Lani Langford

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Vol 82

# THE IRON AGE

New York, Thursday, July 2, 1908.

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## The Besly No. 18 Piston Ring Grinder.

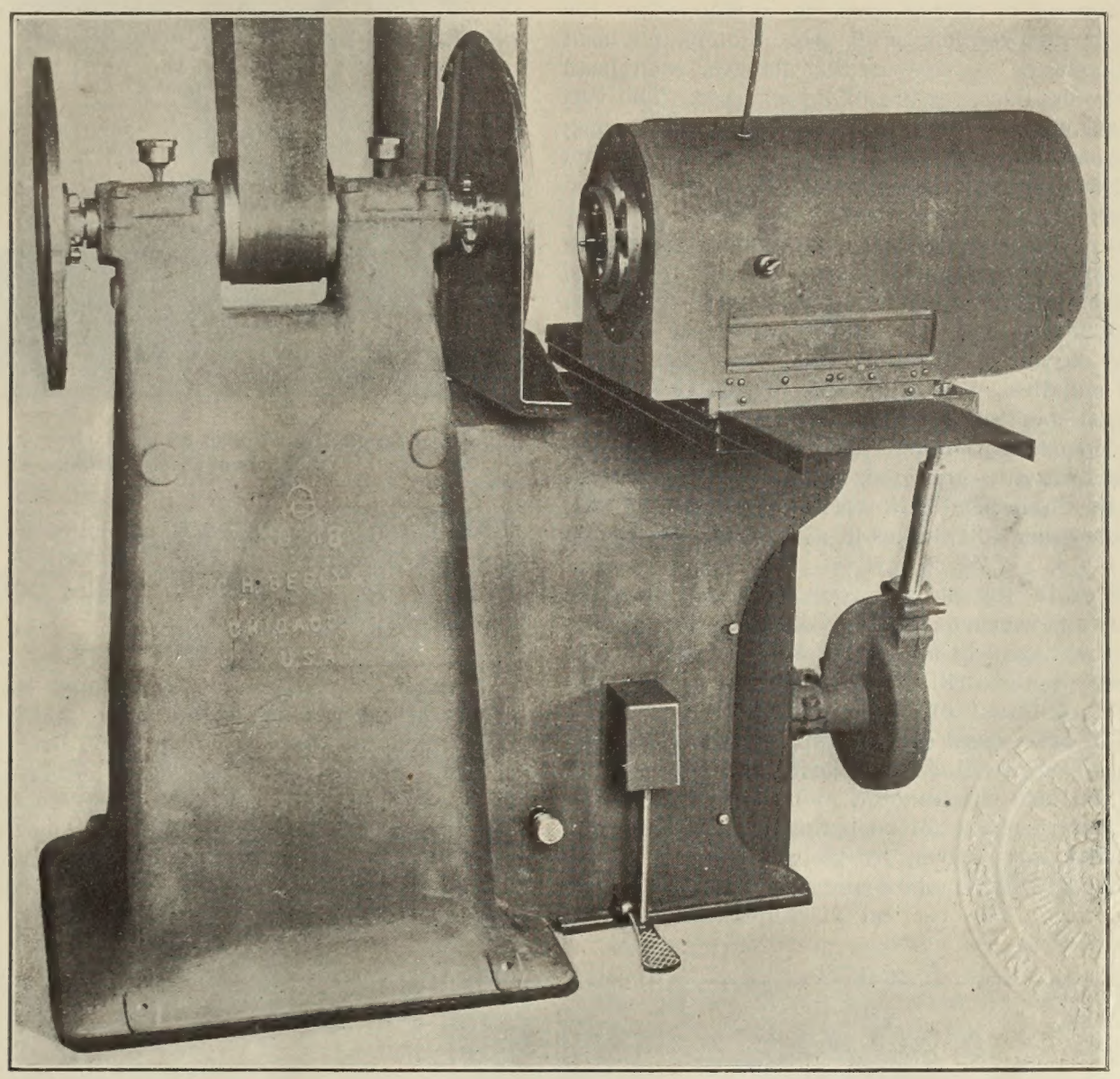
For grinding the sides of piston rings rapidly and accurately to size, Charles H. Besly & Co., 15-21 South Clinton street, Chicago, Ill., have designed a new type of grinding machine shown in the illustration herewith. The novel feature of this machine is that the grinding is done on a steel disk wheel, which has its sides covered with Helmet spiral abrasive disks, which are manufactured exclusively by the builders. This machine will grind rings from the smallest diameter up to 10 in. diameter very rapidly and accurately.

The machine as shown carries 18-in. disk wheels. The spindle is 1¾ in. diameter by 25 9-16 in. long, and is made of crucible machinery steel. The bearing bushings are 8 in. long and are fitted in bored holes in the base casting, thus insuring perfect alignment, as well as making it easy to replace them when worn out. The bushings are split and the base has removable caps over the bushings, facilitating removing the spindle when necessary. End adjustment of the spindle is accomplished by means of a threaded collar, which is mounted on the spindle just under the flange of the spindle pulley. The end thrust is taken on hardened and ground steel thrust collars of large area. The bearings are well protected from dirt and grit, and particular attention has been given the lubricating of all bearing parts. The spindle pulley is 7 in. diameter and is driven by a 6-in. belt.

One the right side of the machine and secured to the bed is a dove-tailed bed plate, on which is mounted a platen or carriage. This platen has a reciprocating motion parallel to the face of the disk wheel, effected through a gear and rack underneath the bed. This gear is driven through a crank and lever, the crank being attached to a lower shaft, which is in turn driven by a spur gear meshing a gear on a worm gear shaft. The latter shaft is driven by a worm on a shaft, which is placed in the lower part of the base at right angles to the spindle, and projects at the rear, where it carries a pulley driven direct from the countershaft by a quarter-turn belt. On the worm gear shaft is mounted a clutch which when engaged causes this shaft to make four revolutions and then releases automatically. The four revolutions are sufficient to produce a forward and return movement of the platen head.

On the platen is mounted a compound slide which also has a reciprocating motion, but perpendicular to the face of the disk wheel. This slide receives its motion from a cam, which is secured to the outer edge of the bed plate. On the slide is mounted the head or bearings of a spindle which carries a chuck for holding the work to be ground. This head can be moved back and forth through a screw and hand wheel. The screw has a micrometer dial graduated to thousandths of an inch and governs the distance of the chuck from the face of the disk wheel. The chuck is a magnetic rotating one, driven through bevel and spur gears from a shaft in the base of the machine. Through a sliding gear in the base a rapid or slow motion can be obtained across the face of the disk wheel.

The operation of the machine is as follows: The work is placed in the chuck and the lever is tripped, causing the platen to move forward; the chuck carrying the work moves toward the face of the grinding disk and the rotating work comes in contact with the grinding



The No. 18 Piston Ring Grinder Built by Charles H. Besly & Co., Chicago, Ill.

face of the work is ground at once. As soon as the platen makes its full forward stroke it recedes, and near the end of the latter stroke the chuck carrying the work also recedes from the face of the grinding disk. As soon as the full backward stroke is made the platen and chuck stop automatically . The working parts are thoroughly encased and protected from dust and grit, as can be seen in the engraving.

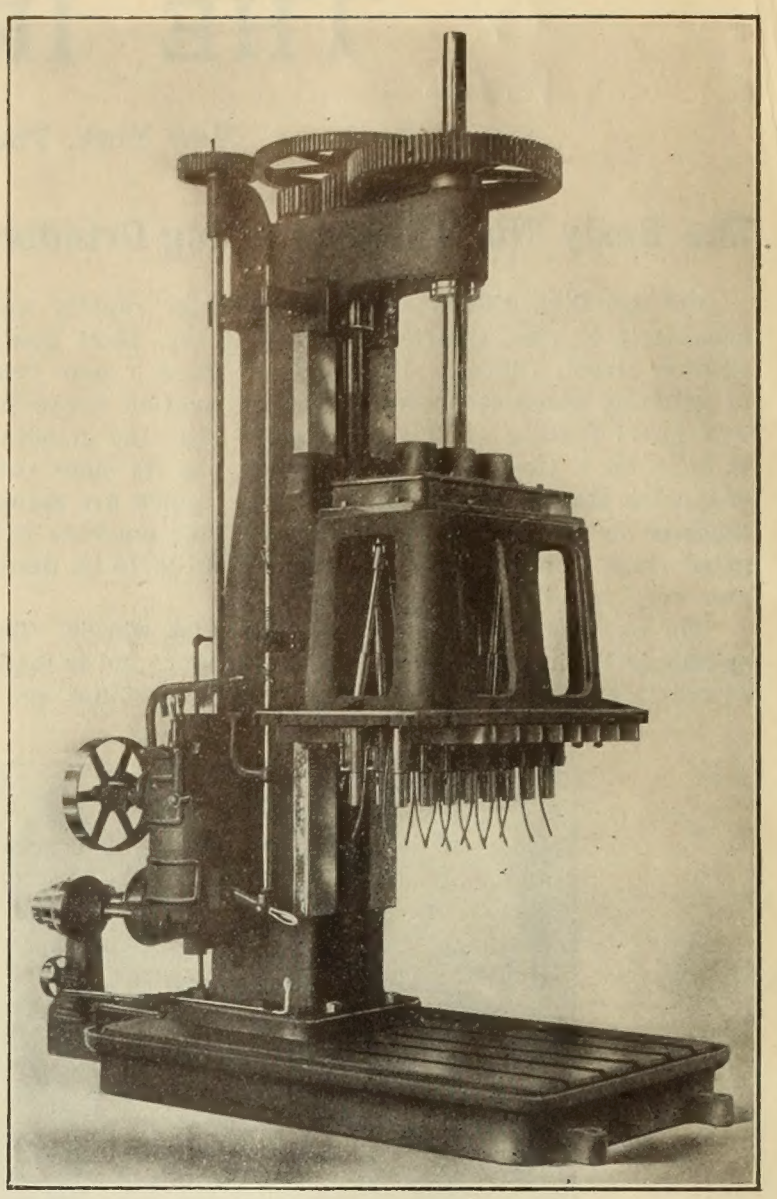
The hight of the machine from the floor to the center of the spindle is 42 in., the floor space occupied 30 x 48 in. and the complete weight 3000 lb.

## Baush Special Multiple Drills.

The multiple spindle drilling machines shown in the illustrations are two special types installed at the plant of the Bethlehem Steel Company, South Bethlehem, Pa., and constituting a part of the equipment of the mill for manufacturing the new Bethlehem structural steel sections under the Grey process. The group consists of eight double head horizontal and four single head vertical drilling machines arranged in a line, with every other machine on a sliding base, to accommodate the drilling of any required length of steel. The double head horizontal machines are for drilling flanges, each head sustaining the drilling pressure of its opposite. The vertical machines are for drilling the web. This arrangement permits of the necessary drilling with the minimum handling of the work. These machines were designed and built for this special purpose by the Baush Machine Tool Company, Springfield, Mass., and embody the standard features of the company's line of this class of tools.

The double head horizontal machines are in two sizes, one carrying 12 x 48 in. heads and the adjustable spindles covering any layout within that rectangle. Each head has 18 drill spindles. The other size carries 12 x 24 in. heads. with 10 spindles to each head. The heads can be operated independently or together as desired. The vertical machines are also in two sizes, one carrying 16 drill spindles on its single head in a working rectangle of 12 x 36 in., and the other 10 spindles in a rectangle of 12 x 24 in.

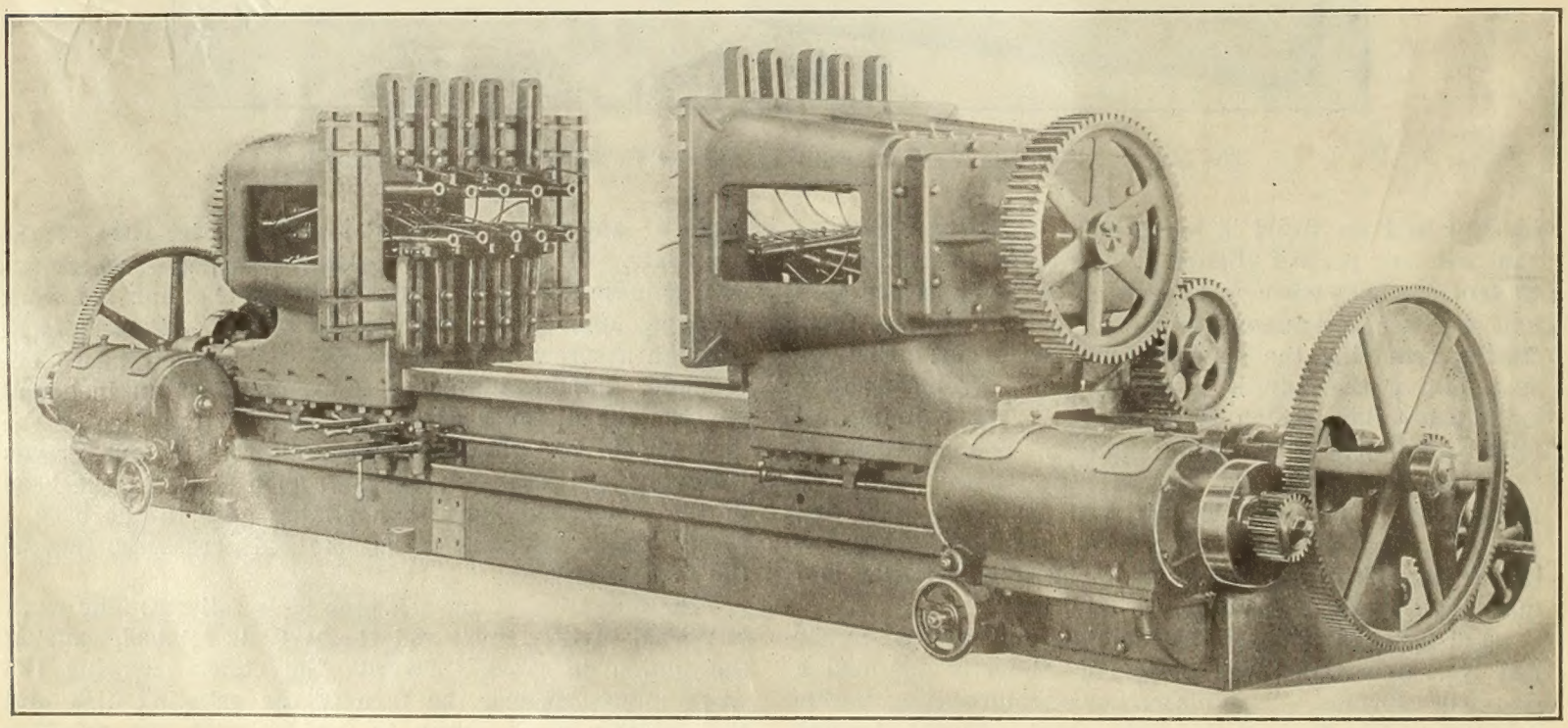
All spindles in the entire group of machines have No. 3 Morse taper sockets, and are designed for drilling 1-in. holes in soft steel at a speed of 55 ft. per minute at the periphery of the drill, with ranges of feed up to 0.01 in. per revolution of the spindle. Each head is equipped with a two-speed quick return of the drill heads. In both types of machine each head is independently driven by a variable speed motor, and each movable machine has an extra motor for adjusting its position. The 18-spindle heads are driven by 25-hp. motors, the 16-spindle heads by 20-hp. motors and the 10-spindle heads by 15-hp. motors. The vertical machines weigh about



A Vertical Single-Head Baush Multiple Drill, Also Built for the Bethlehem Steel Company.

11,000 lb. and the horizontal machines about 25,000 lb., exclusive of the motors. Each head has an oil pump, pan reservoir and connections to spindles to allow of lubricating each drill.

Arrangements have been perfected by the Droeges, owners of the Licking Rolling Mill Company, Covington, Ky., which has been in a state of litigation for some time, to resume within 30 days. Bids are now being taken on the repairs necessary and for some minor details of construction. The mill has been idle since February 6, when fire destroyed the central portion of the structure. Fred Droege will be the president of the reorganized company.



Built for the Bethlehem Steel Company by the Baush Machine

## The New Gould & Eberhardt Stocking Cutter.

Accurate and noiseless running gearing is much sought and special machines and accessories for producing them are being continually developed and perfected. In machines using the rotary milling or disk cutter it is considered by some advisable to first rough out the teeth with a roughing-out or stocking cutter before finishing.

Some five or six years ago, Gould & Eberhardt, Newark, N. J., brought out what they term their stepped style of stocking cutter for roughing out the teeth of coarse pitch gearing, preparatory to finishing with a standard finishing cutter. The advantages claimed over the ordinary square saw or slotting cutter which had previously been used most generally in this country, was that by having the steps in the cutter the chips were broken up, and consequently less power was consumed and the strain on the machine and parts was not so great as with the old style of cutter, the principle of which produces a long shearing cut, with its incidental disadvantages. Again, the lower step of the cutter takes away the wide flank of the gear tooth space, which the square stocking or slotting cutter did not do, and in this way it left a more nearly uniform amount of metal all around for the finishing cutter to take out.

While the idea was not new at the time this cutter was put on the market, this firm claims the credit for first exploiting and marketing it in this country. Since then the cutter has been still further improved, and recently the new stepped style of stocking cutter, shown in Fig. 1, was patented. The essential difference between this and the older stepped cutter is the recessing of the tops of the cutting teeth, so that each tooth practically takes out about half as much as before, as shown in Fig. 2. The new stocking cutter also finishes the bottom of the tooth space, thereby relieving the finishing cutter of this work, and saving it where it usually wears out first. Finishing cutters with these new features can also be furnished.

The principal claims for the new cutter are that a maximum amount of stock is removed with a minimum amount of power consumption; that the cutting edges being staggered are more thoroughly lubricated while cutting; that they save the finishing cutters by removing the stock where the ordinary saw cutter leaves large corners at the points of the gear teeth, and that they are considerably wider through the hubs than a saw or slotting cutter, lessening the liability for keys to shear off,

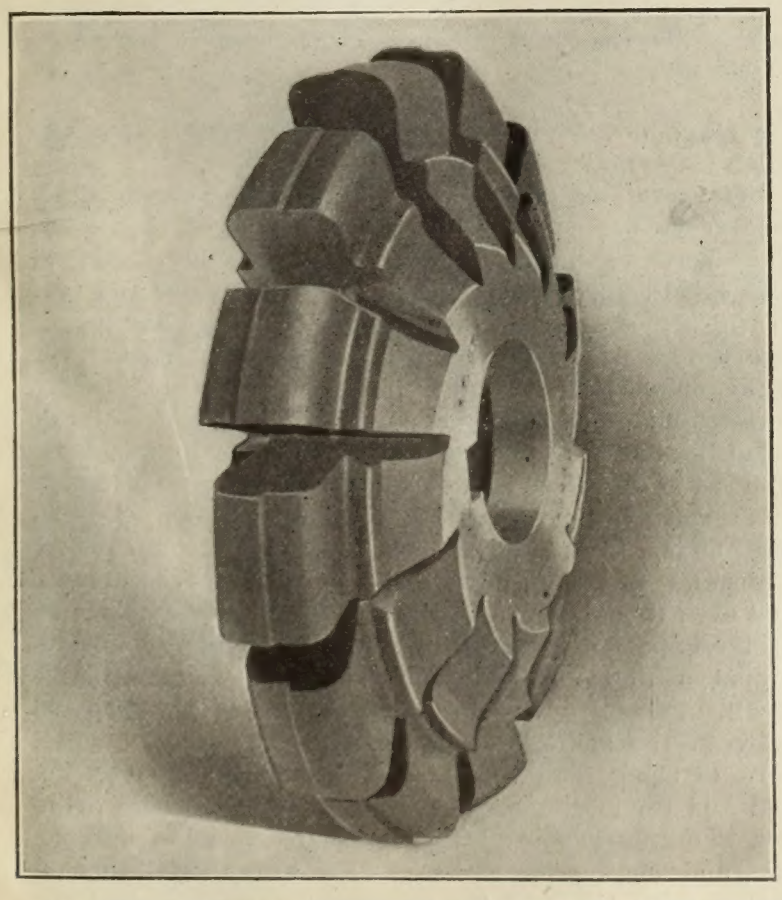


**Fig. 1.—The New Stocking Cutter for Cutting Gears, Made by Gould & Eberhardt, Newark, N. J.**

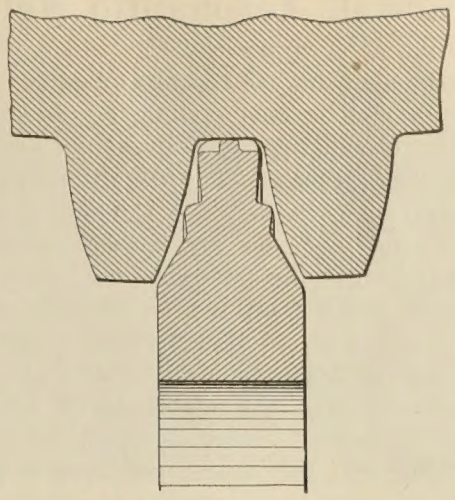


Fig. 2.—Detail Illustrating the Action of the New Gould & Eberhardt Stocking Cutter.

and in consequence of all of the above permit of faster feeds and speeds being used, and at the same time lessen considerably the strains on the machine itself.

## Business Men to Be Columbia Teachers.

Some leading men in the manufacturing world will appear at Columbia University, New York, as lecturers in the engineering schools at the next session. For some time there have been occasional lectures by such men on special subjects, but their design has been rather to stimulate the students than to give them systematic instruction. The new scheme aims at an addition to the course by a regular series of lectures given by men actively engaged in business, with the definite idea of bringing the university into touch with the requirements of everyday life, and to teach students how not only a result may be obtained theoretically, but how it may be reached with the utmost economy.

In pursuance of the general plan arrangements have been made by Dean Frederick A. Goeze and Prof. Charles E. Lucke, head of the Department of Mechanical Engineering, assisted by Charles B. Going, editor of the *Engineering Magazine*, to secure men of the highest reputations as practical engineers to deliver courses at Columbia next fall on engineering. Among the men who will become for the nonce university lecturers are James M. Dodge, president of the Link-Belt Company, who will describe the different kinds of conveying machinery; Charles U. Carpenter, president of the Herring-Hall-Marvin Company, who, as well as Mr. Going, will give his experience of the management of works; James Newton Gunne, who is one of the foremost authorities on shop costs and processes; Richard T. Lingley, who will unravel to the students the mysteries of the accounts of works, and Harrington Emerson, who is down for a course on shop efficiency.

Special types of machines will be explained by leading authorities, such as William P. White, who has designed the largest water turbines in this country; Frederick W. O'Neil of the Nordberg Mfg. Company, who will discuss air machinery, and Frederick Ophuls, manager of the De La Vergne Machinery Company, refrigerating machinery.

The puddling mill to be erected by A. M. Byers & Co., Inc., at Girard, Ohio, will require considerable new equipment. The plant will contain 40 puddling furnaces and two finishing mills. The building for the latter is to be 102 x 390 ft, and the building to contain the puddling furnaces will be 80 x 408 ft., both of steel construction, with corrugated steel siding. Increased power will be needed for the new plant, and the firm is in the market for ten 125 hp. boilers and a 750 hp. engine. A 16-in. three-high roughing mill and a 12-in. three-high finishing mill, squeezers, &c., will also be required.

The Rockdale Iron Company's furnace at Rockdale, Tenn., which has been on foundry iron, was changed to ferrophosphorus on July 1. It is reported that some good business has been booked for the latter product.

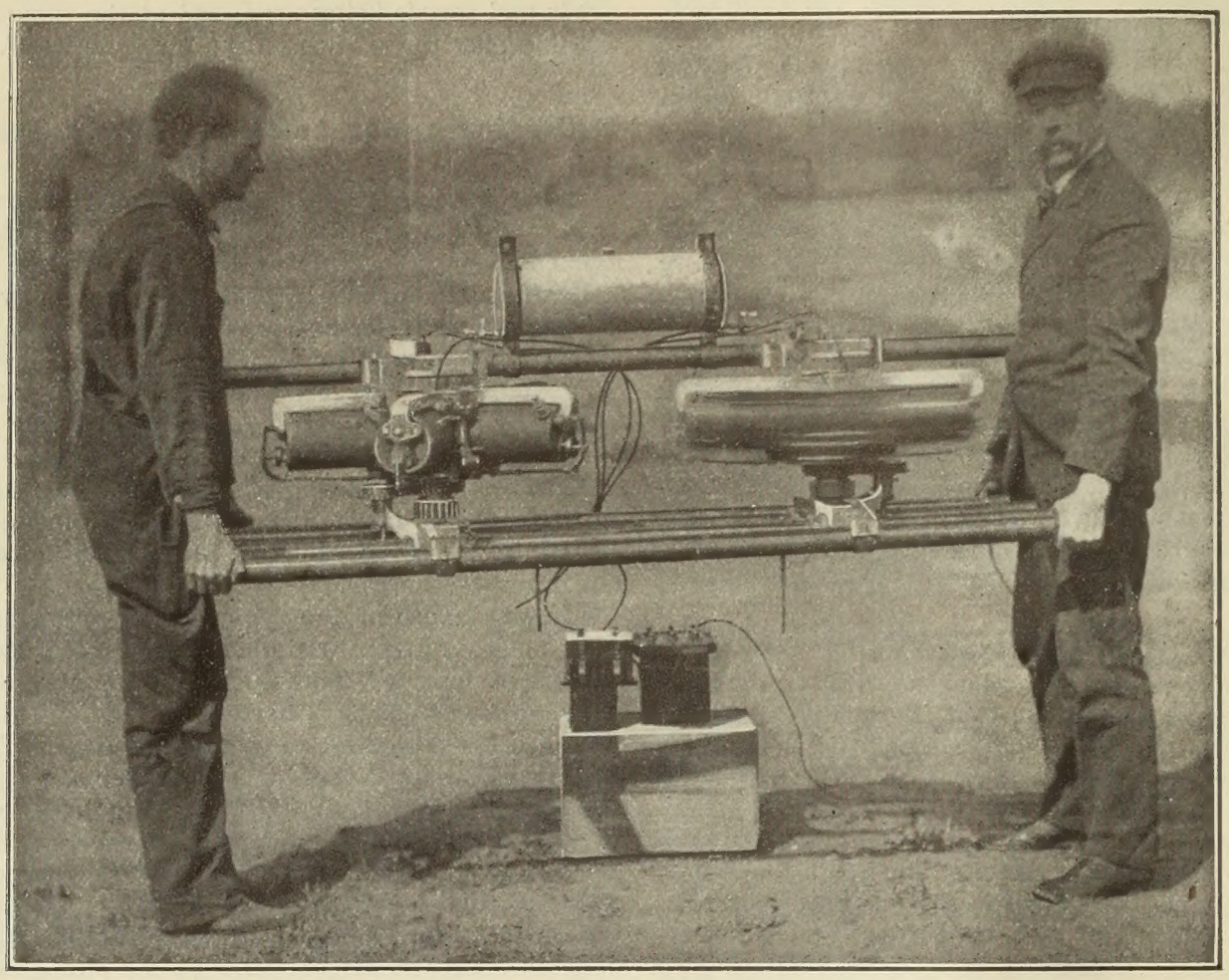
## The Farwell Aeronautic Motor.

What is claimed to be the lightest motor of its power ever constructed, is that designed by F. O. Farwell and built by the Adams Company, Dubuque, Iowa, particularly for propelling airships. The illustration shows two of these motors, one running and the other stationary. To demonstrate the lightness and steadiness, they were held by two men while the photograph was taken. The weight, including timer, float feed carburetor, automatic force feed oil pump and oil tank, is only 97¼ lb. for 36 hp., or 2.7 lb. per horsepower. The single throw crankshaft, weighing only 4½ lb., is stationary, and the five 4¼ x 3½ in. cylinders set 72 degrees apart revolve around it and up to 1800 rev. per min., producing a gyroscopic action which is of value in an airship to steady its flight. Other novel features are that the motor has no flywheel, no reciprocating parts, no muffler and no cooling device, that the valves, 10 in number, are actuated by a single cam and are closed by centrifugal force instead of by springs, and that centrifugal force also introduces the gas into the cylinders under pressure. The motor is controlled like a Corliss steam engine, and the ignition system is the same as used on ordinary single cylinder motors.

The motor is similar to the revolving cylinder motor used in the Adams-Farwell motor car, and described in *The Iron Age* November 3, 1904, but of much lighter weight. With the spider shown in the photograph, which, in this case, secures the motor to four tubes, the motor and base and all weighed 104 lb. The light weight of this motor, which is air cooled, is brought about more by the simplicity of its construction and the high grade of the material used than by reduction of strength to the minimum. The motor is not what is usually termed a rotary engine. The cylinders revolve around a common center—the vertical stationary crank shaft and the pistons and connecting rods revolve around another common center—the single crank pin. At one point the pistons reach the head of the cylinder; at another point the pistons approach the base of the cylinder, but no moving part ever comes to a stop while the engine is running. It is a continuous circular motion and there is no shock, vibration or loss of power in overcoming the inertia of reciprocating parts as in other motors.

Each cylinder, complete with head and part of the central crank case, is cast in one piece of steel of high tensile strength, and weighs only 7½ lb. Five of these cylinders are bolted together and bolted to a top aluminum flange (which also forms the gas manifold) weighing 3 lb., and to a bottom steel flange which also supports the valve cam and transmission gear. These flanges have long bronze bushes and form bearings around the vertical stationary crank shaft. In each cylinder is a cast iron piston weighing 2½ lb. All the pistons are connected to the single crank pin by bronze connecting rods which interlock each other around a bronze lined steel bush around the crank pin.

The cooling is one of the most important features. The cylinders move rapidly through the air like the arms of a centrifugal blower. Centrifugal force removes the air in contact with the cylinders and atmospheric pressure supplies fresh air. The circulation of air is equally rapid on all sides of all cylinders, and as the cylinders are of equal thickness on all sides the expansion is equal and the cylinders may be made light without distortion. The result is entirely different from blowing air upon one side of a cylinder or row of cylinders.



Two of the Farwell Air Ship Motors Made by the Adams Company, Dubuque, Iowa, Showing One Running to Illustrate the Absence of Vibration.

The revolving element that acts as the balance wheel is over 80 per cent. of the entire weight of the motor. This heavy flywheel revolving rapidly around a vertical axis exerts an enormous force to keep the motor and that to which it is attached in a horizontal plane. The motor, like a top, has a tendency to resist being tipped over while spinning and to quickly right itself if forcibly thrown out of its proper running plane. This force can be utilized to maintain equilibrium in a flying machine. The heavy flywheel is also conducive to steady running and transmits a constant torque to the propeller. A gasoline motor, particularly one using high compression, transmits its power by a series of explosions or blows, and even though several cylinders may be used to divide up the impulses, the arms of the propeller or fan used to propel a flying machine are subjected to destructive strains unless a flywheel of sufficient weight is interposed between the motor and propeller. The heavy flywheel permits using high compression which is more economical and produces more power from the same size cylinder than the low compression usually used in automobile and aeronautic motors. This heavy flywheel, together with the variable compression system used for controlling the motor speed and power, permits of a very wide range of speeds.

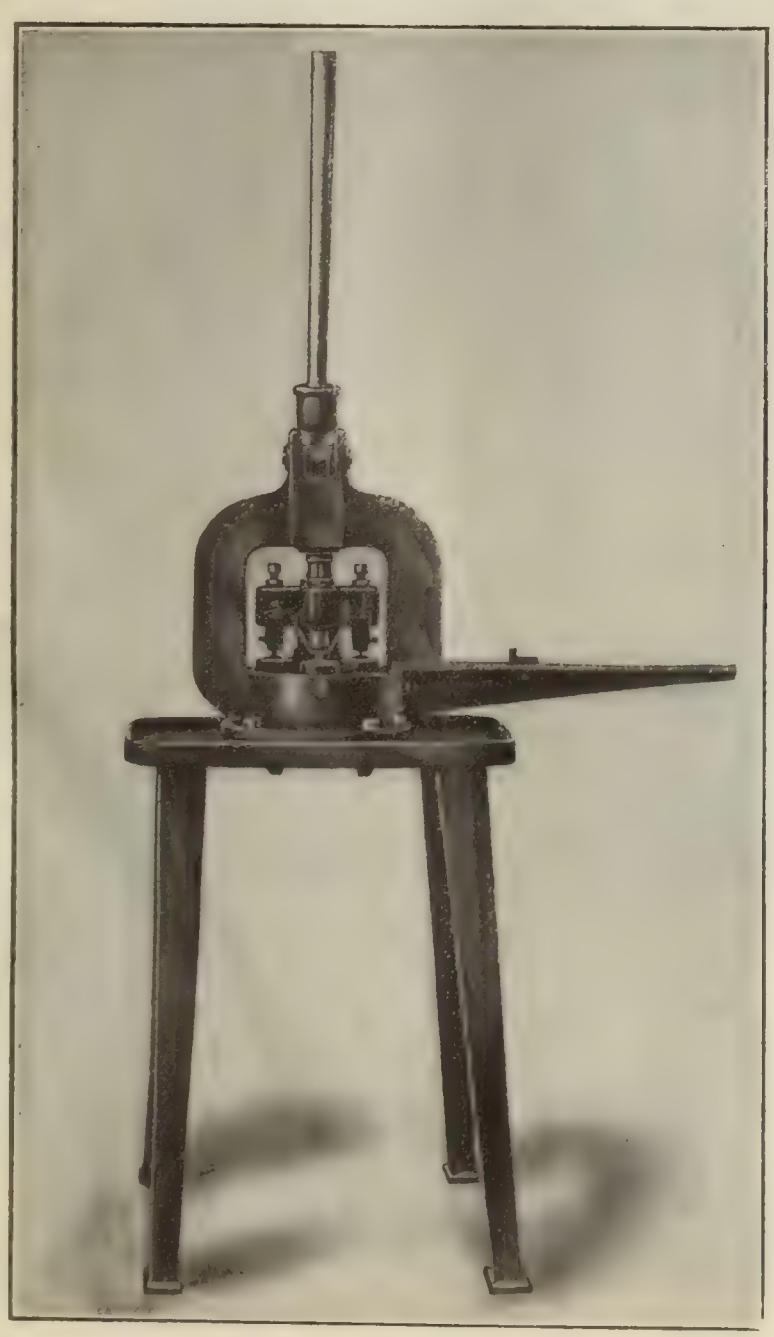
The variable compression system referred to has been used for several years on the automobile engines and consists in mechanically holding the inlet valve open for a part of the compression stroke and closing it after a part of the gas has been blown back and taken in by another cylinder which is at the time on the suction stroke. The compression is relieved and the motor is easily turned when it starts and runs slowly. The compression may be gradually increased until maximum speed and power is obtained and it may be as gradually reduced when stopping the motor. There is not that abruptness in starting or stopping which characterizes the ordinary gasoline motor and the propelling arms are thus relieved of much strain. After the motor is started the spark lever is set and requires no further attention. All speeds are obtained by the variable compression lever. The proper firing is cared for automatically.

The valves, being in the head of the cylinders, and closing outwardly, are closed by centrifugal force. The higher the speed of the motor the greater the force and the greater the necessity for a stiff force to close the valves quickly.

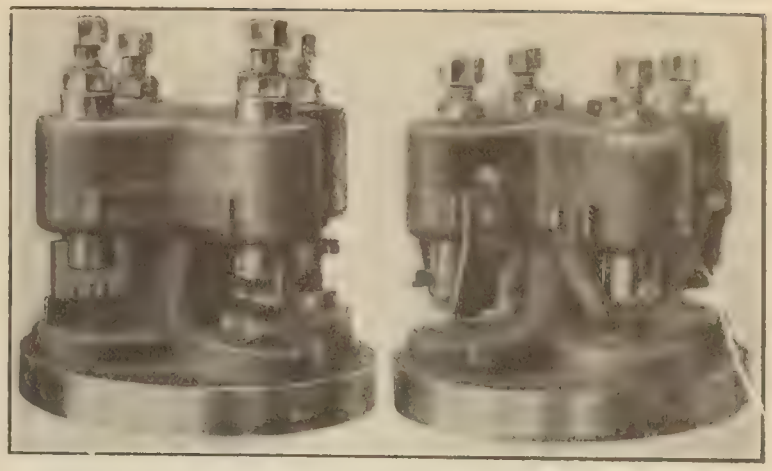
The two motors illustrated are now being used by a well known inventor who is making secret tests of a new type of aeroplane. If these tests result as favorably as might be expected in consideration of the advantages possessed by the motors a practical "heavier-than-air" flying machine may become a reality this summer.

## A Walsh Turret Bench Press.

The machine illustrated has a turret carrying four sizes of punches or tools for doing various work, such as bending, shearing, wire cutting, riveting, embossing, &c., and is built by the H. C. H. Walsh Company, 2448 West Kinzie street, Chicago, Ill. The turret can be instantly adjusted from one operation to another by simply drawing the locking pin out in front and swinging the turret around until the plunger of the machine engages with a slide in the turret. Each separate slide in the turret is independently adjusted, so that in the grinding of punches or dies the wear can be taken up. There are no springs or delicate mechanism in this machine to prevent its standing the hardest usage.



A Turret Punching Press Built by the H. C. H. Walsh Company, Chicago, Ill.



Two of the Interchangeable Turrets Which May Be Used in the Walsh Turret Press



The Walsh Turret Press as Made for Mounting on a Bench.

Any number of turrets can be had with this machine, so that tools need not be changed for various operations. The turret is easily removed from the machine, as there are no screws to loosen; it is simply necessary to draw the front locking bolt and lift the turret out, replacing it with one to be used. There is an adjustable gauge on the side which can be set at a given distance, allowing any number of strips to be punched with any sized hole at this given distance with no change.

The capacity of the machine for punching is a 5-16-in. hole through ¼-in. stock, and it will punch a hole in a strip 1¼ in. from the edge. The bench machine with one turret weighs 170 lb. and when fitted on an iron table and legs 310 lb. These machines will be built in various sizes to suit the requirements of the trade, and will be fitted to be worked either by hand or power.

**Metillure.**—At a recent meeting of the French Society of Civil Engineers Ad. Jouve reported on the opportunities for utilizing ferrosilicon alloys in the chemical industries. Ferrosilicon, or "metillure," as he has called it, has the property of showing extraordinary resistance to acids, and this has led to the suggestion that vessels for the chemical industry be made of it. It may be that platinum may be replaced in the manufacture of sulphuric acid. A new outlet would be found for ferrosilicon which is now exclusively used in steel manufacture.

## The Milwaukee 16-in. Engine Lathe.

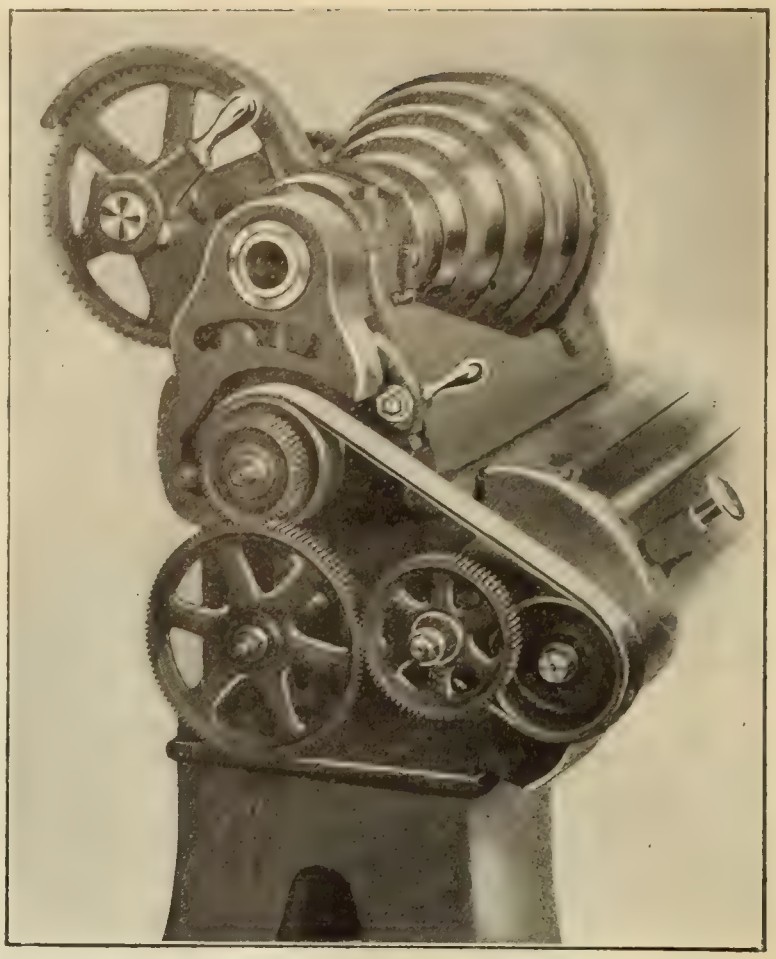
The new lathe shown in the accompanying engravings is an improved 16-in. plain engine lathe, built by the Milwaukee Machine Tool Company, Milwaukee, Wis. This machine is a tool designed principally for manufacturers desiring durable powerful machines capable of high cutting speed. The lathe is of an extra heavy design and differs from the ordinary plain lathe in having quick change attachment for all feeds. It has four changes of belt driven feeds and one feed taken from the lead screw when a coarser range of positive feeds is required. The feeds are driven by a wide belt mounted on two single faced pulleys, provided with a conveniently located belt tightener. For thread cutting the different pitches are obtained by change gears, which are furnished to cover a range of from 3 to 36 threads per inch; this also produces a range of positive feeds when engaged with the lead screw of from 10 to 108 per inch. The belt feeds have a range of from 30 to 80 per inch.

The apron is fitted with a clutch for the longitudinal traverse, and a sliding gear for the cross feed. The machine has reverse in the apron and a sliding lock for the half nut. Special care has been taken in the design and placing of all handles so as to be most convenient for the operator.

The bed is of heavy pattern, having unusual depth, and is strongly reinforced with heavy cross ties. The head and tailstock are massive in construction, and are fitted to a large V bearing in the rear and a flat bearing on the front. The headstock is designed with two large oil reservoirs located directly under the spindle, from which oil is supplied to the bearings by wicks. The tailstock is so formed as to leave clearance for the compound rest when used for angular feeds. The carriage is fitted to the bed by a large V bearing in the rear and front. It has a wide cross slide and a compound rest of large proportions.

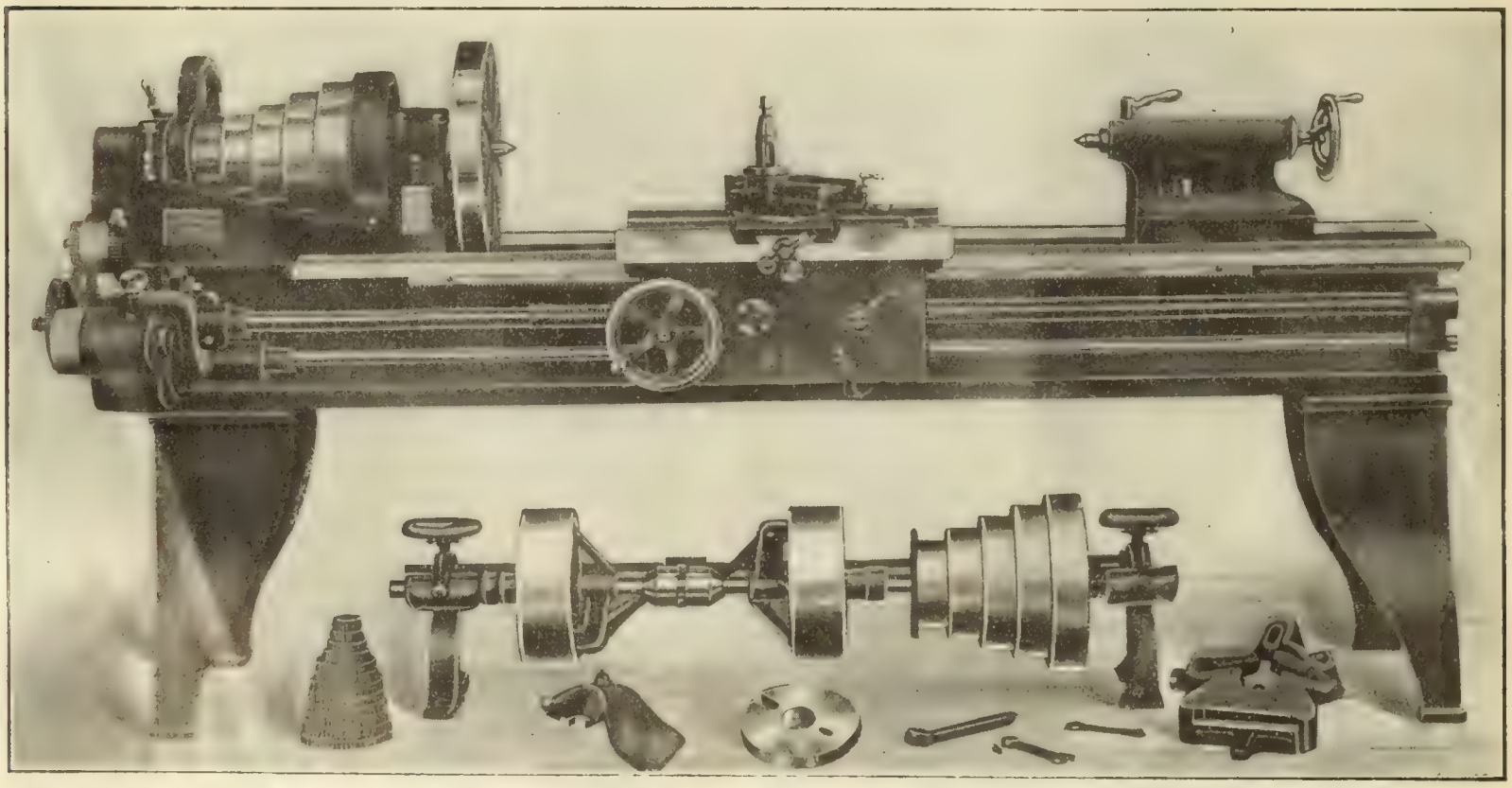
The main spindle bearings are of phosphor bronze scraped to a bearing surface; the main bearing is 3 3-16 x 5 in. long. The spindle has a 1 9-16 in. hole running its length, is made of high carbon crucible steel cut from the solid and is ground. The centers are of tool steel with No. 4 Morse taper shanks. The cone pulley is unusually large, taking a 2¼-in. belt, and having a diameter of 11 in. on the largest step. All pinions and gears of importance are of steel cut from the solid. All studs throughout the machine are of steel hardened and ground.

The Milwaukee lathe is at present built only in the 16 in. size, which can be furnished with any length of bed from 6 to 16 ft. The net weight of the machine with an 8-ft. bed is approximately 2500 lb. complete, the machine is well proportioned throughout, the weight being evenly distributed. A double friction countershaft, compound rest, steady rest, follower rest, large and small face plates, together with all necessary change gears and wrenches, are furnished with each machine.



View of the Head End of the New Milwaukee Lathe.

The Niles Car Mfg. Company, Niles, Ohio, recently built, in three weeks, two passenger cars for the Milwaukee Northern Railroad. The cars are of the combination smoking and passenger type, with a seating capacity of 52 persons. Each is 50 ft. 4 in. long, over all, and 40 ft. 2 in. long over the body. The passenger compartment is 28 ft. 1 in. long, and the smoking compartment 8 ft. 2 in. A special baggage vestibule, 8 ft. 3 in. is also provided.



The New 16-In. Engine Lathe Built by the Milwaukee Machine Tool Company, Milwaukee, Wis.

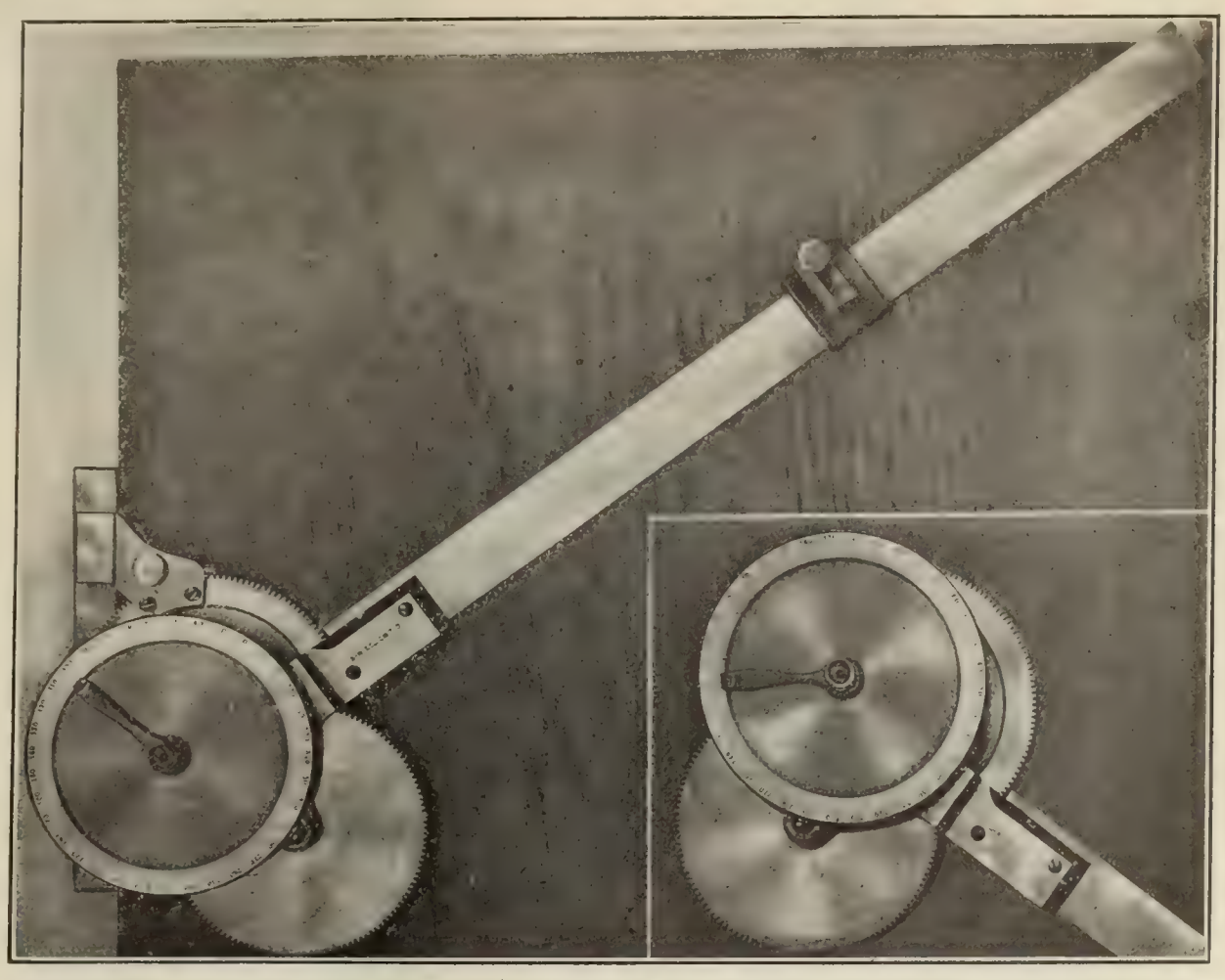
## The Schellenbach-Hunt Protractor.

A new mechanical device for laying out angles and dividing circles is shown in the accompanying illustration. It is made by the Schellenbach-Hunt Tool Company, Cincinnati, Ohio, and can be used on a drafting board, as shown, or attached to a metal plate. It is useful in the tool-room, drafting department or pattern shop.

The center gear around which the arm swings has 144 teeth, and can be placed in any position and held stationary. The arm swings around this gear from its central stud and carries a pinion of 18 teeth meshing the stationary gear. Attached to this pinion is a revolving gear of 135 teeth, shown at the right, which meshes another pinion of 18 teeth carrying a pointer. One turn of the arm revolves the pointer or hand 60 times. The dial under the hand is graduated and reads to degrees and minutes. The engraving shows the device in two positions, one attached to the base piece and held on the edge of the drafting board as a bevel protractor. In this position the blade will move through a half circle. In the other position the base piece is removed and the large gear held in the center of the board by thumb tacks passed through holes in the web of the gear. In this position the blade is free to move through the full circle. One edge of the blade is radial with the center of the stationary gear. A sliding block for a scriber or pencil is shown attached to the blade. The indicating hand can be set to any desired position in relation to the dial and clamped by knurled thumbscrews.

In using the device to divide a circle into 144 spaces, for example, the radial face of the blade is set in the desired position, and the hand moved to zero on the dial and clamped to the spindle. The blade is then moved until the hand coincides with 150 min. on the dial; the line is marked, and the blade next moved to indicate 300 min., etc. For dividing uneven numbers, as 47, for instance, a vernier hand reading to 5 min. can be furnished. As 47 will not divide in even minutes the fractional parts of the minutes will have to be estimated on the dial—a full circle, 21,600 min., divided by 47, equals 7 deg. 39 27-47 min. The hand is set at zero on the dial, and the blade moved to the right until the hand makes one revolution and 99½ min. on the dial; for the second division the hand is turned one revolution and to 199 min., and so on.

The blade of the instrument is 12 in. long. The gears are made of German silver, and the spindles and bearings of steel, hardened, ground and lapped. The weight complete is 20 oz.



Two Ways of Using the Mechanical Device for Laying Out Angles and Dividing Circles, Made by the Schellenbach-Hunt Tool Company, Cincinnati, Ohio.

## The Western Electric Company's Improvements.

Plans embracing a project that in extent and industrial importance outranks any similar work of the present year in that vicinity are announced by the Western Electric Company, Chicago. These include the erection of three buildings which will be added to the group comprising the company's new plant at Forty-eighth avenue and West Thirty-second street, known as the Hawthorne Works. Some idea of the extent of these additions is conveyed by the fact that between $500,000 and $600,000 will be expended in their construction. It is interesting to note that the plans outlined are not merely tentative, but that the new buildings will be started at once. That expansion of such magnitude should be planned for execution at this time, when the present capacity is only partially occupied, is particularly significant of confidence in the future development of business; it likewise emphasizes an appreciation of the opportunities offered under present conditions for the economical prosecution of such work.

Since the establishment of the Hawthorne plant, manufacturing formerly done in the Clinton street plant, located in the block bounded by Van Buren, Harrison, Clinton and Jefferson streets, has been gradually transferred to the new location, and when the additions are completed all manufacturing operations will be concentrated at that point. It is also the purpose of the company to transfer to the Hawthorne plant a large portion of the work now done in New York. One of the objects in view in extending plant facilities at Hawthorne is to provide adequate facilities for the manufacture of large dynamos and the building of steam turbines, which constitute a recent line of development in the company's undertakings and will be largely extended. The location at Hawthorne affords exceptional facilities for economical production. The plant is provided with adequate shipping facilities through a well arranged system of tracks, and the site is large enough to admit of a convenient plant layout.

# The New Walcott & Wood Shaper.

Although in general following the usual design, the shaper recently produced by the Walcott & Wood Machine Tool Company, Jackson, Mich., has a number of important details intended to correct what are commonly weak points. Figs. 1 and 2 show front and side views of a 20-in. high speed crank shaper of the new design, and it will also be built in 16 and 24 in. and probably larger sizes in the future.

Among the parts that the builder considered could be improved were the ram bearings. After an experience of years in the designing, building and operating of shapers, the company concluded that the ordinary square form of ram bearings with caps screwed on to hold the ram to its work, even if suitable for general work, do not stay true long enough to be satisfactory where very accurate work is required; and besides they are likely to give under heavy cuts, producing a fan-tail cut. To overcome these defects the ram bearings of this new shaper are constructed as shown in the halftone Fig. 1 and in the drawings Fig. 3. The ram has flat bearings underneath, a very wide side bearing tapering slightly outward and upward and a wide top bearing tapering slightly upward and inward. The column is cast with recessed ways to receive the ram bearings, and taper wedge gibs are provided to take up wear. To maintain the sidewise alignment of the ram the side bearing is more than 60 per cent. greater than customary. The lower is proportioned to the side bearing surface so that the ram will wear downward in its bearing, and the side bearings, being tapered outward and upward, automatically compensate the lateral wear. The bearing surfaces on the ram are virtually surrounded on three sides by the solid metal of the column, which is apparently the strongest possible construction. When screwed on caps are used, fitting the ram bearing surfaces at an angle of 45 degrees, there is a tendency for the ram to wedge under the upward pressure of a heavy cut, producing uneven work and batter marks. By making the upward bearing of the ram substantially flat, this wedging tendency is avoided.

The design of the ram has been improved also by dispensing with the long slot usually necessary for the clamping stud. This is accomplished by placing the clamping device for binding the ram to the rocker arm entirely within the shell of the ram, so that a box form of ram is allowed with an unbroken outer surface and crossribs from side to side at short intervals its entire length, thus making what is claimed to be the strongest ram ever put on a crank shaper. The binding device is operated from a wrench hold *a* projecting through the top of the ram. The construction of this clamping arrangement is shown in Fig. 3. As may be seen, the inner surface of the ram has two lateral longitudinal ribs which engage the positioning nut *b*. The lower rear end of this positioning nut is cut away, admitting the clamping plate *c*, which is caused to bind upon the ribs and the positioning screw *d* at the same time. The clamping is done by means of eye-bolts and an eccentric lever, which is operated by a rack, *e*, through a pinion on the lower end of the stem of the wrench hold *a*.

The tool head is of a familiar design, but strongly constructed throughout. It is graduated, and swivels to any angle through an arc of 90 degrees, and has an adjustable graduated collar reading to 0.001 in. on the down feed screw. The tool head slide has a graduated scale and pointer to indicate the depth of cut; the pointer is adjustable so that it can be set to an even division of the scale. The clapper box is strengthened by a tie rib *f* connecting both sides at the bottom, which greatly increases its rigidity. The tool head has a strap tool post and power down feed, as shown in Fig. 3. The down feed mechanism consists of the rail *g* mounted on top of the column and a dog adustable along the rail and having a projecting pin which engages with the slotted lever *h*. The motion of the lever is positive in both directions, requiring no spring to return it. It is connected with the down feed screw, as shown, by gearing and a ratchet which can be thrown in and out at will.

The driving gears are unusually strong and the back gear ratio very large. The main drive is from a four-step cone driving pulley which runs on the outside of a stem cast on the column, through a double sliding gear *i* on the cone shaft and back gears on an intermediate shaft, which connect with the bull gear *j*. On the other

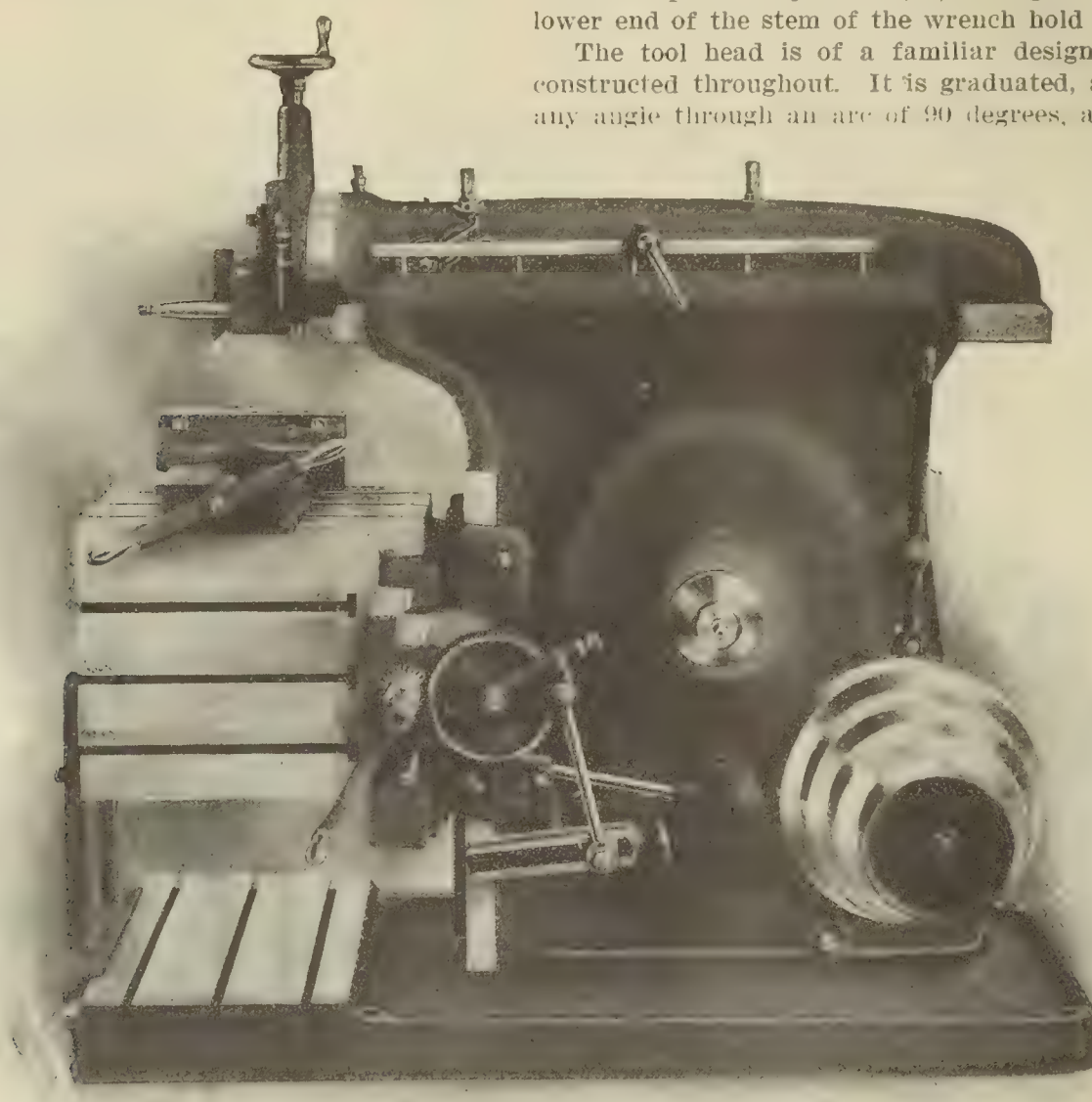


Fig. 1.—The New Shaper Built by the Walcott & Wood Machine Tool Company, Jackson, Mich.

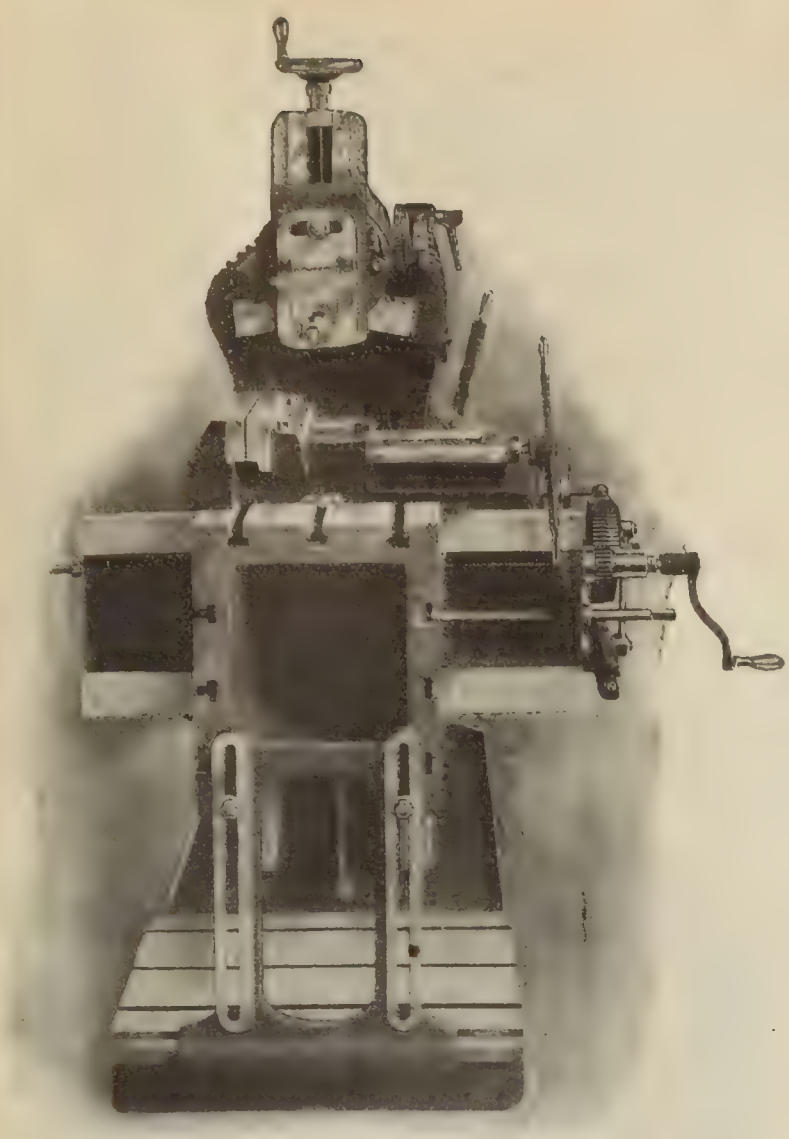


Fig. 2.—Front View of the New Walcott & Wood Shaper.

end of the bull gear shaft is an elliptical gear, *k*, which meshes a second elliptical gear attached to the main driving crank *l*. The elliptical gears give a suitable quick return of the ram and a greater power during the cut without necessitating excessive speed of the shafts and gears. The elliptical gear arrangement is considered preferable in construction to the Whitworth quick return and gives a smooth, positive drive, besides eliminating the wear that attends the Whitworth quick return. The drive gives eight cutting speeds for each length of stroke and is smooth and powerful. The ratio of gearing with back gears is 32 to 1.

The driving crank *l* is made very strong and rigid, the bearing for the crank being large and long, as shown in Fig. 3, and integral with the column. The length of stroke is adjusted by means of a shaft passing through the center of the crank, which, through gears, turns the screw *m* and alters the position of the adjusting nut and crank pin *n* so as to increase or decrease the throw of the crank. The nut *n* slides in ways on the face of the crank *l* and is provided with a long bearing and a taper gib to take up wear.

The rocker arm is a very important part of a shaper and its design has been given especial attention. It is unusually long and, when the ram is at either extreme of its stroke, is less than 15 degrees from perpendicular. Unnecessary friction and wear on the ram bearings due to excessive angle of the rocker arm are thereby avoided. The recess for the crank block is of box form, as shown in Fig. 3, and contains a taper gib to take up wear. The fork in the top of the rocker arm allows shafting to be passed through under the ram for cutting keyways. The pivot pin at the top of the rocker arm connecting it to the positioning nut has a very large bronze-bushed bearing and is tapered to take up wear.

The cross rail is of box form and is designed to withstand the strain due to taking heavy cuts. Its bearings *o* on the front of the column are slightly bevelled on the outside to adjust for wear without having to rely upon the pressure of a few gib screws to maintain the alignment. The cross rail is long and deep and has ample bearing surfaces for the apron. The apron is provided with a taper gib to take up wear. The table is of box form and can be detached readily to allow work to be clamped to the face of the apron. The table is locked to the apron in a simple and effective way, as shown in the halftone Fig. 2, and also has a convenient detachable outer support.

The table cross feed mechanism is quite out of the ordinary, doing away with necessity for adjusting the feed to correspond with the hight of the cross rail. As shown in Fig. 3, it consists of the miter gears *p* and *q* connected by a splined shaft to transmit motion from the bull gear shaft to the small crank *r*, which, through a connecting rod, actuates the rocker *s*. This rocker has an adjusting screw and trunnion nut which is connected by a rod to the ratcht lever *t* mounted on a stud in the

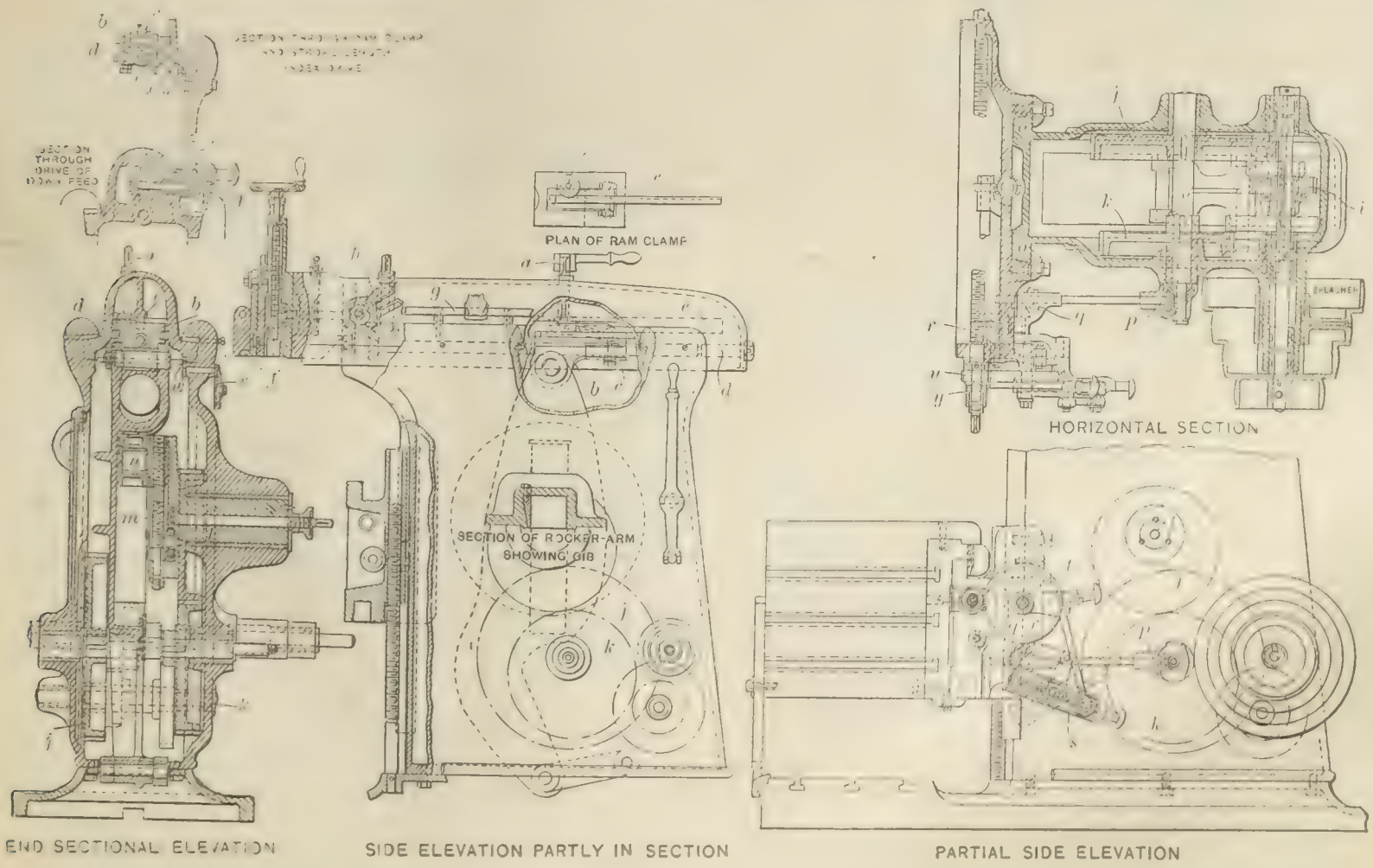



Fig. 3.—Constructional Details of the New Walcott & Wood Shaper.

cross rail. The ratchet operates a gear which meshes a pinion *u* loosely mounted upon the cross rail, but connected to the cross feed screw through a spring clutch *y* capable of sliding on the screw. This spring clutch introduces a yielding link in the transmission so that if the table accidentally runs to the extreme of its travel the pressure on the clutch teeth forces the clutch out of mesh and prevents breaking any parts.

For convenience in adjusting the length of stroke an index is provided to show it. This index, *v* Fig. 3, is a dial on the side of the machine just above the stroke adjusting shaft with a pointer oscillating over its face. This pointer is driven through gears by the rack *w* which is connected by the screw *x* to a lug on the ram positioning nut.

All bearings are bushed with bronze bushings and all rapid running bearings have ring oilers, the construction of which is shown in Fig. 3. The driving cone has two half bushings with oil chambers between them; a splasher attached to the pulley throws the oil up over the stem and keeps the bearings thoroughly lubricated. Convenient oiling facilities are provided for all running or sliding bearings. All shafting is of steel ground to size, and all gears are cut from the solid, are coarse pitch and wide face, and all pinions are of steel.

The vice, as shown on the halftones Figs. 1 and 2, is designed to rest flat upon the top of the table, this forming the most rigid possible construction. It has a swivel base and is graduated.

The maximum stroke of the machine is 20 in.; the length of ram bearing in the column 36 in.; the keyseating capacity 3½ in.; the horizontal travel of the table 27 in., and the feed to the head 7 in. A 3-in. driving belt is used, which runs from a countershaft having 4½ x 14 in. tight and loose pulleys. The countershaft is intended to run at 350 rev. per min. The net weight of machine and countershaft is 4100 lb.

## Customs Decisions.

### Steel Channels for Automobile Frames.

It has been decided by the Board of United States General Appraisers that side frames and cross pieces used in the construction of chassis for automobiles are dutiable at the rate of 5-10 cent per pound under paragraph 125, providing for channels or car truck channels. The articles were imported by the Napier Motor Company of America, and were assessed for duty by the collector of customs at 4 7-10 cents per pound under the paragraph in the tariff for "steel in all forms and shapes not specially provided for." The decision of the board says in part: "From the testimony and the exhibits in the case, we are inclined to regard the contention of the importers in this case as well founded. Not only does the testimony offered in behalf of the importers show that the steel articles in question are channels, but it further appears that even the witnesses for the Government admit that in shape the articles are channels, and that they are not complete manufactured articles. Thus the articles appear to be ordinary steel channels for car trucks, and require to be further manipulated before they are ready to be used as finished frames for automobiles. The protest is sustained."

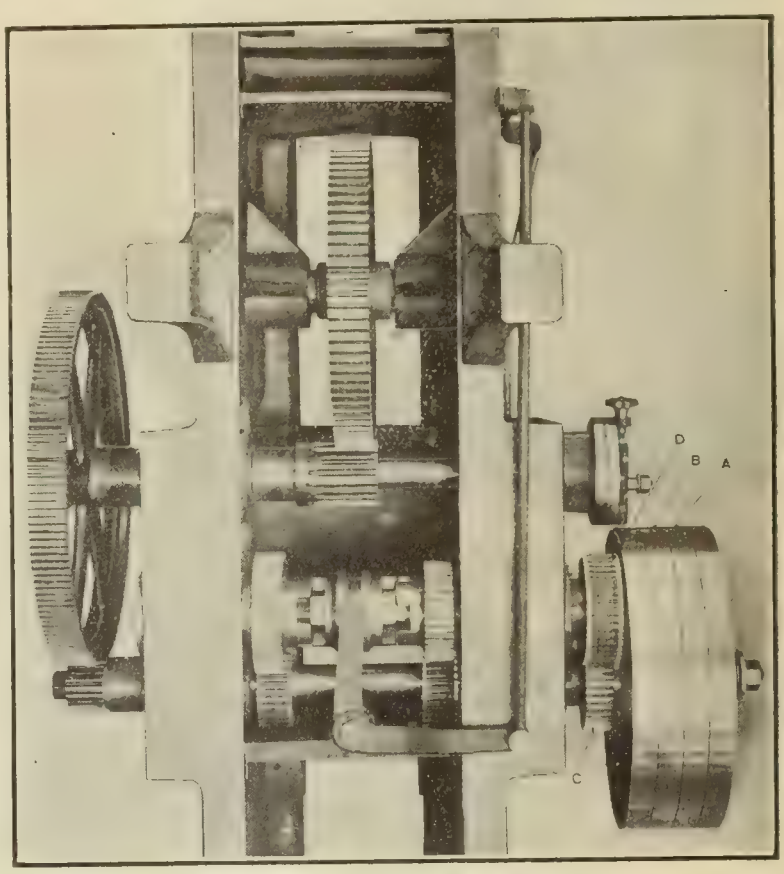
### Steel Wool.

The Treasury Department announces that inasmuch as the Supreme Court has refused to grant a writ of certiorari in the litigation over the tariff classification of steel wool, the decision of the Circuit Court of Appeals favorable to the contention of the Buehne Steel Company, the importer, will stand. The Government, backed by domestic manufacturers, has brought several test cases since 1902 to determine the rate of duty applicable to the product. The Board of General Appraisers and courts have almost unanimously upheld the contention of the importers for the lower duty. The Treasury Department asked for a 45 per cent. duty, while the importers alleged that the rate should be according to the gauge and value of the wire from which the wool is made.

With the July copy, the Du Bois Iron Works, Du Bois, Pa., has begun the distribution of a series of 12 monthly calendars, each bearing a reproduction in colors of one of May A. Post's paintings of "Child Life in Holland." A leaflet accompanies the July calendar, containing a brief description by the artist of each picture. The reverse sides of the cards will contain short talks on the company and its products, engines and pumping machinery.

## A New Variable Speed Planer Mechanism.

The variable speed mechanism shown in the illustration is designed to give two cutting speeds and one constant return speed to the planer table of planers smaller than 36 x 36 in. On that size and larger planers four cutting speeds may be had, if desired, by introducing a second clutch. The builder, the Woodward & Powell Planer Company, Worcester, Mass., has made the positive clutch and the gears of massive construction; there




The Variable Speed Planer Drive Used by the Woodward & Powell Planer Company, Worcester, Mass., as Seen from Beneath.

is no danger of the clutch slipping out of engagement unless forced out by its lever.

The clutch, mounted on an auxiliary shaft, is operated by a lever on the front side of the bed. The pulley A which drives the table on the return is keyed to the main driving shaft. The pulley B which drives the table for the cut has a long hub upon which the loose pulley revolves, and on the end of the hub is keyed the gear C, which also revolves loose on the main driving shaft. This gear meshes the rawhide gear D, which is keyed to the auxiliary shaft, as is also the sliding clutch. The two self-oiling, cast iron clutch gears on the auxiliary shaft are loose, and mesh rawhide gears keyed to the main driving shaft. Thus the position of the clutch determines the speed of the cut, or when out of engagement permits the table to stand idle. When cutting, the auxiliary shaft is the driver of the main shaft, the effect being that of back gearing, with resultant gain in power. On the return the main driving shaft is the driver. The ordinary ratio of the two speeds is 3 to 2, but this may be varied to suit requirements. As already suggested, the greater width of a 36-in. planer permits the use of two clutches, giving four speeds.

Data gathered at Detroit, Mich., show that 1780 lake vessels are out of commission at the present time and that 14,000 employees are idle. President Livingstone of the Lake Carriers' Association says that only about 40 per cent. of the total tonnage of that association is under way at present, though there has been some slight improvement in the past few weeks.

# LA BELLE IRON WORKS IMPROVEMENTS.

## The New 72-in. Plate and Jobbing and Sheet Mills of the La Belle Iron Works, Steubenville, Ohio.

Herewith are presented two ground plans, Figs. 1 and 2, one showing the general layout of the extensive plant of the La Belle Iron Works at Steubenville, Ohio, and the other the new 72-in. plate and jobbing and sheet mills, these being recent additions. In *The Iron Age* of October 8, 1903, appeared an illustrated article describing the plant as it existed at that time. In *The Iron Age* of December 7, 1905, an illustrated description was given of the new 84-in. plate mill. No other additions were made to the plant until the fall of 1907, at which time work was commenced on the erection of the new 72-in. plate and jobbing and sheet mills. The entire plant now occupies an area of 126 acres, and has 16 miles of its own railroad tracks that connect with the Pittsburgh, Cincinnati, Chicago & St. Louis Railroad, the Cleveland & Pittsburgh Railroad and the Wheeling & Lake Erie Railroad, thus making its facilities for receiving and shipping materials the very best.

### The Blast Furnace Plant.

The company owns two blast furnaces, each 90 ft. high, 20 ft. diameter of bosh, with 13 ft. hearth, and equipped with Brown top with revolving distributer. No. 1 furnace was originally built in 1865, rebuilt in 1889 and torn down and rebuilt in 1901-1903, the first pig iron being made at the rebuilt stack April 28, 1903. No. 2 furnace was built in 1903-1904 and was first blown in October 31, 1904. Each furnace is served by four McClure three-pass stoves, 21 x 80 ft., built by G. W. McClure, Son & Co., Pittsburgh. The ore is handled by a 5-ton Brown hoist traveling ore bridge that spans the stock pile and the parabolic bins, from which latter it is conveyed in overhead larries to the furnaces. The air is supplied by three horizontal cross compound blowing engines, 44 and 84 x 84 x 66 in., built by the Mesta Machine Company, Pittsburgh, and conveyed in two 48-in. riveted steel pipes across the Cleveland & Pittsburgh Railroad to the furnaces. The iron is taken in 25-ton hot metal cars, either directly to the open hearth plant or to the two pig casting machines built by Heyl & Patterson, Pittsburgh. The capacity of the two furnaces is 800 tons a day.

### The Open Hearth Plant.

This consists of 10 50-ton stationary furnaces. The stock is loaded on buggies in the stockhouse and elevated by mechanical up-haul to the charging floor, where it is charged in the furnaces by two Wellman-Seaver low type charging machines. The empty buggies are returned by a gravity track system to the stockhouse for reloading. The gas producer house, east of and parallel with the open hearth building, contains 40 Laughlin gas producers, the coal being brought there in cars on an overhead track directly from the mine. The capacity of the open hearth plant is 35,000 tons of ingots per month.

The ingots, after being stripped by two Wellman-Seaver electric strippers, are placed in the soaking pits and then transferred by an electric car to the 45-in. blooming and slabbing mill, driven by a pair of 46 x 60 in. geared reversing engines, both mill and engines having been built by the Mesta Machine Company, Pittsburgh. They are rolled into slabs and billets, which are cut and loaded in cars or run directly to the 22-in. continuous mill with a 24-in. three-high finishing mill, where they are further reduced to plates, skelp or sheet bars. The capacity of the blooming mill is 35,000 tons a month and that of the skelp mill is 15,000 tons a month.

West of these mills and parallel with them are two stands of 22-in. three-high mills for rolling smaller skelp and bars, the capacity of these mills being 5000 tons a month. The skelp is carried in standard cars to the tube mills at the south end of the plant and there made into pipe in sizes ranging from ⅛ to 12 in. in diameter. The present pipe equipment consists of two lap weld and two butt weld mills, a socket shop and galvanizing department. The mills with equipment were built by the United Engineering & Foundry Company, Pittsburgh, and the furnaces and gas producers by Alex Laughlin & Co., Pittsburgh. The output from the tube plant is about 7000 tons a month.

### Power Plant.

There are three separate boiler houses, all equipped with Stirling boilers, their aggregate capacity being 15,000 hp., of which 7000 hp. is fired with gas from the blast furnaces and the remaining 8000 with slack coal, the Green chain grate stoker being used for this purpose. The ashes are conveyed by electric ash cars to elevators and loaded into railroad cars. The electric power plant is built directly south of the blast furnaces, and has a generating capacity of 2000 kw. direct current and 1000 kw. alternating current.

The capacity of the two pump houses at the edge of the Ohio River is about 35,000,000 gal. a day, a part of which is filtered and used for hydraulic purposes.

### Coal and Iron Properties.

The La Belle Iron Works is absolutely self-contained, manufacturing all its products from the ore to the finished material. The company owns and controls the Pitt Iron Mining Company, Steubenville, which operates the Wacootah, La Belle and Miller ore mines in Minnesota, and also owns 6000 acres of coal lands in Brooke, Jefferson, Randolph and Ohio counties, W. Va., and in Fayette County, Pa. The coal lands in Randolph County are undeveloped, but coal is mined at all of the other mines named. The company controls the La Belle Coke Company, which operates 200 beehive coke ovens in Fayette County, Pa., with an annual capacity of 150,000 tons. The company also owns 99 acres of undeveloped limestone property in Berkeley County, W. Va. The coal from the properties in Ohio and in West Virginia, across the Ohio River, is hauled by electric locomotives to the main shaft, shown on the general plan, Fig. 1, where it is hoisted, crushed and stored in bins, whence it is distributed to the different parts of the plant by an overhead track system.

### The New 72-In. Plate and Jobbing and Sheet Mills.

The plate and sheet mills shown in the larger scale on Fig. 2 are the most recent additions to the plant and are located west on the Cleveland & Pittsburgh Railroad. The raw steel for these mills is brought in cars and unloaded in the slab yard or at the bar shear in building O, where it is cut in lengths, loaded on buggies and hauled by electric storage battery locomotives to the different furnaces. The buildings covering these mills were built by the Riter-Conley Mfg. Company, Pittsburgh, their sizes being as follows: Building A, 100 x 250 ft.; B, 100 x 200 ft.; D and Dx, each, 50 x 250 ft.; E, 100 x 325 ft.; F, 30 x 400 ft.; G, 40 x 400 ft.; H, 80 x 400 ft.; I, 80 x 400 ft.; J, 30 x 200 ft.; K, 25 x 190 ft.; L, 50 x 350 ft.; M, 82 x 350 ft.; N, 25 x 60 ft.; O, 75 x 300 ft., and P, 100 x 190 ft., with a 15-ft. lean-to.

Referring to the plan, Fig. 2, it will be noted that there are two plate mills located in building B. The first of these is a 30 x 84 in. three-high plate mill, with 30-ft. lifting tables, which was fully illustrated and described in *The Iron Age* of December 7, 1905, but a brief repetition of its main features would be of interest at this time. The middle roll and tables are raised by hydraulic power and the table rollers are driven by electric motors, two being mounted on each table. The mills and tables were built by the United Engineering & Foundry Company. The engine driving the mill is a 44 x 60 in. Corliss engine, built by Mackintosh, Hemphill & Co., Pittsburgh.

The slabs for this mill are heated in two Laughlin continuous heating furnaces and delivered to the mill by means of a roller table built by the United Engineering & Foundry Company, which also built the runout tables and plate straightener. The marker's table between the runout table and shear consists of a four-strand roller chain conveyor 15 ft. long, built by Heyl & Patterson, Pittsburgh. The plates, after being marked, are run through a 110-in. cross cut shear built by the United En-

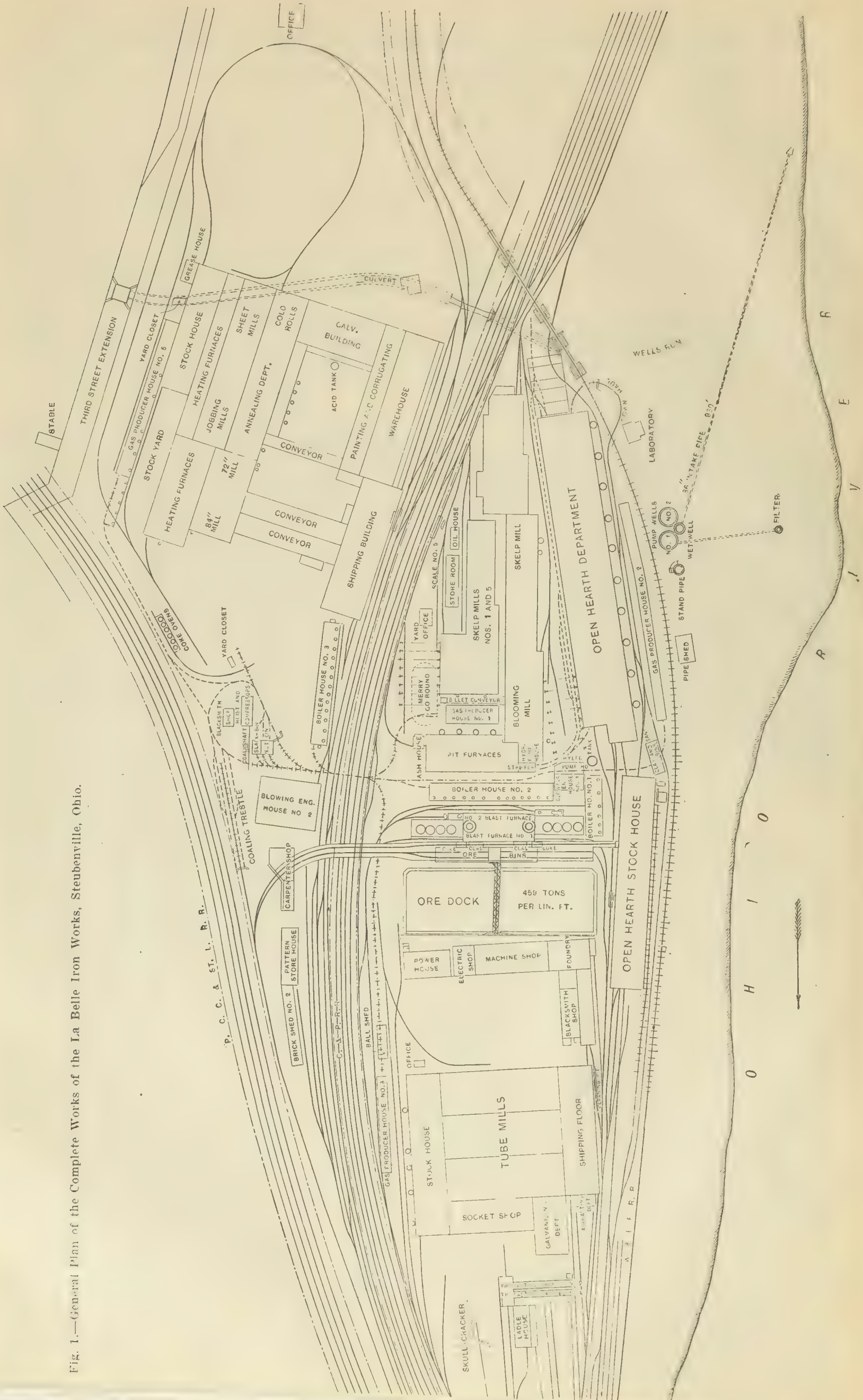



Fig. 1.—General Plan of the Complete Works of the La Belle Iron Works, Steubenville, Ohio.

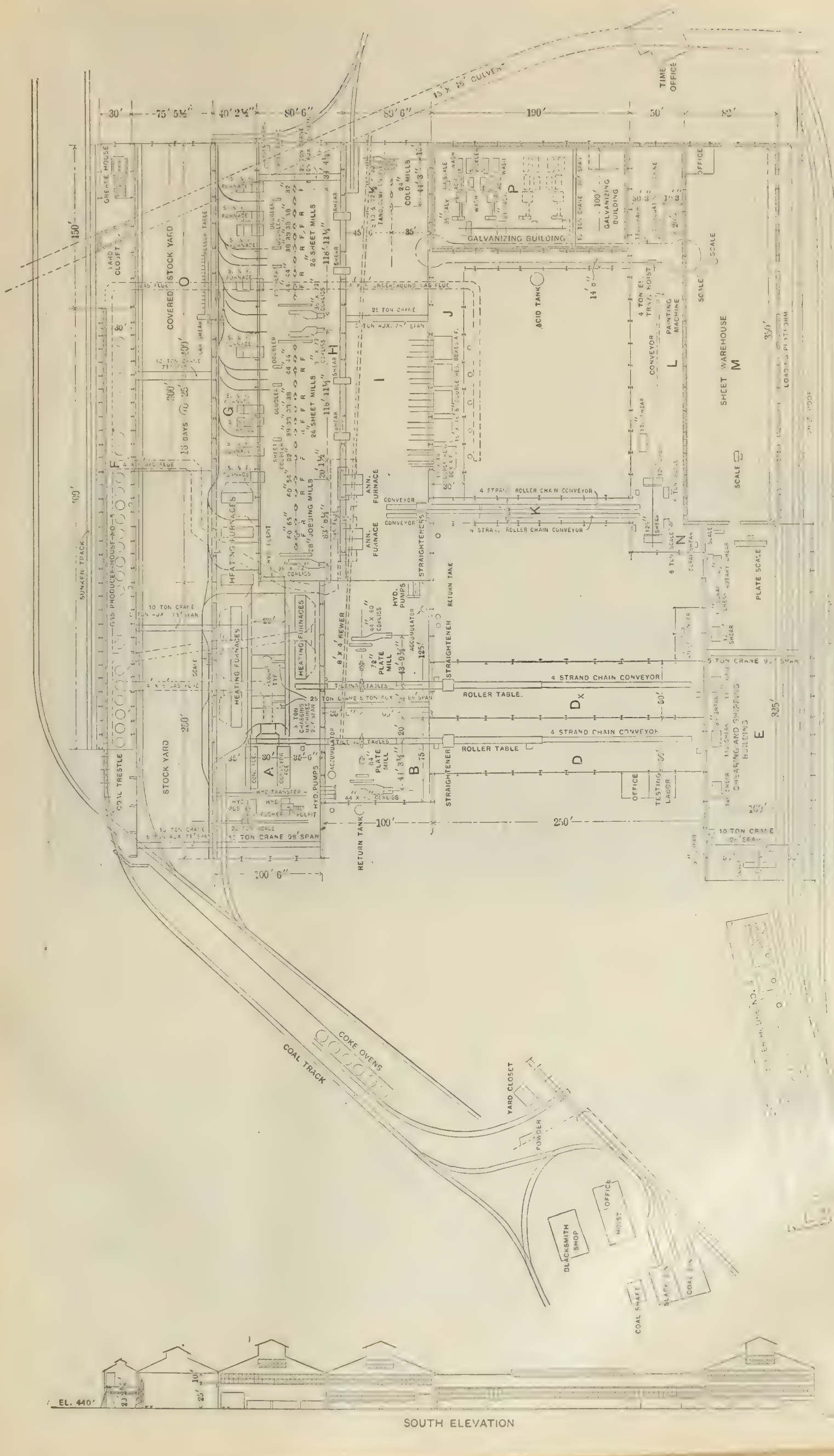



Fig. 2.—Plan of the New 72-In. Plate and Jobbing and Sheet Mills of the La Belle Iron Works.—An Enlarged Plan of the Upper Right Hand Corner of Fig. 1.

gineering & Foundry Company, where they are cut to lengths and then run on casters to the 146-in. trimming shear, built by the Hilles & Jones Company, Wilmington, Del., whence they are taken to the plate scales, weighed and loaded in cars.

**The New 72-In. Plate Mill.**

This mill has just been completed. It is practically a duplicate of the 84-in. mill. The rolls are 12 in. shorter, or 72 in. long, and the lifting tables were made correspondingly narrower and with some improvements over the tables in the 84-in. mill. The mills and tables, Fig. 3, were built by the United Engineering & Foundry Company, and the 44 x 60 in. Corliss engine driving the mill was built by Mackintosh, Hemphill & Co. The tables, conveyor and cross cut shear are exact duplicates of those in the 84-in. mill. The trimming shear for this mill is a 125-in. Hilles & Jones shear. The slabs are heated in five Siemens regenerative heating furnaces built by Alex Laughlin & Co., the charging and drawing being done by a two 3-ton floor type charging and drawing machine, Fig. 4, built by the Alliance Machine Company, Alliance, Ohio. The machines can also deliver slabs to the 84-in. plate mill. The capacity of these two mills is 6000 and 5000 tons of plates a month, respectively.

ment. Both finishing and roughing rolls are carried in cast steel close top housings, which weigh approximately 26,000 lb. each. They are provided with 8-in. diameter steel screws carried in bronze nuts. The finishing rolls are hand adjusted by means of a large spanner wheel.

The roughing stands, which require a far wider range of adjustment, are provided with motor driven screw downs, one motor to each stand. This motor, a Westinghouse series wound railroad type, is geared to a shaft which carries right and left bronze worms, engaging with corresponding cast iron worm wheels on the adjacent screws. By mounting the motor on a bracket near the top of the roll housing a very effective and compact arrangement is obtained. The top roughing rolls have a lift of 6 in. and are therefore balanced by weights and levers. Bronze top and bottom bearings 12 in. wide and bronze side bearings 6 in. wide are fitted to all roll necks. These rolls have necks 21 in. in diameter and 17 in. long, while the wabblers, which are four pawed, are 18 in. in diameter and 9 in. long. The 30-in. double helical cast steel pinions, through which a drive is connected to the upper rolls of the roughing stands, are carried in cast iron Babbitt lined bearings, which are mounted in air furnace iron open top housings. The caps for these hous-

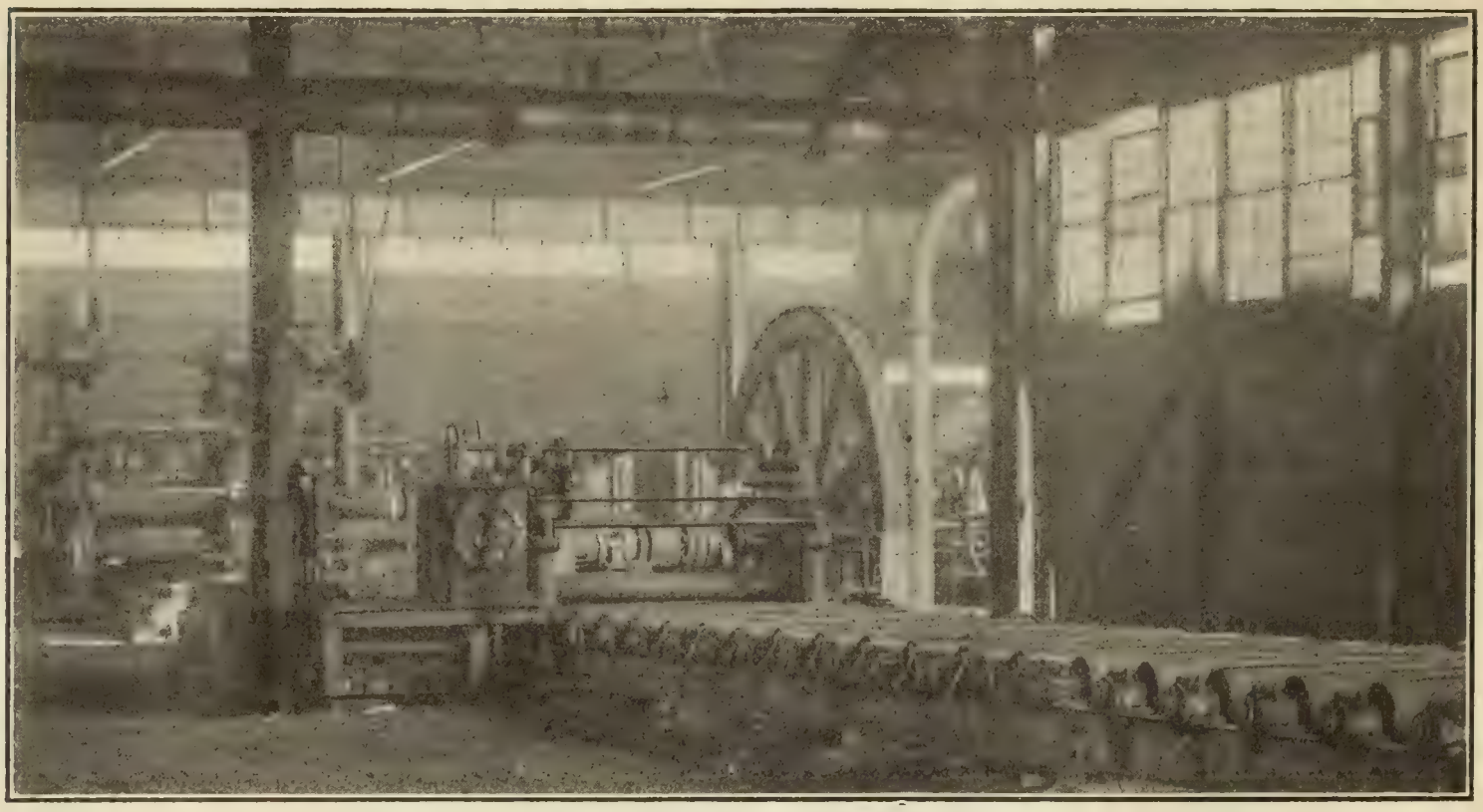


Fig. 3.—The New 72-In. Plate Mill.

The electric traveling cranes for these mills comprise one 10-ton, with 5-ton auxiliary 71-ft. span Morgan crane, and one same capacity Alliance crane over the slab yard; one 10-ton 98-ft. span Alliance crane in the furnace building A; one 25-ton with 5-ton auxiliary 98-ft. span Alliance crane in the mill building B, and one 10-ton 98-ft. span Morgan crane and one 5-ton 98-ft. span Alliance crane, both in the shipping building E. The hydraulic power is furnished by four 16 and 25 x 7¾ x 16 in. compound duplex pumps, built by Epping, Carpenter & Co., Pittsburgh, the pressure being regulated by two 16-in. accumulators built by the United Engineering & Foundry Company.

**The Jobbing Mills.**

Referring to Fig. 2, it will be noted that in the south end of the building H are located the 28-in. jobbing mills, consisting of one 60-in. finishing mill with a 66-in. roughing mill, and one 54-in. finishing mill with a 60-in. roughing mill, driven by a Mesta heavy duty simple Corliss engine, 36 in. in diameter and 72-in. stroke, with a 30-ft. 100-ton flywheel. The two roughing mills furnished by the Mesta Machine Company are mounted on shoe plates about 77 ft. in length.

By locating the pinion housing in the middle of the train the two roughing stands, which are mounted on either side, are provided with a positive drive for both upper and lower rolls, and the finishing stands are then placed at either end of the train to complete the arrangeings are secured by 4-in. diameter steel bolts. On the sides of the pinion housings is furnished a supporting bracket for the adjacent vibrating spindle carriers.

Since this mill runs in one direction only, double helical pinions are better adapted to the services than spur. These pinions are shrouded to pitch line and are molded to a patented Mesta gear molding machine, which insures perfect spacing of teeth. This method reduces the back lash to a minimum, and overcomes troubles due to draft and inequalities in full pattern molded pinions. Each stand of rolls is fitted with rest bars on both sides for plates and guides, making the whole train complete.

The slabs are heated in three Siemens regenerative heating furnaces built by Alex Laughlin & Co. and conveyed to the roughing mills by means of telegraphs. From the finishing mills the plates are passed through the blue annealing furnaces built by William Swindell & Brothers, Pittsburgh, and then to two four-strand roller chain conveyors built by Heyl & Patterson, which convey the plates to the straightening rolls built by the Hilles & Jones Company, and thence to the two 126-in. Hilles & Jones shears located at the south end of building L, where the plates are sheared to size, weighed and transferred on hand trucks to the warehouse marked M. There is an auxiliary shear near the other shears for reshearing, also a scrap shear in building N, both built by the United Engineering & Foundry Company. The capacity of these mills is 3000 tons a month.

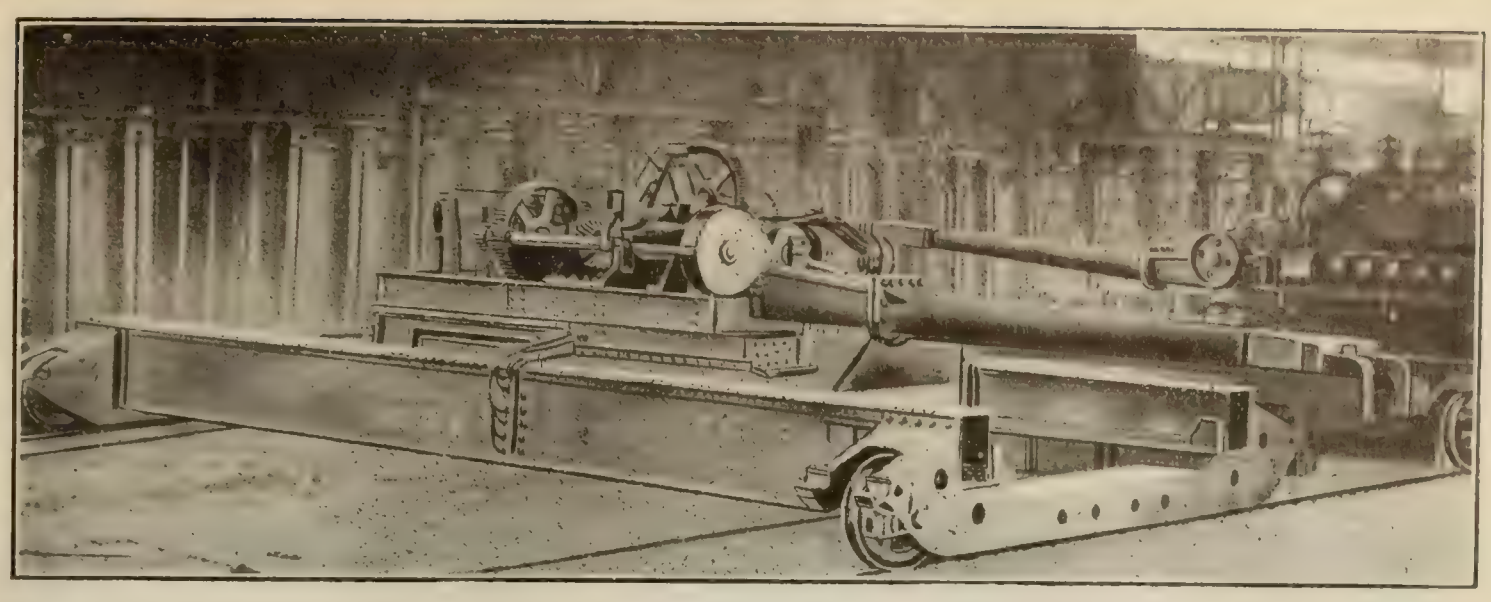


Fig. 4.—Slab Charging and Drawing Machine for the 72-In. Plate Mill.

**The New Sheet Mills.**

There are two 26-in. sheet mill trains, Fig. 5, located in line with the 28-in. jobbing mills, each train consisting of one 44-in. two 38-in. and one 32-in. finishing mills, and one 44-in. and two 38-in. roughing mills, with two sets of pinions. Each train is driven individually by a 36 x 72 in. direct connected Corliss engine, with a 30-ft. 100-ton flywheel built by Mackintosh, Hemphill & Co.

Of the mills, which are exact duplicates, the Mesta Machine Company built one train and the Wheeling Mold & Foundry Company the other. All of the mill housings are of cast steel and weigh practically 26,000 lb. each. The pinion housings are of air furnace iron and weigh 15,000 lb. each. All pinions are of cast steel, 26½ in. pitch diameter, 26-in. face and 6-in. pitch, with V teeth. All coupling boxes and spindles are of cast steel. The finishing rolls are chilled and all roughing rolls are sand rolls. All rolls have necks 20 in. in diameter and 16 in. long, with wabblers 18 in. in diameter and 9 in. long.

Steel housing nuts and 8-in. screws of 1-in. pitch are used on the roughing mills, with bevel gear and hand wheel screw down. The upper roughing rolls are balanced and have a lift of 6 in. The screws on finishing rolls are of the same diameter as those on roughing mills, but of ¾-in. pitch. The usual spanner wheels and wrenches are used on these mills. The bed plate under these mills weighs 500 lb. to the foot each side and the sections are securely bolted together, making total length of 112 ft. 4½ in.

In addition to the hot mills the Wheeling Mold & Foundry Company also furnished the 24-in. cold mill, consisting of three stands with cast iron housings, each weighing 15,200 lb. The bed plate for this mill weighs 350 lb. to the foot on each side and has a total length of 38 ft. 8 in. The leading spindle on this mill is of cast steel, all other spindles and boxes being of cast iron. The bars and sheets are heated in eight coal fired combination sheet and pair furnaces built by William Swindell & Brothers, who also built the five double regenerative box annealing furnaces located in building J. The gas for the annealing furnaces is supplied by six Swindell producers located in the gas producer house, in line with the 22 Laughlin producers that furnish gas to the plate and jobbing mills. There are six steam driven sheet doublers built by Bowdle Brothers, also four 126-in. squaring shears, two built by the United Engineering & Foundry Company and two built by the Erie Foundry Company.

The sheets, after being squared, are taken to the cold mills, Fig. 6, located in the north end of building I, there being one 54-in. and two 46-in. mills built by the Wheeling Mold & Foundry Company. The cold mills are driven by a 13 in. and 22½ x 30 in. tandem compound Buckeye engine through a pair of gears. The sheets after passing through the mill are piled directly on the annealing bottoms, which are picked up by the crane and carried to the annealing furnaces. The cranes over the mills and the annealing floor are both 25 tons capacity, with 5-ton auxiliary hoist, the span being 78 ft., and were built by the Morgan Engineering Company, and the crane in the bar shed O is of 10 tons capacity and 71 ft. span, built by the Alliance Machine Company. The eight sheet mills have a capacity of 4000 tons a month.

The galvanizing department, located in building P, is equipped with one 36-in. and one 54-in. galvanizing machine, two levelers and two pickling plants, built by the Erie Foundry Company. A 10-ton Morgan crane is installed in this building to serve the machines and handle the pickling crates. The output of this plant is about 1200 tons of galvanized sheets a month.

In building L are located the corrugating machines built by the Poorman Company, also a painting machine built by the J. H. Day Company, Cincinnati, Ohio. The sheets are brought to these machines by a 4-ton Sprague electric monorail trane traveling on a suspended track, as indicated in dotted lines on the plan.

The sheet warehouse, Fig. 7, is an iron and brick building, 82 ft. wide by 350 ft. long, with a covered loading platform running the full length of the building, from



Fig. 5.—Some of the Sheet Mills.

which the cars are loaded in the usual manner. The roof over the shipping side of the sheet warehouse projects out for a space of about 15 ft., thus allowing sheets to be loaded without any interference. The officers of the La Belle Iron Works are as follows: Isaac M. Scott, president; W. D. Crawford, vice-president and general manager; H. D. Westfall, secretary and general manager of sales; W. B. Higgins, assistant secretary; R. C. Kirk, treasurer, and J. H. Gilmore, assistant treasurer and auditor. The company maintains selling agencies in the leading cities throughout the country.

**Fire Danger in Fan Bearings.**—The fire menace of the ordinary fan bearing, frequently overflowing with oil, is recognized by the insurance companies. Various recommendations are made from time to time by inspectors and experimental bureaus looking to the elimination of this risk, especially where the materials in process in manufacturing plants are particularly inflammable and susceptible to ignition. The fan by its action is always in position to spread the flames. This danger should no longer prevail. From the crude journal to the ring oiled bearing a definite progressive step was made. But to-day the ball bearing is available, and already successfully applied in fan practice. With this type the presence of oil and collected dust is eliminated, overheating becomes impossible, and incidentally, but of great importance, frequency of attention is greatly reduced. Such a bearing if properly designed may run for six months without repacking. From every reasonable standpoint it appears that the ball bearing fan should supersede all others.

## High Grade Forgings.

A brochure entitled, "Handbook of Steam Hammer Forgings," has been issued by the Driggs-Seabury Ordnance Corporation, Sharon, Pa. In this publication interesting information is given as to the company's facilities for the production of work of the United States Government standard of excellence. The equipment has been specially provided for meeting the specifications of the Navy Department for high powered guns and of the War Department for field material. This equipment therefore enables the company to supply its general customers with the same high standard. Views are given of the interior of the machine shop which not only indicate the character and extent of the company's facilities, but also show the class of work upon which it is engaged. Illustrations are presented of such forgings as guns, automobile parts and crank shafts, and of other products, including types of gears and drop forgings. The gear cutting equipment consists of the most recent automatic machines which cut teeth with scientific accuracy. The attention of users of gears is called to the company's special nickel steel gears, which are both hard and tough. The possession of both steam hammer and drop forgings departments enables the quality of material to be controlled and prompt deliveries to be effected. The drop forgings are made of plain, nickel or chrome nickel steel to prescribed physical qualities. Record of tests of crank shafts are given, which show remarkable strength. Tables are presented which are of interest to users of gears and of high class steel.



Fig. 6.—The Cold Rolls and the Annealing Furnaces.

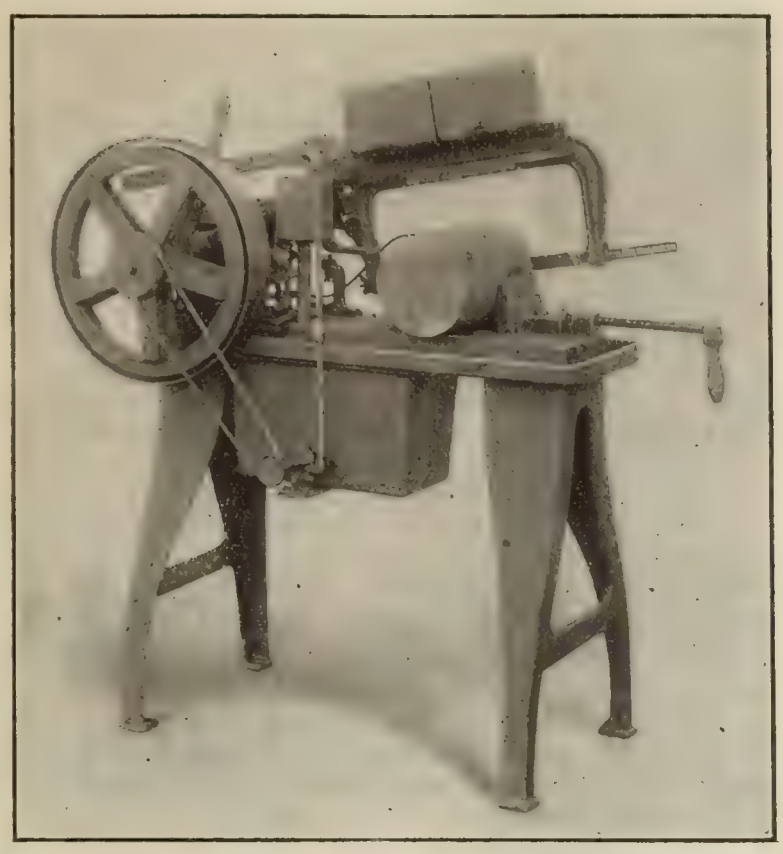


Fig. 7.—The Sheet Warehouse.

## The Racine Power Hack Saw.

A hack saw especially designed for high cutting speeds and heavy service is a new product of the Racine Gas Engine Company, Racine Junction, Wis. The tool, as will be observed in the accompanying engraving, is equipped with a reservoir underneath the frame for the cutting compound, which is circulated by a rotary pump, belt driven from the main shaft. A channel cast in the frame receives the compound after being discharged upon the saw, and from thence it is returned to the tank to be used again.

Features of advantage in this saw which are particularly emphasized are its draw cut, the blade being pulled instead of pushed across the material, and its positive automatic lifting device, consisting of a ratchet bar and dog for lifting the saw on the return stroke. It is claimed that under a pulling cut a new blade can be started under



The New Power Hack Saw Built by the Racine Gas Engine Company, Racine Junction, Wis.

full pressure without injury and that heavy pressure can safely be applied to the blade. It is also stated that a 14-in. saw blade 1 in. wide by 0.032 in. thick has, under test, withstood a pressure of 80 lb. in a cut through 6-in. round steel bar, which was accomplished in 32 min. It is further claimed that by the use of compound the working speed is increased at least 100 per cent., with a reduction in cutting time from 10 to 40 per cent., according to the size and kind of material to be cut.

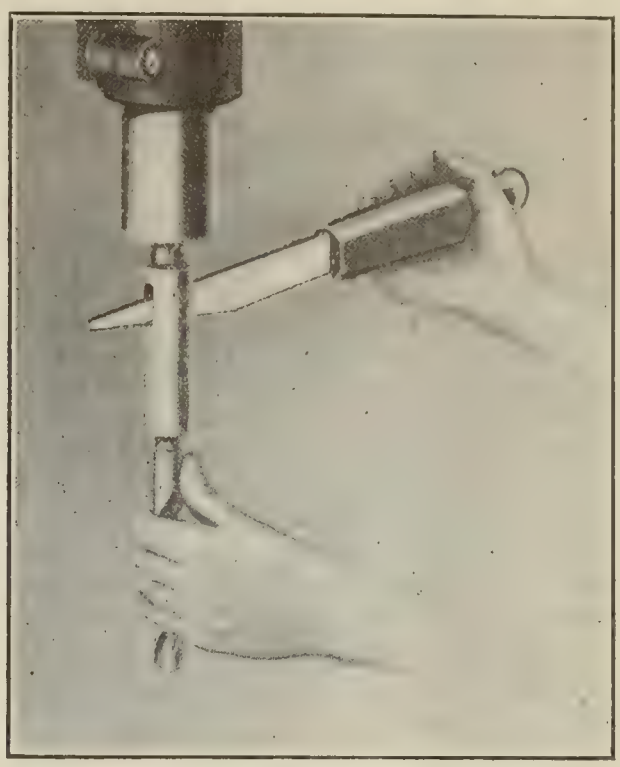
The machine is provided with a heavy flywheel surrounded by a metal guard and a convenient screw clamp for holding the work. All parts are made with jigs and templates and are therefore interchangeable. The saw guide, cast in the form of an I beam, 1 x 2¼ in., is in one piece, on the lower flange of which the saw frame is carried. Provision is made for taking up wear on the guides to preserve the alignment of the saw. A special device in the form of an extension bar is supplied for holding blades varying in length from 10 to 14 in., and in keeping them square with the chuck. The saw has a capacity for cutting bars up to 6 in. round or 6 x 6 in. square.

The Sirocco Engineering Company, New York, has been advised by the foreign attorneys for S. C. Davidson of Belfast, the original inventor and manufacturer of Sirocco fans, that a decision has been rendered in the suit brought by Mr. Davidson against the Siemens Schuckert Werke for infringement of his German patent for Sirocco centrifugal fans and blowers. This decision adds another to the chain of legal victories achieved by Mr. Davidson in every country and in every suit where his patents for the Sirocco fans have come under adjudication. Following this decision a German company, the Sirocco Gesellschaft, has been formed for the manufacture of Sirocco fans, which are to be constructed at the works of the Algemeine Electricitat Gesellschaft.

## The New Automatic Drill Drift.

The new automatic drill drift, manufactured by the Automatic Drill Drift Company, Springfield, Ill., is herewith illustrated. Though simple in the extreme, its thorough practicability and merit appeal to any one who is familiar with drill presses and their operating.

In construction it consists of a hardened and polished steel blade which is slidably mounted in a heavy cast iron handle, containing a very low tension coil spring by



The New Automatic Drill Drift.

which the blade is kept extended when not in use. In operating, as is shown in the illustration, the drift or blade is inserted in the drill socket and driven home by sliding the heavy handle up the blade until the base of the latter contacts sharply with the bottom of its socket, the impact of which is sufficiently great to extract even the most stubborn drill. The drift and driving mechanism being self-contained, only one hand is required to operate it, the other hand being free to hold the drill and prevent it from falling, as it invariably does when the ordinary method of driving a drift is attempted.

In size it is practically universal for ordinary purposes, fitting sockets Nos. 1 to 3, inclusive, thus adapting it to the demands of almost every shop. It is fitted with a ring at the end by which it may be attached with a chain to the press, where it will be always ready. The tool is supplied at an extremely low price by the company.

The United States Metal Recovery Company, which is erecting a plant near Elwood City, Pa., for extracting metals from various ores, recently completed one of its smaller buildings. Motor driven crushing, elevating and separating machinery is being installed, and this department will be placed in operation about July 10. Another building, which is nearing completion, will be used for manufacturing materials used in gas lighting, the by-product from certain minerals being utilized in their manufacture. R. Daae, House Building, Pittsburgh, has charge of the engineering work.

The Ohio Iron & Steel Company states that it has no intention of starting its Mary Furnace at Lowellville, Ohio, at present. Some repairs and improvements are being made, but when the furnace will go in blast again is uncertain.

# THE MECHANICAL ENGINEERS' CONVENTION.

## Detroit Meeting, June 23 to 26, 1908.

In point of numbers in attendance, the fifty-seventh convention of the American Society of Mechanical Engineers held last week in Detroit, Mich., was the largest mid-year meeting in the history of the society. The previous issue of *The Iron Age* contained an announcement of the opening session Tuesday evening, June 23, at the convention headquarters, the Hotel Cadillac, where all of the subsequent professional sessions were held. The present report covers these and refers briefly to the simultaneous meetings of the Society for the Promotion of Engineering Education and the Society of Automobile Engineers, the former convening from June 24 to 27, and the latter from June 25 to 27. These two additional meetings and the holding of the mechanical engineers' meeting about a month later than usual, allowing those members who are on the faculties of the various engineering schools and colleges to attend, were largely responsible for the large registration of members and guests, which was 720 at the close of the meeting.

### SECOND SESSION.

Business, which is always the first matter of consideration at the second session, Wednesday morning, was quickly dismissed and consisted of the report of the tellers on the election of new members, the appointment of the Nominating Committee and the adoption of a motion to ask the Gas Power Section of the society to propose revisions of the standard method of testing gas engines.

The remainder of the morning was given to the presenting and discussing of a collection of papers dealing with the hoisting and conveying of materials. Discussion was deferred until the five papers had been presented. Abstracts of these papers follow:

#### "Hoisting and Conveying Machinery."

BY GEORGE E. TITCOMB, PHILADELPHIA, PA.

This paper is confined to the intermittent type of apparatus and describes present day facilities in the mechanical transfer of materials, especially coal and ore, to and from shipping points and storage. Its numerous illustrations give striking evidence of the remarkable development of such machinery where the magnitude of the installation is as much a consideration as expeditious and economical operation. The paper deals with cargo steamers, loading wharves and ore unloading machinery on the Great Lakes, ore stocking machinery at furnaces, anthracite and bituminous coal storage machinery, covered anthracite storage, storage for locomotive coaling stations, machinery for loading and unloading coal from vessels, and freight handling. The equipment described includes open air and covered coal storage apparatus, traversing and revolving bridge tramways, locomotive cranes, hoisting towers and telphers.

#### "Continuous Conveying of Materials."

BY STAUNTON B. PECK, CHICAGO, ILL.

Only the conveying of materials by continuous machines is covered in this paper. Much experimental work has been done in the 30 years during which these have been developed, and much is still to be done. There has been a lack of published information on this subject. In contemplated installations the tendency is too often to select a style of conveyor that involves the least initial cost, although the wide diversity in the designs and details of this class of machinery allows choosing that which in any particular case will operate most efficiently. This paper aims to give a general idea of some of the types of conveyors in use, and data as to their adaptabilities, capacities, power consumed and economies effected. Following this some of the more systematic applications of conveying machinery are shown, with figures of the saving they have effected.

#### "The Belt Conveyor."

BY C. KEMBLE BALDWIN, CHICAGO, ILL

To acquaint engineers who are designing plants with the possibilities of the belt conveyor for handling heavy abrasive materials, and give them data which will be of service in preparing preliminary designs is the purpose of this paper. The author claims the following for this type of conveyor: Large capacity with low power requirements, small maintenance charges, freedom from breakdown, light weight of mechanism for large capacities, contact of the material carried with the belt only, no necessity of absolutely perfect alignment, ability to assemble in light portable sections, and large overload capacity. Local conditions affect the choice of the proper width and character of belt, general arrangement of conveyors, &c., and on these matters the specialist should be consulted.

#### "Conveying Machinery in the Portland Cement Plan."

BY C. J. TOMLINSON, NEPONSET, ILL.

Belt conveyors, screw conveyors, chain and bucket elevators and flight conveyors are those generally used in cement plants. Their advantages are low first cost and continuous and automatic operation, and their disadvantages rapid wear, low mechanical efficiency and lack of proper measuring arrangements. The conditions in these plants are trying, and results indicate that a heavier, simpler device should be adopted, and one that includes convenient means of recording the performances of the machinery served. Devices similar to the blast furnace skip-hoist and scale transfer car are suggested, which, however, involve radical changes in the design of the plant.

#### "Performance of Belt Conveyors."

BY EDWIN J. HADDOCK, COLUMBUS, OHIO.

This paper gives details of experiments made some time ago by the Jeffrey Mfg. Company to obtain data relating to the following points: Other conditions remaining the same, what will be the effect on the traction of changing the diameter of the driving pulley? What is the effect of different arcs of contact on the tractive force exerted by the driving pulley? What is the effect of different initial tensions of the belt on the tractive force? And what is the value of rubber covered pulleys as compared with plain ones? The results of these experiments are given, in some cases by curves, tables or equations deduced. Conclusions are drawn and recommendations made with regard to the foregoing points in connection with belt conveyors.

#### Discussion of Conveyor Papers.

Melvin Pattison gave as supplementary to the first paper the records of ore unloading machinery at Conneaut, Fairport and Cleveland. He referred also to several notable coal handling equipments. He declared that there is a growing sentiment for man trollies and larger grab buckets.

George B. Willcox, discussing Peck's paper, and referring to belt conveyors, described scraper type conveyors used to handle salt in a warehouse, and submitted a drawing and photograph of the equipment.

Charles Piez noted the omission in Baldwin's paper of mention of the Robins patent belt conveyor. He discussed principally the different methods of troughing the belt, and gave details of the design and construction of belt conveyors and how to care for them. He advised avoiding unnecessary turns, and especially counterbends in the belts. The driving mechanism he maintained should always be placed at the head end of the conveyor. He referred also to Baldwin's formula for finding the horsepower required by a conveyor and to two other formulas given in other papers, calling attention to the fact that they were all different. One formula, he believed, should be agreed upon that would give satisfaction without calling for special expertness in the person using it.

T. A. Bennett submitted a discussion for A. B. Proal which compared belt and bridge conveyors, with special reference to the former. He showed samples of steel, cast iron and various kinds of conveyor belt all of which had been subjected to a sand blast for 45 min. In proportion to the depth of the abrading, rubber belt was 1, steel 1½, cast iron 3½, woven cotton 5, stitched cotton 8, and woven cotton of low quality 12. He emphasized the diversified materials which can be handled by conveyors.

E. H. Messiter suggested a modification of Baldwin's formula for conveyor belt horsepower. He also believed it would be desirable to have a uniform formula, and proposed one.

James M. Dodge of the Link Belt Company paid a pretty tribute to C. W. Hunt of the company of the same name, stating that the equalizer invented by him (Dodge) was not the first, and that where his associate, Mr. Peck, had declared for the need of greater excellence in the quality of product, it was not an inference that such was not now on the market. He averred that it is the Link Belt Company's ambition to emulate the C. W. Hunt Company in that regard.

Prof. R. C. Carpenter, referring to Tomlinson's paper and the conveying of Portland cement, explained that conveying machinery which in other industries stands the work soon goes to pieces in handling cement, and stated that it pays to put in very heavy machinery. He had drawn the conclusion from the paper that the author intimated that screw conveyors are very little used in cement plants. His experience is that they are used for about 90 per cent. of this work. As a rule it is not the ordinary screw conveyor, but one of some special design. In his opinion belt conveyors are not very good for cement work, and the cost of repairs is high. Steel cars with cables had not been mentioned in the paper, but he regards them as very useful in cement mills.

A written discussion was submitted by E. S. Fickes, which remarked that Mr. Peck's paper did not mention inclined tube conveyors which are made with or without an inside helicoid, and outlined details of such a conveyor that can be modified to adapt it to various conditions. It is suitable for almost any materials except those that are too lumpy or tend to pack together.

E. G. Thomas referred principally to Baldwin's paper and gave an illustration of a spiral spring used in place of troughing idlers on a belt conveyor. The spring has about two coils per inch of belt width and wire of a tensile strength of about 15,000 lb. per square inch. The spring is designed so that with the conveyor under full load its deflection is about the same as with idlers at 35 degrees, where three troughing idlers are used.

Prof. H. W. Hibbard believed that the information brought out at this meeting would interest the railroads. They are anxious to get the best type of coal handling apparatus. The speaker considered that the equipment for coaling locomotives may be developed farther. Much depends on its capacity and reliability.

W. T. Donnelly drew attention to a form of conveying not alluded to in any of the papers or the discussion —conveying by running water, of which hydraulic dredging is an example. By this means objects of considerable size as well as sand can be conveyed, and it is an economical process. Professor Hibbard thought as closely akin to this compressed air should be mentioned. H. H. Supplee mentioned the removal of ashes from vessels by pumping out with injectors as a practical illustration of conveying by water. Prof. William Kent referred to a projected scheme of the same sort in the experiments of the late W. S. Andrews on the conveying of anthracite coal by water. It was proposed to deliver the coal from the mines to the plant, about 200 miles, but the plan has not been carried out since the death of the promoter. W. H. Blauvelt also cited the use of a strong stream of water for carrying away slag, a practice which is some 15 years old.

### Authors' Closures.

G. E. Titcomb gave more in detail concerning some of the apparatus referred to in his paper. S. B. Peck spoke further of flat and troughed belt conveyors. A previous speaker had said that if a flat belt had capacity enough why trough it? In answer to this Mr. Peck explained that there is a tendency from wind currents and vibration for material to work to the edge of a belt and dribble from it. Pivoted conveyors, he considered, have a place where the proposition involves elevating material, as they elevate as well as convey. He did not agree with the conclusions of Tomlinson's paper with regard to conveyors for cement plants, and also replied to Professor Hibbard's preference for cars and trestles in locomotive coaling as more reliable than continuous conveyors, stating that where uninterrupted service is demanded conveyors can be installed in duplicate and used alternately, and that he had known of many instances where trestles had been disastrous from cars running backward or over the ends.

C. K. Baldwin defended his formula for the horsepower required by belt conveyors, as one developed from a great many experiments and used for over five years, during which it had proved all right. A number of conveyors based on his table for the diameters of pulleys suitable for given belts are in satisfactory operation. He still maintained also that a conveyor can be driven from any point in its length and not necessarily from the head end. E. J. Haddock in reference to the diameters of pulleys for belt conveyors agreed that the number of plies in the belt should determine the minimum diameters of pulleys over which the belt passes. He believed that belts should be protected on the inner or driving side, as well as on the carrying side.

## THIRD SESSION.

Miscellaneous subjects were considered at the Wednesday afternoon session. The first paper was presented in the absence of the author by Prof. L. P. Breckenridge An abstract follows:

### "The Thermal Properties of Superheated Steam."

BY PROF. R. C. H. HECK, LEHIGH UNIVERSITY.

The paper made a graphical comparison of the data from the experiments of Knoblauch and Jakob and of Thomas on the specific heat of superheated steam under constant pressure. This shows a marked difference near the point of saturation. The author explains conditions at this point and finds evident errors in the interpretation by Knoblauch and Jakob. Views are given of the critical state of water and a new interpretation is made of Knoblauch and Jakob's results, bringing them into essential agreement with the work of Thomas. The author treats of the higher range of superheat, referring to experiments of Holborn and Henning, and gives a combination of data derived graphically showing the probable manner of variation of specific heat. There is a table for superheated steam, giving specific heat, heat added above saturation and entropy above saturation. Other data are also referred to, with several comparisons and a statement of the general considerations involved. As Professor Breckenridge explained, this paper has endeavored to take the results of all earlier experimenters and deduce from them the truth.

A discussion by Prof. W. D. Ennis, Polytechnic Institute of Brooklyn, was submitted by A. L. Rice. The writer agreed that the question of the specific heat of superheated steam is now about settled. He believes that if the same temperature for the higher degrees of superheat had been used by the German experimenters the same results would have been reached as by Thomas.

Another prepared discussion in the absence of its writer, Dr. H. N. Davis, was offered by Prof. L. S. Marks, Harvard University. It had to do with the lower ranges of temperature and compared the results obtained by Knoblauch and Jakob and by Thomas. He compared the methods of the two and pointed out advantages in those of the former. The Thomas method of determining when the steam is saturated was criticised as being not necessarily a true indication, and this would explain the higher values for superheat at low ranges of temperature found by Thomas. Dr. Davis submitted a series of curves correcting the results of the two experimenters. He also criticised the treatment in the neighborhood of the critical state.

Prof. H. T. Eddy of the University of Minnesota submitted a set of diagrams which he had plotted for his own convenience, with the aid of which he compared the results of the different experimenters. Thomas' results he considered to be straight lines, within the limits of practice. These curves enable judging somewhat of the value of these results in relation to one another. He also referred to the paper read by A. R. Dodge on "The Specific Heat of Superheated Steam," at the Indianapolis meeting one year ago. Concerning Thomas' conclusions Prof. Eddy considered that he had taken liberties with his experiments. It is Prof. Eddy's idea that superheated steam can be regarded as a gas, but a different gas for each pressure. In this connection H. H. Supplee referred to gas turbines, in which the gas is cooled by the admixture of steam which then becomes a gas, and declared that knowledge of the specific heat at very high degrees of superheat would be useful.

The secretary, in the absence of the author, read the next paper, an abstract of which follows:

### "A Rational Method of Checking Conical Pistons for Stress."

BY PROF. GEORGE H. SHEPARD, SYRACUSE UNIVERSITY.

On account of the differences in form of conical pistons of different design, the author explains that it is impossible to deduce a general formula, but the method explained for the form of piston selected may be used to work out the stress in any other form. The mathematical development of the formula is explained step by step. While the equation is too complicated to permit of direct design for dimensions.

it may be used to check up a trial design. The equation shows that the stress at any point varies nearly as the square of the thickness at that point so that the design, if at fault, can be readily corrected. The discussion deals only with pressure on the hollow side of the piston, but as this is more than likely to be the side on which it is the weakest, it is safe to assume the piston strong enough for pressure on the opposite side if properly designed for inside pressure. The uniformly distributed stress can nearly always be neglected.

A written discussion, prepared by M. Nusim, was offered for him by George A. Orrok. It called attention to the fact that Shepard had not taken into account the force acting parallel to the slant hight of the cone as a component of the force acting parallel with the axis of the piston rod. In justice to the author who was not there to reply, it is probably safe to say that he had regarded this as one of the stresses of such small magnitude in comparison to the others that it could safely be neglected when sufficient strength was provided for the other stresses.

The author of the next paper was also absent and Prof. C. H. Benjamin of Purdue University presented it in abstract. The following gives the substance of the paper:

### "A Journal Friction Measuring Machine."

BY HENRY HESS, PHILADELPHIA, PA.

This paper describes a machine for testing bearings, particularly ball bearings, under various loads and speeds, with the loads applied normal to, or parallel to the shaft, or both. Radial loads up to 15,000 lb. and axial loads up to 10,500 lb. can be applied under speeds from 150 to 2500 rev. per min. and the co-efficient of friction measured under any of these conditions. The principle of the machine is explained, its use, methods of taking observations, and formulas for calculating results. Merely to illustrate the range and accuracy of the machine, but not to discuss friction tests, curves from typical tests are given. The machine was designed by the author and built by the Riehlé Brothers Testing Machine Company, Philadelphia, Pa.

J. R. Peirce discussing this paper, believed that the friction of ball bearings is not as important as their reliability, but considered that the Hess machine will be of great value in detecting inferiority in bearings on the market. He thought that it would be interesting to have all bearings at present made tested on this machine. He also gave interesting facts from his own experience in the use of ball bearings under rather remarkable and unusual conditions of load and speed.

Dr. Brashear asked what was the earliest date of the use of ball bearings. He had recently taken apart a telescope built in 1859 having a bearing in which there were ⅝-in. balls. All astronomical telescopes are now built with ball bearings.

Professor Benjamin stated that his experience with journal friction testing machines, not those designed to test ball bearings, is that all are too complicated. He believed that there is still room for improvement.

This session was concluded with the announcement by the secretary that the Semet-Solvay Company had extended an invitation to visit the Delray plant in the southern part of the city as of probable interest in connection with the paper on the by-product coke oven to be presented at the Thursday afternoon session.

## THE S.P.E.E. SESSION.

Simultaneously, the Society for the Promotion of Engineering Education was holding a session in another part of the Hotel Cadillac, the programme of which included:

Report of the Joint Committee on Engineering Education, by Prof. D. C. Jackson, Massachusetts Institute of Technology.

"The Course in English in Technical Schools," by Prof. J. M. Telleen, Case School of Applied Science.

"Results of an Experiment in Teaching Freshmen English," by Dean William Kent, Syracuse University.

"A Proposed Course in General Engineering," by Harwood Frost, secretary *Engineering News*.

"Present Curricula of the Mechanical Engineering Courses," by Prof. W. T. Magruder, Ohio State University.

"The Correlation of Courses in Engineering Colleges," by Gardner C. Anthony, dean of department of engineering, Tufts College.

## WEDNESDAY EVENING LECTURE.

In the Y. M. C. A. Building Wednesday evening the various societies jointly enjoyed an extremely interesting lecture by Prof. John A. Brashear, astronomer and scientist, Allegheny, Pa., on "Contributions of Photography to Our Knowledge of Stellar Evolution." The lecture was illustrated with some very remarkable pictures that became the more impressive when the professor explained that the objects photographed were in many cases millions upon millions of miles away, and may have ceased to exist centuries before their light reached us.

## EXCURSIONS.

The entertainment provided by the Local Committee was almost too attractive for the good of the attendance at the professional sessions, for several trips to local factories were made while these sessions were in progress, among them the Ford Motor Company, Packard Motor Company, Burrough's Adding Machine Company and the Semet-Solvay Company. The ladies were unusually well provided for in luncheons and excursions, so much so that they independently voted a resolution of thanks at the close of the meeting on Friday. An excursion in which all could participate was the one Thursday morning when there was no professional session. A steamer was taken to witness the launching of the 10,500-ton steamship William B. Meacham at the yards of the Great Lakes Engineering Works, at Ecorse, on the Detroit River. It had been expected that on the return trip the party would see the sinking of the fourth section of the Detroit tunnel, but this was delayed by the foundations not being ready.

## FOURTH SESSION.

Thursday afternoon the American Society itself had two sections in simultaneous session. One under the charge of the Gas Power Section of the society, at which papers of interest to those in that field were given, and another section at which miscellaneous papers were considered.

### Gas Power Section.

Dr. Charles E. Lucke, president of the section, and Henry H. Supplee, secretary, presided. This was the first meeting of the Gas Power Section at a semiannual meeting. Business was first in order, consisting of reports of Membership, Meeting and Standardization committees. The latter has to do with the methods of rating, specifications, guarantees, &c., of engines and producers, and reported progress. Communications relative to this subject were read from J. R. Bibbins, H. F. Smith, J. B. Plump and Arthur West; also a letter from the National Fire Protective Association, asking that members of this section furnish information regarding the storage and handling of gasoline to decrease the fire risk.

Taking up the papers, the first one read was

### "The By-Product Coke Oven."

BY WILLIAM H. BLAUVELT, SYRACUSE, N. Y.

Briefly outlined, this paper discussed coke, what it is, what constitutes good coke, how it is made in the various types of ovens in use in this country, described the beehive and various retort ovens—Otto-Hoffman, United Otto, Semet-Solvay, Rothberg and Koppers—the superiority of retort ovens in the recovery of by-products, the methods of charging and withdrawing, and among mechanical devices the combined stamper and coke pusher, and incidentally referred to an oven plant designed under the author's direction; explained the uses of various by-products, gas, tar, ammonia and benzol, the methods of their extraction and refining, and gave analyses and yield of gas from low and high volatile coals. In part, the author's conclusions were that the development of the by-product coke oven in this country has been relatively slow because the chemical industries have not kept pace with the sources of their raw materials and because of the expense of installing by-product coke ovens; that the prospect of increasing demand for the by-products is encouraging—gas not only for illuminating but for power—tar and pitch for briquetting coal, creosoting wood and sprinkling roads—ammonia for commercial and household uses, fertilizers and other chemical products—and benzol, both alone and with alcohol, as a motor fuel; and that "the production of coke at the blast furnace plant, where the operation is assured by large storage of coal and where the labor is under better control than in less developed regions, is in line with to-day's manufacturing methods. The higher economy of the by-product coke oven's operation,

its special adaptation to control by the modern scientific organization, the ability to draw coals from several fields, and the successful adaptation of labor saving appliances to its various operations, all point to its being the oven of the future."

In presenting his paper the author, instead of reading an abstract of the paper, gave a little historical introduction to it.

J. R. Bibbins, discussing this paper, described briefly an installation of gas engines at Lebanon and spoke principally on the utilization of its by-product gas. C. M. Barber considered the paper a valuable contribution to our knowledge of coke manufacture. He gave it as his opinion that cooling is a better term for quenching the coke when withdrawn, as it is not then combustible in air. It can be cooled in air on conveyors, to illustrate which the speaker gave a diagram of a suitable conveyor and described its operation and use. As objections to quenching or cooling coke with water he maintained that it cracks the coke and results in a great amount of breeze. A better grade of coke is produced by air cooling, which soon offsets the cost of installing the conveyor. A discussion by C. G. Atwater took principally the form of submitting statistics relative to the production of coke, and its various by-products, during the year 1907, showing the gain over previous years.

It was asked if the trouble from sulphur in gas comes from the condensation of this impurity on the gas engine rods due to their water cooling. Mr. Bibbins replied that no trouble results if the sulphur and water are kept apart. Prof. R. H. Fernald repeated the statement he has made at other times before the society that in the experiments at the St. Louis fuel testing plant they ran all fuels with as high as 8½ per cent. sulphur, and experienced no trouble in using the gas in gas engines without passing it through a scrubber to remove the sulphur. A purifier was used for a short time, but gave more trouble than was had when its use was discontinued. G. J. Rathbun stated that he had recommended in one case where sulphur in the gas resulted in dry spots on the rod, that hot instead of cold water be passed through the rods. When this was done the trouble ceased.

In closing the discussion on his paper Mr. Blauvelt stated that he hoped that the conclusions from the St. Louis experiments that sulphur in gas does no harm will find foundation in fact. He does not expect to see sulphur purifiers a regular part in a gas engine installation.

A resumé of the next paper follows:

### "Power Plant Operation on Producer Gas."

BY GODFREY M. S. TAIT, NEW YORK.

Experience with gas producers for engine operations has brought out the following facts: Owing to the high percentage of fusible ash in American fuels European data as to sizes of producers and general design are for the most part misleading when applied to American conditions. While low rates of gasification obviate clinker troubles, the incident low temperatures interfere with the complete dissociation of the steam in the draft, and consequently cause a great range of variation in the amount of hydrogen in the gas, when the load on the plant varies. As the variation in percentage of hydrogen affects the ignition point of the gas it seriously affects the regulation of the engines. A simple and satisfactory remedy for these conditions tried by the writer was the elimination of the moisture in the draft (and consequently the hydrogen in the gas), thus making a gas of an obsolute fixed value and having one ignition point under all conditions.

C. W. Lummis, in discussing this paper, described what was done in the practice of the Camden Iron Works. He thought that the bad feature of the gas exhauster was the introducing of the necessity of a water seal. H. F. Smith declared that Mr. Tait had put his finger on the weak point in producers for gas power, and offered a scheme for removing the difficulties. E. P. Coleman of the Lackawanna Steel Company talked of the trouble which that company had had in an open hearth steel plant where they tried to run on producer gas. C. J. Davidson explained that when in Europe he could not find any success with the use of bituminous coal for operating gas engines, and desired to know if there were any records of successful plants of that character in this country. H. W. Peck did not think that an expert steam engineer was as good for operating a gas plant as a mechanic who had not any special knowledge of steam engine practice. F. H. Stillman explained that he had acted on similar advice with evident benefit.

In the author's closure he explained that the exhauster described in his paper is not a part in the process, but a suggestion for operating engines in parallel. His discussion was based on anthracite practice only. He agreed that good machinists, since they have nothing to unlearn, make the best operators.

An abstract of the third paper follows:

### "Horse Power, Friction Losses, and Efficiencies of Gas and Oil Engines."

BY LIONEL S. MARKS, HARVARD UNIVERSITY.

Indicated horsepower and the efficiencies derived from it are of little use in comparing the performances of different gas engines. Indicated work in the four cycle engine is the difference between the total work done by the gas and the gas friction work of getting the gas into and out of the cylinder. These two components should always be determined separately, and thermodynamic efficiencies should be calculated from the total work. If total horsepower, gas friction horsepower, machine friction horsepower, thermodynamic efficiency, engine efficiency, mechanical efficiency and net efficiency are determined, they will permit really useful comparisons between engines of different types and between any engine and the ideal.

Instead of presenting his paper in abstract the author explained it. In his conclusions he referred to a German discussion, that Secretary Supplee will abstract for printing in the *Proceedings*, and, answering a question that had been asked—what compression would he recommend for illuminating and producer gas engines?—he replied that the practice is so variable he would not like to make a statement.

### "A Simple Method of Cleaning Gas Conduits."

BY W. D. MOUNT, SALTVILLE, VA.

The means developed to clean the conduits leading from a battery of gas producers to heating furnaces without interrupting operation are described in this paper. Most bidders on the installation had offered as the best possible not more than a few hours shut-down each week to remove the accumulated soot in the conduits, but this was not allowable. A duplicate conduit system was proposed, but lack of space precluded this. Finally the Morgan Construction Company, Worcester, Mass., designed a system which would not require more than 15 min. shut-down, which, it was presumed, would not seriously impair the heat of the furnaces. This system as installed provided openings for cleaning out the soot by a jet of steam (compressed air was used instead), but even 15 min. shut-down proved too great. The scheme was further developed, and as now in operation is entirely successful. Frequent openings are provided in the upper side of the conduits, stopped by plugs which can easily be removed to insert a bent iron pipe with ball joint surrounding it to stop the escape of gas while the pipe is inserted, to blow the soot along toward the furnace. Clean out holes, except in the drop legs, were found unnecessary, as the soot blown forward into the furnaces is almost wholly consumed. It is not necessary to shut off the gas at all, the producers do not seem to be affected, and the conduits are thoroughly cleaned down to the brick lining.

This paper passed without discussion, and the author was not present to offer anything further.

## General Section.

This section, which convened simultaneously with the gas power section, first gave attention to the paper:

### "The Surge Tank in Water Power Plants."

BY B. D. JOHNSON, ALBANY, N. Y.

This paper treats of the momentum of flowing water in long pressure pipes for the supply of hydraulic turbines or impulse wheels and of the control of rate of flow by modifying the momentum in such manner as to obviate harmful effect upon speed regulation of the water wheels, without waste of water through relief valves, deflecting nozzles or bypassing it, as has usually been thought unavoidable where pipes are long, velocity great and pressures high. This is accomplished by a surge tank near the down stream end of the pressure pipe, atmospheric or under compressed air. The paper treats of the size of surge tank needed under various conditions of velocity, size and length of the moving water column, and presents a novel device by which the diameter (or area) of the tank may be reduced about one-half, thereby lessening its cost and at the same time improving the pressure regulation for speed control. This device, the differential regulator, may work open to the air or under compressed air where head is high and support lacking. The design of the regulator is fully set forth in its mathematical relation to the balance of the plant.

A discussion offered by L. F. Harza reduced certain of Johnson's equations to more simple form. Discussing surge tanks he considered friction and made different assumptions. The author had worked out a problem with these equations and Mr. Harza did the same. Not including friction the two compared well; including friction, governor, &c., they did not agree at all. Mr. Harza did not think favorably of the differential regulator referred to in the paper.

Prof. I. P. Church submitted a discussion in which he stated that there was serious error in the assumptions in the author's paper and offered his corrections for a certain part in the formula. He complained that Johnson had considered the whole pipe line as a water pendulum and that he did not consider the leakage at the bottom. In closing, Mr. Johnson insisted on the integrity of his formula by giving the reason that difference in level justified his formula.

Of the next two papers, abstracts of which follow, the first passed without discussion.

### "Some Pitot Tube Studies."

BY PROF. W. B. GREGORY, NEW ORLEANS, LA., AND PROF. E. W. SCHODER, ITHACA, N. Y.

The distribution of velocities and pressures of flowing water were determined in straight and curved portions of pipe. A study of the indications of a Pitot tube, both with the impact opening facing the current and reversed, in straight pipe with normal elliptical velocity distribution, gave a means for finding the true velocities and the relative pressures throughout cross sections in a curved portion of the pipe where the flow was distorted. There is given a convenient method of making Pitot tube traverses in straight pipe. The modified indications of static pressure by the static openings of a Pitot tube due to suction action are explained.

### "Comparison of Screw Thread Standards."

BY AMASA TROWBRIDGE, HARTFORD, CONN.

A diagram is submitted in this paper to show what is possible or impossible in combining the present recognized standards for screw threads. On this are curves comparing the Pratt & Whitney standard thread for machine screws, the United States standard thread and the standard of the Association of Licensed Automobile Manufacturers, with the standard recommended by the Machine Screw Committee of the American Society of Mechanical Engineers. The latter is recommended because of its uniform proportions for sizes below 7-16 in. diameter and the United States standard for larger sizes. The standard of the automobile manufacturers is adapted only for the special use intended.

Discussing this paper, L. D. Burlingame declared that the United States standard threads are too coarse for small threads, and commended the new A. S. M. E. standard for screws below 7-16 in. He derived a formula which follows the A. S. M. E. standard up to 5-16 in., and beyond that is sort of a mean between this and the A. L. A. M. standard. A motion was passed to take up this question and revise the society's present standard.

The last paper in this section was in substance as follows:

### "Identification of Power House Piping by Colors."

BY WILLIAM H. BRYAN, ST. LOUIS, MO.

The number, extent, and variety of pipe lines in modern power plants have become so great as to lead to confusion, resulting in uncertainty, delay and occasional accident. A beginning has been made toward the quick identification of such lines by coloring them, further subdivision being secured by giving the flanges a different tint. The value of some such plan in emergencies, and to supervising engineers and inspectors, is evident. The author discusses the situation fully, and gives a list of schemes already in use. He recapitulates the requirements of the case, and believes that the time is ripe for concerted action looking to the establishment of a uniform, standard, and widely applicable color scheme for this purpose.

The suggestion was made by G. E. Mitchell that arrows be used to indicate the direction of flow in pipe, and that darker colors be used for distinguishing mains in the boiler room, since there they get dirty quicker. He emphasized as important that manufacturers should either make all valves open the same way or that they should be plainly marked to show which are the opening and closing directions. F. W. Salmon claimed that any system adopted should be national, or better, international, and that special rates should be made by insurance companies for plants which have such systems in use. It was moved by J. W. Leib that the council take up this subject and appoint a committee for working out a standard.

## S. P. E. E. SESSION.

Simultaneously the Society for the Promotion of Engineering Education was holding a session in another part of the hotel. The programme of which follows:

President's address, "The Function of the Engineer in the Conservation of Natural Resources of the Country," by President Charles S. Howe, Case School of Applied Science.

"Adapting Means to the End in Technical Education," by Arthur L. Rice, Chicago.

"The Place of Foreign Languages in the Curriculum of the School of Engineering," by Prof. Arthur L. Wright, Case School of Applied Science.

"Second Degrees for Graduates of Engineering Courses," by Prof. W. F. M. Goss, University of Illinois.

"Scholasticisms in Engineering Education," by Prof. John P. Jackson, Pennsylvania State College.

"Concentration of College Work on a Smaller Number of Subjects," by Milan R. Bump, New York.

## THURSDAY EVENING RECEPTION.

The members of all the different societies were invited as the guests of the American Society of Mechanical Engineers to its reception in the Hotel Cadillac. This was followed by dancing and a collation.

## S. A. E. MEETING.

Thursday evening there was also in progress the opening meeting of the Society of Automobile Engineers, at which the following papers were presented:

"Autogenous Welding and Its Application to Automobile Construction," by E. S. Foljambe.

"Some Recent Developments in Magneto Ignition," by Otto Heins.

"The Storage Battery in Automobile Work," by Bruce Ford.

"The Unit System of Power Transmission in Automobiles," by Frank Beemer.

"Increased Efficiency of Single Motor Drive," by A. L. Dixon.

The demonstrations given in connection with the first paper were particularly interesting, and attracted many members of the other societies to this meeting. The Linde Air Products Company, Buffalo, and the Davis-Bournonville Oxy-Acetylene Development Company, New York, had furnished apparatus for the demonstration, and a number of welds were made by the oxy-acetylene blow pipe, and some pieces of steel cut by means of an auxillary jet of high pressure oxygen. This meeting was held in the Hotel Tuller, which was the headquarters for the Society of Automobile Engineers.

## FIFTH SESSION.

Friday morning the American Society of Mechanical Engineers held its last professional session. The first paper was a collection of data from

### "Economy Tests of High Speed Engines."

BY F. W. DEAN AND A. C. WOOD.

These tests were made of the following engines and generators: A 14 x 15 in. 240 rev. per min. horizontal single flat valve engine with a 100-kw. direct current generator on the shaft; a 15 x 16 in. 240 rev. per min. vertical single flat valve engine with two 50-kw. direct current generators on the shaft; a 14 x 12 in. 300 rev. per min. horizontal single flat valve engine with two 40-kw. direct current generators on the shaft; a 16 x 14 in. 270 rev. per min. horizontal engine with four flat valves, and having a 125-kw. alternating current generator on the shaft; a 12 and 19 x 14 in. 230 rev. per min. vertical cross compound condensing piston valve engine with a 100 kw. direct current generator on the shaft; an 18 x 18 in. 220 rev. per min. horizontal single piston valve engine with a 150-kw. direct current generator on the shaft; a 15 x 16 in. 250 rev. per min. horizontal single piston valve engine with a 100-kw. direct current generator on the shaft, and a 12 x 18 in. 190 rev. per min. horizontal engine with two flat inlet valves and two Corliss exhaust valves, and having a 75-kw. direct current generator on the shaft. The object of the tests was to determine the steam used per indicated horsepower hour and per kilowatt hour, and also the efficiency of the set, as shown by the ratio of the indicated horsepower to the electrical horsepower at the switchboard. The engines were put in order for the tests. The usual methods of determining power and water were used.

A written discussion of this paper was submitted by C. A. Dawley, who considered that the tests were interesting as a collection of isolated tests on automatic engines under various conditions of type, size, speed,

load, steam pressure, steam quality, back pressure, overrating and underrating. He believed that the number of engines tested, seven, was not sufficient to draw any sweeping conclusions. The poor results were credited mainly in the paper to valve leakage, but the writer gave instances to show that piston leakage, a factor usually neglected in investigations of causes for lack of expected economy in steam engines, should be considered. R. H. Rice also thought that the author's results were interesting for individual cases. He considered the society fortunate in obtaining such accurate and satisfactory tests on non-condensing engines, because they are usually difficult to obtain; facilities are not often at hand for accurate tests. The tests showed that refinement, such as small clearance, prompt valve action, accurate adjustment of compression, &c., are of little importance until the greater loss of valve leakage is decreased. He believes the poppet valve the best for all classes of engines where the speed of the engine is sufficiently low to permit the valve to seat without noise or shock, eliminating, as it does, all rubbing surfaces from the valve itself. From steam turbine experience it has been found that single poppet valves remain tight and double poppet valves, if designed to be free from differential expansion with their seats, are also likely to maintain tightness. Reciprocating engines have higher water rates than equivalent turbines. R. C. Stevens showed a valve which the maker guarantees to remain steam tight for five years. He gave what he believed is the best record for an engine of its type. He expressed wonder that engineers do not insist when asking for guarantees that the engines maintain their economy in prolonged operation.

John C. Parker believed that many plants owe their lack of economical operation to careless attendants; indifferent men are given too many duties. Referring particularly to small plants such as office buildings, he had found that it is advisable to improve the all-year efficiency by cutting down the grate area. He considered that small plants might pool their interests, using a central plant for their load; a number of them can then together maintain a single plant, otherwise it is better to purchase current from a central station or a public supply.

F. A. Halsey described a double poppet valve used on the Nordberg engine in this country. He will submit a sketch of it later for the *Proceedings*. G. A. Young had tested five different types of engines and gave a report from some of his own tests. Prof. W. F. M. Goss considered that the results of this paper may surprise many. He explained that highly articulated engines may be all right if proper attention is given to their maintenance. Operators of such high speed engines ought to give them more care.

At this point the secretary made a request that the members of the society be particular in making their tests to be very accurate and to give the society the benefit of their results. In this President Holman seconded him. The president remarked that different engines tested in different places give different results. In pioneer plants he believed poppet valves likely to be the best because they will better stand wear from sand and grit carried along in the steam.

### "Air Leakage in Steam Condensers."

BY THOS. C. M'BRIDE, PHILADELPHIA.

The author of this paper advocates measuring, by air pump displacement and temperature, the amount of air passing through a condenser, and comparing this amount in different condensers on the basis of its ratio, by volume, to the steam being condensed. The amount of air passing through condensers, as presupposed by manufacturers' ratings of air pumps, is calculated, and 4½ volumes of air per 10,000 volumes of exhaust steam is established therefrom as the average maximum amount these ratings allow. The paper includes curves showing the theoretical relationship of the volume of air while in the exhaust pipe and after it has reached the air pump suction pipe. Tests are cited showing widely different air leakages, the leakage in one case amounting to about 18 volumes and in another to from two to three volumes of air per 10,000 volumes of exhaust steam. The paper recommends that in testing condensers engineers measure the amount of air on the basis suggested, and publish their results in order that the amount of air anticipated by ordinary practice may be established.

A. L. Rice presented a discussion for C. A. Howard on this paper. It was the writer's opinion that too much is put on the condenser manufacturer because large amounts of air leakage may come through the piping for which the piping contractor should be responsible. The present methods of constructing glands of steam turbines makes their leakage inconsiderable. C. L. Heisler agreed with Howard that the condenser builder must not be expected to guarantee too much without having any control over the tightness of the piping. It appears to be extremely difficult to find out how much is the leakage throughout the system and from where it comes.

The last paper of the morning was presented in abstract for the author by Charles B. Hayward, secretary of the Society of Automobile Engineers. This paper,

### "Clutches, With Special Reference to Automobile Clutches,"

BY HENRY SOUTHER, HARTFORD, CONN.,

was submitted at the monthly meeting of the society in New York, Tuesday, May 12, and was printed in *The Iron Age* May 14.

A discussion of this paper was offered by Frank Mossberg, which was confined to positive clutches, such as those used on power presses. The speaker submitted a number of illustrations of different types of such clutches and described them, including one of his invention.

F. Du P. Thomson described the Wheeling Mold & Foundry Company's clutch, which was illustrated in *The Iron Age* June 11.

C. W. Hunt added data concerning the coefficient of friction in friction clutches. He stated what are the conditions necessary for designers to know, and disagreed with the author that theory does not enter into clutch design, for it should. He gave details of clutches used by different manufacturers, particularly in coal handling machinery. He referred to what are the best friction surfaces; all may be divided into the classes of leather, wood, cork and metal. He commented also on automobile clutches. Time being limited, discussions from Charles D. Rice, C. E. Billings, F. A. Waldron, Hiram Maxim and Forest R. Jones were read by title only; these will appear later in the *Proceedings* of the society. Thomas A. Fay, president of the Society of Automobile Engineers, declared that either disk or cone clutches if properly designed give entire satisfaction. He favored small diameters of clutches with leather eliminated and oil used.

At the close of the meeting resolutions of thanks were offered by C. W. Hunt to the Local Committee for all of the pleasures which the members of the society and their guests had been privileged to enjoy.

## S. P. E. E. MEETING.

Simultaneously the Society for the Promotion of Engineering Education held its session, at which the following was the programme:

Report of the Committee on the Revision of the Constitution, by Prof. A. L. Williston.

Report of the Committee on Technical Books for Libraries, by Prof. A. H. Ford.

"Hydraulic Laboratories, Their Equipment, Method of Conducting Work, Their Efficiency as a Factor in Engineering Education, Methods of Teaching Hydraulics, &c., & &c.," by Prof. D. W. Mead, University of Wisconsin.

"Electrical Laboratory Efficiency," by S. Sumner Edmands, Pratt Institute.

"Cement Laboratory Practice," by Prof. Ira O. Baker, University of Illinois.

"Entrophy, a Simple Method of Presentation," by Prof. W. D. Ennis, Polytechnic Institute, Brooklyn.

"How Far is Pure Thermodynamics of Value in Preparing Students for Handling Mechanical Engineering or Heating Problems," by Prof. Arthur J. Wood, Pennsylvania State College.

## FRIDAY AFTERNOON EXCURSION.

The concluding and very pleasurable feature of the American Society of Mechanical Engineers' meeting was the excursion Friday afternoon and evening by steamer to Bois Blanc Island at the outlet of the Detroit River into Lake Erie. Here a supper was served and the members and guests were returned by moonlight in time for many of them to make their train and boat connections for leaving the city

## ADDITIONAL S. P. E. E. PAPERS.

There yet remained for the Society for the Promotion of Engineering Education to hold two sessions, Saturday morning and Saturday afternoon, at which the following papers were presented:

Report of the Committee on Industrial Education, by Profs. C. M. Woodward and A. L. Williston.

"The Relation Between Engineering Education and Industrial Education," by Prof. Charles R. Richards.

"Two Years of the Co-operative Engineering Courses, University of Cincinnati," by Prof. Herman Schneider, University of Cincinnati.

"The Careers of Graduates in Mechanical Engineering," by Prof. De R. Furman, Stevens Institute of Technology.

"A Summer Course in Surveying," by Prof. Charles Derleth, Jr., University of California.

"The Co-ordination of Work in Drawing Rooms, Shops and Laboratories, and the Real Function of Shop Instruction for Engineering Students," by Prof. Dexter L. Kimball, Cornell University.

"The Concentric Method of Education in Engineering," by Prof. V. Karapetoff, Cornell University.

"Requisite Qualifications of an Engineering College Instruction," by Oliver B. Zimmerman, Charles City, Iowa.

"Should the Engineer Be Required to Hold License?" by Prof. Walter H. Drane, University of Mississippi.

"The Use, Abuse and Care of Lantern Slides," by Prof. Henry H. Norris, Cornell University.

"Shall We Try to Develop General Culture by Teaching Engineering Subjects in a Broad and Comprehensive Way? or Shall We Introduce Unrelated Subjects Because of Their Supposed Culture Value?" by Prof. E. Brydone, University of Manitoba.

"A Combined College and Engineering Course."

"A Five-year Course in Engineering. Is This Advisable?"

"How Shall We Teach the Lower Classes so That All Men May Come in Contact with the Older Professors—the Heads of Departments?"

Saturday evening at 8 o'clock this society held a banquet as the concluding feature of its meeting.

## The Cramp Shipbuilding Company's Annual Report.

Notwithstanding the contraction in general business, the annual report of the William Cramp & Son's Ship & Engine Building Company for the 12 months ended April 30 shows net profits of $555,735, an increase of $227,467; fixed charges of $313,008, a decrease of $11,912; and a surplus of $242,727, an increase of $239,379. The last named item is equal to about 4 per cent. earned on the outstanding capital stock.

During the year the company redeemed $160,000 of the 5 per cent. notes, and $25,000 first mortgage 5 per cent. bonds, purchased $48,000 mortgages held in trust, and expended $77,995 in the purchase of real estate, tools, machinery, &c.

President Henry S. Grove states that, although the unsettlement of business following the late severe panic still continues, and as a consequence the volume of current business is less than in previous years, and the uncertainty of commercial conditions makes it difficult to form any judgment as to how long this condition of affairs will continue, much has been accomplished since the last annual report to strengthen the company's effectiveness and resources.

The general balance sheet, as of April 30, 1908, compares as follows:

*Assets.*

| | 1908. | 1907. |
|---|---|---|
| Real estate, machinery, &c. | $12,877,740 | $12,971,014 |
| Bills and accounts receivable | 748,133 | 1,577,200 |
| Material and supplies | 472,246 | 823,620 |
| Cash | 740,883 | 186,881 |
| Claims in litigation, &c. | 713,484 | 1,068,368 |
| Totals | $15,552,486 | $16,627,184 |

*Liabilities.*

| | | |
|---|---|---|
| Capital stock | $6,098,000 | $6,098,000 |
| Bonds and mortgages on real estate | 6,134,912 | 6,319,912 |
| Wages, bills and accounts, bond interest, &c. | 333,773 | 963,521 |
| Surplus | 2,985,801 | 3,245,750 |
| Totals | $15,552,486 | $16,627,184 |

## The Correct Way to Apply Detachable Link Belt.*

BY STAUNTON B. PECK.†

When considering the relative merits of different methods of running chain-drives, the drive should be considered as a whole, and the action noted at the four points indicated in Fig. 1—*a*, the entering point on the driver; *b*, the releasing point on the driver; *c*, the entering point on the driver sprocket; *d*, the releasing point on the driver sprocket. In this discussion, the action at a point is said to be good when all the articulation or bending takes place in the joint of the chain, Fig. 2. The action is said to be bad when, in bending, the link rubs on the sprocket, producing wear on the sprocket and outside or external wear on the hook, Fig. 3.

Another fact is also to be remembered—there is never more than one tooth in action at any one time. No matter how carefully the chain and sprocket may be made, as soon as the load comes on, there is a change caused by stretch and wear. It can be predetermined which tooth shall be in action by making the pitch of the wheel either larger or smaller than the pitch of the chain. Thus, on the driver, Fig. 4, the wheel pitch being smaller than the chain pitch, the entering tooth does all the work. In Fig. 5 the conditions are reversed; the wheel pitch is the larger and the releasing tooth does the work. On the driven sprocket the same thing holds, except that here conditions are reversed. When the wheel pitch is smaller than the chain pitch the releasing tooth does the work, Fig. 6. When the wheel pitch is larger than the chain pitch the entering tooth does all the work, Fig. 7. For the best work the pitch of the driver should be larger than the pitch of the chain, see Fig. 5, and the pitch of the driven sprocket should be smaller than that of the chain, as in Fig. 6. The releasing teeth *b* and *d* are then the working teeth and the chain can set at *a* and *c* quietly and take the load gradually as the wheel revolves.

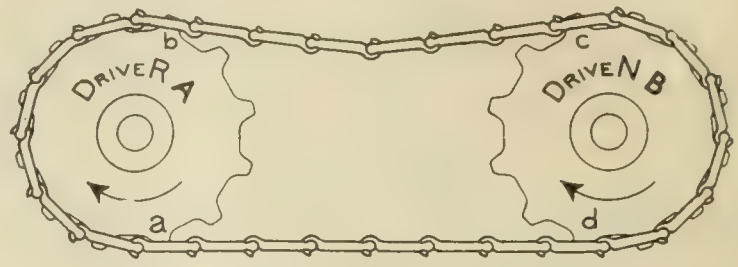



Fig. 1.—A Properly Applied Driving Chain.

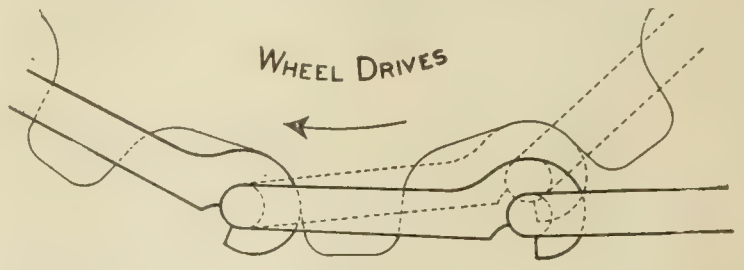



Fig. 2.—Good Action.—Bar Working in Hook.

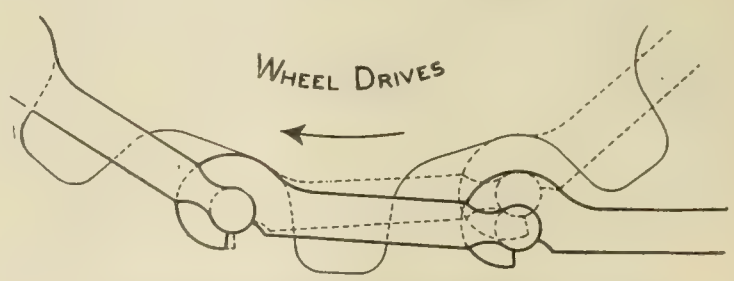



Fig. 3.—Bad Action.—Hook Working on Bar.

Next to be considered is the drive as a whole to determine whether the chain links shall be run bar first or hook first.

In Fig. 8 the pitch of the driver is larger and that of the driven sprocket smaller than the pitch of the chain, hence *b* and *d* are the teeth in action. The chain runs with the bar of each link leading; the action at *a*

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† Vice-president of the Link-Belt Company.

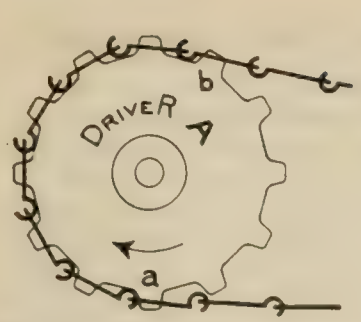



Fig. 4.—Wheel Pitch Smaller than Chain Pitch.

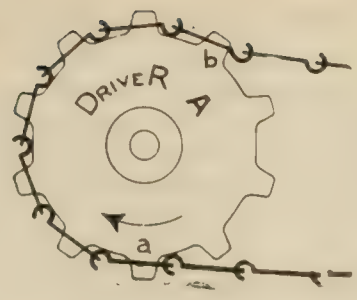



Fig. 5.—Wheel Pitch Larger than Chain Pitch.

Driving Wheel.

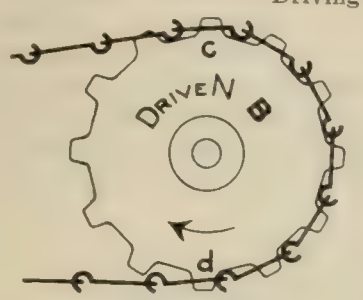



Fig. 6.—Wheel Pitch Smaller than Chain Pitch.

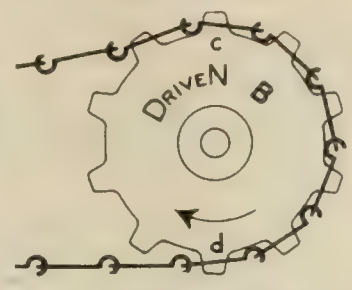



Fig. 7.—Wheel Pitch Larger than Chain Pitch.

Driven Wheel.

is good, at *b* bad, at *c* good and at *d* bad. In Fig. 9 the sprockets are the same as in Fig. 8, but the chain links run hook first. Here the action at *a* is bad, but the fact that the hook is not in contact with a tooth face at this point makes the consequent wear of little extent. The action at *b* is good. The action at *c* is bad, but this is on the slack side of the chain and this bad action causes no wear. The action at *d* is good. It is thus seen that there are two very bad points, *b* and *d*, where the links run bar first, and only one serious trouble, *a*, when running hook first.

As usually furnished the sprockets are ground to fit the new chain; when the latter stretches both the driver and the driven sprocket are smaller in pitch than the chain and teeth *a* and *d* are now in action. In Fig. 10 is shown a pair of wheels with the chain links running bar first. The action at *a* is good; at *b* it is bad, but as there is no tension on the chain at this point this is not objectionable. At *c* the action is good; at *d* it is bad. In this case, therefore, it would seem that the wear would be confined to the driven wheel. This is so in actual practice.

The same wheels with the links running hook first are shown in Fig. 11. The action at *a* is bad, at *b* it is good, at *c* it is bad, but not objectionable, because, as before, there is no tension at this point, and the action at *d* is good. Thus all the wear would seem to be on the driver as a result of the action at *a*. This is found to be the case, and theory and practice agree that with the chain links running bar first the driven wheel wears, and with the chain links running hook first the driver wears.

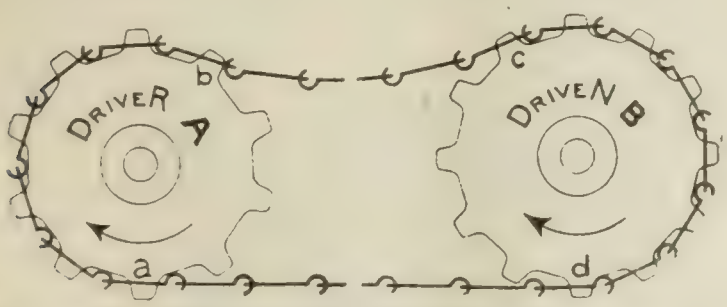



Fig. 8.—Pitch of Driver Larger and Driven Wheel Smaller than Chain Pitch, with the Links Running Bar First.

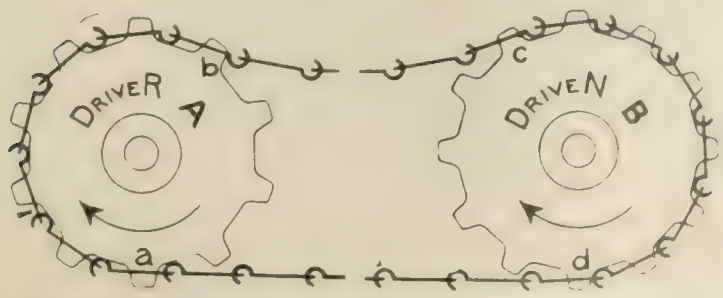



Fig. 9.—Pitch of Driver Larger and Driven Wheel Smaller than Chain Pitch, with the Links Running Hook First.

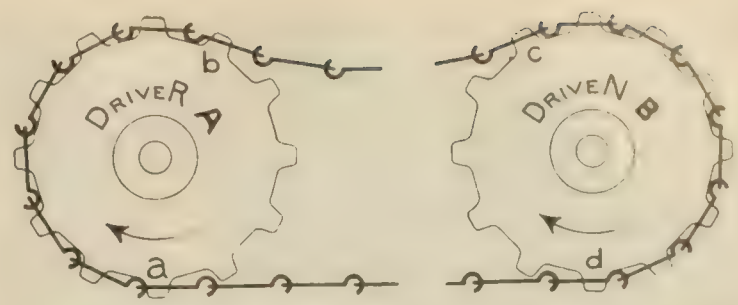



Fig. 10.—Pitch of Both Wheels Smaller than Chain Pitch, with the Links Running Bar First.

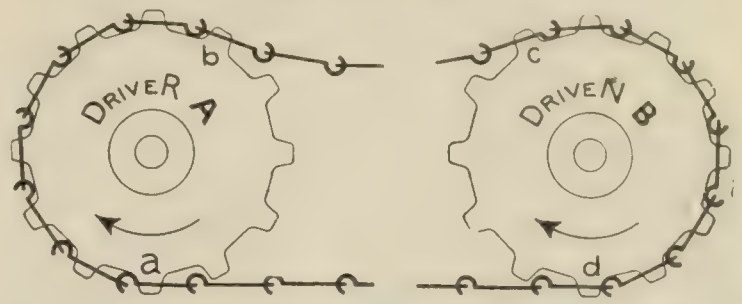



Fig. 11.—Pitch of Both Wheels Smaller than Chain Pitch, with Links Running Hook First.

It is found that because the wear at *d*, running bar first, is caused by the link slipping up the tooth, it tends to undercut and form a hook and thus break the chain. On the other hand, the wear at *a*, when running hook first, is caused by the link slipping down the tooth, and the wheel will wear out completely without endangering the chain. It has also been proved that the driver, when running the chain links hook first, lasts several times as long as the driven wheel when running the links bar first. As the driven wheel is in nearly every case much larger than the driver and the consequent wear on each tooth is less, it would seem that if the chain were run so as to wear the driven wheel the wear on the two wheels would be equalized. This would be poor practice, for the reason that the driver, being smaller, is more cheaply replaced and the repair account will therefore be less running the links hook first.

In elevators, Fig. 12, the head wheels acts as a driver, the foot wheel simply as an idler, because it is doing no work. Therefore the chain links should be run bar first, so as to favor the driver. On conveyors one wheel is always an idler, comparatively speaking, and the same reasoning holds as for elevators; the chain links should run bar first in all cases.

The foregoing applies equally well to all closed end




Fig. 12.—An Elevator Chain, with the Links Running Bar First.

pin chains; the closed end corresponds to the hook and the pin end to the bar of the Ewart chain. In general, therefore, on drives run hook first, on elevators and conveyors run bar first.

## The United States Cast Iron Pipe & Foundry Company.

The United States Cast Iron Pipe & Foundry Company reports its profit and loss account for the fiscal year ending May 31, 1908, as follows:

| | | |
|---|---|---|
| Gross income from operations | | $637,617.83 |
| Other income for the year | | 136,656.62 |
| Total income | | $774,274.45 |
| Less interest on American Pipe & Foundry Company's bonds | | 90,000.00 |
| Net earnings | | $684,274.45 |
| Reserved to secure doubtful accounts | | 12,000.00 |
| Remainder | | $672,274.45 |
| Add surplus May 31, 1907 | | 631,801.12 |
| Total | | $1,304,075.57 |
| 7 per cent. dividend paid on preferred stock | $875,000 | |
| 2 per cent. paid on common stock | 250,000 | |
| | | 1,125,000.00 |
| Surplus May 31, 1908 | | $179,075.57 |
| Distribution of surplus: | | |
| For improvements in lieu of depreciation | | 163,051.12 |
| Balance, profit and loss, May 31, 1908 | | $16,024.45 |

BALANCE SHEET AS OF MAY 31, 1908.

*Assets.*

| | |
|---|---|
| Cost of properties | $24,095,935.45 |
| Treasury stock at cost | 347,555.00 |
| Bonds of American Pipe & Foundry Company and sinking fund | 589,103.67 |
| Raw and manufactured material, &c | 2,147,074.00 |
| Accounts, bills receivable, &c | 2,081,041.78 |
| Cash | 739,289.55 |
| Total | $29,999,999.45 |

*Capital and Liabilities.*

| | | |
|---|---|---|
| Preferred stock issued | | $12,500,000.00 |
| Common stock issued | | 12,500,000.00 |
| Bonds of American Pipe & Foundry Company | | 1,500,000.00 |
| Accounts payable | | 903,199.38 |
| Total capital and liabilities | | $27,403,199.38 |
| Reserve for working capital | $2,459,896.64 | |
| Reserve for insurance fund | 100,000.00 | |
| Reserve to secure doubtful accounts | 20,878.98 | |
| | | 2,580,775.62 |
| Profit and loss | | 16,024.45 |
| Total | | $29,999,999.45 |

President George B. Hayes makes the following report to the stockholders:

"The report which your directors are making you to-day is, superficially considered, not very encouraging, but I am glad to be able to say to you that your directors do not feel at all discouraged about either the condition or the business of the company. The month of October, 1907, was one of the most prosperous months which the company has ever had. During the month of November, 1907, business absolutely stopped. The company did not lose its business. There was no business. The winter months in the cast iron pipe business are alway dull months. When there was added to this natural condition the depression which was caused by the panic, the result was a stagnation such as has never been known in the history of the cast iron pipe business in this country. Not only was there a cessation of business, and a sharp fall in prices in November, but there was a declining market all through the winter and early spring months.

"I am glad to say to you, however, that, with the opening of spring, business has improved. The inventories presented to-day are made at the market. The company has no outstanding bills payable, and no debts of any kind, except for the current raw material. Not only this, but the company went through the panic without borrowing a dollar, or discounting or selling its bills receivable. On the other hand, it paid in cash for all of its supplies and raw material. The company has plenty of money, and its plants are in first-class condition.

"So far as dividend possibilities are concerned, as you know, since the organization of the company, there has been created an account known as 'reserve for additional working capital.' To this account, in addition to the large sums spent out of the net earnings for extensions and new construction, amounting to $1,802,450.13, there has also been credited out of net earnings the sum of $2,459,896.64. This account is distinct from, and is a surplus over and above, the original working capital of the company. There is no financial reason why a portion of this reserve or surplus should not be used for the payment of dividends until the present period of depression shall have vanished. This, of course, is contingent upon this period of depression not lasting too long, but as I have said, it is already beginning to pass away. Owing, however, to the phraseology of the charter, there seems to be some legal doubt as to whether or not any part of this surplus may be used for dividend purposes. After carefully considering the matter, your directors are of the opinion that it would be for the best interests of the company to have the question determined by judicial decision, and a suit for the determination of this question will probably be instituted at once. If a favorable decree is entered, the preferred stockholders may expect to receive the usual quarterly dividend on the preferred stock."

## Results of Fuel Investigations.

In an address before the annual convention of Smoke Inspectors, at Cleveland, Ohio, June 24, D. T. Randall, engineer in charge of tests of the United States Geological Survey's fuel testing plant, summed up the results of the investigations as follows:

A study of the fuel values of coals burned while conducting some 540 boiler tests has shown that the value of the coal depends almost entirely on the number of heat units which it contains as determined by a calorimeter, these relative values being influenced somewhat by the amount and character of volatile matter and of ash present in the coal. This information has strengthened the position of the Government engineers who desire to purchase coal on a specification which has for its basis of payment the British thermal units and ash in the coal.

For the coming year a very large part of the coal purchased for the Government will be paid for according to its value as determined in the Government chemical laboratories. One of the largest purchases under this form of contract is for use on the Isthmus of Panama, and calls for the delivery of 400,000 tons within the year.

Investigations of the washing and coking tests of coals have also shown the possibilities of utilizing poorer grades of coal than are commonly used, and point to a very considerable saving in our fuel supply. The experiments on the briquetting of coal have shown that the slack coal which is otherwise difficult to utilize, may be made into artificial lumps and used with high efficiency in power plants or for locomotive use.

A study of the furnace conditions in connection with the boiler tests will show the influence of different methods of burning coal with relation to the reduction of smoke. These tests have demonstrated the possibility of burning certain kinds of coal efficiently without smoke in an ordinary furnace. They have pointed to possibilities of modifying furnaces so that practically all fuels may be burned without smoke under favorable conditions. Some bulletins have already been issued on this work, but those which deal directly with the smoke problem are now in course of preparation.

The tests made at the producer gas plant have shown that it is possible to burn almost any grade of coal with the very highest efficiency and absolutely without smoke. Bituminous coals having as high as 45 per cent. of ash, lignites and peats, which are considered low grades of fuel for boiler furnaces, have been very successfully burned in the producer, generating gas for the development of power in a gas engine. The low-grade lignites of North Dakota developed as much power per pound in the gas producer as do the very best West Virginia bituminous coals, when utilized in a steam boiler with a simple non-condensing engine, such as is usually installed in manufacturing plants.

The results of these investigations will have an important bearing on the question of smoke prevention, both directly and indirectly, but the Government is investigating the possibilities only from the engineering and not at all from the legal standpoint.

## The Kempsmith Circular Milling Attachment.

Two unusual milling machine operations, made possible on the standard milling machine through an improved circular milling attachment just produced by the Kempsmith Mfg. Company, Milwaukee, Wis., are illustrated herewitn. Either of these jobs is such as might be encountered in any general repair or jobbing shop.

Fig. 1 shows the attachment used in milling the faces of 12 in. pulleys. The rough pulley is mounted firmly on the attachment, and through the power feed, is revolved against the inserted tooth milling cutter screwed on the spindle. The table is adjusted slightly off-center longitudinally, which results in a convex cut, thus producing the crown on the pulley face. It is not claimed that on this job the milling machine is the equal of a special or automatic machine designed for this purpose; the main advantage is that, in addition to the wide range of work possible on the standard miller, the use of this attachment accomplishes satisfactorily and almost automatically, this character of work which would otherwise require a more specialized and more expensive equipment. The extent of the cut and the consequent strain involved give an idea of the rigidity of the attachment.

Fig. 2 shows the attachment employed in cutting a gear, 6 pitch, 18 in. diameter, which is far too large to swing on the dividing head. It is mounted horizontally on the attachment, and the power vertical feed of the miller is used in cutting the teeth. The worm shaft of the attachment is arranged to readily receive the index plate mechanism, as regularly furnished with dividing heads, and since the ratio of worm and worm wheel is the same as on the dividing head, the full range of divisions is obtainable. The large diameter of the worm wheel insures accuracy. This makes the circular attachment in effect a dividing head, especially valuable in cutting large diameter gears, which could not be handled easily in any other manner except on a special machine.

The attachment is built in two sizes, with 14 and 18 in. tables, respectively. The table has a solid bearing for almost its whole extent on the attachment base, and is clamped at any angle through the same patent ring clamping mechanism that is used on the Kempsmith universal millers. The table can be released from the worm wheel for quick revolving.

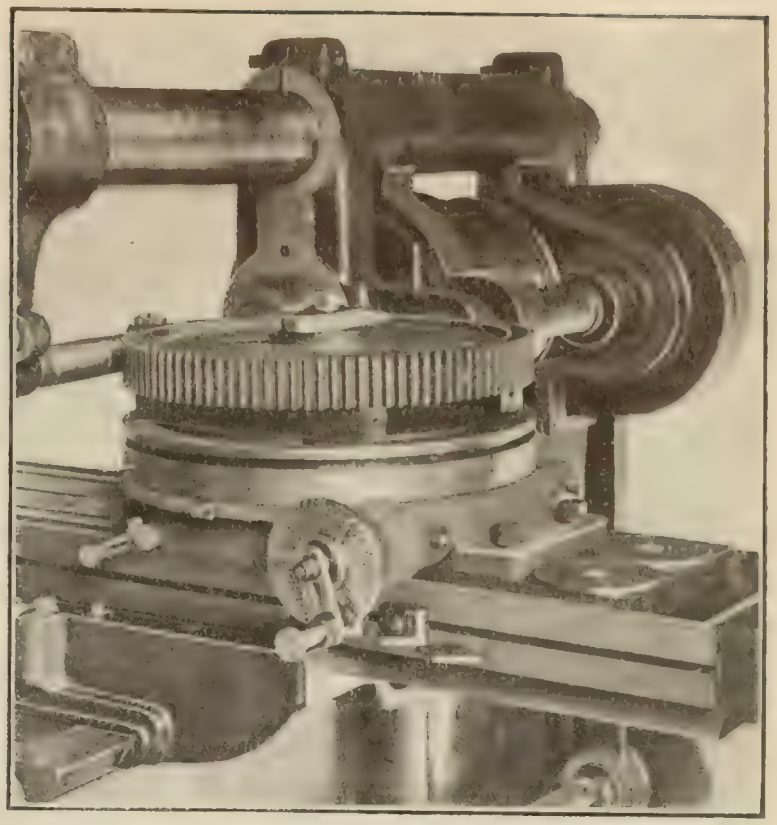


Fig. 2.—The Kempsmith Circular Milling Attachment Applied to the Cutting of Large Gears.

**Fire Protection Engineering.**—The Boston Manufacturers' Mutual Fire Insurance Company, 31 Milk street, Boston, Mass., has issued a new edition of its Insurance Engineering Experiment Station's Report No. V on "Slow Burning or Mill Construction." This report has been revised and enlarged. It contains a great deal of matter which will be found of service to those connected with industrial undertakings, giving practical instructions, accompanied by illustrations so that proper systems of fire protection can be installed. Diagrams are freely used, showing ideal mill plants and methods of securing fire preventive measures. The price of this book is only 25 cents per copy. This is very much less than the cost of publication, but the intention is to limit requests for the work simply to those who can make use of it to good advantage, and will therefore value it.

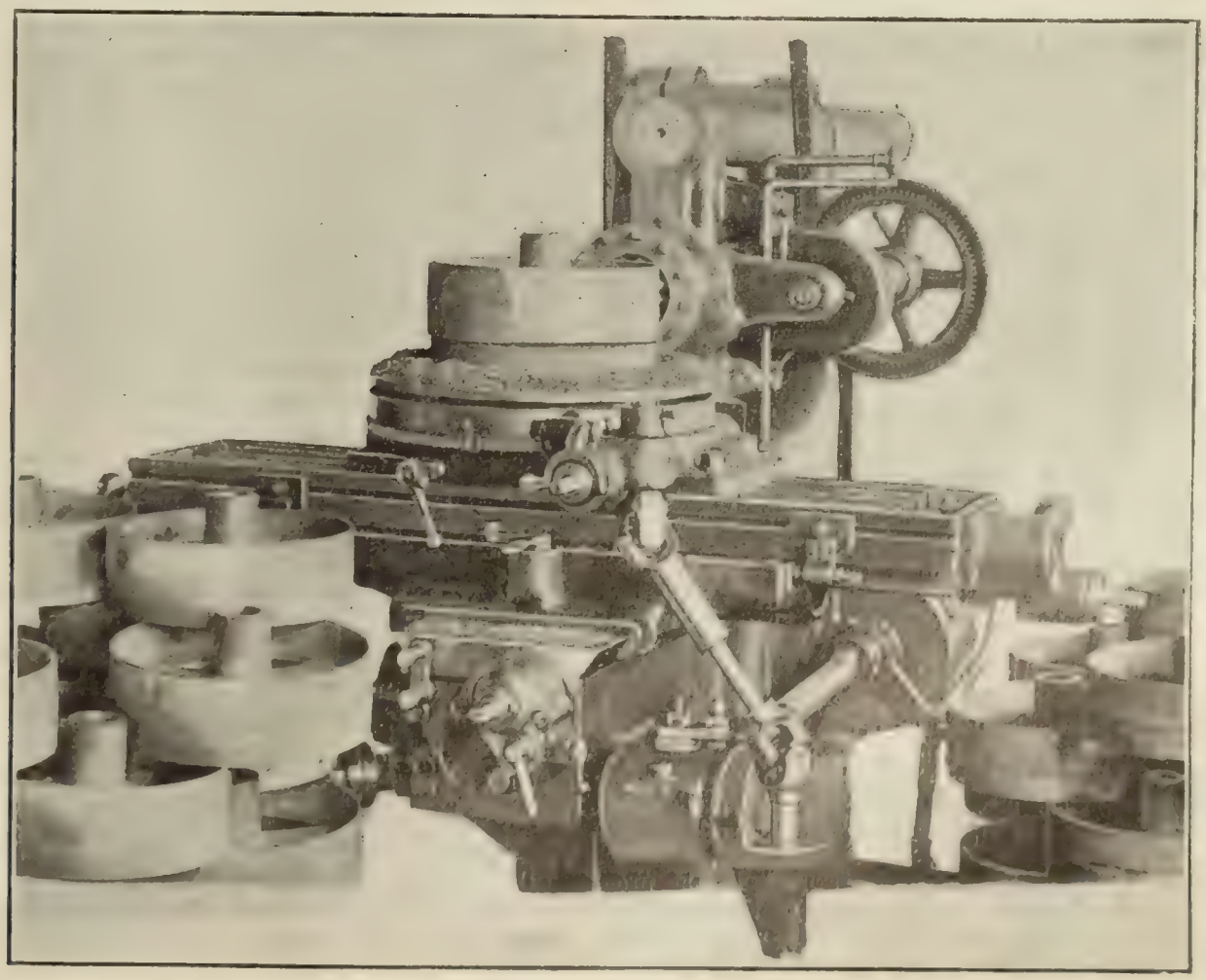


Fig. 1.—The New Circular Milling Attachment Made by the Kempsmith Mfg. Company, Milwaukee, Wis., as Used for Finishing Crowned Pulley Faces.

# The American Society for Testing Materials.

## Steel Rails, Pipe Corrosion, Preservative Coatings and Other Important Questions Discussed at the Eleventh Annual Meeting.

From the standpoint of iron and steel manufacturers and metallurgical engineers, rails and corrosion were again the chief topics of discussion at the annual meeting of the American Society for Testing Materials, held at Atlantic City, June 23 to 27. While some well remembered ground was traversed again, much was brought out indicating that real progress is being made in the clearer recognition of the causes of rail failures and in the cooperation of manufacturer and user in applying remedies. The masterly paper of the president, Dr. Charles B. Dudley, of which a synopsis was given to our readers last week, received marked approval for combining incisiveness and fairness.

### Dry Blast in Bessemer Steel Making at South Chicago.

An interesting sequel to President Dudley's remarks on what he considered the lack of progress in Bessemer practice in the last 20 years came at the opening of the Friday morning session. Referring to what he had said on this subject in his opening address of Tuesday evening, Dr. Dudley said he believed the agitation of the past two years had resulted in stimulating inquiry and experiment, and he took pleasure in presenting the results of some recent experiments, as given in the following letter he had received since the beginning of the meeting. It was written by P. H. Dudley, at the South Works of the Illinois Steel Company, South Chicago, Ill., and bore date of June 24:

It may be of interest for you to announce to the society that for the past month here at the South Works of the Illinois Steel Company the dry blast has been applied in the Bessemer practice with excellent results. The steel sets solid, with scarcely a trace of blow holes upon the sides except near the extreme top or cap of the ingot. The few blow holes found in the interior of the ingot were without oxidized surfaces, quite in contrast to the ordinary ingots. The metal is exceedingly tough under the drop test. The moisture the past few humid days, of 8 to 9 grains per cubic foot of air, was reduced to less than 2 grains per cubic foot entering the Bessemer converter. This marks a decided step in the reduction of the variable of moisture entering the Bessemer converter to blow the bath of molten metal.

### Some Features of the Meeting.

Without attempting a complete resume of the proceedings, mention may be made at the outset of a few of the matters acted on or discussed at the meeting:

The Bessemer steel rail specifications adopted last year were altered on recommendation of Committee A in three particulars. For rails weighing 85 to and including 100 lb. per yard a drop test for every blow of steel is provided, instead of from every fifth blow. Instead of an allowable 10 per cent. of seconds it is provided that "No. 2 rails shall be accepted to at least 5 per cent. of the whole order." An added provision is that rails rejected under the drop test will not be accepted as No. 2 rails.

The contributions to the rail discussion showed that much valuable experimental work is being done to discover and remedy the defects in rail steel.

Some new evidence was presented on the relative corrodibility of iron and steel pipe, but the data were not sufficient to warrant definite conclusions, though as far as they go they seem to indicate improvement in pipe steel through the methods of working adopted in the past two or three years. The investigation of the corrosion of iron and steel, in the light of the theory of electrolysis as presented at the previous meeting by A. S. Cushman and W. H. Walker, is progressing. The Committee on Corrosion of Iron and Steel will have the co-operation of the American Steel & Wire Company in an inquiry about to be made into the corrosion of wires of varying carbons and manganese.

The report of the society's Committee on Preservative Coatings indicated good progress with the elaborate paint tests now being conducted, and from which valuable results are expected.

As at previous meetings, reports were made of the progress made with the fuel investigations of the United States Geological Survey. Much has already been published. In reference to the investigation into the relative efficiency of gasoline and denatured alcohol, Chief Engineer H. M. Wilson reported that compression up to 180 lb. and the method of manipulation had given results not previously attained. Denatured alcohol in this way was brought to the same power producing value, gallon for gallon, as that of gasoline, though its heat value is only six-tenths as much.

The Committee on Standard Specifications for Pig Iron presented as a substitute for grading by fracture and the use of grade numbers, the purchase of pig iron by analysis, and a code scheme of symbols was submitted, representing the various percentages of the metalloids. This was given in *The Iron Age* of January 30, 1908, p. 365.

Other interesting features of the meeting were the partial report on the investigation of steel at Watertown Arsenal and the recommendation of the society's Committee on Uniform Boiler Specifications that the phosphorus and sulphur limits for boiler steel be lowered.

### THE OPENING SESSION.

The annual report of the Executive Committee presented at the opening session Tuesday afternoon showed a membership of 1015. The additions in the year were 150, with a net gain of 90. Apparently, the society is at high point in influence and membership.

W. A. Aiken, Philadelphia, read the first paper, entitled "Testing is not Inspection." He said that the fundamental intention of inspection is to secure materials and workmanship in accordance with specifications, and this cannot be accomplished by testing alone. The selection of test bars in the way decided by the manufacturer and the acceptance of the chemical analyses of the manufacturer by the consumer were cited as examples of the loose practice that has grown up.

The report of Committee B on Standard Specifications for Cast Iron and Finished Castings, Walter Wood, chairman, was read by Secretary Marburg. It said that the standard specifications for cast iron pipe adopted by this society has been adopted practically without change by the American Water Works Association. The committee has formulated a new specification for foundry pig iron, but does not desire action on it as yet. The report also brought up a resolution passed by the American Foundrymen's Association at Toronto this month deprecating the further use of pig iron grade numbers in any form and favoring analysis as the sole basis of purchase. The committee was authorized to co-operate in this movement for the abolition of grade numbers.

In connection with the report of Committee H on Standard Tests for Road Material, the chairman, L. W. Page, said that while the steel tires of vehicles wear off enough of the coarser fragments of road materials to make a binder, the automobile has upset all this. It not only does not produce this binder, but it gathers it up from the road and throws it into the air. The underlying materials, deprived of binder, become loosened, and the cost of road maintenance is increased 100 per cent. The French Government spent tens of millions of dollars on 24,000 miles of macadamized road, and now the automobile has to such an extent undone this work that the problem has become exceedingly serious.

H. M. Wilson, chief engineer, gave a resume of the work of the technologic branch of the United States Geological Survey in the past year, particularly in its fuel investigations. J. E. Woodwell presented a paper on a kindred subject, "Commercial Results in the Purchase of Coal on Specifications," showing how this basis of purchases is coming more and more into use.

The result of the ballot for officers was announced, all the following being re-elected: Charles B. Dudley, president; Robert W. Lesley, vice-president; Edgar Marburg, secretary-treasurer; James Christie, member of Executive Committee.

### THE CORROSION OF IRON AND STEEL.

The first part of the Tuesday evening session was given up to the presidential address of Dr. Charles B. Dudley on "Some Features of the Present Steel Rail Question." A synopsis of this able address was given in *The Iron Age* of June 25. The latter half of the evening session was devoted to papers and discussions on the corrosion of iron and steel. An abstract of a paper by Profs. H. M. Howe and Bradley Stoughton on the "Rela-

tive Corrosion of Steel and Wrought Iron Water Pipes" was read by Mr. Stoughton. It dealt chiefly with investigations carried on by the writers on behalf of the National Tube Company, bearing on these questions:

1. How does the modern steel pipe of the National Tube Company compare as regards pitting and as regards loss of weight by corrosion with the present wrought iron pipe?

2. How does it compare with that company's steel pipe of 1897?

3. How trustworthy is the basis of the popular distrust of steel pipe?

**Tests of Iron and Steel Pipe.**

It was stated that the tests thus far made are not conclusive, and that further tests will be made and comment on them added to the paper before it is printed in the Proceedings of the society. Some of the statements as to the method of making the tests and the conclusions derived from them are given below:

First, 12 pieces of modern steel skelp of 1906 and 10 of wrought iron of 1906 were immersed side by side, insulated from each other in wooden crates, for 224 days in hot ærated sea water, a condition which in previous tests has usually appeared the most unfavorable to steel. Then the same pieces of modern skelp were re-exposed in like manner for six months along with 12 pieces of steel skelp of 1897. Thus the time of exposure was as follows:

Wrought iron of 1906.....224 days
Modern steel skelp of 1906..... 13 months
Steel skelp of 1897..... 6 months

It was found that, whereas the loss of weight in seven months of modern steel skelp and wrought iron skelp was practically identical, yet the wrought iron skelp, though from the best makers, pitted in seven months much deeper than the steel did in 13 months. It seems to us that the fairest way is to confine our attention to the deepest pit in each plate, because, as has well been said before this society, if there is a hole the water will run out, no matter how much the pipe weighs. Using thus the deepest pit in each piece as a basis of comparison, in our tests the steel pitted very much less than the wrought iron. Thus 9 out of the 12 steel pieces pitted very much less deeply than any of the wrought iron pieces. The remaining three pieces of steel pitted only very slightly deeper than the very best of the wrought iron pieces.

The 1897 steel lost in six months about 9 per cent. more by weight than the modern steel of 1906 lost in six months, and pitted in six months very much deeper than the modern pieces pitted (in their total exposure of 13 months) less than 0.005 in.; only two of the 1897 pieces (in their six months exposure) pitted as little as this, and half of them pitted from 4 to 12 times as deep. The deepest pit in any of the modern steel pieces was 0.014 in. Only four out of the 12 pieces of 1897 pitted as little as this, and of the remaining eight, four pitted at least half deeper than this, and one pitted more than four times as deep.

In the sulphuric acid bearing water of coal mines modern steel pipes have been found to pit less than wrought iron ones exposed alongside, apparently under conditions which should insure a perfectly fair test. These are reported in *The Iron Age* of July 12, 1906. We learn of other cases in which like results have been reached. As to these we hope to write more positively in revising this paper for its final form.

We learn that 29 pipes, all believed to be wrought iron, after long use in the interlocking and signal systems of a very important railroad, were lately examined, with the results that 12 were found to be steel and only 17 iron. The life of the steel pipes was in this case somewhat longer than that of the iron ones. Thus, of those which were practically destroyed by corrosion and pitting,

11 were of steel, with an average life of.....13.5 years
8 were of iron, with an average life of.....10.4 years

. . . We believe that the reports as to the relative pitting of steel and iron pipes are based in large part on the testimony of plumbers and pipe fitters. In order to throw some light on the competence of these witnesses to testify on this question, and on the value of their most positive assertions, we bought from 19 different plumbers' shops 19 different pieces of pipe, which we were assured were wrought iron. On examining them we found that 13 out of the 19 were steel. To test the matter further, one of us submitted several pieces of pipe which he knew by his own etching tests to be steel, and others which he knew to be wrought iron, to four different plumbers, and asked them to tell, by cutting with a die or otherwise, which were steel and which iron. One plumber, after making several attempts, admitted that he could not tell. The three others reached the results given in the following table. In every case the plumber made the tests with his own dies:

| Plumber No. | No. of pipes tested. Iron. | Steel. | No. reported right. Iron. | Steel. | No. reported wrong. Iron. | Steel. | Percentage of error Iron. | Steel |
|---|---|---|---|---|---|---|---|---|
| 1 | 11 | 11 | 6 | 10 | 5 | 1 | 45 | 9 |
| 2 | 6 | 6 | 0 | 6 | 6 | 0 | 100 | 0 |
| 3 | 6 | 6 | 0 | 6 | 6 | 0 | 100 | 0 |

This goes to show that cutting with a die, the only ready test the plumber has, is not trustworthy. . . . It would seem to us to be an act of wisdom, where pipe is purchased in large enough quantities to warrant the expense, to subject it to specifications and inspection, just as in the case of steel rails, or steel or cast iron car wheels, or tires, or steel castings.

**The Case of Wrought Iron Pipe.**

George Schuhmann, Reading Iron Company, Reading, Pa., presented the case of wrought iron pipe, and argued for its greater resistance to corrosion than that of steel. The familiar reason of the interlacing streaks of slag between the fibers of pure iron, in the case of puddled iron, was given. It was explained that iron made from scrap by the busheling process, which also covers the iron with slag, does not resist corrosion as well as puddled iron, 1. because there is very much less slag in scrap, and the pieces of steel intermixed are not brought to the fusion point, so that the slag can penetrate them; 2. owing to the variations in junk yard scrap from high carbon steel to hoops and cans, there are greater differences in electrical potential than in puddled iron, so that electrolysis is accelerated. Mr. Schuhmann referred to the results with wrought and steel conduit pipes for the Rochester, N. Y., water supply. The wrought iron pipe laid in 1873-75 required no repairs for 19 years; then from 1894 to 1904 less than 10 leaks from corrosion were reported, and none since 1904. The steel conduit laid in 1890 developed rust holes in 1900, and up to 1907 the total repaired was 164. The iron pipe was 3-16 to ¼ in. thick, and the steel pipe ¼ to ⅜ in. thick. Laboratory tests the speaker regarded as far from conclusive in comparison with service tests, citing as an example of the former the tests with about 5 ft. each of 2-in. iron and steel pipe, exposed to hot water service for a year, calculations then being made by taking micrometer measurements of the depth of corrosions.

Professor Stoughton remarked that the Rochester water conduit data do not bear on the question since the Rochester pipe were all coated. They could not be a basis for deductions, therefore, as to the durability of steel for boilers or other uses of uncoated steel.

**The Improvement of Steel Pipe.**

F. N. Speller, National Tube Company, Pittsburgh, said that the argument for the protecting effect of cinder in wrought iron would be reasonable if the grains of iron are enveloped in cinder or if the cinder lies in sheets, between which are sandwiched layers of iron. He added:

Aside from the fact that we have only 1½ parts of cinder to protect 98 parts of iron, any one who has looked at a polished section of wrought iron pipe under the microscope understands that the cinder is very irregularly distributed in strings and patches, and that there are many loopholes through which corrosion is unobstructed, entirely free from cinder. Moreover, owing to the concentration of cinder in places, electrolytic action comes into play, accelerating corrosion at the weak points. Hence, instead of being a benefit, cinder in puddled iron seems to be the chief cause of irregular corrosion.

We recognize our share of responsibility in that steel, in order to have the highest resistance to corrosion, must be uniform and well worked. Our experience along this line started back in 1903. Tests made prior to this date in the laboratory indicated that pitting was usually caused by electro-negative substances adhering to the surface of the metal, such as mill scale, which was shown to have as much as two-tenths volt difference of potential from the iron. On removing this scale corrosion became considerably more uniform. It was found that steel which had been locally worked or forged gave better results than when simply rolled out. This led to the development of a process of mechanically working steel which has come into general use in our mills. There is no mysterious principle involved in this treatment, and we believe the beneficial effect of such local work at proper temperatures will be admitted by all. There is not time, nor is this perhaps the place, to discuss mechanical details of the process employed. I would like to say, however, that improvements in the metallurgy of pipe steel during recent years have contributed largely to rendering the metal more serviceable.

Regarding the protection of iron from rusting, Dr. Cushman has indicated possible methods by which this may be accomplished by preventing the solution of iron. The practical application of this remains to be worked out. In the meantime, however, we can in many cases prevent the secondary reaction, viz., oxidation, without which corrosion is hardly noticeable. In the case of boiler waters or heaters, this may be accomplished in part by preheating the water,

thus driving off the gases, or by passing the heated water over a large surface of steel turnings or other scrap, through which agency the oxygen is removed by well-known reactions. We have applied this method with encouraging results in an experimental way.

**The Electrolytic Theory of Corrosion.**

For Committee U, on the Corrosion of Iron and Steel, the chairman, Dr. Allerton S. Cushman, Washington, D. C., reported that considerable progress had been made in the studies of the past year. A brief synopsis follows:

The evidence brought forward by various investigators seems conclusive as to the fact that corrosion is an electrochemical phenomenon. Much experiment is still necessary to determine whether the methods of preventing corrosion suggested by these researches will prove of practical value. Co-operative tests have been arranged between the committee and the American Steel & Wire Company, in charge of a subcommittee, consisting of A. S. Cushman, W. H. Walker and S. M. Rodgers. The particular matters to be investigated are the effect of possible segregation in the ingot, the influence on wire of high carbon and manganese versus low carbon and manganese, and in the third place, the effect of increasing amounts of manganese on basic open hearth steel. Independently of these tests opportunity will be given manufacturers who control special methods for protecting steel to expose at the same time panels of wire fencing under the auspices of the committee.

Tests are under way to demonstrate the ability of certain pigments to prevent corrosion. A number of steel columns under the Steel Pier at Atlantic City have been painted under the auspices of the Paint Manufacturers Association of the United States, with rust inhibiting compounds, based on zinc chromate formulæ supplied by Chairman Cushman.

As a quick preliminary test of the resistance of steel and iron to corrosion the standard acid bath has been used by the committee. It cannot be said that the results of the acid test are an indication of the rust-resisting power of metals, and certainly, according to the committee, they are not a basis for inferring that metal manufactured by one process is superior to that manufactured by another. The committee has experimented with the immersion of pieces of sheet metal made from Bessemer steel, puddled iron and charcoal iron in water and a salt solution. Only slight differences were noted in the losses in weight, and the committee does not consider that the immersion test is of value in determining resistance to corrosion unless the immersion bath is constantly ærated.

Dr. Cushman followed the report with a paper on "Electrolysis and Corrosion," which in part repeated the line of argument presented in his paper read at the meeting of 1907. A new set of specimens was shown, examplifying by the use of wire nails the electro-chemical action which the speaker identified with rust formation. The paper gave the modern physico-chemical explanation of electrolytic solution tension. He held that since under ordinary conditions of service metals suffer corrosion only by first passing into solution, corrosion can only be prevented or inhibited either by aiding the resistance of the entrance of more ions into solution, or by covering the surface of the metal with a waterproof coating, or by doing both. Two lines of progress may be followed in combatting corrosion, there being both a metallurgical problem and a paint problem. The application to metals of a first or prime coat containing a substance inhibiting electrolysis—zinc chromate, for example—it was thought would give good results. The paper urged the importance of studying the effects of the usual metallic impurities which accompany nearly all forms of merchantable iron and steel, referring, as illustration, to the now general belief of metallurgists that the use of manganese has been overdone. He had recently found that impure metallic manganese, when in a finely divided condition, is soluble in water, decomposing it with a rapid evolution of hydrogen. Since this is the case, it is not surprising, if even slight segregation has taken place in manganiferous steel, that the polarization effects would be modified and increased.

## IRON AND STEEL INVESTIGATIONS.

The first paper at the Wednesday morning session was that of Dr. William Campbell, Columbia University, on "Some Practical Applications of Metallography." The writer detailed the results of microscopic studies of the structure of steel, particularly noting the effects of varying heat treatment. One important development of the experiments contradicted the old idea that the higher the temperature at which the rolling of steel is stopped, above the critical point, the coarser the grain. While it had been taught that 800 degrees Cent. is the critical temperature for rail steel, some mills are working such steel at 1050 to 1100 degrees Cent., and producing rails of fine grain. It is found that the nearer the final rolling is to the critical temperature the better the ductility. Reference was also made to microscopic examinations of wrought iron and low carbon steel. It was found, the speaker said, as easy to distinguish good and bad wrought iron under the microscope as to distinguish chalk from cheese.

In the discussion of the paper it was stated that steel rolled at about 1000 degrees gives the greatest tensile strength; also that the condemnation of material on the ground of coarse grain had been proved completely in error. The discussion drifted into a consideration of the causes of shelling out of steel. A case was cited of two tires on the same axle in which one developed this trouble while the other did not, while both were from the same ingot. It was stated that the theory of slag and oxide had been abandoned. Another speaker referred to the same trouble, with cast iron wheels, the view being taken that it was due to peening.

Secretary Marburg gave an outline of the programme proposed for the investigation of structural steel at the Watertown Arsenal, and J. E. Howard followed, with some data obtained in the tests already made of lap welded tubing and rolled H sections, these being a part of the investigation of steel columns.

**Tests of Steel Springs.**

J. A. Kinkead, chairman of Committee T, on Tempering and Testing of Steel Springs and Standard Specifications for Spring Steel, reported that several railroads have worked to one or the other of the specifications proposed last year, but have not reported results. Tests were conducted at the Baldwin Locomotive Works to determine the effect of different methods of tempering on the elastic limit and modulus. It was clearly shown that the modulus bears no close relation to the elastic limit. The question has come up as to the most satisfactory fibre stress in springs. To determine whether a low or high elastic limit is desirable, tests will be carried out in the coming year. Investigation is also being made of the effect of banding. One road has found an average of five failures of short plates to one of main plates. Dr. Dudley observed in connection with this report that the question how to avoid the breaking of semi-elliptic springs of locomotives has become a very important one.

## THE STEEL RAIL SESSION.

So much has happened in connection with steel rails since the Steel Pier discussion at the society's meeting last year that the proceedings this year naturally were not attended with the same degree of expectancy. The session of Wednesday afternoon was opened with the reading of the report of Committee A on Standard Specifications for Iron and Steel, W. R. Webster, chairman. It gave the results of the committee's conferences on rails in the past year, with the few changes recommended in the specifications adopted since the last meeting. On the question of discard the report says that in view of the recently developed disposition to leave the discard to the manufacturer, the consumers protecting themselves by such testing as will secure only good rails, the committee believes the present provision in the society's specification, making the discard a matter of agreement, should remain unchanged. On the matter of drop test the report says:

The satisfactory hight of drop is affected by the rail section used, and very greatly by the drop-testing machine employed. The whole subject of rail sections and drop-testing machines is at the present moment in a very chaotic condition and much experimental work is now being done. Furthermore, the relation between the strain in the rail produced by the drop test and the strains produced in service has not yet been ascertained with any degree of certainty. The information thus far obtained indicates: 1, that many of the drop-testing machines used in the past have given very fallacious results, owing to inferior foundations and anvils; 2, that due to this defect in the drop-testing machines heretofore employed, but little reliable information in regard to the best and proper hights of drop can be obtained from past practice. Rapid progress is being made in the design and

manufacture of drop-testing machines, and already a proposed standard design has been prepared, and it is hoped it will be in shape to be presented at the next meeting of the society. In view of these uncertainties, and until more positive data can be obtained by experiment, your sub-committee does not see its way clear to recommend any change at the present time in the standard hights of drop of the rail specifications.

**The Watertown Arsenal Investigation of Steel.**

"Some Results of Tests of Steel Rails in Progress at the Watertown Arsenal" was the title of a paper, accompanied by numerous photographs of failed rails and microphotographs of specimens illustrating the structure of the steel. It was read by the author, J. E. Howard, engineer of tests at Watertown, who explained the information as to service conditions furnished by the tests, also as to the quality of the steel. Defects due to wheel pressures, to the impairment of the elastic limit of the steel in the cold straightening of rails, to the heating of the surface of the rail by the slipping of driving wheels, and to the presence of longitudinal streaks in rails, the lines of fracture often following these streaks. It was noted that Dr. Henry Fay, who collaborated in the tests, recognized the presence of manganese sulphide in these streaks. Illustrations of the occurrence of the streaks were given in Mr. Howard's paper before the ninth annual meeting of the American Railway Engineering and Maintenance of Way Association at Chicago, March 19, 1908, and were reproduced in *The Iron Age* of March 26, p. 1000.

**Manganese Sulphide as a Cause of Rail Failure.**

Dr. Henry Fay, Massachusetts Institute of Technology, presented in an elaborate paper, "A Microscopic Investigation of Broken Steel Rails: Manganese Sulphide as a Source of Danger."

The first piece examined was a small section broken out of the foot of a rail and having a good-sized check. The metal was cut through just beyond the check and polished to a mirror surface. The surface was pitted badly on a line with the check, and under the microscope manganese sulphide was shown where the pitting had taken place. The appearance of pitting from slag is usually quite different. Examinations were then made of a number of rails which had broken in the foot in the crescent form. Near the top surface of the fractured piece the metal in nearly every case showed a thin layer of more brittle material, and in many cases fine checks extending in the direction of rolling. In each polished specimen manganese sulphide was found in considerable quantities, either alone or accompanied by ferrite. Tests were made demonstrating the brittleness of the manganese sulphide, also that it was cemented but weakly to the steel in which it was embedded. Other fractures besides crescent breaks were also found to be connected with manganese sulphide. The form in which the sulphide exists determines whether it is harmful. If the metal has been forged the sulphide will appear in small spherical masses. If there has been rolling, begun at high temperatures, the sulphide areas will be elongated, as in the crescent breaks.

Le Chatelier has stated that as sulphide of manganese often appears crystallized it has a higher freezing point than any other of the constituents. This has been granted by some experimenters and questioned by others. The author detailed an experiment by which he had determined the freezing point of manganese sulphide to be 1162 deg., refuting Le Chatelier's claim, and explaining the elongated masses of the sulphide. If rolling begins at any temperature above 1162 deg. the manganese sulphide will still be liquid from the temperature at which rolling began down to 1162 deg., and below this temperature being in a plastic condition it is elongated in the direction of rolling. It appears in elongated threads where rolling pressure is exerted on three sides. An examination of flat bars will be made to see if it appears, as is to be expected, in flattened, elongated masses where the rolling pressure is on but two sides.

Specifications should be so drawn as to limit the amount of sulphur in the steel. Then the metal should be allowed to stand longer after the ferro-manganese addition. With specific gravity of manganese sulphide 3.966 and of steel 6.82 the former should rise to the surface and be skimmed off with the slag if given sufficient time. Usually the interval between the ferro addition and pouring is very short. But if a low sulphur ore is not available to start with, or if a sufficient time cannot be given for the removal of manganese sulphide, a resort must be had to electric refining of the molten metal by means of a basic slag.

**Failures from Split Heads.**

M. H. Wickhorst, engineer of tests of the Chicago, Burlington & Quincy Railroad, Aurora, Ill., read a paper on "Rail Failures—Mashed and Split Heads." He presented a characteristic example in an etched section of a 100-lb. rail. The investigation and conclusions are in substance as follows:

A rail about to fail in this way first shows its weakness in a dark streak along the head, several feet to several yards long. The head starts to sag down on one side or both and spreads somewhat. The rail shown was the top rail of the ingot. Analysis disclosed considerable segregation of carbon, phosphorus and sulphur. Longitudinal and transverse test pieces were taken from the middle of the head and just below. The former showed good tensile strength, while elongation and reduction in area were very low. The transverse tests showed low tensile strength and no elongation. Because of segregation, the metal is unable to withstand the internal tensile stress, the load coming on the head more or less to one side on account of the wear of the tread of the wheel or the canting of the rail. A crack develops internally and increases until it breaks through on the under side of the head where it joins the web. The speaker considered it probable that the great majority of failures called pipes by trackmen are really split heads, occurring as he had described.

**General Discussion.**

After the paper of E. F. Kenney, Cambria Steel Company, Johnstown, Pa., of which a large part is printed on another page, had been read, the question of rail failures was thrown open for general discussion. Wm. R. Webster referred to the elaborate programme of investigation which had been blocked out, including rail steel in all forms from the ingot to the finished rail.

The statement was made that the planes of cleavage formed in the rolling of rails are at right angles to the direction of pressure and that they exist independently of manganese sulphide. It was added that they constitute a strong argument for a deeper head. Mr. Fay remarked in this connection that the point to be emphasized relative to manganese sulphide is that when it is found a crack may be predicted; it does not explain all characters of breaks, however.

J. P. Snow, bridge engineer of the Boston & Maine Railroad, enlarged upon the data relative to rolling flaws which he brought to the attention of the Maintenance of Way Association at its Chicago meeting in March. A synopsis was given in *The Iron Age* of March 26, page 1001. Mr. Snow showed specimens taken from rails which had failed in track, and illustrated the different kinds of flaws. One he attributed to a gas seam; another was an example of what he called a rolling flaw. The bulk of the flaws which he had investigated in the past year he assigned to the latter class. On the Boston & Maine Road crescent shaped breaks in the base of the rail are more frequent than other forms of failure, while on other roads with heavier traffic split heads are the most numerous class.

**Leaves from the Early Bessemer Book.**

Capt. R. W. Hunt said he was gratified to find that some of the things he and others had been harping on for years are at last being recognized by the present generation. It has long been known that sounder ingots could be made by pouring through smaller nozzles; also that ingots of smaller section and of less length will result in a better finished product than that from large and long ingots; and further, that time should be given for the necessary chemical reactions after recarburizing in the Bessemer process. The speaker cited some of the precautions taken in the earlier days to secure sound steel, such as putting blooms under the hammer and chipping out defects by hand. He referred to an incident in his experience at Johnstown, Pa., when associated with John E. Fry and Capt. Wm. R. Jones, which might be considered the genesis of the Gjers soaking pit and the Hainsworth furnace. An important consideration is the allowance of sufficient time after the ingot has been placed in the vertical position in the pit furnace before it is put in horizontal position on the rolling mill table. A number of improvements in the practice of prominent rail mills have recently come under the speaker's observation. At one plant ingots are being cast of a length that makes but three rails. The taper of ingots has been reduced at this plant, and they are being cast through a smaller nozzle, while more time is allowed to elapse before taking the ingots out of the vertical position. In one case the percentage of seconds has been divided by two, and at another plant by four. The introduction of

the dry blast has also given good results as applied to the Bessemer converter.

C. E. Stafford referred to experience with rail steel some years ago at the Pennsylvania Steel Works. It was found that usually the greatest number of seconds were produced near the changes of turn, the trouble being particularly noticeable in the blooming mill. The tendency was to put too much reduction on the ingot in the first passes. The production of seconds he regarded as not due altogether to the quality of steel, but to the treatment it received in the roughing and finishing passes of the rail mill. He believed that as a result of recent investigation there would be a return to some of the methods formerly in use which had been abandoned under the pressure for tonnage.

**Changes in Specifications Adopted.**

Following the discussion, the recommendations of the Rail Committee were taken up and adopted, as referred to in the early portion of this report. The change in the percentage of seconds was objected to by P. E. Carhart, who held that as this was purely a commercial question it should be left to agreement between the mill and the buyer. In answer it was pointed out that the new provision practically does this in specifying that No. 2 rails shall be accepted to at least 5 per cent. of the whole order, so that the prevailing arrangement of 10 per cent. seconds, or any other, can be adopted if desired.

## PRESERVATIVE COATINGS.

The sessions of Thursday were devoted to cement and concrete, the programme including reports from Committee C on Standard Specifications for Cement and Committee I on Reinforced Concrete, in addition to a number of interesting papers. The seventh session, that of Friday morning, was introduced by S. S. Voorhees, chairman, who read the report of Committee C on Preservative Coatings. Details were given of progress in the past year in continuation of the service test on the Pennsylvania Railroad bridge over the Susquehanna River at Havre de Grace. The analysis of the 57 paints applied to the 19 sections of this bridge has been completed. The method followed in these analyses was detailed in a paper following Mr. Voorhees' report, read by J. F. Walker, chemist. Concerning the various paints on the Havre de Grace bridge the report said that in general they are affording good protection, and it will require longer exposure to differentiate in the majority of cases. The only example of an asphaltum coating thinned with a petroleum volatile solvent has failed to a marked degree after 18 months' exposure. A carbon paint containing rosin in the oil has developed minute fissure cracks all over the surface. It is also noted that one of the pure red lead pigments in straight linseed oil shows unmistakable evidence of alligatoring. The report referred also to the big fence which the paint manufacturers have erected in North Dakota for the testing of paint and to additional tests which have been arranged for at Atlantic City and Pittsburgh.

A. S. Cushman referred to the vogue which chrome pigments had had in the past year, following the publication of the results obtained by using zinc chromate as an inhibitor of corrosion. As some of the chrome pigments inhibit while others stimulate electrolytic action, the speaker urged that some caution in this direction is advisable.

G. W. Thompson, New York, read a paper on "Certain Solubility Tests on Protective Coatings." He took the view that the protective coating which gives the lowest per cent. of soluble matter is to be preferred.

The topic, "Will Pure Paint Legislation Give Us Better Paints?" was discussed by a number of representatives of manufacturing interests, including C. D. Rinald, J. B. Heckel and J. Dewar. Little was added by these addresses to the sum of knowledge concerning protective coatings, and the injection of purely commercial considerations into the proceedings of the society was met with some protests. The aim of the speakers seemed to be to put in as unfavorable a light as possible the efforts of those who have been instrumental in getting the so-called "pure paint" legislation on the statute books of several States.

One point of interest was brought out at the end of the morning's discussion—namely, that in some paint tests conducted by the Philadelphia & Reading Railroad the cheapest paint proved to be the best covering. It was stated that this contained 58 per cent. of calcium sulphate and 23 per cent. sesquioxide of iron. Another incident of the discussion was the protest of L. S. Hughes, Joplin, Mo., against accepting as representative of conditions in actual service, the laboratory tests made by Dr. Cushman and offered by him in support of the electrolytic theory of corrosion.

## TESTING AND TESTING MACHINES.

T. D. Lynch, Westinghouse Electric & Mfg. Company, East Pittsburgh, Pa., in connection with a paper on the "Use of the Extensometer in Commercial Work," gave plotted results of experiments with various kinds of steel under three conditions: 1. As they came from the mill; 2. After oil tempering and annealing; and 3. After oil tempering without annealing. The curves represented the relation between yield point and elastic limit. One deduction from the experiments was that the real elastic limit is farther from the tensile strength that is commonly regarded. Commenting on the paper, J. J. Shuman of the Jones & Laughlin Steel Company, Pittsburgh, suggested that it is unfair, in view of the results shown, to make specifications providing that the elastic limit shall be at least 50 per cent. of the tensile strength. He hoped the society would discourage specifications with such a proviso. Dr. Dudley added that a safe stress in any metal is a hard thing to arrive at apart from a consideration of the conditions under which it will be used.

T. Y. Olsen, Philadelphia, followed with a description of a 600,000-lb. universal testing machine, three of this type having been installed—one at the structural testing laboratory at St. Louis, a second in the engineering department of the University of Pennsylvania, and a third at Rensselaer Polytechnic Institute, Troy, N. Y. He also described a new form of pendulum testing machine, made by the same company.

There were also presented at this session the report of Committee G, on the "Magnetic Testing of Iron and Steel," J. W. Esterline, chairman; also papers on "An Autographic Recorder for Commercial Tension Tests," by H. F. Moore, and "Uniformity in Magnetic Testing and in the Specifications of Magnetic Properties," by C. W. Burrows.

**More Stringent Specifications for Boiler Steel.**

Col. E. D. Meier, chairman of Committee R, on Uniform Specifications for Boilers, read its report, which found a text in the regulations adopted by the Board of Boiler Rules in Massachusetts, published March 24, 1908. Though drastic in some of the requirements they put upon boiler works, these rules, the committee believe, will in time be adopted by other States. The specifications for boiler steel are those of the American Society for Testing Materials. The committee considered that this put a fresh responsibility upon the society and called for improvement in these specifications. It recommended a change in the chemical properties prescribed. These are now for phosphorus as follows: Flange or boiler steel, 0.06 per cent. for acid and 0.04 per cent. for basic; for firebox steel, 0.04 per cent. for acid and 0.03 per cent. for basic; for extra soft steel, 0.04 per cent. for both. The sulphur limits for the three kinds of steel are 0.05, 0.04 and 0.04 per cent. respectively. The committee favored making the requirements for acid steel the same as for basic and for extra soft steel the same as for firebox. This would give 0.04 and 0.03 and 0.03 per cent. respectively for the three qualities of steel. At present the sulphur limits are 0.05, 0.04 and 0.04 per cent. respectively. The committee favored a reduction to 0.03 per cent., saying that in the chairman's experience a boiler steel containing more than 0.03 per cent. sulphur cannot safely be employed. The American Boiler Manufacturers' Association specification providing 0.04, 0.035 and 0.035 per cent. sulphur, respectively, was a compromise with the manufacturers, 0.03 per cent. having governed from 1889 to 1905. The committee took the position that if steel makers can meet the necessities of the automobile builder by furnishing axles and braces

of 120,000 lb. tensile strength, they can rise to the demand of the vastly more extensive steam boiler industry. Lack of uniformity in plates and tubes, it was stated, is being met with at a time when crystallization is developing quite rapidly at the higher pressures demanded by modern steam practice. It is deemed of utmost importance, the report said in conclusion, that the society's specifications for boiler steel be revised in accordance with the suggestions made above. The recommendation was referred to Committee A, on Standard Specifications for Iron and Steel. One member's comment on the report was that in view of the practical exhaustion of natural gas and the nearly complete dependence on producer gas, steel under 0.03 in sulphur is much more difficult to secure.

### THE FINAL SESSION.

For the ninth session of the meeting, that of Saturday morning, a miscellaneous programme of papers and reports was scheduled. R. L. Humphrey reported on the work done in sand and cement testing in the past year at the structural materials testing laboratory of the United States Geological Survey, at St. Louis. A paper on "Manganese Bronze" was presented by C. R. Spare, also papers on the "Desirability of Standard Specifications for Hard Drawn Copper Wire," by J. A. Capp and W. H. Bassett, and on the "Effect of Combined Stresses on the Elastic Properties of Steel," by E. L. Hancock.

On Friday evening an informal dinner was given at the Hotel Traymore, attended by about 75 members. Willard Smith was toastmaster, and responses were made by Chas. B. Dudley, R. W. Lesley, F. P. Cheesman, R. W. Hunt, and G. W. Thompson.

The registration reached 280, the largest on record. The plan of having the sessions extend over five days, avoiding simultaneous sessions of different sections, and giving intervals for recreation, also bringing sessions on kindred subjects within a space of two days, so that attendance throughout the entire meeting is not necessary, seemed to work well, and will probably be continued at other meetings.

## The Iron and Steel Electrical Engineers.

The Association of Iron and Steel Electrical Engineers, which was formed last year in Pittsburgh, Pa., and which comprises as its members the electrical engineers in charge of the electric installations in the large iron and steel producing plants, held its first annual convention at the Engineers' Club, Philadelphia, Pa., June 24 to 26. The convention was well attended. It was called to order on Wednesday morning by the president, James Farrington, who made a brief address of welcome.

The meetings on the first day of the convention were of an executive nature. The Executive Committee presented its report, which included recommendations for increase in its membership and the publication of a year book, which, as the official organ of the association, would print the papers presented and their discussion. The secretary and treasurer presented their annual reports. The question of the standardization of mill motors was discussed at length at the morning session, and efforts will be made to have all the members approve certain types of motors, which would then be made and carried in stock by the principal manufacturers of motors and electrical equipment.

A report was presented by G. H. Winslow, Pittsburgh, on the "Operation of the Stoeckel Induction Drive," while the subject of "Electric Drilling and Reaming" was discussed by F. W. Stevens, Ambridge, Pa. George W. Richardson, Philadelphia, Pa., presented a paper on "Electric Motors for Heavy Torque and Rapid Reversal." At the afternoon session A. P. Stoeckel, Wheeling Mold & Foundry Company, Wheeling, W. Va., presented a paper on "The Induction Drive," demonstrating his subject by means of a working model showing the operation of the rolls and clutches. E. W. Yearsley, Philadelphia, followed with a paper on "Electric Motor Drives."

Open sessions of the association were held on Thursday. After the transaction of routine business, H. D. James of the Westinghouse Electric & Mfg. Company, Pittsburgh, presented a paper on "Control of Motor Operated Auxiliary Apparatus for Steel Mills," and B. Wiley of the same company presented a paper on "Electrical Equipment of Rolling Mills." The Cutler-Hammer Company, represented by C. T. Henderson, exhibited and described by papers its new resistance grid interlocking systems and controlling apparatus at Gary. The association then adjourned to the Hotel Walton, where the members lunched as the guests of the Crocker-Wheeler Company.

At the afternoon session a paper on "Combination Manual and Magnetic Switch Controllers" was presented by H. F. Stratton, Electric Controller & Supply Company. R. C. Hill, Electric Storage Battery Company, Philadelphia, presented papers on "The Storage Battery in Steel Mills" and "Storage Battery Regulations of Alternating Current Circuits."

The General Electric Company offered papers on "Mill Motors," "Rolling Mill Apparatus," "The Interchangeability of A. C. and D. C. Motors" and "Lightning Arresters." The Crocker-Wheeler Company presented papers on "Standard Rolling Mill Motors." The papers of both the foregoing companies were illustrated by means of lantern slides. The closing paper of the session was by C. J. Toerring, on "The Flame Arc Lamp." After a general discussion of topics of interest the convention, as far as meetings were concerned, came to a close. No official business was transacted, the object of the meeting being to bring about a closer relationship between the members and to co-operate with the manufacturers of electrical equipment for mill service, with a view of eliminating unsatisfactory types and adopting in the future standard types of the various equipment. The annual session for the election of officers and transacting the business of the association will be held in October. On Thursday evening the association was the guest of the Westinghouse Electric Mfg. Company, which entertained the members with a trip to Willow Grove Park, while Friday was given to visits to plants, which included those of the American Bridge Company, Pencoyd; Electric Storage Battery Company, Philadelphia, and New York Shipbuilding Company, Camden, N. J. The principal officers of the association are as follows: President, James Farrington, La Belle Iron Works, Steubenville, Ohio; vice-presidents, John C. Reed, Pennsylvania Steel Company, Steelton, Pa., and G. M. Sturgess, Lackawanna Steel Company, Buffalo, N. Y.; secretary, G. H. Winslow, National Tube Company, Pittsburgh, Pa.; treasurer, E. W. Yearsley, Midvale Steel Company, Nicetown, Philadelphia.

## A Deep Artesian Well in South Dakota.

For many months a big well-drilling machine had been boring into the dry ground of the Black Hills region of South Dakota alongside the track of the Burlington Railroad at Edgemont. Down went the drill, until the native onlookers wondered whether the railroad company had fixed no limit to the bore, and was simply "going it blind," indefinitely. The company's intention was very definite, indeed. Its officials had been informed by a geologist of the United States Geological Survey that a good supply of water would be found in a certain stratum of rock that lay at a depth of about 3000 ft. This geologist had made a study of the surface outcrops of the rocks of the region, and had based his prediction on that study. And, having faith in the prophesy, the company determined to drill to that depth. It was not necessary, however, to bore quite to the depth of 3000 ft., for when the drill had gone down 2980 ft. water gushed out at the rate of 350 gal. a minute, and the faith reposed in the judgment of the geologist was justified. This water supply fills a need which is so urgent that if anything should happen to destroy this well the railroad company would not hesitate to bore its counterpart.

It is computed that the appraised value of foreign goods entered at New York in the year ending June 30 amounted to $714,170,714, compared with $852,050,780 for the fiscal year ending June 30, 1907. A heavy falling off is noted in the entry of precious stones and automobiles.

## The Barnes 12-22 In. Gap Lathe.

A lathe particularly designed for automobile garage and general repair shops where there are frequent jobs requiring more swing or greater distance between centers than can be obtained on the ordinary small lathe is a new product of the Barnes Drill Company, Rockford, Ill. The lathe as illustrated herewith is known as a 12 and 22 in. sliding extension gap engine lathe, and is equipped with a sliding top bed, by the movement of which a gap may be formed of whatever width may be needed to suit the requirements of the work. This same movement not only increases the swing of the lathe, but also the distance between centers. Fig. 1 shows the machine and the equipment which is furnished with it, and in the condition as here shown the lathe is one of 22-in. swing, suitable for large work. It has no removable section, which has to be inserted in the ordinary stationary gap lathe. Fig. 2 shows a detail of the lathe when the gap is closed. In place of the countershaft power drive, foot-power drive can be furnished when required.

The bed is described as very broad and deep and well braced, and accurately proportioned throughout. The top and main beds are fitted together by a dove tail construction which permits the top bed to be held firmly at any position by clamp bolts transversely placed through the main bed. To extend the gap the top bed is drawn back by the screw and crank at the rear end. The carriage rack and pinions are cut from steel, the rack is in one piece.

The headstock is heavy and strong and carries a hollow spindle, which runs in large bronze bearings. The cone pulley has four steps for a 2-in. belt and is back geared, giving eight changes of speed. A push pin on the head gear allows the cone to be instantly locked or unlocked without need of a wrench. The tailstock is of the off-set type, allowing the compound rest to be set parallel with the bed, and has a set-over adjustment for taper work.

The carriage is extended in front and is unusually strong, to provide a firm support to the turning tool when doing work in the gap up to the limit of the swing. The carriage is fitted to the bed with a long bearing on the V front and a flat bearing in the rear. It is gibbed and can be conveniently and quickly clamped to the bed for cross feed work. The carriage is also fitted with T slots for clamping on work. The compound rest has a graduated base and is gibbed and has sufficient travel for the largest capacity of the lathe. Power feeds both longitudinal and cross are provided, and the necessary change gears are furnished for cutting, either right or left hand,

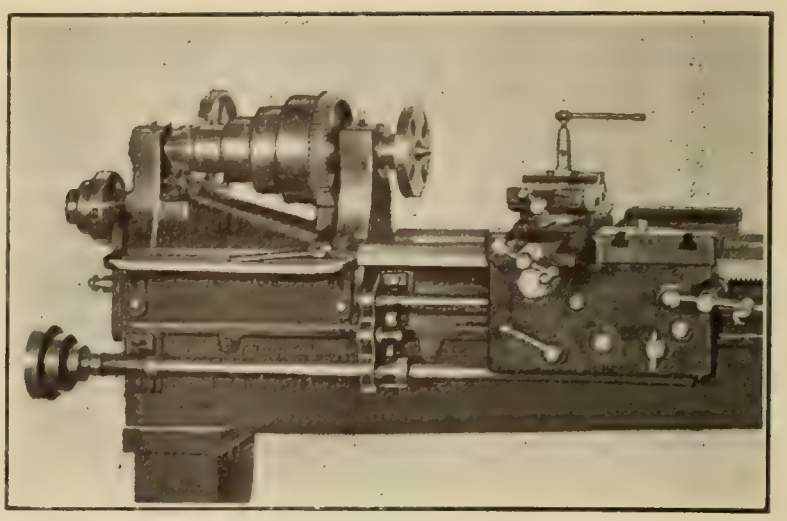


Fig. 2.—Detail of the Barnes Gap Lathe, Showing the Gap Closed.

all threads from 2 to 18, including 11½ pipe threads, and by twos from 18 to 36, and by fours from 36 to 48 threads per inch. The actual swing over the bed is 13 in., and over the carriage 8½ in., and through the gap 22½ in. The ratio of the back gearing is 8 to 1. The center rest will admit a 4 in. diameter piece of work. The lathe when built in 5½-ft. bed length takes between centers when the extension bed is closed 36 in., and with the bed extended 54 in., the gap opening 18 in. The net weight of the machine, including the countershaft, is 1155 lb.

The diversity of views concerning business prospects is illustrated in the following: J. P. Morgan considers that business conditions have greatly improved and will continue to improve. President Mellen of the New Haven road refers to June as little better than May, which he calls the worst month since the panic. He finds no indications of a return to sustained activity. Alfred Blenzig, a Deutscher bank manager, who has recently traveled in this country, believes recovery from the panic will be slower than is generally expected.

W. C. Brown, senior vice-president of the New York Central Lines, who has spent five weeks studying crop conditions in the West and Northwest, says that in the 40 years he has visited those sections he has not seen the general average as good as it is now. He reports the Western railroads in good shape and not needing work on their roadbeds. All have postponed replacement of rails as much as possible, and, in Mr. Brown's opinion, the rail purchases of 1908 are practically over.

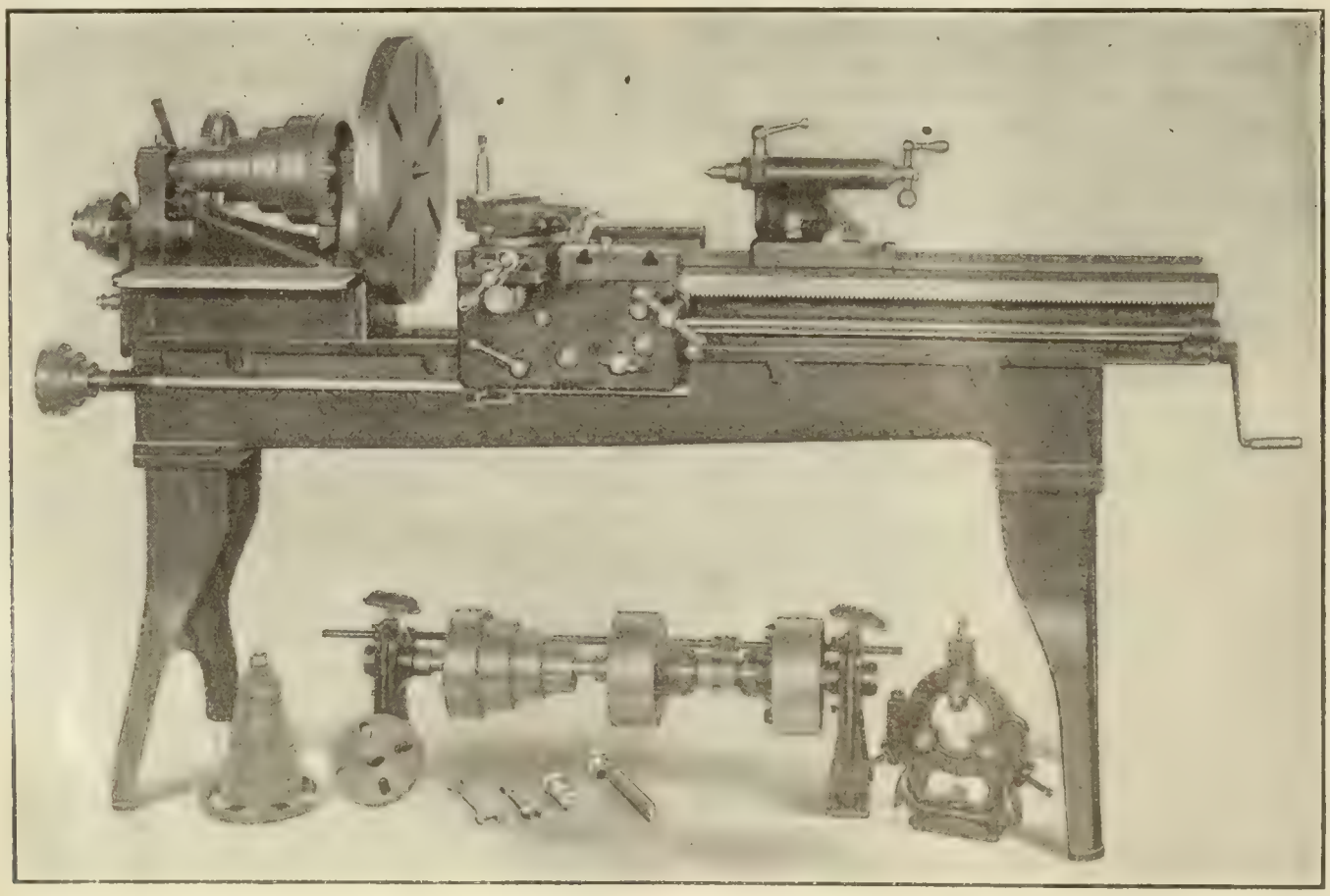


Fig. 1.—The 12-22 In. Gap Lathe Built by the Barnes Drill Company, Rockford, Ill., Showing the Gap Open.

## No. 12 Gardner's Improved Disk Grinder.

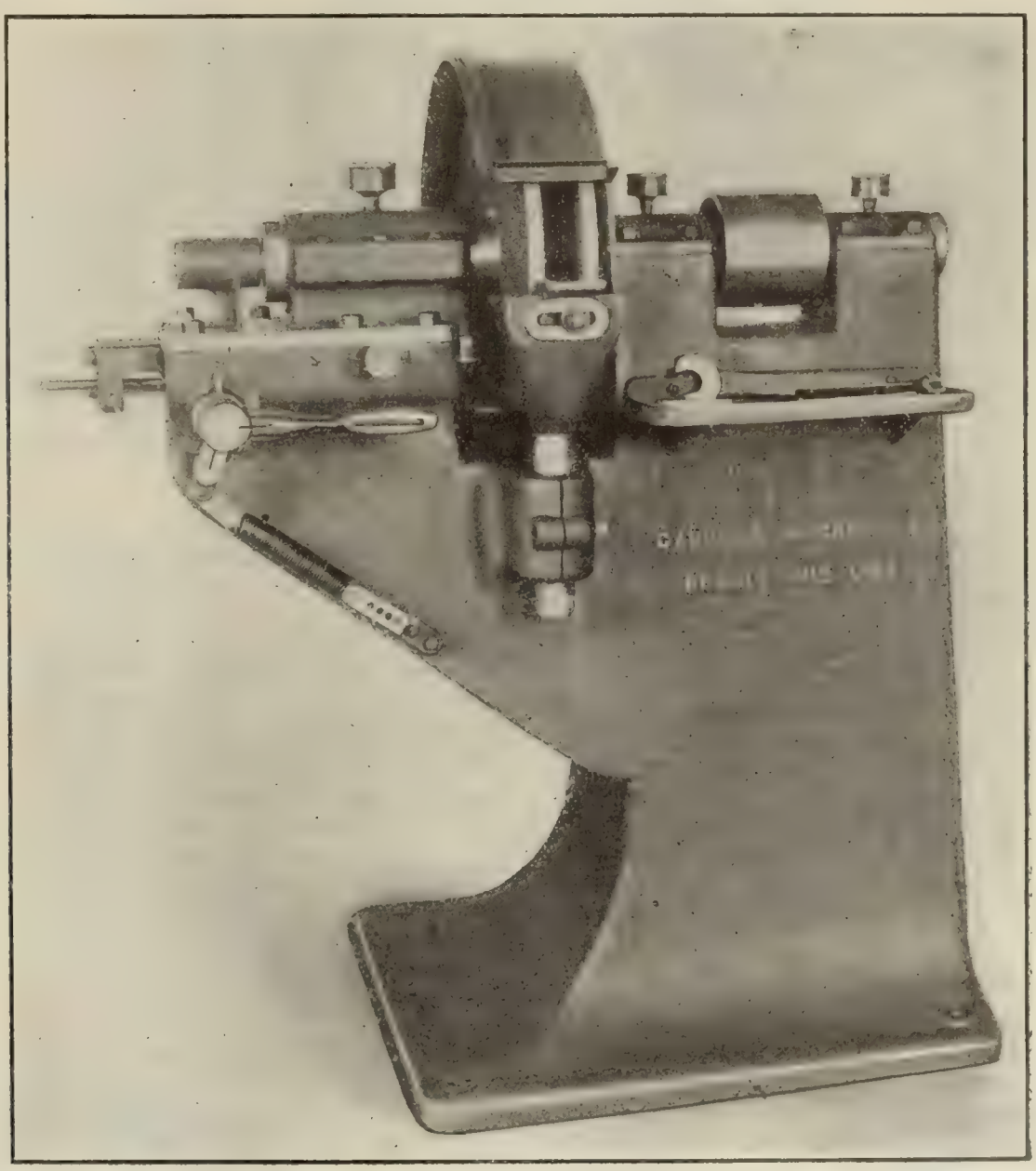
The accompanying illustration shows a departure in disk grinder construction. This machine which is built by the Gardner Machine Company, Beloit, Wis., is designed for rapid grinding of small pieces having parallel faces to be finished, such as bolt heads, square or hexagon nuts, wrenches, thrust collars, die blanks, reamer blades and thread die chasers, also typewriter, sewing machine, firearm parts, &c. Its modified design was occasioned by the frequent need of a smaller double head disk grinder than the No. 14 grinder built by this company, and described in *The Iron Age* January 2, 1908. Patents are now pending covering the new machine.

The principal feature of the No. 12 machine is its one belt drive. The left-hand disk wheel is mounted on a hollow spindle supported in the sliding head. A driving shaft coupled to the spindle carrying the right-hand disk wheel and driving pulley, drives the hollow spindle carrying the left-hand disk wheel. The driving shaft is splined to engage a key fastened in the hollow spindle, and is provided with dust proof collars to exclude dust from the hollow spindle.

To remove the disk wheels from the machine it is only necessary to uncouple the driving shaft of the left-hand head from the main spindle of the machine. The end of the driving shaft is made with a left-hand thread and taper seat, and the main spindle of the machine is bored and threaded to fit it. The sliding head may be removed and special work table or fixtures used in connection with a single wheel. The disk wheels are fastened to the spindles by the usual countersunk screws.

The sliding head is operated by a hand lever, which is directly connected to a steel cut pinion operating in a steel cut rack fastened to the under side of the sliding head. The sliding head is equipped with micrometer stop screws and back stop. The back stop is important in double disk grinding, especially where thin work of from ⅛ down to 1-32 in. in thickness is being ground. By means of this back stop the backward travel of the sliding head is confined to the least required to admit the piece to be ground between the wheels, and thus removes the liability of the work being caught between the wheels and the work rest.

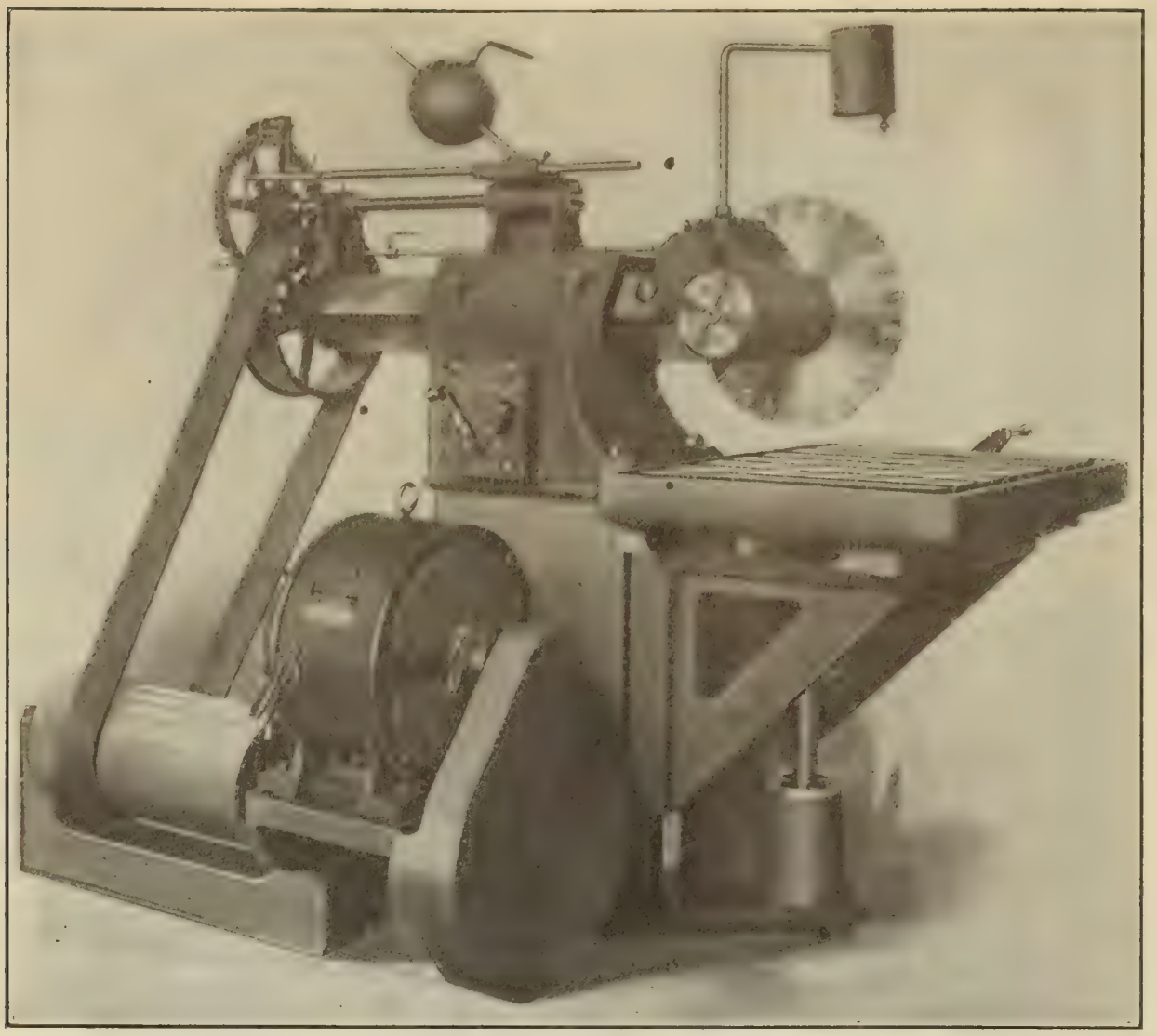
The machine throughout is rigidly constructed, and lubrication and the exclusion of dust from all wearing surfaces carefully provided for. Disk wheels of either 15 or 18 in. diameter may be used. The maximum distance between wheels is 4¼ in., which in a great majority of cases is ample. This space may be increased to suit special cases. The weight of the machine as illustrated is 1050 lb. With all accessories, including setting up press for wheels, countershaft, supplies, &c., crated for domestic shipment the weight is 1800 lb.



The No. 12 Disk Grinder Built by the Gardner Machine Company, Beloit, Wis.

**The Remington Typewriter Bonus.**—The eleventh half-yearly bonus distribution to the employees of the Remington Typewriter Works, Ilion, N. Y., took place June 30. The sum of $14,000 in gold was distributed among 280 employees selected for diligence and efficiency during the past six months, and whose periods of continuous service at these works ranged from 10 to 35 years. Including this sum, $145,000 in all, has now been distributed under the bonus scheme. The prizes and certificates for good suggestions adopted during the half year were awarded at the same time.

Alexander Agassiz, president of the Calumet & Hecla Mining Company, testified last week in a suit at Boston, brought to restrain control of the Osceola Company by the Calumet & Hecla, that the life of the latter's mine on the Michigan conglomerate may be put at 12 to 15 years. It is hoped, he said, to develop sufficient copper on the properties purchased recently to make up for the diminution of the old mine. The machinery of the Calumet & Hecla he estimated at $10,000,000, besides several million dollars in buildings and other surface property.



The Latest Wagner Cold Saw Built by the Birdsboro Steel Foundry & Machine Company and Equipped with a Westinghouse Driving Motor.

## The Wagner Cold Saw.

The accompanying illustration shows a Wagner cold saw, manufactured by the Birdsboro Steel Foundry & Machine Company, Birdsboro, Pa., equipped with a Westinghouse type S direct current semienclosed constant speed motor. The cross feed of the work table, in connection with the vertical movement, enables the work to be brought up to the saw without blocking, except enough to level the casting. This saw is especially designed for small work, such as cutting off sink heads. It may also be used for cutting miters or bevels, as the head may be turned through any angle desired. Where the hardness of the material to be cut varies considerably the peripheral speed of the saw can be varied, if a variable speed motor is used for the drive. A heavier type of cold saw manufactured by this company is built in several sizes up to a 50-in. saw, capable of cutting through a 16-in. bar. These saws are supplied with motor drive through a chain or belt or direct gearing.

## The Stockbridge Shaper Main Bearing Construction.

The manner in which the driving mechanism of the shapers built by the Stockbridge Machine Company, Worcester, Mass., is supported is shown in the accompanying engravings. The construction is different from that usual in the driving gear and crank; with the ordinary construction the gear is held from the central hub entirely. On large shapers, when out on their full stroke, the strain put upon this hub tends to buckle the gear and often breaks the gear at the hub. Buckle in the gear pro-

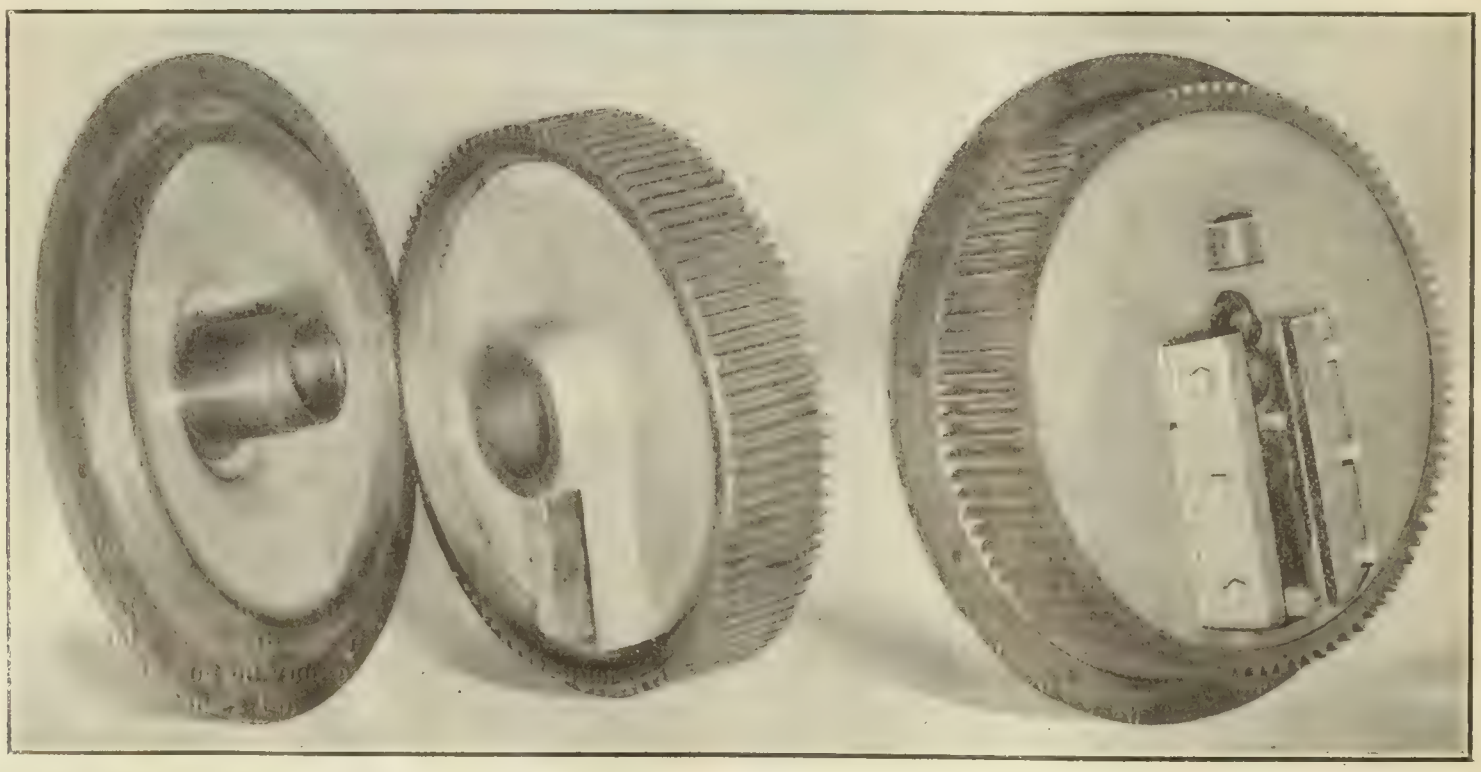


Fig. 1.—The Gear and Main Bearing.

Fig. 2.—The Parts Assembled.

Main Bearing Construction Used on the Stockbridge Shapers.

duces unevenness in the stroke of the ram, which results in chatter marks on the work.

Patents have been applied for on the construction illustrated. Fig. 1 shows the gear and main bearing. The latter has a flange which is turned to a running fit in the overhang on the periphery of the gear. The flange bottoms on the gear casting and makes a support for the gear, relieving the central hub from strain, preventing possibility of buckle in the gear, and insuring a smooth and even cut regardless of the length of the ram stroke. This construction adds considerably to the stiffness of the driving mechanism and makes it possible to take a much heavier cut than if the gear were not supported in this way. Fig. 2 shows the parts assembled. When the main bearing is bolted to the column this becomes an integral part of the shaper.

## Poor's Manual for 1908.

Poor's *Manual* for 1908 (forty-first annual number) is issued. Although the work appears some two months earlier than last year and five months earlier than in 1906, yet it is as complete as ever, covering the 1907 fiscal and calendar years, and containing information concerning the more important companies up to June 10, 1908.

An important feature of this edition is an enlarged industrial section embracing every prominent corporation in the United States from which a report could be obtained. Information is strictly up to date, and in the case of the larger companies includes elaborate tables showing income accounts and balance sheets in comparative form for a series of years. In general treatment the industrial section compares favorably with the railroad section.

The total mileage of the steam railroads of the United States December 31, 1907, was 228,128 miles, as against 222,766 miles December 31, 1906, showing an increase of 5362 miles.

The total capital liabilities of the railroads, including stock, bonds and other indebtedness, was $16,501,413,069, showing an increase of $907,864,112. Of this increase $351,717,809 is represented by stock, and the balance by bonds and other forms of indebtedness.

The following table shows the income account of American railroads for the year 1907 as compared with 1906:

| | 1907. | 1906. |
|---|---|---|
| Miles of railroad operated | 225,227.23 | 220,633.33 |
| Passenger earnings | $574,718,578 | $521,231,337 |
| Freight earnings | 1,825,061,858 | 1,659,925,643 |
| Other earnings | 202,977,067 | 165,483,306 |
| Total gross earnings | $2,602,757,503 | $2,346,640,286 |
| Operating expenses | 1,769,417,903 | 1,556,452,574 |
| Net earnings | $833,339,600 | $790,187,712 |
| Other receipts | 128,015,081 | 100,292,369 |
| Total net income | $961,354,681 | $890,480,081 |
| Taxes | $74,253,245 | $68,169,833 |
| Interest on bonds | 280,931,001 | 269,926,395 |
| Other interest | 23,759,329 | 13,107,169 |
| Dividends on stock | 247,258,219 | 225,601,245 |
| Miscellaneous | 75,176,725 | 79,806,024 |
| Rentals—Interest | 38,188,406 | 39,612,179 |
| Dividends | 31,087,374 | 27,739,680 |
| Miscellaneous | 18,127,456 | 15,042,783 |
| Total payments | $788,781,755 | $739,005,308 |
| Surplus | $172,572,926 | $151,474,773 |

Interesting traffic statistics are as follows:

| | 1907. | 1906. |
|---|---|---|
| Passengers carried | 885,724,314 | 815,774,118 |
| Passenger mileage | 28,370,247,819 | 25,842,462,029 |
| Revenue per passenger mile | 2.040 cents. | 2.011 cents. |
| Tons freight moved | 1,722,210,281 | 1,610,099,829 |
| Freight mileage | 233,137,507,807 | 216,653,795,696 |
| Revenue per ton-mile | 0.782 cent. | 0.766 cent. |

The Wellman-Seaver-Morgan Engineering Company, Cleveland, reports much improvement in inquiries for ore and coal handling machinery, both from Western mines and from Pennsylvania coal mines. Inquiries are coming from large concerns that have been purchasing no equipment for several months past, and the company expects soon to begin work on some good orders.

## Railroads Require Better Packing.

By reason of the losses which have been suffered by both railroads and shippers, because of improper and insecure packing of freight, the 416 lines of the Official Classification territory have decided, beginning July 1, to require the use of more secure boxes.

At the present time, Official Classification Rule 2 (B) stipulates that "Property packed in boxes or cases made from strawboard, leather board, wood pulp, fiber, wired splintwood, or other analogous material, will be charged 10 per cent higher than the classification provided for such property." It is now intended to penalize by adding 20 per cent to the regular rate on all packages not packed in strong boxes coming up to requirements which are set forth with great details in the new rule covering this point.

It is believed by railroad traffic experts that the introduction of cheap substitutes for substantial wooden cases is responsible for a large number of "damages" to goods in transit which should not occur. American Consuls abroad have long protested that bad packing lost a vast amount of trade to American exporters. The abuse has become of equal seriousness in respect to domestic shipments.

The railroads regard it as impossible to prevent damage under such conditions. It is believed that the time will come, unless shippers are more careful in their packing, when the carriers will be forced to specify exactly how all commodities shall be packed, and refuse to receive them for shipment unless the rules are observed. In an address before the Traffic Club of Pittsburgh, C. E. E. Childers, joint agent of the Trunk Line Association in that city, said on the subject of proper packing of freight:

> Of what avail is it to move a shipment from origin to destination in record time if, upon its arrival, the goods are damaged or destroyed? The carrier's energies on the one hand have been devoted to quick handling of traffic, while the shippers, on the other hand, have been endeavoring in too many cases to meet the increased cost of packing by the use of cheaper and flimsier material. With all the improvements that have been made in transportation there is now actually more liability of injury to goods in transit because unreasonably light instead of reasonably strong packages are used.

The Pennsylvania Railroad, for instance, paid out last year $452,000 in claims for goods damaged en route. Other railroads have paid out amounts equally proportionate to their gross traffic. It is the opinion of railroad men that a large amount of these "damages" would never be inflicted if goods were packed with some regard to the ordinary conditions of train movement and freight handling at stations.

## The Pocahontas Collieries Suit Dismissed.

An order has been entered in the United States Circuit Court at Lynchburg, Va., dismissing at the plaintiffs' costs the suit instituted January 14 by a minoriey of the preferred stockholders of the Pocahontas Collieries Company against the Pocahontas Consolidated Collieries Company, Inc. The latter corporation was formed through a merger July 1, 1907, of a company of the same name with the Pocahontas Collieries Company, with a capitalization of $2,800,000 preferred stock and $4,520,000 common stock, and an authorized bond issue of $20,000,000. The terms of the merger provided that the preferred stockholders of the Pocahontas Collieries Company should accept in exchange for their preferred stock in the Pocahontas Collieries Company, the new bonds of the merged company. This provision in the merger not having been exercised by all the preferred stockholders of the Pocahontas Collieries Company, a suit was instituted by those who refused to make such exchange, for the purpose of securing an appraisement under the Virginia laws of their holdings, or, in the alternative, a receivership for the merged company

The surplus reserve shown in the weekly bank statement for New York City, June 27, was $66,098,800, the largest amount since 1894. The cash holdings were $396,480,200, the largest for any week in the history of the New York Clearing House.

## A New Springfield Lathe.

The accompanying illustration shows a motor driven No. 3 high power rapid reduction lathe, recently built by the Springfield Machine Tool Company, Springfield, Ohio. The lathe is neat in appearance and compact, and all gears are protected.

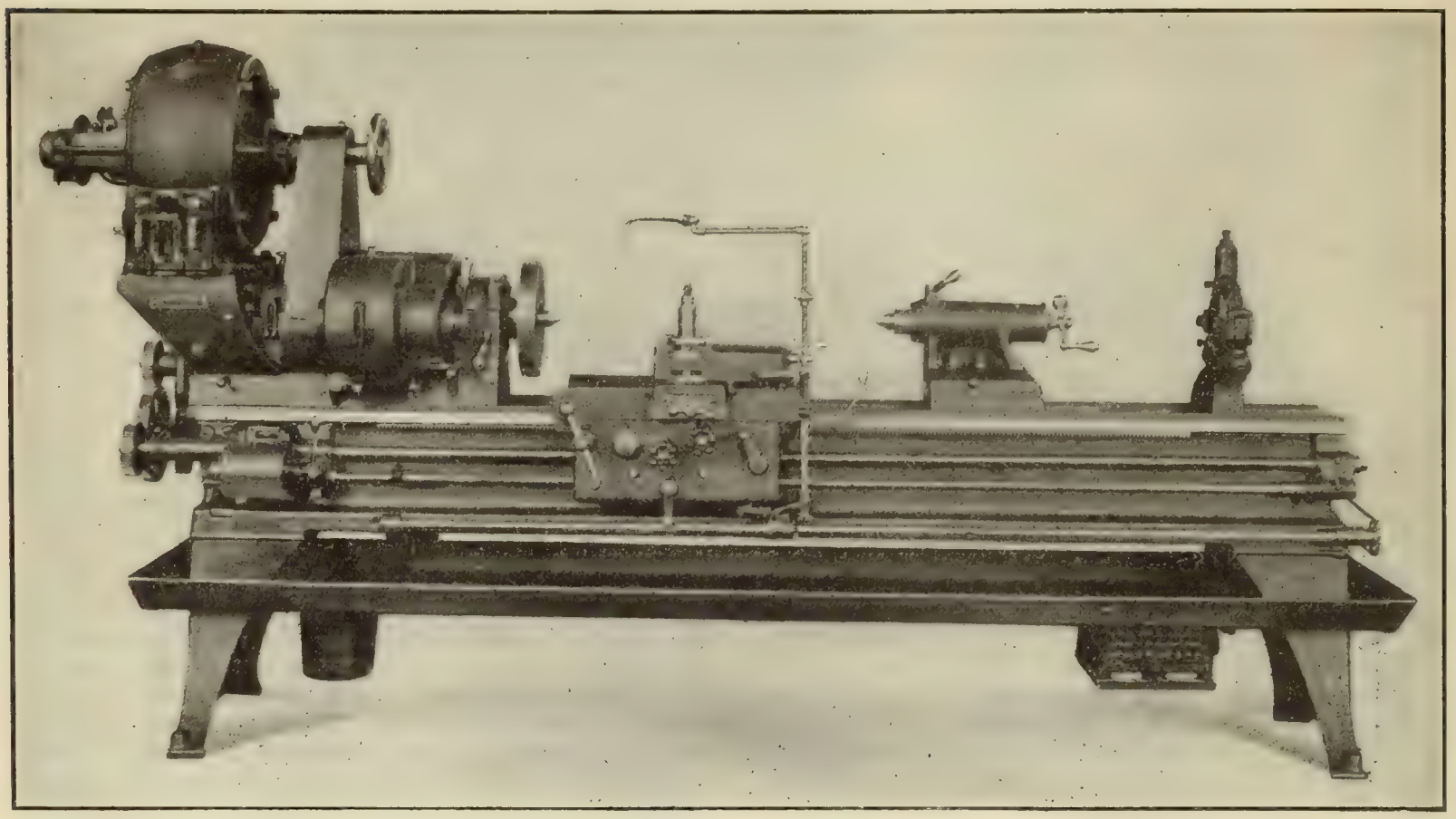
The head is heavily ribbed and tied together where strain may occur, ribs passing between the gears in the upper portion, while the lower portion is heavily ribbed, lengthwise and crosswise. The spindle is exceedingly heavy and runs in large journals of Lumen bearing metal. The journals of the spindle and back shaft are oiled by babbitt rings of triangular section, which deliver a stream of oil, and prevent heating of boxes. The gears in this machine are steel throughout, and the gears which run directly on the spindle are bushed with bronze.

The motor shown in the illustration is of 7½ hp., variable speed, from 500 to 1000 rev. per min., and transmits power to the main driving pulley on the spindle through a silent chain. The fast speeds of this machine are obtained by direct drive from the motor to the spindle. The next changes of speed are obtained through one train of gears, consisting of one set of spur and one set of spiral gears. The spiral gears give a smooth, even drive, so that a fine finishing cut may be taken without chatter marks. The next series of speeds are obtained by a double set of back gears, and with the arrangement as above mentioned all spindle speeds from 10 to 285 rev. per min. are obtainable. The clutches in the head are positive steel clutches, but are so arranged that the machine does not have to come to a dead stop before changes can be made. The same lathe, when belt driven, has 10 mechanical changes of speed, and with a two-speed countershaft is designed to give a constant cutting speed of 80 ft. per minute for all diameters from 1½ to 18½ in.

The bed is of heavy pattern, well tied together by girts, and has one V and one flat shear. The tailstock is exceptionally stiff and heavy, and has a spindle of extra large diameter to accommodate large centers. A No. 5 Morse taper socket is provided for the tail spindle, and also in the head spindle in connection with a bush.

The carriage is of recent design, in which the weight and bearing surface have been increased, making it very rigid and secure under the heaviest cuts. The compound rest is of new design, and is clamped by bolts on either side. The cross feed screw and compound rest screw have micrometer collars, while the gibs in the compound top and bottom slide are taper gibs. The apron is of the double apron type, with heavy gears throughout, and is designed to carry many times the strain it is ever called upon to withstand. The friction knobs for throwing the gears and longitudinal feeds in and out are made with a series of small beads around the outer circumference, so that the operator can readily get a good grip upon them. The rack pinion is made so that it can be withdrawn at any time, when chasing threads.

This machine, as shown in the illustration, is equipped with the New Standard change gears, which are a modification of the rapid change gear system generally in use. In addition, the lathe is equipped with a rapid feed changing box, which gives six feeds in geometrical progression. The lathe can also be equipped with the Ideal rapid change gears manufactured by the company. With either system the lathe is equipped with automatic stop and reverse; the reverse can be controlled either from the head or the apron. In use the lathe has shown remarkable power, considering that its maximum swing is 19 in.; cuts ¾ in. deep have been taken at a cutting speed of 60 ft., with a feed of 5-32 in. in 0.6 carbon steel.



The Motor Driven No. 3 High Power Rapid Reduction Lathe Built by the Springfield Machine Tool Company, Springfield, Ohio.

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The Pittsburgh Steel Company, Pittsburgh, Pa., and the Tennessee Coal, Iron & Railroad Company, Birmingham, Ala., have placed large equipment orders with the Allis-Chalmers Company, Milwaukee, Wis. These include, for the first named, a horizontal-vertical rolling mill engine of 4000 hp. capacity, and for the second a mammoth two stage air compressor capable of furnishing 5,760,000 cu. ft. of free air per day. It is of interest to note that the rolling mill engine referred to is of the same general type as those operating the Subway and Manhattan power houses of New York City, where machines of over 200,000 hp. have been installed. Similar engines are also in service at the plants of the Illinois Steel Company, National Tube Company and other large industrial works.

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The R. D. Nuttall Company, Pittsburgh, announces the establishment of a new department to be devoted exclusively to the manufacture of gears and pinions for air compressors. This company has for some time been supplying gears and pinions for all the standard makes of air compressors. It is owing to the rapidly growing demand for compressed air in a number of important industries that a special department was found necessary. The department will not only be equipped to turn out gears and pinions for the standard types of compressors upon short notice, but will also carry a complete assortment from which immediate shipment can be made.

## The Bessemer Process and the Gayley Dry Blast.

Years ago James Gayley, the inventor of the dry blast, expressed the conviction that Bessemer practice would be greatly improved by reducing the moisture in the blast to a practical minimum and securing uniformly low moisture. It was finally decided to test the subject thoroughly at the Bessemer shop of the South Chicago works of the Illinois Steel Company, in connection with the dry air plant erected at the works for a group of the blast furnaces supplying that shop with metal.

Very encouraging results have been obtained in the direction of increased scrap carrying capacity and other items bearing on cost, but the most significant achievement has been in the marked improvement of the product. On that point emphatic testimony comes from the highest authority in the form of the following letter from P. H. Dudley, of New York, the well-known inventor of the Dudley track testing car and expert on steel rail design and rail specifications:

SOUTH WORKS, ILLINOIS STEEL COMPANY,
SOUTH CHICAGO, ILL., June 23, 1908.

JAMES GAYLEY,
First Vice-President United States Steel Corporation,
71 Broadway, New York.

My Dear Mr. Gayley—I have been here at the mill at different times since the last of April having rails manufactured for the New York Central lines.

The first application of your dry blast to the Bessemer practice by William A. Field, the general superintendent, and his corps of able assistants, is of historic and technical interest in the efforts to reduce to a constant the variable element of moisture in the air from day to day to blow the bath of metal in the converter. The effects upon the skin of the ingots are noticeable at once by the absence of pit marks on the sides, except at the extreme top, which is discarded, and the metal blooms as though of greater solidity than usual.

A typical ingot 53 in. long cast in a new type of mold 65 in. high, 17¼ x 18¼ in. on the bottom and 16½ x 17½ in. on the top, was cut longitudinally in half without a trace of blow holes on the sides except at the extreme top, which confirmed the previous opinion of the solidity of the steel. The few central blow holes had clean, unoxidized surfaces slightly striated, and seemed to be the center of a limited segregation. Another ingot cast in the old style molds, 18½ x 19 in. on the bottom and 17 x 17½ in. on top, was cut in longitudinal halves, and had many blow holes and cavities near the top. This was the type of mold in use for many years; and the ingot cracked extensively in the three high blooming train, particularly near the butt end. The dry blast produced an ingot in the old mold which withstood the rapid three high blooming about twice as well as the ordinary blast as measured by the reduction in second quality rails.

Thirty-five sets, 240 in number, of the new style molds were ready for service on the 19th and 20th inst., and were used for 2500 tons of Lake Shore & Michigan Southern and Michigan Central 100-lb. rails. The dry blast was used in the Bessemer converter, the metal recarburized and held in the intermediate ladle three minutes, then turned into the teeming ladle and poured with a 1½-in. nozzle. The ingots were in the soaking pits about two hours, and bloomed in the three high rapid blooming train; and after the first pass the ingot was turned by a manipulator on the back side of the train. The rails had a good color, were tough and free from seams in the head or base. The oldest employees in the mill said these were the finest 100-lb. rails they ever saw made here. In one lot of 1238 bars on one side of the mill my inspectors found only 14 for rejection.

The average grains of moisture per cu. ft. of air for the two days was 5.98 at the inlet and 1.39 at the outlet of the dry blast. This lessened moisture in the Bessemer converter insures a better and more uniform grade of steel for the consumer and a reduction of second quality rails for the manufacturer. The blooms crop with sound ends, under the usual manufacturer's discard. It is a great step in advance for the Bessemer process from every standpoint of consideration and practical operation.

The blooming of the ingots should be slow and gentle until the skin is toughened, and from general observations the slow running two high trains with light passes at first are best. The control of low or high silicon irons is enlarged. It is stated 60 consecutive heats were blown with direct metal with silicon about 0.60 per cent. last week. We expect to repeat our tests of last week this and also the succeeding week.

I am just as enthusiastic to secure sound ingots as when you visited me in the winter of 1894 at Scranton, Pa.; and the dry blast is an important aid in this humid, hot weather.

Very truly yours, P. H. DUDLEY.

We need hardly allude to the wave of opinion justified by the progress made in favor of the open hearth steel rail, which has coincided with the earnest efforts made by railroad engineers and steel makers alike to adapt the rail to the necessities of the greatly increased burdens of modern railroad service. It is evident from the results obtained at South Chicago that the application of the Gayley dry air blast places the Bessemer converter at least on a parity with the open hearth furnace, as to quality and reliability of product. There has been a disposition in the steel trade to sound "the death knell of the Bessemer process." The results of the application of the Gayley dry blast to the converter will thoroughly re-establish the Bessemer process in the full occupation of the field which the supply of suitable ores entitles it to. In view of the opinions expressed by so eminent an expert as P. H. Dudley, buyers of rails will show less disposition to favor open hearth steel and will suspend judgment while the South Chicago results are being backed up by additional evidence. Even as it is, the facts now available make it certain that a better quality of steel rail can be produced, and that the public will be justified in increased confidence in the safety of travel.

## Canadian Tariff Notes.

TORONTO, June 29, 1908.—Mr. Paterson, the Canadian Minister of Customs, has given notice of certain amendments to be made in the Customs act in the present session of Parliament. Two of these are for facilitating the work of customs officials, and one prescribes and imposes a new tariff duty. The last named is in the interest of the Canadian shipbuilding industry. It provides that repairs to vessels and their equipment shall be subject to a duty of 25 per cent. ad valorem. The vessel repaired or re-equipped must, however, have returned to Canadian waters within a year of the time at which the work was done. All vessel repairs done in other than Canadian yards or works are dutiable, but in cases where they have been done to secure the safety of a vessel and to enable it to reach port the duty may be refunded by order of the Minister. It is to be added that the duty, as is the rule in Canada, went into effect at the moment of announcement, and the fact that the legislation establishing it is not yet complete in no way bars the Government from collecting it.

The shipbuilders were looking for this aid to their industry, and some of them were sanguine that the Government would also give them the benefit of a tonnage bounty. Evidently the latter was farther than the Government could see its way to go at the present time. Besides providing this duty on repairs the Government has introduced legislation for continuing on more favorable terms its assistance to the builders and operators of dry docks. The two concessions taken together should turn the balance of the Canadian vessel repair business into the hands of the domestic shipbuilders. The building of new vessels for the Canadian shipping trade will, however, be as much as ever open to external competition.

Of the amendments to facilitate and make more certain the collecting of the customs duties one provides for the production of way bills in transit and the other gives customs officials the right of free transportation on Canadian trains and vessels in Canadian waters. The former of these is the more important. It requires that the conductor of every railroad train carrying freight to any customs port in Canada from any foreign point shall at the time of making his report produce way bills of all goods on his train.

There has been much complaint of late as to the working of the anti-dumping clause of the tariff. It is contended that this arrangement is proving less effective as a check upon the "slaughtering" evil than it was earlier in its history. Apparently, more ingenuity is shown on the part of exporters to Canada, for it does not appear that the Department or its officials are less energetic to enforce the law. C. A. C. J.

Repairs are being made to plants of the Southern Steel Company, preparatory to a resumption of operations.

# The Chemist in the Iron Trade.

## The Chemical Engineer and the Analytical Chemist.

BY GEORGE AUCHY.

The term chemical engineer is given by the writer a very wide significance, being used to designate one who is, or who aspires to be, a manager, superintendent or director, not only in the making of chemicals but in any line of industry whatever, and who has a groundwork of chemical knowledge to start with.

The object of this paper is to call the attention of the iron trade to certain facts connected with analytical chemistry and with chemical engineering, and also to criticise our colleges for the methods and scope of the training they have so far been giving in these lines.

### What the Works Ask For and What They Get.

Taking a particular instance, the writer respectfully makes the charge that our colleges have not been meeting, intelligently and fairly, the demands that the iron and steel trade has made on them. The works have asked for analytical chemists simply, and have been given chemical engineers instead, who, it is true, are analytical chemists also, but only in a perfunctory and superficial way, and whose highest ambition is to get out of analytical chemistry as soon as they possibly can. This condition of things is undesirable and the remedy that is obviously to be proposed is simply that colleges make a sharp distinction between chemical engineers and analytical chemists, and a sharp distinction in their respective courses of study, giving the analytical chemist no "engineering," and giving the chemical engineer no analytical chemistry, and starting the latter with the steel works office instead of with the steel works laboratory, as now. For the analytical chemist, it is necessary that the college course be cheap, comparable in this respect with a course in stenography, or an ordinary business course. Such a cheap and brief course would be no innovation. Our colleges today all give special courses in chemistry to whomsoever desire them.

### Neither Party Gets What He Wants.

Although the demand for analytical chemists from the steel trade has been a great and growing one, yet probably in no other business do demand and supply connect with each other in such ridiculously loose and disjointed fashion as here. Neither party to the transaction gets what he wants or what he is entitled to have. The employer gets a whale instead of the minnow he is fishing for, and the chemical engineer just the reverse, instead of the dignified and well paid position that his long and expensive course at college entitles him to expect. The chemical engineer gets routine laboratory work in impossible amount, and at mechanic's wages, and with the hoped for "chance of advancement" year by year receding further into the dim and misty depths of doubt and uncertainty. And moreover, there is at best an element of economic waste about the whole performance that is entirely out of harmony with the utilitarian spirit of the age.

Supposing that the college graduate in chemistry succeeds ultimately in developing into a full-fledged chemical engineer, and gets the coveted post of steel works or furnace manager. In that event, his knowledge of general chemistry will be of the greatest help to him, but the years in college and at the works spent on anlytical chemistry will have been years entirely wasted as far as any help or advantage to him in his final occupation is concerned. He might just as well have spent those years in the study and practice of dentistry or any other business entirely unconnected with the iron and steel trade.

### The Steel Business Not Learned in the Laboratory.

At the same time, from the standpoint of the employer's interests, there is to be considered the waste involved in the appointment of a man who has his business all to learn after the appointment, or who, if he has learned anything of it before the appointment, has done so at the expense of the other work then engaged in. The analytical chemist can not learn the steel business in the laboratory. The office man, on the contrary, if not of the humblest type, learns the steel business almost with every breath he draws. The same is true of the man outside the office in the works. In fact, of all places about the works, the laboratory is really the only place where nothing whatever about the steel business can be learned. In this particular it is unique and stands quite alone, and the wastefulness therefore of making a practical steel man out of the analytical chem-method of producing roast pork.

It is true that the steel works manager should be a chemical engineer, or at least should understand the chemistry of the metallurgical processes under his charge. It is true also that the steel works chemist understands the chemistry of these processes (but it must be borne in mind he understands this entirely because he has studied general chemistry, and not in the least because he has studied analytical chemistry), but the waste involved in transforming the chemist into the manager is not the less plain. It is a performance that irresistibly reminds us of the alleged ancient Chinese method producing roast pork.

According to Charles Lamb, roast pork was unknown in China until one time a pig-sty accidentally took fire and burnt down, and the unfortunate owner incautionsly touching the still hot carcass of a pig burnt his finger, and, hastily thrusting the injured member into his mouth to alleviate the pain, got the taste of roast pork and found that it was good. The news quickly spread, and pig-sty fires became soon a regular and frequent occurrence, and it was a long time before they realized that this was a crude and expensive way of getting roast pork. But in their main facts the ancient Chinese were undoubtedly right. Just as today, in the steel trade, it is undoubtedly true that a chemical engineer as a steel works manager is the right man in the right place. What must be criticised only is his devious, wasteful and uncertain way of getting there. Perhaps also on the ground of candor the tortuousness of his path to the steel work's superintendency is not strictly to be commended.

### When an Analytical Chemist Is Wanted, That Is All.

But here exceptions may be perhaps taken by some to the writer's dictum that the iron and steel trade's demand for chemists is a demand strictly and exclusively for analytical chemists and not at all for chemical engineers or for chemical engineers and analytical chemists mixed. Without professing infallibility on this point, and with the fullest realization that he may be mistaken, the writer must nevertheless believe from his experience and observation that when the iron and steel trade asks for an analytical chemist, an analytical chemist is all that is wanted, and there is no ulterior aim whatever. Just as a blacksmith is employed to do blacksmithing simply, and an office man to do office work, so a chemist is employed to do analytical work simply, and in no case, or at least in very few cases, the writer believes, is there also present in the employer's mind a determination to by and by make a practical steel man of his chemist.

There was a time, perhaps, in the very start, when the employer expected something more of the chemist than analytical chemistry, but this was merely because the employer was not aware either of the tediousness and laboriousness of analytical work or of the extent of his own demand for it, and was afraid that he could not keep his chemist busy with analytical work alone. But this fear has been dissipated, and the problem of iron and steel works today is how to turn out the analytical work required. The demand therefore for analytical chemists is a constantly growing one.

### No Demand for the Chemical Engineer.

For chemical engineers, on the contrary, there has never been any demand from the iron and steel trade. The chemical engineer approaching here for a position finds no broad flower-skirted avenue leading to the works and terminating in a wide open gateway with the inscription in great golden letters, "Welcome Chemical

Engineer!" On the contrary, not only does he find no special entrance for himself, but he finds, moreover, all other entrances barred to him, except he assumes a humble disguise. Naturally enough the disguise he assumes is that of analytical chemist. Really it is no disguise.

He is in fact, and truly, an analytical chemist. But this is exactly what is to be deplored. He ought not to be an analytical chemist if he is a chemical engineer. Or, if he is really an analytical chemist, he should not be a chemical engineer. For, if he is both he is probably not much of either. As a matter of fact, he is usually a good bit more of a chemical engineer than an analytical chemist.

We do not have to scratch the ordinary steel works or blast furnace chemist very deep to find the chemical engineer. This is all wrong. Analytical chemistry, though far below chemical engineering in dignity and importance, is nevertheless too exacting a mistress to be taken up and contemptuously discarded at will. So, too, on the other hand, chemical engineering is too important and too absorbing a profession to be diluted with 10, 15, or 20 years of study and work in some extraneous and entirely irrelevant pursuit. What, for instance, would be thought of an iron and steel chemical engineer who with deliberate intent spent 10 or 20 years at dentistry as a preliminary to steel work's superintendency? Yet to the full-fledged iron and steel chemical engineer—that is, the blast furnace manager or steel works manager—20 years of preliminary work at dentistry would be just as valuable a training to him as 20 years at analytical chemistry.

### The Future Iron and Steel Chemical Engineer.

Here let us reiterate that the chemical knowledge so useful to the iron and steel manager is a knowledge derived from the study of general chemistry, and not at all from the study of analytical chemistry, and the steel works or blast furnace manager in remembering how to make an analysis remembers nothing that is directly or indirectly of any value to him, as a manager or chemical engineer. To hazard a prediction, the iron and steel chemical engineer of the future will be a good bit more of a chemical engineer than his brother of today, and will not be an analytical chemist at all.

Young men choosing this profession should clearly understan that a jump from the work's laboratory to the work's superintendency is only accomplished at the expense of a violent strain on the eternal fitness of things, and it is hardly harshness to characterize the cherishing of such an ambition as a piece of effrontery on their part. This will best be seen by an illustration. Suppose that a man should apply for the position of steel works superintendent, basing his application upon the fact that he had studied chemistry, physics, mathematics, French and German, Biblical geography, analytical chemistry and other things useful to the steel man, and that after all this, to still further qualify himself for the position of steel work's superintendent he had taken a polar trip with Peary, what would be said to him? It would be said that his study of chemistry, &c., was all right, and exceilent as far as it went (but that it did not go far enough), but that his trip to the North Pole, though a highly creditable performance in itself, yet viewed as a preliminary to the steel business it could not be considered as anything else then a piece of foolishness, because he could not possibly learn anything about the steel business at the North Pole.

But it is just as true that he could not learn anything about the steel business in the steel works laboratory. That is, of course, if he is conscientious, and steals no time from his work. Or even if he works overtime at learning the steel business, he is nevertheless taking time that belongs to analytical chemistry, time that he needs for his chemical journals and analytical books, or time that he needs to investigate the perplexing practical analytical problems that are always springing up, or that he needs to look to for the detection of error in his methods. The steel works chemist, if he has the love for his work that every worker should have, will have no time to learn the steel business, either in or outside of laboratory hours, unless, indeed, he is exceptionally able. Especially is this true if he for his employer's benefit takes up the study of metallography and of theoretical metallurgy in addition to analytical chemistry, and this latter is something that it is well for him to do, because nobody else around the works will do it—at least not systematically and thoroughly.

### The Need of Theorists.

Theorists at the works are just as scarce as practical men are plentiful. So that in metallurgical theory the steel works chemist finds a genuine field of usefulness if he desires one outside of, and in addition to, analytical chemistry. But, instead of taking advantage of this opportunity for usefulness, he is hardly settled in his place before he bends all his energies to making a practical steel man of himself, a performance which for absurdity throws the familiar "carrying coal to Newcastle" completely in the shade. It is, indeed, like selling potatoes to get money to buy coal to carry to Newcastle at a time when Newcastle is suffering with a potato famine.

The chemist will find an abundance of practical men at the works who are amply able to hold up their end, and the chemist cannot hope to compete with them on their own ground, or to catch up to them, handicapped as he is with his laboratory duties, and in trying to do so he likely succeeds in merely falling between two stools and becoming a sort of a hybrid nondescript. His ambition to become a practical steel man prevents him from being much of an analytical chemist or metallurgical theorist, and on the other hand his analytical duties prevent him from becoming much of a practical steel man. So, as a result, he is perhaps apt to be not much of anything—neither fish, fowl nor good red herring.

But if the writer is wrong, as well he may be, in believing that this is not what the steel man wants when he employs a chemist; in other words, if it is a fact that the iron and steel trade all along has been expecting chemical engineers in response to its demand for analytical chemists, then of course the writer's charge that the colleges here do not understand their business must be apologetically withdrawn. His guns must then be trained at the iron and steel employers instead, and it is against them then that the accusation must be made that in this particular they do not understand their business, and are like Charles Lamb's ancient Chinese, taking a wasteful, round-about way of accomplishing a simple thing. If the steel man's demand for an analytical chemist is merely a pleasant conceit, and what he really wants is a chemical engineer, then he is taking a very expensive and round-about way of getting him. Let him put his embroyo chemical engineer in the office, or let him put him anywhere around the works except in the laboratory. The laboratory is the last place for the young chemical engineer—as well might he go in a grocery store. There is no resemblance or connection between the chemical reactions of metallurgical processes and those of chemical analysis.

The probability is, as before stated, that the iron trade has been calling for analytical chemists simply, and the many cases where the chemist has developed into the manager are cases merely of the buoyancy of genius. That is, these chemists have risen to superintendency because they have had exceptional ability, and not because they have been analytical chemists. As blacksmiths they would have risen just the same. A long list could be given of men who were distinguished as analytical chemists and afterward distinguished as iron and steel metallurgists, but this proves nothing except native ability.

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The Weidenthal-Gosliner Electric Works, San Francisco, Cal., which for the past eight years has conducted its business as a copartnership, has recently incorporated with a capital stock of $100,000. The company has moved into its new building, located at 623 to 625 Mission street, which affords better facilities for the handling of its business, comprising electrical machinery, gas engines, hoists, pumping machinery and general contracting in electrical machinery. S. H. Weidenthal is president, and H. J. Gosliner, vice-president and secretary.

# The Latest Results with Steel Rails.*

## Investigations by Pennsylvania Railroad Interests.

BY E. F. KENNEY.

In almost any engineering structure an increase in the load and stresses is met by the engineer by an increase in the resistance by means of greater sections and stronger members, but there seems to be very strong opposition to an increase in the amount of metal in the rail. One reason advanced is that rails of lighter weight show less breakage than the heavier rails. The light, flexible rail will relieve itself by bending until it gets support, whereas the heavier rail, being stiffer, will stand up and take the stresses. Under the same drop test blow the 100-lb. rail will break very much oftener than the 70-lb., but the deflection caused by the blow will be much less. In track we can keep better line and surface with the 100-lb. rail than with the lighter rail, but in doing this we put more work on the rail and less on the other elements of the track. As the average cost of rail on American railroads is only about 7 per cent. of the total maintenance charges, and as it is well known that the cost of maintaining track laid with 100-lb. rails is decidedly less than for that laid with 85 or 70 lb., it seems quite probable that the adoption of much heavier rail sections than those used to-day would be distinctly an economy because of the reduction of the cost of maintaining the track. Aside from economy, it would unquestionably be an advance on the side of safety.

### Deep Headed Rails Stand Service Best.

Now, over 90 per cent. of the rails which fail do not fail as girders, but in their details. Regarding the split head, which is the type of failure probably causing more trouble than all the others combined, the following figures have been furnished by railroads with heavy traffic, A having the heaviest tonnage in the country. A uses a deep headed rail, while B and C use a shallow headed rail. The number of 100-lb. rails removed from track in one year per 1000 tons rolled is 0.66 for road A and 12.59 for C. The number of 85-lb. rails removed from track in one year per 1000 tons rolled is 0.59 for A, 6.02 for B and 8.08 for C. The percentage of failures was 10 to 20 times as great for B and C as for A, and of these failures on the last named roads 90 per cent. were in the head—namely, splitting, often spoken of as piping—while this type of failure was almost unknown on road A with the deep headed rail. The necessary stiffness should be provided not by spreading the metal out so thin as to weaken the head and base of the rail, but by the addition of enough metal to furnish the required girder strength without weakening the section in its details.

### Rolling Temperature.

New sections have been designed increasing the size of the base, making it possible to roll the entire rail at a more uniform temperature, but unfortunately robbing the head of some of its metal. However, the rolling of these rails so far has indicated that the structure of the metal in the head is much finer than in the old section and should give better results in track. None of these rails are yet in service. It was expected that for these new sections the shrinkage allowance could be reduced, but this is not so. It was the thin flange that determined the shrinkage of the old rails. In going through the cambering wheels the head was stretched, giving the hot head a greater length for shrinkage than the base. In rolling the new section the temperature is nearly uniform and much colder than the head of the old rail was, but no part of the new rails is as cold as the thin base of the old, consequently a greater shrinkage allowance is required.

### Open Hearth Steel.

A great deal is heard of open hearth rails, and many persons seem to be impressed with the belief that the words open hearth are a talisman which will cure all their troubles. Some rails which were made in open hearth furnaces have given excellent service and others gave anything but good results. The writer some years ago suggested the use of very high carbon rails and advocated keeping the phosphorus as low as possible, so that the carbon could be kept very high. In accordance with this the Pennsylvania Railroad made a trial lot of rails 0.80 to 0.90 carbon and less than 0.02 phosphorus, the phosphorus actually being 0.009 and 0.011. These rails gave excellent service, not because they were open hearth rails, but because the low phosphorus permitted us to use enough carbon to make them wear well. It is impossible to use this per cent. of carbon in open hearth steel much higher in phosphorus, and open hearth steel much lower in carbon will not give the wear shown by these rails. On the strength of the behavior of these rails 3000 tons were ordered 0.80 to 0.90 carbon and less than 0.03 phosphorus, and we then had an exhibition of some of the difficulties to be encountered with open hearth steel.

In the converter it was easy to control the carbon content and hold it within narrow limits so that the 10 points of allowable variation were quite sufficient, but the open hearth furnace cannot be controlled in the same way, and in making the 3000 tons the heats varied in carbon nearer 20 points than 10. It thus ran about 0.75 to 0.95, and as the amount of segregation of carbon increased with the carbon content some of the steel was so brittle that it had to be rejected, and even at that some brittle rails got into track. The rails as a whole gave very good results in track, but it was their exceptional composition, not the mere fact of being made in the open hearth furnace which was responsible. This was clearly shown in the behavior of some open hearth rails of 0.06 phosphorus, in which we did not dare to run the carbon very high and which in track did not wear as well as ordinary Bessemer. Unless we are able to get an exceedingly low phosphorus content in the basic open hearth we had better hold to the acid Bessemer.

[The paper then took up the occurrence of seams in rail steel. These have been found in all the steels investigated at Watertown Arsenal, from expensive gun forgings down to the cheapest steel. Mr. Kenney thought that as these minute seams are likely to be present they are a strong argument for sufficient metal in the rail to compensate for the lack of continuity. The statement that all crescent shaped breaks in rail bases are caused by seams is too sweeping. In addition to these seams some rails show distinct stripes of ferrite or pure iron on the surface, usually with threads of manganese sulphide running through them. It has been suggested that the ferrite streaks are caused by manganese sulphide throwing carbon out of solution, but this the writer thought improbable, since manganese sulphide exists in the interior of the rail without the production of ferrite there. He thought the patches of scale adhering to parts of the ingot mold might cause the ferrite streaks, by causing a lag in the cooling effect in the portions of the ingot just underneath the patches.]

### Discard According to Piping.

In cropping the blooms at the shears it is often impossible to tell when the piped portion has been entirely removed, and for a number of years the feeling has been growing that to guard against piping a heavy discard should be made from the top of the ingot. The writer was in favor of this and advocated a discard of 25 per cent., believing that this was the only way to insure the removal of all the metal containing these internal defects. The objection to this was the waste. Of all the rails put in track by the Pennsylvania Railroad only about one-fortieth of 1 per cent. failed in any year. Assuming the average life at 8 years this would be one-fifth of 1 per cent., so that in discarding 25 per cent. we would be discarding 24 4-5 per cent. of metal for the sake of detecting one-fifth of 1 per cent. A test has been devised which makes this waste unnecessary, as the same result is obtained by the method of procedure advocated by the Pennsylvania Railroad and the American Railway Association and incorporated in the specifications which have been recently adopted by them. The crop end from the

* From a paper read at the meeting of the American Society for Testing Materials, Atlantic City, N. J., June 24, 1908. Mr. Kenney was for some years engineer of tests of the Pennsylvania Railroad. He is now metallurgical engineer of the Cambria Steel Company, Johnstown, Pa.

top of every ingot is tested to destruction, and if piping is shown all the top rails from that heat are rejected. This practically means that about 30 per cent. will be discarded from all heats which show piping, while those which do not show piping are cropped only the usual amount.

The Cambria Steel Company has rolled a considerable tonnage of rails under these specifications and the testing to destruction unquestionably detected the pipes. To find to what depth the pipes extended we polished the end of the drop test pieces and cut the top rail adjoining the test piece into small lengths, examining carefully each cut for pipes. It was found that of the heats showing pipes in the drop test piece when tested to destruction 60 per cent. contained pipes so short that they were confined entirely to the crop end. Of the remaining 40 per cent. which extended into the top rail

40 per cent. showed pipe extending more than 1 ft. but less than 4 ft.
26 per cent. showed pipe extending more than 4 ft. but less than 7 ft.
20 per cent. showed pipe extending more than 7 ft. but less than 10 ft.
16 per cent. showed pipe extending more than 10 ft. but less than 13 ft.
16 per cent. showed pipe extending more than 13 ft. but less than 16 ft.
10 per cent. showed pipe extending more than 16 ft. but less than 19 ft.
10 per cent. showed pipe extending more than 19 ft. but less than 22 ft.
10 per cent. showed pipe extending more than 22 ft. but less than 25 ft.
8 per cent. showed pipe extending more than 25 ft. but less than 28 ft.
6 extended all the way through (very slight).

It will be seen that even under this specification the rejections include the 60 per cent. of rails which contain no pipes. It would be quite feasible and legitimate to avoid this by the acceptance of all heats in which the pipe can be shown to be confined to the crop end. This can be determined by roughly polishing the end of the drop test piece.

### The Drop Test.

Changing conditions have been so modifying the effect of the drop test that there is a question whether as we are applying it, it is a proper one. A 100-lb. rail will not stand as heavy a drop test as a 70-lb. rail of the same steel because it is stiffer; and as the heavy traffic has necessitated harder steel with higher carbon, to get better wear we are in the position to-day, with our stiffer sections and harder steel, where the drop test is causing the rejection of the very kind of steel we need in track. In a recent series of tests made on pieces cut from the same rail, some of which were subjected to 15-ft. fall and some to 19-ft. fall, in almost every case where a rail stood the 15-ft. fall but broke under the 19-ft. fall the steel showed plainly by its fracture that it was not brittle, but simply hard steel which could not extend as fast as it is necessary for the extension flange to extend to avoid fracture.

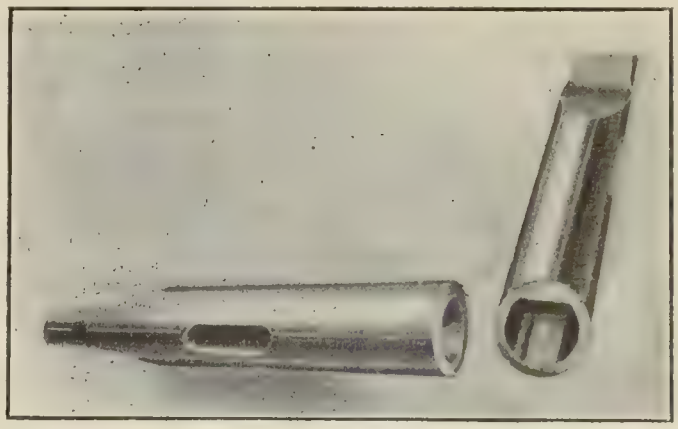
The amount of fall required to strain the rail beyond its elastic limit and produce a permanent set has been found to be about 12 in. for 100-lb. and 8 in. for 85-lb. rail. It is comparatively seldom that a rail is actually bent by the shock in service, and yet we demand a test about 20 times as great in momentum and more than 20 times as great, so far as the effect on the rail is concerned, as it is probable that the breakage under the drop is due really more to the speed of the tup than to the momentum. In other words, a test using a much heavier tup and a smaller drop might be fairer to the rail and more nearly approach the service conditions. Moreover the drop test is simply a test of girder strength, and, as pointed out earlier, 90 per cent. of rail failures are not failures as girders but failures in the details.

We have many instances of steel which will bend under slowly applied stresses in such a way as to give the impression of extreme ductility, but which under suddenly applied loads is very brittle and will not stand any amount of distortion. Some impact test is necessary to detect this condition, but it should be a reasonable test, one which differentiates between a strong, hard steel and a brittle softer one.

To show the different results obtained by using different anvils we took pieces from the same rail and subjected them to the same hight of fall of a 2000-lb. tup in the new machine at Sparrows Point, in the axle testing machine at Cambria and the rail testing machine at Cambria. The Sparrows Point machine has a 20,000-lb. anvil on concrete, the axle machine at Cambria has an anvil of 17,500 lb. supported on springs and the old Cambria rail drop test has about 3000-lb. anvil. Taking the deflections obtained at Sparrows Point as unity, those obtained in the axle machine were 97.6 per cent. and those in the Cambria rail machine were 75.3 per cent. The manufacturers have recently adopted a standard testing machine having a 20,000-lb. anvil supported on springs. This will eliminate the variation due to weight of anvil and character of foundation.

## A Special Drill Socket.

A drill socket, appropriately named the Use-'Em-Up, being designed to hold drills with broken tangs, has been brought out by the American Specialty Company, Harvey, Ill. This socket differs from the ordinary Morse standard only in having a flattened side on its interior tapered surface, as shown in the accompanying illustration; and in the longer drift slot provided to facilitate the driving out of tangless drills. To prepare a drill shank to fit



The Use-Em-Up Drill Socket Made by the American Specialty Company, Harvey, Ill.

this socket it is ground with a corresponding flat; a few minutes' work thus makes an otherwise worthless drill serviceable. The hold afforded by this device is positive and effective on both large and small drills, and is especially advantageous in high speed work. The socket is finished in one solid piece, the interior being flattened by swaging on a forming tool; the stud is turned in a lathe and the socket finished in the same manner as standard sockets. The widths of the flat face on the interior of different sized sockets are as follows: For No. 1, 5-16; No. 2, 7-16; No. 3, 9-16, and No. 4, 11-16 in.

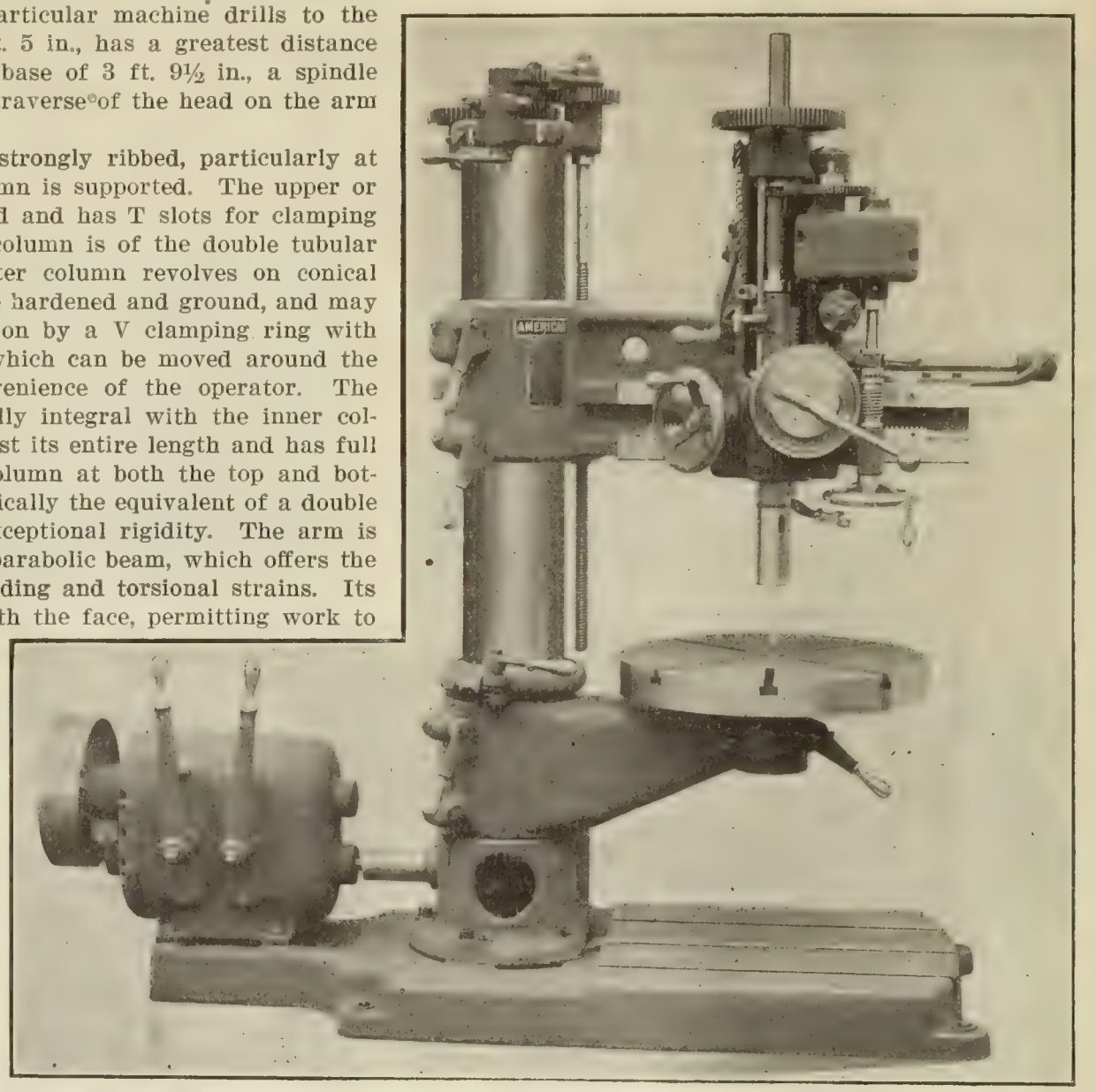
**A Large Flanging Press.**—The Petroleum Iron Works Company, Sharon, Pa., is installing in its plant a 200-ton sectional flanging press, built by R. D. Wood & Co., Philadelphia, which will operate under 1500 lb. hydraulic pressure. It has a 60-in. gap, 8 ft. 6 in. x 6 ft. table, and is equipped with two vertical rams, each of 100 tons capacity, having 30-in. stroke, which can be operated together or independently, to suit the work, also one horizontal ram of 50 tons capacity and 24-in. stroke, and one 75-ton supplementary ram with 24-in. stroke. This machine or straight flanging will bend plate up to and including 1¼ in. cold, or will dish and flange 84-in. diameter heads in one operation. The machine can also flange 45-in. flue holes in ¾-in. boiler heads, and turn straight or O G flange at end of riveted pipe or any rectangular or circular shell. It can also bend angles or shapes to any desired forms, besides turning out all classes of flanged work. The machine will shortly be placed in operation.

The Portsmouth Steel Company, which operates plate and jobbing mills at Portsmouth, Ohio, is now manufacturing a full line of Economy tie plates, not "tin" plates, as erroneously printed last week. The Spencer-Otis Company, Chicago, Ill., has the exclusive selling agency for this product.

# The American 2-Ft. High-Speed Radial Drill.

As a substitute for a larger radial drill on work which requires a powerful machine but not a very large swing the American Tool Works Company, Cincinnati, Ohio, has developed the 2-ft. back geared high speed radial drill shown in the accompanying illustrations. In proportion to its size it has a remarkable producing capacity. Probably it is the only 2-ft. radial drill built in this country having such power and rigidity, as can be judged by a reference to the tests which are later referred to. The drill is the smallest of a full line, including 2½, 3, 3½, 4, 5, 6 and 7 ft. radial drills, which are designed to operate under the speeds and feeds possible with high speed steel twist drills. The machines are especially designed for rapid drilling and heavy tapping, and are built with either cone pulleys or speed box drive. The latter is shown in the illustration. This particular machine drills to the center of a circle of 4 ft. 5 in., has a greatest distance from the spindle to the base of 3 ft. 9½ in., a spindle traverse of 11 in. and a traverse of the head on the arm of 16 in.

The massive base is strongly ribbed, particularly at the point where the column is supported. The upper or working surface is planed and has T slots for clamping work to the base. The column is of the double tubular type. The sleeve or outer column revolves on conical roller bearings, which are hardened and ground, and may be clamped in any position by a V clamping ring with attached binder handle which can be moved around the column to suit the convenience of the operator. The outer column is practically integral with the inner column, which extends almost its entire length and has full bearings for the outer column at both the top and bottom. There is thus practically the equivalent of a double column, which affords exceptional rigidity. The arm is in the form of a hollow parabolic beam, which offers the greatest resistance to bending and torsional strains. Its lower edge is parallel with the face, permitting work to be operated upon close to the column, so as not to necessitate an extreme reach of the spindle when the head is in such a position. The arm is clamped to the column by two binder levers, and, in fact, no loose wrenches are required on any part of the machine. The arm is provided with a gibbed screw, which permits it to work freely without sagging while the binder handles are loose. The arm is raised and lowered rapidly by a double thread course pitch screw, the operation of which is controlled by a lever near the top of the column. Arrows at each extreme of the movement of this lever indicate the direction of travel which the arm will take when the lever is thrown to the corresponding sides.



The 2-Ft. Back-Geared High Speed Radial Drill Built by the American Tool Works Company, Cincinnati, Ohio.

The machine may be driven by single belt when provided with a speed box or by a motor of any type, either through gears, chain or belt. The gear connected motor seems to be the most satisfactory from the company's experience. The speed box is very powerful, of the geared friction type, and provides four changes of speed, each instantly available by manipulating the two levers shown. The frictions are claimed to be extremely powerful, and since there are few parts in their construction they can be made large to avoid slipping under severe duty, and the use of loose delicate parts. There is declared to be no shock to the parts when throwing in any speed.

The head is moved along the column by a hand wheel through an angular rack and spiral rack pinion. For locking the head in any position a convenient clamping device is provided. The back gears are located on the head, bringing the greatest speed reduction direct to the spindle. A convenient lever manipulates these, engaging or disengaging them without shock while the machine is in operation, the high speed being run through a friction. On the head is the feeding mechanism, which provides four rates of feed in geometrical progression from 0.007 to 0.02 in. By turning a knob on the feed box these feeds are obtained, and a dial with reference to a fixed pointer indicates which one is in action. It is not necessary to refer to index plates and then operate other levers. The all gear feeds when supplied instead of belted feeds insure greatly increased producing capacity, rapidity of change and positive action. The feeds operate through a friction which permits crowding the drill to its limit without straining the feed works.

Sixteen changes of speed are provided for the spindle, ranging from 33 to 400 rev. per min., and all immediately available without stopping the machine. The speeds cover a wide range and vary by small increments, which, combined with the powerful drive, adapt the machine for efficient use with ordinary or high speed twist drills of large sizes. A speed plate on the column indicates to the operator how to select the proper speeds for both carbon and high speed drills for either boring or tapping. The spindle is counterbalanced and has a quick advance and return through a friction connection. The feeds can be automatically tripped at any position of the spindle by an adjustable dog and pointer acting on the worm clutch. On the spindle are depth graduations which can be read from zero. A safety stop acts automatically at the full depth of the spindle preventing breaking of the feeding mechanism.

The tapping mechanism is carried on the head between the back gears and speed box thus giving to the already powerful frictions the benefit of the back gear ratios. This makes unusually heavy tapping operations possible, and also permits taps to be backed out at an

accelerated speed. A lever for starting, stopping or reversing the spindle is controlled at the head from the front of the machine.

The following tables are interesting as showing something of the capacity of the machine:

*Table I.—Drilling Test in Cast Iron 2 In. Thick.*

| Drill size. | Speeds.—Rev. per min. | Cutting speed. Feet per min. | Feeds. Inches.—Per rev. | Per min. | Back gears.—Ratio. | Position. | Actual hp. |
|---|---|---|---|---|---|---|---|
| ¾ | 290 | 56.9 | 0.015 | 4.35 | 1.5 | Top. | 3.68 |
| ¾ | 406 | 79.7 | 0.020 | 8.12 | 1.5 | Top. | 7.40 |
| 1 3/32 | 290 | 83 | 0.020 | 5.8 | 1.5 | Top. | 7.40 |
| 1 3/32 | 406 | 116.2 | 0.020 | 8.12 | 1.5 | Top. | 11.1 |
| 1 15/32 | 290 | 111.4 | 0.015 | 4.35 | 1.5 | Top. | 10.5 |
| 1 15/32 | 290 | 111.4 | 0.020 | 5.8 | 1.5 | Top. | 13.5 |
| 1 29/32 | 207 | 79.5 | 0.007 | 1.4 | 1.5 | Top. | 6.5 |
| 1 29/32 | 207 | 79.5 | 0.020 | 4.14 | 1.5 | Top. | 13.5 |

*Table II.—Drilling Test in Steel 3 In. Thick.*

| Drill size. | Speeds.—Rev. per min. | Cutting speed. Feet per min. | Feeds. Inches.—Per rev. | Per min. | Back gears.—Ratio. | Position. | Actual hp. |
|---|---|---|---|---|---|---|---|
| ¾ | 406 | 79.7 | 0.007 | 2.84 | 1.5 | Top. | 5.01 |
| ¾ | 406 | 79.7 | 0.011 | 4.46 | 1.5 | Top. | 11.8 |
| ¾ | 290 | 56.9 | 0.020 | 5.8 | 1.5 | Top. | 5.01 |
| 1 1/32 | 290 | 78.3 | 0.011 | 3.2 | 1.5 | Top. | 5.9 |
| 1 23/32 | 106.5 | 47.9 | 0.011 | 1.17 | 5.72 | Bottom. | 8.4 |
| 1 27/32 | 76 | 36.6 | 0.011 | 0.84 | 5.72 | Bottom. | 5.3 |
| 1 27/32 | 76 | 36.6 | 0.015 | 1.14 | 5.72 | Bottom. | 6.2 |
| 1 27/32 | 76 | 36.6 | 0.020 | 1.52 | 5.72 | Bottom. | 8.4 |

*Table III.—Tapping Test with Pipe Taps in Cast Steel 1⅛ In. Thick.*

| Diameter tap. | Speeds.—Rev. per min. | Cutting speed. Feet per min. | Feeds. In.—Per rev. | Per min. | Back gears.—Ratio. | Position. | Actual hp. |
|---|---|---|---|---|---|---|---|
| 2½ | 38.5 | 28.9 | ⅛ | 4.8 | 5.72 | Bottom. | 9.14 |
| 3 | 38.5 | 35.2 | ⅛ | 4.8 | 5.72 | Bottom. | 9.7 |
| | *Test in Cast Iron 1⅛ In. Thick.* | | | | | | |
| 2 | 40 | 24.8 | 1/11.5 | 3.4 | 5.72 | Bottom. | 4.24 |
| 2½ | 40 | 30.1 | ⅛ | 5 | 5.72 | Bottom. | 5.15 |
| 3 | 40 | 36.6 | ⅛ | 5 | 5.72 | Bottom. | 5.75 |

The machine is regularly equipped with a round table, a double friction countershaft, and a cone pulley drive. The speed box or electric motor drive are provided when so ordered. The round table, which is regularly furnished, has a top surface of 24 in. in diameter and liberal T-slots. It is supported on a rigid knee, which can be swung to either side when working on the base. The lubrication, as is necessary in any machine tool that is capable of high speeds and feeds, has been given special consideration in the design of this radial drill. Every bearing is thoroughly and carefully provided for.

**A New Wellston Furnace.**—The Wellston Steel & Iron Company is preparing to rebuild its No. 2 blast furnace at Wellston, Ohio, which collapsed June 1, when in blast. The shell of this furnace was put up in 1874, of very thin iron, and had rusted completely out. The wreck was complete, but no damage was done except to the shell itself. The furnace had been in blast two years and the lining was found as good as when put in. It had been the plan to tear down the stack as soon as the lining should give out. It is the intention to replace the iron stoves with brick stoves, and in other respects to modernize the plant. The company's No. 1 furnace, adjoining No. 2, is lined up ready for blowing in, but the date has not been fixed yet.

The steel superstructure of the Blackwell's Island Bridge is now complete, and the contractor, the Pennsylvania Steel Company, has handed over its care to the Bridge Department of New York City. It was begun in October, 1904, and was to have been completed by January 1, 1907, but strikes and other disturbances made it necessary to ask for an extension of time. There remain to be finished the paving of the roads, the laying of rails, and the provision of proper approaches.

The Thomas Brace Rail Company, with offices at 115 Broadway, New York, has been incorporated with an authorized capital of $2,000,000 to manufacture rails and railroad appliances. The company is also authorized to manufacture motors, cars, structural iron, &c. It is stated that the company's product will probably be made abroad and no plant will be erected in this country at present. E. T. Thomas is at the head of the enterprise.

## The Limitation in the Hepburn Law.

Levy Mayer of Chicago, general counsel for the Illinois Manufacturers' Association, has written an opinion on the two-year "statute of limitation" in the Hepburn law at the request of O. F. Bell, traffic manager of the Crane Company. Mr. Mayer, after an exhaustive review of the case, arrives at the conclusion that was presented in *The Iron Age* of May 7, that the limitation in the law applies only in cases where a shipper has paid a rate that was technically a lawful, published rate; and that it does not bar claims where the shipper has paid more than the legal rate. Where a legal tariff rate has been paid, which the shipper believes to be unjust or unreasonable, a claim for reparation must be filed with the Interstate Commerce Commission within two years.

In reviewing the question Mr. Mayer calls attention to a decision by the United States Supreme Court in the Texas & Pacific Railway Company *v.* Abilene Cotton Oil Company, 204 U. S., 426 (1907), in which it was held that the shipper must first apply to the commission for relief when an unjust or unreasonable rate has been charged. The court said:

> A shipper seeking reparation predicated upon the unreasonableness of the established rate must, under the act to regulate commerce, primarily invoke redress through the Interstate Commerce Commission, which body alone is vested with power originally to entertain proceedings for the alteration of an established schedule, because the rates fixed therein are unreasonable.

Mr. Mayer states in his opinion that the two-year limitation does not apply to loss or damage claims, nor to claims for overcharges above the lawfully published rates and charges for the route over which the shipment moves. On the question of misrouted shipments Mr. Mayer quotes Rule 70 of Tariff Circular 15-A, which authorizes the carriers to settle these cases without action by the commission on all shipments that have moved since March 18, 1907. He calls attention to the fact that no limitation is provided in the rule for claims of this character for misrouting.

### The Claims Covered by the Law.

After quoting at length from the rules of the Interstate Commerce Commission, Mr. Mayer says:

> I am of the opinion that the effect of Section 16 of the interstate commerce act, and of Rule 81 in I. C. C. Tariff Circular No. 15-A, is that claims against carriers for damages for violations of the act which accrued prior to August 28, 1906, if not presented to the Interstate Commerce Commission before August 29, 1907, are barred by the statute, and that claims for violations of the act accruing after August 28, 1907, must be presented to the commission within two years after they accrue, or they will be barred. But the claims that will thus be barred are only those which require action on the part of the commission and which relate to violations of the act of the character heretofore noted, such as claims on account of unreasonable and unjust charges, discriminations or preferences, or involving refunds from the lawfully published charges for the route over which the shipment moved.
>
> In cases of this character, even if the claims have been taken up with the railroad company and settlement is delayed, the claims must be filed with the commission within two years after they accrue or they will be barred. Of course, in effect this will result in a considerable burden to the Interstate Commerce Commission, but the penalties for violating the interstate commerce act or the Elkins act are so severe that it is the only safe method to pursue. Indeed, it appears from the records of the commission that over 2000 informal reparation orders have already been entered by the commission since the Hepburn act went into effect, August 28, 1906. But I am further of the opinion that the statutory two-year period has no application to claims for loss and damages to shipments, or for delay in transportation, or overcharges above the lawfully published rate applicable to the shipment—or other claims of similar character which require no action on the part of the commission. As to claims for violations of the act which have become barred by the statute, the shipper has no redress.

Mr. Mayer is widely known for his ability to win recognition for his opinions from the courts and other tribunals, and his review of this question has been received with great satisfaction by the shippers interested.

# THE IRON AGE

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## Passenger Earnings a Railroad Problem.

Comment was made in *The Iron Age* of March 26 on the increasing burden of passenger traffic upon the railroads, by reason of the fact that the load per passenger train had not increased nearly so rapidly as the load per freight train, while the rates charged had not changed greatly. The statistics used were those of the Interstate Commerce Commission, for the fiscal year ended June 30, 1906. Poor's statistics for 1907 have just appeared, these covering in general the fiscal year ended June 30, 1907, but in some cases the year ended December 31, 1907. By using these figures the comparison can be brought up to a later date, while by making some additional computations the increasing burden upon the railroads can be brought out still more clearly.

It would probably surprise the average man to learn that in the 15 years from 1892 to 1907, both of which were prosperous years, the number of freight trains passing a given point had actually decreased by 6.7 per cent., although the tonnage, measured by tons carried one mile, increased 176.2 per cent. In the same 15-year period the number of passenger trains passing a given point increased by 19.6 per cent., while the number of passengers carried one mile increased 107.3 per cent. In the trend thus shown lies the gist of the railroad problem of today. It is not to be supposed that railroad managers do not possess a clear conception of this trend and of its influence in creating the embarrassments they insist they are laboring under, but in their public discussions of their problem they evade the issue which a full acknowledgment of this trend would present.

The following tables give the passenger and freight statistics at intervals of five years. The railroad mileage is given in each case, as in 1897 and 1902 there was a slight difference in the mileage of railroads reporting passenger and freight statistics, respectively.

*Passenger Statistics.*

| | Miles of road. | Passenger miles. (Millions.) | Train miles. (Millions.) | Average number of trains. | Passengers per train. |
|---|---|---|---|---|---|
| 1892 | 170,607 | 13,584 | 324 | 1,899 | 41.52 |
| 1897 | 180,621 | 12,495 | 342 | 1,896 | 36.49 |
| 1902 | 196,648 | 19,707 | 403 | 2,050 | 48.87 |
| 1907 | 225,227 | 28,166 | 512 | 2,271 | 55.05 |

*Freight Statistics.*

| | Miles of road. | Ton miles. (Millions.) | Train miles. (Millions.) | Average number of trains. | Tons per train. |
|---|---|---|---|---|---|
| 1892 | 170,607 | 84,413 | 524 | 3,070 | 161.14 |
| 1897 | 181,065 | 97,843 | 500 | 2,764 | 195.56 |
| 1902 | 197,381 | 156,624 | 508 | 2,575 | 308.19 |
| 1907 | 225,227 | 233,138 | 645 | 2,866 | 361.22 |

In the 15-year period the growth of passenger and freight business has not been very uneven. Measured in passengers carried one mile and tons of freight carried one mile, passenger business has increased 107.3 per cent., and freight business 176.2 per cent., the increase in freight business being thus measurably greater, although there has been a good increase in each. Average receipts have been as follows:

*Average Receipts.*

| | Per passenger mile. Cents. | Per freight ton-mile. Cents. |
|---|---|---|
| 1892 | 2.168 | 0.941 |
| 1897 | 2.029 | 0.797 |
| 1902 | 2.012 | 0.764 |
| 1907 | 2.040 | 0.782 |

These figures are worthy of careful study. In 15 years the average trainload of freight has more than doubled, increasing from 161 to 361 tons, or 125 per cent., and thereby the railroads have seen their way clear to reduce freight rates, so that the average receipts per ton mile have decreased from 0.941 to 0.782 cent, or 20 per cent. The increased trainload would have permitted a great reduction in the rates charged had there not been increased costs in other directions, chiefly the better equipment and better permanent way required.

In the passenger business, on the other hand, there has been scarcely any increase in the trainload. The average in 1892 was 41.52 passengers per train, this increasing only to 55.05 in 1907, or only 33 per cent. The rate per passenger mile decreased from 2.168 to 2.040 cent, or 6 per cent. With the increased cost of operating the road as a whole and of each passenger train as a unit, it was not justifiable to make any decrease at all, when the number of passengers carried per train increased so slightly.

Thus the railroads have taken care of the great increase in freight business by increasing the load per freight train, while they have taken care of the slightly smaller increase in passenger business chiefly by putting on more passenger trains.

Referring to the two general tables of train mileage statistics just given, it can be seen how the railroads have taken care of the increased business. The number of freight trains has of course increased somewhat, but the total mileage of road has also increased, the net result actually being that the number of freight trains per mile of road has decreased from 3070 trains passing a given point in 1892 to 2866 trains in 1907, a falling off of 6.7 per cent., due to the trains being loaded so much more heavily. With the passenger business this was not done, the number of passenger trains passing a given point increasing from 1899 to 2271, or 19.6 per cent.

The comparison between 1892 and 1907 shows the general trend. The forces have been at work uniformly. The tables presented give the statistics for the intermediate years 1897 and 1902. There are variations, but they are such as were brought about merely by the changes in industrial conditions. The year 1897 was one of poor business, and the passenger business showed a decrease, but the number of passenger trains was unchanged, and the average number of passengers per train showed a decrease. In the freight business, on the other hand, 1897 showed a slight increase, and as the number of freight trains is regulated directly by physical conditions there was a sharp drop in the number, accompanied by the regular increase in the load per train. These vicissitudes do not alter the general trend, as the conditions were working and were merely influenced by industrial conditions. The average freight train load, it will be observed, showed a moderate increase from 1892 to 1897, then a larger increase to 1902, on account of the introduction of all-steel and steel underframed cars, beginning in 1899, while 1907 showed a further increase.

Obviously this general trend is to crowd the freight

trains off the tracks altogether, as the number of passenger trains is steadily increasing, while the number of freight trains is decreasing. Obviously something would have to happen. Ultimately the railroads would be doing a passenger business exclusively, and that at rates which, with the meager patronage per train, do not afford a legitimate profit. The passenger traffic as handled cannot bear the increased proportion of the general expenses which the increased proportionate use of the facilities by passenger trains demands should be allotted.

The railroads have done excellent work in increasing the freight train load so largely in the past 15 years, but the saving thereby effected, while going partly to reduce freight rates and to pay the increased cost of operation due to changed conditions in the handling of freight has gone very largely to pay an increased cost of operation properly chargeable to passenger operations, but which that department could not stand itself.

As a result of legislative efforts to reduce passenger rates there has been much effort at defense on the part of the railroads, but in all such discussions there has been a tendency to assume that the existing conditions created by the railroads in handling the freight and passenger business are necessary and not susceptible of modification; that the solution should lie in increased passenger rates or at any rate in their maintenance. The matter of the number of passenger trains has at best been referred to but vaguely, and the excuse made that "the public demands" the passenger service which is being given. There may be some such demand on the part of the public, but certainly it has not been as plainly expressed as has been the demand for lower passenger rates. The railroads clearly elect to yield to the one demand rather than to the other, and their chief reason for doing so is undoubtedly that they have considered it for their best interest to do so. By giving excellent passenger service they have sought to advertise their securities and their freight business. They have put much faith in the adage that "as a man travels, so will his freight travel." They have nursed the delusion that competition has been eliminated, when it is merely competition in rates which has been eliminated, while the competition in character of service has increased.

The present railroad situation shows how dangerous is this form of competition because it is recondite. The problem will not solve itself. No hope can be entertained that in any reasonable time passenger traffic will become sufficiently dense to permit of largely increased trainloads and consequent reduction in cost. As the exception tests the rule, the case of passenger traffic over the 90 miles between New York and Philadelphia can be cited. There is hourly service, with well filled trains. How long would it be until similar conditions were established on the major part of the 225,000 miles of railroad in the United States?

## Receivers' Weights in Pig Iron and Coke Contracts.

The agitation begun in New England and now extended to other parts of the country in the effort to procure an equitable basis of settlement of shortages in shipments of pig iron and coke has resulted in the establishment in not a few cases of receivers' weights as the foundation of the foundries' contracts with pig iron and coke manufacturers. Partly on account of this new condition in the trade in the relations of the seller and the buyer, and partly for reasons that had existed previously, prominent interests have decided to attempt the establishment of legal precedents, either through the Interstate Commerce Commission or in the courts, that some certain remedy may be had against the transportation companies in cases where there are flagrant discrepancies between billed weights and those at point of delivery.

Large consumers of coke and pig iron, taking advantage of the buyers' market to dictate terms, have insisted that a change be made in their contracts, so that neither railroads' nor shippers' weights shall prevail, and their recent purchases have been made on that basis. This means that each car shall be weighed, loaded and empty at point of destination, no reliance being put on stenciled tare weights, nor upon weights as previously ascertained at point of shipment. But neither may material be weighed outside of the car, by wagon load. The amount of the bill is the difference between weight of the car loaded and unloaded. Where the customer has railroad scales in his yard, properly tested and attended by a sworn weigher, their weights are accepted. If there is no such convenience the railroads will do the weighing, for a consideration. One road charges $1.50 a car, conceding the fee if there is a discrepancy of more than 1000 lb. Another company has a fixed charge of 5 cents a ton. These weights are the bases of all payments by the customer. The burden of shortages in shipment is transferred to the middleman or the shipper, and he must fight it out with the transportation companies. Some of the dealers profess the belief that the custom is establishing itself as a permanent factor in the trade, because, though it was inaugurated in a market entirely favorable to the buyer, yet when conditions change, and the seller is in a position to dictate, it will be difficult to take a step backward in liberality.

Naturally, if this is the true aspect of the situation, the dealers will have to bear the expense of shortages, and the aggregate of such losses may be considerable, unless some method is devised to eliminate them. The seller is brought into closer active co-operation with the buyer in acting for a common good. As is well known, the attempt at some fair system of placing responsibility has been made by a conference between representatives of foundrymen's associations, shippers and the transportation companies, but little, if anything, was accomplished, beyond giving the subject additional agitation, because the railroad and steamship people could not see the practicability of changing existing methods.

Hitherto, under an almost invariable rule, the customer has been compelled to accept the billed weights, and the railroads have based their freight charges thereon. It is the established practice that the ovens take the railroads' weight at point of shipment as the basis of billing coke, while the railroads take the furnace weights on shipments of pig iron. There has been small redress for buyers so located that freights must pass over the lines of several transportation companies, even if delivered weights were grossly less than billed weights. Complaints have brought forth the claim by each of the companies handling the freight that any loss must have occurred on some other line. Settlements for losses and proportionate allowances for freights have, therefore, been difficult to obtain, and hence comes the desire of the buyer that his coke and iron be billed on receivers' weights, which rids him not only of losses but of annoyance. The gain to the consumer is the loss to the dealer or shipper. It is he who must look to the transportation companies for indemnity or concession.

The causes of discrepancy have been discussed in detail during the past year. A shortage may result from actual loss in transit, through theft or otherwise, or through an error on the part of an employee of railroad or furnace at point of shipment in weighing or in reading or putting

down the tare weight of car; or the tare weight itself may be wrong. Several cases have been reported in the past month where it was apparent that an actual error had been made by the transportation company in finding the weight of a carload of coke, but the effort to procure a correction has been fruitless. In one typical instance the billed weight of a carload was some 10,000 lb. more than the tare weight of the car as stenciled upon it, as if a car with maximum capacity of 35,000 lb. had been made in the billing to hold 45,000 lb. Yet the railroad which gave the weights asserts that the complaint has been investigated and found groundless so far as that company's lines are concerned.

As already stated, the matter has now come to a point where some tribunal will be asked to pass on test cases and establish precedents to govern the settlement of future disputes of this nature. Probably New England will take the initiative in the litigation, either by association or individual action. The plan is first to go to the Interstate Commerce Commission, asking that body to adjudicate the issue, laying down rules to govern in the future, the contention being that the commission has jurisdiction because the transportation companies have discriminated between like claims, making concessions in some and declining to do so in others. If the commission should decide that it cannot act, then the purpose is to take the question to the courts and carry the case to the point of establishing legal precedents of responsibility which would have important influence in the settlement of future claims.

## Trade Combinations in Germany.

The Chamber of Commerce of Berlin, Germany, prints annually a series of elaborate reports, prepared by specialists, relating to commercial, industrial and financial developments. These experts, in the course of their investigations, have collected some data bearing on the great movement in their country toward a methodical elimination or moderation of competition among those engaged in the same line of business.

### The Great Variety of Associations.

One report prints a list of associations, combinations and syndicates which the experts regarded as influential. It does not include the syndicates in the mining or other great branches, nor those which have existed for so long a time that they are established. It does include 22 associations which were founded in 1907, among which were the spinners of Saxony and Thuringia; the manufacturers of waists, suits and similar articles; the makers of mantles and cloaks of Germany; the association of wholesale dealers in boys' clothing of Berlin; the wholesale dealers in ladies' dress goods; the association of German straw hat and ladies' felt hat manufacturers; the manufacturers of ladies' hats of Berlin; the association of wholesale dealers in straw hats of Germany; the brass syndicate; the syndicate of rolled and pressed lead products; the association of German wind instruments; the vise syndicate; the association of manufacturers of gas and water fittings; the price association of German book printers and others.

Associations are further mentioned as existing among the manufacturers of silk goods, of velvet and plush manufacturers and of dealers in the latter goods, of wholesale dealers in dress goods, of makers of necktie goods and of neckties, of makers of hat bands, of corset clasps and springs, of wool combers and spinners, of manufacturers and wholesale dealers in rubber balls, of dealers in steel shapes at Berlin, of manufacturers of copper sheets and wire, of German dealers in electrical goods, of envelope makers, of manufacturers of China, of cement mills, of merchants and manufacturers of toys at Sonneberg, of wholesale dealers in mineral waters, and of the Berlin wholesale dealers in coal, coke and briquettes. The partial enumeration indicates how widespread the movement is.

### Designed to Benefit Their Members.

All these associations have the common aim to better the position of the individual members by determining the maximum which they will yield to customers. The more the goods sold by manufacturers and dealers are uniform, the more pronounced is the aim to determine prices directly as with the selling syndicates in the metals, coal, bottles and alcohol. The greater are the differences in the quality of the products of different manufacturers, and therefore the greater the differences in prices, the more the agreements must refer to other conditions of sale. These may be less important than the prices, but they, too, are very significant. These are credits, discounts, acceptance of rejected goods, free delivery of samples, arbitration in cases of disagreement, &c. To this class belong the majority of the combinations in the textile and clothing industry, with its wide range of styles.

Agreements as to conditions regularly supplement the fixing of prices. One modification of price combinations is that in which the maximum prices are not directly fixed, but are aimed at only indirectly, by confining competition within geographical boundaries or by pooling the output. Special note should be made of the combination of manufacturers of trademark goods, because it embraces very different articles, all, however, bearing a trademark, from champagne to cosmetics. The aim is to keep up the retail price. A retailer who is shown to have sold a single trademark article at less than the established price has the goods of all members of the combination withdrawn from him.

### Organization Becoming More Efficient.

Progress in establishing combination has the effect of inducing a premium for similar organizations in other branches not yet syndicated. The force of example is potent. Experience is developed in organizing combinations which has gradually led to efficient types of organization and has rejected inefficient types. Then, too, there has been direct coercion. Buyers who must promptly pay syndicated manufacturers and dealers have less means for paying for goods in other branches, and keep the sellers in those branches waiting until they also form associations.

On the other hand, the combinations among sellers have aided similar organizations among buyers who have sought to force lower prices and more satisfactory terms in this manner. Thus buyers' associations have been formed among smiths, florists, paper hangers, druggists, &c. The Association of Retailers of the Dry Goods Trade has directed its attention chiefly to more satisfactory methods of buying.

At first these associations were declared to be "excresences," which should not exist, and should be got rid of, if necessary through the intervention of the State. Now the public has grown accustomed to see them extend to wider fields, and to become lasting institutions in consequence of the inherent strength of the organizations. Among those directly affected, the prevailing opinion concerning syndicates in their own particular branch may be summarized as follows: The syndicate to which I belong is for the common good, but the combination formed by those who supply me, or who buy my goods, is hurtful to the community.

Those who cannot see any chance of an association in their own branch have no alternative but to regard all syndicates as injurious to the public. Those who are able to rise above the narrow selfish point of view will judge a syndicate on the basis of whether it uses its power solely for its own purposes or whether it has some consideration for the other links in the economic chain.

### The Complaints Against Them.

At the present time complaints against the syndicates are quite widespread, and are frequently justified, the following being conspicuous. So far as the policy with regard to prices is concerned, the old complaint is repeated that many syndicates covering raw materials or semifinished articles render the export of finished goods more difficult by selling cheaper abroad than at home. Complaint is made that syndicates frequently raise and lower prices suddenly and largely, while under the sys-

tem of open competition these changes took place more gradually. By these sudden changes the calculations based on former prices, made by dealers or manufacturers, are upset. These troubles are very serious when the combinations break down, since the prices which had been screwed up artificially are apt to drop very much and old stocks are greatly reduced in value.

A common selling agency for the entire pooled products of the syndicate has the very serious drawback that the buyer often does not get exactly the goods which he needs in his operations, and that sometimes, in order to receive any consideration at all, he must submit to having other brands delivered to him.

#### Common Terms or Variable Terms.

The objection is made against strict common terms that they force retailers who do not control ample capital to order cautiously, which means that they must pay more than when they ordered large quantities. As the assortment is less extensive, the temptation to buying exerted upon the public is lessened, and both these considerations tend to reduce the consumption. This is particularly noted when an effort is made to enter the sharp competition of the world's markets. Then, too, the more accommodating spirit of foreign sellers sometimes makes it preferable to pay duties and import the goods. The fact is pointed out that the syndicates do not standardize terms in cognate branches. Thus a large retailer reports that in his purchase he deals with 35 different combinations, and must comply with 17 different sets of terms. In France and England the entire textile industry deals under common terms.

Combinations are usually formed among those belonging to the same stage of the process—among manufacturers, wholesalers or retailers, each by itself. Complaint is made that in almost every case the other groups have their vital interests neglected. The assertion is made that relatively minor changes in the syndicate agreement would have rendered it innocuous or even advantageous to them. The latter point of view is regarded as important in order to smooth down the opposition which the syndicate movement has brought out. It is believed that, in forming such pools, all the lines of business involved should be given consideration and their just claims should be met; in other words, that a broader economic policy should take the place of the narrower business point of view.

It remains to be seen which syndicates, whose creation has so greatly developed during a rising tendency, will show vitality when the business is receding; when the hunt for work and for orders which is characteristic of such periods begins.

## The American Car & Foundry Company.

The ninth annual report of the American Car & Foundry Company, covering the operations of the year ending April 30, 1908, shows that the income account compared as follows with the previous year:

| | 1908. | 1907. |
|---|---|---|
| Total earnings | $10,624,574 | $11,115,087 |
| Rentals, repairs, &c | 1,663,194 | 1,768,003 |
| Net | $8,961,380 | $9,347,084 |
| New construction charged off and insurance reserve | 746,762 | 1,207,548 |
| Balance available for dividends | $8,214,618 | $8,139,536 |
| Preferred dividends | 2,100,000 | 2,100,000 |
| Balance | $6,114,618 | $6,039,536 |
| Common dividends | 1,050,000 | 600,000 |
| Surplus | $5,064,618 | $5,439,536 |
| Reserved for repairs, maintenance and improvements | 1,650,000 | ..... |
| Reserved, common dividend | 600,000 | ..... |
| Year surplus | $2,814,618 | $5,439,536 |
| Previous surplus | 19,552,630 | 14,113,094 |
| Total surplus | $22,367,248 | $19,552,630 |

The statement of working capital shows as follows: Original working capital, $5,633,004; add surplus earnings at April 30, 1908, as above, $22,367,247; total, $28,000,252. Deduct cash expenses for new steel car and other plants, additional real estate, amount reserved for payment of full purchase price of Wilmington plant, and for additions to steel car plants from date of organization to April 30, 1908; and reservation for construction of and additions to steel car plants, $10,815,537; net working capital, excluding reserves, April 30, 1908, $17,184,714.

In his report to the stockholders Frederick H. Easton, the president, said that notwithstanding a heavy falling off in the demand of the railroads for new equipment during the fiscal year, the production of the company's plants was 51,532 steel freight cars, 32,063 wooden freight cars, 171 steel passenger cars, 574 wooden passenger cars, 881,423 car wheels, 16,746 tons of cast iron water pipe, 69,698 tons of gray iron castings, 18,251 tons of pig iron, 136,853 tons of bar iron and axles and 4,500,000 ft. of lumber. The gross sales for the year were $104,319,560. The amount of freight paid to railroads on material received and shipped by the company was $6,625,000. The average number of men employed was 23,521 and the wages paid during the year were $15,915,828. Continuing, he says:

"During the year there has been constructed and equipped one new shop at Milton, Pa., for building all-steel tank cars. Practically all other expenditures charged during the year to plant account have been for improvements at the different steel car shops. There has been made a reservation of $1,500,000 to cover (as circumstances may make advisable) the construction of new or additions to existing steel car plants. There has been set aside also $1,650,000 for general overhauling, improvements, maintenance, &c., including the installing of labor saving devices and the equipping of plants with such new machinery as may be necessary to enable us to maintain our leadership in the car building industry. The making of these reservations does not necessarily mean that the total amount will be used during the current year, but it seems wise to have money available so that the company, following its policy of constant improvement, may be in a position to take advantage of favorable conditions as they offer, and hence prosecute the work with least expense and with least interference with productive operations.

"The problem of insurance has been made the subject of careful study for some time past, and the result has been reached that it is advisable for the company itself to carry at least a part of the fire risk. To effect this there has been created an insurance reserve, which at the close of the fiscal year amounted to $1,000,000. In the construction of new shops, brick, steel and other fireproof materials have been used to the largest extent possible, and all repairs and changes in other shops have been designed and made with reference to making them as thoroughly fireproof as possible consistent with the original design; and in line with this, many of them have been equipped with sprinkler systems and other safeguards.

"Conditions recently obtaining in the industrial world have served to emphasize the soundness of the policy to which the company has committed itself—that is, the accumulation of a working capital sufficiently large to enable it to conduct its ordinary operations without strain during times of financial stringency and to have readily available in prosperous times the capital necessary to produce satisfactory returns.

"During the heavy months of the past year the inventories aggregated $21,000,000, and, with the accounts receivable, necessitated the borrowing of a larger amount of money than is altogether desirable."

The number of car orders on hand at the close of the fiscal year was the smallest in the history of the organization. This was due solely to the general business depression and condition of financial unrest, the first effects of which are always shown in the railroad's retrenchment in the purchase of new equipment and rolling stock.

The general balance sheet as of April 29, 1908, shows: Total assets, $92,843,392, against $104,185,495 previous year; accounts and notes receivable, $17,797,171, against $18,464,543; cash, $3,457,562, against $3,322,309; audit vouchers payable and payrolls, $4,551,145, against $22,533,863; profit and loss surplus, $22,367,248, against $19,552,630.

The plant of the Seaboard Pipe Foundry Company, at Savannah, Ga., has been put in operation, after an idleness of some months.

# Trade Publications.

**Reamers.**—William J. Smith Company, New Haven, Conn. Booklet. Describes and gives price-lists of the Smith one-lock adjustable reamer consisting of only three parts in addition to the blades, which are the shell, cam bolt and lock nut. The reamer was illustrated in *The Iron Age*, October 3, 1907.

**Machine Tools.**—Sibley Machine Tool Company, South Bend, Ind. Catalogue No. 50, 6 x 9 in., 36 pages. Devoted to the Sibley & Ware power drills, which are made in 20 to 28 in. sizes, including drills with plain lever feed and combined lever and wheel feed. Motor drive can be had for all the standard sizes and types. Parts for repairs are illustrated and numbered to assist customers in ordering.

**Precision Machinery.**—Sloan & Chase Mfg. Company, Newark, N. J. Loose leaf catalogue of bulletin Nos. 1 to 10. Bench lathes, rack cutters, gear cutters, pinion cutters, drill presses, tapping machines and other types of specially accurate machine tools are shown, together with a number of special tools and precision machinery attachments.

**Roofing.**—W. H. Johns-Manville Company. Pamphlet. Devoted to asbestos roofing, which is made in rolls similar to the ordinary roofing. A number of illustrations are given showing buildings where the roofing has been applied.

**Concrete Machinery.**—Svenson-Sherman Machine Company, Pittsburgh, Pa. Booklet. Pertains to Svenson concrete mixers, which are made in portable form, and which it is claimed mix cement to accurate measure. Illustrations of the machine in use are given, together with testimonial letters.

**Tie Plates and Spikes.**—Hart Steel Company, Elyria, Ohio. Catalogue, 6¾ x 8½ in., 45 pages. Devoted to the McKee plates, which are made in several types and particularly with corrugated tops in a number of designs. Several diagrams give the punching data for a number of different rail bases used by several railroads, to which the company has furnished tie plates, and a section of the book refers to spikes, giving information for ordering the company's product.

**Link Belt Chains.**—Link Belt Company, Nicetown, Philadelphia, Pa. Catalogue 175, 6 x 9 in., 208 pages. The varied types of link belt chains and attachments made by the company are illustrated and listed. Traction wheels, chain gears and conveying equipment made by the company are also shown, together with price-lists and directions for ordering the company's product.

**Pumps and Pumping Engines.**—M. T. Davidson Company, 43-53 Keap street, Brooklyn, N. Y. Catalogue, 6 x 9 in., 96 pages. Covers a complete line of pumping equipment, including pumping engines, air pumps, boiler feed pumps, gas works pumps, mining pumps, distilling apparatus, &c. Useful information, such as areas of circles, directions for installing and operating pumps, and tables of friction loss in pipes are given, and illustrations and sectional drawings of the several types of pumps are included.

**Engineering Specialties.**—D. T. Williams Valve Company, Cincinnati, Ohio. Catalogue, 5 x 7 in., 180 pages. Illustrates and describes various lines of valves, oil cups, steam traps, cocks, &c., made by the company, in addition to some interesting information regarding repacking valves, directions for regrinding, &c. A number of useful tables and other data, such as terms applied to electrical units, receipts for treating steel, cleaning brass, caring for machinery, &c., are given.

**Machinery and Machinery Supplies.**—Machinists' Supply Company, Chicago and Pittsburgh. Catalogue, 6¼ x 9¼ in., 813 pages. This volume is bound in cloth and contains an index of 21 pages. The book is copiously illustrated and embraces a complete line of machinists', railroad, mill and mining machinery and supplies.

**Corrugated Sheet Steel.**—Brown Hoisting Machinery Company, Cleveland, Ohio. Catalogue, 6 x 9 in., 36 pages. Devoted to Ferro-inclave, which is a corrugated sheet steel of special shape used in the construction of fire resisting roofing, siding, flooring, &c., which, after it is secured in place, is filled on both sides with Portland cement. This makes a reinforced concrete construction. The sheets are crimped into dovetailed sections, the corrugations being ½ in. deep. Illustrations of construction work in which the steel has been used are given and a number of completed structures are shown. Methods of applying the sheet steel and combining it with the cement are illustrated with the aid of drawings.

**Stay Bolts.**—Falls Hollow Stay Bolt Company, Cuyahoga Falls, Ohio. Brochure. An interesting little booklet entitled "Stay Bolts: Their Use and Abuse," written by John Hickey, master mechanic.

**Hammer Drills.**—Sullivan Machinery Company, Chicago, Ill. Bulletin 60 A. Devoted to the Sullivan hammer drill, which, it is explained, is a comparatively new type of rock drill, similar [illegible] way to a large pneumatic riveting or chipping hammer. This drill is operated by air, and when the bit is held against the rock it is struck by a piston or hammer, which drives the shaft end of the steel at 1200 or more blows a minute. The drill is rotated by hand. A complete description of the parts of the machine is given. The drills are made in sizes weighing up to 70 lb., capable of drilling a hole 2 in. in diameter and 96 in. deep.

**Asbestos Wood.**—H. W. Johns-Manville Company, 100 William street, New York. Catalogue No. 107. A small booklet advocating the substitution of asbestos wood for slate, marble or fiber. This is made principally from asbestos fiber and has the appearance of ordinary wood, although it is much harder and takes a higher polish. It is made in the shape of boards, shingles, &c., and can be used in construction work much the same as wood.

**Tubular Boilers, Dryers, Steel Stacks and Steam Pipes.**—Coatesville Boiler Works, Coatesville, Pa. Catalogue. Describes principally the Coatesville high duty return tubular boiler, and contains illustrations of steel stacks, cooling towers, storage tanks, &c.

**Peat Machinery.**—Julius Bordollo, Kingsbridge, N. Y. Catalogue. Devoted principally to machines for peat briquetting made by the A. Heinen Machine Works of Germany, for which Julius Bordollo is the American agent.

**Metal Melting and Refining Furnaces.**—Hawley Down Draft Furnace Company, Chicago, Ill. Catalogue, 8½ x 10½ in., 80 pages. Particularly treats of Schwartz metal melting and refining furnaces, in which either oil or gas can be used as fuel, and which are built in seven sizes up to furnaces with a 120-in. shell. Numerous illustrations and cross section drawings are given, together with tables governing the melting of metals and giving mixtures for making various combination metals. Some space is given to the Hawley down draft furnaces.

**Lathe Mandrels.**—W. H. Nicholson & Co., Wilkes-Barre, Pa. Circular. Illustrates a full set of Nicholson expanding lathe mandrels and gives dimensions and prices.

**Mining Equipment.**—Jeffrey Mfg. Company, Columbus, Ohio. Pamphlet. Shows a number of installations of Jeffrey wire cable hauls, elevators, coal picking tables, belt conveyors and other mining equipment.

**Lightning Arresters.**—General Electric Company, Schenectady, N. Y. Bulletin 4573. Details benefits to be derived from the use of lightning arresters and shows a graded shunt resistance multigap lightning arrester of new design, and describes low voltage arresters, static dischargers, constant current horn arresters, &c.

**Valves.**—Schutte & Koerting Company, Philadelphia, Pa. Catalogue 8, sections A, B, C and D. Section A shows types of extra heavy hard bronze valves with cross sectional views; section B is devoted to stop, check and emergency valves; section C illustrates a number of stop and throttle valves and special globe valves, and section D describes balanced trip and trip throttle valves and balanced stop and throttle valves, some of which are made in the heaviest known sizes. These sections are all arranged so that they can be added to a loose leaf catalogue.

**Flexible Shafting, Drills, Grinders, Foundry Equipment, &c.**—Coates Clipper Mfg. Company, Worcester, Mass. Bulletin No. 21. Illustrates, assembled and in sections, the Coates unit link flexible shafting, which was described in *The Iron Age* June 4, 1908. The rest of the book is devoted to drill presses, breast drills, patent multiple grinders and attachments, foundry equipment, radial drills, boring machines, etc., in connection with most of which the flexible transmission is a feature.

**Metal Reels, Spools and Beams.**—Frank Mossberg Company, Attleboro, Mass. Catalogue. Covers reels and spools for wire manufacturing, and also for the textile industry.

**Foundry Equipment.**—Whiting Foundry Equipment Company, Harvey, Ill. (Chicago suburb). Booklet, 6 x 9 in., 30 pages, designed especially for distribution as a souvenir at the company's booth in the recent foundrymen's convention held at Toronto, Canada. Owing to the favor with which it was received, a second edition for general distribution has been prepared, covering a complete line of foundry equipment, embracing all the later models and improvements that have been introduced for the perfection of these appliances. Interesting illustrations show the disposition and arrangement of traveling and jib cranes, tumblers, core ovens, pneumatic crane systems and the Moyer tramrail system. The company also publishes a general catalogue in which all these different machines and appliances are more specifically described. This is referred to as the "foundrymen's reference book," for examples of efficiency and economy in foundry equipment developed by experience and tried out under tests of actual service. The company invites special attention to its automatic cupola charging machine operated by compressed air.

**Gasoline Engines.**—Globe Iron Works Company, Menominee, Wis. Catalogue No. 1006, 8½ x 9¼ in. Describes the White gasoline engines in both stationary and portable types, which are described as the "hit and miss" and the "automatic," each operating on the four-cycle principle. The electric ignition system and the arrangement of throttle, air and resistance valves are clearly illustrated in broken view showing the internal mechanism of these parts. A line drawing illustrataes the proper setting and connections for the installation

of the engine. Several types of portable outfits for well drilling, pumping and other service are shown in full page engravings. The company, which some years ago was located in Minneapolis, is now represented in that city by W. E. Wines, 6-8-10 Central avenue. Since its establishment in Menominee a large part of its output has been sold in Australia and New Zealand.

**Electrical Equipment.**—General Electric Company, Schenectady, N. Y. Booklet on illuminous radiators, which consist of an ornamental cast iron frame fitted with a polished copper reflector in the back and with large cylindrical incandescent heating lamps. Bulletin 4584, issued by the same company, describes the CQ motor for direct current circuits, which is made up to 20 hp. in size. Bulletin 4576 describes oil switches for panel installation and remote controller. Bulletin 4579 is devoted to luminous arc headlights, and bulletin 4578 treats of railroad motor controllers.

**Power Hammers.**—Beaudry & Co., Inc., 141 Milk street, Boston, Mass. Bulletin. Describes the Beaudry champion power hammer, which is made up to 9000 lb. in weight.

**Die Stocks.**—William P. Walter's Sons, 1233 Market street, Philadelphia, Pa. Brochure. Devoted to the Forbes die stocks, for hand power and pipe mill machines, and pipe cutters and vises. Price-lists and directions for ordering are given.

**Centrifugal Pumps.**—Alberger Pump Company. Catalogue A, 6 x 9 in., 32 pages. Describes the development and theory of centrifugal pumps and the design and construction of the Alberger volute pumps, which are known as the standard regular two-stage and turbo volute types. Illustrations are given of the standard volute pumps, motor driven and belt driven, and the volute pump, engine driven. The other illustrations include two-stage volute pumps, centrifugal condensers and the Alberger turbine pumps.

**Welding.**—Goldschmidt Thermit Company, 90 West street, New York. Pamphlet showing methods of butt welding wrought iron and steel and pipes and rods by the thermit process.

**Rock Crushing and Road Building Machinery.**—American Road Machine Company, Kennett Square, Pa. Catalogue, 7 x 9½ in., 60 pages. Illustrates and describes rock crushers and a general line of road building machinery.

**Piston Pumps.**—International Steam Pump Company, New York. Bulletin B K-811. Illustrates a new type of vertical duplex pumps suitable for boiler feeding.

**Compressed Air Hoisting Machinery.**—Detroit Hoist & Machine Company, Detroit, Mich. Catalogue. Shows pneumatic geared hoists which are made to handle loads of from 1 to 10 tons. Sectional views of standard types of hoists are shown; a diagram of the outside dimensions of pneumatic stationary engine made by the company is given, and a pit car loader and a combination loader and conveyor operated by compressed air and manufactured by the company are shown.

**Chucks.**—Cincinnati Chuck Company, Cincinnati, Ohio. Price-list showing the four-jaw chuck, which is made in sizes from 8 to 24 in.

**Punch and Shears.**—Cincinnati Punch & Shear Company, Cincinnati, Ohio. Catalogue No. 11, 6¼ x 9¼ in., 64 pages. Principally devoted to punch and shears, which are made by the company in all the standard sizes. The machines are illustrated and described and the book includes views of the double punch and shear, combined punch and shear, and a special machine with a 36-in. throat, which can be used as either a punch or shear by changing the attachment. A small part of the volume is given over to bending and straightening rolls and rolling mill machinery.

**Electric Traveling Cranes.**—Alfred Box & Co., Philadelphia, Pa. Catalogue, 7 x 9¾ in., 48 pages. Numerous illustrations of traveling cranes are given, including two 60-ton, 74-ft. span cranes installed in the locomotive shops of the Missouri, Kansas & Texas Railroad, at Parsons, Kan. A general description of the Box standard cranes is given, together with views of sections of machines, such as trolleys, hoisting crabs, motors, &c. A list of users of the firm's cranes is included, together with directions for ordering.

**Clutches.**—Sturtevant Mill Company, Boston, Mass. Booklet. Views of ore breakers and rock crushers are included in this volume, with prices. These machines are made of rolled plate steel, and the booklet contains arguments in favor of crushers made of this class of material as against cast iron. The company makes steel plate crushers up to a capacity of 150 tons an hour.

**Planers.** Whitcomb Blaisdell Machine Tool Company, Worcester, Mass. Folder. Shows a second-belt drive planer which is built in standard sizes, from 7 to 30 in. The second belt drive is a comparatively new method of operating planers and it is applied, the folder states, to all sizes of Whitcomb planers.

**Portland Cement.**—Universal Portland Cement Company, Chicago and Pittsburgh. Catalogue, 6 x 9 in. Gives the history of the manufacture of universal Portland cement and illustrates samples of the materials of which it is composed. Bridges, railroad construction and buildings where the cement has been used are illustrated and a number of tests are cited. The catalogue is accompanied by the May bulletin of the company, showing recent construction work in which this cement has been used.

**Radiators and Condensers.**—Long-Turney Mfg. Company, Rome, N. Y. Catalogue, 6 x 9 in., 31 pages. Advocates the company's vertical tube radiators for automobiles and illustrates styles adaptable to different machines.

**Forging Tools, Punching and Shearing Tools and Railroad Shop Equipment.**—Williams, White & Co., Moline, Ill. Catalogue, 7 x 11 in. This is a good sized volume showing the firm's line of bulldozers, upsetting and forging machinery, punches and shears, gang boring machines, &c. Considerable space is given showing the work that has been done by these machines, and cross sections of an upsetter are shown, together with an illustration of the firm's exhibit at the World's Fair in St. Louis, 1904.

**Boiler Compounds.**—H. W. Johns-Manville Company, New York. Booklet. Devoted to magic boiler compound. It is claimed that this compound does not dissolve the boiler scale, but loosens it from the iron. The effect on the boiler is as a preventive rather than otherwise, it is claimed.

**Power Pumps.**—Lucas Pump Company, Dayton, Ohio. Brochure. Contains illustrations and descriptions of the company's line of power pumps and some space is given to self-starters for electric motors.

**Boilers.**—Traylor Engineering Company, 2 Rector street, New York. Booklet. Describes the Hawkes boiler, which is a combination of the horizontal return tubular and water tube type. Details of the construction of the boiler are given and a number of installations are shown, together with sectional drawings of the apparatus. Space is given to foundry ladles and riveted and welded pipe made by the company.

**Crane Fittings.**—Electric Controller & Supply Company, Cleveland, Ohio. Bulletin No. 281. Arranged for loose leaf catalogue. Gives prices and descriptions of crane settings, such as trolley wheels, trolley contacts, fuse blocks, circuit breakers, knife switches, &c.

**Variable Speed Motors.**—Lincoln Motor Works Company, Springfield, Ohio. Bulletin No. 10. Consists of 16 pages describing variable speed motors and including detailed drawings, speed and efficiency charts, table of ratings and general outlined dimensions. A motor is shown driving a large engine lathe.

**Vertical Gas Engines.**—Bruce-Merian-Abbott Company, Cleveland, Ohio. Catalogue A, section 1. Treats of the adaptability of vertical gas engines for electric lighting, pumping and general power purposes. The engine is built in two types, one for operating on natural or illuminating gas and ano her for operating on producer gas. It is argued that these engines are especially efficient and economical for medium sized lighting plants. The engines are of the vertical multiple cylinder type, operating on the four-stroke cycle principle. The catalogue is illustrated with a full view and a cross section view of a 100-hp. engine, and several of the more important parts of the machine are shown and described. Views are also given of a producer gas outfit and a suction gas producer made by the company.

**Rail Bonds and Appliances.**—American Steel & Wire Company, Chicago, Ill. Folder supplementing 1907 catalogue. Illustrates several types of rail drills used in the installation of twin terminal bonds.

**Magnetos.**—Boch Magneto Company, 160 West Fifty-sixth street, New York. Catalogue. Illustrates and describes the Boch magneto for cycle motors, arc lights, automobile motors, &c., made in a number of different types, including low and high tension magnetos and special low tension magnetos for magnet plug ignition.

**Steam and Oil Separators.** Ohio Blower Company, Cleveland, Ohio. Catalogue No. 116. Size 6 x 9 in., 72 pages. Describes the Swartwout cast iron exhaust head and centrifugal steam and oil separators, made in a number of types. Views of the apparatus are shown, including two exhaust heads of the 36-in. condenser type made for the Utah Copper Company for use in the largest copper smelting plant in the world, at Garfield, Utah. Views of buildings in which the exhaust heads have been used are given and sectional drawings of the apparatus are shown. The volume includes descriptions of oil separators, steam separators of various types and interesting tables and other useful data.

**Clutches, Chain Speed Gears, Metallic Tire Cases.**—Merchant & Evans Company, 517 Arch street, Philadelphia, Pa. Catalogue, 8 x 10¾ in., 40 pages. Contains illustrations of the Hele-Shaw clutch for motor cars, boats, &c., with views of unassembled parts and sectional drawings. Space is also given to friction disks, change speed gears, metallic tire cases, automobile axles, springs, clips, shackles and other accessories.

**Chucks.** Skinner Chuck Company, New Britain, Conn. Booklet. Shows various types of chucks, giving price-lists. The company makes drill chucks, lathe chucks, planer chucks, scroll chucks, two jaw chucks, &c.

# The Lake Superior Mining Institute.

DULUTH, MINN., June 27.—The thirteenth annual meeting of the Lake Superior Mining Institute has been in session this week on the Minnesota iron ranges. It began Wednesday afternoon. Special trains of sleeping, dining and private cars carried the members on their rounds of the ranges.

The session began on Wednesday with an informal reception and smoker at the Northland Country Club at Duluth. Trips to the works of the Great Northern Power Company, the Minnesota Steel Company, the Zenith Furnace Company and various other points of general interest around the city were arranged by the local committees.

### On the Vermillion Range.

On Thursday morning the trains were sidetracked close to the Pioneer mine, at Ely, and a surface inspection was made of the various mines of the "Ely trough," including the Pioneer, Zenith, Savoy and Sibley. The Chandler, the original mine of the district, is now practically exhausted. This mine produced since 1888 a total of 9,150,000 tons. The other mines named are all operated by the Oliver Iron Mining Company and last year produced a total of 1,582,290 tons. The underground haulage system of the Pioneer, the various steel shafts of great capacity, that at the Pioneer having a capacity for hoisting 100,000 tons per month, the shafthouses, some of them 165 ft. high and of steel construction, and the automatic hoisting machinery were all worth close examination. These mines of Ely have produced since opening a total of 18,631,606 tons. No visit was made to the famous "section 30," for no development is under way there, the costly explorations that have been in progress for some years being now suspended.

A stop of a few minutes was made at Soudan, after leaving Ely, on the way to the Mesaba range. At Soudan is the old Minnesota mine, the original iron mining property in the State, from which 8,200,000 tons have been mined. This mine, which last year produced only 102,000 tons, was the reason for the construction of the Duluth & Iron Range Railroad and the formation of the Minnesota Iron Company, with its capital of $8,000,000, and was what led Charlemagne Tower, the elder, to invest half that sum in the development of the district. At the time Mr. Tower began his investment there was not to exceed 100,000 tons of ore in sight at the mine—and no thought that any more mines existed in the State,—which is an interesting comment on the boldness, intrepidity and, withal, of the sublime assurance of ignorance, with which that vast investment was made. Last year the Minnesota produced only 1.24 per cent. of the tonnage of the road, and if it were still the only mine on the railroad, the latter could not be operated.

### On the Mesaba Range.

In the afternoon of Thursday there was a brief inspection of the Biwabik mine, which is operated by the Biwabik Mining Company and was notable in the early days of the Mesaba by reason of the exceptional boldness of the plans for its stripping, the rapidity with which its tonnage was increased, and the consequent scare it gave old range operators at a time when the industry was at low ebb, and for the excellent character of its ore. There have been taken from the surface of this mine more than 4,000,000 cubic yards of overburden, and it has produced 8,250,000 tons of ore. From Biwabik the party visited the Adams, Spruce and Fayal mines at Eveleth, all of which are operated by the Oliver Iron Mining Company, and which last year produced a total of 3,685,782 tons of ore, and since their opening, in 1895, 28,959,831 tons. At these mines all the various systems of mining in vogue on the Mesaba were to be seen. From the open cuts of the properties there have been taken a total of 9,725,000 yards of overburden. From Eveleth the party went to Virinia, where some time was spent in examination of the Oliver group, the Republic Iron & Steel group, the Corrigan, McKinney & Co.'s Commodore mine, and the Jones & Laughlin group, some surface and some underground. From the Oliver group alone, which is now under extensive development, there has been removed 2,550,000 yards of surface above the ore. The first evening session for business and the reading and discussion of papers was held there.

Papers presented include the following: "Sampling of Iron Ores," by Prof. L. S. Austin, Houghton, Mich.; "Biographical Sketches," by John H. Hearding, Eveleth, Minn.; "Oliver Iron Mining Company's Standard Boiler-House," by A. M. Gow, Duluth; "Automatic Throttle Closing Device for Hoisting Machinery," by Spencer S. Rumsey, Duluth; "The Hydro-Electric Plant of the Great Northern Power Company on St. Louis River," by Francis A. Cokefair, Duluth; "Coleraine," by M. Curley; "The Late Hon. Peter White, of Marquette;" "The Hydro-Electric Plant of the Penn. Iron Mining Company at Sturgeon Falls, Mich.," by Messrs Orbison and Armstrong; "A Reconnaisance Along the West Mexican Coast," by Dwight E. Woodbridge."

### At Virginia, Hibbing and Coleraine.

On Friday the Mountain Iron open cut mine of the Oliver Company was seen. This was the initial property taken by the famous Carnegie-Oliver coalition, being secured from the Rockefeller interests in 1898, and thus it formed the basis, with the Oliver of the Virginia group, for the Oliver Iron Mining Company. It is opened in a tremendous manner and a yardage of nearly 5,000,000 has been taken from it, aside from about 17,000,000 tons of ore. During two consecutive years the mine produced more than 5,000,000 tons of ore alone. The Monroe-Tener group was visited for an inspection of advanced methods of opening for underground and milling processes, and for the elaborate and extensive system of underground electric haulage in place there. This property, while a vast sum has been spent in development, and while many millions of tons are ready for mining, is not producing very largely on account of the grading system of the company. The latter is able to conserve the leaner ores near its surface until such time as the increased tonnage from the range shall make it possible to mine and mix these leaner ores to bring an average grade, and that without sacrificing either the high grade or the poorer material in this immense deposit. In three years the company has removed 3,875,000 yards of overburden from this property and made a vast pit of great depth.

Most of the day was passed at Hibbing, where there are more mines than at any other point, and where the extent of operations is very great. The Hull-Rust alone has stripped 4,400,000 yards, all in about two years; the Burt 4,000,000 and the Mahoning 3,500,000. It was impossible to visit many of the important outlying mines near Hibbing, such as Stevenson, Leetonia, and the like, and after a business session the trains proceeded to Coleraine, the scene of the Oliver Iron Mining Company's vast activities in the development of low grade ores of the western Mesaba. These are ores that can be concentrated into merchantable condition by washing, and an experimental washery is in operation on the shores of Trout lake. The stripping development at this point is especially noteworthy not alone from its magnitude, though 2,475,000 yards have been taken off in less than two years, while less than 18,000 tons of ore have been shipped to this time, but from the labor saving methods utilized and in the amount of earth removed from month to month. The town of Coleraine is owned by the company, and a most successful attempt is being made to build up here a model dwelling place in which there shall be all possible comforts and conveniences, and inducements for the best class of residents to become permanent citizens. Large sums are being spent, and able minds are directing matters, toward this end.

The session ends at noon to-day with the departure of the party from Coleraine by train for Duluth.

D. E. W.

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At New Haven, Conn., Frank McGee, a business agent of the Iron Molders' Union, was found guilty by a jury last week on three counts, alleging intimidation in connection with a strike at the McLagon Foundry Company's plant last year, and was sentenced to three months' imprisonment on each count. An appeal has been taken to the Supreme Court.

# The Static and Dynamic Properties of Steels.

BY W. L. TURNER.*

We have now arrived at a time when engineers and manufacturers, engaged either in the direct production of, or compelled by necessity to make a selection from, one or other of the numerous alloy or special steels now in the market, are set face to face with the problem of determining the relative merits of the materials at their disposal. The reason for this necessity of choice will be apparent when investigation is made into the limits which ordinary steel imposes on the user, due either to lack of strength, want of toughness, or failure to respond to the ever-increasing demands of engineering practice. It cannot be readily denied that conditions nowadays are such that designers in machine construction have, in many instances, arrived at the limits imposed upon them by the materials at hand. Future requirements, should they continue to grow at the present rate, will only be satisfied by recourse to one or all of the following expedients:

1. Radical, but correspondingly uncommercial and inefficient, changes in proportions.

2. Continuation of present proportions involving trespass upon the customary, but arbitrary, factors of safety.

3. Adoption of more suitable and higher quality materials of construction.

The last named alternative would seem to be the only admissible one, provided that such materials exist in a commercial sense. The steel maker, in order to demonstrate this, has shown that, by the judicious use of various other metals as alloys in his products, great superiority as regards static strength may be attained, and this without undue forfeiture of that toughness which is only to be found in the milder forms of carbon steel. Many such static intensifiers, some of which incidentally enhance the ductile qualities of their steels, are in daily use by the steel makers, the more common metals being chromium, nickel and vanadium.

### Most Thorough Investigation Necessary.

That the behavior of different alloy steels in service varies very considerably for the same static strength is a matter of common knowledge, but hitherto few attempts have been made to classify them except according to tensile properties. We are confronted with the problem of securing the best means to make investigation into the relative merits of these steels, assuming that, for purposes of argument, tensile strengths are equal. Too much reliance is generally placed upon the limited information furnished by the static tension tests, with the result that numerous failures in practice are often inexplicable. It behoves us to look for other devices which will, in a commercial manner, divulge something concerning the other properties of steel.

It is just as essential to know the probable behavior of a given material in service as to be satisfied as to what steady load it will sustain without permanent set. Empirical safety factor formulae have, from time to time, been enunciated for the use of designers of structures subjected to live loads. Such formulae vary considerably, acording to the purpose to which they are to be applied,—a fact pointing to incongruity and absence of special knowledge regarding some important properties of the materials of construction. We have long understood that materials are prone to degenerate in quality at a rate depending upon the service which they undergo.

The term "crystallization," which has caused some very bitter feeling in the steel world, is a name given to designate those phenomena which we have recognized but not very deeply studied. It presupposes secular deterioration in the metal, due to the influences of shock and alternating stresses, whether pure or combined. The name has been advantageously altered to "intermolecular disintegration," but, whatever we choose to call it, there remains the evidence that some modification takes place in the structure of steel when the above named forces are to be dealt with.

### Resistance to Fatigue Not a Function of Static Strength.

The numerous every-day failures which cannot be accounted for are forcing us further and further to make research and investigation into the action on steel and iron exerted by complicated kinematic forces and to realize the fact that resistance to fatigue is not a function of static strength. We actually have, as is proved by the grades of steel we use in practice, a good general idea of the relative "dynamic" properties of carbon steels, but this idea has only been acquired after laborious systems of trial and error. We have never gone so far as to suspect that alloy steels would behave very differently in this respect—indeed, we have not had the appliances to give any such information.

As an example of our knowledge of the "life" properties of ordinary steel, I would quote the case of the staying of a locomotive fire-box. Something is required which will possess considerable strength combined with the power to withstand a moderate degree of flexure in all directions. With absence of empirical knowledge, a *prima facie* reason for the adoption of high carbon steel is here presented, owing to its possession of higher strength and consequently the capability to withstand a larger degree of deflection without permanent set. Experience, however, has shown that the use of anything but the mildest steel for this work is prohibitive, and that wrought iron, or even copper, is still more satisfactory.

Steel, according to its composition, or rather according to the manner in which the component elements are inter-united, is prone to deteriorate rapidly or "crystallize" under the fatigue of continued reversals of stress. The importance of investigation of this subject has been fully demonstrated by J. Kent Smith (the pioneer of vanadium), Prof. Arnold of Sheffield and others. The classic researches of Wohler, Baker and Martens have opened the gate for us, but that is all. It is necessary to supplement their work commercially, that is, by making every-day dynamic tests, just as we do with the tensile machine. It is unfortunate that, while there are many so-called dynamic machines available at the present time, the majority of them are not practicable for routine use, inasmuch as very considerable time is required for the completion of their tests: moreover, unless an intelligent interpretation is applied to the results, no very useful information is forthcoming.

The writer has just completed a preliminary investigation into the relative dynamic properties of iron and the various ordinary and alloy steels, the results being set forth in the accompanying tables. To what extent the figures here shown are strictly comparative is a matter of opinion, but the writer would like to say that his experience has been that the "alternating impact" machine, herinafter described, shows a higher power of discrimination between good and bad material than any other appliance yet devised, seeing that the results are substantially confirmed by practical experience over an extended period.

### Conditions of the Test.

The tensile tests were performed in the usual manner, the diameter in each case being ½ in. and the elongation measured over a length of 2 in. The conditions of the "dynamic" tests were as follows:

A cylindrical test piece, carefully finished with emery to remove all tool marks, is firmly clamped at one end in a vise. The sample is 6 in. long and ⅜ in. in diameter. A tool steel head, in which there is cut a slot, is placed over the other end, the distance from the striking center of this head to the vise-line being 4 in. A crank and connecting rod furnish the reciprocating motion for this head, thereby causing the test piece to be deflected a certain distance (in this case it was ¾ in.) each side of the neutral position. In addition to this alternating flexure, the test piece is also subjected, at each reversal, to an impact, due to the slot on the reciprocating head. By this arrangement, a very important factor is introduced, seeing that hitherto no tests have combined reversals of stress with rapidly repeated shocks.

* American Vanadium Company, Pittsburgh, Pa.

The sample under trial, which undergoes 650 alternations per minute, is pulled out of the machine after fracture by a spring, and a suitable arrangement is attached which counts the total number of alternations endured. A deflection of ⅜ in. a side has the effect of imparting a permanent set to the test piece—a condition considered by experts to be necessary for the estimation of the fundamental properties of materials to resist vibratory deterioration. From the formulae for the deflection of beams, the stress produced on the outermost fibers by this bending would, if the material remained elastic, be in the neighborhood of 400,000 lb. per square inch, which is of course sufficient to permanently distort all known metals.

The experiments were carried out with long test pieces (8 in.), which, by reversal, permitted of two tests being obtained from one sample, thereby securing an indication of the uniformity of the particular steels. On each class of steel a large number of dynamic tests were made, an average being taken of the results after elimination of those figures which were apparently abnormal.

### Remarks on the Results.

It is apparent from the figures here shown that the dynamic properties of steels vary very largely according to composition as well as to static strength. No claim is made that the tests are in any way complete or final, the idea simply being to demonstrate, by a process of trial and error, the comparative behavior of the several metals experimented upon. Various steels were taken, analyzed and tested, without attempt to classify them rigidly. In spite of this, the general characteristics of individual alloys are observed by noting the effect produced by the addition or omission of the particular metal. The results have been grouped into three tables, which are arranged according to elastic limits. All the steels in a particular table may, more or less, be applied to a given purpose, whereas any taken from another group would probably be found unsuitable. One of the reasons for such classification is in order that a comparison could be shown with regard to quality, between the several steels comprising a group, and for this purpose a "quality figure" has been chosen to take account of the principal factors in the test.

It appears highly probable that we are fast approaching a time when engineers will be forced to recognize combined static and dynamic properties of steels by including such a quality figure in their specification. It is of course patent that comparisons of quality are useless and misleading if made between very mild and very hard materials, but when no very great dissimilarity exists between the fundamental properties, such a mode of distinction is not only practicable but even advisable. The idea of a quality figure is not by any means new, since it has been adopted by numerous manufacturers, especially by those engaged in the boiler and ship-plate trades, but the multiplicity of the formulae suggested and the fact that there is no standardization have hindered the universal adoption of such a co-efficient. The writer has taken an arbitrary quality figure which is designed to comprise the three most important attributes of constructional steel, which are as follows:

1. Elastic limit—showing the range of load commercially available. This figure is largely preferable to tensile strength for the good reason that a material is practically valueless after the stresses have exceeded the yield point. The widely varying ratios of elastic limit to ultimate strength, especially in the case of alloy steels, will not permit of the continuance of the prevalent practice of regarding this ratio as constant. Factors of safety must sooner or later be based upon the range of the material's elastic condition.

2. Reduction of area—chosen for various reasons, as the measure of static ductility in preference to percentage elongation. Engineers regard the latter factor as being somewhat unreliable, owing to the extent to which it is affected by influences such as diameter of test piece, &c.

3. Dynamic figure—or measure of power of fatigue resistance.

*Results of Some Comparative Tests Made on All Grades of Iron and Steel to Determine Relative Strengths and Properties of ... ies of Fatigue Resistance.—The Results on Each Steel are Collectively Combined Into a "Quality Figure."*

| No. | Material. | Heat treatment. | Approximate chemical analysis. C. | Mn. | Cr. | Ni. | V. | Elastic limit. (E.) | Tensile stress. | Static figures. T. S. % | Elong. % | Reduc. of area % (R.) | Ratio E. I. | Dynamic figures. Alternations. (A.) | Quality figures. E×R×A / $10^6$ = | Process of manufacture. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Elastic limits, 30,000 to 60,000. | | | | | | | | | | | | | | |
| 1. | Wrought iron | Raw | 0.05 | ... | ... | ... | ... | 32,020 | 49,450 | 64.7 | 42.5 | 53.8 | | 583 | 1,004 | ..... | As used for staybolts. |
| 2. | Mild vanadium steel | Annealed | 0.11 | ... | ... | ... | 0.19 | 32,120 | 54,400 | 59.0 | 44.0 | 60.1 | | 1,111 | 2,143 | Open hearth. | |
| 3. | Old boiler plate | Raw | 0.24 | ... | ... | ... | ... | 58,160 | 70,840 | 82.1 | 25.5 | 53.4 | | 612 | 1,901 | Open hearth. | Scrapped after service. |
| 4. | Mild carbon steel | Annealed | 0.18 | ... | ... | ... | ... | 39,460 | 60,650 | 65.1 | 35.0 | 62.6 | | 871 | 2,152 | Open hearth. | Shafting steel. |
| 5. | Mild carbon steel | O. T. 900/425 | 0.18 | ... | ... | ... | ... | 45,390 | 70,030 | 64.6 | 33.0 | 64.0 | | 777 | 2,258 | Open hearth. | |
| 6. | Carbon forging steel | Annealed | 0.26 | ... | ... | ... | ... | 43,010 | 61,850 | 69.5 | 34.0 | 63.4 | | 1,415 | 3,858 | Open hearth. | Specially selected. |
| 7. | Carbon forging steel | O. T. 900/550 | 0.26 | ... | ... | ... | ... | 52,230 | 77,310 | 67.5 | 28.0 | 65.3 | | 1,175 | 4,008 | Open hearth. | |
| 8. | Vanadium case hardening steel | Annealed | 0.15 | 0.25 | ... | ... | 0.12 | 44,790 | 55,990 | 80.0 | 45.0 | 69.0 | | 1,958 | 6,051 | Open hearth. | Sliding gear steel. |
| 9. | Chrome nickel steel | Annealed | 0.36 | 0.34 | 0.95 | 1.70 | ... | 56,520 | 81,370 | 69.5 | 32.0 | 68.5 | | 978 | 3,787 | Crucible. | |
| 10. | Carbon steel casting | Annealed | 0.18 | 0.65 | ... | ... | ... | 34,690 | 58,800 | 57.0 | 28.0 | 44.9 | | 269 | 419 | Acid open hearth. | |
| 11. | Vanadium steel casting | Annealed | 0.19 | 0.60 | ... | ... | 0.076 | 44,340 | 70,250 | 63.0 | 25.5 | 44.9 | | 850 | 1,671 | Acid open hearth. | |
| 12. | Cr-Va-Steel casting | Annealed | 0.57 | 0.68 | 0.75 | ... | 0.16 | 52,330 | 92,900 | 56.3 | 16.0 | 20.5 | | 656 | 704 | Basic open hearth. | Used for car wheels. |
| | | | Elastic limits, 60,000 to 100,000. | | | | | | | | | | | | | | |
| 13. | Nickel forging steel | Annealed | 0.21 | 0.45 | ... | 3.70 | ... | 61,140 | 79,700 | 76.7 | 30.0 | 62.5 | | 746 | 2,851 | Basic open hearth. | |
| 14. | Nickel forging steel | O. T. 900/550 | 0.21 | 0.45 | ... | 3.70 | ... | 77,140 | 98,470 | 78.3 | 25.0 | 65.3 | | 664 | 3,345 | Basic open hearth. | |
| 15. | Chrome-vanadium forging steel | Annealed | 0.26 | 0.50 | 1.00 | ... | 0.16 | 61,920 | 92,900 | 66.6 | 25.0 | 57.3 | | 1,608 | 5,706 | Basic open hearth. | Known as type A. |
| 16. | Carbon spring steel | Annealed | 1.00 | 0.30 | ... | ... | ... | 63,800 | 125,000 | 51.0 | 8.5 | 15.2 | | 1,260 | 1,222 | Open hearth. | |
| 17. | Chrome-vanadium spring steel | Annealed | 0.40 | 0.77 | 1.22 | ... | 0.19 | 67,520 | 100,600 | 67.1 | 26.0 | 61.7 | | 1,406 | 5,858 | Crucible. | Known as type D. |
| 18. | Chrome-nickel-vanadium steel | Annealed | 0.30 | 0.27 | 1.51 | 3.45 | 0.085 | 69,140 | 96,880 | 71.3 | 28.5 | 68.5 | | 507 | 2,402 | Crucible. | Imported automobile steel. |
| 19. | Nickel-vanadium steel | Annealed | 0.24 | 0.72 | ... | 3.40 | 0.15 | 79,260 | 99,700 | 79.5 | 25.0 | 64.0 | | 798 | 4,048 | Basic open hearth. | |
| 20. | Chrome-nickel-vanadium steel | Annealed | 0.57 | 0.27 | 0.93 | 2.04 | 0.07 | 95,150 | 129,100 | 73.7 | 21.0 | 49.8 | | 983 | 4,659 | Crucible. | |
| 21. | Chrome-nickel steel | Tempered | 0.37 | 0.34 | 0.89 | 1.70 | ... | 86,080 | 102,700 | 83.8 | 22.0 | 63.8 | | 702 | 3,855 | Crucible. | |
| | | | Elastic limits, 100,000 and over. | | | | | | | | | | | | | | |
| 22. | Chrome spring steel | O. T. 900/450 | 1.00 | 0.30 | ... | ... | ... | 101,000 | 186,300 | 54.2 | 9.5 | 16.1 | | 561 | 912 | Open hearth. | Spring temper. |
| 23. | Chrome-vanadium spring steel | O. T. 900/450 | 0.40 | 0.77 | 1.22 | ... | 0.19 | 195,300 | 208,500 | 93.7 | 10.0 | 36.3 | | 480 | 3,403 | Acid open hearth. | Spring temper, type D. |
| 24. | Chrome-vanadium forging steel | O. T. 900/550 | 0.30 | 0.50 | 1.00 | ... | 0.16 | 141,600 | 151,750 | 93.0 | 16.0 | 56.2 | | 717 | 5,705 | Basic open hearth | Type A, crankshaft temper. |
| 25. | Nickel-vanadium steel | O. T. 900/550 | 0.24 | 0.72 | ... | 3.40 | 0.15 | 129,900 | 134,600 | 96.4 | 18.0 | 64.8 | | 626 | 5,270 | Basic open hearth. | |
| 26. | Chrome-nickel-vanadium steel | O. T. 900/550 | 0.30 | 0.27 | 1.51 | 3.45 | 0.085 | 152,300 | 159,900 | 95.2 | 17.0 | 58.9 | | 487 | 4,369 | Crucible. | Imported automobile steel. |
| 27. | Chrome-vanadium spring steel | O. T. 900/550 | 0.40 | 0.77 | 1.22 | ... | 0.19 | 183,400 | 187,600 | 97.7 | 14.0 | 50.6 | | 634 | 5,883 | Crucible. | Type D. |
| 28. | Chrome-nickel steel | Tempered | 0.36 | 0.34 | 0.95 | 1.70 | ... | 134,500 | 150,300 | 89.5 | 15.5 | 53.5 | | 579 | 4,166 | Crucible. | |

NOTES.—Static tests made on samples ½ in. diameter x 2 in. long. Dynamic tests made on the Landgraf-Turner alternating impact machine (old form). The quality figure is the product of: Elastic limit, representing useful strength; reduction of area, representing static ductility; dynamic figure, representing fatigue resisting property—divided by 1,000,000 = E × R × A ÷ $10^6$. O. T. = Oil tempered.

**Dynamic Effects of Nickel and Vanadium Alloys.**

There are several noteworthy features with regard to the actual figures to be observed by the steel user. Of these, perhaps, the most striking is the extraordinary difference subsisting between the dynamic effects conferred on steel by the alloys nickel and vanadium. The differences are so strongly marked that the future investigator should be encouraged to make deep research on the lines previously suggested, and thereby put himself in a position to realize the importance of this new field.

It is very apparent, right through the list, that the action of nickel is twofold: 1. It statically intensifies. 2. It dynamically "poisons." As an instance of this, take tests Nos. 13 and 15, the former being a 3.7 per cent. nickel steel and the latter a chrome-vanadium variety. In the annealed condition, the elastic limits of the two are almost identical, but at the same time the alternations of stress endured by the latter are two and a quarter times the number sustained by the nickel steel. Take again Nos. 17 and 18. The dynamic figures are more than three to one in favor of the chrome-vanadium product, whereas the difference in elastic limit is only about 3 per cent. Surely such figures as these should call attention to the peculiarities of the nature of alloys.

The writer has noticed, over a long period of time, that nickel will dynamically poison the steel containing it, though the effects may be modified to some extent when another element is used in conjunction. The influence of the small content of vanadium in steel No. 18 is not perceptible, being outweighed by the large proportion of nickel. Test No. 20 shows to what extent the dynamic virtue is improved by the removal of about 40 per cent. of the nickel. The reader may select other tests as he wishes, only to find in each case the disturbing influence of this element and the corresponding ameliorating effects wrought by the metal vanadium.

These tests also lead us to the conclusion that the common assumption that the ductility figures shown by tension tests give reliable indication regarding dynamic virtues is evidently erroneous, though there can be no doubt that it holds fairly well for the same type of steel under different conditions of heat treatment. Nickel tends to enhance ductility as much as or even more so than vanadium, but as to their powers of fatigue resistance there can be no comparison.

**Differences in Quality.**

It is equally manifest that the static action of vanadium is similar to that of nickel, but that its dynamic effects are the exact converse. The differences are markedly brought out in the quality figures, which invite attention as to comparison with those of ordinary carbon steel. Taking the latter as standard, the chrome-vanadium steels are as much above it as the nickel steels are below it. Microscopic investigation will furthermore confirm the assertions made in this article. The structure of nickel ferrite, as revealed by the microscope, shows a crystalline arrangement which would not naturally be expected to offer as much resistance to molecular disintegration as does carbon steel, but, in the case of vanadium, the whole structure is exceedingly well interlocked, giving one the impression that the constitution would be ideal for hard service conditions.

Chromium, *per se*, does not appear to exert appreciable influence other than statically, but it is possible that the effect of this metal in a ternary steel might be very marked.

The writer has noticed that the dynamic attributes of plain carbon steel reach a maximum with about 0.25 per cent. carbon content, falling away on both sides of this amount.

The somewhat low figure shown by wrought iron is anomalous. It may be partly due to the unhomogeneous nature of this material, and partly due to the fact that the test piece was turned down from a 1 in. bar, and, therefore, would not have had very much forging work done upon it.

The quality figure in the case of the chrome-vanadium steel does not appear to undergo much alteration in the process of oil tempering, but there are considerable variations in other cases. The dynamic test may eventually act as a reliable guide to the correct methods for the heat treatment of individual steels.

Owing to lack of space, it is impossible to make more than cursory mention of other subjects which are brought to notice by these tests. The question of price has not been touched upon, but it is fitting to say here that the open hearth chrome-vanadium steels compare very favorably with the nickel product, and of course are vastly cheaper (fully 50 per cent.) than those manufactured in the crucible. Strength for strength, the chrome-vanadium steels also have the advantage over all others as regards machining properties, which, with certain users, are very important items. With regard to forging and drop forging some alloy steels, notably chrome-nickel, an enormous amount of work, necessitating expenditure, is requisite for such a process, and furthermore extreme caution must be observed in the heating operations. Chrome-vanadium steel may be forged with the same ease as ordinary steel of similar carbon contents, no special precaution being necessary as to temperatures.

In conclusion, the author would like to recommend to those who criticise his results, and to those who are interested in the kinetic testing of materials, a paper entitled, "Factors of Safety in Marine Engineering," * read before the Institution of Naval Architects by Prof. J. O. Arnold of Sheffield. In it he advocates the form of test adopted by the writer and furthermore shows how it will detect unreliable material where other dynamic machines fail.

## Ferroalloys in the Foundry.†

BY W. M. SAUNDERS, PROVIDENCE, R. I.

The manufacturer of steel has found that the addition of certain metals endows the steel with properties it did not before possess. The foundry metallurgist, observing the effect of these valuable additions to steel, naturally turned to the same metals for improving cast iron. For many years the high cost prevented a very extensive use of these metals, but within a few years improvements in methods of manufacture, due in part to the progress made in the use of the electrical furnace, or the discovery of new deposits of ore in more accessible localities, have lowered the price. At the present quotations, with few exceptions, the cost prohibits the use of these metals very extensively, except in special cases where castings are required demanding unusual qualities.

Most of the metals employed melt at a higher temperature than cast iron and consequently do not react to the best advantage with the iron. This difficulty has been overcome by first making an alloy of iron and the metal, which alloy melts at a lower temperature and easily diffuses throughout the cast iron. The manufacture of ferroalloys has an important place in modern industry, and their electrical production has increased until it is of considerable value.

**Manganese.**

About 1886, R. A. Hadfield discovered that steel with 1.5 per cent. manganese became brittle. With 5 to 7 per cent. manganese it became very brittle. With the addition of manganese above this amount, the steel began to lose the property of brittleness and assumed that of toughness and hardness. These qualities greatly increased in the presence of a certain amount of carbon and the proper heat treatment, until the steel contained about 12 per cent. manganese, when it became exceedingly tough and hard. This material is known as Hadfield steel.

The effect of manganese upon cast iron resembles in many ways that upon steel. High manganese castings are employed only in special cases where exceptional hardness is desired. Castings with 1 to 1.5 per cent. manganese are sometimes made, but the best results are obtained in gray iron with manganese under 1 per cent.

Ferromanganese in the foundry has an important part to play in perfecting cast iron. It has been claimed that

* See *The Iron Age* of June 18, page 1938.

† From a paper read at the Toronto meeting of the American Foundrymen's Association, June, 1908.

ferromanganese makes hard iron soft and soft iron hard. This anomaly is not difficult to explain. Cast iron with a low percentage of manganese often gives trouble in machining, by causing the drills or tools to become dull. This trouble at once disappears upon adding enough ferromanganese to bring the manganese to 0.5 per cent. High manganese pig iron added to the charge in the cupola will also give the same result.

Manganese reduces the tendency of cast iron to chill, and consequently when ferromanganese is added in small quantities in the ladle, the iron becomes softened. Advantage is taken of this fact by car wheel makers who add a small amount of ferromanganese to the molten iron just before casting and thus improve the strength and endurance of the wheel.

Ferromanganese hardens cast iron by increasing the percentage of manganese. A cast iron may contain the requisite amount of manganese for good machining, but it is necessary to make the iron hard and tough for cylinder purposes. With the addition of enough ferromanganese to raise the manganese to 1 per cent. or over, the desired hardness is produced.

Ferromanganese removes sulphur from cast iron by forming a compound of sulphur and manganese which rises to the surface as slag, but only when the iron is very hot. It is also beneficial in removing oxides from the iron, the manganese seizing the oxygen combined with the iron, forming manganese oxide which rises to the surface of the molten metal and passes off as slag.

**Silicon.**

Cast iron with 4 per cent. silicon shows weakness, but not as marked as in steel. As the silicon in cast iron increases above 4 per cent., the hardness and brittleness become very apparent.

Ferrosilicon melted in a cupola with cast iron in the right amount tends to soften the iron and reduce strength. A. E. Outerbridge, Jr., found the addition of a high grade ferrosilicon (about 50 per cent. silicon) to the molten iron in a ladle not only softened the iron but increased the strength from 15 to 25 per cent., as shown in transverse test bars.

Overheated iron in an air furnace often may be restored to the right condition upon adding a sufficient amount of ferrosilicon; the silicon deoxidizing the iron, leaving it in the proper state for good casting.

Silico-manganese, containing from 35 to 70 per cent. of manganese, and 20 to 25 per cent. silicon, the remainder chiefly iron, is sometimes used to raise both the silicon and manganese in cast iron; its action being similar to a mixture of ferrosilicon and ferromanganese.

Carbide of silicon, containing about 60 per cent. silicon and 30 per cent. carbon, is occasionally used in steel making as a deoxidizing agent. In the foundry it is not generally employed on account of its high melting point, but when used is charged in the form of lumps with the pig iron in the cupola. The effect of carbide of silicon is to increase the silicon and carbon to some extent.

**Aluminum.**

In cast iron the influence of aluminum resembles in many ways that of silicon. A white cast iron to which ½ to 1 per cent. of aluminum has been added assumes at once the appearance of gray iron.

In 1890, W. J. Keep published the results of his experiments upon the addition of aluminum to cast iron. He found that the addition of aluminum increased the proportion of graphitic carbon, and the softening of the iron increased up to 4 per cent. Aluminum added in large amounts reduces the total carbon by throwing out the graphite. Aluminum diminishes the tendency of cast iron to chill; it also reduces shrinkage and increases strength when in small amounts. About 4 per cent. aluminum the softening influence begins to diminish, and the strength of the iron becomes less, until cast iron with 12 to 14 per cent. aluminum is very weak.

**Phosphorus.**

In the foundry ferrophosphorus is employed to increase the phosphorus in cast iron in the ladle, when it is desired to prolong the time of fluidity, as in the case of very thin castings.

Cast iron containing about 1½ per cent. phosphorus causes the tools used in machining it to become heated and quickly worn, while with 2 per cent. and over, cast iron becomes brittle and weak.

Phosphorus under 1 per cent. in general machinery castings is desirable, and in some cases as low as 0.2 per cent is necessary to secure strong iron.

**Titanium.**

In the form of ferroalloy and also as titanium thermit, titanium is used in small amounts in steel making and in the iron foundry to remove gases absorbed by the molten metal. The action is purely chemical, the titanium combining with oxygen forming oxides, and with nitrogen forming nitrides of titanium, the resulting compounds being found in the slag; none of the titanium entering into the iron, which remains soft. With larger additions of the alloy a small percentage of titanium unites with the iron tending to harden it.

Whether the action of titanium is direct by alloying with the iron or indirect by the removal of gases the results show marked improvement in the iron. Test bars made from cast iron to which 1 to 5 per cent. of ferrotitanium (containing 10 to 12 per cent titanium) had been added showed an increased transverse strength up to 40 per cent. over bars made from iron receiving no titanium.

**Vanadium, Nickel, &c.**

Dr. Richard Moldenke lately made an important investigation upon the effect of vanadium on cast iron. The result of the experiments have been published in the *Transactions* of the American Foundrymen's Association, and showed an increase in transverse strength on test bars of gray iron from 2000 to 2500 lb., and white iron from 1500 to 3900 lb. These results were obtained by adding a few tenths per cent. of vanadium in the form of ferrovanadium, and also indicated that beneficial action could be obtained by so treating molten iron used to make chilled rolls and car wheels.

The action of nickel upon cast iron has been investigated by J. F. Webb and reported in the *Transactions* of the American Foundrymen's Association for 1907. It was found that the addition of between 0.5 and 7 per cent. nickel "showed no marked improvement in the physical strength of the casting."

Cast iron with 30 per cent. nickel is not easily corroded by water or exposure to the usual atmospheric conditions.

Chromium, tungsten and molybdenum alone or in ferroalloys have but little influence upon cast iron.

It is hoped that what has been stated in favor of certain alloys will not cause them to be taken as a panacea for all foundry troubles. When employed in an intelligent manner—that is, with a knowledge of the chemical composition of iron and of the alloy used—there is no doubt that ferroalloys will greatly assist the foundryman in the many and not too easy metallurgical problems with which he has to deal.

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The Associated Supply Company, with general offices in the Wells-Fargo Building, San Francisco, has been incorporated under the laws of the State of California with a capital stock of $500,000, fully paid. It proposes to operate stores at the present time in San Francisco; Los Angeles; Oil City, Kern County; McKittrick, Kern County; Coalinga, Fresno County; Los Alamos, Santa Barbara County, and will carry large stocks of all kinds of oil well tools and supplies, and to some extent stocks of general merchandise. Its large business, of course, will be in casing, tubing, merchant pipe, steel billets and blooms, steel bars, malleable and cast iron fittings, valves of all kinds and general hardware. The company desires catalogues and communications from such firms as have material to sell in which it is interested.

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The plant of the Weber Bros. Foundry Company, Cincinnati, Ohio, was sold June 30 to Wessling Brothers of that city for $15,000. The Webers failed last December, with liabilities given as $44,000. Trustee C. H. Domhoff of the Domhoff & Joyce Company, conducted the sale and settlements, which were confirmed by the referee in bankruptcy. The Wesslings owned the foundry before the Webers, and acquire everything but the book accounts.

# NEWS OF THE WORKS.

### Iron and Steel.

The Shelby Steel Tube Company is cleaning up the wreckage of its plant at Shelby, Ohio, which was recently destroyed by fire, and it will be probably some months before the matter of rebuilding will be taken up.

The Youngstown Sheet & Tube Company, Youngstown, Ohio, is repairing its Alice Furnace at Sharpsville, Pa., and it may possibly be put in blast about August 1, but this has not been definitely decided upon as yet.

Belfont Furnace of the Belfont Iron Works Company, Ironton, Ohio, will be blown out in a couple of weeks.

Norton Furnace of the Norton Iron Works, Ashland, Ky., was blown out June 26.

### General Machinery.

The John Hunsader Machine Company, Sturgeon Bay, Wis., having secured a site on the water front affording desirable dock facilities, has commenced the construction of a new plant, 50 x 80 ft., of cement blocks. The new plant will be equipped with machinery from the old plant.

The Termaat & Monahan Company, Oshkosh, Wis., manufacturer of gasoline engines, has increased its capital stock to $200,000 for the purpose of enlarging its capacity.

John Williams Taylor, Dallas, Texas, has incorporated his business under the name of the John Williams Taylor Company, with a capital stock of $50,000. The company expects to add general heavy machinery to its business, which will include mill machinery and furnishings, railroad, mill, mine and elevator supplies, heating and ventilating systems. The incorporators are John W. Taylor, Eugene Bullock and John M. Thomas.

The Reliance Motor Truck Company, successor to the Reliance Motor Car Company, Detroit, Mich., is erecting a new plant at Owosso, 65 x 600 ft., with trussed steel roof and cement floor. The company is not yet in a position to state just how much additional machinery will be purchased for completing the equipment of the new building.

The Gibbs Gas Engine Company, Peters Building, Atlanta, Ga., recently organized, expects to complete plans for its proposed new plant in the latter part of July.

The William H. Ottemiller Company, York, Pa., has been organized with a capital stock of $10,000, of which $6500 has been paid in, to manufacture special screws and special machinery, to do general machine work and to sell machinery and supplies. G. Clayton Krone is president; William H. Ottemiller, treasurer and general manager, and J. H. Ottemiller, secretary.

### Foundries.

The T. H. Symington Company, Corning, N. Y., which is to erect a new plant for the manufacture of journal boxes, lids, &c., to consist of a foundry, 400 x 700 ft., carpenter shop and pattern shop, will not build the plant at Elmira, N. Y., as stated in these columns last week. The company's plans are only preliminary and it does not yet know when or where the plant will be located, a number of points being under consideration.

### Power Plant Equipment.

The installation of a water works system is being considered by the city of Russell, Kan. Plans and estimates have been prepared by Burns & McDonnell, Kansas City, Mo., and an election to decide the question of a bond issue to provide funds for this improvement will probably be held in the near future.

The City Clerk of Sturgeon Bay, Wis., will receive bids until July 7 for an electric light and water works plant. Bids will be received for constructing the plant complete and separate bids will be received for machinery and material delivered at Sturgeon Bay.

The Cannon Falls Electric Service Company, Cannon Falls, Minn., recently incorporated with a capital stock of $25,000, will furnish commercial light and power, and deal in electric signs and specialties, electric fixtures and shades. The proprietors of the company are E. L. Twiss, L. F. Blinco, D. E. Twiss.

The city of Knox, Ind., has decided to construct a water works system to cost about $18,000, plans and specifications for which are being prepared by Geo. C. Morgan, Royal Insurance Building, Chicago. H. C. Wise is City Clerk.

The Kirksville Light, Power & Ice Company, Kirksville, Mo., recently incorporated, has purchased the electric light and power plant formerly conducted by the Kirksville Electric Company, and is now constructing an ice plant, which it is expected will be ready for operation within 60 days. Charles V. Miller is president; C. J. Baxter, secretary.

The town of Holly, Colo., has under consideration the construction of a system of water works, for which an issue of bonds has been voted. Burns & McDonnell, Kansas City, Mo., have been selected as engineers for the supervision of the work.

The Athens Electric Railway Company, Athens, Ga., is increasing its power equipment by the installation of a 1000-kw. Allis-Chalmers turbine unit with Worthington condensers and additional battery of Sterling water tube boilers.

We are advised that an issue of $24,000 in bonds has been voted by the city of Russellville, Ala., for the construction of an electric light plant and water works system.

Bids for the installation of water works in the town of Templeton, Iowa, which were to have been received on June 6, have been extended to July 20. M. J. Daeges is Town Clerk.

A new power house will be added to the municipal electric light plant of Atlantic, Iowa, plans for which are being prepared by J. L. Darnell, Kansas City, Mo.

J. S. Beckwith, Machesney Building, Pittsburgh, Pa., has recently received a contract for a 260 hp. boiler to be installed by the Parker Boiler Company in the home of the Sister of the Good Shepherd, Wheeling, W. Va.

H. von Schon, Detroit, Mich., has been engaged to prepare plans and specifications for the hydro-electric development at Fremont, Ohio, which was deferred last year on account of the financial depression, and which is to be started at once. Three old mill powers have been consolidated, making 40 ft. head available which can be utilized at that point, and the works will consist of a spillway, power station, &c., the output to aggregate about 2000 hp.

### Bridges and Buildings.

The Interstate Engineering Company, Bedford, Ohio, has been awarded the contract for the structural steel work for a new assembling and finishing building that is being erected by the Peerless Motor Car Company, Cleveland.

### Fires.

The plant of the Columbia Heater Company, Belvidere, Ill., was totally destroyed by fire June 10, entailing a loss estimated at about $50,000.

The power plant of the Portland Railway, Light & Power Company, at Cazadero, Ore., was burned June 21, the loss being about $50,000.

The large abattoir of D. B. Martin & Co., Philadelphia, Pa., was destroyed by fire June 25, the loss being about $50,000.

The plant of the Warren Refining Company, Warren, Pa., was burned June 24, the loss being about $40,000.

### Hardware.

The Chicago Nut Company, Chicago, Ill., has increased its capital stock from $25,000 to $40,000.

The Hill-Standard Mfg. Company, Anderson, Ind., maker of children's hand power vehicles, is considering the equipment of its plant with automatic sprinklers.

The Pelouze Scale & Mfg. Company, Chicago, Ill., has just moved into a new fireproof factory, which is said to be strictly modern and up to date in equipment and complete in all details.

### Miscellaneous.

The contemplated building of a $200,000 brick, concrete and steel packing plant adjacent to their present abattoir by E. H. Stanton & Co., Spokane, Wash., has been deferred and will not be undertaken until next year.

The New York Metal Ceiling Company, New York, has filed tentative plans for rebuilding its three-story factory building at 537-541 West Twenty-fourth street, New York, the intention being to add two new stories. It will probably be some weeks before the company decides upon the alterations, and at that time will know what new machinery it will have to install.

The Independent Stove Company, Detroit, Mich., has increased its capital stock to $175,000.

The Circum Bearing Company, 123 Liberty street, New York, desires estimates from manufacturers upon parts of its circum bearings, stamped steel work, malleable and cast iron, semisteel, &c.

The Ideal Plating Company is now located in its new factory at Marlborough, Mass., where all communications should be sent.

Announcement is made of the formation of the Rockwell Furnace Company, 26 Cortlandt street, New York, engineer and manufacturer of metallurgical furnaces and fuel oil and gas burning appliances. The officers and employees of the company were connected for a number of years with the Rockwell Engineering Company, New York, and it is the intention of the company to follow the high standard of excellence in design and construction maintained by the latter company.

The city of Jamestown, N. D., is considering improvements to its water works and sewer system, the cost of which is estimated at about $10,000. Geo. C. Morgan, engineer in charge.

The Wright Wire Company, Worcester, Mass., has purchased 35,000 sq. ft. of land adjoining its present works at Worcester, and plans to erect a two-story fireproof storehouse on the premises. The work will not be done this season.

There is no truth in the current report that the Roach Shipbuilding Company, Chester, Pa., is to be sold to settle the estate of the late John B. Roach.

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The new Ironton stack of the Ironton Iron Company, Ironton, Ohio, will go into blast about August 1 on foundry and malleable pig iron. The capacity is 200 tons a day. Quality and price will be identical with the Nellie product. Eaton, Rhodes & Co. will be one of the Cincinnati selling agents.

# The Iron and Metal Trades

The Iron trade is drifting along without any special features. On the whole the volume of orders is a little larger and specifications are coming in slightly more freely, but little is expected of this, usually the dullest season of the year.

Buying of Pig Iron is on a moderate scale, at about the range of prices which have been recently ruling, except that at least one large interest in the South is disposed to book business on the basis of $11.50 for No. 2 Foundry at Birmingham. There have been some sales to Steel foundries on the Delaware of Low Phosphorus Pig at $21 to $21.25 delivered, the quantity involved being about 3000 tons. In Foundry Iron it is expected that there will be closed to-day an order for from 6000 to 8000 tons for a plant in New Jersey, and from 3000 to 4000 tons for a works in New England controlled by the same interest.

The mills have added a further belated moderate tonnage to their orders for Steel Bars, but that incident seems now to be practically closed. With the orders carried over from last year the season business entered for the agricultural implement makers and the vehicle builders has been quite satisfactory in volume.

The Plate mills report a slightly better run of work. Among the orders coming up is the material for the four new boats for the Quartermasters' Department just let to a yard on the Delaware.

The Erie Railroad has placed an order for 7500 tons of Steel Rails. The Seaboard order of 12,000 tons is simply a reinstatement of an old order, and the same is true of 8000 tons for the Tidewater Railroad. The latter, however, has added 2000 tons.

Little has been done in Structural Material. The impression is growing that the placing of contracts is being delayed pending a further reduction in the price. In the Chicago District the Western Electric Company is figuring on extensions which will call for about 15,000 tons.

There has come up again in the Merchant Pipe trade an inquiry for about 300 miles of 8-in. Pipe for the Pacific Coast. Generally speaking, while there has been a slight increase in business, there has not been a satisfactory response to the recent reduction in price.

A settlement has been reached on the wages scale for the year between the Amalgamated Association and the American Sheet & Tin Plate Company, which reduces Tin Plate wages about 5 per cent. in the union mills, which represent about 60 per cent. of the capacity.

Almost to a man, Copper mine managers boast of lowered costs through higher labor efficiency. Few of them admit a cost above 11c., and some claim 8c. and less. All are pushing output, and no one is holding the umbrella. Important new producers are swinging into line. Yet buyers are asked to believe that the tendency is upward when European consumers are supplied for months to come, encouraged by cheap money, and our home demand is only very slowly recovering. It looks as though the psychological moment for replenishing our own working stocks and covering coming wants well ahead had not yet come. When it does come a very large buying movement will set in with a sharp advance.

## A Comparison of Prices.

**Advances Over the Previous Month in Heavy Type, Declines in Italics.**

At date, one week, one month and one year previous.

| | July 1, 1908. | June 24, 1908. | June 3, 1908. | July 3, 1907. |
|---|---|---|---|---|
| **PIG IRON,** Per Gross Ton: | | | | |
| Foundry No. 2, Standard, Philadelphia | *$16.50* | $16.50 | $16.75 | $23.50 |
| Foundry No. 2, Southern, Cincinnati | 15.25 | 15.25 | 15.25 | 24.25 |
| Foundry No. 2, Local, Chicago | **17.50** | 17.50 | 17.25 | 25.50 |
| Bessemer, Pittsburgh | 16.90 | 16.90 | 16.90 | 24.15 |
| Gray Forge, Pittsburgh | 14.90 | 14.90 | 14.90 | 23.15 |
| Lake Superior Charcoal, Chicago | 20.00 | 20.00 | 20.00 | 27.00 |
| **BILLETS, &c.,** Per Gross Ton: | | | | |
| Bessemer Billets, Pittsburgh | *25.00* | 25.00 | 28.00 | 30.00 |
| Forging Billets, Pittsburgh | *27.00* | 27.00 | 30.00 | 33.00 |
| Open Hearth Billets, Phila | *26.20* | 26.20 | 29.20 | 32.50 |
| Wire Rods, Pittsburgh | *33.00* | 33.00 | 35.00 | 36.50 |
| Steel Rails, Heavy, Eastern Mill | 28.00 | 28.00 | 28.00 | 28.00 |
| **OLD MATERIAL,** Per Gross Ton: | | | | |
| Steel Rails, Melting, Chicago | **12.50** | 12.50 | 12.25 | 18.75 |
| Steel Rails, Melting, Phila | **13.50** | 13.50 | 13.00 | 18.25 |
| Iron Rails, Chicago | 15.50 | 15.50 | 15.50 | 24.50 |
| Iron Rails, Philadelphia | 18.00 | 18.00 | 18.00 | 26.00 |
| Car Wheels, Chicago | 13.00 | 13.00 | 13.00 | 25.00 |
| Car Wheels, Philadelphia | *13.50* | 13.50 | 14.00 | 25.00 |
| Heavy Steel Scrap, Pittsburgh | **14.00** | 13.25 | 13.00 | 18.25 |
| Heavy Steel Scrap, Chicago | 11.50 | 11.50 | 11.50 | 16.50 |
| Heavy Steel Scrap, Phila | **13.50** | 13.50 | 13.00 | 18.00 |
| **FINISHED IRON AND STEEL,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Refined Iron Bars, Philadelphia | *1.35* | 1.40 | 1.40 | 1.83½ |
| Common Iron Bars, Chicago | *1.50* | 1.50 | 1.58 | 1.78 |
| Common Iron Bars, Pittsburgh | *1.40* | 1.40 | 1.50 | 1.70 |
| Steel Bars, Tidewater, New York | *1.56* | 1.56 | 1.76 | 1.86 |
| Steel Bars, Pittsburgh | *1.40* | 1.40 | 1.60 | 1.60 |
| Tank Plates, Tidewater, New York | *1.76* | 1.76 | 1.86 | 1.86 |
| Tank Plates, Pittsburgh | *1.60* | 1.60 | 1.70 | 1.70 |
| Beams, Tidewater, New York | *1.76* | 1.76 | 1.86 | 1.86 |
| Beams, Pittsburgh | *1.60* | 1.60 | 1.70 | 1.70 |
| Angles, Tidewater, New York | *1.76* | 1.76 | 1.86 | 1.86 |
| Angles, Pittsburgh | *1.60* | 1.60 | 1.70 | 1.70 |
| Skelp, Grooved Steel, Pittsburgh | *1.45* | 1.45 | 1.55 | 1.90 |
| Skelp, Sheared Steel, Pittsburgh | *1.50* | 1.50 | 1.65 | 1.90 |
| **SHEETS, NAILS AND WIRE,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Sheets, No. 27, Pittsburgh | 2.40 | 2.40 | 2.40 | 2.50 |
| Wire Nails, Pittsburgh | *1.95* | 1.95 | 2.05 | 2.00 |
| Cut Nails, Pittsburgh | *1.75* | 1.75 | 1.85 | 2.05 |
| Barb Wire, Galv., Pittsburgh | *2.40* | 2.40 | 2.50 | 2.45 |
| **METALS,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Lake Copper, New York | *12.87½* | 13.00 | 13.00 | 23.50 |
| Electrolytic Copper, New York | 12.62½ | 12.87½ | 12.62½ | 22.00 |
| Spelter, New York | *4.50* | 4.55 | 4.55 | 6.35 |
| Spelter, St. Louis | *4.35* | 4.40 | 4.40 | 6.27½ |
| Lead, New York | **4.50** | 4.50 | 4.30 | 5.25 |
| Lead, St. Louis | **4.40** | 4.40 | 4.20 | 5.15 |
| Tin, New York | *27.20* | 27.60 | 28.85 | 42.75 |
| Antimony, Hallett, New York | *8.25* | 8.50 | 8.50 | 12.00 |
| Nickel, New York | 45.00 | 45.00 | 45.00 | 45.00 |
| Tin Plate, 100 lb., New York | $3.89 | $3.89 | $3.89 | $4.09 |

## Chicago.

FISHER BUILDING, July 1, 1908.—(*By Telegraph.*)

Steel Bars and Wire products are the only divisions of the finished material market in which there is any movement of special interest. Some hesitating contracts for Steel Bars closed during the week added 20,000 tons to the tonnage taken by Implement makers. There has also been some increase in specifications from the same source, but improvement in this respect is only moderate, though the greater frequency of demand for prompt shipment indicates the existence of stock shortages. The fact also that production will be much reduced through July by the shutdown of a number of Bar mills is doubtless responsible for part of the increase noted. Responsive to the actual needs of consumption, Wire products are in fairly good demand. Though it is recognized from the character of purchases that buyers are not anticipating wants far in advance, last week's bookings of new business and specifications by the principal interest ran well up to a normal midseason average. This result, however, is only significant of sound agricultural conditions and is not regarded as a forerunner of an early quickening of trade. Such improvement as is shown in Sheets, Plates and Merchant Pipe is of no particular moment except in so far as it indicates a forward rather than a backward tendency. While there is no activity in Rails, there is evidence that a good many interurban projects brought out last year and since held up by adverse financial and industrial conditions have not been abandoned and are only awaiting developments favorable to their consumma-

tion. Prices in finished material show a remarkable degree of steadiness and uniformity considering the quiet state of demand. Very little unevenness has developed, though it is true there is not enough business coming out to test the market severely in any line. The recent support afforded to the Scrap market by a heavy demand for Rerolling Steel Rails has been withdrawn, and in consequence prices are easier though not as yet appreciably reduced.

**Pig Iron.**—Transactions for the week are somewhat less in volume than in the week previous, though the character of the demand is unchanged. The majority of orders are for small lots, with a few sales mainly of Northern Iron running as high as 1000 tons. Included in these are one of 1000 tons of Malleable Bessemer sold by a leading Northern furnace at $17.50, and another of 1000 tons of Silicon Iron. As was the case a week ago, there was more demand for Northern than for Southern Iron, with the implement foundries more active as buyers than the jobbing melters. The position of both Northern and Southern furnaces respecting prices remains unchanged, with $17.50 at furnace for the former and $12, Birmingham, for the latter as the recognized market levels. Valley Irons continue to be openly offered on a basis of $15, at furnace, or $17.40, Chicago, so that in open competition the local price of $17.50 at furnace is necessarily subject to concession. A large part of the transactions in Northern Iron is, however, comprised of standard brands on which more than a nominal shade in price is necessary to influence buyers. A prominent implement manufacturer is still in the market for a moderate tonnage, most of which is required for early delivery. A few makers seem to be willing to go as low as $11.50, Birmingham, on orders for prompt shipment, and it is likely that some Iron is still available at this price. In other respects the market shows an encouraging degree of firmness, which lacks only a decided increase in the melt in jobbing foundries to guarantee its position. The following prices are for July, August and September delivery, f.o.b. Chicago:

| | |
|---|---|
| Lake Superior Charcoal | $20.00 to $20.50 |
| Northern Coke Foundry, No. 1 | 18.00 to 18.50 |
| Northern Coke Foundry, No. 2 | 17.50 to 18.00 |
| Northern Coke Foundry, No. 3 | 17.00 to 17.50 |
| Northern Scotch, No. 1 | 18.50 to 19.00 |
| Southern Coke, No. 1 | 16.85 to 17.35 |
| Southern Coke, No. 2 | 16.35 to 16.85 |
| Southern Coke, No. 3 | 15.85 to 16.35 |
| Southern Coke, No. 4 | 15.35 to 15.85 |
| Southern Coke, No. 1 Soft | 16.85 to 17.35 |
| Southern Coke, No. 2 Soft | 16.35 to 16.85 |
| Southern Gray Forge | 14.35 to 14.85 |
| Southern Mottled | 14.10 to 14.60 |
| Malleable Bessemer | 17.50 to 18.00 |
| Standard Bessemer | 18.40 to 18.90 |
| Jackson Co. and Kentucky Silvery, 6 % | 19.90 to 20.40 |
| Jackson Co. and Kentucky Silvery, 8 % | 20.90 to 21.40 |
| Jackson Co. and Kentucky Silvery, 10 % | 22.90 to 23.40 |

(*By Mail.*)

**Billets and Rods.**—Practically no new business is being offered in Steel. Orders for Forging Billets comprise lots of car lots and less, and even these are few and far between. No deviation from the regular price is heard of, which for Rolling Billets is $28.50, base, Chicago. The situation in Wire Rods is not materially changed. Specifications are coming in at a fairly good rate, but the tonnage of new contracts is moderate. We quote as follows: Bessemer, $33; Basic, $34, all at Pittsburgh.

**Rails and Track Supplies.**—The events of the past week have included nothing of market interest in Rails of any kind. No orders so far as reported have been placed nor are any inquiries out that give promise of early developments. Moderate orders are being entered for Track Supplies, though business in this direction does not reflect a marked increase in railroad demand. Neither is the tonnage of new business in Light Rails increasing, though it is holding pretty nearly the average of recent weeks. The conditions as to prices of Light Rails are unchanged, concessions of from $3 to $5 a ton being made by rerolling mills. We quote as follows: Angle Bars, accompanying Rail orders, 1908 delivery, 1.50c.; car lots, 1.60c.; Spikes, 1.80c. to 1.90c., according to delivery; Track Bolts, 2.20c. to 2.25c., base, Square Nuts, and 2.35c. to 2.40c., base, Hexagonal Nuts. The store prices on Track Supplies range from 0.15c. to 0.20c. above mill prices. Light Rails, 25 to 45 lb., $28; 20-lb., $29; 16-lb., $30; 12-lb., $31. Standard Sections, $28, f.o.b. mill, full freight to destination.

**Structural Material.**—Quite a number of Structural projects on which bids are in, and on which early closure was expected by fabricators, are being held up. No reason is assigned for the delay other than that the conjecture that buyers are hoping for a further recession in prices. Most of the projects involved are of a character that seems to assure final consummation, as is indicated by the persistent efforts made to secure revised proposals from fabricators. Among the contracts taken in the past week none is of noteworthy tonnage. The most important undertaking involving the use of Structural Material now in sight is that of the additional plant buildings which the Western Electric Company is about to erect; for the completion of extensions planned, about 15,000 tons will be required. Bids are now being taken on 500 tons for the initial building, and contracts for this portion will likely be placed within a week. Inquiries are out for about 2500 tons of bridge material, of which at least 500 tons will doubtless be let without delay. Slight improvement is noted in specifications coming to the mills, but the increase is not yet sufficient to warrant starting the Structural mills at the South Works, which have been idle several weeks. Prices from store at 1.95c. to 2c. Mill prices at Chicago are as follows: Beams and Channels, 3 to 15 in., inclusive, 1.78c.; Angles, 3 to 6 in., ¼-in. and heavier, 1.78c.; larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 15 in., 1.88c.; Zees, 3 in. and over, 1.78c.; Tees, 3 in. and over, 1.83c., in addition to the usual extras.

**Plates.**—Orders for small lots continue to represent all that is doing in the way of new business. These, however, have been a little more numerous in the past 10 days; but until the large users of Plates, such as car shops, ship yards and tank and boiler shops, are better supplied with work there will be a scarcity of large orders. The Sheared Plate mill at the South Works was started on Monday of this week to clean up specifications that have been gradually piling up during a number of weeks the mill has been idle. The Universal mill remains closed. Leading producers report prices as being firmly maintained, with the exception of occasional concessions of about $1 a ton being made on small Plates by the smaller mills. We quote mill shipments, as follows: Tank Plates, ¼-in. and heavier, wider than 6¼ and up to 100 in. wide, inclusive, car lots, Chicago, 1.78c.; 3-16 in., 1.88c.; Nos. 7 and 8 gauge, 1.93c.; No. 9, 2.03c.; Flange quality, in widths up to 100 in., 1.88c., base, for ¼-in. and heavier, with the same advance for lighter weights; Sketch Plates, Tank quality, 1.88c.; Flange quality, 1.98c. Store prices on Plates are as follows: Tank Plates, ¼-in. and heavier up to 72-in. wide, 2c. to 2.10c.; from 72 to 96 in. wide, 2.10c. to 2.20c.; 3-16 in. up to 60 in. wide, 2.10c. to 2.25c.; 72 in. wide, 2.30c. to 2.40c.; No. 8, up to 60 in. wide, 2.10c. to 2.15c.; Flange and Head quality, 0.25c. extra.

**Sheets.**—Trade in Sheets continues quiet, being closely restricted to actual consumptive requirements. Stock orders from jobbers contain specifications for actual replenishment needs only, there being no disposition in any quarter to buy ahead. Store stocks are moving slowly, especially in the heavy gauges. Except for a shade of $1 a ton obtainable from a few of the smaller mills, prices are reported to be firmly maintained. We quote mill shipments, as follows, Chicago: Blue Annealed, No. 10, 1.98c.; No. 12, 2.05c.; No. 14, 2.08c.; No. 16, 2.18c.; Box Annealed, Nos. 17 to 21, 2.43c.; Nos. 22 to 24, 2.48c.; Nos. 25 and 26, 2.53c.; No. 27, 2.58c.; No. 28, 2.68c.; No. 29, 2.78c.; No. 30, 2.88c.; Galvanized Sheets, Nos. 10 to 14, 2.63c.; Nos. 15 and 16, 2.83c.; Nos. 17 to 21, 2.98c.; Nos. 22 to 24, 3.13c.; Nos. 25 and 26, 3.33c.; No. 27, 3.53c.; No. 28, 3.73c.; No. 30, 4.23c.; Black Sheets from store: Blue Annealed, No. 10, 2.20c.; No. 12, 2.25c.; No. 14, 2.30c.; No. 16, 2.40c.; Box Annealed, Nos. 18 to 21, 2.60c.; Nos. 22 to 24, 2.65c.; No. 26, 2.70c.; No. 27, 2.75c.; No. 28, 2.85c.; No. 30, 3.25c.; Galvanized from store: Nos. 10 to 16, 3c.; Nos. 18 to 20, 3.15c.; Nos. 22 to 24, 3.30c.; No. 26, 3.50c.; No. 27, 3.70c.; No. 28, 3.90c.; No. 30, 4.40c. to 4.45c.

**Bars.**—A number of contracts for Steel Bars pending since the recent price reduction have been entered during the week. Of such business 20,000 tons was booked by the leading interest which swells its total to 60,000 tons. What is of perhaps greater significance is that specifications are being offered more freely. Steel stocks in the hands of implement makers have been steadily reduced without replenishment for some time, and it is noted that specifications are now generally being accompanied by requests for prompt shipment. This lends encouragement to the hope that the rolling schedules of the Bar mills will soon be better filled, enabling their steadier operation. All of the Bar mills of the Illinois Steel Company's Bay View plant are going, with prospect of continuance throughout the week. With the various plants of the Republic Iron & Steel Company closed down during July, and some others that will be idle through a part or all of this period, the remaining mill capacity of the district will doubtless be more fully occupied. It is stoutly affirmed by local producers that the new schedule of prices on Iron and Steel Bars is being rigidly maintained. Quotations, Chicago, are as follows: Steel Bars, 1.58c., with half extras: Iron Bars, 1.50c.; Hoops, No. 13 and lighter, 1.98c., full extra Hoop card; Bands, No. 12 gauge and heavier, 1.58c., half extra Steel Bar card; Soft Steel Angles and Shapes, 1.68c., half extras. Store prices are as follows: Bar Iron, 2c. to 2.15c.; Steel Bars, 1.90c. to 2c.; Steel Bands, 1.90c., as per Bar card, half extras; Soft Steel Hoops, 2.25c. to 2.35c., full extras.

**Merchant Pipe.**—While the demand for Merchant Pipe shows a slight increase, it is not regarded as a satisfactory response to the concession made in the recent reduction of $4 a ton. Though jobbers' orders are of somewhat better volume, what increase there is seems to correspond closely to increase in consumption. In other words, jobbers are not enlarging their stocks, which are being held down as nearly as

possible to the minimum of present trade requirements. Out of the territory tributary to this market, more is coming from the Northwest than any other section, due doubtless to the promising crop outlook. The following mill discounts are quoted: Black Pipe, ¾ to 6 in., 73.2; 7 to 12 in., 70.2; Galvanized, ¾ to 6 in., 63.2. These discounts are subject to one point on the base. From store, in small lots, Chicago jobbers quote 73 per cent. on Black Steel Pipe, ¾ to 6 in. About three points above these prices is asked for Iron Pipe.

**Boiler Tubes.**—Better inquiry for Locomotive Tubes is regarded as foreshadowing more liberal purchases by the railroads. As yet these have not resulted in actual orders, but reports of active repair work on motive power equipment to be undertaken soon find some measure of confirmation in collateral conditions. The demand for Merchant Tubes is still extremely quiet. Mill quotations for future delivery, on the base sizes, are as follows: Steel Tubes, 63.2; Iron, 50.2; Seamless, 49.2; 2½ in. and smaller, and lengths over 18 ft., and 2½ in. and larger, and lengths over 22 ft., 10 per cent. extra. Store prices are as follows:

| | Steel. | Iron. | Seamless. |
|---|---|---|---|
| 1 to 1½ in. | 35 | 35 | 35 |
| 1¾ to 2¼ in. | 50 | 35 | 35 |
| 2½ in. | 52½ | 35 | 35 |
| 2¾ to 3 in. | 60 | 47½ | 47½ |
| 6 in. and larger | 50 | 35 | .. |

**Merchant Steel.**—A fair tonnage in contracts for miscellaneous Shapes has been taken by implement makers in the past week. Specifications, however, have not yet commenced to come out in any volume. Orders for Tire sizes from wagon builders have been more plentiful, and with the exception of Shafting, perhaps, all lines included under this head are in better demand. Quotations are as follows: Planished or Smooth Finished Tire Steel, 1.78c.; Iron Finish up to 1½ x ½ in., 1.73c., base, Steel card; Iron Finish, 1½ x ½ in. and larger, 1.58c., base, Tire card; Channels for solid Rubber Tires, ¾ to 1 in., 2.08c., and 1⅛ in. and larger, 1.98c.; Smooth Finished Machinery Steel, 2.08c.; Flat Sleigh Shoe, 1.63c.; Concave and Convex Sleigh Shoe, 1.83c.; Cutter Shoe, 2.05c.; Toe Calk Steel, 2.13c.; Railroad Spring, 1.98c.; Crucible Tool Steel, 7¼c. to 8c., and still higher prices are asked on special grades. Shafting, 56 per cent. off in car lots; 52 per cent. in less than car lots, base territory delivery.

**Cast Iron Pipe.**—A contract for 1800 tons of 6-in. and 8-in. Pipe let last week by the city of Newark, Ohio, was awarded to James B. Clow & Son. Bids on 1000 tons up for letter by Berwyn, Ill., were opened, but the contract has not yet been awarded; offers from contractors only were considered. The total volume of business moving is not great enough to reduce stocks in founders' yards, which have in most cases been steadily accummulating. Although there are but few lots of considerable tonnage being let, the aggregate of small routine orders holds fairly even. Miscellaneous orders for Gas Pipe amounting to 1500 tons were booked by the United States Cast Iron Pipe & Foundry Company. We quote, nominally, per net ton, Chicago, as follows: Water Pipe, 4-in., $27; 6 to 12 in., $26; 16-in. and up, $25; with $1 extra for Gas Pipe.

**Metals.**—There are but few carload buyers for Copper or other metals in the market, the majority of consumers preferring to supply their needs with 5 to 10 ton lots. Dealers report that metal using shops are slowly increasing their output, but are buying very little more material. In no quarter is there any disposition shown to contract for future deliveries, nor is it expected that this disposition will change until either business improves or prices show a tendency to advance. Values hold practically without change throughout the line, though Lead is somewhat less firm at the ruling quotation. We quote, as follows: Casting Copper, 13¼c.; Lake, 13½c. to 13¾c., in car lots for prompt shipment; small lots, ¼c. to ⅜c. higher; Pig Tin, car lots, 30c.; small lots, 32½c.; Lead, Desilverized, 4.60c. to 4.65c., for 50-ton lots; Corroding, 4.95c. to 5.05c., for 50-ton lots; in car lots, 2¼c. per 100 lb. higher; Spelter, 5c.; Cookson's Antimony, 10½c., and other grades, 9¾c. to 10¼c.; Sheet Zinc is $7, list, f.o.b. La Salle, in car lots of 600-lb. casks. On Old Metals we quote: Copper Wire, 12¾c.; Heavy Copper, 12¾c.; Copper Bottoms, 10⅝c.; Copper Clips, 11c.; Red Brass, 11½c.; Yellow Brass, 9¾c.; Light Brass, 6½c.; Lead Pipe, 4c.; Zinc, 3¾c.; Pewter, No. 1, 21c.; Tin Foil, 24c.; Block Tin Pipe, 27c.

**Old Material.** Outside of trading among dealers, which is less active than a week ago, there is little doing in the market; but with the closure of a number of rolling mills in this district in July, and others running at only part capacity, there is little prospect of much demand for mill material. Melters, on the other hand, are not actively in the market, most of them restricting purchases to actual needs. There is no material change in prices, though it is more difficult for sellers to place material at figures within the range of current quotations than it was a week ago. There is some demand for Rerolling Steel Rails, but buyers are not paying outside prices, as has been the case for several weeks. A lot of 600 tons of 60-lb. Relaying Rails offered by the Chicago, Indiana & Southern Railway brought $19.50. Other railroad material closed since last report included 1000 tons by the Chicago, Milwaukee & St. Paul, and 3000 tons by the Chicago, Burlington & Quincy. A list of 2100 tons will be offered by the Chicago & Northwestern this week. We quote per gross ton, f.o.b. Chicago, as follows:

| | |
|---|---|
| Old Iron Rails | $15.50 to $16.00 |
| Old Steel Rails, rerolling | 14.25 to 14.75 |
| Old Steel Rails, less than 3 ft. | 12.50 to 13.00 |
| Relaying Rails, standard sections, subject to inspection | 19.00 to 20.00 |
| Old Car Wheels | 13.00 to 13.50 |
| Heavy Melting Steel Scrap | 11.50 to 12.00 |
| Frogs, Switches and Guards, cut apart | 12.00 to 12.50 |
| Mixed Steel | 9.50 to 10.00 |

The following quotations are per net ton:

| | |
|---|---|
| Iron Fish Plates | $14.25 to $14.75 |
| Iron Car Axles | 16.50 to 17.00 |
| Steel Car Axles | 15.25 to 15.75 |
| No. 1 Railroad Wrought | 12.00 to 12.50 |
| No. 2 Railroad Wrought | 11.00 to 11.50 |
| Railway Springs | 11.75 to 12.25 |
| Locomotive Tires, smooth | 12.75 to 13.25 |
| No. 1 Dealers' Forge | 9.50 to 10.00 |
| Mixed Busheling | 7.00 to 7.50 |
| Iron Axle Turnings | 6.00 to 6.50 |
| Soft Steel Axle Turnings | 6.00 to 6.50 |
| Machine Shop Turnings | 6.00 to 6.50 |
| Cast Borings | 5.00 to 5.50 |
| Mixed Borings, &c | 5.00 to 5.50 |
| No. 1 Mill | 6.50 to 7.00 |
| No. 2 Mill | 5.50 to 6.00 |
| No. 1 Boilers, cut to Sheets and Rings | 8.25 to 8.75 |
| No. 1 Cast Scrap | 12.25 to 12.75 |
| Stove Plate and Light Cast Scrap | 10.25 to 10.75 |
| Railroad Malleable | 11.25 to 11.75 |
| Agricultural Malleable | 10.25 to 10.75 |
| Pipes and Flues | 8.00 to 8.50 |

## San Francisco.

SAN FRANCISCO, CAL., June 24, 1908.

On the whole the situation in Iron and Steel lines is more favorable, although the reductions in mill prices have not particularly stimulated buying here. Collections are good again and what business is transacted is done on a safe basis. Several large contracts have been let for Government work and others are coming up in the not far future. The Union Iron Works will soon award contracts for material for the early construction of a floating dry dock capable of handling a vessel 500 ft. in length. It will be constructed in two sections and will be by far the largest floating dock on the Pacific Coast. The building of new mining mills is progressing in this State and other portions of the Coast and several new smelters are talked of. More smelters are now in operation and others will resume work later. The State Harbor Commissioners have approved the plans for pier 40, which is to be constructed on the site of the old Pacific Mail dock. It will be fireproof. Instead of piles, pillars of concrete reinforced with Steel will support the dock. A concrete floor will rest on Steel beams and the shed will be of Steel. The wharf will be 130 x 650 ft., and the cost estimates run from $375,000 to $412,000. A letter of award has just arrived from Washington containing the details in regard to the transport wharves which are to be constructed for the new army supply depot at Fort Mason, San Francisco. The work must be completed within 27 months, and two sections of sea wall, the first part of the construction work, within six months. These aggregate 1200 ft. Much Structural Steel will be required for the wharves and sheds. Some reinforced concrete work will be included. The cost of the wharves, with their sheds, will be $1,178,000.

**Structural Material.**—While many new buildings are in plan, the tightness of money still delays the closing of contracts for Structural Steel on several large business buildings. Specifications are out for the new Magnin Building which will require 300 tons or more. Some bridge Steel will be required for several good contracts coming up in July in the interior of the State. The revised plans for the fine hotel which is to be erected on the block at the corner of Fourteenth and Harrison streets, in Oakland, have been sent out from the East and the details will soon be given out for contractors to figure upon. The reinforced concrete foundations have been completed and it is the intention to commence work on the five-story superstructure as soon as practicable. The entire investment will amount to about $2,000,000. State Architect Sellon has prepared plans for the State building which is to be erected in San Francisco. It will be a seven-story Steel frame building, occupying a space of 100 x 120 ft., in a central location. Space is provided for many State offices, including those of the Bank Commission, Railroad Commission, Supreme Court, District Court of Appeals and Board of Health.

**Pig Iron.**—The local consumption of Pig Iron is still comparatively light, but prices have not declined to any extent as a result of the recent drop in price of Iron Ore in the East. Buying continues light and mainly for immediate use. Stocks of foreign Pig Iron have been increased by the arrival of the ship Milverton with 300 tons of Pig Iron from Antwerp and the steamer Admiral Dupree with 525 tons of

Chinese Pig Iron loaded at Shanghai. The foundry business remains dull, as the mining and shipbuilding companies are not sending in many orders for castings. Prices of No. 1 Scotch, No. 1 English and Chinese Pig Iron are about $28 per ton, ex-yard, San Francisco.

**Merchant Pipe.**—While stocks are reduced to a low ebb, there is not much of a demand for Merchant Pipe at present. Occasionally an order has to be sent East by wire, owing to a shortage in some particular size. It seems that considerable buying by the local jobbers will be absolutely necessary before long, for otherwise their assortments will get badly broken. Discounts on Steel Pipe are about as follows on jobbers' carloads:

| | Steel. Black. | Steel. Galv. |
|---|---|---|
| | % | % |
| ⅛ to ¼ in. | 56.5 | 40.5 |
| ⅜ in. | 58.5 | 44.5 |
| ½ in. | 60.5 | 48.5 |
| ¾ to 6 in. | 64.5 | 54.5 |
| 7 to 12 in. | 61.5 | 46.5 |
| Extra strong, plain ends: | | |
| ⅛ to ⅜ in. | 49.5 | 37.5 |
| ½ to 4 in. | 56.5 | 44.5 |
| 4½ to 8 in. | 52.5 | 40.5 |
| Double extra strong, plain ends: | | |
| ½ to 8 in. | 45.5 | 34.5 |

**Cast Iron Pipe.**—Reports for the past week are without transactions of significance, but the outlook is encouraging. There are numerous inquiries for small lots of Pipe for delivery during the next three months. The city of Chico, Cal., has taken bids for Cast Iron Pipe for a municipal street sprinkling system. The Oro Water, Light & Power Company, which supplies the city of Oroville, has agreed to improve the service so that there will be enough water for sprinkling. The city will be repiped. The new City Gas Company of Los Angeles is in the market for a quantity of Pipe for its extensions. The United States Cast Iron Pipe & Foundry Company, R. W. Martindale, Pacific Coast sales manager, has taken a $12,000 contract to furnish a lot of special castings, including some 60-in. tees, bends, &c., for the new Government dry dock which is being completed by the Scofield Construction Company at the Mare Island Navy Yard. The Coast market on Cast Iron Pipe remains firm at about the following prices: 6, 8, 10 and 12 in., $36; 4-in., $37, f.o.b. Pacific Coast terminals.

**Coke.**—The market for Coke is perhaps a little stronger, with a slight improvement expected in the demand from the smelters, but without any advance in prices so far. The only arrival of Coke of any consequence in many weeks was a shipment of 600 tons of Westphalian Coke, per ship Milverton, which arrived June 11 from Antwerp. Nothwithstanding the lack of importations of Coke, stocks are still in excess of the present needs of the Pacific Coast. The closing of the Selby Smelting & Lead Company's large smelter at Selby, Contra Costa County, temporarily, has reduced that company's requirements for Coke, which amount to a large quantity annually.

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Major Williamson, the constructing quartermaster, has received 21 bids for the work of installing a pumping plant at the Presidio of San Francisco. The estimated cost of the new water system is about $100,000. It is almost certain that several different contractors will have portions of the work, as no one firm submitted the lowest bid for all seven divisions of the project.

The trial of C. W. French, the Steel plant promoter charged with obtaining $1000 from C. H. Geldert of San Jose under false pretenses, which was set for June 22, has been put over until July 13, owing to the enforced absence of a witness for the State. Mr. French was the organizer of the Pacific Steel Company, a corporation of San Diego, Cal., capitalized at $1,000,000. Harrison Gray Otis is the president of the company and Ulysses S. Grant one of the directors, and both are stated to have lost heavily through the connection.

The plans for the improvement of Oakland's water front, which are being prepared by the Board of Public Works, will be presented to the Oakland City Council July 6. The plans provide for an expenditure of about $25,000,000 in the improvement of the water front. The proposed improvements will be carried out in sections, and it is expected that within the next six months a bond election will be called to secure funds with which to do a portion of the proposed work. The plans are very comprehensive, and provide for the building of municipal docks and wharves on Oakland's entire water front. Three railroad companies already have four long piers with a ferry depot at the end of each on the water front. The Western Pacific Railway, which is nearly completed from Salt Lake City to Oakland, has just finished its passenger and freight ferry slips.

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The Canadian Pacific Railway has placed an order for 20 locomotives with the Canadian works of the American Locomotive Company, at Montreal, delivery to be made at the rate of five a week.

## Philadelphia.

PHILADELPHIA, PA., June 30, 1908.

A noticeable decline is observed in buying, as is customarily the case about this time. The closing week in June and the opening week in July are usually dull, owing to the fact that many manufacturing consumers are engaged in semiannual stock taking and mills to a large extent close down for the usual summer repairs. The falling off in business is therefore not looked upon with any degree of apprehension. The undertone of the market is strong, notwithstanding the fact that here and there a weak spot has developed, and the belief is expressed that after the nomination of the candidate for President by the Democratic convention next week, business will again move forward, and continue to show a moderate, steady gain. It is also believed that the railroads will enter the market before long, as with the present favorable outlook for harvest they will find it necessary to place a large part of their equipment in shape to enable them to move the crops expeditiously.

**Pig Iron.**—While some sellers still report pretty large sales, the aggregate tonnage sold in the past week shows a decline. Transactions have been pretty largely confined to Foundry grades, quantities running from car loads up to several hundred tons, with an isolated sale of a 1000 ton lot. There is considerable inquiry for Iron for last half and last quarter delivery, but sellers are not forcing the market, and for standard grades the ruling prices prevail. Some few would probably make a slight concession for prompt shipment, particularly where stocks on hand are large, but stocks on furnace banks generally are reported to be rapidly diminishing, so that this situation is likely to adjust itself in the near future, particularly inasmuch as those furnaces which have made concessions heretofore are firm on their prices for forward shipment. Eastern Pennsylvania furnaces are holding at $16 at furnace for standard No. 2X Irons, equal to $16.50 to $16.75 delivered for third quarter, while for fourth quarter $16.75 to $17, delivered, is quoted for the same grade, although if the tonnage was satisfactory $16.50 to $16.75 might be done for deliveries to extend over the full last half of the year. The Pipe makers have been in the market and sales of moderate tonnages of both standard and low grade Irons are reported. No concessions are said to have been made in the standard Foundry grades, although it is understood that the low grade Irons were bought at quite low figures. Virginia Foundry Irons have not been active. Some sales of Nos. 2X and 2 Plain have been reported at the ruling prices for local delivery, while some off grade Irons have been sold to the Pipe makers. Southern Iron has not been extensively sold. The reported weakness on the part of a few sellers has held up buying for the time in order to see what will develop. The large majority of sellers, however, are very firm regarding price, and no business of any volume has been done even at the reported lower figures. Forge Iron is in but light demand, the Bar mills still running irregularly. Basis Iron has been dull, recent sales having covered about all that consumers will take at the time, although one buyer is said to be still in the market for a moderate tonnage for last half delivery. Some little business has been done in Low Phosphorus Iron, the aggregate sales during the week reaching about 3000 tons, at prices ranging from $21 to $21.25, delivered. Quotations for third quarter delivery are practically unchanged. For the fourth quarter, the majority of sellers ask an advance of 50c. a ton, although the outside price quoted for third quarter can be done for deliveries covering the last half of the year. For delivery in buyers' yards eastern Pennsylvania and nearby territory, during the third quarter, quotations range as follows:

| | |
|---|---|
| Eastern Pennsylvania, No. 2 X Foundry | $16.50 to $16.75 |
| Eastern Pennsylvania, No. 2 Plain | 16.00 to [illegible] |
| Virginia, No. 2 X Foundry | 17.00 |
| Virginia, No. 2 Plain | 16.50 to 16.75 |
| Gray Forge | 15.00 to 15.50 |
| Basic | 15.25 to [illegible] |
| Low Phosphorus | 21.00 to 21.25 |

**Ferromanganese.** Prices are lower, due no doubt to the lack of interest shown by buyers at the recent price level. The demand is very light, but one sale of 150 tons for Western delivery having been made at $43, Baltimore. For prompt shipment we quote $43 to $44, Baltimore.

**Steel.**—The demand is not large, orders being confined to small lots for prompt delivery. There is no disposition shown on the part of buyers to anticipate their requirements. Prices are unchanged, ordinary Rolling Steel being quoted for delivery in this district at $26.20, with Forging Steel at $28.20, subject to the usual extras for high carbons and special sizes.

**Plates.**—Decided improvement is to be noted in the demand for Plates. Tonnages placed are running larger, and Plate makers are more encouraged with the outlook for the future. Good orders have recently been booked for boat, tank, bridge and locomotive Steel. Some pretty fair tonnages are being inquired for. One of the propositions still to come out is for the Steel for the construction of four new boats for the Quartermaster's [illegible]

to build which was awarded a few days ago to the New York Shipbuilding Company, Camden, N. J. Quotations are being firmly held, although some concessions are said to have been made by the smaller mills which are not factors in the trade. The leading mills quote as follows for local delivery:

| | Carloads. Cents. | Parts carload. Cents. |
|---|---|---|
| Tank, Bridge and Boat Steel | 1.75 | 1.80 |
| Flange or Boiler Steel | 1.85 | 1.95 |
| Commercial Firebox | 1.95 | 2.00 |
| Marine | 2.15 | 2.20 |
| Locomotive Firebox Steel | 2.25 | 2.30 |

The above are base prices for ¼ in. and heavier. The following extras apply:

| | Extra per 100 lb. |
|---|---|
| 3-16-in. thick | $0.10 |
| Nos. 7 and 8, B. W. G. | .15 |
| No. 9, B. W. G. | .25 |
| Plates over 100 to 110 in. | .05 |
| Plates over 110 to 115 in. | .10 |
| Plates over 115 to 120 in. | .15 |
| Plates over 120 to 125 in. | .25 |
| Plates over 125 to 130 in. | .50 |
| Plates over 130 in. | 1.00 |

**Structural Material.**—The business placed recently has been confined to small tonnages. Large propositions continue to be held in abeyance, while considerable work of moderate size, particularly in the building line, is being estimated upon. Mills continue to book about an average volume of business, made up largely of orders of a miscellaneous character. Prices are unchanged, 1.75c. to 1.90c., according to specifications, being quoted for deliveries in this territory.

**Sheets.**—The demand has not been so good for Sheets, and some of the mills again show a falling off in production. A number of the mills have shut down during the week for the usual midsummer overhauling, and will probably remain idle for several weeks. This, however, will depend on the volume of new orders received. Quotations are firm and unchanged, and range as follows for mill shipments, a tenth extra being added for small lots: Nos. 18 to 20, 2.50c.; Nos. 22 to 24, 2.60c.; Nos. 25 to 26, 2.70c.; No. 27, 2.80c.; No. 28, 2.90c.

**Bars.**—A better demand is to be noted. Consumers are inclined to contract for future needs at the present low prices, but mills as a rule refuse to take orders for forward delivery at prompt delivery prices. Specifications are better, and there is more tonnage coming to the mills. Prices show a further recession, and Iron Bars can now be had at 1.35c. to 1.45c., delivered, in this territory. Steel Bars are in moderate demand, and are quoted at 1.55c., with Rerolled Bars at 1.50c., delivered in this territory.

**Coke.**—A fair demand is to be noted for Foundry Coke. Not much business has been done in Furnace Coke. A few contracts for delivery in the last half have been made, but the aggregate tonnage sold was not large. Prices are unchanged, Foundry Coke being quoted at $2.15 to $2.35, with Furnace Coke at $1.50 to $1.75, at oven. For delivery in this territory the following range of prices is quoted:

| | |
|---|---|
| Connellsville Furnace Coke | $3.65 to $3.90 |
| Foundry Coke | 4.50 to 4.50 |
| Mountain Furnace Coke | 3.25 to 3.50 |
| Foundry Coke | 3.90 to 4.10 |

**Old Material.**—While there has not been much business done, the undertone of the market is somewhat better. The rolling mills have been taking better tonnages of No. 1 Wrought Iron, Borings and Turnings, but there is no quotable change in the price of these materials. Heavy Melting Steel is being inquired for, but no tonnage of any size has yet been taken. In the absence of business quotations are largely nominal, and range about as follows, for prompt deliveries in buyers' yards, eastern Pennsylvania and adjoining territory:

| | |
|---|---|
| No. 1 Steel Scrap and Crops | $13.50 to $14.00 |
| Low Phosphorus | 18.00 to 18.50 |
| Old Steel Axles | 18.00 to 18.50 |
| Old Iron Axles | 20.00 to 21.00 |
| Old Iron Rails | 18.00 to 18.50 |
| Old Car Wheels | 13.50 to 14.00 |
| Choice No. 1 R. R. Wrought | 15.50 to 16.00 |
| Machinery Cast | 14.00 to 14.50 |
| Railroad Malleable | 11.75 to 12.25 |
| Wrought Iron Pipe | 12.00 to 12.50 |
| New Bundled Sheets | 12.00 to 12.50 |
| No. 1 Forge Fire Scrap | 11.50 to 12.00 |
| No. 2 Light Iron | 7.50 to 8.00 |
| Wrought Turnings | 9.50 to 10.00 |
| Stove Plate | 11.00 to 11.50 |
| Cast Borings | 9.00 to 9.50 |
| Grate Bars | 11.75 to 12.25 |

## Cincinnati.

CINCINNATI, OHIO, July 1, 1908.—(*By Telegraph.*)

A considerably better feeling exists in the local Iron and Steel trade, and hopeful signs are plenty. The only idle gray Iron foundry, that of the Weber Bros., who failed last December, was sold to-day. Manufacturers of agricultural implements, pumping machinery, electric power generators, metal working machinery, and engines are all sufficiently impressed with late and in some instances unexpected orders and inquiries to warrant the sentiment expressed in the opening sentence. Inquiries in the machine tool line have not yet reached a point to be regarded as anything like normal, although there is some nice business being closed up on single tool and pairs. In finished lines no specially encouraging signs have followed the announced reductions, and buying is of the hand to mouth order.

**Pig Iron.**—There is no marked change to be recorded in the condition of the Iron market as compared with last week, unless one expects the relative attitude of buyers and sellers. They seem to be further apart on such business as is going, and rumors of cutting by a large interest in the South which a few weeks ago led the advance are plenty. There is suspicion also that some Southern High Silicon Irons have invaded the market to good purpose. Ohio Silveries are still held firm at $18.50, at furnace, for 8 per cent. Spot Iron is weak at $12, Birmingham, and $15, at southern Ohio furnace, for No. 2, with interests in the Hanging Rock District holding for $15.50 and $16 and piling Iron. If present plans are carried out, an additional competitor at the lower price will be furnished in the blowing in of a new stack in Ironton about August 1. Both stacks of the Dayton Coal & Iron Company in Tennessee are now idle, the active furnace having been banked last week. It is expected that the smaller of the Vanderbilt furnaces, in Alabama, will be put on Basic within a few weeks. Consumers are asking for prices on next year's delivery, which furnace companies are not as yet giving, although a prominent agent has ventured an advance of $1 above the present market. The scarcity of Forge has been well illustrated in late prices. One agency sold a few days ago a good sized tonnage at $10.75, Birmingham, and is to-day asking $11. A sale that is expected to be closed here to-day is of 3000 tons of Bessemer, 1000 tons of low grade, 500 of Silvery and a few hundred of Ferromanganese to a prominent agricultural implement interest in northern Indiana. A price of $16.25, Valley furnace, has been quoted on the Bessemer, but it is said that the Iron will go at a lower figure. A large Eastern pump interest is in the market for 1200 tons in special lots of High Manganese, High Silicon and some Foundry to analyze about No. 2, for delivery through the next 12 months. A local foundry interest wants 800 tons of Northern or Southern No. 2, the same amount of No. 3, 200 of Low Phosphorus and 200 of High Manganese for the last half. For early delivery and balance of the year we quote, f.o.b. Cincinnati, as follows: Freight being $3.25 from Birmingham, and $1.20 from the Hanging Rock District:

| | |
|---|---|
| Southern Coke, No. 1 | $15.75 to $16.25 |
| Southern Coke, No. 2 | 15.25 to 15.75 |
| Southern Coke, No. 3 | 14.75 to 15.25 |
| Southern Coke, No. 4 | 14.25 to 14.75 |
| Southern Coke, No. 1 Soft | 15.75 to 16.25 |
| Southern Coke, No. 2 Soft | 15.25 to 15.75 |
| Southern Coke, Gray Forge | 13.75 to 14.25 |
| Ohio Silvery, 8 per cent. Silicon | 19.70 |
| Lake Superior Coke, No. 1 | 16.70 to 17.70 |
| Lake Superior Coke, No. 2 | 16.20 to 17.20 |
| Lake Superior Coke, No. 3 | 15.70 to 16.70 |
| Standard Southern Car Wheel | 22.25 to 22.75 |
| Lake Superior Car Wheel | 21.75 to 22.25 |

(*By Mail.*)

**Coke.**—Oven operators manifest a disposition to contract at a slight advance over spot prices for six months' delivery, but will not fill a year's requirements at these figures. Connellsville best Foundry grades are obtainable under these conditions at about $2.25, at oven. Indications at selling agencies here point to a gradually increasing Foundry melt, and Coke is being taken on contract in very good form. Some furnaces in the southern Ohio District are blowing out, but others going in will balance pretty well, keeping consumption at about the same ratio during the balance of the warm weather.

**Finished Iron and Steel.**—Spasmodic and intermittent buying characterizes the Finished markets. Little life is seen in any line, save perhaps twisted Steel Bars for reinforced concrete work, which are in good demand here just now and selling out of stock at about 2.20c., base, cut in lengths not less than 5 ft. Some inquiry is also noted for Steel Hoops, which sell in small lots at 2.20c. to 2.30c., base, f.o.b. Cincinnati. Otherwise prices remain unchanged, and orders are filled from stock at the following prices, f.o.b. Cincinnati: Iron Bars, carload lots, 1.65c., base, with half extras; small lots from store, 1.85c., base, half extras; Steel Plates, carload lots, 1.75c., base, with half extras; small lots from store, 1.85c., base, half extras; Base Angles, carload lots, 1.85c., base; small lots from store, 2.10c.; Beams, Channels and Structural Angles, 1.85c., base; small lots from store, 2.10c.; Plates, ¼ in. and heavier, carload lots, 1.85c.; small lots from store, 2c.; Blue Annealed Sheets, heavy, No. 16, carload lots, 2.15c.; small lots from store, 2.50c.; No. 14, carload lots, 2.05c.; small lots from store, 2.40c.; No. 10, and heavier, carload lots, 1.95c.; small lots from store, 2.20c.; No. 12, carload lots, 2c.; small lots from store, 2.30c.; Sheets (Light), Black, No. 28, carload lots, 2.65c.; Galvanized Sheets, No. 28, carload lots, 3.70c.; Steel Tire, 4 in. and heavier, carload lots, 1.95c.; Plates, 3-16 and No. 8, carload lots, 2c.; small lots from store, 2.20c.

**Old Material.**—Rolling Mill Scrap is defined as practically dead in this market. Dealers are all loaded up with choice stocks which are not moving at present low prices. Consumers have evidenced a willingness to take some lines of Old Metal at ruling prices for delivery next year, and for 60 to 90 days, but dealers are turning them down. The largest buyers here have immense stocks which they are holding, believing firmly that there will be an active demand after the election. The Cincinnati supply is practically controlled by two or three dealers, and it is evident that the control is held firmly. Dealers' prices to the trade, f.o.b. Cincinnati, are about as follows:

| | |
|---|---|
| No. 1 R. R. Wrought, net ton | $10.50 to $11.50 |
| Cast Borings, net ton | 4.00 to 5.00 |
| Heavy Melting Steel Scrap | 11.00 to 12.00 |
| Steel Turnings, net ton | 5.00 to 6.00 |
| No. 1 Cast Scrap, net ton | 10.25 to 11.25 |
| Burnt Cast and Wrought, net ton | 8.00 to 9.00 |
| Old Iron Axles, net ton | 14.50 to 15.50 |
| Old Iron Rails, gross ton | 13.00 to 14.00 |
| Old Steel Rails, long, gross ton | 11.00 to 12.00 |
| Old Steel Rails, short, gross ton | 11.00 to 12.00 |
| Relaying Rails, 56 lb. and up, gross ton | 22.00 to 23.00 |
| Old Car Wheels, gross ton | 12.00 to 13.00 |
| Low Phosphorus Scrap, gross ton | 13.00 to 14.00 |

## Birmingham.

BIRMINGHAM, ALA., June 29, 1908.

**Pig Iron.**—Notwithstanding the fact that the demand has not been stimulated, the market is without sign of weakness. The business offered the past week, as has been for some weeks previous, covered an unusual territory, and the aggregate tonnage involved was comparatively small, but reports from all producers indicate a favorable comparison of order book requirements with the rate of production and the outlook such as to warrant a conservative policy in making additional commitments. It is known that Southern Iron recently reported sold to an Eastern melter at $11.50, Birmingham, for No. 3 Foundry, was only 500 tons, and the analysis specified was sufficiently low in silicon to permit of No. 3 Foundry being furnished. The company making this sale will increase its output July 1 and adheres firmly to $12, Birmingham, for prompt deliveries and the third quarter. A schedule of $12.50, Birmingham, for the last quarter has been adopted by practically all producers who are in position to accept orders for shipment within that period. There has been no negotiation for deliveries extending into 1909. Among the sales reported in the past week, 600 tons of No. 2 Foundry for the third quarter at $12, Birmingham, is most significant. The sale of 300 tons of Gray Forge for prompt shipment is reported at $10.75, Birmingham, as well as 200 tons of the same grade at $10.50. A Stove manufacturer is in the market for 2000 tons to be delivered over the remainder of the year, and 500 tons for July delivery is being sought by another concern. The present movement of Pig Iron exceeds reports at any time since last October, without evidence of an anticipated reduction in the melt. It is to be noted that the increase in the melt within the past 10 days is material. The fact that the fiscal year of leading railroad interests ends June 30 is a significant one, and developments as to the course to be pursued by them will be awaited with some eagerness.

**Cast Iron Pipe.**—Among the orders now in sight is 800 to 1000 tons of Water Pipe for the city of Atlanta, Ga. The contract to cover this tonnage will be awarded July 8. The city of Pensacola, Fla., is to place contract for approximately 1000 tons of Water Pipe July 1, and a similar quantity is to be placed for Douglass, Wyo., June 30. The city of Cleveland, Ohio, is supposed to have placed a contract for 3000 tons of Water Pipe June 27. Of the small orders placed within the past week, the principal one is reported at an advance of $2 per ton. The tonnage involved was not sufficient to warrant an advance in quotations, but with prices for raw material remaining firm, indications are not unfavorable for an advance at an early date. We quote as follows for Water Pipe, per net ton, f.o.b. cars here: 4 in. to 6 in., $23; 8 in. to 12 in., $22; over 12 in., average $21, with $1 per ton extra for Gas Pipe. For large municipal contracts departures from the figures probably result.

**Old Material.**—The condition of the market is such that a definite statement as to its strength is not warranted. Practically no business has been transacted within the past week, and the outlook for a reaction is without an encouraging feature. A revision of quotations is not authorized, although there is no incentive for concessions. We quote nominally as follows, per gross ton, f.o.b. cars here:

| | |
|---|---|
| Old Iron Rails | $15.00 to $15.50 |
| Old Iron Axles | 14.00 to 15.00 |
| Old Steel Axles | 12.50 to 13.00 |
| No. 1 Railroad Wrought | 12.00 to 12.50 |
| No. 2 Railroad Wrought | 9.00 to 9.50 |
| No. 1 Country Wrought | 10.50 to 11.00 |
| No. 2 Country Wrought | 9.50 to 10.00 |
| No. 1 Machinery | 10.00 to 11.00 |
| No. 1 Steel | 9.50 to 10.00 |
| Wrought Pipe and Flues | 8.50 to 9.00 |
| Stove Plate and Light Cast | 8.50 to 9.00 |
| Cast Borings | 5.00 to 5.50 |

## St. Louis.

ST. LOUIS, MO., June 29, 1908.

The situation in the Southwest and locally, with regard to the flooded territory, has improved and is rapidly admitting of the resumption of business and traffic. For the past month the condition has been sufficiently serious to act as a deterrent to the otherwise favorable outlook. Parties identified with railroad supplies report an improved demand for the lighter material and appliances and find the railroads more prompt in payment of accounts. As is usual during the heated term, some of the local rolling mills have closed down and are improving the time by making repairs to their plants.

**Coke.**—The market is quiet, but firm. While inquiries are continuing to come in, no important sales are reported. The inquiry noted last week for a round lot is expected to result in a sale within the next few days. There is no change in price. We quote Connellsville 72-hr. Foundry for immediate and future shipment at $2.15 and $2.50 at oven.

**Pig Iron.**—Notwithstanding the demand, so far as actual sales is concerned, is ruling quiet, the market is strong. Difficulty is being experienced in placing even small orders with Southern furnaces where prompt shipment is desired. The minimum price is $12, Birmingham, with some furnaces holding at $12.50 for the last quarter. It is reported that the Southern field is well sold up for July, August and September.

**Structural Material, Bars, &c.**—There have been no contracts involving large tonnage in Structural Material, yet the various sales agencies and local plants are in receipt of considerable business in small orders. Requests for shipment of contracts show a gratifying urgency. Specifications for material on previous bookings include also Bars and Track Material. Orders for small lots of Standard Rails are reported. Merchant Steel is in better inquiry. Specifications are coming in more freely from railroads for Bars and Plates.

**Metals.**—Pig Lead is in fair demand at 4.40c. to 4.45c. for common and 4.52½c. for special brands. Spelter is ruling somewhat easier. To-day's price is 4.40c. There is a slack demand, but production is falling off and stocks in dealers' hands are decreasing. Antimony is easier. Casting Copper is off ⅛c. Lake Copper has also declined ⅛c. and the demand is lighter.

**Old Material.**—With but a light demand from the mills, which at this season of the year are usually either closed down or running on half time, it may be said to be a dealers' market. Transactions are mainly confined to Steel Scrap, which is ruling higher in price. Car Wheels, Railroad Wrought and Cast Scrap are held at some advance on last week's figures. Quotations per gross ton, f.o.b. St. Louis, are as follows:

| | |
|---|---|
| Old Iron Rails | $14.00 to $14.50 |
| Old Steel Rails, rerolling | 12.20 to 12.50 |
| Old Steel Rails, less than 3 ft. | 12.00 to 12.25 |
| Relaying Rails, standard sections, subject to inspection | 22.50 to 23.50 |
| Old Car Wheels | 12.50 to 13.50 |
| Heavy Melting Steel Scrap | 11.75 to 12.00 |
| Frogs, Switches and Guards, cut apart | 11.50 to 12.00 |
| Mixed Steel | 9.00 to 9.50 |

The following quotations are per net ton:

| | |
|---|---|
| Iron Fish Plates | $11.50 to $12.00 |
| Iron Car Axles | 14.50 to 15.00 |
| No. 1 Railroad Wrought | 11.75 to 12.00 |
| No. 2 Railroad Wrought | 9.50 to 11.00 |
| Railway Springs | 9.50 to 10.50 |
| Locomotive Tires, smooth | 12.00 to 12.50 |
| No. 1 Dealers' Forge | 9.50 to 10.00 |
| Mixed Borings, etc. | 3.50 to 3.75 |
| No. 1 Boilers, cut to Sheets and Rings | 7.00 to 8.00 |
| No. 1 Cast Scrap | 11.00 to 11.50 |
| Stove Plate and Light Cast Scrap | 9.00 to 9.50 |
| Railroad Malleable | 9.25 to 9.75 |
| Agricultural Malleable | 8.50 to 9.00 |
| Pipes and Flues | 7.25 to 7.50 |

The demand for locomotive driver brakes shows some improvement and the outlook is better than it was two months ago. The general air brake business for steam roads begins to show a slight gain, with indications of quite a marked improvement in the next two months. The general air brake business for electric roads is very promising. Inquiries are coming in freely and more orders have been received for this month than during several months.

A large jobbing house in Iron and Steel reports the country trade ordering freely in small lots. As compared with last year, the business shows an average decline of only 25 per cent.

The Helmbacher Iron Works has recently started up for the manufacture of Bar Iron, Car Links, Pins and small forgings.

The Missouri Bridge & Iron Works is running full on orders for bridge work and is employing the same force as last year.

Local elevator builders find some improvement in conditions.

The Missouri, Kansas & Texas shops at Parsons, Kan.,

that employ 850 men and closed May 16, have been ordered to reopen July 1, and it is understood that all the other shops on the system have been ordered reopened.

## Pittsburgh.

PARK BUILDING, July 1, 1908.—(*By Telegraph.*)

**Pig Iron.**—The market continues quiet, and not much improvement in demand is looked for until next month at least. Many finishing mills shut down Tuesday night for inventory and repairs, which will decrease consumption very materially for the greater part of this month. We quote Sand Cast Bessemer Iron at $16; Basic, $15 to $15.50; Malleable Bessemer, $15.25 to $15.50; No. 2 Foundry, $15; Forge, $14 to $14.10, all f.o.b. Valley furnace, the freight rate to Pittsburgh being 90c. a ton. We note a sale of 1000 tons of Sand Cast Bessemer at $16; 200 tons at the same price, 300 tons of Basic at $15.25 for third quarter and 1000 at $15.50 or last quarter, all at Valley furnace.

**Steel.**—Sales have been made of about 2000 tons of Bessemer Billets, 4 x 4 in'., and 5½ x 5½ in., at the full official price of $25, Pittsburgh, with freight to destination added. There is a little more inquiry for Steel, but the amount being sold is very light. Specifications against contracts for Sheet and Tin Bars are fairly satisfactory. Slightly better demand is reported for Forging Billets. We quote Bessemer and Open Hearth Billets, 3⅞ in. and larger, up to and including 0.25 carbon, $25; 0.26 to 0.60 carbon, $1 extra; over 0.60 carbon, $2 extra, all f.o.b. Pittsburgh. For Wheeling, Martins Ferry, Follansbee, Newcastle, Sharon, Steubenville and Washington (Pa.) delivery, half the freight or 50c. additional is charged. Sheet and Tin Bars in random lengths are $27, f.o.b. Pittsburgh. Forging Billets take $2 advance over Rolling Billets.

(*By Mail.*)

Additional large orders for Steel Bars have been taken, and official advices are that the total in new orders and in extended contracts secured since the reduction in prices was made is 650,000 tons. This is a much heavier quantity than was placed last year, and indicates strongly that the large Steel Bar interests will be pretty well employed over the next twelve months. Prices of Steel Bars are very firm on the basis of 1.40c., Pittsburgh. On Monday, the American Sheet & Tin Plate Company reached a settlement with the Amalgamated Association on the Sheet and Tin Plate scales, the men accepting some severe cuts. General conditions in the Iron trade have been quiet the past week, but the feeling is more optimistic, and while July is always a dull month, it is confidently believed that early in August there will be a material increase in orders. A number of finishing mills will close down on the night of June 30, for inventory and repairs, among these being the mills of the Republic Iron & Steel Company and of the Western Bar Iron Association that sign the Amalgamated scale. It is believed a settlement of the scales will be reached early in July with these two interests, as the men realize that with a heavy reduction in prices of Iron and Steel Bars, they will have to accept a corresponding reduction in wages.

**Ferromanganese.**—No sales of moment are reported. We quote 80 per cent. foreign Ferro at $44, seaboard, for third quarter, and about $45, for fourth quarter, the freight rate to Pittsburgh being $1.95 a ton.

**Ferrosilicon.**—With no recent sales, we quote 50 per cent. at $70, Pittsburgh.

**Rods.**—The market is bare of inquiries, and the amount of new business taken is relatively small. We quote Bessemer Rods at $33, Basic at $34 and Chain Rods at $33, f.o.b. Pittsburgh.

**Muck Bar.**—We continue to quote nominally $26, Pittsburgh, for best grades of Muck Bar made from all Pig Iron.

**Skelp.**—The market is very quiet. Prices are largely nominal, and we quote: Grooved Steel Skelp, 1.45c. to 1.50c.; Sheared Steel Skelp, 1.50c. to 1.60c.; Grooved Iron Skelp, 1.60c. to 1.70c., and Sheared Iron Skelp, 1.70c. to 1.75c., f.o.b. Pittsburgh.

**Steel Rails.**—The Carnegie Steel Company has taken orders for about 1700 tons of Light Rails, while specifications against old contracts for Standard Sections are coming in more freely. Regular quotations on Light Rails, which are shaded $4 to $5 a ton to meet competition of mills that reroll Rails, are as follows: 25 to 45 lb. Sections, $28; 20-lb., $29; 16-lb., $30, and 12-lb., $32. We quote Standard Sections at $28, at mill, and Angle Splice Bars at 1.65c., at mill.

**Plates.**—New business is still of a hand to mouth character, but we may note that the Carnegie Steel Company is rolling a heavy tonnage in Plates to be made into Pipe for [illegible] mills [illegible]

make a full assortment of sizes, are still shading prices from $1 to $1.50 a ton. Regular prices are as follows: Tank Plates, ¾-in. thick, 6¼ in. up to 100 in. wide, 1.60c., base, at mills, Pittsburgh. Extras over this price are as follows:

| | Extra per 100 lb. |
|---|---|
| Gauges lighter than ¼-in. to and including 3-16 in. Plates on thin edges | $0.10 |
| Gauges Nos. 7 and 8 | .15 |
| Gauge No. 9 | .25 |
| Plates over 100 to 110 in. | .05 |
| Plates over 110 to 115 in. | .10 |
| Plates over 115 to 120 in. | .15 |
| Plates over 120 to 125 in. | .25 |
| Plates over 125 to 130 in. | .50 |
| Plates over 130 in. | 1.00 |
| All sketches (excepting straight taper Plates varying not more than 4 in. in width at ends, narrowest end being not less than 30 in.) | .10 |
| Complete Circles | .20 |
| Boiler and Flange Steel Plates | .10 |
| "A. B. M. A." and ordinary Firebox Steel Plates | .20 |
| Still Bottom Steel | .30 |
| Marine Steel | .40 |

TERMS.—Net cash 30 days. Pacific Coast base, 1.50c., f.o.b. Pittsburgh.

**Structural Steel.**—No local work has been placed in the past week, but a heavy tonnage is being figured on by the American Bridge Company and the McClintic-Marshall Construction Company for delivery in New York, Chicago and other large cities. Competition among fabricators is still keen, but it is said that prices for erected work are somewhat better. We quote: Beams and Channels, up to 15 in., 1.60c.; over 15 in., 1.70c.; Angles, 3 x 2 x ¼ in. thick, up to 6 x 6 in., 1.60c.; 8 x 8 and 7 x 3½ in., 1.70c.; Zees, 3 in. and larger, 1.60c.; Tees, 3 in. and larger, 1.65c.; Bulb Angles and Deck Beams, 1.90c. Under the Steel Bar card, Angles, Channels and Tees under 3 in. are 1.50c., base, for Bessemer and Open Hearth, subject to half extras on the Standard Steel Bar card.

**Sheets.**—As yet we are not able to report any increase in the demand for Sheets, which have been relatively quiet for some time, and at present the leading mills are able to operate to only about 40 per cent. of capacity. Prices, on the whole, are being maintained, but in exceptional cases slight concessions are sometimes made. Regular prices are as follows: Blue Annealed Sheets, No. 10 and heavier, 1.80c.; Nos. 11 and 12, 1.85c.; Nos. 13 and 14, 1.90c.; Nos. 15 and 16, 2c.; Box Annealed, Nos. 17 to 21, 2.25c.; Nos. 22 to 24, 2.30c.; Nos. 25 and 26, 2.35c.; No. 27, 2.40c.; No. 28, 2.50c.; No. 29, 2.60c.; No. 30, 2.70c. Galvanized Sheets: Nos. 10 and 11, 2.45c.; Nos. 12 and 14, 2.55c.; Nos. 15 and 16, 2.65c.; Nos. 17 to 21, 2.80c.; Nos. 22 and 24, 2.95c.; Nos. 25 and 26, 3.15c.; No. 27, 3.35c.; No. 28, 3.55c.; No. 29, 3.70c.; No. 30, 3.95c. No. 28 Painted Roofing Sheets, $1.75 per square, and Galvanized Roofing Sheets, No. 28, $3.10 per square, for 2½-in. corrugations. These prices are subject to a rebate of 5c. per 100 lb. to the large trade under the usual conditions, jobbers charging the usual advances for small lots from store.

**Tin Plate.**—Jobbers are placing only filling in orders to keep up a full assortment of sizes in their stocks, but the leading mills have a good deal of business booked. The leading interest is operating to practically full capacity, and this is the case with three or four independent mills. We quote at $3.70 for 100-lb. Cokes, 14 x 20, f.o.b. Pittsburgh, terms 30 days, less 2 per cent. off for cash in 10 days, this price being subject to the usual rebate of 5c. per base box in large lots.

**Hoops and Bands.**—Specifications against contracts are fair, but practically no new orders are being placed. Regular prices are as follows: Steel Hoops, 1.80c., base, full Hoop card prices; Steel Bands, 1.40c., base, half Steel card extra, all f.o.b. cars Pittsburgh, in carload lots, for delivery during 1908.

**Iron and Steel Bars.**—The scales of the Republic Iron & Steel Company with the Amalgamated Association expired on the night of June 30, and an agreement has not yet been reached on the wage scales for the year beginning July 1. A conference is to be held with the Republic at an early date, and on July 7 the Amalgamated Association will meet the Western Bar Iron Association in conference. The mills have asked for a fairly large reduction, which the men at first did not seem inclined to consider, but it is probable that a settlement will be reached by both sides making concessions. Prices on Steel Bars remain firm on the basis of 1.40c., Pittsburgh, and the mills are busier and making larger shipments than for some time. As yet the tonnage placed in Iron Bars for forward delivery is rather light, but the demand is expected to improve in the near future. We quote Iron Bars at 1.40c., base, for Pittsburgh delivery, and 1.35c., base, for Western points, to which freight is added, except Chicago, the price for which is 1.50c., delivered. We quote Steel Bars at 1.40c., Pittsburgh, for base sizes.

**Merchant Steel.**—Some contracts have been placed for different grades of Steels by the implement makers, but the quantity covered so far is much smaller than anticipated. The demand for Tire Steel continues fairly active, and several mills have taken considerable business. Shafting continues dull. We quote: Cold Rolled Shafting, on contracts

for 100 tons and over, 57 per cent. off; carloads, 56 per cent. off, and less than carloads, 52 per cent. off, on which carload freight is allowed within base territory. Smooth Finished Machinery Steel, 1.80c. to 1.90c.; Flat Sleigh Shoe, 1.75c. to 1.85c.; Cutter Shoe Steel, 2.15c. to 2.25c.; Toe Calk, 1.90c. to 1.95c.; Railroad Spring Steel, 1.60c. to 1.75c., the higher price being for Pennsylvania Railroad analysis. Carriage Spring Steel is 1.80c.; Tire Steel, Iron, finished, 1½ in. and wider, 1.40c.; under 1½ in., 1.55c. Planished Tire Steel is 1.60c., all f.o.b. at mill.

**Railroad Spikes.**—No orders of moment are being placed. There is a fair demand for the smaller sizes, but only in small lots to meet current needs. We quote: Standard sizes, 4½ x 9-16 in., at $1.70, and the smaller sizes at $1.80 per 100 lb. in carload and larger lots, with an advance of 5c. per 100 lb. for less than carload, f.o.b. Pittsburgh.

**Spelter.**—The market on this material is no better, but on the contrary is easier. The demand is light, and there is a large overproduction. It is evident that the smelters will have to reduce their output materially or the demand will have to improve, before prices of Spelter will show betterment. We quote prime grades of Western at 4.30c., East St. Louis, equal to about 4.42½c., Pittsburgh. Hardly enough new business is being offered to test the market.

**Merchant Pipe.**—The demand holds up remarkably well in spite of the fact that jobbers are buying only to cover actual needs and to keep up sizes in stock. Both new orders and shipments of Pipe in June show a large increase over May. Spang, Chalfant & Co., Inc., have recently taken contracts from Western and local gas and oil interests for 30 miles of 16-in. and 10 miles of 10-in. Line Pipe. We can also state that it is likely inquiries will be out in a short time for about 300 miles of 8-in. Pipe for oil lines for the Pacific Coast. This inquiry came up about two years ago, but nothing was done with it at that time. It has recently been revived. Prices are firm. Discounts on Steel Pipe, ¾ to 6-in., to the large trade are now 76 and 5 per cent. off list. Regular discounts are as follows:

*Merchant Pipe.*

| | Jobbers, carloads, Steel. | |
|---|---|---|
| | Black. % | Galv. % |
| ⅛ to ¼ in. | 67 | 51 |
| ⅜ in. | 69 | 55 |
| ½ in. | 71 | 59 |
| ¾ to 6 in. | 75 | 65 |
| 7 to 12 in. | 72 | 57 |
| Extra strong, plain ends: | | |
| ⅛ to ⅜ in. | 60 | 48 |
| ½ to 4 in. | 67 | 55 |
| 4½ to 8 in. | 63 | 51 |
| Double extra strong, plain ends: | | |
| ½ to 8 in. | 56 | 45 |

Discounts on Genuine Iron Pipe are as follows:

| | Black. % | Galv. % |
|---|---|---|
| ⅛ to ¼ in. | 65 | .. |
| ⅜ in. | 67 | 53 |
| ½ in. | 69 | 57 |
| ¾ to 6 in. | 73 | 63 |
| 7 to 12 in. | 70 | 55 |
| Extra strong, plain ends: | | |
| ⅛ to ⅜ in. | 58 | 46 |
| ½ to 4 in. | 65 | 53 |
| 4½ to 8 in. | 61 | 49 |
| Double extra strong, plain ends: | | |
| ½ to 8 in. | 54 | 43 |

**Boiler Tubes.**—The railroads are buying few Tubes, while the demand from the general trade for Merchant Tubes is only fair. Regular discounts on Merchant Tubes in small lots, on which an extra 5 per cent. is allowed in carloads, but which discounts are being shaded, are as follows.

*Boiler Tubes.*

| | Iron. | Steel. |
|---|---|---|
| 1 to 1½ in. | 42 | 47 |
| 1¾ to 2¼ in. | 42 | 59 |
| 2½ in. | 47 | 61 |
| 2¾ to 3 in. | 52 | 65 |
| 6 to 13 in. | 42 | 59 |

2½ in. and smaller, over 18 ft. long, 10 per cent. net extra.
2¾ in. and larger, over 22 ft. long, 10 per cent. net extra.

**Iron and Steel Scrap.**—The shutdown of finishing mills on the night of June 30 is temporarily restricting the demand for Scrap, but it is expected that a number of consumers will shortly be in the market to cover their requirements when they start up again. The market is firm, and prices on some lines, notably Heavy Steel Scrap, Old Steel Rails for remelting, and Bundled Sheet Scrap are higher. One large consumer has recently bought a considerable tonnage of Heavy Steel Scrap. We quote per gross ton f.o.b. Pittsburgh: Heavy Steel Scrap for Pittsburgh, Steubenville and Sharon delivery, $14; Cast Iron Borings, $8 to $8.25; No. 1 Railroad Wrought Scrap, $13.75 to $14; No. 1 Cast Scrap, $14 to $14.25; Bundled Sheet Scrap, $10.75 to $11.25; Sheet Bar Crop Ends, $17.25 to $17.50; No. 1 Busheling Scrap, $12.75 to $13; No. 2 Busheling Scrap, $8.75 to $9; Iron Axles, $19.50 to $20; Steel Axles, $17.50 to $18; Low Phosphorus Melting Stock, 0.04 and under, $18 to $18.50; Old Steel Rails, short pieces, $14; Rerolling Rails, $14.50 to $15; Machine Shop Turnings, $8.50 to $8.75; Grate Bars, $12.25 to $12.50; Railroad Malleable Scrap, $13 to $13.50. We note sales of about 1000 tons of Heavy Steel Scrap at $14; 500 tons of Busheling Scrap at $13; 500 tons of Turnings at $8.50 to $8.75; and about 1000 tons of Rerolling Rails on the basis of $14.50, f.o.b. Pittsburgh.

**Coke.**—While there is a slightly better demand for Furnace Coke, due to the starting up of two or three furnaces, and prospective early operation of some other stacks, prices show no betterment. The estimated output of Coke in the Upper and Lower Connellsville regions for the first six months of 1908 is 4,500,000 tons, against 10,755,452 tons for the first six months of 1907. Strictly Connellsville Furnace Coke for prompt shipment is held at $1.60, at oven, while on contracts for last half of the year $1.80 to $1.85 is quoted. The price of 72-hr. Foundry Coke is $2 to $2.25, depending on grade.

J. F. Robinson and Thos. A. Orr, of the firm of Robinson & Orr, and H. D. Stalnaker, recently manager of the Pittsburgh office of the Wilkoff Brothers' Company, dealer in Iron and Steel Scrap, have formed a corporation, to be known as the Stalnaker Iron Company, for the purpose of dealing in Iron and Steel Scrap, with offices at 2124 and 2125 Farmers' Bank Building, Pittsburgh. J. F. Robinson is president; Thos. A. Orr, vice-president and treasurer; H. D. Stalnaker, secretary and general manager. The present business of Robinson & Orr, dealers in Stocks and Bonds and Iron and Steel, will be continued at the present location, 419 Wood street, Pittsburgh.

## Cleveland.

CLEVELAND, OHIO, June 30, 1908.

**Iron Ore.**—A moderate amount of Ore has been purchased the past week. Some furnace interests seem content to wait until later, and as yet are showing no interest in the market. Others are buying only a portion of their requirements for the year. These are expected to come into the market again later in the season when they can tell more definitely how much they will need to last them till the opening of navigation next year. Another reduction of 5c. a ton in the carrying charges for Ore has been announced, making the present rates, 10c. a ton, below those that prevailed last year. It is believed that the rates now established will be maintained the balance of the season. The rate per ton is now 65c. from the head of the lakes, 60c. from Marquette and 50c. from Escanaba. Contracts for carrying several hundred thousand tons of Ore have been closed with vesselmen at the new rate in the past few days. A number of the big shippers, however, have done no chartering, preferring to wait until the Ore is sold. The Ore movement is slowly increasing, but there are too many boats in commission for the cargoes and vessels are forced to wait for loads. Although shipments in July will show much improvement as compared with June, the indications are that the movement the coming month will be rather light. A committee representing the Merchant Ore firms and the furnace interests has worked out a new plan of figuring Ore prices, increasing the penalty on Ore running low in Iron content. When the Iron content was but slightly below the guarantee not much complaint of the present method of fixing the penalty was made by the furnacemen, but the latter claim that the penalty should be larger than at present when the Iron content runs 5 or 6 per cent. below the guarantee. It is believed that the new plan, which has been worked out with the exception of minor details, will prove satisfactory both to the Ore men and furnace interests. Ore prices for 1908 delivery at Lake Erie docks, per gross ton, are as follows: Old Range Bessemer, $4.50; Mesaba Bessemer, $4.25; Old Range non-Bessemer, $3.70; Mesaba non-Bessemer, $3.50.

**Pig Iron.**—The only sales reported were a few lots of 100 to 300 tons of Northern Foundry Iron for last half delivery. The purchasers were consumers who failed to cover in the recent buying movement. Producers feel encouraged because prices did not sag after the reduction in the price of Ore, and some of them are inclined to hold for slightly firmer prices. The market is firm at $15 to $15.25, Valley furnace for No. 2 Foundry, for prompt shipment, and for the last half. Some furnaces are asking $15.50 for the fourth quarter. Local furnaces quote No. 2 Foundry at $15.75, delivered, Cleveland, and $15.50, at furnace, for outside delivery. With Northern Foundry Iron lower than Southern, with the freight rate added, there is no inquiry for the latter in this territory. There is one inquiry for Bessemer Iron, the first that has appeared in the local market in some time. There are no inquiries for Basic or Malleable Iron. There is a little improvement in shipping orders for Foundry Iron on contract, indicating some increase in the melt. Furnace B of the Toledo Furnace Company will go in blast in about 10 days, and one or two other furnaces in this territory will probably be blown in within a few weeks. For prompt shipment and for the last half, we quote, delivered, Cleveland, as follows:

| | |
|---|---|
| Bessemer | $16.90 |
| Northern Foundry, No. 1 | $16.25 to 16.65 |
| Northern Foundry, No. 2 | 15.75 to 16.15 |
| Northern Foundry, No. 3 | 15.25 to 15.65 |
| Southern Foundry, No. 2 | 16.35 |
| Gray Forge | 14.90 |

**Coke.**—There is no inquiry for Furnace Coke, but the Foundry Coke market is fairly active. Prices are firm. We quote Connellsville Furnace Coke, for last half delivery, at $1.85 to $1.90, at oven. Some producers are holding to $2 for the fourth quarter. We quote 72-hr. Foundry Coke at $2.25, at oven, for last half delivery.

**Finished Iron and Steel.**—The condition of the market remains nearly stationary, although what change has appeared has been for the better. There is a little improvement in small orders for Steel Bars, Plates and Shapes, which is attributed to a little more activity among consumers rather than to the price reduction. Prices are being fairly well maintained, but some consumers, particularly of Plates, are holding off in the expectation of further price reductions. A number of manufacturers have cancelled their old contracts for Steel Bars and made new ones on the present price basis. It is understood that a number of the mills are making concessions to their customers, allowing them to make Steel Bar contracts for a year at the present prices, the contracts being the same as those of the implement makers. Following the spurt caused by the price reduction there is very little activity in Iron Bars. Prices are being fairly well maintained by Western mills, but the open cut by some of the Eastern mills is having the effect of rather unsettling the market. The Union and Empire rolling mills of this city will shut down July 3 for a month and perhaps longer. There is a fair improvement in the demand for Structural Material in small lots for local work, but fabricators, it is claimed, are quoting prices lower even than those at which work has been taken during the past few months. New municipal work has developed in Cleveland requiring an aggregate of about 500 tons of Structural Material for a house of correction and for a school building. In Plates price concessions are still being made by some of the smaller mills. The demand for Sheets is very light. Although some projects are pending there is little prospect that there will be any good sales of Rails for new traction lines in this territory this season. The Cleveland Board of Public Service has received a low bid of $22.75 per ton for 3400 tons of Iron Pipe, ranging from 3 to 36 in. for Water Pipe extension, the price being for Pipe delivered on the streets. Newark, Ohio, has awarded a contract for 1100 tons of Iron Pipe at $21.59 per ton. Warehouse business during June showed a slight improvement over the previous month. We quote Iron Bars at 1.45c., Cleveland, for car lots; Steel Bars, 1.50c., Cleveland, for car lots, half extras; Beams and Channels, 1.70c., base, Cleveland, and Plates, ¼-in. and heavier, 1.70c., Cleveland. Dealers quote Sheets, mill shipments, car lots, Cleveland, as follows: Blue Annealed, No. 10, 1.90c.; Box Annealed, No. 28, 2.60c.; Galvanized, No. 28, 3.65c. Jobbers quote Iron and Steel Bars out of stock at 1.65c. to 1.70c. Beams and Channels out of stock are 2c., and Plates, ¼-in. and heavier, 1.90c. Warehouse prices on Sheets are as follows: Blue Annealed, No. 10, 2.10c.; Box Annealed, No. 28, 2.70c.; Galvanized, No. 28, 3.85c. Warehouse prices on Boiler Tubes, 2¾ to 5 in., are 64 per cent. discount, and on Black Merchant Iron Pipe, base sizes, 71 per cent. discount.

**Old Material.**—The market continues quiet, but prices remain firm. There is little inquiry from consumers, and about the only activity is in small transactions among dealers who are covering on contracts. With many mills shut down a large part of July, dealers are not looking for much demand that month, but expect a good demand toward August. Expecting better prices then, they are not anxious to sell at present prices. An advance is noted in quotations on Old Car Wheels and Malleable and Cast Scrap. The Pennsylvania Railroad has a list out this week of about 1500 tons. Dealers' prices to the trade, per gross ton, f.o.b. Cleveland, are as follows:

| | |
|---|---|
| Old Steel Rails | $13.00 to $13.50 |
| Old Iron Rails | 15.00 to 16.00 |
| Steel Car Axles | 16.50 to 17.50 |
| Old Car Wheels | 14.00 to 14.50 |
| Relaying Wheels, 50 lb. and over | 22.00 to 23.00 |
| Heavy Melting Steel | 12.50 to 13.00 |
| Railroad Malleable | 12.00 to 12.50 |
| Agricultural Malleable | 11.00 to 11.50 |
| Light Bundled Sheet Scrap | 8.00 to 9.00 |

The following quotations are per net ton, f.o.b. Cleveland:

| | |
|---|---|
| Iron Car Axles | $16.00 to $16.50 |
| Cast Borings | 6.00 to 6.50 |
| Iron and Steel Turnings and Drillings | 7.00 to 7.25 |
| Steel Axle Turnings | 8.50 to 9.00 |
| No. 1 Busheling | 11.00 to 11.50 |
| No. 1 Railroad Wrought | 12.00 to 13.00 |
| No. 1 Cast | 12.00 to 12.50 |
| Stove Plate | 9.50 to 10.00 |
| Bundled Tin Scrap | 8.00 to 9.00 |

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Harry Bialosky has resigned his position with L. I. Bregman & Co., dealers in old materials, and has bought an interest in the business of A. Rotter & Co., 1962 to 1988 Scranton road, Cleveland, Ohio. The old firm name of A. Rotter & Co. will be continued.

## New York.

NEW YORK, July 1, 1908.

**Pig Iron.**—The market is quiet, and on the whole unchanged, with a relatively small group of sellers urgent to market Pig Iron at current prices. It is expected that the leading pump interest will to-day close contracts covering about 6000 to 8000 tons for New Jersey delivery, and 3000 to 4000 tons for New England delivery. A large electrical concern is asking for prices on about 2000 tons of Low Phosphorus Pig. We quote, at tidewater: Northern No. 1 Foundry, $16.75 to $17; No. 2 Foundry, $16 to $16.50, and No. 2 Plain, $15.25 to $15.50. Alabama Irons are quoted $16.50 to $17 for No. 1 Foundry, and $16 to $16.25 for No. 2 Foundry.

**Steel Rails.**—The Erie Railroad, which has bought what Rails it has needed this year, month by month, has taken 7500 tons for July delivery. A traction road has bought 700 tons, and there has been fair activity in frog and crossing work. The Seaboard Air Line receiver's order for 12,000 tons is really the reinstatement of business placed before the receivership with the Sparrows Point mill. The Tidewater Railroad has also contracted with the Pennsylvania Steel Company for 10,000 tons, or 2000 tons more than its original contract, which for some months has been held up. The Bethlehem Steel Company is reported to have taken an order for Girder Rails, this marking the entrance of a new competitor into that field.

**Structural Material.**—Sales at the reduced price fixed a few weeks ago have been made for delivery in the next six months. In the case of sales to jobbing interests deliveries are limited to three months. A factor which manufacturers of Structural Steel are expecting to assume greater importance in its bearing on the structural situation is the large accumulations of idle money. While projects like that of the Equitable Assurance Society's $10,000,000 building, on which work is expected to begin in the coming year, are exceptional, it is an illustration of the reconstruction that is to be looked for in lower Manhattan for years. While several good contracts are pending, the week has not brought out a great deal of new business. The third section of the Pennsylvania Railroad viaduct work in connection with the Sunnyside, L. I., terminal, 800 tons, has not been let, as reported. The New Haven road has placed 425 tons of bridge work for the Harlem Division with the Pennsylvania Steel Company and about 1000 tons more is pending. The Rutland Railroad in Vermont has placed an order for 300 tons with the American Bridge Company. We continue to quote tidewater deliveries, mill shipments, as follows. Beams, Channels, Angles and Zees, 1.76c.; Tees, 1.81c. On Beams, 18 to 24 in., and Angles over 6 in., the extra is 0.10c. Material cut to length is sold from stock at 2¼c. to 2½c.

**Ferroalloys.**—A round lot of 80 per cent. Ferromanganese was sold this week at $44.50, Baltimore. The market ranges between $44.50 and $45.50, with some few holders of choice Continental brands asking higher prices. The demand for 50 per cent. Ferrosilicon is dull, but it can be secured at $70, seaboard, or maker's works. For a fair order the freight rate would possibly be absorbed to inland points.

**Bars.**—It is understood that the Eastern Bar Iron Association has passed out of existence, due to the withdrawal of leading companies. The Bar Iron market has shown the effect of the practical abandonment of efforts to maintain prices, and quotations now range from 1.36c. to 1.46c., tidewater, according to quality and quantity. The demand has not been large. Steel Bars continue to be quoted at 1.56c., tidewater.

**Plates.**—The local demand is light, and inquiries do not indicate any early resumption of activity. Prices of standard sizes are as follows, at tidewater: Sheared Plates, 1.76c. to 1.86c.; Flange Plates, 1.86c. to 1.96c.; Marine Plates, 2.16c. to 2.26c.; Firebox Plates, 2.65c. to 3.50c., according to specifications.

**Cast Iron Pipe.**—Conditions are looking a little better in this branch of trade. Quite a number of contracts are in sight. Manchester, Mass., will open bids July 10 for 443 net tons of 16-in. and 523 net tons of 14-in. Water Pipe, as well as a small quantity of special castings. New York City is preparing to purchase a considerable quantity. Within the next four weeks the city will put out specifications for about 6000 tons, principally 6 and 12 in. A city contractor will this week buy about 2800 tons of 30-in. to apply on some work recently taken by him. The Western gas companies are beginning to put out inquiries. One of the most important of these is the inquiry of the Laclede Gas Company, St. Louis, for 20 to 25 miles of Gas Pipe. The Lynchburg Foundry Company recently secured 1400 tons of Water Pipe awarded by the city of Washington, D. C. Prices are firm for carload lots on the basis of $24.50 to $25 per net ton at tidewater for 6-in.

**Old Material.**—A generally better feeling prevails as to the future, although in most lines trade is exceedingly dull. Improvement is seen in No. 1 Railroad Wrought, which is in better demand at slightly higher prices. Wrought

Pipe is being purchased more freely, at prices 25c. to 50c. per ton higher than a month ago. No. 1 high grade Heavy Cast Scrap is rather eagerly wanted, with little to be had in this vicinity for immediate shipment. Several inquiries have been received for this grade of Scrap for delivery in the next three months, but it cannot be learned that any sales were made as dealers have been chary of contracting to make shipments within this time. Practically the same conditions are found in Stove Plate. Steel Scrap is rather quiet, but this is due to the fact that quite large quantities have been bought within the past month or so by the leading Eastern Steel companies, and these buyers are now out of the market. The opinion quite generally prevails that all grades of Old Material will command higher prices before September 1. Quotations are about as follows per gross ton, New York City:

| | |
|---|---|
| Old Girder and T Rails for melting | $10.00 to $10.50 |
| Heavy Melting Steel Scrap | 10.00 to 10.50 |
| Old Steel Rails, rerolling lengths | 11.50 to 12.00 |
| Relaying Rails | 20.50 to 21.50 |
| Old Iron Rails | 14.50 to 15.00 |
| Standard Hammered Iron Car Axles | 16.00 to 16.50 |
| Old Steel Car Axles | 14.50 to 15.00 |
| No. 1 Railroad Wrought | 13.50 to 14.00 |
| Iron Track Scrap | 10.00 to 10.50 |
| No. 1 Yard Wrought, long | 11.50 to 12.00 |
| No. 1 Yard Wrought, short | 10.50 to 11.00 |
| Light Iron | 5.50 to 6.00 |
| Cast Borings | 5.00 to 5.50 |
| Wrought Turnings | 6.50 to 7.00 |
| Wrought Pipe | 10.00 to 10.50 |
| Old Car Wheels | 12.50 to 13.50 |
| No. 1 Heavy Cast, broken up | 13.00 to 14.00 |
| Stove Plate | 9.50 to 10.50 |
| Locomotive Grate Bars | 10.50 to 11.00 |
| Malleable Cast | 11.50 to 12.50 |

## Iron and Industrial Stocks.

NEW YORK, July 1, 1908.

The course of the stock market since our last report has been quite interesting. It had been generally expected that the American Locomotive Company would pass or reduce its quarterly dividend on the common stock, but contrary to the general expectation the management decided to pay the full dividend, and the stock advanced on Thursday of last week from 43 to 48, probably causing some confusion among those who had sold short. While this action has been criticised, it nevertheless had the effect of strengthening other industrial stocks, notwithstanding some adverse developments among railroad stocks. The range of prices on active iron and industrial stocks from Thursday of last week to Tuesday of this week was as follows: United States Steel common 36¾ to 38¼, preferred 101½ to 102⅞; Car & Foundry common 33⅛ to 34⅞, preferred 97⅜; Locomotive common 43 to 48½, preferred 101 to 102; Steel Foundries common 6¾ to 7½, preferred 35 to 36; Cambria Steel 31⅛ to 31⅝; Colorado Fuel 26 to 27¼; Crucible Steel common 5¾ to 5⅞, preferred 39½ to 41; Pressed Steel common 26 to 28, preferred 82¾; Republic common 16½ to 18⅛, preferred 63½ to 66½; Sloss-Sheffield 49 to 52¼, preferred 95½ to 96; Cast Iron Pipe common 19½ to 21⅜, preferred 63 to 66; Can common 4½, preferred 53¼ to 54¾. Last transactions up to 1.30 p.m. to-day are reported at the following prices: United States Steel common 38, preferred 102¾, bonds 97¼; Car & Foundry common 34⅜, preferred 97⅜; Locomotive common 47¾, preferred 101¼; Colorado Fuel 27; Pressed Steel common 28, preferred 82¾; Railway Spring common 36; Republic common 17⅝, preferred 66½; Sloss-Sheffield common 52; Cast Iron Pipe common 21, preferred 64½; Can common 4½, preferred 54¾.

**Dividends.**—The American Locomotive Company has declared the regular quarterly dividend of 1¾ per cent. on the preferred stock, payable July 21, and 1¼ per cent. on the common stock, payable August 26.

The E. W. Bliss Company, Brooklyn, N. Y., has declared a quarterly dividend of 2½ per cent. on the common stock and 2 per cent. on the preferred stock.

The American Brake Shoe & Foundry Company has declared the regular quarterly dividends of 1 per cent. on the common stock and 1¾ per cent. on the preferred stock.

At the close of the fiscal year, June 30, the deficit in the United States Treasury for the 12 months was $59,655,992, as compared with a surplus one year previous of more than $84,000,000. The receipts from all sources in the past fiscal year were $763,000,000. The disbursements were about $823,000,000, or $181,000,000 larger than in the fiscal year 1907. The increase in expenditure on account of public works was $17,100,000, due largely to the Panama Canal construction. The expenditures for pensions have increased markedly, being $14,600,000 over the preceding year, although it was predicted two or three years ago that the limit had been reached. The falling off in merchandise imports due to the business depression is responsible for the large deficit.

## Metal Market.

NEW YORK, July 1, 1908.

**Pig Tin.**—A slight improvement in the volume of business, compared with the preceding week, is noticed. The demand, however, continues insufficient to bring the price up to import cost. Price changes have been within narrow limits, and on a downward trend, as follows:

| | Cents. |
|---|---|
| June 24 | 27.55 to 27.60 |
| June 25 | 27.40 |
| June 26 | 27.40 |
| June 29 | 27.35 |
| June 30 | 27.35 |
| July 1 | 27.20 |

The most favorable feature of the situation is the actual requisitions in hand from railroads for all kinds of metal. It has been unofficially rumored that these large consumers of metals would begin purchasing for repairs after July 1. Their anxiety to secure supplies as soon after the close of the fiscal year as possible was evident when metal dealers found in their mail this morning requisitions for small lots of metals. The statistics as compiled by C. Mayer, Secretary of the New York Metal Exchange, are more favorable toward higher prices than those of last month, the total visible supply in Europe and the United States being 14,155 tons June 30, a decrease of about 1300 tons as compared with the end of May. Stocks in the United States have increased about 400 tons, being 1500 tons at the end of June. Deliveries into consumption were figured as 3000 tons. The London market is lower than last week, closing to-day at £124 5s. 6d. for spot, and £125 7s. 6d. for futures. There are afloat for American ports 2249 tons.

**Copper.**—The market is undeniably lower, but it is scarcely as low as some rumors would lead one to believe. Electrolytic can be had at 12.62½ to 12.75c., and possibly a shade under for foreign account. Lake has likewise dropped from its level of 13c., and can be had at 12.87½c., from second hands, at least. Business is small, but consumption in America has improved, compared with two months ago. The export movement, as far as buying for consumption is concerned, is small: nevertheless, exports for June amount to 29,749 tons, which indicates that much metal has been sent abroad for financial reasons. The total exports for the first half of the year amount to 166,621 tons. Since this movement began, which was when prices fell to a level at which European interests would buy around October 1, there has been shipped from American ports 265,000 tons. In this period of nine months more metal has been sent out of this country than in any 12 consecutive months. European melters and warehouses all have large stocks, for Copper is not only going from this country, but from Japan and Australia. Consumption in Europe is lessening, and fresh confirmation of the slowing down in industrial activities there is frequently coming to hand. Operations in the Butte mining district were seriously curtailed during June, and it is possible that the mines in that district have not been producing as largely as reports from the mining district would lead those in the East to think. The fire in the Anaconda mine is of little importance at this stage. The London market is £1 lower than last week, closing to-day at £56 5s. for spot, and £57 for futures.

**Pig Lead.**—The leading producer continues to ask 4.50c. for round lots. The premium on spot has disappeared, and, in fact, some tired second-hand holders are offering at a less price. The St. Louis market is firm, at 4.40c. Outside producers of Lead are optimistic as to the course of prices, and look for higher quotations, but close observers of the market feel that any further attempt to raise prices would be unwise.

**Spelter.**—Lower quotations again prevail, and Prime Western brands can be had at 4.50c., New York, and 4.35c., St. Louis. Lower quotations have been heard, especially in the West, but operators here who have tried to buy in St. Louis found no better quotation than 4.35c.

**Nickel.**—The price continues unchanged, at 45c., for ton lots; smaller quantities are held at 55c. to 65c.

**Antimony.**—In spite of heroic attempts on the part of importers to advance quotations, Antimony is again lower. Hallett's is now selling at 8.25c. to 8.50c.; Cookson's at 8.50c. to 8.75c., and outside brands 8c. to 8.25c.

**Aluminum.**—The market is quiet, the leading producer asking 33c. for No. 1 ingots, and 30c. to 31c. for No. 2 ingots. Rods are quoted at 38c., and sheets at 40c., base. Large orders for commercial Aluminum can be placed at slightly lower figures.

**Tin Plates.**—Activity at the mill continues, but new business in this center is light. The price is absolutely without change, at $3.89, New York, and $3.70, Pittsburgh, for 100 lb. IC Coke Plates. In Swansea Welsh Plates are 1½d. higher, at 12s. 3d.

**Old Metals.**—Business continues fair, sales of heavy Copper having been made this week on a basis of about 12.10c., New York. The foreign demand is likewise fair, but accumulators of Scrap complain that they cannot secure

all the material desired. The following dealers' selling prices are unchanged from last week:

| | Cents. |
|---|---|
| Copper, Heavy and Crucible | 12.00 to 12.25 |
| Copper, Heavy and Wire | 11.75 to 12.00 |
| Copper, Light and Bottoms | 10.75 to 11.00 |
| Brass, Heavy | 8.75 to 9.00 |
| Brass, Light | 7.00 to 7.25 |
| Heavy Machine Composition | 11.50 to 11.75 |
| Clean Brass Turnings | 7.75 to 8.25 |
| Composition Turnings | 9.00 to 9.50 |
| Lead, Heavy | 4.20 |
| Lead, Tea | 3.85 |
| Zinc | 3.50 |

## The Vulcan Detinning Company.

In its application for the listing of its stock on the New York Stock Exchange, the Vulcan Detinning Company says:

The company was incorporated under the laws of the State of New Jersey, April 25, 1902. Authorized capital, preferred stock, 7 per cent. cumulative, $1,500,000; common stock, $2,000,000. All issued and outstanding. Par value of shares $100 each. The name, location, acreage and capacity of plants are as follows:

| Name. | Location. | Acreage. |
|---|---|---|
| Vulcan Metal Refining Branch (detinning) | Sewaren, N. J. | 6 |
| Vulcan Western Branch (detinning) | Streator, Ill. | 55 |
| Empire Foundry (iron castings) | Sewaren, N. J. | 1¼ |

The business of the company is to purchase waste tin plate scrap from manufacturers of tinware, tin cans and similar articles, and to separate the component metals (tin and steel), by a chemical and electrolytical process. This process is a secret one, and, by a recent decision of the Court of Errors and Appeals of New Jersey, has been declared to be secret and to be the sole and absolute property of the company. In addition thereto the company owns patents on a number of the principal and important appliances. The product is tin and steel plate scrap, the tin being sold to manufacturers of pig tin, tin alloys, solder, electrotype and babbitt metal, &c., and to terne plate manufacturers, while the steel scrap is sold partly to steel mills and partly manufactured in the Empire Foundry (recently acquired) into castings of various kinds.

The Vulcan Metal Refining Branch is located at Sewaren, N. J., on the Long Branch Division of the Central Railroad of New Jersey. It also has a water front and dock for receiving and shipping by water a large proportion of its raw materials, as well as part of its steel product and coal. The plant comprises a number of brick or frame factory buildings, a complete machine shop, blacksmith shop, &c. Erected in 1899 with a capacity of 10,000 tons of tin scrap per annum, it has been in constant and uninterrupted operation since then. In 1901 the capacity was increased to 15,000 tons, and early in 1907 the plant was again enlarged, so that now its capacity is 25,000 tons of tin scrap per annum.

The Vulcan Western Branch is located on the line of the Chicago, Indiana & Southern Railroad at Streator, Ill., at which place quite a number of railroads are converging. This plant was built in 1900, destroyed by a cyclone in 1903, immediately reconstructed entirely out of earnings, and has steadily operated since that time. It is built of brick, and is likewise equipped with its own machine and blacksmith shop. The yearly capacity is 20,000 tons, the buildings, however, being of sufficient size to permit of a considerable extension of its producing capacity without important alterations.

The company has just acquired by purchase, for cash out of surplus, all the real estate, plant, machinery, appliances and patent rights of the Empire Iron & Metal Company, a corporation of the State of New York. This property immediately adjoins the Vulcan Company's property at Sewaren, N. J., on which there is a complete and fully equipped iron foundry, erected in 1906, of a capacity of about 20 tons of iron castings per day. The foundry will utilize a part of the scrap production of the detinning plant at Sewaren, the intention being to enlarge the same gradually until the company's entire output of scrap may be converted there into manufactured iron.

There is no bonded debt, and the company does not owe one dollar excepting for ordinary purchases of merchandise not yet due.

Yearly net earnings (after making all deductions for betterments and depreciation), dividends paid and surplus at end of each fiscal year, are shown in the following table:

April 26, 1902: Reserve fund, $26,910; surplus, $288,140.30; total, $315,050.30.

| Fiscal year. | Net earnings. | Dividends paid. Preferred stock. % | Preferred stock. | Common stock. % | Common stock. | Surplus. |
|---|---|---|---|---|---|---|
| 1902-3 | $181,525.36 | 5¼ | $78,750 | 3 | $60,000 | $357,825.66 |
| 1903-4 | 29,581.43 | 4½ | 67,500 | 2 | 40,000 | 279,907.09 |
| 1904-5 | 56,791.35 | 1¼ | 18,750 | ..... | | 317,948.44 |
| 1905-6 | 125,478.25 | 6 | 90,000 | ..... | | 353,426.69 |
| 1906-7 | 117,866.05 | 6½ | 97,500 | ..... | | 373,792.74 |
| 1907-8 | 71,831.04 | 3¾ | 56,250 | ..... | | 389,373.78 |

There are now due to the preferred stockholders accumulated dividends of 14¾ per cent. The last financial statement of the company, issued March 31, 1908, is as follows:

*Assets.*

| | |
|---|---|
| Cash, cash items and inventory of stock on hand | $113,554.18 |
| Plants, lands, tenements, patents, processes | 3,832,977.45 |
| Total | $3,946,361.63 |

*Liabilities.*

| | |
|---|---|
| Accounts payable (not due) | $56,987.85 |
| Capital stock | 3,500,000.00 |
| Surplus | 389,373.78 |
| Total | $3,946,361.63 |

The business office of the company is at 157 Cedar street, New York. The fiscal year of the company ends March 31 of each year. The directors are Samuel R. Beardsley, New Jersey; Samuel J. Bloomingdale, Adolph Kern, Harry Kraus, Benjamin Nicoll, Eugene E. Spiegelberg, Isaac Stiebel, all of New York. The officers are: President, Samuel R. Beardsley; vice-president, Adolph Kern; secretary, Charles P. Hull; treasurer, Adolph Kern.

**A Large Sale of Boilers.**—The Rust Boiler Company, Pittsburgh, Pa., has sold to the Tennessee Coal, Iron & Railroad Company 11,000 hp. of Rust boilers, for the Ensley plant. They are in part to replace old boilers, with which the Ensley furnaces are now equipped.

Selden S. Deemer, New Castle, Del., and associates have organized the Deemer Steel Casting Company, with a capital stock of $250,000, to manufacture steel castings under the Deemer improved surface blown Bessemer converter process. The company has secured property with a frontage of 837 ft. on the Delaware River, upon which a plant will be erected as soon as the plans have been completed, with the intention of having it in operation within a year. Mr. Deemer has had 30 years' experience in the manufacture of steel castings. He was superintendent of the Bryldon Steel Casting Company from the inception of that company eight years ago until last April, when his contract expired, and previously was for over 20 years with the Chester Steel Castings Company.

T. J. Mitchell, general manager of the W. J. Rainey Coke Company's interests, states that about 1000 of the company's coke ovens in the Connellsville region, which have been idle since December, were to be started up last week. The works comprise the Paul, near Vandergrift, 250 ovens; Revere, 200; Elm Grove, 100; Mount Braddock, 100; Acme, near Mt. Pleasant, 150; Fort Hill, 100. Construction will begin in the near future on the building of a large coke works on a tract of 700 acres of coal land owned by the company in Redstone Township, in the Connellsville region.

Premier Stolypin, who was called upon last week by a deputation of the Duma protesting against the formation of the proposed consolidation of Russian steel interests, which was expected also to include extensive coal and iron ore properties, said that the promoters of the enterprise had abandoned it. This action was due to the fact that the Government, which has in its discretion to impose a high or low capitalization tax on new corporations, had declined to grant a reduction. All similar projects, M. Stolypin said, would have to pass the Cabinet, which would look carefully to the public interest.

## PERSONAL.

B. Nicoll of B. Nicoll & Co., New York, iron and steel merchants and representatives of the Wharton Steel Company, has sailed for Europe.

Judge E. H. Gary, chairman of the United States Steel Corporation, will probably go abroad next week.

Julius Preleuthner, formerly with the National Tube Company, Lorain, Ohio, has accepted a position as designer with the Bethlehem Steel Company. He will work on the reconstruction of the 28-in. structural mill, and later on will take charge of the construction in field.

Paul L. Wolfel, formerly chief engineer of the American Bridge Company and lately consulting engineer for the American Bridge Company of New York, has resigned his position and accepted the position of chief engineer of the McClintic-Marshall Construction Company, with works at Pittsburgh, Pottstown and Carnegie, Pa. He assumed the duties of his new position July 1. His headquarters are at Pittsburgh.

Stephen G. Hobert has been appointed a member of the Advisory Board of Consulting Engineers of the Chicago Smoke Abatement Commission and the city department of Smoke Inspection, filling the vacancy due to the recent resignation of A. Bement. Graduating at Cornell University in 1896, Mr. Hobert has since had charge of the engineering work of several large concerns in different States, among these being Swift & Co., Chicago; the Solvay Process Company, Syracuse and Detroit, and the Eastman Kodak Company, Rochester.

The Filer & Stowell Company, Milwaukee, builder of high grade heavy duty Corliss engines, is again represented in Chicago and vicinity by Frank Englehardt, with office at 735 Marquette Building. Mr. Englehardt, with the exception of a short period, has been handling the Filer & Stowell engines for about 10 years.

C. P. Wagoner, for eight years engineer of the plate department of the Riter-Conley Mfg. Company, Pittsburgh, is now connected with the Petroleum Iron Works Company, Sharon, Pa., in the same capacity.

Dartmouth College has conferred on C. J. H. Woodbury, Boston, Mass., the degree of doctor of science, this being the second time that he has received the same degree, the first being from Union College, New York, in 1906. He is secretary and treasurer of the National Association of Cotton Manufacturers.

C. C. Mason of the sales department of the Browning Engineering Company, Cleveland, left recently for Paris, where he expects to remain about nine months, looking after the interests of his company in France, Germany and Belgium.

H. B. Thwing of the Whitcomb-Blaisdell Company, Worcester, Mass., returned from Europe on Tuesday, after an absence of six weeks.

Charles H. Moyer, New York manager of the George V. Cresson Company, returned from Europe last week. During his absence he secured an important contract from a French firm.

George D. Evans has resigned as assistant manager of sales of the Cleveland office of the Republic Iron & Steel Company because of poor health. He will go to Colorado Springs, Colo., for an indefinite period.

William S. Pilling, of Pilling & Crane, Philadelphia, sailed July 1 for a two months' trip abroad. He will spend a considerable portion of the time in Switzerland.

B. F. Wilson, Jr., Birmingham, Ala., formerly manager of the Tennessee Coal, Iron & Railroad Company's Oxmoor furnaces, will have charge of operations at the Williamson furnace, which is expected to go into blast soon on foundry iron. Originally built of 50-ton capacity, this will be increased to about 100.

W. A. Bostwick, metallurgical engineer of the Carnegie Steel Company, is in Europe.

Dr. W. C. Heraeus has been awarded the John Scott Legacy Premium and Medal of the Franklin Institute of Philadelphia for his improvements on the Heraeus Le Chatelier pyrometer and the accuracy and interchangeability of the thermocouple which he has produced, known as the Heraeus element, and sold by Charles Engelhard, Hudson Terminal Buildings, 30 Church street, New York City.

Sidney H. Wheelhouse, Cincinnati sales manager of the Westinghouse Machine Company, has become Pittsburgh sales manager of the Hooven-Owens-Rentschler Company, effective July 1. Cincinnati business friends tendered him a dinner at the Business Men's Club June 30.

## OBITUARY.

JOSEPH CUMMINGS, at one time the owner of the old Columbian Foundry, at Duane and Centre streets, New York, died at Rutherford, N. J., June 26, aged 81 years. He was president of the Morris & Cummings Dredging Company, a pioneer in dredging with machinery.

JOSHUA WALTER RHODES, Pittsburgh, died June 30, at the home of his father-in-law, George H. Barbour, at Grosse Point, near Detroit, Mich., from a sudden attack of uræmic poisoning. He was born in Pittsburgh 35 years ago, and was educated in the Pittsburgh schools. His wife died about two years ago, leaving two daughters. Mr. Rhodes was a prominent figure in financial circles of Pittsburgh. In addition to being the head of the firm of Joshua W. Rhodes & Co., iron and steel brokers, he was connected with the United Iron & Steel Company, Colonial Trust Company and Columbia National Bank as director. His father and mother survive him.

**A Sixty-two Story Building.**—Plans have been filed with the Bureau of Buildings for a 62-story building, to occupy the block bounded by Broadway and Nassau, Pine and Cedar streets, New York, on a part of which now stands the building of the Equitable Life Assurance Society. The main building of the new structure will be 34 stories, or 489 ft. high. Above it the tower will extend 420 ft., containing 28 stories, finished with a cupola. There will be 38 passenger elevators, eight running to the top of the tower extension. Of the other high tower buildings in New York City the Singer Building is 617 ft. from the curb to the pinnacle, and the Metropolitan tower is 692 ft., or just 700 ft., counting the metal point which will ornament the lantern.

The American Sheet & Tin Plate Company and the Amalgamated Association came to an agreement on Monday as to the wage scales in the mills operated under the latter's rules. In the sheet scale all labor has been put on a tonnage basis, and the base of the scale for 26, 27 and 28 gauge sheets has been advanced from 2.30c. to 2.50c. per pound. In other words, 28-gauge will have to advance above 2.50c. before the men are entitled to any advance in wages. In the tin plate scale, wages of rollers, doublers, catchers, shearing and screw boy were reduced 6 per cent., and the base of the scale was advanced from $3.40 to $3.90 per base box. The base price of tin plate will have to be $4 or above before the men will be entitled to any advance in wages. The concessions given by the Amalgamated Association to the American Sheet & Tin Plate Company will also be allowed to the independent sheet and tin plate mills.

The American Railway Association has ascertained that the railroads which are members of that organization had supplied themselves up to February, 1908, with 300,000 freight cars more than the business of the roads demanded under the average conditions of the fiscal year 1907. Non-member roads in the United States on the same date had only two-thirds of the equipment which their business demanded. Within the association 79 roads were deficient, while 127 had an excess. The last report of the association on surplus cars showed the number to be 350,000 on June 10, apart from the largely increased number of cars in shops, the repair of which is deferred because of poor earnings. On May 13 the number of idle cars was 404,534 in the United States and Canada, or 9071 less than the high point figure reported at the close of April.

# The Machinery Trade.

NEW YORK, July 1, 1908.

Developments in the machinery trade the past week were such as to more clearly indicate an upward tendency, and the opinion is becoming more general that by fall there will be a marked increase in the demand. This optimistic feeling has been brought about by the renewed activity on the part of some of the important interests and the partial revival of a few of the larger projects which have been held in abeyance for many months. Not that these corporations are now in the market for extensive lines of equipment, but their inquiries indicate that they are getting ready to take up the matter of purchasing within the next few months. Thus one whose representative is inspecting standard tools intimates that it will probably purchase a large amount of machine tool equipment soon, and another, which received bids over a year ago, is asking for reduced prices. It is expected, however, that actual business the next two months will not vary much from the present dullness, there being not enough activity among buyers to cause a betterment in a usually dull period. Notwithstanding the improvement in the outlook, business the past week showed but little change. Orders were no more plentiful than the previous week, but some fair sized lots of tools were sold. Inquiries were light and generally covered but few tools each. Business for June was a disappointment with many of the machinery houses, the sales sheets showing a decrease from the previous month's business. When the month opened it was thought that the sales would equal, if not excel a little, those of April and May, and with a few houses only a slight variation was noted; but others report business worse than that for any month but one since the beginning of the year, the poorest month with some being January and others February.

### Delaware, Lackawanna & Western Railroad's Machinery Requirements.

The Delaware, Lackawanna & Western Railroad continues to send out inquiries for machinery for its new shops at Scranton, Pa., and now has inquiries in the trade for about 12 machine tools, some of them of the heavier class. Bids for these tools are to be received by the railroad this week, and from the short time given to machinery houses to prepare their bids it is inferred that purchases will not be delayed more than the time necessary to tabulate the bids. As the construction of this plant progresses the railroad will probably come into the market from time to time for small quantities of tools, and as soon as the machine shop is built the company will probably ask bids for a large amount of equipment. As has been noted in these columns, the company will probably purchase about $12,000 worth of new tools for its Keyser Valley freight car repair shops.

The construction of a new cut-off on the Delaware, Lackawanna & Western Railroad line between Lake Hopatcong and the Delaware Water Gap, which will include about 28½ miles of railroad, will entail the purchasing of considerable machinery on the part of contractors making the successful bids on the work, according to an engineer who is in close contact with the enterprise. It is stated that this is the largest piece of railroad construction of the kind undertaken in this country in some years and it will entail the expenditure of about $10,000,000. The successful bidders on the work are: Section 1, Timothy Burke, Scranton, Pa.; section 2, Waltz & Reece, Billings, Mont.; section 3, D. W. Flickwire, Terry Building, Roanoke, Va.; section 4, W. H. Gahagan, 189 Montague street, Brooklyn, N. Y.; section 5, Hyde-Macfarlane Company, 7 East Forty-second street, New York; section 6, Reiter, Curtiss & Hill, Arcade Building, Philadelphia, Pa.; section 7, Smith & McCormack, Easton, Pa. The new cut-off will extend through a particularly difficult piece of country for railroad construction, and regardless of the fact that some of the contractors may have equipment on hand, it is stated that considerable buying will have to be done, especially in the way of rock drilling and excavating machinery, rock conveying apparatus, hoisting and a general line of contractors' equipment. The contractors will all establish offices at or near the work, it is stated, and in consequence it is expected that the buying will be done in this section.

Orders have been placed by Westinghouse, Church, Kerr & Co., New York, for the mechanical equipment for the new shops to be constructed at Spirit Lake, Idaho, for the Idaho & Washington Northern Railroad, for which they are engineers. This plant is to cost about $100,000, and being modern in every respect, will necessitate the installation of good sized equipment, including wheel presses, lathes and all necessary machinery for machine and erecting shops. The plant is to consist of a machine and erecting shop, 70 x 210 ft.; blacksmith shop and boiler room, 40 x 97 ft., and other smaller buildings.

From reliable sources we learn that the American Locomotive Company contemplates the purchase of a large amount of equipment for its Pittsburgh shops. It is not expected that the company will buy this equipment immediately, but it is intimated that the trade can look for some substantial inquiries within a short time. The company now has inquiries in the market for a few machine tools and has placed a few orders the past week, but we understand that all of the present requirements have not been covered.

The Universal Lock Nut & Bolt Company, with offices at 200 Broadway, New York, is making plans for erecting one or more plants for the manufacture of a new combination lock nut and bolt. The company will probably erect its first plant at Paterson, N. J., and negotiations are now under way for securing a site there. William Jacobus, treasurer and general manager, is in charge of the enterprise and under his directions plans are being prepared for a plant large enough to employ about 300 hands. It is stated that the company has orders enough on its books to keep a plant of this size busy for two years, and as soon as the plans are perfected bids will be obtained on the machinery equipment. This will include the purchasing of power apparatus and nut and bolt machinery. It is the company's intention to maintain its own machine shop, and it will manufacture its entire product from the raw material to the finished state. The bolts, it is stated, are adapted to use in railroad rails and machinery where bolts and nuts are subject to vibration. The vibration, it is stated, has a tendency to work the nut on tighter and to lock it, and it can only be unscrewed by use of a pinion. The company is negotiating for a site of about 12 acres in extent, and it is expected that work on the new plant will be begun before the summer is over.

The Pratt Institute, Brooklyn, N. Y., intends to build a new forge shop and foundry for the department of science and technology. Prof. Arthur L. Williston, director of the department, will have full charge of the purchase of machinery.

The recent fire at the plant of the Dickson Car Wheel Company, Houston, Texas, destroyed the machine, pattern and blacksmith shops. No plans have as yet been prepared for rebuilding these departments, and it is not likely that purchases of machinery will be made until plans for the new buildings have been completed.

The W. B. Forbes Company, Hoboken, N. J., is now ready to take up the purchase of the additional machinery it will need for completing the equipment of its new shops to be erected at Fort Trumbull, Conn. There will be a main building, 50 x 200 ft.; power house, 30 x 40 ft.; office building, 35 x 65 ft., all two stories in hight.

The Tamaqua Mfg. Company, Tamaqua, Pa., general foundry and machine work and manufacturer of improved machinery, has decided to rebuild its plant which was recently destroyed by fire, but has not yet prepared plans for the new buildings nor ascertained the amount and character of new machinery it will have to purchase to replace that lost in the fire.

The Public Service Corporation of New Jersey is now asking bids on the large addition to its Marion power plant, mentioned in these columns, and a number of houses in this city are figuring on the equipment for furnishing the power and accessories, such as coal and ash handling machinery, cranes, etc. The addition will include sufficient equipment to generate about 18,000 kw. in two sets. The building will be 80 x 100 ft., and will be of steel and concrete construction.

The large amount of money to be spent for increasing the water supply of New York will probably be of considerable benefit to manufacturers of contractors' machinery for some time to come. Bids have already been received on part of the greatest piece of work, the Catskill aqueduct, and in addition the city is preparing to increase the water supply from Long Island. The Board of Estimate at its meeting last week approved plans for the proposed new water supply system in Suffolk County, which is to cost about $40,000,000. The sum of $22,000,000 was voted on account of the Catskill water project, making $50,000,000 thus far granted for that work.

The Superintendent of Public Works, Albany, N. Y., will receive bids until July 21 for additional work on the Erie Barge Canal, covering contract No. 60, for the improvement of the canal from the west end of contract No. 6 to about ½ mile west of Adams basin bridge, length about 8 miles; contract No. 64, for the improvement of the canal from 600 ft. west of Prospect street bridge, Medina, to 100 ft. east of the Gasport bridge, length about 9 miles.

# Chicago Machinery Market.

CHICAGO, ILL., June 30, 1908.

The existing dullness in the machinery trade was not especially emphasized, neither was it appreciably relieved by the volume of last week's transactions. There is still considerable irregularity in the distribution of orders, which

gives rise to a variation in the results reported by various machinery houses. One leading distributor of machine tools reports a fair increase over last month, with several prospective orders that are likely to materially increase the total; others have broken about even, while some have fallen behind. But, despite the indecisive movements of the present, there is a growing feeling of optimism respecting developments of the near future. This statement is not meant to convey the idea that the trade is expecting a rush of business, but rather a conservative increase that will lift the wheels of traffic out of the extreme rut of dullness into which they have fallen. This sentiment is strongly reflected in a number of letters received from manufacturers of various kinds of machinery. Typical of the expressions contained therein is the following statement of a Western manufacturer of steam pumps and hoisting machinery: "Our views on the financial and industrial situation are optimistic. Business conditions with us are improving, and we think will continue to improve. However, we do not look for any sudden or quick improvement in business conditions. We do think, though, improvement will be slow, but steady." The reason generally assigned for as the basis of the expected improvement is the promising prospects of bountiful crops. It is reasoned that the prosperity of the agricultural communities must be sensibly reflected in all lines of industry. Already the agricultural foundries are busier and the demand for agricultural machinery is exceedingly good. Jobbing foundries, however, are still quiet, showing no general increase in pig iron consumption.

A machine tool representative lately returned from a trip through the northern iron ranges reports an increasing demand for equipment from the iron mines. This is attributed to preparations that are being made for extensive development work which will call for the active employment of mechanical equipment in that region. A number of tool orders have lately been secured from shops in the iron country and other points in the Northwest. More inquiries, it appears, are emanating from Northwestern territory than elsewhere at the present time, and though they concern no large requirements individually, the aggregate of business represented is considerable.

The addition of three large buildings to the Hawthorne plant of the Western Electric Company, Chicago, is a development of importance in the Western machinery trade. Construction of these buildings will be begun at once, and when completed will result in a concentration of the company's interests in this plant. It is likely that a large part of the machinery required to equip the new additions will be transferred from the Clinton street plant, which will eventually be abandoned. The purchase of considerable new machinery will probably be necessary for the completion of the equipment, but as yet the wants of the company in this respect have not been fully planned.

The following are among the recent crane orders received by Pawling & Harnischfeger, Milwaukee, Wis.: Chicago City Railway Company, Chicago, one 7½-ton three-motor crane, 54-ft. span; Manistee Iron Works Company, Manistee, Mich., one 15-ton three-motor crane, 51-ft. span, and one 10-ton three-motor crane, 29-ft. span; Bethlehem Steel Company, South Bethlehem, Pa., three 10-ton five-motor cranes, 84-ft. span, and one 10-ton five-motor crane, 61-ft. span; Sewerage and Water Board of New Orleans, one 3-ton three-motor crane, 45-ft. span; Compania Minera De Penoles, New York, for shipment to Mexico, one 3-ton one-motor electric hoist crane, 40-ft. span; Savannah Lumber Company, Savannah, Ga., one 10-ton hand crane, 36-ft. span; Reading Iron Company, Reading, Pa., one 10-ton three-motor crane, 72-ft. span; Standard Cast Iron Pipe & Foundry Company, Bristol, Pa., six 10-ton three-motor cranes, 51-ft. span; one 6-ton three-motor crane, 51-ft. span; Phillips Sheet & Tin Plate Company, Clarksburg, W. Va., one 20-ton three-motor crane, 60-ft. span, and one 5-ton three-motor crane, 50-ft. span; Milton Mfg. Company, Milton, Pa., one 3-ton two-motor electric traveling hoist.

Notwithstanding the general curtailment of demand for generative and motive power equipment, the Murray Iron Works Company, Burlington, Iowa, has since the first of January, 1908, sold 35 units of Murray Corliss engines, amounting to 5700 hp.; Murray tubular and water tube boilers aggregating 4500 hp. in 62 units. The significant feature of this business is its wide distribution, consisting as it does of 75 individual orders from industrial plants of all kinds, scattered from New York to California.

The city of Marion, Ind., has under consideration the purchase of the following machinery equipment for the municipal electric light plant: One 500-kw., 2300-volt, 60-cycle engine type generator, direct connected to a horizontal cross compound condensing engine of about 800 hp. with surface condenser, and two 300-hp. water tube boilers. Alternate plans, however, contemplate the purchase of a 375-kw. 3-phase, 60-cycle engine type generator, to be direct connected to the same type of engines. Otis Weesner is superintendent.

Plans and specifications now in course of preparation for a new municipal electric light plant at Clarkson, Neb., will soon be submitted to manufacturers of electric and power equipment for bids on the necessary machinery. The installation will comprise a steam plant to be run in connection with a water plant already installed.

Bids for the construction of a water works system for the city of Ricketts, Iowa, will be received until July 6. Plans and specifications are on file with the town clerk.

The city of Lodi, Wis., is about to purchase an additional 100-hp. boiler for its electric light plant.

The Common Council of Hartford, Wis., has authorized the building of a municipal electric light plant to cost $27,000. The equipment of this plant will include two 300-volt 60-cycle single phase alternating current units with 30 and 60 kw. generators. We are advised, however, that specifications for this work have not as yet been completed. George E. Ines is deputy city clerk.

## Cleveland Machinery Market.

CLEVELAND, OHIO, June 30, 1908.

There is considerable improvement in the orders and inquiries for special machinery as compared with the past few months. This improvement is noticed by the builders of machine tool equipment and special heavy machinery. While the demand for the ordinary run of machine tools has not picked up, plants making these tools are turning their attention to such special machinery as there is a demand for and in this way many plants are able to keep fairly busy that otherwise would be nearly idle. In the line of heavy machinery good inquiries have developed recently for coal and ore handling machinery, the inquiries coming from the Pennsylvania coal fields and from the Western mines. The prospective purchasers of this new mine equipment have been holding off until conditions improved and their present inquiries are expected to result shortly in the placing of orders; in fact, some of these orders are about as good as closed now. There is some improvement in the inquiries for shop cranes, but owing to the absence of the railroads from the market the locomotive crane market shows little if any improvement.

The past week has been unusually quiet with machine tool dealers, the volume of their orders being about as light as they have been during any week of the year. Sales were confined mostly to single tools. Some inquiries are pending, but none of them is for more than small requirements. Some industrial plants that have suffered from the recent depression are arranging to add new products to their lines and are placing orders for special tools and machinery, their present equipment, some of which is still idle, not being suitable for turning out these new products. The automobile makers are buying a few tools. While the demand from this source is still light, the outlook for future business is regarded as favorable. The automobile industry is in fairly satisfactory shape, and some of the plants are still running at full capacity to complete this season's output. Plants that make automobile parts are fairly busy.

The general industrial situation is regarded as more favorable on all sides. While in some lines of manufacturing the improvement in orders has so far only been light, the general feeling is much better, and although not a great deal of improvement is looked for during the summer months of July and August, there is a belief that conditions will materially improve early in the fall.

Owing to the fact that many factories shut down for a short time about July 1 for inventories, it has been decided to postpone "employment day" until August 1. At a meeting of representatives of the Manufacturers' Club, the Cleveland Chamber of Industry, Cleveland Improvement League and Builders' Exchange, held a few days ago, resolutions were adopted urging all northern Ohio employers to put as many men to work as possible on the day set. The secretaries of the organizations represented were appointed a committee to take up the matter among the members of their own organizations. The joint committee organized by appointing Walter D. Sayle, president of the Cleveland Punch & Shear Works Company and of the Manufacturers' Club, as chairman, and A. E. Hyre, secretary of the Chamber of Industry, as secretary.

The Morgan Engineering Company, Alliance, Ohio, reports a very satisfactory increase in its orders and inquiries for cranes and special machinery. The company is running its plant at 75 per cent. of its capacity, and the working force will soon be further increased.

The Western office of the Waterbury Farrel Foundry & Machine Company, Williamson Building, Cleveland, reports that the volume of its orders, which showed much improvement during May, has kept up in a very satisfactory manner during June, and that inquiries for special machinery continue to come in in good shape.

George E. Neil, who is well known among the machinery

trade in this territory, has opened offices at 249 The Arcade and will conduct a general new and second-hand machinery agency. He will also handle a line of good specialties, including belting, roofing, &c.

With the intention of enlarging its business the Eureka Mfg. Company, which has a plant in Warren, Ohio, for the manufacture of display racks, store fixtures and novelties, has been incorporated, with a capital stock of $10,000, by F. A. Millikan, F. B. Wadsworth, E. A. Millikan, C. L. Wood and F. E. Alexander.

The Johnson Bibb & Faucet Company, Upper Sandusky, Ohio, has been incorporated, with a capitalization of $25,000, by John W. Johnson, Joseph E. Van Nostran, Homer S. Robinson, John Carey and Robert Carey.

The Buckeye Rubber Company, Akron, Ohio, has under erection a large addition to its plant to be devoted entirely to automobile tires. The new building is 40 x 231 ft. and three stories high.

The Western Reserve Machinery Company, Cleveland, has been incorporated, with a capitalization of $1000, by W. R. Holding, W. H. Bosworth, M. K. Bosworth, H. H. Holding and W. M. Crane.

## Cincinnati Machinery Market.

CINCINNATI, OHIO, June 30, 1908.

Noticeable features of the past week were indicative rather of a hopefulness for the future than any feeling that present conditions have undergone a change for the better. This is shown in the taking on of additional help in most all departments, the more generally optimistic note to correspondence from dealers and salesmen in all parts of the country and the placing of contracts and specifications for various shop changes and improvements planned and laid out in the early or middle part of last year. Interviews with heads of departments of a number of the minor manufacturers of machine tools show that many have maintained their modest shop forces throughout the months of depression and worked full or nearly full time—55 hr. per week. An explanation is offered for this condition of affairs by a close observer. Such tools as have been acquired have been bought closely and have been of the universal types and medium and small sizes. This moved the less expensively constructed lathes, drills and the like, but left the special and high speed machines on stock floors. Another cause of the activity of these cheaper lines is the number of skilled mechanics who held important positions in big shops and who were let out when the slump came. Those who had saved up some money fitted up small shops economically with such tools—lathes, sensitive drills and the like—as they could secure with limited means and started in business as general machinists, preferring to carry out long cherished dreams of independence than remain idle awaiting chances of reinstatement. Many of these makers of cheaper lines of tools profited, too, by putting their prices at a reasonable advance over those of the second-hand and slightly used tools. The result has been that these manufacturers have been busy through the slump and for the most part are in very good shape.

The head of one local concern making a neat little sensitive drill of about 300 lb. weight sold on one trip of about three weeks 68 of these tools.

The American Valve & Meter Company, Cincinnati, manufacturer of automatic water columns, tank fixtures, float valves, water meters, &c., will change its power system from belt drive to electrical. This was decided by the officers and directors in line with a determination to increase shop officiency to take care of its rapidly growing business. The Reliance Engineering Company is preparing plans and specifications and will take bids on equipment. It has not yet been determined whether to employ direct or alternating current.

Local financiers are figuring with a prominent builder of engines from the East who is here investigating with a view of locating. At present a plan is under discussion which would see the taking over of a large local plant and perhaps consolidation with the Eastern concern, with headquarters here. Details are not yet ready for publication, but it is understood that preliminaries have been gone over and that all parties are satisfied with the location of the big plant in Cincinnati.

Local jobbing foundries are making little headway. The melt with strictly jobbing concerns has not increased, although some establishments located outside the city report increased business with local machine tool manufacturers. Very few foundries are buying pig iron. A few placed orders for tonnage ranging from 500 to 1500 tons a month ago at the time of the $11.50 buying movement, but the larger of these were for the most part speculative. A number of castings contracts expire July 1, and it is reported that some manufacturers have succeeded in getting a contract on a flat price basis for the coming term.

The American Rolling Mill Company, Middletown, Ohio, which is managed by Cincinnati people, is shut down for a week to invoice and for a general overhauling in certain departments. The company made a good record during the months of general mill depression and the officials are well satisfied with conditions, everything considered.

The Long & Alstatter Company, Hamilton, Ohio, maker of heavy punching and shearing machinery, has experienced a good demand for several special types built to specifications and to perform certain work marked out by large manufacturers of perforating machinery. One of the latest orders of this character is for a big machine for hot pressing continuous rail points. It weighs 40,000 lb. Heads of departments of the company are optimistic and express confidence in the future.

August Tuechter and Sherman Schauer of the Cincinnati Machine Tool Company returned Saturday from Atlantic City, well pleased and quite enthusiastic over the exhibits and general air of confidence in the future manifested by close observers and manufacturers who spent considerable of their time at the famous seaside resort while the Railway Master Mechanics' and Master Car Builders' associations were in session. There has been a little revival of trade with foreign countries, one order from abroad calling for three medium sized drills.

The Steptoe Shaper Company reports sales of a 24-in. triple gear through the Augustin Fuller Company, New York, for shipment to Mexico; 25-in. back gear type through the Salt Lake city branch of the Mine & Smelters Supply Company, also for shipment to Mexico. Another is of a 20-in. single gear machine to a Detroit party.

The Cincinnati Punch & Shear Company recently shipped to the Cooper Safe Company, Hillsboro, Ohio, a small double power punch and shear machine; Hallidie Machinery Company, Portland, Ore., double 36-in. punch and shear, weight 16,000 lb., which was accompanied by a wheel press from the Niles Tool Works Company; 36-in. throat single punch for export; one single 12-in. machine, Aiken Engineering Company, Winthrop Harbor, Ill.

A new building of the Byesville Foundry & Machine Company, Byesville, Ohio, was blown down recently during a severe storm which destroyed considerable property in that part of Ohio. The machinery had not yet been installed.

Middletown, Ohio, manufacturers have recently organized the Tennessee Metal Culvert Company.

## Philadelphia Machinery Market.

PHILADELPHIA, PA., June 30, 1908.

New business has hardly been as plentiful as in preceding weeks. The trade, however, about holds its own and looks at the situation encouragingly, as, even in good years, a decline in buying is generally noticeable at this season, when semiannual stock taking is the usual order. While plants will not be shut down for repairs as extensively as customary, owing to the diminished pressure which has prevailed, there will nevertheless be the same tendency to withhold business until after the turn of the half year.

Both manufacturers and merchants have been giving the Atlantic City conventions of the Master Car Builders and Railway Master Mechanics a good share of their attention the past week, and other business has probably not been pushed as hard as is customarily done. With these conventions over, more attention will be given to the general trade, which, it is expected, will result in an increased number of orders. The conventions and the exhibits of railroad shop tools and appliances were very largely attended, and will, it is believed, result in a satisfactory volume of business later in the year. Encouragement is taken from the expressions of the railroad people, and while those from the Western roads are expected to come into the market first, some fair business is looked forward to later in the year from the local roads.

Manufacturers generally report no change in the general situation. Orders are confined to single tool propositions, mostly of the smaller and medium classes. There have been a few more orders about for special metal working tools, but the demand for general equipment is still quiet. Makers of the larger machine tools report no particular improvement in the demand, buying being pretty well scattered. Inquiries are hardly as plentiful as they were, although it is said that in a number of instances it is to be noted that they lead up to orders somewhat better.

While some little improvement has been noted in the foreign demand, little business has come to this section. Such as has been placed has been largely in the nature of special tools. Those transacting an established business abroad in power transmission specialties report only a fair volume of business.

Second hand machine tools continue in comparatively

good demand. A fair volume of inquiry is reported, and while sales have been largely of the single tool variety, the aggregate volume of business is regarded by the trade as quite satisfactory. Both metal and woodworking machinery as well as tools of a somewhat special nature appear to be in equal demand, while there is also a fair inquiry reported for power equipment specialties. Engines and boilers, particularly those of the smaller horsepowers, are not extensively inquired for, although a fair amount of business is still being done in medium horsepowers. A moderate business in new engines and boilers is being transacted, some of which run up into the higher power equipment.

Spasmodic improvement is noted in the foundry trade. Some of the steel casting plants report a better run of orders, but there is no disposition to enter any large contracts or buy for forward shipment. A few of the gray iron foundries report an increase of orders, but the business is still somewhat irregular. Jobbing foundries are not very active, and dependent almost entirely on current week to week business.

Percy A. Kley, 1535 Chestnut street, Philadelphia, engineer in charge of construction of the new plant building for the E. J. Schwartz & Bros. Company, Newark, N. J., will take bids at an early date for equipment required, included among which will be a 40 kw. direct connected electric generator and engine, a 100-hp. return tubular boiler, two large electric or hydraulic freight elevators, and general fertilizer manufacturing apparatus.

The Board of Water Commissioners, Reading, Pa., will receive bids until July 10 for the construction of a number of Bernhart filters. Specifications may be had by applying at the office of the superintendent and engineer, Emil L. Neubling, Reading, Pa.

The receiver of the Neafie & Levy Ship & Engine Building Company will offer at public sale July 28 the real estate and equipment of the plant, including foundry, machine shops, boiler shops, storage and warehouses, dry docks, wharves, tools, &c. The plant has been operated by the receivers for several years, and efforts will be made to sell it as a going concern.

The West Philadelphia Stock Yards Company is having estimates made for the erection of a two-story packing plant, 60 x 192 ft., at Thirtieth and Arch streets.

Edward Fay & Sons have been awarded the contract by the Philadelphia & Reading Railway Company for a car cleaning plant, to be erected at Broad street and Lehigh avenue. This work is in connection with the elevation of that company's tracks on Ninth street, and consists of the construction of water, steam and air pipe lines and the erection of a paint shop, blacksmith shop, power house, stove house, coal trestles, &c.

The Light House Engineer, Wilmington, Del., will receive bids until July 10 for furnishing the metal work superstructure for a lighthouse to be erected at Elbow of Cross Ledge Light Station, in Delaware Bay.

The newly constructed machine shop of the Taylor Iron & Steel Company, High Bridge, N. J., was dedicated with appropriate ceremony, under the auspices of that company and the Board of Trade of High Bridge, N. J., Saturday, June 27. Charles W. Summerfield, secretary of the Merchants' & Travelers' Association, Philadelphia, was one of the prominent speakers.

## New England Machinery Market.

WORCESTER, MASS., June 30, 1908.

While more machinery was disposed of the past week than in the week preceding, the orders were not numerous nor large. The continuous hot weather is having its effect, adding to the prevailing dullness. Sales are for the most part confined to second-hand machines. Even inquiries for new tools are not brisk. Prospective buyers are apathetic, there being no immediate necessity for placing orders, and there is the other element, the hope that a general systematized reduction in prices of machinery will be made by the manufacturers, or that a break in the market may follow price cutting. Both possibilities seem remote, for the machine tool builders are not considering a change in their lists, and there is no evidence that prices are being shaved or that there is an inclination to make other than trivial concessions to customers.

Veteran observers call attention to the fact that, in spite of months of poor business and the general belief that no important change for the better need be hoped for before autumn, there prevails a pronounced degree of cheerfulness among manufacturers and merchants. This is in marked contrast to the mental depression that has been strongly in evidence in all other similar periods of industrial inactivity in the United States. This is explained by the fact that business houses are entrenched behind a financial strength sufficient to meet a drain on resources, and that they believe the underlying conditions of the country are sound and therefore promising of a change for better things in the not too distant future. Collections are improving and may be termed fair. The money market is easy, and the stock market has signs of strength. Incidentally it may be stated that some business men look to the stock market to act as the force which will give the required impetus toward a return of the sort of general confidence which will mean the resumption of buying in every branch of business. The crop outlook loses nothing of its brightness. General business continues to improve in spots, though it must be added that the improvement in some quarters is to an extent counteracted by decreased production in others. The transportation companies are busier than they have been. This applies not only to the railroads and steamship companies, but also to those concerns which do transfer and other hauling in the cities. In Boston there are not nearly so many idle horses as there were a month or two ago.

The Watertown Arsenal will buy some machinery soon, but the list will not be a long one, and will consist principally of inexpensive tools. It is also likely that the Charlestown and Portsmouth navy yards will be in the market to a small extent. Nothing will be done in the way of Government buying, however, until funds included in recent appropriations become available. Work at the navy yards is very dull, there being a noticeable difference from last year, as was expected when the Atlantic fleet sailed for the Pacific, and consequently there is no great demand for general supplies. Nevertheless the influence of the navy upon New England business is by no means a small one at this time, and emphasizes the fact, often discussed by manufacturers and dealers, that a large navy has a very important place industrially. Not only are the Government works affected, but the shipbuilders at Bath, Maine, and Quincy, Mass., are active buyers because of the Government work in the yards. This is especially true at Quincy, where the Fore River Shipbuilding Company is very busy, as is emphasized by the occasional purchase of machinery and other equipment. Besides the work laid down, including the 20,000-ton North Dakota, the construction of eight steel tugs for the War Department is about to begin. The work on the North Dakota is being rushed at a rate never equaled in this country, it is claimed, the ship being three months ahead of a schedule that was itself without precedent for time on this side of the Atlantic. A great deal of satisfaction is expressed in New England over the performance of the scout cruiser Salem, which is equipped with the strictly American Curtis steam turbines. While full information is not available it is known that the hour record of 26.885 knots was made, at least equaling that of the sister ship, the Chester, which has the Parsons turbines. The coal consumption tests, though not yet finished, are believed to be entirely favorable. Two 12,000-hp. Curtis turbines, building by the Fore River Company for a Japanese cruiser, are being tested, and so far as reported have come up to the full expectations of their designers.

The pressed metal manufacturers report that their business is improving, the change being quite marked in some instances. This trade gets its business from a wide variety of industry, and is also close to the consumer with many of its products, so that it responds quickly to whatever improvement may come to many other branches of manufacturing. At present figuring is close and competition keen, but the volume of business compares favorably to that of other metal lines. In fact, there has been less serious depression in this trade than in most others. Some of the pressed steel people have been increasing equipment, and others are planning for a larger or more diversified capacity.

The present car barns of the New York, New Haven & Hartford trolley system at Bridgeport, Conn., have been sold to form a part of the site for the new plant which the Remington Arms Company proposes to erect in that city in preparation for removing the industry from Ilion, N. Y., according to a Bridgeport dispatch. The trolley company will erect a new barn to cost $250,000, which will doubtless have the usual equipment of machinery for repair purposes.

A project is on foot in Boston to build a [illegible] industrial building, plans for which are being prepared by H. L. Gilman, 46 Corn Hill, Boston. The purpose is to provide 3,000,000 sq. ft. of manufacturing space for rental. This would mean very large power plant requirements, and large amounts of other equipment which must form a part of the conveniences of the modern building of the type.

The Union Hardware Company, Torrington, Conn., has increased its capital stock from $150,000 to $600,000.

The Narragansett Machine Company, Pawtucket, R. I., is erecting an addition to its machine shop building, 50 x 100 ft., and two stories. The new space is not required for the immediate needs of the business; extension is following out the policy of the company in separating its departments as they grow and to make preparation for the time when greater facilities will be required.

The Mattatuck Mfg. Company, Waterbury, Conn., manufacturer of furniture nails, is to erect a four-story brick building, 42 x 148 ft., to be used for shipping, packing and storage.

The Clark [illegible]

an addition to its factory that will have a little more than double the present floor space. The building will be of brick, two stories, with concrete flooring and fireproof construction.

The business and equipment of the Elmore Mfg. Company, Southington, Conn., have been purchased by new interests, which have incorporated as the Elmore Tool Mfg. Company and moved the business to Hartford, Conn., where the headquarters will be located. The factory will be at Weathersfield, a suburb of Hartford, where a complete plant containing 25,000 sq. ft. of floor space has been occupied. The new company will continue the manufacture of the same line of goods, including machinists' and carpenters' tools, screw drivers, nail sets, punches, awls, screw driver bits and cold chisels, but will make the product more complete and will manufacture on a much larger scale. The authorized capital stock is $100,000, of which $25,000 will be issued immediately. The incorporators are Charles C. Merridith, Clarence I. Hills and William S. Corning, all of Hartford.

James E. McWilliams & Son, Hubbardston, Mass., will build an addition to the building occupied by their automatic fire extinguisher department, to be 24 x 30 ft. and two stories. Additional water or steam power will be installed for the purpose of running additional machine tools. The firm will do work which is at present done by outside parties. The firm states that it is not in the market for equipment at the present time.

The New York, New Haven & Hartford Railroad will build a new electric line from Willimantic to South Coventry, Conn., through the town of Mansfield. The railroad has changed its decision to dispose of its Connecticut electric lighting, gas and power interests, it is stated. These properties were acquired with the purchase of electric railroads, and it was not deemed wise to continue to operate them, but they have been found profitable. They were formerly owned by the Connecticut Railway & Lighting Company, which covered an important section of the southerly part of the State.

## St. Louis Machinery Market.

ST. LOUIS, Mo., June 29, 1908.

The metal working machinery merchants, while reporting some improvement in inquiries and in the outlook, are not effecting many sales. As this is the dull season, however, they are not surprised at the lack of demand. Dealers in shoe machinery state that business is within 20 per cent. of last year, covering the past six months. Special machinery tools are in fair call. There is a fair demand for presses and dies for sheet metal. Manufacturers of saddlery hardware are entering upon the usual dull season.

Boiler makers report business somewhat better, and numerous inquiries render the outlook encouraging. The principal manufacturer of stencil machinery states the demand has materially improved. In woodworking machinery conditions continue favorable. Manufacturers of plumbing material report doing within 25 per cent. of last year, and state that collections from railroads have improved.

## Government Purchases.

WASHINGTON, D. C., June 30, 1908.

Schedules have been sent out covering class 1, one 5 ton electric pillar crane for the Mare Island Navy Yard, bids for which will be opened July 7.

The Depot Quartermaster of New York will open bids under abstract 4716 for the following machines for Camp Keithley, Mindanao, P. I.: Three arbor steel lathes, one gasoline engine, one swing lathe, &c.

Sealed proposals will be received at Fort Terry, N. Y., until July 18, for a 50-hp. boiler.

The following bids were opened June 15 for electric light equipment for Jefferson Barracks, Mo.:

Item 6, boilers.—Bidder 17, Erie City Iron Works, Erie, Pa., $12,446; 19, Heine Safety Boiler Company, St. Louis, Mo., $13,645; 20, Babcock & Wilcox Company, New York, $12,832.

Item 7, engine.—Bidder 17, Erie City Iron Works, Erie, Pa., $6896; 21, A. L. Ide & Sons, Springfield, Ill., $7107; 23, Ridgway Dynamo & Engine Company, Ridgway, Pa., $8585; 24, Harrisburg Foundry Machine Company, Harrisburg, Pa., $9375; 25, Ball Engine Company, Erie, Pa., $11,357.

Item 8, dynamos.—Bidder 9, Westinghouse Electric & Mfg. Company, Pittsburgh, Pa., $9949; 10, Fort Wayne Electric Works, Fort Wayne, Ind., $9475; 12, Western Electric Company, New York, $11,625.

The following bids were opened June 22, Circular No. 445, for supplies for the Isthmian Canal Commission:

Class 1.—Six air motor generator blasting sets—Bidder 21, Detroit Hoist & Machine Company, Detroit, Mich., $1950, accepted.

Class 2.—Pneumatic geared air hoists—Bidder 16, Chicago Pneumatic Tool Company, New York, $1067; 21, Detroit Hoist & Machine Company, Detroit, Mich., $999.50; 40, Ingersoll-Rand Company, New York, $1015; 58, Manning, Maxwell & Moore, New York, $1147.30; 78, Shepard Electric Crane & Hoist Company, Montour Falls, N. Y., $1147.50; 83, South Park Mfg. Company, Port Huron, Mich., $981.65.

Class 3.—Six roller bearing geared ratchet screw jacks—Bidder 13, Buda Foundry & Mfg. Company, Chicago, Ill., $356.40; 29, George S. Fowler, Washington, D. C., $435; 58, Manning, Maxwell & Moore, New York, $559.50; 63, Motley, Green & Co., New York, $360; 101, Atlas Export & Trading Company, New York, $450.

The following bids were opened June 23 for supplies for the navy yards:

Class 149.—Pneumatic drill and pneumatic calking hammer—Bidder 26, Chicago Pneumatic Tool Company, New York, $105; 61, Helwig Mfg. Company, St. Paul, Minn., $83; 67, Ingersoll-Rand Company, New York, $87; 68, Independent Pneumatic Tool Company, Chicago, Ill., $86; 113, Rawles-Cobb Company, Boston, Mass., $82.30; 132, Standard Railway Equipment Company, St. Louis, Mo., $109.

Class 152.—One-valve reseating machine—Bidder 17, Central Metal & Supply Company, Baltimore, Md., $325; 46, R. W. Geldart, New York, $325; 63, Handlon-Buck Mfg. Company, St. Louis, Mo., $325; 73, Knox & Bro., New York, $325; 83, Manning, Maxwell & Moore, New York, $325; 84, Montgomery & Co., New York, $325; 85, Manhattan Supply Company, New York, $325; 116, J. B. Roach, Brooklyn, New York, $325; 126, Sherman-Brown-Clements Company, New York, $325; 135, Tucker Tool & Machine Company, New York, $325; 148, Excelsior Equipment Company, Pittsburgh, Pa., $325.

Bids were opened June 24, Circular No. 444, at the office of the Isthmian Canal Commission for furnishing under class 1, boiler equipment for power plant to be erected at Gatun, and under class 2 a duplicate thereof to be erected at Miraflores, as follows:

The Babcock & Wilcox Company, New York, class 1, $83,396, alternative bid $83,111.30, delivery Colon or Crostobal; class 2, original and alternative bid same as class 1.

Central Metal & Supply Company, Baltimore Md., part bid; bid submitted on items 2, 3, 4, 5, 6, 7 and 16, total $13,970.

C. L. de Muralt & Co., New York, class 1, alternative bid $82,500; class 2, same bid as class 1.

D'Olier Engineering Company, Philadelphia, Pa., class 1, alternative bid, $56,620; class 2, alternative bid same as class 1.

A. D. Granger Company, New York, class 1, $76,490, alternative $75,806; classes 1 and 2, $82,099, with an alternative of $81,415.

Heine Safety Boiler Company, St. Louis, Mo., class 1, alternative bid, $62,591; class 2 is same bid.

Merrill Company, Boston, Mass., class 1, $74,857, alternative $74,057; class 2, same bids as class 1.

The following bids were opened May 22, for installing boiler plant in United States Post Office, Boston, Mass.:

C. H. Sanborn, Boston, Mass., $21,872: Bradlee & Chatman Company, Boston, Mass., $26,387; Lynch & Woodward, Boston, Mass., $28,970; Merrill Company, Boston, Mass., $27,400; Walworth Construction & Supply Company, Boston, Mass., $24,962; English & Flett, Inc., Boston, Mass., $23,333; Cleghorn Company, Boston, Mass., $23,800; Lumsden & Van Stone Company, Boston, Mass., $27,600.

Bids were received June 18 by the superintendent of construction, National Museum Building, for furnishing engines and dynamos, as follows:

Item 1, engines; 2, dynamos; 3, alternate No. 1 for turbines, using 150 lb. steam pressure; 4, alternate No. 2 turbine, 100 lb. steam pressure.

Ball & Wood, Elizabethport, N. J., item 1, $16,500; Providence Engineering Works, Providence, R. I., item 1, $15,000; 2, $9800 and $9700; Wallace Stebbins & Sons, Baltimore, Md., items 1 and 2 combined, $24,533 and $25,462; Ridgway Dynamo & Engine Company, Ridgway, Pa., item 1, $9848; 2, $10,770; General Electric Company, Schenectady, N. Y., item 2, $9565; 3, $19,040; 4, $19,040; Westinghouse Electric & Mfg. Company, Baltimore, Md., item 2, $8795; Chase Engine & Mfg. Company, Mattoon, Ill., item 1, $12,500, or for a four-valve type of engine, $12,750; Burke Electric Company, Erie, Pa., item 2, $8970; Ball Engine Company, Erie, Pa., item 1, $13,817; Northern Electric Mfg. Company, Madison, Wis., item 1, $11,340; 2, $9550; 3, $13,475; 4, $13,475. Alternate under item 1 $16,950 and $16,850. Alternate under item 2, bidder's specification, $8660 and $13,400.

The following awards have been made for supplies for the Isthmian Canal Commission, bids for which were opened May 4, Circular No. 436:

Fox Bros. & Co., New York, class 6, one 18-in. engine lathe, $694.

Vandyck-Churchill Company, New York, class 7, one bench speed lathe, $60; class 8, one bolt cutter, $732; class 11, one hack saw, $33.

Manning, Maxwell & Moore, New York, class 9, one upright drill, $642; class 30, one blower, $47.52.

C. T. Patterson Company, New Orleans, La., class 10, one 24-in. shaper, $642.

Fairbanks Company, New York, class 12, one duplex emery grinder, $281.

Under bids opened June 8, Circular No. 442, for machinery for the Isthmian Canal Commission, the Western Electric Company, New York, has been awarded class 13, two motors, $583.20.

Under bids opened June 15, Circular No. 443, for supplies for the Isthmian Canal Commission, the International Electric & Engineering Company, New York, has been awarded class 3, one hand planer and jointer, $164.45; class 4, one universal saw table, $188; class 5, one band saw, $85.25.

Under bids opened June 16 for supplies for the navy yards, the Lincoln Electric Company, Cleveland, Ohio, has been awarded class 81, four induction motors, $1600.

The General Fireproofing Company, Youngstown, Ohio, has reduced wages of all officials and employees 10 per cent., dating from July 1.

# HARDWARE

THERE are many indications that in the strife for international trade the governments of the great competing industrial and commercial nations are more and more taking a hand. It is coming to be looked upon as one of the functions of government not only to protect its citizens in their dealings with foreign lands but to foster and facilitate foreign trade in many ways. The frank admission of a great English statesman that the British Empire is maintained for the sake of the trade with its colonies and the designation of the Union Jack as a commercial asset is a picturesque expression of a principle which is influential in countries which have not yet carried their commercial relations so successfully to the ends of the earth. Recognizing its need of foreign markets and having full faith in its ability to supply them, the United States is increasing its efforts to further in any way in its power the interests of its manufacturers and merchants who are in a position to do an export business. Its chief activity in this work is through its consular service to the improvement of which attention has recently been given, but the extension of foreign trade is also under the care of the Department of Commerce and Labor, whose intelligent cooperation may be counted on. The problem is, however, a complicated one, invested with peculiar difficulties, and it is for manufacturers to suggest, if they can, the manner in which the department can be of practical use to them.

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In this connection the statement made by the chief of the Bureau of Manufactures as referred to in another column will be of interest. There is a frank recognition of the fact that the Consuls cannot be expected to give expert attention to the interests of manufacturers in the countless lines which seek foreign sale. The experiment is gradually being made of sending out special agents, each of whom is an expert in an important line. These special agents are charged with gathering information in regard to market conditions, trade opportunities and information generally which will be serviceable to those in the line of business directly concerned. This is unquestionably working along right lines. Such information, if reliable and practical, will undoubtedly be useful, and indeed has already been found to be valuable and the means of establishing and broadening business relations. Apart however from this, it will undoubtedly result in obtaining through official channels a greater familiarity with general export requirements and in learning what needs to be done, as, for example, in the matter of finance and shipping, to facilitate American trade with foreign countries. That the former inadequate appropriation for this service should have been cut down to the meager sum of $40,000 for the current year is a reproach to a Congress all too lavish in other directions.

## Condition of Trade.

There is a marked contrast in the conditions which prevailed a year ago and those under which we now enter upon the second half of 1908. In July, 1907, merchants and manufacturers were congratulating themselves on the exceptionally satisfactory six months with its great volume of business, a special feature of the situation being the number of unfilled contracts on the books. There were then to be noted only occasional and uncertain indications that a slackening of the pace might be expected. The present July opens also with reasons for regarding the half year past with satisfaction, not so much on account of the volume of business transacted as of the dangers which have been escaped and the fair movement of merchandise which has been enjoyed. The outlook for the crops, too, appears to be excellent, and the prosperity of the farming communities assured. All this will, little by little, tend to the welfare of the industrial and commercial classes, by whom, however, the benefits will be more slowly and indirectly enjoyed. Several influences continue to contribute to moderate movement in trade channels. The effects of the financial disturbance are not entirely over-past. There is a general prevalence of a spirit of economy. Labor, especially in the manufacturing towns, is not fully employed. Prices are continuing downward rather than upward. The impending Presidential election distracts the attention and energies of many persons. There is, however, a fair business doing and along reasonable and healthful lines. Things are certainly improving, with the prospect of better conditions, commercial and industrial, it is hoped before long.

### Chicago.

In its general aspect trade in Hardware lines has undergone no marked change in the past week. In some of its branches, however, there have been movements of a somewhat more pronounced character in the direction of improved demand. This is particularly noticeable in Haying Tools, orders for which are quite gratifying, both in number and volume. An exceptionally bountiful hay crop is, of course, the immediate cause for activity in this direction, and it is the more important because it is not confined to any one locality, but, on the contrary, is extended impartially throughout all hay raising districts. Though it is a condition that exists in few, if any, other lines, it is nevertheless true that manufacturers of Haying Tools and equipment are enjoying a demand for their product that is in excess of that of last year at this time. Another feature of interest in this connection is the development of a heavy demand for Bale Ties. An abundant hay crop does not of necessity signify a correspondingly increased use of Bale Ties, nor, on the other hand, does a short crop necessarily mean a curtailment of requirements. The quantity of Bale Ties used in any season is largely dependent on the price of hay and the conditions that govern its consumption in home or distant markets. When the crop is scanty in some localities and plentiful in others better prices are realized by baling for shipment, which naturally augments the demand for Ties. This year the yield is not only generally large, but prices are attractive enough to permit of shipment to outside markets. As was the case last year, belated orders for Wire Cloth and Poultry Netting are coming into the market, though in quite moderate volume. Buyers of Wire and Wire Nails continue as before to order what they need and as they need it. This practice, which at the present time is recognized as a commendably conservative course, gives a pretty accurate idea of the actual rate of consumption. The statement, therefore, of leading jobbers that the number of Nail orders coming in, though less in volume, is greater than at this time last year indicates a healthful condition, since it represents the actual assimilative powers of the country. Continued favorable reports concerning growing crops and the safe harvest of maturing ones are exerting a powerful influence in behalf of a restoration of confidence, which finds expression in a more optimistic sentiment in all lines of trade. If the impulses back of commerce and manufacture were backed by the material

prosperity spreading over farm and field, dull times and depression would soon be forgotten themes. As it is, the strength of the latter must reflexively lend substantial aid to the former interests.

### Boston.

BIGELOW & DOWSE COMPANY.—We are having ideal summer weather, and friends arriving from the West and South welcome the delightful change after the excessive heat which has driven them to the seashore to find the comfort denied them at home. While the temperature averages 80 degrees, a gentle easterly wind makes life worth living. The summer resorts are now in full swing, and the prospects are for a rushing business.

The farmers are complaining of the dry "spell," and like the quail are crying for "more wet," but the crowds attending Harvard class day and the various excursions arranged for the convention of club women the past week were made very happy.

Politics as yet has had no influence on the trade for better or for worse. People seem to be waiting the result of the Denver convention, but rumor tells us of the plans of the large manufacturing interests to start mills on full time at full wages, feeling that the working man with a "full dinner pail" will be more inclined to vote for a continuance of the old than try any experiments with a new party, however rosy their promises may be.

We hear of increased business since the late revision of prices by the Steel interests. When asked how soon there would be a further decline in Wire Nails, the general sales agent of the largest interest replied, saying "The price as it stands to-day is fixed for the fall," so we feel that they will go no lower, but may reach a higher level later.

General business is good, and the comparison with last year for the month is more favorable. There is a general opinion that we have to look forward to a gradual improvement in business conditions, and that the year will close with a much more satisfactory showing than any one could possibly have hoped for a few months ago. Remittances are really good and stocks are light.

### Cleveland.

W. BINGHAM COMPANY.—Trade conditions are just about the same as they were two weeks ago when our last letter was sent to print.

Surely, this has been a great year for political conventions; the Socialist party held their convention at Chicago in May, the Republican convention was held in June at Chicago, the Democratic convention will convene at Denver in July, and Hearst's National party will have their gathering at Chicago in July. However, politics are something that the business man likes to cut out of his category. A real business man minds his own business, "saws wood" and tries all he can to put everybody on "Prosperity Road."

Our National Agricultural Department says to the world that the outlook for another bumper crop for the farmers is excellent. Just think of it, for the last eight years the farmers have enjoyed unprecedented prosperity, and everything points to a splendid harvest for the ninth year. Surely the good Lord has made His face to shine upon our beloved country, and all of us ought to humble ourselves and offer up thanks for the great benefits that we have had and are receiving, despite the adverse legislation and muck raking that business men and railroad companies have been obliged to come up against; but they are going to assert themselves and will come off more than conquerors.

It has been truly said that the railroad companies have been governed within an inch of their lives. We are all glad to know that there is a letup, for we were afraid if the drastic measures and immoderate talk that has been indulged in by so many demagogues and politicians were kept up it would not be very long before our laboring class would feel the effect of this "cat hauling" in the reduction of the wage scale. No manufacturer or business man desires at any time to curtail labor or cut wages, and that only comes as a last resort.

At this time of the year almost every one now is thinking of taking a summer vacation in a way which is most pleasing to him; some go fishing, some go sailing, others go abroad, some others stay at home and get acquainted with their families, and a good many other ways of resting up are indulged in. May the outings be pleasant and agreeable to all of our friends, and enable them to return to business in midsummer or fall with renewed energy.

The general Hardware trade is very fair at this time of the year. We believe the last six months of this year will be more cheerful and prosperous to all of us than the first six months. Merchants are getting over the skittish idea of buying future goods, and are placing orders now for seasonable goods, such as Coal Hods, Stove Boards, Elbows, Axes, Husking Tools, Skates, Sleds, Registers, Lanterns, Meat Stuffers and many other fall goods. There is considerable inquiry now as to what can be done on goods for spring shipment. Uncertainty of prices is wearing off, and there is a better feeling all around; at least we find it so in this "neck of the woods" and in other sections that Cleveland jobbers draw trade from. As we have five large Hardware jobbing houses in this city, we claim to be the center of the Hardware trade in the United States of America, where many railroad, trunk and water lines radiate, making Cleveland a splendid distributing point.

### St. Louis.

NORVELL-SHAPLEIGH HARDWARE COMPANY.—The rains have ceased, the rivers are receding and good corn growing, hot weather is with us. Orders are larger and more numerous. Mail orders show an increase over last year. The daily sales in June, in dollars and cents, show a considerable increase over April and May.

We have received more new stock orders in June than any month this year. These orders are not from any one particular section, but from the various parts of the country, one handsome new stock coming from as far East as the State of Virginia. These practical things indicate that times are better.

The writer has the pleasure of discussing the situation with manufacturers and retailers every day. Many of these visiting manufacturers state frankly business with them in June has not been good. Reports from retailers vary according to the locality in which they are doing business.

In the mind of the writer there is no question but that business, generally speaking, here in the West is steadily improving. This does not mean jobbers or retailers are going to place extravagant orders. A broken stock and a steady pressure for goods will compel the jobber to buy. As the pressure continues and the demand becomes more insistent he will naturally grow less conservative in his buying.

Here is a little suggestion to jobbers that is worth something: Have carbon copies made of the shortage slips sent your customers. Have the profit figured on the shortage slips and see how much you are losing every month by being out of goods. Try this one month, and may be you will take the lid off your buying department.

The greatest one loss in any business is caused by the goods we sell and then leave off the order. It costs as much to sell and it costs more to handle such orders in the house than if the items were filled complete. You have all the expense without any compensating profit.

Not only this, but the items short delay the filling of your orders, not to mention the dissatisfaction caused your customers with possible loss of trade.

We jobbers never know how much business we lose from one cause or another:

A retail merchant sends an order, especially one particular item. His jobber is short that item. This is the straw that breaks the camel's back. He turns his trade to some other jobber.

The collection department calls for a remittance in a letter that lacks in courtesy and friendliness of expression.

The claim department tells a good customer to look in the straw for the lost Wheelbarrow.

The proper handling of all these and many more details goes toward the making up of "good service," and the lack of them leads to a falling off in trade.

To keep a business in live and in good condition means

a constant fight all down the line on little things. The manager of a Hardware business is constantly reminded that "genius is the capacity for taking infinite pains." The modern idea, however, of executive ability is to get the man who has the genius to take the infinite pains while you go away on a vacation. That is a great kind of ability! Some men work it successfully all their lives. Other men do not seem to have the knack. Probably the trouble with them is they hire the man with genius for infinite pains, but with executive ability also. He is a dangerous man to have working for you—your job is not safe.

### Baltimore.

CARLIN & FULTON.—With the thermometer ranging about 90 degrees in the shade, business in July lacks the activity of other months. The farmers have been busy with their hay and wheat harvests which we are glad to report are fine, while the growing crops of cotton and tobacco promise well. Building operations, though somewhat more extended than a few months ago, still are not up to the mark. Purchases by the retail trade continue to be made conservatively, for one reason a lack of demand, and for another reason a desire to see what will be the development of the market during the present month in regard to prices. In a few weeks we look for a good demand for goods to spring up from the cotton States, and as stocks have been depleted for several months, and the necessities of the country are just as great as ever, with no financial panic to be apprehended, and no reason for business depression, we can only look for and expect a good trade, though perhaps somewhat less than that of the last year or two. The slight reduction made in prices of Wire and Nails has so far been followed by no further decline in those commodities, and from all the information that can be gathered no further reductions will be made. While prices in many other lines have been forced up to abnormal figures the costs of Hardware have been kept within reason, and what fluctuations have or may occur cannot affect values very much.

### Omaha.

LEE-GLASS-ANDREESEN HARDWARE COMPANY.—This market, including other jobbing centers located on the Missouri River, presents no new or particularly interesting features at the present time. Business during the month of June has been satisfactory, and up to expectations. During the coming 30 days agriculturists will be busy in the fields, harvesting the small grains. Corn looks very well on the uplands, but in the low or flat lands too much moisture has injured the plants as well as retarded their growth, consequently the result may show a shortage in volume of this important cereal. The extent and value of the crops about to be harvested will be the main feature of importance having a bearing on the future trend of traffic, and upon this will largely depend the extent of business during the autumn months. With crops of all kinds in fair supply, coupled with the present remunerative values, a continuance of a very satisfactory volume of business is predicted, and probably assured.

### Louisville.

BELKNAP HARDWARE & MFG. COMPANY.—This is strictly the intermediate season between the late spring and early fall business, and is selected by many salesmen who do not wish to be absent from their territories at times when business in volume can be had, as a vacation season. For this reason the natural dullness from the season is emphasized, but the general disposition to rest still lingers in those whose activities make Hardwaremen busy.

There are some signs of awakening interest in the subject of money making among capitalists, large and small, and we incline to the belief that by midsummer this disposition will become much more pronounced. By that time the country at large will begin to make up its mind which way the election is likely to go and be influenced by their hopes or fears, but as the majority of men are inspired by hope rather than fear, it may be presumed that the guessing will be in the direction of their own views of the political situation.

It must be impressive to Americans with foreign correspondence to realize to what extent business the world over is affected and almost controlled by business conditions in this country, and the realization of this condition should make of us a sober minded and conservative people, fit for the responsibilities that have come to us through our wealth and productive energy.

We have been interested to learn, through foreign correspondents in the Spanish-American countries, in Canada and in European countries that they expect a revival of business "when America gets on her feet." That America will be on her feet in time no one of course doubts, but the guessing match that business men are now engaged in is whether or not any recovery will be manifest before Election Day.

If the condition of crops to date is an indication of fall business, it should certainly not be lacking. While too much rain is reported in the Southwest, the latest news still gives the State of Texas cotton acreage above 102 per cent. and conditions 107 per cent. On the whole the crop news is more than encouraging, with preliminary mutterings about drought and bugs, to which we are accustomed at this season of the year.

### Nashville.

GRAY & DUDLEY HARDWARE COMPANY.—There is not much difference in the situation in this part of the country since we wrote you last. Crops in the South are of course, pretty far advanced, and the weather continues to be most favorable, and the crops unless something unforeseen occurs, will certainly be bountiful. The wheat crop in Tennessee is now being harvested, and the weather is ideal for farm work. The farmers are about the busiest people we know, and between gathering their bountiful crops and attending to politics, they have been in a rush for the past few weeks. To-day is the day when the next Governor for Tennessee is to be nominated, and the campaign just closing has been probably the most remarkable and exciting one in the history of the State. The prohibition question is cutting a very large figure, and it looks like that Tennessee will soon join some of the other "dry" States in the South. The campaign has attracted so much attention that it has really interfered with business throughout the State to quite a large extent for the past few weeks. A prominent retail Hardware merchant was in our office a few days ago, and made the remark that he found business was interfering with politics so he had cut out business for a while, and it looks like a good many other merchants throughout the State have done the same thing. Now that it is over, however, and with the splendid crop prospects, we are anticipating a nice volume of fall business. Prices, with a few exceptions, are being very well maintained. The recent slight reduction in Nails and Wire seems to have had very little effect in increasing the volume of business. While the bank clearings throughout the country do not indicate any great improvement in business conditions, at the same time we think that we can see considerable change for the better in the South. The shrewder merchants seem to be coming out of their shells, and quite a good many are taking hold of business with more life and energy than they have done for nearly a year. We notice a disposition on the part of many of the smart merchants to place orders for fall shipment, and quite a number of nice orders are being received for Hardware, Stoves, Saddlery and Cutlery for August and September shipment. Collections are fairly good.

## NOTES ON PRICES.

**Wire Nails.**—There does not appear to have been any falling off in the volume of business, notwithstanding the advanced season. While buyers are not ordering in quantities in excess of actual requirements, they are ordering somewhat more freely. This would indicate an increase in consumptive demand without reference to the recent reduction in price. Quotations for base sizes are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads, to jobbers.....$1.95
Carload lots to retail merchants..... 2.00
Less than car lots from mill, 5 cents advance per keg.

*New York.*—Business from nearby points is showing some improvement, but the volume is still restricted to comparatively small proportions. Orders are confined to medium sized lots. Nails are being held on the basis of $2.40, in small lots at store, with occasional concessions of 5 to 10 cents per keg.

*Chicago.*—Last week brought out an aggregate business considerably in excess of recent weeks. It is believed that this showing is due more to the strength of actual consumptive demand than to any effect of the recent reduction in price. While ordering more freely buyers are not extending their purchases beyond the immediate demands of the trade. Besides a fair run of new orders specifications are being offered without hesitation. Prices are, we are advised, being firmly maintained by the leading producers. Quotations are as follows: $2.13, in car lots to jobbers, and $2.18 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

*Pittsburgh.*—Within the past week or 10 days there has been a notable improvement in the demand for Wire Nails, and the mills are entering more orders and making larger shipments than for some time. As yet jobbers are not inclined to buy in large quantities, but are placing such orders as are necessary to keep up assortments of stocks. Consumption is no doubt getting heavier, and the outlook is good for a moderate volume of business in Wire Nails during the next two or three months. We are advised by the mills that regular prices are being maintained. Quotations for base sizes are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads, to jobbers.....$1.95
Carload lots to retail merchants..... 2.00
Less than car lots from mill, 5 cents advance per keg.

Galvanized Nails are quoted at $1 over the price of the regular Nails.

**Cut Nails.**—Conditions in the Steel Cut Nail market remain unchanged, demand continuing light and for small quantities. The price for Steel Nails at mill is reported to be a $1.75 base, with the probability that it would be shaded for desirable orders, small lots being held at $1.80 to $1.85, base, at mill. In the Western market Iron Cut Nails are held at an advance of about 10 cents per keg over Steel Cut Nails, but this differential is not observed in the East.

*New York.*—In the local market the demand for Steel Cut Nails continues to be relatively small. Cut Nails are held on the basis of $2.15 per keg for small lots at store.

*Chicago.*—There is no perceptible change in conditions governing the demand for Cut Nails. Orders are still closely limited to present needs, which of course means an extremely quiet movement. Western mills and jobbers claim that prices are generally firm at $1.80, Pittsburgh, for Steel Cut Nails. We therefore quote Chicago prices as follows: In car lots to jobbers, Iron Cut Nails, $2.08; Steel Cut Nails, $1.98. In small lots from store: Iron Cut Nails, $2.25; Steel Cut Nails, $2.15.

*Pittsburgh.*—The market continues extremely quiet, and there is not much encouragement for a larger demand in the near future. Jobbers are placing orders only to cover actual needs, and the amount of new business entered by the mills is relatively small. We quote Steel Cut Nails at $1.75, at mill, but on a desirable order this price could be shaded. Small lots are held at $1.80 to $1.85, at mill. Iron Cut Nails are quoted at about $1.80, at mill.

**Barb Wire.**—The amount of new business, received at mills, is naturally light at this season, but is regarded as quite satisfactory considering general conditions. Quotations are as follows, f.o.b. Pittsburg, 60 days, 2 per cent. discount for cash in 10 days:

| | Painted. | Gal. |
|---|---|---|
| Jobbers, carload lots | $2.10 | $2.40 |
| Retailers, carload lots | 2.15 | 2.45 |
| Retailers, less than carload lots | 2.25 | 2.55 |

*Chicago.* Considering the usual dullness of the season business is quite as good as could be expected. New orders are naturally light and of moderate volume, but withal a fair amount of business has been entered in the past week. We are advised that prices are being regularly held. Quotations are as follows: Jobbers, Chicago, car lots, Painted, $2.28; Galvanized, $2.58; to retailers, car lots, Painted, $2.33; Galvanized, $2.63; retailers, less than car lots, Painted, $2.45; Galvanized, $2.75; Staples, bright, in car lots, $2.25; Galvanized, $2.55; car lots, to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

*Pittsburgh.*—The amount of new tonnage received by the mills is small, as this is the off season in this line and not much business is expected. An improved demand is looked for early in August, when the new season will open up. The mills advise us that regular prices are being maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

| | Painted. | Gal. |
|---|---|---|
| Jobbers, carload lots | $2.10 | $2.40 |
| Retailers, carload lots | 2.15 | 2.45 |
| Retailers, less than carload lots | 2.25 | 2.55 |

**Plain Wire.**—Demand has shown some increase from jobbers and also from manufacturers of Fencing, although nearby requirements are apparently adhered to. Quotations per 100 lb. to jobbers in carload lots are as follows, on a basis of $1.80 for Plain and $2.10 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the price to retailers being 5 cents additional:

| Nos. | 6 to 9 | 10 | 11 | 12&12½ | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|
| Annealed | $1.80 | 1.85 | 1.90 | 1.95 | 2.05 | 2.15 | 2.25 | 2.35 |
| Galvanized | 2.10 | 2.15 | 2.20 | 2.25 | 2.35 | 2.45 | 2.85 | 2.95 |

*Chicago.*—Last week's bookings in new orders and specifications by the leading interest showed considerable improvement indicating a more liberal policy in purchasing by jobbers and manufacturers, due partly to the recent price reduction, and doubtless in a large measure to promising crop prospects, Fence makers ordering more freely though not in quantities that represent far ahead requirements. We quote as follows: Car lots to jobbers, $1.98, f.o.b. Chicago, and to retailers, $2.05.

*Pittsburgh.*—The demand continues to show some improvement, and the mills are entering more orders than for some time. Shipments are also better, and the condition of the Wire Fence market is more satisfactory than for several months. The large trade is still inclined to place orders only for actual needs, but the number of such orders is increasing, and the mills expect a fairly heavy volume of business during the next month or two, and a decided gain in tonnage when fall trade opens up. Quotations per 100 lb. to jobbers in carload lots are as follows, on a basis of $1.80 for Plain and $2.10 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the price to retailers being 5 cents additional:

| Nos. | 6 to 9 | 10 | 11 | 12&12½ | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|
| Annealed | $1.80 | 1.85 | 1.90 | 1.95 | 2.05 | 2.15 | 2.25 | 2.35 |
| Galvanized | 2.10 | 2.15 | 2.20 | 2.25 | 2.35 | 2.45 | 2.85 | 2.95 |

**Adzes.**—A reduction of $1 per dozen on all grades of Adzes has been made by the principal manufacturers.

**Scythes.**—A change has been made in the working arrangement of Scythe manufacturers and notices have been sent out that payment of premiums, &c., through a commissioner have been discontinued.

**Hatchets.**—There has been a change in conditions affecting the marketing of Hatchets, as hinted in these columns a week ago. Leading manufacturers have reduced their prices about 10 per cent., but their action seems to have been a concerted one, and the market retains an appearance of regularity. A discount of 40 and 12½ per cent. may be named to represent the new level of prices, with additional discount as before to large buyers. Broad Axes, which are affected by the same condition, may be quoted at the same discount as Hatchets. On second quality goods the corresponding discount is 50, 10 and 5 per cent.

**Lawn Mowers.**—As the time approaches when manufacturers of Lawn Mowers are usually soliciting contracts for the succeeding season, the question is raised whether declines which have taken place in iron and steel will be reflected in quotations on these machines. Such changes, if they occurred, would probably be most noticeable on the cheaper grades, but manufacturers are

quite positive in the assertion that reductions may not be expected. For some years they have, owing to keen competition, made prices on low grade Mowers which have often been unremunerative, and have not reflected increased productive costs as have most other lines of goods. Last year a moderate advance was brought about, but this was apparently imperative and scarcely made the manufacturers whole on their low priced output. Thus it is argued that the decline in iron offers no good reason for a reduction in the price of Mowers especially as lumber and labor remain as high as ever. Manufacturers are accordingly maintaining last season's prices. The rainy season which has been experienced in most sections of the country has caused an active sale of Mowers, and the trade are pretty well sold out, so that manufacturers feel assured that a good volume of business will be obtainable.

**Spooled Wire.**—In quoting the market on Spooled Wire a week ago we omitted to name a price on retail assortments, an important feature of this line. A figure of $2 to $2.25 per box may be named as representing the market to average buyers.

**Corn Poppers.**—A reduction of about 10 per cent. in 1-qt. square and 1-qt. round Corn Poppers was made last month by the leading manufacturers. The following quotations may now be mentioned as representing the market in these goods in a general way:

| | | | |
|---|---|---|---|
| 1-qt. square, per doz., | $0.80; | per gross, | $8.75 |
| 1-qt. round, per doz., | 0.90; | per gross, | 10.00 |
| 1½-qt. square, per doz., | 1.20; | per gross, | 12.00 |
| 2-qt. square, per doz., | 1.50; | per gross, | 15.00 |

**Rope.**—Manufacturers who are the most aggressive in going after business, and especially those who are exceptionally well equipped for producing certain lines of Cordage, are securing the bulk of orders. This is at best, however, much below the capacity of the plants, buyers keeping their stocks down to the lowest possible limits. The market is not very firm at the following quotations: Pure Manila, 10 cents; Pure Sisal, 7 cents; No. 1 Jute, ¾-in. and up, 5¾ cents; No. 2 Jute, ¼-in. and up, 5¼ cents.

**Binder Twine.**—During the last week or two there has been some evidence of cutting in prices of ⅛ to ¼ cent per pound by holders of Twine. The market is, however, referred to as generally strong at the original schedule prices. The demand is confined largely to second orders from territory where harvest is in progress. The grades of Twine which are called for most largely are Sisal and Standard. These are held, respectively, at 8 cents in carloads and 8¼ cents in less than carload lots, central delivery, except by those who are shading prices as above noted.

**Paris Green.**—Some manufacturers report that they have disposed of their entire production of Paris Green, while others state that the demand has been very satisfactory. The acreage devoted to potato planting in Long Island is exceptionally large this year, and the demand for Green from this section has been active. Quotations are unchanged as follows:

| | Arsenic kegs. | 175 lb. | 28-56 lb. | 2 & 5 lb. | Boxes. 1-lb. | Boxes. ½-lb. | Boxes. ¼-lb. |
|---|---|---|---|---|---|---|---|
| 10,000 lb. and over | 21½ | 22 | 23 | 23½ | 24½ | 25½ | 26½ |
| 5000 to 10,000 lb | 22 | 22½ | 23½ | 24 | 25 | 26 | 27 |
| 1000 to 5000 lb | 23 | 23½ | 24½ | 25 | 26 | 27 | 28 |
| 500 to 1000 lb | 24 | 24½ | 25½ | 26 | 27 | 28 | 29 |
| Less than 500 lb | 25 | 25½ | 26½ | 27 | 28 | 29 | 30 |

**Window Glass.**—Hand operated factories are gradually dropping out, and it seems probable that those which will continue in operation after the Fourth of July will not exert much influence on the market. The Eastern Jobbers' Window Glass Association recommend the following quotations: New England and New York Metropolitan District, 90 and 30 per cent. discount for Single, and 90 and 35 per cent. discount for Double Strength; Eastern and Southern States, including the Carolinas, 90 and 35 Single, and 90 and 40 per cent. discount for Double Strength; extreme Southern States, including Florida, Georgia and Alabama, 90 and 30 for Single, and 90 and 35 per cent. discount for Double Strength Glass. According to press reports, a number of Plate Glass factories are about to be closed down temporarily, owing to the light demand and accumulation of stocks.

**Linseed Oil.**—The market continues quiet, and the demand is restricted to actual requirements. Manufacturing consumers are confining their orders to a carload or less at a time, while the consuming trade is buying in small lots as requirements demand. According to reports, there were about 1,500,000 less bushels of Flax Seed at Duluth and Minneapolis last week than at the same period last year. It is also said that the price of Seed has encouraged an export demand. These conditions are regarded by some as reflecting a strong statistical position in Seed, notwithstanding the limited demand for Oil. Prices for carload lots, especially for Western Raw, are not very firm, as a quotation of 41 cents or less could probably be obtained. Local quotations are as follows: State and Western Raw, 42 to 44 cents; City Raw, 44 to 45 cents per gallon. Boiled Oil is 1 cent per gallon advance on Raw.

**Spirits Turpentine.**—Supplies have been more than sufficient to meet requirements in the Savannah market during the week, and as a result prices showed some decline. Consuming manufacturers are closing their plants for the annual repairs which reduces the demand to some extent. Present prices are regarded by some as low, while others view the accumulation of heavy receipts at primary points as favoring still further reductions in price. The New York market is represented by the following quotations: Oil Barrels, 41½ to 42 cents; Machine Made Barrels, 42 to 42½ cents per gallon.

**White Lead and Oxides.**—As a result of the continued upward tendency in Pig Lead, manufacturers of White Lead and Oxides have advanced prices, subject to change without notice, as follows, terms lots of 500 pounds and over, 60 days, or 2 per cent. discount for cash if paid in 15 days from date of invoice:

*White Lead.*

| | Cents per lb. |
|---|---|
| Dry and in Oil, in 100, 250 and 500 lb. kegs | 7 |
| Dry and in Oil, in 25 and 50 lb. kegs | 7¼ |
| Dry and in Oil, in 12½-lb. kegs | 7½ |
| In Oil, in 25-lb. tin pails (100 lb. in a case) | 7½ |
| In Oil, in 12½-lb. tin pails (100 lb. in a case) | 8 |
| In Oil, in 1, 2, 3 and 5 lb. tin cans, assorted (100 lb. in a case) | 9 |

In lots of less than 500 lb., ½ cent per lb. advance over above prices.

*Oxides.*

| | |
|---|---|
| Red Lead and Litharge, in 100-lb. kegs | 7 |
| Red Lead and Litharge, in 25 and 50 lb. kegs | 7¼ |
| Red Lead and Litharge, in 12½-lb. kegs | 7½ |

In lots of less than 500 lb., ½ cent per lb. advance over above prices.

Red Lead and Litharge, in bbls. and ½ bbls., same price as in kegs.

**Strap and T-Hinges.**—The market for Strap and T-Hinges is regarded with some interest, as there are indications of special concessions or other irregularities in price.

**Dripping Pans.**—Some of the manufacturers are acting independently and quoting somewhat lower prices than have heretofore prevailed.

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AT the annual meeting of Louis Hoffman Hardware Company, Vicksburg, Miss., the old officers were re-elected and Louis Hoffman, Jr., was admitted to partnership. The business was founded in 1857, and was organized as a stock company in 1886.

J. L. OSGOOD, Buffalo, N. Y., has just returned from a two months' European trip. He succeeded in making very desirable connections for the production of Indestructible File and Tool Handles under his patents in England, France, Belgium and Germany.

J. E. Gebhart, Plainville, Kan., who handles Shelf and Heavy Hardware, Stoves, Paints, Implements, Harness, Vehicles, &c., is erecting a new building to be of fireproof construction, with concrete basement, elevator, Warren shelving, plate glass front and up to date in every way.

The Cameron Hardware Company, Cameron, Texas, has been incorporated with a capital stock of $100,000, by J. T. Brown, T. E. George and Leonard Brown. J. T. Brown is president of the new company.

## Death of Samuel Disston.

SAMUEL DISSTON died at his home in Philadelphia, Saturday, June 27, as the result of a complication of ailments, with some of which he had been contending for several years. In consequence of advanced years and impaired health and strength, Mr. Disston retired from the active duties of secretary and general manager of Henry Disston & Sons, Inc., May 28 last, a position he had occupied since 1894. Owing to Mr. Disston's continuous association with this important industry almost from its inception and in a commanding position, a sketch of his life is, in part, a history of the growth and development of the business with which he had been so closely connected for 58 years and in which he bore so influential a part.

Samuel Disston was born in Nottingham, England, September 15, 1838, coming to the United States in 1850, when he entered the employ of his brother, Henry Disston, founder of the business, where he served an apprenticeship as a Saw maker and gained a general knowledge of the business. After he had mastered the art of Saw making he entered the office and eventually became the selling representative of the firm, traveling extensively, his strong personality, earnest efforts, wonderful physical endurance and complete knowledge of the business winning for him a high reputation. In 1894 Mr. Disston became secretary and general manager of the company, and on retirement from the more active duties a few weeks since, he was elected chairman of the Board of Directors.

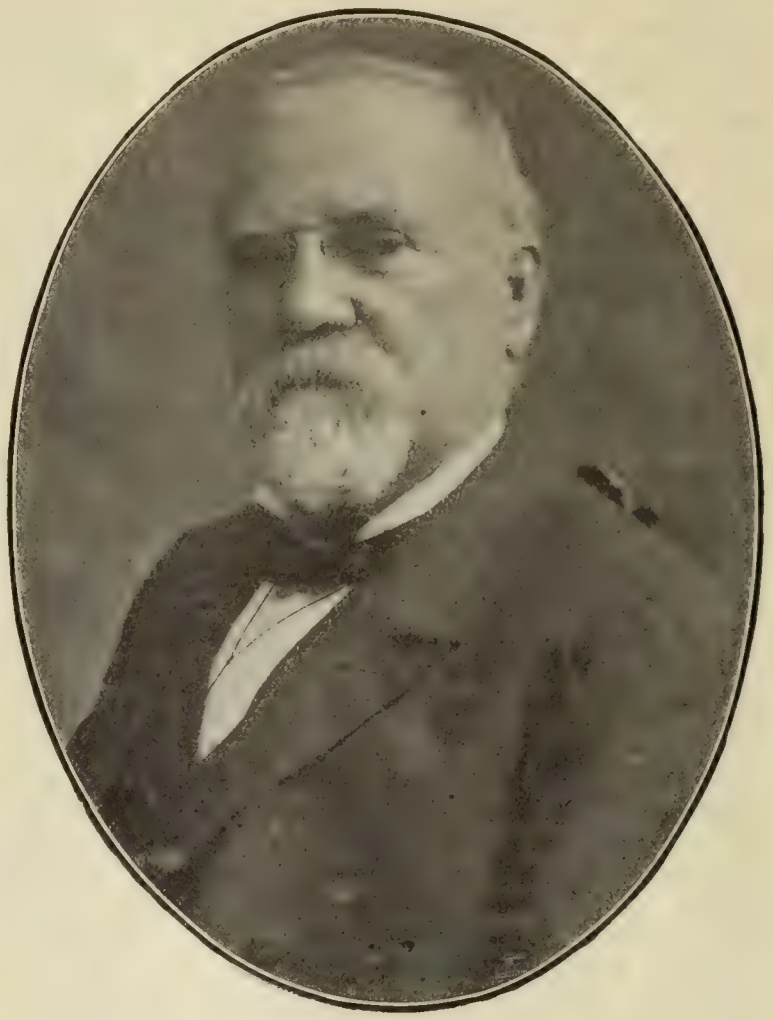
When Samuel Disston entered the employ of Henry Disston, in 1850, the whole number of employees was about 35, while now over 3500 are employed, and the extensive plant at Tacony (Philadelphia) covers 50 acres, on which are 54 buildings, branch houses being maintained at Chicago, Cincinnati, New Orleans, Memphis, Nashville, Boston, San Francisco and Toronto, with representatives in many of the large cities of the world. The Laurel street plant, when Samuel Disston was first employed there, had a capacity of 75 to 100 dozen Saws of all classes per week. The site of the present plant was purchased in 1873 and removal to the new works was fully consummated in 1884. The present capacity of the great plant is several thousands of dozens of Saws of all kinds per week.

The Saw industry of Henry Disston had its inception at Front and Laurel streets, Philadelphia, in 1840, when the founder, Henry Disston, constituted the entire "force"—Saw maker, bookkeeper, salesman and proprietor. Immediate success did not come in the competition with Spear & Jackson and other established English makes, despite the fact that the superiority of the Disston Saws to the foreign brands then in demand was recognized by those who compared them. It was only after years of incessant effort and struggle, the surmounting of innumerable obstacles and the overcoming of rooted prejudices against not only Saws but other tools of American origin that success was achieved. Henry Disston, once when asked what he put in his saws, replied: "Good steel and honest work."

With increasing experience in the requirements of Saws, which now are put to greater and more varied uses than formerly, the larger the establishment became the more it was possible to experiment along the lines developed by experience, looking to the betterment of manufacturing facilities, the making of improvements in machinery, methods, processes, &c., as well as increasing the efficiency of the Saw. Invention followed invention, process after process was devised and original ideas tried out. The result has been that Saw making was revolutionized, and a great plant with complete equipment for economical manufacture was an accomplished fact capable of turning out Saws of improved design in greatly increased variety of high quality and superior finish, which work easier, last longer and sell for less than would have been possible under old methods.

All Disston Saws are made throughout in the Disston establishment. The steel itself is made in the Disston Steel Works, under a special formula which insures a raw material peculiarly adapted for Saw purposes. A complete laboratory is maintained for the making of physical and chemical tests of steel, in order to maintain a high quality, accuracy and uniformity, while in the Saw factory with its numerous departments, each step in the different operations of Saw making is based on methods peculiarly their own, particularly in the operations of hardening and tempering, important details upon which largely depend the life and vitality of the Saw. Of much importance also is the length of the term of service of the large body of Saw makers, the majority of whom have been long connected with the establishment and thoroughly drilled in correct methods.

In the building up of this great establishment Samuel Disston bore a prominent part, giving his attention to practically every detail of manufacture and to a careful consideration of the various problems that came up in connection with the development of the industry along



Samuel Disston

practically new lines. He recognized the value of expert knowledge in the various departments, and thus had the aid of the best ability in carrying out the broad and well devised plans which have always been characteristic of Disston enterprise. He had also exceptional judgment in the marketing of goods and the general direction of the affairs of the corporation. His conservatism and wisdom was repeatedly shown in keeping the prices of the Disston goods on a moderate level, when many jobbing houses were urging the advancing of prices which the market conditions for the time being appeared to justify.

Samuel Disston was a volunteer soldier during the Civil War, and the prominent position he came to occupy in the manufacturing and commercial world doubtless led him into other activities of a public character. He was a director of the Eighth National Bank, Northern Trust Company and Board of Trade, all of Philadelphia; belonged to the Union League Club, was ex-president and director of the Hardware Merchants' and Manufacturers' Association, ex-president and member of the Columbia Club, and previous to a gradual breaking down in health was a member of the Board of Port Wardens of Philadelphia. He had also been a member of the Executive Committee of the American Hardware Manufacturers' Association, and was actively connected with a number of other financial and mercantile enterprises. He had

a wide acquaintance with the trade throughout the country founded on business relations running through a long period of years. While in his death the trade loses one of its leading manufacturers and merchants, there will be a general recognition of the rare energy, wisdom, uprightness and ability that characterized his business career and crowned it with so large a measure of success. He will be held in kindly remembrance by a host of friends who esteemed him in proportion to their acquaintance with him, and the opportunity thus given to recognize the genuine kindliness and nobility of his strong and forceful nature. The manner in which during the recent years he contended with failing health brought out conspicuously some of the finer traits of his character.

A set of resolutions expressing deep regret and sorrow at Mr. Disston's death and in which reference was made to some of the features of a long and honorable career, have been adopted by the Hardware Merchants & Manufacturers' Association, a copy of which, suitably engrossed, will be presented to his family. Mr. Disston is survived by a widow, two sons and two daughters.

## LETTERS FROM THE TRADE.

*Our readers are invited to discuss in these columns questions of trade interest connected with the manufacture or sale of Hardware. We shall be pleased to have a free expression of opinion on subjects deserving the attention of Hardware merchants and manufacturers.*

### Guaranteeing Iron and Steel Prices.

*To the Editor:* There is a disposition on the part of all dealers in iron and steel products—Nails, Wire, and Wire Fencing, Metal Roofing, Black and Galvanized Sheets, &c., to insist on manufacturers guaranteeing price against decline. Any one that can read the signs of the times knows that production is far in advance or excess of consumption, the farmer, the contractor, as well as the dealer, holding back for the reason that they feel present values are excessive, based on the capacity to produce goods in iron and steel, on the consumption going on at this time, and on the fact that heretofore the law of supply and demand has governed.

The steel manufacturers have undoubtedly been able to settle the market for the past six, eight, or nine months, and in doing so they have favored the jobber and the retailer who had large stocks of high priced stuff on hand. So far as the steel makers are concerned, they have done their whole duty up to this time.

Matters have now gone along until stocks in the hands of jobbers and retailers have been reduced to a point probably as low as such stocks can be cut without getting entirely out of reasonable assortments, and jobbers and retailers are not unreasonable in demanding that manufacturers guarantee the goods they sell the dealers against further decline to the extent of stock on hand. Guaranteeing against decline on unfilled contracts is not enough.

If the market were an open one and the law of supply and demand governed, the dealer would have more reason to demand contracts other than guaranteeing against decline on unfilled contracts, but the market in its present condition is an unnatural one. If the Steel manufacturers can maintain prices for eight months, and against the fact that consumption was greatly reduced, they can now afford to guarantee their distributors, the jobber and the retailer, against any loss from further decline in price.

The jobber and distributor depend upon the margin allowed them by the manufacturers, and further decline of course would wipe out that margin, which would result in the jobber and retailer working for nothing or less than nothing. On the other hand, the manufacturer on account of the greatly reduced cost of production at this time, and with a wide margin of profit in manufacturing, would lose only a portion of profit that he otherwise would make in case a decline should take place, so that the jobber and retailer are entirely justified in the stand they are taking. FAIR PLAY.

## Carolinas Hardware Association.

THE programme for the annual convention of the Retail Hardware Association of the Carolinas, which will be held at Wrightsville Beach, N. C., on the 7th, 8th and 9th inst., promises a very interesting and instructive meeting. Among the formal papers and addresses will be the following: "How Best to Get Legislation Through," by W. M. Otis, manager Columbia Lumber & Mfg. Company; "Hardware Advertising," by R. D. Baldwin, advertising manager Simonds Mfg. Company, Fitchburg, Mass.; "How to Get Best Results from Our Clerks," by T. W. Dixon, Southern Hardware Company, Charlotte, N. C.; "The National Pure Paint Law," by M. C. Thompson, H. B. Davis Company, Baltimore, Md.; "Hardware Mutual Fire Insurance," by W. P. Lewis, National Hardware Mutual Fire Insurance Company, Huntingdon, Pa., and "Parcel Post and the Retailer," by M. L. Corey, secretary of the National Retail Hardware Association.

## AMONG THE HARDWARE TRADE.

Goodloe & Curtis have bought the Hardware, Stove, Tinware and Implement business of D. B. Shackelford & Co., Richmond, Ky.

I. H. & J. H. Hansen, Portland, Ore., have been succeeded in the Hardware, Stove, Paint and Sporting Goods business by H. Hansen & Co.

McCook Hardware Company, McCook, Neb., is building a two-story and basement storehouse, 25 x 80 ft. in size, adjoining its main store.

M. C. Joyce, Syracuse, Neb., has succeeded to the Hardware, Stove, Tinware, Harness, Vehicle and Sporting Goods business of Joyce & Shrader.

The Vick-Jennings Hardware Company has been organized, with a capital of $10,000, for the purpose of taking over the Hardware, Implement and Vehicle business of Will A. Vick Company, Watertown, Tenn.

M. E. Kirby has succeeded to the business of the Drake Hardware Company in Bolivar, Mo., and will handle Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints, Oils, Sporting Goods and Harness.

AN elaborate programme of entertainment has been arranged for the thirteenth annual picnic of the Chicago Retail Hardware Association, to be held at Northwestern Park on Wednesday, July 15. The annual outing of the organization has come to be an event that is looked forward to by its members with much pleasurable anticipation. Such diversions as dancing, target shooting, games, baseball and the variety of races constitute the special features of entertainment. These sports are arranged and supervised by a Committee of Arrangements, consisting this year of Martin Engelhardt, chairman; A. J Engelhardt, W. H. Bennett, Fred Ruhling and Carl Herzog, who will be assisted by a number of special committees.

THE address on "The Best Methods of Departmentizing Business and the Benefits to Be Derived Therefrom," delivered at the recent convention of the Southern Hardware Jobbers Association, by S. Norvell, president of the Norvell-Shapleigh Hardware Company, St. Louis, has been issued in attractive pamphlet form for distribution among the trade.

JOHN H. GRAHAM & Co., 113 Chambers street, New York, have been appointed general sales agents for the American Lawn Mower Company, Muncie, Ind. The firm have for some time been export selling agents for this manufacturer, and their success in that quarter has led to the present arrangements, covering both domestic and export business.

## Motor Window Display.

THE GEO. T. GADD HARDWARE COMPANY, Cedar Rapids, Iowa, has a spacious and attractive Hardware store with a large and well arranged stock. At the time of the Iowa Retail Hardware Convention in that city, the company's window was dressed with the special Tool display shown in the accompanying illustration. The window is a large one, measuring 15 ft. wide, 7 ft. high and 6 ft. deep, so that it accommodated an elaborate layout. In either side of the window upright frames were erected, something like the fleur de lis design and covered with red crepe paper. On these, Saws and other Tools were effectively arranged. A Tool Chest on one side and a framed Whetstone display on the other formed an upright background on the floor of the window, while Planes, Drills, Hammers, Hatchets, &c., were symmetrically arranged in the foreground.

### The Central Figure

was a huge display board 6 ft 6 in. square, also covered with red, out of which was cut a 5-ft. wheel, as shown in the illustration. This was mounted on a ball bearing Grindstone shaft, with the ends resting on tripods both front and rear, the long end of the shaft on the front side of the wheel, which would have permitted the display of larger articles on the wheels than are shown.

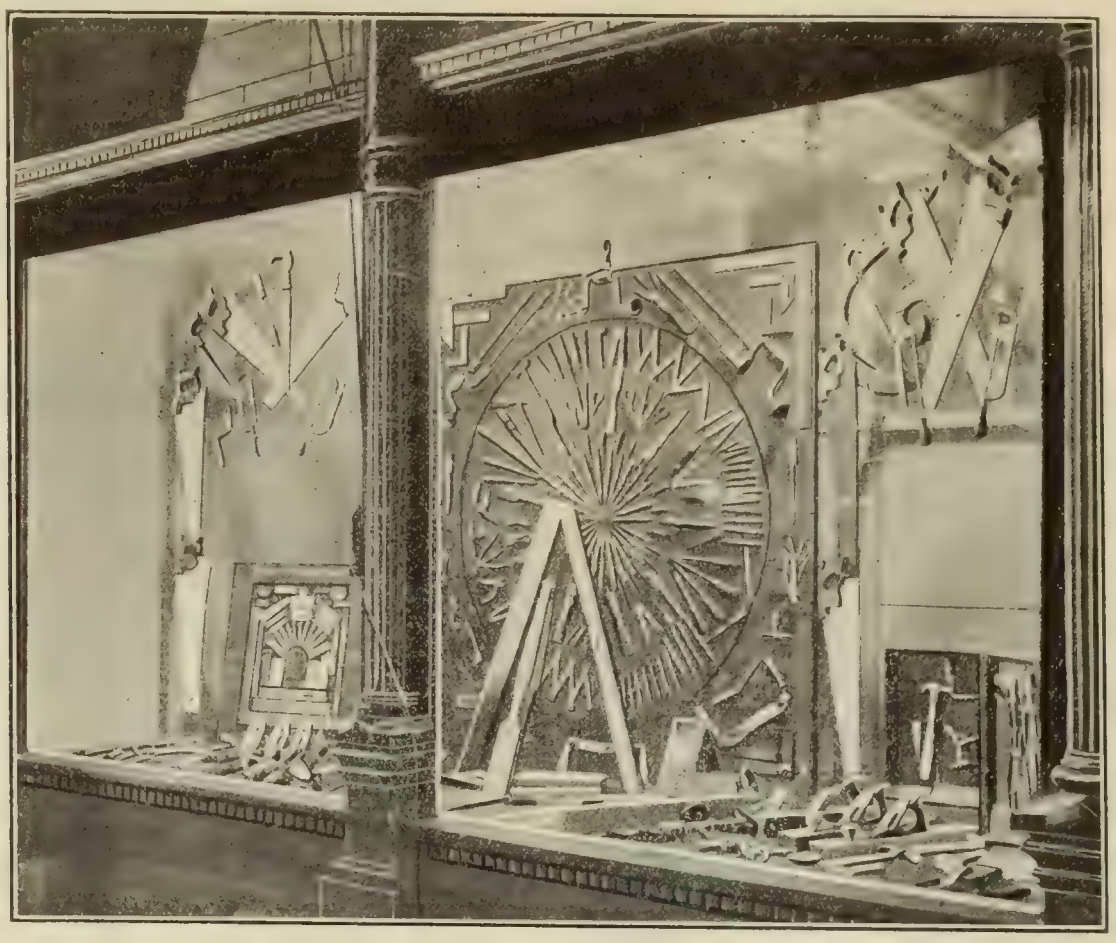


*Fig. 1.—Tool Window Display of Geo. T. Gadd Hardware* Company.

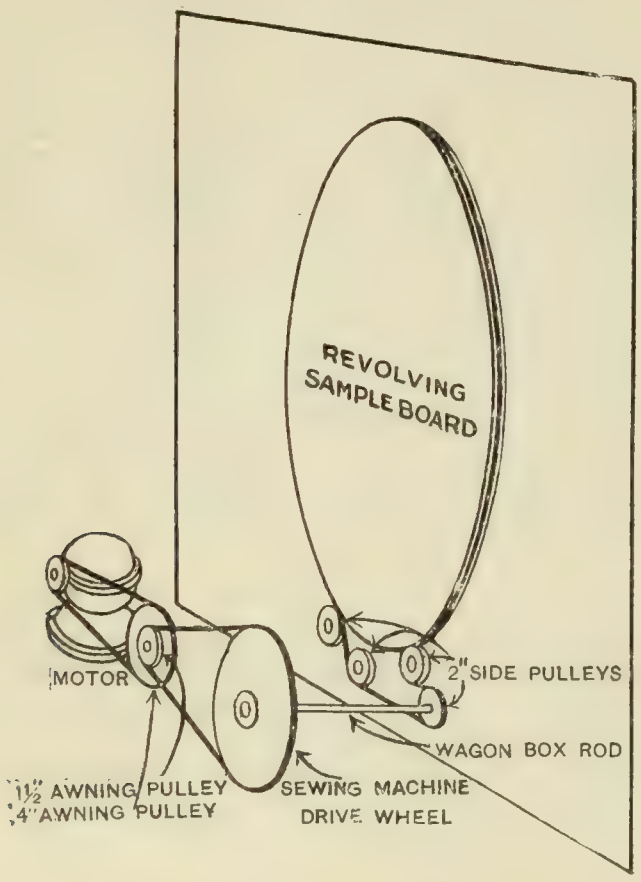



*Fig. 2.—Diagram Showing the Operation of the Motor Attachment.*

The legs of the front tripod supporting the shaft were concealed by two large Levels and a carpenters' Slick. The wheel was made to revolve by an electric sewing machine motor cleverly harnessed to it, as shown in Fig. 2. The method of operation will doubtless be clear from the diagram, but it may be explained that the motor is belted to a 4-in. awning pulley on the shaft with a 1½ in. awning pulley, the latter being belted to a sewing machine drive wheel on a shaft made of Wagon Box Rod, with a 2-in. side Pulley at the other end. The main drive belt was No. 7 Sash Cord, which ran in a groove cut in the circumference of the wheel. The arrangement of Pulleys reduced the speed of the large wheel to about four revolutions a minute.

## India Oil Stone Window Displays.

IN the interest of its India Oil Stones and with a view to educating mechanics and others in the large number of different shapes and sizes and demonstrating the kind of sharpening which each is best adapted for, the Pike Mfg. Company, Pike, N. H., has put two men on the road going from one city to another and preparing window displays of the goods in the stores of the company's customers. The company's representative spends a week with each customer, and during this time no effort is spared to advance the mutual interests of merchant and manufacturer. The attractive window exhibits are well advertised in each city or town, and invitations to visit the store are sent to mechanics, whose names and addresses are secured through the local merchant. The company's publicity man also visits the shops and plants in the vicinity, and thus comes into personal touch with the workmen, whose attention is called to the display.

A little booklet has lately been issued by the company, entitled "What Bill Said," in which the efficiency of the coarse India Oil Stones in sharpening Planer Knives without removing them from the machine is enforced. This is also true in the case of many other machine tools, the time required to take them out and adjust them after being ground and put back thus being saved.

# STIMULATING EXPORT TRADE IN HARDWARE AND RELATED LINES.

FROM OUR SPECIAL CORRESPONDENT.

WASHINGTON, D. C., June 30, 1908.

THE attention bestowed by *The Iron Age* upon the important problem of the stimulation of our export trade in Hardware and allied lines has brought forth very favorable comment from official experts here and has resulted in offers of governmental co-operation which cannot fail to be of great and lasting benefit. Major John M. Carson, chief of the Bureau of Manufactures of the Department of Commerce and Labor, in an interview with the Washington representative of *The Iron Age*, said:

I have noted with much interest the efforts of *The Iron Age* to arouse the Hardware manufacturers to the importance of developing our export trade, and I wish to extend the assurance through *The Iron Age* that my bureau stands ready to do everything in its power to co-operate with this movement. This branch of the Department of Commerce and Labor was organized chiefly for the purpose of aiding manufacturers and exporters in developing their foreign business, and while of necessity we must work within rather narrow limits, I think I am justified in saying that we have met with a fair measure of success in several important directions, judging by the testimony of those most deeply interested.

### Policy of the Bureau.

A brief statement of the policy pursued by this bureau with reference to our trade abroad may be of interest to the readers of *The Iron Age*. Before this Department was organized the efforts of the Government in behalf of American manufacturers desirous of extending their foreign business were limited to directing the consular service in the investigation of trade opportunities abroad, but as our consuls, in the nature of things, can but rarely possess special qualifications for this work the scope of their activities and the consequent measure of their success were necessarily limited. With the development of this bureau was evolved the policy of employing expert special agents, thoroughly competent by reason of their familiarity with certain important American industries to go abroad and gather information regarding openings for American goods that would be of genuine value to our producers. Congress made a modest appropriation for this purpose, and perhaps I can in no way furnish a better basis for a full understanding of the scope of our work than by describing briefly the character of the staff of special agents we now have in the field.

### Expert Special Agents and Their Work.

Seven men are now representing this bureau in foreign countries, of whom six have had lifelong experience either directly in the industries which they now represent or closely associated with them, while the seventh is a man of comprehensive experience in many lines which makes him exceedingly useful for general work and in emergencies that are constantly arising.

Foreign markets for American agricultural implements are now being investigated by Roland R. Dennis of Auburn, N. Y. Mr. Dennis is a successful retired implement manufacturer, who has undertaken this work rather because of his interest in the industry than for any pecuniary consideration. His investigation is made from the standpoint of a thorough expert, and the results cannot fail to be of great benefit to the domestic industry.

An exceedingly valuable series of reports upon the machine tool trade of the world is now being received by the bureau from Capt. Godfrey L. Carden of the United States Revenue Marine Service, who has been detailed to this bureau for the special work he now has in hand. Captain Carden has made a lifelong study of American machine tools and is the recognized expert of the revenue service in this line. He will also be remembered as the expert in charge of an important branch of the machinery exhibits at the St. Louis Exposition.

A study of the cotton oil trade of the world is being made for the benefit of the American oil crushers by A. G. Perkins, who for many years was a practical oil crusher and thoroughly familiar with the technical and commercial problems of interest to the industry. His reports have been of great value and are being closely followed by cotton oil men in all sections.

In cotton goods an investigation has been in progress for the past two years, the results of which alone are worth far more than the total cost of this expert service. It has been conducted by W. A. Graham Clark, formerly superintendent of a large cotton mill in one of the leading industrial centers of the South. Mr. Clark's equipment has been unusually comprehensive and his reports have been universally commended by experts.

The flour milling industry is now represented on our staff of experts by M. H. Davis of Shelby, Ill., a practical miller and president of a well-known milling company. It is hardly necessary to say that the compensation received from the Government by such a man as Mr. Davis is a minor consideration and the industry is very fortunate in being able to secure his services.

Much valuable information regarding the foreign markets for American shoes and leather, especially in the West Indies, has been gathered for the bureau by Arthur Buttman, who has long been identified with this industry.

Our general commercial expert available for almost any line of work is Charles M. Pepper, formerly one of the leading newspaper correspondents at Washington and a conservative, carefully trained observer, whose reports have proven of much value to a number of leading industries.

### In the Selection of Nearly All These Experts

the bureau has followed the plan of soliciting nominations from the interested trades. The appointments have thus been taken entirely out of politics and we have secured the services not only of experts, but of men in whom the leading representatives of the several industries have the fullest confidence. It is a matter of genuine regret to me that I cannot hold out to the Hardware trade the hope that the bureau during the coming year will be able to employ a special expert to make an investigation of trade opportunities in this particular line. Congress at its last session, finding it necessary to retrench in some directions, cut our appropriation for the salaries and expenses of special agents from $50,000 to $40.000. This will make it necessary for us to dispense with the services of two men and will render it impossible to employ additional experts during the fiscal year beginning July 1. I believe, however, that this work is but just begun, and that with the co-operation of the interested trades I shall be able to induce Congress another year to materially increase our allotment.

### Special Inquiries Through Consuls in All Parts of the World.

But while the bureau was thus prevented from assigning a special agent to visit foreign countries in the interest of the Hardware trade, there are other things we can do and that we shall be glad to do if called upon. With our present organization it is practicable to make special inquiries through our consuls in almost any part of the world, and we are daily forwarding to the consular service interrogatories suggested by American business men. Excellent results have followed these efforts, especially where schedules of specific questions have been carefully formulated by intelligent representatives of the various trades or by the officers of trade organizations. I desire especially to get into touch with manufacturers in the Hardware industry, as we are constantly in receipt of information that would be of more or less value to them and which I should take pleasure in placing at their disposal. I wish particularly to be kept informed regarding the national organizations in the various trades, as through them we can most efficiently obtain and distribute matter of value to the industries.

### Suggestions as to Exploiting American Hardware.

American Hardware is a strong line for exploitation abroad because of its superiority and cheapness. Wonderful progress has been made in the past decade in the manufacture of these specialties, much of which is due to the splendid organization of producing plants, the use of automatic tools, the specialization of skilled labor, &c. In my opinion our Hardware needs only to be shown abroad to be appreciated, and I think there is much that could be done, either by individual exporters or by the trade associations, to bring these goods before foreign dealers and consumers. Such organizations abroad as the American Chamber of Commerce in Paris and its prototype in Berlin can be relied upon for co-operation, and arrangements might easily be made through these associations for temporary or permanent displays of complete lines of our products. Foreign manufacturers have found it well worth their while to provide exhibits at our trade fairs held periodically in nearly all the large and small European towns, and a little systematic work in this direction would bring our specialties to the attention of a large number of dealers and consumers. Catalogues should be prepared for such exhibits in French or German or the language of the country, and could be carefully illustrated to great advantage. The American consular service stands ready to co-operate in any such work, and this bureau will cheerfully lend its aid and advice at all times.

Preliminary study of the needs of the people of the countries in which it is desired to develop an export business is necessary to avoid costly mistakes. It would be folly, for example, to send Sash Weights to France, where they are unknown, because French windows open vertically on hinges and do not slide up and down. Our Builders' Hardware would be apt to prove an especially popular line in nearly all countries, because of its artistic design, superior finish and comparative cheapness.

### The Bureau of Standards.

I might add a word regarding the service which the entire Department of Commerce and Labor stands ready to perform for American business men at all times. Nearly every one of its bureaus is in position to furnish information

of value if our business men will only take the trouble to ascertain what can be had upon application. The Bureau of Statistics is a mine of valuable trade information and responds cheerfully to all inquiries. The recently organized Bureau of Standards is now doing a great work for American manufacturers in the standardizing of scientific instruments, measuring apparatus of all kinds, electric appliances, &c., and its stamp of approval upon American wares is accepted throughout the world as the hallmark of excellence. All these facilities may be enjoyed by any American producer who will take the trouble to apply for them.

## FOURTH OF JULY AT PORT ALLEGANY.

IN connection with the Fourth of July celebration at Port Allegany, Pa., Bard & Cheney, Hardware and Stove merchants of that place, issue what they state will be the only printed programme of the day's official doings. In it attention is called to their business, and some of the lines handled by them in the following vein, the extract given covering the morning portion of the programme:

SUNRISE.

**Salute of Thirteen Guns.**

Make Bard & Cheney's store your headquarters whenever in town. They have both 'phones and you are welcome to use them, or have them transfer messages for you.

* * * *

8.30 TO 9.30 A.M.

**Serenades by Various Bands.**

Bard & Cheney's store will be closed at 2 p.m. for balance of the day, as the boys want a little fun themselves; so do your trading early, please.

* * * *

9.30 A.M.

**Ball Game.**

Emporium vs. Port Allegany. Band at the Game.

The Majestic Rotary Washing Machine, sold by Bard & Cheney in Port Allegany, is one of the greatest labor savers manufactured. Does perfect work. Sold on trial. Money back if not satisfactory.

* * * *

11.00 A.M.

**Address by President.**

and Orator of the Day in Public Square.

While this is Bard & Cheney's first year in the Implement business, they are much pleased with the sales. They find the people generally are glad to get goods made outside of the Harvester Trust, at the same time getting better goods and better terms.

* * * *

11.30 A.M.

**Parade.**

Firemen's, Civic and Industrial.

If you keep bees get Hives and supplies from Bard & Cheney. All the most used goods carried in stock and others quickly procured, at right prices.

With the programme are sent, under date June 30, two circulars, in which a cordial invitation is given to people in the vicinity " to come to the Port on the Fourth and have a good time," attention being also directed to a number of seasonable lines, including Harvesters, Potato Machinery, Separators, Pest Exterminators, Haying Tools, Bee supplies, &c.

On July 1 the Webb-Adams Hardware Company succeeded the Webb Hardware Company, Brookneal, Va., R. E. Adams becoming a member of the concern. The capital will be increased by $10,000, a jobbing department will be added and the scope of the business will be materially enlarged.

F. N. Eckley has purchased an interest in the business of J. M. Early, San Mateo, Cal. The name of the firm is now Early-Eckley Company, Inc., which will handle Shelf Hardware, Tin and Enameled Ware.

Ivie, Payne & Thornton have engaged in business at Willamina, Ore., and will handle Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints, Oils, Sporting Goods, Wagons and Buggies.

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## The Carborundum Company's Display Cases.

THE CARBORUNDUM COMPANY, Niagara Falls, N. Y., is using effective methods to interest and encourage the trade in pushing its sharpening stones. Special efforts are made to make the line a convenient one



*Fig. 1.—Triangular Display Case of Carborundum Sharpening Stones.*

to handle, as well as to command the attention of the public and promote sales. The handsome and substantial display case shown in Fig. 1 is offered gratis to merchants purchasing a reasonable assortment. The case is 40 in. high and 24 in. wide in its greatest width. It is triangular in shape, giving two display surfaces which are seen from different directions, while it has a swing door in the back admitting to capacious stock shelves inside. The case is made of clear quartered oak, golden finish, with plate glass fronts. The company is also offering its carborundum Niagara Scythe Stones in 1 doz. and 3 doz. With 1 doz. stones a display box (Fig. 2) is furnished made of cardboard reinforced with wood and covered with buff glazed coated paper. The boxes are hinged at the center and folded back for display, as illustrated. Two sizes are provided, one holding 10 in. and the other 12 in. stones. With 3 doz. Scythe Stones the company furnishes a substantial display box of highly polished wood.



*Fig. 2.—Display Box Furnished with 1 Dozen Carborundum Niagara Scythe Stones.*

In addition to furnishing merchants with display cases and supplying them liberally with advertising matter, the company has been conducting a window display campaign. It has representatives traveling with complete display outfits who visit different cities and install attractive windows showing the company's product. They then call upon carpenters and mechanics, demonstrating the goods and inviting them to call at the Hardware store for souvenirs. On Saturday nights he often arranges for a public demonstration in the store.

## Price-Lists, Circulars, Etc.

*Manufacturers in Hardware and related lines are requested to send us copies of catalogues, price-lists, &c., for our Catalogue Department in New York; and at the same time to call attention to any new goods or additions to their lines, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.*

BUTLER BROS., Chicago: "Our Drummer" catalogue for the summer of 1908, referring to an extensive line of goods, many of which are seasonable for the Hardware trade. Special offers are made on 5 and 10 cent goods, Tin and Enameled Ware, &c.

HARDSOCG MFG. COMPANY, Ottumwa, Iowa: Illustrated catalogue and price-list for 1908-1909 referring to Coal Drills and Parts and Coal Miners' Tools and Supplies.

LEADER FENCE COMPANY, St. Charles, Ill.: Illustrated catalogue referring to Leader Double Strand Reverse Twist Corrugated Farm and Lawn Fence and Fence Sundries.

PREMIER SPECIALTY COMPANY, Chicago: Illustrated Catalogue A referring to an elaborate line of Mirrors and Bathroom Furnishings.

PHILADELPHIA LAWN MOWER COMPANY, Philadelphia, Pa.: Large catalogue and price-list elaborately illustrated in colors, referring to Philadelphia Lawn Mowers.

CARVER TOOL WORKS, Spring Valley, N. Y.: Illustrated catalogue and price-list of tools of various kinds, including Cold Chisels, Brick, Marble and Metal Drills, Case, Cotton Bale and Hay Hooks, Calking Irons, Oyster and Clam Knives, Punches, Box Scrapers and Chisels, Brick and Slate Roofers' Hammers, &c.

## Requests for Catalogues, Etc.

*The trade is given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.*

**REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate:**

FROM YAEGER-BETHEL HARDWARE COMPANY, wholesale and retail Hardware, Sporting Goods, Mill Supplies, Building Material, Stoves, Paints and Oils, Agricultural Implements, Plumbing, Roofing, &c., has reorganized its office system and now has excellent facilities for accommodating catalogues and other trade literature issued by manufacturers. The company will value catalogues, price-lists, &c., relating to hardware and allied lines.

FROM LEON J. LAMBERT COMPANY, 70 Calle David, Manila, P. I., which is starting business, handling Stoves, Kitchen Furniture, Plumbing and Sanitary Fixtures, Oils, Varnishes, Hose, Packing, Lubricating Oils, Engineer Supplies, &c. The company desires catalogues and export discounts. Milton E. Springer, who for the last five years has successfully managed the American Hardware & Plumbing Company, is associated with the new company.

FROM JAS. A. DEZELL, who has engaged in business in Greensboro, Fla., and will handle Shelf and Heavy Hardware, Stoves, Tinware, Paints and Oils.

FROM A. C. SNYDER, York, Neb., who is about to embark in the Shelf Hardware, Stove, Tinware, and Furnace business.

FROM G. PITARD'S SONS, New Orleans, La., dealers in Shelf and Heavy Hardware, Stoves, Tinware, Implements, Paints and Sporting Goods, who recently had a fire in their Paint department, causing about $2000 damage.

FROM J. P. WOOD, Butte, Neb., who has bought the Hardware business of N. Seller.

## The A. B. Stropper.

The three illustrations shown herewith relate to a stropping holder for double edged safety razor blades,

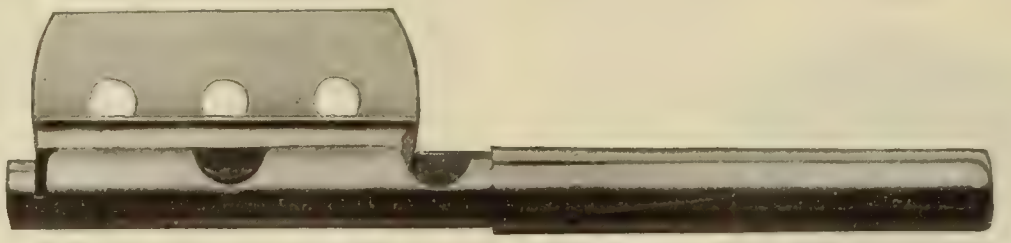


*Fig. 1.—The A. B. Stropper.*

put on the market by the A. B. Mfg. Company, Worcester, Mass. Fig. 1 represents the blade in the holder, ready for stropping. The blade is guided into the holder as shown in Fig. 2, until the left hand edge is even with the

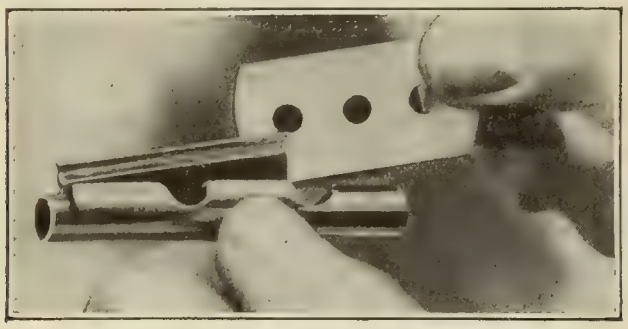


*Fig. 2.—Guiding Blade Into Holder.*

left hand edge of the holder jaws. The blade is pushed down into the holder as far as it will go. Then with the index finger the holder is pushed down, as in Fig. 3, where it is held in place by the handle. It is pointed out that the stropper permits of the same motion as is used

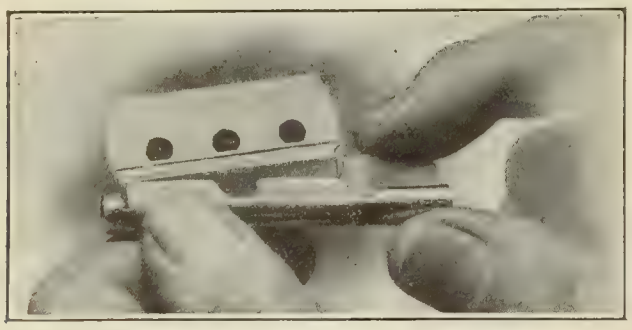


*Fig. 3.—Pressing Holder Down.*

when stropping an old-fashioned razor, that is, stropping one edge the length of the strop, reversing and stropping the other side of the same edge back, thus securing equal bevels on both sides of the blade.

## Allsteel Lockers.

The accompanying cuts represent lockers manufactured by the General Fireproofing Company, Youngstown,

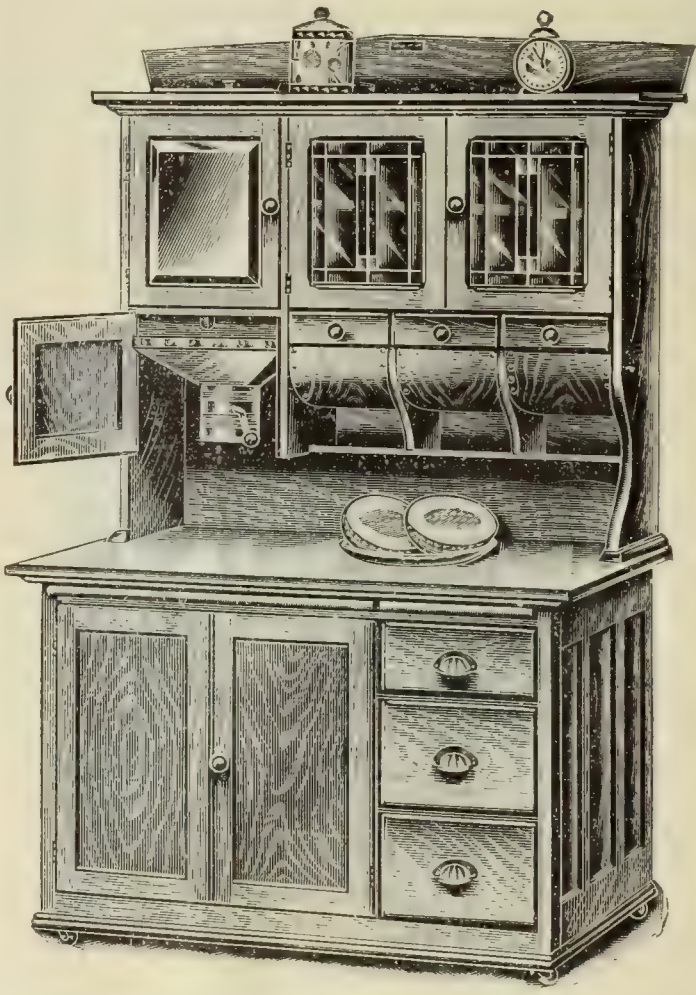


*Allsteel Lockers.*

Ohio. They are built entirely of sheet steel ventilated or expanded metal. The finish is enamel, which is baked on the steel at very high temperature, so that it cannot flake off and is not easily marred in every day use. The lockers are adaptable to use wherever lockers are required—in offices, banks, schools, hospitals, gymnasiums, country clubs, boat clubs, mills, factories, police and fire stations, &c.

## IXL Kitchen Cabinet No. 500.

An attractive and convenient kitchen cabinet, marketed by the I-X-L Furniture Company, Goshen, Ind., is here illustrated. It provides for the compact disposal of provisions and utensils where they are ready at hand when wanted for culinary purposes. In the top of the cabinet are three tilting bins for sugar and a large sanitary flour bin with sifter attached; the door to the latter compartment is fitted with a 10 x 12 in. beveled mirror. The cupboard has 10 x 12 in. leaded art glass doors, carrying card rack and want list on the inside. All the doors, drawers and tilting bins are furnished with a

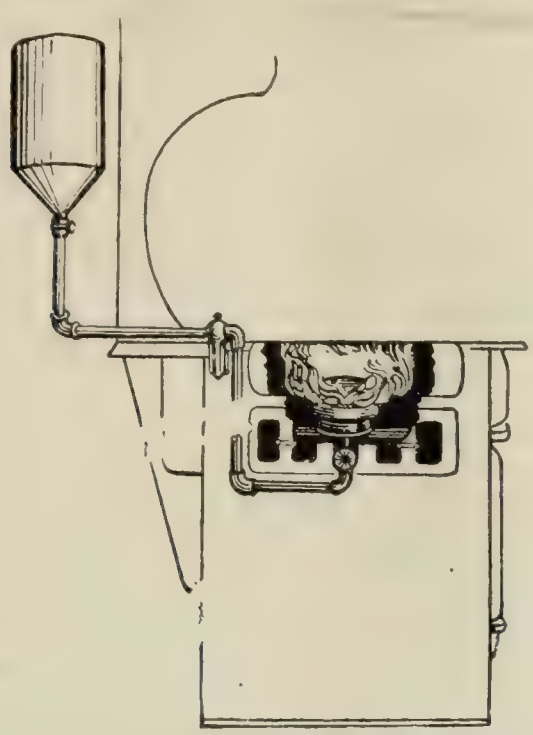


*I X L Kitchen Cabinet No. 500.*

sanitary lip and are trimmed with antique hardware copper. The base is constructed with a finished double top attached with screws, and has large kneading and cutting boards, which slide back underneath the top. Besides two drawers for miscellaneous use, one is provided with a removable tin bread and cake box, and the lower cupboard is supplied with a sliding shelf. On the inside of the doors are pan racks and a rack containing six spice cans. The cabinet is made of either walnut or oak in golden waxed or weathered finish and is mounted on casters. It is also built with additional drop leaves if desired. The dimensions are as follows: Top, hight 44½ in., width 45 in., depth 12 in.; base, hight, 31 in., width 45 in., depth 29 in.; total weight 190 lb. Several other styles of this cabinet are made by the company, which states that the demand is chiefly for the better grades.

## Robbinsdale Gas Generator.

The Robbinsdale Gas Generator Company, 344 Security Bank Building, Minneapolis, Minn., is offering the gas generator for use in cook stoves, ranges and heaters, as shown herewith. Cheap kerosene oil is used in the tank. It is explained that the device does not burn oil but gas which is made from the oil, burning gas and air, without offensive odors. It is stated that a baking heat



*Robbinsdale Gas Generator.*

has been maintained in an oven for five hours with a consumption of 1 gal. of cheap kerosene oil, but that the same quantity will last much longer, as a stove or range is ordinarily used in household service. The fire is controlled by a needle valve, so that a low or medium or very hot fire can be obtained, as desired. The illustration represents the firebox end of a stove or range, the curved line indicating an outline of a portion of the high shelf or warming closet, with the burner in operation in the firebox, and connected to the oil tank. The device can be used equally well with or without water fronts or backs.

## The Knead-Full Bread and Cake Mixer.

The prominent features of the bread and cake mixer shown in the accompanying illustration, are the steel arms which hold and guide the kneading rod and crank;




*The Knead-Full Bread Maker.*

the tool steel hub, through which the kneading rod and crank pass, and the gripping cam. It is stated that the mixer, when assembled for work, will easily support a weight of 200 lb. upon its arms. The bottom of the pail is made to resist the tortional strain by having an extended rim below the bottom through which a steel rod is passed and riveted to opposite sides. The rod not only stiffens the pail but affords a reliable, sanitary grip for the table clamp. The pail is made of XXXX charcoal plate, mellen grade, and all steel parts are retinned. It is offered by the Gem Mfg. Company, Boston, Everett Station, Mass.

## The Buffalo Staple Puller.

The staple puller here illustrated represents a recent addition to the line of products of the Osmundson Spade Mfg. Company, Perry, Iowa. The puller is said to be the only fence tool of its kind, having a detachable jaw, a feature of improvement that is particularly emphasized. The object of this construction is to prolong the usefulness of the tool by replacement of broken jaws which may be easily and conveniently done at a trifling cost.

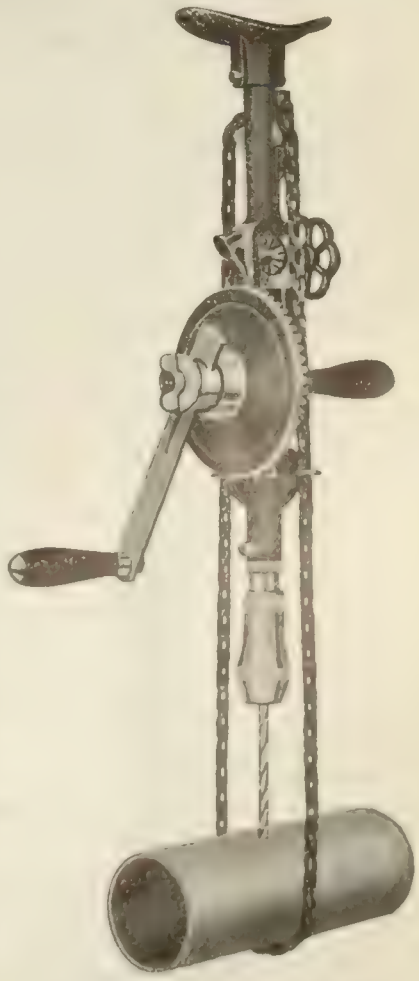


*The Buffalo Staple Puller.*

Owing to the fact that the entire strain of pulling staples is borne by the sharp points of the jaws, they are extremely liable to wear and breakage, while in other respects the tool may be as good as new and the detachable jaws make it unnecessary to discard tools otherwise unimpaired. The puller is made of stamped steel, brightly finished, and comprises a combination consisting of two staple pullers, two wire cutters, a double faced hammer and a wire stretcher, the total weight being 1¼ lb.

## The Universal Breast Drill.

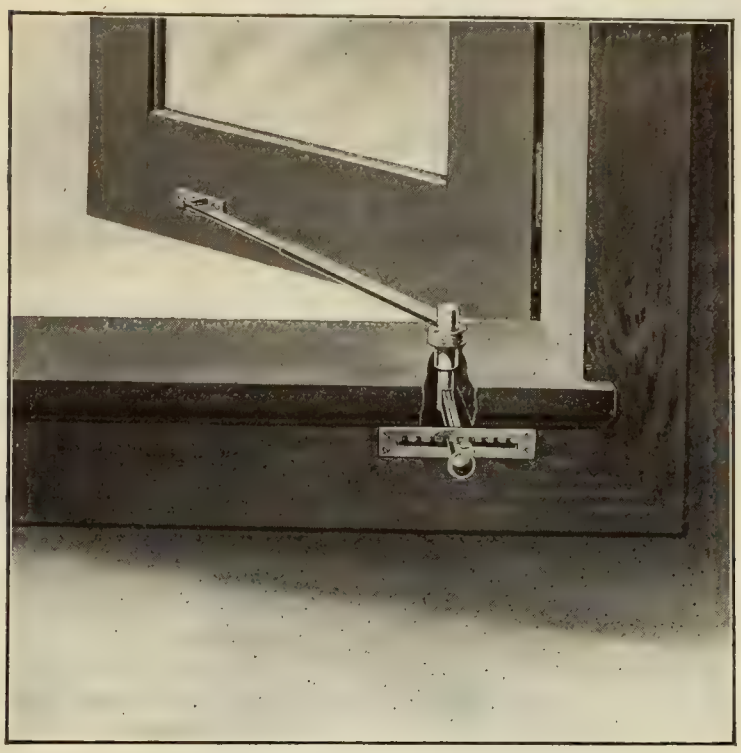
The breast drill shown herewith is placed on the market by the Lancaster Machine & Knife Works, Lancaster, N. Y. The tool is fitted up with a varied adaptation for all classes of small drilling. It has a chain feed attachment, furnished with each tool, which is operated by the supporting handle, allowing pipes, beams and similar articles to be drilled with ease. It can be adjusted to any angle making it desirable for working between girders and ceiling joists, in the interior of machinery where space is limited, and for all such work has a screw feed. When limited space does not permit a full turn of the handle the ratchet can be used. It has two speeds which can readily be changed, and the sweep of the handle is also adjustable. The gears are machine cut. The head and socket are ball bearing, and the handles are of cocobolo. The chuck is fitted with forged steel alligator jaws, which firmly hold both round and square shank drills, or the drill will be fitted with a three-jawed chuck.



*The Universal Breast Drill.*

## Locking Casement Adjuster No. 33.

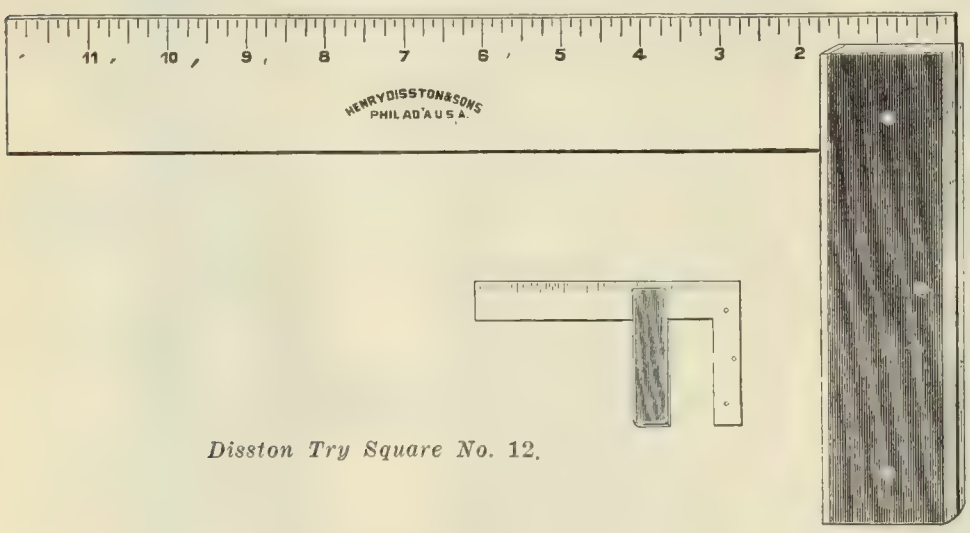
The locking casement adjuster shown herewith, and manufactured by Russell & Erwin Mfg. Company, New Britain, Conn., is made of cast bronze and is used only on casements opening out. It is especially adapted to casements fitted with inside screens or inside storm sash. Operated from the inside, as shown in the illustration, the casement may be opened or closed by moving the bolt and without opening either screen or storm sash. The casement is firmly locked open at any angle up to 90 degrees and is always locked when closed. The adjuster is simple in construction, strong and durable. It has a locking lever and plate in the apron below the stool and a telescope arm. The device is made regularly for windows with apron not more than 4½ in. from the inside line of sash, but it can be made to order for stools of greater width.



*Locking Casement Adjuster No. 33.*

## Disston Try Square No. 12.

The try square here shown is an addition to the line of Henry Disston & Sons, Philadelphia, Pa. It has a rosewood stock polished, with flush heavy brass face plate fastened by a method which is said to insure security. As no screws are used and there is no countersinking the surface is finished perfectly smooth and true. The blade consists of a solid piece of L-shaped steel with one arm extending through the slotted stock flush with the back and fastened therein with heavy brass rivets. Thus the stock is practically a part of the blade affording rigidity and preventing getting out of true. The graduations are to ⅛ in., and the edges are trued inside and out. The square is made only in 4, 6, 8, 10 and 12 in. sizes.

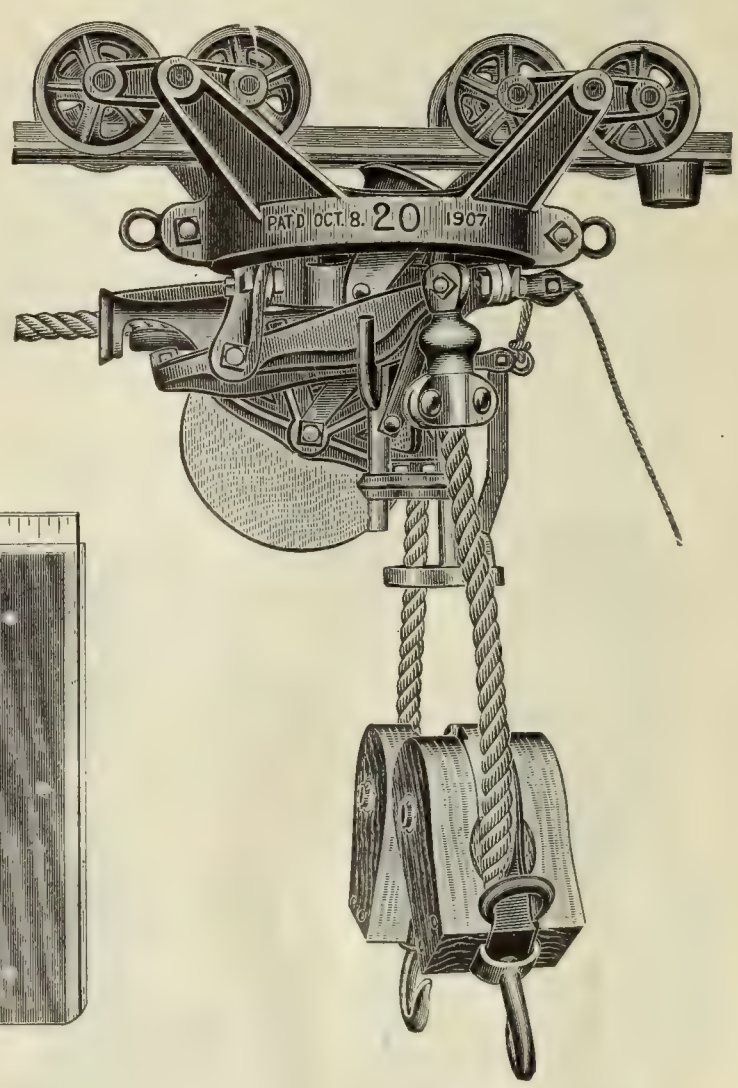



*Disston Try Square No. 12.*

The Pease Hardware Company, Lee, Mass., suffered a loss of about $5000 by fire, on the 19th inst.

## The Diamond Swivel and Reversible Steel Track Sling Hay Carrier.

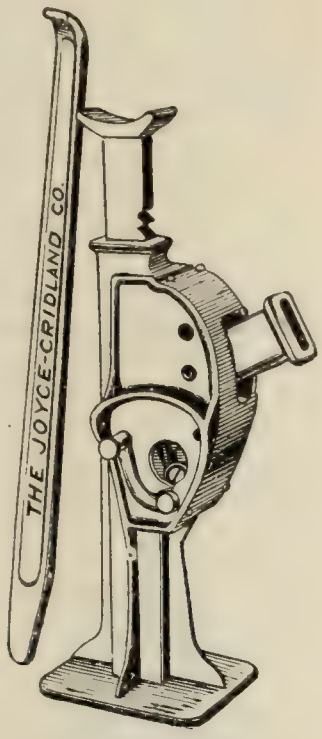
Whitman & Barnes Mfg. Company, Chicago, is putting on the market the hay carrier shown herewith, which has been in course of construction during the past year. It is built of high grade material throughout, and is simple in construction and easy to operate. All parts are referred to as of great strength and as capable of carrying very heavy loads. There are eight track wheels of large diameter, fitted with steel bearings, to make light draft and to give a long spread on the track to distribute the weight of the load. The carrier operates automatically and is tripped out of the stop by the sling pulleys engaging the underside trip, or it may be tripped by pulling a cord running over the small pulley and attached to the trip lever, which will release the carrier with the load at any distance above the floor. The carrier is built so that the load is raised at a right angle to the track, the company's regular sure grip pulleys being used. The load is deposited in the mow in the same position in which it is taken from the wagon. The load is raised with the sling carrier by the rope running over one wood sheave 7½ in. in diameter, the sheave being of mard maple, thoroughly seasoned and fitted with rawhide bushing. Wnen rigged for double hoist the end of the rope is held firmly in a swivel clamp, placed on the end of the gripping lever, and this prevents kinking or twisting of the rope. It is pointed out that the locking and tripping device contains few parts and is, therefore, simple, easy working and positive in action. The instant the carrier begins to leave the stop the rope grip is thrown into action and the rope is gripped and held without any slipping by the rope gripping lever from which the load is suspended. It is explained that the heavier the load the more firmly the rope is gripped, and as there is no slipping the rope does not wear out from this cause. The carrier can be rigged for triple hoist, as well as for double hoist, as with each carrier there is furnished an additional pulley to replace the swivel clamp used when rigged double hoist, and the rope passes through this pulley to the eye in the sure grip. The carrier is adapted for use with either center tip or end brake slings or with two double harpoon forks, one attached to each pulley. It is also built to work on 4 x 4 in. wooden track.




*The Diamond Swivel and Reversible Steel Track Sling Hay Carrier No. 20.*

## Twentieth Century Automobile Jack.

The Joyce-Cridland Company, Dayton, Ohio, Eastern sales office, 136 Liberty street, New York, W. M. Briggs, manager, has just put on the market the Twentieth Century automobile jack here illustrated. The dimensions are: Least hight, 11½ in.; rise of bar, 6½ in.; weight, 10 lb., and lifting capacity, 1 ton. The bar and pins are of machinery steel, with every bearing surface hardened. The frame, pawl and lever are made of high grade malleable iron, with just the right proportions to insure safe work, it is said. The operating lever is shaped like an I-beam to obtain the most strength from the least weight, and its outer end is formed like a tire tool, so that it may be used in removing automobile tires. This offset likewise enables the user to work the jack in difficult situations, not only centerwise, but on either side of the center by employing the end most serviceable. There is a conveniently located, reversing lever on the side by means of which to change the jack from a rising to lowering adjustment. The lever, it is said, is always locked positively in one position or the other by bolt, and it cannot be moved unintentionally, thereby protecting an individual at work beneath a car from the danger of accidental dropping. Other advantages, referred to, are that there are but few parts, all of which are machined, that there is no cast iron in its construction and no delicate springs or screws to work loose.




*Twentieth Century Automobile Jack.*

## Artistic Novelties.

The National Sheet Metal Company, Peru, Ill., is manufacturing a line of articles of household utility, two of which are shown herewith. Fig. 1 illustrates statue mirror No. 503, which is cast from special metal, oxidized copper finish. The mirror is made with celluloid back bearing handsome colored subjects, such as souvenir views, etc. The handle is an artistically modeled figure which holds the mirror upright. The bottom of the handle is covered with cloth, preventing the scratching of furniture. Fig. 2 represents a cupid clock, which is 9 in. high, 6¾ in. wide and has a 3 in. dial. It is cast of special metal and finished in oxidized copper or antique silver. The stand is described as artistic in design and is furnished with a high grade clock, with or without alarm.



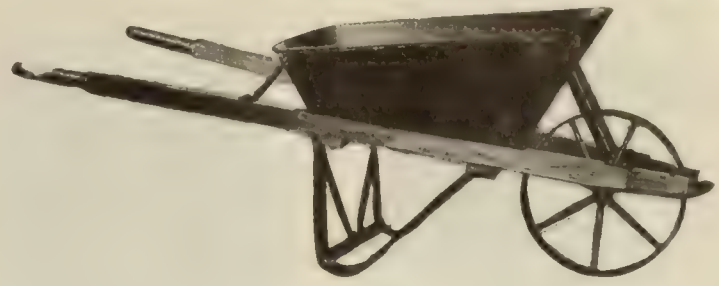
*Fig. 1.—Statue Mirror, No. 503*



*Fig. 2.—Cupid Clock No. 51.*

## Concrete Barrow.

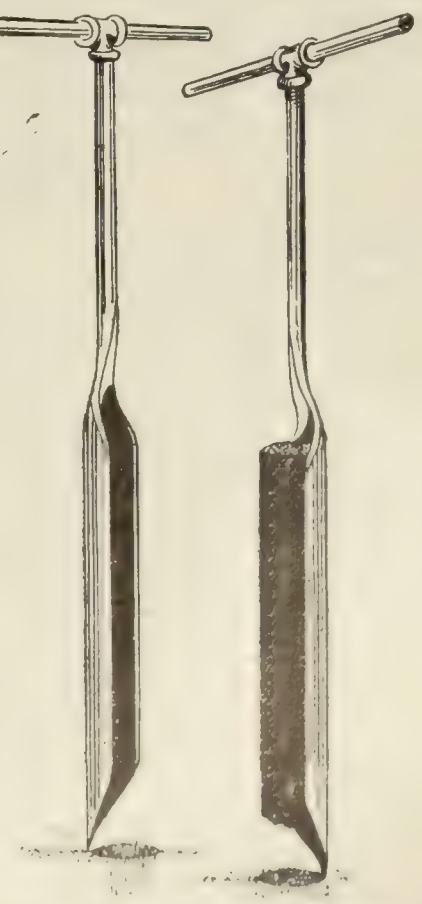
The Puffer-Hubbard Mfg. Company, Minneapolis, Minn., is manufacturing the wheelbarrow here shown, which is intended for use in handling concrete, cement and like material. Among the features of its construction to which attention is called is the one-piece frame and wheel yoke, the handles having at their wheel end a steel yoke or nose piece bolted underneath, which serves the purpose of holding the wheel by means of eyes through which the axle bolt passes, and further serves as a dumping nose. It also holds the handles in place and gives great rigidity and strength, which are also added to by the one-piece tray brace in front, which is fastened to either handle and to the tray. The wheel is made of malleable iron and legs and braces of channel steel, with all parts riveted, doing away with bolts and nuts and making easy the process of setting up. The tray is of No. 15 gauge steel and has a capacity of 4 cu. ft. It is new in design, having an extra heavy rod at the top, and is so shaped that the contents is carried well forward, giving correct balance. The handles are of selected rock elm and are said to be longer than ordinarily used.



*Concrete Barrow.*

## The One Minute Post Hole Digger.

The accompanying illustrations show a post hole digger offered by the Osmundson Spade Mfg. Company, Perry, Iowa. The tool consists of a pointed semicircular disk with cutting edges, and is not, it is remarked, in any sense a post auger. It is designed to cut a circular hole and to remove the dirt in a solid core, as shown in the lower illustration. The tool is made of sheet steel, ⅛ in. thick, with an extension of pipe into which the handle is fitted, the total length of the tool being 3½ ft. The company claims that with the digger a post hole can be dug in one minute, which accounts for its name.



*The One Minute Post Hole Digger.*

## Neoga Hydraulic Washer.

A washing machine of simple construction and method of operation, manufactured by A. P. Leming, Urbana, Ill., is shown in the three accompanying cuts. The agitation of the clothes is accomplished by rocking the washer to and fro on its bed (Fig. 1), the object being to cleanse by forcing water through the clothes. Rubbing of the garments washed in this machine is, therefore, entirely eliminated. In order to get the full effects of the flow of water from one end to the other when the machine is in motion, it is recommended that a momentary pause at each end of the stroke is desirable and the regular ebb and flow of water thus produced will assist in maintaining the rocking motion. The machine is held in stationary position by raising the wringer stand, which locks to the machine as shown in Fig. 2. This prevents oscillation of the tub when putting in or taking out clothes. In Fig. 3 a partial view of the suds box is shown. The washer is made with zinc lining throughout. Seven gallons of water are said to be all that is required at one time, that amount being sufficient to cover the clothes.

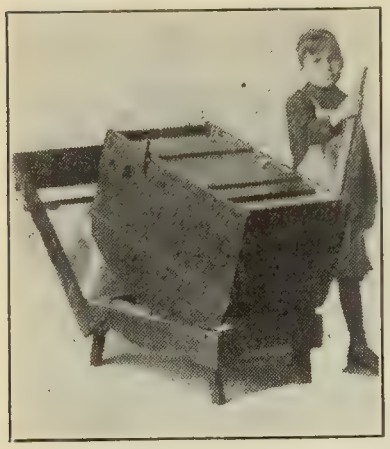


*Fig. 1.—The Neoga Hydraulic Washing Machine.*

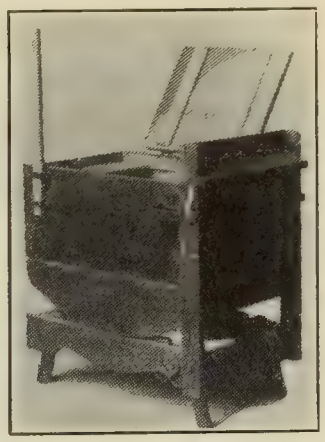


*Fig. 2.—Washing Machine Wringer Stand Locked and Lid Thrown Open.*

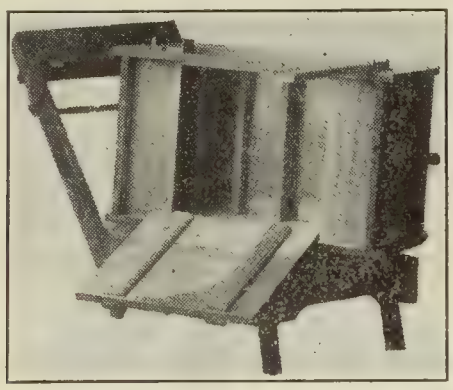


*Fig. 3.—Partial View of Interior of Washing Machine Suds Box.*

## Won't Slip Removable Calks.

The James Reynolds Mfg. Company, New Haven, Conn., is putting on the market the removable horseshoe calks here illustrated. Fig. 1 shows the No. 1 sharp calk to be used when streets are covered with ice and snow, and Fig. 2 the blunt calk made of the same material as No. 1, to be used in the absence of snow and ice. The calks have a high carbon steel center, which becomes very hard while the outside remains soft because made of best refined iron. As the iron is comparatively soft it wears from around the steel, leaving the steel center exposed, which will grip into the footing and prevent slipping. The center is welded in, and runs the entire length of the calk, so that it cannot come out. The calks have standard threads, which will fit any standard calk tap. Six sizes are listed from 5-16 to ⅝.

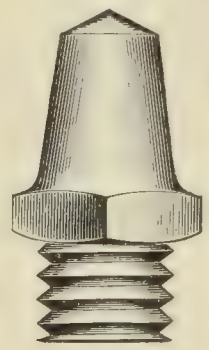


Fig 1.—Sharp Calk.



Fig. 2.—Blunt Calk.

*Won't Slip Removable Calks.*

# PAINTS, OILS AND COLORS

### Animal, Fish and Vegetable Oils—

| | ₱ gal. | |
|---|---|---|
| Linseed, State and Western, raw | .42 | @44 |
| City, Boiled | .45 | @46 |
| City, Raw | .44 | @45 |
| Raw, Calcutta, in bbls | .70 | @.. |
| Lard, Prime, Winter | .68 | @69 |
| Extra No. 1 | .54 | @56 |
| No. 1 | .47 | @52 |
| Cotton-seed, Crude, f.o.b. mill | .. | @.. |
| Summer Yellow, prime | .48 | @48½ |
| Summer White | .49 | @50 |
| Yellow Winter | .49 | @50 |
| Tallow, Acidless | .52 | @55 |
| Menhaden, Brown, Strained | .38 | @.. |
| Southern | .28 | @.. |
| Light Strained | .38 | @.. |
| Bleached Winter | .40 | @.. |
| Ex. Bleached Winter | .42 | @.. |

| | ₱ lb | |
|---|---|---|
| Cocoanut, Ceylon | 6¾ | @ 6½ |
| Cochin | 7⅞ | @ 7⅜ |

| | ₱ gal. | |
|---|---|---|
| Cod, Domestic, Prime | .42 | @44 |
| Newfoundland | .43 | @45 |
| Red Elaine | .37 | @39 |

| | ₱ lb | |
|---|---|---|
| Saponified | 5½ | @ 5¾ |

| | ₱ gal. | |
|---|---|---|
| Olive, Yellow | .66 | @67 |
| Neatsfoot, Prime | .55 | @58 |

| | ₱ lb | |
|---|---|---|
| Palm, Lagos | 5¾ | @ 6 |

### Mineral Oils—

| | ₱ gal. | |
|---|---|---|
| Black, 29 gravity, 25@30 cold test | .13 | @13½ |
| 29 gravity, 15 cold test | .13½ | @14 |
| Summer | .12½ | @13 |
| Cylinder, light filtered | .20½ | @21 |
| Dark, filtered | .18 | @19 |
| Paraffine, 903-907 sp. gravity | .14½ | @15 |
| 903 sp. gravity | .13½ | @14 |
| 883 sp. gravity | .11 | @11½ |
| Red | .13½ | @14 |

### Miscellaneous—

| | | |
|---|---|---|
| Barytes: | | |
| White, Foreign | ₱ ton | $18.50@20 50 |
| Amer., floated | ₱ ton | 18.00@20 00 |
| Off color | ₱ ton | 13.00@16.50 |
| Chalk, in bulk | ₱ ton | 3.00@ 3.40 |
| China Clay, Imported | ₱ ton | 11.50@18.00 |

| | ₱ gal. | |
|---|---|---|
| Cobalt, Oxide | ₱ 100 lb | 1.15@ 2.60 |
| Whiting, Commercial | ₱ 100 lb | .42@ .52 |
| Gilders | ₱ 100 lb | .55@ .60 |
| Ex. Gilders | ₱ 100 lb | .60@ .65 |

### Putty, Commercial—

| | ₱ 100 lb | |
|---|---|---|
| In bladders | $1.70 | @1.80 |
| In bbls. or tubs | 1.20 | @1.15 |
| In 1 lb to 5 lb cans | 2.65 | @2.95 |
| In 12½ to 50 lb cans | 1.50 | @1.90 |

### Spirits Turpentine—

| | ₱ gal. | |
|---|---|---|
| In Oil bbls | .42 | @42½ |
| In machine bbls | .42½ | @43 |

### Glue—

| | ₱ lb | |
|---|---|---|
| Cabinet | .12 | @15 |
| Common Bone | 7½ | @ 9 |
| Extra White | .18 | @24 |
| Fish, liquid, 50 gal. bbls., per gallon | .60 | @1.20 |
| Foot Stock, White | .12 | @14 |
| Foot Stock, Brown | .9 | @11 |
| German Common Hide | .10 | @12 |
| German Hide | .12 | @18 |
| French | .10 | @40 |
| Irish | .13 | @16 |
| Low Grade | .10 | @12 |
| Medium White | .14 | @17 |

### Gum Shellac—

| | ₱ lb | |
|---|---|---|
| Bleached, Commercial | .28 | @29 |
| Bone Dry | .35 | @36 |
| Button | .30 | @40 |
| Diamond I | .47 | @48 |
| Fine, Orange | .34 | @35 |
| A. C. Garnet | .28 | @29 |
| G. A. L. | .18 | @19 |
| Kala Button | .20 | @21 |
| D. C. | .48 | @49 |
| Octagon B | .39 | @40 |
| T. N. | .29 | @32 |
| V. S. O. | .47 | @48 |

### Colors in Oil—

| | ₱ lb | |
|---|---|---|
| Black, Lampblack | .12 | @14 |
| Blue, Chinese | .36 | @46 |
| Blue, Prussian | .32 | @36 |
| Blue, Ultramarine | .13 | @16 |
| Brown, Vandyke | .11 | @14 |
| Green, Chrome | .12 | @16 |
| Green, Paris | .. | @24 |
| Sienna, Raw | .12 | @15 |
| Sienna, Burnt | .12 | @15 |
| Umber, Raw | .11 | @14 |
| Umber, Burnt | .11 | @14 |

### White Lead, Zinc, &c.—

| | ₱ lb | |
|---|---|---|
| Lead, English white, in Oil | 10⅛ | @10⅜ |
| Lead, American White: | | |
| Dry and in Oil, 100, 250 and 500 lb kegs | 7 | |
| Dry and in Oil, 25 and 50 lb kegs | 7¼ | |
| Dry and in Oil, 12½ lb kegs | 7½ | |
| In Oil, 25 lb tin pails | 7½ | |
| In Oil, 12½ lb tin pails | 8 | |
| In Oil, 1, 2, 3 and 5 lb tin cans, ass't | 9 | |
| In lots of less than 500 lbs, ½¢ ₱ lb advance over above prices. | | |

Lead, American. Terms: On lots of 500 lbs and over, 60 days, or 2 for cash if paid in 15 days from date of invoice.

### Zinc, Dry—

| | ₱ lb | |
|---|---|---|
| American, dry | 5½ | @ 5⅝ |
| Red Seal (French process) | 6¾ | @ 7 |
| Green Seal | 7⅛ | @ 7½ |
| German Red Seal (French process) | 6½ | @ 6⅞ |
| Green Seal | 7¼ | @ 7½ |
| White Seal | 7¾ | @ 8⅛ |
| French, Red Seal | 8¼ | @ 8¾ |
| Green Seal | 10¼ | @10½ |

### Dry Colors—

| | ₱ lb | |
|---|---|---|
| Black, Carbon | 6½ | @10 |
| Black Drop, American | 3½ | @ 8 |
| Black Drop, English | 5 | @15 |
| Black, Ivory | 16 | @20 |
| Lamp, commercial | 4 | @ 6 |
| Blue, Celestial | 4 | @ 6 |
| Blue, Chinese | .31 | @33 |
| Blue, Prussian | .29 | @31 |
| Blue, Ultramarine | 3½ | @15 |

| | ₱ lb | |
|---|---|---|
| Brown, Spanish | ½ | @ 1 |
| Carmine, No. 40 | $3.10 | @3.25 |
| Green, Chrome, ordinary | 3½ | @ 5 |
| Green, Chrome, pure | .17 | @25 |

Red Lead and Litharge:

| | | |
|---|---|---|
| In 100 lb kegs | | 7 |
| In 25 and 50 lb kegs | | 7¼ |
| In 12½ lb kegs | | 7½ |

In lots of less than 500lbs, ½¢ ₱ lb advance over above prices.
In bbls. and ½ bbls., same price as in kegs.
Terms: Same as for White Lead.

| | ₱ lb | |
|---|---|---|
| Ocher, American | ton | $8.50@16.00 |
| American Golden | 2½ | @ 3¼ |
| French | 1¼ | @ 2 |
| Foreign Golden | 3 | @ 4 |
| Orange Mineral, English | .10 | @12 |
| French | 12¾ | @13 |
| German | .12 | @13 |
| American | 9 | @10 |
| Red, Indian, English | 1½ | @ 6 |
| American | 3 | @ 3¼ |
| Red, Turkey, English | 4 | @10 |
| Red, Tuscan, English | 7 | @10 |
| Red, Venetian, Amer. | ₱ 100 lb | $0.50@1.25 |
| English | ₱ 100 lb | $1.15@1.60 |
| Sienna, Italian, Burnt and Powdered | 3 | @ 9 |
| Italian, Raw, Powdered | 3 | @ 7 |
| American, Raw | 1½ | @ 2 |
| American Burnt and Pow'd. | 1½ | @ 2 |
| Talc, French | ₱ ton | $18.00@25.00 |
| American | ₱ ton | 15.00@25.00 |
| Terra Alba, French | ₱ 100 lb | .90@ 1.00 |
| English | ₱ 100 lb | .80@ 1.00 |
| American | ₱ 100 lb, No. 1. | .75@ .80 |
| American | ₱ 100 lb, No. 2. | .60@ .65 |
| Umber, Turkey, Bnt. & Pow. | 2¾ | @ 3 |
| Turkey, Raw and Powdered | 2¾ | @ 3 |
| Burnt, American | 1½ | @ 2 |
| Raw, American | 1½ | @ 2 |
| Yellow, Chrome, Pure | 13¾ | @15 |
| Vermilion, American Lead | .7 | @25 |
| Quicksilver, bulk | .65 | @.. |
| Quicksilver, bags | .. | @66 |
| English, Imported | .65 | @70 |
| Chinese | $0.90 | @1.00 |

# Current Hardware Prices.

**General Goods.**—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

**Special Goods.**—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

**Range of Prices.**—A range of prices is indicated by means of the symbol @. Thus 33⅓ @ 33⅓ & 10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

**Names of Manufacturers.**—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1907, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

**Standard Lists.**—"The Iron Age Standard Hardware Lists" contains the list prices of many leading goods.

**Additions and Corrections.**—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

## Adjusters, Blind—

Columbian and Domestic.....33⅓%
North's .....10%
Zimmerman's See Fasteners, Blind.

### Window Stop—

Ives' Patent.....35%
Taplin's Perfection.....35

### Ammunition—See *Caps, Cartridges, Shells, &c.*

### Anti—Rattlers—

Fernald Mfg. Co. Burton Anti-Rattlers, ℔ doz. pairs, Nos. 1, $0.75; 2, $1.00; 4, $1.40; 5, $0.50.
Fernald Quick Shifter, ℔ doz. pairs .....$2.00@$3.00

### Anvils—American—

Eagle Anvils.....℔ lb @8½¢
Hay Budden, Wrought.....9½@9¾¢
Trenton .....℔ lb 9½@9¾¢

### Imported—

Swedish Solid Steel Sisco, Superior, ℔ lb .....10@13½¢
Peter Wright & Sons, ℔ lb. 84 to 349 lb. 11¢; 350 to 699 lb. 11½¢.

### Anvil, Vice and Drill—

Millers Falls Co., $18.00.....15&10%

### Apple Parers—See *Parers, Apple, &c.*

### Aprons, Blacksmiths'—

Livingston N. S. Co.....10

### Augers and Bits—

*Cook, Double Spur....75&10@80*
*Jennings' Patn., Bright.65&10@70*
*Black Lip or Blued...65@65&5*
*Boring Mach. Augers.....70*
*Car Bits, 12 in. twist.....40&10*
Ford's Auger and Car Bits.....40&5
Ft. Washington Auger Co., Conical's .....55
Forstner Pat. Auger Bits.....25
C. E. Jennings & Co.:
No. 10 ext. lip, R. Jennings' list. 25&7½
No. 20, R. Jennings' list. .....50
R. Jennings' .....25&10&2½
L. Hammacher Car Bits .....15
Morse's Cumberstunk Bits .....15
Peck's Bits.....20
Peck's Jennings' Pattern.....35
Snell's Auger Bits .....60
Snell's Bell Hangers' Bits.....60
Snell's Car Bits, 12 in. twist.....60
Snell's Ring Auger Bits.....50
Wright's Jennings' Bits.....50

### Bit Stock Drills—

*See Drills, Twist.*

### Expansive Bits—

Clark's Patent, No. 1, ℔ doz., $26; No. 2, ℔ doz., $18.
Douglass' Patent .....65&5
C. E. Jennings & Co.'s Stock Pat. 25
Ives' Pat., small size, $5.40; large, $9.60 .....50&10
Snell's .....60

### Gimlet Bits—

*Per gro.*
*Common Dbl. Cut.....$3.00@3.25*
*German Pattern, Nos. 1 to 10, $4.75; 11 to 13, $5.75*

### Hollow Augers—

*Bonney Pat., per doz. $5.50@6.00*
Ives' .....50&5
Underwood .....25

### Ship Augers and Bits—

*Ship Augers.....40&10@—%*
Ford's .....40&5
C. E. Jennings & Co.:
L. Hammacher's .....60
Wright's .....50&5
Snell's .....40

### Awl Hafts—See *Handles, Mechanics' Tool.*

### Awls—

*Brad Awls:*
*Handled .....gro. $2.75@3.50*
*Unhdld, Shldered...gro.63@66¢*
*Unhandled, Patent..gro.66¢@70¢*
*Peg Awls:*
*Unhandled, Patent..gro. 31@33¢*
*Unhdld, Shldered..gro. 65@70¢*
*Scratch Awls:*
*Handled, Com...gro. $3.50@4.00*
*Handled, Socket..gro.$11.50@12.00*

### Awl and Tool Sets—See *Sets, Awl and Tool.*

### Axes—

*Single Bit, base weights: Per doz.*
*First Quality.....$4.75@5.00*
*Second Quality.....$4.25@4.50*
*Double Bit, base weights:*
*First Quality.....$7.00@7.50*
*Second Quality.....$6.50@6.75*

### Axle Grease—

See *Grease, Axle.*

### Axles—*Iron or Steel.*

*Concord, Loose Collar...4¼@4½¢*
*Concord, Solid Collar....4½&5 ¢*
*No. 1 Common, Loose...3½@4 ¢*
*No. 1½ Com., New Style.4¼@4¾¢*
*No. 2 Solid Collar.....4¼@4¾¢*
*Half Patent:*
*Nos. 7, 8, 11 and 12.....70%*
*Nos. 13 to 14.....70%*
*Nos. 15 to 18...70&10@70&10&5%*
*Nos. 19 to 22...70&10@70&10&5%*

### Boxes, Axles—

*Common and Concord, not turned .....lb., 5@6¢*
*Common and Concord, turned, lb., 6@7¢*
*Half Patent.....lb., 9½@10¢*

## Bait—Fishing—

Hendryx:
A Bait.....20
B Bait .....25
Competitor Bait.....20&5

### Balances—Sash—

Caldwell new list.....50&10%
Pullman .....50&10

### Spring—

*Light Spring Balances.60@70&5%*
Chatillon's:
Light Spg. Balances.....50@50&10
Straight Balances.....40@40&10
Circular Balances.....50&10
Large Dial.....30

### Barb Wire—See *Wire, Barb.*

### Bars—Crow—

*Steel Crowbars, 10 to 40 lb.... per lb., 2¼@2½¢*

### Towel—

No. 10 Ideal, Nickel Plate, ℔ gro. $8.50

### Beam, Scale—

*Scale Beams.....50*
Chattillon's No. 1.....30%
Chatillon's No. 2.....40%

### Beaters, Carpet—

Holt-Lyon Co.:
No. 12 Wire Coppered ℔ doz. $0.80; Tinned .....$0.85
No. 11 Wire Coppered ℔ doz. $1.15; Tinned .....$1.20
No. 10 Wire Tinned.....℔ doz. $1.50

### Beaters Egg—

Dover Stamping & Mfg. Co.:
Genuine Dover, per gro., No. 1, Tumbler Size, $7.50; No. 2, Family Size, $7.50; No. 3, Extra Family Size, $24.00; No. 4, Hotel Size, $30.00.
Holt Lyon Co.:
Holt, per doz. No. 5, Jap'd $0.80; No. A, Jap'd, $1.15; No. B Jap'd, $1.85; No. 6, Jap'd, $1.65.
Lyon, Jap'd, per doz., No. 2, $2.25
Taplin Mfg. Co.:
Improved Dover, per gro., No. 60, $5.00; No. 75, $6.50; No. 100, $7.00; No. 102, Tin'd, $8.50; No. 150, Hotel, $15.00; No. 152, Hotel Tin'd, $17.00; No. 200 Tumbler, $8.50; No. 202, Tumbler Tin'd, $9.50; No. 300, Mammoth, per doz., $25.00.

### Bellows—

*Blacksmith, Standard List:*
*Split Leather.....60@65@65*
*Grain Leather.....50@55@60%*

### Hand—

| *Inch..* | *6* | *7* | *8* | *9* | *10* |
|---|---|---|---|---|---|
| *Doz..* | *$5.00* | *5.50* | *6.00* | *6.50* | *7.50* |

### Molders—

| *Inch..* | *10* | *12* | *14* | *16* |
|---|---|---|---|---|
| *Doz..* | *$7.50* | *9.00* | *12.00* | *15.00* |

Net Prices.

### Bells—Cow—

*Wrought Cow Bells.....75%*
Lyon's .....75&5
Texas Star.....50

### Door—

Home, R. & E. Mfg. Co.'s.....55&10

### Hand—

*Polished, Brass.....60@60&10%*
*White Metal.....60@60&10%*
*Nickel Plated.....50&10%*
*Swiss .....50&10%*
Cone's Globe Hand Bells.....33⅓@35

### Miscellaneous—

*Farm Bells.....lb., 2¼@2½¢*
*Church and School....60@60&10%*

### Belting—Leather—

*Standard .....70&10@70&10&5%*
*Light .....75&10*
*Cut Leather Lacing..60@60&10%*
*Leather Lacing Sides, per sq. ft. 20¢*

### Rubber—

*Competition (Low Grade), 70&10@75%*
*Standard .....60&10@70%*
*Best Grades.....40@50%*

### Bench Stops—

See *Stops, Bench*

### Benders and Upsetters, Tire—

Green River Tire Benders and Upsetters .....20

### Bicycle Goods—

John S. Leng's Son & Co.'s 1907 list: Chain, Parts, Spokes.....50
Tubes .....60

### Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

### Blocks Tackle—

*Common Wooden.....75@75&5*
B. & L. B. Co.:
Boston Wood Snatch, 50; Eclipse Steel, 75; Hollow Steel, 50&10; Star Wire Rope, 50%; Tarbox Metal Snatch, 50; Tarbox New Style Steel, 50&10; Wire Rope Snatch, 50.
Lane's Patent Automatic Lock and Junior .....30
See also Machines, Hoisting.

### Boards, Stove—

*Paper and Wood Lined.....55%*
*Embossed .....55%*

### Boards, Wash—

See *Washboards.*

### Bobs, Plumb—

Kenffel & Esser Co.....33⅓

### Bolts Carriage, Machine, &c.—

*Common Carriage (cut threads) ⅜ x 6 and smaller..75@75&5—%*
*Larger and longer.....70&5*
*Phila. Eagle, $3.00 list...80&5*
*Bolt Ends.....70&5*
*Machine (Cut Threads) ⅜ x 4 and smaller..75@70&5—%*
*Larger and longer.....70&5*

### Door and Shutter—

*Cast Iron Barrel, Japanned, Round Brass Knobs*

| *Inch* | *3* | *4* | *5* | *6* | *8* |
|---|---|---|---|---|---|
| *Per doz.* | *$0.30* | *.35* | *.45* | *.60* | *.80* |

*Cast Iron Spring Foot, Jap'd:*

| *Inch* | *6* | *8* | *10* |
|---|---|---|---|
| *Per doz.* | *$1.20* | *1.50* | *2.00* |

*Cast Iron Chain, Flat, Japanned*

| *Inch* | *6* | *8* | *10* |
|---|---|---|---|
| *Per doz* | *$1.00* | *1.25* | *1.65* |

*Cast Iron Flat Shutter, Jap'd, Brass Knobs*

| *Inch* | *6* | *8* | *10* |
|---|---|---|---|
| *Per doz* | *$1.20* | *1.50* | *1.75* |

*Wrought Barrel, Japanned, 80@85@90*
*Barrel Bronzed .....60&10*
*Spring .....70&10@75&5*
*Shutter .....60&10@70&5*
*Square Neck .....75&5&10*
*Square .....70&10@75&5%*
Lyon's Patent Door .....40
Lyon's Wrought Metal .....40

### Expansion—

E. H. Evans' Cresent .....40&10&5
Richards Mfg. Co. .....55&10
Stewart & Rumsey Mfg. Co.:
Stock No. 13 Double .....60%
Stock No. 1 Single .....60%
Stock No. 100 Dbl. Jaw, Single .....55%
Lag Screw .....66⅔%

### Plow and Stove—

*Plow .....65&5@70%*
*Stove .....85@85&5%*

### Tire—

*Common Iron.....80@80&5%*
*Norway Iron.....80@80&5%*
American Screw Co.:
Norway Phila., list Oct. 16, '84. .80
Eagle Phila., list Oct. 16, '84...82½
Bay State, list Dec. 28, '99.....80
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84...82½
Eclipse, list Dec. 28, '99.....80
Russell, Burdsall & Ward Bolt & Nut Co.:
Empire, list Dec. 28, '99.....80%
Norway Phila., list Oct. '84.....80%
Eagle .....82½%
Shelton Co.:
Tiger Brand, list Dec. 28, '99....80%
Phila., Eagle, list Oct. 16, 1884..82½%
Upson Nut Co.:
Tire Bolts.....72½%

### Borers, Bung—

*Borers Bung, Ring, with Handle:*

| *Inch.....* | *1* | *1½* | *1¾* | *2* |
|---|---|---|---|---|
| *Per doz...* | *$4.80* | *5.60* | *6.40* | *8.00* |
| *Inch.....* | | *2¼* | | *2½* |
| *Per doz.....* | | *$8.65* | | *11.50* |

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.75; No. 3, $2.50 each.....25%

### Boxes, Mitre—

C. E. Jennings & Co.....25%
Langdon, New Langdon and Langdon Improved, 20&10; Langdon Acme .....15&10
Perfection .....10
Seavey .....15

### Braces—

*Comman Ball, American....$1.50*
Barber's .....50&10&12½60&10
Fray's Genuine Spofford's.....60
Fray's No. 61, 166, 206, 614.....50
C. E. Jennings & Co.....50&5
Mayhew's Ratchet.....60
Mayhew's Quick Action Hay Pat..50
Millers Falls Drill Braces....25&10
P., S. & W. Co., Peck's Pat. 60&10

### Brackets—

*Wrought Steel..25&10@75&10&10%*
Bradley Metal Clasp, 50&10&5&1&
Griffin's Pressed Steel.....75&75&5
Griffin's Folding Brackets .....7&1
Taplin Vulcan Hands Egg Beater Bracket .....℔ doz. $1.50

### Bright Wire Goods—

See *Wire and Wire Goods*

### Broilers—

Kilbourne Mfg. Co.....75&5
Wire Goods Co.....

### Buckets, Galvanized

*Per Cent*
*Miller's List, price per gross*
*Quart.....*
*Water, Round.....*
*Water, Hip.....*
*Fire Pail Bits.....*
*Well .....*

### Butts—Full Rings—See *Rings, Full*

### Butts—Brass—

*Wrought Plain Cast Joint*
*Cast .....*

### Cast Iron—

*Cast Joint, Broad.....*
*Cast Joint, Narrow.....*
*Loose Joint .....*
*Loose Pin.....70&10@75%*
*Mason's Hinges .....70&10@75*
*Parliament Butts .....70&10@75*

### Wrought Steel—

*Bright*
*Light Narrow, Light Reversible .....70@75*
*Reversible and Broad .....70@75*
*Loose Joint Narrow, Light*
*Inside Blind .....70@75*
*Back Flaps, Table Chest..65%*
*Japanned*
*Light Narrow, Loose Pin, 40&5%*
*Light Narrow, Ball Tip, 60%*
*Broad .....40&5%*
*Steeple Tipped.....70%*
*Ball Tipped.....70%*

Extra, 10@

## Cages, Bird—

Hendryx Brass: Series 3000, 5000, 1100, net list; 1200, 15%; 200, 300, 900 ..... 30%
Hendryx Bronze: Series 700, 800....30%
Hendryx Enameled..... 35%

## Calipers—See *Compasses.*

## Calks, Toe and Heel—

*Blunt, 1 prong, per lb.....4@4½¢*
*Sharp, 1 prong, per lb...4½@5¢*
Burke's, Blunt, 4@4¾¢; Sharp, 4½@5¼¢
Lautier, Blunt, 4@4¼¢; Sharp, 4½@4¾¢
Perkins', Blunt, ℔ lb, 3.65¢; Sharp, 4.15¢

## Can Openers—

See *Openers, Can.*

## Caps, Percussion—

*Eley's E. B.....52@55¢*
*G. D.....per M 34@35¢*
*F. L.....per M 40@42¢*
*G. E.....per M 48@50¢*
*Musket .....per M 62@63¢*

### Primers—

*Berdan Primers, $2 per M..20&5%*
*Primer Shells and Bullets..15&10%*
*All other primers per M..$1.52@1.60*

## Carpet Stretchers—

See *Stretchers, Carpet.*

## Cartridges—

*Blank Cartridges:*
*32 C. F., $5.50.....10&5%*
*38 C. F., $7.00.....10&5%*
*22 cal. Rim, $1.50.....10&5%*
*32 cal. Rim, $2.75.....10&5%*
*B. B. Caps, Con. Ball, Swgd. $1.90*
*B. B. Caps, Round Ball.....$1.49*
*Central Fire.....25%*
*Target and Sporting Rifle.15&5%*
*Primed Shells and Bullets.15&10%*
*Rim Fire, Sporting.....50%*
*Rim Fire, Military.....15&5%*

## Casters—

*Bed .....65&10@70%*
*Plate .....60&5@60&10%*
*Philadelphia .....70&1@75%*
Acme, Ball Bearing.....35%
Gem (Roller Bearing).....70&10&10&5%
Steel Gem.....50%
Standard Ball Bearing.....45%
Yale (Double Wheel) low list...40&10%

## Cattle Leaders—

See *Leaders, Cattle.*

## Chain, Proof Coil—

*American Coil, Straight Link:*

| 3-16 | ¼ | 5-16 | ⅜ | 7-16 | ½ | ⅝ |
|---|---|---|---|---|---|---|
| $8.15 | 5.55 | 4.60 | 3.95 | 3.75 | 3.65 | 3.55 |

¾-⅞-1 1⅛ to 1¼ inch.
$3.45 3.55
*In cask lots, deduct 25¢.*
*German Coil.....60@60&5%*
*German Pattern Coil:*
*6-0 to 1.....70&5@70&10%*
*2 and 3..60&10&10@60&10&10&5%*
*4, 5 and 6.....50&10@50&10&5%*

### Halter—

*Halter Chains.....60&5@60&10%*
*German Pattern Halter Chains, list July 24, '97.....60&10&5@70%*
Covert Mfg. Co.:
Halter .....35&5%

### Cow Ties—

See *Halters and Ties.*

### Trace, Wagon, &c.—

*Traces, Western Standard: 100 pr.*
*6½—6-3, Straight, with ring.$28.00*
*6½—6-2, Straight, with ring.$29.00*
*6½—8-2, Straight, with ring.$32.00*
*6½—10-2, Str'ght, with ring.$37.00*
*NOTE.—Add 2c per pair for Hooks Twist Traces: add per pair for Nos. 2 and 3, 2c; No. 1, 3c; No. 0, 4c to price of Straight Link.*
*Eastern Standard Traces, Wagon Chain, &c...60&10@60&10&5%*

### Miscellaneous—

*Jack Chain, list July 10, '93:*
*Iron .....60&10&7½%*
*Brass .....65%*
*Safety and Plumbers' Chain.75%*
*Gal. Pump Chain....lb., 4½@5%*
Bridgeport Chain Co.:
Triumph Halter and Coil.35&2½@40%
Triumph Dog.....50&10@60%
Brown Halter and Coil....45@50&5%
Covert Mfg. Co.:
Breast, Halter, Heel, Rein, Stallion .....40%
Oneida Community:
American Halter, Dog and Kennel Chains .....35&2½@40%
Niagara Dog Leads and Kennel Chains .....45@50&5%
Wire Goods Co.:
Dog Chain.....70%
Universal Dbl.-Jointed Chain.....50%

## Chain and Ribbon, Sash—

Oneida Community:
Steel Chain.....60%
Pullman:
Bronze Chain, 60%; Steel Chain, Coppered .....60&10%
Sash Chain Attachments, per set..8¢
Aluminoy Sash Ribbon, per 100 ft. .....$2.00@$5.00
Sash Ribbon Attachments, per set..8¢

## Chalk—(From Jobbers.)

*Carpenters' Blue.....gro., 50¢*
*Carpenters' Red.....gro., 45¢*
*Carpenters' White.....gro., 40¢*

## Checks, Door—

Bardsley's .....45%
Pullman, per gro.....$54.00
Yale .....33⅓%

## Chests, Tool—

American Tool Chest Co.:
Boys' Chests, with Tools.....55%
Youths' Chests, with Tools.....40%
Gentlemen's Chests, with Tools..25%
Farmers', Carpenters, etc., Chests, with Tools .....20%
Machinists' and Pipe Fitters' Chests, Empty.....45%
Tool Cabinets.....45%
C. E. Jennings & Co.'s Machinists' Tool Chests.....7½%

## Chisels—

### Socket Framing and Firmer

*Standard List.....80&10@—%*
Buck Bros.....30%
C. E. Jennings & Co.:
Socket Firmer No. 10.....25&7½%
Socket Framing No. 15.....25&7½%
Swan's .....66⅔@70%
L. & I. J. White & Co.....30@30&5%

### Tanged—

*Tanged Firmers.....30&5@35%*
Buck Bros.....30%
C. E. Jennings & Co. Nos. 191, 181..25%
L. & I. J. White Co.....25&5%

### Cold—

*lb.*
*Cold Chisels, good quality.13@15¢*
*Cold Chisels, fair quality.11@12¢*
*Cold Chisels, ordinary.... 9@10¢*

## Chucks—

Almond Drill Chucks.....35%
Almond Turret Six-Tool Chuck.....40%
Beach Pat, each $8.00..... .....35&5%
Empire .....25%
Blacksmiths' .....25%
Jacobs' Drill Chucks.....35%
Pratt's Positive Drive.....25%
Skinner Patent Chucks:
Independent Lathe Chucks.....35%
Universal, Reversible Jaws.....35%
Combination, Reversible Jaws....35%
Drill Chucks, New Model, 25%; Standard, 45%; Skinner Pat. 25%; Positive Drive.....40%
Planer Chucks.....20%
Face Plate Jaws.....35%
Standard Tool Co.:
Improved Drill Chuck.....45%
Union Mfg. Co.:
Combination, Nos. 1, 2, 3, 4, 5, 6, 7, 8 and 17, 40%; No. 21.....35%
Scroll Combinations, Nos. 83 and 84 .....30%
Geared Scroll, Nos. 33, 34 and 35..25%
Independent Iron, Nos. 18 and 318.35%
Independent Steel, No. 64.....25%
Union Drill, Nos. 000, 00, 100, 101, 102, 103, 104.....35%
Union Czar Drill.....25%
Universal, 11, 12, 16, 17, 13, 14, 15..40%
Universal No. 42.....35%
Iron Face Plate Jaws, Nos. 28, 30, 48 and 50.....35%
Steel Face Plate Jaws, Nos. 70 and 72 .....30%
Westcott Patent Chucks:
Lathe Chucks.....50%
Little Giant Auxiliary Drill.....50%
Little Giant Double Grip Drill...50%
Little Giant Drill, Improved.....50%
Oneida Drill.....50%
Scroll Combination Lathe.....50%
Whitaker Mfg. Co.:
National Drill.....25%

## Clamps—

Adjustable Hammers.....20@20&5%
Carriage Makers', P., S. & W. Co. .....50&10%
Besly, Parallel.....33⅓&10%
Myers' Hay Rack.....45%
Lineman's Swedish Neverturn.....65%
Wood Workers' Hammers.....40&10%
Saw Clamps, see Vises, Saw Filers'

## Cleaners, Drain,

Iwan's Champion, Adjustable.....50%
Iwan's Champion, Stationary.....40%

### Sidewalk—

Star Socket, All Steel..℔ doz. $4.05 net
Star Shank, All Steel..℔ doz. $3.24 net
W. & C. Shank, All Steel, ℔ doz., 7½ in., $3.00; 8 in., $3.25.

## Cleavers, Butchers'—

Foster Bros.....30%
Fayette R. Plumb.....30%
L. & I. J. White Co.....30%

## Clippers, Horse and Sheep—

Chicago Flexible Shaft Co.:
1902 Chicago Horse, each..$10.75
20th Century Horse, each...$5.00
Lightning Belt Horse, each.$15.00
Chicago Belt Horse, each..$20.00
Stewart's Enclosed Gear Horse each.....$6.75
Stewart's Patent Sheep Shearing Machine, each.....$12.75
Stewart Enclosed Gear Shearing Machine, No. 8, each..$9.75
} 20%

## Clips, Axle—

*Regular Styles, list July 1, '05, 80&80&10%*

## Cloth and Netting, wire

—See *Wire, &c.*

## Cocks, Brass—

*Hardware list:*
*Plain Bibbs, Globe, Kerosene, Racking, Liquor, Bottling, &c .....75%*
*Compression Bibbs.....70%*

## Coffee Mills—

See *Mills, Coffee.*

## Collars, Dog—

Nickel Chain, Walter B. Stevens & Son's list.....40%
Leather, Walter B. Stevens & Son's list .....40%

## Compasses, Dividers, &c.

*Ordinary Goods.....70&10@75%*

## Conductor Pipe,—

*L. C. L. to Dealers:*

| | Gal. Steel. | Charcoal. |
|---|---|---|
| *Northeastern.* | *70&10%* | *50&10&7½%* |
| *Eastern.....* | *75%* | *50&10&7½%* |
| *Pittsburgh* | *..75&10&5%* | *60%* |
| *Central* | *....75&10%* | *60%* |
| *Northwestern.* | *75&7½%* | *60%* |
| *Western* | *....70&12½%* | *50&12½%* |
| *Tennessee* | *...70&10%* | *50&12½%* |
| *Southern* | *....70%* | *50&12½%* |
| *Southwestern.* | *70%* | *50&5%* |

*Terms, 60 days: 2% cash 10 days. Factory shipments generally delivered.*
See also Eave Troughs.

## Coolers, Water—

L. & G. Mfg. Co.:

| Gal. | 2 | 3 | 4 | 6 | 8 |
|---|---|---|---|---|---|
| Galvanized, ea. | $1.85 | $2.00 | $2.25 | $2.90 | $3.90 |

Galvanized, Lined, side handles,

| Gal. | 2 | 3 | 4 | 6 | 8 |
|---|---|---|---|---|---|
| Each | $1.95 | $2.15 | $2.40 | $3.30 | $4.15 |

White Enameled.....10%
Agate Lined.....10%

## Coppers' Tools—

See *Tools, Coopers'.*

## Coppers, Soldering—

*Soldering Coppers, 3 lb. to pair and heavier, 20¢; lighter than 3 lb. to pair.....22¢*

## Cord—Sash—

*Braided, Drab.....lb. 35¢*
*Braided, White, Com., Nos. 8 to 12, 20¢; No. 7, 20½¢; No. 6, 21½¢. In lots of 12 doz. or over, 1 cent less per pound.*
*Cable Laid Italian, lb., No. 18.37¢*
*Italian, lb., A, No. 18, 25¢; B, 22¢*
*Common India.....lb., 11@11½¢*
*Cotton Sash Cord, Tw'ted.18@20¢*
*Patent Russia.....lb....20¢*
*Cable Laid Russia.....lb...21¢*
*India Hemp, Br'd'd.....lb...21¢*
*India Hemp, Twisted..lb.13@14¢*
*Patent India, Twisted..lb...17¢*
Pearl Braided, cotton, No. 6, ℔ lb, 27½¢; No. 7, 26½¢; Nos. 8 to 12, 26¢
Eddystone, Braided, Nos. 8 to 12, 26¢; 7, 26½; 6, 27½¢.
Harmony Cable Laid Italian, Nos. 7 to10.....℔ lb 25¢
Pullman:
Wire Sash Cord.....10%
Sash Cord Attachments, per 100..$2.00
Samson, Nos. 8 to 12:
Braided, ℔ lb., Drab Cotton, 55¢; Italian Hemp, 40¢@50¢; Linen, 65¢; White Cotton, 50¢; Spot Cord.....50¢
Massachusetts, White...℔ lb 40¢
Massachusetts, Drab...℔ lb 45¢
} 15%
Phoenix, White, Nos 8 to 12....27¢
Silver Lake, per lb.:
A, Drab, 45¢; A, White, 40¢; B, Drab, 40¢; B, White, 35¢; Italian Hemp, 40¢; Linen....57½¢
See also Chain and Ribbon.

## Wire, Picture—

*Full Length.....90@—%*
*Short Length.....90&20@—%*
Hendryx Standard Wire Picture Cord, old list, 85&10%
Turner & Stanton Co. Wire Picture Cord .....90%

## Cradles—

*Grain .....50%*

## Crayons—

*White Round Crayons, Cases, 100 gro., $8.00, $8.50 and $9.00 according to grade.*
Telnicker's Lumber: ℔ gro.
White and Purple, Indelible....$7.50
Blue, Red, Green, Yellow and Terra Cotta, $6.50; Black.....$4.50
Giant Lumber, 5¼ in. x 15-16 in. round, all colors, $12.00; Indelibles, $14.00; Blacks.....$10.00
Genuine Soapstone, Metal Workers', 5 in. x ¼ in. Round, $2.50; 5 in. x ¼ in. Square, $1.75; 5 x ½ x 3-16, $2.50; 5 x 1¼ x 3-16.....$3.00
Suremark, Black, $2.25; Blue, Red and Yellow.....$2.50

## Crooks, Shepperds'—

Fort Madison, per doz., Heavy, $5.50; Light .....$5.00

## Crow Bars—See *Bars, Crow.*

## Cultivators—

Victor Garden.....50%

## Cutlery, Table—

International Silver Company:
No. 12 M'd'm Knives, 1847.℔ doz. $3.50
Star, Eagle, Rogers & Hamilton and Anchor.....℔ doz. $3.00
Wm. Rogers & Son.....℔ doz. $2.50

## Cutters—Glass—

H. H. Mayhew Co.....40%
Red Devil.....60%
B. Mfg. Co.....40%
Woodward .....50%

## Meat and Food—

American .....30%

| Nos. | 401 | 402 | 403 | 404 | 405 | 406 | 407 |
|---|---|---|---|---|---|---|---|
| Each | $5 | $7 | $10 | $12 | $25 | $50 | $60 |

Enterprise:

| Nos. | 5 | 10 | 12 | 22 | 32 |
|---|---|---|---|---|---|
| Each | $2 | $3 | $2.75 | $4.50 | $6 |

25@25&7½%
No. 202, $1.50.....40&7½%
P., S. & W. Co.:
Dixon's .....℔ doz. 33⅓%

| Nos. | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| | $14.00 | $17.00 | $19.00 | $30.00 |

Ideal .....40@40&5%
Hales .....60&10&5%
Little Giant.....℔ doz. 40@50%

| Nos. | 305 | 310 | 312 | 320 | 322 |
|---|---|---|---|---|---|
| | $35.00 | $48.00 | $44.00 | $72.00 | $68.00 |

New Triumph No. 605, ℔ doz. $24.00, 40&10%
Russwin Food, No. 1, $24.00; No. 2, $27.00 .....45&10&10%
$15.00 $18.00
Enterprise Beef Shavers.....25@30%

## Slaw and Kraut—

Henry Disston & Sons:
Slaw and Kraut Cutters.....35%
Corn Graters.....30%
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife....℔ doz. $3.00
Combined Slaw Cutter and Corn Grater .....℔ doz. $4.00

## Tobacco—

*All Iron, Cheap...doz, $4.25@4.50*
Enterprise .....25@30%
National, ℔ doz., No. 1, $21; No. 2, $18 .....40%

## Diggers, Post Hole, &c—

Disston's:
Rapid, ℔ doz., $24.00.....25%
Samson, ℔ doz., $34.00.....25%
Iwan's Imp'ved Post Hole Auger..40%
Vaughan Pattern Post Hole Augers, ℔ doz., $7.00
Perfection Post Hole Diggers, ℔ doz. .....$8.75
Split Handle Post Hole Diggers, ℔ doz., $7.75
Hercules Pattern, ℔ doz.....$10.00
Kohler's, ℔ doz., Universal, $15.00; Little Giant, $12.00; Hercules, $10.00; Invincible, $9.00; Rival, $8.50; Pioneer.....$7.50
Never-Break Post Hole Diggers, ℔ doz., $24.00.....60%

## Dividers—See *Compasses.*

## Drawing Knives—

See *Knives, Drawing.*

## Dressers Emery Wheel—

Sterling Emery Wheel Dressers.....35%
Sterling Wheel Dresser Cutters.....35%

## Drills and Drill Stocks—

*Blacksmith's Common Drilling Machines .....$1.50@1.75*
Breast, Millers Falls.....15&10%
Breast, P., S. & W.....33⅓%
Goodell Automatic Drills.50&10@60&10%
Millers Falls Automatic Drills.33⅓&10%
Ratchet, Curtis & Curtis.....25%
Ratchet, Parker's.....40%
Ratchet, Weston's.....40%
Ratchet, Weston's, Style H Improved .....40%
Ratchet, No. 012.....40%
Ratchet, Celebrated.....40%
Ratchet, Whitney's, P., S. & W., 50&5%
Whitney's Hand Drill, No. 1, $10.00; Adjustable, No. 10, $12.00.....33⅓%

## Twist Drills—

*Bit Stock.....70@70&5%*
*Taper and Straight Shank, 60&10@70%*

## Drivers, Screw—

*Screw D'ver Bits, per doz.45@50¢*
Balsey's Screw Holder and Driver, ℔ doz., 2½-in., $6; 4-in., $7.50; 6-in., $9 .....50%
Buck Bros.' Screw Driver Bits.....30%
Champion .....50%
Disston's .....70%
Fray's Hol. H'dle Sets, No. 3, $12..50%
Ford's Brace Screw Drivers....40&10%
Gay's Double Action Ratchet.....35%
Goodell's Auto.....65@65&10%
Mayhew's Black Handle.....40%
Mayhew's Monarch.....40%
Millers Falls, Nos. 20 and 21....25&10%
Millers Falls, Nos. 11, 12, 41, 42..15&10%
Smith & Hemenway Co., Neverturn, 66⅔%; Elmora, [illegible]ar, 30&10%
Swan's:
Nos. 7565 to 7568 [illegible]%; No. 7540, 40&10%

## Eave Trough, Galvanized—

| Territory... | Gal. Steel. | Charcoal. Iron. |
|---|---|---|
| *Northeastern.* | *75&10&5%* | *60&20%* |
| *Eastern.....* | *80&2½%* | *60&20%* |
| *Pittsburgh* | *..80&20%* | *65&10%* |
| *Central* | *...80&10&10&2½%* | *65&10%* |
| *Northwestern.* | *80&10&10%* | *65&10%* |
| *Western* | *....80&10%* | *60&10&5%* |
| *Tennessee* | *...80&5%* | *60&10&5%* |
| *Southern* | *....80%* | *60&10&5%* |
| *Southwestern.* | *75&10&2½%* | *60&5%* |

*Terms.—2% for cash. Factory shipmeets generally delivered.*
*Note.—Lower prices are made in some sections.*
See also Conductor Pipe and Elbows.

## Elbows and Shoes—

*Factory shipments, all territories:*

| | Galv. Steel and Galv. C. I. Standard Gauge | Charcoal Iron |
|---|---|---|
| *No. 26* | *85@85&10%* | *50%* |
| *No. 24* | | *25%* |
| *No. 22* | | *10%* |

## Elbows, Stove Pipe—

Edwards, Standard Blue....40&10&10%
Edwards, Royal Blue.....40&10&10%
Reeves, Dover, one piece.....40&10%

## Emery, Turkish—

| | 4 to 46: | 54 to 220: | Flour. |
|---|---|---|---|
| *Kegs .....lb.* | *5 ¢* | *5½¢* | *3½¢* |
| *½ Kegs.....lb.* | *5¼¢* | *5¾¢* | *3¾¢* |
| *¼ Kegs.....lb.* | *5½¢* | *6 ¢* | *4 ¢* |
| *10-lb. cans, 10 in case....* | *6½¢* | *7 ¢* | *6 ¢* |
| *10-lb. cans, less than 10.....* | *10 ¢* | *10 ¢* | *8 ¢* |
| *Less quantity..* | *10 ¢* | *10 ¢* | *8 ¢* |

*NOTE.—In lots 1 to 3 tons a discount of 10% is given.*

## Extractors, Lemon Juice—

—See *Squeezers, Lemon.*

## Fasteners, Blind—
Zimmerman's .....50&10%
Walling's .....40&10%
Upson's Patent.....40%

## Cord and Weight—
Ives and Titan.....33⅓%

## Corrugated—
Acme Corrugated Fasteners.....70%

## Faucets—
*Cork Lined.....50&10@60%*
*Metallic Key, Leather Lined, .. 60&10@70%*
*Red Cedar.....40&5@40&10&5%*
*Petroleum .....70&10@75%*
B. & L. B. Co.:
Metal Key.....60&10%
Star .....60%
West Lock.....50&10%
John Sommer's Peerless Tin Key....40%
John Sommer's Boss Tin Key.....50%
John Sommer's Victor Mtl. Key.50&10%
John Sommer's Duplex Metal Key..60%
John Sommer's Diamond Lock.....40%
John Sommer's I.X.L. Cork Lined..50%
John Sommer's Reliable Cork Lined.. 50&10%
John Sommer's Chicago Cork Lined.60%
John Sommer's O. K. Cork Lined...50%
John Sommer's No Brand, Cedar....50%
John Sommer's Perfection, Cedar....40%
Self Measuring:
Enterprise, ₱ doz. $36.00.....40&10%
Lane's, ₱ doz. $36.00.....40&10%
National Measuring, ₱ doz. $36.40&10%

## Felloe Plates—
See *Plates, Felloe.*

## Files— Domestic—
*List Nov. 1, 1899.*
*Best Brands.....70&10@75&10%*
*Standard Brands.....75&10@80%*
*Lower Grade....75&10&10@80&10%*

## Imported—
*Stubs' Tapers, Stubs' list, July 24, '97.....33⅓@40%*

## Fixtures, Fire Door—
Allith Underwriters' Approved.....50%
Richards Mfg. Co.:
Universal, No. 103; Special, No. 104 .....$3.75
Fusible Links, No. 96.....50%
Expansion Bolts, No. 107.....60&10%

## Grindstone—
*Net Prices:*

| | *Inch* | *15* | *17* | *19* | *21* |
|---|---|---|---|---|---|
| | *Per doz.* | *$3.60* | *3.85* | *4.15* | *4.65* |

P., S. & W. Co.....25%
Reading Hardware Co.....60%

## Fodder Squeezers—
See *Compressors.*

## Forks—
*NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.*
Iowa Dig-Ezy Potato.....60&10%
Victor, Hay.....60&15&2½%
Victor, Manure.....66⅔%
Victor, Header.....65%
Champion, Hay.....66⅔%
Champion, Header.....65%
Champion, Manure.....60&15&2½%
Columbia, Hay.....60&20%
Columbia, Manure.....70%
Columbia, Spading.....70&12½%
Hawkeye Wood Barley.....40%
W. & C. Potato Digger.....60&10%
Acme Hay.....60&20%
Acme Manure, 4 tine.....60&10&5%
Dakota Header.....60&20%
Jackson Steel Barley.....60&20%
Kansas Header.....65%
W. & C. Favorite Wood Barley....40%
Plated. See Spoons.

## Frames— Wood Saw—
*White, S'g't Bar, per doz.75@80¢*
*Red, S'g't Bar, per doz.$1.00@1.25*
*Red, Dbl. Brace, per doz.$1.40@1.50*

## Freezers, Ice Cream—

| *Qt.....* | *1* | *2* | *3* | *4* | *6* |
|---|---|---|---|---|---|
| *Each....* | *$1.25* | *$1.60* | *$1.90* | *$2.20* | *$2.80* |

## Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

## Fry Pans—See *Pans, Fry.*

## Fuse— *Per 1000 Feet.*
*Hemp .....$2.75*
*Cotton .....3.20*
*Waterproof Sgl. Taped..3.65*
*Waterproof Dbl. Taped..4.40*
*Waterproof Tpl. Taped..5.15*
Extra 5% and 10%.

## Gates, Molasses and Oil—
*Stebbins' Pattern.....80@80&5%*

## Gauges—
*Marking, Mortise, &c..50@50&10%*
Chapin-Stephens Co.:
Marking, Mortise, &c.....50&50&10%
Disston's Marking, Mortise, &c..67½%
Wire, Brown & Sharpe's.....33⅓%
Wire, Morse's.....25%
Wire, P., S. & W. Co.....33⅓%

## Gimlets— Single Cut—
*Numbered assortments, per gro.*
*Nail, Metal, No. 1, $2.00; 2, $2.30*
*Spike, Metal, No. 1, $4.00; 2, $4.30*
*Nail, Wood Handled, No. 1, $2.30; 2, $2.60*
*Spike, Wood Handled, No. 1, $4.30; 2, $4.60*

## Glass, American Window
See *Trade Report.*

## Glasses, Level—
Chapin-Stephens Co.....65@65&10%

## Glue, Liquid Fish—
*Bottles or Cans, with Brush, 25&10@70%*
Elwell's .....40%

## Grease, Axle—
*Common Grade...gro.$6.00@$6.50*
Dixon's Everlasting, 10-lb. pails, ea. 85¢; in boxes, ₱ doz., 1 lb. $1.20; 2 lb.....$2.00
Helmet Hard Oil.....25

## Griddles, Soapstone—
Pike Mfg. Co.....33⅓@33⅓&10%

## Grinders—
Royal Mfg. Co.:
Alundum Grinding Machines, each, Nos. 01, $1.75; 1A, $2.50; 10, $5.00 .....30%
Alundum Sickle Grinders, each, Nos. 20, $5.00; 20A, $6.00; 20A Combined, $6.50.....30%
Alundum Disc Grinders, each, $2.50 .....30%

## Grindstones—
Pike Mfg. Co.:
Improved Family Grindstones, ₱ inch, ₱ doz., $2.00.....33⅓
Richards Mfg. Co., Eli and Cycle, Ball Bearing, mounted.....40%

## Grips, Nipple—
Perfect Nipple Grips.....40&10&2%

## Halters and Ties—
*Cow Ties.....65@65&10%*
Bridgeport Chain Co.:
Triumph Coil and Halters,35&2½@40%
Brown Coil and Halters...45@50&5
Brown Cow Ties.....50&5@50&10&5%
Brown Tie Outs.....70&10@75&5%
Covert Mfg. Co.:
Web .....30&2%
Jute Rope.....35%
Sisal Rope.....20%
Cotton Rope.....45
Hemp Rope.....45%
Oneida Community:
Am. Coil and Halters.....40@40&5%
Am. Cow Ties.....45@50%
Niagara Coil and Halters...45@50&5%
Niagara Cow Ties.....45&5@50&10&5%

## Hammers—
### Handled Hammers—
Heller's Machinists'....55&10@55&10&5%
Heller's Farriers.....40&5@40&10&5%
Peck, Stow & Wilcox Co.:
Crucible Steel.....40&10%
Farriers' .....40&10%
Riveting .....40&10%
Machinists' .....60&10%
Blacksmiths' .....50%
Fayatte R. Plumb:
A. E. Nail.....40&2½@40&12½%
Eng. and B. S. Hand.50&10&5@60&5
Machinists' Hammers.....60@60&10%
Rivet and Tinners'.40&7½@40&12½&5%

### Heavy Hammers and Sledges—
*Under 3 lb., per lb., 50¢...80&10%*
*3 to 5 lb., per lb., 40¢...80&10&10%*
*Over 5 lb., per lb., 30¢.....*
*Over 5 lb., per lb., 30¢.80&10&10%*

## Handles—
### Agricultural Tool Handles
*Axe, Pick, &c....60&10@60&10&5%*
*Hoe, Rake, &c.....40%*
*Fork, Shovel, Spade, &c.:*
*Long Handles.....40%*
*D Handles.....40%*

### Cross-Cut Saw Handles—
Atkins' .....40%
Champion .....50%
Disston's .....50%

### Mechanics' Tool Handles—
*Auger, assorted...gro.$3.00@$3.50*
*Brad Awl.....gro.$1.65@$1.75*
*Chisel Handles, Ass'd, per gro.:*
*Tanged Firmer, Apple, $2.40@$2.65; Hickory.....$2.15@2.40*
*Socket Firming, Apple, $1.75@$1.95; Hickory.....1.60@1.75*
*Socket Framing, Hickory, $1.60@$1.75*
*File, assorted.....gro.$1.30@$1.40*
*Hammer, Hatchet, &c.. 60&10@60&10&5%*
*Hand Saw, Varnished, doz., 80&85¢; Not Varnished.....65@75¢*
*Plane Handles:*
*Jack, doz., 30¢; Fore, doz...45¢*
Chapin-Stephens Co.:
Carving Tool.....30@30&10%
Chisel .....60@60&10
File and Awl.....60@60&10
Saw and Plane.....30@30&10
Screw Driver.....30@30&10%
Millers Falls Adj. and Ratchet Auger Handles .....15&10%
Nicholson Simplicity File Handle.... ₱ gro. $1.85@$1.50
J. L. Osgood:
Indestructible File and Tool, ₱ gro., No. 1, $8.00; No. 2, $8.50; No. 3, $9.00; No. 4, $9.50; No. 5, $10.00.....gro. lots 10%
W. A. Zelnicker Supply Co.:
Hammer, ₱ doz., 12 in. $2.00; 14 in., $2.00; 16 in., $2.30; 18 12., $2.50; 20 in., $2.70, 22 in., $3.00; 24 in., $3.30; 26 in., $3.50; 30 in., $3.80.
Sledge, ₱ doz., oval, 30 in., $3.80; octagon, 30 in., $3.80, oval, 36 in., $4.00; octagon, 36 in., $4.00.
Axe, ₱ doz., 28 to 34 in., $5.60; 36 in., $5.80.
Adze, ₱ doz., 36 in., $5.80; 26 in., $7.80.
Pick, ₱ doz., R. R., 36 in., $8.00; coal, 34 in., $5.80.
Hatchet, ₱ doz., 12 to 14 in., $2.00
Extra 5@10%, often given.

## Hangers—
*NOTE.—Barn Door Hangers are generally quoted per pair, without track and Parlor Door Hangers per double set with track, &c.*
Allith Mfg. Co.:
Reliable, Nos. 1 and 2; Allith, No. 3; Allith Adjustable, No. 6; Reliable Parlor Door.....50%
Chicago Spring Butt Co.:
Friction .....25%
Oscillating .....25
Big Twin.....25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door.....50%
Elevator .....30
Railroad .....50%
Cronk & Carrier Mfg. Co.:
Loose Axle.....6)&2½
Roller Bearing.....70&2½
Griffin Mfg. Co.:
Solid Axle, No. 10, $12.00..60&10%
Roller Bearing, No. 11, $15.00, 60&10%
Roller Bearing, Ex. Hy., No. 22, $18.00.....60&10%
Bull Dog, $24.00.....70%
Lane Bros. Co.:
Parlor, Ball Bearing, $1.00:
Standard, $3.15; No. 105, $2.85; New Model, $2.80; New Champion .....$2.25
Barn Door, Standard.....60&10
Hinged .....net $6.08
Covered .....60&5%
Special .....70&5%
Lawrence Bros.:
Advance .....55&10%
Cleveland .....70&7½%
Clipper, No. 75.....60%
Crown .....55&10%
Cyclone, No. 40.....net $6.50
Tandem, No. 50.....net $7.50
New York.....55&10%
McKinney Mfg. Co.:
Roller Bearing, Nos. 1 and 2..70%
Anti-Friction .....60
Hinged Hangers, King Charm.60%
Richards Mfg. Co.:
Hangers, Nos. 47, 48, 147, 247, 60&5%
Pioneer Wood Track, No. 3..$2.25
Roller B'r'g St'l Track No. 12.$2.20
Roller B'r'g St'l Track No. 13.$2.50
Roller B'r'g, Nos. 39, 41, 43, 70&7½%
Hero, Adj. Track No. 19..50&10%
Adjustable Track Tandem Trolley Track No. 16.....50&10%
Seal, Steel Track No. 8.....$2.25
Auto Adj. Track No. 22..50&5%
Trolley B. D. No. 17, $1.25; F. D. No. 120, $2.25; No. 121, $2.45; No. 150.....$2.50
Safety Underwriters F. D. No. 101 .....50%
Tandem No. 44..2½ and 3 60&10%
Palace, Adjustable Track No. 132 .....50&5%
Royal, Adjustable Track No. 122 .....50&10%
Ives' Wood Track No. 1.....$2.25
Trolley B. D. No. 20.....50&10%
Trolley B. D. No. 24, $1.30; No. 27, $1.40; No. 28.....$1.60
Roller Bearings, Nos. 37, 38, 39, 41, 43, 44, Sizes 1 and 2.70&7½%
Anti-friction, No. 42; No. 44, sizes 2½ and 3.....60%
Hinged Tandem No. 48....60&5%
Folding Door B. B. Swivel No. 135 .....40%
Taylor & Boggis F'y Co.'s Kidder's Roller Bearing.50&15&10&5%
Myers' Stayon Hangers.....60%

## Hangers— Garment—
Pullman Trouser, ₱ gro., No. 1 $9.00; No. 4, $24.00; No. 5, $16.50; No. 8, Black Enamel, $7.50; No. 10, $21.00; No. 12, $8.00; No. 15, Rods, $9.00; No. 18, Loops.....$10.00
Victor Folding.....₱ gro. $9.60

## Gate—
Myers' Patent Gate Hangers, ₱ doz. net .....$1.50

## Joist and Timber—
Lane Bros. Co.....30

## Hasps—
Griffin's Security Hasp.....50&10%
McKinney's Perfect Hasp, ₱ doz..60%

## Hatchets—
*Regular list, first qual.40&2½@—*
*Second quality.....50&5@—*

## Heaters, Carriage—
Clark No. 2, $1.75; No. 3B, $2.00; No. 3, $2.25; No. 3D, $2.75; No. 7D, $3.00; No. 3E, $3.25; No. 1, $3.50.....25%
Clark Coal, ₱ doz., $0.75.....20

## Hinges—
### Blind and Shutter Hinges
*Surface Gravity Locking Blind: (Victor; National; 1868 O. P.; Niagara; Clark's O. P.; Clark's Tip; Buffalo.)*

| *No.* | | | *5* | *7* |
|---|---|---|---|---|
| *Doz. pair* | *$0.75* | *1.35* | | *2.70* |

*Mortise Shutter (L. & P., O. S., Acme, &c.)*

| *No.* | *1* | *1½* | *2* | *2½* |
|---|---|---|---|---|
| *Doz. pair* | *$0.70* | *.65* | *.60* | *.55* |

*Mortise Reversible Shutter (Buffalo, &c.):*

| *No.* | *1* | *1½* | *2* |
|---|---|---|---|
| *Doz. pair* | *$0.70* | *.65* | *.60* |

Norris Automatic Blind Fastener, No. 2 for Wood, $9.00; No. 3 for Brick $9.50 .....10
Clark's Parlor Co .....70&75
Peck, Stow & Wilcox Co.:
Hale & Benjamin Automatic Blind Hinges .....20
Hale Blind Awning Hinges No. 110 for wood, $9.00; No. 111 for brick $9.00 .....20
Reading's Gravity.....60
Stanley's Steel Gravity Blind Hinges, No. 1647½, ₱ doz. sets, without screws, $9.95; with screws $11.25.
Wrightsville Hardware Co.:
O. S., Lull & Porter.....75&5%
Acme, Lull & Porter.....75
Queen City Reversible.....75
Shepard's Noiseless, Nos. 61, 65, 55 .....75&5%
Niagara, Gravity Locking, Nos. 1, 3 & 5.....75&5%
Tip Pat'n, No. 1 .....75&10
No. 3.....75&5
Buffalo Gravity Locking, Nos. 1, 3 & 5.....70&10&5
Shepard's Double Locking.....75
Champion Gravity Locking.....75&5
Pioneer .....75&10
Empire .....65%
W. H. Co.'s Mortise Gravity Locking, No. 2.....60&10%
Extra 10% often given on most of these Hinges.

### Gate Hinges—
*Clark's or Shepard's—Doz. sets:*

| *No.* | | *1* | *2* | *3* |
|---|---|---|---|---|
| *Hinges with L'tches.* | | *$2.00* | *2.70* | *5.00* |
| *Hinges only* | | *1.25* | *1.90* | *3.50* |
| *Latches only* | | *.70* | *.75* | *.85* |

*New England:*
*With Latch.....doz..@$2.00*
*Without Latch.....doz..@$1.00*
*Reversible Self-Closing:*
*With Latch.....doz..@$1.75*
*Without Latch...doz....@$1.35*
*Western:*
*With Latch.....doz. $1.75*
*Without Latch.....doz..$1.15*
Wrightsville Hardware Co.:
Shepard's or Clark's Hinges and Latches, Hinges only or Latches only, Nos. 1, 2 or 3.....70%

### Pivot Hinges—
Bommer Bros. Pivot.....40%
Lawson Mfg. Co. Matchless.....50%

### Spring Hinges—
*Holdback, Cast Iron...$6.75@$7.00*
*Non-Holdback, C'st Iron$6.50@$6.75*
J. Bardsley:
Bardsley's Non-Checking Mortise Floor Hinges.....40%
Bardsley's Patent Checking,33⅓%
Bommer Bros.:
Bommer Ball Bearing Floor..40%
Bommer Spring Hinges.....40%
No. 999 Wrot. Steel Hold Back, ₱ gro. $9.00
Chicago Spring Butt Co.:
Chicago Spring Hinges.....25%
Triple End Spring Hinges....50
Chicago (Ball Bearing) Floor.50
Garden City Engine House...25%
Keene's Saloon Door.....25
Columbian Hardware Co.:
Acme, Wrought Steel.....30%
Acme, Brass.....25%
American .....30%
Columbia, ₱ gr., No. 14, $9.00; No. 18.....$25.00
Columbia, Adj., No. 7, ₱ gr.$12.00
Columbian Hinges.....60&10
Gem, new list.....30%
Clover Leaf and Acorn, gro. lots, $5.10; ½ gro. lots.....$6.00
Oxford, new list.....30
Floor Spring Hinges.....65&10
Lawson Mfg. Co., Matchless...30
Richards Mfg. Co.:
Superior Double Acting Floor Hinges .....10%
Shelby Spring Hinge Co.:
Buckeye All Steel Holdback Screen Door.....₱ gr. $9.00
Chief Ball Bearings Floor Hinge .....50
Ball Bearing Door.....25
No. 777, Sheet Steel Holdb'k, ₱ gr. pr.....$9.00
Standard Mfg. Co.:
Champion Double Acting Door Hinge .....25&10&10%
Standard Double Acting Floor Hinge .....25&10&10
Superior Spring Hinge Co.:
Superior Floor Hinges.....33⅓%

### Wrought Iron Hinges—
*Strap and T Hinges, &c., list December 20, 1904:*
*Light Strap Hinges..50&10*
*Heavy Strap Hinges..60&5*
*Light T Hinges.....50*
*Heavy T Hinges.....70*
*Extra Hvy. T Hinges.....50&10*
*Hinge Hasps.....33⅓*
*Cor. Hearn Strap.....60&5*
*Cor. Ex. Heavy T.....70*
Extra 10@71½%.
*Screw Hook and Strap.* *6 to 12 in..lb..3½¢*
*1½ to 5 in..lb..3½¢*
*5½ to 8 in..lb..3½¢*
*Screw Hook and Eye*
*¾ to 1 inch.....lb. 6½¢*
*1¼ inch.....lb. 5½¢*
*1½ inch.....lb. 5½¢*
Jobbing 65%.

## Hitchers, Stall—
Cowan Mfg. Co. Stall Hitchers .30&2

## Hods— Coal—
*M'f'gr's list, price per gross:*

| *Inch* | *15* | *16* | *17* | *18* |
|---|---|---|---|---|
| *Gale Open* | *$3.5* | *$3.9* | *$4.2* | *$4.6* |
| *Jap. Open* | *2.6* | *2.8* | *3.1* | *3.5* |
| *Gale Funnel* | *4.3* | *4.8* | *5.2* | *5.6* |
| *Jap. Funnel* | *3.3* | *3.6* | *3.9* | *4.3* |

## Masons' Etc.
Cleveland Wire Spring Co.:
Steel Buck, No. 162.....each $1.05
Steel Mortar, No. 158.....each $1.35

## Hoes— Eye—
*Scovil and Oval Pattern, 60&10@60&10&10%*
*Grub, list Feb. 23, 1899 70&10@70&10&10%*
D. & H. Scovil .....27½%
Am. Fork & Hoe Co. (Scovil Pattern) .....60%

### Handled—

*NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.*

Cronk's Weeding, No. 1,$2.00; No. 2,$2.50
Star Double Bit.....$3.20
Ft. Madison Cotton Hoe....70&10&10%
Ft. Madison Crescent Cultivator Hoe, ₱ doz.....70&10%
Ft. Madison Mattock Hoes:
Regular Weight.....₱ doz. 40&5%
Junior Size.....₱ doz. $4.00
Ft. Madison Sprouting Hoe, ₱ doz., 60&10%
Ft. Madison Dixie Tobacco Hoe..... 75&10&7½%
Kretsinger's Cut Easy.....70&10
Warren Hoe.....45&10%
W. & C. Ivanhoe.....75&2
B. B. 6 in., Cultivator Hoe.....$3.40
B. B., 6½ in.....$3.50
Acme Wedding.....₱ doz., net, $4.35
W. & C. L'tning Shuffle Hoe, ₱doz.$5.25

### Hoisting Apparatus—

See *Machines, Hoisting.*

### Holders— Bit—

Angular, ₱ doz. $24.00.....45&10%

### Door—

Bardsley's, Iron, 40%; Brass and Bronze .....25%
Empire .....50
Pullman .....25
Richards Mfg. Co.: No. 117, Ever-ready, 40%; Nos. 118, 119, Sure Grip .....50
Superior .....33⅓

### File and Tool—

Nicholson File Holders and File Handles .....33⅓@40%

### Fruit Jar—

Triumph Fruit Jar Holder, ₱ gross, $18.00; ₱ doz.....$2.00

### Trace and Rein—

Fernald Double Trace Holder, ₱ doz. pairs .....$1.25
Dash Rein Holder, ₱ doz. pairs.$1.25

### Hones—Razor—

Pike Mfg. Co., Belgian and Swaty, 50%; German.....33⅓

### Hooks—Cast Iron—

Bird Cage, Reading.....40
Clothes Line, Reading List.....40
Coat and Hat, Reading.....45&2%
Coat and Hat, Wrightsville.....60&5
Harness, Reading List.....40

### Wire—

*Belt* .....80%
*Wire C. & H. Hooks*.....80%
Bradley Metal Clasp Wire, Coat and Hat, 70&10%; Ceiling.....70&10
Columbian Hdw. Co., Gem.....70&5
Parker Wire Goods Co., King..70&10%
Wire Goods Co.:
Acme, 60&10%; Chief, 70%; Crown, 75%; Czar, 65%; V Brace, 75%; Czar Harness, 50&10%.

### Wrought Iron—

*Box, 6 in., per doz., $0.99; 8 in., $1.15.*
*Cotton* .....*doz. $1.25@$1.50*
Wrought Screws, Hooks, &c.
See Wrought Goods.

### Miscellaneous—

*Hooks, Bench, see Stops, Bench.*
*Bush, Light, doz., $6.20; Medium, $6.75; Heavy, $7.65*
*Grass, best, all sizes, per doz., $2.75@$3.00*
*Grass, common grades, all sizes, per doz.*.....*$1.25@$1.50*
*Whiffletree* .....*lb. 5½@6¢*
*Hooks and Eyes:*
*Brass* .....*60@60&10%*
*Malleable Iron*.....*70@70&10%*
Covert Mfg. Co. Gate and Scuttle Hooks .....40
Ft. Madison Cut-Easy Corn Hooks, ₱ doz. $3.25 net
Turner & Stanton Co. Cup and Shoulder .....85&10
Bench Hooks. See Bench Stops.
Corn Hooks. See Knives, Corn.

### orse Nails—

See *Nails, Horse.*

### Horseshoes—

See *Shoes, Horses.*

### Hose, Rubber—

*Garden Hose, ¾-inch:*
*Competition* .....*ft. 6@6½¢*
*3 ply Guaranteed*.....*ft. 8½@9¢*
*4-ply Guaranteed*.....*ft. 9½@12¢*
*Cotton Garden, ¾-in., coupled:*
*Low Grade*.....*ft. 8@ 9c*
*Fair Quality*.....*ft. 10@11¢*

### Irons— Sad—

*From ¼ to 10*.....*lb. 2½@2¾¢*
*B. B. Sad Irons*.....*lb. 3¼@3½¢*
*Mrs. Potts', cents per set:*

| | Nos. 59 | 55 | 61 | 65 |
|---|---|---|---|---|
| *Japʼd Tops* | 83 | 80 | 93 | 91 |
| *Tinʼd Tops* | 88 | 85 | 98 | 95 |

*New England Pressing..lb.3¾@4¢*

### Bar and Corner—

Richards Mfg. Co., Bar, 60&10%; Corner .....60

### Pinking—

*Pinking Irons*.....*doz. 60@65¢*

### Irons, Soldering

See *Coppers.*

### Jacks, Wagons—

Covert Mfg. Co.:
Auto Screw.....30&2%; Steel, 15
Lockwort .....50
Lane's Steel.....30&5
Richards' Tiger Steel, No. 130...50&10
Smith & Hemenway Co.'s.....25%

### Ladder—

Richards Mfg. Co., Ladder Jacks..50%

### Kettles—

*Brass, Spun, Plain*.....*20@25%*
Enameled and Cast Iron See Ware, Hollow.

### Knives—

### Butcher, Kitchen, &c.—

Foster Bros.' Butcher, &c.....30%
Wilkinson Shear & Cutlery Co....60%

### Corn—

Columbian Cutlery Co., Wilcut Brand Knives and Hooks.....60%
Withington Acme, ₱ doz., $2.65; Dent, $2.75; Adj. Serrated, $2.20; Serrated, $2.10; Yankee No. 1, $1.50; Yankee No. 2, $1.15.

### Drawing—

*Standard List*.....*80&10@—%*
C. E. Jennings & Co., Nos. 45, 46, 25&7½%
Jennings & Griffin, Nos. 41, 42, 66⅔&7½%
Swan's .....66⅔@70%
Watrous .....16⅔%
L. & I. J. White.....20&5@25%

### Hay and Straw—

*Serrated Edge, per doz. $5.00@5.50*
Iwan's Sickle Edge.....₱ doz. $9.50
Iwan's Serrated.....₱ doz. $10.00

### Miscellaneous—

*Farriers'* .....*doz. $2.60@3.55*
Westenholm's .....₱ doz. $3.00@3.25

### Knobs—

*Base, 2½-inch, Birch or Maple, Rubber Tip*.....*gro. $1.25@1.40*
*Carriage, Jap., Drive, all sizes, gro. .35@40¢*
*Door, Mineral*.....*doz. 65@70¢*
*Door, Por. Japʼd*.....*doz. 70@75¢*
*Door, Por. Nickel*..*doz. $2.05@2.15*
Bardsley's Wood Door, Shutters, &c.15%

### Lacing, Leather—

See *Belting, Leather*

### Ladders, Store, &c.—

Allith Mfg. Co., Reliable.....50%
Lane's Store.....25
Myers' Noiseless Store Ladders....50%
Richards Mfg. Co.:
Improved Noiseless, No. 112.....50%
Climax Shelf, No. 113.....50
Trolley, No. 109.....50%

### Ladles, Melting—

L. & G. Mfg. Co. (new list).....20%
P., S. & W.....40&10
Reading .....60

### Lanterns—Tubular—

*Regular, No. 0*.....*doz. $4.35@4.50*
*Side Lift, No. 0*.....*doz. $4.60@4.75*
*Hinge Globe, No. 0. doz. $4.60@4.75*
*Other Styles*.....*40@40@10%*

### Bull's Eye Police—

*Side Lt.* .....*$3.75@4.00*

### Latches— Thumb—

*Roggin's Latches, Japʼd, with Screws* .....*doz. .35@40¢*

### Door—

Allith Mfg. Co., Reliable and Allegator, 5%; Reliable Cold Storage, 50%
Cronk & Carrier Mfg. Co., No. 101, ₱ doz. $2.00
Richards' Bull Dog, Heavy, No. 125 .....50&5%
Richards' Tramp, No. 127.....$1.50

### Leaders, Cattle—

*Small*.....*doz. 50¢; large, 60¢*
Covert Mfg. Co.:
Cotton, 45%; Hemp, 45%; Jute, 35%; Sisal, 20%.

### Leathers, Pump—

See *Pumps.*

### Lifters, Transom—

R. & E.....10%

### Lines—

| *Wire Clothes, Nos.* | *18* | *19* | *20* |
|---|---|---|---|
| *100 feet*..... | *$2.30* | *1.95* | *1.75* |
| *75 feet*..... | *$1.95* | *1.65* | *1.50* |

Samson Cordage Works:
Solid Braided Chalk, Nos. 0 to 3..40%
Solid Braided Masons'.....50
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50.....₱ gr. 20%
Masons' Lines, Shade Cord, &c.; White Cotton, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50; Colors, No. 3½, $1.75; No. 4, $2.25; No. 4½, $2.75; Linen, No. 3½, $2.50; No. 4, $3.50; No. 4½, $4.50.....20%
Tent and Awning Lines: No. 5, White Cotton, $7.50; Drab Cotton $8.50 .....20
Clothes Lines, White Cotton: 50 ft., $2.25; 60 ft., $2.25; 70 ft., $2.75; 75 ft., $4.00; 80 ft., $4.25; 90 ft., $4.75; 100 ft., $5.25.....20
Turner & Stanton Co.:
Solid Braided Chalk, Masons' and Awning Lines.....40
Clothes Lines, White Cotton....25
Shade Cord, Cotton or Linen....20

### Locks— Cabinet—

*Cabinet Locks*.....*33⅓@33⅓@45%*

### Door Locks, Latches, &c

*NOTE.—Net Prices are very often made on these goods.*
Reading Hardware Co.....40
R. & E. Mfg. Co.....10

### Padlocks—

R. & E. Mfg. Co. Wrought Steel and Brass .....75&10

### Sash, &c.—

Ives' Patent:
Bronze and Brass, 55&5%; Crescent, 60%; Iron, 60%; Window Ventilating, 40&20%; Robinson Pat. Ventilating Sash Lock 33⅓%.
Pullman Patent Ventilating Lock..25%
Reading Sash Locks.....40%

### Machines—Boring—

*Com. Upr't, without Augers, $2.00@2.25*
*Com. Angl'r, without Augers, $2.25@2.50*
Swan's Improved.....40&10
Jennings', Nos. 1 and 4.....25&7½
Millers' Fal's.....5.75
Snell's, Upright, $2.65; Angular, $2.90

### Corking—

Reisinger Invincible Hand Power... ₱ doz. $48.00

### Fence—

Williams' Fence Machines....each. $5.50

### Hoisting—

Moore's Anti-Friction Chain Hoist.30%
Moore's Hand Hoist, with Lock Brake .....20%
Moore's Cyclone High Speed Chain Hoist .....25%

### Ice Cutting—

Chandler's .....12½%

### Washing

| Boss Washing Machine Co.: | Per doz. |
|---|---|
| Boss No. 1 | $57.00 |
| Boss Rotary | $57.00 |
| Champion Rotary Banner No. 1 | $57.00 |
| Standard Champion No. 1 | $50.00 |
| Standard Perfection | $27.00 |
| Cincinnati Square Western | $33.00 |
| Uneeda American, Round | $33.60 |

### Mallets—

*Hickory* .....*45&5@50%*
*Lignumvitæ* .....*45&5@50%*
*Tinners' Hickory and Applewood* .....*doz. 45&5@50%*

### Mangers, Stable—

Swett Iron Works.....50%

### Mats, Door—

Acme Flexible Steel.....50
Elastic Steel (W. G. Co.), new list.50

### Mattocks—

See *Picks and Mattocks.*

### Milk Cans—See *Cans, Milk.*

### Mills, Coffee, &c.—

Enterprise Mfg. Co.....20@25
National list Jan. 1, 1902.....30
Parker's Columbia and Victoria..33⅓
Parker's Box and Side.....50&10%
Swift, Lane Bros. Co.....30%

### Motors, Water—

Divine's Red Devil.....30%
Lippincott's .....30%

### Mowers, Lawn—

*NOTE.—Net prices are generally quoted*
*Cheapest, 10 in., $2.00; advance 10¢ for each size.*
*Cheap, 10-in., $2.25; advance 15@20¢ for each size.*
*Better Grade, 10 in., $3.00; advance 25¢ for each size.*

| | 12 | 14 | 16 | 18 in. |
|---|---|---|---|---|
| *High Grade* | *$4.50* | *4.75* | *5.00* | *5.25* |
| Continental | | | | .....60% |
| Great American | | | | .....70% |
| Great American Ball B'r'g new list | | | | .70 |
| Quaker City | | | | .....70 |
| Pennsylvania | | | | .....60 |
| Pennsylvania, Jr., Ball Bearing, | | | | 50&10&5% |
| Pennsylvania Golf | | | | .....50 |
| Pennsylvania Horse | | | | .....33⅓&5 |
| Pennsylvania Pony | | | | .....40&5 |

Granite State:
Style A, L. & Wheel.....70
Style B, L. & Wheel.....70
Style C, High Wheel, special list, 70&10
Style D, High Wheel, special list..70
Philadelphia:
Styles M., S., C., K., T. & ...10&5
Style A, all Steel.....10&10&5
Style E, High Wheel.....7...10&5
Drexel and Gold Coin, special list.40
Horse .....40&5
Pony .....40&5
36-in. Horse.....30&10
Eagle Horse.....30&5
I. X. L. Horse.....50

### Nails—

*Wire Nails and Brads, Miscellaneous* .....*85&5@85&10%*
*Cut and Wire. See Trade Report.*
*Hungarian, Finishing, Upholsterers', &c. See Tacks.*

### Horse—

| Nos. | 6 | 7 | 8 | 9 | 10 | |
|---|---|---|---|---|---|---|
| Anchor | 25 | 21 | 20 | 19 | 18 | ...40&5% |
| Coleman | 13 | 12 | 12 | 11 | 11 | ..... net |
| New Haven | 23 | 21 | 20 | 19 | 18 | ...40&5 |
| Livingston | 19 | 18 | 17 | 16 | 16 | .....10 |
| Western | | | | | | ₱ lb. 8½¢ |

*Jobbers' Special Brands, per lb. 9¢*

### Picture—

| | 1¾ | 2 | 2¾ | 3 in. |
|---|---|---|---|---|
| *Brass Hd. gro.* | *.55* | *.55* | *.60* | *.70* |
| *Por. Head, gro.* | *1.10* | *1.20* | *1.40* | |

### Upholsters—

*Brass* .....*30%*
*Plated* .....*30&10%*

### Nippers—

See *Pliers and Nippers.*

### Nuts— *Blank or Tapped.*

*Cold Punched:* *Off list.*
*Square* .....*5.50@5.50¢*
*Hexagon* .....*6.00@6.10¢*
*Square, C., T. & R* .*5.80@5.90¢*
*Hexagon, C., T. & R.6.60@6.70¢*
*Hot Pressed:*
*Square* .....*5.80¢*
*Hexagon* .....*6.80¢*

### Oakum—

*Best* .....*lb. 6½¢*
*U. S. Navy*.....*lb. 6 ¢*
*Navy* .....*lb. 5 ¢*
*Plumbers' Spun Oakum..2¾@3 ¢*

### Oil Tanks—See *Tanks, Oil.*

### Oilers—

*Steel, Copper Plated*.....*75%*
*Chase or Paragon:*
*Brass and Copper*.....*50&10%*
*Zinc* .....*65&10%*
*Railroad* .....*60&10&10%*
Malleable, Hammers' Improved, Nos. 11, 12 and 13, 20%; Old Pattern, Nos. 1, 2, 3, 50%.
American Tube & Stamping Co.:
Spring Bottom Cans.....70@70&10%
Railroad Oilers, &c.....60@60&10%
Maple City Mfg. Co.:
Spring Bottom Cans.....70@70&10%
Railroad Oilers, &c.....60@60&10%

### Openers—Packing Box—

Herculever, ₱ doz., $24.....30%

### Can Openers—

*Per doz.*
*Sprague, Iron Handle*....*30@35¢*
*Sprague, Wood Handle*.....*40¢*
*Sardine Scissors*.....*$1.75@3.00*
Yankee Can and Bottle Opener, ₱ doz., net, $0.75; Little Gem, ₱ doz., net.....$0.65

### Egg—

Hartigan Nickel Plate, ₱ doz., $2.00; Silver Plate, $4.00.

### Packing—

*Asbestos Packing, Wick and Rope, any quantity*.....*18@20¢*

### Rubber—

*(Fair quality goods.)*
*Sheet, C. I*.....*11@12¢*
*Sheet, C. O. S*.....*11@12¢*
*Sheet, C. B. S*.....*12@13¢*
*Sheet, Pure Gum*.....*40@45¢*
*Sheet, Red*.....*40@50¢*
Jenkins' '96. ₱ lb, 80¢.....25%

### Miscellaneous—

*American Packing*....*lb. 7@10 ¢*
*Cotton Packing*.....*lb. 16@25 ¢*
*Italian Packing*.....*lb. 9@10¢*
*Jute* .....*lb. 4@4¼¢*
*Russia Packing*.....*lb. 9@10¢*

### Pails, Water, Well, &c.—

See *Buckets.*

### Pans— Dripping—

*Standard List*.....*65&7½@70%*
Edwards, Royal Blue.....65&7½

### Fry—

*Common Lipped:*

| *Nos.* | *1* | *2* | *3* | *4* | *5* |
|---|---|---|---|---|---|
| *Per doz.* | *$0.75* | *0.80* | *0.90* | *1.10* | *1.30* |

### Refrigerator, Galva.—

| *Inch* | *12* | *14* | *16* | *18* |
|---|---|---|---|---|
| *Per doz.* | *$1.75* | *2.25* | *2.80* | *3.15* |

### Paper—Building Paper

*Asbestos:* *lb.*
*Roll Board or Building Felt, 6 to 30 lb., per 100 sq. ft..2½¢*
*Roll Board or Building Felt, 3-32 and ⅛ in., 45 to 60 lb., per 100 sq. ft*.....*3½¢*
*Mill Board, Sheet, 40 x 40 in., 1-32 to ½ in*.....*3¢*
*Per roll.*
*Rosin Sized Sheathing: 500 sq. ft. Light weight, 25 lbs. to roll, 48@58¢*
***Medium weight, 30 lbs. to roll, 56@70¢***
*Heavy weight, 40 lbs. to roll, 75@78¢*
*Black Water Proof Sheathing, 500 sq. ft., 1 ply, 65¢; 2 ply, 85¢; 3 ply, $1.10; 4 ply, $1.25.*
*Deafening Felt, 9, 6 and 4½ sq. ft. to lb., ton*.....*$54.50*
*Red Rope Roofing, 250 sq. ft per roll*.....*$1.75*

### Tarred Paper—

*1 ply (roll 400 sq. ft.), ton, $34.00@$38.00*
*2 ply, roll 108 sq. ft*.....*65¢*
*3 ply, roll 108 sq. ft*.....*88¢*
*Slater's Felt (roll 500 sq. ft.).80¢*

### Sand Paper and Cloth—

*Flint and Emery*.....*50&10%*
*Garnet Paper and Cloth*.....*25%*

### Parers—Apple—

Goodell Co.:
Family Bay State.....₱ doz. $15.00
Improved Bay State.....₱ doz. $36.00
New Lightning.....₱ doz. $7.00
Turn Table '98.....₱ doz. $6.00
White Mountain.....₱ doz. $5.00
Bonanza Improved.....each $7.50
Dandy .....each $10.00
Eureka Improved.....each $20.00
New Century.....each $20.00
Ranger .....each $25.00
Livingston Nail Co.:
Daisy .....₱ doz. $4.00
Little Star.....₱ doz. $5.00
Rocking Table.....₱ doz. $6.20
Reading Hardware Co.:
Advance .....₱ doz. $4.00
Baldwin .....₱ doz. $4.00
Reading 72.....₱ doz. $3.25
Reading 78.....₱ doz. $6.25

### Potato—

Saratoga .....₱ doz. $7.00
White Mountain.....₱ doz. $6.00

### Picks and Mattocks—

*(List Jan., 1908.)*
*List* .....*70&10@70&10&10%*
Cronk's Handled Garden Mattock, ₱ doz., No. 2, $2.60; No. 3, $6.40.

### Pinking Irons—
See *Irons, Pinking.*

### Pins, Escutcheon—
*Brass* .....50@50&10%
*Iron, list Nov. 11, '85*..60@60&10%

### Pipe, Cast Iron Soil—
*Standard, 2-6 in*.....60&5@—%
*Extra Heavy, 2-6 in*....70&5@—%
*Fittings, Standard and Heavy,* 70&10@75 %

### Pipe, Merchant—

| | *Consumers, Carloads, Steel.* | | *Iron.* | |
|---|---|---|---|---|
| | *Blk.* % | *Galv.* % | *Blk.* % | *Galv.* % |
| *⅛ and ¼ in.* | 66 | 50 | 64 | .. |
| *⅜ in.* | 68 | 54 | 66 | 52 |
| *½ in.* | 70 | 58 | 68 | 56 |
| *¾ to 6 in.* | 74 | 64 | 72 | 62 |
| *7 to 12 in.* | 71 | 56 | 69 | 54 |

### Pipe, Vitrified Sewer—
*Carload lots.*
*Standard Pipe and Fittings, 3 to 24 in., f.o.b. factory:*
*First-class* .....87½%
*Second-class* .....90%

### Pipe, Stove—

| Per 100 joints. | C. L. | L. C. L. |
|---|---|---|
| Edwards' Nested: | | |
| 5 in., Standard Blue | $6.25 | $7.25 |
| 6 in., Standard Blue | 6.75 | 7.75 |
| 7 in., Standard Blue | 7.75 | 8.75 |
| 5 in., Royal Blue | 7.00 | 8.00 |
| 6 in., Royal Blue | 7.50 | 8.50 |
| 7 in., Royal Blue | 8.50 | 9.50 |
| Wheeling Corrugating Co.'s Nested: | | |
| 5 in., Uniform Color | $6.15 | $7.15 |
| 6 in., Uniform Color | 6.65 | 7.65 |
| 7 in., Uniform Color | 7.65 | 8.65 |

### Planes and Plane Irons—
#### Wood Planes—
*Bench, first qual*.....30@30&10%
*Bench, second qual*...40@40&10%
*Molding* .....25@25&10%
Chapin-Stephens Co.:
Bench, First Quality.....30%
Bench, Second Quality.....40%
Molding and Miscellaneous.....25%
Tow and German.....30%
Union .....60%

#### Iron Planes
Chaplin's Iron Planes.....50&10%
Union .....60%

#### Plane Irons—
*Wood Bench Plane Irons, list Dec. 12, '06*.....25%
Buck Bros.....30%
Chapin-Stephens Co.....25%
Union .....50%
L. & I. J. White.....20&5@25%

### Planters, Corn, Hand—
Kohler's Eclipse.....₽ doz. $8.00

### Plates—
*Fellor* .....lb..3¾@4¢

### Pliers and Nippers
*Button Pliers*....75&5@75&10&5%
*Gas Burners, per doz., 5 in., $1.25 @$1.50; 6 in., $1.45 $1.50.*

| *Gas Pipe..* | *7* | *8* | *10* | *12-in.* |
|---|---|---|---|---|
| | *$2.00* | *$2.25* | *$2.75* | *$3.50* |

Acme Nippers.....5&5%
Crook & Garner Mfg. Co.:
American Button.....80%
Improved Button.....75&10%
Combination.....60%
New Set Lineman's.....50%
Side Cutting Pattern.....45%
Combination and others.....33⅓%
Hoke's Farriers' Nippers, Pincers and Tools.....10&5@10&50&5%
P., S. & W. Tinners' Cutting Nippers.....40%
Scotch Side, End and Diagonal Cutting Pliers.....50%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds....40%

### Plumbs and Levels—
Chapin-Stephens Co.:
Plumbs and Levels.....30@30&10%
Compass Ins. Brass Cap.....10@10&10%
Pocket Levels.....30@30&10%
Extension Sights.....30@30&10%
Mechanics' Levels.....10@30&10%
Disston's Plumbs and Levels....60&10%
Lockwood's Pocket Levels.....60&10%
Stanley's Duplex.....35%
Wood's Extension.....33⅓%

### Points, Glaziers'—
*Bulk and 1-lb. papers*....*lb. 9 ¢*
*½ lb. papers*.....*lb. 9½¢*
*¼-lb. papers*.....*lb. 10 ¢*

### Police Goods—
*Manufacturers' Lists*...25@25&5%
Tower's .....25%

### Polish—Metal, Etc—
Prestoline Liquid, No. 1 (½ pt.), ₽ doz., $3.00; No. 2 (1 qt.), $9.00....10%
Prestoline Paste.....40%

George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, ₽ doz. 50¢; ₽ gro. $4.50; ½ lb boxes, ₽ doz. $1.25; 1 lb boxes, ₽ doz. $2.25.
U. S. Liquid, 8 oz. cans, ₽ doz., $1.25.
Barkeepers' Friend Metal Polish, ₽ doz., $1.75.

### Stove—
Black Eagle Benzine Paste, 5 lb cans, ₽ lb 10¢
Black Eagle, Liquid, ½ pt. cans.. ₽ doz. 75¢
Black Jack Paste, ¾ lb cans, ₽ gr. $9.00
Black Kid Paste, 5 lb can...each, $0.65
Ladd's Black Beauty Liquid, per 100 tins.....$6.75
Joseph Dixon, ₽ gr. $5.75.....10
Dixon's Plumbago.....₽ lb 8¢
Fireside .....₽ gr. $2.50
Gem, ₽ gr. $4.50.....10
Japanese .....₽ gr. $3.50
Jet Black.....₽ gr. $3.50
Peerless Iron Enamel, 10 oz. cans.. ₽ doz. $1.50

### Window Polish—
Benj. P. Forbes:
Glasbright, No. 2, gal pails, ₽ doz., $24.00; each, $2.50; 1 lb cans, each .....75¢
Glasbright Powder, bbls., ₽ lb..20¢

### Poppers, Corn—
*1 qt. Square..doz.$0.80; gro.$8.75*
*1 qt. Round..doz.$0.90; gro.$10.00*
*1½ qt. Square.doz.$1.00; gro.$11.00*
*2 qt. Square..doz.$1.25; gro.$13.50*

### Post Hole and Tree Augers and Diggers—
See also *Diggers, Post Hole, &c.*

### Posts, Steel—
Steel Fence Posts, each, 5 ft., 42¢; 6 ft., 46¢; 6½ ft., 48¢.
Steel Hitching Posts.....each $1.30

### Potato Parers—
See *Parers, Potato.*

### Pots, Glue—
*Enameled* .....40%
*Tinned* .....50&10%

### Powder—
*In Canisters:*
*Duck, 1 lb*.....*each 45¢*
*Fine Sporting, 1 lb*....*each 75¢*
*Rifle, ½-lb*.....*each 15¢*
*Rifle, 1 lb*.....*each 25¢*
*In Kegs:*
*12½-lb. kegs*.....*$3.50*
*25-lb. kegs*.....*$4.50*
King's Semi-Smokeless:
Keg (25 lb bulk).....$6.50
Half Keg (12½ lb bulk).....$3.50
Quarter Keg (6¼ lb bulk).....$1.90
Case 24 (1 lb cans bulk).....$8.50
Half case (1 lb cans bulk).....$4.50

| King's Smokeless: | Shot Gun. | Rifle. |
|---|---|---|
| Keg (25 lb bulk) | $12.00 | $15.00 |
| Half Keg (12½ lb bulk) | 6.25 | 7.75 |
| Quarter Keg (6¼ lb bulk) | 3.25 | 4.00 |
| Case 24 (1 lb cans bulk) | 14.00 | 17.00 |
| Half case 12 (1 lb c. bk) | 7.25 | 8.75 |

### Presses—
#### Fruit and Jelly—
Enterprise Mfg. Co.....20@25%
#### Seal Presses—
Merrill's No. 1, ₽ doz., $20.00.....50%

### Pruning Hooks and Shears
See *Shears.*

### Pullers, Nail—
Cyclops .....50%
Miller's Falls, No. 3, ₽ doz., $12.00..
.....33⅓&10%
Merrill's No. 1, Nail Puller, ₽ doz. $20.00 .....50
Pearson No. 1, Cyclone Spike Puller, each $50.00.....50
The Scranton Co. Case Lots:
No. 2B (large).....$5.50
No. 3B (small).....$5.00
Smith & Hemenway Co.:
Diamond B.....70%
Giant .....50
Staple Pullers, Utica and Davison .....60

### Pulleys, Single Wheel—

| *Inch* | *1½* | *1¾* | *2* | *3* |
|---|---|---|---|---|
| *Awning or Tackle, doz.* | *$0.30* | *.35* | *.60* | *1.05* |
| *Hay Fork, Swivel or Solid Eye, doz., ½ in., $1.25; 5 in., $1.75* | | | | |
| *Inch* | *2* | *2¼* | *2½* | |
| *Hot House, doz.* | *.$0.65* | *.85* | *1.10* | |
| *Inch* | *1¼* | *1½* | *1¾* | *2* |
| *Screw, doz.* | *$0.16* | *.19* | *.23* | *.30* |
| *Inch* | *1¾* | *2* | *2¼* | *2½* |
| *Side, doz.* | *$0.25* | *.40* | *.55* | *.60* |
| *Inch* | *1½* | *1¾* | *2* | *2½* |

### Sash Pulleys—
*Common Frame; Square or Round End, per doz., 1¾ and 2 in*.....17@21¢
*Auger Mortise, no Face Plate, per doz., 1¾ and 2 in*....20@21¢
Acme, No. 35..1¾ in., 19¢; 2 in., 21½¢
American Pulley Co.:
Wrought Steel American Plate Axle .....50&10%
Wrought Steel, Eagle.....17@21¢
Top Notch, Electrically Welded, Nos. 3 and 4.....11¢
Fox-All-Steel, Nos. 3 and 7, ₽ doz. 50%
Grand Rapids All Steel Noiseless 50
Niagara, No. 25, 1¾ in., 19¢; 2 in. .....20¢
No. 26, Trox..1¾ in., 14½¢; 2 in., 16¢
Star, No. 26....1¾ in., 19¢; 2 in., 25½¢
Tackle Blocks—See Blocks.

### Pumps—
*Cistern* .....60%
*Pitcher Spout*.....75&5@75&10%
*Wood Pumps, Tubing, &c*....50%
Barnes Dbl. Acting (low list)....40&5
Barnes Pitcher Spout.....75&10%
Contractors' Rubber Diaphragm, No. 2, B. & L. Block Co.....$16.00
Daisy Spray Pump.....₽ doz. $6.50
Flint & Walling's Fast Mail Hand (low list).....50%
Flint & Walling's Fast Mail (low list) .....50%
Flint & Walling's Tight Top Pitcher .....75&10%
National Specialty Mfg. Co., Measuring, Nos. 2, $6.00; 3, $5.50.....30%
Myers' Pumps (low list).....40&5
Myers' Power Pumps.....40&5%
Myers' Spray Pumps.....40&5%

### Pump Leathers—
*Plunger and Valve Leathers—Per gro.:*

| *No.* | *1* | *2* | *3* | *4* |
|---|---|---|---|---|
| | *$5.00* | *6.00* | *7.00* | *8.00* |

*Cup Leathers—Per 100:*

| *Inch* | *2½* | *3* | *3½* | *4* |
|---|---|---|---|---|
| | *$5.00* | *7.00* | *9.00* | *12.00* |

30%

### Punches—
*Saddlers' or Drive, good, doz.*.50@75¢
*Spring, single tube, good quality* .....$1.75
*Revolving (4 tubes)*....*doz.$3.50*
Bemis & Call Co.'s Cast St'l Drive.50%
Morrill's Nos. 1AA, 1A, 1B, 1C, 1D, $15.00.....50%
Hercules, 1 die, each $5.00.....50%
Niagara Hollow Punches.....40
Niagara Solid Punches.....55&10%
Tinners' Hollow, P., S. & W. Co..40
Tinners' Solid, P., S. & W. Co., ₽ doz., $1.44.....40%

### Rail—Barn Door, &c.—
*Sliding Door, Painted Iron, 2½@2¾¢*
*Sliding Door, Wrought Brass, 1⅛ in., lb., 36¢*.....30%
Allith Mfg. Co.: Reliable Hanger Track .....50
Cronk's:
Double Braced Steel Rail..₽ ft. 3¼¢
O. N. T. Rail.....$3.12
Griffin's:
xxx, ₽ 100 ft., 1 x 3-16 in., $3.25; 1¼ x 3-16 in., $3.75.
Hinged Hanger, ₽ 100 ft., 1 x 3 16 in., $3.50; 1¼ x 3-16 in., $4.00.
Lane's:
Hinged Track, ₽ 100 ft.....$3.45
O. N. T., ₽ 100 ft., 1 in., $3 00; 1¼ in., $3.45; 1½ in., $4.00.
Standard, 1¼ in.....₽ 100 ft. $4.00
Lawrence Bros.:
1 x 3-16 in., ₽ 100 ft., $7.50; 1¼ x 3-16 in., $8.75..... .....55&7½%
McKinney's:
Hinged Hanger Track, ₽ ft., 11¢ 60&5
1 x 3-16 Track.....55&7½%
Myers' Stayon Track.....60&5%
Richards Mfg. Co.:
Common, 1 x 3 16 in., $3.00; 1⅛ x 3-16, $3.25; 1¼ x 3-16, $3.50.
Special Hinged Hanger Rail..60&10%
Lag Screw Rail, No. 65.....50%
Gauge Trolley Track, ₽ ft., No. 31, 9¢; No. 32, 14¢; No. 33, 20¢.
No. 50.....60&10%
Nos. 61, $3.00; 62 $3.25; 63, $3.50; 64, $4.00; 45, $3.25; 46, $3.50; 49, No. 1, $3.25; 49, No. 2, $3.50.

### Rakes—
*NOTE.—Many goods are sold at net prices.*
Fort Madison, Red Head Lawn....$3.25
Fort Madison Blue Head Lawn....$2.70
Cronk's:
Steel Garden: Champion, 75%; Ideal, 80; Victor .....80&25
Queen City Lawn, ₽ doz., 20 teeth, $2.85; 24, $3.00..... .....not
Antelope Lawn, ₽ doz.....$4.00
Malleable Garden .....70&10
Ideal Steel Garden, ₽ doz., 12 teeth, $15.00; 14, $16.00; 16, $18.00..... 80
Kohler's:
Lawn Queen, 24 teeth.. ₽ doz. $3.15
Lawn Queen, 22 teeth.. ₽ doz. $3.25
Paragon, 20 teeth..... ₽ doz. $2.70
Paragon, 24 teeth..... ₽ doz. $2.75
Steel Garden, 14 teeth.. ₽ doz. $2.40
Malleable Garden, 14 teeth, ₽ ..... $2.00@2.25
New Nickelson..... 75&10%
See also Hoes.

### Razors—
Lion Razors.....75
Pax Razors.....
New Nickelson, Nos. 1 to 4.....
$2.50.....
Red Devil.....65%

### Reels, Fishing—
Henshaw's:
Model Q, Nos. 1 to 4, Model A, Nos. 1 to 4, Model B, Nos. 1 to 4, Model C, Nos. 1 to 4, Model D, Nos. 1 to 4, Model E, Nos. 1 to 4, Model F, Nos. 1 to 4, Model G, Nos. 1 to 4, Model H, Nos. 1 to 4, Model I, Nos. 1 to 4, Model J, Nos. 1 to 4, Model K, Nos. 1 to 4, Model L, Nos. 1 to 4, Model M, Nos. 1 to 4, Model N, Nos. 1 to 4, Model O, Nos. 1 to 4, Model P, Nos. 1 to 4, Model Q, Nos. 1 to 4, Model R, Nos. 1 to 4, Model S, Nos. 1 to 4, Model T, Nos. 1 to 4, Model U, Nos. 1 to 4, Model V, Nos. 1 to 4, Model W, Nos. 1 to 4, Model X, Nos. 1 to 4, Model Y, Nos. 1 to 4, Model Z, Nos. 1 to 4, Model AA, Nos. 1 to 4, Model BB, Nos. 1 to 4, Model CC, Nos. 1 to 4, Model DD, Nos. 1 to 4, Model EE, Nos. 1 to 4, Model FF, Nos. 1 to 4, Model GG, Nos. 1 to 4, Model HH, Nos. 1 to 4, Model II, Nos. 1 to 4, Model JJ, Nos. 1 to 4, Model KK, Nos. 1 to 4, Model LL, Nos. 1 to 4, Model MM, Nos. 1 to 4, Model NN, Nos. 1 to 4, Model OO, Nos. 1 to 4, Model PP, Nos. 1 to 4, Model QQ, Nos. 1 to 4, Model RR, Nos. 1 to 4, Model SS, Nos. 1 to 4, Model TT, Nos. 1 to 4, Model UU, Nos. 1 to 4, Model VV, Nos. 1 to 4, Model WW, Nos. 1 to 4, Model XX, Nos. 1 to 4, Model YY, Nos. 1 to 4, Model ZZ, Nos. 1 to 4, Model AAA, Nos. 1 to 4, Model BBB, Nos. 1 to 4, Model CCC, Nos. 1 to 4, Model DDD, Nos. 1 to 4, Model EEE, Nos. 1 to 4, Model FFF, Nos. 1 to 4, Model GGG, Nos. 1 to 4, Model HHH, Nos. 1 to 4, Model III, Nos. 1 to 4, Model JJJ, Nos. 1 to 4, Model KKK, Nos. 1 to 4, Model LLL, Nos. 1 to 4, Model MMM, Nos. 1 to 4, Model NNN, Nos. 1 to 4, Model OOO, Nos. 1 to 4, Model PPP, Nos. 1 to 4, Model QQQ, Nos. 1 to 4, Model RRR, Nos. 1 to 4, Model SSS, Nos. 1 to 4, Model TTT, Nos. 1 to 4, Model UUU, Nos. 1 to 4, Model VVV, Nos. 1 to 4, Model WWW, Nos. 1 to 4, Model XXX, Nos. 1 to 4, Model YYY, Nos. 1 to 4, Model ZZZ, Nos. 1 to 4, Model AAAA, Nos. 1 to 4, Model BBBB, Nos. 1 to 4, Model CCCC, Nos. 1 to 4, Model DDDD, Nos. 1 to 4, Model EEEE, Nos. 1 to 4, Model FFFF, Nos. 1 to 4, Model GGGG, Nos. 1 to 4, Model 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### Saws—

Atkins':
Circular ..... 45%
Band ..... 50@50&10%
Butcher Saws ..... 50%
Cross Cuts ..... 35%
One-Man Cross Cut ..... 40%
Narrow Cross Cut ..... 50%
Hand, Rip and Panel ..... 35&5%
Miter Box and Compass ..... 10%
Mulay, Mill and Drag ..... 45%
Wood Saws ..... 40&10%
Chapin-Stephens Co.:
Turning Saws and Frames 30@30&10%
Diamond Saw & Stamping Works:
Sterling Kitchen Saws ..... 30&10&10%
Disston's:
Circular, Solid and Ins'ted Tooth 50%
Band, 2 to 18 in. wide ..... 60%
Band, ¼ to 1¾ ..... 60%
Crossents ..... 45%
Narrow Crossents ..... 50%
Mulay, Mill and Drag ..... 50%
Framed Woodsaws ..... 25%
Woodsaw Blades ..... 25%
Woodsaw Rods, Tinned ..... 15%
Hand Saws, Nos. 12, 99, 9, 16, d100, D8, 120, 76, 77, 8 ..... 25%
Hand Saws, Nos. 7, 107, 107½, 3, 1, 0, 00, Combination ..... 30%
Compass, Key Hole, &c. ..... 25%
Butcher Saws and Blades ..... 30%
C. E. Jennings & Co.'s:
Back Saws ..... 16⅔%
Butcher Saws ..... 25&7½%
Compass and Key Hole Saws, 33⅓&7½%
Framed Wood Saws ..... 25&7½%
Hand Saws ..... 12½%
Wood Saw Blades ..... 33⅓&7½%
Millers Falls:
Butcher Saws ..... 15&10%
Star Saw Blades ..... 15&10%
Massachusetts Saw Works:
Victor Kitchen Saws ..... 40&10&50%
Butcher Saws Blades ..... 35@40%
Peace & Richardson's Hand Saws 30%
Simonds':
Circular Saws ..... 45%
Crescent Ground Cross Cut Saws 30%
One-Man Cross Cuts ..... 40&10%
Gang Mill, Mulay and Drag Saws 45%
Band Saws ..... 50%
Back Saws ..... 25@25&7½%
Butcher Saws ..... 35@35&7½%
Hand Saws ..... 25@25&7½%
Hand Saws, Bay State Brand ..... 45%
Compass, Key Hole, &c. 25@25&7½%
Wood Saws ..... 40&7½%
Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws ..... 50%

### Hack Saw Blades and Frames—

Atkins' Hack Saw Blades A A A 25%
Disston's:
Concave Blades ..... **25%**
Keystone Blades ..... 50%
Hack Saw Frames ..... 30%
Simonds File Co ..... 35%
C. E. Jennings & Co.'s:
Hack Saw Frames, Nos. 175, 180 ..... 40&7½%
Hack Saws, Nos. 175, 180, complete, 40&7½%
Goodell's Hack Saw Blades ..... 40&10%
Griffin's Hack Saw Frames 35&5&10%
Griffin's Hack Saw Blades ..... 35&5&10%
Star Hack Saws and Blades ..... 15&10%
Sterling Hack Saw Blades 30&10&5%
Sterling Hack Saw Frames 30&10&10%
Sterling Power Hack Saw Machines, each, No. 1, $25.00; No. 2, $30.00 10%
Victor Hack Saw Blades ..... 20%
Victor Hack Saw Frames ..... 40%
Whitaker Mfg. Co.:
National Hand Blades ..... 40%
National Hand Frames ..... 30&5%
National Power Blades ..... 30&10%

### Scroll—

Barnes, No. 7, $15 ..... 25%
Barnes' Scroll Saw Blades ..... 40%
Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20 ..... 20%
Lester, complete, $10.00 ..... 15&10%
Rogers, complete, $3.50 and $4.00 .. 15&10%

### Scales—

*Union Platform, Plain $2.10@2.20*
*Union Platform, Stpd. $2.20@2.30*
Chatillon's:
Eureka ..... 25%
Favorite ..... 40%
Grocers' Trip Scales ..... 50%
The Standard Portables ..... 40%
The Standard R. R. and Wagon ..... 50&10%

### Scrapers—

*Box, 1 Handle ..... doz. $1.85@2.10*
*Box, 2 Handle ..... doz. $2.35@2.50*
*Ship ... Light, $2.00; Heavy, $4.50*
Chapin-Stephens Co., Box 30@30&10%
Richards Mfg. Co., Foot ..... 60%

### Screws—Bench and Hand

*Bench, Iron, doz., 1 in., $2.50@2.75; 1⅛ $3.00@3.25; 1¼ [illegible] 3.75*
*Bench, Wood ..... 20@20&10%*
*Hand, Wood .... 70&10@70&10&10%*
Chapin-Stephens Co., Hand ..... 70@70&10&2½%

### Coach, Lag and Hand Rail—

*Lag, Cone Point ... 80&5@80&10%*
*Coach, Gimlet Point .. 80@80&5%*
*Hand Rail ..... 70&10@75%*

### Jack Screws—

*Standard List ..... 70&10@75%*
Millers Falls ..... 50&10&10%
Swett Iron Works ..... 70@75

### Machine—

*Cut Tread, Iron, Brass or Bronze:*
*Flat Head or Round Head, 50@50&10%*
***Fillister Head ..... 40@40&10%***
*Rolled Thread, F. H. or R. H., Iron ..... 75&10%*
*F. H. or R. H., Brass, Nos. 8 to 14 ..... 65&10%*

### Set and Cap—

*Set (Iron) ..... 75&10&7½%*
*Set (Steel), net advance over Iron ..... 25%*
*Sq. Hd. Cap ..... 70&10&7½%*
*Hex. Hd. Cap ..... 70&10&7½%*
*Rd. Hd. Cap ..... 50&7½%*
*Fillister Hd. Cap ..... 60&7½%*

### Wood—

*List July 23, 1903.*
*Flat Head, Iron .... 87½&5@.. %*
*Round Head, Iron .... 85&5@.. %*
*Flat Head, Brass .... 80&5@.. %*
*Round Head, Brass .. 77½&5@.. %*
*Flat Head, Bronze .... 75&5@.. %*
*Round Head, Bronze . 72½&5@.. %*
*Drive Screws ..... 87½&5@.. %*

### Scroll Saws—

See *Saws, Scroll.*

### Scythes— *Per doz.*

*Grass, No. 1, Plain ..... $7.00*
*Clipper, Bronzed Webb ..... $7.25*
*No. 3 Clipper, Pol'd Webb ... $7.50*
*No. 6 Clipper and Solid Steel. $7.75*
*Bush, Weed and Bramble, Nos. 11, 12 and 13 ..... $7.25*
*Grain, No. 1 ..... $9.00@9.50*
*Bronzed Webb, No. 1 ... $9.25@9.75*
*Nos. 3 and 4 Clipper, Grain, $9.50@10.00*
*Solid Steel, No. 6 .... $10.00@10.50*

### Seeders, Raisin—

Enterprise ..... 25@30%

### Sets— Awl and Tool—

Fray's Adj. Tool Handles, Nos. 1, $12; 2, $16; 3, $12 ..... 50%
Millers Falls Adj. Tool Handles, No. 1, $12; No. 4, $12; No. 5, $18 .. 20&10%

### Garden Tool Sets—

Ft. Madison Three Plows, Hoe, Rake and Shovel ..... ℔ doz. sets $9.00

### Sets, Nail—

*Octagon ..... gro. $3.50@3.75*
Buck Bros ..... 27½%
Cannon's Diamond Point, ℔ gro. $12, 40&10%
Mayhew's ..... ℔ gro. $9.00
Snell's Corrugated, Cup Pt. ..... 40&10%
Snell's Knurled, Cup Pt. ..... 40&10%
Victor Knurled, Cup Pt. ... ℔ gro. $7.50

### Rivet—

*Regular list ..... 75@75&10%*

### Saw—

Atkin's:
Criterion ..... 40%
Adjustable ..... 40%
Disston's Star, Monarch and Triumph ..... 30%
Morrill's No. 1 ..... $15.00
Nos. 3 and 4, Cross Cut .... $20.60
No. 5, Mill ..... $30.00
Nos. 10, 11, 95 ..... $15.60
No. 1 Old Style ..... $10.00
Special ..... $16.25
} 50%
Giant Royal Cross Cut ..... ℔ doz. $8.00
Royal, Hand ..... ℔ doz. $4.50
Taintor Positive ..... ℔ doz. $6.75

### Shaving—

Fox Shaving Sets, No. 30 ..... ℔ doz., net, $24.00
Smith & Hemenway Co.'s ..... 75%

### Sharpeners, Knife—

Pike Mfg. Co.:
Fast Cut Pocket Knife Hones, ℔ doz ..... $1.50
Mounted Kitchen Sand Stone, ℔ doz ..... $1.50
Natural Grit Carving Knife Hones, ℔ doz ..... $3.00
Quick Cut Emery Carving Knife Hones, ℔ doz ..... $1.50
Quick Edge Pocket Knife Hones, ℔ doz ..... $2.50
} 50%

### Skate—

Smith & Hemenway Co., Eureka .. 50%

### Shaves, Spoke—

*Iron ..... doz. $1.25*
*Wood ..... doz. $2.00*
Bailey's (Stanley R. & L. Co.) ..... 45%
Chapin-Stephens Co. ..... 30@30&10%
Goodell's, ℔ doz. $9.00 ..... 15&10%

### Shears—

| | 7 | 8 | 9 in. |
|---|---|---|---|
| *Cast Iron* | | | |
| *Best* | $16.00 | 18.00 | 20.00 gro. |
| *Good* | $13.00 | 15.00 | 17.00 gro. |
| *Cheap* | $5.00 | 6.00 | 7.00 gro. |

*Straight Trimmers, &c.:*
*Best quality Jap .... 70@70&10%*
*Best quality Nickel .. 60@60&10%*
*Tailors' Shears ..... 40@40&10%*
Acme Cast Shears ..... 40@40&5
Heinisch's Tailor's Shears ..... 10%
National Cutlery Co.'s Nickel Plated, 60&10%; Japan Handles ..... 70&10%
Wilkinson Shear & Cutlery Co.:
Sheep, 1900 list ..... 30&10&5%
Grass ..... 50&10%
Horse or Mule ..... 50&10%
J. Wiss & Sons Co.:
Best Quality Jap'd ..... 60&10%
Best Quality Nickeled ..... 50&10%
Tailors' ..... 25%

### Tinners' Snips—

*Steel Blades ..... 20&5@20&10%*
*Steel Laid Blades ..... 40&10@50%*
Forged Handles, Steel Blades, Berlin ..... 50%
Heinisch's Snips ..... 40%
Jennings & Griffin Mfg. Co.'s 6½ to 10 in ..... 33⅓&7½%
National Cutlery Co.'s Forged Steel. 50%
Niagara Snips ..... 40%
P., S. & W. Forged Handles, 25%; W. R. W ..... 40&10%
J. Wiss & Sons Co.:
Wiss Forged Steel ..... 25%

### Pruning Shears—

Cronk's Hand Shears ..... 33⅓%
Cronk's Wood Handle Shears .... 33⅓%
Disston's Combined Pruning Hook and Saw, ℔ doz. $18.00 ..... 25%
Disston's Pruning Hook only, ℔ doz., $12.00 ..... 25%
John T. Henry Mfg. Co.:
Pruning Shears, all grades ..... 40%
P., S. & W. Co ..... 40&10%
Columbian Cutlery Co.:
Hedge, Wilcut Brand ..... 60&10%
Lawn and Border, Wilcut Brand, 60&10%

### Sheaves—Sliding Door—

Reading ..... 40%
R. & E. list ..... 15%

### Sliding Shutter—

Reading list ..... 40%
R. & E. list ..... 10%

### Shells—Shells, Empty—

Brass Shells, Empty:
Climax, 10 and 12 gauge ..... 65&10%
Club, Rival, 65&5%; First Quality, 60&5%
Paper Shells, Empty:
New Rapid, 10, 12, 16 and 20 gauge, 25&10%
Climax, 10 and 12 gauge; Acme, 10, 12, 16 and 20 gauge; Ideal, 10, 12, 16 and 20 gauge; Leader grade, 25&5%
Union League, 12 and 12 gauge; Rival Grade ..... 25%
New Climax, Defiance 10, 12, 14, 16 and 20 gauge; Climax, 14, 16 and 20 gauge ..... 20&5%
Challenge, Monarch, 10, 12, 16 and 20 gauge; League, Union, 14, 16 and 20 gauge; Repeater Grade .. 20%

### Shells, Loaded—

*Loaded with Black Powder .. 40%*
*Loaded with Smokeless Powder, medium grade ..... 40&5%*
*Loaded with Smokeless Powder, high grade ..... 40&10&10%*
Union Metallic Cartridge Co.:
New Club, Black Powders ..... 40%
Nitro Club, Smokeless Powders 40&5%
Arrow, Smokeless Powders 40&10&10%
Winchester:
Smokeless Repeater Grade ..... 40&5%
Smokeless Leader Grade ... 40&10&10%
Black Powder ..... 40%

### Shingles, Metal— Per Sq.

| | Painted. | Galv. |
|---|---|---|
| Edwards Mfg. Co.: | | |
| 14 x 20 | $4.25 | $6.00 |
| 10 x 14 | 4.50 | 6.25 |
| 7 x 10 | 4.75 | 6.50 |
| Wheeling Corrugating Co.: | | |
| Dixie, 14 x 20 in | $4.25 | $5.50 |
| Dixie, 10 x 14 in | 4.50 | 6.00 |
| Dixie, 7 x 10 in | 5.00 | 6.75 |

### Shoes, Horse, Mule, &c.—

*F.o.b. Pittsburgh:*
*Iron ..... per keg. $4.10*
*Steel ..... per keg. $3.85*
Burden's, all sizes ..... ℔ keg $3.90

### Shot—

*25-lb. bag.*
*Drop, up to B ..... $1.80*
*Drop, B and larger ..... 2.05*
*Buck ..... 2.05*
*Chilled ..... 2.05*
*Dust ..... 2.30*

### Shovels and Spades—

*Association List, Nov. 15, 1902. 40%*
Avery Stamping Co ..... 40%

### Snow Shovels—

*Long Handle ..... $3.25@$3.50*
*Wood and Mall, D Handle, $3.75@$4.00*

### Sieves and Sifters—

*Hunter's Imitation, gro .... $9.50*
*Hunter's Genuine, per gro .. $12.00*

### Sifters, Ash—

Acme Ball Bearing Sales Co., Acme Automatic Ash Sifter, each, $3.25; ℔ doz ..... $39.00

### Sieves, Seamless Metallic

| *Mesh* | *1¼* | *16* | *18* | *20* |
|---|---|---|---|---|
| | *Per dozen.* | | | |
| *Iron Wire* | *$1.05* | *1.05* | *1.10* | *1.20* |
| *Tinned Wire* | *$1.15* | *1.15* | *1.20* | *1.30* |

### Sieves, Wooden Rim—

*Nested, 10, 11 and 12 Inch.*
*Mesh 18, Nested .... doz. $0.90@0.95*
*Mesh 20, Nested .... doz. $1.00@1.05*
*Mesh 24, Nested .... doz. $1.30@1.40*

### Sinks, Cast Iron—

*Painted, Standard list:*
*12 x 12 to 22 x 36 in ..... 60%*
*20 x 24 to 24 x 50 in ..... 50%*
*24 x 60 to 24 x 120 in ..... 30%*
Barnes' low list:
Up to and including 20 x 36 in .. 50&5%
20 x 40 to 24 x 50 in ..... 45%

*NOTE.—There is not entire uniformity in lists used by jobbers.*

### Skeins, Wagon—

*Cast Iron ..... 70@75&10%*
*Steel ..... 40@45%*

### Slates, School—

*Factory Shipments.*
*"D" Slates ..... 50@50&10%*
*Eureka, Unexcelled Noiseless .. 60&7 tens.*
***Victor A, Noiseless. 60&4 tens &5%***

### Slaw Cutters—See *Cutters.*

### Snaps, Harness—

*German ..... 40@40&10%*
Covert Mfg. Co.:
Derby, 25%; Yankee, 30&2%; Yankee Roller, 30&2%.
High Grade, 40 ; Trojan ..... 40%
Jockey ..... 25%

### Snaths—

*Scythe ..... 60%*

### Snips, Tinners—See *Shears.*

### Spoons and Forks—

### Silver Plated—

*Good Quality ..... 50&10@60&5%*
*Cheap ..... 60@60&10%*
International Silver Co:
1847 Rogers Bros., 40&10%; Rogers & Hamilton ..... 50&10%
Rogers & Bro., William Rogers' Eagle Brand ..... 50&10%
Anchor, Rogers Brand ..... 60%
Wm. Rogers & Son ..... 60&10%

### Miscellaneous

*German Silver ..... 60@60&5%*

### Tinned Iron—

*Teas ..... per gro. 50@55¢*
*Tables ..... per gro. $0.90@$1.00*

### Springs— Door—

Bardsley's Spring and Check ..... 40%
Chicago (Coil) ..... 40&10%
Gem (Coil) ..... 20%
Pullman Door and Gate ..... 10%
Reliance (Coil) ..... 40&10%
Star (Coil) ..... 30%
Torrey's Rod, 39 in ..... ℔ doz. $1.10

### Carriage, Wagon, &c.—

| *1¼ in. and Wider:* | *Per 100 lb.* |
|---|---|
| *Black* | *$4.75@$5.00* |
| *Half Bright* | *$4.75@$5.00* |
| *Bright* | *$5.25@$5.50* |

*Painted Seat Springs:*
*1½ x 2 x 26 .... per pair. 45@47¢*
*1½ x 3 x 28 .... per pair. 68@71¢*

### Sprinklers, Lawn—

American Foundry & Mfg. Co.:
Cactus, 65%; Japanese, 70%; National, ℔ doz ..... $12.00
Enterprise ..... 25@30%
Philadelphia No. 1, ℔ doz. $12; No. 2, $15; No. 3, $20 ..... 30%

### Squares—

*Nickel plated .. } List Jan. 5, 1900.*
*Steel and Iron . } 80@80&5%*
*Rosewood Hdl. Try Square and T-Bevels ..... 60&10&10@70%*
***Iron Hdl. Try Squares and T-Bevels ..... 40&10@40&10&10%***
Disston's Try Squares and Bevels, Rosewood Handle, 60 & 10%; Iron Stock and Bevel ..... 15%

### Squeezers, Lemon

*Wood, Porcelain Lined:*
*Cheap ..... doz. $1.00*
*Good Grade ..... doz. $1.25*
*Tinned Iron ..... doz. $0.75@1.00*
*Iron, Porcelain Lined ... doz. $1.75*

### Staples—

*Barbed Blind ..... 85&5@85&10%*
*Electricians' ..... 80&10&10@85%*
*Fence Staples, Polished, $2.05; Galvanized ..... $2.35*
*Poultry Netting Staples ..... per lb. 3¼@3½¢*

### Steels, Butchers'—

Dick's ..... 30%
Foster Bros.' ..... 30%

### Steelyards— .... *30@30&10%*

### Stocks and Dies—

*Blacksmiths' ..... 50@50&10%*
Curtis Rev'ble Ratchet Die Stock .. 25%
Derby Screw Plates ..... 25%
Green River ..... 25%
Lightning Screw Plate ..... 25%
Little Giant ..... 25%
Reece's New Screw Plate ..... 25%

### Stoners, Cherry—

Enterprise ..... 25@30%

### Stones—Oil, &c.

Pike Mfg. Co., 1907 list: ℔ lb
Arkansas St. No. 1, 3 to 5½ in. $2.80
Arkansas St. No. 1, 5½ to 8 in. $3.50
Arkansas Slips No. 1 ..... $1.00
Lily White Washita, 4 to 8 in. 60¢
Rosy Red Washita, 4 to 8 in .. 60¢
Washita St., Extra, 4 to 8 in .. 50¢
Washita St., No. 1, 4 to 8 in .. 40¢
Washita St., No. 2, 4 to 8 in .. 25¢
Lily White Slips ..... 90¢
Rosy Red Slips ..... 90¢
Washita Slips, Extra ..... 80¢
Washita Slips, No. 1 ..... 70¢
Washita Slips, No. 2 ..... 40¢
} 33⅓%
India Oil Stones (entire list) .. 33⅓%
Quickcut Emery and Corundum Oil Stone, Double Grit ..... 40%
Quickcut Emery and Corundum Axe Stone, Double Grit ..... 33⅓%
Quickcut Emery Rubbing Bricks .. 40%
Hindostan No. 1, R'g'lar, ℔ lb 8¢
Hindostan No. 1, Small .. ℔ lb 10¢
Axe Stones (all kinds) .....
Turkey Oil Stones, Extra, 5 to 8 in ..... ℔ lb 80¢
Queer Creek Stones, 4 to 8 in. 20¢
Queer Creek Slips ..... 40¢
Sand Stone ..... 6¢
} 33⅓%

### Scythe Stones—

Pike Mfg. Co., 1901 list:
Black Diamond S. S. ₱ gro. $12.00
Lamoille S. S. ₱ gro. $11.00
White Mountain S. S. ₱ gro. $9.50
Green Mountain S. S. ₱ gro. $7.00
Extra Indian Pond S. S. ₱ gro. $8.00
No. 1 Indian Pond S. S. ₱ gro. $7.50
No. 2 Indian Pond S. S. ₱ gro. $5.00
Leader Red End S. S. ₱ gro. $5.00
Quick Cut Emery....₱ gro. $10.00
Pure Corundum.....₱ gro. $18.00
Crescent .....$7.00
Emery Scythe Rifles, 2 Coat. $8.80
Emery Scythe Rifles, 3 Coat. $11.00
Emery Scythe Rifles, 4 Coat. $13.20
Balance of 1904 list 33⅓%
E'lectro (Artificial), ₱ gro., $12.00 .....33⅓%
Lightning (Artificial), ₱ gro., $18.00 .....33⅓%

### Stoppers, Bottle—

Victor Bottle Stoppers.....₱ gro. $9.00

### Stops—Bench—

Millers Falls.....15&10%
Morrill's, ₱ doz., No. 1, $10.00....50
Morrill's, No. 2, $12.50.....50%

### Door—

Chapin-Stephens Co.....50@50&10%

### Plane—

Chapin-Stevens Co.....20%

### Straps—Box—

Acme Embossed, case lots..20&10&10%
Cary's Universal, case lots...20&10&10

### Stretchers, Carpet—

*Cast Iron, Steel Points..doz.55¢*
*All Steel Socket...doz.$2.00@2.25*
Excelsior Stretcher and Tack Hammer Combined, ₱ doz., $6.00....20%

### Stuffers, Sausage—

Enterprise Mfg. Co.....25@25&7½%
National Specialty Co., list Jan. 1, 1902 .....30&5%
P., S. & W. Co.....40&10&5%

### Sweepers, Carpet—

| | ₱ doz. |
|---|---|
| Bissell Carpet Sweeper Co.: | |
| Superba, Crotch Mahogany | $36.00 |
| Triumph, Fancy Veneers | $33.00 |
| Parlor Queen, Fig. Rosewood | $30.00 |
| Elite, Hungarian Ash | $29.00 |
| Am. Queen, Fig. Mahogany | $27.00 |
| Ideal, Bird's-Eye Maple | $25.00 |
| Grand Rapids, Nickel, $24.00; Japan | $22.00 |
| Standard, Nickel, $22.00; Japan | $20.00 |
| Crown Jewel, Nickel, $21.00; Jap. | $19.00 |
| Crystal, Glass Top | $36.00 |
| Grand, 17 in. wide | $36.00 |
| Parlor Grand | $48.00 |
| Club, 24 in. wide | $51.00 |
| Hall 28 in. wide | $60.00 |

***NOTE.—Rebates:* 50c *per dozen on three dozen lots;* $1 *per dozen on five-dozen lots;* $2 *per dozen on ten-dozen lots;* $2.50 *per dozen on twenty-five dozen lots.***

## Tacks, Finishing Nails, &c.

*American Carpet Tacks...90&40%*
*American Cut Tacks.....90&40%*
*Swedes' Cut Tacks.....90&40%*
*Swedes' Upholsterers'....90&50%*
*Gimp Tacks.....90&50%*
*Lace Tacks.....90&50%*
*Trimmers' Tacks.....90&40%*
*Looking Glass Tacks.....65%*
*Bill Posters' and Railroad Tacks, 90&50&10%*
*Hungarian Nails.....80&20%*
*Finishing Nails.....70%*
*Trunk and Clout Nails...80&10%*

*NOTE.—The above prices are for Straight Weights.*

### Miscellaneous—

*Double Pointed Tacks, 90&6 tens@—%*
See also Nails, Wire.

### Tanks, Oil and Gasoline—

Wilson & Friend Co.:

| Gal. | Gasoline | Oil |
|---|---|---|
| 30 | $2.75 | $3.00 |
| 60 | $3.50 | $4.00 |
| 110 | $5.00 | $5.75 |

### Tapes, Measuring—

*American Asses' Skin....50@—%*
*Patent Leather.....25@30@5%*
*Steel .....33⅓@5%*
*Chesterman's .....25@25@5%*
Kraffel & Esser Co.:
Favorite, Ass Skin.....40&10@50
Favorite, Duck and Leather..... 25&5@25&10
Metallic and Steel, lower list, 35@35&5%; Pocket, 35@35&5%.
Lufkins:
Asses' Skin.....40&10@50%
Metallic .....30@30&5%
Patent Bend, Leather...25&5@25&10%
Pocket .....40@40&5%
Steel .....33⅓@35%
Wiebusch & Hilger:
Chesterman's Metallic, No. 34L, etc. .....25%
Chesterman's Steel, No. 1038L, etc. .....35%

### Teeth, Harrow—

*Steel Harrow Teeth, plain or headed, 5/8-inch and larger, per 100 lb.....$2.55@$2.80*

### Thermometers—

*Tin Case, Cabinet, Flange, Dairy, &c.....30@35%*

### Ties, Bale—Steel Wire—

*Single Loop.....82½@10%*
*Monitor, Cross Head, &c. 70@2½%*

### Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

### Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

### Tire Benders, Upsetters, &c.

See *Benders and Upsetters, Tire.*

### Tools—Coopers'—

L. & I. J. White.....20@20&5

### Haying—

Myers' Hay Tools.....45%

### Ice Tools—

Gifford-Wood Co.....15%

### Miniature—

Smith & Hemenway Co.'s, Davidson, ₱ doz., Nickel Plated, $1.50; Gold Plated.....$2.00

### Saw—

Atkins' Cross Cut Saw Tools....35&5%
Simond's Improved.....33⅓
Simonds' Crescent.....25

### Ship—

L. & I. J. White.....25%

### Transom Lifters—

See *Lifters, Transom.*

### Traps—Fly—

*Balloon, Globe or Acme, doz., $1.15@$1.25; gro....$11.50@12.00*
*Harper, Champion or Paragon, doz., $1.25@1.40; gro.$13.00@13.50*

### Game—

*Imitation Oneida.....75@10%*
Newhouse .....45@45&5%
Hawley & Norton.....65%
Victor .....75@75&10%
Oneida Community Jump.....50%
Hector .....75@75&10%

### Mouse and Rat—

*Mouse, Wood, Choker, doz. holes, 12¢*
*Mouse, Round or Square Wire, doz. 85@90¢*
Marty French Rat and Mouse Traps (Genuine):
No. 1, Rat, ₱ doz., $13.25..$11.50 doz.
No. 3, Rat, ₱ doz., $6.50...$5.75 doz.
No. 3½, Rat, ₱ doz., $5.25. $4.70 doz.
No. 4, Mouse, ₱ doz., $3.85. $3.00 doz.
No. 5, Mouse, ₱ doz., $3.00. $2.25 doz.
Oneida Community:
Out o' Sight, Mouse, ₱ doz.....$0.60
Out o' Sight, Rat, ₱ doz.....1.25
Easy Set, Mouse, ₱ doz..... .35
Easy Set, Rat, ₱ doz..... 1.00
Wood Choker, Rat, ₱ doz. holes. .12
Premier Tin Choker, 5 hole, ₱ doz. traps..... .75

### Trowels—

Disston Brick and Pointing.....25%
Disston Plastering.....20%
Disston "Standard Brand" and Garden Trowels.....30%
Kohler's Steel Garden Trowels, ₱ gro., 5 in., $4.80; 6 in., $6.00.
Never-Break Steel Garden Trowels.. ₱ gro. $6.00
Woodrough & McParlin, Plastering.25%

### Trucks, Warehouse, &c.—

B. & L. Block Co.:
New York Pattern.....50&10%
Western Pattern.....60&10
Handy Trucks.....₱ doz. $16.00
Grocery .....₱ doz $15.00
McKinney Trucks.....each, net $10.00
Model Stove Trucks.....₱ doz $18.50

### Tubs, Wash—

*M'f'gr's list, price per gross.*

| No. | 0 | 1 | 2 | 3 |
|---|---|---|---|---|
| *Galvanized* | $67 | $79 | $89 | $99 |

*10&7½&5&5%*

### Twine, Miscellaneous—

*Flax Twine:*
*No. 9, ¼ and ½-lb. Balls..21@23¢*
*No. 12, ¼ and ½-lb. Balls..19@21¢*
*No. 18, ¼ and ½-lb. Balls..16@18¢*
*No. 24, ¼ and ½-lb. Balls. 15½@17½¢*
*No. 36, ¼ and ½-lb. Balls..15@17¢*
*Chalk Line, Cotton ½-lb. Balls .....24@29¢*
***Cotton Mops, 6, 9, 12 and 15 lb to doz.....8½@19¢***
*Cotton Wrapping. 5 Balls to lb according to quality..13½@19¢*
*American 2-Ply Hemp, ¼ and ½-lb. Balls.....12½@15¢*
*American 3-Ply Hemp ¼ Balls .....13½@16¢*
*India 2-Ply Hemp, ¼ and ½ Balls (Spring Twine)...7½@9¢*
*India 3-Ply Hemp, 1-lb. Balls 7½@9¢*
*India 3-Ply Hemp, 1½-lb Balls, 7@8½¢*
*2, 3, 4 and 5-Ply Jute, 1½ lb. Balls .....9@11¢*
*Mason Line, Linen, ½-lb Bls.45¢*
*No. 264 Mattress, ¼ and ½ lb. Balls, according to quality. 40@60¢*
*Wool, 3 to 6 ply....B 6¢; 1 7½¢*

## Vises—

*Solid Box.....50&5@50&10&5%*

### Parallel—

Athol Machine Co.:
Simpson's Adjustable.....10%
Standard .....40
Amateur .....25
Columbian Hdw. Co.....40
Fisher & Norris Double Screw, net, each, Nos. 2, $10.50; 3, $16.00; 4, $20.50; 5, $27.00.
Fulton Mach. & Vise Co.:
Reed, Swivel.....25
Star, Solid Jaw.....10
Hollands':
Machinists' .....40@40&5
Keystone .....65&5@70
Lewis Tool Co.:
Adjustable Jaw.....30
Monarch, 50...; Solid Jaw.....50
Massey Vise Co.:
Clincher .....40%
Perfect, 15%; Lightning Grip.....15%
Merrill's .....20%
Millers Falls Oval Slide Pattern.60&10
Parker's:
Victor, 20@25%; Regulars....20@25%
Vulcan's .....40@45
Combination Pipe.....55@60
Prentiss .....20@25
Rock Island.....25%
Snediker's X. L.....33⅓%
Stephens' .....33⅓

### Saw Filers

Disston's D 3 Clamp and Guide, ₱ doz., $24.00, 30...; Clamps.....30%
Perfection Saw Clamps, ₱ doz....$4.50
Reading .....60%

### Wood Workers—

Fulton Mach. & Vise Co.:
Reed .....25%
Star .....40%
Massey Vise Co.:
Lightning Grip, 15%; Perfect....15%
Wyman & Gordon's Quick Action, 6 in., $6.00; 9 in., $7.00; 14 in., $8.00.

### Miscellaneous—

Holland's Combination Pipe..60@60&5%
Massey's Quick Action Pipe.....40%
Parker's Combination Pipe: 87 Series, 60%; 187 Series, 60&5%; No. 870, 40%.
Rock Island Pipe.....25%

## Wads—*Price per M.*

*B. E., 11 up.....60¢*
*B. E., 9 and 10.....70¢*
*B. E., 8.....80¢*
*B. E., 7.....80¢*
*P. E., 11 up.....$1.00*
*P. E., 9 and 10..... 1.25*
*P. E., 8..... 1.50*
*P. E., 7..... 1.50*
*Ely's B. E., 11 and larger.$1.70@1.75*
*Ely's P. E., 12 to 20....$3.00@3.25*

*Dis. 15%*

### Ware, Hollow—Cast Iron, Hollow—

*Store Hollow Ware:*
*Enameled .....45&10%*
*Ground .....50&5%*
*Plain or Unground.....60%*
*Country Hollow Ware, per 100 lbs .....$2.75@$3.00*
*White Enameled Ware:*
*Maslin Kettles.....65&10%*
*Covered Wares:*
*Tinned and Turned....35&10%*
*Enameled .....45&10%*
See also *Pots, Glue.*

### Enameled—

Agate Nickel Steel Ware.....33⅓%
Iron Clad Ware.....70&10%
Lava and Volcanic, Enameled..40&10%

### Tea Kettles—

*Galvanized Tea Kettles:*

| *Inch* | 6 | 7 | 8 | 9 |
|---|---|---|---|---|
| *Each* | 45¢ | 50¢ | 55¢ | 65¢ |

### Steel Hollow Ware—

Avery Spiders and Griddles..65@65&5%
Avery Kettles.....60%
Porcelained .....50&5@50&10
Never Break Spiders and Griddles.. 65&5%
Never Break Kettles.....60
Solid Steel Spiders and Griddles.65&5
Solid Steel Kettles.....60

### Warmers, Foot—

Pike Mfg. Co., Soapstone....40@40&10%

### Washboards—

Solid Zinc: ₱ doz.
Crescent, family size, beat frame, $4.05
Red Star, family size, stationary protector .....$4.05
Double Zinc Surface:
Saginaw Globe, family size, stationary protector. .....$4.65
Cable Cross, family size, stationary protector .....$5.60
Single Zinc Surface:
Nasad, family size, open back perforated .....$3.40
Single Saginaw Globe. .....$2.85
Brass Surface:
Brass King, Single Surface, open back .....$4.05
Nickel Plate Surface:
No. 100, Nickel Plate, Single Surface .....$3.60
Glass Surface:
Glass King, Single Surface, open back .....$3.95
Enamel Surface:
Enamel King, Single Surface, ventilated back .....$3.95

### Washers—Leather, Axle—

*Solid .....90@90&10%*
*Patent .....90@90&10%*
*Coil: ⅜ ½ ⅝ ¾ Each*
*9¢ 10¢ 11¢ 12¢ per box.*

### Iron or Steel—

*Size bolt.... 5-16 ⅜ ½ ⅝ ¾*
*Washers....$4.65 3.75 2.75 2.25 2.05*
*The above prices are based on $6.75 off list.*
*In lots less than one keg add ½¢ per lb.; 5 lb. boxes add ½¢ to list.*

### Cast Washers—

*Over ½ inch, barrel lots, per lb. 1½@1¾¢*

### Wedges—

*Oil Finish.....lb., 2¼@2¾¢*

### Weights—Hitching—

Covert Mfg. Co.....30&2

### Sash—

*Per net ton, f.o.b. factory:*
*Eastern District.....$21.00@—*
*Western and Central Districts .....$19.00@$20.00*

### Wheels, Well—

*8-in., $2.00; 10-in., $2.30; 12-in., $3.00; 14-in., $4.75.*

### Wire and Wire Goods—

*Bright and Annealed:*
*6 to 9.....72½&10&7½%*
*10 to 18.....72½&10&10%*
*19 to 26.....75&10&10&2½%*
*27 to 36.....77½&7½%*
*Galvanized:*
*6 to 9.....72½&10%*
*10 to 14.....72½&10&5%*
*15 to 16.....72½&10&5%*
*17 to 18.....72½%*
*19 to 26.....70&5&2½%*
*27 to 36.....65&10&10%*
*Coppered:*
*6 to 9.....65&10&10%*
*10 to 14.....70&10&5%*
*15 to 18.....65&10&10&10%*
*19 to 26.....70&5&2½%*
*27 to 36.....72½&10&2½%*
*Tinned:*
*6 to 18.....67&10&10%*
*Brass .....15½¢ lb., base*
*Copper .....15¢ lb., base*
*Cast Steel Wire.....50%*

### Spooled Wire—

*Annealed and Tinned.....75%*
*Brass and Copper.....70%*
***Retailers' Assortments, per box, $2.10@$2.40***
Wire Clothes Line, See Lines.
Wire Picture Cord, see Cord.

### Bright Wire Goods—

*Steel Wire Goods..90&33⅓@—%*
*Brass Wire Goods....90@90&10%*
*Brass Cup and Shoulder Hooks, 85&10%*

### Wire Cloth and Netting—

*Galvanized Poultry Netting, 80&2½@80&7½%*
*Painted Screen Cloth, 100 ft., $1.35*
*Standard Galv. Hardware Grade: 100 ft. rolls, 2½ to 48 in. wide, Per 100 sq. ft.*
*Nos. 2, 2½ and 3 Mesh....$2.75*
*Nos. 4 and 5 Mesh.....$3.00*
*No. 6 Mesh.....$3.25*
*Nos. 7 and 8 Mesh.....$3.75*

### Wire, Barb—See *Trade Report*

### Wrenches—

*Agricultural .....80&10&10%*
*Alligator or Crocodile..70&10@75%*
***Baxter Pattern S Wrenches...***
*70&5@70&10%*
*Drop Forged S.....45@45&5%*
Acme .....60&10
Alligator Pattern, 70...; Bull Dog..70
Bemis & Call's:
Adjustable S, 40...; Adjustable S Pipe, 40...; Briggs Pattern, 40...; Combination Bright, 40...
Steel Handle Nut.....50
Combination Black .....10&5
Merrick Pattern .....
Boardman's .....40
Coes' Genuine Knit. H.D. .....
Coes' Genuine Stee. H.D. .....
Coes' Genuine Ke. Monkey .....
Coes' Genuine Hammer Head .....
Coes' " Monkey .....
Dauchies Engineers .....10&5
Eagle .....
Gem Pocket .....40
Hercules .....70
W. & B. Monkey .....
Case lots .....70&5
Less than case lots .....50%
W. & B. Railroad Spanner .....
Case lots .....50
Less than case lots .....10&5
Solid Handle P. S. & W. .....50&10
full case .....50&10&5
Stillson .....65
Twenty Wrench Co.
Twenty Special Drop Handle .....10&5
Other Wrenches .....50
Vulcan and Advance Chain .....50
Whitaker Machine's
Case Lots .....50&10
Less than case lots .....50%

### Fruit Jar—

Beni. P. Forbes Triumph, ₱ gro., $7.50, per doz. .....$0.90

### Wrought Goods—

*Staples, Hooks, &c. Hat March 17, '92.....85&10&10%*

## Zinc—*(Cask lots at mill.)*

*Sheet.....per 100 lb.. $7.00*

# CURRENT METAL PRICES.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

## IRON AND STEEL—

### Bar Iron from store—

Refined Iron:

1 to 1⅞ in. round and square } ₩ lb 1.90¢
1½ to 4 in. x ⅜ to 1 in. }
1½ to 4 in. x ¼ to 5-16 ₩ lb 2.10¢
Rods—⅝ and 11-16 round and square ₩ lb 2.10¢

| Angles: | Cts ₩ lb |
|---|---|
| 3 in. x ¼ in. and larger | 2.25¢ |
| 3 in. x 3 16 in. and ¼ in. | 2.30¢ |
| 1½ to 2½ in. x ¼ in. | 2.10¢ |
| 1½ to 2¾ in. x 3-16 in. and thicker | 2.05¢ |
| 1 to 1¼ in. x 3-16 in. | 2.10¢ |
| 1 to 1¼ x ⅛ in. | 2.15¢ |
| ⅞ x ⅛ in. | 2.30¢ |
| ¾ x ⅛ in. | 2.40¢ |
| ⅝ x ⅛ in. | 3.45¢ |
| ½ x 3-32 in. | 3.55¢ |
| Tees: | |
| 1 in | 2.40¢ |
| 1¼ in. | 2.20¢ |
| 1½ to 2½ in. | 2.10¢ |
| 3 in. and larger | 2.35¢ |
| Beams | 2.25¢ |
| Channels, 3 in. and larger | 2..5¢ |
| Bands—1½ to 6 x 3-16 to No. 8 | 2.25¢ |
| "Burden's Best" Iron, base price | 3.15¢ |
| Burden's "H. B. & S." Iron, base price | 2.95¢ |
| "Ulster" | 3.20¢ |
| Norway Bars | 3.30¢ |

### Merchant Steel from Store—

| | per lb |
|---|---|
| Bessemer Machinery | 1.90¢ |
| Toe Calk, Tire and Sleigh Shoe | 2.50@3.00¢ |
| Best Cast Steel, base price in small lots | 7¢ |

### Sheets from Store—

#### Black

| | One Pass, C.R. Soft Steel. | R. G. Cleaned. |
|---|---|---|
| No. 14 | ₩ lb 2.50 | 2.90¢ |
| Nos. 18 to 21 | ₩ lb 2.95 | 3.10¢ |
| No. 27 | ₩ lb 3.15 | 3.40¢ |
| No. 28 | ₩ lb 3.20 | 3.50¢ |

#### Russia, Planished, &c.

Genuine Russia, according to assortment, W. Dewees wood ₩ lb 11¾@14½¢
Patent Planished ₩ lb A, 10¢; B, 9¢, net.

#### Galvanized.

Nos. 14 to 16 ₩ lb, 3.15¢
Nos. 22 to 24 ₩ lb, 3.55¢
No. 27 ₩ lb, 4.00¢
No. 28 ₩ lb, 4.25¢
No. 20 and lighter 36 inches wide, 25¢ higher.

### Tin Plates—

#### American Charcoal Plates (per box.)

"A.A.A." Charcoal:
IC, 14 x 20 $6.40
IX, 14 x 20 7.65
A. Charcoal:
IC, 14 x 20 $5.45
IX, 14 x 20 6.55

#### American Coke Plates—Bessemer-

IC, 14 x 20 ..... 107 lb ..... $4.45
IX, 14 x 20 ..... 5.45

#### American Terne Plates—

IC, 20 x 28 with an 8 lb. coating ..... $8 60
IX, 20 x 28 with an 8 lb. coating ..... 10.60

### Seamless Brass Tubes—

List December 4, 1905. Base price 18¢

### Brass Tubes, Iron Pipe Sizes—

List December 4, 1905. Base price 18¢

### Copper Tubes—

List December 4, 1905. Base price 21¢

### Brazed Brass Tubes—

List June 6, 1898. 21 ¢ ₩ lb

### High Brass Rods—

14¾¢ ₩ lb

### Roll and Sheet Brass—

List June 6, 1898. 14½¢ ₩ lb

## METALS—

### Tin—

Straits Pig ₩ lb 29 @30 ¢

### Copper—

Lake Ingot ₩ lb 14 @14¼¢
Electrolytic ₩ lb 14 @14¼¢
Casting ₩ lb 13½@13¾¢
Sheet Copper Hot Rolled, 16 oz ₩ lb 17@..¢
" " 14 " " " 17@..¢
Sheet Copper Cold Rolled, 1¢ ₩ lb advance over Hot Rolled.
Sheet Copper Polished 20 in. wide and under, 1¢ advance over Cold Rolled.
Sheet Copper Polished over 20 in. wide, 2¢ advance over Cold Rolled.
Bottoms, Pits and Flats ₩ lb 21¢ basis
Planished Copper, 1¢ ₩ lb more than Polished.

### Spelter—

Western ₩ lb 5½@5¾¢

### Zinc.

No 9, base, casks, ₩ lb 7.50¢ | Open ₩ lb 8.00¢

### Lead.

American Pig ₩ lb 4⅞@5⅛¢
Bar ₩ lb 6 @6¼¢

### Solder.

½ & ½, guaranteed ₩ lb 18 @18½¢
No. 1 ₩ lb 17 @17½¢
Refined ₩ lb 15 @15½¢
Prices of Solder indicated by private brand vary according to composition.

### Antimony—

Cookson ₩ lb ..@11¢
Hallett's @10½¢
Other Brands @9½¢

### Bismuth—

Per. lb $1.90@$2.00

### Aluminum—

No. 1 Aluminum (guaranteed over 99% pure), in ingot for remelting:
Small lots 38¢
100-lb lots 36¢
Rods & Wire Base Price 38¢
Sheets Base Price 40¢

### Old Metals.

*Dealers' Purchasing Prices Paid in New York*

| | Cents |
|---|---|
| Copper, Heavy and Wire ₩ | 10.75@11.00¢ |
| Copper, Light and Bottoms ₩ lb | 10.00@10.25¢ |
| Brass, Heavy ₩ lb | 7.50@ 8.00¢ |
| Heavy Machine Composition ₩ lb | 10.25@10.50¢ |
| Clean Brass Turnings ₩ lb | 6.75@ 7.25¢ |
| Composition Turnings ₩ lb | 8.00@8.50¢ |
| Lead, Heavy ₩ lb | ....@ 3.70¢ |
| Tea Lead ₩ lb | ....@ 3.45¢ |
| Zinc Scrap ₩ lb | ....@ 3.00¢ |
| No. 1 Yard Wrought, Long | $11.00@$11.50 |
| No. 1 Yard Wrought, Short | $ 0.00@$10.50 |
| Wrought Pipe | $ 9.50@$ 0.00 |


# THE IRON AGE

*The oldest paper in the world devoted to the interests of the Hardware, Iron, Machinery and Metal Trades, and a standard authority on all matters relating to those branches of industry.*

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# THE IRON AGE

New York, Thursday, July 9, 1908.


## The Ryerson Iron and Steel Warehouses.

Surpassing in magnitude by a considerable margin any similar group of structures devoted to the merchandizing of iron and steel and kindred specialties, the new warehouse and general office buildings just completed by Joseph T. Ryerson & Son, Chicago, stand as a leading exponent of the remarkable development which has given to that city pre-eminent rank as a distributing center. While the natural advantage of location, geographically considered, coupled with unexcelled transportation facilities, are the basic factors underlying the successful evolution of this business, the attainment of its present proportions is directly due to an early recognition of the requirements of the trade and the progressive steps that have been taken to supply them promptly. The construction and equipment of the extensive warehouses here described, affording as they do a floor space—exclusive of main and auxiliary office floors—comprising 675,000 sq. ft., may therefore be regarded as the latest concrete expression of a gradually unfolding plan.

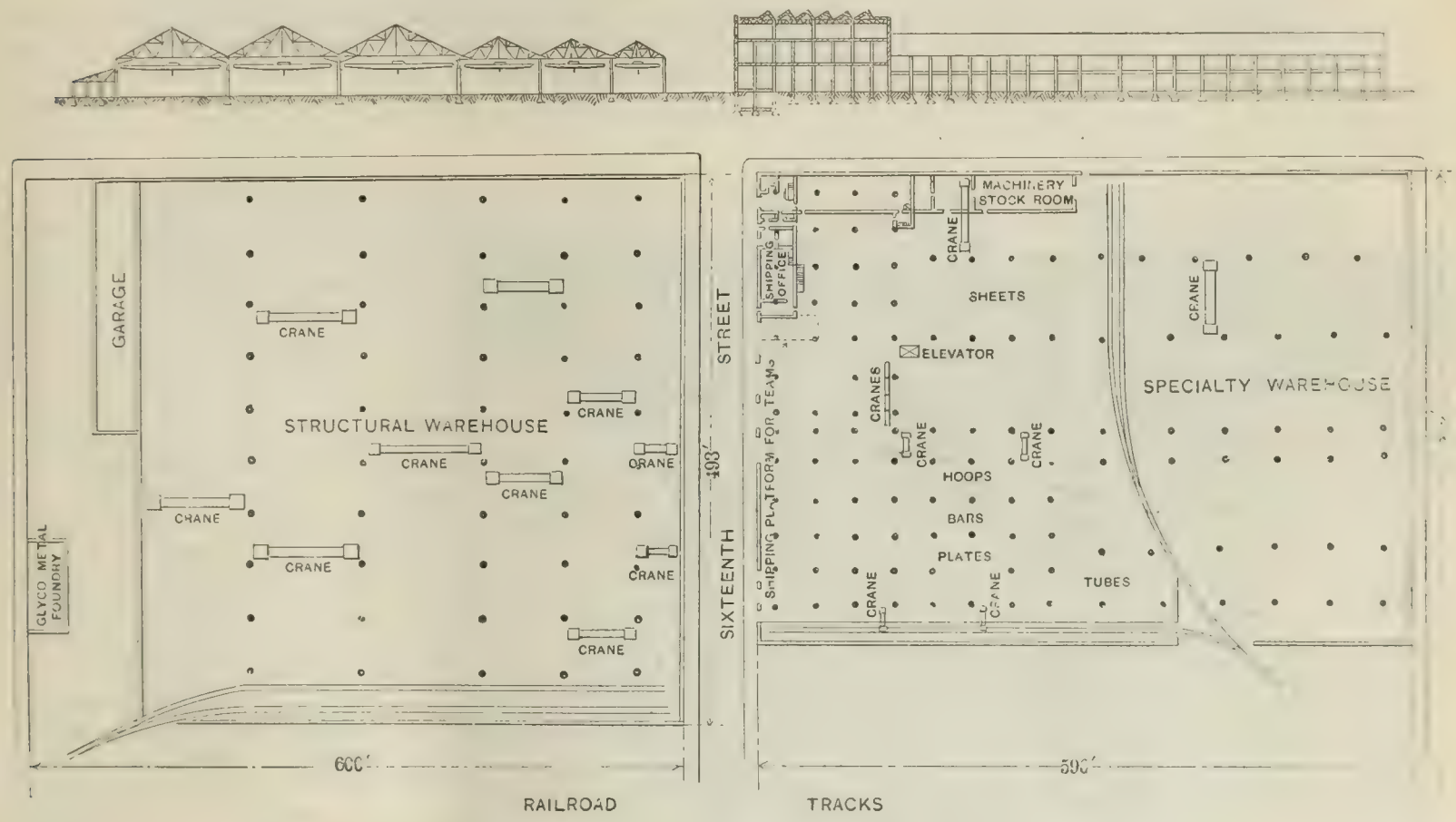



Fig. 1.—General Plan of the Warehouses of Joseph T. Ryerson & Son, Chicago.

### The History of the House.

Preliminary to a description of the plant, a brief glance at the origin and history of the organization will perhaps be of interest because of the contrast it affords betwen past and present conditions in this phase of the iron and steel industry. Founded in 1842 by Joseph T. Ryerson, the business had a modest beginning in a store on South Water street, where a stock of iron was kept with a view to supplying the current requirements of iron working shops. No attempt was made to carry a complete assortment of sizes in any of these materials, the entire stock never exceeding a few hundred tons. Yet, owing to the uncertainty attending the prompt execution and shipment of mill orders, even the imperfect facilities it afforded found appreciation among consumers and foreshadowed the possibilities of future development.

After a number of years of slow but steady progress the business was moved from its original location to quarters in the block bounded by Lake street, Clinton street and Milwaukee avenue, where it gradually expanded until several large warehouses in this block were occupied. In the meantime the constantly widening range of consumers' requirements brought about by growing needs of the industrial world, made necessary the addition of new lines and improved methods and provisions for handling them. Up until 1888, when the business was incorporated, its scope of activities was pretty closely limited to the warehousing and handling of materials and specialties for boiler and tank shops, but a few years later steel bars were added, and soon thereafter structural shapes were included in the stocks carried.

This latter step involved the need of a large increase in storage room, which was met by the erection of a warehouse at Sixteenth and Rockwell streets, on part of the site now occupied by the new plant, of which it is indeed the nucleus. The advantages of the new location soon made it apparent that the consolidation of the entire business at this point would be highly conducive to its best interests; and when the property included in the old downtown location was two years ago [illegible] as part of the territory to be occupied by the new depot and terminal system of the Chicago & Northwestern Railway Company, arrangements were made and plans drawn which culminated in the construction and equipment of what was designed, and is now claimed, to be not only the largest but the most modern and complete system of such warehouses yet built for the handling of iron and steel mill products and allied specialties.

### Advantages and Special Features of the Location.

Embracing two entire blocks between Fifteenth place and Eighteenth street on the north and south, and Campbell avenue and Rockwell street on the east and west respectively, the selection of the present site was influenced largely by its proximity to the lines of the Pittsburgh, Cincinnati, Chicago & St. Louis, the Chicago, Burlington & Quincy and the Chicago Terminal Transfer railroads, whose right of way extends along the eastern side, and with all of which direct connection is had by six switch tracks entering the warehouses.

As will be noted by reference to the plan drawing, Fig. 1, these tracks are arranged to serve each of the two units comprising the plant. Some idea of their extent may be had from the fact that they will accommodate 49 cars, in position for loading or unloading, under roof at one time. The loading platforms in each building, one of which is shown in Fig. 2, are directly served by traveling cranes which transport material from all parts thereof directly to all platforms. Incoming and outgoing shipments are thus handled with equal facility and despatch.

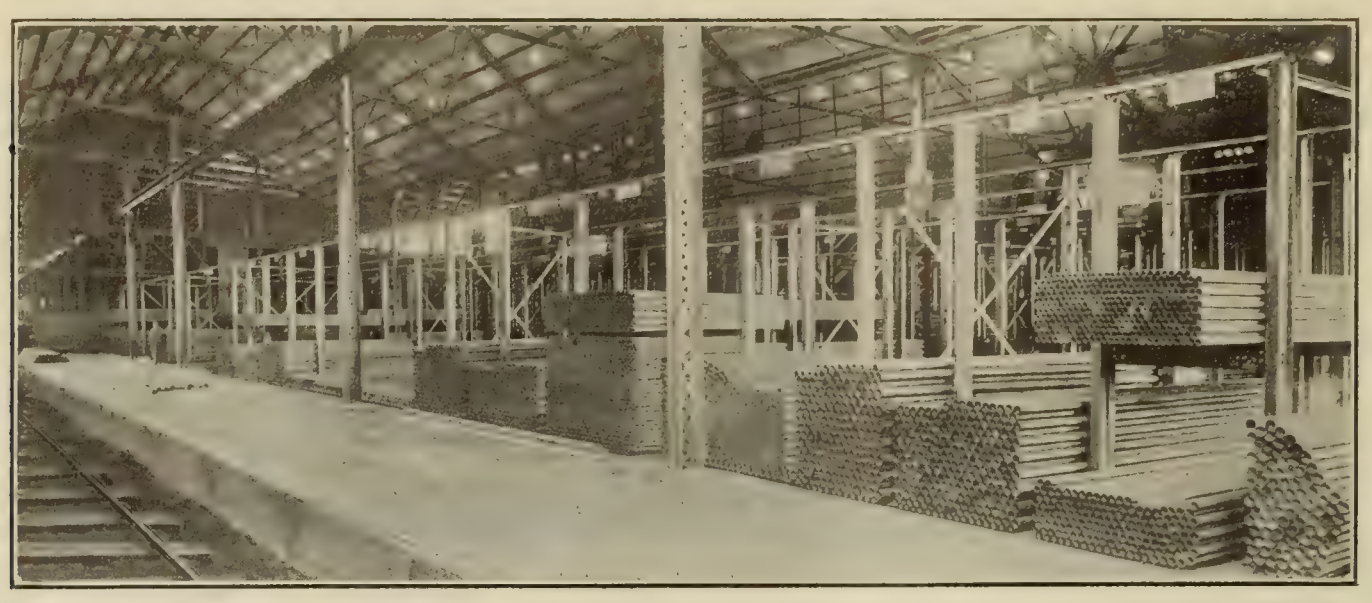


Fig. 2.—One of the Four Switch Tracks Serving the Tube Floor in Joseph T. Ryerson & Son's Warehouses.

Although integral as to its functions, the plant is divided into two parts by Sixteenth street, running east and west. The buildings to the north of this street include the general and shipping offices, departments for the storing of sheets, plates, hoops, bars, tubes, rivets and the varied assortment of iron and steel specialties which go to make up the complete line, and the boiler house. The opposite building south of the street is exclusively devoted to the storage and handling of structural material. In dimensions these two buildings are respectively 380 x 414 ft., and 395 x 500 ft., and both are of heavy steel construction. Together they have a storage capacity of 150,000 tons.

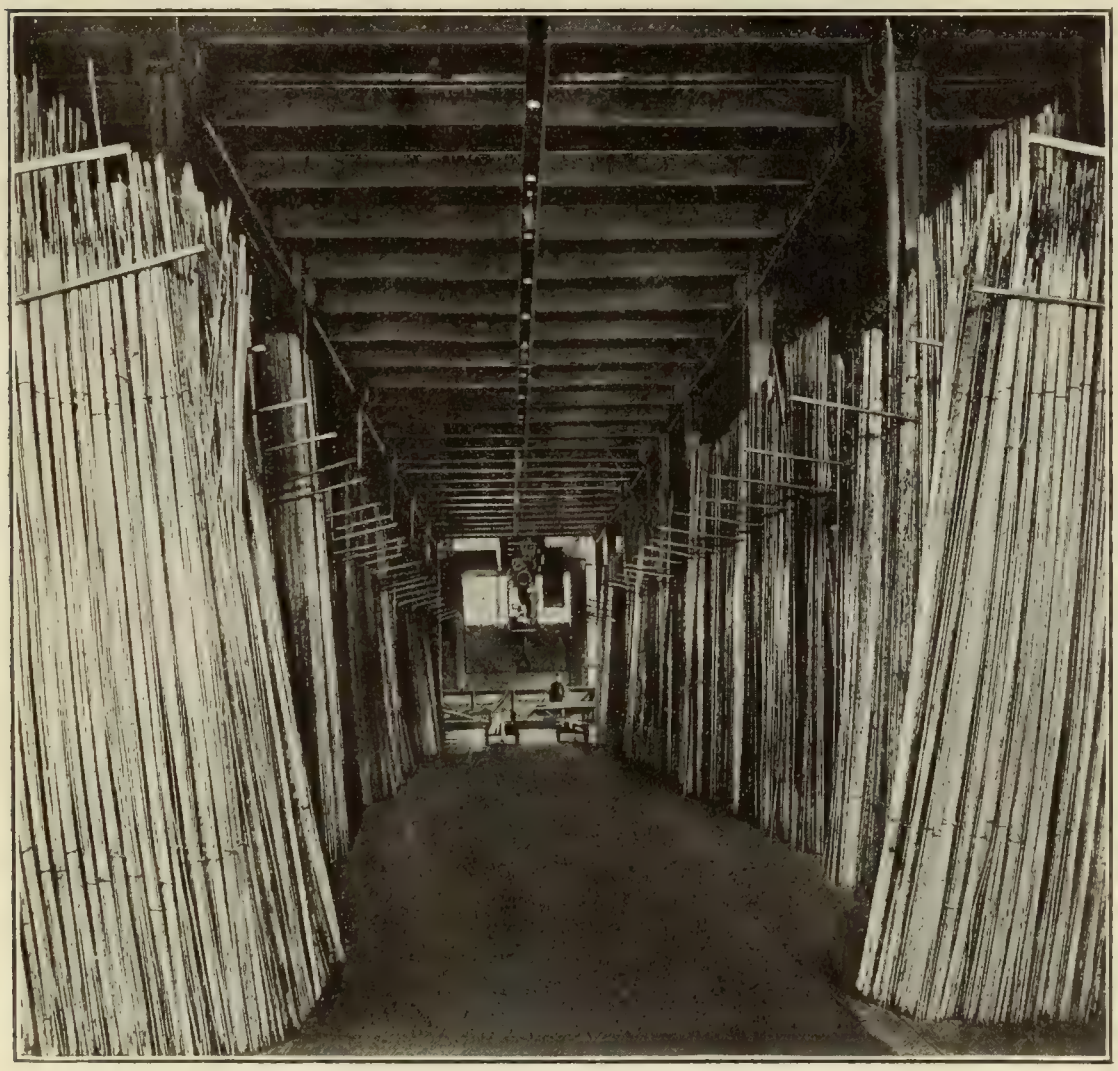


Fig. 3.—An Aisle of the Bar Floor in Joseph T. Ryerson & Son's Warehouses.

**The North Warehouse.**

About one-half of the north warehouse is two stories and provides floor space of over 100,000 sq. ft. The greater portion of it is roofed with tile and glass, and the east and south sides, including the office building, are faced with brick. Bars, tubes, galvanized sheets, rivets, metal working machinery and over 1000 specialties used in the various branches of steel construction are carried on the ground floor of this building. Bars are stacked on end in racks on either side of the isles, as shown in Fig. 3, the assortment regularly carried comprising 740 sizes; bands and scrolls are stored in adjoining aisles in the same manner.

To the right of the bar sections, as indicated in the plan drawing, are the boiler tube racks; these are framed of structural steel with separate divisions for each size and are conveniently located near one of the three tracks entering this building. In a large bay on the west side of the building galvanized sheets are stacked in piles according to gauges and sizes, and across the switching tracks to the northward is a space devoted to boiler heads, braces, lugs and other specialties of like character; this section is shown in Fig. 4.

To the left of the galvanized sheets are nine isles occupied by rivets. Experience has demonstrated that these are handled more speedily and economically by hand than with mechanical devices, and therefore no carrying equipment is provided in this section. An inclosed machinery stockroom is built in on the ground floor in the western bay of the building, and is covered with a removable roof, so that heavy machines may be handled in and out by the crane which traverses this bay.

Views of the second floor, shown in Figs. 5 and 6, give some idea of the extent and arrangement of the plate and back sheet stocks carried, which embrace over 600 sizes. Each pile is composed of a single size and all are arranged in bays, according to grade and thickness.

**The Comprehensive Crane Service.**

A notable feature of these warehouses is the exceptionally complete and flexible system of electric crane service that covers practically the entire area of all floors. There are in all 16 high speed traveling cranes of from 10 to 20 tons capacity, and over 20 smaller

cranes and electric hoists, ranging in capacity from one to five tons. In a double runway over the switch track at the east side of the north building are two 10 ton Case electric cranes, fitted with carriages that can be run off the crane bridge proper to a system of I beam trolleys. By this means the entire storage system is traversed building serve the team shipping floor, the plate and sheet floors above—which it divides—and the sheet and plate shears located at the side and midway of the bay; these are supplemented by three 3 ton Sprague electric cranes covering the three short bays at the entrance of the main driveway.



Fig. 4.—A Section of the Floor for Boiler Heads in Joseph T. Ryerson & Son's Warehouses.



Fig. 5.—One Corner of the Plate Floor in Joseph T. Ryerson & Son's Warehouses.



Fig. 6.—An Aisle of the Sheet Steel Section in Joseph T. Ryerson & Son's Warehouses.

through the several aisles on the upper and lower floors, so that any portion of the warehouse may be reached by cranes, and loads can be carried to or from cars or wagons to the shearing machinery without transfer.

Two 5 ton Case cranes in the central bay of this

One of the shears, all of which are of the guillotine pattern, is of extraordinary size, being, it is claimed, the largest of its type ever built. It weighs 130 tons and has capacity for cutting 12 ft. of 2 in. steel at one stroke. One other Case crane, of 15 tons capacity, in the west

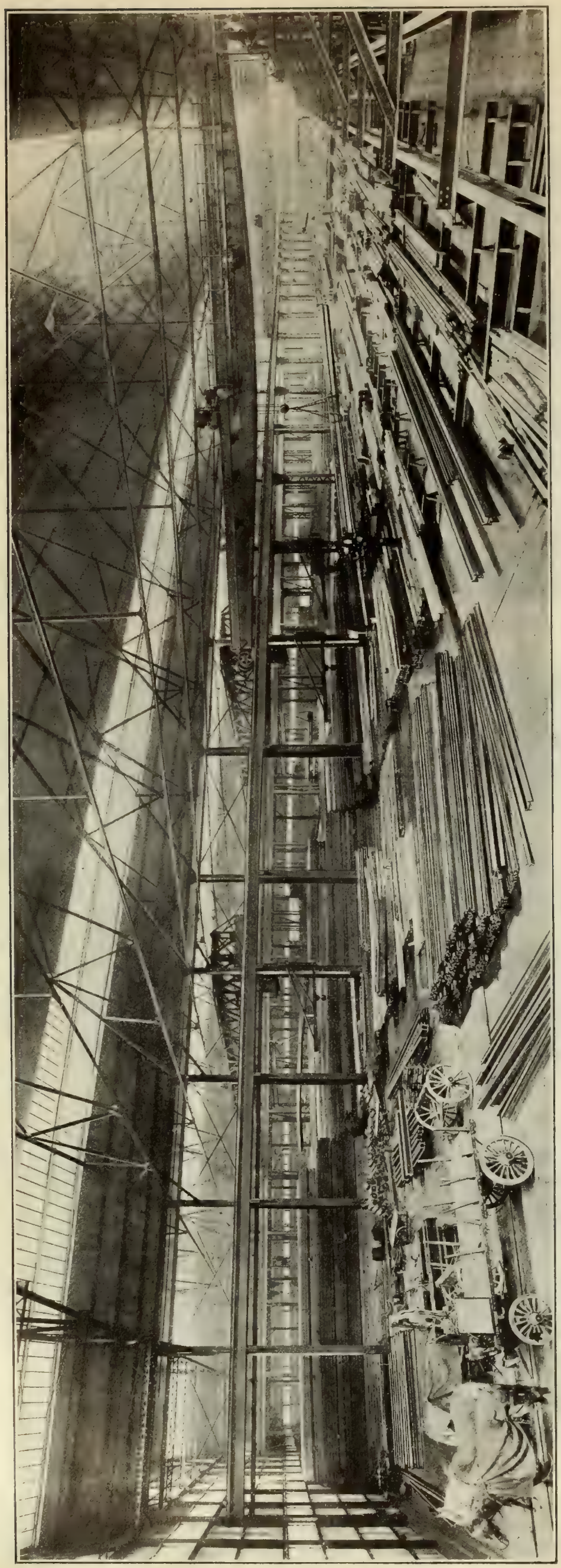


Fig. 7.—Interior View of the Structural Warehouse of Joseph T. Ryerson & Son.

bay, serves the machinery room and specialty section at the north end of the warehouse. In the adjoining bay, where the galvanized sheets are stored, provision is made for a similar crane, which has not yet been installed.

In addition to the railroad shipping facilities supplied by switching tracks there is in the central bay of the north building a loading area large enough to accommodate a number of wagons; entrance to this section is through two wide driveways opening into Sixteenth street. This space, like other loading platforms throughout the plant, is accessible to the entire warehouse crane service and is also adjacent to a large Otis electric freight elevator opening between the shipping bays and the sheet storage rooms on the floor above.

### The South Building.

The structural warehouse on the south, a general interior view of which is shown in Fig. 7, is also of steel construction with corrugated iron roof and skylights. It is divided into five bays, each 500 ft. long and 45, 65, 75, 100 and 110 ft. wide, respectively, which are spanned by eight high speed traveling bridge cranes ranging from 3 to 10 tons capacity. Supplementing this handling equipment are two radial wall jib cranes, roller tables, hoist systems used in connection with the shearing machinery, and a tram track extending across the building near the center and at right angles with the crane travel.

The three cranes serving the 100 and 110 ft. bays are of 10 tons capacity each and are equipped with two trolleys operated from stationary cages. These cranes have a bridge travel speed of 350 ft. and a trolley travel speed of 175 ft. per minute. In the bay immediately north of these sections is a 75-ft. crane of the transfer type, having two trolleys equipped with I-beam clings for handling material of long lengths. These hoists have a capacity of 5 tons each, and like the larger cranes are operated from the stationary cages. Two 65-ft. cranes, each with two 5-ton trolleys, serve the next bay, while the next and last one on the north side of the building is covered by two 45-ft. 3-ton cranes of the same general type.

All of the cranes in this building were built by Pawling & Harnischfeger and the Case Mfg. Company. They are supplied with motors of 220 volt 60 cycle 3 phase alternating current made by the Westinghouse Electric & Mfg. Company and the General Electric Company. A carefully designed motor driven roller table system extends in two trains across the entire plant, bisecting all bays about midway of their length, and is arranged to feed the high speed friction saws and heavy shearing machinery.

### Machinery Equipment.

Included in the equipment for the rapid cutting of structural material there are installed, in addition to angle and plate shears, three high speed friction saws designed by the company's

engineers. These machines are mounted on steel sliding carriages which move backward and forward in V-shaped grooves on a structural steel and cement foundation. They carry saw blades 52 in. in diameter and are motor driven at a peripheral speed of 27,000 ft. per minute, the saw carriages being controlled by motor driven triplex pumps. The fact that a 24 in. 100 lb. beam is cut through in less than 20 seconds conveys some idea of their cutting capacity. Material is carried to these saws by the roller tables, which are also motor driven. A large Ingersoll-Rand air compressor supplies power for the operation of the pneumatic tools and appliances.

A boiler house located at the northeast corner of the plant site contains two 150 hp. internally fired Morrison corrugated flue furnace boilers, which at the present time are not required for power service, since all of the power tools are supplied with independent motor drive.

As regards completeness of detail and adaptation to comfort and convenience in design and arrangement, the new offices of the company, occupying the stone trimmed brick structure on the north side of Sixteenth street and flanking on Rockwell street, form a conspicuous feature of the plant. This building, four stories in hight, has a floor space of over 30,000 sq. ft. on each floor and contains in addition to the general offices a number of separate rooms devoted to the storage of special grades of sheet steel, tool steel and specialties. It also includes a well appointed restaurant, a dormitory, a library, a barber shop and reading rooms.

The general offices proper occupy the top floor of the building, and in addition to the side windows receive light from above through saw tooth skylights. All of the office rooms are heated and ventilated by an air washed blast system operated by motor fans, and by means of a system of exhaust fans by which the air in the rooms is changed every eight minutes. The heating and ventilating system was installed by the Andrews & Johnson Company, Chicago. The architectural designs and plans for the plant were supplied by Howard Shaw, and the engineering features of its construction were developed and supervised by Ritter & Mott, engineers.

## Falls Hollow Staybolt Tests.

The following results of vibrating tests of eight samples of hollow staybolt iron manufactured by the Falls Hollow Staybolt Company, Cuyahoga Falls, Ohio, have been certified to by W. K. Hatt, professor of civil engineering and director of the laboratory for testing materials at Purdue University, under date of May 7, 1908:

| No. | Tension load. Pounds per square inch. | Revolutions per minute. | Number of revolutions to rupture. |
|---|---|---|---|
| 1 | 4,000 | 100 | 10,188 |
| 2 | 4,000 | 100 | 13,123 |
| 3 | 4,000 | 100 | 8,339 |
| 4 | 4,000 | 100 | 9,363 |
| 5 | 4,000 | 100 | 8,868 |
| 6 | 4,000 | 100 | 10,880 |
| 7 | 4,000 | 100 | 11,888 |
| 8 | 4,000 | 100 | 5,318 |
| Average | | | 9,746 |

The tests were made on an Olsen staybolt machine, in accordance with the specifications recommended by the Committee on Staybolts of the American Society for Testing Materials. These specifications include the following:

Tensile strength, not less than 48,000 lb. per square inch.

Per cent. of elongation in 8 in., not less than 28.

Per cent of contraction of area, not less than 45.

Must stand 6000 revolutions, when one end is fixed and the other end (8 in. from fixed end) is moved in a circle of 3/32 in. radius, while the bolt is under a tension load of 4000 lb. per square inch.

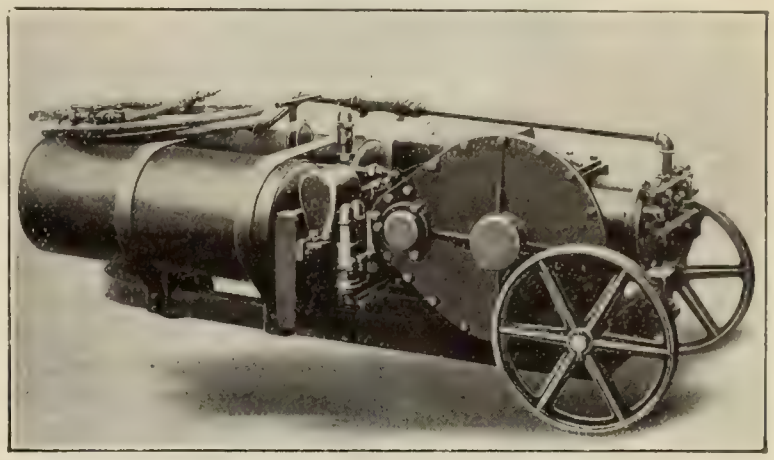
The bolts were threaded with standard staybolt dies —12 threads to the inch.

**The Cleveland-Cliffs Iron Company has decided to install the Gayley dry blast at its Pioneer Furnace No. 2, Marquette, Mich., and has retained Frank C. Roberts & Co., Philadelphia, as the engineers for the plant.**

## A Westinghouse Portable Compressor Outfit.

For some years the Westinghouse Air Brake Company, Wilmerding, Pa., has built a portable motor-driven vertical air compressor outfit for cleaning electrical and other machinery and supplying compressed air for various purposes in and about engine rooms and shops. In some places and under some conditions of use this equipment was not as convenient as could be desired, which prompted the company to bring out the horizontal outfit herewith illustrated. It embodies the same general principles as the vertical plant, but is of somewhat different arrangement and more compact construction.

The new horizontal plant consists of a motor-driven air compressor with one or two brazed reservoirs, an electric pump governor, and the usual accessories, such as switch, fuse blocks, gauge, safety valve, insulating hose connection, and hose with nozzle. The truck frame is made of angle iron bent into the shape of a U, and is cross braced at the back under the compressor. The rear axle is of square steel bolted directly to the frame. The compressor bed plate bolts to the frame at each corner. The reservoirs rest upon angle iron supports, and are held in place by wrought iron straps bolted to the



A Portable Motor-Driven Horizontal Air Compressor Blowing Outfit Made by the Westinghouse Air Brake Company.

frame. A simple switchboard is placed between the reservoirs and the compressor, upon which the governor, fuse blocks and switch are mounted. The position of the governor renders it easily accessible for adjustment and inspection. Ample space is allowed for opening the commutator door and to examine the brushes. The compressor cylinder head can be removed and the pistons taken out without disturbing the rest of the apparatus.

If it should be necessary, the gear case cover can be easily removed by first removing one of the rear wheels. All oil fittings are easily accessible. The rear wheels are 18 in. diameter, and the front wheel 8 in. diameter, and the latter can be turned through an angle somewhat greater than 180 deg. The handle is bent so that when turned back between the reservoirs, the end of it will not protrude above the other apparatus on the truck. When the reservoirs are used, they are drilled symmetrically, so that if removed either one can be put back on either side. The outfit is 31 in. wide, and low enough in hight to be stored under a bench. The disposal of the apparatus on the truck brings about two thirds of the weight on the rear axle.

The type shown in the illustration can be varied in arrangement to suit condition and the truck furnished with roller bearings if preferred.

The Chicago branch of the Crucible Steel Company of America, now located at 61 South Clinton street, will shortly move into its new warehouse at 117-121 West Washington street which has just been completed. The building is 60 x 152 ft., three stories, of heavy steel construction, and contains 26,400 sq. ft. of storage floor space. About 7500 different sizes of tool steel are carried in stock and the warehouse has been especially designed for their convenient storage and handling. The front part on the second floor will be occupied by offices, and will be finished in oak. The work of removal will be begun next week, and the company expects to be fully installed in its new quarters by the middle of the month.

# Liquid Fuel in the Brass Foundry.*

BY W. N. BEST, BROOKLYN, N. Y.

The success obtained from the use of liquid fuel depends largely upon the hydro-carbon burner used. There are many different burners upon the market to-day, of which the majority are of the internal mixing or injector type. In these the fuel and the atomizing agent flow out in the same direction. In another type of burner, known

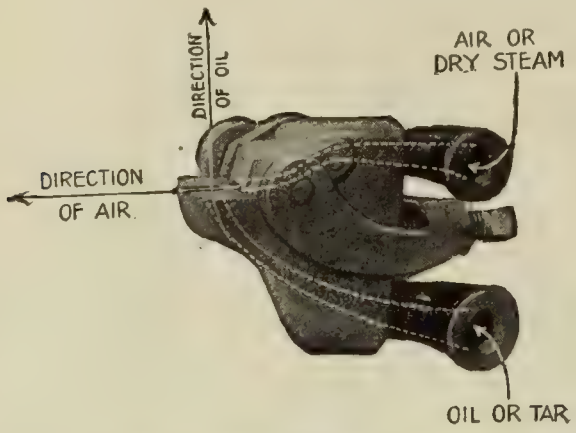



Fig. 1.—Hydro-Carbon Burner.

as an external mixer, the fuel flows down upon a sheet of steam or air, and is thus carried into the furnace or firebox of boilers. While the more volatile fuels require very little atomization, yet if the burner used is not of such form and capacity as to insure the thorough atomization of any grade of liquid fuel, the foundryman will be in a sad predicament whenever a shipment of low grade fuel is sent him. I always recommend an external mixing burner, as in Fig. 1, having the fuel orifice below the atomizer cavity. This prevents the fuel from solidifying or carbonizing over the atomizer slot; and as the fuel passes out of the nose of the burner on a perpendicular line, while the atomizing agent passes out horizontally, the thorough pulverization or atomization of the fuel as well as the even distribution of the flame in the combustion chamber is effected. I also recommend the use of a special regulating cock, Fig. 2, which insures both a steady flow of fuel to the burner and the minute regulation of the quantity. The plug of this regulating cock has a V-shaped knife edged opening on the intake side, while the exit has a large opening, and thus the residuum which may be in the fuel cannot stop the flow. If a globe or needle valve be used to regulate the fuel supply to the burner, the space the valve parts from the valve seat is so slight that the residuum in the fuel soon collects therein, causing great annoyance. This is especially noticed when low gravity fuels are used, for then often the valves become so clogged that the supply of fuel is entirely cut off.

Theoretically, it requires 13½ to 14½ lb. of air to effect the perfect combustion of 1 lb. of oil. Allowing 14 lb. at 62 degrees F., it would require 184.97 cu. ft. of air to effect the perfect combustion of 1 lb. of oil, or at 100 degrees F. it would require 197.34 cu. ft. In actual practice it has been found that it requires from 17½ to 19½ lb. of air to effect the perfect combustion of 1 lb. of oil. Allowing 19 lb., at 62 degrees F., 249.68 cu. ft. are required, or, at 100 degrees F., 267.82 cu. ft. Considering 1 gal. of oil to weigh 7½ lb., practically it requires 142½ lb. of air to effect the perfect combustion of 1 gal. of oil,

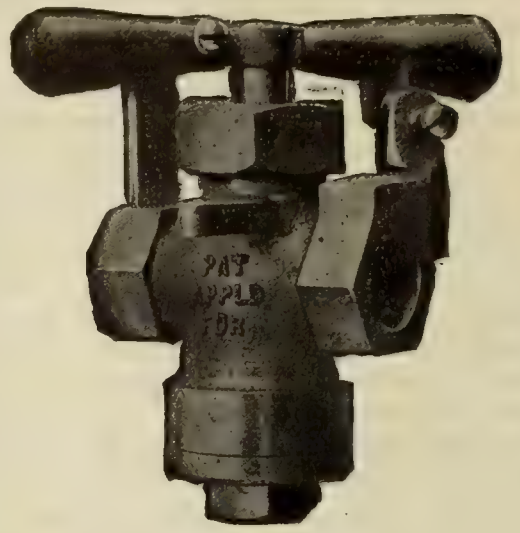


Fig. 2.—Safety Regulating Cock.

or 1872 6-7 cu. ft. of air at 62 degrees F. At 100 degrees F., 2009¼ cu. ft. are required. If compressed air be used as atomizer, only about one-sixth of the air needed for the perfect combustion of the fuel is obtained through the burner, the rest being furnished through an ordinary air nozzle placed immediately under the burner. This air is at 3 or 4 ounce pressure. As to the cost of compressing air per cubic foot, the conditions in no two plants are precisely alike. In some works steam driven compressors are used, while in others there are compound compressors. Some employ electrical power to compress the air, while others use gasoline engines. Again, if steam driven compressors are considered, the many grades of coal vary as much in calorific value as they do in price.

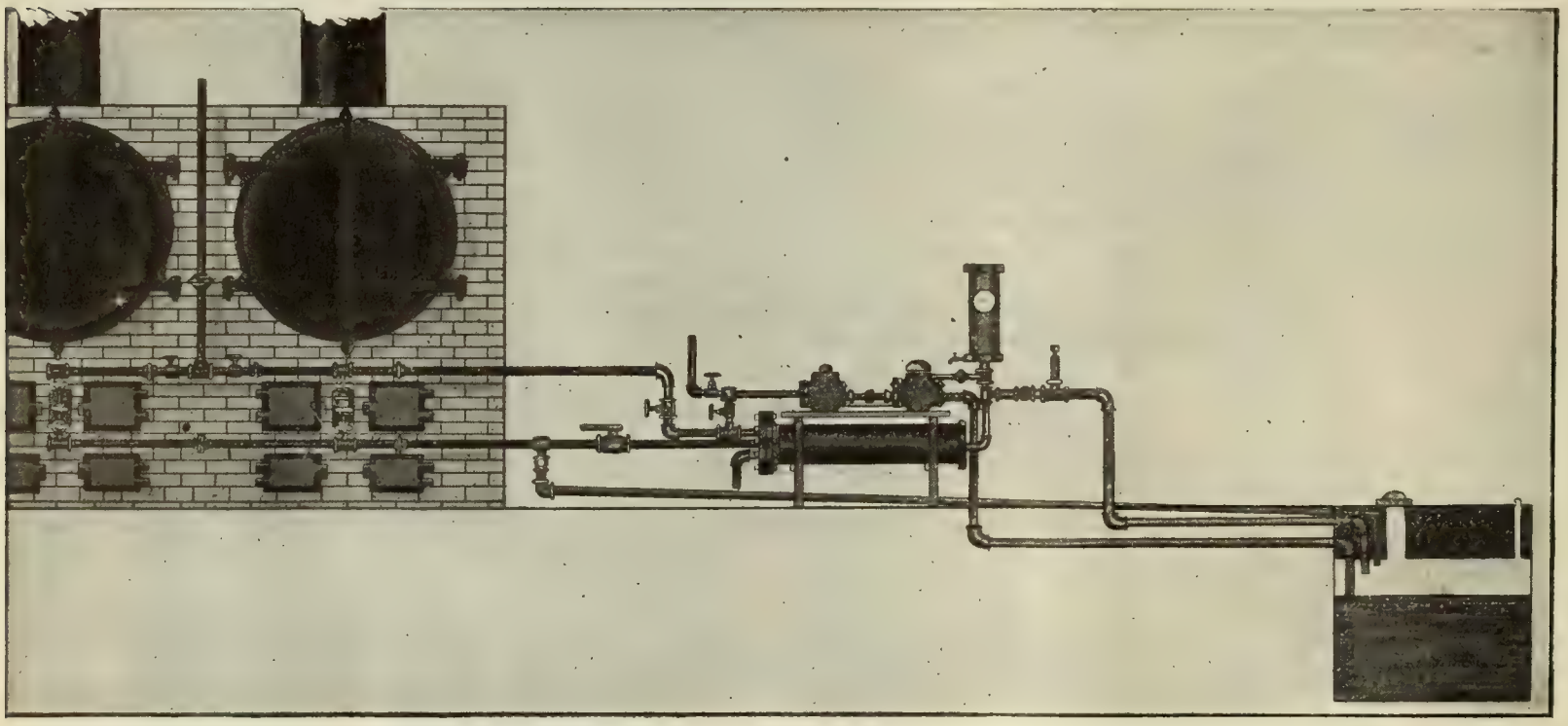


Fig. 3.—Piping for Oil Burning Under a Horizontal Tubular Boiler.—The Same System of Piping, Tanks, &c., Is Used for Melting Furnaces.

To those who contemplate using liquid fuel in their plants a few words in regard to the supply tank, &c., may be of interest. A piping system is shown in Fig. 3. To conform with the requirements of the underwriters as

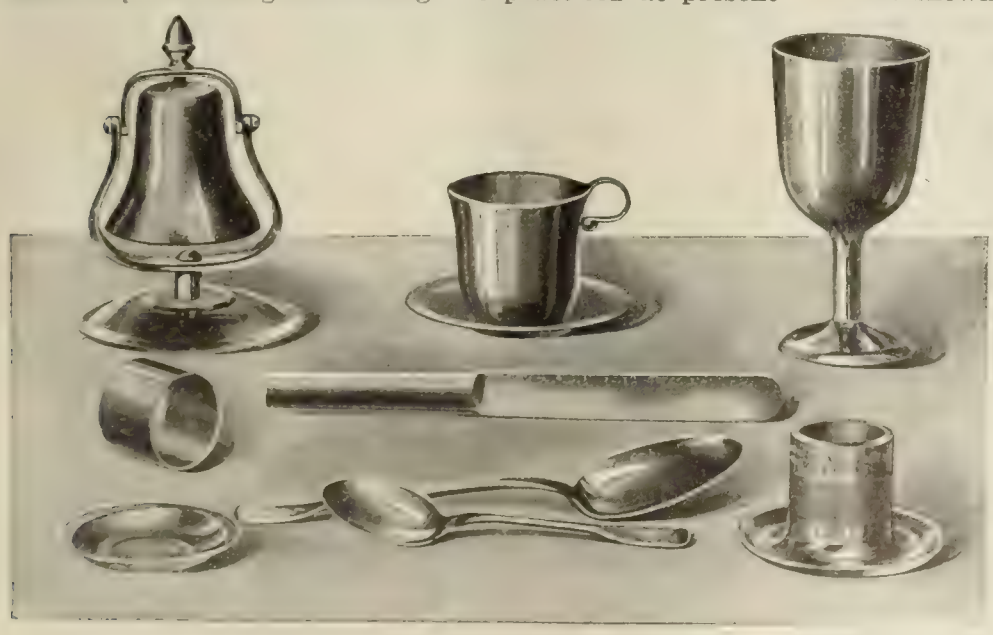
* From a paper read at the Toronto meeting of the American Brass Founders' Association, June, 1908.

well as the various city ordinances, it is necessary that the fuel supply tank (varying in capacity from 1000 to 10,000 gal.) be placed some distance from the buildings. It should be provided with a vent pipe extending at least 2 ft. higher than the shop building and placed 10 ft. or more from any chimney or smoke stack. Ten or 12 lb. pressure is usually maintained on the fuel line and an ordinary steam driven brass lined duplex pump or a belt driven triplex plunger pump may be used to pump the fuel. A pulsometer with gauge and a pressure valve with an overflow pipe connecting with the storage tank should always be placed upon the fuel line, so that when one or more of the burners are closed off an even pressure will be maintained upon the fuel supply pipe line to the other burners by the release of excess oil through the pressure valve, the fuel returning to the storage tank through the overflow pipe.

Whatever the type of furnace, I always recommend that a combustion chamber built on scientific lines be used, for it directs the course of the heat in the furnace and provides for the union of the air requisite for perfect combustion with the fuel before they reach the furnace proper. Those who have given liquid fuel a thorough test have proven conclusively that it is the incomparable fuel for all work connected with the brass foundry, core drying as well as melting, &c.; but in order to obtain the highest possible efficiency modern equipment must be used in every detail, the fuel must be thoroughly atomized by the hydro-carbon burner, the fuel supply must be constant at all times, and the furnaces must be so constructed as to meet every requirement.

## Unusual Products from Seamless Tubing.

The articles illustrated in the accompanying engraving seem ordinary until it is explained that they were all made from seamless steel tubing. It is not proposed to form eating utensils from such stock as a regular process of manufacture, but as indicating something of the possibilities of this material these pieces, selected from a set made for use at a banquet of the officials of the Shelby Steel Tube Company, are interesting. For example, the material may be hammered flat as in the knife blade and spoon handles, curved in or out as in the plate and the bowl of the spoon, left in its original form as in the napkin ring, expanded at one end to several times its original diameter as in the goblet, or formed into a bell. The possibilities suggested by these objects are but a few to the many more useful ones that have been found as indicated in the fact that over three hundred ways of using the tubing are practiced at present



Parts of a Dinner Set made from Shelby Seamless Steel Tubing.

and new uses are constantly being found. As contrasts and wide extremes, a salesman, passing through a Western city, recently found the tubing in one case being used to make joints for artificial limbs and in another molds for chocolate creams.

Fearing that the United States Steel Corporation will not rebuild its tube mill in Shelby, Ohio, that was recently destroyed by fire, and desiring to have a similar industry that will keep the skilled workmen in that city who were thrown out of employment by the fire, the citizens of Shelby, at a public meeting held July 2, subscribed $100,000 toward the formation of a new company to build a new tube plant. It is proposed to form a company with a capitalization of $700,000 to be known as the Seamless Steel Tube Company.

## The Nugent Friction Clutch.

Within the past year the Nugent Tool Company, Cincinnati, Ohio, has made material changes in the friction clutch it manufactures which are considered to be important improvements over its original form, as described in *The Iron Age* June 20, 1907. As first designed the

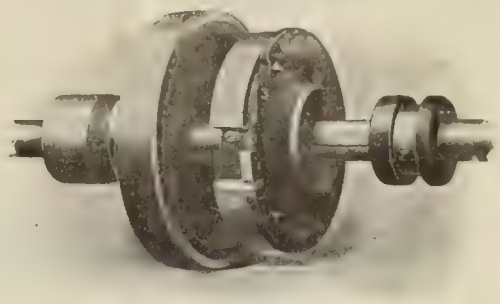


Fig. 1.—The Parts Separated.

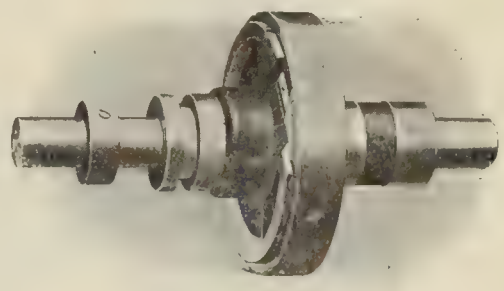


Fig. 2.—The Parts Assembled and Engaged.

The Nugent Friction Clutch.

clutch seemed to be as simple and compact as it could be made, but several modifications have been adopted which add to its advantages. The clutch is now manufactured with both metal to metal and wood to metal friction surfaces.

As shown in Fig. 1, where the parts are drawn apart on the shaft, the sleeve which is intended to carry the split pulleys, sprocket wheels, sheaves or gears has an inside ring containing wood inserts of well seasoned hard maple blocks, with end grain exposed for the wear. Wherever it is possible to use wood on metal friction the power of the clutch is great in proportion to its size.

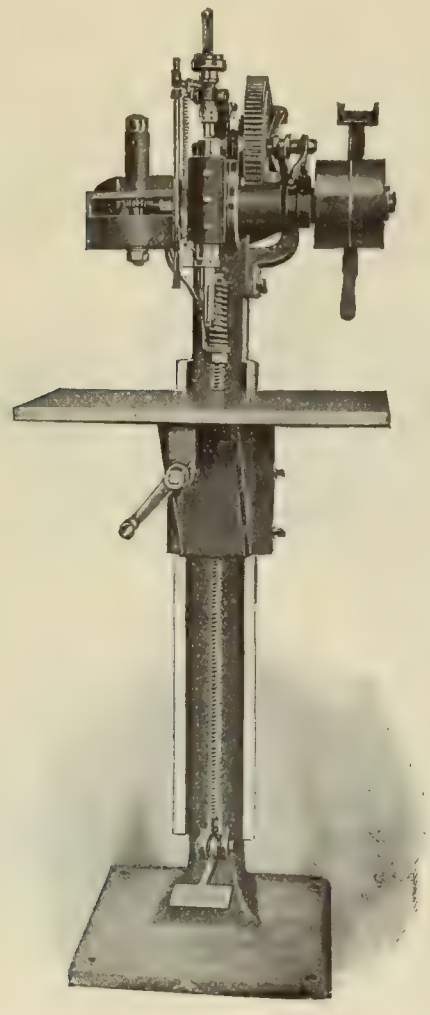
As originally constructed the shifting spool, 5 in Fig. 1, which forces the tapered feather key under the radial plo carrying the wedge to expand the friction ring was guided on the shaft by a pair of steel pins inserted in the solid block. These pins have been dispensed with by providing a hub for the block 3 in the illustration. The feather key is never entirely withdrawn from this hub, which adds to the strength and general appearance of the clutch.

Fig. 2 shows the clutch after the parts have been set together on the shaft, and after the shifting spool has been operated so as to engage the clutch. One important advantage of the clutch is strikingly apparent in this illustration; there are no extending parts to endanger the hands, arms or to catch the clothing of a careless workman.

The Cincinnati Iron & Steel Company, Cincinnati, Ohio, is the exclusive selling agent for the Nugent clutch.

## A Reynolds Automatic Screw Driver.

Among the several styles and sizes of automatic machines for driving wood and machine screws, built by the Reynolds Machine Company, Rock Island, Ill., is the one known as the No. 11, illustrated herewith. In its essential features it is much the same as the company's other machines, but it is even more completely automatic, for



One of the Special Automatic Screwdriving Machines Built by the Reynolds Machine Company, Rock Island, Ill.

where the others require a pressure of the foot lever for each screw driven, this one drives one screw after another as long as the lever is depressed. The spindle is reciprocated by a cam which is operated through a clutch by the foot lever. Ordinarily the work is fed by hand, but even this may often be accomplished automatically, making the operation of the machine exceedingly rapid. Naturally the machine is only intended for small screws and does not cover as large a range of screw sizes as the company's regular line of screw driving machines. The machine illustrated is principally designed for setting screws in small objects, such as piano action damper blocks, push buttons, &c.

With the exceptions mentioned above the machine is similar to the standard line of Reynolds automatic screw drivers. The screws are dumped into the hopper or magazine in bulk, where they are automatically arranged, and from which they are automatically taken one at a time. All the operator has to do is to place the work on the table and press the foot lever. After being taken from the hopper the screw is held by a pair of jaws until the driver descends and engages the slot in the head of the screw and forces it down into the work. The jaws are controlled by springs which permit them to open. The spindle is driven by an adjustable friction, which makes it possible to set screws as tight as desired and which allows the spindle to stop when the screw is home, thus avoiding marring of work or heads of screws. The spindle is intended to run at from 1000 to 1500 rev. per minute, so that the screw is driven in a fraction of a second, and the output of the machine is limited only by the ability of the operator to get the work under the spindle, and he has both hands free to do this. The table is adjustable on the column for work of different hight.

The standard type of machine is built in three sizes: No. 1 drives up to No. 6 or 8 screws up to 1 in. long; No. 2 drives up to No. 12 or 18 screws up to 1½ or 1¾ in. long; No. 3 drives the same range of sizes as No. 2 but up to 3 in. long. The company also builds a No. 13 machine, which is similar to the Nos. 1, 2 and 3 except that it has a gap in the column, giving it an increased depth of throat, so that wide flat work can be handled to better advantage. The No. 21 machine is also similar to the Nos. 1, 2 and 3, but is provided with an offset extension for the spindle, allowing the driving of screws in positions where the overhang of other parts of the work prevents the use of the regular machine. The No. 22 machine is provided with two magazines, so that two sizes and lengths of screws can be driven at one handling of the work, not at once, but in any desired succession. It is built to handle the same range of screws as the Nos. 1 and 2.

All of the machines are usually equipped with tight and loose pulleys and a belt shifter, so that they may be driven direct from the line shaft, but a countershaft or motor drive can be furnished if desired. The driver in the larger sizes is made with an inserted blade, which can be replaced when worn. Each machine has ample power to drive screws anywhere that they can be driven by other means, and in many cases screws can be set without boring for them where it is impossible to do so by other means. The machines are claimed to be simple, efficient and durable, and not to require skilled operators.

## A New Expanded Metal Corner Bead.

The corner bead has come to be standard in building construction, not only where metallic laths are used in fireproofing, but with wooden lathing as well. Herewith is illustrated a new corner bead for use with lathing constructed of expanded metal, recently introduced by the John L. Parker Company, Worcester, Mass.

The process of manufacturing the new bead is one in which there is no waste of material. The metal is first slit in a press, as shown in Fig. 1, the forming of the strip being partially accomplished at the same time. The second operation, in a special press, completes the work, the forming being finished and the strip expanded into the shape shown in Figs 2 and 3. The strips are then galvanized. It will be noticed that the expanded strips forming the sides of the bead pitch in opposite directions, giving a truss effect which increases the strength and rigidity. The strips are punched with holes at intervals

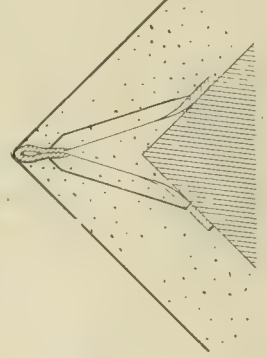


Fig. 3.

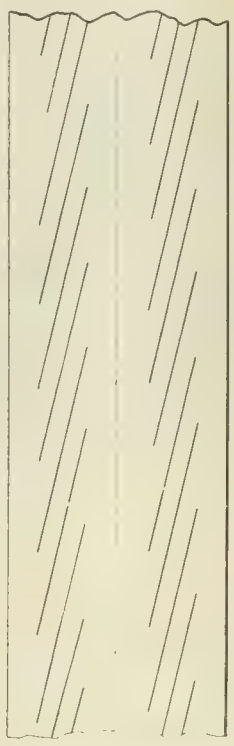


Fig. 1.

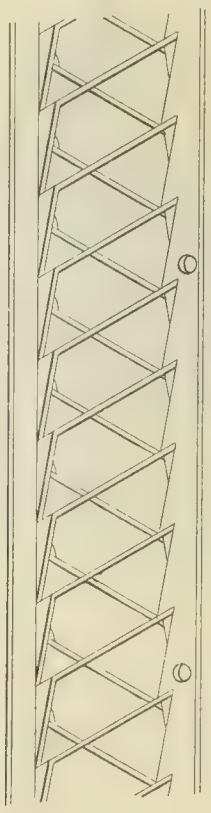


Fig. 2.

The New Expanded Metal Corner Bead Made by the John L. Parker Company, Worcester, Mass.

for nails, or are left without holes, in which case square headed tacks are used for fastening them in place.

## The Cyclone Positive Friction Clutch.

Manufacturers of well and prospecting drilling machines have need of a friction clutch possessing special properties in order to stand the severe duty of driving the crank of a drilling machine. The constant jerking in handling the tools is destructive of the ordinary friction clutch, and at times, especially when the tool sticks in the hole on in pulling pipe, there is a momentary load of three to four times the average, which will cause a plain friction clutch to slip. The Cyclone Drill Company, Orrville, Ohio, after several years' experimenting, has recently produced a clutch which is claimed to be entirely satisfactory. It is in reality a combination friction and positive drive clutch. The positive drive takes effect automatically when a suddenly applied load exceeds the carrying capacity of the friction clutch, which is two to four times greater than that of the ordinary friction clutch.

Fig. 1 shows the clutch complete with the crank, crank shaft and hoisting gear. The shifting lever when thrown to one side operates the crank; when thrown to the opposite side operates the hoisting gear, and in its central position leaves both crank and gear disengaged. Fig. 2 shows the crank drawn back on the shaft, exposing the male friction member and the ends of the tool steel pins which produce the positive drive.

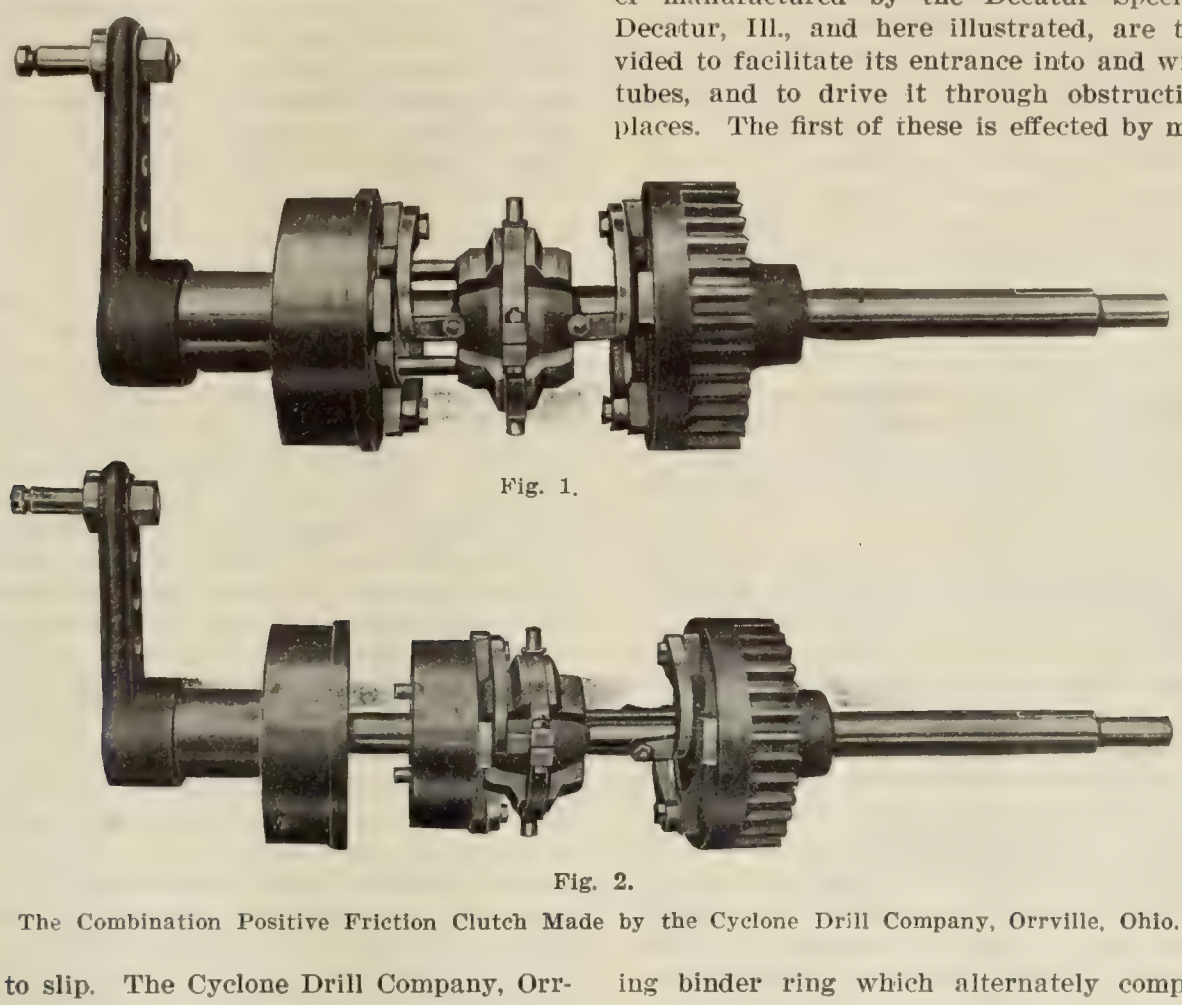


Fig. 1.

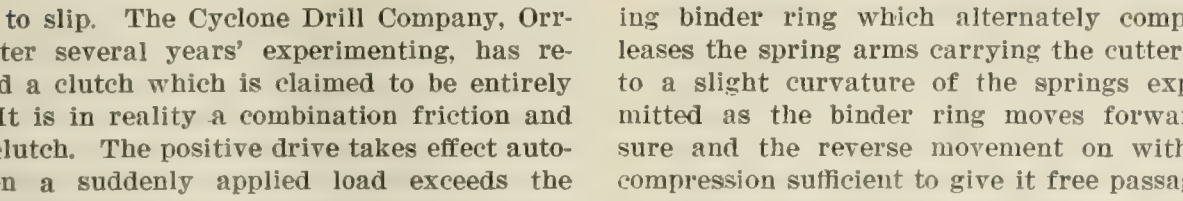


Fig. 2.

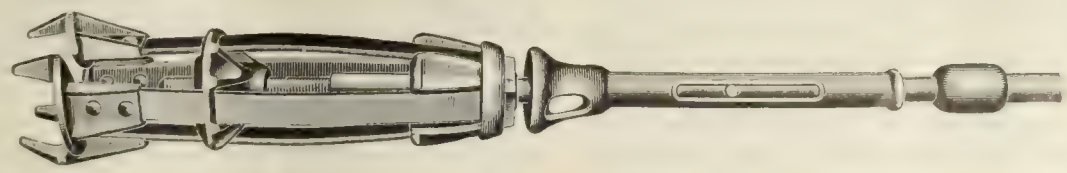
The Combination Positive Friction Clutch Made by the Cyclone Drill Company, Orrville, Ohio.

One lever controls all of the movements of the clutch. A partial movement of the lever to right or left engages the friction clutch to drive the crank or gear, and carries the entire load up to 25 to 40 per cent. overload. When the full tension of the friction clutch is applied the shifting lever can be moved somewhat farther, compressing the two steel pins between the face of the female member of the clutch and compression springs back of the pins. This sets the positive drive ready to operate automatically, and should the load on the clutch cause it to slip, within less than a fifth of a revolution the pins will register with and enter the holes in the clutch, making the drive positive. When the clutch is released the positive drive pins are retracted before the friction surfaces are disengaged.

Being operated by one lever and by one movement, this clutch meets the requirements for which it is designed, and it is believed to be the first clutch equal to the hard service which is encountered in driving a drilling machine crank. The clutch is suitable also for use as a single clutch on any piece of machinery where the load is irregular and momentarily excessive.

## The Faries Boiler Tube Cleaner.

The principal improvements in the Faries tube cleaner manufactured by the Decatur Specialty Company, Decatur, Ill., and here illustrated, are the means provided to facilitate its entrance into and withdrawal from tubes, and to drive it through obstructions or uneven places. The first of these is effected by means of a sliding binder ring which alternately compresses and releases the spring arms carrying the cutter heads. Owing to a slight curvature of the springs expansion is permitted as the binder ring moves forward under pressure and the reverse movement on withdrawal causes compression sufficient to give it free passage. The extent of adjustment in this respect is controlled by a screw on the end of the push rod, by means of which the position of the binder ring can be advanced or retracted by turning either the scraper or handle, the latter being practicable when the scraper is in the flue.



The Faries Boiler Tube Cleaner Made by the Decatur Specialty Company, Decatur, Ill.

To facilitate driving the cleaner through tight or uneven places, a ram in the form of a slip joint is provided. This admits of a limited withdrawal of the handle without moving the scraper and when shoved quickly forward produces a powerful ramming stroke.

The wearing edges of the cutter heads are made of substantial malleable castings with smooth edges for fire tubes and serrated edges on those designed for water tubes. Cleaners for the latter use are also of heavier construction throughout.

Fire tube cleaners are made in sizes to fit tubes from 2 to 6 in. diameter, varying by ¼ in., each size of tube requiring an individual tool of corresponding size. Cleaners for water tubes are made only in sizes for 3½ and 4 in. tubes. The adjustable feature is limited to the requirements of variation and unevenness in tubes and does not extend to interchangeable use of the same tool in tubes of more than one size.

# The Brown Iron Ores of Alabama.—IV.

BY WILLIAM B. PHILLIPS.

With the exception of one deposit in Chilton County, occurring in altered strata of what is possibly carboniferous, the brown ore deposits of Alabama must be regarded as segregations in clay. The ordinary term "pocket" may be retained, as it is in common use. At the same time it must be remembered that some of these pockets are of very large extent, both laterally and vertically, one of them at least having been mined to a depth of 300 ft. below the original crest of the hill, with a boring 60 ft. deeper, or a total depth of 360 ft. that is known. Excluding the few deposits in which a more or less ferruginous sandstone may be found, the foreign matter associated with the ore is clay and chert. The clay may be of almost any color, brown, yellow, reddish and purplish predominating, and of many degrees of plasticity.

### Freeing the Ore from Clay.

If it were merely a question of removing the clay from the ore by a washing process, the utilization of brown ore "banks" would give no special trouble. But the clay is not always of such a nature as to yield to suspension in water. It is often of a putty-like consistency, rolls into balls which enclose small particles of ore, and refuses to be freed from the ore by any water treatment in ordinary use. It is true that such clay may be removed over a picker belt, but this entails additional expense and does not recover the ore that is mechanically held in the balls.

It is a fortunate circumstance that most of the Alabama brown ore deposits do not carry an excessive amount of this kind of clay. Still, it is present in practically every deposit and has to be reckoned with in the general operations. The very tenacious clays are generally of a much lighter color than the others and carry much more alumina. It will generally be found that when the ore runs high in alumina the fault is in the washing and especially in the failure to remove the light colored clays. They are not easily disintegrated in the logs, have a pronounced tendency to ball and to roll around with the ore, coming out with it at the head of the log and so into the cars, unless picked out on the belt. It is a rule almost without exception that brown ore carrying a considerable amount of alumina—2.50 to 5 per cent. and above—has not been properly washed. The ore itself carries but little alumina; the clay with which it is mixed always carries a large amount of alumina, and the presence of this objectionable ingredient in stockhouse ore is proof of insufficient washing. In the logs themselves there is very little foreign material removed from the ore except the clay, and if the ore is more or less honeycombed the clay fills the small cavities and goes over with the ore. It is partly on this account, but more especially on account of included chert, that it is advisable to crush the ore before it goes to the logs. By the washing process it is not possible to free the ore from included clay or included chert unless the previous crushing has already separated the one from the other.

Almost any type of ordinary log washer or disintegrating screen will remove clay from ore if opportunity is given for the suspension of the clay in the water; but if the clay cannot be intimately mixed with sufficient water to remove it the log cannot perform its duty. No rule of general application as to the amount of water required per ton of ore can be given. With some kinds of material 500 gal. per ton of ore is enough; in other places 1000 gal. is not too much. Much depends upon the nature of the material to be washed, this being, perhaps, the chief consideration; but the manner in which the water is applied is also most important. These factors have to be settled for each locality, and it often happens that the same "bank" will require varying quantities of water from day to day. One cannot have too much water. In some places in Alabama there is an excellent custom of dumping the material from the mine cars into a large headbox provided with grizzlies made of railroad iron. Into this box heavy streams of water play, and the entire material is washed down a long trough, lined with V-shaped castings, into the log washers. In this manner the mixture of clay and ore is given a thorough tumbling about in a rapid stream of water and reaches the washer in fine condition for subsequent treatment. This procedure may be adopted if there is not much lump ore. Where this is present it should go over the grizzly and into a chute to the loading bins, if it is not to be crushed.

### Jigging for the Removal of Chert.

There is no general rule applying to the quality of the lump and the gravel ore. In some localities the lump is better than the gravel, or, at least, as good, and in others the gravel is better than the lump. Where the lump ore is admixed with chert, which cannot be freed from the ore except by crushing, the gravel ore is preferred, provided there is not an excess of chert in the gravel. No log washer or disintegrating screen will remove chert from brown ore; it must be jigged out. Concerning jigging, it must be said that the Alabama brown ore mines are not equipped with the best modern appliances. Here is the weak point in all of our practice. At the best establishments the ore is well washed and the clay is practically all removed, save such as is held in cavities in the ore. But the chert is not removed and high silica ore results. This leads to excessive variations in the content of silica, variations of from 11 to 26 per cent. of silica from the same mine having been observed during one month. If high alumina is to be taken as proof of insufficient washing, high silica means insufficient removal of the chert. The one can be corrected by proper washing, the other by proper jigging. Proper jigging means proper sizing and the sending of each size to its own separate jig. It means a small additional expense per ton of ore, this varying from 10 to 15 cents per ton, according to circumstances. Under the most favorable conditions the actual expense of jigging may be brought below 10 cents. We have in brown ore "banks" two things to get rid of and one thing to save: Clay and chert to throw away, ore to ship. The present appliances for getting rid of the clay are fairly effective, although certainly susceptible of improvement; but the proper appliances for removing the chert are not in use. We build plants, install washers, pipe lines, conveyors, &c., for getting rid of the clay, and this is done fairly well. But the chert is just as troublesome, costs just as much to flux in the blast furnace, and interferes just as much in the conduct of smelting operations as the alumina in the clay. Restricting our brown ore mining to such deposits as may profitably be handled by a simple washing operation, we are restricting the supply of ore, sending material to the furnace which should never be shipped, adding to the cost of making iron, and allowing many a property which could be worked to remain in idleness.

### A Needless Limitation of Supply.

It has happened more than once during the last two years that furnaces in Alabama were in urgent need of brown ore, but it could not be supplied, and for the reason that brown ore operations were confined to such deposits as could be beneficiated by a washing process only. We are putting brown ore deposits on the black list because we do not acquaint ourselves with what is being accomplished elsewhere. It is a question of machinery and water and of knowing how. Both the log washer and the jig act on the same principle—the difference in specific gravity between the ore and the clay and the ore and the chert—only they act in a different manner. If the clay were not lighter than the ore it would not mix with water so readily nor be so easily removed. Its physical condition enables it to be suspended in and go off with the water. Much of it is so fine that it requires hours to settle. The specific gravity of the clay may be about the same as that of the chert, but it is infinitely finer and on this account much more easily suspended in water. Such particles of the ore itself as are of the fineness of the clay go off with it and there is some loss from this source, but not very serious under ordinary conditions.

Brown ore of 48.90 per cent. of iron has ordinarily a specific gravity of 3.474. The ordinary chert with which it is mixed has a specific gravity of 2.57. The

difference is ample for their successful separation. The higher the specific gravity of the ore the greater the content of iron; the lower the specific gravity the lower is the content of iron. Ore of 31.20 per cent. of iron has a specific gravity of 3.284, and ore of 57.40 per cent. of iron has a specific gravity of 3.840.

Attempts are made to remove chert, sandstone, &c., on a picker belt, but any one who has had much experience in such matters must confess that this is not at all satisfactory. To attain even partial success the cost of hand picking is almost as great as the cost of the jigging and the actual gain in metallic iron far below that in jigged ore. Furthermore, there cannot be much uniformity in the ore thus improved, especially since the material is thoroughly wet and it is difficult for the sorters to distinguish between what is almost good enough to pass and what is really good. Hand picking is slow, costly and ineffective. It is not meant that jigging is the panacea for all the ills of the brown ore industry, but it is the cure for high silica and irregular composition. The ordinary log washer or the disintegrating screen will remove the clay and give well washed material, but it will not remove the chert from the ore. This article is concluded with the observation that it is no more difficult to remove the chert from ore that has been washed than it is to remove the clay from run-of-mines material.

## The Lake Superior Mining Institute.

At the recent annual meeting of the Lake Superior Mining Institute these officers were elected for the ensuing year: President, M. M. Duncan, Cleveland-Cliffs Iron Company, Ishpeming, Mich.; vice-presidents, W. J. Richards, Corrigan, McKinney & Co., Crystal Falls, Mich., and Chas. Trezona, general superintendent of Vermillion range mines for the Oliver Iron Mining Company, Ely, Minn.; managers, T. E. Keese, Ishpeming, Mich.; W. J. Uren, Calumet, Mich.; L. M. Hardenburg, Hurley, Wis.; treasurer, E. W. Hopkins, Commonwealth, Mich.; secretary, A. J. Yungbluth, Ishpeming, Mich. The last two were re-elections and deservedly a tribute to the two men who have served long and well in their respective positions. The election of Mr. Duncan foreshadows a meeting next year on the Marquette Range. Seventy-two applications for membership were favorably considered, bringing the active membership to 547. The treasury balance showed $4670 on hand. Some 240 members participated in the trip on the Minnesota Range, while 40 or 50 more joined the party at points along its route.

In the course of his presidential address, delivered at Virginia, President T. F. Cole referred to the brightening outlook for the metals, especially iron and copper. He spoke of the conservation of natural resources, not alone in the saving of what materials we are using but in the utilization of others that lie about us, referring to the water power of the St. Louis River near Duluth, which, when fully utilized, will equal the consumption of 1,300,000 tons of coal annually. This power the institute had visited the preceding day. He referred to the time when mining companies would be compelled to use steel for timbering; said that the Oliver Company is even now considering the use of this material in main lateral openings, as it is now using it in shafts, and he looked for the time to be near at hand when that company would adopt steel for main horizontals in many of its mines. He outlined the future of the new Minnesota plant of the United States Steel Corporation, stating that there was every reason to expect that this works would supply all that part of the trade in steel lying west of the great lakes and north of a line drawn between Duluth and, say, Denver, so far as that territory could be supplied by steel from Lake Superior ores. To include all this region, which is geographically nearer Duluth than Chicago or other steel making point of prominence, there were needed but a few short railroad links to connect nearby points and give the proper rates.

Those attending the recent meeting visited three points of especial interest and importance—the Great Northern Power Company's works, near Duluth; the Norman mine, near Virginia, and the Oliver Iron Mining Company's operations at Coleraine. These presented novel conditions. The power plant referred to has already been fully described in *The Iron Age*. At the Norman mine the owners are reopening, by stripping, an old underground property, once mined by rooms and caving. The difficulties were seen of taking off the surface of a mine where the steam shovels employed in stripping may without warning sink out of sight in some abandoned cave. This inspection called attention to the drift toward steam shovel operations as against any other method of winning large tonnage. But that same tendency was still better shown at the Monroe-Tener group, near Hibbing. Here is a mine that the Oliver Iron Mining Company has opened on plans made but four years ago and then considered the most elaborate example of a milling operation to be found. The overburden was so thick—75 to 90 ft.—that is was not considered feasible to open for the operation of shovels, loading directly on railroad cars. The mine was to be the biggest and best milling pit on the Mesaba. But now, before any considerable quantity of ore has come out of the property, all this is to be changed, and a mile-long open cut approach is being put in for a track, and the mine is to become an open pit steam shovel proposition. At Coleraine the Oliver Company has now so far completed its experiments in the concentration of the Western Mesaba sandy ores that orders have just been given for the erection of the permanent washery. The experimental plant, erected two years ago, and capable of treating 150 tons per hour, has demonstrated that the ores can be washed, a 35 per cent. ore brought up to 59 or 60 per cent., the sand eliminated, the paint rock gone, and much of the fine ore lost. Losses, however, do not run to above 13 per cent. at present, and, with certain additions contemplated, are to be cut lower. It would seem that a series of settling tanks would be of value, but here the furnaceman steps in and demurs; he does not want the fine ore they would save.

D. E. W.

## Rail Steel from an Electric Furnace.

A paper dealing with recent developments of the Kjellin and Roechling-Rodenhauser electric induction furnaces was read before the Faraday Society in London, May 23, by J. Härdén. A synopsis in the London *Times Engineering Supplement* says that in the original Kjellin furnace some disadvantages appeared when dealing with material which had to be refined and treated in large quantities, as in making rail and other steel at the Röchling Iron Works, at Völklingen. Mr. Rodenhauser and Dr. Schönawa applied themselves to the task of adapting the Kjellin furnace to these requirements, the result being the production of the "combined furnace." The principal feature is a heavy secondary winding of copper cables connected to conductive plates built into the furnace wall. The plates do not conduct well when cold, but when the furnace is charged with molten raw material they act as conductors of the second class. The result is that about one-half of the power is transmitted to the charge by induction in the rings, and the rest of the power through the side plates. Three furnaces, taking from 1 to 1½ tons, are now in operation at a power factor of 0.7 to 0.85. The finished product is distinguished for its great strength and homogeneity. Rails have been made with a much higher bending and breaking point than ordinary Bessemer or Thomas rails, and such rails command from 25 to 45 shillings per ton more than ordinary rails, owing to their greater durability. In one case, with 0.75 carbon, 0.03 phosphorus, 0.594 manganese and 0.069 sulphur, the breaking strain was 64 tons per square inch, elongation 21 per cent., contraction 28.5 per cent. In a second case, with 0.86 carbon, 0.018 phosphorus, 0.310 manganese and 0.077 sulphur, the figures were: Breaking, 37.3 tons; elongation, 36.5 per cent.; contraction, 69.2 per cent.

The William Tod Company, Youngstown, Ohio, has received an order from the Youngstown Sheet & Tube Company for a 34 and 64 x 48 in. horizontal vertical engine, rated at 2000 hp., intended for direct connection to a continuous double strand rod mill. Delivery is to be made in five months.

## The Personal Factor in the Care and Inspection of Boilers and Machinery.*

BY J. W. RAUSH.

There is often a very material difference of opinion regarding things about a plant, especially if the question pertains to the necessity or practicability of guarding certain machinery, and it is this difference of opinion that brings into play the various personal factors, which often make the inspector's duty a most trying one. At some plants care is exercised to keep everything in first-class condition. The work is done in an orderly and systematic manner, and everything possible consistent with the nature of the business appears to be done for the welfare and safety of the employees. It is a pleasure to make an inspection at a plant of this kind, not because the inspection is less thorough, but the inspector knows that if he does find anything which is dangerous and liable to cause accident, such dangerous defects will be remedied if a practical way can be devised.

Unfortunately, however, there are many plants where the conditions are just the opposite. The inspector is looked upon with suspicion. The superintendent or manager at the plant may be more interested in turning out large quantities of goods at the least possible expense than in the safety of the employees. He may be aware of the fact that certain safeguards recommended by the inspector are absolutely necessary for safety, but is afraid that they will hamper the work, and instead of giving the improvements a fair trial complaint is made that the inspector is too critical and is insisting upon impracticable things. Thoroughly competent engineers are sometimes exceedingly jealous and sensitive, and are under the impression that their ability is questioned when an inspection is made of the machinery, boilers and other appurtenances of which they may be in charge. This is all wrong. Banks and trust companies are periodically examined by Government examiners, yet no one would question the ability of the officials of the banks and trust companies because of such examination.

It should be remembered in these times of rapid development that new appliances and devices are constantly being put on the market. The inspector visits different plants, and the very nature of his work is such that he picks up information and acquires a knowledge of matters pertaining to steam plants that could not be obtained in any other way. It is therefore reasonable to suppose that he can often suggest improvements even to the competent engineer, and he may also exchange ideas with the engineer to the mutual benefit of both. Then there is the engineer who does things knowing that they are dangerous but who is reckless and would rather take chances than encounter inconvenience. For example, inspectors often find the governor of an overloaded engine blocked. The engineer knows that the belt of an overloaded engine is under its most severe strain and is liable to break at any time. He also knows that if the belt does break the engine will race immediately, for the reason that with the governor blocked there is nothing to control the speed, and a disastrous flywheel explosion is inevitable; and this is only one of the many causes which, combined with a blocked governor, result in flywheel explosions. Strange to say, this is being done every day, and sometimes with the full knowledge of the management. This practice cannot be condemned too severely, for while the engineer may be willing to risk his life and the manager may be willing to run the chances of a heavy property loss, they certainly have no right to jeopardize the lives of the employees and other persons who may be about the plant.

Blocking the safety attachment of a passenger elevator is also done by some men, rather than take the trouble of adjusting the governor to the proper speed limit. Imagine an elevator full of passengers with the safety attachment purposely put out of commission because it was found a little troublesome to adjust it. The necessity of keeping safety attachments in proper working order cannot be too strongly emphasized. It is true that no mechanical device is absolutely reliable under all conditions, but thorough inspections and the proper care of safety attachments have prevented many accidents.

The responsible head of a large engineering plant cannot be expected and neither would he have the time to look after every detail, but as will be shown by the following experience, which is only one of many, a personal inspection now and then will often pay well. One of our inspectors visited an unusually large power plant to inspect boilers. Everything was apparently in the very best condition. At this plant special men are detailed to look after the repairs and the cleaning out of the boilers. The chief engineer pointed to one of the boilers, saying, "You may start on that one, but I hardly think it necessary to get inside as I have just received a report from the man in charge, who reports everything in first-class condition," and on holding a light inside of the manhole the boiler did look to be in excellent condition. However, the inspector wanted to see, and it is well that he did. He first got into the manhole above the tubes. The tubes were found to be fairly clean, but a solid mass of scale was found on the back head between the tubes and the shell. This scale extended down to the lower row of tubes, the water space being solid with scale for a distance of 1 ft. from the back head; also both sides were practically the same. In breaking out the scale we succeeded in getting a piece 12 in. long, 3 in. thick and 6 in. wide. An external examination showed that the shell plates at the points where the scale was found were very badly bulged and burnt. The rivets and the edge of the lap of the head seam were nearly gone. In order to put the boiler in safe condition extensive repairs were necessary.



Specimens of Scale Found by Boiler Inspectors of the Maryland Casualty Company.

Recognizing the importance of the proper care and management of steam boilers and the necessity of certain definite action in case of an emergency, we have prepared rules and instructions, printed on cardboard 8½ x 12 in., which are usually posted in boiler rooms by our inspectors so as to be constantly before the fireman. Careful attention to these rules will go a long way toward prolonging the life of boilers and preventing accidents.

The above cases bring out a few of the conditions met with by the inspector, but how about the inspector himself? Is he always courteous, and is he always clear and concise in his recommendations? Then, too, inspectors do not always agree, and in a controversy it is not always

* A paper by the superintendent of the inspection division of the Maryland Casualty Company, Baltimore, read at the convention of the International Association of Factory Inspectors, Toronto, June 23-26, 1908.

the fault of the management at the factory. The inspector with the requisite amount of tact and diplomacy can say things the right way. He will succeed in having improvements made where the other man will make an utter failure. If there is anything that makes a manager or superintendent indignant it is to have an inspector criticise or find fault with certain dangerous conditions without being able to show in a clear, concise and practical way how the danger can be overcome. Owners and managers do not like to have matters pertaining to their plants discussed by outside persons, especially if dangerous conditions are alluded to. If, then, the inspector finds anything about a plant which is dangerous he should confine his remarks to the proper person or persons and submit his report according to the instructions of his chief. It may at times be advisable, in order to emphasize the necessity of certain safeguards, to refer to other plants, and if the inspector will use discretion there can be no harm in this. On the contrary, it will go a long way toward convincing the management that certain safeguards are necessary if he can show from actual experience that accidents have occurred due to the lack of them.

What we need is a better understanding between the management at the plant and the inspectors. Let the owners know that inspections are not made with a view of criticising or finding fault, but that we want to help them. We are all working for one common good, and in order to obtain the best results we must co-operate with each other.

## Ore Shipments Half Last Year's.

### Resuming Operations at a Slow Rate.

DULUTH, MINN., July 4, 1908.—Iron ore shipments from the old ranges are now running about 50 per cent. of last year, and from the Mesaba a little more than that. Up to date the total shipments have been much less than 50 per cent. of last year, because of the elimination of April as a shipping month. The vessels of the Steel Corporation are all busy, and some of the independents have most of their ships active. Others are still idle.

Lake Superior presents a very different appearance from that of a year ago, and the season as it is usually figured, is almost half over. Mines that customarily ship a large tonnage are just now wheeling into line for the year; the Biwabik, for instance, which has a record of over 1,000,000 tons, sent out its first ore this week. Others, that have been idle to date, are beginning shipments in a slow and indolent manner. On the Marquette Range shipments are gradually increasing, and a fair tonnage is going out. Three or four steam shovels are working in stock piles at Ishpeming. The Empire mine, Cascade District, has started shipments and is sending forward about 700 tons a day. Around Crystal Falls the situation is much improved; stock piles are well out of the way, but pocket shipments are yet small. There are many idle men, though the forces at work are increased about 100 men per week just now. In the Iron Mountain District the Oliver Company has three shovels in stock piles, while the daily product is going to docks regularly. In the Norway Vulcan District all the mines usually busy are shipping, except the Saginaw, which will resume daily deliveries to the Sault furnaces at once. The Milwaukee Railroad has been hauling no ore from that district so far, but expects to begin in a few days. The fear of labor troubles on vessels is passing away, and it looks as though nowhere in the Lake Superior ore trade would there be any difficulties with labor this year.

#### New Work.

The Rogers-Brown Ore Company, operating in the Cuyuna District, has just shown its faith in that region, in spite of the large expense under which it has been in sinking to ore there, by taking a large additional acreage of lands on the trend of the formation, to the west. No explorations have been done here, but the magnetic attraction carries through that section, and the company will conduct extensive explorations soon. The difficulty with its shaft sinking near Rabbit Lake continues.

The work of turning the channel of the Sturgeon River at the Loretto mine has been delayed, and it will be some weeks before the mine can be reopened. Much more rock than was looked for has been encountered in the excavation of the channel. As soon as possible the work of unwatering the mine will begin, and it is expected that the property can be re-entered by miners about August 1. A large new Sullivan compressor has just been installed at the Maas mine, to supply air for this and the Negaunee mines. Its capacity is for 4000 ft. of air per minute.

Syracuse mine, of Pickands, Mather & Co., Mesaba Range, is now idle and full of water. This has been an exceptionally difficult proposition, and it is by no means certain that it will be opened for a long time.

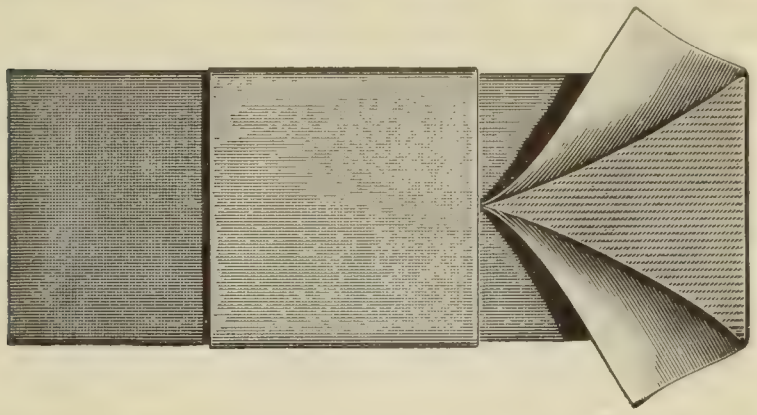
The Oliver Iron Mining Company has begun operations at Coleraine in the construction of five units of the permanent washing works for Canisteo mine ores. Each of these units will be of double the size of the experimental plant now at work and which has been treating ore at the rate of four cars per hour. The new plant should easily handle 1000 tons per 10 hr. per unit. This should make about 2500 tons of concentrates, aside from such ores as can be shipped in natural condition. It will be 1910 before the plant will be doing much business, and by that time a second block of five units may be under construction. The intention is to bring shipments from Coleraine to a very large tonnage. With this idea in mind the company has commenced preliminary work in stripping the one-half of section 16, 56-23, where it has a deposit, under the Great Northern lease, of about 25,000,000 tons. This is a State tract, and the Great Northern must pay the State school funds, 25 cents, out of its own royalty. The mine will be opened for a very large tonnage and is to be called the Hill. Close to it the Oliver Company also owns a large deposit in sections 17 and 18, and other parties own explored mines both east and west of the Hill. The town of Marble is to be established there, and will become a subordinate center for the Coleraine District. It lies some six miles northeast of Coleraine, four miles from Taconite, where are the Holman and Diamond mines of the Oliver Company, while the same company's Arcturus is half way between Marble and Taconite, making a tremendous tonnage in a short distance.

Work has been commenced in cutting a deep and long approach from surface to the Monroe-Tener pit, in section 28, 58-20, in order to open that property for steam shovel operations. It has been a milling pit, and the largest example of its class to be found. The change to steam shovel is exceedingly significant of the trend of operations on the Mesaba to-day. D. E. W.

**An Oregon Hydro-Electric Enterprise.**—The Wasco County Electric & Water Power Company, Condon, Ore., has been organized for the purpose of constructing a system of electric railroads, tapping the region embraced in the territory of the Deschutes and John Day rivers from Condon south to Bend. The country included in this district embraces a large area of fertile agricultural lands, sheep and cattle raising regions and rich mineral deposits which hitherto have been without transportation facilities. The company has authorized a $15,000,000 bond issue, of which series A and B, amounting to $6,225,000, will be offered in the Eastern security markets within the next 60 days. Construction work connected with this enterprise will be handled by the Portland Construction Company, recently organized and incorporated with a capital stock of $500,000. Power for the operation of the system will be generated from two hydro-electric plants to be built on the Deschutes and John Day rivers. Plans for this work contemplate the construction of large dams on these rivers; the one on the John Day River will be built to furnish 100 ft. head upon turbine wheels, which it is estimated will generate 20,000 hp.; the Deschutes River plant is so located that sufficient head can be secured to develop 60,000 hp. The incorporators of this enterprise are Geo. S. Carpenter, Mark W. Gill, W. H. Grindstaff, H. I. Keeney, R. L. Donald, H. J. Martin, O. B. Hathaway, E. P. Schow, C. D. Charles, F. S. Munn, F. T. Hurlburt, C. W. Lord, R. L. Hunter and D. R. Parker.

## Chemi Linen Center Belting.

As the equivalent in strength of a double leather belt at a cost of within that of the best single leather belt, the U. S. Chemical Rubber Company, 109 South Jefferson street, Chicago, Ill., offers the new Chemi linen center belting. The illustrations herewith show its construction. Through the center run parallel linen cords, which provide the tensile strength of the belt, and around these are placed two or three canvas covers, which take all of the wear but little or none of the strain. The linen center cords have a breaking strain of over 125 lb. each and there are eighteen to each inch width of the



The Belt with the Outer and Inner Covers Partly Removed, Exposing the Center Cords.



Transverse Section of Five-Ply Belt.



Transverse Section of Five-Ply Belt with Leather Facing.

The Chemi Linen Center Belting Made by the U. S. Chemical Rubber Company, Chicago.

belt. The plies and center of the belt are united into a continuous but flexible structure by the Elastic belting cement made by the company. This cement not only joins the linen cords and canvas but also forms a film between each ply, which contributes to extra flexibility and life of the belt. The canvas is a closely woven fabric declared to be superior to the ordinary belting duck in its wearing qualities and produces an excellent friction surface.

The Chemi belting is especially suitable for transmitting power in connection with dynamos, motors, fans, blowers and as main and lead belts, or in any place where double leather belting is ordinarily used. When an extra heavy belt is required, as in connection with elevators, punch presses, hammers and air compressors, where there is an uneven and jarring pull, which causes considerable friction, the belt is faced with leather which makes a soft contact with the pulley and increases the belt's gripping power. The belts are finally treated with a sizing of a special oil, which maintains the softness and pliability and materially avoids slipping. The treatment makes the belt oil-proof, but the belt is not claimed to be waterproof, hence is not suitable for outdoor work. The main fact emphasized concerning the belt is that it is substantially stretchless. In an average length of belt one take-up of ½ in. is sufficient; this is usually made three or four days after the belt is applied, but if belt clamps or stretchers are used to put the belt on tight in the beginning all of the stretch can be taken out at once.

Chemi belts are claimed to transmit more power for a given weight and width than any other belts. They can be run crossed and on pulleys over 6 in. diameter at a speed up to 3500 rev. per min. They can be used as shifting belts if the fingers on the shifters are rounded so as not to cut the edge of the belt. As has been said, the belts are not adapted to use where they will come in contact with water or dampness; they are not recommended either for high speed on small pulleys, and they should not be run at a quarter turn, because they are stretchless.

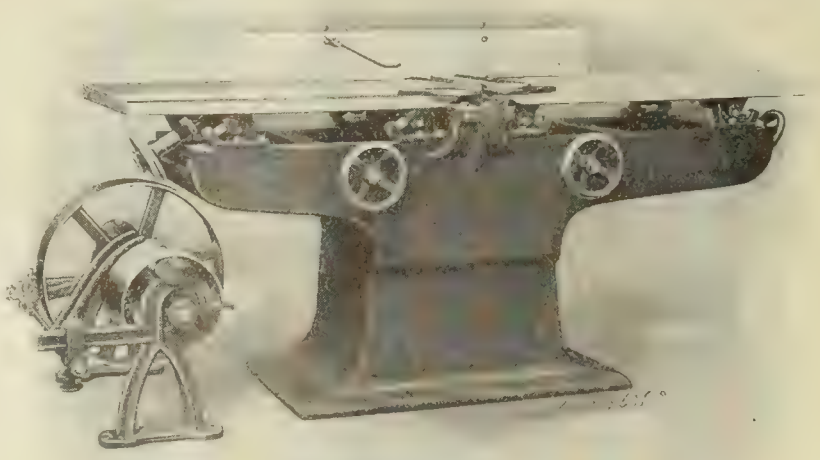
To join the ends of Chemi belts the different plies at the ends can be stepped and lapped for a distance of from 12 to 15 in., the linen cords being separately tied together and the whole made practically an endless belt by cementing with the Elastic cement. Like other belts, however, they can be joined by a soft wire, rawhide or machine lacing. The holes for the lacing should not be made with the usual belt punch, as this cuts out some of the material, but an awl or nail should be used to spread the fibres apart and then the tensile strength at the joint will be greater. The company particularly recommends its Simplex belt lacing, with which a hinged joint may be made, preferably connected with a rawhide pin for the key. With it there is a very small amount of the lacing in contact with the pulley, so that there is little jar or loss of power at the joint. The lacing has six prongs to the inch, and these are driven through the belt in staggered relation, so that there is less tendency for the belt to break at the line of the punctures. The prongs spread the fabric instead of cutting it and a hammer is the only tool necessary to apply the lacing.

Another product of the company which is useful in connection with the Chemi belting is the Chemi pulley dressing. Most pulley dressings contain rosin, which makes the belt clutch the pulley too closely, causing the laps or plies to pull apart. The dressing when poured on the belt is transmitted to the pulley faces, forming a rubber-like coating on them which keeps the surface of the belt smooth and clean and prevents the belt from slipping without running it excessively tight.

## Silver's New Jointers.

From entirely new designs and patterns the Silver Mfg. Company, Salem, Ohio, is building a line of woodworking jointers containing a number of special features. They are built in five sizes, with 8, 12, 16, 20 and 24 in. knives. The frames are in column form, with a large base. The cylinder heads are milled from solid forged steel and are T slotted on two sides for molding, rabbetting and other cutters. For the protection of the operator a movable guard covers the unused portion during working. On the 8-in. machine the driving pulley is 3½ in. in diameter for a 2½-in. belt, and on the larger sizes it is 4 in. in diameter for a 4-in. belt.

A very important part in a jointer are the bearings. In these machines they are made of good length and diameter, lined with copper hardened babbitt, and large oil



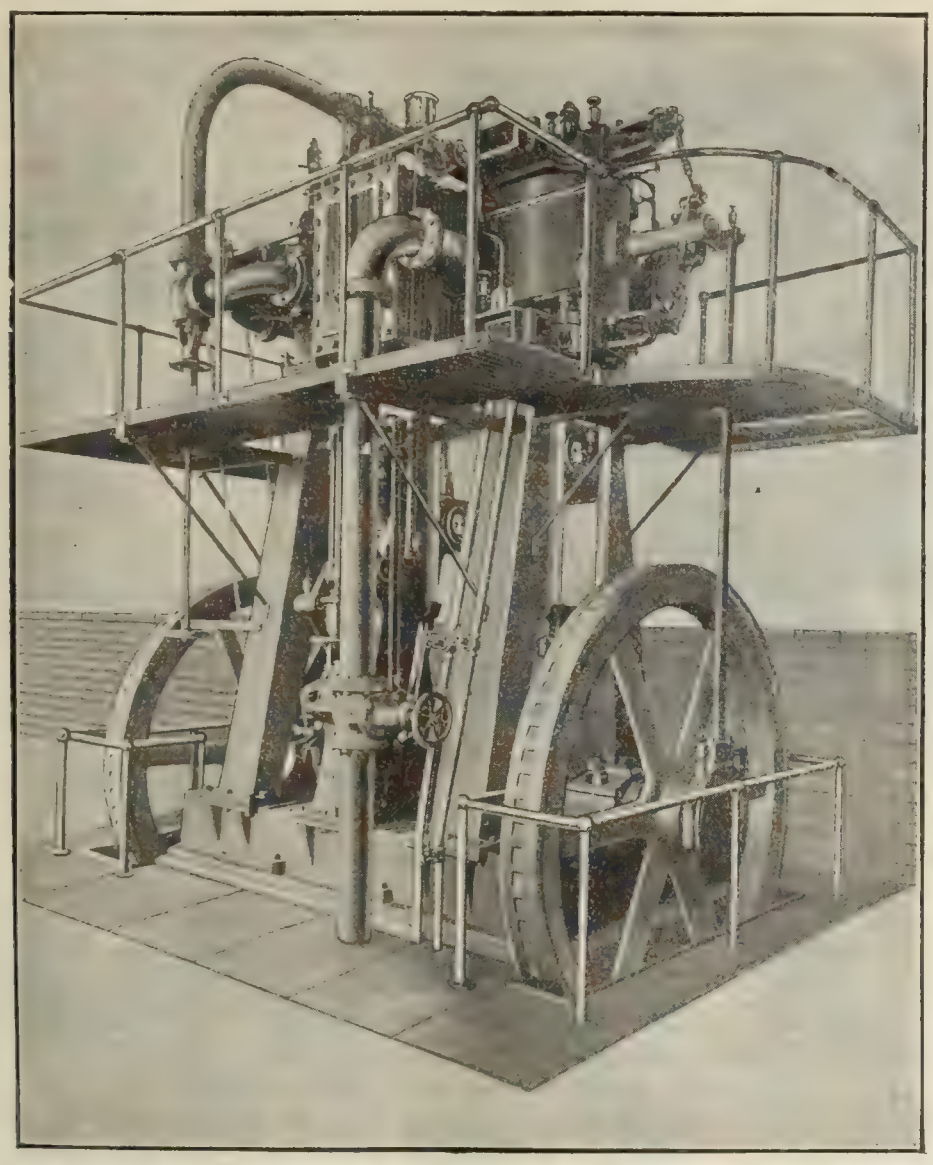
An Example of the New Jointers Built by the Silver Mfg. Company, Salem, Ohio.

chambers and self-closing oilers are provided. The bearing on the pulley side is 7 in. long and that on the operating side 5 in.; both are capped to prevent escape of oil.

A unique feature in the jointers is the arrangement for making the vertical and longitudinal adjustments of the table. These are independent of one another and can be regulated, while the machine is still or running, to suit the thickness of the cut or to close the gap over the head. The table is mounted on steel pin inclines, which

take the place of the usual slides or grooves. They are claimed to be absolutely uniform, and have split bearings clamped with set screws to take up wear and keep the table firm. The vertical movement of the table on these pins is controlled by a hand wheel at each end, and an auxiliary hand wheel rigidly locks the table at any level. Without disturbing this level, the tables and sliding frame can be rapidly withdrawn from the knives to make the latter accessible for sharpening, adjusting or for substituting special cutters. This movement of the table is governed by a hand wheel on the working side of the machine, through a rack and pinion. The same hand wheel by a clutch device locks the whole. The sliding frame is dovetailed into the main frame and has adjustable gibs on the sides for taking up wear.

The tables are of iron, planed smooth, and are about 32½ in. from the floor. The rear table is constructed for rabbetting. On the 8-in. machine the front table is 36 in. long and the rear table 30 in.; on all the larger jointers the front table is 42 in. long and the rear 36 in. The fence can be tilted to any angle from 90 to 45 degrees, and can be moved to cut the full length of the knives. A pressure spring is provided for holding the work to the table.



A Vertical Two-Stage Air Compressor Built by the Rowland Machine Company, New Haven, Conn., for the Continental Iron Works, Brooklyn, N. Y.

The 8-in. jointer occupies a floor space of 22 x 68 in. and weighs 900 lb. The corresponding figures for the 12, 16, 20 and 24 in. machines are, respectively: 30 x 80 in., 1390 lb.; 34 x 80 in., 1520 lb.; 38 x 80 in., 1615 lb., and 42 x 80 in., 1750 lb. The jointers are furnished with countershafts having 10 x 5 in. tight and loose pulleys intended to run at 800 rev. per min., which gives the required speed to the machines of about 4000 rev. per min.

The June issue of *Ideal Power*, published monthly by the Chicago Pneumatic Tool Company, Fisher Building, Chicago, Ill., contains as its leading article "The Gas Process of Case Hardening," reprinted from *The Iron Age* of May 28, 1908. There are also descriptions of the Merrill-Shoffner pneumatic tool holder, an article from the *Railway Age* on cutting metals with the oxy-hydrogen blowpipe, one from the *Industrial World* on the welding of brass or copper to steel and a description of the Burke induction motors.

## The Rowland Vertical Two-Stage Air Compressor.

Where floor space is limited it is often desirable to install machines of a vertical type. The accompanying illustration shows an air compressor of such a type which was built by the Rowland Machine Company, New Haven, Conn., for the Continental Iron Works, Brooklyn, N. Y. In its essential features it is not unlike other machines of the same capacity. The style of valves, both intake and discharge, their arrangement, the method of water jacketing, the intercooler and the important points of the machine differ little from those of other standard makes, but it occupies an unusually small amount of floor space compared to the horizontal machines of equal capacity; the floor space is only 11½ x 8 ft. and the hight is 14½ ft. The machine is also considered by the builder to be creditable for its compactness of design and symmetrical arrangement of its various parts. That it weighs 42,000 lb. gives some idea of its solidity.

The purchaser specified a compressor delivering approximately 600 cu. ft. of free air per minute at a pressure of up to 100 lb. per square inch. The floor space available in the engine room would not admit a horizontal machine of this capacity, so this vertical machine was built to order. It is a steam driven compressor with compound air cylinders; the steam cylinder is 20 in. in diameter and is mounted between the air cylinders, which are 20 and 13 in. in diameter, respectively. The stroke of all three cylinders is 24 in. and the speed 70 rev. per min. The cylinders are mounted on a common bed plate upon legs or frames of rectangular cross section.

The steam cylinder is of the slide valve class, fitted with independent cut-off valves which can be adjusted to suit various loads. The ports are large, and both the cylinder and steam chest are jacketed and surrounded with asbestos lagging to reduce condensation. The speed is regulated by a Judson governor, which is controlled by an air pressure regulating attachment.

The inlet valves of the low pressure air cylinder are similar to the steam valves of a Corliss engine, and are moved by an eccentric attached to the outer end of the crank shaft. The high pressure cylinder has poppet inlet valves, and the discharge valves of both cylinders are also poppet valves. These valves work in cages which can readily be taken out for examining or repairing, without disturbing other parts of the machine. Both air cylinders are surrounded with water jackets which extend to both the top and bottom heads. In addition to this an intercooler, consisting of a cast iron shell filled with brass tubes, connects the low with the high pressure cylinder.

The crank shaft is of open hearth steel. The main bearings, four in number, are 7 in. in diameter by 14 in. long. The two flywheels, which overhang at each end, are large and heavy enough to give steadiness of motion. An elevated platform around the machine just below the cylinders gives access to the valves, rocker arm, governor, &c.

This first machine of its type has proved so successful that the purchaser has recently been furnished with a second compressor from the same design and patterns. So far this is the only size that has been built, but the builder is prepared to undertake the construction of any other size along the same general lines.

The Youngstown Sheet & Tube Company has moved its general offices from the Federal Building to the new Stambaugh Building, Central square, Youngstown, Ohio, where it occupies the entire eighth floor. Additional space was needed to take care of the company's growing business.

## The Morse Rarefied Dust Collector.

In the Morse Rarefied dust collector, its manufacturer, the Knickerbocker Company, Jackson, Mich., believes it has overcome the disadvantages of other means of separating finely pulverized material from a conveying air current. It uses no cloth or other screens, hence does not require frequent attention to remove the material that clogs up the meshes. While it is a centrifugal collector, it is radically different from the usual devices in that the air is exhausted from it instead of being blown through it, hence a partial vacuum or rarefied condition of the air is produced within the collector, which explains its name. An important gain from this arrangement is that the particles carried with the air are thrown against the walls of the collector only by their own momentum and not augmented by pressure of air behind them; their abrading action on the surfaces they impinge upon is correspondingly decreased, so that these parts need not be frequently renewed. More important still is that the air is purified before it passes through the fan instead of after, and wear of the fan blades and housing is consequently avoided. The collector is particularly valuable therefore for use in connection with emery wheels, tumbling mills, sand blasts, &c., and in handling all products of metallic or flinty character. Morse collectors have been in practical use under such conditions for over two years without, it is claimed, requiring any repairs to either fans or collectors.

The dust spout is connected to the collector at the tangential inlet A as shown in Figs. 1 and 2, while the fan inlet is connected with an exhaust pipe opening in the collector at J. The fan establishes an air current through the outlet J, creates a partial vacuum or rarefied air condition in the areas B, C and D, and draws the material laden air into the casing at the inlet A. The tangential entry of the material laden air establishes a whirl as it passes through the structure and the centrifugal action causes the heavier material particles, having the greatest specific gravity, to be projected toward the inner dividing casing E, where they pass through the skimmers F into the rarefied chamber C. A lighter grade of dust travels along the walls to chamber B, and the very light dust, which, by reason of its low specific gravity, has not sufficient momentum to immediately overcome the draft of the air current, passes toward the center with the inwardly flowing air and escapes to the rarefied or vacuum chamber D, which is open to the air whirl. The purified air passes out of the collector through the axial exhaust pipe and thence through the fan. As the material accumulates in the chambers B, C and D, it will fall to the bottom thereof and discharge of its own weight through the automatic traps G, H and I.

The inner casing E of the collector is of heavy sheet steel and interchangeable, so that it may be readily renewed at any time at small expense, although, due to the axial escape of the air and the vacuum principle of the collector, the wear is not considerable. The air drawn into the collector at the periphery of the casing instantly escapes at the center outlet J and exerts no pressure against the casing E, as the flow of air is from the dividing wall, as may be seen in Fig. 3. The heavier dust is carried on only by its own momentum to the inner casing E and is immediately skimmed out into the rarefied areas surrounding the inner walls. The greatest suction is at the center of the whirl X, which is the axis of the casing, and the outer areas being rarefied act as cushions for receiving the centrifugally expelled dust, reducing the friction on the casing.

The Rarefied collectors are built in both vertical and horizontal patterns. The latter type is for use where a separation of the product collected is necessary. It will separate material collected according to the specific gravity and discharge it in three grades through the traps G, H and I, Fig. 2. The vertical type discharges all the dust in one stream through the trap G, Fig. 1. Up to and including No. 15, the horizontal collector is constructed in one body as shown in Fig. 2. For No. 16 and larger it is built in three sections, to facilitate placement.

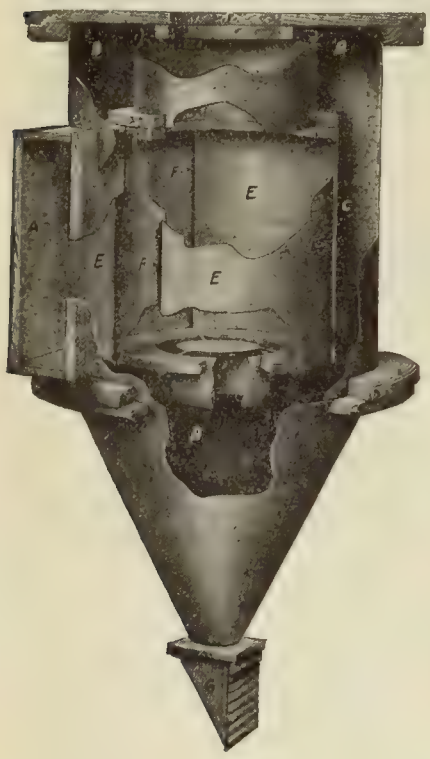



Fig. 1.—The Vertical Type.

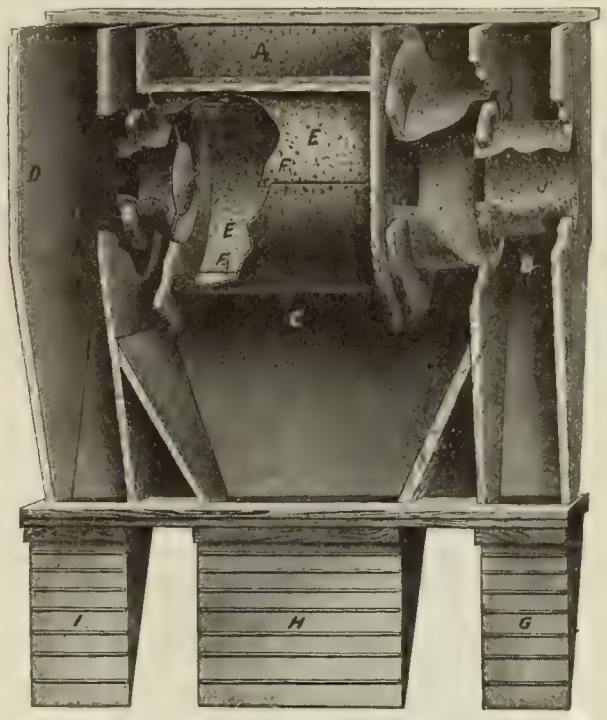



Fig. 2.—The Horizontal Type.

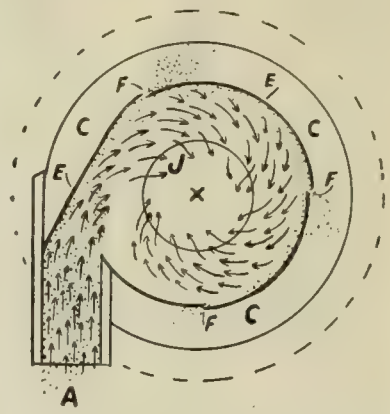



Fig. 3.—Diagram of the Lateral Section Common to Both Types.

The Morse Rarefied Dust Collector Built by the Knickerbocker Company, Jackson, Mich.

Summing the advantages claimed for the Rarefied collectors—the suction never varies; they collect all the dust heavier than air; the material collected is discharged automatically; there are no moving parts; there is no cutting out of the fan; the inner separating walls are interchangeable; there is no undue wear on the collector parts, and the cost of repairs is very slight.

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The Youngstown Car Mfg. Company, Youngstown, Ohio, has booked an export order for 20 flat wooden standard gauge 80,000 lb. capacity cars for shipment to the Hawaiian Islands. It recently shipped 10 12-ton 36-in. gauge steel ingot cars to the La Belle Iron Works, Steubenville, Ohio. During the business depression the company had sufficient contracts for cars to enable it to run its plant to nearly full capacity, and at present it is running to about 75 per cent., with orders enough on hand to carry it over the next two months.

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Germany's imports of iron ore in 1907 included 5,603,505 tons from Sweden and 2,149,299 tons from Spain. The total from all countries was 8,476,076 tons. The imports from Sweden have increased rapidly, averaging about 1,550,000 tons in 1903, 1904 and 1905. In 1906 they were 2,300,000 tons, and in 1907 increased to nearly two and a half times that amount.

## Shipbuilding in the Fiscal Year 1908.

WASHINGTON, D. C., July 7, 1908.—The preliminary annual report of Commissioner of Navigation Chamberlain shows that the shipbuilding industry in the fiscal year ended June 30, 1908, broke all records. The aggregate tonnage of vessels actually completed and put into service amounted to more than 600,000 tons, more than two-thirds of which was of steel construction. Considerably more than one-half the total tonnage was constructed in shipyards on the Great Lakes.

That this record breaking output is to be followed by a heavy slump is already foreshadowed in unofficial advices received by the Bureau of Navigation, and it is predicted that the construction for the fiscal year, which began July 1, will hardly exceed one-half the output for the year just closed.

Returns covering the fiscal year 1908 show that 1506 vessels of 588,627 gross tons, were built and officially numbered. To this total there should be added, however, a considerable number of vessels, which were officially numbered in May and June, 1907, but which, because of shipyard strikes, were not actually completed until after July 1 of that year. The amount of this additional tonnage cannot be accurately stated, but there is no doubt it carries the total well above 600,000 tons. The largest previous annual output was in the year 1855, when 2024 vessels, of 583,450 tons, were built. The steel vessels built in the fiscal year just ended numbered 142, of 417,167 gross tons, compared with 131, of 366,517 gross tons, built in the year 1907. The record for steel construction was broken in both these years.

The following table presents a comparison of the steel construction of the last two fiscal years by navigation districts:

*Steel Vessels Built and Officially Numbered.*

| | 1908. | | 1907. | |
|---|---|---|---|---|
| District. | No. | Gross tons. | No. | Gross tons. |
| Atlantic and Gulf | 53 | 87,374 | 80 | 117,311 |
| Pacific | 11 | 24,850 | 1 | 8,579 |
| Great Lakes | 75 | 304,379 | 47 | 238,713 |
| Western rivers | 3 | 564 | 3 | 1,914 |
| Totals | 142 | 417,167 | 131 | 366,517 |

Next to the important gain in steel construction in recent years, the most significant tendency has been the increased proportion of the total output credited to Great Lakes shipyards. A few years ago these yards produced a relatively small proportion of the total, but in the fiscal year 1907 they turned out 57 per cent. of the construction, and in 1908 they produced 61.5 per cent.

Of the 142 steel vessels built in 1908, 85 exceeded 1000 gross tons each. Of these 55 were built on the Great Lakes, the largest being the William M. Mills of 7962 tons, and 30 were built on the seaboard, the largest being the Columbian of 8579 tons, built at San Francisco for trade to Hawaii. Four ocean sailing vessels exceeding 1000 tons each, were built during the year, the largest being the Edward J. Lawrence, of 3350 gross tons. The tonnage built in 1908 was entirely for domestic transportation, no vessels exclusively for foreign trade having been launched in the United States.

Supplementing these interesting figures, returns are being received by the Bureau of Navigation from the principal shipyards showing vessels in the course of construction and contracts on hand. From these data it appears that all the shipyards, and notably those at tidewater, are rapidly cleaning up their orders, and that very few contracts have been secured since last November. It is from these advices that the bureau officials draw the conclusion that the output for the present fiscal year will hardly exceed one-half the production of the year 1908. The heavy falling off in orders for construction for the coastwise trade, combined with the absolute cessation of shipbuilding for the foreign trade, will be urged upon the attention of Congress next winter in connection with the pending Ship Subsidy bill, which has passed the Senate, but which has not yet been acted upon by the House. In the closing days of the recent session the Subsidy bill was stricken off the Post Office Appropriation bill, to which it had been added as an amendment. W. L. C.

## Average Analyses of Lake Ores in 1907.

The Lake Superior Iron Ore Association, Cleveland, Ohio, W. B. Treat, secretary, has issued its annual booklet, giving average cargo analyses of Lake Superior ores for the season of 1907. In a few cases the expected analysis for 1908 is given instead of the record for last year. The names of 38 ores appear in the present list which were not in that published last year, and 16 ores listed last year are absent from the new list. In some cases there may have been changes of ore names and in others the ore is not now on the market, either from exhaustion or temporary inactivity of the mine. Of the ores appearing for the first time 14 are from the Mesaba range.

In referring to the association's ore book of last year mention was made in these columns of the declining iron content of a number of ores. This is again noticeable in the list just published. In some cases the iron content as shown by the average analyses for 1907 represents an increase over the preceding year, but the number of these instances is small in comparison with those representing the general trend. The ores which showed one point less in iron in 1907 than in 1906 are numerous. Some declined two points and the average is probably considerably over one point, though in order to get an accurate idea of what is taking place it would be necessary to know how much of each ore is shipped. Below are given the names of representative ores, with a comparison of the iron contents for 1907 and 1906:

| | 1907. Per ct. iron. | 1906. Per ct. iron. |
|---|---|---|
| Ashland | 58.70 | 60.00 |
| Atlantic | 62.097 | 63.01 |
| Aurora | 62.18 | 61.30 |
| Brotherton | 56.72 | 58.40 |
| Cary Bessemer | 54.57 | 55.90 |
| Cary Empire | 53.85 | 56.01 |
| Iron Belt | 55.50 | 56.00 |
| Montreal | 63.27 | 62.69 |
| Newport | 52.58 | 53.50 |
| Sunday Lake | 58.12 | 59.25 |
| Tilden | 62.73 | 63.45 |
| Angeline Hemat'e | 64.36 | 65.14 |
| Cliffs Shaft, crushed | 59.40 | 60.80 |
| Cliffs Shaft, lump | 60.00 | 61.50 |
| Imperial | 51.70 | 54.50 |
| Lake | 59.00 | 59.50 |
| Lake Bessemer | 60.80 | 62.50 |
| Lillie | 58.53 | 59.46 |
| Negaunee Bes'm'r | 58.80 | 60.00 |
| Princeton | 57.70 | 58.60 |
| Republic, crushed | 61.55 | 62.90 |
| Salisbury | 58.60 | 59.50 |
| Chapin | 58.98 | 58.18 |
| Biwabik | 61.54 | 62.23 |
| Franklin | 56.65 | 60.46 |
| Hawkins | 55.40 | 57.59 |
| Higgins | 58.37 | 59.85 |
| La Belle | 58.73 | 56.05 |
| La Rue | 55.44 | 60.28 |
| Laura | 57.95 | 59.20 |
| Malta | 56.97 | 60.46 |
| Union | 61.26 | 59.99 |
| Victoria | 60.22 | 62.33 |
| Helen | 58.20 | 59.60 |

The above percentages are for ore dried at 212 degrees F. While many ores mined by steel companies for their own use are not included in the analysis book, enough of such ores are given to show that the tendency toward lower iron contents is general and applies equally to Old Range and Mesaba ores.

## A Consolidation of British Structural Firms.

The rumors concerning a steel consolidation which have been cabled from London in recent weeks have been too vague to merit attention, and the surprise is that they should have been reiterated so frequently. Perhaps as solid a foundation as has existed for these reports is furnished by the negotiations for an association of "makers of bridge and constructional iron and steel work" referred to by the London *Economist*. It is said that the project has met with approval from a number of British structural firms, including Braithwaite & Kirk, West Bromwich; Cleveland Bridge & Engineering Company, Darlington; P. and W. MacLellan, Ltd., Glasgow; Joseph Westwood & Co., London; the Widnes Foundry Company; Head, Wrightson & Co., Stockton-on-Tees, and John Butler & Co., Ltd., Leeds. Several strong concerns have declined to join, but an effort is being made to overcome their objections. The report is that negotiations have been in progress between representatives of the proposed consolidation and a committee of the Northeast Coast steel manufacturers, the Midland producers of steel angles and several Scotch steel companies, looking to an agreement involving preferential prices.

# THE IRON AGE

Established in 1855.

New York, Thursday, July 9, 1908.

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## The Responsibility for Steel in Construction.

The consumer's demands upon the manufacturer of steel grow more exacting. The rail problem may come first to mind in this connection, since there has been such a flood of published matter on the added stringency of the requirements of the railroads. But the point we would emphasize is not so much that issues have been raised between producer and buyer over the severity of specifications for rail or other steels, as that the buyer has been disposed, apparently, to throw over upon the manufacturer of steel the burden the buyer's customers in turn have been putting upon him. It is this factor in the rail controversy that offsets much that was said last year, directly or by innuendo, as to the lack of co-operation by the steel companies in the movement for higher quality in rail steel. These companies could not be expected to join with heartiness in an effort to lay all track failures at their door. Dr. Charles B. Dudley, in his presidential address before the American Society for Testing Materials at Atlantic City recently, properly characterized the disposition shown by some railroad engineers to shift the responsibility of inferior track maintenance upon the shoulders of the rail manufacturer. The aim of such engineers, as he put it, is "to have a rail of minimum weight per yard and yet so good that even though the track might not always in every detail be kept up to standard there would still be no failures." The speaker, with the candor and fairness that marked all his discussion of the question, then weighed the factors in the track maintenance problem and raised the question whether heavier rails would not pay for the increased weights by the resulting economy in track maintenance. He also asked whether heavier rails of more expensive steel would not be even more economical—that is, yield such a saving in track maintenance as would more than pay for both the increased weights and the higher grade steel.

So far as the experience of the Pennsylvania Railroad goes, the answer given by E. F. Kenney, formerly engineer of tests of that system, in a paper read at the same meeting, is positive. Mr. Kenney says that the adoption of much heavier rails than those used to-day would be distinctly an economy because of the reduction in the cost of maintaining the track. Since the rail cost on American roads averages only 7 per cent. of the total maintenance charges, it would seem that quite too much stress has been put by the railroads on the pecuniary side of the rail question. On the testimony cited above some of the railroad engineers have been straining at a gnat and swallowing a camel in quibbling over paying the rail makers for more steel per yard of track and for the better steel that would result from the more expensive mill practice they insist upon. The rail question is to a far greater extent than the multiplication of words over it has indicated, a commercial question. It is encouraging to see in this later discussion more of a disposition to grant that the rail mill should not be saddled with the problems, certainly not the neglected problems, of the maintenance of way department.

At the meeting of the American Society for Testing Materials referred to above there was also presented a report from the Committee on Uniform Specifications for Boilers, which further illustrated the readiness of the consumer of steel to pass his troubles on to the steel mill. The manufacturers of boilers have had up with the Board of Boiler Rules in Massachusetts some of the provisions of the new regulations in that State which they have found it difficult to comply with under existing boiler shop practice. The Massachusetts board is quite disposed to insist upon the original requirements, and the boiler makers are facing the probability that they will be adopted in other States. Some of the regulations bearing on boiler construction would not be necessary, the boiler manufacturers argue, if greater strength and uniformity could be guaranteed for boiler plates and tubes. They recommended, therefore, that in the specifications for boiler plates the phosphorus and sulphur limits be lowered, so that 0.03 per cent. of both elements shall be the maximum for much of the steel entering into boiler construction and that 0.04 per cent. in phosphorus shall be the maximum for any boiler steel.

We are not citing this last demand of the boiler manufacturers upon the manufacturers of steel as being entirely parallel with that of the railroads, but it illustrates the manifest tendency. In every form of service in construction steel is being called on to carry greater loads, sustain higher pressures, resist stronger attacks by corroding agents. From all directions consumers are crowding upon the steel manufacturer these increased demands. It is certain that they must be met by new methods, by greater care in all the processes of manufacture, by the application of the discoveries constantly being made as to the effects of heat treatment and the alloying elements. We do not find that steel manufacturers have ever been satisfied to stop improving their product. Much of the progress they have already made has been unrecognized because service has increased in severity as product has gained in quality, and in many cases faster. The question may properly be raised, however, whether the practice of the consumers of steel has improved as much as has that of the steel mills. It is only fair to expect, moreover, that each interest in its own field should bestow some worthy effort on these problems of steel in construction, and not merely make them the ground for fresh exactions from the mills whenever specifications come up for amendment.

## Some Precedent for Earlier Working Hours.

The movement in the British Parliament to set the clock ahead an hour or so in the spring, so that people will get greater benefit from the long daylight, is generally regarded in this country as impracticable. Yet it recalls that there is a sort of precedent for the suggested custom in American industry. In some trades in New England the factories have started earlier in the morning in the spring months and closed correspondingly early in the afternoon, so that employees might have additional daylight in which to take recreation. While the practice

has been by no means common, yet it formerly existed, and there may yet be instances of it.

The English idea is to set the clocks of the country about an hour ahead in the early spring, so that while the morning work will start at the same time by the clock, it will really be an hour earlier. It would be 7 a.m. when it is now 6. Bed time would be correspondingly earlier. The people, however, would have more daylight in their waking hours. In general theory the idea is not an impossible one. Each spring the clocks would be set ahead, to be put back again in the autumn.

It is stated that in those American works which changed their daily schedules to start an hour or half an hour earlier in the morning, the trouble was experienced that employees did not change their hours of retiring, and consequently got an hour's less sleep. This usually meant a loss in production, because a sleepy workman loses some of his efficiency. Another manner of changing schedules in the spring has been to run 11 hours a day for five days, starting at 6.30 a.m. and allowing but half an hour at noon, thus making up for a Saturday half holiday without loss of time. This custom has been followed for years in certain textile mills employing English workmen, who use the whole Saturday holiday for their sports, making of it their summer vacations. In such cases the manufacturers state that there has been no loss in efficiency of labor.

## Holding Back Improved Products.

A certain amount of disinclination is observed with some manufacturers of machinery and other shop equipment to bring out new tools at this time. From the buyers' point of view, this attitude toward them does not seem the most profitable under existing conditions. It will be remembered that when business was extraordinarily active the machinery builders were loath to introduce new types or designs into their lines because there was then no need of stimulating demand, and because they did not wish to complicate manufacturing in any way, the wise policy being considered one of concentration to the last degree upon regular products. Neither did they wish to spend time and energy on anything new. Every bit of industrial and business strength was required in taking care of a market so great that it passed the limits of producing capacity. The theory then expressed was that the time to bring out new products is when business is dull. This idea, however, is not being lived up to in many cases. The tendency is to wait for a rising market, for a period of increasing demand when buyers will be actually in the market.

Such delay is based on wrong surmises. A great many industrial concerns have been doing much planning during their rest from active business. Weaknesses of plants were thoroughly exposed while business was rushing, and it was difficult, frequently impossible, to remedy them at the time. Now plans have been made for such improvements as have not already been accomplished. Campaigns have been laid out for taking care in the most economical manner of the business which will come with a return of prosperous conditions. These facts have been demonstrated in various ways. The unusual number of inquiries for equipment, which have constituted a feature of the market, are founded upon the expectation of making improvements as soon as more funds shall become available or the business outlook better defined. Many manufacturers have been heard to express their intention of improving their equipment as soon as the time seems right to do so. Tools have been rearranged in the works, and other preparations made for the installation of new machinery. A very definite idea exists in almost every manufacturing plant as to what should be done to equalize production through the various departments and processes of manufacture, and to increase it.

It is not assumed that manufacturers as a whole are planning extensive changes at this time, nor that radical enlargements of plants are to be looked for. But, nevertheless, the improvements which are already on paper as necessary in order to meet another rush of business will total an amount of money which will be an important factor in the trade when they are carried through. The machinery and other salesmen who have kept in unusually close touch with their trade of late have found this to be the state of things everywhere. After such a period of stagnation as that through which we are passing a rapid recovery is to be expected. This may come at any time. No condition seriously unfavorable to improvement is now in sight, and the present would seem to afford the opportunity to bring to the attention of the trade all new products which would serve to improve a customer's lines or reduce his cost of manufacturing.

# CORRESPONDENCE.

### The Chemist in the Iron Trade.

*To the Editor:* The writer of this communication, in an article on "The Chemist in the Iron Trade" published in *The Iron Age* of July 2, makes a statement which, in justice to the many practical works managers and superintendents in the iron trade who do not know general chemistry, must be qualified somewhat. That statement is that the works manager should understand general chemistry (analytical chemistry, as we have shown, is no good at all to him to understand), and the qualification that must be made to it is—if he has no chemist in his employ. But, having a chemist, there is hardly any more reason that he should understand general chemistry than that he should understand stenography and typewriting with a stenographer on hand, although certainly more desirable.

In this connection, it is worth while to note the point that with a works supplied with a practical man as manager and an analytical chemist not only to make analyses of material and product, but also to supply the manager with the chemical metallurgical theory needed, every requirement is pretty well met, and it is really not so very apparent after all that the chemical engineer—that is, the manager who understands chemistry—is a burning necessity to the iron trade. The works chemist does not have to be bribed by the gift of superintendency into parting with his precious chemical knowledge. On the contrary, he is glad of a chance to air his knowledge, and precious little chance he gets at present, with his superior impressed with the prejudice that chemical theory is strictly the manager's business, into which he may not call another without suffering the imputation of not understanding his business. This is a false and foolish idea on the manager's part. As well might he feel obliged to do his own typewriting as do his own chemical theorizing.

A practical man as manager and an analytical chemist upon whose chemical knowledge the practical manager has no prejudice against drawing would seem to be a reasonably effective combination. But it is of course desirable in such an arrangement that the chemist be really and truly a chemist, and not an indefinite and more or less inefficient (compared, that is, with the same effort concentrated in a single line) compound of chemist, practical engineer and unconscious humbug. In other words, with a practical engineer as manager, working with an analytical chemist who supplies the chemical theory, it is a waste for the former to study up chemistry and for the latter to study up practical engineering.

So with a chemical engineer, on the contrary, as manager and an analytical chemist also employed in the

works, there would seem to be a plethora of chemical knowledge. But when this arrangement is preferred, then the writer must once again hark back to his old cry that the young chemical engineer should be started in the office and not in the laboratory. Why impose upon him a handicap (the handicap of many years spent in a foreign and unrelated occupation) that the members of no other profession have to submit to? A certain amount of handicap, it is true, the chemical engineer must put up with. He cannot, like the members of other professions, jump at once from college into the practice of his profession, but must first serve a humble, practical apprenticeship at the works. But this is the question, and it is an important one, should this humble apprenticeship be served in a position where he can learn the practical part of his profession or where he cannot? Should he be put in the office, or somewhere around the works, or should he be put in the laboratory, or on a farm, or in a dry goods store? The answer would seem to be obvious, and works that take on young chemical engineers should start them as officemen, and the college should give chemical engineers no training in analytical chemistry.

GEORGE AUCHY.

PHILADELPHIA, PA., July 6, 1908.

### The Inventor and the Patent Office.

*To the Editor:* A discussion having arisen in various parts of the country regarding the status of the inventor with relation to the United States Patent Office, and expressive of the opinion that inventors of the country should form a national organization for the protection and advancement of their interests, permit us to state that just such an organization exists in the International Congress of Inventors, established in 1906, incorporated in 1907, and having members in several States of the Union, with branches formed or forming in Texas, Missouri, Illinois and California. This organization was established to benefit inventors as a class by seeking to secure legislation which shall insure to the inventor the services at the Patent Office which his application fees should provide and the protection for his invention which a government guaranty should give.

Largely through the efforts of the International Congress of Inventors the Federal Congress has this year provided for an increased force of examiners in the Patent Office and for an advance in the salaries of Patent Office employees, which will tend to retain in Government employ those who have become expert in the treatment of applications. A patent fund of $7,000,000 has been accumulated from the sums paid to the Government by inventors, and the Patent Office is the only self-sustaining Federal department. Surely the inventors of the country are entitled to the consideration which these facts warrant.

An important matter under consideration by the International Congress of Inventors is the establishment of a standard for a United States patent. The patent system purports to be a method of rewarding inventors and thereby stimulating the production of inventions of value to the public. But patentees and holders of patents find that a United States patent, in order to attain a definite standing, must be tried out in court. Yet a guaranty of protection issued by the Government ought to be something more than a license for a law suit. The International Congress of Inventors is giving this matter careful consideration, and it will seek such action by the Government as will make a patent conform to its purport. This is one of the many subjects now before this organization. Suggestions in the interest of inventors and all who hold patents are solicited by this organization.

RALPH T. OLCOTT,
Secretary International Congress of Inventors.
16 STATE STREET, ROCHESTER, N. Y., July 2, 1908.

At a meeting to be held in the Business Men's Club, Cincinnati, July 8, it is expected that plans will be consummated for the removal of the plant of the Reeves Engine & Machine Company from Trenton, N. J., to Cincinnati, with an increased capitalization and equipment. It is desired to form a $150,000 corporation, of which $100,000 is to be subscribed locally. Clifton Reeves, the president, will furnish $32,000, and $18,000 is to be kept as treasury stock. Mr. Reeves' investigations have shown that no engine of the type manufactured by him is built between Springfield, Ill., and Erie, Pa., and that the South, a rapidly growing territory for high speed engines, is advantageously reached from the Cincinnati market.

## May Exports and Imports of Iron and Steel.

According to the May report of the Bureau of Statistics of the Department of Commerce and Labor, a sharp decline was experienced that month in the exports of iron and steel and manufactures thereof. The total value of such exports, not including ore, was only $11,281,425, against $15,467,319 in the preceding month and $14,594,043 in May, 1907. The falling off was also heavy in the figures given for quantities, as the total for May was only 64,020 gross tons, against 93,522 tons in April, 96,437 tons in March, 81,755 tons in February and 74,352 tons in January.

The following table gives the details of the exports of commodities for which quanaities are given, for May and for the 11 months of the current fiscal year ending with May, as compared with the corresponding periods of the previous year:

*Exports of Iron and Steel.*

| | May. | | Eleven months. | |
|---|---|---|---|---|
| | 1908. | 1907. | 1908. | 1907. |
| | Gross tons. | Gross tons. | Gross tons. | Gross tons. |
| Pig Iron | 3,621 | 7,342 | 47,612 | 79,043 |
| Scrap | 1,840 | 5,815 | 18,527 | 20,207 |
| Bar iron | 634 | 1,214 | 12,443 | 39,979 |
| Wire rods | 401 | 551 | 6,072 | 9,573 |
| Steel bars | 2,818 | 8,080 | 60,106 | 44,532 |
| Billets, blooms, &c | 3,831 | 7,305 | 87,310 | 110,116 |
| Hoop, band, &c | 170 | 195 | 8,285 | 5,467 |
| Steel rails | 11,440 | 11,726 | 263,108 | 272,964 |
| Iron sheets and plates | 3,208 | 2,924 | 38,900 | 27,158 |
| Steel sheets and plates | 5,320 | 8,954 | 56,626 | 90,678 |
| Tin and terne plates | 2,220 | 2,089 | 14,897 | 8,220 |
| Structural iron and steel | 5,091 | 9,838 | 125,882 | 113,637 |
| Wire | 12,077 | 10,848 | 146,545 | 149,514 |
| Cut nails | 588 | 653 | 5,953 | 7,206 |
| Wire nails | 1,640 | 3,075 | 34,282 | 36,352 |
| All other nails, including tacks | 238 | 279 | 5,283 | 5,930 |
| Pipes and fittings | 8,883 | 10,653 | 159,638 | 115,691 |
| Totals | 64,020 | 91,541 | 1,091,469 | 1,136,267 |

The import movement is now so small that the changes from month to month are not significant. The total value of the imports of iron and steel and manufactures thereof, not including ore, for May was $1,347,332, against $1,633,812 in April. Taking the commodities for which quantities are given, the May total was 13,584 gross tons, against 12,342 tons in April, 15,885 tons in March, 19,054 tons in February and 28,008 tons in January.

The following table shows the details of the imports of these commodities for May and for the 11 months of the current fiscal year ending with May, as compared with the corresponding periods of the previous year:

*Imports of Iron and Steel.*

| | May. | | Eleven months. | |
|---|---|---|---|---|
| | 1908. | 1907. | 1908. | 1907. |
| | Gross tons. | Gross tons. | Gross tons. | Gross tons. |
| Pig iron | 4,975 | 66,276 | 194,751 | 519,961 |
| Scrap | .... | 3,071 | 17,077 | 17,725 |
| Bar iron | 300 | 3,034 | 31,645 | 34,278 |
| Rails | 7 | 23 | 2,633 | 3,947 |
| Hoop, band, &c | 9 | 296 | 472 | 4,007 |
| Billets, bars and steel in forms n.e.s | 818 | 1,462 | 15,401 | 17,617 |
| Sheets and plates | 152 | 164 | 2,381 | 3,188 |
| Tin and terne plates | 6,642 | 7,874 | 55,180 | 59,749 |
| Wire rods | 630 | 1,774 | 12,461 | 16,304 |
| Structural iron and steel | 51 | 171 | 1,470 | 9,096 |
| Totals | 13,584 | 84,145 | 333,471 | 685,872 |

The imports of iron ore in May were 51,780 gross tons, against 48,153 tons in April, 52,729 tons in March and 80,095 tons in February. Of the May imports of ore, 44,560 tons came from Cuba.

The total value of all kinds of exports of iron and steel, not including ore, for the 11 months ending with

May was $172,304,248, against $164,304,612 in the corresponding period of the previous year. The total value of similar imports for the 11 months ending with May was $25,848,258, against $37,315,606 in the corresponding period of the previous year.

## Canadian Duties and American Steel in the Detroit River Tunnel.

In March last *The Iron Age* published an article describing the "made in Canada" commotion which followed the wide publication in the Toronto newspapers that American steel and American cement were being used in the railroad tunnel under the Detroit River. It was then remarked that the commotion which up to that time had been confined to the newspaper world would surely extend to Parliament. As a matter of fact, it did reach the House of Commons a few days ago, when this grievance was made the subject of a long and personal debate at the time the House was voting money for the Department of Customs.

Mr. Cockshutt, a Conservative Ontario member, opened the attack on the Government, and set out to prove that there is a section of the tunnel 3000 ft. long between the portal and the river bed on the Windsor side of the river which is not a part of the tunnel, according to the rulings of the United States customs regulations. He added:

But, according to the interpretation of our Minister of Customs, this part of the tunnel, which will cost about $3,000,000 to construct, is considered to be part of the tunnel; and the labor and the materials required for it are allowed to come in from the United States free of duty and without any restriction. For this part of the tunnel American cement and American steel are allowed to come in duty free, with the result that $50,000 of revenue has been thrown away.

I hope that the Minister of Customs will take the House into his confidence and tell us what influences were set to work to cause him to give these favors to this American tunnel company. What were the influences at work? Was it in the interest of the Government? Was it in the interest of the country? Was it in the interest of the manufacturers? Was it in the interest of the workingmen? Let the Minister answer these questions.

Mr. Paterson, the Minister of Customs, promptly did answer. First he quoted the following item from the free list of the Tariff act of 1906:

Materials to be used in Canada for construction of bridges and tunnels crossing the boundary between the United States and Canada when similar materials are admitted free under similar circumstances into the United States, under regulations prescribed by the Ministers of Customs.

Next the Minister of Customs ran over the list of international bridges and tunnels that were constructed between 1883, when the bridge over the Niagara River was built, and the beginning of work on the Detroit tunnel; and he assured the House that in all these international works the Canadian rule as to customs duty was the same as had been followed in connection with the tunnel under the Detroit River. He went on:

Without depreciating our own manufacturers, it would be reasonable to say that the steel for such a structure would be prepared in the United States. It is probable that there are but a few firms in the United States that could produce it. We are carrying out what we consider to be the law. We feel sure we are right. We are taking every precaution that can be taken that the spirit of the law shall be carried out; that no favoritism shall be shown; that no discrimination against Canadians shall be allowed. Whatever the law instructs us to do shall be done; but if the law says that certain articles are to be admitted free of duty, we cannot collect duty on them and should be violating our duty if we attempted to do so.

Mr. Foster and other conservative members went to the aid of Mr. Cockshutt. Not one of the critics of the Government claimed that there existed in Canada a plant at which steel for the Detroit tunnel could be made. The discussion in Parliament, like the newspaper commotion which preceded it, is of significance in that it shows that with every new concession which is made to the protectionists by the Laurier government there comes among manufacturers and among the Conservatives, who are eager to get back into power, an increasing sensitiveness on the "made in Canada" question.

E. P.

## Customs Decisions.

### Steel Tubular Gas Tanks.

The Treasury Department has given formal notice that the Government's attempt to collect a 45 per cent. duty on steel tubular tanks used for holding gas will be abandoned. A test case standing in the name of the Liquid Carbonic Company, New York, was decided recently in the United States Circuit Court of Appeals in favor of the importer, whose claim was that the tanks are entitled to enter at 35 per cent. under the provision in paragraph 152 for "tubes." They consist of bottle shaped vessels of steel about 4 ft. long and 18 in. in diameter, with a steel cap fitted over and shrunk on one end, thus permanently closing it, and with the other end tapered to a neck. Both the Board of Appraisers and the Circuit Court denied the Government's contention that the articles fall within the purview of the basket clause of the metal schedule. Inasmuch as the Appellate tribunal indorsed the conclusions reached by the board and the lower courts, the Attorney-General advised the Treasury officials that no further proceedings would be instituted. Refunds will be given to importers whose entries have paid the higher rate of duty.

### Consular Invoice Takes Precedence.

In a decision by General Appraiser Hay, the principle is laid down that in instances where the collector of customs has before him both a pro forma and a consular invoice, and there is no valid appraisement by the appraising official, it is the collector's duty to assess and collect duty upon the value of the merchandise as stated in the consular invoice. In the case before the board, the collector assessed duty on solder imported by A. S. Lascelles & Co., New York. The prices stated in the pro forma invoice exceeded those appearing in the consular invoice. The collector exacted duty on the values stated in the pro forma invoice, although there had been no appraisal of the merchandise by the appraiser of the port. This action the board holds to have been illegal.

**The Northwestern Iron Company Increases Its Capital.**—The Northwestern Iron Company, operating iron ore mines and furnaces at Mayville, Wis., and with general offices at Milwaukee, has just increased its working capital from $500,000 to $1,000,000. The company was recently acquired by Ferdinand Schlesinger and others of the Milwaukee Coke & Gas Company. With the increased capitalization it is announced that immediate improvements will be made at the Mayville plant aggregating in cost between $300,000 and $400,000. The improvements will include the introduction of many labor saving devices; the construction of new steel trestles at furnace A, and also the building of ore and coke pockets on the trestles for the expeditious handling of those products; four new stoves to be added to furnace A, a dry house, machine shop, storehouse and oil house. All of these improvements are to be made at once; in fact, work is already in progress. The company has also in contemplation the erection of a dry air blast plant at a large expense and which will greatly increase the facilities for a large output of iron ore. The present capacity is between 500 and 600 tons a day. The plant of the Northwestern Iron Company is now considered one of the model merchant plants of the country, and with the improvements to be made it will take still higher rank.

The Sharon Steel Hoop Company, Sharon, Pa., has decided not to recognize the Amalgamated Association in the future, and has not entered into any arrangements with it for the year beginning July 1. The company is operating its open hearth steel plant and its finishing mills in the manufacture of steel billets, hoops, bands and cotton ties to about 50 per cent. of capacity, and has made no change among its employees.

# Trade Publications.

**Coke Drawing and Loading Machines.**—Covington Machine Company, Covington, Va. Catalogue. Consists largely of views of plants where the company's machines are installed. The machine is described as consisting of two principal parts, an extractor for drawing the coke out of the ovens and a conveyor for screening and loading it into cars. They are mounted on separate trucks connected by a draw-bar, so that the conveyor travels with the extractor as it moves up and down the track. The frame of the extractor consists of one heavy casting mounted on four wheels keyed fast to the axles, which are driven through beveled gears. A number of machines in operation are shown.

**Grinders and Grinding Attachments,**—Diamond Machine Company, Providence, R. I. Catalogue. Included in this book is a view of the company's new drop apron and removable water guard, used in connection with a wet tool grinder. This apron is of sufficient size to prevent the grinder from throwing the water on the operator. A motor driven grinding machine is shown with the motor attached to the rear of the grinder, and sprockets and chains employed in driving the wheel are encased by a feed metal guard. Bench tool grinding machines and a double head disk grinder are also shown.

**Steam Heating Vacuum Pumps.**—Blake & Knowles Steam Pump Works, 115 Broadway, New York. Booklet B K-810. Shows a direct acting horizontal steam heating vacuum pump and a power driven steam heating vacuum pump, both of the double acting piston type. The first is made up to a 16-in. stroke and the second up to a 12-in. stroke.

**Gaskets.**—Smooth-On Mfg. Company, Jersey City, N. J. Circular. Devoted to the Smooth-On gaskets, which are covered with Smooth-On elastic iron cement, capable, it is claimed, of expanding and contracting like iron. The statement is made that a sample gasket will be sent to any engineer sending his business address.

**Electrically Driven Tools.**—James Clark, Jr., Electric Company, 313-315 West Main street, Louisville, Ky. Catalogue, 9½ x 11 in., 54 pages. This book illustrates an extensive line of small electrically driven tools, such as hand drills, breast drills, screw feed portable drills, grinders and buffers, grinders for lathe carriage or tool post, water tool grinders, electrically driven hack saws, sensitive drills, two and three spindle drills and radial drills up to 30 in. size. Motors and generators are also shown and several pages are devoted to testimonials.

**Contractors' Machinery.**—Western Wheeled Scraper Company, Aurora, Ill. Catalogue, 6½ x 9¾ in., 104 pages. Contains descriptions of a general line of machinery for handling earth and stone, including road machinery, excavating equipment, farming machinery, railroad dumping cars, wagon loaders and ditchers, rock crushers, &c. Views are also given of some of the larger machines in use.

**Air Pumps, Motors and Transmitters.**—Emerson Electric Mfg. Company, St. Louis, Mo. Bulletin No. 3803, replacing bulletin No. 3802, shows two types of motor driven air pumps, single and double cylinder. Bulletin 3126, replacing bulletins 3119, 3120 and 3121, is devoted to single phase induction motors, generally described in the company's former literature. Bulletin 3125, replacing bulletin 3115, refers to single phase induction motors of ⅙ and ⅛ hp., and bulletin 3124, replacing 3117, shows the same type of motor down to ¼ hp. Bulletin 3212 shows a bipolar inclosed motor of ¼ to ½ hp., and bulletin 3905 shows motors with transmitters operating factory sewing machines.

**Locomotives.**—H. K. Porter Company, Pittsburgh, Pa. Catalogue, 6¼ x 9¼ in., 223 pages. This is the tenth edition of the company's catalogue devoted to light locomotives. It is bound in cloth and completely indexed. Light locomotives for coke oven service, logging service, plantation, passenger service, &c., are shown and described. Machines operated by both steam and compressed air are illustrated and complete data as to prices and construction details is given. Interesting information such as comparative cost of operating locomotives as against animal haulage is given, with estimates of the cost of tracks and maintenance. Useful information such as weights of cars and lumber and other data helpful in the operation of industrial railroads is included.

**Boiler Feed Pumps.**—Allentown Rolling Mills, Allentown, Pa. Pamphlet called "Pump Data No. 11." Views of several types and sizes of boiler feed pumps, together with sectional drawings, are shown, with tables of the range of operation.

**Roofing.**—Asbestos Protected Metal Company, Canton, Mass. Catalogue No. 4. Deals with the application of asbestos protected metal to roofing in general. Describes the material, which is manufactured of annealed Bessemer sheet steel, pure asphalt and asbestos. Details its advantages: in the reduction of insurance rates because of its fire resisting qualities; equalization of temperatures; immunity from chemical fumes, hot cinders, exhaust steam, damp or salt air climate, &c. Goes into its advantages for interior use, in that it takes paint and is fireproof, sanitary and vermin proof. Details of the two brands, the Aspromet and the Duckback, are brought out, together with the various forms of the material and the method of its application. Catalogue No. 48A is devoted to the Robertson standard box car roof, which consists entirely of the asbestos protected metal. Both catalogues are profusely illustrated.

**Firebrick and Firebrick Shapes.**—Baltimore Retort & Fire Brick Company, Baltimore, Md. Bulletin No. 1. Different shapes of the company's firebrick are shown and tables showing the number of bricks required for a given amount of construction are included.

**Flange Couplings and Clutch Shell Couplings.**—C. S. Mersick & Co., 286-292 State street, New Haven, Conn. Folder. Shows Shaw combination flange couplings and Hercules and Ajax combination clutch shell couplings, and gives prices for various sizes.

**Scientific Instruments.**—Taylor Instrument Companies, Rochester, N. Y. Bulletin. Illustrates anemometers, pocket transits and airmeters, and quotes prices.

**Side Dump Cars.**—Atlas Car & Mfg. Company, Cleveland, Ohio. Bulletin 1065. Shows several types of side dump cars, including standard sized cars and extra heavy cars. Unassembled sections of a one-side rocker dump scale car are also illustrated.

**Gas, Gasoline, Kerosene and Alcohol Engines.**—Charter Gas Engine Company, Sterling, Ill. Folder and circulars. The former illustrates standard machines of these types made by the company, besides engines connected with electric dynamos. A sectional drawing showing the adaptability of gasoline engines in stern wheel boats and side wheel boats is given. The circulars advocate portable gasoline engines and Charter double acting pumps for deep well pumping and other purposes.

**Hardness Tester.**—Schuchardt & Schütte, 136 Liberty street, New York. Booklet. Describes an electro-magnetic instrument for determining the hardness of steel. An illustrated description of this instrument appeared in *The Iron Age,* April 9, 1908.

**Glue Heaters.**—Advance Machinery Company, Toledo, Ohio. Catalogue. Describes the Wetmore glue heating apparatus, which is made entirely of copper and consists of an air-tight glue heating chamber surrounded by a water chamber or pocket. The heaters are arranged for gas, gasoline, oil or electrical fuel, are fitted with patent agitators which can be operated by hand or power, and are made in sizes up to 100 gal. The catalogue is accompanied by circulars describing other types of glue heaters, some of which are made of cast iron under the name of Advance heaters. Another folder is devoted to gluing clamps.

**Electric Blowers.**—Electric Blower Company, Newton Center, Mass. Folders. Advertise the Marvel electric forge blowers for direct connection to motors.

**Incandescent Units.**—General Electric Company, Schenectady, N. Y. Bulletin 4561 consists of a pamphlet on illumination and illustrates the Gem lamp and fixtures. Bulletin 1104 illustrates the multiphase belted alternators. Bulletin 4530 describes the mercury arc rectifier. A four-page folder is devoted to flame arc lamps.

**Antifriction Metals.**—A. Allan & Son, 486 Greenwich street, New York. Folder. Advocates the Allan metal, which is supplied cast in segments of the proper size for applying to cylinders and other wearing cylinders.

**Blowers.**—B. F. Sturtevant Company, Hyde Park, Mass. Bulletin 153. Reproduces an article published in the *Engineering Magazine,* January, 1908, reciting the history of the development of the Sturtevant fan wheels.

**Vanadium.**—American Vanadium Company, Pittsburgh, Pa. Pamphlet, reproducing an address made by J. Kent Smith before the Association of Licensed Automobile Maunfacturers on the services of vanadium in automobile manufacture. Tables of tests are appended. Another pamphlet reproduces an address on "Vanadium—Its Services in Engineering Steels," made by Mr. Smith before the Engineers' Society of Western Pennsylvania, at Pittsburgh, June 4, 1907.

**Deep Well Pumps.**—Keystone Driller Company, Beaver Falls, Pa. Catalogue No. 6. Describes the Downie deep well pumps, formerly made by the Downie Pump Company, Downie, Pa., but now manufactured by the Keystone Driller Company. The catalogue advocates the advantages of wells as a permanent source of water supply and describes the construction of several types of pumps, including single stroke steam pumps, double stroke steam pumps, hand geared pumps, and includes directions for installing. Several types of pumps are illustrated, with tables of measurements and capacities and other useful data, besides illustrations of pump accessories.

**Reinforced Brazing.**—Reinforced Brazing & Machine Company, 2525 Liberty avenue, Pittsburgh, Pa. Catalogue. Describes the company's process of brazing for restoring broken castings, which the company claims is original with it, and by which the spelter is introduced directly into the bolts of iron on both sides of the brazed portions. A number of restored castings are shown, including a rolling mill housing weighing 24,000 lb., which was successfully reinforced and brazed by the process

## PERSONAL.

Joseph G. Butler, Jr., Youngstown, Ohio, has been elected president of the Merchant Marine League of the United States, which has its headquarters at Cleveland, Ohio. Mr. Butler sailed for Europe last week.

W. D. Sargent, New York, president of the Reading Steel Casting Company, Reading, Pa., and George M. Sargent, Chicago, sailed for Europe July 2 on the La Lorraine.

Fred W. Wurster of F. W. Wurster & Co., Brooklyn, N. Y., has been elected a director of the Manufacturers' National Bank of Brooklyn.

Howard F. Martin, general manager of sales of the Pennsylvania Steel Company and Maryland Steel Company, sails for Europe July 16.

F. W. Jaeger, New York manager for Alfred H. Schutte, sails to-day for a short European trip.

W. S. Boyd, formerly purchasing agent of the Page Woven Wire Fence Company, Monessen, Pa., has resigned to become connected with the Pittsburgh Steel Company, Pittsburgh, whose mills are at Monessen and Glassport, Pa., as assistant purchasing agent. D. S. Muckley has been made purchasing agent of the Page Woven Wire Fence Company.

James O. Barnett, formerly manager of the steel casting department of the United Engineering & Foundry Company, Pittsburgh, has resigned to become general manager of the American Roll & Foundry Company, Canton, Ohio.

R. C. Lewis, manager of the Southern office of Manning, Maxwell & Moore, Inc., with headquarters at Birmingham, Ala., has returned to his home in Hartford, Conn., to take charge of the Connecticut territory for the same house.

E. G. Moss, superintendent of the Warner Iron Company's plant at Cumberland Furnace, Tenn., has resigned and will spend a couple of months at Creedmoor, N. C., after which time he will be located at Ensley, Ala.

C. A. Meissner, of the technical staff of the United States Steel Corporation, has sailed for Europe.

## OBITUARY.

JOHN H. ECKEL, Syracuse, N. Y., died June 28, after a short illness, aged 42 years. He was born in Syracuse. Coming from a family long engaged in the manufacture of steel, he entered the mill of the late W. A. Sweet when 14 years old. He continued in this business until he became a master roller, and nine years ago with his five brothers incorporated the Eckels-Nye Steel Company, building a plant for the manufacture of merchant steel, which has had a successful career. The five brothers above referred to are Jacob, Peter, Louis, Philip and Frank, all of whom are living.

SAMUEL M. SIMPSON, Boston, of the firm of L. M. Ham & Co., machinists, is dead at the age of 73 years. He was a native of York, Maine, and had been in the iron working business since he went to Boston as a boy. He leaves a widow, a son and two daughters.

EDWARD ASCHERSON died June 24 at his country seat, Pett Place, Charing, Kent, England, aged 72 years. He was one of the senior partners of Naylor, Benzon & Co., London, and was at one time a partner of Naylor & Co., New York.

The National Wire & Iron Works, Houston, Texas, is seeking a new site that will afford room and facilities for extensive expansion of its business. To this end an increase in capital stock is now under consideration. The present location in Louisiana street is entirely too small, and as soon as a new site is selected a rolling mill for the manufacture of cotton ties, railroad spikes, nails and merchant iron will be installed. It is also proposed to build a wire mill, which will not only supply all of this material required in the company's works, but will afford a surplus for distribution in the market. The company also expects to build a foundry large enough to supply its own castings.

## The International Steam Pump Company.

The International Steam Pump Company has issued its annual report for the year ending March 31, 1908. The profit and loss account compares as follows:

| | 1908. | 1907. |
|---|---|---|
| Manufacturing and trading profits.. | $1,917,526 | $2,288,914 |
| Other income..... | 308,727 | 256,991 |
| Total income..... | $2,226,253 | $2,545,905 |
| Interest, discount, &c..... | 185,856 | 156,201 |
| Balance..... | $2,040,397 | $2,389,704 |
| Depreciation, &c..... | 421,890 | 467,691 |
| Balance..... | $1,618,507 | $1,922,013 |
| Interest, funded debt, sinking fund and discount..... | 394,962 | 394,889 |
| Balance for dividends..... | $1,223,545 | $1,527,124 |
| Preferred stock dividends..... | 859,800 | 859,800 |
| Surplus..... | $363,745 | $667,324 |
| Previous surplus..... | 2,551,707 | 2,029,184 |
| Total surplus..... | $2,915,452 | $2,696,508 |
| Adjustments ..... | *322,583 | 144,802 |
| Final surplus..... | $2,592,869 | $2,551,706 |

* Special appropriation to meet revaluation of assets brought forward from former years.

The general consolidated balance sheet of the International Steam Pump Company, as of March 31, 1908, compares as follows:

*Assets.*

| | 1908. | 1907. |
|---|---|---|
| Real estate, &c..... | $33,154,277 | $32,748,010 |
| Discount on bonds..... ..... | 137,707 | 150,106 |
| Manufacturing materials, supplies, &c. | 4,778,549 | 5,829,341 |
| Accounts and bills receivable..... | 3,825,377 | 4,327,788 |
| Miscellaneous ..... | 484,206 | 256,435 |
| Associated companies' balance..... | 42,570 | 67,171 |
| Cash ..... | 417,114 | 621,727 |
| Totals..... | $42,839,801 | $44,000,579 |

*Liabilities.*

| | | |
|---|---|---|
| Capital liabilities..... | $36,322,820 | $36,414,485 |
| Trade accounts..... | 257,807 | 564,447 |
| Miscellaneous ..... | 176,508 | 177,536 |
| Held for dividends..... | 170,250 | 170,445 |
| Suspended accounts..... | 2,592,867 | 2,551,706 |
| Reserve for completion of contract... | 127,505 | ..... |
| Reserve operation sinking fund..... | 423,322 | 326,332 |
| Surplus capital..... | 973,221 | 1,116,399 |
| Notes payable..... | 1,795,500 | 2,566,452 |
| Totals..... | $42,839,801 | $44,000,579 |

President Dunn says: "During the first six months of the fiscal year—namely, from April to October, 1907—the orders booked equaled in amount the average for the preceding year, which was the largest year of our company. For the last six months of the fiscal year, owing to the financial disturbance which affected the country at large, the orders booked fell off about 40 per cent. There were unfilled orders on the books at March 31, 1908, amounting to $4,000,000. The profits, after charging off $421,890 for depreciation on buildings, machinery, tools, patterns, drawings, &c., were $1,618,506 for the year just closed. The business of the Power & Mining Machinery Company, at Cudahy, Wis., shows a substantial gain over the former years, resulting in a profit largely in excess of the amount guaranteed. Our foreign company, the Worthington Pump Company, Ltd., reports a very successful year, with increased [illegible] over the previous year. Since the close of the fiscal year there has been a gradual improvement in business, which, during the past few weeks, has resulted in a marked increase in the volume of orders booked by the company."

The American Sheet & Tin Plate Company operates nine tin plate plants containing 152 hot mills, for which it signs the Amalgamated scale, and nine tin plate plants containing 90 hot mills, for which it does not sign any wage scale. It also operates six sheet mill plants containing 51 mills, for which it signs the Amalgamated scale, and 12 sheet mills containing 129 hot mills, for which it does not sign any wage scale.

The report of H. S. Pell, receiver of the Niles Boiler Company, Niles, Ohio, has been approved by the courts, and he was allowed $650 for his services and was discharged from further services in that capacity.

# Pig Iron Production.

## More Furnaces Blown in in June.

### Total Output for the First Half of the Year About 6,900,000 Gross Tons.

Our pig iron statistics for June show a slight falling off in the daily rate of production from that of May, in addition to the decrease due to a 30-day month. The production of coke and anthracite iron is shown to have been 1,088,634 tons, or 36,287 tons a day, against 1,165,688 tons, or 37,603 tons a day, in May. The number of furnaces blown in last month exceeded by 12 the number blown out, 151 being active on July 1, against 139 on June 1, and the weekly capacity of active furnaces July 1 was 264,452 tons, as compared with 259,284 tons June 1. It should be said again that under the conditions existing for some months the active capacity at the beginning of a month is less of a criterion than usual of the probable performance for the month. In so many cases furnaces are slowed down, so that stockpiles may not increase too fast, and adjustments are being made frequently in the case of large interests, to preserve a close correspondence between make and the requirements of steel works. At one group of furnaces, for example, three stacks made practically as much iron in June as four made in May, and in another case three stacks active in June made less iron than two in the same group in May.

#### Production in the First Half of 1908.

With the receipt of the June production figures for coke and anthracite iron an approximation is possible of the output of pig iron in the first half of 1908, an estimate being made of the charcoal iron production, which is not reported monthly. Assuming that there was a less sharp restriction in charcoal iron output than in coke iron, owing to the special conditions as to fuel supply connected with the former industry, the total pig iron production in the first six months of the year may be put at 6,900,000 gross tons. This compares as follows with the output of previous six months periods, as shown by the statistics of the American Iron and Steel Association, in gross tons:

| | 1905. | 1906. | 1907. | 1908. |
|---|---|---|---|---|
| First half | 11,163,175 | 12,582,250 | 13,478,044 | 6,900,000 |
| Second half | 11,829,205 | 12,724,941 | 12,303,317 | ..... |
| Totals | 22,992,380 | 25,307,191 | 25,781,361 | ..... |

Such a precipitous breaking off in production is without parallel in the records of the iron trade. In 1904 a sharp falling off was looked for from the rate of production in the first half of 1903, but it turned out to be only about 15 per cent., the total for the first half of 1903 being 9,707,367 tons and for the first half of 1904, 8,173,438 tons. A noteworthy fact about 1904, moreover, is that production in the second half exceeded that in the second half of 1903—8,323,595 tons against 8,301,885 tons. There is not the slightest probability that the second half of 1908 will exceed the output of 12,303,317 tons made in the second half of last year. In the first six months of this year the production has been less than 52 per cent. of the high record of 13,478,044 tons made in the first half of 1907.

The daily output of the steel works and merchant furnaces respectively in the first six months of the year was as follows:

*Daily Rate of Production.—Gross Tons.*

| | Steel works. | Merchant. | Total. |
|---|---|---|---|
| January | 21,432 | 12,286 | 33,718 |
| February | 25,717 | 11,446 | 37,163 |
| March | 27,145 | 12,474 | 39,619 |
| April | 24,185 | 14,104 | 38,289 |
| May | 24,505 | 13,098 | 37,603 |
| June | 23,923 | 12,364 | 36,287 |

#### June Product by Districts.

The table below gives the production of coke and anthracite furnaces in June and the four months preceding:

*Monthly Pig Iron Production.—Gross Tons.*

| | Feb. (29 days) | March. (31 days) | April. (30 days) | May. (31 days) | June. (30 days) |
|---|---|---|---|---|---|
| New York | 65,567 | 49,231 | 62,263 | 64,746 | 61,249 |
| New Jersey | 19,880 | 23,243 | 22,701 | 20,889 | 15,963 |
| Lehigh Valley | 39,732 | 39,105 | 28,919 | 28,712 | 26,357 |
| Schuylkill Val. | 22,338 | 29,104 | 28,654 | 25,566 | 23,814 |
| Lower Susquehanna and Lebanon Val. | 19,363 | 23,907 | 28,315 | 29,943 | 31,058 |
| Pittsburgh Dis | 324,418 | 325,953 | 276,883 | 284,571 | 259,771 |
| Shenango Val. | 68,919 | 76,377 | 71,970 | 53,720 | 58,244 |
| West. Penn | 51,283 | 62,782 | 54,570 | 54,185 | 59,521 |
| Md., Va., and Kentucky | 27,775 | 41,452 | 48,955 | 49,273 | 47,110 |
| Wheeling Dis. | 12,961 | 18,988 | 17,930 | 18,121 | 16,539 |
| Mahoning Val. | 93,332 | 105,310 | 94,780 | 99,788 | 89,238 |
| Central and North Ohio. | 75,137 | 94,952 | 88,047 | 88,995 | 70,283 |
| Hocking Valley and Hanging Rock | 12,296 | 20,108 | 18,772 | 21,259 | 20,342 |
| Mich.,Minn.,Mo., Wis., Colo | 36,129 | 39,327 | 36,808 | 36,831 | 34,363 |
| Chicago Dis. | 99,289 | 147,014 | 157,633 | 165,291 | 153,162 |
| Alabama | 91,209 | 114,295 | 94,754 | 104,697 | 107,391 |
| Tennessee, Georgia and Texas | 18,112 | 17,056 | 17,648 | 19,101 | 14,229 |
| Totals | 1,077,740 | 1,228,204 | 1,149,602 | 1,165,688 | 1,088,634 |

#### Capacity in Blast July 1 and June 1.

The table below gives the weekly capacity of coke and anthracite furnaces in blast July 1 and June 1:

*Coke and Anthracite Furnaces in Blast.*

| Location of furnaces. | Total number of stacks. | July 1. Number in blast. | July 1. Capacity per week. | June 1. Number in blast. | June 1. Capacity per week. |
|---|---|---|---|---|---|
| New York: | | | | | |
| Buffalo | 14 | 6 | 12,022 | 7 | 13,372 |
| Other New York | 7 | 2 | 1,712 | 1 | 1,253 |
| New Jersey | 8 | 2 | 3,725 | 2 | 3,656 |
| Spiegel | 2 | 0 | 0 | 0 | 0 |
| Pennsylvania: | | | | | |
| Lehigh Valley | 25 | 6 | 6,150 | 5 | 5,965 |
| Spiegel | 3 | 1 | 130 | 1 | 128 |
| Schuylkill Valley | 15 | 4 | 5,557 | 4 | 5,768 |
| Low. Susquehanna | 7 | 2 | 3,564 | 2 | 3,350 |
| Spiegel | 1 | 0 | 0 | 0 | 0 |
| Lebanon Valley | 10 | 4 | 3,683 | 4 | 3,423 |
| Pittsburgh Dist. | 45 | 22 | 60,949 | 19 | 57,610 |
| Spiegel | 3 | 2 | 2,574 | 2 | 1,957 |
| Shenango Valley | 20 | 7 | 14,874 | 6 | 13,937 |
| West. Penn | 27 | 10 | 14,075 | 10 | 14,650 |
| Maryland | 4 | 2 | 4,142 | 2 | 4,214 |
| Wheeling Dist. | 14 | 2 | 3,859 | 2 | 4,088 |
| Ohio | | | | | |
| Mahoning Valley | 18 | 10 | 23,522 | 10 | 25,648 |
| Central and Northern and Mich. | 22 | 7 | 18,172 | 7 | 18,669 |
| Hocking Valley and Hanging Rock | 12 | 6 | 4,741 | 6 | 4,206 |
| Illinois and Indiana | 24 | 15 | 36,538 | 14 | 38,012 |
| Spiegel | 2 | 1 | 1,012 | 1 | 1,125 |
| Minnesota | 1 | 0 | 0 | 0 | 0 |
| Wisconsin | 6 | 2 | 2,275 | 1 | 962 |
| Missouri | 1 | 1 | 705 | 0 | 0 |
| Colorado | 6 | 2 | 3,892 | 2 | 4,326 |
| The South: | | | | | |
| Virginia | 23 | 8 | 6,202 | 8 | 5,677 |
| Kentucky | 7 | 1 | 1,218 | 1 | 1,148 |
| Alabama | 46 | 19 | 25,172 | 16 | 22,430 |
| Tennessee | 18 | 6 | 3,537 | 6 | 3,710 |
| Georgia and Texas | 3 | 1 | 450 | 0 | 0 |
| Totals | 394 | 151 | 264,452 | 139 | 259,284 |

Among furnaces which started up in June were Missouri at St. Louis, Standish in New York, three Carnegie stacks in the Pittsburgh District, Fannie in the Shenango Valley, Colonial in western Pennsylvania, Radford Crane in Virginia, No. 3 Calumet at South Chicago, B. Mayville in Wisconsin, Struthers in the Mahoning Valley, Alice, one Bessemer and two Ensley in Alabama and Sam Lanham in Texas.

The list of furnaces blown out between June 1 and July 1 includes one Lackawanna at Buffalo, Victoria in Virginia, one Ohio in the Mahoning Valley and one Clifton in Alabama.

#### Production of Steel Companies.

Returns from all the plants of the United States Steel Corporation, the Cambria, Pennsylvania, Maryland, Lackawanna, Wheeling, Republic, Youngstown Sheet & Tube Company, Jones & Laughlin, La Belle, Bethlehem, Calumet, Inland, Colorado and Tennessee (Ensley) companies

show the following totals of product month by month. We give separately a statement of the output of spiegeleisen and ferromanganese, which is included for each month in the total production:

*Production of Steel Companies.—Gross Tons.*

| | Pig.—Total production.— | | | Spiegeleisen and ferromanganese. | |
|---|---|---|---|---|---|
| | 1906. | 1907. | 1908. | 1907. | 1908. |
| January | 1,358,015 | 1,406,397 | 664,415 | 21,477 | 20,254 |
| February | 1,226,760 | 1,317,923 | 745,802 | 19,444 | 9,402 |
| March | 1,400,395 | 1,424,827 | 841,502 | 31,091 | 13,750 |
| April | 1,333,591 | 1,446,788 | 725,548 | 26,527 | 12,363 |
| May | 1,372,423 | 1,470,080 | 759,674 | 28,822 | 17,823 |
| June | 1,293,437 | 1,457,230 | 717,689 | 30,942 | 15,958 |
| July | 1,323,391 | 1,452,557 | ..... | 25,343 | ..... |
| August | 1,237,485 | 1,445,685 | ..... | 23,696 | ..... |
| September | 1,264,380 | 1,417,153 | ..... | 30,270 | ..... |
| October | 1,452,200 | 1,514,521 | ..... | 35,105 | ..... |
| November | 1,411,350 | 1,084,114 | ..... | 21,861 | ..... |
| December | 1,445,528 | 659,459 | ..... | 19,480 | ..... |

**A Record of Active Capacity.**

The active weekly capacity in coke and anthracite iron has shown the following fluctuations since January 1, 1903:

| | Capacity per week. | | Capacity per week. |
|---|---|---|---|
| July 1 | 264,452 | September 1 | 412,563 |
| June 1 | 259,284 | August 1 | 410,088 |
| May 1 | 268,674 | July 1 | 408,617 |
| April 1 | 264,890 | June 1 | 443,092 |
| March 1 | 267,437 | May 1 | 452,031 |
| February 1 | 241,925 | April 1 | 439,564 |
| January 1, 1908 | 232,652 | March 1 | 403,157 |
| December 1, 1907 | 347,372 | February 1 | 405,792 |
| November 1 | 491,436 | January 1, 1905 | 377,879 |
| October 1 | 511,397 | December 1, 1904 | 357,846 |
| September 1 | 507,768 | November 1 | 334,249 |
| August 1 | 513,471 | October 1 | 319,249 |
| July 1 | 528,170 | September 1 | 291,573 |
| June 1 | 523,220 | August 1 | 246,092 |
| May 1 | 524,538 | July 1 | 272,301 |
| April 1 | 496,456 | June 1 | 336,107 |
| March 1 | 511,035 | May 1 | 368,244 |
| February 1 | 492,359 | April 1 | 337,257 |
| January 1, 1907 | 507,397 | March 1 | 308,751 |
| December 1, 1906 | 513,860 | February 1 | 273,692 |
| November 1 | 500,580 | January 1, 1904 | 185,636 |
| October 1 | 469,665 | December 1, 1903 | 244,156 |
| September 1 | 441,426 | November 1 | 273,715 |
| August 1 | 449,908 | October 1 | 353,142 |
| July 1 | 460,570 | September 1 | 360,197 |
| June 1 | 472,622 | August 1 | 353,681 |
| May 1 | 484,031 | July 1 | 384,825 |
| April 1 | 484,240 | June 1 | 388,178 |
| March 1 | 479,737 | May 1 | 373,496 |
| February 1 | 482,156 | April 1 | 386,215 |
| January 1, 1906 | 463,673 | March 1 | 347,424 |
| December 1, 1905 | 475,814 | February 1 | 335,239 |
| November 1 | 460,449 | January 1, 1903 | 346,073 |
| October 1 | 445,468 | | |

## The Production of Asbestos in 1907.

WASHINGTON, D. C., July 7, 1908.—There was a marked decrease in the production of asbestos in the United States in 1907, the output amounting to but 653 net tons, valued at $11,899, as compared with 1695 net tons valued at $28,565 in 1906, according to the forthcoming annual report of the United States Geological Survey. The cause of this decline is found in the better quality and greater abundance and accessibility of the Canadian asbestos, which completely dominates the industry of the United States. There was a large increase in imports in 1907, which much more than offset the decrease in domestic production.

Nearly all the output of asbestos in 1907 came from the Sall Mountain and Hollywood Mountain of Georgia, which is the only State that furnished asbestos for the market in 1907, and nearly half of the quantity produced was exported. The largest output in the history of the industry in the United States was in 1905, when the product amounted to 3100 tons.

Owing to the variety of forms in which asbestos is imported the customs statistics do not show quantities. The value of the unmanufactured asbestos imported in 1907 was $1,104,109, while that of the manufactured asbestos was $200,371, making a total of $1,316,379. In 1906 the total value of the imports of asbestos was $1,076,170. The production of Canada is now nearly 100 times that of the United States. Practically all the unmanufactured asbestos imported into the United States comes from Canada. As to the manufactured asbestos, however, the reverse is true; only a small quantity comes from Canada and of the rest over 75 per cent. comes from the United Kingdom. More than a year ago it was estimated that Canada produced 85 per cent. of the world's supply of asbestos. In 1907, owing to the large increase in the production of Canada, the Dominion doubtless contributed a still larger percentage of the total yield of the world and its controlling position in the asbestos industry is apparent. Twelve companies are reported as producing asbestos in Canada in 1907, and four new ones are making extensive preparations for production in 1908, so that a much larger yield may be expected for the current year.

When we consider the manufactured products, the United States is in advance of all other countries. The relatively great importance of the industry to the United States results directly from the fact that a number of the largest Canadian mines are owned in the United States and that several of the owners have factories in this country. The Keasbey & Mattison Company, owning the Bell Asbestos Company mines at Thetford, Canada, has several large factories at Ambler, Pa. The H. W. Johns-Manville Company, whose mines are near Danville, Canada, has large factories at Brooklyn, N. Y., Milwaukee and West Milwaukee, in Wisconsin. The mine which up to the present time is reported to have produced more asbestos than any other is the King Brothers mine at Thetford, controlled by a company of which R. H. Martin of New York is president. The Beaver Asbestos Company, with mine near Thetford, is under the same management. But these companies, the Dominion Asbestos Company, the Manhattan Asbestos Company, and several other companies, all of which are said to be controlled by American capital, are not known to be manufacturers in the United States, though the bulk of the raw material from most of their mines comes to this country.

Raw asbestos is imported free into the United States, while there is a duty of 25 per cent. on imported manufactured asbestos. In Canada all the larger mines are reported as paying an annual license of $500.

In the amphibole asbestos trade in the United States there was a decline of about 10 per cent. in 1907, though the price ranged about $18 per ton, a figure somewhat higher than for 1906.

The demand for the best grades of chrysotile asbestos has kept ahead of the supply. Some of the manufacturers report that the best grades cannot be bought in the open market, and that the high prices have a tendency to restrain the progress of the industry. The range of prices per ton for the various grades reported by a number of firms is as follows:

| | |
|---|---|
| No. 1 crude asbestos | $275 to $350 |
| No. 2 crude asbestos | 150 to 200 |
| Asbestos fiber (according to grading) | 25 to 110 |
| Fines (according to grading) | 10 to 25 |

The special features of interest regarding the industry in Canada during 1907 are said to have been increased output, higher prices and further consolidation of mining interests.

**A Strike in Alabama Coal Mines.**—Union coal miners employed in a number of merchant mines and in mines of some of the smaller furnace interests in Alabama have gone out on a strike following the refusal of the operators to grant certain demands which the union sought to make effective July 1. The large interests are not involved, having freed their mines from union control in the strike of several years ago. However, the effort of some of the companies whose men are out to get in new men may affect production at the nonunion mines, and the trouble may become a factor, though not an important one, in the pig iron situation.

The Page Woven Wire Fence Company, Monessen, Pa., has recently added a 50-ton open hearth steel furnace to its plant, which previously contained two 15-ton and one 50-ton furnace.

# NEWS OF THE WORKS.

### Iron and Steel.

The furnace of the Hudson Iron Company, Secaucus, N. J., which has been out of blast since May 20, will be repaired and changes will be made with a view to increasing the output. The company is mining about 200 tons a day of magnetic ore at its Forest of Dean mine near Fort Montgomery, N. Y., and is making shipments to New Jersey and Eastern Pennsylvania furnaces. The average of a recent shipment was 62.54 per cent. metallic iron.

The two blast furnaces of the Lehigh Iron & Steel Company, Allentown, Pa., are being dismantled.

The furnace of the St. Louis Blast Furnace Company, St. Louis, Mo., was blown in June 16.

Furnace D of the Bethlehem Steel Company, South Bethlehem, Pa., is being dismantled and will be replaced by a modern furnace similar to Furnace E, 90 x 22 ft., which was blown in in April, 1907.

William Swindell & Brother, engineers and contractors, German National Bank Building, Pittsburgh, have received an order from the Superior Steel Company, Carnegie, Pa., for two large Swindell patented regenerative heating furnaces, and also an order from the West Leechburg Steel Company, West Leechburg, Pa., for one large Swindell patented regenerative heating furnace. Both of these companies have had a number of heating furnaces of this type in operation for some time, and the placing of these additional orders indicates very strongly that they are giving entire satisfaction.

The Virginia Iron, Coal & Coke Company blew in its Radford-Crane furnace at Radford, Va., the last week in June.

The Carnegie Steel Company blew in three more of its furnaces in the Pittsburgh district in June, these being furnace J at Edgar Thomson, Carrie No. 4 and Duquesne No. 3. The company has a total of 32 blast furnaces in the Pittsburgh district, of which 17 were active on July 1 and 15 were idle.

Nos. 1 and 4 blast furnaces of the National Tube Company at McKeesport, Pa., were in blast in June, while Nos. 2 and 3 stacks are still idle.

Four of the five Eliza furnaces of the Jones & Laughlin Steel Company at Pittsburgh are in blast. Soho stack is still idle.

The Wisconsin Steel Company blew in the new No. 3 furnace of its Calumet group at South Chicago on June 30.

The Northwestern Iron Company blew in its Furnace B, Mayville, Wis., June 5.

The Struthers Furnace Company blew in Anna furnace at Struthers, Ohio, the last week in June.

The No. 2 Clifton furnace of the Alabama Consolidated Coal & Iron Company, at Ironaton, Ala., was blown out June 20 for relining.

Thomas J. Deane, the new owner of the blast furnace at Rome, Ga., expects to blow it in about August 1.

Sam Lanham furnace at the State Penitentiary, Rusk, Texas, was blown in June 24.

Victoria furnace of the Goshen Iron Company, Goshen, Va., was blown out June 9.

No. 1 furnace of the Lackawanna Steel Company, Buffalo, N. Y., was blown out June 10 for relining.

Standish furnace of the Northern Iron Company, Port Henry, N. Y., was blown in June 16 after relining.

The Durham Iron Company, Riegelsville, Bucks County, Pa., had its blast furnace in operation for two weeks in June, working up ore and coke which were on hand. The furnace had not been operated previously for many months.

The furnace of the Colonial Iron Company, Riddlesburg, Pa., was blown in June 10.

The Belfont Iron Works Company, Ironton, Ohio, expects to blow out its furnace about July 15 for repairs.

The Rosena Furnace of the Carnegie Steel Company, at New Castle, and Carrie No. 2 of the same company, at Rankin, Pa., were started up July 6.

The new No. 3 furnace of the Shenango Furnace Company, at Sharpsville, Pa., was blown in July 8. The company is now operating three blast furnaces, with a daily output of 1000 to 1200 tons.

### General Machinery.

The capital stock of the American Locomotive Equipment Company, Chicago, has been increased from $200,000 to $300,000, for the purpose of taking care of the company's growing business.

The new plant of the W. B. Forbes Company, Hoboken, N. J., is to be established at New London, Conn. The company will move its present equipment to the new location and will probably install considerable new equipment.

### Power Plant Equipment.

The Union Power Company, St. Cloud, Minn., has been organized with a capital stock of $100,000 to build a new electric light and power plant in that city to develop something over 1200 hp. The object of the Union Power Company in building the plant is not to operate it, but to lease it to the Public Service Company, which occupies the entire electric field in St. Cloud. Power for the operation of the plant will be supplied by the St. Cloud Water Power Company, which owns the dam.

The city of Omulgee, Okla., will receive bids until July 20 for one 60 hp. gas engine direct connected to 35 kw. generator or an automatic high speed engine and generator of the same capacity, one triplex pump direct connected to electric motor, standard water works hydrants and valves and other supplies. Specifications may be obtained from the O'Neil Engineering Company, Dallas, Texas.

Those interested in the Youghiogheny Light & Power Company, Oakland, Md., which intends to develop a 10,000 hp. plant at Swallow Falls in the Youghiogheny River, Muddy Creek Falls and the Deep River Falls, have incorporated the Oakland, Swallow Falls & Uniontown Electric Railway Company, to build an electric road from Oakland, Md., to Uniontown, Pa., with branches. The road will be operated by power from the new hydraulic plant. H. P. Tasker is general manager of the power company.

### Foundries.

The Erie Foundry Company, Erie, Pa., whose plant was recently destroyed by fire, has decided upon plans for the pattern storage and pattern shop, which are being prepared by the Osborne Engineering Company of Cleveland. Plans for the building of a new foundry have not yet been completed.

The Independent Stove Company, Detroit, Mich., has increased its capital stock from $60,000 to $175,000, and is to establish a new foundry in Owosso, Mich., 74 x 190 ft., and a two-story storage building, 62 x 173 ft. The present equipment will be moved to the new location and about the only new equipment required will be a new 60-in. Colliau cupola. The company is now employing 55 men and the number will be increased to 75 when the plant is moved to Owosso.

E. E. Linthicum, formerly general manager of the American Cast Iron Pipe Company, Birmingham, Ala., and associates contemplate the establishment of a new plant in Anniston for the manufacture of high pressure pipe, provided the citizens of that place will furnish $75,000, Mr. Linthicum agreeing to provide $50,000 of the capital. The proposition has been accepted by the Chamber of Commerce and a committee of five has been appointed to solicit subscriptions.

The Holbrook-Armstrong Company, Racine, Wis., which recently purchased the foundry building from the Herrick estate, has converted the greater part of the building into a foundry for making brass and aluminum castings by the installation of three brass furnaces and one Baltimore aluminum furnace. Part of the building will be used for making iron castings, although the main foundry department is in another section of the plant. The works has its own electric light plant, and is said to be one of the best equipped foundries in the State of Wisconsin.

The Gadsden Stove & Foundry Company, Gadsden, Ala., resumed operations July 6, after an idleness of some months.

The Anniston plant of the United States Cast Iron Pipe & Foundry Company will be put in operation in all departments July 15

The receivers of the Atha Steel Casting Company, Newark, N. J., have been authorized by the court to continue operating the plant for 90 days, they having showed that they were running the business at a profit.

### Fires.

On June 28 the plant of C. Wilson & Sons Scale Works, Toronto, Ontario, was damaged $15,000 by fire.

The plant of the Flint-Lomax Electric & Mfg. Company, Denver, Col., was recently destroyed by fire. The loss is estimated at over $50,000 The plant comprises a machine shop, assembling room and a foundry.

The factory and machine shop of the Kink & Walker Company, Madison, Wis., were burned June 27, the loss being about $10,000.

The building occupied by the W. A. Wilson Machine Company, Rochester, N. Y., was burned June 30. The loss is placed at $15,000.

### Hardware.

The H. M. Myers Company plant of the Ames Shovel & Tool Company, at Beaver Falls, Pa., which was shut down for two weeks owing to a breakdown in its rolling department, started up again on Monday, July 6.

The Ireland & Matthews Mfg. Company, Detroit, Mich., is just occupying a new addition to its factory, and is installing a new 35 ton two step press for drawing large shells and tubes. The addition is 40 x 150 ft. and five stories high.

The Ingram-Richardson Enamel Company, Beaver Falls, Pa., has received an order for 16,000 automobile license plates from the State of Ohio.

# The Iron and Metal Trades

The returns of the blast furnaces to *The Iron Age* show that the June output was 1,088,634 tons, as compared with 1,165,688 tons in May, the Steel works production having been 717,689 tons in June and 759,674 in May. We estimate that, including Charcoal Iron, the make of the first half of the year was 6,900,000 tons. Furnace capacity shows an increase, having been 264,452 tons on July 1, weekly, as compared with 259,284 tons on June 1.

The Pig Iron markets are quiet and steady, with comparatively few transactions of any magnitude. The absence of any reliable data on the amount of stocks is to be deplored, since it is impossible to verify some of the reports that the quantities of Iron at the furnaces, which at one time were very large, have been reduced. Partial returns are apt to be very misleading.

The opinion is expressed by at least one leading authority in the Lake Ore mining industry that if present very conservative plans for bringing down Ore during the current season are carried out there will be a decided shortage before next spring, with an accompanying upward rush of Pig Iron prices.

It is estimated that the mills now have on their books an aggregate of 650,000 tons of orders for Steel Bars for forward delivery, the bulk thereof being for the year ending July 1, 1909, for the agricultural implement makers and the vehicle builders, who anticipate a very busy season. The leading interest added about 10,000 tons to its tonnage this week and other mills took from 2000 to 3000 tons.

A little more business is coming from the railroads, who are starting a considerable number of repair shops. The tonnage, however, is small when contrasted with normal requirements. The Rail trade is particularly dull and car orders are few and far between.

Fabricators are handling a fair tonnage of small orders for construction, but the competition continues very keen. Among the orders received is about 2000 tons for the Farmers' Loan & Trust Company. At Pittsburgh bids have once more been invited for the Oliver Building, which will call for 10,000 to 12,000 tons of Structural Material.

The Tin Plate mills continue to run pretty close to capacity, but the Sheet mills are not operating at more than a 40 per cent. rate, and irregularity in prices continues.

One shop has secured orders for 6000 tons of Cast Iron Pipe for Cuban points, and there is an inquiry in the market for about 11,000 tons for Havana.

Some heavy offerings of Old Material have been made by the Pennsylvania Railroad, including 25,000 tons of Long Length Rails.

The Copper market is a little stronger, there being increased inquiry, particularly for the last quarter. The price remains 12⅝c. for Electrolytic Copper. Spelter continues weak.

## A Comparison of Prices.

**Advances Over the Previous Month in Heavy Type, Declines in Italics.**

At date, one week, one month and one year previous.

| | July 8, 1908. | July 1, 1908. | June 10, 1908. | July 10, 1907. |
|---|---|---|---|---|
| **PIG IRON,** Per Gross Ton: | | | | |
| Foundry No. 2, Standard, Philadelphia | $16.50 | $16.50 | $16.50 | $23.00 |
| Foundry No. 2, Southern, Cincinnati | 15 25 | 15.25 | 15.25 | 23.75 |
| Foundry No. 2, Local, Chicago | **17.50** | 17.50 | 17.25 | 25.50 |
| Bessemer, Pittsburgh | 16.90 | 16.90 | 16.90 | 23.90 |
| Gray Forge, Pittsburgh | 14.90 | 14.90 | 14.90 | 22.90 |
| Lake Superior Charcoal, Chicago | 20.00 | 20.00 | 20.00 | 27.00 |
| **BILLETS, &c.,** Per Gross Ton: | | | | |
| Bessemer Billets, Pittsburgh | 25.00 | 25.00 | 25.00 | 30.00 |
| Forging Billets, Pittsburgh | 27.00 | 27.00 | 27.00 | 34.00 |
| Open Hearth Billets, Phila | 26.20 | 26.20 | 26.20 | 32.50 |
| Wire Rods, Pittsburgh | 33.00 | 33.00 | .... | 36.50 |
| Steel Rails, Heavy, Eastern Mill | 28.00 | 28.00 | 28.00 | 28.00 |
| **OLD MATERIAL,** Per Gross Ton: | | | | |
| Steel Rails, Melting, Chicago | **12.50** | 12.50 | 12.25 | 18.00 |
| Steel Rails, Melting, Phila | **13.50** | 13.50 | 13.00 | 17.75 |
| Iron Rails, Chicago | 15.50 | 15.50 | 15.50 | 24.50 |
| Iron Rails, Philadelphia | 18.00 | 18.00 | 18.00 | 25.00 |
| Car Wheels, Chicago | 13.00 | 13.00 | 13.00 | 24.50 |
| Car Wheels, Philadelphia | *13.50* | 13.50 | 14.00 | 25.00 |
| Heavy Steel Scrap, Pittsburgh | **14.00** | 14.00 | 13.00 | 18.00 |
| Heavy Steel Scrap, Chicago | *11.25* | 11.50 | 11.50 | 16.50 |
| Heavy Steel Scrap, Philadelphia | **13.50** | 13.50 | 13.00 | 17.50 |
| **FINISHED IRON AND STEEL,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Refined Iron Bars, Philadelphia | *1.35* | 1.35 | 1.40 | 1.83½ |
| Common Iron Bars, Chicago | 1.50 | 1.50 | 1.50 | 1.78 |
| Common Iron Bars, Pittsburgh | 1.40 | 1.40 | 1.40 | 1.70 |
| Steel Bars, Tidewater, New York | 1.56 | 1.56 | 1.56 | 1.86 |
| Steel Bars, Pittsburgh | 1.40 | 1.40 | 1.40 | 1.60 |
| Tank Plates, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Tank Plates, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Beams, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Beams, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Angles, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Angles, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Skelp, Grooved Steel, Pittsburgh | *1.45* | 1.45 | 1.55 | 1.90 |
| Skelp, Sheared Steel, Pittsburgh | *1.50* | 1.50 | 1.65 | 1.90 |
| **SHEETS, NAILS AND WIRE,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Sheets, No. 27, Pittsburgh | 2.40 | 2.40 | 2.40 | 2.50 |
| Wire Nails, Pittsburgh | 1.95 | 1.95 | 1.95 | 2.00 |
| Cut Nails, Pittsburgh | *1.75* | 1.75 | 1.80 | 2.05 |
| Barb Wire, Galv., Pittsburgh | *2.40* | 2.40 | 2.40 | 2.45 |
| **METALS,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Lake Copper, New York | *12.87½* | 12.87½ | 13.00 | 22.25 |
| Electrolytic Copper, New York | *12.62½* | 12.62½ | 12.75 | 22.00 |
| Spelter, New York | *4.45* | 4.50 | 4.57½ | 6.30 |
| Spelter, St. Louis | *4.30* | 4.35 | 4.42½ | 6.12½ |
| Lead, New York | 4.50 | 4.50 | 4.50 | 5.30 |
| Lead, St. Louis | 4.35 | 4.40 | 4.35 | 5.15 |
| Tin, New York | *28.05* | 27.20 | 28.25 | 41.35 |
| Antimony, Hallett, New York | *8.25* | 8.25 | 8.50 | 10.00 |
| Nickel, New York | 45.00 | 45.00 | 45.00 | 45.00 |
| Tin Plate, 100 lb., New York | $3.89 | $3.89 | $3.89 | $4.09 |

## Chicago.

FISHER BUILDING, July 8, 1908. —(*By Telegraph.*)

Continued improvement in nearly all lines of finished mill products, though as yet of but moderate degree, is the basis of a stronger tone throughout the market. The tonnage of Steel Bars booked since the recent price reduction has been quite satisfactory, and as soon as specifications against these contracts begin to come in liberally the rolling capacity of Steel Bar mills will be well occupied. The present activity of agricultural implement manufacturers gives promise of an early demand for shipments, and from this source and its immediate connections a steadily increasing volume of specifications may be reasonably expected. Whatever measure of improvement the situation now shows has been accomplished without much effective support from the railroads, but it is believed that necessity will compel them to increase their purchases before long. Plates, Sheets and Boiler Tubes are very quiet, and though on the whole are gaining slowly, show less advance than is observed in some other divisions of the market. Some important Structural contracts are still holding back, evidently in the hope of securing more favorable prices. Fabricators still complain of extremely low prices resulting from the scramble for the limited jobs offered. It is stated that the prices at which contracts are now being figured admit of no profit. Lack of demand from consumers has brought the Scrap Iron market pretty nearly to a standstill. Dealers are finding it more and more difficult to dispose of incoming shipments, and stock piles are already too large to admit of much increase.

**Pig Iron.**—The principal transaction of the week was the sale of 4900 tons to the Oliver Chilled Plow Works, South Bend, Ind. This lot was composed of 3000 tons of Standard Bessemer and 1900 tons of Foundry. It is reported that the requirements of this concern will also include 10,000 tons of Charcoal Iron. Other orders placed during the week were for small lots, and not very numerous, at that. The price situation has not changed appreciably, though it is noted that nearly all of the Southern furnaces are now squarely on a $12, Birmingham, basis, for all deliveries through the second half. No pretense of holding for $12.50 for second half or even exclusive fourth quarter deliveries, except on one or two select grades, is made by the Southern furnaces. At $12, the market is apparently firm enough, except for a possible shade of 25c. a ton on prompt shipment; but it is doubtful if there is much such tonnage available, since several inquiries have been floating around the market for several days seeking concessions, without result. Northern Iron is still held at $17.50, at furnace, which price, it is claimed, is being strictly adhered to by some producers, but $17.25 at least is being done on Valley Irons. The demand from agricultural foundries continues to increase, though very little improvement is noted in the jobbing foundries. With the beginning of July deliveries, the latter will have an ample supply of Iron to meet their requirements at the present rate of melt. The following prices are for July, August and September delivery, f.o.b. Chicago:

| | |
|---|---|
| Lake Superior Charcoal | $20.00 to $20.50 |
| Northern Coke Foundry, No. 1 | 18.00 to 18.50 |
| Northern Coke Foundry, No. 2 | 17.50 to 18.00 |
| Northern Coke Foundry, No. 3 | 17.00 to 17.50 |
| Northern Scotch, No. 1 | 18.50 to 19.00 |
| Southern Coke, No. 1 | 16.85 to 17.35 |
| Southern Coke, No. 2 | 16.35 to 16.85 |
| Southern Coke, No. 3 | 15.85 to 16.35 |
| Southern Coke, No. 4 | 15.35 to 15.85 |
| Southern Coke, No. 1 Soft | 16.85 to 17.35 |
| Southern Coke, No. 2 Soft | 16.35 to 16.85 |
| Southern Gray Forge | 14.35 to 14.85 |
| Southern Mottled | 14.10 to 14.60 |
| Malleable Bessemer | 17.50 to 18.00 |
| Standard Bessemer | 18.40 to 18.90 |
| Jackson Co. and Kentucky Silvery, 6 % | 19.90 to 20.40 |
| Jackson Co. and Kentucky Silvery, 8 % | 20.90 to 21.40 |
| Jackson Co. and Kentucky Silvery, 10 % | 22.90 to 23.40 |

*(By Mail.)*

**Billets and Rods.**—Only a few small orders for Forging Billets comprising the incidental requirements of shops are being entered, and no further inquiries have developed for lots of considerable tonnage. Prices are unchanged, and are reported to be firmly held at $28.50, base, Chicago, for Forging Billets. There is a fair demand for Wire Rods, which we quote as follows: Bessemer, $33; Basic, $34; all at Pittsburgh.

**Rails and Track Supplies.**—Practically nothing is doing in Standard Section Rails, and no large addition to the tonnage for 1908 delivery already booked is probable. The intervening period of inactivity until the entry of new contracts is begun will likely be broken only by unimportant orders placed by the smaller roads. Specifications for Track Supplies are slowly improving, with prospects of further betterment. The market for Light Rails is practically an open one, it being necessary for all makers to meet the quotations of rerolling mills, which are all the way from $3 to $5 a ton below the nominal quotations. We quote as follows: Angle Bars, accompanying Rail orders, 1908 delivery, 1.50c.; car lots, 1.60c.; Spikes, 1.80c. to 1.90c., according to delivery; Track Bolts, 2.20c. to 2.25c., base, Square Nuts, and 2.35c. to 2.40c., base, Hexagonal Nuts. The store prices on Track Supplies range from 0.15c. to 0.20c. above mill prices. Light Rails, 25 to 45 lb., $28; 20-lb., $29; 16-lb., $30; 12-lb., $31. Standard Sections, $28, f.o.b. mill, full freight to destination.

**Structural Material.**—The volume of business taken by fabricating shops in the past week, though not at all satisfactory, shows a gain over recent weeks. Among the contracts closed by the American Bridge Company were 605 tons for a viaduct at El Paso; 365 tons from the American Smelting & Refining Company, McGill, Nev.; 100 tons for a trestle to be built at Twin Falls, Idaho, by the Twin Falls Land & Water Company, and several highway bridges of small tonnage. The Richards Noelke Company, Indianapolis, was awarded a contract by the Western Electric Company for 1225 tons, to be used in the construction of new plant additions at the Hawthorne Works. The Hansell-Elcock Company was the successful bidder on 500 tons for a stock pavilion at Denver. The Chicago & Northwestern Railway is taking bids on 2000 tons of material for track elevation work in connection with approaches to the site of the new depot. A slight increase in Structural specifications at the mills is noted, though it is not marked enough to be especially emphasized. Prices from store are 1.95c. to 2c. Mill prices at Chicago are as follows: Beams and Channels, 3 to 15 in., inclusive, 1.78c.; Angles, 3 to 6 in., ¼-in. and heavier, 1.78c.; larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 15 in., 1.88c.; Zees, 3 in. and over, 1.78c.; Tees, 3 in. and over, 1.83c., in addition to the usual extras.

**Plates.**—Slow improvement is noted in Plate specifications, but orders continue to be for small lots that are evidently required for immediate consumption. These, it seems, are growing a little more frequent, and in so far as they represent increased consumption such signs are encouraging; but it is noted that they are not coming from the heavy Plate users, the demand being more of an incidental nature. The Sheared Plate mill at the South Works, which started up a week ago, had specifications on hand at that time for only a few days' run, but enough have been received in the meantime to insure its continued operation through the present week at least. Prices continue firm and regular, except for a shade of about $1.50, which continues to be offered by some of the size limited mills. We quote mill shipments, as follows: Tank Plates, ¼-in. and heavier, wider than 6¼ and up to 100 in. wide, inclusive, car lots, Chicago, 1.78c.; 3-16 in., 1.88c.; Nos. 7 and 8 gauge, 1.93c.; No. 9, 2.03c.; Flange quality, in widths up to 100 in., 1.88c., base, for ¼-in. and heavier, with the same advance for lighter weights; Sketch Plates, Tank quality, 1.88c.; Flange quality, 1.98c. Store prices on Plates are as follows: Tank Plates, ¼-in. and heavier up to 72-in. wide, 2c. to 2.10c.; from 72 to 96 in. wide, 2.10c. to 2.20c.; 3-16 in. up to 60 in. wide, 2.10c. to 2.25c.; 72 in. wide, 2.30c. to 2.40c.; No. 8, up to 60 in. wide, 2.10c. to 2.15c.; Flange and Head quality, 0.25c. extra.

**Sheets.**—Beyond a very moderate run of small orders to supply actual present needs there are no developments of interest in the Sheet market. This is admittedly the dull season for Sheets, but with the due allowance for this condition the demand is of quite unsatisfactory proportions. Neither manufacturers nor jobbers are increasing their stocks which, on all hands, are as low as it is practicable to run them. Prices are in the main well maintained, though it is reported a few mills are receding to the extent of $1 a ton from the regular schedule. We quote mill shipments as follows: Chicago: Blue Annealed, No. 10, 1.98c.; No. 12, 2.05c.; No. 14, 2.08c.; No. 16, 2.18c.; Box Annealed, Nos. 17 to 21, 2.43c.; Nos. 22 to 24, 2.48c.; Nos. 25 and 26, 2.53c.; No. 27, 2.58c.; No. 28, 2.68c.; No. 29, 2.78c.; No. 30, 2.88c.; Galvanized Sheets, Nos. 10 to 14, 2.63c.; Nos. 15 and 16, 2.83c.; Nos. 17 to 21, 2.98c.; Nos. 22 to 24, 3.13c.; Nos. 25 and 26, 3.33c.; No. 27, 3.53c.; No. 28, 3.73c.; No. 30, 4.23c.; Black Sheets from store: Blue Annealed, No. 10, 2.20c.; No. 12, 2.25c.; No. 14, 2.30c.; No. 16, 2.40c.; Box Annealed, Nos. 18 to 21, 2.60c.; Nos. 22 to 24, 2.65c.; No. 26, 2.70c.; No. 27, 2.75c.; No. 28, 2.85c.; No. 30, 3.25c.; Galvanized from store: Nos. 10 to 16, 3c.; Nos. 18 to 20, 3.15c.; Nos. 22 to 24, 3.30c.; No. 26, 3.50c.; No. 27, 3.70c.; No. 28, 3.90c.; No. 30, 4.40c. to 4.45c.

**Bars.**—Some additional orders for Steel Bars have been placed by the implement makers during the week, of which the leading interest has entered about 10,000 tons, while other makers have booked between 2000 and 3000 tons. Specifications for Steel Bars continue to improve, though few of these are as yet being furnished against the new contracts. Owing to the activity in the implement trade and the flattering prospects back of it, steady improvement in Steel Bar specifications is looked for. If present indications hold good, Bar mill rolling schedules ought to be fairly well filled by August 1. Mills of the Republic Iron & Steel Company and those of the Inland Steel Company are closed down, and will probably not resume before August 1. We are advised that prices on both Iron and Steel Bars are being firmly held. Quotations, Chicago, are as follows: Steel Bars, 1.58c., with half extras; Iron Bars, 1.50c.; Hoops, No. 13 and lighter, 1.98c., full extra Hoop card; Bands, No. 12 gauge and heavier, 1.58c., half extra Steel Bar card; Soft Steel Angles and Shapes, 1.68c., half extras. Store prices are as follows: Bar Iron, 2c. to 2.15c.; Steel Bars, 1.90c. to 2c.; Steel Bands, 1.90c., as per Bar card, half extras; Soft Steel Hoops, 2.25c. to 2.35c., full extras.

**Merchant Pipe.**—While the margin of gain is small, the mills continue to report some improvement each week. It is apparent, however, that buyers have not changed their attitude respecting the manner of supplying requirements, and are still ordering to cover needs as they arise. Whatever increase there is under such circumstances naturally reflects an increase in consumption, which is a healthy market symptom. There is no change either in the level or regularity of prices. The following mill discounts are quoted: Black Pipe, ¾ to 6 in., 73.2; 7 to 12 in., 70.2; Galvanized, ¾ to 6 in., 63.2. These discounts are subject to one point on the base. From store, in small lots, Chicago jobbers quote 73 per cent. on Black Steel Pipe, ¾ to 6 in. About three points above these prices is asked for Iron Pipe.

**Boiler Tubes.**—The eyes of the trade are turned toward the railroads as a probable source from which Tube orders may soon be expected, but as yet these hopes have not been realized. The movement of Merchant Tubes is, of course, dependent upon activity in boiler shops, which thus far shows no definite improvement. Mill quotations for future delivery, on the base sizes, are as follows: Steel Tubes, 63.2; Iron, 50.2; Seamless, 49.2; 2½ in. and smaller, and lengths

over 18 ft., and 2½ in. and larger, and lengths over 22 ft., 10 per cent. extra. Store prices are as follows:

| | Steel. | Iron. | Seamless. |
|---|---|---|---|
| 1 to 1¼ in. | 35 | 35 | 35 |
| 1¾ to 2¼ in. | 50 | 35 | 35 |
| 2½ in. | 52½ | 35 | 35 |
| 2¾ to 5 in. | 60 | 47½ | 47½ |
| 6 in. and larger | 50 | 35 | .. |

**Merchant Steel.**—While a fair amount of contract orders from implement makers has been entered during the week, specifications are light. Jobbers are reported to be ordering a little more freely, but the situation as a whole has not materially changed. Quotations are as follows: Planished or Smooth Finished Tire Steel, 1.78c.; Iron Finish up to 1½ x ½ in., 1.73c., base, Steel card; Iron Finish, 1½ x ½ in. and larger, 1.58c., base, Tire card; Channels for solid Rubber Tires, ¾ to 1 in., 2.08c., and 1⅛ in. and larger, 1.98c.; Smooth Finished Machinery Steel, 2.08c.; Flat Sleigh Shoe, 1.63c.; Concave and Convex Sleigh Shoe, 1.83c.; Cutter Shoe, 2.05c.; Toe Calk Steel, 2.13c.; Railroad Spring, 1.98c.; Crucible Tool Steel, 7¼c. to 8c., and still higher prices are asked on special grades. Shafting, 56 per cent. off in car lots; 52 per cent. in less than car lots, base territory delivery.

**Cast Iron Pipe.**—A lot of 3000 tons required for a water works system by the city of Sheridan, Wyo., on which bids were taken a few weeks ago, but no award made, is again up for offers. Other lettings to be held in the near future include 500 tons for Wahoo, Neb.; 300 tons for Concordia, Kan., and 200 tons for Batavia, Ill. Of the business placed last week the United States Cast Iron Pipe & Foundry Company secured 3500 tons from Cleveland, Ohio. We quote, nominally, per net ton, Chicago, as follows: Water Pipe, 4-in., $27; 6 to 12 in., $26; 16-in. and up, $25; with $1 extra for Gas Pipe.

**Old Material.**—The demand for Scrap of all grades is extremely quiet. The amount of tonnage moved last week was small even in comparison with the very moderate business that has constituted the volume of transactions for several weeks. Dealers' stocks, which have been steadily accumulating for some time, are now unusually large, and the demand is insufficient to reduce them. It is noticed also that country dealers are growing more and more anxious to lessen their stockpiles, but in the present state of the market this cannot be accomplished without a sacrifice in values, which they are as yet unwilling to make. The fact that prices have receded but little from last week's quotations is largely due to the absence of tempting offers rather than any inherent strength in the list. There is an increasingly wide range of difference between the prices asked and the prices offered, and until buyers are harder pressed for material than they are at present the advantage seems to be with them. The only list so far reported for disposal this week is that of the Baltimore & Ohio Railroad, which includes 7000 tons, in which there are 2000 tons of Steel Rails and 600 tons of Wrought Iron bridge Scrap. We quote per gross ton, f.o.b. Chicago, as follows:

| | |
|---|---|
| Old Iron Rails | $15.50 to $16.00 |
| Old Steel Rails, rerolling | 14.00 to 14.50 |
| Old Steel Rails, less than 3 ft. | 12.50 to 13.00 |
| Relaying Rails, standard sections, subject to inspection | 19.00 to 20.00 |
| Old Car Wheels | 13.00 to 13.50 |
| Heavy Melting Steel Scrap | 11.25 to 11.75 |
| Frogs, Switches and Guards, cut apart | 12.00 to 12.50 |
| Mixed Steel | 9.50 to 10.00 |

The following quotations are per net ton:

| | |
|---|---|
| Iron Fish Plates | $14.25 to $14.75 |
| Iron Car Axles | 16.50 to 17.00 |
| Steel Car Axles | 15.25 to 15.75 |
| No. 1 Railroad Wrought | 12.00 to 12.50 |
| No. 2 Railroad Wrought | 11.00 to 11.50 |
| Railway Springs | 11.50 to 12.00 |
| Locomotive Tires, smooth | 12.75 to 13.25 |
| No. 1 Dealers' Forge | 9.50 to 10.00 |
| Mixed Busheling | 7.00 to 7.50 |
| Iron Axle Turnings | 6.00 to 6.50 |
| Soft Steel Axle Turnings | 6.00 to 6.50 |
| Machine Shop Turnings | 6.00 to 6.50 |
| Cast Borings | 4.75 to 5.25 |
| Mixed Borings, &c. | 4.75 to 5.25 |
| No. 1 Mill | 6.50 to 7.00 |
| No. 2 Mill | 5.50 to 6.00 |
| No. 1 Boilers, cut to Sheets and Rings | 8.25 to 8.75 |
| No. 1 Cast Scrap | 12.00 to 12.50 |
| Stove Plate and Light Cast Scrap | 10.25 to 10.75 |
| Railroad Malleable | 11.00 to 11.50 |
| Agricultural Malleable | 10.00 to 10.50 |
| Pipes and Flues | 8.00 to 8.50 |

**Metals.**—There is perhaps a little stronger tone in the market, but it is not based on any evidence of permanent improvement in demand. Here and there manufacturers are somewhat busier, and in such cases metal purchases keep pace with requirements, but do not go beyond them. With the exception of Lead and Spelter, which are weaker, prices hold fairly even and unchanged. We quote as follows: Casting Copper, 13¼c.; Lake, 13½c. to 13¾c., in car lots for prompt shipment; small lots, ¼c. to ⅜c. higher; Pig Tin, car lots, 30c.; small lots, 32½c.; Lead, Desilverized, 4.50c. to 4.55c., for 50-ton lots; Corroding, 4.85c. to 4.95c., for 50-ton lots; in car lots, 2¼c. per 100 lb. higher; Spelter, 4.85c.; Cookson's Antimony, 10½c., and other grades, 9¾c. to 10¼c.; Sheet Zinc is $7, list, f.o.b. La Salle, in car lots of 600-lb. casks. On Old Metals we quote: Copper Wire, 12¾c.; Heavy Copper, 12¾c.; Copper Bottoms, 10⅝c.; Copper Clips, 11c.; Red Brass, 11½c.; Yellow Brass, 9¾c.; Light Brass, 6½c.; Lead Pipe, 4c.; Zinc, 3¾c.; Pewter, No. 1, 21c.; Tin Foil, 24c.; Block Tin Pipe, 27c.

## Pittsburgh.

PARK BUILDING, July 8, 1908.—(*By Telegraph.*)

**Pig Iron.**—While the Pig Iron market continues quiet there is more inquiry, some consumers asking prices on considerable tonnage for balance of the year delivery. More Pig Iron is now being made in the Pittsburgh District than for some time, and this week the Carnegie Steel Company has started up two more blast furnaces. The Midland Steel Company will start up its furnace in the latter part of this month or early in August. We quote Sand Cast Bessemer at $16, Valley furnace, but note a sale of 200 tons at $15.75, and another of 50 tons at the same price. Basic is $15 to $15.25, and we note a sale of 3000 tons equal deliveries August, September, and October at $15.25, Valley furnace. We quote Malleable Bessemer at $15 to $15.25, and note a sale of 1000 tons at $15, Valley furnace. We quote Northern No. 2 Foundry at $14.75 to $15, Valley furnace, and note that a local consumer is in the market for about 1000 tons for early delivery. Northern Forge Iron is very quiet, and we quote the market at $14, Valley furnace, or $14.90, Pittsburgh.

**Steel.**—Little new business is offering in Billets, but a fair amount of tonnage is being specified for against contracts for Sheet and Tin Bars. Some conversion deals in Billets and Slabs are still being made by which Basic Iron is shipped to outside Steel mills and made into Billets and Slabs which are furnished to consumers at slightly less than regular prices. We are advised that official prices on Sheet and Tin Bars are being absolutely maintained. We quote Bessemer and Open Hearth Billets, 3⅞ in. and larger, up to and including 0.25 carbon, $25; 0.26 to 0.60 carbon, $1 extra; over 0.60 carbon, $2 extra, all f.o.b. Pittsburgh. For Wheeling, Martins Ferry, Follansbee, Newcastle, Sharon, Steubenville and Washington (Pa.) delivery, half the freight or 50c. additional is charged. Sheet and Tin Bars in random lengths are $27, f.o.b. Pittsburgh. Forging Billets take $2 advance over Rolling Billets.

(*By Mail.*)

The month of June, compared with May and previous months, showed a large increase in mill business, both in new orders booked and in specifications. Most of this, however, was in Steel Bars, June being a record breaker in this respect. New orders and specifications of the Carnegie Steel Company in June were very much the largest in any one month since last October, and other large Steel interests report that the buying movement is steadily getting better. The feeling is more optimistic than for some time, and it is now confidently believed the long expected turn in the Steel trade has come and that conditions will steadily improve. Consumers are becoming more convinced that there will not be another reduction in prices and are buying more freely. A large number of finishing mills are idle, taking inventory and making repairs, and also awaiting adjustment of the wage scales of the Amalgamated Association.

**Ferromanganese.**—No sales of moment have been made in this market for some little time, and inquiries are light. We quote 80 per cent. foreign Ferro at $44, seaboard, for third quarter, and about $45, for fourth quarter, the freight rate to Pittsburgh being $1.95 a ton.

**Rods.**—Business is dull. We quote Bessemer Rods at $33; Basic Rods, $34, and Chain Rods, $33, f.o.b. Pittsburgh.

**Ferrosilicon.**—The market is quiet, but prices are steady. We quote 50 per cent. at $70, Pittsburgh.

**Muck Bar.**—With no sales we continue to quote nominally for best grades, made from all Pig Iron, $26, Pittsburgh.

**Skelp.**—A sale of about 1000 tons of Grooved Iron Skelp is reported by a local mill on the basis of about 1.57½c., Pittsburgh. Prices, however, are largely nominal, and we quote: Grooved Steel Skelp, 1.45c. to 1.50c.; Sheared Steel Skelp, 1.50c. to 1.60c.; Grooved Iron Skelp, 1.60c. to 1.70c., and Sheared Iron Skelp, 1.70c. to 1.75c., f.o.b. Pittsburgh.

**Steel Rails.**—During June the Carnegie Steel Company entered orders for about 9000 tons of Light Rails, which is only about 20 per cent. below normal business and a very good record considering present conditions. Last week the company entered orders for about 1100 tons of Light Rails, but as yet no contracts of moment for Standard Sections are being placed. Some tonnage is coming in steadily, but it is made up of small orders. Regular quotations on Light Rails, which are shaded $4 to $5 a ton to meet competition of mills that reroll Rails, are as follows: 25 to 45 lb. Sections, $28; 20-lb., $29; 16-lb., $30, and 12-lb., $32. We quote Standard Sections at $28, at mill, and Angle Splice Bars at 1.65c., at mill.

**Plates.**—While orders are a little more numerous, they are still confined to small lots, to meet current needs of cus-

tomers. The car shops, shipyards, and boiler and tank shaps are still very short of work, and until their conditions improve not much betterment in Plates can be expected. The Carnegie Steel Company operated its Plate mills at the Homestead Works to fuller capacity in June than at any time since last October, a large part of the tonnage turned out going to an identified interest to be made into Pipe for the Standard Oil Company. A few mills, that do not make a full range of sizes, are still shading prices from $1 to $1.50 a ton. We quote Tank Plates, ¾-in. thick, 6¼ in. up to 100 in. wide, 1.60c., base, at mills, Pittsburgh. Extras over this price are as follows:

Tank, Ship and Bridge quality, ¼ in. thick on edges, 100 in. wide, down to but not including 6 in. wide, is taken as base.

Steel Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per square foot, shall be considered ¼-in. Plate. Steel Plates over 72 in. wide must be ordered ¼-in. thick on edge, or not less than 11 lb. per square foot to take base price. Steel Plates over 72 in. wide ordered less than 11 lb. per square foot down to the weight of 3-16-in. shall take the price of 3-16-in.

Percentages as to overweight on Plates, whether ordered to gauge or weight, to be governed by the Association of American Steel Manufacturers' Standard Specifications.

| | |
|---|---|
| Gauges under ¼-in. to and including 3 16-in. Plates on thin edges | $0.10 |
| Gauges under 3-16-in. to and including No. 8 | .15 |
| Gauges under No. 8 to and including No. 9 | .25 |
| All sketches (excepting straight taper Plates varying not more than 4 in. in width at ends, narrowest end being not less than 30 in.) | .10 |
| Complete Circles | .20 |
| Boiler and Flange Steel Plates | .10 |
| "A. B. M. A." and ordinary Firebox Steel Plates | .20 |
| Still Bottom Steel | .30 |
| Marine Steel | .40 |
| Locomotive Firebox Steel | .50 |
| Shell grade of Steel is abandoned. | |
| For widths over 100 in. up to 110 in | .05 |
| For widths over 110 in. up to 115 in | .10 |
| For widths over 115 in. up to 120 in | .15 |
| For widths over 120 in. up to 125 in | .25 |
| For widths over 125 in. up to 130 in | .50 |
| For widths over 130 in | 1.00 |

TERMS.—Net cash 30 days. Pacific Coast base, 1.50c., f.o.b. Pittsburgh.

**Structural Material.**—The feeling is decidedly better and quite a good deal of work is in sight. The McClintic-Marshall Construction Company has taken a 250-ft. arch span for the city of Philadelphia, 500 tons; some ore bins and trestles for the Columbus Iron & Steel Company, 500 tons; and a viaduct for the Pittsburgh Railways Company at Rankin, 200 tons. The School of Mines Building for the New Western University in this city, 430 tons, is likely to be placed this week. A large tonnage will be required for different buildings for this institution, but they will probably be placed one or two at a time. Prices for fabricated work are still very low, but it is believed that bottom has been reached and that there will soon be an improvement in this direction. The proposed Oliver Building on Smithfield street has again come up, and bids for the Steel, 10,000 to 12,000 tons, have again been asked for, and it is believed that this time the contract will be placed. We quote as follows, f.o.b. mill, Pittsburgh: I Beams, H Beams and Channels, 3 to 15 in. inclusive. 1.60c. net; Beams over 15 in., 1.70c. net; Angles, 3 to 6 in. inclusive, ¼ in. and up, 1.60c. net; Angles, over 6 in., 1.70c. net; Angles 3 x 3 in. and up, less than ¼ in., 1.50c., base, half extras, Steel Bar card; Tees, 3 in. and up, 1.65c. net; Zees, 3 in. and up, 1.60c. net; Angles, Channels and Tees under 3 in., 1.50c. base, half extras, Steel Bar card; Deck Beams and Bulb Angles, 1.90c. net; Hand Rail Tees and Z-19, 3c. net; Checkered and Corrugated Plates, 3c. net.

**Sheets.**—No disposition is shown by jobbers to buy ahead, stocks being kept as low as possible. Two or three of the smaller mills are reported as shading prices about $1 a ton, but in a general way the market is fairly strong. Regular prices for mill shipments are as follows: Blue Annealed Sheets, No. 10 and heavier, 1.80c.; Nos. 11 and 12, 1.85c.; Nos. 13 and 14, 1.90c.; Nos. 15 and 16, 2c.; Box Annealed, Nos. 17 to 21, 2.25c.; Nos. 22 to 24, 2.30c.; Nos. 25 and 26, 2.35c.; No. 27, 2.40c.: No. 28, 2.50c.; No. 29, 2.60c.; No. 30, 2.70c. Galvanized Sheets: Nos. 10 and 11, 2.45c.; Nos. 12 and 14, 2.55c.; Nos. 15 and 16, 2.65c.; Nos. 17 to 21, 2.80c.; Nos. 22 and 24, 2.95c.; Nos. 25 and 26, 3.15c.; No. 27, 3.35c.; No. 28, 3.55c.; No. 29, 3.70c.; No. 30, 3.95c. No. 28 Painted Roofing Sheets, $1.75 per square, and Galvanized Roofing Sheets, No. 28, $3.10 per square, for 2½-in. corrugations. These prices are subject to a rebate of 5c. per 100 lb. to the large trade under the usual conditions, jobbers charging the usual advances for small lots from store.

**Tin Plate.**—Little suspension of work will take place among the Tin Plate mills, as the American Sheet & Tin Plate Company has signed the scale for its union mills for the year beginning July 1. The Pope Tin Plate Company, the largest independent producer, has also signed the scale, as have the smaller union mills. The largest nonunion mills, outside the American Sheet & Tin Plate Company, are the McKeesport Tin Plate Company and the Phillips Sheet & Tin Plate Company, at Clarksburg, W. Va. The canners are commencing to specify against contracts placed some time ago, and shipments by the Tin Plate mills are now quite heavy. We quote at $3.70 for 100-lb. Cokes, 14 x 20, f.o.b. Pittsburgh, terms 30 days, less 2 per cent. off for cash in 10 days, this price being subject to the usual rebate of 5c. per base box in large lots.

**Hoops and Bands.**—Practically no new orders are being placed, but specifications against contracts are coming in at a fairly satisfactory rate. Regular prices are as follows: Steel Hoops, 1.80c., base, full Hoop card prices; Steel Bands, 1.40c., base, half Steel card extra, all f.o.b. cars, Pittsburgh, in carload lots, for delivery during 1908.

**Iron and Steel Bars.**—With orders on their books for fully 650,000 tons of Steel Bars for delivery over the next year, the Steel Bar mills are in more comfortable position than they have been in a long time. At present, most of the Bar mills, aside from the Carnegie, Jones & Laughlin and other companies that do not sign the Amalgamated scale, are idle, waiting adjustment of the wage scale for the year beginning July 1. We quote Iron Bars at 1.40c., base, for Pittsburgh delivery, and 1.35c., base, for Western points, to which freight is added, except Chicago, the price for which is 1.50c, delivered. We quote Steel Bars at 1.40c., Pittsburgh, for base sizes.

**Merchant Steel.**—The Crucible Steel Company and the Cambria Steel Company have received some good-sized contracts from implement makers, but as yet specifications against these contracts have not commenced to come out in large volume. Generally speaking, the trade in Merchant Steels is showing some betterment, with the single exception of Shafting, which is still dull. We quote: Cold Rolled Shafting, on contracts for 100 tons and over, 57 per cent. off; carloads, 56 per cent. off, and less than carloads, 52 per cent. off, on which carload freight is allowed within base territory. Smooth Finished Machinery Steel, 1.80c. to 1.90c.; Flat Sleigh Shoe, 1.75c. to 1.85c.; Cutter Shoe Steel, 2.15c. to 2.25c.; Toe Calk, 1.90c. to 1.95c.; Railroad Spring Steel, 1.60c. to 1.75c., the higher price being for Pennsylvania Railroad analysis. Carriage Spring Steel is 1.80c.; Tire Steel, Iron, finished, 1½ in. and wider, 1.40c.; under 1½ in., 1.55c. Planished Tire Steel is 1.60c., all f.o.b., at mill.

**Railroad Spikes.**—Practically no new orders for Railroad Spikes have been placed, but there is a fair demand for the smaller sizes. The trade in Railroad Spikes this year has shown an enormous falling off, as compared with the same period last year, and prospects for last half are not bright. We quote: Standard sizes, 4½ x 9-16 in., at $1.70, and the smaller sizes at $1.80 per 100 lb. in carload and larger lots, with an advance of 5c. per 100 lb. for less than carload, f.o.b. Pittsburgh.

**Spelter.**—Prices have again declined, and reports are that prime Western grades in large lots have been offered below 4.30c., St. Louis. The demand is light, and it is understood that smelters are taking steps to cut down the output materially.

**Merchant Pipe.**—Conditions in this trade are showing gradual betterment, and it is estimated that 55 per cent. of the Pipe capacity is active. The Standard Oil Company has been a heavy buyer of 6-in. Line Pipe, and two or three large jobs in oil and gas lines for Indiana, Illinois and Texas are on the carpet and may come up actively before long. Prices are firm, and jobbers are reported to be buying more freely than for some time. Discounts on Steel Pipe, ¾ to 6 in., to the large trade are now 76 and 5 per cent. off list. Regular discounts are as follows:

*Merchant Pipe.*

| | Jobbers, carloads, Steel. Black. | Galv. |
|---|---|---|
| | % | % |
| ⅛ to ¼ in. | 67 | 51 |
| ⅜ in. | 69 | 55 |
| ½ in. | 71 | 59 |
| ¾ to 6 in. | 75 | 65 |
| 7 to 12 in. | 72 | 57 |
| Extra strong, plain ends: | | |
| ⅛ to ⅜ in. | 60 | 48 |
| ½ to 4 in. | 67 | 55 |
| 4½ to 8 in. | 63 | 51 |
| Double extra strong, plain ends: | | |
| ½ to 8 in. | 56 | 45 |

Discounts on Genuine Iron Pipe are as follows:

| | Black. | Galv. |
|---|---|---|
| | % | % |
| ⅛ to ¼ in. | 65 | .. |
| ⅜ in. | 67 | 53 |
| ½ in. | 69 | 57 |
| ¾ to 6 in. | 73 | 63 |
| 7 to 12 in. | 70 | 55 |
| Extra strong, plain ends: | | |
| ⅛ to ⅜ in. | 58 | 46 |
| ½ to 4 in. | 65 | 53 |
| 4½ to 8 in. | 61 | 49 |
| Double extra strong, plain ends: | | |
| ½ to 8 in. | 54 | 43 |

**Boiler Tubes.**—For the first time in some weeks we can report a little better inquiry for Locomotive Tubes, and this is taken as an indication that the railroads will be more liberal buyers in the near future. Regular discounts on Merchant Tubes in small lots, on which an extra 5 per cent.

is allowed in carloads, but which discounts are being shaded, are as follows:

*Boiler Tubes.*

| | Iron. | Steel. |
|---|---|---|
| 1 to 1½ in. | 42 | 47 |
| 1¾ to 2¼ in. | 42 | 59 |
| 2½ in. | 47 | 61 |
| 2¾ to 5 in. | 52 | 65 |
| 6 to 13 in. | 42 | 59 |

2½ in. and smaller, over 18 ft. long, 10 per cent. net extra.
2¾ in. and larger, over 22 ft. long, 10 per cent. net extra.

**Iron and Steel Scrap.**—Conditions in the Scrap trade are showing some betterment, inquiries being more plentiful, and the amount of actual tonnage sold being larger than for some time. The Pennsylvania Railroad sold a heavy quantity of Scrap to dealers last week, the prices obtained being better than for some months. We quote, per gross ton, f.o.b. Pittsburgh: Heavy Steel Scrap, for Pittsburgh, Steubenville and Sharon delivery, $14; Cast Iron Borings, $8 to $8.25; No. 1 Railroad Wrought Scrap, $13.75 to $14; No. 1 Cast Scrap, $14 to $14.25; Bundled Sheet Scrap, $10.75 to $11.25; Sheet Bar Crop Ends, $17.25 to $17.50; No. 1 Busheling Scrap, $12.75 to $13; No. 2 Busheling Scrap, $8.75 to $9; Iron Axles, $19.50 to $20; Steel Axles, $17.50 to $18; Low Phosphorus Melting Stock, 0.04 and under, $18 to $18.50; Old Steel Rails, short pieces, $14; Rerolling Rails, $14.50 to $15; Machine Shop Turnings, $8.50 to $8.75; Grate Bars, $12.25 to $12.50; Railroad Malleable Scrap, $13 to $13.50. We note sales of 200 tons of Cast Iron Borings at about $8.25, and 200 tons of Machine Shop Turnings at about $8.50, f.o.b. Pittsburgh.

**Coke.**—As yet there is not much improvement in the demand for either Furnace or Foundry Coke, the trade not brightening up as much as anticipated. Several Valley furnaces are getting ready to go into blast, and when these are started it will mean a heavier demand for Furnace Coke. The Frick Coke Company is operating its ovens five days a week and 8 hr. a day, and the larger independent operators are running to about the same capacity. The output of Coke in the Upper and Lower Connellsville regions last week was 164,839 tons, an increase over the previous week of only 2000 tons. Furnace Coke for prompt shipment continues to be quoted at $1.60 for best grades, and 72-hr. Foundry at $2 to $2.25, at oven. On contracts for Furnace Coke for shipment over last half of the year, $1.80 to $1.89, at oven, is quoted.

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I. W. Wilkoff has been appointed sales manager for the Wilkoff Brothers Company, dealer in Iron and Steel Scrap, Farmers' Bank Building, Pittsburgh, succeeding H. D. Stalnaker, resigned.

## St. Louis.

ST. LOUIS, MO., July 5, 1908.

An encouraging feature respecting the business situation in this district is found in increased activity in the line of railroad supplies, mainly in the direction of repairs to cars and engines. Four leading railroads here recently started up their shops, and local concerns report a moderate but steady gain in orders from purchasing agents. The demand for Bars from manufacturers of agricultural implements is falling off, as buyers in this line have supplied their wants. An improved demand is noted for Sheets, and for Tin Plate there is a continued inquiry. For Spelter the demand rules mainly for galvanizing purposes. Clearing house returns for June show a falling off of but 6 per cent., while the post office receipts gained over the same month last year.

**Coke.**—The market for Coke is quiet, but steady. A leading local house reports the sale of quite a large tonnage, the contract covering a period of one year from July 1, to one of the Car Wheel companies of St. Louis. Another local agency has been instructed by one of its producers to hold price at $2.35, at oven, which is regarded as practically withdrawing from the market. We quote $2.15 to $2.50 for 72-hr. Coke, at oven, Connellsville, the lower price for quick shipment and the higher price for contract, 6 to 12 months delivery.

**Pig Iron.**—The market for Pig Iron is slower, but prices are maintained. A local house finds that its specifications on contract during June exceeded its sales, which clears the way for new business from their customers. As July is not an active month, though the melt of Iron has increased, sellers look for business mainly for forward deliveries, and being in receipt of numerous inquiries the feeling is confident. We quote $12 to $12.50, Birmingham, for No. 2 Foundry, according to delivery, though we hear of $13 being asked for fourth quarter.

**Finished Iron and Steel.**—The demand for Structural Steel is characterized by numerous sales of small lots, which, however, in the aggregate reach a satisfactory tonnage. Conditions are improving in respect to the inquiry for Steel Bars. In Standard Rails there is very little doing, with some business in Light Rails. For Track Material, mainly repair work, there is a gratifying increase in inquiry and orders received carry requests for immediate shipment. From jobbers orders indicate replenishing stocks, without much disposition for anticipating wants. The improvement in the demand for Bars and small Shapes is coming from car works. Harvester work has followed a Northern and Western course in closing up buying. In Tubing and Plates the demand represents about 50 per cent. of last year.

**Lead and Spelter.**—The demand for Lead and Spelter is slower and prices have declined in spite of the fact that they were already too low for Ore cost. Production is about one-half of capacity. For either metal 4.35c. is bid.

**Old Material.**—The market continues to rule quiet and the limited transactions are principally confined to dealers. No lists of importance are out. The holiday feature is thought to have made the dullness more pronounced, and greater activity is looked for in the coming week. We quote nominally dealers' prices as follows, f.o.b. St. Louis, per gross ton:

| | |
|---|---|
| Old Iron Rails | $14.00 to $14.50 |
| Old Steel Rails, rerolling | 12.75 to 13.00 |
| Old Steel Rails, less than 3 ft | 12.50 to 13.00 |
| Relaying Rails | 22.50 to 23.50 |
| Old Car Wheels | 12.50 to 13.50 |
| Heavy Melting Steel Scrap | 12.25 to 12.75 |
| Frogs, Switches and Guards, cut apart | 12.00 to 12.50 |
| Mixed Steel | 9.00 to 9.50 |

The following quotations are per net ton:

| | |
|---|---|
| Iron Fish Plates | $11.50 to $12.00 |
| Iron Car Axles | 15.00 to 15.50 |
| No. 1 Railroad Wrought | 11.75 to 12.00 |
| No. 2 Railroad Wrought | 9.50 to 11.00 |
| Railway Springs | 9.50 to 10.50 |
| Locomotive Tires, smooth | 12.00 to 12.50 |
| No. 1 Dealers' Forge | 9.50 to 10.00 |
| Mixed Borings | 3.50 to 3.75 |
| No. 1 Boilers, cut to Sheets and Rings | 7.00 to 8.00 |
| No. 1 Cast Scrap | 11.00 to 11.50 |
| Stove Plate and Light Cast Scrap | 9.00 to 9.50 |
| Railroad Malleable | 9.25 to 9.75 |
| Agricultural Malleable | 8.50 to 9.00 |
| Pipes and Flues | 7.25 to 7.50 |

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The Natural Power Company, manufacturer of air compressors, has increased its capital stock from 60,000 to $300,000, fully paid up.

The Scullin-Gallagher Iron & Steel Company has just closed a contract for Cast Steel bolsters for 500 box cars with the International & Great Northern Railroad, and another for cast Steel Bolsters for 300 Coal cars with the Delaware, Lackawanna & Western Railroad.

The resumption of work at the machine shops of the Missouri, Kansas & Texas Railway Company at Parsons, Kan.; the Frisco at Springfield, Mo., and the Santa Fé system at Topeka, Kan., will furnish employment for 3800 men.

Bids for the erection of the $1,000,000 Central Library Building must be in the hands of the Library Board August 18, and copies of the plans and specifications will be given out to-day.

## Birmingham.

BIRMINGHAM, ALA., July 6, 1908.

**Pig Iron.**—The market is firm, with the aggregate of sales similar to reports for some weeks previous. A schedule of $12, Birmingham, is being adhered to for prompt deliveries and the third quarter without evidence of a disposition to shade quotations. For delivery during the last quarter $12.50, Birmingham, for No. 2 Foundry is being asked, and while the tonnage engaged at this price is comparatively small, all parties concerned appear to be satisfied. Recent requests for quotations on tonnage to be delivered during the last quarter of this year and first quarter of next have not had serious consideration, and as a result nominal quotations only have been made. Practically all lines of foundry trades have gradually improved. In the case of Pipe manufacturers the volume of business recently developed is considered equal to the entire production for some months, but melters generally are chary of negotiations for requirements further advanced than previously provided for, notwithstanding the fact that producers are not solicitous of such engagements. Some cases are reported where shipment against contract has been deferred by request of purchasers, and in other instances the material purchased is being stocked on foundry yards, yet the aggregate of tonnage being moved indicates that actual requirements exceed anticipations. There has been no accumulation of stock on furnace yards, and official announcement is made that at least two additional stacks will be in operation by August 1. The scarcity of off grades has been relieved to some extent, although quotations have not been affected. A lot of 100 tons Gray Forge is reported sold during the week at $10.50, Birmingham. The output of merchantable Basic Iron is to be increased to fill an order requiring the operation of one stack during the remainder of the year.

**Cast Iron Pipe.**—With the business actually in sight reaching such proportions as to warrant a material increase in the rate of production, and prices apparently on a firm basis, the condition of the market is very encouraging. Recent developments relative to the proposed expenditure for the city of San Francisco are expected to result in orders

practically equal to the output of all Southern plants for many months. Indications are favorable for an order covering something like 11,000 tons of Water Pipe for Havana, Cuba, in addition to tonnage recently placed. To the list of lettings for the early part of this month the following are added: Wahoo, Nev., July 6; Sheridan, Wyo., July 6; Detroit, Mich., July 14. An Eastern company was the successful bidder on 6000 tons of Water Pipe for Cuban points, and a contract covering 1000 tons for Pensacola, Fla., was awarded a Southern interest July 1. We quote Water Pipe as follows, per net ton, f.o.b. cars here: 4 to 6 in., $23; 8 to 12 in., $22; over 12-in., average $21, with $1 per ton extra for Gas Pipe.

**Old Material.**—The market is without signs of improvement. Consumers are apparently disinterested other than for actual requirements and the aggregate of their engagements is comparatively insignificant. Quotations are revised on some grades, but no transactions have recently been recorded that could be considered a criterion of values. We quote nominally as follows, per gross ton, f.o.b. cars here:

| | |
|---|---|
| Old Iron Rails | $14.50 to $15.00 |
| Old Iron Axles | $14.00 to 14.50 |
| Old Steel Axles | 12.50 to 13.00 |
| No. 1 Railroad Wrought | 12.00 to 12.50 |
| No. 2 Railroad Wrought | 9.00 to 9.50 |
| No. 1 Country Wrought | 10.50 to 11.00 |
| No. 2 Country Wrought | 9.50 to 10.00 |
| No. 1 Machinery Cast | 10.00 to 11.00 |
| No. 1 Steel | 9.50 to 10.00 |
| Wrought Pipe and Flues | 8.50 to 9.00 |
| Stove Plate and Light Cast | 8.50 to 9.00 |
| Cast Borings | 5.00 to 5.50 |

## Cincinnati.

CINCINNATI, OHIO, July 8, 1908.—(*By Telegraph.*)

Little actual business of any kind is going on in the Iron and Steel line, but signs of further activity multiply, and there is a feeling that long desired relief is near at hand. These signs are evidently in the optimistic talk of the machinery manufacturers, preparations of foundrymen for the more economical handling of castings, and the presence in the city of officials and agents of blast furnaces arranging for sales or renewal of operations suspended at the beginning of or during the slump. All local Pig Iron dealers report encouraging signs in the way of inquiries for Iron for next year. Money is plentiful, and indications are that it will be cheaper very soon, which will be of material help in a number of good sized propositions for buildings and improvements determined on within the past 10 days or two weeks. Tool manufacturers report an increasing interest manifested on the part of the railroads for shop needs, and believe that some good sized lists are in preparation.

**Pig Iron.**—Some good sales have been made, but it is reported at close figures. Published prices have been maintained remarkably well as far as can be learned, notwithstanding persistent rumors of shading on a large tonnage in which Bessemer predominated to a prominent agricultural implement manufacturer in an adjoining State. While the quoted prices of the new furnaces which are to make their entree in this territory soon are in line with established trade, it is rumored that some inducements have been offered to introduce the new brands, and this has unsettled the local markets somewhat on Northern Silveries and Foundry Irons. There are also charges of cutting on the Southern product and $11.50, Birmingham, for No. 2, is heard at every turn, but as nearly as this rumor can be verified is that a speculative interest is abroad with a little off analysis Iron that it is willing to dispose of at a slight margin of profit. Some new prices were established on popular grades of Iron in the implement manufacturer's purchase above referred to, among which figures a 50 ton lot of Ferromanganese at $46.50 delivered, and about 500 tons of Ohio Silvery 9 and 10 per cent. at approximately the price of the Southern product, which is quotable at a slightly reduced price usually. The scarcity of low grades continues, and few furnaces are able to quote on Forge or Mottled, the price of the former being firm at about $10.75, Birmingham. A little inquiry for Malleable has developed in the past few days, and indications are good for a general revival among concerns using this grade. An Ohio consumer is asking for prices on 1000 tons for nearby delivery. A prominent manufacturer of agricultural implements asks for prices on 1000 tons divided equally between Northern and Southern Foundry for the last four months for delivery to its Ohio factory. An Indiana concern is out with an inquiry for 500 tons each of Northern and Southern No. 2 Foundry for the last half, but this is suspected to be rather in the nature of a feeler. Some interest is shown in Standard Bessemer, which is quoted at about $16, Valley furnace, and said to be shaded from 25c. to 50c. Local foundries, aside from one which has had out an inquiry for 800 tons for more than a week and is yet not closed, are not interested in the market and the larger melters do not look for much relief until after the election. As a rule, sellers are quoting on fourth quarter business now at the ruling price for the current quarter. For early delivery and for balance of the year we quote, f.o.b. Cincinnati, as follows, the rate from Birmingham District being $3.25, and from Hanging Rock, $1.20:

| | |
|---|---|
| Southern Coke, No. 1 | $15.75 to $16.25 |
| Southern Coke, No. 2 | 15.25 to 15.75 |
| Southern Coke, No. 3 | 14.75 to 15.25 |
| Southern Coke, No. 4 | 14.25 to 14.75 |
| Southern Coke, No. 1 Soft | 15.75 to 16.25 |
| Southern Coke, No. 2 Soft | 15.25 to 15.75 |
| Southern Coke, Gray Forge | 13.75 to 14.25 |
| Ohio Silvery, 8 per cent. Silicon | 19.70 |
| Lake Superior Coke, No. 1 | 16.70 to 17.70 |
| Lake Superior Coke, No. 2 | 16.20 to 17.20 |
| Lake Superior Coke, No. 3 | 15.70 to 16.70 |
| Standard Southern Car Wheel | 22.25 to 22.75 |
| Lake Superior Car Wheel | 21.75 to 22.25 |

(*By Mail.*)

**Coke.**—Consumers of Furnace grades are taking shipments on contract. Practically all contracting for the balance of the year and for the first half of next has been negotiated and therefore there is little demand not already taken care of, as few idle furnaces have announced intention of resuming operations. The price on favorite brands of Furnace Coke ranges from $1.75 to $2 at oven. Foundry Coke is quiet, and the price runs from $2 to $2.50 on spot shipments, with little or no contracting. There is some dissatisfaction with the railroads which are apparently endeavoring to find excuses for increasing rates. The rate on Iron from the Virginia furnaces to the St. Louis and East St. Louis District has been advanced by the Chesapeake & Ohio Railroad 10 cents a ton, which makes that rate now $3.60.

**Finished Iron and Steel.**—This market is very dull. No change of prices has been made as yet, but there is much dissatisfaction, and dealers look for a break almost any day. What little buying there is at this time comes mostly from the agricultural implement people and buggy and carriage manufacturers. Steel Tire such as is used by the latter is quoted here at 1.75c. in carload lots, and 2c. in small lots. There is a little movement in Twisted Steel Bars for concrete construction. Orders are filled from stock at the following prices, which are f.o.b., Cincinnati: Iron Bars, carload lots, 1.65c., base, with half extras; small lots from store, 1.85c., base, half extras; Steel Plates, carload lots, 1.75c., base, with half extras; small lots from store, 1.85c., base, half extras; Base Angles, carload lots, 1.85c., base; small lots from store, 2.10c.; Beams, Channels and Structural Angles, 1.85c., base; small lots from store, 2.10c.; Plates, ¼-in. and heavier, carload lots, 1.85c.; small lots from store, 2c.; Blue Annealed Sheets, heavy, No. 16, carload lots, 2.15c.; small lots from store, 2.50c.; No. 14, carload lots, 2.05c.; small lots from store, 2.40c.; No. 10, and heavier, carload lots, 1.95c.; small lots from store, 2.20c.; No. 12, carload lots, 2c.; small lots from store, 2.30c.; Sheets (Light), Black, No. 28, carload lots, 2.65c.; Galvanized Sheets, No. 28, carload lots, 3.70c.; Steel Tire, 4-in. and heavier, carload lots, 1.95c.; Plates, 3-16 and No. 8, carload lots, 2c.; small lots from store, 2.20c.

**Old Material.**—Prices have gone off a shade on many items, and dealers are not anticipating any relief until after the election or perhaps the first of the year. The large dealers are confident, however, and are looking forward to a normal and perhaps abnormal market in the winter. Such transactions as are being booked at this time are mainly in Stove Scrap, Melting Steel, and Relayers. As nearly as they can be fixed under the ruling conditions, prices may be quoted, f.o.b. Cincinnati, as follows:

| | |
|---|---|
| No. 1 R. R. Wrought, net ton | $10.00 to $11.00 |
| Cast Borings, net ton | 4.00 to 5.00 |
| Heavy Melting Steel Scrap | 10.00 to 11.00 |
| Steel Turnings, net ton | 5.00 to 6.00 |
| No. 1 Cast Scrap, net ton | 10.25 to 11.25 |
| Burnt Cast and Wrought, net ton | 8.00 to 9.00 |
| Old Iron Axles, net ton | 14.50 to 15.50 |
| Old Iron Rails, gross ton | 13.00 to 14.00 |
| Old Steel Rails, long, gross ton | 10.50 to 11.50 |
| Old Steel Rails, short, gross ton | 11.00 to 12.00 |
| Relaying Rails, 56 lb. and up, gross ton | 20.00 to 21.00 |
| Old Car Wheels, gross ton | 12.00 to 13.00 |
| Low Phosphorus Scrap, gross ton | 13.00 to 14.00 |

Rome Furnace at Rome, Ga., will go in blast about August 1 on Foundry Iron. This furnace has been out of blast since last October, when for a time it was on Charcoal Iron. Its capacity is about 2500 tons a month. Operations will be in charge of Thomas J. Dean. The product is to be marketed under the name Silver Creek. Rogers, Brown & Co., Cincinnati, will be sole selling agents.

Arrangements have just been perfected by President C. P. Perin and Manager Samuel Fearing of Embreeville Furnace at Embreeville, Tenn., for going into blast about August 15. This furnace has been out of blast since May. Hickman, Williams & Co., Cincinnati, will market the product, which will be a high Manganese Iron.

The American Cast Iron Pipe Company, Birmingham, Ala., has completed its department for making large size pipe, and will commence operations July 15. The addition will increase the company's output approximately 40 per cent.

## Cleveland.

CLEVELAND, OHIO, July 7, 1908.

**Iron Ore.**—Ore shipments from upper lake ports in June were 2,585,682 tons, making the movement 2,870,996 tons up to July 1, or 9,814,519 tons less than the shipments up to July 1 last year. Only a small additional tonnage of Ore was sold the past week, and in view of the limited sales so far the shipments in July will be rather light. The bulk of the Ore shipments for the season will be made after August 1. The lake fleet can readily bring down 6,000,000 tons per month, so that no trouble is feared in getting down the required amount of Ore the latter part of the season. The estimates made some time ago that not over 20,000,000 tons of Ore will be brought down this season are as yet unchanged. A number of furnace interests that will require Ore later are not yet ready to buy. A few will need no Ore before the opening of navigation in 1909. There is a fair movement from the docks, the consuming interests taking last year's Ore instead of making new purchases. There are at present too many boats in commission for the tonnage that is moving. Most of the large Ore firms have all they can do to take care of their own boats. The only chartering of importance noted during the week was for 50,000 tons of Ore for shipment from Escanaba at 50 cents a ton. At a meeting of the Executive Committee of the Lake Carriers' Association it was decided that the wage schedule adopted last spring should stand. The schedule, which is the same as last year, was agreed upon when the lake carriers adopted the open shop policy. Since the carrying charges for Ore were reduced 10 cents a ton there has been considerable talk of reducing the pay of sailors. Some of the vessel owners that are not members of the association have reduced wages. Ore prices for 1908 delivery at Lake Erie docks, per gross ton, are as follows: Old Range Bessemer, $4.50; Mesaba Bessemer, $4.25; Old Range Non-Bessemer, $3.70; Mesaba Non-Bessemer, $3.50.

**Pig Iron.**—While the market is quiet, some sales of Foundry Iron are still being made, a number of lots ranging from 100 to 500 tons having been disposed of. The purchasers were mainly consumers, who did not make contracts in the recent buying movement. We also note the sale of 1000 tons of off Iron. The only large inquiry in the market is for 1500 tons of No. 3 Northern Foundry for July and August delivery, from the local plant of the United States Cast Iron Pipe & Foundry Company, which was awarded the contract last week for 3400 tons of Cast Iron Pipe for the Cleveland waterworks department. Prices remain firm and stationary. We quote No. 2 Northern Foundry at $15, Valley furnace, for last half delivery. Several interests are asking $15.25. Local furnaces quote No. 2 Foundry at $15.75, delivered, Cleveland, and about $15, at furnace, for outside shipments. The melt in this territory shows some increase, and shipping orders are fairly good. While some furnaces were able to ship about all their output in June, others, only a portion of whose output is sold, are piling considerable Iron. One feature of the situation that is regarded as encouraging is the fact that about all the high-priced Foundry Iron sold for delivery the latter part of last year has at last been taken by consumers. Many of the foundries in the past few months have been taking a portion of the high-priced Iron and buying some Iron at lower market prices to go with it. Some of the large consumers of Malleable Iron, however, still have considerable high-priced Iron coming to them on old contracts. With the exception of the little activity in Foundry Iron the market is lifeless. For prompt shipment and for the last half, we quote, delivered, Cleveland, as follows:

| | |
|---|---|
| Bessemer | $16.90 |
| Northern Foundry, No. 1 | $16.25 to 16.50 |
| Northern Foundry, No. 2 | 15.75 to 16.00 |
| Northern Foundry, No. 3 | 15.25 to 15.50 |
| Southern Foundry, No. 2 | 16.35 |
| Gray Forge | 14.90 |

**Coke.**—The market has quieted down, after a fairly active buying movement in Foundry grades. There is no demand for Furnace Coke. Prices remain stationary. We quote Connellsville Furnace Coke for last half delivery, at $1.75 to $1.85, at oven, lower prices being quoted for spot delivery. We quote 72-hr. Foundry Coke at $2.25, at oven, for last half delivery.

**Finished Iron and Steel.**—Specifications on contracts show some improvement as compared with the previous two or three weeks. An encouraging feature of the market is the fact that specifications are now coming for somewhat larger tonnages than have been wanted for some time. For the past few months a large share of the orders have been for less than carload lots. The volume of orders is deemed satisfactory, considering the fact that many industrial plants were shut down July 1 for inventories. In most cases these shutdowns will be for only a few days. A number of additional contracts were closed during the week, with manufacturers for the balance of the year for Steel Bars, Shapes and Plates. The contract for the Structural Material for the Sterling & Welch store building has been awarded to T. H. Brooks & Co., Cleveland. The building will require 1400 tons of Structural Material, and the contract price was about $77,000, or $55 per ton, fabricated and erected. Bids will be received this week for about 1500 tons of Structural Material for a new store building for the Bailey Company. The erection of the building will not be started until January. The demand for Iron Bars is light. With mills shut down, jobbers are looking for some improvement in their store business. With the exception of concessions by some of the smaller Plate and Sheet mills, prices are being firmly maintained on all lines. The feeling among consumers after the recent price reductions that there would be further cutting of prices on Finished Lines has largely disappeared. While the mills are not expecting a large volume of orders in July and August, there is a general feeling that there will be a decided improvement in business conditions by September 1. We quote Iron Bars at 1.45c., Cleveland, for car lots; Steel Bars, 1.50c., Cleveland, for car lots, half extras; Beams and Channels, 1.70c., base, Cleveland, and Plates, ¼-in. and heavier, 1.70c., Cleveland. Dealers quote Sheets, mill shipments, car lots, Cleveland, as follows: Blue Annealed, No. 10, 1.90c.; Box Annealed, No. 28, 2.60c.; Galvanized, No. 28, 3.65c. Jobbers quote Iron and Steel Bars out of stock at 1.65c. to 1.70c., Beams and Channels from warehouse are 2c. and Plates, ¼-in. and heavier, 1.90c. Warehouse prices on Sheets are as follows: Blue Annealed, No. 10, 2.10c.; Box Annealed, No. 28, 2.70c.; Galvanized, No. 28, 3.80c. Warehouse prices on Boiler Tubes, 2¾ to 5 in., are 64 per cent. discount, and on Black Merchant Iron Pipe, base sizes, 71 per cent. discount.

**Old Material.**—The market is quiet, and with many of the mills shut down, little activity is expected the present month. There is some trading among dealers, but little demand from consumers. Mills that are still running have enough Scrap on hand to supply their immediate needs. Prices of all kinds of Scrap remain firm and stationary. Dealers are looking for a fair demand and somewhat stronger prices during August. The railroad offerings this week include 3500 tons to be sold by the Baltimore & Ohio and 500 tons by the Nickel Plate. Dealers' prices to the trade, per gross ton, f.o.b. Cleveland, are as follows:

| | |
|---|---|
| Old Steel Rails | $13.00 to $13.50 |
| Old Iron Rails | 15.00 to 16.00 |
| Steel Car Axles | 16.50 to 17.50 |
| Old Car Wheels | 14.00 to 14.50 |
| Relaying Rails, 50 lb. and over | 22.00 to 23.00 |
| Heavy Melting Steel | 12.50 to 13.00 |
| Railroad Malleable | 12.00 to 12.50 |
| Agricultural Malleable | 11.00 to 11.50 |
| Light Bundled Sheet Scrap | 8.00 to 9.00 |

The following quotations are per net ton, f.o.b. Cleveland:

| | |
|---|---|
| Iron Car Axles | $16.00 to $16.50 |
| Cast Borings | 6.00 to 6.50 |
| Iron and Steel Turnings and Drillings | 7.00 to 7.25 |
| Steel Axle Turnings | 8.50 to 9.00 |
| No. 1 Busheling | 11.00 to 11.50 |
| No. 1 Railroad Wrought | 12.00 to 13.00 |
| No. 1 Cast | 12.00 to 12.50 |
| Stove Plate | 9.50 to 10.00 |
| Bundled Tin Scrap | 8.00 to 9.00 |

## Philadelphia.

PHILADELPHIA, PA., July 7, 1908.

A temporary lull, usual at this season, is to be noted. The midsummer closing of plants for stock taking and repairs and the national holiday are the general factors which retard business at the time, while the political situation, owing to the nomination of the Presidential candidate of the Democratic party, during the current week, is an added influence, which no doubt also affects trade to a certain extent at the time. July is usually not a very active month, and the present one will hardly prove an exception. The trade, however, views the situation most optimistically. The strong undertone of the market is generally commented on, and it is believed that later in the month a resumption of business will be noted, possibly not in any great force, but in the nature of a continued moderate improvement, which will gradually lead to more normal conditions in general.

**Pig Iron.** The effect of the usual summer dullness is apparent, and the aggregate volume of business is small. Some scattered buying is noted of Foundry Iron for both prompt and forward shipment at full prices, and the general tone of the market, notwithstanding the immediate lack of business, is decidedly strong. The tendency on the part of a few furnaces in the central part of the State to shade prices is not so apparent as it was, while the Eastern furnaces hold the present range of prices firmly. Stocks on furnace banks are reported to be declining sharply in some instances, and furnacemen contend that no further capacity will be put in at the present range of prices. Interest centers largely in deliveries for the fourth quarter, for which most sellers are firmly asking and making sales at an advance of 50c. a ton. Where deliveries cover the entire half of the year, shipments beginning at once and continuing regularly, sales have been made at the top price of the ruling quotations. Sales ordinarily have been in comparatively small tonnages, ranging from 50 tons up to a few hundred, with an occasional larger lot. For prompt shipment, $16.50 delivered, is about the best that can be done for Standard

No. 2 X Foundry, while sales of the same grade for strictly fourth quarter delivery have been made at $17, delivered, although some sellers hold for higher figures. The Pipe foundries have been taking odd lots of both No. 2 X and No. 2 Plain Iron, which they have been able to pick up here and there at low figures, but have not come into the market recently for large quantities. Virginia Foundry Irons have been held pretty firmly, with sales reported for both Eastern and Western delivery, for third quarter shipment, at prices equal to $17, delivered, here for No. 2 X Foundry. Two sales of fourth quarter No. 2 X Iron, 800 tons each, are reported at $14.50 and $15, at furnace, respectively, which is equal to $17.50 and $18, delivered, in this territory. Southern Iron has been quiet. Even at the reported concession in prices but little business has been done, although it is said that some of the Pipe makers would buy if their ideas of prices would be met. Little has been done in Basic Iron, sales of a 500-ton and a 1000-ton lot, for last half delivery, being reported at the market. There has not been much demand for Forge Iron, although one sale of a fair tonnage for shipment in the last half of the year has been reported at current prices. Inquiries are fairly plentiful, both for prompt and forward Iron, but the tonnages wanted are usually small. In this immediate territory, particularly, there is little business pending of any size. Prices are practically unchanged, and range as follows for deliveries in buyers' yards, eastern Pennsylvania and adjoining territory, during the third quarter, while for strictly fourth quarter delivery sales have been made at an advance of 50c. to 75c. a ton, dependent on brand and tonnage:

| | |
|---|---|
| Eastern Pennsylvania, No. 2 X Foundry | $16.50 to $16.75 |
| Eastern Pennsylvania, No. 2 Plain | 16.00 to 16.25 |
| Virginia, No. 2 X Foundry | 17.00 |
| Virginia, No. 2 Plain | 16.50 to 16.75 |
| Gray Forge | 15.00 to 15.50 |
| Basic | 15.25 to 15.50 |
| Low Phosphorus | 21.00 to 21.25 |

**Ferromanganese.**—Little demand is reported, even at the recent low prices, and sellers have in a number of instances advanced their quotations to $46, seaboard, although there is little doubt that moderate tonnages for last half delivery could still be had at $43.50 to $44.50, Baltimore.

**Steel.**—Business has been at a standstill. The demand has been light, and the tonnage booked insignificant. Prices are unchanged, ordinary Rolling Steel being quoted for delivery in this territory at $26.20, with Forging Steel at $28.20, subject to the usual extras for high carbons and special sizes.

**Plates.**—A very fair run of orders for Steel Plates has been enjoyed, notwithstanding the holiday. The individual orders are not large, but aggregate a good tonnage. A little railroad business has come out, as have also some locomotive, boat and bridge Steel orders, while some pretty good tonnages of boat Steel are being figured upon. Prices on the whole are being well maintained and range as follows for delivery in this territory.

| | Carloads. Cents. | Parts carload. Cents. |
|---|---|---|
| Tank, Bridge and Boat Steel | 1.75 | 1.80 |
| Flange or Boiler Steel | 1.85 | 1.95 |
| Commercial Firebox | 1.95 | 2.00 |
| Marine | 2.15 | 2.20 |
| Locomotive Firebox Steel | 2.25 | 2.30 |

The above are base prices for ¼-in. and heavier. The following extras apply:

| | Extra per 100 lb. |
|---|---|
| 3-16-in. thick | $0.10 |
| Nos. 7 and 8, B. W. G. | .15 |
| No. 9, B. W. G. | .25 |
| Plates over 100 to 110 in. | .05 |
| Plates over 110 to 115 in. | .10 |
| Plates over 115 to 120 in. | .15 |
| Plates over 120 to 125 in. | .25 |
| Plates over 125 to 130 in. | .50 |
| Plates over 130 in. | 1.00 |

**Structural Material.**—The bulk of the business being placed is in small lots, mostly for bridge and building work, ranging customarily from 50 to 100 tons. Larger propositions are for the most part temporarily held up. For delivery in this territory prices are unchanged, ranging from 1.75c. to 1.90c., according to specification.

**Sheets.**—Some few orders have come out, but the demand is not active; sufficient will be in hand, it is believed, to start some of the mills, which have been closed for repairs over the holidays, early next week. Practically all the business placed has been for prompt shipment, consumers not anticipating their wants. Quotations remain unchanged, ranging as follows for mill shipments, a tenth extra being added for small lots: Nos. 18 to 20, 2.50c.; Nos. 22 to 24, 2.60c.; Nos. 25 to 26, 2.70c.; No. 27, 2.80c.; No. 28, 2.90c.

**Bars.**—A better demand has been experienced for Iron Bars. Consumers are willing to anticipate their wants at to-day's prices, but mills will not contract for forward delivery at those figures. For desirable prompt business, 1.30c., at Eastern mill, can be done, with 1.35c. to 1.40c. named for delivery in this territory on the general run of sizes for prompt shipment. Little business has been done in Steel Bars, which are quoted at 1.55c., delivered in this territory, with rerolled Bars at 1.50c.

**Coke.**—Not much business has been transacted. Some sellers are firmer in their quotations, but there is still some low-priced Coke reported around. Foundry Coke is quoted at $2.15 to $2.35, at oven, with Furnace Coke at $1.50 to $1.75, at oven. For delivery in this territory the following range of priecs is named:

| | |
|---|---|
| Connellsville Furnace Coke | $3.65 to $3.90 |
| Foundry Coke | 4.30 to 4.50 |
| Mountain Furnace Coke | 3.25 to 3.50 |
| Foundry Coke | 3.90 to 4.10 |

**Old Material.**—The market appears firmer, even in the absence of business of any quantity. Some few odd lots of Steel Scrap have been picked up by the mills, but dealers will not sell any large tonnages at present prices. Rolling mills are still taking moderate quantities of No. 1 Wrought Iron, Borings and Turnings, and prices of these materials, while not quotably higher, are decidedly firmer. Quotations, which are largely nominal, range as follows for prompt delivery in buyers' yards, eastern Pennsylvania and nearby territory:

| | |
|---|---|
| No. 1 Steel Scrap and Crops | $13.50 to $14.00 |
| Low Phosphorus | 18.00 to 18.50 |
| Old Steel Axles | 18.00 to 18.50 |
| Old Iron Axles | 20.00 to 21.00 |
| Old Iron Rails | 18.00 to 18.50 |
| Old Car Wheels | 13.50 to 14.00 |
| Choice No. 1 R. R. Wrought | 15.75 to 16.00 |
| Machinery Cast | 14.00 to 14.50 |
| Railroad Malleable | 11.75 to 12.25 |
| Wrought Iron Pipe | 12.00 to 12.50 |
| New Bundled Sheets | 12.00 to 12.50 |
| No. 1 Forge Fire Scrap | 11.50 to 12.00 |
| No. 2 Light Iron | 7.50 to 8.00 |
| Wrought Turnings | 9.50 to 10.00 |
| Stove Plate | 11.00 to 11.50 |
| Cast Borings | 9.00 to 9.50 |
| Grate Bars | 11.75 to 12.25 |

## The German Iron Market.

BERLIN, June 23, 1908.

Further deterioration of the trade position has been the current drift since last report. The situation has within a fortnight been complicated and rendered worse through the uncertainty as to the prolongation of the four Pig Iron syndicates of the country. These organizations only last, according to contract, till the end of the year, but they renew themselves automatically as long as no establishment gives notice of withdrawal. An important furnace company at Duisburg, the Niederrheinische Hütte, above a week ago announced its intention to quit the Duesseldorf Syndicate, which is the chief organization of the Pig Iron trade, at the end of the year. The Siegerland Syndicate, which sells its product of Spiegeleisen and other high grade qualities through the Duesseldorf Syndicate, gave notice at once that it would not renew its present contract with the latter. Then the Luxemburg-Lorraine Syndicate, which maintains a selling agency in Duesseldorf and operates in harmony with the big syndicate there, announced its withdrawal from its contract agreement.

### A Single Pig Iron Combination Favored.

This leaves the outlook for the reorganization of the syndicates highly uncertain, inasmuch as there are extremely difficult problems to be solved and disagreements to be adjusted before a combination can be formed to take their places. The motive behind the discontent with existing arrangements is the wish to have a single great Pig Iron combination for the entire empire, and this discontent has grown out of the attitude of the furnaces connected with the great Steel companies. The latter are not only masters of the Steel trade through their organization, the Steel Works Union, but they are also the dominant element in the Duesseldorf Syndicate and determine its price policy. Latterly a controversy has arisen in the syndicate between the detached furnaces and the Steel company furnaces, the former claiming that the great companies utilize their membership in the syndicate with a ruthless disregard for the interests of the isolated furnaces. They point out that those companies disregarded their allotments of Pig Iron for delivery to the syndicate during the recent period of highly prosperous business, since they wanted to use up all their product in their own Steel mills; but now that the situation has changed and the demand for Steel products has sharply diminished, the big companies find themselves able to produce much more Iron than they can consume. Hence they insist upon turning over to the syndicate what they cannot use in their mills. This intensifies the competition for the small detached furnaces at a moment when they are least able to stand it. They are pretty hard hit by the course of the mixed companies, and the curtailment of production that has taken place this year has fallen chiefly upon them.

On the other hand, the furnaces of the big Steel companies have scarcely reduced their rate of production. Thus it comes about that the reduction of the country's Pig Iron output for the first five months of the year reached only 318,000 metric tons in a total of 5,093,000 tons. The make for May was 1,010,900 tons, which is 31,000 tons more than in April, but 82,400 tons less than in May, 1907. The continued high rate of production begins to find expression in pretty heavy accumulations of stocks at the furnaces. By the end of April these had amounted to 520,000 tons, and they are probably now above 750,000 tons. In this period

of rapid technical progress in the methods of furnace and mill operation it is interesting to note the explanation given for the continued heavy production of Iron at the furnaces of the great mixed concerns. These say they need the furnace gases for running their power plants, and the blowing out of a single furnace would in many cases cause a complete derangement of the power supply; hence furnaces are kept going for power purposes at a time when trade conditions would seem to demand that they be blown out.

**The Price Question.**

The complaints of the "pure" furnaces against the great mixed companies do not end with the foregoing statement. The matter of prices also is a ground for discontent. The policy of the syndicate, as mentioned already, is controlled by the big Steel Works Union establishments, and they have found it in their interest to keep the price of Iron at a high level, influenced by their desire to prevent the independent Steel producers from getting cheap Iron. These latter are the chief suppliers of the detached rolling mills, the competitors of the union companies; and in order to make these mills pay high prices for their Steel material the big companies saw to it that Iron prices remained high, although the "pure" furnaces wanted to reduce them more rapidly in order to encourage production. At present the price of Bessemer Pig Iron is still 80 marks per ton, but last week the syndicate finally yielded to the prolonged clamor of the trade and ordered a cut of 5 marks for the next quarter. At the same time puddling and Steelmaking Irons were cut 4 marks; No. 1 Foundry, 4 marks, to 72 marks, and No. 3 Foundry, 2 marks, to 69 marks.

Last week the Steel Works Union also voted a cut of 5 marks on Billets. The trade had long been demanding a reduction, and this one comes, from the consumers' standpoint, not only very tardily, but also of too small a size to relieve the stagnation of business. The Union had hitherto made only one reduction—namely, of 10 marks last December—in the price of Billets since the changed situation of the trade set in. The price was then fixed at 100 marks; last week it was fixed at 95 marks for the next quarter. On the other hand, according to newspaper reports, German Steel material is being sold in the English market 20 to 25 marks a ton cheaper than in Germany. The "pure" rolling mills will hardly be relieved by the cut just made, as it still leaves it possible for the English competitors to buy German Steel at prices so low as to prevent the German mills from selling their finished goods in neutral markets in the face of their competition. At the same time the Union refused to increase the drawback on exported finished goods. The prices of Rails and Structural forms were left unchanged. Critics of the great combination continue to point out that Structural prices are much too high relatively to other goods, and that this fact is having a very restrictive effect upon building operations.

The Union's May report shows shipments of 414,855 tons of Steel Rails, Structural Shapes and Billets. This compares with 371,956 tons in April and 489,307 tons in May, 1907.

**General Conditions.**

The general position of the trade has certainly grown less satisfactory than it was a month ago. All the reports from the Iron centers agree in representing the state of business as very bad. Consumers still pursue the policy of placing only very small orders; they are merely taking such amounts as they imperatively need. In doing so they are evidently actuated by their knowledge that they will have no difficulty at any time in obtaining additional quantities as needed. Under all the circumstances a decidedly pessimistic tone prevails There is no expectation of an improvement this year; the most that is hoped for is that trade may grow better next spring. Just now the money market has begun to show substantial signs of improvement, and if this continues for the rest of the year the building trades ought to show a considerably increased activity next spring, and this would have a reviving effect upon the Iron trade.

Notwithstanding the dullness of trade, considerable demands for new capital are coming from Iron companies. This is partly from companies that began improvements within the past year or two and have not yet finished them. In some cases it is where money has still to be raised to pay for improvements already finished, but some companies are even showing their confidence in the future by raising money for beginning new undertakings. The great Krupp Company has just announced a loan of 12,000,000. It needs the money for acquiring Coal properties and paying for improvements in some parts of its works.

## Buffalo.

BUFFALO, July 6, 1908.

The prevailing depressed conditions in the Pig Iron market, combined with the customary midsummer quietness, cause a very limited local demand, and such orders as are placed are for small quantities to supply immediate necessities only, running from carloads to 100 and 200 ton lots. Prices are at about as low a level as at any time since the first of the year. Some inquiry is noted for deliveries covering the last half of the year for small amounts, but few deals are being consummated. The market is represented approximately by the following prices, f.o.b. Buffalo.

| | |
|---|---|
| No. 1 X Foundry | $16.25 to $16.50 |
| No. 2 X Foundry | 15.75 to 16.00 |
| No. 2 Plain | 15.25 to 15.50 |
| No. 3 Foundry | 14.75 to 15.00 |
| Malleable Bessemer | 16.00 to 17.00 |
| Gray Forge | 14.75 to 15.00 |
| Charcoal | 20.00 to 20.50 |

## Metal Market.

NEW YORK, July 8, 1908.

**Pig Tin.**—Very little business was done last week. A number of inquiries were in the market, but the advancing prices apparently frightened buyers. Quotations have steadily advanced, and Tin is now above import cost. The following prices have ruled during the week:

| | Cents. |
|---|---|
| July 1 | 27.20 |
| July 2 | 27.30 |
| July 3 | 27.45 |
| July 6 | 27.50 |
| July 7 | 27.60 |
| July 8 | 28.05 |

Another favorable feature in the situation is that the outside speculative lots which have been making the market for several weeks have apparently been cleaned out, and importers are now doing the business. From the manner in which the Spot stocks are strongly concentrated in a few hands, it would appear that there was little Tin in the market, but this is misleading, as there is plenty for present requirements. The arrivals amount to 392 tons, and there are afloat for American ports 2397 tons. The London market shows an advance of about £3 from last week, Spot closing to-day at £127 7s. 6d., and futures at £128 10s. The sharp bulge in London to-day was said to be due to disquieting rumors regarding the safety of the steamer Verona, which was to arrive in New York the last of the month. Little can be learned here about her except that she carries 900 tons of Tin.

**Copper.**—A better sentiment prevails in the Copper market, and although sales have been few they show that the trend is upward. Some Electrolytic was sold during the week at 12.75c. The general quotation for Electrolytic is 12.62½c. to 12.75c., which although unchanged from last week could scarcely be shaded. Numerous inquiries are in the market for delivery after September 1, and invariably producers or selling agents here quote prices entirely too high or refuse to make quotations. If last quarter's delivery could be had at to-day's prices, it is felt that quite a business could be done. Those who have been looking for a bad break in the market feel now that perhaps it may not come, pointing out that each week passed without a sharp drop in quotations is so much nearer the ultimate goal, and it is thought the heavy speculative purchases in London during May and June probably eliminated the possibility of a sharp decline. Sharply increasing demands have been noticed for Copper products since July 1. This applies noticeably to Copper Sheets. Buyers for foreign accounts are not active at present, but would probably take on some future Copper at to-day's export quotations. The imports of Copper for May, as per Government returns now for the first time available, were 3300 tons, making a total of 32,900 tons for the first five months this year, compared with 56,250 tons during the corresponding period last year. The figures for May are evidently too low. The London market has likewise advanced, and is now £1 higher than last week, closing to-day at £57 10s. for spot and £58 2s. 6d. for futures.

**Waterbury Average.**—The Waterbury average for June was 13 cents.

**Pig Lead.**—The leading interest continues to quote shipment Lead in 50-ton lots, at 4.50c., New York. The premium on spot has entirely disappeared, and some sales have been made at small concessions from the views of the leading interest. The St. Louis market is slightly easier, at 4.35c. to 4.40c.

**Spelter.**—General apathy prevails in the Spelter market, and there is really not enough business to make quotations. In a general way, however, prices are lower, and Prime Western brands can be had at 4.45c. New York, and 4.30c., St. Louis. Until the large stocks which are hanging over the market can be taken care of in some better manner, the market is likely to rule dull.

**Antimony.**—Quotations are nominal. There is little business of any character. Prices are unchanged, with Hallett's selling at 8.25c. to 8.50c.; Cookson's at 8.50c. to 8.75c., and outside brands 8c. to 8.25c.

**Nickel.**—Prices are unchanged, at 45c., for ton lots, and 55c. to 65c., for smaller quantities.

**Tin Plate.**—New business is light, but the mills continue actively engaged on old orders. Prices are absolutely without change, at $3.89, New York, and $3.70, Pittsburgh,

for 100-lb. IC Coke Plates. In Swansea, Welsh Plates are unchanged, at 12s. 3d.

**Old Metals.**—Business has dwindled to small proportions, largely because foreign buyers are not so eager to purchase scrap as a month ago. Prices, however, are absolutely without change, and dealers' selling quotations are repeated from last week, as follows:

| | Cents. |
|---|---|
| Copper, Heavy and Crucible | 12.00 to 12.25 |
| Copper, Heavy and Wire | 11.75 to 12.00 |
| Copper, Light and Bottoms | 10.75 to 11.00 |
| Brass, Heavy | 8.75 to 9.00 |
| Brass, Light | 7.00 to 7.25 |
| Heavy Machine Composition | 11.50 to 11.75 |
| Clean Brass Turnings | 7.75 to 8.25 |
| Composition Turnings | 9.00 to 9.50 |
| Lead, Heavy | 4.20 |
| Lead, Tea | 3.85 |
| Zinc | 3.50 |

## New York.

NEW YORK, July 8, 1908.

**Pig Iron.**—Since the purchase last week of an aggregate of about 7000 tons by the leading pump interest, for New Jersey and New England delivery, no large transactions have taken place, and the market is stationary. The quantity purchased by the interest in question was cut down below the original estimates. We quote, at tidewater: Northern No. 1 Foundry, $16.75 to $17; No. 2 Foundry, $16 to $16.50, and No. 2 Plain, $15.25 to $15.50. Alabama Irons are quoted $16.50 to $17 for No. 1 Foundry, and $16 to $16.25 for No. 2 Foundry.

**Steel Rails.**—There is little expectation that further important new contracts will be placed for Rails for this year's delivery, though business heretofore closed is being reported in the daily press from time to time as though it were new. The Lackawanna Steel Company has the contract for 1000 tons of Rails for the Interborough system, and a contract for several hundred tons of girder Rails for New York City has been placed.

**Structural Material.**—From the mill standpoint the situation in Structural Steel is fairly satisfactory, though the fabricating interests are not as well assured concerning operations two or three months ahead as they would like to be. The absence of railroad contracts is a continuing feature, and with bridge business light there is still the sharpest kind of competition for building contracts. The principal business taken last week was the Farmers' Loan & Trust Company Building, the Steel, amounting to about 2000 tons, going to the Lackawanna Steel Company. The Levering & Garrigues Company has the fabricating contract. For the Sinclair Realty Company Building the Hay Foundry & Machine Company has the contract. About 1000 tons of Steel will be required. Some work is coming up on the Pacific Coast, including a large hotel at Oakland, Cal. The Milliken Brothers' receivers have taken the contract for the Arctic Club at Seattle, Wash., calling for about 350 tons. In New York City considerable additional school building work is coming up in the near future. We quote as follows on mill shipments, tidewater delivery: Beams, Channels, Angles and Zees, 1.76c.; Tees, 1.81c. On Beams, 18 to 24 in., and Angles over 6 in., the extra is 0.10c. Material cut to length is sold from stock at 2¼c. to 2½c.

**Bars.**—Quite an improved demand for Bar Iron has been observed since the opening of the month. Semi-annual stock taking appears to have been more general than for years, and small orders are now coming in quite freely to fill broken assortments. An interesting development is the appearance of quite a number of railroads as buyers, this being the first time in a long period that anything of importance has come from that direction. Manufacturers of Bar Iron are feeling more confidence in the future, and are instructing their salesmen not to accept orders for delivery beyond 90 days, believing that within that time business will be much more active and that prices will be higher. While some sales have been made as low as 1.35c., tidewater, it is alleged that this has only been by mills having odds and ends in their warehouses which they desire to clean up. The general price on good assortments is 1.40c., tidewater. Steel Bars are held at 1.56c., tidewater.

**Plates.**—As many orders are being placed as usual, but all are small. Ordinarily these orders do not call for more than one-third of the size placed in normal times. The volume of business is therefore quite light. While the feeling is a little more hopeful, there are some indications that prices are not being closely held, even on standard sizes. Usual quotations on wide Plates are as follows at tidewater: Sheared Plates, 1.76c. to 1.86c.; Flange Plates, 1.86c. to 1.96c.; Marine Plates, 2.16c. to 2.26c.; Firebox Plates, 2.65c. to 3.50c., according to specifications.

**Cast Iron Pipe.**—New York City is buying 700 tons of Water Pipe to-day through contractors. One of the Newark or Essex County boards will buy this evening about 500 tons. The general demand for the past few days has been running quite light, which is probably due to the extremely hot weather and the vacation season. Prices are firm at $24.50 to $25 per net ton at tidewater for 6 in.

**Ferroalloys.**—The market is stagnant, and in the absence of business, large or small, prices are quoted, nominally, at $44.50, for 80 per cent. Ferromanganese, and $70 for 50 per cent. Ferrosilicon, f.o.b. Makers' works, or seaboard.

**Old Material.**—Foundry stock is in rather better demand than any other class of Scrap. Good inquiries are in the market for Stove Plate, and its price is somewhat stronger. Old Car Wheels are in continued demand, and they cannot be had as cheaply as some time ago. Relaying Rails are also a little higher. The leading Eastern railroad companies have put out rather large lists this month. The Pennsylvania Railroad is offering about 25,000 tons of long length Rails, as well as large quantities of other classes of Old Material. Rolling mills are probably able to purchase from railroads at somewhat lower prices than from dealers, who are not inclined to part with their stock at concessions. It is likely, nevertheless, that a considerable part of the railroad offerings will be taken by dealers, to be held until the demand improves. Quotations are about as follows, per gross ton, New York City:

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|---|---|
| Old Girder and T Rails for melting | $10.00 to $10.50 |
| Heavy Melting Steel Scrap | 10.00 to 10.50 |
| Old Steel Rails, rerolling lengths | 11.50 to 12.00 |
| Relaying Rails | 21.00 to 22.00 |
| Old Iron Rails | 14.50 to 15.00 |
| Standard Hammered Iron Car Axles | 16.00 to 16.50 |
| Old Steel Car Axles | 14.50 to 15.00 |
| No. 1 Railroad Wrought | 13.50 to 14.00 |
| Iron Track Scrap | 10.00 to 10.50 |
| No. 1 Yard Wrought, long | 11.50 to 12.00 |
| No. 1 Yard Wrought, short | 10.50 to 11.00 |
| Light Iron | 5.50 to 6.00 |
| Cast Borings | 5.00 to 5.50 |
| Wrought Turnings | 6.50 to 7.00 |
| Wrought Pipe | 10.00 to 10.50 |
| Old Car Wheels | 13.50 to 14.00 |
| No. 1 Heavy Cast, broken up | 13.00 to 14.00 |
| Stove Plate | 10.00 to 10.50 |
| Locomotive Grate Bars | 11.00 to 11.50 |
| Malleable Cast | 12.00 to 13.00 |

B. Nicoll & Co., Iron merchants, have removed to the Singer Building, 149 Broadway, New York, in which they occupy the entire twenty-eighth floor.

## Iron and Industrial Stocks.

NEW YORK, July 8, 1908.

For a quiet week the developments in the stock market have been rather surprising. Values have been steadily advancing, and in some cases prices are now nearly up to the highest point of the year. The opinion prevails that the stock market is anticipating better conditions in general business. The range of prices on active stocks from Thursday of last week to Tuesday of this week was as follows: United States Steel common 37⅞ to 39⅜, preferred 103 to 105⅝; Car & Foundry common 34 to 36¾, preferred 97 to 99; Locomotive common 47¼ to 50½, preferred 101¼, ex-div., to 102; Steel Foundries preferred 36¾ to 37½; Cambria Steel 31⅜ to 32¼; Colorado Fuel 26⅝ to 29; Crucible Steel common 5¾, preferred 40 to 40¼; Pressed Steel common 28¼ to 28¾, preferred 85; Railway Spring common 36⅛; Republic common 18 to 18⅜, preferred 66⅛ to 69⅛; Sloss-Sheffield common 51½ to 54⅞, preferred 96½ to 98; Cast Iron Pipe common 21 to 22, preferred 65⅞ to 67¾; Can preferred 54¾ to 55. Last transactions up to 1.30 p.m. to-day are reported at the following prices: United States Steel common 40⅛, preferred 107⅞; Car & Foundry common 37⅜; Locomotive common 50¼, preferred 102¼; Colorado Fuel 29¼; Pressed Steel common 29½; Republic common 18⅝, preferred 68¾; Sloss-Sheffield common 56; Cast Iron Pipe common 22, preferred 66¼; Can common 4⅜, preferred 56¾.

**Dividends.**—The United States Cast Iron Pipe & Foundry Company has declared the regular quarterly dividend of 1¾ per cent. on the preferred stock, subject to the approval of the court on the stand taken by the directors that the company has a right to divert from its account carried on the balance sheet as reserved for working capital, the funds necessary to pay the dividend. This reserve amounts to $2,459,897.

The La Belle Iron Works, Steubenville, Ohio, has declared a quarterly dividend of 2 per cent. and a stock dividend of 33 1-3 per cent. to be paid out of the surplus earnings. This stock dividend increases the outstanding capital stock from $7,500,000 to $10,000,000.

The Monongahela River Consolidated Coal & Coke Company, Pittsburgh, has declared a semi-annual dividend of 3½ per cent. on the preferred stock, payable July 15.

The Pittsburgh Plate Glass Company has declared a quarterly dividend of 1¾ per cent.

The Harbison-Walker Refractories Company, Pittsburgh, has declared a quarterly dividend of 1½ per cent. on the preferred stock.

Vollkommer & Hagan, 1004 Empire Building, Pittsburgh, have received a contract for rebuilding several open hearth furnaces in the plant of the American Steel & Iron Company, Norwalk, Ohio.

## The Youngstown Sheet & Tube Company's Labor Attitude.

It is not improbable there will be a break in the relations heretofore existing between the Amalgamated Association and the Youngstown Sheet & Tube Company, Youngstown, Ohio. This company has always heretofore signed the Amalgamated scales, and when the sheet scale was agreed upon in Pittsburgh last week, it agreed to sign this scale. The men, however, refused to accept it unless the company would also agree to be bound by the decision arrived at in the conference being held this week between the Amalgamated Association and the Western Bar Iron Association. This the company refused to do, with the result that its sheet, puddling and finishing mills are now closed down. James A. Campbell, president of the company, has issued an official statement regarding the trouble, which is as follows:

Anticipating that there might be some difficulty this year in arriving at an agreement with the Amalgamated Association, and being dissatisfied with the arrangement entered into last year with the Western Bar Iron Association and the Amalgamated, because of its manifest unfairness to the manufacturers, we notified President McArdle in a letter dated April 30, 1908, that we would not feel obliged to abide by any agreement arrived at between these two organizations.

During the annual conference, held at Youngstown, President McArdle and Vice-President Williams, together with James H. Nutt, secretary of the Western Bar Iron Association, visited the writer, in order to get a more clear understanding of the position we had taken in our letter of April 30. On the same day, May 15, we dictated a letter to Mr. Nutt, setting forth our position at length, and confirming our statement to President McArdle, and asked him to transmit the contents of this letter to President McArdle, so that we would be on record as to our actual position.

It was not our intention to go into the conference at Cambridge Springs, and we so notified Mr. Nutt, but at his earnest solicitation, our vice-president, Mr. Robinson, attended this conference the short time that it was in session, with the full understanding, however, of the Western Bar Iron Association and the Amalgamated Association that we would not be bound by any agreement arrived at at this conference unless it was satisfactory to our company.

On June 29, the American Sheet & Tin Plate Company agreed with the Amalgamated Association on a scale to be paid sheet and tin plate workers, and we notified our men that we were willing to pay this scale of wages as agreed upon, and sign the scale for our sheet mills, and asked them to work on Wednesday July 1, which our own employees agreed to do. On taking it up later with the officials of the Amalgamated Association, they notified us that they could not sign the sheet mill scale alone or continue working after June 30 unless we would agree to sign a continuous agreement which would bind us to accept any settlement arrived at by the Western Bar Iron Association or the Republic Iron & Steel Company. This we refused to do, because we did not want to obligate ourselves in advance to sign an agreement to pay a scale of wages which might be satisfactory to others but not satisfactory to our company, or to sign a scale in advance until we knew what that scale would be.

We took this position largely because a large percentage of the product of our puddle mill is used in making pipe, and all of our competitors on iron pipe, with the exception of one, employ non-union labor, and as a rule pay a much lower scale of wages than we do, and we did not care to continue the operation of our puddle mill unless the scale of wages presented would put us in position to compete with some profit to ourselves. We did not mean by this that we were not willing to pay considerably more than the Eastern mills, as we have always paid $1 to $2 per ton more, and we believe we can still continue to pay considerably more for labor than they do and compete.

Our men have notified us again this morning that the officials have ruled that they cannot permit our sheet mills to operate even though we are willing to sign the scale agreeing to pay the same price as the American Sheet & Tin Plate Company, unless we also sign an agreement that we will accept any scale of wages agreed upon by the Western Bar Iron Association. We take the position that as our sheet mills are not dependent on the puddle mill for their source of supply of raw material, our sheet bars being furnished by our steel plant, there is no good reason why they should not continue to operate our sheet mills, giving our men employment and permitting us to fill our orders, and as soon as they present us a scale for the puddle mill agreed upon with the Western Bar Iron Association, if it is satisfactory to us, we will promptly sign it. We will not be represented at the Detroit conference this week between the Amalgamated Association and the Western Bar Iron Association.

## The Carnegie Steel Company Buys the Schoen Steel Wheel Company.

Negotiations were practically concluded last week by which the Carnegie Steel Company purchased the entire plant of the Schoen Steel Wheel Company, located at McKees Rocks, Pittsburg. This plant was built in 1903 and was first put in operation in November of that year. It contains 10 heating furnaces, two special mills for rolling car wheels from steel slabs and 10 large hydraulic forging presses. The product is pressed and rolled steel wheels for engine tenders, passenger, steam, freight and electric cars, the annual capacity being close to 100,000 tons per year.

About the middle of last year the Schoen Steel Wheel Company placed contracts for the building of four 50-ton open hearth furnaces, and the foundations were built, but the furnaces themselves were never completed. The steel buildings to contain the open hearth plant are partially on the ground, but were not erected. The company is a large user of steel and has been a heavy purchaser from the Carnegie Steel Company.

The new organization has not yet been effected, but will be in a short time. It is understood that the Carnegie Steel Company will very much increase the capacity of the plant, and in the future will be a large factor in the steel wheel trade. The plant was built by Charles T. Schoen, president of the company, who developed his own patents in the manufacture of all steel pressed and rolled car wheels. It is equipped with a very large amount of special machinery for this purpose, most of which was designed by Mr. Schoen. The Carnegie Steel Company has taken possession of the plant, the formal transfer having already been made.

The Carnegie Steel Company has been experimenting for some time with the Slick process of making steel car wheels at the Homestead plant, and it is understood that these experiments will still be carried forward.

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**Milliken Brothers' Reorganization.**—The receivership of Milliken Brothers, Inc., New York, has been extended by the court to August 1. There is an expectation that by that date some definite plan of reorganization will be submitted, but it is not in shape for announcement at this time. Between June 10, 1907, when the receivers were appointed, and June 26, 1908, when their last report was made to the court, the output of fabricated steel from the works on Staten Island was 33,800 tons. In the year preceding the receivership the company shipped 34,670 tons on contracts, besides furnishing 3464 tons for the erection of its rolling mills, then under construction. Considering the condition of general business in the past year the scale of operations under the receivers will be seen to compare favorably with that in the preceding year. On June 26 the receivers had on hand $531,973. Accounts and notes receivable were $159,619, against accounts payable of $83,461. The interest on outstanding bonds has been met regularly and no receivers' certificates are outstanding.

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The American Bureau of Inspection and Tests, Monadnock Block, Chicago, is distributing a pocket size specification pamphlet. It contains the specifications and sections for steel rails adopted by the American Railway Association in April, 1908, and the specifications for steel rails and splice bars adopted by the rail manufacturers in November, 1907. In addition, are included the specifications for first and second quality relaying rails drawn up by this bureau several years ago.

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The report of the American Railway Association shows that the number of idle freight cars in the United States and Canada on June 24 was 312,847, or 36,720 less than the number reported on June 10. This is the fourth decrease in two months, the maximum number of idle cars, 413,338, being reported on April 29. The reduction in a period of a little less than two months is thus 100,491, or nearly 25 per cent.

## Canadian Trade Prospects.

TORONTO, July 6, 1908.—Canada is on the eve of what promises to be a magnificent harvest, which is expected to usher in a very interesting trade situation. A large harvest with grain prices good would mean a large buying power, and that ought to mean general prosperity for the country. But to mean general prosperity for the country there must be on the side of Canada's manufacturing industries a selling power to match the large buying power on the side of the farmers. At present it appears extremely doubtful that the manufacturing industries will have output enough to meet the home demand that will begin to open up perhaps voraciously two months hence. What the chances are on this point may be roughly reckoned after a summing up of the conditions that now present themselves under the two heads of agricultural production and manufacturing production.

In the Canadian West, which term is usually understood to comprehend the three prairie Provinces—Manitoba, Saskatchewan and Alberta—a wheat crop estimated at not less than 125,000,000 bushels is coming on. If the total yield comes up to the estimate, the crop will be nearly 50 per cent. larger than that of any former year. Other grains, especially barley, show excellent prospects, and in all the average is from 20 to 25 per cent. greater than it was in 1907. In Ontario the harvest outlook is equally inviting. But the harvest is no longer the only season of money making for the Canadian farmer. In Ontario and Quebec the grass crop is the largest source of agricultural revenue. This year there has been ample moisture, and the meadows will yield a great tonnage of hay and clover. After providing for the needs of swarms of live stock—to be fed for the market—the farmers will have a material surplus of hay to sell. But their marketable hay and their marketable live stock are not all the farmers get from the grass crop. They obtain from it their immense dairy output as well. Of that the export value in the present year cannot be less than $30,000,000, for the butter sales are now going up, and in a few years may become as important as the cheese sales. It is unnecessary to go further into conditions to show that the farmers will be likely this year to have far more money than they had in the most prosperous year of their past. It is not to be forgotten, however, that not all their money will be available to them as buying power. Farmers in Western Canada have debts to pay, most of them a consequence of too much eagerness in land buying. But, after all allowance is made on this account, there is certain to remain in their hands money enough to maintain a great market demand—that is, unless something happens to cut down the abundant fruition, the crops and promise.

It is calculated that the assistance of 25,000 hands from Eastern Canada will be required to take off the Western harvest. This large auxiliary force will be needed notwithstanding that the West has now important towns and cities of its own in which there must be a large volume of surplus labor waiting for the wages of the harvest. But if there has been depression in Western centers of manufacturing industry, there has also been slackness in Eastern towns and cities. There the ranks of the unemployed, while materially reduced from their footing of last winter, are still far from being wiped out. The factories in Eastern Canada are more active than they were two months ago, but if they are to have ready by the fall all the goods they can sell they will have to get more plant to work. That the manufacturers of Canada are not now in the full heat of their operations is not due to want of confidence on their part. They are generally convinced that there will be a very capacious market awaiting their goods, but they can prepare for it fully only with the co-operation of the banks; that co-operation, up to the present, is by no means unreserved. The banks are dispensing credit more liberally than they were in the late autumn, throughout the winter and during the greater part of the spring, but they are nothing like the generous helpers they were through the four or five years ending a twelvemonth ago. During that period they perhaps allowed their optimism to carry them too far. In some cases they anticipated the success of pending operations and allowed some large customers to contract a large floating indebtedness to them. In other cases their assistance was more in the way of really furnishing capital than of making advances upon output. From the former tendency to excessive faith in the situation, the banks have changed to one of great caution. They are sparing of their aid, even to strong concerns. This is due not altogether to a change of spirit, but to some extent to financial consequences of the former overconfidence. They are still carrying many accounts that ought to have been liquidated last year. In one sense the money pinch of last fall is past, but much of the indebtedness which produced that pinch is still unpaid. Until the banks have cleared up most of the business they had to tide over they will be averse to venturing out strongly on a new campaign. Last winter was a bad one for mercantile trade. The goods purchased in the early autumn were still largely in retailers' and wholesalers' hands when spring came, and most of the money furnished to buy them was owing to the banks.

If money is not forthcoming in free supply, there will be a deficiency of output from Canadian factories. That is, some of the farmers' buying power will have to be turned to sources outside of Canada to obtain all the commodities required. In such a situation even a very high tariff would not prevent a large importation of merchandise. The main need of Canadian manufacturing industry in the coming autumn will not be an adequate home market, or adequate tariff protection, but an adequate supply of funds. There may be a sudden loosing of the purse strings on the part of the banks, one timely enough and considerable enough to enable Canadian manufacturers to make their productions commensurate with that of the farmers. If there is no such change, then Canada will import more goods in the present crop year than she ever imported before.

C. A. C. J.

The Triumph Electric Mfg. Company and Triumph Ice Machine Company of Cincinnati, whose contemplated mammoth plant in the new Oakley suburb of that city was temporarily delayed because of the business depression, have ordered the work to proceed on the lines originally planned. At a recent meeting of directors matters were settled, and the firm of Bert Baldwin & Co., engineers, was given the commission to prepare plans at once. The buildings will be of steel construction, with concrete or brick walls. The principal structure is to be 140 x 300 ft. The Administration Building will not be built until the others are completed and in use. It is the intention to devote the winter and early spring months of next year to the building of the plant. The investment will represent an expenditure of $250,000. The officers of the company will encourage their employees in buying property in the vicinity of the plant, and are now improving a large number of building lots with that object in view. Some new ideas in the way of dining rooms, cooking equipment, &c., for employees will be tried, and if they prove satisfactory and are appreciated by employees will be made a permanent feature.

The Midland Steel Company, Pittsburgh, which blew out its blast furnace at Midland, Pa., several weeks ago, is making some improvements as well as repairs. New dust catchers are being installed, the contract for which has been placed with the Pittsburgh Steel Construction Company, and changes and improvements are being made in the steam and water lines. These will be completed in time to allow the furnace to resume operations in the latter part of July or early in August.

Some important changes and additions are being made at the Bessemer steel plant of the Republic Iron & Steel Company, at Youngstown, Ohio, which has closed down for the purpose. In the sheet bar and rail mills two new stands of rolls will be erected, with the object of rolling longer lengths. New tables are to be put in and shears will be added to cut the bars, which heretofore have been sawed. These improvements will add somewhat to the capacity and are also expected to reduce labor cost.

# The Machinery Trade.

NEW YORK, July 8, 1908.

The coming into the market for large quantities of machinery by several of the more important industrial companies within the past few weeks, which number was further augmented the week just ended, indicates that confidence is being restored and that a more optimistic feeling as to the near future prevails. This large business, however, is insufficient to go around, and, in fact, does not amount to enough to more than show a slight improvement over the previous month's business of the few large tool builders that secured the orders, there being so little buying on the part of the smaller plants. The activity by the large interests is bound to have a beneficial effect and ought to be followed later by more liberal purchases by the smaller companies. A large machine tool builder states that its business has gradually improved the last few months, but the increase has not been what was expected. With the others, this house is looking for a marked improvement in the fall. The dealers whose sales territory is limited, and consequently are not in a position to supply many wants, report practically no improvement in their business. Since our last report, trade has been very light, due in part to the holiday. Of the inquiries received one was from the International Steam Pump Company for an extensive line of machine tool equipment.

It is understood among machinery men who are familiar with the work on the Panama Canal that a redivision of the operations along the canal has been made and the work will now be done in three sections, consisting of the Atlantic division, Pacific division and the central division. The Atlantic division will be under Division Engineer Major Seibert, and Major Harding as assistant. The work will include the Gatun lock and dam site and the work at the Portobello quarries, and all terminal and dredging work on the Cristobal end of the canal. The central division will be under Division Engineer Major Gaillard, and this will include all steam shovel work on the present Gorgona and Culebra divisions. The engineer to have charge of the Pacific division has not been announced, but it is said in some quarters that Sidney B. Williamson will be given charge. This will include work on the Miraflores locks and dams and all terminal work on the Pacific end at La Boca. This is taken as an indication that it is the Government's intention to centralize work on the canal as far as possible and a number of departments have been abolished. It is said in the trade that with the reorganization will come renewed activity in the way of machinery purchasing, especially in the line of equipment for the large amount of lock and dam work to be done.

### Large Machine Tool Requirements of International Steam Pump Company.

Inquiries for a large amount of machinery are being sent out by the International Steam Pump Company, 115 Broadway, New York, through the purchasing department. The company is planning to increase the efficiency of its various plants by the installation of new and improved machine tools, and it is stated that the requirements will cover tools aggregating $100,000 in value. As all the requisitions from the various plants have not been received, the complete list of requirements has not been made up and the purchasing agent is sending out a few inquiries at a time. Thus far machinery houses have only received inquiries for a small part of the machinery that will be purchased. It will be remembered that the company erected a new plant at Harrison, N. J., a couple of years ago and moved the plant of Henry R. Worthington from Brooklyn to that point. It is understood that considerable of the machinery to be purchased will be installed in this plant. Machine tools will also be purchased for installation in the works at Holyoke and Cambridge, Mass., and probably some for the Snow Steam Pump Company's plant at Buffalo, N. Y.

Last week mention was made of the extensive line of equipment to be purchased by the American Locomotive Company for its Pittsburgh shops and that some orders had already been placed. The company, we understand, has now practically covered its requirements, having placed an order with the Niles-Bement-Pond Company for machine tools amounting to about $230,000. The entire machine tool equipment for the new shops of the Idaho & Washington Northern Railroad at Spirit Lake, Idaho, the purchase of which, through Westinghouse, Church, Kerr & Co., was also mentioned in these columns last week, will also be furnished by the Niles-Bement-Pond Company. The order amounts to $30,000 and covers a complete machine shop equipment. Other orders received by the company include one from St. Louis, Brownsville & Mexico Railroad for $20,000 worth of machine tools, and one from the American Sugar Refining Company for electric hoists, aggregating $25,000 in value, for the New Orleans plant. The placing of these large orders by important interests is of more than ordinary interest at this time, in that the purchasing of larger companies is often followed by freer buying on the part of small companies and is an indication of an early resumption to a more normal business. For some time inquiries and orders in this territory have covered principally a few tools each and came from the smaller plants, but recently the larger corporations have shown more disposition to come into the market.

It is understood that the construction of the new cut-off of the Delaware, Lackawanna & Western Railroad between Lake Hopatcong and the Delaware Water Gap will begin at once, and because of the large amount of excavating to be done it is expected that the contractors in charge of the seven sections will have to buy a large amount of equipment. The engineers in charge estimate that about 250,000 cu. yd. of concrete will be constructed, of which 50,000 cu. yd. will be of reinforced work. The work also includes the building of a steel bridge 1200 ft. long across the Delaware Water Gap. On the entire job there will be 12,000,000 cu. yd. of excavation, of which 5,000,000 cu. yd. will be through solid rock. Most of this rock excavating will be in sections 1, 2 and 3, and this work will no doubt necessitate the purchase of a considerable lot of rock drilling equipment. The contractors in charge of those sections were mentioned in these columns last week. On sections 3 and 4 there is a fill that will require about 6,000,000 cu. yd. of earth, and in consequence it is expected that considerable industrial railway equipment will be used there. It is understood that some of the contractors are already assembling their plants and preparing to begin work very shortly.

The Crescent Portland Cement Company, Wampum, Pa., is letting contracts for machinery for the large plant being constructed for that company by the Curtin-Ruggles Engineering Company, 39 Cortlandt street, New York. The contracts were let last week for three 1000-kw. cross compound engines to the Ball & Wood Company and for three 6000-hp. boilers to the Rickert Engineering & Machine Company. It is understood that the contracts for the cement machinery will be let within the next few days and by the end of next week all the machinery equipment will be decided upon. The plant when completed will be capable of producing about 3000 bbl. of cement a day, and the structures to be erected include a kiln building, 120 x 200 ft.; raw grinding building, 100 x 280 ft.; dry grinding building, 60 x 240 ft.; coal pulverizing building, 70 x 100 ft.; storehouse, 70 x 500 ft., and a machine shop and office building.

The Public Service Corporation of New Jersey is arranging to erect a terminal at Hoboken at a cost of $500,000, and work will be begun on the structure in September. The building is to be of brick, concrete and ornamental limestone, and will be three stories in hight. This structure, plans for which are now being prepared, will connect with the McAdoo terminal in Hoboken, and it is probable that the machinery trade will hear of requirements for this building before the summer is over. The Public Service Corporation has let contracts for the generators and boilers to be installed in the addition to the company's Marion power plant, mentioned before in these columns. The General Electric Company will furnish two 900-kw. turbo-generators and the Babcock & Wilcox Company will install the boilers. It is expected that contracts for other equipment will be let shortly. James T. Whittlesee is the chief engineer, and he, it is understood, is directing the purchases, and the contracts are being placed by Dudley Farrand, who has offices in the Prudential Building, Newark, N. J.

The Department of Water Supply, Gas and Electricity, New York, will receive bids until July 15 for a [illegible] engine and accessories for the Mt. Prospect pumping station, Brooklyn, and one hand traveling crane for the high pressure pumping station at Gansevoort and West streets, and one hand traveling crane for the high pressure pumping station at Oliver and South streets, New York.

The Washington Company, 39 Cortlandt street, New York, is installing two complete steam plants, one of 100 hp. for the Levison Mfg. Company, New York, and another at Edgewater, N. J., for a manufacturing firm and which will be of 150 hp. capacity.

### Business Changes.

The Case Mfg. Company, Columbus, Ohio, manufacturer of electric and hand power cranes and hoists, has appointed A. E. Hoermann, mechanical engineer, 30 Church street, New York, manager of its New York office. Mr. Hoermann is at present Eastern manager of the Curtis & Co. Mfg. Company, in which capacity he will continue.

**Catalogues Wanted.**—Miles A. Hoffman & Co., 43-45 Great Tower street, London, E. C., England, desire to receive catalogues from manufacturers of goods suitable for the English market.

## Chicago Machinery Market.

CHICAGO, ILL., July 7, 1908.

Transactions of the past week in machinery lines have been mainly confined to small requirements, the aggregate of which has not perceptibly increased. It is too early to determine if the general expectation of more liberal purchases by the railroads will be realized in the present month, but the general belief that demand from this source will show considerable improvement before the first of August is unabated. The action of the railroads is naturally being watched with a great degree of interest, because it is realized that as soon as they begin to buy the machinery trade will be both directly and indirectly benefited. Individual tool orders are about all there are in the machine tool market, and while business of this kind is highly desirable, the trouble is that there is not enough of it to go around. Such a condition is at all times sure to invite unduly sharp competition, which in turn is apt to have a disturbing effect upon prices. That considerable unevenness has developed is evident from the range of prices disclosed on recent bids by dealers, which in some instances are quite low. At the same time it does not appear that factory prices have been affected in like manner; in fact, they are reported to be generally firm, with only a few makers disposed to yield anything from established schedules. While the machine tool business is far from satisfactory in volume at present and will probably not respond as quickly to the effects of general improvement as many other industries, yet most dealers feel that the beginning of an upward turn is not far distant.

In electrical machinery a somewhat better movement is observed, which, though not as yet of a pronounced character, is the basis of a stronger tone and a more optimistic feeling among manufacturers of generative and motive power equipment. During the past few months plant managers have not only had time but urgent need as well for the study of economics, and a good many are taking advantage of the opportunity to make changes that promise a reduction of operating expenses. The advantages of the unit system as applied to motor drives has been especially emphasized in plants working at only part capacity, as is shown by the increasing interest manifested in such equipment by mills and factories in which it has hitherto been in little demand. Flour mills, for instance, are gradually awakening to an appreciation of motors as a substitute for belt drives and orders from this source are not now infrequent. Another feature in connection with the demand for electrical equipment is the relatively large proportion of orders coming from central lighting stations. During the period of depression that followed the panic of 1893 no industry was harder hit than this, but the reverse is now true. The only explanation offered is that what was under the conditions of that time a luxury has become a necessity, and so escapes in a large measure its share of curtailment due to enforced economy.

The Eclipse Feed Water Heater & Purifier Company, Oshkosh, Wis., which is now having its machines built at Wausaw, Wis., contemplates the building of a plant for the manufacture of its product at Oshkosh in the course of the year. The company builds the Eclipse heater in both open and closed types. It is now installing a purifier of large capacity in the power plant of the Blatz Brewing Company, Milwaukee.

To provide funds for extension and improvement of its plant and enlargement of its field of operations the Termaat & Monahan Company, Oshkosh, Wis., has increased its capital stock from $50,000 to $200,000. This step was made necessary by the growth of its gasoline locomotive business; these machines are now being extensively used in mining and gravel pits and railroad work. The marine engine department, which, it is stated, now turns out 1000 marine engines during a year, will also be enlarged. It is likely that the execution of these plans will involve the need of some new tools and machinery.

The Chicago Board of Education is now working on manual training school plans which will in the next two or three months develop machinery requirements of considerable importance. While the amount of the machinery required for the proposed installation will perhaps not be as extensive as those of the recently equipped Lane School, they will comprise quite a number of machine tools such as were included in that list. Bids close July 8 for the following equipment to be installed in various high schools: Forty-two 4-in. standard speed lathes, belt driven; seven 37-in. motor and belt band saws and eight power grindstones. A lot of miscellaneous electric supplies will be purchased at the same time.

The Straubel Machine Company, Green Bay, Wis., recently incorporated with a capital stock of $25,000, is to enlarge its business and will build a modern plant on property recently purchased. Plans provide for a machine shop 60 x 100 feet, one story high, with saw tooth roof. It will have a concrete foundation and be constructed of brick and steel trusses of its own manufacture. The officers of the company are Louis G. Straubel, president; Ernest C. Straubel, secretary and treasurer; Edwin Straubel, vice-president.

A site has been purchased by the Mitchell Power Company, Mitchell, S. D., for the erection of a power plant, the cost of which is estimated at $50,000. Construction of a power house will be begun at once, and it will be supplied with modern machinery and equipment throughout, part of which will be taken from the present plant. In addition to this improvement a considerable sum will be expended for the rebuilding of transmission lines.

The city of Stillwater, Okla., will soon ask bids on two direct connected a. c. generating units of 60 and 90 kw. capacity respectively; also on cast iron pipe and specials for water works extension. About $7000 will be expended for extension and improvement of the electric light system, $33,000 for like improvements to the water works system and $27,000 for the construction of public sewers.

The Georgetown Water, Light & Power Company, Georgetown, Texas, has under consideration some plant improvements which include the installation of a new engine which would be either of the producer gas type or an oil heated engine. The company will also purchase some new wire and pipe.

The Cutler-Hammer Mfg. Company, Milwaukee, Wis., maker of electric controlling devices, has just completed arrangements whereby it will be represented on the Pacific Coast by Otis & Squires, 111 New Montgomery street, San Francisco. A large stock of standard Cutler-Hammer controllers will be carried by Otis & Squires, enabling them to make prompt delivery of apparatus. A. W. Vinson, who has for several years been connected with the engineering department of the Cutler-Hammer Mfg. Company, has been transferred to the office of Otis & Squires, where his services will be available to those confronted with problems of electric control which cannot be met by the use of standard apparatus.

## Cincinnati Machinery Market.

CINCINNATI, OHIO, July 7, 1908.

While it is difficult to find enough current business in machine tools and allied lines to justify a statement that business in this character of machinery is improving, there are enough hopeful signs extant to warrant the wearing of an optimistic exterior, and that is just what the big manufacturers in this field are doing. Visits to shops find office forces busy with correspondence, and as a rule from a third to a three-quarters payroll on time ranging from 30 to 45 hr. per week.

The tool manufacturing shops are still the least busy. The timid awakening of a few of the railroad corporations for the taking on of some badly needed shop equipment is obvious here only in the promise, and as a rule heads of large concerns are not looking for anything of consequence before the first of the year.

Manufacturers of electric equipment are busy and taking on additional help from time to time. Boiler makers, too, are noticing a little better feeling, and it is evident that power units are being increased. A visitor from the East, Clifton Reeves of the Reeves Engine & Machine Company, Trenton, N. J., finds sufficient evidence of advantage in the matter of manufacturing and sales capacity to warrant the announcement that he would locate in Cincinnati, and on July 8 a meeting of local capitalists and financiers will discuss the matter of incorporation and stock subscription at the Business Men's Club. The greater part of the business for high speed engines, throttling engines and for motive power of the medium class has of late come from the South and Southwest, and manufacturers of these types find the Central West territory best adapted for their operations.

Manufacturers of engineers' specialties report business improving, particularly from Texas and Mexico and the Southwest. Local establishments have shipped some large bills of brass goods for use in Government work in the Canal Zone. Signs of resumption of activities outlined at the time of the slump last October in connection with the new factory colony at Oakley, Cincinnati suburb, are reviving. The new power plant which is eventually to drive the machinery of the Cincinnati Milling Machine Company, Bickford Drill & Tool Company, Cincinnati Planer Company, Triumph Electric Company and the Triumph Ice Machine Company is completed and one unit installed—a Hamilton Corliss compound engine of 450 hp. and a Triumph generator of 300 kw. speeded to 100 rev. per min. Provision is made in the building for 2000 kw., which will eventually be installed when the four establishments named get into their new quarters. At present the power is only utilized for the various operations at the Modern Foundry, the enterprise of the Cincinnati Milling Machine Company, which is destined to take care of all the castings at this plant as

well as others forming a part of the new group. In this foundry are installed very new and complete systems of compressed air, hot and cold water pumps, and a splendid tower for an improved sprinkler system.

A fairly good business is reported from the dealers and some of the larger and more expensive tools are getting attention, something practically unheard of during the earlier months of the year. There is not so much inquiry for second-hand tools, from which is argued favorable symptoms and better attention for the new tools.

The foundry melt continues light. Those concerns running more than three moderate sized heats per week are very few. This applies more strictly to the Cincinnati foundries which for the most part find their patrons in the manufacturers of machine tools. Some foundries making small castings for cash registers and similar devices are quite up to their normal output and have not noticed the recent depression.

The Iron Buyers' Association, comprising a membership of several hundred influential manufacturers in the Central West, is now under the general direction of a new president, G. H. Gorman of the Davis Sewing Machine Company, Dayton, Ohio, and it is understood the organization will be continued and perfected until the objects for which it stands shall, at least the most of them, be obtained. It is stated that some contracts have been made by members with the furnaces using a slight modification of the printed form authorized by the association. A number of furnaces have, it is understood, refused to use any other than their own form for the making of contracts for iron.

It is stated that work is to begin shortly on the erection of a large plant for the Federal Castings Company in Vincennes, Ind. The company incorporates with a capital stock of $250,000, and the directors are Henry C. Atkins of Indianapolis, Ind.; Sidney Smith of Louisville, Ky.; George P. Altenberg, Cincinnati; C. Brooks Buckley and George S. Cotter, Springfield, Ohio; Lee Herman, Muncie, Ind.; Henry C. Price, James C. Curtis and William Hecht, Indianapolis, Ind. The company will manufacture all kinds of metal castings, and will build a variety of railroad, industrial and mining cars and all parts and appliances, and also tools and appliances used in railroad machine shops. The buildings are to be in the beginning two in number, one 100 x 300 ft., the other 50 x 240 ft., with concrete foundations and superstructure of brick and steel. The agreement with the Vincennes people also contemplates the duplication of the two buildings within three years, and an investment of $70,000 over and above the $30,000 bonus in buildings and equipment.

A new company for the manufacture of stoves and ranges and for the conduct of a general stove foundry business is the Conklin Stove Mfg. Company, Columbus, Ohio. The capital to start is $35,000, and the incorporators are J. W. Hastings, E. A. Evans, F. M. Haberkorn, Patrick Carroll and Barbara Haberkorn.

Reports from Newcastle, Ind., indicate that the Indiana Rolling Mill Company has resumed work with a full force and will run day and night shifts as formerly. Other Newcastle concerns reported busy are the Maxwell-Briscoe Automobile Company, which is running full time, with some overtime, and building an extensive addition, and the Pan-American Bridge Company, which is running full force and on full time.

## New England Machinery Market.

WORCESTER, MASS., July 7, 1908.

Figuring the totals of the first six months of the year and comparing them with those of 1906 and 1907 have not been a particularly cheerful task, for there is a very wide difference, both with the machinery dealers and with the builders. But the element of cheer is that the depressed months are accumulating as a part of the past, and that the worst is about over, according to common opinion. Few orders have been booked during the week; it has been so fearfully hot that probably there would have been little business under any conditions of the market. General business seems to be better, according to the reports of the transportation companies and individual knowledge of existing industrial conditions. The machine tool trade does not expect to feel a revival until after most other lines have picked up, but it is believed a gradual improvement will be noticed in the fall.

The automobile trade continues to indicate that its preparations for next season will be on a larger scale than that which was adopted for the 1908 market. The manufacturers are making numerous inquiries for machinery, and some tools of rather a special design have been sold during the past fortnight. There is said to be more activity on the part of the railroads looking toward new machine shop and similar equipment, but there have been few tangible evidences of immediate buying in the way of orders.

Machine tool production has been further curtailed by the shutting down of plants. In Worcester, for example, the works of the F. E. Reed Company, engine lathes; Woodward & Powell Planer Company, planers, and J. E. Snyder & Son, upright drills, are closed. The Prentice Bros. Company is still running, but will probably shut down soon. The Whitcomb-Blaisdell Machine Tool Company and the Norton Grinding Company are running. Most of the smaller companies are operating on reduced production. The F. E. Reed Company will not resume operations again for a month, the protracted vacation being utilized for making extensive repairs. The company's former custom was to close for the purpose, 10 days every summer, but it is now five years since this was done, and there is need of overhauling. The main lines of shafting will be lined up, and new floors laid in parts of the works.

The business of the Becker-Brainard Milling Machine Company will hereafter be conducted as the Becker Milling Machine Company, a new corporation of that name having been organized to purchase the business. John Becker will continue as its head. The name of the Becker-Brainard Milling Machine Company originated in 1899, when the business of the Becker Milling Machine Company, Fitchburg, Mass., and that of the Brainard Milling Machine Company, Hyde Park, were consolidated. Consequently the new name is a revival of one which was formerly very well known in the trade. Details of the organization of the new corporation are not available, but it is understood that the personnel of the officers will remain much the same as in the Becker-Brainard Company. The name of Brainard disappears.

The Powell Tool Company, Worcester, Mass., of which A. M. Powell is the founder and the head, has completed the first of its line of planers, and is demonstrating it in its shops. The planer is of an entirely new type, containing features essentially different from those embodied in any planer previously built. It is known as the Powell high speed accelerating cut planer. The feature of acceleration is the essential one in the design. The mechanism provides that the machine may be operated with a cut of constant speed during its entire length, or with the acceleration, which means that the tool starts in the work slowly, the speed is then greatly increased, and the cut slows down again as the finish of the stroke is approached. The theory is that the great consumption of power in high speed planer work is in the start of the cut, and consequently that a much higher cutting speed is practicable if the tool enter the metal at a low speed, and is given an accelerated speed after momentum has been achieved.

The Heald Machine Company, Worcester, has established W. P. Starks as its special Western representative, the purpose being to have a man in the field who will devote his entire time to the introduction and sale of the company's line of grinding machinery, working in co-operation with the dealers. Mr. Starks was formerly with the O. L. Packard Machinery Company, Chicago. He will make his headquarters in his home town of Crawfordsville, Ind.

The Everett Foundry Company, Everett, Mass., is establishing a machine shop for the finishing of castings.

George W. Fifield, Lowell, Mass., manufacturer of machine tools, has taken out a building permit for his new machine shop already mentioned in these columns. The building will be of fireproof construction.

William T. Cardy & Sons, Boston, box manufacturers, have prepared plans for a new factory to replace that destroyed in the Chelsea fire. The building, as described, will be of reinforced concrete, 50 by 100 ft., and three stories, and there will be a one story boiler house.

A case of much importance to New Hampshire manufacturers and other shippers of that State has been brought by the State against the Boston & Maine Railroad, alleging that increases in freight rates are illegal in that they constitute a violation of the laws under which various local railroads were merged in the Boston & Maine system. The contention is that schedules existing on some lines as long ago as 1883 are still the legal limit of rates, and others go back to 1889. Should the contention hold there would be an important change in freight rates all over the State.

The Remington Arms Company, Ilion, N. Y., states in regard to the persistent rumors regarding the removal of the business to Bridgeport, Conn., that there has evidently been a mistake, as no such action is anticipated at present.

The C. G. Garrigus Machine Company, Bristol, Conn., builder of special machinery, has let contract for its new shop building, which will be 37 x 75 ft., and three stories, with one story ell, 10 x 35 ft. It will be of brick, mill construction.

The receivers of the Pope Mfg. Company, Hartford, Conn., have received the permission of the court to proceed with the manufacture of 700 Pope-Hartford automobiles and 50,000 bicycles, which insures the activity of the works at Hartford and at Westfield, Mass.

## Cleveland Machinery Market.

CLEVELAND, OHIO, July 7, 1908.

The past week has been an unusually quiet one among machine tool dealers, orders for single tools even being very scarce. The majority of the dealers find that their June sales were a little larger than during the previous month and the general feeling regarding future conditions is somewhat better, although dealers are looking for two dull months during July and August. At present scarcely any inquiries are coming in and none of those that are being received is for more than one or two tools. While there is practically no demand for the standard machine tools, such as lathes, planers, drills and milling machines, there is a fair demand for forging, stamping and special machinery. There is not much demand for second-hand tools, but not many are being placed on the market, and owners having any for sale are holding them for good prices. Owing to the greater activity on the part of many manufacturing plants there is considerable improvement in the demand for mill supplies, but orders are for much smaller lots than they are in normal times.

The majority of the local machinery and machine tool builders report quite a satisfactory increase in the volume of their orders. They have been able to increase their working forces and they regard the outlook as encouraging. Inquiries are better, and are more apt to be followed by the placing of orders than they were during the early part of the year. Inquiries are now coming from concerns that rarely make inquiries unless they are about ready to place orders. Among the buyers who have not been in the market for some time are the agricultural implement makers, some of whom have placed orders for new machinery during the past few days.

While there is little work in sight in the way of erecting new plants, engineering firms report considerable improvement in inquiries from those that have under consideration plant additions and alterations. This work, it is expected, will cause an increase in the demand for special machinery. Other plants are waiting until conditions become normal before adding to their equipment. A number of the automobile makers in this city and the Central West are expected to overhaul and make additions to their plants during the next few months, some of them already having plans under way for increasing the efficiency and capacity of their plants. Some old tools will be thrown out and replaced with new ones. There is an improvement in the demand for industrial cars and other equipment needed in improving various industrial plants.

The jobbing foundry business, which has been very dull for several months, with only an occasional spurt of activity, at last shows a certain improvement, particularly in the demand for light castings, and the majority of the foundries have been able to increase their force of workmen.

The Board of Education of Cleveland will receive bids until July 17 for the small tools for the machine shop and woodworking equipment for the new Technical High School that is being erected in this city.

The Atlas Car & Mfg. Company, Cleveland, has just secured a large order through Marcellus Reid, mechanical engineer, for an industrial railway and equipment for the Oldsmobile Motor Works, which will make some extensive improvements to its automobile factory at Lansing, Mich. The order includes a number of cars, switches, tracks, storage battery locomotive, and 12 special crane cars for handling material in the shops. A new method of handling material with cranes on cars that can be moved about the plant will be adopted. The company reports a fair volume of orders and inquiries for industrial cars.

The Foote-Burt Company, Cleveland, maker of radial drills, bolt and nut machinery, &c., reports a very satisfactory increase in its business, and the prospects are regarded as good for further improvement. The low point in amount of work was reached by this company in February. During the next three months there was an increase of about 30 per cent. each month over the preceding month. The increase in June reached 50 per cent. over May. The company's plant is now running on full time with slightly over one-half of its full working force. Orders are scattering, none of them being large ones. The company is getting a fair volume of orders from automobile builders.

The Acme Machinery Company, Cleveland, maker of bolt and nut machinery, reports a satisfactory increase in the volume of its orders and inquiries. Its plant is now running at about 75 per cent. of its full capacity. The company has recently received some good orders for machinery from the agricultural implement makers and is getting a fair volume of foreign orders.

Extensions will be made to the plant of the Shelby Electric Company, Shelby, Ohio, according to reports from that city. The main building will be enlarged and a power building, 50 x 100 ft., will be built, in which will be installed a battery of water tube boilers, two direct connected steam turbine engines, each of 200 hp., and five gas generators.

The Commercial Mfg. Company, formerly located at 1967 East Fifty-fifth street, has moved to larger quarters in the power building at 1144 West Third street, Cleveland. The company makes a bending machine, and is preparing to place on the market a new bar cutting machine.

## Philadelphia Machinery Market.

PHILADELPHIA, PA., July 7, 1908.

The local machinery trade has felt the effect of the usual midsummer stock taking and shutting down of plants for repairs, as well as the vacation period. Under the circumstances, therefore, no particular attention has been paid to the let-up in business, and not much in the way of a renewal is expected until later in the month. The undertone of the market is strong, and it is pretty generally believed that probably by August 1 a moderate, slow improvement in buying will be noted. The railroad outlook is considered more hopeful. There has been some scattered buying on the part of some of the roads, sufficient to make the trade feel that they are getting in shape to place more business before a very great while. The opinion is generally expressed that extensive buying will be necessary before the railroads can get their rolling stock and motive power in shape to handle the heavy crop movement, which from present reports is pretty well assured.

Manufacturers' reports vary as to the volume of new business taken in the month of June. With some there was an increase in orders to be noted, but others report that the month was not as good as the preceding one. Those manufacturing the medium class of tools were perhaps the most active, as orders for heavy tools have not been very plentiful. Special tool builders have not taken on as much business as some lines, but still have a fair number of orders on their books. Here and there a plant is to be found which is working pretty well up to its capacity; these, however, are mostly of the smaller size, as the large plants have not usually been able to get much beyond 50 per cent. of their normal capacity, while some still fall below that figure.

While there has been a falling off in the demand for second-hand machine tools in the past week, the decreased activity is believed to be due to the same causes which have affected the machine tool trade generally. Notwithstanding the holiday, however, a fair amount of business is reported. It has been in the smaller tools, sales being largely of an individual character. The second-hand boiler and engine trade has been quiet, reflecting the general condition of the trade. New power equipment, particularly of the medium type, seems to be a trifle more active, and while there have been no large contracts given out recently, it is understood that several are under consideration, including a considerable amount for the proposed new plant of the Curtis Publishing Company in this city.

New business has been rather quiet in the foundry trade. Orders have not been plentiful, although some of the steel casting plants report a better demand. The jobbing gray Iron foundries report only a fair amount of orders, while those making a specialty of machinery castings report no permanent improvement. There has been a little more municipal work around for both iron and bronze castings, and an award is expected to be made in a few days for some $18,000 worth of work of that class.

The Energy Elevator Company, 214 New street, this city, is in the market for a McCabe double spindle lathe, second hand preferred. This company reports business in fairly good shape, although orders are not as plentiful as they were several months ago. The company, however, is still able to maintain operations in its plant on a full time basis.

The Franklin County Commissioners, Chambersburg, Pa., have decided to establish an electric light plant at the County Infirmary.

The employees of the Philadelphia Roll & Machine Company on July 2 presented their general manager, August Marx, with a handsome leather club traveling bag, completely fitted, as a token of their appreciation, on the occasion of his trip abroad for a sojourn of a few months.

The commission to erect a State Hospital for the Criminal Insane, for the Commonwealth of Pennsylvania, at Fairview, Pa., will receive proposals pertaining to the erection of certain groups of buildings, until July 21. Plans and specifications may be had upon payment of fee, at the office of the architect, J. C. M. Shirk, 518 Philadelphia Bank Building, Philadelphia. Proposals are being received by H. G. Ashmead, secretary of commission, Chester, Pa. The buildings on which proposals are now asked are designated as wards B and C, of the men's department, and are estimated to cost $150,000. The entire group of buildings will cost over $1,000,000, and will include both men's and women's departments. In addition to the usual ward buildings there will be a power plant, boiler house, fuel storage plant, laundry plant, work shop and refrigerating plant.

## Government Purchases.

WASHINGTON, D. C., July 7, 1908.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until July 21 for a traveling crane, 12 hydraulic jacks, &c., for the Portsmouth and Boston navy yards, and until August 4 for one auxiliary hoist for crane and one induction motor for the Mare Island Navy Yard.

The Bureau of Yards and Dock, Navy Department, Washington, will receive bids until August 1 for a coal handling plant for the New York Navy Yard.

The following bids were opened June 29, Circular No. 446, for machinery for the Isthmian Canal Commission:

Class 1.—Two water tube boilers, stack breeching, pipe and fittings—Bidder 2, Babcock & Wilcox Company, New York, $8057; 25, A. D. Granger Company, New York, $5988 and $6188; 88, Heine Safety Boiler Company, St. Louis, Mo., $8309 and $7309.

Class 2.—Four engine lathes—Bidder 23, Fox Bros. & Co., New York, $1356; 24, Garvin Machine Company, New York, $1432; 40, Manning, Maxwell & Moore, New York, $1620 and $2180; 52, Niles-Bement-Pond Company, New York, $1540; 74, Springfield Machine Tool Company, Springfield, Ohio, $1332.

Class 3.—Four sliding head drill presses—Bidder 22, Fairbanks Company, New York, $792; 23, Fox Bros. & Co., New York, $852; 24, Garvin Machine Company, New York, $1000 and $760; 40, Manning, Maxwell & Moore, New York, $1260 and $1160; 46, Motley, Green & Co., New York, $720; 52, Niles-Bement-Pond Company, New York, $900; 56, C. T. Patterson Company, New Orleans, La., $1240; 60, Prentiss Tool & Supply Company, New York, $896; 66, Charles E. Robidoux, St. Louis, Mo., $1140 and $1280; 72, J. E. Snyder & Son, Worcester, Mass., $1280; 79, Vandyck-Churchill Company, New York, $760 and $1040.

Class 4.—Four back-geared shapers—Bidder 22, Fairbanks Company, New York, $2220 and $1880; 23, Fox Bros. & Co., New York, $1796.64; 24, Garvin Machine Company, New York, $2152 and $2060; 26, Handlan-Buck Mfg. Company, St. Louis, Mo., $1980; 40, Manning, Maxwell & Moore, New York, $2220; 46, Motley, Green & Co., New York, $1800; 52, Niles-Bement-Pond Company, New York, $2432 and $1912; 56, C. T. Patterson Company, New Orleans, La., $2292; 59, Potter & Johnson Machine Company, Pawtucket, R. I., $2460; 60, Prentiss Tool & Supply Company, New York, $1964; 62, Queen City Machine Tool Company, Cincinnati, Ohio, $2200; 74, Springfield Machine Tool Company, Springfield, Ohio, $2220; 79, Vandyck-Churchill Company, New York, $2180.

Class 5.—Four water tool grinders—Bidder 22, Fairbanks Company, New York, $264; 23, Fox Bros. & Co., New York, $260; 26, Handlan-Buck Mfg. Company, St. Louis, Mo., $270; 27, Clinton E. Hobbs, Boston, Mass., $335.92; 40, Manning, Maxwell & Moore, New York, $292; 46, Motley, Green & Co., New York, $260; 79, Vandyck-Churchill Company, New York, $216 and $272.

Class 6.—Eighteen air hammer rock drills—Bidder 12, Chicago Pneumatic Tool Company, New York, $952.50; 13, Cleveland Pneumatic Tool Company, Cleveland, Ohio, $962; 16, Thomas H. Dallett Company, Philadelphia, Pa., $1030.13; 32, Ingersoll-Rand Company, New York, $1085.50; 46, Motley, Green & Co., New York, $1296; 76, Sullivan Machinery Company, Chicago, Ill., $988.10.

Class 7.—Twelve rock drills—Bidder 12, Chicago Pneumatic Tool Company, New York, $4259.56; 32, Ingersoll-Rand Company, New York, $5104.97 and $4079.70; 33, International Electric & Engineering Company, New York, $3794.16; 76, Sullivan Machinery Company, Chicago, Ill., $4227.12; 86, Wood Drill Works, Paterson, N. J., $4249.47.

Class 8.—Eight long stroke riveting hammers and two pneumatic wood boring machines—Bidder 12, Chicago Pneumatic Tool Company, New York, $633.45; 13, Cleveland Pneumatic Tool Company, Cleveland, Ohio, $489.60; 23, Fox Bros. & Co., New York, $610.05; 31, Independent Pneumatic Tool Company, Chicago, Ill., $398.95; 32, Ingersoll-Rand Company, New York, $545.75; 75, Standard Railway Equipment Company, St. Louis, Mo., $805.92.

The following bids were opened June 29 for supplies for the navy yards:

Class 1.—One improved tool room lathe—Bidder 84, Fairbanks Company, New York, $599; 93, Garvin Machine Company, New York, $510; 101, Harron, Ricard & McCone, San Francisco, Cal., $520; Henshaw, Bulkley & Co., San Francisco, Cal., $537.

Class 2.—One 16-in. improved tool room lathe—Bidder 84, Fairbanks Company, New York, $724; 93, Garvin Machine Company, New York, $627; 101, Harron, Ricard & McCone, San Francisco, Cal., $681.60 and $746; 184, Henshaw, Bulkley & Co., San Francisco, Cal., $680.

Class 3.—One spindle milling machine—Bidder 93, Garvin Machine Company, New York, $2600; 184, Henshaw, Bulkley & Co., San Francisco, Cal., $1895 and $2100.

Class 4.—One overhead electric traveling crane—Bidder 12, Alliance Machine Company, Alliance, Ohio, $3800; 29, Alfred Box & Co., Philadelphia, Pa., $2567; 42, Case Mfg. Company, Columbus, Ohio, $3265; 64, Cleveland Crane & Car Company, Wickliffe, Ohio, $2973; 144, Morgan Engineering Company, Alliance, Ohio, $3790; 146, Manning, Maxwell & Moore, New York, $2740; 147, Modern Steel Structural Company, Waukesha, Wis., $3610; 161, Niles-Bement-Pond Company, New York, $2830; 164, Northern Engineering Works, Detroit, Mich., $3425; 189, Pawling & Harnischfeger, Milwaukee, Wis., $3050; 195, Ransome Concrete Machinery Company, Dunnellen, N. J., $4000; 212, Shepard Electric Crane & Hoist Company, Montour Falls, N. Y., $3100; 256, Whiting Foundry Equipment Company, Harvey, Ill., $3310.

Class 52.—One long wood frame rip saw—Bidder 86, J. A. Fay & Egan Company, Cincinnati, Ohio, $676; 87, Frevert Machinery Company, New York, $838; 100, Handlan-Buck Mfg. Company, St. Louis, Mo., $700; 117, International Electric & Engineering Company, New York, $860; 239, Vermilye & Power, New York, $690; 260, Cordesman-Rechtin Company, Cincinnati, Ohio, $760.

Class 53.—One knife grinding machine—Bidder 87, Frevert Machinery Company, New York, $403; 117, International Electric & Engineering Company, New York, $321.50; 148, Motley, Green & Co., New York, $420; 166, Oliver Machinery Company, Grand Rapids, Mich., $670; 245, S. A. Woods Machine Company, South Boston, Mass., $600.

Class 55.—Two motor driven water tool grinders—Bidder 87, Frevert Machinery Company, New York, $319 and $358; 99, Hill, Clarke & Co., Boston, Mass., $284; 100, Handlan-Buck Mfg. Company, St. Louis, Mo., $396.80; 141, Manhattan Supply Company, New York, $540; 148, Motley, Green & Co., New York, $320; 183, Ransome Mfg. Company, Oshkosh, Wis., $300.

Class 56.—One motor driven dry grinder—Bidder 183, Ransome Mfg. Company, Ashkosh, Wis., $197.

Class 58.—One 12 in. wood turning speed lathe—Bidder 9, American Wood Working Machinery Company, Rochester, N. Y., $75; 86, J. A. Fay & Egan Company, Cincinnati, Ohio, $91; 87, Frevert Machinery Company, New York, $68; 100, Handlan-Buck Mfg. Company, St. Louis, Mo., $97; 117, International Electric & Engineering Company, New York, $250; 166, Oliver Machinery Company, Grand Rapids, Mich., $74.

Class 59.—One mechanical woodworking machine—Bidder 166, Oliver Machinery Company, Grand Rapids, Mich., $3826, $4081, $4578 and $3833.

Class 60.—One four-side outside molder—Bidder 9, American Wood Working Machinery Company, Rochester, N. Y., $925; 86, J. A. Fay & Egan Company, Cincinnati, Ohio, $896; 100, Handlan-Buck Mfg. Company, St. Louis, Mo., $938; 146, Manning, Maxwell & Moore, New York, $950; 223, A. B. Smith Machine Company, Smithville, N. J., $915.90.

Class 61.—One panel planer—Bidder 9, American Wood Working Machinery Company, Rochester, N. Y., $510; 86, J. A. Fay & Egan Company, Cincinnati, Ohio, $419; 87, Frevert Machinery Company, New York, $478 and $538; 100, Handlan-Buck Mfg. Company, St. Louis, Mo., $441; 117, International Electric & Engineering Company, New York, $595; 166, Oliver Machinery Company, Grand Rapids, Mich., $748 and $582; 223, A. B. Smith Machine Company, Smithville, N. J., $526; 260, Cordesman-Rechtin Company, Cincinnati, Ohio, $655.

Class 62.—One hand planer and jointer—Bidder 86, J. A. Fay & Egan Company, Cincinnati, Ohio, $465; 87, Frevert Machinery Company, New York, $404 and $458; 100, Handlan-Buck Mfg. Company, St. Louis, Mo., $496; 117, International Electric & Engineering Company, New York, $435 and $500; 166, Oliver Machinery Company, Grand Rapids, Mich., $759, $643, $550 and $435.

Class 63.—One motor driven sensitive drill—Bidder 46, James Clark, Jr., Electric Company, Louisville, Ky., $115.50; 87, Frevert Machinery Company, New York, $98; 235, U. S. Electric Tool Company, Cincinnati, Ohio, $95.

The only bid received July 1 by the Department of Agriculture for five mechanical stokers was one from the Underfeed Stoker Company, Chicago, Ill., $4870.

The Nordberg Mfg. Company, Milwaukee, Wis., has been awarded contract for air compressors and accessories for the Philadelphia Navy Yard at its bid of $22,600.

Under bids opened June 22 for one portable pipe threading and cutting machine for the Isthmian Canal Commission, the bid of Vermilye & Power, New York, $549.70 has been accepted.

The Des Moines Bridge & Iron Company, Des Moines, Iowa, has been awarded contract for boiler, smokestack and addition to power house at the Indian School, Salem, Ore., at $8188.

Under bids opened June 22, Circular No. 445, for supplies for the Isthmian Canal Commission, George S. Fowler, Washington, D. C., has been awarded class 3, six roller bearing geared ratchet screw jacks, $435.

The following awards have been made for supplies for the navy yards, bids for which were opened June 23:

Helwig Mfg. Company, St. Paul, Minn., class 149, pneumatic drill and pneumatic calking hammer, $83.

Montgomery & Co., New York, class 152, one valve reseating machine, $325.

**Improvements at Mary Furnace.**—The Ohio Iron & Steel Company's Mary Furnace at Lowellville, Ohio, which has been shut down for three months or more, has been extensively improved. This includes the installation of 500 hp. Wheeler boilers, a 35 ton Brown Engineering Company crane for use in unloading and handling ore, pig iron, &c.; a new 55 x 80 ft. brick building in which the pumps are now all centrally located; an addition to the machine shop, and the remodeling of all filling bins and trestles. A large dam has been built on the hillside, forming a lake 30 ft. deep and 1600 ft. long, which insures the company a large supply of clear water for operation of the furnaces. The company has a contract with the Youngstown Sheet & Tube Company to deliver a certain tonnage of Bessemer iron monthly and this, in connection with other contracts taken, warrants the starting up of the furnace, and it will go in blast about July 20. Its daily capacity is 100 tons.

Owing to the increased call upon it for accurately finished valve stems and other similar work, the Electric Welding Products Company, Cleveland, Ohio, has recently installed a grinding and finishing department, consisting of several Brown & Sharpe plain and universal grinders and special imported machines for spline milling or slot cutting, as well as centering machines. With the aid of this department the company is able to turn out a product completely finished in every detail. For example, a gas engine valve stem is ground on both seat and stem, and a slot, groove or thread is cut or hole drilled and the end hardened, so that it is all ready to slip into an engine in the assembling room. A majority of the large manufacturers are grinding their valve stems and many other parts to insure an accurate fit and wear.

# HARDWARE

LEGISLATION for the correction of evils and the protection of the community from perils or wrongs of one kind or another to which it may be subject frequently has a bearing which was not thought of when the laws were enacted. An example of this is found in the case of the legal requirements which are in force in several States regulating the kind of Cans in which Gasoline or other explosive fluids are to be contained, and establishing penalties if these requirements are not followed. There is naturally some difference in the phraseology of these laws and in the details of their provisions, but a typical illustration is found in the law which prevails in at least one State providing that Gasoline and Benzine in quantities of more than a pint and less than 6 gal. shall be contained only in receptacles of a bright red color, which shall be tagged and labeled in plain letters with the name of the contents. The sale of these dangerous fluids or the keeping of them in other receptacles is a misdemeanor. It will be seen that this endeavor to secure the safety of the people entails new difficulties for the manufacturers and merchants. Comparatively few States, we believe, have as yet such requirements, but manufacturers of Cans if they desire a sale of their goods in the States where such legislation prevails, have to be careful to comply with the law. In order to do this, in addition to the regular styles, they must make special Cans which will meet the special legislation in the various States. Inasmuch as each State is free to pass laws of this character according to its own notion, there is obviously the possibility that it may be necessary for the manufacturers to turn out a wide variety of styles or patterns of a given article in order to comply with the varying provisions of the different States. It would be of interest to know to what extent these laws are enforced, because some manufacturers of the goods in question appear to be ignorant of the existence of these laws. The difficulty, too, comes up to the jobbers whose territory includes several States.

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It would be a mistake to assume that the problem as to methods which the Government can best employ to help manufacturers and export houses to secure foreign trade is a simple one. Notwithstanding the Government's great resources, and a sincere desire to co-operate in the extension of foreign business, it is hard to determine along what lines efforts should be made and in what manner the best results can be secured. In this it will doubtless be necessary for our officials to feel their way. Something indeed may be learned from the methods adopted in other countries, but it is not the American way simply to imitate. The problem is to find better methods and to develop new lines of usefulness. In grappling with this task we bespeak the co-operation of our manufacturers and merchants. This may be given in more than one way. Advice as to measures which may be adopted and the lines along which the efforts to extend foreign business may advantageously be carried will undoubtedly be welcomed by the department at Washington and given weight in forming plans for its enlarged usefulness. In a less formal and more indirect manner the officials in question can be guided in ascertaining the needs of those who are seeking foreign markets if inquiries are frequently sent to them asking for the specific information desired. It may not be feasible to give the inquirers a full reply to requests, for example, in regard to the foreign prices of a certain class of articles, the names in a given city or country of those who might reasonably purchase them, what the competing goods are which now hold the market and the countries in which such goods are made. It may be, however, that information along these lines might be obtained which would be useful as far as it goes, while at the same time the officials would be given suggestions as to lines on which their work might be directed and the kind of information that would be useful to business men who are seeking to take possession of foreign markets.

## Condition of Trade.

No new features of interest have appeared in the Hardware market. The protracted period of excessive heat experienced in most sections of the country has undoubtedly added to the general dullness. The vacation season is well started, but it is doubtful if the absence of a portion of their working force is seriously felt in many establishments. Seasonable lines, however, are moving with some freedom, especially because most merchants made conservative purchases at the opening of the season, and are now requiring additional stock. As regards prices there is no improvement in the situation, and indeed there seems to be an increasing tendency to shade quotations where there is a chance of securing orders. This applies to nearly all classes of goods and buyers, quick to appreciate their advantage, show a disposition to make special terms on every order, experience having shown that they will probably be rewarded for their pains. In spite of present discouragements, it is probably true that the underlying temper of the trade is more cheerful since developments of the passing weeks all tend to show the fundamental soundness of the situation and give promise of greater activity in the fall. As has been frequently brought out, stocks have been reduced until probably they are to-day on a minimum working basis, a consideration, the importance of which cannot be overestimated in its bearing on the future. A substantial improvement in business can scarcely come about without developing a scarcity of goods and a hardening, if not an upward, movement in prices. Good judges express the belief that many lines of Hardware may be bought with confidence at the concessions now obtainable.

### Chicago.

While in volume the business for June in Hardware lines compares unfavorably with that of the same month last year, and is, generally speaking, rather under than above that of the preceding month, the situation is not without its features of encouragement. Perhaps the most prominent of these is the meagerness of stocks which on all hands are reported to be uniformly low. Considering the hand to mouth order of buying that for the past six or eight months has alike prevailed with retail dealers, jobbers and manufacturers, it could, indeed, hardly be otherwise. Purchases in the meantime have been closely governed by the varying rate of current consumption, and there has been a notable disinclination on the part of buyers to discount the future by the placing of forward contracts. Even orders for seasonable goods which are of necessity made up in advance of requirements have been so conservatively estimated that they have fallen short of rather than overreached the demand. As a re-

sult, the stability of the market is spared the menace of large surplus stocks, which under like conditions in the past have seriously retarded forward progress. Increased consumption will therefore be quickly reflected all along the line from consumer to the manufacturer in direct ratio with the revival of business. Developments are unfolding too slowly to produce very marked degrees of change in the week to week periods, but it is noticed that there has been a moderate gain in the demand for Wire Nails; orders are somewhat more numerous but continue to represent actual needs. Included in the week's transactions were a few orders from car shops which have not been buying for some time; but whether or not this is significant of an early resumption of work in these plants does not yet appear. The medium grades of Builders' Hardware are also in better demand, due largely to building operations. Generally speaking, there has been no radical change in prices, though in some directions evidences pointing to the lack of firmness have developed, and it is probably true that concessions from recognized schedules are offered with more or less frequency.

## NOTES ON PRICES.

**Wire Nails.**—The improved conditions in demand, which were noted last week, continue in a moderate way. While more freedom is shown in the quantities ordered, buyers are confining their purchases to the immediate demands of the trade. The increase in the size of orders may reflect the confidence some feel in the stability of present mill prices. Quotations for base sizes are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

| | |
|---|---|
| Carloads, to jobbers | $1.95 |
| Carload lots to retail merchants | 2.00 |

Less than car lots from mill, 5 cents advance per keg.

*New York.*—There is a continued demand for Nails in small lots, business being limited to immediate requirements. The price has gradually sagged since the reduction at mill, and Nails are being held on the basis of $2.30, in small lots, at store.

*Chicago.*—The improvement noted in last report has been well sustained by the orders entered in the past week. Though they include none of unusual size, they are numerous enough to produce in the aggregate a fair tonnage, and continue to represent actual consumptive requirements. Prices are unchanged and are, it is reported, being firmly held. Quotations are as follows: $2.13, in car lots to jobbers, and $2.18 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

*Pittsburgh.*—New business in Wire Nails is showing betterment, and, while jobbers are not placing large orders for delivery ahead, they are buying more freely, and shipments by the mills are showing some increase. It is stated that the large trade is becoming more convinced that there will be no further reductions in prices of Wire Nails, and for this reason are buying a little more freely. The mills advise us that they are maintaining prices absolutely. Quotations for base sizes are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

| | |
|---|---|
| Carloads, to jobbers | $1.95 |
| Carload lots to retail merchants | 2.00 |

Less than car lots from mill, 5 cents advance per keg.

Galvanized Nails are quoted at $1 over the price of the regular Nails.

**Cut Nails.**—Demand continues sluggish and only for moderate lots. Jobbers are pursuing the same policy as merchants have been following, that of buying for immediate needs only. The market shows increased stability to the extent that $1.75 base is only obtainable on desirable orders. Quotations on Steel Nails are on the basis of $1.75 to $1.80 at mill. In the Western market Iron Cut Nails are held at an advance of 10 cents per keg over Steel Cut Nails, but this differential is not observed in the East.

*New York.*—Requirements are light and are satisfied with small quantities. Cut Nails are held on the basis of $2.15 per keg for small lots at store.

*Chicago.*—What trade there is in Cut Nails is largely comprised of Iron Shingle Nail orders, and these are by no means either plentiful or large. Jobbers are selling only small lots and are buying for the actual needs of replenishment in the same way. The Belleville, Ill., mills are shut down and will not resume operations before September 1. We quote Chicago prices as follows: In car lots to jobbers, Iron Cut Nails, $2.08; Steel Cut Nails, $1.98. In small lots from store: Iron Cut Nails, $2.25; Steel Cut Nails, $2.15.

*Pittsburgh.*—Reports that Cut Nails had been sold below $1.75 at mill are officially denied, and the statement is made that this price is obtainable only on desirable orders, the general market being represented by the quotation of $1.80, Pittsburgh. Demand is only fair, and is mostly for small lots to meet current needs. We quote Steel Cut Nails at $1.75 to $1.80 at mill, the lower price being obtainable only on desirable orders. Small lots are held at $1.85 to $1.90 from store. Iron Cut Nails are quoted at 10 cents per keg advance over these prices.

**Barb Wire.**—Business is confined to the restricted volume usual at this season, and no market increase in demand is anticipated until fall trade commences. Reports are to the effect that regular prices are being maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, 2 per cent. discount for cash in 10 days:

| | Painted. | Gal. |
|---|---|---|
| Jobbers, carload lots | $2.10 | $2.40 |
| Retailers, carload lots | 2.15 | 2.45 |
| Retailers, less than carload lots | 2.25 | 2.55 |

*Chicago.*—New business is very light, but perhaps not more so than is usual at this season of the year. Some shipments are still going forward from the mills, but nothing of noteworthy importance is looked for until the fall trade opens, which will be about August 1. No deviation from regular prices is reported. Quotations are as follows: Jobbers, Chicago, car lots, Painted, $2.28; Galvanized, $2.58; to retailers, car lots, Painted, $2.33; Galvanized, $2.63; retailers, less than car lots, Painted, $2.45; Galvanized, $2.75; Staples, bright, in car lots, $2.25; Galvanized, $2.55; car lots, to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

*Pittsburgh.*—This is always the dull season in this trade, and the present light demand for Barb Wire is therefore not exceptional. Small orders to meet current needs are being placed, and the mills advise us that they are maintaining regular prices. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

| | Painted. | Gal. |
|---|---|---|
| Jobbers, carload lots | $2.10 | $2.40 |
| Retailers, carload lots | 2.15 | 2.45 |
| Retailers, less than carload lots | 2.25 | 2.55 |

**Plain Wire.**—Orders are being placed more freely than for some time, and while restricted to some extent to nearby requirements, crop prospects and consequent larger demand for Fencing are contributing to a better feeling. Quotations per 100 lb. to jobbers in carload lots are as follows, on a basis of $1.80 for Plain and $2.10 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the price to retailers being 5 cents additional:

| Nos. | 6 to 9 | 10 | 11 | 12&12½ | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|
| Annealed | $1.80 | 1.85 | 1.90 | 1.95 | 2.05 | 2.15 | 2.25 | 2.35 |
| Galvanized | 2.10 | 2.15 | 2.20 | 2.25 | 2.35 | 2.45 | 2.55 | 2.65 |

*Chicago.*—The demand continues fairly active, and is now better than for some time past. Promising prospects for Fence trade, as a result of bountiful crops, are perhaps the strongest influence contributing to this improvement. Manufacturers are buying more liberally, though not anticipating future wants to any extent. Prices continue unchanged, and are reported to be firmly maintained. We quote as follows: Car lots to jobbers, $1.98, f.o.b. Chicago, and to retailers, $2.05.

*Pittsburgh.*—Fence makers are ordering Plain Wire more freely, but are still disposed to confine their purchases to actual needs. Crop prospects are very good, and for this reason alone a fairly good volume of business is anticipated during the next two or three months. Jobbers are inclined to buy more freely, believing that present prices will not be changed. Quotations per 100 lb. to

jobbers in carload lots are as follows, on a basis of $1.80 for Plain and $2.10 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the price to retailers being 5 cents additional:

| Nos. | 6 to 9 | 10 | 11 | 12&12½ | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|
| Annealed | $1.80 | 1.85 | 1.90 | 1.95 | 2.05 | 2.15 | 2.25 | 2.35 |
| Galvanized | 2.10 | 2.15 | 2.20 | 2.25 | 2.35 | 2.45 | 2.85 | 2.95 |

**Rope.**—There is nothing in the position of Cordage that is encouraging to manufacturers. Demand is light and the Hemp market is easier and inactive. Cordage is inclined to follow the lower prices of raw material, while manufacturers are working up material which they purchased at higher prices than now ruling. According to published reports the receipt of Manila Hemp at Manila ports is double of that for 1907. It is reported that Pure Manila Rope has been sold at 9½ cents and Pure Sisal at 6 cents per lb. Regular quotations are, however, as follows, at which the market is not very firm: Pure Manila, 10 cents; Pure Sisal, 7 cents; No. 1 Jute, ¾-in. and up, 5¾ cents; No. 2 Jute, ¼-in. and up, 5¼ cents.

**Window Glass.**—There is now but a small proportion of the hand operated factories in blast, as quite a number have shut down during the past week, materially reducing the output for the coming two or three months. The factories that are still in operation are trying the experiment of running through July and August. Demand for June fell short of expectations, and if trade does not improve there will be little inducement for factories to continue in operation. A call has been issued for a meeting of the members of the Western Window Glass Jobbers' Association to be held in Chicago on July 9. The call is said to embody the statement that "This will be the commencement of a money making era." The Eastern Jobbers' Window Glass Association recommend the following quotations: New England and New York Metropolitan District, 90 and 30 per cent. discount for Single, and 90 and 35 per cent. discount for Double Strength; Eastern and Southern States, including the Carolinas, 90 and 35 Single, and 90 and 40 per cent. discount for Double Strength; extreme Southern States, including Florida, Georgia and Alabama, 90 and 30 for Single, and 90 and 35 per cent. discount for Double Strength Glass.

**Nickel Plated Copper Ware, Etc.**—Some manufacturers have announced reductions of 5 per cent. or thereabouts, in Nickel Plated Copper Ware, Copper Pots and Kettles, &c.

**Dripping Pans.**—As reported last week, there seems to be an open market on Dripping Pans, and quotations showing heavy declines from former established prices are being made by many manufacturers. The market on this line to average trade may be fairly quoted at 70 and 10 to 70, 10 and 5 per cent. discount.

**Soil Pipe.**—The condition of the market for Cast Iron Soil Pipe continues unsatisfactory, the irregularity arising from competition being accentuated by low prices for raw material. On standard 2-6 in. Pipe the market may be represented in a general way by a discount of 70 per cent.; on Extra Heavy, by 75 and 10 per cent., and on Standard and Extra Heavy Fittings, by 80 and 10 to 80, 10 and 10 per cent.

**Shovels.**—Owing to the lightness of the demand from large consumers the Shovel business is dull, and many plants are practically shut down. Low quotations are being made by so-called independent manufacturers, but, as regards prices, conditions are about the same as on other Hardware lines, special concessions being obtainable where orders are to be placed, even though the quantity is moderate. No change in prices has been made by the constituent companies of the Ames Shovel & Tool Corporation.

**Sash Weights.**—The Sash Weight market in the western and central districts is reported as showing increased firmness. The market price is said to be generally well maintained at $20 to $22 per ton, though lower prices have been made in some cases.

**White Lead.**—The position of Pig Lead is somewhat weaker and precludes the idea of higher prices at present of the finished product. The market for White Lead is referred to as firm at the recent advance. Demand in the way of small lots is considered fair for the season, as there is no inducement for buying ahead of nearby requirements. Quotations for best brands are on the basis of 7 cents per pound for 100, 250 and 500 lb. kegs, with an advance of ½ cent per pound over the above price in lots of less than 500 lbs.

**Linseed Oil.**—The market shows comparatively little activity, and what business there is generally represents small lots to meet nearby requirements. There is really more pressure to sell than there is to buy, and the supply of Oil in crushers' hands is considered sufficient to supply current needs. Buyers are looking for concessions in prices rather than for advances. Local quotations are as follows: State and Western Raw, 41 to 44 cents; City Raw, 44 to 45 cents per gallon. Boiled Oil is 1 cent per gallon advance on Raw.

**Spirits Turpentine.**—The market has advanced about 1 cent a gallon during the week, reflecting the stronger tone of the Savannah market, which was the result of heavy export buying. In the local market demand has been light, and only for small lots. The New York market is represented by the following quotations: Oil Barrels, 42½ to 43 cents; Machine Made Barrels, 43 to 43½ cents per gallon.

## CAROLINAS RETAIL HARDWARE ASSOCIATION.

(*By Telegraph.*)

THE fourth annual convention of the Retail Hardware Association of the Carolinas is in progress as we go to press. The meetings are held in the ballroom of the Seashore Hotel, Wrightsville Beach, N. C. The opening session was held on Tuesday forenoon when a goodly number of members and guests, among whom was a delegation of ladies, were in attendance. After the address of the president, W. W. Everett, Rockingham, N. C., the whole of the national hymn, "America," was sung, and not simply the first stanza, as is often the case at such gatherings. The singing was heartily united in under excellent leadership, instrumental and vocal, a copy of the words being furnished in printed form to all in attendance. This was commented on as illustrating the careful and detailed preparation made for the convention.

The formal address of welcome was made by W. E. Springer, Mayor of Wilmington, whose greeting was especially happy, as he is a well-known Hardware merchant of the city. Besides extending the usual courtesies the Mayor gave a résumé of interesting facts in regard to the city of Wilmington, the agricultural and other products of the State, and the development of manufactures and commerce generally throughout the South. Happy responses were made by E. Walker Duval, Cheraw, S. C., on behalf of the members, and by W. W. Watt on behalf of the associate members.

One of the difficulties under which business interests suffer in South Carolina is the want of a proper lien law, and the question as to how the passing of such a law can be secured was discussed by W. M. Otis, manager of the Columbia Lumber & Mfg. Company., whose clear and forcible address led to the calling of a conference of the South Carolina members to determine on what should be done along the lines recommended. A most admirable paper was presented by R. D. Baldwin, Fitchburg, Mass., advertising manager of the Simonds Mfg. Company. It was a carefully prepared and eminently practical paper on the subject of advertising, especially by Hardware merchants, and abounded in excellent suggestions put in a clear, crisp and effective manner.

A brief address was made by R. R. Williams of *The Iron Age*, who touched lightly on some matters connected with the gathering. He referred among other things to the happy combination of work and play which the members were invited to enjoy in accordance with the arrangements of the wisely planned programme which provided for serious work along business lines with ample opportunity for recreation and social intercourse. Attention was then given to the announcement of committees, enrollment of those in attendance, securing the sig-

natures of new members and other matters connected with the business of the association.

The afternoon was given up to inspection of the Hardware exhibits. Wednesday is perhaps the most important day of the convention, the forenoon being given up to an exceptionally interesting excursion, while the afternoon will be devoted to association work and the discussion of several topics of importance.

## Death of William H. Belcher.

WILLIAM HARBORNE BELCHER, the last of the English family of Belchers who manufactured measuring rules in this country for nearly a century, died at his home in Orange, N. J., June 20, of pneumonia,



WILLIAM HARBORNE BELCHER.

in his seventy-ninth year, after an illness of less than two days.

Mr. Belcher and the business of the house were best known to an earlier generation of Hardware men, but although the goods in diminishing volume were sent all over the country to the last, younger houses more in harmony with current methods of production had secured much of the trade in this line. About three years ago an interest in the business was purchased by Edwin B. Stimpson, who in February, 1907, sold it outright to the Lufkin Rule Company, Saginaw, Mich. The latter company, with its great capacity and resources, transferred such machinery, tools, stock, books and papers as were of value, to Saginaw, even taking some of the employees who were grounded in the manufacture of rules through years of experience and conversant with the Belcher methods in producing high grade goods, which in their day were standard products. The old line is still being manufactured by the Lufkin Rule Company, a new catalogue just issued showing various kinds of gauging and wantage rods, shrinkage rules, extension and desk rules, tailors' and dressmakers' squares, beveled yard and curve sticks, yard sticks, shoemakers' size sticks, etc., while some of the old time specialties can still be obtained, to order. Belcher Brothers & Co. made innumerable kinds of measuring devices in lance, maple and boxwood, ivory, &c., not only in the standard styles and sizes but specialties for draftsmen and engineers of various kinds, having for a long time made desk rules, &c., for E. Faber, pencil manufacturer.

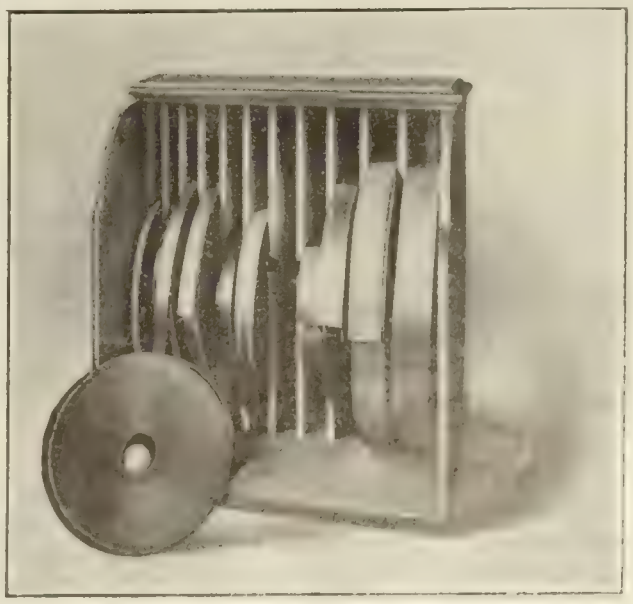
William H. Belcher was born in 1830 in New York City, and was the son of William Belcher, one of the founders of the original rule business in the United States. Zachariah Belcher, an Englishman, originally founded this business in Sheffield, England, in 1788, where, it is said, Arthur Belcher, a grandson of Zachariah Belcher, still carries on in a moderate way the manufacture of Rules. Thomas Belcher came to this country in 1821, and was soon followed by his brothers William (father of William H.), Charles, Zachariah and Henry. At first he settled in Baltimore, but desirous of establishing a plant to be run by water power selected a site at Camptown, now Irvington, where the business has always been carried on.

The subject of this sketch was never connected directly with the manufacture of Rules, but always acted as selling representative, with an office and stock in New York, from which the goods were shipped all over the country. Mr. Belcher, many years ago, also represented directly the Brown & Sharpe Mfg. Company, Providence, carrying a stock of the goods so far as they related to measuring devices of this character, and selling exclusively at the company's own prices.

Mr. Belcher and other members of the family lived in Brooklyn for many years, but about 30 years ago he removed to Orange, N. J., where he has since been a respected and honored resident. He was of the old school of business men, thoroughly honorable and upright in all his dealings, vigorous, of erect carriage and much given to bicycle riding as a healthful pastime until within a comparatively short time. Mr. Belcher valued his home and spent most of his time with his family, his deafness probably having kept him from many activities he would otherwise have been identified with. He is survived by a widow, one son and three daughters.

## A Convenient Belting Rack.

FOR effectively handling narrow leather and rubber belting, the Chandler & Farquhar Company, 34-38 Federal street, Boston, Mass., constructed the rack here illustrated. The uprights are made of ⅞-in. boards, the spaces between them being about the same as the width of the belting they are designed to accommodate. Diagonal runways, 1½ in. across, with circular inner ends, are cut in each upright, all runways being about half the distance between the bottom and the top of the rack. The rolls or axles are made of wood, all 3 in. in diameter and as long as the belting is wide, with a projection turned on each end 1½ in. in diameter and 7-16 in. long. Thus each upright accommodates a projection from each



A Convenient Belting Rack.

side. One of the rolls is shown in the illustration standing by the rack. This arrangement allows the belting to be reeled off for retailing and also an entire roll to be taken from the rack, should occasion require.

THE LANSING WHEELBARROW COMPANY, Philadelphia, has just completed and moved into its new five-story warehouse, standing at the corner of American and Willow streets. The company is carrying a very large stock in this warehouse, from which it will fill orders from all surrounding country and the South.

## ENAMELED WARE WINDOW DISPLAY.

BY FAR WEST.

TO make an attractive window of Enameled Ware is not the easiest thing to do. Especially is this so with Gray Enameled Utensils, which have been in the market so long that it is now the price, more than anything else, that is relied upon to attract and make sales.

**Prices Made Prominent.**

For a display of this kind arrange the utensils in a half circle, starting in the corner of a window and building up the half circle until it terminates in a single article at the top, being careful to have none of the boxes or racks show. Then as price is the main feature, each article should have a plain mark on it, while a large card hung in the window emphasizes the prices, and the arrangement has the appearance of quantity. In combination with other colors of Enameled Ware, effective windows can be made. On the wall side of the window hang one of the large colored posters furnished by the manufacturers. If you have none advertising your particular kind or make, you may use nearly any large poster, providing is has a clean cut design. Follow the outline of the design by hanging Tea and Coffee Pots upon finishing nails placed just far enough apart so that each pot will just touch the next. This can be done by driving the first nail a little to the right or left of the center of the design, if it is circular. Hang a pot and then gauge for the next. Have Tea Pots hang one way, Coffee Pots the reverse.

**Combine Colors.**

**Tea and Coffee Pots.**




*A Window Exhibit of Enameled Ware.*

Hang the other articles on the outline of the rest of the design, as Cups, small Pitcher or Sauce Pans. The poster used in the window trim described was a trademark, the design being a large battle ax. The picture of a woman would be excellent. In using this Kettles could be placed to look as though she were holding them, and a string of Pans hung around her waist.

**A Woman in the Case.**

**For the Window**

place a row of Gray Enameled Tea Kettles close to the glass, the largest a little to one side of the center. On the other side arrange an equal number of colored Tea Kettles, as brown and white, blue and white or green and white. In the center of the window place a large Galvanized Washtub. In front of this put large white lined Platters, so that the tub is entirely concealed. On this tub place a much smaller one, placing flat ware in front of this also, letting the edge rest on the tub underneath.

On the second tub stand a high piece, such as a white enameled Slop Pail, and on top of this place a white lined Wash Bowl inverted, and top the whole with a large white Bowl and Pitcher. If the window has side posts of wood, hang on them tin Sink Strainers. These not only serve to cover the posts, but catch the light and add to the white effect of the window. If all of the window space is not taken up by centerpiece, an Oil or Gas Stove is good for a background; then place Saucepans and Kettles over the burners. In trimming with Enameled Ware there are often found blank spaces that need filling. Saucepans on the Stove, if filled with sand, can be placed so the handle will project without upsetting, and on the projecting handle other Kettles may be hung. These blank spaces should be watched for and prevented, which can only be done by either the trimmer or an assistant going frequently to the outside of the window.

**Preventing Blank Spaces.**

## Trade Items.

THE CHAPIN-STEPHENS COMPANY, Pine Meadow, Conn., and 126 Chambers street, New York, has purchased all the plane machinery and finished stock and the greater part of the raw material of the Doscher Plane & Tool Company, Saugatuck, Conn., which has discontinued business since the death of Marten Doscher a month or two since.

O. CHAN WELLS, 100 William street, New York, who has represented the Casey-Hedges Company, Chattanooga, Tenn., in its Soil Pipe and Fittings department for the past eight years, is now to have, in addition, supervision of its Boiler department for the North Atlantic Coast, also as general agent. Theodore T. Mesereau, formerly United States Local Inspector of Boilers of Steam Vessels, Port of New York, has, in this connection, likewise been appointed sales agent for the marine department of the same company, which has decided to extend its business and compete for marine work in the same territory. The Casey-Hedges Company, capitalized for $1,000,000, manufactures Water Tube, marine and standard Boilers, brickless setting, hollow blast Grates, Cast Iron Soil Pipe and Fittings, water, steam and gas specialties and plumbers' cast iron goods.

ARTHUR PRATT, manufacturers' agent, Spring and Gresham streets, Sydney, N. S. W., is now in this country on a business trip. During the present week he is visiting the Hardware manufacturers of Connecticut with a view to making arrangements with some of them for the representation of their products to the trade of Australia and New Zealand.

THE AUTOMOBILE CLUB OF AMERICA, Fifty-fourth street, New York, his just issued its 1908 year book of 117 pages, which contains much information in regard to the club, including constitution and by-laws, officers, committees, active, life and honorary members, &c.

THE LUFKIN RULE COMPANY, Saginaw, Mich., and Windsor, Ontario, has just issued illustrated descriptive catalogue No. 8 of measuring tapes and rules of every kind, the 96 pages also including illustrations of the two plants as they now exist. The tapes of steel, phosphor bronze linen, &c., include everything, in various systems of graduation, from those for surveyors and engineers to the dainty pocket sizes. Specialties include exhaustive lines of steel and wood desk rules and other measuring devices for diverse trades.

THE RUSSELL, BURDSALL & WARD BOLT & NUT COMPANY, with principal plant at Port Chester, N. Y., other plants being located at Pemberwick, Conn., and Rock Falls, Ill., has issued an elegantly printed and conveniently arranged catalogue of Bolts and Nuts, of which the styles most popular with the largest consumers are illustrated, Rivets, Screws, Staples, Turnbuckles, Washers, &c. It also contains interesting tables of weights, together with a voluminous telegraphic code. It is stated that the company is now prepared to furnish Nuts and Bolts, as well as other work, galvanized in a superior manner, either by a new electro-galvanizing process or by the hot process, as may be preferred.

W. C. Youngblood has bought an interest in the Monroe Hardware Company, Monroe, La., and will be actively connected with the business from now on. G. G. Weaks, vice-president and manager of the company since 1899, has severed his connection, and will enter business on his own account about September 1, handling Mill Supplies, Roofing, Fencing, &c.

# Correspondence.

### The National Prosperity Association.

*To the Editor:* I thought the readers of your valuable journal would be interested to hear about the work of the National Prosperity Association and what it had accomplished.

On May 1, 1908, a number of the largest and most successful business men of St. Louis got together to talk over the condition of business. They reasoned that the panic was over; that there never had been any real good reason for this panic; that fundamentally conditions were all right; that there was no reason now for a depression in business, excepting lack of confidence. The history of this country shows that after panics which have occurred previously, it has taken from three to five years to get back to a full volume of business; and also that Presidential campaigns had a deterrent influence upon the course of business. We believed it was possible, by a strong, vigorous, intelligent effort, to overcome these handicaps and to hasten the return of business activity very materially. It was a sort of vague proposition—rather difficult to know how to begin and what to do; but after careful consideration we made our plans, and have worked to them with some considerable success.

We first ascertained that there were about 100,000 business organizations in the United States. To every one of them we sent out prosperity literature—our letter of good cheer and our platform of full dinner pails, &c.—asking co-operation and approval—which we received in unstinted measure; in fact, we marveled at the wonderfully prompt and cordial responses that came to hand by the thousand. Nearly all of these letters stated that they were willing to do anything we asked of them—to work in any way we directed—attend any meeting that we could get up; in fact, a number of them were decidedly in favor of a large Prosperity Congress to be held in St. Louis almost immediately. This gave us a realizing sense of the importance and the purpose of these business organizations, and when we come to think of the tremendous influence they could wield if their entire power was concentrated on turning public opinion into healthy channels, it was something most interesting to contemplate.

Next, our Executive Committee visited President Roosevelt and made a short address to him; received a most cordial response at his hands—all of which has been made public, so I shall not attempt to repeat it. After that we were given a luncheon by the Chamber of Commerce of New York City, where our work was discussed impartially and logically, and the conclusion they reached was that we were working on the right lines and we could accomplish a great deal, and they promised us cordial and hearty support.

After returning to St. Louis, our committee originated and put into shape the idea of a Re-Employment Day on June 1. We sent circulars to all the business people of St. Louis, asking them to take back as many of their old employees as possible on June 1, whether they wanted them or not. The result was that 17,800 people were put to work on that day, and the idea of a Re-Employment Day was established as a fact and one that could be put into successful operation. This was a practical thing, which clearly demonstrated that our organization was based upon good sense, and that results could be obtained. Cincinnati took up the work of Re-employment Day, and they have been very successful, so that on July 1, most of the idle people in and around Cincinnati were put to work again. Chicago did the same thing. Cleveland has fixed August 1 as Re-Employment Day, but it looks now as though they would not be able to wait that long, because of the increased business that has come to them. We feel vastly pleased at the result of this plan of having a Re-Employment Day, because it has produced such success.

The more we considered the problem of prosperity the more we realized that we could not have it in full measure until the railroads began to buy, as they are the greatest purchasing power on the face of the earth. We found that last year the railroads bought of raw material and manufactured products, $2,250,000,000 in value; we found the deficit in their purchases this year for the first six months, as compared to the same period of last year, was $450,000,000. We therefore commenced an earnest, active campaign of education—trying to change the prevailing sentiment of antagonism and distrust toward railroads, to friendship and friendliness.

In my address on June 10 to the Commercial Clubs convention in Oklahoma I laid great stress and dwelt with as much force as possible upon the necessity of giving the railroads a chance to adapt themselves to new conditions and new laws before framing others. This convention consisted of delegates from the Commercial Clubs of all the cities in Oklahoma. It seems they have a Commercial Club there in every place of any importance, and they convened in Oklahoma City for the express purpose of declaring themselves opposed to drastic and unfavorable legislation, which has the effect of keeping out capital and of deterring railroad improvement and expansion. Their resolutions, unanimously passed, were exceedingly strong, and in substance they said that their votes would be against any man who would favor unfriendly laws against large corporations and against railroads; that they realized capital was timid; that they need capital very much indeed to develop the resources of that wonderful State, and they did not want to wait five or ten years for it; therefore, they wanted to make it known in the most public way possible that sentiment was favorable and legislation would be friendly.

Among other means that were employed was the insertion of our "Good Cheer" letter and our platform in 2000 country newspapers—all of which appeared within the space of one week, and it is estimated that we reached from 9,000,000 to 10,000,000 of the farming community in that manner.

On June 29 Texas held a convention in Galveston for the same purpose as the Oklahoma convention. Their slogan was "Fewer laws and better laws." There has been a marked change in sentiment during these 60 days, and it is confidently believed now that where there was a general feeling of antagonism toward railroads and large corporations, it is now fully realized that the interests of these railroads and large corporations and the interests of the people at large are so corelated, so interlinked and so closely allied that what hurts one hurts the other; in other words, that any one who hurts the railroads hurts the masses of the people—and especially hurts the working man.

An evidence of change in sentiment was shown in the recent election in Georgia, where Governor Hoke Smith, who sought re-election, was turned down because of his opposition and unfriendly attitude toward railroads, and the vote of that State was reversed by about 40,000.

In my address in Oklahoma City June 10, I used two phrases which seem to have "caught on" remarkably, as they have been quoted all over the country. One of those was "Stop rocking the boat." It seems to be catchy—people seem to like it—at least newspaper men do, and it is being quoted very frequently. The other was, "Don't burn down all your barns trying to smoke out a few rats"—which has likewise become very popular and has been repeated many times.

We are now trying to get adopted as a slogan for the coming campaign a sentence used in the Oklahoma address, viz.: "Let us get back to full dinner pails and dividends." If you can do anything through *The Iron Age* to accelerate the adoption of that slogan, assuming that it meets your approval, of which there is not the slightest doubt in my mind, I shall consider it a good help in pushing along the prosperity movement.

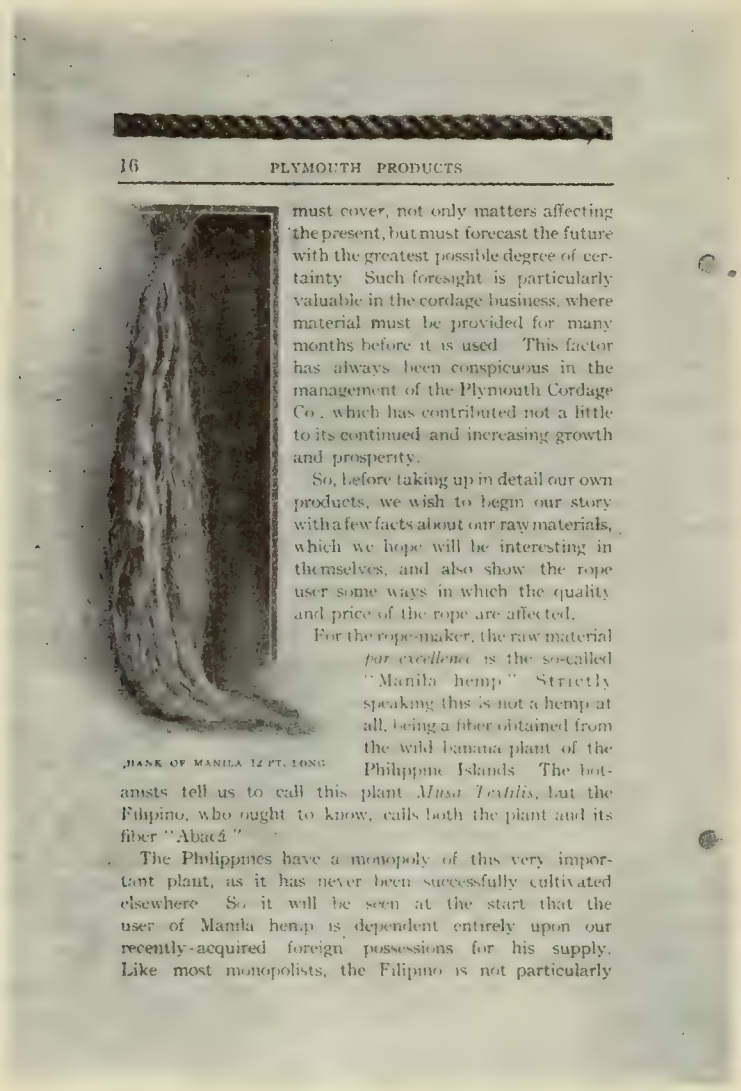
Meanwhile, our own business has been growing better each week. The month of June was very satisfactory indeed—far better than we had reason to think it could possibly be, and we cannot but believe that the generally hopeful atmosphere of the country—with the sunshine and good cheer which has been brought about by the work of the Prosperity Association—has contributed in no small degree to the great improvement that there is in business conditions since May 1, or since the National Prosperity Association was organized.

Speaking of the help we have received and the co-operation from so many different sources—I express my gratitude for the help given us by the Michigan (State) Retail Hardware Dealers' Association. They got out a circular, which was remarkably well gotten up and forcibly worded, calling attention to our work—asking every member of their association to join in it—to pull on the prosperity rope—to push on the prosperity line—and to "lift" with the prosperity lifters. If we could have that done in every State in the Union and let the Hardwaremen be leaders in it, it would be a good thing, because it would put before the world the fact that the men who are engaged in the Hardware business in this country are the leaders in every good work—foremost in every undertaking, with any amount of "get up and git," progress, push and enterprise. Yours truly,

E. C. SIMMONS, Chairman Executive Committee National Prosperity Association.

## Plymouth Cordage Company.

THE initial number of the house organ, "Plymouth Products," published by the Plymouth Cordage Company, North Plymouth, Mass., was largely historical in character, but the second now at hand amply substan-



16 PLYMOUTH PRODUCTS

must cover, not only matters affecting the present, but must forecast the future with the greatest possible degree of certainty. Such foresight is particularly valuable in the cordage business, where material must be provided for many months before it is used. This factor has always been conspicuous in the management of the Plymouth Cordage Co., which has contributed not a little to its continued and increasing growth and prosperity.

So, before taking up in detail our own products, we wish to begin our story with a few facts about our raw materials, which we hope will be interesting in themselves, and also show the rope user some ways in which the quality and price of the rope are affected.

For the rope-maker, the raw material *par excellence* is the so-called "Manila hemp." Strictly speaking this is not a hemp at all, being a fiber obtained from the wild banana plant of the Philippine Islands. The botanists tell us to call this plant *Musa Textilis*, but the Filipino, who ought to know, calls both the plant and its fiber "Abacá."

BUNCH OF MANILA 12 FT. LONG

The Philippines have a monopoly of this very important plant, as it has never been successfully cultivated elsewhere. So it will be seen at the start that the user of Manila hemp is dependent entirely upon our recently-acquired foreign possessions for his supply. Like most monopolists, the Filipino is not particularly

*Page from Monthly Bulletin Issued by Plymouth Cordage Company.*

tiates the promise of the company to furnish through this channel interesting and unusual information of value to all buyers and users of Rope. The raw material of the Rope maker, Manila hemp, is the subject of this number, which treats at length of the growth, handling, grading, packing and shipping of the raw product. It is written in a clear and entertaining style, excellently printed on good paper and contains a profusion of handsome and picturesque halftone illustrations, which add much to the interest of the story. Perhaps no better idea can be given of the contents of the booklet than by presenting the accompanying reproduction of one of its pages. This will indicate the interest of the subjects chosen for illustration, and a glance at the text distinctly suggests the technical importance of the information compiled. In a chapter entitled "An Object Lesson" in the first issue of "Plymouth Products," the company makes a comparison which may be startling to the uninitiated. This comparison presents by means of photographic illustration and also by measurements and tests the relative value and strength of two coils of Rope, one being of the company's manufacture and the other being of so-called Manila, selling 3 cents per pound lower than Plymouth. The two Ropes were both ½ in. in diameter and were taken from regular stock just as they were placed on sale. After the burlap covering had been removed, the coils were photographed and accurately weighed and measured. A number of pieces of each were also tested upon a reliable testing machine. As already suggested the difference in the two coils is instantly apparent from a glance at the pictures, the coil of Plymouth Rope appearing much more bulky and substantial. The results of the tests and measurements were even more conclusive, being tabulated as follows:

| | Plymouth. | Anon. |
|---|---|---|
| Length of rope in coil | 1,250 ft. | 1,070 ft. |
| Weight of coil with lashings | 97 lb. | 97 lb. |
| Weight of lashings | 1 lb. | 3 lb. |
| Assumed price per pound | 12 cts. | 9 cts |
| Comparative price per 100 ft | 93 cts. | 82 cts. |
| Breaking strength | 2,907 lb. | 1,450 lb. |
| Comparative value (Plymouth worth 12 cents) | 12 cts. | 5⅔ cts. |

It goes without saying that the company is doing the trade a service in issuing these bulletins. The information disseminated will doubtless be new to many handlers of Rope, who, by its intelligent study, cannot fail to become more proficient as buyers or sellers of this product. Further steps in the process of manufacture, &c., will be treated in forthcoming issues, and a large proportion of the trade will doubtless avail themselves of the company's offer to send the paper gratuitously upon request.

## Requests for Catalogues, Etc.

*The trade is given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.*

**REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate:**

FROM GENSEMER & Co., Duncannon, Pa., who have opened a new Hardware and House Furnishing Goods store.

FROM THE PARK STREET HARDWARE & LOAN COMPANY, which has been incorporated in Hartford, Conn., with $3000 capital stock, handling Shelf and Heavy Hardware, Paints, Oils and Sporting and Athletic Goods. New fixtures have been installed in the store.

FROM WHITE & TEMPLE, Mankato, Kan., who have purchased the Vance Hardware business in Randall, Kan., and will continue it under the name of Randall Hardware Company. The lines handled are Shelf and Heavy Hardware, Stoves, Tinware, Paints, Oils and Sporting Goods.

FROM G. T. HANSON, who has purchased the store of M. O. Rime, Oxfordville, Wis., dealing in Shelf and Heavy Hardware, Stoves, Tinware, Paints and Oils.

FROM STOFER MERCANTILE COMPANY, which is opening a store in Headrick, Okla., and will handle Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints, Oils, Sporting Goods and Furniture. The company has other stores at Snyder and Manitou, Okla.

FROM MCKINNEY & VAN ALLEN, who have embarked in the Hardware business at Spirit Lake, Idaho.

FROM YAEGER-BETHEL HARDWARE COMPANY, Tallahassee, Fla., wholesale and retail Sporting Goods, Mill Supplies, Building Material, Stoves, Paints, Oils, Agricultural Implements, Plumbing, Roofing, &c., which has reorganized its office system and now has excellent facilities for accommodating catalogues and other trade literature issued by manufacturers. The company will value catalogues, price-lists, &c., relating to the above lines.

# PACIFIC COAST HARDWARE JOBBERS' CLEARING HOUSE.

THE good feeling among competitors which is increasingly characteristic of the Hardware trade has borne valuable fruit in the recent months of financial stress and business depression. Skeptical ones, formerly inclined to discount, as a product of prosperity, the harmony apparently existing, have been forced to admit that in many instances it has stood the test of hard times and proved of most substantial benefit to the trade in one

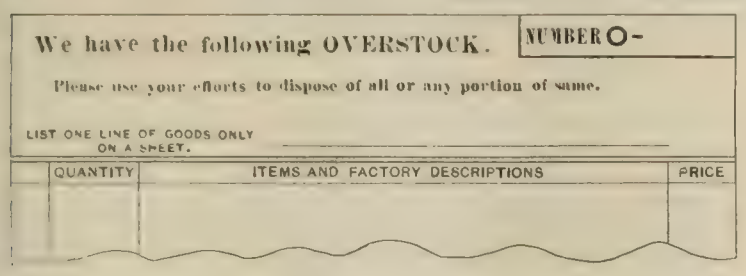



*Fig. 1.—Overstock Blank Which Is Filled Out by Member and Sent to Secretary.*

and another locality. A striking instance of harmony and good feeling carried to the extent of actual practical co-operation has been furnished by the Hardware jobbers of the Pacific Coast.

### Interdependence of Jobbers on the Coast.

The situation of these houses is unique as compared with those in other sections, combining elements both of weakness and of strength. Cut off in a way from the rest of the country and far from their source of supply

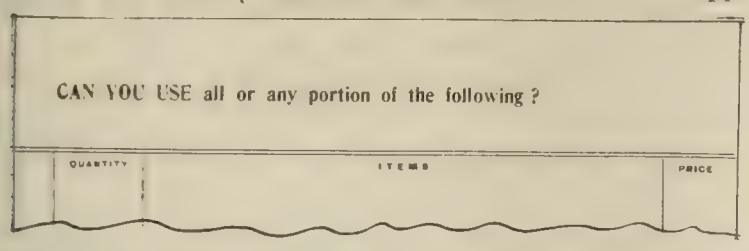



*Fig. 2.—Overstock Blank Filled Out by Secretary and Sent to Association Members.*

in many lines, they realized their independence and put in practice a plan of co-operation which is now referred to with satisfaction by all concerned. This did not involve entering into any hard and fast agreements or the fixing of any prices; it consisted merely in taking

### Measures for Mutual Protection

against well defined and distinctly foreseen evils which without such protection would be almost certain to develop as a result of existing conditions. This was done by the establishment of what for want of a better term was called a jobbers' clearing house, with the object of

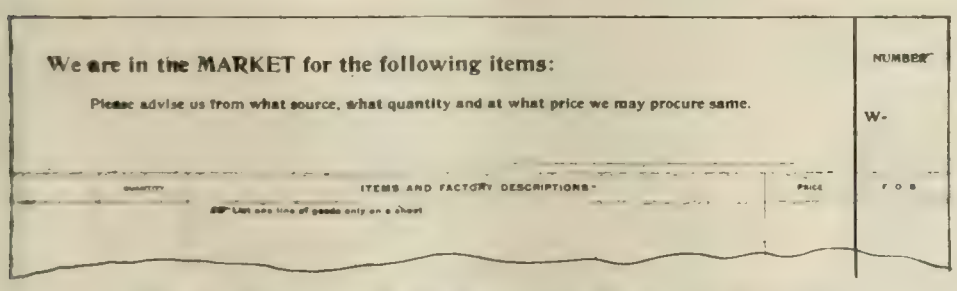



*Fig. 3.—Requirements Blank Sent by Member to Secretary.*

reducing stocks of goods in the territory and conserving the local financial resources by obviating the necessity of placing orders in the East.

### Heavy Stocks When Panic Struck.

Business through the spring and summer of 1907 had been very active, and at the time the panic struck stocks were heavy. With the resultant falling off in business nearly every one found themselves overloaded in certain lines of goods. Price reductions were imminent, and the natural result would have been a rush to unload, which would have brought about a disastrous break in prices. Instead, the sensible plan was adopted of helping each other to unload, an arrangement made possible by the organization and friendly understanding already existing. Through the secretary of their association, different houses notified each other as to the lines on which they were overstocked, and also those in which they were required to make purchases, the result being in many cases

### An Exchange of Surplus Stock

on terms entirely favorable to both sides. In the Portland, Ore., Association blanks were prepared for the use of members in reporting and for the secretary in announcing overstock and needed goods. The same system was adopted by other local associations, and in some instances lists were then exchanged by the different association secretaries, thus broadening the field of operation. It is reported that the system worked without a hitch during the acute period of the stringency when all were trying to reduce their stocks and avoid as far as possible the placing of new orders with the manufacturers.

### The Method of Operation

was as follows: A house that was overstocked on any item filled out blank No. 1, reproduced herewith, forwarding it to the secretary of the association. From these sheets he made up schedules on blank No. 2, furnishing one to every member. Those who could use any goods on the list notified him, and he placed them in communica-

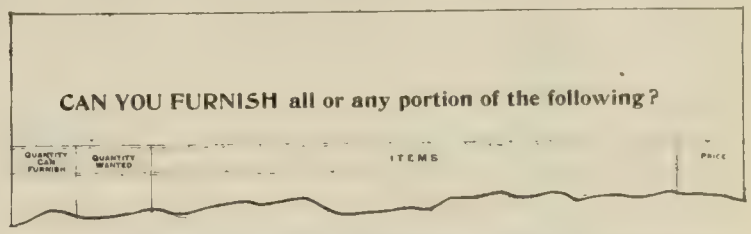



*Fig. 4.—Blank Announcing Requirements Sent by Secretary to Members.*

tion with the house carrying the overstock. Very much the same system was used when a house desired to make a purchase. Instead of sending his order East to the manufacturer, the buyer would fill out blank No. 3 and send it to the secretary, who in turn would make up a schedule on blank No. 4 and send copies to all members. If they could furnish any of the goods needed they would notify the secretay, and he would place buyer and seller in communication. Adjustments were generally on a basis of cost laid down, and it will be readily seen that frequent settlements by remittance were unnecessary, as exchanges were likely to be made both ways.

### The Advantages of the Arrangement

were many and so obvious that they need only to be hinted at to be clearly understood by intelligent merchants. By distributing the stock already in the territory a material reduction was effected in the total amount which the territory was required to absorb. There was also a corresponding reduction in the amount of stock necessary for one house to carry, since in case of sudden shortage they could draw upon the surplus of their neighbors. Much greater stability was imparted to the local market, as houses were enabled to reduce their lines without resorting to the expedient of cutting prices. It may even be imagined that where a merchant was especially overloaded and made known the exigencies of his situation, his competitors would rather assist him by distributing the stock among themselves than have him throw the goods on the market at low prices.

When needing goods a jobber could sort up his stock without taking the quantity necessary to get favorable prices from the manufacturer and secure minimum transportation rates.

Another very patent benefit to the individual merchant, as well as to the community, was that of reducing outgoing remittances and keeping available funds in local circulation.

As a result of the arrangement it is safe to say that the houses on the Coast gained a new idea of the advantages of co-operation. The cordiality between them has been greatly increased, and, even though the present system is not continued in all its details, these broad gauge merchants have learned that they can come to-

gether and discuss matters which formerly would have been considered beyond the pale of discussion among business competitors.

## Wanted: System for Repair Work.

OUR readers are invited to recommend to an inquiring Hardware firm a system for keeping track of repair work. Our correspondents mention the following as features of the system which they desire:

1. Book form arrangement enabling them to have a copy of each repair order taken, showing the detail of the work, costs, selling price, &c.

2. Detachable numbered tag which could be given to the customer and returned when the work was called for.

We shall be pleased to hear from the trade with advices which will be of service to our correspondents.

## Price-Lists, Circulars, Etc.

*Manufacturers in Hardware and related lines are requested to send us copies of catalogues, price-lists, &c., for our Catalogue Department in New York; and at the same time to call attention to any new goods or additions to their lines, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.*

F. D. KEES MFG. COMPANY, Beatrice, Neb.: Booklet devoted to Gossett Hinges for Screens and Storm Sash.

LAWRENCE BROS., Sterling, Ill.: Booklet presenting plain, strong selling points of their newer products, and illustrating No. 30 Steel Trolley Barn Door Hanger and No. 301 Trolley Rail and Colonial Hinge.

ISZARD-WARREN COMPANY, 1122 Vine street, Philadelphia, Pa.: Catalogue illustrating Sterling Transits and Levels, Engineering Field Equipments, Drafting Room Outfits and supplies.

IRELAND & MATTHEWS MFG. COMPANY, Detroit, Mich.: Catalogue and price-list illustrating Stove Ornaments, Nickel Stove Rings, Edges, Strips, Stove Knobs and Hinge Pins, Screw Draft Registers, Gas Mixers, Towel Racks, Shakers and Scrapers, Stove Bolts and Stove Rods.

NORDYKE & MARMON COMPANY, Indianapolis, Ind.: Budget of special catalogues covering an extensive line of milling machinery, including Grinding Mills, Rice and Corn Mill Machinery, Dusters, Sifters, Packers, Bolting Machinery, &c. Also catalogue of the Marmon Motor Car.

INTERNATIONAL CUTLERY COMPANY, Fremont, Ohio: Illustrated catalogue and price-list of handy size referring to Shears, Scissors, Razors and Strops, Tinners' Snips, Pruners, &c.

EVAN L. REED MFG. COMPANY, Sterling, Ill.: Illustrated catalogue No. 2B, referring to Hardware and Woodenware specialties.

PELOUZE SCALE & MFG. COMPANY, Chicago: Illustrated catalogue K, describing and listing the company's extensive line of family, postal, counter and confectionery Scales.

THE NEW ENGLAND HARDWARE DEALERS' ASSOCIATION has decided to hold a summer outing which will be a stag affair. The attendance of representatives of the different branches of the trade in New England, retail, wholesale and manufacturing, is invited. It is said that Davis' Indian Troupe and Abbe's Glee Club will be among the special features of the occasion, which is sure to be an interesting one. The date of the outing has not yet been chosen, but those who are desirous of participating in it may communicate with F. Alexander Chandler, chairman of the Committee of Arrangements, 36 Federal street, Boston, Mass.

THE HERCULEVER COMPANY, manufacturer of the Herculever Box and Case Opener, recently described in these columns, has taken offices and warerooms in the new Hardware Building, 106-110 Lafayette street, corner of Walker street, New York City.

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## AMONG THE HARDWARE TRADE.

F. Midelburg, successor to the Kitsap Trading Company, Port Orchard, Wash., is erecting a new Hardware warehouse.

C. W. Hawes & Co., Leola, S. D., has purchased the Hardware and furniture department of the Leola Exchange.

Barry Hardware Company, Clovis, N. M., whose store and stock were destroyed by fire, have a new building in process of construction, which they hope to occupy by July 15.

Pierce-Field Hardware Company has succeeded Reed & Wyman Company, San Diego, Cal.

Harris & Wedick have purchased the Hardware, Stove, Paint and Sporting Goods business of Richards Hardware Company, Sugar City, Colo.

Williard Bros. & Holt's retail store, 715 Cherry street, Chattanooga, Tenn., was recently destroyed by fire, the loss being fully covered by insurance. Their new building is being erected as rapidly as possible, and the stock of Hardware and Paint is being replaced.

Merry Hardware Company has succeeded to the Hardware, Stove, Tinware, Sporting Goods, Harness and Vehicle business of Fraser-Moore Hardware Company, Stillwater, Okla.

Massie-Kelley Hardware Company has been incorporated with a capital of $6000 to conduct a retail Hardware, Stove, Tinware and Sporting Goods business at Frederick, Okla.

Peterson Brothers, Calamus, Iowa, have succeeded M. E. Peterson & Co., the members of the firm, however, remaining the same as before.

W. G. Arnold has purchased the interest of A. F. Meyer in McGrath Hardware Company, Hastings, Neb.

Miller Vidor Saw Mill Company is opening a Hardware store at Milvid, Texas.

As a result of the purchase by L. M. Annan of the interest of B. H. Quick in the Froyd-Quick Company, Moline, Ill., the name of the concern has been changed to the Froyd-Annan Hardware Company; the officers being A. E. Froyd, president and general manager; L. M. Annan, vice-president; A. N. Johnson, secretary and treasurer.

G. R. Werner has purchased the business of F. S. Lovitt, Colby, Kan., and will handle Shelf and Heavy Hardware, Agricultural Implements, Vehicles, Pumps and Windmills.

J. P. Strickler has succeeded to the business of Kruchek Bros., Waitsburg, Wash., and will handle Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints, Bicycle Supplies and Harness.

Gross & Vincent have purchased the business of Labor & Wordy in Creston, Wash., and will handle Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints, Oils and Sporting Goods. The firm will erect a brick building on the site of Labor & Worby's store, which was destroyed by fire. The new firm is now occupying temporary quarters.

Fire recently caused about $15,000 damage in the Hardware store of W. S. Kaulback, Malden, Mass.

J. D. Cotty, Cameron, Mo., has sold his Hardware, Stove, Paint and Sporting Goods business to G. A. Easterday.

## Disston Plumb and Level No. 27.

Henry Disston & Sons, Philadelphia, Pa., have added to their line the plumb and level illustrated herewith. It is of solid cherry stock, natural finish. The end and top plates are of brass, fastened with brass screws. There are two brass lipped side and two brass lipped plumb views, and the tool is fully tested for accuracy. The level



*Disston Plumb and Level No. 27.*

and plumb glasses are set in brass tubing. Each tool is put up in a neat pasteboard box and lengths are assorted, 12, 14, 16 and 18 in. This same pattern plumb and level is made in longer lengths under Nos. 28 and 29, while Nos. 30 and 31 possess the additional feature of being adjustable.

## Daisy Automatic Baster.

The Beaver Mfg. Company, Beaver, Pa., is manufacturing the self-basting roaster shown in the accompanying illustrations. It is made throughout of smooth, heavy sheet steel, well wired and handsomely finished on the outside of the pan with dead black coating. On the inside it has a coating of anti-rust. The handles are of heavy




*Fig. 1.—Daisy Automatic Baster.*

coppered steel wire. It is stated that the pan affords ample room for a 14-lb. roast, being 16½ in. long, 10½ in. wide and 10 in. high. The percolator, which is the feature of the roaster, will be observed in Fig. 2. The pan has an inclined bottom, so that water which it contains runs down toward the percolator, while the roast rests on a level roasting plate which is raised above the bottom of the pan and keeps the meat out of the water. In using the roaster 2 quarts of water are poured into the pan, the roasting plate put in and the percolator set in place.

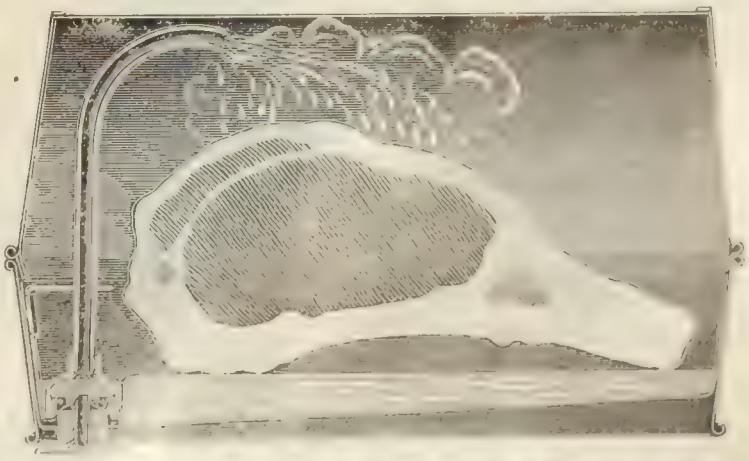


*Fig. 2. Interior of Baster, Showing the Operation of the Percolator.*

The roast is then put in and the cover affixed. The roaster is put in the oven or on top of the range and allowed to remain the usual length of time required for cooking a roast. The water is boiled in the aluminum plate which is part of the percolator and bubbles up, raising and lowering the check valve and gradually forcing

the water up the pipe from which it is sprayed over the roast. It is explained that after the roast has been in the oven about ½ hr. enough water will evaporate to stop the percolator working, but there will still be enough water in the pan to prevent scorching even a large roast, which must remain in the oven 3 hr.

## Hermetic Padlocks.

The Yale & Towne Mfg. Company, 9-15 Murray street, New York, has just introduced the Hermetic line of padlocks in three grades of the same general style, each having distinctive features which are principally in the locking mechanism. Fig. 1 illustrates the No. 726 Yale padlock, having the genuine Yale pin tumbler mechanism, each lock being fitted with four pin tumblers, capable of 144 key changes, and packed with two nickel-bronze Paracentric keys. Fig. 2 is a sectional view of the annular case, Fig. 3 showing the case complete and the keyway.



*Fig. 1.—Yale Hermetic Padlock, Rear View.*

This novel constructive principle eliminates exposed seams, joints and rivets. The annular case is a single member of cast metal, within the central opening of which are located the locking parts. Both sides of the lock are closed by a strong and rigid steel disk, each of which is expanded into a grooved seat in the case, thus hermetically sealing, as it were, all the interior parts against exposure to the elements or mechanical attack. This watch case principle of production affords no opportunity for slipping a tool into an exposed joint to force it open, and there are no rivets to file. In addition to these elements of security the locks are attractive in appearance. Having the same general features are the Cyclox, No. 526, and Loxol, No. 326, all at present having the uniform diameter of 2¼ in., but other sizes may be made later. The Yale



*Fig. 2.—Section of Annular Case.*

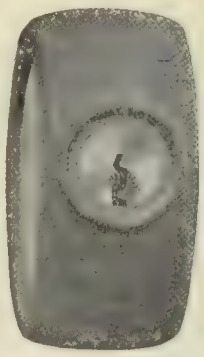


*Fig. 3. Case Complete and Keyway of "Yale" Model.*

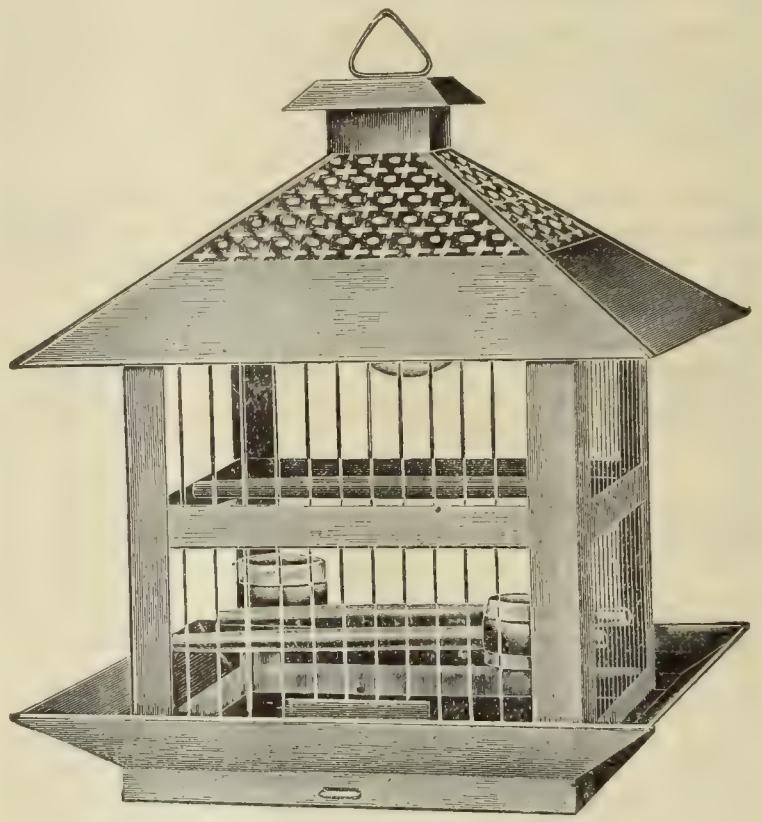
is 1 in. thick and the other two ⅞ in. The Cyclox is of the lever tumbler or secure lever type, having four double acting lever tumblers, 144 key changes and two flat steel nickel plated keys. The Loxol is warded with six key changes and two flat steel nickel plated keys. The shackle action of all is of the rotating type, the shackle when released being thrown upward a short distance automatically, when it is free to rotate in either direction, but on being pressed backward into position locks automatically. The shackle is made of steel rod, polished and nickel or brass plated. The annular lock case is of cast iron and the disks are of cold rolled steel. The "Yale" case is Bower-Barff finish, with bronze plated disks, Fig. 1 reproducing back of case, the front having "Yale" in a 1-in. circle. The Cyclox case is brass plated, oxidized, with rim surrounding disks relieved and steel disks of Libian black. The Loxol case is of Nubian finish and copper plated steel disks. All of the locks are listed as shown or with 9-in. chains, as desired.

## Buffalo Scale Company.

The Buffalo Scale Company, Buffalo, N. Y., has added to its line new types of scales framed with steel, including heavy dormant scales from 8000 to 10,000 lb. capacity; also wagon, miner, railroad track and industrial scales with steel framing. The demand for this construction, it is stated, has become quite large in the last few years, and scales so framed are regarded as much superior to those framed with timber.

## The Hendryx Mission Cage No. 8000.

A bird cage which is unique from the fact that it is a radical departure from the usual type of cages is illustrated herewith. It is put on the market by the Andrew B. Hendryx Company, New Haven, Conn., The cage is made of solid brass throughout, in mission style of con-



*The Hendryx Mission Cage No. 8000.*

struction, and finished in dull brass. It is 15¼ in. high and 8¾ in. square. Patents have been applied for on both the construction and design.

## The Perfect Bread Maker.

The Wm. J. Witte Mfg. Company, 31 and 32 Park Row, New York, is manufacturing a bread mixer, which is used in connection with a pan, having a dough capacity of about eight loaves. The mixing rod is mounted on a detachable frame in such a manner as to allow it to be tilted out of the pan, so that the dough, after kneading, can be stripped from the rod by putting a little flour on the finger and pushing the mass off. At the same time the pan can be withdrawn from the frame and the mixture allowed to rise in the pan in which it is mixed. The mixer can be easily adjusted, and as quickly removed for cleaning. The mixing pan is kept in a permanent position while in use, by a hooked frame made of steel rod, which can be quickly secured to table or ledge, whether ½ in. or 2 in. thick. In operation as the mixing rod is revolved by a crank handle, it picks up the dough, which from its soft, spongy character tends to lag and travel slower than the mixing rod which draws through it, thus reaching in the operation eventually every part of the mass and distributing evenly the yeast and other ingredients with a comparatively small amount of labor. The retail price of the bread maker complete is $1.

## The Marshalltown New Brick Trowel.

The Marshalltown Trowel Company, Marshalltown, Iowa, is placing on the market a new brick trowel designed to meet the most exacting requirements of bricklayers. Evenly balanced proportions is a feature that has been carefully considered in its design, particular attention having been given to the lift. The trowel is made of crucible trowel steel of superior quality, and it is asserted that no pains have been spared in finish and workmanship to make it a model tool. The various sizes in which it is furnished include blades 10, 10½, 11 and 11½ in. long, with 6-in. heels and leather handles.




*The Marshalltown New Brick Trowel.*

## The Universal Knife Cleaner.

The accompanying illustrations represent a knife cleaner put on the market by Landers, Frary & Clark, New Britain, Conn. In Fig. 2 a view of the interior of the machine is shown, looking at it from the back. A are leather covered cleaning disks; B, screws to tighten disks; C, device for feeding flour of emery to the cleaning disks; D, trough for holding the emery, and E, screw for fastening machine to table. The machine is small and convenient, and is designed for brightening steel bladed knives. In use the blade of the knife is put between the cleaning disks, back downward, as shown in Fig. 1, and the blade is drawn toward the operator as the handle of the machine is turned. It is pointed out that by the use of the machine the table can be set for every meal with bright, clean, sharp knives, and with very slight addition to the household labor.

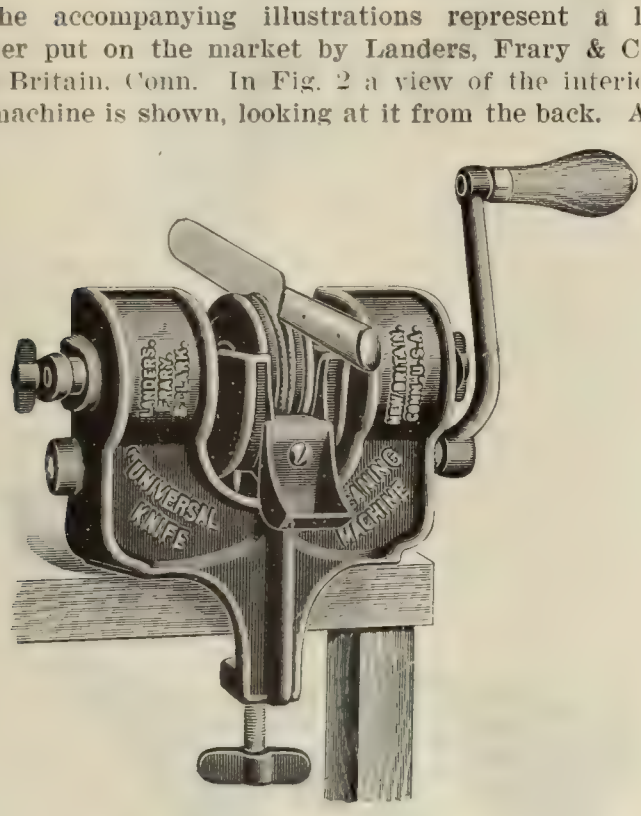



*Fig. 1.—The Universal Knife Cleaner.*

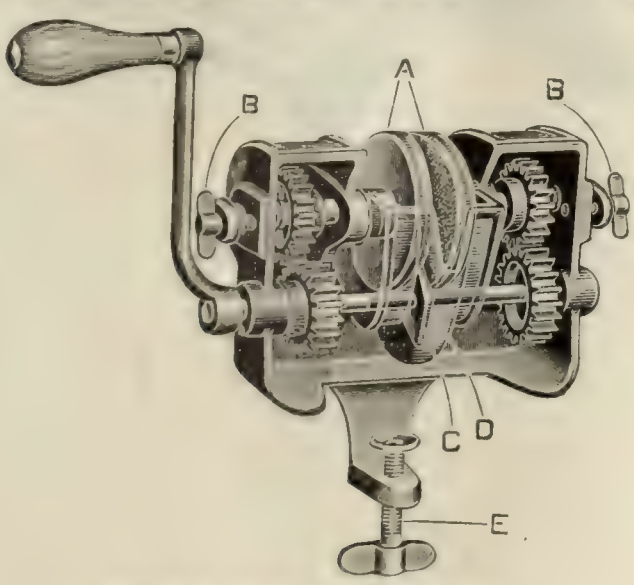



*Fig. 2.—Interior of Knife Cleaner.*

## Buckeye Traps, Flanges and Valves.

The accompanying illustrations represent various new devices put on the market by Mast, Foos & Co., Springfield, Ohio. The sink trap, Fig. 1, designed for use with iron pipe. It can be readily attached, and is easily cleaned by removing the screw cap shown in the illustration. The makers state that the trap is cheaper and more conveniently used than lead pipe sink traps, and is guaranteed to give entire satisfaction. The flanges shown in Fig. 2 are for attaching force and lift pumps to well pipe or casing. No. 1 shows a flange to be used instead of the base on ordinary lift pumps, the large end slipping over the casing. No. 11 is for use with double acting pumps, the oval part of the flange supporting the base of pump bolted to it. No. 14 is used with lift or single acting pumps with round bases. The horizontal check valve shown in Fig. 3 is designed to overcome features of weakness in old style valves commonly used. It is well made, with brass valve seat and poppet valve, while the cap in the top gives easy access to the working parts without disturbing the pipe. The vertical union check valve, Fig. 4, is made with union connection, so that the valve can be dismantled without disturbing any of the pipes.



*Fig. 1.—Buckeye Cast Iron Sink Trap 293.*



No. 1. No. 11. No. 14.

*Fig. 2.—Buckeye Pump Flanges.*



*Fig. 3.—Buckeye Horizontal Check Valve 292.*



*Fig. 4.—Buckeye Vertical Union Check Valve.*

## Carver Tool Works.

In the new catalogue of the Carver Tool Works, Spring Valley, N. Y., which is now being distributed, will be noted several additions to the company's line. Among these may be mentioned knurled nail sets, knurled tinners' and center punches, tile setters' hammers and chisels, brick hammers and slate roofers' hammers and rippers. All of the tools are described by the manufacturers as being of high quality and finish and approved shape, and it is believed that they will fully maintain the reputation of the company's other lines of tools.

## The Bergman Improved Corner Bit Brace.

Bergman Hardware & Tool Company, 19-21 Douglas street, Buffalo, N. Y., is making the corner bit brace shown in the accompanying illustrations, de-

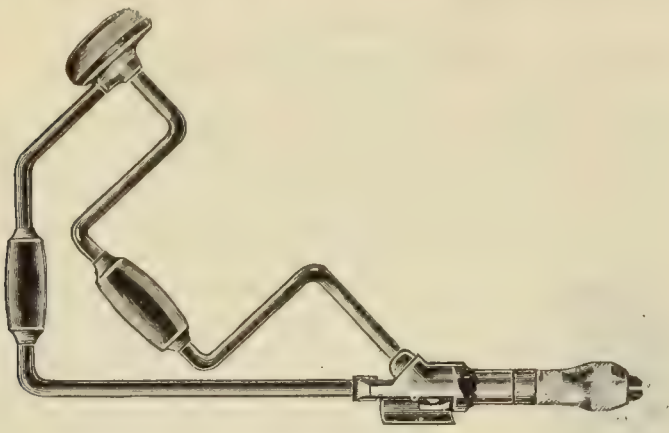


*Fig 1.—The Bergman Improved Corner Bit Brace.*

signed for the use of electricians, steam fitters, plumbers, bell hangers, telephone workmen, pattern-makers, vehicle builders and mechanics generally. The device is referred to as taking the place of a breast drill and ratchet brace and as being especially useful in corner boring and between beams. The braces are made with the universal knuckle, shown in Fig. 2, enclosed in a sleeve so that the dirt and grit cannot enter

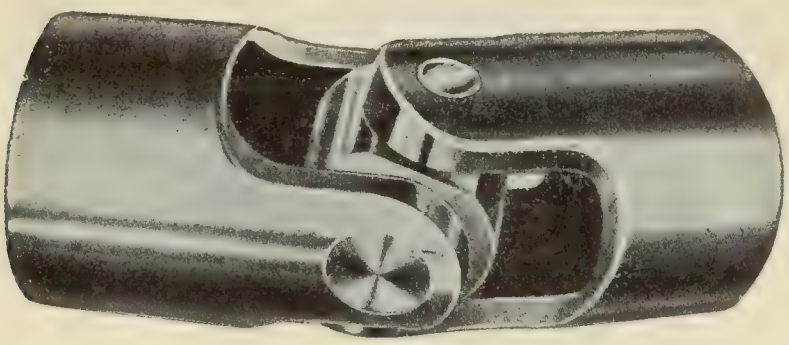
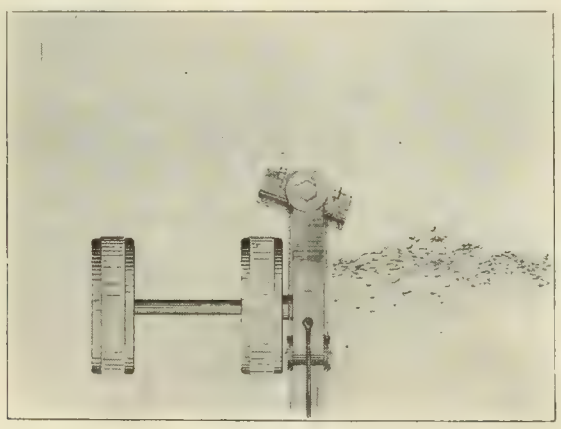


*Fig. 2.—Hardened Steel Universal Joint.*

the wearing parts. In Fig. 1 the brace is shown with the guard open. The universal joint is turned from solid bar steel and all bearings are hardened and fully tempered. The braces have forged jaws and all bearings are case hardened, with taper pins used throughout the construction.

## The Johnson Adjustable Floor Scraper.

The floor scraper shown herewith, is manufactured by S. C. Johnson & Son, Racine, Wis. The illustration gives a view looking down upon the top of the scraper in operation. It is referred to as being built upon an entirely new line, in that it has a blade which can be ad-



*The Johnson Adjustable Floor Scraper.*

justed to any angle by the operator through the medium of a small lever on the handle. The machine, it is pointed out, will work with the knife at an extreme angle and any tendency which the machine might have to "skid" or go sideways is overcome by having the machine head on the outside of the wheels. It is pointed out that most of the weight is in the wheels where it properly belongs and which gives the operator complete control of the blade at all times.

## The Blust Self-Recommending Churn.

The Constance Company, Mansfield, Ohio, is manufacturing the churn shown herewith. The body is made of thoroughly seasoned yellow poplar lumber, and is built up of narrow staves. The staves are not bent, but are

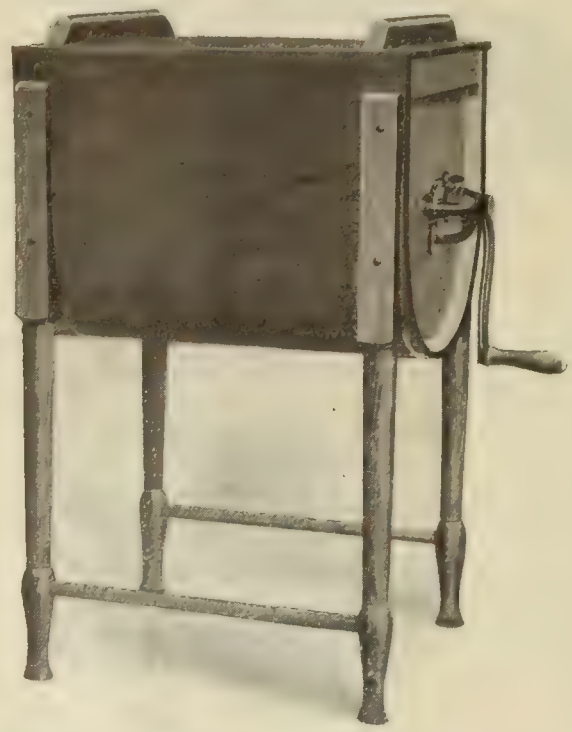


*Fig. 1. The Blust Self-Recommending Churn.*

worked out of a thick board so as to form a perfect fit around the ends of the churn body. They are also made with deep tongues and grooves on the edges in order to make perfectly tight joints when fitted together. Before assembling the body every joint is given a heavy coating of pure white lead. The dasher, Fig. 2, which completely fills the churn body, is made of hard sugar wood, which, it is explained, will in no way effect the taste or color of the butter. The combined friction and compression bars are square and are set diagonally in relation to the dasher arms, making a series of wedge shaped slots in each



*Fig. 2. The Blust Dasher.*

dasher wing. It is shown that as the dasher revolves the cream is forced through the wedged shaped openings, producing the friction and compression necessary for the complete separation and gathering of every particle of butter fat in the cream. The dasher can be placed in the churn or removed at any time without getting the hands in the cream, and butter may be worked in the churn allowing the water to drain off through the opening at the bottom. In cleaning it is only necessary to put in a little boiling water, give the dasher a few turns and drain off the water. The churns are finished in natural wood, first having a coating of liquid filler, then a coat of high-grade varnish. The castings are of best quality iron, and the dasher castings are tinned, so as not to rust or to blacken the butter. The churns are carefully wrapped and securely crated before leaving the factory.

## Acme Self-Computing Framing Tool.

The self-computing framing tool here shown is put on the market by E. Oehrle, 2567 Dodge street, Omaha, Neb. The tool is convenient to handle, and can readily be carried in the pocket, so that it may be at hand when wanted. Fig. 1 gives a view of the tool, while Fig. 2 indicates its application in connection with an ordinary steel square. The tool will give lengths and cuts for all common, hip, valley and jack rafters; lengths and cuts for all rafters for polygonal roofs up to 10 sides; as well as for all polygon miters and will be found of great value in laying out stairs. Stamped upon the tool is a scale for the polygon cuts referred to.




*Fig 1.—Acme Self-Computing Framing Tool.*

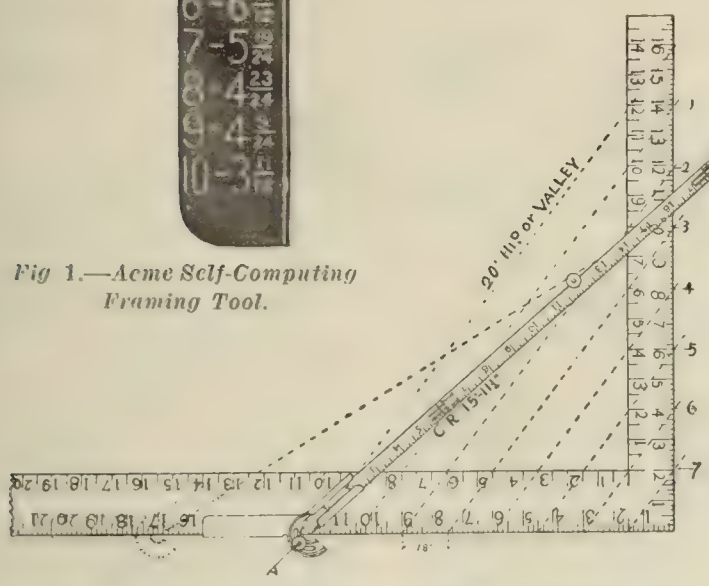
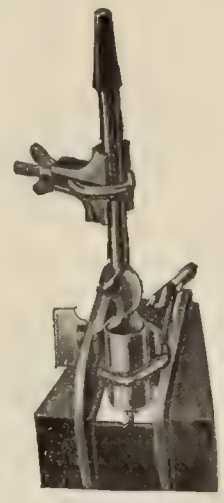



*Fig. 2.—Showing Application of Tool in Finding Lengths and Cuts of Rafters.*

The manufacturer claims that with the tool a mechanic can divide and substract, and that it can be used with a rule and a square. The corner of the rule always remains at the outer edge of the square, no matter in what position the rule may be swung. With each rule the manufacturer gives instructions fully explaining how to use it.

## Roberts Doweling Jig.

The patented device shown herewith is designed for boring dowel holes, and is also useful for other purposes. It is put on the market by the Roberts Doweling Company, 3931 Lancaster avenue, Philadelphia, Pa. The jig can be quickly set in position, and holes can be bored without complicated measurements. The body of the jig is of iron and steel, and is held firmly in position on the work by means of a screw clamp, taking in work 3 in. in depth. The guide for the bit is held firmly in position by means of a thumb screw. There are five different guides of ¼, ⅜, ½, ⅝ and ¾ in. in diameter. These are of special cold drawn steel, and the bore is slightly larger than regular so as to permit of the entrance of a full size drill or bit. The guides can be rapidly changed so as to accommodate the different size bits or drills. In operation only a mark indicating the center line of the hole to be bored is required, the jig being placed on the work, with the center line marked on the jig conforming with that on the work, the guide can then be moved to the desired position, locked, and the hole bored with the usual brace and bit. To overcome boring the holes too deep, a movable depth gauge is supplied with the jig. The gauge is placed on the bit, at the depth of hole required after allowing 1¼ in. for the depth of the guide, it being held firmly in position by means of a screw clamp hook. The operation of the tool is very simple, the guides permitting of perfectly accurate boring, it being impossible to bore crooked or to have the bit diverted by hard or soft grain. The device is substantially made, full nickel plated, and weighs 1 lb. 3 oz., and is packed in a waterproof carton.



*Roberts' Doweling Jig*

# PAINTS, OILS AND COLORS

### Animal, Fish and Vegetable Oils—

| | ℔ gal |
|---|---|
| Linseed, State and Western, raw | .41 @42 |
| City, Boiled | .45 @46 |
| City, Raw | .44 @45 |
| Raw, Calcutta, in bbls | .70 @.. |
| Lard, Prime, Winter | .68 @69 |
| Extra No. 1 | .54 @56 |
| No. 1 | .47 @52 |
| Cotton-seed, Crude, f.o.b. mill | @.. |
| Summer Yellow, prime | .47 @47½ |
| Summer White | .49 @50 |
| Yellow Winter | .49 @49½ |
| Tallow, Acidless | .52 @55 |
| Menhaden, Brown, Strained | .38 @.. |
| Southern | .28 @.. |
| Light Strained | .38 @.. |
| Bleached Winter | .40 @.. |
| Ex. Bleached Winter | .42 @.. |
| Cocoanut, Ceylon ℔ lb | 6⅜@ 6½ |
| Cochin ℔ lb | 7⅛@ 7⅜ |
| Cod, Domestic, Prime | .42 @44 |
| Newfoundland | .43 @45 |
| Red Elaine | .37 @39 |
| Saponified ℔ lb | 5½@ 5¾ |
| Olive, Yellow | .66 @67 |
| Neatsfoot, Prime | .55 @58 |
| Palm, Lagos ℔ lb | 5¾@ 6 |

### Mineral Oils—

| | ℔ gal. |
|---|---|
| Black, 29 gravity, 25@30 cold test | .13 @13½ |
| 29 gravity, 15 cold test | .13½@14 |
| Summer | .12½@13 |
| Cylinder, light filtered | .20½@21 |
| Dark, filtered | .18 @19 |
| Paraffine, 903-907 sp. gravity | .14½@15 |
| 903 sp. gravity | .13½@14 |
| 883 sp. gravity | .11 @11½ |
| Red | .13½@14 |

### Miscellaneous—

| | |
|---|---|
| Barytes: | |
| White, Foreign ℔ ton | $18.50@20.50 |
| Amer., floated ℔ ton | 18.00@20.00 |
| Off color ℔ ton | 13.00@16.50 |
| Chalk, in bulk ℔ ton | 3.00@ 3.40 |
| China Clay, Imported ℔ ton | 11.50@18.00 |

| | ℔ gal. |
|---|---|
| Cobalt, Oxide ℔ 100 lb | 1.45@ 2.60 |
| Whiting, Commercial ℔ 100 lb | .42@ .52 |
| Gilders ℔ 100 lb | .55@ .60 |
| Ex. Gilders ℔ 100 lb | .60@ .65 |

### Putty, Commercial—℔ 100 lb

| | |
|---|---|
| In bladders | $1.70 @1.80 |
| In bbls. or tubs | 1.20 @1.45 |
| In 1 lb to 5 lb cans | 2.65 @2.95 |
| In 12½ to 50 lb cans | 1.50 @1.90 |

### Spirits Turpentine— ℔ gal.

| | |
|---|---|
| In Oil bbls | .42 @42½ |
| In machine bbls | .42½@43 |

### Glue—

| | ℔ lb |
|---|---|
| Cabinet | .12 @15 |
| Common Bone | .7½@ 9 |
| Extra White | .18 @24 |
| Fish, liquid, 50 gal. bbls., per gallon | .60 @1.20 |
| Foot Stock, White | .12 @14 |
| Foot Stock, Brown | .9 @11 |
| German Common Hide | .10 @12 |
| German Hide | .12 @18 |
| French | .10 @40 |
| Irish | .13 @16 |
| Low Grade | .10 @12 |
| Medium White | .14 @17 |

### Gum Shellac—

| | ℔ lb |
|---|---|
| Bleached, Commercial | .28 @29 |
| Bone Dry | .35 @36 |
| Button | .30 @40 |
| Diamond I | .47 @48 |
| Fine, Orange | .34 @35 |
| A. C. Garnet | .28 @.. |
| G. A. L. | .20 @21 |
| Kala Button | .18 @.. |
| D. C. | .18 @19 |
| Octagon B | .39 @40 |
| T. N. | .20½@.. |
| V. S. O. | .47 @48 |

### Colors in Oil—

| | ℔ lb |
|---|---|
| Black, Lampblack | .12 @14 |
| Blue, Chinese | .36 @46 |
| Blue, Prussian | .32 @36 |

| | ℔ lb |
|---|---|
| Blue, Ultramarine | .13 @16 |
| Brown, Vandyke | .11 @14 |
| Green, Chrome | .12 @16 |
| Green, Paris | @24 |
| Sienna, Raw | .12 @15 |
| Sienna, Burnt | .12 @15 |
| Umber, Raw | .11 @14 |
| Umber, Burnt | .11 @14 |

### White and Red, Lead &c.—

| | ℔ lb |
|---|---|
| Lead, English white, in Oil | .10⅛@10⅜ |
| Lead, American White: | |
| Dry and in Oil, 100, 250 and 500 lb kegs | 7 |
| Dry and in Oil, 25 and 50 lb kegs | 7¼ |
| Dry and in Oil, 12½ lb kegs | 7½ |
| In Oil, 25 lb tin pails | 7½ |
| In Oil, 12½ lb tin pails | 8 |
| In Oil, 1, 2, 3 and 5 lb tin cans, ass't | 9 |
| Red Lead and Litharge: | |
| In 100 lb kegs | 7 |
| In 25 and 50 lb kegs | 7¼ |
| In 12½ lb kegs | 7½ |
| In lots of less than 500 lbs. ½¢ ℔ lb advance over above prices. | |

Lead, American. Terms: On lots of 500 lbs and over, 60 days or 2 for cash if paid in 15 days from date of invoice.

### Zinc, Dry—

| | ℔ lb |
|---|---|
| American, dry | 5⅛@ 5⅝ |
| Red Seal (French process) | 6⅛@ .. |
| Green Seal | 7⅛@ 7½ |
| German Red Seal (French process) | 6½@ 6⅞ |
| Green Seal | 7⅛@ 7½ |
| White Seal | 7⅝@ 8⅛ |
| French, Red Seal | 8⅛@ 8⅝ |
| Green Seal | 10¼@10½ |

### Dry Colors—

| | ℔ lb |
|---|---|
| Black, Carbon | 6½@10 |
| Black Drop, American | 3½@ 8 |
| Black Drop, English | 5 @15 |
| Black, Ivory | 16 @20 |
| Lamp, commercial | 4 @ 6 |
| Blue, Celestial | 4 @ 6 |
| Blue, Chinese | 31 @33 |
| Blue, Prussian | 29 @31 |
| Blue, Ultramarine | 3½@15 |
| Brown, Spanish | ½@ 1 |
| Carmine, No. 40 | $3.10@3.25 |
| Green, Chrome, ordinary | 3½@ 5 |
| Green, Chrome, pure | 17 @25 |
| Ocher, American ℔ ton | $8.50@16.00 |
| American Golden | 2½@ 3¼ |
| French | 1¾@ 2 |
| Foreign Golden | 3 @ 4 |
| Orange Mineral, English | 10 @.. |
| French | 12½@15 |
| German | 12 @15 |
| American | 9 @10 |
| Red, Indian, English | 4½@ 6 |
| American | 3 @ 3½ |
| Red, Turkey, English | 4 @10 |
| Red, Tuscan, English | 7 @10 |
| Red, Venetian, Amer ℔ 100 lb | $0.50@1.25 |
| English ℔ 100 lb | $1.15@1.60 |
| Sienna, Italian, Burnt and Powdered | 3 @ 9 |
| Italian, Raw, Powdered | 3 @ 7 |
| American, Raw | 1½@ 2 |
| American Burnt and Pow'd. | 1½@ 2 |
| Talc, French ℔ ton | $18.00@25.00 |
| American ℔ ton | 15.00@25.00 |
| Terra Alba, French ℔ 100 lb | .90@ 1.00 |
| English ℔ 100 lb | .80@ 1.00 |
| American ℔ 100 lb, No. 1 | .75@ .80 |
| American ℔ 100 lb, No. 2 | .60@ .65 |
| Umber, T'key, Bnt. & Pow. | 2¾@ 3 |
| Turkey, Raw and Powdered | 2¾@ 3 |
| Burnt, American | 1½@ 2 |
| Raw, American | 1½@ 2 |
| Yellow, Chrome, Pure | 13¾@15 |
| Vermilion, American Lead | 7 @25 |
| Quicksilver, bulk | .65 @.. |
| Quicksilver, bags | @66 |
| English, Imported | .65 @70 |
| Chinese | $0.90@1.00 |

# Current Hardware Prices.

**General Goods.**—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

**Special Goods.**—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

**Range of Prices.**—A range of prices is indicated by means of the symbol @. Thus 33⅓ @ 33⅓ & 10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

**Names of Manufacturers.**—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1907, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

**Standard Lists.**—"The Iron Age Standard Hardware Lists" contains the list prices of many leading goods.

**Additions and Corrections.**—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

### Adjusters, Blind—

Columbian and Domestic.....33⅓%
North's .....10%
Zimmerman's—See Fasteners, Blind.

### Window Stop—

Ives' Patent.....35%
Taplin's Perfection.....35%

### Ammunition—See *Caps, Cartridges, Shells, &c.*

### Anti—Rattlers—

Fernald Mfg. Co. Burton Anti-Rattlers, ₱ doz. pairs, Nos. 1. $0.75; 2, $0.60; 4, $1.00; 5, $0.50.
Fernald Quick Shifter, ₱ doz. pairs .....$2.00@$3.00

### Anvils—American—

Eagle Anvils.....₱ lb @8½¢
Hay-Budden, Wrought.....9½@9¾¢
Trenton .....₱ lb 9½@9¾¢

### Imported—

Swedish Solid Steel Sisco, Superior, ₱ lb.....10@10½¢
Peter Wright & Sons, ₱ lb, 84 to 349 lb, 11¢; 350 to 600 lb, 11½¢.

### Anvil, Vice and Drill—

Millers Falls Co., $18.00.....15&10%

### Apple Parers—See *Parers, Apple, &c.*

### Aprons, Blacksmiths'—

Livingston Nail Co.....10%

### Augers and Bits—

*Com. Double Spur....75&10@80%*
*Jennings' Patn., Bright.65&10@70%*
*Black Lip or Blued...65@65&5%*
*Boring Mach. Augers.....70%*
*Car Bits, 12-in. twist.....40&10%*
Ford's Auger and Car Bits.....10&5%
Ft. Washington Auger Co., Conard's .....35%
Forstner Pat. Auger Bits.....25
C. E. Jennings & Co.:
No. 10 ext. lip. R. Jennings' list. 25&7½%
No. 30, R. Jennings' list.....50%
Russell Jennings'.....25&10&2½%
L'Hommedieu Car Bits.....15%
Mayhew's Countersink Bits.....45%
Pugh's Black.....20%
Pugh's Jennings' Pattern.....35%
Snell's Auger Bits.....60%
Snell's Bell Hangers' Bits.....60%
Snell's Car Bits, 12-in. twist.....60%
Snell's King Auger Bits.....50
Wright's Jennings' Bits.....50%

### Bit Stock Drills—

See *Drills, Twist.*

### Expansive Bits—

Clark's Pattern, No. 1, ₱ doz., $26; No. 2, $18.....60&10
Ford's, Clark's Pattern.....66⅔&5
C. E. Jennings & Co., Steer's Pat..25%
Lavigne Pat., small size, $18.00; large size, $26.00.....60&10%
Swan's .....60%

### Gimlet Bits—

*Per gro.*
*Common Dbl. Cut.....$3.00@3.25*
*German Pattern, Nos. 1 to 10, $4.75; 11 to 13, $5.75*

### Hollow Augers—

*Bonney Pat., per doz..$5.50@6.00*
Ames .....25&10
Universal .....20

### Ship Augers and Bits—

*Ship Augers.....40&10@—%*
Ford's .....33⅓&5%
C. E. Jennings & Co.:
L'Hommedieu's .....6%
Watrous' .....33⅓&7½%
Snell's .....48%

### Awl Hafts—See *Handles, Mechanics' Tool.*

### Awls—

*Brad Awls:*
*Handled .....gro. $2.75@3.00*
*Unhdld, Shldered...gro.63@66¢*
*Unhandled, Patent..gro.66@70¢*
*Peg Awls:*
*Unhandled, Patent..gro. 31@34¢*
*Unhdld, Shldered..gro. 65@70¢*
*Scratch Awls:*
*Handled, Com...gro. $3.50@4.00*
*Handled, Socket.gro.$11.50@12.00*

### Awl and Tool Sets—See *Sets, Awl and Tool.*

### Axes—

*Single Bit, base weights: Per doz.*
*First Quality.....$4.75@5.00*
*Second Quality.....$4.25@4.50*
*Double Bit, base weights:*
*First Quality.....$7.00@7.50*
*Second Quality.....$6.50@6.75*

### Axle Grease—

See *Grease, Axle.*

### Axles—Iron or Steel.

*Concord, Loose Collar...4¼@4½¢*
*Concord, Solid Collar....4½&5 ¢*
*No. 1 Common, Loose...3½@4 c*
*No. 1½ Com., New Style.4¼@4¾¢*
*No. 2 Solid Collar.....4¼@4¾c*
*Half Patent:*
*Nos. 7, 8, 11 and 12.....70%*
*Nos. 13 to 14.....70%*
*Nos. 15 to 18...70&10@70&10&5%*
*Nos. 19 to 22...70&10@70&10&5%*

### Boxes, Axles—

*Common and Concord, not turned .....lb., 5@6¢*
*Common and Concord, turned, lb., 6@7c*
*Half Patent.....lb., 9½@10¢*

### Bait—Fishing—

Hendryx:
A Bait.....20%
B Bait.....25%
Competitor Bait.....20&5

### Balances—Sash—

Caldwell new list.....50&10%
Pullman .....50&10%

### Spring—

*Light Spring Balances.60@60&5%*
Chatillon's:
Light Spg. Balances.....50@50&10%
Straight Balances.....40@40&10%
Circular Balances.....50&10%
Large Dial.....30%

### Barb Wire—See *Wire, Barb.*

### Bars—Crow—

*Steel Crowbars, 10 to 40 lb.... per lb., 2¼@2½¢*

### Towel—

No. 10 Ideal, Nickel Plate..₱ gro. $8.50

### Beam, Scale—

*Scale Beams.....40%*
Chattillon's No. 1.....30%
Chatillon's No. 2.....40%

### Beaters, Carpet—

Holt-Lyon Co.:
No. 12 Wire Coppered ₱ doz. $0.80; Tinned .....$0.85
No. 11 Wire Coppered ₱ doz. $1.15; Tinned .....$1.20
No. 10 Wire Tinned.....₱ doz. $1.50

### Beaters Egg—

Dover Stamping & Mfg. Co.:
Genuine Dover, per gro., No. 1, Tumbler Size, $7.50; No. 2, Family Size, $7.50; No. 3, Extra Family Size, $24.00; No. 4, Hotel Size, $30.00.
Holt-Lyon Co.:
Holt, per doz., No. 5, Jap'd. $0.80; No. A, Jap'd, $1.15; No. B, Jap'd, $1.85; No. 6, Jap'd, $1.65.
Lyon, Jap'd, per doz., No. 2, $1.35.
Taplin Mfg. Co.:
Improved Dover, per gro., No. 60, $6.00; No. 75, $6.50; No. 100, $7.00; No. 102, Tin'd, $8.50; No. 150, Hotel, $15.00; No. 152, Hotel Tin'd, $17.00; No. 200, Tumbler, $8.50; No. 202, Tumbler Tin'd, $9.50; No. 300, Mammoth, per doz., $25.00.

### Bellows—

*Blacksmith, Standard List:*
*Split Leather.....60&10@65%*
*Grain Leather.....50@50&10%*

Net Prices.

Hand—

| *Inch..* | *6* | *7* | *8* | *9* | *10* |
|---|---|---|---|---|---|
| *Doz..* | *$5.00* | *5.50* | *6.00* | *6.50* | *7.50* |

Molders—

| *Inch..* | *10* | *12* | *14* | *16* |
|---|---|---|---|---|
| *Doz..* | *$7.50* | *9.00* | *12.00* | *15.00* |

### Bells—Cow—

*Wrought Cow Bells.....75%*
Jersey .....75&10
Texas Star.....50

### Door—

Home, R. & E. Mfg. Co.'s.....55&10%

### Hand—

*Polished, Brass.....60@60&10%*
*White Metal.....60@60&10%*
*Nickel Plated.....50&10%*
*Swiss .....50&10%*
Cone's Globe Hand Bells.....33⅓@35%

### Miscellaneous—

*Farm Bells.....lb., 2¼@2½¢*
*Church and School....60@60&10%*

### Belting—Leather—

*Standard .....70&10@70&10&5%*
*Light .....75&10%*
*Cut Leather Lacing..60@60&10%*
*Leather Lacing Sides, per sq. ft. 20¢*

### Rubber—

*Competition (Low Grade), 70&10@75%*
*Standard .....60&10@70%*
*Best Grades.....40@50%*

### Bench Stops—

See *Stops, Bench*

### Benders and Upsetters, Tire—

Green River Tire Benders and Upsetters .....20%

### Bicycle Goods—

John S. Leng's Son & Co.'s 1907 list: Chain, Parts, Spokes.....50
Tubes .....60

### Bits—

Auger, Gimlet, Bit Stock Drills, &c. See *Augers and Bits.*

### Blocks—Tackle—

*Common Wooden.....75@75&5%*
B. & L. B. Co.:
Boston Wood Snatch, 50%; Eclipse Steel, 75%; Hollow Steel, 50&10%; Star Wire Rope, 50%; Tarbox Metal Snatch, 50%; Tarbox New Style Steel, 50&10%; Wire Rope Snatch, 50%.
Lane's Patent Automatic Lock and Junior .....30%
See also Machines, Hoisting.

### Boards, Stove—

*Paper and Wood Lined.....55%*
*Embossed .....55%*

### Boards, Wash—

See *Washboards.*

### Bobs, Plumb—

Keuffel & Esser Co.....33⅓%

### Bolts Carriage, Machine, &c,—

*Common Carriage (cut thread):*
*⅜ x 6 and smaller..75&5@—%*
*Larger and longer.....70@—%*
*Phila. Eagle, $3.00 list...80@—%*
*Bolt Ends.....70@—%*
*Machine (Cut Thread):*
*⅜ x 4 and smaller..75&10@—%*
*Larger and longer.....70@—%*

### Door and Shutter—

*Cast Iron Barrel, Japanned, Round Brass Knobs:*

| *Inch* | *3* | *4* | *5* | *6* | *8* |
|---|---|---|---|---|---|
| *Per doz..* | *$0.30* | *.35* | *.45* | *.60* | *.80* |

*Cast Iron Spring Foot, Jap'd:*

| *Inch* | *6* | *8* | *10* |
|---|---|---|---|
| *Per doz.....* | *$1.20* | *1.50* | *2.25* |

*Cast Iron Chain, Flat, Japanned:*

| *Inch* | *6* | *8* | *10* |
|---|---|---|---|
| *Per doz.....* | *$1.00* | *1.40* | *1.65* |

*Cast Iron Flat Shutter, Jap'd, Brass Knobs:*

| *Inch* | *6* | *8* | *10* |
|---|---|---|---|
| *Per doz.....* | *$0.75* | *.95* | *1.25* |

*Wrought Barrel Japanned, 80&10@80&10&5%*
*Barrel Bronzed.....60&10%*
*Spring .....70&10@70&10&10%*
*Shutter .....50&5@50&10&5%*
*Square Neck.....75@75&10%*
*Square .....70&10&10@80%*
Ives' Patent Door.....55
Ives' Wrought Metal.....45%

### Expansion—

F. H. Evans' Crescent.....40@60%
Richards Mfg. Co.....55&10%
Steward & Romain Mfg. Co.:
Style No. 13, Double.....60%
Style No. 1, Single.....60
Style No. 100, Dbl. Jaw, Single 55%
Lag Screw.....66⅔%

### Plow and Stove—

*Plow .....65&5@70%*
*Stove .....85@85&5%*

### Tire—

*Common Iron.....80@80&5%*
*Norway Iron.....80@80&5%*
American Screw Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84...82½%
Bay State, list Dec. 28, '99.....80%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84...82½%
Eclipse, list Dec. 28, '99.....80%
Russell, Burdsall & Ward Bolt & Nut Co.:
Empire, list Dec. 28, '99.....80%
Norway Phila., list Oct. '84.....80%
Eagle .....82½%
Shelton Co.:
Tiger Brand, list Dec. 28, '99...80%
Phila., Eagle, list Oct. 16, 1881..82½%
Upson Nut Co.:
Tire Bolts.....72½%

### Borers, Bung—

*Borers Bung, Ring, with Handle:*

| *Inch.....* | *1¼* | *1½* | *1¾* | *2* |
|---|---|---|---|---|
| *Per doz...* | *$4.80* | *5.60* | *6.40* | *8.00* |
| *Inch.....* | | | *2¼* | *2½* |
| *Per doz.....* | | | *$8.65* | *11.50* |

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.75; No. 3, $2.50 each.....25%

### Boxes, Mitre—

C. E. Jennings & Co.....25%
Langdon, New Langdon and Langdon Improved, 20&10%; Langdon Acme .....15&10%
Perfection .....40%
Seavey .....45%

### Braces—

*Comman Ball, American....$1.50*
Barber's .....50&10&10@60&10%
Fray's Genuine Spofford's.....60%
Fray's No. 61, 166, 206, 614.....50%
C. E. Jennings & Co.....50&—
Mayhew's Ratchet.....60%
Mayhew's Quick Action Hay Pat...50%
Millers Falls Drill Braces.....25&10%
P., S. & W. Co., Peck's Pat....60&10%

### Brackets—

*Wrought Steel.75&10@75&10&10%*
Bradley Metal Clasp...80&10@80&10&5
Griffin's Pressed Steel.....75@75&10%
Griffin's Folding Brackets.....70&10%
Taplin Victor Handy Egg Beater Bracket .....₱ doz. $1.50

### Bright Wire Goods—

See *Wire and Wire Goods.*

### Broilers—

Kilbourne Mfg. Co.....75&20%
Wire Goods Co.....75%

### Buckets, Galvanized—

*M'fr's list, price per gross.*

| *Quart..* | *10* | *12* | *14* |
|---|---|---|---|
| *Water, Reg...* | *26.85* | *29.50* | *33.50* |
| *Water, Hvy...* | *45.35* | *48.00* | *52.00* |
| *Fire, Rd. Bim..* | *32.00* | *34.65* | *38.65* |
| *Well .....* | *37.35* | *41.35* | *45.35* |

10@7½&5&5%

### Bull Rings—See *Rings, Bull.*

### Butts—Brass—

*Wrought, High List, Oct. 26, '06..55%*
Cast Brass, Tiebout's.....40%

### Cast Iron—

*Fast Joint, Broad....40&10@50%*
*Fast Joint, Narrow...40&10@50%*
*Loose Joint.....70&10@75%*
*Loose Pin.....70&10@75%*
*Mayer's Hinges.....70@70@5*
*Parliament Butts.....70@70@5*

### Wrought Steel—

Extra, 10@—

*Bright.*
*Light Narrow, Light Reversible .....70&5%*
*Reversible and Broad..70&5%*
*Loose Joint, Narrow, Light Inside Blind, &c.....70%*
*Back Flaps, Table Chest.65%*
*Japanned.*
*Light Narrow, Loose Pin, 40&5%*
*Light Narrow, Ball Tip..60%*
*Broad .....40&5%*
*Steeple Tipped.....70%*
*Ball Tipped.....70%*

## Cages, Bird—

Hendryx Brass: Series 3000, 5000, 1100, net list; 1200, 15%; 200, 300, 900 ..... 30
Hendryx Bronze: Series 700, 800.... 30
Hendryx Enameled..... 35

## Calipers—See *Compasses.*

## Calks, Toe and Heel—

*Blunt, 1 prong, per lb.* ....4@4½¢
*Sharp, 1 prong, per lb*....4½@5¢
Burke's, Blunt, 4@4¾¢; Sharp, 4½@5¼¢
Lautier, Blunt, 4@4¾¢; Sharp, 4½@4¾¢
Perkins', Blunt, ₱ lb. 3.65¢; Sharp, 4.15¢

## Can Openers—

See *Openers, Can.*

## Caps, Percussion—

*Eley's E. B.*.....52@55¢
*G. D.*.....*per M* 34@35¢
*F. L.*.....*per M* 40@42¢
*G. E.*.....*per M* 48@50¢
*Musket*.....*per M* 62@63¢

## Primers—

*Berdan Primers, $2 per M*..20&5%
*Primer Shells and Bullets*..15&10%
*All other primers per M*.*$1.52@1.60*

## Carpet Stretchers—

See *Stretchers, Carpet.*

## Cartridges—

*Blank Cartridges:*
*32 C. F., $5.50*.....10&5%
*38 C. F., $7.00*.....10&5%
*22 cal. Rim, $1.50*.....10&5%
*32 cal. Rim, $2.75*.....10&5%
*B. B. Caps, Con. Ball, Swgd*.*$1.90*
*B. B. Caps, Round Ball*....*$1.50*
*Central Fire*.....25%
*Target and Sporting Rifle*.15&5%
*Primed Shells and Bullets*.15&10%
*Rim Fire, Sporting*.....50%
*Rim Fire, Military*.....15&5%

## Casters—

*Bed*.....65&10@70%
*Plate*.....60&5@60&10%
*Philadelphia*.....70&10@75%
Acme, Ball Bearing.....35
Gem (Roller Bearing).....70&10&10&5
Steel Gem.....50%
Standard Ball Bearing.....45
Yale (Double Wheel) low list...40&10%

## Cattle Leaders—

See *Leaders, Cattle.*

## Chain, Proof Coil—

*American Coil, Straight Link:*

| 3-16 | ¼ | 5-16 | ⅜ | 7-16 | ½ | ⅝ |
|---|---|---|---|---|---|---|
| $8.15 | 5.55 | 4.60 | 3.95 | 3.75 | 3.65 | 3.55 |

¾-1 1⅛ to 1¼ inch.
$3.45 3.55

*In cask lots, deduct 25¢.*
*German Coil*.....60@60&5%
*German Pattern Coil:*
*6-0 to 1*.....70&5@70&10%
*2 and 3*..60&10&10@60&10&10&5%
*4, 5 and 6*.....50&10@50&10&5%

## Halter—

*Halter Chains*.....60&5@60&10%
*German Pattern Halter Chains, list July 24, '97*....60&10&5@70%
Covert Mfg. Co.:
Halter .....35&5%

## Cow Ties—

See *Halters and Ties.*

## Trace, Wagon, &c.—

*Traces, Western Standard: 100 pr.*
*6½—6-3, Straight, with ring*.*$28.00*
*6½—6-2, Straight, with ring*.*$29.00*
*6½—8-2, Straight, with ring*.*$32.00*
*6½—10-2, Str'ght, with ring*.*$37.00*
*NOTE.—Add 2c per pair for Hooks Twist Traces: add per pair for Nos. 2 and 3, 2c; No. 1, 3c; No. 0, 4c to price of Straight Link.*
*Eastern Standard Traces, Wagon Chain, &c*...60&10@60&10&5%

## Miscellaneous—

*Jack Chain, list July 10, '93:*
*Iron*.....60&10&7½%
*Brass*.....65%
*Safety and Plumbers' Chain*.75%
*Gal. Pump Chain*....*lb.*, 4½@5%
Bridgeport Chain Co.:
Triumph Halter and Coil.35&2½@40%
Triumph Dog.....50&10@60%
Brown Halter and Coil....45@50&5%
Covert Mfg. Co.:
Breast, Halter, Heel, Rein, Stallion .....40%
Oneida Community:
American Halter, Dog and Kennel Chains .....35&2½@40%
Niagara Dog Leads and Kennel Chains .....45@50&5%
Wire Goods Co.:
Dog Chain.....70%
Universal Dbl.-Jointed Chain.....50

## Chain and Ribbon, Sash—

Oneida Community:
Steel Chain.....60%
Pullman:
Bronze Chain, 60%; Steel Chain, Coppered .....60&10%
Sash Chain Attachments, per set..8¢
Aluminoy Sash Ribbon, per 100 ft. .....$2.00@$5.00
Sash Ribbon Attachments, per set..8¢

## Chalk—(From Jobbers.)

*Carpenters' Blue*.....*gro.*, 50¢
*Carpenters' Red*.....*gro.*, 45¢
*Carpenters' White*.....*gro.*, 40¢

## Checks, Door—

Bardsley's .....15%
Pullman, per gro.....$51
Russwin .....33⅓%

## Chests, Tool—

American Tool Chest Co.:
Boys' Chests, with Tools.....55
Youths' Chests, with Tools.....40
Gentlemen's Chests, with Tools..30
Farmers', Carpenters, etc., Chests, with Tools .....20%
Machinists' and Pipe Fitters' Chests, Empty.....15%
Tool Cabinets.....15
C. E. Jennings & Co.'s Machinists' Tool Chests.....7½%

## Chisels—

### Socket Framing and Firmer

*Standard List*.....80&10@—%
Buck Bros.....30
C. E. Jennings & Co.:
Socket Firmer No. 10.....25&7½
Socket Framing No. 15.....25&7½
Swan's .....66⅔@70
L. & I. J. White & Co.....30@30&5%

### Tanged—

*Tanged Firmers*.....30&5@35%
Buck Bros.....30
C. E. Jennings & Co. Nos. 191, 181..25%
L. & I. J. White Co.....25&5%

### Cold—

*lb.*
*Cold Chisels, good quality*.13@15¢
*Cold Chisels, fair quality*.11@12¢
*Cold Chisels, ordinary*....9@10¢

## Chucks—

Almond Drill Chucks.....35%
Almond Turret Six-Tool Chuck.....40
Beach Pat. each $8.00.....35&5%
Empire .....25%
Blacksmiths' .....25%
Jacobs' Drill Chucks.....35%
Pratt's Positive Drive.....25
Skinner Patent Chucks:
Independent Lathe Chucks.....35%
Universal, Reversible Jaws.....35%
Combination, Reversible Jaws....35
Drill Chucks, New Model, 25%; Standard, 45%; Skinner Pat. 25%; Positive Drive.....40%
Planer Chucks.....20%
Face Plate Jaws.....35%
Standard Tool Co.:
Improved Drill Chuck.....45%
Union Mfg. Co.:
Combination, Nos. 1, 2, 3, 4, 5, 6, 7, 8 and 17, 40%; No. 21.....35%
Scroll Combinations, Nos. 83 and 84 .....30
Geared Scroll, Nos. 33, 34 and 35..25
Independent Iron, Nos. 18 and 318.35
Independent Steel, No. 64.....25%
Union Drill, Nos. 000, 00, 100, 101, 102, 103, 104.....35%
Union Czar Drill.....25
Universal, 11, 12, 16, 17, 13, 14, 15..40%
Universal No. 42.....35%
Iron Face Plate Jaws, Nos. 28, 30, 48 and 50.....35%
Steel Face Plate Jaws, Nos. 70 and 72 .....30%
Westcott Patent Chucks:
Lathe Chucks.....50%
Little Giant Auxiliary Drill.....50%
Little Giant Double Grip Drill...50%
Little Giant Drill, Improved.....50%
Oneida Drill.....50%
Scroll Combination Lathe.....50%
Whitaker Mfg. Co.:
National Drill.....25%

## Clamps—

Adjustable Hammers.....20@20&5%
Carriage Makers', P., S. & W. Co. .....50&10%
Besly, Parallel.....33⅓&10%
Myers' Hay Rack.....45%
Lineman's Swedish Neverturn.....65%
Wood Workers' Hammers.....40&10%
Saw Clamps, see Vises, Saw Filers'

## Cleaners, Drain,

Iwan's Champion, Adjustable.....50%
Iwan's Champion, Stationary.....40%

## Sidewalk—

Star Socket, All Steel..₱ doz. $4.05 net
Star Shank, All Steel..₱ doz. $3.24 net
W. & C. Shank, All Steel, ₱ doz., 7½ in., $3.00; 8 in., $3.25.

## Cleavers, Butchers'—

Foster Bros.....30%
Fayette R. Plumb.....30
L. & I. J. White Co.....30

## Clippers, Horse and Sheep—

Chicago Flexible Shaft Co.:
1902 Chicago Horse, each..$10.75
20th Century Horse, each...$5.00
Lightning Belt Horse, each.$15.00
Chicago Belt Horse, each..$20.00
Stewart's Enclosed Gear Horse, each.....$6.75
Stewart's Patent Sheep Shearing Machine, each.....$12.75
Stewart Enclosed Gear Shearing Machine, No. 8, each..$9.75
} 30%

## Clips, Axle—

*Regular Styles, list July 1, '05.* *80&80&10%*

## Cloth and Netting, wire

See *Wire, &c.*

## Cocks, Brass—

*Hardware list:*
*Plain Bibbs, Globe, Kerosene, Racking, Liquor, Bottling, &c* .....75%
*Compression Bibbs*.....70%

## Coffee Mills—

See *Mills, Coffee.*

## Collars, Dog—

Nickel Chain, Walter B. Stevens & Son's list.....40%
Leather, Walter B. Stevens & Son's list .....40

## Compasses, Dividers, &c.

*Ordinary Goods*.....70&10@75%

## Conductor Pipe,—

*L. C. L. to Dealers:*

| | *Gal. Steel.* | *Charcoal* |
|---|---|---|
| *Northeastern* | 70&10% | 50&10&7½% |
| *Eastern* | 75% | 50&10&7½% |
| *Pittsburgh* | 75&10&5% | 60% |
| *Central* | 75&10% | 60% |
| *Northwestern* | 75&7½% | 60% |
| *Western* | 70&12½% | 50&12½% |
| *Tennessee* | 70&10% | 50&12½ |
| *Southern* | 70 | 50&12½ |
| *Southwestern* | 70% | 50&5% |

*Terms, 60 days: 2% cash 10 days. Factory shipments generally delivered.*
See also Eave Troughs.

## Coolers, Water—

| L. & G. Mfg. Co.: Gal. | 2 | 3 | 4 | 6 | 8 |
|---|---|---|---|---|---|
| Galvanized, ea. | $1.85 | $2.00 | $2.25 | $2.90 | $3.90 |
| Galvanized, Lined, side handles, Gal. | 2 | 3 | 4 | 6 | 8 |
| Each | $1.95 | $2.15 | $2.40 | $3.30 | $4.15 |

White Enameled.....10%
Agate Lined.....10%

## Coppers' Tools—

See *Tools, Coopers'.*

## Coppers, Soldering—

*Soldering Coppers, 3 lb. to pair and heavier, 20¢; lighter than 3 lb. to pair*.....22¢

## Cord—Sash—

*Braided, Drab*.....*lb.* 35¢
*Braided, White, Com., Nos. 8 to 12, 20¢; No. 7, 20½¢; No. 6, 21½¢. In lots of 12 doz. or over, 1 cent less per pound.*
*Cable Laid Italian, lb., No. 18*.37¢
*Italian, lb., A, No. 18, 25¢; B, 22¢*
*Common India*.....*lb.*, 11@11½¢
*Cotton Sash Cord, Tw'ted*.18@20¢
*Patent Russia*.....*lb.*...20¢
*Cable Laid Russia*.....*lb.*...21¢
*India Hemp, Br'd'd*.....*lb.*...21¢
*India Hemp, Twisted*...*lb.*13@14¢
*Patent India, Twisted*..*lb.*..17¢
Pearl Braided, cotton, No. 6, ₱ lb, 27½¢; No. 7, 26½¢; Nos. 8 to 12, 26¢
Eddystone, Braided, Nos. 8 to 12, 26¢; 7, 26½; 6, 27½¢.
Harmony Cable Laid Italian, Nos. 7 to10.....₱ lb 23¢
Pullman:
Wire Sash Cord.....10%
Sash Cord Attachments, per 100..$2.00
Samson, Nos. 8 to 12:
Braided, ₱ lb., Drab Cotton, 55¢; Italian Hemp, 40¢@50¢; Linen, 65¢; White Cotton, 50¢; Spot Cord.....50¢
Massachusetts, White...₱ lb 40¢
Massachusetts, Drab...₱ lb 45¢
} 15%
Phoenix, White, Nos 8 to 12....27¢
Silver Lake, per lb.:
A, Drab, 45¢; A, White, 40¢; B, Drab, 40¢; B, White, 35¢; Italian Hemp, 40¢; Linen....57½¢
See also Chain and Ribbon.

## Wire, Picture—

*Full Length*.....90@—%
*Short Length*.....90&20@—%
Hendryx Standard Wire Picture Cord, old list, 85&10%
Turner & Stanton Co. Wire Picture Cord .....90%

## Cradles—

*Grain*.....5%

## Crayons—

*White Round Crayons, Cases, 100 gro., $8.00, $8.50 and $9.00 according to grade.*
Zelnicker's Lumber: ₱ gro.
White and Purple, Indelible....$7.50
Blue, Red, Green, Yellow and Terra Cotta, $6.50; Black.....$4.50
Giant Lumber, 5¼ in. x 15-16 in. round, all colors, $12.00; Indelibles, $14.00; Blacks.....$10.00
Genuine Soapstone, Metal Workers', 5 in. x ¼ in. Round, $2.50; 5 in. x ⅛ in. Square, $1.75; 5 x ½ x 3 16, $2.50; 5 x 1¼ x 3-16.....$3.00
Suremark, Black, $2.25; Blue, Red and Yellow.....$2.50

## Crooks, Shepperds'—

Fort Madison, per doz., Heavy, $5.50; Light .....$5.00

## Crow Bars—See *Bars, Crow.*

## Cultivators—

Victor Garden.....50

## Cutlery, Table—

International Silver Company:
No. 12 M'd'm Knives, 1847.₱ doz. $3.50
Star, Eagle, Rogers & Hamilton and Anchor.....₱ doz $3.00
Wm. Rogers & Son.....₱ doz. $2.50

## Cutters—Glass—

H. H. Mayhew Co.....40
Red Devil.....60
B. Mfg. Co.....40
Woodward .....50

## Meat and Food—

American .....50

| Nos. | 101 | 102 | 103 | 104 | 105 | 106 | 107 |
|---|---|---|---|---|---|---|---|
| Each | $5 | $7 | $10 | $12 | $25 | $50 | $75 |

Enterprise:

| Nos. | 5 | 9 | 12 | 22 | 72 |
|---|---|---|---|---|---|
| Each | $2 | $2 | $2.75 | $1.50 | $.25@25&7½ |
| No. 2½ | $1.50 | | | | 10&7½ |

P., S. & W. Co.:
Dixon's .....₱ doz 35¢

| Nos. | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| | $14.00 | $17.00 | $20.00 | $21.00 |

Ideal .....10@10&5
Hales .....60&10&5
Little Giant .....₱ doz 10&50
New Triumph No. 605, ₱ doz $24.00, 40&10
Russwin Food, No. 1, $24.00; No. 2, $27.00 .....45&10&10

| Nos. | 305 | 310 | 312 | 320 | 322 |
|---|---|---|---|---|---|
| | $35.00 | $48.00 | $41.00 | $72.00 | $68.00 |

$15.00 $18.00
Enterprise Beef Shavers.....25@30

## Slaw and Kraut—

Henry Disston & Sons:
Slaw and Kraut Cutters.....35
Corn Graters.....30%
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife....₱ doz. $3.00
Combined Slaw Cutter and Corn Grater .....₱ doz. $4.00

## Tobacco—

*All Iron, Cheap*...*doz, $4.25@4.50*
Enterprise .....25@30
National, ₱ doz., No. 1, $21; No. 2, $18 .....40

## Diggers, Post Hole, &c—

Disston's:
Rapid, ₱ doz., $24.00.....25
Samson, ₱ doz., $34.00.....25%
Iwan's Imp'ved Post Hole Auger..40
Vaughan Pattern Post Hole Augers, ₱ doz., $7.00
Perfection Post Hole Diggers, ₱ doz. .....$8.75
Split Handle Post Hole Diggers, ₱ doz., $7.75
Hercules Pattern, ₱ doz.....$10.00
Kohler's, ₱ doz., Universal, $15.00; Little Giant, $12.00; Hercules, $10.00; Invincible, $9.00; Rival, $8.50; Pioneer.....$7.50
Never-Break Post Hole Diggers, ₱ doz., $24.00.....60

## Dividers—See *Compasses.*

## Drawing Knives—

See *Knives, Drawing.*

## Dressers Emery Wheel—

Sterling Emery Wheel Dressers.....35%
Sterling Wheel Dresser Cutters.....35

## Drills and Drill Stocks—

*Blacksmith's Common Drilling Machines* .....*$1.50@1.75*
Breast, Millers Falls.....15&10
Breast, P., S. & W.....33⅓%
Goodell Automatic Drills 50&10@60&10
Millers Falls Automatic Drills.33⅓&10
Ratchet, Curtis & Curtis.....25%
Ratchet, Parker's.....40%
Ratchet, Weston's.....40%
Ratchet, Weston's, Style H Improved .....40
Ratchet, No. 012.....40
Ratchet, Celebrated.....40%
Ratchet, Whitney's, P., S. & W., 50&5%
Whitney's Hand Drill, No. 1, $10.00; Adjustable, No. 10, $12.00.....33⅓

## Twist Drills—

*Bit Stock*.....70@70&5%
*Taper and Straight Shank, 60&10@70%*

## Drivers, Screw—

*Screw D'ver Bits, per doz*.*45@50¢*
Balsey's Screw Holder and Driver, ₱ doz., 2½-in., $6; 4-in., $7.50; 6-in., $9 .....50%
Buck Bros.' Screw Driver Bits.....30%
Champion .....50%
Disston's .....70%
Fray's Hol. H'dle Sets, No. 3, $12..50%
Ford's Brace Screw Drivers....40&10
Gay's Double Action Ratchet.....35%
Goodell's Auto.....65@65&10%
Mayhew's Black Handle.....40%
Mayhew's Monarch.....40%
Millers Falls, Nos. 20 and 21....25&10%
Millers Falls, Nos. 11, 12, 41, 42..15&10%
Smith & Hemenway Co., Neverturn, 66⅔%; Elmora, [illegible]ar. 30&10%
Swan's:
Nos. 7565 to 7567 [illegible]%; No. 7540, 40&10%

## Eave Trough, Galvanized—

| *Territory...* | *Gal. Steel.* | *Charcoal. Iron.* |
|---|---|---|
| *Northeastern* | 75&10&5% | 60&20% |
| *Eastern* | 80&2½% | 60&20% |
| *Pittsburgh* | 80&20% | 65&10% |
| *Central* | 80&10&10&2½% | 65&10% |
| *Northwestern* | 80&10&10% | 65&10% |
| *Western* | 80&10% | 60&10&5% |
| *Tennessee* | 80&5% | 60&10&5 |
| *Southern* | 80% | 60&10&5 |
| *Southwestern* | 75&10&2½% | 60&5 |

*Terms, 2% for cash. Factory shipments generally delivered.*
*Note. Lower prices are made in some sections.*
See also Conductor Pipe and Elbows.

## Elbows and Shoes—

*Factory shipments, all territories:*

| | *Galv. Steel and Galv. C. I. Standard Gauge* |
|---|---|
| *No. 26* | 50% |
| *No. 24* | 45% |
| *No. 22* | 40% |

## Elbows, Stove Pipe—

Edward Stoveland Blue .....40&10&10
Edwards, Royal Blue .....40&10&10
Reeves, Dover, one piece. .....40&10

## Emery, Turkish—

| | ¼ to ⅜: | 5/16 to 220: | Flour. |
|---|---|---|---|
| *Kegs*.....*lb.* | 5¢ | 5½¢ | 3½¢ |
| *½ Kegs*.....*lb.* | 5½¢ | 5¾¢ | 3¾¢ |
| *¼ Kegs*.....*lb.* | 5½¢ | 6¢ | 4¢ |
| *10 lb cans, 10 in case*....6½¢ | | 7¢ | 6¢ |
| *10 lb cans, less than 10*..... | 10¢ | 10¢ | 8¢ |
| *Less quantity*.. | 10¢ | 10¢ | 8¢ |

*NOTE. In lots 1 to 3 tons a discount of 10% is given.*

## Extractors, Lemon Juice—

See *Squeezers, Lemon.*

## Fasteners, Blind—
Zimmerman's .....50&10
Walling's .....40&10
Upson's Patent.....10%

### Cord and Weight—
Ives and Titan.....

### Corrugated—
Acme Corrugated Fasteners.....70%

### Faucets—
*Cork Lined.....50&10@60%*
*Metallic Key, Leather Lined, ..60&10@70%*
*Red Cedar.....40&5@40&10&5%*
*Petroleum .....70&10@75%*
B. & L. B. Co.:
Metal Key.....60&10
Star .....60
West Lock.....50&10%
John Sommer's Peerless Tin Key....10%
John Sommer's Boss Tin Key.....50%
John Sommer's Victor Mtl. Key..50&10%
John Sommer's Duplex Metal Key..60%
John Sommer's Diamond Lock.....40%
John Sommer's I.X.L. Cork Lined..50%
John Sommer's Reliable Cork Lined..50&10%
John Sommer's Chicago Cork Lined.60%
John Sommer's O. K. Cork Lined...50%
John Sommer's No Brand, Cedar....50%
John Sommer's Perfection, Cedar....40%
Self Measuring:
Enterprise, ₱ doz. $36.00.....40&10
Lane's, ₱ doz. $36.00 .....40&10
National Measuring, ₱ doz. $36.40&10%

### Felloe Plates—
See *Plates, Felloe.*

### Files— Domestic—
*List Nov. 1, 1899.*
*Best Brands.....70&10@75&10%*
*Standard Brands.....75&10@80&10%*
*Lower Grade....75&10&10@80&10%*

### Imported—
*Stubs' Tapers, Stubs' list, July 24, '97.....33⅓@40%*

### Fixtures, Fire Door—
Allith Underwriters' Approved.....50%
Richards Mfg. Co.:
Universal, No. 103; Special, No. 104 .....$3.75
Fusible Links, No. 96.....50%
Expansion Bolts, No. 107.....60&10%

### Grindstone—
*Net Prices:*

| | | | | |
|---|---|---|---|---|
| *Inch* | *15* | *17* | *19* | *21* |
| *Per doz.* | *$3.60* | *3.85* | *4.15* | *4.65* |

P., S. & W. Co.....25%
Reading Hardware Co.....60%

### Fodder Squeezers—
See *Compressors.*

### Forks—
*NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.*
Iowa Dig-Ezy Potato.....60&10
Victor, Hay.....60&15&2½
Victor, Manure.....66⅔
Victor, Header.....65
Champion, Hay.....66⅔
Champion, Header.....65
Champion, Manure.....60&15&2½
Columbia, Hay.....60&20
Columbia, Manure.....70
Columbia, Spading.....70&12½
Hawkeye Wood Barley.....10
W. & C. Potato Digger.....60&10%
Acme Hay.....60&20
Acme Manure, 4 tine.....60&10&5%
Dakota Header.....60&20
Jackson Steel Barley.....60&20
Kansas Header.....65
W. & C. Favorite Wood Barley....40
Plated.—See Spoons.

### Frames— Wood Saw—
*White, S'g't Bar, per doz.75@80¢*
*Red, S'g't Bar, per doz.$1.00@1.25*
*Red, Dbl. Brace, per doz.$1.40@1.50*

### Freezers, Ice Cream—

| *Qt.* | *1* | *2* | *3* | *4* | *6* |
|---|---|---|---|---|---|
| *Each* | *$1.25* | *$1.60* | *$1.90* | *$2.20* | *$2.80* |

### Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

### Fry Pans—See *Pans, Fry.*

### Fuse— *Per 1000 Feet.*
*Hemp .....$2.75*
*Cotton .....3.20*
*Waterproof Sgl. Taped..3.65*
*Waterproof Dbl. Taped..4.40*
*Waterproof Tpl. Taped..5.15*
10&2½%

## Gates, Molasses and Oil—
*Stebbins' Pattern.....80@80&5%*

### Gauges—
*Marking, Mortise, &c..50@50&10%*
Chapin-Stephens Co.:
Marking, Mortise, &c.....50&50&10%
Disston's Marking, Mortise, &c..67½%
Wire, Brown & Sharpe's.....33⅓%
Wire, Morse's.....25
Wire, P., S. & W. Co.....33⅓%

### Gimlets— Single Cut—
*Numbered assortments, per gro.*
*Nail, Metal, No. 1, $2.00; 2, $2.30*
*Spike, Metal, No. 1, $4.00; 2, $4.80*
*Nail, Wood Handled, No. 1, $2.30; 2, $2.60*
*Spike, Wood Handled, No. 1, $4.40; 2, $4.60*

### Glass, American Window
See *Trade Report.*

### Glasses, Level—
Chapin-Stephens Co.....65@65&10%

### Glue, Liquid Fish—
*Bottles or Cans, with Brush, 25&10@50%*
Elwell's .....40%

### Grease, Axle—
*Common Grade...gro.$6.00@$6.50*
Dixon's Everlasting, 10-lb. pails, ea. 85¢; in boxes, ₱ doz., 1 lb, $1.20; 2 lb.....$2.00
Helmet Hard Oil.....25

### Griddles, Soapstone—
Pike Mfg. Co.....33⅓@33⅓&10%

### Grinders—
Royal Mfg. Co.:
Abundum Grinding Machines, each, Nos. 01, $1.75; 1A, $2.50; 10, $5.00 .....30%
Abundum Sickle Grinders, each, Nos. 20, $5.00; 20A, $6.00; 20A Combined, $6.50.....30
Abundum Disc Grinders, each, $2.50 .....30

### Grindstones—
Pike Mfg. Co.:
Improved Family Grindstones, ₱ inch, ₱ doz., $2.00.....33⅓
Richards Mfg. Co., Eli and Cycle, Ball Bearing, mounted.....40

### Grips, Nipple—
Perfect Nipple Grips.....40&10&2%

## Halters and Ties—
*Cow Ties.....65@65&10%*
Bridgeport Chain Co.:
Triumph Coil and Halters.35&2½@40%
Brown Coil and Halters...45@50&5
Brown Cow Ties.....50&5@50&10&5
Brown Tie Outs.....70&10@75&5
Covert Mfg. Co.:
Web .....30&2%
Jute Rope.....35%
Sisal Rope.....20%
Cotton Rope.....45%
Hemp Rope.....45%
Oneida Community:
Am. Coil and Halters.....40@40&5%
Am. Cow Ties.....45@50
Niagara Coil and Halters...45@50&5
Niagara Cow Ties.....45&5@50&10&5

### Hammers—
### Handled Hammers—
Heller's Machinists'....55&10@55&10&5%
Heller's Farriers.....40&5@40&10&5%
Peck, Stow & Wilcox Co.:
Crucible Steel.....40&10%
Farriers' .....40&10%
Riveting .....40&10%
Machinists' .....60&10%
Blacksmiths' .....50%
Fayatte R. Plumb:
A. E. Nail.....40&2½@40&12½%
Eng. and B. S. Hand.50&10&5@60&5%
Machinists' Hammers.....60@60&10%
Rivet and Tinners'.40&7½@40&12½&5%

### Heavy Hammers and Sledges—
*Under 3 lb., per lb., 50¢...80&10%*
*3 to 5 lb., per lb., 40¢...80&10&10%*
*Over 5 lb., per lb., 30¢.....*
*Over 5 lb., per lb., 30¢.80&10&10%*

### Handles—
### Agricultural Tool Handles
*Axe, Pick, &c....60&10@60&10&5%*
*Hoe, Rake, &c.....40%*
*Fork, Shovel, Spade, &c.:*
*Long Handles.....40%*
*D Handles.....40%*

### Cross-Cut Saw Handles—
Atkins' .....40%
Champion .....50%
Disston's .....50%

### Mechanics' Tool Handles—
*Auger, assorted...gro.$3.00@$3.50*
*Brad Awl.....gro.$1.65@$1.75*
*Chisel Handles, Ass'd, per gro.:*
*Tanged Firmer, Apple, $2.40@$2.65; Hickory.....$2.15@2.40*
*Socket Firming, Apple, $1.75@$1.95; Hickory.....1.60@1.75*
*Socket Framing, Hickory, $1.60@$1.75*
*File, assorted.....gro.$1.30@$1.40*
*Hammer, Hatchet, &c., 60&10@60&10&5%*
*Hand Saw, Varnished, doz., 80&85¢; Not Varnished.....65@75¢*
*Plane Handles:*
*Jack, doz., 30¢; Fore, doz...45¢*
Chapin-Stephens Co.:
Carving Tool.....30@30&10%
Chisel .....60@60&10%
File and Awl.....60@60&10%
Saw and Plane.....30@30&10%
Screw Driver.....30@30&10%
Millers Falls Adj. and Ratchet Auger Handles .....15&10%
Nicholson Simplicity File Handle.....₱ gro. $0.85@$1.50
J. L. Osgood:
Indestructible File and Tool, ₱ gro., No. 1, $8.00; No. 2, $8.50: No. 3, $9.00; No. 4, $9.50; No. 5, $10.00.....gro. lots 10%
W. A. Zelnicker Supply Co.:
Hammer, ₱ doz., 12 in. $2.00; 14 in., $2.00; 16 in., $2.30; 18 12., $2.50; 20 in., $2.70; 22 in., $3.00; 24 in., $3.30; 26 in., $3.50; 30 in., $3.80.
Sledge, ₱ doz., oval, 30 in., $3.80; octagon, 30 in., $3.80; oval, 36 in., $4.00; octagon, 36 in., $4.00.
Axe, ₱ doz., 28 to 34 in., $5.60; 36 in., $5.80.
Adze, ₱ doz., 36 in., $5.80; 36 in., $7.80.
Pick, ₱ doz., R. R., 36 in., $8.00; coal, 34 in., $5.80.
Hatchet, ₱ doz., 12 to 14 in., $2.00.
Extra 5&10% often given.

### Hangers—
*NOTE.—Barn Door Hangers are generally quoted per pair, without track and Parlor Door Hangers per double set with track, &c.*

Allith Mfg. Co.:
Reliable, Nos. 1 and 2; Allith, No. 3; Allith Adjustable, No. 6; Reliable Parlor Door.....50
Chicago Spring Butt Co.:
Friction .....25%
Oscillating .....25
Big Twin.....25
Chisholm & Moore Mfg. Co.:
Baggage Car Door.....50
Elevator .....30
Railroad .....50
Cronk & Carrier Mfg. Co.:
Loose Axle.....60&2½
Roller Bearing.....70&2½
Griffin Mfg. Co.:
Solid Axle, No. 10, $12.00..60&10%
Roller Bearing, No. 11, $15.00, 60&10
Roller Bearing, Ex. Hy., No. 22, $18.00.....60&10
Bull Dog, $24.00.....70
Lane Bros. Co.:
Parlor, Ball Bearing, $1.00
Standard, $3.15; No. 105, $2.85; New Model, $2.85; New Champion .....$2.25
Barn Door, Standard.....60&10
Hinged .....Net $3.08
Covered .....60&5
Special .....70&5
Lawrence Bros.:
Advance .....55&10%
Cleveland .....70&7½
Clipper, No. 75.....60
Crown .....55&10%
Cyclone, No. 40.....Net $6.50
Tandem, No. 50.....Net $7.50
New York.....55&10%
McKinney Mfg. Co.:
Roller Bearing, Nos. 1 and 2..70%
Anti-Friction .....60
Hinged Hangers, King Charm.60%
Richards Mfg. Co.:
Hangers, Nos. 47, 48, 147, 247, 60&5%
Pioneer Wood Track, No. 3..$2.25
Roller B'r'g St'l Track No. 12.$2.20
Roller B'r'g St'l Track No. 13.$2.50
Roller B'r'g, Nos. 39, 41, 43, 70&7½%
Hero, Adj. Track No. 19..50&10%
Adjustable Track Tandem Trolley Track No. 16.....50&10%
Seal, Steel Track No. 8.....$2.25
Auto Adj. Track No. 22..50&5%
Trolley B. D. No. 17, $1.25; F. D. No. 120, $2.25; No. 121, $2.45; No. 150.....$2.50
Safety Underwriters F. D. No. 101 .....50%
Tandem No. 41..2½ and 3 60&10%
Palace, Adjustable Track No. 132 .....50&5%
Royal, Adjustable Track No. 122 .....50&10%
Ives' Wood Track No. 1.....$2.25
Trolley B. D. No. 20.....50&10%
Trolley B. D. No. 24, $1.30; No. 27, $1.40; No. 28.....$1.60
Roller Bearings, Nos. 37, 38, 39, 41, 43, 44, Sizes 1 and 2.70&7½%
Anti-friction, No. 42; No. 44, sizes 2½ and 3.....60%
Hinged Tandem No. 48....60&5%
Folding Door B. B. Swivel No. 135 .....40%
Taylor & Boggis F'y Co.'s Kidder's Roller Bearing.50&15&10&5%
Myers' Stayon Hangers.....60%

### Hangers— Garment—
Pullman Trouser, ₱ gro., No. 1 $9.00; No. 4, $24.00; No. 5, $16.50; No. 8, Black Enamel, $7.50; No. 10, $21.00; No. 12, $8.00; No. 15, Rods, $9.00; No. 18, Loops.....$10.00
Victor Folding.....₱ gro. $9.60

### Gate—
Myers' Patent Gate Hangers, ₱ doz. net .....$1.50

### Joist and Timber—
Lane Bros. Co.....30%

### Hasps—
Griffin's Security Hasp.....50&10%
McKinney's Perfect Hasp, ₱ doz..60

### Hatchets—
*Regular list, first qual.40&12½@—*
*Second quality.....50&10&5@—*

### Heaters, Carriage—
Clark, No. 5, $1.75; No. 5B, $2.00; No. 3, $2.25; No. 3D, $2.75; No. 7D, $3.00; No. 3E, $3.25; No. 1, $3.50.....25%
Clark Coal, ₱ doz., $0.75.....20%

### Hinges—
### Blind and Shutter Hinges
*Surface Gravity Locking Blind: (Victor; National; 1868 O. P.; Niagara; Clark's O. P.; Clark's Tip; Buffalo.)*

| *No.* | *1* | *3* | *5* |
|---|---|---|---|
| *Doz. pair* | *$0.75* | *1.35* | *2.70* |

*Mortise Shutter: (L. & P., O. S., Acme, &c.)*

| *No.* | *1* | *1½* | *2* | *2½* |
|---|---|---|---|---|
| *Doz. pair* | *$0.70* | *.65* | *.60* | *.55* |

*Mortise Reversible Shutter (Buffalo, &c.):*

| *No.* | *1* | *1½* | *2* |
|---|---|---|---|
| *Doz. pair* | *$0.70* | *.65* | *.60* |

North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%
Charles Parker Co.....70@75%
Parker Wire Goods Co.
Hale & Benjamin Automatic Blind Hinges .....20%
Hale's Blind Awning Hinges, No. 110, for wood, $9.00; No. 111, for brick, $9.00.....20%
Reading's Gravity.....60%
Stanley's Steel Gravity Blind Hinges, No. 1647½, ₱ doz. sets, without screws, $0.95; with screws, $1.25.
Wrightsville Hardware Co.:
O. S., Lull & Porter.....75&5%
Acme, Lull & Porter.....75
Queen City Reversible.....75%
Shepard's Noiseless, Nos. 60, 65, 55 .....75&5%
Niagara, Gravity Locking, Nos. 1, 3 & 5.....75&5%
Tip Pat'n, No. 1.....75&10%
No. 3.....75&5%
Buffalo Gravity Locking, Nos. 1, 3 & 5.....70&10&5%
Shepard's Double Locking.....75%
Champion Gravity Locking.....75&5%
Pioneer .....75&10
Empire .....65%
W. H. Co.'s Mortise Gravity Locking, No. 2.....60&10
Extra 10% often given on most of these Hinges.

### Gate Hinges—
*Clark's or Shepard's—Doz. sets:*

| *No.* | *1* | *2* | *3* |
|---|---|---|---|
| *Hinges with Latches.* | *$2.00* | *2.70* | *3.60* |
| *Hinges only.....* | *1.25* | *1.90* | *3.52* |
| *Latches only.....* | *.70* | *.75* | *.75* |

*New England:*
*With Latch.....doz..@$2.00*
*Without Latch.....doz..@$1.40*
*Reversible Self-Closing:*
*With Latch.....doz..@$1.75*
*Without Latch.....doz....@$1.35*
*Western:*
*With Latch.....doz. $1.75*
*Without Latch.....doz..$1.15*
Wrightsville Hardware Co.:
Shepard's or Clark's Hinges and Latches, Hinges only or Latches only, Nos. 1, 2 or 3.....70%

### Pivot Hinges—
Bommer Bros. Pivot.....40%
Lawson Mfg. Co. Matchless.....50

### Spring Hinges—
*Holdback, Cast Iron...$6.75@$7.00*
*Non-Holdback, C'st Iron $6.50@$6.75*
J. Bardsley:
Bardsley's Non-Checking Mortise Floor Hinges.....40%
Bardsley's Patent Checking.33⅓%
Bommer Bros.:
Bommer Ball Bearing Floor..40%
Bommer Spring Hinges.....40%
No. 999 Wrot. Steel Hold Back, ₱ gro. $9.00
Chicago Spring Butt Co.:
Chicago Spring Hinges.....25%
Triple End Spring Hinges....50%
Chicago (Ball Bearing) Floor.50%
Garden City Engine House...25
Keene's Saloon Door.....25%
Columbian Hardware Co.:
Acme, Wrought Steel.....30%
Acme, Brass.....25%
American .....30%
Columbia, ₱ gr., No. 14, $9.00; No. 18.....$25.00
Columbia, Adj., No. 7, ₱ gr.$12.00
Columbian Hinges.....60&10
Gem, new list.....30%
Clover Leaf and Acorn, gro. lots, $5.10; ½ gro. lots.....$6.00
Oxford, new list.....30
Floor Spring Hinges.....65&10%
Lawson Mfg. Co., Matchless...30%
Richards Mfg. Co.:
Superior Double Acting Floor Hinges .....40%
Shelby Spring Hinge Co.:
Buckeye All Steel Holdback Screen Door.....₱ gr. $9.00
Chief Ball Bearings Floor Hinge .....50%
Ball Bearing Door.....25%
No. 777, Sheet Steel Holdb'k, ₱ gr. pr.....$9.00
Standard Mfg. Co.:
Champion Double Acting Door Hinge .....25&10&10%
Standard Double Acting Floor Hinge .....25&10&10%
Superior Spring Hinge Co.:
Superior Floor Hinges.....33⅓%

### Wrought Iron Hinges—
*Strap and T Hinges, &c., list December 20, 1904:*
*Light Strap Hinges..50&10%*
*Heavy Strap Hinges..60&5%*
*Light T Hinges.....50%*
*Heavy T Hinges.....40%*
*Extra Hvy. T Hinges.50&10%*
*Hinge Hasps.....33⅓%*
*Cor. Heavy Strap....60&5%*
*Cor. Ex. Heavy T...50&10%*
Extra 10&7½%.

*Screw Hook and Strap.*
*6 to 12 in..lb.3½¢*
*14 to 20 in..lb.3½¢*
*22 to 36 in..lb.3 ¢*

*Screw Hook and Eye:*
*¾ to 1 inch.....lb.6½¢*
*⅝-inch .....lb.7½¢*
*½-inch .....lb.8½¢*
Extra 10&5%.

### Hitchers, Stall—
Covert Mfg. Co., Stall Hitchers..30&2%

### Hods— Coal—
*M'f'gr's list, price per gross:*

| *Inch* | *15* | *16* | *17* | *18* |
|---|---|---|---|---|
| *Galv. Open* | *$35* | *$39* | *$42* | *$46* |
| *Jap. Open* | *26* | *28* | *31* | *35* |
| *Galv. Funnel* | *43* | *48* | *52* | *56* |
| *Jap. Funnel* | *33* | *36* | *59* | *43* |

Net 10&2½%.

### Masons' Etc.
Cleveland Wire Spring Co.:
Steel Brick, No. 162.....each $1.05
Steel Mortar, No. 158.....each $1.35

### Hoes— Eye—
*Scovil and Oval Pattern, 60&10@60&10&10%*
*Grub, list Feb. 23, 1899, 70&10@70&10&10%*
D. & H. Scovil.....27½%
Am. Fork & Hoe Co. (Scovil Pattern) .....60%

### Handled—

*NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.*

Cronk's Weeding, No. 1, $2.00; No. 2, $2.50
Star Double Bit.....$3.20
Ft. Madison Cotton Hoe....75&10&10%
Ft. Madison Crescent Cultivator Hoe, ₱ doz.....70&10%
Ft. Madison Mattock Hoes:
Regular Weight.....₱ doz. 40&5%
Junior Size.....₱ doz. $4.00
Ft. Madison Sprouting Hoe, ₱ doz., 60&10%
Ft. Madison Dixie Tobacco Hoe.....75&10&7½%
Kretsinger's Cut Easy.....70&10
Warren Hoe.....45&10%
W. & C. Ivanhoe.....75&2%
B. B. 6 in., Cultivator Hoe.....$3.10
B. B., 6½ in.....$3.50
Acme Wedding.....₱ doz., net, $4.35
W. & C. L'tning Shuffle Hoe, ₱doz.$5.25

### Hoisting Apparatus—

See *Machines, Hoisting.*

### Holders— Bit—

Angular, ₱ doz. $2.00.....35&10

### Door—

Bardsley's, Iron, 40%; Brass and Bronze.....25%
Empire.....50%
Pullman.....25%
Richards Mfg. Co.: No. 117, Ever-ready, 40%; Nos. 118, 119, Sure Grip.....50%
Superior.....33⅓%

### File and Tool—

Nicholson File Holders and File Handles.....33⅓@40

### Fruit Jar—

Triumph Fruit Jar Holder, ₱ gross, $18.00; ₱ doz.....$2.00

### Trace and Rein—

Fernald Double Trace Holder, ₱ doz. pairs.....$1.25
Dash Rein Holder, ₱ doz. pairs.$1.25

### Hones—Razor—

Pike Mfg. Co., Belgian and Swaty, 50%; German.....33⅓%

### Hooks—Cast Iron—

Bird Cage, Reading.....40%
Clothes Line, Reading List.....40%
Coat and Hat, Reading.....45&20%
Coat and Hat, Wrightsville.....60&5%
Harness, Reading List.....40%

### Wire—

*Belt*.....80%
*Wire C. & H. Hooks*.....80%
Bradley Metal Clasp Wire, Coat and Hat, 70&10%; Ceiling.....70&10%
Columbian Hdw. Co., Gem.....70&5%
Parker Wire Goods Co., King..70&10%
Wire Goods Co.:
Acme, 60&10%; Chief, 70%; Crown, 75%; Czar, 65%; V Brace, 75%; Czar Harness, 50&10%

### Wrought Iron—

*Box, 6 in., per doz., $0.90; 8 in., $1.15.*
*Cotton*.....*doz. $1.25@$1.50*
Wrought Staples, Hooks &c.
See Wrought Goods.

### Miscellaneous—

*Hooks, Bench, see Stops, Bench.*
*Bush, Light, doz., $6.20; Medium, $6.75; Heavy, $7.65*
*Grass, best, all sizes, per doz., $2.75@$3.00*
*Grass, common grades, all sizes, per doz*.....*$1.25@$1.50*
*Whiffletree*.....*lb. 5½@6¢*
*Hooks and Eyes:*
*Brass*.....*6%@60&10%*
*Malleable Iron*.....*70@70&10%*
Covert Mfg. Co. Gate and Scuttle Hooks.....40%
Ft. Madison Cut-Easy Corn Hooks, ₱ doz. $3.25 net
Turner & Stanton Co. Cup and Shoulder.....85&10%
Bench Hooks—See Bench Stops.
Corn Hooks—See Knives, Corn.

### Horse Nails—

See *Nails, Horse.*

### Horseshoes—

See *Shoes, Horses.*

### Hose, Rubber—

*Garden Hose, ¾-inch:*
*Competition*.....*ft. 6@6½¢*
*3 ply Guaranteed*.....*ft. 8½@9¢*
*4-ply Guaranteed*.....*ft. 9½@12¢*
*Cotton Garden, ¾-in., coupled:*
*Low Grade*.....*ft. 8@ 9¢*
*Fair Quality*.....*ft. 10@11¢*

### Irons—Sad—

*From ¼ to 10*.....*lb. 2½@2¾¢*
*B. B. Sad Irons*.....*lb. 3¼@3½¢*
*Mrs. Potts', cents per set:*

| | Nos. 50 | 55 | 60 | 65 |
|---|---|---|---|---|
| *Jap'd Tops* | 83 | 89 | 93 | 91 |
| *Tin'd Tops* | 88 | 85 | 98 | 95 |

*New England Pressing..lb.3¾@4¢*

### Bar and Corner—

Richards Mfg. Co., Bar, 60&10%; Corner.....60

### Pinking—

*Pinking Irons*.....*doz. 60@65¢*

### Irons, Soldering

See *Coppers.*

### Jacks, Wagons—

Covert Mfg. Co.:
Auto Screw.....30&2%; Steel, 15
Lockport.....50
Love's Steel.....30&5
Richards' Tiger Steel No. 130.....50&10
Smith & Hemenway Co.'s.....25%

### Ladder—

Richards Mfg. Co. Ladder Jacks .50%

### Kettles—

*Brass, Spun, Plain*.....*20@25%*
Enameled and Cast Iron See Ware, Hollow.

### Knives—

### Butcher, Kitchen, &c.—

Foster Bros.' Butcher, &c.....30%
Wilkinson Shear & Cutlery Co....60%

### Corn—

Columbian Cutlery Co., Wilcut Brand Knives and Hooks.....60%
Withington Acme, ₱ doz., $2.65; Dent, $2.75; Adj. Serrated, $2.20; Serrated, $2.10; Yankee No. 1, $1.50; Yankee No. 2, $1.15.

### Drawing—

*Standard List*.....*80&10@—%*
C. E. Jennings & Co., Nos. 45, 46 25&7½%
Jennings & Griffin, Nos. 41, 42, 66⅔&7½%
Swan's.....66⅔@70
Watrous.....16⅔
L. & I. J. White.....20&5@25%

### Hay and Straw—

*Serrated Edge, per doz.$5.00@5.50*
Iwan's Sickle Edge.....₱ doz. $9.50
Iwan's Serrated.....₱ doz. $10.00

### Miscellaneous—

*Farriers'*.....*doz.$2.60@3.55*
Wostenholm's.....₱ doz. $3.00@3.25

### Knobs—

*Base, 2½-inch, Birch or Maple, Rubber Tip*.....*gro.$1.25@1.40*
*Carriage, Jap., Drive, all sizes, gro.35@40¢*
*Door, Mineral*.....*doz.65@70¢*
*Door, Por. Jap'd*.....*doz.70@75¢*
*Door, Por. Nickel*..*doz.$2.05@2.15*
Bardsley's Wood Door, Shutters, &c.15%

### Lacing, Leather—

See *Belting, Leather*

### Ladders, Store, &c.—

Allith Mfg. Co., Reliable.....50%
Lane's Store.....25%
Myers' Noiseless Store Ladders....50%
Richards Mfg. Co.:
Improved Noiseless, No. 112.....50
Climax Shelf, No. 113.....50
Trolley, No. 109.....50%

### Ladles, Melting—

L. & G. Mfg. Co. (low list).....20%
P., S. & W.....40&10
Reading.....60%

### Lanterns—Tubular—

*Regular, No. 0*.....*doz.$4.35@4.50*
*Side Lift, No. 0*.....*doz.$4.60@4.75*
*Hinge Globe, No. 0.doz.$4.60@4.75*
*Other Styles*.....*40@40&10%*

### Bull's Eye Police—

*3-inch*.....*$3.75@4.00*

### Latches— Thumb—

*Roggin's Latches, Jap'd, with Screws*.....*doz.35@40¢*

### Door—

Allith Mfg. Co., Reliable and Alligator, 50%; Reliable Cold Storage, 50%
Cronk & Carrier Mfg. Co., No. 101, ₱ doz. $2.00
Richards' Bull Dog, Heavy, No. 125.....50&5%
Richards' Trump, No. 127.....$1.50

### Leaders, Cattle—

*Small*.....*doz.50¢; large, 60¢*
Covert Mfg. Co.:
Cotton, 45%; Hemp, 45%; Jute, 35%; Sisal, 20%.

### Leathers, Pump—

See *Pumps—*

### Lifters, Transom—

R. & E.....10%

### Lines—

| *Wire Clothes, Nos.* | *18* | *19* | *20* |
|---|---|---|---|
| *100 feet* | *$2.30* | *1.95* | *1.75* |
| *75 feet* | *$1.95* | *1.65* | *1.50* |

Samson Cordage Works:
Solid Braided Chalk, Nos. 0 to 3..40%
Solid Braided Masons'.....30%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50.....₱ gr. 20%
Masons' Lines, Shade Cord, &c.; White Cotton, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50; Colors, No. 3½, $1.75; No. 4, $2.25; No. 4½, $2.75; Linen, No. 3½, $2.50; No. 4, $3.50; No. 4½, $4.50.....20%
Tent and Awning Lines: No. 5, White Cotton, $7.50; Drab Cotton, $8.50.....20%
Clothes Lines, White Cotton: 50 ft., $2.75; 60 ft., $3.25; 70 ft., $3.75; 75 ft., $4.00; 80 ft., $4.25; 90 ft., $4.75; 100 ft. $5.25.....20
Turner & Stanton Co.:
Solid Braided Chalk, Masons' and Awning Lines.....40
Clothes Lines, White Cotton....20%
Shade Cord, Cotton or Linen....20

### Locks— Cabinet—

*Cabinet Locks*.....*33⅓@33⅓@5%*

### Door Locks, Latches, &c

*NOTE.—Net Prices are very often made on these goods.*
Reading Hardware Co.....40
R. & E. Mfg. Co.....40

### Padlocks—

R. & E. Mfg. Co. Wrought Steel.....
Brass.....75&10

### Sash, &c.—

Ives' Patent:
Bronze and Brass 55&5%; Cast Iron, 60; Iron 60; Window Ventilating, 10&20; Robinson Pat. Ventilating Sash Lock 33⅓.
Pullman Patent Ventilating Lock .25%
Reading Sash Locks.....40%

### Machines—Boring—

*Com. Upr't, without Augers.*.....*$2.00@2.25*
*Com. Angl'r, without Augers.*.....*$2.25@2.50*
Swan's Improved.....40&10
Jennings', Nos. 1 and 4.....25&7½%
Millers' Falls.....5.75
Snell's, Upright, $2.65; Angular, $2.90

### Corking—

Reisinger Invincible Hand Power...
₱ doz. $48.00

### Fence—

Williams' Fence Machines....each. $5.50

### Hoisting—

Moore's Anti-Friction Chain Hoist.30%
Moore's Hand Hoist, with Lock Brake.....20
Moore's Cyclone High Speed Chain Hoist.....25%

### Ice Cutting—

Chandler's.....12½

### Washing

| Boss Washing Machine Co.: | Per doz. |
|---|---|
| Boss No. 1 | $57.00 |
| Boss Rotary | $57.00 |
| Champion Rotary Banner No. 1 | $57.00 |
| Standard Champion No. 1 | $50.00 |
| Standard Perfection | $27.00 |
| Cincinnati Square Western | $33.00 |
| Uneeda American, Round | $33.60 |

### Mallets—

*Hickory*.....*45&65@50%*
*Lignumvitæ*.....*45&65@50%*
*Tinners' Hickory and Applewood*.....*doz.45&65@50%*

### Mangers, Stable—

Swett Iron Works.....50%

### Mats, Door—

Acme Flexible Steel.....50%
Elastic Steel (W. G. Co.), new list.50%

### Mattocks—

See *Picks and Mattocks.*

### Milk Cans—See *Cans, Milk.*

### Mills, Coffee, &c.—

Enterprise Mfg. Co.....20@25
National list Jan. 1, 1902.....30
Parker's Columbia and Victoria..33⅓
Parker's Box and Side.....50&10
Swift, Lane Bros. Co.....30%

### Motors, Water—

Divine's Red Devil.....30%
Lippincott's.....30

### Mowers, Lawn—

*NOTE.—Net prices are generally quoted*
*Cheapest, 10-in., $2.00; advance 10¢ for each size.*
*Cheap, 10-in., $2.25; advance 15@20¢ for each size.*
*Better Grade, 10-in., $3.00; advance 25¢ for each size.*

| | 12 | 14 | 16 | 18 in. |
|---|---|---|---|---|
| *High Grade* | *$4.50* | *4.75* | *5.00* | *5.25* |

Continental.....60%
Great American.....70%
Great American Ball B'r'g, new list.70%
Quaker City.....70%
Pennsylvania.....60%
Pennsylvania, Jr., Ball Bearing, 50&10&5%
Pennsylvania Golf.....50%
Pennsylvania Horse.....33⅓&5%
Pennsylvania Pony.....40&5%
Granite State:
Style A, Low Wheel.....70%
Style B, Low Wheel.....70%
Style C, High Wheel, spcl. list, 70&10%
Style D, High Wheel, spcl. list..70%
Philadelphia:
Styles M., S., C., K., T....70&10&5%
Style A, all Steel.....60&10&5%
Style E, High Wheel.....70&10&5%
Drexel and Gold Coin, special list.40%
Horse.....40&5
Pony.....40&5
36-in. Horse.....30&10
Eagle Horse.....30&5
I. X. L. Horse.....50%

### Nails—

*Wire Nails and Brads, Miscellaneous*.....*85&5@85&10%*
*Cut and Wire.* See *Trade Report.*
*Hungarian, Finishing, Upholsterers', &c.* See *Tacks.*

### Horse—

| Nos. | 6 | 7 | 8 | 9 | 10 | |
|---|---|---|---|---|---|---|
| Anchor | 23 | 21 | 20 | 19 | 18 | ..40&5% |
| Coleman | 13 | 12 | 12 | 11 | 11 | ..net |
| New Haven | 23 | 21 | 20 | 19 | 18 | ..40&5 |
| Livingston | 19 | 18 | 17 | 16 | 16 | ..10 |
| Western | | | | | | ₱ lb. 80¢ |

*Jobbers' Special Brands, per lb.9¢*

### Picture—

| | 1½ | 2 | 2½ | 3 in. |
|---|---|---|---|---|
| *Brass Hd. oro.* | *.55* | *.55* | *60* | *70* |
| *Por. Head, oro.* | *1.10* | *1.10* | *1.10* | *1.10* |

### Upholsters—

*Brass*.....*30%*
*Plated*.....*30&10%*

### Nippers—

See *Pliers and Nippers.*

### Nipples—

Standard Nipple Co.:
Wrought Pipe Nipples..Std.&S.&10

### Nuts— *Blank or Tapped.*

| *Cold Punched:* | *Off list* |
|---|---|
| *Square* | *5.70@5.75¢* |
| *Hexagon* | *6.00@6.10¢* |
| *Square, C. T. & R.* | *5.80@5.90¢* |
| *Hexagon, C., T. & R.* | *6.60@6.70¢* |
| *Hot Pressed:* | |
| *Square* | *5.80¢* |
| *Hexagon* | *6.30¢* |

### Oakum—

*Best*.....*lb. 6½*
*U. S. Navy*.....*lb. 6¢*
*Navy*.....*lb. 5¢*
*Plumbers' Spun Oakum*.....*2¾@3¢*

### Oil Tanks—See *Tanks, Oil.*

### Oilers—

*Steel, Copper Plated*.....75%
*Chase or Paragon:*
*Brass and Copper*.....50&10%
*Zinc*.....65&10%
*Railroad*.....60&10&10%
Malleable, Hammers' Improved, Nos. 11, 12 and 13, 20%; Old Pattern, Nos. 1, 2, 3, 50%
American Tube & Stamping Co.:
Spring Bottom Cans.....70@70&10
Railroad Oilers, &c.....60@60&10
Maple City Mfg. Co.:
Spring Bottom Cans.....70@70&10
Railroad Oilers, &c.....60@60&10

### Openers—Packing Box—

Herculever, ₱ doz., $24.....35

### Can Openers—

*Per doz.*
*Sprague, Iron Handle*.....*30@35¢*
*Sprague, Wood Handle*.....*40¢*
*Sardine Scissors*.....*$1.75@3.00*
Yankee Can and Bottle Opener, ₱ doz., net, $0.75; Little Gem, ₱ doz., net.....$0.65

### Egg—

Hartigan Nickel Plate, ₱ doz., $2.00; Silver Plate, $4.00.

### Packing—

*Asbestos Packing, Wick and Rope, any quantity*.....*25@2 ¢*

### Rubber—

*(Fair quality goods.)*
*Sheet, C. I.*.....*11@12¢*
*Sheet, C. O. S.*.....*11@12¢*
*Sheet, C. B. S.*.....*12@13¢*
*Sheet, Pure Gum*.....*40@45¢*
*Sheet, Red*.....*40@50¢*
Jenkins' '96, ₱ lb, 80¢.....25

### Miscellaneous—

*American Packing*....*lb. 7@10¢*
*Cotton Packing*.....*lb. 16@25¢*
*Italian Packing*.....*lb. 9@11¢*
*Jute*.....*lb. 4@4½¢*
*Russia Packing*.....*lb. 9@13¢*

### Pails, Water, Well, &c.—

See *Buckets.*

### Pans— Dripping—

*Standard List*.....*65&7½@70%*
Edwards, Royal Blue.....65&7½%

### Fry—

*Common Lipped:*

| *Nos.* | *1* | *2* | *3* | *4* | *5* |
|---|---|---|---|---|---|
| *Per doz.* | *$0.75* | *0.80* | *0.90* | *1.10* | *1.30* |

### Refrigerator, Galva.—

| *Inch* | *12* | *14* | *16* | *18* |
|---|---|---|---|---|
| *Per doz.* | *$1.75* | *2.25* | *2.80* | *3.45* |

### Paper—Building Paper

*Asbestos:* *lb.*
*Roll Board or Building Felt, 6 to 30 lb., per 100 sq. ft.*...*2¢*
*Roll Board or Building Felt, 3-32 and ⅛ in., 45 to 60 lb., per 100 sq. ft.*.....*3½¢*
*Mill Board, Sheet, 40 x 40 in., 1-32 to ½ in.*.....*3¢ Per roll.*
*Rosin Sized Sheathing: 500 sq. ft. Light weight, 25 lbs. to roll, 48@53¢*
***Medium weight, 30 lbs. to roll, 56@70¢***
*Heavy weight, 40 lbs. to roll, 75@78¢*
*Black Water Proof Sheathing, 500 sq. ft., 1 ply, 65¢; 2 ply, 85¢; 3 ply, $1.10; 4 ply, $1.25.*
*Deafening Felt, 9, 6 and 4½ sq. ft. to lb., ton*.....*$75.00*
*Red Rope Roofing 250 sq. ft. per roll*.....*$1.75*

### Tarred Paper—

*1 ply (roll 400 sq. ft.), ton, $34.00@35.00*
*2 ply, roll 108 sq. ft.*.....*65¢*
*3 ply, roll 108 sq. ft.*.....*85¢*
*Slater's Felt (roll 500 sq. ft.*.....

### Sand Paper and Cloth

*Flint and Emery*.....
*Garnet Paper and Cloth*.....

### Parers—Apple

Goodell Co.:
Family Box, Steel.....doz. $15.00
Improved B. Steel.....doz. $9.00
New Ladies'.....doz. $7.00
Turn Table.....doz. $6.00
White Mountain.....doz. $5.00
Bonanza Improved.....each $7.50
Dandy.....each $13.00
Ellis's Improved.....each $20.00
New Century.....each $21.00
Ranger.....each $25.00
Livingston Nail Co.:
Daisy.....doz. $4.00
Little Star.....doz. $5.00
Rocking Table.....doz. $6.20
Reading Hardware Co.:
Advance.....doz. $4.00
Baldwin.....doz. $4.00
Reading 77.....doz. $3.25
Reading 78.....doz. $2.75

### Potato—

Saratoga.....doz. $7.00
White Mountain.....doz. $6.00

### Picks and Mattocks—

*(List Jan., 1908.)*

***List***.....*70&10@70&10&10*
Cronk's Handled Grass Mattock, ₱ doz., No. 2, $2.60, No. 3, $2.40

### Pinking Irons—
See *Irons, Pinking.*

### Pins, Escutcheon—
*Brass* .....50@50&10%
*Iron, list Nov. 11, '85*..60@60&10%

### Pipe, Cast Iron Soil—
*Standard, 2-6 in*.....60&5@—%
*Extra Heavy, 2-6 in*....70&5@—%
*Fittings, Standard and Heavy,* 70&10@75%

### Pipe, Merchant—

| | Consumers, Steel. Blk. | Galv. | Carloads, Iron. Blk. | Galv. |
|---|---|---|---|---|
| | % | % | % | % |
| *⅛ and ¼ in*.. | 66 | 50 | 64 | .. |
| *⅜ in*..... | 68 | 54 | 66 | 52 |
| *½ in*..... | 70 | 58 | 68 | 56 |
| *¾ to 6 in*.... | 74 | 64 | 72 | 62 |
| *7 to 12 in*.... | 71 | 56 | 69 | 54 |

### Pipe, Vitrified Sewer—
*Carload lots.*
*Standard Pipe and Fittings, 3 to 24 in., f.o.b. factory:*
*First-class* .....87%
*Second-class* .....90%

### Pipe, Stove—

| | Per 100 joints. C. L. | L. C. L. |
|---|---|---|
| Edwards' Nested: | | |
| 5 in., Standard Blue.... | $6.25 | $7.25 |
| 6 in., Standard Blue.... | 6.75 | 7.75 |
| 7 in., Standard Blue.... | 7.75 | 8.75 |
| 5 in., Royal Blue..... | 7.00 | 8.00 |
| 6 in., Royal Blue..... | 7.50 | 8.50 |
| 7 in., Royal Blue..... | 8.50 | 9.50 |
| Wheeling Corrugating Co.'s Nested: | | |
| 5 in., Uniform Color.. | $6.15 | $7.15 |
| 6 in., Uniform Color.. | 6.65 | 7.65 |
| 7 in., Uniform Color.. | 7.65 | 8.65 |

### Planes and Plane Irons—
#### Wood Planes—
*Bench, first qual*.....30@30&10%
*Bench, second qual*...40@40&10%
*Molding* .....25@25&10%
Chapin-Stephens Co.:
Bench, First Quality.....30%
Bench, Second Quality.....40%
Molding and Miscellaneous.....25
Toy and German.....30
Union .....60%

#### Iron Planes -
Chaplin's Iron Planes.....50&10%
Union .....60%

#### Plane Irons—
*Wood Bench Plane Irons, list Dec. 12, '06*.....25%
Buck Bros.....30
Chapin-Stephens Co.....25%
Union .....50
L. & I. J. White.....20&5@25%

### Planters, Corn, Hand—
Kohler's Eclipse.....₱ doz. $8.00

### Plates—
*Felloe* .....*lb*. 3¾@4¢

### Pliers and Nippers -
*Button Pliers*....75&5@75&10&5%
*Gas Burners, per doz., 5 in., $1.25 @$1.30; 6 in., $1.45 $1.50.*

| *Gas Pipe*.. | 7 | 8 | 10 | 12-in. |
|---|---|---|---|---|
| | $2.00 | $2.25 | $2.75 | $3.50 |

Acme Nippers.....50&5%
Cronk & Carrier Mfg. Co.:
American Button.....80
Improved Button.....75&10%
Cronk's .....60%
No. 80 Linemen's.....50%
Stub's Pattern.....45%
Combination and others.....33⅓%
Heller's Farriers' Nippers, Pincers and Tools.....40&5@40&10&5
P., S. & W. Tinners' Cutting Nippers .....40%
Swedish Side, End and Diagonal Cutting Pliers.....50%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds....40%

### Plumbs and Levels—
Chapin-Stephens Co.:
Plumbs and Levels.....30@30&10%
Chapin's Imp. Brass Cor..40@40&10%
Pocket Levels.....30@30&10
Extension Sights.....30@30&10%
Machinists' Levels.....40@40&10
Disston's Plumbs and Levels....60&10%
Disston's Pocket Levels.....60&10%
Stanley's Dulex.....35%
Woods' Extension.....33⅓

### Points, Glaziers'—
*Bulk and 1-lb. papers*....*lb*. 9 ¢
*½-lb. papers*.....*lb*. 9½¢
*¼-lb. papers*.....*lb*. 10 ¢

### Police Goods—
*Manufacturers' Lists*...25@25&5%
Tower's .....25%

### Polish—Metal, Etc—
Prestoline Liquid, No. 1 (½ pt.), ₱ doz., $3.00; No. 2 (1 qu.), $9.00...40%
Prestoline Paste.....40%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, ₱ doz. 50¢; ₱ gro. $4.50; ½ lb boxes, ₱ doz. $1.25; 1 lb boxes, ₱ doz. $2.25.
U. S. Liquid, 8 oz. cans, ₱ doz., $1.25.
Barkeepers' Fric'd Metal Polish, ₱ doz., $1.75.

#### Stove—
Black Eagle Benzine Paste, 5 lb cans, ₱ lb 10¢
Black Eagle, Liquid, ½ pt. cans.. ₱ doz. 75¢
Black Jack Paste, ¾ lb cans, ₱ gr. $9.00
Black Kid Paste, 5 lb can...each, $0.65
Ladd's Black Beauty Liquid, per 100 tins.....$6.75
Joseph Dixon ₱ gr. $5.75.....10
Dixon's Plumbago.....₱ lb 8¢
Fireside .....₱ gr. $2.50
Gem, ₱ gr. $4.50.....10
Japanese .....₱ gr. $3.50
Jet Black.....₱ gr. $3.50
Peerless Iron Enamel, 10 oz. cans.. ₱ doz. $1.50

#### Window Polish—
Benj. P. Forbes:
Glasbright, No. 2, gal pails, ₱ doz., $24.00; each, $2.50; 1 lb cans, each .....75¢
Glasbright Powder, bbls., ₱ lb..20¢

### Poppers, Corn—
*1 qt. Square*..*doz*.*$0.80; gro*.*$8.75*
*1 qt. Round*..*doz*.*$0.90; gro*.*$10.00*
*1½ qt. Square*.*doz*.*$1.20; gro*..*$12.00*
*2 qt. Square*..*doz*.*$1.50; gro*..*$15.00*

### Post Hole and Tree Augers and Diggers—
See also *Diggers, Post Hole, &c.*

### Posts, Steel—
Steel Fence Posts, each, 5 ft., 42¢; 6 ft., 46¢; 6½ ft., 48¢.
Steel Hitching Posts.....each $1.30

### Potato Parers—
See *Parers, Potato.*

### Pots, Glue—
*Enameled* .....40%
*Tinned* .....30&10%

### Powder—
*In Canisters:*
*Duck, 1 lb*.....*each* 15¢
*Fine Sporting, 1 lb*....*each* 75¢
*Rifle, ¼-lb*.....*each* 15¢
*Rifle, 1 lb*.....*each* 25¢
*In Kegs:*
*12½-lb. kegs*.....$3.50
*25 lb. kegs*.....$4.50
King's Semi-Smokeless:
Keg (25 lb bulk).....$6.50
Half Keg (12½ lb bulk).....$3.50
Quarter Keg (6¼ lb bulk).....$1.90
Case 24 (1 lb cans bulk).....$8 50
Half case (1 lb cans bulk).....$4.50

| King's Smokeless: | Shot Gun. | Rifle. |
|---|---|---|
| Keg (25 lb bulk).. | $12.00 | $15.00 |
| Half Keg (12½ lb bulk).. | 6.25 | 7.75 |
| Quarter Keg (6¼ lb bulk) | 3.25 | 4.00 |
| Case 24 (1 lb cans bulk).. | 14.00 | 17.00 |
| Half case 12 (1 lb c. bk).. | 7.25 | 8.75 |

### Presses—
#### Fruit and Jelly—
Enterprise Mfg. Co.....20@25%

#### Seal Presses—
Morrill's No. 1, ₱ doz., $20.00.....50%

### Pruning Hooks and Shears
See *Shears.*

### Pullers, Nail—
Cyclops .....50%
Miller's Falls, No. 3, ₱ doz., $12.00.. 33⅓&10%
Morrill's No. 1, Nail Puller, ₱ doz. $20.00 .....50%
Pearson No. 1, Cyclone Spike Puller, each $30.00.....50%
The Scranton Co. Case Lots:
No. 2B (large).....$5.50
No. 3B (small).....$5.00
Smith & Hemenway Co.:
Diamond B.....70%
Giant .....50%
Staple Pullers, Utica and Davison .....60

### Pulleys, Single Wheel—

| *Inch* ..... | 1½ | 1¾ | 2 | 3 |
|---|---|---|---|---|
| *Awning or Tackle, doz* | $0.30 | .45 | .60 | 1.05 |

*Hay Fork, Swivel or Solid Eye, doz., ¼ in., $1.25; 5 in., $1.55*

| *Inch* ..... | 2 | 2¼ | 2½ |
|---|---|---|---|
| *Hot House, doz*... | $0.65 | .85 | 1.20 |
| *Inch* ..... | 1¼ | 1½ | 1¾ | 2 |
| *Screw, doz*.... | $0.16 | .19 | .23 | .30 |
| *Inch* ..... | 1¾ | 2 | 2¼ | 2½ |
| *Side, doz*..... | $0.25 | .40 | .55 | .60 |
| *Inch* ..... | 1½ | 1¾ | 2 | 2½ |

### Sash Pulleys—
*Common Frame; Square or Round End, per doz., 1¾ and 2 in*.....17@20¢
*Auger Mortise, no Face Plate, per doz., 1¾ and 2 in*....20@21¢
Acme, No. 35..1¾ in., 19¢; 2 in., 20½¢
American Pulley Co.:
Wrought Steel American Plain Axle .....50&10%
Wrought Steel, Eagle.....17@20¢
Top Notch, Electrically Welded, Nos. 3 and 4.....19¢
Fox-All-Steel, Nos. 3 and 7, 2 in.... ₱ doz. 50%
Grand Rapids All Steel Noiseless..50%
Niagara, No. 25, 1¾ in., 19¢; 2 in.....20½¢
No. 26 Trox..1¾ in., 14½¢; 2 in., 16½¢
Star, No. 26....1¾ in., 19¢; 2 in., 20½¢
Tackle Blocks—See Blocks.

### Pumps—
*Cistern* .....60%
*Pitcher Spout*.....75&5@75&10%
*Wood Pumps, Tubing, &c*....50%
Barnes Dbl. Acting (list).....40&5
Barnes Pitcher Spout.....75&10%
Contractors' Rubber Diaphragm, No. 2 B. & L. Block Co.....$.6.00
Daisy Spray Pump.....₱ doz. $6.50
Flint & Walling's Fast Mail Hand (low list).....50%
Flint & Walling's Fast Mail (low list) .....50%
Flint & Walling's Tight Top Pitcher .....75&10
National Specialty Mfg. Co., Measuring, Nos. 2, $6.00; 3, $5.50.....30%
Myers' Pumps (low list).....40&5
Myers' Power Pumps.....40&5
Myers' Spray Pumps.....40&5

### Pump Leathers—
*Plunger and Valve Leathers—Per gro.:*

| *No*..... | 1 | 2 | 3 | 4 | 30% |
|---|---|---|---|---|---|
| | $5.00 | 6.00 | 7.00 | 8.00 | |

*Cup Leathers—Per 100:*

| *Inch*.... | 2½ | 3 | 3½ | 4 | 30% |
|---|---|---|---|---|---|
| | $5.00 | 7.00 | 9.00 | 12.00 | |

### Punches—
*Saddlers' or Drive, good, doz*.*50@75¢*
*Spring, single tube, good quality* .....*$1.75*
*Revolving (4 tubes)*....*doz*.*$3.50*
Bemis & Call Co.'s Cast St'l Drive.50%
Morrill's Nos. 1AA, 1A, 1B, 1C, 1D, $15.00.....50
Hercules, 1 die, each $5.00.....50%
Niagara Hollow Punches.....40%
Niagara Solid Punches.....55&10%
Tinners' Hollow, P., S. & W. Co..40%
Tinners' Solid, P., S. & W. Co., ₱ doz., $1.44.....40%

## Rail—Barn Door, &c.—
*Sliding Door, Painted Iron, 2½@2¾¢*
*Sliding Door, Wrought Brass, 1⅛ in., lb., 36¢*.....30%
Allith Mfg. Co.: Reliable Hanger Track .....50%
Cronk's:
Double Braced Steel Rail..₱ ft. 3¼¢
O. N. T. Rail.....$3.12
Griffin's:
xxx, ₱ 100 ft., 1 x 3-16 in., $3.25; 1¼ x 3-16 in., $3.75.
Hinged Hanger, ₱ 100 ft., 1 x 3-16 in., $3.50; 1¼ x 3-16 in., $4.00.
Lane's:
Hinged Track, ₱ 100 ft.....$3.45
O. N. T., ₱ 100 ft., 1 in., $3.00; 1¼ in., $3.45; 1½ in., $4.00.
Standard, 1¼ in.....₱ 100 ft. $4.00
Lawrence Bros.:
1 x 3-16 in., ₱ 100 ft., $7.50; 1¼ x 3-16 in., $8.75.....55&7½%
McKinney's:
Hinged Hanger Track, ₱ ft., 11¢ 60&5%
1 x 3-16 Track.....55&7½%
Myers' Stayon Track.....60&5%
Richards Mfg. Co.:
Common, 1 x 3-16 in., $3.00; 1¼ x 3-16, $3.25; 1¼ x 3-16, $3.50.
Special Hinged Hanger Rail..60&10%
Lag Screw Rail, No. 65.....50%
Gauge Trolley Track, ₱ ft., No. 31, 9¢; No. 32, 14¢; No. 33, 20¢.
No. 50.....60&10%
Nos. 61, $3.00; 62, $3.25; 63, $3.50; 64, $4.00; 45, $3.25; 46, $3.50; 49, No. 1, $3.25; 49, No. 2, $3.50.

### Rakes—
*NOTE.—Many goods are sold at net prices.*
Fort Madison Red Head Lawn....$3.25
Fort Madison Blue Head Lawn....$2.75
Cronk's:
Steel Garden: Champion, 75%; Ideal, 80; Victor.....80&25%
Queen City Lawn, ₱ doz., 20 teeth, $2.85; 24, $3.00.....net
Anticlog Lawn, ₱ doz.....$4.00
Malleable Garden.....70&10%
Ideal Steel Garden, ₱ doz., 12 teeth, $15.00; 14, $16.00; 16, $18.00.....80%
Kohler's:
Lawn Queen, 20-tooth....₱ doz. $3.15
Lawn Queen, 24-tooth....₱ doz. $3.25
Paragon, 20-tooth.....₱ doz. $2.70
Paragon, 24-tooth.....₱ doz. $2.75
Steel Garden, 14-tooth....₱ doz. $2.40
Malleable Garden, 14-tooth, ₱ doz. $2.00@2.25

### Rasps, Horse—
Disston's .....75%
Heller Bros.'.....70&5@70&10&5%
Liveright Bros.' Gold Medal.70&10@75%
McCaffrey's American Standard..... 60&10&5%
New Nicholson.....70&10@75%
See also Files.

### Razors—
Liana Boraslc.....60%
Fox Razors, ₱ doz., No. 42 $20.00; No 44, $20.00; No. 82, Platina, $25.00. } 25 10
Red Devil.....65%

### Reels, Fishing—
Hendryx:
M 6, Q 6, A 6, B 6, M 9¼, M 16, O 16, A 16, B 16, 4008, Rubber, Populo, Nickeled Populo.....20%
Aluminum, German Silv., Bronze.25%
1240 N, 124 N.....20%
3004 N, 06 N, 6 RM, G 9.....25
4 N, 6 PN, 24 N, 26 PN .....20
2904 P., 33⅓%; 2904 PN., 33⅓%; 0924 N., 33⅓%; 02084 N., 33⅓%; 002904 PN., 33⅓%; 802 N., 33⅓
986 PN, 2904 N, 974 PN.....25%
5009 PN 5009 N.....20%
Competitor, 102 P, 102 PN, 202 P 202 PN 102 PR, 202 PR .....20
304 P, 304 PN, 00304 P, 00304 PN.33⅓%

### Registers—*List July 1, 1903.*
*Japanned, Electroplated and Bronzed* .....70%
*White Porcelain Enamel*..50&10%
*Solid Brass or Bronze Metal*.40%

### Revolvers—
*Single Action*.....$5¢@$1.00
*Double Action, except 44 cal*.$2.00
*Double Action, 44 caliber*...$2.00
*Automatic* .....$4.00
*Hammerless* .....$4.50

### Riddles, Hardware Grade
*16 in*.....*per doz*.*$2.50@$2.75*
*17 in*.....*per doz*.*$2.75@$3.00*
*18 in*.....*per doz*.*$3.00@$3.25*

### Rings and Ringers—
#### Bull Rings—

| | 2 | 2½ | 3 inch. |
|---|---|---|---|
| *Steel* ..... | $0.70 | 0.75 | 0.80 doz. |
| *Copper* ..... | $1.10 | 1.25 | 1.65 doz. |

#### Hog Rings and Ringers—
*Hill's Rings, gro. boxes*.$4.50@$4 50
*Hill's Ringers, Gray Iron, doz., 60@75¢*
*Hill's Ringers, Malleable Iron, doz*.*80@95¢*
*Blair's Rings*..*per gro*.*$5.00@$5.50*
*Blair's Ringers*...*per doz*.*75@90¢*

### Rivets and Burrs—
*Copper* .....50@50&5%
*Carriage, Coopers', Tinners', &c.:*
*Black* .....70&10%
*Metallic Tinned*.....70%

### Bifurcated and Tubular—
*Assorted in Boxes.*
*Bifurcated, per doz. boxes, pasteboard boxes, 50 count, 23@25¢; Tin boxes, 100 count, 29@32¢.*
*Tubular, per doz. boxes, 50 count, 29@32¢; 100 count, 51@58¢.*

### Rollers—
Cronk's Stay, No. 50.....$1.00
Cronk's Brinkerhoff No. 55, $0.60; No. 56, $0.75; No. 60.....$0.75
Lane's Stay.....40%
Richards' Stay:
Handy Adj. and Reversible No. 53.75¢
O. K. Adj. and Reversible No. 58.50¢
Lag Screw, Nos. 55 and 57.....50%
Underwriters', Nos. 59, 60.....50%
Favorite, No. 54.....60%

### Rope—
*Manila, 7-16 in. diam. and larger: Pure* .....*lb*., 10¢
*Sisal, 7-16 in. diam. and larger: Pure* .....*lb*., 7¢
*Sisal, 7-16 in. diam. and larger: lower grade*.....*lb*., 6½¢
*Sisal, Hay, Hide and Bale Ropes, Medium and Coarse: Mixed* .....*lb*., 6½¢
*Pure* .....*lb*., 7½¢
*Sisal, Tarred, Medium Lath Yarn: Mixed* .....*lb*., 5¢
*Pure* .....*lb*., 6¢
*Cotton Rope: Best, ¼-in. and larger*...18@20¢
*Medium, ¼-in. and larger*.16@17¢
*Common, ¼-in. and larger*..10¢
*In coils, ½¢ advance.*
*Jute Rope: Thread, No. 1, ¼-in. and up, lb*. .....6¼¢
*Thread, No. 2, ¼-in. and up, lb*. .....5¾¢

#### Wire Rope—
*Galvanized* .....37½&2½%
*Plain* .....45&2½%

### Ropes, Hammock—
Covert Mfg. Co.:
Jute, 35%; Sisal.....20%

### Rules
*Boxwood* .....60@60&10%
*Ivory* .....35&10@35&10&5%
Chapin-Stephens Co.:
Boxwood .....60%
Flexifold .....40%
Ivory .....25@25&10%
Miscellaneous .....50@50&10%
Stephens' Combination.....55%
Stationers' .....50@50&10%
Keuffel & Esser Co.:
Folding, Wood.....35&10%
Folding, Steel.....33⅓&10%
Lufkin's Steel.....50&10%
Lufkin's Lumber.....50&10%
Upson Nut Co.:
Boxwood .....60@60&10%
Ivory .....35&10@35&10&10%

## Sash Balances—
See *Balance, Sash.*

### Sash Locks—See *Locks, Sash.*

### Sash Weights—
See *Weights, Sash.*

### Sausage Stuffers or Fillers
See *Stuffers or Fillers, Sausage.*

### Saw Frames—
See *Frames, Saw.*

### Saw Sets—See *Sets, Saw.*

### Saw Tools—See *Tools, Saw.*

## Saws—

Atkins':
Circular ..... 45
Band ..... 50@50&10
Butcher Saws ..... 50
Cross Cuts ..... 35
One-Man Cross Cut ..... 40
Narrow Cross Cut ..... 50
Hand, Rip and Panel ..... 35&5
Miter Box and Compass ..... 40
Mulay, Mill and Drag ..... 45
Wood Saws ..... 40&10
Chapin-Stephens Co.:
Turning Saws and Frames ..... 30@30&10
Diamond Saw & Stamping Works:
Sterling Kitchen Saws ..... 30&10&10
Disston's:
Circular, Solid and Ins'ted Tooth ..... 50
Band, 2 to 18 in. wide ..... 60
Band, ¼ to 1¾ ..... 60
Crosscuts ..... 45
Narrow Crosscuts ..... 50
Mulay Mill and Drag ..... 50
Framed Woodsaws ..... 25
Woodsaw Blades ..... 25
Woodsaw Rods, Tinned ..... 15
Hand Saws, Nos. 12, 99, 9, 16, d100, D8, 120, 76, 77, 8 ..... 25%
Hand Saws, Nos. 7, 107, 107½, 3, 1, 0, 00, Combination ..... 30
Compass, Key Hole, &c ..... 25
Butcher Saws and Blades ..... 30
C. E. Jennings & Co.'s:
Back Saws ..... 16⅔%
Butcher Saws ..... 25&7½%
Compass and Key Hole Saws, 33⅓&7½%
Framed Wood Saws ..... 25&7½%
Hand Saws ..... 12½%
Wood Saw Blades ..... 33⅓&7½%
Millers Falls:
Butcher Saws ..... 15&10%
Star Saw Blades ..... 15&10%
Massachusetts Saw Works:
Victor Kitchen Saws ..... 40&10&50%
Butcher Saws Blades ..... 35@40%
Peace & Richardson's Hand Saws. 30%
Simonds':
Circular Saws ..... 45
Crescent Ground Cross Cut Saws. 30%
One-Man Cross Cuts ..... 40&10%
Gang Mill, Mulay and Drag Saws. 45%
Band Saws ..... 50%
Back Saws ..... 25@25&7½%
Butcher Saws ..... 35@35&7½%
Hand Saws ..... 25@25&7½%
Hand Saws, Bay State Brand ..... 45%
Compass, Key Hole, &c. .25@25&7½%
Wood Saws ..... 40&7½%
Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws ..... 50%

## Hack Saw Blades and Frames—

Atkins' Hack Saw Blades A A A. .25%
Disston's:
Concave Blades ..... 25%
Keystone Blades ..... 30%
Hack Saw Frames ..... 30%
Simonds File Co. ..... 35%
C. E. Jennings & Co.'s:
Hack Saw Frames, Nos. 175, 180 .... 40&7½%
Hack Saws, Nos. 175, 180, complete, 40&7½%
Goodell's Hack Saw Blades .... 40&10%
Griffin's Hack Saw Frames .. 35&5&10%
Griffin's Hack Saw Blades .... 35&5&10%
Star Hack Saws and Blades .... 15&10%
Sterling Hack Saw Blades .. 30&10&5%
Sterling Hack Saw Frames .. 30&10&10%
Sterling Power Hack Saw Machines, each, No. 1, $25.00; No. 2, $30.00 .. 10%
Victor Hack Saw Blades ..... 20%
Victor Hack Saw Frames ..... 40%
Whitaker Mfg. Co.:
National Hand Blades ..... 40%
National Hand Frames ..... 30&5%
National Power Blades ..... 30&10%

## Scroll—

Barnes, No. 7, $15 ..... 25%
Barnes' Scroll Saw Blades ..... 40%
Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20 ..... 20%
Lester complete, $10.00 ..... 15&10
Rogers, complete, $3.50 and $4.00 .. 15&10%

## Scales—

*Union Platform, Plain .$2.10@2.20*
*Union Platform, Stpd .$2.20@2.30*
Chatillon's:
Eureka ..... 25%
Favorite ..... 40%
Grocers' Trip Scales ..... 50%
The Standard Portables ..... 40%
The Standard R. R. and Wagon ..... 50&10%

## Scrapers—

*Box, 1 Handle ..... doz. $1.85@2.10*
*Box, 2 Handle ..... doz. $2.35@2.50*
*Ship ... Light, $2.00; Heavy, $4.50*
Chapin-Stephens Co., Box .. 30@30&10%
Richards Mfg. Co., Foot ..... 60%

## Screws—Bench and Hand

*Bench, Iron, doz., 1 in., $2.50@ 2.75; 1⅛, $3.00@3.25; 1¼, $3.50@3.75*
*Bench, Wood ..... 20@20&10%*
*Hand, Wood .... 70&10@70&10&10%*
Chapin-Stephens Co., Hand .. 70@70&10&2½%

## Coach, Lag and Hand Rail—

*Lag, Cone Point ... 80&5@80&10%*
*Coach, Gimlet Point .. 80@80&5%*
*Hand Rail ..... 70&10@75%*

## Jack Screws—

*Standard List ..... 70&10@75%*
Millers Falls ..... 50&10&10%
Swett Iron Works ..... 70@75%

## Machine—

*Cut Tread, Iron, Brass or Bronze:*
*Flat Head or Round Head, 50@50&10%*
*Fillister Head ..... 40@40&10%*
*Rolled Thread, F. H. or R. H., Iron ..... 75&10%*
*F. H. or R. H., Brass, Nos. 8 to 14 ..... 65&10%*

## Set and Cap—

*Set (Iron) ..... 75&10&7½%*
*Set (Steel), net advance over Iron ..... 25%*
*Sq. Hd. Cap ..... 70&10&7½%*
*Hex. Hd. Cap ..... 70&10&7½%*
*Rd. Hd. Cap ..... 50&7½%*
*Fillister Hd. Cap ..... 60&7½%*

## Wood—

*List July 23, 1903*
*Flat Head, Iron ..... 87½&5@ ..%*
*Round Head, Iron .... 85&5@ ..%*
*Flat Head, Brass ..... 80&5@ ..%*
*Round Head, Brass .. 77½&5@ ..%*
*Flat Head, Bronze .... 75&5@ ..%*
*Round Head, Bronze .. 72½&5@ ..%*
*Drive Screws ..... 87½&5@ ..%*

## Scroll Saws—

See *Saws, Scroll.*

## Scythes— Per doz.

*Grass, No. 1, Plain ..... $7.00*
*Clipper, Bronzed Webb ..... $7.25*
*No. 3 Clipper, Pol'd Webb ... $7.50*
*No. 6 Clipper and Solid Steel. $7.75*
*Bush, Weed and Bramble, Nos. 11, 12 and 13 ..... $7.25*
*Grain, No. 1 ..... $9.00@9.50*
*Bronzed Webb, No. 1 ... $9.25@9.75*
*Nos. 3 and 4 Clipper, Grain, $9.50@10.00*
*Solid Steel, No. 6 .... $10.00@10.50*

## Seeders, Raisin—

Enterprise ..... 25@30%

## Sets— Awl and Tool—

Fray's Adj. Tool Handles, Nos. 1, $12; 2, $16; 3, $12 ..... 50%
Millers Falls Adj. Tool Handles, No. 1, $12; No. 4, $12; No. 5, $18 .. 20&10%

## Garden Tool Sets—

Ft. Madison Three Plows, Hoe, Rake and Shovel ..... ₱ doz. sets $9.00

## Sets, Nail—

*Octagon ..... gro. $3.50@3.75*
Buck Bros. ..... 27½
Cannon's Diamond Point, ₱ gro. $12. 40&10
Mayhew's ..... ₱ gro. $9.00
Snell's Corrugated, Cup Pt. .... 40&10
Snell's Knurled, Cup Pt. .... 40&10%
Victor Knurled, Cup Pt. .... ₱ gro. $7.50

## Rivet—

*Regular list ..... 75@75&10%*

## Saw—

Atkin's:
Criterion ..... 40%
Adjustable ..... 40%
Disston's Star, Monarch and Triumph ..... 30
Morrill's No. 1 ..... $15.00
Nos. 3 and 4, Cross Cut .... $20.60
No. 5, Mill ..... $30.00
Nos. 10, 11, 95 ..... $15.60
No. 1 Old Style ..... $10.00
Special ..... $16.25
Giant Royal Cross Cut ..... ₱ doz. $8.00
Royal, Hand ..... ₱ doz. $4.50
Taintor Positive ..... ₱ doz. $6.75

## Shaving—

Fox Shaving Sets, No. 30 ..... ₱ doz., net, $24.00
Smith & Hemenway Co.'s ..... 75%

## Sharpeners, Knife—

Pike Mfg. Co.:
Fast Cut Pocket Knife Hones, ₱ doz. ..... $1.50
Mounted Kitchen Sand Stone, ₱ doz. ..... $1.50
Natural Grit Carving Knife Hones, ₱ doz. ..... $3.00
Quick Cut Emery Carving Knife Hones, ₱ doz. ..... $1.50
Quick Edge Pocket Knife Hones, ₱ doz. ..... $2.50
(50%)

## Skate—

Smith & Hemenway Co., Eureka .. 50%

## Shaves, Spoke—

*Iron ..... doz. $1.25*
*Wood ..... doz. $2.00*
Bailey's (Stanley R. & L. Co.) ..... 45
Chapin-Stephens Co. ..... 30@30&10
Goodell's, ₱ doz. $9.00 ..... 15&10

## Shears—

| *Cast Iron* | 7 | 8 | 9 in. |
|---|---|---|---|
| *Best* | $16.00 | 18.00 | 20.00 gro. |
| *Good* | $13.00 | 15.00 | 17.00 gro. |
| *Cheap* | $5.00 | 6.00 | 7.00 gro. |

*Straight Trimmers, &c.:*
*Best quality Jap .... 70@70&10%*
*Best quality Nickel .. 60@60&10%*
*Tailors' Shears ..... 40@40&10*
Acme Cast Shears ..... 40@40&5
Heinisch's Tailor's Shears ..... 10
National Cutlery Co.'s Nickel Plated, 60&10%; Japan Handles ..... 70&10
Wilkinson Shear & Cutlery Co.:
Sheep, 1900 list ..... 30&10&5
Grass ..... 50&10
Horse or Mule ..... 50&10
J. Wiss & Sons Co.:
Best Quality Jap'd ..... 60&10
Best Quality Nickeled ..... 50&10
Tailors' ..... 25

## Tinners' Snips—

*Steel Blades ..... 20&5@20&10%*
*Steel Laid Blades ..... 40&10@40&10%*
Forged Handles, Steel Blades, Berlin ..... 50
Heinisch's Snips ..... 40
Jennings & Griffin Mfg. Co.'s 6½ to 10 in. ..... 33⅓&7½%
National Cutlery Co.'s Forged Steel 50
Niagara Snips ..... 50
P., S. & W. Forged Handles, 25; W., R. W. ..... 10&10
J. Wiss & Sons Co.:
Wiss Forged Steel ..... 25%

## Pruning Shears—

Cronk's Hand Shears ..... 33⅓
Cronk's Wood Handle Shears .... 33⅓%
Disston's Combined Pruning Hook and Saw, ₱ doz. $18.00 ..... 25
Disston's Pruning Hook only, ₱ doz., $12.00 ..... 25
John T. Henry Mfg. Co.:
Pruning Shears, all grades ..... 40
P., S. & W. Co. ..... 40&10
Columbian Cutlery Co.:
Hedge, Wilcut Brand ..... 60&10
Lawn and Border, Wilcut Brand. 60&10

## Sheaves— Sliding Door—

Reading ..... 40
R. & E. list ..... 15

## Sliding Shutter—

Reading list ..... 40%
R. & E. list ..... 10%

## Shells—Shells, Empty—

Brass Shells, Empty:
Climax, 10 and 12 gauge ..... 65&10%
Club, Rival, 65&5%; First Quality, 60&5%
Paper Shells, Empty:
New Rapid, 10, 12, 16 and 20 gauge, 25&10%
Climax, 10 and 12 gauge; Acme, 10, 12, 16 and 20 gauge; Ideal, 10, 12, 16 and 20 gauge; Leader grade, 25&5%
Union League, 12 and 12 gauge; Rival Grade ..... 25
New Climax, Defiance, 10, 12, 14, 16 and 20 gauge; Climax, 14, 16 and 20 gauge ..... 20&5%
Challenge, Monarch, 10, 12, 16 and 20 gauge; League, Union, 14, 16 and 20 gauge; Repeater Grade .. 20%

## Shells, Loaded—

*Loaded with Black Powder .. 40%*
*Loaded with Smokeless Powder, medium grade ..... 40&5%*
*Loaded with Smokeless Powder, high grade ..... 40&10&10%*
Union Metallic Cartridge Co.:
New Club, Black Powders ..... 40%
Nitro Club, Smokeless Powders. 40&5%
Arrow, Smokeless Powders. 40&10&10%
Winchester:
Smokeless Repeater Grade ..... 40&5%
Smokeless Leader Grade ... 40&10&10%
Black Powder ..... 40%

## Shingles, Metal— Per Sq.

| Edwards Mfg. Co.: | Painted. | Galv. |
|---|---|---|
| 14 x 20 | $4.25 | $6.00 |
| 10 x 14 | 4.50 | 6.25 |
| 7 x 10 | 4.75 | 6.50 |
| Wheeling Corrugating Co.: | | |
| Dixie, 14 x 20 in. | $4.25 | $5.50 |
| Dixie, 10 x 14 in. | 4.50 | 6.00 |
| Dixie, 7 x 10 in. | 5.00 | 6.75 |

## Shoes, Horse, Mule, &c.—

*F.o.b. Pittsburgh:*
*Iron ..... per keg. $4.10*
*Steel ..... per keg. $3.85*
Burden's, all sizes ..... ₱ keg $3.90

## Shot—

*25-lb. bag.*
*Drop, up to B ..... $1.80*
*Drop, B and larger ..... 2.05*
*Buck ..... 2.05*
*Chilled ..... 2.05*
*Dust ..... 2.30*

## Shovels and Spades—

*Association List, Nov. 15, 1902 .. 10%*
Avery Stamping Co. ..... 40%

## Snow Shovels—

*Long Handle ..... $3.25@$3.50*
*Wood and Mall, D Handle, $3.75@$4.00*

## Sieves and Sifters—

*Hunter's Imitation, gro. ..... $9.50*
*Hunter's Genuine, per gro .. $12.00*

## Sifters, Ash—

Acme Ball Bearing Sales Co., Acme Automatic Ash Sifter, each, $3.25; ₱ doz. ..... $39.00

## Sieves, Seamless Metallic

| Mesh | Per dozen. 14 | 16 | 18 | 20 |
|---|---|---|---|---|
| *Iron Wire* | $1.05 | 1.05 | 1.10 | 1.20 |
| *Tinned Wire* | $1.15 | 1.15 | 1.20 | 1.30 |

## Sieves, Wooden Rim—

*Nested, 10, 11 and 12 Inch*
*Mesh 18, Nested ..... doz. 80.90@0.95*
*Mesh 20, Nested ..... doz. $1.00@1.05*
*Mesh 24, Nested .... doz. $1.30@1.40*

## Sinks, Cast Iron—

*Painted, Standard list:*
*12 x 12 to 22 x 36 in. ..... 60*
*20 x 24 to 24 x 30 in. ..... 50*
*24 x 60 to 24 x 120 in. ..... 30*
Barnes' list
Up to and including 20 x 36 in. 50&5
20 x 40 to 24 x 50 in. ..... 45

*NOTE.—There is not entire uniformity in lists used by jobbers.*

## Skeins, Wagon—

*Cast Iron ..... 70@75&10%*
*Steel ..... 40@45%*

## Slates, School—

*Factory Shipments*
*"D" Slates ..... 50@50&10*
*Eureka, Unexcelled Noiseless .. 60&7 tens.*
*Victor A, Noiseless .60&5 tens net.*

## Slaw Cutters— See *Cutters.*

## Snaps, Harness—

*German ..... 40@40&10%*
Covert Mfg. Co.:
Derby, 25; Yankee, 30&2; Yankee Roller, 30&2%.
High Grade, 10; Trojan ..... 10
Jockey ..... 25

## Snaths—

*Scythe ..... 60%*

## Snips, Tinners— See *Shears.*

## Spoons and Forks—

### Silver Plated—

*Good Quality ..... 50&10@60&5%*
*Cheap ..... 60@60&10%*
International Silver Co.:
1847 Rogers Bros., 44&10; Rogers & Hamilton ..... 50&10
Rogers & Bro., William Rogers Eagle Brand ..... 50&10%
Anchor, Rogers Brand ..... 60%
Wm. Rogers & Son ..... 60&10%

### Miscellaneous

*German Silver ..... 60@60&5%*

### Tinned Iron—

*Teas ..... per gro. 50@55¢*
*Tables ..... per gro. $0.90@$1.00*

## Springs— Door—

Bardsley's Spring and Check ..... 40%
Chicago (Coil) ..... 40&10%
Gem (Coil) ..... 20%
Pullman Door and Gate ..... 10%
Reliance (Coil) ..... 40&10%
Star (Coil) ..... 30%
Torrey's Rod, 39 in. ..... ₱ doz. $1.10

## Carriage, Wagon, &c.—

*1¼ in. and Wider: Per 100 lb.*
*Black ..... $4.75@$5.00*
*Half Bright ..... $4.75@$5.00*
*Bright ..... $5.25@$5.50*
*Painted Seat Springs:*
*1½ x 2 x 26 .... per pair .45@47¢*
*1½ x 3 x 28 .... per pair .68@71¢*

## Sprinklers, Lawn—

American Foundry & Mfg. Co.:
Cactus, 65%; Japanese, 70%; National, ₱ doz. ..... $12.00
Enterprise ..... 25@30
Philadelphia No. 1, ₱ doz. $12; No. 2, $15; No. 3, $20 ..... 30

## Squares—

*Nickel plated .. } List Jan. 5, 1900.*
*Steel and Iron .. } 80@80&5%*
*Rosewood Hdl. Try Square and T-Bevels ..... 60&10&10@70%*
*Iron Hdl. Try Squares and T-Bevels ..... 40&10@40&10&10%*
Disston's Try Squares and Bevels, Rosewood Handle, 60 & 10%; Iron Stock and Bevel ..... 15%

## Squeezers, Lemon

*Wood, Porcelain Lined:*
*Cheap ..... doz. $1.00*
*Good Grade ..... doz. $1.25*
*Tinned Iron ..... doz. $0.75@1.00*
*Iron, Porcelain Lined ... doz. $1.75*

## Staples—

*Barbed Blind ..... 85&5@85&10%*
*Electricians' ..... 80&10&10@85*
*Fence Staples, Polished, $2.05:*
*Galvanized ..... $2.35*
*Poultry Netting Staples .....*
*per lb. 3¼@3½¢*

## Steels, Butchers'—

Dick's ..... 30%
Foster Bros. ..... 30

## Steelyards— ..... 30@30&10%

## Stocks and Dies—

*Blacksmiths' ..... 50@50&10%*
Curtis Rev'ble Ratchet Die Stock ..... 50
Derby Screw Plates ..... 50
Green River ..... 50
Lightning Screw Plate ..... 50
Little Giant ..... 50
Reece's New Screw Plate ..... 50

## Stoners, Cherry—

Enterprise ..... 50&10

## Stones—Oil, &c.

Pike Mfg. Co., 1907 list: ₱ lb (33⅓%)
Arkansas St. No. 1, 3 to 5½ in. $2.85
Arkansas St. No. 1, 5½ to 8 in. 8. 50
Arkansas Slips No. 1 ..... $4.00
Lily White Washita, 4 to 8 in. 60¢
Rose Red Washita, 4 to 8 in. 60¢
Washita St., Extra, 4 to 8 in. 50¢
Washita St., No. 1, 4 to 8 in. 40¢
Washita St., No. 2, 4 to 8 in. 25¢
Lily White Slips ..... 90¢
Rose Red Slips ..... 90¢
Washita Slips, Extra ..... 80¢
Washita Slips, No. 1 ..... 70¢
Washita Slips, No. 2 ..... 40¢
India Oil Stones (entire list) (33⅓%)
Quickcut Emery and Corundum Oil Stone, Double Grit ..... 40%
Quickcut Emery and Corundum Axe Stone, Double Grit ..... 33⅓%
Quickcut Emery Rubbing Bricks
Hindostan No. 1, R'g'lar ₱ lb 8¢.
Hindostan No. 1, Small .. ₱ lb 10¢
Axe Stones (all kinds) .....
Turkey Oil Stones, Extra 5 to 8 in. ..... ₱ lb 80¢ (33⅓%)
Queer Creek Stones, 4 to 8 in. 20¢
Queer Creek Slips ..... 10¢
Sand Stone ..... 6¢

### Scythe Stones—

Pike Mfg. Co., 1901 list:
Black Diamond S. S., ℔ gro. $12.00
Lamoille S. S., ℔ gro. $11.00
White Mountain S. S., ℔ gro. $9.50
Green Mountain S. S., ℔ gro. $7.00
Extra Indian Pond S.S., ℔ gro. $8.00
No. 1 Indian Pond S.S., ℔ gro. $7.50
No. 2 Indian Pond S.S., ℔ gro. $5.00
Leader Red End S. S., ℔ gro. $5.00
Quick Cut Emery, ℔ gro. $10.00
Pure Corundum, ℔ gro. $18.00
Crescent $7.00
Emery Scythe Rifles, 2 Coat, $8.80
Emery Scythe Rifles, 3 Coat, $11.00
Emery Scythe Rifles, 4 Coat, $13.20
Balance of 1904 list 33⅓%
Electro (Artificial), ℔ gro., $12.00 33⅓%
Lightning (Artificial), ℔ gro., $8.00 33⅓%

### Stoppers, Bottle—

Victor Bottle Stoppers, ℔ gro. $9.00

### Stops—Bench—

Millers Falls 15&10%
Morrill's, ℔ doz., No. 1, $10.00 50%
Morrill's, No. 2, $12.50 50%

### Door—

Chapin-Stephens Co. 50@50&10%

### Plane—

Chapin-Stevens Co. 20%

### Straps—Box—

Acme Embossed, case lots..20&10&10%
Cary's Universal, case lots...20&10&10%

### Stretchers, Carpet—

*Cast Iron, Steel Points..doz. 55¢*
*All Steel Socket...doz. $2.00@2.25*
Excelsior Stretcher and Tack Hammer Combined, ℔ doz., $6.00 20%

### Stuffers, Sausage—

Enterprise Mfg. Co. 25@25&7½%
National Specialty Co., list Jan. 1, 1902 30&5%
P., S. & W. Co. 40&10&5%

### Sweepers, Carpet—

Bissell Carpet Sweeper Co.: ℔ doz.
Superba, Crotch Mahogany $36.00
Triumph, Fancy Veneers $33.00
Parlor Queen, Fig, Rosewood $30.00
Elite, Hungarian Ash $29.00
Am. Queen, Fig, Mahogany $27.00
Ideal, Bird's-Eye Maple $25.00
Grand Rapids, Nickel, $24.00; Japan $22.00
Standard, Nickel, $22.00; Japan $20.00
Crown Jewel, Nickel, $21.00; Jap. $19.00
Crystal, Glass Top $36.00
Grand, 17 in. wide $36.00
Parlor Grand $48.00
Club, 24 in. wide $54.00
Hall 28 in. wide $60.00

*NOTE.—Rebates: 50c per dozen on three dozen lots; $1 per dozen on five-dozen lots; $2 per dozen on ten-dozen lots; $2.50 per dozen on twenty-five dozen lots.*

## Tacks, Finishing Nails, &c.

*American Carpet Tacks...90&40%*
*American Cut Tacks.....90&40%*
*Swedes' Cut Tacks.....90&40%*
*Swedes' Upholsterers'....90&50%*
*Gimp Tacks.....90&50%*
*Lace Tacks.....90&50%*
*Trimmers' Tacks.....90&40%*
*Looking Glass Tacks.....65%*
*Bill Posters' and Railroad Tacks, 90&50&10%*
*Hungarian Nails.....80&20%*
*Finishing Nails.....70%*
*Trunk and Clout Nails...80&10%*

*NOTE.—The above prices are for Straight Weights.*

### Miscellaneous—

*Double Pointed Tacks, 90&6 tens@—%*
Se also Nails, Wire.

### Tanks, Oil and Gasoline—

| Wilson & Friend Co.: Gal. | Gasoline | Oil |
|---|---|---|
| 30 | $2.75 | $3.00 |
| 60 | $3.50 | $4.00 |
| 110 | $5.00 | $5.75 |

### Tapes, Measuring—

*American Asses' Skin....50@—%*
*Patent Leather.....25@30&5%*
*Steel .....33⅓&5%*
*Chesterman's .....25@25&5%*
Keuffel & Esser Co.:
Favorite, Ass Skin.....40&10@50%
Favorite, Duck and Leather..... 25&5@25&10%
Metallic and Steel, lower list, 35@35&5; Pocket, 35@35&5%.
Lufkins:
Asses' Skin.....40&10@50%
Metallic.....30@30&5%
Patent Bend, Leather...25&5@25&10%
Pocket.....40@40&5%
Steel.....33⅓@35
Wiebusch & Hilger:
Chesterman's Metallic, No. 31L, etc.....25%
Chesterman's Steel, No. 1038L, etc.....35%

### Teeth, Harrow—

*Steel Harrow Teeth, plain or headed, ⅝-inch and larger, per 100 lb.....$2.55@$2.80*

### Thermometers—

*Tin Case, Cabinet, Flange, Dairy, &c.....30@35%*

### Ties, Bale—Steel Wire—

*Single Loop.....82½&10%*
*Monitor, Cross Head, &c.70&2½%*

### Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

### Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

### Tire Benders, Upsetters, &c.

See *Benders and Upsetters, Tire.*

### Tools—Coopers'—

L. & I. J. White.....20@20&5%

### Haying—

Myers' Hay Tools.....45%

### Ice Tools—

Gifford-Wood Co.....15%

### Miniature—

Smith & Hemenway Co.'s, Davidson, ℔ doz., Nickel Plated, $1.50; Gold Plated.....$2.00

### Saw—

Atkins' Cross Cut Saw Tools....35&5%
Simond's Improved.....33⅓%
Simonds' Crescent.....25%

### Ship—

L. & I. J. White.....25%

### Transom Lifters—

See *Lifters, Transom.*

### Traps—Fly—

*Balloon, Globe or Acme, doz., $1.15@$1.25; gro.....$11.50@12.00*
*Harper, Champion or Paragon, doz., $1.25@1.40; gro.$13.00@13.50*

### Game—

*Imitation Oneida.....75@10%*
Newhouse .....45@45&5%
Hawley & Norton.....65%
Victor .....75@75&10%
Oneida Community Jump.....50%
Hector .....75@75&10%

### Mouse and Rat—

*Mouse, Wood, Choker, doz. holes, 12¢*
*Mouse, Round or Square Wire, doz. 85@90¢*
Marty French Rat and Mouse Traps (Genuine),
No. 1, Rat, ℔ doz. $13.25..$11.50 doz.
No. 3, Rat, ℔ doz., $6.50...$5.75 doz.
No. 3½, Rat, ℔ doz., $5.25. $1.70 doz.
No. 4, Mouse, ℔ doz., $3.85. $3.00 doz.
No. 5, Mouse, ℔ doz., $3.00. $2.25 doz.
Oneida Community:
Out o' Sight, Mouse, ℔ doz.....$0.60
Out o' Sight, Rat, ℔ doz.....1.25
Easy Set, Mouse, ℔ doz..... .35
Easy Set, Rat, ℔ doz..... 1.00
Wood Choker, Rat, ℔ doz. holes. .12
Premier Tin Choker, 5 hole, ℔ doz. traps..... .75

### Trowels—

Disston Brick and Pointing.....25%
Disston Plastering.....20%
Disston "Standard Brand" and Garden Trowels.....30%
Kohler's Steel Garden Trowels, ℔ gro., 5 in., $4.80; 6 in., $6.00.
Never-Break Steel Garden Trowels.. ℔ gro. $6.00
Woodrough & McParlin, Plastering.25%

### Trucks, Warehouse, &c.—

B. & L. Block Co.:
New York Pattern.....50&10%
Western Pattern.....60&10%
Handy Trucks.....℔ doz. $16.00
Grocery .....℔ doz $15.00
McKinney Trucks.....each, net $10.00
Model Stove Trucks.....℔ doz $18.50

### Tubs, Wash—

*M'f'gr's list, price per gross.*

| No. | 0 | 1 | 2 | 3 | |
|---|---|---|---|---|---|
| *Galvanized* | $67 | $79 | $89 | $99 | 10&7½&5&5% |

### Twine, Miscellaneous—

*Flax Twine:*
*No. 9, ¼ and ½-lb. Balls .21@23¢*
*No. 12, ¼ and ½-lb. Balls .19@21¢*
*No. 18, ¼ and ½-lb. Balls .16@18¢*
*No. 24, ¼ and ½ -lb. Balls. 15½@17½¢*
*No. 36, ¼ and ½-lb. Balls .15@17¢*
*Chalk Line, Cotton ½-lb. Balls .....24@29¢*
*Cotton Mops, 6, 9, 12 and 15 lb. to doz.....8½@19¢*
*Cotton Wrapping, 5 Balls to lb., according to quality..13½@19¢*
*American 2-Ply Hemp, ¼ and ½-lb. Balls.....12½@15¢*
*American 3-Ply Hemp, 1 lb Balls .....13½@16¢*
*India 2-Ply Hemp, ¼ and ½-lb. Balls (Spring Twine)...7½@9¢*
*India 3-Ply Hemp, 1-lb. Balls 7½@9¢*
*India 3-Ply Hemp, 1½-lb Balls, 7@8½¢*
*2, 3, 4 and 5-Ply Jute, 1¼-lb. Balls .....9@11¢*
*Mason Line, Linen, ¼-lb. Bls.17¢*
*No. 2½ Mattress, ¼ and ½ lb. Balls, according to quality, 30@60¢*
*Wool, 3 to 6 ply....B 6¢; A 7½¢*

## Vises—

*Solid Box.....50&5@50&10@5%*

### Parallel—

Athol Machine Co.:
Simpson's Adjustable.....10%
Standard .....40
Amateur .....25
Columbian Hdw. Co.....10
Fisher & Norris Double Screw, net, each, Nos. 2, $10.50; 3, $16.00; 4, $20.50; 5, $27.00.
Fulton Mach. & Vise Co.:
Reed, Swivel.....25%
Star, Solid Jaw.....10%
Hollands':
Machinists' .....40@40&5
Keystone .....65&5@70
Lewis Tool Co.:
Adjustable Jaw.....30%
Monarch, 50%; Solid Jaw.....50%
Massey Vise Co.:
Clincher .....40%
Perfect, 15%; Lightning Grip.....15%
Merrill's .....20%
Millers Falls Oval Slide Pattern.60&10%
Parker's:
Victor, 20@25%; Regulars....20@25%
Vulcan's .....40@45%
Combination Pipe.....55@60%
Prentiss .....20@25%
Rock Island.....25%
Snediker's X. L.....33⅓%
Stephens' .....33⅓%

### Saw Filers

Disston's D 3 Clamp and Guide, ℔ doz., $24.00, 30%; Clamps.....30%
Perfection Saw Clamps, ℔ doz....$4.50
Reading .....60%

### Wood Workers—

Fulton Mach. & Vise Co.:
Reed .....25%
Star .....40%
Massey Vise Co.:
Lightning Grip, 15%; Perfect....15%
Wyman & Gordon's Quick Action, 6 in., $6.00; 9 in., $7.00; 14 in., $8.00.

### Miscellaneous—

Holland's Combination Pipe..60@60&5%
Massey's Quick Action Pipe.....40%
Parker's Combination Pipe: 87 Series, 60%; 187 Series, 60&5%; No. 870, 40%.
Rock Island Pipe.....25%

## Wads—*Price per M.*

*B. E., 11 up.....60¢*
*B. E., 9 and 10.....70¢*
*B. E., 8.....80¢*
*B. E., 7.....80¢*
*P. E., 11 up.....$1.00*
*P. E., 9 and 10..... 1.25*
*P. E., 8..... 1.50*
*P. E., 7..... 1.50*
*Dis. 15%*
*Ely's B. E., 11 and larger.$1.70@1.75*
*Ely's P. E., 12 to 20....$3.00@3.25*

### Ware, Hollow—Cast Iron, Hollow—

*Stove Hollow Ware:*
*Enameled .....45&10%*
*Ground .....50&5%*
*Plain or Unground.....60%*
*Country Hollow Ware, per 100 lbs .....$2.75@$3.00*
*White Enameled Ware:*
*Maslin Kettles.....65&10%*
*Covered Wares:*
*Tinned and Turned.....35&10%*
*Enameled .....45&10%*
See also *Pots, Glue.*

### Enameled—

Agate Nickel Steel Ware.....33⅓%
Iron Clad Ware.....70&10%
Lava and Volcanic, Enameled..40&10%

### Tea Kettles—

*Galvanized Tea Kettles:*

| *Inch* | *6* | *7* | *8* | *9* |
|---|---|---|---|---|
| *Each* | *45¢* | *50¢* | *55¢* | *65¢* |

### Steel Hollow Ware—

Avery Spiders and Griddles..65@65&5%
Avery Kettles.....60%
Porcelained .....50&5@50&10%
Never Break Spiders and Griddles.. 65&5%
Never Break Kettles.....60%
Solid Steel Spiders and Griddles.65&5%
Solid Steel Kettles.....60%

### Warmers, Foot—

Pike Mfg. Co., Soapstone....40@40&10%

### Washboards—

Solid Zinc: ℔ doz.
Crescent, family size, bent frame.$4.05
Red Star, family size, stationary protector .....$4.05
Double Zinc Surface:
Saginaw Globe, family size, stationary protector.....$3.55
Cable Cross, family size, stationary protector.....$3.60
Single Zinc Surface:
Naiad, family size, open back, perforated .....$3.00
Single Saginaw Globe.....$2.85
Brass Surface:
Brass King, Single Surface, open back .....$4.05
Nickel Plate Surface:
No. 1001 Nickel Plate, Single Surface .....$3.60
Glass Surface:
Glass King, Single Surface, open back .....$3.95
Enamel Surface:
Enamel King, Single Surface, ventilated back.....$3.95

### Washers—Leather, Axle—

*Solid .....90@90&10%*
*Patent .....90@90&5%*
*Coil:* ¾ 9¢; 1 10¢; 1¼ 11¢; 1¼ inch. 14¢ per box.

### Iron or Steel—

*Size bolt.... 5-16 ⅜ ½ ⅝ ¾*
*Washers....$4.65 3.75 2.45 2.25 2.05*
*The above prices are based on $6.75 off list.*
*In lots less than one keg add ½c per lb.; 5-lb. boxes add ½c to list.*

### Cast Washers—

*Over ½-inch, barrel lots, per lb. 1½@1¾¢*

### Wedges—

*Oil Finish.....lb., 2¼@2¾¢*

### Weights—Hitching—

Covert Mfg. Co.....30&2%

### Sash—

*Per net ton, f.o.b. factory:*
*Eastern District....$21.00@—*
*Western and Central Districts .....$19.00@$20.00*

### Wheels, Well—

*8-in., $2.00; 10-in., $2.30; 12-in., $3.00; 14-in., $4.45.*

### Wire and Wire Goods—

*Bright and Annealed:*
*6 to 9.....72&10&7½%*
*10 to 18.....72½&10&10%*
*19 to 26.....75&10&10&2½%*
*27 to 36.....77½&7½%*
*Galvanized:*
*6 to 9.....72½&10%*
*10 to 14.....72½&10&5%*
*15 to 16.....72½&10&5%*
*17 to 18.....72½%*
*19 to 26.....70&5&2½%*
*27 to 36.....65&10&10%*
*Coppered:*
*6 to 9.....65&10&10%*
*10 to 14.....70&10&5%*
*15 to 18.....65&10&10&10%*
*19 to 26.....70&5&2½%*
*27 to 36.....72½&10&2½%*
*Tinned:*
*6 to 18.....67&10&10%*
*Brass .....15½¢ lb., base*
*Copper .....15¢ lb., base*
*Cast Steel Wire.....50%*

### Spooled Wire—

*Annealed and Tinned.....75%*
*Brass and Copper.....70%*
*Retailers' Assortments, per box $2.00@$2.25*
Wire Clothes Line, See Lines.
Wire Picture Cord, see Cord.

### Bright Wire Goods—

*Steel Wire Goods..90 ⅛@—%*
*Brass Wire Goods....90@90&10%*
*Brass Cup and Shoulder Hooks, 85&10%*

### Wire Cloth and Netting—

*Galvanized Poultry Netting, 80&2½@80&7½%*
*Painted Screen Cloth, 100 ft..$1.35*
*Standard Galv. Hardware Grade: 100 ft. rolls, 2 to 48 in. wide, Per 100 sq. ft.*
*Nos. 2, 2½ and 3 Mesh....$2.75*
*Nos. 4 and 5 Mesh.....$3.00*
*No. 6 Mesh.....$3.25*
*Nos. 7 and 8 Mesh.....$3.75*

### Wire, Barb—See *Trade Report*

### Wrenches—

*Agricultural .....80&10&10%*
*Alligator or Crocodile..70&10@75%*
*Baxter Pattern S Wrenches... 70&5@70&10%*
*Drop Forged S.....45@45&5%*
Acme .....60&10%
Alligator Pattern, 70%; Bull Dog..70%
Bemis & Call's:
Adjustable S, 40%; Adjustable S Pipe, 40%; Briggs Pattern, 40%; Combination Bright, 40%.
Steel Handle Nut.....50%
Combination Black.....40&5%
Merrick Pattern.....50%
Boardman's .....40%
Coes' Genuine Knife Hdl...40&10&5&5%
Coes' Genuine Steel Hdl...40&10&5&5%
Coes' Genuine Key Model..40&10&5&5%
Coes' Genuine Hammer Handle..... 40&10&5&5%
Coes' "Mechanics'"...40&10&10&5&5%
Donohue's Engineer.....40&10%
Eagle .....70%
Gem Pocket.....30%
Hercules .....70%
W. & B. Machinist:
Case lots.....50&5%
Less than case lots.....50%
W. & B. Railroad Special:
Case lots.....50%
Less than case lots.....40&10&5%
Solid Handles, P., S. & W..50&10%; full cases.....50&10&5%
Standard Nipple Mfg. Co.:
Duplex Chain.....50@50&10%
Stillson .....65%
Uwanta Wrench Co.:
Uwanta Special, Iron Handle.... 40&10&5%
Other Wrenches.....50%
Vulcan and Agrippa Chain.....50%
Whitaker Machinists':
Case Lots.....50&10%
Less than case lots.....50%

### Fruit Jar—

Beni, P. Forbes, Triumph, ℔ gro., $7.50; per doz.....$0.90

### Wrought Goods—

*Staples, Hooks, &c., list March 17, '02.....90@—%*

## Zinc—*(Cask lots at mill.)*

*Sheet. .....per 100 lb., $7.00*

# THE IRON AGE

New York, Thursday, July 16, 1908.

## American Steel Frame Buildings Abroad.

### Notable Achievements of the United States Steel Products Export Company.

A conspicuous example of the important work that is being done in foreign countries by American manufacturers is the construction, and in many cases the erection, of steel frame buildings. It is generally known that American manufacturers have undertaken contracts for some of the largest bridges in the world, and that the United States Steel Products Export Company recently supplied the whole of the bridges for the South Manchurian Railway and for a number of other important railroad projects in the Far East, Mexico, South America and elsewhere.

It is probably, however, not generally known that there is a steady development of a demand for steel buildings of American design throughout the world. While these buildings have not as yet assumed the proportions of the American skyscraper, the tendency of development is in that direction, and it is probable that within a few years an increasing number of large buildings of American design will be erected in the principal cities of the world. A recent example is the Phœnix Hotel at Buenos Aires, which an accompanying illustration, Fig. 1, shows in process of erection. This is the first modern fireproof building in Buenos Aires, and is, furthermore, the largest and highest building in that city. It consists of nine stories, the maximum hight from the level of the sidewalk being 63 m. (about 207 ft.), with a frontage on San Martin square of 60 m. (about 197 ft.) and a depth of 57 m. (about 187 ft.). The contract for the steel work was taken by the Buenos Aires branch office of the United

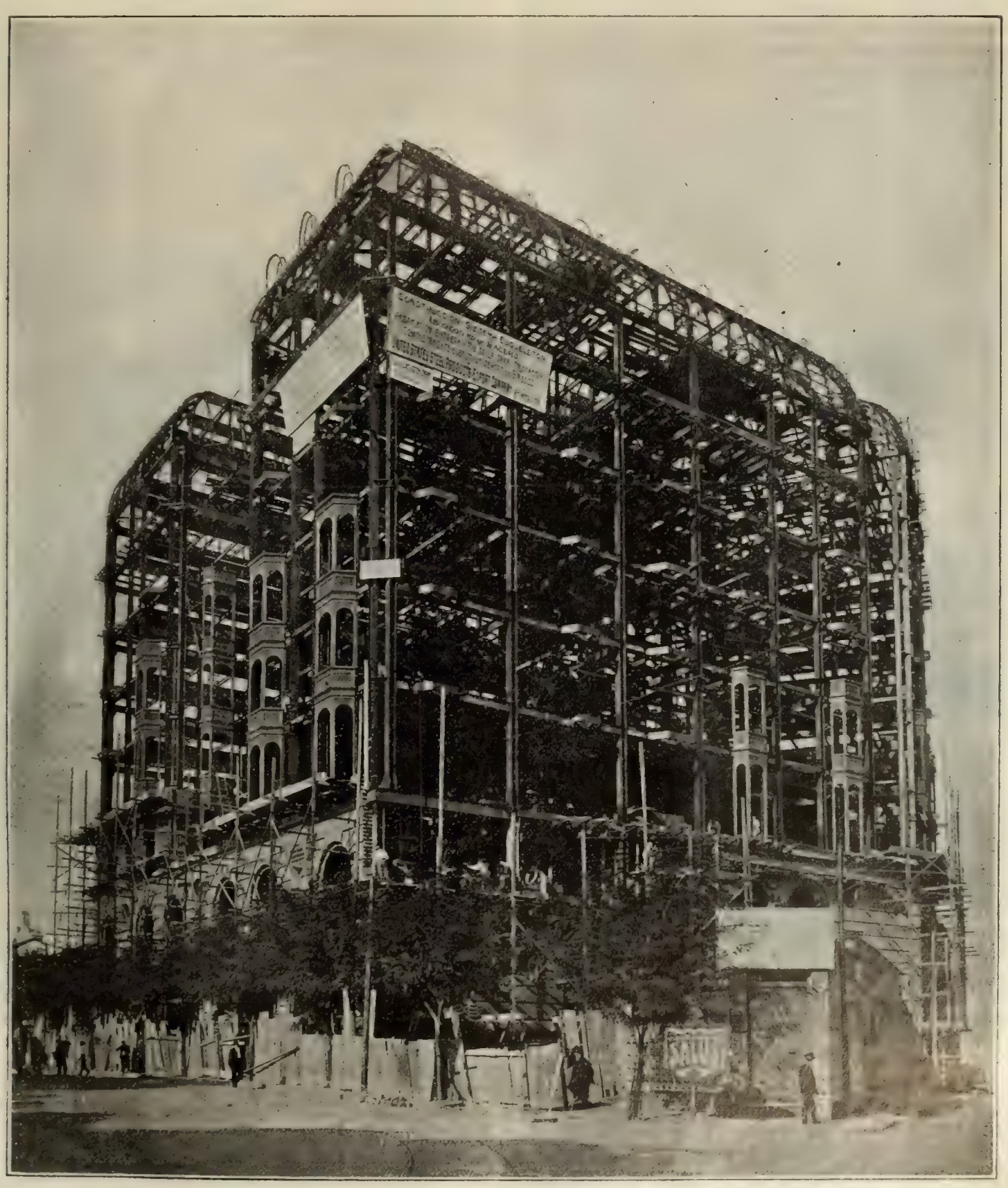


Fig. 1. The Phœnix Hotel at Buenos Aires, the First Modern Fireproof Building in that City.

States Steel Products Export Company, and the material was fabricated and furnished ready for erection by the American Bridge Company, the total quantity of steel amounting to 1800 tons. The erection of this hotel resulted in a further important development in the shape of steel construction apartment houses, of which a number are now under way in Buenos Aires.

**American Methods Overcoming Prejudice.**

In the early stages of the development of the American skyscraper, American methods of steel building construction were not regarded with favor by foreigners. Many of the most notable examples of the new style of construction, while possessing the advantages of size with resulting economy and adaptability to the uses for which they were designed, were nevertheless of a type of architecture so unsightly that it would not have been tolerated in the old cities of the world. Foreign architects whose ideas were in favor of buildings of moderate hight, and who were also obliged to conform to laws restricting the hight of buildings (such as, for instance, the English laws relating to "ancient lights"), viewed with distrust the comparatively light skeleton designs of American steel work. Time has, however, demonstrated the strength and safety of this form of construction, and the constant increase in the value of land in the large cities of the world has compelled an increase in the hight of buildings, thus removing one of the principal obstacles to the development of American steel construction, and the pioneer work of American architects and engineers in foreign countries is beginning to yield substantial returns.

Other important examples of American building construction, although not of the skyscraper type, are the two buildings at Rio de Janeiro, also shown in accompanying illustrations, for both of which the steel work was sold by the United States Steel Products Export Company and manufactured by the American Bridge Company. One of these buildings, the artistic National Library of Rio de Janeiro, Fig. 2, is a modern steel frame building, four stories high, with basement and dome, approximately measuring 100 x 208 ft. The quantity of steel furnished for this building was 1500 tons. This was the second structure of its kind in Brazil, the first one being the Fire Department Building at Rio de Janeiro, four stories, with a central dome eight stories high, which was also furnished by the American Bridge Company through the United States Steel Products Export Company. The other building of which an illustration is given, Fig. 3, is the Exposition Building at Rio de Janeiro, in which the Pan-American Congress held its meetings. This is an exact duplicate of the Government Building at the St. Louis Exposition, with the exception that, instead of wood and staff, the Rio de Janeiro building is of masonry and steel, two stories high, with a dome, the main section occupying an area of 90 x 120 ft.

As a result of the efforts and organization of the United States Steel Products Export Company American steel building construction is being rapidly developed throughout the whole of South America. Other important contracts secured by this company include the smelting plant of the Cerro de Pasco Mining Company in Peru, for which 4000 tons of steel was required; buildings of various kinds in Chile, car and factory buildings in the Argentine Republic, warehouses in Paraguay, power houses in Peru, power plants in Brazil, railroad and highway bridges in Peru, Colombia, Argentina, Ecuador, Brazil, Bolivia and Uruguay.

**Exports of Steel Bridge and Structural Work Growing in Importance.**

Considering the engineering difficulties to be overcome in building bridges over gorges, canyons, rivers and valleys in far distant countries, where the facilities for transportation and erection are frequently of the most primitive character, the fact that American exports of steel bridges and structural work have already become one of the most important branches of our foreign trade, even from the point of view of tonnage, is highly creditable to the enterprise of American manufacturers and of the distributers of their products in foreign markets.

Not least among the difficulties to be overcome was the fact that a large majority of the engineers and architects in the countries in which this development is taking

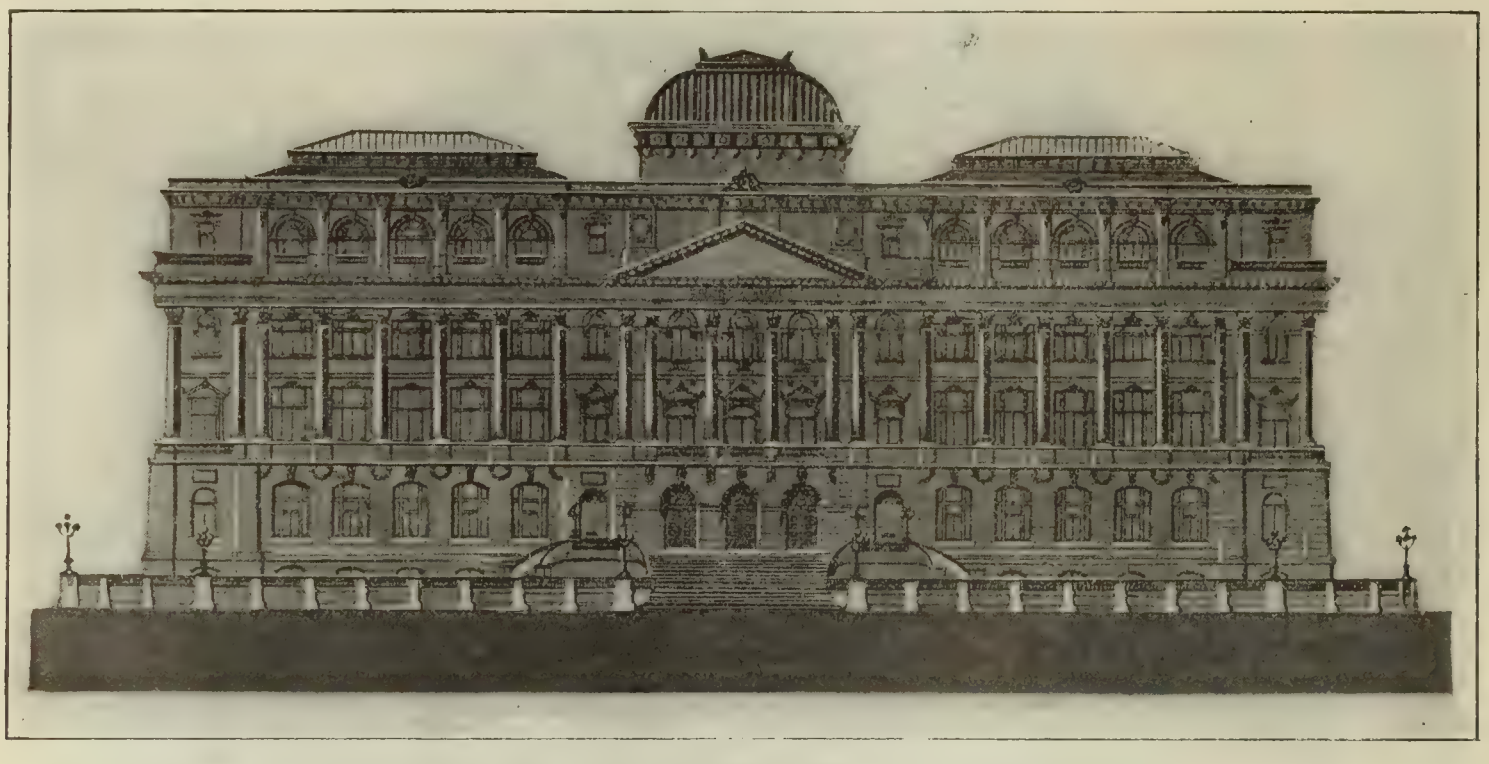


Fig. 2.—The National Library Building, Rio de Janeiro.

place were trained in Europe, and are therefore accustomed to regard European practice as standard and to distrust any departure from it. In such cases it has been necessary to convince them not only of the economy of American methods and standards, but also of their safety and practicability.

One feature of the organization of the United States Steel Products Export Company, the necessity of which soon developed, was the establishment at important points of a complete engineering and technical staff, capable of designing steel structures to meet the local requirements, of submitting estimates of cost of erection and of carrying out the actual work of erection under local conditions. In other words, the representative of the United States Steel Products Export Company at these leading foreign points is in a position to make a bid on the erected work, and for that bid needs nothing more from the home office than a cabled c.i.f. price on the material. The foreign engineering office receives at frequent intervals detailed costs of fabrication from the American Bridge Company as a guide in figuring, subject to local conditions. The foreign customer therefore need not wait for the passing to and fro of estimates for material, and is not called upon to figure freights or any details whatever. He receives a straight bid, with the design, of the actual cost to him of the erected structure, terms of payment being arranged locally in the funds of the country, all the correspondence being conducted, as is the rule of the United States Steel Products Export Company, in the language of the cus-

tomer, whose views, it will be observed, are met to the last detail. It was found that this was the wisest course to adopt in developing this business, particularly since the disposition of European competitors was to make a low price per pound of material, but to submit designs cumbersome in character, so that the tonnage was considerably greater and the final cost to the user larger. It has been the aim to convince the customer that the final structure, meeting all his requirements, is put in place, by American design and methods of erection, at a lower ultimate cost to him than the proposals of rivals which may appear more advantageous on the basis of a fallacious low per pound price for the material alone.

The United States Steel Products Export Company now has an engineering organization at Buenos Aires, Argentine Republic; Valparaiso, Chile; Sydney, Australia, and Shanghai, China. How completely the selling organization, which handles over $50,000,000 worth of business a year, covers the world may be judged from the following list of the branch offices, some of which are effective aids in the important purchases of raw materials, notably tin, which this subsidiary of the United States Steel Corporation handles: London, E. C., England; Antwerp, Belgium; Montreal, Canada; Buffalo, N. Y. (for Province of Ontario); Mexico City, Mexico; Sydney, N. S. W., Australia; Johannesburg, South Africa; Cape Town, South Africa; Buenos Aires, Argentine Republic; Rio de Janeiro, Brazil; Lima, Peru; Shanghai, China; Yokohama, Japan; Batavia, Java; Aleppo, Syria; Alexandria, Egypt; Barcelona, Spain; Beyrouth, Syria; Bombay, India; Cairo, Egypt; Calcutta, India; Christiania, Norway; Constantinople, Turkey; Copenhagen, Denmark; Genoa, Italy; Limassol, Cyprus; Mersina, Turkey; New Orleans, La.; Piræus, Greece; Portland, Ore.; Rotterdam, Holland; St. Johns, Newfoundland; St. Paul, Minn. (for Manitoba); San Francisco, Cal.; Smyrna, Turkey; Trieste, Austria; Tripoli, Syria; Turin, Italy; Vancouver, British Columbia; Varna, Bulgaria.

It will be observed that while a great deal has been accomplished in the past few years, the broad foundations have been laid for a much more extensive and important development in the near future.



Fig. 3.—The Exposition Building at Rio de Janeiro, in Which the Pan-American Congress Held Its Meetings.

A bulletin of the Forest Service, Washington, D. C., notes that upward of 150,000,000 barrels and circular wooden packages are manufactured in the United States each year. The heaviest demand comes from the cement business; flour is second, and sugar third, while barrels for fence staples, bolts, nuts, and nails are fourth in the order of demand. The life of a barrel is put at one year by the trade, but the bulletin considers this far from true, the majority of barrels being used many times. Modern machinery has made it possible to manufacture barrels for the trade cheaper than almost any other form of durable package.

The battleship South Carolina was launched July 11 at the Cramp shipyard, Philadelphia. It is 450 ft. long between perpendiculars, 80 ft. wide, and will have a mean draft of 24 ft. 6 in., the normal displacement being 16,000 tons. The reciprocating engines are of 17,000 hp. and the contract speed is 18½ knots. The main battery will consist of eight 12-in. breechloading rifles mounted in four turrets, and arranged so that each gun can fire two shots per minute. The cost of the vessel complete will be $7,000,000. The South Carolina is a sister ship of the Michigan, recently launched.

# WATER POWER FOR IRON MINING.

## The Hydro-Electric Plant of the Penn Iron Mining Company at Vulcan, Mich.*

BY THOMAS W. ORBISON AND FRANK H. ARMSTRONG.

In 1877 the Republic Iron Company installed a hydro-pneumatic plant on the Michigamme River, with transmission of about 1 mile, to furnish power for the operation of the Republic mine. Five years later the water power at the upper Quininesec Falls on the Menominee River was improved with the installation of an air compressor plant, the transmission being about 3½ miles to the Chapin, Ludington and Hamilton mines at Iron Mountain, Mich. These plants have been in successful operation all this time. Up to and until about one year ago they were the only water powers in all the Lake Superior District being utilized for mining purposes, notwithstanding the abundant tributary water power on the one hand and the enormous consumption of coal required for power on the other.

Though there are many reasons for the slow development of these water powers, the chief one has been the lack of a satisfactory medium of transmission applicable to the successful operation of mining machinery and economical in cost. Compressed air as a medium of transmission meets the first of these requirements and is indispensable in mining operations. The cost, however, is great under favorable conditions, and increases rapidly with the length of the transmission. The mine operator, therefore, has been watching with great interest the wonderful progress made in the last few years in electrical transmission and the application of this power to his requirements.

In the fall of 1904 the Penn Iron Mining Company, Vulcan, Mich., began an investigation of its water power at Sturgeon Falls on the Menominee River, Mich., to ascertain the amount of power available, the possible plans for its development and transmission by means of compressed air or electricity, and the application of the power to the operation of the mines at Vulcan, about 3 miles from the falls. The Menominee River has a drainage area at Sturgeon Falls of 2929 square miles. The average annual rainfall is 31.15 in. The run off in ordinary low water is estimated at 1266 sec.-ft. The available head is 25 ft. Therefore at ordinary stages of water there is 3600 theoretical hp., or 2880 hp., delivered by the turbines.

* A paper read at the Minnesota Range meeting of the Lake Superior Mining Institute, June, 1908.

For a large portion of the year the flow is very much greater, and this fact was taken into consideration when the capacity of the machinery installed was decided upon.

Fig. 1 shows the river at the falls and two general plans for the improvement. One is for a dam at AA, with a tunnel through the bluff to the forebay at the power house; the other is for a dam located further down stream on the top of the last pitch in the rapids, with a canal through a depression leading the water to the forebay. The latter plan was adopted because the estimates showed that its cost would be less, even with the longer and higher dam, and the longer dam would provide more spillway for the disposal of flood water and facilitate the handling of the saw logs that are floated down the river.

In discussing whether to transmit by compressed air or electricity four things were considered—first cost, efficiency, net saving and reliability. Carefully prepared estimates showed that the installation by compressed air would cost 14 per cent. more than the electrical installation, including all changes for the mining machinery. In a new installation, requiring the purchase of all the machinery at the mine, the percentage in favor of electricity would be very much greater. The division of power used at the Vulcan mines at the time of the investigation was: For pumping water, 74.4 per cent.; for compressed air, 12.2 per cent., and for hoist, &c., 13.4 per cent. Three manufacturers of electrically driven turbine pumps made propositions guaranteeing an efficiency of over 60 per cent., and in our investigations we assumed that efficiency. It was estimated that it would require 54 per cent. more power to do the required work with compressed air than if electricity was used. The net saving in fuel, labor and maintenance was estimated to be sufficient to warrant the expenditure. The estimate showed that there was very little difference in the saving in the two methods of transmission, except in the efficiency as stated above. The experience of the last few years has proved that in its manufacture by water power, electricity is even more reliable than compressed air. In the application to the operation of mining machinery compressed air had been proved to be very reliable, while on the other hand electricity had been almost untried.

At East Vulcan there was 700 gal. of water per minute

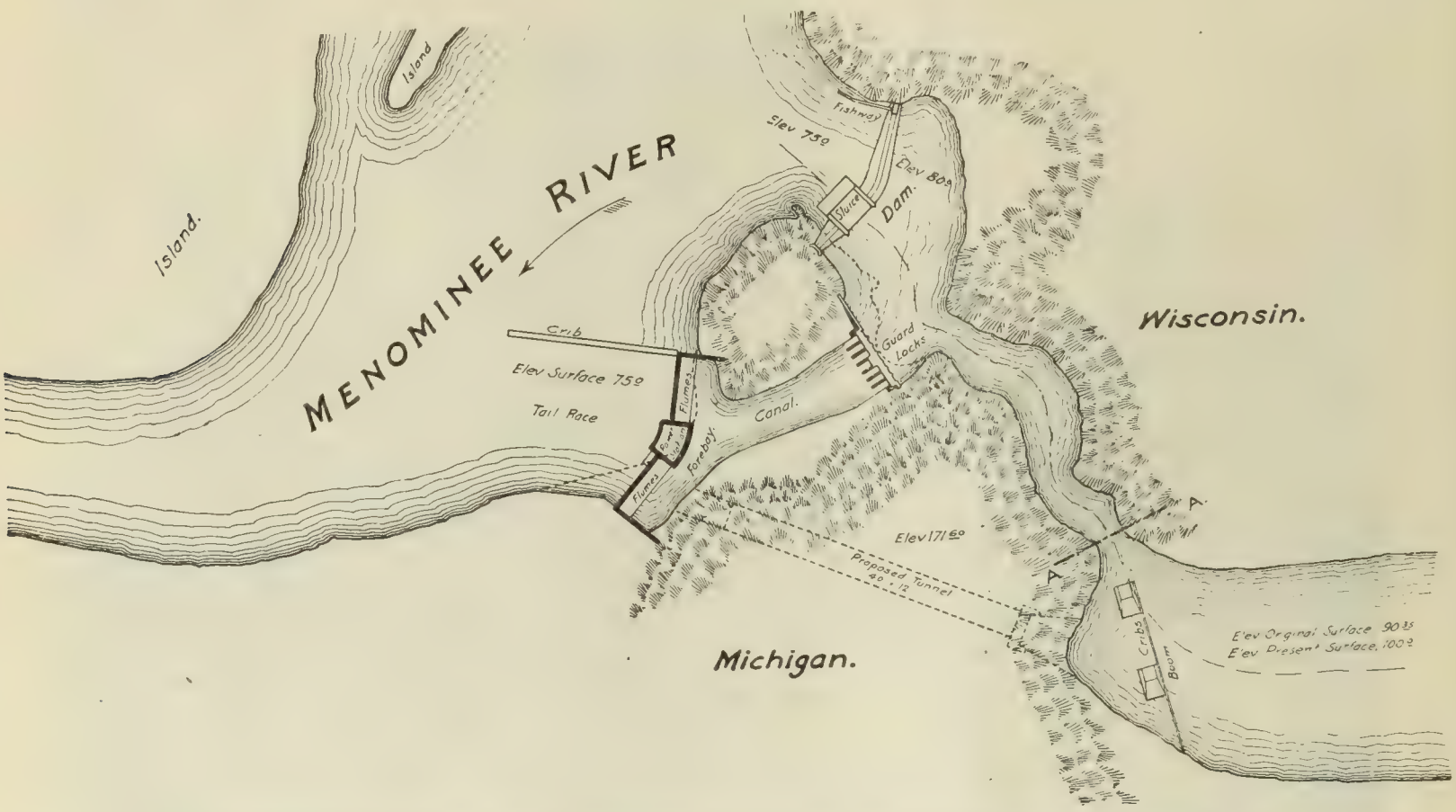



Fig. 1.—Map of the Water Power Development of the Penn Iron Mining Company at Vulcan, Mich.

to be raised 1000 ft. At West Vulcan 1800 gal. per minute to be raised 1200 ft. The inquiry failed to locate an instance where such volumes of water had been taken care of with turbine pumps under like heads, or an installation of sufficient size to establish a precedent. Although confident that the turbine pumps would eventually do the work, the question was, would it pay to undertake the experimental stage that seemed unavoidable. There was also some apprehension as to the reliability of electricity applied to the operation of hoisting engines. The facts as above stated were submitted to the engineers of the company in the East, in July, 1905. At this conference, for the reasons above cited and for the reason that at times of low water the mines would require the full power with a most efficient installation and transmission, it was decided unanimously to recommend the improvement of the water power electrically, and that it be applied to all departments of the work, including turbine pumps and geared hoists.

In August the work was authorized and operations were commenced at once. Little was done, however, until September, except in the improvement of the road leading to the falls and the building of camps for the laborers.

Fig. 2 is a photograph of the river on September 28, when the first cribs for the coffer dam were being located. This shows in the immediate foreground the location of the dam, in the upper right hand corner the concrete mixing plant and in the center of the picture the entrance to the depression through which the canal was excavated. Fig. 1, already referred to above, shows in heavy lines the general layout of the dam, guard locks, canal, forebay and power house. By means of the guard locks the amount of water let into the forebay is regulated or entirely cut off. Fig. 3 is a plan of the dam, with elevation and sections; it also shows the log sluice and fishway. Fig. 4 shows the plan and sections of the power house and flumes, and the location of the machinery installed. Fig. 5 is a view of the power house, from which it will be noticed that there is an angle in it. The reason for this is that the power house and flumes are founded on solid rock, and this line was adopted to conform with the natural contour and thereby save a large quantity of excavation.

The dam was completed in the latter part of January, 1906, the power house late in the fall of the same year, and the machinery for the first unit was installed in the winter of 1906 and 1907. This first unit was started March 22, 1907, and the first power used at the mines April 27, and the plant has been in continuous operation ever since.

The generating plant consists of a line of four pairs of 45-in. horizontal turbines in tandem, furnished by James Leffel & Co., Springfield, Ohio, direct connected to a 1500-kw. three-phase 60-cycle 6600-volt alternating current generator, at 180 rev. per min., furnished by the General Electric Company; also two 30-kw. direct current exciter units, direct connected to two single horizontal 20-in. turbines. A 60-cycle system was adopted because the pumps had to be run at about 1200 rev. per min. Since starting the first unit there has been installed a motor driven pump for delivering water to the three dwelling houses provided for the operatives, a small motor compressor for cleaning the generators and a motor driven exciter.

The 1500-kw. generator is rated at 132 amp. with 6600 volts. This machine has been run for 10 hr. with a current load of between 200 and 250 amp. and voltage up to 7300. At times the load was 275 amp. It has carried these heavy overloads without giving any trouble whatever. The water wheels have worked perfectly and the Lombard governor holds the speed as constant as could be desired. There has been no trouble with frazil, or anchor ice. Recently the second unit has been installed, consisting of a duplicate line of water wheels, direct connected to a 2000-kw. generator, furnished by the Westinghouse Electric & Mfg. Company, which will be operated in synchronism with the first unit.



Fig. 2. The Site of the Dam at the Beginning of Operations

For the transmission line No. 000 B. & S. gauge stranded copper wire is used from the power house to the junction pole, No. 00 stranded wire from the junction pole to West Vulcan and No. 4 solid wire from the junction pole to East Vulcan. The poles are 7 in. top, 35 ft. long, except at a few places across depressions where longer poles are used. Locke porcelain insulators are used. These are tested to 60,000 volts and are good for a line voltage of 23,000 volts, three and one-half times the voltage now in use, *i. e.*, 6600. The wires are spaced 3 ft. apart.

There are at present two substations, practically the same, one at East Vulcan and one at West Vulcan. They are built of brick, approximately 20 ft. long, 9 ft. wide and 20 ft. high. The following describes the West Vulcan station:

The transmission line enters at one end through three Locke porcelain insulators, which are supported by slate panels 1½ in. thick, 19 in. square, built into the brickwork of the end wall. From these insulators the line is led through disconnector switches and choke coils to a high tension oil switch mounted in a brick cell. Lightning arresters are connected to the line above the choke coils. From the high tension switch the current is car-

ried to three step down transformers, which reduce the voltage from 6600 to 2200. Three 500-kw. transformers are used at West Vulcan, three 300-kw. transformers at East Vulcan.

The 2200-volt current is carried to the switchboard. time limit relay will open the first switch in case of a prolonged heavy overload. Instruments on this first panel show the voltage and amount of 6600-volt current used at this substation. The other panels contain seven feeder switches, each supplying a certain motor or set of motors.

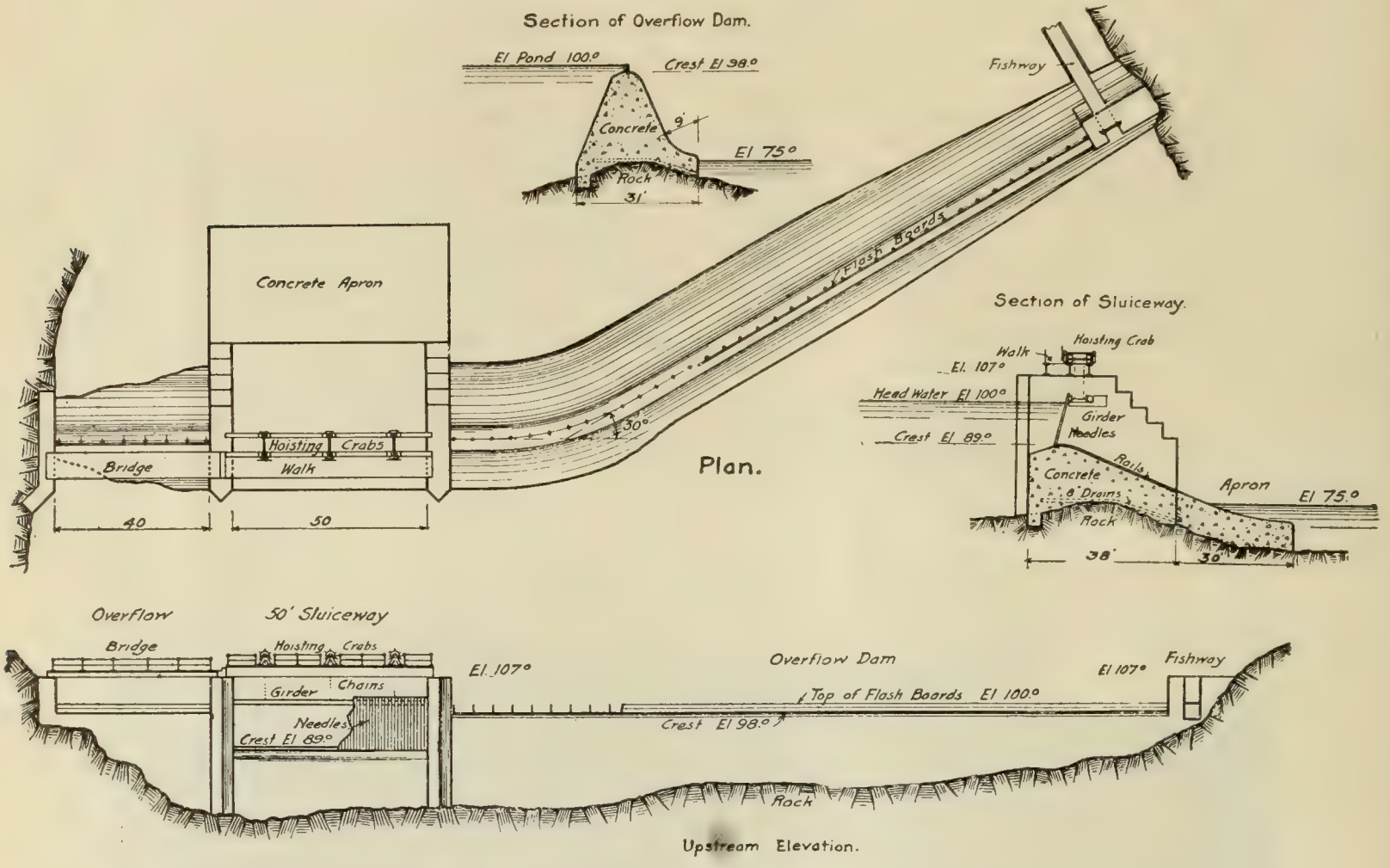



Fig. 3.—Plan, Elevation and Sections of the Dam.

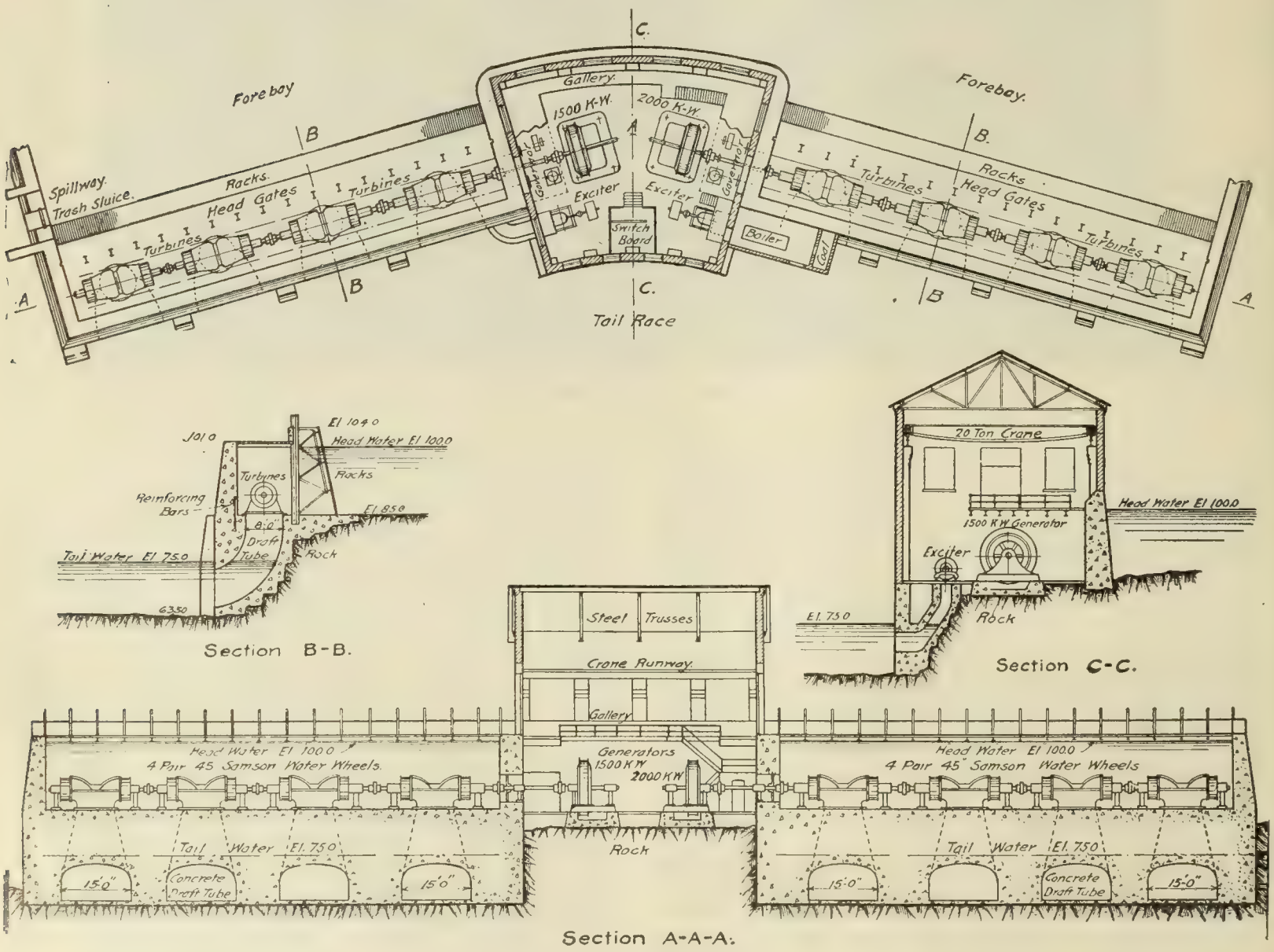



Fig. 4.—Plan and Sectional Elevations of the Power House

On the substation panel is a handle which, by a system of levers, operates the high tension switch in the substation. A smaller switch on this panel operates an oil switch through which all the 2200-volt current flows. A Each feeder circuit has an ammeter showing the amount of current used on each line and an automatic release which will open the switch in case of a heavier overload than is desired. The point of release is adjustable. The



Fig. 5.—The Finished Power House from the Downstream Side.

switchboard at East Vulcan is the same, except that it has one less panel.

One hoist at each mine is motor driven. They are of the double drum geared type. The hoist at West Vulcan has drums 12 ft. in diameter. The pinion shaft runs at 56 rev. per min., the drums at 17.3 rev. per min., with a hoisting speed of 652 ft. per minute. The motor is connected to the pinion shaft by a rope drive built by the Dodge Mfg. Company. The large rope wheel is 22 ft. in diameter and the motor rope wheel 4 in. in diameter, using 24 turns of 1-in. rope, American system. It was impossible to get more than 25 ft. between the centers of the motors and the pinion shafts, which necessitates a deflector pulley, as shown in Fig. 6. The motors are General Electric 2200-volt 200-hp. three-phase form M induction motors, running at a synchronous speed of 360 rev. per min. The flywheel of the engine was taken off and the connecting rod of the engine disconnected from the crank pin. To change back to a steam driven hoist, it is only necessary to put on the connecting rod.

The energy of the revolving parts varies with the weight, the square of the diameter and the square of the revolutions per minute. The amount of energy in these parts—*i. e.*, rotor, deflector pulley, 22-ft. pulley, pinion and two gears—is such that it requires as much current to get them up to speed in 30 sec. as is required to do the hoisting. These revolving parts are got up to speed before the clutch is thrown in, which is done gradually. The energy given out by these revolving parts in slowing up from full speed to slip speed or full load speed which is 4 per cent. less is enough to accelerate the drum, skip, rope and load, thus giving no peak load in starting. At East Vulcan the skip carries 5800 lb. of ore, with a total load of 14,400 lb., and the length of hoist is about 1250 ft., of which 1050 ft. is in a vertical shaft. These hoists have been running over a year, and the same fiber band on the friction clutch is still in service and in good condition.

The switch panel for the hoist contains an oil switch, an ammeter and a controller. At the right and left of the controller are hand wheels operating the friction clutches and the brakes. At the right of the oil switch is the hand wheel operating the throttle valve of the engine when using steam. In new hoisting plants the steam engine would, of course, be omitted.

Back balance drums are to be used to counterbalance the weight of the skip or cage and the rope. There are to be two tapered drums for each skip or cage to be balanced, the rope from one leading to the hoisting drum and the rope from the other leading to a counter weight in the shaft. By the use of tapered drums the varying weight of the rope is balanced, so that the unbalanced load at any point is only enough to pull the drums around. Back balance drums on this principle are in use at the Republic mine.

For pumping three 8-in. turbine or centrifugal pumps are in use. Two are at West Vulcan and one at East Vulcan. They run about 1200 rev. per min. and were designed to deliver 900 gal. of water per minute, but they have a range of from 500 to 1250 gal. per minute each. The suction lift is about 20 ft. and the discharge head, including friction, about 1275 ft. The pumps were built by the Henry R. Worthington Company and are driven by 450-hp. General Electric 2200-volt induction motors.

These pumps are divided into two parts, with four stages on each side of the motor. From the suction the water passes to the center of the first impeller, is thrown out at the circumference into a channel ring and led by diffusion vanes to the center of the next impeller. It travels thus through the first section of the pump toward the motor, from which it is led by a pipe to the further end of the second section. Here it travels the same

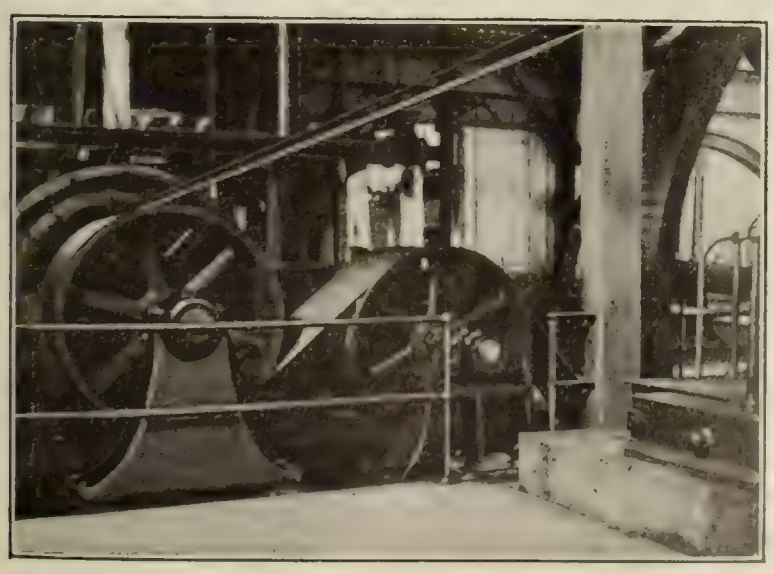


Fig. 6.—The Motor and Drive of the West Vulcan Hoist.

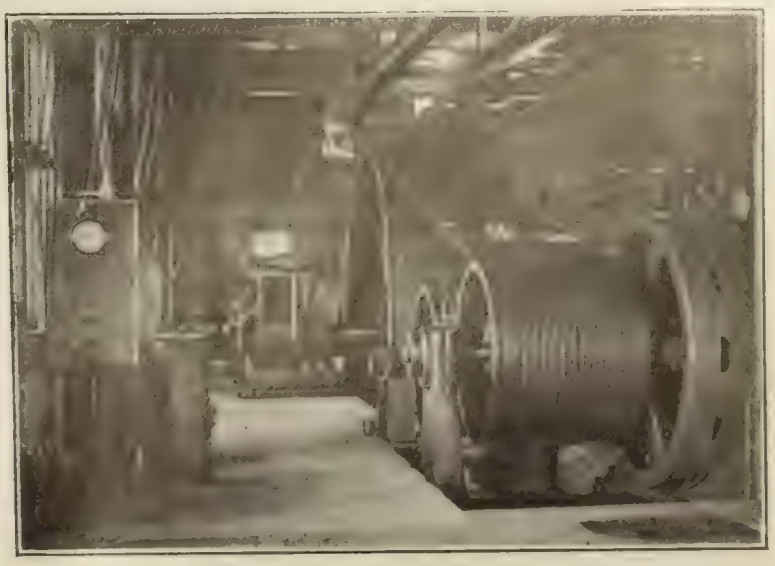


Fig. 7.—The 450-Hp. Compressor Drive at West Vulcan.

course through four impellers, channel rings and diffusion vanes again toward the motor. In other words, the water travels in opposite directions in the two sections of the pump. The motor shaft is connected to the pump shafts by split sleeve couplings, making a rigid connection between the pumps and the motor. This allows one section of the pump to help balance the end thrust of the other section. On the suction end of the pump the shaft is fitted with a marine thrust bearing. On the other end is fitted a water step bearing. The impellers are of bronze and the channel rings and diffusion vanes of cast iron. The casings are of cast steel. The shaft is nickel steel, 3¾ in. in diameter. Where it goes through the pump heads it is packed with a fibrous packing. At these points the shaft is protected by a steel bushing, which can be renewed when worn, and there are brass bushings where it goes through the diffusion vanes. The hubs of the impellers are also bushed where they enter the diffusion vanes.

The quantity of water is varied by simply closing or opening a gate valve on the suction of the pump. The pumps when in good order with 900 gal. of water per minute have given efficiency tests as high as 66 per cent. This is from the current delivered to the motor to the water delivered at the top of the shaft. The water is measured by a vertical knife edge orifice. At West Vulcan this is 7 in. in diameter. The quantity of water flowing through an orifice varies as the square root of the head of water above the center of the orifice. For recording this head a Bristol recording water level gauge is used, which records with very great accuracy a variation in head of 0.1 ft. The chart is a weekly one, so that every chart shows the actual amount of water pumped for that week. The water at West Vulcan has decreased from 1800 to 900 gal. per minute since the original estimate three years previous.

At West Vulcan two Ingersoll-Sergeant piston inlet rope driven duplex compound compressors are installed—size, 35¼ and 22¼ x 42 in. The rated capacity is 3110 cu. ft. of free air per minute. The rope wheels are 18 ft. in diameter, grooved for 24 1¼-in. ropes. The motor pulleys are 52 in. in diameter. Deflector pulleys were required here also, because of the short centers between motors and crank shafts. One of the motors is a General Electric 450-hp. 2200-volt form L. M. induction motor, running at 300 rev. per min. synchronous speed. The compressors run at 70 rev. per min. The other motor is a Westinghouse 450-hp. 6600-volt form H. F. induction motor at the same speed. This is the motor shown in Fig. 7. These compressors have 10-in. gate valves in the low pressure discharge and 5-in. gate valves on the high pressure discharge below check valves, which allow the compressors to be started with less than full load current even when one is already running and the air pressure is up in the receiver. After getting up to speed these valves are closed. The quantity of air is regulated by an automatic valve which closes the intake. This valve is moved gradually, sometimes remaining in a partially closed position for a considerable length of time.

The East Vulcan compressor is a Laidlaw-Dunn-Gordon 18 and 29 x 24 in. duplex compound rope driven machine. The rated capacity is 2200 cu. ft. of free air per minute. The rope wheel is 12 ft. in diameter, grooved for 18 1¼-in. ropes. The motor pulley is 50 in. in diameter. As the compressor wheel is only 12 ft. in diameter, it was not necessary to use a deflector pulley in this case. The motor is a 350-hp. 2200-volt General Electric form L. M. induction motor, running at 350 rev. per min. synchronous speed. The compressor runs at 120 rev. per min. The quantity of air is regulated by a choking controller which closes the intake entirely, but by the use of a dash pot it does it gradually. Ten to 15 sec. are used to open or close this valve. The action is automatic and is controlled by the air pressure.

Surface tramming is done by 220-volt motors. The one at East Vulcan is geared to the tram plant. The one at West Vulcan is belted. The plants move the ropes to which the cars that run between the shafts and pockets or stockpiles are attached. There is no power tramming underground, as there is not enough ore on any one level to justify the expense of the installation. The shops are run by 15-hp. motors. On the surface 220-volt motors, varying in size from 5 to 50 hp., are running a laboratory crusher and pulverizer, concrete mixers, cord wood saw, lagging saw for splitting lagging, boiler tube cleaner, rock crusher, 40-hp. hoist and triplex geared pumps. A 1-hp. motor runs a horse grooming machine at the stable. The pump and principal shaft stations underground and all the surface buildings at the mines are lighted with a current of 110 volts.

## Electrolytic versus Lake Copper.

In the suit of A. S. Bigelow against the Calumet & Hecla Mining Company, Col. Thomas L. Livermore, who has charge of all the sales of the latter company, testified as follows with reference to the relative value of electrolytic and lake copper:

"Nearly all the copper produced in the United States other than lake is marketed in the form of electrolytic copper, and besides that produced in the United States there is a great deal of electrolytic copper produced and marketed in other countries. In 1906 about 330,000 tons was produced in other countries, of which a large part was marketed as electrolytic copper. In the years following 1892 the proportion of wire bars sold by the Calumet & Hecla Mining Company diminished gradually, although not with absolute regularity, until within the last three years the sale of them has not exceeded 10 per cent. of the whole marketed by the Calumet & Hecla Mining Company. Electrolytic wire bars, during this period of diminution above mentioned, have increased gradually until during the last three years much more electrolytic copper has been sold in competition with the Calumet copper in that shape than the Calumet itself has sold, and as I have every reason to believe, more than all lake copper in the shape of wire bars."

Mr. Livermore was questioned as to the relative prices of lake and electrolytic copper from 1889 down to the present. He replied. "Of Calumet copper I can say that sometimes it has been of the same price as electrolytic and sometimes higher. In the early part of the period mentioned, when electrolytic copper did not have the good reputation for excellency and uniformity that much of it has to-day, it was more common to get a better price for Calumet than it is now, but to-day while on a rising market for copper we ordinarily command a little better price, ranging from ¼ to ½ cent a pound, than is commanded by electrolytic copper, yet on a falling market we are obliged to take the same price in order to dispose of our products and do take it.

"I think that the reputation of Calumet copper established in the early days of which I have spoken, when electrolytic copper, as a rule, was not as good as it is to-day, has descended to the recent period with some users, and they have preferred Calumet copper on account of that actual difference which once did exist; but for the most part to-day I believe from all I have learned from our customers that it is the uniformity of quality of the Calumet copper which gives it the preference over electrolytic copper where it does do so, and that as a matter of fact there is no absolute necessity of Calumet copper for the uses of consumers which gives it a preference over electrolytic. I regret to have to come to that conclusion because the reputation of superiority, I think, has been for the benefit of my company, and I should be very glad to have it maintained."

Asked what degree of conductivity the Calumet & Hecla copper possessed, Mr. Livermore replied that that portion of it which is put into wire bars has an electric conductivity of 99.5 per cent. or more, frequently more.

At Detroit, Mich., in the case of the General Fire Extinguisher Company against the Plumbers' Union and a similar case of the Manufacturers' Automatic Sprinkler Company against the same union the court decided that as these two foreign corporations had failed to register with the Secretary of State and to pay a franchise fee they had no status in court in a suit for injunction to prevent a union from interfering with their business.

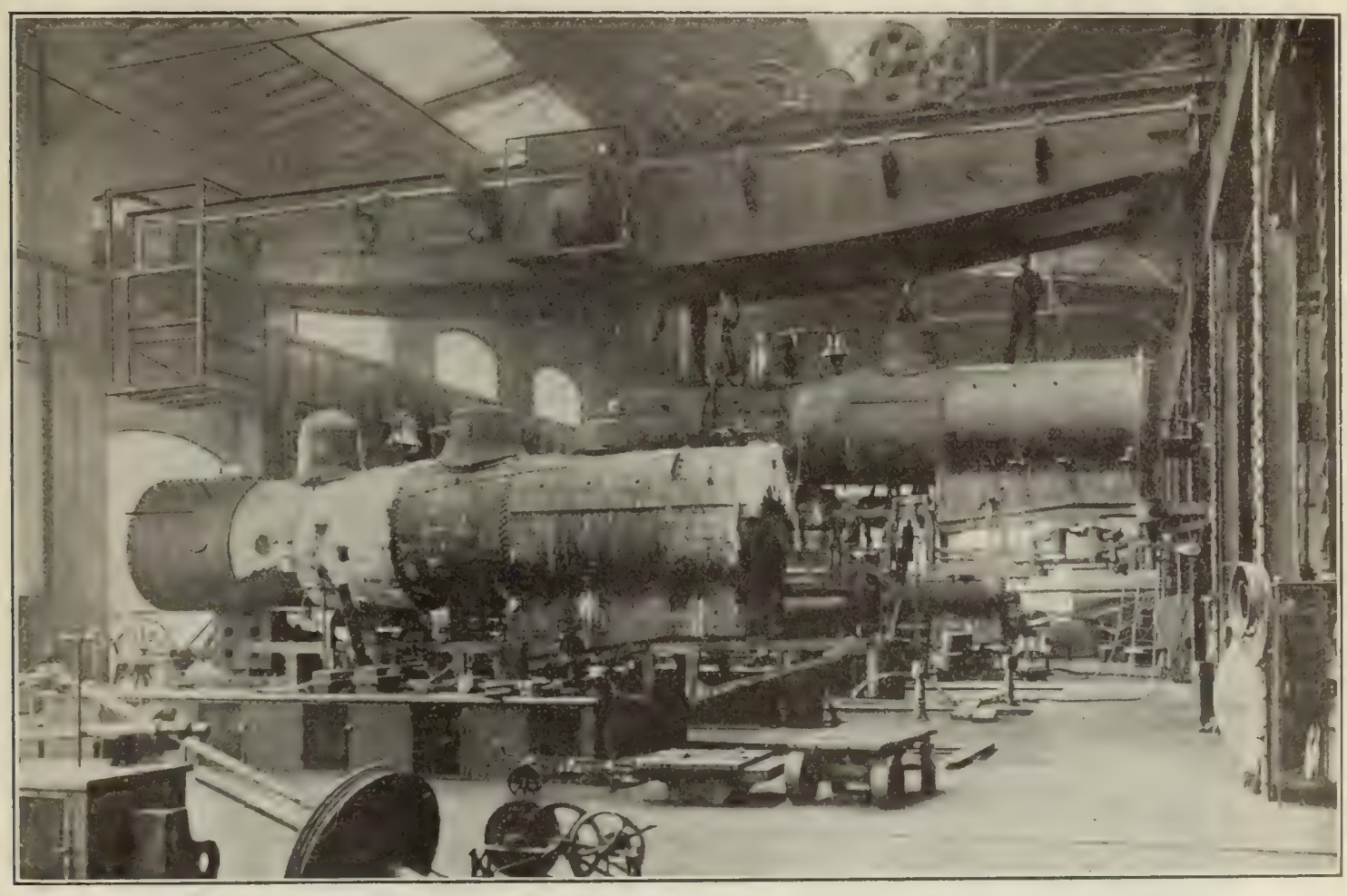
## A Powerful Whiting Crane.

An electric traveling crane recently built by the Whiting Foundry Equipment Company, Harvey, Ill., and installed in the shops of the Southern Pacific Railway Company at Bakersfield, Cal., is of particular interest because of its unusual capacity, rated at 120 tons. This, it is claimed, exceeds the limit of any similar machine operated by alternating current in use in this country. In design and construction it is of the same general type as is regularly furnished by the company, though some minor modifications have been made to suit it to the specific needs of these shops.

The crane has a span of 57 ft. 4½ in. and a lift of 22 ft. 7 in. It is equipped with two 60-ton trolleys, operated by 60-hp. motors using three-phase 60-cycle 440-volt current, and each trolley has a 10-ton auxiliary hoist.

The bridge girders are of box section, constructed of ⅜-in. web plates riveted to four 6 x 6 x 9-16 in. angles, with 9-16-in. top and bottom cover plates. Transverse diaphragm plates connecting the inside 4 x 3 x ⅜ in. stiffener angles transmit the load from the rail on the top chord plate to the web plates. These diaphragms are closely spaced to prevent deflection of the chord plate under heavy load; they also serve to relieve the rivets of bending stresses. Transverse steel frames connecting the girders afford sufficient flexibility to allow for inequalities in the level of the runway rails.

Under each end of the bridge girder is a two-wheeled truck mounted on steel tired wheels. The 60-ton hook blocks are of steel plate construction, and carry forged steel hooks which swivel on steel balls set in hardened steel plate bearings. The use of this crane in handling locomotives in the shop is shown in the illustration.



The 120-Ton Crane Built by the Whiting Foundry Equipment Company for the Southern Pacific Railway Company.

The record of shipbuilding on the Clyde in the first six months of the year is the smallest for a like period since 1893. The launchings between January 1 and June 30 were 143 and the tonnage 140,149. In 1907 in the corresponding period 171 vessels of 302,847 tons were launched. The June launchings on the Clyde numbered 22 with a tonnage of 25,323, as compared with 60,455 tons in June, 1907.

At Trenton, N. J., July 13 an order was made in the United States Circuit Court permitting William B. Blauvelt as trustee to begin foreclosure proceedings on a mortgage of $2,500,000 against the Passaic Steel Company. The receivers will be made the defendants. Argument will be made later on an application to have the New Jersey Court of Chancery appoint new receivers.

**Favorable Crop Indications.**—The Department of Agriculture issued a statement last week on crop indications. The average condition of the corn crop on July 1 was 82.8 per cent. of a normal, as compared with the 82.2 on July 1, 1907, 87.5 on July 1, 1906, and 85.6 the 10-year average on July 1. The average condition of winter wheat at time of harvest was 80.6, as compared with 86 on June 1, 78.3 at harvest in 1907, 85.6 in 1906, and 80.2 the average at time of harvest for the last 10 years. The average condition on July 1 of spring and winter wheat combined was 83.9, as compared with 89.4 last month, 81.6 on July 1, 1907, 87.8 on July 1, 1906, and 82.9 the 10-year average. The estimated wheat crop is 660,812,000 bushels, compared with an indicated wheat crop in June of 737,270,000 bushels and an actual crop in 1907 of 634,087,000 bushels. The indicated corn crop is 2,726,000,000 bushels. This compares with an indication in June of 2,560,000,000 bushels and a final crop in 1907 of 2,592,320,000.

It is announced that the *Open Shop*, which has been published monthly for some years by the National Metal Trades Association at Cincinnati, has suspended publication and that the *Review*, now published at Detroit by the National Founders' Association, will be made the official organ of both associations. This is in line with the movement in progress in the past year or two for a closer affiliation of these organizations.

In the Superior Court at Fitchburg, Mass., it has been decided that nine bondsmen for apprentices who broke their agreement with the Fitchburg Steam Engine Company by going out on a strike in July, 1908, must pay $100 each to the company.

Hamilton & Chambers, 29 Broadway, New York, composed of John W. Hamilton and Herbert J. Chambers, have issued a folder marking the first anniversary of the firm. It is stated that 53 structural steel contracts have been completed in the past year.

# The New Model Roney Stoker.

Smokeless combustion in boiler furnaces results under the following conditions: Feeding the fuel continuously to the furnace in small quantities so that the volatile gases may be driven off at a uniform rate; mixing these volatile gases with sufficient air and maintaining them at a high temperature; allowing sufficient distance between the fuel bed and the heating surface of the boiler for the volatile gases to be completely consumed before being chilled by contact with the cooler surfaces of the boiler; providing liberal air passage through the grate for consuming the fixed carbon remaining after the coking process; continuously agitating the fuel to bring all the particles of carbon in intimate contact with the air supply; and providing a large ratio of cooling to heating surface in the grate bar to permit higher rates of combustion and insure a long life. To permit high rates of combustion with moderate draft pressures, the following are also necessary: Automatic means of agitating and advancing the fuel bed at the proper rate of combustion to suit the load carried, and adjustable air admission area through the grate, increasing with the rate of combustion. to avoid excessive pressure drop through the grates and the fuel bed. All of the above conditions, it is claimed, are fulfilled in the New Model Roney stoker made by the Westinghouse Machine Company, East Pittsburgh, Pa.

The most important features of the improved stoker are: A one-half reduction in number of complete grate bars; interchangeable parts (tops, webs, guards and dumping grates); self-centering of the grate bars by their own weight in side bearers; elimination of lost motion in grate movement due to wear, as the grates return by their own weight to inclined position; grate bar tops with 7.4 times as much cooling surface as heating surface; low cost of repairs due to small number of moving parts and long life of tops; ability to redistribute the grate bar tops so as to equalize wear over all parts of the furnace; absence of threaded bolts inside of the furnace; provision of non-sifting tops for the first four rows of the upper grates; interchangeability of guards and dumping grates without disturbing the side or center bearers; improved leverage for operating the guard and dumping grate, minimizing the labor of handling; direct thrust of the connecting rod on the rocker arm, avoiding twisting forces; one hand adjustment for both grate movements; provision of a stop on each connecting rod to hold the grates open for dislodging clinker; improved air distribution over the arch, which cools it and heats the incoming air, thus preventing smoke; baffles over the arch direct air supply to obtain uniform air distribution over the fire; constant draft area through the grate bar tops practically two-thirds of the total draft area; and moderate fluctuation in draft between limiting movements of grate bars.

The action of the stoker will be understood from Fig. 1. The coal is fed into a hopper extending across the boiler front, usually by gravity from an overhead bin. From this hopper the coal is automatically supplied to the furnace by a reciprocating pusher operated from the rock shaft by an eccentric. The fuel descends through the throat of the arch to the upper grate bars, where it is subjected to intense heat from the incandescent fire-brick arch spanning the upper part of the furnace. This cokes the fuel and drives off all the volatile gases, leaving the coke, or fixed carbon, which is then gradually worked down the inclined surface by the rocking motion of the grate bars imparted to them from the eccentric on the rock shaft. The oscillation of the grate bars not only works the fuel slowly down the furnace, but also keeps it constantly agitated, this preventing, to a large extent, the formation of clinker, and bringing the fuel into intimate contact with the incoming air. After the solid combustibles have been totally consumed the remaining ash is discharged on the dumping grate at the bottom of the furnace.

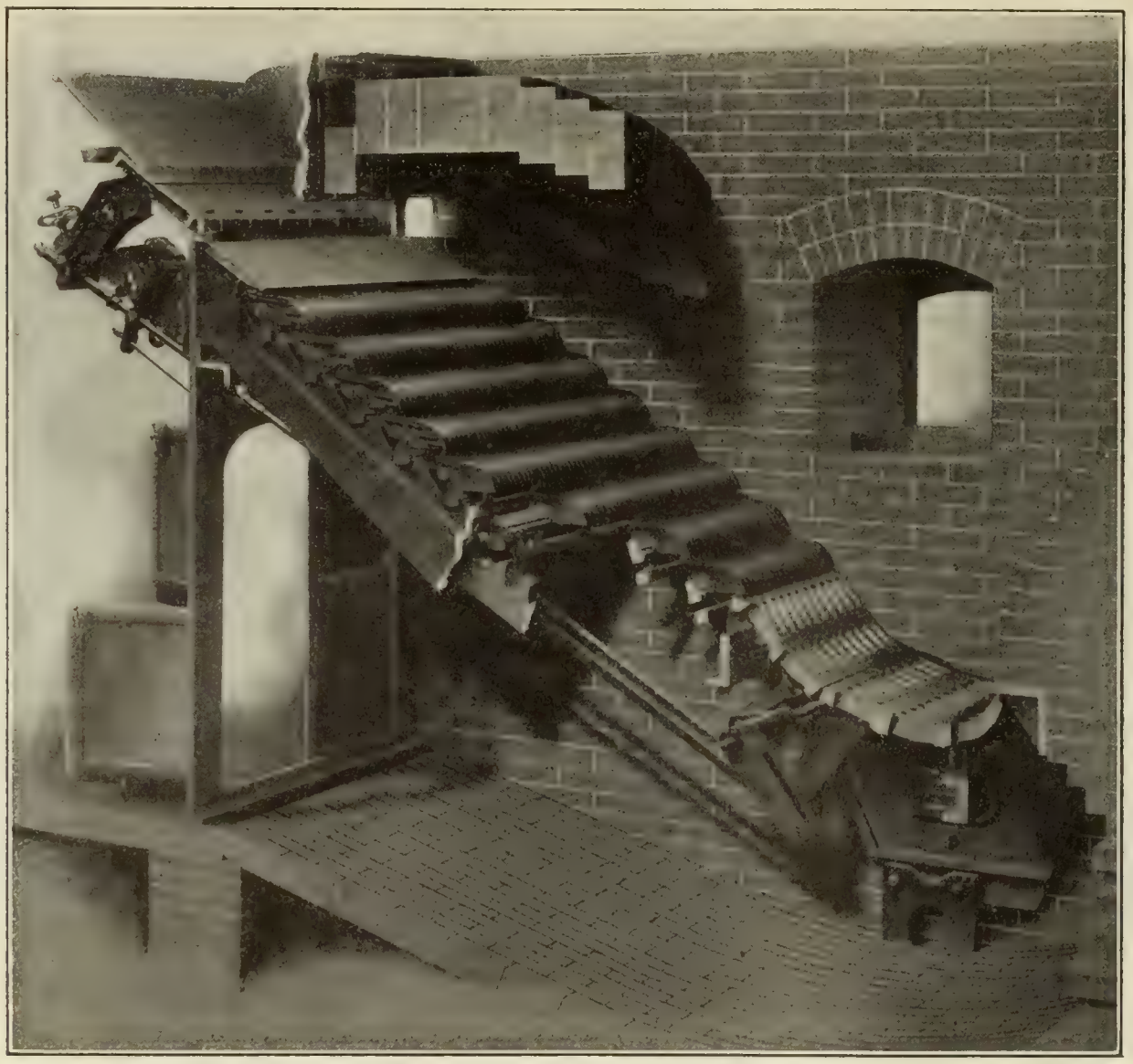


Fig. 1.—The New Model Roney Mechanical Stoker Built by the Westinghouse Machine Company.

The sectional grate bar, or fire top, is one of the most important features of the stoker. For the upper four grates a non-sifting type top is used, shown in Fig. 2, provided with abutting horizontal ledges to prevent the fine fuel from sifting through the bars and at the same time permit a free entrance of the air. As only the thin edge of the fire top is exposed to the direct heat of the fire, while both sides and the bottom are cooled by the incom-

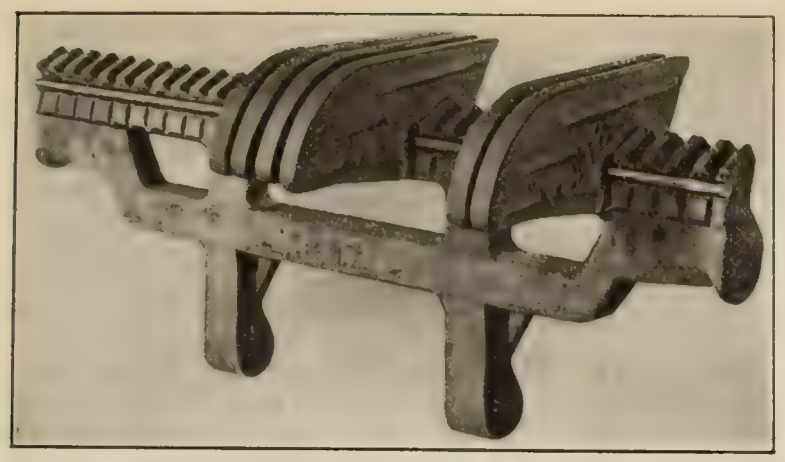


Fig. 2.—Examples of the Nonsifting Tops Used on the Upper Four Grates.

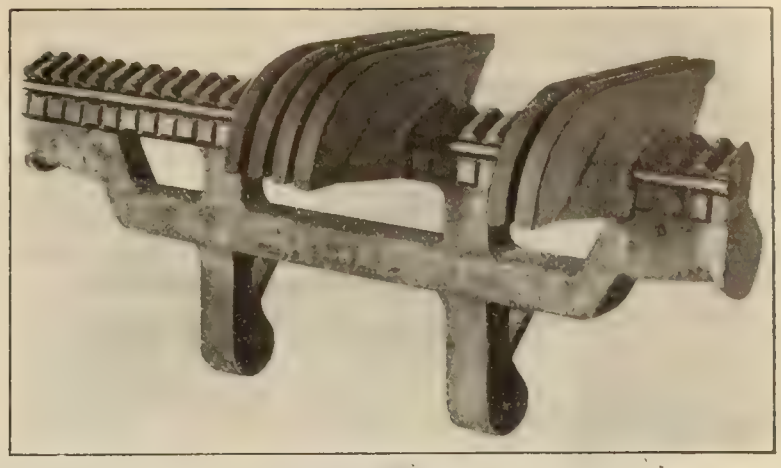


Fig. 3.—Examples of the Tops Used on the Remainder of the Grate Proper.

ing air, these tops are well protected from overheating, thus insuring long life. As previously mentioned, for each square foot exposed to the fire 7.4 sq. ft. of surface is cooled by air, giving 7.4 times the cooling effect of the flat top grate bar. Fig. 3 shows the form of grate bar top used below the first four rows.

The grate as a whole consists of a number of these tops set on edge in V-grooves. They hook over a trussed web, as shown in Figs. 2 and 3, and are held in place by a key rod slipped in from the end. They are therefore easily removed. The webs have conical bearing surfaces at the ends, which make them self-centering in the side bearers and prevent uneven wear. By lifting the webs out of the bearers and removing the key rods the tops may be redistributed, if desired, so as to equalize the wear in various parts of the furnace. If the bars are redistributed from time to time they should have an average life of about six years. One of the principal advantages of the sectional grate bar tops is that it reduces the amount of scrap when they have been sufficiently worn to be discarded. In this stoker all internal parts are interchangeable. No bolts are used and any part can be removed without disturbing another.

The new type of guard prevents the fire from sliding into the ash pit when the dumping grate is operated. As the lower end of the guard is now raised, instead of cutting through the fire as formerly, it not only makes it possible to dislodge from the fire all clinker formed at the bottom, but also provides an unobstructed descent for the ash and clinker separately. When dropped to its normal position it permits the lower edge of the fire to settle quietly without tendency to slide.

The new dumping grate is hinged about one-third forward, dumping both front and rear. Being nearly balanced, it is very easily operated. The upward motion of the dumping grate breaks up any clinker bridge tending to form between the grates and the bridge wall. Both the dumping guard and grate rest in U-shaped trunnions in the side bearers, the guard being simply hooked over the bearing rods. The latter can therefore be easily removed without dismantling any part of the stoker.

The rocking motion is transmitted to the grate bars by a connecting rod from the eccentric agitator. As the grate bar tops are unbalanced, they return to the inclined position by their own weight, and therefore only one feed adjustment is necessary, made by the sheath nut on the end of the connecting rod. A simple locking device, or dog, is used for holding the grates open to permit rapid trimming of the fires.

The most essential requirements of smokeless combustion—a gradual coking of the green fuel and an adequate supply of preheated air admitted above the coking bed—have received special attention in the design of this stoker. The air supply to effect the combustion of the volatile hydrocarbons is admitted through two wind gates located on each side of the stoker. It first passes to the rear of the firebrick arch extending across the front of the furnace, and is then directed by baffles to the crown of the arch, at which point it enters the front air spaces. From the latter it enters the furnace through the spaces between the stoker front and the first ring of the arch brick. Passing the air over the furnace in this manner not only preheats the air, but assists materially in cooling the arch. The firebrick arch is of such extent and so designed that it completely cokes the green fuel and directs the gases downward over the hottest part of the fire, therefore permitting the volatile gases to be completely consumed before coming in contact with any of the boiler heating surfaces.

With the grates open maximum width, the effective admission area of the entire grate is 36.8 per cent. of the projected area of the furnace. At minimum opening—*i. e.*, in their lower position—the effective opening is 24.2 per cent. Based on the actual time of opening and clos-

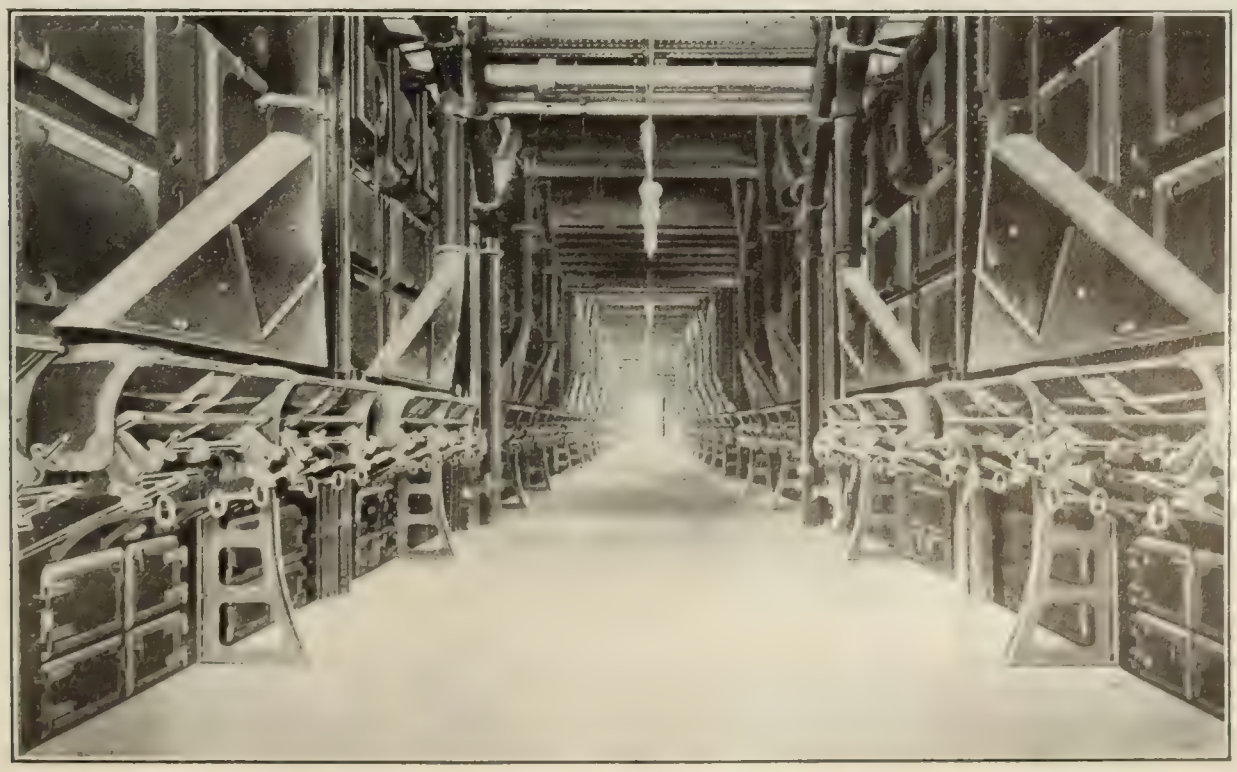


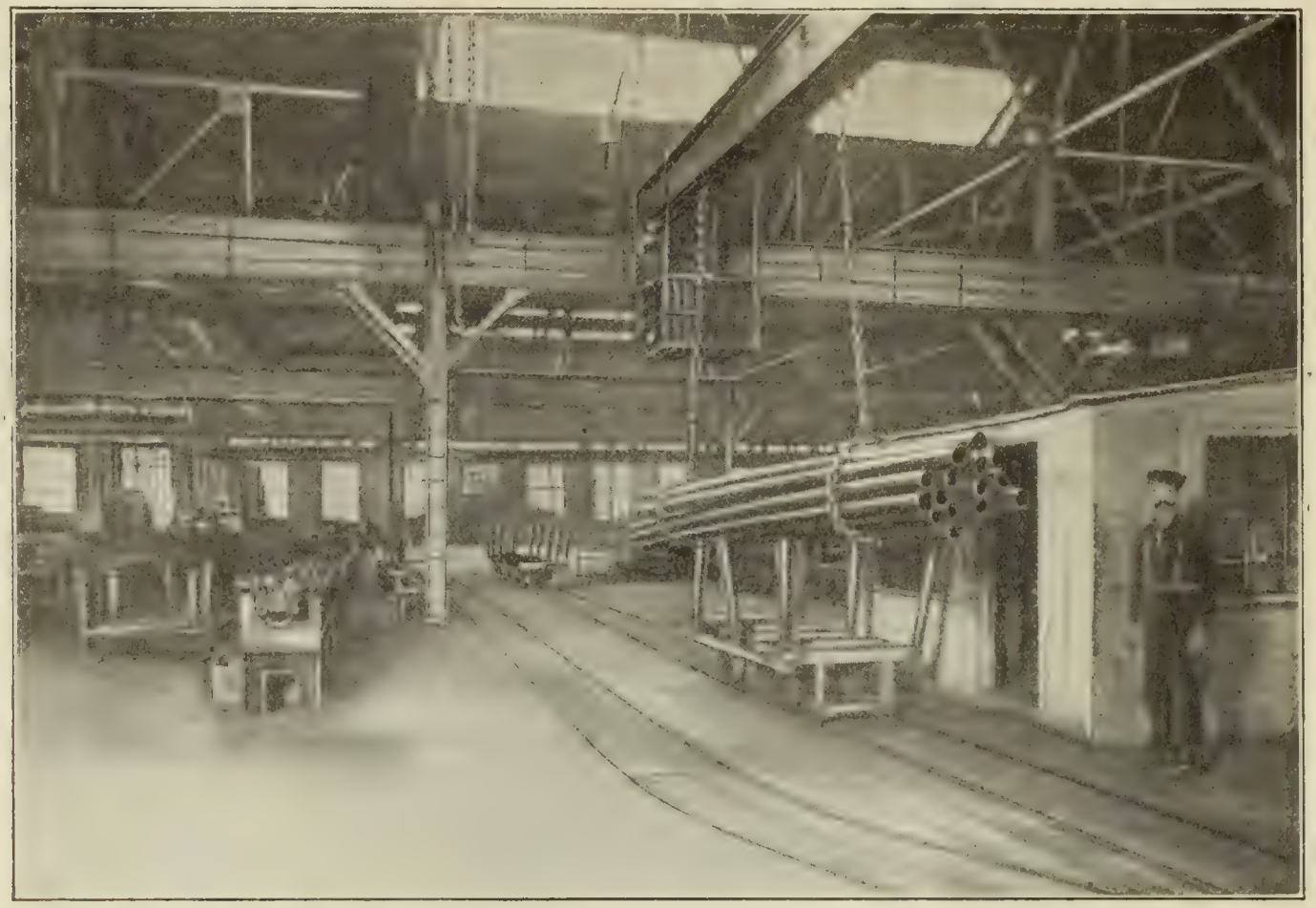
**Fig. 4.**—Installation of New Model Roney Stokers in the Ninety-sixth Street Power House of the Metropolitan Railway Company, New York City.

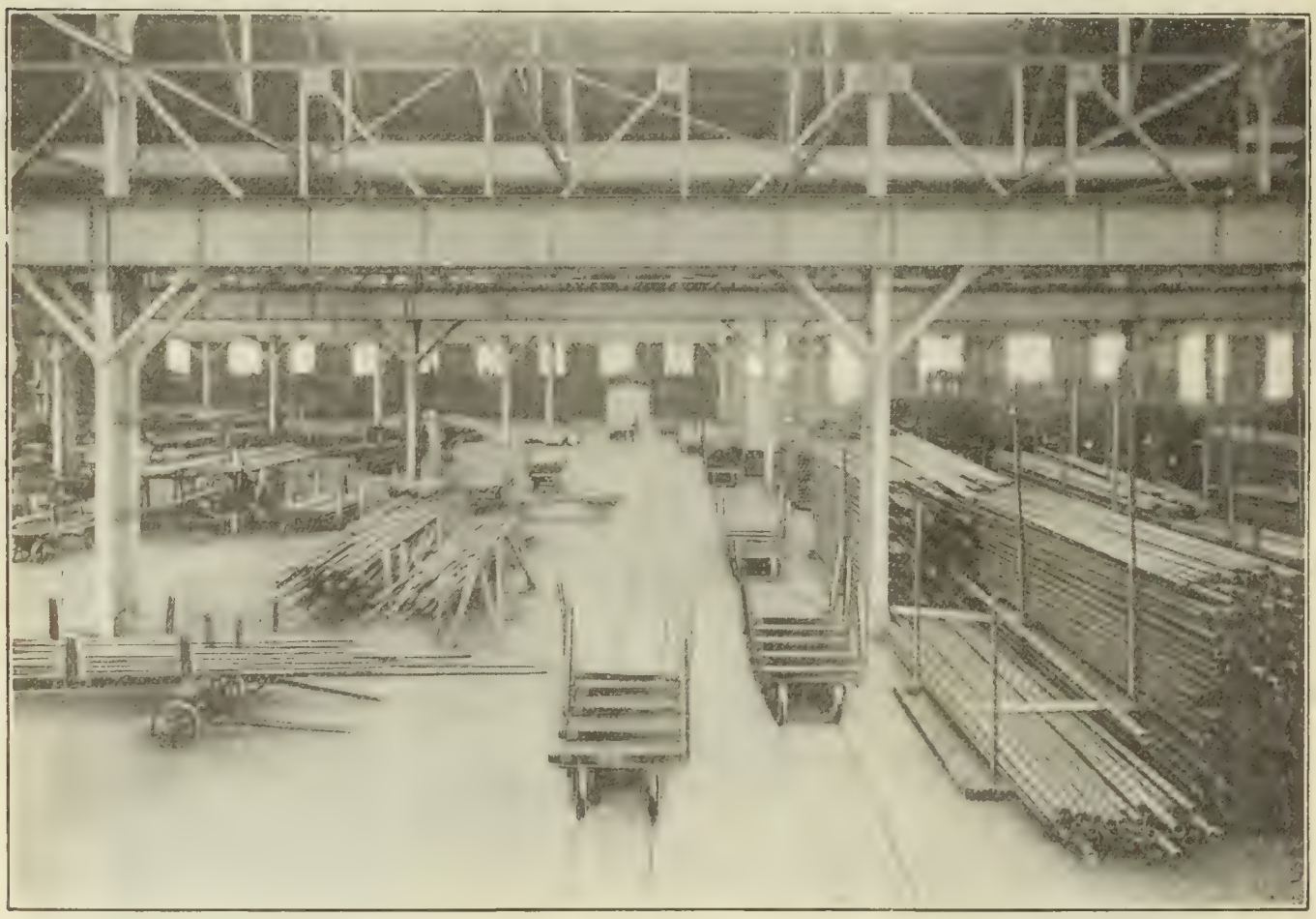
ing, the average effective draft area is 27.4 per cent. of the total projected area, as compared with the average of 17.9 per cent. with flat horizontal fire tops. This increased admission area makes it possible to maintain a higher rate of combustion, as was demonstrated in a series of capacity tests on a 375-hp. Babcock & Wilcox stoker fired boiler at East Pittsburgh. During these tests an output of over double rating, 224.7 per cent. was maintained for 6 hr. with but 0.42 in. furnace draft. This corresponds to a rate of combustion of 46 lb. per square foot of grate per hour, with a very fair overall efficiency of 63.5 per cent. at this load. A test of 25 per cent. above rating was maintained for 6 hr. with 0.18 in. draft, with the same efficiency. In other words, a higher output per boiler unit.

Fig. 4 shows the interior of the 25,000-hp. boiler plant of the Metropolitan Railway Company, Ninety-sixth street, New York City, which is equipped with the Westinghouse New Model Roney stokers.

## An Industrial Railway Installation in a Tube Works.

An excellent example of a modern industrial road properly installed is that of the Ellwood Works of the Shelby



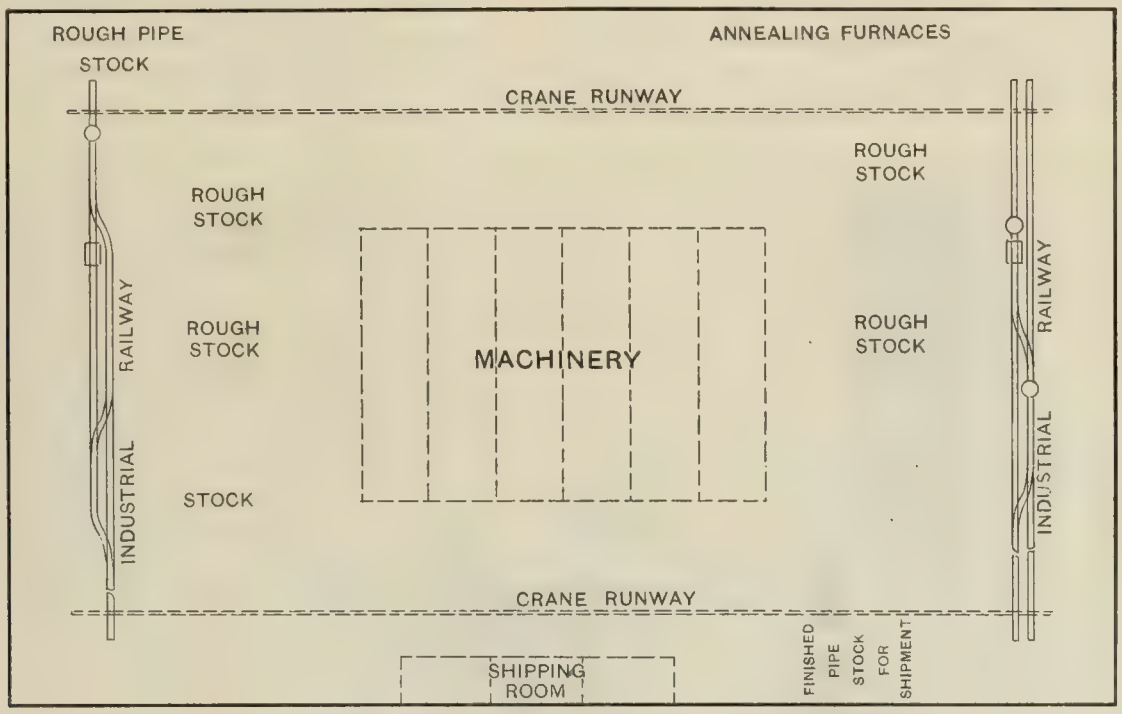


Two Views in the Ellwood Works of the Shelby Steel Tube Company.

74 per cent. efficiency and 23 lb. of coal per square foot of grate per hour. The fact that the boiler and grate passed through this severe test without damage while the brick setting was melted down, illustrates the effectiveness of the improved air distribution throughout the grates, and also the fact that a somewhat higher rate of combustion may be normally maintained with

Steel Tube Company at Ellwood City, Pa., which installation was made by the Arthur Koppel Company of Pittsburgh. This road is installed to be used in connection with cranes. The cranes are used to handle bulk materials in space, while the industrial road is used to carry materials, both raw and finished, on the ground floor and between cranes; also by its use these materials can be

placed at any desired intervening point. The cranes, of which there are two, run on either side of the plant the entire length of the building, while the industrial track is used to connect the cranes and runs the entire width of the building at either end. Thus a complete circuit of conveyance is formed by which materials can be loaded or unloaded anywhere. The road is of 24-in. gauge and consists of Koppel portable track made of 20-lb. rails in 15-ft. lengths. The track is imbedded in the floor and



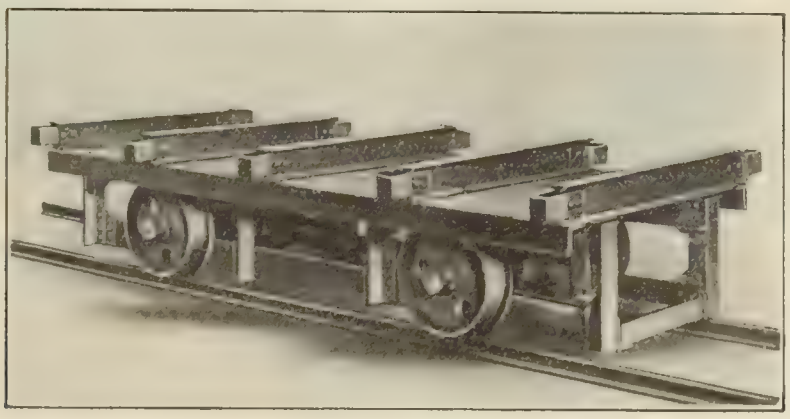

B & O. R. R.

Plan of the Building, Showing the Koppel Industrial Railway.

planks are fitted between the rails and brought up to a level with the floor, so that it can be crossed without interference.

The switches used in the system are of 30-ft. radius and are made of corresponding material to the track. The Koppel patent ball bearing turntables form an important part of the system. These turntables are capable of supporting a load of 4 tons, and are so easily manipulated that a loaded car can be turned end for end by one man in a fraction of a minute. This feature will appeal to any person knowing the rudiments of tube making, as it is necessary to be constantly turning the tubing so as to work on both ends.

The cars used in the system were especially designed and are of a platform type of all steel construction. They are 8 ft. long and 3 ft. wide, and the rigid underframe support of channel steel adds materially to the durability of the car. Five transverse 3-in. I-beams are mounted on the top of the car, the ends of each containing stake pockets in which pipe stakes are fitted. The wheel base



One of the Koppel Cars Used for Handling Tubes.

of the car is 4 ft. 6 in., and the wheels are of cast steel and are equipped with patent roller bearings. While the car has an exceptionally long wheel base, it is equipped with a radial axle which allows it to take curves easily. The entire construction of the car is light, yet strong enough to answer its purpose, and was put together with a view of economy in operation. A loaded car, although it weighs approximately 3 tons, can be pushed with ease by two men. The entire system is declared to have proved satisfactory and is expected to show a large saving in the unproductive distribution expense.

**The International Tube Agreement.**—Advices from London are that in the midst of negotiations for amalgamating the Scotch manufacturers of iron and steel tubes, except Stewart & Lloyds, in one company, the announcement was suddenly made that the working agreement between British tube makers and also the so-called international tube agreement were at an end. The international arrangement, which has been in operation with a fair amount of success for a year or two, has been under some strain since the depression in iron and steel set in. The arrangement was intended to provide against the invasion by manufacturers in one country of the territory of manufacturers in another. The taking of a contract in South America by a Glasgow firm in competition with manufacturers in the United States to whom the South American business has been going, is credited with the breaking up of the agreement. In the early part of July tube prices in England were cut 10 per cent. below what had prevailed for months, and it is said as much as 15 per cent. reduction has been made. German producers are also reported to have named lower prices at Antwerp and other ports on export business to British colonies. Predictions are made in the British trade that the period of low prices will be short and that the agreement will be restored on a stronger basis.

**Coal Lands at $1500 an Acre.**—George D. Howell, an attorney of Uniontown, Pa., closed the purchase last week of 200 acres of coal land, known as the English property, located in Jefferson Township, Fayette County, 3 miles from Brownsville, Pa. The sale was negotiated by John W. Boileau, Pittsburgh, at $1500 an acre, the highest price ever paid for coal in that vicinity. The property contains the largest body of coking coal in the Redstone District. It lies close to the Redstone branch of the Pennsylvania Railroad and near the Pittsburgh & Lake Erie Road, beyond the Alice and Albany mines of the Monongahela River Consolidated Coal & Coke Company. An 8-ft. vein lies about 100 ft. below the surface and contains close to 2,000,000 tons. It is understood that the property will be turned over to the Monongahela River Consolidated Coal & Coke Company.

At the annual meeting of the Crocker-Wheeler Company, Ampere, N. J., July 10, S. S. Wheeler was elected president; Gano Dunn, vice-president and chief engineer; A. L. Doremus, second vice-president; Rodman Gilder, secretary; W. L. Brownell, treasurer; J. B. Milliken, assistant secretary, and G. W. Bower, assistant treasurer.

## Portable Oxy-Acetylene Welding and Cutting Machine.

The portable oxy-acetylene welding and cutting machine shown in the illustrations is designed for use where it is necessary or more convenient to take the apparatus to the work, as in repairing heavy castings which are defective, cutting gates and risers from steel castings, in stopping leaks in power plants, and many other purposes. The equipment differs from other portable ones in that it includes generators for producing the oxygen and acetylene in place of tanks of these gases compressed, and for all kinds and any dimensions after the practice with the stationary installations of this character, which have been described in these columns. The same blowpipe, by changing the nozzle, is used for the cutting of steel up to 4 in. thick.

The oxygen pressure tank, *d*, is fitted with a reducing valve, *e*, and the exit pipe of the tank connects with the oxygen pipe *g* of the blowpipe. The exit pipe *h* of the acetylene generator is connected with a safety valve, *i*, the purpose of which is to prevent the forcing back of oxygen toward the acetylene generator, as, for instance, in case the exit nozzle of the blowpipe should be stopped by molten metal. The exit pipe *k* of the safety valve is



**Fig. 1.—The Parts of the Portable Oxy-Acetylene Welding and Cutting Apparatus Made by the Beltzer-Delcamp Welding Company.**

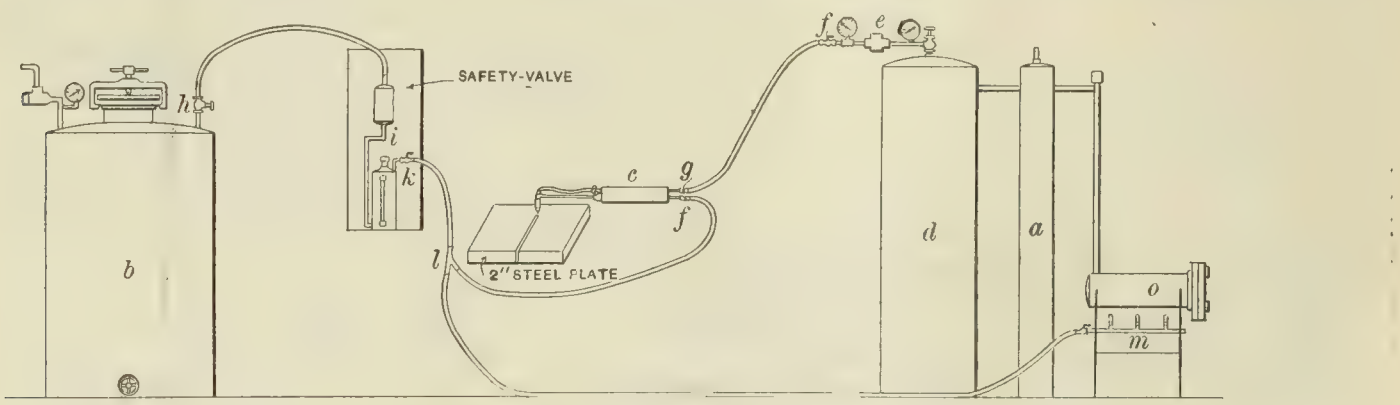



Fig. 2.—Diagram Showing the Connection of the Parts.

that reason is said to be much less expensive to operate. The apparatus weighs about 750 lb., and may be carried on a wagon 4 x 8 ft. It is manufactured by the Beltzer-Delcampe Welding Company, Bridgeport, Conn.

A general view of the equipment is shown in Fig. 1, and a diagram of its connections in Fig. 2. The oxygen generator, *a*, produces pure oxygen gas under pressure from a substance called "oxyvite." The acetylene generator, *b*, produces acetylene gas from calcium carbide. The tanks are of great strength. A blow pipe, *c*, with its set of nozzles, permits the welding of any thickness of sheets up to 1¾ in., and the repairing of castings of finally connected with the acetylene cock *f* of the blowpipe. There is a branch at *l* on the acetylene line connecting with acetylene bunsen burners which supply the heat required by the oxyvite retort, *o*. The acetylene generator is loaded with 8 to 10 lb. of carbide, and the oxygen retort with a corresponding amount of oxyvite. In 20 minutes after the lighting of the burners the oxygen retort is filled with oxygen at 100 lb. pressure, and the machine is ready for cutting or welding.

The Beltzer-Delcampe Company gives the following figures to show the time required and expense incurred in cutting steel plate of various thicknesses:

| Thickness of steel plate.—Inches. | Time required to cut 1 ft.—Minutes. | Oxygen required. Cubic feet. | Acetylene required. Cubic feet. |
|---|---|---|---|
| ¼ | 0.6 | ... | .. |
| ½ | 1.0 | 1.5 | 0.5 |
| 1½ | 3.8 | 10 | 2.5 |
| 1¾ | 4.2 | 10.8 | 2.7 |
| 2 | 6.0 | 15.5 | 4.1 |
| 2¼ | 6.6 | 17.1 | 4.5 |

When the metal to be cut is first heated the expense is considerably reduced. For instance, a plate 1¾ in. thick heated to such a temperature that it begins to become red, can be cut at a speed of 30 seconds per foot, which is eight times quicker than for cold metal, and with the cheap oxygen the cost for cutting a foot of 1¾ in. steel plate is 3.3 cents.

## The American-Ball Indicator Motion.

Indicator cards of engines would be taken more frequently if it were not so troublesome. What has been needed is a simple accurate reducing motion, and such the new one patented by F. H. and F. O. Ball of the American Engine Company, Bound Brook, N. J., is claimed to be. It is now regularly furnished in connection with the American-Ball Angle-Compond engine, description of which appeared in *The Iron Age* February 27, 1908. It may, however, be applied to other engines.



Fig. 1.

Fig. 1 shows the device by itself and Fig. 2 shows it in connection with the cross head. It will be seen to consist of a slotted plate, through which moves an L-shaped lever pivoted at the apex of triangular plates cast with the outer plate and perpendicularly beneath it. The short arm of the lever is forked and carries a roller. Also connected with this arm is a pin which works through the outer plate and carries a

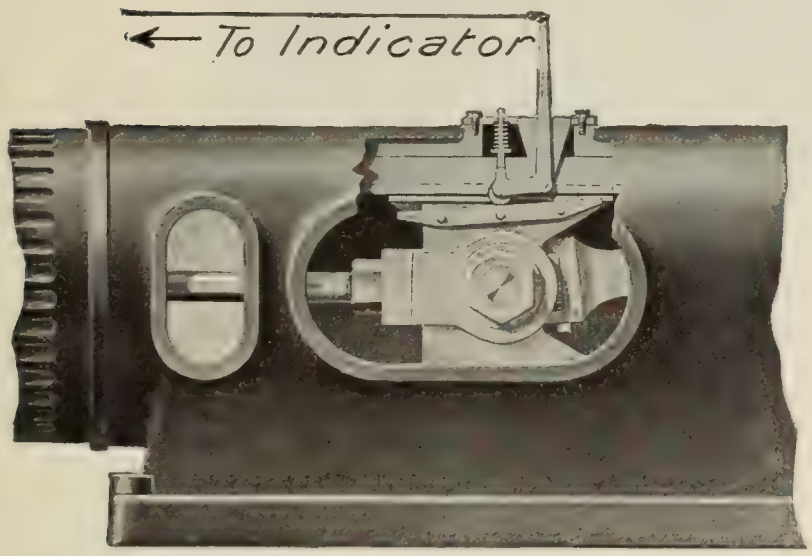



Fig. 2.

The New Indicator Reducing Motion Made by the American Engine Company, Bound Brook, N. J.

helical spring which tends to maintain the long arm of the lever at one end of the slot. The device is fastened by bolts to the frame of the engine.

On the cross head is secured a cast iron cam or inclined slide set with one end about 2 in. below the other end. When the cross head moves in one direction this slide, which is in contact with the roller of the L arm, raises it in exact proportion to the piston travel against the pressure of the spring; the reverse takes place as the cross head returns. The strength of the coiled spring is sufficient to prevent lost motion in the device, even on a high speed engine. The cam plate can be adjusted so that the travel of the upper end of the arm is that desired to turn the indicator cylinder the required distance without further reduction.

On top of the exterior plate, as may be seen in Fig. 1, is a small flat trigger or lock which engages with a slot milled in the pin working through the plate. When the pin is raised its full extent the trigger can be slipped into the slot to hold the roller out of contact with the cross head cam. Releasing the trigger instantly throws the device into service. The indicator cord may be kept attached to the lever and cards taken as often as desired.

## Customs Decisions.

The validity of reappraisements of imported merchandise is discussed in a decision handed down by the Board of United States General Appraisers in the past week. H. S. Beer of New York, importer, alleged that the board in reappraising his merchandise failed to have samples of the goods actually before them, also that the board gave heed to the values of similar merchandise in the United States. General Appraiser Hay, who writes the opinion, holds that in reappraisement proceedings it is not necessary that the board examine the merchandise involved, unless it appears, as it does not in the pending case, that the value of the goods could not be arrived at without such examination of the merchandise. The decision also affirms the right of the customs court to take into consideration the wholesale price in this country of goods similar to an importer's.

It has been decided that pencil sharpeners imported by George Borgfeldt & Co., New York, are not to be regarded for purposes of duty as being manufactures of wood, as the Custom House authorities had held, but are properly entitled to free entry under the provision in the Dingley tariff for "hones."

The Board of Appraisers has affirmed an assessment of 45 per cent. ad valorem on automobile shoes imported by the Morris European & American Express Company, New York, as the importers did not introduce testimony in support of their claim that the shoes should be admitted free as necessary repairs to the automobile.

Routine decisions have been handed down in the following cases: George Borgfeldt & Co., small metal whistles held not to be manufactures of metal, but "toys." The contentions of George Nash & Co., Henry B. Jackson, Perry Ryer & Co., and Wetherell Bros. for a reduction in duty on steel in strips have been granted. Claims of Cambell & Gardner, Robert Reiner and S. Blumenthal & Co. for the admission of parts of machinery as "castings" denied, and duty of 45 per cent. under metal schedule affirmed. Claims of Edwin Horrax and Wilfred Schade & Co. for lower duty on nickel plated pins, and fish hooks, respectively, were denied.

**The Oriskany Ore & Iron Corporation.**—This company, which was chartered recently, as noticed in these columns, is composed exclusively of Virginia interests, which have leased for three years the properties of the Alleghany Ore & Iron Company. The blast furnaces covered by this lease are at Iron Gate, Buena Vista and Shenandoah. The company's ores come from its Oriskany steam shovel mines and its Reidton and Dixie mines at Vesuvius. R. L. Parrish, Covington, Va., is president; W. W. Taylor, vice-president and general manager, and B. T. McPeak, Covington, Va., secretary. The operating force is the outgrowth of the Alleghany Ore & Iron Company, W. W. Taylor having been general superintendent of that company since its incorporation. John W. Stull, who has been in charge of the Oriskany mines, is still superintendent there, and O. M. Stull, formerly superintendent of the Buena Vista Furnace, is now superintendent of the Iron Gate stack, which has started up after having been banked for two months. The trade name "Alleghany" for the pig iron is retained, and Rogers, Brown & Co. continue as selling agents.

## Fox Motor Driven Miller and Universal Dividing Head.

As an example of a constant speed motor application to a standard belt-driven milling machine without sacrificing speed range, Fig. 1 herewith is interesting. It shows the No. 3½ light milling machine made by the Fox Machine Company, Grand Rapids, Mich., and described in *The Iron Age* March 29, 1906. Analyzed, the equipment is the one usual in belt-driven machinery—the machine itself, a countershaft, and a line shaft. In this case, however, the motor armature is the line shaft and the arrangement is such that the whole equipment is put in compact, self-contained form. This equipment was originally brought out to meet Government specifications, the machine illustrated being one recently furnished the Charlestown Navy Yard.

The machine is mounted on an extended sub plate which affords support for the motor base. The latter is pivoted at one side, and the free end of the motor bracket is supported by the short arm of a foot lever to hold the belt slack when it is desired to stop the machine temporarily. In this position the foot lever is held by a foot catch, the releasing of which, by depressing, allows the motor to settle by gravity until the belt tightens and the drive is again started. In order that the belt may not fall away from either of the pulleys they are flanged, and they also have two steps to give two speeds. These two speeds, through the four-step pulleys on the countershaft and machine, give a range of eight in all, which is doubled by back gears on the spindle. It happens that the equipment illustrated is provided with a variable speed motor, so that a still greater range of speeds is possible. The cast iron supporting frame for the countershaft is secured to the top of the milling machine, and the sub base of the whole equipment. The motor starter and controller are supported on a column standard, so that the whole may be shifted in location to suit the convenience of the operator.

As illustrated in Fig. 1 the machine is equipped with one of the attachments made by this company, the vertical milling attachment. Fig. 2 shows another special attachment, the universal dividing head which is of an improved form recently brought out. It is especially

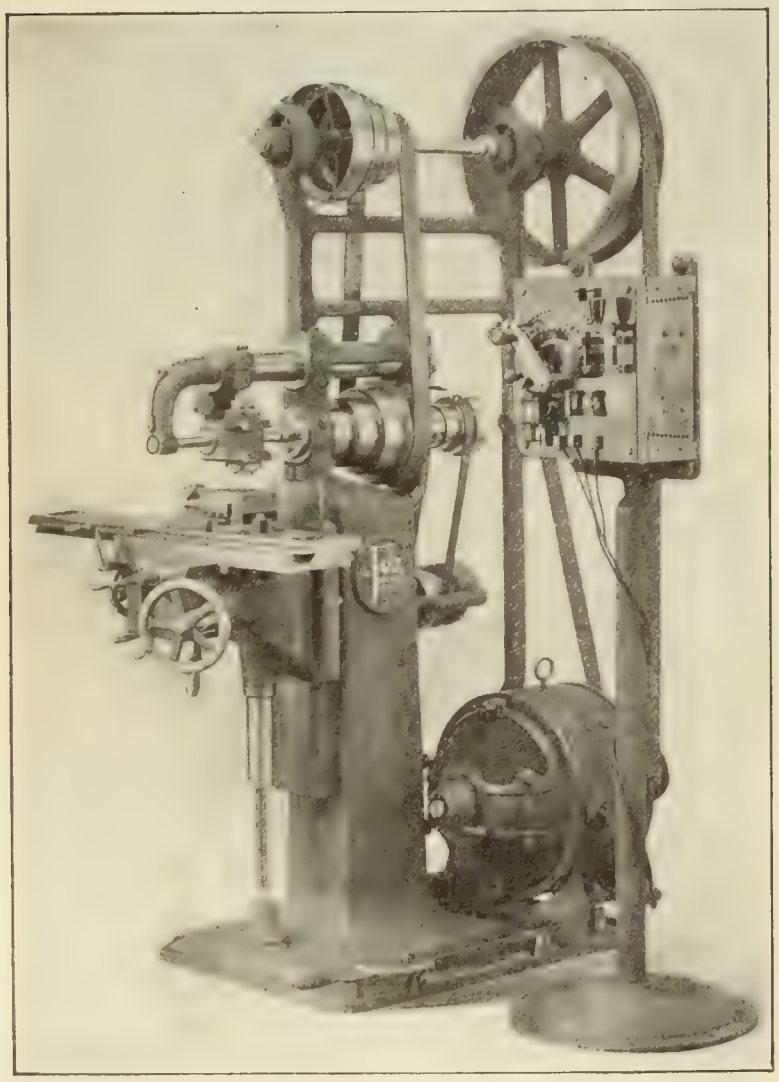


Fig. 1.—A No. 3½ Fox Miller Equipped with Motor Drive Through a Self-Contained Countershaft.

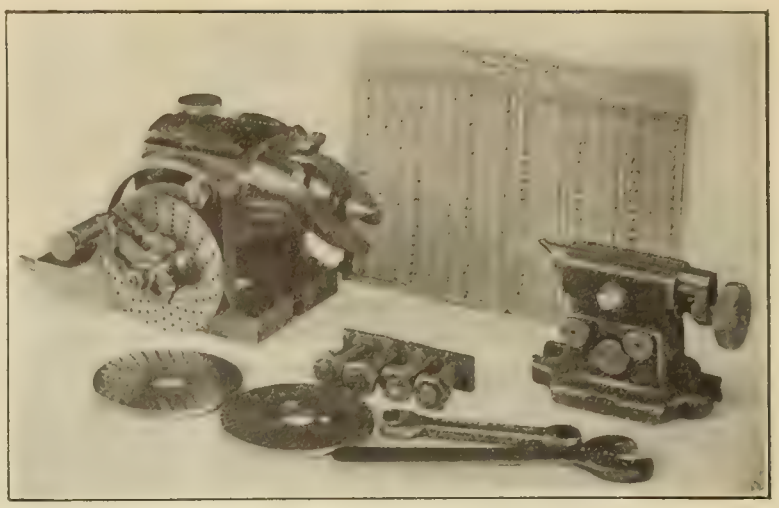


Fig. 2.—The Improved Fox Universal Dividing Head and Tailstock.

intended for cutting small gears, milling squares, hexagons, &c., including taps and reamers and a large variety of other work of this class. By the use of these heads the range of work which may be handled by the milling machines is greatly increased.

The spindle of the head is held in a long taper bearing and may be locked by means of a knurled thumb screw shown on top. The head itself is graduated, and the spindle may be elevated to any angle from horizontal to vertical, and set with reference to the graduation marks. Reversing the head gives a complete range of 180 dgrees. When the spindle is in its vertical position the form of the head is such that the work is at a minimum distance above the table, therefore great stability is secured. The index head will swing 8½ in. in diameter when the spindle is in a horizontal position.

The hole in the spindle is a No. 9 B. & S. taper, which is the same as that in the milling machine spindle. With the head are furnished three index plates, giving all divisions from 2 to 50, and the principal divisions up to 360, as shown on a chart which accompanies each head. The index plates are drilled on a special automatic machine having a master worm wheel 18 in. in diameter, which insures extreme accuracy.

The tailstock spindle is also shown in Fig. 2, and is arranged so that the spindle may be raised or lowered and tilted for taper work. It can be brought up instantly and accurately to the central horizontal position by means of a taper pin on either side of the clamping screws.

**Future Coal Consumption in the United States.**—Edward W. Parker of the United States Geological Survey estimates the country's annual production of coal, in *Mines and Minerals*, as far forward as the year 2055. By that time, it is figured from the records, the United States will be using more than 2,000,000,000 tons a year. The average annual production in the decade from 1916 to 1925 is put at 600,000,000 tons. The total production in 1907 was 480,450,042 tons. Mr. Parker predicts that future generations "will have so far developed methods of subduing and utilizing other forces of nature that the need of coal for the production of heat, light and power will to a great extent have been eliminated." Since the bonanza anthracite beds have been practically exhausted the mining of the deeper and thinner beds will increase the cost, which must be made up by higher prices. It is doubted "if the production of anthracite will ever greatly exceed the production of 1907, which was about 76,000,000 gross tons."

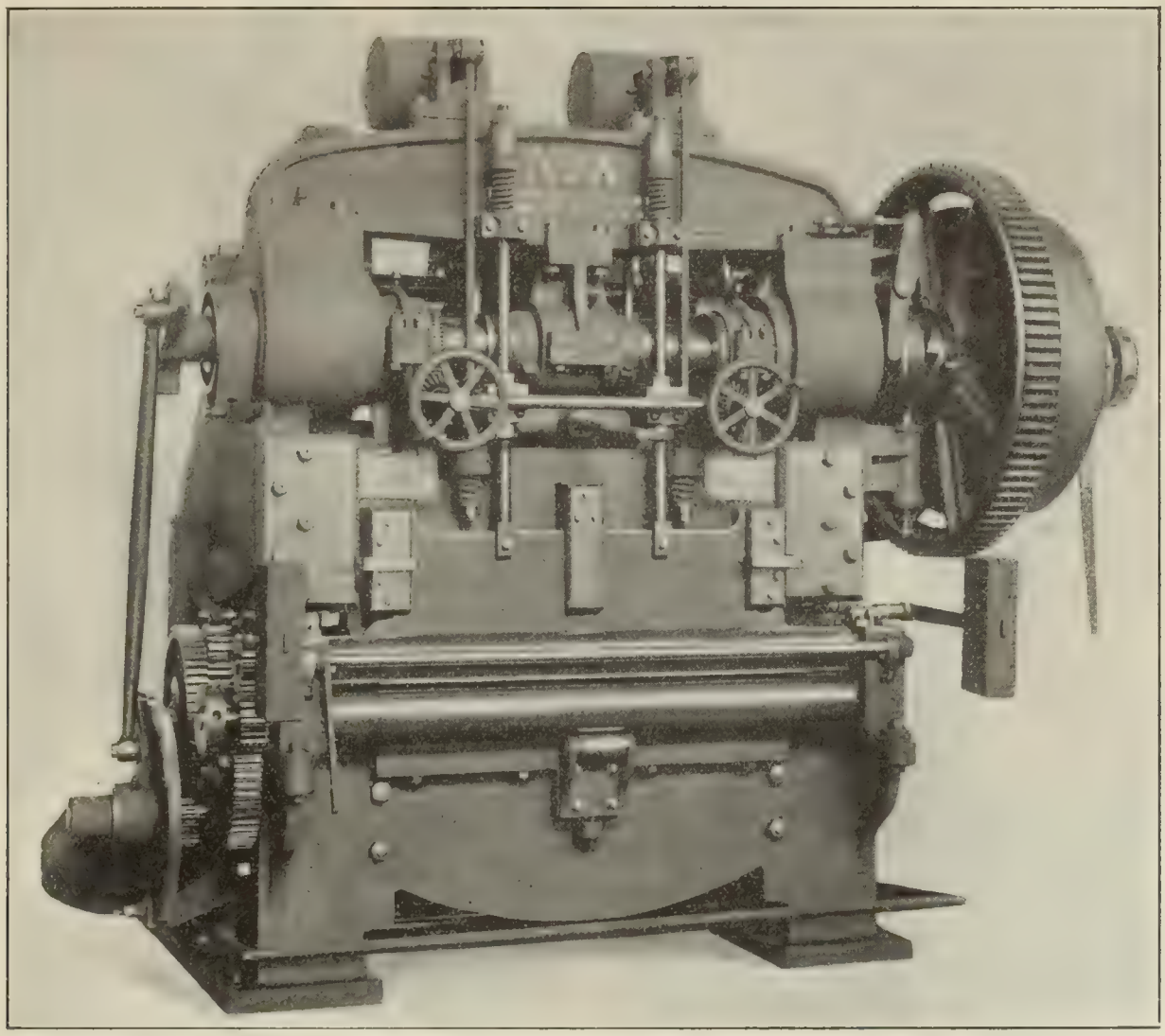
A compilation recently made by the Pennsylvania Railroad shows that 1350 active employees have been with the road 40 years or more, and that 1013, whose term of service was more than 40 years, have been retired on pension. Three hundred and sixteen persons have been with the road for more than 50 years, in contrast with a total of 40 men and 1 woman who have been in the employ of the Federal Government more than half a century. The Pennsylvania Railroad has 293 men on its pension list whose ages are between 71 and 90.

## A New Long & Allstatter Perforating Machine.

A machine which overcomes many of the difficulties and develops some remarkable utilities in connection with sheet metal perforating has recently been designed and manufactured by the Long & Allstatter Company, Hamilton, Ohio. The illustration shows what is known as a multiple perforating machine with automatic roller feed, and is suitable for material up to ¼ in. thick. It is built for belt drive and arranged for quick changes of speed. The spacing is in multiples of 30 sec. and the speed from 40 to 84 strokes per minute. This machine is 54 in. between the housings and weighs about 46,000 lb., and occupies a floor space of 84 x 46 in.

The novel roller feed is one of the particularly valuable features of the machine; others performing similar functions depend on the ordinary grip feed. The new roller feature secures more regular and rapid feed, and has demonstrated its excellence in fine and intricate work.

The machine illustrated, which is the second of the type ordered by one of the largest sheet metal perforators in the country, has an automatic stop attachment for bringing the slide to rest, a safety device for preventing accidents to operators, and the construction is such that the tool holders can be easily changed and without delay, an important feature in this type of machine. The same is true of the feed. The index affords the exact setting for the changes of feed, so there is no gauging and trying. One of these machines has a record of 75 days' constant work, at the rate of 80 strokes per minute, punching 98 holes at each stroke, on material about 14 gauge in thickness.



A Special Automatic-Feed Multiple Perforating Machine Built by the Long & Allstatter Company, Hamilton, Ohio.

**A Large Water Softening Plant.**—Among many improvements undertaken by the Tennessee Coal, Iron & Railroad Company at the Ensley, Ala., plant is the provision of a supply of soft, clear water for boiler feed. A contract has just been made with Wm. B. Scaife & Sons Company, Pittsburgh, Pa., to remodel the present water softening and purifying system and convert it into a We-Fu-Go system of the intermittent type, with a capacity for 35,000 hp. of boilers. Wm. B. Scaife & Sons Company will discard all apparatus heretofore in use except four tanks, and when completed the new system will consist essentially of eight large treating and settling tanks equipped with mechanical stirring devices and eight mechanical gravity filters. In the building containing the filters will be located also all the valves, &c., for operating the system. The arrangement of the piping will be such that any or all of the treating tanks can supply water to any or all of the filters. With a capacity of 3,300,000 gal. of water in 24 hr. it will be the largest intermittent type of water softening and purifying system in the world. The water taken from Yellow Creek in its natural condition contains about 15 grains per gallon of scale forming solids.

The merchandise creditors of the Westinghouse Electric & Mfg. Company issued a circular last week saying that 95 per cent. of all the merchandise creditors have assented to the reorganization plan, and that it is expected to secure the assent of the most of the rest. Substantial progress has been made toward securing from stockholders, employees and others the $6,000,000 of cash subscriptions to "assenting stock" required by the plan, and additional subscriptions for a considerable sum are assured. Abount 5000 employees have made subscriptions aggregating $690,000. The readjustment committee has agreed to a further extension to September 1. A circular has also been issued by the stockholders' committee stating that the second installment of the stockholders' subscriptions, amounting to $10 per $50, is payable August 1.

The Bethlehem Steel Company has successfully completed at South Bethlehem, Pa., the rolling of an order for 30-in. girder beams with 15-in. flange, ¾-in. web, and weighing 200 lb. per ft. The company has now rolled all the various Grey sections, including the special light beams, girder beams and H-columns, shown in its structural handbook. The Grey mill is running double turn and with good results, both as to output and uniformity of product.

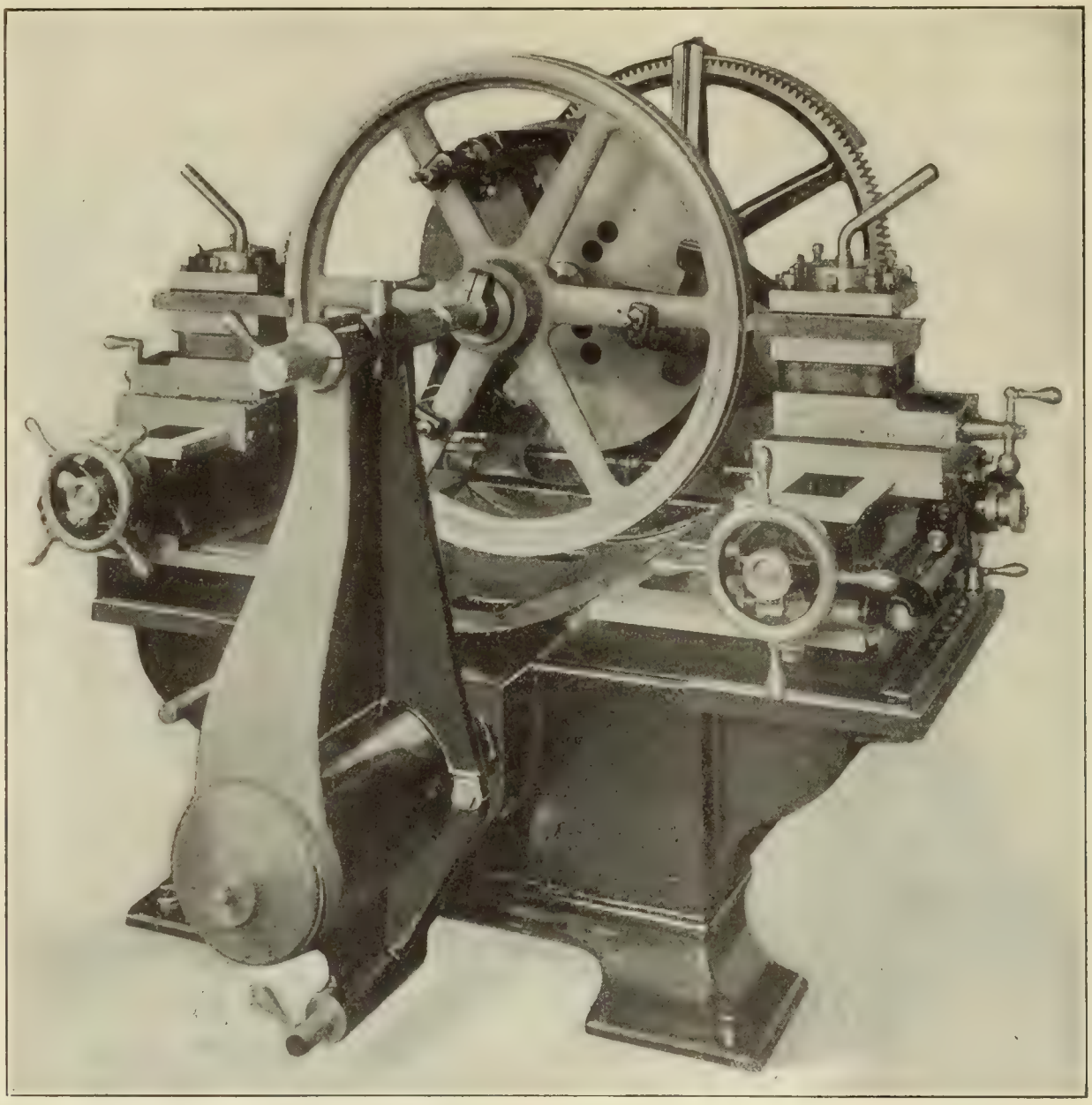
The output of the Dominion Iron & Steel Company, Sydney, Nova Scotia, in June, is reported to have been 14,220 tons of rails and 3319 tons of rods.

## A Special Streit Pulley Lathe.

For turning large gear blanks and pulleys up to 40 in. in diameter the Streit 40-in. pulley lathe shown in the accompanying engraving is built by the Cincinnati Pulley Machinery Company, Cincinnati, Ohio. This machine is declared to have striking advantages in its double tool capacity, exceptional driving power, compactness and low cost as compared with other machines of like capacity. This machine, although built especially for turning gear blanks and flywheels, is still a pulley lathe, since there is no change in the swiveling table for crowning pulleys. When turning gears or flywheels the table is simply not swiveled.

Power cross and lateral feeds are provided on both sides of the machine. The power cross feed machinism is contained in small aprons attached to the carriages; by pulling a plunger cross feed is obtained in or out, either side of the machine at will. Lateral feed is provided in one direction on one side, and in the opposite direction on the other side. This enables the operator to turn the periphery of a gear on one side of the machine, and at the same time to face down the sides of the gear on the other side of the machine. The ratio of the driving gear is 25 to 1. The tailstock swings to one side, allowing the work to be slipped on the arbor. Special dogs and drivers hold the work rigid while driving it.

The lathe has positive feed and turret tool posts on each side of the machine, which is unusual in this type of machine, and largely increases its field of usefulness. The cone pulleys are arranged for 4-in. belt from a double friction countershaft having pulleys of 5½-in. face. Six changes of spindle speed are provided, from 4 to 17 rev. per min., and seven changes of feed ranging from 1-12 to 1-48 in. per revolution. The coarsest feed and highest speed will give either a lateral or cross feed of about 1½ in. per minute. The weight of the machine illustrated is about 5500 lb.



A Special 40-In. Streit Pulley Lathe Built by the Cincinnati Pulley Machinery Company.

## Experiments on the Weight of Crushed Stone.

The University of Illinois Engineering Experiment Station has recently issued Bulletin No. 23, "Voids, Settlement and Weight of Crushed Stone," by Ira O. Baker. This bulletin gives the results of experiments to determine the proportion of voids in crushed stone loaded by various methods in cars and in wagons, to find the amount of settlement during transportation in wagons and in cars, and also to obtain the relation between the weight of a unit of volume of the solid stone and that of the same volume of crushed stone immediately after being loaded in various ways, into cars and wagons, and also after being transported different distances.

Crushed stone is usually nominally bought and sold by volume, but really by weight, since in ordinary commercial transactions the weight of a cubic yard of crushed stone is assumed and the number of yards in a shipment is obtained by dividing the total weight by the assumed weight of a cubic yard; and yet there seem to have been almost no experiments made to determine the actual weight of a cubic yard of crushed stone under any particular condition. Apparently the only experiments heretofore made upon this general subject are a few brief ones upon trap rock, conducted by Mr. McClintock, lately president of the Massachusetts Highway Commission. An account of his experiments is presented and discussed in this bulletin, but the main features are an elaborate series of tests upon crushed limestone from Chester, Joliet and Kankakee, all in Illinois.

The results are summarized in a table which gives for different sizes of crushed stone the coefficients by which to multiply either the weight of a cubic foot of the solid stone (or its specific gravity) to get the weight of a cubic yard of the crushed stone at the crusher and also at the destination, for stone from the three different quarries. This elaborate table is summarized in the following statement: The mean coefficient by which to

multiply the weight of a cubic foot of solid limestone to obtain the weight of a cubic yard of crushed limestone is as follows:

| | |
|---|---|
| For ½-in. screenings | 15.5 |
| For ½-in. to 2-in. stone | 14.6 |
| For 2-in. to 3-in. stone | 15.2 |

For trap rock the corresponding cofficients are as follows:

| | |
|---|---|
| For ½-in. screenings | 14.6 |
| For ½-in. to 1½-in. stone | 13.5 |
| For 1½-in. to 3-in. stone | 13.9 |

Copies of this bulletin may be obtained upon application to Prof. L. P. Breckenridge, director, Engineering Experiment Station, Urbana, Ill.

## Renold Transmission Chain Tools.

Two novel accessories for assembling the Renold chains made in this country by the Link-Belt Company, Philadelphia, Chicago and Indianapolis, are shown in the accompanying Figs. 1 and 3, and Fig. 2 shows the details of an improvement in the joint of the

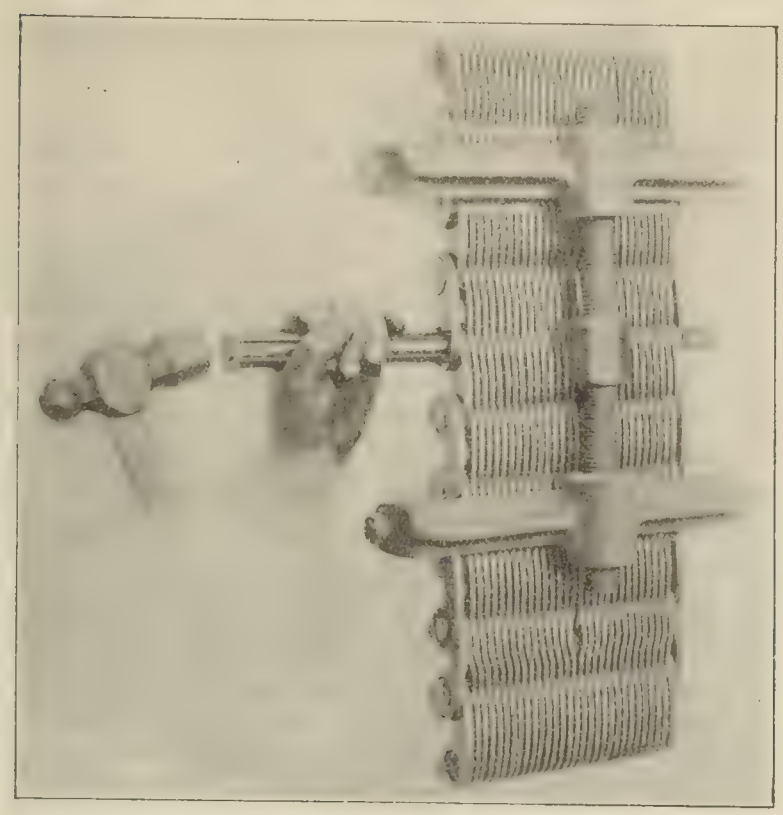


Fig. 1.—A Cramp for Holding the Ends of Renold Silent Chain While Joining.

Renold Silent chain. As may be seen in the latter illustration, two semicircular bushings are used in each joint, each as long as the width of the chain. This new arrangement, besides allowing for the proper articulating movement, permits complete rotation of the pin, which is of value as it makes the wear uniform, while the accuracy of the fit reduces the tendency to elongation with its accompanying wobble. Another favorable point in the new construction is the absence of contact between the links and the pins, which relieves the latter of concentrated pressure and eliminates the internal wear on the links.

To facilitate the work of connecting the links when installing chain drives of this character, the special appliances shown in Fig. 1 have been devised. These include a specially designed holder, called a cramp, made of cast iron members which grip the ends of the chain and are connected by a right and left hand screw for drawing the gripped ends of the chain together while fastening them. The latter is accomplished by fitting the bushings to a short drift pin of proper diameter to lead into the holes of the links, after which the link pin is inserted and with a few light blows is driven into position.

The device shown in Fig 3 is a fork and anvil used in making or breaking joints in the roller type of chain. When the forked piece is slipped between the rollers the lower parts of the links hang into the channel in the anvil block. It is then easy to cut the old joint with the chisel which is included in the kit or make a new joint with the punch to burr over the rivet. The tools are all small enough to be easily portable, so that lengthening, shortening or making other changes in driving chains can be readily accomplished at the places where the chains are in use.

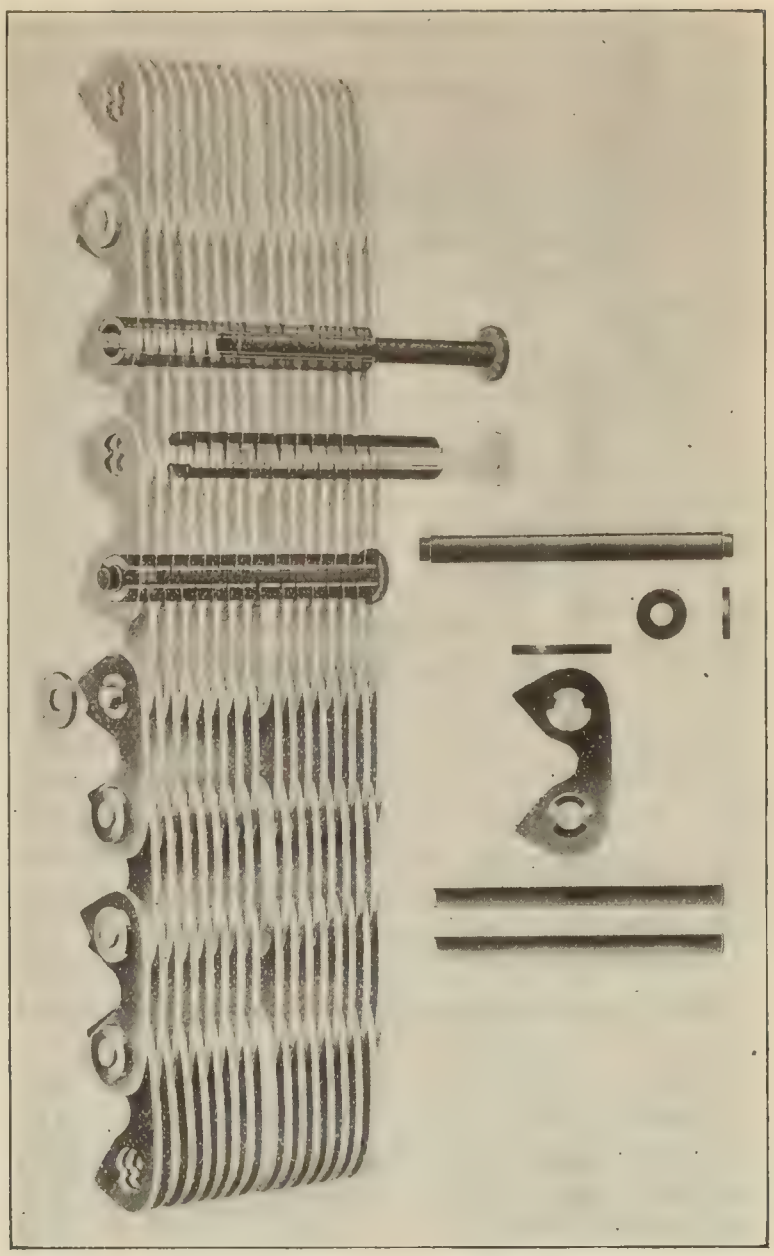


Fig. 2.—Details of the Improved Renold Silent Chain as Made by the Link-Belt Company.

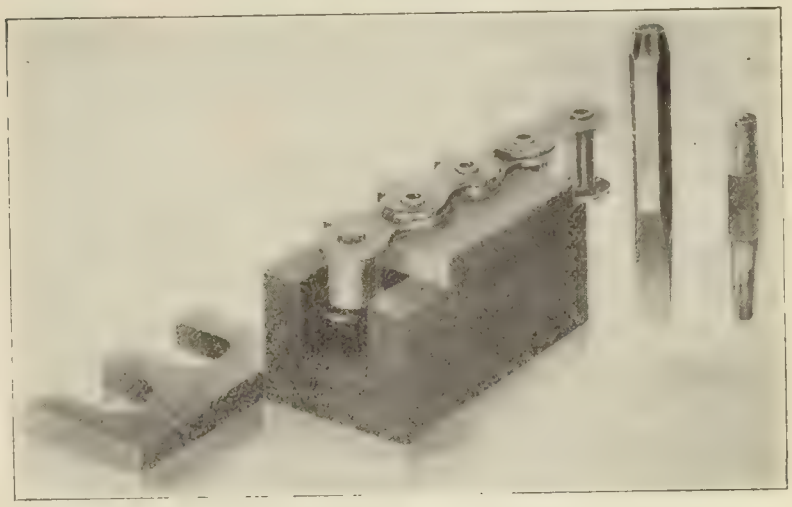


Fig. 3.—Equipment for Making and Breaking Joints in Renold Roller Chain.

In an account of the Tayeh iron mines, 70 miles below Hankow, China, on the Yangtse River, by the British consul-general at Hankow, it is said that in 1904 the Japanese were given the right to work the mines for a period of 30 years by an agreement with the Chinese Government. Iron deposits are said to extend over an area of 35 square miles, and to contain about 273,000,000 tons of ore. The Lion Hill, now being worked, contains 150,000,000 tons of ore, of which 150,000 tons is supplied annually to Japan, and 60,000 or 70,000 tons to the Hanyang Iron Works. The ore is taken by rope tramway to Shih-liu Yao, about 8 miles away, and stored to await shipment by four steamers, each carrying 3000 tons. The ore averages 65 per cent. of iron. The price per ton is $1.50 to $1.70, with $2 freight, payable to China.

# THE IRON AGE

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## The Iron Age Index.

The index to Volume 81 of *The Iron Age*, January 1 to June 30, 1908, will be mailed to subscribers applying for it. A list of those who have received the index heretofore is kept in this office, and to all such the latest one will be mailed without notice from them. Additional names will be put upon this list on request.

## Liability for Accidents and Labor Organizations.

Those who are apt at spending other people's money to relieve the sufferings of a third party have been enjoying an unusual opportunity for open handed generosity in pushing legislation in behalf of employers' liability for accidents. The foundation is laid by blood-curdling accounts of the conditions under which workmen must labor, of the risks which they incur, and of the frightful fatalities whose victims they are. Statistics are paraded without any indication as to their source or proof of their accuracy, beyond the label "official." Add some telling interviews to indicate the callous indifference of the cruel employer, cap it off with some touches showing how he rolls in predatory wealth and the ground is prepared for demands in behalf of the slaughtered worker for a share of the ill-gotten gain. Since it is only evening up, how easy it is to sweep aside all other considerations and let the employer bear all responsibility, expressed in nicely rounded sums, for injury to life and limb. Such little incidental features as contributory negligence are buried out of sight by an avalanche of maudlin sentiment.

Some straight thinking is eminently desirable before these self-constituted philanthropists are allowed to have their way with other people's money. There should be as careful and accurate a distribution of responsibility as is possible in so complex a matter.

It is the duty of the employer, and we may add that it is the part of wisdom, too, for him to adopt every safeguard which experience has shown to be desirable. We go even so far as to say that he should adopt them, even though he suffers in output, and in extreme cases even in quality. It is the duty of the employer to keep his men constantly conscious of danger, by warning, backed by unswerving discipline. He is liable for any accident due to defects of machinery, to faulty design of plant, and to the carrying out of mistaken orders. It is probable that he will be held liable for accidents due to risks inherent in the nature of the business. But there his responsibility should cease.

Injury or death caused by the recklessness or negligence of a workman, whether he be the only sufferer or whether he involve fellow workers, should not be made a charge against the employer. Such a shifting of the responsibility is a patent cause for accidents, with all the attendant suffering, which the outside philanthropist is so eager to avoid. Unless it is placed where it belongs little or no improvement can be expected.

Experienced and serious workmen, recognizing the danger to themselves which grows out of negligence or recklessness on the part of fellow workmen, have often an emphatic way of entering their protest to the guilty one. But only too many wink at infractions of shop rules devised for safety, and their *esprit du corps* invariably prevents them from bringing an offender to book by reporting him. While the watchfulness of some individuals in every shop undoubtedly prevents many casualties, it does not go far enough.

It is an entirely different matter when there is an organization among the workmen, and yet where is there a record of a union, capable of distributing among the many the burdens due to an accident too heavy to be borne by one or a few sufferers, assuming the liability? We are told that the employer should be held liable in every case, because he has got the money to pay, and otherwise the sufferer from an accident due to his own fault or that of a fellow workman would not get anything. We hold that it is not to the employer, but to the union that the victim should look for compensation. But their motto appears to be "Millions for war, but not a cent for charity." It is true that some unions have pretended to protect themselves against the danger of ignorant fellow workmen by securing State laws calling for a certificate of skill, but that was done merely to keep the supply of labor in check. Miners' unions have resorted to such tactics, but is there a single case on record of a miners' union expelling a member because he struck a match underground, or picked a safety lamp lock to light his pipe in a fiery mine, at the risk of blowing up hundreds of men and destroying valuable property?

Organized labor rather than the employer should be held liable for accidents due to negligence and recklessness of its members, if it be an axiom that in some manner the burdens of such casualty, being too heavy to be borne by the guilty individual, should be distributed. It might then be found that the unions would be willing to support reasonable shop discipline, instead of defeating it by indifference or even by deliberate hostility.

## The Lake Ore Movement for 1908.

Not in years have the sellers and consumers of Lake Superior iron ores been as much at sea as they now are regarding the ore movement of the year. Furnacemen have such meager data on which to base a judgment of their probable requirements in the next ten months that in most cases they are allowing the matter to drift, hoping that by another month or two the situation will be clearer. The ore firms, on the other hand, with comparatively few orders on their books, are certain only of the fact that most of the business they do will be crowded into the fall months. Meantime the basis usually existing in midsummer for an approximation of the work laid out for vessel interests and the mining companies before navigation ends is entirely lacking. The statistics of water shipments up to July 1, showing only 2,870,996 tons brought down, or but 22 per cent. of the total of 12,685,515 tons to July 1, 1907, look startling. But with a carrying capacity of 6,000,000 tons a month available there is no reason yet to fear that the pinching off will be too pronounced.

The estimates of the ore firms as to the season's business have ranged between 20,000,000 and 25,000,000 tons, with the opinion preponderating that the lower figure will be found nearer the actual. In this connection the experience of 1904 is of interest. In February of that year the best opinion among the ore selling firms was that a falling off to 14,000,000 tons might be looked for, or only about 60 per cent. of the movement in 1903; but the total proved to be 21,822,839 tons, or over 50 per cent. above the estimate. To-day's estimates are made with the season well under way, yet, it must be said, with an uncertainty prevailing that baffles the most experienced operators. If another six months of 50 per cent. pig iron production, using the first half of 1907 as the basis of comparison, is ahead, the lower estimate of 20,000,000 tons might be considered a safe calculation, the movement of 1907 having been 42,245,070 tons. But the average furnace man hopes, and in most cases believes, that the business of the second half will advance beyond the 50 per cent. figure that has been for so many months the common measure of iron trade activity. There is, of course, the not easily measured factor of safety maintained in the ore movement for some years, the allowance always made in excess of the probable requirements. Conditions like the present will cause these stocks carried as a protection against strikes or interruptions to navigation, to be eaten into more than ordinarily, so that the start next spring will be a cleaner one than usual. It is easily conceivable, indeed, that the abstention from new ore buying may be carried beyond the mark, and that May, 1909, will find furnacemen with a pig iron demand quite out of proportion to their ore supply.

When the fever was on in the closing months of 1906 there was an ore buying movement that in a few days took up the bulk of the supply for 1907. It was pointed out then that to buy at the highest prices in years a supply of ore, some of which would not go into the blast furnace for 18 months from the time of purchase, involved many risks to the buyer. It turns out that for some of that ore the interval between purchase and conversion into pig iron will be fully two years, which assuredly is a long look ahead in such a shifting of scenes as the American iron trade affords. To-day the furnaceman who unhesitatingly took that long chance is beset with doubts as he tries to calculate for even the final quarter of the present year. Plainly, so far as merchant pig iron is concerned, the element of speculation remains a very present factor in the iron trade of the United States.

## The Passing of the Steel Billet.

Years ago it was a matter of comment in the trade that the steel billet was disappearing as a market factor. In the past three years the disappearance has been made more nearly complete. In the first half of 1905, when the industry had fully recovered from the setback it received in 1903-1904, open market sales of rolling averaged from 25,000 to 30,000 tons a month, a small total compared with what was done in the nineties, while at present, were there similar industrial activity, the current sales would probably not run half as large. The estimate made for the early part of 1905 includes the tonnage taken by the Pittsburgh Steel Company and the Youngstown Sheet & Tube Company, but shortly afterward the former company made a regular scale contract for its billets, and a year later the latter company completed a steel plant of its own. The Pittsburgh Steel Company has since passed out of the scale contract period, having built a steel plant of its own. The Atlanta Steel Hoop Company was also a regular buyer at that time, but has since built a steel plant of its own.

No important new consumers of rolling billets have appeared in the past three years, and it is improbable that any new operation of magnitude will be based upon the acquisition of billets in the market, either by straight market purchases or through the medium of scale contracts. As the trade is now aligned, the conversion of acquired billets into finished rolled products is not an attractive operation. A finishing mill expects to run under high pressure in times of exceptionally large demand and to run slack or close entirely in times of poor demand, its relatively light investment avoiding a very large interest charge during such periods of light operation. It is not sufficient, however, to avoid losses in poor times. Profits must be made in good times, and these do not seem to be sufficiently well assured by any of the customary means of acquiring billets. Open market purchases are largely a speculation, while scale contracts, of necessity it seems, are based upon the current market for Bessemer pig iron, which is inclined to fluctuate more than does the market for finished material, thus giving the buyer the smaller spread between raw and finished material at the time he expects to turn over the larger tonnage. It accentuates the condition he wishes to avoid by buying instead of making billets, that of having a surplus when steel is not needed and a shortage when it is needed.

The condition of a large tonnage of billets passing through the open market was at best only a temporary one, and it is not surprising that it lasted only a few years. It grew largely out of the fact that many rolling mills had been built, with their attendant puddling furnaces, to make and roll iron. As steel came to displace iron, large units were necessary to manufacture by the Bessemer process, and the rolling mills were ready made to consume the crude steel product. An interchange was quite natural. Later came the consolidations, replacing the open market transactions in billets by an "intercompany" price, and it so happened last year that the Bessemer pig iron average passed above the inter-company price, even on sheet bars. By these consolidations a very large tonnage of billet exchanges was taken out of the market, and the building of independent open hearth steel plants in the past few years has taken away most of the remaining business. Doubtless there has been much more of this steel works erection than would have been the case had there been no open hearth process, with a cost per ton quite comparable with that of the Bessemer process and an original investment much smaller, through the much smaller tonnage required for economical operation.

While soft steel has almost disappeared as a commodity, bought in large tonnages by rolling mills, the 4-in. billet has also been getting less prominent as marking a stage in manufacture. An eminent engineer once said that the 4-in. billet was one of the greatest inventions made by the American steel trade; but its usefulness has been passing with the development of rolling mills, as in many cases it is much easier to add a few stands of rolls to the blooming and billet division and start the finishing operation with a smaller billet. One of the chief merits of the 4-in. billet is the wide diversity possible in its use, but that is exactly what modern steel rolling does not require. It builds the mill to fit a certain product only. In the rolling of rods from ingots in one unit, it has been found advantageous to roll down to a 1¾-in. billet, and heat this, rather than stop at the 4-in. billet and heat it.

There is a saving in the heating and a saving in the power required for the subsequent rolling operations. The same principle has held good in the rolling of merchant bars by continuous mills.

Thus both commercially and mechanically the old time billet has largely passed its period of usefulness. The fact is not altogether realized in some branches of the steel market, where there is still a tendency to regard the current price of rolling billets as a market factor, as something with which other prices should be kept more or less in line; but in point of tonnage or manufacturing importance this would be a case of the tail wagging the dog. Almost as well might one insist that the price of muck bar used in crucible steel making should control the price of common bar iron.

The forging billet is a different proposition altogether from the rolling billet. Forging operations are conducted in a much more variable manner than rolling operations, requiring larger or smaller tonnages from time to time, and it is natural that forging establishments should look to the outside for a supply of raw material. Sales of forging billets, either at flat prices or upon scale contracts, have been steadily increasing, and the total tonnage of forging billets thus passing in the market probably exceeds the tonnage of rolling billets similarly exchanged. Sheet bars, too, are an important crude steel commodity, and of the three, rolling billets, forging billets and sheet bars, rolling billets have easily become the least important from a market standpoint.

## The Production of Fluorspar in 1907.

WASHINGTON, D. C., July 14, 1908.—The total quantity of fluorspar marketed in the United States in 1907 was 49,486 net tons, valued at $287,342, which represents a gain in quantity of 8690 tons and in value of $43,317 over the output for 1906, according to the annual report of the U. S. Geological Survey, compiled by E. F. Burchard. This indicates a firm condition in the fluorspar industry, since there was on hand at the close of 1906 a stock of 13,470 tons, which has evidently been absorbed without leaving quite so large a surplus on hand at the close of 1907. The production from Kentucky increased considerably in 1907, while that of Illinois decreased slightly. Colorado shows a large proportional increase in 1907, but no production was reported from either Arizona or Tennessee. Illinois reported a total production of 25,128 tons, of which 18,610 tons was gravel spar, valued at $4.47 a ton. The output of lump spar was 3038 tons, valued at $7.51 per ton; and of ground spar, 3480 tons, valued at $10.31 per ton. Small quantities of lump spar were reported to have sold at $18 to $35 per ton. Kentucky's total production of 21,058 tons, valued at $133,971, was divided as follows: Gravel, 14,276 tons, valued at $4.99 per ton; ground spar, 6782 tons, valued at $9.23 per ton. All the Colorado product, 3300 tons, was reported as crude or gravel, and was valued at $3.45 per ton.

Up to October, 1907, the demand for fluorspar was generally strong, with prices ranging from 75 cents to $1 in advance of those of 1906. Toward the end of the year there was a decided falling off in production as a result of the depression in iron and steel. Wholesale prices in December, 1907, on domestic lump spar f.o.b. shippi g point, ranged from $8 to $10 per gross ton; on ground spar, from $11.50 to $13.50 per gross ton; and on foreign crude, ex dock, from $8 to $10 per gross ton. In May, 1908, the quotations were exactly the same.

### A Rapid Growth of Production.

The production of fluorspar in the United States has increased rapidly in the past decade. In 1898 it was but 7675 net tons, valued at $63,050. In the following years it doubled and continued to increase rapidly until 1902, when it amounted to 48,018 net tons. There was a decline in the next two years but in 1905 high water mark was reached at 57,385 net tons, valued at $362,488.

The three principal classes of consumers of fluorspar are, in order of importance, smelters and metallurgists, makers of opalescent glass and enameled wares, and chemical manufacturers. The highest grade, "American lump No. 1," which runs less than 1 per cent. silica, and is white or clear pale blue in color, is sold either ground or in lumps for use in the glass, enameling and chemical industries, the last including the manufacture of hydrofluoric acid. The second grade, "American lump No. 2," is used by blast furnaces in the production of ferrosilicon and ferromanganese, and in basic open hearth steel furnaces to give fluidity to the slag and to reduce phosphorus and sulphur. This grade includes colored spar and may run as high as 4 per cent. silica, though most of it is sold with a 3 per cent. guaranty. The lowest grade, "gravel spar," including all that contains more than 4 per cent. silica, as well as spar mixed with calcite, is used in iron and brass foundries. Other minor metallurgical uses are in the extraction of aluminum from bauxite, in smelting gold ores, in refining copper, and in refining lead bullion. In the last-named process the spar is first converted into hydrofluoric acid. Miscellaneous uses are as a bonding for constituents of emery wheels, for carbon electrodes to increase their lighting efficiency, while also decreasing the amount of current required, and as a constituent of Portland cement.

### The Distribution of Domestic Deposits.

The fluorspar deposits thus far exploited in the United States are confined to Arizona, Colorado, Illinois, Kentucky, and Tennessee. The Arizona production has come mainly from the Castle Dome District, Yuma County. In Colorado fluorspar occurs in Boulder and Custer counties. The chief deposits in Illinois and Kentucky occur in adjoining portions of the two States—Hardin and Pope counties in Illinois and Crittenden, Livingston, and Caldwell counties in Kentucky. The great size and the purity of these deposits indicate that for many years they will continue the main source of domestic production. Prospecting with favorable results has been reported from Mercer County, in central Kentucky. The Tennessee production has been from Smith and Trousdale counties, near the central part of the State. In California a deposit in San Bernardino County is now being investigated. Flourspar is secured as a by-product of lead and zinc mining in Albermarle County, Va.; with gold tellurides at the Cripple Creek mines, Colorado, and at a number of other localities in quantities too small for use at present. W. L. C.

**The Alabama Coal Miners' Strike.**—At the end of the first week of the United Mine Workers' strike in Alabama, the union claims to have received large accessions to its ranks, while operators say that little interruption of their business has resulted. The companies involved have had many conferences, and after one recently held the following notice was issued: "In order to correct certain rumors now being circulated, the undersigned coal operators desire to announce publicly and postively their adherence to open shop principles, and their determination to maintain these conditions without further delay. All those desiring employment will be protected."

The manganese mining industry in Mysore, India, has been demoralized for some months following a period of activity. Owing to the fact that a concession obtained in the Shimoga District to work manganese ore was sold a few years ago to the New Manganese Company of London at a large profit, the price being £150,000, there was great competition for leases. The high prices then prevailing for ore and the fact that surface ore could be mined cheaply and hauled to the nearest railroad station at a good profit brought into the business a good many persons of limited capital. Prices fell off in time and those who had taken up leases as a speculation were forced to give them up. The industry at present is completely stagnant.

# Pending Railroad Questions.

## Advances in Western Freight Rates.

BY R. L. ARDREY.

The traffic experts of Western roads are making satisfactory progress in checking rates preparatory to the proposed general advance. It has been decided not to make any horizontal advance in class rates from Chicago to Western points, as these rates are now considerably higher, from a mileage or distance tariff point of view, than class rates east of Chicago, which the Eastern roads propose to advance.

The Transcontinental roads have checked in a horizontal advance of 10 per cent. in all commodity rates to and from the Pacific Coast, excepting east bound lumber rates, which have been raised about 10 per cent. by the recent decision of the Interstate Commerce Commission. There is some talk of fixing October 15 as the date when the new rates will become effective. The shippers on the Coast will undoubtedly stir up strong opposition and the advance may be deferred for political reasons until after the election. The commodity rates of the Transcontinental lines cover all important products moving to or from the Pacific Coast. Commodity rates to Texas points will also be advanced 10 per cent., but it is understood that on the principal articles of iron and steel moving to that territory the increase will be only 3 cents per cwt.

There will be a general readjustment of rates on iron and steel from Chicago to points in the industrial district immediately west, including eastern Iowa and southern Wisconsin and Minnesota. Carload commodity rates will be advanced ½ cent to 1½ cent per cwt., but the date is uncertain. Manufacturers in this industrial territory are large users of iron and steel, and the industries of each city are strenuous in demanding rate adjustments that will not afford advantages or preferences to other cities. The railroad traffic managers in this district usually consult the welfare of their industries, and they have a difficult task before them in harmonizing all the conflicting interests.

The railroads expect that some of these advances will be attacked by injunction proceedings in the federal courts, to be followed by hearings before the Interstate Commerce Commission. The National Association of Manufacturers and the conference held in Chicago two months ago on the call issued by the Illinois Manufacturers' Association have proposed to follow this procedure in contesting the advances. The railroad men, however, say that they are prepared to show in proceedings before the commission that the higher rates are necessary and reasonable. Senior Vice-President Brown, of the New York Central, takes this ground in a long letter to James T. Hoile, secretary of the Manufacturers' Association of New York, protesting strongly on behalf of that association against the proposed advances.

The advocates of higher rates call attention to the fact that the Interstate Commerce Commission recently allowed an advance of about 10 per cent. to the Transcontinental lines, on lumber from Oregon and Washington to points in the Mississippi Valley, covering perhaps the largest tonnage movement of a single commodity in the United States excepting coal. The railroads in tariffs effective November 1, 1907, had advanced their rates 10 cents per cwt. to the principal points in the Mississippi Valley, equal to an increase of 20 to 25 per cent. The lumbermen of Washington and Oregon appealed to the federal courts and obtained injunctions which restrained the roads from putting the new tariffs into effect until their reasonableness could be passed upon by the Interstate Commerce Commission. After an exhaustive hearing, the commission allowed about half the increase originally intended.

A conference of railroad presidents will be held in New York the middle of August to consider the contemplated increase in rates. It is understood, however, that the vital question to be decided at this conference is the date when the new tariffs shall be issued.

## A Decision on Track Weights.

The Interstate Commerce Commission has given a decision in Rice *vs.* Georgia Railroad Company *et al* which is important in that it tends to clear up some of the doubts regarding track weights which have been under consideration in the foundry trade. In the above case the commission held that the railroad should correct the expense bill and charge freight on the actual weight at destination (of coal shipped to Rice from mines in Tennessee) if reweighing shows a variation of 1 per cent., with a minimum of 500 lb. A charge of $2 for reweighing at destination is held to be reasonable, if the weight checks within the limit fixed, but this charge is to be refunded by the railroad when the variation is greater than 1 per cent. or the minimum of 500 lb. A ruling by the commission on a specific complaint, it should be remembered, extends no farther than the case before it. So long as a tariff is in effect it must be followed by the railroad and the shipper. The decision shows, however, the view the commission would be likely to take of any case in which similar circumstances and conditions are presented.

In November, 1907, the commission decided in Leonard vs. M. K. & T., that the railroad should settle on the basis of destination weight on coal, where there was a discrepancy of several thousand pounds between the initial and destination weights. There have been few court decisions on the question of weights, as the railroads, on all commodities excepting coal, have almost always settled freight bills on the basis of destination weights, wherever a car is reweighed or check weighed. On coal it has been the general custom to stand firmly on the mine weight, and many roads make the mine weight a condition of their tariffs. The commission has raised a new question in holding that the carrier may charge for more than the initial weight where the lading has been rained or snowed upon in transit.

## Iron and Steel Production in 1907.

From advance sheets of the report for 1907 of James M. Swank, general manager of the American Iron and Steel Association, is taken the following summary of the production last year of pig iron, steel ingots and various forms of finished material. Details of the pig iron and steel ingot figures have already been given in these columns. All the items are in gross tons except the last two, which are in kegs:

| Articles.—Gross tons, except for coke and nails. | 1906. | 1907. |
|---|---|---|
| Pig iron, including spiegel and ferro | 25,307,191 | 25,781,361 |
| Spiegeleisen and ferromanganese | 300,500 | 339,348 |
| Bessemer steel ingots and castings | 12,275,830 | 11,667,549 |
| Open hearth steel ingots and castings | 10,980,413 | 11,549,736 |
| All kinds of steel ingots and castings | 23,398,136 | 23,362,594 |
| Structural shapes, not including plates | 2,118,772 | 1,940,352 |
| Plates and sheets, except nail plate | 4,182,156 | 4,248,832 |
| Iron and steel wire rods | 1,871,614 | 2,017,583 |
| All rolled iron and steel, except rails | 15,610,581 | 16,231,168 |
| Bessemer steel rails | 3,791,459 | 3,380,025 |
| All kinds of rails | 3,977,887 | 3,633,654 |
| All rolled iron and steel, including rails | 19,588,468 | 19,864,822 |
| Iron and steel cut nails, kegs | 1,189,239 | 1,109,138 |
| Iron and steel wire nails, kegs | 11,486,647 | 11,731,044 |

The differences in the comparisons made above are interesting. It will be noticed that in all rolled iron and steel except rails the increase last year over 1906 was 620,000 tons, while rails fell off 344,000 tons, making the net gain in finished iron and steel about 276,000 tons. Structural shapes show a falling off of 178,000 tons, while in plates and sheets there was a gain of 66,000 tons and in wire rods a gain of 146,000 tons.

A 1000-hp. vertical gas engine was started recently at the works of the Castner-Kellner Alkali Company, Ltd., Runcorn, England. It was supplied by the British Westinghouse Company and is connected to a direct current generator. It is said to be the largest vertical gas engine yet put in operation. The cylinders in pairs are placed over four cranks, giving a very even turning moment. No water cooling is used for the pistons, valves or other moving parts, thus avoiding the danger of breakage of pistons.

# Industrial Politics in England.

## The Onward Sweep of the Labor Movement.

Modern political history in England may be dated from the split in the Liberal party that took place in 1886 over Gladstone's first bill for home rule in Ireland. A new era then opened in which the great landmarks so far are the development of the Labor party, which in its three groups has now 59 members in the House of Commons, and the movement for the revival of protection to which Chamberlain committed the Tory party in 1903. For the present the more important is the development of the labor movement in politics; for it is already affecting the fortunes of the two older parties and is making its impress on the statute book.

### The Rise of the Labor Party.

England has been seriously concerned over this labor movement only since 1906; for it was at the general election in that year that it assumed to any marked degree its new form, and it became obvious that it had taken hold of the electorate in the industrial constituencies. The older political parties were overwhelmed with surprise, when in January, 1906, the returns from the constituencies of England and Scotland showed that an advanced group which in the Parliament of 1900-1905 had held two or three seats was to command 28 in the new House of Commons; and the surprise developed into a shock when it was realized later on that the Independent Labor party at the by-elections disputed seats with the Liberal candidates and continued to add to its strength in Parliament.

Before the Asquith Administration was organized in April, 1908, the Parliamentary strength of the Independent Labor group had been increased from 28 to 31. There were then two other labor groups in the House. One of these, in which there were then 14 members, was known as the Liberal Labor group. It consisted of men—most of whom were drawn directly from the industrial ranks—who at the last general election were returned to Parliament with the help of the central and local Liberal associations and by the votes of Liberals and labor men in the constituencies. The second group, which also numbered 14, consisted wholly of trade union presidents and secretaries, whose Parliamentary salaries were paid by their unions, and in most cases the heavy expenses attendant on a Parliamentary candidature in England had also been met by the trade union organizations with which they were associated.

At the time the Government was reorganized and Asquith succeeded Campbell-Bannerman as premier, the labor groups of the House of Commons stood thus: Independent and Socialist Labor party, 31; Liberal Labor group, 14; trade union group, 14. The members of the two latter groups sat on the Government side of the House with the liberals and Radicals. They receive and usually respond to the summonses sent out by the Government whips; they go into counsel with the Liberals and in and out of Parliament generally work in close association with the Liberal party. The Independent Labor party, on the other hand, sits on the opposition side of the House, with the Irish Nationalists. The members of that party do not receive the Government whips, and their policy has been to fight for their own hand.

### The Miners the Pioneers in Seeking Representation.

While labor men have been members of the House of Commons since 1874 until 1900, they were always of the Liberal party, and had no policy distinct from that party. One of the remarkable facts in the history of the labor movement in English politics is that it was not the most highly skilled trade unionists—men of such unions as the Amalgamated Society of Engineers, the boiler makers, shipbuilders and printers—that were the first to move into the political field. The first successful movement in this direction came from the Miners' unions of Northumberland and Staffordshire.

That the miners should have been the pioneers in the movement for Parliamentary representation is, however, easily understandable. Up to 30 or 40 years ago legislation touched coal miners much more closely than any other class of workmen. Miners, earlier than any other trade unionists, thus felt the need of direct representation in the House of Commons. Their first opportunity came in 1874.

Up to 1867 the right to vote for members of the House of Commons could be exercised in rural England by men who possessed freehold land or by men who leased land and paid not less than £50 a year in rent. In the boroughs the franchise could be exercised by men paying not less than £10 a year in rent. Not one workingman or day laborer in a hundred could then vote for a member of Parliament. In 1867, however, the franchise was extended to the working classes in the boroughs, although still denied to artisans and laborers who happened to live outside the areas of Parliamentary boroughs. Small and restricted as this new franchise was, it gave the Miners' unions a chance. Thomas Burt, who is now a member of Privy Council, and as such is styled in all formal documents the Right Honorable, was elected in 1874 for the Northumberland Borough of Morpeth. He was then as now salaried president of the Northumberland and Miners' Union. His union has ever since made him an extra annual allowance to pay the cost of his residence in London, and has also paid his election expenses. At the same election Alexander Macdonald, president of the Staffordshire Miners' Union, was returned as one of the members for the ancient city of Stafford, and until his death in 1881 he sat in the House under conditions similar to those of Burt. In 1880 the Stone Masons' Union secured the election of a representative to Parliament from Stoke-upon-Trent.

### Effect of the Franchise Extension in 1885.

As long as the franchise remained on the basis of the Reform act of 1867 there were few additions to the ranks of labor men in Parliament. In 1885 the franchise was again extended, and household suffrage became general. This gave a new impetus to the labor movement in politics. Between the elections of 1885 and 1895 there were times when there were as many as 17 labor members in the House of Commons. Most of these newcomers were miners, as the miners all over England are well organized, and in many of the county divisions they can easily dominate the vote. They entered the House of Commons on the same terms as Burt and Macdonald in 1874. Their unions found the money to pay their election expenses, and also paid their Parliamentary salaries, in addition to the salaries they were receiving as presidents or secretaries of their unions.

Following the example of Burt and Macdonald, all these new labor members between threw in their lot with the Liberal party. They worked for legislation in the interest of labor, but their work was done from inside the Liberal party. The labor members in the House, until the Independent Labor party was organized in 1899, had no programme of their own or any organization completely independent of the Liberal party.

### The Independent Labor or Socialist Party Rises.

Much of the industrial political activity between 1874 and 1900 originated with the Trades Union Congress, a federation of trade unions, which holds a convention every year. In the later nineties the more aggressive element got control of the congress and determined on pushing the political propaganda along independent lines and with much more vigor. Out of this movement grew the Labor Representation Committee, with funds at its command subscribed by the trade unions; and side by side with this there was developed the Independent Labor or Socialist party. In 1900, soon after this party was organized, its leader, Keir Hardie, who at one time was secretary of the Lanarkshire and Ayrshire Miners' Union, but who now for 16 years has been editor of the *Labor Leader*, was elected to the House of Commons as member for Merthyr Tydvil. For a while he was the only Socialist Labor member there. During the Parliament of 1900-1905 he was joined by two other members of his party.

Between 1900 and 1905 the Socialist party had been hard at work pushing its propaganda in the industrial constituencies of England and Scotland, and getting can-

didates into the field for the general election which came in January, 1906. The methods of this party are akin to those of the Salvation Army. It attaches a similar value to curbstone oratory; and, like the Salvation Army, it seeks to make each local branch of the organization self-sustaining, while contributing also on a pro rata basis to the Parliamentary Salaries Fund and to the cost of the national propaganda. By 1906 the Labor Representation Committee had become practically fused with the Independent Labor party; and when the election came 51 Independent Labor party candidates were ready with money to meet the returning officer's charges, and to go to the poll. Thirty-eight other labor candidates—Liberal Labor men and Miners' Union candidates—had been assigned to constituencies after conference with the headquarters organization of the Liberal party in London; and in each case they had the indorsement and the cordial electoral support of the local Liberal party organization.

The Independent Labor party, on the other hand, put its men in the field without regard to the fortunes of the Liberal party. In some constituencies Socialist Labor candidates were nominated in opposition to Liberal candidates, and carried seats which had hitherto been regarded as safely Liberal. In other constituencies the Liberal organization refrained from nominating candidates when it was seen that to split the progressive vote between Liberal and Labor candidates would result in throwing the seat into the hands of the Tories.

The success of the Independent Labor party exceeded its own expectation. It carried 28 out of the 51 constituencies in which it had put up candidates, and when the new Parliament met there were, including Socialist Labor, Liberal Labor and miners' representatives, more than three times as many labor men as had sat in any previous House of Commons.

### The Labor Surprise of 1906.

The older political parties were amazed at the strength which the Socialist Labor party developed at the 1906 general election. Both were disposed to conclude that its successes were due to general weariness with the Tory governments, which had been in power since 1886, with the exception of the Liberal rule from 1892 to 1895. Outside the ranks of the Socialists, it was generally thought that the high water mark of Socialist electoral success had been reached in January, 1906. But since then the Socialists have been even more active. As the net result of their propaganda and of the activity at the by-elections they have obtained two more seats in Parliament; thrown what was a safe Liberal seat into the possession of the Tories; polled astonishingly large votes at elections in which they were not successful in displacing either Liberal or Tory candidates; recruited their strength at the polls from electors who were wont to vote with the Tories as well as from electors whose former allegiance was to the Liberal party; and finally so influenced the miners in England and Wales as to induce them to instruct their members in the House of Commons—14 in all—to act independently of the Liberal party.

The vote of the Miners' unions in May that their representatives shall hereafter act with the Independent Labor group will withdraw members from both the old labor groups. The Trade Union group will be the most affected. Among the Liberal Labor members it will affect Thomas Burt, the dean of labor members, and Charles Fenwick, who has been in the House since 1885, and who is so highly regarded by it that in the absence of the speaker he has been called to preside over its deliberations. Nor does the effect of this vote of the Miners' unions end with the change it brings about in the make-up of parties and groups in the House. It adds materially to the strength of the Independent Labor movement in the constituencies, especially in mining districts, such as Whitehaven and Cockermouth, where in the past Liberals have carried the seats by the aid of the miners.

### Labor Demands Which Won Votes.

The distinctly labor planks in the platform on which the Independent Labor party went into the general election of 1906 were as follows: 1. A Trades Disputes act, which should completely safeguard union funds from law court decisions like that in the Taff Vale case in 1900, which made a railroad men's union liable for damages due to a strike. 2. An amendment to the Workmen's Compensation acts of 1897 and 1900, which would give compensation to all workers in every trade from the date of the accident. 3. An amendment to the Truck act to prevent stoppages of any description from wages. 4. An amendment to the Unemployed act of 1903, which would provide that employment be found at trade union rates for those unable to obtain work. 5. State pensions for men and women reaching 60 years of age. 6. The establishment of an 8 hr. working day. In the sessions of 1906 and 1907 three out of these six demands of labor were conceded by Parliament.

The Trades Disputes bill was a Government measure, and was introduced early in the session of 1906 by the attorney-general, who is a member of the administration. Its most important clause provided that the funds of trades unions could not be made liable for damages by reason of the action of a trade union official unless the action could be proved to have been authorized by the central body of the union. It was the Taff Vale decision that gave the great new impetus to the labor movement between 1900 and 1905, being largely responsible for the feeling in the labor ranks that the Labor party must work for its own hand. That decision was the most serious blow at trade unionism in England since trade unions were given a legal status in 1869.

The Government was pledged to a measure which would safeguard union funds. All over the country in 1906 trade unionists had obtained pledges from candidates for an Amending act. But the Government bill did not go nearly so far as the Labor men in the House of Commons demanded. The Independent Labor group prepared a bill of its own. This bill gave absolute immunity to trade union funds from such decisions as that in the Taff Vale case. It was introduced as a Private Member's bill—that is, as a measure for which the Government is not responsible—and which it may see fit to oppose with all the weight of its majority in the House of Commons.

On this question, however, the Government was not able to hold its unprecedentedly large majority in hand. Whips were sent out calling on all the supporters of the Government to vote against the bill of the Independent Labor group; but many of the Liberal members were more apprehensive of the ill-will of the labor men in their constituencies than of embarrassment to the Liberal Government. The result was that the clause in the bill of the Independent Labor group was adopted, and in that shape the bill went to the House of Lords.

Ordinarily the peers might have been relied upon to reject a bill of this nature in the most summary fashion. But in the session of 1906 a conflict was pending between the House of Commons, with its big Liberal majority, and the peers; and the Tory leaders, both in the Commons and the Lords, were most anxious to secure tactical advantages in the impending struggle. They agreed that the Trades Disputes bill was not a good measure over which the Lords and Commons should come to issue. The Tory leaders were anxious to avoid a fight on a bill which touched trade unionists in all three countries; so they contented themselves with denouncing the trades union funds protection clause in the Government bill as an outrage. Having thus given vent to their feelings, they announced that the Tory majority in the House of Lords would not be used to defeat the bill, and so it became law. Thus in the first session of the first Parliament in which there had been an Independent Labor party that party achieved a victory for labor without precedent in English Parliamentary history.

### Other Concessions to Labor.

In the following session—that of 1907—the Workmen's Compensation act was so extended that to-day outworkers in the clothing trades are the only men and women working for wages who do not come within the provisions of the law that Chamberlain carried through Parliament. The principle of the law is that industry shall carry its own casualties; and this principle was so

extended by the Amending act of 1907 that even stablemen and gardeners, as well as cooks, nursemaids and charwomen, must now be compensated by their employers when in the course of their work they meet with an accident which disables them for longer than two weeks. The Government bill for providing old age pensions does not go so far as the Independent Labor party demands. As submitted to the House of Commons by Premier Asquith, it gives a pension of 5 shillings a week to people over 70 years of age, whose own incomes do not exceed 10 shillings a week. The pensions are noncontributory, and are to be paid through the post office.

Apart from these legislative concessions to labor, to which before the session of 1908 ends may be added an Eight Hour Day act for miners, there have been many concessions made through the various State departments, for which the Government has been responsible. Wages have been increased for all ranks of service at the Government dockyards. Trade unionism has been officially recognized in the post office and telegraph services. Seamen's and Firemen's Trade Union officials have been given an official status before the marine boards at the ports which investigate disputes between shipmasters and crews. Further, numerous committees and royal commissions have been set at work to investigate industrial grievances of which the labor politicians complain.

E. P.

The American Roll & Foundry Company, Canton, Ohio, manufacturer of rolls and all classes of rolling mill machinery, has made some important changes in management. James O. Barnett, formerly general manager of the Vandergrift plant of the United Engineering & Foundry Company, and N. Austin, formerly roll maker of the same plant, are now with the American Roll & Foundry Company, the former as manager and treasurer and the latter having charge of the roll department. Mr. Quinn, formerly of the Frank Kneeland department of the United Engineering & Foundry Company, has accepted the position of superintendent. The American Roll & Foundry Company reports a fair amount of business on its books, with prospects improving.

The arrivals of alien immigrants to the United States in the year ending June 30 numbered 680,000, compared with 1,300,000 in the previous fiscal year. It is estimated that the net increase of aliens in the country from immigration does not exceed 100.000 for last year. The Atlantic Steamship Conference has a record of the sailing of 560,914 aliens for their homes abroad in the first half of the calendar year 1908.

Weyman & Connors of Atlanta, Ga., have purchased the Helena Rolling Mills and Pipe Works at Helena, Ala., which they will convert into a plant to roll steel hoops and cotton ties. A company will shortly be incorporated to operate the plant. G. W. Connors of the firm organized the Atlanta Steel Company, and as secretary and treasurer managed the plant of the latter company for seven years.

Breaking all previous records over the long distance course of 2891 miles, the turbine steamer Lusitania came across the Atlantic last week in 4 days 19 hours and 36 minutes, or an average of 25.01 knots an hour. This is 39 minutes better than the Mauretania's record. The two new four-blade propellers are credited with the increased speed.

The Bessemer & Lake Erie Railroad Company, Pittsburgh, has recently placed additional cars in service in carrying ore from Conneaut Harbor to Pittsburgh. An average of 30,000 tons of ore a day is being hauled. The coal tonnage from the south end of the line and the Butler-Mercer District to the harbor is also heavy.

The Susquehanna Smelting Company, which recently moved from Philadelphia to Lockport, N. Y., in order to secure Niagara power, commenced the operation of its new plant early this month and will run continuously night and day. The company uses 1000 hp., with options on 4000 hp. additional.

## The Western Mesaba District.

DULUTH, MINN., July 13, 1908.—In the Nashwauk District, near at the west end of the Mesaba range, are three mines—Hawkins, La Rue and Crosby. Hawkins is a very large open pit, mined steam shovel, and has produced as high as 295,000 tons in a season. The pit is more than 1200 ft. long, fully 900 ft. wide, and not excessively deep, and the ore, which is in great quantity, is of good grade. Costs of mining must be very low. This year the company will produce nearly 400,000 tons, and has been shipping of late at the rate of 4000 or 5000 tons a day, double shift. Stripping with one shovel is now in progress in the east and north side of the pit, bringing the opening nearly to the south line of the Crosby property. La Rue is stripping on the north end of its rather restricted pit with one shovel, day and night, and is taking off a heavy overburden. No ore is being mined yet, though in past years the property has produced in a single season as high as 301,000 tons. Crosby is a small property, and has been very unfortunate in the character of its ore body, which is probably more mixed with rock and sand than any mine on the entire range. It is now mining about 700 tons a day, chiefly by scramming the old pit, but has stripped during the past winter a new pit from which a considerable tonnage can perhaps be moved during the coming year. About 100,000 yd. were taken from the surface over this pit, and, as showing what Mesaba stripping costs can reach under unfavorable circumstances on the Mesaba range, it is understood that this stripping represents nearly $1 per ton on the ore exposed thereby.

Until the operations conducted at Coleraine, in township 56-24, Nashwauk, which is in town 57-22, was the most westerly mining town on the Mesaba, and there is now nothing between it and Coleraine, so far as active operations are concerned, except the new Hill mine of the Oliver Iron Mining Company in section 16-56-23. Here several shovels are beginning the opening of a body of ore estimated at 30,000,000 tons, on lands belonging to the State and leased by the Great Northern road. Under the terms of the Great Northern leases to the Steel Corporation, this ore will be hauled to the lake by the Great Northern road, and that road is surveying a line from Nashwauk to the mine, a distance of about 6 miles. The line will connect at Marble, which is the name of a town started at the Hill mine, with the Coleraine branch of the Duluth, Missabe & Northern road, thus affording far better connection than at present along the western Mesaba. While it may be necessary that a part of the Hill mine will require washing before shipment, the bulk of the ore will be shipped in its raw state.

Drilling for ore on lands surrounding Cedar Lake, south of Sparta, Mesaba range, has begun. These lands have been in litigation for many years, and some of them have recently been taken out of the courts, so that work can now begin. Much interest will be taken in the result of this exploration, which is expected to be favorable. The present exploration will cover some 500 acres on the south side the lake. There are in all some 1200 acres in dispute, and eventually all this will be drilled.

The big Stevenson mine on the Mesaba range is loading a little from its stockpile of 40,000 tons in the south workings, and one shovel is in the pit. The St. Paul of the same company is idle, and has been so since last fall. The Commodore is loading some small tonnage with one shovel, having started within a few days. Outside of this the Mesaba operations of Corrigan, McKinney & Co. are quite limited. The probability is they will make increased shipments before long. Within the past year a large amount of ore has been exposed at the Stevenson by new stripping areas to the south of the older workings, and when desired the mine can make a much larger production than was thought possible two or three years ago.

D. E. W.

The Canadian Niagara Falls Power Company is building a second transmission line to Buffalo, from Niagara Falls, Ontario, along the Niagara River to Fort Erie opposite Buffalo, where it will cross the river on the 150-ft. transmission towers erected two years ago.

# NEWS OF THE WORKS.

### Iron and Steel.

Tod Furnace of the Youngstown Steel Company, Youngstown, Ohio, was blown out last week.

The Monongahela Tube Company, Pittsburgh, works at Wilson, Pa., manufacturer of boiler tubes, has recently made some additions and improvements to its plant, including an engine driven combined type compressor and shear built by the United Engineering & Foundry Company, weighing 35 tons, and a new building, 40 x 180 ft., of mill type construction, with corrugated siding has been added, and another story has been built over the present stock room.

The Warwick Iron & Steel Company, Pottstown, Pa., will build three Roberts central combustion chamber three-pass firebrick stoves at its No. 1 furnace, and has retained Frank C. Roberts & Co., Philadelphia, as engineers for the work. This stove was described and illustrated in *The Iron Age* of June 20, 1907.

No. 3 furnace of the Woodward Iron Company, Woodward, Ala., has been put in blast after having been remodeled. This stack, as well as No. 1 of the same plant, has a daily capacity of 300 tons.

### General Machinery.

The King & Walker Company, Madison, Wis., whose plant, consisting of machine shop, boiler room, engine room, blacksmith shop, pattern shop, &c., was recently destroyed by fire, intends to rebuild the structures as soon as possible, but does not need any new machinery at the present time, as most of the machinery in the burned structures was not damaged beyond repair. For temporary use the company is putting in electric motors for operating the machinery, and hopes to have its plant in partial operation within 30 days. The company has enough work on hand to keep it busy for over a year, and will resume operations at the plant at as early a date as possible.

McGovern, Archer & Co., 114-118 Liberty street, New York, dealers in electrical and steam machinery, have sent out a list covering a large quantity of second-hand machinery in stock ready for immediate shipment, including 25-cycle three-phase, 60-cycle three-phase and 60 cycle two-phase alternating units, belted three-phase and belted two-phase alternating dynamos, direct current direct connected units, belted dynamos and motors, arc dynamos, car motors, rotary converters, railroad dynamos, car controllers, alternating current motors, engines, &c. The firm issues a list of machinery in stock every month.

The Vulcan Iron Works, Mason City, Iowa, whose business has largely increased under the management of Ira Knapp, has increased its capital stock from $15,000 to $30,000, and has added an active secretary who will relieve Mr. Knapp of part of his work. D. A. Wheeler of Riverside, Cal., has taken $5000 of the increased stock, and his son, F. E. Wheeler of Clear Lake, has taken a like amount. The latter will move to Mason City and become secretary of the company. The plant is now employing 40 men and has a considerable number of orders on hand.

The Geo. A. Hogg Iron & Steel Foundry Company, Twenty-fourth and Railroad streets, Pittsburgh, builder of roll lathes, shears, &c., has in course of construction the following belt driven shears: One No. 5½ high knife scrap shear, weighing 50,000 lb., to cut 3¼ x 3¼ in., for L. Brenner & Co., Lebanon, Pa., and one No. 3 bar shear, to cut 2 x 2 in., for the Vandyck-Churchill Company, Philadelphia. A recent order placed by M. Smolovitz, McKees Rocks, Pa., calls for a No. 4 belt driven special high knife scrap shear, to cut 3¼ x 3¼ in.

The Oklahoma Machinery Company, Muskogee, Okla., has been organized with a capital stock of $10,000 to handle a general line of machinery, including the lines of road building machinery and corrugated culverts made by the Austin-Western Company, Ltd.

Alexander Brothers, Carnegie, Pa., have recently completed a new two-story building, 40 x 80 ft., at 313-315 James street, which contains a power plant and a complete line of machine tools, for the manufacture of special sheet metal working machinery, including stove pipe machines, corrugated elbow machines, four-pieced stove pipe elbows, furnace elbows, dripping pan dies, handle machines, &c. The company has equipment for the manufacture of special and experimental machinery. It reports business to be fair, and expects to increase its output by the installation of additional machine tools a little later in the year.

The Vilter Mfg. Company, Milwaukee, Wis., manufacturer of Corliss engines and refrigerating machinery, has been awarded the contract for a 100-ton icemaking plant for the National Capitol Brewing Company, Washington, D. C. According to officers of the company, more inquiries for prospective work are now being received than for some months past.

### Power Plant Equipment.

The installation of a lighting system to cost not more than $3500 is being considered by the town of Albany, Minn. Thos. Tamaset is village recorder.

It is understood that the village of Buhl, Minn., will make improvements to the water works and electric light plant and will receive bids until July 21 for a 75-kw. direct current direct connected dynamo, two 150-hp. boilers, 125-hp. automatic engine, surface condenser, boiler feed pump and accessories.

Bids will be received until July 22 by A. H. Gillespie, recorder, Nowata, Okla., for the construction of a municipal water works system. Specifications can be obtained from the O'Neil Engineering Company, Dallas, Texas.

W. B. Potts, 80 South Front street, Columbus, Ohio, dealer in machinery and supplies, has secured an order from the city of Columbus for a large vertical engine to be installed in the municipal lighting plant.

The Guymon Electric Light & Power Company has been incorporated with a capital stock of $40,000, to install an electric light, water and sewerage system in Guymon, Okla. The incorporators are J. H. Wright, R. S. Cox and others.

### Foundries.

The Lawrence Stove Company, Buffalo, N. Y., will build a three-story brick factory at Seneca street and the Lehigh Valley Railroad tracks, to replace that portion of its plant recently destroyed by fire.

The Wambold-Brunschweiler Company, Milwaukee, Wis., brass founder and supply agent, has just secured by long lease a tract of land at Thirtieth street and Lisbon avenue, on which it will erect a foundry, office and finishing shop, 48 x 150 ft., to cost $10,000. The company recently removed from Appleton, Wis.

The Union Foundry Company, Anniston, Ala., has recently increased its capital stock $100,000, and proposes to double its capacity for the manufacture of cast iron soil pipe and fittings.

The Erie Stove & Mfg. Company, Erie, Pa., will erect and equip a two-story factory building, 42 x 133 ft., of brick with concrete flooring.

### Fires.

The plant of the Borden Condensed Milk Company at Whitefield, N. H., which contained a large quantity of valuable machinery, was destroyed by fire July 12, the loss being placed at $50,000.

The plant of the Claxton Foundry & Machine Company, Claxton, Ga., was burned July 5.

Sayre Bros. Foundry at Phœbus, Va., was burned July 8, the loss being about $20,000.

### Hardware.

The Louisville Axe & Tool Company, Highland Park, Louisville, Ky., which commenced operations early in the year, having acquired the plant formerly owned by the American Tool Company and built in 1905 at a cost of nearly $100,000, states that notwithstanding the general disturbance in business orders received have been very gratifying and duplicate orders are now coming in from almost every one to whom shipments were made in February, March and April. W. J. Sager, who is well known in the axe manufacturing line, having been identified with this industry for nearly 50 years, is associated with this company as general manager, the other officers being as follows: J. A. Stewart, president; M. T. Christopher and B. F. Fitch, vice-presidents, and J. D. Augustus, secretary and treasurer. The plant has been running six days a week since starting and is still being operated on this basis. The company has not been attempting to make more than 50 dozen axes a day and shall not in the future attempt to make more than 100 dozen a day, because of the desire to have Mr. Sager's personal supervision over every axe shipped. The company maintains a New York office at 97-101 Warren street.

The Buffalo Scale Company, Buffalo, N. Y., has made a shipment of eight 70,000 lb. capacity locomotive scales of special design to the American Locomotive Company, Schenectady, N. Y. The scales are used to ascertain the load on each truck of locomotives and are referred to as entirely different from anything heretofore used. The compnay has also shipped a number of 100 and 125 ton steel construction railroad track scales to various points at home and abroad.

The King Sewing Machine Company, recently incorporated at Buffalo, N. Y., with a capital of $250,000, has established its factory at Court and Wilkeson streets., in the Montgomery Bros. & Co. manufacturing building, with offices and salesrooms at 630 Main street. Morris S. Tremaine, president of the National Lumber Insurance Company, is president; W. Grant King, vice-president and general manager; Carlton M. Smith, secretary, and George B. Montgomery, treasurer.

### Miscellaneous.

The General Fireproofing Company, Youngstown, Ohio, is building an addition to its plant, 60 x 200 ft., to be devoted to the manufacture of steel office furniture and filing devices, including steel sections or units, desks and tables.

Davidson ventilating fans, manufactured by the Massachusetts Fan Company, Watertown, Mass., are being installed by M. J. Whittall, Worcester, Mass.; C. H. Sanborn, Boston, Mass.; Burlington Steam Laundry, Burlington, Vt.; French Benzol Dry Cleaning Company, Cincinnati, Ohio, and by the Glenlyon Dye Works, Saylesville, R. I., to whom six special fans are being furnished. Five fans are also being installed in the new Department Store at Lynn, Mass. Fans of various types and sizes, principally for ventilating purposes, are being

furnished to the F. & N. Lawn Mower Company, Richmond, Ind.; Pure Evaporated Food Company, Boston, Mass., and John Morrell & Co., Ltd., Ottumwa, Iowa.

The Oregon Interurban Railway Company, Oregon, Mo., incorporated with a capital stock of $60,000, is preparing to build a line 4½ miles in length connecting Oregon and Forest City. The motive power employed will be either steam engine or gasoline motor. The contract for construction has been let to M. A. Wogan of Kansas City, Kans., and it is stated that construction work will be begun within a short time. The cost of the road exclusive of the equipment is estimated at $40,000.

The Glacier Metal Company, Richmond, Va., which is erecting a new plant at Manchester, across the river, opposite the depot of the Atlantic Coast Line, expects to be installed in the new quarters by the end of July. The building is 40 x 100 ft. and two stories high. The company has plants in London, England, and Paris, France, the English plant being the parent company, having been established in 1899. A warehouse is maintained in Montreal, Canada, which is supplied from the English plant.

The Atlantic Filter Company has been incorporated at Buffalo, N. Y., with a capital stock of $500,000, to manufacture and install water purification and filtration systems for industrial and municipal plants. Offices have been established at 409-411 White Building. DeLancy P. White is president and J. B. Newman, secretary and treasurer.

The Cobb Car Company, Ltd., Lake Charles, La., has under consideration the removal of its plant to another location in Louisiana. The company expects to build a new plant in Houston, Tex., and is also looking for a location in Alabama or Mississippi to handle the Southern territory east of the Mississippi River. It expects to start work on the Houston plant within the next 60 days.

The Germofert Mfg. Company, Atlanta, Ga., has purchased an extensive site upon which it will erect a large fertilizer plant, the plans for which have not yet been entirely completed.

John Eichleay, Jr., Company, Pittsburgh, fabricator and erector of structural material, making a specialty of house moving, has completed the main portion of its new four-story building adjoining its present plant on South Twentieth street, S. S., Pittsburgh, and the interior is now being finished. At present the building is L-shaped, open on the inner side, and built around some houses in which the company has been maintaining its offices, engineering and drafting departments. Construction on the new building was commenced last year, during the rush period, and so as to handle its business uninterruptedly the company built around these. In about a week's time it will occupy its new quarters, when the old buildings will be razed and the balance of the building erected. It will be 97 x 120 ft., four stories high, with provisions for future growth, and will occupy the square between Wharton and Merriman streets. It is constructed of steel and brick, all columns being encased in concrete, which material also is used in the floors. The first and second floors will be used for offices, part of the third by the drafting department, the balance and all of the fourth will be used for storing small shapes and bars. At present the power plant is located in one of the bays of the shop, but this will shortly be moved to the basement of the new building and the old space used as an extension to the shop. The company now maintains a large storage yard on South Twenty-first street, and this with the new building and shops will enable it to carry a stock of 5000 tons of structural material, permitting quick fabrication and prompt shipments.

Articles of incorporation with a capital stock of $50,000 have been filed by the F. E. Newbery Electric Company, St. Louis, Mo., which has been organized to do contracting work in electrical engineering.

The Brooklyn Cooperage Company, which is building a large plant at Chalmette, near New Orleans, La., consisting of a warehouse building, 100 x 250 ft., four stories high, and a manufacturing building, 150 x 300 ft., one story high, has recently awarded the contract for the complete metal and copper work to the Perritt Iron & Roofing Company, Susquehanna street and Brushton avenue, E. E., Pittsburgh. The following is what the order calls for: 88 automatic tinclad fire doors, with 8 x 8 ft. openings; 22 sheet metal frames and sashes, 6 x 11 ft.; 10 sheet metal transoms, 8 x 10 ft.; 400 squares of No. 22 corrugated galvanized iron for the warehouse building; besides all the miscellaneous copper work required for copper gutter downspouts, flashing, &c., the contract price for which is $10,000. Other contracts recently taken by the Perritt Company include a new 200 x 200 building, requiring 30,000 sq. ft. of double glazed skylight, fireproof windows, doors, and miscellaneous copper work, amounting to $7,500, for the Duplan Silk Company, Hazelton, Pa., and the work will be completed in about 60 days. The roofing and copper work for the new power house, and all the copper work for covering the steel bridges connecting the old with the new buildings of the S. S. Hospital, Pittsburgh, which amounts to $2500, is also being erected by this company.

The Canadian Ship Building Company is having plans prepared and will soon commence construction work on a drydock at its shipbuilding plant on the Niagara River at Bridgeburg, Ont., opposite Buffalo, of sufficient capacity for the docking of the largest steamers operating on the lakes.

The Corn Products Company will remodel the five-story brick factory building at Scott street and the New York Central Railroad tracks, at a cost of $36,000, having leased it for a term of years to Theodore Hofeller & Co., dealers in scrap metals and old materials for warehouse, shop and foundry purposes.

The Buffalo Railway Wrench Company has been incorporated at Buffalo, N. Y., with a capital stock of $50,000, to manufacture track wrenches and other railway tools and appliances Lucian A. Jackson, Charles B. Moulthrop and Edward F. and Louis C. Walsh are directors. The office of the company is at 905 D. S. Morgan Building.

**Motors and Small Engines.**

The Police Department of New York will receive bids until July 24 for installing gasoline engines with tanks and full equipment in launches 3, 4 and 5.

The Lanson Lawton Company, Depere, Wis., has been incorporated with a capital stock of $25,000, and will manufacture gasoline engines in eight sizes ranging from 4 to 20 hp.

## A Resident British Trade Commissioner for Canada.

TORONTO, July 13, 1908.—The appointment of Richard Grigg as resident British Trade Commissioner in Canada is announced by the home government. He will leave for Canada immediately and establish his office in Ottawa. Mr. Grigg visited Canada last year and toured the country very thoroughly as special commissioner of the Advisory Committee to the British Board of Trade on Commercial Intelligence. His report, which was presented at the end of the year, was a very full and interesting document. He made a number of recommendations, one of them being for the employment of commercial correspondents at the leading trade and industrial centers of Canada. That idea has been adopted by Winston Churchill, the president of the Board of Trade, and Mr. Grigg himself has been selected as the head of the new service. Correspondents have been appointed at Vancouver, Winnipeg, and some other places, and when the Trade Commissioner arrives the number will doubtless be completed. He will have the direction of the service, and will be expected to do everything a government official can do to promote British trade in Canada.

In his report Mr. Grigg recognized the difficulties to be overcome. He warned the British trade authorities that between Canadian industrial enterprise on the one hand and United States competition on the other, British trade can be expanded in this country only by persistent and strenuous efforts. He pointed out that the Americans have obtained controlling interests in many Canadian works and have established branch factories here. This latter, he added, was much preferred by Canadians, and, in his opinion, British manufacturers might find it to their advantage in many cases to open branch works in Canada. To compete from their home workshops British manufacturers must, he considers, have the advantage of quick and cheap transportation, for, though the American goods may be no better than the British, the proximity of the United States to the Canadian market is greatly in their favor, offsetting so decided an advantage on the other side as the tariff preference of 33 1-3 per cent.

He puts emphasis on the suggestion that larger stocks be maintained in Canada by British manufacturers and other British exporters. He urges also that heads of British exporting houses visit Canada. His recommendation that faster and cheaper means of communication be established between Canada and Great Britain is supposed to have turned the thoughts of the British Government more seriously to the "All-Red" Line project, which, by the way, has within the last few days been presented to the Canadian House of Commons by Sir Wilfrid Laurier for approval. The resolution he submitted was carried by a large majority on Thursday. It is shown that of Canada's imports of iron, steel and other metals and manufactured products thereof, in 1906, only 19 per cent. came from the United Kingdom, whereas 77 per cent. came from the United States. C. A. C. J.

# The Iron and Metal Trades

Industrial news in the daily press is being received with growing suspicion. Beyond the usual inaccuracies and beyond possibly praiseworthy exaggerations to create confidence, there is now strong evidence of deliberate tainting for stock jobbing or political purposes.

The Iron markets have gained during the past few weeks, and the gain while slow is being maintained. But conditions are still far from satisfactory, and at the present rate of progress it will take many months until we are back to the normal.

The Steel Corporation is now operating close to 55 per cent. of its capacity, of which about 10 per cent. is engaged in export tonnage. During the past week six blast furnaces have been started by subsidiary companies, reflecting the increased requirements.

The settlement of the Bar Iron wages scale which governs the union Iron mills removes almost the last of the wage questions. The new puddling scale does not start advancing on the $5 rate until the 1.20c. Bar Iron price is reached, and then it advances 12½c. per ton for each 1-20c. increase in the price. It is figured that this is equivalent to a reduction of between 8 and 9 per cent. The reduction on Muck rolling is 11 per cent. and on finishing on large mills 7 per cent. for rolling.

Generally speaking, the Pig Iron markets are dull, and in some quarters are easier. Southern Iron, which was sold in some sections on the basis of $11.50, Birmingham, while it was held at $12 in others, is now easing toward the lower figure in the latter. In Chicago offerings of Foundry Iron from Ohio and the valleys have caused local makers to lower their price to $17. In the East an Open Hearth Steel plant has bought 10,000 tons of Basic Pig for delivery during the second half at $15, delivered. Eastern Cast Iron Pipe interests have covered some tonnage during the past few days, the aggregate being about 20,000 tons. Some Iron has also been purchased for the same purpose in the West. The Pipe trade is a little better as to inquiries, but prices continue low. New York is expected to call for a considerable tonnage soon, and Pittsburgh is asking bids on 7000 tons.

No important contracts are reported by the Structural mills. Some of the fabricators have recently held a meeting at Pittsburgh to formulate plans for protesting to the Steel mills which have fabricating departments in regard to the low prices which such interests are claimed to be making on finished Structural work.

Purchases by Pittsburgh of Old Material in the Chicago market have caused some excitement there. The greatest part of the 30,000 tons of Old Material offered by the Pennsylvania Railroad has been withdrawn, since the prices bid were not acceptable.

## A Comparison of Prices.

**Advances Over the Previous Month in Heavy Type, Declines in Italics.**

**At date, one week, one month and one year previous.**

| | July15, 1908. | July8, 1908. | June17, 1908. | July17, 1907. |
|---|---|---|---|---|
| **PIG IRON,** Per Gross Ton: | | | | |
| Foundry No. 2, Standard, Philadelphia | $16.50 | $16.50 | $16.50 | $23.00 |
| Foundry No. 2, Southern, Cincinnati | *15.00* | 15.25 | 15.25 | 23.75 |
| Foundry No. 2, Local, Chicago | *17.00* | 17.50 | 17.50 | 25.50 |
| Bessemer, Pittsburgh | 16.90 | 16.90 | 16.90 | 23.40 |
| Gray Forge, Pittsburgh | 14.90 | 14.90 | 14.90 | 22.90 |
| Lake Superior Charcoal, Chicago | 20.00 | 20.00 | 20.00 | 27.00 |
| **BILLETS, &c.,** Per Gross Ton: | | | | |
| Bessemer Billets, Pittsburgh | 25.00 | 25.00 | 25.00 | 30.00 |
| Forging Billets, Pittsburgh | 27.00 | 27.00 | 27.00 | 34.00 |
| Open Hearth Billets, Phila | 26.20 | 26.20 | 26.20 | 32.50 |
| Wire Rods, Pittsburgh | 33.00 | 33.00 | 33.00 | 36.50 |
| Steel Rails, Heavy, Eastern Mill | 28.00 | 28.00 | 28.00 | 28.00 |
| **OLD MATERIAL,** Per Gross Ton: | | | | |
| Steel Rails, Melting, Chicago | *12.75* | 12.50 | 13.00 | 18.00 |
| Steel Rails, Melting, Phila | 13.50 | 13.50 | 13.50 | 17.75 |
| Iron Rails, Chicago | **16.00** | 15.50 | 15.50 | 24.50 |
| Iron Rails, Philadelphia | 18.00 | 18.00 | 18.00 | 25.00 |
| Car Wheels, Chicago | 13.00 | 13.00 | 13.00 | 23.50 |
| Car Wheels, Philadelphia | 13.50 | 13.50 | 13.50 | 25.00 |
| Heavy Steel Scrap, Pittsburgh | **14.00** | 14.00 | 13.25 | 18.00 |
| Heavy Steel Scrap, Chicago | *11.50* | 11.25 | 12.00 | 16.00 |
| Heavy Steel Scrap, Phila | **14.00** | 13.50 | 13.50 | 17.50 |
| **FINISHED IRON AND STEEL,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Refined Iron Bars, Philadelphia | *1.35* | 1.35 | 1.40 | 1.83½ |
| Common Iron Bars, Chicago | 1.50 | 1.50 | 1.50 | 1.78 |
| Common Iron Bars, Pittsburgh | 1.40 | 1.40 | 1.40 | 1.70 |
| Steel Bars, Tidewater, New York | 1.56 | 1.56 | 1.56 | 1.86 |
| Steel Bars, Pittsburgh | 1.40 | 1.40 | 1.40 | 1.60 |
| Tank Plates, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Tank Plates, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Beams, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Beams, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Angles, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Angles, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Skelp, Grooved Steel, Pittsburgh | 1.45 | 1.45 | 1.45 | 1.90 |
| Skelp, Sheared Steel, Pittsburgh | 1.50 | 1.50 | 1.50 | 1.90 |
| **SHEETS, NAILS AND WIRE,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Sheets, No. 27, Pittsburgh | 2.40 | 2.40 | 2.40 | 2.50 |
| Wire Nails, Pittsburgh | 1.95 | 1.95 | 1.95 | 2.00 |
| Cut Nails, Pittsburgh | 1.75 | 1.75 | 1.75 | 2.05 |
| Barb Wire, Galv., Pittsburgh | 2.40 | 2.40 | 2.40 | 2.45 |
| **METALS,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Lake Copper, New York | *12.97½* | 12.87½ | 13.00 | 21.50 |
| Electrolytic Copper, New York | *12.75* | 12.62½ | 12.87½ | 20.67½ |
| Spelter, New York | *4.45* | 4.45 | 4.57½ | 6.15 |
| Spelter, St. Louis | *4.30* | 4.30 | 4.40 | 6.00 |
| Lead, New York | *4.45* | 4.50 | 4.50 | 5.25 |
| Lead, St Louis | *4.27½* | 4.35 | 4.40 | 5.12½ |
| Tin, New York | **29.20** | 28.05 | 28.00 | 40.25 |
| Antimony, Hallett, New York | *8.25* | 8.25 | 8.50 | 11.50 |
| Nickel, New York | 45.00 | 45.00 | 45.00 | 45.00 |
| Tin Plate, 100 lb., New York | $3.89 | $3.89 | $3.89 | $4.09 |

## Chicago.

FISHER BUILDING, July 15, 1908.—(*By Telegraph.*)

Slow but steady gains are being made by the mills in nearly all departments. Except in Steel Bars the demand has to do almost wholly with present requirements, but specifications show moderate improvement, indicating an increased consumption. It is also observed that buying is becoming more general, and orders, though small, are more numerous. Preparations for overhauling and repairing rolling stock now being made by a few of the railroads have resulted in the purchase of some material. While this has not the significance that should attach to new car construction, yet what it will add to the present slender volume of business will be relatively of more importance than usual. More finishing mills are in operation at the South Works of the Illinois Steel Company this week than any time in four months. Rail mills Nos. 1 and 2, No. 1 Plate mill and the Structural mill are all going, and another Open Hearth furnace has been started. The Plate mill, however, will probably be shut down again next week, and the activity for other departments will depend largely upon the future offering of specifications. Coincident with the diminishing demand for Pig Iron a weaker tendency in prices is noted. No round lots for forward delivery were included in last week's business, and the few unimportant inquiries hold no promise of early improvement. The mercurial disposition of the Scrap Iron market was aptly illustrated by a sudden upturn which had its inception in the purchase of a few thousand tons for the account of mills in the Pittsburgh District. Although only a few items were included in these require-

ments, the entire list was sympathetically affected to the extent of 25c. to 50c. a ton.

**Pig Iron.**—Trade in Pig Iron has again lapsed into a state of extreme inactivity. Transactions for the past week have been limited to car lots and small orders, the aggregate of which represents less than a normal business for any one of the several selling interests. With no appreciable improvement in the jobbing foundry melt and only a moderate increase in agricultural castings, the attitude of consumers regarding the acceptance of deliveries scheduled against second half contracts is naturally a subject of interest. So far the requests for hold-ups are unimportant, but it is too early for developments of significance on this question. The fact that some Southern furnaces having a differential over Birmingham rates are willing to concede this advantage has resulted in some sales at $11.50, Birmingham basis, and $11.75 is reported to be more generally possible. These prices, which have been heard of occasionally on prompt shipments, are now being extended to at least third quarter deliveries. The effect of slack demand is being felt in Northern Iron, which is now easily obtained at $17, furnace. With Ohio and Valley Irons being offered on a basis of $16.80 to $16.90, Chicago, it will be seen that on competitive business local furnaces must do even better than $17. What effect the coal strike in the Birmingham District will have on the Pig Iron situation will of course depend on the extent to which it may spread and its duration. Should a large enough body of miners cease work and stay out for some time it would result in the shut-down of some furnaces now operating, and this in turn would tend to bolster up the Pig Iron market. We quote as follows:

| | |
|---|---|
| Lake Superior Charcoal | $20.00 to $20.50 |
| Northern Coke Foundry, No. 1 | 17.50 to 18.00 |
| Northern Coke Foundry, No. 2 | 17.00 to 17.50 |
| Northern Coke Foundry, No. 3 | 16.50 to 17.00 |
| Northern Scotch, No. 1 | 18.00 to 18.50 |
| Southern Coke, No. 1 | 16.60 to 17.10 |
| Southern Coke, No. 2 | 16.10 to 16.60 |
| Southern Coke, No. 3 | 15.60 to 16.10 |
| Southern Coke, No. 4 | 15.35 to 15.85 |
| Southern Coke, No. 1 Soft | 16.60 to 17.10 |
| Southern Coke, No 2 Soft | 16.10 to 16.60 |
| Southern Gray Forge | 14.10 to 14.60 |
| Southern Mottled | 13.85 to 14.35 |
| Malleable Bessemer | 17.50 to 18.00 |
| Standard Bessemer | 18.40 to 18.90 |
| Jackson Co. and Kentucky Silvery, 6 % | 19.90 to 20.40 |
| Jackson Co. and Kentucky Silvery, 8 % | 20.90 to 21.40 |
| Jackson Co. and Kentucky Silvery, 10 % | 22.90 to 23.40 |

*(By Mail.)*

**Billets and Rods.**—There is practically no new buying except in small lots for current consumption, but such orders are somewhat more frequent. Specifications also are coming out a little better. A few small orders for Forging Billets from shops which have not been buying anything for some time is noted as a hopeful sign. Regular prices, we are advised, are being held. We quote as follows: Forging Billets, 28.50, base, Chicago. Wire Rods, Bessemer, $33; Basic, $34; Chain, $33; all at Pittsburgh.

**Rails and Track Supplies.**—Coupled with an improved demand for Track Supplies is the significant fact that orders are being received from roads that have not been heard from for several months. That only present needs are being considered in purchases is indicated by the requests for prompt shipment, which in every case accompany orders. Lots of 1000 to 1500 kegs are growing more frequent, and the number of buyers is increasing. Odd lots of standard section Rails amounting to 1200 tons comprise the total of business in this line entered by the leading makers in the past week. Light Rail business is fair and shows slight improvement. There is, perhaps, less tendency to make extreme concessions in meeting the competition of rerolling mills, but as yet no definite change has taken place in this respect. Regular prices here quoted are still subject to cuts of from $3 to $5 a ton. We quote as follows: Angle Bars, accompanying Rail orders, 1908 delivery, 1.50c.; car lots, 1.60c.; Spikes, 1.80c. to 1.90c., according to delivery; Track Bolts, 2.20c. to 2.25c., base, Square Nuts, and 2.35c. to 2.40c., base, Hexagonal Nuts. The store prices on Track Supplies range from 0.15c. to 0.20c. above mill prices. Light Rails, 25 to 45 lb., $28; 20-lb., $29; 16-lb., $30; 12-lb., $31. Standard Sections, $28, f.o.b. mill, full freight to destination.

**Structural Material.**—Quite a number of small contracts are being let; but of those involving large tonnages, only such as are compelled by the early need of material to carry on work in progress are coming into the market. A total of 1470 tons taken by the leading fabricator in the past week was composed of a number of small orders varying in size from 10 to 100 tons. Bids are in on 3000 tons of Bridge Material for the Chicago & Northwestern Railway Company, and contract will probably be awarded in a day or two. In this tonnage is included the 2000 tons referred to as pending in last report. The Kenwood Bridge Company secured 200 tons for a garbage reduction plant at East St. Louis, Ill., and 660 tons for a drawbridge over the Chicago River, placed by the Chicago, Milwaukee & St. Paul Railway, was taken by the Wisconsin Bridge & Iron Company. For 250 tons required by the Chicago, Burlington & Quincy Railway in track elevation, the contract went to the Toledo-Massillon Bridge Company. Prices from store are 1.95c. to 2c. Mill prices at Chicago are as follows: Beams and Channels, 3 to 15 in., inclusive, 1.78c.; Angles, 3 to 6 in., ¼-in. and heavier, 1.78c.; larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 15 in., 1.88c.; Zees, 3 in. and over, 1.78c.; Tees, 3 in. and over, 1.83c.

**Plates.**—That more work is being done in boiler, tank and other Plate using shops is evident from the increasing number of prompt shipment orders coming from these industries. The character of orders placed makes it plain, however, that they include only material needed for immediate use. Though composed of small lots, the business now being entered is in the aggregate larger than for some time. Conditions as to prices are unchanged, it being still possible to secure concessions of from $1 to $1.50 a ton from some mills rolling limited widths. We quote mill shipments, as follows: Tank Plates, ¼-in. and heavier, wider than 6¼ and up to 100 in. wide, inclusive, car lots, Chicago, 1.78c.; 3-16 in., 1.88c.; Nos. 7 and 8 gauge, 1.93c.; No. 9, 2.03c.; Flange quality, in widths up to 100 in., 1.88c., base, for ¼-in. and heavier, with the same advance for lighter weights; Sketch Plates, Tank quality, 1.88c.; Flange quality, 1.98c. Store prices on Plates are as follows: Tank Plates, ¼-in. and heavier up to 72-in. wide, 2c. to 2.10c.; from 72 to 96 in. wide, 2.10c. to 2.20c.; 3-16 in. up to 60 in. wide, 2.10c. to 2.25c.; 72 in. wide, 2.30c. to 2.40c.; No. 8, up to 60 in. wide, 2.10c. to 2.15c.; Flange and Head quality, 0.25c. extra.

**Sheets.**—It can hardly be said that positive betterment is shown in the demand for Sheets, but there is a strong feeling in the market. Perhaps this sentiment is in a measure inspired by the belief that influences responsible for improvement noted in other mill products will be felt in Sheets. The local mills are operating at about 40 per cent. capacity. Prices are reported to be firmly maintained by the leading producers, but concessions of $1 a ton are being made by a few of the smaller mills. We quote mill shipments as follows: Chicago: Blue Annealed, No. 10, 1.98c.; No. 12, 2.05c.; No. 14, 2.08c.; No. 16, 2.18c.; Box Annealed, Nos. 17 to 21, 2.43c.; Nos. 22 to 24, 2.48c.; Nos. 25 and 26, 2.53c.; No. 27, 2.58c.; No. 28, 2.68c.; No. 29, 2.78c.; No. 30, 2.88c.; Galvanized Sheets, Nos. 10 to 14, 2.63c.; Nos. 15 and 16, 2.83c.; Nos. 17 to 21, 2.98c.; Nos. 22 to 24, 3.13c.; Nos. 25 and 26, 3.33c.; No. 27, 3.53c.; No. 28, 3.73c.; No. 30, 4.23c.; Black Sheets from store: Blue Annealed, No. 10, 2.20c.; No. 12, 2.25c.; No. 14, 2.30c.; No. 16, 2.40c.; Box Annealed, Nos. 18 to 21, 2.60c.; Nos. 22 to 24, 2.65c.; No. 26, 2.70c.; No. 27, 2.75c.; No. 28, 2.85c.; No. 30, 3.25c.; Galvanized from store; Nos. 10 to 16, 3c.; Nos. 18 to 20, 3.15c.; Nos. 22 to 24, 3.30c.; No. 26, 3.50c.; No. 27, 3.70c.; No. 28, 3.90c.; No. 30, 4.40c. to 4.45c.

**Bars.**—Not much has been added in the past week to the Steel Bar tonnage already placed. Specifications are coming out in better volume, though these represent mainly the current requirements of implement makers. It will probably be some weeks before shipments against the new contracts for next season's work will begin, and until then only a moderate amount of specifications is looked for. The East Chicago mills of the Interstate Steel & Iron Company are running, and will probably continue in operation continuously through July. Four mills of the Illinois Steel Company's plant at Bay View are going this week, as is also the Calumet Steel Company's mill at Chicago Heights. A settlement reached by the committees of the Western Bar Iron Association and the Amalgamated Association at Detroit on Saturday disposes of the adjustment of the wage scale for the ensuing year. Quotations, Chicago, are as follows: Steel Bars, 1.58c., with half extras; Iron Bars, 1.50c.; Hoops, No. 13 and lighter, 1.98c., full extra Hoop card; Bands, No. 12 gauge and heavier, 1.58c., half extra Steel Bar card; Soft Steel Angles and Shapes, 1.68c., half extras. Store prices are as follows: Bar Iron, 2c. to 2.15c.; Steel Bars, 1.90c. to 2c.; Steel Bands, 1.90c., as per Bar card, half extras; Soft Steel Hoops, 2.25c. to 2.35c., full extras.

**Merchant Pipe.**—There has been a small but steady gain in tonnage entered for some time; last week's gain, however, was more marked. Jobbers are buying a little more freely, and are gradually increasing the size of their orders. At the same time there is no general movement to increase stocks beyond the reasonable requirements of actual consumption. Regular prices are being maintained. The following mill discounts are quoted: Black Pipe, ¾ to 6 in., 73.2; 7 to 12 in., 70.2; Galvanized, ¾ to 6 in., 63.2. These discounts are subject to one point on the base. From store, in small lots, Chicago jobbers quote 73 per cent. on Black Steel Pipe, ¾ to 6 in. About three points above these prices is asked for Iron Pipe.

**Boiler Tubes.**—Both Merchant and Locomotive Tubes are moving slowly. Preparations now being made by the railroads for the repair of motive power equipment will likely bring out more orders for Locomotive Tubes before long. In view of the large harvest of small grain liberal orders from thresher engine builders are looked for a little later. Mill quotations for future delivery, on the base sizes, are as follows: Steel Tubes, 63.2; Iron, 50.2; Seamless, 49; 2½ in. and smaller, and lengths over 18 ft., and 2½ in.

and larger, and lengths over 22 ft., 10 per cent. extra. Store prices are as follows:

| | Steel. | Iron. | Seamless. |
|---|---|---|---|
| 1 to 1½ in. | 35 | 35 | 35 |
| 1¾ to 2¼ in. | 50 | 35 | 35 |
| 2½ in. | 52½ | 35 | 35 |
| 2¾ to 5 in. | 60 | 47½ | 47½ |
| 6 in. and larger | 50 | 35 | .. |

**Merchant Steel.**—So far as specifications are concerned, there is no improvement, but contracts covering implements are being entered in fair volume. While orders for prompt shipment from jobbers are a little more plentiful, there is not likely to be any radical change in conditions until consumers begin to specify against the new contracts. We quote: Cold Rolled Shafting, on contracts for 100 tons and over, 57 per cent. off; carloads, 56 per cent. off, and less than carloads, 52 per cent. off, on which carload freight is allowed within base territory. Smooth Finished Machinery Steel, 1.80c. to 1.90c.; Flat Sleigh Shoe, 1.75c. to 1.85c.; Cutter Shoe Steel, 2.15c. to 2.25c.; Toe Calk, 1.90c. to 1.95c.; Railroad Spring Steel, 1.60c. to 1.75c., the higher price being for Pennsylvania Railroad analysis. Carriage Spring Steel is 1.80c.; Tire Steel, Iron finished, 1½ in. and wider, 1.40c.; under 1½ in., 1.55c. Planished Tire Steel is 1.60c., all f.o.b., at mill.

**Cast Iron Pipe.**—The principal tonnage included in last week's transactions was a lot of 3000 tons which was awarded by the city of Sheridan, Wyo., to an Omaha contractor. In addition to this, contracts were let by Concordia, Kan., for 300 tons, which was taken by the United States Cast Pipe & Foundry Company, and 300 tons by Batavia, Ill., the general contract for which was secured by the United States Wind Engine & Pump Company. Few large requirements are in sight at present, but a fair volume of small orders continues to develop. We quote, nominally, per net ton, Chicago, as follows: Water Pipe, 4-in., $27; 6 to 12 in., $26; 16-in. and up, $25; with $1 extra for Gas Pipe.

**Old Material.**—Due mainly to buying in this market for shipment to the Pittsburgh District, Old Material developed a stronger tone last week, which resulted in a slight advance on several grades. Cast Borings were in active demand, sales aggregating 2000 tons being made for shipment to Breckenridge, Pa.; Heavy Melting Steel and Frog Switches and Guards were among the items directly affected by the Eastern buying. Locally there is no observable change in conditions as to demand. Consumers are buying sparingly except where positive bargains are offered. Dealers seem to be confident of a future rise in values that will enable them to realize good profits on their stock investments, and are generally disposed to hold on. Only a small portion of last week's railroad offerings came to this market. A lot of No. 1 Railroad Wrought in the Wisconsin Central list is reported to have brought $12.65, connecting line, Chicago. Little Cast Scrap is being taken by melters, though prices continue rather firm at current quotations. Three railroad lists to be offered next week aggregate 4850 tons. They include 300 tons from the Chicago, Milwaukee & St. Paul; 750 tons from the Northern Pacific, and 2800 tons offered by the Southern Railroad. We quote per gross ton, f.o.b. Chicago, as follows:

| | |
|---|---|
| Old Iron Rails | $16.00 to $16.50 |
| Old Steel Rails, rerolling | 14.00 to 14.50 |
| Old Steel Rails, less than 3 ft | 12.75 to 13.25 |
| Relaying Rails, standard sections, subject to inspection | 19.00 to 20.00 |
| Old Car Wheels | 13.00 to 13.50 |
| Heavy Melting Steel Scrap | 11.50 to 12.00 |
| Frogs, Switches and Guards, cut apart | 12.00 to 12.50 |
| Mixed Steel | 9.50 to 10.00 |

The following quotations are per net ton:

| | |
|---|---|
| Iron Fish Plates | $14.50 to $15.00 |
| Iron Car Axles | 17.00 to 17.50 |
| Steel Car Axles | 15.50 to 16.00 |
| No. 1 Railroad Wrought | 12.25 to 12.75 |
| No. 2 Railroad Wrought | 11.25 to 11.75 |
| Railway Springs | 11.50 to 12.00 |
| Locomotive Tires, smooth | 12.75 to 13.25 |
| No. 1 Dealers' Forge | 9.75 to 10.25 |
| Mixed Busheling | 7.25 to 7.75 |
| Iron Axle Turnings | 5.75 to 6.25 |
| Soft Steel Axle Turnings | 5.75 to 6.25 |
| Machine Shop Turnings | 5.75 to 6.25 |
| Cast Borings | 4.75 to 5.25 |
| Mixed Borings, &c | 4.75 to 5.25 |
| No. 1 Mill | 6.50 to 7.00 |
| No. 2 Mill | 5.50 to 6.00 |
| No. 1 Boilers, cut to Sheets and Rings | 8.25 to 8.75 |
| No. 1 Cast Scrap | 12.00 to 12.50 |
| Stove Plate and Light Cast Scrap | 10.50 to 11.00 |
| Railroad Malleable | 11.50 to 12.00 |
| Agricultural Malleable | 10.50 to 11.00 |
| Pipes and Flues | 8.50 to 9.00 |

**Metals.**—Whatever indications of growing strength there may be in other markets, nothing of the kind has appeared to relieve the continued dullness in Metals. Copper users are keeping close to imperative present needs in placing orders, which, though perhaps more numerous, are small. Spelter is extremely quiet. Old Metals share equally in the pervading dullness of new material and stocks are moving slowly. We quote as follows: Casting Copper, 13¼c.; Lake, 13½c. to 13¾c., in car lots for prompt shipment; small lots, ¼c. to ⅜c. higher; Pig Tin, car lots, 30c.; small lots, 32½c.; Lead, Desilverized, 4.50c. to 4.55c., for 50-ton lots; Corroding, 4.85c. to 4.95c., for 50-ton lots; in car lots, 2¼c. per 100 lb. higher; Spelter, 4.85c.; Cookson's Antimony, 10½c., and other grades, 9¾c. to 10¼c.; Sheet Zinc is $7, list, f.o.b. La Salle, in car lots of 600-lb. casks. On Old Metals we quote: Copper Wire, 12¾c.; Heavy Copper, 12¾c.; Copper Bottoms, 10⅝c.; Copper Clips, 11c.; Red Brass, 11½c.; Yellow Brass, 9¾c.; Light Brass, 6½c.; Lead Pipe, 4c.; Zinc, 3¾c.; Pewter, No. 1, 21c.; Tin Foil, 24c.; Block Tin Pipe, 27c.

## Cincinnati.

CINCINNATI, OHIO, July 15, 1908.—(*By Telegraph.*)

Coming a trifle later here than in the other large manufacturing centers, the midsummer lull is now on and in earnest. Notwithstanding heroic efforts of the National Prosperity Association to put up a good front and the columns of interviews and boom material, little improvement can be noted in the situation at tool manufacturing concerns, jobbing foundries and Iron and Steel stores. A careful canvass by a large Pig Iron selling concern reveals not a single foundry in the market for anything and none evidencing any interest in quotations. It can be said, however, that consumers are taking Iron on contracts quite satisfactorily, and there is no wailing among the temporarily idle, such as one would find in panicky times. Giving some hope to the tool works, is the changed attitude of the Government and the railroads. Some Government visitors have been here looking around among the shops, and while nothing is given out definitely, it is pretty well assured that some good sized lists of tools are being prepared. Some manufactories here have already profited through the needs of the railroads for car equipment.

**Pig Iron.**—The local market presents the anomalous situation of increasing weakness, against a determined stand on the part of the Southern furnacemen for a uniform price of $12, Birmingham, for No. 2. The rumored $11.50 price was found to have originated with some business placed in the East by a prominent Southern interest which maintained the $12 figure in this market meanwhile. While the lower price is now said most positively to be withdrawn, there have been some sales here in the week at $11.75, and that can be done on certain brands for the year. A prominent Southern interest which figured conspicuously in the May bargain sales is reminding buyers that those low prices were made in the interest of furnace organizations to keep them intact during a period of depression, and they would therefore expect buyers to take Iron promptly and as specified in contracts. A prominent agent just returned from Birmingham reports less Iron on furnace yards there than a month ago, and production keeping up about the same, which he construes as promising. The scarcity of low grades is still very pronounced. Aside from a small quantity of Forge and a little Mottled at one furnace, it is said that none can be found in Birmingham. Northern Irons are now off in price, and attention of the bargain hunters is turned toward Ohio and the Valley regions. Ohio foundry Irons are now selling on the uniform basis of $15, at Ironton, Ohio, furnace, for No. 2, and one or two interests are said to be shading this figure for third quarter business. The coal strike in Alabama is expected to retard production somewhat in that field, and may possibly have the effect of stiffening the price of Southern Iron. Ohio Silveries are unchanged in price, and $18.50 for 8 per cent. is still quoted, with little doing save an occasional sale of a small amount to regular patrons for immediate needs. Reports to-day of the starting up of Ohio's largest stove foundry, of a large builder of locomotives and other industries, interest Pig Iron sellers. Aside from the tonnages moving on contracts and a few small sales in one- and two-car lots, the only inquiries heard here are one for 2500 tons of Basic from a northern Ohio steelmaker and one from a St. Louis concern for about 250 tons of 12 per cent. Silicon Iron, for delivery over the balance of the year. Valley competition is expected to take the Basic business at about $15, furnace. For immediate delivery and for the balance of the year we quote f.o.b. Cincinnati, as follows, the freight rate from the Birmingham District being $3.25, and from Hanging Rock, $1.20.

| | |
|---|---|
| Southern Coke, No. 1 | $15.50 to $16.00 |
| Southern Coke, No. 2 | 15.00 to 15.50 |
| Southern Coke, No. 3 | 14.50 to 15.00 |
| Southern Coke, No. 4 | 14.00 to 14.50 |
| Southern Coke, No. 1 Soft | 15.50 to 16.00 |
| Southern Coke, No. 2 Soft | 15.00 to 15.50 |
| Southern Coke, Gray Forge | 13.75 to 14.25 |
| Ohio Silvery, 8 per cent. Silicon | 19.70 |
| Lake Superior Coke, No. 1 | 16.70 to 17.20 |
| Lake Superior Coke, No. 2 | 16.20 to 16.70 |
| Lake Superior Coke, No. 3 | 15.70 to 16.20 |
| Standard Southern Car Wheel | 22.25 to 22.75 |
| Lake Superior Car Wheel | 21.75 to 22.25 |

(*By Mail.*)

**Coke.**—The market is quiet, but prices are in the main well sustained, and the ovens have no trouble making liberal shipments on contracts The little excitement in the Alabama District has turned some extra attention to the Virginia fields, and Wise County Furnace brands for spot shipment are bringing $1.60 to $1.75; Foundry grades, $2.10 to $2.25, the latter price ruling for contract Coke. Connellsville Foundry for spot shipment is quoted at $2, and

at $2.15 to $2.25 on contract. The Foundry melt is slowly increasing, but nothing important is anticipated before the first of the year.

**Finished Iron and Steel.**—Business in this market is about 50 per cent. of last year's volume in all lines, and the larger dealers are not especially optimistic on the future. There is a little increased inquiry for Steel products, and the outlook is better in the Structural lines. Iron Bars are very quiet. There is some Boiler Tube business, and some fairly good sales of Twisted Steel Bars for concrete construction. No change is to be noted in retail prices, and we quote as follows, prices being f.o.b. Cincinnati: Iron Bars, carload lots, 1.65c., base, with half extras; small lots from store, 1.85c., base, half extras; Steel Plates, carload lots, 1.75c., base, with half extras; small lots from store, 1.85c., base, half extras; Base Angles, carload lots, 1.85c., base; small lots from store, 2.10c.; Beams, Channels and Structural Angles, 1.85c., base; small lots from store, 2.10c.; Plates, ¼-in. and heavier, carload lots, 1.85c.; small lots from store, 2c.; Blue Annealed Sheets, heavy, No. 16, carload lots, 2.15c.; small lots from store, 2.50c.; No. 14, carload lots, 2.05c.; small lots from store, 2.40c.; No. 10, and heavier, carload lots, 1.95c.; small lots from store, 2.20c.; No. 12, carload lots, 2c.; small lots from store, 2.30c.; Sheets (Light), Black, No. 28, carload lots, 2.65c.; Galvanized Sheets, No. 28, carload lots, 3.70c.; Steel Tire, 4-in. and heavier, carload lots, 1.95c.; Plates, 3-16 and No. 8, carload lots, 2c.; small lots from store, 2.20c.

**Old Material.**—Scrap dealers are doing very little business with the larger melters, and in the main look for little improvement before the cold weather sets in. Prices on some descriptions have stiffened a little, but taking the entire line of Scrap, there is not enough inquiry to make a market. There is more genuine activity among the small dealers and those handling Stove Scrap, Country Wrought, &c., than from the big concerns which are loaded up with heavy melting Steel Scrap, Relayers, Re-rollers, Steel Rails, &c., for which there is anticipated a good buying movement when the railroads determine upon a general rehabilitation of equipment. Local dealers note but few offerings from the railroads. As nearly as they can be determined from an inactive market, prices f.o.b. Cincinnati are as follows:

| | |
|---|---|
| No. 1 R. R. Wrought, net ton | $10.50 to $11.50 |
| Cast Borings, net ton | 4.00 to 5.00 |
| Heavy Melting tSeel Scrap | 10.00 to 11.00 |
| Steel Turnings, net ton | 5.00 to 6.00 |
| No. 1 Cast Scrap, net ton | 10.25 to 11.25 |
| Burnt Cast and Wrought, net ton | 8.00 to 9.00 |
| Old Iron Axles, net ton | 14.50 to 15.50 |
| Old Iron Rails, gross ton | 13.00 to 14.00 |
| Old Steel Rails, long, gross ton | 10.50 to 11.50 |
| Old Steel Rails, short, gross ton | 11.00 to 12.00 |
| Relaying Rails, 56 lb. and up, gross ton | 20.00 to 21.00 |
| Old Car Wheels, gross ton | 12.00 to 13.00 |
| Low Phosphorus Scrap, gross ton | 13.00 to 14.00 |
| Stove Plate, net ton | 9.25 to 10.25 |

## St. Louis.

ST. LOUIS, MO., July 11, 1908.

While the principal shops are not nearly as active as at the corresponding time last year, it is the exception to hear a report other than of a gain in the volume of work. With the leading car building establishment the improvement is confined to repair rather than new work. Quite a large inquiry is reported for Relaying Rails from small railroads and an active demand for Track Material. Finished Iron and Steel are in fair and steady demand, but Pig Iron is quiet. The demand for Spelter has improved. Building is active and the June report of permits shows but little falling off from the corresponding month last year. The new work is principally flats and residences. Crop prospects continue encouraging and the tonnage of railroads is increasing.

**Coke.**—The market is quiet but firm. We quote for 72-hr., $2.15 to $2.50 for Connellsville, f.o.b. ovens, with some producers holding at the outside figure for best grade. Shipments continue about the same.

**Pig Iron.**—The sales of Pig Iron are confined to small lots. Inquiries are out for larger ones, though relatively small compared with last month. One company reports inquiry for 500 tons last quarter of this year and first quarter 1909. Another house is in receipt of inquiries for upward of 1300 tons, covering the second half. We quote for No. 2 Foundry $12, f.o.b. Birmingham, for last quarter.

**Finished Iron and Steel.**—An improvement is shown in the demand for Structural Steel. The buying is still confined to small orders, which, however, are numerous and call for immediate shipment. Very large specifications are being received from Bar users, principally from agricultural works, but inquiry from vehicle manufacturers is not so large. Light Rails continue in fair inquiry. In Track Material there is an active demand, as the railroads are using large quantities of Bolts, Splice Bars and Spikes to repair track and as far as possible postpone buying Rails.

**Lead and Spelter.**—Producers are holding Spelter for higher prices and there is an improvement in the demand. We quote 4.35c. The demand for Lead is not so active. We quote 4.30c. to 4.32½c. Special brands are held 0.10c. higher.

**Old Materials.**—While there is a little more doing with the mills, it is still mainly a dealers' market. Prices, however, are hardening. The principal feature is an active inquiry for Relaying Rails from railroads, with light stocks in dealers' hands, especially 50 and 60 lb. The only offerings are 225 tons by the Missouri Pacific Railway and 220 tons by the Vandalia Railroad, both lots consisting of miscellaneous material. We quote dealers' prices per gross ton, f.o.b. cars St. Louis, as follows:

| | |
|---|---|
| Old Iron Rails | $14.00 to $14.50 |
| Old Steel Rails, rerolling | 12.75 to 13.25 |
| Old Steel Rails, less than 3 ft | 12.25 to 12.75 |
| Relaying Rails, standard sections, subject to revision | 22.50 to 23.50 |
| Old Car Wheels | 12.50 to 13.50 |
| Heavy Melting Steel Scrap | 12.50 to 12.75 |
| Frogs, Switches and Guards, cut apart | 12.25 to 12.75 |
| Mixed Steel | 9.00 to 9.50 |

The following quotations are per net ton:

| | |
|---|---|
| Iron Fish Plates | $12.25 to $12.75 |
| Iron Car Axles | 15.00 to 15.50 |
| No. 1 Railroad Wrought | 11.75 to 12.00 |
| No. 2 Railroad Wrought | 9.50 to 11.00 |
| Railway Springs | 10.00 to 11.00 |
| Locomotive Tires, smooth | 12.00 to 12.50 |
| No. 1 Dealers' Forge | 9.50 to 10.00 |
| Mixed Borings, &c | 3.50 to 3.75 |
| No. 1 Boilers, cut to Sheets and Rings | 7.00 to 8.00 |
| No. 1 Cast Scrap | 11.00 to 11.50 |
| Stove Plate and Light Cast Scrap | 9.00 to 9.50 |
| Railroad Malleable | 9.25 to 9.75 |
| Agricultural Malleable | 8.50 to 9.00 |
| Pipes and Flues | 7.25 to 7.50 |

The American Car Company has received orders for street cars from the Northwest and is running at about one-half capacity. At present the company is not buying any material.

The Medart Patent Pulley Company is running about 60 per cent. of capacity, and, feeling assured of an improved demand, is carrying a full stock of finished product.

The American Foundry & Mfg. Company has not curtailed production this year, there being a good demand from gas and water works and the trade throughout the country for Iron, Brass and Bronze castings.

Kingsland-Kay-Cook Mfg. Company, brass founder, reports an improved demand from gas companies for Brass material.

## Birmingham.

BIRMINGHAM, ALA., July 15, 1908.

**Pig Iron.**—The transactions for the past week fail to indicate an improvement in the demand. Inquiries received have in but few cases resulted in sales other than for prompt delivery, and the aggregate tonnage is comparatively insignificant. The largest sale recently recorded was 200 tons of No. 2 Foundry. Just what price could be had on a round tonnage it would be hard to say. An inquiry for quotations on from 3000 to 10,000 tons is pending, but owing to the nature of the business figures named can hardly be considered a criterion of values. It is understood that two producers would accept good sized orders at less than the $12 schedule, yet a recent effort to place 100 tons of No. 2 for prompt shipment at $11.75, Birmingham, was unsuccessful. One of the leading interests is practically out of the market, refusing to part from a schedule of $12.50, while another large producer adheres to $12.50 for the last quarter. The announcement that output is not to be increased to the extent recently arranged for is noteworthy. There has been no increase in the number of deferred shipments; as a matter of fact, the movement since July 1 would indicate an increase in the melt. The demand for Charcoal Iron has recently improved and the quotation of $20 per ton, at furnace, is adhered to. Developments in the coal miners' strike will no doubt be watched with interest by the trade, especially since producers of Pig Iron stand firmly by the "open shop" policy. General conditions are such, however, as to make any serious hindrance in blast furnace operations unlikely.

**Cast Iron Pipe.**—The principal letting within the past week was 1200 tons of Water Pipe for Atlanta, Ga., which is to be furnished by the United States Cast Iron Pipe & Foundry Company. The American Cast Iron Pipe Company was the successful bidder on 600 tons of Water Pipe recently placed by the city of Douglass, Wyo., while it is announced that contracts for Pensacola, Fla., and Sheridan, Wyo., are being held in abeyance. An order for approximately 7000 tons is also withheld by Council Bluffs, Iowa. Lettings ahead are 7000 tons for Pittsburgh, Pa., and 3000 tons for Dallas, Texas, which is to be awarded July 15. Specifications have been submitted on eight lots of Water Pipe for New York City. Contrary to expectations, there has been no advance in quotations, but recent departures from the established prices have been slight. We quote Water Pipe as follows per net ton, f.o.b. cars here: 4 to 6 in., $23; 8 to 12 in., $22; over 12-in., average $21, with $1 per ton extra for Gas Pipe.

**Old Material.**—Sales for the past week exceed those for a number of weeks previous. Prices have not suffered despite the fact that some round sales have been made, but the demand is very unsatisfactory and the strength of quotations is hardly determined. Among the sales reported are 600 tons of Steel Scrap and 200 tons of Wrought. Nominal quotations are as follows, per gross ton, f.o.b. cars here:

| | |
|---|---|
| Old Iron Rails | $14.50 to $15.00 |
| Old Iron Axles | 14.00 to 14.50 |
| Old Steel Axles | 12.50 to 13.00 |
| No. 1 Railroad Wrought | 13.00 to 13.50 |
| No. 2 Railroad Wrought | 9.00 to 10.00 |
| No. 1 Country Wrought | 10.50 to 11.00 |
| No. 2 Country Wrought | 9.00 to 9.50 |
| No. 1 Machinery | 10.00 to 10.50 |
| No. 1 Steel | 9.50 to 10.50 |
| Wrought Pipe and Flues | 8.50 to 9.00 |
| Stove Plate and Light Cast | 8.50 to 9.00 |
| Cast Borings | 5.00 to 5.50 |

## Cleveland.

CLEVELAND, OHIO, July 14, 1908.

**Iron Ore.**—Following the recent very moderate buying movement the Ore market is exceedingly quiet. Inquiries show a little improvement, but consumers are nearly all holding off. Those who will need no Ore for the next few months have no thought of buying at the present time. The tonnage sold so far is disappointing to the Ore men, who had expected the majority of the furnace interests to cover for their year's requirements soon after the recent reduction in prices. Furnacemen seem to think they will have no trouble in getting all the Ore they need by waiting a while longer, and they seem inclined to get all the light they can on the probability of business improving later in the year. On the other hand, some Ore men are beginning to express anxiety over the situation. They say that unless some of those who are holding back come into the market soon there is bound to be a shortage before next May. Especially would this be true should there be a marked revival of business activity late in the fall. Owing to the limited amount of Ore sold the expected improvement in shipments in July has not materialized. The increase over June is so far very slight, and it is estimated now that the July shipments will not run much over 3,000,000 tons, making the total up to August 1 only about 6,000,000 tons. Little betterment appears for the vessel interests. Scarcely any wild chartering is being done, and there are several boats for every cargo of Ore. Twenty boats operated by local Ore firms have not yet been placed in commission. The first Ore cargoes of the season to reach Ashtabula were taken into that port late last week. No Ore had previously been sent there, largely because of the labor situation. The annual convention of the International 'Longshoremen, Marine and Transport Workers' Association is being held in Erie, Pa., this week. It is expected that some action may be taken on the question of amalgamating all the unions connected with the shipping interests. Ore prices for 1908 delivery at Lake Erie docks, per gross ton, are as follows: Old Range Bessemer, $4.50; Mesaba Bessemer, $4.25; Old Range Non-Bessemer, $3.70; Mesaba Non-Bessemer, $3.50.

**Pig Iron.**—The market continues quiet and inquiries are scarce. The local plant of the United States Cast Iron Pipe & Foundry Company, which was in the market a week ago, has bought 2000 tons of No. 3 Northern Foundry Iron for early delivery. The price is understood to be somewhat below the recent market. We also note the sale of 1000 tons of Malleable Bessemer to a Toledo buyer at a little less than $15.50, for fourth quarter delivery. A few other sales of Foundry Iron ranging from carloads to 100-ton lots are reported. We quote No. 2 Northern Foundry at $14.75 to $15, Valley furnace. There are reports, however, of No. 2 Iron being sold as low as $14.50, Valley furnace. Local furnaces are holding at $15, at furnace, for No. 2 Northern Foundry for outside shipment, and at $15.50 at furnace, for city delivery. There is practically no inquiry for Southern Iron, although the report is current that 1500 tons of No. 3 Southern was sold in this territory last week at $11.50, Birmingham. It is also reported that a sale of No. 3 Northern was made at $14.50, delivered, Cleveland. Consumers in this territory are pretty well covered for at least a large share of their last half requirements. Shipping orders on contracts are coming in fairly well, showing some improvement over last month. There is no inquiry for Basic Iron and only an occasional inquiry for a small tonnage of Bessemer Iron. Furnace No. 3 of the American Steel & Wire Company, Newburg, which has been out of blast since late last fall, was blown in last week. For prompt shipment and for the last half, we quote, delivered, Cleveland, as follows:

| | |
|---|---|
| Bessemer | $16.90 |
| Northern Foundry, No. 1 | $16.15 to 16.50 |
| Northern Foundry, No. 2 | 15.65 to 16.00 |
| Northern Foundry, No. 3 | 15.15 to 15.50 |
| Southern Foundry, No. 2 | 16.35 |
| Gray Forge | 14.90 |

**Coke.**—The market is very quiet, both in the Furnace and Foundry grades. Consumers of Foundry Coke have nearly all covered for the balance of the year, and are taking a fair amount of Coke on contract. For last half delivery we quote Connellsville Furnace Coke at $1.80 to $1.90; 72-hr. Foundry Coke at $2.25, at oven, for last half delivery. Lower prices are being made for spot shipment.

**Finished Iron and Steel.**—Several consumers of Steel Bars closed contracts in the week for their year's requirements at the prevailing prices. But few Bar consumers in this territory are not under contract for the year. Mills are meeting with more competition than usual from makers of rerolled hard Steel Bars, which are being offered at 1.25c. to 1.30c., Pittsburgh. While mills have had little trouble in closing Bars, consumers of Plates and Shapes are holding off, and few contracts for these materials are being placed. One reason is the feeling still existing among consumers that Plates and Shapes may be further reduced, and another is that the mills will not make Plate and Shape contracts for a longer period than January 1. Actual demand shows, possibly, a little improvement, although mills are differently affected in the volume of orders. While some report fair specifications and current orders, requiring a larger tonnage than a month ago, others have few specifications or new orders. Improvement in the demand is expected as soon as consumers finish their July inventories. The business in Plates shows some improvement, but the orders are nearly all for small tonnages. Some of the smaller mills are shading prices about $1.50 a ton. The demand for Iron Bars is very light. Local mills have not yet resumed operations. Prices on both Iron and Steel Bars are being firmly maintained. While little new business is done in Light Rails, there is an improvement in car lot orders for Light Rails on old contracts. The Structural situation is quieter. The demand for Sheets is very light, and shows no improvement. We quote Iron Bars at 1.45c., Cleveland, for car lots; Steel Bars, 1.50c., Cleveland, for car lots, half extras; Beams and Channels, 1.70c., base, Cleveland; and Plates, ¼ in. and heavier, 1.70c., Cleveland. We quote Sheets, mill shipments, car lots, Cleveland, as follows: Blue Annealed, No. 10, 1.90c.; Box Annealed, No. 28, 2.60c.; Galvanized, No. 28, 3.65c. Jobbers report warehouse business light, but a slight improvement in their mill orders. Jobbers quote Iron and Steel Bars out of stock at 1.65c. to 1.70c. Beams and Channels from warehouse are 2c., and Plates, ¼ in. and heavier, 1.90c. Warehouse prices on Sheets are as follows: Blue Annealed, No. 10, 2.10c.; Box Annealed, No. 28, 2.70c.; Galvanized, No. 28, 3.80c. Warehouse prices on Boiler Tubes, 2¾ to 5 in., are 64 per cent. discount, and on Black Merchant Iron Pipe, base sizes, 71 per cent. discount.

**Old Material.**—While the consuming demand has not improved there have been more transactions among dealers, much of the business being of a speculative nature. Influenced by the feeling that there will be a much better demand next month, all prices are firm, and Heavy Steel Scrap is being held at about 50c. a ton higher than a week ago, or above what consumers are at present willing to pay. Dealers have fair sized stocks on hand, and are not anxious to sell at present prices. Mills are taking some Scrap on contracts, but there are no reports of new contracts. The lists of Scrap sold by two railroads last week brought good prices. Dealers' prices to the trade, per gross ton, f.o.b. Cleveland, are as follows:

| | |
|---|---|
| Old Steel Rails | $13.00 to $13.50 |
| Old Iron Rails | 15.00 to 16.00 |
| Steel Car Axles | 16.50 to 17.50 |
| Old Car Wheels | 14.00 to 14.50 |
| Relaying Rails, 50 lb. and over | 22.00 to 23.00 |
| Heavy Melting Steel | 13.00 to 13.50 |
| Railroad Malleable | 12.00 to 12.50 |
| Agricultural Malleable | 11.00 to 11.50 |
| Light Bundled Sheet Scrap | 8.00 to 9.00 |

The following quotations are per net ton, f.o.b. Cleveland:

| | |
|---|---|
| Iron Car Axles | $16.00 to $16.50 |
| Cast Borings | 6.00 to 6.50 |
| Iron and Steel Turnings and Drillings | 7.00 to 7.25 |
| Steel Axle Turnings | 8.50 to 9.00 |
| No. 1 Busheling | 11.00 to 11.50 |
| No. 1 Railroad Wrought | 12.00 to 13.00 |
| No. 1 Cast | 12.00 to 12.50 |
| Stove Plate | 10.00 to 10.50 |
| Bundled Tin Scrap | 8.00 to 9.00 |

## Buffalo.

BUFFALO, N. Y., July 14, 1908.

**Pig Iron.**—The character of the market in Pig Iron is practically the same as reported last week—a continuance of midsummer quietness, and, in fact, scarcely sufficient demand to establish a well defined market price. Improvement is looked for, however, and such small business as is offered is not very hotly contested for. Producers are not hungry for business at the present low market levels. The prices given below, f.o.b. Buffalo, represent the situation as accurately as possible:

| | |
|---|---|
| No. 1 X Foundry | $16.00 to $16.25 |
| No. 2 X Foundry | 15.50 to 15.75 |
| No. 2 Plain | 15.00 to 15.25 |
| No. 3 Foundry | 14.75 to 15.00 |
| Malleable Bessemer | 16.00 to 17.00 |
| Gray Forge | 14.75 to 15.00 |
| Charcoal | 20.00 to 20.50 |

**Old Material.**—The market remains quiet, with only a small amount of business coming out. There was some expectation that prices might stiffen somewhat this week, but so far there are no indications of added strength. We quote for gross tons, f.o.b. Buffalo, as follows:

| | |
|---|---|
| Heavy Steel | $13.00 |
| Old Car Wheels | 13.00 |
| No. 1 Railroad Wrought Scrap | 13.00 |
| No. 1 Railroad and Machinery Cast Scrap | 14.00 |
| Old Steel Axles | 15.00 |
| Old Iron Axles | 17.00 |
| Clean Cast Iron Borings | 6.00 |
| Wrought Iron and Soft Steel Turnings | 7.00 |
| Railroad Grate Bars | 10.50 |
| No. 1 Busheling Scrap | 10.00 |

## Philadelphia.

PHILADELPHIA, PA., July 14, 1908.

Dullness characterizes the entire market. Notwithstanding the absence of business in any volume, the tone is strong and but little effort is made by sellers to force business. The extreme heat in the past few weeks has had a retarding effect on trade generally, and has reduced production slightly in some instances. The situation, however, is considered satisfactory under the circumstances, and while a certain amount of business will continue to come out during the summer months, it is hardly expected that any strong forward movement will be noticeable much before September.

**Pig Iron.**—Some scattered business has been done, but the market on the whole has been pretty flat. In Foundry grades sales have been mostly in small lots, ranging from carloads up to those of a few hundred tons, practically all for prompt shipment. The dullness is usual at this time, and notwithstanding the fact that but little interest is being taken in the market by buyers, the feeling in the trade is optimistic. No disposition is shown to force sales, and some of the furnaces which have been selling recently at bottom figures have taken all the business they wanted at that level and advanced their price for prompt Iron 50c. a ton. They are now holding No. 2 X Foundry, delivered, in this territory, at $17. There seems to be less cutting on the part of the few interests which have recently been shading prices for spot Iron, no sales being reported in the past week under the current prices for delivery in this territory. Producers report that while orders have decreased, an improvement is seen in shipping instructions on Iron already contracted for, and stocks on the furnace banks are showing a decline, which strengthens the situation to a considerable extent. The undertone of the market on the whole is strong, and the outlook for increased consumption in the second half of the year is considered bright. Sales for the week have not been very heavy. The Cast Iron Pipe interests have again taken some moderate tonnages, and are still reported to be in the market for low grade Iron for delivery during the third and fourth quarters of the year. Gray Iron Foundries have taken some fair sized lots for third quarter delivery, but orders running up to 1000 tons are pretty scarce. Virginia Foundry Irons have been sold in small lots, up to several hundred tons, for prompt delivery at full prices. Southern Iron, however, has not been very active, except in the lower grades taken by the Pipe foundries, and with few exceptions producers are holding firmly at $12 to $12.50, Birmingham, for No. 2 Iron. Steel makers are still in the market for Basic and Low Phosphorus Irons. A sale of 10,000 tons of Basic, for delivery during the last half of the year, is announced at $15, delivered, while another sale of 1000 tons of the same grade, for delivery during the next four months, was made at $15.25, delivered. Some sellers, however, are firm on this grade, and refuse to take business at less than $15.50, delivered. While no sales of Low Phosphorus Iron have been reported recently, a number of inquiries for moderate lots have been made, and sellers are holding prices on standard grades pretty firmly. Forge Iron is quiet; producers as a rule have but little to offer. Inquiries on the whole are said to be encouraging. A number of buyers are still in the market for Iron for third quarter delivery, and there is also considerable inquiry for Iron for shipment during the last half. Prices as a rule are stronger. The following range represents quotations for delivery in buyers' yards, eastern Pennsylvania and adjoining territory, during the third quarter. For fourth quarter delivery, however, sales have been made at advances, dependent on tonnage and brand:

| | |
|---|---|
| Eastern Pennsylvania, No. 2 X Foundry | $16.50 to $17.00 |
| Eastern Pennsylvania, No. 2 Plain | 16.00 to 16.25 |
| Virginia No. 2 X Foundry | 17.00 |
| Virginia, No. 2 Plain | 16.50 to 16.75 |
| Gray Forge | 15.00 to 15.50 |
| Basic | 15.00 to 15.50 |
| Low Phosphorus | 21.00 to 21.25 |

**Ferromanganese.**—The demand has not improved and no sales are reported. Prices have, however, been marked up from the low quotations last week and most of the sellers are now holding Ferro at $45 to $46, Baltimore, although it is believed that $44.50 could be done if a desirable order came out.

**Steel.**—The principal makers of Billets in this territory have not yet resumed operations at their plants. What little business comes out can usually be furnished from stock. Prices are unchanged, for delivery in this territory Ordinary Rolling Steel is quoted at $26.20, with Forging Steel at $28.20, subject to the usual extras for high carbons and special sizes.

**Plates.**—Business during the week has been somewhat irregular, but averages up fairly well. A moderate demand is to be noted for Boiler and Structural Plates, with fair inquiries for boat work. Some few orders from the railroads have also been booked, but the tonnage was small. Practically all the orders placed have been for prompt delivery, there being no disposition on the part of buyers to contract for future requirements. Prices are firm, and we quote as follows for deliveries in this vicinity:

| | Carloads. Cents. | Parts carload. Cents. |
|---|---|---|
| Tank, Bridge and Boat Steel | 1.75 | 1.80 |
| Flange or Boiler Steel | 1.85 | 1.95 |
| Commercial Firebox | 1.95 | 2.00 |
| Marine | 2.15 | 2.20 |
| Locomotive Firebox Steel | 2.25 | 2.30 |

The above are base prices for ¼-in. and heavier. The following extras apply:

| | Extra per 100 lb. |
|---|---|
| 3-16-in. thick | $0.10 |
| Nos. 7 and 8, B. W. G. | .15 |
| No. 9, B. W. G. | .25 |
| Plates over 100 to 110 in. | .05 |
| Plates over 110 to 115 in. | .10 |
| Plates over 115 to 120 in. | .15 |
| Plates over 120 to 125 in. | .25 |
| Plates over 125 to 130 in. | .50 |
| Plates over 130 in. | 1.00 |

**Structural Material.**—Business continues light, and the bulk of orders taken recently have been small. The Bethlehem Steel Company reports a fair run of miscellaneous orders, while the Pennsylvania Steel Company has taken some small bridge and building contracts. No large propositions have come out in the week. Prices are being fully maintained and range from 1.75c. to 1.90c., according to specification for delivery in this territory.

**Sheets.**—The demand is not heavy, but enough orders have accumulated since the first of the month to start some of the mills which suspended over the holiday at full time. Orders are, as a rule, for small tonnages, prompt delivery, so that mills are largely dependent on day to day orders to maintain their present rate of production. Prices range as follows for mill shipment, a tenth extra being added for small lots: Nos. 18 to 20, 2.50c.; Nos. 22 to 24, 2.60c.; Nos. 25 to 26, 2.70c.; No. 27, 2.80c.; No. 28, 2.90c.

**Bars.**—Some of the mills which have been making very low prices for Iron Bars recently have withdrawn their quotations, having booked all the tonnage desired at those figures. In order to get any concessions, specifications must be just right and deliveries prompt or mills will not consider the order, and 1.35c. to 1.40c. is about the best that can be done for deliveries in this territory. The volume of business coming out, while better than it was some weeks ago, is still small, and many of the mills still operate irregularly. Steel Bars are not very active, and are quoted at 1.55c. for delivery in this territory, with Re-rolled Bars at 1.50c.

**Coke.**—The demand is very light and but few sales of any moment have been made. Some small contracts have been closed for Foundry Coke for delivery during the remainder of the year at $2.25, at oven. Furnace Coke is dull. Foundry Coke is quoted at $2.15 to $2.35, at oven, with Furnace Coke at $1.50 to $1.75, at oven. For delivery in this territory the following range of prices is named:

| | |
|---|---|
| Connellsville Furnace Coke | $3.65 to $3.90 |
| Foundry Coke | 4.30 to 4.50 |
| Mountain Furnace Coke | 3.25 to 3.50 |
| Foundry Coke | 3.90 to 4.10 |

**Cast Iron Pipe.**—The city of Philadelphia will receive proposals until July 29, through the Department of Public Works, for 400 tons of 48-in. Cast Iron Water Pipe, also for 5000 lengths of 6-in. Pipe, 600 lengths of 8-in. Pipe, and 250 lengths of 10-in. Pipe—in all, about 1300 tons. Bids will also be advertised for in a few days for about 1000 tons of Cast Iron Pipe for extension of the high pressure fire mains.

**Old Material.**—There is a decidedly better feeling in the Old Material market, and prices of some grades have advanced. Heavy offerings of Steel Scrap by the railroads recently have been extensively bid upon at higher prices than recently quoted, without bidders getting the Scrap. The Pennsylvania Railroad has offered about 30,000 tons of Old Rails, but apparently will not sell them at the present market. Some few odd lots of Steel Scrap have been sold at prices up to $14, delivered, but holders of this grade of Scrap still refuse to sell large lots at to-day's prices. Rolling Mill Scrap is a shade more active and better prices have been realized. Quotations, which are to a large extent

nominal, range as follows for prompt deliveries in buyers' yards, eastern Pennsylvania and nearby territory:

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|---|---|
| No. 1 Steel Scrap and Crops | $14.00 to $14.50 |
| Low Phosphorus | 18.00 to 18.50 |
| Old Steel Axles | 18.50 to 19.00 |
| Old Iron Axles | 21.00 to 21.50 |
| Old Iron Rails | 18.00 to 18.50 |
| Old Car Wheels | 13.50 to 14.00 |
| Choice No. 1 R. R. Wrought | 16.00 to 16.50 |
| Machinery Cast | 14.00 to 14.50 |
| Railroad Malleable | 12.00 to 12.50 |
| Wrought Iron Pipe | 12.50 to 13.00 |
| New Bundled Sheets | 12.00 to 12.50 |
| No. 1 Forge Fire Scrap | 11.50 to 12.00 |
| No. 2 Light Iron | 7.50 to 8.00 |
| Wrought Turnings | 10.00 to 10.50 |
| Stove Plate | 11.00 to 11.50 |
| Cast Borings | 9.00 to 9.50 |
| Grate Bars | 12.00 to 12.50 |

## Pittsburgh.

PARK BUILDING, July 15, 1908.—(*By Telegraph.*)

**Pig Iron.**—The Pittsburgh Steel Company is understood to have bought 8000 tons of Basic Pig Iron for prompt delivery, at about $16, delivered Monessen, and is not actively negotiating for any additional Iron. It recently dried out two of its open hearth furnaces, and lately has been drying out four more, there being eight altogether. Half the furnaces will probably be started early next month. The United Steel Company, Canton, Ohio, is inquiring for 500 tons monthly over the last four months of the year, with an option on 500 also in August. Otherwise, the Basic Pig Iron market is very quiet, and we continue to quote $15 to $15.25, Valley furnace. A sale of 3000 tons of special Bessemer is reported, at $18, Valley furnace, for delivery to a Pittsburgh consumer over the balance of the year, also 1000 tons of Standard Bessemer over the next three months, a contract for other material being involved in the latter case, so that the price fixed is not an index. Sand Cast Bessemer is quoted at $16, Valley furnace, but small tonnages have been sold at $15.75. Foundry Iron has not been moving freely, but there is a material improvement in inquiry in the past few days. We quote $14.75 to $15, Valley furnace, but it is difficult to buy at the lower price. Malleable is $15 to $15.25, Valley and Gray Forge $14, Valley furnace.

**Steel.**—There is very little demand for Billets, and offerings at special prices are also light, although some shading is possible. Sheet Bars are quite firm, and shipments are well maintained. We quote Bessemer and Open Hearth Billets, 3⅞ in. and larger, up to and including 0.25 carbon, $25; 0.26 to 0.60 carbon, $1 extra; over 0.60 carbon, $2 extra, all f.o.b. Pittsburgh. For Wheeling, Martins Ferry, Follansbee, Newcastle, Sharon, Steubenville and Washington (Pa.) delivery, half the freight or 50c. additional is charged. Sheet and Tin Bars in random lengths are $27, f.o.b. Pittsburgh. Forging Billets take $2 advance over Rolling Billets.

(*By Mail.*)

There is a moderate increase in business coming into the Steel mills for finished products, the greatest gain being probably in Merchant and Line Pipe. The Standard Oil Company has been a particularly heavy buyer. Some of the railroads have also loosened up, and the equipment concerns, outside of the Steel car interests, are doing considerably better than before the turn of the year. The settlement of the Iron wage scale at Detroit, Saturday night, between the union and the Western Bar Iron Association, will enable the independent union Iron mills to resume when they are through with their inventories and repairs, and it is presumed that the Republic Iron & Steel Company will be able to make an early start also. A few of the hot mills at Tin Plate plants of the leading interests are down this week, having run ahead of the finishing departments, which continue in operation. It is expected that these mills will start again next week. The Tin Plate trade continues to give an excellent account of itself.

**Ferromanganese.**—A sale is reported of 100 tons of Ferromanganese at $44, seaboard, or $45.95, delivered Pittsburgh, for prompt shipment, and we quote the market for prompt unchanged at this price. For fourth quarter and next year sellers quote $45, but it is possible this price might be shaded a trifle for fourth quarter, although hardly for next year.

**Rods.**—Scarcely anything is being done in either Chain or Wire Rods. We quote Bessemer wire rods at $33, and Basic at $34, with Chain Rods at $33, but there is not enough being done to test these prices.

**Muck Bar.**—As all the union iron mills have been down, and demand is light, the market has been very quiet. We continue to quote best grades, all Pig, at $26, Pittsburgh.

**Skelp.**—The market is very quiet, with prices remaining nominally as follows: Grooved Steel Skelp, 1.45c. to 1.50c.; Sheared Steel Skelp, 1.50c. to 1.60c.; Grooved Iron Skelp, 1.60c. to 1.70c., and Sheared Iron Skelp, 1.70c. to 1.75c., f.o.b. Pittsburgh.

**Steel Rails.**—There seems to be little doubt that the railroads in general are ready to buy Rails on a more liberal scale, and to specify better on their old contracts. The rolling mills that make Light Rails are endeavoring to get better prices, and have made one of their nominal advances of $2 a ton, while the actual market remains substantially as last reported, $23 to $24, and very little business is going. It is a fact, however, that some orders for Light Rails were taken recently as low as $21.50, f.o.b. mill, and that price cannot now be duplicated. The rerolling mills have to pay considerably higher prices for their rerollers than formerly, and some are bidding $15.50, delivered, without getting any, whereas some time ago purchases were made as low as $13.50, delivered. The mills that produce Light Rails from new Steel will still meet rerolling competition, but will not go under $23 or $24. We repeat regular quotations as follows: 25 to 45 lb. Sections, $28; 20-lb., $29; 16-lb., $30, and 12-lb., $32. We quote Standard Sections at $28, at mill, and Angle Splice Bars at 1.65c., at mill.

**Plates.**—The Carnegie plate mills at Homestead continue very busy on plates for Line Pipe being made at McKeesport, for the Standard Oil Company. Relatively little new business is being placed, but the outlook is regarded as very favorable for an early improvement. Prices are well maintained, except that a few mills which do not make the wider sizes are shading the regular market from $1 to $1.50 a ton. We quote Tank Plates, ¾-in. thick, 6¼ in. up to 100 in. wide, 1.60c., base, at mills, Pittsburgh. Extras over this price are as follows:

Tank, Ship and Bridge quality, ¼ in. thick on edges, 100 in. wide, down to but not including 6 in. wide, is taken as base.

Steel Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per square foot, shall be considered ¼-in. Plate. Steel Plates over 72 in. wide must be ordered ¼-in. thick on edge, or not less than 11 lb. per square foot to take base price. Steel Plates over 72 in. wide ordered less than 11 lb. per square foot down to the weight of 3-16-in. shall take the price of 3-16-in.

Percentages as to overweight on Plates, whether ordered to gauge or weight, to be governed by the Association of American Steel Manufacturers' Standard Specifications.

| | |
|---|---|
| Gauges under ¼-in. to and including 3-16-in. Plates on thin edges | $0.10 |
| Gauges under 3-16-in. to and including No. 8 | .15 |
| Gauges under No. 8 to and including No. 9 | .25 |
| All sketches (excepting straight taper Plates varying not more than 4 in. in width at ends, narrowest end being not less than 30 in.) | .10 |
| Complete Circles | .20 |
| Boiler and Flange Steel Plates | .10 |
| "A. B. M. A." and ordinary Firebox Steel Plates | .20 |
| Still Bottom Steel | .30 |
| Marine Steel | .40 |
| Locomotive Firebox Steel | .50 |
| Shell grade of Steel is abandoned. | |
| For widths over 100 in. up to 110 in | .05 |
| For widths over 110 in. up to 115 in | .10 |
| For widths over 115 in. up to 120 in | .15 |
| For widths over 120 in. up to 125 in | .25 |
| For widths over 125 in. up to 130 in | .50 |
| For widths over 130 in | 1.00 |

TERMS.—Net cash 30 days. Pacific Coast base, 1.50c., f.o.b. Pittsburgh.

**Structural Material.**—A number of fabricating interests, which have to buy their Shapes from the regular Steel mills, held a meeting at the Hotel Henry, Pittsburgh, last Friday night, to formulate plans for protesting to the Steel mills which have fabricating departments in regard to the low prices, such interests have been making on finished Structural work. They claim that the fabricating business has been put on a basis of no profit to the concerns that do work from purchased Shapes, and that even the jobbers are given better treatment than the outside fabricating interests. The Structural mills are doing a little better, and prospects are favorable for a material improvement. We quote as follows, f.o.b. mill, Pittsburgh: I Beams, H Beams and Channels, 3 to 15 in., inclusive, 1.60c. net; Beams over 15 in., 1.70c. net; Angles, 3 to 6 in., inclusive, ¼ in. and up, 1.60c. net; Angles, over 6 in., 1.70c. net; Angles, 3 x 3 in. and up, less than ¼ in., 1.50c., base, half extras, Steel Bar card: Tees, 3 in. and up, 1.65c. net; Zees, 3 in. and up, 1.60c. net; Angles, Channels and Tees under 3 in., 1.50c., base, half extras, Steel Bar card; Deck Beams and Bulb Angles, 1.90c. net; Hand Rail Tees and Z-19, 3c. net; Checkered and Corrugated Plates, 3c. net.

**Sheets.**—It is stated that there has been a material improvement in Sheet business placed in the past week, amounting to perhaps 15 per cent. as compared with June. The buying continues to be of a strictly hand to mouth character. It is regarded as surprising how small the stocks of jobbers are, but they are not disposed to increase them until the last moment. At the present time mill deliveries can be had in from 10 days to two weeks, and the jobbers do not feel it necessary to carry stocks when they can do as well as this with the mills. As soon as demand begins to increase materially mill deliveries will fall behind, and then it is expected that jobbers will be forced to resume the carrying of moderate stocks, which would give the Sheet mills a great deal more work. The leading interest continues to operate about 40 per cent. of its Sheet mills, maintaining the situation that has existed for six weeks or more. Some of the independents are running fairly well, and others are closed entirely for the time being. Occasionally prices are being shaded slightly, but in general the market is fairly well held. Regular prices for mill shipments are as follows: Blue Annealed Sheets, No. 10 and heavier, 1.80c.; Nos. 11 and 12, 1.85c.; Nos. 13 and 14, 1.90c.; Nos. 15 and 16, 2c.; Box Annealed, Nos. 17 to 21, 2.25c.; Nos. 22 to 24, 2.30c.;

Nos. 25 and 26, 2.35c.; No. 27, 2.40c.; No. 28, 2.50c.; No. 29, 2.60c.; No. 30, 2.70c. Galvanized Sheets: Nos. 10 and 11, 2.45c.; Nos. 12 and 14, 2.55c.; Nos. 15 and 16, 2.65c.; Nos. 17 to 21, 2.80c.; Nos. 22 and 24, 2.95c.; Nos. 25 and 26, 3.15c.; No. 27, 3.35c.; No. 28, 3.55c.; No. 29, 3.70c.; No. 30, 3.95c. No. 28 Painted Roofing Sheets, $1.75 per square, and Galvanized Roofing Sheets, No. 28, $3.10 per square, for 2½-in. corrugations. These prices are subject to a rebate of 5c. per 100 lb. to the large trade under the usual conditions, jobbers charging the usual advances for small lots from store.

**Tin Plate.**—This week the following hot mills of the American Sheet & Tin Plate Company, formerly running, are closed: 12 of the 25 mills at the National Works, Monessen, Pa.; 10 of the 30 mills at the Shenango Works, New Castle, Pa.; the 10 mills at the La Belle Works, Wheeling, W. Va., and the 23 mills at the Laughlin Works, Martin's Ferry, Ohio. These mills are not closed through lack of orders, but because partly finished material had accumulated, and it was necessary to close these mills for a few days in order to let the finishing departments catch up. There are thus 158 hot mills of the leading interest in operation this week, against 213 mills for many preceding weeks, but it is expected that practically the full quota will be on again next week. The McKeesport Tin Plate Company, which was closed in all departments last week for repairs and improvements, is on again this week, and the other independents are running as usual, so that production of Tin Plate continues substantially up to the record of the year. It is believed that there will be very little closing through lack of specifications before about the middle of August, the regular summer lull coming later than usual, as the mills lost some time early in the year. Tin Plate prices continue absolutely firm, and we quote at $3.70 for 100-lb. Cokes, 14 x 20, f.o.b. Pittsburgh, terms 30 days, less 2 per cent. off for cash in 10 days, this price being subject to the usual rebate of 5c. per base box in large lots.

**Hoops and Bands.**—Specifications continue fairly good, while a little new business is being placed. Regular prices are as follows: Steel Hoops, 1.80c., base, full Hoop card prices; Steel Bands, 1.40c., base, half Steel card extra, all f.o.b. cars, Pittsburgh, in carload lots, for delivery during 1908.

**Iron and Steel Bars.**—With the settlement of the Iron Bar scale for the independent Iron mills that operate on a union basis the plants could be started at once, but it is not likely that there will be any general resumption until late this month. The Republic Iron & Steel Company has not made any move in reference to the scale since the settlement with the independents at Detroit Saturday night, and whether it will sign this scale or attempt to operate on a nonunion basis remains to be seen. There is very little Iron Bar business going, but prices are pretty well maintained on the regular schedule. The Steel Bar mills expect to receive good specifications soon on the large tonnage of business recently booked. We quote Iron Bars at 1.40c., base, for Pittsburgh delivery, and 1.35c., base, for Western points, to which freight is added, except Chicago, the price for which is 1.50c., delivered. We quote Steel Bars at 1.40c., Pittsburgh, for base sizes.

**Merchant Steel.**—July has shown a mild improvement in Merchant Steel as compared with June, with the exception of Shafting, which is rather dull. We quote: Cold Rolled Shafting, on contracts for 100 tons and over, 57 per cent. off; carloads, 56 per cent. off, and less than carloads, 52 per cent. off, on which carload freight is allowed within base territory. Smooth Finished Machinery Steel, 1.80c. to 1.90c.; Flat Sleigh Shoe, 1.75c. to 1.85c.; Cutter Shoe Steel, 2.15c. to 2.25c.; Toe Calk, 1.90c. to 1.95c.; Railroad Spring Steel, 1.60c. to 1.75c., the higher price being for Pennsylvania Railroad analysis. Carriage Spring Steel is 1.80c.; Tire Steel, Iron, finished, 1½ in. and wider, 1.40c.; under 1½ in., 1.55c. Planished Tire Steel is 1.60c., all f.o.b., at mill.

**Railroad Spikes.**—There is a fair demand for small sizes, but standard spikes are dull so far as actual orders are concerned. The Spike producers expect much better business within a month or so. We quote: Standard sizes, 4½ x 9-16 in., at $1.70, and the smaller sizes at $1.80 per 100 lb. in carload and larger lots, with an advance of 5c. per 100 lb. for less than carload, f.o.b. Pittsburgh.

**Spelter.**—Demand for Spelter is extremely light in this district. We again quote 4.30c., St. Louis, for prime Western grades.

**Boiler Tubes.**—The market continues quiet, but Locomotive Tubes are looking up. Regular discounts on Merchant Tubes in small lots, on which an extra 5 per cent. is allowed in carloads, but which discounts are being shaded, are as follows:

*Boiler Tubes.*

| | Iron. | Steel. |
|---|---|---|
| 1 to 1½ in | 42 | 47 |
| 1¾ to 2¼ in | 42 | 59 |
| 2½ in | 47 | 61 |
| 2¾ to 5 in | 52 | 65 |
| 6 to 13 in | 42 | 59 |

2½ in. and smaller, over 18 ft. long, 10 per cent. net extra.
2¾ in. and larger, over 22 ft. long, 10 per cent. net extra.

**Merchant Pipe.**—The few producers making Pipe over 12-in. are quite busy, and running at a better rate than at any previous time since last year, while there has been a slight improvement in Merchant Pipe. Discounts on Steel Pipe, ¾ to 6 in., to the large trade are now 76 and 5 per cent. off list. Regular discounts are as follows:

*Merchant Pipe.*

| | Jobbers, carloads, Steel. | |
|---|---|---|
| | Black. | Galv. |
| | % | % |
| ⅛ to ¼ in | 67 | 51 |
| ⅜ in | 69 | 55 |
| ½ in | 71 | 59 |
| ¾ to 6 in | 75 | 65 |
| 7 to 12 in | 72 | 57 |
| Extra strong, plain ends: | | |
| ⅛ to ⅜ in | 60 | 48 |
| ½ to 4 in | 67 | 55 |
| 4½ to 8 in | 63 | 51 |
| Double extra strong, plain ends: | | |
| ½ to 8 in | 56 | 45 |

Discounts on Genuine Iron Pipe are as follows:

| | Black. | Galv. |
|---|---|---|
| | % | % |
| ⅛ to ¼ in | 65 | .. |
| ⅜ in | 67 | 53 |
| ½ in | 69 | 57 |
| ¾ to 6 in | 73 | 63 |
| 7 to 12 in | 70 | 55 |
| Extra strong, plain ends: | | |
| ⅛ to ⅜ in | 58 | 46 |
| ½ to 4 in | 65 | 53 |
| 4½ to 8 in | 61 | 49 |
| Double extra strong, plain ends: | | |
| ½ to 8 in | 54 | 43 |

**Iron and Steel Scrap.**—The dealers have become still more excited and have raised their bids on melting grades of Scrap, evidently expecting a great improvement in consumers' buying prices in the near future. Some of the Melting Scrap on the Pennsylvania Railroad Company's letting late last week went at $15, delivered on its lines. Some dealers have started a purely speculative movement, offering to buy Heavy Melting Scrap at prices above the market, if the seller will hold it for 60 days and not charge storage. We note a sale of 1000 tons of Heavy Melting Steel at $14.25, delivered, Sharon, and it is possible that one or two interests would pay a slightly higher figure, while dealers quote $15 and higher on forward delivery. The 22,600 tons of Rerolling Rails offered by the Pennsylvania Railroad Company again went over, as a suitable price was not offered. These Rails have been accumulating for months, a few thousand tons being added each month. It is understood that the railroad company will not sell under $15, and this price cannot be had, as it will not sell except f.o.b. the division, and there are no consuming points nearby. For delivery at such points as Cumberland or Huntingdon it is understood $15.50 could be secured. Bundled Sheet Scrap, Borings and Cast Scrap, are also slightly higher. We revise prices as follows, per gross ton, f.o.b. Pittsburgh: Heavy Steel Scrap, for Pittsburgh, Steubenville and Sharon delivery, $14 to $14.50; Cast Iron Borings, $8.25 to $8.50; No. 1 Railroad Wrought Scrap, $13.75 to $14; No. 1 Cast Scrap, $14.25 to $14.75; Bundled Sheet Scrap, $11 to $11.50; Sheet Bar Crop Ends, $17.25 to $17.50; No. 1 Busheling Scrap, $12.75 to $13; No. 2 Busheling Scrap, $8.75 to $9; Iron Axles, $19.50 to $20; Steel Axles, $17.50 to $18; Low Phosphorus Melting Stock, 0.04 and under, $18 to $18.50; Old Steel Rails, short pieces, $14 to $14.50; Rerolling Rails, $15 to $15.50; Machine Shop Turnings, $8.50 to $8.75; Grate Bars, $12.25 to $12.50; Railroad Malleable Scrap, $13 to $13.50.

**Coke.**—The better tone in the Connellsville Coke market continues. A number of smaller operators are resuming on the contracts recently booked for Foundry Coke for second half. Prompt Furnace Coke continues to be held at $1.60, while the operators who recently had to sell stock Coke at sacrifice prices declare they will not stock any more Coke. While production has only increased slightly in the past three weeks, shipments have been much better. Production last week in the Connellsville and Lower Connellsville regions was 165,472 tons, against 164,839 tons the previous week, and was the largest production since the third week in May. Furnace Coke for prompt shipment continues to be quoted at $1.60, for best grades, and 72-hr. Foundry at $2 to $2.25, at oven. On contracts for Furnace Coke for shipment over last half of the year, $1.80 to $1.90, at oven, is quoted.

## San Francisco.

SAN FRANCISCO, CAL., July 8, 1908.

Since the payment of the semiannual dividends, amounting to $10,000,000 in San Francisco, the local money situation is a little easier, but not enough to encourage new deals for engineering and building enterprises. However, the purchase of $4,000,000 worth of 30-year bonds of the California Gas & Electric Corporation by a syndicate of Eastern capitalists, which has just been announced by N. W. Halsey & Co., is an exception. The bonds carry 5 per cent. interest and were taken at 90 and 91. A part of the $4,000,000 will be used to take up the floating indebtedness

and the remainder for extensions to the company's power plants in various parts of the State. The company is now selling electric power to the amount of 175,000 hp., and will increase its capacity to 225.000 hp. One of the most cheering features is that things are still booming in the California oil regions. Many new wells are being drilled in old fields. New territory is being exploited, and the Standard Oil Company has just acquired additional holdings.

**Structural Material.**—There are some good inquiries for railroad bridges in California and elsewhere on the Coast, but few Steel frames are being erected in this city now. The erection of Steel was recently commenced on the Royal Insurance Company's large 10-story class A building at Pine and Sansome streets. The San Francisco Rebuilding Company has erected the Steel for a large four-story class A brick building on Post street, and the Smith-Rice Company has erected the Steel frame for the new Academy of Sciences Building on Market street, between Fourth and Fifth streets. San Francisco's building permits for June indicate that things are about the same as for the past three months. The number of permits was 638 and the valuation $2,351.211. Oakland had 233 permits, with a valuation of $438,467; Los Angeles, 626 permits, valuation $727,956; Seattle, Wash., 1088 permits, valuation $1,280,003; Portland, Ore., 380 permits, valuation $833,390.

**Pig Iron.**—The increase in activity at the mines and smelters of the Coast will help the local foundries in time, but there is not much life to the Pig Iron trade at present. No foreign Pig Iron has arrived in the past two weeks. No. 1 English, No. 1 Scotch and Chinese Pig Iron are about $28, ex-yard, San Francisco.

**Merchant Pipe and Oil Well Supplies.**—Local jobbers report only moderate activity in Wrought Pipe. Most of the recent orders are for sorting stock. The continued improvement in the oil regions is most gratifying to the supply dealers, as it means increased purchases of Casings, Well Tools, Pipe and Fittings. While stocks in these lines have not been exhausted, there must be considerable ordering by the Coast jobbers before very long. The Standard Oil interests have just acquired the Talara Oil Company's 80 acres in the Midway District of California for a reported cash price of $100.000. There are four fine producing wells on the property turning out light oil, which the Standard has been buying under contract. The land appears to be capable of extensive development. We quote unchanged the following discounts on Merchant Pipe, jobbers' carloads:

| | Steel. Black. | Steel. Galv. |
|---|---|---|
| | % | % |
| ⅛ to ¼ in. | 56.5 | 40.5 |
| ⅜ in. | 58.5 | 44.5 |
| ½ in. | 60.5 | 48.5 |
| ¾ to 6 in. | 64.0 | 54.5 |
| 7 to 12 in. | 61.5 | 46.5 |
| Extra strong, plain ends: | | |
| ⅛ to ⅜ in. | 49.5 | 37.5 |
| ½ to 4 in. | 56.5 | 44.5 |
| 4½ to 8 in. | 52.5 | 40.5 |
| Double extra strong, plain ends: | | |
| ½ to 8 in. | 45.5 | 34.5 |

**Cast Iron Pipe.**—Business is looking up and bids have been taken on several moderate sized contracts. Several large water projects which are under consideration on this Coast show some signs of favorable action. Work has been begun by the Klamath Falls Light & Water Company on two additional reservoirs for the water system of Klamath Falls, Ore. Eventually it will be necessary to lay about 3 or 4 miles of Pipe. The market remains at about the following prices per net ton: 6, 8, 10 and 12 in., $36; 4-in., $37, f.o.b. Pacific Coast terminals.

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H. H. Noble, president of the company operating the electric smelting process at Heroult, Cal., has placed an order in the East for three 750-kw. variable voltage transformers. which are to be delivered in three months. Mr. Noble says that by that time the new Lyon Furnace will be completed also. This will have a capacity of producing 25 tons a day of Pig Iron. It will be of the same design as the experimental furnace that proved so satisfactory in a recent run of about one month. The Lyon Furnace is named for Professor Lyon of Stamford University, who designed it. The plant for saving the by-products of wood is complete and a test run is being made, directed by W. B. Harper, superintendent of the Lake Charles Chemical Company, operating at Lake Charles, La. Several thousand cords of wood are piled upon the ground ready to be reduced to charcoal, carbons and the various by-products.

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The Carbon Steel Company, Pittsburgh, is this week completing its shipments of steel for the new Manhattan Bridge over the East River, New York. The contract was placed last year, and called for 45,000 tons of steel, including the cables, the construction and fabrication of which is being done by the Glyndon Construction Company of New York, a subsidiary corporation of the Carbon Steel Company. A part of the material is of nickel steel and the rest of carbon steel.

## New York.

NEW YORK, July 15, 1908.

**Pig Iron.**—Aside from two sales of 5000 tons each of Basic Pig Iron, to a Steel plant in the coal regions, at $15 per ton, and of about 10,000 tons, at private terms, of Foundry Iron to a Cast Iron Pipe interest, no important transactions are reported. The pump interest had added a little tonnage. We quote, at tidewater: Northern No. 1 Foundry, $16.75 to $17; No. 2 Foundry, $16 to $16.50, and No. 2 Plain, $15.25 to $15.50. Alabama Irons are quoted, $16.50 to $17, for No. 1 Foundry, and $15.75 to $16.25 for No. 2 Foundry.

**Steel Rails.**—Some domestic business is pending, though some details remain to be closed. Foreign inquiry is also reported, including, besides Canadian business, a 10,000-ton lot for Mexico.

**Structural Material.**—A number of contracts are being figured on in various parts of the country, chiefly buildings, railroad work being a very small proportion. A railroad viaduct at Westfield, N. Y., is now being bid on, and bids have been asked on 500 tons for the Cornwall bridge, Ontario, Canada. The International Engineering Company, Scranton, Pa., is about to receive bids on the main building of its new plant. In connection with the Beaver bridge, let some time ago, by the Pittsburgh & Lake Erie Road, the American Bridge Company has received a contract for about 2000 tons of Eyebars. The low prices on fabricated material continue, but the leading interest in this line appears to have received a smaller proportion of the business let in the past six months than would be indicated by its capacity. Its total bookings in the first half of the year were about 100,000 tons, or not more than 40 per cent., it is estimated, of the aggregate of fabricating contracts for that period. We continue to quote, on tidewater delivery, mill shipments, as follows: Beams, Channels, Angles and Zees, 1.76c.; Tees, 1.81c. On Beams, 18 to 24 in., and Angles over 6 in., the extra is 0.10c. Material cut to length is sold from stock at 2¼c. to 2½c.

**Bars.**—Iron rolling mills shut down for repairs at the end of June have found no urgency in the situation calling for starting up. The improved demand referred to a week ago was short lived, and the prospect is for a dragging summer market. We continue to quote 1.35c. to 1.40c., tidewater, for Iron Bars, and 1.56c., tidewater, for Steel Bars.

**Plates.**—A slight improvement has been noticed in the past week or two, and as the result of recent orders, some of the Eastern mills have got up to about 50 per cent. of capacity. Early shipment is called for in nearly all cases. The large consumers of Plates have done little buying of late, and the mills are kept at work by the aggregate of scattered small orders. Here and there the competition of mills in the Central West is noticed, and these plants have taken some New England business, particularly in narrow Plates of light gauges. We continue to quote on wide Plates, at tidewater, as follows: Sheared Plates, 1.76c. to 1.86c.; Flange Plates, 1.86c. to 1.96c.; Marine Plates, 2.16c. to 2.26c.; Firebox Plates, 2.65c. to 3.50c., according to specifications.

**Old Material.**—Consumers of Old Material are buying sparingly, and such speculative buying as is reported is confined entirely to dealers, but as has been evident for some time there is continued accumulation of Scrap by such firms. General confidence is felt in the trade that the fall months will bring a firmer market with a revival of demand from all classes of consumers. The Pennsylvania Railroad did not sell the 25,000 tons of long length relaying rails offered last week, its idea of price being considerably above offers. The New York Central is reported to have disposed of a considerable tonnage of Old Material in various forms, purchases being made both by dealers and consumers. A fair demand from the foundries is reported, but Steel works are practically out of the market, and Iron rolling mills have done comparatively little. The quotations below are for gross tons, New York City, representing in some cases dealers' prices, which on Wrought Scrap, Stove Plate and Old Car Wheels are firmer than a week ago:

| | |
|---|---|
| Old Girder and T Rails for melting | $10.00 to $10.50 |
| Heavy Melting Steel Scrap | 10.00 to 10.50 |
| Old Steel Rails, rerolling lengths | 11.50 to 12.00 |
| Relaying Rails | 21.00 to 22.00 |
| Old Iron Rails | 14.50 to 15.00 |
| Standard Hammered Iron Car Axles | 16.00 to 16.50 |
| Old Steel Car Axles | 14.50 to 15.00 |
| No. 1 Railroad Wrought | 13.50 to 14.00 |
| Iron Track Scrap | 10.00 to 10.50 |
| No. 1 Yard Wrought, long | 12.00 to 12.50 |
| No. 1 Yard Wrought, short | 11.00 to 11.50 |
| Light Iron | 5.50 to 6.00 |
| Cast Borings | 5.00 to 5.50 |
| Wrought Turnings | 6.50 to 7.00 |
| Wrought Pipe | 10.00 to 10.50 |
| Old Car Wheels | 13.75 to 14.25 |
| No. 1 Heavy Cast, broken up | 13.00 to 14.00 |
| Stove Plate | 10.50 to 11.00 |
| Locomotive Grate Bars | 11.00 to 11.50 |
| Malleable Cast | 12.50 to 13.00 |

**Ferroalloys.**—Business is exceedingly dull. While 80 per cent. Ferromanganese can be had at $14.50, several sellers are asking advances over this figure. For 70 per cent.

Ferrosilicon importers are asking $70, but domestic producers are out of the market at higher figures.

**Cast Iron Pipe.**—Inquiries are a little more numerous, and the tone is more cheerful. It is expected that at an early date a considerable tonnage will be required for this city. We quote $24.50 to $25 per net ton, at tidewater, for 6-in. Pipe.

## Metal Market.

NEW YORK, July 15, 1908.

**Pig Tin.**—The market, if anything, has been duller than last week, and if more than 300 tons of Tin were sold it would be a surprise to those well informed in the trade. The advance in London which began July 8 was continued on July 9, and carried prices up to £133 7s. 6d. The advance was attributed largely to the disquieting rumors of the safety of the Verona from Singapore to New York. On this rumor the short interests were thoroughly frightened, and began to cover. The steamer was reported safe at Aden July 10, but will be delayed about three weeks. Quotations during the week have been as follows:

| | Cents. |
|---|---|
| July 8 | 28.05 |
| July 9 | 29.15 |
| July 10 | 28.90 |
| July 13 | 28.65 |
| July 14 | 28.65 |
| July 15 | 29.20 |

Notwithstanding the light business, it looks as though the delay to the Verona might cause a shortage of Tin the last of the month or the first of next, as only 922 tons have arrived so far this month, and among the afloats of 2100 tons are 1250 tons on unknown steamers, 85 tons on the Minnehaha, due July 20, 315 tons on the Sikh, which arrived in Boston July 8, but it is problematical when her cargo of Tin will be discharged in New York, and 900 tons on the Verona, which will be three weeks late. The London market closed at about £6 above last week, at £132 7s. 6d. for spot, and £133 7s. 6d. for futures.

**Copper.**—The numerous inquiries in the market last week were not turned into orders, and there has been a falling off in inquiries this week. The market is therefore a waiting one. Owing to the few transactions it is difficult to determine the price. Lake, while held at 13c. by producers, can be obtained at concessions from second-hands; Electrolytic is quoted at 12.75c., but exporters can secure it for 12.65c. or 12.62½c. possibly. Casting Copper is likewise unchanged, at 12.50c. The rumor in the daily papers this morning of a sale of 1,000,000 lb. at 11.87½ is stamped as a canard by several well versed in Copper matters. Moreover, it does not look plausible that producers would break the market for such a small lot. Buying for foreign account continues light. Exports so far this month amount to but 7950 tons. The London market is slightly higher than last week, at £57 15s., for spot, and £58 7s. 6d. for futures.

**Spelter.**—There is so little business in the Spelter market that a variety of quotations is offered. The general market, however, can be quoted at 4.30c., St. Louis, and 4.45c., New York. While several inquiries have been in the market for extended deliveries, some of them as long as 20 months, these have not been filled or even quoted on.

**Pig Lead.**—The market is dull and lower, especially for outside lots. These can be obtained at 4.45c., New York, and 4.27½c., St. Louis. Little business is in evidence.

**Antimony.**—The market continues very dull, buying being confined to small lots for actual needs. Prices are unchanged, and more or less nominal, Hallett's being sold at 8.25c. to 8.50c.; Cookson's at 8.50c. to 8.75c., and outside brands at 8c. to 8.25c.

**Nickel.**—The unchanged price of 45c. for ton lots, and 55c. to 65c., for smaller quantities, continues.

**Tin Plates.**—Specifications being received at the mills are rather heavy, but new orders are light. Prices continue absolutely without change at $3.89, New York, and $3.70, Pittsburgh, for 100-lb. IC Coke Plates. In Swansea Welsh Plates are unchanged at 12s. 3d.

**Old Metals.**—Business is light, but higher quotations for Ingot Copper have had a sentimental improvement, and inquiries are more numerous. Dealers' selling prices are as follows:

| | Cents. |
|---|---|
| Copper, Heavy and Crucible | 12.00 to 12.25 |
| Copper, Heavy and Wire | 11.75 to 12.00 |
| Copper, Light and Bottoms | 10.75 to 11.00 |
| Brass, Heavy | 8.75 to 9.25 |
| Brass, Light | 7.00 to 7.25 |
| Heavy Machine Composition | 11.25 to 11.50 |
| Clean Brass Turnings | 7.75 to 8.25 |
| Composition Turnings | 9.00 to 9.50 |
| Lead, Heavy | 4.10 |
| Lead, Tea | 3.75 |
| Zinc | 3.50 |

**Noteworthy Records at Ensley Steel Plant.**—The Tennessee Coal, Iron & Railroad Company, which put the fifth and sixth of its 85-ton tilting open hearth furnaces in operation at Ensley, Ala., in the latter part of June, has made a remarkable record. The six new furnaces, operated under the duplex process in conjunction with two Bessemer converters, and one of the 50-ton furnaces working half pig and half scrap, produced in 24 hr. on June 26 1782 tons of ingots. The two new furnaces, E and F, together made 725 tons on Monday, July 13.

## Iron and Industrial Stocks.

NEW YORK, July 15, 1908.

The activity in the stock market referred to in this column one week ago has continued. The United States Steel stocks have been particularly noteworthy for sustained strength and high mark for 18 months in the common and for nearly two years in the preferred was reached. The advance in the common stock has been more than four points in two weeks, the highest price before to-day's being made in the last hour on Tuesday, July 14, at 42. The high point in the preferred in the past week was reached on Wednesday, July 8, at 108⅞. Sloss-Sheffield common made an advance of three points on Monday. Comments on the stock market in financial columns in the past week have referred to manipulative features in the upward movement. The range of prices on active stocks from Thursday, July 9, to Tuesday of this week was as follows: United States Steel common 39½ to 42, preferred 106⅜ to 108; Car & Foundry common 36 to 37⅛, preferred 101 to 102½; Steel Foundries preferred 38½ to 41; Cambria Steel 33¾ to 34⅞; Colorado Fuel 27¼ to 29½; Crucible Steel common 5¾ to 6, preferred 40¼ to 41; Pressed Steel common 29 to 29⅞; Railway Spring common 37, preferred 98; Republic common 18½ to 18¾, preferred 69 to 69½; Sloss-Sheffield common 55¼ to 59¾; Cast Iron Pipe common 21½ to 24¼, preferred 68 to 69⅝; Can preferred 57½ to 59½. Last transactions up to 1.30 p.m. to-day are reported at the following prices: United States Steel common 42½, preferred 107⅞; Car & Foundry common 37¼, preferred 101; Locomotive common 50⅜, preferred 102½; Colorado Fuel 29¾; Pressed Steel common 29¾, preferred 87; Railway Spring common 37; Republic common 19⅝, preferred 70¼; Sloss-Sheffield common 59; Cast Iron Pipe common 23¾, preferred 69½; Can common 5, preferred 59¾; United States Steel bonds, second 5s, 99¼.

**Dividends.**—The Cambria Steel Company has declared a semiannual dividend of 1½ per cent., payable August 15.

The American Shipbuilding Company has declared a quarterly dividend of 1¾ per cent. on the preferred stock.

The International Steam Pump Company has declared the regular quarterly dividend of 1½ per cent. on the preferred stock, payable August 1.

The American Seeding Machine Company has declared a quarterly dividend of 1½ per cent. on the preferred stock.

## The Bar Iron Scale Settlement.

At a conference in Detroit between the Western Bar Iron Association and the Amalgamated Association, lasting from Tuesday until Saturday night of last week, an agreement was reached on the wage scale to govern the union iron mills. While some of the independent union mills were not directly represented, it is taken that the scale as agreed to will be acceptable to all independents, including probably the Youngstown Sheet & Tube Company, which, as explained last week, had an issue with the Amalgamated Association because the workers would not allow it to operate its sheet mill with union labor, despite the fact that there is no material connection between the sheet department and the iron dpartmnt, unless the company would agree in advance to sign whatever iron scale might be formulated later.

The Republic Iron & Steel Company demanded a much larger reduction in the scale than was agreed to by the independents at the Detroit conference, and it is not known what stand it will take now that the independents have come to terms. By its rules the Amalgamated Association cannot agree to any different scales with this company from that it allows to the signers of the scale just arranged.

The old boiling scale started with $5 on 1-cent bar iron, advancing by 12½ cents for each 1-20-cent advance in bar iron. The new scale does not start advancing untill 1.20-cent bar iron is passed, when it advances by 12½ cent for each 1-20-cent. Accordingly the new scale is 5 cents less than the old scale when bar iron is 1.29 cents and higher, or 8 to 9 per cent. on the present range of

prices. The average reductions in other parts of the scale are approximately as follows:

Swarth, 9 to 10 per cent.

Busheling on cinder bottom: Heavy, 7 per cent.; light, 8 per cent.

Muck rolling, 11 per cent.

Heating piles on boards, 5 per cent.

Finishing on large mills, 7 per cent. for rolling and 6 per cent. for other jobs.

A full statement of the Detroit scale is as follows:

| | | | Cinder Bottom Busheling. | |
|---|---|---|---|---|
| | Boiling. | Swarth. | Heavy. | Light. |
| 1c. bar iron | 5.00 | 4.50 | 2.28 | 2.97 |
| 1.05 | 5.00 | 4.50 | 2.28 | 2.97 |
| 1.10 | 5.00 | 4.50 | 2.28 | 2.97 |
| 1.15 | 5.00 | 4.50 | 2.34 | 3.04 |
| 1.20 | 5.00 | 4.50 | 2.40 | 3.12 |
| 1.25 | 5.12½ | 4.62½ | 2.46 | 3.20 |
| 1.30 | 5.25 | 4.75 | 2.52 | 3.28 |
| 1.35 | 5.37½ | 4.87½ | 2.58 | 3.35 |
| 1.40 | 5.50 | 5.00 | 2.64 | 3.43 |
| 1.45 | 5.62½ | 5.12½ | 2.70 | 3.51 |
| 1.50 | 5.75 | 5.25 | 2.76 | 3.59 |
| 1.55 | 5.87½ | 5.37½ | 2.82 | 3.66 |
| 1.60 | 6.00 | 5.50 | 2.88 | 3.74 |
| 1.65 | 6.12½ | 5.62½ | 2.94 | 3.82 |
| 1.70 | 6.25 | 5.75 | 3.00 | 3.90 |
| 1.75 | 6.37½ | 5.87½ | 3.06 | 3.97 |
| 1.80 | 6.50 | 6.00 | 3.12 | 4.05 |
| 1.85 | 6.62½ | 6.12½ | 3.18 | 4.13 |
| 1.90 | 6.75 | 6.25 | 3.24 | 4.21 |
| 1.95 | 6.87½ | 6.37½ | 3.30 | 4.28 |
| 2.00 | 7.00 | 6.50 | 3.36 | 4.36 |

| | Busheling sand bottom. | | | Heating piles on |
|---|---|---|---|---|
| | Heavy. | Light. | Muck rolling. | boards. |
| 1c. bar iron | 1.95 | 2.28 | .64 | 1.50 |
| 1.05 | 1.97½ | 2.28 | .65½ | 1.51½ |
| 1.10 | 2.00 | 2.28 | .67 | 1.53 |
| 1.15 | 2.02½ | 2.34 | .68½ | 1.54½ |
| 1.20 | 2.05 | 2.40 | .70 | 1.56 |
| 1.25 | 2.07½ | 2.46 | .71½ | 1.57½ |
| 1.30 | 2.10 | 2.52 | .73 | 1.59 |
| 1.35 | 2.12½ | 2.58 | .74½ | 1.60½ |
| 1.40 | 2.15 | 2.64 | .76 | 1.62 |
| 1.45 | 2.17½ | 2.70 | .77½ | 1.63½ |
| 1.50 | 2.20 | 2.76 | .79 | 1.65 |
| 1.55 | 2.22½ | 2.82 | .80½ | 1.66½ |
| 1.60 | 2.25 | 2.88 | .82 | 1.68 |
| 1.65 | 2.27½ | 2.94 | .83½ | 1.69½ |
| 1.70 | 2.30 | 3.00 | .85 | 1.71 |
| 1.75 | 2.32½ | 3.06 | .86½ | 1.72½ |
| 1.80 | 2.35 | 3.12 | .88 | 1.74 |
| 1.85 | 2.37½ | 3.18 | .89½ | 1.75½ |
| 1.90 | 2.40 | 3.24 | .91 | 1.77 |
| 1.95 | 2.42½ | 3.30 | .92½ | 1.78½ |
| 2.00 | 2.45 | 3.36 | .94 | 1.80 |

BAR AND 12-IN. MILLS.

| | Heater. | Roller. | Catcher. | Rougher down. | Rougher up. |
|---|---|---|---|---|---|
| 1c. bar iron | .54 | 36.3 | 19.5 | 16.4 | 16.4 |

These are base rates and advance in the same proportion as scale of 1907-08.

The words "steel axle" to be eliminated from footnote No 7 of Bar Mill Scale.

GUIDE, 10-IN., HOOP AND COTTON TIE MILLS.

| | Roller. | Heater. | Rougher and catcher (each). |
|---|---|---|---|
| 1c. bar mill | $1.01 | .54 | .29 |

These are base rates for base sizes and advance in same proportion as 1907-08 scale.

Prices for extra sizes to be reduced at same percentage, which is approximately 7.8 per cent.

Footnotes same as last year, except as affected by transfer from memorandum of agreement.

## Rapid Method for Determining Silica in Iron Ore.

BY RANDOLPH BOLLING.

When silica alone is wanted in an iron ore, the method of analysis used in iron and steel laboratories consists in dissolving one gramme of the ore in hydrochloric acid, evaporating to dryness, redissolving in dilute hydrochloric acid, filtering on an ashless filter paper, washing with water, drying, igniting, and weighing of the insoluble siliceous matter, and reporting as such. If it is desired to obtain silica alone, the residue is moistened with a few drops of sulphuric acid, and hydrofluoric acid added and the liquid evaporated to dryness. The difference between the first and last weighing represents the weight of pure silica. This is not a rapid procedure. The evaporation to dryness occupies considerable time, usually all night, and one has to be on the alert so that no spattering occurs, which is a danger always to be feared when lean ores are being operated upon. Then the evaporation has to be to dryness, for silica would be soluble in the dilute acid. Sometimes it requires prolonged heating at about 300 F. to decompose the last traces of ferric chloride.

The introduction of a rapid process would be of great assistance in classifying ore in the stock house of a blast furnace plant, especially some Southern furnaces, which sometimes receive a very variable grade from the mines, owing to conditions of mining and washing iron ore. In order to stock the ore properly, it is necessary to determine silica separately in each carload received from the mine. The rapid method will give the percentage of silica in the sample in 25 minutes. The analytical details are as follows:

### The Method.

The sample is ground to pass a 100 mesh sieve. Then 0.5 gramme is weighed on an analytical balance turning on one-tenth of a milligramme, and transferred to a 20 c.c. Russia iron crucible. The crucible is placed in an iron wire triangle on a tripod and heated by a full flame bunsen burner for five minutes after the iron crucible bottom becomes red. A lid must cover the crucible. Taking the crucible in the jaws of a pair of crucible tongs, it must be cooled in about half an inch of water, and then the contents are carefully crushed by a wire nail. This breaks up the mass of sintered ore on the crucible bottom.

The roasted ore is now brushed into a No. 1 beaker and 25 c.c. of tin bi-chloride solution added. This solution is prepared by dissolving 50 grammes of metallic tin in form of foil or granulated tin in one liter of strong hydrochloric acid. Solution of the ore in the acid tin solution is accelerated by heating on the hot plate for a few minutes and all goes into solution except the silica. The beaker is now diluted with about an equal volume of hot water and filtered on an ashless paper, washed with hot water and the filter containing the silica transferred to a weighed platinum crucible and ignited over a blast lamp, cooled and weighed. The weight of silica found, divided by five and multiplied by 100, gives the percentage of silica in the sample.

The separation of the siliceous contents of the ore from its other constituents, without the usual method of evaporating to dryness with hydrochloric acid, is accomplished by taking advantage of the peculiar condition into which silica is converted by heating the ore to redness over a bunsen burner. This treatment converts it into an insoluble modification, possibly by driving off the water combined in the hydrous silicate molecule, in which state it exists in most ores. In order to try out this rapid method of determining silica in iron ore, by comparing the results obtained by fusing the ore with sodium carbonate and then acidifying with hydrochloric acid and then evaporating to dryness, redissolving in dilute acid and filtering, washing and igniting the silica, which method of analysis is considered to yield absolutely correct results, several samples of different ores which the writer had analyzed from different localities and in most instances had made the determination of silica in duplicate, were selected for comparison, with results as follows:

*Table of Comparative Determinations.*

| Ore sample. | Origin. | Percentage of silica. By rapid method. | By fusion. |
|---|---|---|---|
| Limonite | —Embreville, Tenn | 15.98 | 15.95 |
| Limonite | —Attala, Ala | 8.80 | 8.77 |
| Limonite | —Allen's Creek, Tenn | 18.78 | 18.77 |
| Limonite | —Foster Falls, Va | 25.35 | 25.33 |
| Limonite | —Roanoke, Va | 17.99 | 17.98 |
| Limonite | —Oriskany, Va | 15.30 | 15.29 |
| Limonite | —Ritch Patch, Va | 26.97 | 26.95 |
| Limonite | —Goshen, Va | 39.38 | 39.37 |
| Hematite | —Wabana, Belle Isle, Newfoundland | 7.75 | 7.72 |
| Hematite | —Wabana, Belle Isle, Newfoundland | 16.56 | 16.55 |
| Hematite | —Stevenson (Lake ore) | 8.31 | 8.30 |
| Hematite | —Found near Rio de Janeiro, Brazil | 1.23 | 1.22 |
| Hematite | —Justino Spanish | 5.39 | 5.36 |
| Limonite | —Carthagena, Spain | 10.56 | 10.55 |
| Limonite | —Cape Breton, N. S. | 22.88 | 22.88 |

These samples give this method a trial with ores from very widely separated localities and seem to demonstrate that its accuracy remains about the same for all ores. After subjecting it to a test like the above, the writer thinks it will answer for the general run of ores which are soluble in hydrochloric acid and that it can be relied on to give accurate results. It certainly speeds up the old method for silica and also gives the gas meter a rest at night.

## A New Penalty and Bonus Provision in Iron Ore Contracts.

A committee of the iron ore firms at Cleveland, Ohio, has been at work for some time on a new form of iron ore contract. The change under discussion has related to the basis for settlement in cases of variation from the percentage of metallic iron in the natural condition, as specified in contracts. It has been the custom where the iron content fell below the guarantee to make a deduction in proportion to the number of units guaranteed. On the other hand, where the metallic iron exceeded the guarantee a bonus was paid by the furnace company, this also being figured proportionately. This method was satisfactory where there were only slight departures from guaranteed percentages. But when the iron content fell several points below the guarantee other factors of loss to the furnacemen entered into the account—the extra freight paid on the greater nonferrous content of the ore and the increased amount of fuel and flux required in the furnace. We give below the paragraph in the new ore contract adopted by the committee and now employed by iron ore selling firms for sales of Bessemer ore. No change has been made in the phosphorus penalty and bonus, these being figured from the phosphorus table which has been in use for a number of years:

The price of this ore is named and accepted on the expectation that the ore will average....per cent. in metallic iron in its natural condition, and....one-thousandths of 1 per cent. in phosphorus dried at 212 degrees F. Taking this as the standard of quality, it is agreed that any total average variation therefrom in metallic iron shall be entitled to recognition and adjustment by increase or abatement in price, as the case may be, at the rates per unit, per ton, hereinafter specified. When this ore contains 50 per cent. to 55 per cent. (both inclusive) of metallic iron, the value per unit or fraction thereof is at the rate of...., known as the base unit value; when less than 50 per cent., but not less than 49 per cent., for such unit or fraction thereof of decrease only, said base unit value shall be increased at the rate of one-half thereof; when less than 49 per cent., but not less than 48 per cent., for such unit or fraction thereof of decrease only, said base unit value shall be increased at the rate of 100 per cent. thereof; when less than 48 per cent., the value shall be at the rate of....cents per unit or fraction thereof; when more than 55 per cent., but not more than 56 per cent., for such unit or fraction thereof of excess only, said base unit value shall be increased at the rate of 1 cent; when more than 56 per cent., but not more than 57 per cent., for such unit or fraction thereof of excess only, said base unit value shall be increased at the rate of 2 cents; when more than 57 per cent., but not more than 58 per cent., for such unit or fraction thereof of excess only, said base unit value shall be increased at the rate of 3 cents; when more than 58 per cent., but not more than 59 per cent., for such unit or fraction thereof of excess only, said base unit value shall be increased at the rate of 4 cents; when more than 59 per cent., but not more than 60 per cent., for such unit or fraction thereof of excess only, said base unit value shall be increased at the rate of 5 cents; when more than 60 per cent., each unit or fraction thereof of excess shall be figured at said base unit value. And in case of excess of phosphorus over and above the estimated quantity, settlement shall be made according to the table of phosphorus values hereon.

It will be observed from the contract that when an ore does not run below 50 per cent. iron (natural state) the regular unit system of payment prevails. There is written in the first blank space in the paragraph the standard guarantee, which in the case of Bessemer ores is 55 per cent. In the next blank space is written 45, the phosphorus standard in thousandths of 1 per cent.; in the next blank space there is written the unit price reached by dividing the price by 55; in the case of Mesaba Bessemer ore the price is $4.25, which makes the unit price 7.727 cents.

Then comes the variation from the old contract. Formerly the unit price prevailed throughout, but under the new arrangement the unit entering into the penalty is increased by one-half if the ore is between 49 and 50 per cent. and by 100 per cent. if it is between 48 and 49 per cent. It will be noticed that the amount of the penalty where the iron content is less than 48 per cent. is not specified in the above paragraph. It is probable that it will be made the same as for ore running between 48 and 49 per cent. iron, natural.

The non-Bessemer contract is similar to the Bessemer contract, with the exceptions that the reference to phosphorus is omitted, the range for the straight penalty basis is 50 to 53 per cent. instead of 50 to 55 per cent., the specified standard being 51.50 per cent. instead of 55 per cent., and the premium basis is 2 per cent. less throughout, so that an ore between 53 and 55 per cent., instead of an ore between 55 and 56 per cent., carries the extra premium of 1 cent, and so throughout, the progression stopping at 58 instead of 60 per cent.

## PERSONAL.

W. G. Nichols, formerly assistant superintendent of the Taylor Iron & Steel Company, Highbridge, N. J., has accepted the position of superintendent of the manganese steel department at the Chicago Heights, Ill., Works of the American Brake Shoe & Foundry Company.

A. Bement, consulting mining and mechanical engineer, has moved from the American Trust Building to 2114 Fisher Building, Chicago.

W. F. Robertson, president of the W. F. Robertson Iron & Steel Company, Cincinnati, Ohio, will sail July 25 for a six weeks' trip in Europe.

C. M. Schwab, chairman, and Archibald Johnstou, president of the Bethlehem Steel Company, have returned from Europe.

J. C. Maben, president of the Sloss-Sheffield Steel & Iron Company, has returned to Birmingham, Ala., after a three months' stay in Europe.

Don H. Bacon, formerly chairman of the Tennessee Coal, Iron & Railroad Company, expects to sail from New York this month on a European trip.

Robert Abbott Hadfield, chairman of Hadfield's Steel Foundry Company, Ltd., a Bessemer medallist and consulting metallurgist of the United States Steel Corporation, has been made a Knight.

At a meeting of the Board of Directors of the Dearborn Drug & Chemical Works, July 8, W. A. Converse, assistant secretary and chemical director of the company, was elected secretary and chemical director, and Ralph R. Browning, assistant treasurer, was elected treasurer of the company. Both have been connected with the Dearborn Company for many years.

Baylor Hickman, of the pig iron firm of Hickman, Williams & Co., Cincinnati, Ohio, has taken a house on Norham Road, Oxford, England, and is sojourning there with his family, making trips to Paris and other parts of Europe. He will remain in England until September.

## OBITUARY.

D. FRANK HULL, head of the implement manufacturing firm of D. Frank Hull & Son, Hagerstown, Md., died July 2, aged 60 years.

THOMAS J. MCCORMICK, aged 58, died this week at his home, 1131 Braddock avenue, Braddock, Pa. He was superintendent of the stockyards of the Carrie Furnace of the Carnegie Steel Company's Carrie Furnace, at Rankin, Pa. Mr. McCormick was formerly engaged in brick manufacture at Connellsville, Pa., and had been superintendent of the H. C. Frick Coke Company and the J. M. Schoonmaker Coke Company plants at Connellsville. He is survived by his widow, a daughter and two sons.

WM. F. NIEDRINGHAUS, who was associated with his brother, ex-Congressman F. G. Niedringhaus, in the original tin plate and sheet industry at Granite City, Ill., that is now a part of the National Enameling & Stamping Company, died at St. Louis, July 14, aged 73 years. His brother is president, and his son, T. K. Niedringhaus, is vice-president of the National Enameling & Stamping Company. Wm. F. Niedringhaus was a director of the company and had charge of the Granite City Rolling Mill.

The Washington Tin Plate Company, Washington, Pa., has sufficient orders ahead to enable it to run through the summer and employ 300 men.

# The Machinery Trade.

NEW YORK, July 15, 1908.

Business with machinery houses the past week was exceedingly light, being smaller in volume with many firms than it has been for some time. In view of the prosperity talk of a month or two ago it was expected that trade would receive some impetus the early part of this month, and houses were much encouraged over the prospect; but the failure to receive even a fair number of orders and the absence of any inquiries of importance have dispelled to a great degree the feeling that prevailed. This disappointment on the part of machinery houses is more keenly felt because of the failure to receive any business from the sources from which it was reported a buying movement was to start July 1. Information was spread broadcast that the railroads would come into the market before this, but thus far, with few exceptions, they have adhered to their policy of retrenchment, and have given out neither inquiries nor orders. Two weeks ago the Delaware, Lackawanna & Western Railroad sent out inquiries for a few tools; orders were placed for the equipment for the Idaho & Washington Northern shops, and in the past week the New York Central Railroad purchased 8 or 10 machines, while the Panama Railroad has just issued specifications for a quantity of steam and track supplies. Aside from these few cases no activity on the part of the railroads is reported, though it is said that three have lists of tools prepared which they are withholding for the present. While in some quarters business is said to be holding up as well as could be expected, a majority of the machinery houses are more discouraged over the outlook than they have been for some time. In some branches of the trade there has been considerable price cutting. Notwithstanding the abundance of money in the banks, collections are still bad.

The announcement in last week's *Iron Age* to the effect that the Panama Canal Commission began a system of concentration of the work on July 1, by organizing the first of three divisions, under which all the departments will be administered, came as a surprise to many machinery men here, and the action of the commission is causing considerable speculation in the trade as to the future policy of purchasing machinery. The canal operations are important in the eyes of many machinery men just now, because of the fact that preparations are being made to purchase a great deal of cement making equipment and conveying machinery to be used in the construction of the locks and dams. Under the new arrangement the Department of Lock and Dam Construction has been abolished, and that work will be operated now under the direction of Major William L. Seibert, division engineer, with headquarters at Gatun. The heads of the Lock and Dam Department have been ordered to report to the new division engineer, and the marine shops at Cristobal and the mechanical shops of the Atlantic Division will be operated under the direction of Major Seibert.

### New York Central Railroad Improvements.

The only railroad business reported the past week was the few machines purchased by the New York Central & Hudson River against the inquiries sent out last April. The company bought about a dozen machine tools, the orders being scattered among several dealers and manufacturers. Plans are being prepared by the engineering staff of the New York Central & Hudson River Railroad for a new erecting shop, 100 x 442 ft., to be built at West Albany, at a cost of about $200,000, and it is expected they will be completed within the next few weeks and that work on the structures will commence shortly after. The company is now building a large boiler shop at that point, and purchases of machinery to be installed in that structure have been made in the market of late. The buying for the structural shops has not been done as yet. The general contract for the construction of the shop has been let to Lyman B. Milliken of Buffalo. The company is also building a brick addition, 75 x 161 ft., to the boiler shop of its locomotive repair plant at Depew, N. Y.

The Delaware & Hudson Railroad is understood to have secured the land needed for the erection of its new shops at Watervliet, N. Y. It is said that quite an extensive plant is contemplated for that point and that it will be used not only for engine and car repair work, but for the building of passenger and freight cars.

The large purchases of machinery to be made by the International Steam Pump Company, New York, mention of which was made in these columns last week, will cover a variety of machine tools aggregating in value about $50,000. This machinery is to be used for increasing the efficiency of the company's various plants, and is to be installed in the plants at Harrison, N. J., Cambridge and Holyoke, Mass., and probably some in the Snow Steam Pump Works, Buffalo, N. Y. As the requisitions from the various shops have not all been tabulated, the entire list is not yet ready to be sent out, but it is expected that within the next 10 days the trade will receive inquiries from the company covering the entire amount of machinery to be purchased. It is understood that the money has been appropriated for the purchase of the equipment.

Those in the trade who have been following the International Engineering Company, Carter Building, Scranton, Pa., and who have submitted bids on the greater portion of the equipment, will probably receive orders for the machinery by the end of this month. The company has received quotations on the large part of the equipment to be installed, and expects to place orders for the machinery by August 1. All the buildings of the plant, which is to be erected on an extensive site at Erie, Pa., were designed by the company's own mechanical force, and the greater part of the erecting will be done by the company. The contract for the steel work of the main building, as well as the smith and forge shop, will probably be awarded this week. The main building will consist of a boiler shop, 60 x 200 ft.; machine and erecting shop, 60 x 200 ft.; with a machine shop bay, 20 x 200 ft. The boiler and machine shop will be served by a 20-ton electric crane, with a 5-ton auxiliary hoist, and the machine shop bay by a five-ton electric crane, all of the cranes to travel the full length of the shop. The other buildings of the plant include a power house, 60 x 60 ft.; smith and flange shop, 60 x 100 ft.; two-story brick office building, 60 x 70 ft.; carpenter and pattern shop, 70 x 135 ft.; store house, 60 x 100 ft.; foundry, 60 x 100 ft., and smaller structures. The plant will have excellent shipping facilities, being served by tracks into the buildings from the Lake Shore & Michigan Southern and New York, Chicago & St. Louis railroads, the trackage and buildings being so arranged that a 75-ft. yard crane will pass over the flue sheds and storage platforms. Considerable ground is given over to yard space, and a space 100 x 150 ft. is reserved for additional shop buildings. The company, which was organized early in the year, for the manufacture of traction, stationary and small locomotive engines, tubular, upright, stationary, locomotive, traction, portable boilers, general sheet iron work and machine work, is managed by practical mechanics and business men. H. S. Jeffery is president; E. K. Kyler, secretary; I. R. Miller, treasurer.

It is understood that H. C. Stone, Montreal, Quebec, has been selected to prepare plans for the new plant to be built at Lachine, Quebec, by the Imperial Locomotive & Machine Works.

The Knoxville Power Company, National Bank Building, Washington, D. C., is to go ahead with the development of its hydro-electric plant on the Little Tennessee River, the cost of which will be over $2,000,000. The general contract for the construction has been awarded to William T. Oliver, Knoxville, Tenn. About 32,000 hp. will be developed, the plant being 34 miles from Knoxville and a short distance from the dividing line between Tennessee and South Carolina. The power house will be 68 x 200 ft., in which will be installed five 9000-hp. turbine units, two exciter turbine units of 400 hp. each direct connected to 250-kw. direct current generators. To each of the five turbine units will be direct connected a 5000-kw. generator. A 30-ton electric crane will also be installed. Charles A. Treat, Treasurer of the United States, Washington, D. C., is president of the company; J. T. Wilder, Knoxville, Tenn., vice-president; F. J. F. Thiel, Washington, treasurer; George H. Sullivan, New York, secretary.

### Business Changes.

The Du Bois Iron Works, Du Bois, Pa., has established the following agencies for the sale of its gas and gasoline engines, producer gas plants and steam and power pumps: Anderson & Gaylord, Real Estate Trust Building, Philadelphia, Pa.; Barden Electric Company, 109 Main street, Houston, Texas; Hampson & Fielding, 1711 Tremont street, Denver, Colo.; A. C. Stansill, 5 Church avenue, Roanoke, Va.; B. S. Middleton, Goldsboro, N. C.; General Supply Company, Independencia, No. 28, Mexico, D. F.; Gisendorff & Schlotzhauer, Indianapolis, Ind.; Cass Harkins & Son, Schofield Building, Cleveland, Ohio. This last named firm consists of Robert R. Harkins, the company's representative at Cleveland, and his father, Cass Harkins, formerly manager of the Atlas Engine Company, Columbus, Ohio. The company has secured a contract for a complete lighting system for Du Bois, Pa., operated by gas engines of twin tandem cylinder type belted to General Electric generators, the power plant to have a capacity of 300 hp., which will later be increased to 600 hp. Other sales consist of two 80-hp. tandem engines with direct connected generators to the Allegheny Trust Company, Allegheny, Pa.; 50-hp. producer gas plant, Philadelphia Gear Works, Philadelphia, Pa.; 175-hp. tandem cylinder engine operating on natural gas, Van Tassel Tannery, Du Bois, Pa.; 60-hp. tandem cylinder engine direct connected to generators, Hibner-Hoover Hardware Company, Du Bois, Pa.; 50-hp. general service engine, South Cleveland Lumber Company, Cleveland, Ohio; 50-hp. engine Tarentum Glass Company, Tarentum, Pa.; 50-hp. engine, Taylor Crush Stone Company, Falls Creek, Pa.; 32-hp. plant, Du Bois Laundry Company, Du Bois, Pa. The com-

pany reports a gratifying increase in sales of small sizes of gas and gasoline engines and steam and power pumps, of which it is an extensive builder.

The Rust Boiler Company, Pittsburgh, Pa., in order to give better attention to its growing business in the East, has opened an office at 50 Church street, New York, in charge of E. M. Rust.

## Chicago Machinery Market.

CHICAGO, ILL., July 14, 1908.

Viewed as a whole the machinery trade continues very quiet, but at the same time evidences of improvement are not altogether lacking. It is noticeable that reports of increased sales—always conservatively qualified, of course, to indicate a narrow margin of gain—are somewhat more numerous this week. Such experiences are, however, by no means uniform even in kindred lines. Here and there, it is true, a machinery plant of one kind or another is found fairly well supplied with orders; but in such cases it develops upon investigation that this result is due to exceptional circumstances which have no bearing upon the general situation. The difficulty of judging the true trend of affairs from week to week observations lies in the erratic and spasmodic nature of movements which now characterize the course of trade in machinery as well as other lines. Not until the advance settles into regular progressive steps, without hesitating and halting stops, will it be possible to reflect the measure of gain with any degree of accuracy.

Last week produced nothing of special interest for the machine tool houses either in sales or inquiries. Some of the more fortunate dealers entered a few single tool orders, while others did next to nothing. It is noted that when a user now comes into the market for a tool immediate shipment is usually an imperative condition governing the sale. This was pointedly illustrated in a recent transaction where a manufacturer sought to buy a good sized drill; when it was found that the one selected could not be shipped under 10 days the order was canceled and preference given to another make that was furnished immediately from stock. Such demands are in striking contrast with the conditions of 1906 and the early months of 1907, when 10 weeks was counted early delivery, and even 10 months no bar to the entry of orders. It simply goes to show that only such tools as are indispensably required are being bought. There is but little demand for second-hand tools and, as compared with other like periods of depression, few are being thrown on the market by bankrupt sales. Not being crowded with work, manufacturers are content to use tools that under more favorable circumstances they would discard and replace with new ones and therefore few are offered for sale. Dealers' stocks of second-hand tools are being replenished mainly by exchange deals in which an old tool is taken in part payment for a new one.

The boiler shops are running very light, especially those engaged exclusively in the production of power units. One large Western plant making a specialty of heating boilers is reported to be running near 90 per cent. capacity. But this again is one of the exceptional cases governed by peculiar circumstances and has no special significance.

The results of the policy of retrenchment inaugurated last year by the railroads and since continued with exacting stringency have been felt with particular severity by the manufacturers of railway cars and equipment. Nearly all the plants of this character have for the last six months been either wholly idle or working at very much reduced capacity. The announcement therefore that new car shops are to be built at Kansas City, Mo., is of special interest as indicating a hopeful view of the prospects for improvement in this direction. A site comprising nearly 19 acres east of the Blue River, on the Belt Line and Kansas City Southern railroads, has been secured for the establishment of the plant, which will be built by the Sheffield Car & Equipment Company. Contracts have been let for the construction of the buildings, the initial one of which will be of steel construction, 80 x 100 ft., and the work of erection will begin about September 1. The shop will be equipped with machinery suitable for new car construction and repair work. What form of motive power will be used has not been decided, though electricity is being considered. The interests back of this enterprise are identical with those of the Blue Island Car & Equipment Company, Chicago, of which F. H. Nills is president and manager.

The Chicago Steel Foundry Company, Chicago, has turned its attention to the production of steel castings for high pressure steel valves and fittings, with the result that this branch of work has within the past few months been quite extensively developed. All work of this kind is subjected to a test of 10,000 lb. hydraulic pressure, and though this is several times as great as the pressure sustained in actual service, the percentage of failures is said to be very small. In order to better meet the requirements of high pressure service the company is now making cast nickel-steel stems for the larger sized valves. With the percentage of carbon and nickel properly proportioned, it is stated that these castings are as easily machined as ordinary crucible steel, and besides taking a high polish, it is claimed that the nickel-steel is noncorrosive. The reduced operations of machinery builders have greatly lessened demand from this source, but the foundry has been well occupied with crucible steel castings for valves and fittings ranging in weight from 1 to 300 lb.

The Jackson-Church-Wilcox Company, Saginaw, Mich., manufacturer of light machinery and automobile parts, is preparing plans and expects to let contracts within a few days for a new two-story factory building, 50 x 220 ft., of brick and steel construction. Power will probably be secured from the Jackson & Church Company.

The National Brake & Electric Company, Milwaukee, Wis., is improving the foundry portion of its plant by the erection of a brick addition to accommodate new core and annealing ovens at its Larkin street plant. About $10,000 will be expended on this extension, work on which will be begun without delay.

The Los Angeles Railway Company, Los Angeles, Cal., contemplates improvements to its power plant during the present year which will include two 1000-kw. motor generator sets and one 600-kw. motor generator, with necessary transformers.

The Wilmarth & Morman Company, Grand Rapids, Mich., manufacturer of grinding machinery, has kept its factory running 12 hr. a day a good part of the time since the middle of May. Sales of New Yankee drill grinders for the month of June not only exceeded those of June, 1907, but were larger than those of every other month in the year with one exception.

## Cleveland Machinery Market.

CLEVELAND, OHIO, July 14, 1908.

From the standpoint of actual transactions the local machinery market shows no improvement. During the past week orders received by dealers have been practically all for single tools, and these sales have not been numerous. Although some price cutting has been going on for several months, much more of it is being done now as a result of the strong competition for the little business to be had, and some dealers are no longer attempting to conceal the fact that they are frequently offering liberal concessions from regular prices. Although the current business does not warrant optimistic feeling, it is nevertheless true that the feeling is growing stronger every day that there will be a decided improvement in the demand for machine tools by early fall. Because of the brighter outlook greater activity is being shown by machinery salesmen, and in some cases additional salesmen have been put on the road to do missionary work preparatory to the revival in buying. The largest local transaction of the week was the sale of $3500 worth of woodworking tools to the Municipal Traction Company of this city, the order being placed within 48 hr. after the inquiry was out.

The second-hand machinery market is very quiet. Few second-hand tools are being offered to dealers, and there is little demand at present for used tools.

In power equipment there is considerable improvement in the demand for small motors, and preliminary inquiries lead to the belief that there will be a decided improvement in the demand for large power installations toward the end of the year, or when other conditions approach nearer the normal state. Many plants of various kinds need new or additional generative and motive power equipment, but have been holding off for an improvement in business.

The majority of the local manufacturers of various iron and steel products report a slight increase in orders from week to week, and as a result additional labor is being employed. It is estimated that in the 50 local concerns that are members of the Cleveland branch of the National Metal Trades Association 15 per cent. more men are at work than early in the spring. There are now very few plants that are not running at over one-half of their capacity. A local builder of sugar machinery reports that orders so far this season have been confined mostly to repair work and some new machinery for old plants. The demand for heavy forgings is still very light. There is a slight improvement in the demand for malleable castings. The jobbing foundry situation shows some improvement.

The Osborn Engineering Company, Cleveland, has secured the contract for the engineering work for the rebuilding of the plant of the Erie Foundry Company, Erie, Pa., that was recently partially destroyed by fire. The new structures will include a machine shop and some small buildings. The power plant and foundry building escaped the flames, but the company may decide to build an additional foundry building later. The company will buy some traveling cranes and machine shop and foundry equipment.

The American Steel & Wire Company has received bids on a list of machine tools for its new Cuyahoga plant. The list includes a lathe, planer, drill, bolt cutter, water tool grinder and upright drill.

The Chicago Mfg. Company, Chicago Junction, Ohio, has been organized, with a capitalization of $25,000, to take over the plant of a defunct company that formerly made windmills and the property of the New Haven Foundry & Machine Company. Special attention will be given to the manufacture of windmills and to making a well drilling machine recently invented by C. C. Sanford of Chicago Junction. The officers of the company are as follows: President, J. A. Underwood; vice-president, A. S. Richards; treasurer, A. C. Griffin; secretary, E. L. Niver; general manager, F. C. Troutwine.

Reports from Canton, Ohio, indicate that the sheet metal industry in that city is in a flourishing condition. The Canton Art Metal Company has rented a four-story building, 60 x 200 ft., in the Aultman Works, where it will establish its metal furniture department about August 1. The company has outgrown the capacity of its present plant. The Canton Mfg. Company is reported to have enough orders on hand to keep it busy until winter, and its present force of men, which is working overtime, will probably be increased.

The Cleveland Foundry Company is having plans prepared for a five-story addition to its plant, on which work will probably be started in a short time. The size has not yet been determined, but it is proposed to largely increase the capacity of the plant.

The Chisholm-Moore Mfg. Company, Cleveland, reports considerable improvement in the demand for chain hoists, the company's June orders showing up quite a bit better than those of the previous month.

The Falls Heat, Light & Power Company, recently incorporated at Cuyahoga Falls, has been organized by the election of the following officers: C. M. Walsh, president; E. A. Murphy, vice-president; E. A. Prior, secretary and M. E. Wright, treasurer. Nothing will be done about the erection of a plant until a suit brought by another company to acquire water rights is disposed of in court.

The National Metallic Packing Company, Oberlin, Ohio, maker of power disk grinders and other products, has been incorporated, with a capitalization of $100.000. by W. P. Carruthers, C. S. Carruthers, E. M. Cook, B. T. Cook and A. Straus.

A. W. Schirring, who is well known in local machinery circles, has become connected with the machinery department of the Strong, Carlisle & Hammond Company.

## Cincinnati Machinery Market.

CINCINNATI, OHIO, July 14, 1908.

For some time—in fact, since the first of the year—the machinery market has been featureless. Aggressive establishments have kept up a fairly steady average of sales of standard machines where actually needed, employing the most approved methods of salesmanship, and this average would not vary much from month to month. But there has been no filling of large specifications such as would be needed for new machine shops and enlargements and additions to going plants. For the first time in 1908 there is a disposition to show confidence in the future, and manufacturers are encouraged to believe that the market will improve from now on. A feature of the week is the visit to this market of manufacturers from the Central West, or cities and towns within a radius of 150 and 200 miles. A number of the larger shops making lathes, drills, drill presses, shapers and planers report calls during the week from agricultural works and other lines closely related to farming. Many of these manufacturers are buying needed tools to take care of an extraordinary rush of work in repairs and in new machinery. The larger sales, however, are of special tools and punches and shears. There have been some really good sales in this last mentioned line, though for the most part very closely negotiated. The standard tools are not moving and the second-hand machinery market is stagnant. In machinery such as would be needed in the manufacture of automobile parts there is a fine inquiry, and some good sales are reported. Foreign inquiry is stronger, but not enough business is coming from abroad just now to lend any special encouragement.

Some foreign agents have visited this market within the past few days, among them Hugo Stockvis, son of R. Stockvis, a large dealer of Rotterdam, Holland. Mr. Stockvis visited several of the larger manufacturers and placed a few orders for lathes, shapers and special tools. Some local establishments have profited during the week in the placing of orders for tools to be set up in various technical school branches of educational institutions.

Manufacturers of pumping machinery for municipal and manufacturing plants are all busy on orders, but it is felt that a slump is inevitable and that not much in this line may be looked for after August before the new year. Inquiries are coming in in good volume to manufacturers of machinery for tobacco pressing, &c., particularly from the West and Southwest. This is also true of the boiler and engine trade.

Negotiations looking to the removal from Trenton, N. J., to Cincinnati of the Reeves Engine & Machine Company have reached the point where an engineering expert is to be sent to Trenton at the instance of a number of local capitalists who expect to be interested in the establishment if it is moved here. This report may not be received for two or three weeks.

Manufacturers of tools needed in Government arsenals and naval stations believe that some fair sized lists will soon be available.

The foundry melt is increasing slowly and is still a long way from normal. As a rule the larger establishments are taking off from three to five moderate sized heats a week.

The Ward Fence Company, Marion, Ohio, is building a new factory at Decatur, Ind.

Joseph and George Healy, brass founders of Evansville, Ind., have let contracts for a new foundry at High and Goodsell streets, that city. It is expected to be ready for occupancy early in September. The brothers belong to a family of foundrymen and have a profitable business already at First and Division streets in Evansville. Another brother has a foundry at First and Pine streets.

A new form of trolley wheel invented by C. F. and John Hensley, Huntington, Ind., has been acquired by the Acme Brass Foundry Company, Detroit, Mich., and it is understood will be manufactured there.

New machinery to the value of about $25,000 is to be installed in the electric light plant at Hartford City, Ind., being intended to take care of emergencies.

A force is employed at the plant of the Columbus Machnie Company, builder of gas engines, Columbus, Ohio, on practically full time, turning out engines of from 60 to 150 hp., for which there is reported a very fair demand.

Work has been resumed in nearly all the mills of the Andrews Steel Company at Newport, Ky., and a gradual improvement is looked for in the balance of the year.

The George W. Grimes Company has been incorporated at Bluffton, Ind., to conduct a general foundry business and manufacture a portable oil well drilling machine which has found considerable favor in the oil fields of Indiana and adjacent States.

President and General Manager John H. Patterson of the National Cash Register Company, Dayton, Ohio, states that the company shipped more cash registers in May than in any other month in its history.

The Central Organizations Committee, composed of heads of departments and officials of the American Rolling Mill Company at Middletown, Ohio, is reported to have been quite successful in its work. It was formed some months ago to increase the effectiveness of various departments and to bring the men into closer social relations. The second quarterly dinner was given on the evening of July 2 at the United States Hotel in Middletown.

It is reported that prominent men in Pittsburgh, Hamilton and Cincinnati will be interested in a new rolling mill to be built at Cokeotto, the suburb of Hamilton, where the Hamilton Steel & Iron Company's plant is located.

A company to manufacture refined and common bar iron has been promoted in Toledo by W. W. Lindsay of Detroit, with capital to be supplied mostly by George E. McBride of London, Ont.; J. B. Patterson of the Dominion Iron & Steel Company, and prominent Toledo manufacturers and capitalists. The capital stock is $350,000, and it is stated that about 400 men will be employed.

The Bucyrus (Ohio) Steel Castings Company has been making some repairs to its furnace department. This company reports a very good run of orders which will keep it busy for some time.

Arrangements will be made, it is understood, for the manufacture in Cincinnati of a new automatic round cotton bale press. J. A. Taft of Houston, Texas, has been perfecting arrangements for the formation of a $100,000 corporation.

The Kentucky State Board of Control is expected to close bids on July 15 on boilers, stokers, feed water heaters, pumps, &c., to be installed in the plant of the Kentucky Asylum for the Insane at Lakeland, Ky.

## Philadelphia Machinery Market.

PHILADELPHIA, PA., July 14, 1908.

While a certain volume of business has and will continue to come out during the summer months, no orders of any great volume are expected to develop in the near future. The action of the railroads is being closely watched, and while some business has developed in other territories, the roads in this neighborhood show as yet no disposition to come into the market. The decrease in idle cars, however, is an encouraging feature, and it is believed there cannot be much further delay in putting equipment in shape to take care of the usual crop movement. The tone of the market, notwithstanding the immediate absence of any improvement in buying, is strong; the trade on the whole feeling encouraged, and express the belief that a movement toward more

normal conditions will develop early in the fall. In many cases the uncertainty of the coming election will no doubt hold up progressive measures to some extent, but we have moved a step forward at least since the conventions were held, and it is believed that a certain volume of business will be released from which the machine tool trade will benefit.

Manufacturers and dealers report business during the past week as being extremely light, but this was not unexpected at this season. Single tool orders have been the rule, principally for those of the medium and smaller classes. Many plants which were shut down over July 4 extended the period over the past week in order to take account of stock and make the usual midsummer repairs. But few show any increase in production, the larger ones remaining fairly stationary around the 50 per cent. mark.

There has been no noticeable improvement in the foreign demand. Trade abroad is reported dull and no large orders can be expected to develop. Those transacting a regular export business in special tools and power transmission equipment report buying to have been in smaller volume.

The second-hand machinery market still keeps fairly active, and the falling off in business is hardly as heavy as it has been in regular lines. The demand has been confined to the smaller and medium tools for both metal and woodworking purposes. The second-hand boiler and engine trade is particularly quiet.

No change is to be noted in the demand for iron and steel castings, particularly in the machine tool line. Some steel foundries have picked up a little railroad and locomotive work, but not much has been done by the gray iron foundries. Some municipal work was recently given out for gray iron and bronze castings, and contracts are to be let at an early date for a considerable tonnage of pipe, but the usual run of the jobbing foundries still find the demand pretty light.

Bids will be received until July 29, 1908, by George R. Stearns, Director of Public Works, for the Bureau of Water, under contract No. 147, for sluice gates for the Torresdale filter plant; under contract No. 150 for a surface condenser for the Roxborough auxiliary pumping station, and contract No. 151 for furnishing 6, 8 and 10-in. cast iron pipe and special castings. Specifications may be obtained at the office of the chief of the Water Bureau, room 790a, City Hall, Philadelphia.

The contract for ornamental bronze and iron electric lamp posts, to be placed around the City Hall, Philadelphia, mention of which was recently made in these columns, has been awarded to the Horn & Brennan Mfg. Company, at $25,375.

The Hess Machine Works reports only a fair volume of business. Orders for file making machinery for export come in rather slowly, as do also domestic orders for that class of machinery. Some fair business has been taken, however, for special tools and machinery. This concern shipped several weeks ago a special set of file cutting machines for domestic delivery, while three sets are now ready for shipment for export to Germany.

At the Baldwin Locomotive Works inquiries from the railroads are not showing any increase, and probably will not until railroad traffic improves. The recent report that the working hours of the plant had been increased from five to eight a day, five days a week, is denied; in fact, there has been a decrease in number of men employed from 5000 to 4600 at the former hours. One recently taken was for 15 engines of the Pacific type for the Erie Railroad, but the bulk of the business has been in small orders. Some few, very few, export orders have been taken. Electric and mine locomotive business holds up pretty well, the falling off in this branch of the business being less than in steam locomotives.

## New England Machinery Market.

WORCESTER, MASS., July 14, 1908.

The condition of the machine tool market has not changed. There are a few orders for new tools and more for second-hand machinery. Inquiries continue fairly active, and dealers occasionally mention that a customer is about to consummate a sale for machines concerning the purchase of which he has been talking for months back. It is a common expression, that "the tone of the market seems better," which is apparently a reference to an intangible something in the situation, which argues for a return of better business in the autumn. Undoubtedly the closing of the primary campaigns in the national election has had a good influence; there is no tendency to worry over possible exigencies unfavorable to a revival of business. In some of the lines akin to the machinery trade, for example in abrasive wheels and materials, steady improvement is noted, and in some other branches of business the volume of orders is constantly increasing. The machine tool people realize that their own business cannot expect to show any marked gain until their customers have made a start on the upward wave of demand, and they see in the beginnings already made encouraging signs for the future. Concerns that do grinding of crankshafts for the automobile manufacturers report an increase in this class of business. Among them is the Norton Grinding Company, Worcester, which had closed this department of their business, but which will now resume its operation, owing to the receipt of scattering orders for the work from automobile builders in various parts of the country. This constitutes another indication of the improvement in the automobile trade, and is another reason for the expectation that the manufacturers will be much better customers for machine tools and other equipment than had been hoped for.

The decrease in wages in the machine shops has not been nearly so marked as had been expected. It has been a difficult matter in many cases to lower the hourly rate of a man who is working but a small part of the time, especially if he is a workman whose services it is desired to retain. It has been easier to procure a somewhat general cutting of wages in works which have been kept in operation manufacturing for stock. But on the whole, the decreased cost of labor among the machine tool builders is not commensurate with the condition of business. It is anticipated that on the average the wage scale will not be markedly lower when business shall regain its normal condition. But a gain has been made in getting rid of workmen who have been paid exaggerated wages as compared to their degrees of skill, a class which constitutes no small proportion of shop forces when business is at its hight.

Reports from the Naugatuck Valley indicate that the brass business is showing improvement, as indicated by increased production in the face of the season of the year which is usually the dullest. The improvement applies to the general manufacturing of brass products as well as to the brass mills proper.

A transaction of unusual interest and importance is the sale to the Industrial Instrument Company, Waterbury, Conn., of the plant at Foxboro, Mass., built by the Van Choate Electric Company and recently owned and operated by the Schaeffer & Budenberg Company, of Magdeburg, Germany, manufacturer of gauges, valves, &c. The Industrial Instrument Company is headed by Bennett B. Bristol, until recently head of the Bristol Company, Waterbury, manufacturer of recording instruments, &c. This is a holding company. The plant at Foxboro will be operated by a new corporation, to be known as the Standard Gauge Mfg. Company, which will manufacture gauges, recording instruments, &c., and the property will undoubtedly be deeded to this company by the Industrial Instrument Company. The personnel of the two companies will be practically identical. Watson E. Goodyear, Naugatuck, Conn., will be president of the Standard Gauge Mfg. Company; Bennett B. Bristol, treasurer, and Arthur F. Mundy, Syracuse, N. Y., secretary. The company states that it will be in the market later for manufacturing equipment, but it is not the intention to begin on a very elaborate scale, and machine tools and other equipment will be purchased as they will be needed. The power already installed in the works will be ample for the company's purposes. The plant at Foxboro is one of the best in New England. It was erected about 10 years ago, at a cost of $500,000, no expense being spared in the details of its construction and equipment. When the Schaeffer & Budenberg Mfg. Company acquired it a few years ago, a new foundry was added at a cost of $20,000. The two main buildings are of brick, 60 x 210 ft. each, and three stories. Between them extends a forge shop and testing room, 42 x 76 ft. The foundry is 60 x 150 ft., one story, with skylights. A carpenter shop is 30 x 42 ft., and two stories, and there is a glass furnace building, 39 x 39 ft., used by the recent owners for a brass polishing shop. The power plant contains three Wm. T. Harris Corliss engines, respectively, of 100, 250 and 150 hp., with three electric generators, and there are four 100 hp. Roberts boilers. The property includes a gas plant, with a building for the storage of oil, and one with two complete sets of gas making apparatus, and a gasometer of large capacity. The plant is served by the New York, New Haven & Hartford Railroad. The Industrial Implement Company has just increased its authorized capital stock from $202,500 to $2,000,000.

Important changes have been made in the management of the New Haven Mfg. Company, New Haven, Conn., manufacturer of machine tools. Josiah Judd has been made manager and superintendent, and William H. Brown, secretary and treasurer, succeeding Leslie Moulthrop, who has resigned. Mr. Moulthrop remains one of the Board of Directors. Mr. Judd has been the superintendent of the company's shops.

The Worcester Pressed Steel Company, Worcester, Mass., has awarded the contract for a new building, which will be used for its annealing and case-hardening department. It will be 40 by 140 ft., one story, with monitor roof. In it will be installed a Pittsburgh annealing furnace, a large Brown & Sharpe double furnace, together with five furnaces of ordinary type. A 12-in. rolling mill for cold rolling steel has been ordered of the Pittsburgh Foundry & Engineering Company, and a 1000-ton press of the crank

type of the Toledo Machine & Tool Company. The matter of purchasing a large hydraulic press is held in abeyance for the present.

The Wright Wire Company, Worcester, Mass., has purchased of the Columbia Wire Cordage Company, Hyde Park, Mass., all its machinery for the manufacture of wire picture cord and clothes line. The equipment will be removed to the Worcester factory.

The Chapman Ball Bearing Company, Boston, is about to open an office in London, England, in charge of James E. Whitney, for the demonstration of the Chapman double ball bearings.

The Narragansett Electric Lighting Company, Providence, R. I., has ordered of the Westinghouse Machine Company a 2500-kw. steam turbine with condenser. No new boilers will be required.

Plans for the large industrial plant to be erected on the water front in South Boston, Mass., are being prepared by H. L. Gilman, consulting engineer, 26 Linden place, Brookline, Mass. The plant will contain 3,000,000 sq. ft. of floor space, to be rented for manufacturing purposes and will consist of 20 or more buildings, all eight stories high, of reinforced concrete construction. The tenants will be furnished with electric current for power or light, steam or hot water heat, gas and compressed air, all generated and furnished from one central power plant. A wharf of over 1,000,000 sq. ft. in area, located on the deep water channel, and with direct rail connections with all the railroads in Boston will be constructed. The cost of the enterprise will be about $10,000,000, and work of construction will be extended over five years. Financial arrangements have been made, and active work of building will probably start early in the fall.

## Government Purchases.

WASHINGTON, D. C., July 14, 1908.

The Isthmian Canal Commission will soon ask bids for a 15-ton locomotive crane, a 25-ton locomotive crane, eight 15-ton steel flat cars, two rail benders and other supplies.

The Bureau of Yards and Docks, Navy Department, Washington, will open bids August 1 for a 100-ton derrick for the League Island Navy Yard.

The following bids were opened July 7 for supplies for the navy yards:

Class 1.—One 5-ton motor driven pillar crane—Bidder 6, Alliance Machine Company, Alliance, Ohio, $3560; 16, Brown Hoisting Machinery Company, New York, $2420; 29, Cleveland Crane & Car Company, Wickliffe, Ohio, $1980; 80, Hoisting Machinery Company, New York, $2580; 91, Interstate Engineering Company, Bedford, Ohio, $2755; 112, Modern Steel Structural Company Waukesha, Wis., $2758; 125, Northern Engineering Works, Detroit, Mich., $1800; 131, Niles-Bement-Pond Company, New York, $2400; 195, Whiting Foundry Equipment Company, Harvey, Ill., $1500.

Class 22.—Six portable exhaust fans—Bidder 8, Buffalo Forge Company, Buffalo, N. Y., $207.85 and $231.85; 72, General Electric Company, Schenectady, N. Y., $183; 76, Green Fuel Economizer Company, Matteawan, N. Y., $166; 84, Harron, Rickard & McCone, San Francisco, Cal., $198; 180, B. F. Sturtevant Company, Hyde Park, Mass., $220.

Class 61.—One improved vertical milling head and column—Bidder 58, Detrick & Harvey Machine Company, Baltimore, Md., $1975.

The following bids were opened July 6, Circular No. 448, for supplies for the Isthmian Canal Commission:

Class 32.—Two 75-hp. motors—Bidder 30, Diehl Mfg. Company, Elizabethport, N. J., $2360; 39, Fairbanks, Morse & Co., Chicago, Ill., $2400; 45, General Electric Company, Schenectady, N. Y., $2350; 60, International Electric & Engineering Company, New York, $2458; 82, Motley, Green & Co., New York, $2620; 120, Sprague Electric Company, New York, $2450; 129, B. F. Sturtevant Company, Hyde Park, Mass., $2,477.88; 142, Western Electric Company, New York, $2540; 143, Westinghouse Electric & Mfg. Company, Pittsburgh, Pa., $2583.

The following bids were opened June 20 for pumping plant equipment at the Presidio, San Francisco, Cal.:

Item 5, boilers; 6, pumps, &c.

Lindgren Company, San Francisco, Cal., item 5, $21,088; 6, $43,600. Compressed Air Mfg. Company, San Francisco, Cal., item 5, $17,468. Fairbanks, Morse & Co., San Francisco, Cal., item 5, $13,219; 6, $30,030. George E. Dow Pumping Engine Company, San Francisco, Cal., item 5, $30,022.50, includes steel stack; 6, $42,259. Standard Electrical Works, San Francisco, Cal., item 5, $12,595. Allis-Chalmers Company, San Francisco, item 6, $44,561.50. Pringle, Dunn & Moscrip, San Francisco, Cal., item 6, $45,228. Risdon Iron & Locomotive Works, San Francisco, Cal., item 5, $15,094. Warren Improvement Company, San Francisco, Cal., item 6, $44,561.50. Carles C. Moore & Co., San Francisco, Cal., item 5, $16,600; 6, $29,700.

Under bids opened May 18, Circular No. 438, for machinery for the Isthmian Canal Commission, the American Hoist & Derrick Company, St. Paul, Minn., has been awarded class 1, three locomotive coaling cranes, $18,642.

Under bids opened June 16 for supplies for the navy yards, the Dean Steam Pump Company, New York, has been awarded class 21, one Dow vertical plunger pump, $470.

The Wellman-Seaver-Morgan Company, Cleveland, Ohio, has the engineering and designing contract for a large steel foundry that will be built by the Marion Steam Shovel Company, Marion, Ohio. The Wellman-Seaver-Morgan Company also has the contract for a 20-ton furnace and the incline for the foundry. Contracts are yet to be let for a charging machine, ladle crane, charging cars and boxes.

## Trade Publications.

**Tubular Products.**—National Tube Company, Pittsburgh, Pa. Booklet for ready reference purposes. Lists the products made by the company, ranging from merchant pipe, malleable iron fittings, cast iron fittings, &c., to seamless steel tubing.

**Generating Sets.**—B. F. Sturtevant Company, Hyde Park, Mass. Bulletin 156. Devoted to Sturtevant generating sets for small power plants which are built in standard sizes from 150 to 500 kw., and consisting of vertical compound enclosed engines direct connected to 10-pole generators. A 400-kw. set is illustrated and parts of the apparatus are shown.

**Shapers.**—Cincinnati Shaper Company, Cincinnati, Ohio. Catalogue F, 6 x 9 in., 71 pages. This volume illustrates shapers of nearly all the standard types and some special machines made by the company. Crank shapers up to 32 in. are shown, together with open side shapers, traverse shapers and machines with motor drive. Keyseating attachments are illustrated and the book includes a cross section drawing of a Cincinnati heavy duty back gear crank shaper.

**Seamless Steel Barrels.**—Pressed Steel Tank Company, Milwaukee, Wis. Booklet. Shows seamless steel barrels made by the company, the principal feature of which is a bilged body. A number of sizes are shown and it is explained that the bodies are formed from a single piece of open hearth steel with attachable heads brazed in place to the inturned body of the barrel.

**Electrical Appliances.**—Fort Wayne Electric Company, Fort Wayne, Ind. Construction Book No. 3032, superseding No. 3024. Explains the company's series alternating current arc systems, showing the various attachments and illustrations with diagrams for installing and connecting the system, accompanied by full instructions. A pamphlet treats of fan motors, which are made for desks and with bracket attachments; a folder advocates the company's meter reading books and Bulletin No. 1106 treats of direct current switchboard panels for small plants.

**Electrical Appliances.**—General Electric Company, Schenectady, N. Y. Two bulletins and folder. Bulletin 4587 shows the company's latest type of resistance units for rheostats, fixed resistance, laboratory use, &c. Folder No. 3654 contains arguments favoring the company's luminous arc head lights. Bulletin No. 4582 treats of commutating pole railway motors, which are similar to other standard motors made by the company, with the exception that they are provided with commutating poles located between the main field poles.

**Derails.**—Hayes Track Appliance Company, Geneva, N. Y. Catalogue, 6 x 9 in., 51 pages. Devoted principally to the Hayes derails and contains plans for operating the company's derails by pipe line from the main track switch stand. A number of types of the company's derails are illustrated and the book includes illustrations of target stands and operating stands.

**Vertical Engines.**—American Blower Company, Detroit, Mich. Catalogue No. 232, superseding No. 206, 7 x 8¾ in., 64 pages. A number of small high speed engines of the vertical enclosed self-oiling type are illustrated with full views and sectional drawings, and particular attention is called to the automatic internal lubrication by a pump and gravity flow. Some space is given to the heating and ventilating systems made by the company, as well as exhaust fans, volume and pressure blowers and the company's system of mechanical draft, which has been described in other printed matter.

**Steam Specialties.**—Ohio Brass Company, Mansfield, Ohio. Catalogue No. F. This is particularly devoted to gauge cocks, water gauges, bronze gate valves and fittings. Each of these specialties is illustrated with short descriptions and prices.

**Narrow Gauge Railways.**—Arthur Koppel Company, Koppel, Beaver County, Pa. Pamphlet. This is a reprint of an article published in *Engineering*, of London, England, July 19, 1907, describing the longest narrow gauge light railway in the world, which was constructed by the Arthur Koppel Company in German Southwestern Africa. The road is 361 miles long and views of completed sections are given, together with sectional drawings of the rolling stock used.

**Tube Mills.**—J. R. Alsing Engineering Company, New York. Brochure on the evolution of the tube mill for pulverizing. This volume describes the old type of pulverizing equipment and includes a brief description of the modern mills made by this company. Some testimonials and references are given, together with cross section drawings illustrating the descriptions.

**Bolt and Nut Machinery.**—H. B. Brown Company, East Hampton, Conn. Catalogue No. 12, 6 x 9 in., 45 pages. Numerous illustrations of the Merriam bolt cutter are included in this volume, and the types shown include automatic machines with oil pump attached, automatic bolt cutters, motor-driven and arranged for belt drive. Space is given to nut tappers, bolt heading machines and attachments. A number of testimonials are included.

# HARDWARE

MORE than one manufacturer and merchant has ascribed the marked success achieved by him to his ability to choose the right men to do his work, securing their utter loyalty by adequately recompensing their abilities. This is done in such a manner as not only to make them entirely satisfied, but also to make it difficult if not impossible for competitors to take them from him, especially as they were permitted to know that the future had much in store for them, dependent alone upon their ability and loyalty. There should be a more general recognition of the wisdom of this course, and many men in charge of enterprises, large or small, should acknowledge to themselves at least their dependence upon the faithful service and expertness of their helpers in the battle for business. They should also remember that to secure the unswerving loyalty and attachment of these men to the fullest extent they must be made to feel that a proper business ambition has a good prospect of attainment. This cannot be accomplished by mere words or promises, but there should be a substantial recognition of exceptionally good service which has contributed largely to the success of the business. This will be the best assurance that a fitting recompense for marked ability and constantly increasing efficiency may be anticipated.

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The so-called pure Paint laws which have been passed in several of the States appear to involve consequences which were not contemplated when the laws were enacted. It is well known that the requirements in regard to placing on each package of Paint a label stating the formula according to which the Paint is made, with the percentage of each of its component parts, have been recognized by the manufacturers generally as placing on them a troublesome and expensive burden, in view of which they have reconsidered their early and inconsiderate approval of the law. Indeed, the more the matter is looked into the more serious becomes the evident difficulty in carrying out the legal provisions. Not only must manufacturers disclose the composition of their Paints, which is often the result of the practice and experiments of years, but the pigments used differ so greatly in their coloring efficiency that the proportion varies materially in the different batches mixed, so that there is no uniformity in the percentage which must be designated on the label. To determine this percentage accurately calls for the employment of a staff of chemists, while the printers are kept busy in making a variety of labels.

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While the manufacturers for these and other reasons are opposing laws of this character it appears that these laws operate in an unexpected way to embarrass the painters. Under a strict interpretation, as it is pointed out in the *Painters' Magazine*, every master painter who mixes together the various Paint materials in his shop is a Paint manufacturer and subject to the provisions of the law. As such he should attach to each pail or can a printed label showing the formula in accordance with which the Paint is made. It will not do to say that this is an extreme view, for laws should be strictly construed in accordance with their letter as well as in their spirit, and the application of the requirement in regard to the labeling should apply to the painter who mixes his own Paint and sells it to his customer, as well as to the manufacturer who disposes of his product in a wider market. And who shall say there is no need of protecting the public against the local painter, who often uses inferior materials and thins them with cheap substitutes for turpentine or oil? If there is to be legal regulation in such matters it is proper that the painters should come within the scope of the law and that the formula should be put on each package of the mixture they make. After all, it is not unreasonable that the law should apply to Paint manufacturers large and small alike. This, however, the lawmakers did not contemplate. Possibly the impracticability and unwisdom of legislation of this character will before long be recognized.

## Condition of Trade.

The normal July quiet is relieved by rumors of increasing activity in some branches of trade and of the resumption of operations in factories which have been out of commission. All this has a cheerful undertone and tends to strengthen confidence in an early improvement in the business situation. This is especially the case, as in many sections of the country trade is moving along in good volume and undisturbed by the conditions which prevail in the manufacturing and industrial States, where a good many men are out of full employment and factories are, as a rule, running on short time and limiting their production. While in the South and in some parts of the West the farming communities and the towns dependent on their trade are thus relatively well off and have little reason for complaint in regard to present conditions, the merchants generally are frank to admit that the recent financial depression still affects them to some extent. With the reports not only of returning activity, but what is of greater importance, the steadily growing assurance of large crops at fine prices, there is no doubt that each week as it passes is chronicling an advance towards a general recovery, commercial and industrial. Political matters must doubtless be reckoned with as a factor which will tend as always to diminish trade, but it does not appear that during the impending canvass this will be as serious a disturbance as sometimes. There is thus, taken all in all, a hopeful undertone to the market at large notwithstanding the limited volume of current business. In the Hardware field there is little new to report. Manufacturers are in a good many lines going carefully over their prices, and as a result are making revisions here and there mostly in the direction of slight reductions. The policy of buying only what is needed in the near future is followed by both wholesale and retail houses. The tendency is to keep stocks down to moderate dimensions, but the unwisdom of starving stocks should be recognized. The work of cleaning up factories and stores after the long period of engrossing business is going on, and in this process accounts as well as goods and machinery have their share of attention. There are a few business men who have the courage to prepare for the return of prosperity by getting in shape for larger operations and a renewal of aggressive conduct of business. In this state of things the vacation season comes in very appropriately and many men are availing themselves of an opportunity to enjoy the respite from business cares which a less urgent demand permits, while the satisfactory manner in which the depression is being gradually outgrown en-

ables them to enter on their vacations without undue solicitude as to the future course of things.

### Chicago.

A marked increase in business at the dullest point of the midsummer season is hardly to be expected, but nevertheless it is recognized the beginning of lasting improvement may come at any time.

Just where the wavering fluctuations leave off and steady upward progress begins will in any event be hard to determine, but there is an increasing number of observers who are strongly of the opinion that if this point has not been reached, it is at least not far off. This statement is backed by more frequent orders in many lines which it is noticed are generally assuming more liberal proportions. As yet there is nothing to indicate a growing disposition to anticipate future demand by enlarging stocks, but in many directions consumption is increasing at a moderate rate. No line has been more active than Haying Tools, and though the season is well advanced, a fair volume of business is still being done. Some difficulty was experienced by Hay Tool makers at the outset in promptly meeting the demand for their product; this was chiefly due to the conservatism displayed in providing forward stocks, which seem to have fallen short of the actual requirements developed by an unusually good hay crop. Hitherto the principal element of market strength has been the known prosperity and promising prospects of the agricultural districts, but within the past week or two orders have been received from car repair shops which have been buying nothing for some time. Some shops that were idle have started up and others are reported to be steadily increasing capacity. While there will probably not be much new car construction through the remainder of the year, the amount of repair work, it is estimated, which will of necessity be required will doubtless be reflected in a noticeable increase of orders for Bolts, Nuts, Nails, &c. Car Roofing Sheets are also in better demand, as is evidenced by several car lot orders placed during the week in this market. Reports from local dealers are of a distinctly encouraging nature. Chicago building permits for the first six months of the year exceed in number of building and frontage measure those of last year for the same period. Many of these buildings are now coming in for requirements in Building Hardware, the effect of which is seen in a slowly increasing volume of business. That the demand for Carpenters' and Builders' Tools continues exceedingly quiet is perhaps significant of the lack of employment of a considerable body of artisans. All things considered, however, the situation warrants a fair degree of optimism concerning the gradual development of trade through the last half of the year.

### St. Louis.

NORVELL-SHAPLEIGH HARDWARE COMPANY.—Good crop weather continues. Business in June was much better than in May and the improvement is being held. Numbers of orders exceed last year, but in quantities buying continues conservative.

Rush orders for seasonable goods are being received by mail and wire. Stocks in the hands of retail dealers are low. This leads to many filling-in orders.

Without any special effort on our part in seeking this business, our mail order sales in June increased over last year. Mail orders are the best barometer of the condition of retail stocks. Dealers are sailing close in the wind and when they run short they hurry off mail orders.

We can report collections as being reasonably good.

We continue to receive new stock orders, and many inquiries for good locations and business openings.

Salesmen advise us the political conventions have had little effect upon business.

We do not anticipate much interruption to trade this fall on account of the Presidential campaign. After the leading lights were nominated the recent conventions gave birth to statesmen who do not seem to have written their names very large on the national records.

As the London papers state, this campaign will not be one of issues. While there has been mighty wrestling with words, both platforms spell the same thing. The interest of the compaign will come from the strong personalities of the two leading candidates.

If Mr. Taft is elected the business interests believe they will be let alone, that there will be no more sudden flashing of light in dark places. Mr. Taft enjoys the confidence of the country. He has been trained in a wonderful way for the responsibilities of the position he seeks.

If Mr. Bryan is elected it is hard to imagine just what will happen. He enjoys the love and affection of a large part of our population. In that case the chances are business would hold its breath waiting to see what he would do.

As merchants, we want good business. So we wonder if it is necessary, as patriots, to sacrifice our business to the welfare of our country. We wonder if there is not some middle course by which honesty and common decency can be maintained without ruining the entire business of the country in the process.

The patriot within us says: "If the country has gone so far wrong it cannot be straightened out without all of us getting back to homespun, then go ahead. Other patriots have given up their lives for this country. We also will be patriotic—we will sacrifice our dessert except on Sundays."

The merchant within us says: "Maybe things are not quite as bad as they have been painted. By wise management why cannot these things be corrected and still allow us to grow fat and have dessert every day?"

After all, as has been said of the British, we are a nation of shopkeepers. A shopkeeper is generally conservative. Shopkeepers have been known to make great sacrifices for their country, but before making these sacrifices they have figured out the cost, and they have also figured out if there were not other ways and methods.

What we shopkeepers want is honesty in high places, and we propose to have it, but we do not believe a revolution is necessary to bring this about.

### Portland, Oregon.

FAILING-MCCALMAN COMPANY.—The writer has just returned from the convention of the Pacific Coast Hardware and Metal Dealers' Association, which was held in the Yosemite Valley June 25, 26 and 27, and was attended by about 35 representatives from the Pacific Coast, ranging from San Diego to Seattle. The three days' meetings were taken up with discussions on general questions of policy affecting the Coast, and we feel that we reached a thorough understanding with each other that will be very fruitful of good results in the future. T. D. Honeyman of the Honeyman Hardware Company, Portland, was elected president for the new year.

In conversation with jobbers from all parts of the Coast it would seem that on this Coast, at least, conditions have reached the point where the upward movement should begin. This seems to be the almost unanimous belief of those at Yosemite, and it is especially the belief of the members from the Northwest.

Returning to local conditions, we understand that Seattle and Tacoma are looking forward to a revival of prosperity, and that their business at present is, all things considered, very satisfactory. In Portland the conditions are very good. The price of real estate remains at least as high as it was before the stringency and several large transfers have recently taken place with the intention of building. The crops as a whole promise well though there is a possibility that our wheat crop will not be as good as last year. It will, however, be far from even a partial failure.

Our collections are good, and when everything is taken into consideration, are remarkably good. We find that there is quite a bit of money in the country, and people seem to be using it to pay their bills fully as well as they do in normal times.

### Nashville.

GRAY & DUDLEY HARDWARE COMPANY.—We are much gratified to be able to report an improvement in business. June was one of the dullest months we have ever had in

this section, but since July 1 we have had a marked improvement in the demand for Hardware.

Trade is still short of what it ordinarily is in July, but it is so much better than it was in May and June, that we are in a position to appreciate an improvement, though it be slight.

We are now threshing wheat in this section. It is showing a good yield and is being marketed at good prices. The oat crop, which is heavy, is selling at high figures. The early corn crop is now assured; while the acreage is not heavy, the yield will be splendid. We had a fine hay crop, and prospects for cotton, tobacco, peanuts and other crops are flattering, and, as the season advances, the crop prospects seem to improve.

Surrounded by these evidences of prosperity, we can hardly expect anything but a good fall trade, but we have been disappointed a few times.

### Cleveland.

THE W. BINGHAM COMPANY.—Keep the dinner pail in sight. It is said that the earnings of our railroad companies are falling below the fixed charges. Well, who is to blame for this? Is it not a fact if our legislatures had been a little more conservative and talked reason and common sense giving our railroad companies and industries regulation and not annihilation, that the whole country would be in better shape to-day? The railroads are called the arteries of the country, through which flow or circulate the business of the country. When you stop the free course of these arteries with drastic measures, what is the result—you simply paralyze them. We believe there is a change in the sentiment or feeling all over the country, for the interests of large and small corporations throughout our country are so widely spread that the effect of constant nagging is being felt in more ways than one. We hope that the trouble will not go so far as to make it necessary to readjust or lower the rate of wages. The railroad companies employ directly over 1,500,000 of men, and when you count those dependent upon them it amounts to about 7,500,000 people.

Now, that our political conventions are about over, we hope that all will turn their thoughts, actions and energies to the upbuilding of trade and commerce in all lines. No one can certainly begrudge the railroads, corporations or any other business a profit on the wares they have to sell to the public, when it is a well-known fact that the public are directly benefited.

The recent cheerful talk of Judge Gary of the United States Steel Corporation as to his idea of what is needed to bring about a speedy return to prosperous times will go a long ways to make a better feeling and encourage a hearty spirit of co-operation all around. We are great believers in a square deal and good fellowship, and trust that from this time on a hearty exchange of views will tend to bring business back on to old "Prosperity Road" in a very short time.

Just at this time of the year many jobbers like ourselves have had a round-up of salesmen—that is, they come together in a meeting and spend three or four days in good fellowship and exchange of ideas, which has always proved very beneficial, and we believe that our recent pleasant meeting with our salesmen will result in good business, and they will enter upon their duties the first of the week surcharged with courage and vim, having large stocks of goods behind them at prices and terms that we are confident will be favorable to our old as well as the new customers we hope to make. We sincerely believe that the last six months' business of 1908 will round up with larger gross sales than the first six months have shown, which, as compared with the same time in 1907, show up favorably and well, especially with the trade in the agricultural communities.

It is a fact that stocks all over the country are very light, and customers have been a little timid in stocking up, and their assortments are broken, and what they do have on hand is not in very large quantities. All these signs portend a good future trade. We are getting a good deal of business now for fall goods—Elbows, Coal Hods, Stove Boards, Rat Traps, Steel Traps, Grain and Scoop Shovels. A large amount of Merchant Pipe and Cast, Brass and Malleable Fittings is being sold. Really, the one thing wanting to complete our happiness is the hope that the railroads, mines and mills will be in the market very soon, for they certainly need a lot of supplies. We are getting a good many inquiries from them now as to what and when they can be supplied, and quite a few small or medium orders are being placed.

Money with the country merchants seems to be plentiful and collections are very satisfactory. Wish we could say as much for other lines.

### Omaha.

LEE-GLASS-ANDREESEN HARDWARE COMPANY.—The month of July is seldom marked by any special activity in jobbing circles. The volume of business, however, still continues very satisfactory.

The harvest of small grains just completed shows a fair yield and of good quality. The weather continues propitious for the ripening of corn, and every indication points to a large crop.

Industrial and commercial activity is well maintained, and the general outlook is favorable.

The Hardware market is comparatively featureless, and as most lines appear to occupy a fairly firm position, it is more than likely that values, as a rule, will maintain the *statu quo* for the remainder of the year.

### Philadelphia.

SUPPLEE HARDWARE COMPANY.—No great changes in trade have been made since our last letter to *The Iron Age*. The great heat that has extended over our surrounding territory has naturally had some effect in preventing increased trade, and many merchants have stated that they desired to take a couple of weeks' vacation during the hot spell now existing. Everything looks prosperous for agricultural crops in the districts surrounding us, and while there is a good deal of talk about the fall election, there does not appear to be any worry or anxiety concerning it. Stocks have generally been reduced, and we see no reason why trade should not show quite an increase early in the coming fall. Collections, or payments on accounts, are now quite fair.

### St. Paul.

FARWELL, OZMUN, KIRK & Co.—July business shows to some extent that we have reached the usual quiet season that precedes harvest. This may be a little more distinct this season, owing to the disposition of the trade to wait a little and see what the outcome of the harvest will be. In the meantime, the orders for actual wants are considerable and trade is moving along about as expected. In 1907 July and August were exceptionally heavy months in Hardware, and it is not probable that these two months' trade will be equalled this year. Still, trade will be fairly active during July, and by early August the crop situation will be pretty well determined. Just now small grain is being injured to some extent in certain sections by the severe hot weather that has prefailed the last week, which it is hoped will not last many days. Collections are up to expectations.

## NOTES ON PRICES.

**Wire Nails.**—The market is viewed with considerable complacency by the manufacturers, as the demand has kept up well during the present month. While it is true that orders are usually for small lots, they are being placed with the frequency that trade conditions require and indicate that stocks in merchants' hands are small. Prices appear to be regularly maintained. Quotations for base sizes are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

| | |
|---|---|
| Carloads, to jobbers | $1.95 |
| Carload lots to retail merchants | 2.00 |
| Less than carloads to jobbers | 2.00 |
| Less than carloads to retail merchants | 2.10 |

*New York.*—Local conditions show improvement to the extent that orders are for somewhat larger quantities and are received with more frequency. This results in a more continuous movement of Nails. Quotations are on the basis of $2.30 per keg, in small lots at store.

*Chicago.*—Instead of a decreased demand for Wire Nails in July, as is customarily the case, trade has shown a gradual increase since the first of the month. Orders, it is true, are generally smaller than usual, but they are being placed with greater frequency, indicating a purpose to provide only for immediate requirements. In view of the exceptionally good prospects for plentiful crops, the outlook for further improvement at the opening of the fall trade is most promising. We are advised that prices are being regularly maintained. Quotations are as follows: $2.13, in car lots to jobbers, and $2.18 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

*Pittsburgh.*—A moderate amount of new business is going, but buying is of a hand to mouth character, and no large orders are being placed. Occasionally a buyer attempts to obtain a cut price, but the mills are absolutely firm. Quotations for base sizes are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

| | |
|---|---|
| Carloads, to jobbers | $1.95 |
| Carload lots to retail merchants | 2.00 |

Galvanized Nails are quoted at $1 over the price of the regular Nails.

**Cut Nails.**—Demand continues moderate for Steel Cut Nails, but has shown some increase from manufacturing interests which have resumed work after a period of inactivity. Quotations on Steel Nails are on the basis of $1.80 per keg, at mill, $1.75 being obtainable on the most desirable business. In the Western market Iron Cut Nails are held at an advance of 10 cents per keg over Steel Cut Nails, but this differential is not observed in the East.

*New York.*—Local demand for Steel Cut Nails is light, buying being restricted to actual requirements. Quotations are on the basis of $2.15 per keg for small lots at store.

*Chicago.*—Although there is no definite increase in the general volume of orders as yet, some improvement is expected in the near future as a result of more active work in car repair shops. A few carload orders received from such shops in the past week are regarded as forerunners of at least a moderate demand from a source that for several months has contributed nothing to the support of the Cut Nail market. Save that current mill quotations may be shaded at least 5 cents per keg on especially desirable orders, prices are unchanged. We quote Chicago prices as follows: In car lots to jobbers, Iron Cut Nails, $2.08; Steel Cut Nails, $1.98. In small lots from store: Iron Cut Nails, $2.25; Steel Cut Nails, $2.15.

*Pittsburgh.*—There is only a moderate demand, but prices are being firmly held at a minimum of $1.75 for Steel Cut Nails, and this only on the most desirable business, the general market being quoted at $1.80, Pittsburgh. Iron Cut Nails are held at 10 cents a keg above these prices.

**Barb Wire.**—The volume of business now doing in Barb Wire is naturally small, and is expected to continue so until fall trade opens. Prices are reported firm on regular quotations. Quotations are as follows, f.o.b. Pittsburgh, 60 days, 2 per cent. discount for cash in 10 days:

| | Painted. | Gal. |
|---|---|---|
| Jobbers, carload lots | $2.10 | $2.40 |
| Retailers, carload lots | 2.15 | 2.45 |
| Retailers, less than carload lots | 2.25 | 2.55 |

*Chicago.*—Desultory orders, such as commonly cover the diminishing volume of trade at this season, measure the extent of new business now being placed. The fall trade is expected to open up before the end of the month, beginning with a demand from the South and Southwest. The mills advise that regular prices are being maintained. Quotations are as follows: Jobbers, Chicago, car lots, Painted, $2.28; Galvanized, $2.58; to retailers, car lots, Painted, $2.33; Galvanized, $2.63; retailers, less than car lots, Painted, $2.45; Galvanized, $2.75; Staples, bright, in car lots, $2.25; Galvanized, $2.55; car lots, to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

*Pittsburgh.*—Demand is light as usual at this season. Prices are being maintained on the small orders coming out. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

| | Painted. | Gal. |
|---|---|---|
| Jobbers, carload lots | $2.10 | $2.40 |
| Retailers, carload lots | 2.15 | 2.45 |
| Retailers, less than carload lots | 2.25 | 2.55 |

**Plain Wire.**—Orders being received at mill are being strictly confined to small lots, especially those placed by manufacturing interests. Fence makers are anticipating a good demand in the fall, and are making preparations to supply it. Quotations per 100 lb. to jobbers in carload lots are as follows, on a basis of $1.80 for Plain and $2.10 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the price to retailers being 5 cents additional:

| Nos. | 6 to 9 | 10 | 11 | 12&12½ | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|
| Annealed | $1.80 | 1.85 | 1.90 | 1.95 | 2.05 | 2.15 | 2.25 | 2.35 |
| Galvanized | 2.10 | 2.15 | 2.20 | 2.25 | 2.35 | 2.45 | 2.85 | 2.95 |

*Chicago.*—Manufacturers have not departed from the practice of buying only for present needs, but the fact that they are ordering more freely than for some time is regarded as conclusive evidence of increased consumption of their product. Fence makers anticipate a good fall trade, owing to the promising crop prospects, which if realized will result in a decidedly better demand for Plain Wire. Regular prices, we are advised, are firmly held. We quote as follows: Car lots to jobbers, $1.98, f.o.b. Chicago, and to retailers, $2.05.

*Pittsburgh.*—While buying is of fairly good volume, there is little forward buying. Fence makers are preparing for a good demand in the fall, and therefore taking somewhat larger deliveries. Quotations per 100 lb. to jobbers in carload lots are as follows, on a basis of $1.80 for Plain and $2.10 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the price to retailers being 5 cents additional:

| Nos. | 6 to 9 | 10 | 11 | 12&12½ | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|
| Annealed | $1.80 | 1.85 | 1.90 | 1.95 | 2.05 | 2.15 | 2.25 | 2.35 |
| Galvanized | 2.10 | 2.15 | 2.20 | 2.25 | 2.35 | 2.45 | 2.85 | 2.95 |

**Bright Wire Goods.**—Quotations on Bright Wire Goods continue to show some irregularity, and low prices are reported on the small business offering. A feature of the market is the fact that the differential in discount between Brass and Iron Wire Goods, which has for some time been maintained, has now disappeared, both varieties now being quoted to arrange trade at a discount of 90 and 40 per cent.

**Rope.**—The usual summer dullness in Cordage is somewhat accentuated by the general business conditions ruling, and demand is consequently light. Orders, as a rule, are restricted to small quantities for immediate necessities. It is reported that Pure Manila Rope has been sold at 9 cents and Pure Sisal at 6 cents per pound. Regular quotations are, however, as follows: Pure Manila, 9½ to 10 cents; Pure Sisal, 6¼ to 6½ cents; No. 1 Jute, ¾-in. and up, 5¾ cents; No. 2 Jute, ¼-in. and up, 5¼ cents.

**Window Glass.**—A better feeling obtains in Window Glass circles since the recent meetings of manufacturers and jobbers. At a meeting of the hand operated Window Glass manufacturers, held in Cleveland on the 9th inst., the following discounts were announced from manufacturers' list of January 1, 1901, to take effect at once: Single Strength, 90, 27½ per cent., except 16 x 20, which is 90, 20½ per cent. Double Strength A Glass, 90 and 30 per cent.; Double Strength B Glass, 90 and 35 per cent., freight equalized with Columbus, Ohio, on all Western shipments. On the same day the American Window Glass Company is reported to have announced the following discounts from manufacturers' list: Single Strength, 90 and 30 per cent., except 16 x 20 A Glass, which is 90 and 25 per cent.; Double Strength A Glass, 90 and 30 per cent.; Double Strength B Glass, 90 and 40 per cent.; Greenhouse selection, 90 and 35 per cent. These prices represent about the regular difference between hand operated and machine made Glass prices. It is understood that the Pittsburgh Plate Glass Company has agreed to maintain the prices on Window Glass made by the American Company. It is estimated that the latter company

has a stock of about 300,000 boxes and that its summer output will be about 300,000 boxes more, and that the hand operated factories have on hand about 350,000 boxes, making 950,000 boxes. Probably one-third of this amount of Glass is of undesirable sizes or dead stock, which is the usual proportion of unavailable Glass in any manufacturer's stock. This would leave, in round figures, about 633,000 boxes of available Glass to supply demand until new Glass is put on the market in the fall. This quantity is small compared with summer supplies in former years, but the volume of business this year is not so large as in former years. A meeting of Western Glass jobbers has been held in Chicago, but no report of the deliberations has been given out, although it is understood that those who were present were very bullish in their feelings. The Eastern Jobbers' Window Glass Association held a meeting in New York on the 14th inst., at which a better feeling was manifested as to conditions, and while it was acknowledged that business was quiet, prospects appeared to be a little better. It was decided to make the minimum price for all territory East of the Mississippi River, 90 and 30 per cent. discount for Single and 90 and 35 per cent. discount for Double Strength Glass, from jobbers' list October 1, 1903. Another meeting will be held between August 1 and 4, at which time trade conditions are expected to be better.

**Linseed Oil.**—There have been no important developments during the week, the demand being limited to small lots, with little pressure to sell on the part of crushers. The inability to market Oil has resulted in some accumulation at mill, although crushers have been running light as Seed stocks are small. The impression seems to be that there will be enough Oil to supply all demands until the new crop of Seed arrives. Local quotations are as follows: State and Western Raw, 41 to 44 cents; City Raw, 44 to 45 cents per gallon. Boiled Oil is 1 cent per gallon advance on Raw.

**Turpentine.**—The demand in this market during the week has been for small lots, but the market has been steady at 1 cent per gallon decline from last week's prices. The New York market is represented by the following quotations: Oil Barrels, 42½ to 43 cents; Machine Made Barrels, 43 to 43½ cents per gallon.

## Trade Items.

THE GEORGE B. MAIN COMPANY, 70 Warren street, New York, the organization of which has recently been noted in these columns, is now the direct representative of the following factories: The F. & N. Lawn Mower Company, Richmond, Ind.; S. H. Williams, Mechanicsville, N. Y., Step Ladders; Seneca Chain Company, Kent, Ohio, Welded Chain; Nicholls Mfg. Company, Ottumwa, Iowa, Squares and Miter Boxes; Rex File & Saw Company, Newcomerstown, Ohio, Files, Rasps and Butcher and Hack Saw Blades; National Caster Company, Hamilton, Ohio; Cleveland Lock Company, Shelf Brackets, Wire Scoops, &c.; Keystone Wire Matting Company, Beaver Falls, Pa., Door Mats; Anchor Bolt & Nut Company, Poughkeepsie, N. Y., Machine, Carriage and Plow Bolts; O. B. Wilson Mfg. Company, Gasport, Ind., Stock Bells; National Supply Company, Baltimore, Md., Furniture Casters; L. & I. J. White Company, Buffalo, N. Y., Edge Tools for States of New York and Pennsylvania (except Philadelphia and 100 miles around Greater New York); I. S. Spencer's Sons, Guilford, Conn., Scales, and Johnson & Sharp Mfg. Company, Ottumwa, Iowa, Hardware Specialties. The representation of the Rex File & Saw Company includes the territory south and east of Indianapolis, for its complete line of Files and Rasps, Auger Bit, Files, Butchers' Saw Blades and Steels, all first grade goods branded Rex, being fully guaranteed.

THE WASHINGTON HARDWARE AND IMPLEMENT DEALERS' MUTUAL FIRE INSURANCE ASSOCIATION, Spokane, Wash., E. W. Evenson, secretary, has got out a large hanger in which attention is effectively directed to the economy secured through the medium of this form of insurance. During 1908 the return premium of this company amounts to 33 1-3 per cent., $6000 being thus awarded policy holders. Portraits of a dozen or more of these policy holders, with their names and addresses and dividend amounts, ranging from $28 to $238.55, form the centerpiece of the hanger, and it is suggested that any in doubt as to the desirability of Hardware mutual fire insurance take the matter up with these merchants, who are referred to as "A Bunch of Busy Business Builders—Hardheaded Hardware Haberdashers, who buy insurance like they buy goods—in the best market."

OWING to the retirement of W. O. Haines from the corporation of Failing, Haines & McCalman, Portland, Ore., the style has become Failing-McCalman Company. The officers of the corporation remain as before except that E. M. Underwood, formerly with Corbett, Failing & Robertson for some years, and a director of Failing, Haines & McCalman, becomes treasurer.

THE COMMERCIAL BUREAU COMPANY, 90 West street, New York, and New Bloomfield, Pa., of which James M. Barnett is president, and William Harper, who has had wide experience in export matters, general manager, has been organized to supply domestic and foreign buyers with specific catalogue information relative to goods manufactured in the United States. The information is printed concisely on cards 3 x 5 in., the matter being prepared by the manufacturer relative to his line or lines of production, there being no limit to the groups of cards so prepared, according to the scope and extent of the business. The manufacturer sends the cards to the Commercial Bureau Company, which sends them, at a fixed charge per thousand, to all inquirers concerning the goods they relate to, the recipient filing them in furniture prepared for the purpose in regular order for future use. The manufacturer pays for the distribution and furnishes the cards.

THE L. S. STARRETT COMPANY, Athol, Mass., has opened a branch office and warehouse at 36 and 37 Upper Thames street, London, E. C. Hereafter a complete stock of fine mechanical tools, hack saws, steel tapes, &c., will be carried at this place which will be in charge of E. P. Barrus. The company is to be congratulated upon this progressive movement, the advantages of which will doubtless be appreciated by its British and Continental customers.

ON Saturday, 11th inst., the Wolff-Lane Hardware Company, Pittsburgh, gave and outing to its employees, chartering the steamboat Sunshine for a trip down the Ohio River. At Rochester, Pa., the party disembarked for an afternoon in the woods.

A MEETING of the directors, officers and members of the Advisory Committee of the Connecticut Hardware Association was held at the New Hill's Homestead, West Haven, Conn., 9th inst. An invitation to join the Western Massachusetts Association in an outing at Boston on July 25 was read, in reply to which the secretary was instructed to express regret that it was not feasible for the members to attend in a body, but that they would be notified of the invitation, so that any of them who desired might attend. An invitation was also extended by A. R. Jones on behalf of the Danbury Fair Association for an outing in Danbury, October 7, and it was voted that the association accept it. The members of the Western Massachusetts Association will be invited to participate in this gathering. President Birdsey, Secretary James DeF. Phelps, A. R. Jones and Charles Hull were appointed a Committee on Arrangements for the outing. It was also decided to accept the invitation of the Waterbury members of the association to hold the next meeting in their city.

THE secretaries of the Colorado, Wisconsin, Missouri, Minnesota, North Dakota, South Dakota, Nebraska and Iowa State Hardware associations are planning to meet at the office of the Iowa secretary in Mason City, Iowa, to discuss plans and details of the 1909 conventions, and especially to select dates that will conflict as little as possible. The gathering will be held about the middle of August.

THE fifth annual outing of the Iowa retail Hardware merchants will be held at Clear Lake, July 31. The outing will doubtless prove the usual success in view of the ability and standing of the members of the different committees appointed to look after the arrangements and programme, all of whom are prominently identified with the State Hardware Association.

# LETTERS FROM THE TRADE.

*Our readers are invited to discuss in these columns questions of trade interest connected with the manufacture or sale of Hardware. We shall be pleased to have a free expression of opinion on subjects deserving the attention of Hardware merchants and manufacturers.*

### Retired but Hardware Business Still Interests Him.

The letter which we give below is from a veteran Ohio Hardwareman, and indicates that while the writer has retired from the Hardware field he is still wedded to it in spirit and sentiment. Our correspondent's remarks in regard to his length of service and the time spent every day in the store will be suggestive to a later generation of Hardware merchants and clerks:

I enclose check for *The Iron Age* to July, 1909. I have taken it for a good many years and want to keep posted as to hardware doings. I sold out my store in February of last year, and am now taking things easy. I had been on a hard floor for 34 years, and in my time worked from 5 a.m. to 9 or 10 p.m. Thirty-four years through without a lost day. Quite different now with people working 8 hr. a day and half day off on Saturday. But I am in good condition and count myself a well preserved man. I can look back to a prosperous run of business life and have many friends in the O. H. A., of which I was a member for a number of years.

### Why Not Cheap Blank Cartridge Pistols of Steel?

*To the Editor:* Almost all the cities of the United States have legislated against the sale of the unsafe Cast Iron Single Shot and Revolving Pistol used by boys in firing blank cartridges. Heretofore, these weapons produced solely and entirely to satisfy the boy and discharge the blank cartridges have been made from cast iron, which is totally unfit for the purpose. A large business could be established and heavy sales made of Pistols made solely and entirely for the discharge of blank cartridges in 22, 32 and 38 caliber. They should be made in single shot, particularly the 22 caliber, as well as in five or six shot style. There is no reason at all why Pistols of this character cannot be made cheaply out of steel, the difference in the cost of material being not very great between cast iron and steel. The chamber of the Pistol could be bored so it would take nothing but a blank cartridge.

The manufacturers of ammunition, the jobbers of ammunition and the retailers of ammunition are all losing a great deal of profit because the small boy, and for that matter the larger boy, cannot purchase a Pistol at a moderate price with which he can discharge blank cartridges. A Single Shot Pistol to take either a 22 or 32 rim fire cartridge, or for that matter a 32 central fire cartridge, can be made so it can be retailed at 25 cents, and a Revolving Pistol can be made to retail at from 50 cents to $1 each. Such Pistols will sell and sell readily. Any manufacturer prepared to turn out Pistols could make Pistols at a price that would enable the manufacturer to market them through the jobber, and he in turn through the retailer, at a reasonable but small margin of profit, so that the small boy could become the owner of a Pistol.

I suggest to the ammunition manufacturers that some action should be taken with reference to producing a safe Pistol to discharge blank cartridges. The makers of Pistols as well as the producers of ammunition should busy themselves to get out something before the next holiday season.

The house with which I am connected had perhaps 500 calls during the Fourth of July season just passed, for Pistols. The boys were willing to take the cast iron ones, but we were unwilling to sell them, and not having sold the Pistols, of course, the ammunition business was exceedingly dull, and what is true of this place is likewise probably true of every other place in the United States. A profitable business is being lost in the Hardware trade by the ammunition manufacturers and the manufacturers of Pistols because a Pistol suited for the purpose of discharging blank cartridges is not produced at a popular price. RETAILER.

### Abuse in the Distribution of Samples.

*To the Editor:* I believe that possibly you may like to hear a suggestion which occurred to me along a line which is very much abused in our trade, that is, the abuse of the distribution of samples. I think if you will take up the matter with manufacturers and dealers, that you will find that there are people who are grafting on manufacturers and dealers in the way of samples of goods to such an extent that in working the different lines offered they are able to get a good part of their whole stock in this gratuitous manner.

This abuse has been particularly notable of late in the Hack Saw market, although I believe that a little investigation will prove that there are many other lines worked in the same manner. You will therefore appreciate that the abuse of this privilege as well as the abuse of all broad replacement and guarantee privileges cuts heavily into the retailer, jobber and larger manufacturers when the aggregate amount is considered. NEW ENGLAND.

## Requests for Catalogues, Etc.

*The trade is given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.*

**REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate:**

FROM W. H. KELCH & SON, who are opening a general Hardware store at Trafalgar, Ind.

FROM THE MILLIREN-BUCHANAN HARDWARE COMPANY, which is putting in a new stock of Shelf and Heavy Hardware, Plumbing Supplies, Sporting Goods, &c., at Clovis, N. M.

FROM C. C. NEWMAN & Co., Columbia, Mo., who are remodeling their Hardware, Stove, House Furnishing, Paint and Sporting Goods store and are adding new lines adapted their trade.

FROM FASSNACHT & KEEGAN, Axtell, Kan., who have succeeded to the Shelf and Heavy Hardware, Stove, Paint and Sporting Goods business of Chas. Fassnacht & Co.

FROM BEATY & WATSON, who have bought the Shelf Hardware, Stove, Implement, Paint and Sporting Goods business of Mr. Kramer, Vliets, Kan.

FROM E. F. WOODS, who has opened a Hardware, Stove, Tinware and Sporting Goods store at Seibert, Colo.

FROM VAN COTT & ROECKER, Broken Bow, Neb., successors to the Hardware, Stove, Tinware and Sporting Goods business of J. G. Van Cott, the latter having sold a half interest to F. L. Roecker.

FROM RIDLEY & OTTINGER COMPANY, 261-263 West Twenty-seventh street, New York, which has been incorporated with a capital of $10,000 to deal in Black and Galvanized Sheets, Tin Plate, Solder, Zinc, &c.

THE FOLDING STEEL LADDER COMPANY, 81 Warren street, New York, was incorporated July 1, with an authorized capital of $50,000, and all of the stock has been issued. The officers are: Bernard B. Neal of the Neal & Scott Company, president; William A. McClellan, Arden, N. Y., vice-president, and Edwin Shivell, Boston, Mass., secretary and treasurer. The company will manufacture a Fire Escape, made of No. 6 galvanized steel wire, about 12 in. wide with ⅜-in. rods for steps, the construction being such that the ladder projects 4 in. away from the building to afford a good footing. Lengths are made regularly up to 100 ft., but any length will be furnished to order. The design is to fasten the Ladder to the floor inside the house, nesting the parts in front of a window and covering the nested Ladder with a neat wood case finished to match trim.

THE TENNESSEE RETAIL HARDWARE ASSOCIATION, M. Richardson secretary, Lawrenceburg, which was organized last summer, will hold its first annual convention at Nashville, Tenn., August 12 and 13. The headquarters will be at the Tulane Hotel.

THE ENOS & SANDERSON COMPANY, wholesale carriage Hardware, Buffalo, N. Y., has contracted for the erection of a two-story and basement warehouse, 105 x 200 ft., of brick and structural steel, at Swan and Centre streets, and upon its completion will move their business to it from the present quarters at 43 Carroll street.

# Retail Hardware Association of the Carolinas.

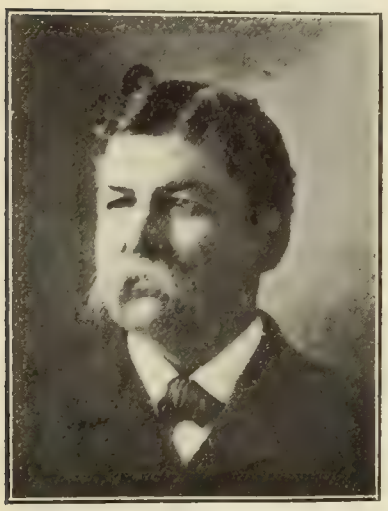
## CONCLUDING REPORT.



E. WALTER DUVAL.



R. H. McDUFFIE.



W. H. SMITH.



A. L. PHIPPS.

THE programme of the fourth annual convention of the Retail Hardware Association of the Carolinas, whose first day's session was covered in our last issue, was admirably followed out in the succeeding days of the gathering. Evidence was thus afforded of the excellence of the arrangements which had been made as reflected in a well ordered programme, which under the efficient management of the officers was successfully carried out. It was not, however, found feasible to adjourn Thursday noon as was contemplated in the arrangements, and a short session was held in the afternoon of that day at which some unfinished business was taken care of. The whole gathering was also in other respects a marked success, the unanimous expression being that it was the most profitable in its helpfulness and suggestiveness as well as the most enjoyable in the history of the young association.

### Entertainment and Reception Committees.

These committees were made up of the following gentlemen prominently connected with the Hardware interests of Wilmington and vicinity:

ENTERTAINMENT: Joseph N. Jacobi, W. E. Perdew, B. R. Hoshall.
RECEPTION: Hon. W. E. Springer, J. W. Murchison, C. C. Chadbourn, Fred A. Burr, Jasper Pratt, R. C. Sloan, R. E. Blake, C. D. Foard, T. G. Hyman.

These committees were unremitting in their attention and contributed greatly to the pleasure of the guests. There was throughout the manifestation of a genuine spirit of hospitality, with admirable organization and business management.

### The Excursion.

The boat excursion on Wednesday to points of interest around Wilmington, including a visit to the fort and the government works, was the principal feature of the entertainment provided by the Merchants and Manufacturers of Wilmington for the association and its guests. The manner in which this was devised and managed was illustrative of the care and liberality which characterized a the arrangements of the Entertainment Committee. There was nothing to mar the carrying out of the full and attractive programme, which included an extended sail, the serving of lunch on board and the holding of special sessions of the convention. All this, with a prompt start and a finish on time, together with the not easy task of furnishing a most excellent lunch to the party, was done without any confusion or the occurrence of anything to interfere with the pleasure and comfort of the guests.

### Exhibits.

In the convention hall were a number of exhibits which were regarded with interest by the great majority of the members of the association. Many of these were of goods of manufacturers or jobbers with whom the merchants have business dealings, and an opportunity was thus afforded to both parties to become better acquainted with one another. Notwithstanding the fact that these exhibits were in the assembly hall in which the meetings were held, the proceedings were but little disturbed, a fortunate circumstance which was in good part owing to the ample opportunity given to examine them when the association was not in session. Among the exhibitors were the following: American Steel & Wire Company, E. C. Atkins & Co., Pittsburgh Steel Company, Simonds Mfg. Company, Peters Cartridge Company, Union Metallic Cartridge Company, Dover Mfg. Company, Odell Hardware Company, Benjamin Moore & Co., Cameron Stove Company, Price-Cline Hardware & Tanning Company, Waterbury Company, and E. I. DuPont de Nemours Powder Company.

### Finances.

The subject of association finances was gone into carefully, and measures were taken which, it is hoped, will



T. W. DIXON.



W. N. EVERETT.



PAUL W. McLURE.



T. O. FLOWERS.

put the association on a strong financial basis, and enable it to have the funds requisite for the energetic carrying on of its work on the enlarged lines contemplated.

### Pure Paint Law.

On Wednesday evening there was an interesting discussion in regard to the enactment of a pure paint law, and some divergence of opinion was expressed in regard to the desirability of such legislation. While there was a disposition on the part of many to favor the enactment of something in the line of a pure or honest paint law, the general sense of the convention seemed to be that the members were not sufficiently familiar with the subject or sufficiently sure of their ground to justify them in putting themselves on record, and the matter was passed over without formal action.

### Lien Laws.

As referred to in the report given in our last issue this subject received careful consideration. It was generally recognized that existing lien laws are unsatisfactory, and indeed embarrassing to merchants while failing to give them requisite protection, and steps were taken looking to the enactment of suitable laws in accordance with the recommendations made by W. M. Otis of Columbia.

### The Banquet.

The banquet on Thursday evening was largely attended by the members and guests of the association, and was thoroughly enjoyed. The presence of many ladies contributed much to the pleasure of the occasion. After dinner, under the direction of W. W. Watt, who very happily officiated as toastmaster, a number of interesting addresses were made, some of which were on business topics, others in a lighter vein and all of interest. It made an admirable concluding feature for an exceptionally successful convention.

### The Retiring Officers.

The meetings were admirably conducted by President Everett, assisted by the efficient vice-presidents. Much apprceiation was expressed of the success of the administration of the retiring president, to whose wise and energetic management the association recognized its indebtedness. This was given formal consideration in a rising vote of thanks and confidence. Many of the members, too, expressed themselves as appreciating the amount of work devoted to the furtherance of association interests by Mr. McLure, the retiring secretary, and his part in bringing the association to its present strong position.

### Secretary McLure's Report.

The report of Secretary-Treasurer McLure was an interesting résumé of the work of the association, and touched on following topics, among others—the Pure Paint law, the Mechanic's Lien law, Parcel Post Legislation and some matters which had been under advisement, but on which it did not seem feasible for the association to take formal action. A striking evidence of the success of the meeting is given in the fact that about 25 new members joined the association during its sessions.

### Insurance.

One of the matters which received prominent attention from the convention was that of mutual Hardware insurance. The subject was fully presented by W. P. Lewis, secretary of the National and the Pennsylvania companies, who, in his usual clear-cut and forcible manner, furnished full information in regard to the advantages of such insurance and the manner in which the National Company and companies organized by the various State associations are conducted. A full report on the subject was made by W. W. Watt, who recommended the election of a standing committee to take charge of the matter, investigating the subject fully and reporting at the next meeting. Such committee, after the subject had been fully discussed, was elected, consisting of the following gentlemen: T. O. Flowers, Rock Hill, S. C.; N. F. York, Concord, N. C.; U. B. Blalock, Wadesboro, N. C. It was further provided that such committee should be paid $5 per day for time devoted to these duties, together with their expenses, it being understood that their meetings should be held in some town or city in which none of the members of the committee reside, that their uninterrupted attention might be given to the matter in hand. There was an evident disposition on the part of members to regard this mutual Hardware insurance favorably and a desire was expressed by more than one that they should have their own insurance company. It was, however, recognized that it would be impracticable to organize a company at present, and the matter was left open in the expectation that the merchants would avail themselves freely of the insurance which is offered them by the National Company and by other companies now in operation. Whether or not it will be deemed feasible hereafter to organize and have their own company remains to be seen.

### Question Box.

At the suggestion of the Question Box a number of practical subjects were brought to the attention of the convention and their discussion was an interesting feature of the gathering. This part of the programme was under the able direction of M. L. Corey, who was assisted at the Thursday morning session by R. R. Williams. Without attempting to go into the details of the answers elicited, the following list of questions handed in will be of interest as showing the class of subjects which command the attention of the merchants in the Carolinas. It will be observed that the problems concerning the trade in different parts of the country are not materially different from those in other sections:

Which is the more profitable course for a merchant to pursue, to build up a good, solid reputation, for handling standard goods, or to acquire a reputation for handling only cheap goods?

What is the best method to introduce improved labor-saving implements and tools in good section of country where farmers cling to the old way of doing things?

What are we to do about Loaded Shells? A little cross-roads dealer can buy 1000 as cheap as a Hardware merchant can buy 50,000.

Should the Hardware merchant buy goods from a jobber who sells cross-road trade, blacksmiths and contractors?

How can we get a profit on Shot Shells?

What is the best method of managing a customer who comes into your store to buy a bill of goods for the lowest possible price for cash and then when he has got the goods ready to take out, asks you to charge the goods, 30 days, "the same as cash," and then often makes you wait four to six months?

How to sell goods for cash only?

Do any of the members sell .22 cartridges without paying the tax, and if so, is it lawful?

What is the best means of advertising if one does not use newspapers?

Where can we purchase mechanical window displays?

What do you think of the loose leaf ledger?

How can merchants be protected by law better than at present where they furnish building materials?

Does it pay to borrow money at 8 per cent. to discount 2 per cent. 10-day bills?

Should not Hardware merchants stop handling Shells or request factories to sell Hardwaremen only?

Does it pay a Hardware concern to do a credit business in the Carolinas?

Do you think one-tenth of your net profits is too much to give away?

What is the best way to get your salesmen to take a deep interest in your business and push the business as if it belonged to them?

### Visitors.

Visitors from other States contributed not a little to the success of the gathering, and a resolution expressing the appreciation of the association of the presence of the following gentlemen was adopted by a rising vote: M. L. Corey, W. P. Lewis, R. R. Williams, Charles H. Ireland, H. M. Owsley, F. J. Semple and R. D. Baldwin.

### Election of Officers.

At the session on Thursday morning the Nominating Committee put in nomination the following officers for the ensuing year:

PRESIDENT, E. Walter Duval, Cheraw, S. C.

FIRST VICE-PRESIDENT, R. H. McDuffie, Fayetteville, N. C.

SECOND VICE-PRESIDENT, W. H. Smith, Gaffney, S. C.

THIRD VICE-PRESIDENT, A. L. Phipps, Durham, N. C.

SECRETARY-TREASURER, T. W. Dixon, Charlotte, N. C.

These gentlemen were then unanimously elected. It was further provided that the Nominating Committee be a Standing Committee, and empowered to fill any vacancy which might occur, and further that the president with the advice of the Board of Directors was empowered for cause to create a vacancy.

### The Next Meeting.

Invitations were extended to the association to hold its next meeting in Charleston, Asheville and Charlotte, and the claims of these competing places were duly presented. When the vote was taken Asheville was selected by a substantial majority. There is no doubt that the association will have a very hearty reception from the merchants of that city.

### Delegates to Sister Associations.

The action of the association when it put itself on record as favoring the sending of delegates by the State associations to the conventions of the associations in neighboring States may have far reaching influence. It was recognized that this interchange of delegates would add to the interest and usefulness of the annual gatherings. In this connection it may be mentioned that a pleasing feature of the Wrightsville Beach meeting was the presence of R. R. Williams, a member of the New York State Hardware Association, who bore a letter of greeting from John Holley Bradish, president of the New York Association, with an invitation to any of the members to attend any of its meetings. Mr. Williams was extended every courtesy, and the secretary was directed to send to Mr. Bradish a suitable acknowledgment of his letter.

### Resolutions.

Resolutions of thanks were adopted to the Hardware and Mill Supply merchants, and to the Sash, Door and blind manufacturers of Wilmington for the handsome entertainment afforded the association; to the commandant and officers of Fort Caswell for courtesies extended during visit to the fort; to the manfacturers and jobbers making exhibits and distributing souvenirs at the convention: to the Mayor of Wilmington for hospitable welcome, and to the press of the city; to the ladies present; to the Seashore and Tarrymoore hotels, and to retiring Secretary McLure, for his able and efficient work during his three years of service with the association.

It was also resolved that the suggestion made during the deliberations that the association should send delegates to the meetings of retail Hardware organizations of nearby States was a good one and worthy of serious consideration.

Another resolution was unanimously adopted heartily indorsing the efforts of the North Carolina Retail Merchants' Association to have the Homestead law of the State repealed.

## CONVENTION NOTES.

"How to Get the Best Results from Our Clerks" was the subject of a paper assigned to T. W. Dixon, manager of the Southern Hardware Company, Charlotte, N. C. Mr. Dixon, was, however, prevented from being present, and much regret was expressed that the association was unable to have the benefit of his advice and experience in this important matter. There was, however, a discussion of the subject, and some admirable suggestions were made by the members.

The presence of Charles H. Ireland, of the Odell Hardware Company, Greensboro, N. C., who is known and honored as a high-minded and able merchant, contributed not a little to the success of the convention. His address on Wednesday evening was listened to with the closest attention and abounded in practical suggestions while enforcing a high ideal of business life.

There was a larger number of ladies in attendance than at any former gathering and their presence was a pleasant feature of the meeting, which was duly recognized in an appropriate resolution. It is probably safe to predict that as the association develops in strength the number of ladies who will attend its annual meetings will still further increase.

The desirability on some accounts of having the association incorporated led to the adoption of a resolution directing the Executive Committee to take steps towards incorporating under the laws of one of the Carolinas.

Joseph N. Jacobi, the chairman of the Entertainment Committee, was very active and considerate in looking after the comfort of those in attendance at the convention, as well as in managing matters connected with the courtesies extended to the visitors. In recognition of his services a special vote of thanks was given him.

## HARDWARE ADVERTISING.

A valuable paper on the subject of "Hardware Advertising" was read by R. D. Baldwin, advertising manager of Simonds Mfg. Company, Fitchburg, Mass., as follows:

*Better to say a few things and have some remembered than to say many things and have none remembered.*

If a man were to stop in the doorway of your Hardware store and glance only casually around and you were to say to him, "There is a first-class Lawn Mower—stoutly built—ball bearings—sharp blades—easy to operate, will you buy one?" and nothing more. And if the next day the same man were to glance in your store and you said to him, "Here is a first-class Lawn Mower—stoutly built—ball bearings—sharp blades—easy to operate, will you buy one?" and again nothing more. And if the third day the same were repeated, and again the fourth day, and so on, for three weeks or a month, it would get monotonous, wouldn't it? The man would not think very much about your Lawn Mowers, your store, or yourself, or anything that you had to sell in your store.

**Useless and Monotonous.**



R. D. BALDWIN.

Now, that is exactly what is happening only with the personal element removed, when day after day and week after week you run the same advertisement in your local paper or keep the same display in your windows. This window display and this newspaper advertisement is the one sentence you can say to the average man who favors your business with the interest of a passing glance.

Change your display often, change your advertisements oftener. Results count.

Let me say a few things you have often heard before. Let me give some old truths a practical turn. Advertising Pays. Advertising is Salesmanship. Advertising also Costs; that is, it is just like any other form of salesmanship, you don't get it free—not very often. Now, just as you want to hire the best salesmen and clerks and get the best service out of them that your money entitles you to, so you want the best value out of every dollar you spend for publicity. On that point we are all agreed.

**Advertising Costs Money.**

### Three Fundamentals.

It is often said that the three fundamental principles of advertising are, first, to attract attention; second, to interest, and third, to create desire and close the sale. That last sounds good, it's what we are all after—it's the result. Results count.

But all three advertising principles must be kept in mind. Those three things are the fundamentals in preparing copy, remember this and half your problem is solved.

Now, as briefly as possible, I want to touch a few detail points.

### The Business End.

Your rent and taxes cost you a certain percentage of yearly sales. Your clerk hire and your own time charged against the business cost you a regular percentage. Put your advertising on the same business basis. Experiment a little and then settle on the percentage of yearly gross sales you can invest for publicity. Take a certain percentage each month or for the year, have a page in your ledger for this, then charge up against it every cent you pay out for advertising. Draw the line when the charges exceed your credit percentage. Be fair with your business and yourself, and increase your advertising when you are not up to or near the set mark. Business conditions may vary by months or seasons, thus causing a varying percentage for those months or seasons.

I would be only too glad to name some definite figure for you to go by, but that must be settled individually. Make it 1 per cent. or 2 per cent. or 5 per cent., or even higher, but stick to it. Don't expect the particular article you talk about in your advertisements to stand all the expense, it can't do it.

### All Advertising Is Cumulative.

The human mind is affected by repetition. Repeat often and consistently enough that you sell good goods, and live up

to your story, and the people will soon be believing it and taking it for granted. It was the plan of Marshall Field of Chicago to so persistently connect the idea of high grade dry goods with the name Marshall Field that a person couldn't think of the one without at the same time thinking of the other.

This persistency is equally valuable in Hardware advertising. Keep at it and keep at it right, and your public will soon take for granted that yours is *the* Hardware store for them to deal with.

**Advertising Solicitors.**

In some towns advertising solicitors are numerous, with all kinds of schemes. In others you may not meet them. A good way to handle them is to say, "What new idea have you got that will help me to sell more Hardware?" If the solicitor has anything in him, get it out. Don't let him take your time or money without some return. If he cannot offer some plan that you can apply to Lawn Mowers or Spades or Saws or Nails, he isn't worth your attention. The up to date solicitor recognizes that his is an altruistic business, and tries to offer you something good.

**Newspaper Advertising.**

One of the best ways to turn the favorable consideration of your local town toward your store is through newspaper advertising. But to do it your daily talks must be alive. They must attract attention, interest, and create desire. Talk in the language of the people. Let them understand you. Take almost any article in your stock of general Hardware and write about it *just as you would talk*. But take only one article. That's the good part of the secret, your talk is then straight from the shoulder. That interests as much in type as when it comes in person. Tell of your services. Give your store news. If there is something John Jones wants to know about a Monkey Wrench the chances are many other people would like to hear the same thing.

Don't think Hardware a dull subject; it isn't; you can make or mar the business.

I like the South and feel that I am here talking to friends. Let me relate an incident that happened before I got into the Saw business. I was taking care of the advertising of a newspaper in Florida. One of the local merchants was advertising moderately. He was induced to take a half page one day and follow it with a full page advertisement the next day, announcing a special sale. About eleven o'clock the night of the third day, I dropped into that store and really, it looked like a cleaned house. The merchant tired out from two days' hard sales stopped for a moment to rest and talk with me. Here are his most pleasant words, "This has been the biggest day I have ever known since I have been in business."

**Advertising Splurge and Its Result.**

**Manufacturers Ready to Co-operate.**

Now, copy is a hard thing to prepare on all occasions. Let me suggest that you make more thorough use of the service offered by so many Hardware manufacturers to supply you with electrotypes of newspaper advertisements all ready to hand to your printers. A great many manufacturers now offer this free advertising service. I can't say how many or just what ones, but I do know that the firm I represent is always very willing to generously supply Hardware dealers with attractive newspaper copy all ready for the press.

In this connection just remember that for a small cost you can have your printer run off a lot of circulars from these same electrotypes. These circulars printed with your name and enclosed with all packages that you send out, work for your good in ways almost too numerous to mention.

This also holds true of printed matter sent you by the manufacturers. In this day I believe there are dealers few and far between who don't appreciate and rightly use the expensive booklets manufacturers send them with shipments to advertise their makes of Hardware.

**Circulars, Booklets, etc.**

Enclosing these booklets and leaflets with your correspondence and especially putting them in every package you send out is an excellent and easy method to get that silent force—advertising—working to build up your Hardware trade.

No matter what your customer may buy, if you at the same time send along a circular or leaflet printed or stamped with your name, that circular I venture to say in the majority of cases receives some attention. We will give it the credit of being carefully worded and neatly printed. It is just one more shot home in the mind of your possible customer; one more thought conveyed that the Stoves or Enamel Ware, the Wire Fence or the Saws you sell are high quality goods. Hence, finally, the settled conviction that all you do sell is worth dollar for dollar paid for it.

Fortunate, indeed, is the Hardware dealer who can establish in the collective mind of the community this conviction of a high-grade store. Advertising helps all tend in that direction. Keep your store up in all particulars or else don't waste your money telling people about it—go out of business.

**A High Grade Emporium.**

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One word more about manufacturers' circular matter. Perhaps you will call this a special plea, well, then, so be it. It really seems to me that you dealers should consider yourselves fortunate to receive, practically free from expense, such generous allotments of printed matter, or at least to be so situated that you may write almost any manufacturer for such a supply as you may need to cover any line you handle.

**How Retailers Can Show Appreciation.**

When the cost of making pretty cuts and the cost of neat printing is considered, doesn't it seem fair that in return careful plans should be made and followed persistently for the proper distribution of this advertising matter bearing your name?

You who have this matter systematized will pardon my mentioning it, while you who may be on the other side will see no offense, but rather value when I urge that greater care be given to see that this advertising is distributed.

This for our mutual good. Only results count.

### The Store Windows.

I am not a window decorator, but if I were a Hardware dealer I would reason this way about store windows—they create the first impression, that impression if bad harms my business, if good, helps it. They catch the eye of the passer-by, hence I profit most when I show seasonable goods and special bargains, even such articles as I might advertise in my local newspaper.

Take advantage of chance offerings. In one of the upper Broadway stores in New York City a large glass window was broken. During the morning so many people came in to ask questions about it that the merchant, to stop the interruptions, conceived the idea of putting up placards reading as follows:

THE WIND DID IT.
NOBODY WAS HURT.
NO ARRESTS WERE MADE.
THE COLD CREAM WAS NOT DAMAGED.
THE GLASS COST $165.
IT WAS COVERED BY INSURANCE.

In a very short time such a large crowd had gathered that it was necessary for the police to clear the street. That merchant merely took advantage of an accident to attract attention to his store.

How many times in large cities you have noticed a particularly striking window display. It is only the result of a little careful thought and thoughtful work.

### Signs and Hangers.

Some signs and hangers are bad, others are worse, and some are hopeless. But that is too dark a view of the art work of the lithographer. From the manufacturer's point of view I can assure you that they are costly. Now, unless they add to the selling power of our stores let us abolish them. Keep together on this matter. Encourage the artistic and strong signs and hangers. Refuse all others.

The best attract attention and help to interest—two fundamentals of advertising—therefore use them, but occasionally express your disapproval of the mistaken, hopeless signs you so often receive.

### Trade Journal Help.

You may say it is all very well to hear talks and helpful hints regarding advertising, but how am I to keep them continually before me so that they stay fresh in my mind? There is one excellent method, namely, through the trade publications devoted to the Hardware business. You get these weekly and monthly, and in practically every number you will find live advertising suggestions both in the reading matter and in the advertising pages.

### Systematic Plan of Action.

Now regarding all advertising, recognizing it as an important business force of the day, something as yet in its infancy; why not give the subject as it applies to your store, your city, yourself, calm consideration, settle on some likely, systematic plan of action and either see personally that the plan is followed or put the working out of it in the hands of some bright assistant.

It will be as valuable ultimately to your Hardware business as it has been to so many other lines of business and industry.

Get the habit as they have at big stores, of digging down to the roots of your advertising and see just wherein you fail, and by what means you can make improvement.

Get the Marshall Field idea applied to your Hardware business so that when a man thinks of good Hardware he instinctively thinks of your name and your store. Results count.

## ADDRESS OF M. L. COREY.

The address of M. L. Corey, national secretary, touched on a variety of topics of practical interest and importance to the trade, including catalogue house competition and its ramifications, parcel post legislation, and the desirability of harmony among local competitors. We give the following liberal extracts from it:

Many problems that confront the retail hardware trade are national in scope, and it is necessary and wise that we join hands and pledge harmonious co-operation in meeting and solving them. Fifteen years ago the first State Hardware Association was formed, but until the National came into existence in 1901 State influences were scarcely recognized outside their own borders, and there was a wide divergence of views as to the proper plans and policies. Radical men with a "rule or ruin policy" we had among us, but the wise conservatism of our chosen leaders prevailed in the management, and thus we see the hardware association movement growing stronger, bigger and more influential year after year, until to-day we have one of the best working and most harmonious retail commercial organizations the world has ever seen. Each item of information, each lesson of experience, should add wisdom to govern our future course. The one thing we should and must have is the loyal, earnest, prompt co-operation of our membership.

**A Divergence of Views.**



M. L. COREY.

### The Parcel Post Fight.

During the last six months we had a fight in Congress to prevent the passage of a domestic parcels post measure. Requests to write your Congressman and Senators came to you from your secretary, from the *National Hardware Bulletin*, which is your official spokesman, and from the trade press. Ask yourself whether you promptly acted upon these requests individually and as a body. If you did not, then you failed to recognize and take full advantage of the power of associated effort. Notwithstanding that not over 40 per cent. of our members wrote to their Congressmen, yet we have the assurance that more letters came from hardwaremen than all other classes of business combined. Let us learn a lesson from this experience. If we are again confronted with injurious legislation, and we surely will be, let us not only act ourselves, but insist upon other dealers in other lines in our towns doing their duty as well. It is not a question of right or wrong that prevents writing; it's our natural inclination to let others do the fighting and the easy way we have of carelessly sidetracking matters of general interest and advantage.

**Hardwaremen Most Alert.**

### High deals.

Our association would elevate business to a higher plane. It advocates general prosperity instead of individual advantages. It urges common sense trade relations between competitors as well as honest, friendly co-operation. It would have our members build their success upon improved selling system, quality goods, and broad gauge, honorable methods. It would have you shake hands with your hardware neighbors and treat them fair and square. It would have you unite to encourage and assist home enterprise and community prosperity. To recognize and support your true trade friends as well as resist the encroachment of our unscrupulous, demoralizing, foreign, catalogue house enemy.

**Trade Friends Supported.**

### Importance of Local Harmony.

Each member should do all in his power to bring about harmonious conditions in his own town and community. Much has been said of the growing prejudice between the merchant and farmer. Fifty per cent. of this feeling is the result of the bitter and senseless antagonism that often exists between dealers. What a sad reflection upon our business judgment and common sense is the spectacle of one merchant continually and persistently wasting his energies in tearing down the trade and reputation of his neighbor. How foolish and suicidal a local antagonism that would prefer an order going to a catalogue house rather than to a competitor. No wonder some complain they are making no money and that mail order business is growing. We should recognize and reform our own faults and actions, then unitedly and intelligently face and fight our real enemies. Our members can do much to bring better local conditions and we urge them whenever it is possible to make the effort.

**Suicidal Antagonism.**

### Catalogue Houses.

While it is undoubtedly true that your people have not yet generally contracted the mail buying habit, the catalogue house trade has been increasing in the South, and prudence demands that every merchant in your State be on his guard. The mail order business is like a thief in the night, its work is done quietly and the results are hidden from

**An Insidious Business.**

the careless merchant. You have no means of knowing whether your customers are being continually impressed with the idea that they are being robbed by local tradesmen, and the innocent looking box that comes to your depot bears few marks that prove its catalogue house origin. Distance, cost of transportation, money demanded in advance and the peculiar character of your customers have, to some extent, barred the growth of the mail order buying habit in your section, but you cannot depend upon these features entirely for future protection.

**Hardware Has Furnished More Leaders**

for catalogue houses and cut rate stores than all other lines put together. A mail order house advertising man recently said that they quoted many hardware items at less than actual cost, and the whole line brought them no profit. Go into any racket, or cut rate department store and you will find them pushing Hardware as leaders. Hardware is staple, well known and easily compared. It can be counterfeited, cheapened, pot metaled, slighted and misrepresented, yet there will always remain some evidence of merit and desirability stamped on its face. There was a time when the brand carried more weight in deciding the consumers' choice. This decline is more the result of selling through objectionable channels than a depreciation of quality. Many manufacturers are now striving desperately to regain their lost ground; they have refused to sell catalogue houses; they are spending money freely in publicity advertising, but the retail trade has discovered that their safety and prosperity depends upon building trade upon articles *they can control;* that salesmanship, when backed by quality and merit, is the foundation of success. If a demoralizing local competitor sells an article without profit, you seek a substitute or boldly meet the price; this prevents him from securing an advantage. The same methods should, to a great extent, be applied to catalogue house competition, and our failure to do this accounts in large measure for their enormous growth.

**The Cause of Degeneration.**

**Methods Which Succeed.**

**Profits Irregularly Adjusted.**

In every line of business to-day some articles are made leaders and sold without profit. We quote Nails, Wire and other staples on a losing basis. Years ago local competition forced the issue and named these items. Catalogue houses select other goods such as the common, every day Strap Hinges, Hasp and Staples, Screws and Bolts, &c., &c., on all of which our percentage of profit is large and our sales frequent. We know no customer would send to Chicago for a pair of 6 in. Strap Hinges, but when he goes home he gets out his book and compares what he paid with the catalogue price and jumps at once to the conclusion that the same ratio of difference exists on all other goods. It is our failure to revise our own selling prices, to consider the catalogue house as our common, most dangerous competitor, that is injuring the retail merchant in the estimation of the consumer. Catalogue houses claim to have spies (missionaries, they call them) in every section of the country, whose business it is to find out what articles you are having the largest and most profitable trade on, buy samples, and send them in so that they can advertise something similar and cheaper. In doing this they admit that we build the demand. They expect us to sow the seed that brings them their harvest. Don't stand for such business. Get the catalogues and investigate. Push goods that no catalogue house can buy—if in doubt, write us.

**How Customers Are Deceived.**

**Similar and Cheaper.**

**Hardwaremen Create Demand.**

**Catalogue Houses on the Defensive.**

I have no time to follow up this subject, but leave it for your further earnest consideration and trust that you will take such individual action as your interests may demand. The catalogue houses are not having everything their own way. They are on the defensive. They have in three instances appealed to the courts to tie the hands of our retail opposition and been beaten. One of the largest is now under indictment for fraudulent use of the mails and awaiting trial. Their trade has been materially reduced and they are resorting to desperate tactics to influence business. They want cheaper delivery of goods irrespective of distance carried, and this brings me to

**The Domestic Parcel Post.**

I do not know how well you are posted on this subject nor how closely you have followed the arguments as given in the *National Bulletin* and our trade papers. Parcel post has two distinct divisions: Foreign and domestic. The first relates only to packages passing between this and some foreign country, the rates and terms are a subject of treaty, with the President and Postmaster-General representing the United States. We as retail Hardwaremen have no special interest in its provisions. The domestic parcel post delivers packages anywhere in United States territory at a uniform rate, irrespective of distance or transportation conditions, and we vigorously oppose any extension of postal privileges in this direction.

**Proper Limits of Mail Service.**

We contend that our mail service should limit its field to the dissemination of knowledge and information and the carrying of personal and business communications, and this service should be performed at a minimum cost for the people. This kind of work is *essentially educational;* the carrying of merchandise by means of a parcel post is *purely commercial.* During the last five years every Congress has produced a number of domestic parcel post bills, all of which have been opposed by merchants' associations and finally defeated. This session the fight was most determined and persistent, the friends of the scheme receiving the active support of the Postmaster-General, who has made speeches in its favor, as well as sending out large quantities of literature under the franking privilege to influence favorable public sentiment.

**Yearly Bill Crop.**

**Modification of the Department Programme.**

The Postmaster-General started out with the idea of securing radical changes. He was compelled to drop one feature after another, and finally settled upon the Burnham bill and brought strong influence to bear upon Congress to force its passage.

**Provisions of the Burnham Bill.**

This provided a special service for carrying packages over rural routes, served by the town from which the rural carriers are working. It provided that no parcels should be handled except they were offered by bona fide merchants or individual residents on the routes. On casual glance some merchants were inclined to favor this bill, and until its objectionable features were pointed out even some of our trade editors were on the fence. The bill provided certain fixed charges; up to 5 cents for 1 lb. and 2 cents for each additional pound up to 11 lb., which is the limit, and goes for 25 cents. The sender would, of course, pay the postage. Whether this would result in placing the whole burden upon the merchant or whether the merchant and his farmer customer would divide the expense remains to be seen. Our opinion is that it would soon result in the merchant paying all delivery charges.

**Merchant Would Probably Pay.**

To-day, the farmer can ask a rural carrier to step into any store and make a purchase and bring the goods to him and the matter of recompense is settled between them; very seldom are charges made for the accommodation. Experience has demonstrated that the privilege, even under present rules, is seldom taken advantage of; under fixed charges it would not be likely to increase, therefore, if this were all we would not so earnestly oppose the Burnham bill.

**Privileges Little Used.**

**Putting Merchants at a Disadvantage.**

We believe it to be but the "entering wedge." It is evidently "class legislation" and good legal talent has advised us that if taken into the courts the bill might be declared invalid or more likely the discriminating *local* feature would be eliminated. Then there would be great pressure brought upon Congress to extend the cheap rural route merchandise rate over the whole postal service and our opposition would be handicapped because it will be claimed that we were receiving special mail privileges that are denied to the country at large. The country merchant cannot do anything but a "face to face" business successfully. It will never pay us to issue catalogues showing all our goods nor advertise extensively in our limited fields. *Personal contact between seller and buyer is the force that drives our business.* New goods must be shown, explained and demonstrated before a demand can be created. No parcel post ever contemplated handling anything except small packages, therefore, it will not materially benefit the merchant. The farmer that asks for a parcel post is usually influenced by a selfish desire to save a few cents in carrying charges. The farm journals that advocate it want a cheap delivery for mail orders and by increasing the mail business they will get more profitable advertising. The mail order manufacturer and catalogue houses want it to increase selling by mail.

**A Face to Face Business.**

**Axes to Grind.**

**Good Work Done.**

The splendid work done by our Hardware associations assisted by the National Grocers, Druggists and other organizations, not omitting mention of our trade press, prevented the passage of any parcel post measure by the recent Congress. We were most fortunate in having influential friends on the Postal Committees, who did not even allow the bills to come before our law makers.

**Bills Will Come Up Again.**

There is no question but that the parcel post will come up again and we should maintain and strengthen our organization in every possible way. It is our duty to educate the people on this question. To see that good men and true are nominated and elected to Congress. No class of men are more concerned in good government than the merchant, manufacturer, jobber and traveling man.

**People Must Be Educated.**

**Legislation and Business.**

Legislation is necessary, but it should be reasonable and intelligent legislation, that will not injure, embarrass or persecute honest capital investments or legitimate enterprise. This is a government of the people, but it is too true that a very large class allow *others* to do their thinking and direct their actions. Plausible misrepresentations and sensational doctrines frequently influence the general public. The level headed, practical business men of our country should exercise more power in directing public affairs.

**A Wave of Distrust.**

Six months ago our financial sky was suddenly clouded and a wave of fear, distrust and suspicion swept over our fair land, clogging the wheels of a thousand factories and throwing their busy workmen out of employment. Caution and prudence demanded that every merchant prepare for the threatening crisis. Some cancelled orders and stocks have been reduced, with the expectation of fluctuating values.

**Honor to Trade Leaders.**

All honor to the master minds who with a firm hand held the price levers until business could adjust itself to the new conditions. No class of men did more to restore confidence and stability than those who managed our Hardware and steel industries.

There may, and undoubtedly will, be some lowering of prices, but no one need fear to buy conservatively any staple Hardware to-day. Let us do all in our power to restore normal conditions. Let us preach the doctrine of sunshine and prosperity in our several communities. Let us extend a helping hand to our customers and encourage them to buy with their usual freedom. Reports from many States say that their May and June business was good and in many cases better than a year ago. I bring you this word of cheer and urge your most hearty co-operation toward restoring and maintaining business confidence.

## Price-Lists, Circulars, Etc.

*Manufacturers in Hardware and related lines are requested to send us copies of catalogues, price-lists, &c., for our Catalogue Department in New York; and at the same time to call attention to any new goods or additions to their lines, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.*

STERLING FOUNDRY COMPANY, Sterling, Ill.: Catalogue illustrating Cast Iron Chimney Caps, Chimney Tops, Chimney Flue Thimbles, Fuel Chutes, Foot Scrapers, Automatic Door Holders; also circulars referring to Sterling Stove Polish and Iron Enamel and Magiclean Wood Polish.

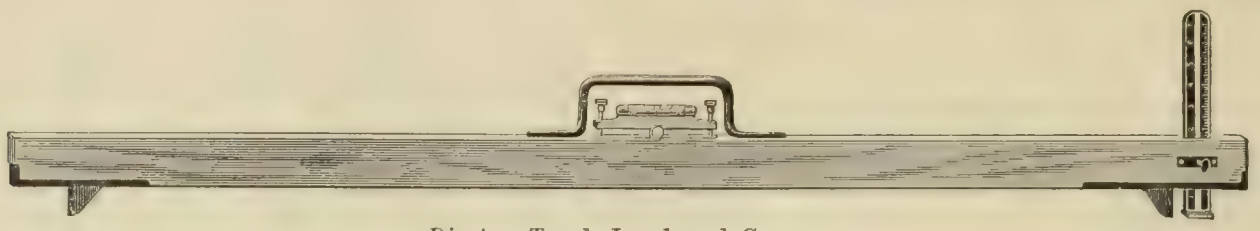
TAPLIN MFG. COMPANY, New Britain, Conn.: Special list dated July 1, referring to various articles of the company's manufacture, including Dover Egg Beaters, Lemon Squeezers, Towel Racks, Garment Hangers, Magnetic Hammers, Bottle Stoppers and Openers, &c.

BERGER BROS. COMPANY, Philadelphia: Illustrated catalogue and price-list covering a complete line of tinners' and roofers' supplies, Roofing Sheet Metals, Conductor Pipe, &c.

HERCULEVER COMPANY, 106-110 Lafayette street, New York: Large mailing folder referring to the Herculever Box and Case Opener, with half size reproduction and series of illustrations showing the application of the tool to the use for which it is designed.

## Disston Track Level and Gauge.

The track level and gauge here shown, made by Henry Disston & Sons, Philadelphia, Pa., has a stock of poplar wood thoroughly seasoned, with ends reinforced with metal castings, japanned. The sliding gauge is made of brass, graduated for elevation up to 7 in. The level holder is nickel plated, and there is a movable shield to protect the vial, which is sensitive in action. With the level, it is explained, the proper elevation is secured by means of the sliding gauge, the vial being adjusted to a horizontal position, in accordance with the elevation fixed, after which the sliding gauge is removed and the tool then serves for both track and elevation gauge without further adjustment. When it is desired to use the tool as a track gauge only, the elevation slide and level adjustment can readily be removed.



*Disston Track Level and Gauge.*

## Grab's Keyless Basket Bank.

A novel dime bank, comprising one of a number of patent specialties made and distributed by Victor M. Grab & Co., Ashland Block, Chicago, is here illustrated. The bank is made in basket form of solid steel and iron with oxidized copper finish, and is designed to hold 300 dimes. It is so constructed that it cannot be opened until $5 or a multiple thereof in dimes has been deposited, when it opens automatically without the aid of a key. It is supplied with an automatic registering device, which registers each dime deposited, the number appearing in plain figures on a dial face in the top of the bank. It is 2½ x 3½ in. in size, and weighs 14 oz.



*Grab's Keyless Basket Bank.*

## Hardsocg's E-Z-Q Side Gear for Q Drill.

The Hardsocg Mfg. Company, Ottumwa, Iowa, has made a change in its Q drilling machine gear, and calls the new gear the E-Z-Q. In some districts where the coal is unusually hard the company found a demand for a machine with a gear a little lower than on its regular Q drill. The new drill is identical in pattern with the Q machine, with the exception of the size of the large cog wheel, which is increased ½ in. in diameter and has 23 cogs, whereas the Q large cog had only 18. The company claims that the machine equipped with the new gear makes a comparatively easy running coal drill. The feed bar has two slots opposite each other which engage keys in the large cog wheel, thus keeping pressure even on the feed bar in all positions, and lengthening the life of the large cog wheel, as there are two keys to wear instead of one.

## Magiclean Wood Polish.

The Sterling Stove Polish Company, Sterling, Ill., is manufacturing Magiclean Wood Polish, for cleaning and polishing furniture, pianos, hardwood floors, bar and store fixtures and all finished or varnished surfaces. The

company also manufactures Sterling Stove Polish and Iron Enamel, all of which preparations are fully guaranteed to give satisfaction or they may be returned at the expense of the manufacturer.

## Garbage and Oily Waste Cans.

The Justrite Company, formerly located at 14 Franklin street, but recently removed to 218 Lake street, Chicago, is making and marketing a line of garbage, waste and hospital cans in which are noted some special features of

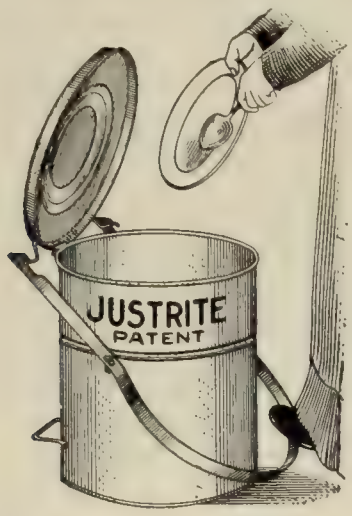



*Fig. 1.—The Justrite Garbage Pail.*

serviceable convenience and utility. Fig. 1 of the accompanying illustrations show the garbage can, with an ingenious device for automatically lifting the lid, which is an important improvement since it obviates the necessity for stooping to remove the lid, a convenience that will be readily appreciated by housewives. The simplicity and positive operation of the lifting device is also a commendable feature. Extensions of the handle acting as levers engage pins in a steel strap riveted to the top of the can, so that by pressure of the foot the hinged lid is easily lifted. A loop at the back of the lid serves as a stop to keep it from swinging beyond a perpendicular position, and when the pressure is released permits it to close by gravity. The oily waste can shown in Fig. 2 is of similar construction to the garbage can, and clearly illustrates the design and application of the hinged lifting mechanism. Sanitary requirements of such receptacles

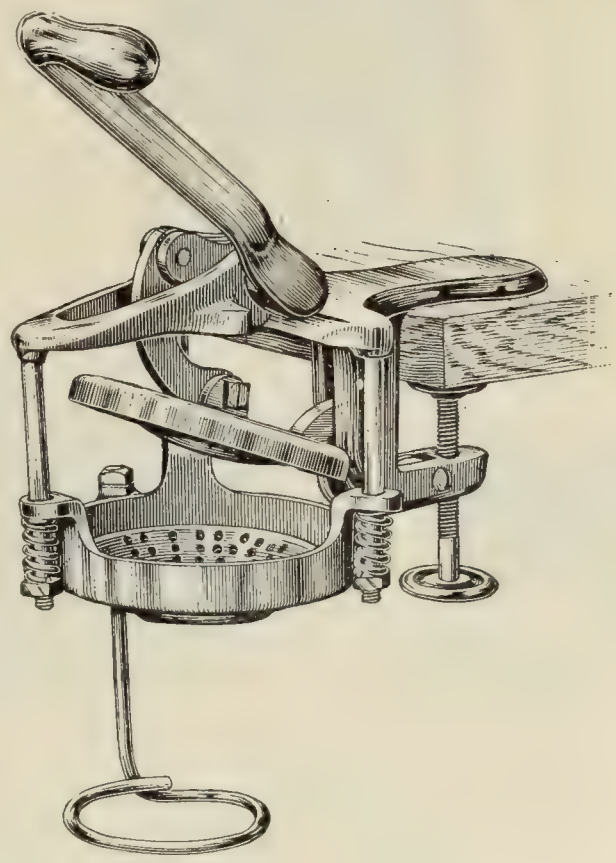



*Fig. 2.—The Justrite Oily Waste Can.*

and the safe storage of greasy cloths and other inflammable materials demand that they be kept tightly closed, which result is insured by the permanent attachment and automatic closure of the can lids. To guard against danger of fire from spontaneous combustion the waste cans are mounted on legs which raise the bottom clear of the floor. Heavy galvanized steel is used in their construction and the lids are strongly reinforced by steel straps, giving them the necessary rigidity to withstand the shocks of opening and closing. The garbage cans are furnished in three sizes, 6, 8 and 10 gal., and the dimensions of the oily waste cans, exclusive of legs, are 11¾ x 13 in., 12½ x 14 in. and 13½ x 15 in. The line made by the company also includes white enameled hospital pails of 6, 8 and 10 gal. capacity.

## The Mosteller Orange and Lemon Press.

A simple, compact and powerful orange and lemon press just placed on the market by the Mosteller Mfg. Company, Chicago, is here illustrated. Including the wire glass holder, the entire length of the machine is 7 in., and when adjusted to counter or table projects but 1½ in. above the surface. It is designed for pressing all sizes of citrus fruits, such as oranges, lemons, limes and grape fruit when cut in halves. Adjustability to fruit of different sizes is effected by springs, on which the lower press block rests. Seeds and plup of pressed fruit are

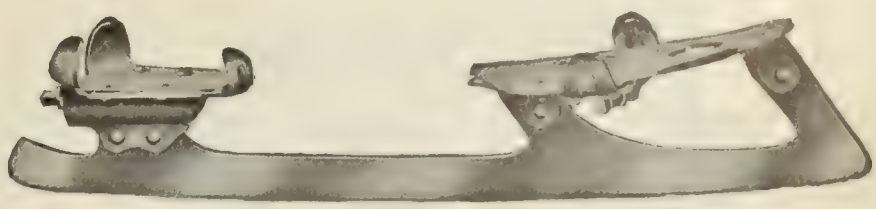


*The Mosteller Orange and Lemon Press.*

retained and the juices are strained through perforations in the press with one movement of the lever. It is stated that all parts of the machine coming in contact with fruit are made non-corrosive and impervious to acid. The press is attractively finished in polished nickel.

## The Winslow Skate No. 2120.

The Samuel Winslow Skate Mfg. Company, Worcester, Mass., is offering this year the skate shown here-



*The Winslow Skate No. 2120.*

with. It is designed for either men or women, and is made of cast steel with a curved, plain, beveled runner, which is not chamfered. The parts are not polished, but are nicked plated, while the attachment of the skate is key full clamp. The company allude to this as one of the cheaper styles of skates, for which there was a noticeable demand from the trade during the season of 1907.

## The Quicker Yet Washing Machine.

The Globe Mfg. Company, Perry, Iowa, is offering the washing machine here illustrated. A distinguishing feature of the machine is the high speed balancing apparatus consisting of two pivoted balls underneath the tub, which, being revolved by the lower pitman, rise by centrifugal force, imparting a steady governor-like motion to the

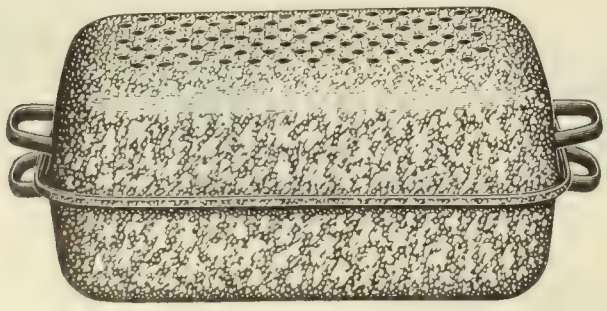



*The Quicker Yet Washing Machine.*

machine. It is claimed for the device that while it maintains the momentum as effectively as the ordinary fly wheel it offers very little resistance to the motion in starting. The dotted lines in the illustration show position of the governor arms as the speed of the machine is increased. The agitator is actuated by a lever with a rack tooth arm engaging a gear attached to the upper end of the agitator shaft, and is hung low, near the bottom, so that a small piece will be treated as effectively as a full tub of clothes. The double thick cover is fitted with steel fastenings, which hold it firmly in place and can be freely raised, regardless of the position of the lever. The entire mechanism is exceedingly simple, no castings liable to breakage entering into its construction, and there is no dead center on which the motion can hang. The tub is built of tongued and grooved cypress staves, bound with galvanized hoops, and has no projecting parts inside the tub or below the agitator to interfere with the efficiency of the pegs. The principal advantages claimed by the company for this washer are easy starting, easy running and quick washing.

## Enameled Self-Basting Roaster.

The Columbian Enameling & Stamping Company, Terre Haute, Ind., maker of an extensive line of enameled ware, is placing upon the market a specialty in the

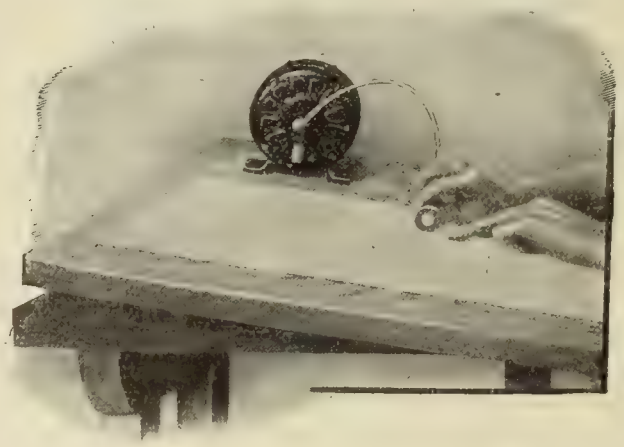


*Enameled Self-Basting Roaster.*

form of an enameled self-basting turkey roaster, here illustrated. This roaster embodies several features of improvement, which it is claimed make it particularly serviceable and effective in the roasting of fowls or meats of any kind. It is made in two seamless parts, oblong in shape, 16 by 10 by 7½ in. inside measurements, and is double coated with onyx enamel. A point to which attention is particularly called is the provision made for automatic basting during the process of cooking. This is accomplished by small indentations in the dome, which collect and condense the moisture from rising vapors and precipitate it uniformly over the entire surface of the roast. A deep paneled bottom prevents the turkey, or other roast, coming in direct contact with the heating surface. The raised bottom is also fluted to permit the free passage of the juices to the outer edge of the bottom, where they are vaporizd. The roasters are packed one dozen in a case.

## Coates Flexible Shaft Eraser.

The accompanying illustration shows a motor driven eraser put on the market by Coates Clipper Mfg. Company, Worcester, Mass. As here shown the eraser is operated by a Westinghouse motor, and connected by a Coates unit link of flexible shaft, the company supplying the complete outfit. Motors are wound for either direct or alternating current. The company believes that draftsmen, &c., will welcome the opportunity to use motors to furnish the necessary power for erasing when altering or cleaning up drawings. It is suggested that erasing with a light, fast stroke will remove lines without a scratch, but few people have the patience to erase properly. Not only is erasing by hand very tiresome, but it



*Coates Flexible Shaft Eraser.*

takes much time, while the motor is said to make the work quick and easy. It is believed by the manufacturer that in large drafting rooms, where changes involving extensive alterations often have to be made, the device will find special favor. As shown in the illustration, the motor is usually placed near the edge of the table, but it may easily be moved about from one table to another as its weight is very little. In some drafting rooms, it is suggested, that a separate bench may be used for erasing, and all tracings, &c., requiring correction might be brought to that place.

## Auger Bit File.

The Rex File & Saw Company, Newcomerstown, Ohio, in addition to a full line of files and rasps, butcher and hack saw blades, is making an Augerbit File, for sharpening the cutting members of Auger Bits. The file is about 6 in. long, rounded and smooth in the center, having two tapering flat filing surfaces at each end. At one end, the broad surfaces on either side are smooth, with both edges cut for sharpening the inner side of the scorer. The opposite is the case at the other end of tool, where the broad surfaces are cut for sharpening the lip and the edges are smooth so as not to interfere with the scorer. This file is packed, as usual, a dozen in pasteboard box, and is also obtainable 12 on a card with easel back for counter display and to sell from.

The Vale Hardware Company has succeeded the Eastern Oregon Hardware Company, Vale, Ore.

## The Smith Bathroom Specialties.

The Premier Specialty Company, Chicago, has added to its line the bathroom specialties here illustrated. Fig. 1

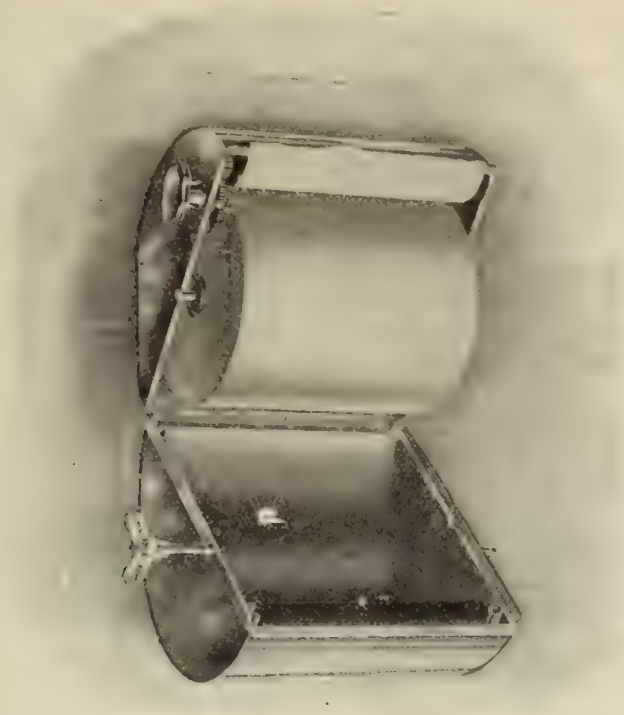


*Fig. 1.—The Smith Toilet Paper Holder.*

represents a toilet paper holder, with the case open showing the mechanism which controls the issuance of paper. The holder is designed for the use of roll paper of any style or size, and is fitted with a thumb feed screw carrying a small spur gear which meshes with a similar gear on the end of the feed roll. The screw can be turned only in one direction, which unrolls the paper and feeds it out through the slot. Paper can be obtained only by turning the screw, a provision that guards against undue wastefulness. When the roll is in position the case is securely fastened by a lock and key and is attached to the wall by a screw or bolt from inside the case, which cannot be reached without first unlocking the metal case. The holder is neat in form and attractively finished in nickel plate. Figs. 2 and 3 represent the company's combined brush and spray. The composition disk holding the bristles, which are described as of fine quality, is perforated with small holes; these admit free passage of water through the brush. Connection is made through the bath or basin faucets by an ordinary hose and hollow handle attached to the back of the brush by the metal cap. This is easily removed for cleaning, and when taken off allows easy access to the metal disk for opening small holes that may have become clogged. The brush and spray are furnished with or without handle, as desired.

Milton Feusner, Huntley, Neb., has bought the Hardware stock of David Wedean, Wilcox, Neb.

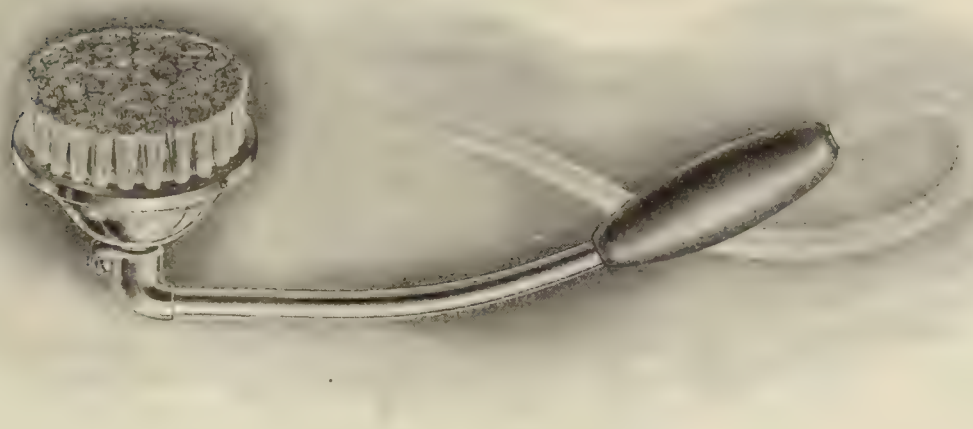


*Fig. 2.—The Smith Brush and Spray Combination.*

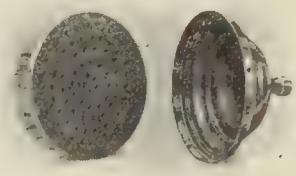


*Fig. 3.—Sectional View of Brush and Spray.*

# PAINTS, OILS AND COLORS

### Animal, Fish and Vegetable Oils—

| | ₱ gal |
|---|---|
| Linseed, State and Western, raw | 41 @42 |
| City, Boiled | 45 @46 |
| City, Raw | 44 @45 |
| Raw, Calcutta, in bbls | 50 @.. |
| Lard, Prime, Winter | 68 @69 |
| Extra No. 1 | 54 @56 |
| No. 1 | 47 @52 |
| Cotton-seed, Crude, f.o.b. mill | @.. |
| Summer Yellow, prime | 47 @47½ |
| Summer White | 49 @50 |
| Yellow Winter | 49 @49½ |
| Tallow, Acidless | 52 @55 |
| Menhaden, Brown, Strained | 38 @.. |
| Southern | 28 @.. |
| Light Strained | 38 @.. |
| Bleached Winter | 40 @.. |
| Ex. Bleached Winter | 42 @.. |
| Cocoanut, Ceylon | ₱ lb 6⅜@6½ |
| Cochin | ₱ lb 7⅛@7⅜ |
| Cod, Domestic Prime | 42 @44 |
| Newfoundland | 43 @45 |
| Red Elaine | 37 @39 |
| Saponified | ₱ lb 5½@5¾ |
| Olive, Yellow | 66 @67 |
| Neatsfoot Prime | 55 @58 |
| Palm, Lagos | ₱ lb 5¾@6 |

### Mineral Oils—

| | ₱ gal. |
|---|---|
| Black 29 gravity, 25@30 cold test | 13 @13½ |
| 29 gravity, 15 cold test | 13½@14 |
| Summer | 12½@13 |
| Cylinder, light filtered | 20½@21 |
| Dark, filtered | 18 @19 |
| Paraffine, 903-907 sp. gravity | 14½@15 |
| 903 sp. gravity | 13½@14 |
| 883 sp. gravity | 11 @11½ |
| Red | 13½@14 |

### Miscellaneous—

| | |
|---|---|
| Barytes: | |
| White, Foreign | ₱ ton $18.50@20.50 |
| Amer., floated | ₱ ton 18.00@20.00 |
| Off color | ₱ ton 13.00@16.50 |
| Chalk, in bulk | ₱ ton 3.00@3.40 |
| China Clay, Imported | ₱ ton 11.50@18.00 |

| | ₱ gal. |
|---|---|
| Cobalt, Oxide | ₱ 100 lb 1.45@2.60 |
| Whiting, Commercial | ₱ 100 lb .42@.52 |
| Gilders | ₱ 100 lb .55@.60 |
| Ex Gilders | ₱ 100 lb .60@.65 |

### Putty, Commercial—

| | ₱ 100 lb |
|---|---|
| In bladders | $1.70 @1.80 |
| In bbls. or tubs | 1.20 @1.45 |
| In 1 lb to 5 lb cans | 2.65 @2.95 |
| In 12½ to 50 lb cans | 1.50 @1.90 |

### Spirits Turpentine—

| | ₱ gal. |
|---|---|
| In Oil bbls | 41 @41½ |
| In machine bbls | 41½@42 |

### Glue—

| | ₱ lb |
|---|---|
| Cabinet | 12 @15 |
| Common Bone | 7½@9 |
| Extra White | 18 @24 |
| Fish, liquid, 56 gal. bbls., per gallon | 60 @1.20 |
| Foot Stock, White | 12 @14 |
| Foot Stock, Brown | 9 @11 |
| German Common Hide | 10 @12 |
| German Hide | 12 @18 |
| French | 10 @40 |
| Irish | 13 @16 |
| Low Grade | 10 @12 |
| Medium White | 14 @17 |

### Gum Shellac—

| | ₱ lb |
|---|---|
| Bleached, Commercial | 27 @28 |
| Bone Dry | 32 @35 |
| Button | 30 @40 |
| Diamond I | 47 @48 |
| Fine, Orange | 34 @35 |
| A. C. Garnet | 28 @29 |
| G. A. L. | 20 @21 |
| Kala Button | 18 @19 |
| D. C. | 48 @49 |
| Orange B | 39 @40 |
| T. N. | 28½@30 |
| V. S. O. | 47 @48 |

### Colors in Oil—

| | ₱ lb |
|---|---|
| Black, Lampblack | 12 @14 |
| Black, Chinese | 36 @46 |
| Blue, Prussian | 32 @36 |
| Blue, Ultramarine | 13 @16 |
| Brown, Vandyke | 11 @14 |
| Green, Chrome | 12 @16 |
| Green, Paris | @24 |
| Sienna, Raw | 12 @15 |
| Sienna, Burnt | 12 @15 |
| Umber, Raw | 11 @14 |
| Umber, Burnt | 11 @14 |

### White and Red, Lead &c.—

| | ₱ lb |
|---|---|
| Lead, English white, in Oil | 10⅛@10⅜ |
| Lead, American White: | |
| Dry and in Oil, 100, 250 and 500 lb kegs | 7 |
| Dry and in Oil, 25 and 50 lb kegs | 7¼ |
| Dry and in Oil 12½ lb kegs | 7½ |
| In Oil, 25 lb tin pails | 7½ |
| In Oil, 12½ lb tin pails | 8 |
| In Oil, 1, 2, 3 and 5 lb tin cans, ass't | 9 |
| Red Lead and Litharge: | |
| In 100 lb kegs | 7 |
| In 25 and 50 lb kegs | 7¼ |
| In 12½ lb kegs | 7½ |
| In lots of less than 500 lbs, ½c ₱ lb advance over above prices. | |

Lead, American, Terms, On lots of 500 lbs and over, 60 days or 2 for cash if paid in 15 days from date of invoice.

### Zinc, Dry—

| | ₱ lb |
|---|---|
| American, dry | 5½@5⅝ |
| Red Seal, French process | 6½@7 |
| Green Seal | 7½@7½ |
| German Red Seal (French process) | 6½@6⅝ |
| Green Seal | 7½@7½ |
| White Seal | 7¾@8⅛ |
| French Red Seal | 8½@8⅝ |
| Green Seal | 10½@10½ |

### Dry Colors—

| | ₱ lb |
|---|---|
| Black, Carbon | 6½@10 |
| Black Drop, American | 3½@8 |
| Black Drop, English | 5 @15 |
| Black, Ivory | 16 @20 |
| Lamp, commercial | 4 @6 |
| Blue, Celestial | 4 @6 |
| Blue, Chinese | 31 @33 |
| Blue, Prussian | 29 @31 |
| Blue, Ultramarine | 3½@15 |
| Brown, Spanish | ½@1 |
| Carmine, No. 40 | $3.10@3.25 |
| Green, Chrome, ordinary | 3½@5 |
| Green, Chrome, pure | 17 @25 |
| Ocher, American | ₱ ton $8.50@16.00 |
| American Golden | 2½@3½ |
| French | 1½@2 |
| Foreign Golden | 3 @4 |
| Orange Mineral English | 10 @.. |
| French | @.. |
| German | @.. |
| American | @15 |
| Red Indian, English | @.. |
| American | @3½ |
| Red Turkey, English | 4 @10 |
| Red Tuscan, English | 7 @10 |
| Red Venetian, American | ₱ 100 lb $3.50@4.25 |
| English | ₱ 100 ₱ $1.15@1.60 |
| Sienna, Italian, Burnt and Powdered | 3 @9 |
| Italian, Raw, Powdered | 3 @7 |
| American Raw | 1½@2 |
| American Burnt and Pow'd | 1½@2 |
| Talc, French | ₱ ton $18.00@25.00 |
| American | ₱ ton 15.00@25.00 |
| Terra Alba, French | ₱ 100 lb .90@1.00 |
| English | ₱ 100 lb 8.50@1.00 |
| American | ₱ 100 lb No. 1 .75@.80 |
| American | ₱ 100 lb, No. 2 .60@.65 |
| Umber, Turkey, Bnt. & Pow. | 2½@3 |
| Turkey, Raw and Powdered | 2½@3 |
| Burnt, American | 1½@2 |
| Raw, American | 1½@2 |
| Yellow, Chrome, Pure | 13¾@15 |
| Vermilion, American Lead | 7 @25 |
| Quicksilver, bulk | 65 @.. |
| Quicksilver, bags | @66 |
| English, Imported | 65 @70 |
| Chinese | $0.90@1.00 |

# Current Hardware Prices.

**General Goods.**—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

**Special Goods.**—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

**Range of Prices.**—A range of prices is indicated by means of the symbol @. Thus 33⅓ @ 33⅓ & 10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

**Names of Manufacturers.**—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1907, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

**Standard Lists.**—"The Iron Age Standard Hardware Lists" contains the list prices of many leading goods.

**Additions and Corrections.**—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

## Adjusters, Blind—

Columbian and Domestic.....33⅓%
North's .....10%
Zimmerman's—See Fasteners, Blind.

### Window Stop—

Ives' Patent.....35%
Taplin's Perfection.....35%

## Ammunition—See *Caps, Cartridges, Shells, &c.*

## Anti-Rattlers—

Fernald Mfg. Co. Burton Anti-Rattlers, ₱ doz. pairs, Nos. 1, $0.75; 2, $0.60; 4, $1.00; 5, $0.50.
Fernald Quick Shifter, ₱ doz. pairs .....$2.00@$3.00

## Anvils—American—

Eagle Anvils.....₱ lb @8½¢
Hay-Budden, Wrought.....9½@9¾¢
Trenton .....₱ lb 9½@9¾¢

### Imported—

Swedish Solid Steel Sisco, Superior, ₱ lb.....10@10½¢
Peter Wright & Sons, ₱ lb, 84 to 349 lb, 11¢; 350 to 600 lb, 11½¢.

## Anvil, Vice and Drill—

Millers Falls Co., $18.00.....15&10%

## Apple Parers—See *Parers, Apple, &c.*

## Aprons, Blacksmiths'—

Livingston Nail Co.....10%

## Augers and Bits—

*Com. Double Spur....75&10@80%*
*Jennings' Patn., Bright.65&10@70%*
*Black Lip or Blued...65@65&5%*
*Boring Mach. Augers.....70%*
*Car Bits, 12-in. twist.....40&10%*
Ford's Auger and Car Bits.....40&5%
Ft. Washington Auger Co., Conard's .....35%
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip. R. Jennings' list, 25&7½%
No. 30, R. Jennings' list.....50%
Russell Jennings'.....25&10&2½%
L'Hommedieu Car Bits.....15%
Mayhew's Countersink Bits.....45%
Pugh's Black.....20%
Pugh's Jennings' Pattern.....35%
Snell's Auger Bits.....60
Snell's Bell Hangers' Bits.....60
Snell's Car Bits, 12 in. twist.....60
Snell's King Auger Bits.....50
Wright's Jennings' Bits.....50

### Bit Stock Drills—

See *Drills, Twist.*

### Expansive Bits—

Clark's Pattern, No. 1, ₱ doz., $26; No. 2, $18.....60&10%
Ford's, Clark's Pattern.....66⅔&5%
C. E. Jennings & Co., Steer's Pat..25%
Lavigne Pat., small size, $18.00; large size, $26.00.....60&10%
Swan's .....60%

### Gimlet Bits—

*Per gro.*
*Common Dbl. Cut.....$3.00@3.25*
*German Pattern, Nos. 1 to 10, $4.75; 11 to 13, $5.75*

### Hollow Augers—

*Bonney Pat., per doz..$5.50@6.00*
Ames .....25&10%
Universal .....20%

### Ship Augers and Bits—

*Ship Augers.....40&10@—%*
Ford's .....33⅓&5%
C. E. Jennings & Co.:
L'Hommedieu's .....6%
Warrens' .....33⅓&7½%
Snell's .....48%

## Awl Hafts—See *Handles, Mechanics' Tool.*

## Awls—

*Brad Awls.*
*Handled .....gro. $2.75@3.00*
*Unhdled, Shldered...gro.63@66¢*
*Unhandled, Patent..gro.66@70¢*
*Peg Awls:*
*Unhandled, Patent..gro. 31@34¢*
*Unhdled, Shldered..gro. 65@70¢*
*Scratch Awls:*
*Handled, Com...gro. $3.50@4.00*
*Handled, Socket..gro.$11.50@12.00*

## Awl and Tool Sets—See *Sets, Awl and Tool.*

## Axes—

*Single Bit, base weights: Per doz.*
*First Quality.....$4.75@5.00*
*Second Quality.....$4.25@4.50*
*Double Bit, base weights:*
*First Quality.....$7.00@7.50*
*Second Quality.....$6.50@6.75*

### Axle Grease—

See *Grease, Axle.*

### Axles—

*Iron or Steel.*
*Concord, Loose Collar...4¼@4½¢*
*Concord, Solid Collar....4½@5 ¢*
*No. 1 Common, Loose...3½@4 ¢*
*No. 1½ Com., New Style.4¼@4¾¢*
*No. 2 Solid Collar.....4¼@4¾¢*
*Half Patent:*
*Nos. 7, 8, 11 and 12.....70%*
*Nos. 13 to 14.....70%*
*Nos. 15 to 18...70&10@70&10&5%*
*Nos. 19 to 22...70&10@70&10&5%*

### Boxes, Axles—

*Common and Concord, not turned .....lb., 5@6¢*
*Common and Concord, turned, lb., 6@7¢*
*Half Patent.....lb., 9½@10¢*

## Bait—Fishing—

Hendryx:
A Bait.....20%
B Bait.....25%
Competitor Bait.....20&5%

### Balances—Sash—

Caldwell new list.....50&10%
Pullman .....50&10%

### Spring—

*Light Spring Balances.60@60&5%*
Chatillon's:
Light Spg. Balances.....50@50&10%
Straight Balances.....40@40&10%
Circular Balances.....50&10%
Large Dial.....30%

## Barb Wire—See *Wire, Barb.*

### Bars—Crow—

*Steel Crowbars, 10 to 40 lb.... per lb., 2¼@2½¢*

### Towel—

No. 10 Ideal, Nickel Plate..₱ gro. $8.50

## Beam, Scale—

*Scale Beams.....40%*
Chatillon's No. 1.....30%
Chatillon's No. 2.....40%

### Beaters, Carpet—

Holt-Lyon Co.:
No. 12 Wire Coppered ₱ doz, $0.80; Tinned .....$0.85
No. 11 Wire Coppered ₱ doz. $1.15; Tinned .....$1.20
No. 10 Wire Tinned.....₱ doz. $1.50

### Beaters Egg—

Dover Stamping & Mfg. Co.:
Genuine Dover, per gro., No. 1, Tumbler Size, $7.50; No. 2, Family Size, $7.50; No. 3, Extra Family Size, $24.00; No. 4, Hotel Size, $30.00.
Holt-Lyon Co.:
Holt, per doz., No. 5, Jap'd, $0.80; No. A, Jap'd, $1.15; No. B, Jap'd, $1.85; No. 6, Jap'd, $1.65.
Lyon, Jap'd, per doz., No. 2, $1.35.
Taplin Mfg. Co.:
Improved Dover, per gro., No. 60, $6.00; No. 75, $6.50; No. 100, $7.00; No. 102, Tin'd, $8.50; No. 150, Hotel, $15.00; No. 152, Hotel Tin'd, $17.00; No. 200, Tumbler, $8.50; No. 202, Tumbler Tin'd, $9.50; No. 300, Mammoth, per doz., $25.00.

## Bellows—

*Blacksmith, Standard List:*
*Split Leather.....60&10@65%*
*Grain Leather.....50@50&10%*

*Net Prices.*

### Hand—

| *Inch..* | *6* | *7* | *8* | *9* | *10* |
|---|---|---|---|---|---|
| *Doz..* | *$5.00* | *5.50* | *6.00* | *6.50* | *7.50* |

### Molders—

| *Inch..* | *10* | *12* | *14* | *16* |
|---|---|---|---|---|
| *Doz..* | *$7.50* | *9.00* | *12.00* | *15.00* |

### Bells—Cow—

*Wrought Cow Bells.....75%*
Jersey .....75&10%
Texas Star.....50%

### Door—

Home, R. & E. Mfg. Co.'s.....55&10%

### Hand—

*Polished, Brass.....60@60&10%*
*White Metal.....60@60&10%*
*Nickel Plated.....50&10%*
*Swiss .....50&10%*
Cone's Globe Hand Bells.....33⅓@35%

### Miscellaneous—

*Farm Bells.....lb., 2¼@2½¢*
*Church and School....60@60&10%*

### Belting—Leather—

*Standard .....70&10@70&10&5%*
*Light .....75&10%*
*Cut Leather Lacing..60@60&10%*
*Leather Lacing Sides, per sq. ft. 20¢*

### Rubber—

*Competition (Low Grade), 70&10@75%*
*Standard .....60&10@70%*
*Best Grades.....40@50%*

### Bench Stops—

See *Stops, Bench*

### Benders and Upsetters, Tire—

Green River Tire Benders and Upsetters .....20%

## Bicycle Goods—

John S. Leng's Son & Co.'s 1907 list:
Chain, Parts, Spokes.....50%
Tubes .....60%

### Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

### Blocks Tackle—

*Common Wooden.....75@75&5%*
B. & L. B. Co.:
Boston Wood Snatch, 50%; Eclipse Steel, 75%; Hollow Steel, 50&10%; Star Wire Rope, 50%; Tarbox Metal Snatch, 50%; Tarbox New Style Steel, 50&10%; Wire Rope Snatch, 50%.
Lane's Patent Automatic Lock and Junior .....30%
See also Machines, Hoisting.

## Boards, Stove—

*Paper and Wood Lined.....55%*
*Embossed .....55%*

## Boards, Wash—

See *Washboards.*

## Bobs, Plumb—

Keuffel & Esser Co.....33⅓%

## Bolts

### Carriage, Machine, &c,—

*Common Carriage (cut thread):*
*⅜ x 6 and smaller..75&5@—%*
*Larger and longer.....70@—%*
*Phila. Eagle, $3.00 list...80@—%*
*Bolt Ends.....70@—%*
*Machine (Cut Thread):*
*⅜ x 4 and smaller..75&10@—%*
*Larger and longer.....70@—%*

### Door and Shutter—

*Cast Iron Barrel, Japanned, Round Brass Knobs:*

| *Inch ...* | *3* | *4* | *5* | *6* | *8* |
|---|---|---|---|---|---|
| *Per doz..* | *$0.30* | *.35* | *.45* | *.60* | *.80* |

*Cast Iron Spring Foot, Jap'd:*

| *Inch .....* | *6* | *8* | *10* |
|---|---|---|---|
| *Per doz.....* | *$1.20* | *1.50* | *2.25* |

*Cast Iron Chain, Flat, Japanned:*

| *Inch .....* | *6* | *8* | *10* |
|---|---|---|---|
| *Per doz.....* | *$1.00* | *1.40* | *1.65* |

*Cast Iron Flat Shutter, Jap'd, Brass Knobs:*

| *Inch .....* | *6* | *8* | *10* |
|---|---|---|---|
| *Per doz.....* | *$0.75* | *.95* | *1.25* |

*Wrought Barrel Japanned, 80&10@80&10&5%*
*Barrel Bronzed.....60&10%*
*Spring .....70&10@70&10&10%*
*Shutter .....50&5@50&10&5%*
*Square Neck.....75@75&10%*
*Square .....70&10&10@80%*
Ives' Patent Door.....55%
Ives' Wrought Metal.....45

### Expansion—

F. H. Evans' Crescent.....40@60%
Richards Mfg. Co.....55&10
Steward & Romain Mfg. Co.:
Style No. 13, Double.....60%
Style No. 1, Single.....60%
Style No. 100, Dbl. Jaw, Single..55%
Lag Screw.....66⅔%

### Plow and Stove—

*Plow .....65&5@70%*
*Stove .....85@85&5%*

### Tire—

*Common Iron.....80@80&5%*
*Norway Iron.....80@80&5%*
American Screw Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84...82½%
Bay State, list Dec. 28, '99.....80%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84...82½%
Eclipse, list Dec. 28, '99.....80%
Russell, Burdsall & Ward Bolt & Nut Co.:
Empire, list Dec. 28, '99.....80%
Norway Phila., list Oct. '84.....80%
Eagle .....82½%
Shelton Co.:
Tiger Brand, list Dec. 28, '99....80%
Phila., Eagle, list Oct. 16, 1884..82½%
Upson Nut Co.:
Tire Bolts.....72½%

### Borers, Bung—

*Borers Bung, Ring, with Handle:*

| *Inch.....* | *1¼* | *1½* | *1¾* | *2* |
|---|---|---|---|---|
| *Per doz...* | *$4.80* | *5.60* | *6.40* | *8.00* |
| *Inch.....* | | | *2¼* | *2½* |
| *Per doz.....* | | | *$8.65* | *11.50* |

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.75; No. 3, $2.50 each.....25%

## Boxes, Mitre—

C. E. Jennings & Co.....25%
Langdon, New Langdon and Langdon Improved, 20&10%; Langdon Acme .....15&10%
Perfection .....40%
Seavey .....45%

## Braces—

*Comman Ball, American....$1.50*
Barber's .....50&10&10@60&10
Fray's Genuine Spofford's.....60%
Fray's No. 61, 166, 206, 614.....50%
C. E. Jennings & Co.....50&5%
Mayhew's Ratchet.....60%
Mayhew's Quick Action Hay Pat...50%
Millers Falls Drill Braces.....25&10%
P., S. & W. Co., Peck's Pat....60&10%

## Brackets—

*Wrought Steel.75&10@75&10&10%*
Bradley Metal Clasp...80&10@80&10&5%
Griffin's Pressed Steel.....75@75&10
Griffin's Folding Brackets.....70&10
Taplin Victor Handy Egg Beater Bracket .....₱ doz. $1.50

## Bright Wire Goods—

See *Wire and Wire Goods.*

## Broilers—

Kilbourne Mfg. Co.....75&20%
Wire Goods Co.....75%

## Buckets, Galvanized—

*M'fr's list, price per gross.*

| *Quart..* | *10* | *12* | *14* |
|---|---|---|---|
| *Water, Reg...* | *26.85* | *29.50* | *33.50* |
| *Water, Hvy...* | *45.35* | *48.00* | *52.00* |
| *Fire, Rd. Btm..* | *32.00* | *34.65* | *38.65* |
| *Well .....* | *37.35* | *41.35* | *45.35* |

*10@7½&6&5%*

## Bull Rings—See *Rings, Bull.*

### Butts—Brass—

*Wrought, High List, Oct. 26, '06.55%*
Cast Brass, Tichout's.....40%

### Cast Iron—

*Fast Joint, Broad....40&10@50%*
*Fast Joint, Narrow...40&10@50%*
*Loose Joint.....70&10@75%*
*Loose Pin.....70&10@75%*
*Mayer's Hinges.....70@70&5*
*Parliament Butts.....70@70&5*

### Wrought Steel—

*Bright.*
*Light Narrow, Light Reversible .....70&5*
*Reversible and Broad..70&5%*
*Loose Joint, Narrow, Light Inside Blind, &c.....70%*
*Back Flaps, Table Chest.65%*
*Japanned.*
*Light Narrow, Loose Pin, 40&5%*
*Light Narrow, Ball Tip..60%*
*Broad .....40&5%*
*Steeple Tipped.....70%*
*Ball Tipped.....70%*

*Extra, 10@—*

## Cages, Bird—

Hendryx Brass: Series 3000, 5000, 1100, net list; 1200, 15%; 200, 300, 900 ..... 30%
Hendryx Bronze: Series 700, 800.... 30%
Hendryx Enameled..... 35%

## Calipers—See *Compasses.*

## Calks, Toe and Heel—

*Blunt, 1 prong, per lb.....4@4½¢*
*Sharp, 1 prong, per lb...4½@5¢*
Burke's, Blunt, 4@4¾¢; Sharp, 4½@5¼¢
Lautier, Blunt, 4@4¼¢; Sharp, 4½@4¾¢
Perkins', Blunt, ℔ lb, 3.65¢; Sharp, 4.15¢

## Can Openers—

See *Openers, Can.*

## Caps, Percussion—

*Eley's E. B.....52@55¢*
*G. D.....per M 34@35¢*
*F. L.....per M 40@42¢*
*G. E.....per M 48@50¢*
*Musket .....per M 62@63¢*

### Primers—

*Berdan Primers, $2 per M..20&5%*
*Primer Shells and Bullets..15&10%*
*All other primers per M..$1.52@1.60*

## Carpet Stretchers—

See *Stretchers, Carpet.*

## Cartridges—

*Blank Cartridges:*
*32 C. F., $5.50.....10&5%*
*38 C. F., $7.00.....10&5%*
*22 cal. Rim, $1.50.....10&5%*
*32 cal. Rim, $2.75.....10&5%*
*B. B. Caps, Con. Ball, Swgd..$1.90*
*B. B. Caps, Round Ball.....$1.49*
*Central Fire.....25%*
*Target and Sporting Rifle..15&5%*
*Primed Shells and Bullets..15&10%*
*Rim Fire, Sporting.....50%*
*Rim Fire, Military.....15&5%*

## Casters—

*Bed .....65&10@70%*
*Plate .....60&5@60&10%*
*Philadelphia .....70&1.@75%*
Acme, Ball Bearing..... 35%
Gem (Roller Bearing).....70&10&10&5
Steel Gem..... 50%
Standard Ball Bearing..... 45%
Yale (Double Wheel) low list...40&10%

## Cattle Leaders—

See *Leaders, Cattle.*

## Chain, Proof Coil—

*American Coil, Straight Link:*

| 3-16 | ¼ | 5-16 | ⅜ | 7-16 | ½ | ⅝ |
|---|---|---|---|---|---|---|
| $8.15 | 5.55 | 4.60 | 3.95 | 3.75 | 3.65 | 3.55 |

¾-⅞-1 1⅛ to 1¼ inch.
$3.45 3.55

*In cask lots, deduct 25¢.*
*German Coil.....60@60&5%*
*German Pattern Coil:*
*6-0 to 1.....70&5@70&10%*
*2 and 3..60&10&10@60&10&10&5%*
*4, 5 and 6.....50&10@50&10&5%*

### Halter—

*Halter Chains.....60&5@60&10%*
*German Pattern Halter Chains, list July 24, '97....60&10&5@70%*
Covert Mfg. Co.:
Halter ..... 35&5%

### Cow Ties—

See *Halters and Ties.*

## Trace, Wagon, &c.—

*Traces, Western Standard: 100 pr.*
*6½—6-3, Straight, with ring..$28.00*
*6½—6-2, Straight, with ring..$29.00*
*6½—8-2, Straight, with ring..$32.00*
*6½—10-2, Str'ght, with ring..$37.00*

*NOTE.—Add 2c per pair for Hooks Twist Traces: add per pair for Nos. 2 and 3, 2c: No. 1, 3c; No. 0, 4c to price of Straight Link.*

*Eastern Standard Traces, Wagon Chain, &c...60&10@60&10&5%*

### Miscellaneous—

*Jack Chain, list July 10, '93:*
*Iron .....60&10&7½%*
*Brass .....65%*
*Safety and Plumbers' Chain..75%*
*Gal. Pump Chain....lb., 4½@5%*
Bridgeport Chain Co.:
Triumph Halter and Coil..35&2½@40%
Triumph Dog..... 50&10@60%
Brown Halter and Coil....45@50&5%
Covert Mfg. Co.:
Breast, Halter, Heel, Rein, Stallion ..... 40%
Oneida Community:
American Halter, Dog and Kennel Chains ..... 35&2½@40
Niagara Dog Leads and Kennel Chains ..... 45@50&5%
Wire Goods Co.:
Dog Chain..... 70%
Universal Dbl.-Jointed Chain..... 50%

## Chain and Ribbon, Sash—

Oneida Community:
Steel Chain..... 60%
Pullman:
Bronze Chain, 60%; Steel Chain, Coppered ..... 60&10
Sash Chain Attachments, per set..8c
Aluminoy Sash Ribbon, per 100 ft. .....$2.00@$5.00
Sash Ribbon Attachments, per set..8c

## Chalk—(From Jobbers.)

*Carpenters' Blue.....gro., 50¢*
*Carpenters' Red.....gro., 45¢*
*Carpenters' White.....gro., 40¢*

## Checks, Door—

Bardsley's ..... 15%
Pullman, per gro..... $54.00
Russwin ..... 33⅓%

## Chests, Tool—

American Tool Chest Co.:
Boys' Chests, with Tools..... 55%
Youths' Chests, with Tools..... 40
Gentlemen's Chests, with Tools..30%
Farmers', Carpenters, etc., Chests, with Tools ..... 20%
Machinists' and Pipe Fitters' Chests, Empty..... 45%
Tool Cabinets..... 45%
C. E. Jennings & Co.'s Machinists' Tool Chests..... 7½%

## Chisels—

### Socket Framing and Firmer

*Standard List.....80&10@—%*
Buck Bros..... 30%
C. E. Jennings & Co.:
Socket Firmer No. 10.....25&7½%
Socket Framing No. 15.....25&7½%
Swan's ..... 66⅔@70%
L. & I. J. White & Co.....30@30&5%

### Tanged—

*Tanged Firmers.....30&5@35%*
Buck Bros..... 30%
C. E. Jennings & Co. Nos. 191, 181..25%
L. & I. J. White Co..... 25&5%

### Cold—

*lb.*
*Cold Chisels, good quality..13@15¢*
*Cold Chisels, fair quality..11@12¢*
*Cold Chisels, ordinary....9@10¢*

## Chucks—

Almond Drill Chucks..... 35%
Almond Turret Six-Tool Chuck.....40%
Beach Pat, each $8.00..... 35&5%
Empire ..... 25%
Blacksmiths' ..... 25%
Jacobs' Drill Chucks..... 35%
Pratt's Positive Drive..... 25%
Skinner Patent Chucks:
Independent Lathe Chucks..... 35%
Universal, Reversible Jaws..... 35%
Combination, Reversible Jaws.... 35%
Drill Chucks, New Model, 25%; Standard, 45%; Skinner Pat., 25%; Positive Drive..... 40%
Planer Chucks..... 20%
Face Plate Jaws..... 35%
Standard Tool Co.:
Improved Drill Chuck..... 45%
Union Mfg. Co.:
Combination, Nos. 1, 2, 3, 4, 5, 6, 7, 8 and 17, 40%; No. 21..... 35%
Scroll Combinations, Nos. 83 and 84 ..... 30%
Geared Scroll, Nos. 33, 34 and 35..25%
Independent Iron, Nos. 18 and 318..35%
Independent Steel, No. 64..... 25%
Union Drill, Nos. 000, 00, 100, 101, 102, 103, 104..... 35%
Union Czar Drill..... 25%
Universal, 11, 12, 16, 17, 13, 14, 15..40%
Universal No. 42..... 35%
Iron Face Plate Jaws, Nos. 28, 30, 48 and 50..... 35%
Steel Face Plate Jaws, Nos. 70 and 72 ..... 30%
Westcott Patent Chucks:
Lathe Chucks..... 50%
Little Giant Auxiliary Drill..... 50%
Little Giant Double Grip Drill...50%
Little Giant Drill, Improved..... 50%
Oneida Drill..... 50%
Scroll Combination Lathe..... 50%
Whitaker Mfg. Co.:
National Drill..... 25%

## Clamps—

Adjustable Hammers..... 20@20&5%
Carriage Makers', P., S. & W. Co. ..... 50&10%
Besly, Parallel..... 33⅓&10%
Myers' Hay Rack..... 45%
Lineman's Swedish Neverturn..... 65%
Wood Workers' Hammers..... 40&10%
Saw Clamps, see Vises, Saw Filers'

## Cleaners, Drain,

Iwan's Champion, Adjustable..... 50%
Iwan's Champion, Stationary..... 40%

### Sidewalk—

Star Socket, All Steel..℔ doz. $4.05 net
Star Shank, All Steel..℔ doz. $3.24 net
W. & C. Shank, All Steel, ℔ doz., 7½ in., $3.00; 8 in., $3.25.

## Cleavers, Butchers'—

Foster Bros..... 30%
Fayette R. Plumb..... 30%
L. & I. J. White Co..... 30%

## Clippers, Horse and Sheep—

Chicago Flexible Shaft Co.: 20%
1902 Chicago Horse, each..$10.75
20th Century Horse, each...$5.00
Lightning Belt Horse, each..$15.00
Chicago Belt Horse, each..$20.00
Stewart's Enclosed Gear Horse, each..... $6.75
Stewart's Patent Sheep Shearing Machine, each..... $12.75
Stewart Enclosed Gear Shearing Machine, No. 8, each..$9.75

## Clips, Axle—

*Regular Styles, list July 1, '05, 80&80&10%*

## Cloth and Netting, wire

—See *Wire, &c.*

## Cocks, Brass—

*Hardware list:*
*Plain Bibbs, Globe, Kerosene, Racking, Liquor, Bottling, &c .....* 75%
*Compression Bibbs.....70%*

## Coffee Mills—

See *Mills, Coffee.*

## Collars, Dog—

Nickel Chain, Walter B. Stevens & Son's list..... 40%
Leather, Walter B. Stevens & Son's list ..... 40%

## Compasses, Dividers, &c.

*Ordinary Goods.....70&10&7½%*

## Conductor Pipe,—

*L. C. L. to Dealers:*

| | Gal. Steel. | Charcoal. |
|---|---|---|
| *Northeastern* | *70&10%* | *50&10&7½%* |
| *Eastern* | *75%* | *50&10&7½%* |
| *Pittsburgh* | *75&10&5%* | *60%* |
| *Central* | *75&10%* | *60%* |
| *Northwestern* | *75&7½%* | *60%* |
| *Western* | *70&12½%* | *50&12½%* |
| *Tennessee* | *70&10%* | *50&12½%* |
| *Southern* | *70%* | *50&12½%* |
| *Southwestern* | *70%* | *50&5%* |

*Terms, 60 days: 2% cash 10 days. Factory shipments generally delivered.*
See also Eave Troughs.

## Coolers, Water—

L. & G. Mfg. Co.:

| Gal. | 2 | 3 | 4 | 6 | 8 |
|---|---|---|---|---|---|
| Galvanized, ea. | $1.85 | $2.00 | $2.25 | $2.90 | $3.90 |
| Galvanized, Lined, side handles, Gal. | 2 | 3 | 4 | 6 | 8 |
| Each | $1.95 | $2.15 | $2.40 | $3.30 | $4.15 |

White Enameled..... 10%
Agate Lined..... 10%

## Coppers' Tools—

See *Tools, Coopers'.*

## Coppers, Soldering—

*Soldering Coppers, 3 lb. to pair and heavier, 20¢; lighter than 3 lb. to pair.....22¢*

## Cord—Sash—

*Braided, Drab.....lb. 35¢*
*Braided, White, Com., Nos. 8 to 12, 20¢; No. 7, 20½¢; No. 6, 21½¢. In lots of 12 doz. or over, 1 cent less per pound.*
*Cable Laid Italian, lb., No. 18..37¢*
*Italian, lb., A, No. 18, 25¢; B, 22¢*
*Common India.....lb., 11@11½¢*
*Cotton Sash Cord, Tw'ted..18@20¢*
*Patent Russia.....lb....20¢*
*Cable Laid Russia.....lb...21¢*
*India Hemp, Br'd'd.....lb...21¢*
*India Hemp, Twisted...lb.13@14¢*
*Patent India, Twisted..lb...17¢*
Pearl Braided, cotton, No. 6, ℔ lb, 27½¢; No. 7, 26½¢; Nos. 8 to 12, 26¢
Eddystone, Braided, Nos. 8 to 12, 26¢; 7, 26½; 6, 27½¢.
Harmony Cable Laid Italian, Nos. 7 to 10..... ℔ lb 23¢
Pullman:
Wire Sash Cord..... 10%
Sash Cord Attachments, per 100..$2.00
Samson, Nos. 8 to 12: 15%
Braided, ℔ lb., Drab Cotton, 55¢; Italian Hemp, 40¢@50¢; Linen, 65¢; White Cotton, 50¢; Spot Cord.....50¢
Massachusetts, White...℔ lb 40¢
Massachusetts, Drab...℔ lb 45¢
Phoenix, White, Nos 8 to 12....27¢
Silver Lake, per lb.:
A, Drab, 45¢; A, White, 40¢; B, Drab, 40¢; B, White, 35¢; Italian Hemp, 40¢; Linen....57½¢
See also Chain and Ribbon.

## Wire, Picture—

*Full Length.....90@—%*
*Short Length.....90&20@—%*
Hendryx Standard Wire Picture Cord, old list, 85&10%
Turner & Stanton Co. Wire Picture Cord ..... 90%

## Cradles—

*Grain .....50%*

## Crayons—

*White Round Crayons, Cases, 100 gro., $8.00, $8.50 and $9.00 according to grade.*
Zelnicker's Lumber: ℔ gro.
White and Purple, Indelible....$7.50
Blue, Red, Green, Yellow and Terra Cotta, $6.50; Black.....$4.50
Giant Lumber, 5¼ in. x 15-16 in. round, all colors, $12.00; Indelibles, $14.00; Blacks.....$10.00
Genuine Soapstone, Metal Workers', 5 in. x ¼ in. Round, $2.50; 5 in. x ¼ in. Square, $1.75; 5 x ½ x 3-16, $2.50; 5 x 1¼ x 3-16.....$3.00
Suremark, Black, $2.25; Blue, Red and Yellow.....$2.50

## Crooks, Shepperds'—

Fort Madison, per doz., Heavy, $5.50; Light ..... $5.00

## Crow Bars—See *Bars, Crow.*

## Cultivators—

Victor Garden..... 50%

## Cutlery, Table—

International Silver Company:
No. 12 M'd'm Knives, 1847..℔ doz. $3.50
Star, Eagle, Rogers & Hamilton and Anchor.....℔ doz. $3.00
Wm. Rogers & Son.....℔ doz. $2.50

## Cutters—Glass—

H. H. Mayhew Co..... 40%
Red Devil..... 60
B. Mfg. Co..... 40
Woodward ..... 50

## Meat and Food—

American ..... 30

| Nos. | 401 | 402 | 403 | 404 | 405 | 406 | 407 |
|---|---|---|---|---|---|---|---|
| Each | $5 | $7 | $10 | $12 | $25 | $50 | $65 |

Enterprise:

| Nos. | 5 | 10 | 12 | 22 | 32 |
|---|---|---|---|---|---|
| Each | $2 | $3 | $2.75 | $4.50 | $6 |

No. 202, $1.50..... 40&7½%
P., S. & W. Co.:
Dixon's ..... ℔ doz 33⅓%

| Nos. | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| | $14.00 | $17.00 | $19.00 | $30.00 |

Ideal ..... 10&10&5
Hales ..... 60&10&5
Little Giant..... ℔ doz 40&50%

| Nos. | 305 | 310 | 312 | 320 | 322 |
|---|---|---|---|---|---|
| | $35.00 | $48.00 | $44.00 | $72.00 | $68.00 |

New Triumph No. 605, ℔ doz $21.00, 40&10%
Russwin Food, No. 1, $24.00; No. 2, $27.00 ..... 15&10&10%
$15.00 $18.00
Enterprise Beef Shavers..... 25@30

## Slaw and Kraut—

Henry Disston & Sons:
Slaw and Kraut Cutters..... 35%
Corn Graters..... 30%
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife....℔ doz. $3.00
Combined Slaw Cutter and Corn Grater ..... ℔ doz. $4.00

## Tobacco—

*All Iron, Cheap...doz, $4.25@4.50*
Enterprise ..... 25@30%
National, ℔ doz., No. 1, $21; No. 2, $18 ..... 40%

## Diggers, Post Hole, &c—

Disston's:
Rapid, ℔ doz., $24.00..... 25%
Samson, ℔ doz., $34.00..... 25%
Iwan's Imp'ved Post Hole Auger..40%
Vaughan Pattern Post Hole Augers, ℔ doz., $7.00
Perfection Post Hole Diggers, ℔ doz. .....$8.75
Split Handle Post Hole Diggers, ℔ doz., $7.75
Hercules Pattern, ℔ doz.....$10.00
Kohler's, ℔ doz., Universal, $15.00; Little Giant, $12.00; Hercules, $10.00; Invincible, $9.00; Rival, $8.50; Pioneer.....$7.50
Never-Break Post Hole Diggers, ℔ doz., $24.00..... 60%

## Dividers—See *Compasses.*

## Drawing Knives—

See *Knives, Drawing.*

## Dressers Emery Wheel—

Sterling Emery Wheel Dressers..... 35%
Sterling Wheel Dresser Cutters..... 35%

## Drills and Drill Stocks—

*Blacksmith's Common Drilling Machines .....$1.50@1.75*
Breast, Millers Falls..... 15&10%
Breast, P., S. & W..... 33⅓%
Goodell Automatic Drills..50&10@60&10%
Millers Falls Automatic Drills, 33⅓&10%
Ratchet, Curtis & Curtis..... 25%
Ratchet, Parker's..... 40%
Ratchet, Weston's..... 40%
Ratchet, Weston's, Style H Improved ..... 40%
Ratchet, No. 012..... 40%
Ratchet, Celebrated..... 40%
Ratchet, Whitney's, P., S. & W., 50&5%
Whitney's Hand Drill, No. 1, $10.00; Adjustable, No. 10, $12.00.....33⅓%

### Twist Drills—

*Bit Stock.....70@70&5%*
*Taper and Straight Shank, 60&10@70%*

## Drivers, Screw—

*Screw D'ver Bits, per doz..45@50¢*
Balsey's Screw Holder and Driver, ℔ doz., 2½-in., $6; 4-in., $7.50; 6-in., $9 ..... 50%
Buck Bros.' Screw Driver Bits..... 30%
Champion ..... 50%
Disston's ..... 70%
Fray's Hol. H'dle Sets, No. 3, $12..50%
Ford's Brace Screw Drivers....40&10%
Gay's Double Action Ratchet..... 35%
Goodell's Auto.....65@65&10%
Mayhew's Black Handle..... 40%
Mayhew's Monarch..... 40%
Millers Falls, Nos. 20 and 21....25&10%
Millers Falls, Nos. 11, 12, 41, 42..15&10%
Smith & Hemenway Co., Neverturn, 66⅔%; Elmora, [illegible] ear, 30&10%
Swan's:
Nos. 7565 to 7568, 60%; No. 7540, 40&10%

## Eave Trough, Galvanized—

| Territory... | Gal. Steel. | Charcoal. Iron. |
|---|---|---|
| *Northeastern* | *75&10&5%* | *60&20%* |
| *Eastern* | *80&2½%* | *60&20%* |
| *Pittsburgh* | *80&20%* | *65&10%* |
| *Central* | *80&10&10&2½%* | *65&10%* |
| *Northwestern* | *80&10&10%* | *65&10%* |
| *Western* | *80&10%* | *60&10&5%* |
| *Tennessee* | *80&5%* | *60&10&5%* |
| *Southern* | *80%* | *60&10&5%* |
| *Southwestern* | *75&10&2½%* | *60&5%* |

*Terms.—2% for cash. Factory shipments generally delivered.*
*Note.—Lower prices are made in some sections.*
See also Conductor Pipe and Elbows.

## Elbows and Shoes—

*Factory shipments, all territories:*

| | Galv. Steel and Galv. C. I. |
|---|---|
| *Standard Gauge* | *85&10&10%* |
| *No. 26* | *50%* |
| *No. 24* | *25%* |
| *No. 22* | *10%* |

## Elbows, Stove Pipe—

Edwards, Standard Blue....40&10&10%
Edwards, Royal Blue..... 40&10&10%
Reeves, Dover, one piece..... 40&10%

## Emery, Turkish—

| | ⅛ to 1/6: | 5/16 to 220: | Flour. |
|---|---|---|---|
| *Kegs* ..... *lb.* | 5 ¢ | 5½¢ | 3½¢ |
| *½ Kegs* ..... *lb.* | 5½¢ | 5¾¢ | 3¾¢ |
| *¼ Kegs* ..... *lb.* | 5½¢ | 6 ¢ | 4 ¢ |
| *10-lb. cans, 10 in case* | 6½¢ | 7 ¢ | 6 ¢ |
| *10-lb. cans, less than 10* | 10 ¢ | 10 ¢ | 8 ¢ |
| *Less quantity* | 10 ¢ | 10 ¢ | 8 ¢ |

*NOTE.—In lots 1 to 3 tons a discount of 10% is given.*

## Extractors, Lemon Juice—

—See *Squeezers, Lemon.*

## Fasteners, Blind—
Zimmerman's .....50&10%
Walling's .....40&10
Upson's Patent.....10%

## Cord and Weight—
Ives and Titan.....33⅓

## Corrugated—
Acme Corrugated Fasteners.....70%

## Faucets—
*Cork Lined.....50&10@60%*
*Metallic Key, Leather Lined, ..60&10@70%*
*Red Cedar.....40&5@40&10&10&5%*
*Petroleum .....70&10@75%*
B. & L. B. Co.:
Metal Key.....60&10
Star .....60%
West Lock.....50&10%
John Sommer's Peerless Tin Key....40
John Sommer's Boss Tin Key.....50
John Sommer's Victor Mtl. Key.50&10
John Sommer's Duplex Metal Key..60
John Sommer's Diamond Lock.....40
**John Sommer's I.X.L. Cork Lined..50%**
John Sommer's Reliable Cork Lined..50&10%
John Sommer's Chicago Cork Lined.60
John Sommer's O. K. Cork Lined...50
John Sommer's No Brand, Cedar....50
John Sommer's Perfection, Cedar....40%
**Self Measuring:**
Enterprise, ₱ doz. $36.00.....40&10
Lane's, ₱ doz. $36.00.....40&10
National Measuring, ₱ doz. $36.40&10%

## Felloe Plates—
See *Plates, Felloe.*

## Files— Domestic—
*List Nov. 1, 1899.*
*Best Brands.....70&10@75&10%*
*Standard Brands.....75&10@80%*
*Lower Grade....75&10&10@80&10%*

## Imported
*Stubs' Tapers, Stubs' list, July 24, '97.....33⅓@40%*

## Fixtures, Fire Door—
Allith Underwriters' Approved.....50
Richards Mfg. Co.:
Universal, No. 103; Special, No. 104 .....$3.75
Fusible Links, No. 96.....50
Expansion Bolts, No. 107.....60&10

## Grindstone—
*Net Prices:*

| *Inch* | *15* | *17* | *19* | *21* |
|---|---|---|---|---|
| *Per doz.* | *$3.60* | *3.85* | *4.15* | *4.65* |

P., S. & W. Co.....25
Reading Hardware Co.....60

## Fodder Squeezers—
See *Compressors.*

## Forks—
*NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.*
Iowa Dig-Ezy Potato.....60&10
Victor, Hay.....60&15&2½
Victor, Manure.....66⅔
Victor, Header.....65
Champion, Hay.....66⅔
Champion, Header.....65
Champion, Manure.....60&15&2½
Columbia, Hay.....60&2½
Columbia, Manure.....70
Columbia, Spading.....70&12½
Hawkeye Wood Barley.....10
W. & C. Potato Digger.....60&10
Acme Hay.....60&2½
Acme Manure, 4 tine.....60&10&5
Dakota Header.....60&2½
Jackson Steel Barley.....60&20
Kansas Header.....65
W. & C. Favorite Wood Barley....40
Plated.—See Spoons.

## Frames— Wood Saw—
*White, S'g't Bar, per doz.75@80¢*
*Red, S'g't Bar, per doz. $1.00@1.5*
*Red, Dbl. Brace, per doz.$1.40@1.50*

## Freezers, Ice Cream—

| *Qt.* | *1* | *2* | *3* | *4* | *6* |
|---|---|---|---|---|---|
| *Each* | *$1.25* | *$1.60* | *$1.90* | *$2.20* | *$2 80* |

## Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

## Fry Pans—See *Pans, Fry.*

## Fuse— *Per 1000 Feet.*
*Hemp .....$2.75*
*Cotton .....3.20*
*Waterproof Sgl. Taped..3.65*
*Waterproof Dbl. Taped..4.40*
*Waterproof Tpl. Taped..5.15*
Extra 10&2½%.

## Gates, Molasses and Oil—
*Stebbins' Pattern.....80@80&5%*

## Gauges—
*Marking, Mortise, &c..50@50&10%*
Chapin-Stephens Co.:
Marking, Mortise, &c. ..50&50&10
Disston's Marking, Mortise, &c. 67½
Wire, Brown & Sharpe's.....33⅓%
Wire, Morse's .....25
Wire, P., S. & W. Co.....33⅓

## Gimlets— Single Cut—
*Numbered assortments, per gro.*
*Nail, Metal, No. 1, $2.00; 2, $2.30*
*Spike, Metal, No. 1, $1.90; 2, $1.30*
*Nail, Wood Handled, No. 1, $2.30; 2, $2.60*
*Spike, Wood Handled, No. 1, $1.30; 2, $1.60*

## Glass, American Window
See *Trade Report.*

## Glasses, Level—
Chapin-Stephens Co.....65@65&10

## Glue, Liquid Fish—
*Bottles or Cans, with Brush, 25&10@50%*
Elwell's .....40%

## Grease, Axle—
*Common Grade...gro.$6.00@$6.50*
Dixon's Everlasting, 10-lb. pails, ea. 85¢; in boxes, ₱ doz., 1 lb. $1.20; 2 lb.....$2.00
Helmet Hard Oil.....25%

## Griddles, Soapstone—
Pike Mfg. Co.....53⅓@33⅓&10%

## Grinders—
Royal Mfg. Co.:
Abundum Grinding Machines, each, Nos. 01, $1.75; 1A, $2.50; 10, $5.00 .....30
Abundum Sickle Grinders, each, Nos. 20 $5.00; 20A, $6.00; 20A Combined, $6.50.....30
Abundum Disc Grinders, each, $2.50 .....30

## Grindstones—
Pike Mfg. Co.:
Improved Family Grindstones, ₱ inch, ₱ doz., $2.00.....33⅓
Richards Mfg. Co., Eli and Cycle, Ball Bearing, mounted.....40%

## Grips, Nipple—
Perfect Nipple Grips.....40&10&2%

## Halters and Ties—
*Cow Ties.....65@65&10%*
Bridgeport Chain Co.:
Triumph Coil and Halters.35&2½@40%
Brown Coil and Halters...45@50&5%
Brown Cow Ties.....50&5@50&10&5%
Brown Tie Outs.....70&10@75&5%
Covert Mfg. Co.:
Web .....30&2%
Jute Rope.....35
Sisal Rope.....20
Cotton Rope.....45
Hemp Rope.....45%
Oneida Community:
Am. Coil and Halters.....40@40&5%
Am. Cow Ties.....45@50
Niagara Coil and Halters...45@50&5
Niagara Cow Ties.....45&5@50&10&5

## Hammers—
### Handled Hammers—
Heller's Machinists'....55&10@55&10&5
Heller's Farriers.....40&5@40&10&5
Peck, Stow & Wilcox Co.:
Crucible Steel.....40&10
Farriers' .....40&10
Riveting .....40&10
Machinists' .....60&10
Blacksmiths' .....50
Fayette R. Plumb:
A. E. Nail.....40&2½@40&12½
Eng. and B. S. Hand.50&10&5@60&5
Machinists' Hammers.....60@60&10
Rivet and Tinners'.40&7½@40&12½&5

### Heavy Hammers and Sledges—
*Under 3 lb., per lb.. 50¢... 80&10%*
*3 to 5 lb., per lb., 40¢...80&10&10%*
*Over 5 lb., per lb., 30¢.....*
*Over 5 lb., per lb., 30¢.80&10&10%*

## Handles—
### Agricultural Tool Handles
*Axe, Pick, &c....60&10@60&10&5%*
*Hoe, Rake, &c.....40*
*Fork, Shovel, Spade, &c.:*
*Long Handles.....40*
*D Handles.....40%*

### Cross-Cut Saw Handles
Adams' .....40
Champion .....50
Disston's .....50

### Mechanics' Tool Handles—
*Auger, assorted...gro.$3.00@$3.50*
*Brad Awl.....gro.$1.65@$1.75*
*Chisel Handles, Ass'd, per gro.:*
*Tanged Firmer, Apple, $2.40@$2.65; Hickory.....$2.15@2.40*
*Socket Firming, Apple, $1.75@$1.95; Hickory.....1.60@1.75*
*Socket Framing, Hickory, $1.60@$1.75*
*File, assorted.....gro.$1.30@$1.40*
*Hammer, Hatchet, &c., 60&10@60&10&5%*
*Hand Saw, Varnished, doz., 80&85¢; Not Varnished.....65@75¢*
*Plane Handles:*
*Jack, doz., 30¢; Fore, doz...45¢*
Chapin-Stephens Co.:
Carving Tool.....30@30&10
Chisel .....60@60&10
File and Awl.....60@60&10
Saw and Plane.....30@30&10
Screw Driver.....30@30&10
Millers Falls Adj. and Ratchet Auger Handles .....15&10
Nicholson Simplicity File Handle.....₱ gro. $9.85@$1.50
J. L. Osgood:
Indestructible File and Tool ₱ gro., No. 1, $8.00; No. 2, $8.50; No. 3, $9.00; No. 4, $9.50; No. 5, $10.00.....gro. lots 10
W. A. Zehnicker Supply Co.:
Hammer, ₱ doz. 12 in. $2.00; 14 in., $2.00; 16 in. $2.30; 18 in., $2.50; 20 in., $2.70; 22 in., $3.00; 24 in., $3.30; 26 in., $3.50; 30 in., $3.80.
Sledge, ₱ doz., oval, 30 in., $3.80; octagon, 30 in., $3.80; oval 36 in. $4.00; octagon, 36 in., $4.00.
Axe, ₱ doz., 28 to 34 in., $5.60; 36 in., $5.80.
Adze, ₱ doz., 26 in., $5.80; 36 in., $7.80.
Pick, ₱ doz., R. R., 36 in., $8.00; coal, 34 in., $5.80.
Hatchet, ₱ doz., 12 to 14 in., 2.00
Extra 5&10% often given.

## Hangers—
*NOTE—Barn Door Hangers are generally quoted per pair, without track and Parlor Door Hangers per double set with track, &c.*
Allith Mfg. Co.:
Reliable, Nos. 1 and 2; Allith, No. 3; Allith Adjustable, No. 6; Reliable Parlor Door.....50
Chicago Spring Butt Co.:
Friction .....25%
Oscillating .....25
Big Twin.....25
Chisholm & Moore Mfg. Co.:
Baggage Car Door.....50
Elevator .....30
Railroad .....50
Cronk & Carrier Mfg. Co.:
Loose Axle.....60&2½
Roller Bearing.....70&2½
Grillin Mfg. Co.:
Solid Axle, No. 19, $12.00..60&10
Roller Bearing No. 11, $15.00, 60&10
Roller Bearing, Ex. Hy., No. 22, $18.00.....60&10
Bull Dog, $24.00.....70
Lane Bros. Co.:
Parlor, Ball Bearing, $1.00:
Standard, $3.15; No. 105, $2.85; New Model, $2.80; New Champion .....$2.25
Barn Door, Standard.....60&10
Hinged .....net $6.08
Covered .....60&5
Special .....70&5
Lawrence Bros.:
Advance .....55&10%
Cleveland .....70&7½
Clipper, No. 75.....60
Crown .....55&10
Cyclone, No. 40.....net $6 50
Tandem, No. 50.....net $7.50
New York.....55&10
McKinney Mfg. Co.:
Roller Bearing, Nos. 1 and 2..70%
Anti-Friction .....60
Hinged Hangers, King Charm.60
Richards Mfg. Co.:
Hangers, Nos. 47, 48, 147, 247, 60&5
Pioneer Wood Track, No. 3..$2.25
Roller B'r'g St'l Track No. 12.$2.20
Roller B'r'g St'l Track No. 13.$2.50
Roller B'r'g, Nos. 39, 41, 43 70&7½
Hero, Adj. Track No. 19..50&10%
Adjustable Track Tandem Trolley Track No. 16.....50&10
Seal, Steel Track No. 8.....$2 25
Auto Adj. Track No. 22..50&5
Trolley B. D. No. 17, $1.25; F. D. No. 120, $2.25; No. 121, $2.45; No. 150.....$2.50
Safety Underwriters F. D. No 101 .....50
Tandem No. 41..2½ and 3 60&10
Palace, Adjustable Track No. 132 .....50&5%
Royal, Adjustable Track No. 122 .....50&10
Ives' Wood Track No. 1.....$2.25
Trolley B. D. No. 20.....50&10
Trolley B. D. No. 24, $1.30; No. 27, $1 40; No. 28 .....$1.60
Roller Bearings, Nos. 37, 38, 39, 41, 43, 44, Sizes 1 and 2.70&7½
Anti-friction, No. 42; No. 44, sizes 2½ and 3.....60
Hinged Tandem No. 48....60&5
Folding Door B. B. Swivel No. 135 .....40
Taylor & Boggis F'y Co.'s Kidder's Roller Bearing.50&15&10&5
Myers' Stayon Hangers.....60
Extra 10% often given on most of these Hinges.

## Hangers— Garment—
Pullman Trouser, ₱ gro., No. 1 $9.00; No. 4, $24.00; No. 5, $16.50; No. 8, Black Enamel, $7.50; No. 10, $21.00; No. 12, $8.00; No. 15, Rods, $9.00; No. 18, Loops.....$10.00
Victor Folding.....₱ gro. $9.60

## Gate—
Myers' Patent Gate Hangers, ₱ doz. net .....$4.50

## Joist and Timber—
Lane Bros. Co.....30

## Hasps—
Griffin's Security Hasp.....50&10
McKinney's Perfect Hasp, ₱ doz..60

## Hatchets—
*Regular list, first qual.40&12½@—*
*Second quality.....50&10&5@—*

## Heaters, Carriage—
Clark No. 5, $1.75; No. 5B, $2.00; No. 3, $2.25; No. 3D, $2.75; No. 7D, $3.00; No 3E, $3 25; No. 1, $3 50.....25%
Clark Coal, ₱ doz., $0.75.....20

## Hinges—
### Blind and Shutter Hinges
*Surface Gravity Locking Blind: (Victor; National; 1868 O. P.; Niagara; Clark's O. P.; Clark's Tip; Buffalo.)*

| *No.* | *1* | *3* | *5* |
|---|---|---|---|
| *Doz. pair* | *$0.75* | *1.35* | *2.70* |

*Mortise Shutter: (L. & P., O. S., Acme, &c.)*

| *No.* | *1* | *1½* | *2* | *2½* |
|---|---|---|---|---|
| *Doz. pair* | *$0.50* | *.65* | *.60* | *.55* |

*Mortise Reversible Shutter (Buffalo, &c.):*

| *No.* | *1* | *1½* | *2* |
|---|---|---|---|
| *Doz. pair* | *$0.70* | *.65* | *.60* |

North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10
Charles Parker Co.....70@75
Parker Wire Goods Co.
Hale & Benjamin Automatic Blind Hinges .....20
Hale's Blind Awning Hinges, No. 110, for wood, $9.00; No. 111, for brick, $9.00 .....20
Reading's Gravity.....60
Stanley's Steel Gravity Blind Hinges, No. 1647½, ₱ doz. sets, without screws, $0.95; with screws, $1.25.
Wrightsville Hardware Co.:
O. S., Lull & Porter.....75&5%
Acme, Lull & Porter.....75
Queen City Reversible.....75
Shepard's Noiseless, Nos. 60, 65, 55 .....75&5
Niagara, Gravity Locking, Nos. 1, 3 & 5.....75&5%
Tip Pat'n, No. 1.....75&10
No. 3.....75&5
Buffalo Gravity Locking, Nos. 1, 3 & 5.....70&10&5
Shepard's Double Locking.....75
Champion Gravity Locking ....75&5
Pioneer .....75&10
Empire .....65
W. H. Co.'s Mortise Gravity Locking, No. 2.....60&10

### Gate Hinges—
*Clark's or Shepard's—Doz. sets:*

| *No.* | *1* | *2* | *3* |
|---|---|---|---|
| *Hinges with L't'chs* | *$2.00* | *2.70* | *5.00* |
| *Hinges only* | *1.25* | *1.90* | *3.52* |
| *Latches only* | *.70* | *.75* | *.35* |

*New England:*
*With Latch.....doz..@$2.00*
*Without Latch.....doz..@$1.60*
*Reversible Self-Closing:*
*With Latch.....doz..@$1.75*
*Without Latch...doz. ...@$1.35*
*Western:*
*With Latch.. ..... doz. $1.75*
*Without Latch.....doz..$1.15*
Wrightsville Hardware Co.:
Shepard's or Clark's Hinges and Latches, Hinges only or Latches only, Nos. 1, 2 or 3.....70%

### Pivot Hinges—
Bommer Bros. Pivot.....40%
Lawson Mfg. Co. Matchless.....50%

### Spring Hinges—
*Holdback, Cast Iron...$6.75@$7.00*
*Non-Holdback, C'st Iron $6.50@$6.75*
J. Bardsley:
Bardsley's Non-Checking Mortise Floor Hinges.....40
Bardsley's Patent Checking.33⅓
Bommer Bros.:
Bommer Ball Bearing Floor..40
Bommer Spring Hinges.....40
No. 999 Wrot. Steel Hold Back, ₱ gro. $9.00
Chicago Spring Butt Co.:
Chicago Spring Hinges.....25%
Triple End Spring Hinges....50
Chicago (Ball Bearing) Floor.50
Garden City Engine House...25
Keene's Saloon Door.....25
Columbian Hardware Co.:
Acme, Wrought Steel.....33
Acme, Brass.....25
American .....30
Columbia, ₱ gr., No. 14, $9.00; No. 18.....$25.00
Columbia, Adj., No. 7, ₱ gr.$12.00
Columbian Hinges.....60&10
Gem, new list.....30
Clover Leaf and Acorn, gro. lots, $5.10; ½ gro. lots.....$6.00
Oxford, new list.....30
Floor Spring Hinges.....65&10
Lawson Mfg. Co., Matchless...30%
Richards Mfg. Co.:
Superior Double Acting Floor Hinges .....40%
Shelby Spring Hinge Co.:
Buckeye All Steel Holdback Screen Door.....₱ gr. $9.00
Chief Ball Bearings Floor Hinge .....50
Ball Bearing Door.....25%
No. 777, Sheet Steel Holdb'k, ₱ gr. pr.....$9.00
Standard Mfg. Co.:
Champion Double Acting Door Hinge .....25&10&10
Standard Double Acting Floor Hinge .....25&10&10
Superior Spring Hinge Co.:
Superior Floor Hinges.....33⅓
Extra 10% often given on most of these Hinges.

### Wrought Iron Hinges—
*Strap and T Hinges, &c., list December 20, 1904:*
*Light Strap Hinges..50&10%*
*Heavy Strap Hinges..60&5%*
*Light T Hinges.....50%*
*Heavy T Hinges.....40%*
*Extra Hvy. T Hinges 50&10%*
*Hinge Hasps.....33⅓%*
*Cor. Heavy Strap....60&5%*
*Cor. Ex. Heavy T...50&10%*
Extra 10&7½%.

*Screw Hook and Strap.*
*6 to 12 in..lb.3½¢*
*14 to 20 in..lb.3½¢*
*22 to 36 in..lb.3¢*

*Screw Hook and Eye:*
*¾-inch .....lb.6½¢*
*¾-inch .....lb.7½¢*
*½-inch .....lb.8½¢*

## Hitchers, Stall—
Covert Mfg. Co., Stall Hitchers..30&2%

## Hods— Coal—
*M'f'gr's list, price per gross:*

| *Inch* | *15* | *16* | *17* | *18* |
|---|---|---|---|---|
| *Galv. Open* | *$35* | *$39* | *$42* | *$46* |
| *Jap. Open* | *26* | *28* | *31* | *35* |
| *Galv. Funnel* | *43* | *48* | *52* | *56* |
| *Jap. Funnel* | *33* | *36* | *39* | *43* |

10&5%

## Masons' Etc.
Cleveland Wire Spring Co.:
Steel Brick, No. 102.....each $1.05
Steel Mortar, No. 158.....each $1.35

## Hoes— Eye—
*Scovil and Oval Pattern, 60&10@60&10&10%*
*Grub, list Feb. 23, 1899, 70&10@70&10&10%*
D. & H. Scovil.....37½
Am. Fork & Hoe Co. (Scovil Pattern) .....60%

### Handled—

*NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.*

Cronk's Weeding, No. 1, $2.00; No. 2, $2.50
Star Double Bit.....$3.20
Cotton Hoe.....70&10&10%
Ft. Madison Crescent Cultivator Hoe, ₱ do.....70&10%
Ft. Madison Mattock Hoes.
Regular Weight.....₱ doz. 10&5%
Junior Size.....₱ doz. $4.00
Ft. Madison Sprouting Hoe, ₱ do.....60&10%
Ft. Madison Dixie Tobacco Hoe.....75&10&7½%
Kretsinger's Cut Easy.....70&10
Warren Hoe.....45&10
W. & C. Ivanhoe.....75&2
B. B. 6 in., Cultivator Hoe.....$3.40
B. B., 6½ in.....$3.50
Acme Wedding.....₱ doz., net, $1.35
W. & C. Tuning Shuffle Hoe, ₱ doz. $5.25

### Hoisting Apparatus—

See *Machines, Hoisting.*

### Holders— Bit—

Angular, ₱ doz. $21.00.....45&10%

### Door—

Bardsley's, Iron, 40; Brass and Bronze.....25%
Empire.....50%
Pullman.....25%
Richards Mfg. Co.: No. 117, Ever-ready, 40; Nos. 118, 119, Sure Grip.....50%
Superior.....33⅓%

### File and Tool—

Nicholson File Holders and File Handles.....33⅓@40%

### Fruit Jar—

Triumph Fruit Jar Holder, ₱ gross, $18.00; ₱ doz.....$2.00

### Trace and Rein—

Fernald Double Trace Holder, ₱ doz. pairs.....$1.25
Dash Rein Holder, ₱ doz. pairs.$1.25

### Hones—Razor—

Pike Mfg. Co., Belgian and Swaty, 50; German.....33⅓%

### Hooks—Cast Iron—

Bird Cage, Reading.....40%
Clothes Line, Reading List.....40
Coat and Hat, Reading.....45&20
Coat and Hat, Wrightsville.....60&5
Harness, Reading List.....40

### Wire—

*Belt*.....80%
*Wire C. & H. Hooks*.....80%
Bradley Metal Clasp Wire, Coat and Hat, 70&10; Ceiling.....70&10
Columbian Hdw. Co., Gem.....70&5
Parker Wire Goods Co., King..70&10%
Wire Goods Co.:
Acme, 60&10; Chief, 70; Crown, 75; Czar, 65; V. Brace, 75; Czar Harness, 50&10.

### Wrought Iron—

*Box, 6 in., per doz., $0.90; 8 in., $1.15.*
*Cotton*.....*doz. $1.25@$1.50*
Wrought Staples, Hooks, &c.—See Wrought Goods.

### Miscellaneous—

*Hooks, Bench,* see *Stops, Bench.*
*Bush, Light, doz., $6.20; Medium, $6.75; Heavy, $7.65*
*Grass, best, all sizes, per doz., $2.75@$3.00*
*Grass, common grades, all sizes, per doz*.....*$1.25@$1.50*
*Whiffletree*.....*lb. 5¼@6¢*
*Hooks and Eyes:*
*Brass*.....60@60&10%
*Malleable Iron*.....70@70&10%
Covert Mfg. Co. Gate and Scuttle Hooks.....40%
Ft. Madison Cut-Easy Corn Hooks, ₱ doz. $3.25 net
Turner & Stanton Co. Cup and Shoulder.....85&10%
Bench Hooks See Bench Stops.
Corn Hooks See Knives, Corn.

### Horse Nails—

See *Nails, Horse.*

### Horseshoes—

See *Shoes, Horses.*

### Hose, Rubber—

*Garden Hose, ¾-inch:*
*Competition*.....*ft. 6@6½¢*
*3 ply Guaranteed*.....*ft. 8½@9¢*
*4-ply Guaranteed*.....*ft. 9½@12¢*
*Cotton Garden, ¾-in., coupled:*
*Low Grade*.....*ft. 8@9¢*
*Fair Quality*.....*ft. 10@11¢*

### Irons—Sad—

*From ¼ to 10*.....*lb. 2½@2¾¢*
*B. B. Sad Irons*.....*lb. 3¼@3½¢*
*Mrs. Potts', cents per set:*

| Nos. | 50 | 55 | 60 | 65 |
|---|---|---|---|---|
| *Jap'd Tops* | 83 | 89 | 93 | 94 |
| *Tin'd Tops* | 88 | 85 | 98 | 95 |

*New England Pressing..lb. 3¾@4¼¢*

### Bar and Corner—

Richards Mfg. Co., Bar, 60&10; Corner.....60

### Pinking—

*Pinking Irons*.....*doz. 60@65¢*

### Irons, Soldering

See *Coppers.*

### Jacks, Wagons—

Covert Mfg. Co.:
Auto Screw.....30&2%; Steel, 45
Lockport.....50
Lane's Steel.....30&5
Richards' Tiger Steel No. 130...50&10%
Smith & Hemenway Co.'s.....25%

### Ladder—

Richards Mfg. Co. Ladder Jacks..50%

## Kettles—

*Brass, Spun, Plain*.....*20@25%*
Enameled and Cast Iron See Ware, Hollow.

### Knives—

### Butcher, Kitchen, &c.—

Foster Bros.' Butcher, &c.....30%
Wilkinson Shear & Cutlery Co....60%

### Corn—

Columbian Cutlery Co., Wilcut Braid Knives and Hooks.....60%
Withington Acme, ₱ doz., $2.65; Dent, $2.75; Adj. Serrated, $2.20; Serrated, $2.10; Yankee No. 1, $1.50; Yankee No. 2, $1.15.

### Drawing—

*Standard List*.....*80&10@—%*
C. L. Jennings & Co., Nos. 45, 46, 25&7½%
Jennings & Griffin, Nos. 41, 42, 66⅔&7½%
Swan's.....66⅔@70
Watrous.....16⅔
L. & I. J. White.....20&5@25%

### Hay and Straw—

*Serrated Edge, per doz.$5.00@5.50*
Iwan's Sickle Edge.....₱ doz. $5.50
Iwan's Serrated.....₱ doz. $10.00

### Miscellaneous—

*Farriers'*.....*doz. $2.60@3.55*
Wostenholm's.....₱ doz. $3.00@3.25

### Knobs—

*Base, 2½-inch, Birch or Maple, Rubber Tip*.....*gro. $1.25@1.40*
*Carriage, Jap., Drive, all sizes, gro. 35@40¢*
*Door, Mineral*.....*doz. 65@70¢*
*Door, Por. Jap'd*.....*doz. 70@75¢*
*Door, Por. Nickel*.....*doz. $2.05@2.15*
Barndsley's Wood Door, Shutters, &c. 15%

## Lacing, Leather—

See *Belting, Leather*

### Ladders, Store, &c.—

Allen Mfg. Co., Reliable.....50%
Lane's Store.....25%
Myers' Noiseless Store Ladders....50%
Richards Mfg. Co.:
Improved Noiseless, No. 112.....50%
Climax Shelf, No. 115.....50%
Trolley, No. 109.....50%

### Ladles, Melting—

L. & G. Mfg. Co. (low list).....20%
P., S. & W.....40&10%
Reading.....60

### Lanterns—Tubular—

*Regular, No. 0*.....*doz. $4.35@4.50*
*Side Lift, No. 0*.....*doz. $4.60@4.75*
*Hinge Globe, No. 0*.....*doz. $4.60@4.75*
*Other Styles*.....*40@40&10%*

### Bull's Eye Police—

*3-inch*.....*$3.75@4.00*

### Latches— Thumb—

*Roggin's Latches, Jap'd, with Screws*.....*doz. 35@40¢*

### Door—

Allith Mfg. Co., Reliable and Alligator, 50%; Reliable Cold Storage, 50%
Cronk & Carrier Mfg. Co., No. 101, ₱ doz. $2.00
Richards' Bull Dog, Heavy, No. 125.....50&5%
Richards' Trump, No. 127.....$1.50

### Leaders, Cattle—

*Small*.....*doz. 50¢; large, 60¢*
Covert Mfg. Co.:
Cotton, 45%; Hemp, 45%; Jute, 35%; Sisal, 20%.

### Leathers, Pump—

See *Pumps—*

### Lifters, Transom—

R. & E.....10%

### Lines—

| *Wire Clothes, Nos.* | *18* | *19* | *20* |
|---|---|---|---|
| *100 feet* | *$2.30* | *1.95* | *1.75* |
| *75 feet* | *$1.95* | *1.65* | *1.50* |

Samson Cordage Works:
Solid Braided Chalk, Nos. 0 to 3..40%
Solid Braided Masons'.....30%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50.....₱ gr. 20%
Masons' Lines, Shade Cord, &c.; White Cotton, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50; Colors, No. 3½, $1.75; No. 4, $2.25; No. 4½, $2.75; Linen, No. 3½, $2.50; No. 4, $3.50; No. 4½, $4.50.....20%
Tent and Awning Lines: No. 5, White Cotton, $7.50; Drab Cotton, $8.50.....20
Clothes Lines, White Cotton: 50 ft., $2.75; 60 ft., $3.25; 70 ft., $3.75; 75 ft., $4.00; 80 ft., $4.25; 90 ft., $4.75; 100 ft. $5.25.....20
Turner & Stanton Co.:
Solid Braided Chalk, Masons' and Awning Lines.....40
Clothes Lines, White Cotton....20
Shade Cord, Cotton or Linen....20

### Locks— Cabinet—

*Cabinet Locks*.....*33⅓@33⅓@7%*

### Door Locks, Latches, &c

*NOTE.—Net Prices are very often made on these goods.*
Reading Hardware Co.....40
R. & E. Mfg. Co.....10

### Padlocks—

R. & E. Mfg. Co. Wrought Steel and Brass.....75&10

### Sash, &c.—

Ives' Patent:
Bronze and Brass 75&5, Crescent, 60%; Iron 60; Window Ventilating, 40&20; Robinson Pat. Ventilating Sash Lock 33⅓%.
Pol'man Patent Ventilating Lock..25%
Reading Sash Locks.....40%

## Machines—Boring—

*Com. Upr't, without Augers.*
*$2.00@2.25*
*Com. Angl'r, without Augers, $2.25@2.50*
Swan's Improved.....40&10
Jennings', Nos. 1 and 4.....25&7½%
Millers' Falls.....5.75
Snell's, Upright, $2.65; Angular, $2.90

### Corking—

Reisinger Invincible Hand Power... ₱ doz. $48.00

### Fence—

Williams' Fence Machines....each, $5.50

### Hoisting—

Moore's Anti-Friction Chain Hoist.30%
Moore's Hand Hoist, with Lock Brake.....20%
Moore's Cyclone High Speed Chain Hoist.....25%

### Ice Cutting—

Chandler's.....12½%

### Washing

| Boss Washing Machine Co.: | Per doz. |
|---|---|
| Boss No. 1 | $57.00 |
| Boss Rotary | $57.00 |
| Champion Rotary Banner No. 1 | $57.00 |
| Standard Champion No. 1 | $50.00 |
| Standard Perfection | $27.00 |
| Cincinnati Square Western | $33.00 |
| Uneeda American, Round | $33.60 |

### Mallets—

*Hickory*.....*45&5@50%*
*Lignumvitæ*.....*45&5@50%*
*Tinners' Hickory and Applewood*.....*doz. 45&5@50%*

### Mangers, Stable—

Swett Iron Works.....50%

### Mats, Door—

Acme Flexible Steel.....50%
Elastic Steel (W. G. Co.), new list.50%

### Mattocks—

See *Picks and Mattocks.*

### Milk Cans—See *Cans, Milk.*

### Mills, Coffee, &c.—

Enterprise Mfg. Co.....20@25
National list Jan. 1, 1902.....30
Parker's Columbia and Victoria..33⅓
Parker's Box and Side.....50&10
Swift, Lane Bros. Co.....30

### Motors, Water—

Divine's Red Devil.....30%
Lippincott's.....30

### Mowers, Lawn—

*NOTE.—Net prices are generally quoted*
*Cheapest, 10-in., $2.00; advance 10¢ for each size.*
*Cheap, 10-in., $2.25; advance 15@20¢ for each size.*
*Better Grade, 10-in., $3.00; advance 25¢ for each size.*

| | *12* | *14* | *16* | *18-in.* |
|---|---|---|---|---|
| *High Grade* | *$4.50* | *4.75* | *5.00* | *5.25* |

Continental.....60
Great American.....70
Great American Ball B'r'g, new list.70
Quaker City.....70
Pennsylvania.....60%
Pennsylvania, Jr., Ball Bearing, 50&10&5%
Pennsylvania Golf.....50%
Pennsylvania Horse.....33⅓&5%
Pennsylvania Pony.....40&5
Granite State:
Style A, Low Wheel.....70%
Style B, Low Wheel.....70
Style C, High Wheel, spcl. list, 70&10%
Style D, High Wheel, spcl. list..70%
Philadelphia:
Styles M., S., C., K., T....70&10&5%
Style A, all Steel.....60&10&5%
Style E, High Wheel.....70&10&5%
Drexel and Gold Coin, special list.40%
Horse.....40&5%
Pony.....40&5
36-in. Horse.....30&10%
Eagle Horse.....30&5%
I. X. L. Horse.....50

## Nails—

*Wire Nails and Brads, Miscellaneous*.....*85&5@85&10%*
*Cut and Wire.* See *Trade Report*
*Hungarian, Finishing, Upholsterers', &c.* See *Tacks.*

### Horse—

| Nos. | 6 | 7 | 8 | 9 | 10 | |
|---|---|---|---|---|---|---|
| Anchor | 23 | 21 | 20 | 19 | 18 | ...40&5 |
| Coleman | 13 | 12 | 12 | 11 | 11 | ...net |
| New Haven | 23 | 21 | 20 | 19 | 18 | ...40&5 |
| Livingston | 19 | 18 | 17 | 16 | 16 | ...10 |
| Western | | | | | ₱ lb. | 8½¢ |

*Jobbers' Special Brands, per lb. 9¢*

### Picture—

| | 1 | 2 | 2½ | 3 in. |
|---|---|---|---|---|
| *Brass Hd. gro.* | *.45* | *.55* | *.60* | *.70* |
| *Por. Head, gro.* | *1.10* | *1.10* | *1.10* | *1.10* |

### Upholsters—

*Brass*.....*30*
*Plated*.....*30@40%*

### Nippers—

See *Pliers and Nippers*

### Nipples—

Standard Nipple Co.:
Wrought Pipe Nipples.....80@80&10

### Nuts— *Blank or Tapped.*

*Cold Punched* *Off list.*
*Square*.....*5.50@5.50¢*
*Hexagon*.....*6.00@6.10¢*
*Square, C., T. & R.*.....*5.80@5.90¢*
*Hexagon, C., T. & R.*.....*6.60@6.70¢*
*Hot Pressed:*
*Square*.....*5.80¢*
*Hexagon*.....*6.30¢*

## Oakum—

*Best*.....*lb. 6½¢*
*U. S. Navy*.....*lb. 6¢*
*Navy*.....*lb. 5¢*
*Plumbers' Spun Oakum..2¾@3¢*

### Oil Tanks—See *Tanks, Oil.*

### Oilers—

*Steel, Copper Plated*.....*75%*
*Chase or Paragon:*
*Brass and Copper*.....*50&10*
*Zinc*.....*65&10*
*Railroad*.....*60&10&10%*
Malleable, Hammers' Improved, Nos. 11, 12 and 13, 20%; Old Pattern, Nos. 1, 2, 3, 50%.
American Tube & Stamping Co.:
Spring Bottom Cans.....70@70&10
Railroad Oilers, &c.....60@60&10
Maple City Mfg. Co.:
Spring Bottom Cans.....70@70&10
Railroad Oilers, &c.....60@60&10

### Openers—Packing Box—

Herculever, ₱ doz., $24.....30

### Can Openers—

*Per doz.*
*Sprague, Iron Handle*.....*30@35¢*
*Sprague, Wood Handle*.....*40¢*
*Sardine Scissors*.....*$1.75@3.00*
Yankee Can and Bottle Opener, ₱ doz., net, $0.75; Little Gem, ₱ doz., net.....$0.65

### Egg—

Hartigan Nickel Plate, ₱ doz., $2.00; Silver Plate, $4.00.

## Packing—

*Asbestos Packing, Wick and Rope, any quantity*.....*18@20¢*

### Rubber—

*(Fair quality goods.)*
*Sheet, C. I.*.....*11@12¢*
*Sheet, C. O. S.*.....*11@12¢*
*Sheet, C. B. S.*.....*12@13¢*
*Sheet, Pure Gum*.....*40@45¢*
*Sheet, Red*.....*40@50¢*
Jenkins' '96, ₱ lb, 80¢.....25

### Miscellaneous—

*American Packing*.....*lb. 7@10¢*
*Cotton Packing*.....*lb. 16@25¢*
*Italian Packing*.....*lb. 9@10¢*
*Jute*.....*lb. 4@4½¢*
*Russia Packing*.....*lb. 9@10¢*

### Pails, Water, Well, &c.—

See *Buckets.*

### Pans— Dripping—

*Standard List*.....*70&10@70&10&5%*
Edwards, Royal Blue.....65&7½%

### Fry—

*Common Lipped:*

| *Nos.* | *1* | *2* | *3* | *4* | *5* |
|---|---|---|---|---|---|
| *Per doz.* | *$0.75* | *0.80* | *0.90* | *1.10* | *1.30* |

### Refrigerator, Galva.—

| *Inch* | *12* | *14* | *16* | *18* |
|---|---|---|---|---|
| *Per doz.* | *$1.75* | *2.25* | *2.80* | *3.15* |

### Paper—Building Paper

*Asbestos:* *lb.*
*Roll Board or Building Felt, 6 to 30 lb., per 100 sq. ft...2½¢*
*Roll Board or Building Felt, 3-32 and ⅛ in., 45 to 60 lb., per 100 sq. ft*.....*3½¢*
*Mill Board, Sheet, 40 x 40 in., 1-32 to ½ in*.....*3¢*
*Per roll.*
*Rosin Sized Sheathing: 500 sq. ft. Light weight, 25 lbs. to roll, 48@58¢*
***Medium weight, 30 lbs. to roll, 56@70¢***
*Heavy weight, 40 lbs. to roll, 75@78¢*
*Black Water Proof Sheathing, 500 sq. ft., 1 ply, 65¢; 2 ply, 85¢; 3 ply, $1.10; 4 ply, $1.25.*
*Deafening Felt, 9, 6 and 4½ sq. ft. to lb., ton*.....*$54.50*
*Red Rope Roofing, 250 sq. ft. per roll*.....*$1.75*

### Tarred Paper—

*1 ply (roll 400 sq. ft.), ton, $34.00@$38.00*
*2 ply, roll 108 sq. ft*.....*85¢*
*3 ply, roll 108 sq. ft*.....*85¢*
*Slater's Felt (roll 500 sq. ft.)*.....

### Sand Paper and Cloth—

*Flint and Emery*.....*50@60*
*Garnet Paper and Cloth*.....*25*

### Parers—Apple

Goodell Co.:
Family Bay State.....₱ doz. $15.00
Improved Bay State.....₱ doz. $9.00
New Lightning.....₱ doz. $7.00
Turn Table.....₱ doz. $6.00
White Mountain.....₱ doz. $5.00
Bronze Improved.....each $7.50
Dandy.....each $10.00
Eureka Improved.....each $20.00
New Century.....each $90.00
Ranger.....each $25.00
Livingston Nail Co.:
Dixie.....₱ doz. $4.00
Little Star.....₱ doz. $5.00
Rocking Table.....₱ doz. $6.20
Reading Hardware Co.:
Advance.....₱ doz. $4.00
Baldwin.....₱ doz. $4.00
Reading 72.....₱ doz. $3.25
Reading 78.....₱ doz. $6.25

### Potato—

Saratoga.....₱ doz. $7.00
White Mountain.....₱ doz. $6.00

### Picks and Mattocks—

*(List Jan., 1908.)*
*List*.....*70&10@70&10&10%*
Cronk's Hand'l'd Garden Mattock, ₱ doz., No. 2, $2.60; No. 3, $6.40.

### Pinking Irons—
See *Irons, Pinking.*

### Pins, Escutcheon—
*Brass* .....50@50&10%
*Iron, list Nov. 11, '85*..60@60&10%

### Pipe, Cast Iron Soil—
*Standard, 2-6 in*.....70@—%
*Extra Heavy, 2-6 in*..75&10@—%
*Fittings, Standard and Heavy,* 80&10@80&10&10%

### Pipe, Merchant—

| | Consumers, Steel. Blk. | Galv. | Carloads, Iron. Blk. | Galv. |
|---|---|---|---|---|
| | % | % | % | % |
| 1/8 and 1/4 in. | 66 | 50 | 64 | .. |
| 3/8 in. | 68 | 54 | 66 | 52 |
| 1/2 in. | 70 | 58 | 68 | 56 |
| 3/4 to 6 in. | 74 | 64 | 72 | 62 |
| 7 to 12 in. | 71 | 56 | 69 | 54 |

### Pipe, Vitrified Sewer—
*Carload lots.*
*Standard Pipe and Fittings, 3 to 24 in., f.o.b. factory:*
*First-class* .....87%
*Second-class* .....90%

### Pipe, Stove—

| | Per 100 joints. C. L. | L. C. L. |
|---|---|---|
| Edwards' Nested: | | |
| 5 in., Standard Blue | $6.25 | $7.25 |
| 6 in., Standard Blue | 6.75 | 7.75 |
| 7 in., Standard Blue | 7.75 | 8.75 |
| 5 in., Royal Blue | 7.00 | 8.00 |
| 6 in., Royal Blue | 7.50 | 8.50 |
| 7 in., Royal Blue | 8.50 | 9.50 |
| Wheeling Corrugating Co.'s Nested: | | |
| 5 in., Uniform Color | $6.15 | $7.15 |
| 6 in., Uniform Color | 6.65 | 7.65 |
| 7 in., Uniform Color | 7.65 | 8.65 |

### Planes and Plane Irons—

#### Wood Planes—
*Bench, first qual*.....30@30&10%
*Bench, second qual*...40@40&10%
*Molding* .....25@25&10%
Chapin-Stephens Co.:
Bench, First Quality.....30%
Bench, Second Quality.....40%
Molding and Miscellaneous.....25%
Toy and German.....30%
Union .....60%

#### Iron Planes -
Chaplin's Iron Planes.....50&10%
Union .....60%

#### Plane Irons—
*Wood Bench Plane Irons, list Dec. 12, '06*.....25%
Buck Bros.....30
Chapin-Stephens Co.....25%
Union .....50
L. & I. J. White.....20&5@25%

### Planters, Corn, Hand—
Kohler's Eclipse.....℔ doz. $8.00

### Plates—
*Felloe* .....*lb.* 3¾@4¢

### Pliers and Nippers -
*Button Pliers*....75&5@75&10&5%
*Gas Burners, per doz., 5 in., $1.25 @$1.30; 6 in., $1.45 $1.50.*

| *Gas Pipe*.. | 7 | 8 | 10 | 12-in. |
|---|---|---|---|---|
| | $2.00 | $2.25 | $2.75 | $3.50 |

Acme Nippers.....50&5%
Cronk & Carrier Mfg. Co.:
American Button.....80%
Improved Button.....75&10%
Cronk's .....60%
No. 80 Linemen's.....50%
Stub's Pattern.....45%
Combination and others.....33⅓%
Heller's Farriers' Nippers, Pincers and Tools.....40&5@40&10&5%
P., S. & W. Tinners' Cutting Nippers .....40%
Swedish Side, End and Diagonal Cutting Pliers.....50%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds....40%

### Plumbs and Levels—
Chapin-Stephens Co.:
Plumbs and Levels.....30@30&10%
Chapin's Imp. Brass Cor..40@40&10%
Pocket Levels.....30@30&10%
Extension Sights.....30@30&10%
Machinists' Levels.....40@40&10%
Disston's Plumbs and Levels....60&10%
Disston's Pocket Levels.....60&10%
Stanley's Dulex.....35%
Woods' Extension.....33⅓%

### Points, Glaziers'—
*Bulk and 1-lb. papers*....*lb.* 9 ¢
*½ lb. papers*.....*lb.* 9½¢
*¼-lb. papers*.....*lb.* 10 ¢

### Police Goods—
*Manufacturers' Lists*...25@25&5%
Tower's .....25%

### Polish—Metal, Etc—
Prestoline Liquid, No. 1 (½ pt.), ℔ doz., $3.00; No. 2 (1 qt.), $9.00...40%
Prestoline Paste.....40%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, ℔ doz. 50¢; ℔ gro. $4.50; ½ lb boxes, ℔ doz. $1.25; 1 lb boxes, ℔ doz. $2.25.
U. S. Liquid, 8 oz. cans, ℔ doz., $1.25.
Barkeepers' Friend Metal Polish, ℔ doz., $1.75.

### Stove—
Black Eagle Benzine Paste, 5 lb cans, ℔ lb 10¢
Black Eagle, Liquid, ½ pt. cans.. ℔ doz. 75¢
Black Jack Paste, ¾ lb cans, ℔ gr. $9.00
Black Kid Paste, 5 lb can...each, $0.65
Ladd's Black Beauty Liquid, per 100 tins.....$6.75
Joseph Dixon, ℔ gr. $5.75.....10%
Dixon's Plumbago.....℔ lb 8¢
Fireside .....℔ gr. $2.50
Gem, ℔ gr. $4.50.....10%
Japanese .....℔ gr. $3.50
Jet Black.....℔ gr. $3.50
Peerless Iron Enamel, 10 oz. cans.. ℔ doz. $1.50

### Window Polish—
Benj. P. Forbes:
Glasbright, No. 2, gal pails, ℔ doz., $24.00; each, $2.50; 1 lb cans, each .....75¢
Glasbright Powder, bbls., ℔ lb..20¢

### Poppers, Corn—
*1 qt. Square..doz.$0.80; gro.$8.75*
*1 qt. Round..doz.$0.90; gro.$10 00*
*1½ qt. Square.doz.$1.20; gro..$12.00*
*2 qt. Square..doz.$1.50; gro..$15.00*

### Post Hole and Tree Augers and Diggers—
See also *Diggers, Post Hole, &c.*

### Posts, Steel—
Steel Fence Posts, each, 5 ft., 42¢; 6 ft., 46¢; 6½ ft., 48¢.
Steel Hitching Posts.....each $1.30

### Potato Parers—
See *Parers, Potato.*

### Pots, Glue—
*Enameled* .....40%
*Tinned* .....30&10%

### Powder—
*In Canisters:*
*Duck, 1 lb*.....*each* 45¢
*Fine Sporting, 1 lb*....*each* 75¢
*Rifle, ½-lb*.....*each* 15¢
*Rifle, 1 lb*.....*each* 25¢
*In Kegs:*
*12½-lb. kegs*.....$3.50
*25-lb. kegs*.....$4.50
King's Semi-Smokeless:
Keg (25 lb bulk).....$6.50
Half Keg (12½ lb bulk).....$3.50
Quarter Keg (6¼ lb bulk).....$1.90
Case 24 (1 lb cans bulk).....$8.50
Half case (1 lb cans bulk).....$4.50

| King's Smokeless: | Shot Gun. | Rifle. |
|---|---|---|
| Keg (25 lb bulk) | $12.00 | $15.00 |
| Half Keg (12½ lb bulk) | 6.25 | 7.75 |
| Quarter Keg (6¼ lb bulk) | 3.25 | 4.00 |
| Case 24 (1 lb cans bulk) | 14.00 | 17.00 |
| Half case 12 (1 lb c. bk) | 7.25 | 8.75 |

### Presses—

#### Fruit and Jelly—
Enterprise Mfg. Co.....20@25%

#### Seal Presses—
Morrill's No. 1, ℔ doz., $20.00.....50%

### Pruning Hooks and Shears
See *Shears.*

### Pullers, Nail—
Cyclops .....50%
Miller's Falls, No. 3, ℔ doz., $12.00.. 33⅓&10%
Morrill's No. 1, Nail Puller, ℔ doz. $20.00 .....50%
Pearson No. 1, Cyclone Spike Puller, each $30.00.....50%
The Scranton Co. Case Lots:
No. 2B (large).....$5.50
No. 3B (small).....$5.00
Smith & Hemenway Co.:
Diamond B.....70%
Giant .....50%
Staple Pullers, Utica and Davison .....60%

### Pulleys, Single Wheel—

| *Inch* | 1½ | 1¾ | 2 | 3 |
|---|---|---|---|---|
| *Awning or Tackle, doz* | $0.30 | .45 | .60 | 1.05 |
| *Hay Fork, Swivel or Solid Eye, doz., 4 in., $1.25; 5 in., $1.55* | | | | |
| *Inch* | 2 | 2¼ | 2½ | |
| *Hot House, doz*... | $0.65 | .85 | 1.20 | |
| *Inch* | 1¼ | 1½ | 1¾ | 2 |
| *Screw, doz*.... | $0.16 | .19 | .23 | .30 |
| *Inch* | 1¾ | 2 | 2¼ | 2½ |
| *Side, doz*..... | $0.25 | .40 | .55 | .60 |
| *Inch* | 1½ | 1¾ | 2 | 2½ |

#### Sash Pulleys—
*Common Frame; Square or Round End, per doz., 1¾ and 2 in*.....17@20¢
*Auger Mortise, no Face Plate, per doz., 1¾ and 2 in*....20@21¢
Acme, No. 35..1¾ in., 19¢; 2 in., 20½¢
American Pulley Co.:
Wrought Steel American Plain Axle .....50&10%
Wrought Steel, Eagle.....17@20¢
Top Notch, Electrically Welded, Nos. 3 and 4.....19¢
Fox-All-Steel, Nos. 3 and 7, 2 in.... ℔ doz. 50%
Grand Rapids All Steel Noiseless..50%
Niagara, No. 25, 1¾ in., 19¢; 2 in. .....20½¢
No. 26 Troy..1¾ in., 14½¢; 2 in., 16½¢
Star, No. 26....1¾ in., 19¢; 2 in., 20½¢
Tackle Blocks—See Blocks

### Pumps—
*Cistern* .....60%
*Pitcher Spout*.....75&5@75&10%
*Wood Pumps, Tubing, &s*....50%
Barnes Dbl. Acting (low list)....40&5%
Barnes Pitcher Spout.....75&10%
Contractors' Rubber Diaphragm, No. 2. B. & L. Block Co.....$16.00
Daisy Spray Pump.....℔ doz. $6.50
Flint & Walling's Fast Mail Hand (low list).....50%
Flint & Walling's Fast Mail (low list) .....50%
Flint & Walling's Tight Top Pitcher .....75&10%
National Specialty Mfg. Co., Measuring, Nos. 2, $6.00; 3, $5.50.....30%
Myers' Pumps (low list).....40&5%
Myers' Power Pumps.....40&5%
Myers' Spray Pumps.....40&5%

### Pump Leathers—
*Plunger and Valve Leathers—Per gro.:*

| *No*..... | 1 | 2 | 3 | 4 | 30% |
|---|---|---|---|---|---|
| | $5.00 | 6.00 | 7.00 | 8.00 | |
| *Cup Leathers—Per 100:* | | | | | |
| *Inch*.... | 2½ | 3 | 3½ | 4 | |
| | $5.00 | 7.00 | 9.00 | 12.00 | |

### Punches—
*Saddlers' or Drive, good, doz.*.50@75¢
*Spring, single tube, good quality* .....$1.75
*Revolving (4 tubes)*....*doz.*$3.50
Bemis & Call Co.'s Cast St'l Drive.50%
Morrill's Nos. 1AA, 1A, 1B, 1C, 1D, $15.00.....50%
Hercules, 1 die, each $5.00.....50%
Niagara Hollow Punches.....40%
Niagara Solid Punches.....55&10%
Tinners' Hollow, P., S. & W. Co..40%
Tinners' Solid, P., S. & W. Co., ℔ doz., $1.44.....40%

## Rail—Barn Door, &c.—
*Sliding Door, Painted Iron, 2½@2¾¢*
*Sliding Door, Wrought Brass, 1⅛ in., lb., 36¢*.....30%
Allith Mfg. Co.: Reliable Hanger Track .....50%
Cronk's:
Double Braced Steel Rail..℔ ft. 3¼¢
O. N. T. Rail.....$3.12
Griffin's:
xxx, ℔ 100 ft., 1 x 3-16 in., $3.25; 1¼ x 3-16 in., $3.75.
Hinged Hanger, ℔ 100 ft., 1 x 3-16 in., $3.50; 1¼ x 3-16 in., $4.00.
Lane's:
Hinged Track, ℔ 100 ft.....$3.45
O. N. T., ℔ 100 ft., 1 in., $3.00; 1¼ in., $3.45; 1½ in., $4.00.
Standard, 1¼ in.....℔ 100 ft. $4.00
Lawrence Bros.:
1 x 3-16 in., ℔ 100 ft., $7.50; 1¼ x 3-16 in., $8.75.....55&7½%
McKinney's:
Hinged Hanger Track, ℔ ft., 11¢. 60&5%
1 x 3-16 Track.....55&7½%
Myers' Stayon Track.....60&5%
Richards Mfg. Co.:
Common, 1 x 3-16 in., $3.00; 1¼ x 3-16, $3.25; 1¼ x 3-16, $3.50.
Special Hinged Hanger Rail..60&10%
Lag Screw Rail, No. 65.....50%
Gauge Trolley Track, ℔ ft., No. 31, 9¢; No. 32, 14¢; No. 33, 20¢.
No. 50.....60&10%
Nos. 61, $3.00; 62, $3.25; 63, $3.50; 64, $4.00; 45, $3.25; 46, $3.50; 49, No. 1, $3.25; 49, No. 2, $3.50.

### Rakes—
*NOTE.—Many goods are sold at net prices.*
Fort Madison Red Head Lawn....$3.25
Fort Madison Blue Head Lawn....$2.70
Cronk's:
Steel Garden: Champion, 75%; Ideal, 80%; Victor.....80&25%
Queen City Lawn, ℔ doz., 20 teeth, $2.85; 24, $3.00.....net
Anticlog Lawn, ℔ doz.....$4.00
Malleable Garden.....70&10%
Ideal Steel Garden, ℔ doz., 12 teeth, $15.00; 14, $16.00; 16, $18.00.....80%
Kohler's:
Lawn Queen, 20-tooth....℔ doz. $3.15
Lawn Queen, 24-tooth....℔ doz. $3.25
Paragon, 20-tooth.....℔ doz. $2.70
Paragon, 24-tooth.....℔ doz. $2.75
Steel Garden, 14-tooth....℔ doz. $2.40
Malleable Garden, 14-tooth, ℔ doz. $2.00@2.25

### Rasps, Horse—
Disston's .....75%
Heller Bros.'.....70&5@70&10&5%
Liveright Bros.' Gold Medal.70&10@75%
McCaffrey's American Standard..... 60&10&5%
New Nicholson.....70&10@75%
See also Files.

### Razors—
Liana Bo-ras-ic.....60%
Fox Razors, ℔ doz., No. 12, $20.00; No. 44, $20.00; No. 82, Platina, $25.00. } Dis. 40%
Red Devil.....65%

### Reels, Fishing—
Hendryx:
M 6, Q 6, A 6, B 6, M 9¼, M 16, Q 16, A 16, B 16, 4008, Rubber, Populo Nickeled Populo.....20%
Aluminum, German Silv., Bronze,25
1240 N, 124 N.....20%
3004 N, 06 N, 6 RM, G 9.....25
4 N, 6 PN 24 N, 26 PN.....20%
2904 P., 33⅓%; 2904 PN., 33⅓%; 0924 N., 33⅓%; 02084 N., 33⅓%; 002904 PN., 33⅓%; 802 N., 33⅓%
986 PN, 2904 N, 974 PN.....25%
5009 PN, 5009 N.....20%
Competitor, 102 P, 102 PN, 202 P, 202 PN 102 PR, 202 PR.....20%
304 P, 304 PN, 00304 P, 00304 PN.33⅓%

### Registers—*List July 1, 1903.*
*Japanned, Electroplated and Bronzed* .....70%
*White Porcelain Enamel*..50&10%
*Solid Brass or Bronze Metal*.40%

### Revolvers—
*Single Action*.....95¢@$1.00
*Double Action, except 44 cal*.$2.00
*Double Action, 44 caliber*...$2.00
*Automatic* .....$4.00
*Hammerless* .....$4.50

### Riddles, Hardware Grade
*16 in*.....*per doz*.$2.50@$2.75
*17 in*.....*per doz*.$2.75@$3.00
*18 in*.....*per doz*.$3.00@$3.25

### Rings and Ringers—

#### Bull Rings—

| | 2 | 2½ | 3 inch. |
|---|---|---|---|
| *Steel* | $0.70 | 0.75 | 0.80 doz. |
| *Copper* | $1.10 | 1.25 | 1.65 doz. |

#### Hog Rings and Ringers—
*Hill's Rings, gro. boxes.$4.50@$4.50*
*Hill's Ringers, Gray Iron, doz., 60@75¢*
*Hill's Ringers, Malleable Iron, doz.*.80@95¢
*Blair's Rings..per gro.$5.00@$5.50*
*Blair's Ringers...per doz.*75@90¢

### Rivets and Burrs—
*Copper* .....50@50&5%
*Carriage, Coopers', Tinners', &c.:*
*Black* .....70&10%
*Metallic Tinned*.....70%

### Bifurcated and Tubular—
*Assorted in Boxes.*
*Bifurcated, per doz. boxes, pasteboard boxes, 50 count, 23@25¢; Tin boxes, 100 count, 29@32¢.*
*Tubular, per doz. boxes, 50 count, 29@32¢; 100 count, 51@58¢.*

### Rollers—
Cronk's Stay, No. 50.....$1.00
Cronk's Brinkerhoff No. 55, $0.60; No. 56, $0.75; No. 60.....$0.75
Lane's Stay.....40%
Richards' Stay:
Handy Adj. and Reversible No. 53.75¢
O. K. Adj. and Reversible No. 58.50¢
Lag Screw, Nos. 55 and 57.....50%
Underwriters', Nos. 59, 60.....50%
Favorite, No. 54.....60%

### Rope—
*Manila, 7-16 in. diam. and larger: Pure* .....*lb.*, 10¢
*Sisal, 7-16 in. diam. and larger: Pure* .....*lb.*, 7¢
*Sisal, 7-16 in. diam. and larger: lower grade*.....*lb.*, 6½¢
*Sisal, Hay, Hide and Bale Ropes, Medium and Coarse: Mixed* .....*lb.*, 6½¢
*Pure* .....*lb.*, 7½¢
*Sisal, Tarred, Medium Lath Yarn: Mixed* .....*lb.*, 5¢
*Pure* .....*lb.*, 6¢
*Cotton Rope: Best, ¼-in. and larger*...18@20¢
*Medium, ¼-in. and larger.16@17¢*
*Common, ¼-in. and larger*..19¢
*In coils, ½¢ advance.*
*Jute Rope: Thread, No. 1, ¼-in. and up, lb.* .....6¼¢
*Thread, No. 2, ¼-in. and up, lb.* .....5¾¢

#### Wire Rope—
*Galvanized* .....37½&2½%
*Plain* .....45&2½%

### Ropes, Hammock—
Covert Mfg. Co.:
Jute, 35%; Sisal.....20%

### Rules
*Boxwood* .....60@60&10%
*Ivory* .....35&10@35&10&5%
Chapin-Stephens Co.:
Boxwood .....60%
Flexifold .....40%
Ivory .....25@25&10%
Miscellaneous .....50@50&10%
Stephens' Combination.....55%
Stationers' .....50@50&10%
Keuffel & Esser Co.:
Folding, Wood.....35&10%
Folding, Steel.....33⅓&10%
Lufkin's Steel.....50&10%
Lufkin's Lumber.....50&10%
Upson Nut Co.:
Boxwood .....60@60&10%
Ivory .....35&10@35&10&10%

## Sash Balances—
See *Balance, Sash.*

### Sash Locks—See *Locks, Sash.*

### Sash Weights—
See *Weights, Sash.*

### Sausage Stuffers or Fillers
See *Stuffers or Fillers, Sausage.*

### Saw Frames—
See *Frames, Saw.*

### Saw Sets—See *Sets, Saw.*

### Saw Tools—See *Tools, Saw.*

### Saws—

Atkins':
- Circular ..... 45%
- Band ..... 50@50&10%
- Butcher Saws ..... 50%
- Cross Cuts ..... 35%
- One-Man Cross Cut ..... 40%
- Narrow Cross Cut ..... 50%
- Hand, Rip and Panel ..... 35&5%
- Miter Box and Compass ..... 40%
- Mulay, Mill and Drag ..... 45%
- Wood Saws ..... 40&10%

Chapin-Stephens Co.:
- Turning Saws and Frames ..... 30@30&10%

Diamond Saw & Stamping Works:
- Sterling Kitchen Saws ..... 30&10&10%

Disston's:
- Circular, Solid and Ins'ted Tooth ..... 50%
- Band, 2 to 18 in. wide ..... 60%
- Band, ¼ to 1¾ ..... 60%
- Crosscuts ..... 45%
- Narrow Crosscuts ..... 50%
- Mulay, Mill and Drag ..... 50%
- Framed Woodsaws ..... 25%
- Woodsaw Blades ..... 25%
- Woodsaw Rods, Tinned ..... 15%
- Hand Saws, Nos. 12, 99, 9, 16, d100, D8, 120, 76, 77, 8 ..... 25%
- Hand Saws, Nos. 7, 107, 107½, 3, 1, 0, 00, Combination ..... 30%
- Compass, Key Hole, &c ..... 25%
- Butcher Saws and Blades ..... 30%

C. E. Jennings & Co.'s:
- Back Saws ..... 16⅔%
- Butcher Saws ..... 25&7½%
- Compass and Key Hole Saws, 33⅓&7½%
- Framed Wood Saws ..... 25&7½%
- Hand Saws ..... 12½%
- Wood Saw Blades ..... 33⅓&7½%

Millers Falls:
- Butcher Saws ..... 15&10%
- Star Saw Blades ..... 15&10%

Massachusetts Saw Works:
- Victor Kitchen Saws ..... 40&10&50%
- Butcher Saws Blades ..... 35@40%

Peace & Richardson's Hand Saws ..... 30%

Simonds':
- Circular Saws ..... 45%
- Crescent Ground Cross Cut Saws ..... 30%
- One-Man Cross Cuts ..... 40&10%
- Gang Mill, Mulay and Drag Saws ..... 45%
- Band Saws ..... 50%
- Back Saws ..... 25@25&7½%
- Butcher Saws ..... 35@35&7½%
- Hand Saws ..... 25@25&7½%
- Hand Saws, Bay State Brand ..... 45%
- Compass, Key Hole, &c ..... 25@25&7½%
- Wood Saws ..... 40&7½%

Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws ..... 50%

### Hack Saw Blades and Frames—

Atkins' Hack Saw Blades A A A ..... 25%

Disston's:
- Concave Blades ..... **25%**
- Keystone Blades ..... **35%**
- Hack Saw Frames ..... 30%

Simonds File Co ..... 35%

C. E. Jennings & Co.'s:
- Hack Saw Frames, Nos. 175, 180 .... 40&7½%
- Hack Saws, Nos. 175, 180, complete, 40&7½%

Goodell's Hack Saw Blades ..... 40&10%

Griffin's Hack Saw Frames ..... 35&5&10%

Griffin's Hack Saw Blades ..... 35&5&10%

Star Hack Saws and Blades ..... 15&10%

Sterling Hack Saw Blades ..... 30&10&5%

Sterling Hack Saw Frames ..... 30&10&10%

Sterling Power Hack Saw Machines, each, No. 1, $25.00; No. 2, $30.00 ..... 10%

Victor Hack Saw Blades ..... 20%

Victor Hack Saw Frames ..... 40%

Whitaker Mfg. Co.:
- National Hand Blades ..... 40%
- National Hand Frames ..... 30&5%
- National Power Blades ..... 30&10%

### Scroll—

Barnes, No. 7, $15 ..... 25%

Barnes' Scroll Saw Blades ..... 40%

Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20 ..... 20%

Lester, complete, $10.00 ..... 15&10%

Rogers, complete, $3.50 and $4.00 .. 15&10%

### Scales—

*Union Platform, Plain ..... $2.10@2.20*
*Union Platform, Stpd ..... $2.20@2.30*

Chatillon's:
- Eureka ..... 25%
- Favorite ..... 40%
- Grocers' Trip Scales ..... 50%

The Standard Portables ..... 40%

The Standard R. R. and Wagon ..... 50&10%

### Scrapers—

*Box, 1 Handle ..... doz. $1.85@2.10*
*Box, 2 Handle ..... doz. $2.35@2.50*
*Ship ... Light, $2.00; Heavy, $4.50*

Chapin-Stephens Co., Box .. 30@30&10%

Richards Mfg. Co., Foot ..... 60%

### Screws—Bench and Hand

*Bench, Iron, doz., 1 in., $2.50@2.75; 1⅛, $3.00@3.25; 1¼ .$3.50@3.75*
*Bench, Wood ..... 20@20&10%*
*Hand, Wood .... 70&10@70&10&10%*

Chapin-Stephens Co., Hand ..... 70@70&10&2½%

### Coach, Lag and Hand Rail—

*Lag, Cone Point ... 80&5@80&10%*
*Coach, Gimlet Point .. 80@80&5%*
*Hand Rail ..... 70&10@75%*

### Jack Screws—

*Standard List ..... 70&10@75%*

Millers Falls ..... 50&10&10

Swett Iron Works ..... 70@75

### Machine—

*Cut Tread, Iron, Brass or Bronze:*
*Flat Head or Round Head, 50@50&10%*
*Fillister Head ..... 40@40&10%*
*Rolled Thread, F. H. or R. H., Iron ..... 75&10%*
*F. H. or R. H., Brass, Nos. 8 to 14 ..... 65&10%*

### Set and Cap—

*Set (Iron) ..... 75&10&7½%*
*Set (Steel), net advance over Iron ..... 25%*
*Sq. Hd. Cap ..... 70&10&7½%*
*Hex. Hd. Cap ..... 70&10&7½%*
*Rd. Hd. Cap ..... 50&7½%*
*Fillister Hd. Cap ..... 60&7½%*

### Wood—

*List July 23, 1903.*

| | |
|---|---|
| *Flat Head, Iron* | *87½&5@ .. %* |
| *Round Head, Iron* | *85&5@ .. %* |
| *Flat Head, Brass* | *80&5@ .. %* |
| *Round Head, Brass* | *77½&5@ .. %* |
| *Flat Head, Bronze* | *75&5@ .. %* |
| *Round Head, Bronze* | *72½&5@ .. %* |
| *Drive Screws* | *87½&5@ .. %* |

### Scroll Saws—

See *Saws, Scroll.*

### Scythes— *Per doz.*

*Grass, No. 1, Plain ..... $7.00*
*Clipper, Bronzed Webb ..... $7.25*
*No. 3 Clipper, Pol'd Webb ... $7.50*
*No. 6 Clipper and Solid Steel. $7.75*
*Bush, Weed and Bramble, Nos. 11, 12 and 13 ..... $7.25*
*Grain, No. 1 ..... $9.00@9.50*
*Bronzed Webb, No. 1 ... $9.25@9.75*
*Nos. 3 and 4 Clipper, Grain, $9.50@10.00*
*Solid Steel, No. 6 .... $10.00@10.50*

### Seeders, Raisin—

Enterprise ..... 25@30%

### Sets— Awl and Tool—

Fray's Adj. Tool Handles, Nos. 1, $12; 2, $16; 3, $12 ..... 50%

Millers Falls Adj. Tool Handles, No. 1, $12; No. 4, $12; No. 5, $18 .. 20&10%

### Garden Tool Sets—

Ft. Madison Three Plows, Hoe, Rake and Shovel ..... ℔ doz. sets $9.00

### Sets, Nail—

*Octagon ..... gro. $3.50@3.75*

Buck Bros ..... 27½%

Cannon's Diamond Point, ℔ gro. $12, 40&10%

Mayhew's ..... ℔ gro. $9.00

Snell's Corrugated, Cup Pt ..... 40&10%

Snell's Knurled, Cup Pt ..... 40&10%

Victor Knurled, Cup Pt .... ℔ gro. $7.50

### Rivet—

*Regular list ..... 75@75&10%*

### Saw—

Atkin's:
- Criterion ..... 40%
- Adjustable ..... 40%

Disston's Star, Monarch and Triumph ..... 30%

Morrill's No. 1 ..... $15.00
Nos. 3 and 4, Cross Cut .... $20.60
No. 5, Mill ..... $30.00
Nos. 10, 11, 95 ..... $15.60
No. 1 Old Style ..... $10.00
Special ..... $16.25
} 50%

Giant Royal Cross Cut ..... ℔ doz. $8.00

Royal, Hand ..... ℔ doz. $4.50

Taintor Positive ..... ℔ doz. $6.75

### Shaving—

Fox Shaving Sets, No. 30 ..... ℔ doz., net, $24.00

Smith & Hemenway Co.'s ..... 75%

### Sharpeners, Knife—

Pike Mfg. Co.:
- Fast Cut Pocket Knife Hones, ℔ doz ..... $1.50
- Mounted Kitchen Sand Stone, ℔ doz ..... $1.50
- Natural Grit Carving Knife Hones, ℔ doz ..... $3.00
- Quick Cut Emery Carving Knife Hones, ℔ doz ..... $1.50
- Quick Edge Pocket Knife Hones, ℔ doz ..... $2.50

} 50%

### Skate—

Smith & Hemenway Co., Eureka .. 50%

### Shaves, Spoke—

*Iron ..... doz. $1.25*
*Wood ..... doz. $2.00*

Bailey's (Stanley R. & L. Co.) ..... 45%

Chapin-Stephens Co ..... 30@30&10%

Goodell's, ℔ doz, $9.00 ..... 15&10%

### Shears—

| *Cast Iron* | *7* | *8* | *9 in.* |
|---|---|---|---|
| *Best* | *$16.00* | *18.00* | *20.00 gro.* |
| *Good* | *$13.00* | *15.00* | *17.00 gro.* |
| *Cheap* | *$5.00* | *6.00* | *7.00 gro.* |

*Straight Trimmers, &c.:*
*Best quality Jap .... 70@70&10%*
*Best quality Nickel .. 60@60&10%*
*Tailors' Shears ..... 40@40&10%*

Acme Cast Shears ..... 33⅓&5

Heinisch's Tailor's Shears ..... 10

National Cutlery Co.'s Nickel Plated, 60&10; Japan Handles ..... 70&10%

Wilkinson Shear & Cutlery Co.:
- Sheep, 1909 list ..... 33⅓&5
- Grass ..... 50&10
- Horse or Mule ..... 50&10

J. Wiss & Sons Co.:
- Best Quality Japed ..... 60&10
- Best Quality Nickeled ..... 50&10
- Tailors' ..... 25

### Tinners' Snips—

*Steel Blades ..... 20&5@20&10%*
*Steel Laid Blades ..... 40&10@50%*

Forged Handles, Steel Blades, Berlin ..... 50%

Heinisch's Snips ..... 40%

Jennings & Griffin Mfg. Co.'s 6½ to 10 in ..... 33⅓&7½%

National Cutlery Co.'s Forged Steel. 50%

Niagara Snips ..... 40%

P., S. & W. Forged Handles, 25 ; W. R. W ..... 40&10%

J. Wiss & Sons Co.:
- Wiss Forged Steel ..... 25%

### Pruning Shears—

Cronk's Hand Shears ..... 33⅓%

Cronk's Wood Handle Shears .... 33⅓%

Disston's Combined Pruning Hook and Saw, ℔ doz. $18.00 ..... 25%

Disston's Pruning Hook only, ℔ doz., $12.00 ..... 25%

John T. Henry Mfg. Co.:
- Pruning Shears, all grades ..... 40%

P., S. & W. Co ..... 40&10%

Columbian Cutlery Co.:
- Hedge, Wilcut Brand ..... 60&10%
- Lawn and Border, Wilcut Brand, 60&10%

### Sheaves—Sliding Door—

Reading ..... 40%

R. & E. list ..... 15%

### Sliding Shutter—

Reading list ..... 40%

R. & E. list ..... 10%

### Shells—Shells, Empty—

Brass Shells, Empty:
- Climax, 10 and 12 gauge ..... 65&10%
- Club, Rival, 65&5%; First Quality, 60&5%

Paper Shells, Empty:
- New Rapid, 10, 12, 16 and 20 gauge, 25&10%
- Climax, 10 and 12 gauge; Acme, 10, 12, 16 and 20 gauge; Ideal, 10, 12, 16 and 20 gauge; Leader grade, 25&5%
- Union League, 12 and 12 gauge; Rival Grade ..... 25%
- New Climax, Defiance, 10, 12, 14, 16 and 20 gauge; Climax, 14, 16 and 20 gauge ..... 20&5%
- Challenge, Monarch, 10, 12, 16 and 20 gauge; League, Union, 14, 16 and 20 gauge; Repeater Grade .. 20%

### Shells, Loaded—

*Loaded with Black Powder .. 40%*
*Loaded with Smokeless Powder, medium grade ..... 40&5%*
*Loaded with Smokeless Powder, high grade ..... 40&10&10%*

Union Metallic Cartridge Co.:
- New Club, Black Powders ..... 40%
- Nitro Club, Smokeless Powders. 40&5%
- Arrow, Smokeless Powders. 40&10&10%

Winchester:
- Smokeless Repeater Grade ..... 40&5%
- Smokeless Leader Grade ... 40&10&10%
- Black Powder ..... 40%

### Shingles, Metal— Per Sq.

| Edwards Mfg. Co.: | Painted. | Galv. |
|---|---|---|
| 14 x 20 | $4.25 | $6.00 |
| 10 x 14 | 4.50 | 6.25 |
| 7 x 10 | 4.75 | 6.50 |

Wheeling Corrugating Co.:

| | | |
|---|---|---|
| Dixie, 14 x 20 in | $4.25 | $5.50 |
| Dixie, 10 x 14 in | 4.50 | 6.00 |
| Dixie, 7 x 10 in | 5.00 | 6.75 |

### Shoes, Horse, Mule, &c.—

*F.o.b. Pittsburgh:*
*Iron ..... per keg. $4.10*
*Steel ..... per keg. $3.85*

Burden's, all sizes ..... ℔ keg $3.90

### Shot—

*25-lb. bag.*

*Drop, up to B ..... $1.80*
*Drop, B and larger ..... 2.05*
*Buck ..... 2.05*
*Chilled ..... 2.05*
*Dust ..... 2.30*

### Shovels and Spades—

*Association List, Nov. 15, 1902. 40%*

Avery Stamping Co ..... 40%

### Snow Shovels—

*Long Handle ..... $3.25@$3.50*
*Wood and Mail, D Handle, $3.75@$4.00*

### Sieves and Sifters—

*Hunter's Imitation, gro .... $9.50*
*Hunter's Genuine, per gro .. $12.00*

### Sifters, Ash—

Acme Ball Bearing Sales Co., Acme Automatic Ash Sifter, each, $3.25; ℔ doz ..... $39.00

### Sieves, Seamless Metallic

| | *Per dozen.* | | | |
|---|---|---|---|---|
| *Mesh* | *14* | *16* | *18* | *20* |
| *Iron Wire* | *$1.05* | *1.05* | *1.10* | *1.20* |
| *Tinned Wire* | *$1.15* | *1.15* | *1.20* | *1.30* |

### Sieves, Wooden Rim

*Nested, 10, 11 and 12 Inch.*

*Mesh 18, Nested .... doz. $0.90@0.95*
*Mesh 20, Nested .... doz. $1.00@1.05*
*Mesh 24, Nested .... doz. $1.30@1.40*

### Sinks, Cast Iron—

*Painted, Standard List:*
*12 x 12 to 22 x 36 in ..... 60%*
*20 x 24 to 24 x 50 in ..... 50%*
*24 x 60 to 24 x 120 in ..... 30%*

Barnes' list:
- Up to and including 20 x 36 in. 50&5%
- 20 x 40 to 24 x 50 in. ... 15

*NOTE.—There is not entire uniformity in lists used by jobbers.*

### Skeins, Wagon—

*Cast Iron ..... 70@75&10%*
*Steel ..... 40@45%*

### Slates, School—

*Factory Shipments.*
*"D" Slates ..... 50@50&10%*
*Eureka, Unexcelled Noiseless .. 60&7 tens.*
*Victor A, Noiseless .60&4 tens &5%*

### Slaw Cutters—See *Cutters.*

### Snaps, Harness—

*German ..... 40@40&10%*

Covert Mfg. Co.:
- Derby, 25%; Yankee, 30&2%; Yankee Roller, 30&2%.
- High Grade, 40%; Trojan ..... 40%
- Jockey ..... 25%

### Snaths—

*Scythe ..... 60%*

### Snips, Tinners'—See *Shears.*

### Spoons and Forks—

### Silver Plated—

*Good Quality ..... 50&10@60&5%*
*Cheap ..... 60@60&10%*

International Silver Co:
- 1847 Rogers Bros., 40&10%; Rogers & Hamilton ..... 50&10%
- Rogers & Bro., William Rogers' Eagle Brand ..... 50&10%
- Anchor, Rogers Brand ..... 60%
- Wm. Rogers & Son ..... 60&10%

### Miscellaneous

*German Silver ..... 60@60&5%*

### Tinned Iron—

*Teas ..... per gro. 50@55¢*
*Tables ..... per gro. $0.90@$1.00*

### Springs— Door—

Bardsley's Spring and Check ..... 40%

Chicago (Coil) ..... 40&10%

Gem (Coil) ..... 20%

Pullman Door and Gate ..... 10%

Reliance (Coil) ..... 40&10%

Star (Coil) ..... 30%

Torrey's Rod, 39 in ..... ℔ doz. $1.10

### Carriage, Wagon, &c.—

| *1¼ in. and Wider:* | *Per 100 lb.* |
|---|---|
| *Black* | *$4.75@$5.00* |
| *Half Bright* | *$4.75@$5.00* |
| *Bright* | *$5.25@$5.50* |

*Painted Seat Springs:*
*1½ x 2 x 26 .... per pair. 45@47¢*
*1½ x 3 x 28 .... per pair. 68@71¢*

### Sprinklers, Lawn—

American Foundry & Mfg. Co.:
- Cactus, 65%; Japanese, 70%; National, ℔ doz ..... $12.00

Enterprise ..... 25@30%

Philadelphia No. 1, ℔ doz. $12; No. 2, $15; No. 3, $29 ..... 30%

### Squares—

*Nickel plated .. } List Jan. 5, 1900.*
*Steel and Iron . } 80@80&5%*
*Rosewood Hdl. Try Square and T-Bevels ..... 60&10&10@70%*
*Iron Hdl. Try Squares and T-Bevels ..... 40&10@40&10&10%*

Disston's Try Squares and Bevels, Rosewood Handle, 60 & 10%; Iron Stock and Bevel ..... 15%

### Squeezers, Lemon

*Wood, Porcelain Lined:*
*Cheap ..... doz. $1.00*
*Good Grade ..... doz. $1.25*
*Tinned Iron ..... doz. $0.75@1.00*
*Iron, Porcelain Lined ... doz. $1.75*

### Staples—

*Barbed Blind ..... 85&5@85&10%*
*Electricians' ..... 80&10&10@85%*
*Fence Staples, Polished, $2.05; Galvanized ..... $2.35*
*Poultry Netting Staples ..... per lb. 3¼@3½¢*

### Steels, Butchers'—

Dick's ..... 30%

Foster Bros.' ..... 30%

### Steelyards— .... 30@30&10%

### Stocks and Dies—

*Blacksmiths' ..... 50@50&10%*

Curtis Rev'ble Ratchet Die Stock .. 25

Derby Screw Plates ..... 25

Green River ..... 25

Lightning Screw Plate ..... 25

Little Giant ..... 25

Reece's New Screw Plate ..... 25

### Stoners, Cherry—

Enterprise ..... 25@30

### Stones—Oil, &c.

Pike Mfg. Co., 1907 list: ℔ lb
- Arkansas St. No. 1, 3 to 5½ in. $2.85
- Arkansas St. No. 1, 5½ to 8 in. $3.50
- Arkansas Slips No. 1 ..... $4.00
- Lily White Washita, 4 to 8 in. 60¢
- Rosy Red Washita, 4 to 8 in. 60¢
- Washita St., Extra 4 to 8 in. 50¢
- Washita St., No. 1, 4 to 8 in. 40¢
- Washita St., No. 2, 4 to 8 in. 25¢
- Lily White Slips ..... 90¢
- Rosy Red Slips ..... 90¢
- Washita Slips, Extra ..... 80¢
- Washita Slips, No. 1 ..... 70¢
- Washita Slips, No. 2 ..... 40¢
- India Oil Stones (entire list) .. 33⅓
- Quickcut Emery and Corundum Oil Stone, Double Grit ..... 40%
- Quickcut Emery and Corundum Axe Stone, Double Grit ..... 33⅓
- Quickcut Emery Rubbing Bricks .. 10
- Hindostan No. 1, R'g'lar ℔ lb 8¢
- Hindostan No. 1 Small .. ℔ lb 10¢
- Axe Stones (all kinds) .....
- Turkey Oil Stones, Extra 5 to 8 in. ℔ lb 80¢
- Queer Creek Stones, 4 to 8 in. 20¢
- Queer Creek Slips ..... 10¢
- Sand Stone ..... 6¢

} 33⅓%
} 33⅓%

### Scythe Stones—

Pike Mfg. Co., 1901 list:
Black Diamond S. S. ℔ gro. $12.00
Lamoille S. S. ℔ gro. $11.00
White Mountain S. S. ℔ gro. $9.50
Green Mountain S. S. ℔ gro. $7.00
Extra Indian Pond S.S. ℔ gro. $8.00
No. 1 Indian Pond S.S. ℔ gro. $7.50
No. 2 Indian Pond S.S. ℔ gro. $5.00
Leader Red End S. S. ℔ gro. $5.00
Quick Cut Emery.... ℔ gro. $10.00
Pure Corundum..... ℔ gro. $18.00
Crescent ..... $7.00
Emery Scythe Rifles, 2 Coat. $8.80
Emery Scythe Rifles, 3 Coat. $11.00
Emery Scythe Rifles, 4 Coat. $13.20
Balance of 1904 list 33⅓%
Electro (Artificial), ℔ gro., $12.00 ..... 33⅓%
Lightning (Artificial), ℔ gro., $18.00 ..... 33⅓%

### Stoppers, Bottle—

Victor Bottle Stoppers..... ℔ gro. $9.00

### Stops— Bench—

Millers Falls..... 15&10
Morrill's, ℔ doz., No. 1, $10.00.... 50
Morrill's, No. 2, $12.50..... 50

### Door—

Chapin-Stephens Co..... 50@50&10%

### Plane—

Chapin-Stevens Co..... 20%

### Straps— Box—

Acme Embossed, case lots.. 20&10&10%
Cary's Universal, case lots... 20&10&10

### Stretchers, Carpet—

*Cast Iron, Steel Points..doz. 55¢*
*All Steel Socket...doz. $2.00@2.25*
Excelsior Stretcher and Tack Hammer Combined, ℔ doz., $6.00.... 20

### Stuffers, Sausage—

Enterprise Mfg. Co..... 25@25&7½%
National Specialty Co., list Jan. 1, 1902 ..... 30&5
P., S. & W. Co..... 40&10&5

### Sweepers, Carpet—

| | ℔ doz. |
|---|---|
| Bissell Carpet Sweeper Co.: | |
| Superba, Crotch Mahogany.... | $36.00 |
| Triumph, Fancy Veneers..... | $33.00 |
| Parlor Queen, Fig, Rosewood.. | $30.00 |
| Elite, Hungarian Ash..... | $29.00 |
| Am. Queen, Fig. Mahogany.... | $27.00 |
| Ideal, Bird's-Eye Maple..... | $25.00 |
| Grand Rapids, Nickel, $24.00; Japan ..... | $22.00 |
| Standard, Nickel, $22.00; Japan. | $20.00 |
| Crown Jewel, Nickel, $21.00; Jap. | $19.00 |
| Crystal, Glass Top..... | $36.00 |
| Grand, 17 in. wide..... | $36.00 |
| Parlor Grand..... | $18.00 |
| Club, 24 in. wide..... | $54.00 |
| Hall 28 in. wide..... | $60.00 |

*NOTE.—Rebates: 50c per dozen on three dozen lots; $1 per dozen on five-dozen lots; $2 per dozen on ten dozen lots; $2.50 per dozen on twenty-five dozen lots.*

## Tacks, Finishing Nails, &c.

*American Carpet Tacks...90&40%*
*American Cut Tacks.....90&40%*
*Swedes' Cut Tacks.....90&40%*
*Swedes' Upholsterers'....90&50%*
*Gimp Tacks.....90&50%*
*Lace Tacks.....90&50%*
*Trimmers' Tacks.....90&40%*
*Looking Glass Tacks.....65%*
*Bill Posters' and Railroad Tacks, 90&50&10%*
*Hungarian Nails.....80&20%*
*Finishing Nails.....70%*
*Trunk and Clout Nails...80&10%*

*NOTE.—The above prices are for Straight Weights.*

### Miscellaneous—

*Double Pointed Tacks, 90&6 tens@—%*
Se also Nails, Wire.

### Tanks, Oil and Gasoline—

| Wilson & Friend Co.: Gal. | Gasoline | Oil |
|---|---|---|
| 30 | $2.75 | $3.00 |
| 60 | $3.50 | $4.00 |
| 110 | $5.00 | $5.75 |

### Tapes, Measuring—

*American Asses' Skin....50@—%*
*Patent Leather.....25@30&5%*
*Steel .....33⅓&5%*
*Chesterman's .....25@25&5%*
Keuffel & Esser Co.:
Favorite, Ass Skin.....40&10@50
Favorite, Duck and Leather..... 25&5@25&10
Metallic and Steel, lower list, 35@35&5, Pocket, 35@35&5%.
Lufkins:
Asses' Skin.....40&10@50%
Metallic .....30@30&5%
Patent Bend, Leather...25&5@25&10%
Pocket .....40@40&5%
Steel .....33⅓@35
Wchusch & Hilger:
Chesterman's Metallic, No. 34L, etc. ..... 25%
Chesterman's Steel, No. 1038L, etc. ..... 35%

### Teeth, Harrow—

*Steel Harrow Teeth, plain or headed, ⅝ inch and larger, per 100 lb.....$2.55@$2.80*

### Thermometers—

*Tin Case, Cabinet, Flange, Dairy, &c.....30@35%*

### Ties, Bale—Steel Wire—

*Single Loop.....82½&10%*
*Monitor, Cross Head, &c. 70&2½%*

### Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

### Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

### Tire Benders, Upsetters, &c.

See *Benders and Upsetters, Tire.*

### Tools—Coopers'—

L. & I. J. White..... 20@20&5%

### Haying—

Myers' Hay Tools..... 45%

### Ice Tools—

Gifford-Wood Co..... 15%

### Miniature—

Smith & Hemenway Co.'s, Davidson, ℔ doz., Nickel Plated, $1.50; Gold Plated..... $2.00

### Saw—

Atkins' Cross Cut Saw Tools....35&5%
Simond's Improved..... 33⅓%
Simonds' Crescent..... 25%

### Ship—

L. & I. J. White..... 25%

### Transom Lifters—

See *Lifters, Transom.*

### Traps—Fly—

*Balloon, Globe or Acme, doz., $1.15@$1.25; gro.....$11.50@12.00*
*Harper, Champion or Paragon, doz., $1.25@1.40; gro.$13.00@13.50*

### Game—

*Imitation Oneida.....75@10%*
Newhouse .....45@45&5
Hawley & Norton..... 65
Victor .....75@75&10
Oneida Community Jump..... 50%
Hector .....75@75&10

### Mouse and Rat—

*Mouse, Wood, Choker, doz. holes, 12¢*
*Mouse, Round or Square Wire, doz. 85@90¢*
Marty French Rat and Mouse Traps (Genuine):
No. 1, Rat, ℔ doz., $13.25..$11.50 doz.
No. 3, Rat, ℔ doz., $6.50...$5.75 doz.
No. 3½, Rat, ℔ doz., $5.25. $4.70 doz.
No. 4, Mouse, ℔ doz., $3.85. $3.00 doz.
No. 5, Mouse, ℔ doz., $3.00. $2.25 doz.
Oneida Community:
Out o' Sight, Mouse, ℔ doz.....$0.60
Out o' Sight, Rat, ℔ doz..... 1.25
Easy Set, Mouse, ℔ doz..... .35
Easy Set, Rat, ℔ doz..... 1.00
Wood Choker, Rat, ℔ doz. holes, .12
Premier Tin Choker, 5 hole, ℔ doz. traps..... .75

### Trowels—

Disston Brick and Pointing..... 25%
Disston Plastering..... 20%
Disston "Standard Brand" and Garden Trowels..... 30
Kohler's Steel Garden Trowels, ℔ gro., 5 in., $4.80; 6 in., $6.00.
Never-Break Steel Garden Trowels.. ℔ gro. $6.00
Woodrough & McParlin, Plastering. 25%

### Trucks, Warehouse, &c.—

B. & L. Block Co.:
New York Pattern..... 50&10
Western Pattern..... 60&10
Handy Trucks..... ℔ doz. $16.00
Grocery ..... ℔ doz $15.00
McKinney Trucks..... each, net $10.00
Model Stove Trucks..... ℔ doz $18.50

### Tubs, Wash—

*M'f'gr's list, price per gross.*

| | No. 0 | 1 | 2 | 3 |
|---|---|---|---|---|
| *Galvanized.* | $67 | $79 | $89 | $99 |

*10@7½ &5&5%*

### Twine, Miscellaneous—

*Flax Twine:*
*No. 9, ¼ and ½-lb. Balls. 21@23¢*
*No. 12, ¼ and ½-lb. Balls. 19@21¢*
*No. 18, ¼ and ½-lb. Balls. 16@18¢*
*No. 24, ¼ and ½ -lb. Balls. 15½@17½¢*
*No. 36, ¼ and ½-lb. Balls. 15@17¢*
*Chalk Line, Cotton ½-lb. Balls .....24@29¢*
*Cotton Mops, 6, 9, 12 and 15 lb to doz.....8½@19¢*
*Cotton Wrapping, 5 Balls to lb according to quality..13½@19¢*
*American 2-Ply Hemp, ¼ and ½-lb. Balls.....12½@15¢*
*American 3-Ply Hemp ¼ lb. Balls .....13½@16¢*
*India 2-Ply Hemp, ¼ and ½ lb. Balls (Spring Twine)...7½@9¢*
*India 3-Ply Hemp, 1-lb. Balls 7½@9¢*
*India 3-Ply Hemp, 1½-lb. Balls. 7@8½¢*
*2, 3, 4 and 5-Ply Jute, 1¼-lb Balls .....9@11¢*
*Mason Line, Linen, ¼-lb Balls 17¢*
*No. 264 Mattress ¼ and ½ lb. Balls, according to quality. 30@50¢*
*Wool, 3 to 6 ply....B 6¢; A 7½¢*

## Vises—

*Solid Box.....50&5@50&10&5%*

### Parallel—

Athol Machine Co.:
Simpson's Adjustable..... 40%
Standard ..... 40
Amateur ..... 25
Columbian Hdw. Co..... 10
Fisher & Norris Double Screw, net, each, Nos. 2, $10.50; 3, $16.00; 4, $20.50; 5, $27.00.
Fulton Mach. & Vise Co.:
Reed, Swivel..... 25%
Star, Solid Jaw..... 40
Hollands':
Machinists' .....40@40&5%
Keystone .....65&5@70
Lewis Tool Co.:
Adjustable Jaw..... 30%
Monarch, 50; Solid Jaw..... 50
Massey Vise Co.:
Clincher ..... 40%
Perfect, 15; Lightning Grip..... 15
Merrill's ..... 20%
Millers Falls Oval Slide Pattern. 60&10%
Parker's:
Victor, 20@25; Regulars....20@25%
Vulcan's .....45@45
Combination Pipe ..... 60
Prentiss .....20@25
Rock Island..... 25%
Spediker's N. L. ..... 33⅓%
Stephens' ..... 33⅓%

### Saw Filers

Disston's D 3 Clamp and Guide, ℔ doz., $24.00, 30; Clamps..... 30
Perfection Saw Clamps, ℔ doz....$4.50
Reading ..... 60

### Wood Workers—

Fulton Mach. & Vise Co.:
Reed ..... 25%
Star ..... 40
Massey Vise Co.:
Lightning Grip, 15; Perfect....15
Wyman & Gordon's Quick Action, 6 in., $6.00; 9 in., $7.00, 14 in., $8.00.

### Miscellaneous—

Holland's Combination Pipe..60@60&5%
Massey's Quick Action Pipe..... 40%
Parker's Combination Pipe:
87 Series, 60; 187 Series, 60&5%; No. 870, 40%.
Rock Island Pipe..... 25%

## Wads— *Price per M.*

| | |
|---|---|
| *B. E., 11 up.....* | *60¢* |
| *B. E., 9 and 10.....* | *70¢* |
| *B. E., 8.....* | *80¢* |
| *B. E., 7.....* | *80¢* |
| *P. E., 11 up.....* | *$1.00* |
| *P. E., 9 and 10.....* | *1.25* |
| *P. E., 8.....* | *1.50* |
| *P. E., 7.....* | *1.50* |

*Dis. 15%*

*Ely's B. E., 11 and larger. $1.70@1.75*
*Ely's P. E., 12 to 20....$3.00@3.25*

### Ware, Hollow—Cast Iron, Hollow—

*Store Hollow Ware:*
*Enameled .....45&10%*
*Ground .....50&5%*
*Plain or Unground.....60%*
*Country Hollow Ware, per 100 lbs .....$2.75@$3.00*
*White Enameled Ware:*
*Maslin Kettles.....65&10%*
*Covered Wares:*
*Tinned and Turned.....35&10%*
*Enameled .....45&10%*
See also *Pots, Glue.*

### Enameled—

Agate Nickel Steel Ware..... 33⅓
Iron Clad Ware..... 70&10
Lava and Volcanic, Enameled..40&10

### Tea Kettles—

*Galvanized Tea Kettles:*

| *Inch* | 6 | 7 | 8 | 9 |
|---|---|---|---|---|
| *Each* | *45¢* | *50¢* | *55¢* | *65¢* |

### Steel Hollow Ware—

Avery Spiders and Griddles..65@65&5
Avery Kettles..... 60
Porcelained .....50&5@50&10
Never Break Spiders and Griddles.. 65&5%
Never Break Kettles ..... 60
Solid Steel Spiders and Griddles. 65&5
Solid Steel Kettles..... 60%

### Warmers, Foot—

Pike Mfg. Co., Soapstone....40@40&10%

### Washboards—

| Solid Zinc: | ℔ doz. |
|---|---|
| Crescent, family size, bent frame. | $4.05 |
| Red Star, family size, stationary protector ..... | $4.05 |
| Double Zinc Surface: | |
| Saginaw Globe, family size, stationary protector..... | $3.55 |
| Cable Cross, family size, stationary protector ..... | $3.60 |
| Single Zinc Surface: | |
| Naiad, family size, open back, perforated ..... | $3.00 |
| Single Saginaw Globe..... | $2.85 |
| Brass Surface: | |
| Brass King, Single Surface, open back ..... | $4.05 |
| Nickel Plate Surface: | |
| No. 1001 Nickel Plate, Single Surface ..... | $3.60 |
| Glass Surface: | |
| Glass King, Single Surface, open back ..... | $3.95 |
| Enamel Surface: | |
| Enamel King, Single Surface, ventilated back..... | $3.95 |

### Washers—Leather, Axle—

*Solid .....90@90&10%*
*Patent .....90@90&5%*

| *Coil:* | ⅞ | 1 | 1¼ | 1½ *inch.* |
|---|---|---|---|---|
| | 9¢ | 10¢ | 11¢ | 14¢ *per box.* |

### Iron or Steel—

*Size bolt.... ⅝ ¾ ⅞ 1 1½ ⅝ 1¾*
*Washers....$4.65 3.75 2.45 2.25 2.05*
*The above prices are based on $6.75 off list.*
*In lots less than one keg add ½¢ per lb.; 5-lb. boxes add ½¢ to list.*

### Cast Washers—

*Over ½-inch, barrel lots, per lb. 1½@1¾¢*

### Wedges—

*Oil Finish.....lb., 2¼@2¾¢*

### Weights—Hitching—

Covert Mfg. Co..... 30&2

### Sash—

*Per net ton, f.o.b. factory:*
*Eastern District....$21.00@—*
*Western and Central Districts .....$20.00@$22.00*

### Wheels, Well—

*3-in., $2.00; 10-in., $2.30; 12-in., $3.00; 14-in., $4.45.*

### Wire and Wire Goods—

*Bright and Annealed:*
*6 to 9.....72½&10&7½%*
*10 to 18.....72½&10&10%*
*19 to 26.....75&10&10&2½%*
*27 to 36.....77½&7½%*
*Galvanized:*
*6 to 9.....72½&10%*
*10 to 14.....72½&10&5%*
*15 to 16.....72½&10&5%*
*17 to 18.....72½%*
*19 to 26.....70&5&2½%*
*27 to 36.....65&10&10%*
*Coppered:*
*6 to 9.....65&10&10%*
*10 to 14.....70&10&5%*
*15 to 18.....65&10&10&10%*
*19 to 26.....70&5&2½%*
*27 to 36.....72½&10&2½%*
*Tinned:*
*6 to 18.....67&10&10%*
*Brass .....15½¢ lb., base*
*Copper .....15¢ lb., base*
*Cast Steel Wire.....50%*

### Spooled Wire

*Annealed and Tinned.....75%*
*Brass and Copper.....70%*
*Retailers' Assortments, per box $2.00@$2.25*
Wire Clothes Line, See Lines
Wire Picture Cord, see Cord.

### Bright Wire Goods—

*Steel Wire Goods..90&33⅓@—%*
*Brass Wire Goods..90&33⅓@—%*
*Brass Cup and Shoulder Hooks, 85&10%*

### Wire Cloth and Netting—

*Galvanized Poultry Netting. 80&2½@80&7½%*
*Painted Screen Cloth, 100 ft., $1.25*
*Standard Galv. Hardware Grade: 100 ft. rolls, 24 to 48 in. wide, Per 100 sq. ft.*
*Nos. 2, 2½ and 3 Mesh....$2.75*
*Nos. 4 and 5 Mesh.....$3.00*
*No. 6 Mesh.....$3.25*
*Nos. 7 and 8 Mesh.....$3.75*

### Wire, Barb—See *Trade Report*

### Wrenches—

*Agricultural .....80&10&10%*
*Alligator or Crocodile..70&10@75%*
*Baxter Pattern S Wrenches 70&5@70&10%*
*Drop Forged S.....45@45&5%*
Acme .....60&10
Alligator Pattern, 70%; Bull Dog..70
Bemis & Call's:
Adjustable S, 40%; Adjustable S Pipe, 40%; Briggs Pattern, 40%; Combination Bright, 40%.
Steel Handle Nut..... 50%
Combination Black..... 40&5%
Merrick Pattern..... 50%
Boardman's ..... 40%
Coes' Genuine Knife Hdl...40&10&5&5%
Coes' Genuine Steel Hdl...40&10&5&5%
Coes' Genuine Key Model..40&10&5&5%
Coes' Genuine Hammer Handle..... 40&10&5&5%
Coes' "Mechanics'"...40&10&10&5&5
Donohue's Engineer.....40&10
Eagle .....70%
Gem Pocket..... 70
Hercules ..... 70%
W. & B. Machinist:
Case lots..... 50&5
Less than case lots..... 50
W. & B. Railroad Special:
Case lots..... 50%
Less than case lots.....10&10&5
Solid Handles, P., S. & W..50&10%; full cases ..... 50&10&5%
Standard Nipple Mfg. Co.:
Duplex Chain..... 50@50&10%
Stillson ..... 65%
Uwanta Wrench Co:
Uwanta Special, Iron Handle ... 40&10&5%
Other Wrenches..... 50%
Vulcan and Agrippa Chain..... 50%
Whitaker Machinists':
Case Lots..... 50&10
Less than case lots..... 50%

### Fruit Jar—

Beni, P. Forbes, Triumph, ℔ gro., $7.50; per doz..... $0.90

### Wrought Goods—

*Staples, Hooks, &c., list March 17, '92.....90@—%*

## Zinc— (Cask lots at mill.)

*Sheet.....per 100 lb., $7.00*

For the Table of "Current Metal Prices" see the First Issue of Every Month.

# THE IRON AGE

New York, Thursday, July 23, 1908.

## The Hamilton Coke Storage Machine.

A departure from the usual method of handling storage coke has been made in a machine invented by William E. Hamilton and built by the Hamilton Mfg. Company, Columbus, Ohio. The machine illustrated is one installed in the yards of the Illinois Steel Company, at Stockton, Ind. Fig. 1 shows the machine at work on one end of the storage yard, which has a capacity of about 100,000 tons, loading coke from a strip or siding 100 ft. wide, extending along the railroad track about ½ mile. Fig. 2 is a plan diagram, which gives a clearer idea of the manner of using the machine.

Since coke is very friable, and it is necessary to deliver the coke to the furnace in large pieces, the use of a grab bucket or a steam shovel is avoided where it is possible to do so, because either one breaks up the coke considerably. The scraper conveyor of this machine, moving at a slow speed, mechanically takes the coke from the base of the pile without breaking it, and the conveyor is filled by the coke rolling down from the 35-ft. pile that is shown in Fig. 1. The coke is screened at the end of the delivering conveyor.

In one run of 4¾ hr. there were loaded 24 steel hopper bottom cars, containing in all 732 tons of coke. Three men operated the machine at a cost of $7 per day for wages, making the cost per ton for loading less than 1 cent. The cost of loading this material by hand, which was formerly done to prevent breakage, is 19 cents a ton. The operation of the machine required an average of 20 hp., supplied in electrical current at, say, 30 cents an hour. Adding this to the labor cost gives a total actual cost of 1½ cents a ton for the coke loaded. This means a saving



Fig. 1.—The Hamilton Storage Machine Loading Coke from the Stock Pile.

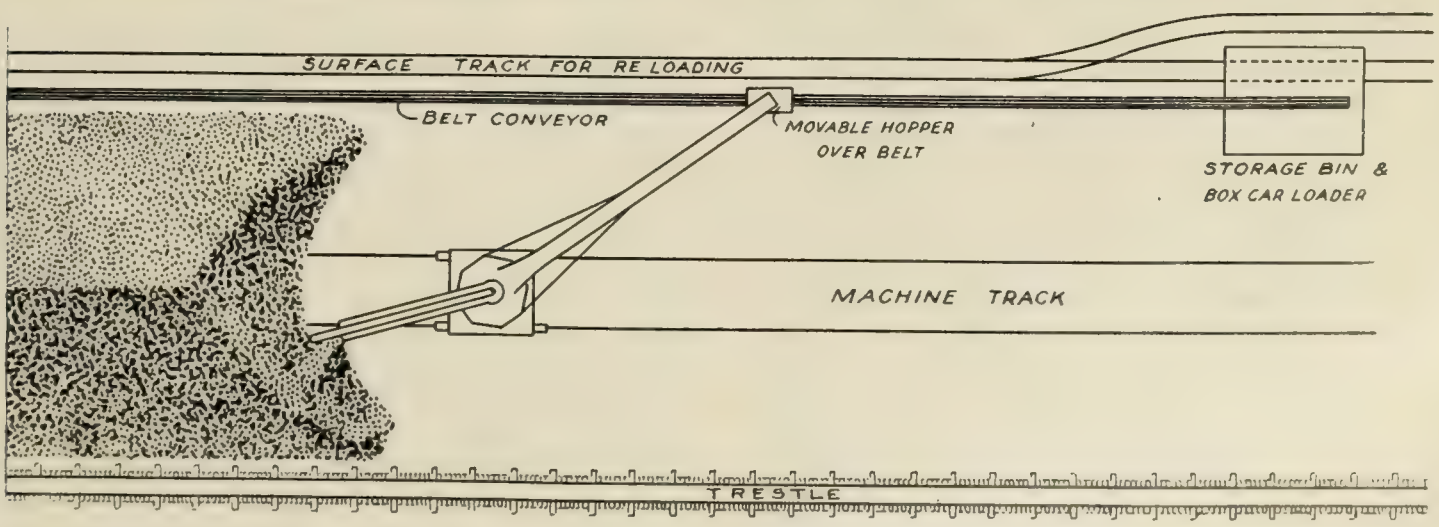



Fig. 2.—Plan Diagram of the Arrangement and Use of the Machine.

over hand loading of about $125 on the day referred to, exclusive of the charge for depreciation.

Aside from this, the machine delivers the coke into the car in very much better condition than is done even by hand loading, and it is estimated that a saving of probably 5 per cent. will be made on this point alone. Coke on the yard costs about $5 a ton, and counting this saving at 25 cents a ton, the machine in handling 100,000 tons will save its cost in a year's time. Its first cost is much less than the cost of a traveling bridge, and it is claimed to have four times the capacity of a locomotive crane and grab bucket.

The machine also stocks the coal in the yard, and here the same contention with regard to breakage is made. The coke is dumped on a platform from hopper bottom cars on the trestle, the nose of the machine being swung underneath the trestle; the delivery conveyor stocks the coal at the apex of the pile, which may be as high as 40 ft. if desired. The common method of putting coke into storage has been to dump a train load of coke in the yard, jack up the track on top of the coke, and to continue this operation until the grade the track takes to the top of the pile prohibits further storage. In doing this every 3 ft. of the pile is successively pounded down by a locomotive and train of loaded cars, and the coke thereby suffers in value for furnace use. This machine delivers the coke to the top of the pile without any drop, as the delivery conveyor may be raised or lowered to suit the hight of the pile. When the pile has reached the desired hight the machine moves by its own power a few feet further down the platform.

Among the other points claimed for the machine is that of no investment in plant aside from the machine itself, the track on which it runs and the trestle or conveyor belt at the side of the yard. When additional storage is called for the extension of the track and trestle is all that is required, for the machine moves as it builds or reloads the pile all along the length of the platform. In other words, it is declared to have the elasticity of a locomotive crane and the capacity of a traveling bridge, without the limitations of either.

## New Thermit Reactions.

Before the German Bunsen Society, Dr. Hans Goldschmidt of Essen, a. d. Ruhr, the inventor of thermit, spoke on thermit reactions, which he defined as such action of one or several reducing metals or metal alloys on a metallic compound, that the mixture, ignited at one point, continues to burn by itself, so that a fluid slag is formed, the active element being completely oxidized. The reduced metal is segregated as a regulus, free from the reducing metal. The cerium group of metals act like aluminum, a fact established by Professor Muthmann of Munich. Silicon, however, does not act in the manner indicated, in spite of the statements of some investigators. While it is true that a similar reaction takes place with certain more highly oxidized compounds, the resulting metal is never free from silicon. When metallic calcium appeared on the market, the suggestion was obvious, to employ this metal for reducing purposes. It was soon shown, however, that calcium, like magnesium, cannot be used for technically satisfactory reduction, because the reaction is too violent, and because the slag, CaO, is too difficult to melt in order to permit of a clean separation of the metal. Conditions are different when calcium is used in conjunction with silicon as the reducing agent. The rapidity of the action of the calcium is greatly moderated by the much more sluggish silicon, and a readily fusible slag of silicate of lime is formed at the same time. By a long series of tests the limits were determined within which an alloy or mixture of calcium and silicon furnishes technically useful reactions.

Aluminum acts like silicon upon the speed of reaction of calcium, and a combination of the three, silicon, aluminum and calcium, yields good separation of metals. Magnesium may be substituted for calcium with similar success. Experiments showed that an alloy of calcium and silicon may not only be obtained by melting the two together, but also by heating silicon and lime together. Silicon reduces lime, forming a silicide of calcium, with about one-third of calcium and two-thirds of silicon. This silicide is not affected by exposure to air, has a brilliant fracture, and has a specific gravity of about two. Besides being used as a reducing agent, this alloy may be advantageously employed in the steel industry for deoxidizing the bath in the place of aluminum or of magnesium. The chief advantage is compared with aluminum and magnesium that a readily fusible slag is formed (melting at about 1350 degrees Celsius), which rises to the surface readily and completely. Besides, it is possible with this silicide of calcium to lower the sulphur contents of the steel considerably which is of importance in the case of special steels.

## An English University Confers an American Degree.

A novel and charming ceremony took place at Liverpool on July 2, the circumstances being the following: Last June the Board of Trustees of Lehigh University, of South Bethlehem, Pa., voted to grant to Horace Field Parshall, of London, England, the honorary degree of Master of Science, which is the highest honorary degree Lehigh gives to its alumni. Mr. Parshall is an American, a graduate of the electrical course at Lehigh in 1887, and a very eminent electrical engineer. Important duties before a Parliamentary commission in London made it impossible last June for him to come to this country to receive the degree. It was then that the faculty of Lehigh University decided upon the novel plan, which in substance is to authorize by power of attorney a foreign institution to confer the honorary degree. Through the interest taken in the matter by Sir William Ramsay, perhaps the foremost technical chemist in the world, the University of Liverpool, an institution devoted to technical teaching, was selected to act as the representative of Lehigh University in conferring the degree.

When the matter was brought to the attention of A. W. W. Dale, the Vice Chancellor of the University of Liverpool, it impressed him so favorably that it caused him to remark in his letter to Dr. Henry S. Drinker, president of Lehigh University, accepting the duty: "So far as I am aware no precedent or parallel for such an act can be found in the history of British Universities. But it is our business to make precedents as well as to follow them, and we trust in so doing our act will be regarded as an expression of fellowship and sympathy with kindred institutions carrying on similar work, established for similar services, and bound to us by many ties."

## American Iron and Steel Institute.

There has been issued in pamphlet form the constitution, by-laws and the list of officers and members of the American Iron and Steel Institute, which was formed as the outgrowth of the Gary banquets last winter. There is little in the pamphlet which defines more definitely than has been done hitherto, the aims and scope of the new organization, except that article VIII states that the standing committees shall be: a Committee on Foreign Relations, a Committee on Statistics, a Committee on Improvement in Methods and a Committee on Membership. Each of the first three committees consists of five members, who do not appear to have been named, while the Committee of Membership consists of nine members, including the president, the present incumbents being Elbert H. Gary, chairman; E. A. S. Clarke, William E. Corey, E. C. Felton, Willis L. King, Samuel Mather, Charles M. Schwab, Powell Stackhouse, and John A. Topping. There are now 163 members of the Institute, of whom 43 are connected with the United States Steel Corporation.

The Government has filed a petition in the Jamestown Exposition litigation, setting forth its prior claim on the assets of the exposition company on account of a balance of $897,953 on the $1,000,000 loan to the exposition. This debt, the petition claims, is a first lien under the special statute appropriating the loan.

# Boiler Manufacturers' Convention.

## Twentieth Annual Meeting at Atlantic City.

The twentieth annual convention of the American Boiler Manufacturers' Association was held at the Marlboro-Blenheim, Atlantic City, N. J., July 14, 15 and 16. First Vice-President T. M. Rees, Pittsburgh, presided over the opening session. He referred in his remarks to the work of the association in bringing before State and national authorities the sentiment of the trade in favor of improvement in inspection of boilers and a revision of regulations covering their construction and use. He congratulated the association upon the action of President Roosevelt in appointing a commission on the revision of laws relating to the safety of life at sea, the association having long sought to have such a commission created.

At the Tuesday afternoon session Col. E. D. Meier of the Heine Safety Boiler Company reviewed the work of the association in its endeavor to obtain a higher grade of boiler plate with reduction of the phosphorus and sulphur contents, also its part in the movement for uniform boiler inspection laws. From the revision of the national marine inspection laws, now well under way, excellent results are expected.

William L. Hirsch of the Carnegie Steel Company, Pittsburgh, spoke from the standpoint of the steel manufacturer. He referred to the improvement already made in the quality of boiler steel from the study of chemists and metallurgists in recent years, and said that manufacturers are ready to take a forward step whenever this is practicable to meet not only the demands of the domestic trade, but to enter more largely into foreign markets. As an example of the importance of heat treatment in the manufacture of steel, he said he had seen steel plate bent cold flat on itself without injury, and the opposite end of the same piece heated to a cherry red and bent flat without fracture. But the same piece of steel when heated to about 500 degrees F. and bent flat will crack like glass. The speaker answered the question why it is more difficult to reduce phosphorus and sulphur to a minimum in acid steel than in basic steel.

A discussion followed, participated in quite generally, in which various causes of imperfections in boiler steel were alluded to, including variation in rolling, segregation in the ingot, the percentage of sulphur, &c.

### Uniform Boiler Specifications.

At the Wednesday morning session the Committee on Uniform Boiler Specifications presented its report through Col. E. D. Meier, the chairman. The appointment by President Roosevelt of a commission on the revision of laws relating to the safety of life at sea was spoken of as the culmination of the association's efforts, beginning with the convention of 1901 at Buffalo. The Massachusetts law relating to boiler construction was reviewed at length and commended in the main as a pattern for other States. One anomaly was pointed out—namely, permitting open hearth flange or boiler steel for the combustion chambers and furnaces and prohibiting it for shells, drums and butt straps. The committee made inquiry on this point and was told that the provision is a temporary one, the intention being to eliminate open hearth flange steel altogether and insist on the use of firebox and extra soft steel. The committee thinks steel castings are given more prominence in the rules than they deserve, in view of the losses sustained by boiler manufacturers through the porosity of such castings. But cast iron is eliminated from boiler work in a number of parts and wrought or cast steel specified, so that the best practice will soon leave wrought steel only. The committee had protested to the Massachusetts Board of Boiler Rules against the paragraph regarding drilling of rivet holes and tube holes, believing that much more accurate work can be done by punching and then reaming than is possible on a drill press. A series of tests was recommended which it was believed would show that good punching, with after reaming to make smooth surface and remove burrs, is first-class workmanship for boilers. The committee believes that a material which has to be so gingerly treated that it cannot be punched with safety is not fit to go into a boiler.

In the discussion of this report the question of proper limits on boiler pressures came up, and the point was made that if the diameter of boilers is to be limited (the Massachusetts rules making 84 in. maximum for externally fired boilers) there should also be a limit on working pressures.

### Uniform State Laws Advocated.

H. J. Hartley of the William Cramp & Sons Ship & Engine Building Company, Philadelphia, read a paper on the "Necessity of Uniform Laws Governing Construction and Inspection of boilers." The writer had sent out letters of inquiry and had replies from 39 states saying that no State laws existed governing the inspection of boilers. Five have laws, and in some other States there are inadequate provisions embodied in factory inspection laws. The paper referred to the prominent features of the municipal regulations in New York and Philadelphia and reviewed the new Massachusetts law. While it has been considered impracticable under our form of government to secure uniform inspection regulations throughout the various States and develop such an efficient system as obtains in Germany, the speaker believes that the functions of the Department of Commerce and Labor could be extended to cover the execution of a national uniform boiler inspection law similar to that now in force in the marine service.

A discussion followed in which the confusion resulting from the present diversity of specifications in vogue in different parts of the country was spoken of as a great drawback. George Hartley spoke from the standpoint of the large buyer, being connected with a company which has about 275 boilers in different parts of the country. Manufacturers bidding on work in different States are often very much at sea because of the diversity of requirements.

### The Proper Working of Rivets.

At the Wednesday afternoon session topical discussion was the order. D. J. Champion, Cleveland, Ohio, referred to the fact that wrong methods are often responsible for complaints as to rivets. An important piece of advice is never to drive a rivet except on a rising heat and finish it before it becomes dark blue. Being asked whether it would be possible for rivet manufacturers to advise their customers as to the highest heat a particular rivet would stand, the speaker said that he had not carried on any experiments which would permit an exact answer, but the general rule is that rivets must be worked while they are coming, not while they are going. This was corroborated by a member, who said that if a piece of boiler sheet is heated from a slight heat up to blue heat it can be flanged, but if the same piece has been heated up to regular flange heat and then allowed to fall back to blue heat it will break in working.

E. M. Wilkinson said that boiler manufacturers should do more in the direction of preventing smoke, and suggested that the Dutch oven might serve as a groundwork for a practicable solution of the trouble. He favored the adoption of a standard depth from the grate line to the shell in boiler fronts, in the case of horizontal boilers, especially where bituminous coal is used. The majority of manufacturers make their fronts so that the grate line will be on a level or within 2 ft. of the shell of the boilers, so as to reduce the cost of the fronts. With the majority of Pennsylvania coals this distance is not enough. In two boilers recently installed, of 200 hp. each, the distance from grate line to the bottom of the shell, which had been 26 in. in the boilers replaced, was increased to 40 in. The difference in the amount of smoke made and the saving in fuel were pronounced. The speaker thought that a 48-in. space would give still better results.

The legal aspects of a federal boiler inspection law were taken up for consideration. The opinion was expressed that this is a subject for State regulation and that federal control could not be had over land boilers. It was felt by some members that the question would need to be handled by agitation and by impressing the sense of the trade upon the authorities of the different States with a view to securing uniform legislation.

### Hight of Stack.

The question of relative hight of boiler stacks in different altitudes was raised. It was said that both the grate size and the horsepower must be taken into consideration as well as the altitude. Colonel Meier has followed the rule of about 8 per cent. additional hight of chimney to over 1000 ft. of altitudes. Enlarging the grate area will not answer unless the necessary hight is obtained. Mr. Wilkinson said that with a boiler developing 200 hp. and requiring a stack 100 ft. high with natural draft, the hight could be cut down to 65 ft. with forced draft and give better results. The case was cited of boilers developing 950 hp. at Pittsburgh where two stacks too care of four boilers with induced draft. The stacks, which were 135 ft., were found to be too high and were cut down to 90 ft. The fans were taken out and more horsepower developed than required. Using forced draft with a very large stack forces a larger volume of air into the stack than it is able to carry and the gases become chilled. Mr. Hartley said that while it is true a stack can be too large, generally the mistakes are the other way For stationary work he added one-quarter to the area of the tubes and never had any trouble with the size of stacks.

The question was asked whether a round or a square stack is preferable, and it was answered that a round stack is the perfect shape, as can be shown by permitting a column of smoke to ascend through a glass retainer. It will be found that the smoke does not stain the corners.

### Iron versus Steel.

The Thursday morning session was marked by a discussion on the comparative advantages of iron and steel. R. H. Bate believed iron rivets properly driven are better for light work and repair work, arguing that they upset better in the hole. A great quantity of poor work is done in boiler shops, he said, because of defective holes, and this is avoided by punching with a rack. The practice in the speaker's shop had been to drive rivets at a white heat, though he knew many did not heat rivets up to that point. The speaker preferred iron to steel tubes, provided they can be had at the same price. He did not see that there had been any improvement in tubes.

Geo. N. Riley said that his company, the National Tube Company, is governed by the demands of the trade in the use of iron or steel tubes. The drift at present seems to be toward steel. The navy has adopted steel and the railroads are specifying steel, both seamless and lap welded. Mr. Rees said that he had been known at one time as a crank on iron rivets, but had been converted to steel. He was astonished at the advance made in their quality and effectiveness. In all his experience the speaker had not had flues as good as those he is using to-day, of any of the makes of cold drawn tubes. They will turn over without a crack, and, so far as his experience goes, they are superior to those of the old days.

### New Officers.

At the banquet Thursday evening Col. E. D. Meier, president-elect, was toastmaster, and responses were made by Charles M. Schwab, the guest of honor, and by T. A. Daly, James G. Mitchell, E. M. Wilkinson, F. M. Campbell, George Slate and W. O. Duntley. Mr. Schwab prophesied that 10 years hence steel production in the United States would treble the present figures. He referred to the co-operation now more common than ever among manufacturers, and said that the steel manufacturers of the country desired to treat all alike and see that the large buyer pays as much as the small one for the same product.

Detroit was chosen as the place for the convention of 1909. The following officers were elected:

President, E. D. Meier, New York.

Secretary, J. D. Farasey, Cleveland, Ohio.

Treasurer, Jos. F. Wangler, St. Louis, Mo.

First Vice-President, T. M. Rees, Pittsburgh, Pa.

Second Vice-President, J. Don Smith, Charleston, S. C.

Third Vice-President, W. A. Brunner, Phillipsburg, N. J.

Fourth Vice-President, H. D. McKinnon, Bay City, Mich.

Fifth Vice-President, M. A. Ryan, Duluth, Minn.

The associate members and supply men re-elected the following officers: W. O. Duntley, Chicago, president; J. T. Corbett, Chicago, vice-president; W. H. S. Bateman, Philadelphia, secretary; H. B. Hare, Cleveland, Ohio, treasurer.

## An Important Ruling on Industrial Switching.

The Interstate Commerce Commission has made a report of far reaching importance on the question of "industrial switching," which was discussed in an editorial in *The Iron Age* of June 4, page 1796, entitled "Terminal Railroads at Iron and Steel Works." The case of the General Electric Company vs. the New York Central and the Delaware & Hudson railroads is the one on which the ruling has been made. In 1906 these railroads discontinued an allowance which they had made for a number of years to the General Electric Company for switching service performed by the company on terminals which it had provided at considerable expense. Section 15 of the Interstate Commerce law authorizes carriers to pay a shipper for any service he performs or for any "instrumentality" which he furnishes in connection with transportation, and gives the commission the power to fix a maximum rate or charge. The General Electric Company filed its complaint, and asked the commission to order the payment by the above carriers of a reasonable rate for switching. The commission has summarized its ruling as follows:

1. Where a manufacturing plant has so increased in size as to require within the plant inclosure 12 miles of broad gauge switching tracks and seven miles of narrow gauge electric tracks for the prompt, successful and economical operation of the industry, and with its own motors, engines and crews does a vast amount of purely internal switching, which would be seriously interfered with by the switching engines of the railroad if permitted access to the plant, and has on that account assumed charge also of the in-and-out switching and spotting theretofore done by the railroads; held: That it is not entitled to compensation from the railroad companies to cover the cost of the movements of loaded and empty cars between the interchange tracks and certain shops, foundries and other buildings within the inclosure.

2. Common carriers are under no duty to extend their transportation obligations with the extension of great industrial plants, and to accept and deliver cars within the inclosure over a network of interior switching tracks constructed as plant facilities to meet the requirements of the industry.

3. On the facts of the case, held: That the complainant does nothing within its plant inclosure which it can lawfully call upon the defendants to do for it, and therefore nothing for which it may lawfully demand compensation. Under the circumstances shown of record the obligation of the defendants to complainant involves only an acceptance and delivery of cars at some reasonably convenient point of interchange.

4. The commission has no power either to enforce the specific performance of contractual obligations or to award damages for the breach of such agreements between carriers and shippers.

Following this ruling the commission has dismissed a similar complaint by the Solvay Process Company against the New York Central and the Lackawanna roads. In both of these cases the internal switching from one building or department to another had grown to such proportions that it would be unsafe and impracticable for railroad switching crews to work in the plants, and the necessities of the industries are so exacting that they could not await the convenience of the railroad to perform the in-and-out service and spotting of cars. In both of these cases the industrial switching was undertaken voluntarily by the industries. A similar complaint was filed some time ago by the Buffalo Union Furnace Company, Buffalo, N. Y.

The commission, it should be noted, has not held that it would be illegal for the railroad to pay a switching allowance. It has merely refused to order such payment where the railroad resists the demand. The orders in these cases do not make illegal or affect in any manner the status of hundreds of other large industries where railroads make allowances for industrial switching. An order by the commission on a specific complaint does not establish any general rule.

## The Climax Spur Gear Chain Block.

A patent has recently been granted to the Climax Hoist Company, 1753 North Howard street, Philadelphia, Pa., on a new spur geared chain block, an exterior view of which is given in Fig. 1 herewith and details of construction and operation in Fig. 2. Excellent efficiency and durability are the two principal contentions made for



Fig. 1.—A 1-Ton Climax Spur-Geared Chain Block.

the block; it is also claimed to be low in cost and to be of considerable advantage in that the load is carried on hardened and ground steel rollers. It is this latter fact which is largely responsible for the high efficiency, 80 per cent. The gears are all enclosed in a dustproof case and run in an oil bath, and the hoist is remarkable for

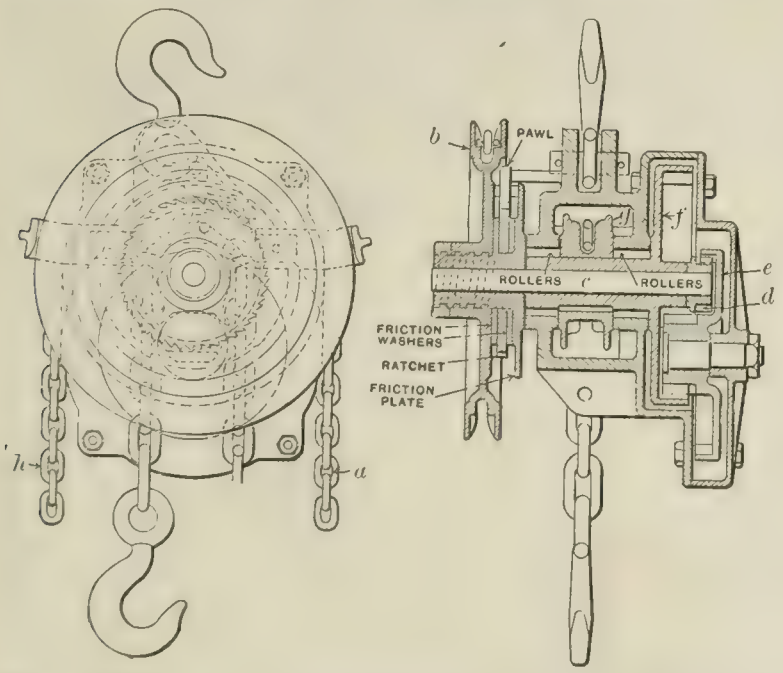



Fig. 2.—Side and Cross Sectional Elevations of the New Climax Chain Block.

its small number of parts, all of which are interchangeable, being made to jigs and of standard sizes.

The action of the block can be understood from the side and sectional elevations given in Fig. 2. Pulling on the side *a* of the hand chain causes the hand chain wheel *b* to revolve the driving shaft *c;* this shaft carries a pinion, *d*, which meshes with an internal gear, *e*. The latter is mounted on a stud and is integral with a pinion meshing the internal gear *f*, which is the load gear, this gear being mounted on a quill carrying the load wheel *d*. The lowering is accomplished by pulling on the side *h* of the hand chain, which action releases the friction brake and permits the load to descend. The retaining brake is of the company's own design, and is declared to be absolutely secure, smooth and noiseless in operation. The chains are specially made for the company and are claimed to be of a very high grade of iron.

The hoist is made in seven sizes, from 1000 to 10,000 lb. capacity, and ranging in standard lifts from 8 to 12 ft. Greater lifts can be had on order. The smallest block weighs 68 lb. and the largest 390 lb.

## Customs Decisions.

The Treasury Department has decided to acquiesce in a recent decision of the United States Circuit Court of Appeals at Philadelphia relating to so-called arched Purves furnaces. The Government conducted a long litigation to compel importers to pay duty at 2½ cents per pound under the tariff provision for welded cylindrical furnaces made from plate metal. F. B. Vandegrift & Co.'s claim that the furnaces are in reality "flues," dutiable at 2 cents per pound, was sustained by the appellate tribunal.

Another acquiescence on the part of the Government to suits won by importers relates to crude hematite ore, which was returned for duty at 30 per cent. as a "pigment." Francklyn & Ferguson were sustained in the claim that the commodity is iron ore, with a duty of 40 cents a ton.

The Board of United States General Appraisers has decided that ornamental metal stands, made to hold boxes of safety matches, do not fall within the provision in the Dingley tariff for "smokers' articles." The Jordan Marsh Company, Boston, have been sustained in their objection to the action of the Custom House authorities in fixing a 60 per cent. duty, and their claim that the articles should be admitted at 45 per cent. as manufactures of metal.

In sustaining a claim filed by C. H. Wyman & Co. of St. Louis, the board held that there is no reason why an importer should not be relieved of the burden of additional duty when by a clerical error he enters his invoices too low. The merchandise in question consisted of steel wire.

The Board of United States General Appraisers decides that specially prepared woven belting used for the transmission of power to machinery is dutiable under the provision in the tariff for "manufactures of wool" at the appropriate rates according to value. Thomas Meadows & Co., New York, had objected to the action of the customs authorities in classifying the merchandise as "beltings of wool," at the rate of 50 cents per pound and 60 per cent. ad valorem. The belting is composed of vegetable fibres and wool, impregnated with a waterproof adhesive cement containing tar and edged with a raw hide cord. The decision points out that all of the articles provided for in paragraph 371, which includes belting, are wearing apparel and articles of luxury, and that to include machine belting in this category is contrary to the spirit of equity.

The Clark Car Company, recently incorporated under a New Jersey charter, with a paid in capital of 50.000, has established offices at 1468 Frick Building Annex, Pittsburgh. It will build steel box and dumping cars of special designs and motor trucks. Its officers are the following: Charles H. Clark, president, formerly chief engineer of the Tennessee Coal, Iron & Railroad Company; Geo. E. Slater, secretary, and Justin R. Swift, treasurer.

Colne & Co., 11 Broadway, New York, formerly Powell & Colne, contractors for the erection of Tropenas steel casting plants, have completed an equipment at the Mare Island Navy Yard, California, which is now in successful operation. This makes 33 converters installed by this firm. As a sign of revival of business Colne & Co. report several inquiries lately from existing and contemplated foundries.

## A German Automatic Screw Machine.

The machine shown is built by Hans Richter, Berlin, Germany, for automatically producing screws, nuts and general profile work from rods of any kind of metal. To do this work four independent turning tools, a boring tool and a tap are used. One workman can serve six such machines, as his work consists principally in replacing worked-up rods. Fig. 1 is a top view of the machine in which the principal mechanism is quite clearly revealed; Fig. 2 is a front view showing the working parts and Fig. 3 a near view.

Referring to the first illustration, the spindle *a* is glass hard and runs in bronze bearings. At the front end it is provided with a chuck to take in rods from about 1-32 in. up to the full diameter of the spindle bore.

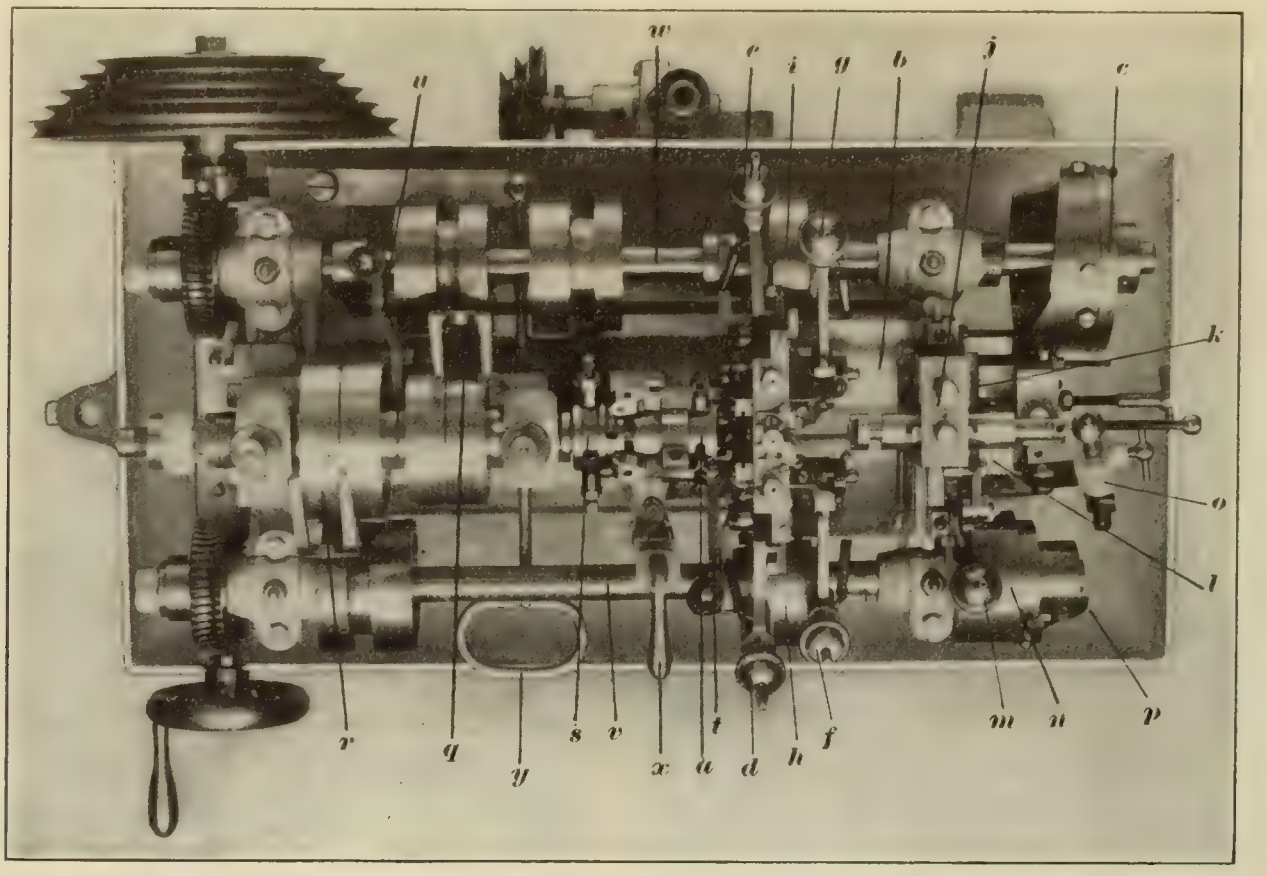



Fig. 1.—Top View of the Richter Screw Machine, Showing the Working Parts.

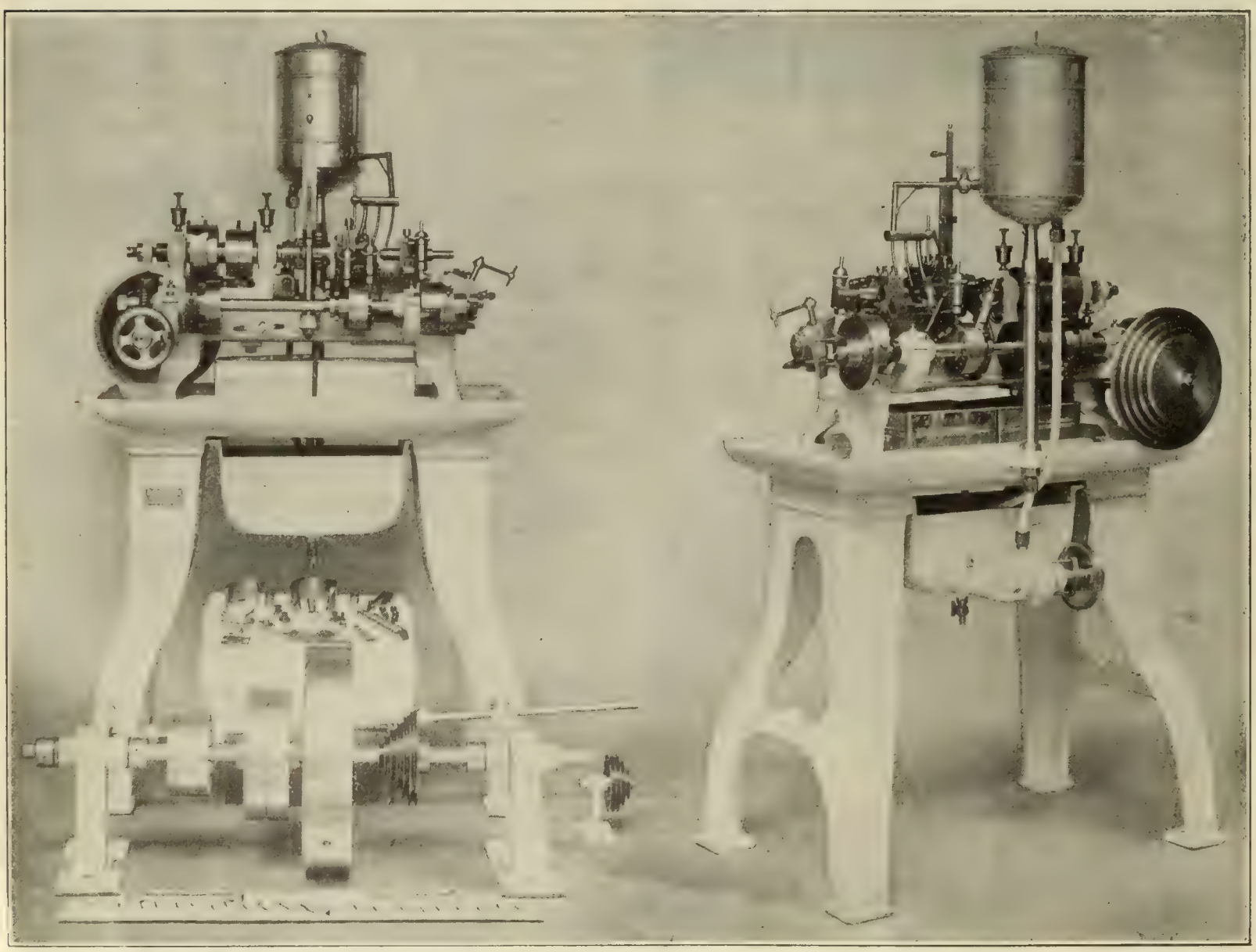


Fig. 2. Front View or Working Side.

Fig. 3. Rear View or Driving Side.

A New Automatic Screw Machine Built by Hans Richter, Berlin, Germany.

There are three sizes of this machine, their dimensions being as follows:

| | No. 1 Inches. | 2 Inches. | 3 Inches. |
|---|---|---|---|
| Spindle bore | 1¼ | ⅞ | ½ |
| Greatest diameter of screw | ⅝ | 7/16 | ¼ |
| Greatest length of screw | 3⅛ | 2⅛ | 1 7/16 |
| Turns up to a length of | 3 15/16 | 2¾ | 1¾ |

The machine illustrated is the smallest of the three sizes.

The tools are held in a carriage, *b*, Fig. 3, that slides on the profile cam *c*. The levers *d*, *e*, *f* and *g*, which work independently of each other, serve to hold the tools fast. By means of eccentrics on the parts *h* and *i*, the levers are brought into action in a manner corresponding to the shape and character of the piece being made, either one after another in any desired order, or any two or three together, or all four together.

On the main slide *b* travels the cross slide *j*, in which the boring tool *k* and the tap *l* are adjustably held. The lever *m* actuates the cross slide by means of the profile cam *n*, from the axial line of the boring spindle to the middle of the threading tool, so that when a hole is bored, the threading tool comes in line axially and cuts the thread in the bore, or it can also cut an outside thread. The lever *o* presses the boring tool (or the threading tool, as the case may be), by means of the profile cam *p*, against the work piece. The tight pulleys *q* and *r* act alternately in thread cutting.

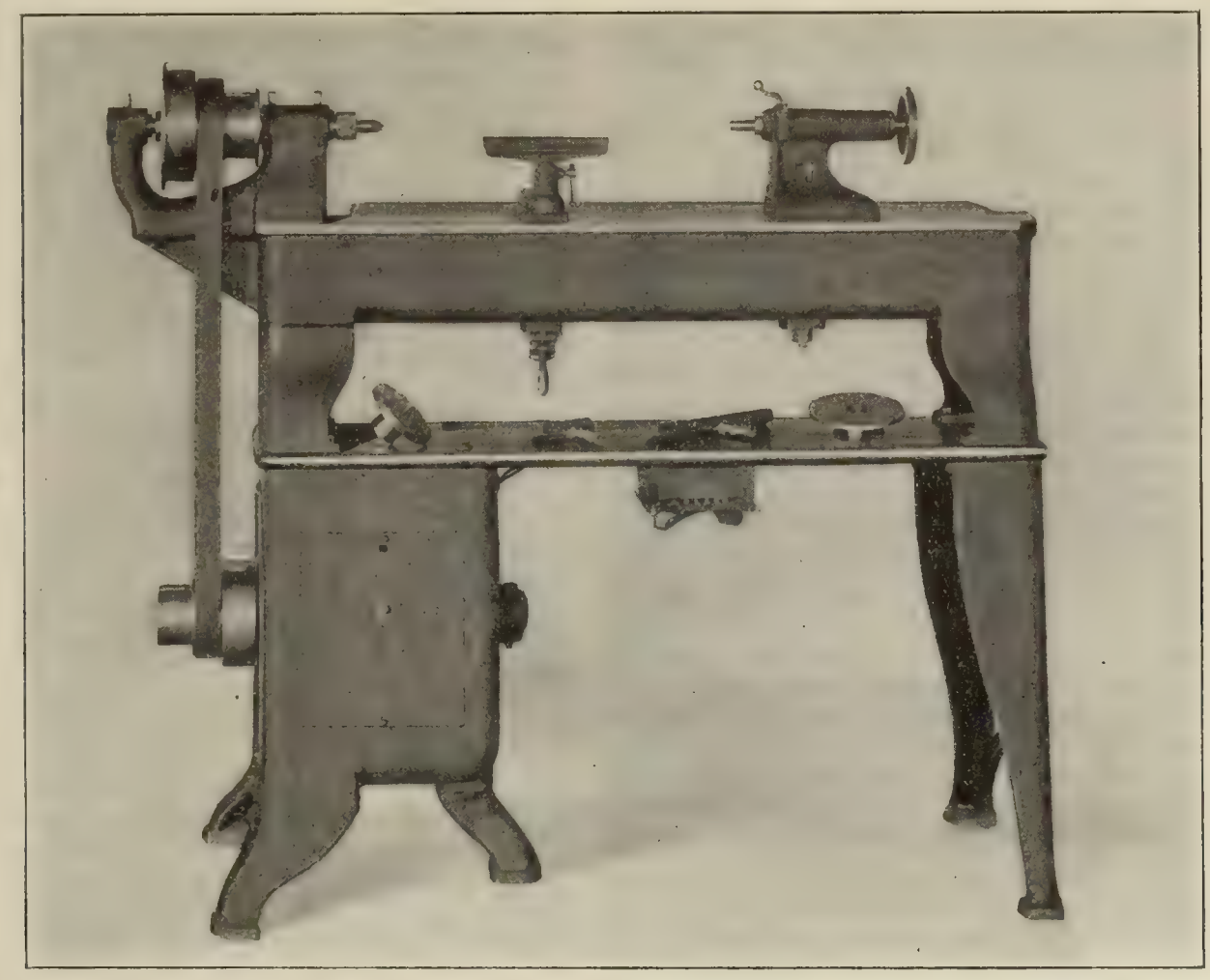
When the piece is cut off, the chuck *a* is opened by the lever *s;* at the same time, the lever *t* strikes a dog and holds the material tight in the chuck. The driving belt fork *q* is in the idle position during the shifting of the rod, and at the same time the lever *u* brakes the spindle. The slide *b*, with the material, is then drawn back by means of a spring to an adjustable dog, which fixes the length of the piece made.

The various cams are actuated by two shafts *v* and *w*, journaled on the two sides of the bed. These shafts are driven by worms which can be given any desired speed by means of stepped pulleys. A hand wheel serves for starting. The handle *x* is used for temporarily throwing out the cam shafts. The automatic throw out mechanism *y* comes into play when the material is worked up clear to the chuck jaws. Of each rod about 2½ to 3 in. remains unworked.

**Improvements at the Sligo Rolling Mills.**—The Sligo Iron & Steel Company, with sales offices in the House Building, Pittsburgh, and mills at Connellsville, Pa., is remodeling its plant and making improvements which will increase its efficiency and capacity. The machinery will be electrically operated, two large transformers and a trolley line 1000 ft. long having been installed. A crane-way 50 x 180 ft. has been erected, and two new furnaces have been about completed. Pipe lines throughout the plant have been changed, and an innovation in connection with the water supply is the use of compressed air for its distribution throughout the plant. The guide mills have all been rearranged, and a Belgian mill has been installed. Instead of the 69-ft. cooling table, one 90 ft. in length has been provided, sufficient to handle any size material in demand. The company has also added two 150 hp. boilers, which will utilize the waste heat from the furnaces. The new electric crane will supplant the old hand method of loading and unloading material and transporting it about the shops. It is equipped with a magnet of sufficient power to carry several tons of rolled material. The improvements will be completed in about a month, and then if business warrants the plant will be placed in operation.

## A New Reed Motor-Driven Wood Lathe.

The F. E. Reed Company, Worcester, Mass., has brought out a new motor driven 10-in. wood turning lathe, particularly designed for manual training schools. Its new feature is the use of a constant speed motor, which, as shown in the illustration, is located within an enclosure underneath the bed. The motor shaft is belted to the lathe spindle through three-step cone pulleys, which give a sufficient range of speeds for the purpose. The motor is mounted on four threaded studs, and may be adjusted vertically by means of nuts to give the correct belt tension.



A 10-In. Motor Driven Wood Turning Lathe for Manual Training Shops, Built by the F. E. Reed Company, Worcester, Mass.

One advantage of the location of the motor at the base of the machine is that there is a minimum of vibration there, and there is further benefit in the fact that the motor is not convenient of access to the student and is therefore less likely to be tampered with. The company also builds a lathe of the same general type, with variable speed motor mounted as part of the head, the armature shaft being the head spindle; but this requires more expensive controlling apparatus.

An electric railroad about 10,000 ft. high is being built on the Zugspitze, Bavaria, the highest peak of the Alps. It will run to the summit, and at the 7000-ft. level a hotel will be built.

# The Power Required in Rolling Steels.

BY J. A. KNESCHE.

### Past Methods of Arriving at Engine Sizes.

When the question comes up "What size engine will be required to drive a roll train on which a given shape is to be finished?" the method often pursued is to see what size engine some one else uses in the manufacture of a similar product, perhaps make a few inquiries about the operation of the train, available steam pressure, &c., and with this information as a basis, fix the size of engine to be used for driving this particular roll train. It will be conceded by most men familiar with the conditions prevailing in different mills manufacturing like or similar products that this is not exact knowledge, although it may be the best knowledge and information available at the time being. This method of fixing the size of rolling mill engines has been used very much in the past, and millions of tons of steel have been worked up in roll trains driven by steam engines, the size of which was thus determined. This speaks well for the steam engine—not necessarily for the method pursued in determining its size.

The purpose of this article is to propose a better, more scientific way to determine the power required for the rolling of any kind of product under any of the different conditions existing in the manufacture of the many kinds of steel shapes. These methods for determining the power required for this purpose may, of course, be still further improved as more accurate data become available. The writer hopes in this article to be able to point out the direction along which improvements of such method should progress.

### Present Practice Makes Exact Methods Necessary.

At the present time the steam engine begins slowly to be pushed out of the position of being the only prime mover for driving rolling mill trains. It has done much service in this field, but is no longer regarded as the only power available for such work. The electric driven roll train, receiving the current for its motors from a gas engine electric central station, and the gas engine driven roll train are beginning slowly, but surely, to contest for a share of this service so long done by the steam engine exclusively. With the arrival of these prime movers in this field and with their limitations peculiar to themselves, the need of more exact knowledge and information insuring their successful operation in this special field becomes at once evident.

That this has been recognized by the men responsible for the design and operation of such installations is proved by the fact that in nearly every case they have made unusually careful calculations, often based upon exhaustive tests,* with a view of insuring success from the standpoint of the operating department. However, it will be found on examination that all these tests have covered special cases only; that is, a special product, the rolling of rails or plates, for instance, and to the writer's knowledge no attempt has been made to arrive at such practical conclusions as would permit the application of their data to any kind of product. The problem in the past seems always to have been "What is the average and maximum power requirement to roll a rail or plate of a certain section and length in so many passes?" If it were desired to roll that same shape in more or less passes than were used when the investigation was made, the data obtained during the test would not be applicable to the new case at hand.

### Tests of Engines Driving Plate Mills.

The writer had recently the opportunity to make a number of tests during the regular operation of mills on engines driving 21 in. plate mills, made up of three-high roughing rolls, three-high planishing rolls and two-high finishing rolls. The 36 x 48 in. engines are directly connected, have flywheels each weighing from 60,000 to 65,000 lb. and are run noncondensing. All engines with the exception of one were built nine years ago and are of reputable make. The purpose of these tests among other things was to ascertain the power required to roll 0.07 per cent. carbon steel as used in the manufacture of the plates referred to later.

These tests were made with great care and all possible refinements were used that did not interfere with the operation of the mills. Throughout the tests continuous indicators with electric pencil attachments were employed, thus recording every stroke the engine made during the rolling of the piece. A chronograph with electric recording device showed the exact time for all passes, the intervals between passes and recorded also the slightest variations of the engine speed. The width and thickness of piece after each pass were obtained with great accuracy in the following manner: After all the data for the test had been obtained, without making any change on the rolls, billets were passed through them in the regular way; after the first pass the first billet was thrown away, after the second pass the second billet, after the third pass the third billet, &c. When enough billets had been put aside for all the passes, and when these had become cold, the thickness and width were carefully measured. The length was obtained from the original billet weight. Thus the sectional area was obtained with great accuracy. Of course this method would not have been possible had the billets been very large, because of the great waste of steel. As it was, the waste was practically nil, because the pieces resulting after the first few passes were recharged into the heating furnace and the last few passes were used in the blacksmith shop.

### Formula for Determining the Actual Horse Power Required.

Much useful and interesting data embodied in two special sheets for each investigation were obtained from these tests. With these experiments and data as a basis, the writer proposes the following formula for the determination of the average actual horsepower to be exerted at the mill driving shaft of any rolling mill engine:

*Formula* 1.

$$\text{Average actual hp. developed during passes} = C\left[\frac{(A_b - A_1)L_1 + (A_1 - A_2)L_2 + (A_2 - A_3)L_3 + \&c.}{550\ S}\right] + F$$

where

C = a constant depending on the average temperature maintained during the rolling of a certain material.

$A_b$ = sectional billet area in square inches.

$A_1$, $A_2$, $A_3$, &c. = sectional areas in square inches after 1st, 2d and 3d passes.

$L_1$, $L_2$, $L_3$, &c. = lengths in feet after 1st, 2d and 3d passes.

F = friction load in i.hp. assumed from previous experiments.

S = sum of duration of all passes in seconds.

In order to use this formula in determining the average actual horsepower, the following data should be given:

1. All dimensions of billet, slab or ingot.
2. All dimensions of the final section of the finished shapes.
3. Number of passes.
4. Reduction for each pass.
5. Average temperature at which the steel is to be rolled.
6. Average lineal speed of roll surface.

### Discussion of the Above Formula.

The accuracy of the above formula will depend largely on the constant C. This quantity represents the work done in foot pounds during the rolling of one pass for each square inch reduction of section per one foot length of piece. It is at once evident that if we succeed in determining the exact amount of work required to bring about a reduction of 1 sq. in. for a length of 1 ft. we can very easily determine the total work required for any pass, if the reduction is known.

With the exception of the reduction, the work required in the rolling of steel, practically speaking, depends on the nature of the metal and its temperature at the instant of rolling. The writer desires to emphasize the

* See *Power*, June, 1907, p. 370; also *The Iron Age*, January 16, 1908, p. 206, *et seq.*

fact that he is speaking of work and not of power; and in speaking of work, time does not enter into consideration. The higher the carbon contents in the steel the more work will be required to roll that steel; the lower the temperature the more work will be required to bring about a certain reduction. Constant C in above formula was determined experimentally for a steel with carbon contents of from 0.06 to 0.08 per cent. The writer is of the opinion that constants C, as given herein, are accurate enough for all practical purposes for steels containing up to 0.15 per cent. carbon.

The temperature of the steel at the instant of rolling plays a very important part in the determination of constant C. The hotter the steel the softer and more plastic is it and the less work will be required to bring about a certain reduction. As the steel becomes colder more work will be required to bring about the same reduction. According to this idea, as the steel cools in rolling, the general tendency of constant C should be to increase—a condition found true during the tests. The following constants were obtained in the rolling of a plate 0.105 in. by 13.621 in. by 54 ft. 4¼ in., the passes being taken in order from first to last inclusive: 11,900; 10,000; 16,700; 23,600; 26,800; 40,700; 73,000; 257,000. The last constant (257,000) may be regarded as uncertain; it is the constant for the last finishing pass and is much higher than any constant obtained in any other test. However, the writer finds a note recorded on the test sheet, saying that when the data for constant 73,000 were obtained the temperature of the steel was about 2000 degrees F., while the temperature had dropped to 1300 degrees F. when the data for constant 257,000 were obtained; the note concludes by saying that this drop in temperature may be the cause of the enormous increase in work as shown by these constants.

### Formula in Foot Pounds Per Square Inch Reduction Per Foot Length.

The temperatures were judged only by the color of the heated steel. This, of course, is not satisfactory; the original intention was to use a pyrometer for determining the temperature of the steel before each pass, and an attempt was made to use a sensitive thermo-couple for this purpose, but no satisfactory results were obtained. The writer, who is familiar with several optical pyrometers now on the market, thinks it might be possible to use the Holburn-Kurlbaum optical pyrometer for any such work that might be undertaken in the future. For the all-important determination of constant C in this formula the temperature of the steel should be known, and it is hoped that some one with a more complete outfit of instruments than was at the disposal of the writer will be able to make investigations which will give us a more exact knowledge of the influence of the temperature on constant C. The following is the formula in foot pounds for this quantity or for the work required for each square inch reduction per foot length of piece:

*Formula 2.*

$$\text{Constant } C = \frac{W - F}{R\,L}$$

where

W = the total work done on mill driving shaft, or work developed in engine cylinder plus energy paid out by the flywheel. The continuous indicator cards taken during pass furnish one item, and the complete flywheel data and the speed reduction during pass furnish the other item.

F = friction load during pass. The friction load during pass was computed from the i.hp. required to overcome the engine and roll train friction. This is not entirely accurate, because the friction of the roll train is greater during a pass than the i.hp. of roll train, taken with nothing between the rolls, shows. But this error was regarded as small and therefore not taken into account.

R = total reduction in square inches from one pass to next one; or the difference of area in square inches between two consecutive passes.

L = length of steel in feet after pass in question.

The average constant C for a given shape is the sum of all the products of the constants C for the different passes by their respective durations of time expressed in seconds, divided by the sum of the durations of the passes expressed in seconds. This average constant C holds good for the average temperature maintained during the rolling of that steel. The usual custom is to start rolling with the highest practical temperature. Different shapes are completed at different temperatures. Certain bars, for instance, may be completed at an orange heat; certain structural shapes at a light red heat, and certain plates at a dull red heat. The average temperature for the average constant C in the case of these tests was 1900 degrees F., obtained as follows: The temperature at which the steel entered the rolls was between 2300 and 2500 degrees F.; the temperature at which this steel usually was finished was between 1300 degrees F. and 1500 degrees F. The sum of the mean starting and finishing temperatures divided by two was taken as the average temperature, or 2400 plus 1400, divided by 2 equals 1900 degrees F.

### Working Out the Average Constant C.

The average constant C, based on five tests made on plates ranging in thickness from 0.105 to 0.259 in., in width from 4¼ in. to 22.1 in., and in lengths from 21 ft. 3 in. to 68 ft 9 in. was found to be approximately 27,000, the extremely high constant of 257,000 mentioned elsewhere in this article not having been included. In accordance with the definition of constant C, the foregoing means that on an average 27,000 ft.-lb. of work must be done in the rolling of 0.07 per cent. carbon steel, during the operation of which the average temperature is approximately 1900 degrees F. This is the average constant for rolling plates of dimensions given above.

In blooming mill work, where the smallest sections seldom are less than 4 x 4 in., and, of course, often much larger, the average finishing temperature is usually, under normal conditions, in the neighborhood of 2000 degrees F. and the starting temperature about 2300 degrees F., judged by color. Here the average temperature becomes 2300 plus 2000 divided by 2 equals 2150 degrees F. and the average constant C should be much lower than the one given for the plates mentioned above. The writer worked out the constants C for the test made in 1907 by F. G. Gasche on a 42 x 60 in. twin reversing blooming mill engine of the International Harvester Company. Here a 2.5-ton ingot was rolled to 4 x 4 in. billets in 21 passes and the average constant C was found to be 14,600.

When we consider that the average finishing temperature of the plates above mentioned is about 500 degrees F. lower than the average finishing temperature of the ingot on the blooming mill table, and, further, that the data from which constant C in the case of the International Harvester Company's test is computed were obtained not with a view of determining the constant C, we seem to be forced to the conclusion that 27,000 cannot be far from the true constant C for the work under the conditions given. Further, if we average the constants C in all the tests up to the point where the temperature becomes about the same as is the finishing temperature under normal conditions on the blooming mill table, we obtain an average constant C of between 14,500 and 15,500, which comes close to the one obtained from the data of the International Harvester Company's blooming mill engine test.

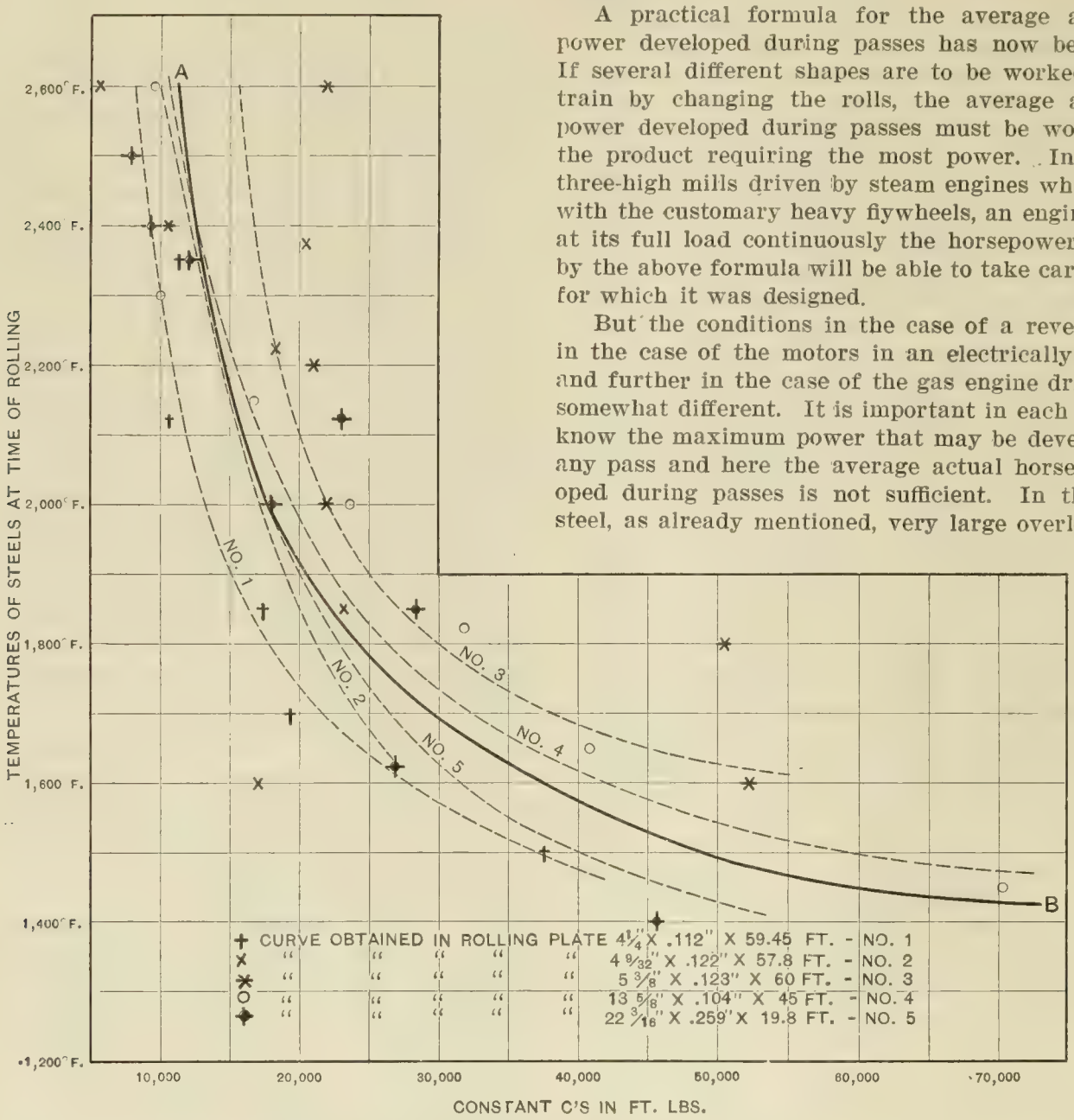
Some time ago the writer discussed with an engineer of a large steel works, the name of which he is not at liberty to mention, similar tests made at these works, and on this occasion learned that constants C had been obtained in their tests, which, if he remembers correctly, averaged between 17,000 and 24,000 for the special shapes rolled. It is to be regretted that all these tests were made without the aid of good optical pyrometers. If such instruments had been used, the tests could now be brought on a common basis and constants C fixed with accuracy for every possible case. We could then determine with practical certainty the power required to roll steel, no matter whether the finished product be rails, structural shapes, bars, plates or special shapes, provided the carbon contents come within the limits for which constant C was obtained.

### Why the Expression "Constant C" is Used.

The expression "constant C" has been used throughout this article; its use being regarded by the writer as correct because the work required to produce a like

effect, under like conditions, on like material, should always be the same. In other words, the work required to bring about a reduction of 1 sq. in. for a length of 1 ft. on the so-called soft steels of the same carbon contents and the same rolling temperature, disregarding any possible small increase in density due to previous rolling, should always be the same.

Referring back to the formula for determining the average actual horsepower developed during passes, we see, for instance, that $A_b - A_1$ represents the total reduction in square inches during the first pass; $L_1$ the length in feet after the first pass, and C the average work required to bring about a reduction of 1 sq. in. in cross section for a length of 1 ft. Therefore, $CL_1 (A_b - A_1)$ represents in averaging all the passes (I repeat the expression, in averaging all the passes, for it is important to remember this), the work required for that pass. The summation of all the quantities, one of which is given in detail above, gives the numerator of the formula, which divided by the product of the sum of the duration of the passes expressed in seconds multiplied by 550, plus the friction load of the engine, which may be assumed with comparative accuracy for each case, and which in the five tests made by the writer averaged 160 i.h.p., gives the average actual horsepower required during passes.




THE POWER REQUIRED IN ROLLING STEELS.

Fig. 1.—Constant C Curve, Showing Work Required at Different Temperatures Per 1 Sq. In. Reduction Per Foot Length of Piece During the Rolling of Soft Steels Containing Up to 0.15 Per Cent. Carbon.

**As to the Number of Passes Required.**

All other conditions having been made favorable, the question how many passes are required to break down and finish a billet, slab or ingot is closely related to the tonnage produced by the mill, and in the case of a new installation must be decided first. No universal rule applying to all cases can be given here; special cases will require special treatment, and these same special cases under different conditions may require again different treatment. When the number of passes has been decided upon, the reduction for each pass must be fixed, and as a general rule the heavy drafts should come first, which, in case of large flywheel engines, sometimes are 150 per cent. above their rated capacity. When the size of ingot, slab or billet is known, also the reduction for each pass, then $L_1$, $L_2$, &c., are easily determined. The friction load is assumed from those of similar mills; it is averaged in the 21 in. three-high mills working on different sized plates (160 i.h.p., as already mentioned), but in the case of very heavy mills may even go over 400 i.h.p. The average lineal speed of roll surface in continuous mills is usually from 5 to 7 ft. per second, but in the case of reversing engines the speed reaches sometimes the high figure of 15 ft. per second. When the average lineal speed of the roll surface has been determined and the length after the pass is known, the duration of the pass is easily worked out.

A practical formula for the average actual horsepower developed during passes has now been proposed. If several different shapes are to be worked in the roll train by changing the rolls, the average actual horsepower developed during passes must be worked out for the product requiring the most power. In the case of three-high mills driven by steam engines which are fitted with the customary heavy flywheels, an engine developing at its full load continuously the horsepower as obtained by the above formula will be able to take care of the steel for which it was designed.

But the conditions in the case of a reversing engine, in the case of the motors in an electrically driven mill, and further in the case of the gas engine driven mill are somewhat different. It is important in each case that we know the maximum power that may be developed during any pass and here the average actual horsepower developed during passes is not sufficient. In the rolling of steel, as already mentioned, very large overloads have to be taken care of. These overloads seldom last longer than 10 sec., but, of course, they must be provided for, even though only of short duration.

**Providing for the Several Kinds of Engines.**

The steam engine, in the case of a three-high mill with both large cylinder overload capacity and the energy given out by the heavy flywheel during such periods, comes up to the requirements. But it is different in the case of the reversing engine, because we have no flywheel here to help out and the energy stored in the revolving masses is insignificant when compared with the demand for power. It is therefore necessary to know quite closely the power that may be required at the mill driving shaft, and calculations must be made so that all this power may be developed in the engine cylinder. In the case of electric motor driven mills, the manufacturer of the electric apparatus and machinery must know the overload that his machinery may be required to stand so that he may get out his designs accordingly. The science of motor building has reached such a stage now that the manufacturer of the apparatus can satisfy

practically any demand of even the severest service if the conditions of such service are previously known.

When the gas engine is considered as a prime mover for roll trains, it is even more important that the exact power be known that will be needed to drive the roll train because of the very small overload capacity of the engine. The only possible way of arriving at the exact power requirement is to work out the load to be developed at the mill driving shaft for each pass and then specify an engine or motor that will be able to take care of this maximum load. The formula used for determining the average actual horsepower developed during passes will answer in this case also if we can fix the value of constant C for each pass. The writer offers the curve shown in Fig. 1 for fixing constant C for each pass; this curve is based on the results of the five tests already mentioned several times. In making this offer the writer well realizes that he lays himself open to the criticism of presenting something the accuracy of which is not yet fully established; however, he believes that the curve is a very close approximation to the true curve because of the fact that, not only the constants C of the five tests already mentioned fall within this curve, but also the constants C of those tests conducted by the engineers mentioned. The writer has had considerable practical experience in large and small forge work, and the general direction of the curve is in line with his experience of the rapid increase of work required to change the section of the steel as it becomes cool. In all future work this curve could be made almost scientifically correct by exercising care to obtain all quantities accurately and by using a suitable optical pyrometer.

For the purpose of ascertaining both the magnitude of the maximum power requirement and on which pass it comes, the following arrangement of the formula containing constant C will answer:

$$\text{Pass No. 1} \quad \frac{C_1 L_1 (R_b - R_1)}{550\, s} + F = \text{"actual horsepower."}$$

$$\text{Pass No. 2} \quad \frac{C_2 L_2 (R_1 - R_2)}{550\, s} + F = \text{"actual horsepower."}$$

$$\text{Pass No. 3} \quad \frac{C_3 L_3 (R_2 - R_3)}{550\, s} + F = \text{"actual horsepower," &c.}$$

In this arrangement $R_b$, $R_1$, $R_2$, $R_3$, &c., $L_1$, $L_2$, $L_3$, &c., "$s$" and F have the same significance as the quantities in formula 1. Constants $C_1$, $C_2$, $C_3$, &c., are determined in the manner shown in Fig. 2.

*Determination of Constants C.*

For ¼ x 22 in. by 22 ft. plate rolled from 2⅜ x 22 x 28 in. billet.
Average starting temperature, 2400 degrees F.
Average finishing temperature, 1400 degrees F.
Roll speed, 6 ft. per second.
Average drop of temperature per 1 sec., 24 degrees F.

| Pass No. | Area. Sq. in. | L'gth. Feet. | Duration of pass in seconds. | Interval between passes. Sec. | Pass + interval. Sec. | Calculated drop. Deg. F. | Average temp. when rolling. Deg. F. | Constants C |
|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 1 | 42.5 | 2.87 | 0.45 | 2.00 | 2.45 | .. | 2,400 | 12,500 |
| 2 | 31.7 | 3.86 | 0.74 | 1.75 | 2.49 | 60 | 2,340 | 13.000 |
| 3 | 24 | 5.07 | 0.86 | 2.25 | 3.11 | 74 | 2,266 | 14,200 |
| 4 | &c. | | | | | | | |

In working out the sheet shown in this figure, the dimensions of billet and finished section are given, also roll speed and reduction per pass; the starting temperature or the temperature at which the billet enters the rolls is usually the highest temperature at which the steel may be worked. The finishing temperature differs for different shapes, being, of course, lowest in thin plates and higher in heavy structural shapes as rails, billets, &c.

The drop in temperature per 1 second is obtained by dividing the difference between the starting and finishing temperatures by the sum of all the figures in the "pass plus interval" column, or, in other words, by the total number of seconds that shall elapse from the time the billet, slab or ingot enters until the finished product comes from the finishing rolls. In working out this drop in temperature per 1 second, the assumption is made that the rate of cooling is the same for all the sections of the different passes, no allowance being made for the many other conditions influencing the rate of cooling, such as the temperature of the atmosphere, the temperature and quantity of water running on rolls, heat lost while the sections are in contact with the iron plates of the hot bed, different rates of cooling because of different sectional areas, &c.; these conditions are not of sufficient importance to warrant the introduction of coefficients different in each case and difficult to determine. These are minor questions only and can be left out without detracting from the practical value of the results.

Even in very small sections, such as occur in thin plates, when during the transfer from one pass to another the steel remains in contact with the comparatively cold plates of the hot bed for a greater period of time than is usual, it seems best to use the average drop of temperature per 1 second only, rather than to introduce uncertainties that might lead to serious errors. The duration of pass is easily obtained when length of piece and roll speed are known, no allowance being made for slips, as these do not belong to normal conditions of operation. The interval between passes can be very closely timed and estimated by those familiar with mill operations, due allowance being made for the turning of the piece and transfers from one set of rolls to another set.

When the average drop of temperature per 1 second and the duration of the period from one pass to the next one are known, the drop of temperature for column 7 is easily figured. The average temperature during rolling, column 8, is the difference between average temperature during rolling of the preceding pass and the "calculated drop" in column 7. When thus the average temperature during rolling has been found, constant C can be read from the curve in Fig. 1, placed in the formula and the actual horsepower determined for each pass. An inspection of these figures will then reveal both the maximum actual horsepower to be developed at the engine shaft and the pass on which the maximum actual horsepower comes, when the power required has been worked out for all the passes.

## International Association for Testing Materials.

The fifth congress of the International Association for Testing Materials represented in this country by the American Society for Testing Materials, will be held in Copenhagen, Denmark, early in September, 1909. Arrangements are actively in progress, and the indications are that it will be the most successful convention in the history of the organization. The programme will consist largely of official reports of standing committees and individual referees on subjects relating to the testing of materials. By action of the council nonofficial papers by members of the association will be restricted to the following subjects:

A. METALS. — (a) Metallography; (b) Hardness Testing; (c) Impact Tests; (d) Testing Metals by Alternating Stresses, Thermal Treatment, &c.; (e) Testing of Cast Iron; (f) Influence of Increased Temperature on the Quality of Metal.

B. HYDRAULIC CEMENTS. — (g) Reinforced Concrete; (h) Progress in the Methods of Testing; (i) Cement in Sea Water; (j) Constancy of Volume; (k) Tests by Means of Prisms and Standard Sand; (l) Weathering Resistance of Building Stones.

C. MISCELLANEOUS. — (m) Oils; (n) Caoutchouc; (o) Wood; (p) Paints on Metallic Structures.

The International Association has begun the publication of Proceedings, which will be issued three or four times a year. Further information will be given by the general secretary of the International Association, IV Nordbahnstrasse 50, Vienna, Austria, or by Edgar Marburg, secretary American Society for Testing Materials, University of Pennsylvania, Philadelphia, Pa.

The Riverside Engine Company, Oil City, Pa., builder of the Riverside heavy duty gas engine, has extended its sales organization by opening an office in the Rockefeller Building, Cleveland, Ohio, in charge of the Holbeck Company. The company's shops have been running full time in spite of the recent financial depression.

A delegation from the Steel Structural Manufacturers' Club of Chicago visited Milwaukee Friday, July 17. They were entertained by Milwaukee manufacturers at luncheon at the Country Club, and in the afternoon visited several of the large industrial plants.

# The Deposition of Zinc for Protecting Iron and Steel Surfaces.

A recent issue* of the *Transactions* of the Glasgow Technical College Scientific Society, Glasgow, Scotland, reproduces a paper read by Sherard Cowper-Coles before a meeting of the society. This paper describes the four processes at present in use for applying zinc to iron and steel, as follows: 1. Hot or molten galvanizing. 2. Electro or cold galvanizing. 3. Dry galvanizing or Sherardizing. 4. Vapor galvanizing or Cowperizing.

The first of these processes is the one in ordinary use. The other three have been quite thoroughly described in *The Iron Age*. The reader may consult the following list of articles if it is desired to refer to them:

"Sherardizing" (illustrated), October 20, 1904.

"Investigation of Properties of Zinc Coatings," by Prof. Charles Burgess, February 2, 1905.

"Electrolytic Galvanizing," by Henry I. White, January 18, 1906.

"Art of Galvanizing," by Alfred Sang, May 23 and 30, 1907.

The process of vaporizing or Cowperizing, which is the latest development in galvanizing, is described as follows in the paper by Mr. Cowper-Coles, above referred to:

This process is distinctive from all other processes inasmuch as the articles coated with zinc are not brought into contact with molten zinc or any of its compounds, but placed in a separate chamber into which zinc vapor is passed. A convenient form of apparatus is shown in the illustration, Fig. 1. It consists of an inner drum marked *c*, composed of wire netting or gauze, in which the articles to be Cowperized are placed. This case or hollow drum is slowly rotated inside an outer cylinder, *b*, composed of wrought iron, in which the metallic zinc is heated by means of gas or an electric furnace, or any other suitable means, to a temperature sufficiently high to volatilize the zinc. Hydrogen gas is forced into the apparatus through the tube marked *a*, and a pilot light of hydrogen is kept burning through a small hole in the door marked *d*, which makes a gastight joint when closed. The apparatus for Cowperizing has to be modified to suit various requirements, but in almost all cases it is necessary to move the objects to insure their being evenly coated with zinc. This process has also been successful when applied to decorating porcelain and metallic surfaces with a brilliant coating of metallic zinc.

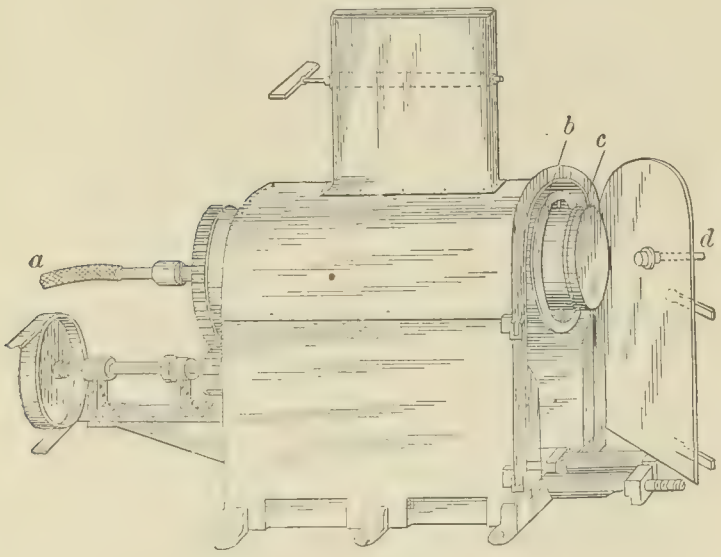



Fig. 1.—Apparatus for Cowperizing or Vapor Galvanizing.

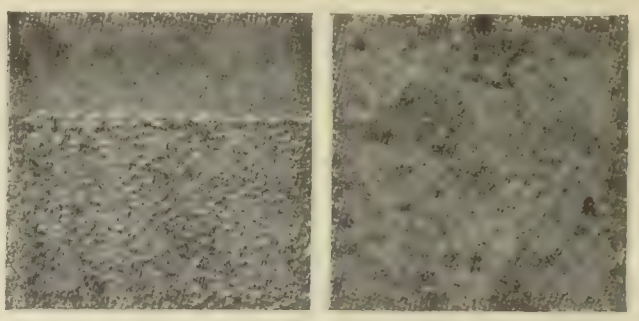
The conclusion of Mr. Cowper-Coles' paper is as follows:

In conclusion I will compare the advantages and disadvantages of the various systems described in the paper.

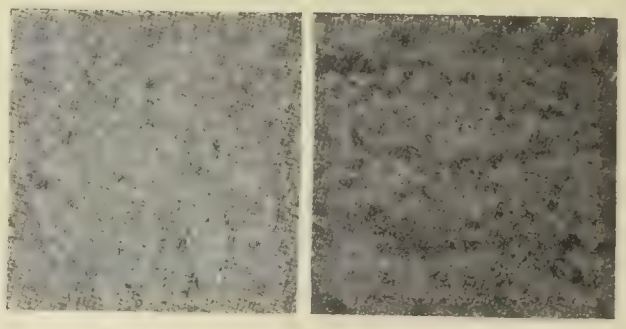
### The Advantages of Sherardizing Over Hot Galvanizing.

The process of Sherardizing has the following advantages over hot galvanizing:

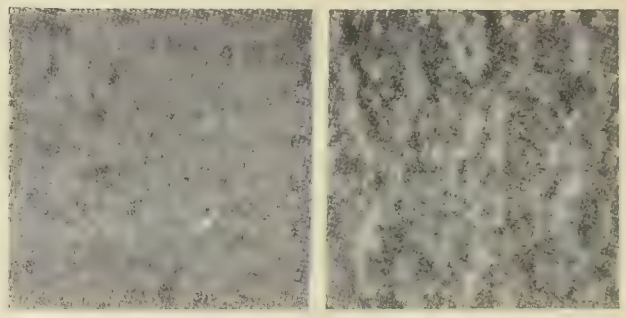
There is no waste of zinc due to the formation of zinc-iron alloys. Less zinc is required to give the same protective coating, the zinc being evenly distributed. The temperature required is lower, consequently the amount of fuel consumed is less. The labor is less, as the articles do not require to be cleansed as carefully as in hot galvanizing. No flux is required. No dross or skimmings are formed. There is no danger of explosion, breaking of castings or distortion of thin ironwork. Dry galvanized machined work does not require refitting, as the coating is evenly distributed. There is not the same reduction in tensile strength as in the case of hot galvanizing. Work can be placed directly in the dry galvanizing drum from the pickling vat without drying. The process can be worked intermittently without waste. Iron can be coated with zinc to any desired thickness. The whole of the zinc is consumed without waste. The depreciation of plant is small compared with hot galvanizing.



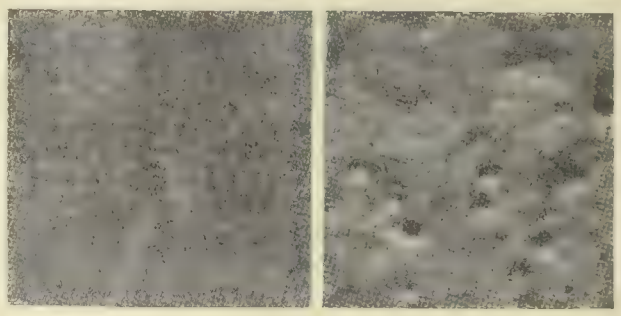
Ill. 1. Ill. 2.



Ill. 3. Ill. 4.



Ill. 5. Ill. 6.



Ill. 7. Ill. 8.

Fig. 2.—Illustrations of Photo-Micrographs Showing Surfaces Produced by Hot and Cold Galvanizing.

### Comparison of Hot, Cold, Galvanized and Sherardized Surfaces.

Surfaces obtained by hot and cold galvanizing and Sherardizing are different in each case, but they can readily be distinguished by anybody conversant with the three processes. In the case of hot galvanizing the surface is spangled, or if not spangled has the appearance of cast metal. In the case of cold galvanizing the surface is free from spangles and has a matted or frosted surface; uniform, if the work has been well executed. Sherardizing is again distinctive from the two former processes, the general appearance resembling more that of cold galvanizing than hot galvanizing, but is more lustrous and metallic, and is uniformly distributed over the whole surface, which is not the case with the hot and

* Vol. IV, Part 4, Session 1907-8.

cold galvanizing processes. The Sherardizing process, although similar to cold galvanizing in some respects, is also similar to hot galvanizing in other respects, inasmuch as the zinc alloys with the iron and forms a protective zinc-iron alloy intermediate between the zinc coating and the underlying metal.

In Fig. 2, illustrations Nos. 1 and 2 show photo-micrographs of hot and cold galvanizing. The line in the center of illustration 1 shows the line of demarcation between the crystals or spangles. Illustration 2 shows zinc electro deposited by the regenerative process from a solution of zinc sulphate with a current density of about 20 amperes per square foot, the electrolyte being kept in the best working condition by passing it through a filter bed of zinc dust and coke.

Illustration 3 shows an iron surface coated with zinc by the Sherardizing process. Illustrations 4 and 5 show photo-micrographs of surfaces Sherardized with and without the presence of carbon in the zinc dust, the surfaces appearing to be identically the same.

It was at one time thought that zinc dust containing carbon might have a detrimental effect on the nature of the deposit, due to the retention of small portions of carbon setting up galvanic action in the presence of moisture. The microscope does not reveal any small particles of carbon in the zinc surface.

### The Copper Sulphate Test for Determining the Thickness of Zinc Coatings.

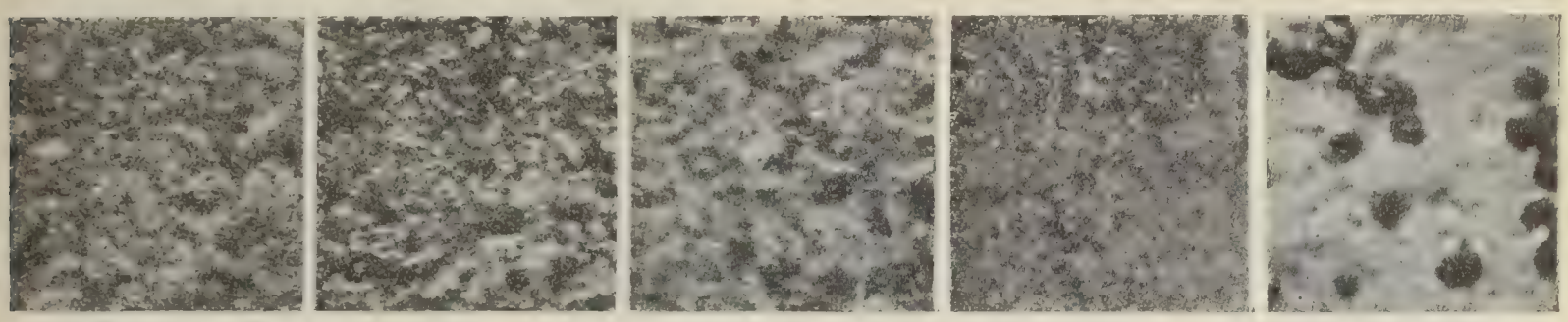
The copper sulphate test known as Preece's test is not applicable as a comparative test of the thickness of zinc applied by the Sherardizing or electro-zincking process for the following reasons: On applying Preece's tests to Sherardized and hot galvanized articles coated with an equal thickness of zinc, the former requires from three to four times the number of immersions, which suffice to remove the zinc from the latter. When hot galvanized articles are placed in a saturated solution of copper sulphate the copper is precipitated to a loose form, but when Sherardized or electro-zincked articles are similarly treated the copper adheres firmly to the zinc and no fresh surface is exposed, apparently due to the deposit of zinc applied by the electro-zincking and Sherardizing processes having a fine matted surface.

### Ferric Sulphate Solution as a Test of Thickness of Zinc Coatings.

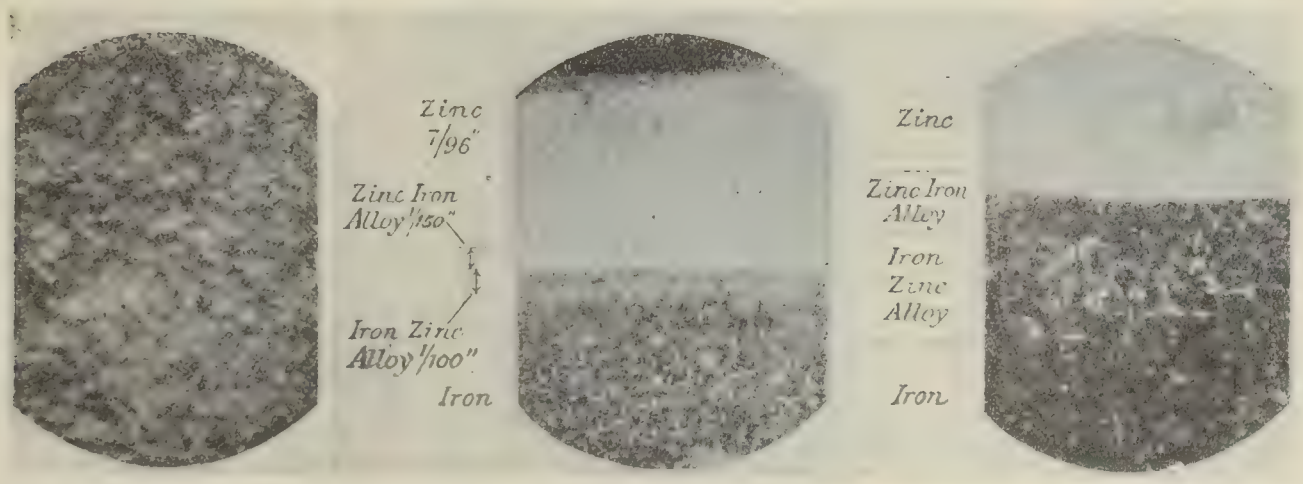
It would appear from these observations that the apparently great resistance to corrosion of Sherardized iron when subject to Preece's test is due to the protection of the zinc by the deposited copper; so experiments were made with a solution of ferric sulphate, which dissolves zinc without forming a precipitate on the zinc coating. To test this, known areas of Sherardized and hot galvanized plate were exposed to the action of ferric-sulphate solution for an equal period, and the amount of ferrous salt formed by the reducing action of the zinc determined. The column headed "Weight of zinc dissolved," in the following table, shows the relative corrosion:

| Nos. | Sample. | Zinc per square foot. Grams. | Weight of zinc dissolved. Grams. |
|---|---|---|---|
| 1. | Sherardizing | 26.908 | 0.080 |
| 2. | Sherardizing | 26.908 | 0.074 |
| 3. | Sherardizing | 22.93 | 0.057 |
| 4. | Hot galvanizing | 22.12 | 0.058 |
| 5. | Sherardizing | 31.116 | 0.034 |

Sample No. 2 was moistened with water and allowed to dry. The oxide formed appears to protect the zinc, and this protection is more marked if water is allowed to act for a longer period than was permissible in these experiments. It will be noticed that samples 1 and 2, which had a thicker coating than samples 3 and 4, dissolved to a greater extent than samples 3 and 4, which had practically the same weight of zinc coating, dissolved. Sample 5 was Sherardized copper, and although the zinc coating was the heaviest, yet the corrosion was in this case the least. On testing this sample with copper sulphate solution, as in the other cases, instead of a brown precipitate of copper a bright metallic deposit was obtained, and no further action seemed to occur. From the result of these experiments and other tests, it may be concluded that Sherardizing offers equal, and probably greater, resistance to ordinary corrosive influences than hot galvanized iron coated with an equal weight of zinc, and the resistance is considerably increased by repeated moistening and drying, so as to form an oxide which renders the surface less soluble.



Ill. 10 Ill. 11. Ill. 12. Ill. 13. Ill. 14.




Ill. 15. Ill. 16. Ill. 17.

Fig. 3.—Illustrations of Photo-Micrographs Showing the Results of Experiments to Elucidate the Nature of the Union Between a Sherardized Coating and the Base Metal as Compared with Electro-Galvanizing.

### Experiments to Elucidate the Nature of the Union Between a Sherardized Coating and the Base Metal as Compared with Electro-Galvanizing.

Three sheets of charcoal iron were taken and sand blasted, and without further treatment one of them was hot galvanized (not passing through rollers), one cold galvanized, and the third Sherardized. Each was carefully weighed before and after being coated, with the following results:

Weight of zinc, hot galvanized, 1.49 oz. per square foot.
Weight of zinc, cold galvanized, 1.55 oz. per square foot.
Weight of zinc, Sherardized sheet, 1.49 oz. per square foot.

The photo-micrographs, Fig. 2, illustrations 7 and 8,

illustrate the nature of the deposits, each being magnified 45 diameters. Illustration No. 6 is the charcoal iron sand blasted only.

The deposits of zinc in each case were dissolved off by repeated immersions in copper sulphate, the final flash of copper left at the end was removed by very rapid immersion in nitric acid, and the specimens were then washed and dried and photo-micrographs taken of each at 45 diameters magnification. See Fig. 3, illustrations Nos. 10, 11 and 12.

As the structure of the intermediate surfaces between the iron and zinc coatings was not well developed by the above method of treatment, a second set of specimens was etched electrically, the specimens being made anodes in a solution of ammonium chloride. The same current was passed through each specimen per square foot. It was found that the time required to strip the specimens of zinc were as follows:

Time required to strip hot galvanizing, 1¾ hr.
Time required to strip cold galvanizing, 3 hr.
Time required to strip Sherardizing, 4½ hr.

The longer time taken to dissolve the zinc applied by the Sherardizing process is probably due to the rougher surface, to which adhere the products of the reaction which retard further dissolving action, as in the case of Preece's test, already referred to. As soon as the zinc deposits had entirely dissolved away the specimens were removed, washed and dried, and photo-micrographs taken of each surface, magnified 45 diameters. See Fig. 3, illustrations Nos. 13, 14 and 15.

It will be observed that the etching in the case of the cold galvanized iron is very deep and marked, while the surfaces underneath the hot galvanizing and Sherardizing are similar, with close grained structures, and have not been noticeably affected by the etching process. This bears out the supposition that in both the latter cases there is not merely mechanical adhesion between the coating and the base, but that an alloy of zinc and iron is actually formed at the surface of junction, and this film of alloy is less liable to corrosion than is the iron itself.

### Comparison of Advantages of Cowperizing Over Hot Galvanizing.

The vapor or Cowperizing process is especially suitable for coating articles with threads, or which require to be accurately fitted, as the zinc is evenly distributed. The zinc combines with the surface of the iron forming a rustless zinc alloy. The articles on removal from the Cowperizing drum do not require any cleaning or washing. The process is cheaper than hot galvanizing, as there is less handling and the amount of heat required is small, as only a small quantity of zinc has to be heated. The process, like Sherardizing, is not suitable for coating articles which are dependent on the soldering action of molten zinc to make them watertight, or when the spangled effect obtained by hot galvanizing is an essential condition. The whole of the zinc is consumed, and there is no dross or residue formed. The process can be quickly started, as there is no large quantity of metal to get hot.

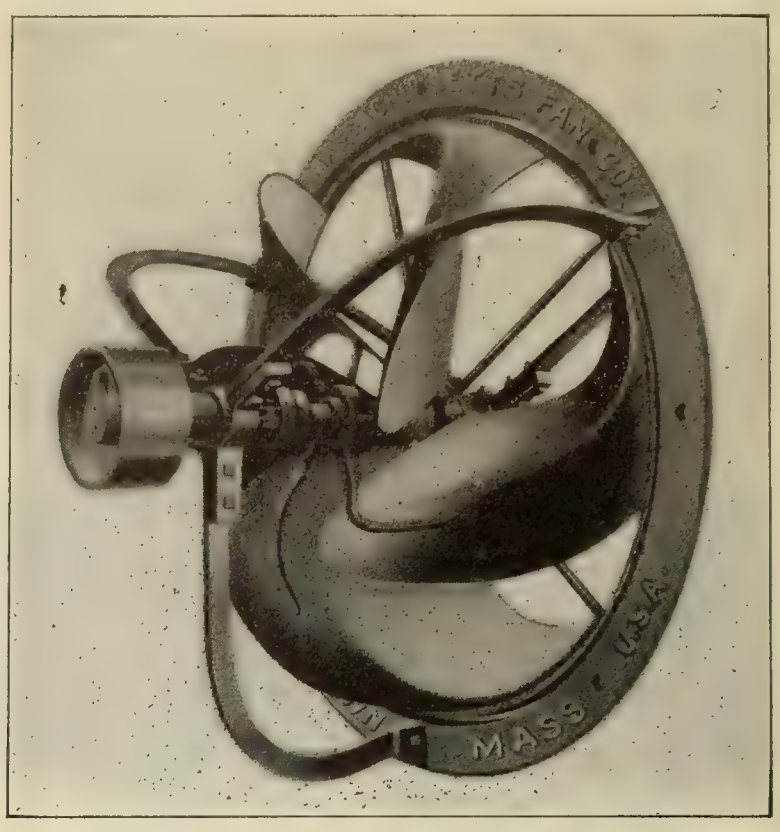
Electro zincking, Sherardizing and Cowperizing all have a large field of application and will greatly increase the amount of iron coated every year with zinc, as each process has its own peculiarities which render it more suitable than any other process for specific purposes, and in many cases enable iron objects to be coated with zinc, which could not be done by the process of hot galvanizing.

Tentative plans for a building with a tower 1000 ft. high, to be erected on the site of the present Mills Building, 15 Broad street, New York, have been drawn by Ernest Flagg, a New York architect. No definite statement is made, but it is probable work will begin within a year or more on the new building. The plans locate the tower in the center of the building. The estimated cost is $7,000,000.

William Whyte, vice-president of the Canadian Pacific Railroad, after a tour of the three prairie provinces of Canada, estimates this year's wheat crop at 125,000,000 bushels.

## Davidson Fan Thrust Bearings.

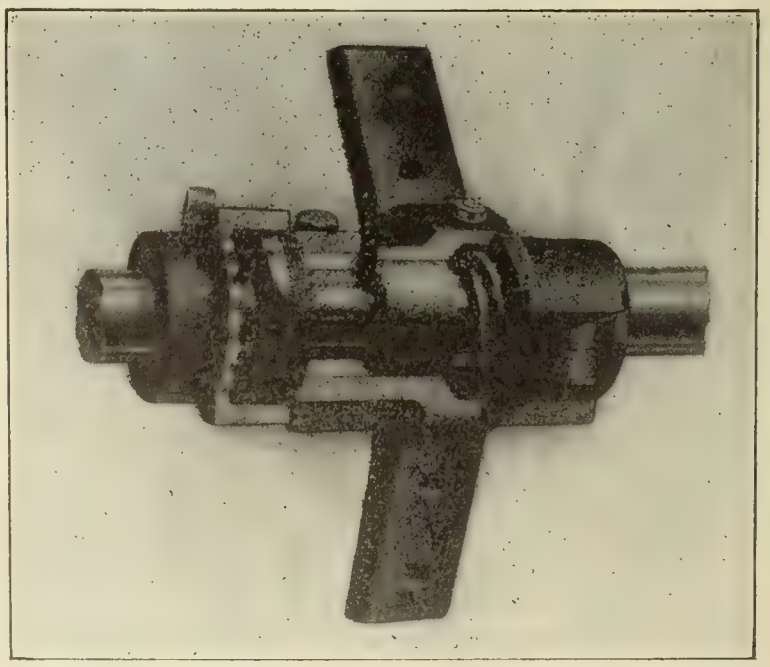
The reaction of the air against the blades of fans of the propeller type produces end thrust on the shaft. Although the pressure per square inch upon the face of the fan is relatively slight, the aggregate over the entire area is sufficient to warrant consideration, for its intensity per




The Davidson Propeller Fan Built by the aMssachusetts Fan Company.

unit of area when concentrated upon the surfaces of a collar and the bearing end is considerable.

In the Davidson ventilating fans manufactured by the Massachusetts Fan Company, Watertown, Mass., this end thrust is provided for in a ball thrust bearing which greatly reduces the thrust friction. It consists of a series of hardened steel balls carried in a brass ring between two hardened steel rings of similar shape, all being loose on the shaft. The main portion of the cast iron bearing, to which the supporting arms are bolted, bears against one steel ring which remains stationary. The other turns



Detail of the Thrust Bearing Used on the Davidson Propeller Fan.

with the thrust collar which is fast on the shaft and encloses the three rings. The balls bear on the inside faces of the two steel rings, while the brass ring containing them is perfectly free to turn between the steel rings. There is claimed to be no possibility of rusting in place.

The main bearing lining is of babbitt metal. The whole is constantly lubricated by a ring oiler dipping into a large oil reservoir cored in the lower half of the bearing. The frame consists of both wrought and cast iron

parts, carefully machined, fitted and bolted together in the most rigid manner. Each of the bearings is connected to a heavy cast iron wall ring by three heavy wrought iron braces.

The vertical shaft driving Davidson fans are fitted with special extra large adjustable lower or thrust bearings, made up of hardened steel disks running in a bath of oil. The entire weight of the fan and shaft is carried by this bearing. The upper or guide bearing is of the ball and socket type, lined with a removable graphite bushing which requires no attention or lubrication. In all other respects the vertical fans are identical with those of the horizontal type.

To provide for various conditions and individual preferences, Davidson fans are regularly furnished with any of the different standard direct or alternating current motors.

## New Steam and Oil Separators.

Three steam and oil separators of new design just completed by the Steam Appliance Company, Milwaukee, Wis., are here illustrated. The necessity of nearly complete separation of water from live steam and oil from exhaust steam, where the latter is condensed for return to boilers or discharged into heating systems, is quite well understood and appreciated by steam users.

Concerning the efficiency of the Triumph oil seperator, Fig. 1, the company offers, subject to 60 days' trial on approval, a guarantee that exhaust steam after passing through it will be 99.995 per cent. pure, which means the practical elimination of every particle of oil. To accomplish this result a system of corrugated spiral baffling is interposed against the course of the steam; it is so arranged as to carry the steam downward with a whirling motion which causes the oil to be thrown out centrifugally against the corrugated walls of the separator. From there it is drained along with entrained water into troughs, the first of which is seen in the broken out section at the flange connection, the second being underneath it, and thence it passes through a series of drain pipes to the bottom of the separator below a guard shield.

In the Victor horizontal separator, Fig. 2, a different design of baffling is followed. On entering the inlet at the right, as shown in the engraving, the steam first strikes the spiral corrugations in the neck of the opening, which are designed to give a whirling motion; it then comes in contact with the first perpendicular baffle, seen in the broken away view, from which it is deflected in either direction and passes on to the opposite baffles, between which there is an opening allowing the flow to be carried to the outlet at the left. Separated particles of oil and water are drained downward by gravity through holes in the shield at the bottom of the baffles into the separator well, from whence they are withdrawn through the bottom drain lug. Being cast in a single piece, there are no packed joints in the body of this separator to give trouble through leakage. Since the centrifugal motion imparted by the baffles is chiefly relied upon to cause the desired separation the course of the steam is not tortuous, but is passed with but little deflection from its regular direction.

Fig. 3 represents the vertical type of the Victor separator, which is similar in principle of action to the horizontal type, but of somewhat modified construction on account of the different direction of flow of the steam. The body of this separator is also made of a single casting, and has an extended neck to provide room for bolting directly to engine throttle valves. All of the three styles of separators here shown are made in sizes of 2 to 10 in.

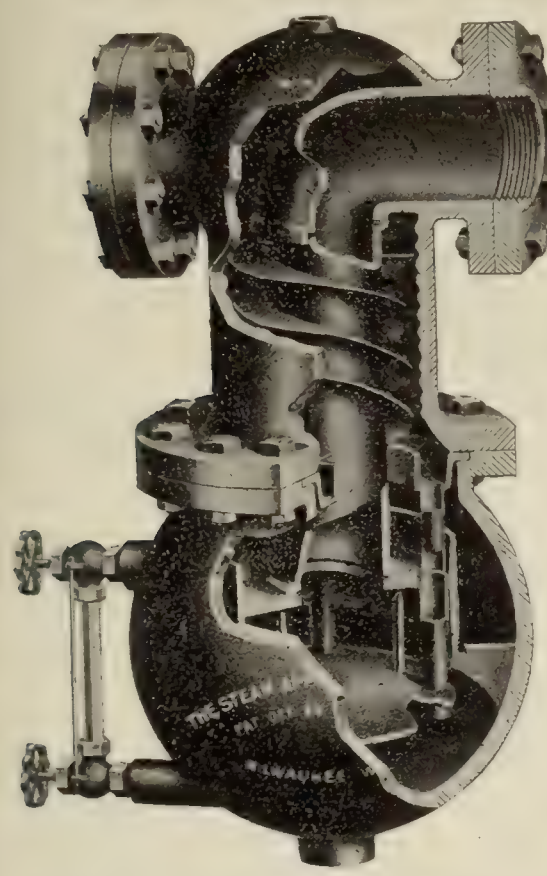


Fig. 1.—The Triumph Oil Separator.

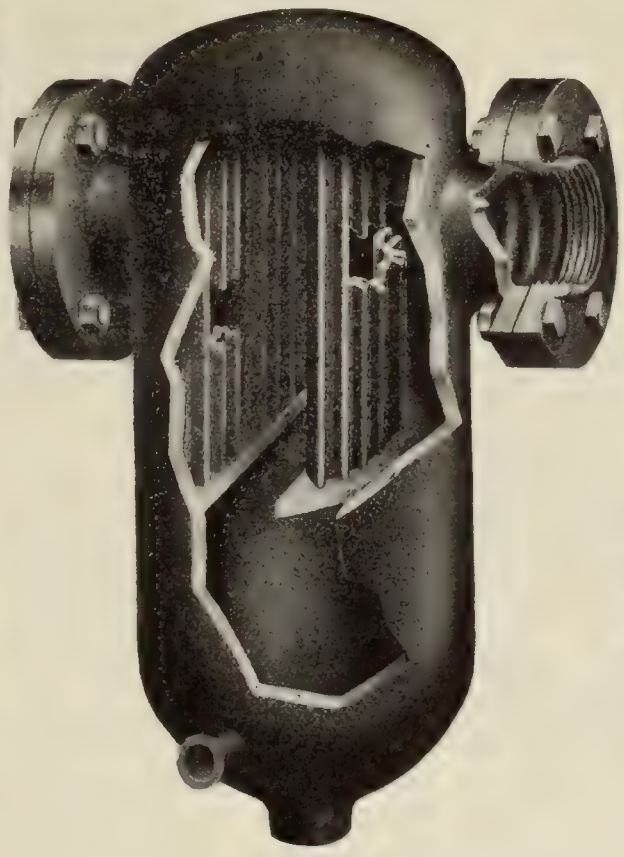


Fig. 2.—The Victor Horizontal Separator.

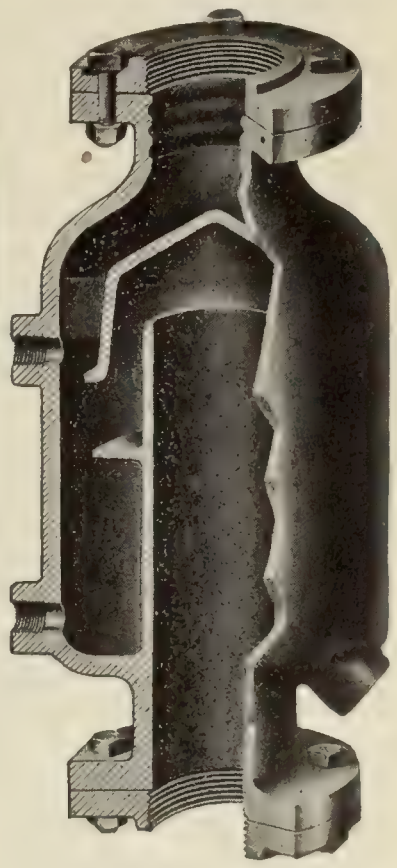


Fig. 3—The Victor Vertical Separator.

New Steam and Oil Separators Made by the Steam Appliance Company, Milwaukee, Wis.

**Rebuilding the Quebec Bridge.**—The Canadian Government will assume all the assets and franchises of the Quebec Railway & Bridge Company under a resolution which will be introduced at Ottawa, and the reconstruction of the Quebec bridge will be undertaken as a Government project, under the supervision of the Trans-Continental Railway Commission. The oversight of the construction work will be in the hands of a board of prominent engineers, one from Canada, one from the United States, and the third from Great Britain. It is stated that the Canadian Government will assume the loss of all expenditures made by the Quebec Bridge Company under the bond issue guaranteed by the government up to the collapse of the bridge, the amount being between $5,000,000 and $6,000,000.

Robesonia Furnace, Robesonia, Pa., was blown out Friday, July 10, after a run of three years, three months and 18 days. The stack and accessories were in good condition, apparently fit for another year's run or more. Cornwall ore, running from 42 to 48 per cent. in iron, was used exclusively. The total of pig iron made was 164,411 tons, of which 77½ per cent. was No. 1, 20 per cent. No. 2 and 2½ per cent. No. 3. No mottled or white iron was made in the entire blast, except 47 tons produced when blowing in.

# THE IRON AGE

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## The Favorable Balance in Our Foreign Trade.

The statistics of our foreign commerce for the year ended June 30 are as follows:

| | |
|---|---|
| Merchandise exports | $1,860,799,097 |
| Merchandise imports | 1,194,341,994 |
| Apparent merchandise balance | $666.457,103 |
| Silver, net exports | 13,350,121 |
| Total apparent balance | $679,807,224 |
| Gold, net imports | 75,864,609 |
| Apparent unsettled balance | $603,942,615 |

The total merchandise commerce, imports plus exports, was $3,055,141,091. The apparent unsettled balance is 20 per cent. of this. It is well understood that there must always be this apparent unsettled balance of trade for two general reasons: 1, Because the statistics of imports and exports are not strictly comparable, and, 2, because there is a partial settlement by means other than the exchange of gold and silver. Under the first head come the fact that imports are frequently undervalued, while exports are frequently overvalued, and the fact that imports are valued at the foreign port and exports at the home port. Under the second head come the movement in securities, which are a commodity to be settled for just as much as the merchandise which appears in the statistics, the interest and dividend payment on American stocks and bonds held abroad, and the money spent abroad by American tourists, in excess of that which is spent in this country by foreign tourists. The freights paid to foreign vessel owners are an alternative to the difference between valuing our imports at one point and our exports at another.

The improper valuations of merchandise and the freights paid to foreign vessel owners are functions in a measure of the total amount of our foreign commerce. In this respect, if the total foreign commerce increases, the apparent favorable balance must also increase, or we lose. The movement of securities and the money spent abroad by tourists are practically unknown quantities. Attempts are sometimes made to estimate them, but such estimates are useless in an effort to analyze our apparent unsettled balance of trade; it is reasoning backward. The actual trade statistics will show more about this movement than estimates of the movement will show themselves.

There is so much loose discussion of our foreign trade, and it is so often assumed that there is an increase in our material wealth quite comparable to the apparent favorable balance of trade, that it is well to state emphatically that such is not the case. Our foreign commerce does not bring us any quantity of material wealth in that way. Its benefit is almost exclusively in the line that it enables us to dispose of products which we can spare easily, and gives us in return products which we need.

The familiar idea is that the favorable balance of trade is settled in gold; but it is not the hundreds of millions of a favorable balance shown every year that is thus settled. It is only the small fraction of this amount—the real balance, after the merchandise balance has been greatly whittled down in various ways, which is thus settled. Thus, in the 10 years ended June 30, 1907, the apparent merchandise balance of trade was $5,000,000,000, but the net gold imports were only a trifle over $250,000,000, the gold payment therefore being only about 5 per cent. of the apparent bill rendered.

As regards the material prosperity of this country, it is only this small gold payment which helps. The apparent favorable balance does not benefit. The interchange of commodities is good, when we give that which we can spare for that which we need, but it is immaterial in what values the statistics are expressed, or whether they show a favorable balance, since we collect as we go along. A large balance of trade might be used to pay for American securities held abroad, bringing them back to this country and keeping at home the interest and dividend returns upon them, but there is no reason to suppose that in recent years this has been done.

The significance of the statistics for the fiscal year 1908 can be shown best by comparison with the past. The average of the preceding 10 years is a convenient standard, and it so chances that the statistics for years back show two fairly well defined and distinct periods, from 1888 to 1897, inclusive, and from 1898 to 1907, inclusive, fiscal years being meant in both cases. In the earlier period there were pretty uniform gold exports, while in the later period there was a fairly steady gold import movement. The statistics for the two periods are given below:

*Fiscal Years* 1888 *to* 1897.

| | |
|---|---|
| Excess merchandise exports | $963,349,521 |
| Excess silver exports | 206,876,621 |
| Excess gold exports | 253,417,261 |
| Total excess | $1,423,643,403 |

(Total merchandise imports and exports, $16,420,426,577.)

*Fiscal Years* 1898 *to* 1907.

| | |
|---|---|
| Excess merchandise exports | $5,001,783,290 |
| Excess silver exports | 219,969,432 |
| Gross excess | $5,220,852,722 |
| Excess gold imports | 264,600,305 |
| Total net excess | $4,956,252,417 |

(Total merchandise imports and exports, $24,371,655,270.)

The gold exports from 1888 to 1897 represented more than half of our gold production, which we had to use to pay for that which we could not pay for otherwise. While the merchandise balance of trade appeared large, it was less than 6 per cent. of the total merchandise movement, and the errancy of the statistics, with the invisible balance of trade, amounted to more than this, so that we had to settle in gold.

In the next period, 1898 to 1907, our foreign commerce did much better. The total imports, plus exports, showed an increase of about one-half, while the merchandise balance of trade was quintupled. The apparent favorable balance, instead of being 6 per cent. of the total movement, was more than 20 per cent. Our exports of silver were about the same, and a result was that instead of exporting gold, we were able to import it. But note how little that cash settlement was: While the apparent favorable balance, merchandise and silver, was $5,220,000,000, the gold payment was only $264,600,000, just 5 per cent.

It was not this little gold payment that made this country rich in money. Comparing the dates at the be-

ginning and end of the period we are referring to, July 1, 1897, and July 1, 1907, the increase in gold coin, plus gold bullion in the United States Treasury, has been from $697,223,332 to $1,602,014,642, an increase of $904,791,410. That increase is almost four times as much as the amount we got in settlement of our foreign trade balance. The bulk of the increase came from our own gold production, which in those 10 years was about $786,000,000. Adding to this the gold received from abroad, $265,000,000, gives a total of $1,051,000,000. The increase in the visible supply of gold was $905,000,000, leaving a discrepancy of $146,000,000, which is the gold consumed or put into use as a metal and not as money.

So far as gold is concerned, then, our foreign commerce has given us very little, its main function having been to enable us to keep our gold production at home instead of using it to settle foreign obligations with.

The statistical record of the fiscal year ended June 30, 1908, compares very favorably in its general aspect with the average of the preceding 10 years. The actual figures can be compared by reference to the tables already presented. The total merchandise movement, imports plus exports, showed an increase in 1908 of one-fourth over the average of the preceding 10 years. The apparent favorable balance of trade, in merchandise, showed an increase of one-third, so that the balance is a larger percentage of the total business done than it was. Silver exports are slightly less. The gold imports are nearly three times as large, averaging $26,460,000 in the 10-year period, and being $75,865,000 in the year just ended.

## Special Machinery Salesmen.

Builders of machinery which may be classed as special tools are more and more adopting the policy of taking active part in marketing their products. Instead of depending exclusively upon the machinery dealer, or sales resulting from correspondence or the initiative of the customer, the method is to send out representatives thoroughly equipped by special training to interest customers in the merits of the tools. Such manufacturers argue that the lists of the general machinery salesman are far too diversified to permit of an intimate acquaintance with any but the standard tools he represents. In a few cases manufacturers of special and semi-special machinery have cut loose completely from the dealers, maintaining offices and salesmen of their own in the various divisions of territory; but the more common custom is to keep men in the field in active co-operation with the machinery houses.

Under this system each representative may be given a large territory, its extent governed by the degree of specialization of the machine. The salesman can work deliberately, giving ample time to the customer or manufacturer whose needs the machine especially meets. In the case of a grinder used only in the manufacture of combustion engines, for example, the special salesman can devote his time to this trade, exploiting and demonstrating his one line, and alert for newcomers in the business. With almost every tool of special type a campaign of education must usually precede a sale, and it must be carried on at both the office and the shop. By keeping in mind possible variations of the machine for other purposes the salesman has often developed a much wider demand than was originally deemed likely. All the time the dealer is looking after the interests of the manufacturer. A sample machine is kept in stock for the inspection of such customers as are sent by the special salesman. The dealer receives a commission on all sales, whether the order was taken by his own office or by the manufacturer's own agent, if the rule of exclusive territorial rights is in practice, as is usual nowadays.

One question which may arise between manufacturer and dealer is the amount of the latter's commission. In certain cases where the greater part of the work of exploiting and marketing a machine is done by the special agent some manufacturers hold that the commission should be less than where the dealer works with no assistance from the machine builder except from the office, or in the routine of putting machines in operation, or later in removing causes of complaint. The argument is that the dealer has little to do in placing orders beyond maintaining a machine in stock and keeping generally on the lookout for possible business which the special representative can develop. The special agent is the man who shoulders the burden. He hunts for new opportunities; carries on a campaign of education on the economies of this particular tool; sees to its installation, and, when necessary, trains those who will operate it.

Where the dealer has exclusive territory the question has been raised, what part of the 10, 12½ or 15 per cent. commission he ordinarily receives should the dealer concede toward the increased expense of the manufacturer's sales department. There is even a feeling among some machinery builders that on special machines the dealer should have no share at all in sales with which he has had nothing to do. It is not our intention, however, to pass upon the relative rights of the two parties to the transaction, but only to state a condition which, while not wholly new, is a growing one, possessing elements different from those which have heretofore existed.

The opinion has been expressed lately by some builders of the so-called standard machine tools that sooner or later they will be forced to enter the field with their own specially trained salesmen. Their dealers serve them well. Indeed, as indicated above, the policy of manufacturers of special machinery is based on the fact that the middleman concentrates his salesmanship on the standard lines for which there is a larger market. But special machinery, to apply the term to the wide range of tools not classified as standard, has been developed until it strongly competes with the machinery which formerly did practically all of the work of a machine shop. The automatic and turret machines are excellent examples of this. The lathe builders believe that a great deal of work now put on the automatics could be done to better advantage in lathes. One man known everywhere in the trade has frequently remarked that "the best automatic machine in the world is a good engine lathe properly rigged for the work, and a bright boy at $5 a week to operate it"—a statement that conveys a good deal. The lathe people do not dispute the usefulness of the automatics and other similar machines, and use them to excellent advantage in their own shops. But they feel that an important class of work exists which popular favor has taken from the lathe and which would have been better done had it remained with the older machine. They are better equipped to fight their cause against the automatics than they were. They better understand the limitations of the later types. Naturally the feeling exists that it might pay to send out experts with more than a salesman's knowledge of machinery and methods.

The idea in another form exists in a growing practice among the machinery dealers of sending the young men who are to become their salesmen into the works of the machinery builders whom they represent. The suggested specialization would be carrying the present practice much farther, in confining the training to an individual works. But there is no thought of a break with

the dealers should special salesmen become an established factor in the trade. It has come to be an accepted fact that co-operation between the two branches of the trade is all important, and if the policy should be carried further by the introduction of the new element of the special salesman, it is wholly probable that both manufacturer and dealer would profit by it, and so would the user of machinery, the customer, who would receive the benefit of expert assistance in planning for cheaper and better production.

## The Connecticut Brass Industry Slowly Reviving.

The brass manufacturers of the Naugatuck Valley report that their business is gradually reviving. There is nothing radical in the improvement, but the change is considered by the brass people to be a healthful one. The preference would be for slow but constant progress toward normal conditions rather than quick jumps to a top market. The American Brass Company's subsidiary companies at Waterbury, Ansonia and Torrington are gradually lengthening their working hours and calling back employes who had been laid off. None of the companies is back to a complete six-day schedule, but some departments are exceeding the normal working time of 60 hours a week. The American Brass Company finds its business "gradually improving." A smaller and independent mill states that there is a slight improvement in its business and that it has been compelled to run six days a week for the last fortnight, not so much because of the volume of business as because customers insist upon immediate shipments. Another company, a very large consumer of brass, writes: "Business with us, as is the case with most of the Waterbury manufacturers, has shown a slight tendency to improve within the last 30 days, improvement being more marked in Chicago and the West." Another manufacturer of brass goods says: "It is practically necessary to run our factory full time, as we have a great many small orders which cannot wait."

These changes are the more important, because they come in the time of year that is normally dullest. It is easy to reconcile the large number of small rush orders with the known low stocks of consumers, who represent a wide range of industries. Their increasing requirements in the face of the dog days are in harmony with the general expectation that the revivifying influence will become stronger and more widely extended with the return of cooler weather.

## The New British Patent Law.

The plank in one of the national political party platforms urging retaliation on England and Canada for their enactments which make it necessary that patented machinery shall be manufactured in Great Britain and in the Dominion was quite expected, so far as England was concerned. Only a few weeks ago J. E. Evans-Jackson, chairman of the Patents Section of the London Chamber of Commerce, in an interview, corrected some popular misconceptions as to the transference of manufacturing plants to England, and foreshadowed the demand for retaliatory legislation in the United States. Mr. Evans-Jackson smiled at the statement then current in the English newspapers that the new law would bring tens of millions of business to England, and said:

> If it brings us £5,000,000 it will be a tremendous success; but I do not for a moment believe it will. I question the correctness of the statements current as to numerous American factories to be established in England. In the case of one American concern which is establishing a factory at Leicester, England, for the manufacture of razors, the determination to manufacture in England was arrived at three years before the change in the English patent law was made. Every day I am receiving letters from people who want to sell works to foreigners. I have as yet had no applications from foreigners for sites. At the same time I am glad of the act. It is the most protective measure since Cobden's day, a great victory for the Tariff Reform League, of which I am a vice-president.

This is the spirit in which tariff reformers in England are welcoming the new law, although the supporters of the Liberal and free trade government now in power deny that the law was conceived in a protectionist spirit, and insist that its intention was to insure that every machine or device that enjoys the privilege and advantages of the English patent law shall be available for use in England on equitable terms and with the least possible loss of time.

The United States Ambassador and also the German Ambassador in London asked, through the British Foreign Office, for an extension of time in the enforcement of the act against manufacturers of patent machinery and devices in their respective countries. In the House of Commons the Government was questioned as to what concessions, if any, were to be made in response to the American and German requests. Mr. Winston Churchill, the president of the Board of Trade—the state department charged with the administration of the patent code—replied for the Government that it was not its intention to make any change in the law of 1907, and it will accordingly go into full effect on August 28. About the same time the answer of the British Government to the German request was made public in Berlin by Dr. von Bethman Holburg, Imperial Secretary of State for the Interior. It was on the lines of Mr. Churchill's statement; but the Imperial Secretary pointed out to the Industrialists' Union that Section 27 of the new British law does not unreservedly demand the manufacture of every patent in Great Britain. The Comptroller of Patents and the courts in Great Britain are authorized, he reminded the union, to consider the situation in every case, and in given circumstances are empowered to extend the time limit.

Section 27 is retroactive in its application. It includes all patents that were taken out from 1894 to 1904; and according to the best calculation 16,000 patents come within the scope of the section. One of the prime movers for the new law says that if half of these patents are already worked in England, which is a liberal allowance, there are left about 8000 patents to which Section 27 applies. It is affirmed that the law will do more for England's industrial welfare and more to decrease unemployment than any act passed in the last 50 years.

# CORRESPONDENCE.

### Direct Air Pressure Pumping.

*To the Editor:* The company with which the writer is connected has, during the past seven or eight years, had in operation on the Pohle system 14 wells of an average depth of about 250 ft. These wells are in sand, interspersed with lenses of rather fine gravel. Some of the wells have 4, others 5, and others 6-in. discharge pipes, each having a 1¼-in. central air pipe. The water is found about 75 ft. from the surface, but, owing to the fine sand and gravel through which it must pass, there is considerable drop when the wells are pumping, the amount of drop depending upon the quantity of water pumped.

The lift at the different wells varies from 100 to 140 ft. Various submergencies or heads have been tried from 60 to 35 or 40 per cent. of the total head and lift. The wells being in almost constant use in connection with the works have made the conditions very unfavorable for conducting a series of experiments or tests that would

be of any particular value, but it is hoped that in the near future a favorable opportunity will offer.

As a means of obtaining a sufficient supply of water the wells have been a success, but from an economical standpoint per gallon of water pumped they have not been entirely satisfactory, and for this reason the writer some years ago undertook to work out theoretically the principles involved in the operation of the wells with the view of establishing the proper conditions for the most economical results. Formulas were deduced for determining the proper relation of head, lift, quantity of water, diameter of discharge pipe, quantity and pressure of free air required, &c., with the expectation of confirming or disproving them by actual test, but so far, for the reason stated above, without result.

The statements published from time to time in the past that have come to the observation of the writer, concerning the operation and tests of wells using direct air pressure, on account of insufficient data being given, have neither proved nor disproved the correctness of the theory proposed and the resulting formulas. The recent publication in *The Iron Age*, June 11, 1908, of experiments at Wilmerding, Pa., confirm the correctness of three of the formulas, while apparently not confirming two others.

In the article referred to the following statement is understood: Size of discharge pipe, gallons of water delivered per minute and ratio of lift to submergence remaining constant, the free air required per minute will be the same regardless of whether the lift is 10 or 100 ft.

This is at variance with theory, with the practice of engineers in figuring free air requirement, and also with the actual experience of the writer. Under the conditions as stated engineers figure the free air required would be proportional to the lift. Theoretically, the free air required does not increase proportionally with the lift. The statement that "the cubic feet of free air per gallon of water raised increases as the ratio increases for a given size of discharge pipe, and for a given ratio it decreases as the size of the discharge pipe increases," agrees with theory. Also the free air required per gallon of water decreases with increased submergence, the lift remaining constant.

Theoretically, the decrease of free air required is very rapid, from 10 to 35 per cent. of submergence to total lift and submergence, less rapid from 35 to 50 per cent., and after the submergence reaches 60 per cent. of the total, the decrease is so slight that it may be taken to be constant for any additional increase of submergence. To secure the maximum economy due to decreased quantity of free air required, it would be unnecessary to go beyond 60 per cent. submergence. Probably 59 per cent. would be nearer the practical limit. The curve for free air required for different percentages of submergence is a hyperbola.

The statement that "a curve representing the horsepower per gallon of water raised for varying depths and constant lift will at first decrease as the depth increases until it reaches a minimum point, after which it increases" is not in accordance with theory. Theoretically, commencing at 10 per cent. submergence, the horsepower of the air required increases by a constantly decreasing ratio for each percentage of increase in the submergence. Economy in horsepower, therefore of fuel, lies in the direction of lower percentage of submergence, while economy in size of compressor plant, piping, &c., lies in the direction of increased percentage of submergence up to, say, 60 per cent.

For any given well the submergence, lift and quantity of water discharged being known, the proper diameter of discharge and air pipe may be found, and the whole adjusted to the most economical working condition.

N. M. L.

## Production by the United States Steel Corporation.

The American Iron and Steel Association's report for 1907, just issued, contains the usual statement of the production of the various forms of iron and steel in that year by the United States Steel Corporation subsidiaries, compared with the total for the country in the various lines. We have added the percentages for the preceding years, to make complete comparison through all the full calendar years of the corporation's existence. But one slight deviation in classification has been made in the statistics for the various years, the items "ferro phosphorus" and "Bessemer ferrosilicon" having been included with ferro manganese and spiegeleisen in the reports of two years, but the tonnage is so small that the percentage is not significantly changed. The figures represent gross tons in all cases, except that coke is stated in net tons. As has been noted heretofore, the Steel Corporation's percentage of steel ingots has steadily declined, and in most items declines are noted with some fluctuations:

| | By U. S. Steel Corporation. | By independent companies. | Total shipments and production. | Percentage of U. S. Steel Corporation. 1907. | 1906. | 1905. | 1904. | 1903. | 1902. |
|---|---|---|---|---|---|---|---|---|---|
| Shipments of iron ore from the Lake Superior region | 23,148,467 | 19,096,603 | 42,245,070 | 54.7 | 54.2 | 56.0 | 53.8 | 58.8 | 60.4 |
| Total production of iron ore | 22,403,801 | 29,316,818 | 51,720,619 | 43.3 | 43.2 | 43.4 | 38.0 | 43.8 | 45.1 |
| Production of coke, net tons | 12,373,938 | 28,405,626 | 40,779,564 | 30.3 | 36.5 | 37.9 | 36.6 | 34.2 | 37.4 |
| Spiegeleisen and ferromanganese | 186,472 | 152,876 | 339,348 | 54.9 | 67.2 | 74.9 | 70.5 | 81.0 | 81.0 |
| Bessemer, basic, low phosphorus, foundry, forge, ferrosilicon and all other pig iron | 10,633,496 | 14,808,517 | 25,442,013 | 41.7 | 44.2 | 43.8 | 44.3 | 39.9 | 44.3 |
| Total pig iron, including spiegel, ferromanganese,, ferrophosphorus and Bessemer ferrosilicon | 10,819,968 | 14,961,393 | 25,781,361 | 41.9 | 44.5 | 44.2 | 44.6 | 40.4 | 44.7 |
| Bessemer steel ingots and castings | 7,556,460 | 4,111,089 | 11,667,549 | 64.7 | 65.7 | 67.4 | 69.0 | 72.0 | 73.9 |
| Open hearth steel ingots and castings | 5,543,088 | 6,006,648 | 11,549,736 | 47.9 | 49.6 | 51.4 | 50.4 | 51.0 | 52.4 |
| Total Bessemer and open hearth steel ingots and castings | 13,099,548 | 10,117,737 | 23,217,285 | 56.4 | 58.1 | 60.2 | 61.0 | 63.5 | 65.7 |
| Bessemer steel rails | 1,744,578 | 1,635,447 | 3,380,025 | 51.6 | 52.6 | 53.6 | 57.2 | 65.6 | 65.4 |
| Structural shapes | 1,066,727 | 873,625 | 1,940,352 | 54.9 | 54.6 | 54.6 | 55.1 | 60.3 | 57.9 |
| Plates and sheets, including black plates for tinning, but excluding nail plate | 2,372,498 | 1,876,334 | 4,248,832 | 55.8 | 56.3 | 57.4 | 58.0 | 59.9 | 59.4 |
| Wire rods | 1,443,191 | 574,392 | 2,017,583 | 71.5 | 71.7 | 69.9 | 71.3 | 73.1 | 71.5 |
| Bars, skelp, nail plate, open hearth and iron rails, and other finished rolled products | 2,814,042 | 5,463,988 | 8,278,030 | 33.9 | 33.8 | 31.0 | 28.6 | 29.8 | 31.1 |
| Total finished rolled products, including rolled forging blooms and billets | 9,441,036 | 10,423,786 | 19,864,822 | 47.5 | 48.1 | 47.3 | 47.8 | 51.2 | 53 |
| Wire nails, kegs of 100 lb | 7,794,546 | 3,936,498 | 11,731,044 | 66.4 | 65.5 | 66.1 | 67.0 | 70.6 | 64 |

The name of the Electric Controller & Supply Company, Cleveland, Ohio, has been changed to the Electric Controller & Mfg. Company. The new name is more in consideration of the nature and scope of the business, which includes the manufacture of lifting magnets, electric brakes, magnetic switches, solenoids, limit stops, arc welders, crane fittings, knife switches, flexible couplings, and the electric fault finder, as well as controllers of manual and magnetic switch types for all purposes.

The number of idle railroad cars in the United States and Canada on July 8 was 303,042, or 9378 less than on June 24.

# The Uniform Bill of Lading.

## A Document to Be Adopted in Official Classification Territory.

BY R. L. ARDREY.

The Interstate Commerce Commission has published a report "in the matter of bills of lading," which it is believed will dispose of the long standing controversy between the railroads and shipping interests on this complex question. The commission concedes that it does not have the power to enforce the adoption of any form of bill of lading, and its report merely recommends that the form which has been revised by the commission should be adopted September 1, 1908. It is understood that the railroads in official classification territory will act favorably upon this recommendation. Two forms are provided for, printed on the face side in different colors, one for "straight" and one for "order" consignments. The "order" bill will have a degree of negotiability, while the "straight" bill will be non-negotiable.

The new document is essentially the form filed with the commission a year ago by a joint committee representing the Eastern roads and various associations of shippers. In *The Iron Age* of November 7, 1907, page 1323, a history of the movement for the uniform bill of lading was given, with the objections to certain proposals made by various interests. At the hearing at Washington, as detailed in that article, it was brought out that bankers advance $2,500,000,000 a year on shipments of commodities like grain and cotton, which are carried on negotiable "order" bills of lading. The new bill of lading will be signed by the shipper as well as by the agent of the carrier. The present form is not signed by the shipper, and its provisions have not been enforced, but the new document will undoubtedly be recognized by the courts as a valid contract between the carrier and the shipper, especially since it has been promulgated and recommended by the Interstate Commerce Commission.

### Liability for Loss.

The railroads accept their full common law liability for loss or damage in transit, as generally interpreted by the courts in this country; and on "house" freight and cars going to team tracks they remain liable as common carriers until 48 hr. after notice of arrival has been duly sent or given. Carload freight on private sidings is at the owner's risk. The exceptions to the liability of the carrier are stated in section 1 of the "conditions" as given below.

It will be seen that loss or damage is to be settled on the basis of the invoice price at the time and place of shipment. The grain and cotton brokers took violent exception to this clause at the hearing before the commission last fall, but the commission has made no change. The clause which gave the carrier the benefit of any insurance effected on the property was also a bone of contention. The commission has modified this clause, so that it will not be binding if it would have the effect of invalidating the insurance.

### A Flaw in the Commission's Document.

The new document is so carefully drawn to safeguard the rights of the shipper as well as the carrier that it answers the needs of manufacturing interests. There is, however, one flaw in the document which may be productive of a great deal of trouble, and it might easily be corrected by the commission or by the railroads. The third paragraph of section 3 reads:

> Claims for loss, damage or delay must be made in writing to the carrier at the point of delivery or at the point of origin within four months after delivery of the property, or, in case of failure to make delivery, then within four months after a reasonable time for delivery has elapsed. Unless claims are so made, the carrier shall not be liable.

There are thousands of manufacturers whose general offices and claim departments are not located at the plants from which they ship; and a large number have two or more plants. There are also thousands of wholesale dealers in commodities like pig iron, coal, coke, lumber, &c., whose places of business are in central cities, but whose shipments are ordered direct from the place of production to their customers throughout the country. It is not customary for these shippers to file their claims at point of origin or at destination. In many cases an intermediate carrier settles with them.

As a rule shippers will pay no attention to this clause. Claims will be filed as heretofore, and if they are declined by the carrier to whom presented, after the four months have elapsed, the shipper may not be able to bring suit to enforce his claim because he did not comply with this provision. It is not necessary to specify in a bill of lading where the claim shall be presented. If the courts enforce this clause it will prove a veritable trap to many shippers to deprive them of their rights, because it will be disregarded in ordinary usage by the people who will be affected by it.

Heretofore the laws of the States have determined the life of a damage claim against a railroad, and few of the States bar such a claim in less than five years. There is no doubt that this time is too long, and that it is unfair to the railroad for a shipper to sleep on his rights for years before making demand for what he believes to be due him. Four months, however, may prove an unreasonably short time to outlaw a claim. Under all ordinary circumstances a shipper should be aware of his loss within four months, but mistakes will occur. The railroads make many mistakes. Some of them take more than four months to pay a claim after full proofs have been presented, and the delay is not always due to mistakes in the claim department. It would seem as though the line is drawn a little too closely and may work injustice to the shipper who overlooks his claim for four months, or who, through unavoidable circumstances, is unable to present proofs within that time. The commission, having recommended this document to the carriers, might hold that the payment of a claim that was not presented in the time and manner prescribed would be an unlawful "rebate."

### The New Bill of Lading.

The following is the form of the bill of lading as it is given in the report of the Interstate Commerce Commission:

COPY OF BILL OF LADING—NEGOTIABLE.

.....Railroad Company.

ORDER BILL OF LADING—ORIGINAL.

Received, subject to classifications and tariffs in effect on the date of issue of this original bill of lading, at..... 190.., from ..... the property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned and destined as indicated below, which said company agrees to carry to its usual place of delivery at said destination, if on its road, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each carrier of all or any of said property over all or any portion of said route to destination, as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the conditions, whether printed or written, herein contained (including conditions on back hereof), and which are agreed to by the shipper and accepted for himself and his assigns.

The surrender of this original order bill of lading properly indorsed shall be required before the delivery of the property. Inspection of property covered by this bill of lading will not be permitted unless provided by law, or unless permission is indorsed on this original bill of lading, or given in writing by the shipper.

Notes.—The foregoing will appear on the front or first page of the bill of lading.

In connection with the name of the party to whom the shipment is consigned the words "order of" shall prominently appear in print, thus:

"Consigned to order of ....."

The bill of lading is to be signed by the shipper and agent of the carrier issuing same, and space shall be provided for this purpose.

The detail arrangement respecting other matters that customarily appear on the face of the bill of lading, such as name of destination, car numbers, routing, description of articles, weights, &c., will be prescribed by the uniform bill of lading committee.

The size of the bill of lading shall be 8½ in. wide by 11 in. long.

Order bills of lading shall be printed on yellow paper for convenient distinction from bills of lading covering other than "order" consignments.

COPY OF NON-NEGOTIABLE BILL.

.....Railroad Company.

BILL OF LADING—ORIGINAL—NOT NEGOTIABLE.

Received, subject to classifications and tariffs in effect on the date of issue of this original bill of lading, at..... 190.., from ..... the property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned and destined as indicated below, which said company agrees to carry to its usual place of delivery at said destination, if on its road, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the conditions, whether printed or written, herein contained (including conditions on back hereof), and which are agreed to by the shipper and accepted for himself and his assigns.

Notes.—The foregoing will appear on the front or first page of the bill of lading.

The bill of lading is to be signed by the shipper and agent of the carrier issuing same, and space shall be provided for this purpose.

The detail arrangement respecting other matters that customarily appear on the face of the bill of lading, such as name of destination, car numbers, routing, description of articles, weights, &c., will be prescribed by the uniform bill of lading committee.

The size of the bill of lading shall be 8½ in. wide by 11 in. long.

Bills of lading covering what may be termed "straight consignments," being those other than "order consignments," shall be printed on white paper.

Bills of lading other than those covering "order consignments" shall be stamped "not negotiable."

The following conditions will appear on the back of the bill of lading:

CONDITIONS.

Section 1. The carrier or party in possession of any of the property herein described shall be liable for any loss thereof or damage thereto, except as hereinafter provided.

No carrier or party in possession of any of the property herein described shall be liable for any loss thereof or damage thereto, or delay caused by the act of God, the public enemy, quarantine, the authority of law, or the act or default of the shipper or owner, or for differences in the weights of grain, seed or other commodities caused by natural shrinkage or discrepancies in elevator weights. For loss, damage or delay caused by fire occurring after 48 hr. (exclusive of legal holidays) after notice of the arrival of the property at destination or at port of export (if intended for export) has been duly sent or given, the carrier's liability shall be that of warehousemen only. Except in case of negligence of the carrier or party in possession (and the burden to prove freedom from such negligence shall be on the carrier or party in possession), the carrier or party in possession shall not be liable for loss, damage or delay occurring while the property is stopped and held in transit upon request of the shipper, owner or party entitled to make such request, or resulting from a defect or vice in the property or from riots or strikes. When in accordance with general custom, on account of the nature of the property, or when at the request of the shipper the property is transported in open cars the carrier or party in possession (except in case of loss or damage by fire, in which case the liability shall be the same as though the property had been carried in closed cars) shall be liable only for negligence, and the burden to prove freedom from such negligence shall be on the carrier or party in possession.

Sec. 2. In issuing this bill of lading this company agrees to transport only over its own line, and except as otherwise provided by law acts only as agent with respect to the portion of the route beyond its own line.

No carrier shall be liable for loss, damage or injury not occurring on its own road or its portion of the through route, nor after said property has been delivered to the next carrier, except as such liability is or may be imposed by law, but nothing contained in this bill of lading shall be deemed to exempt the initial carrier from any such liability so imposed.

Sec. 3. No carrier is bound to transport said property by any particular train or vessel, or in time for any particular market, or otherwise than with reasonable dispatch, unless by specific agreement indorsed hereon. Every carrier shall have the right in case of physical necessity to forward said property by any railroad or route between the point of shipment and the point of destination, but if such diversion shall be from a rail to a water route the liability of the carrier shall be the same as though the entire carriage were by rail.

The amount of any loss or damage for which any carrier is liable shall be computed on the basis of the value of the property (being the bona fide invoice price, if any, to the consignee, including the freight charges, if prepaid) at the place and time of shipment under this bill of lading, unless a lower value has been represented in writing by the shipper, or has been agreed upon or is determined by the classification or tariffs upon which the rate is based, in any of which events such lower value shall be the maximum amount to govern such computation, whether or not such loss or damage occurs from negligence.

Claims for loss, damage or delay must be made in writing to the carrier at the point of delivery, or at the point of origin, within four months after delivery of the property; or, in case of failure to make delivery, then within four months after a reasonable time for delivery has elapsed. Unless claims are so made the carrier shall not be liable.

Any carrier or party liable on account of loss of or damage to any of said property shall have the full benefit of any insurance that may have been effected upon or on account of said property, so far as this shall not avoid the policies or contracts of insurance.

Sec. 4. All property shall be subject to necessary cooperage and baling at owner's cost. Each carrier over whose route cotton is to be transported hereunder shall have the privilege, at its own cost and risk, of compressing the same for greater convenience in handling or forwarding, and shall not be held responsible for deviation or unavoidable delays in procuring such compression. Grain in bulk consigned to a point where there is a railroad, public or licensed elevator, may (unless otherwise expressly noted herein, and then if it is not promptly unloaded) be there delivered and placed with other grain of the same kind and grade without respect to ownership, and if so delivered shall be subject to a lien for elevator charges in addition to all other charges hereunder.

Sec. 5. Property not removed by the party entitled to receive it within 48 hr. (exclusive of legal holidays) after notice of its arrival has been duly sent or given may be kept in car, depot or place of delivery of the carrier, or warehouse, subject to a reasonable charge for storage, and to carrier's responsibility as warehouseman only, or may be, at the option of the carrier, removed to and stored in a public or licensed warehouse at the cost of the owner, and there held at the owner's risk and without liability on the part of the carrier, and subject to a lien for all freight and other lawful charges, including a reasonable charge for storage.

The carrier may make a reasonable charge for the detention of any vessel or car, or for the use of tracks after the car has been held 48 hr. (exclusive of legal holidays), for loading or unloading, and may add such charge to all other charges hereunder and hold such property subject to a lien therefor. Nothing in this section shall be construed as lessening the time allowed by law or as setting aside any local rule affecting car service or storage.

Property destined to or taken from a station, wharf or landing at which there is no regularly appointed agent shall be entirely at risk of owner after unloaded from cars or vessels, or until loaded into cars or vessels, and when received from or delivered on private or other sidings, wharves or landings shall be at owner's risk until the cars are attached to and after they are detached from trains.

Sec. 6. No carrier will carry or be liable in any way for any documents, specie, or for any articles of extraordinary value not specifically rated in the published classification or tariffs unless a special agreement to do so, and a stipulated value of the articles are indorsed hereon.

Sec. 7. Every party, whether principal or agent, shipping explosive or dangerous goods, without previous full written disclosure to the carrier of their nature, shall be liable for all loss or damage caused thereby, and such goods may be warehoused at owner's risk and expense, or destroyed without compensation.

Sec. 8. The owner or consignee shall pay the freight and all other lawful charges accruing on said property, and if required shall pay the same before delivery. If upon inspection it is ascertained that the articles shipped are not those described in this bill of lading, the freight charges must be paid upon the articles actually shipped.

Sec. 9. Except in case of diversion from rail to water route, which is provided for in section 3 hereof, if all or any part of said property is carried by water over any part of said route, such water carriage shall be performed subject to the liability, limitations and exemptions provided by statute, and to the conditions contained in this bill of lading not inconsistent with such statutes or this section, and subject also to the condition that no carrier or party in possession shall be liable for any loss or damage resulting from the perils of the lakes, sea or other waters, or from explosion, bursting of boilers, breakage of shafts, or any latent defect in hull, machinery or appurtenances, or from collision, stranding or other accidents of navigation, or from prolongation of the voyage. And any vessel carrying any or all of the property herein described shall have the liberty to call at intermediate ports, to tow and be towed, and assist vessels in distress, and to deviate for the purpose of saving life or property.

The term "water carriage" in this section shall not be construed as including lighterage across rivers or in lake or other harbors, and the liability for such lighterage shall be governed by the other sections of this instrument.

Sec. 10. Any alteration, addition or erasure in this bill of lading which shall be made without an indorsement thereof hereon, signed by the agent of the carrier issuing this bill of lading shall be without effect, and this bill of lading shall be enforceable according to its original tenor.

# NEWS OF THE WORKS.

### Iron and Steel.

The Niles Iron & Steel Company, Niles, Ohio, has under construction large additions to its plant which will enable it to increase the output of eaves trough and conductor pipe, pressed steel seats, cultivator shields and other steel stamping pieces, which are manufactured only for large jobbers. The company is erecting a one-story building of steel construction, 74 x 260 ft., one-half of which will be used for the stamping department and the other half for the eaves trough and conductor pipe department, to be in charge of R. G. Bird. The necessary machinery has been purchased and the plant will be in operation by July 25.

Under a reorganization recently effected, the Texas Rolling Mill Company, Fort Worth, Texas, incorporated with a capital stock of $160,000, has succeeded the Fort Worth Iron & Steel Company. The plant, which has been shut down for some time, will be modernized and equipped to produce 100 tons of merchant bars daily, besides cotton ties and track spikes and bolts. The officers of the new organization are Geo. W. Armstrong, president; W. H. Mills, vice-president; E. A. Hughes, secretary and manager.

The No. 1 Etowah furnace of the Alabama Consolidated Coal & Iron Company, at Gadsden, Ala., has been banked.

The Edgewater Iron Company, recently incorporated, has purchased the Lebanon Valley Furnace from the Lebanon Valley Furnace Company, Lebanon, Pa., and a 196th interest in the Cornwall Iron Ore Banks, Cornwall, Pa., for $220,000. The directors of the new company are Gen. E. Burd Grubb, president of the Lebanon Valley Furnace Company; George L. Record and L. W. Richardson, assistant treasurer and manager of the Lebanon Valley Furnace Company.

The rolling mill formerly operated by the Seidel & Hastings Company at the foot of East Tenth street, Wilmington, Del., has been purchased by the Keystone Steel Company, which is understood to be making alterations preparatory to placing the mill in operation at an early date. The plant has been idle for some time.

### General Machinery.

The Auto-Fedan Hay Press Company, formerly located at Topeka, Kan., has moved to Kansas City, Mo., where it occupies a new factory just completed at the suburban town of Rosedale. The present plant is about three times the size of the old one, and its equipment has been augmented by the installation of considerable new machinery. The contemplated establishment of switch track connections with the 'Frisco Line will furnish convenient shipping facilities for in and out carload freight. The offices of the company are at 1521 West Twelfth street.

The Frick Company, Waynesboro, Pa., manufacturer of ice and refrigerating machinery, recently contracted through Otto C. Arens, its Pittsburgh representative, with the Fort Pitt Hotel of that city for a complete 30-ton Eclipse refrigerating plant. The hotel has been operating in its present establishment a 15-ton Eclipse machine, and this with the one just contracted for will be moved to the new addition when it is completed.

The Thomas Carlin's Sons Company, 1600 River avenue, N. S., Pittsburgh, builder of shears and grinding pans for iron and steel works and contractors' equipment, has orders on its books for medium sized shears for shipment to Hamilton, Ohio; Newark, N. J., and Elyria, Ohio, and recently made shipments of medium sized shears to Buffalo and Syracuse, N. Y. It is also building a 54,000-lb. shear for a Philadelphia concern and one of 100,000 lb. for a company in Columbia, Pa. Last week it shipped two large hoisting engines to Mobile, Ala., for the United States Government, to be used in the erection of a breakwater for the Mobile Harbor. Another engine somewhat similar in construction was shipped to the Purglobe Coal Company, Columbus, Ohio.

C. B. Eads and associates, Eunice, La., will erect a new machine shop on North Second street, for which two lathes, a drill press, shaper, emery grinder and small tools will be required. The shop will not be open for business before the first of next year.

The Oakley & Jansen Machine Company, Parkersburg, W. Va., whose plant is at 101-103 First street, has incorporated, with a capital stock of $50,000, to manufacture a special line of patented belt sanding and grinding machines for grinding and polishing brass, iron, steel and other metals. E. N. Jansen is general manager.

W. A. Crandall, Binghamton, N. Y., has opened a modernly equipped machine shop at 227-229 Water street, where he will do general machine work, making a specialty of gas, gasoline, automobile and marine engine repairs. Mr. Crandall has built several marine engines and has orders on hand for several of this type.

### Power Plant Equipment.

Articles have been filed for the incorporation of two companies at Virginia City, Mont., the Easton-Pacific Company, with a capital stock of $100,000, and the Economic Power Company, with $200,000. The incorporators of the two companies are identical, being W. A. Clark, Mary R. Elling and J. H. Pankey of Virginia City.

The Parker Boiler Company, Philadelphia, Pa., has recently completed the third order from Michigan College of Mines, Houghton, Mich., for one 268-hp. unit, which already has two 120-hp. units, one installed in 1901 and the other in 1904. The company has also received an order from United Verde Copper Company, Jerome, Ariz., for two 265-hp. boilers equipped with superheaters, and one from the Belen Mining Company, Nacozari, Sonora, Mexico, for two 130-hp. units.

The Board of Health, New York, will receive bids until July 29 for two boilers for the boiler house of the Kingston Avenue Hospital, Brooklyn.

The Town Clerk of Fairview, Okla., will receive bids until August 14 for one 45-kw. alternating current generator and exciter, one 60-kw. alternating current generator and exciter, one 400-gal. single acting triplex power pump, one 300-gal. double acting triplex power pump and two 100-hp. gas producer units.

The Town Council of Emporia, Va., is taking bids on one 50-hp. improved gasoline engine and one single acting duplex power pump direct connected to engine.

### Foundries.

The E. Killing Molding Machine Works, Davenport, Iowa, has under erection a new foundry, 50 x 100 ft. The company does general jobbing work and makes a specialty of sash weights molded on the Killing molding machine. All contracts for material in connection with improvements planned have been let.

Pursuant to an increase in capital stock from $100,000 to $200,000, the Union Foundry Company, Anniston, Ala., has begun work on new plant extensions that will largely increase the capacity of the foundry. It is stated that practically all the additional machinery required has been bought. Soil pipe and fittings constitute the product of the plant, which when completed will have a maximum capacity of 20,000 tons.

R. L Ahles, president of the Sweet's Steel Company, Williamsport, Pa., has purchased the plant of the Demorest Mfg. Company and will reorganize the business under the name of the Lycoming Foundry & Machine Company. The new company will do a general foundry and machine business, making a specialty of high grade castings and special machinery, and will also continue the manufacture of sewing machines and operate the japanning and nickeling departments. The fact that Mr. Ahles is president of both companies has led to the circulation of incorrect reports that the Sweet's Steel Company will occupy part of the buildings.

### Bridges and Buildings.

The Penn Bridge Company, Beaver Falls, Pa., fabricator and erector of structural material, last week made shipment of two large crane girders, each 123 ft. long and 8 ft. deep, and weighing 75 tons. The girders were designed by the Alliance Machine Company for electric cranes. The company is shipping material for a steel frame building being erected by the Government at the Bremerton Navy Yard, Washington, D. C.; a Government coaling station at San Diego, Cal., and recently completed the shipment of a large quantity of structural steel to Panama for use in the construction of railroad bridges.

### Fires.

The farm machinery plant of S. H. Sargent & Son, Castleton, Vt., was burned July 17, the loss being about $15,000.

The plant of the Stockham Pipe & Fittings Company, Birmingham, Ala., was damaged $25,000 by fire July 12.

The garage owned by D. W. Pratt, at Bedford avenue, near Atlantic avenue, Brooklyn, N. Y., was practically destroyed by fire July 18, the loss being about $30,000.

The main building of the Elk Tanning Company, Everett, Pa., was burned July 17. The loss on the buildings, machinery and stock is estimated at $150,000.

The factory of the Greenpoint Metallic Bed Company, Brooklyn, N. Y., was badly damaged by fire July 14, the loss being estimated at $30,000.

### Hardware.

The Humphrey-Jones Paint Company, Denver, Colo., is enlarging its facilities by the erection of a three-story warehouse and factory building adjacent to the Denver & Rio Grande tracks. The new buildings will be equipped with improved machinery for the manufacture and distribution of mixed paints. Underground vaults will be provided for the storage of oils, which will be drawn to the various departments in the building by measuring pumps. It is expected that the new plant will be ready for occupancy by September 1.

A two-story brick addition to the large factory of the Patton Paint Company, Milwaukee, Wis., is now in course of construction. The dry color works are being moved into a recently purchased building just opposite the plant, which will triple the capacity of this department; the buildings heretofore occupied by the dry color works will be used for other purposes. It is expected that by the first of the year every department of the Milwaukee works will be doubled in capacity and that of the Newark, N. J., factory will also be largely increased.

The Ward Fence Company, formerly located at Marion, Ind., is moving its entire plant to Decatur, Ind., where it has erected new and modern factory buildings especially adapted to the requirements of its business. The company makes a complete line of farm and ornamental wire fencing.

# The Iron and Metal Trades

Improvement continues slow, and is somewhat spotty, with some complaint of irregularity in prices in some finished lines. Leaders in the steel industry object to the efforts to boom the business and do not expect a return to normal conditions until next spring.

Pig Iron has been quiet in all the leading markets, and so far as the Southern producers are concerned the willingness to meet $11.50 base for No. 2 Foundry, at Birmingham, in distant competitive markets is increasing.

Philadelphia reports the sale of an additional lot of 3000 tons of Basic Pig at $15.45, for the last quarter, which is higher than was accepted last week, for delivery during the second half at the same point. In the same market there has been a transaction involving 26,000 tons of Forge Iron, which is virtually an extension of a present contract into mid-year, the price being based on a sliding scale.

Some low prices have again been made in Cast Iron Pipe, a lot of 1700 tons for Boston having been taken at $22.50. Low figures were also made on about 2700 tons for delivery at Albany. A contract for 6400 tons for Havana was secured by the same shop on the Delaware. The order for 3000 tons for Dallas, Texas, was divided. Bids are going in for 4200 tons for Brookline, Mass., and there is a very considerable tonnage coming up for Mexico.

An interesting piece of work, calling for 20,000 tons of Steel Plates, is that of the Pipe line for the water service of Brooklyn. This work, which was up once before, is now to be pushed vigorously. Delaware shipyards have placed orders for close to 4000 tons, and a small job is up for a boat to be built on the Hudson River.

New Structural work is rather light. Chicago reports 6400 tons, including 3000 tons for the Chicago & Northwestern Railroad and 2200 tons for a building at Los Angeles, Cal.

Steel Rail business continues very light, but it is noticed that the demand for track supplies in small lots is rather urgent, indicating that there is more activity in track repairs.

An additional contract for 4000 tons of Steel Bars was closed in Chicago, the requirements of the implement makers now being quite generally provided for. Thus far specifications against these large contracts are coming along slowly, but that is to be expected at this season of the year.

The markets for Old Material are firmer, and more interest is being taken in them by both consumers and dealers.

While it is conceded that the purchases of Copper by domestic consumers are somewhat better, the movement has been much exaggerated. It does not look as though it could yet counterbalance the heavy production and the disposition of European financiers and consumers to call a halt on the heavy tonnage which is being put at them.

## A Comparison of Prices.

**Advances Over the Previous Month in Heavy Type, Declines in Italics.**

At date, one week, one month and one year previous.

| | July22, 1908. | July15, 1908. | June24, 1908. | July23, 1907. |
|---|---|---|---|---|
| **PIG IRON,** Per Gross Ton: | | | | |
| Foundry No. 2, Standard, Philadelphia | $16.50 | $16.50 | $16.50 | $22.50 |
| Foundry No. 2, Southern, Cincinnati | *14.75* | 15.00 | 15.25 | 23.75 |
| Foundry No. 2, Local, Chicago | 17.00 | 17.00 | 17.50 | 25.00 |
| Bessemer, Pittsburgh | 16.90 | 16.90 | 16.90 | 23.40 |
| Gray Forge, Pittsburgh | 14.90 | 14.90 | 14.90 | 22.90 |
| Lake Superior Charcoal, Chicago | 20.00 | 20.00 | 20.00 | 27.00 |
| **BILLETS, &c.,** Per Gross Ton: | | | | |
| Bessemer Billets, Pittsburgh | 25.00 | 25.00 | 25.00 | 30.00 |
| Forging Billets, Pittsburgh | 27.00 | 27.00 | 27.00 | 34.00 |
| Open Hearth Billets, Phila | 26.20 | 26.20 | 26.20 | 32.00 |
| Wire Rods, Pittsburgh | 33.00 | 33.00 | 33.00 | 36.50 |
| Steel Rails, Heavy, Eastern Mill | 28.00 | 28.00 | 28.00 | 28.00 |
| **OLD MATERIAL,** Per Gross Ton: | | | | |
| Steel Rails, Melting, Chicago | **13.00** | 12.75 | 12.50 | 17.50 |
| Steel Rails, Melting, Phila | 13.50 | 13.50 | 13.50 | 17.75 |
| Iron Rails, Chicago | **16.00** | 16.00 | 15.50 | 21.50 |
| Iron Rails, Philadelphia | 18.00 | 18.00 | 18.00 | 25.00 |
| Car Wheels, Chicago | 13.00 | 13.00 | 13.00 | 24.00 |
| Car Wheels, Philadelphia | 13.50 | 13.50 | 13.50 | 25.00 |
| Heavy Steel Scrap, Pittsburgh | **14.75** | 14.00 | 13.25 | 18.00 |
| Heavy Steel Scrap, Chicago | **12.00** | 11.50 | 11.50 | 15.50 |
| Heavy Steel Scrap, Phila | **14.00** | 14.00 | 13.50 | 17.50 |
| **FINISHED IRON AND STEEL,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Refined Iron Bars, Philadelphia | *1.35* | 1.35 | 1.40 | 1.83½ |
| Common Iron Bars, Chicago | 1.50 | 1.50 | 1.50 | 1.78 |
| Common Iron Bars, Pittsburgh | 1.40 | 1.40 | 1.40 | 1.70 |
| Steel Bars, Tidewater, New York | 1.56 | 1.56 | 1.56 | 1.86 |
| Steel Bars, Pittsburgh | 1.40 | 1.40 | 1.40 | 1.60 |
| Tank Plates, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Tank Plates, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Beams, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Beams, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Angles, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Angles, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Skelp, Grooved Steel, Pittsburgh | 1.45 | 1.45 | 1.45 | 1.90 |
| Skelp, Sheared Steel, Pittsburgh | 1.50 | 1.50 | 1.50 | 1.90 |
| **SHEETS, NAILS AND WIRE,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Sheets, No. 27, Pittsburgh | 2.40 | 2.40 | 2.40 | 2.50 |
| Wire Nails, Pittsburgh | 1.95 | 1.95 | 1.95 | 2.00 |
| Cut Nails, Pittsburgh | 1.75 | 1.75 | 1.75 | 2.05 |
| Barb Wire, Galv., Pittsburgh | 2.40 | 2.40 | 2.40 | 2.45 |
| **METALS,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Lake Copper, New York | 13.00 | 12.97½ | 13.00 | 21.50 |
| Electrolytic Copper, New York | *12.75* | 12.75 | 12.87½ | 21.00 |
| Spelter, New York | *4.45* | 4.45 | 4.55 | 6.00 |
| Spelter, St. Louis | *4.35* | 4.30 | 4.40 | 5.80 |
| Lead, New York | *4.47½* | 4.45 | 4.50 | 5.25 |
| Lead, St. Louis | *4.32½* | 4.27½ | 4.40 | 5.00 |
| Tin, New York | **29.75** | 29.20 | 27.60 | 41.15 |
| Antimony, Hallett, New York | *8.25* | 8.25 | 8.50 | 10.50 |
| Nickel, New York | 45.00 | 45.00 | 45.00 | 45.00 |
| Tin Plate, 100 lb., New York | $3.89 | $3.89 | $3.89 | $4.09 |

## Chicago.

FISHER BUILDING, July 22, 1908.—(*By Telegraph.*)

Viewed as a whole, the market trend is forward. The main force back of the advance so far made toward normal conditions is the soundness and strength of agriculture. This has made possible and even necessary increased hours of work and in some cases the employment of more men in repair shops, which in turn means the use of more material. While the increase of tonnage coming to the Iron and Steel mills on this account is relatively small, yet even the moderate demand for railroad supplies thus created is beneficially reflected in many lines. Fabricators made a little better showing last week, the business taken footing up 6400 tons. The bids on some recent contracts indicate a growing inclination by fabricators to end the extreme price cutting that has well nigh eliminated all possibility of profit in the work. The entering of Steel Bar contracts being now almost completed, the point of interest shifts to specifications against them. These are not expected in any great volume for some weeks, though they should begin to come in pretty freely in August. Scrap Material not only held last week's advance, but prices on the leading grades are pushed up a notch or two. Rolling Steel Rails are being eagerly sought by dealers, with more demand from consumers. The 2500 tons in the Illinois Central's list closed on Monday is reported to have brought $16.10, half the tonnage being taken by a dealer and half by a consumer.

**Pig Iron.**—The very limited tonnage included in last week's transactions further emphasizes the lessened demand.

Carload orders for early shipment formed a major part of the business, with here and there a lot of from 100 to 300 tons. Buyers show no interest in forward deliveries. No inquiries of moment for second half, and none at all for last quarter are coming out. While the leading Southern furnaces are generally holding at $12, Birmingham, for No. 2 Foundry, and in view of their undelivered tonnage on forward contracts, they are hardly in position to recede from this position, in any event at present. Prompt and even third quarter iron is now to be had at $11.50 and $11.75, Birmingham, basis. Most of the sales reported at these prices have been from the high phosphorus producers of Northern Alabama and Tennessee. The situation in Northern Iron is unchanged since last reports, save that orders are fewer and lighter. No evidence of an effective increase of melt among the jobbing founders has yet appeared, but besides some actual improvement seen in the melt of interests connected with or related to the farm and implement machinery industry, the prospect for continued increase in such plants is good. Much now depends upon the ability of consumers to use Iron already purchased, and when it is demonstrated that shipments will be accepted according to contract schedules, the time will be ripe for consideration of fourth quarter requirements. We quote as follows for August and September delivery:

| | |
|---|---|
| Lake Superior Charcoal | $20.00 to $20.50 |
| Northern Coke Foundry, No. 1 | 17.50 to 18.00 |
| Northern Coke Foundry, No. 2 | 17.00 to 17.50 |
| Northern Coke Foundry, No. 3 | 16.50 to 17.00 |
| Northern Scotch, No. 1 | 18.00 to 18.50 |
| Southern Coke, No. 1 | 16.35 to 16.85 |
| Southern Coke, No. 2 | 15.85 to 16.35 |
| Southern Coke, No. 3 | 15.35 to 15.85 |
| Southern Coke, No. 4 | 14.85 to 15.35 |
| Southern Coke, No. 1 Soft | 16.35 to 16.85 |
| Soutnern Coke, No. 2 Soft | 15.85 to 16.35 |
| Southern Gray Forge | 13.85 to 14.35 |
| Southern Mottled | 13.35 to 13.85 |
| Malleable Bessemer | 17.50 to 18.00 |
| Standard Bessemer | 18.40 to 18.90 |
| Jackson Co. and Kentucky Silvery, 6 % | 19.90 to 20.40 |
| Jackson Co. and Kentucky Silvery, 8 % | 20.90 to 21.40 |
| Jackson Co. and Kentucky Silvery, 10 % | 22.90 to 23.40 |

(*By Mail.*)

**Billets and Rods.**—Beyond occasional small orders for Forging Billets, there are no transactions to record. Market conditions and prices are unchanged, with Forging Billets quoted and firmly held at $28.50, base, Chicago. Wire Rods, in which there is only a light movement, we quote: Bessemer, $33; Basic, $34; Chain, $33, all at Pittsburgh.

**Rails and Track Supplies.**—No new Rail orders of importance are heard of in the market; indeed, the prospect for an early change from existing conditions is not at all flattering. Specifications for Spikes, Bolts and Track Supplies continue to improve slowly. Besides one order for 3000 kegs of Bolts from a Western road taken by the principal interest last week, a number of smaller orders of fair size were entered. Activity in Light Rails is maintained in a moderate degree, with a tendency toward more uniformity in prices. The extreme concessions of $5 and in some instances as much as $7 a ton that have heretofore been made are no longer obtainable in the Western market, and the limit of shading from regular prices does not in the main exceed $3 per ton. We quote as follows: Angle Bars, accompanying Rail orders, 1908 delivery, 1.50c.; car lots, 1.60c.; Spikes, 1.80c. to 1.90c., according to delivery; Track Bolts, 2.20c. to 2.25c., base, Square Nuts, and 2.35c. to 2.40c., base, Hexagonal Nuts. The store prices on Track Supplies range from 0.15c. to 0.20c. above mill prices. Light Rails, 25 to 45 lb., $28; 20-lb., $29; 16-lb., $30; 12-lb., $31. Standard Sections, $28, f.o.b. mill, full freight to destination.

**Structural Material.**—Though still subject to the same retarding influence that has been operating to stay the placing of material for a number of important contracts, the market was somewhat more active than in the previous week. Contracts amounting to a little over 6400 tons were placed. The transactions included in this tonnage were 2950 tons of miscellaneous bridge and track elevation material for the Chicago & Northwestern Railroad, 2200 tons of which are taken by the American Bridge Company, which also booked 1152 tons in smaller orders; 2262 tons for the Nelson Story Building, Los Angeles, secured by the Llewellyn Iron Works, Los Angeles, Cal., and 55 tons for the Paahua Sugar Plantation Company, Hawaii, which went to the United States Steel Products Export Company. Mill specifications, though slightly improved, are still light. The structural mill at the South Works of the Illinois Steel Company will likely continue in operation until August 1, at least. Prices from store are 1.95c. to 2c. Mill prices at Chicago are as follows: Beams and Channels, 3 to 15 in., inclusive, 1.78c.; Angles, 3 to 6 in., ¼-in. and heavier, 1.78c.; larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 15 in., 1.88c.; Zees, 3 in. and over, 1.78c.; Tees, 3 in. and over, 1.83c.

**Plates.**—The movement in Plates gathers momentum very slowly. Owing to the extreme reduction of stocks in the hands of jobbers, these interests are being compelled to order more frequently for replenishment, but little disposition is shown to increase holdings to provide for prospective requirements. Prices are unchanged. It is still possible to place orders for narrow Plates with a few mills at from $1 to $1.50 under regular quotations. We quote mill shipments as follows: Tank Plates, ¼-in. and heavier, wider than 6¼ and up to 100 in. wide, inclusive, car lots, Chicago, 1.78c.; 3-16 in., 1.88c.; Nos. 7 and 8 gauge, 1.93c.; No. 9, 2.03c.; Flange quality, in widths up to 100 in., 1.88c., base, for ¼-in. and heavier, with the same advance for lighter weights; Sketch Plates, Tank quality, 1.88c.; Flange quality, 1.98c. Store prices on Plates are as follows: Tank Plates, ¼-in. and heavier up to 72-in. wide, 2c. to 2.10c.; from 72 to 96 in. wide, 2.10c. to 2.20c.; 3-16 in. up to 60 in. wide, 2.10c. to 2.25c.; 72 in. wide, 2.30c. to 2.40c.; No. 8, up to 60 in. wide, 2.10c. to 2.15c.; Flange and Head quality, 0.25c. extra.

**Sheets.**—No change is observed in the mill demand for Sheets. The Indiana Harbor plant is running four of its 10 mills. Some improvement in orders from store is noted by jobbers, seemingly due to gradually increasing consumption in the smaller shops and manufacturing plants. With the exception of prices on Blue Annealed Sheets, quotations on which are reduced 5c. per 100 lb., prices are unchanged. Mill prices continue to be evenly held, save for the occasional shading of $1 to $1.50 per ton by a few small mills. We quote mill shipments as follows: Chicago: Blue Annealed, No. 10, 1.98c.; No. 12, 2.05c.; No. 14, 2.08c.; No. 16, 2.18c.; Box Annealed, Nos. 17 to 21, 2.43c.; Nos. 22 to 24, 2.48c.; Nos. 25 and 26, 2.53c.; No. 27, 2.58c.; No. 28, 2.68c.; No. 29, 2.78c.; No. 30, 2.88c; Galvanized Sheets Nos. 10 to 14, 2.63c.; Nos. 15 and 16, 2.83c.; Nos. 17 to 21, 2.98c.; Nos. 22 to 24, 3.13c.; Nos. 25 and 26, 3.33c.; No. 27, 3.53c.; No. 28, 3.73c.; No. 30, 4.23c.; Black Sheets from store: Blue Annealed, No. 10, 2.15c.; No. 12, 2.20c.; No. 14, 2.25c.; No. 16, 2.35c.; Box Annealed, Nos. 18 to 21, 2.60c.; Nos. 22 to 24, 2.65c.; No. 26, 2.70c.; No. 27, 2.75c.; No. 28, 2.85c.; No. 30, 3.25c.; Galvanized from store: Nos. 10 to 16, 3c.; Nos. 18 to 20, 3.15c.; Nos. 22 to 24, 3.30c.; No. 26, 3.50c.; No. 27, 3.70c.; No. 28, 3.90c.; No. 30, 4.40c. to 4.45c.

**Bars.**—In addition to a number of smaller orders, the leading interest has taken a contract for 4000 tons of Steel Bars within the past week. Outside of some scattering orders the requirements of the trade are thought to be now pretty well taken care of. Specifications show no falling off and are, perhaps, better than a week ago. The demand for Iron Bars is up to the standard of recent weeks, which means that specifications for immediate shipment have not declined. The settlement of wage scales for the ensuing year by the Republic Iron & Steel Company removes from the situation a possible factor of disturbance. Owing to the shutdown at the present time of all but two of the Bar mills in this district, those in operation are better supplied with specifications and are running fuller. No deviation of consequence from regular prices is reported. Quotations, Chicago, are as follows: Steel Bars, 1.58c., with half extras; Iron Bars, 1.50c.; Hoops, No. 13 and lighter, 1.98c., full extra Hoop card; Bands, No. 12 gauge and heavier, 1.58c., half extra Steel Bar card; Soft Steel Angles and Shapes, 1.68c., half extras. Store prices are as follows: Bar Iron, 2c. to 2.15c.; Steel Bars, 1.90c. to 2c.; Steel Bands, 1.90c., as per Bar card, half extras; Soft Steel Hoops, 2.25c. to 2.35c., full extras.

**Merchant Pipe.**—While the increase in the volume of business coming out is scarcely measureable from week to week, it is enough to make a definite showing. The demand consists principally of jobbers' orders, which are not as yet covering anything beyond current requirements. From this it is understood that whatever gains are shown in the tonnage entered means a corresponding increase of consumption. Prices continue unchanged and firm. The following mill discounts are quoted: Black Pipe, ¾ to 6 in., 73.2; 7 to 12 in., 70.2; Galvanized, ¾ to 6 in., 63.2. These discounts are subject to one point on the base. From store, in small lots, Chicago jobbers quote 73 per cent. on Black Steel Pipe, ¾ to 6 in. About three points above these prices is asked for Iron Pipe.

**Boiler Tubes.**—The anticipated increase of railroad buying of Locomotive Tubes for repair work is being realized in a measure. Not much is doing in Merchant Tubes, though jobbers report a slightly better movement than in previous weeks. Mill quotations for future delivery, on the base sizes, are as follows: Steel Tubes, 63.2; Iron, 50.2; Seamless, 49; 2½ in. and smaller, and lengths over 18 ft., and 2½ in. and larger, and lengths over 22 ft., 10 per cent. extra. Store prices are as follows:

| | Steel. | Iron. | Seamless. |
|---|---|---|---|
| 1 to 1½ in. | 35 | 35 | 35 |
| 1¾ to 2¼ in. | 50 | 35 | 35 |
| 2½ in. | 52½ | 35 | 35 |
| 2¾ to 5 in. | 60 | 47½ | 47½ |
| 6 in. and larger | 50 | 35 | .. |

**Merchant Steel.**—Last week developed a fair amount of forward contracts, mainly from the Implement interests. Specifications, however, continue to lag and the demand for Shafting is limited to small lots for prompt shipment. We quote: Cold Rolled Shafting, on contracts for 100 tons and over, 57 per cent. off; carloads, 56 per cent. off, and less than carloads, 52 per cent. off, on which carload freight is

allowed within base territory. Smooth Finished Machinery Steel, 1.80c. to 1.90c.; Flat Sleigh Shoe, 1.75c. to 1.85c.; Cutter Shoe Steel, 2.15c. to 2.25c.; Toe Calk, 1.90c. to 1.95c.; Railroad Spring Steel, 1.60c. to 1.75c., the higher price being for Pennsylvania Railroad analysis. Carriage Spring Steel is 1.80c.; Tire Steel, Iron finished, 1½ in. and wider, 1.40c.; under 1½ in., 1.55c. Planished Tire Steel is 1.60., all f.o.b., at mill.

**Cast Iron Pipe.**—From the inquiries received, it is inferred that the small buyers are beginning to evince a little more interest in the market, but this has not so far taken the form of an increased demand. Lettings last week by Mansfield, Ohio, of 500 tons, and Newton Falls, Ohio, of 250 tons were made to the United States Cast Iron Pipe & Foundry Company. Bids are being opened to-day (Monday) on 500 tons, to be let by West Branch, Michigan, and this week awards of 330 tons by Burlington, Wis., and 1000 tons by Milwaukee, Wis., are expected. Gas Pipe in sizes from 4 to 10 in. is in fairly good demand. There is no abatement in the competition for the meager tonnage offered.

**Old Material.**—The market is distinctly stronger, and prices on several kinds, including Old Steel Rails, Heavy Melting Steel and Pipes and Flues, have firmed up considerably under a stronger buying movement. Added to the impetus given by an upward turn in the western Pennsylvania markets are inquiries from mill interests which seem to foreshadow a better local demand. Some important Foundry concerns have inquiries out for fair amounts of melting stock, which has inspired the hope of something more from consumers than the small orders which have constituted the only sign of activity seen in No. 1 Cast and Stove Plate for some time. The advance in Old Steel Rails is largely due to the efforts of dealers to cover for deliveries on recent short contracts made at low prices. Holders of this material are not anxious to let go short of $15, and some are holding for even higher prices. One lot of 1000 tons of No. 1 Wrought purchased by a local mill is reported to have brought $12.75. The railroad offerings for this week amount to 9800 tons, of which the Illinois Central has 5000 tons and the Chicago, Burlington & Quincy 4300 tons. Half of the former list is composed of Old Steel Rails. We quote per gross ton, f.o.b. Chicago, as follows:

| | |
|---|---|
| Old Iron Rails | $16.00 to $16.50 |
| Old Steel Rails, rerolling | 14.75 to 15.25 |
| Old Steel Rails, less than 3 ft. | 13.00 to 13.50 |
| Relaying Rails, standard sections, subject to inspection | 19.00 to 20.00 |
| Old Car Wheels | 13.00 to 13.50 |
| Heavy Melting Steel Scrap | 12.00 to 12.50 |
| Frogs, Switches and Guards, cut apart | 12.50 to 13.00 |
| Mixed Steel | 10.00 to 10.50 |

The following quotations are per net ton:

| | |
|---|---|
| Iron Fish Plates | $14.50 to $15.00 |
| Iron Car Axles | 17.00 to 17.50 |
| Steel Car Axles | 15.50 to 16.00 |
| No. 1 Railroad Wrought | 12.25 to 12.75 |
| No. 2 Railroad Wrought | 11.25 to 11.75 |
| Railway Springs | 11.75 to 12.25 |
| Locomotive Tires, smooth | 12.75 to 13.25 |
| No. 1 Dealers' Forge | 9.75 to 10.25 |
| Mixed Bushcling | 7.50 to 8.00 |
| Iron Axle Turnings | 6.00 to 6.50 |
| Soft Steel Axle Turnings | 6.00 to 6.50 |
| Machine Shop Turnings | 6.00 to 6.50 |
| Cast Borings | 4.75 to 5.25 |
| Mixed Borings, &c | 4.75 to 5.25 |
| No. 1 Mill | 6.50 to 7.00 |
| No. 2 Mill | 5.50 to 6.00 |
| No. 1 Boilers, cut to Sheets and Rings | 8.25 to 8.75 |
| No. 1 Cast Scrap | 12.00 to 12.50 |
| Stove Plate and Light Cast Scrap | 10.50 to 11.00 |
| Railroad Malleable | 11.50 to 12.00 |
| Agricultural Malleable | 10.50 to 11.00 |
| Pipes and Flues | 9.00 to 9.50 |

**Metals.**—Not much fluctuation is seen in the general volume of business in Metals. The large consumers of Copper are not in the market for anything more than small lots, and the smaller users are buying from hand to mouth as they have been doing. The demand for Spelter is exceedingly light, while Lead is a trifle more active this week. We quote as follows: Casting Copper, 13¼c.; Lake, 13½c. to 13¾c., in car lots for prompt shipment; small lots, ¼c. to ⅜c. higher; Pig Tin, car lots, 30c.; small lots, 32c.; Lead, Desilverized, 4.45c. to 4.50c., for 50-ton lots; Corroding, 4.85c. to 4.95c., for 50-ton lots; in car lots, 2¼c. per 100 lb. higher; Spelter, 4.85c.; Cookson's Antimony, 10½c., and other grades, 9¾c. to 10¼c.; Sheet Zinc is $7, list, f.o.b. La Salle, in car lots of 600-lb. casks. On Old Metals we quote: Copper Wire, 12¾c.; Heavy Copper, 12¾c.; Copper Bottoms, 10⅝c.; Copper Clips, 11c.; Red Brass, 11½c.; Yellow Brass, 9¾c.; Light Brass, 6½c.; Lead Pipe, 4c.; Zinc, 3¾c.; Pewter, No. 1, 21c.; Tin Foil, 24c.; Block Tin Pipe, 27c.

An impostor has been traveling through the Pacific Coast representing himself as a salesman of J. J. McCabe, New York, and attempting with some success to sell double spindle lathes. J. J. McCabe has no traveling men on the Pacific Coast, the sale of his double spindle lathes being handled by Harron, Ricard & McCone, at San Francisco and Los Angeles, Cal., and the Hallidie Machinery Company, Seattle and Spokane, Wash.

## Cincinnati.

CINCINNATI, OHIO, July 22, 1908.—(*By Telegraph.*)

While there has been comparatively little gain in the Iron market during the week, there is a distinct improvement in machinery lines, and foundrymen are taking heart. Orders for tools in the past few days have been larger, and call for more expensive types. Reports from the railroad offices indicate that the transportation companies are not yet a factor in this improvement, but it is believed they must soon be, because of the immense crops to be moved. The chief executive of a large interest in the South who was in the city to-day, having just come from Alabama, advises that the troubles from the coal miners' strike are lessening, but that the additions to cost in various ways and the unavoidable curtailment of output will soon have the effect of stiffening the price of Southern Iron. The vacation season is on, and heads of most large concerns are taking full advantage of the lull. Collections are not as good as they were reported a month ago, but money is easy, and a number of local improvements which will require Steel and Iron are receiving attention of the financiers.

**Pig Iron.**—There is weakening toward the $11.50 basis price for Southern No. 2, although most agencies refuse to quote lower than $12, Birmingham. Such quite frankly confess that they lose the business. One large interest which quotes the $12 price for the third quarter announces that $13.50 is its price for the fourth quarter. Northern Irons remain at $15, Hanging Rock Furnace, although there are reports that the price is being shaded. The Pipe interests are buying, but transactions are negotiated, for the most part, through the furnace officials, and prices are guarded. Jackson County Silvery is still quoted at $18.50 for 8 per cent., but some agents contend that one of the new producers has taken introductory business at lower prices. In contrast is the sale of two lots recently of the same grade from an established furnace at $21.50. The Southern furnace, which recently went in blast on Ferro Phosphorus, is reported to have a promising order book, with the price about $42, at furnace. The feature of the market the past week has been the preponderance of carload orders for quick shipment. A number of inquiries for Foundry, Bessemer and Basic Iron are still pending, and a few have been withdrawn. A Central Ohio concern is inquiring for from 1250 to 2500 tons of Northern Iron for the third quarter, and also 500 to 1000 tons of low grade, on an analysis basis, same delivery. An Ohio buyer has asked prices on 3000 tons of Steel making Iron for delivery in the last four months. Bessemer is quoted at about $15.75, Ironton, Ohio. There is but little inquiry for Basic in this immediate vicinity. For immediate delivery and to the close of the third quarter we quote, f.o.b. Cincinnati, as follows, freight rates being $3.25 from Birmingham, and $1.20 from the Hanging Rock District:

| | |
|---|---|
| Southern Coke, No. 1 | $15.25 to $15.75 |
| Southern Coke, No. 2 | 14.75 to 15.25 |
| Southern Coke, No. 3 | 14.25 to 14.75 |
| Southern Coke, No. 4 | 14.00 to 14.50 |
| Southern Coke, No. 1 Soft | 15.25 to 15.75 |
| Southern Coke, No. 2 Soft | 14.75 to 15.25 |
| Southern Coke, Gray Forge | 13.75 to 14.25 |
| Ohio Silvery, 8 per cent. Silicon | 19.70 |
| Lake Superior Coke, No. 1 | 16.70 to 17.20 |
| Lake Superior Coke, No. 2 | 16.20 to 16.70 |
| Lake Superior Coke, No. 3 | 15.70 to 16.20 |
| Standard Southern Car Wheel | 22.25 to 22.75 |
| Lake Superior Car Wheel | 21.75 to 22.25 |

(*By Mail.*)

**Coke.**—There is little change in the market save that the troubles in Alabama serve to stiffen prices on the Virginia product somewhat, and Wise County Furnace is strong at about $1.75, and foundry grades at about $2.25, on contract, while very little better can be done on spot shipments. Connellsville 72-hr. Foundry is selling at $2.25, on contract, and little better than $2.10 can be done on spot business. Some contracting is going on, but it is noticeable that Foundry Coke is practically all going East. There is talk of some very low prices being made on emergency sales of Pocahontas Coke, as low as $1.50 being quoted to move some delayed shipments.

**Finished Iron and Steel.**—The same lethargic conditions prevail in the Finished Material market and Sheets and Plates are, if anything, duller than last week. There is some further inquiry on Twisted Steel Bars for concrete work, on account of the beginning of a lot of public work, and Structural Material generally is receiving a little more attention. There is no change in retail prices and no likelihood of any, as dealers have an understanding which precludes the making of bargain prices as long as there is so little demand. Taking the local field of sellers into consideration, there is a little better feeling abroad. Money is considerably easier, and competition is not of a depressing character. Dealers quote as follows, f.o.b. Cincinnati: Iron Bars, carload lots, 1.65c., base, with half extras; small lots from store, 1.85c., base, half extras; Steel Plates, carload lots, 1.75c., base, with half extras; small lots from store, 1.85c., base, half extras; Base Angles, carload lots, 1.85c., base; small lots from store, 2.10c.; Beams, Channels and

Structural Angles, 1.85c., base; small lots from store, 2.10c.; Plates, ¼-in. and heavier, carload lots, 1.85c.; small lots from store, 2c.; Blue Annealed Sheets, heavy, No. 16, carload lots, 2.15c.; small lots from store, 2.50c.; No. 14, carload lots, 2.05c.; small lots from store, 2.40c.; No. 10, and heavier, carload lots, 1.95c.; small lots from store, 2.20c.; No. 12, carload lots, 2c.; small lots from store, 2.30c.; Sheets (Light), Black, No. 28, carload lots, 2.65c.; Galvanized Sheets, No. 28, carload lots, 3.70c.; Steel Tire, 4-in. and heavier, carload lots, 1.95c.; Plates, 3-16 and No. 8, carload lots, 2c.; small lots from store, 2.20c.

**Old Material.**—The dull period of the mills and melters generally finds a corresponding inactivity among the sellers of Scrap. This is the eve of the house cleaning time among railroads in this section, and some lists will be in preparation very soon. Meanwhile about the only business that is going here is in Stove Scrap and some occasional sacrifice sales of Melting Steel Scrap. As a rule the larger dealers here are holding firm and selling little. Prices f.o.b. Cincinnati, are about as follows:

| | |
|---|---|
| No. 1 R. R. Wrought, net ton | $10.50 to $11.50 |
| Cast Borings, net ton | 4.00 to 5.00 |
| Heavy Melting Steel Scrap | 10.00 to 11.00 |
| Steel Turnings, net ton | 5.00 to 6.00 |
| No. 1 Cast Scrap, net ton | 10.25 to 11.25 |
| Burnt Cast and Wrought, net ton | 8.00 to 9.00 |
| Old Iron Axles, net ton | 14.50 to 15.50 |
| Old Iron Rails, gross ton | 13.00 to 14.00 |
| Old Steel Rails, long gross ton | 10.50 to 11.50 |
| Old Steel Rails, short, gross ton | 11.00 to 12.00 |
| Relaying Rails, 56 lb. and up, gross ton | 20.00 to 21.00 |
| Old Car Wheels, gross ton | 12.00 to 13.00 |
| Low Phosphorus Scrap, gross ton | 13.00 to 14.00 |
| Stove Plate, net ton | 9.25 to 10.25 |

## St. Louis.

ST. LOUIS, July 20, 1908.

The daily records of prospective work in building operations continue to be quite large and comprise churches, business and factory structures, and a number of residences. There are also several important public and semi-public buildings and an office building, on which contracts will soon be let, requiring considerable structural material. Increasing activity is noted in repair work by the railroads in this territory. Some of them are now in the market for pig iron and machine tools.

**Coke.**—The leading sellers report inquiry for delivery from July, 1908, to July, 1909; for immediate shipment the market is quiet. Prices show no change, at $2.15 to $2.50 for 72-hr., f.o.b. ovens, Connellsville. We hear of the sale of 5000 tons of Smelter Coke, delivery September to September, and 100 tons foundry 72-hr., delivery commencing with October, over a period of one year, and an inquiry for 500 tons, shipments through the year, beginning with August.

**Pig Iron.**—Inquiries are mainly confined to the last quarter of 1908, and the first quarter of 1909, for which deliveries considerable interest is manifested. Melters in this section are not carrying over 50 per cent. of last year's stocks, and for that reason sellers count on a steady demand. It is thought the strike in the coal district at Birmingham may tend to stiffen the price of Pig Iron. A leading house reports that inquiries this week exceed in volume those of the previous fortnight. We quote $12, f.o.b. Birmingham, for No. 2 Foundry, for last quarter.

**Finished Iron and Steel.**—The leading sellers find a satisfactory demand for Structural Steel, and the outlook encouraging. The demand continues good for Bars. Light Rails are fairly active, and the market is stronger. There is a steady increase in demand from railroads for all kinds of Track Material, especially Splice Bars, Bolts, and Spikes.

**Lead and Spelter.**—Lead and Zinc Ore are weaker, and more mines have closed down. At present only about 25 per cent. of the mines are open in the Joplin District. Spelter is quoted at 4.30c. Lead is offered at 4.40c., and dull, notwithstanding that price is below the cost of replacing. One important Spelter interest reports a good demand within the past few days. Inquiries are also being received for September-October shipments, but smelters are not disposed to quote so far ahead. The fact that some consumers consider it a favorable time to contract it is thought will lead to more activity.

**Old Metals.**—For certain classes of Old Material, prices have advanced, and demand continues good for Relayers, but Car Wheels and Cast Scrap are still neglected, and prices are nominal. On the whole, the market is stronger, with considerable improvement in tone and outlook. The only list out is that of the Cotton Belt Railroad for 600 tons miscellaneous Scrap Iron. We quote dealers' prices, per gross ton, f.o.b. cars, St. Louis, as follows:

| | |
|---|---|
| Old Iron Rails | $14.50 to $15.00 |
| Old Steel Rails, rerolling | 13.25 to 13.75 |
| Old Steel Rails, less than 3 ft. | 12.50 to 13.00 |
| Relaying Rails, standard sections, subject to inspection | 22.50 to 23.50 |
| Old Car Wheels | 12.50 to 13.50 |
| Heavy Melting Steel Scrap | 13.00 to 13.50 |
| Frogs, Switches and Guards, cut apart | 12.50 to 13.00 |
| Mixed Steel | 9.00 to 9.50 |

The following quotations are per net ton:

| | |
|---|---|
| Iron Fish Plates | $12.50 to $13.00 |
| Iron Car Axles | 16.00 to 16.50 |
| No. 1 Railroad Wrought | 12.25 to 12.50 |
| No. 2 Railroad Wrought | 10.50 to 11.50 |
| Railway Springs | 10.50 to 11.50 |
| Locomotive Tires, smooth | 12.00 to 12.50 |
| No. 1 Dealers' Forge | 9.50 to 10.00 |
| Mixed Borings | 4.00 to 4.50 |
| No. 1 Boilers, cut to Sheets and Rings | 7.00 to 8.00 |
| No. 1 Cast Scrap | 11.00 to 11.50 |
| Stove Plate and Light Cast Scrap | 9.00 to 9.50 |
| Railroad Malleable | 9.50 to 10.00 |
| Agricultural Malleable | 9.00 to 9.50 |
| Pipes and Flues | 8.00 to 8.50 |

It is reported that Pittsburgh and Youngstown interests have been buying Scrap in this market, which has stimulated prices.

A firm of local dealers has bought 1000 tons of Relaying Rails from one of the large Western railroads.

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The Bethlehem Steel Company finds that architects and fabricators show a marked interest in the new Bethlehem sections in view of the saving claimed in the amount of Steel required.

The American Car & Foundry Company refers to a quite general resumption of repair work by the railroads, which is encouraging, as bringing nearer an improvement in demand for new cars.

A leading metal company reports trade better this month than last. The largest Steel interest reports that business for June was double that of May, and July promises well.

## Birmingham.

BIRMINGHAM, ALA., July 20, 1908.

**Pig Iron.**—The tonnage of sales in the past week is considerably in excess of that for the week previous, although only one large transaction was recorded. This involved 4000 tons of No. 2 Soft and 6000 tons of No. 3 Foundry, for delivery in the remainder of the year to a Cast Iron Pipe company. The price is not made known, but there is reason to believe it was but slightly under $11.75, Birmingham, for No. 2 Foundry. The demand for prompt deliveries and for comparatively small lots has been met with figures around $12. In the case of bona fide offers of $11.50 for lots of 400 and 500 tons, respectively, the tonnage is known to have been refused. However, the conditions relative to the supply of fuel for furnace operation are such that a conservative course as to engagements for prompt delivery is apparently being pursued by all concerns. One of the leading producers has withdrawn from the market, while another large interest has been forced to curtail its output and adheres to prohibitive quotations. Inquiries are pending, but there is apparently no eagerness to cover for future needs, and the plan of making frequent purchases of limited quantities predominates. The present output of Foundry Iron is made by 13 stacks, and a recent estimate of stocks on furnace yards placed the aggregate at less than 100,000 tons. The accumulation of Charcoal Iron has been practically cleaned up. A recent sale of 750 tons is reported at $19.50, at furnace. There is no apparent change in the attitude of either party in the coal miners' strike. Furnace operators have in some cases found other than the usual sources for fuel, and in other cases further curtailment of present supply is not anticipated.

**Old Material.**—Dealers generally are more optimistic, but there has been but little change in conditions so far as actual transactions are concerned. A number of inquiries are pending, and an increased rate of consumption is indicated, but consumers continue to purchase sparingly. Quotations are unchanged, as follows, per gross ton, f.o.b. cars here:

| | |
|---|---|
| Old Iron Rails | $14.50 to $15.00 |
| Old Iron Axles | 14.00 to 14.50 |
| Old Steel Axles | 12.50 to 13.00 |
| No. 1 Railroad Wrought | 13.00 to 13.50 |
| No. 2 Railroad Wrought | 9.00 to 10.00 |
| No. 1 Country Wrought | 10.50 to 11.00 |
| No. 2 Country Wrought | 9.00 to 9.50 |
| No. 1 Machinery | 10.00 to 10.50 |
| No. 1 Steel | 9.50 to 10.50 |
| Wrought Pipe and Flues | 8.50 to 9.00 |
| Light Cast and Stove Plate | 8.50 to 9.00 |
| Cast Borings | 5.00 to 5.50 |

**Cast Iron Pipe.**—In the past week an order for 3000 tons of Water Pipe, to be furnished Dallas, Texas, was divided between the United States Cast Iron Pipe & Foundry Company and the American Cast Iron Pipe Company. The R. D. Wood Company, Camden, N. J., was the successful bidder on 6400 tons of Water Pipe for Havana, Cuba, and the Katz-Craig Contracting Company, Omaha, Neb., secured the contract for Water Works extension, at Sheridan, Wyo. The Pipe required has not been purchased. Milwaukee, Wis., is to enter the market July 22 for a round tonnage, and reports from reliable sources indicate a large volume of business to come from Mexican points. It is estimated that something like 94,000 tons will ultimately be required. Quotations have been advanced by two producers, and on small lots the price thus established has been maintained, but re-

cent lettings of large proportions were at such figures that an advance in published quotations is not warranted. We quote as follows for Water Pipe, per net ton, f.o.b. cars here: 4 to 6 in., $23; 8 to 12 in., $22; over 12-in. average, $21, with $1 per ton extra for Gas pipe.

## Pittsburgh.

PARK BUILDING, July 22, 1908.—(*By Telegraph.*)

**Pig Iron.**—We can report a sale of 10,000 tons of chill cast Bessemer for August, September, October delivery at $16 Valley furnace, or $16.90 delivered. Standard Bessemer is regularly quoted at $16, Valley furnace, although it is claimed that on small lots for early shipment this price can occasionally be shaded. At last reports the Canton interest which was inquiring for 4000 tons of Basic over the last four months of the year had not closed, but the order will doubtless go to a nearby furnace. The 8000 tons reported last week as sold to the Pittsburgh Steel Company at about $16 delivered Monessen, brought just a trifle above that price. Foundry Iron continues quiet and it is not certain that the nominal prices could not be shaded. We quote Standard Bessemer at $16, Valley furnace; Basic at $15 to $15.25 Valley; No. 2 Foundry at $14.75 to $15, Valley, and Gray Forge at $14, Valley.

**Steel.**—Occasionally sales of Sheet Bars are being made at full prices, while shipments are a trifle better. The Billet market continues quiet. The Republic Iron & Steel Company this week started its Bessemer Steel plant at Youngstown, after an idleness of three weeks. The principal product just now is Sheet Bars. We quote Bessemer and Open Hearth Billets, 3⅞ in. and larger, up to and including 0.25 carbon, $25; 0.26 to 0.60 carbon, $1 extra; over 0.60 carbon, $2 extra, all f.o.b. Pittsburgh. For Wheeling, Martins Ferry, Follansbee, Newcastle, Sharon, Steubenville and Washington (Pa.) delivery, half the freight or 50c. additional is charged. Sheet and Tin Bars in random lengths are $27, f.o.b. Pittsburgh. Forging Billets take $2 advance over Rolling Billets.

(*By Mail.*)

It seems to be a pretty general opinion among Steel manufacturers that the moderate improvement in orders noted in most departments this month, as compared with last month, is not necessarily indicative of a continued increase in business with this as a foundation. It is pointed out that in June there was a great deal of uncertainty as to prices, while it was particularly desired to have inventory valuations as small as possible July 1, and this naturally led to the deferring of buying wherever possible. The nature of the orders received since July 1 indicates in many instances that it is simply business which was deferred from June, and manufacturers are anxious to avoid basing too optimistic predictions upon the showing thus made. Then again, it appears probable that the movement for a general advance in freight rates will have to be dropped, and less hopes of large railroad buying are entertained than was the case two or three weeks ago. At the same time, there are evidences here and there that buying of a sounder character than formerly has been started. Orders are being received for Railroad Spikes, for instance, from roads which have been out of the market for a long time, and these orders are being followed up with insistence upon prompt delivery, indicating that the railroads are actually doing more outside work. Mill operations in this section are distinctly better this week than last. The Republic Iron & Steel Company started its Bessemer Steel plant at Youngstown Sunday night, after an idleness of three weeks, and has Sheet Bar specifications accumulated indicating a steady run of at least a fortnight. The company started its largest rolling mill plant, the Brown-Bonnell, in full operation Monday morning, and to-night it will start the major part of the Mahoning Valley plant. These plants have been idle since the end of June, as have other rolling mills of the company, on account of the wage scale not being settled. The company signed the Detroit scale last Friday, and by the end of the week will have most of its plants in full or partial operation. The American Sheet & Tin Plate Company this week started nearly all the hot mills in its Tin Plate plants, which were closed last week on account of the hot mills having gotten ahead of the finishing departments. The company has also started a few additional Sheet mills and is doing better in the Sheet department than for a couple of months. The Carnegie Steel Company is operating this week 27 of its 54 completed blast furnaces, against 25 last week. The National Tube Company blew in an additional stack at McKeesport, and one more at Lorain. It has now three furnaces in blast at each point, there being 11 furnaces altogether. One of the regular meetings of the Carnegie Steel Company's district sales agents is being held in Pittsburgh Tuesday and Wednesday of this week. On Thursday, W. E. Corey, president of the Steel Corporation, will be here to confer with the heads of departments.

**Ferromanganese.**—The market for Ferromanganese is rather quiet, but prices are well held at $44, seaboard, or $45.95, Pittsburgh, for early delivery, and $44.50 to $45 for delivery in the last quarter.

**Rods.**—The Rod market continues quiet. We quote Bessemer Wire Rods at $33, Pittsburgh, Basic Wire Rods at $34, and Chain Rods at $33.

**Muck Bar.**—A little more activity is expected as the union mills have arranged the wage scale and are in position to do business again and promise deliveries. We quote the market at $36, Pittsburgh, for best grades of all pig Muck Bar.

**Skelp.**—Demand is small, with prices nominally as follows: Grooved Steel Skelp, 1.45c. to 1.50c.; Sheared Steel Skelp, 1.50c. to 1.60c.; Grooved Iron Skelp, 1.60c. to 1.70c., and Sheared Iron Skelp, 1.70c. to 1.75c., f.o.b. Pittsburgh.

**Steel Rails.**—The Edgar Thomson Rail plant continues in partial operation, and has been doing a little better in the way of tonnage than formerly. Very little new business is coming in, but there is a moderate volume of specifications on old contracts. In Light Rails very little business is going, but the rerolling mills are making a strong effort to secure better prices, as Rerolling Rails have scored another advance of 50c. or so in the week. We quote Light Rails unchanged, at $23 to $24, but there is less willingness than formerly to quote the lower price, whereas a few weeks ago it was quite liberally shaded. We repeat regular quotations as follows: 25 to 45 lb. Sections, $28; 20-lb., $29; 16-lb., $30, and $12-lb., $32. We quote Standard Sections at $28, at mill, and Angle Splice Bars at 1.65c., at mill.

**Plates.**—A moderate amount of hurry up business is coming into the market, and this, with the work on a few old contracts, serves to keep Plate mills on about the same gait as formerly. Occasionally some of the smaller mills, which do not make the full range of sizes, shade prices $1 to $1.50, but in general the regular market is well maintained. We quote Tank Plates, ¾ in. thick, 6¼ in. up to 100 in. wide, 1.60c., base, at mills, Pittsburgh. Extras over this price are as follows:

Tank, Ship and Bridge quality, ¼ in. thick on edges, 100 in. wide, down to but not including 6 in. wide, is taken as base.

Steel Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per square foot, shall be considered ¼-in. Plate. Steel Plates over 72 in. wide must be ordered ¼-in. thick on edge, or not less than 11 lb. per square foot to take base price. Steel Plates over 72 in. wide ordered less than 11 lb. per square foot down to the weight of 3-16-in. shall take the place of 3-16-in.

Percentages as to overweight on Plates, whether ordered to gauge or weight, to be governed by the Association of American Steel Manufacturers' Standard Specifications.

| | |
|---|---|
| Gauges under ¼-in. to and including 3-16-in. Plates on thin edges | $0.10 |
| Gauges under 3-16-in. to and including No. 8 | .15 |
| Gauges under No. 8 to and including No. 9 | .25 |
| All sketches (excepting straight taper Plates varying not more than 4 in. in width at ends, narrowest end being not less than 30 in.) | .10 |
| Complete Circles | .20 |
| Boiler and Flange Steel Plates | .10 |
| "A. B. M. A." and ordinary Firebox Steel Plates | .20 |
| Still Bottom Steel | .30 |
| Marine Steel | .40 |
| Locomotive Firebox Steel | .50 |
| Shell grade of Steel is abandoned. | |
| For widths over 100 in. up to 110 in | .05 |
| For widths over 110 in. up to 115 in | .10 |
| For widths over 115 in. up to 120 in | .15 |
| For widths over 120 in. up to 125 in | .25 |
| For widths over 125 in. up to 130 in | .50 |
| For widths over 130 in | 1.00 |

TERMS.—Net cash 30 days. Pacific Coast base, 1.50c., f.o.b. Pittsburgh.

**Structural Material.**—No Structural contracts of any magnitude have been booked in this district in the past two weeks. It is not expected that the new Oliver Building, which is estimated to require some 13,000 tons of Steel, will be definitely figured on for months to come. The Steel for the new Pittsburgh & Lake Erie bridge, at Beaver, Pa., the contract for which was awarded some weeks ago, will not come to the mills for about three months, as it is estimated that it will take about four months to get the job through the drafting department. We quote as follows, f.o.b. mill, Pittsburgh: I Beams, H Beams and Channels, 3 to 15 in., inclusive, 1.60c. net; Beams over 15 in., 1.70c. net; Angles, 3 to 6 in., inclusive, ¼ in. and up, 1.60c. net; Angles, over 6 in., 1.70c. net; Angles, 3 x 3 in. and up, less than ¼ in., 1.50c., base, half extras, Steel Bar card; Tees, 3 in. and up, 1.65c. net; Zees, 3 in. and up, 1.60c. net; Angles, Channels and Tees under 3 in., 1.50c., base, half extras, Steel Bar card; Deck Beams and Bulb Angles, 1.90c. net; Hand Rail Tees and Z-19, 3c. net; Checkered and Corrugated Plates, 3c. net.

**Sheets.** There has been a good improvement in Sheet mill operations this week. The Youngstown Sheet & Tube Company started its Sheet department, which had been idle for three months. The American Sheet & Tin Plate Company is this week operating 86 of its Sheet mills, or 47 per cent. of the total, against about 40 per cent. for several weeks past. This is partly in consequence of the increase in business coming in noted in last week's report. While the Sheet trade does not expect full activity for months to come, the character of the orders coming in now is good ground for

a belief that there will be a moderately steady improvement from now on. The regular prices on Sheets are being fairly well maintained, and we continue to quote as follows for mill shipment: Blue Annealed Sheets, No. 10 and heavier, 1.80c.; Nos. 11 and 12, 1.85c.; Nos. 13 and 14, 1.90c.; Nos. 15 and 16, 2c.; Box Annealed, Nos. 17 to 21, 2.25c.; Nos. 22 to 24, 2.30c.; Nos. 25 and 26, 2.35c.; No. 27, 2.40c.; No. 28, 2.50c.; No. 29, 2.60c.; No. 30, 2.70c. Galvanized Sheets: Nos. 10 and 11, 2.45c.; Nos. 12 and 14, 2.55c.; Nos. 15 and 16, 2.65c.; Nos. 17 to 21, 2.80c.; Nos. 22 and 24, 2.95c.; Nos. 25 and 26, 3.15c.; No. 27, 3.35c.; No. 28, 3.55c.; No. 29, 3.70c.; No. 30, 3.95c. No. 28 Painted Roofing Sheets, $1.75 per square, and Galvanized Roofing Sheets, No. 28, $3.10 per square, for 2½-in. corrugations. These prices are subject to a rebate of 5c. per 100 lb. to the large trade under the usual conditions, jobbers charging the usual advances for small lots from store.

**Tin Plate.**—The American Sheet & Tin Plate Company this week started 47 of the 55 Tin mills it closed last week on account of accumulation of semifinished material, the Tin houses being kept in regular operation. The accumulation is pretty well worked off now, there being still some at the National Works, Monessen, where eight mills remain idle. One mill is idle at another plant. The company is operating this week 204 of its Tin mills, against 158 last week and 213 for many weeks previous. One of the smaller independents which was running only part time is now on in full, and the independents are operating as many Tin mills as at any time this year. It is not expected that the demand for Tin Plate shipments will hold out much longer, but substantially full operations are expected for the remainder of this month and the fore part of next, which is doing very well for the Tin Plate trade, since many mills usually close about July 1, and sometimes in the latter part of June. Tin Plate prices continue absolutely firm, and we quote at $3.70 for 100-lb. Cokes, 14 x 20, f.o.b. Pittsburgh, terms 30 days, less 2 per cent. off for cash in 10 days, this price being subject to the usual rebate of 5c. per base box in large lots.

**Hoops and Bands.**—Specifications are coming in at about the same rate as last week, with a moderate amount of new business. Regular prices are as follows: Steel Hoops, 1.80c., base, full Hoop card prices; Steel Bands, 1.40c., base, half Steel card extra, all f.o.b. cars, Pittsburgh, in carload lots, for delivery during 1908.

**Iron and Steel Bars.**—The Steel Bar mills are running at between 35 and 40 per cent. of normal, substantially the same as for the past two or three months. Orders against the large contracts booked early in June are coming in only at a moderate rate. The mills complain of the high cost of operation on the present character of business, as specifications are so mixed that it is necessary to change rolls very frequently, and this, with the low tonnage, shows up badly in the cost sheet. Specifications are coming in a little better for Iron Bars this week, as on the settlement of the wage scale the mills became able to promise deliveries again and have been inviting specifications. The Republic Iron & Steel Company signed the Detroit scale last Friday, and this week started the Brown-Bonnell plant, which is a Steel proposition, in full, while it is also starting a number of its other mills. We quote Iron Bars at 1.40c., base, for Pittsburgh delivery, and 1.35c., base, for Western points, to which freight is added, except Chicago, the price for which is 1.50c., delivered. We quote Steel Bars at 1.40c., Pittsburgh, for base sizes.

**Merchant Steel.**—The market continues only seasonably active in most lines, while Shafting is decidedly dull. We quote: Cold Rolled Shafting, on contracts for 100 tons and over, 57 per cent. off; carloads, 56 per cent. off, and less than carloads, 52 per cent. off, on which carload freight is allowed within base territory. Smooth Finished Machinery Steel, 1.80c. to 1.90c.; Flat Sleigh Shoe, 1.75c. to 1.85c.; Cutter Shoe Steel, 2.15c. to 2.25c.; Toe Calk, 1.90c. to 1.95c.; Railroad Spring Steel, 1.60c. to 1.75c., the higher price being for Pennsylvania Railroad analysis. Carriage Spring Steel is 1.80c.; Tire Steel, Iron, finished, 1½ in. and wider, 1.40c.; under 1½ in., 1.55c. Planished Tire Steel is 1.60c., all f.o.b., at mill.

**Railroad Spikes.**—A decided change in the character of buying of Railroad Spikes is noted in the past week or 10 days. While no large orders are being received, there is a uniform insistence upon prompt shipment, and orders are decidedly more numerous, although of small volume, and are coming from a larger number of roads, some roads buying moderate lots for quick shipment, which have not been in the market at all for months. There is also a moderately fair demand for small Spikes, and some of the Spike departments are running this week at well above one-half their normal. We quote: Standard sizes, 4½ x 9-16 in., at $1.70, and the smaller sizes at $1.80 per 100 lb. in carload and larger lots, with an advance of 5c. per 100 lb. for less than carload, f.o.b. Pittsburgh.

**Spelter.**—We note a sale of a couple of carloads of Prime Western Spelter for prompt shipment at 4.32½c., St. Louis, or 4.45c., Pittsburgh, and a sale of 75 tons for September and October shipment at the same price, and the market is quotable at this price for prompt shipment, with a slight rise asked for single carloads for forward delivery.

**Boiler Tubes.**—The market remains rather quiet for Boiler Tubes, with a fair amount of business going in Locomotive Tubes for repair work. Regular discounts on Merchant Tubes in small lots, on which an extra 5 per cent. is allowed in carloads, but which discounts are being shaded, are as follows:

*Boiler Tubes.*

| | Iron. | Steel. |
|---|---|---|
| 1 to 1½ in. | 42 | 47 |
| 1¾ to 2¼ in. | 42 | 59 |
| 2½ in. | 47 | 61 |
| 2¾ to 3 in. | 52 | 65 |
| 6 to 13 in. | 42 | 59 |

2½ in. and smaller, over 18 ft. long, 10 per cent. net extra.
2¾ in. and larger, over 22 ft. long, 10 per cent. net extra.

**Merchant Pipe.**—A fair business is being done in Merchant Pipe, comparing well with the tonnage in the second quarter. No large Line Pipe business has been placed lately, but the mills are fairly busy on old orders. Discounts on Steel Pipe, ⅜ to 6 in., to the large trade are now 76 and 5 per cent. off list. Regular discounts are as follows:

*Merchant Pipe.*

| | Jobbers, carloads, Steel. | |
|---|---|---|
| | Black. | Galv. |
| | % | % |
| ⅛ to ¼ in. | 67 | 51 |
| ⅜ in. | 69 | 55 |
| ½ in. | 71 | 59 |
| ¾ to 6 in. | 75 | 65 |
| 7 to 12 in. | 72 | 57 |
| Extra strong, plain ends: | | |
| ⅛ to ⅜ in. | 60 | 48 |
| ½ to 4 in. | 67 | 55 |
| 4½ to 8 in. | 63 | 51 |
| Double extra strong, plain ends: | | |
| ½ to 8 in. | 56 | 45 |

Discounts on Genuine Iron Pipe are as follows:

| | Black. | Galv. |
|---|---|---|
| | % | % |
| ⅛ to ¼ in. | 65 | .. |
| ⅜ in. | 67 | 53 |
| ½ in. | 69 | 57 |
| ¾ to 6 in. | 73 | 63 |
| 7 to 12 in. | 70 | 55 |
| Extra strong, plain ends: | | |
| ⅛ to ⅜ in. | 58 | 46 |
| ½ to 4 in. | 65 | 53 |
| 4½ to 8 in. | 61 | 49 |
| Double extra strong, plain ends: | | |
| ½ to 8 in. | 54 | 43 |

**Iron and Steel Scrap.**—A consumer in Pittsburgh has bought 1000 tons of Heavy Melting Steel at $15.25, delivered. The regulations as to size and character are more stringent than with the usual run of buyers. A Sharon interest has bought between 4000 and 5000 tons of Heavy Melting Steel, paying from $14.50 on up to $15.25, delivered, but getting only a small part of the tonnage at $14.50. The dealers had to go short on most of this material, as there is very little lying around, and in some quarters the fact that the dealers have loosened up, even though they got higher prices than formerly quoted, is taken as an evidence that with this latest advance the market has about found its level. The Rolling Mills are not buying to any extent, and the activity in scrap outside of open hearth material is almost entirely on the part of dealers, who have been bidding up prices nearly all along the line, and making small transactions among themselves. An open hearth interest in this district has taken between 1000 and 2000 tons of Cast Iron Borings, some of the material coming from the Chicago District, and paying an average of about $8.75, delivered. Rerolling mills have again increased their bids on Rerollers, as there is no material to be had at anything like the former bids. We advance nearly all grades of Scrap from 25c. to 75c., and now quote, as follows, per gross ton, f.o.b. Pittsburgh: Heavy Steel Scrap, for Pittsburgh, Steubenville and Sharon delivery, $14.75 to $15.25; Cast Iron Borings, $8.50; No. 1 Railroad Wrought Scrap, $13.75 to $14.25; No. 1 Cast Scrap, $14.25 to $14.75; Bundled Sheet Scrap, $11.50 to $12; Sheet Bar Crop Ends, $17.50 to $17.75; No. 1 Busheling Scrap, $13 to $13.50; No. 2 Busheling Scrap, $9.50 to $10; Iron Axles, $20 to $20.50; Steel Axles, $18.50 to $19; Low Phosphorus Melting Stock, 0.04 and under, $18 to $18.50; Old Steel Rails, short pieces, $14.75 to $15.25; Rerolling Rails, $15.50 to $16; Machine Shop Turnings, $8.75 to $9.25; Grate Bars, $12.25 to $12.50; Railroad Malleable Scrap, $13 to $13.50.

**Coke.**—Coke operations in the Connellsville regions continue to increase slightly in the aggregate, but the increase is due almost wholly to heavier operations by the Frick Company. Production last week in the Connellsville and Lower Connellsville regions aggregated 174,729 tons, against 165,472 tons the previous week, thus showing the largest gain for several weeks, and making the reported production the largest, by a slight margin, since last February. Furnace Coke for prompt shipment continues to be quoted at $1.60, for best grades, and 72-hr. Foundry at $2 to $2.25, at oven. On contracts for Furnace Coke for shipment over last half of the year, $1.80 to $1.90, at oven, is quoted.

## Cleveland.

CLEVELAND, OHIO, July 21, 1908.

**Iron Ore.**—The slight activity that appeared in the market for a few weeks has entirely disappeared. Following the reduction in prices, representatives of Merchant Ore firms were very active for a few weeks in calling on their customers. The results, however, were somewhat disappointing. A few furnace interests covered for a portion of their year's requirements, but the majority are still holding off. They think that they will have no trouble in getting all the Ore they need later in the season, at a time when they can tell more definitely how much they will need. There are still a few inquiries coming in, but they do not result in the placing of contracts, and the present condition of the Pig Iron market does not encourage buying. Ore men who had expected a fair buying movement during July are now expecting consumers to hold off until about September 1. Owing to the limited production at the mines, some of the Ore men say that with buyers holding off so long there is a probability of a shortage of Ore at the mines late in the fall. Shipments from the mines have increased very slightly over June, and owing to the falling off in the movement of coal there is less business for the lake fleet than a month ago, with several boats for every cargo. With no prospects of an early improvement a number of boats have been laid up and others will probably go temporarily out of commission. Some Ore, not a great deal, is going forward to the furnaces from Lake Erie docks, last season's Ore being shipped to furnaces that have not yet bought any of this season's. Ore prices at Lake Erie docks, per gross ton, are as follows: Old Range Bessemer, $4.50; Mesaba Bessemer, $4.25; Old Range Non-Bessemer, $3.70; Mesaba Non-Bessemer, $3.50.

**Pig Iron.**—Some good inquiries have come into the market during the week from outside this territory. Among these are two from Detroit stove concerns, one for 5000 tons and the other for 6000 tons, mostly Foundry Iron. A small portion is High Silicon Iron. It is expected that contracts for this Iron will be closed early this week. Another inquiry is for 3000 to 4000 tons of Foundry and Malleable Iron for a Dayton car company. Bids will be received until July 22. Furnaces are asked to submit proposals for the last quarter and for five months' delivery, beginning September 1. There are also some inquiries from Eastern consumers. Otherwise the market is very quiet, the sales of the week being limited to a very few small lots. Consumers in this city and other parts of this territory are practically all out of the market, those that did not place contracts during the recent buying movement still having plenty of Iron for their immediate requirements. A number are holding off for a further improvement in business. Prices remain stationary, but the market cannot be said to be very firm. Shipping orders on contracts are rather light, although they are slightly better than a month ago. We quote No. 2 Northern Foundry at $14.75 to $15, Valley furnace, the latter price being asked by nearly all of the furnace interests. Local furnaces quote No. 2 Foundry at $15, at furnace, for outside delivery, and about $15.50, delivered, Cleveland. There is little inquiry for Southern Iron. The market price seems to be $11.50, Birmingham, although some interests are still holding to $12. There is little inquiry for Bessemer, Malleable or Basic Iron. Some furnaces are accumulating larger stockpiles. For prompt shipment and for the balance of the year we quote, delivered, Cleveland, as follows:

| | |
|---|---|
| Bessemer | $16.90 |
| Northern Foundry, No. 1 | $16.00 to 16.25 |
| Northern Foundry, No. 2 | 15.50 to 15.75 |
| Northern Foundry, No. 3 | 15.00 to 15.25 |
| Southern Foundry, No. 2 | 15.85 |
| Gray Forge | 14.90 |

**Coke.**—Considerable spot Furnace Coke on the track has been thrown on the market during the past week, and has been sold around $1.50 to $1.60. The general market is very quiet in both grades, and inquiries are very scarce. For the last half delivery we quote Connellsville Furnace Coke at $1.75 to $1.85, at oven, and 72-hr. Foundry Coke at $2.25, at oven.

**Finished Iron and Steel.**—There is a fair improvement in the volume of specifications, particularly for Steel Bars, which causes a considerably better feeling regarding future conditions. Consumers are still ordering only for their immediate actual requirements, but these requirements are greater than they have been for the past few months. The Bar specifications include some from the implement makers. Additional Bar contracts were closed in the week and there are very few consumers who are not now under contract for the year. Some additional contracts have been closed by rerolling mills for Hard Steel Bars, the buyers being implement makers. Some fair Bar specifications have come from local jobbers. The demand for Iron Bars shows little if any improvement, although orders from railroads for repair work are showing up slightly better. The two local Bar mills that shut down July 3 are still idle, and it has not yet been decided when they will start up. In Plates there is also a slight improvement in the demand, although orders are all for small lots for immediate needs. The demand for Sheets shows no particular improvement. The contract for the Structural Steel for the new Bailey Building has been awarded to the Forest City Steel & Iron Company, Cleveland. About 1000 tons of Structural Material will be needed, but the erection will not be started before the first of the year. The contract will be closed soon for the Structural Steel for the new Pope Building, that will require in the neighborhood of 1000 tons. A factory building, for which plans are now being prepared, calling for some amount of Structural Material, is to be erected by the Goodrich Rubber Company, of Akron, Ohio. Current orders are very light, consumers being nearly all under contract. Prices on Iron and Steel Bars are being firmly maintained. The price of the narrower Plates is being shaded $1.50 per ton by some of the smaller mills, and some price concessions are being made in Sheets. Warehouse business continues quiet, but jobbers are not looking for much improvement in July. We quote Iron Bars at 1.45c., Cleveland, for car lots; Steel Bars, 1.50c., Cleveland, for car lots, half extras; Beams and Channels, 1.70c., base, Cleveland, and Plates, ¼-in. and heavier, 1.70c., Cleveland. We quote Sheets, mill shipments, car lots, Cleveland, as follows: Blue Annealed, No. 10, 1.90c.; Box Annealed, No. 28, 2.60c.; Galvanized, No. 28, 3.65c. Jobbers quote Iron and Steel Bars out of stock at 1.65c. to 1.70c. Beams and Channels out of stock are 2c., and Plates, ¼-in. and heavier, 1.90c. Warehouse prices on Sheets are as follows: Blue Annealed, No. 10, 2.10c.; Box Annealed, No. 28, 2.70c.; Galvanized, No. 28, 3.80c. Warehouse prices on Boiler Tubes, 2¾ to 5 in., are 64 per cent. discount, and on Black Merchant Iron Pipe, base sizes, 71 per cent. discount.

**Old Material.**—Prices are firmer as a result of the action of the dealers, who have advanced their quotations on several grades. While inquiries are slightly better, the strength that has developed is due entirely to the expectation that the demand will greatly improve within a short time. About the only sales of the past week have been trading among dealers and covering by the shorts. There are better inquiries for both Steel and Cast Scrap, but the majority of these inquiries are believed to be for the purpose of feeling the market. Dealers believe, however, that they will be followed by a fair buying movement, and in this way they have added strength to the market. Dealers' prices to the trade, per gross ton, f.o.b. Cleveland, several of which are advanced 50c. or more per ton over last week, are as follows:

| | |
|---|---|
| Old Steel Rails | $13.00 to $13.50 |
| Old Iron Rails | 15.00 to 16.00 |
| Steel Car Axles | 17.50 to 18.00 |
| Old Car Wheels | 14.50 to 15.00 |
| Relaying Rails, 50 lb. and over | 22.00 to 23.00 |
| Heavy Melting Steel | 13.25 to 13.75 |
| Railroad Malleable | 12.00 to 12.50 |
| Agricultural Malleable | 11.00 to 11.50 |
| Light Bundled Sheet Scrap | 8.00 to 9.00 |

The following quotations are per net ton, f.o.b. Cleveland:

| | |
|---|---|
| Iron Car Axles | $16.00 to $16.50 |
| Cast Borings | 6.00 to 6.50 |
| Iron and Steel Turnings and Drillings | 7.50 to 8.00 |
| Steel Axle Turnings | 8.50 to 9.00 |
| No. 1 Busheling | 11.50 to 12.00 |
| No. 1 Railroad Wrought | 13.00 to 13.50 |
| No. 1 Cast | 12.50 to 13.00 |
| Stove Plate | 10.00 to 10.50 |
| Bundled Tin Scrap | 8.00 to 9.00 |

## Philadelphia.

PHILADELPHIA, PA., July 21, 1908.

The midsummer apathy is pronounced in the Iron and Steel market. The general tone, however, is strong; prices are, perhaps, a shade firmer, and while the volume of current business is not large, the outlook appears to be somewhat better. The trade is quite optimistic regarding business in the fall months, when a resumption in buying which will tend toward normal conditions is expected. Crops and the coming Presidential election are the principal factors mentioned as reasons for the waiting market.

**Pig Iron.**—There has been less buying in the week, but the general tone is stronger. Furnaces are booked up for the next month or so, and prices are being well maintained. With surplus stocks on furnace banks decreasing, there is not the same tendency to make concessions. The larger consumers have to a certain extent covered for their requirements in the near future and are showing more interest in Iron for fourth quarter delivery, as well as deliveries for the first quarter of next year. While sellers are willing to take business for strictly fourth quarter delivery at a slight advance over present prices, they hesitate when it comes to booking orders for next year, and pretty generally refuse to quote for such delivery. In some instances producers are out of the market for third quarter business, and while a large portion of their capacity is idle, there is no disposition to blow in additional furnaces at the present range of prices. No great change in consumption is expected during July and August. Iron foundries are not very actively engaged, and while some furnaces report better shipping instructions, no large increase in consumption is anticipated much before September 1. Sales of Foundry Iron have for

the most part been small and for prompt shipment. While $16.50, delivered, for No. 2 X Foundry can be done, a number of producers are holding firmly at $16.75 and $17 for that grade, and have booked some little business. In some cases sellers will accept $16.75 to $17 for No. 2 X Foundry for delivery over the entire half of the year, but when it comes to strictly fourth quarter delivery an advance of about 50c. a ton is asked for standard grades. Southern Iron has not been very active during the week. Little business outside of that transacted with the Cast Iron Pipe interests recently is reported, and while some furnaces are holding the $12, Birmingham, base, for No. 2 Foundry, others are understood to be shading that figure for prompt Iron. Virginia Foundry Irons are firm and in some instances better prices have been realized, a sale of 800 tons of No. 2 X Iron for third quarter delivery being reported at $15, furnace. This, however, appears to be exceptional, as $14 to $14.25, furnace, can still be done for this grade and delivery. The demand for Fore Iron has not been very heavy. Some scattered lots have been sold at the market for third quarter delivery, but furnaces as a rule are pretty well sold up on this grade. A sale of 26,000 tons of Forge for delivery next year was reported, it being virtually an extension of a present contract, the price being based on a sliding scale. There has been some further inquiry for Basic Iron, largely for forward delivery, and a sale of 3000 tons for fourth quarter shipment is reported at $15.45, delivered. For the entire last half delivery, however, it is believed that $15 to $15.25 could still be done, although some producers are now pretty well sold up on Basic. A little inquiry has been noted for Low Phosphorus Iron, but this is also somewhat scarce and the price is being well maintained. A sale of 600 tons of off grade is reported at $19.75, delivered. The general tone of the market continues strong. Inquiries, while not heavy, are fairly numerous, and considered good for the season of the year, and sellers in this territory are by no means inclined to exert any pressure to get tonnage. Prices are firm and range as follows for standard grades, delivered in buyers' yards, eastern Pennsylvania and nearby territory, during the third quarter; for strictly fourth quarter delivery an advance of about 50c. a ton rules, dependent on brand and tonnage:

| | |
|---|---|
| Eastern Pennsylvania, No. 2 X Foundry | $16.50 to $17.00 |
| Eastern Pennsylvania, No. 2 Plain | 16.00 to 16.50 |
| Virginia, No. 2 X Foundry | 17.00 |
| Virginia, No. 2 Plain | 16.50 to 16.75 |
| Gray Forge | 15.00 to 15.50 |
| Basic | 15.00 to 15.50 |
| Low Phosphorus | 21.00 to 21.25 |

**Ferromanganese.**—Business in the week has been dull. Offerings have been made as low as $43.50, Baltimore, for small lots for prompt shipment, but this is believed to be largely on resales. For forward shipment, sellers still hold at $45 to $46, seaboard, but this price could probably be shaded.

**Steel.**—The demand for Billets is quiet. Consumers are understood to be taking more interest in the market, but are not yet ready to place orders. The local mills feel more encouraged regarding the future, but at the time are still idle. Quotations for deliveries in this territory are firm, $26.20 being named for ordinary Rolling Steel, with Forging Steel at $28.20, subject to the usual extras for high carbons and special sizes.

**Plates.**—While the demand continues somewhat irregular, there has been more tonnage placed and Plate makers feel encouraged regarding the situation. The bulk of the orders placed have been small and cover miscellaneous requirements. Contracts have been closed for several fair tonnages of Boat Steel, one for 2000 tons from a Wilmington shipyard, and another for 1800 tons from a Delaware River yard. Some little railroad business still continues to come out, but the demand for Locomotive Steel is hardly as large as it was a few weeks ago. Mills are rather better engaged and the output in some departments show an increase. Prices are being fully maintained and range as follows for delivery in this territory:

| | Carloads. Cents. | Parts carload. Cents. |
|---|---|---|
| Tank, Bridge and Boat Steel | 1.75 | 1.80 |
| Flange or Boiler Steel | 1.85 | 1.95 |
| Commercial Firebox | 1.95 | 2.00 |
| Marine | 2.15 | 2.20 |
| Locomotive Firebox Steel | 2.25 | 2.30 |

The above are base prices for ¼-in. and heavier. The following extras apply:

| | Extra per 100 lb. |
|---|---|
| 3-16-in. thick | $0.10 |
| Nos. 7 and 8, B. W. G. | .15 |
| No. 9, B. W. G. | .25 |
| Plates over 100 to 110 in. | .05 |
| Plates over 110 to 115 in. | .10 |
| Plates over 115 to 120 in. | .15 |
| Plates over 120 to 125 in. | .25 |
| Plates over 125 to 130 in. | .50 |
| Plates over 130 in. | 1.00 |

**Structural Material.**—There has been no marked improvement in the immediate demand. A fair run of business continues, but individual orders are not large. A considerable amount of bridge work for the city is now under contract, and plans have been approved by the Survey Department for a new bridge over the Schuylkill River, for which proposals will no doubt be asked shortly. While large propositions are somewhat scarce, and mills have made slight gains in the volume of business taken, the trade feels hopeful for the future. Prices are firm and unchanged at 1.75c. to 1.90c., according to specification for delivery in this territory.

**Sheets.**—The majority of the mills in this territory continue in operation on full time, but are still dependent on current orders to keep them so occupied. The business coming out is somewhat better in the aggregate, although orders individually are small and for prompt shipment. Prices are as follows for mill shipments, a tenth extra being added for small lots: Nos. 18 to 20, 2.50c.; Nos. 22 to 24, 2.60c.; Nos. 25 to 26, 2.70c.; No. 27, 2.80c.; No. 28, 2.90c.

**Bars.**—The demand for Refined Iron Bars has been somewhat more active, buyers show more disposition to come into the market, and there is less tendency shown on the part of the mills to shade quotations. Sellers are not inclined to accept orders for future delivery at the recent low quotations, and prices show more firmness. For desirable specifications for prompt shipment, 1.35c., delivered in this territory has been done, but some mills hold at 1.40c. to 1.45c., delivered, for the general run of business. Steel Bars are not very active, and are quoted at 1.55c., delivered in this territory, with Rerolled Bars at 1.50c.

**Coke.**—The volume of business transacted has been small, and sales as a rule have been for moderate tonnages for last half of the year delivery. Prices are practically unchanged, Foundry Coke being quoted at $2.15 to $2.35, at oven, with Furnace Coke at $1.50 to $1.75, at oven. For delivery in this territory the following range of prices is named:

| | |
|---|---|
| Connellsville Furnace Coke | $3.65 to $3.90 |
| Foundry Coke | 4.30 to 4.50 |
| Mountain Furnace Coke | 3.25 to 3.50 |
| Foundry Coke | 3.90 to 4.10 |

**Old Material.**—The material shows decided sentimental strength. Dealers are holding Scrap for higher prices, and but comparatively small tonnages could be had at to-day's quotations without advancing the price. Sales have been light during the week, small tonnages only having been moved in the leading grades. Neither Steel nor Iron mills have come into the market for any pronounced tonnages, but are picking up small odd lots from different sources at prices close to the market. Quotations, while unchanged, and largely nominal, show considerable strength, and range about as follows for deliveries in buyers' yards, eastern Pennsylvania and adjoining territory:

| | |
|---|---|
| No. 1 Steel Scrap and Crops | $14.00 to $14.50 |
| Low Phosphorus | 18.00 to 18.50 |
| Old Steel Axles | 18.50 to 19.00 |
| Old Iron Axles | 21.00 to 21.50 |
| Old Iron Rails | 18.00 to 18.50 |
| Old Car Wheels | 13.50 to 14.00 |
| Choice No. 1 R. R. Wrought | 16.00 to 16.50 |
| Machinery Cast | 14.00 to 14.50 |
| Railroad Malleable | 12.00 to 12.50 |
| Wrought Iron Pipe | 12.50 to 13.00 |
| New Bundled Sheets | 12.00 to 12.50 |
| No. 1 Forge Fire Scrap | 11.50 to 12.00 |
| No. 2 Light Iron | 7.50 to 8.00 |
| Wrought Turnings | 10.00 to 10.50 |
| Stove Plate | 11.00 to 11.50 |
| Cast Borings | 9.00 to 9.50 |
| Grate Bars | 12.00 to 12.50 |

## Buffalo.

BUFFALO, N. Y., July 21, 1908.

**Pig Iron.**—A more hopeful feeling pervades the Pig Iron market with some indications of improvement in the situation. The general impression is that better things may be looked for shortly with a gradual but steadily increasing demand. The following prices, f.o.b. Buffalo, fairly approximate the current market:

| | |
|---|---|
| No. 1 X Foundry | $16.00 to $16.25 |
| No. 2 X Foundry | 15.50 to 15.75 |
| No. 2 Plain | 15.00 to 15.25 |
| No. 3 Foundry | 14.75 to 15.00 |
| Malleable Bessemer | 16.00 to 17.00 |
| Gray Forge | 14.75 to 15.00 |
| Charcoal | 20.00 to 20.50 |

**Old Material.**—Prices are a little stronger all along the line in the Old Material market, and a more confident feeling is developing, although the buying by consumers so far is but moderate. We quote for gross tons, f.o.b. Buffalo, as follows:

| | |
|---|---|
| Heavy Melting Steel | $13.50 to $14.00 |
| No. 1 Railroad Wrought | 13.25 to 13.75 |
| No. 1 Railroad and Machinery Cast Scrap | 13.50 to 14.00 |
| Old Steel Axles | 15.50 to 16.25 |
| Old Iron Axles | 17.75 to 18.25 |
| Old Car Wheels | 13.25 to 14.00 |
| Railroad Malleable | 12.00 to 12.50 |
| Boiler Plate | 11.50 to 12.00 |
| Stove Plate | 12.00 to 12.25 |
| Grate Bars | 10.50 to 11.25 |
| Pipe | 10.25 to 10.50 |
| Wrought Iron and Soft Steel Turnings | 7.00 to 7.50 |
| Clean Cast Iron Borings | 6.00 to 6.50 |
| No. 1 Busheling Scrap | 11.25 to 11.75 |

## New York.

NEW YORK, July 22, 1908.

**Pig Iron.**—The market has been very quiet and steady. We quote at tidewater: Northern No. 1 Foundry, $16.75 to $17; No. 2 Foundry, $16 to $16.50 and No. 2 Plain, $15.25 to $15.50. Alabama Irons are quoted $16.50 to $17 for No. 1 Foundry, and $15.75 to $16.25 for No. 2 Foundry.

**Ferroalloys.**—Inquiries for 80 per cent. Ferromanganese have been more numerous. The price is $44, and this will be accepted for balance of the year deliveries, but probably not for last quarter deliveries alone or those extending into 1909. For 50 per cent. Ferrosilicon $70 is quoted both by European and American producers.

**Steel Rails.**—The Mexican Central contract for 10,000 tons of 75-lb. Rails, referred to last week, was taken by the Pennsylvania Steel Company, and the Rails will be rolled at Sparrows Point. Some further domestic tonnage is under negotiation, but nothing has been closed in the past week.

**Structural Material.**—Mills are getting better specifications and the prospect for fall work is encouraging. Railroad bridge work is still of meager proportions. The Chicago & Northwestern has closed for its long pending bridge requirements, about 2200 tons going to the American Bridge Company. At Los Angeles, Cal., the Nelson-Story Building, requiring 2300 tons of Steel has been awarded to a local construction company. The Chicago, Milwaukee & St. Paul Road has placed 700 tons of bridge contracts with the Wisconsin Bridge Company. The New Haven, New York Central and Pennsylvania roads have some further bridge work in contemplation, but the tonnage is comparatively small. We quote on tidewater delivery, mill shipments, as follows: Beams, Channels, Angles and Zees, 1.76c.; Tees, 1.81c. On Beams, 18 to 24 in., and Angles over 6 in., the extra is 0.10c. Material cut to length is sold from stock at 2c. to 2½c.

**Bars.**—Wage questions have been no impediment to the operation of Eastern Iron rolling mills. At each mill it has been simply a matter of getting together orders enough for a run after the midyear shutdown. Buying in Iron is mostly for the supply of early needs. The Steel Bar manufacturers, who have made contracts with consumers extending, in some cases, to July 1, 1909, are selling to dealers only for deliveries this side of October 1. In a number of instances the new contracts in Steel Bars cover simply the unspecified portions of contracts expiring July 1. We continue to quote Iron Bars at 1.35c. to 1.40c., tidewater delivery, and Steel Bars at 1.56c., tidewater.

**Old Material.**—The buying by dealers, who are accumulating stocks against the expected revival of consuming demand, continues, and there is also a beginning of interest on the part of users. At a price foundries and rolling mills would no doubt take on more stock, but holders are not forcing the market. Nothing comparable to the activity in Steel Scrap reported at Pittsburgh and Chicago in the past two weeks is to be found in the eastern Pennsylvania market, and the unwillingness of Open Hearth Steel works to buy except at a considerable concession from $13.50 delivered is sending some Heavy Melting Scrap from the New York District to Pittsburgh and the Shenango Valley. If this movement should become more extensive it might eventually strengthen the Eastern situation. Prices still largely represent dealers' asking prices, but it is also true that where business is done by melters it is at an advance from the level prevalent a short time ago. We quote as follows:

| | |
|---|---|
| Old Girder and T Rails for melting | $10.50 to $11.00 |
| Heavy Melting Steel Scrap | 10.50 to 11.00 |
| Old Steel Rails, rerolling lengths | 12.00 to 12.00 |
| Relaying Rails | 21.00 to 22.00 |
| Old Iron Rails | 14.50 to 15.00 |
| Standard Hammered Iron Car Axles | 16.00 to 16.50 |
| Old Steel Car Axles | 14.50 to 15.00 |
| No. 1 Railroad Wrought | 14.00 to 14.50 |
| Iron Track Scrap | 10.00 to 10.50 |
| No. 1 Yard Wrought, long | 12.00 to 12.50 |
| No. 1 Yard Wrought, short | 11.00 to 11.50 |
| Light Iron | 5.50 to 6.00 |
| Cast Borings | 5.00 to 5.50 |
| Wrought Turnings | 6.50 to 7.00 |
| Wrought Pipe | 10.00 to 10.50 |
| Old Car Wheels | 13.75 to 14.25 |
| No. 1 Heavy Cast, broken up | 13.00 to 14.00 |
| Stove Plate | 10.50 to 11.00 |
| Locomotive Grate Bars | 11.00 to 11.50 |
| Malleable Cast | 12.50 to 13.00 |

**Plates.**—There is a somewhat better demand, and Eastern mills have increased the number of their active Open Hearth furnaces. The Troy Line boat, building at Newburgh, N. Y., on which work was suspended some months ago, is to be finished, it is now decided, and 400 tons of Plates are thus reinstated on order books. Plate manufacturers are keenly alive to the importance of the tonnage that will soon be placed for the Long Island riveted pipe line from Amityville to Clear Valley, for the extension of the Brooklyn water supply. The New York Water Board has called for bids to be in by July 31, and 400 working days are allowed for the completion of the work. We quote for wide Plates as follows at tidewater: Sheared Plates, 1.76c. to 1.86c.; Flange Plates, 1.86c. to 1.96c.; Marine Plates, 2.16c. to 2.26c.; Firebox Plates, 2.65c. to 3.50c., according to specifications.

**Cast Iron Pipe.**—A shop on the Delaware has taken the contract for 1700 tons at Boston and for 2750 tons at Albany at a very close figure. Brookline, Mass., is in the market for 4200 tons. We quote 6 in. Pipe at tidewater, $23.50 to $24 per net ton.

## Metal Market.

NEW YORK, July 22, 1908.

**Pig Tin.**—Apparently business is as dull as ever, with no improvement in sight. More or less of a shortage has developed, owing to the delay to the steamer Verona, and this will increase until the arrival of the Minneapolis, which is due July 27. Yet how much this will relieve the situation is problematic, as the boat has less than 300 tons of Tin. Arrivals since July 1 have been only 1407 tons, and including the stocks held here at that date and that aboard the Minneapolis there will be available for American consumption 3220 tons for July. As deliveries into consumption will probably reach 2500 tons, it can be readily seen that stocks at the end of the month will be very small and, perhaps, go to a new low figure. There is afloat for American ports over 2000 tons, and with the arrival of the Verona, August 10, there should be sufficient metal to go around, although no large supplies have been sent from London. It is expected that the next London steamer will bring an increased cargo. Prices during the week have been as follows:

| | Cents. |
|---|---|
| July 15 | 29.15 |
| July 16 | 29.35 |
| July 17 | 29.50 |
| July 20 | 29.25 |
| July 21 | 29.25 |
| July 22 | 29.75 |

The course of the London market during the week has been interesting on account of the large sales. This speculative business is probably induced by the reports that such a large number of Tin Plate mills in this country had closed. These mills have since resumed operations. The London market closes £1 higher than last week, at £134 10s. for spot and £135 10s. for futures.

**Copper.**—More inquiries have been in the market, with a considerable increase in the tonnage of Copper sold. Business has come from all parts of the country, and while the buying movement is larger than for many months, it is not of the same volume as formerly. This buying by American consumers comes at a particularly opportune time, because foreign buying has fallen off and exports this month will be considerably less, as for the first 21 days of the month they are only 13,000 tons. Bankers in Europe are discouraging any more imports which will have to be financed. Several sales of Lake have been made at 13c., and Electrolytic has been sold all the way from 12.85c. down to 12.75c. At least one export order has gone at 12.80c. Little has been 12.62½c. The increased buying, although a welcome sign, doing in Casting Copper, but it remains firm at 12.50c. to should not be taken too seriously, as the immense stocks held abroad will furnish a check against any sudden uprush in price. Then, too, it must be remembered that all signs point to a greater production of Copper in the United States and the world during the last half of this year than ever. Encouraging features in the line of more orders for Wire, better business in Copper Sheets and a larger demand for Scrap Metals are in evidence. The London market shows a slight advance over last week, closing at £58 7s. 6d. for spot, and £59 for futures.

**Spelter.**—The market is firmer and prices are higher, but no large business has been transacted. The advance comes principally from St. Louis, where prices have been raised to 4.35c. In New York quotations are unchanged, at 4.45c.

**Lead.**—Prices are stronger and the speculative lots which have been pressing on the market for several weeks are not going out quite as freely. Lead in New York is quoted at 4.47½c., but in St. Louis there has been an advance of 5 points, and the market there is firm at 4.32½c.

**Antimony.**—A slight increase in the volume of business is observed, but conditions in this trade are still unsatisfactory and prices more or less nominal. Hallett's is quoted at 8.25c. to 8.50c., Cookson's at 8.50c. to 8.75c., but outside brands are lower, at 7.75c. to 8c.

**Nickel.** Prices are unchanged, at 45c. for ton lots and 55c. to 60c. for smaller quantities.

**Tin Plate.** Specifications against contracts continue to come in freely, and many of the mills which were closed down for repairs have resumed. They have enough business on their books to keep them going until the middle of August at least. Prices are without change, at $3.89, New York, and $3.70, Pittsburgh, for 100-lb. I. C. Coke Plates. In Swansea, Welsh Plates are 1½d. higher, at 12s. 4½d.

**Old Metals.** Considerable improvement in business is

noted. This is especially observed in the New England territory. While it is practically impossible to tell all the sales, there have been orders for 50, 20, 10 and 5 ton lots during the week. Some of these were from consumers, who believe time is ripe for an advance, and others from regular buyers, who are stocking up against actual orders. The export business to Europe has fallen off. Prices are sentimentally slightly stronger, but Old Metals can still be bought within the following range of prices, which are dealers' selling prices in New York:

| | Cents. |
|---|---|
| Copper, Heavy and Crucible | 12.00 to 12.25 |
| Copper, Heavy and Wire | 11.75 to 12.00 |
| Copper, Light and Bottoms | 10.75 to 11.00 |
| Brass, Heavy | 8.75 to 9.25 |
| Brass, Light | 7.00 to 7.25 |
| Heavy Machine Composition | 11.25 to 11.50 |
| Clean Brass Turnings | 7.75 to 8.25 |
| Composition Turnings | 9.00 to 9.50 |
| Lead, Heavy | 4.10 |
| Lead, Tea | 3.75 |
| Zinc | 3.50 |

## Iron and Industrial Stocks.

NEW YORK, July 22, 1908.

Increasing activity and advancing prices have marked the stock market in the past week, both industrial and railroad stocks participating in the movement. The United States Steel shares have been remarkably active, and up to Tuesday night, July 21, the extreme advance in the common stock beyond the high point reached on Wednesday, July 15, was 2⅝, or from 42⅞ to 45½. From total sales of 500,000 to 600,000 shares last week, the market this week has shown totals around 900,000 shares, and on Monday, July 20, the record was 982,930 shares. The low and high points on active iron and industrial stocks between Thursday of last week and Tuesday of this week are indicated in the ranges given below: United States Steel common 42 to 45½, preferred 107 to 109; Car and Foundry common 37 to 39⅛, preferred 101 to 104; Locomotive common 49⅜ to 52¾, preferred 103 to 106; Steel Foundries common 7½ to 8; Bethlehem Steel common 18¾ to 21, preferred 46½ to 50; Cambria Steel 35 to 36⅞; Colorado Fuel 29½ to 33⅞; Crucible Steel common 5½ to 6, preferred 41 to 42⅛; Pressed Steel common 29⅛ to 32⅞, preferred 89 to 92½; Republic common 19¼ to 21⅜, preferred 70¼ to 74⅛; Sloss-Sheffield common 57½ to 60, preferred 97 to 99; Cast Iron Pipe common 23⅛ to 24½, preferred 68⅜ to 69¾; Can common 4¾ to 5⅛, preferred 59 to 60½. The last transactions up to 1.30 p.m. to-day are reported at the following prices: United States Steel common 45⅛, preferred 108⅛; Car & Foundry common 39, preferred 103½; Locomotive common 53⅛, preferred 105½; Steel Foundries common 45⅛; preferred 108⅛; Colorado Fuel 32¾; Pressed Steel common 32½, preferred 93; Railway Spring common 42; Republic common 21, preferred 74¼; Sloss Sheffield common 60⅞; Cast Iron Pipe common 24½, preferred 71¾; Can common 5½, preferred 60¼.

## The Hazelton Sheet Steel Company.

The Hazelton Sheet Steel Company, Hazelton, Pa., started up its new sheet steel mill July 7, and now has three hot mills in successful operation and expects to start the fourth mill this week. The plant was built under the direction of L. C. Taylor, formerly of Cambridge, Ohio, organizer of the company. It is located on a 12-acre tract on the Lehigh Valley Railroad, and cost about $250,000. The rolling mill building, 110 x 260 ft., contains 4 hot mills, 2 cold mills, 4 sheet furnaces, 4 pair furnaces, 4 annealing furnaces, 2 steam doublers, a 25-ton traveling crane, 1200 hp. Corliss horizontal engine, and other necessary equipment. There are also the roofing and galvanizing department, 62 x 240 ft.; a power plant equipped with a 150-hp. automatic engine and generator, 4 boilers aggregating 700 hp., and 2 Duff patent gas producers. The plant has an annual capacity of 16,000 tons of black and galvanized iron and steel sheets, blue annealed and electric sheets, steel roofing and corrugated sheets, conductor pipe, eave trough, &c. The main office will be located at 318 Stephen Girard Building, Philadelphia, Pa., where Mr. Taylor will make his headquarters after August 1. The officers of the company are the following: President, E. Cooper Shapley; vice-president, M. F. Straus, president of the American Tin & Terne Plate Company, Philadelphia; general manager, Larkin C. Taylor, formerly with the United Sheet & Tin Plate Company, Marietta, Ohio; sales manager, John N. Rensen, formerly with the Follansbee Brothers Company, Pittsburgh; superintendent, W. A. Housholder, formerly manager of the American Sheet & Tin Plate Company, at Chester, W. Va.; assistant superintendent, Ira Housholder, formerly assistant superintendent of the American Sheet & Tin Plate Company, at Chester, W. Va.; superintendent of galvanizing and roofing departments, H. T. Wilson, formerly superintendent of the galvanizing department of the American Rolling Mill Company, at Middletown, Ohio.

## Cincinnati Metal Trades Outing.

Saturday, July 25, will be a red letter day for several thousand employees of the Cincinnati machinery manufacturers who are members of the Cincinnati branch of the National Metal Trades Association. The third annual outing will be given as usual at Chester Park. Tickets will be given out to all employees, no distinction being made between those who have been laid off and those now on the payroll. Entries for the athletic and aquatic events have been more numerous than formerly. Superintendent M. C. Langnecker of the Cincinnati Gymnasium and 16 assistants will have charge of the events, for which medals of all kinds and a purse have been provided. Everything on the grounds will be free to each employee and his family, each ticket being good for $1.40 worth of amusement, and admitting to all forms of entertainment. E. H. Haargrave of the Cincinnati Tool Company is chairman of the committee in charge, on which are also P. O. Geier of the Cincinnati Milling Machine Company, S. C. Schauer of the Cincinnati Machine Tool Company, Robert McGowan of the John H. McGowan Pump Company, E. Von Wyck of the Von Wyck Machine Tool Company, and Secretary John Manley of the Cincinnati Association. Dinner will be served at the clubhouse at 6.30. Provision will be made at this dinner for all members of the association and superintendents and foremen of the various establishments.

**Worth Brothers Company to Build a Blast Furnace.**—Worth Brothers Company, manufacturers of steel plates, Coatesville, Pa., will begin at once the erection of a blast furnace. It will be about 85 ft. high and will have a daily capacity of 400 to 450 tons of basic pig iron. The construction will be under the direction of the company's own engineering staff. The new furnace will be in close proximity to the open hearth steel plant now operated by Worth Brothers Company and it is expected to charge hot metal from the blast furnace to the open hearth furnaces. The company expects to begin placing contracts soon for materials, machinery and all necessary equipment. An ore bridge will be built and the construction and equipment of the entire plant will be thoroughly modern. The open hearth plant at Coatesville was built in 1895 and 1896 and consists of 10 50-ton and 6 35-ton furnaces. The company's rated capacity is 285,000 tons of basic ingots and 15,000 tons of acid ingots per year.

The Hudson-Fulton Celebration Commission, New York City, is planning for the commemoration next year of the discovery of the Hudson River by Hendrik Hudson in 1609, and the first successful trip of Robert Fulton's steamboat Clermont on the Hudson in 1807. The celebration will begin September 25, 1909, and continue through Saturday, October 2. A feature will be two naval parades, one starting from Albany and the other from New York, meeting at Newburgh. An appropriation of $300,000 by the New York Legislature is expected.

Two new fireboats of New York City are equipped with Worthington centrifugal pumps driven by Curtis steam turbines. They are 12-in. two-stage pumps, designed to deliver 4500 gal. per minute, each against a pressure of 150 lb. The turbines are rated at 650 hp. each, with steam pressure of 220 lb. and vacuum of 26 in., and running at 1800 rev. per min. A flexible coupling directly connects the rotating parts. In a test by the General Electric Company such a turbine delivered 1 hp. per 15 lb. of steam consumed.

## OBITUARY.

CARL LUNKENHEIMER, first vice-president of the Lunkenheimer Company, Cincinnati, died at Pasadena, Cal., Sunday, July 19. He had been in ill health for several years, and had resided for the most part in California. The funeral will be held in Cincinnati.

ANICETO GARCIA MENOCAL, long prominent in hydraulic engineering, died in New York July 20, aged 69 years. The son of a Cuban planter, he came to the United States in 1857 and in 1862 graduated at Rensselaer Polytechnic Institute, Troy, N. Y. He became chief engineer of the Havana Water Works and his work attracted attention. He became connected with the New York Department of Public Works in 1870 and in 1872 was made chief engineer in the Navy Department, conducting government surveys for a ship canal at Panama and Nicaragua. He was sent to Paris in 1879 by President Hayes as a delegate to the Canal Congress and was decorated with the Order of the Legion of Honor. In recent years he has served on important government commissions in the Philippines, Liberia and Cuba.

ANNOUNCEMENT is made by the Upson Nut Company, Cleveland, Ohio, of the death of Oliver A. Austin, on Friday, July 17, aged 58 years.

FRANCIS ALLEN BARROWS, Salem, Mass., for many years a manufacturer of farming implements, is dead at the age of 83 years. He was a native of Castleton, Vt., where he learned the iron workers' trade, and afterwards built up an important manufacturing industry in the town. In 1876 he invented a swivel plow which yielded him large returns. He leaves two daughters.

## Two Important Wage Scale Settlements.

With the signing of the iron wage scale last week by the Republic Iron & Steel Company and the Youngstown Sheet & Tube Company all scale matters of the Amalgamated Association are settled for the year. The sheet and tin plate scales were arranged with the American Sheet & Tin Plate Company at Pittsburgh June 29, the independents afterward signing these scales. An iron scale was arranged with the Western Bar Iron Association at Detroit July 11, the substance of which was given in *The Iron Age* last week. The Youngstown Sheet & Tube Company, which operates sheet mills and puddling furnaces, &c., but as totally distinct departments, signed the entire scale last week. It had desired to sign the sheet scale immediately after it was agreed to between the American Sheet & Tin Plate Company and the Amalgamated Association, and start its sheet mills, but the Amalgamated Association would not allow it to sign this scale alone, requiring that it should sign the entire scale, although the iron scale had not yet been arranged in a way satisfactory to any of the manufacturers. When the iron wage scale was actually arranged the Youngstown Sheet & Tube Company signed the entire scale, and this week started its sheet and iron departments.

The Republic Iron & Steel Company signed the Detroit iron scale last Friday. This removed the last of the scale uncertainties, as originally the company had demanded quite a large reduction in the iron scale, and there was a possibility of a conflict. The Republic Iron & Steel Company started its Bessemer steel plant at Youngstown Sunday night, it having been idle since the last week in June, and this week it is starting most of its rolling mills. The entire Brown-Bonnell plant, the most important of the company's rolling mills, was put in full operation Monday morning, and the Mahoning Valley plant, with the exception of a few departments, was put in operation Tuesday night. A number of the Western plants are also being started.

The usual bimonthly return was made last Saturday, and showed that the average realized price on base sizes of iron bars during May and June lay between 1.35 and 1.40 cents, or 1-10 cent. less than in the preceding period. This makes the puddling rate for July and August, $85.37\frac{1}{2}$, against the rate of $86.12\frac{1}{2}$, which prevailed during May and June, 25 cents of the decline being due to the lower price of bar iron, and 50 cents to the lower wage rates in the scale.

## Milliken Receivers on the Structural Situation.

The recent order of the courts continuing the receivership of Milliken Bros., Inc., to August 1, 1908, was made after the filing of a report covering operations from June 11, 1907, to June 24, 1908, accompanied by the statement that reorganization plans were being worked out. The tonnage fabricated in the period named was 33,800 tons, against 34,670 tons in a like period in the preceding year, when, in addition, 3464 tons was fabricated for the building of the company's new steel plant. In the months of April, May and June, 1908, there was fabricated at the bridge plant 6000 tons. For the same period last year 10,721 tons was shipped. Following are the receipts and expenditures for the period named:

| RECEIPTS. | | |
|---|---|---|
| Cash on hand at New York as per statement Haskins & Sells | | $64,439 |
| Cash on hand June 10, 1907 | | 6,218 |
| Received on account of contracts | | 2,646,291 |
| Received on account of estate accounts receiver | | 147,027 |
| Realization of inventories June 10, 1907 | | 247,519 |
| Proceeds of receivers' note for $90,000, Carnegie Trust Company | | 89,979 |
| Received from all other sources | | 27,121 |
| Total | | $3,228,594 |
| DISBURSEMENTS. | | |
| Expenditures on contract | $2,063,005 | |
| Interest on bonds | 180,000 | |
| Payment of note (Carnegie Trust Company) | 90,000 | |
| Preservation of steel mill | 41,299 | |
| Payment of claims preferred by statutes | 58,727 | |
| Miscellaneous disbursements | 21,569 | |
| General administrative expenses | 242,021 | |
| | | 2,696,621 |
| Balance on hand June 24, 1908 | | $531,973 |

The demoralization in the structural market in recent months is emphasized in the receivers' report, and inferentially the chance for profitable operation of the plant in times of normal activity and good prices. We quote the following:

> During the past three months there has existed in this community an unprecedented condition in the structural steel business; at no time in the entire history of this business has the condition been worse. The tonnage which has been let has been remarkably light even for a period of depression. All fabricating concerns, without exception, have reduced the tonnage in their shops to such an extent that in most cases it became necessary for them to take work at any price in order to keep the shops running. The result has been that not only has there been a small amount of work let, but the prices at which this work has been taken have been amazingly low.
>
> We take great pleasure in reporting that notwithstanding this condition and notwithstanding the difficulties of operating a going concern under a receivership, we have been able, without taking work at especially low figures, to keep the shops going with a fair output. We are able to report that at the present time there is enough work to keep the shops operating at the present rate for at least a period of two months. However, we have not found it possible to get sufficient business to carry the entire overhead expense. During this period of worldwide business stagnation, in which the steel industry is particularly affected, we have maintained unimpaired the value of the goodwill of Milliken Brothers, Inc., and have continued the business of this company, without interruption, under circumstances unprecedentedly adverse, have vigorously and successfully competed in the markets at home and abroad, and have secured profitable contracts not only in the United States, from the Atlantic to the Pacific Coast, but also in Mexico, Argentine Republic, Cuba, Brazil, Peru, Venezuela, United States of Colombia, Porto Rico and the Hawaiian Islands. Thus we have been enabled to avail of and maintain the valuable organization of the company and to keep the shop comfortably filled with work, considering the depressed condition obtaining in the steel business. At the same time we have extended the scope of business and increased the efficiency of the plant, while decreasing its operating expenses.

A party of about 50 members of the Engineers' Society of Western Pennsylvania and others visited the plant of the United States Sanitary Mfg. Company, Colona, Pa., July 21, and saw all the operations involved in the manufacture of sinks, lavatories, bathtubs and other enameled goods. The foundry, pattern shop, grinding and sand blast departments were all visited, but special interest was taken in the enameling department, which is equipped with special appliances of modern type.

# The Machinery Trade.

NEW YORK, July 22, 1908.

There were no new developments of magnitude in the trade the past week that will result in important purchases of machinery at an early date, and so far as could be learned no large inquiries were sent out nor were there any good sized orders received. As a consequence of the inactivity on the part of the larger interests, including the railroads which are only doing a little scattering buying, there was no increase in the demand for machine tools, which is very light. An optimistic feeling as to the fall trade still prevails, and it is hoped that these expectations will be realized. The several large projects before the trade have not yet materialized into actual business. It is expected, however, that within the next few days the $50,000 list of machine tools will be sent out by the International Steam Pump Company, and those who are closely following the contractors for the construction of the Delaware, Lackawanna & Western cut-off state that inquiries for contractors' equipment will shortly be issued. In the West a project that will necessitate the purchase of considerable mechanical equipment is the proposed new plant of the McKeen Motor Car Company, Omaha, Neb., which is affiliated with the Union Pacific Railroad.

Ardeshir D. Wadia and P. S. Mehenti, of the firm of Ardeshir D. Wadia & Co. of Ahmedabad and Bombay, India, who are dealers in all sorts of machinery and mill supplies and make a specialty of cotton mill equipment, left last week on the Lusitania for England, after spending 10 days in this country making American connections, and while here they spent several thousand dollars for machinery equipment. The territory their agency covers is known as the Presidency of Bombay, and it is larger than the whole State of Texas. While in New York the visitors were guests of Charles A. Schieren, Jr., of the Charles A. Schieren Company, which they represent in India. They are making an eight months' tour of the world, with a view to establishing added business connections and getting acquainted with the machinery trade in general. They expressed their regret that they did not realize the importance of the machinery interests of this country and wished they had set aside more time to spend here, they having allowed themselves only 10 days for their American visits.

Their first calls were in the West, and they spent some time in Cincinnati, where they arranged agencies with the Cincinnati Milling Machine Company, Cincinnati Machine Tool Company and Lodge & Shipley Machine Tool Company. They also arranged agencies with the Standard Tool Company of Cleveland, and Hart Mfg. Company, electrical supplies, of Hartford, Conn. They placed orders for machinery equipment with all these firms, and made some arrangements for exhibits at an exposition to be held at Nagpur, India, early next year. This exhibition will draw from all the central provinces of India, and machinery shown will be electrically driven, but not by individual motors. The shafting in the exposition hall will be operated by electricity and belt drives will be used on the individual machines. The Charles A. Schieren Company will exhibit its well-known Duxbak display shown at the Jamestown Exhibition. In the American transactions of Ardeshir D. Wadia & Co. the Charles A. Schieren Company, through Charles A. Schieren, Jr., will act as a confidential and financial agent. The visitors announced that all machinery engaged for the exposition, in case the machinery is not sold, the India firm will purchase within 12 months from the day of shipment. Before leaving the visitors said that industries of India were increasing rapidly, especially in the central provinces, and American equipment is finding great favor there.

President Charles F. Aaron of the American Supply and Machinery Manufacturers' Association, who was elected at the recent convention of the organization at Richmond, Va., has appointed the following standing committees for 1908-1909:

Conference and Grievance Committee.—Samuel L. Moyer, chairman, Lunkenheimer Company, Cincinnati, Ohio; N. A. Gladding, E. C. Atkins & Co., Inc., Indianapolis, Ind.; E. C. Hinman, American Steam Pump Company, Battle Creek, Mich.; H. B. Lupton, Oliver Iron & Steel Company, Pittsburgh, Pa.; M. W. Mix, Dodge Mfg. Company, Mishawaka, Ind. Membership Committee.—W. S. Paden, chairman, Northampton Emery Wheel Company, Chicago, Ill.; J. E. Kelley, Simonds Mfg. Company, Fitchburg, Mass.; Chas. P. King, American Iron & Steel Mfg. Company, Atlanta, Ga.; D. K. Swartout, Ohio Blower Company, Cleveland, Ohio; J. H. P. Wharton, La Belle Iron Works, Steubenville, Ohio. Credentials Committee.—F. A. Hall, chairman, Yale & Towne Mfg. Company, New York; H. J. Grover, Brown & Sharpe Mfg. Company, Providence, R. I.; Willard Parker, Pennsylvania Shafting Company, Spring City, Pa. Press and Publicity Committee.—H. J. Grover, chairman, Brown & Sharpe Mfg. Company, Providence, R. I.; J. E. Osgood, J. M. Carpenter Tap & Die Company, Pawtucket, R. I.; G. L. Gillon, Watson-Stillman Company, New York. Resolutions Committee.—John Trix, chairman, American Injector Company, Detroit, Mich.; John W. Neil, John H. McGowan Company, Cincinnati, Ohio; Edmund F. Smith, Baeder, Adamson & Co., Chicago, Ill.; Joseph W. Wall, Gardner Governor Company, Quincy, Ill.; Chas. O. Wood, T. B. Wood's Sons Company, Chambersburg, Pa. Committee on Rules and Order.—A. D. Hermance, chairman, Hermance Machine Company, Williamsport, Pa.; F. A. Ball, L. S. Starrett Company, Athol, Mass.; F. F. Chandler, Chandler & Taylor Company, Indianapolis, Ind. Convention and Entertainment Committee.—T. H. Dickerson, chairman, New York Belting & Packing Company, New York; D. J. Campbell, Dodge Mfg. Company, Mishawaka, Ind.; Clement Restein, Clement Restein Company, Philadelphia, Pa.

There are some inquiries in the market for machinery required for the J. Wiss & Sons Company, Newark, N. J., manufacturer of shears, tinners' snips, cutlery, &c., for machinery. The requirements consist principally of drop hammers, presses and the like. It is understood that this is not for any great extension, but to meet the growing needs of the present plant.

The Galard Company, 31 Union square West, New York, recently incorporated, contemplates increasing its manufacturing facilities and is negotiating for a large manufacturing building in the vicinity of New York, for the equipment of which it will be in the market for machinery and fittings. The company manufactures bathroom fixtures, medicine cabinets, &c.

Equipment will probably soon be purchased for the power plant and repair shops for the Southern Cambria Railroad, which is being constructed to connect Johnstown, Conemaugh, Mineral Point, South Fork, Ehrenfeld, Summerhill and Ebensburg, Pa., comprising about 24 miles of track. The power station and repair shops will be located at Mineral Point. Material is being delivered for the construction of the power house and barn, but contracts for the equipment have not yet been made. Concerning equipment, inquiries should be made of James Bryan or Charles Tennis, care of Tennis Brothers, Fourth avenue, Pittsburgh, Pa. The officers are: George M. Wertz, Johnstown, president; P. J. Little, Ebensburg, secretary; G. Walters, Johnstown, treasurer; James Bryan, Pittsburgh, electrical engineer, and William Butler, Johnstown, chief engineer.

The Public Service Corporation of New Jersey, which has been buying considerable equipment in the New York market of late for its Marion power house and which has arranged to erect a terminal at Hoboken, has also announced that plans are being prepared to construct a large and costly terminal at Exchange place, Jersey City. The construction of this terminal will include some tunneling in order to connect with the McAdoo tubes at that point, and the building will also be connected with the Pennsylvania Railroad ferries, so that passengers of Jersey City may reach the Public Service Corporation's trolley cars without going from shelter. As far as can be learned, plans have been made only in a general way and none of the equipment has been purchased as yet. Another New Jersey corporation that will come into the market for machinery equipment shortly, either directly or through contractors, is the Prudential Insurance Company, which is preparing plans for a large addition to its building at Newark, which is already the largest office structure in the State.

Within the next few months specifications will probably be ready for the mechanical equipment required for the hydro-electrical plant to be developed by the Knoxville Power Company, National Bank Building, Washington, D. C., on the Little Tennessee River, at a cost of about $2,000,000. About 32,000 hp. will be developed, and the requirements will include five 9000-hp. turbine units, two exciter turbine units of 400 hp. each, direct connected to 250-kw. direct current generators; five 5000-kw. generators, direct connected to the turbines; a 30-ton electric traveling crane and other machinery. Pressy & Weller, Hibbs Building, Washington, are engineers in charge of the work. None of the machinery has been purchased.

The New York Central & Hudson River Railroad has sent out of late inquiries for power equipment to generate about 600 kw., for use in the New York City territory.

The Board of Trustees of Pensacola, Fla., will receive bids until July 30 for one air compressor and receiver, the compressor to be capable of compressing sufficient air to lift 2,000,000 gal. of water from 13 driven wells.

### Business Changes.

J. W. Lowell, who is Eastern manager of the Fort Wayne Foundry & Machine Company, has also been appointed manager of the Bass Foundry & Machine Company and has taken more commodious offices in the American Surety Building, 100 Broadway, New York. J. H. Bass of Fort Wayne, Ind., is president of both companies. With the management of the Eastern business of both companies, Mr. Lowell is in a position to handle contracts for steam engines and boilers or gas engines and gas producers. The

New York office of the Bass Foundry & Machine Company was located prior to May 1 at 141 Broadway.

The American Stoker Company, Pittsburgh, Pa., has moved its general offices to the Park Building. The company in reorganizing its machine department appointed as its chief engineer John Van Brunt, who has had considerable experience in the stoker business, and having made advantageous arrangements with the Coshocton Iron Company is prepared to fill all orders promptly for stokers and stoker repair parts, both chain grate and American underfeed.

Fred F. Fischer and P. F. Hegerty, having offices at 310 House Building, Pittsburgh, have been appointed sales agents for the Pennsylvania Boiler Works, Erie, Pa., for its tubular and locomotive type of boilers, and the Nagle Engine Company of Erie for its line of heavy duty and tandem compound Corliss engines.

## Chicago Machinery Market.

CHICAGO, ILL., July 21, 1908.

The amount of actual business developed last week in machinery lines added very little to the forward momentum of the market. Beyond question some of the present lethargy of trade is attributable to the usual dullness of the season. Perhaps, too, there is less energy expended by sales departments in their effort to secure orders and this may have something to do with it. That such is the case may naturally be inferred from the numerous gaps noticed in the ranks of officers, managers and employees caused by vacation absentees. Owing to the prevailing quietness in business these are perhaps not only more numerous but the vacation terms are not unfrequently more prolonged than usual. But whatever causes or combination of causes operating in restraint of trade they are at least effective in restricting transactions to extremely modest proportions. Reports of an encouraging nature come from a few large shops making varied lines of machinery, especially in power and generative equipment. The Allis-Chalmers Company, for instance, reports a very decided gain in orders entered in June over the preceding month, with a promising showing thus far in July. Several contracts for equipments of important size taken in this period have helped to produce this result, and it is doubtful if it could be pointed to as an evidence of widespread improvement in demand. Mining enterprises, particularly in the West and Northwest, have not felt the effects of business depression to the same extent as many other industries, and some good-sized orders for machinery required in mining and smelting operations have been recently entered. Nothing more than straggling inquiries for single machines are coming in to engage the attention of machine tool dealers. The market is entirely bare of any inquiries embracing tool lists of considerable size and railroads are practically out of it; they are buying nothing in the way of tools that they can possibly get along without. While the tool trade will doubtless feel in a measure the reflex action of general improvement when it begins to appear in a decided manner, yet it will not rise with the tide at once. For this reason both manufacturers and dealers are trimming their sails for a moderate breeze through the remainder of the year.

A prospective improvement of the United States Steel Corporation is involved in a recent purchase of several hundred acres of stone quarry land near Stinesville, Ind. This property will be developed with a view to supplying the company's furnaces in the Chicago District with lime stone and the installation of extensive machinery equipment will be required for getting out and preparing the product for shipment. Plans for plant buildings, trackage system and other necessary construction are being prepared, and the company will come into the market for a large amount of machinery, including crushers, derricks, motors and other auxilliary apparatus. It has, however, been incorrectly stated in a number of the newspaper dispatches that purchases of this equipment are now being made. Just how soon this point will be reached in the development of plans has not been determined.

A new plant of notable size and design has been planned by the Ford Motor Company, Detroit, Mich. A tract of 60 acres has been secured, in the northern outskirts of the city, which includes a mile track for testing, and upon this site will be erected a four-story building of reinforced concrete and glass, 75 x 865 ft. Besides this main building there will be a separate office in front and a power house at one side. The roof of the building will be of saw tooth construction, and aside from the supporting frame work the walls will be principally of glass. The extent of glass area in the building is indicated by the fact that windows provided will require 52,435 sq. ft. of glass. The equipment of the plant will include machinery for making every part that enters into the construction of an automobile from screws to upholstering.

The Kansas City, Ozark & Southern Railway incorporated with a capital stock of $300,000 to construct and operate a standard gauge electric railroad about 15 miles in length is one of few Western enterprises of this character now requiring new machinery equipment. Beginning at Mansfield, Mo., a junction point on the St. Louis & San Francisco Railroad, the projected road extends to Ava, Mo., the county seat of Douglas County, and travels a territory comprising 1300 to 1500 square miles that is now without railroad facilities. The work of grading is being pushed rapidly forward, and the laying of steel, it is stated, will soon be commenced. An available water power of several thousand horsepower capacity will be utilized for the generation of electric current, and in addition thereto the company will install an auxiliary steam plant. Some orders for machinery have already been placed, but included in the equipment yet to be purchased are boilers, engines, pumps, turbine wheels and electric machinery and equipment. The officers of the company are, Albert C. Parker, president; J. S. McIntosh, vice-president and treasurer; Geo. W. Wilhelm, secretary, all of Kansas City, Mo.; J. B. Quigley, chief engineer and general manager, Sedalia, Mo. The general offices of the road are located at Ava, Mo., but all communications addressed to the company should be sent to Mansfield, Mo.

Brundin Bros., Albert Lea, Minn., contemplate improvements to their meat packing plant which will include the early installation of refrigerating machinery. The firm is now in the market for a 25-ton refrigerating machine on which it would be pleased to have prices from manufacturers of such equipment.

Pending investigation regarding the question of location the Commissioner of Public Works, Tacoma, Wash., has withdrawn the advertisement for bids for the installation of a new water power plant. It is expected that the matter will be taken up again a little later on.

Having secured a 20 years' franchise for operation of an electric light plant, B. C. Morrison, Olathe, Kan., has organized a company with a capital stock of $30,000, which will take over the present plant. The improvements contemplated will involve the purchase of new Corliss engines and alternating current generators.

To meet the needs of service in its electrical plant the Mayfield Water & Light Company, Mayfield, Ky, has purchased a 300 kw. direct connected alternator, and will later on buy a similar unit of 500 kw. capacity.

## Cleveland Machinery Market.

CLEVELAND, OHIO, July 21, 1908.

The local machine tool market continues very quiet. Dealers report no improvement in the demand for the standard tools, sales being limited to single tools in the smaller sizes. The demand for some lines of special machinery has improved somewhat, and dealers in automatic machinery report a better demand for that line. During the period of depression many manufacturers have taken up the problem of reducing the cost of production, and in refitting their plants with that object in view are placing orders for new special and automatic machinery. The throwing out of some old machine tools and the putting in of new and more up to date equipment results in the placing of some orders for single tools, but there is practically no demand for machinery for enlargements of industrial plants. Some concerns that have extensions under consideration are waiting until general business conditions become more favorable. During the spring there was a fair demand for small machine tools for small plants of various kinds that were being started up, but at present practically no new projects requiring machine tools are being launched, so that the demand from this source has about disappeared.

There seems to be more activity among automobile builders than among any other line of manufacturers in the matter of refitting and enlarging plants, and the demand for machine tools from this source is fairly good. Dealers expect some buying by the automobile people during the next three or four months. With a large number of the builders the automobile industry is in a very satisfactory condition, and the makers are looking for a very good year in 1909.

While machine tool dealers are not looking for much of an improvement in orders before September, and some of them do not expect conditions to reach their normal state before next year, a more optimistic feeling prevails among makers of tools and machinery, who report the outlook better. There is an improvement in inquiries for heavy machinery, and some good sized orders for coal handling and other machinery equipment are pending. Very few inquiries are as yet being received from railroads, but with the large amount of repair work that must be done before freight traffic resumes its normal proportions machinery makers are looking for a decided improvement in the demand from the railroads early in the fall. There is some improvement in orders and inquiries for cranes. The same is true of industrial cars.

The second-hand machine tool market is very quiet.

Very few are being offered the dealers and the demand does not exceed the supply.

The jobbing foundries continue to improve very slowly. Small steel castings plants report no improvement in their orders.

The American Shipbuilding Company has decided to build a large boiler shop in connection with its Lorain plant. The directors of the company have made a large appropriation for the purpose and the new shop will be one of the largest on the lakes. The company has been making the boilers for boats built at Lorain at its Cleveland shops and one of the latter may be dismantled. Later a new machine shop may be added to the Lorain plant. No orders have as yet been booked by the company for boats for next season's delivery and the outlook is not very bright, considering the present condition of the lake trade.

The Williams Foundry & Machine Company, Akron, Ohio, has been incorporated in Ohio, with a capital stock of $75,000. The company formerly operated under a West Virginia charter, with a capitalization of $50,000. The increase in stock is due to the purchase recently of the Akron Clutch Company, which was merged with the Williams Company's plant. It is planned to increase the working force 25 per cent. The incorporators are J. K. Williams, C. Franz, J. E. Bennett, Harvey Musser and T. W. Kimber.

The Ohio Bale Tie Company, of which M. D. Kilmer is manager, has moved its office from the American Trust Building to a factory building on the Cleveland & Pittsburgh Railroad, near Euclid avenue, where the company has secured 6000 sq. ft. of floor space for the manufacture of bale ties and other products that will be added to its present line. Machinery equipment is now being installed. The company recently took out incorporation papers, with a capitalization of $50,000. The incorporators are H. R. Crow, H. R. Brailey, M. D. Kilmer, H. Miner and C. M. Lemmon.

A change has been made in the organization of the Modern Machinery & Engineering Company, machinery dealer, 309 Schofield Building, Cleveland. At the recent annual meeting of the directors T. F. Ahern was elected president and treasurer; Robert M. Bronson, vice-president, and James M. Hibbard, secretary. Mr. Hibbard, who resides in Detroit, is a new stockholder. The company reports the sale recently of six Potter & Johnston automatic machines to the Weston-Mott Company, automobile maker, Flint, Mich.; five to the Wayne Automobile Company, Detroit, Mich., and two to the International Harvester Company.

The Cady Machine Company, Cleveland, has recently placed on the market a new chain making machine, for which it is receiving a very satisfactory number of orders. The company also reports an improvement in its inquiries for presses.

The McMyler Mfg. Company, Cleveland, reports considerable improvement in the business outlook. The company has taken four crane orders during the past two weeks, and has a number of inquiries pending.

The Wile gas producer, heretofore furnished by the Wile Power Gas Company, is now exclusively manufactured and sold by the Gas Machinery Company, Cleveland, Ohio. J. J. Wile has been appointed sales manager of the Wile producer department.

## Cincinnati Machinery Market.

CINCINNATI, OHIO, July 21, 1908.

Carefully reviewing the local field, it appears to be the standard tool—the more expensive and elaborate piece of machinery—that has had the call since the beginning of the second half of the year. Milling machines, shapers and planers are to be credited with the greatest activity; and while manufacturers in these lines have noticed an appreciable increase in inquiry and have made some (for the times) exceptionally good sales, they are quite uncertain whether it is the beginning of a buying movement that will be permanent. One or two similar periods since the beginning of the year are recalled, which as events showed belonged to the spasmodic class. One of the largest firms in this field manufacturing millers has had some good business in the past 10 days or two weeks. Lathes have become more active also since the beginning of July. One manufacturer reports the sale of a couple of 42-in. lathes and has been apprised of appropriations that should result in the sale of several more. Having booked something like 40 orders, on which it is now working, the company takes an optimistic view of the future. Drills, drill presses and punching and shearing machinery are not so active, and some establishments manufacturing drills, having a good sized stock of machines on the sales floor, have shut down for a brief time. There is a little better inquiry for planers and shapers, and some large and expensive types of these machines have been shipped since the first of the month. One company shipped a carload of shapers for export early in July and has had some very fair inquiries this month. Another manufacturer of shapers has made some good sales for domestic shipment.

Illustrating the shifting and uncertain character of tool orders, some recent sales include one through a Baltimore dealer for a 14-in. motor driven shaper for installation in the revenue cutter Seneca, and another for the shipment of a 24-in. triple back gear to Vera Cruz and a 16-in. single gear to go to Torreon, Mexico. Some sales have been made in the week also of tools for technical and trade schools in different parts of the country. These branch schools are multiplying and the interest is growing rapidly. The dealers report having better inquiry for the standard tools and a little diminution of the interest evidenced in special machinery a month ago. Collections are reported better throughout this section.

Among the jobbing foundries there is a general cleaning up process and preparations for the expected activity later. For the present it cannot be said that the situation is any better save with those making miscellaneous castings. Local foundries depending largely on the machine tool companies do not look for much better times before the election. As a rule the larger tool establishments have enough machines on the stock floor to take care of intermittent calls and will not order castings until they are compelled to do so.

It is reported that the foundry of the National Steel Casting Company at Montpelier, Ind., is closed down temporarily.

The plant of the Bucyrus Steel Casting Company, Bucyrus, Ohio, is in operation again after a short shutdown and prospects are reported good for a gradually increasing melt.

A new car wheel is being tried out on the Toledo, Port Clinton & Lakeside Railroad, the experimental set of four wheels having been made by the C. E. Sutton Company of Toledo. The wheels are in sections of five pieces—the body, the tire, the disk, the flange and the collar. After being assembled the wheels are said to possess the strength of the solid piece, with the advantage that a worn out flange may be substituted and the wheel be quite as serviceable as before, whereas in the ordinary wheel the entire piece is practically worthless with a broken flange.

The United States Malleable Iron Company is a new corporation for Toledo, Ohio, with a capital of $60,000. Robert C. Pew and associates are given as incorporators.

The Buckeye Steel Castings Company at Columbus, Ohio, announces a quarterly dividend of 1 per cent. on the common and 1½ per cent. on the preferred stock, payable August 1. The additions at the plant are now practically completed and preparations are being made for the expected increase of business.

Resumption of work in all departments of the Lima Locomotive & Machine Company at Lima, Ohio, is noted, after a practical shutdown for several months.

The Shortsville, N. Y., branch of the American Seeding Machine Company will be merged with the Hoosier drill plant at Richmond, Ind., some time in the fall. Everything is expected to be ready by November 1, when the fiscal year begins for the Richmond company. The Shortsville concern will bring its own office force and several of its foremen. Under the consolidation the Richmond plant will employ about 500 men.

The United States Cast Iron Pipe & Foundry Company will furnish the pipe for the water works extension in the city of Springfield, Ohio. The estimate of the successful bidder was $11,405.70, which buys 189 tons of 6-in., 263 tons of 12-in. and 70 tons of 16-in. pipe.

It is expected that the additions now being constructed at the plant of the American Steel Wheel Company in Alexandria, Ind., will be completed and the enlarged plant in operation the latter part of August. The capacity will be doubled.

A business association of Evansville, Ind., is working to secure a new machinery foundry which it is said is anxious to locate in that vicinity.

## New England Machinery Market.

WORCESTER, MASS., July 21, 1908.

It cannot be said that the trade notes any improvement in actual demand for machine tools. The week has seen a number of sales, several of some amount by comparison with the usual single tool order. Inquiries are no less active than for the past month. The trade has heard of improvements in other lines of business in which machine tools are an important factor in manufacturing, and it is argued from this change, slight though it is up to the present time, that if improvement can come in the very middle of the hot weather, the return of cooler days should see the betterment strongly accentuated.

The machine tool builders find business as dull as ever. Curtailment is the rule everywhere. Where the shops are not shut down completely, they are usually on reduced time

with small working forces. Inquiries continue, strongly tinged with promise of actual sales, as has been the case for months, but there is still the tendency of customers to hold off. Some of this business is being placed, however. The General Electric Company has bought a few tools for the Lynn and Pittsfield works, and a few sales of a like nature are recorded, though the fortunate recipients of orders speak the names of such customers in whispers only, for there is no desire to inform competitors of what is happening in the way of actual business.

The report of the Chandler Planer Company, Ayer, Mass, is somewhat typical in a general way. The works have been shut down for some time, but it is believed that inquiries which amount almost to orders will result in contracts in the near future, totaling a business that will make necessary the starting up on full production. Work on orders already in hand has not begun, because customers are in no hurry for the tools.

While many of the daily newspaper reports of improved business conditions among the manufacturers are exaggerated, it is nevertheless evident that some New England industries are experiencing changes for the better. The shoe manufacturers are busy, and many of the cotton mills are on full time, with practically full working forces. In the metal industry, outside of machine tools, an increase in volume of orders is noted, generally not strongly marked, but when it is taken into account that the change comes in the season when improvement is least to be expected the gain is the more important. Inquiry of a number of prominent manufacturers of Connecticut revealed an increasing sense of a strengthening of their market. Not all of them have received an actual increase in orders, but without exception they express the belief that the situation is a hopeful one, and that the autumn will see a more marked improvement. A few of the statements follow:

E. J. Manville Machine Company, Waterbury, Conn., builder of heavy machinery, screw thread rolling machines, automatic screw slotters, wire forming machines, power presses, &c.: "Business with us is constantly growing better and we look for a good fall trade. We are running 51 hr. a week, which is the customary summer schedule."

Peck, Stow & Wilcox Company, Southington, Conn., hardware specialties, wrenches, tinsmiths' tools and machinery: "We note a slightly encouraging tone in orders."

Waterville Cutlery Company, Waterville, Conn.: The shear department opened after summer vacation on practically full time and with force of hands increased to about the normal of a year ago.

Wm. L. Gilbert Clock Company, Winsted, Conn.: Resumed on 50 hr. a week schedule, with business prospects much better than they were, though not all that could be wished.

Wm. Schollhorn Company, New Haven, Conn., hardware specialties: Business has been resumed with full force on full time, because of increased business.

Bristol Brass Company, Bristol, Conn.: Improvement is noted in business, but it is a slow one.

Russell & Erwin Mfg. Company, New Britain, Conn., builders' hardware: "Beginning with February 1 our monthly sales have not varied by $5000 from month to month, and our business has maintained a very constant volume. In the past fortnight, however, there has been a sharp upturn in the quantity of orders received. While we are by no means confident that this is anything but a temporary spurt, still it is our confident belief that our business during the last half of the year will show a larger amount than during the first half, and that the percentage of decrease from last year's business will thereby be lowered. We might add that at the present time our distribution is about 30 per cent. less than for the corresponding period of the year 1907."

Landers, Frary & Clark, New Britain, cutlery and hardware: "The orders that we receive indicate that the hardware trade, both jobbers and retailers, are short of goods, and filling in their stock, and we note a general improvement in our business, though not as much as we would like to see."

Berlin Construction Company, Berlin, Conn., steel buildings, bridges and structural work: "We are now running our plant 10 hr. a day, because of increased demand for structural shapes and bridge work, but we would not like to say that this full running time will be a permanent thing under present conditions."

Pilling Brass Company, Waterbury, Conn., brass, copper, German metal, &c.; 6-in. and narrower; 0.005 in. and thinner: "Slight improvement noted, necessitating running works six days a week for the past fortnight, not so much because of the increased volume of business as because customers demand immediate delivery of small orders."

Smith & Griggs Mfg. Company, Waterbury, Conn., brass specialties: "Works are running full time because of the receipt of many orders that cannot wait."

American Brass Company, Waterbury, Torrington, Ansonia, brass manufacturer: "All the plants are gradually lengthening hours and calling back help. Not all departments are on a six-days' schedule, but some are running more than 60 hr. a week.

American Ring Company, Waterbury, Conn., manufacturer of brass furniture trimmings, &c.: An improvement in business has been noted during the past month, which is experienced in common with industry generally in Waterbury.

Fletcher, Terry & Co., Forestville, Conn., glass cutters: Contracts have been received for large amounts of goods, which will probably make it necessary to enlarge the present factory by at least one-third when business shall be back to normal again.

The Sessions Clock Company, Forestville, Conn., has resumed operations after a two weeks' shutdown for inventory. Good advance orders are being received, indicating a decided improvement in the business situation.

The business of the Winchester Repeating Arms Company, New Haven, Conn., is showing some improvement over the past six months, although not normal for this season. Nearly all departments are running on full time, and many of the old employees are returning to their accustomed jobs.

One of the first direct results of the new compulsory working clause in the British patent act is the decision of the Clinton Wire Cloth Company, Clinton, Mass., to establish a plant in that country for the manufacture of its patented specialties. An agent has been sent to England for the purpose of selecting a site for the factory. Under this act an article protected by a British patent must be manufactured in that country, else the patent may be declared void and the invention made available to any one who might desire to employ it in Great Britain. The Clinton Company owns valuable patents on products which have a large sale in Great Britain and its dependencies. The Clinton Wire Cloth Company is planning to erect a new factory building this season, to be 175 x 228 ft., and either three or four stories. With its completion a rearrangement of departments will be made, to increase the productive capacity of the plant.

The National Spring Bed Company, New Britain, Conn., has increased its capital stock from $25,000 to $50,000, the increase being in the form of a stock dividend.

As to the report that the Wm. H. Page Boiler Company would rebuild its manufacturing plant at Norwich, Conn., destroyed by fire some months ago, the company states that there is no such intention. A warehouse will be maintained in Norwich to supply the Eastern trade, while manufacturing will be centered at Meadville, Pa., where new works have recently been occupied.

The Waterbury Enamel Company, Waterbury, Conn., manufacturer of watch, clock and meter indicator dials, is seeking a suitable site for a new factory which will be erected in the near future. The business was established last September. George J. Strobel is president and treasurer, and Herbert J. Phillips secretary and manager.

The Argand Boiler Company has been organized at South Norwalk, Conn., to manufacture the steam and hot water heaters formerly produced by the Colonial Foundry & Machinery Company of South Norwalk. Edward S. Meeker is the president, Charles H. Aisthorpe, treasurer, and William S. Folant, secretary. The capital stock is $6000.

The Library Bureau of Boston has purchased the factory property at Albany and Pacific streets, Cambridge, Mass., formerly occupied by the Hutchings-Votey Organ Company, and will occupy it for manufacturing, concentrating this end of the business, including the woodworking plant. The building is 95 x 210 ft., three stories and basement. Additional floors, increasing the manufacturing space to 80,000 sq. ft., are in process of construction.

The Hartford Electric Light Company, Hartford, Conn., has purchased the water power at Tariffville, Conn., on the Farmington River, which is a part of the lace mills plant, and will develop electric power to provide power for the mills. These have been purchased by the Bromleys, of Philadelphia, who will equip them with modern machinery and will manufacture lace goods.

The Carter & Hakes Machine Company, Winsted, Conn., manufacturer of milling machines and special machinery, has increased its capital stock from $25,000 to $50,000, the purpose of the new funds being to enlarge the company's plant, which has been done.

The New York, New Haven & Hartford Railroad announces that it has contracted for the construction of electric railroads in Connecticut totaling 20½ miles, comprising 11 miles between Wethersfield and Middletown, 3½ miles from Hartford to Bloomfield, and 6 miles from Willimantic and South Coventry. The aggregate expenditure will be about $1,000,000.

Various financial and mining interests, including Senator Clark and H. H. Rogers and others who represent the Missouri River Power Company, have arranged with the Stone & Webster Engineering Corporation, Boston, Mass., for the development of the extensive water power resources on the upper Missouri River in Montana. The plans provide for the ultimate generation of 50,000 hp. by means of two dams and power plants, the construction work to be done in two stages, the first to be the building of a concrete dam to afford 20,000 hp. at Hauser Creek, 60 miles from Butte, Mont., work on which will be started immediately. Later it is planned to build a new concrete dam about 1800

ft. long and 110 ft. high, together with a 30,000 hp. hydro-electric plant at Wolf Creek, a few miles above Hauser Creek, from which power will be transmitted at a high voltage to Butte and Helena. It is estimated that the work planned will cost $3,000,000.

The American Steam Gauge & Valve Mfg. Company, Boston, Mass., has recently appointed the Pittsburgh Steel Supply Company agent for the Pittsburgh District, and has made a number of changes in the sales department. J. B. Kane, who has been in the factory for several years, has been appointed a salesman, with headquarters in the New York office, and C. S. Kiessling, who was in the general offices, has been transferred to the Chicago office, in charge of the order department.

## Philadelphia Machinery Market.

PHILADELPHIA, PA., July 21, 1908.

There is some diversity in the reports of machinery dealers and manufacturers as to the volume of new business and condition of the market during the past few weeks. In some directions there has been a fair amount of business transacted, while in others the volume coming out shows no appreciable gain. Trade, on the whole, is spotty, and frequently the full amount of the week's business is transacted in one or two days, and while current business scarcely warrants optimistic expressions, the trade feels that with the coming of the fall months there will be a buying movement, which will lead to more normal conditions. The undertone of the market continues strong, and while sales during the week have been small and confined, as a rule, to individual tools, there have been a few transactions of somewhat larger magnitude, the most important of which was that for the machinery equipment of the United States battleship South Carolina, representing an expenditure of some $7000 or $8000, most of which went to local concerns. Dealers report individual sales of lathes, drills and special tools, mostly of the medium sizes, but there is less being done in odds and ends than was the case some time ago. New inquiries are not reported as being very numerous, but there is more activity shown on the part of buyers who have been before the trade for some time, but deferred placing their orders, and it is believed that some business of this class will shortly be placed. Not much, however, is to be expected during the summer months, and if the same slight gain which has characterized the market generally during the past month or two is maintained, it will, as a rule, be considered satisfactory under the circumstances.

Manufacturers do not report any material gain in the amount of orders taken and with but few exceptions continue to operate their plants on a restricted basis. Tool builders are getting a fair share of the orders placed with dealers, although in a number of cases orders for individual standard tools are filled from stocks in dealers' warerooms, and as these stocks have been pretty large, manufacturers are not feeling the full effect of even the moderate volume of business.

No improvement is to be noted in the foreign demand. For some lines of tools the inquiry is practically nil, while in others it is very light. In power transmission specialties those transacting an established trade abroad report fewer orders, and those received are usually small in size.

The second-hand machine tool trade keeps up fairly well, dealers getting quite a pronounced share of that business, which, in prosperous times, usually goes in part to builders of new tools. Sales are reported fairly numerous, but are confined almost entirely to equipment of the medium and smaller size. The demand for second-hand boilers and engines shows no improvement, the volume of business transacted has been small, although there has been a shade more inquiry.

Iron and steel castings are not in very heavy demand and most of the foundries are operating on short time. Machinery castings, owing to the generally quiet condition of the trade, have been in weak demand and the generally unsatisfactory condition of the other branches of the trade withhold business usually going to the jobbing foundries. Steel casting plants, while they have picked up a little locomotive business, are still very short of orders and operate irregularly as a rule.

The Board of Surveys, Department of Public Works, has approved plans for the erection of two bridges, one across the Schuylkill River at Passayunk avenue, the other at Belfield street, over the Tabor branch of the Philadelphia & Reading Railroad. Proposals for bids for these bridges will be advertised for at an early date.

The County Controller, Wilkesbarre, Pa., will open bids in a few days for a motor generator, and static transformer in connection with the electrical power and light equipment for the new Luzerne County court house.

The Link Belt Company's weekly report of orders received at its local plant shows an improvement in the volume of business taken. Among those received was a sand batch elevator, raw fish conveyor, large extension for handling machinery at a sugar plant, lumber conveyor, belt conveyor equipment, and coal handling machinery for coke plant. The recent improvement in business as noted by this company lends encouragement to the outlook for the future.

The American Pulley Company notes a slight improvement for all wrought steel pulleys, but the size of individual orders is not large, the tendency of purchasers being to order for immediate needs only. Orders as a rule are irregular. Some days a very fair volume of business will develop, only to be followed by days on which orders are very light. Under the circumstances this company has not yet been able to operate its plant much beyond 50 per cent. of its capacity. The company, which usually conducts a large export business, reports foreign orders smaller, in number as well as volume.

The E. H. Mumford Company, manufacturer of foundry molding machines, reports a fair volume of business. So far orders for the month are hardly up to the total for June, but there is a very satisfactory volume of new business in sight, and recent inquiries are more encouraging. There has, however, been but little export demand. Shipments of molding machines during the month have not been large, but include a number of special design for gray iron foundry work.

## Government Purchases.

WASHINGTON, D. C., July 21, 1908.

The Isthmian Canal Commission will receive bids until August 10, Circular No. 456, for a locomotive crane, stiff leg derrick, drilling and counter sinking machine, turbo generator, track and post drills, hydraulic jacks and other supplies.

The Isthmian Canal Commission will soon ask bids for ten 2-ton traveling cranes, ten hoisting motors, ten bridge motors, ten trolley motors and other supplies for a plant to be erected at Gatun, also one single spindle universal horizontal boring machine, one double cylinder timber planer, matcher and jointer, ten 50-ton heavy ball bearing ratchet screw bridge jacks, one heavy three-spindle vertical car boring machine, and a quantity of tin shop tools.

The following bids were opened July 14 for machinery for the navy yards:

Class 41.—One double surface planer—Bidder 7, American Wood Working Machinery Company, Rochester, N. Y., $1850; 14, Berlin Machine Works, Beloit, Wis., $1804.15; 44, J. A. Fay & Egan Company, New York, $2688, $2790 and $2906.40.

Class 42.—One self-feed circular rip saw—Bidder 7, American Wood Working Machinery Company, Rochester, N. Y., $260; 14, Berlin Machine Works, Beloit, Wis., $227.50 and $207.50; 16, Bentel & Margedant Company, Hamilton, Ohio, $270; 44, J. A. Fay & Egan Company, New York, $243.60, $268.80, $300.30 and $325.60; 125, H. B. Smith Machine Company, Smithville, N. J., $270; 148, Cordsman-Rechtin Company, Cincinnati, Ohio, $195; 156, Drew Machinery Agency, Manchester, N. H., $210, $251, $272 and $288.75.

Class 43.—One cold saw cutting-off machine—Bidder 18, Birdsboro Steel Foundry & Machine Company, Birdsboro, Pa., $1650; 48, Fairbanks Company, New York, $1495; 62, Handlan-Buck Mfg. Company, St. Louis, Mo., $1495; 91, Newton Machine Tool Works, Philadelphia, Pa., $1425; 103, S. M. Price Machinery Company, Norfolk, Va., $1435; 113, Quincy, Manchester, Sargent Company, Plainfield, N. J., $1252, $1260 and $1292; 163, Niles-Bement-Pond Company, New York, $1397, $1348 and $1273; 174, Tindel-Morris Company, Eddystone, Pa., $1135 and $1290.

Class 44.—One automatic saw sharpening machine—Bidder 18, Birdsboro Foundry & Machine Company, Birdsboro, Pa., $235; 48, Fairbanks Company, New York, $185; 62, Handlan-Buck Mfg. Company, St. Louis, Mo., $194.25; 91, Newton Machine Tool Works, Philadelphia, Pa., $140; 113, Quincy, Manchester, Sargent Company, Plainfield, N. J., $100; 156, Drew Machinery Agency, Manchester, N. H., $207 and $235.25; 174, Tindel-Morris Company, Eddystone, Pa., $178.

Class 71.—145 electric motors—Bidder 53, General Electric Company, Schenectady, N. Y., $19,146; 138, Western Electric Company, New York, $25,338.15; 139, Westinghouse Electric & Mfg. Company, Pittsburgh, Pa., $19,397.

Class 81.—One heavy double engine lathe—Bidder 55, Garvin Machine Company, New York, $9610; 71, I. H. Johnson, Jr., Company, Philadelphia, Pa., $12,123 and $12,545; 81, Manning, Maxwell & Moore, New York, $13,440; 163, Niles-Bement-Pond Company, New York, $15,435 and $10,965; 167, Prentiss Tool & Supply Company, New York, $11,975.

Class 176.—One duplex pump and one circulating pump—Bidder 9, Blake & Knowles Steam Pump Company, New York, $1473; 141, Warren Steam Pump Company, New York, $116.70; 155, M. T. Davidson Company, Brooklyn, N. Y., $1317.70.

Bids were opened at the office of the Isthmian Canal Commission July 15, for one valve re-seating machine, as follows:

Knox & Bro., New York, $175; Manning, Maxwell & Moore, New York, $175; Motley, Green & Co., New York, $175; Vermilye & Power, New York, $175.

Under bids opened May 25, Circular No. 440, for supplies for the Isthmian Canal Commission, Greenlee Brothers & Co., Chicago, Ill., have been awarded class 2, one vertical car tenoning machine, $785; class 3, one extra large automatic power gaining machine, $1120.

Under bids opened June 2, Circular No. 441, for machinery for the Isthmian Canal Commission, the Alberger Pump Company, New York, has been awarded class 1, one turbine pump, $5970.

# PERSONAL.

Walter S. King, formerly Eastern manager of the Hill Clutch Company, Cleveland, Ohio, with headquarters in New York City, has resigned, and is now connected with the Sturtevant Mill Company of Boston. Mr. King has opened an office at 1206 Park Building, Pittsburgh, and will look after sales of crushing, grinding, screening and other machinery in West Virginia, Ohio and Pennsylvania.

The office of Walter L. Lee, purchasing agent of the Republic Iron & Steel Company, First National Bank Building, Chicago, has been transferred to Room 759, Frick Building Annex, Pittsburgh.

G. C. Parker, sales manager of the William J. Smith Company, New Haven, Conn., has been elected vice-president of the Colton Combination Tool Company, Easthampton, Mass., manufacturer of tool holders.

F. E. Reed, head of the F. E. Reed Company, Worcester, Mass., sustained severe though not dangerous injuries in an automobile accident in the White Mountains last week, a touring car in which he was riding turning over and pinning him beneath it.

William Kent, for the past five years connected with Syracuse University, Syracuse, N. Y., as dean and professor of mechanical engineering in the College of Applied Science, will devote a year to literary work, especially the revision of his two books, the "Mechanical Engineer's Pocket Book" and "Steam Boiler Economy."

Hollinshead W. Taylor of N. & G. Taylor Company, Philadelphia, sailed for Europe July 16 on the Princess Alice. He will remain several months, touring through France.

Wm. G. Starkweather will represent Robt. Wetherill & Co., Chester, Pa., after August 1 in New England, having charge of the sale of their Corliss engines, boilers and other power plant machinery.

Lee C. Moore, consulting engineer, with offices in the Fulton Building, Pittsburgh, left last week for Europe. After transacting business in Liverpool and London for a week, he will visit France, Germany and Belgium.

John G. Hezlep, for the past three years purchasing agent and traffic manager of the Pressed Radiator Company, Pittsburgh, has resigned, and will shortly take up a new line of work in Denver, Col.

E. F. Atwater of Poughkeepsie, N. Y., has been appointed receiver of the Poughkeepsie Iron Company, a close corporation.

John R. Morgan, formerly chief engineer of the Morgan Engineering Company, Alliance, Ohio, has been appointed general manager of the Calumet Engineering Works, Harvey, Ill.

James H. Nutt, secretary of the Western Bar Iron Association, visited Pittsburgh this week to confer with the officials of the Amalgamated Association of Iron, Steel and Tin Workers regarding the details of the new wage agreement just signed.

H. P. Ingels has recently been appointed Eastern representative of the Youngstown Car Mfg. Company, Youngstown, Ohio, with office at 90 West street, New York City.

William R. McKeen, Jr., has resigned his position as superintendent of motive power and machinery with the Union Pacific Railroad to devote his attention to the management of the McKeen Motor Car Company, which has been organized to manufacture the gasoline motor cars now in use on the Harriman lines. These cars are of 200 hp. capacity, and three years of operation have proved them an efficient and economical medium of transportation. They will be manufactured for the present at the old car shop of the Union Pacific Railroad at Omaha, Neb., where a new $1,000,000 car shop has just been completed. As soon as the organization of a permanent manufacturing plant has been perfected the building of the motor cars will be separated from the railroad work. The position of superintendent of motive power and machinery of the Union Pacific Railroad has been assumed by C. E. Fuller, formerly of the Chicago & Alton Railroad.

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# HARDWARE

ONE of the principal problems before the retail Hardware association movement is in regard to making the annual State conventions so interesting and useful that they will not only secure and justify a large attendance, but also furnish a convincing argument to be used in efforts to increase their membership. In the early enthusiasm of the movement it may be that the coming together of the members and following an inadequate or carelessly devised programme will be in some measures satisfactory, and the association survive meetings for which no suitable preparation has been made. It cannot, however, be expected that the associations will continue to prosper, much less to attain the position and influence to which they are entitled, unless there is skill and care given to the arrangement of the programme and to the manner in which the various subjects considered are presented and discussed, with a view to making the meetings helpful and profitable along business lines. This should be the case to such an extent that merchants will feel not only that they have been repaid for coming, but that if they should be obliged to stay away from such meetings they would suffer a positive loss.

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Without attempting a general discussion of this large subject we desire to call attention to one method, which, if wisely followed, may be made, we believe, an exceedingly interesting and helpful feature of a State convention. We refer to an INTERCHANGE OF DELEGATES BETWEEN THE ASSOCIATIONS IN NEIGHBORING STATES. These delegates should ordinarily be men active and prominent in the association work of their own States. Their duties would be to give friendly greetings and manifest the spirit of fraternity; to impart any information desired in regard to difficulties encountered and advantageous methods of working in association matters; to be ready to aid in discussions, and in general to contribute in any way in their power to the interest and enthusiasm of the gathering. On their return to their own association they should have a valuable report to make in view of their enlarged experience and the things seen and heard. Another result of this interchange of representative men would be the opportunity afforded to employ the talent of competent members who are not among the officers, who would thus be developed so that they would be more useful members of their own associations. All the State associations, it is safe to say, have men whose attendance would be greatly appreciated in a sister association. A person invested with the dignity of a delegate, especially if he were an up-to-date merchant and active association worker, would contribute materially to the interest and helpfulness of the gathering. In this way, beside the advantages to which we have referred, there would obviously be the bringing of the various State organizations into close touch with one another, thus correcting the isolation in which they at present are working. The extent to which this movement should be carried and many details, as, for example, the number of States to which delegates should be sent, and whether on their own charges or otherwise, would naturally depend on the special circumstances in each case. At this time we simply mention the matter that it may receive consideration from those who are interested in the improvement of association methods.

In this connection it should be noted, as mentioned in our last issue, that this matter was suggested at the recent meeting of the Carolinas Association, where the plan was broached and favorably regarded. We understand that it is likely that this association will take steps to carry out the suggestion, inviting delegates from and sending delegates to other States. At that convention, too, a member of the New York Association was present with a letter containing greeting and expressions of good-will, which were very pleasantly received and appropriately reciprocated. This incident and the approval of the plan by the Association of the Carolinas may be the beginning of a general movement which will mark a forward step in methods of association work. If this should prove to be the case this association, one of the youngest in the great movement will be entitled to the distinction of having set the seal of its approval on what may be a new departure in organization methods, the fruits of which will be found in the greater interest and increased success of many a State convention.

## Condition of Trade.

The gradual improvement in the general situation which has recently been characteristic of the market continues with a perceptibly better feeling in commercial circles during the past week or two. Many influences are apparently uniting to give and justify increased confidence. Prominent among these is the fact that the country is steadily and safely working out of the financial troubles which clouded the sky at the beginning of the year. Money is more abundant than for a long time and is calling for investment. The assurance that the country is fundamentally well to do in both its manufacturing and agricultural activities is held with renewed confidence. There is, too, a growing feeling that corporations, and especially the railroads, will be accorded a more sane and reasonable treatment, which will justify a renewal of expenditures on their part in repairs and betterments. Great harvests at good prices, unless some improbable injury befalls the crops, promise to contribute an enormous sum to the wealth of the nation and to give employment again to railroads, which will very likely soon overtax their facilities. The proceeds of these crops will in turn give renewed activity in all the channels of trade. Stocks of merchandise during the past six months have been kept unusually low, and the necessity for replenishing them is more cheerfully recognized than even a few weeks ago. Whether or not in Iron and Steel lines and in Hardware and related products especially further reductions in price are to be anticipated, there is little reason to apprehend an abrupt break of large proportions, so that purchasing for near-by requirements is generally recognized as a safe and wise policy. In addition to these influences, the force of which cannot be denied, there is a general disposition to credit the manufacturers with conservatism in accepting sensibly the slump in business, and not attempting to induce unwilling buyers to place orders under the attraction of deeply cut prices. The practical shutting down of factories and almost withdrawing from the market for a while has helped greatly to hasten the return to a safe basis for normal business. When trade begins to move again with some freedom in its wonted channels there will probably be a temptation to put forth greater efforts

to secure business, and possibly by resorting to the old-time expedient of slaughtering prices. The trade are, however, apparently justified in hoping for a continuation of the conservative course of the manufacturers and jobbers, and notably of those identified with the Iron and Hardware interests who have done so much to keep the market steady and restore public confidence.

### Chicago.

The past week has been productive of no developments tending to change market conditions in any important respect. From some sections of the country, especially in the Northwest, orders for current stock requirements have shown slight improvement, but on the whole there is no marked variation either way in the general volume of business. Not much complaint is heard among the leading local Hardware houses concerning shrunken demand; as matter of fact, some of them report that sales are running not far from the normal average for dull months. This experience would scarcely represent business on the aggregate, but at the same time is noticeably true that the local trade has shown a remarkable degree of vitality. It is receiving an increasing amount of support from building operations, which seem to be gradually extending. Building plans in the hands of the trade for estimates are fairly numerous, but they relate principally to dwellings, apartments and other structures of moderate size. A notable exception in this respect is the New La Salle Hotel, which will require around $45,000 worth of Builders' Hardware. Foundation work on this great hostelry is now well along and proceeding without halt, but the Hardware specifications have not yet been submitted for bids. Forward orders for fall and winter goods, such as Stoves, Stove Boards, Elbows, Coal Hods, Axes, &c., are beginning to come in, but dealers are following the same rule of conservatism in buying that has governed their forward purchases for the past eight months. This course does not necessarily imply the existence of a pessimistic feeling regarding the future outlook; it is more likely a reflection of the general belief that if the demand should exceed the provisions made to supply it, there would in any event be no difficulty in getting more goods when wanted. The promptness with which shipments have been made in recent months has enabled dealers to reduce stocks much below their normal standard without impairment of efficiency in meeting the needs of their customers, and so long as business can be thus satisfactorily handled with a decreased investment and no particular handicap in buying cost there is really no strong incentive to contract for goods in advance of actual stock requirements. The movement of Wire Nails continues fairly active, and prices are well maintained. Of many other lines the same cannot be said. There is, it is true, no noteworthy change in nominal quotations, but on many articles actual selling prices are largely determined by the circumstances surrounding each individual transaction. The market for Bolts is in this sense practically an open one, and in Hinges like conditions prevail. But, after all, in view of the pressure that has been brought to bear upon values by the long continued weight of depression, it is not so much a matter of surprise that some prices are more or less irregular, as it is that they are not utterly demoralized.

## NOTES ON PRICES.

**Wire Nails.**—Demand continues in about the same volume that has characterized business at mills during the month. Orders are for near-by requirements and do not indicate any desire to anticipate the future. Prices appear to be regularly maintained. Quotations for base sizes are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

| | |
|---|---|
| Carloads, to jobbers | $1.95 |
| Carload lots to retail merchants | 2.00 |
| Less than carloads to jobbers | 2.00 |
| Less than carloads to retail merchants | 2.10 |

*New York.*—Demand in the local market continues somewhat light, and orders are for small quantities. Quotations are on the basis of $2.30 per keg, in small lots at store.

*Chicago.*—No backward tendency is shown in the demand for Wire Nails, which continues to be sustained at the level of recent weeks, with possibly some evidence of improvement. Buying, however, is the same in character that it has been for some time, being confined to orders of moderate size for requirements as they develop. At the same time there is less of a disposition to question the stability of present values. The unwavering firmness of prices is strongly emphasized by market advices. Quotations are as follows: $2.13, in car lots to jobbers, and $2.18 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

*Pittsburgh.*—There is absolutely no change in the situation. Buying is of a hand to mouth character, but makes a better showing as compared with June than is usually the case in July. It is stated that prices are firmly maintained. Quotations for base sizes are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

| | |
|---|---|
| Carloads, to jobbers | $1.95 |
| Carload lots to retail merchants | 2.00 |

Galvanized Nails are quoted at $1 over the price of the regular Nails.

**Cut Nails.**—There is nothing new to report regarding the conditions of the market. Demand continues very moderate and orders are for small lots. Quotations on Steel Nails are on the basis of $1.80 per keg, at mill, $1.75 being obtainable on the most desirable business. In the Western market Iron Cut Nails are held at an advance of 10 cents per keg over Steel Cut Nails, but this differential is not observed in the East.

*New York.*—Local demand has shown no improvement, requirements being light, and orders for small quantities. Quotations are on the basis of $2.15 per keg for small lots at store.

*Chicago.*—What little trade there is in Cut Nails is largely confined to Shingle Nails, which are moving in small lots. Increasing work in car repair shops bids fair to make itself felt in moderate orders from this source. Especially desirable orders would probably command a concession of 5 cents a keg from ruling quotations, but on the general run of orders the market is fairly firm at prices named. We quote Chicago prices as follows: In car lots to jobbers, Iron Cut Nails, $2.08; Steel Cut Nails, $1.98. In small lots from store: Iron Cut Nails, $2.25; Steel Cut Nails, $2.15.

*Pittsburgh.*—The volume of demand has shown no material change in the week, being only of moderate proportions. While the general market is quoted at $1.80 for Steel Cut Nails, it is still possible to do 5 cents less on very desirable orders. Iron Cut Nails are held at 10 cents above these prices.

**Barb Wire.**—Requirements are in accordance with the season, which are naturally light. Demand is constantly limited, but prices are referred to as being maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, 2 per cent. discount for cash in 10 days:

| | Painted. | Gal. |
|---|---|---|
| Jobbers, carload lots | $2.10 | $2.40 |
| Retailers, carload lots | 2.15 | 2.45 |
| Retailers, less than carload lots | 2.25 | 2.55 |

*Chicago.*—In accordance with the demands of the season not much new business is now being offered, but the prospects of a fair fall trade are quite promising. No departures from regular prices are reported. Quotations are as follows: Jobbers, Chicago, car lots, Painted, $2.28; Galvanized, $2.58; to retailers, car lots, Painted, $2.33; Galvanized, $2.63; reailers, less than car lots, Painted, $2.45; Galvanized, $2.75; Staples, bright, in car lots, $2.25; Galvanized, $2.55; car lots, to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

*Pittsburgh.*—Demand continues rather light, as is seasonable. Prices are stated to be well maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days

| | Painted. | Gal. |
|---|---|---|
| Jobbers, carload lots | $2.10 | $2.40 |
| Retailers, carload lots | 2.15 | 2.45 |
| Retailers, less than carload lots | 2.25 | 2.55 |

**Plain Wire.**—Buying is limited to moderate quantities, although indications point to quite a demand for Wire Fencing in the fall. Immediate requirements are apparently more considered in placing orders than anticipating future needs. Quotations per 100 lb. to jobbers in carload lots are as follows, on a basis of $1.80 for Plain and $2.10 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the price to retailers being 5 cents additional:

| Nos. | 6 to 9 | 10 | 11 | 12&12½ | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|
| Annealed | $1.80 | 1.85 | 1.90 | 1.95 | 2.05 | 2.15 | 2.25 | 2.35 |
| Galvanized | 2.10 | 2.15 | 2.20 | 2.25 | 2.35 | 2.45 | 2.85 | 2.95 |

*Chicago.*—The prospects ahead for fall fence trade would ordinarily influence buyers to anticipate it by liberal forward orders, but with the easy deliveries now obtainable, and nothing in market conditions to induce speculative purchases, only immediate requirements are considered. These are of fairly good volume with a growing tendency. Prices are reported to be firmly maintained. We quote as follows: Car lots to jobbers, $1.98, f.o.b. Chicago, and to retailers, $2.05.

*Pittsburgh.*—Demand is fairly good, but there is only a moderate amount of forward buying. Quotations to jobbers in carload lots are on a basis of $1.80 for Plain and $2.10 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days.

**Rope.**—Some manufacturers express themselves as quite well satisfied with trade, considering that July and August are usually dull months. An increased demand is noticed for Pure Hard Fiber goods since prices have become lower, while some buyers continue to want the cheaper grades of Rope. Quotations are as follows: Pure Manila, 9½ to 10 cents; Pure Sisal, 6¼ to 6½ cents; No. 1 Jute, ¾-in. and up, 5¾ cents; No. 2 Jute, ¼-in. and up, 5¼ cents.

**Binder Twine.**—The market is referred to as irregular, as prices range from 7¾ to 8¼ cents, central delivery, often without regard to quantities. It is reported that some Twine is offered at lower than above figures.

**Window Glass.**—Conditions of the trade in the East continue unsatisfactory in regard to the volume of business, which is light. Manufacturers and Western jobbers report a larger demand at the advanced prices announced last week. There is said to be some talk of further advances in price by manufacturers early in August, but this is without official confirmation. Quotations are as follows: Hand Blown Glass from manufacturers' list of January 1, 1901, Single Strength, 90 and 27½ per cent., except 16 x 20, which is 90 and 22½ per cent.; Double Strength A Glass, 90 and 30 per cent.; Double Strength B Glass, 90 and 35 per cent., freight equalized with Columbus, Ohio, on all Western shipments. American Window Glass Company, machine blown Glass, manufacturers' list: Single Strength, 90 and 30 per cent., except 16 x 20 A Glass, which is 90 and 25 per cent.; Double Strength A Glass, 90 and 30 per cent.; Double Strength B Glass, 90 and 40 per cent.; Greenhouse selection, 90 and 35 per cent. Eastern Jobbers' Window Glass Association name as minimum price for all territory East of the Mississippi River, 90 and 30 per cent. discount for Single and 90 and 35 per cent. discount for Double Strength Glass, from jobbers' list October 1, 1903.

**Linseed Oil.**—Conditions remain unchanged in this market, in which a hand-to-mouth demand is the most prominent. The usual large buyers generally prefer waiting for further developments in the seed situation before placing contract orders, while crushers consider the future too uncertain to accept orders for delivery very far in advance. Some of the Southwestern Flaxseed has been harvested and the Northwestern crop is said to be progressing finely, with perhaps damage in some sections as the result of the recent heat wave. Car lots of Western Raw are held at 41 to 42 cents per gallon. Local quotations, in barrels, are as follows: State and Western Raw, 42 to 44 cents; City Raw, 44 to 45 cents per gallon. Boiled Oil is 1 cent per gallon advance on Raw.

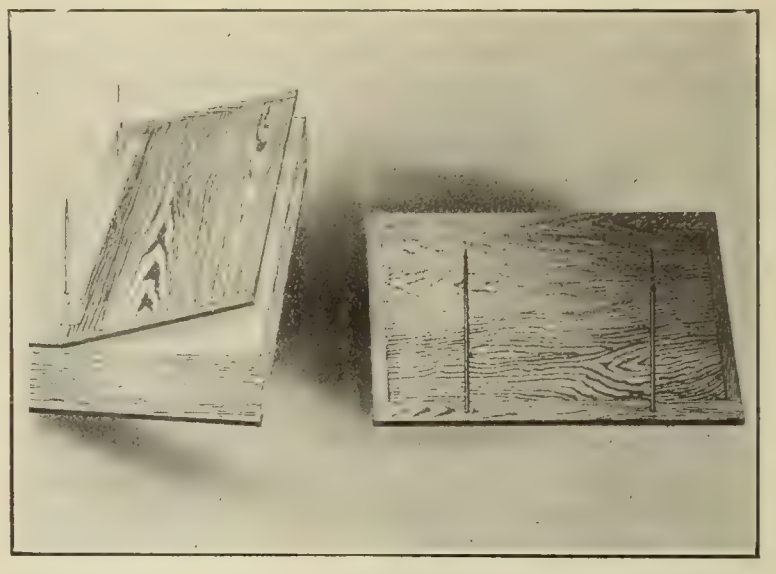
**Spirits Turpentine.**—The local market has been dull and demand light. Prices are steady at ½ cent reduction from those of last week. The New York market is represented by the following quotations: Oil Barrels, 42 to 42½ cents; Machine Made Barrels, 42½ to 43 cents per gallon.

## A HOME MADE BINDER.

IN the well managed Hardware store of A. Douglas Law, Springfield, Mass., may be noted a number of original and practical ideas applying to different departments of the business. The bookkeeping system is a simple yet efficient one, embodying continuous monthly statements, with which readers of *The Iron Age* are generally familiar. This system necessitates keeping on file many carbon copies of statements covering open accounts, and for office convenience a dozen or so loose leaf binders are needed. Such binders, however, as furnished by stationers are rather elaborate and decidedly expensive, and in the store of Mr. Law

### An Inexpensive Substitute

is used, an illustration of which is presented herewith. The covers of the binder are made of thin pieces of board, cut the proper size, with cleats fitted on each end



*A Home Made Binder.*

to make a smooth finish and prevent warping. Narrow strips of board, say, 2 or 2½ in. wide, are then attached to the lateral edges by brass hinges set in, as indicated in the illustration. These afford the flexibility necessary for the convenient use of the binders.

### Fastening the Leaves.

The leaves are held in place by heavy wire bent through the hinged strip on the bottom cover, the upturned ends of which form two upright spindles fitting the perforations in the leaves. The side strip on the upper cover has two holes bored in it corresponding with the spindles and perforations, and making the binder complete. The total cost of a binder like this is estimated at about 50 cents, and it serves the purpose quite as well as a much more expensive affair, especially for inclosing leaves representing back business, which are infrequently referred to.

J. O. PERKINS, advertising manager for the wholesale mail order house of Butler Brothers, Chicago, New York, St. Louis and Minneapolis, died at his home in Ravenswood, Chicago, on the 14th inst. Mr. Perkins was born at Hustisford, Wis., in 1867, and at the age of 19 moved to Jefferson, Wis., where he published the Jefferson *Banner*, and, during his residence in that city, served a term as postmaster. Mr. Perkins, who removed to Chicago in 1898, was the author of several valuable booklets upon advertising and other business topics, which are held in high regard by the trade. Of these publications the booklets entitled "Retail Mail Order Problems," "The Problem of the General Merchant" and "The Bargain Basement," are best known, having attracted wide attention. He is survived by a widow and two sons, aged 15 and 18 years.

# ILLUMINATING THE HARDWARE STORE.

BY CENTRAL.

THE matter of illumination is of interest to all business concerns, and particularly to the retail merchant. Any attempt to economize, which results in a poorly illuminated store, is a grave error of judgment. This applies to the interior of the store, the windows and the exterior. The fairly well lighted store may be successful in attracting a desirable patronage, but the brilliantly lighted store will always prove the greater attraction; its very brilliancy compels attention, and makes adjoining stores appear more dimly lighted than is really the case. When the gas mantle was first introduced some years ago, clever salesmen forced skeptical or unprogressive merchants to buy by interesting the adjoining storekeepers on both sides. The latter stores would be so much better lighted that the other had the appearance of being closed.

### Securing Proper Light.

Illumination has made as great advances during the past few years as any part of the field of electricity or gas. The problem of how to secure proper light is not as easily determined as a few years ago when there was only one style of equipment. Now, the large variety of lamps and light distributers create a very different situation, and expert advice is frequently necessary to secure the correct color value, intensity, &c. Many electrical engineers now specialize by confining their attention to illumination.

### More Light for Less Money Then Formerly.

Notwithstanding the remarkable development of electricity it has a strong competitor in gas, and there appears to be no reason to believe that it will not continue so. The lighting companies have in most cases adopted the broad policy of seeking the good will of their patrons by supplying them with the best light obtainable at a reasonable price, and by suggesting the use of modern equipment. The average store, therefore, can be much better lighted than a few years ago with little, if any, increase in cost.

### Best Possible Equipment Important.

The importance of selecting the best possible equipment is shown by the experience of one large user of electric light. By adopting the newest equipment the efficiency of the light was doubled at one-third the former cost for current. The ordinary incandescent lamp is a 3½ watt lamp. Recent inventions, however, have gradually reduced the electrical energy required, so that the latest lamp burns but 1¼ watts, and electricians prophesy that this will be greatly reduced in time.

### Shades and Reflectors.

To obtain the best results in lighting a store, the effect from various shades and reflectors should be considered. This is particularly important in lighting show cases or windows. The ordinary tin or porcelain shade reflects the light downward, but gives the effect of unevenness or streaks. The new glass prismatic reflectors distribute the light more evenly and wherever desired. To get the best results, it must be remembered that the ordinary incandescent lamp of 16 candlepower, throws a light of 16 candlepower only on the horizontal; the light it throws downward is very much less. It is important therefore to have the proper reflectors which will distribute the light where it is required, and thereby reduce the cost.

### Gas Lamps Have Greatly Improved

during the past few years. The upright mantle lamp greatly reduces the consumption of gas, and makes a remarkably brilliant light. The newer lights, with the inverted burner, are an improvement, as some of them give two-thirds more light downward than the old upright ones.

A comparison of the cost of electricity and gas was recently made by a thoroughly efficient engineer, which showed gas to be the cheaper. Comparing the most efficient gas light and the most efficient electric, electricity will cost about 40 per cent. more than gas.

# MERRY WIDOW HAT WINDOW DISPLAY.

MUCH ingenuity in conception as well as in arrangement, is shown in the Merry Widow Hat illustrated herewith, which was displayed in one of the show windows of the Knapp-Cramer Hardware Company, North Tonawanda, N. Y., a short time since. The display resulted in drawing a number of people to the store to buy Hose. The hat was about 3 ft. in diameter, made by winding 100 ft. of garden Hose around a wire Ash Sieve, which formed the frame and crown. The rim was also formed with the Hose, all being supported upon a standard with cross pieces. The trimmings included two feather dusters for plumes, two bottle brushes for pompons, two scratch Awls for hat pins, and four large brass Lamp Burners as roses. It is hardly necessary to say that this choice confection of millinery attracted a great deal of attention from the ladies, while the sterner sex also studied the exhibit with much interest.




*Merry Widow Hat Window Display.*

WE regret to find that the name and address of the Fowler Nail Company, Seymour, Conn., were inadvertently omitted under the head of "Nails, Horseshoe" in the 1908 edition of The Iron Age Directory recently issued. We shall be pleased if the trade will note the omission and bear the company in mind when making use of the Directory in this connection.

J. V. D. Wymelenberg, Wrightstown, Wis., is about to add to his stock of general merchandise a full line of Hardware, Paints, &c., continuing the business after August 1 under the style of J. V. D. Wymelenberg & Son.

## Death of Charles H. Dale.

CHARLES H. DALE, prominent in rubber manufacturing and financial circles, died after a short illness, July 18, of heart disease, in his summer home at Larchmont Manor. He was born in New York City, and was in his fifty-seventh year. In earlier years he was a conductor on the West Shore Railroad. He invented and patented a hose coupling device which through royalties gave him a start toward fortune and led him into the production of rubber goods. He was essentially a self-made man, rising as the result of inherent ability and untiring industry. His first marked progress was with the Peerless Rubber Company, which advanced rapidly under his administration and guidance. He later sold his interest to the Rubber Goods Mfg. Company, when it was organized, and a few years later became president of the company.

A strong characteristic in Mr. Dale's nature and which he inculcated in those about him was loyalty to the interests he or those under him served. As position and influence came in his own career he promoted subordinates, who had been for years with the various companies with which he was identified, thus getting the advantage of their thorough familiarity with the details in the different companies. He possessed in large degree the faculty of getting close to employees in every station, from wage earners in factories to high executive officials in the offices, by whom he was respected and esteemed to an unusual degree.

Some idea of the influence he exercised in business and social life is indicated by an enumeration of some of the interests he was identified with. He was president and director of the Rubber Goods Mfg. Company, New York Belting & Packing Company, Peerless Rubber Mfg. Company, American Commerce Company, Mechanical Rubber Company and Morgan & Wright Company of Detroit. He was a director in the following organizations: American Dunlop Tire Company, Fabric Fire Hose Company, G. & J. Tire Company, General Rubber Company, Hartford Rubber Works Company, India Rubber Company, Indianapolis Rubber Company, Mechanical Fabric Company, Morgan & Wright Company of Chicago, Single Tube Automobile & Bicycle Tire Company, Stoughton Rubber Company, United States Rubber Company, Century Bank and Merchants' Exchange National Bank. He was a member of the Union League Club, New York Athletic Club, New York Yacht Club, Larchmont Yacht Club and the Automobile Club of America. He is survived by a widow and one daughter.

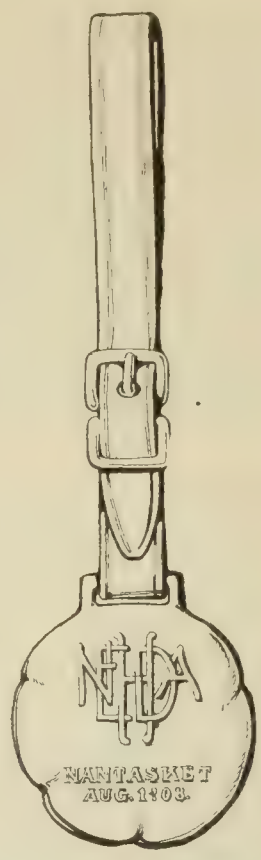
## Charleston Metallic Packing Company.

THE CHARLESTON METALLIC PACKING COMPANY, Charleston, S. C., has established a New York office at 253 Broadway and is now soliciting inquiries from those who are in the market for its product. The company manufactures Packing in any form, made from Asbestos, Rubber or Flax, including Steam, Ammonia, Gas, Air, Oil and Hot or Cold Water Packings, Rings, Spiral or Coil Form, Locomotive Throttle or Air Pump Packing and Gaskets. While it has for some time been active in the South, the company is just entering the New York market. Its officers are: C. B. Jenkins, president; M. B. Barkley, vice-president, and J. R. Thomas, secretary and treasurer, all of whom are also officers of the Cameron & Barkley Company, a prominent machinery and supply house of Charleston, S. C., and Tampa, Fla. Equipped with up-to-date machinery, employing expert workmen and using only the best material, the company expresses the intention of furnishing only the highest grade of Packing. The New York office is under the management of E. H. Griffith, who is well known to the local trade through his 17 years' connection with the sales department of a prominent Leather Belting manufacturer.

The Hardware firm of Eddy Bros., Fairbury, Ill., has, upon the retirement of Henry Eddy, been changed to J. E. Eddy & Co. The business comprising a general line of Hardware, Furnaces, Lightning Rods, Plumbing and Tin Work will be continued as heretofore.

## Hardware Organizations.

The New England Hardware Dealers' Association will hold an outing at Nantasket Beach, Boston Harbor, Saturday, August 1. The party will include not only members of the association, but manufacturers and jobbers as well. The committee in charge consists of F. Alexander Chandler, 36 Federal street, Boston, chairman; H. H. Sawyer, Providence, R. I.; H. M. Sanders, Boston; S. H. Thompson, Lowell, Mass.; C. L. Underhill, Somerville, Mass.; H. L. Russell, Holyoke, Mass., and F. E. Stacy, Springfield, Mass. A large representation of the trade from different sections of New England is expected. The programme of sports includes a baseball game, fat men's race, hurdle race, &c. The ball game will be between teams representing the merchants and traveling salesmen, and the members of the winning team will be presented with beautifully engraved silver fobs. F. E. Stacy, president of the Western Massachusetts Hardware Dealers' Association, Springfield, will captain the merchants' nine, and John W. Rathbun of the S. W. Card Mfg. Company, Mansfield, Mass., will lead the Knights of the Grip. After the games the party will repair to the Palm Garden at Paragon Park, where an old-fashioned New England fish and chicken dinner will be served. Subsequently the different amusements in the park will be visited.




The thirteenth annual picnic of the Chicago Retail Hardware Association, held on July 15, at Northwestern Park, was an occasion of interest and enjoyment for the many Hardware merchants and their friends who were in attendance. Two trains of 18 cars were required for the transportation of the crowd, which was favored by ideal weather. An extended programme of races and other features of entertainment arranged by the committee on sports, of which G. A. Englehardt was chairman, furnished a constant series of amusements that were keenly enjoyed by both participants and spectators. Sixty-five different prizes for the winners in the various events were supplied by Hardware manufacturers, jobbers and retailers. These were composed of a large assortment of articles which were arranged for by a prize committee, headed by W. H. Bennett. The unflagging interest which attaches to this annual gathering is significant of the pleasant relations established through local organization of this character.

The fifteenth annual meeting of the Western Massachusetts Hardware Dealers' Association was held at the Highland Hotel, Springfield, July 8, when these officers were elected: President, Frank E. Stacy, Springfield; vice-president, A. J. Osborne, Holyoke; secretary and treasurer, W. A. Pearson, Holyoke; directors, the officers and Francis D. Foot, Springfield; Oliver C. Alderman, Springfield; Henry L. Russell, Holyoke, and Fred F. Shepard, Westfield. A banquet followed the business meeting.

THE MERIDEN CUTLERY COMPANY, Meriden, Conn., manufacturer of an extensive line of Table Cutlery, has just issued its new catalogue No. 17, in which a noteworthy change has been made in the method of listing goods. The company expresses the belief that the trade has found difficulty in finding the price of articles in

catalogues where price-lists were separated from illustrations. In this book, therefore, all lists and illustrations are printed in conjunction, so that prices and details may be taken in at a glance. These illustrations and lists are also a great assistance to retail purchasers and may be shown without hesitation, as the merchant is fully protected by discounts.

## Production of Cut and Wire Nails in 1907.

THE annual report of the American Iron and Steel Association, James M. Swank, general manager, has just been issued. It shows that the production of Cut Nails and Cut Spikes in 1907 amounted to 1,109,138 kegs of 100 lb. each, against 1,189,239 kegs in 1906, a decrease of 80,101 kegs. The following table gives the production of Cut Nails and Cut Spikes by States in 1906 and 1907, Iron Nails being separated from Steel Nails for both years; in 1907 a little over 72 per cent. was cut from steel plate and almost 28 per cent. from iron plate:

| | 1906. | | | 1907. | | |
|---|---|---|---|---|---|---|
| States. | Iron. | Steel. | Kegs. Total. | Iron. | Steel. | Kegs. Total. |
| Pennsylvania | 279,607 | 378,229 | 657,836 | 267,065 | 397,933 | 664,998 |
| West Virginia and Indiana | ..... | 208,935 | 208,935 | ..... | 175,549 | 175,549 |
| Massachusetts and Ohio | ..... | 114,400 | 114,400 | ..... | 102,333 | 102,333 |
| Kentucky, Illinois and California | 70,158 | 137,910 | 208,068 | 42,903 | 123,355 | 166,258 |
| Total | 349,765 | 839,474 | 1,189,239 | 309,968 | 799,170 | 1,109,138 |

Sixteen works in seven States made Cut Nails in 1907, as compared with 16 works in eight States in 1906. Indiana was the only State enumerated in the above table which was not a producer in 1907.

The following table gives the production by States of Cut Nails and Cut Spikes from 1902 to 1907; with the exception of 1905 there has been a steady decline in production since 1902:

| States—Kegs. | 1902. | 1903. | 1904. | 1905. | 1906. | 1907. |
|---|---|---|---|---|---|---|
| Pennsylvania | 752,729 | 725,000 | 698,326 | 757,407 | 657,836 | 664,998 |
| West Virginia and Indiana | 271,362 | 274,808 | 245,997 | 210,345 | 208,935 | 175,549 |
| Massachusetts and Ohio | 267,901 | 203,138 | 182,981 | 158,113 | 114,400 | 102,333 |
| Maryland, Virginia, Kentucky, Illinois, Wisconsin and California | 341,770 | 232,947 | 156,058 | 231,684 | 208,068 | 166,258 |
| Total | 1,633,762 | 1,435,893 | 1,283,362 | 1,357,549 | 1,189,239 | 1,109,138 |

In 1907 exports of Cut Nails and Cut Spikes amounted to 15,521,208 lb., equivalent to 155,212 kegs of 100 lb., against 16,951,893 lb., or 169,519 kegs in 1906. Imports of Cut Nails and Cut Spikes are now only nominal.

### Production of Wire Nails.

The production of Wire Nails in 1907 amounted to 11,731,044 kegs of 100 lb., as compared with 11,486,647 kegs in 1906, an increase of 244,397 kegs, or over 2.1 per cent.

The following table gives the production of Wire Nails by States in 1905, 1906 and 1907 in kegs of 100 lb.:

| States. | 1905. | 1906. | 1907. |
|---|---|---|---|
| New Hampshire, Massachusetts, Rhode Island and Connecticut | 264,024 | 281,472 | 263,487 |
| New York, New Jersey and Pennsylvania | 4,504,376 | 4,688,071 | 4,787,311 |
| Maryland, Kentucky, Georgia, Alabama and Ohio | 2,861,587 | 3,163,214 | 3,057,620 |
| Indiana and Illinois | 2,531,774 | 2,735,915 | 2,941,216 |
| Michigan, Wisconsin and Colorado | 693,131 | 617,975 | 681,410 |
| Total | 10,854,892 | 11,486,647 | 11,731,044 |

The Wire Nails produced in 1907 were made by 48 works in 14 States, as compared with 49 works in 14 States in 1906, 54 works in 16 States in 1905, and 56 works in 16 States in 1904. Steel Wire Nails only were made.

The exports of Wire Nails in 1907 amounted to 94,503,450 lb., or 945,034 kegs, against 103,570,539 lb., or 1,035,705 kegs, in 1906. Very few Wire Nails are imported.

### Comparative Production of Cut and Wire Nails.

In the following table we give the production in kegs of 100 lb. of standard sizes of Cut Nails and Spikes cut from plates, from 1896 to 1907; also the production of standard sizes of Wire Nails during the same period. The annual increase of Wire Nails over Cut Nails in the 12 years is also shown. The maximum production of 8,160,973 kegs of Cut Nails was reached in 1886 and the maximum of 11,926,661 kegs of Wire Nails in 1904:

| Years. | Cut nails. Kegs. | Wire nails. Kegs. | Total. Kegs. | Wire nails over cut. |
|---|---|---|---|---|
| 1896..... | 1,615,870 | 4,719,860 | 6,335,730 | 3,103,990 |
| 1897..... | 2,106,799 | 8,997,245 | 11,104,044 | 6,890,446 |
| 1898..... | 1,572,221 | 7,418,475 | 8,990,696 | 5,846,254 |
| 1899..... | 1,904,340 | 7,618,130 | 9,522,470 | 5,713,790 |
| 1900..... | 1,573,494 | 7,233,979 | 8,807,473 | 5,660,485 |
| 1901..... | 1,542,240 | 9,803,822 | 11,346,062 | 8,261,582 |
| 1902..... | 1,633,762 | 10,982,246 | 12,616,008 | 9,348,484 |
| 1903..... | 1,435,893 | 9,631,661 | 11,067,554 | 8,195,768 |
| 1904..... | 1,283,362 | 11,926,661 | 13,210,023 | 10,643,299 |
| 1905..... | 1,357,549 | 10,854,892 | 12,212,441 | 9,497,343 |
| 1906..... | 1,189,239 | 11,486,647 | 12,675,886 | 10,297,408 |
| 1907..... | 1,109,138 | 11,731,044 | 12,840,182 | 10,621,906 |

## AMONG THE HARDWARE TRADE.

The Emmons-Hawkins Hardware Company has purchased the stock of Koontz Hardware Company, Huntington, W. Va., and has moved it to its own quarters. The company handles Shelf and Heavy Hardware, Agricultural Implements, Paints, Oils, Sporting Goods, Sash, Doors, &c.

The Drake Hardware Company, Rockford, Ill., has changed its name to the Drake & Tucker Hardware Company, and increased its capital stock from $5000 to $10,000. To the regular line of Hardware heretofore carried the company has added a complete stock of Sporting Goods.

Gerard & Dean, Barneston, Neb., have sold their Hardware stock to Cady Hardware Company, but will continue in the Implement business.

The Williams Hardware Company, Shreveport, La., has been incorporated with a capital of $10,000, and will do a retail business in Shelf Hardware, Stoves, Tinware, Paints and Sporting Goods.

The Stofer Mercantile Company, Snyder, Neb., will open up in Hedrick, Neb., about August 1 with a new stock of Hardware, Implements, &c.

The Thompson Bros. Company, Memphis, Texas, has been incorporated with a capital of $25,000, and will enlarge its quarters in the fall.

The King City Hardware Company, King City, Mo., has increased its capital stock from $16,000 to $25,000, for the purpose of developing the grain and seed end of the business, in which it is now extensively engaged. The management remains unchanged.

A. F. BROMBACHER & Co., 29-31 Fulton street, New York, have issued an interesting illustrated booklet of 16 pages, in which is recounted some of the history of the business which was originally conducted under the title of H. & C. Van Wagenen from 1760 to 1800. A map of New York in 1728 and one in 1908, together with views of the store at 33 and 34 Fulton street in 1808, and the present store at 29-31 Fulton street are a part of the pamphlet.

# EXPERIMENTAL PARCEL POST WILL BE THE PROGRAMME OF THE "REFORMERS."

FROM OUR SPECIAL CORRESPONDENT.

WASHINGTON, D. C., July 21, 1908.

RETAIL merchants would seem to have been justified in believing that the Post Office Department would accept as final and conclusive the rejection by Congress of the various parcel post projects which were so strongly urged throughout the past winter. It is a fact, however, that plans have already been formulated for another campaign to be waged at the short session beginning next December, the object of which will be to secure a special appropriation to establish an experimental parcel post on rural routes. The department officials evidently hope that in the event of securing this entering wedge a strong demand for an extension of the service can be created based upon rose colored reports regarding the results of the proposed experiment. It is apparent, therefore, that retailers have another hard fight ahead of them, and it goes without saying that they should promptly take the matter up with their Senators and Representatives before the latter have been induced to pledge their support to what is being urged as a "reasonable compromise."

**Another Hard Fight in Prospect.**

Readers of *The Iron Age* will remember that the Department's plan as originally put forward a year ago involved the inauguration of a parcel post on all rural routes under conditions as to weight, rates, &c., practically identical with those provided in the Hearst and Henry bills for a complete parcel post system. When it became apparent that this plan as incorporated in the Burnham bill, supplemented by the Kean measure, raising the limit of weight of merchandise throughout the service, could not pass, the Post Office Department made an urgent request of the Senate Post Office Committee for an appropriation of $10,000 to test the rural parcel post scheme on a few routes to be designated by the Postmaster-General. This recommendation did not reach the Senate, however, until the consideration of the bill was practically completed, and no vote was had upon the proposition. After reviewing carefully the work of the past year, the department officials have reached the conclusion that they will be able to operate along the line of the least resistance if they follow the tactics employed in the inauguration of the rural free delivery, when an appropriation of $10,000 was used to stimulate a demand from a relatively small proportion of the population with such effect that to-day the Government is spending more than $35,000,000 on the rural delivery, of which four-fifths is a deficit to be met by the taxpayers at large.

**Line of Least Resistance Will Be Followed.**

The publicity bureau of the postal service is already at work in the interest of the proposed "experiment." The press correspondents here are being daily advised of the calculations by which the postal deficit will disappear when the parcel post is established on rural routes, and the specious argument is put forward that no sound reason can be cited against an experiment that can easily be abandoned if the results do not justify the claims heretofore made. This is precisely the argument that was employed when rural free delivery was first proposed, and for at least three years after the first appropriation was made Congress was induced to increase the annual allotment on the ground that the money available was "insufficient to fully test the institution." By the time it became apparent that the annual cost of the service would run into many millions, the demand for it in the rural districts and its value as a political machine to Senators and Representatives were so strongly in evidence that no possible influence could check its expansion. It remains to be seen whether Congress next winter will permit the history of the establishment of the rural free delivery to be repeated in the authorization of a limited parcel post.

**Argument Offered for Experimental Parcel Post.**

Some exceedingly interesting postal statistics have been compiled since the beginning of the new fiscal year on the first inst. The deficit for the year ended June 30, 1908, will somewhat exceed $15,000,000, which is approximately high water mark for the excess of expenditures over receipts. In making these figures public, however, the department calls attention to the estimates, so often referred to during last winter's campaign, designed to demonstrate that a very limited patronage of the proposed rural parcel post would wipe out the entire shortage. Of course, it is hardly necessary to call attention to the fact that these estimates are based upon a horizontal distribution of the proposed new business among all the routes of the service in such a way as to require absolutely no new equipment or increase in the personnel. Unfortunately, business does not develop in any such symmetrical manner, and there can be no doubt that thousands of routes would show practically no increased patronage long after the business on other routes had assumed such proportions as to require a heavy equipment of trucks and drays to handle it.

**The Department's View of $15,000,000 Deficit.**

The appropriation for rural free delivery for the fiscal year just begun, as finally adjusted in conference in the annual post office budget bill, is $35,573,000. This is based upon a maximum salary for carriers of $900 per annum, the House having refused to accede to the increase to $1000 made by the Senate. The total appropriation for increase in the rural service covered by this sum is $300,000 less than the department's estimate, and the whole amount is but $673,000 more than the appropriation for the year ended June 30, 1908. Careful calculations made by the officials of the rural free delivery service show that the increased appropriation will justify the establishment of only 588 new routes during the new fiscal year. It has been determined to prorate this number throughout the year, 49 new routes to be authorized monthly. As more than 588 petitions for new routes have already been received and favorably reported upon, it is obvious that no new service not already approved can be installed during the coming year. In view of these conditions the Department will give considerable attention to the readjustment of the service in the various districts, and the discontinuance of unnecessary routes will permit the installation of a limited amount of new service not covered by the increased appropriation. It is obvious, however, that the reckless expansion of rural free delivery, which in the past has been such a disturbing factor in the retail trade, is no longer a menace.

**Less Than 600 New Routes for Next Fiscal Year.**

The recent rapid increase in the extension of the service in the Southern States, notably in Georgia, North and South Carolina, Alabama and Texas, is highly significant. During the early years of this service Southern Senators and Congressmen discountenanced it on the ground that it was extravagant and paternalistic, but it is a suggestive fact that the majority of the bills for a rural parcel post presented last winter were brought forward by Southern Congressmen. It is perhaps more than a coincidence that the catalogue houses have shown an activity and enterprise in the extension of their business in the South that bear a close relation to governmental expenditures for the extension of the rural service.

**Extension of R. F. D. Service in the Southern States.**

THE PATTERSON-SARGENT COMPANY, Cleveland, Ohio, manufacturer of B. P. S. Paints, Varnishes, &c., is sending out notices announcing the establishment of a retail distributing store in connection with its offices and warehouse at 8-10 Jay street, New York City, where it will carry a full line of painters' supplies.

THE UNITED STATES CARTRIDGE COMPANY, Lowell, Mass., has issued a handsome advertising hanger in brilliant colors. The subject of the illustration is a mountain lion devouring its prey on the edge of a precipitous cliff.

# Oklahoma Retail Hardware and Implement Dealers' Association.

THE fifth annual convention of the Oklahoma Retail Hardware and Implement Dealers' Association was held in Oklahoma City on July 14, 15 and 16, the scene of the deliberations being the Auditorium. L. T. Yount, vice-president of the Oklahoma City Hardware and Manufacturers' Club and local manager of the John Deere Plow Company, welcomed the visiting merchants to the city, the response for the association being made by Frederick Pfaff, Anadarko.

### Convention Committees.

The following convention committees were appointed by the president:

NOMINATING.—O. A. Smith, Watonga; Will Brewington, Pawnee; C. W. Dutton.

LEGISLATIVE.—Will Brewington, Pawnee; Ben F. Ridge, W. J. Pettee.

RESOLUTIONS.—M. C. Hale, chairman, Tulsa; Frederick Pfaff, Anadarko; G. W. Turner.

### Hardware Store Motto.

Announcement had been made in the printed programme that "The dealer who brings the best motto for a Hardware store will have his fare refunded." In response to this offer mottoes were called for by the president, but only one had been prepared, that by M. C. Hale, Tulsa, which read as follows:

*Your Money's Worth With Every Purchase—Courtesy Thrown In.*

Mr. Hale was declared to have won the prize, but it having been rumored that Mrs. Hale had written the motto, it was moved and carried that the check for the amount should be made payable to his wife.

### Secretary Patterson's Report.

A detailed report of the work of the association since the last meeting was made by the energetic secretary, D. C. Patterson, Oklahoma City. In it reference was made to some of the matters discussed at the last annual meeting of the National Federation, and the important and successful part taken by Hardware interests in opposing parcel post before the Trans-Mississippi Commercial Congress, which was held in Muskogee in November. Mention was also made of a few complaints of trade abuses by manufacturers and jobbers. Mr. Patterson concluded his report with a courteous request that members pay more attention to letters sent out from the secretary's office, so that his time and the funds of the association shall not be wasted.

### State Legislation Benefits.

William Murdock, Ralston, president of the association, delivered a forcible address on the subject of "Legislation and Its Benefits to the Retail Hardware and Implement Trade," in which he pointed out the necessity of merchants taking an active interest in this matter and seeing to it that only competent men having the welfare of the entire people at heart are sent to represent them at the State capitol. Mr. Murdock said:

If I had been consulted relative to the subject that should be my portion of this work, I would never have consented to address this convention upon a subject of this kind. It is true that I have had some little experience with the work of a legislature, but while that work was pleasant, yet it is not of a kind that we like to discuss outside of legislative halls. We are rather loath to enter upon these discussions, particularly upon an occasion of this character, because we are too apt to discuss these things from a party standpoint and this is not always best, but I want to say to the members of this association and to the commercial interests of the State of Oklahoma at large that we made strenuous efforts during the 160 days of the first session of the Oklahoma Legislature to enact laws that in their very nature would be of such a character as would give to the retail trade of Oklahoma the benefit of the protection that we know they need. Yet, I am frank to say that the commercial interests of Oklahoma have never yet recognized the need of holding up the hands of their representatives as they should.

**The Commercial Bodies Themselves Are Largely Responsible**

for the unsatisfactory condition of legislation. I have weighed this matter and believe I have studied it from every viewpoint, and I now make the assertion that the commercial interests can control, if they will, the laws that go upon the statute book for your use and mine. Why do I say this? Because the interests of the farming class and of the commercial class of Oklahoma are so closely identified that there is no dividing point to be found. That being true, it is your duty to help elect men to office that know the necessity for sane legislation. But I have found it always true that the men who are engaged in mercantile life, when approached upon a subject of this kind, say, "Oh, I haven't the time to give to this matter. My time is too valuable. Let somebody else attend to it." What is the result? Simply this: That men who are incompetent, without experience, have announced themselves for office, and you have walked like sheep to the ballot box and have given them the power to control, not alone the commercial interests, but the combined interests of all. The time is coming when the commercial interests of these United States must awaken and go forward and occupy the position that belongs to them.

**Oklahoma's Foundation.**

We have just come into the Union, as it were, and have had to build from the foundation, and the foundation is not yet finished. The structure that shall rest upon this foundation is for you to decide whether it shall be a finished one or not. You ask the Legislature, after the men are elected, to grant you relief in ways that you say are necessary for your interests, but then it is too late. The time for preparation and for the consummation of your wishes is before you have placed your ballot in the ballot box. That is the day of your power and the day you can make the world feel your power the most. If this is done and you discharge your duty as citizens of Oklahoma, then will Oklahoma take such an advanced position as will forever be a cause for pride and satisfaction.

**A Rugged Citizenship.**

We have the ability in Oklahoma. I say to you that the citizenship of Oklahoma is composed of some of the best elements of the older States. The man who is hunting ease never goes to the frontier. Why? Because he does not want to meet the hardships that he knows confront him there. But with such a citizenship as we have I say to you that if you and I measure up to the full stature of manhood there will be no need hereafter for the people to make such criticisms as they have in the past. Care should be taken as to the dispatches and news sent broadcast over the land. They are up to you to control. With the vast resources with which God has blessed us, resources that wait development, every citizen should constitute himself a committee of one to let the outside world know our true rights and position.

**Every Member's Duty.**

I hope every member of this association will recognize that he has a duty which he must perform, a duty which he will discharge in such a way that he can have the consciousness of work well done. Let us see to it that in the election of men to office in Oklahoma they shall be men; let us see to it that they are men true and tried, men of experience and ability and wide in their range of knowledge, so that Oklahoma shall stand forever as a type of the class that the United States so much desires in her citizenship.

### Trade Journals and the Trade.

A carefully prepared address on the subject of "The Advantages Derived from Reading Trade Papers," was delivered by Frederick Pfaff, Anadarko, from which we make the following extracts:

The trade journal has for its mission the dissemination of news which is of special interest to those who are interested in some particular line of business. The remarks which I shall make are supposed to have direct bearing on the Hardware and Implement business.

The benefits derived from reading these journals depends a great deal upon the reader. As you are all aware, many people will read through an article and then not be able to tell what they have read. With this class reading is only a pastime. On the other hand, there are those who, after reading an article, can tell you of every suggestion contained in it, and if there is anything which looks good to them they will see how it will work in connection with

their business. With this class reading is a source of enlightenment.

**Influence in Parcel Post Legislation.**

We will suppose that we have before us one of the leading journals. The first news we come to is the latest news concerning the Parcel Post bill. In this connection I will say that if it were not for the trade journals we would only secure the facts bearing on one side of the parcel post matter, and that would be in favor of the proposition, as the news we would receive through the regular channels would be playing for political effect. There is a popular feeling among politicians that the way for them to be successful is to make grand stand plays to the farmers for their votes, and that they will be able to call on the business man and fix his vote all O. K.

The recent defeat of the Parcel Post bill is due mainly to the influence of the trade journals. Had it not been for their influence the bill would have passed without any serious objection, and the large mail order houses would have secured another chunk of business which rightfully belongs to the home dealer.

**Show Window Arrangement.**

Looking a little further, we find the illustration of a show window. A little study shows us that it contains a great deal of merit and that our clerks could easily reproduce it. Let me say in this connection that there is no more effective way of bringing your wares before the buying public than through your show windows. If you are not original enough to get up an interesting window, you will be able to find some winners in almost any of the trade journals. Many of the suggestions in this line are worth several times the price of a year's subscription.

**Retailer's Advertising.**

Turning over a page we find that the adman connected with the journal is taking a few falls out of some fellow's ad. Don't fail to digest this part of the journal, as a large percentage of the advertising done by the local dealers is very faulty, and a little careful study of suggestions made by the adman will well repay you.

The next article is on the meeting of catalogue house competition. In this connection, as in the parcel post proposition, we have to depend on the trade journal for our information. While I do not agree with many of the propositions presented, there is much valuable information to be gained by reading all the articles on this subject.

On another page we find the proceedings of a dealers' convention which has been held somewhere. The trade journal is the only medium by which we are able to find a detailed discussion of their proceedings.

**New Goods and Quotations.**

In various places through the journal we see illustrations and descriptions of new articles which have just been placed on the market. It may be that some of those articles are in line with something we have been wanting and did not know where to secure them.

In many of the journals we find a list of prices of all staples. These change with each issue and are as nearly reliable as can be made. The journals often contain suggestions as to the prospects of an increase or decrease in the price of some commodity. Such information is often of considerable value to us.

Another subject we find discussed is that of the legal rights of the dealer. Many suggestions in this line are very timely and of considerable worth to the reader.

**Other Topics of Interest and Value.**

Then there are many valuable suggestions as to the best way to get up and conduct special sales, abuses of the warranty on Implements, Buggies, Wagons, &c. Advice is given as to the mistakes made by salesmen, and suggestions of how to increase our own ability and the ability of our clerks as salesmen. Remedies are given for price cutting, and hints of the most attractive way to arrange the interior of our stores.

Other articles of interest are found on the best way to collect bad debts, special forms of cards and duns used in making collections, &c.

There are various other articles of interest which may be read with profit. In fact, nothing is lost if you begin with the front cover, read all the ads., and finish, without missing a page, by reading the ads. on the back of the cover.

Considerable discussion followed the reading of this paper, in which a number of those present took occasion to refer to the importance of keeping abreast of the times, and that this could best be done through the medium of journals devoted to the trade.

## Mels S. Darling's Address.

A notable address was that made by Mels S. Darling, Oklahoma City, in which he discussed at considerable length, "The Utter Disregard for Commercial Economics by Commercial Parasites," his remarks having special reference to the operations of the catalogue and mail order houses. Mr. Darling said that this was called an age of commercialism, but he declared this was true of every age. Commercialism was directly responsible for all the great discoveries in science; for all the great works of art; for all the marvelous creations in music. Shakespeare never would have given us those masterpieces had it not been for his own need of the financial return they would bring him. But commercialism was both destructive and constructive. The proper control of wealth was the problem confronting the people of to-day. Commercialism properly controlled meant happiness and democratic socialism.

Mr. Darling went on to show by illustration that the downfall of all the great nations of history was caused by the concentration of wealth. In spite of all he said the little man cannot be eliminated entirely, but his business can be crippled and his usefulness curtailed, and this was done by patronizing the mail order houses, the sales of the small merchant being thus lessened to such an extent that his business was cramped and his power in the community as a factor in its development was largely destroyed. He continued:

Take the village of Prosperity—Prosperity, Okla. It is the noon hour. The scene lies at the boarding house. The people are congregating for dinner. Here comes Mrs. Wilkins, the village milliner. She takes from her pocket a little purse and says to Mrs. Blank, who runs the boarding house, "Here is the $8 I owe you." And Mrs. Blank turns to the carpenter and says, "Here, Mr. Jones, is the money for that work you did for me last week." And the carpenter takes it and hands it to the doctor, who has just brought his boy through a bad case of typhoid. The doctor thanks him, and on his way home stops at the blacksmith's and pays his bill there, handing him the $8. And the blacksmith goes home at night and says, "Here, wife, is the money for the children's hats." And so you see it all goes back to Mrs. Wilkins, but what a lot of good it has done and how many debts it has settled since she paid it that day to the landlady at the boarding house. But where would it have been if Mrs. Wilkins had sent it to ———, Chicago?

Mr. Darling then pictured the difference in the citizenship that was produced in a city and the citizenship that was developed in the country or in a good sized town. He showed how democratic life was in a small place, how the children of the rich and poor played together, attended the same school and grew up with the same interests at heart. He showed that the catalogue house by cutting out the traveling man and the small merchant was destructive to the best interests of the rural communities and towns. Mr. Darling concluded his very interesting and suggestive address by emphasizing the interdependency of interests that is characteristic of every village and hamlet of the land.

## Hardware Exhibits and the Retail Merchant.

A suggestive paper on the subject of "Convention Exhibits and Their Benefits to the Retail Dealer" was read by M. Scott, Hastings. Mr. Scott, who regards displays of this sort as of great educational value, spoke in part as follows:

In my judgment Hardware exhibits are the most important feature of these conventions. True, many interesting questions come up for discussion, but the exhibit is the university of the retail dealer. Comparison is the law by which we arrive at our definite conclusion. There is little in the world that is absolute. The homeliest woman, if not too homely, becomes beautiful in the eyes of the man to whom all other feminine society is denied; and the poorest tool, implement or machine is appreciated as a thing of value until placed in contrasted relation with one of improved type. There is no perfection in art. The primeval man who sharpened a stone by the tedious process of rubbing it upon one of its kind and bound it to the end of a stick by the bark thereon, to be used as an implement of war, looked upon his achievement with much the same satisfaction as did the inventor of the locomotive engine. Each had accomplished something great for his day. Each looked upon his product, no doubt, as the perfection of art; and yet the possibilities of subsequent invention and improvement were as great in the second case as in the first, and the wheels of progress moved on.

**Should Keep Informed.**

In the great Southwest the interest of the retail Hardware and Implement dealer centers in those things designed for household and agricultural use, and it is expected, yes, demanded of him that he keep thoroughly informed as to the

important changes and improvements in those lines. How, then, is the dealer to gain a comprehensive idea of what is best to be placed upon his shelves, his floor or his yard? This problem has been solved for him by the convention exhibit. Here the manufactured products of the world have been assembled for the general good. I say "general good" because the manufacturer is benefited by having this opportunity of showing his products to men whose business is to distribute them to the consumer. The retailer is benefited by having this opportunity to study side by side the various makes offered him, while the consumer is benefited by this prompt method of bringing within his reach the best that genius has produced. And permit me to make this statement: The fact that the manufacturer is willing to so place his goods in juxtaposition with those of a competitor is the best evidence of confidence in his line. And the zeal manifested by our manufacturers and wholesalers in thus placing their respective lines for study by the retail man, while prompted by business reasons, is in effect most unselfish.

**How to Go About It.**

Now let us discuss more particularly the benefits that the retail Hardwareman gets from these exhibits, and how he is to go about obtaining the greatest degree of assistance to his business from this subject. In other words, let us make the application. The climatic conditions, the soil and the nature of the crops determine to a very great degree the kind of implements required for a given locality, and it is with implements that we wish to deal now. The successful retail implement dealer will make a careful study of these conditions, together with the tools now in use, note carefully the results, being especially observant as to points of marked excellence or defect. He will freely discuss these points with his customer and encourage him to suggest remedies. Great care must be exercised, however, that the user does not exaggerate the points of distinction. Many times the inexperienced retailer is induced to make injudicious purchases by the overzealous recommendations of a favorite customer. In some instances it will be found that the style of Plow, Planter or Cultivator in use in a given trade territory is in no particular suited to the demands, and in a case of this kind he should have the courage to make the radical changes required to properly equip his customers.

A sufficient consideration of local requirements having been taken, the next step is to remedy—the time, now, and the place, the convention exhibit. Endeavor there to find the implement that overcomes the defects of the objectionable one, if possible losing none of the virtues which the discarded one may possess. The aggregate of excellence is the end sought, and much time and thought must be expended before one can safely assure himself of what is best.

**Look Out for "Talking Points."**

Again, we have what are called "talking points," by which is understood features that are not really material as regards utility, but simply used to distinguish a line from others of similar type. The inexperienced retail man must beware of these "talking points," for the chances are that the manufacturers' salesman is a better talker than he, and the possibilities are that your competitor is also, in which case it is much better to retain the stable features and let them speak for themselves. Besides, this "talking point" method is open to question as to its honesty.

**Over-Improvement.**

Another point to be watched is overimprovement. I can recall to mind more than one excellent implement which has been materially weakened by changes that were induced by the desire of the manufacturer to keep in advance of those who were copying his expiring patents. In fact, I fully believe such changes have been made when it was known to the builder himself that the change would cripple the utility of the tool.

**One of the Difficulties Encountered**

by the retailer in the selection of a line of implements is that no one make carries the best in all the various kinds of machines. It thus leaves the buyer the alternative of taking a complete line, the good with the bad, for car shipment, or to choose from the various lines and ship by local freight. In this time of excessive wholesale prices, and consequent narrow retail margins, the former is the only practical plan.

Let us sum up by saying that the convention exhibit is a means by which the consumer is brought into communication with the manufacturer through the medium of the retailer. It offers the last named not only an opportunity of profit by the selection and sale of the most advanced type of goods, but being in close touch with what has been produced upon the one side and with what is demanded upon the other, he has unlimited opportunities himself in the field of invention.

## A Striking Poster.

A poster, the subject matter of which was prepared by Mrs. M. S. Darling, was distributed at the convention and has been given a wide circulation. The poster is headed "Thoughts of Which to Think," and among the sentiments are the following:

One of the nation's greatest dangers is concentration of wealth and its power.

One of the great concentrators is the big catalogue house which boasts of its greatness.

The mail order houses seek to build a few great centers: A few centers mean fewer towns and smaller ones. This means reduced taxable wealth and depleted population, impoverished small communities and congested cities.

The home merchants don't expend millions in advertising and for big picture books, but they do pay taxes and give employment to home people.

The catalogue house shows you a picture, takes your money and sends the goods later. Most men have passed the age when they trade jack knives "sight unseen."

When in a hurry do people send away for goods? Can the merchant live on hurry-up business? It will worry him to do it.

If half the merchants in this town quit business what will real estate and the farm be worth? What will bank deposits be?

You don't know what your home merchant can do and will do until you talk to him. If you want cheap stuff, he can get it for you. You can buy a piano for $150 and one for $3000, and they are both cheap for the price. You can't get something for nothing—you usually pay what a thing is worth; not much more or less.

## Election of Officers.

The following officers were chosen for the ensuing year:

PRESIDENT, Ben. P. Ridge, Duncan.
VICE-PRESIDENT, M. C. Hale, Tulsa.
SECRETARY-TREASURER, D. C. Patterson, Oklahoma City.
DIRECTORS: M. Scott, Hastings, and J. M. Johnston, Waurika.

Mr. Murdock, the retiring president, was selected to represent the association at the annual meeting of the National Federation of Retail Implement and Vehicle Dealers' Associations, and Mr. Patterson, the secretary, to represent the organization at the annual gathering of the National Retail Hardware Association. O. A. Smith, Watonga, and Frederick Pfaff, Anadarko, were elected alternates.

## Resolutions.

The Committee on Resolutions recommended the following, which were adopted:

We extend a vote of thanks to the Oklahoma City Hardware and Manufacturers' Club, to the retail dealers, and to all other organizations and citizens of Oklahoma City, for the splendid hospitality extended to us.

We also extend a vote of thanks to Mels S. Darling for his splendid address.

We extend to the traveling men our thanks for the interest they have taken in our organization and to those who have become members of the same.

We extend thanks to the many exhibitors for their fine displays and the assistance rendered our association.

We extend thanks to our worthy president, Mr. Murdock, and to Mr. Patterson, our secretary, for their untiring efforts in behalf of the organization.

We believe that it is the duty of the retailers of Oklahoma to do everything in their power to send men to represent us in our Legislature who have had business experience.

And we further recommend that our representatives in the Legislature work for fewer and better laws.

We also recommend that our Legislative Committee do all in their power to secure the enactment of laws which will protect the retail dealer from the range, buggy and kindred peddler.

It is the belief of your committee that the retailers are not taking enough interest in our organization. Its success depends upon the hearty co-operation of all the dealers in our State.

We further wish to recommend that as our retiring president, Mr. Murdock, is retiring also from the Hardware business, that he be made an honorary member of our association permanently.

*Resolved*, That the dealers over the State take up the matter of writing articles for the various trade papers, and thereby carry on a discussion of the numerous questions that are of vital concern to their welfare.

## Boosting Oklahoma.

"Our Part in Boosting Oklahoma and Bringing in New Settlers" was the topic of a paper read by M. C. Hale, Tulsa. Mr. Hale said that while this subject had no bearing on the association as an organization, it had a great deal to do with the future prosperity of the merchants of the State. Much of the prospective welfare of Oklahoma depended on getting people to locate there, to get the rich lands under cultivation and to make use of the great natural resources of the State. Realizing this, Tulsa had tried to do her part by advertising Tulsa and Oklahoma in the North and East, the natural source of emigration. Mr. Hale did not attempt to tell all that the

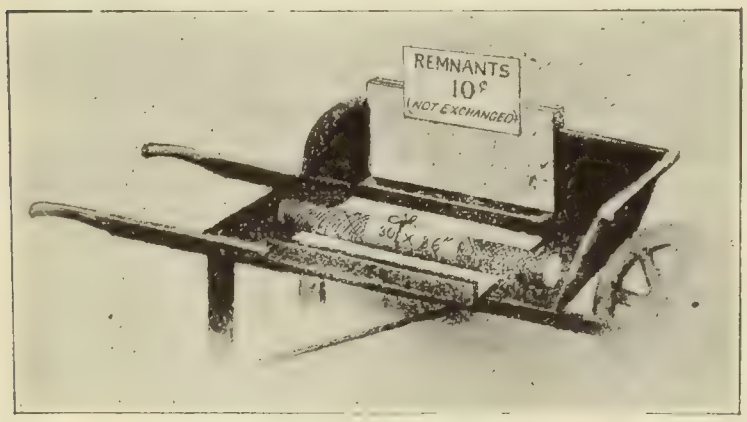
Commercial Club of Tulsa had done along these lines, but described the form of advertising that had been found the most profitable and effective—namely, that of sending special trains through the manufacturing centers of the North and East. The first train was sent out in 1905 and covered a few of the Middle Western States. The results of this enterprise were so gratifying that in April last a special train, composed of 10 cars and carrying more than 100 representative business men of Tulsa, together with a band of 23 pieces, "once more pierced the manufacturing centers of the East." The train carried a complete printing outfit and five men were constantly employed getting out the *Daily Courier*, which told in detail of the great natural resources of Oklahoma. He said that the free advertising of Oklahoma secured by this train could not have been purchased at any price. The secretary of the Commercial Club had received 500 clippings from well-known papers all over the country in which Tulsa and the State in which it was located were mentioned. The town, he continued, had already felt the result of this advertising, the railroad people reporting that the travel into the place since the return of the train has increased more than 20 per cent.

### Hardware Exhibits.

Only one business session was held each day, which allowed the merchants considerable time to visit manufacturers and jobbers in the city and also to inspect the numerous exhibits of Hardware and related lines. More than 40 houses had reserved space in the body of the convention hall and in tents just back of the building, and much interest was manifested in the displays. Among the exhibitors were the following: E. C. Atkins & Co., Indianapolis, Ind.; Peters Cartridge Company, Cincinnati, Ohio; Union Metallic Cartridge Company, Bridgeport, Conn.; Chandler Pump Company, Chandler, Iowa; Vermont Farm Machine Company, Bellows Falls, Vt.; De Laval Separator Company, Poughkeepsie, N. Y., and Standard Varnish Works, New York City.

## Odds and Ends of Wire Cloth.

ODDS and ends may often be turned into good money if presented to the public in some ingenious way. Nelson W. Haskell, a wideawake Hardwareman of Lynn, Mass., writes us that he has always been bothered by odds and ends of Wire Cloth and Netting. He, of course, saved them and tried to work them off when the right size and length were called for, but they were always a nuisance. A few weeks ago there was a pile of them lying in the cellar, a sad collection. Struck by a happy




*Selling Odds and Ends of Wire Cloth.*

thought he decided to wrap them all up, mark them at low prices, and see if they would not sell themselves. That is just what happened. A rack was made to fit into a wheelbarrow with one side taken out, as shown in the illustration. It took 5 min. to make the rack and ½ hr. to do up the odd pieces in bundles, with a piece of 12-in. paper and a little twine. They were marked as indicated, a dozen pieces at a time being piled up in the wheelbarrow at the doorway. The selling was no trouble, as people just came in and put 10 cents on the counter, took their bundle and walked away happy, while Mr. Haskell made $10 by the bright idea.

H. D. Bachtell has opened a new Hardware, Stove, Tinware and Sporting Goods store at Waterloo, Iowa.

## Price-Lists, Circulars, Etc.

*Manufacturers in Hardware and related lines are requested to send us copies of catalogues, price-lists, &c, for our Catalogue Department in New York; and at the same time to call attention to any new goods or additions to their lines, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.*

J. FINLEY SMITH & SON, 117 Chambers street, New York: Illustrated and revised price-list, under date July 1, relating to Brushes and Dusters in great variety and covering a wide range of uses.

MILWAUKEE DUSTLESS BRUSH COMPANY: A catalogue describing the "Dustless" brush, printed in French for the use of the company's French agent, P. Geoffroy, in France and Algeria.

EAGLE COOPERAGE WORKS, Circleville, Ohio: Illustrated booklet relating to the Eagle Mop Wringer and Bucket.

ROSELAND CAN & SPECIALTY COMPANY, Rockford, Ill.: Illustrated catalogue of Cans and Tanks for various uses, Sifters, Strainers, Flue Stops, and other tin and sheet iron goods.

ELLER MFG. COMPANY, Canton, Ohio: Special illustrated catalogue of Roofing, Siding, Conductor Pipe, Elbows, Cut-offs, Hangers, Strainers, &c. The catalogue also refers to Cornices, Skylights, Crestings, Finials, Vanes, ornamental work and metal ceilings.

ANDREWS WIRE & IRON WORKS, Rockford, Ill.: Catalogue No. 27, relating to specialties, including Vrooman Sink Strainers, Higgins Flue Stops, Androck Bread Toaster, Androck and Ideal Carpet Beaters.

INVINCIBLE GRAIN CLEANER COMPANY, Silver Creek, N. Y.: Catalogue No. 15, relating to Grain Cleaning Machinery of all kinds; also Bran, Feed, Flour, Cement and Lime Packers, Separators, &c.

KNAPP & SPENCER COMPANY, Sioux City, Iowa: Tenth edition of insert pages for its loose leaf general catalogue.

ALLWIN ICELESS REFRIGERATOR COMPANY, Galesburg, Ill.: Catalogue illustrating and describing an Iceless Refrigerator.

## Requests for Catalogues, Etc.

*The trade is given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.*

**REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate:**

FROM THE KINGMAN HARDWARE COMPANY, Hudson, N. Y., which has been incorporated with a capital of $10,000 to take over the business of R. I. Kingman & Co., handling Shelf Hardware, Stoves, Tinware, Paints, &c., and doing a heating and roofing business.

FROM POPP & FORBES HARDWARE COMPANY, which has opened a Hardware, Stove, Tinware and Sporting Goods store at Waterloo, Iowa.

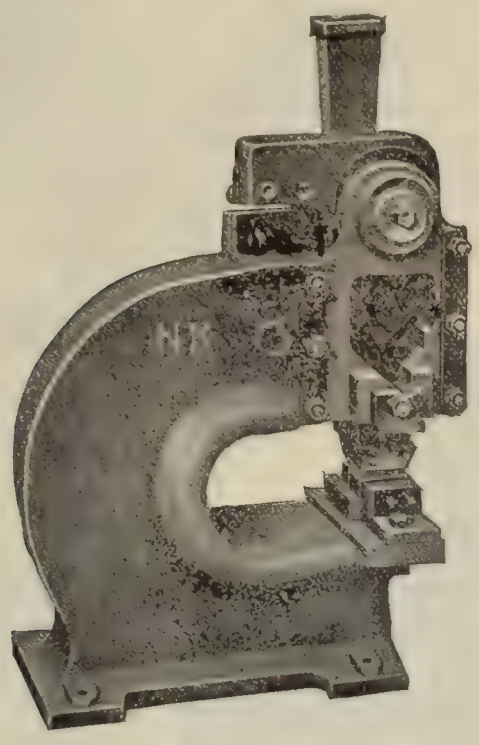
FROM A. B. HENDRICKSON, Ridgeway, Wis., who has bought and remodeled a building into which he has recently moved his Hardware, Stove and Tinware business.

FROM GUTHRIE, BRADLEY & JONES, Sweetwater, Tenn., who are about to add Plumbing Supplies and accessories to their stock of Hardware, Stoves, Implements and Kindred lines.

## S. & S. Combined Punch and Shear.

Schuchardt & Schütte, 136 Liberty street, New York, have put out the S. & S. Punch and Shear, as shown. It is made entirely of forged and cast steel, the saddle is adjustable, and there are two punch sockets so that, by changing position, channel and T iron can be punched close to the web. The cutting capacity for plates and flat bars is as great as 13-32 in., round bars to 25-32 in., squares to 23-32 in. Angles up to 2 x ¼ in. dimensions,

Ts 1 25-32 x 3-16 in. dimensions, and holes may be punched up to ⅝ in. diameters. The body or frame is 8 in. wide at the top, 26 in. high above the floor, and 21 in. from front to back, on a base 8 x 17 in. The lever bar of forged steel, not illustrated, is 77 in. long from shaft center, and is seated in the square socket, where it is keyed to position. The bottom die plate has an ad-



*S. & S. Punch and Shear.*

justability of 1 in. to facilitate the punching of holes close to the web of angle iron. The frame throat is 10 in. deep and 5¾ in. high, capable of accommodating I beam flanges up to 5¾ in. in punching processes. The upper knives for cutting flats have a shearing length of 3½ in., and the knives can be readily removed and replaced as occasion requires. There is a group of 3 round holes for the insertion of rods to be cut, which have a capacity up to 25-32 in. The tool can be sent with or without a sliding gauge in the throat, not shown in the illustration. The weight of the device complete is nearly 300 lb.

## Disston Keyhole Saw and Pad No. 95.

Henry Disston & Sons, Philadelphia, Pa., have added to their line the keyhole saw here illustrated. The blade is 10 in. long, ground thin back, and is firmly held in place by a steel grip inside the handle, tightened by a

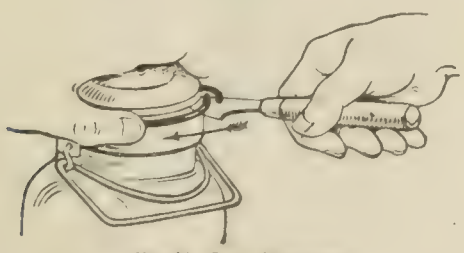


*Disston Keyhole Saw and Pad No. 95.*

thumb screw, which is nickel plated. The handle, which is of hard wood, polished, with nickel plated ferrule, is slotted clear through, permitting the adjustment of the blade, according to the length of the cutting edge required.

## Fruit Jar Opener.

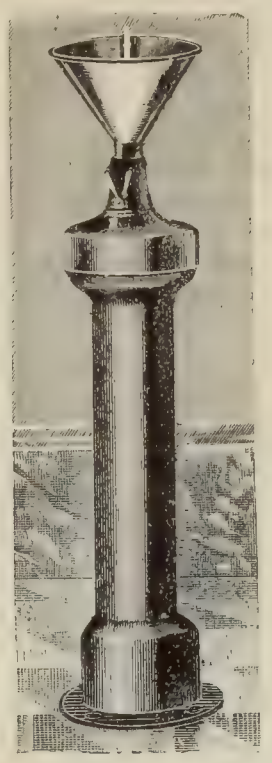
The Perfecto Mfg. Company, 21 Cherry street, Towanda, Pa., is putting on the market the device for



*Fruit Jar Opener.*

opening fruit jars shown in the accompanying illustration. It consists of a wooden handle with wedge shaped blade, to which is riveted a wire ring. The latter is so attached that when the ring is placed over the top of a fruit jar and the blade is pressed in by the rubber band between cover and jar, a pull of the handle exerts a powerful leverage, which starts the cover with ease. It is urged in favor of this opener that it prevents wounding hands, breaking jars and bending knife points, and that it does not injure the rubber bands. Two dozen are packed in a box and 2 gross in a case, which weighs 40 lb.

## Hyde Sanitary Drinking Fountain.



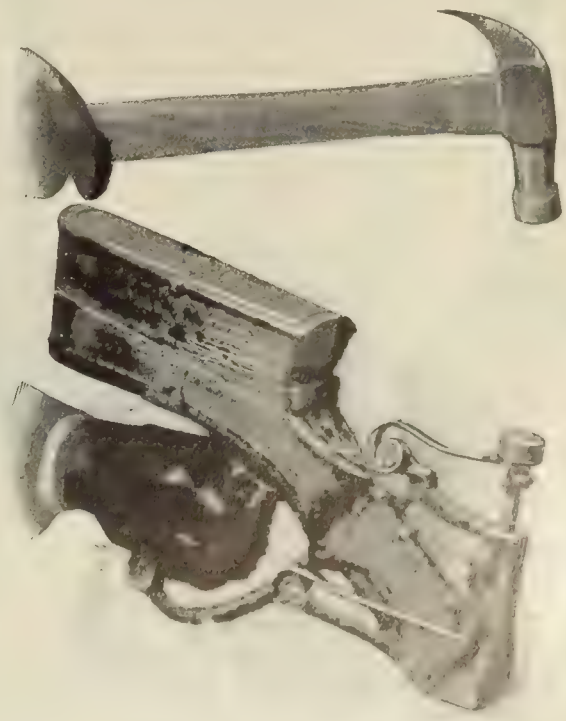
*Hyde Sanitary Drinking Fountain.*

The G. F. Barron Cooler Company, Rochester, N. Y., is the manufacturer of the Hyde sanitary drinking fountain shown in the accompanying illustration. It is so constructed that the lips cannot be placed upon the source of supply, thus preventing contamination from previous drinkers. In order to get a drink it is necessary to press together the rabbit ear faucet, which causes the water to be thrown up in a jet 3 or 4 in. above the bowl. Then the lips are placed over the jet for drinking. When the faucet is let go the water stops. The company states that the fountains are being used with satisfaction in schools and other public places in a number of cities.

WM. GEACH, senior member of the firm of Wm. Geach & Son, Granville, Ohio, died July 2, at the age of 78. He had been active in the Hardware business at Granville for over a quarter of a century.

## Pearson's Improved Nailer.

The Pearson Mfg. Company, Robbinsdale, Minn., is manufacturing the improved Pearson's nailer shown in operation herewith. The frame is made of malleable iron, and the top spring of steel wire. The box or hopper in which the nails are held is made of galvanized iron



*Nailing Machine in Use.*

instead of tin, which, it is explained, makes the machine lighter and stronger. The bottom is put in to a crease or bead inside of the box so that it cannot get loose. The machine is especially useful in shingling, and can be used on a roof of any pitch, as well as on a level surface. With it a workman avoids pounding his fingers and holding dirty nails in his mouth.

## Universal Pot Cover and Anti-Scorcher.

The kitchen utensils herewith illustrated are manufactured by the Beaver Mfg. Company, Beaver, Pa. They

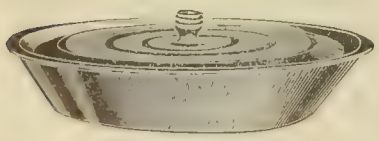


*Fig. 1.—Pot Cover.*

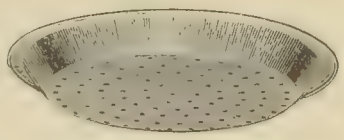


*Fig. 2.—Anti-Scorcher.*

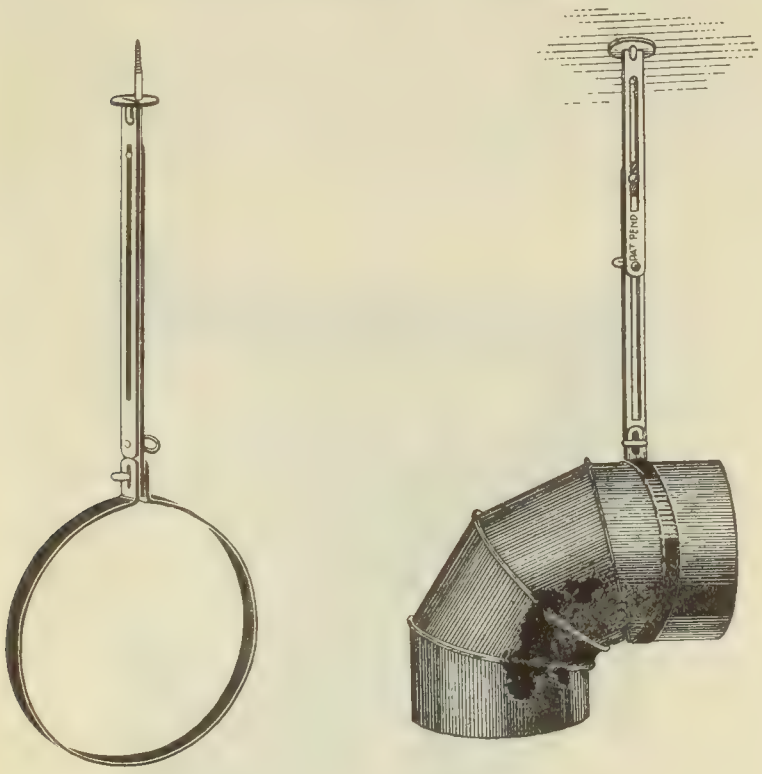
are made of heavy tin and are of good workmanship. The merits of the cover, as pointed out by the manufacturer, are that it will fit from 8 to 11 in. pots, that its large inner space prevents boiling over, and that when it is lifted from the pot the condensation does not drip, but remains within the cone part of the cover. The anti-scorcher prevents food touching the bottom of the cooking utensil, and thus, it is claimed, eliminates all danger of scorching. Pot covers are packed 4 doz. to the crate and anti-scorchers 1 gross to the crate.



*Fig. 3.—Pot Fitted with Cover and Anti-Scorcher.*

## The Gem Stove Pipe Hanger.

The accompanying illustrations show a stove pipe hanger and its application. The device is made in two lengths: No. 1 adjusting from 9 to 14 in., and No. 2 adjusting from 14 to 19 in. A screw at the upper end of the hanger holds it firmly to the ceiling. The arm of the hanger is adjustable, and there is a thumb screw which holds the pipe in place after it has been fixed at the



*The Gem Stove Pipe Hanger.*

desired hight. The band which goes around the pipe elbow is also held firmly by a thumb screw which prevents the pipe getting loose or falling. The band is made to fit 4, 5, 6 or 7 in. pipe. The hanger is made of steel, neatly japanned, and is being put on the market by the Hale Specialty Company, 544 Unity Building, Chicago, Ill.

## Lindström's Swedish Side Cutting Pliers.

Schuchardt & Schütte, 136 Liberty street, New York, are putting on the market Lindström's diagonal and side cutting Swedish pliers, No. 805 L, made in seven sizes, 3 to 6 in., inclusive, by half inches. The pliers are made of the highest quality of Swedish tool steel, are finely polished throughout, and are offered as thoroughly high-grade goods.

## Clark's New Casters.

The Casters shown herewith are put on the market by the George P. Clark Company, Windsor Locks, Conn. The swivel stem caster illustrated in Fig. 1 is strong and durable, and will adapt itself to many places where the regular swivel caster cannot be used. The socket caster shown in Fig. 2 is fitted with hardened steel balls, making it to swivel easily, and is adapted for use on table legs in manufacturing establishments, such as paper, cotton,

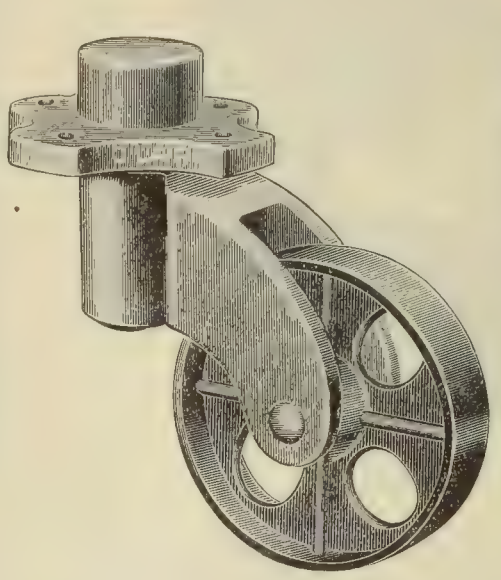


*Fig. 1.—Swivel Stem Plate Caster No. 72.*

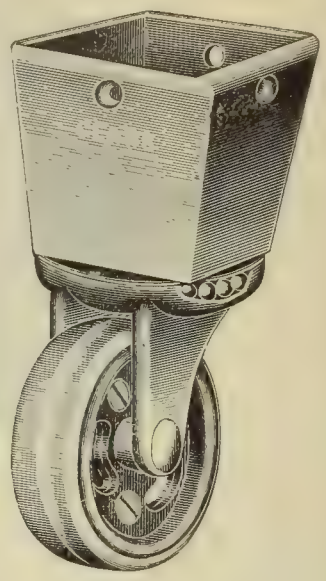
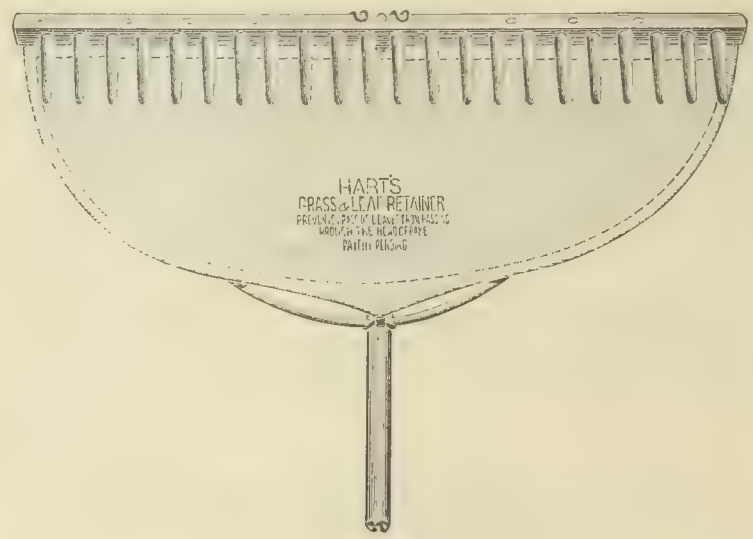


*Fig. 2.—Socket Casters with Rubber Tired Wheels.*

woolen mills, &c., where heavy tables are used and subjected to heavy loads. The caster is not intended for use on tables in private residences owing to its heavy construction. Referring to its No. 60 anti-friction casters the company emphasizes the point that hardened steel balls are used, in distinction to small round steel disks. The two casters illustrated, as well as the No. 60, are fitted either with the company's rubber tired wheels or with plain iron wheels.

## Hart's Lawn Rake Grass Retainer.

The Hart Mfg. Company, Unionville, Conn., is putting on the market the device shown in the accompanying illustration, intended for use in connection with a lawn rake to prevent grass and leaves from passing through the head. It consists of a frame of wire with cloth sewed




*Hart's Grass Retainer on Rake.*

on to it. Attached to the frame are wire snaps which will snap on to a wooden rake head and hold the device in place. The company claims that much time may be saved by the use of its retainer in clearing lawns of cut grass or leaves.

## The Nicholls Automatic Stropper.

The accompanying illustrations relate to an automatic stropping machine adapted for use with Gillette safety razor blades only, and offered by W. H. Nicholls & Co., 69

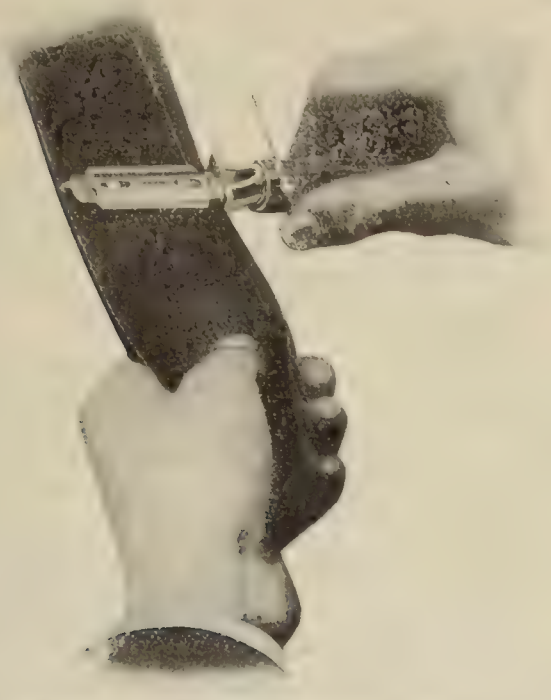


*Fig. 1.—The Nicholls Automatic Stropper.*

Pearl street, Boston, Mass. In Fig. 1 is shown the position of the machine on the strop while Fig. 2 indicates how the machine is held to release the blade. The blade



*Fig. 2.—Removing Blade from Nicholls Stropper.*

seat has two pins which are slotted on both sides near the top. The pins project up through the holes in the blade. When the cap is put on it scores by sliding along into the slots in the pins, thus acting as a key and holding the blade in place. This construction is shown in Fig. 2. In operation the machine, with the blade in position, is placed on the strop ready for the stroke which is given with a slight downward pressure. This brings the end of the handle in contact with the rocking cam, which when in motion imparts to the blade seat a simple rocking movement, throwing the blade against the strop. After a few strokes or so, back and forth, the machine is placed on the strop with the other side up, and the operation continued as before. The quick reverse of the machine from one side to the other is referred to by the manufacturers as an advantage peculiar only to this machine.

## Imp Gasoline Blow Torch.

The Frank Mossberg Company, Attleboro, Mass., has added to its line the blow torch illustrated herewith. Although the device is especially convenient because of its small size, and sells at a low price, yet the company declares that it will do as much work as many larger torches. It is described as simple in construction and




*Imp Gasoline Blow Torch.*

operation, being entirely automatic. No pump or valve are required, the torch being started by the flame of a match applied to the corrugated neck. The corrugation, it is said, increases the heating surface to such an extent that the match easily generates gas enough for starting, after which the mixing tube renders further attention unnecessary. The torch weighs 3½ oz., and burns 2 hours on 4 oz. of gasoline. It is especially recommended for electricians, linemen, painters, repair men, automobilists, and men who do their own repairing.

# PAINTS, OILS AND COLORS

### Animal, Fish and Vegetable Oils—

| | ₱ gal |
|---|---|
| Linseed, State and Western, raw | 41 @42 |
| City, Boiled | 45 @46 |
| City, Raw | 44 @45 |
| Raw Calcutta, in bbls | 70 @.. |
| Lard, Prime, Winter | 68 @69 |
| Extra No. 1 | 54 @56 |
| No. 1 | 47 @52 |
| Cotton-seed, Crude, f.o.b. mill | 32 @35 |
| Summer Yellow, prime | 45½@46 |
| Summer White | 46 @50 |
| Yellow Winter | 46 @49 |
| Tallow, Acidless | 52 @55 |
| Menhaden, Brown, Strained | 38 @.. |
| Southern | @.. |
| Light Strained | 38 @.. |
| Bleached Winter | 40 @.. |
| Ex. Bleached Winter | 42 @.. |

| | ₱ lb |
|---|---|
| Cocoanut, Ceylon | 6¾@6½ |
| Coehin | 7 @7⅛ |
| Cod, Domestic, Prime | 42 @44 |
| Newfoundland | 43 @45 |
| Red Elaine | 39 @41 |
| Saponified | 5¾@5⅞ |
| Olive, Yellow | 67 @69 |
| Neat's-foot, Prime | 55 @58 |
| Palm, Lagos | 5⅝@6 |

### Mineral Oils—

| | ₱ gal. |
|---|---|
| Black 29 gravity, 25@30 cold test | 13 @13½ |
| 29 gravity, 15 cold test | 13½@14 |
| Summer | 12½@13 |
| Cylinder, light filtered | 20½@21 |
| Dark, filtered | 18 @19 |
| Paraffine, 903 sp. gravity | 14½@15 |
| 903 sp. gravity | 13½@14 |
| 885 sp. gravity | 11 @11½ |
| Red | 13½@14 |

### Miscellaneous—

| | |
|---|---|
| Barytes: | |
| White, Foreign | ₱ ton $18.50@20.50 |
| Amer., floated | ₱ ton 18.00@20.00 |
| Off color | ₱ ton 13.00@16.50 |
| Chalk in bulk | ₱ ton 3.00@ 3.10 |
| China Clay, Imported | ₱ ton 11.50@18.00 |

| | ₱ gal. |
|---|---|
| Cobalt, Oxide | ₱ 100 lb 1.45@ 2.60 |
| Whiting, Commercial | ₱ 100 lb .42@ .52 |
| Gilders | ₱ 100 lb .55@ .60 |
| Ex. Gilders | ₱ 100 lb .60@ .65 |

### Putty, Commercial—

| | ₱ 100 lb |
|---|---|
| In bladders | $1.70 @1.80 |
| In bbls. or tubs | 1.20 @1.45 |
| In 1 lb to 5 lb cans | 2.65 @2.35 |
| In 12½ to 50 lb cans | 1.50 @1.90 |

### Spirits Turpentine—

| | ₱ gal. |
|---|---|
| In Oil bbls | 41 @41½ |
| In machine bbls | 41½@42 |

### Glue—

| | ₱ lb |
|---|---|
| Cabinet | 12 @15 |
| Common Bone | 7½@ 9 |
| Extra White | 18 @24 |
| Fish, liquid, 50 gal. bbls., per gallon | 60 @1.20 |
| Foot Stock, White | 12 @14 |
| Foot Stock, Brown | 9 @11 |
| German Common Hide | 10 @12 |
| German Hide | 12 @18 |
| French | 10 @40 |
| Irish | 13 @16 |
| Low Grade | 10 @12 |
| Medium White | 14 @17 |

### Gum Shellac—

| | ₱ lb |
|---|---|
| Bleached, Commercial | 27 @28 |
| Bone Dry | 32 @35 |
| Button | 30 @40 |
| Diamond I | 47 @48 |
| Fine, Orange | 44 @35 |
| A. C. Garnet | 27 @28 |
| G. A. L. | 20 @21 |
| Kala Button | 18 @19 |
| D. C. | 28 @19 |
| Octagon B | 39 @40 |
| T. N. | 28½@30 |
| V. S. O. | 47 @48 |

### Colors in Oil—

| | ₱ lb |
|---|---|
| Black, Lampblack | 12 @14 |
| Blue, Chinese | 36 @46 |
| Blue, Prussian | 32 @36 |
| Blue, Ultramarine | 13 @16 |
| Brown, Vandyke | 11 @14 |
| Green, Chrome | 12 @16 |
| Green, Paris | @24 |
| Sienna, Raw | 12 @15 |
| Sienna, Burnt | 12 @15 |
| Umber, Raw | 11 @14 |
| Umber Burnt | 11 @14 |

### White and Red, Lead &c.—

| | ₱ lb |
|---|---|
| Lead, English white, in Oil | 10⅛@10⅝ |
| Lead, American White: | |
| Dry and in Oil, 100, 250 and 500 lb kegs | 7 |
| Dry and in Oil, 25 and 50 lb kegs | 7¼ |
| Dry and in Oil 12½ lb kegs | 7½ |
| In Oil, 25 lb tin pails | 7½ |
| In Oil, 12½ lb tin pails | 8 |
| In Oil, 1, 2, 3 and 5 lb tin cans, ass't | 9 |
| Red Lead and Litharge: | |
| In 100 lb kegs | 7 |
| In 25 and 50 lb kegs | 7¼ |
| In 12½ lb kegs | 7½ |
| In lots of less than 500 lbs, ½¢ ₱ lb advance over above prices of White and Red Lead and Litharge | |

Lead, American. Terms: On lots of 500 lbs and over, 60 days, or 2 for cash if paid in 15 days from date of invoice.

### Zinc, Dry—

| | ₱ lb |
|---|---|
| American, dry | 5¾@ 5⅞ |
| Red Seal (French process) | 6¾@ 7 |
| Green Seal | 7¼@ 7½ |
| German Red Seal (French process) | 6¼@ 6¾ |
| Green Seal | 7¼@ 7½ |
| White Seal | 7¼@ 8½ |
| French, Red Seal | 8¼@ 8¾ |
| Green Seal | 10¼@10½ |

### Dry Colors—

| | ₱ lb |
|---|---|
| Black Carbon | 6½@10 |
| Black Drop, American | 3½@ 8 |
| Black Drop, English | 5 @15 |
| Black, Ivory | 16 @20 |
| Lamp, commercial | 4 @ 6 |
| Blue, Celestial | 4 @ 6 |
| Blue, Chinese | 31 @35 |
| Blue, Prussian | 29 @31 |
| Blue, Ultramarine | 3½@15 |
| Brown, Spanish | ½@ 1 |
| Carmine, No. 40 | $3 10@3 25 |
| Green, Chrome, ordinary | 3½@ 5 |
| Green, Chrome, pure | 17 @25 |
| Ocher, American | ₱ ton $8.50@16.00 |
| American Golden | 2½@ 3¼ |
| French | 1¼@ 2 |
| Foreign Golden | 3 @ 4 |
| Orange Mineral English | 10 @12 |
| French | 12 @15 |
| German | 5 @ 7 |
| American | 9 @10 |
| Red, Indian, English | 5 @ 6 |
| American | @ ¼ |
| Red, Turkey, English | 4 @ ½ |
| Red, Turkey, French | 7 @10 |
| Red, Venetian, American | .75@1.25 |
| English | .75@1.60 |
| Sienna, Italian, Imported Powdered | 3 @ 9 |
| Italian, Ground | 5 @ 7 |
| American, Raw | 1½@ 2 |
| American Burnt and Powd. | 1½@ 2 |
| Talc, French | ₱ ton $15.00@ .00 |
| American | ₱ ton .00@ .00 |
| Terra Alba, French | ₱ 100 lb .90@1.00 |
| English | ₱ 100 lb 8.00@1.00 |
| American | ₱ 100 lb, No. 1, .75@ .80 |
| American | ₱ 100 lb, No. 2, .60@ .65 |
| Umber, Turkey, Burnt, & Powd. | 2¾@ 3 |
| Turkey, Raw and Powdered | 2½@ 3 |
| Burnt, American | 1½@ 2 |
| Raw, American | 1½@ 2 |
| Yellow, Chrome, Pure | 13¾@15 |
| Vermilion, American Lead | 7 @25 |
| Quicksilver, bulk | 65 @.. |
| Quicksilver, bags | @66 |
| English, Imported | 65 @70 |
| Chinese | $0.90@1.00 |

# Current Hardware Prices

**General Goods.**—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

**Special Goods.**—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

**Range of Prices.**—A range of prices is indicated by means of the symbol @. Thus 33⅓ @ 33⅓ & 10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

**Names of Manufacturers.**—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1907, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

**Standard Lists.**—"The Iron Age Standard Hardware Lists" contains the list prices of many leading goods.

**Additions and Corrections.**—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

## Adjusters, Blind—

Columbian and Domestic.....33⅓%
North's .....10%
Zimmerman's See Fasteners, Blind.

### Window Stop—

Ives' Patent.....35%
Taplin's Perfection.....35%

## Ammunition—See *Caps, Cartridges, Shells, &c.*

## Anti-Rattlers—

Fernald Mfg. Co. Burton Anti-Rattlers, ₱ doz. pairs, Nos. 1, $0.75; 2, $0.60; 4, $1.00; 5, $0.50.
Fernald Quick Shifter, ₱ doz. pairs .....$2.00@$3.00

## Anvils—American—

Eagle Anvils.....₱ lb @8½¢
Hay-Budden, Wrought.....9½@9¾¢
Trenton .....₱ lb 9½@9¾¢

### Imported—

Swedish Solid Steel Sisco, Superior, ₱ lb.....10@10½¢
Peter Wright & Sons, ₱ lb. 84 to 349 lb. 11¢; 350 to 600 lb. 11½¢.

## Anvil, Vice and Drill—

Millers Falls Co., $18.00.....15&10%

## Apple Parers—See *Parers, Apple, &c.*

## Aprons, Blacksmiths'—

Livingston Nail Co.....10%

## Augers and Bits—

*Com. Double Spur....75&10@80%*
*Jennings' Patn., Bright.65&10@70%*
*Black Lip or Blued...65@65&5%*
*Boring Mach. Augers.....70%*
*Car Bits, 12-in. twist.....40&10%*
Ford's Auger and Car Bits.....40&5%
Ft. Washington Auger Co., Conard's .....35%
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip. R. Jennings' list, 25&7½%
No. 30, R. Jennings' list.....50%
Russell Jennings'.....25&10&2½%
L'Hommedieu Car Bits.....15%
Mayhew's Countersink Bits.....45%
Pugh's Black.....20%
Pugh's Jennings' Pattern.....35%
Snell's Auger Bits.....60%
Snell's Bell Hangers' Bits.....60%
Snell's Car Bits, 12-in. twist.....60%
Snell's King Auger Bits.....50%
Wright's Jennings' Bits.....50%

## Bit Stock Drills—

See *Drills, Twist.*

## Expansive Bits—

Clark's Pattern, No. 1, ₱ doz., $26; No. 2, $18.....60&10%
Ford's, Clark's Pattern.....66⅔&5%
C. E. Jennings & Co., Steer's Pat..25%
Lavigne Pat., small size, $18.00; large size, $26.00.....60&10%
Swan's .....60%

## Gimlet Bits—

*Per gro.*
*Common Dbl. Cut.....$3.00@3.25*
*German Pattern, Nos. 1 to 10, $4.75; 11 to 13, $5.75*

## Hollow Augers—

*Bonney Pat., per doz..$5.50@6.00*
Ames .....25&10
Universal .....20

## Ship Augers and Bits—

*Ship Augers.....40&10@—%*
Ford's .....33⅓&5%
C. E. Jennings & Co.:
L'Hommedieu's .....6
Wetmore's .....33⅓&5%
Snell's .....48%

## Awl Hafts—See *Handles, Mechanics' Tool.*

## Awls—

*Brad Awls:*
*Handled .....gro. $2.75@3.00*
*Shielded Shildered...gro.63@66¢*
*Shielded Patent...gro.66@70¢*
*Saddlers':*
*Unhandled, Patent...gro. 31@34¢*
*Unhdld., Shildered...gro. 65@70¢*
*Scratch Awls:*
*Handled, Com...gro. $3.50@4.00*
*Handled, Socket..gro.$11.50@12.00*

## Awl and Tool Sets—See *Sets, Awl and Tool.*

## Axes—

*Single Bit, base weights: Per doz.*
*First Quality.....$4.75@5.00*
*Second Quality.....$4.25@4.50*
*Double Bit, base weights:*
*First Quality.....$7.00@7.50*
*Second Quality.....$6.50@6.75*

## Axle Grease—

See *Grease, Axle.*

## Axles—Iron or Steel.

*Concord, Loose Collar...4¼@4½¢*
*Concord, Solid Collar....4½&5¢*
*No. 1 Common, Loose...3½@4¢*
*No. 1½ Com., New Style.4¼@4¾¢*
*No. 2 Solid Collar.....4¼@4¾¢*
*Half Patent:*
*Nos. 7, 8, 11 and 12.....70%*
*Nos. 13 to 17.....70%*
*Nos. 15 to 18...70&10@70&10&5%*
*Nos. 19 to 22...70&10@70&10&5%*

## Boxes, Axles—

*Common and Concord, not turned .....lb., 5@6¢*
*Common and Concord, turned, lb., 6@7¢*
*Half Patent.....lb., 9½@10¢*

## Bait—Fishing—

Hendryx:
A Bait.....20%
B Bait.....25%
Competitor Bait.....20&5%

## Balances—Sash—

Caldwell new list.....50&5%
Pullman .....50&5%

## Spring—

*Light Spring Balances.60@60&5%*
Chatillon's:
Light Spg. Balances.....50@50&10%
Straight Balances.....40@40&10%
Circular Balances.....50&10%
Large Dial.....30%

## Barb Wire—See *Wire, Barb.*

## Bars—Crow—

*Steel Crowbars, 10 to 40 lb.... per lb., 2¼@2⅜¢*

## Towel—

No. 10 Ideal, Nickel Plate..₱ gro. $8.50

## Beam, Scale—

*Scale Beams.....40%*
Chattillon's No. 1.....30%
Chatillon's No. 2.....40%

## Beaters, Carpet—

Holt-Lyon Co.:
No. 12 Wire Coppered ₱ doz. $0.80; Tinned .....$0.85
No. 11 Wire Coppered ₱ doz. $1.15; Tinned .....$1.20
No. 10 Wire Tinned.....₱ doz. $1.50

## Beaters Egg—

Dover Stamping & Mfg. Co.:
Genuine Dover, per gro., No. 1, Tumbler Size, $7.50; No. 2, Family Size, $7.50; No. 3, Extra Family Size, $24.00; No. 4, Hotel Size, $30.00.
Holt-Lyon Co.:
Holt, per doz., No. 5, Jap'd $0.80; No. A, Jap'd, $1.15; No. B, Jap'd, $1.85; No. 6, Jap'd, $1.65.
Lyon, Jap'd, per doz., No. 2, $1.35
Taplin Mfg. Co.:
Improved Dover, per gro., No. 60, $6.00; No. 75, $6.50; No. 100, $7.00; No. 102, Tin'd, $8.50; No. 150, Hotel, $15.00; No. 152, Hotel Tin'd, $17.00; No. 200, Tumbler, $8.50; No. 202, Tumbler Tin'd, $9.50; No. 300, Mammoth, per doz., $25.00.

## Bellows—

*Blacksmith, Standard List:*
*Split Leather.....60&10@65%*
*Grain Leather.....50@50&10%*

### Hand—

| Inch.. | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|
| Doz.. | $5.00 | 5.50 | 6.00 | 6.50 | 7.50 |

### Molders—

| Inch.. | 10 | 12 | 14 | 16 |
|---|---|---|---|---|
| Doz.. | $7.50 | 9.00 | 12.00 | 15.00 |

Net Prices.

## Bells—Cow—

*Wrought Cow Bells.....75%*
Jersey .....75&10
Texas Star .....50

### Door—

Home, R. & E. Mfg. Co.'s.....55&10%

### Hand—

*Polished, Brass.....60@60&10%*
*White Metal.....60@60&10%*
*Nickel Plated.....50&10%*
*Swiss .....50&10%*
Cone's Globe Hand Bells.....33⅓@35%

### Miscellaneous—

*Farm Bells.....lb., 2¼@2½¢*
*Church and School....60@60&10%*

## Belting—Leather—

*Standard .....70&10@70&10&5%*
*Light .....75&10%*
*Cut Leather Lacing..60@60&10%*
*Leather Lacing Sides, per sq. ft. 20¢*

### Rubber—

*Competition (Low Grade), 70&10@75%*
*Standard .....60&10@70%*
*Best Grades.....40@50%*

## Bench Stops—

See *Stops, Bench*

## Benders and Upsetters, Tire—

Green River Tire Benders and Upsetters .....20%

## Bicycle Goods—

John S. Leng's Son & Co.'s 1907 list:
Chain, Parts, Spokes.....50%
Tubes .....60%

## Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

## Blocks Tackle—

*Common Wooden.....75@75&5%*
B. & L. B. Co.:
Boston Wood Snatch, 50%; Eclipse Steel, 75%; Hollow Steel, 50&10%; Star Wire Rope, 50%; Tarbox Metal Snatch, 50%; Tarbox New Style Steel, 50&10%; Wire Rope Snatch, 50%.
Lane's Patent Automatic Lock and Junior .....30%
See also Machines, Hoisting.

## Boards, Stove—

*Paper and Wood Lined.....55%*
*Embossed .....55%*

## Boards, Wash—

See *Washboards.*

## Bobs, Plumb—

Keuffel & Esser Co.....33⅓%

## Bolts Carriage, Machine, &c.—

*Common Carriage (cut thread):*
*⅜ x 6 and smaller..75&5@—%*
*Larger and longer.....70@—%*
*Phila. Eagle, $3.00 list...80@—%*
*Bolt Ends.....70@—%*
*Machine (Cut Thread):*
*⅜ x 4 and smaller..75&10@—%*
*Larger and longer.....70@—%*

## Door and Shutter—

*Cast Iron Barrel, Japanned, Round Brass Knobs:*

| Inch | 3 | 4 | 5 | 6 | 8 |
|---|---|---|---|---|---|
| Per doz.. | $0.30 | .35 | .45 | .60 | .80 |

*Cast Iron Spring Foot, Jap'd:*

| Inch | 6 | 8 | 10 |
|---|---|---|---|
| Per doz. | $1.20 | 1.50 | 2.25 |

*Cast Iron Chain, Flat, Japanned:*

| Inch | 6 | 8 | 10 |
|---|---|---|---|
| Per doz. | $1.00 | 1.40 | 1.65 |

*Cast Iron Flat Shutter, Jap'd. Brass Knobs:*

| Inch | 6 | 8 | 10 |
|---|---|---|---|
| Per doz. | $0.75 | .95 | 1.25 |

*Wrought Barrel Japanned. 80&10@80&10&5%*
*Barrel Bronzed.....60&10%*
*Spring .....70&10@70&10&10%*
*Shutter .....50&5@50&10&5%*
*Square Neck.....75@75&10%*
*Square .....70&10&10@80%*
Ives' Patent Door .....55
Ives' Wrought Metal.....45

## Expansion—

F. H. Evans' Crescent.....10@60%
Richards Mfg. Co.....55&10%
Steward & Romain Mfg. Co.:
Style No. 13 Double.....60%
Style No. 1, Single.....60%
Style No. 100, Dbl. Law, Single..55%
Lag Screw.....66⅔%

### Plow and Stove—

*Plow .....65&5@70%*
*Stove .....85@85&5%*

### Tire—

*Common Iron.....80@80&5%*
*Norway Iron.....80@80&5%*
American Screw Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84...82½%
Bay State, list Dec. 28, '99.....80%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84...82½%
Eclipse, list Dec. 28, '99.....80%
Russell, Burdsall & Ward Bolt & Nut Co.:
Empire, list Dec. 28, '99.....80%
Norway Phila., list Oct. '84.....80%
Eagle .....82½%
Shelton Co.:
Tiger Brand, list Dec. 28, '99....80%
Phila., Eagle, list Oct. 16, 1884..82½%
Upson Nut Co.:
Tire Bolts.....72½%

## Borers, Bung—

*Borers Bung, Ring, with Handle:*

| Inch..... | 1¼ | 1½ | 1¾ | 2 |
|---|---|---|---|---|
| Per doz... | $4.80 | 5.60 | 6.40 | 8.00 |
| Inch..... | | 2¼ | | 2½ |
| Per doz..... | | $8.65 | | 11.50 |

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.75; No. 3, $2.50 each.....25%

## Boxes, Mitre—

C. E. Jennings & Co.....25%
Langdon, New Langdon and Langdon Improved, 20&10%; Langdon Acme .....15&10%
Perfection .....40%
Seavey .....45%

## Braces—

*Comman Ball, American....$1.50*
Barber's .....50&10&10@60&10%
Fray's Genuine Spofford's.....60%
Fray's No. 61, 166, 206, 614.....50%
C. E. Jennings & Co.....50&5%
Mayhew's Ratchet.....60%
Mayhew's Quick Action Hay Pat..50%
Millers Falls Drill Braces.....25&10%
P., S. & W. Co., Peck's Pat....60&10%

## Brackets—

*Wrought Steel..75&10@75&10&10%*
Bradley Metal Clasp...80&10@80&10&5%
Griffin's Pressed Steel.....75@75&10%
Griffin's Folding Brackets.....70&10%
Taplin Victor Handy Egg Beater Bracket .....₱ doz. $1.50

## Bright Wire Goods—

See *Wire and Wire Goods.*

## Broilers—

Kilbourne Mfg. Co.....75&20%
Wire Goods Co.....75%

## Buckets, Galvanized—

*M'fr's list, price per gross.* — *10&7½&5&5%*

| Quart.. | 10 | 12 | 14 |
|---|---|---|---|
| Water, Reg... | 26.85 | 29.50 | 33.50 |
| Water, Hvy... | 45.35 | 48.00 | 52.00 |
| Fire, Rd. Btm.. | 32.00 | 34.65 | 38.65 |
| Well ..... | 37.35 | 41.35 | 45.35 |

## Bull Rings—See *Rings, Bull.*

## Butts—Brass—

*Wrought, High List, Oct. 26, '06.55%*
Cast Brass, Tiebout's.....40%

### Cast Iron—

*Fast Joint, Broad....40&10@50%*
*Fast Joint, Narrow...40&10@50%*
*Loose Joint.....70&10@75%*
*Loose Pin.....70&10@75%*
*Mayer's Hinges.....70@70&5*
*Parliament Butts.....70@70&5*

### Wrought Steel—

*Bright.*
*Light Narrow, Light Reversible .....70&5%*
*Reversible and Broad..70&5%*
*Loose Joint, Narrow, Light Inside Blind, &c.....70%*
*Back Flaps, Table Chest.65%*
*Japanned.*
*Light Narrow, Loose Pin. 40&5%*
*Light Narrow, Ball Tip..60%*
*Broad .....40&5%*
*Steeple Tipped.....70%*
*Ball Tipped.....70%*

*Extra, 10@—*

## Cages, Bird—

Hendryx Brass: Series 3000, 5100, 1100, net list; 1200, 15%; 200, 300, 900 .....30%
Hendryx Bronze: Series 700, 800....30
Hendryx Enameled.....35

## Calipers—See *Compasses.*

## Calks, Toe and Heel—

*Blunt, 1 prong, per lb.....½@7½¢*
*Sharp, 1 prong, per lb...7½@8¢*
Burke's, Blunt, 4@4¼¢; Sharp, 4½@4¾¢
Lautier, Blunt, 4@4¼¢; Sharp, 4½@4¾¢
Perkins', Blunt, ₱ lb, 3.65¢; Sharp, 4.15¢

## Can Openers—

See *Openers, Can.*

## Caps, Percussion—

*Eley's E. B.....52@55¢*
*G. D.....per M 34@35¢*
*F. L.....per M 40@42¢*
*G. E.....per M 48@50¢*
*Musket.....per M 62@63¢*

### Primers—

*Berdan Primers, $2 per M..20&5%*
*Primer Shells and Bullets..15&10%*
*All other primers per M..$1.52@1.60*

## Carpet Stretchers—

See *Stretchers, Carpet.*

## Cartridges—

*Blank Cartridges:*
*32 C. F., $5.50.....10&5%*
*38 C. F., $7.00.....10&5%*
*22 cal. Rim, $1.50.....10&5%*
*32 cal. Rim, $2.75.....10&5%*
*B. B. Caps, Con. Ball, Swgd..$1.90*
*B. B. Caps, Round Ball.....$1.49*
*Central Fire.....25%*
*Target and Sporting Rifle..15&5%*
*Primed Shells and Bullets..15&10%*
*Rim Fire, Sporting.....50%*
*Rim Fire, Military.....15&5%*

## Casters—

*Bed.....65&10@70%*
*Plate.....60&5@60&10%*
*Philadelphia.....70&1 @75%*
Acme, Ball Bearing.....35
Gem (Roller Bearing).....70&10&10&5
Steel Gem.....50%
Standard Ball Bearing.....45
Yale (Double Wheel) low list...40&10%

## Cattle Leaders—

See *Leaders, Cattle.*

## Chain, Proof Coil—

*American Coil, Straight Link:*

| 3/16 | 1/4 | 5-16 | 3/8 | 7-16 | 1/2 | 5/8 |
|---|---|---|---|---|---|---|
| $8.15 | 5.55 | 4.60 | 3.95 | 3.75 | 3.65 | 3.55 |

3/4-7/8-1 1⅛ to 1¼ inch.
$3.45 3.55

*In cask lots, deduct 25¢.*
*German Coil.....60@60&5%*
*German Pattern Coil:*
*6-0 to 1.....70&5@70&10%*
*2 and 3..60&10&10@60&10&10&5%*
*4, 5 and 6.....50&10@50&10&5%*

### Halter—

*Halter Chains.....60&5@60&10%*
*German Pattern Halter Chains list July 24, '97....60&10&5@70%*
Covert Mfg. Co.:
Halter .....35&5%

### Cow Ties—

See *Halters and Ties.*

## Trace, Wagon, &c.—

*Traces, Western Standard: 100 pr.*
*6½—6-3, Straight, with ring..$28.00*
*6½—6-2, Straight, with ring..$29.00*
*6½—8-2, Straight, with ring..$32.00*
*6½—10-2, Str'ght, with ring..$37.00*

*NOTE.—Add 2c per pair for Hooks Twist Traces; add per pair for Nos. 2 and 3, 2c: No. 1, 3c; No. 0, 4c to price of Straight Link.*

*Eastern Standard Traces, Wagon Chain, &c...60&10@60&10&5%*

### Miscellaneous—

*Jack Chain, list July 10, '93:*
*Iron.....60&10&7½%*
*Brass.....65%*
*Safety and Plumbers' Chain..75%*
*Gal. Pump Chain....lb., 4½@5%*
Bridgeport Chain Co.:
Triumph Halter and Coil.35&2½@40
Triumph Dog.....50&10@60%
Brown Halter and Coil....45@50&5%
Covert Mfg. Co.:
Breast, Halter, Heel, Rein, Stallion .....40%
Oneida Community:
American Halter, Dog and Kennel Chains .....35&2½@40%
Niagara Dog Leads and Kennel Chains .....45@50&5%
Wire Goods Co.:
Dog Chain.....70%
Universal Dbl.-Jointed Chain.....50%

## Chain and Ribbon, Sash—

Oneida Community:
Steel Chain.....60%
Pullman:
Bronze Chain, 60%; Steel Chain, Coppered .....60&10%
Sash Chain Attachments, per set..8¢
Aluminoy Sash Ribbon, per 100 ft .....$2.00@$5.00
Sash Ribbon Attachments, per set..8¢

## Chalk—(From Jobbers.)

*Carpenters' Blue.....gro., 50¢*
*Carpenters' Red.....gro., 45¢*
*Carpenters' White.....gro., 40¢*

## Checks, Door—

Brinsley's .....45%
Pullman, per gro.....$54.00
Russwin .....33⅓%

## Chests, Tool—

American Tool Chest Co.:
Boys' Chests, with Tools.....55
Youths' Chests, with Tools.....40
Gentlemen's Chests, with Tools..30
Farmers', Carpenters, etc., Chests, with Tools .....20
Machinists' and Pipe Fitters' Chests, Empty.....45
Tool Cabinets.....15
C. E. Jennings & Co.'s Machinists' Tool Chests.....7½%

## Chisels—

### Socket Framing and Firmer

*Standard List.....80&10@—%*
Buck Bros.....30%
C. E. Jennings & Co.:
Socket Firmer No. 10.....25&7½%
Socket Framing No. 15.....25&7½%
Swan's .....66⅔@70
L. & I. J. White & Co.....30@30&5%

### Tanged—

*Tanged Firmers.....30&5@35%*
Buck Bros.....30%
C. E. Jennings & Co. Nos. 191, 181..25%
L. & I. J. White Co.....25&5%

### Cold—

*lb.*
*Cold Chisels, good quality..13@15¢*
*Cold Chisels, fair quality..11@12¢*
*Cold Chisels, ordinary....9@10¢*

## Chucks—

Almond Drill Chucks.....35%
Almond Turret Six-Tool Chuck.....40
Beach Pat, each $8.00.....35&5
Empire .....25
Blacksmiths' .....25
Jacobs' Drill Chucks.....35%
Pratt's Positive Drive.....25
Skinner Patent Chucks:
Independent Lathe Chucks.....35%
Universal, Reversible Jaws.....35
Combination, Reversible Jaws....35
Drill Chucks, New Model, 25%; Standard, 45%; Skinner Pat. 25%; Positive Drive.....40%
Planer Chucks.....20
Face Plate Jaws.....35%
Standard Tool Co.:
Improved Drill Chuck.....45%
Union Mfg. Co.:
Combination, Nos. 1, 2, 3, 4, 5, 6, 7, 8 and 17, 40%; No. 21.....35%
Scroll Combinations, Nos. 83 and 84 .....30%
Geared Scroll, Nos. 33, 34 and 35..25%
Independent Iron, Nos. 18 and 318..35%
Independent Steel, No. 64.....25%
Union Drill, Nos. 000, 00, 100, 101, 102, 103, 104.....35%
Union Czar Drill.....25%
Universal, 11, 12, 16, 17, 13, 14, 15..40%
Universal No. 42.....35%
Iron Face Plate Jaws, Nos. 28, 30, 48 and 50.....35%
Steel Face Plate Jaws, Nos. 70 and 72 .....30%
Westcott Patent Chucks:
Lathe Chucks.....50%
Little Giant Auxiliary Drill.....50%
Little Giant Double Grip Drill...50%
Little Giant Drill, Improved.....50%
Oneida Drill.....50%
Scroll Combination Lathe.....50%
Whitaker Mfg. Co.:
National Drill.....25%

## Clamps—

Adjustable Hammers.....20@20&5%
Carriage Makers', P., S. & W. Co. .....50&10%
Besly, Parallel.....33⅓&10%
Myers' Hay Rack.....45%
Lineman's Swedish Neverturn.....65%
Wood Workers' Hammers.....40&10%
Saw Clamps, see Vises, Saw Filers'

## Cleaners, Drain,

Iwan's Champion, Adjustable.....50%
Iwan's Champion, Stationary.....40%

### Sidewalk—

Star Socket. All Steel..₱ doz. $4.05 net
Star Shank. All Steel..₱ doz, $3.24 net
W. & C. Shank. All Steel, ₱ doz., 7½ in., $3.00; 8 in., $3.25.

## Cleavers, Butchers'—

Foster Bros.....30%
Fayette R. Plumb.....30
L. & I. J. White Co.....30

## Clippers, Horse and Sheep—

Chicago Flexible Shaft Co.:
1902 Chicago Horse, each..$10.75
20th Century Horse, each...$5.00
Lightning Belt Horse, each.$15.00
Chicago Belt Horse, each..$20.00
Stewart's Enclosed Gear Horse each.....$6.75
Stewart's Patent Sheep Shearing Machine, each.....$12.75
Stewart Enclosed Gear Shearing Machine, No. 8, each..$9.75

## Clips, Axle—

*Regular Styles, list July 1, '05. 80&80&10%*

## Cloth and Netting, wire—See *Wire, &c.*

## Cocks, Brass—

*Hardware list:*
*Plain Bibbs, Globe, Kerosene, Racking, Liquor, Bottling, &c .....75%*
*Compression Bibbs.....70%*

## Coffee Mills—

See *Mills, Coffee.*

## Collars, Dog—

Nickel Chain, Walter B. Stevens & Son's list .....40%
Leather, Walter B. Stevens & Son's list .....40%

## Compasses, Dividers, &c.

*Ordinary Goods.....70&10@75%*

## Conductor Pipe,—

*L. C. L. to Dealers:*

| | Gal. Steel. | Charcoal. |
|---|---|---|
| *Northeastern* | 70&10% | 50&10&7½% |
| *Eastern* | 75% | 50&10&7½% |
| *Pittsburgh* | 75&10&5% | 60% |
| *Central* | 75&10% | 60% |
| *Northwestern,* | 75&7½% | 60% |
| *Western* | 70&12½% | 50&12½% |
| *Tennessee* | 70&10% | 50&12½% |
| *Southern* | 70% | 50&12½% |
| *Southwestern.* | 70% | 50&5% |

*Terms, 60 days: 2% cash 10 days. Factory shipments generally delivered.*
See also Eave Troughs.

## Coolers, Water—

L. & G. Mfg. Co.:

| Gal. | 2 | 3 | 4 | 6 | 8 |
|---|---|---|---|---|---|
| Galvanized, ea. | $1.85 | $2.00 | $2.25 | $2.90 | $3.90 |

Galvanized, Lined, side handles,

| Gal. | 2 | 3 | 4 | 6 | 8 |
|---|---|---|---|---|---|
| Each | $1.95 | $2.15 | $2.40 | $3.30 | $4.15 |

White Enameled.....10%
Agate Lined.....10%

## Coppers' Tools—

See *Tools, Coopers'.*

## Coppers, Soldering—

*Soldering Coppers, 3 lb. to pair and heavier, 20¢; lighter than 3 lb. to pair.....22¢*

### Cord—Sash—

*Braided, Drab.....lb. 35¢*
*Braided, White, Com., Nos. 8 to 12, 20¢; No. 7, 20½¢; No. 6, 21½¢. In lots of 12 doz. or over, 1 cent less per pound.*
*Cable Laid Italian, lb., No. 18..37¢*
*Italian, lb., A, No. 18, 25¢; B, 22¢*
*Common India.....lb., 11@11½¢*
*Cotton Sash Cord, Tw'ted..18@20¢*
*Patent Russia.....lb....20¢*
*Cable Laid Russia.....lb...21¢*
*India Hemp, Br'd'd.....lb...21¢*
*India Hemp, Twisted...lb..13@14¢*
*Patent India, Twisted..lb...17¢*
Pearl Braided, cotton, No. 6, ₱ lb. 27½¢; No. 7, 26½¢; Nos. 8 to 12, 26¢
Eddystone Braided, Nos. 8 to 12, 26¢; 7, 26½; 6, 27½¢.
Harmony Cable Laid Italian, Nos. 7 to10.....₱ lb 23¢
Pullman:
Wire Sash Cord.....10
Sash Cord Attachments, per 100..$2.00
Samson, Nos. 8 to 12:
Braided, ₱ lb., Drab Cotton, 55¢; Italian Hemp, 40¢@50¢; Linen, 65¢; White Cotton, 50¢; Spot Cord.....50¢ } 15%
Massachusetts, White...₱ lb 40¢ } 15%
Massachusetts, Drab...₱ lb 45¢ } 15%
Phoenix, White, Nos 8 to 12....27¢
Silver Lake, per lb.:
A, Drab, 45¢; A, White, 40¢; B, Drab, 40¢; B, White, 35¢; Italian Hemp, 40¢; Linen....57½¢
See also Chain and Ribbon.

### Wire, Picture—

*Full Length.....90@—%*
*Short Length.....90&20@—%*
Hendryx Standard Wire Picture Cord, old list, 85&10
Turner & Stanton Co. Wire Picture Cord .....90

## Cradles—

*Grain.....50%*

## Crayons—

*White Round Crayons, Cases, 100 gro., $8.00, $8.50 and $9.00 according to grade.*
Zelnicker's Lumber: ₱ gro.
White and Purple, Indelible....$7.50
Blue, Red, Green, Yellow and Terra Cotta, $6.50; Black.....$4.50
Giant Lumber, 5¼ in. x 15-16 in. round, all colors, $12.00; Indelibles, $14.00; Blacks.....$10.00
Genuine Soapstone, Metal Workers', 5 in. x ¼ in. Round, $2.50; 5 in. x ¼ in. Square, $1.75; 5 x ½ x 3-16, $2.50; 5 x 1¼ x 3-16.....$3.00
Suremark, Black, $2.25; Blue, Red and Yellow.....$2.50

## Crooks, Shepperds'—

Fort Madison, per doz., Heavy, $5.50; Light .....$5.00

## Crow Bars—See *Bars, Crow.*

## Cultivators—

Victor Garden.....50

## Cutlery, Table—

International Silver Company:
No. 12 M'd'm Knives, 1847, ₱ doz. $3.50
Star, Eagle, Rogers & Hamilton and Anchor.....₱ doz. $3.10
Wm. Rogers & Son.....₱ doz. $2.50

### Cutters—Glass—

H. H. Mayhew Co.....10
Red Devil .....60
B. Mfg. Co.....40
Woodward .....50

### Meat and Food—

American .....30%

| Nos. | 401 | 402 | 403 | 404 | 405 | 406 | 407 |
|---|---|---|---|---|---|---|---|
| Each | $5 | $7 | $10 | $12 | $25 | $50 | $60 |

Enterprise:

| Nos. | 5 | 10 | 12 | 22 | 32 | |
|---|---|---|---|---|---|---|
| Each | $2 | $3 | $2.75 | $1.50 | $6 | 25@25&5% |
| No. | 202 | $1.50 | | | | 40&5 |

P., S. & W. Co.:
Dixon's .....₱ doz 33⅓

| Nos. | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| | $14.00 | $17.00 | $19.00 | $30.00 |

Ideal .....40@40&5
Hales .....60&10&5
Little Giant.....₱ doz. 40@50%

| Nos | 305 | 310 | 312 | 320 | 322 |
|---|---|---|---|---|---|
| | $35.00 | $48.00 | $44.00 | $72.00 | $68.00 |

New Triumph No. 605, ₱ doz. $24.00, 10&10
Russwin Food, No. 1, $21.00; No. 2, $27.00 .....45&10&10

| | $15.00 | $18.00 |
|---|---|---|

Enterprise Beef Shavers.....25@30

### Slaw and Kraut—

Henry Disston & Sons:
Slaw and Kraut Cutters.....35%
Corn Graters.....30%
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife....₱ doz $3.00
Combined Slaw Cutter and Corn Grater .....₱ doz. $4.00

### Tobacco—

*All Iron, Cheap...doz. $4.25@4.50*
Enterprise .....25@30%
National, ₱ doz., No. 1, $21; No. 2, $18 .....40%

## Diggers, Post Hole, &c—

Disston's:
Rapid, ₱ doz., $24.00.....25%
Samson, ₱ doz., $34.00.....25%
Iwan's Imp'ved Post Hole Auger..40%
Vaughan Pattern Post Hole Augers, ₱ doz., $7.00
Perfection Post Hole Diggers, ₱ doz. .....$8.75
Split Handle Post Hole Diggers, ₱ doz., $7.75
Hercules Pattern, ₱ doz.....$10.00
Kohler's, ₱ doz., Universal, $15.00; Little Giant, $12.00; Hercules, $10.00; Invincible, $9.00; Rival, $8.50; Pioneer.....$7.50
Never-Break Post Hole Diggers, ₱ doz., $24.00.....60%

## Dividers—See *Compasses.*

## Drawing Knives—

See *Knives, Drawing.*

## Dressers Emery Wheel—

Sterling Emery Wheel Dressers.....35%
Sterling Wheel Dresser Cutters.....35%

## Drills and Drill Stocks—

*Blacksmith's Common Drilling Machines .....$1.50@1.75*
Breast, Millers Falls.....15&10
Breast, P., S. & W.....33⅓%
Goodell Automatic Drills 50&10@60&10
Millers Falls Automatic Drills.33⅓&10%
Ratchet, Curtis & Curtis.....25%
Ratchet, Parker's.....40%
Ratchet, Weston's.....40%
Ratchet, Weston's, Style H Improved .....40%
Ratchet, No. 012.....40
Ratchet, Celebrated.....40
Ratchet, Whitney's, P., S. & W., 50&5%
Whitney's Hand Drill, No. 1, $10.00; Adjustable, No. 10, $12.00.....33⅓%

### Twist Drills—

*Bit Stock.....70@70&5%*
*Taper and Straight Shank, 60&10@70%*

## Drivers, Screw—

*Screw Driver Bits, per doz..45@50¢*
Balsey's Screw Holder and Driver, ₱ doz., 2½-in., $6; 4-in., $7.50; 6-in., $9 .....50%
Buck Bros.' Screw Driver Bits.....30%
Champion .....50%
Disston's .....70%
Fray's Hol. H'dle Sets, No. 3, $12..50%
Ford's Brace Screw Drivers....40&10
Gay's Double Action Ratchet.....35%
Goodell's Auto.....65@65&10
Mayhew's Black Handle.....40%
Mayhew's Monarch.....40%
Millers Falls, Nos. 20 and 21....25&10%
Millers Falls, Nos. 11, 12, 41, 42..15&10%
Smith & Hemenway Co.'s Neverturn, 66⅔%; Elmora, [illegible]ar. 30&10%
Swan's:
Nos. 7565 to 7569 .....%; No. 7540, 40&10%

## Eave Trough, Galvanized—

| Territory... | Gal. Steel. | Charcoal. Iron. |
|---|---|---|
| *Northeastern* | 75¢&10&5% | 60&20% |
| *Eastern* | 80&2½% | 60&20% |
| *Pittsburgh* | 80&20% | 65&10% |
| *Central* | 80&10&10&2½% | 65&10% |
| *Northwestern* | 80&10&10 | 65&10% |
| *Western* | 80&10 | 60&10&5% |
| *Tennessee* | 80&5% | 60&10&5% |
| *Southern* | 80% | 60&10&5% |
| *Southwestern* | 75&10&2½% | 60&5% |

*Terms.—2% for cash. Factory shipments generally delivered.*
*Note.—Lower prices are made in some sections.*
See also Conductor Pipe and Elbows.

## Elbows and Shoes—

*Factory shipments only from Cleveland.*

| | Galv. Steel | Galv. Iron |
|---|---|---|
| *Standard Gauge* | | |
| *No. 26* | | |
| *No. 24* | | |
| *No. 22* | | |

## Elbows, Stove Pipe—

Edwards, Standard Pipe, 10&10&10
Edwards, Royal Pipe, 10&10&10
Reeves, Dover, one piece, 10&10

## Emery, Turkish—

| | ¼ to ⅜: | ½ to 220: | Flour. |
|---|---|---|---|
| *Kegs.....lb.* | 5¢ | 5½¢ | 3½¢ |
| *½ Kegs.....lb.* | 5½¢ | 5¾¢ | 3¾¢ |
| *¼ Kegs.....lb.* | 5½¢ | 6¢ | 4¢ |
| *10 lb. cans, 10 in case....* | 6½¢ | 7¢ | 6¢ |
| *10 lb. cans, less than 10.....* | 10¢ | 10¢ | 8¢ |
| *Less quantity..* | 10¢ | 10¢ | 8¢ |

*NOTE.—In lots 1 to 3 tons a discount of 10% is given.*

## Extractors, Lemon Juice—See *Squeezers, Lemon.*

## Fasteners, Blind—
Zimmerman's .....50&10%
Walling's .....40&10%
Upson's Patent.....40%

### Cord and Weight—
Ives and Titan.....33⅓%

### Corrugated—
Acme Corrugated Fasteners.....70%

### Faucets—
*Cork Lined.....50&10@60%*
*Metallic Key, Leather Lined, ..60&10@70%*
*Red Cedar.....40&5@40&10&5%*
*Petroleum .....70&10@75%*
B. & L. B. Co.:
Metal Key.....60&10
Star .....60%
West Lock.....50&10%
John Sommer's Peerless Tin Key....40
John Sommer's Boss Tin Key.....50
John Sommer's Victor Mtl. Key..50&10
John Sommer's Duplex Metal Key..60
John Sommer's Diamond Lock. .....40
John Sommer's I.X.L. Cork Lined..50%
John Sommer's Reliable Cork Lined..50&10%
John Sommer's Chicago Cork Lined.60
John Sommer's O. K. Cork Lined...50
John Sommer's No Brand, Cedar....50%
John Sommer's Perfection, Cedar....40%
Self Measuring:
Enterprise, ℔ doz. $36.00.....40&10%
Lane's, ℔ doz. $36.00.....10&10
National Measuring, ℔ doz. $36.40&10%

### Felloe Plates—
See *Plates, Felloe.*

### Files— Domestic—
*List Nov. 1, 1899.*
*Best Brands.....70&10@75&10%*
*Standard Brands.....75&10@80%*
*Lower Grade....75&10&10@80&10%*

### Imported—
*Stubs' Tapers, Stubs' list, July 24, '97.....33⅓@40%*

### Fixtures, Fire Door—
Allith Underwriters' Approved.....50%
Richards Mfg. Co.:
Universal, No. 103; Special, No. 104 .....$3.75
Fusible Links, No. 96.....50
Expansion Bolts, No. 107.....60&10

### Grindstone—
*Net Prices:*

| *Inch* | *15* | *17* | *19* | *21* |
|---|---|---|---|---|
| *Per doz.* | *$3.60* | *3.85* | *4.15* | *4.65* |

P., S. & W. Co.....25%
Reading Hardware Co.....60%

### Fodder Squeezers—
See *Compressors.*

### Forks—
*NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.*
Iowa Dig-Ezy Potato.....60&10
Victor, Hay.....60&15&2½
Victor, Manure.....66⅔
Victor, Header.....65%
Champion, Hay.....66⅔
Champion, Header.....65
Champion, Manure.....60&15&2½
Columbia, Hay.....60&20
Columbia, Manure.....70
Columbia, Spading.....70&12½
Hawkeye Wood Barley.....40
W. & C. Potato Digger.....60&10
Acme Hay.....60&20
Acme Manure, 4 tine.....60&10&5
Dakota Header.....60&20
Jackson Steel Barley.....60&20
Kansas Header.....65
W. & C. Favorite Wood Barley....40%
Plated.—See Spoons.

### Frames— Wood Saw—
*White, S'g't Bar, per doz.75@80¢*
*Red, S'g't Bar, per doz.$1.00@1.25*
*Red, Dbl. Brace, per doz.$1.40@1.50*

### Freezers, Ice Cream—

| *Qt.....* | *1* | *2* | *3* | *4* | *6* |
|---|---|---|---|---|---|
| *Each....* | *$1.25* | *$1.60* | *$1.90* | *$2.20* | *$2 80* |

### Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

### Fry Pans—See *Pans, Fry.*

### Fuse— *Per 1000 Feet.*
*Hemp .....$2.75*
*Cotton ..... 3.20*
*Waterproof Sgl. Taped.. 3.65*
*Waterproof Dbl. Taped.. 4.40*
*Waterproof Tpl. Taped.. 5.15*
10&2½%

## Gates, Molasses and Oil—
*Stebbins' Pattern.....80@80&5%*

### Gauges—
*Marking, Mortise, &c..50@50&10%*
Chapin-Stephens Co.:
Marking, Mortise, &c.....50&30&10
Disston's Marking, Mortise, &c..67½%
Wire, Brown & Sharpe's.....33⅓%
Wire, Morse's.....25
Wire, P., S. & W. Co.....33⅓%

### Gimlets— Single Cut—
*Numbered assortments, per gro.*
*Nail, Metal, No. 1, $2.00; 2, $2.30*
*Spike, Metal, No. 1, $4.00; 2, $4.30*
*Nail, Wood Handled, No. 1, $2.30; 2, $2.60*
*Spike, Wood Handled, No. 1, $4.30; 2, $4.60*

### Glass, American Window
See *Trade Report.*

### Glasses, Level—
Chapin-Stephens Co.....65@65&10

### Glue, Liquid Fish—
*Bottles or Cans, with Brush, 25&10@50%*
Elwell's .....40%

### Grease, Axle—
*Common Grade...gro.$6.00@$6.50*
Dixon's Everlasting, 10-lb. pails, ea. 85c; in boxes, ℔ doz., 1 lb. $1.20; 2 lb.....$2.00
Helmet Hard Oil.....25

### Griddles, Soapstone—
Pike Mfg. Co.....33⅓@33⅓&10%

### Grinders—
Royal Mfg. Co.:
Alundum Grinding Machines, each, Nos. 01, $1.75; 1A, $2.50; 10, $5.00 .....30
Alundum Sickle Grinders, each, Nos. 20, $5.00; 20A, $6.00; 20A Combined, $6.50.....30
Alundum Disc Grinders, each, $2.50 .....30

### Grindstones—
Pike Mfg. Co.:
Improved Family Grindstones, ℔ inch, ℔ doz., $2.00.....33⅓%
Richards Mfg. Co., Eli and Cycle, Ball Bearing, mounted.....40%

### Grips, Nipple—
Perfect Nipple Grips.....40&10&2%

## Halters and Ties—
*Cow Ties.....65@65&10%*
Bridgeport Chain Co.:
Triumph Coil and Halters.35&2½@40%
Brown Coil and Halters...45@50&5
Brown Cow Ties.....50&5@50&10&5%
Brown Tie Outs.....70&10@75&5
Covert Mfg. Co.:
Web .....30&2%
Jute Rope.....35
Sisal Rope.....20
Cotton Rope.....45
Hemp Rope.....45%
Oneida Community:
Am. Coil and Halters.....40@40&5%
Am. Cow Ties.....45@50
Niagara Coil and Halters...45@50&5
Niagara Cow Ties.....45&5@50&10&5

### Hammers—
#### Handled Hammers—
Heller's Machinists'....55&10@55&10&5%
Heller's Farriers.....45&5@40&10&5
Peck, Stow & Wilcox Co.:
Crucible Steel.....40&10
Farriers' .....40&10
Riveting .....40&10
Machinists' .....60&10
Blacksmiths' .....50
Fayatte R. Plumb:
A. E. Nail.....40&2½@40&12½
Eng. and B. S. Hand.50&10&5@60&5
Machinists' Hammers.....60@60&10
Rivet and Tinners'.40&7½@40&12½&5

#### Heavy Hammers and Sledges—
*Under 3 lb., per lb., 50¢.. 80&10%*
*3 to 5 lb., per lb., 40¢...80&10&10%*
*Over 5 lb., per lb., 30¢.....*
*Over 5 lb., per lb., 39¢.80&10&10%*

### Handles—
#### Agricultural Tool Handles
*Axe, Pick, &c....60&10@60&10&5%*
*Hoe, Rake, &c.....40*
*Fork, Shovel, Spade, &c.:*
*Long Handles.....40%*
*D Handles.....40%*

#### Cross-Cut Saw Handles—
Atkins' .....40
Champion .....50
Disston's .....50

#### Mechanics' Tool Handles—
*Auger, assorted...gro.$3.00@$3.50*
*Brad Awl.....gro.$1.65@$1.75*
*Chisel Handles, Ass'd, per gro.:*
*Tanged Firmer, Apple, $2.40@$2.65; Hickory.....$2.15@2.40*
*Socket Firming, Apple, $1.75@$1.95; Hickory.....1.60@1.75*
*Socket Framing, Hickory, $1.60@$1.75*
*File, assorted.....gro.$1.30@$1.40*
*Hammer, Hatchet, &c., 60&10@60&10&5%*
*Hand Saw, Varnished, doz., 80¢ 85¢; Not Varnished.....65@75¢*
*Plane Handles:*
*Jack, doz., 30¢; Fore, doz...45¢*
Chapin-Stephens Co.:
Carving Tool.....30@30&10
Chisel .....60@60&10
File and Awl.....60@60&10
Saw and Plane.....30@30&10
Screw Driver.....30@30&10
Millers Falls Adj. and Ratchet Auger Handles .....15&10
Nicholson Simplicity File Handle....℔ gro. $0.85@$1.50
J. L. Osgood:
Indestructible File and Tool, ℔ gro., No. 1, $8.00; No. 2, $8.50; No. 3, $9.00; No. 4, $9.50; No. 5, $10.00.....gro. lots 10
W. A. Zelnicker Supply Co.:
Hammer, ℔ doz., 12 in., $2.00; 14 in., $2.00; 16 in., $2.30; 18 12., $2.50; 20 in., $2.70; 22 in., $3.00; 24 in., $3.30; 26 in., $3.50; 30 in., $3.80.
Sledge, ℔ doz., oval, 30 in., $3.80; octagon, 30 in., $3.80; oval, 36 in., $4.00; octagon, 36 in., $4.00.
Axe, ℔ doz., 28 to 34 in., $5.60; 36 in., $5.80.
Adze, ℔ doz., 36 in., $5.80; 36 in., $7.80.
Pick, ℔ doz., R. R., 36 in., $8.00; coal, 34 in., $5.80.
Hatchet, ℔ doz., 12 to 14 in., $2.00.
30%

### Hangers—
*NOTE—Barn Door Hangers are generally quoted per pair, without track and Parlor Door Hangers per double set with track, &c.*

Allith Mfg. Co.:
Reliable, Nos. 1 and 2; Allith, No. 3; Allith Adjustable, No. 6; Reliable Parlor Door.....50
Chicago Spring Butt Co.:
Friction .....25
Oscillating .....25
Big Twin.....25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door.....50
Elevator .....30
Railroad .....50
Cronk & Carrier Mfg. Co.:
Loose Axle.....60&2½
Roller Bearing.....70&2½
Griffin Mfg. Co.:
Solid Axle, No. 10, $12.00..60&10%
Roller Bearing, No. 11, $15.00, 60&10%
Roller Bearing, Ex. Hy., No. 22, $18.00.....60&10%
Bull Dog, $24.00.....70%
Lane Bros. Co.:
Parlor, Ball Bearing, $4.00; Standard, $3.15; No. 105, $2.85; New Model, $2.80; New Champion .....$2.25
Barn Door, Standard.....60&10
Hinged .....net $6.08
Covered .....60&5
Special .....70&5
Lawrence Bros.:
Advance .....55&10%
Cleveland .....70&7½
Clipper, No. 75.....60
Crown .....55&10
Cyclone, No. 40.....net $6 50
Tandem, No. 50.....net $7.50
New York.....55&10
McKinney Mfg. Co.:
Roller Bearing, Nos. 1 and 2..70%
Anti-Friction .....60
Hinged Hangers, King Charm.60
Richards Mfg. Co.:
Hangers, Nos. 47, 48, 147, 247, 60&5
Pioneer Wood Track, No. 3..$2.25
Roller B'r'g St'l Track No. 12.$2.20
Roller B'r'g St'l Track No. 13.$2.50
Roller B'r'g, Nos. 39, 41, 43, 70&7½
Hero, Adj. Track No. 19..50&10%
Adjustable Track Tandem Trolley Track No. 16.....50&10%
Seal, Steel Track No. 8 .....$2 25
Auto Adj. Track No. 22..50&5%
Trolley B. D. No. 17, $1.25; F. D. No. 120, $2.25; No. 121, $2.45; No. 150.....$2.50
Safety Underwriters F. D. No. 101 .....50
Tandem No. 41..2½ and 3 60&10
Palace, Adjustable Track No. 132 .....50&5
Royal, Adjustable Track No. 122 .....50&10%
Ives' Wood Track No. 1.....$2.25
Trolley B. D. No. 20.....50&10
Trolley B. D. No. 24, $1.30; No. 27, $1 40; No. 28 .....$1.60
Roller Bearings, Nos. 37, 38, 39, 41, 43, 44, Sizes 1 and 2.70&7½%
Anti friction, No. 42; No. 44, sizes 2½ and 3.....60
Hinged Tandem No. 48....60&5
Folding Door B. B. Swivel No. 135 .....40%
Taylor & Boggis F'y Co.'s Kidder's Roller Bearing.50&15&10&5
Myers' Stayon Hangers.....60%
Extra 5&10 often given.

### Hangers— Garment—
Pullman Trouser, ℔ gro., No. 1 $9.00; No. 4, $24.00; No. 5, $16.50; No. 8, Black Enamel, $7.50; No. 10, $21.00; No. 12, $8.00; No. 15, Rods, $9.00; No. 18, Loops.....$10.00
Victor Folding.....℔ gro. $9.60

### Gate—
Myers' Patent Gate Hangers, ℔ doz. net .....$4.50

### Joist and Timber—
Lane Bros. Co.....30%

### Hasps—
Gridin's Security Hasp.....50&10%
McKinney's Perfect Hasp, ℔ doz..60

### Hatchets—
*Regular list, first qual.40&12½@—*
*Second quality.....70&10&5@—*

### Heaters, Carriage—
Clark No. 5, $1.75; No. 5B, $2.00; No. 3, $2.25; No. 3D $2.75; No. 7D, $3.00; No 3E $3.25; No. 1, $3.50.....25%
Clark Coal, ℔ doz., $0.75.....20%

### Hinges—
#### Blind and Shutter Hinges
*Surface Gravity Locking Blind: (Victor; National; 1868 O. P.; Niagara; Clark's O. P.; Clark's Tip; Buffalo.)*

| *No.* | *1* | *3* | *5* |
|---|---|---|---|
| *Doz. pair.....* | *$0.75* | *1.35* | *2.70* |

*Mortise Shutter: (L. & P., O. S., Acme, &c.)*

| *No.* | *1* | *1½* | *2* | *2½* |
|---|---|---|---|---|
| *Doz. pair....* | *$0.70* | *.65* | *.60* | *.55* |

*Mortise Reversible Shutter (Buffalo, &c.)*

| *No.* | *1* | *1½* | *2* |
|---|---|---|---|
| *Doz. pair.....* | *$0.70* | *.65* | *.60* |

North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%
Charles Parker Co.....70@75%
Parker Wire Goods Co.:
Hale & Benjamin Automatic Blind Hinges .....20%
Hale's Blind Awning Hinges, No. 110, for wood, $9.00; No. 111, for brick, $9.00.....20%
Reading's Gravity.....60
Stanley's Steel Gravity Blind Hinges, No. 1647½, ℔ doz. sets, without screws, $0.95; with screws, $1.25.
Wrightsville Hardware Co.:
O. S., Lull & Porter.....75&5%
Acme, Lull & Porter.....75
Queen City Reversible.....75%
Shepard's Noiseless, Nos. 60, 65, 55 .....75&5%
Niagara, Gravity Locking, Nos. 1, 3 & 5.....75&5%
Tip Pat'n, No. 1.....75&10%
No. 3.....75&5%
Buffalo Gravity Locking, Nos. 1, 3 & 5.....70&10&5%
Shepard's Double Locking.....75%
Champion Gravity Locking.....75&5%
Pioneer .....75&10
Empire .....65
W. H. Co.'s Mortise Gravity Locking, No. 2.....60&10%
Extra 10% often given on most of these Hinges.

### Gate Hinges—
*Clark's or Shepard's—Doz. sets:*

| *No.* | *1* | *2* | *3* |
|---|---|---|---|
| *Hinges with L't'chs.* | *$2.00* | *2.70* | *3.60* |
| *Hinges only.....* | *1.25* | *1.90* | *3.52* |
| *Latches only.....* | *.70* | *.75* | *.75* |

*New England:*
*With Latch.....doz..@$2.00*
*Without Latch.....doz..@$1.60*
*Reversible Self-Closing:*
*With Latch.....doz..@$1.75*
*Without Latch...doz. ...@$1.35*
*Western:*
*With Latch.....doz. $1.75*
*Without Latch.....doz..$1.15*
Wrightsville Hardware Co.:
Shepard's or Clark's Hinges and Latches, Hinges only or Latches only, Nos. 1, 2 or 3.....70%

### Pivot Hinges—
Bommer Bros. Pivot.....40%
Lawson Mfg. Co. Matchless.....50%

### Spring Hinges—
*Holdback, Cast Iron...$6.75@$7.00*
*Non-Holdback, C'st Iron$6.50@$6.75*
J. Bardsley:
Bardsley's Non-Checking Mortise Floor Hinges.....40%
Bardsley's Patent Checking.33⅓%
Bommer Bros.:
Bommer Ball Bearing Floor..40%
Bommer Spring Hinges.....40
No. 999 Wrot. Steel Hold Back, ℔ gro. $9.00
Chicago Spring Butt Co.:
Chicago Spring Hinges.....25%
Triple End Spring Hinges....50
Chicago (Ball Bearing) Floor.50%
Garden City Engine House...25%
Keene's Saloon Door.....25%
Columbian Hardware Co.:
Acme, Wrought Steel.....30%
Acme, Brass.....25%
American .....30
Columbia, ℔ gr., No. 14, $9.00; No. 18.....$25.00
Columbia, Adj., No. 7, ℔ gr.$12.00
Columbian Hinges.....60&10
Gem, new list.....30%
Clover Leaf and Acorn, gro. lots, $5.10; ½ gro. lots.....$6.00
Oxford, new list.....30
Floor Spring Hinges.....65&10%
Lawson Mfg. Co., Matchless...30%
Richards Mfg. Co.:
Superior Double Acting Floor Hinges .....40%
Shelby Spring Hinge Co.:
Buckeye All Steel Holdback Screen Door.....℔ gr. $9.00
Chief Ball Bearings Floor Hinge .....50%
Ball Bearing Door.....25%
No. 777, Sheet Steel Holdb'k, ℔ gr. pr.....$9.00
Standard Mfg. Co.:
Champion Double Acting Door Hinge .....25&10&10%
Standard Double Acting Floor Hinge .....25&10&10%
Superior Spring Hinge Co.:
Superior Floor Hinges.....33⅓%
Extra 10% often given on most of these Hinges.

### Wrought Iron Hinges—
*Strap and T Hinges, &c., list December 20, 1904:*
*Light Strap Hinges..50&10%*
*Heavy Strap Hinges..60&5%*
*Light T Hinges.....50%*
*Heavy T Hinges.....40%*
*Extra Hvy. T Hinges.50&10%*
*Hinge Hasps.....33⅓%*
*Cor. Heavy Strap....60&5%*
*Cor. Ex. Heavy T...50&10%*
Extra 10&7½%.

*Screw Hook and Strap.* *6 to 12 in..lb.3½¢* *1½ to 20 in..lb.3½¢* *22 to 36 in..lb.3 ¢*

*Screw Hook and Eye:*
*3/8 to 1 inch.....lb 6½¢*
*5/8-inch .....lb.7½¢*
*½-inch .....lb.8½¢*
10&10&5%

### Hitchers, Stall—
Covert Mfg. Co., Stall Hitchers..30&2%

### Hods— Coal—
*M'f'gr's list, price per gross:*

| *Inch* | *15* | *16* | *17* | *18* |
|---|---|---|---|---|
| *Galv. Open....* | *$35* | *$39* | *$42* | *$46* |
| *Jap. Open.....* | *26* | *28* | *31* | *35* |
| *Galv. Funnel...* | *43* | *48* | *52* | *56* |
| *Jap. Funnel....* | *33* | *36* | *59* | *43* |

10&10&5%

### Masons' Etc.
Cleveland Wire Spring Co.:
Steel Brick, No. 162.....each $1.05
Steel Mortar, No. 158.....each $1.35

### Hoes— Eye—
*Scovil and Oval Pattern, 60&10@60&10&10%*
*Grub, list Feb. 23, 1899, 70&10@70&10&10%*
D. & H. Scovil.....27½%
Am. Fork & Hoe Co. (Scovil Pattern) .....60%

### Handled—

*NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.*

Cronk's Weeding, No. 1, $2.00; No. 2, $2.50
Star Double Bit.....$3.20
Ft. Madison Cotton Hoe....70&10&10%
Ft. Madison Crescent Cultivator Hoe, ₱ doz.....70&10%
Ft. Madison Mattock Hoes:
Regular Weight.....₱ doz. 40&5%
Junior Size.....₱ doz. $4.00
Ft. Madison Sprouting Hoe, ₱ doz., 60&10%
Ft. Madison Dixie Tobacco Hoe.....75&10&7½%
Kretsinger's Cut Easy.....70&10
Warren Hoe.....45&10%
W. & C. Ivanhoe.....75&2
B. B. 6 in., Cultivator Hoe.....$3.40
B. B., 6½ in.....$3.50
Acme Wedding.....₱ doz., net, $4.35
W. & C. L'tning Shuffle Hoe, ₱doz. $5.25

### Hoisting Apparatus—

See *Machines, Hoisting.*

### Holders— Bit—

Angular, ₱ doz. $24.00.....45&10%

### Door—

Bardsley's, Iron, 40%; Brass and Bronze.....25%
Empire.....50%
Pullman.....25%
Richards Mfg. Co: No. 117, Ever-ready, 40%; Nos. 118, 119, Sure Grip.....50%
Superior.....33⅓%

### File and Tool—

Nicholson File Holders and File Handles.....33⅓@40%

### Fruit Jar—

Triumph Fruit Jar Holder, ₱ gross, $18.00; ₱ doz.....$2.00

### Trace and Rein—

Fernald Double Trace Holder, ₱ doz. pairs.....$1.25
Dash Rein Holder, ₱ doz. pairs. $1.25

### Hones—Razor—

Pike Mfg. Co., Belgian and Swaty, 50%; German.....33⅓%

### Hooks—Cast Iron—

Bird Cage, Reading.....40%
Clothes Line, Reading List.....40%
Coat and Hat, Reading.....45&20%
Coat and Hat, Wrightsville.....60&5%
Harness, Reading List.....40%

### Wire—

*Belt*.....80%
*Wire C. & H. Hooks*.....80%
Bradley Metal Clasp Wire, Coat and Hat, 70&10%; Ceiling.....70&10%
Columbian Hdw. Co., Gem.....70&5%
Parker Wire Goods Co., King..70&10%
Wire Goods Co.:
Acme, 60&10%; Chief, 70%; Crown, 75; Czar, 65; V Brace, 75%; Czar Harness, 50&10%.

### Wrought Iron—

*Box, 6 in., per doz., $0.90; 8 in., $1.15.*
*Cotton*.....*doz. $1.25@$1.50*
Wrought Staples, Hooks, &c.
See Wrought Goods.

### Miscellaneous—

*Hooks, Bench,* see *Stops, Bench.*
*Rush, Light, doz., $6.20; Medium, $6.75; Heavy, $7.65*
*Grass, hcs, all sizes, per doz., $2.75@$3.00*
*Grass, common grades, all sizes, per doz*.....*$1.25@$1.50*
*Whiffletree*.....*lb. 5¼@6¢*
*Hooks and Eyes:*
*Brass*.....*60@60&10%*
*Malleable Iron*.....*70@70&10%*
Covert Mfg. Co. Gate and Scuttle Hooks.....40%
Ft. Madison Cut-Easy Corn Hooks, ₱ doz. $3.25 net
Turner & Stanton Co. Cup and Shoulder.....85&10%
Bench Hooks—See Bench Stops.
Corn Hooks—See Knives, Corn.

### Horse Nails—

See *Nails, Horse.*

### Horseshoes—

See *Shoes, Horses.*

### Hose, Rubber—

*Garden Hose, ¾-inch:*
*Competition*.....*ft. 6@6½¢*
*3 ply Guaranteed*.....*ft. 8½@9¢*
*4-ply Guaranteed*.....*ft. 9½@12¢*
*Cotton Garden, ¾-in., coupled:*
*Low Grade*.....*ft. 8@ 9c*
*Fair Quality*.....*ft. 10@11¢*

### Irons— Sad—

*From ¼ to 10*.....*lb. 2½@2¾¢*
*B. B. Sad Irons*.....*lb. 3¼@3½¢*
*Mrs. Potts', cents per set:*

| | Nos. 50 | 55 | 60 | 65 |
|---|---|---|---|---|
| *Jap'd Tops* | 83 | 89 | 93 | 94 |
| *Tin'd Tops* | 88 | 85 | 98 | 95 |

*New England Pressing..lb. 3¾@4¢*

### Bar and Corner—

Richards Mfg. Co., Bar, 60&10; Corner.....60

### Pinking—

*Pinking Irons*.....*doz. 60@65¢*

### Irons, Soldering

See *Coppers.*

### Jacks, Wagons—

Covert Mfg. Co.:
Auto Screw.....30&2%; Steel, 45%
Lockport.....50%
Lane's Steel.....30&5%
Richards' Tiger Steel, No. 130...50&10
Smith & Hemenway Co.'s.....25%

### Ladder—

Richards Mfg. Co., Ladder Jacks..₱

## Kettles—

*Brass, Spun, Plain*.....*20@25%*
Enameled and Cast Iron—See Ware, Hollow.

### Knives—
### Butcher, Kitchen, &c.—

Foster Bros.' Butcher, &c.....30%
Wilkinson Shear & Cutlery Co....60%

### Corn—

Columbian Cutlery Co., Wilcut Brand Knives and Hooks.....60%
Withington Acme, ₱ doz., $2.65; Dent, $2.75; Adj. Serrated, $2.20; Serrated, $2.10; Yankee No. 1, $1.50; Yankee No. 2, $1.15.

### Drawing—

*Standard List*.....*80&10@—%*
C. E. Jennings & Co., Nos. 45, 46, 25&7½%
Jennings & Griffin, Nos. 41, 42, 66⅔&7½%
Swan's.....66⅔@70
Watrous.....16⅔
L. & I. J. White.....20&5@25%

### Hay and Straw—

*Serrated Edge, per doz. $5.00@5.50*
Iwan's Sickle Edge.....₱ doz. $9.50
Iwan's Serrated.....₱ doz. $10.00

### Miscellaneous—

*Farriers'*.....*doz. $2.60@3.55*
Wostenholm's.....₱ doz. $3.00@3.25

### Knobs—

*Base, 2½-inch, Birch or Maple, Rubber Tip*.....*gro. $1.25@1.40*
*Carriage, Jap., Drive, all sizes, gro. 35@40¢*
*Door, Mineral*.....*doz. 65@70¢*
*Door, Por. Jap'd*.....*doz. 70@75¢*
*Door, Por. Nickel*.*doz. $2.05@2.15*
Bardsley's Wood Door, Shutters, &c. 15%

## Lacing, Leather—

See *Belting, Leather*

### Ladders, Store, &c.—

Allith Mfg. Co., Reliable.....50%
Lane's Store.....25%
Myers' Noiseless Store Ladders....50%
Richards Mfg. Co.:
Improved Noiseless, No. 112.....50%
Climax Shelf, No. 113.....50%
Trolley, No. 109.....50%

### Ladles, Melting—

L. & G. Mfg. Co. (low list).....20%
P., S. & W.....40&10%
Reading.....60%

### Lanterns—Tubular—

*Regular, No. 0*.....*doz. $4.35@4.50*
*Side Lift, No. 0*.....*doz. $4.60@4.75*
*Hinge Globe, No. 0*.*doz. $4.60@4.75*
*Other Styles*.....*40@40&10%*

### Bull's Eye Police—

*3-inch*.....*$3.75@4.00*

### Latches— Thumb—

*Roggin's Latches, Jap'd, with Screws*.....*doz. 35@40¢*

### Door—

Allith Mfg. Co., Reliable and Alligator, 50%; Reliable Cold Storage, 50%
Cronk & Carrier Mfg. Co., No. 101, ₱ doz. $2.00
Richards' Bull Dog, Heavy, No. 125.....50&5%
Richards' Trump, No. 127.....$1.50

### Leaders, Cattle—

*Small*.....*doz. 50¢; large, 60¢*
Covert Mfg. Co.:
Cotton, 45%; Hemp, 45%; Jute, 35%; Sisal, 20%.

### Leathers, Pump—

See *Pumps—*

### Lifters, Transom—

R. & E.....10%

### Lines—

| *Wire Clothes, Nos.* | *18* | *19* | *20* |
|---|---|---|---|
| *100 feet* | *$2.30* | *1.95* | *1.75* |
| *75 feet* | *$1.95* | *1.65* | *1.50* |

Samson Cordage Works:
Solid Braided Chalk, Nos. 0 to 3..40%
Solid Braided Masons'.....30
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50.....₱ gr. 20
Masons' Lines, Shade Cord, &c.: White Cotton, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50; Colors, No. 3½, $1.75; No. 4, $2.25, No. 4½, $2.75; Linen, No. 3½, $2.50; No. 4 $3.50; No. 4½, $4.50.....20%
Tent and Awning Lines: No. 5, White Cotton, $7.50; Drab Cotton, $8.50.....20
Clothes Lines, White Cotton: 50 ft., $2.75; 60 ft., $3.25; 70 ft., $3.75; 75 ft., $4.00; 80 ft., $4.25; 90 ft., $4.75; 100 ft. $5.25.....20
Turner & Stanton Co.:
Solid Braided Chalk, Masons' and Awning Lines.....40
Clothes Lines, White Cotton....20
Shade Cord, Cotton or Linen....20

### Locks— Cabinet—

*Cabinet Locks*.....*33⅓@33⅓@7%*

### Door Locks, Latches, &c

*NOTE.—Net Prices are very often made on these goods.*
Reading Hardware Co.....40
R. & E. Mfg. Co.....10

### Padlocks—

R. & E. Mfg. Co. Wrought Steel and Brass.....75&10%

### Sash, &c.—

Ives' Patent:
Bronze and Brass, 55&5%; Crescent, 60; Iron, 60; Window Ventilating, 40&20; Robinson Pat. Ventilating Sash Lock 33⅓%.
Pullman Patent Ventilating Lock..25%
Reading Sash Locks.....40%

## Machines—Boring—

*Com. Upr't, without Augers.*.....*$2.00@2.25*
*Com. Angl'r, without Augers, $2.25@2.50*
Swan's Improved.....10&10
Jennings', Nos. 1 and 4.....25&7½%
Millers' Falls.....5.75
Snell's, Upright, $2.65; Angular, $2.90

### Corking—

Reisinger Invincible Hand Power...₱ doz. $48.00

### Fence—

Williams' Fence Machines....each, $5.50

### Hoisting—

Moore's Anti-Friction Chain Hoist.30%
Moore's Hand Hoist, with Lock Brake.....20%
Moore's Cyclone High Speed Chain Hoist.....25%

### Ice Cutting—

Chandler's.....12½%

### Washing

| Boss Washing Machine Co.: | Per doz. |
|---|---|
| Boss No. 1 | $57.00 |
| Boss Rotary | $57.00 |
| Champion Rotary Banner No. 1 | $57.00 |
| Standard Champion No. 1 | $50.00 |
| Standard Perfection | $27.00 |
| Cincinnati Square Western | $33.00 |
| Uneeda American, Round | $33.60 |

### Mallets—

*Hickory*.....*45&50&50%*
*Lignumvitæ*.....*45&50&50%*
*Tinners' Hickory and Applewood*.....*doz. 45&50&50%*

### Mangers, Stable—

Swett Iron Works.....50%

### Mats, Door—

Acme Flexible Steel.....50
Elastic Steel (W. G. Co.), new list.50%

### Mattocks—

See *Picks and Mattocks.*

### Milk Cans—See *Cans, Milk.*

### Mills, Coffee, &c.—

Enterprise Mfg. Co.....20@25%
National list Jan. 1, 1902.....30
Parker's Columbia and Victoria..33⅓%
Parker's Box and Side.....50&10
Swift, Lane Bros. Co.....30%

### Motors, Water—

Divine's Red Devil.....30%
Lippincott's.....30%

### Mowers, Lawn—

*NOTE.—Net prices are generally quoted*
*Cheapest, 10-in., $2.00; advance 10¢ for each size.*
*Cheap, 10-in., $2.25; advance 15@20¢ for each size.*
*Better Grade, 10-in., $3.00; advance 25¢ for each size.*

| | *12* | *14* | *16* | *18 in.* |
|---|---|---|---|---|
| *High Grade* | *$4.50* | *4.75* | *5.00* | *5.25* |

Continental.....60
Great American.....70
Great American Ball B'r'g, new list.70%
Quaker City.....70%
Pennsylvania.....60%
Pennsylvania, Jr., Ball Bearing, 50&10&5%
Pennsylvania Golf.....50
Pennsylvania Horse.....33⅓&5
Pennsylvania Pony.....40&5%
Granite State:
Style A, Low Wheel.....70%
Style B, Low Wheel.....70%
Style C, High Wheel, spcl. list, 70&10%
Style D, High Wheel, spcl. list..70%
Philadelphia:
Styles M., S., C., K., T....70&10&5
Style A, all Steel.....60&10&5
Style E, High Wheel.....70&10&5
Drexel and Gold Coin, special list.40
Horse.....40&5%
Pony.....40&5
36-in. Horse.....30&10
Eagle Horse....:.....30&5%
I. X. L. Horse.....50%

## Nails—

*Wire Nails and Brads, Miscellaneous*.....*85&5@85&10%*
*Cut and Wire, See Trade Report.*
*Hungarian, Finishing, Upholsterers', &c. See Tacks.*

### Horse—

| Nos. | 6 | 7 | 8 | 9 | 10 | |
|---|---|---|---|---|---|---|
| Anchor | 23 | 21 | 20 | 19 | 18 | ...40&5 |
| Coleman | 13 | 12 | 12 | 11 | 11 | ....net |
| New Haven | 23 | 21 | 20 | 19 | 18 | ...40&5 |
| Livingston | 19 | 18 | 17 | 16 | 15 | ....10 |
| Western | | | | | | ₱ M. $2.50 |

*Jobbers' Special Brands, per lb. 9¢*

### Picture—

| | 1½ | 2 | 2½ | 3 in. |
|---|---|---|---|---|
| *Brass Hd. gro.* | *55* | *55* | *60* | *70* |
| *Por. Head, gro.* | *1.10* | *1.10* | *1.10* | *1.50* |

### Upholsters—

*Brass*.....*30%*
*Plated*.....*30&10%*

### Nippers—

See *Pliers and Nippers*

### Nipples—

Standard Nipple Co.:
Wrought Pipe Nipples.....80&80&20

### Nuts— *Blank or Tapped.*

| *Cold Punched:* | *Off list.* |
|---|---|
| *Square* | *5.50@5.50¢* |
| *Hexagon* | *6.00@6.10¢* |
| *Square, C., T. & R.* | *5.80@5.90¢* |
| *Hexagon, C., T. & R.* | *6.60@6.70¢* |
| *Hot Pressed:* | |
| *Square* | *5.80¢* |
| *Hexagon* | *6.80¢* |

## Oakum—

*Best*.....*lb. 6½¢*
*U. S. Navy*.....*lb. 6 ¢*
*Navy*.....*lb. 5 ¢*
*Plumbers' Spun Oakum..2¾@3 ¢*

### Oil Tanks—See *Tanks, Oil.*

### Oilers—

*Steel, Copper Plated*.....*75%*
*Chase or Paragon:*
*Brass and Copper*.....*50&10%*
*Zinc*.....*65&10%*
*Railroad*.....*60&10&10%*
Malleable, Hammers' Improved, Nos. 11, 12 and 13, 29; Old Pattern, Nos. 1, 2, 3, 50%.
American Tube & Stamping Co.:
Spring Bottom Cans.....70@70&10%
Railroad Oilers, &c.....60@60&10%
Maple City Mfg. Co.:
Spring Bottom Cans.....70@70&10%
Railroad Oilers, &c.....60@60&10%

### Openers—Packing Box—

Herculever, ₱ doz., $24.....30%

### Can Openers—

| | *Per doz.* |
|---|---|
| *Sprague, Iron Handle* | *30@35¢* |
| *Sprague, Wood Handle* | *40¢* |
| *Sardine Scissors* | *$1.75@3.00* |

Yankee Can and Bottle Opener, ₱ doz., net, $0.75; Little Gem, ₱ doz., net.....$0.65

### Egg—

Hartigan Nickel Plate, ₱ doz., $2.00; Silver Plate, $4.00.

## Packing—

*Asbestos Packing, Wick and Rope, any quality*.....*18@20¢*

### Rubber—

*(Fair quality goods.)*
*Sheet, C. I.*.....*11@12¢*
*Sheet, C. O. S.*.....*11@12¢*
*Sheet, C. B. S.*.....*12@13¢*
*Sheet, Pure Gum*.....*45@45¢*
*Sheet, Red*.....*40@50¢*
Jenkins' '96, ₱ lb. 80¢.....25%

### Miscellaneous—

*American Packing*....*lb. 7@10 ¢*
*Cotton Packing*.....*lb. 16@25 ¢*
*Italian Packing*.....*lb. 9@10¢*
*Jute*.....*lb. 4@4½¢*
*Russia Packing*.....*lb. 9@10¢*

### Pails, Water, Well, &c.—

See *Buckets.*

### Pans— Dripping—

*Standard List*...*70&10@70&10&5%*
Edwards, Royal Blue.....65&7½%

### Fry—

*Common Lipped:*

| *Nos.* | *1* | *2* | *3* | *4* | *5* |
|---|---|---|---|---|---|
| *Per doz.* | *$0.75* | *0.80* | *0.90* | *1.10* | *1.30* |

### Refrigerator, Galva.—

| *Inch* | *12* | *14* | *16* | *18* |
|---|---|---|---|---|
| *Per doz.* | *$1.75* | *2.25* | *2.80* | *3.15* |

### Paper—Building Paper

| *Asbestos:* | *lb.* |
|---|---|
| *Roll Board or Building Felt, 6 to 30 lb., per 100 sq. ft.* | *2½¢* |
| *Roll Board or Building Felt, 3-32 and ⅛ in., 45 to 60 lb., per 100 sq. ft.* | *3½c* |
| *Mill Board, Sheet, 40 x 40 in., 1-32 to ½ in.* | *3¢* |
| | *Per roll.* |
| *Rosin Sized Sheathing: 500 sq. ft. Light weight, 25 lbs. to roll,* | *48@58¢* |
| *Medium weight, 30 lbs. to roll.* | *56@70¢* |
| *Heavy weight, 40 lbs. to roll,* | *75@78¢* |
| *Black Water Proof Sheathing, 500 sq. ft., 1 ply, 65¢; 2 ply, 85¢; 3 ply, $1.10; 4 ply, $1.25.* | |
| *Deafening Felt, 9, 6 and 4½ sq. ft. to lb., ton*.....*$54.50* | |
| *Red Rope Roofing, 250 sq. ft. per roll*.....*$1.75* | |

### Tarred Paper—

*1 ply (roll 400 sq. ft.), ton, $34.00@$38.00*
*2 ply, roll 108 sq. ft.*.....*65¢*
*3 ply, roll 108 sq. ft.*.....*88¢*
*Slater's Felt (roll 500 sq. ft.)*.....*$2*

### Sand Paper and Cloth—

*Flint and Emery*.....*7@8¢*
*Garnet Paper and Cloth*.....*12*

### Parers—Apple—

Goodell Co.:
Francis Bay.....$7.00
Improved Bay State.....6.00
New Era.....5.00
Terry Cyclone.....4.00
White Mountain.....3.00
Peerless Improved.....3.00
Daisy.....3.00
Enterprise Improved.....3.00
New Century.....$2.00
Reading.....each $25.00
Landers-Ide Nail Co.:
Dress.....₱ doz. $4.00
Little Star.....₱ doz. $5.00
Rocking Table.....₱ doz. $6.20
Reading Hardware Co.:
Advance.....₱ doz. $4.00
Baldwin.....₱ doz. $4.00
Reading 72.....₱ doz. $3.25
Reading 78.....₱ doz. $6.25

### Potato—

Saratoga.....₱ doz. $7.00
White Mountain.....₱ doz. $6.00

### Picks and Mattocks—

*(List Jan., 1908.)*

*List*.....*70&10@70&10&10%*
Cronk's Handled Garden Mattock, ₱ doz., No. 2, $2.60; No. 3, $6.40.

### Pinking Irons—
See *Irons, Pinking.*

### Pins, Escutcheon—
*Brass* .....50@50&10%
*Iron, list Nov. 11, '85*..60@60&10%

### Pipe, Cast Iron Soil—
*Standard, 2-6 in*.....70@— %
*Extra Heavy, 2-6 in*..75&10@— %
*Fittings, Standard and Heavy,* 80&10@80&10&10%

### Pipe, Merchant—

| | Consumers, Steel. Blk. | Galv. | Carloads, Iron. Blk. | Galv. |
|---|---|---|---|---|
| | % | % | % | % |
| ⅛ and ¼ in. | 66 | 50 | 64 | .. |
| ⅜ in. | 68 | 54 | 66 | 52 |
| ½ in. | 70 | 58 | 68 | 56 |
| ¾ to 6 in. | 74 | 64 | 72 | 62 |
| 7 to 12 in. | 71 | 56 | 69 | 54 |

### Pipe, Vitrified Sewer—
*Carload lots.*
*Standard Pipe and Fittings, 3 to 24 in., f.o.b. factory:*
*First-class* .....87%
*Second-class* .....90%

### Pipe, Stove—

| | Per 100 joints. C. L. | L. C. L. |
|---|---|---|
| Edwards' Nested: | | |
| 5 in., Standard Blue | $6.25 | $7.25 |
| 6 in., Standard Blue | 6.75 | 7.75 |
| 7 in., Standard Blue | 7.75 | 8.75 |
| 5 in., Royal Blue | 7.00 | 8.00 |
| 6 in., Royal Blue | 7.50 | 8.50 |
| 7 in., Royal Blue | 8.50 | 9.50 |
| Wheeling Corrugating Co.'s Nested: | | |
| 5 in., Uniform Color | $6.15 | $7.15 |
| 6 in., Uniform Color | 6.65 | 7.65 |
| 7 in., Uniform Color | 7.65 | 8.65 |

### Planes and Plane Irons—

#### Wood Planes—
*Bench, first qual*.....30@30&10%
*Bench, second qual*...40@40&10%
*Molding* .....25@25&10%
Chapin-Stephens Co.:
Bench, First Quality.....30%
Bench, Second Quality.....40%
Molding and Miscellaneous.....25%
Toy and German.....30%
Union .....60%

#### Iron Planes
Chaplin's Iron Planes.....50&10%
Union .....60%

#### Plane Irons—
*Wood Bench Plane Irons, list Dec. 12, '06*.....25%
Buck Bros.....30%
Chapin-Stephens Co.....25%
Union .....50%
L. & I. J. White.....20&5@25%

### Planters, Corn, Hand—
Kohler's Eclipse.....℔ doz. $8.00

### Plates—
*Felloe* .....lb. 3¾@4¼¢

### Pliers and Nippers
*Button Pliers*....75&5@75&10&5%
*Gas Burners, per doz., 5 in., $1.25 @$1.30; 6 in., $1.45 $1.50.*

| Gas Pipe.. | 7 | 8 | 10 | 12-in. |
|---|---|---|---|---|
| | $2.00 | $2.25 | $2.75 | $3.50 |

Acme Nippers.....50&5%
Cronk & Carrier Mfg. Co.:
American Button.....80%
Improved Button.....75&10%
Cronk's .....60%
No. 80 Linemen's.....50%
Stub's Pattern.....45%
Combination and others.....33⅓%
Heller's Farriers' Nippers, Pincers and Tools.....40&5@40&10&5%
P., S. & W. Tinners' Cutting Nippers .....40%
Swedish Side, End and Diagonal Cutting Pliers.....50%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds....40%

### Plumbs and Levels—
Chapin-Stephens Co.:
Plumbs and Levels.....30@30&10%
Chapin's Imp. Brass Cor..40@40&10%
Pocket Levels.....30@30&10%
Extension Sights.....30@30&10%
Machinists' Levels.....40@40&10
Disston's Plumbs and Levels....60&10%
Disston's Pocket Levels.....60&10%
Stanley's Dulex.....35%
Woods' Extension.....33⅓

### Points, Glaziers'—
*Bulk and 1 lb. papers*....lb. 9 ¢
*½ lb. papers*.....lb. 9½¢
*¼-lb. papers*.....lb. 10 ¢

### Police Goods—
*Manufacturers' Lists*...25@25&5%
Tower's .....25%

### Polish—Metal, Etc—
Prestoline Liquid, No. 1 (¼ pt.), ℔ doz., $3.00; No. 2 (1 qu.), $9.00...40%
Prestoline Paste.....40%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, ℔ doz. 50¢; ℔ gro. $4.50; ½ lb boxes, ℔ doz. $1.25; 1 lb boxes, ℔ doz. $2.25.
U. S. Liquid, 8 oz. cans, ℔ doz., $1.25.
Barkeepers' Friend Metal Polish, ℔ doz., $1.75.

### Stove—
Black Eagle Benzine Paste, 5 lb cans, ℔ lb 10¢
Black Eagle, Liquid, ½ pt. cans.. ℔ doz. 75¢
Black Jack Paste, ¾ lb cans, ℔ gr. $9.00
Black Kid Paste, 5 lb can...each, $0.65
Ladd's Black Beauty Liquid, per 100 tins.....$6.75
Joseph Dixon, ℔ gr. $5.75.....10%
Dixon's Plumbago.....℔ lb 8¢
Fireside .....℔ gr. $2.50
Gem, ℔ gr. $4.50.....10%
Japanese .....℔ gr. $3.50
Jet Black.....℔ gr. $3.50
Peerless Iron Enamel, 10 oz. cans.. ℔ doz. $1.50

### Window Polish—
Benj. P. Forbes:
Glasbright, No. 2, gal pails, ℔ doz., $24.00; each, $2.50; 1 lb cans, each .....75¢
Glasbright Powder, bbls., ℔ lb..20¢

### Poppers, Corn—
*1 qt. Square..doz.$0.80; gro.$8.75*
*1 qt. Round..doz.$0.90; gro.$10.00*
*1½ qt. Square..doz.$1.20; gro..$12.00*
*2 qt. Square..doz.$1.50; gro..$15.00*

### Post Hole and Tree Augers and Diggers—
See also *Diggers, Post Hole, &c.*

### Posts, Steel—
Steel Fence Posts, each, 5 ft., 42¢; 6 ft., 46¢; 6½ ft., 48¢.
Steel Hitching Posts.....each $1.30

### Potato Parers—
See *Parers, Potato.*

### Pots, Glue—
*Enameled* .....40%
*Tinned* .....30&10%

### Powder—
*In Canisters:*
*Duck, 1 lb*.....each 45¢
*Fine Sporting, 1 lb*....each 75¢
*Rifle, ½-lb*.....each 15¢
*Rifle, 1 lb*.....each 25¢
*In Kegs:*
*12½-lb. kegs*.....$3.50
*25-lb. kegs*.....$4.50
King's Semi-Smokeless:
Keg (25 lb bulk).....$6.50
Half Keg (12½ lb bulk).....$3.50
Quarter Keg (6¼ lb bulk).....$1.90
Case 24 (1 lb cans bulk).....$8.50
Half case (1 lb cans bulk).....$4.50

| King's Smokeless: | Shot Gun. | Rifle. |
|---|---|---|
| Keg (25 lb bulk) | $12.00 | $15.00 |
| Half Keg (12½ lb bulk) | 6.25 | 7.75 |
| Quarter Keg (6¼ lb bulk) | 3.25 | 4.00 |
| Case 24 (1 lb cans bulk) | 14.00 | 17.00 |
| Half case 12 (1 lb c. bk) | 7.25 | 8.75 |

### Presses—
#### Fruit and Jelly—
Enterprise Mfg. Co.....20@25%
#### Seal Presses—
Morrill's No. 1, ℔ doz., $20.00.....50%
#### Pruning Hooks and Shears
See *Shears.*

### Pullers, Nail—
Cyclops .....50%
Miller's Falls, No. 3, ℔ doz., $12.00.. 33⅓&10%
Morrill's No. 1, Nail Puller, ℔ doz. $20.00 .....50%
Pearson No. 1, Cyclone Spike Puller, each $30.00.....50%
The Scranton Co. Case Lots:
No. 2B (large).....$5.50
No. 3B (small).....$5.00
Smith & Hemenway Co.:
Diamond B.....70%
Giant .....50%
Staple Pullers, Utica and Davison .....60%

### Pulleys, Single Wheel—

| *Inch* | 1½ | 1¾ | 2 | 3 |
|---|---|---|---|---|
| *Awning or Tackle, doz.* | $0.30 | .45 | .60 | 1.05 |
| *Hay Fork, Swivel or Solid Eye, doz., 4 in., $1.25; 5 in., $1.55* | | | | |
| *Inch* | 2 | 2¼ | 2½ | |
| *Hot House, doz...* | $0.65 | .85 | 1.20 | |
| *Inch* | 1¼ | 1½ | 1¾ | 2 |
| *Screw, doz....* | $0.16 | .19 | .23 | .30 |
| *Inch* | 1¾ | 2 | 2¼ | 2½ |
| *Side, doz.....* | $0.25 | .40 | .55 | .60 |
| *Inch* | 1½ | 1¾ | 2 | 2½ |

### Sash Pulleys—
*Common Frame; Square or Round End, per doz., 1¾ and 2 in*.....17@20¢
*Auger Mortise, no Face Plate, per doz., 1¾ and 2 in*....20@21¢
Acme, No. 35..1¾ in., 19¢; 2 in., 20½¢
American Pulley Co.:
Wrought Steel American Plain Axle .....50&10%
Wrought Steel, Eagle.....17@20¢
Top Notch, Electrically Welded, Nos. 3 and 4.....19¢
Fox-All-Steel, Nos. 3 and 7, 2 in.... ℔ doz. 50%
Grand Rapids All Steel Noiseless..50%
Niagara, No. 25, 1¾ in., 19¢; 2 in. .....20½¢
No. 26, Troy..1¾ in., 14½¢; 2 in., 16½¢
Star, No. 26....1¾ in., 19¢; 2 in., 20½¢
Tackle Blocks—See Blocks.

### Pumps—
*Cistern* .....60%
*Pitcher Spout*.....75&5@75&10%
*Wood Pumps, Tubing, &s*....50%
Barnes Dbl. Acting (low list)....40&5
Barnes Pitcher Spout.....75&10%
Contractors' Rubber Diaphragm, No. 2, B. & L. Block Co.....$16.00
Daisy Spray Pump.....℔ doz. $6.50
Flint & Walling's Fast Mail Hand (low list).....50%
Flint & Walling's Fast Mail (low list) .....50%
Flint & Walling's Tight Top Pitcher .....75&10%
National Specialty Mfg. Co., Measuring, Nos. 2, $6.00; 3, $5.50.....30%
Myers' Pumps (low list).....40&5
Myers' Power Pumps.....40&5
Myers' Spray Pumps.....40&5

### Pump Leathers—
*Plunger and Valve Leathers—Per gro.:*

| *No.* | 1 | 2 | 3 | 4 | 30% |
|---|---|---|---|---|---|
| | $5.00 | 6.00 | 7.00 | 8.00 | |
| *Cup Leathers—Per 100:* | | | | | |
| *Inch* | 2½ | 3 | 3½ | 4 | |
| | $5.00 | 7.00 | 9.00 | 12.00 | |

### Punches—
*Saddlers' or Drive, good, doz.*.50@75¢
*Spring, single tube, good quality* .....$1.75
*Revolving (4 tubes)*....*doz.*$3.50
Bemis & Call Co.'s Cast St'l Drive.50%
Morrill's Nos. 1AA, 1A, 1B, 1C, 1D, $15.00.....50%
Hercules, 1 die, each $5.00.....50
Niagara Hollow Punches.....10%
Niagara Solid Punches.....55&10%
Tinners' Hollow, P., S. & W. Co..40%
Tinners' Solid, P., S. & W. Co., ℔ doz., $1.44.....40%

### Rail—Barn Door, &c.—
*Sliding Door, Painted Iron, 2½@2¾¢*
*Sliding Door, Wrought Brass, 1⅛ in., lb., 36¢*.....30%
Allith Mfg. Co.: Reliable Hanger Track .....50%
Cronk's:
Double Braced Steel Rail..℔ ft. 3¼ c
O. N. T. Rail.....$3.12
Griffin's:
xxx, ℔ 100 ft., 1 x 3-16 in., $3.25; 1¼ x 3-16 in., $3.75.
Hinged Hanger, ℔ 100 ft., 1 x 3 16 in., $3.50; 1¼ x 3-16 in., $4.00.
Lane's:
Hinged Track, ℔ 100 ft.....$3.45
O. N. T., ℔ 100 ft., 1 in., $3.00; 1¼ in., $3.45; 1½ in., $4.00.
Standard, 1¼ in.....℔ 100 ft. $4.00
Lawrence Bros.:
1 x 3-16 in., ℔ 100 ft., $7.50; 1¼ x 3-16 in., $8.75.....55&7½%
McKinney's:
Hinged Hanger Track, ℔ ft., 11c 60&5
1 x 3-16 Track.....55&7½
Myers' Stayon Track.....60&5%
Richards Mfg. Co.:
Common, 1 x 3-16 in., $3.00; 1¼ x 3-16, $3.25; 1¼ x 3-16, $3.50.
Special Hinged Hanger Rail..60&10%
Lag Screw Rail, No. 65.....50%
Gauge Trolley Track, ℔ ft., No. 31, 9¢; No. 32, 14¢; No. 33, 21¢.
No. 50.....60&10%
Nos. 61, $3.00; 62, $3.25; 63, $3.50; 64, $4.00; 45, $3.25; 46, $3.50; 49, No. 1, $3.25; 49, No. 2, $3.50.

### Rakes—
*NOTE.—Many goods are sold at net prices.*
Fort Madison Red Head Lawn....$3.25
Fort Madison Blue Head Lawn....$2.70
Cronk's:
Steel Garden: Champion, 75%; Ideal, 80%; Victor.....80&25%
Queen City Lawn, ℔ doz., 20 teeth, $2.85; 24, $3.00.....net
Anticlog Lawn ℔ doz.....$4.00
Malleable Garden.....70&10
Ideal Steel Garden, ℔ doz., 12 teeth, $15.00; 14, $16.00; 16, $18.00.....80%
Kohler's:
Lawn Queen, 20-tooth....℔ doz. $3.15
Lawn Queen, 24-tooth....℔ doz. $3.25
Paragon, 20-tooth.....℔ doz. $2.70
Paragon, 24-tooth.....℔ doz. $2.75
Steel Garden, 14-tooth....℔ doz. $2.40
Malleable Garden, 14-tooth, ℔ doz. $2.00@2.25

### Rasps, Horse—
Disston's .....75%
Heller Bros.'.....70&5@70&10&5%
Livright Bros.' Gold Medal.70&10@75%
McCaffrey's American Standard..... 60&10&5%
New Nicholson.....70&10@75%
See also Files.

### Razors—
Liana Bo-ras-ic.....60%
Fox Razors, ℔ doz., No. 42, $20.00; No 44, $20 00; No. 82, Platina, $25.00. } Dis. 40%
Red Devil.....65%

### Reels, Fishing—
Hendryx:
M 6, Q 6, A 6, B 6, M 9¼, M 16, O 16, A 16, B 16, 1008, Rubber, Populo, Nickeled Populo.....20%
Aluminum, German Silv., Bronze.25%
1210 N, 124 N.....20%
3004 N, 06 N, 6 RM, G 9.....25%
4 N, 6 PN, 24 N, 26 PN .....20%
2904 P., 33⅓%; 2904 PN., 33⅓%; 0924 N., 33⅓%; 02084 N., 33⅓%; 002904 PN., 33⅓%; 802 N., 33⅓%
986 PN, 2904 N, 974 PN.....25%
5009 PN 5009 N.....20%
Competitor, 102 P, 102 PN, 202 P, 202 PN, 102 PR, 202 PR .....20%
304 P, 304 PN, 00304 P, 00304 PN.33⅓%

### Registers—*List July 1, 1903.*
*Japanned, Electroplated and Bronzed* .....70%
*White Porcelain Enamel*..50&10%
*Solid Brass or Bronze Metal*.40%

### Revolvers—
*Single Action*.....95¢@$1.00
*Double Action, except 44 cal*.$2.00
*Double Action, 44 caliber*...$2.00
*Automatic* .....$4.00
*Hammerless* .....$4.50

### Riddles, Hardware Grade
*16 in*.....*per doz*.$2.50@$2.75
*17 in*.....*per doz*.$2.75@$3.00
*18 in*.....*per doz*.$3.00@$3.25

### Rings and Ringers—
#### Bull Rings—

| | 2 | 2½ | 3 inch. |
|---|---|---|---|
| *Steel* | $0.70 | 0.75 | 0.80 doz. |
| *Copper* | $1.10 | 1.25 | 1.65 doz. |

#### Hog Rings and Ringers—
*Hill's Rings, gro. boxes*.$4.50@$4.50
*Hill's Ringers, Gray Iron, doz., 60@75¢*
*Hill's Ringers, Malleable Iron, doz.*.80@95¢
*Blair's Rings..per gro*.$5.00@$5.50
*Blair's Ringers...per doz*.75@90¢

### Rivets and Burrs—
*Copper* .....50@50&5%
*Carriage, Coopers', Tinners', &c.:*
*Black* .....70&10%
*Metallic Tinned*.....70%

### Bifurcated and Tubular—
*Assorted in Boxes.*
*Bifurcated, per doz. boxes, pasteboard boxes, 50 count, 23@25¢; Tin boxes, 100 count, 29@32¢.*
*Tubular, per doz. boxes, 50 count, 29@32¢; 100 count, 51@58¢.*

### Rollers—
Cronk's Stay, No. 50.....$1.00
Cronk's Brinkerhoff No. 55, $0.60; No. 56, $0.75; No. 60.....$0.75
Lane's Stay.....40%
Richards' Stay:
Handy Adj. and Reversible No. 53.75¢
O. K. Adj. and Reversible No. 58.50¢
Lag Screw, Nos. 55 and 57.....50%
Underwriters', Nos. 59, 60.....50%
Favorite, No. 54.....60%

### Rope—
*Manila, 7-16 in. diam. and larger:*
*Pure* .....lb. 9½@10¢
*Sisal, 7-16 in. diam. and larger:*
*Pure* .....lb. 6¼@6½¢
*Sisal, Hay, Hide and Bale Ropes, Medium and Coarse:*
*Pure* .....lb. 6¾@7 ¢
*Sisal, Tarred, Medium Lath Yarn:*
*Pure* .....lb. 5¾@6 ¢
*Cotton Rope:*
*Best, ¼-in. and larger*...18@20¢
*Medium, ¼-in. and larger.16@17¢*
*Common, ¼-in. and larger..10¢*
*In coils, ½¢ advance.*
*Jute Rope:*
*Thread, No. 1, ¼-in. and up, lb.* .....6¼¢
*Thread, No. 2, ¼-in. and up, lb.* .....5¾¢

#### Wire Rope—
*Galvanized* .....37½&2½%
*Plain* .....45&2½%

### Ropes, Hammock—
Covert Mfg. Co.:
Jute, 35%; Sisal.....20%

### Rules
*Boxwood* .....60@60&10%
*Ivory* .....35&10@35&10&5%
Chapin-Stephens Co.:
Boxwood .....60%
Flexifold .....40%
Ivory .....25@25&10%
Miscellaneous .....50@50&10%
Stephens' Combination.....55%
Stationers' .....50@50&10%
Keuffel & Esser Co.:
Folding, Wood.....35&10%
Folding, Steel.....33⅓&10%
Lufkin's Steel.....50&10%
Lufkin's Lumber.....50&10%
Upson Nut Co.:
Boxwood .....60@60&10%
Ivory .....35&10@35&10&10

### Sash Balances—
See *Balance, Sash.*

### Sash Locks—See *Locks, Sash.*

### Sash Weights—
See *Weights, Sash.*

### Sausage Stuffers or Fillers
See *Stuffers or Fillers, Sausage.*

### Saw Frames—
See *Frames, Saw.*

### Saw Sets—See *Sets, Saw.*

### Saw Tools—See *Tools, Saw.*

### Saws—

Atkins':
Circular ..... 45%
Band ..... 50@50&10
Butcher Saws ..... 50
Cross Cuts ..... 35
One-Man Cross Cut ..... 40
Narrow Cross Cut ..... 50%
Hand, Rip and Panel ..... 35&5
Miter Box and Compass ..... 40
Mulay, Mill and Drag ..... 45
Wood Saws ..... 40&10%
Chapin-Stephens Co.:
Turning Saws and Frames. 30@30&10%
Diamond Saw & Stamping Works:
Sterling Kitchen Saws....30&10&10%
Disston's:
Circular, Solid and Ins'ted Tooth. 50%
Band, 2 to 18 in. wide ..... 60
Band, ¼ to 1¾ ..... 60%
Crosscuts ..... 45%
Narrow Crosscuts ..... 50%
Mulay Mill and Drag ..... 50
Framed Woodsaws ..... 25%
Woodsaw Blades ..... 25%
Woodsaw Rods, Tinned ..... 15%
Hand Saws, Nos. 12, 99, 9, 16, d100, D8, 120, 76, 77, 8 ..... 25%
Hand Saws, Nos. 7, 107, 107½, 3, 1, 0, 00, Combination ..... 30%
Compass, Key Hole, &c ..... 25%
Butcher Saws and Blades ..... 30%
C. E. Jennings & Co.'s:
Back Saws ..... 16⅔%
Butcher Saws ..... 25&7½%
Compass and Key Hole Saws, 33⅓&7½%
Framed Wood Saws ..... 25&7½%
Hand Saws ..... 12½%
Wood Saw Blades ..... 33⅓&7½%
Millers Falls:
Butcher Saws ..... 15&10%
Star Saw Blades ..... 15&10%
Massachusetts Saw Works:
Victor Kitchen Saws ..... 40&10&50%
Butcher Saws Blades ..... 35@40%
Peace & Richardson's Hand Saws. 30%
Simonds':
Circular Saws ..... 45%
Crescent Ground Cross Cut Saws. 30%
One-Man Cross Cuts ..... 40&10%
Gang Mill, Mulay and Drag Saws. 45%
Band Saws ..... 50
Back Saws ..... 25@25&7½
Butcher Saws ..... 35@35&7½%
Hand Saws ..... 25@25&7½%
Hand Saws, Bay State Brand....45%
Compass, Key Hole, &c..25@25&7½%
Wood Saws ..... 40&7½%
Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws ..... 50%

### Hack Saw Blades and Frames—

Atkins' Hack Saw Blades A A A..25%
Disston's:
Concave Blades ..... 25%
Keystone Blades ..... 35%
Hack Saw Frames ..... 30
Simonds File Co ..... 35%
C. E. Jennings & Co.'s:
Hack Saw Frames, Nos. 175, 180.... 40&7½%
Hack Saws, Nos. 175, 180, complete, 40&7½%
Goodell's Hack Saw Blades....40&10
Griffin's Hack Saw Frames..35&5&10
Griffin's Hack Saw Blades....35&5&10%
Star Hack Saws and Blades....15&10%
Sterling Hack Saw Blades..30&10&5%
Sterling Hack Saw Frames..30&10&10
Sterling Power Hack Saw Machines, each, No. 1, $25.00; No. 2, $30.00..10%
Victor Hack Saw Blades ..... 20%
Victor Hack Saw Frames ..... 40%
Whitaker Mfg. Co.:
National Hand Blades ..... 40%
National Hand Frames ..... 30&5%
National Power Blades ..... 30&10%

### Scroll—

Barnes, No. 7, $15 ..... 25%
Barnes' Scroll Saw Blades ..... 10%
Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20 ..... 20%
Lester, complete, $10.00 ..... 15&10
Rogers, complete, $3.50 and $4.00.. 15&10%

### Scales—

*Union Platform, Plain. $2.10@2.20*
*Union Platform, Stpd. $2.20@2.30*
Chatillon's:
Eureka ..... 25%
Favorite ..... 40
Grocers' Trip Scales ..... 50%
The Standard Portables ..... 40%
The Standard R. R. and Wagon ..... 50&10%

### Scrapers—

*Bor. 1 Handle ..... doz. $1.85@2.10*
*Bor. 2 Handle ..... doz. $2.35@2.50*
*Ship... Light, $2.00; Heavy, $4.50*
Chapin-Stephens Co., Box..30@30&10
Richards Mfg. Co., Foot ..... 60

### Screws—Bench and Hand

*Bench, Iron, doz., 1 in., $2.50@ [illegible]; 1¼, $3.00@3.25; 1¼, $3.50@3.75*
*Bench, Wood ..... 20@20&10%*
*Hand, Wood....70&10@70&10&10%*
Chapin-Stephens Co., Hand... 70@70&10&2½%

### Coach, Lag and Hand Rail—

*Lag Cone Point...80&5@80&10%*
*Coach, Gimlet Point..80@80&5%*
*Hand Rail ..... 70&10@75%*

### Jack Screws—

*Standard List ..... 70&10@75%*
Morris Pitts ..... 50&10&10
Sweet Iron Works ..... 70@75

### Machine—

*Cut Tread, Iron, Brass or Bronze:*
*Flat Head or Round Head, 50@50&10%*
*Fillister Head... 40@30&10%*
*Rolled Thread, F. H. or R. H., Iron ..... 75&10%*
*F. H. or R. H., Brass, Nos. 8 to 14 ..... 65&10%*

### Set and Cap—

*Set (Iron) ..... 75&10&7½%*
*Set (Steel), net advance over Iron ..... 25%*
*Sq. Hd. Cap ..... 70&10&7½%*
*Hex. Hd. Cap ..... 70&10&7½%*
*Rd. Hd. Cap ..... 50&7½%*
*Fillister Hd. Cap ..... 60&7½%*

### Wood—

*List July 23, 1903.*
*Flat Head, Iron.....87½&5@..%*
*Round Head, Iron....85&5@..%*
*Flat Head, Brass.....80&5@..%*
*Round Head, Brass..77½&5@..%*
*Flat Head, Bronze....75&5@..%*
*Round Head, Bronze.72½&5@..%*
*Drive Screws.....87½&5@..%*

### Scroll Saws—

See *Saws, Scroll.*

### Scythes—

*Per doz.*
*Grass, No. 1, Plain ..... $7.00*
*Clipper, Bronzed Webb..... $7.25*
*No. 3 Clipper, Pol'd Webb... $7.50*
*No. 6 Clipper and Solid Steel. $7.75*
*Bush, Weed and Bramble, Nos. 11, 12 and 13 ..... $7.25*
*Grain, No. 1 ..... $9.00@9.50*
*Bronzed Webb, No. 1...$9.25@9.75*
*Nos. 3 and 4 Clipper, Grain, $9.50@10.00*
*Solid Steel, No. 6....$10.00@10.50*

### Seeders, Raisin—

Enterprise ..... 25@30%

### Sets— Awl and Tool—

Fray's Adj. Tool Handles, Nos. 1, $12; 2, $16; 3, $12 ..... 50%
Millers Falls Adj. Tool Handles, No. 1, $12; No. 4, $12; No. 5, $18..20&10%

### Garden Tool Sets—

Ft. Madison Three Plows, Hoe, Rake and Shovel ..... ℔ doz. sets $9.00

### Sets, Nail—

*Octagon ..... gro. $3.50@3.75*
Buck Bros. ..... 27½
Cannon's Diamond Point, ℔ gro. $12, 40&10%
Mayhew's ..... ℔ gro. $9.00
Snell's Corrugated, Cup Pt.....40&10%
Snell's Knurled, Cup Pt.....40&10%
Victor Knurled, Cup Pt....℔ gro. $7.50

### Rivet—

*Regular list ..... 75@75&10%*

### Saw—

Atkin's:
Criterion ..... 40%
Adjustable ..... 40
Disston's Star, Monarch and Triumph ..... 30%
Morrill's No. 1 ..... $15.00
Nos. 3 and 4, Cross Cut....$20.60
No. 5, Mill ..... $30.00
Nos. 10, 11, 95 ..... $15.60
No. 1 Old Style ..... $10.00
Special ..... $16.25
} 50%
Giant Royal Cross Cut.....℔ doz. $8.00
Royal, Hand ..... ℔ doz. $4.50
Taintor Positive ..... ℔ doz. $6.75

### Shaving—

Fox Shaving Sets, No. 30..... ℔ doz., net, $24.00
Smith & Hemenway Co.'s ..... 75%

### Sharpeners, Knife—

Pike Mfg. Co.:
Fast Cut Pocket Knife Hones, ℔ doz. ..... $1.50
Mounted Kitchen Sand Stone, ℔ doz ..... $1.50
Natural Grit Carving Knife Hones, ℔ doz. ..... $3.00
Quick Cut Emery Carving Knife Hones, ℔ doz. ..... $1.50
Quick Edge Pocket Knife Hones, ℔ doz ..... $2.50
} 50%

### Skate—

Smith & Hemenway Co., Eureka..50%

### Shaves, Spoke—

*Iron ..... doz. $1.25*
*Wood ..... doz. $2.00*
Bailey's (Stanley R. & L. Co.)..... 45%
Chapin-Stephens Co. ..... 30@30&10
Goodell's, ℔ doz. $9.00 ..... 15&10

### Shears—

| *Cast Iron..* | 7 | 8 | 9 in. |
|---|---|---|---|
| *Best* | *$16.00* | *18.00* | *20.00 gro.* |
| *Good* | *$13.00* | *15.00* | *17.00 gro.* |
| *Cheap* | *$5.00* | *6.00* | *7.00 gro.* |

*Straight Trimmers, &c.:*
*Best quality Jap.... 70&10&10%*
*Best quality Nickel..60&10&10%*
*Tailors' Shears ..... 40&10&10*
Acme Cast Shears ..... 40&10&5
Heinisch's Tailor's Shears ..... 10
National Cutlery Co.'s Nickel Plated, 60&10%; Japan Handles..... 70&10
Wilkinson Shear & Cutlery Co.:
Sheep, 1900 list ..... 30&10&5
Grass ..... 50&10
Horse or Mule ..... 50&10
J. Wiss & Sons Co.:
Best Quality Lacquered ..... 60&10
Best Quality Nickeled ..... 50&10
Tailors' ..... 10

### Tinners' Snips—

*Steel Blades ..... 20&5@20&10%*
*Steel Laid Blades ..... 40&10@50%*
Forged Handles, Steel Blades, Berlin ..... 50%
Heinisch's Snips ..... 40%
Jennings & Griffin Mfg. Co.'s 6½ to 10 in. ..... 33⅓&7½%
National Cutlery Co.'s Forged Steel. 50%
Niagara Snips ..... 40
P., S. & W. Forged Handles, 25%; W. R. W. ..... 40&10%
J. Wiss & Sons Co.:
Wiss Forged Steel ..... 25%

### Pruning Shears—

Cronk's Hand Shears ..... 33⅓%
Cronk's Wood Handle Shears....33⅓%
Disston's Combined Pruning Hook and Saw, ℔ doz, $18.00 ..... 25%
Disston's Pruning Hook only, ℔ doz., $12.00 ..... 25%
John T. Henry Mfg. Co.:
Pruning Shears, all grades ..... 40%
P., S. & W. Co. ..... 40&10%
Columbian Cutlery Co.:
Hedge, Wilcut Brand ..... 60&10%
Lawn and Border, Wilcut Brand, 60&10%

### Sheaves—Sliding Door—

Reading ..... 40%
R. & E. list ..... 15%

### Sliding Shutter—

Reading list ..... 40%
R. & E. list ..... 10%

### Shells—Shells, Empty—

Brass Shells, Empty:
Climax, 10 and 12 gauge ..... 65&10%
Club, Rival, 65&5%; First Quality, 60&5%
Paper Shells, Empty:
New Rapid, 10, 12, 16 and 20 gauge, 25&10%
Climax, 10 and 12 gauge; Acme, 10, 12, 16 and 20 gauge; Ideal, 10, 12, 16 and 20 gauge; Leader grade, 25&5%
Union League, 12 and 12 gauge; Rival Grade ..... 25%
New Climax, Defiance, 10, 12, 14, 16 and 20 gauge; Climax, 14, 16 and 20 gauge ..... 20&5%
Challenge, Monarch, 10, 12, 16 and 20 gauge; League, Union, 14, 16 and 20 gauge; Repeater Grade..20%

### Shells, Loaded—

*Loaded with Black Powder..40%*
*Loaded with Smokeless Powder, medium grade ..... 40&5%*
*Loaded with Smokeless Powder, high grade ..... 40&10&10%*
Union Metallic Cartridge Co.:
New Club, Black Powders ..... 40%
Nitro Club, Smokeless Powders. 40&5%
Arrow, Smokeless Powders. 40&10&10%
Winchester:
Smokeless Repeater Grade ..... 40&5%
Smokeless Leader Grade...40&10&10%
Black Powder ..... 40%

### Shingles, Metal— Per Sq.

| Edwards Mfg. Co.: | Painted. | Galv. |
|---|---|---|
| 14 x 20 | $4.25 | $6.00 |
| 10 x 14 | 4.50 | 6.25 |
| 7 x 10 | 4.75 | 6.50 |

Wheeling Corrugating Co.:
Dixie, 14 x 20 in....$4.25 $5.50
Dixie, 10 x 14 in.... 4.50 6.00
Dixie, 7 x 10 in.... 5.00 6.75

### Shoes, Horse, Mule, &c.—

*F.o.b. Pittsburgh:*
*Iron ..... per keg. $4.10*
*Steel ..... per keg. $3.85*
Burden's, all sizes ..... ℔ keg $3.90

### Shot—

*25-lb. bag.*
*Drop, up to B ..... $1.80*
*Drop, B and larger ..... 2.05*
*Buck ..... 2.05*
*Chilled ..... 2.05*
*Dust ..... 2.30*

### Shovels and Spades—

*Association List, Nov. 15, 1902. 40%*
Avery Stamping Co. ..... 40%

### Snow Shovels—

*Long Handle ..... $3.25@$3.50*
*Wood and Mall, D Handle, $3.75@$4.00*

### Sieves and Sifters—

*Hunter's Imitation, gro.... $9.50*
*Hunter's Genuine, per gro..$12.00*

### Sifters, Ash—

Acme Ball Bearing Sales Co., Acme Automatic Ash Sifter, each, $3.25; ℔ doz. ..... $39.00

### Sieves, Seamless Metallic

| | —Per dozen.— | | | |
|---|---|---|---|---|
| *Mesh* | *14* | *16* | *18* | *20* |
| *Iron Wire* | *$1.05* | *1.05* | *1.10* | *1.20* |
| *Tinned Wire* | *$1.15* | *1.15* | *1.20* | *1.30* |

### Sieves, Wooden Rim—

*Nested, 10, 11 and 12 Inch.*
*Mesh 18, Nested.... doz. $0.90@0.95*
*Mesh 20, Nested.... doz. $1.00@1.05*
*Mesh 24, Nested.... doz. $1.30@1.40*

### Sinks, Cast Iron—

*Painted, Standard list:*
*12 x 12 to 22 x 36 in..... 60%*
*20 x 24 to 24 x 50 in..... 50*
*24 x 60 to 24 x 120 in..... 30*
Extra [illegible]
Up to and including 20 x 36 in. 50&5
24 x 40 to 24 x 50 in. ..... 45

*NOTE.—There is not entire uniformity in lists used by jobbers.*

### Skeins, Wagon—

*Cast Iron ..... 70@75&10%*
*Steel ..... 40@45%*

### Slates, School—

*Factory Shipments.*
*"D" Slates ..... 50@50&10%*
*Eureka, Unexcelled Noiseless.. 60&7 tens.*
*Victor A, Noiseless. 60&4 tens &5%*

### Slaw Cutters—See *Cutters.*

### Snaps, Harness—

*German ..... 40@40&10%*
Covert Mfg. Co.:
Derby, 25%; Yankee, 30&2%; Yankee Roller, 30&2%.
High Grade, 40%; Trojan ..... 40%
Jockey ..... 25%

### Snaths—

*Scythe ..... 60%*

### Snips, Tinners—See *Shears.*

### Spoons and Forks—

#### Silver Plated—

*Good Quality ..... 50&10@60&5%*
*Cheap ..... 60@60&10%*
International Silver Co:
1847 Rogers Bros., 40&10%; Rogers & Hamilton ..... 50&10%
Rogers & Bro., William Rogers' Eagle Brand ..... 50&10%
Anchor, Rogers Brand ..... 60%
Wm. Rogers & Son ..... 60&10%

#### Miscellaneous

*German Silver ..... 60@60&5%*

#### Tinned Iron—

*Teas ..... per gro. 50@55¢*
*Tables ..... per gro. $0.90@$1.00*

### Springs— Door—

Bardsley's Spring and Check ..... 40%
Chicago (Coil) ..... 40&10%
Gem (Coil) ..... 20%
Pullman Door and Gate ..... 10%
Reliance (Coil) ..... 40&10%
Star (Coil) ..... 30%
Torrey's Rod, 39 in. ..... ℔ doz. $1.10

### Carriage, Wagon, &c.—

*1¼ in. and Wider: Per 100 lb.*
*Black ..... $4.75@$5.00*
*Half Bright ..... $4.75@$5.00*
*Bright ..... $5.25@$5.50*
*Painted Seat Springs:*
*1½ x 2 x 26.... per pair. 45@47¢*
*1½ x 3 x 28.... per pair. 68@71¢*

### Sprinklers, Lawn—

American Foundry & Mfg. Co.:
Cactus, 65%; Japanese, 70%; National, ℔ doz ..... $12.00
Enterprise ..... 25@30%
Philadelphia No. 1, ℔ doz. $12; No. 2, $15; No. 3, $20 ..... 30%

### Squares—

*Nickel plated..* } *List Jan. 5, 1900.*
*Steel and Iron.* } *80@80&5%*
*Rosewood Hdl. Try Square and T-Bevels ..... 60&10&10@70%*
*Iron Hdl. Try Squares and T-Bevels ..... 40&10@40&10&10%*
Disston's Try Squares and Bevels, Rosewood Handle, 60 & 10%; Iron Stock and Bevel ..... 15%

### Squeezers, Lemon

*Wood, Porcelain Lined:*
*Cheap ..... doz. $1.00*
*Good Grade ..... doz. $1.25*
*Tinned Iron ..... doz. $0.75@1.00*
*Iron, Porcelain Lined... doz. $1.75*

### Staples—

*Barbed Blind..... 85&5@85&10%*
*Electricians' ..... 80&10&10@85%*
*Fence Staples, Polished, $2.05; Galvanized ..... $2.35*
*Poultry Netting Staples..... per lb. 3¼@3½¢*

### Steels, Butchers'—

Dick's ..... 30%
Foster Bros.' ..... 30

### Steelyards— .... 30@30&10%

### Stocks and Dies—

*Blacksmiths' ..... 50@50&10%*
Curtis Reyble Ratchet Die Stock. 25
Derby Screw Plates ..... 25
Green River ..... 25%
Lightning Screw Plate ..... 25%
Little Giant ..... 25
Reece's New Screw Plate ..... 25

### Stoners, Cherry—

Enterprise ..... 25@30%

### Stones—Oil, &c.

Pike Mfg. Co., 1907 list: ℔ lb.
Arkansas St., No. 1, 3 to 5 in. [illegible]
Arkansas St., No. 1, 5 to 8 in. [illegible]
Arkansas Slips, No. 1 [illegible]
Lily White Washita [illegible]
Rose Red Washita [illegible]
Washita St., Extra [illegible]
Washita St., No. 1 [illegible]
Washita St., No. 2 [illegible]
Lily White Slips [illegible]
Rose Red Slips [illegible]
Washita Slip, Extra [illegible]
Washita Slip, No. 1 70¢
Washita Slip, No. 2 40¢
} 33⅓%
Lake Oil Stones, entire list ..... 33⅓%
Quickcut Emery and Corundum Oil Stone, Double Grit ..... 40%
Quickcut Emery and Corundum Axe Stone, Double Grit ..... 33⅓%
Quickcut Emery Rubbing Bricks 40%
Hindostan No. 1, Regular ℔ lb. 80¢
Hindostan No. 1 Small ℔ lb. 100¢
Axe Stones (all kinds) ..... 33⅓%
Turkey Oil Stones, Extra, 5 to 8 in. ℔ lb. 80¢
Queen Creek Stones, 4 to 8 in. 20¢
Queen Creek Slips ..... 16¢
Sand Stone ..... 6¢

### Scythe Stones—

Pike Mfg. Co., 1901 list:
Black Diamond S. S., ℔ gro. $12.00
Lamoille S. S., ℔ gro. $11.00
White Mountain S. S., ℔ gro. $9.50
Green Mountain S. S., ℔ gro. $7.00
Extra Indian Pond S.S., ℔ gro. $8.00
No. 1 Indian Pond S.S., ℔ gro. $7.50
No. 2 Indian Pond S.S., ℔ gro. $5.00
Leader Red End S. S., ℔ gro. $5.00
Quick Cut Emery, ℔ gro. $10.00
Pure Corundum, ℔ gro. $18.00
Crescent, $7.00
Emery Scythe Rifles, 2 Coat, $8.80
Emery Scythe Rifles, 3 Coat, $11.00
Emery Scythe Rifles, 4 Coat, $13.20
Balance of 1901 list 33⅓%
Electro (Artificial), ℔ gro. $12.00, 33⅓%
Lightning (Artificial), ℔ gro. $18.00, 33⅓%

### Stoppers, Bottle—

Victor Bottle Stoppers, ℔ gro. $9.00

### Stops—Bench—

Millers Falls, 15&10
Morrill's, ℔ doz., No. 1 $10.00, 50
Morrill's, No. 2, $12.50, 50

### Door—

Chapin-Stephens Co., 50@50&10%

### Plane—

Chapin-Stevens Co., 20

### Straps—Box—

Acme Embossed, case lots, 20&10&10
Cary's Universal, case lots, 20&10&10

### Stretchers, Carpet—

*Cast Iron, Steel Points, doz. 55c*
*All Steel Socket, doz. $2.00@2.25*
Excelsior Stretcher and Tack Hammer Combined, ℔ doz., $6.00, 20

### Stuffers, Sausage—

Enterprise Mfg. Co., 25@25&7½%
National Specialty Co., list Jan. 1, 1902, 30&5%
P., S. & W. Co., 40&10&5

### Sweepers, Carpet—

| | ℔ doz. |
|---|---|
| Bissell Carpet Sweeper Co.: | |
| Superba, Cr. Arch Mahogany | $36.00 |
| Triumph, Fancy Veneers | $33.00 |
| Parlor Queen Fig. Rosewood | $30.00 |
| Elite, Hungarian Ash | $29.50 |
| Am. Queen, Fig. Mahogany | $27.00 |
| Ideal, Bird's-Eye Maple | $25.00 |
| Grand Rapids, Nickel, Japan | $24.00; $22.00 |
| Standard, Nickel, $22.00; Japan | $20.00 |
| Crown Jewel, Nickel, $21.00; Japan | $19.00 |
| Crystal, Glass Top | $36.00 |
| Grand, 17 in. wide | $36.00 |
| Parlor Grand | $48.00 |
| Club, 24 in. wide | $54.00 |
| Hall 28 in. wide | $60.00 |

*NOTE.—Rebates: 50c per dozen on three dozen lots; $1 per dozen on five-dozen lots; $2 per dozen on ten dozen lots; $2.50 per dozen on twenty-five dozen lots.*

## Tacks, Finishing Nails, &c.

*American Carpet Tacks*, 90&10%
*American Cut Tacks*, 90&40%
*Swedes' Cut Tacks*, 90&40
*Swedes' Upholsterers'*, 90&50%
*Gimp Tacks*, 90&50
*Lace Tacks*, 90&50
*Trimmers' Tacks*, 90&40%
*Looking Glass Tacks*, 65%
*Bill Posters' and Railroad Tacks*, 90&50&10%
*Hungarian Nails*, 80&20%
*Finishing Nails*, 70
*Trunk and Clout Nails*, 80&10%

*NOTE.—The above prices are for Straight Weights.*

### Miscellaneous—

*Double Pointed Tacks*, 90&6 tens@—%
See also Nails, Wire.

### Tanks, Oil and Gasoline—

Wilson & Friend Co.:

| Gal. | Gasoline | Oil |
|---|---|---|
| 30 | $2.75 | $3.00 |
| 60 | $3.50 | $4.00 |
| 110 | $5.00 | $5.75 |

### Tapes, Measuring—

*American Asses' Skin*, 50@—%
*Patent Leather*, 25@30@5%
*Steel*, 33⅓@5%
*Chesterman's*, 25@25@5%
Keuffel & Esser Co.:
Favorite, Ass Skin, 40&10@50
Favorite, Duck and Leather, 25&5@25&10
Metallic and Steel, lower list, 35@35&5%; Pocket, 35@35&5%.
Lufkins:
Asses' Skin, 40&10@50
Metallic, 30@30&5
Patent Bend, Leather, 25&5@25&10%
Steel, 40@40&5%
Wood, 33⅓@35
Wiss, Neal & Hilger:
Chesterman's Metallic, No. 34L, 25
Chesterman's Steel, No. 1038L, 35

### Teeth, Harrow—

*Steel Harrow Teeth, plain or headed, ⅝-inch and larger, per 100 lb.*, $2.55@$2.80

### Thermometers—

*Tin Case, Cabinet, Flange, Dairy, &c.*, 30@35%

### Ties, Bale—Steel Wire—

*Single Loop*, 82½&10%
*Monitor, Cross Head, &c.*, 70&2½%

### Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

### Tinware—

Stamped, Japanned and Piece, sold very generally at net prices.

### Tire Benders, Upsetters, &c.

See *Benders and Upsetters, Tire.*

### Tools—Coopers'—

L. & I. J. White, 20@20&5%

### Haying—

Myers' Hay Tools, 45%

### Ice Tools—

Gifford-Wood Co., 15%

### Miniature—

Smith & Hemenway Co.'s, Davidson, ℔ doz., Nickel Plated, $1.50; Gold Plated, $2.00

### Saw—

Atkins' Cross Cut Saw Tools, 35&5
Simond's Improved, 33⅓
Simonds' Crescent, 25

### Ship—

L. & I. J. White, 25%

### Transom Lifters—

See *Lifters, Transom.*

### Traps—Fly—

*Balloon, Globe or Acme, doz., $1.15@$1.25; gro., $11.50@12.00*
*Harper, Champion or Paragon, doz., $1.25@1.40; gro. $13.00@13.50*

### Game—

*Imitation Oneida*, 75@10%
Newhouse, 40&5
Hawley & Norton, 65
Victor, 75@75&10
Oneida Community Jump, 50
Hector, 75@75&10

### Mouse and Rat—

*Mouse, Wood, Choker, doz. holes, 12¢*
*Mouse, Round or Square Wire, doz. 85@90¢*
Marty French Rat and Mouse Traps (Genuine):
No. 1, Rat, ℔ doz., $13.25..$11.50 doz.
No. 3, Rat, ℔ doz., $6.50...$5.75 doz.
No. 3½, Rat, ℔ doz., $5.25. $4.70 doz.
No. 4, Mouse, ℔ doz., $3.85. $3.00 doz.
No. 5, Mouse, ℔ doz., $3.00. $2.25 doz.
Oneida Community:
Out o' Sight, Mouse, ℔ doz., $0.60
Out o' Sight, Rat, ℔ doz., 1.25
Easy Set, Mouse, ℔ doz., .35
Easy Set, Rat, ℔ doz., 1.00
Wood Choker, Rat, ℔ doz. holes, .12
Premier Tin Choker, 5 hole, ℔ doz. traps, .75

### Trowels—

Disston Brick and Pointing, 25%
Disston Plastering, 20
Disston "Standard Brand" and Garden Trowels, 30%
Kohler's Steel Garden Trowels, ℔ gro., 5 in., $4.80; 6 in., $6.00.
Never-Break Steel Garden Trowels, ℔ gro. $6.00
Woodrough & McParlin, Plastering, 25%

### Trucks, Warehouse, &c.—

B. & L. Block Co.:
New York Pattern, 50&10%
Western Pattern, 60&10
Handy Trucks, ℔ doz. $16.00
Grocery, ℔ doz $15.00
McKinney Trucks, each, net $10.00
Model Stove Trucks, ℔ doz $18.50

### Tubs, Wash—

*M'f'gr's list, price per gross.*

| No. | 0 | 1 | 2 | 3 | |
|---|---|---|---|---|---|
| *Galvanized* | $67 | $79 | $89 | $99 | 10&7½&5&5% |

### Twine, Miscellaneous—

*Flax Twine:*
*No. 9, ¼ and ½-lb. Balls*, 21@23¢
*No. 12, ¼ and ½-lb. Balls*, 19@21¢
*No. 18, ¼ and ½-lb. Balls*, 16@18¢
*No. 24, ¼ and ½-lb. Balls*, 15½@17½¢
*No. 36, ¼ and ½-lb. Balls*, 15@17¢
*Chalk Line, Cotton Balls*, 24@29¢
*Cotton Mops, 6, 9, 12 and 15 lb. to doz.*, 8½@19¢
*Cotton Wrapping, 5 Balls to lb. according to quality*, 13½@19¢
*American 2-Ply Hemp, ¼ and ½-lb. Balls*, 12½@15¢
*American 3-Ply Hemp, ¼ and ½-lb. Balls*, 13½@16¢
*India 2-Ply Hemp, ¼ and ½-lb. Balls (Spring Twine)*, 7½@9¢
*India 3-Ply Hemp, 1-lb. Balls*, 7½@9¢
*India 2-Ply Hemp, 1½-lb. Balls*, 7@8½¢
*2, 3, 4 and 5-Ply Jute, 1½-lb. Balls*, 9@1¢
*Mason Line, Linen, ½-lb. Bls.*, 47¢
*No. 36½ Mattress, ¼ and ½ lb. Balls, according to quality*, 30@60¢
*Wool, 3 to 6 ply*, B 6¢; A 7½¢

## Vises—

*Solid Box*, 50&5@50&10&5%

### Parallel—

Athol Machine Co.:
Simpson's Adjustable, 40%
Standard, 40
Amateur, 25
Columbian Hdw. Co., 40
Fisher & Norris Double Screw, net, each, Nos. 2, $10.50; 3, $16.00; 4, $20.50; 5, $27.00.
Fulton Mach. & Vise Co.:
Reed, Swivel, 25%
Star, Solid Jaw, 40
Hollands':
Machinists', 40@40&5
Keystone, 65&5@70%
Lewis Tool Co.:
Adjustable Jaw, 30%
Monarch, 50; Solid Jaw, 50
Massey Vise Co.:
Clincher, 40%
Perfect, 15%; Lightning Grip, 15%
Merrill's, 20%
Millers Falls Oval Slide Pattern, 60&10%
Parker's:
Victor, 20@25%; Regulars, 20@25%
Vulcan's, 40@45
Combination Pipe, 55@60%
Prentiss, 20@25%
Rock Island, 25%
Snediker's X. L., 33⅓%
Stephens', 33⅓%

### Saw Filers

Disston's D 3 Clamp and Guide, ℔ doz., $24.00, 30; Clamps, 30
Perfection Saw Clamps, ℔ doz., $1.50
Reading, 60%

### Wood Workers—

Fulton Mach. & Vise Co.:
Reed, 25%
Star, 40
Massey Vise Co.:
Lightning Grip, 15%; Perfect, 15%
Wyman & Gordon's Quick Action, 6 in., $6.00; 9 in., $7.00; 14 in., $8.00.

### Miscellaneous—

Holland's Combination Pipe, 60@60&5%
Massey's Quick Action Pipe, 40%
Parker's Combination Pipe:
87 Series, 60%; 187 Series, 60&5%; No. 870, 40%.
Rock Island Pipe, 25%

## Wads—*Price per M.*

*B. E., 11 up*, 60¢
*B. E., 9 and 10*, 70¢
*B. E., 8*, 80¢
*B. E., 7*, 80¢
*P. E., 11 up*, $1.00
*P. E., 9 and 10*, 1.25
*P. E., 8*, 1.50
*P. E., 7*, 1.50
*Dis. 15%*
*Ely's B. E., 11 and larger*, $1.70@1.75
*Ely's P. E., 12 to 20*, $3.00@3.25

### Ware, Hollow—Cast Iron, Hollow—

*Store Hollow Ware:*
*Enameled*, 45&10%
*Ground*, 50&5%
*Plain or Unground*, 60%
*Country Hollow Ware, per 100 lbs*, $2.75@$3.00
*White Enameled Ware:*
*Muslin Kettles*, 65&10%
*Covered Wares:*
*Tinned and Turned*, 35&10%
*Enameled*, 45&10%
See also *Pots, Glue.*

### Enameled—

Agate Nickel Steel Ware, 33⅓%
Iron Clad Ware, 70&10%
Lava and Volcanic, Enameled, 40&10%

### Tea Kettles—

*Galvanized Tea Kettles:*

| *Inch* | 6 | 7 | 8 | 9 |
|---|---|---|---|---|
| *Each* | 45¢ | 50¢ | 55¢ | 65¢ |

### Steel Hollow Ware—

Avery Spiders and Griddles, 65@65&5%
Avery Kettles, 60
Porcelained, 50&5@50&10
Never Break Spiders and Griddles, 65&5%
Never Break Kettles, 60%
Solid Steel Spiders and Griddles, 65&5%
Solid Steel Kettles, 60%

### Warmers, Foot—

Pike Mfg. Co., Soapstone, 40@40&10%

### Washboards—

| Solid Zinc: | ℔ doz. |
|---|---|
| Crescent, family size, bent frame | $4.05 |
| Red Star, family size, stationary protector | $4.05 |
| Double Zinc Surface: | |
| Saginaw Globe, family size, stationary protector | $3.55 |
| Cable Cross, family size, stationary protector | $3.60 |
| Single Zinc Surface: | |
| Naiad, family size, open back, perforated | $3.00 |
| Single Saginaw Globe | $2.85 |
| Brass Surface: | |
| Brass King, Single Surface, open back | $4.05 |
| Nickel Plate Surface: | |
| No. 1001 Nickel Plate, Single Surface | $3.60 |
| Glass Surface: | |
| Glass King, Single Surface, open back | $3.95 |
| Enamel Surface: | |
| Enamel King, Single Surface, ventilated back | $3.95 |

### Washers—Leather, Axle—

*Solid*, 90@90&10%
*Patent*, 90@90&5%
*Coil:* ⅞ 1 1¼ 1¼ inch.
9¢ 10¢ 11¢ 14¢ per box.

### Iron or Steel—

*Size bolt*, 5-16 ⅜ ½ ⅝ ¾
*Washers*, $4.65 3.75 2.45 2.25 2.05
*The above prices are based on $6.75 off list.*
*In lots less than one keg add ½¢ per lb.; 5-lb. boxes add ½¢ to list.*

### Cast Washers—

*Over ½-inch, barrel lots, per lb.*, 1½@1¾¢

### Wedges—

*Oil Finish*, lb., 2¼@2¾¢

### Weights—Hitching—

Covert Mfg. Co., 30&2%

### Sash—

*Per net ton, f.o.b. factory:*
*Eastern District*, $21.00@—
*Western and Central Districts*, $20.00@$22.00

### Wheels, Well—

*8-in., $2.00; 10-in., $2.30; 12-in., $3.00; 14-in., $4.45.*

### Wire and Wire Goods—

*Bright and Annealed:*
*6 to 9*, 72&10&7½%
*10 to 18*, 72½&10&10%
*19 to 26*, 75&10&10&2½%
*27 to 36*, 77½&7½%
*Galvanized:*
*6 to 9*, 72½&10%
*10 to 14*, 72½&10&5%
*15 to 16*, 72½&10&5%
*17 to 18*, 72½%
*19 to 26*, 70&5&2½%
*27 to 36*, 65&10&10%
*Coppered:*
*6 to 9*, 65&10&10%
*10 to 14*, 70&10&5%
*15 to 18*, 65&10&10&10%
*19 to 26*, 70&5&2½%
*27 to 36*, 72½&10&2½%
*Tinned:*
*6 to 18*, 67&10&10%
*Brass*, 15½¢ lb., base
*Copper*, 15¢ lb., base
*Cast Steel Wire*, 50%

### Spooled Wire—

*Annealed and Tinned*, 75%
*Brass and Copper*, 70%
*Retailers' Assortments, per box*, $2.00@$2.25
Wire Clothes Line, See Lines.
Wire Picture Cord, see Cord.

### Bright Wire Goods—

*Steel Wire Goods*, 90&10%
*Brass Wire Goods*, 90&10%
*Brass Cup and Shoulder Hooks*, 85&10%

### Wire Cloth and Netting—

*Galvanized Poultry Netting*, 80&2½@80&7½%
*Painted Screen Cloth, 100 ft.*, $1.35
*Standard Galv. Hardware Grade: 100 ft. rolls, 2 to 48 in. wide, Per 100 sq. ft.*
*Nos. 2, 2½ and 3 Mesh*, $2.75
*Nos. 4 and 5 Mesh*, $3.00
*No. 6 Mesh*, $3.25
*Nos. 7 and 8 Mesh*, $3.75

### Wire, Barb—See *Trade Report*

### Wrenches—

*Agricultural*, 80&10&10%
*Alligator or Crocodile*, 70&10@75%
*Baxter Pattern S Wrenches*, 70&5@70&10%
*Drop Forged S*, 45@45&5%
Acme, 60&10
Alligator Pattern, 70%; Bull Dog, 70%
Bemis & Call's:
Adjustable S, 40%; Adjustable S Pipe, 40%; Briggs Pattern, 40%; Combination Bright, 40%.
Steel Handle Nut, 50%
Combination Black, 40&5%
Merrick Pattern, 50%
Boardman's, 40%
Coes' Genuine Knife Hdl., 40&10&5&5%
Coes' Genuine Steel Hdl., 40&10&5&5%
Coes' Genuine Key Model, 40&10&5&5%
Coes' Genuine Hammer Handle, 40&10&5&5%
Coes' "Mechanics'", 40&10&10&5&5%
Donohue's Engineer, 40&10%
Eagle, 70%
Gem Pocket, 30%
Hercules, 70%
W. & B. Machinist:
Case lots, 50&5%
Less than case lots, 50%
W. & B. Railroad Special:
Case lots, 50%
Less than case lots, 40&10&5%
Solid Handles, P., S. & W., 50&10%; full cases, 50&10&5%
Standard Nipple Mfg. Co.:
Duplex Chain, 50%
Stillson, 65%
Uwanta Wrench Co.:
Uwanta Special, Iron Handle, 40&10&5%
Other Wrenches, 50%
Vulcan and Agrippa Chain, 50%
Whitaker Machinists':
Case Lots, 50&10%
Less than case lots, 50%

### Fruit Jar—

Benj. P. Forbes, Triumph, ℔ gro., $7.50; per doz., $0.90

### Wrought Goods—

*Staples, Hooks, &c., list March 17, '02*, 90@—%

## Zinc—*(Cask lots at mill.)*

*Sheet*, per 100 lb., $7.00

# THE IRON AGE

New York, Thursday, July 30, 1908.


## The Milwaukee High Power Miller.

In the Milwaukee No. 3-B universal milling machine, the Kearney & Trecker Company, Milwaukee, Wis., has made a number of striking departures from usual practice. The machine is of constant-speed drive, high-power type, designed, as the latter designation implies, to take heavy cuts at fast feeds beyond the limit of work ordinarily put upon a knee-type miller. That the machine is intended for heavy work is readily apparent from the illustrations herewith. The lines as a whole suggest it, and examination into the details of any of its parts bears out the impression, strength being found where strength will be needed, ample bearing surfaces for all sliding and revolving parts and a general stockiness at all places where unfavorable leverages exist when the machine is heavily loaded.

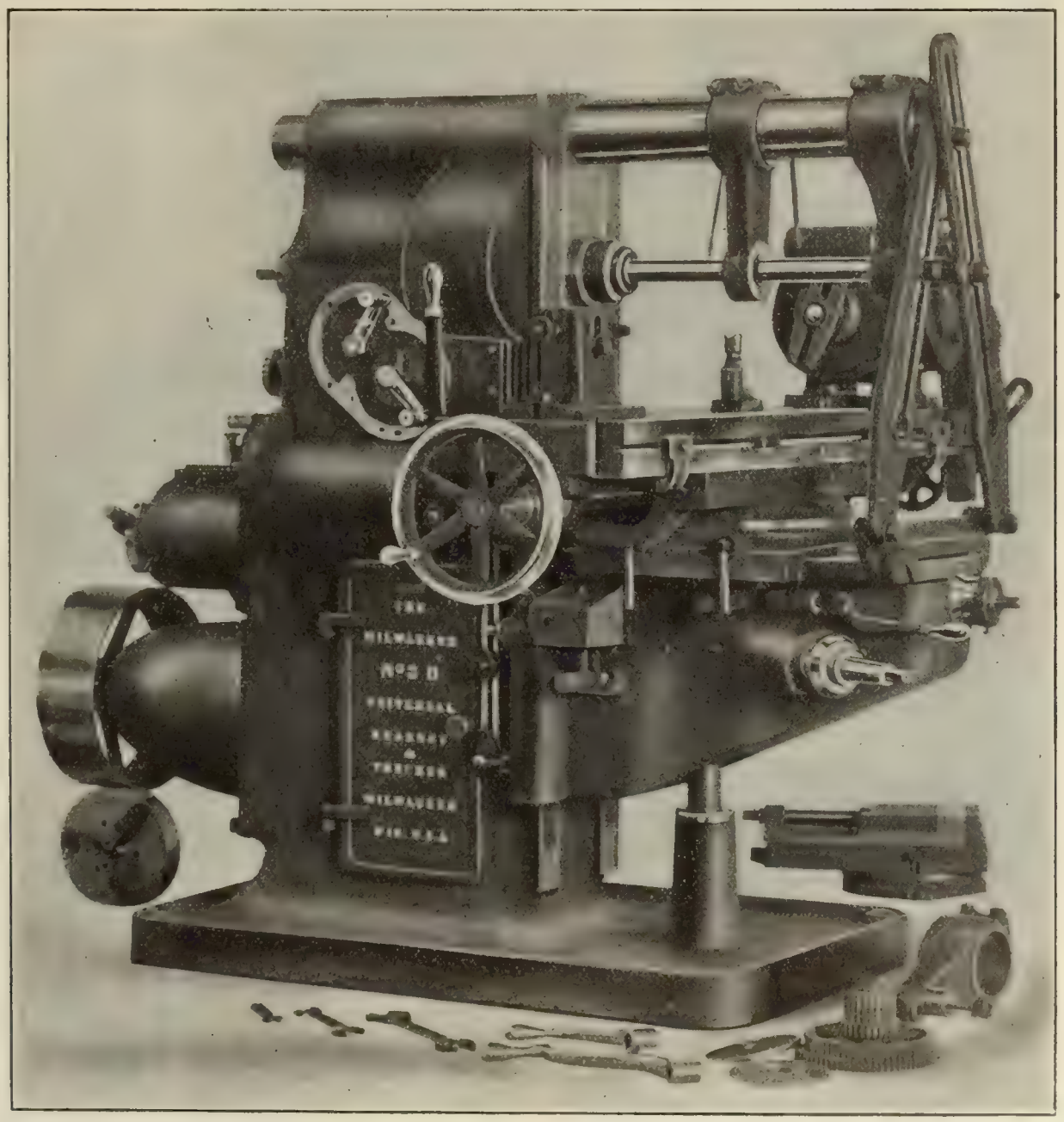


Fig. 1.—The Milwaukee No. 3-B Universal Miller, Built by the Kearney & Trecker Company, Milwaukee, Wis.

As the most prominent features, the drive, lubrication and the new universal dividing head might be mentioned, but there are many original points in connection with the various details, all of which are interesting. The drive of the spindle and the feeds is positive, throughout; there are no belt transmissions on the machine, not even for the oil pumps. All gears are under cover; nearly all of those concerned in the various transmissions are entirely within the column of the machine. The feeds being driven from the constant speed driving shaft are independent of the speed of the spindle, hence it is possible to rate them in inches per minute—*i. e.*, terms of time which is a fixed standard. This is in contrast to the custom of rating the feeds in inches per revolution of the spindle which is based on a variable standard of comparison. The new arrangement has the advantages that the feed is known at once without reducing it to a time basis according to the spindle speed, being read directly on the index plate, and that fast feeds for large cutters can be had, however slowly the spindle may be running. Lubrication is one of the things that has received an unusual amount of attention and probably no machine of its class was ever more thoroughly provided with automatic oiling arrangements. These include not only those for the various running parts, but also the cutter and work. The universal dividing head has been modified in ways that conduce to greater accuracy, rigidity, convenience and versatility. All controlling levers are at a convenient hight from the floor and within easy reach of the operator at all times.

### The General Design.

The views of the two opposite sides of the machine, Figs. 1 and 2, are evidences of its neat and nearly symmetrical exterior. It will be noticed that the frame has no unclosed openings and is therefore substantially of continuous box section. As viewed in Fig. 2, only one opening is seen in the frame. This is in an extension at the base and gives access to the oil reservoir holding the lubricant for the gears and bearings of the machine. Rais-

ing the cover of this reservoir permits replenishing the supply. The opening covered by the door, shown in Fig. 1, has a wall on both sides, so that it is virtually a double box section tied together by the back wall. The opening is smaller than the door would indicate, as a wall behind it extends up nearly to the level of the door knob, forming one side of a reservoir for the lubricant used on the milling cutters. The opening at the top of the frame, Fig. 1, through which the gears and other parts are reached, is covered by a plate shown removed in Fig. 3. The other functions of this plate are described later in connection with the speed change mechanism. Fig. 4, a rear view of the machine, makes clear the way in which the feed box and pulley bracket are attached, each of these necessitating an opening in the frame through which a shaft extends carrying a gear engaging with the mechanism in the interior.

**The Spindle Drive.**

The advantages of driving from a single pulley with relatively high constant speed are now quite generally appreciated, among them being higher power and elimination of the need of a countershaft. The company's experience from commercial practice and its own tests has resulted in its discontinuing to build cone pulley driven milling machines for either manufacturing or toolroom work. In the present machine the pulley, running at about 350 rev. per min., drives a shaft that has a pinion on its inner end, engaging with a larger gear, giving a speed reduction of about 3½ to 1. This larger gear runs loosely on a shaft upon which it is free to move endwise and has a hardened steel clutch attached to one side of it. On this same shaft is another gear of the same size also carrying a clutch that meshes with a gear directly above it and on the shaft B, Fig. 4. This gear drives the feed and also meshes with the pinion *a*, shown in the line drawing, Fig. 5, which is located approximately at C in Fig. 4.

The first large gear mentioned, the one engaged with the pinion on the pulley shaft, is moved by the lever D, Fig. 4, to engage or disengage the clutches referred to, thus starting and stopping the machine without using friction clutches. This is possible because these clutches revolve at a constant speed which is low enough not to produce excessive shock, regardless of what speed the spindle may be set for. The pinion *a*, Fig. 5, drives shaft *b*, to which is keyed the pinion *c*. This in turn drives the idler gear *d*, which is carried by a swinging bracket, *e*, having gear teeth, *f*, cut in it so that it may be manipulated by a long pinion on the shaft with the controlling handle E, Fig. 4. For convenience this segment, *e*, is shown in Fig. 5, dropped down farther than it actually goes, as it swings in such a way that the pinion *d* engages with the various steps of the cone gear *g*. The endwise location of the swinging bracket *e* is controlled by the handle F, Fig. 3. This handle through a gear and rack, as shown in the rear view of the plate given in Fig. 3, operates the extension G engaging with the slot *h*, Fig. 5, of the swinging bracket *e*.

The speed plate under the hub of the handle F indicates 18 speeds, varying by increments of approximately 20 per cent. from 13 to 320 rev. per min. Attached to and

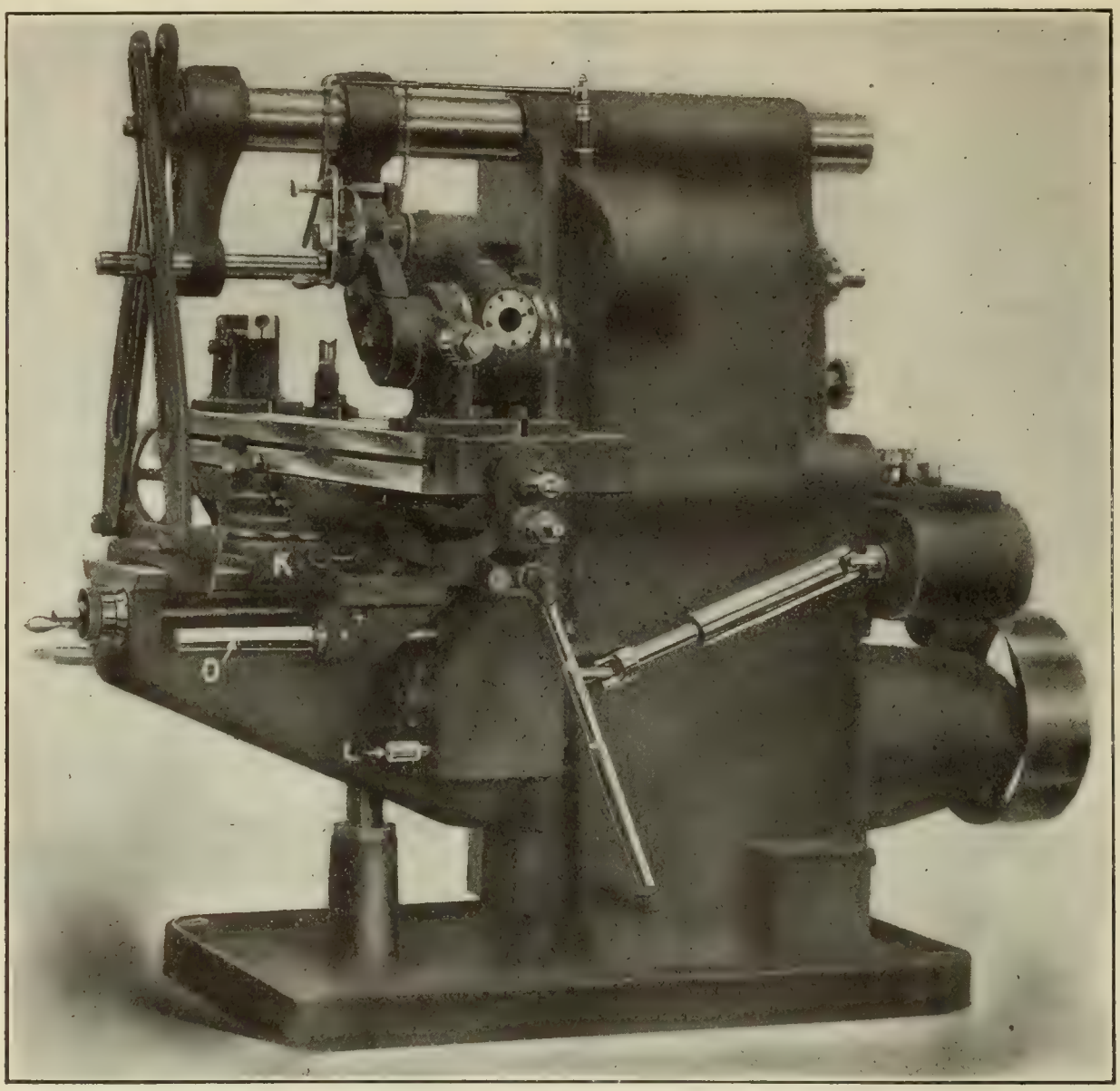


Fig. 2.—A View of the Opposite Side of the New No. 3-B Milwaukee Universal Milling Machine.

revolving with the cone of gears *g* of Fig. 5 is the pinion *i*, which engages with the gear *j*. This gear revolves idly on the spindle and carries the pin *k*. The sleeve gear *l*, keyed to the spindle *q*, has two gears, *m* and *n*, which may be engaged respectively with gears *o* and *p* on the cone *g*, or the sleeve may be moved to the right, bringing *n* out of engagement with *p* and engaging the gear *m* with the pin *k;* thus three speeds are obtained, which multiplied by the six speeds obtained by the cone *g* and the idler *d* gives 18 speeds in all. It will be seen that the only gears in mesh at any one time are those actually driving; no idle gears are engaged. The gears are of large dimensions and all are made of steel.

The speed plate is arranged with three concentric rows of figures indicating these speeds. The inner one corresponds to the slowest, and these speeds are obtained when handle H, Fig. 3, is at its upper right position. The medium speeds are obtained when this handle is at its lower left position and the fastest when it is at the point midway. Through a gear and rack the handle H operates the extension I engaging with the groove *k*,

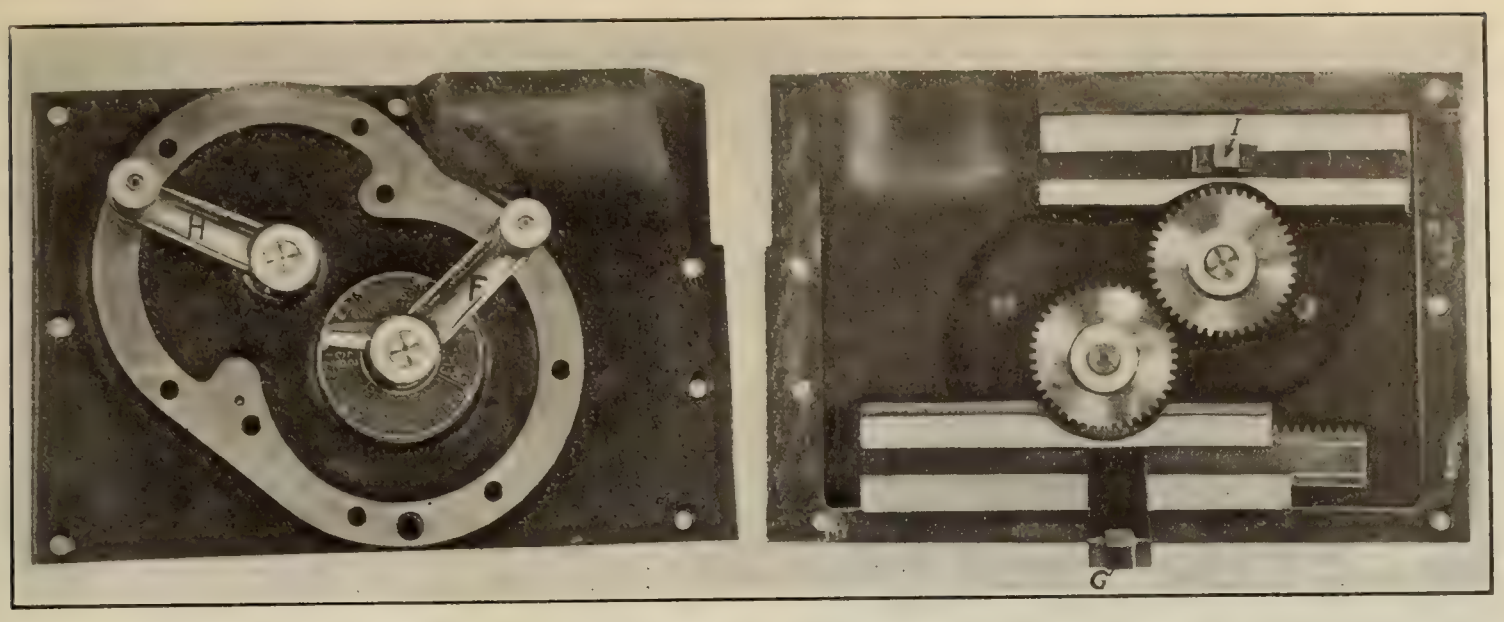



Fig. 3.—Front and Back Views of the Plate Carrying the Spindle Speed Controlling Levers.

Fig. 5, on the sleeve *l*, so that it can be set with ease to any one of the three positions which correspond to those indicated by the three holes on the speed plate marked "Slow," "Medium" and "Fast." Nothing could be simpler than this direct reading index dial. Unlike a separate index plate that shows by symbols what must be done with the various gear changing levers, this one reads directly. The proper thing to do to get the required speed is obvious and as easy as the setting of an alarm clock. It is always apparent what speed the machine is set for, and one does not have to consult a key to find out what condition it was left in by the last user.

In making speed changes, if the gears are not in proper relation to mesh, a touch on the hand wheel *s*, Fig. 5, will turn the spindle and slightly move the gears so as to bring them into engagement. It will be noticed that the spindle runs in taper bearings, the wear being taken up by the sliding of the cone shaped bearing *t*, which is accomplished by the collar *u* threaded to the spindle and clamped thereon by the screw *v*.

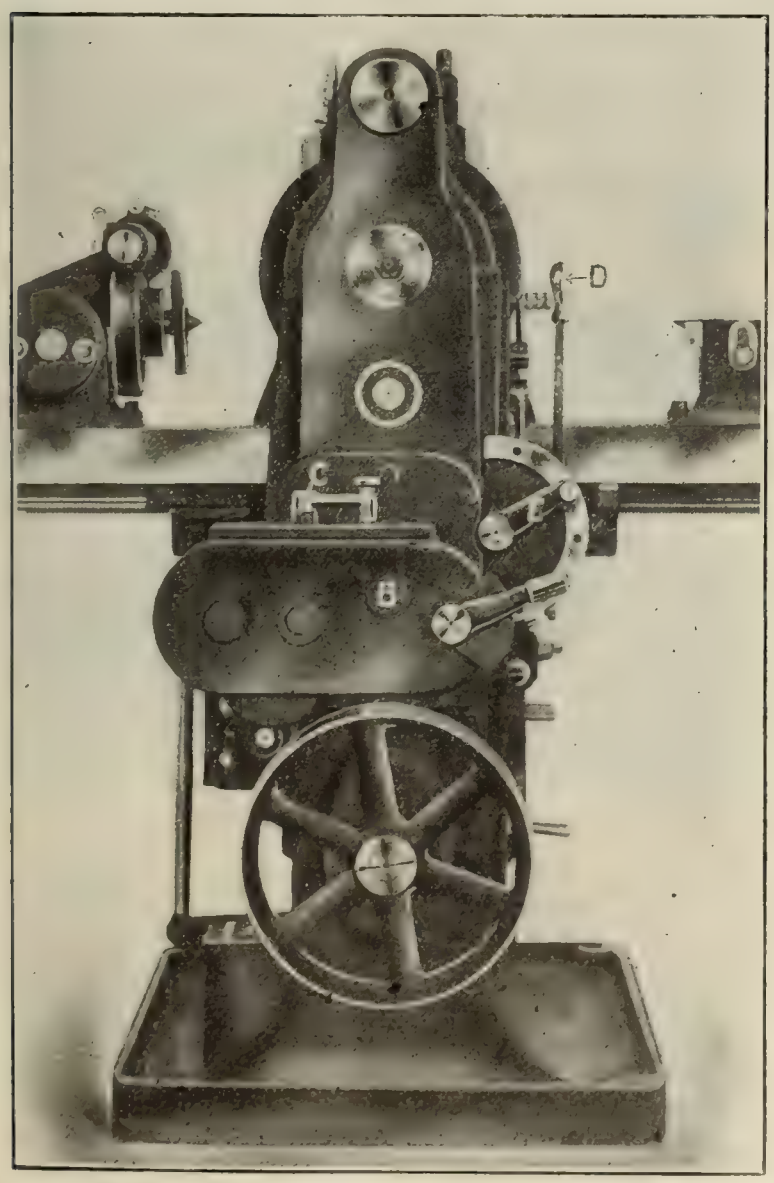



Fig. 4.—A Front View of the Machine, Showing Its Symmetrical Design.

**The Feeding Mechanism.**

The feed is driven from the constant speed shaft B, shown in Fig. 4, through gearing quite similar to that shown by the line drawing for the spindle drive. The index plate, as before mentioned, shows the rates of feed in inches per minute rather than in thousandths of inches per turn of the spindle. Twelve changes of feed are afforded, varying from ½ to 16 in. per minute, or from about 0.0015 in. per turn of the spindle for small cutters to a little over 1 in. per turn for finishing cuts with large cutters. From the feed box power is trans mitted through the universal joint shaft at the side of

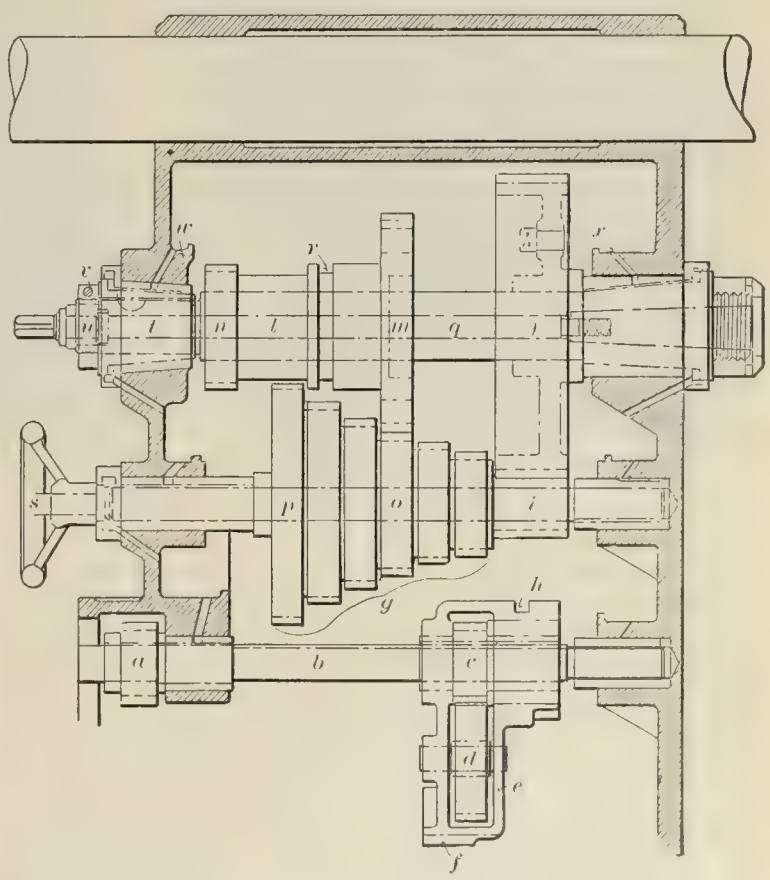



Fig. 5.—Elevation of the Driving Gears Inside of the Column.

the machine shown in Fig. 2 direct to the knee, where a spur gear reverse is provided, operated by the handle L. This handle slides a clutch between two gears running in opposite directions.

A unique arrangement is made to prevent accidental engagement of more than one at a time of the three feeds —vertical, table and cross feed—and also to make it clear to the operator which feed he is about to use without experiment. For each of these three feeds there is a hole drilled in the side of the knee and stamped below are the words "Vertical," "Table" and "Cross." The location of the plunger M determines which of these feeds will be engaged when the operator starts the machine. The feed operating handles are shown in Fig. 6 in better detail than in Fig. 1. The plunger M as shown in this view, is set for the vertical feed. The lever N is connected by a cross shaft to a clutch on the shaft O, Fig. 2, and in the position for cross or vertical feed this clutch

is withdrawn, so that the table feed becomes inoperative. In the position shown, handle P, Fig. 6, can be raised up, which engages a clutch to start the vertical feed. A downward movement of this same handle would engage the cross feed, but is prevented by the lever Q striking against the plunger M, the lever Q being connected with the handle P. In a similar manner engagement with the vertical feed is prevented when the plunger is set in the opposite hole marked "Cross." When the plunger is in a central position it passes through the lever Q and locks it against movement in either direction, so that

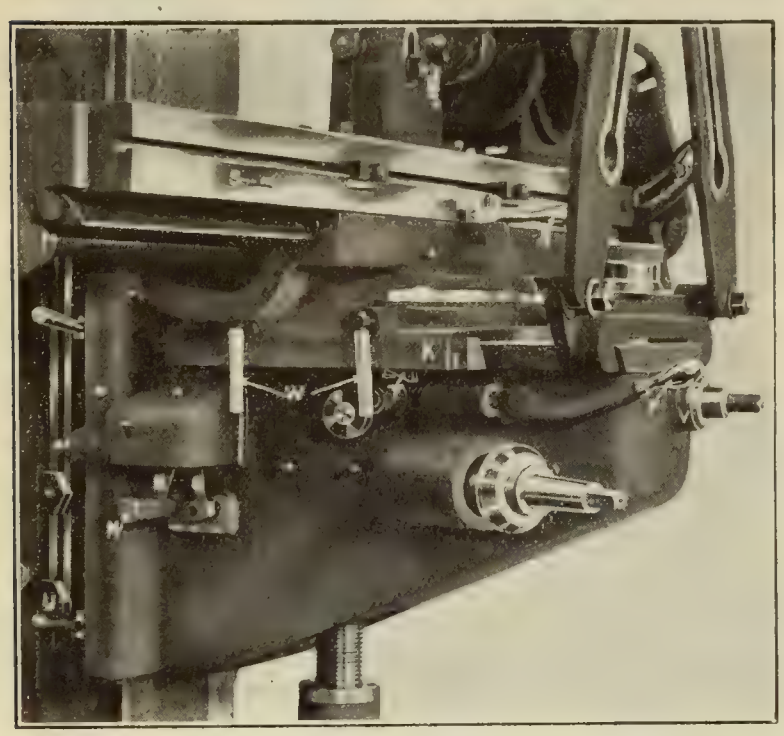


Fig. 6.—Detail of the Knee Showing the Feed Operating Handles.

neither cross nor vertical feed can be engaged, and in this position the clutch on shaft O comes into engagement with the driving gear in the knee, making the table feed operative when it is engaged by the handle R. Adjustable trip blocks are provided to trip the feed at any desired point, and fixed trips are provided at the end of the stroke of all the feeds—S for the table feed, T for the cross feed and U for the vertical feed. The other end of each stroke is similarly protected. The vertical feed screw is of telescopic pattern and never projects below the base of the machine, so that no hole is required in the floor.

On all feed screws there are ball bearing thrust collars; the one for the cross feed is shown at V in Fig. 6. A second ball bearing on this same screw inside of the knee takes the thrust in the opposite direction. The handles W are used to clamp the saddle K to the knee. To prevent the knee from becoming distorted on account of this clamping, or from strains produced by the action of the cutters on the work, it is cast without a hole through the top, this being a continuation of the company's practice begun with the first cone pulley machine it built. This feature is regarded as a very important one in the knee type machine, as it not only renders the machine more rigid and less liable to distortion under strain, but also permits greater cross range and consequently wider tables on universal machines. With short cross range the width of the table back of the center of the swivel carriage is limited by the reason of the fact that the table would strike the edge of the frame before it could be swiveled to the usual 45 degrees. This machine has a table 14 in. wide, having 12 in. of cross range, and it can be swiveled to an angle of 52 degrees, utilizing the full table travel. It can also be swiveled through 360 degrees, and the table feed remains operative at any angle.

The arm braces are made so that they can be removed from the machine without taking off any nuts. They are very simple in construction and their efficiency as braces is much enhanced by an upper bolt which ties the two braces together near their tops and emphasizes their truss action.

### Lubrication.

Connected with the large gear, driven by the pulley shaft pinion, is a pump of simple construction, consisting of two spur gears running together in a suitable case. This pump raises the oil from the reservoir, shown at the base in Fig. 2, to a perforated pipe at the top of the machine above the gears on the spindle *q*, Fig. 5. Through the numerous openings in this pipe oil is delivered into the pockets *w* and *x* and to the gears between these bearings. This oil is passed downward by the gears from one to the other, the shafts being located approximately in a vertical plane. From the pockets *w* and *x* it overflows and cascades to the various pockets and bearings beneath in continuous streams. A portion of this cascading oil finds its way into the feed box, lubricating all of its shafts and gears, and another part flows in a continuous stream through the pulley bracket, thence to the bearing next to the pulley. It will be noticed that the pulley arms are curved outward, so as to bring this outside bearing as nearly as possible in direct line with the belt pull. The oil finally drains from the bottom of the pulley bracket to the reservoir, which extends from one side of the frame to the other, and after straining is redelivered to the discharge pipe by the pump.

The pump for lubricating the cutters is located in the closet of the machine behind the door, Fig. 1, on which the name is cast. This pump runs only when the spindle runs, whereas the other pump for lubricating the gears and bearings runs continuously, so that the pulley shaft is flooded with oil even when the machine spindle is stopped. The pump for lubricating the cutters has a relief and pressure regulating valve for controlling the supply of oil. From this pump the pipe extends upward on the interior of the machine, emerging at a point near the top, as shown in Fig. 2, where a swinging connection is attached, and from thence the pipe connects through stop cocks to two pieces of flexible oil tubing. This is the standard equipment, but it can be varied to suit any special case, and as many of the flexible tubes may be used as are found necessary.

A principal trouble heretofore with flooding oil to the table of a knee type milling machine has been the difficulty of returning it to the reservoir because of inadequate means. The manner in which this has been corrected is indicated in Fig. 7, which shows the table and swivel carriage of the machine. In each end of the table are cast oil pockets partitioned at mid-depth by screens. Connected with the pockets is a channel at the back of

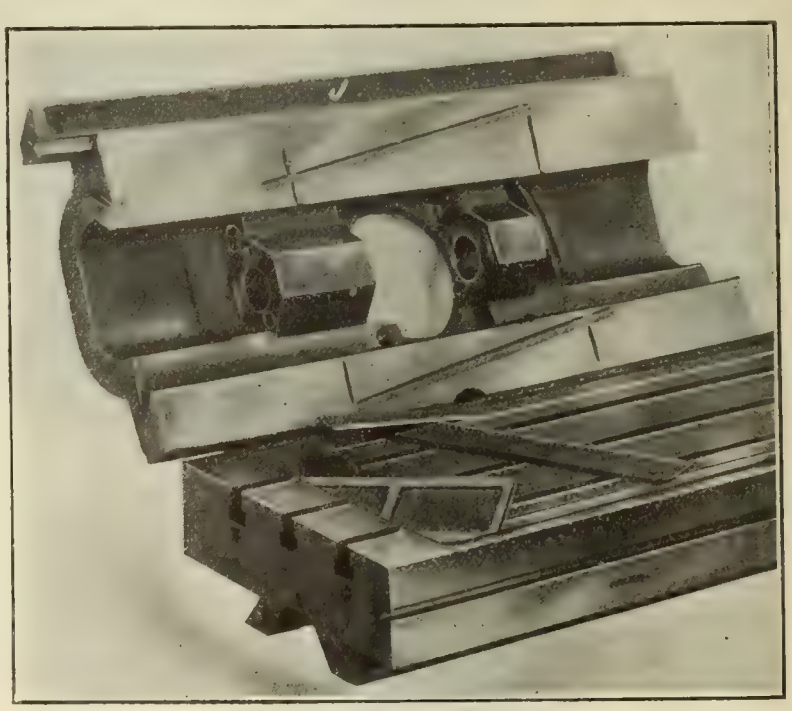


Fig. 7.—Details of the Table and Swivel Carriage.

the table, which is divided horizontally into two sections by a strip of steel. The oil falling on the table runs into the T slots and the front and back grooves and is carried to the ends of the table, where it is strained by the screens and then flows to the center of the table under the strip of steel in the back channel, finally escaping through a hole to the telescoping slide J on the swivel carriage. This slide is used so that the hole in the table will never run beyond the swivel carriage. An opening in the side of the slide communicates with a long opening in the swivel carriage, which terminates in a hole in the bottom of the carriage that registers with a cir-

cular groove in the saddle K, Fig. 2. This circular groove connects through swivel joints with the telescoping tube A, and the oil flows to the reservoir to be again pumped to the cutters. The steel strip shown on the top of the table in Fig. 7 is a blank with which to replace the screen when lubricant is not used, as when milling cast iron, and prevents the dust produced in cutting this material from finding its way into the channels leading down to the reservoir. The depth of the table is a noticeable feature and avoids deflection when the table is heavily loaded and at one extreme of its travel, or put under strain by the clamping of work to it.

**The Universal Dividing Head.**

Fig. 8 shows an enlarged view of this head, from which it will be seen that the worm wheel is on the front end of the spindle. It is consequently possible to make it much larger in diameter than if it were placed in the interior of the head, where it could be no larger than the opening through which the spindle is introduced endwise, or at most the distance between the housings. This larger diameter is conductive to accuracy, other things being equal, and the placing of the index plate and the plunger directly on the worm shaft avoids inaccuracy that may arise on account of indexing through gearing, which is necessary when the index plate is placed on a secondary shaft. To avoid excessive elevation of the end of the spindle when turned to a vertical position the center line of the spindle is considerably above the axis of the center block, so that the end of the spindle moves downward before reaching the vertical position. Because the worm wheel is large in diameter and substantially made, larger spiral work is possible than could be considered otherwise, and for this reason the driving mechanism and the change gears connecting the worm shaft with the table screw X are made strong enough for heavy work, and the method of carrying the change gears sufficiently rigid to withstand heavy duty. This latter result, it will be appreciated, is accomplished when the swinging bracket Y is used in connection with the semicircular bracket Z bolted to the table.

To facilitate setting the universal head at any angle relative to the spindle of the machine and make it completely universal, it is arranged to interchange with the circular base on the vise, as shown in Fig. 9. The zero line on the head frame corresponds with the zero line on the vise base, and the center block carrying the spindle and worm wheel is also graduated, so that complete universality is obtainable.

This machine has 36 in. of table feed, 12 in. of cross feed and 19 in. of vertical feed. The driving pulley is 16 in. in diameter, takes a 5-in. belt and is intended to run at 350 rev. per min. A motor can be arranged to drive the machine directly by chain or gears to the main driving shaft, and the motor can be mounted, if desired, as a part of the machine. However, the disadvantage of vibration in its effect on the work done by a milling machine makes it preferable, in the opinion of many, to connect by belt to the motor and install the latter at a little distance from the machine or on the ceiling or a column, so that it cannot influence the work nor produce shaky cuts. Any constant speed motor may be used and no special controlling apparatus is necessary, as when using a variable speed motor.

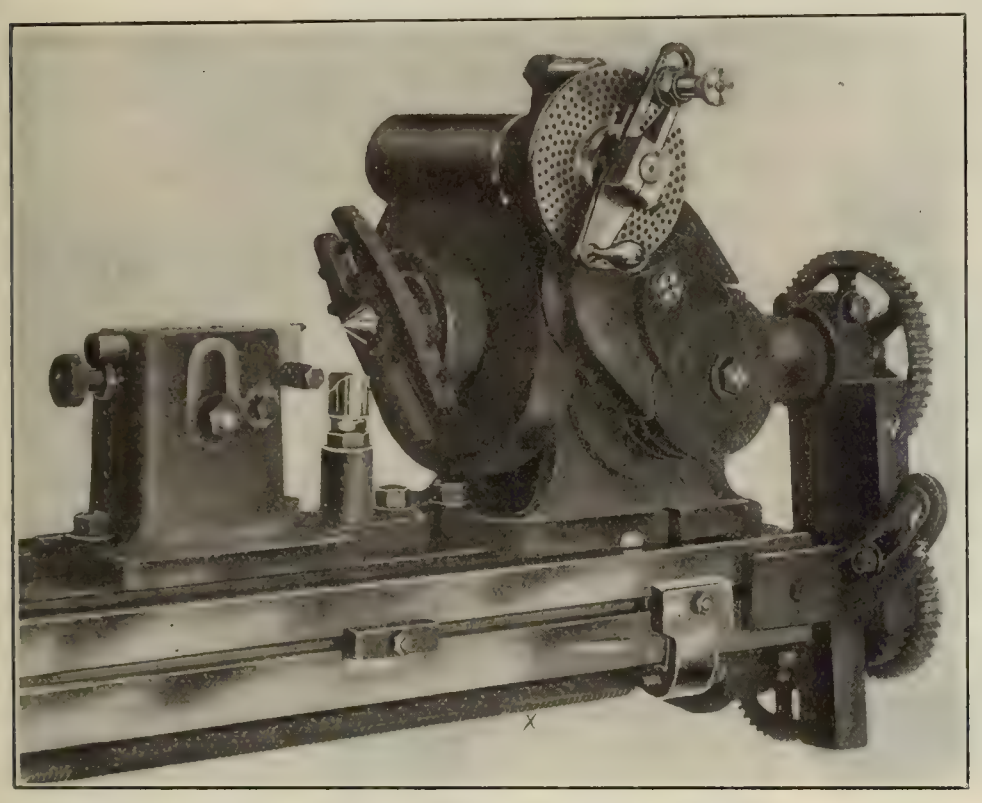


Fig. 8.—The Universal Dividing Head and Tail Center.

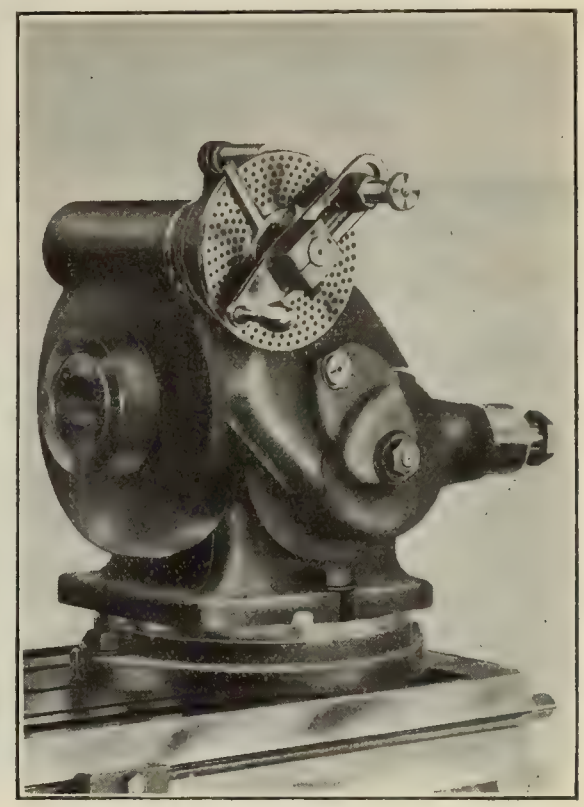


Fig. 9.—The Head Mounted on the Vise Base.

**The Page Woven Wire Fence Company.**—The new 50-ton standard basic open hearth furnace of the Page Woven Wire Fence Company, Monessen, Pa., is now in successful operation, having made several heats. Because of the inadequacy of the cranes now installed, it is necessary to depart from the ordinary practice of casting into a ladle carried by an overhead crane. A 75-ton ladle is carried by a ladle car running over a 12-ft. pit, which extends lengthwise of the mill, and a 25 hp. motor drives the car. The steel is cast through a 3-in. nozzle, filling 38 7 x 9 x 72 in. molds. The stock is brought up an incline to the charging floor level by a dinkey engine and charged into the furnace by a Wellman high type charging machine. By the completion of this furnace the Page Company now has three furnaces in operation, the two others being the Wellman-Seaver tilting furnaces of 15 tons capacity each. The production will aggregate about 50,000 tons a year, which is about the capacity of the connected rod mill, so that the company will not be a buyer of steel in the open market hereafter. In fact, it has been most difficult for it to procure the grades of steel necessary for its specialized manufacture, namely, high carbon material for its fencing and spring steel wire for its wire spring demands. The company reports orders coming in very satisfactorily and all departments running.

The R. Wallace & Sons Mfg. Company, Wallingford, Conn., has been granted the benefit of the drawback on duty paid on steel imported for the manufacture of spoons to be exported. The regulations issued by the Treasury Department state that "in liquidation, the quantity of imported steel which may be taken as the basis for the allowance of drawback may equal the quantity consumed as declared in the drawback entry, provided it shall not exceed 12.96 lb. for each gross of tablespoons, and 6.58 lb. for each gross of teaspoons exported, to which weights may be added 90.78 per cent. in the case of tablespoons, and 81.42 per cent. in the case of teaspoons, to compensate for worthless waste incurred in the process of manufacture."

# A New Friction Block for Wire Drawing Frames.

The Carroll friction block for wire drawing frames, shown in detail in the illustrations, has as its essential feature a friction clutch of the coil type, and is designed to meet the requirements of modern wire drawing: That the block should be so driven that it may be brought gradually and smoothly to full speed in order to decrease the shock on the gear teeth, to minimize the breaking of points and make possible an increase in speed; that the operator should be able to start and stop the block with ease even under the most unfavorable conditions, such as with a heavy coil and draft, which means quicker work in handling the block and greater safety in emergencies; and that the top of the block should be kept as low as possible and free from obstructions to facilitate the removal of the heavy coils which are becoming common in modern wire drawing.

To meet these conditions the designer and builder, the Morgan Construction Company, Worcester, Mass., adopted

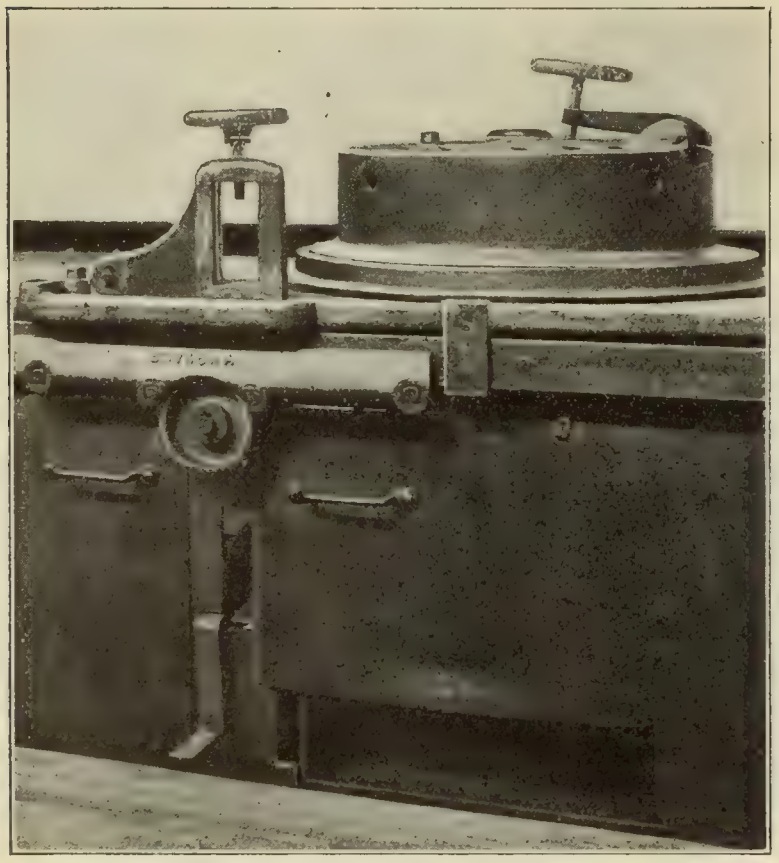


Fig. 1.—One of the Friction Blocks Mounted on a Rod Frame.

a friction clutch for driving the block, selecting the coil type in preference to all others, and decided to place it within the block itself, on the ground that in this position it would have the least weight to set in motion; that the entire block with its clutch might be removed from its frame without dismantling other parts; and that the clutch could be connected directly to the block. Two other options in clutch location, on the main or bevel pinion shaft in direct connection with the bevel pinion, and on the spindle between the spindle gear and the clutch which drives the block, were rejected after thorough test.

In selecting the coil type of clutch it was borne in mind that its principle is the same as that of the wire block itself, for it is the friction of a few wraps around the drawing block—the others being loose—which pulls the wire through the drawing die. In the clutch it is a few wraps of clutch coil around a center drum which drives the block. Clutches of this type have been used in heavy transmission for years, and in this block the clutch is arranged to operate submerged in oil, so that wear is considered unimportant.

### Construction and Operation.

Fig. 1 shows the block mounted on a rod frame, and the details of the block are shown in Fig. 2. A cast iron hub or drum, *a*, with outside surface chilled and ground, is fastened on the spindle, and has an annular recess, *b*, into which projects the concentric flange of the oil cup *c*, a U-shaped annular casting in which the driving mechanism of the clutch rests submerged in oil. The cup is

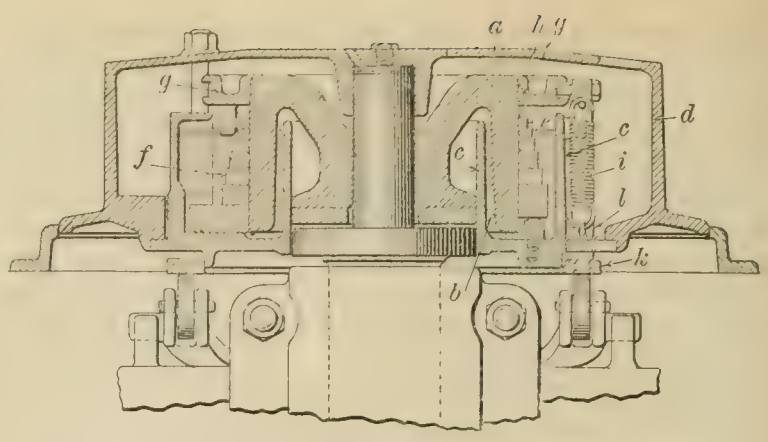



Fig. 2.—Conventional Section of the Friction Block.

fastened to and therefore forms a part of the shell or block proper *d*. Wrapped around the outside of the chilled hub is a soft steel spiral coil, *e*, having its lower end, *f*, fastened to the oil cup and the top or smaller end to the supplementary friction ring *g*, which, when the clutch is set, engages a tapered surface, *h*, on the upper part of the chilled hub. The friction ring is held in contact with the tapered surface of the chilled hub by tension springs, *i*, but is lifted out of contact by the raising of ring *k* carrying standards *l* which engage the ring *g*. The friction block is operated by raising and lowering the friction ring. The entire clutch mechanism is entirely enclosed in the shell, which is so attached that by removing two nuts it may be lifted off and replaced by another of the same or different diameter, the method being shown in Fig. 3.

In the operation of the machine, after the block and clutch have been placed upon the spindle, the foot treadle is adjusted so that the ring *k* may be raised and lowered when the block is ready to start, the spindle being in motion. When the ring *k* and consequently the friction ring *g* are lowered from their raised positions to start the block the friction ring comes in contact with the tapered surface of the chilled hub, and begins to revolve and tighten the small end of the clutch coil to which it is attached. Each wrap of the coil tends to take up a succeeding one, until the friction between the coil and the chilled hub is sufficient to start the block slowly and draw the wire through the die. The operator has only to raise the supplementary friction ring to release the

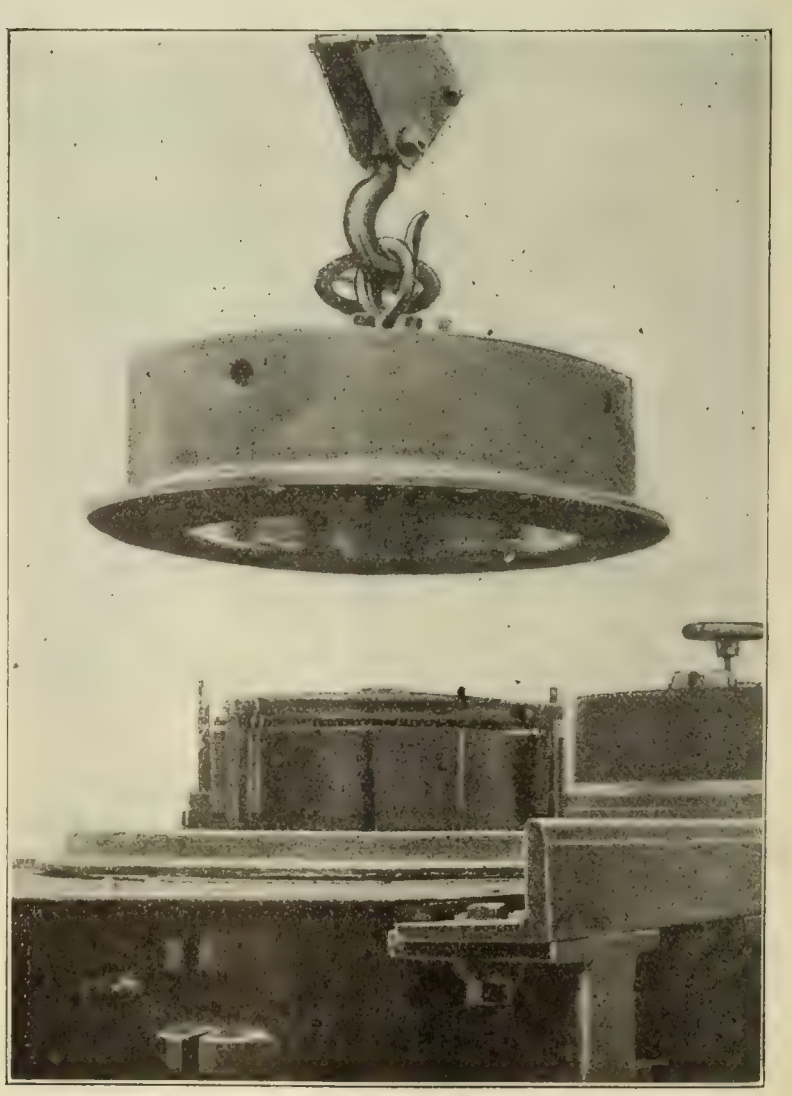


Fig. 3.—A Friction Block with the Shell Lifted, Showing the Clutch and the Two Retaining Bolts.

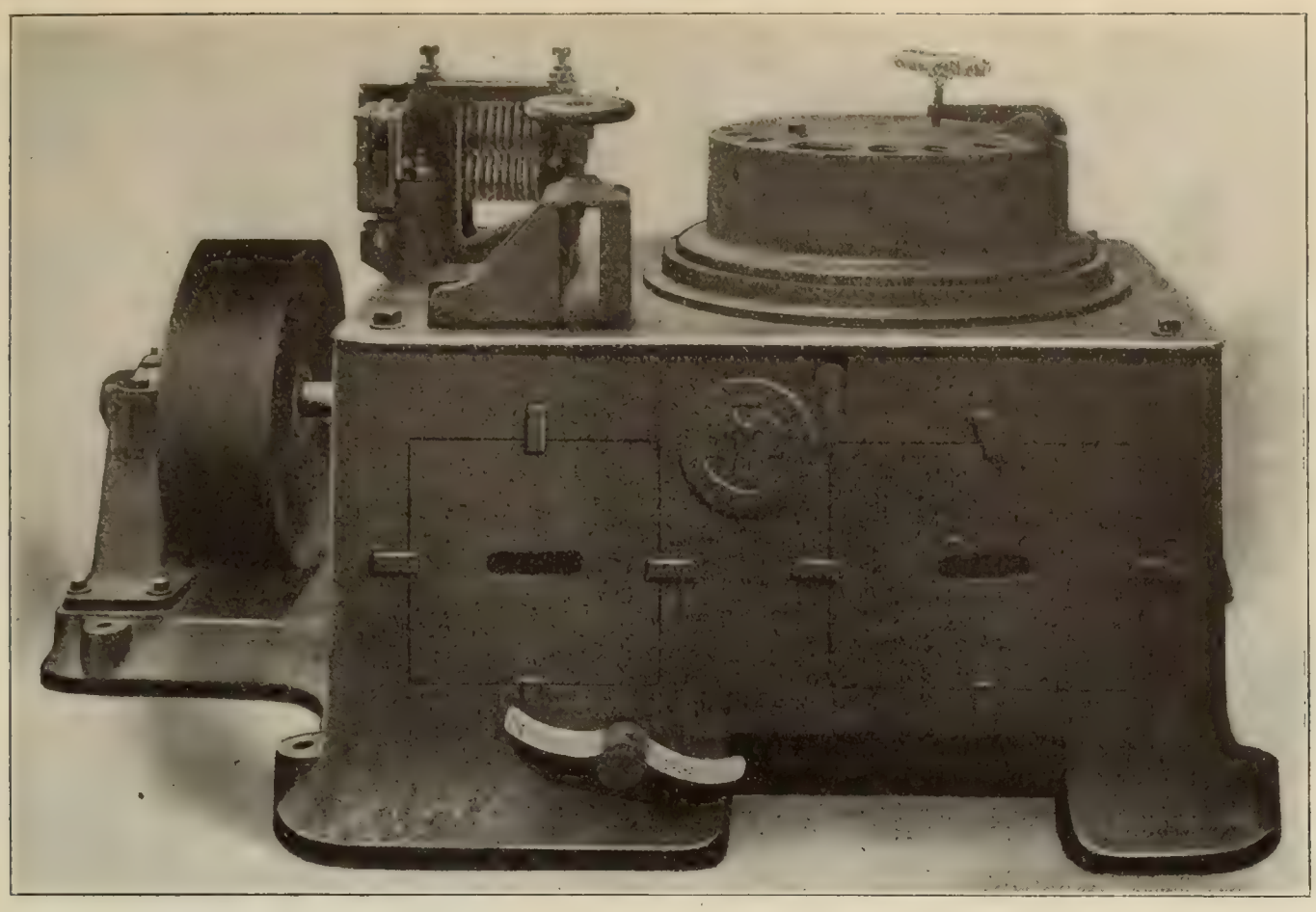


Fig. 4.—One of the Friction Blocks Fitted to a Bull Frame.

clutch coil and stop the block. As the supplementary friction ring is free to revolve in a complete circle it will adjust itself automatically to any variation in the length of the clutch coil due to stretch or wear, and therefore no adjustment is necessary after installation. It will be noticed that the block and clutch mechanism, with the exception of the friction ring, are supported by the block spindle and are not raised or lowered, which is a departure from common practice. Consequently the maximum force required of the operator is that necessary to raise the friction ring against the springs *i*, a force the same whether the block is loaded or empty. In practice a few pounds pressure upon the treadle suffices to start or stop the block under any load.

To demonstrate the power of this clutch the company states that during rigid tests 300 hp. has been transmitted at 100 rev. per min. with the regular clutch used in blocks from 22 to 30 in. in diameter. The clutch is also made to handle blocks from 16 to 22 in. Manufacturing usage in wire mills has shown that it is a practical device for the rough work of wire drawing. One has been operated for two years drawing wire of high carbon steel from 5-16 to ½ in. in diameter, with no adjustments or repairs except the renewal of the steel jaws that grip the end of the rod.

Among the advantages claimed for the block are that only a small mass must be accelerated when starting, minimizing strains throughout the machine; that high speeds may be employed, with consequent high tonnage; that its diameter can be varied by providing spare outer shells, and that the shells, which are subject to the most wear, can be quickly replaced; that it can be applied to almost any frame of the vertical spindle type, either without changes to the existing frame or with very slight changes to the upper end of the block spindles; and that the speed of the block is closely regulated and controlled by the operator, who cannot start up with a shock even if he should attempt to do so.

### Tests of the Block.

Fig. 4 shows the friction block fitted to a bull frame. Below are given the results of tests with the new friction block, employing an indicator by which accurate time

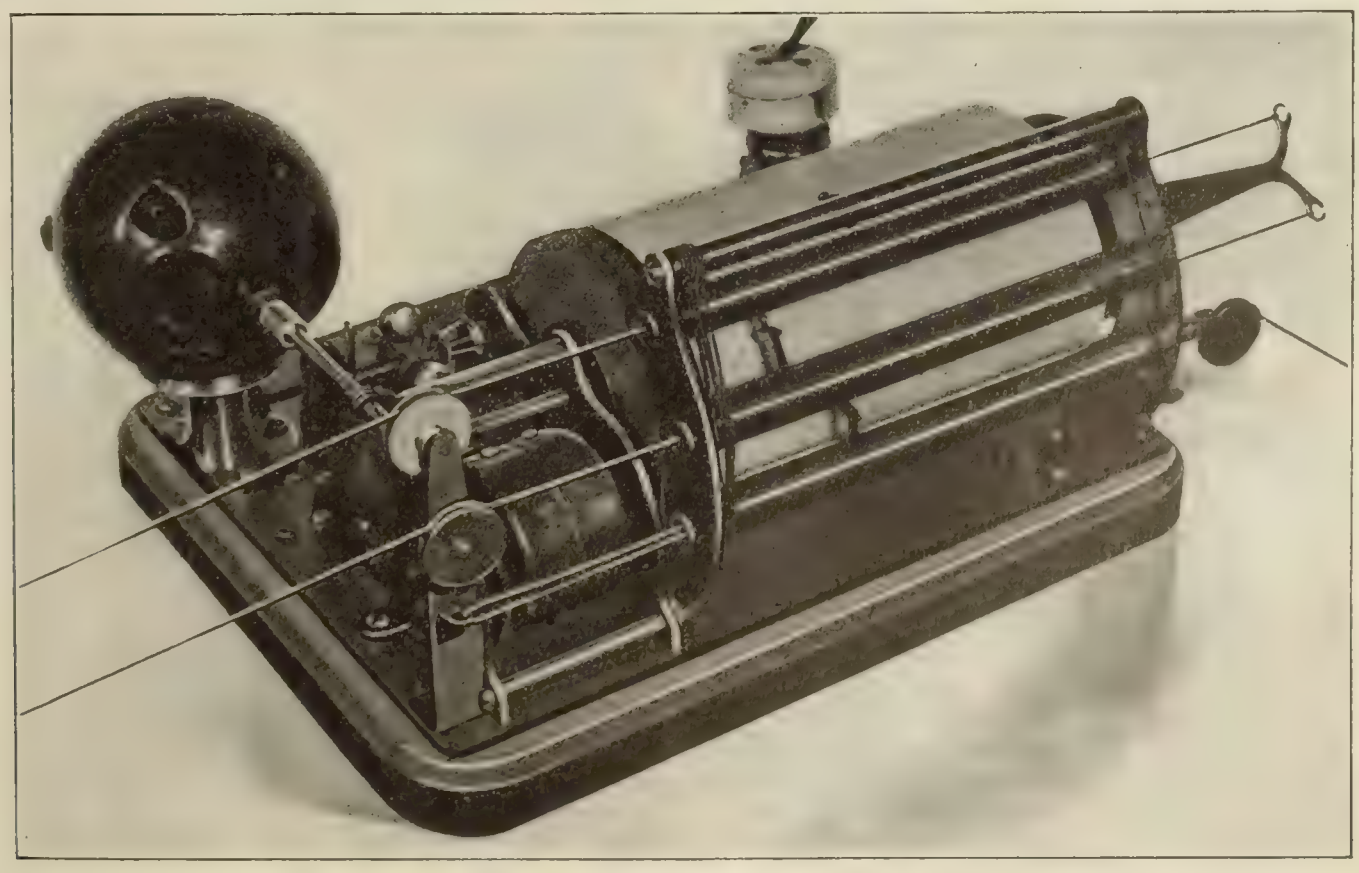


Fig. 5.—The Indicator Used in the Friction Block Experiments.

records could be made. The experiments were made on a Morgan heavy rod frame No. 302, the block spindles of which consist of a cast iron sleeve 5 in. in diameter cast around a steel shaft, this cast iron sleeve having a flange near the lower end to which is bolted the driving gear, and another at the top provided with lugs for driving the block. The distance between these flanges is 1.5 ft. Upon the upper end of one spindle was fitted a friction block, on another the company's standard block, which is fitted with a positive clutch.

The object of the experiments was to determine the length of time required to bring a point upon the surface of the block from rest to full speed when the clutch was thrown in quickly and under the most unfavorable conditions. The time required for starting up either of the blocks is comparatively short, and a mechanism for accurately measuring short intervals of time was absolutely necessary for the success of the experiments. Such a recorder, which was developed in the company's shops, is shown in Fig. 5, and was found to answer the purpose admirably. It consists of a drum carrying a sheet of paper and driven uniformly by a constant speed motor. Extending parallel with the axis of this drum are three slotted tubes carrying points which can be in-

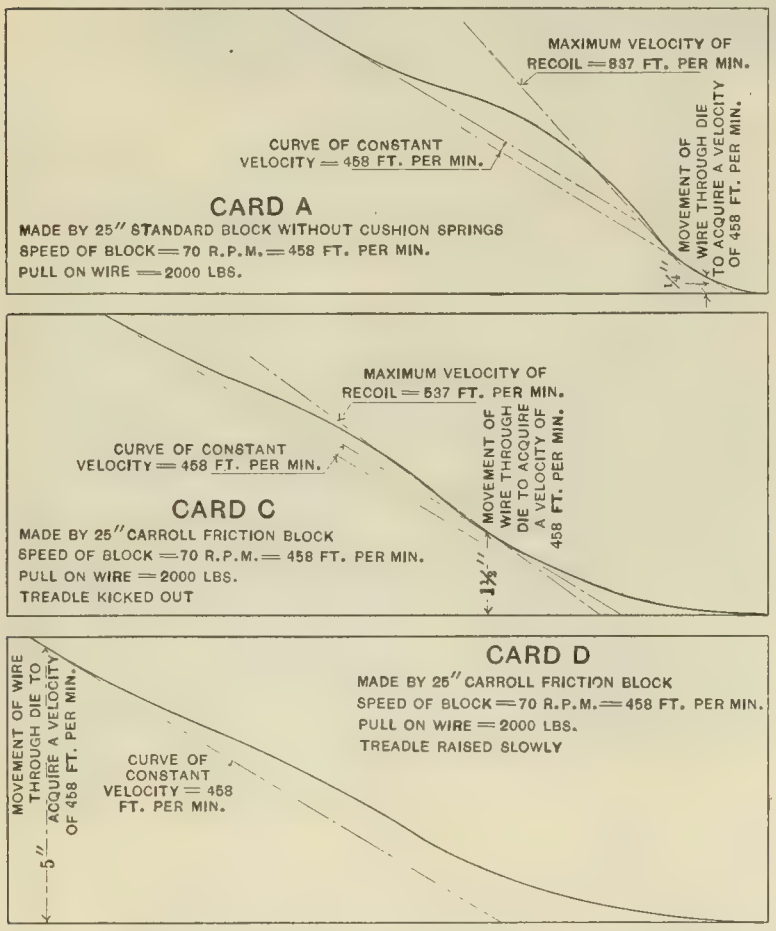



Fig. 6.—Typical Cards Obtained in the Tests from the Indicator.

dependently connected to any moving piece. When several motions are involved the use of separate pencils is indispensable, but in the present case it was necessary to use only one in testing each block. To this pencil was attached a cord by which it could be pulled along the recording drum against the tension of a spring. The other end of the cord was made fast to a point on the surface of the block and arranged to unwind as the block started; hence, as the whole system was kept in tension by the spring above mentioned, the motion of the surface of the block was accurately recorded by the movement of the pencil.

When adjustments had been properly made the foot treadle of the clutch was kicked out as quickly as possible, whereupon the block started and the pencil was pulled across the recording drum at the same rate of speed as any point upon the surface of the block. Inasmuch as the drum was revolving at a certain known surface speed per second, it was easy to compute the time required by the block to reach constant speed by noting the slope of the record line, as will be evident from an inspection of the diagrams, Fig. 6. The vertical distances from the base line show the actual distance from rest traversed by a point upon the block, and the horizontal distances measured from any point toward the left give the elapsed time. Evidently a line of constant speed on such a diagram would be a diagonal straight line, and if the actual speed at which the drawing frame spindles are driven is known, a theoretical line of constant speed can be laid out.

### Results of Tests.

Card A was made by a standard 25-in. block weighing 355.11 lb. and driven by a positive clutch which allowed no give at starting. The rod fastened to this block required a pull of about 200 lb. to draw it through the die. The block spindle revolved 70 rev. per min., which would equal about 458 ft. per minute drawing speed. This card shows that the circumference of the block acquired a velocity of 458 ft. per minute in a movement of about ¼ in. at the circumference. At this point the block spindle, which had been twisted more in overcoming the inertia of the block in starting than was necessary to keep the block revolving at 70 rev. per min. and drawing the wire, started to recoil like a spring and snapped the wire up to a velocity of 837 ft. per minute, then it settled back to 458 ft. per minute, after which the speed curve is very nearly a straight line.

Card C was made by a Carroll friction block under exactly the same conditions as for card A, including the kicking out of the treadle by the operator to start the block in the least possible time with a clutch of this type. This card shows that it required about six times as long to acquire a speed of 458 ft. as it did with card A. Also, on account of starting more gradually, there was much less torsion, or twist, in the driving shaft, as the maximum speed of recoil was 537 ft. per minute.

Card D was made by a Carroll friction block with exactly the same conditions as card C, except that the foot treadle was raised slowly by the operator instead of being kicked out as for card C. This card shows that the block did not acquire the full speed of 458 ft. per minute until the circumference of the block had moved 5 in., or 20 times as far as in card A; that at no time did the drawing speed of the wire exceed 458 ft. per minute and that there is hardly any recoil of the shaft. Regular operating conditions are much more favorable than those of the test, for the block can be brought up to speed almost at will, and if the length of the indicator roll permitted it would be as easy to trace a card 5 ft. as 5 in. long.

### Conclusions.

The constant force required to start a wire block from rest and accelerate its velocity or speed varies directly as the number of revolutions per minute, and inversely as the time or distance through which it acts. For example, if the speed be doubled, then double the force is required; if the time or distance be doubled, half the force is required, all other conditions remaining the same in both cases.

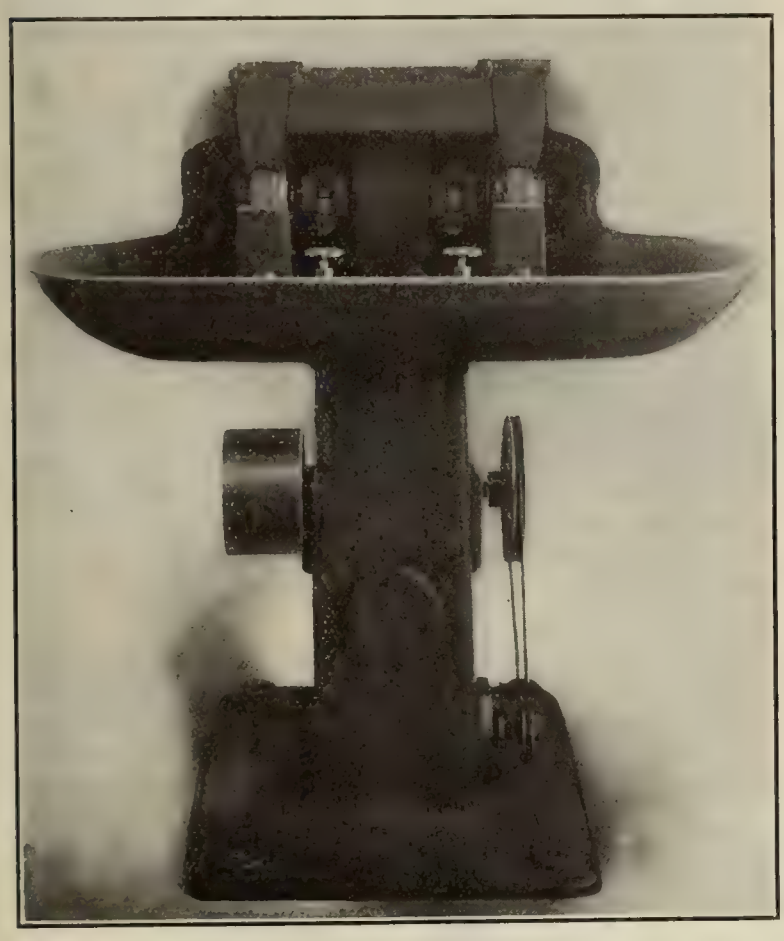
A standard 25-in. block which weighed 355.11 lb. was used in making these tests, and it required a constant force of 535 lb. applied to the lugs at a radius of 6 in. from the center of the spindle to start the block from rest and acquire a velocity of 458 ft. (equal to 70 rev.) per minute in a distance of 1-in. circular movement of a point in the circumference. To start this block in one-fourth the time or distance, as shown in card A, it required a constant force of $4 \times 5035$ lb. = 20,140 lb. If the above block acquired full speed in a circular movement at the circumference of 5 in., as shown on card D, the constant force required would equal $\frac{5035}{5}$ =1007 lb. To this add the force required to draw the wire through the die, which was about 2000 lb. at a radius of 12.5 in., or $\frac{12.5 \times 2000}{6}$ = 4167 lb. on a 6-in. radius. Then the total constant force applied at 6 in. radius to acquire a speed equal to 70 rev. per min. in 1-in. circular movement of a point in the circumference of a 25-in. diameter block will equal 5035 + 4167 = 9202 lb., or for ¼-in. movement, $(4 \times 5035) + 4167$ = 24,307 lb., and for 5-in. movement at the circumference, as shown by card D, $\frac{5035}{5} + 4167 =$ 5174 lb., or about 21 per cent. of the force necessary with the positive type of clutch. It is the large force required

to start the block almost instantly, as shown by card A, which produces the severe strains in a wire drawing machine and is responsible for the excessive wearing and breaking of its parts. The many incidental advantages following from the abolition of this initial shock have already been summed up in detail.

## The Gisholt Double Emery Grinder.

Water around a wet emery grinder is generally accepted as a necessary evil, and after a certain amount of precaution has been taken to limit it to an unharmful nuisance it is assumed that the best has been made of a bad situation. The Gisholt Machine Company, Madison, Wis., took a different attitude and in the double grinding machine illustrated, which is one originally designed for use in its own shops, it has effectively removed the objectionable features of using water in connection with an emery grinder.

The measures taken to prevent water from being scattered about the floor are three-fold. The water instead of being discharged on the wheel over the work rest is emitted from a nozzle in the back of the rest and



The New Double Emery Grinder Made by the Gisholt Machine Company, Madison, Wis.

follows around with the wheel, finally meeting the work in a fine spray. An incidental advantage of this is that the work is not obscured by a shower of water. The hood over the wheels incloses them as completely as possible, leaving only a small space on the periphery of each wheel for contact with the work. Practically no water can therefore be thrown by the rapidly revolving wheels, and when doing dry grinding very little emery dust is likely to fly about in the air. Finally a very large water pan is provided so flared on the sides and front that a piece of work 14 in. long comes entirely within the pan so that any drip from it will be caught by the pan, from which it drains into the tank in the base.

Another interesting feature of the machine is the protection of the spindle driving belt. This, as may be seen, is entirely inclosed in the column of the machine. The main driving pulley instead of being directly on the spindle is on a short shaft extending through the column under the pan and on the interior carries the spindle driving pulley and on the opposite end the grooved pulley for driving the water pump. The main belt is not located where exposed to injury from water and emery and the second belt is completely shielded from them as just explained.

The spindle is mounted in adjustable self-oiling boxes, and end play in the spindle is taken up by two adjusting screws in the face of the spindle driving pulley. The spindle carries two 1½-in. face by 14-in. diameter emery wheels. The water is delivered from the ample reservoir to the nozzles through controlling valves by a centrifugal pump in the base belted to the grooved pulley before mentioned. The machine is very heavy and may be supplied with either belt or motor drive.

## Repairs to the Niagara Power Tunnel.

On Sunday, July 19, the Niagara Falls Power Company shut down its two generating plants at Niagara Falls, N. Y., to make repairs to the tunnel tailrace that carries the water from the wheelpits to the lower river. A few weeks ago the water was shut out of the tunnel in order that it might be inspected. In both wheelpits and throughout the entire length of the main tunnel between wheelpit No. 1 and the tunnel outlet in the lower river, about 1 1-3 miles, the engineers say that not a brick was replaced and there was no sign of material erosion beyond the rounding of the edges of an occasional brick projecting a fraction of an inch beyond the surrounding surface of the wall. The tunnel has had 13 years of continuous use.

In 1902 an extension of the tunnel to take the discharge from wheelpit No. 2 was completed, and two shafts were constructed for the purpose of discharging the ice from the intake canal directly into the tunnel extension. The recent inspection showed that in two places in this extension the roof had been damaged, presumably by the impact of heavy blocks of ice discharged from the canal through the two shafts. The floor of the tunnel extension beneath each of these shafts is paved with iron blocks, but the projection upward of the heavy pieces of ice with force sufficient to injure the roof structure was not anticipated. In the summer of 1903 a substantial buffer of steel beams was placed just above the tunnel roof at the bottom of the ice shaft at the north end of the canal near power house No. 1. Cakes of ice must now strike upon this buffer and are completely shattered before entering the tunnel. The same construction is possible in the other ice shaft, but has not been placed there because since the winter of 1903-1904 it has been found unnecessary to discharge large cakes of ice through that particular shaft, and such use of the shaft is not expected to be necessary in the future. The appearance of the tunnel extension confirmed the judgment of the engineers that the injuries were done several years ago and that the cause of them no longer exists. The fact that the tunnel extension has been operated continuously for years under present conditions evidently indicates that it might be operated safely for an indefinite further period. A decision, however, has been made by the company to make repairs at once, chiefly because the company's customers are better able during the present month to arrange for such reduction in their power use than they will be later.

While the work is in progress the needs of all local customers will be taken care of by the plant of the Canadian Niagara Power Company. The latter will also supply a share of the long distance load, the remainder of which will be carried by the plant of the Electrical Development Company of Ontario, Ltd.

The Pittsburgh Emery Wheel Company, Pittsburgh, Pa., has been successful in bringing some vitrified emery wheels through on an order in perfect condition with 26 in. in width of face. This is stated by the company to be an extraordinary proposition, as it is not known that any such wheel has been made elsewhere by this process. This is the second order of the kind the company has brought through successfully.

The officers and employees of the Allis-Chalmers Company, Milwaukee, joined in their annual picnic July 25 at Waukesha, Wis. The company has for several years adopted the plan of devoting one day to a picnic for all its employees. President W. H. Whiteside acted as chairman of the general Advisory Committee.

## Grinding Disk Tests.

To determine the comparative efficiency for grinding cast iron, with different kinds and makes of abrasive disks, such as are commonly used on disk grinders, the Gardner Machine Company, Beloit, Wis., recently made quite an extensive series of tests. Six different kinds of disks were tested, which as designated in the accompanying table were as follows:

No. 1 a Gardner improved abrasive disk No. 126. Nos. 2, 3 and 4 well known makes of grinding disks, all extensively used and of excellent quality as compared to commercial emery cloth; No. 5, a disk of regular No. 24 commercial emery cloth; and No. 6, the same in emery paper. The disks tested were all 20 in. in diameter and all except Nos. 5 and 6 were of No. 16 grain. The grinding was all done on the same machine by the same operator.

The pieces which were ground were hollow blocks of cast iron as shown in Fig. 1. These blocks were 4 in. long, 3 in. square on the outside and 2 in. square inside, and being ground on the end, the area worked on was 5 sq. in. Reducing the blocks 1 in. in length was therefore equivalent to removing 5 cu. in. of metal. Fig. 2 shows the method of handling the work and twelve

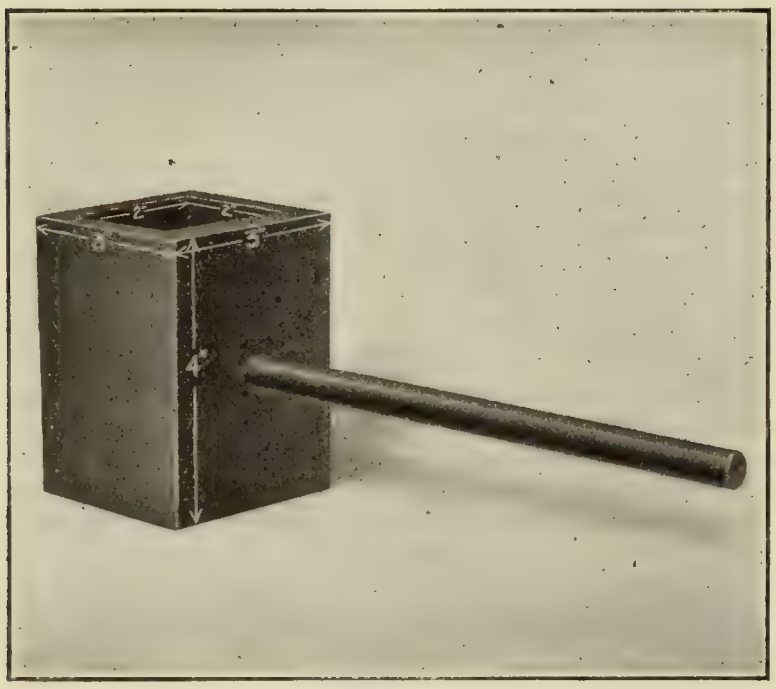



Fig. 1.—One of the Pieces Ground in the Test.



Fig. 3.—Grinding Rotary Pump Impellers.

blocks which have been considerably reduced from their original length. Usually twelve blocks were operated on together. During this test several hundred pounds of these blocks were converted into cast iron chips.

The micrometer stop at the back of the table was set to grind off a fixed amount, usually 0.05 in., and the twelve blocks ground to the stop. The stop was then moved back 0.05 in. and the operation repeated until the disk was worn out or the blocks all ground up, in which case new blocks were substituted and the operation continued until the disk was worn out. Then the time of grinding and the amount of metal removed by the disk were noted. By reversing the blocks they were ground down until the wheel touched the handles on both sides. Whenever the blocks became too warm for efficient grinding they were cooled.

It was necessary to use a Huntington emery wheel dresser on all disks tested except No. 1 and No. 3. The dresser was used whenever the surface of the disk became dull and glazed so that it would not cut cast iron readily. The use of the emery dresser shortens the life

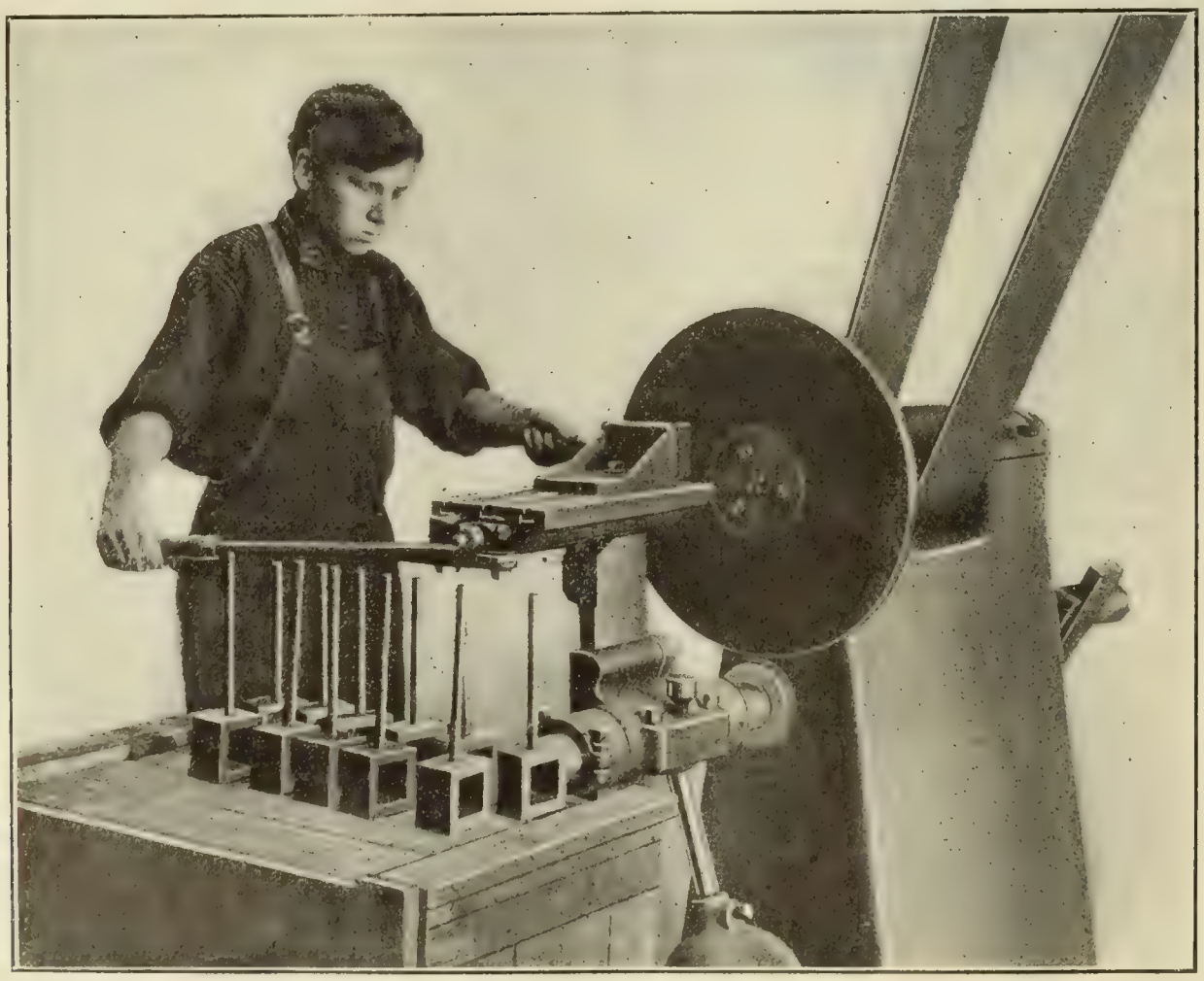


Fig. 2.—The Manner of Testing and the Pieces Tested.

of a disk, but it was absolutely necessary. The results obtained are as per the following table:

*Test of the Efficiency of Abrasive Disks.*

| Disk No. | Time used. Min. | Stock removed Cu. in. | No. of times dres'd. | Average cutting rate. Cu. in. per min. | Cutting rate first half of time used. | Cutting rate second half of time used. | Life of disk based on disk No. 1. Per ct. | Stock removed based on disk No. 1. Per ct. |
|---|---|---|---|---|---|---|---|---|
| 1 | 754 | 349.85 | 0 | 0.464 | 0.442 | 0.486 | 100.0 | 100.0 |
| 2 | 137 | 42.13 | 6 | 0.307 | 0.344 | 0.270 | 18.1 | 12.4 |
| 3 | 540 | 113.95 | 0 | 0.211 | 0.238 | 0.184 | 71.6 | 32.3 |
| 4 | 68 | 27.97 | 2 | 0.411 | 0.546 | 0.276 | 9.0 | 8.0 |
| 5 | 71 | 2.41 | 4 | 0.034 | 0.062 | 0.006 | 9.4 | 0.7 |
| 6 | 73 | 12.48 | 2 | 0.171 | 0.273 | 0.069 | 9.7 | 3.5 |

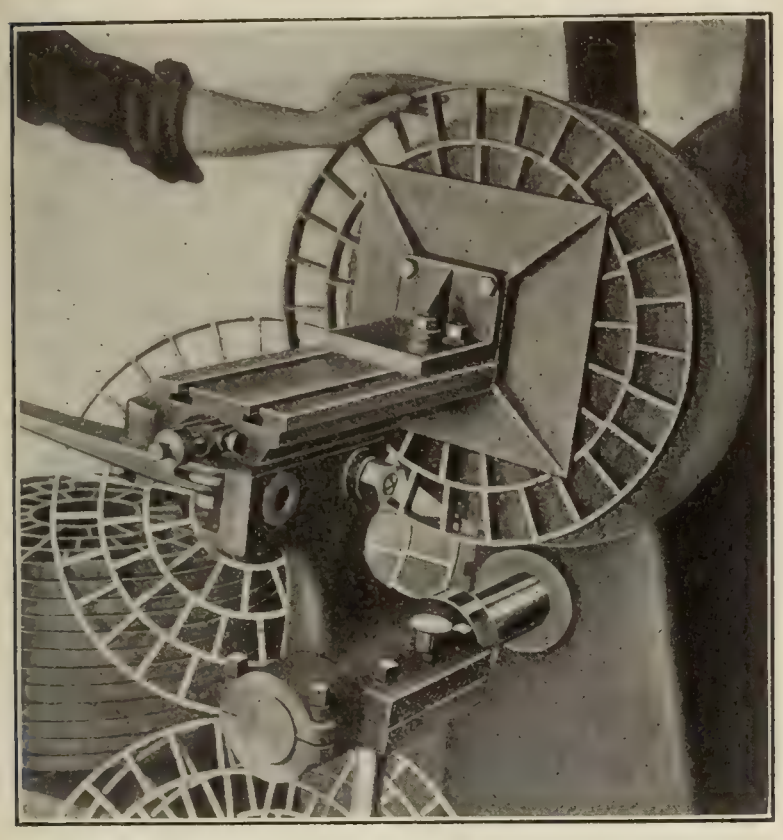


Fig. 4.—Grinding Latticed Plates Used in Making the Disks.

The disk No. 1 in the foregoing table is one made by a new process in which the abrasive grains are mixed with the required bond, cemented to a cloth backing, and while in a plastic condition, mechanically tilted to an efficient cutting angle. Careful examination of a disk treated by the tilting process shows no large grains with large flat faces fixed parallel to the plane of rotation, which is the condition of a great majority of the grains before being subjected to this tilting process. Naturally the flat side of a grain will not cut so freely as a sharp edge, and this is clearly evident from the results given in the table. Another remarkable feature of the No. 1 disk is the uniformity of its cutting efficiency from start to finish. As shown in the table, the disk removed stock even more rapidly the last six hours than it did the first six.

All the other disks tested are made by depositing a heavy coating of glue on the backing sheet and then spreading a quantity of dry abrasive grains on the glue. The abrasive grains settle into the glue and so become firmly attached to the backing sheet. By this process the grains and glue are not evenly mixed from face to back.

Disks made in this way cut freely and rapidly at first but soon wear down to a point where there is too much glue and not enough of the abrasive grains. This is plainly indicated by the record of the disk No. 5 in the columns giving the average cutting speed for the first and second half of the time used.

The accompanying Figs. 3, 4 and 5 show operations on work done with disk No. 1. Fig. 3 shows the grinding of impellers for centrifugal pumps. These were gray iron castings and were very rough and hard in places, making them difficult to machine in a lathe. The diameter is 26 in. and the area of the surface ground is about 50 sq. in. on each side. It was necessary to remove ¼ in. thickness of metal at some points. The rate of grinding these impellers on both sides was 15 min. for each one. The time formerly required for turning them in a lathe was 3½ hr. for each impeller. The pieces are ground at an angle of 7 degrees to the axis, and the surface of the blades being curved and not radial, necessitates their being revolved while grinding. This develops the surface of a cone. The impellers are mounted on a spindle driven through a worm gear and worm by a hand wheel as shown. This fixture is mounted on a lever feed table set at the required angle with the face of the disk wheel, and the impeller is slowly revolved by the hand wheel while the lever is used to bring it against the disk wheel.

Fig. 4 shows a rather interesting job of disk grinding on special cast iron latticed plates. These plates are used in the manufacturing of these special disks and are required to be accurately flat and of uniform thickness. They are 23 in. diameter by ⅞ in. deep. The rings and spokes that go to make up the plates are 5-32 in. thick. The castings being so thin it was found to be impracticable to machine them in a lathe or boring mill, but the results obtained with a disk grinder are entirely satisfactory.

The plates are chucked, at the inner circle, which is about 6 in. in diameter, on a metal disk having setscrew heads projecting from its periphery. This disk has a ¾-in. hole in its center fitting a stud on the angle plate which is bolted to the top of the lower table as shown. The latticed plates are hung on this stud, bearing against the angle plate and are pressed against the disk wheel by the lever. They are free to revolve with the wheel, but the speed of this revolution is easily controlled by changing the relative position of the stud to the axis of the machine spindle, and also by the hand of the operator, as shown. By changing pressure on the lever and by swinging the table on the rocker shaft the revolution of the plates can be increased, stopped entirely, or reversed at will.

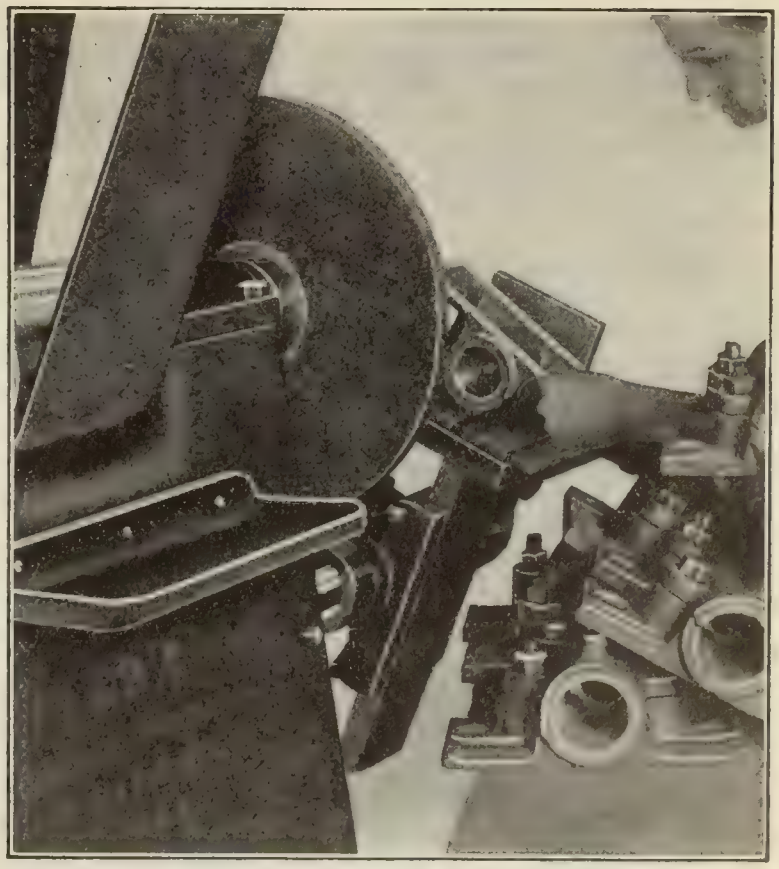


Fig. 5.—Squaring the Ends of Bearing Boxes.

The castings for the plates are made in a stove foundry and are quite accurate to pattern but are too hard to turn. The amount of metal to be removed to make them accurately flat is small, averaging less than 1-32 in. on each side. By the method shown they are finished to required size and made flat on both sides in about 15 min.

Fig. 5 shows the operation of squaring the ends of cast iron boxes after they have been babbitted. In the lot shown, some of the caps lapped over, or fell short of the base as much as ¼ in. and it was necessary to remove more than that thickness on both ends of the box to fully square and face them. The boxes shown are for

2 7-16-in. shaft. The total area of the surface ground on each box was 16 sq. in. Seventy-three boxes were ground on both ends in 59 min., or at the rate of 75 per hr. This work was done with the new disks, but they were coated with a special preparation that prevented the babbitt from clogging the disk. It will be noticed that the boxes are simply slipped on to a freely fitting stud set in an angle plate which is bolted to the top of the lever table. This enables the operator to handle them rapidly, and



Fig. 6.—Gardner's Improved Abrasive Disk.

by using the micrometer screw the correct length can be maintained.

Figs. 6 and 7 are reproduced from photographs of Gardner's improved abrasive disks. Fig. 6 shows a disk such as was used in the grinding test. Fig. 7 is the same kind of a disk, but made of much finer abrasive,

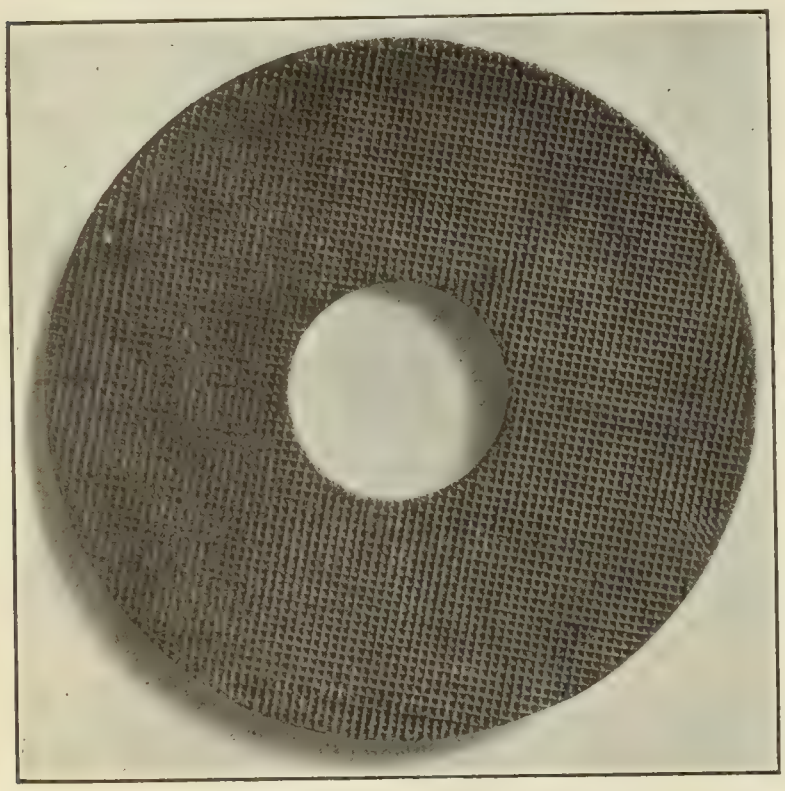


Fig. 7.—One of the Same Disks of Finer Grain.

and being lighter in color shows very plainly the corrugated surface which produces the mechanical tilting of the abrasive grains.

The Globe Machine & Stamping Company, Cleveland, Ohio, is successfully operating a Sherardizing plant, working under the rights purchased some time ago by the United States Sherardizing Company, New Castle, Pa. The Globe company not only Sherardizes metal articles but designs and equips such plants for manufacturers who do not care to send out their work.

## The Seaver Coke Pusher and Coal Leveler.

In connection with the Koppers by-product coke ovens, which the Illinois Steel Company is building at Joliet, Ill., three coke pushers and coal levelers of a new type, designed by John W. Seaver, consulting and contracting engineer, Cleveland, Ohio, are to be installed. The machines are of the combination type—that is, each consists of a coke pusher and a coal leveler carried on one frame. Two of these machines will have sufficient capacity to take care of the requirements of the ovens, leaving the third as a reserve. They are all duplicates and all parts are interchangeable.

As shown in the illustrations the main frame consists of four riveted girders well braced together. These girders rest on end trucks which are steel castings of the box type, of standard crane construction, so arranged that the track wheels may be readily removed. The thrust of the pusher ram is taken by two horizontal castings, the shafts of which are carried by the front truck wheels; this construction does away with any strain in the flanges of the track wheels. The pusher ram is of the box girder type 61 ft. long, and is of unusually heavy construction; it is composed of two 31 x ½ in. web plates, two 14 x 1 in. flange plates and four 6 x 3½ x ½ in. flange angles. Each member is a continuous piece, there being no splices. To the bottom of the ram is attached a rack for moving it. This is a steel casting 14 in. wide by 2½ in. thick, with shrouded teeth of 3-in. pitch and 10-in. face. The sides of the ram are protected from the heat of the oven by removable asbestos shields. The front end of the ram is a steel casting 1½ in. thick, and is provided with adjustable side and bottom rolls. The ram rests on flanged rolls 14 in. in diameter, and is traveled back and forth by a pinion driven by a train of spur gears connected to a 50-hp. motor.

The coal leveler is of the ladder type, consisting of two bars 10 in. deep, tapering to 2½ in. deep at the front end. This ladder leveler is traveled by a plow steel wire rope, which is attached to the rear end of the ladder, and is so arranged that it never enters the ovens. The rope is wound on a grooved drum, which is connected to a 25-hp. motor by a train of spur gearing. This gearing is so arranged that the ladder may be run into the oven or withdrawn from it, and at any desired point in the stroke an automatic vibrating arrangement can be brought into operation, so that the ladder makes a stroke of 5 ft. backward and forward, thereby leveling the coal. This motion is entirely automatic and is under the control of the operator.

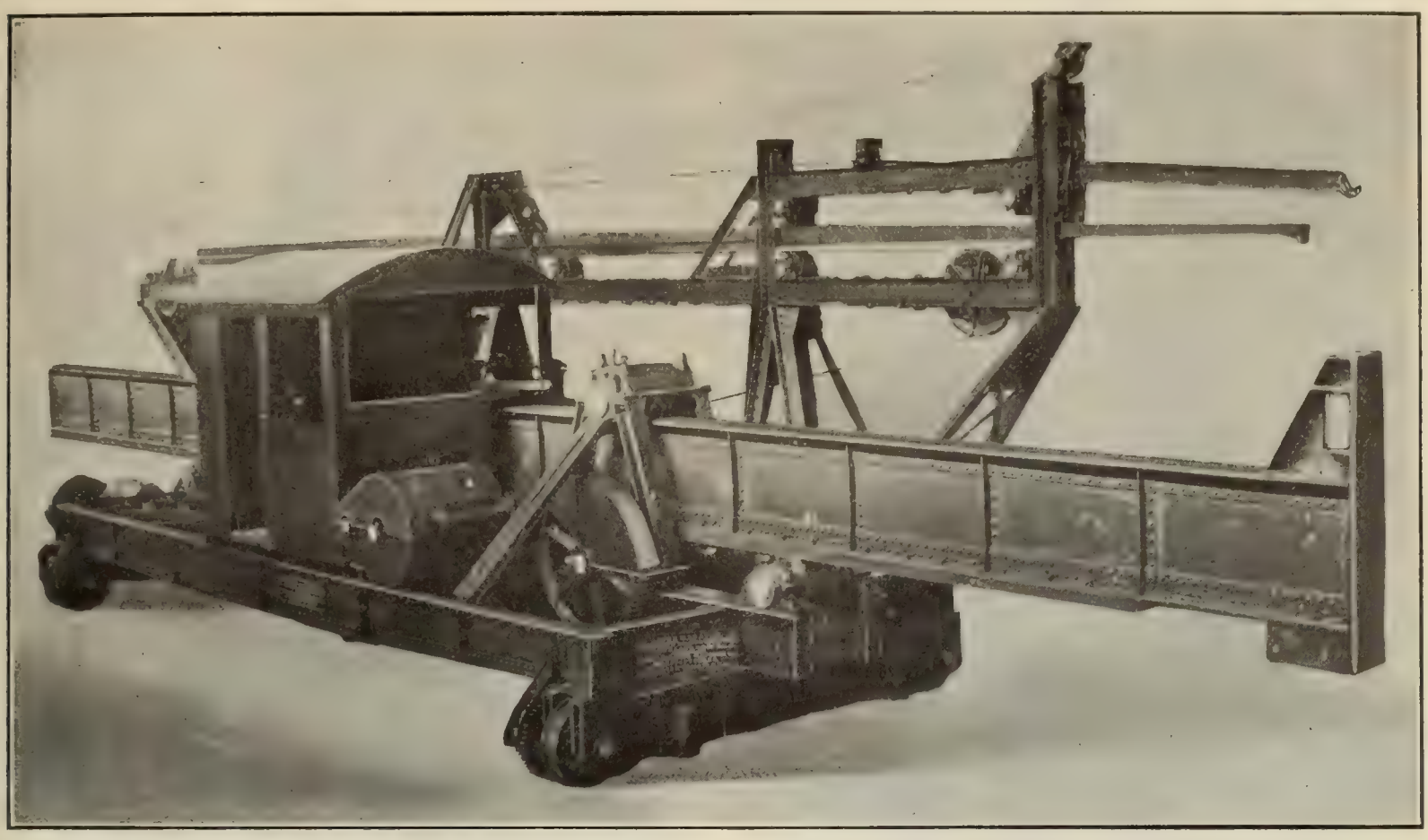
The leveler ladder and the pusher ram are fitted with automatic switches for cutting out the electric current at the ends of their strokes in both directions. The sets of gearing for the pusher ram and the leveler ladder are each mounted on an independent bed plate which contains the bearings for the motor and the shafts, so that each set of mechanism is tied together and entirely independent of the framework, thereby preventing the gearing from getting out of line. By lifting out the bed plates the entire sets of gearing are taken out. Every shaft is readily accessible. Located directly over the leveler ladder and worked from the operator's cab is an arrangement for lifting and supporting the leveler doors, which are independent of the pusher doors.

The hand traveling gear placed in the operator's cab is so arranged that the operator can cut off the current from the traveling motors and adjust the position of the machine in front of the ovens by hand. A powerful boot brake is arranged to lock the machine on the track at any desired position. In the operator's cab recording voltmeters and ammeters show the time of and power taken by every stroke of the machine.

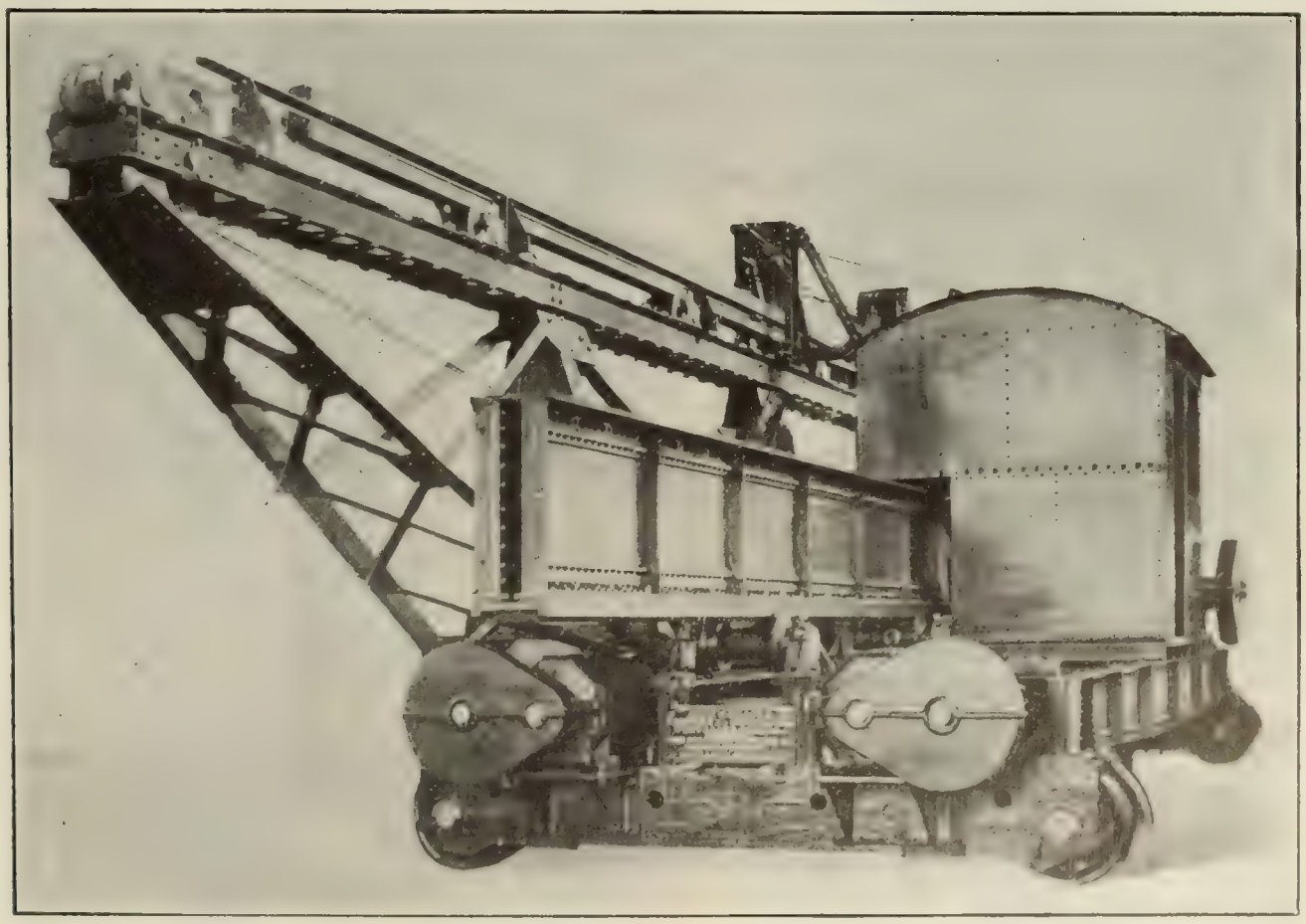
The motors are of the Crocker-Wheeler mill type and rating, series wound. One of 50 hp. operates the ram travel, one of 25 hp. the leveler ladder, and two of 25 hp. travel the machine. All of these motors are operated by General Electric controllers. The two 25-hp. motors for the machine travel and the 50-hp. motor

for the ram travel are controlled by one 50-hp. controller to which they are connected by a double-throw switch. The machine is designed to travel on the tracks at 300 ft. per minute, to move the ram at the rate of 80 ft. per minute, and the leveler bar at 120 ft. per minute.

The construction of the machine throughout is substantial; the castings are bronze or steel, no cast iron being used in the machine. Every part has a factor of safety of not less than six, with the electric motors carrying an overload of 50 per cent. With the exception of the shrouded teeth for the ram travel all of the gears have cut teeth. The shafts are fitted with removable bronze bearings, made in halves. All of the bolts are of the through type, no studs being used. In the designing of the machine especial attention was paid to arranging every part for ready inspection and removal. Over all the gears are placed plate steel cases. The bearings are provided with either compression grease cups or oil reservoirs. The machines were built for John W. Seaver, by the Alliance Machine Company, Alliance, Ohio.



A View of the Seaver Coke Pusher and Coal Leveler Showing the Side and Front End.



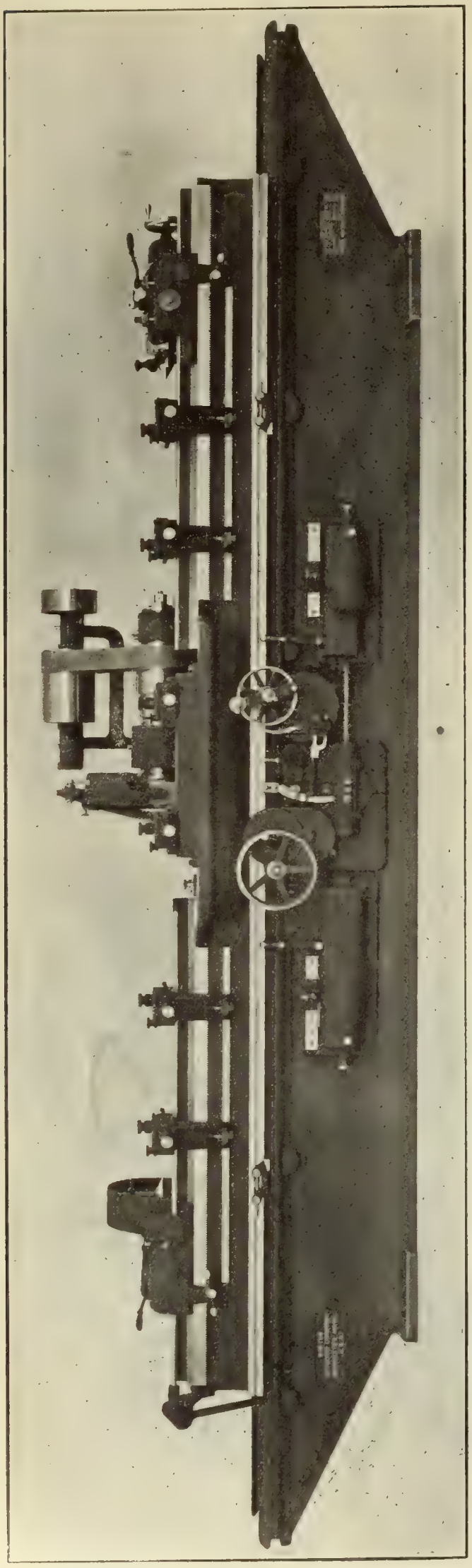
A Rear View of the Seaver Coke Pusher and Coal Leveler as Built by the Alliance Machine Company.

The Howard Stove Mfg. Company, formerly of Savannah, Mo., is preparing to move its plant to the new industrial town of Ralston, near South Omaha, Neb., where construction of buildings is already under way. The plant will consist of a foundry 65 x 150 ft.; warehouse 60 x 100 ft.; factory building, 80 x 120 ft.; and an office building, 30 x 60 ft., of brick and frame construction. Work is being vigorously pushed in order to have the plant in operation in time to participate in the trade of the coming season.

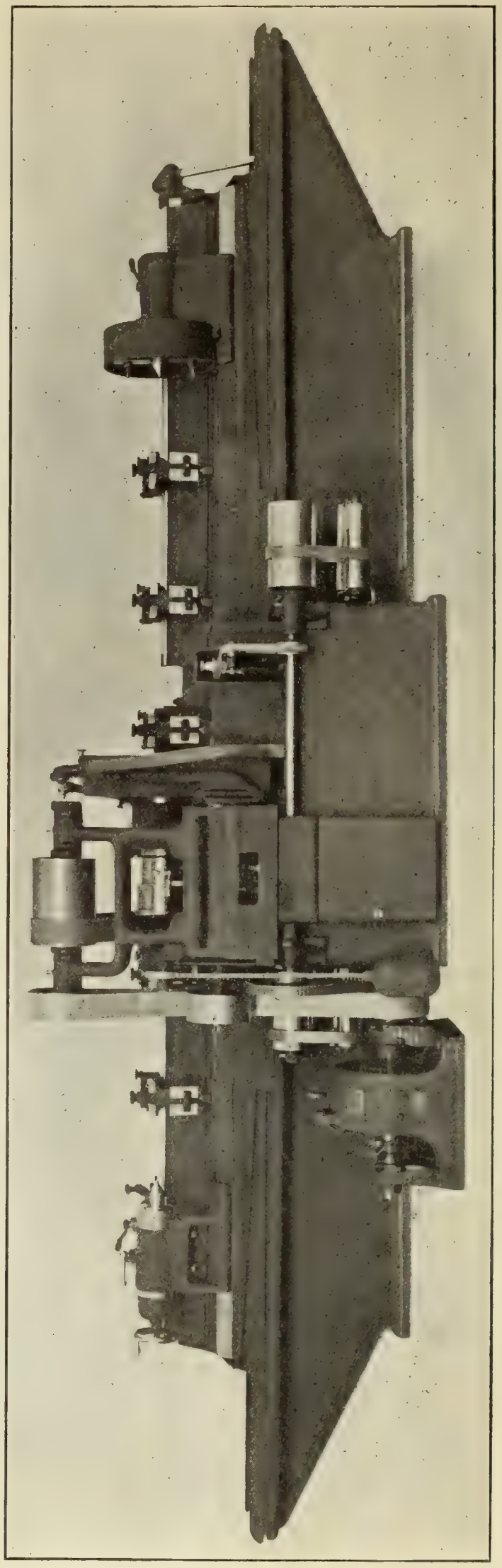
# A New Self-Contained Norton Cylindrical Grinder.

The cylindrical grinding machine shown in the illustrations was built by the Norton Grinding Company, Worcester, Mass., for a German railroad works for grinding crank pins, valve stems, truck axles and piston rods, the pistons having extension rods. The type is known as the 20 x 32 x 168 in. self-contained electrically driven machine. It swings 20 in. except at the gap where it is arranged to swing 32 in. This particular machine as shown has its gap 44 in. in length in the center of the table, but the gap can be of any length desired and in any position on the table to suit the work for which the machine is intended.

The steady rests are mounted on a base arranged to be moved along the front edge of the gap to accommodate different thicknesses and different positions of pistons. The rests may be removed, with their base, to give a clear space over the entire bed. The footstock is designed for delicate adjustment to secure straight work,



Working Side of the New 20 x 32 x 168 In. Cylindrical Grinder Built by the Norton Grinding Company, Worcester, Mass.



Rear View of the New Self-Contained Norton Cylindrical Grinder, Showing the Driving Motor.

and both the head and the foot stock are made unusually heavy to insure durability as well as accuracy when heavy work is supported.

The general details of design and construction are similar to those of the standard Norton grinders, and the same care in workmanship is given its construction. The total weight of the machine is 25,000 lb. It measures 22 ft. in over-all length. The grinding wheel used is 24 in. in diameter with 4 in. face.

Because of its unusual length special provision is made for leveling and straightening, a foundation being necessary. The plates shown on the floor in the photograph will be imbedded in the foundation to a straight edge and level. The wedges are adjusted by two nuts, one on either side of the raised end of the wedge, and operated on threaded studs fixed in the base of the machine. Both plates and wedges are machined to insure broad, permanent contact.

The electric power is so applied, as shown in the rear view of the machine, that no extra floor space is required, as the motor stands within both rear and end lines of the base. The machine requires 20-hp. motor, and in ordinary use the power consumed will vary from 5 to 20 hp., according to the character of the work and the ambition of the operator in producing it. When the maximum power is utilized maximum results in the way of production will be obtained, assuming of course that when the maximum power is employed it will be because the work is large and heavy. For smaller work the power required is proportionately less.

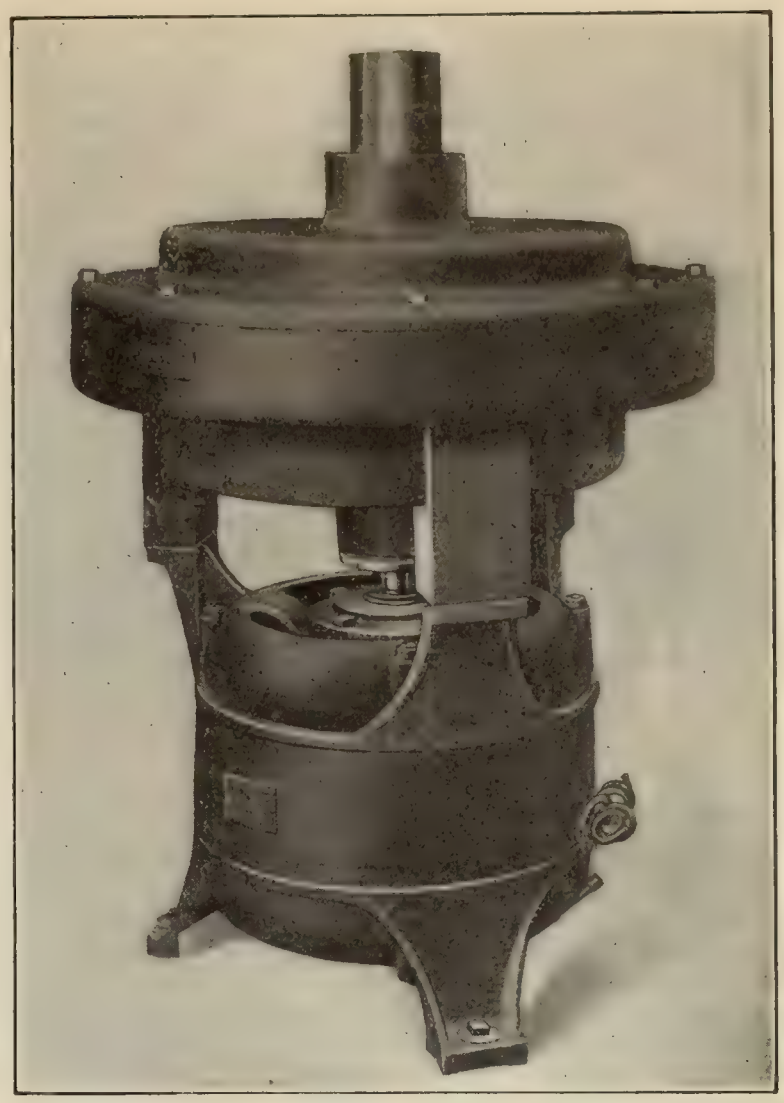


Fig. 3.—A 5-Hp. Vertical Drive Mounted on the Motor.

## The O'Kelly Speed Reducing Gear.

To reduce the speed in any required ratio from a motor or driving shaft to a machine or driven shaft is the function of the O'Kelly speed reducing gear manufactured by the D. O. James Mfg. Company, 351 West Monroe street, Chicago, Ill. The device is especially adapted to transmissions where a considerable speed reduction is required and for such often has advantages over belts or plain gear reductions, as it gives a positive drive in a compact form and continues the drive in the same line—that is, the axes of the driving and driven shafts are coincident. It is claimed to be efficient, durable and strong. Being entirely inclosed and oil tight, it is itself protected from injury from outside sources and offers no menace to operatives working about it, and when once supplied with oil requires practically no attention for months at a time.

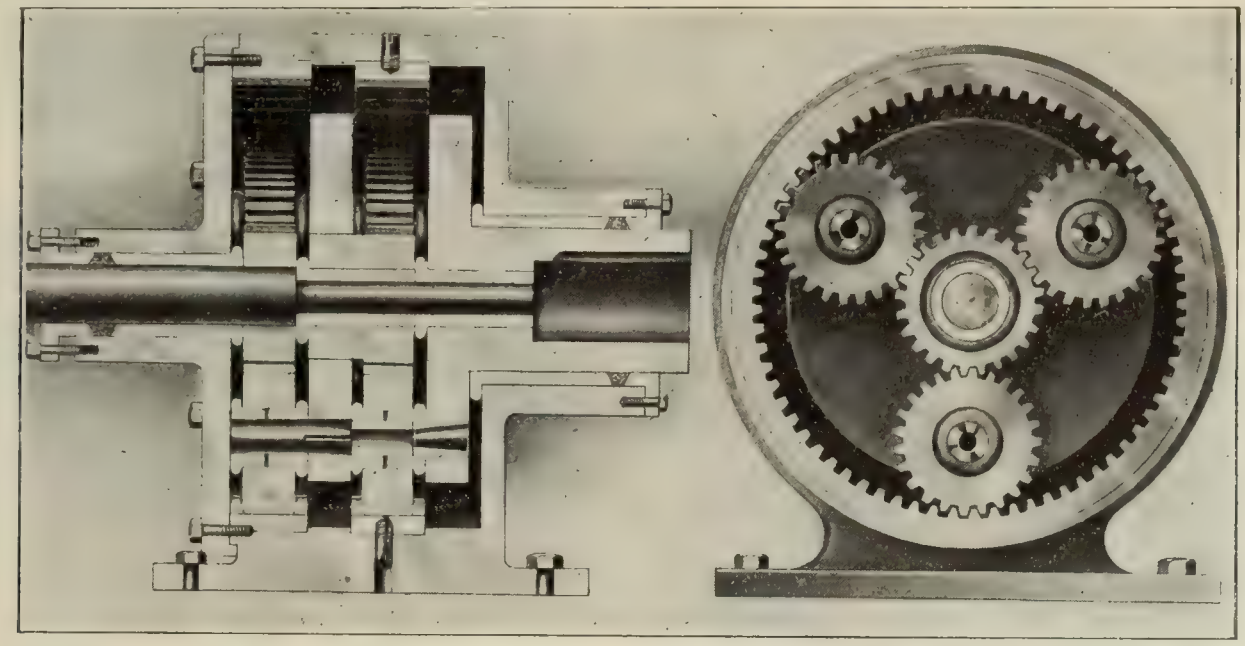


Fig. 1.—Longitudinal and Cross Sections of the O'Kelly Speed Reducing Gear Made by the D. O. James Mfg. Company, Chicago

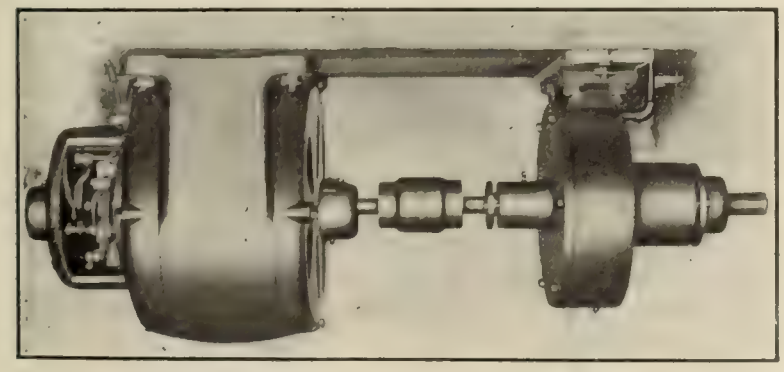


Fig. 2.—A 5-Hp. Line Shaft Speed Reducing Drive.

The construction is exposed in Fig. 1. All the moving parts run in the same direction, and the power being transmitted through three intermediate pinions in each reduction a balanced drive is obtained. The annular or internal gears are fixed in the casing and are made of semi-steel. The idlers are made of steel and run on hard steel bushings. The revolution of the driving gear, the internal gear being fixed, produces an orbital movement of the idlers, which is transmitted through the studs on which the latter are mounted, to the disk in which the studs are fixed, causing the latter to revolve at a speed much slower than that of the driving shaft. This disk may connect directly to the coupling for the delivered drive, as is the case in the single reduction devices, or it may carry a spur gear which as a driving gear through

a second train of idlers still further reduces the speed. In Fig. 1 such a double reducing gear is shown. The idler pins are steel, case hardened, and are keyed to the disks with hard taper pins which are easily removable. The main bearings are bushed with phosphor bronze.

The device is made in a variety of sizes and speed reductions, in either vertical or horizontal patterns, and in

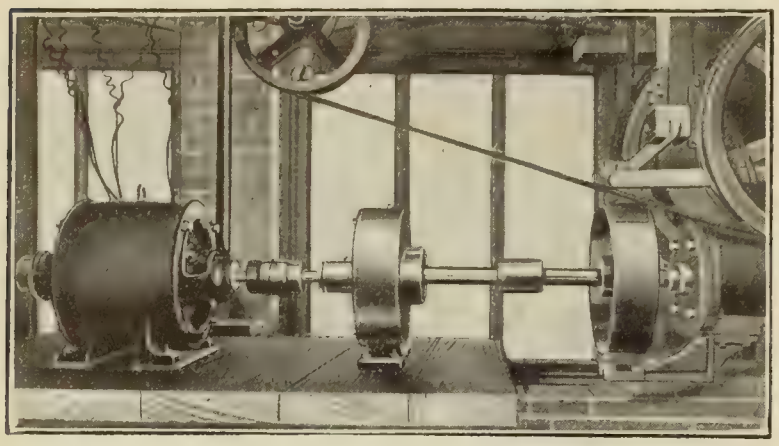


Fig. 4.—A 7½-Hp. 4-to-1 Drive Connected to an Elevator.

capacities of from ⅛ to 50 hp. A universal coupling is generally used to connect the device with the driving motor, so that absolutely perfect alignment of the shafts is not necessary.

The other illustrations show various applications of O'Kelly speed reducing transmission gears. Fig. 2 shows a 5-hp. gear connecting a motor to a line shaft, reducing the speed from 1000 to 150 rev. per min. Fig. 3 shows a 5-hp. vertical drive where the casing of the device is mounted directly on the driving motor. This gives a reduction in a ratio of 73 to 1, and may be placed on the floor as indicated or suspended from the ceiling. It is suitable for any vertical drive.

An instance where the device becomes especially convenient and useful is such as that illustrated in Fig. 4.

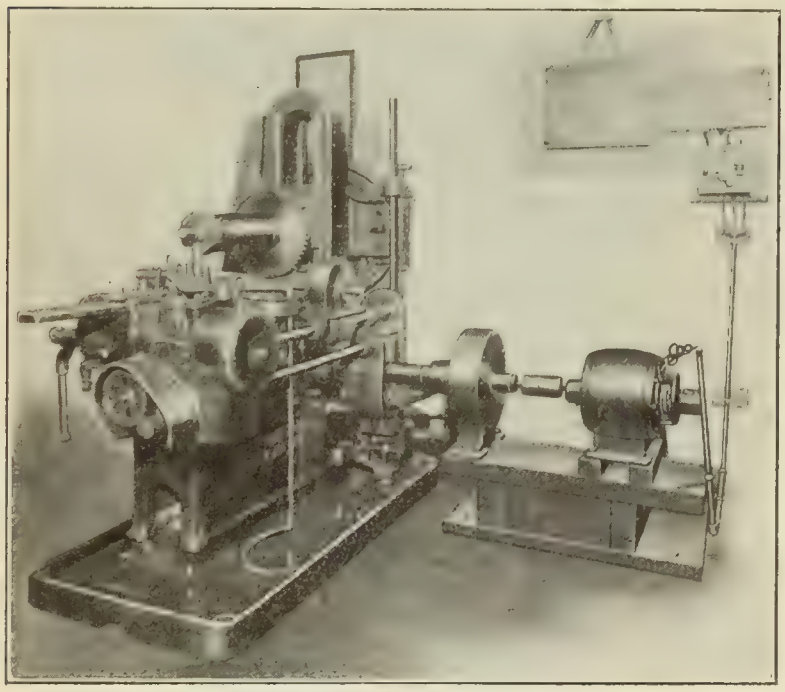


Fig. 5.—A 2-Hp. Drive for a Gear Cutter.

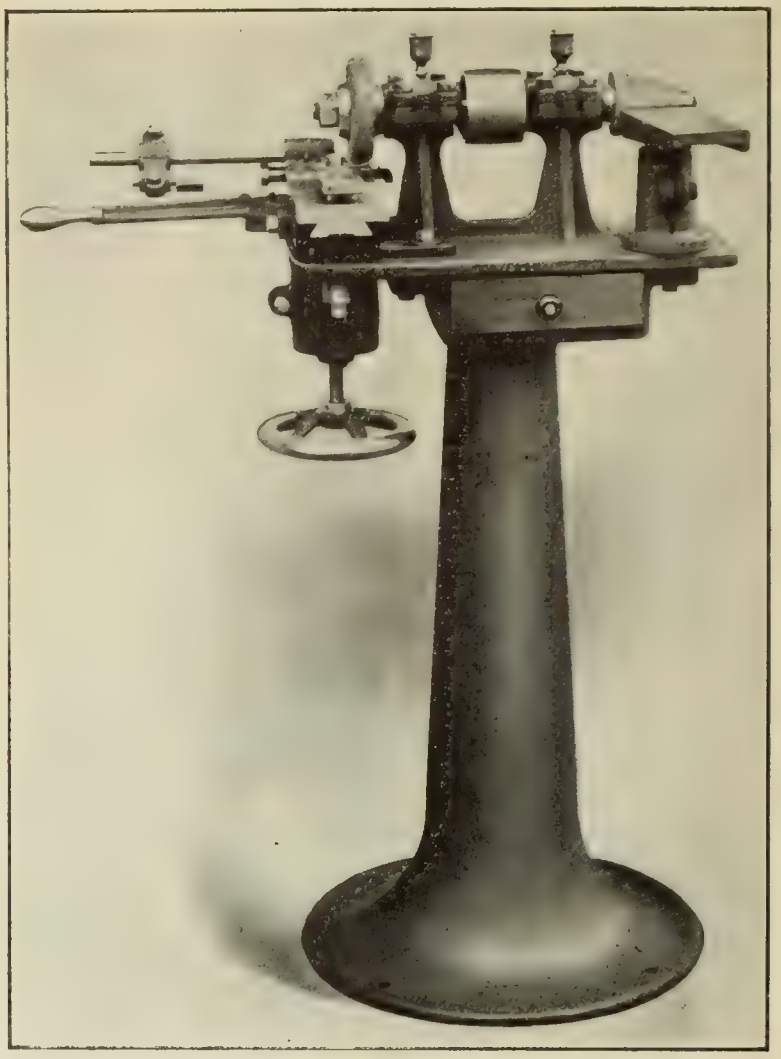
Here a 7½-hp. motor is directly connected through a 4-to-1 reducing gear to a 5000-lb. worm gear elevator, eliminating the belt drive which may in many cases be objectionable. A machine tool drive is shown in Fig. 5, where a 2-hp. motor is connected directly to a Gould & Eberhardt automatic gear cutting machine through one of these transmission devices which reduces the speed from 1800 to 245 rev. per min.

The Hill Clutch Company, Cleveland, Ohio, recently received an order from one of the subsidiary companies of the United States Steel Corporation for 59 friction clutch pulleys. All of these pulleys are to be of one size and fitted with the new 1908 positive action Hill clutch, which was chosen by the purchaser after a competitive test of a number of the various makes of clutches.

## The Bignall & Keeler Pipe Die Grinder.

As a maker of pipe threading machinery the Bignall & Keeler Mfg. Company, Edwardsville, Ill., is naturally in position to know how pipe dies should be ground. Its experience with patrons using its machines has also indicated something of the difficulties experienced by them in keeping their dies in proper condition. With the need apparent and the knowledge at hand to relieve it, the company has produced a new pipe die grinding machine, shown in the illustration, that is claimed to be simple and convenient, easily and rapidly operated, and capable of being satisfactorily handled by a boy, as no particular skill is called for.

While important in the cutting ot threads on any pipe, it is particularly necessary for threading the steel



A New Machine for Grinding Pipe Dies Made by Bignall & Keeler Mfg. Company, Edwardsville, Ill.

pipe now so commonly used, that the dies should be of correct shape and properly ground. A die to work well and cut a clean, perfect thread, must have a certain rake and clearance, for without this the threads are torn or stripped. The dies should also be kept sharp and of the right shape, just as much as should lathe or other metal cutting tools. That dies do not generally receive sufficient attention is mainly because the average shop is not equipped to do the work as it should be done, and as a rule the dies are not ground with due regard to the angle that will produce the best results.

As ordinarily ground no two dies are alike, it follows that poor threads will result, more power be required and more frequent sending of the dies to the factory for recutting be occasioned. Dies sent to the factory for recutting often have been so poorly ground that they cannot be recut for the original size and a complete new set must be purchased. With dies properly ground a great deal of this expense could be saved.

The machine, as the illustration shows, has a special formed wheel on one end of the spindle. The die is clamped to the platen beneath the wheel and is moved back and forth with a lever, while at the same time the wheel is gradually raised by means of a hand wheel. The gauge on the platen, against which the die is placed, is adjustable at any angle with the wheel, so that straight thread dies as well as regular taper pipe dies can be

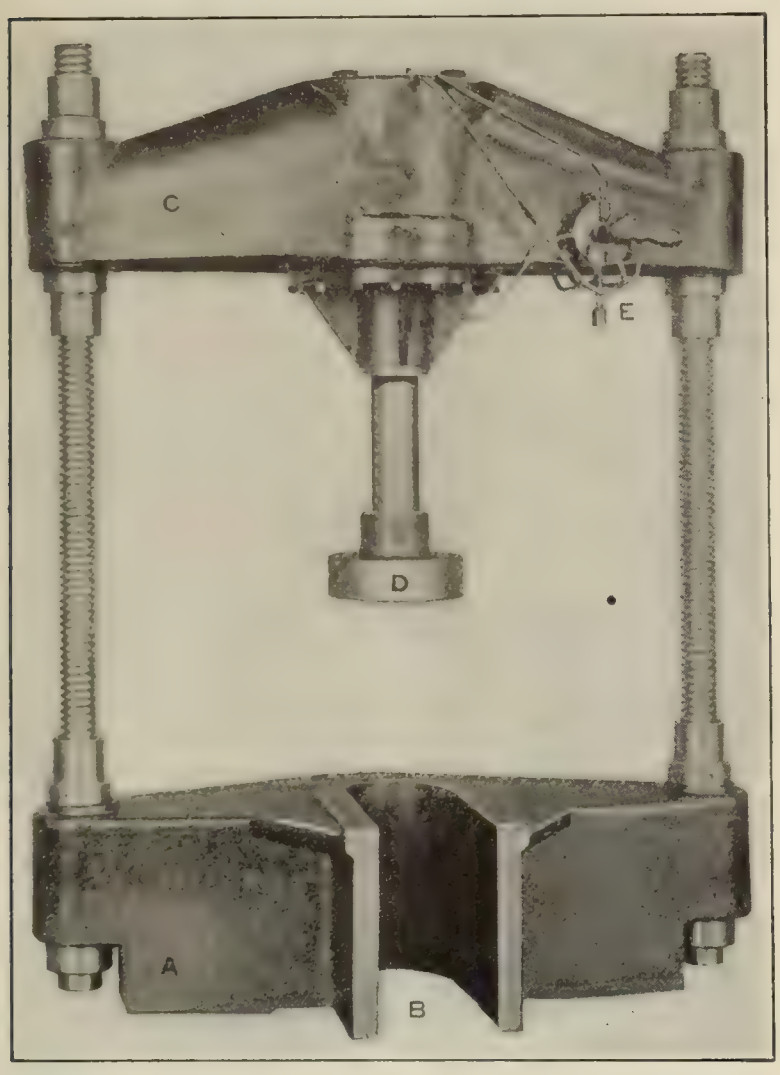
ground. The shape of the wheel gives the die the correct angle of rake. With the machine a wheel dresser is furnished, and also a template to assist in dressing the wheel to the correct shape. The cone shaped wheel on the other end of the spindle is for cutting the lead.

By removing the special shaped wheel and using a straight face wheel, which is also furnished, the machine may be used for grinding other tools. The machine requires 20 x 30 in. floor space and weighs about 425 lb.

## The Springfield Pneumatic Press.

Because it has proved to be so useful in its own factory for making press fits, the Springfield Machine Tool Company, Springfield, Ohio, has recently placed on the market the pneumatic press shown in the accompanying illustration.

Primarily it consists of two main frame castings, and two heavy upright screws. The base A is of massive proportions, and is wide enough to permit a 40-in. diameter wheel to be laid upon it. The opening B which extends back beyond the center of the machine, is for the purpose of making drives where a portion of the work may project some distance below the rest, as is the case in driving lathe spindles into face plates. It facilitates this work inasmuch as the spindle does not have to be raised a considerable hight and dropped through a hole, but is merely set in the space B. The upper frame C is also very heavy, and contains in its center a cylinder 12 in. in diameter, giving an 8-in. stroke; although if required the stroke can be made longer.




A 27,000-Lb. Pneumatic Press Built by the Springfield Machine Tool Company, Springfield, Ohio.

The piston head is fitted with three rings, which prevent air leakage. The lower end of the piston rod carries a heavy shoe D, the central portion of which is filled with babbitt, so that the work will not be bruised when pressure is applied. The two uprights are threaded so that the frame can be raised or lowered, as the nature of the work requires. By using these screws, the press can be made to accommodate almost all classes of work.

The press is controlled by a valve E, shown on the right of the upper frame, which directs the air either above or below the piston, or shuts it off altogether. This valve is simple and unique in its operation; starting its lever from the left-hand position, causes the piston to be raised, a little further movement shuts off the air, and a still further movement in the same direction causes the piston to lower, which permits the full air pressure to be applied to the work. If this pressure does not prove to be sufficient to give the desired results, the controlling handle can be moved still farther which throws into operation a small quick-acting automatic air pump placed on top of the frame C but not shown in the engraving. This pump is capable of raising the pressure 250 lb., when the main line is supplied with 80 lb. pressure. The controlling valve allows a very sensitive adjustment of the piston in either direction, and the parts are so regulated that the piston cannot move too rapidly in either direction.

The press as shown without the pump, when supplied with an air pressure of 80 lb. is capable of exerting 8800 lb. pressure, but when the pump is brought into action, it is capable of exerting 27,000 lb. pressure, which is amply sufficient for most classes of work, within the machine's capacity.

## The Output of Mica in 1907.

The forthcoming annual report of the United States Geological Survey upon the production of mica in 1907, prepared by D. B. Sterrett, shows an output valued at $392,111. This product came from 11 States—North Carolina, South Dakota, Alabama, South Carolina, Colorado, New Hampshire, Idaho, Georgia, Virginia, New Mexico and Maine—named in order of value of output. Of these States, Alabama, South Carolina, Georgia and Maine reported no production in 1906, while Connecticut is credited with no production in 1907, as against a small one in 1906.

The production of sheet mica amounted to 1,060,182 lb., valued at $349,311, a decrease in quantity of 412,918 lb. and an increase in value of $82,963 as compared with 1906. The decrease in quantity and the increase in value are due to the fact that, as reported to the Survey, in 1907 a larger proportion of the mica was manufactured than in 1906.

The production of scrap mica amounted to 3025 net tons, valued at $42,800, an increase of 1526 tons in quantity and of $20,058 in value over 1906. The price per ton was $14.15, as compared with $15.27 in 1906.

It is difficult to separate the figures of production for sheet mica from those for scrap mica, since the material used for sheet by one producer might be ground as scrap by another.

The mica industry in the United States was in an especially flourishing condition during the first part of 1907 in many of the producing areas. During the latter part of the year activity in mica production was but slightly decreased by the panic. To judge from conditions during the first part of 1908, it is doubtful whether the effects of the panic will cause a very great falling off in output.

The average price of sheet mica for the United States during 1907, as deduced from the total production, was 33 cents per pound, as compared with 17.7 cents in 1906. The average prices per pound of sheet mica as reported in the production from several States were as follows: Idaho, $1.50; Alabama, 72 cents; South Dakota, 33.4 cents; North Carolina, 32.5 cents; South Carolina, 30 cents; New Hampshire, 20.6 cents; Virginia, 17.7 cents; Colorado, 9 cents. With the exception of Colorado, the average price of sheet mica in all of these States was considerably higher in 1907 than in 1906, and the figures bring out well the fact that a much larger proportion of manufactured mica was included in these reports.

The average price of scrap mica during 1907, as obtained from the table of production, was $14.15 per ton, as compared with $15.2 in 1906. The average price paid for scrap mica in North Carolina during 1907 was $11.12 per ton, an increase of 55 cents over 1906. In the remaining States the average price was $16.65 per ton. The prices of scrap mica reported by dealers in the several States are so variable, dependent on their transportation and market facilities and on the grade of mica, that it is impossible to state a definite price.

# Drop Forging.

Before the invention of forging with dies, or what might be called "machine blacksmithing," and when a hand or power hammer was all that was available, it was impossible to cheaply produce uniform forgings. The situation is entirely changed now and in the present state of the art drop forgings can be made of tobin bronze, copper, aluminum, iron or steel, using for the purpose dies which are made in two parts. These dies are often so made as to combine in one set the roughing or "breaking down" form in addition to the finishing form, although many forgings require separate breaking-down dies and several forming dies, depending on the shape of the forging to be produced.

To determine the proper shape for the breaking-down

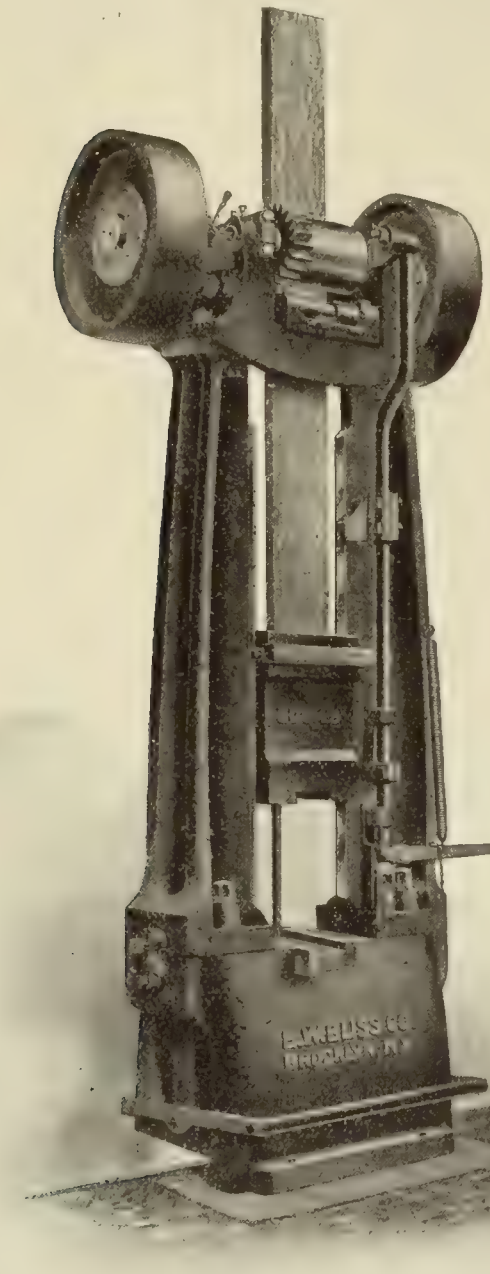


Fig. 1.—A 600-Lb. Drop Hammer.

form it is common practice to make several tests by which it is decided how best to distribute the metal, according to the stock used and the finished article to be produced. These dies are operated in what are known as drop hammers, the size of which is governed by the work to be done. The falling weight may be as light as 50 lb. or as heavy as 5000 lb. Fig. 1 shows a drop hammer with a 600-lb. falling weight. One-half of the die is fastened to the ram or hammer which moves vertically between two guides or uprights, being raised by friction rolls which are under the instant control of the operator. The other half of the die is in the anvil or base of the hammer. The ram of the hammer is lifted until automatically released, the height of the fall being controlled by adjusting the dogs on the side rod which release the lifting rolls. Then the hammer falls, striking the previously heated bar or billet with the upper half of the die and driving it into the lower half of the die. By a

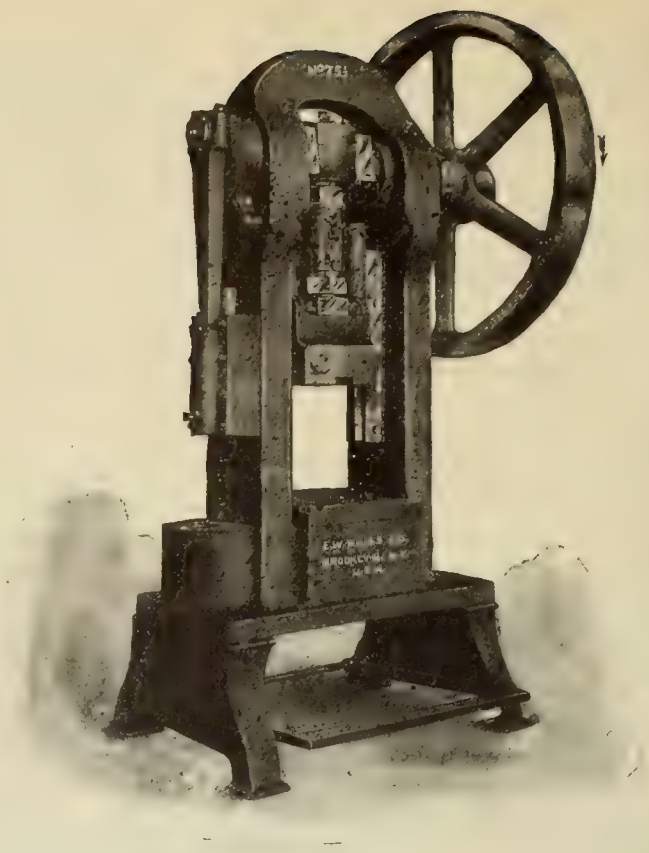


Fig. 2.—A Straight-Sided Trimming Press.

number of blows in rapid succession the stock is quickly hammered into a shape that will distribute the metal so as to secure the best results in the forming die from both an economical and operating point. The piece in this shape is next placed over the finishing form in the die and by a number of blows forced into the concavities in the two dies. It may be necessary to reheat the stock between these operations if the nature of the work or the stock used compels it.

Around the finishing depressions in the faces of both dies is cut a shallow space called the "flash" of the die. This allows for the inequalities in the rough forging, as it is practically impossible for the drop forger to produce the exact shape and size required without surplus metal, and this space in the flash provides for the overflow. The forging as it comes from the finishing drop hammer therefore has a fin formed where the upper and lower dies meet. This is removed in trimming dyes operated in a type of press such as is shown in Fig. 2, and usually located

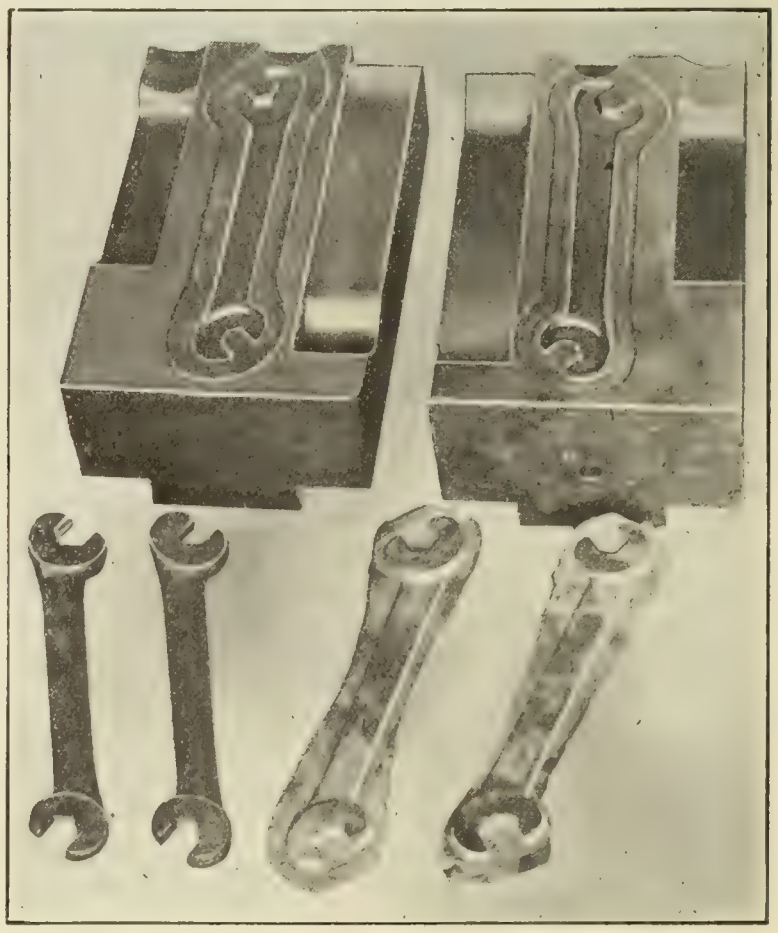


Fig. 3.—An Example of Drop Forging Dies and Their Product Before and After Trimming.

alongside of the hammer. The character of the trimming is such that cut-back or overhanging frames are often more convenient than those of the straight-sided pattern as illustrated in Fig. 2; this overhanging type is particularly adapted for trimming long drop forgings, as the stock can readily be fed from right to left through the throat of the frame. When trimmed the forging is either annealed or pickled, or, if necessary, both, after which it is ready for the machine operations if there be any. Fig. 3 shows a pair of dies and its product before and after being trimmed.

The endurance and effectiveness of drop hammers depend in no small degree upon the proper ratio between the weight of the base and the weight of the hammer. It has been demonstrated that 12 to 1 is decidedly better than a smaller ratio, and that the best results are obtained with a ratio of 15:1 or 16:1 with all parts made

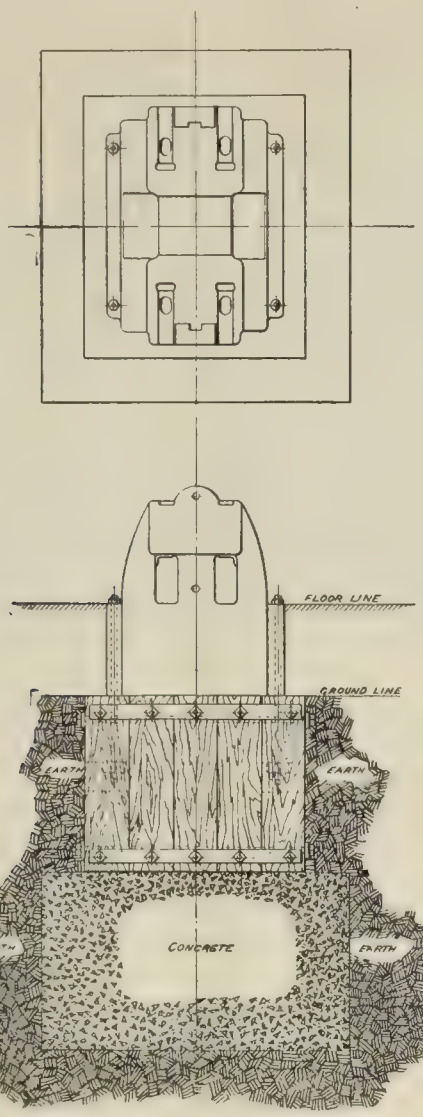



Fig. 4.—Plan and Sectional Elevation of a Drop Hammer Foundation with Wood Cushion.

in proportion, the extra cost of the heavier machine being more than compensated for by the larger quantity and better quality of the finished product and by the comparative freedom from breakdowns.

For the successful operation of drop hammers it is very essential to have a good foundation; either one of the types illustrated in Figs. 4 and 5 have been found satisfactory. The wood cushion foundation, shown in Fig. 4 is used where the ground is not very good and where jarring of surrounding buildings is objectionable. The solid concrete foundation shown in Fig. 5 is recommended as best when it can be used, as it is like a continuation of the base of the hammer and therefore makes the drop more efficient. In deciding the depth of foundation of either of the above types care should be taken to determine the best point to stop the excavation. Bed rock is the best bottom, cement gravel next best, and then a strata of sand or clay, say 4 ft. thick, which if left undisturbed in its original condition also makes a good bottom. The trouble with sand or clay is, that the heat of a drop forge shop dries the soil, and with the continual jar they are apt to shift if they have opportunity to do so. By flaring the bottom of the foundation the desired result is sometimes obtained without going very deep, but

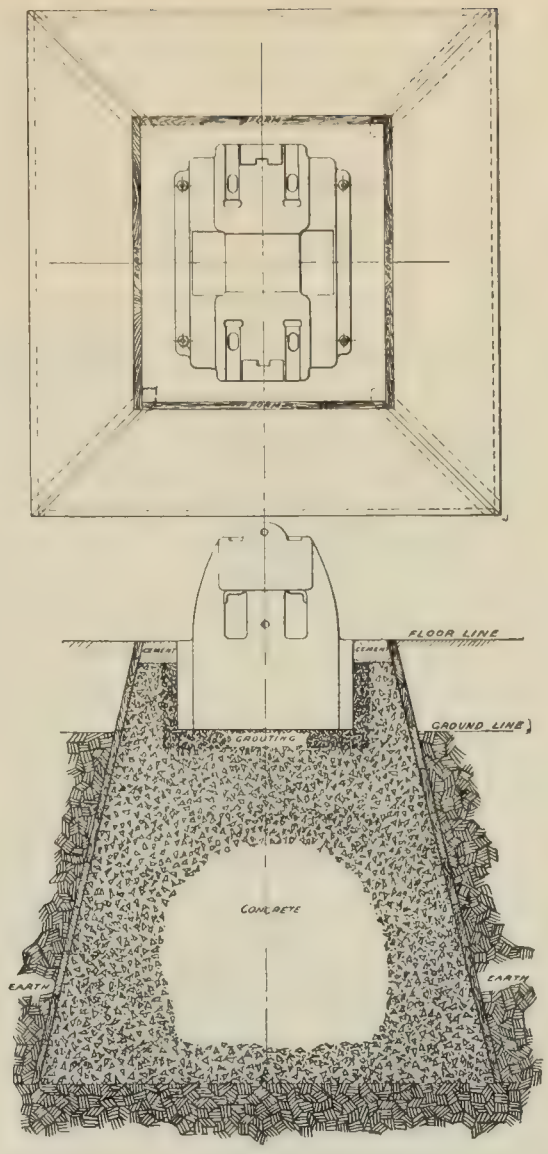



Fig. 5.—Plan and Sectional Elevation of a Solid Concrete Drop Hammer Foundation.

for any size of drop hammer the concrete should not be less than 4 ft thick, whether the wood cushion is used or not.

The forgings produced by the drop hammer are perforce uniform, being formed in the same dies and under similar conditions. Difficult shapes can be readily, rapidly and accurately made, leaving allowances for machining if desired, or finishing where no machine finish is required. In the latter case the cost of manufacture is greatly reduced and the smooth and accurate surface left from the dies generally answers for such articles as handles, wrenches, cranks, connections and bossed parts. Or, should appearance require a bright and polished surface, such may be given by an emery wheel or buffing machine.

The field for drop-forged products is very large; in fact, almost unlimited. There is a great demand for them in the manufacture of firearms, sewing machines, bicycles, automobiles, engines, railroad cars and in many kinds of machinery. The economy in the use of drop forgings has been recognized to such an extent that in many instances steel castings are being replaced by drop



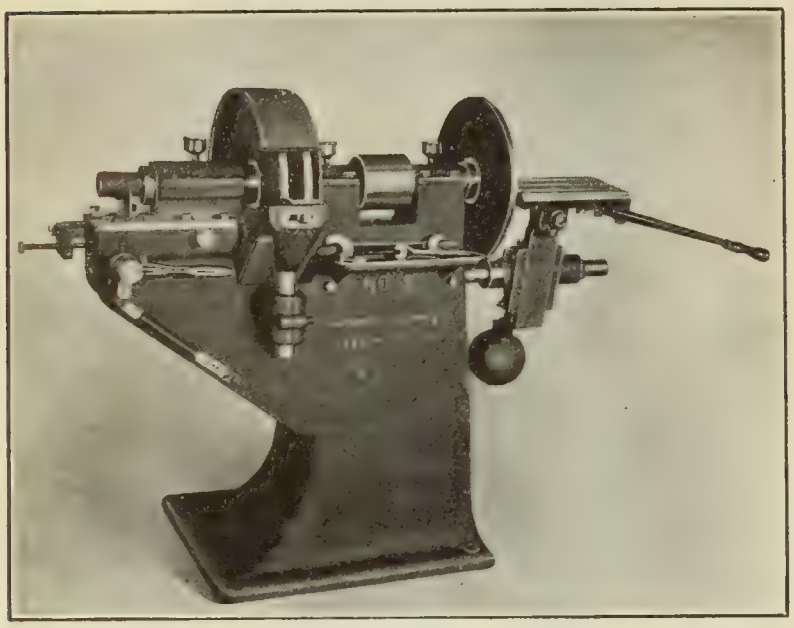
Fig. 6.—Drop Forgings in a Variety of Sizes and Shapes.

forgings where the strain requirements are great and the part requires considerable machining, as by their use the amount of machine labor necessary is very materially reduced, in addition to overcoming the loss consequent with castings developing bad spots. Fig. 6 shows an assorted lot of forgings produced in machinery made by the E. W. Bliss Company, 11 Adams street, Brooklyn, N. Y., which makes a specialty of drop forge equipments, including dies.

## The No. 12 Combination Gardner's Improved Disk Grinder.

*The Iron Age* of July 12 contained an illustrated description of the No. 12 Improved disk grinder built by the Gardner Machine Company, Beliot, Wis., a machine for rapidly grinding the parallel faces of small pieces. The machine herewith illustrated is the same machine with the addition of a single disk and a swinging work table at the right end, and is known as the No. 12 Combination Improved disk grinder. Patents have recently been allowed covering this machine.

As with the standard No. 12 grinder, the principal feature is the one-belt drive, a single belt driving the two



The No. 12 Combination Improved Disk Grinder Built by the Gardner Machine Company, Beloit, Wis.

wheels for double face grinding, and the single wheel at the right end of the machine. The construction and operation of the double face grinding part, having already been described, need not be repeated. This part of the machine is regularly provided with a dust shield opening into the base of the machine and a connection for an exhaust pipe.

The right end is equipped with a single wheel on the spindle and a rocker shaft fastened in the base of the machine, on which any style of work table may be used. As shown in the engraving, a universal lever feed table is mounted on the rocker shaft. This lever feed table has vertical and angular adjustment and is counterbalanced. The top surface of the table is provided with three T slots for bolting fixtures or holders for work. The table is operated by a hand lever and is governed by a micrometer stop screw graduated to 0.001 in. The use of the lever feed table is recommended for manufacturing operations where rapid handling of duplicate pieces is required.

When the right end of the machine is being used alone, the movable head of the double disk grinding part may be uncoupled from the rest of the machine. Also when the machine is not being used for double face grinding the movable head may be removed and special tables substituted for single face grinding. The disk wheels are fastened to the spindles by countersunk screws.

Of this machine the same is true as of the standard No. 12 with regard to the rigid construction, lubrication and the exclusion of dust from all wearing surfaces. Disk wheels of either 15 or 18 in. diameter may be used. At the left end of the machine the maximum distance between the wheels is 4½ in., which in most cases is ample, but this space may be increased to suit special work. The weight of the machine with all accessories, including setting up press for wheels, countershaft, supplies, &c., is 2200 lb.

## Canada's Import Trade.

TORONTO, July 27, 1908.—In the next twelvemonth Canada's imports are certain to be large, possibly larger than in any former year. The conditions preparing for this development were pointed out in a previous letter, wherein it was shown that the growing crops foreshadowed an agricultural yield far in excess of any ever taken off Canada's soil before, and wherein it was maintained that the manufacturing industries of the country did not appear to be anticipating any such demand as the farmers will be presenting. If the Canadian manufacturers of staple articles had financial resources corresponding in all cases to the capacity of their plant and equipment, the goods required would doubtless be turned out, but not a few concerns will have to keep down their output because funds are lacking to spread out. Two years ago there would have been no trouble about the funds, and, indeed, there was none, but it is different now. A factory in which 100 hands were maintained in employment then may not be able to keep more than half the number the next year, notwithstanding that fundamental conditions and the aggregate buying power of the country may be superior to what they were then. The difference in financial accommodation is the result of conservatism on the part of the banks, who were a little too optimistic during the good times. They are not furnishing capital now as in some cases they undoubtedly were when things were flourishing and there seemed no risk in anything. But the banks learned that a "boom" in the first years of the twentieth century is pretty much the same as "booms" have always been, and they are now dispersing credit warily. Three bank presidents—B. E. Walker of the Bank of Commerce, E. B. Osler of the Dominion Bank and D. R. Wilkie of the Imperial Bank—were interviewed by the Toronto *Mail and Empire* a few days ago and gave opinions that certainly could not be encouraging for the watchers for a fresh outbreak of commercial intemperance. All these bankers conceded that a magnificent crop would do wonders, but all likewise declared that the country could not take to the leaping and bounding gait for at least another year. This means, first, that the banks are not going to take such chances as they did, and also that many of the manufacturers were too hard hit by the recent reaction to be in a position for doing business at full rush.

But the farmers will have the money to buy goods, more goods than the Canadian manufacturers appear to be in a state of preparedness to produce. Of course, there is a great aggregate of indebtedness to be paid off by the farmers, who owe for merchandise, for implements and for luxuries bought on credit when times were good, and owe, too, on land purchased at high speculative prices. After paying off all they owe, however, the farmers will have scores of millions to spend. Their crop prospects grow brighter every day, and their wants have been accumulating in the recent dull times. Articles which they had to deny themselves last year because of crop disappointment and debt, they will hasten to buy this year. Whoever is first ready with the goods will get the market in Canada. In the West there is sure to be a great inrush of American manufacturers. Ontario will absorb a large quantity of imports if the home manufacturers are not prompt with delivery or if home stocks become depleted, for Ontario will have a big buying power, too. Already the bills drawn against Ontario and Quebec cheese exports are bringing in British money in large volume. The farmers are depositing their cheese checks, and in this way contributing to the financing resources of the banks. With their deposits increased, the banks can with greater ease supply money for the grain movement that will soon be on their hands. The enormous dairy output that timely rains have swollen will bring much money into the country. C. A. C. J.

# The New Rockford Shaper Single Pulley Drive.

Among the machine tool builders who have shown recognition of the popularity of the single pulley constant speed drive is the Rockford Machine Tool Company, Rockford, Ill. After 18 months of satisfactory use in its own shop of a 16-in. shaper equipped with a positive speed changing device the company is preparing to offer this style of drive regularly on the Rockford shapers. Fig. 1 shows a machine of this size direct connected by gearing to a Northern 2-hp. constant speed motor, which has a friction clutch for stopping and starting the machine without stopping the motor. The only difference in the machine when fitted with a plain pulley to be driven by a countershaft is shown in Fig. 2. The simplicity of the speed changing mechanism will be clearly understood by referring to Fig. 3, which shows a side elevation and cross section of the drive when equipped with a friction clutch pulley, which may be driven by belt direct from the line shaft, no countershaft being necessary. The machine has eight speed changes to the ram, ranging by even progression from 12 to 90 cutting strokes per minute.

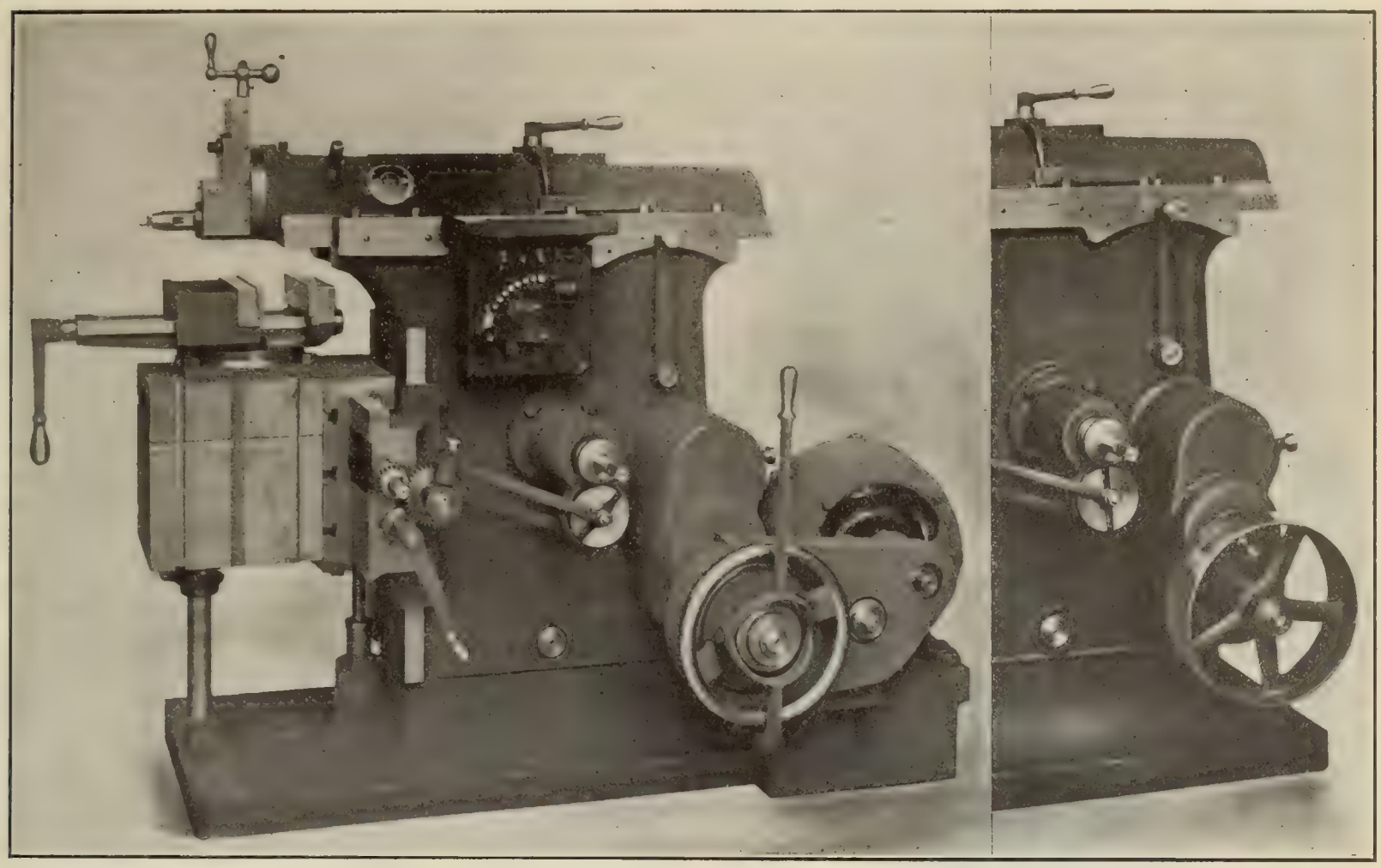


Fig. 1.—A 16-In. Rockford Shaper with Constant Speed Drive from a 2-Hp. Northern Electric Motor.

Fig. 2.—The Positive Speed Changing Device for Belt Drive.

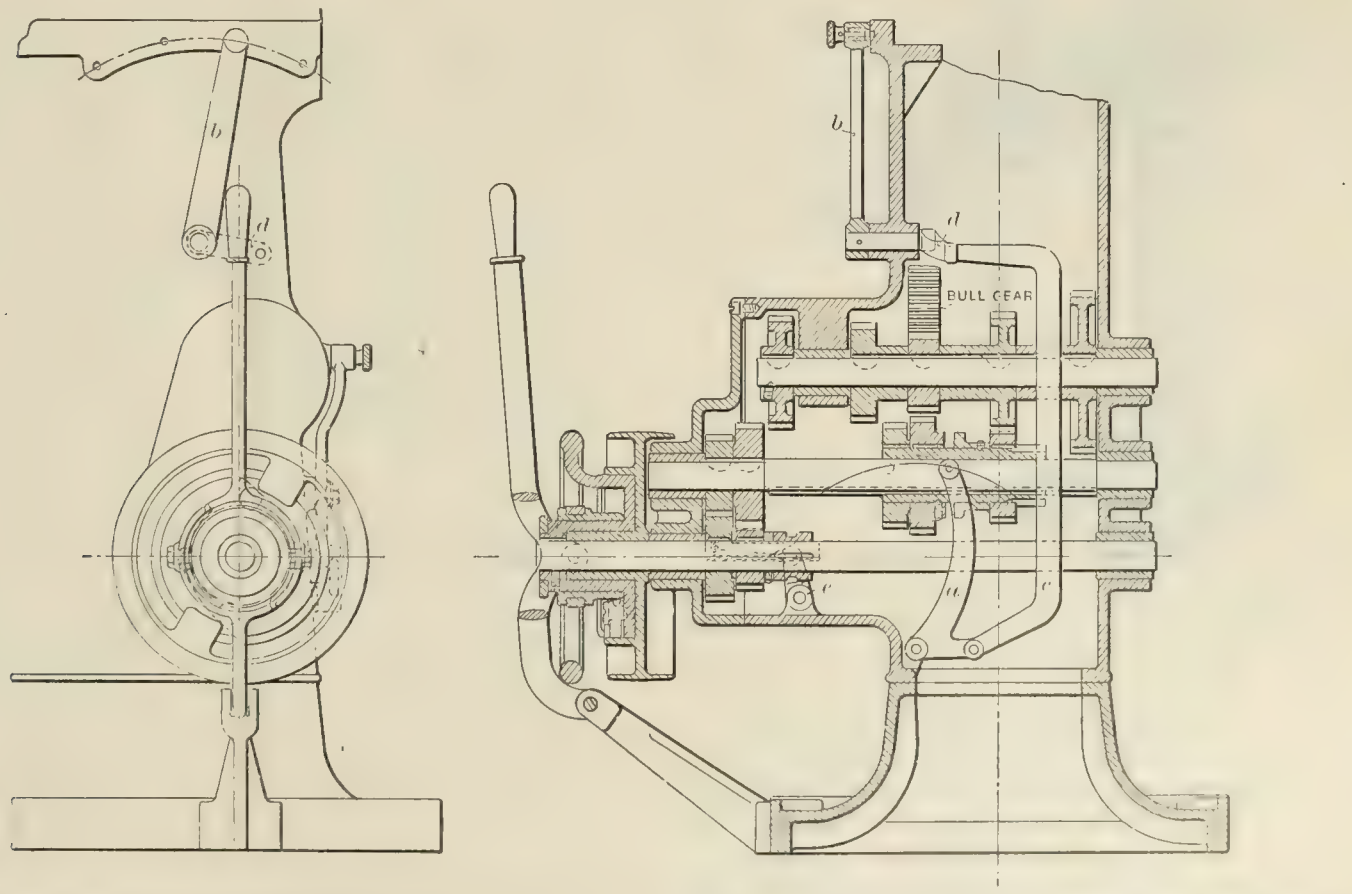



Fig. 3.—Side Elevation and Cross Section of the New Shaper Drive Made by the Rockford Machine Tool Company.

The arrangement of the gearing and shifting mechanism is clearly shown in Fig. 3. The lower shaft carries the friction pulley and two driving gears, one of which is locked to the shaft by the spring key. The other runs loose, and is driven by its mate on the second shaft. It

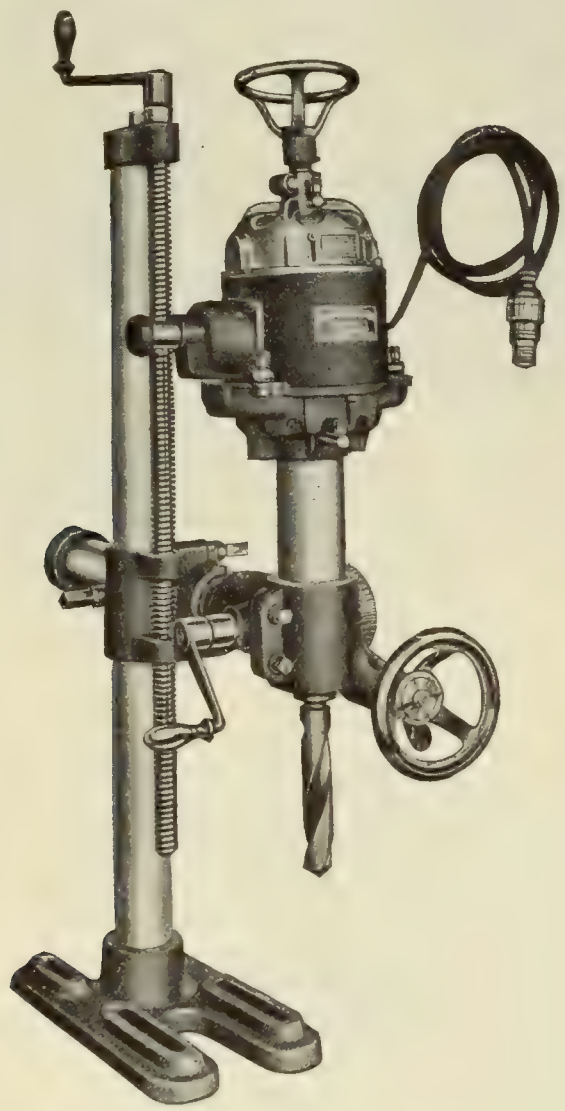
runs at a very low velocity, as the driving gears both run in the same direction, and the movement of the loose gear takes care of the difference in ratio of the two pairs.

A sleeve keyed to the intermediate shaft carries four gears, any one of which may be engaged with its corresponding gear on the upper shaft. The arm *a* for moving the sleeve and gears in the shaft has a bearing at its lower end and carries a steel pin, which operates between two flanges on the sleeve. This arm is connected to the shifting lever *b* by the forgings *c* and *d*. The fork *e* which changes the spring key in the driving gears is operated by the lever at the back of the frame, as shown in the side elevation in Fig. 3. The arrangement places all levers on the front of the machine and in easy reach of the operator, and it is impossible to get any two combinations of gears in mesh at the same time.

The machine is very compact, and the parts are easily accessible. The floor space required is less than that of a cone driven machine. A speed plate shows the proper location of both levers for the correct speed.

## A U. S. Portable Electric Radial Drill.

A portable electrically driven radial drill made by the United States Electrical Tool Company, Cincinnati, Ohio, is shown in the accompanying illustration. This drill



The New Portable Motor Driven Radial Drill Made by the United States Electrical Tool Company, Cincinnati, Ohio.

has a 5-in. feed through the hand wheel, shown at the right of the spindle, and quick return through the handle on the other side of the spindle. Through a rack and pinion on the radial arm the reach of the drill can be varied up to a maximum radius of 32 in. in any direction in a horizontal plane, and the spindle may be swiveled in a vertical plane, so that it is possible to drill at any angle. By means of a graduating line on the radial arm the spindle may be brought back to exact vertical position without the use of a square. The drill is fitted with an eyebolt at approximately its center of gravity by which it may be lifted and carried about the shop by a crane, or two men can carry it by placing a bar through the eyebolt, as the weight of the drill is only 160 lb.

These drills are operated from an ordinary incandescent lamp socket, and are made for either direct or alternating current. The vertical column, as well as the horizontal arm, is of hollow steel tubing, and the column is fitted with a screw to raise and lower the horizontal arm. The starting device or switch for the motor may be seen on the left of it in the illustration. This is inclosed, and the drill is started or stopped by pulling or pushing the switch plunger. The hand wheel on the top of the motor is for knocking out the twist drill. These machines are made in two sizes, one drilling up to ⅞ in. in steel, and the other up to 1¼ in. in steel. The hole in the spindle is made to take a No. 2 Morse taper shank for the ⅞-in. drills, and for the 1¼ in. size a No. 3 Morse taper socket is provided. The drills are fitted with ball thrust bearings on the chuck end of the spindle, and the motors are of the air cooled type.

## The Gary Harbor Formally Opened.

The formal opening of the harbor at the new Gary steel plant of the United States Steel Corporation took place July 23, when with fitting ceremonies the steamship E. H. Gary landed the first ore cargo, consisting of 10,000 tons, at the furnace docks. An elaborate programme of exercises had been arranged by the Gary Commercial Club. With the co-operation of the officials of the Indiana Steel Company and the Illinois Steel Company and distinguished guests this was carried out in an interesting and impressive manner.

Responding to invitations extended by the club, over 500 guests boarded the E. H. Gary at South Chicago, which at 12 o'clock left the harbor for Gary under convoy of the United States vessels Wolverine, Dorothea, Tuscarora and Sumac. A buffet lunch was served on board, and the Illinois Naval Reserve Band lent inspiration to the occasion by the rendition of patriotic airs. On arrival at Gary, as the steamer entered the harbor, the Stars and Stripes were run to the top of the flag staff on the outer end of the pier, and as the colors broke out from the staff the gunboats began firing a salute of 21 guns, which was accompanied by the screech of whistles and the cheers of thousands of workmen who lined the docks.

On arrival at the dock and before leaving the boat brief addresses were made by John W. Kern, of Indiana, the Democratic candidate for Vice-President; Congressman James R. Mann of Illinois, State Senator A. J. Bowser of Indiana, Congressman E. D. Crumpacker of Indiana, William Livingstone of Detroit, president Lake Carriers' Association; H. Coulby, president Pittsburgh Steamship Company, and W. P. Gleason, superintendent Indiana Steel Company, all of whom spoke of the magnitude of work undertaken at Gary and the marvelous success of its development. At the conclusion of the speaking an exhibition of the operation of the ore unloaders was given, when the grab bucket descended into the hold and transferred the first ore into the storage bins.

Under the guidance of the officials and department heads of the Indiana Steel Company, the visitors were escorted on a tour of inspection through the various mills of the plant. The principal building structures were found to be either finished or approaching completion and much of the machinery installed. Work is being steadily advanced, and it was apparent to the observers that before the end of the year the equipment will be ready for operation. The exercises of the day were concluded by a parade headed by an escort of the Gary police, the Illinois Naval Reserve Band, marines from the United States steamship Wolverine, the Illinois Naval Reserves from the steamship Dorothea, and heads of departments of the Indiana Steel Company, which formed in front of the general offices of the plant and marched up Broadway to the Gary Hotel where a reception was held.

Reports of the operation of the Employees' Relief Fund of the Pennsylvania Railroad's lines east of Pittsburgh and Erie show that, including the payments for the month of June, $18,067,948.28 has been paid to members and their families since the organization of the fund February 15, 1886. Of this sum $7,336,574.29 has been

paid to the families of members who have died. The remainder, $10,731,373.99, has been paid to members who, because of illness or accident, have been incapacitated for the work. The payments for the month of June, 1908, amounted to $97,305.

# Pig Iron Production First Half 1908.

## Only 6,918,004 Gross Tons, Smallest Half Year's Output Since 1900.

The American Iron and Steel Association has just collected complete statistics of the production of pig iron in the United States in the first half of 1908. The total was 6,918,004 gross tons, against 12,303,317 tons in the last half of 1907 and 13,478,044 tons in the first half of 1907. The production in the first half of 1908 was the smallest in any half year since the last half of 1900, when 6,146,673 tons were made. The following table gives the half yearly production since 1905:

| Gross tons. | 1905. | 1906. | 1907. | 1908. |
|---|---|---|---|---|
| First half | 11,163,175 | 12,582,250 | 13,478,044 | 6,918,004 |
| Second half | 11,829,205 | 12,724,941 | 12,303,317 | ..... |
| Totals | 22,992,380 | 25,307,191 | 25,781,361 | ..... |

The output by States in the half year, compared with that of the first and second half of 1907, was as follows:

*Total Production of Pig Iron by States.*

| States. | Production.—Gross tons of 2240 lb. (Includes spiegeleisen and ferromanganese.) First half of 1907. | Second half of 1907. | First half of 1908. |
|---|---|---|---|
| Massachusetts and Connecticut | 8,746 | 10,373 | 5,220 |
| New York | 859,125 | 800,627 | 376,208 |
| New Jersey | 195,245 | 177,944 | 125,143 |
| Pennsylvania | 5,964,884 | 5,383,665 | 3,032,297 |
| Maryland | 221,145 | 190,688 | 82,785 |
| Virginia | 260,912 | 217,859 | 137,356 |
| Georgia and Texas | 26,173 | 29,652 | 5,260 |
| Alabama | 861,771 | 824,903 | 605,617 |
| West Virginia | 151,643 | 139,423 | 27,901 |
| Kentucky | 79,013 | 48,933 | 21,357 |
| Tennessee | 193,371 | 199,735 | 115,249 |
| Ohio | 2,815,174 | 2,435,513 | 1,209,399 |
| Illinois | 1,263,258 | 1,194,510 | 782,865 |
| Indiana and Michigan | 197,330 | 239,177 | 167,063 |
| Wisconsin and Minnesota | 160,045 | 162,038 | 69,303 |
| Missouri, Colorado, Oregon, Washington and California | 220,209 | 248,277 | 154,981 |
| Totals | 13,478,044 | 12,303,317 | 6,918,004 |

The production of coke and anthracite pig iron by States, 153 such furnaces being reported in blast June 30, is given in the two following tables:

*Production of Coke Pig Iron.*

| States. | First half of 1907. | Second half of 1907. | First half of 1908. |
|---|---|---|---|
| New York | 859,125 | 800,627 | 376,208 |
| New Jersey | 130,392 | 125,509 | 93,897 |
| Pennsylvania | 5,270,883 | 4,821,111 | 2,822,249 |
| Maryland | 221,145 | 190,688 | 82,785 |
| Virginia, Georgia and Texas | 281,092 | 236,003 | 136,852 |
| Alabama | 846,034 | 805,499 | 596,280 |
| West Virginia | 151,643 | 139,423 | 27,901 |
| Kentucky | 78,423 | 47,561 | 20,811 |
| Tennessee | 193,016 | 197,590 | 114,789 |
| Ohio | 2,815,174 | 2,433,088 | 1,209,399 |
| Illinois | 1,263,258 | 1,194,510 | 782,865 |
| Indiana, Michigan and Wisconsin | 158,299 | 199,969 | 135,814 |
| Minnesota, Missouri and Colorado | 245,530 | 266,818 | 147,589 |
| Totals | 12,514,014 | 11,458,396 | 6,547,439 |

*Production of Anthracite and Mixed Anthracite and Coke Pig Iron.*

| States. | First half of 1907. | Second half of 1907. | First half of 1908. |
|---|---|---|---|
| New York and New Jersey | 64,853 | 52,435 | 31,246 |
| Pennsylvania | 693,381 | 560,885 | 209,599 |
| Totals | 758,234 | 613,320 | 240,845 |

On June 30 the number of active charcoal furnaces was 15, against 22 on December 31. The production of charcoal pig iron by States was as follows:

*Production of Charcoal Pig Iron by States.*

| States. | First half of 1907. | Second half of 1907. | First half of 1908. |
|---|---|---|---|
| Massachusetts, Connecticut and New York | 8,746 | 10,373 | 5,220 |
| Pennsylvania | 620 | 1,669 | 449 |
| Maryland and Virginia | 517 | 927 | 504 |
| Alabama | 15,737 | 19,404 | 9,337 |
| Georgia, Texas, Kentucky and Tennessee | 6,421 | 14,098 | 6,266 |
| Ohio | 0 | 2,425 | 0 |
| Michigan | 143,860 | 151,062 | 82,105 |
| Wisconsin, Missouri, Oregon, Washington and California* | 29,895 | 31,643 | 25,839 |
| Totals | 205,796 | 231,601 | 129,720 |

* Produced a small quantity of pig iron with charcoal and electricity.

In the table below the production of all kinds of pig iron in Pennsylvania and Ohio is given by districts:

*Production of Pig Iron in Pennsylvania and Ohio.*

| Districts. | Production.—Gross tons of 2240 lb. (Includes spiegeleisen and ferromanganese.) First half of 1907. | Second half of 1907. | First half of 1908. |
|---|---|---|---|
| Pennsylvania: | | | |
| Lehigh Valley | 370,941 | 380,287 | 221,867 |
| Schuylkill Valley | 408,178 | 346,053 | 183,207 |
| Lower Susquehanna Valley | 342,741 | 288,438 | 121,159 |
| Juniata Valley | 115,293 | 140,109 | 47,679 |
| Allegheny County | 2,851,098 | 2,587,135 | 1,697,658 |
| Shenango Valley | 1,054,302 | 894,173 | 452,902 |
| Miscellaneous bituminous | 821,711 | 745,801 | 307,376 |
| Charcoal | 620 | 1,669 | 449 |
| Ohio: | | | |
| Mahoning Valley | 1,097,426 | 888,801 | 546,618 |
| Hocking Valley and Lake counties | 812,166 | 742,116 | 435,655 |
| Miscellaneous bituminous | 720,085 | 630,475 | 110,847 |
| Hanging Rock bituminous | 185,497 | 171,696 | 116,279 |
| Hanging Rock charcoal | 0 | 2,425 | 0 |

The production of Bessemer and low phosphorus pig iron by States and by the various districts of Pennsylvania and Ohio is shown in the following table:

*Production of Bessemer and Low Phosphorus Iron.*

| | First half of 1907. | Second half of 1907. | First half of 1908. |
|---|---|---|---|
| New York | 467,143 | 462,376 | 163,984 |
| Pennsylvania: | | | |
| Lehigh Valley and Schuylkill Valley | 64,788 | 79,694 | 62,884 |
| Lower Susquehanna Valley | 254,443 | 160,316 | 33,148 |
| Allegheny County | 1,876,784 | 1,566,957 | 1,026,172 |
| Shenango Valley | 638,495 | 551,774 | 308,886 |
| Miscellaneous bituminous | 301,093 | 241,957 | 90,187 |
| Total Pennsylvania | 3,135,603 | 2,600,698 | 1,521,277 |
| Maryland and Virginia | 220,989 | 200,969 | 83,162 |
| West Virginia, Tennessee and Kentucky | 170,826 | 153,497 | 59,186 |
| Ohio: | | | |
| Mahoning Valley | 889,668 | 680,018 | 424,518 |
| Lake counties | 602,064 | 534,851 | 347,931 |
| Hanging Rock bituminous | 55,712 | 32,690 | 42,056 |
| Miscellaneous bituminous | 498,133 | 417,865 | 0 |
| Total Ohio | 2,045,577 | 1,665,424 | 814,505 |
| Illinois | 916,089 | 866,651 | 663,745 |
| Michigan, Wisconsin and Minnesota | 76,505 | 26,734 | 0 |
| Colorado and California | 153,146 | 69,393 | 82,632 |
| Totals | 7,185,878 | 6,045,742 | 3,388,491 |

The production of basic pig iron, not including charcoal pig iron, was as follows:

*Production of Basic Pig Iron, Not Including Charcoal Iron.*

| | First half of 1907. | Second half of 1907. | First half of 1908. |
|---|---|---|---|
| New York and New Jersey | 114,438 | 100,759 | 51,371 |
| Pennsylvania: Allegheny County | 881,274 | 930,733 | 614,657 |
| Other counties | 943,939 | 828,462 | 372,212 |
| Virginia and Alabama | 250,590 | 291,666 | 177,229 |
| Ohio, Indiana, Illinois, Missouri and Colorado | 480,895 | 552,463 | 266,143 |
| Totals | 2,671,136 | 2,704,083 | 1,481,612 |

The production of spiegeleisen and ferromanganese is given in the following table:

*Production of Spiegeleisen and Ferromanganese.*

| | First half of 1907. | Second half of 1907. | First half of 1908. |
|---|---|---|---|
| Pennsylvania | 121,813 | 129,934 | 52,532 |
| New Jersey, Maryland, Illinois and Colorado | 50,862 | 36,739 | 32,961 |
| Totals | 172,675 | 166,673 | 85,493 |

The production of spiegeleisen alone in the first half of 1908 was 67,021 tons. Of ferromanganese alone the production in the first half of 1908 was 18,472 tons.

*Building Furnaces.*—On June 30, 1908, there were 24 furnaces in course of construction, of which 23 will use mineral fuel and 1 will use charcoal, as follows: New York, 2; Pennsylvania, 6; Ohio, 6; Indiana, 8; Illinois, 1, and Michigan, 1.

*Rebuilding Furnaces.*—On June 30, 1908, there were 17 furnaces being rebuilt, all mineral fuel, as follows: New Jersey, 1; Pennsylvania, 11; Alabama, 1; Ohio, 2, and Illinois, 2.

Steel mine cars are coming into use in some of the anthracite coal mines in Pennsylvania. An installation of 30 cars was made recently at the mines of the Clear Spring Coal Company, West Pittston. A car of the type adopted at these mines costs about twice as much as the average car of wood. The steel cars are introduced not so much with the idea that they will reduce the cost of mining as to keep the cost from increasing, as the companies have to go deeper and deeper for coal. The possible economy of the steel car is a question of the decrease in maintenance being sufficient to offset the increase in original cost.

# THE IRON AGE

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## Evolutions in Machine Tool Design.

Changes in the design of the more common machine tools, such as lathes, planers, milling machines, &c., are usually epidemical. By that is meant that in the same period the changes made in the different tools are of the same nature. Just before the introduction of high speed cutting tools there had been a lull, and apparently designs of all types of tools had settled down to a standard basis. But this condition was entirely upset when the limit of the capabilities of cutting tools was materially raised; pronounced activity was at once seen in a general redesigning for increased strength and power. In this the frames entered conspicuously, being stiffened here and there, and generally made heavier, while shafts were made larger, pulleys were adapted to wider belts, and steel was used more extensively in the parts most subject to strain. The last earlier epidemic took the form of an endeavor for greater convenience in the manipulation of machines, and particularly in feed drives where to do away with the laboriousness of hand changing of gears seemed to be the principal object.

Now the trend is to eliminate cone pulleys and the necessity of shifting belts. The success of change gear boxes in connection with feed drives suggested the line of development, and the direct cause was again the use of high speed tools since a greater range of driving speeds became imperative. For a time there was promise of meeting this need by the application of variable speed driving motors, and as these seemed to be successful it is difficult to explain the reaction that has now set in in favor of constant speed motors. True, they have constant maximum efficiency, whereas variable speed motors sacrifice something in their average efficiency to the speed range, but where constant speed motors are used speed variation must be obtained mechanically and gears and other transmissions providing variable speeds are sources of some loss in efficiency that may or may not equal the loss in variable speed motors. Constant speed motors cost somewhat less than variable speed motors, but the principal saving in installation expense is in the simpler controlling apparatus for the constant speed motor.

Whatever may be the cause, it is very evident that the driving of machines with a single constant speed belt pulley is at present very popular. One advantage is that since gears must be used anyhow, it is perfectly feasible to gear down from the driving speed to the spindle speed for even the fastest spindle speed, and more power can be delivered through a relatively large diameter pulley running at comparatively high speed. A lighter belt than is otherwise necessary will then do the work, and there is generally less wear on the driving parts. Often another advantage is the placing of the driving pulley in a more convenient location than is possible when it is directly mounted on the spindle.

The saving of time ordinarily lost in the shifting of belts was primarily the object of the single speed drive, but incidentally and not far remote is the advantage that, with the changing of speeds more easily accomplished, the operator will not neglect to make a change when the most efficient production of work requires it. The decision as to correct cutting speeds for a given material and given rates of feed, and their relation to one another, is no longer a matter of experiment or an individual's opinion, but more nearly an exact science, so that shop managers now know what results should be realized from the tools in use. Given this knowledge and it becomes highly desirable that machine tools be equipped with sufficient range of speeds and with small increments of variation to allow very closely approximating the most advantageous speed for the work in hand.

It would be difficult to foretell what will probably be the next important development in the design of machine tools, but the prediction may be ventured that it will be a more scientific study of what materials are the most suitable in the various parts, considering the element of strength for static members and friction as well as strength for all revolving and sliding parts. In the meantime machine tool builders will vie with one another in perfecting details such as wear adjustments, lubrication problems, safety devices, and the parts that make for what they are wont to call "foolproofness."

## Modern Business Theories and Old Human Nature.

Occasionally a stray item drifts into the newspapers, particularly into the advertising columns, which has a strangely old-fashioned ring. It makes a direct or veiled bid for business on the ground that the service or the commodity may be secured for 15 to 20 per cent. less money than a year ago. We have noted, for instance, that some one unblushingly announces that he can put up a building at a substantial reduction from the cost of 1907. That is a selfish, individualistic course of procedure which is a defiance of the modern theories of doing business, which demand that all be treated alike; that the community at large and the buyer in particular suffers justly when the recognized standard of prices is ignored, and that the true method of restoring prosperity is to pay more for what is bought. If, as a buyer, you succumb to the temptation of paying less, you, as a seller, must ultimately accept less for what you in turn must market. A good many pleas for higher freight rates sound like this.

Orderly business demands stability of prices, to be determined by the seller, who pledges himself to keep them from soaring in boom times and is unalterably opposed to cutting in periods of adversity. Bitter experience has taught that it is a common error among business men that each believes himself to possess the monopoly of good judgment in buying. That fosters speculation and brings disaster. The idea must be particularly condemned, which has been prevalent among manufacturers, that they should follow their own devices in buying raw material. This is radically wrong. It diverts them from their true vocation of converting raw material into manufactured product. So long as they possess the assurance

from the seller of raw material that all are treated alike and that prices are stable, they should give grateful and loyal support to a beneficent institution. Stability of prices means stability of wages and of employment, and of maximum happiness and contentment to the maximum number. It narrows down competition, and makes what has been a fearful power of destruction a gently stimulating force. Yet an obstinate minority will persist in neglecting the general good and in hugging the belief in their own ability so long as human nature remains what it has been since the dawn of history.

## The Pig Iron Production Curve for 1908.

It is interesting to see how the diagram representing pig iron production in the first half of 1908 compares with that for the year 1907. We have already illustrated graphically (*The Iron Age* January 2, 1908, p. 73; February 6, p. 447) the plunge from the record production of October last year to the low records of December and January. Below we have plotted the figures for the past 18 months representing the production of coke and anthracite iron. The statistics are as follows:

*Production of Coke and Anthracite Pig Iron by Months in* 1907 *and* 1908.

| | 1907. | 1908. |
|---|---|---|
| January | 2,205,607 | 1,045,250 |
| February | 2,045,068 | 1,077,740 |
| March | 2,226,457 | 1,228,204 |
| April | 2,216,558 | 1,149,602 |
| May | 2,295,505 | 1,165,688 |
| June | 2,234,575 | 1,088,634 |
| July | 2,255,660 | ..... |
| August | 2,250,410 | ..... |
| September | 2,183,487 | ..... |
| October | 2,336,972 | ..... |
| November | 1,828,125 | ..... |
| December | 1,234,279 | ..... |

The plotting of the above figures is as follows:




The low point, it will be seen, was reached in January, the record for February, a month of 29 days, exceeding that for the 31 days of January. The high point this year was reached in March, and there was a decline in rate of production in each month since. Since our statistics are reported by months, we have chosen to make the plotted lines preserve the identity of each month. Thus May, a month of 31 days, shows a larger output than April, but the following table giving the daily rate of production shows that the March rate has not been touched since:

*Daily Rate of Pig Iron Production.—Gross Tons.*

| | | | |
|---|---|---|---|
| January | 33,718 | April | 38,289 |
| February | 37,163 | May | 37,603 |
| March | 39,619 | June | 36,287 |

From the number of furnaces that have been blown in this month it is quite probable that the July statistics will show that pig iron production has again taken a turn upward.

## Is a Turn in Copper Due?

Larger purchases of copper by domestic consumers have created the impression that the era of low prices is over and that higher quotations will hereafter prevail. Before accepting this as correct, it may be well to consider a number of points having a bearing on the copper market. In analyzing the situation, several factors come prominently into view, among them the attitude of European bankers in hesitating to finance further shipments, and so curtailing the large exports to Europe; the probable stocks of metal in the world, and, what is more important, the consumptive demand in America.

It may be of interest to observe that the copper market has in the recent past shown three-year cycles of high and low prices almost as exactly as if obeying some uniform law. A fair price for both producer and consumer is generally accepted as 15 cents. According to the average prices which we have compiled, copper has sold under these figures more months than it has above them in the last 12 years. To be exact, in the 12 years ending with December, 1907, there were 77 months in which the average price of lake copper, as given in the reports in *The Iron Age*, was below 15 cents, while in 67 months during that period the average quotations were above 15 cents. This course of cycles, however, did not hold true for a few years previous to 1896, when there was an era of low prices in all commodities. Taking the recent course of the copper market, however, there were over two and a half years of high prices ending with September, 1907, and since then there has been less than a year of copper under 15 cents. The reason for this is not hard to find, when it is realized that when copper sells above 15 cents it stimulates production all over the world, but copper must decline to considerably below 13 cents before production is curtailed. In other words, the operating costs are such that, with many mines, shutting down at 12, 11 and even 10 cents per pound as a selling price for copper would be more expensive than to continue mining and selling the product at a loss. Then, too, there are many properties whose cost of production is below 10 cents per pound.

The mainstay of the copper market for months has been the heavy shipments to Europe. Since copper prices declined to 15 cents, in October, 1907, there have been shipped from American ports over 265,000 tons. This is more than was ever before exported in a year. Much of this metal has been financed in Europe, where the process of making collateral loans is much simpler than in America, and the owner of the metal receives advances for practically its full value. European bankers are now discriminating against these finance bills for copper, and exports are lighter, but those in a position to take a

broad view point out that whenever a heavy export movement to Europe has occurred, as in this year, the European market continues to absorb about the same quantities. This is largely due to the fact that with low-priced copper new uses are found for the metal which continue even after the price has gone back to higher figures. This was well illustrated in 1904, when exports were, to that date, the heaviest on record, and prices were then only slightly recovering from the depression of 1902. In the following year exports were likewise large. This furnishes an excellent argument for those who claim that the exports to Europe will not shrink seriously, even if bankers do discriminate against purely speculative purchases.

Another argument advanced for the continuance of exports at a good figure, although not at the past high record, is that European manufacturers make a practice of accumulating copper at low figures and putting it into their warehouses to be used only when the market advances sharply. It is known that this stock, which is rated as the invisible supply, was largely drawn on in the closing months of 1906 and the early months of 1907, for in each of those months exports fell off to below 18,000 tons, with but a single exception. It is claimed that the quantities sent out during the last nine months above 18,000 or 20,000 tons monthly were to replace this invisible supply, thus accumulating new stocks, and the opinion is advanced that there will be a continuance of these heavy shipments to Europe.

The real upturn to the copper market can scarcely come until American consumers buy much more freely. These consumers have for months been working off their old stocks, which are now down to almost nothing. They, too, will need to replace their invisible supply, but until an active demand for copper products comes about the buoyant market so long hoped for is scarcely possible. Copper was the first to feel the effects of a runaway market, the first to decline and by the same analogy should be the first to advance. The high prices of 1906 and 1907 may have been brought about by the electrification of existing steam railroad lines, of which several projects were then under way, added to the already heavy consumption of copper in general. With the return of prosperity to the railroads, other schemes of this character will develop and more additions to the existing 42,000 miles of electric urban and suburban railroads will surely be made. There is promise of a speedier return to new construction of this character than any other, and one reason for it apparently is the fact that during the past months of depression the earnings of such railroads have not fallen off anywhere near the proportion that the earnings of steam railroads have shown.

## The Position of the "Baby" Bessemer.

The "baby" Bessemer makes a rather pitiable showing in the statistics of production issued by the American Iron and Steel Association. It appears that in 1907 there were made by the Tropenas process in 17 plants 13,140 tons of steel, while other modifications of the Bessemer process produced 19,317 tons, or a total of 32,457 tons. It appears that the annual capacity of the "baby" Bessemer plants increased from 74,600 tons in June, 1904, to 179,200 tons in November, 1907, which would indicate that the production is very intermittent. To base on the increased number of these little pots, the statement that "the growth of our steel industry in the last few years has been almost wholly in the use of the Tropenas and other modifications of the standard Bessemer process," as does the report of the American Iron and Steel Association, is giving the "baby" Bessemer a position which it has not earned.

As a matter of fact, the "baby" Bessemer has fallen behind relatively as a method of making steel castings, and the open hearth has forged ahead enormously. The production of open hearth steel castings was 400,348 tons in 1903. It dropped to 302,834 tons in 1904, rose to 526,540 tons in 1905, jumped to 719,891 tons in 1906, and reached 746,525 tons in 1907. It looks as though the "baby" Bessemer would remain an infant forever.

## The Standard Oil Decision.

The United States Court of Appeals, in the decision at Chicago last week in the Standard Oil case, has thrown light on a portion of the Elkins law that has given considerable concern to the shippers of the country, especially to those whose traffic affairs are large and complex. The fine of $29,240,000 which had been recorded against the Standard Oil Company of Indiana was annulled on the ground that the trial court had made three important errors, as follows: That the amount was excessive, being more than the actual assets of the defendant company; that each car shipped at the rate claimed to be illegal should not have been counted as a separate offense, and that the trial court adopted too strict a view of the duty of the shipper in the instructions to the jury on the question of "intent." The question of "intent" was held to be the fundamental point involved in the case.

The company paid, in monthly settlements with the auditor of the Alton Railroad, a rate of 6 cents from Whiting, Ind., to East St. Louis, but it was charged that the only rate on file with the Interstate Commerce Commission was 18 cents. The traffic manager of the company had testified that he supposed 6 cents was the legal rate, and that he had never heard of the 18-cent rate, and knew nothing of such a rate, he having been informed by the chief tariff clerk of the Alton that the 6-cent rate was a legal tariff, filed with the commission. Judge Landis had instructed the jury that "the proof need not establish the fact that the defendant had actual knowledge of the lawful rate." The jurors were instructed to bring in a verdict of guilty if they found that a diligent effort by the defendant, made in good faith, would have discovered the 18-cent rate which was held to be the lawful rate.

**The Institute of Metals.**—The first meeting of the Interim Council of the Institute of Metals was held July 8 in London, when over 200 members were elected, which undoubtedly compares most favorably with any similar society only in existence one month. The subscription for members is 2 guineas (£2 2s.), and for students 1 guinea. No entrance fees are to be charged for either members or students this year, but after January 1, 1909, an entrance fee of 2 guineas will be charged for members and 1 guinea for students. The next meeting of the Council will take place in September, when it is expected that the rules will be finally fixed and some definite move taken as to appointing a permanent secretary and selecting suitable offices. Such rapid progress is being made that a general meeting, at which papers will be read, will probably be held next November in Birmingham. All communications with reference to reading papers or applications for membership of the institute should be addressed to the secretaries, Dr. H. C. H. Carpenter, Professor of Metallurgy, the University, Manchester, England; Wm. H. Johnson of Johnson, Clapham & Morris, Ltd., 24 and 26 Lever street, Manchester.

L. L. Hurwitz, of Davis & Hurwitz, Syracuse, N. Y., and Morris Hurwitz, of Allan & Hurwitz, Rochester, N. Y., have purchased the business of Davis & Hurwitz and L. J. Davis which they will continue at the same location under the name of the Hurwitz Bros. Iron & Metal Company. The firm is a wholesale dealer in scrap iron and metals.

# Steel and Iron Finished Products Made in the United States in 1907.

The following statistical information is taken from the annual report for 1907 of the American Iron and Steel Association, all tons being gross tons of 2240 lb.:

### Production of All Kinds of Steel.

In 1907 there were 234 works which made steel ingots or castings, against 213 works in 1906. Of the total active works in 1907 there were 86 which made steel ingots, but not steel castings, 119 works which made steel castings, but not steel ingots, and 29 works which made both steel ingots and castings. The following table gives the production of all kinds of steel ingots and castings in 1907, compared with the total for the three previous years:

| States.—Gross tons. | Bessemer. | Open hearth. | Crucible and all other. | Total ingots and castings. |
|---|---|---|---|---|
| Massachusetts, Rhode Island and Connecticut | 1,421 | 239,797 | 3,980 | 245,198 |
| New York and New Jersey | 858,681 | 706,019 | 37,969 | 1,602,669 |
| Pennsylvania | 4,351,841 | 7,868,353 | 88,750 | 12,308,944 |
| Del., Md., Dist. of Columbia, Va., West Va., Ky., Ga. and Ala. | 840,865 | 412,656 | 1,900 | 1,255,421 |
| Ohio | 3,636,679 | 819,642 | 1,690 | 4,458,011 |
| Indiana and Illinois | 1,723,073 | 1,194,913 | 6,251 | 2,924,237 |
| Mich., Wis., Minn, Missouri, Iowa, Colorado, California and Oregon | 254,989 | 308,356 | 4,769 | 568,114 |
| Totals for 1907 | 11,667,549 | 11,549,736 | 145,309 | 23,362,594 |
| Totals for 1906 | 12,275,830 | 10,980,413 | 141,893 | 23,398,136 |
| Totals for 1905 | 10,941,375 | 8,971,376 | 111,196 | 20,023,947 |
| Totals for 1904 | 7,859,140 | 5,908,166 | 92,581 | 13,859,887 |

### Production of All Kinds of Steel Ingots.

The following table gives the production of steel ingots by States, all direct castings being omitted:

| States.—Gross tons. | Bessemer ingots. | Open hearth ingots. | Crucible and all other. | Total ingots. Gross tons. |
|---|---|---|---|---|
| Mass., R. I., Conn., N. Y. and N. J. | 852,103 | 845,607 | 28,049 | 1,725,759 |
| Pennsylvania | 4,345,486 | 7,559,421 | 86,957 | 11,991,864 |
| Md., D. of C., W. Va., Ky., Ga., Ala. | 838,190 | 401,881 | 1,900 | 1,241,971 |
| Ohio | 3,633,073 | 718,962 | 90 | 4,351,225 |
| Ind., Ill., Colorado and California | 1,965,424 | 1,278,240 | 4,994 | 3,248,658 |
| Totals for 1907 | 11,634,276 | 10,803,211 | 121,990 | 22,559,477 |
| Totals for 1906 | 12,243,229 | 10,260,522 | 120,680 | 22,624,431 |
| Totals for 1905 | 10,919,272 | 8,444,836 | 99,072 | 19,463,180 |
| Totals for 1904 | 7,843,089 | 5,605,332 | 81,255 | 13,529,676 |
| Totals for 1903 | 8,574,730 | 5,429,563 | 100,420 | 14,104,713 |

### Production of All Kinds of Steel Castings.

The following table gives by States the production of all kinds of direct steel castings:

| States.—Gross tons. | Bessemer. | Open hearth. | Crucible and all other. | Total. Gross tons. |
|---|---|---|---|---|
| Mass., Conn., New York and New Jersey | 7,999 | 100,209 | 13,900 | 122,108 |
| Pennsylvania | 6,355 | 308,932 | 1,793 | 317,080 |
| Del., Dist. of Col., Va., Ala. and Ohio | 6,281 | 112,355 | 1,600 | 120,236 |
| Indiana, Ill. and Mich. | 6,108 | 157,284 | 2,865 | 166,257 |
| Wis., Minn., Mo., Iowa, Colo., Ore., Cal. | 6,530 | 67,745 | 3,161 | 77,436 |
| Totals for 1907 | 33,273 | 746,525 | 23,319 | 803,117 |
| Totals for 1906 | 32,601 | 719,891 | 21,213 | 773,705 |
| Totals for 1905 | 22,103 | 526,540 | 12,124 | 560,767 |
| Totals for 1904 | 16,051 | 302,834 | 11,326 | 330,211 |
| Totals for 1903 | 18,099 | 400,348 | 11,818 | 430,265 |

### Production of All Kinds of Rails.

The production of all kinds of rails in 1907 amounted to 3,633,654 tons, against 3,977,887 tons in 1906, a decrease of 344,233 tons, or over 8.6 per cent. The maximum production was reached in 1906. The year of next largest production was 1907. Rails rolled from purchased blooms, crop ends and "seconds," and rerolled, or renewed, rails are included. Renewed rails are rails that have been in use and after reheating are rolled down to small sections. In the following table the production of all kinds of rails in 1907 is given by States, followed by the annual production since 1903:

| States. Gross tons. | Bessemer. | Open hearth. | Iron. | Total. |
|---|---|---|---|---|
| Pennsylvania | 1,093,932 | 36,837 | ... | 1,130,769 |
| Other States | 2,286,093 | 215,867 | 925 | 2,502,885 |
| Totals for 1907 | 3,380,025 | 252,704 | 925 | 3,633,654 |
| Totals for 1906 | 3,791,459 | 186,413 | 15 | 3,977,887 |
| Totals for 1905 | 3,192,347 | 183,264 | 318 | 3,375,929 |
| Totals for 1904 | 2,137,957 | 145,883 | 871 | 2,284,711 |
| Totals for 1903 | 2,946,756 | 45,054 | 667 | 2,992,477 |

Twenty-six works in 13 States rolled or rerolled rails in 1907, as follows: New York, 1; Pennsylvania, 6; Maryland, 2; West Virginia, 2; Tennessee, 1; Georgia, 1; Alabama, 2; Ohio, 4; Indiana, 1; Illinois, 3; Wisconsin, 1; Colorado, 1, and Washington, 1.

### Production of Bessemer Steel Rails.

The following table gives the production of Bessemer steel rails by States from 1904 to 1907:

| Gross tons. | 1904. | 1905. | 1906. | 1907. |
|---|---|---|---|---|
| Pennsylvania | 801,657 | 1,097,154 | 1,298,409 | 1,093,932 |
| Other States | 1,336,300 | 2,095,193 | 2,493,050 | 2,286,093 |
| Totals | 2,137,957 | 3,192,347 | 3,791,459 | 3,380,025 |

### Production of Open Hearth Steel and Iron Rails.

The production of open hearth steel rails in 1907 was 252,704 tons, against 186,413 tons in 1906, 183,264 tons in 1905, 145,883 tons in 1904, and 45,054 tons in 1903. The increase in production in 1907 over 1906 was 66,291 tons. The maximum production was reached in 1907. Alabama made over 59 per cent. of the open hearth rails that were rolled in 1907, Colorado, Pennsylvania, Georgia and New York rolling the remainder in the order named. In 1906 Alabama rolled over 84 per cent.

The production of iron rails in 1907 was 925 tons, all rolled in Tennessee and Illinois, and all weighing less than 45 lb. to the yard. In 1906 the production of iron rails was 15 tons and in 1905 it was 318 tons. The maximum production of iron rails was reached in 1872, when 808,866 tons were rolled.

### Weight of All Kinds of Rails.

The following table gives the production of all kinds of rails from 1903 to 1907, according to the weight of the rails per yard. Street and trolley rails are included in the total production.

| Kind of rails.—Gross tons. | Under 45 lb. | 45 lb. and less than 85. | 85 lb. and over. | Total. Gross tons. |
|---|---|---|---|---|
| Bessemer rails | 279,004 | 1,407,490 | 1,693,531 | 3,380,025 |
| Open hearth rails | 15,909 | 162,495 | 74,300 | 252,704 |
| Iron rails | 925 | ..... | ..... | 925 |
| Totals for 1907 | 295,838 | 1,569,985 | 1,767,831 | 3,633,654 |
| Totals for 1906 | 284,612 | 1,749,650 | 1,943,625 | 3,977,887 |
| Totals for 1905 | 228,252 | 1,601,624 | 1,546,053 | 3,375,929 |
| Totals for 1904 | 291,883 | 1,320,677 | 672,151 | 2,284,711 |
| Totals for 1903 | 221,262 | 1,603,088 | 1,168,127 | 2,992,477 |

In addition to the rails rolled in 1907 we imported 3752 tons of iron and steel rails in that year. During the same year we exported 338,906 tons. In 1906 our exports of rails amounted to 328,036 tons, and our imports to 4943 tons, virtually all steel.

### Production of Structural Shapes.

Our statistics of iron and steel structural shapes embrace the production of beams, beam girders, zee bars, tees, channels, angles, and other structural forms, but they do not include plates or girders made from plates. Plates are provided for under other classifications, and all plates cut to specifications are included in the general statistics of plates.

The total production of strictly structural shapes in 1907 was 1,940,352 tons, against 2,118,772 tons in 1906, a decrease of 178,420 tons, or over 8.4 per cent. Of the total production in 1907 about 1,936,379 tons were rolled from steel and about 3973 tons from iron, against about 2,114,053 tons rolled from steel and about 4719 tons rolled from iron in 1906. The maximum production of structural shapes was reached in 1906. The year of next largest production was 1907. The production of structural shapes in 1906 and 1907 by States was as follows:

| States.—Gross tons. | 1906. | 1907. |
|---|---|---|
| New York and New Jersey | 165,584 | 181,677 |
| Pennsylvania | 1,677,115 | 1,555,597 |
| Alabama and Ohio | 67,983 | 47,074 |
| Indiana, Illinois, Wisconsin Colorado and California | 215,990 | 253,004 |
| Totals | 2,118,772 | 1,940,352 |

In 1907 there were 37 works which rolled structural shapes, against 40 works in 1906.

The following table gives the production of structural shapes from 1903 to 1907:

| Years. | Gross tons. | Years. | Gross tons. |
|---|---|---|---|
| 1903 | 1,095,813 | 1906 | 2,118,772 |
| 1904 | 949,146 | 1907 | 1,940,352 |
| 1905 | 1,660,519 | | |

### Production of Wire Rods.

The total production of iron and steel wire rods in 1907 amounted to 2,017,583 gross tons, against 1,871,614

tons in 1906, an increase of 145,969 tons, or over 7.7 per cent. Of the total production in 1907 2,016,033 tons were steel rods and 1550 tons were iron rods. In 1906 the steel wire rods rolled amounted to 1,870,413 tons and the iron rods to 1201 tons. The maximum production of wire rods was reached in 1907. The year of next largest production was 1906. In 1907 there were 29 works which rolled wire rods, against 30 works in 1906. The following table gives the production by States since 1904:

| States.—Gross tons. | 1904. | 1905. | 1906. | 1907. |
|---|---|---|---|---|
| Mass., Conn., R. I., N. Y. and N. J. | 228,289 | 249,835 | 236,380 | 233,687 |
| Pa., Ky., Ga., Ala. and Ohio | 973,801 | 1,038,212 | 1,102,365 | 1,176,278 |
| Indiana, Ill., and Colo. | 496,938 | 520,641 | 532,869 | 607,618 |
| Totals | 1,699,028 | 1,808,688 | 1,871,614 | 2,017,583 |

In 1907 Pennsylvania rolled over 31.5 per cent. of the total for the whole country. The following table gives the total production of iron and steel wire rods from 1903 to 1907:

| Years. | Tons. | Years. | Tons. |
|---|---|---|---|
| 1903 | 1,503,455 | 1906 | 1,871,614 |
| 1904 | 1,699,028 | 1907 | 2,017,583 |
| 1905 | 1,808,688 | | |

**Production of Plates and Sheets.**

The production of iron and steel plates and sheets in 1907, excluding nail plate, was 4,248,832 tons, against 4,182,156 tons in 1906, an increase of 66,676 tons. The following table gives the production by States of plates and sheets since 1905:

| States.—Gross tons. | 1905. | 1906. | 1907. |
|---|---|---|---|
| New England, New York and New Jersey | 76,197 | 124,725 | 126,403 |
| Pennsylvania | 2,308,389 | 2,624,284 | 2,651,166 |
| Del., Maryland and Virginia | 28,481 | 25,500 | 28,420 |
| West Virginia | 93,586 | 148,684 | 153,599 |
| Kentucky and Alabama | 47,303 | 51,642 | 54,631 |
| Ohio | 688,633 | 818,769 | 851,987 |
| Ind., Ill., Missouri, Wyoming and California | 289,641 | 388,552 | 382,626 |
| Totals | 3,532,230 | 4,182,156 | 4,248,832 |

One hundred and thirty-four works in 17 States rolled plates or sheets in 1907, against 134 works in 16 States in 1906.

The total production of iron and steel plates and sheets, not including nail plate or skelp, from 1903 to 1907 is given below:

| Years. | Tons. | Years. | Tons. |
|---|---|---|---|
| 1903 | 2,599,665 | 1906 | 4,182,156 |
| 1904 | 2,421,398 | 1907 | 4,248,832 |
| 1905 | 3,532,230 | | |

At the request of the manufacturers we have separated for 1905, 1906, and 1907 the production of iron and steel plates of No. 12 gauge and thicker from the production of iron and steel sheets of No. 13 gauge and thinner, classifying the former as plates and the latter as sheets. Black plates, or sheets, for tinning are included, but nail plate and skelp are excluded. As shown by the following table there was a steady growth in the production of iron plates from 1905 to 1907, but a continuous decline in the production of iron sheets:

| Years. | Plates.—No. 12 and thicker. | | | Sheets.—No. 13 and thinner. | | |
|---|---|---|---|---|---|---|
| Gr'ss tons. | Iron. | Steel. | Total. | Iron. | Steel. | Total. |
| 1905 | 10,022 | 2,031,184 | 2,041,206 | 62,134 | 1,428,890 | 1,491,024 |
| 1906 | 23,333 | 2,508,219 | 2,531,552 | 51,040 | 1,599,564 | 1,650,604 |
| 1907 | 30,277 | 2,629,783 | 2,660,060 | 43,761 | 1,545,011 | 1,588,772 |

Of the total production of iron and steel plates in 1907 Pennsylvania rolled 2,005,403 tons, or over 75.3 per cent., against 1,917,045 tons, or over 75.7 per cent., in 1906. Of the total production of iron and steel sheets in 1907 Pennsylvania rolled 645,763 tons, or over 40.6 per cent., against 707,239 tons in 1906, and Ohio rolled 571,317 tons in 1907, or over 35.9 per cent., against 544,456 tons in 1906. In 1907 there were 36 works which rolled plates but did not roll sheets, 64 works which rolled sheets but did not roll plates, and 34 works which rolled both plates and sheets. Nail plate works are not included.

**Production of Black Plates, or Sheets, for Tinning.**

The production of black plates, or sheets, for tinning in 1907, which is included in the preceding tables, amounted to 504,072 tons, against 576,079 tons in 1906, a decrease of 72,007 tons, or almost 12.5 per cent. Of the total production in 1907 Pennsylvania made over 50.3 per cent., against over 54.3 per cent. in 1906. Ohio, West Virginia, Indiana, Maryland, and Illinois also made black plates, or sheets, for tinning in 1907 in the order named. Of the total production of black plates, or sheets, for tinning in 1907, about 3161 tons were rolled from iron and about 500,911 tons were rolled from steel, while in 1906 about 5666 tons were rolled from iron and about 570,413 tons from steel.

The following table gives the production by States of black plates, or sheets, for tinning in the last four year:

| States.—Gross tons. | 1904. | 1905. | 1906. | 1907. |
|---|---|---|---|---|
| Pennsylvania | 252,527 | 256,329 | 312,977 | 253,807 |
| Maryland and West Virginia | 54,360 | 69,180 | 94,076 | 95,939 |
| Ohio, Ind., Ill. and Mo. | 165,682 | 182,078 | 169,026 | 154,326 |
| Totals | 472,569 | 507,587 | 576,079 | 504,072 |

**Production of Tin Plates and Terne Plates.**

We estimate the production of tin plates and terne plates in 1907 as amounting to 1,153,097,000 lb., or 514,775 gross tons, as compared with 1,293,740,000 lb., or 577,562 tons, in 1906, a decrease of 140,643,000 lb., or 62,787 tons.

The following table gives the production of tin plates and terne plates in the United States from 1904 to 1907. For the census year 1904 the statistics were collected by the Bureau of the Census:

| Year.—Pounds. | Tin plates. | Terne plates. | Total pounds. |
|---|---|---|---|
| 1904 (census year ending December 31) | 867,526,985 | 158,857,866 | 1,026,384,851 |
| 1905 (calendar year) | ..... | ..... | 1,105,440,000 |
| 1906 | 1,100,373,000 | 193,367,000 | 1,293,740,000 |
| 1907 | 996,650,000 | 156,447,000 | 1,153,097,000 |

Of the total production of tin plates and terne plates in 1907 about 996,650,000 lb., or 444,933 gross tons, were tin plates and about 156,447,000 lb., or 69,842 tons, were terne plates. As compared with 1906 there was a decrease in tin plates of 103,723,000 lb., and in terne plates of 36,920,000 lb.

**Production of Nail Plate.**

The production of iron and steel nail plate in 1907 was 52,027 tons, against 54,211 tons in 1906, a decrease of 2184 tons, or over 4 per cent. Of the total production in 1907 about 36,932 tons were steel and about 15,095 tons were iron, against about 37,032 tons of steel and about 17,179 tons of iron in 1906, a decrease in steel nail plate of 100 tons and in iron nail plate of 2084 tons. Spike plates are included.

**Production of Miscellaneous Rolled Products.**

The following table gives the production by States in 1906 and 1907 of merchant bars, skelp, spike rods, bolt rods, splice bars, hoops, bands, cotton ties, strips, rolled axles, rolled armor plate, and other forms of finished rolled iron and steel for which statistics have not already been given. Rolled forging blooms and forging billets are also included for both years. Forged armor plate, hammered axles, and other forgings are not, however, included:

| States.—Gross tons. | 1906. | 1907. |
|---|---|---|
| Maine and Massachusetts | 40,602 | 41,961 |
| Rhode Island and Connecticut | 86,561 | 100,631 |
| New York | 271,528 | 289,105 |
| New Jersey | 98,652 | 99,176 |
| Pennsylvania | 3,792,666 | 4,173,235 |
| Delaware and Maryland | 26,000 | 28,245 |
| Virginia | 35,852 | 30,211 |
| West Virginia | 192,579 | 254,554 |
| Kentucky, Tennessee, Ga. and Texas | 62,079 | 67,114 |
| Alabama | 125,022 | 91,376 |
| Ohio | 1,246,615 | 1,397,514 |
| Indiana | 294,338 | 262,065 |
| Illinois | 669,683 | 686,413 |
| Michigan | 88,025 | 91,674 |
| Wisconsin | 175,646 | 173,579 |
| Missouri | 64,658 | 75,610 |
| Colorado and Wyoming | 66,303 | 62,483 |
| Washington, Oregon and California | 47,019 | 47,428 |
| Totals | 7,383,828 | 7,972,374 |

Of the products enumerated above about 5,867,869 tons were steel and about 2,104,505 tons were iron in 1907, as compared with 5,294,758 tons of steel and 2,089,070 tons of iron in 1906, showing an increase in steel products of 573,111 tons and in iron products of 15,435 tons, a total increase of 588,546 tons.

The following table gives separately the production in 1907 of merchant bars, skelp, splice bars, hoops, bands, cotton ties, and other miscellaneous forms of finished rolled iron and steel. The production of rolled forging

blooms and rolled forging billets is included for 1905 and subsequent years:

| Products in 1907.—Gross tons. | Iron. | Steel. | Total. |
|---|---|---|---|
| Merchant bars—all kinds and sizes. | 1,440,356 | 2,530,632 | 3,970,988 |
| Skelp, flue and pipe iron or steel.. | 444,536 | 1,358,091 | 1,802,627 |
| Splice bars | 10,115 | 183,108 | 193,223 |
| Hoops | ..... | 200,168 | 200,168 |
| Bands and cotton ties | 4,650 | 469,529 | 474,179 |
| Rolled forging blooms and forging billets | 691 | 227,091 | 227,782 |
| Spike and chain rods, bolt and nut rods, horseshoe bars, strips, shovel blanks, shovel bars, blanks for seamless tubes, railroad ties, rail joints, and all other miscellaneous finished rolled forms not above enumerated | 204,157 | 899,250 | 1,103,407 |
| Totals for 1907 | 2,104,505 | 5,867,869 | 7,972,374 |
| Totals for 1906 | 2,089,070 | 5,294,758 | 7,383,828 |
| Totals for 1905 | 1,950,546 | 4,447,561 | 6,398,107 |
| Totals for 1904 | 1,662,896 | 2,934,601 | 4,597,497 |

**Production of Rolled Iron and Steel Compared.**

The following table gives the production in gross tons of all leading articles of finished rolled steel in 1907, as compared with the production of all leading articles of finished rolled iron. All miscellaneous rolled products are included:

| Products in 1907.—Gross tons. | Iron. | Steel. | Total. |
|---|---|---|---|
| Rails | 925 | 3,632,729 | 3,633,654 |
| Structural shapes | 3,973 | 1,936.379 | 1,940,352 |
| Plates and sheets | 74,038 | 4,174,794 | 4,248,832 |
| Nail plate | 15,095 | 36,932 | 52,027 |
| Wire rods | 1,550 | 2,016,033 | 2,017,583 |
| Rolled forging blooms and forging billets | 691 | 227,091 | 227,782 |
| Merchant bars | 1,440,356 | 2,530,632 | 3,970,988 |
| Skelp | 444,536 | 1,358,091 | 1,802,627 |
| Splice bars | 10,115 | 183,108 | 193,223 |
| Hoops | ..... | 200,168 | 200,168 |
| Bands and cotton ties | 4,650 | 469,529 | 474,179 |
| All other finished rolled | 204,157 | 899,250 | 1,103,407 |
| Totals for 1907 | 2,200,086 | 17,664,736 | 19,864,822 |
| Totals for 1906 | 2,186,557 | 17,401,911 | 19,588,468 |
| Totals for 1905 | 2,059,990 | 14,780,025 | 16,840,015 |
| Totals for 1904 | 1,760,084 | 10,253,297 | 12,013,381 |

**Production of All Kinds of Rolled Iron and Steel.**

By the phrase rolled iron and steel we include all iron and steel rolled into finished forms. Forged armor plate, hammered axles, and other forgings are not included, nor such intermediate rolled forms as muck bars, slabs, blooms, billets, tin plate and sheet bars, &c. Rolled forging blooms and rolled forging billets are, however, included for 1905 and subsequent years. The following table gives the total production by States of all kinds of finished rolled iron and steel for 1906 and 1907, according to their geographical position:

| States.—Gross tons. | 1906. | 1907. |
|---|---|---|
| Maine and Massachusetts | 170,967 | 166,617 |
| Rhode Island and Connecticut | 124,954 | 120,659 |
| New York | 1,228,293 | 1,267,121 |
| New Jersey | 179,220 | 179,686 |
| Pennsylvania | 10,036,639 | 10,081,956 |
| Delaware | 18,800 | 25,415 |
| Maryland | 430,546 | 426,673 |
| Virginia | 37,852 | 32,211 |
| West Virginia | 363,589 | 421,704 |
| Kentucky | 106,675 | 130,069 |
| Tennessee, Georgia and Texas | 46,725 | 62,753 |
| Alabama | 326,588 | 283,297 |
| Ohio | 2,979,367 | 2,975,137 |
| Indiana | 604,317 | 569,146 |
| Illinois | 2,131,517 | 2,246,274 |
| Michigan | 88,025 | 91,674 |
| Wisconsin | 242,679 | 251,533 |
| Missouri | 79,385 | 90,360 |
| Colorado and Washington | 348,079 | 395,379 |
| Kan., Wy., Ore. and Cal. | 44,251 | 47,158 |
| Totals | 19,588,468 | 19,864,822 |

Twenty-seven States rolled iron or steel or both iron and steel in 1907, against the same number in 1906. Pennsylvania made over 50.7 per cent. of the total rolled production in 1907.

**Active Rolling Mills and Steel Works.**

In 1907 there were 522 works in 29 States and the District of Columbia which made steel ingots or castings or rolled iron or steel into finished forms, against 501 similar works in 28 States and the District of Columbia in 1906, a gain of 21 works. Of the total in 1907 there were 383 works which rolled iron or steel into finished forms and 139 works which made steel ingots or castings but not finished forms of rolled iron or steel. Rolled forging blooms and forging billets are classified as finished products.

**Production of Allegheny County, Pennsylvania.**

The following table gives the number of blast furnaces and completed rolling mills and steel works and the production of pig iron, steel ingots and castings, rails, structural shapes, plates and sheets, miscellaneous rolled products, and all finished rolled iron and steel in Allegheny County, Pa., from 1905. Rolled forging blooms and rolled forging billets are included:

| Details.—Gross tons. | 1905. | 1906. | 1907. |
|---|---|---|---|
| Furnaces built and building, No. | 42 | 47 | 47 |
| Production of pig iron | 5,410,890 | 5,702,721 | 5,438,233 |
| Rolling mills and steel works, No. | 65 | 67 | 66 |
| Production of Bessemer steel | 3,137,883 | 3,255,064 | 2,972,286 |
| Production of open hearth steel | 3,410,482 | 3,799,907 | 3,883,014 |
| Production of all other steel | 44,752 | 50,530 | 50,290 |
| Total production of steel | 6,593.117 | 7,105,501 | 6,905,590 |
| Production of all kinds of rails | 743,612 | 851,419 | 770,333 |
| Production of structural shapes | 881,932 | 1,054,747 | 889,066 |
| Production of plates and sheets | 1,232,705 | 1,300,873 | 1,346,517 |
| Production of other rolled products | 2,212,322 | 2,478,978 | 2,632,314 |
| Production of all rolled products | 5,070,571 | 5,686,017 | 5,638,230 |

## Sherardizing Practice.

BY J. EVERETT THOMPSON.

Apropos of the article in *The Iron Age* of July 23 on the "Deposition of Zinc for Protecting Iron and Steel Surfaces," some data may be of interest derived from experience with Sherardizing in the United States. As a method of rust proofing Sherardizing is far superior to any other existing process of galvanizing. It is applicable not only in all cases where hot or cold galvanizing can be used, but also in numberless cases where they can not.

The great importance of Sherardizing consists in the fact that, in addition to a surface coating of zinc, an infinitesimal quantity of zinc is alloyed into the iron or steel and forms in itself a rust proofing that resists corrosion. There is a point to be noted in comparing it with hot galvanizing. In the case of the latter, if by means of some pinhole or otherwise, the coating were pierced down to the iron or steel of the article, a rusting action is set up which in time creeps between the galvanized coating and the pure metal of the article, making the former peel off. In the case of the Sherardized coating such a pinhole would probably only go down to the alloy, and no rusting action would take place. But even if it went deeper still there would be no possibility of rusting action.

In many cases the articles need no special cleaning before being Sherardized. In others they are cleaned, as is done for ordinary galvanizing. Bolts, nuts, screws, stampings, bright plates, wire goods, etc., may be Sherardized just as they come from the machines without any further preparation or cleaning. Articles coated with grease or oil receive as good a coating of zinc as those which are free from it, if not better.

**The Method.**

The articles to be Sherardized are packed in a closed drum or bar in contact with the ordinary zinc of commerce. The drum is placed in an oven and heated to a temperature of about 700 degrees F. for 4 or 5 hr. It is then withdrawn and allowed to cool down to a temperature convenient for handling, when its contents are dumped upon a screen or grating which allows the zinc dust to fall through into a chamber below, from which it is drawn for use again. The cycle of operation is so simple that the most ordinary class of unskilled labor can be employed without fear as to the results.

**Advantages.**

By the gradual heating up, and then the gradual cooling down, the zinc dust being a poor conductor of heat, there can be no sudden high temperature, as contrasted with the plunge of an article into the molten zinc, and then its sudden cooling. The extreme evenness of the coating in practice means that, however thick it may be, the sharpness of screw threads or the shape of stamped letters is preserved, and if sufficient clearance has been given, a Sherardized nut will run on a Sherardized bolt as easily and as smoothly as if it were not Sherardized, no recutting being required. Articles Sherardized and buffed may be used instead of polished brass or nickel plating. Since the protective coating is in the surface and not on it, it does not peel off as plating does. Sherardized plumbers' supplies are unequaled as to beauty of finish and length of life. In marine construction Sherardized metal ranks next to solid copper and brass in its ability to withstand corrosion. Chains treated with this process have remained in sea water continuously for nine months without showing any signs of corrosion.

## Alaska Tin Values Yet to Be Proved.

WASHINGTON, D. C., July 27, 1908.—The tin deposits of Alaska have been subjected to an exhaustive investigation by the United States Geological Survey in the past year, and a bulletin is soon to be published, to be followed by an elaborate report. The York tin deposits were examined by A. J. Collier in 1903 and 1904 and by F. L. Hess in 1905, and the summaries of their reports have heretofore appeared in *The Iron Age*. Of Mr. Hess' report a liberal synopsis was given in *The Iron Age* of May 31, 1906, page 1742. In view of the extensive development work in progress and of the fact that the earlier examinations had been limited on account of lack of time, Adolph Knopf of the Survey staff was instructed to examine all known occurrences of tin in the so-called Seward Peninsula. His preliminary report covers much of the same ground gone over by Mr. Hess in reporting on the York District. Of the four localities now being prospected, Buck Creek, Cape Mountain and Lost River are in the York territory, while Ear Mountain is isolated, being in the northwestern part of the peninsula, in latitude 66° north, longitude 166° west. The only cassiterite Mr. Knopf obtained from Ear Mountain was stream tin from Eldorado Creek. No tin ore in place could be seen. The conclusions stated in the report are as follows:

The Alaskan lode tin deposits are associated with granite intrusives. The ore occurs in a variety of ways:

1. In highly altered quartz porphyry dikes.
2. In tourmalinized margins of granite masses and granitic dikes.
3. In contact metamorphic deposits.
4. In quartz stringers cutting slates and limestones.
5. In quartz veins cutting granite and accompanied by impregnation of the adjoining granite.
6. In beds of actnolite rock interstratified with slates.

Inasmuch as the granite intrusives have in many places profoundly modified the sedimentary rocks surrounding and enveloping them with the production of numerous unusual and heavy minerals, it has happened that the contact metamorphic deposits have received the most attention. This tendency to regard the contacts as favorable ore horizons has been strengthened partly by the fact that some rich masses of tin ore have been found near tourmalinized limestone, and partly by the deceptive resemblance which the heavy contact minerals, such as garnet, bear to cassiterite. The chances of finding workable tin mines in deposits of this type are, however, extremely slight. Quartz porphyry dikes, locally known as lodes or even as quartz veins, have received considerable attention owing to the fact that the original discovery of lode tin in Alaska was made on a highly altered dike of this character. The unwelcome fact should be speedily realized that few of these dikes hold out any inducements whatever as prospective tin producers. Of the other types of occurrence, some of which are of promising character, it can be said that, from the point of view of the conservative mining man, their value remains yet to be proved.

Developments throughout the region are, for the most part, still in the prospecting stage. Many of the open cuts have not reached solid bed rock. No tonnage of ore, with one exception, on Lost River, has yet been blocked out. It follows that on account of inadequate development no data are available for a safe estimate of the future commercial importance of the Alaska tin deposits. The region is plainly not "a poor man's country," but appears to offer a limited field for cautious exploration by capital. The placer deposits from Buck Creek have so far supplied the bulk of the Alaskan tin. W. L. C.

## Tin in the United States in 1907.

In an advance chapter of Mineral Resources of the United States, calendar year 1907, Frank L. Hess of the United States Geological Survey discusses the world's production of tin and briefly describes the various deposits in the United States and Alaska. The total commercial output of all these domestic deposits amounted in 1907 to only 62 tons, although small additional amounts were produced in an experimental way and some low grade tin ore was reported as mined and left on the dumps. The consumption in the United States is from 40,000 to 50,000 tons a year, or 35 to 40 per cent. of the world's production. Commenting on the waste of tin with reference to the world's small visible supply, Mr. Hess says:

The recovery of tin from scrap, dross, type metal, babbitt and other friction metals, bronze, &c., is growing, and should grow even faster. The amount of tin wasted in tin cans that have been used and thrown away and in the solder used on them is very great and is an extravagance which from a broad economic view is deplorable. Although the amount of tin ores to be drawn upon cannot be as accurately measured as the coal deposits of the world, their exhaustion is as certain, and unless some now unrecognized substitute for tin is found, such as an economical method for the production of aluminum from clay might give, such saving will become compulsory. During the year 16 companies in the United States recovered tin amounting to 1662 net tons, valued at $914,404, while a large but unknown recovery of tin from secondary sources was also made in Europe.

## Customs Decisions.

### Fish Hooks.

The Board of United States General Appraisers has declined to reverse the assessment of duty levied by Collector Fowler on importations of fish hooks entered by Abbey & Imbrie and J. W. Hampton, Jr., & Co., New York. The duty was assessed at the rate of 40 per cent. plus 1¼ cents per pound under the provisions of paragraph 137 of the tariff act. The importers claimed in their protests that the wire from which the hooks are made is valued at not more than 4 cents per pound, and that the hooks are therefore dutiable according to the gauge of the wire as provided in the first part of paragraph 137, with the addition of 1¼ cents per pound prescribed in the second proviso of the same paragraph. In overruling the protests, General Appraiser Howell says that the importers failed to offer any evidence, and that there is nothing in the papers in the case to warrant the board in disturbing the finding of the appraising officers that the wire used in the manufacture of the fish hooks is valued at more than 4 cents per pound.

### Cylindrical Steel Gas Tanks.

The Board of General Appraisers has sustained protests filed by the Liquid Carbonic Company, Chicago. The Circuit Court of Appeals recently upheld the contention of the importers and the Government has announced its acquiescence. These protests relate to steel cylinders designed for use in the transportation of gas at a high pressure, upon which duty was assessed at the rate of 45 per cent. under the provisions of paragraph 193, and which are claimed to be dutiable properly at 35 per cent. under paragraph 152, as "steel tubes, finished, not specially provided for."

### Steel Floor Plates.

The Treasury Department has announced its acquiescence in the decision of the United States Circuit Court of Appeals at Philadelphia in the case of R. D. Wood & Co., importers of steel floor plates. The plates had been assessed with duty under paragraph 126, but the claim of the importers that they were properly dutiable under paragraph 135 was sustained by the court.

The Cyclone Drill Company, Orrville, Ohio, has issued a pamphlet entitled "Your Plain Duty," which gives a number of articles on the subject of the necessity of obtaining a supply of pure water. These articles treat of drilled wells on farms, as well as the water supply for towns and small communities. In these days of contamination of rivers and ponds, attention is being turned quite generally to the necessity of obtaining a supply of water, which may be reasonably expected to be pure. The pamphlet is of an educational character, aiming to supply general information on this subject rather than specific details of the manner in which the company performs its functions in furnishing well drilling outfits.

# Manganese Bronze.*

BY C. R. SPARE.

The best present day alloys of manganese bronze are the results of years of scientific research by several of the largest manufacturing concerns, which maintain chemical and physical testing laboratories in connection with their brass foundries. Of all the metal industries, brass founding is almost the last to pass from the empirical and rule-of-thumb to a scientific metallurgical basis. In fact, the majority of the brass and bronze manufacturers have never used chemical analysis or a testing machine and therefore have only a general idea of the composition and physical properties of their products. But conditions have changed, or are changing, and engineers have multiplied powers and manipulated pressures beyond all former figures. Machinery is more powerful, more complicated and more severely tested than ever before, and while the steel and other industries have made great advances and kept pace of requirements, the same rate of improvement has not been maintained in copper and brass, except in the case of the high tensile strength of manganese bronzes.

Manganese bronze first found its important practical application in the manufacture of propeller wheels for ships. Now cast iron and cast steel have been almost universally displaced by it, not only for all naval vessels, but the merchant ships of the world have adopted it as standard practice. Marine engines have been increased to such vast powers that 20,000, then 40,000 and now 70,000 i.h.p. are transmitted through manganese bronze propeller wheels. In some ships the speed runs upward of 300 rev. per min.

There is no metal of equal strength and toughness which will produce such sound, smooth and intricate castings, true to the form of the pattern. These qualities permit of the maximum fineness of section of the propeller blade, and at the surface speeds of thousands of feet per minute friction is reduced to a minimum. This bronze is practically incorrodible in sea and alkali waters. Likewise dilute acids and acid mine water are withstood successfully. Cast blocks of manganese bronze immersed for one year in the most acid mine water in Pennsylvania, containing about 300 grains of sulphuric acid per gallon, showed no material corrosion, and a test piece cut from this metal showed no diminution in tensile strength from that of a duplicate specimen previously tested.

### Testing Methods and Results.

Test pieces cut from cast propellers should show an average ultimate tensile strength of 70,000 lb. per square inch, elastic limit of about 35,000 lb., or one-half the ultimate; a 25 per cent. elongation in 2 in. and 25 per cent. reduction of area. The reduction of area follows the elongation closely in cast manganese bronze. These figures can be varied to suit requirements. A soft manganese bronze having an ultimate strength of 60,000 lb. per square inch and 40 or 50 per cent. elongation in 2 in. is the lower limit, while an exceedingly hard manganese bronze can be made to test over 90,000 lb. per square inch., with even as much as 30 per cent. elongation.

The methods of testing manganese bronze physically do not differ materially from the standard methods for steel. Test pieces according to the standard United States Government sizes, 0.505 in., 0.798 in. or 1 in. in diameter, are machined 2 in. between punch marks and threaded. In the case of castings there is not a sharply defined elastic limit and the yield point cannot be determined by the drop of the beam. Multiplying dividers (such as devised by J. A. Capp) or a standard extensometer will establish quite closely the point at which an appreciable change in the rate of stretch takes place. In the case of rolled or forged manganese bronze the yield point is more closely defined, and the elastic curve is frequently sharp enough to detect the drop of the beam or a halt of the gauge wheel. In compression cast manganese bronze, if properly made, shows an average elastic limit of 35,000 to 40,000 lb. per square inch and a maximum crushing load of 90,000 to 100,000 lb. per square inch. Rolled or forged manganese bronze tests 50,000 to 60,000 lb. elastic limit, and as high as 130,000 to 150,000 lb. maximum crushing load.

### Rolling and Forging.

Manganese bronze can be rolled or forged readily at a red heat with the production of an exceedingly tough, dense and close grained metal. Microscopic examination of cast manganese bronze, after polishing and etching, reveals a very homogeneous and uniformly grained metal, but after rolling or forging to a sufficient reduction the structure is reduced to from 1-30 to 1-50.

Rolling or forging raises the proportional elastic limit to from 45,000 to 75,000 lb. per square inch, depending upon the finishing temperature and the amount of work done on the metal. Likewise the ductility and toughness are increased, but without a corresponding increase in ultimate strength.

Forged and rolled rods find a wide application as piston rods, shafts, axles and for all purposes where a metal of equal strength and toughness to carbon steel is desired, and which will not rust or corrode in the atmosphere or in mine or sea water. An especially soft and tough metal is made to resist vibratory and sudden stresses and shocks. It is used under very severe conditions in modern naval ordnance. Another application is in staybolts for locomotives. This bronze tests 40 to 50 per cent. elongation, with about 60 per cent. reduction of area.

### The Demands of Electrical and Automobile Service.

Thus only a few of the better known applications of manganese bronze have been pointed out. The electrical industry is calling for it for turbo-generator sets, which are run at speeds up to 4000 rev. per min., and the blades of the steam turbine are satisfactorily made of extruded manganese bronze shapes. In this case the erosive action of high pressure steam is severe and under it most metals fail.

The infant industry which has grown to such lusty proportions in this country, automobile manufacture, has set a very high standard for materials demanded by its peculiarly hard service conditions. Automobiles with gasoline motors of 60 hp., and even as high as 130 hp., at speeds of 1000 to 1500 rev. per min., and running over all kinds of roadbeds at 60 and 100 miles an hour, have stimulated the improvement of the materials entering into their construction more, perhaps, than any other modern machine. The nickel-chrome and other high grade steels in gears and drop forgings have produced results never heard of before, and cast iron has been wonderfully improved by the requirements of automobile cylinders. Likewise manganese bronze, formerly used almost exclusively in warships, has been adapted to produce forgings and castings which will not crystallize or fail under similarly severe conditions.

* From a paper read at the Atlantic City meeting of the American Society for Testing Materials, June 27, 1908.

## The Cincinnati Metal Trades Outing.

Nothing occurred to mar the pleasure of some 30,000 people who are in some way identified with the manufacturing side of the Cincinnati Metal Trades Association on Saturday, July 25, at Chester Park, in that city. It was the annual outing provided by members of the organization for their employees and families, and these, whether on the present pay roll or not, participated in large numbers. There were many prize athletic games and contests of speed and skill under the direction of Secretary John M. Manley and a large committee. At 6 o'clock 70 officials and heads of departments with guests sat down to a banquet served on the broad piazzas of the club house, with President John M. Niel as master of ceremonies. A number of congratulatory messages were received from absent members and friends, among these being an especially interesting one from Sherman C. Schauer of the Cincinnati Machine Tool Company. Short talks were made by all the ex-presidents present and other influential members of the Cincinnati tool manufacturing fraternity. Among them were Walter Laidlaw, Laidlaw-Dunn-Gordon Company; S. P. Egan, J. A. Fay & Egan Company; E. H. Hargrave, Cincinnati Tool Company; J.

C. Hobart, Triumph Electric Mfg. Company; B. B. Quillen, Cincinnati Planer Company; Philip Geier, Cincinnati Milling Machine Company, and Secretary John M. Manley of the association.

## PERSONAL.

E. F. Moody, manager of the branch house of the Crucible Steel Company of America at Springfield, Mass., will retire from that position August 1. He expects to continue in the same line of business. D. E. Seymour, formerly of Springfield, lately of New Haven, Conn., will take charge of the Springfield office.

E. L. Graydon, who has been manager of the Bessemer Soil Pipe Company, Bessemer, Ala., for the past two years, has severed his connection with that company, to take effect August 30.

Vice-President J. B. Doan of the American Tool Works Company has returned to Cincinnati from a four months' tour of business and pleasure in Europe. He and his party had some interesting social experiences as well as satisfactory business relations with and among people of prominence abroad.

Leonard Schreiber, the venerable president of the L. Schreiber & Sons Company, Cincinnati, celebrated his 80th birthday anniversary July 24. He is still vigorous and spends much of his time at the structural steel, ornamental iron and bronze manufacturing plant bearing his name. The directors of the German Mutual Insurance Company, of which he is president, gave him a loving cup, and his fellow officials and heads of departments at the plant presented him with another of unique design.

Frank J. Llewellyn, division contract manager of the American Bridge Company, Chicago, has just returned much benefited from a five months' trip to China, Japan and the Orient, where he has been seeking recreation and recovery from impaired health.

Lane Johnson, who has for some time been connected with the main office of the Mesta Machine Company, Pittsburgh, Pa., has been placed in charge of a branch office, opened by the company at 844 Commercial National Bank Building, Chicago. The opening of this office has been compelled by the increased demand for the company's products in the Central West. These products are rolling mill machinery, gas and steam engines, condensers, machine molded gears, steel castings, &c.

Charles W. Blackman has been appointed general sales manager of the Driggs-Seabury Ordnance Corporation, with headquarters at Sharon, Pa.

Horace V. Winchell of Minneapolis, Minn., announces that he has resigned his position as chief geologist of the Great Northern Railway Company and is now open to engagements in the general practice of his profession. Mr. Winchell has been for many years famous as a specialist in copper and iron ore mining.

The Hazard Mfg. Company, Wilkes-Barre, Pa., has about completed improvements to its plant, which will increase the capacity 50 per cent. They include a new wire rope mill and power plant, containing many important features in equipment and arrangement. The new wire rope building is on the opposite side of the street from the present plant, to which it is connected by both a bridge and a subway. It is 50 x 165 ft., four stories and basement, of brick and steel construction, and the two lower stories are equipped with two 5-ton traveling cranes, the upper floors containing the machinery for the manufacture of wire rope. The new power plant is equipped with 1200-hp. of Babcock & Wilcox water tube boilers, with the corresponding horsepower capacity of engines and generators. As soon as the new power plant is in operation the space occupied by the old building will be used by other departments. The machinery is to be motor driven, and shipping facilities are furnished by a switch from the Pennsylvania Railroad, which runs between the new rope mill and the power plant. It is expected that the new buildings will be ready for operation about August 1.

## NEWS OF THE WORKS.

### Iron and Steel.

The Mesta Machine Company, Pittsburgh, Pa., has shipped one of the long crosshead blowing engines, having two high and two low pressure cylinders, 44-in. steam and 84-in. air by 60-in. stroke, and 84 and 84 x 60 in. stroke, to the Cleveland Furnace Company, Cleveland, Ohio, and the other three on contract are nearing completion. Recent business taken by the company includes a simple Corliss engine of 500 kw. capacity for the Pittsburgh-Buffalo Company, Ellsworth, Pa.; two Helander barometric condensers, one of 3500 hp. capacity for the American Sheet & Tin Plate Company, the other of 3000 hp. capacity for the Struthers plant of the Youngstown Sheet & Tube Company, which is the third condenser that this latter company has ordered.

The Eastern Concrete Steel Company, George T. Roberts, manager, 401 D. L. Morgan Building, Buffalo, N. Y., which was awarded the contract last week for the Elk and Michigan streets grade crossing work, including 2200 cu. yds. of reinforced concrete retaining wall, is ready for bids on 131,000 lb. of steel rods for reinforcing concrete.

Niles Furnace of the Carnegie Steel Company, at Niles, Ohio, which has been idle for some months, is being repaired and will probably be put in blast in August.

### General Machinery.

The Cedar Rapids Foundry & Machine Company, Cedar Rapids, Iowa, expects to enlarge its machine shop to provide room for the manufacture of universal stone crushers which it is now making.

The Atchison, Topeka & Santa Fe Railroad has awarded contracts for the construction of a 10-stall brick roundhouse and standard frame sand house to C. A. Fellows, Topeka, Kan., and for a mechanical coaling station to Fairbanks, Morse & Co., Chicago, Ill. These buildings are to be erected at Canadian, Texas.

The Walcott & Wood Machine Tool Company, Jackson, Mich., expects to increase its facilities by the erection of a new building and the installation of modern machinery, such as traveling cranes for handling the heavy machines. The company owns considerable land on the railroad and on this property it is planning to erect a building about 70 x 155 ft.

The Phillips Pressed Steel Pulley Works, Philadelphia, Pa., has taken out a permit for the construction of a building at Fourth street and Glenwood avenue 78 x 170 ft., to cost about $7000. The greater part of the machinery required will be of special design and will be built at the company's shops. The increasing demand for its pulleys, especially the larger sizes, has necessitated the enlargement of the paint.

The Wells Brothers Company, Greenfield, Mass., manufacturer of screw cutting tools and machinery, states that "there seems to be a better feeling as regards business than there was. For some time past our jobbing customers have had but a small stock, and while even now they are not increasing this stock to a great extent, we think that the stock orders are larger and more frequent than they have been in the past. As a proof of this, although the last month showed but a slight increase in the number of orders over those received in May, the amount of sales was considerably more. Some of our representatives are out on their trips and we are receiving favorable reports from them, both in shape of orders and in their criticism of the business conditions as they see them."

The Grant Iron Works, Houston, Texas, incorporated with a capital stock of $50,000, has just completed shop buildings, which include a machine shop 72 x 160 ft. and a blacksmith shop 32 x 46 ft. Machinery for equipment of the plant has been ordered and it is expected it will be ready for operation by September 15. The company will devote its attention principally to the rebuilding of locomotives, cars and heavy sawmill and irrigation machinery. The officers of the company are A. S. Grant, president and general manager; H. A. Paine, first vice-president; F. E. Pye, second vice-president, and William A. Grant, secretary and treasurer.

Operations have been resumed at the plant of the Kilby Machine & Locomotive Works, Anniston, Ala.

Sealed bids will be received by F. W. Ormsby, secretary, Water Works Department, Oswego, N. Y., for one 15-ton hand power traveling crane.

### Power Plant Equipment.

Plans and specifications are being prepared by the State architect at Albany for an addition to the boiler house and installing a new 100-hp. horizontal tubular boiler at the Western New York House of Refuge for Women at Albion. The approximate cost is $11,000. Bids will soon be called for by the Board of Managers.

The Commissioners of the Nutwood Drainage and Levee District, Jerseyville, Ill., will receive bids until August 19 for a pumping plant and sluiceway, including one 300-hp. water tube boiler, one 500-hp. horizontal compound condensing engine, one 40-in. and one 36-in. centrifugal pump, together with foundations, appurtenances, piping, &c.

The Buffalo, Lockport & Rochester Railway Company, Lockport, N. Y., is preparing plans for five substations, to be located at Albion, Knowlesville, Holley, Medina and Spencerport, each

to be of sufficient size to accommodate three 400-kw. rotary transformers with necessary operating apparatus. The substations are to be located 9½ miles apart, built of concrete, with steel roof trusses. Work on buildings will be started in 30 to 60 days.

The Tower Engineering Company, Buffalo, N. Y., has been incorporated, with E. J. G. Tower as president, H. G. Tront and H. G. Walker, of the King Iron Works, as secretary and treasurer, respectively, to control sale and manufacturing rights of a special noiseless valve type of gas engine and gas producer plant, which will be manufactured under contract by the King Iron Works, which is now building a sample 150-hp. engine and producer outfit. Mr. Tront is building special furnaces to be installed in the new brass foundry and is ready for bids on two hand power jib cranes, structural steel runway to be installed in foundry building, and may later purchase electric traveling crane, 110-span, and a 150-ft. structural steel runway, to be installed in machine shop. The Tower Engineering Company will engage in general contracting for complete power plant installations.

The Water Works Department, Oswego, N. Y., has called for bids on the following equipment to be installed at pumping station: Three 150-hp. horizontal tubular boilers and one 50,000-gal. steel water tank. Bids on brick and steel boiler house building will soon be called for.

The Wallkill River Company, Walden, N. Y., will erect a $150,000 hydraulic electric generating plant on Wallkill River at Alden, the power to be utilized by the New York Knife Company, the Wallkill Valley Light & Power Company and the Orange County Traction Company. Construction work on the dam has been started. Work on power plant and equipment installation will be started this fall.

### Foundries.

The Aluminum Foundry Company, Manitowoc, Wis., has increased its capital stock from $50,000 to $100,000 for the purpose of adding brass and bronze to its line of aluminum castings. Additions to the foundry buildings will be made which will increase the capacity of the plant about 50 per cent.

A. T. Zentmyer, Hagerstown, Md., will replace his present foundry with a building 40 x 150 ft., with a wing 35 x 50 ft. and pattern house 30 x 50 ft.

The Headford Brothers & Hitchins Foundry Company, Waterloo, Iowa, maker of architectural iron work and fine gray iron castings, has just completed an addition, 50 x 70 ft., to its foundry building, and has under construction an office building, 36 x 36 ft., which will be ready for occupancy within a short time. The company reports that these improvements were made necessary by a large increase in its business, which from present indications bids fair to exceed that of last year.

The American Brake Shoe & Foundry Company, New York, which has lately been using a portion of the plant of the Passaic Steel Company, Paterson, N. J., for tests for the manufacture of manganese rails, is considering the acquisition of a large rubber manufacturing plant.

The Buffalo, N. Y., branch of the American Malleable Company is to build an addition on each end of the plant, 100 x 200 ft., increasing the capacity of foundry and annealing rooms by one-third capacity.

The Will & Baumer Company, Syracuse, N. Y., has taken option on the old plant of the Susquehanna Hardware Mfg. Company at Susquehanna, Pa., and is considering converting the buildings into a brass foundry to be occupied by the Brass Specialty Company, New York, in which Mr. Baumer is largely interested.

The Board of Contract & Supply, Albany, N. Y., has awarded contract to the Camden Iron Works, Camden, N. J., to furnish the city of Albany with 2000 tons of iron pipe and special castings, at its bid of $21.80 a ton for pipe and $50 a ton for special castings. The contract amounts to about $50,000.

### Bridges and Buildings.

The Upstate Public Service Commission, Albany, N. Y., has ordered that a structural steel viaduct and approaches be erected at Hamilton street, La Salle, Niagara County, for elimination of grade crossing over the lines of the New York Central and Erie railroads and right of way of the Buffalo, Thousand Islands & Portland Railroad. Plans will be prepared at once and bids on material and construction called for later.

### Fires.

The large plant of the American District Steam Company, North Tonawanda, N. Y., was almost completely destroyed by fire July 24. The main building, containing about $40,000 worth of special machinery, the foundry, engine and boiler rooms, dry kiln and stock yard, with 1,000,000 ft. of lumber, were entirely consumed. The estimated loss is $115,000, which is covered by insurance. The buildings saved were the pattern house, flask house and two warehouses in which were stored $30,000 worth of finished product. It is expected the plant will be rebuilt at once.

The machine and blacksmith shops of the Fresno Agricultural Works, owned by James Porteous, at Fresno, Cal., were burned July 20, the loss being about $25,000.

The metal ferrule works of Charles E. Green, Newark, N. J., was damaged $20,000 by fire July 24.

### Hardware.

A company with a capital stock of $15,000 is now being formed by Wesley Kouns, Salina, Kan., for the manufacture of a galvanized steel hay rake, loader and stacker combined, and galvanized steel push rakes.

Having enlarged its original line of fence posts to include clothes posts, hitching posts, flag poles, &c., the Milwaukee Steel Fence Post Company, Milwaukee, Wis., has filed an amendment to its charter changing the corporate name to the Milwaukee Steel Post Company.

A movement is on foot to organize a stock company at Charleston, Ill., for the establishment of a stove foundry at that place, with a capital of $40,000. A large part of the stock has been subscribed, but the success of the undertaking is not as yet assured. J. W. Ramsey, manager of the La Salle Securities Company, Chicago, is interested in the project.

The Pope Mfg. Company, Hartford, Conn., is to abandon its factory at Hagerstown, Md., and will concentrate its bicycle business at Westfield, Mass. This will add to the importance of the latter works, as all bicycles for juveniles will hereafter be manufactured there. The Pope Company thus reduces the number of its works to two, as the automobile business has been concentrated at Hartford.

### Miscellaneous.

The West Allis Malleable Iron & Chain Belt Company, Milwaukee, Wis., has resumed operations after being closed down for several weeks, and 250 men are being given employment.

The Eriez Stove & Mfg. Company, Erie, Pa., will not require any additional equipment at the present time for the new additions to its plant, aside from line shafting, hangers, &c. The company is looking around for a low pressure steam heating plant, and contemplates putting in a sprinkler system for fire protection.

William Lewin, Kansas City, Mo., has withdrawn from the Lewin Scrap Iron Company and has opened an office at 1222 West Ninth street, where he carries on a general brokerage business in scrap iron, steel and metals, old railroad materials, &c.

Rand, McNally & Co., New York, have let contract for the erection of an electrotyping foundry and boiler house at Ossining, N. Y., for which a small stack, blower, heating and plumbing equipment will be required.

The recent fire at the plant of G. Wilson & Son, manufacturers of scales, Toronto, Ont., did but little damage.

The Hamburg Mfg. Company, Hamburg, Pa., which was organized last fall and which established a modern plant for the manufacture of the New Century chain hoists, under patents of Henry J. Schmick, is receiving a good demand for its products. Recent orders include 15 2-ton hoists from a large Ohio rubber company and 12 ½-ton, 25 1-ton, 10 1½-ton and 6 2-ton hoists for the Mare Island Navy Yard. The company has orders booked for about 30 hoists of the Eureka pattern, which is just being perfected.

The Compressed Flint Brick Company, Webb City, Mo., is preparing to erect and equip a new brick making plant at Kansas City, Mo., a site for which has been selected at Sixteenth street and Elmwood avenue. Ornamental pressed brick will constitute the product of the plant, which will be equipped with hydraulic presses. The company operates a similar plant at Webb City, Mo.

Plans have been completed by the Boone Engineering & Architectural Company, Boone, Iowa, for a three-story fireproof brick and concrete telephone building, 30 x 50 ft., the approximate cost of which is estimated at $10,000. It will be equipped with new automatic system of underground cables, converters, batteries, dynamo, switchboard and other modern accessories. A gas engine will be required for the generation of electric power service. About $100,000 will be expended in these improvements.

A franchise has been granted to a local company for the establishment of a gas plant in the city of Fairbury, Neb. The franchise requires completion of the organization and acceptance of its terms within 30 days. E. R. Bee is interested in the enterprise.

A company has been organized at Little Rock, Ark., by Fred Newton Gibb for the purpose of developing and promoting a spring wheel for automobiles. No definite arrangements have as yet been made for the manufacture of this appliance.

The announcement is made that the executive offices, including the purchasing department, of the New England Investment & Sureties Company, which controls the electric railway holdings of the New York, New Haven & Hartford Railroad in Massachusetts, will be removed from Boston to Springfield, Mass. The company controls 600 miles of railway, and the purchasing department is an important buyer in the market.

The Greenpoint Metallic Bed Company, Brooklyn, N. Y., will need very little new machinery, as the recent fire at its plant only damaged the iron stock and paint departments.

# The Iron and Metal Trades

A more cheerful tone pervades the Iron markets, even Pittsburgh, for so long the bluest spot in the country, developing some optimism. The volume of business, taking it as a whole, is slightly better, but prices still display irregularity and in some branches are even a little lower. There has been some gain in the rate of operations since specifications are coming in more freely, but mills are often forced to lie idle for considerable periods, to wait for the accumulation of sufficient specifications to justify a brief period of running. So it happens that press reports again and again refer to the starting of the same plant, while the intermediate stoppages are passed over in silence.

In some quarters the idea seems to have arisen that there was some conflict in the statements recently made that the works of the Steel Corporation were running at about 56 per cent. of capacity, and the announcement just issued that the average daily bookings for the first 24 days of July are in excess of 26,000 tons, equivalent to 72 per cent. of full capacity. Since the first refers to actual manufacturing operations and the other to orders entered, there is no conflict. It may be well to explain, however, that included in the July bookings are considerable quantities of steel bars placed by agricultural implement makers for delivery during twelve months, and that therefore the increase in the tonnage in other lines is not significant.

In some sections the Pig Iron markets are easier, while in others they are steady. Pittsburgh reports sales of Bessemer at $15.65 Valley furnace, so that the market which was nominally at $16 for large quantities, and $15.75 for small lots for a considerable period, is now squarely lower. In the East, a Pennsylvania Structural mill and bridge shop bought 12,000 tons of Basic Pig at close to $15, for delivery over four months. In the Central West an Ohio car builder purchased about 5000 tons of different Irons, one-half thereof being Malleable Bessemer. A Pittsburgh producer of plumbing castings is in the market for about 8000 tons for different works, which will test the Foundry Iron markets.

The Steel Rail trade remains quiet. The Chesapeake & Ohio order has not yet been placed. Inquiries for Rails for export are coming in more freely. A Canadian line is in the market for 20,000 tons. The Grand Trunk business has not yet been placed. There are negotiations pending for Rails for South America, Australia and China.

The Steel work for the Oliver Building in Pittsburgh, involving 10,500 tons, has been placed. Orders have also been booked for 2,000 tons for approaches of a bridge in West Virginia, 2000 tons for the Toledo & Ohio, 1000 tons for the New Haven road and 1000 tons for Buffalo.

In the lighter lines Wire continues to make a good record, the business being better maintained in the summer than is usual. The Sheet mill capacity of the leading interest has gone up from 47 per cent. last week to 51 per cent. this week. The Merchant Pipe trade is developing steadily and some larger projects are under negotiation. The Tin Plate industry is showing signs of tapering off in activity. The canners are now supplied for the season.

The export trade is improving in volume. Among the recent transactions are 2500 tons of Cotton Ties for India, where the American product is given the preference over the English goods; 2000 tons of Bridge Material for Mexico and a cable order for 750 tons of Barb Wire for the Argentine.

Old Material is stronger and better prices are being realized in some of the principal primary markets.

The most important buying movement since the panic has occurred among domestic consumers of Copper. Still, it is only fair, and has been much exaggerated. Sales of Electrolytic Copper have been made at 13⅛c. and 13.07½c. and of Lake at 13¼c. Lead is slightly stronger, at 4.55c. and 4.60c., spot, New York.

## A Comparison of Prices.

**Advances Over the Previous Month in Heavy Type, Declines in Italics.**

At date, one week, one month and one year previous.

| | July29, 1908. | July22, 1908. | June24, 1908. | July31, 1907. |
|---|---|---|---|---|
| **PIG IRON,** Per Gross Ton: | | | | |
| Foundry No. 2, Standard, Philadelphia | $16.50 | $16.50 | $16.50 | $22.00 |
| Foundry No. 2, Southern, Cincinnati | *14.75* | 14.75 | 15.25 | 23.75 |
| Foundry No. 2, Local, Chicago | *17.00* | 17.00 | 17.50 | 24.50 |
| Bessemer, Pittsburgh | *16.55* | 16.90 | 16.90 | 22.90 |
| Gray Forge, Pittsburgh | 14.90 | 14.90 | 14.90 | 22.40 |
| Lake Superior Charcoal, Chicago | 20.00 | 20.00 | 20.00 | 26.00 |
| **BILLETS, &c.,** Per Gross Ton: | | | | |
| Bessemer Billets, Pittsburgh | 25.00 | 25.00 | 25.00 | 30.00 |
| Forging Billets, Pittsburgh | 27.00 | 27.00 | 27.00 | 34.00 |
| Open Hearth Billets, Phila | 26.20 | 26.20 | 26.20 | 31.75 |
| Wire Rods, Pittsburgh | 33.00 | 33.00 | 33.00 | 36.50 |
| Steel Rails, Heavy, Eastern Mill | 28.00 | 28.00 | 28.00 | 28.00 |
| **OLD MATERIAL,** Per Gross Ton: | | | | |
| Steel Rails, Melting, Chicago | **13.50** | 13.00 | 12.50 | 17.25 |
| Steel Rails, Melting, Phila | 13.50 | 13.50 | 13.50 | 17.50 |
| Iron Rails, Chicago | **16.50** | 16.00 | 15.50 | 20.75 |
| Iron Rails, Philadelphia | 18.00 | 18.00 | 18.00 | 22.50 |
| Car Wheels, Chicago | **14.50** | 13.00 | 13.00 | 24.50 |
| Car Wheels, Philadelphia | 13.50 | 13.50 | 13.50 | 25.00 |
| Heavy Steel Scrap, Pittsburgh | **14.50** | 14.75 | 13.25 | 17.75 |
| Heavy Steel Scrap, Chicago | **12.50** | 12.00 | 11.50 | 15.50 |
| Heavy Steel Scrap, Philadelphia | **14.00** | 14.00 | 13.50 | 17.00 |
| **FINISHED IRON AND STEEL,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Refined Iron Bars, Philadelphia | *1.35* | 1.35 | 1.40 | 1.85 |
| Common Iron Bars, Chicago | 1.50 | 1.50 | 1.50 | 1.78 |
| Common Iron Bars, Pittsburgh | 1.40 | 1.40 | 1.40 | 1.70 |
| Steel Bars, Tidewater, New York | 1.56 | 1.56 | 1.56 | 1.86 |
| Steel Bars, Pittsburgh | 1.40 | 1.40 | 1.40 | 1.60 |
| Tank Plates, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Tank Plates, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Beams, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Beams, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Angles, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Angles, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Skelp, Grooved Steel, Pittsburgh | 1.45 | 1.45 | 1.45 | 1.90 |
| Skelp, Sheared Steel, Pittsburgh | 1.50 | 1.50 | 1.50 | 1.90 |
| **SHEETS, NAILS AND WIRE,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Sheets, No. 27, Pittsburgh | 2.40 | 2.40 | 2.40 | 2.50 |
| Wire Nails, Pittsburgh | 1.95 | 1.95 | 1.95 | 2.00 |
| Cut Nails, Pittsburgh | 1.75 | 1.75 | 1.75 | 2.05 |
| Barb Wire, Galv., Pittsburgh | 2.40 | 2.40 | 2.40 | 2.45 |
| **METALS,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Lake Copper, New York | **13.25** | 13.00 | 13.00 | 21.00 |
| Electrolytic Copper, New York | **13.07½** | 12.75 | 12.87½ | 20.00 |
| Spelter, New York | *4.45* | 4.45 | 4.55 | 5.95 |
| Spelter, St. Louis | *4.35* | 4.35 | 4.40 | 5.80 |
| Lead, New York | **4.55** | 4.47½ | 4.50 | 5.15 |
| Lead, St. Louis | 4.40 | 4.32½ | 4.40 | 5.00 |
| Tin, New York | **30.40** | 29.75 | 27.60 | 40.25 |
| Antimony, Hallett, New York | *8.00* | 8.25 | 8.50 | 10.50 |
| Nickel, New York | 45.00 | 45.00 | 45.00 | 45.00 |
| Tin Plate, 100 lb., New York | $3.89 | $3.89 | $3.89 | $4.09 |

## Chicago.

FISHER BUILDING, July 29, 1908.—(*By Telegraph.*)

Moderate improvement is generally reported, but nowhere is it pronounced enough to warrant the extravagant reports which are continually appearing in the daily press of extensive resumption of mill activities and the reemployment of large bodies of workmen. Through the present month there has been some increase in iron and steel consumption, as is evidenced by a moderate increase of active mill capacity. It is doubtful, however, if the gains made during the month are being fully maintained in all directions; in any event, it is certain that they do not, on the whole, show an increasing ratio. Plates and Sheets continue extremely quiet, and although practically all of the Bar mills in this district are either now in operation or about to resume, they have no large amount of specifications on hand, and for the present at least will continue to run short of capacity and intermittently, as heretofore. These condition will likely remain unchanged until specifications against the recent large contracts entered begin to come in. Merchant Pipe is one of the few mill products in which there is a steady improvement, but this is measured by very small degrees. While more specifications are coming to the Structural mills, fabricators have closed little new business. No deals of important tonnage were included in last week's transactions. Continued activity in Scrap Iron has resulted in still further price advances. This movement has been aided by a better demand from both mills and melters, though as a rule consumers are buying only moderate quantities. Rerolling Old Steel Rails, which in April were rather a

drug on the market at $12, are now fairly strong at $16. The advance in prices of this material has had a steadying effect on the price of high carbon Bars.

**Pig Iron.**—In the transfers of tonnage effected last week nothing of significance, either as to price or demand, was developed. Carload buying is still the rule, with here and there an order for 100 to 300 tons, but all for early delivery. There is nothing in the character of the demand indicative of special interest in any direction, since it is plain that orders are prompted in almost every case by present needs. The Southern situation is not materially changed, although it may be noted that the Republic Iron & Steel Company has advanced its price to $12.50, for last half, which rate is likewise being held by the Tennessee Coal, Iron & Railroad Company. Under present conditions, this, of course, means practical withdrawal from the market. There is no evidence that better than $12 on normal Phosphorus Iron is being done by the Birmingham furnaces, although $11.50 is now easily obtainable on the higher Phosphorus Irons of northern Alabama and Tennessee. We note one sale of 200 tons of No. 2 Foundry at $12, Birmingham, and another, which is perhaps the most important of the week, of 800 tons of Southern Gray Forge, at $10.75, which was taken by a local Pipe interest. Several fair-sized inquiries have appeared, which, since they concern deliveries confined principally to the third quarter, are regarded as representing actual requirements. These range in amounts from 500 to 1500 tons. There are also inquiries out from a prominent local interest for 1000 tons, equally distributed between Northern and Southern Irons. The future trend in this market will naturally be governed by the rate of foundry consumption, which at the present is increasing very slowly in some directions, and in others is apparently at a standstill. The following quotations are for July, August and September delivery, f.o.b. Chicago:

| | |
|---|---|
| Lake Superior Charcoal | $20.00 to $20.50 |
| Northern Coke Foundry, No. 1 | 17.50 to 18.00 |
| Northern Coke Foundry, No. 2 | 17.00 to 17.50 |
| Northern Coke Foundry, No. 3 | 16.50 to 17.00 |
| Northern Scotch, No. 1 | 18.00 to 18.50 |
| Southern Coke, No. 1 | 16.35 to 16.85 |
| Southern Coke, No. 2 | 15.85 to 16.35 |
| Southern Coke, No. 3 | 15.35 to 15.85 |
| Southern Coke, No. 4 | 14.85 to 15.35 |
| Southern Coke, No. 1 Soft | 16.35 to 16.85 |
| Southern Coke, No. 2 Soft | 15.85 to 16.35 |
| Southern Gray Forge | 14.35 to 14.85 |
| Southern Mottled | 14.10 to 14.60 |
| Malleable Bessemer | 17.50 to 18.00 |
| Standard Bessemer | 18.40 to 18.90 |
| Jackson Co. and Kentucky Silvery, 6 % | 19.90 to 20.40 |
| Jackson Co. and Kentucky Silvery, 8 % | 20.90 to 21.40 |
| Jackson Co. and Kentucky Silvery, 10 % | 22.90 to 23.40 |

(*By Mail.*)

**Billets and Rods.**—No new demand has arisen and the market remains exceedingly quiet. A few small orders for Car Axles are heard of occasionally, but they are not significant of any special movement, being confined to incidental requirements that arise from time to time. Prices continue unchanged at $28.50, base, Chicago. On Wire Rods, for which there is a moderate demand, we quote: Bessemer, $33; Basic, $34; Chain, $33, all at Pittsburgh.

**Rails and Track Supplies.**—Except for a few small orders of inconsiderable size, no Rail orders are being entered nor are any inquiries reported that promise any improvement in this respect in the near future. The No. 1 Rail mill of the Illinois Steel Company rolling standard sections is still running at a moderate rate and will probably continue active throughout the month of August. Unless new additions of considerable size are added to specifications now in hand the mill will have them pretty well cleaned up before the end of August. A fair amount of business in Bolts, Spikes and Track Supplies is being entered, although the volume for the past week was hardly as great as in the two or three weeks preceding. Light Rails, on the other hand, have been coming out a little more freely of late, with the result that for the past 10 days the tonnage entered has been larger than for some time. Strong efforts are being made to steady Light Rail prices and these have been aided to some extent by the recent advances in Rerolling Steel Rails. Regular prices are still being cut, in competition with Rerolling mills, at least $3 or $4 a ton. We quote as follows: Angle Bars, accompanying Rail orders, 1908 delivery, 1.50c.; car lots, 1.60c.; Spikes, 1.80c. to 1.90c., according to delivery; Track Bolts, 2.20c. to 2.25c., base, Square Nuts, and 2.35c. to 2.40c., base, Hexagonal Nuts. The store prices on Track Supplies range from 0.15c. to 0.20c. above mill prices. Light Rails, 25 to 45 lb., $28; 20-lb., $29; 16-lb., $30; 12-lb., $31. Standard Sections, $28, f.o.b. mill, full freight to destination.

**Structural Material.**—Last week's market presented nothing more than a miscellaneous lot of small contracts to engage the attention of fabricators. An aggregate of 1400 tons booked by the American Bridge Company was entirely made up of such business, which included 700 tons of railroad bridge material distributed among three or four leading Western roads. While the business coming through fabricators is lacking somewhat, mill specifications have within the past few days shown a moderate increase. This is ascribed, in part, to the fact that fabricators who have delayed furnishing specifications on contracts placed some time ago until the last minute are now compelled to ask for shipment. Prices from store are 1.95c. to 2c. Mill prices at Chicago are as follows: Beams and Channels, 3 to 15 in., inclusive, 1.78c.; Angles, 3 to 6 in., ¼-in. and heavier, 1.78c.; larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 15 in., 1.88c.; Zees, 3 in. and over, 1.78c.; Tees, 3 in. and over, 1.83c.

**Plates.**—Neither the Universal nor the Sheared Plate mill at the Illinois Steel Company's South Works is running, and therefore the accumulation of specifications is very slow, since most of the orders received are for immediate shipment and must be transferred to Pittsburgh mills. The amount of tonnage being entered in such orders is very light, and can hardly be said to be increasing. Store shipments, however, show a better average this month than last, indicating that stocks in Plate using shops are low, and warehouse stocks are being relied upon to supply the small lots required for immediate use. Prices are reported to be evenly maintained except by a few smaller mills rolling narrow widths, which are occasionally willing to shade the market from $1 to $1.50 a ton. We quote mill shipments as follows: Tank Plates, ¼-in. and heavier, wider than 6¼ and up to 100 in. wide, inclusive, car lots, Chicago, 1.78c.; 3-16 in., 1.88c.; Nos. 7 and 8 gauge, 1.93c.; No. 9, 2.03c.; Flange quality, in widths up to 100 in., 1.88c., base, for ¼-in. and heavier, with the same advance for lighter weights; Sketch Plates, Tank quality, 1.88c.; Flange quality, 1.98c. Store prices on Plates are as follows: Tank Plates, ¼-in. and heavier up to 72-in. wide, 2c. to 2.10c.; from 72 to 96 in. wide, 2.10c. to 2.20c.; 3-16 in. up to 60 in. wide, 2.10c. to 2.25c.; 72 in. wide, 2.30c. to 2.40c; No 8, up to 60 in wide, 2.10c. to 2.15c.; Flange and Head quality, 0.25c. extra.

**Sheets.**—About all that can be said of the mill demand for Sheets is that it holds fairly even, with but little fluctuation either way. Galvanized and Black Roofing Sheets are in better demand than the heavier gauges. Jobbers report that thus far July business has shown a slow but steady gain over June; at the same time orders from both mill and store continue to be restricted to actual present needs, there being as yet no disposition to buy ahead. We are advised that regular mill and store prices are being generally observed, the chief exceptions being cuts of $1 to $1.50 a ton made by few of the smaller independent mills. We quote mill shipments as follows, Chicago: Blue Annealed, No. 10, 1.98c.; No. 12, 2.05c.; No. 14, 2.08c.; No. 16, 2.18c.; Box Annealed, Nos. 17 to 21, 2.43c.; Nos. 22 to 24, 2.48c.; Nos. 25 and 26, 2.53c.; No. 27, 2.58c.; No. 28, 2.68c.; No. 29, 2.78c.; No. 30, 2.88c.; Galvanized Sheets, Nos. 10 to 14, 2.63c.; Nos. 15 and 16, 2.83c.; Nos. 17 to 21, 2.98c.; Nos. 22 to 24, 3.13c.; Nos. 25 and 26, 3.33c.; No. 27, 3.53c.; No. 28, 3.73c.; No. 30, 4.23c.; Black Sheets from store: Blue Annealed, No. 10, 2.15c.; No. 12, 2.20c.; No. 14, 2.25c.; No. 16, 2.35c.; Box Annealed, Nos. 18 to 21, 2.60c.; Nos. 22 to 24, 2.65c.; No. 26, 2.70c.; No. 27, 2.75c.; No. 28, 2.85c.; No. 30, 3.25c.; Galvanized from store: Nos. 10 to 16, 3c.; Nos. 18 to 20, 3.15c.; Nos. 22 to 24, 3.30c.; No. 26, 3.50c.; No. 27, 3.70c.; No. 28, 3.90c.; No. 30, 4.40c. to 4.45c.

**Bars.**—But little tonnage has been added to the contracts already taken for Steel Bars. Specifications against these contracts have not begun to come in in any quantity, and until they do intermittent operations of the mills will continue to be the rule. The Sylvan Works of the Republic Iron & Steel Company started up this week with one or two trains of rolls, and the East Chicago plant is also running, but the Tudor Works at East St. Louis is still idle. The Bay View Works of the Illinois Steel Company has six mills on this week, and the Interstate Iron & Steel Company's East Chicago plant is in operation. The Inland Steel Company expects to start up its new continuous Merchant Bar mill and Sheet Bar mill this week. None of the mills that have been idle during the past three weeks has accumulated enough specifications to keep it going for more than a week or so at the most, but all are anticipating greater activity when the implement makers begin to call for material, as they are expected to do in the next 30 days. Prices continue without change, and are reported to be regularly held. Quotations, Chicago, are as follows: Steel Bars, 1.58c., with half extras; Iron Bars, 1.50c.; Hoops, No. 13 and lighter, 1.98c., full extra Hoop card; Bands, No. 12 gauge and heavier, 1.58c., half extra Steel Bar card; Soft Steel Angles and Shapes, 1.68c., half extras. Store prices are as follows: Bar Iron, 2c. to 2.15c.; Steel Bars, 1.90c. to 2c.; Steel Bands, 1.90c., as per Bar card, half extras; Soft Steel Hoops, 2.25c. to 2.35c., full extras.

**Merchant Pipe.**—Comparison of the orders entered in July shows that each week's business was slightly in excess of the preceding one, and while the improvement thus indicated is slow, it is nevertheless steady and progressive. No large purchases representing unusual requirements are included in this business, which consists principally of buying by the jobbing trade. These orders are more liberal in size,

although in no case do they go far ahead of current needs. Former prices are here repeated. The following mill discounts are quoted: Black Pipe, ¾ to 6 in., 73.2; 7 to 12 in., 70.2; Galvanized, ¾ to 6 in., 63.2. These discounts are subject to one point on the base. From store, in small lots, Chicago jobbers quote 73 per cent. on Black Steel Pipe, ¾ to 6 in. About three points above these prices is asked for Iron Pipe.

**Boiler Tubes.**—Work in boiler shops has not increased sufficiently to be reflected in an appreciably greater demand for Merchant Tubes. Only small lots are being asked for, and a considerable portion of this business is taken care of by jobbers. Inquiries for Locomotive Tubes are rather more plentiful, but no general buying movement, such as has been anticipated for some time, has developed. We are advised that regular prices are being maintained. Mill quotations for future delivery, on the base sizes, are as follows: 2¾ to 4½ in., inclusive, Steel Tubes, 63.2; Iron, 50.2; Seamless, 50.2; 2½ in. and smaller, and lengths over 18 ft., and 2½ in. and larger, and lengths over 22 ft., 10 per cent. extra. Store prices are as follows:

| | Steel. | Iron. | Seamless. |
|---|---|---|---|
| 1 to 1½ in. | 35 | 35 | 35 |
| 1¾ to 2¼ in. | 50 | 35 | 35 |
| 2½ in. | 52½ | 35 | 35 |
| 2¾ to 5 in. | 60 | 47½ | 47½ |
| 6 in. and larger | 50 | 35 | .. |

**Merchant Steel.**—Some contracts for miscellaneous shapes included under this head are still being taken and it is stated that specifications have within the past few days begun to come in. Orders from the jobbing trade are perhaps not more frequent, but they aggregate a little larger tonnage than through the month of June. We quote as follows: Cold Rolled Shafting, on contracts for 100 tons and over, 57 per cent. off; carloads, 56 per cent. off, and less than carloads, 52 per cent. off, on which carolad freight is allowed within base territory. Smooth Finished Machinery Steel, 1.80c. to 1.90c.; Flat Sleigh Shoe, 1.75c. to 1.85c.; Cutter Shoe Steel, 2.15c. to 2.25c.; Toe Calk, 1.90c. to 1.95c.; Railroad Spring Steel, 1.60c. to 1.75c., the higher price being for Pennsylvania Railroad analysis. Carriage Spring Steel is 1.80c.; Tire Steel, Iron finished, 1½ in. and wider, 1.40c.; under 1½ in., 1.55c. Planished Tire Steel is 1.60c., all f.o.b., at mill.

**Cast Iron Pipe.**—The United States Cast Iron Pipe & Foundry Company was last week awarded 600 tons by Springfield, Ohio; 500 tons by West Branch, Mich., and about 300 tons by Burlington, Wis. The 1000 tons up for letting at Milwaukee has not yet been awarded. The only lots reported on which figures are now being asked are 300 tons for Portsmouth, Ohio, and a similar amount for a small town in Nebraska. Prices on small Pipe from 4 to 6 in. are said to be a little firmer, some of the principal makers being fairly well supplied with orders for these sizes. We quote nominally, per net ton, Chicago, as follows: Water Pipe, 4 in., $27; 6 to 12 in., $26; 16-in. and up, $25, with $1 extra for Gas Pipe.

**Metals.**—A stronger sentiment has developed in the Metal market and is finding support in more liberal orders from manufacturers. Where users have been buying 1000 lb. at a time, they are now taking 2 or 3 tons. Copper prices are considerably firmer, with a strong tendency toward fractional advances. Tin is up 2c., and Lead has moved up slightly. Spelter and Antimony continue quiet, being as yet uninfluenced by the improved tone of the market. We quote as follows: Casting Copper, 13¼c.; Lake, 13½c. to 13¾c., in car lots for prompt shipment; small lots, ¼c. to ⅜c. higher; Pig Tin, car lots, 30c.; small lots, 32c.; Lead, Desilverized, 4.45c. to 4.50c.. for 50-ton lots; Corroding, 4.85c. to 4.95c., for 50-ton lots; in car lots, 2¼c. per 100 lb. higher; Spelter, 4.85c.; Cookson's Antimony, 10½c., and other grades, 9¾c. to 10¼c.; Sheet Zinc is $7, list, f.o.b. La Salle, in car lots of 600-lb. casks. On Old Metals we quote: Copper Wire, 12¾c.; Heavy Copper, 12¾c.; Copper Bottoms, 10⅝c.; Copper Clips, 11c.; Red Brass, 11½c.; Yellow Brass, 9¾c.; Light Brass, 6½c.; Lead Pipe, 4c.; Zinc, 3¾c.; Pewter, No. 1, 21c.; Tin Foil, 24c.; Block Tin Pipe, 27c.

**Old Material.**—Last week's offerings in the market developed material advances upon a number of important grades. There is a good demand for Rerolling Rails, which find a ready market at steadily advancing prices. A lot of 300 tons included in last week's railroad offerings brought $15.90, and a sale recently made topped $16. One of the local mills bought part of this tonnage, the remainder going to a dealer. There is more inquiry for Melting Steel and No. 1 Cast from consumers, on which some sales have been effected. A small lot of No. 1 Cast brought $13, and it is doubtful if any considerable quantity can be obtained below this price. Car Wheels, in which there has been nothing doing for some time, are beginning to show signs of activity. On a lot of fair tonnage recently offered by one of the railroads, around $14.25 was bid, which price it is understood was declined. Another lot of 300 tons is reported to have brought $14.60. Large quantities of Wheels, held speculatively by dealers and others, will not come on the market at anywhere near the present range of prices, being held for an advance that will yield a large profit. The appearance of more consumers in the market has, aside from the actual advance in prices, given it a decidedly firmer tone; but at the same time it is evident that the bulk of the trade is among the dealers themselves. We quote per gross ton, f.o.b. Chicago, as follows:

| | |
|---|---|
| Old Iron Rails | $16.50 to $17.00 |
| Old Steel Rails, rerolling | 15.50 to 16.00 |
| Old Steel Rails, less than 3 ft | 13.50 to 14.00 |
| Relaying Rails, standard sections, subject to inspection | 19.00 to 20.00 |
| Old Car Wheels | 14.50 to 15.00 |
| Heavy Melting Steel Scrap | 12.50 to 13.00 |
| Frogs, Switches and Guards, cut apart | 13.00 to 13.50 |
| Mixed Steel | 10.25 to 10.75 |

The following quotations are per net ton:

| | |
|---|---|
| Iron Fish Plates | $15.50 to $16.00 |
| Iron Car Axles | 17.50 to 18.00 |
| Steel Car Axles | 16.00 to 16.50 |
| No. 1 Railroad Wrought | 12.25 to 12.75 |
| No. 2 Railroad Wrought | 11.25 to 11.75 |
| Railway Springs | 12.25 to 12.75 |
| Locomotive Tires, smooth | 13.00 to 13.50 |
| No. 1 Dealers' Forge | 10.00 to 10.50 |
| Mixed Busheling | 7.50 to 8.00 |
| Iron Axle Turnings | 6.00 to 6.50 |
| Soft Steel Axle Turnings | 6.00 to 6.50 |
| Machine Shop Turnings | 6.00 to 6.50 |
| Cast Borings | 5.00 to 5.50 |
| Mixed Borings, &c | 5.00 to 5.50 |
| No. 1 Mill | 7.00 to 7.50 |
| No. 2 Mill | 6.00 to 6.50 |
| No. 1 Boilers, cut to Sheets and Rings | 9.50 to 10.00 |
| No. 1 Cast Scrap | 12.50 to 13.00 |
| Stove Plate and Light Cast Scrap | 10.75 to 11.25 |
| Railroad Malleable | 11.75 to 12.25 |
| Agricultural Malleable | 10.75 to 11.25 |
| Pipes and Flues | 9.50 to 10.00 |

Rogers, Brown & Co., 1515-1535 Corn Exchange Bank Building, Chicago, are now prepared to furnish high grade smithing and forging Coals, the sale of which is under the management of the Coke department.

## Philadelphia.

PHILADELPHIA, PA., July 28, 1908.

Buying, with a few exceptions, has been light in all departments, although the trade continues to express optimistic opinions regarding the future. Not a great deal of business is expected to come out the coming month, but it is believed that by September more activity will develop in nearly every branch of the trade. Buyers in many cases are withholding business, pending some movement on the part of the railroads, and it is the general opinion that as soon as those interests begin to come into the market a pretty general resumption in the Iron and Steel trades can be expected.

**Pig Iron.**—The market has been rather inactive, although inquiries, particularly for Foundry Iron in small lots and for early shipment, have been somewhat more numerous. The larger consumers have covered their requirements pretty fully, as far as the third quarter is concerned, and are now in the market for Iron for the fourth quarter, and even more extended delivery. Sellers in most cases, however, are not disposed to take on orders for extended forward shipment at to-day's prices. The market, notwithstanding the immediate absence of any large volume of business, continues strong, and price concessions for good tonnages for either prompt or last half deliveries are becoming scarce. In a number of instances furnaces are pretty well booked up for the next 60 days, and unless they can take business at an advance over to-day's prices for delivery beyond that period, prefer to take their chances on a higher price, due to an expected better demand later in the year. Sales of Foundry Iron during the week do not aggregate a large tonnage. The bulk of the business has been in small lots for fairly prompt shipment, running from carloads up to a few hundred tons, at prices ranging from $16.50 to $17, delivered, for No. 2X Foundry. There are a number of inquiries out for larger tonnages for fourth quarter shipment, but these do not close promptly, sellers usually asking $16.75 to $17.25, delivered, for standard No. 2X Iron for such delivery, but they are not forcing business. The Pipe makers are in the market for some low grade Iron, but sellers have not yet met their ideas regarding price. Southern Foundry Iron has been dull. The majority of sellers hold No. 2 Foundry at $12, Birmingham, and although $11.50 could be done in some instances, the business transacted has been light. Virginia Irons have not been active. Sales of No. 2X Foundry Iron have been reported in lots up to 100 tons at $17, delivered, for prompt shipment, while small lots of the same grade for September and October delivery have sold at prices equal to $17.25, delivered here. For fourth quarter, sellers hold Virginia No. 2X at $17.25 to $17.75, delivered. Some little tonnage of both No. 2X and No. 2 Plain Virginia Irons is reported as having been sold recently, for New England delivery, at full prices. There has been a little more inquiry for Forge Iron, but this grade is somewhat scarce, as furnaces are not disposed to make it at the prevailing price. Practically all of the Steel mills have now covered for their Basic Iron requirements for the third quarter, but several are in the market for fourth quarter Iron. But one sale of any consequence

was made the past week, that being a lot of 12,000 tons of Basic for delivery in the last four months of the year, at terms of a somewhat private nature, although the price is believed to have been pretty close to $15, delivered. Several inquiries which aggregate a pretty fair tonnage of Low Phosphorus Iron are before the trade, but sellers are firm on prices, and buyers do not seem inclined to place the business at the ruling quotations. Prices are being pretty firmly maintained, notwithstanding the quiet demand which is largely attributed to the usual summer inactivity of the trade. Quotations for deliveries during the third quarter are unchanged, and range as follows for standard grades, delivered in buyers' yards, eastern Pennsylvania and nearby territory, while for strictly fourth quarter delivery an advance of about 50c. a ton rules, dependent on grade and tonnage:

| | |
|---|---|
| Eastern Pennsylvania, No. 2 X Foundry | $16.50 to $17.00 |
| Eastern Pennsylvania, No. 2 Plain | 16.00 to 16.50 |
| Virginia, No. 2 X Foundry | 17.00 |
| Virginia, No. 2 Plain | 16.50 to 16.75 |
| Gray Forge | 15.00 to 15.50 |
| Basic | 15.00 to 15.25 |
| Low Phosphorus | 21.00 to 21.25 |

**Ferromanganese.**—There has been practically no demand. Some sellers still quote $46, seaboard, for deliveries over the last half of the year. Others have made offerings as low as $43, Baltimore, for prompt business, but no orders have come out.

**Steel.**—A little better inquiry is to be noted. The Alan Wood Iron & Steel Company has enough business in hand to warrant the starting of three open hearth furnaces at its Ivy Rock plant this week, which has been idle for the past six weeks. The demand continues irregular, and orders received are almost entirely for prompt shipment. Prices are firm and unchanged, ordinary Rolling Steel being quoted for delivery in this territory at $26.20, with Forging Steel at $28.20, subject to the usual extras for high carbons and special sizes.

**Plates.**—Orders have been somewhat irregular, and with some mills do not aggregate as large a tonnage as was taken the previous week. Mills maintain a fairly even rate of production and have in some cases added to their melting capacity. No heavy inquiries have come out recently, although several fair propositions are being figured on. Some railroad and locomotive orders have been placed during the week, and one mill booked an order for 600 tons of Tank Steel. Practically all the orders placed have been for prompt shipment. Prices are being well maintained and range as follows for delivery in this territory:

| | Carloads. Cents. | Parts carload. Cents. |
|---|---|---|
| Tank, Bridge and Boat Steel | 1.75 | 1.80 |
| Flange or Boiler Steel | 1.85 | 1.95 |
| Commercial Firebox | 1.95 | 2.00 |
| Marine | 2.15 | 2.20 |
| Locomotive Firebox Steel | 2.25 | 2.30 |

The above are base prices for ¼-in. and heavier. The following extras apply:

| | Extra per 100 lb. |
|---|---|
| 3-16-in. thick | $0.10 |
| Nos. 7 and 8, B. W. G. | .15 |
| No. 9, B. W. G. | .25 |
| Plates over 100 to 110 in. | .05 |
| Plates over 110 to 115 in. | .10 |
| Plates over 115 to 120 in. | .15 |
| Plates over 120 to 125 in. | .25 |
| Plates over 125 to 130 in. | .50 |
| Plates over 130 in. | 1.00 |

**Structural Material.**—A slight improvement is to be noted in the demand. The majority of the recent orders have been small, although there was one placed for a Southern railroad bridge which will take about 700 tons. Some larger building and bridge work is in sight, but these are not expected to develop rapidly. Current business is largely of a miscellaneous character, and while gains in production have been made by some mills, the amount is small. Prices are unchanged, 1.75c. to 1.90c. being quoted, according to specification for delivery in this territory.

**Sheets.**—A fair volume of business continues to come out and mills have been able to continue in operation at full time. Orders, however, are practically all for prompt shipment, so that mills have but little business ahead and are dependent on current orders to maintain their present output. Quotations are named as follows for mill shipments, a tenth extra being added for small lots: Nos. 18 to 20, 2:50c.; Nos. 22 to 24, 2.60c.; Nos. 25 to 26, 2.70c.; No. 27, 2.80c.; No. 28, 2.90c.

**Bars.**—Some little improvement has occurred in the demand for Refined Iron Bars. Consumers show more tendency to take larger tonnages, and some mills have booked fair sized orders for early shipment. Prices are stronger and mills which have heretofore been willing to accept desirable business at low figures have advanced their prices so that quotations for delivery in this territory range from 1.35c. to 1.45c. Steel Bars are dull and quoted at 1.55c., delivered in this vicinity, with Re-rolled Bars at 1.50c.

**Coke.**—Sales of Coke have been light. Such business as has been placed has been for small tonnages for early delivery, with a few small contracts for delivery the last half of the year. Quotations at oven for Foundry Coke range from $2.15 to $2.35, with Furnace Coke at $1.50 to $1.75. For delivery in this territory the following range of prices is quoted:

| | |
|---|---|
| Connellsville Furnace Coke | $3.65 to $3.90 |
| Foundry Coke | 4.30 to 4.50 |
| Mountain Furnace Coke | 3.25 to 3.50 |
| Foundry Coke | 3.90 to 4.10 |

**Old Material.**—The market continues strong, but inactive. Actual business transacted has been small, but the market continues to gain sentimental strength. Steel melters are not inclined to come into the market at present prices, while sellers would not dispose of any heavy tonnages at today's quotations. While some mills will pay $14, delivered, for Heavy Melting Steel Scrap, dealers in some cases are reported to have paid as high as $14.50, and a number of sellers report that they would not dispose of their Heavy Steel at $15, delivered. The rolling mills are buying Scrap suitable for their use somewhat more freely, but in small lots, as any heavy demand would no doubt result in a sharp advance in the price. Quotations on some grades have advanced on moderate sized sales; others are unchanged, and we quote nominally as follows for deliveries in buyers' yards, eastern Pennsylvania and adjoining territory:

| | |
|---|---|
| No. 1 Steel Scrap and Crops | $14.00 to $14.50 |
| Low Phosphorus | 18.00 to 18.50 |
| Old Steel Axles | 18.50 to 19.00 |
| Old Iron Axles | 22.00 to 22.50 |
| Old Iron Rails | 18.00 to 18.50 |
| Old Car Wheels | 13.50 to 14.00 |
| Choice No. 1 R. R. Wrought | 16.50 to 17.00 |
| Machinery Cast | 14.00 to 14.50 |
| Railroad Malleable | 12.00 to 12.50 |
| Wrought Iron Pipe | 13.00 to 13.50 |
| New Bundled Sheets | 12.00 to 12.50 |
| No. 1 Forge Fire Scrap | 11.50 to 12.00 |
| No. 2 Light Iron | 7.50 to 8.00 |
| Wrought Turnings | 10.00 to 10.50 |
| Stove Plate | 11.50 to 12.00 |
| Cast Borings | 9.00 to 9.50 |
| Grate Bars | 12.00 to 12.50 |

## Cincinnati.

CINCINNATI, OHIO, July 29, 1908.—(*By Telegraph.*)

Taking into consideration the entire range of Iron and Steel products, the local situation presents an improvement over last week. There has been an improvement in both buying and in inquiries among the machinery men, and sales of Iron during the week have been quite satisfactory, particularly of Foundry Irons. A number of idle plants in the vicinity have started up, although on short time and with limited forces, and others which were kept going more to retain the shop organization than anything else have added some men and are working on orders. The resumption of operations at several Steel mills has stimulated the Scrap markets to a show of activity, and prices as a rule on Melting Scrap have been advanced from 50c. to $1 a ton, with consumers usually holding off for the minimum quotations earlier in the year.

**Pig Iron.**—Many melters of Iron are feeling the market for next year's prices, but the furnace people generally are loath to talk 1909 business on Pig Iron. Foundry Irons have led in importance the past week, and some good sized sales have been negotiated, but for the most part quietly and directly with the furnaces. Contracts read "for the balance of the year," and in some cases, where a special price was made, conditionally extend to next year. Ideas of all sellers are for considerably higher Iron on next year's deliveries than are quotable for any period this year. Charcoal Irons are getting some attention, and illustrating the ideas of furnaces making this grade a quotation of $30, at furnace, for next year's delivery is significant. The stove makers have bought some Iron during the week, Michigan concerns usually taking the product of local furnaces. An Ohio melter bought 200 tons of High Silicon off Iron, running 4 to 5 per cent. and over 0.05 in sulphur, and some Southern Foundry Iron at a price understood to be slightly under market quotations. A closely contested sale to an Ohio car manufacturer was of 2500 tons of Malleable, 1200 tons of Lake Superior Charcoal and 1000 tons of low grade Northern Foundry. The greater part of this is accredited to a Central Ohio furnace interest, the Malleable at about $14.75, Ironton, with a differential of about $1 on the Forge, which was on an analysis basis. Another car manufacturing company, which was in the market for 1000 tons of Foundry Iron and 500 tons of Forge for delivery at its Detroit shops, is said to have taken the tonnage desired from nearby furnace interests. The inquiry for Steel making Irons from an Ohio melter is said to have resulted in the purchase of between 2000 and 3000 tons from a nearby furnace, which has an advantage of 40c. in freight rate. Ohio Silveries are still quotable on a basis of $18.50 for 8 per cent. Malleable is nominally $15, Northern furnace, while Southern Foundry Iron is still quoted at $11.50, Birmingham, for No. 2. A number of large interests are holding for $12, and such sales as are negotiated at the lower price are carefully guarded. Differentiating between the two in this market, Northern Iron is weaker at the $15 price, and Southern stronger at the $11.50 quotation. Selling agencies are in receipt of a number of orders calling for tonnages in the

two to four and five carload class. Among these for larger shipments is an inquiry from the South for 2500 tons of Southern Foundry grades for the fourth quarter, and another from a Chicago concern for 250 tons of No. 2 Foundry for the third quarter. The local inquiry from one of the new foundries which was originally for 800 tons, and has in the meantime increased to something like 2000 tons, is still open, but is likely to be closed this month. For immediate delivery and to the close of the third quarter we quote f.o.b. Cincinnati, as follows, freight rates being $3.25 from Birmingham and $1.20 from the Hanging Rock District:

| | |
|---|---|
| Southern Coke, No. 1 | $15.25 to $15.75 |
| Southern Coke, No. 2 | 14.75 to 15.25 |
| Southern Coke, No. 3 | 14.25 to 14.75 |
| Southern Coke, No. 4 | 14.00 to 14.50 |
| Southern Coke, No. 1 Soft | 15.25 to 15.75 |
| Southern Coke, No. 2 Soft | 14.75 to 15.25 |
| Southern Coke, Gray Forge | 13.75 to 14.25 |
| Ohio Silvery, 8 per cent. Silicon | 19.70 |
| Lake Superior Coke, No. 1 | 16.70 to 17.20 |
| Lake Superior Coke, No. 2 | 16.20 to 16.70 |
| Lake Superior Coke, No. 3 | 15.70 to 16.20 |
| Standard Southern Car Wheel | 22.25 to 22.75 |
| Lake Superior Car Wheel | 21.75 to 22.25 |

(*By Mail.*)

**Coke.**—There is little change in the Coke market save some stiffening in price of the Virginia Furnace product, because of the labor difficulties in Alabama. While it was possible a week ago to buy the best grades at around $1.65, at oven, it is difficult to get a better price than $1.75 today. Virginia Foundry grades on contract bring about $2.25. Connellsville spot Foundry is obtainable on occasions at about $2, but for forward deliveries nothing better than $2.25 is heard. The Pocahontas spot market shows the greatest weakness, and some exceedingly low prices are named to move the product. On contract the price is $1.75 to $1.85, at oven.

**Finished Iron and Steel.**—Consumers who are wont to patronize the retail stores are still buying from hand to mouth, about the only difference being that these little orders are more frequent and specifications for forwarding more urgent. Orders for shipment of small lots by express are not infrequent here. Structural Iron and Steel are forging a little ahead, there being some very good specifications received, mainly from the South. Iron Bars are dull here, and nothing much in the way of improvement is expected before September. No change is to be noted in prices, dealers quoting as follows, f.o.b., Cincinnati: Iron Bars, carload lots, 1.65c., base, with half extras; small lots from store, 1.85c., base, half extras; Steel Plates, carload lots, 1.75c., base, with half extras; small lots from store, 1.85c., base, half extras; Base Angles, carload lots, 1.85c., base; small lots from store, 2.10c.; Beams, Channels and Structural Angles, 1.85c., base; small lots from store, 2.10c.; Plates, ¼-in. and heavier, carload lots, 1.85c.; small lots from store, 2c.; Blue Annealed, Sheets, heavy, No. 16, carload lots, 2.15c.; small lots from store, 2.50c.; No. 14, carload lots, 2.05c.; small lots from store, 2.40c.; No. 10, and heavier, carload lots, 1.95c.; small lots from store, 2.20c.; No. 12, carload lots, 2c.; small lots from store, 2.30c.; Sheets (Light), Black, No. 28, carload lots, 2.65c.; Galvanized Sheets, No. 28, carload lots, 3.70c.; Steel Tire, 4-in. and heavier, carload lots, 1.95c.; Plates, 3-16 and No. 8, carload lots, 2c.; small lots from store, 2.20c.

**Old Material.**—It is quite apparent that the market on Scrap used by the mills is in control of the large dealers here. Some good prices are heard of in connection with peremptory orders from the mills, and from 25c. to 50c. increase is asked over a week ago, all along the line. The feature of this market seems to be the frequent demand for deliveries on short sales. One local interest which is now on triple turn, and running all 10 Sheet mills, has purchased in this market 10,000 tons of Heavy Melting Steel Scrap since January 1. There has been some interest shown during the week in Relayers, a lot sold by railroads in Indiana bringing $17.75, gross ton, f.o.b. cars at loading point. It is reported here that some of the larger roads in this section have rejected all bids on Scrap, not being willing to move it under $15 in their own yards. Dealers' prices, f.o.b. cars Cincinnati, are about as follows:

| | |
|---|---|
| No. 1 R. R. Wrought, net ton | $10.50 to $11.50 |
| Cast Borings, net ton | 4.50 to 5.50 |
| Heavy Melting Steel Scrap, gross ton | 11.00 to 12.00 |
| Steel Turnings, net ton | 5.50 to 6.50 |
| No. 1 Cast Scrap, net ton | 10.50 to 11.50 |
| Burnt Cast and Wrought, net ton | 8.00 to 9.00 |
| Old Iron Axles, net ton | 14.50 to 15.50 |
| Old Iron Rails, gross ton | 13.00 to 14.00 |
| Old Steel Rails, long, gross ton | 11.00 to 12.00 |
| Old Steel Rails, short, gross ton | 11.00 to 12.00 |
| Relaying Rails, 56 lb. and up, gross ton | 19.00 to 20.00 |
| Old Car Wheels, gross ton | 12.50 to 13.00 |
| Low Phosphorus Scrap, gross ton | 13.00 to 14.00 |
| Stove Plate, net ton | 9.25 to 10.25 |

The National Tube Company is erecting a two-story hospital at its National Works at McKeesport, Pa. An electric ambulance will be used to convey injured employees to the new hospital.

## Birmingham.

BIRMINGHAM, ALA., July 27, 1908.

**Pig Iron.**—A comparison of statistics relative to the rate of production, stock on furnace yards and the output shows the market to be on a firmer basis, but the volume of business to develop, according to present indications, does not afford foundation upon which the continuation of such conditions can be anticipated. The threatened shortage of fuel for furnace operation, however, is a feature not to be overlooked, which is evinced by the conservative course pursued by producers generally as to commitments. Within the past week some quotations have been lowered, but prices have not suffered a further decline. The revision in quotations is not general, and the basis of $11.50 to $12, which is considered the market price for prompt deliveries and the remainder of the third quarter, could be had probably of only one concern. Of the business offered lots of 100 to 200 tons each were the largest considerations. The sale of 100 tons of No. 3 Foundry for immediate shipment is reported at $11.50 per ton, Birmingham. An inquiry for quotations on 2500 tons each of Nos. 2 and 3 Foundry for delivery covering the remainder of the year is pending. No quotations on last quarter deliveries are reported at lower figures than $12 for No. 2, although a departure from this basis could no doubt be effected for the last half. An inquiry for 1000 tons to be delivered during the first quarter of 1909 did not elicit a quotation from one concern, and it is believed that other interests would make nominal quotation on such business. There has been no perceptible check in the movement from furnace yards. The melt is temporarily diminished by the suspension of operations at some foundries, but in most cases shipment as specified is being urged, with an occasional request that tonnage for delivery further advanced be included.

**Cast Iron Pipe.**—The market has been very quiet. Some orders of significance have been placed with Eastern concerns, but transactions reported by Southern interests are without an index to the status of prices. On small orders recently placed, which are attractive in the aggregate, quotations have been maintained. To the list of lettings for the near future a contract for the city of Wahoo, Neb., which is to be placed August 3, is added. It is learned that all former bids were rejected. The United States Cast Iron Pipe & Foundry Company was recently awarded contract for Gas Pipe to be furnished the city of Los Angeles, Cal. A contract covering Gas Pipe for New Orleans, La., was to have been placed July 25. The American Car & Foundry Company was the lowest bidder on Water Pipe for the city of Milwaukee, Wis. We quote Water Pipe as follows, per net ton, f.o.b. cars here: 4 to 6 in., $23; 8 to 12 in., $22; over 12-in., average $21, with $1 per ton extra for Gas Pipe.

**Old Material.**—The improvement in sentiment recently noted in this market has been maintained. A demand has developed for Cast Scrap and sales have been effected at an advance of 50c. per ton. The aggregate of other grades being moved is in excess of previous reports, without revision of prices. We quote as follows, per gross ton, f.o.b. cars here:

| | |
|---|---|
| Old Iron Rails | $14.50 to $15.00 |
| Old Iron Axles | 14.00 to 14.50 |
| Old Steel Axles | 12.50 to 13.00 |
| No. 1 Railroad Wrought | 13.00 to 13.50 |
| No. 2 Railroad Wrought | 9.00 to 10.00 |
| No. 1 Country Wrought | 10.50 to 11.00 |
| No. 2 Country Wrought | 9.00 to 9.50 |
| No. 1 Machinery | 10.00 to 10.50 |
| No. 1 Steel | 9.50 to 10.50 |
| Wrought Pipe and Flues | 8.50 to 9.00 |
| Light Cast and Stove Plate | 8.50 to 9.00 |
| Cast Borings | 5.00 to 5.50 |

## St. Louis.

ST. LOUIS, July 27, 1908.

The situation in general business shows a steady though moderate improvement, with a confident feeling that as fall approaches the volume of trade will increase more rapidly. The banks have regained the cash which had been withdrawn, and now have within 4 to 5 per cent. of the total of the corresponding time last year. The feature in Pig Iron is liberal specifications on contracts, together with requests for tracing shipments. Orders for Finished Iron also are coupled with urgent requests for immediate shipment. While there are no large orders, the fact that quick delivery is wanted shows a lack of stock on hand. Relaying Rails are in good demand, with small stocks in dealers' hands. Some new industrial plants are being built within the city limits, the larger being a wagon factory.

**Coke.**—A fair inquiry is noted for Coke. Absence from town on vacations is the occasion of some large buyers being temporarily out of the market. Prices remain unchanged, and range from $2.15 to $2.50, f.o.b. ovens, Connellsville, for 72-hr., according to quality and time of shipment. For deferred shipment, $2.25 is quoted as bottom. In general, the situation is regarded as quite satisfactory, and the outlook for an increased demand from foundrymen is good.

**Pig Iron.**—The market is not active for new business, though continued interest is indicated by consumers, since numerous inquiries are out for moderate quantities. One house reports an inquiry for 500 tons No. 4 Foundry August-December shipment. A marked feature is the fact that inquiries cover all kinds of Iron, showing a broadening of the market. A leading house states, in the aggregate it has received inquiries for the week for 1200 tons. No. 1 Southern Soft is so scarce that it likely might command more than the usual difference where a furnace could furnish it for early delivery. While we hear of some sales below the prevailing price of $12, Birmingham, the large companies are understood to refuse to sell at less, with some asking a higher figure, and a very confident feeling seems to prevail among buyers regarding the outlook. Specifications for shipments on contracts are fairly liberal.

**Finished Iron and Steel.**—In Structural Steel sales are at present confined to numerous small lots, for city and outside territory. A quite active demand for Steel for large contracts is assured for the coming month. Orders for special lots of Bars, Plates, Light Angles and Tees are being received from several railroads for quick shipment, and the present month has shown quite an increase in inquiry over any month of the current year.

**Lead and Spelter.**—Some improvement is seen in Spelter, which has advanced to 4.50c. For Lead, 4.40c. is asked. Zinc Ore is strong, at $33.50 to $34 per ton. Lead Ore is firm, at $59 to $60 per ton. It is reported that production at Joplin may be further curtailed, with the effect of stiffening the market. Some disposition is noted toward speculative buying of Lead and Spelter. Stocks of Spelter are not heavy. Business in the metals market has been more active than last month.

**Old Material.**—While considerable activity continues, it is mainly speculative, with transactions principally confined to dealers. Prices, however, are ruling firm, and dealers seem to find confidence gaining ground for a somewhat better demand from the mills in the near future. No important offerings are being made this week by the railroads. The stock of Relaying Rails is pretty well cleaned up, with further inquiry for supplies. We quote dealers' prices, per gross ton, f.o.b. cars, St. Louis, as follows:

| | |
|---|---|
| Old Iron Rails | $14.50 to $15.00 |
| Old Steel Rails, rerolling | 13.50 to 13.75 |
| Old Steel Rails, less than 3 ft | 13.00 to 13.50 |
| Relaying Rails, standard sections, subject to inspection | 22.50 to 23.50 |
| Old Car Wheels | 12.50 to 13.50 |
| Heavy Melting Steel Scrap | 12.50 to 13.00 |
| Frogs, Switches and Guards, cut apart | 13.00 to 13.50 |
| Mixed Steel | 9.00 to 9.50 |

The following quotations are per net ton:

| | |
|---|---|
| Iron Fish Plates | $12.50 to $13.00 |
| Iron Car Axles | 16.00 to 16.50 |
| No. 1 Railroad Wrought | 12.25 to 12.50 |
| No. 2 Railroad Wrought | 11.25 to 11.50 |
| Railway Springs | 10.50 to 11.50 |
| Locomotive Tires, smooth | 12.00 to 12.50 |
| No. 1 Dealers' Forge | 9.50 to 10.00 |
| Mixed Borings | 4.00 to 4.50 |
| Machine Shop Turnings | 7.00 to 7.50 |
| No. 1 Boilers, cut to Sheets and Rings | 7.00 to 8.00 |
| No. 1 Cast Scrap | 11.00 to 11.50 |
| Stove Plate and Light Cast Scrap | 9.00 to 9.50 |
| Railroad Malleable | 9.50 to 10.00 |
| Agricultural Malleable | 9.00 to 9.50 |
| Pipes and Flues | 8.00 to 8.50 |

The St. Louis Car Wheel Company reports a somewhat better demand since the first of the present month.

## Cleveland.

CLEVELAND, OHIO, July 28, 1908.

**Iron Ore.**—The market is lifeless, with no indications of an improvement in the next few weeks. An occasional sale of a small lot is being made, but the majority of consumers are not ready to buy, and the Merchant Ore firms are not doing much in trying to close contracts. The movement of Ore down the lakes is not increasing to any extent, and it is estimated that the July shipments will not be much over 3,000,000 tons, or only about 500,000 tons larger than in June. The total shipments until August 1 will be only about 6,000,000 tons, or between 11,000,000 and 12,000,000 tons less than last year. The vessel situation shows no improvement. In fact, some of the vesselmen declare that it is as bad as it has been at any time during the season. More than one-half of the wild vessel tonnage is idle, and there are no cargoes, for many of the boats operated by shippers. Some of the boats that are now being operated will be laid up as soon as they reach their docks. The first Ore cargo shipped to the Steel Corporation's plant at Gary, Ind., reached that harbor July 23. The operation of that plant, together with an increase in the Ore shipments to Indiana Harbor, is expected to result in considerable change in the lake Ore traffic the next year or two, a large volume of the tonnage that is now coming to Lake Erie ports being then diverted to the new ports on Lake Michigan. The stockpiles of Ore on Lake Erie docks are not being reduced rapidly, shipments to the furnaces still being light. Ore prices at Lake Erie docks, per gross ton, are as follows: Old Range Bessemer, $4.50; Mesaba Bessemer, $4.25; Old Range non-Bessemer, $3.70; Mesaba non-Bessemer, $3.50.

**Pig Iron.**—The market continues quiet. The sales during the week were limited to a 1000-ton lot of No. 2 Northern to a foundry interest, and a few other lots ranging from 100 to 400 tons. Inquiries from the East show considerable improvement. In the past few days a local interest has received a number of such inquiries, ranging from car lots to 4000 and 6000 tons. Some of the larger inquiries were both for the last half of this and the first half of next year. It is the belief that they were not for the purpose of merely testing the market, but that contracts will be placed. The market is not particularly firm, but prices are about stationary. We quote No. 2 Northern Foundry at $14.75 to $15, Valley furnace, for spot and last half delivery. The market is not as firm for spot Iron as for contracts for the balance of the year. Local furnaces quote No. 2 Foundry at $15, for outside shipment, and about $15.50, delivered, Cleveland. A slight improvement is seen in the demand for car lots in this territory. Shipping orders on Foundry Iron are somewhat better, and the tonnage taken in July will be considerably larger than in June. Outside of Foundry Iron the market is lifeless, there being no inquiries for Bessemer, and few for Basic, Malleable, or Southern Iron. For prompt shipment and for the balance of the year we quote, delivered, Cleveland, as follows:

| | |
|---|---|
| Bessemer | $16.90 |
| Northern Foundry, No. 1 | $15.75 to 16.25 |
| Northern Foundry, No. 2 | 15.40 to 15.75 |
| Northern Foundry, No. 3 | 15.00 to 15.40 |
| Southern Foundry, No. 2 | 15.85 to 16.35 |
| Gray Forge | 14.90 |

**Coke.**—The market is quiet, with scarcely any inquiry for either Furnace or Foundry grades. Prices remain about stationary. We quote Connellsville Furnace Coke for the last half delivery at $1.75 to $1.90, at oven. Foundry Coke is $2.25, at oven, for the last half, and $2.15 for spot shipment.

**Finished Iron and Steel.**—All mills report a decided improvement in orders. The actual tonnage in specifications placed on the books by the local representative of a leading interest during the week was nearly double that of any previous week this year. The orders include about everything in the line of Finished Material, but the bulk is for Steel Bars, Plates and Structural Shapes. The majority of the orders are for quick shipment. The increase in the demand is attributed partly to the fact that consumers have been holding off in placing orders until after their July inventories were completed, and it is not expected that the pace that was thus set will be kept up, but there are, nevertheless, a number of encouraging features about the market. Good sized specifications for Bars have been received from the implement makers. The good crop prospects make the business outlook very satisfactory for the implement manufacturers. The demand for Plates shows a steady improvement, and some of the week's orders have come from boiler makers, who had been out of the market for some time. Good Plate orders have also come from bridge builders and Structural shops. Bar Iron is about the only material in which there is no improvement in the volume of orders, the demand for Iron Bars still being light. It is expected that the Union and Empire rolling mills of this city, which have been shut down for about a month, will start up August 3, although with a limited tonnage on their order books. No new Structural work requiring a large tonnage is in sight, but some good specifications were received from local shops that have a fair amount of small work on hand. There is an improvement in inquiries for car lots of Light Rails from Coal mining companies. Some improvement is noted in railroad orders for Track Supplies. A local forge company is figuring on a contract for 1200 Car Axles and has an inquiry out for Billets. Some new contracts for Steel Bars, Shafting and Tires were closed. Local Bolt makers report some improvement in export orders, but domestic orders are still light and prices are weak. Prices in Finished lines are being firmly maintained, except on Sheets and Plates. One or two Plate mills are reported to be shading prices at least $2 a ton, but the majority of the mills are getting orders at the regular price. Warehouse business is still quiet. We quote Iron Bars at 1.45c., Cleveland, for car lots; Steel Bars, 1.50c., Cleveland, for car lots, half extras; Beams and Channels, 1.70c., base, Cleveland, and Plates, ¼-in. and heavier, 1.70c., Cleveland. We quote Sheets, mill shipments, car lots, Cleveland, as follows: Blue Annealed, No. 10, 1.90c.; Box Annealed, No. 28, 2.60c.; Galvanized, No. 28, 3.65c. Jobbers quote Iron and Steel Bars out of stock at 1.65c. to 1.70c. Beams and Channels out of stock are 2c., and Plates, ¼-in. and heavier, 1.90c. Warehouse prices on Sheets are as follows: Blue Annealed, No. 10, 2.10c.; Box Annealed, No. 28, 2.70c.; Galvanized, No. 28, 3.80c. Warehouse prices on Boiler Tubes, 2¾ to 5 in., are 64 per cent. discount, and on Black Merchant Iron Pipe, base sizes, 71 per cent. discount.

**Old Material.**—The market continues strong. Prices are about stationary except on Old Steel and Old Iron Rails, which are firmer. Dealers are still unwilling to sell, holding off for higher prices. The actual demand shows little im-

provement, although inquiries are slightly better for some kinds of Scrap. The activity during the week was mostly among dealers who had sold Steel Scrap short and were seeking to cover. The local rolling mills are still idle and are not in the market at present. An improvement is felt in the demand for Cast Scrap from foundries. A good demand for Turnings is reported, but the supply is scarce. Dealers' prices to the trade, per gross ton, f.o.b., Cleveland, are as follows:

| | |
|---|---|
| Old Steel Rails | $14.00 to $14.50 |
| Old Iron Rails | 16.00 to 16.50 |
| Steel Car Axles | 17.50 to 18.00 |
| Old Car Wheels | 14.50 to 15.00 |
| Relaying Rails, 50 lb. and over | 22.00 to 23.00 |
| Heavy Melting Steel | 13.50 to 14.00 |
| Railroad Malleable | 12.00 to 12.50 |
| Agricultural Malleable | 11.00 to 11.50 |
| Light Bundled Sheet Scrap | 8.00 to 9.00 |

The following quotations are per net ton, f.o.b. Cleveland:

| | |
|---|---|
| Iron Car Axles | $16.00 to $16.50 |
| Cast Borings | 6.00 to 6.50 |
| Iron and Steel Turnings and Drillings | 7.50 to 8.00 |
| Steel Axle Turnings | 8.50 to 9.00 |
| No. 1 Busheling | 11.50 to 12.00 |
| No. 1 Railroad Wrought | 13.00 to 13.50 |
| No. 1 Cast | 12.50 to 13.00 |
| Stove Plate | 10.00 to 10.50 |
| Bundled Tin Scrap | 8.00 to 9.00 |

## Pittsburgh.

PARK BUILDING, July 29, 1908.—(*By Telegraph.*)

**Pig Iron.**—Inquiries are decidedly better, and in the past week a moderate tonnage has been sold. Some large consumers are feeling the market for their supplies for the balance of this year, but their ideas and those of the furnaces as to prices are as yet too far apart. The Standard Sanitary Mfg. Company is in the market for nearly 8000 tons of Foundry Iron, of which about 3500 is Southern, 500 Virginia, and about 4000 Northern. In the Mahoning and Shenango valleys the Youngstown Steel Company has blown out its Tod Furnace; Shenango Furnace Company has Nos. 1, 3 and 4 stacks in blast, but will blow out No. 4 early in August; Stewart Iron Company has one stack on Bessemer; Andrews & Hitchcock have one stack on Foundry; Dover, of M. A. Hanna & Co., is running on Foundry; Struthers is running on Basic, and United Iron & Steel Company has two stacks running on Bessemer and Basic; Ella Furnace, of Pickands, Mather & Co., will likely blow in this week. We quote Sand Cast Bessemer Iron at $15.65, Basic, at $15; Malleable Bessemer, at $15; No. 2 Foundry, at $14.50 to $14.75, and Gray Forge, at $14, all at Valley furnace, the freight rate to Pittsburgh being 90c. a ton. We note sales of 600 tons of Malleable Bessemer at $15; 500 tons of Standard Bessemer at $15.75, and 300 tons of Standard Bessemer at $15.65, all at Valley furnace. The output of the Mahoning and Shenango valleys is now running about 12,000 tons per week, and shipments are about the same amount. Stocks are reported to be about 51,000 tons.

**Steel.**—We note moderate sales of Billets and Sheet and Tin Bars at regular prices, and the tone of the market is reported firm. A fair amount of tonnage in Steel is being specified for against contracts, but shipments of Tin Bars by the mills are not so heavy as some time ago. We quote Bessemer and Open Hearth Billets, 3⅞ in. and larger, up to and including 0.25 carbon, $25; 0.26 to 0.60 carbon, $1 extra; over 0.60 carbon, $2 extra, all f.o.b. Pittsburgh. For Wheeling, Martins Ferry, Follansbee, Newcastle, Sharon, Steubenville and Washington (Pa.) delivery, half the freight or 50c. additional is charged. Sheet and Tin Bars in random lengths are $27, f.o.b. Pittsburgh. Forging Billets take $2 advance over Rolling Billets.

(*By Mail.*)

General conditions in the Steel trade are slowly but steadily improving, and there is more optimistic talk than has been heard for some time. As yet there is no heavy buying, orders being mostly for small lots for actual needs, but these are increasing. One large local Steel interest reports that its actual orders received Monday were larger in number and in tonnage than on any one day for over nine months. The leading Steel companies are operating to greater capacity, and this week the entire 60 open hearth furnaces at the Homestead Works of the Carnegie Steel Company are in operation, the first time this has been the case for some months. The Bessemer plants and finishing mills of the Republic Iron & Steel Company and the Youngstown Sheet & Tube Company are in operation to nearly full capacity. The Carnegie Steel Company is operating a larger number of its blast furnaces than at any time this year, and is getting more stacks ready to start up. Seven of the 11 Edgar Thomson stacks are in operation, their output of Bessemer Iron being used in the three Edgar Thomson Rail mills. Inquiries for Pig Iron are better and more is being sold than for some time. Prices, however, are only fairly strong, Bessemer Iron having declined squarely to $15.75 at furnace, while several sales have been made at $15.65 and even lower. In Structural Steel inquiries are reported as being better and the material for the Oliver Building has finally been placed. Plates have not shown much betterment and the demand for Tin Plate has fallen off, but Black and Galvanized Sheets are looking better. There is some movement in the Scrap market, and prices on Heavy Steel Scrap and Rerolling Rails have advanced about $1 a ton. The Coke trade is still dull and low prices have been made, which some of the larger operators are refusing to meet.

**Ferromanganese.**—We quote foreign 80 per cent. for balance of the year delivery at $44, seaboard, or $44.95, Pittsburgh, and note a sale of 100 tons for this delivery at the quoted price.

**Ferrosilicon.**—Not much inquiry is reported, and we quote 50 per cent. at $67.50 to $70, Pittsburgh.

**Muck Bar.**—The market on this material has been stagnant for a long time, but some business is expected to develop soon, as the result of the starting up of a number of Bar Iron mills that signed the wage scale. The quotation last week of $36, Pittsburgh, for best grades of Muck Bar made from all Pig Iron was a typographical error and should have been $26, Pittsburgh. On a firm offer, and for any large tonnage, it is probable that close to $25 could be done, as wages of Muck rollers were materially reduced when the recent scale settlement was made.

**Rods.**—The demand continues quiet, but prices are moderately firm. We quote Bessemer Rods at $33, Basic $34, and Chain Rods, $35, Pittsburgh.

**Skelp.**—The mills have little on their books, with not much new demand, and are not able to operate to more than half capacity, if that much. Nominal prices are as follows: Grooved Steel Skelp, 1.45c. to 1.50c.; Sheared Steel Skelp, 1.50c. to 1.60c.; Grooved Iron Skelp, 1.60c. to 1.70c., and Sheared Iron Skelp, 1.70c. to 1.75c., f.o.b. Pittsburgh.

**Steel Rails.**—A Southern railroad is reported to have placed a contract for 10,000 tons of Standard Section Rails, a part of which is expected to come to Pittsburgh, but this has not been officially confirmed. The Carnegie Steel Company is receiving better specifications against contracts, and last week took orders for over 2000 tons of Light Rails. Nos. 1, 2 and 3 Rail mills of the Carnegie Company, at Bessemer, are in operation, but are gaited to about 35 per cent. or less of capacity. Prices on Light Rails are higher, several mills stating that they have advanced quotations about $2 a ton. Prices on Light Rails, which are still being shaded $2 to $3 a ton, are as follows: 25 to 45 lb. Sections, $28; 20-lb., $29; 16-lb., $30, and 12-lb., $32. We quote Standard Sections at $28, at mill, and Angle Splice Bars at 1.65c., at mill.

**Plates.**—The general demand for Plates does not show much betterment, but the Carnegie Steel Company is still turning out a heavy tonnage of 22¼-in. Plates, which are shipped to the McKeesport Works of the National Tube Company, to be made into 6-in. Pipe for the Standard Oil Company. Prices on narrow sizes of Plates continue to be shaded by some mills to the extent of $1 to $1.50 per ton, but on the larger sizes it is stated that prices are being held. We quote Tank Plates, ¾ in. thick, 6¼ in. up to 100 in. wide, 1.60c., base, at mills, Pittsburgh. Extras over this price are as follows:

Tank, Ship and Bridge quality, ¼ in. thick on edges, 100 in. wide, down to but not including 6 in. wide, is taken as base.

Steel Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per square foot, shall be considered ¼-in. Plate. Steel Plates over 72 in. wide must be ordered ¼-in. thick on edge, or not less than 11 lb. per square foot, to take base price. Steel Plates over 72 in. wide ordered less than 11 lb. per square foot down to the weight of 3-16-in. shall take the place of 3-16-in.

Percentages as to overweight on Plates, whether ordered to gauge or weight, to be governed by the Association of American Steel Manufacturers' Standard Specifications.

| | |
|---|---|
| Gauges under ¼-in. to and including 3-16-in. Plates on thin edges | $0.10 |
| Gauges under 3-16-in. to and including No. 8 | .15 |
| Gauges under No. 8 to and including No. 9 | .25 |
| All sketches (excepting straight taper Plates varying not more than 4 in. in width at ends, narrowest end being not less than 30 in.) | .10 |
| Complete Circles | .20 |
| Boiler and Flange Steel Plates | .10 |
| "A. B. M. A." and ordinary Firebox Steel Plates | .20 |
| Still Bottom Steel | .30 |
| Marine Steel | .40 |
| Locomotive Firebox Steel | .50 |
| Shell grade of Steel is abandoned. | |
| For widths over 100 in. up to 110 in | .05 |
| For widths over 110 in. up to 115 in | .10 |
| For widths over 115 in. up to 120 in | .15 |
| For widths over 120 in. up to 125 in | .25 |
| For widths over 125 in. up to 130 in | .50 |
| For widths over 130 in | 1.00 |

TERMS.—Net cash 30 days. Pacific Coast base, 1.50c., f.o.b. Pittsburgh.

**Structural Material.**—More actual tonnage has been placed in the past week than in any similar period for some time. The contract for the erection of the Oliver Building has at last been closed, the material, about 10,500 tons, to be rolled at the Homestead Works of the Carnegie Steel Company. The American Bridge Company has taken the contract for building the approaches for the Kanawaha & Michigan Railroad, at Point Pleasant, W. Va., to the Ohio River, 2000 tons; also a viaduct for delivery near Buffalo, 1000 tons, and the contract for the May Building in this city, about 600 tons. Inquiries are reported better than for some time, and the Ambridge, Pa., shops of the American

Bridge Company are now being operated to greater capacity than for some months. There is still complaint that very low prices are being made for fabricating by the leading Structural interests. Efforts are being made to bring the fabricators in closer relations with each other, and several meetings for this purpose have already been held. We quote as follows, f.o.b. mill, Pittsburgh: I Beams, H Beams and Channels, 3 to 15 in., inclusive, 1.60c. net; Beams over 15 in., 1.70c. net; Angles, 3 to 6 in., inclusive, ¼ in. and up, 1.60c. net; Angles, over 6 in., 1.70c. net; Angles, 3 x 3 in. and up, less than ¼ in., 1.50c., base, half extras, Steel Bar card; Tees, 3 in. and up, 1.65c. net; Zees, 3 in. and up, 1.60c. net; Angles, Channels and Tees under 3 in., 1.50c., base, half extras, Steel Bar card; Deck Beams and Bulb Angles, 1.90c. net; Hand Rail Tees and Z-19, 3c. net; Checkered and Corrugated Plates, 3c. net.

**Sheets.**—Some improvement in the demand for both Black and Galvanized Sheets is reported, and this week the American Sheet & Tin Plate Company is operating 51 per cent. of its Sheet capacity, against 47 per cent. last week. Reports that prices on Blue Annealed Sheets have been reduced $1 a ton are officially denied. It is stated that regular prices are being well maintained, very little cutting being done. Prices for shipment from mill are as follows: Blue Annealed Sheets, No. 10 and heavier, 1.80c.; Nos. 11 and 12, 1.85c.; Nos. 13 and 14, 1.90c.; Nos. 15 and 16, 2c.; Box Annealed, Nos. 17 to 21, 2.25c.; Nos. 22 to 24, 2.30c.; Nos. 25 and 26, 2.35c.; No. 27, 2.40c.; No. 28, 2.50c.; No. 29, 2.60c.; No. 30, 2.70c. Galvanized Sheets: Nos. 10 and 11, 2.45c.; Nos. 12 and 14, 2.55c.; Nos. 15 and 16, 2.65c.; Nos. 17 to 21, 2.80c.; Nos. 22 and 24, 2.95c.; Nos. 25 and 26, 3.15c.; No. 27, 3.35c.; No. 28, 3.55c.; No. 29, 3.70c.; No. 30, 3.95c. No. 28 Painted Roofing Sheets, $1.75 per square, and Galvanized Roofing Sheets, No. 28, $3.10 per square, for 2½-in. corrugations. These prices are subject to a rebate of 5c. per 100 lb. to the large trade under the usual conditions, jobbers charging the usual advances for small lots from store.

**Tin Plate.**—This week the American Sheet & Tin Plate Company is operating 55 per cent. of its hot mill capacity, but we note that all of its tinning pots are in operation, the company having shut down a large number of hot mills owing to an accumulation of Black Plate. The demand for Tin Plate has fallen off recently, as it usually does at this season. Tin Plate prices continue firm, and we quote at $3.70 for 100-lb. Cokes, 14 x 20, f.o.b. Pittsburgh, terms 30 days, less 2 per cent. off for cash in 10 days, this price being subject to the usual rebate of 5c. per base box in large lots.

**Hoops and Bands.**—Little new business is being placed, but a moderate amount of specifying is being done on contracts. Regular prices are as follows: Steel Hoops, 1.80c., base, full Hoop card prices; Steel Bands, 1.40c., base, half Steel card extra, all f.o.b. cars, Pittsburgh, in carload lots, for delivery during 1908.

**Iron and Steel Bars.**—Specifications against the large contracts for Steel Bars placed in June are now coming in more freely, and as a result the Republic, Carnegie and Jones & Laughlin companies are operating to larger capacity in Steel Bars than for some time. The demand for Iron Bars is only fair, none of the Bar Iron mills being able to operate to full capacity. We quote Iron Bars at 1.40c., base, for Pittsburgh delivery, and 1.35c., base, for Western points, to which freight is added, except Chicago, the price for which is 1.50c., delivered. We quote Steel Bars at 1.40c., Pittsburgh, for base sizes.

**Merchant Steel.**—Implement makers are ordering a fair amount against contracts, and several of the Steel interests report that actual business being entered is larger than for some time, but still in small lots for actual needs. The demand for Shafting is dull, the low prices at which this material is selling failing to bring out any large orders. We quote: Cold Rolled Shafting, on contracts for 100 tons and over, 57 per cent. off; carloads, 56 per cent. off, and less than carloads, 52 per cent. off, on which carload freight is allowed within base territory. Smooth Finished Machinery Steel, 1.80c. to 1.90c.; Flat Sleigh Shoe, 1.75c. to 1.85c.; Cutter Shoe Steel, 2.15c. to 2.25c.; Toe Calk, 1.90c. to 1.95c.; Railroad Spring Steel, 1.60c. to 1.75c., the higher price being for Pennsylvania Railroad analysis. Carriage Spring Steel is 1.80c.; Tire Steel, Iron, finished, 1½ in. and wider, 1.40c.; under 1½ in., 1.55c. Planished Tire Steel is 1.60c., all f.o.b., at mill.

**Railroad Spikes.**—A start has finally been made by the railroads in the buying of Railroad Spikes, but while no large contracts have been placed, some fair-sized orders have been entered by the mills, and the outlook is that more business will be placed in the near future, as several large railroads have inquiries in the market. We quote: Standard sizes, 4½ x 9-16 in., at $1.70, and the smaller sizes at $1.80 per 100 lb. in carload and larger lots, with an advance of 5c. per 100 lb. for less than carload, f.o.b. Pittsburgh.

**Spelter.**—The market is slightly firmer, and it is reported that the volume of business is showing some betterment. A sale of 100 tons of Spelter for September, October and November delivery, has been made, at 4.32½c., St. Louis, or 4.45c., Pittsburgh, and we quote the market at that price.

**Merchant Pipe.**—New business is slowly but steadily increasing, and at present the leading Pipe mills that have Steel Works connections are operating to a little over 50 per cent. of capacity. Several large gas and oil line projects are in the market, but these are slow in developing, owing to difficulties in arranging satisfactory financial terms with the mills. Discounts on Steel Pipe, ¾ to 6 in., to the large trade are now 76 and 5 per cent. off list. Regular discounts are as follows:

*Merchant Pipe.*

| | Jobbers, carloads, Steel. | |
|---|---|---|
| | Black. | Galv. |
| | % | % |
| ⅛ to ¼ in | 67 | 51 |
| ⅜ in | 69 | 55 |
| ½ in | 71 | 59 |
| ¾ to 6 in | 75 | 65 |
| 7 to 12 in | 72 | 57 |
| Extra strong, plain ends: | | |
| ⅛ to ⅜ in | 60 | 48 |
| ½ to 4 in | 67 | 55 |
| 4½ to 8 in | 63 | 51 |
| Double extra strong, plain ends: | | |
| ½ to 8 in | 56 | 45 |

Discounts on Genuine Iron Pipe are as follows:

| | Black. | Galv. |
|---|---|---|
| | % | % |
| ⅛ to ¼ in | 65 | .. |
| ⅜ in | 67 | 53 |
| ½ in | 69 | 57 |
| ¾ to 6 in | 73 | 63 |
| 7 to 12 in | 70 | 55 |
| Extra strong, plain ends: | | |
| ⅛ to ⅜ in | 58 | 46 |
| ½ to 4 in | 65 | 53 |
| 4½ to 8 in | 61 | 49 |
| Double extra strong, plain ends: | | |
| ½ to 8 in | 54 | 43 |

**Boiler Tubes.**—This trade has been dull for a long time, but is now showing slight betterment, with indications that the railroads will soon be moderate buyers. Regular discounts on Merchant Tubes in small lots, on which an extra 5 per cent. is allowed in carloads, but which discounts are being shaded, are as follows:

*Boiler Tubes.*

| | Iron. | Steel. |
|---|---|---|
| 1 to 1½ in | 42 | 47 |
| 1¾ to 2¼ in | 42 | 59 |
| 2½ in | 47 | 61 |
| 2¾ to 5 in | 52 | 65 |
| 6 to 13 in | 42 | 59 |

2½ in. and smaller, over 18 ft. long, 10 per cent. net extra.
2¾ in. and larger, over 22 ft. long, 10 per cent. net extra.

**Iron and Steel Scrap.**—Decided betterment is experienced in the Scrap trade, and prices all along the line have advanced from 50c. to $1 a ton. Heavy Steel Scrap and Rerolling Rails are now fully $1 higher than was quoted by dealers two or three weeks ago. A number of consumers of Scrap have come to the idea that prices are probably as low as they will go, and are now buying Scrap for future requirements. We note a sale of 1000 tons of a special grade of Heavy Steel Scrap, analysis being particularly severe, at $16.50, Pittsburgh. Dealers quote as follows per gross ton, f.o.b. Pittsburgh: Heavy Steel Scrap, for Pittsburgh, Steubenville and Sharon delivery, $14.50 to $15; Cast Iron Borings, $8.50; No. 1 Railroad Wrought Scrap, $13.75 to $14.25; No. 1 Cast Scrap, $14.25 to $14.75; Bundled Sheet Scrap, $11.50 to $12; Sheet Bar Crop Ends, $17.50 to $17.75; No. 1 Busheling Scrap, $13 to $13.50; No. 2 Busheling Scrap, $9.50 to $10; Iron Axles, $20 to $20.50; Steel Axles, $18.50 to $19; Low Phosphorus Melting Stock, 0.04 and under, $18 to $18.50; Old Steel Rails, short pieces, $14.75 to $15.25; Rerolling Rails, $15.50 to $16; Machine Shop Turnings, $8.75 to $9.25; Grate Bars, $12.25 to $12.50; Railroad Malleable Scrap, $13 to $13.50.

**Coke.**—The Frick Coke Company is increasing its operations, due to the blowing in of some additional blast furnaces by the Carnegie Steel Company, but as a rule the Coke plants are not being operated more than four or five days per week. Prices are not any better and some low figures are being made on Furnace Coke for spot shipment and for delivery over balance of this year. An Eastern furnace interest is in the market for 5000 tons of Furnace Coke per month for the rest of 1908, and we understand that some low prices have been made on this inquiry. The concern in question has some Coke ovens in West Virginia, but the quality of the product is not quite satisfactory and it has decided to buy some Connellsville Coke to make a better average. Another Eastern furnace interest has contracted for a fairly large tonnage of Furnace Coke for the rest of the year delivery at $1.65 at oven. We quote Standard Connellsville Furnace Coke for spot shipment at $1.50 to $1.55, and for rest of the year delivery at $1.65 to $1.75 at oven. Several operators are unwilling to sell their Furnace Coke at less than $1.75, claiming that any price below this is less than cost of making it. Connellsville 72-hour Foundry Coke is held at $2 to $2.25, but other grades can be had as low as $1.85 at oven. The output of Coke last week in the Upper and Lower Connellsville regions was 185,093 tons, an increase over the previous week of about 10,500 tons.

## Buffalo.

BUFFALO, N. Y., July 28, 1908.

**Pig Iron.**—The week has shown a perceptibly progressing trend toward improvement, both as regards inquiries and sales, although the demand is not yet sufficiently active to cause any upward movement in prices. Quotations remain practically the same as for last week, as follows, f.o.b. Buffalo:

| | |
|---|---|
| No. 1 X Foundry | $16.00 to $16.25 |
| No. 2 X Foundry | 15.25 to 15.75 |
| No. 2 Plain | 15.00 to 15.25 |
| No. 3 Foundry | 14.75 to 15.00 |
| Malleable Bessemer | 16.00 to 17.00 |
| Gray Forge | 14.75 to 15.00 |
| Charcoal | 20.00 to 20.50 |

**Finished Iron and Steel.**—In Structural Material and Finished Iron and Steel there is a better feeling, but the midsummer quiet is on, and no large orders are being placed—most of the work in hand being on small jobs only. Several contracts of considerable size have been figured on, but are being held for the present.

**Old Material.**—The market has been quiet and lethargic. Prices rule about the same as shown in previous report, with the exception of Scrap Pipe, which has advanced slightly. Quotations, per gross ton, f.o.b. Buffalo, are as follows:

| | |
|---|---|
| Heavy Melting Steel | $13.50 to $14.00 |
| No. 1 Railroad Wrought | 13.25 to 13.75 |
| No. 1 Railroad and Machinery Cast Scrap | 13.50 to 14.00 |
| Old Steel Axles | 15.50 to 16.25 |
| Old Iron Axles | 17.75 to 18.25 |
| Old Car Wheels | 13.25 to 14.00 |
| Railroad Malleable | 12.00 to 12.50 |
| Boiler Plate | 11.50 to 12.00 |
| Stove Plate | 12.00 to 12.25 |
| Grate Bars | 10.50 to 11.25 |
| Pipe | 11.00 to 11.50 |
| Wrought Iron and Soft Steel Turnings | 7.00 to 7.50 |
| Clean Cast Iron Borings | 6.00 to 6.50 |
| No. 1 Busheling Scrap | 11.25 to 11.75 |

## New York.

NEW YORK, July 29, 1908.

**Pig Iron.**—There has been a fair run of business in Foundry Iron, both in this district and in New England, without developing any movement in prices. We quote, at tidewater: Northern No. 1 Foundry, $16.75 to $17; No. 2 Foundry, $16 to $16.50, and No. 2 Plain, $15.25 to $15.50. Alabama Irons are quoted $16.50 to $17 for No. 1 Foundry and $15.75 to $16.25 for No. 2 Foundry.

**Structural Material.**—The most interesting development of the week was the placing of the contract for the erection of the Oliver Building in Pittsburgh, which will require about 11,000 tons of Steel. The Carnegie Steel Company will furnish the material. This contract has been pending for a long time, and the fact that it has now been placed indicates that Pittsburgh interests are taking a more hopeful view of the situation. Pittsburgh has naturally been the most depressed business center of the country, and it is noteworthy that sentiment is there undergoing a change. Other large contracts in various parts of the country are getting into position for being placed, and Structural Steel interests are confident that an improved demand will be felt from this time forward. The American Bridge Company was awarded 1900 tons of bridge work by the Toledo & Ohio Central. Milliken Brothers, Inc., secured a contract from the New Haven Railroad for 1000 tons of material, to be used for terminal work at Oak Point. It is stated that bids have been asked on 10,000 tons of Structural Steel for the Canadian Government, to be used for towers to support cables in transporting electric current generated at Niagara Falls. Bids are to be opened to-day on 500 tons for viaduct work for the Pennsylvania Railroad improvements in Long Island City. Much more business is now being done in furnishing Steel for small structures, such as factory buildings. For work of this character the inquiries are considerably larger than they have been for some time, but it takes quite a number of such orders to aggregate 1000 tons. An interesting local development is the increase in the number of small commercial buildings erected in various portions of this city. The demand for plain material is reported as much larger by the Steel companies and specifications on contracts are good. We quote on tidewater delivery, mill shipments, as follows: Beams, Channels, Angles and Zees, 1.76c.; Tees, 1.81c. On Beams, 18 to 24 in., and Angles over 6 in., the extra is 0.10c. Material cut to length is sold from stock at 2c. to 2½c.

**Plates.**—While the local demand is confined to small orders, their number has increased quite a little of late, and sales agents are feeling more encouraged. As far as can be learned, no contracts are yet being placed for future delivery, as consumers still hold to the opinion that prices are not likely to be advanced in the near future. The trade is anxiously awaiting the result of the bids to be opened on Friday for the large tonnage of Plates needed for the pipe line for the extension of the Brooklyn water supply. We quote for standard sized Plates as follows, at tidewater: Sheared Plates, 1.76c. to 1.86c.; Flange Plates, 1.86c. to 1.96c.; Marine Plates, 2.16c. to 2.26c.; Firebox Plates, 2.65c. to 3.50c., according to specifications.

**Bars.**—The demand for Bar Iron has been considerably heavier, and leading manufacturers state that they have sold a larger tonnage within the past two weeks than for the whole of the preceding five weeks. It is claimed that very little high-grade Bar Iron can now be secured below 1.46c., New York delivery. It is further stated that no long time contracts will be taken by the leading mills, at even this price. The stiffening in Old Material is naturally having its effect on Bar Iron prices. Some disposition is observed among merchants to contract for deliveries of Steel Bars, and the outlook in this direction is satisfactory. We continue to quote Steel Bars at 1.56c., tidewater.

**Cast Iron Pipe.**—The business placed in the past week has consisted of small lots of a few hundred tons each. We quote 6-in. Pipe at tidewater $23.50 to $24 per net ton.

**Old Material.**—All grades are in better demand, but particularly Wrought Iron Pipe, Heavy Cast, Stove Plate, Railroad Wrought and Heavy Melting Steel. The principal buying, however, has been done by parties who had sold for future delivery and have been rather actively covering their requirements. A number of Steel Scrap consumers are not only purchasing at ruling prices but express their willingness to pay 50c. per ton over present quotations for deliveries running through the balance of the year. The belief is general that bottom prices have been reached on Old Material and that all grades are stronger. In a few instances prices have already been marked up a little. We quote as follows, per gross ton, New York and vicinity:

| | |
|---|---|
| Old Girder and T Rails for melting | $11.00 to $11.50 |
| Heavy Melting Steel Scrap | 11.00 to 11.50 |
| Old Steel Rails, rerolling lengths | 12.50 to 13.50 |
| Relaying Rails | 21.00 to 22.00 |
| Old Iron Rails | 15.00 to 15.50 |
| Standard Hammered Iron Car Axles | 16.50 to 17.00 |
| Old Steel Car Axles | 15.00 to 15.50 |
| No. 1 Railroad Wrought | 14.00 to 14.50 |
| Iron Track Scrap | 10.00 to 10.50 |
| No. 1 Yard Wrought, long | 12.50 to 13.00 |
| No. 1 Yard Wrought, short | 11.00 to 11.50 |
| Light Iron | 6.00 to 6.50 |
| Cast Borings | 5.50 to 6.00 |
| Wrought Turnings | 7.00 to 7.50 |
| Wrought Pipe | 10.00 to 10.50 |
| Old Car Wheels | 13.75 to 14.25 |
| No. 1 Heavy Cast, broken up | 13.00 to 14.00 |
| Stove Plate | 10.50 to 11.00 |
| Locomotive Grate Bars | 11.00 to 11.50 |
| Malleable Cast | 12.50 to 13.00 |

**Ferroalloys.**—Some resale lots of 50 per cent. Ferrosilicon are reported as coming out on the market. The unchanged price of $70 is quoted by both domestic and foreign producers, delivered to Pittsburgh points. The unchanged quotation of $44 likewise prevails for 80 per cent. Ferromanganese.

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B. Nicoll & Co., Pig Iron merchants, Singer Building, New York, will open an office at Birmingham, Ala., on August 1. J. W. Porter has been placed in charge.

## Metal Market.

NEW YORK, July 29, 1908.

**Pig Tin.**—Business continues light, although a slight improvement is noticeable. The shortage of Tin is becoming more acute, and prices have advanced sharply on this account. The largest advance was on July 23, when the initiative came in the way of higher cable advices from London. It is expected that deliveries into consumption this month will be about 2500 tons. The Verona, which is bringing 900 tons, ought to relieve the situation considerably, but it is reported that much of the Tin on this boat has already been sold. Price changes during the week have been as follows:

| | Cents. |
|---|---|
| July 22 | 29.70 to 29.75 |
| July 23 | 30.75 |
| July 24 | 30.40 |
| July 27 | 30.20 |
| July 28 | 30.30 to 30.50 |
| July 29 | 30.40 |

The arrivals so far this month have been 1737 tons, and there are afloat for American ports 1865 tons. The London market is about £2 higher than a week ago, closing at £137 10s. for spot, and £138 15s. for futures.

**Copper.**—The good buying noted a week ago has continued, and while the movement has undoubtedly been overestimated, it is the most important one in over a year. Prices have been advanced further, and to-day Lake is quotable, at 13.25c. Electrolytic is likewise firmer, at 13.07½c. to 13.15c. Sales of Electrolytic have been made at the inside figure, and 13.10c. has been refused for a round lot. Other sales later in the week commanded 13.12½c. Exporters are paying slightly over 13c. for such metal as they desire. The largest lake mining company has sold its product for August and September, and the same is true of a Southwestern producer. Selling agencies refuse to make concessions for later deliveries of copper; in fact, some of them are reported as unwilling to quote for later dates.

The advance in price, which is purely due to American consumptive demand, is having a strengthening effect on the London market, and prices for Standard warrants have advanced about £1, closing at £59 5s. for spot, and £60 for futures. The exports for the first 28 days of the month amount to 16,348 tons. While the present movement is an entirely legitimate one, it should not be overestimated. The General Electric Company reports an increase in business, and is figuring on some large contract work which will probably be placed in the near future as a result of easier monetary conditions. This company is now securing a regular supply of Copper from its Bully Hill Mining Company property in California. This week the first Copper from the Steptoe Reduction Works in Nevada is expected to reach the Atlantic seaboard, and this district will probably be producing at the rate of 40,000,000 lb. per year within six months.

**Spelter.**—No change is observed in the market, and business continues unusually quiet. Spelter can still be had in St. Louis at 4.35c., and in New York at 4.45c. It is probable that on a firm offer this New York quotation would be shaded.

**Pig Lead.**—The market is considerably stronger, with some sellers holding out for 4.60c. The American Smelting & Refining Company, however, continues to quote 4.50c. for shipment Lead in 50-ton lots. In other quarters spot Lead is quoted at 4.55c. The St. Louis market is firm at 4.40c. to 4.42½c.

**Antimony.**—Prices are again easier, but quotations are largely nominal at 8c. to 8.25c. for Hallett's, 8.25c. to 8.50c. for Cookson's and 7.75c. to 8c. for outside brands.

**Nickel.**—Quotations are without change at 45c. for ton lots and 50c. to 55c. for smaller quantities.

**Tin Plate.**—New business is rather light, but specifications against contracts continue to come in freely. Prices are absolutely without change at $3.89, New York, and $3.70, Pittsburgh, for 100-lb. IC Coke Plates. In Swansea Welsh Plates are unchanged at 14s. 4½d.

**Old Metals.**—Prices are higher, and the market is firmer, in sympathy with advancing quotations for Ingot Copper. The bulk of the business done this week was at the old figures, but several round lots have been disposed of at the new figures. The following dealers' selling prices are about ¼c. higher than last week:

| | Cents. |
|---|---|
| Copper, Heavy Cut and Crucible | 12.25 to 12.50 |
| Copper, Heavy and Wire | 12.00 to 12.25 |
| Copper, Light and Bottoms | 11.00 to 11.25 |
| Brass, Heavy | 9.00 to 9.25 |
| Brass, Light | 7.25 to 7.50 |
| Heavy Machine Composition | 11.50 to 11.75 |
| Clean Brass Turnings | 8.00 to 8.50 |
| Composition Turnings | 9.25 to 9.75 |
| Lead, Heavy | 4.10 to 4.20 |
| Lead, Tea | 3.75 to 3.87 |
| Zinc Scrap | 3.25 to 3.50 |

**Copper Production in 1907.**—The United States Geological Survey gives the production of Copper in 1907 at 387,945 gross tons, compared with 409,735 tons in 1906, 402,637 tons in 1905 and 365,740 tons in 1904. The apparent home consumption in 1907 was 217,755 tons, and in 1906 306,369 tons. The falling off in production in 1907 of about 5 per cent. was caused by the blockading of railroads in the early part of the year by snows and the shutting down of the Butte camp late in the year on account of low prices.

E. A. Caswell, 99 John street, New York City, has recently compiled a valuable chart showing the brands or ingot marks on all new ingot Copper refined in the United States. This chart is complete, and especially valuable to those using Copper of different brands, because at a glance the name of the mining company, the refinery, the ingot mark, and the form in which it is sold, are shown.

## Iron and Industrial Stocks.

NEW YORK, July 29, 1908.

The stock market has maintained its strength, and in some instances new high records have been made for this movement. Some disposition was shown to regard unfavorably the President's criticism of the Standard Oil decision, but the effect of this fresh announcement of the position of the Administration was only temporary. The recovery was rapid, and prices speedily regained all loss. The range of prices on active industrial stocks from Thursday of last week to Tuesday of this week was as follows: United States Steel common 44 to 45⅝, preferred 107½ to 109⅛; Car & Foundry common 38⅛ to 40, preferred 102 to 103; Locomotive common 52½ to 54½, preferred 105 to 106; Bethlehem Steel common 19 to 20⅝, preferred 48 to 50; Cambria Steel 35⅞ to 36½; Colorado Fuel 31 to 33¼; Crucible Steel common 6⅛ to 6¼, preferred 44¼ to 45⅛; Pressed Steel common 31¾ to 34¾, preferred 94 to 95; Railway Spring common 41 to 44½; Republic common 20¼ to 21⅝, preferred 72¾ to 74¼; Sloss-Sheffield common 60¼ to 63¼; Cast Iron Pipe common 24 to 24⅞, preferred 70⅝ to 73; Can common 5¾ to 6⅜, preferred 60 to 61¾. A noteworthy incident was the sensational advance in the stock of the Westinghouse Electric & Mfg. Company, due to the belief that the plan for reorganization will be carried through successfully. On Wednesday of last week the common stock touched 89¼, showing an advance of 31 points for the week ending on that date. On Tuesday of this week it sold at 77 to 78⅞. The last transactions in active stocks up to 1.30 p.m. to-day are reported at the following prices: United States Steel common 44¾, preferred 108⅝; Car & Foundry common 38⅞, preferred 102; Locomotive common 53¾, preferred 105; Colorado Fuel 32; Pressed Steel common 32¼, preferred 94½; Railway Spring common 45; Republic common 20⅝, preferred 73½; Sloss-Sheffield common 62½; Cast Iron Pipe common 24½, preferred 72; Can common 5¾, preferred 60.

The report of the Barney & Smith Car Company, Dayton, Ohio, for the year ending March 31, 1908, shows net earnings of $508,639, or $93,391 less than in the preceding year. Deducting charges of $100,000, preferred dividend of $200,000 and common dividend of $60,000, the remainder for surplus is $148,639, or $103,499 less than for the preceding year. The total of undivided profits March 31 was $474,163.

**Dividends.**—The J. G. Brill Company has declared the quarterly dividend of 1¾ per cent. on the preferred stock and a quarterly dividend of ½ per cent. on the common stock.

The Pressed Steel Car Company has declared a quarterly dividend of 1¾ per cent. on the preferred stock, payable August 26.

The Flannery Bolt Company, Pittsburgh, has declared a dividend of 5 per cent., payable August 1.

The Standard Roller Bearing Company, Philadelphia, Pa., has declared a quarterly dividend of 1½ per cent. on the preferred stock, payable August 1.

The National Lead Company has declared the regular quarterly dividend of 1¾ per cent. on the preferred stock, payable September 15.

The United States Steel Corporation has declared the regular quarterly dividend of 1¾ per cent. on the preferred stock, payable August 31, and ½ per cent. on the common stock, payable September 30.

**The Southern Steel Company's Affairs Progressing Favorably.**—Under the plan of reorganization of the Southern Steel Company, which has now been assented to by practically all the bondholders, collateral trust noteholders and creditors, the Reorganization Committee of that company announces that it has made financial arrangements by which it has paid the overdue interest and sinking funds on the mortgages of the Georgia Steel Company, the Lacey-Buek Iron Company and the Chattanooga Iron & Coal Company. This action prevents the disintegration of these corporations by foreclosure suits and assures to the new company the ownership of valuable properties, consisting, among other things, of 35,000 acres of ore lands and rights and 37,000 acres of coal lands and rights, as well as thoroughly modern iron and steel works.

**Nova Scotia's First Steel Ship.**—The first steel vessel ever built by private enterprise in Nova Scotia has been launched from the shipyards of J. W. Carmichael & Co., New Glasgow, once the nursery of wooden shipbuilding in the palmy days of Nova Scotia's shipping. This schooner, the James William, has been under construction for seven or eight months. The new vessel's tonnage will be about 500. The hull is of steel, and most of the material was produced in Nova Scotia, the remainder being imported from Great Britain. The rivets were all made in Dartmouth, N. S., and the rope for the rigging all came from the same town. The sails were made in Yarmouth. The vessel has been built without Government subsidy of any sort.

William C. Coffiin, Robert A. McKean and Samuel N. Riter, former officials of the Riter-Conley Mfg. Company, Pittsburgh, have formed the Coffin-McKean Company, and are now completing arrangements for incorporating under a Pennsylvania charter. The company is located at 828 Fulton Building, Pittsburgh, and will act as contracting engineer for the erection of blast furnaces, steel works, oil refineries, power and hydro-electric plants, industrial works and all forms of iron and steel construction.

# The Machinery Trade.

NEW YORK, July 29, 1908.

With machinery houses business keeps up to the level of the past two months, there being so slight a difference in the average of the monthly transactions that neither a marked increase nor demand is noticeable, except in a few instances when spurts of activity have occurred in special lines of products. The maintenance of a fair business, about 50 per cent. of normal, during the usually quiet summer months, with a tendency toward a more active demand, is encouraging. In the past few weeks new projects of magnitude were more numerous, and while they show signs of early consummation, it is probable that a month or two must elapse before the purchases of machinery will be taken up. For plant extensions or equipment replacement the inquiries and orders received the past week were generally for small lots; no important specifications were reported. The railroads have thus far come into the market only in a small way, and the large industrial plants are doing but little buying. Considerable interest has been aroused in the trade by the report that a large powder company is to erect a new plant for the manufacture of cartridges.

The Board of Governors of the Machinery Club of the city of New York has elected W. P. Pressinger of the Chicago Pneumatic Tool Company secretary of the organization, and Charles A. Schieren, Jr., of the Charles A. Schieren Company, treasurer. Mr. Schieren will continue as a member of the House Committee.

### New Car Plant for New Orleans.

The International Car Company, Louisiana Bank & Trust Building, New Orleans, La., recently incorporated, with a capital stock of $350,000, will erect modern shops for the building and repairing of cars, coaches, locomotives and railroad equipment. It is the intention to install a complete motor driven plant and the company will be in the market for a complete line of woodworking machinery, ironworking machinery, boiler, engine, dynamo, motors, &c. Plans for the new buildings have not been prepared and specifications for the required mechanical equipment have not yet been made up. As the company has a lot of urgent work on hand which must be turned out at once, it is the intention to erect temporary structures as soon as possible and begin work as soon as the machinery can be installed. Consequently the company will likely come into the market shortly for the equipment. The plant will give employment to about 400 men and the yards will have 3 or 4 miles of trackage. C. A. Ralston of Ralston & Le Baron, dealers in railway equipment, Chicago, Ill., is president; A. T. Le Baron of Ralston & Le Baron, vice-president and general manager; J. C. Flett, mechanical engineer, New York, secretary; A. Wagatha, vice-president of the Teutonia Bank, New Orleans, La., treasurer. The directors include Seely Dunn, manager of the Southern Car Service Association; J. E. Conley, president of the Conley Switch & Frog Company, Memphis, Tenn.; E. C. Roddie, master mechanic of the Illinois Central Railroad terminal, New Orleans, and John O. Osborn, Iowa City, Iowa. C. A. Ralston, president, is also the head of the McKeen Motor Car Company, Omaha, Neb., which was recently organized to build the gasoline motor cars now in use on the Harriman lines, reference to which was made in these columns last week. This latter company is, we understand, also to erect a large plant. These two large undertakings will necessitate the purchase of a great deal of mechanical equipment, and from the connection with railroad interests through the president it is evident that the propositions will be carried forward without delay.

The business of S. R. Sargent & Son, Castleton, Vt., has been consolidated with that of Osgood & Roundy, Randolph, Vt., under the name of the Sargent, Osgood & Roundy Company, which has been incorporated with a capital stock of $50,000. The company will manufacture a full line of farm implements, carriages and harness, and will do general foundry work. To replace the buildings of S. R. Sargent & Son, which were recently destroyed by fire, a modern fireproof factory building will be erected on a site with water power, for the equipment of which an engine lathe, bolt cutter, drill, wood boring machine, planer and possibly some other machine tools will be purchased. It has not yet been ascertained just what machinery was destroyed by the fire.

Charles Hagan, Winchester, Ky., who is to establish a machine shop 40 x 65 ft., is in the market for new equipment, including lathes, a drill press, planer, shaper, hack saw, forge and gas engine.

The Non-Explosive Safety Naphtha Container Company, 509-515 West Fifty-sixth street, New York, has taken over a plant which it expects to have in operation in October, manufacturing safety and nonexplosive devices under the McNutt patents. The company is in the market for machinery for equipping the new plant, the acquisition of which was necessary to provide facilities for taking care of its increasing business.

The Frevert Machinery Company, New York, has received a good order for machines from the Vermont Copper Company, Pompanoosuc, Vt., and one from another copper company.

In the past two weeks the demand for air compressors built by the Chicago Pneumatic Tool Company has considerably improved. Recent sales of large compressors include Philadelphia & Reading Railroad, Geiser Mfg. Company, Waynesboro, Pa.; Otis Steel Company, Cleveland, Ohio; National Tube Company, and Pusey & Jones, Wilmington, Del.

### Power Plant Requirements.

The Tampa Electric Company, Tampa, Fla., has awarded a contract to the Stone & Webster Engineering Corporation, Stone & Webster Building, Boston, Mass., for enlarging its main power station on West Jackson street, Tampa, Fla., and for making numerous improvements in the light and power service of the city. An addition to the present building will be made to accommodate two turbine units, with all necessary steam and electric auxiliaries, in addition to the present equipment. One turbo-generator of 1500 kw. capacity, arranged to generate current at 2300 volts, with a 520-hp. water tube boiler, will also be installed. The present overhead lighting service of the company carries 133-cycle current, and these circuits will be reconstructed for 60-cycle current and will be extended. The work planned will cost in the neighborhood of $25,000.

J. G. White & Co., 43 Exchange place, New York, have inquiries in the market for about 600 kw. of power for the Wilkes-Barre Electric Company, one of the interests in the Wilkes-Barre District, of which J. G. White & Co. are engineers. It is understood that considerable improvements are contemplated to the traction and lighting properties in that territory and additional purchasing can be looked for shortly.

Frederick Loeser, Fulton street, Brooklyn, N. Y., is purchasing machinery for a power house and storage warehouse, including 300 kw. of power equipment, pumps and other power accessories as well as elevators, &c., for the warehouse.

The Board of Water Commissioners of Trenton, N. J., will receive bids until August 12 for a 20,000,000-gal. vertical triplex expansion crank and flywheel pumping engine for the water works pumping station.

The New York Board of Water Supply will receive bids until September 1 for the construction of another section of the Catskill aqueduct, which includes the construction of 3 miles of concrete conduit. This section will connect with the Walkill Valley siphon and the estimated cost is about $1,300,000.

The State Department of Public Works, Albany, N. Y., has approved contract No. 20, for the dredging of the Mohawk River for Barge Canal work. The work is estimated to cost $4,173,000. A contract for the erection of a large dam in the Mohawk River above Rome was also approved, the cost of the proposed work being estimated at $1,015,000. Bids for both contracts will shortly be advertised. Awards were made July 24 for contracts Nos. 60 and 64 to the Empire Engineering Company, New York, at its bid of $1,349,084 for the former and $1,290,492 for the latter work. Both amounts were a little in excess of the engineer's estimate.

### Business Changes.

Wilkes McClave, formerly a member of McClave-Rimmer & Co., 90 West street, New York, with associates, has formed the Central Foundry & Machine Company, which will succeed to the business of the High Point Machine Company, at High Point, N. C. The new company, of which Mr. McClave has a controlling interest, has an authorized capital of $50,000, with $15,000 fully paid in, and starts business entirely free and clear of debt, with a comfortable working capital. E. W. McClave is president and Wilkes McClave is secretary and treasurer, they controlling 140 shares of the 150 shares issued. The company manufactures steam engines, sawmills, lathmills, box machinery, shingle machinery, bobbin lathes, centrifugal pumps, pulleys, hangers, &c., and will carry a general line of mill and factory supplies. The business has been established for over 20 years, first as the High Point Machine Works and later as the High Point Machine Company, and has a well equipped machine shop, foundry, pattern and woodworking shop. Peter B. Rimmer, the other member of the firm of McClave-Rimmer & Co., has opened an office in Wilkes-Barre, Pa., to sell Ridgway engines in the coal district, and the Ridgway Dynamo & Engine Company, whose agency McClave-Rimmer & Co. had in New York, will continue its New York office.

McLaughlin Brothers, Inc., building construction and engineers, removed July to their own building, 915 to 927 Bolton street, Baltimore, Md.

## Chicago Machinery Market.

CHICAGO, ILL., July 28, 1908.

The machinery trade in general exhibits no features of marked interest, or any indications pointing to an immediate change in existing conditions. Whether the trend is toward lasting improvement is hard to determine in view of the ups and downs which have characterized the course of demand in the past six months or more. During this period, it is true, the range of fluctuation has been confined to extremely narrow limits, and has been lacking in uniformity, but at times there have been upward turns which gave rise to hopes of permanency. Thus far, however, such hopes have failed of realization, for on each occasion reaction has quickly demonstrated the temporary nature of these incipient signs of forward progress, with the result that the market has soon relapsed into its former state of comparative somnolence. But in view of the serious nature of the difficulties encountered through the combined influences of financial and industrial depression, it is a matter of congratulation rather than otherwise that the machinery trade has not been reduced to even narrower limits than it has, since no industry is more keenly susceptible to such untoward effects. The strongest factor operating to prevent utter stagnation in this market has undoubtedly been the relatively unimpaired activity of the smaller shops and factories of the West. From these sources have come no individual orders for large equipment, such as in ordinary times are not infrequent, but they have nevertheless yielded an amount of business which, though widely scattered, has been and continues to be of considerable importance in the present state of affairs. Last week's transactions in machine tools included but a small volume of business, made up of incidental orders comprised principally of single tools. What inquiries there are in the market are of like nature, and so far as can be learned there are no prospective deals of importance in sight promising early closure. While it was hardly expected that there would be any general buying of new tool equipment by the railroads, it was freely predicted some weeks ago that by this time more orders representing urgent shops needs would begin to appear. Up to this time these forecasts have not only failed of fulfillment, but there are no indications affording a certain basis for their early renewal. Some of the leading builders of electrical machinery report a slowly increasing demand for motors, generating sets and accessories, as well as a more extended line of inquiries. Among the latter are a number that relate to prospective traction power house projects which are as yet unfinanced and awaiting more favorable conditions for their development. Of those which concern equipment for isolated lighting and power plants in public buildings, factories and private residences a greater proportion result in direct orders.

Among manufacturing plants none are perhaps quieter at the present time than the car shops. Yet, notwithstanding, a few new enterprises of this character are being organized, and some extensions and improvements of present plants are being undertaken with the view of providing proper facilities for the economical handling of a larger volume of business which will surely follow the ultimate resumption of railroad buying. An instance of such expansion is noted in the improvements being made by the Western Steel Car & Foundry Company, Chicago, which is extending its main building by the erection of a steel structure which will add 500 ft. to its length. A new paint shop, 40 x 140 ft., is also being erected. When these additions are completed they will bring the capacity of the plant up to a basis of 75 cars per day. The purchase of some new tools will be necessary for the equipment of these shops.

A new machine shop equipped with suitable machinery for general contract and job work will be built at Green Bay, Wis., by Carl Hartman. The shop will be of brick, 32 x 80 ft., and will be served with a traveling crane covering its entire length. The tools and machinery will be driven by two 5-hp. motors attached to two line shafts, one driving the light and the other heavy machines.

As an instance of the moderate improvement that is beginning to appear in some lines of machinery, it is noted that a larger number of inquiries from foundries, railroads, boiler shops and bridge works for pneumatic tools and appliances are being received by the makers of pneumatic tools and appliances. The Independent Pneumatic Tool Company, Chicago, is increasing the force of workmen at its Aurora plant, and states that more orders for pneumatic tool equipment have been entered in the first two weeks of July than during any similar period since last October. This fact, in conjunction with the apparent interest manifested in inquiries, is regarded as the forerunner of a steadily increasing trade in coming months.

A new asphalt plant to be erected by the M. H. McGovern Company on Twenty-one place, near Shroop street, Chicago, will require an estimated expenditure of $75,000. The plant will be equipped with modern machinery for the treatment and handling of asphalt, and will have a dock frontage at slip A on the south branch of the Chicago River.

For the improvement of its water and light plant the city of Fort Morgan, Colo., is preparing to expend $55,000 for the purchase of new equipment, bids for which will be received up to August 4. The machinery required will include a heavy duty high grade four valve engine, direct connected to a 100-kw. A. C. 60 cycle two phase 2200 volt generator, together with exciter, switchboard and all necessary accessories.

Sealed proposals will be received until August 12 by the treasurer of the Central Branch, N. H. D. V. S., National Military Home, Ohio, for the construction of an addition to the central power house, together with necessary equipment. Specifications and detailed information may be had upon application to W. H. Ortt, treasurer.

The present ice and cold storage plant of W. E. Llewellyn, Sterling, Ill., will be practically doubled by the installation of new machinery equipment and the extension of buildings. The new building will be 109 x 150 ft., and an additional well 1600 ft. deep expected to give a flow of 60 gal. per minute is being put down.

Proposals for furnishing material and constructing a power plant for the municipal electric lighting system will be received by the city of Hartford, Wis., until August 7. The proposed improvement includes the construction of a brick power house to house the power equipment consisting of two steam engines and two steam boilers, or in lieu of these a gas producer plant; two electric generators of the alternating type with switchboards, street lamps, transformers, regulators, &c., will be required to complete the power house installation. Detailed information concerning the work may be had upon application to A. T. Maltby, engineer, Great Northern Building, Chicago, Ill.

Arrangements are being made by the city of Waterloo, Ill., to move the municipal electric light plant from its present site, 2 miles out of the city, back into town. The contract for this work has been let, and bids are asked until August 3 for two 72 in. by 16 ft. high pressure return tubular boilers for installation at the new location.

The Hanna Engineering Works, Chicago, Ill., has added to its line the entire riveting business of the Quincy, Manchester, Sargent Company, Plainfield, N. J., including the full assortment of the Pedrick & Ayer hydro-pneumatic, plain toggle American riveters, pneumatic punches, &c., which it is now prepared to offer to the trade in a variety of styles and sizes to meet the most exacting conditions, and fill the desire of such manufacturers as have a preference for a particular style of machine.

## Cleveland Machinery Market.

CLEVELAND, OHIO, July 28, 1908.

No change occurred in the condition of the local machinery and machine tool market during the past week. Dealers' sales were limited to a few single tools and their inquiries are very scarce. While not much business was expected during the summer months, the outlook for any marked increase in sales in the fall is as yet not very promising. While business with the machinery and machine tool builders has improved only slightly, inquiries are considerably more plentiful. There is a feeling that the period of depression is near an end and prospective purchasers of machinery are looking around. They say that they are not yet ready to buy, but want to investigate and decide what tools they want with the view of placing orders as soon as business does pick up sufficiently to warrant the purchase of new equipment. There is an improvement in inquiries for heavy machinery for coal handling plants and other installations, but new projects of this nature are all dragging along and some that were expected to be closed several weeks ago are still pending. Everybody seems to be waiting for a further revival in business before placing orders. One project for building an ore handling plant at a Lake Erie dock is under consideration. Engineering firms report some improvement in preliminary inquiries regarding construction work requiring machinery equipment. Several projects of this kind, however, that have been pending for some time are still being held up.

While the majority of manufacturers report an improvement in orders, the gain in volume is still very slight. There is a strong feeling, however, that there will be a slow but steady improvement from now on. The automobile industry is fairly active and some of the local plants have put additional workmen on during the past few days. The demand for machine tools seems to be better among the automobile makers than from any other class of purchasers. Makers of automobile parts continue to be fairly busy. Makers of pneu-

matic tools report orders very light, with no prospects of an improvement in the demand in the early future.

The supply of second-hand tools in the hands of dealers has increased slightly, although their stocks of used tools are not large. A little more activity is noticed in the second-hand tool market.

Following a slight gain for a few weeks, the jobbing foundry situation is very quiet. Orders are being placed for only small lots of castings for immediate needs, and the competition for the small volume of available business is resulting in a great deal of price cutting.

The Reeves Bros. Company, Alliance, Ohio, maker of boilers, cement machinery, &c., recently built an addition to its plant and is now in the market for the necessary machine tool equipment. The company has inquiries out for a boring mill, planer, universal cutter and drill grinder, radial drill and five lathes, 14, 16, 20, 32 and 48 in.

The Republic Belting Company, Cleveland, reports a very satisfactory improvement in orders and inquiries for belting. The company has just secured the largest equipment order ever placed on its books. It came from a lumber company in Mississippi and amounts to about $10,000. It will take one and one-half carloads of leather to fill the order.

The American Shipbuilding Company has secured a contract from the Mesabi Railway Company for a fire boat to be used in protecting the dock property of the company at the head of the lakes. The boat will be 125 ft. long, 30 ft. beam and will cost about $150,000. It will probably be built at Cleveland or Lorain.

The Salem Electric Light & Power Company, Salem, Ohio, will erect a new plant, plans for which are being prepared by Wheeler & Richards, mechanical and electrical engineers, Youngstown. Two 250-hp. engines will be installed.

The Board of Public Affairs, Cuyahoga Falls, Ohio, has awarded contracts for rebuilding the municipal lighting plant in that place. The Crocker-Wheeler Company, Ampere, N. J., was given the contract for the generator, exciter and switchboard. A new engine will be furnished by the Shepard Engine Company, Williamsport, Pa.

The Pay-enter Fare Box Company, Cleveland, has been incorporated, with a capital stock of $10,000, to make fare boxes for street cars, by M. C. Mulhall, A. L. Welch, E. F. Archer, G. A. Howells and C. H. Judkins.

The Lorain Engineering & Construction Company, Lorain, Ohio, has been incorporated, with a capital stock of $10,000, by F. J. Penny, L. M. Penny, Minor Corron, G. C. Penny and E. P. Carron.

The National Foundry Company, Akron, Ohio, has been incorporated, with a capital stock of 10,000, by H. J. Emerman, Louis Abram, B. Emerman, M. Abram and M. B. Abram.

The Palmer-Hawkins Rubber Tire Company, Akron, Ohio, has been incorporated, with a capital stock of $100,000, to place on the market a new sectional tire for heavy trucks.

## Cincinnati Machinery Market.

CINCINNATI, OHIO, July 28, 1908.

Sentiment in this machinery manufacturing center is just now not altogether unanimous as to the meaning of the undeniable improvement in inquiry and the stronger undertone to the nominally lagging machinery markets of July. It is felt by the ultra-conservatives that there can be little real permanent and stable improvement until after the election, that the several important sales of July's first two weeks mean nothing more than the coincidental buying of some badly needed tools, and that these supplied, the machinery markets will settle again into the apathetic conditions of the year's first half, with strong possibilities of more listless conditions than have yet been experienced this year.

Others belonging to the liberal side and conspicuously identified with the "sunshine" movement which was inaugurated here the first of July believe that there will be some steadily increasing buying of tools and machinery needed for the shops, particularly the railroad shops, into which hundreds of empty cars are now being rushed for much needed repairs, and that this will encourage others along similar lines needing new and additional tools. The second-hand machinery market is very quiet. Most dealers have plenty of used machines on the floor and are making good concessions to move them, realizing that a sudden brightening of the trade horizon will direct attention to the new machines, plenty of which are, as a rule, to be found on stock floors or at manufacturers' establishments ready for practically immediate delivery.

The daily press of the city is just now filled with matter of a highly sensational nature, tending to show a rapid return to normal conditions in manufacturing and citing many interviews, and this is being used in connection with the flooding of the territory with "sunshine" literature. While much improved conditions can be noted at the establishments manufacturing electrical power units, bakers' and sheet metal workers' machinery and the like, they are not so pronounced with the tool builders. There is a very good feeling among makers of milling machines, planers and shapers, and the conditions noted last week as indicating an improvement in these establishments are as marked this week, the early mails of the current week carrying quite as much new business for the order books as was placed last week and for the preceding one.

A second order within a comparatively short time for a 48-in. lathe and several orders for smaller tools have convinced one of the larger local establishments that there is a gradually increasing re-employment of labor in the larger shops. A large local concern making planers has recently made some splendid foreign shipments, but of a scattering nature; for instance, a late shipment carried important names in Germany, India, South America and Holland. A special machine recently shipped from this market cost the purchasers $7000. The Canadian Pacific Railroad is said to be buying and a $5000 contract for drills is expected to be landed by a Cincinnati establishment ere another week.

The foundries are taking on a few more men and those manufacturing miscellaneous castings are not far from normal; for instance, one of the largest local foundries is running five heats a week, taking off 15, 17 and 18 tons a day. This company usually sells about 500 tons of castings a month. Aside from the manufacturers of milling machines, planers and drills, local toolmakers have not begun ordering castings.

C. L. Morckel and H. P. McIntosh, formerly of Galion, Ohio, have organized the Ashland Iron Works Company, at Ashland, Ohio, and will operate a general jobbing foundry. Their plant is located adjacent to the works of the Ashland Steel Range Company.

Manager Neal of the National Steel Casting Company, at Montpelier, Ind., advises that the newspaper report that his company was shut down because of a lack of orders was erroneous; that the establishment has been continuously in operation, but for several months with less than half force. He believes there is a better feeling abroad.

Northern Indiana manufacturing interests are awaiting the final developments of the $900,000 company organized for the reclamation of old rubber by a secret process. The company, which was recently incorporated, has purchased the site of the Mishawaka Hydraulic Company, at Mishawaka, Ind., consisting of 10 acres on the north side of the river, and will erect a large plant. Four high power water wheels will be put in to utilize water power in the vicinity.

The Wabash Foundry & Machine Company, Wabash, Ind., has dissolved.

James Goldberg of Cincinnati has purchased the old boilers and machinery in the various water works stations in that city, his bid of $17,967.50 having been accepted by the Board of Public Service. All machinery must be removed by December 1.

Encouraging reports come from the Atlanta tin plate mill at Noblesville, Ind. After an idleness of 10 weeks the mill started up the middle of the month, and on a gradual readjustment of the machinery and increasing orders has made great strides toward normal conditions.

## Philadelphia Machinery Market.

PHILADELPHIA, PA., July 28, 1908.

While no marked improvement has occurred in the demand for tools or machinery in the local market the past week, there have been a few more sales, and the trade feels more encouraged regarding the future. The slight general improvement to be noted in general business recently, and the reports that some plants will shortly be operated at increased capacity, are looked upon as favorable indications for at least some resumption of buying in the machine tool lines. The market is stronger sentimentally, and the trade believes that as soon as the railroads become active buyers there will be a general resumption, gradually leading to more normal business conditions. The circulation of extremely optimistic reports, without basis of fact, is not looked upon as a favorable policy. The machine tool trade is gaining slowly and steadily, and it would be to the best interest of the trade to have this improvement maintained, as hardly any branch of the trade is so situated as to be able to handle promptly and satisfactorily any sudden heavy rush of business. We can hardly return to the normal condition without considerable preparation, as plants which have long been operated on a much restricted basis will require pretty careful overhauling before they can go on a full time basis, and while in many cases operating forces and organization have been maintained in part, it will require time to get working forces operating in proper shape for economical and rapid production. If, therefore, we can return slowly to the normal, the trade believes that business could be best taken care of, and it is the general opinion that while an improvement will be noted during the coming fall months, it will

require a much longer period to enable the trade to get back to normal conditions.

Manufacturers note a spotty improvement in the demand. Here and there some fairly good orders have been booked, but they are irregular and in the aggregate do not enable tool makers to increase with any regularity their working forces or production. The greater part of the business is individually small, although there has been some fair sized business placed for special tools. The situation is viewed quite hopefully, however, and it is believed that with even the partial resumption of some of the industrial plants there will be a tendency toward increased buying of machine tools. Inquiries are reported as somewhat better, but continue to be confined largely to single tool propositions. Some few, taking in more extended equipment, are under consideration, but develop slowly.

Second-hand machinery merchants report a fairly good run of business. The demand is not heavy, but enough develops to keep things moving along satisfactorily. Both metal and woodworking tools, particularly of the medium and smaller classes, find a pretty good sale, and there is a moderately active demand for equipment of a somewhat special nature. Second-hand engines and boilers are not active, although some fresh inquiries for equipment of the medium powers are reported.

Little improvement is seen in the foundry trades. Here and there somewhat better orders are reported, but gray iron foundries particularly are not greatly increasing their output. Jobbing foundries continue dull, and but little improvement is to be noted by those making a specialty of machinery castings. Some of the steel casting plants show a little more activity, but the business taken is nearly all for prompt shipment, there being no disposition on the part of users of castings to anticipate their requirements.

The city of Salem, N. J., will expend about $10,000 on improvements to its water works. Particulars may be obtained from W. B. Dunn, city recorder, Salem, N. J., or George Pfeiffer, engineer, Merchantville, N. J.

The Horace B. Deal Company has been awarded the contract to erect the new fuse and primer shop for the Government at the Frankford Arsenal in this city. The building will be 50 x 200 ft. and be constructed of steel and reinforced concrete.

Sealed proposals will be opened August 12 by the Water Commissioners of Trenton, N. J., for building and erecting a pumping engine, together with all necessary work and appurtenances. The engine is to have a daily capacity of 20,000,000 gal. Particulars may be obtained from the Board of Water Commissioners or Charles A. Hague, consulting engineer, Trenton, N. J.

It is understood that the Bloomsburg & Milville Street Railway Company, Bloomsburg, Pa., has placed a contract for the construction of 12 miles of track with Lawrence & Co., Chicago, Ill. The road will be operated, it is said, with Strang gasoline motor cars.

The city of West Chester, Pa., has under consideration the construction of a sewage system and a disposal plant. A committee appointed to make the necessary investigations has reported that a suitable plant will cost about $125,000.

Proposals for preliminary work in connection with the new Passyunk avenue bridge over the Schuylkill River were opened by the Department of Public Works, Philadelphia, a few days ago. The work embraced the construction of five land piers on pile foundations. Bids were also opened at the same time for a concrete bridge on the Tabor Branch of the Philadelphia & Reading Railroad over Belfield avenue. Bids for this bridge range from $47,390 to $67,627. The awards in either case have not yet been announced.

## Government Purchases.

WASHINGTON, D. C., July 28, 1908.

The Isthmian Canal Commission will receive bids until August 17, Circular No. 457, for shop machines, pumps, jacks, and a quantity of supplies.

Proposals will be received until August 6 at the office of the building for National Museum Library of Congress, Washington, D. C., for the water tube steam boilers for the power plant and fans and motors for ventilation.

The Isthmian Canal Commission will soon ask bids for a quantity of jacks of various sizes, six complete rock drills, &c.

The following bids were opened July 21 for machinery for the navy yards:

Class 71.—One hand power single I-beam overhead traveling crane—Bidder 6, Alfred Box & Co., Philadelphia, Pa., $357; 7, Brown Hoisting Machine Company, New York, $710; 14, Cleveland Crane & Car Company, Wickliffe, Ohio, $395; 19, Fairbanks Company, New York, $547; 20, Frevert Machinery Company, New York, $478; 26, G. & W. Mfg. Company, New York, $513; 28, Hoisting Machinery Company, New York, $480; 29, Handlan-Buck Mfg. Company, St. Louis, Mo., $515; 51, Northern Engineering Works, Detroit, Mich., $465; 52, Niles-Bement-Pond Company, New York, $622; 58, Reading Crane & Hoist Works, Reading, Pa., $390; 62, Shepard Electric Crane & Hoist Company, Montour Falls, N. Y., $341.50; 76, Vermilye & Power, New York, $547.75; 89, George S. Fowler, Washington, D. C., $553.82; 100, Case Mfg. Company, Columbus, Ohio, $532.

The following bids were opened at the Bureau of Yards and Docks, Navy Department, July 11, for the construction of a coal and ash handling plant at the navy yard, Philadelphia, Pa.:

Item 1, price for coal and ash handling plant complete; 2, price for coal handling and storage plant alone; 3, price for ash handling and storage plant alone; 4, same as item 1 except that the capacity of coal handling plant shall be 20 tons per hour and the ash handling plant 10 tons per hour; 5, same as item 2 except that the capacity of coal handling plant shall be 20 tons per hour; 6, same as item 3, except that the capacity of the ash handling plant shall be 10 tons per hour.

Phil Lauthe Construction Company, Chicago, Ill., item 1, $49,850; Hoisting Machinery Company, Philadelphia, Pa., item 1, $36,300; alternates, $32,400 and $29,450. Snare & Triest Company, New York, item 1, $34,498; alternates, $32,698 and $38,411; 4, $31,973. Burgin Point Iron Works, New York, item 1, $29,912; alternates, $29,089, $29,652 and $28,729; 4, $27,221; alternate, $26,398. Darley Engineering Company, New York, item 3, $12,840; alternate, $12,285; 6, $9537; alternate, $8499. Belmont Iron Works, Philadelphia, Pa., item 1, $37,750; alternate, deduct $1000; 2, $26,600; alternates, deduct $1000 and $1300; 4, $35,750; alternate, deduct $1000; 5, $25,580; alternates, deduct $1000 and $1050. Penn Bridge Company, Washington, D. C., item 1, $35,370; alternates, deduct $600 and $1000. Conveying Machinery Company, New York, item 1, $33,364; alternate, deduct $2000, $1500, $800 and $210. Link-Belt Company, Nicetown, Philadelphia, Pa., item 1, $39,370; 2, $35,440; 4, $35,490; 5, $31,560; alternate on all of the above, add $890; alternates on items 1 and 2, deduct $500; alternates on items 4 and 5, deduct $620. Edward F. Fonter, Philadelphia, Pa., item 1, $28,884; 2, deduct $600.

Bids for one 50 hp. boiler for pumping station at Fort Terry, N. Y., were received July 18, as follows:

E. Keeler Company, Williamsport, Pa., $1598. William D. Ahern, New London, Conn., $1742. Henry H. Morgan, New London, Conn., $2127. Dover Boiler Works, Dover, N. J., $1450. Donegan & Swift, New York, $1539. G. & W. Mfg. Company, New York, $1343. Speirs Bros., New London, Conn., $2275.

Under bids opened June 25, Circular No. 345, for supplies for the barracks at Jeffersonville, Ind., the Crescent Machine Company, Leetonia, Ohio, has been awarded contract for one planer, matcher and molder, at $270, and the American Wood Working Machinery Company, Rochester, N. Y., one railway cut-off saw, $200.

Under bids opened June 22, Circular No. 445, for supplies for the Isthmian Canal Commission, the Detroit Hoist & Machine Company, Detroit, Mich., has been awarded, class 2, pneumatic geared hoists, $999.50.

The following awards have been made for machinery for the Isthmian Canal Commission, bids for which were opened May 18, Circular No. 438:

Niles-Bement-Pond Company, New York, class 2, one steam hammer, $1226; class 3, one radial drilling machine, $1499; class 8, one universal crank shaper, $725.

Motley, Green & Co., New York, class 4, one planer, $1310.

Vandyck-Churchill Company, New York, class 5, one engine lathe, $2415; class 18, one portable hydraulic crank pin and small wheel press, $470.

Frevert Machinery Company, New York, class 6, one engine lathe, $1393; class 15, one duplex emery grinder, $249.

Long & Allstatter Company, Hamilton, Ohio, class 7, one double punch and shear, $1275.

Fairbanks Company, New York, class 9, one sliding head drill press, $210.

Manning, Maxwell & Moore, New York, class 10, one pipe threading and cutting machine, $1073.

Prentiss Tool & Supply Company, New York, class 11, one single head bolt cutter, $663.

W. R. Colcord Machinery Company, St. Louis, Mo., class 13, one drill grinder, $120.

Sherman-Brown-Clements Company, New York, class 14, one valve reseating machine, $175.

The Pacific Iron Works, Bridgeport, Conn., which was established in 1853, was reorganized some time ago with the following officers: President, William E. Burnham, formerly of the Eaton, Cole & Burnham Company; vice president, Henry A. Bishop, formerly purchasing agent of the New York, New Haven & Hartford R. R.; secretary and treasurer, A. J. Porter; general superintendent, George M. Chase. New equipment has recently been installed in the foundry and machine shops, affording up-to-date facilities for heavy and medium iron castings up to 10 tons in weight for the building of special machinery to order. The works is now turning out, among other products, automobile engines and propeller wheels.

The Halcomb Steel Company, Syracuse, N. Y., at a meeting held July 23, increased its Board of Directors from five to seven members and elected the following: Frederick R. Hazard, Fred. W. Scott, Frank E. Wade, C. Herbert Halcomb, Horace S. Wilkinson, H. P. Dennison and Lyman C. Smith. At the next meeting of the Board of Directors to be held for the election of officers, Dr. John A. Matthews will be elected to the board. Dr. Matthews recently took a position with the Halcomb Steel Company, having been with the Crucible Steel Company of America for some time at its Syracuse plant.

# Trade Publications.

**Gas Engines.**—Buckeye Engine Company, Salem, Ohio. Catalogue. Devoted to the Buckeye four-cycle gas engine. The principle of the four-stroke cycle—admission, compression, explosion and expansion, and exhaust—is explained in connection with a diagram. The company's standard four-cycle double acting and single acting tandem engines are illustrated with exterior views and sectional drawings. The book also contains arguments favoring the use of gas engines for power.

**Railroad Equipment.**—Arthur Koppel Company, Machesney Building, Pittsburgh, Pa. Booklet. Shows Koppel cars and locomotives in operation on outdoor construction work, such as railroad building, concrete work, excavating work, &c. Particular attention is called to the Koppel double side dump cars, which can be dumped on either side.

**Automobiles and Clutches.**—Sturtevant Mill Company, Boston, Mass. Two catalogues. One illustrates the Automatic automobiles made by this company and the other the Sturtevant clutch, particularly adapted for use in automobiles. The construction and principle of action of the clutch are described at some length and its advantages pointed out.

**Direct Current Generators and Switchboard Panels.**—Crocker-Wheeler Company, Ampere, N. J. Bulletins. No. 104, superseding No. 82, deals with direct current railroad generators, and illustrates a number of important installations. Nos. 96 and 102 treat of alternating current switchboard panels. No. 101, superseding No. 68, is devoted to small generators, and No. 103 contains a reprint from the *Electrical Review* of the hydro-electrical power plant for the Chicago Drainage Canal, showing a 4000-kw. generator and other Crocker-Wheeler equipment in this plant.

**Gasoline Engines.**—Charter Gas Engine Company, Sterling, Ill. Illustrated hanger. Describes the various types and patterns of gasoline engines made by the company for operating mills, grain elevators, dynamos, boats, &c.; contains also a diagram showing a typical installation with circulating water tank for use where other water supply is not available.

**Universal Tool and Cutter Grinders.**—Norton Grinding Company, Worcester, Mass. Catalogue, 6 x 9 in., 61 pages. Chiefly devoted to tool and cutter grinders, which are made in two sizes; machine No. 1, with 15 in. between centers and having an 8-in. swing, and machine No. 2 taking 33 in. between centers and having a 10-in. swing. No. 1 can be furnished to operate with a swing of 10 in., and No. 2 can be made with a 12-in. swing. Considerable space is devoted to showing parts of the machines and the various wheels furnished with them. Some interesting illustrations showing the range of work that can be turned out by the equipment are given, and methods of operating the machines to turn out this work are illustrated by drawings. Directions for setting up are included. This volume should be particularly interesting to parties operating the machine.

**Drills and Grinders.**—United States Electrical Tool Company, Cincinnati, Ohio. Catalogue. Shows the company's complete line of portable electric hand drills, bench drills, radial drills, portable electric grinders which are used in connection with machine tools, surface grinders and bench grinders. Some of the many ways in which electric tools can be used for saving time and labor are illustrated.

**Emery Wheels and Grinding Machinery.**—Safety Emery Wheel Company, Springfield, Ohio. Catalogue No. 6, 6 x 9 in., 185 pages. This is a particularly complete catalogue of the company's line of grinding machinery and is copiously illustrated. Among the machines shown are bench grinders, floor grinders, surface grinders, polishing machinery, &c. Various grinding attachments are illustrated and emery wheels and other grinding attachments are shown. A number of machines arranged for motor drive are illustrated. The book contains a general description of all the machines shown, with prices and other information.

**Gasoline Engines.**—Waterloo Gasoline Engine Company, Waterloo, Iowa. Catalogue No. 10, 7½ x 9¼ in., 32 pages. The company's line includes water cooled, vapor cooled and open jacket or frostproof engines in stationary and portable form suitable for running on gasoline, gas, naphtha, kerosene, distillate and alcohol. These engines are all horizontal and operate on the four-cycle principle. The standard sizes go up to 10 hp. Illustrations are given of the applications of the engine for pumping, churning, cream separating, hay baling, &c., and a number of portable engines mounted on trucks are shown.

**Pressure and Vacuum Gauges.**—Standard Gauge Mfg. Company, Syracuse, N. Y. Bulletin No. 2. Devoted to the company's line of pressure and vacuum gauges, gauge boards and clocks. Several models are illustrated and prices and directions for ordering are included.

**Beam Shears, Coping Machines and Bar and Angle Cutters.**—International Electric & Engineering Company, 148 Chambers street, New York. Catalogue. This book is principally devoted to the S. & N. heavy duty beam shear, which can be made in all the known sizes. A machine with a capacity for 12 to 24 in. 100-lb. beams is shown, together with a series of views illustrating the operations of the knife. Other shears are illustrated, including machines of open-throat type, angle shears, coping machines and angle cutters.

**Hand Bending Tools.**—Estep & Dolan, Sandwich, Ill. Booklet entitled "The Bending Book." Includes arguments for the use of machine benders in blacksmith and machine shops. I benders, angle benders, ring benders, hinge benders are shown, together with various shapes they produce.

**Seamless Drawn Steel Specialties.**—Janney, Steinmetz & Co., Philadelphia, Pa. Booklet. Shows types of the company's seamless steel products, including seamless steel tanks, boilers, shells, reservoirs, air pumps and air pump fittings, radiators, barrels, &c.

**Woodworking Machinery.**—Crescent Machine Company, Leetonia, Ohio. Catalogue, 6 x 9 in., 64 pages. Contains numerous illustrations of woodworking machines, many of which are arranged for motor drive. The illustrations include new double spindle shapers and new types of 18-in. and 24-in. planers. Freight rates from the company's plant to various points throughout the country are listed, and the volume is comprehensively indexed.

**Mine Cages.**—Jeffrey Mfg. Company, Columbus, Ohio. Bulletin No. 24. Shows the Jeffrey drop rail mine cage, which is arranged in two parts, consisting of a hoisting section which travels in guide ways and maintains a fixed position, and a tilting section which carries the car and rotator or tilts forward when it is desired to empty the car.

**Power Transmission Equipment.**—T. B. Wood's Sons Company, Chambersburg, Pa. Catalogue, 6 x 9 in., 61 pages. Price-lists and illustrations of belt appliances, bushings, couplings, friction clutches, hangers, pulleys and other transmission fittings are included, together with directions for ordering.

**Dynamo Brushes.**—Cutler Hammer Mfg. Company, Milwaukee, Wis Booklet. Deals with the Wirt dynamo brushes, which are designed for use with low tension direct current motors and generators, alternating current generators, plating dynamos and exciters. The construction of the brush is described and the pamphlet contains useful information on the care of commutators and brushes.

**Antifriction Metals.**—A. Allan & Son, 486 Greenwich street, New York. Bulletin I. This is the first of a series of bulletins intended to form an exhaustive descriptive catalogue of the Allan metal. The advantages of this composition as an antifriction metal are recited, together with methods of testing such metals. A history of the formation of the company is given, and comparisons are made with other Babbitt metals.

**Fireproofing Material.**—General Fireproofing Company, Youngstown, Ohio. Catalogue of dwelling houses constructed on what the book calls the "herringbone idea," including the adaptability of the Cementine construction in connection with the company's line of fireproof construction material, such as herringbone expanded steel.

**Electrical Equipment.**—General Electric Company, Schenectady, N. Y. Bulletins. No. 4586 illustrates and describes the G-I flame arc lamp; No. 4588, the G E-202 railroad motor, which is provided with commutating poles; No. 4590, starting devices for alternating current motors; No. 4594, Tungsten Economy diffusers, and No. 4595, aluminum lightning arresters for alternating current circuits.

**Railroad Converter Substations.**—General Electric Company, Schenectady, N Y. Bulletin No. 4593. Gives a general description of the various pieces of substation apparatus, including rotary converters, transformers, blowers, cables, switchboards, &c., and includes illustrations of converter stations operated by various railroad companies.

**Foundry Equipment.**—Whiting Foundry Equipment Company, Harvey, Ill. Catalogue No. 51, superseding No. 40. Shows several types of air hoists adaptable for foundry use, together with air jacks, air receivers, hose trolleys, and compressed air jacket jib cranes.

**Molding Machines.**—Henry E. Pridmore, Chicago, Ill. Catalogue No. 6. Shows the various types of Pridmore molding machines, designed for molding stove plate in numerous shapes. Samples of work done by these machines are illustrated and prices and directions for ordering are included.

**Gasoline-Gas Engines.**—Fuller & Johnson Mfg. Company, Madison, Wis. Engine catalogue No. 6, 6¾ x 9 in., 40 pages. These machines are made in the vertical open jacket type up to 2½ hp., and in the horizontal type up to 16 hp. Machines are shown in use on farms, in sawmills and small manufactories, and several types are illustrated with views and sectional drawings. A chapter on the "A, B, C of Mechanical Horsepower" explains the amount of horsepower required to operate pumps of certain capacity and for hoisting purposes, &c. Directions for the proper adjustment and successful operation of the engines are included.

**Pulverizers.**—Jeffrey Mfg. Company, Columbus, Ohio. Catalogue No. 31-A, 6 x 9 in., 79 pages. Pulverizing and crushing machinery for coal, stone, cement and other products is illustrated in this volume, together with numerous types of roll crushers. A sectional view of the Jeffrey standard roll crusher is shown, and space is given to centrifugal fans, electric hoists, rotary drills, bucket elevators and electric locomotives.

## OBITUARY.

SHEPARD P. BROWN, once prominent in the iron trade, died July 23 at Plattsburg, N. Y., aged 84 years.

JOHN H. PIERCE, for many years president of the Western Tube Company, Kewanee, Ill., died July 22, after an operation at Mercy Hospital, Chicago, aged 65 years.

EDWARD S. BARTLETT, president of the Webert Gas Engine Company, Rochester, N. Y., was drowned July 25 while automobiling.

E. C. WHEELER, superintendent of Stanley G. Flagg & Co.'s foundry at Pottstown, Pa., died July 26 at Wildwood, N. J.

WILLIAM S. THATCHER, general manager of the iron works of R. D. Wood & Co., at Florence, N. J., died July 24 at Seaside Park, N. J. He had been in charge of the works for 34 years, and was also president of the Florence Thread Company.

WARREN L. FISH, who, it is claimed, invented the first oil stove, and had distinguished himself by the invention of numerous other devices, died July 24 at Newark, N. J., aged 83 years.

JOHN WILKES, manager of the Mecklenburg Iron Works, Charlotte, N. C., died July 6, aged 81 years. Captain Wilkes was graduated from the United States Naval Academy in 1847, and served in the navy until 1854. He was for some years engaged in gold mining and flour milling in North Carolina. In 1861, in connection with his brother Edmund, he built a railroad for the Confederate Government between Greensboro, N. C., and Danville, Va. In 1865 he organized the First National Bank of Charlotte, which was the first national bank established south of the Potomac River, and was its president from 1865 to 1869. For the past 40 years he has been the manager of the Mecklenburg Iron Works, which he developed from a wayside repair shop to a high-class foundry and machine works. He leaves a widow, two sons and two daughters.

CHARLES LEVI LINCOLN, Hartford, Conn., long identified with the business known as the Lincoln Foundry, died July 22, aged 83 years. He was born in Dorchester, Mass., his father being Levi Lincoln, who in 1834 established the iron foundry on Arch street, Hartford, now included in the plant of the Taylor & Fenn Company. Levi Lincoln associated with him in the business his two sons, George S. and Charles L., the latter being admitted to the firm in 1846. Afterward the business was conducted as George S. Lincoln & Co., and upon the retirement of George S. in 1885 it was continued by Charles L. Lincoln and his sons, Charles P. and Theodore M., first as Lincoln & Co., and afterward as the Lincoln Company, of which deceased was the president. The business was sold to the Phœnix Iron Works Corporation some years ago, and recently was combined with that of the Fenn Machine Company as the Taylor & Fenn Company. Mr. Lincoln was a director of the Hartford & Wethersfield Horse Railway Company until it was taken over by the New York, New Haven & Hartford Railroad, and was a trustee of the Mechanics' Savings Bank. He leaves a widow, two sons and three daughters.

FRED HERBERT SMITH, president, treasurer and one of the founders of the F. H. Smith Mfg. Company, Chicago, maker of hardware specialties and screw machine products, died July 14.

CYRUS W. MERRELL, who had been engaged in the ore business for 26 years as an associate of Oglebay, Norton & Co., Cleveland, Ohio, died July 22 of pneumonia. He was secretary of the Commonwealth Iron Company, the Montreal Mining Company, the Bristol Mining Company and the Castile Mining Company.

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Plans of the Manufacturers' Club and members of the Cincinnati Metal Trades Association for an excursion for business purposes to South American centers are maturing, and it is expected that a manager of the tour will have been appointed and active work commenced by September 1. The ship which is to be chartered will be engaged for 100 days, and about 60 manufacturers will make the trip. President E. H. Hargrave of the Cincinnati Tool Company has the matter in charge.

## United States Steel Corporation's Earnings.

The statement of the United States Steel Corporation's earnings for the quarter ending June 30, 1908, makes the following showing, as compared with the corresponding period of 1907:

| | 1907. | 1908. |
|---|---|---|
| April | $14,600,838 | $6,761,680 |
| May | 16,056,832 | 6,021,279 |
| June | 14,846,035 | 7,482,797 |
| Total after deducting all expenses incident to operations, including those for ordinary repairs and maintenance of plants and interest on bonds and fixed charges of the subsidiary companies | $45,503,705 | $20,265,756 |
| Less appropriations for sinking funds on bonds of subsidiary companies, depreciation and reserve funds | 7,723,230 | 3,911,766 |
| Net earnings | $37,780,475 | $16,353,990 |
| Deduct interest for the quarter on U. S. Steel Corporation bonds and sinking funds for quarter on corporation bonds. | 6,936,963 | 7,311,963 |
| Balance | $30,843,512 | $9,042,027 |
| Dividends for the quarter: | | |
| Preferred, 1¾ per cent. $6,304,919 | | |
| Common, ½ per cent. 2,541,513 | | |
| | 8,846,432 | 8,846,432 |
| Surplus for the quarter | $21,997,080 | $195,595 |
| Less appropriated from surplus on account of expenditures made and to be made on authorized appropriations for additional property, new plants, construction and discharge of capital obligations | 18,500,000 | ..... |
| Balance of surplus for the quarter | $3,497,080 | $195,595 |

For the first quarter in 1908 the earnings were $18,229,005, and the surplus was $7865.

The unfilled orders on hand June 30, 1908, were 3,313,876 tons, against 3,765,343 tons at the close of the previous quarter.

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**The Spencer Wire Company Buys the Taunton Steel Company.**—The Spencer Wire Company, Worcester, Mass., has secured control of the Taunton Steel Company, Taunton, Mass., manufacturer of high speed steel drill rods, and the business has been removed to Worcester. It will be operated for the present under the name of the Taunton Steel Company Division of the Spencer Wire Company. Enlarged and improved facilities have been provided for developing the drawing of the steel under the special process of H. A. Williams, who has associated himself with the Spencer Wire Company in the conduct of the department. Under this process the steel is drawn without any annealing whatever, and is produced uniform in gauge and roundness, it is claimed, even more exactly to size than common carbon steel by the regular processes employed in mills. The same process can be applied to other metals that are difficult or impossible to draw by the regular methods, such as German silver, leaded brass and bronze, tin, zinc, and gold.

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**The Shelby Tube Company Incorporated.**—Backed by many of the leading citizens of that place, who are planning the erection of a tube mill in Shelby, Ohio, to take the place of the mill of the United States Steel Corporation that was recently destroyed by fire, the Shelby Tube Company has been incorporated, with a capitalization of $500,000. It is claimed that $250,000 in stock has been sold and that ground will be broken soon for a new plant. The company has elected the following officers: J. C. Fish, president; G. M. Skiles, vice-president; C. S. Hook, second vice-president; A. C. Moore, general manager; Howard Seltzer, secretary, and James Brubaker, treasuer.

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A special meeting of the stockholders of the Colonial Steel Company, Pittsburgh, will be held September 28, to vote on a proposition to increase the capital of the company from $1,500,000 to $2,000,000. The new issue of shares is to be 7 per cent. cumulative, and preferred as to dividends and assets. The increased capital is to be used for expansion of the business. The Board of Directors is to be increased from five to seven.

# HARDWARE

THE problems of business in these days when things are moving so rapidly and new elements are constantly entering the commercial and industrial field are an interesting study to those who in a broad way endeavor to keep in close touch with the trend of things. The complexity of the problem is increased by the manner in which all parts of the world are brought together in the news of the day and in the constantly widening relations of international trade. In this way influences at first of a local character are soon felt in a wider field and make their impress on business conditions in far distant lands. It is therefore necessary for the merchant who would take a comprehensive view to look far beyond his immediate surroundings and consider tendencies and influences which sooner or later will operate in the comparatively limited field with which he has to do. All this tends to make business, as one of our great merchants remarked, interesting and even fascinating.

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Whether or not the judgment formed in regard to the course of things or any impending change is entirely correct, there is no doubt that the man is of broader gauge for having formed it, and if he continues his attitude of observation and alertness he will be in a much more advantageous position in regard to later developments than his unobservant competitor who takes little interest in the movement of trade beyond the boundaries of his own community. It would, however, be a mistake to make the chief attractiveness of business reside in contemplation or abstract consideration of things remote from the merchant's immediate interests. In connection with this breadth of outlook and information concerning things at a distance there is not only a call for constant study of things near at hand, but also a need of practical wisdom in regard to the course to be pursued and the things to be done, coupled with the energetic putting forth of efforts to use existing opportunities to the best advantage. There is thus a happy combination of the theoretical and the practical. When business is transacted along these lines there is the development of a high type of merchant. Whatever truth there may have been in the designation of the English as a nation of shopkeepers, the taunt will have little force when business men in any fair degree measure up to this high standard.

## Condition of Trade.

Indications of a better feeling with a somewhat increased volume of business characterize the closing days of the month. The gradual improvement in the underlying conditions of the market is becoming more generally recognized. The financial stress being practically over and money abundant people are looking about for channels in which it can be safely employed, and there is thus a beginning of enterprise along conservative lines. This is shown in building in which, with the substantially diminished cost of materials, and in some cases of labor, there is a fair activity throughout the country, especially in the erection of buildings of small size. Business with the railroads shows a little increase, but this line is far from active, and the market thus lacks the support which would come from liberal buying in these heavy products. Prices of Hardware and allied goods are pretty steady, the changes of the week being, for the most part, unimportant, and in the line of revision, with a little scaling down here and there. It remains to be seen to what extent liberal orders would secure concessions from regular quotations which hold fairly steady on ordinary moderate lots. The crop reports continue to contribute to the hopefulness which is beginning to pervade the trade, as a large harvest is becoming more and more assured. A good many manufacturers are giving increased attention to foreign markets, recognizing as they do the importance of finding an outlet for the products which are not fully taken by the trade at home. Taken all in all, the month draws to a close with conditions which should be satisfactory, evidencing as they undoubtedly do a real improvement in the situation and a reasonably healthful movement of trade. Satisfaction may be taken in the thought that while the volume of the month's business is not as large as a year ago, the indications point to a gradual and perhaps marked improvement during the remainder of the year, instead of the rude disturbance which overtook the trade last October. Regarded in this light, there is no doubt that things are in better shape now than they were last July, notwithstanding the general activity and the pressure under which business was then carried on.

### Chicago.

One by one the doubts that have clouded the commercial and industrial skies are being resolved and in corresponding ratio the fabric of public confidence upon which in the last analysis hangs the whole issue is being slowly but surely restored. As the harvests proceed the question of crop yields are being determined, and, so far, they have been quite satisfactory in nearly all sections with excellent prospects ahead for a high average throughout the country. While there are yet some other problems awaiting solution and an intervening period of political uncertainty between now and the November elections, it is significant that market transactions are gradually growing in volume. In this between-season time commercial energy is always more or less relaxed, and if trade has vitality enough to not only maintain headway, but to even show some acceleration in face of natural drawbacks it augurs well for a reasonable degree of activity when the fall demand sets in. Since the moderate improvement which seems to be characteristic of the market as a whole is not uniformly manifested in all industries alike, it naturally follows that the distribution of benefits through the various Hardware lines is likewise by no means uniform. Manufacturers of goods consumed largely by the railroads are still confronted by a restricted demand, due to the extreme retrenchment policies of these interests. Some increase in car repair work has necessitated larger purchases of some material, such as Bolts, Nuts, Roofing Sheets, Nails, &c., but this work has not yet assumed such proportions as make it widely felt as a market factor. Price conditions are in the main unchanged, the only alteration of noteworthy importance being a revision of the list prices of Telephone Wire by the American Steel & Wire Company. Effective July 20, the list prices on Extra BB, BB and Steel are reduced ½ cent from the list issued May 1, 1908.

## NOTES ON PRICES

**Wire Nails.**—Business with the mills shows somewhat of an increase, but is confined to near-by requirements. Orders are for small lots for early shipment, indicating that jobbers are not carrying large stocks. The character of the demand is regarded as reflecting a good

condition of things in the trade, with a prospect of at least a fair fall business. Quotations for base sizes are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

| | |
|---|---|
| Carloads, to jobbers | $1.95 |
| Carload lots to retail merchants | 2.00 |
| Less than carloads to jobbers | 2.00 |
| Less than carloads to retail merchants | 2.10 |

*New York.*—Business is moderate in volume and not much of an increase is anticipated in the coming two or three weeks. Prices are regarded as being fairly well maintained in the metropolitan district, but in near-by territory some unevenness is reported, especially in less than carloads from mill. Nails are held on the basis of $2.30 per keg in small lots at store.

*Chicago.*—The trade for July has thus far run close to last year's volume for the same period. It has been and still is composed of prompt orders for immediate shipment. It is believed that there has been no accumulation of stocks by either jobbers or retailers. Prices are reported to be uniform and firm. Quotations are as follows: $2.13, in car lots to jobbers, and $2.18 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

*Pittsburgh.*—Local mills report a somewhat better demand for Wire Nails, but indicate that new business being placed is still confined to small lots for actual needs, the large trade not being disposed to anticipate their requirements. However, the feeling is getting stronger that present prices of Wire Nails will be maintained, and if this continues it will likely lead to a heavier demand in the near future. Quotations for base sizes are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

| | |
|---|---|
| Carloads, to jobbers | $1.95 |
| Carload lots to retail merchants | 2.00 |

Galvanized Nails are quoted at $1 over the price of the regular Nails.

**Cut Nails.**—The market indicates the same quiet tendency which has characterized it for some time. Demand is confined to actual requirements, and is usually for small lots. Quotations on Steel Nails are on the basis of $1.80 per keg, at mill, $1.75 being obtainable on the most desirable business. In the Western market Iron Cut Nails are held at an advance of 10 cents per keg over Steel Cut Nails, but this differential is not observed in the East.

*New York.*—The local market is quiet and business is of moderate proportions. Steel Cut Nails are held on the basis of $2.15 per keg, for small lots at store.

*Chicago.*—The demand for Cut Nails has been perceptibly increased, and is closely limited to scattering small orders for current consumption. Price conditions are unchanged, the majority of the business going at regular quotations, although concessions of 5 cents a keg are still possible on specially desirable orders. We quote Chicago prices as follows: In car lots to jobbers, Iron Cut Nails, $2.08; Steel Cut Nails, $1.98. In small lots from store: Iron Cut Nails, $2.25; Steel Cut Nails, $2.15.

*Pittsburgh.*—Demand is only fair, and is altogether for small lots for actual needs. We quote Steel Cut Nails at $1.75 to $1.80 at mill, the lower price being available only in carloads and larger lots. Small lots from store are held at $1.90 to $2, and Iron Cut Nails are 10 cents per keg above these prices.

**Barb Wire.**—Shipments are being made on specifications from contract orders, but new business is light, as is usually the case at this season. Quotations are as follows, f.o.b. Pittsburgh, 60 days, 2 per cent. discount for cash in 10 days:

| | Painted. | Gal. |
|---|---|---|
| Jobbers, carload lots | $2.10 | $2.40 |
| Retailers, carload lots | 2.15 | 2.45 |
| Retailers, less than carload lots | 2.25 | 2.55 |

*Chicago.*—Trade as is usual at this season of the year is very quiet, with only desultory orders being placed. Prices continue firm and unchanged. Quotations are as follows: Jobbers, Chicago, car lots, Painted, $2.28; Galvanized, $2.58; to retailers, car lots, Painted, $2.33; Galvanized, $2.63; retailers, less than car lots, Painted, $2.45; Galvanized, $2.75; Staples, bright, in car lots, $2.25; Galvanized, $2.55; car lots, to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

*Pittsburgh.*—This is the dull season in the Barb Wire trade and the present is no exception. There is practically no new demand, but some tonnage is being shipped out by the mills against contracts. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

| | Painted. | Gal. |
|---|---|---|
| Jobbers, carload lots | $2.10 | $2.40 |
| Retailers, carload lots | 2.15 | 2.45 |
| Retailers, less than carload lots | 2.25 | 2.55 |

**Plain Wire.**—Manufacturers are not anticipating fall requirements to any extent, but are ordering in moderate quantities. Quotations per 100 lb. to jobbers in carload lots are as follows, on a basis of $1.80 for Plain and $2.10 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the price to retailers being 5 cents additional:

| Nos. | 6 to 9 | 10 | 11 | 12&12½ | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|
| Annealed | $1.80 | 1.85 | 1.90 | 1.95 | 2.05 | 2.15 | 2.25 | 2.35 |
| Galvanized | 2.10 | 2.15 | 2.20 | 2.25 | 2.35 | 2.45 | 2.85 | 2.95 |

*Chicago.*—Manufacturers, though not extending their orders to include future requirements, are, notwithstanding, ordering more liberally, and fence makers are making up moderate stocks in anticipation of a fairly good fall fence trade. Prices and price conditions remain unchanged. We quote as follows: Car lots to jobbers, $1.98, f.o.b. Chicago, and to retailers, $2.05.

*Pittsburgh.*—While present demand is only moderate, the mills look for a large business in the fall. Present orders are mostly in small lots, buyers taking care only of actual requirements, and there is no disposition on the part of the large trade to buy ahead. We are advised that prices are being absolutely maintained. Quotations per 100 lb. to jobbers in carload lots are as follows, on a basis of $1.80 for Plain and $2.10 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the price to retailers being 5 cents additional:

| Nos. | 6 to 9 | 10 | 11 | 12&12½ | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|
| Annealed | $1.80 | 1.85 | 1.90 | 1.95 | 2.05 | 2.15 | 2.25 | 2.35 |
| Galvanized | 2.10 | 2.15 | 2.20 | 2.25 | 2.35 | 2.45 | 2.85 | 2.95 |

**Wire Belt Hooks.**—Quotations on Wire Belt Hooks have for some time shown a declining tendency. A recent reduction by some manufacturers makes the ruling discount to retail trade on Nos. 1 to 15, from 75 and 10 to 80 per cent.

**Telephone Wire.**—The market for Telephone Wire has under the stress of some active competition shown some irregularities and concessions have been made in price. The American Steel & Wire Company, under date of July 20, issue revised prices of their W. & M. Telephone Wire as follows, there being in less than 1500-lb. lots ¼ cent per pound advance:

*W. & M. Telephone Wire.*

| Diameter in decimals of an inch. | Sizes Birmingham wire gauge. | List prices in cents per pound. Extra B. B. | B. B. | Steel. |
|---|---|---|---|---|
| 0.203 | 6 | 4⅜ | 3¼ | 3 |
| 0.165 | 8 | 4⅜ | 3¼ | 3 |
| 0.148 | 9 | 4⅜ | 3¼ | 3 |
| 0.134 | 10 | 4½ | 3⅜ | 3⅛ |
| 0.120 | 11 | 4½ | 3⅜ | 3⅛ |
| 0.109 | 12 | 4⅝ | 3½ | 3¼ |
| 0.083 | 14 | 5⅛ | 4 | 3¾ |

The circular announcing these revised prices contains interesting matter in regard to the Wire, number of bundles per mile, weights per 1000 ft. and per mile, list prices of Steel Wire Strand and other information relating to Telephone Wire.

**Lawn Mowers.**—The early part of August usually marks the opening of the Lawn Mower market, manufacturers at that time beginning to solicit contracts from the larger trade for next year's business. As stated some weeks ago in these columns, the opinion generally prevails that prices are unlikely to show much variation from last season.

**Sash Cord.**—The Sash Cord market seems to be in good condition, and a very fair volume of business is reported. Prices are still low, but do not show irregular-

ity, and manufacturers express the belief that any movement this fall is likely to be toward a higher rather than a lower level.

**Rope.**—Improvement is noticed, from week to week, in demand for Rope, but increase in the number or size of orders is exceedingly slow. Manufacturers are, and have been, controlling their output in proportion to the requirements of the trade. Pure Sisal Rope is stiffer, but Mixed Sisal is more often ordered. Quotations are as follows: Pure Manila, 9½ to 10 cents; Pure Sisal, 7 to 7½ cents: No. 1 Jute, ¾-in. and up, 5¾ cents; No. 2 Jute, ¼-in. and up, 5¼ cents.

**Window Glass.**—At a meeting held on the 28th inst. by the Eastern Jobbers' Window Glass Association the price for Greater New York was advanced as follows: Single, 90 and 25 per cent. discount; Double Strength Glass, 90 and 30 per cent. discount. Stocks in manufacturers' hands are becoming broken in assortment, espeially A quality. The output of hand blown factories is becoming curtailed by the closing of additional plants, and according to reports but four or five plants remain in operation. Manufacturers, it is understood, are not making general prices, but are only quoting on specifications, and it is expected that factory prices will be advanced in August. The market has taken on a more firm tone than has characterized it for some time.

**Linseed Oil.**—Local business is light, and as a rule is confined to immediate requirements. A few carloads have been sold on the basis of 41 cents for Raw, for delivery during August and September, but crushers appear to be unwilling to contract further ahead, even if buyers wished to. Prices have been maintained, despite lack of active demand, which indicates a really strong Oil market. Quotations in barrel lots are as follows: State and Western Raw, 42 to 44 cents; City Raw, 44 to 45 cents per gallon. Boiled Oil is 1 cent per gallon advance on Raw.

**Spirits Turpentine.**—A feature of the Southern market has been for some time the ability of operators to prevent prices dropping below 40 cents. The price on the 21st inst. reached 42½ cents, which resulted in receipts of Turpentine which were too large to be absorbed by the trade, so that the price went below the 40-cent mark. The lower price is attracting large interests and export buyers, but in the New York market demand is light, and is represented by the following quotations: Oil Barrels, 40 to 40½ cents; Machine Made Barrels, 40½ to 42 cents per gallon.

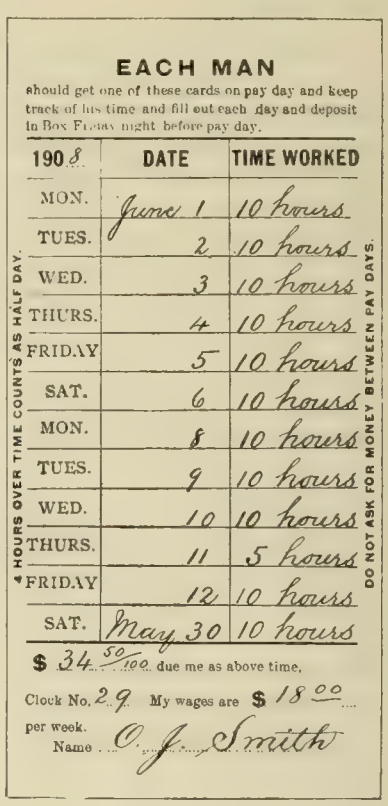
## Trade Relations with Australia.

A PROMINENT New England manufacturer has favored us with copy of a letter received from his Australian representative, in which the latter expresses regret that the Australian Government has reinstated the duty of 12 cents per pound on catalogues and other printed matter. He also comments on one of the articles on Australian trade which have appeared in our columns, making the following remarks on the subject of shipping facilities, in which it will be observed that he expresses great disappointment that the last Congress failed to pass the subsidy bill, which was intended to provide a regular mail service between San Francisco and Australia, and urges that the trade organizations of this country should take this matter up aggressively and prevail upon the national legislature to do something to relieve the situation:

> Without a doubt, this deplorable state of affairs exists owing to the unsatisfactory nature of the mail service communication upon which we have at present to depend. I will try to illustrate the position: The United Tyser Line dispatched the Star of New Zealand from New York on April 19, and after calling and discharging cargo at Melbourne the vessel arrived in Sydney on June 4, representing 54 days' voyage. The documents covering that shipment would be mailed, say, four days after the dispatch of steamer, and therefore would certainly miss the Vancouver mail, which left there on April 25, so that a delay of one month would occur, and the consequent detention of these important documents.
>
> You can readily perceive the situation, and will understand me when I express disgust that your House of Representatives the other day rejected the Subsidy bill, which was designed to provide a regular and efficient mail service from San Francisco to Australia.
>
> I had hoped that this legislation would be passed, and that a satisfactory and regular mail service would be established between your country and this. The present conditions are most exasperating, as it frequently happens that goods shipped from New York by cargo steamer reached port of destination before the documents are to hand, and this is not only irritating, but is a source of additional expense.
>
> What I would like you and my other principals to do is to stir up your trade organizations, so that the commercial interests of your country may put the necessity for efficient mail communications in the proper light before your legislators and compel them to adopt a reasonable and business-like attitude. You do not ask them to carry your goods for nothing, but simply demand that they shall provide the bare facilities for doing business, without which no country or people can progress. I regard this as a very important matter, and I hope that it is one that will engage your attention.

## Factory Time Card.

THE accompanying illustration represents a time card in use by W. C. Heller & Co., Montpelier, Ohio, manufacturers of steel Hardware Shelf, Boxes, Seed Cases, Screw and Bolt Cases, &c. The cards are 3½ x 6¼ in. in size, and are printed on heavy blue card board, this color best withstanding the effects of dirt from constant handling by the men. The cards are used in connection with a record clock as a double check on the payroll department, and were adopted because a workman is apt to make a mistake and ring another man's time, especially when late and in a hurry in the morning. Notwithstanding the great care taken to avoid errors, there were differences in some of the men's money on pay day, which took time to explain and straighten out. Wages are paid every second Saturday, as the company's week closes on Friday night; therefore, the cards are retained by the men two weeks. Each man keeps his own time on his card and deposits it in a box in the office the Friday night before pay day. This gives the company time to check up the cards with the sheet from the time clock, and if there are any differences the men are called to the office and the matter is straightened out. The amount required for the payroll can then be drawn from the bank, with the assurance that it will be correct. The men each receive a new card when they draw their pay on pay day. Four hours' overtime counts as half a day, and men are requested not to ask for money between days. The first entry on the card illustrated is on Saturday, May 30, and according to the record O. J. Smith has kept, $34.50 is due him as above time. His wages are $18 per week, and his number on the clock is 29. Thus all the information required is condensed in a small space at the bottom of the card. Should a man commence working on any other day besides Saturday, it would make no difference with this system, as the days he worked during the two weeks would appear in consecutive order.


EACH MAN

should get one of these cards on pay day and keep track of his time and fill out each day and deposit in Box Friday night before pay day.

| 190 8. | DATE | TIME WORKED |
|---|---|---|
| MON. | June 1 | 10 hours |
| TUES. | 2 | 10 hours |
| WED. | 3 | 10 hours |
| THURS. | 4 | 10 hours |
| FRIDAY | 5 | 10 hours |
| SAT. | 6 | 10 hours |
| MON. | 8 | 10 hours |
| TUES. | 9 | 10 hours |
| WED. | 10 | 10 hours |
| THURS. | 11 | 5 hours |
| *FRIDAY | 12 | 10 hours |
| SAT. | May 30 | 10 hours |

$ 34 50/100 due me as above time.

Clock No. 29 My wages are $ 18 00 per week.

Name O. J. Smith

HOURS OVER TIME COUNTS AS HALF DAY. DO NOT ASK FOR MONEY BETWEEN PAY DAYS.

*Factory Time Card Used by W. C. Heller & Co.*

THE MIDSUMMER EDITION of the official gazette of the Iowa Retail Hardware Association, A. R. Sale, secretary, Mason City, has lately been issued. It refers to several topics of general interest and also contains a number of announcements as to local happenings. It is stated that new members can now obtain a certificate good until Feruary, 1910. Seven hundred members are reported on the rolls.

## DEMONSTRATIONS OF SUMMER GOODS.

BY CLARFIELD.

A PRACTICAL demonstration of what an article will do is worth volumes of talk upon the subject. The Hardwareman will find many things in his stock that will virtually sell themselves if he will only devise means to show them in operation. Such features are doubly beneficial when, as they nearly always do, they attract attention to other lines of merchandise and help the general business of the store.

Various methods of showing Refrigerators in operation have been mentioned from time to time. Perhaps the most common of these is to employ a Refrigerator with double glass instead of wood panels in the doors, or, better still, to have one with the entire back of glass. The latter style will show not only the contents of the food chambers, but also the various walls of the sides, clearly demonstrating the felt or cork interlining and the character of workmanship. Some merchants have placed a box of matches in the food chamber, and have taken them out singly to light for customers, thus proving that the air is not only cold but absolutely dry. Others have used a large thermometer, which could be easily read from the outside, and would forcibly impress the degree of cold. Another plan is to place milk, fruit and vegetables in the same chamber to prove that the air is dry and that milk and butter cannot become tainted. An enterprising Refrigerator manufacturer exhibits in his window a Refrigerator, in which he has placed a window ventilator of the pinwheel type, which is kept constantly revolving by the circulation of air.

**Showing Up Refrigerators.**

An effective and unique demonstration of Lawn Mowers was recently given by a Pennsylvania merchant who advertised that on a certain afternoon the public park lawns would be entirely mowed with Lawn Mowers of different models which he had for sale. He engaged 10 men in whom he could place reliance, and placed them in an oblique line, so that each would overlap the path of the next ahead, the principle being the same as that employed by the reapers in the great Western wheat fields. The event attracted a great deal of attention and comment, the work was done in a remarkably short period of time, and, as Mowers of various grades and prices were shown, with clerks upon the field to explain them, a number of sales were made. These direct sales, however, were probably not of as much bnefit to the store as the general advertising obtained.

**Lawn Mowers in Practical Use.**

Nearly every Hardware merchant has one or two Ice Cream Freezers which he especially recommends because of their various points of merit. Nothing will so well impress these points as "special ice cream days," at which times the cream can be made before the ladies who attend the demonstration, and served to them as an example of the work that the Freezer will do. Such a demonstration need not be very expensive. Of course, it is necessary to retain some one to make the cream who understands both the Freezer and the art of cream making thoroughly.

**Ice Cream Days for the Ladies.**

Cherry Pitters and Apple Parers can be demonstrated almost constantly in the store without much trouble. In conjunction with other demonstrations they always prove attractive. Many such articles are sold simply because the customer has seen them in operation when she may have come to the store for something else.

**Cherry Pitters, Apple Parers.**

Advertising will help such events just as it will help the general sales. In fact, when they are well advertized they become much stronger and more valuable than when they are not. Such plans should be employed by every enterprising Hardware merchant. Their value to a business is far greater than the time, trouble and outlay involved.

**Advertise the Demonstrations.**

## INTERCHANGE OF DELEGATES A FORWARD MOVE IN STATE HARDWARE ASSOCIATION WORK.

*To the Editor:* Under date of July 23, *The Iron Age* editorially notes the meeting of the Carolinas Association and the favorable action taken by it as to inviting delegates from other associations to its annual convention and the sending of its own delegates to various State meetings. The incident of having with them a New York member bearing greetings and good will was possibly responsible for a suggestion that if developed and carried into State association work throughout the country would undoubtedly be productive of added strength, added interest and great general good for the membership. It will also redound to the everlasting credit of the Carolinas Association if in its development the interchange is brought about, and but goes to show that in the forward march of this great work we cannot afford to be without the enrollment of an association in every State.

Another incident. The writer recalls with pleasure that in one of the later Ohio conventions there were present with us the president of the New York Association and the president of the West Virginia Association, dropping in on us informally perhaps, but so cordially welcomed in either case that no question exists as to the advisability and wisdom of sending and asking for delegates, and none as to the hearty greeting that would be offered and the prospective mutual benefits to be derived therefrom. You will recall, too, that at every convention—and this has been the case at all Ohio meetings—telegrams of greetings and congratulations have been sent to other associations convening or about to convene. How much better would it be, and to what greater purpose would the interchange of delegates with their newer ideas and their reports from other associations appeal to the membership of any association, with the bringing together of far away sections, customs and the *personnel* of the delegates themselves.

**An Ohio Incident.**

The benefits to be derived would be many and would develop at every association meeting. Largely they would come as the result of sending the best men in this class of work—men who can say something in "the hour for delegates" that might be appointed—men who develop and bring new thoughts with them, and association work has developed men of this class whose growth has been beyond belief. None of us get the best that is in a man except by personal contact, and the result would be that what we have not, they could give us; what we have, they would gladly take away with them. In every association there are men in the ranks who desire no official position, yet are workers and ideal men to cover just such ground as this, and whose contributions to other associations would evidence their brainy growth in their own.

**Personal Contact.**

Conditions are favorable, and they are more favorable now, perhaps, than at any time since organization work began. The spirit of fellowship and good feeling among merchants has grown until it is considered an actual asset. The desire to know and talk with men from other sections, to learn, to improve one's own methods, to grow, is almost universal among business men. The interchange of delegates would also create a bond and a tie as between associations that does not now exist, and cannot ever exist, in isolated work.

**Would Create a Bond and Tie.**

Some time to develop a situation of this kind would be necessary, for the reason that conditions vary greatly in various associations. With the sectional classifying of State association meetings as provided at the National Association meeting at St. Louis, all of the association work could not well be covered without an interference of dates by any one organization, and without losing the good to the delegate of his presence at his own meeting. This would properly develop, however, as the great work of the States has progressed and developed, with the earnest consideration of the delegate system as proposed, and the writer firmly believes its taking up

**Development of the Idea.**

would be a large feature in added membership and added interest in every existing State association.

As to the expense incurred in sending such delegates, the results to be obtained should certainly offset any and all expense incurred. While there may be many men in every association perfectly able and pertectly willing to go at their own expense, it would seem a legitimate one belonging to the association sending the delegate or delegation. This would develop along with many other matters in connection with and belonging properly to the individual associations.

**The Matter of Expense.**

This article and these suggestions are offered only in the spirit of betterment for association work, and are based entirely on the action of the Carolinas Association and the later article on the subject by Mr. Williams, supplemented by the writer's firm belief in it as one of the very good methods offered leading up to our growth as associations—our increased interest, and therefrom our increased growth. The writer feels that the subject has in it so much of value attached to the work that it is worth more than a passing notice, and trusts that many members of associations will give voice to their opinions on the subject. H. C. W.

**Discussion by the Trade.**

## Trade Items.

H. M. HERMAN, Sydney, Australia, who has been in this country for about four months, making arrangements with manufacturers for representation in Australia, New Zealand and Tasmania, expects to depart for home the latter part of August. Among concerns in the Hardware line whose Australian interests will be looked after by Mr. Herman is the Smith & Hemenway Company, 108 and 110 Duane street, New York, where he may be addressed by any desirous of communicating with him.

ABOUT August 1, the Central Stamping Company will remove its offices and salesroom from 24 Cliff street to 172 and 174 Fulton street, New York, three doors west of Broadway.

THOS. F. BOWKER of the Iver Johnson's Arms & Cycle Works, Fitchburg, Mass., is sailing for Europe on the 30th inst. He will spend several weeks in travel on the Continent.

IN connection with other advertising helps furnished gratis the J. Stevens Arms & Tool Company, Chicopee Falls, Mass., is now ready to supply Hardware and Sporting Goods merchants making application for them half-tone electrotypes, which are designed for use in embellishing letter or bill heads, circulars and envelopes for correspondence. The electrotypes are of a pictorial character, and any one or the entire series of three will be forwarded by the company as desired.

## Pacific Hardware & Steel Company.

THERE has recently been a change in the personnel and stock holdings of the Pacific Hardware & Steel Company, San Francisco, Cal. A. L. Scott and H. J. Morton of that city, and W. T. Smith of Elko, Nev., and Hiram C. Smith of San Francisco, have acquired the stock of the Sloss interests in the company, from which Joseph Sloss and J. C. Brittain have retired. The new officers are as follows: A. L. Scott, president; H. J. Morton, first vice-president, and W. T. Smith, secretary and treasurer.

A certificate of incorporation has been filed by the F. P. Pfleghar Hardware Specialty Company, New Haven, Conn.

Thompson Hardware Company has succeeded to the Hardware, Stove, Harness, Paint, Fencing, Sewing and Washing Machine business of Thompson & Son, Ness City, Kan.

Billings & Brosseau, Rutland, Vt., have dissolved partnership and have been succeeded by Billings & Davis, who will carry a general line of Paints, Trunks, Horse Furnishings, &c., at the old stand.

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## A Niche in the Hall of Fame.

THE effective window display of Locks and other related goods here reproduced was arranged by the Murphy-Maclay Hardware Company, Great Falls, Mont., under the direction of H. W. Dieterle of that house. The motive of the display is the phrase, "A Niche in the Hall of Fame," appearing on the painted sign in the center of the window. The niche forming the background was 9 ft. long, 9 ft. high, 6 ft. deep, and was built entirely by the firm of lumber and sheet metal. It was painted white, as was the pedestal within the niche which supports the cylinder. Behind this was a background of white cloth. The trefoil trademarks were painted on the arch, and artificial green leaves were tacked around to give decorative effect. Gold was used to set off the embossed work at the top of the arch and on the moldings.

Within the niche, besides the cylinder resting on the pedestal, and the key which was suspended by fine Wire, were a Blount Door Check on a special stand, a No. 42 Night Latch and a Store Door Handle on the floor. A variety of goods, similar in character, were arranged in the foreground, which was covered with white cloth. The Lock cylinder was made by fastening a large embossed paper cylinder head furnished as an advertisement by the manufacturer, to a tin cylinder, which was gold bronzed to resemble solid bronze. The key way and the word Yale on the cylinder head were cut out and backed with white tissue paper. An electric light was then placed in the cylinder at the rear, which shone through, bringing out the details conspicuously.

The pedestal was made of galvanized iron, and the trefoil trademark on it was punched out of the metal. The latter was lined on the back with white tissue paper, and was illuminated by a light within the pedestal in the same manner as the cylinder. Taken as a whole, the display was unusually elaborate and artistically worked out. It elicited much appreciative commendation both on the goods displayed and the originality, skill and taste shown in dressing the window.




*Window Display of the Murphy-Maclay Hardware Company.*

## Requests for Catalogues, Etc.

*The trade is given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.*

**REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate:**

FROM BEAUVAIS FRERES, Montreal, Que., who handle General, Household and Kitchen Hardware, Cutlery, Sporting Goods, Paints, &c.

FROM RUECHEL & MILLER, Loveland, Colo., who have succeeded Laudermilk & Ruechel in the Hardware and Implement business.

FROM SUMMER BROS. COMPANY, Newberry, S. C., who have added a line of Automobiles and would like to receive catalogues of sundries, &c.

FROM BALDWIN HARDWARE COMPANY, Bay Minette, Ala., which will open for business about September 15. The officers of the company are J. W. Adkisson, president; E. Luttrell, secretary and treasurer, and B. F. Luttrell, vice-president and manager. They were formerly members of the Luttrell Hardware Company, Brewton, Ala., which was a connection of the Florala Hardware Company, Florala, Ala.

FROM YEATES & WALLACE, Starkville, Miss., who have been succeeded in the Hardware, Store, Implement, Paint, Sporting Goods and Vehicle business by Zeno Yeates.

## Denatured Alcohol.

HON. JOHN G. CAPERS, a former United States Commissioner of Internal Revenue, as special commissioner, and Dr. C. A. Crampton, chief chemist, Bureau of Internal Revenue, in charge of experiments relating to the uses of Denatured Alcohol, sailed for Europe July 21, on the Kaiser Wilhelm, II. They will visit as representatives of the United States Government the European distilleries producing Denatured Alcohol, especially plants in Germany, Austria, France and Belgium. The purpose is to study the methods in vogue abroad where this important staple has made much greater progress for years, through the remission of the government tax, than has been possible in the United States, notwithstanding that Congress exempted Denatured Alcohol from taxation a year or two since. It will be recalled that Congress has appropriated $20,000 with which to build a model distillery for the manufacture of Denatured Alcohol, which is now being erected.

THE BENJ. S. ALDER COMPANY, 37 Warren street, New York, which has recently taken the account of Griffin Mfg. Company, Erie, Pa., has issued a cleverly illustrated mailing card calling attention to the fact that it is carrying a complete stock of this manufacturer's line, including wrought Strap and T Hinges and Butts, Wrought Shelf Brackets, &c.

WEST SIDE HARDWARE COMPANY has succeeded Nish Bros. in the Shelf Hardware, Tinware, Paint, Sporting Goods and Plumbing and Heating business, at Elgin, Ill.

# MODEL HOUSE FURNISHING GOODS DEPARTMENT.

THE Hardware store of G. E. Russell & Co., located in the thriving city of Holyoke, Mass., is in many respects a model retail establishment. The business was founded many years ago by Mr. Russell, whose death last year was a cause of genuine sorrow not only to his local business associates, customers and friends, but also to the New England Hardware trade at large, by whom he was honored and respected as a representative, progressive merchant, alert to grasp and apply to his own business the valuable features and ideas of the most modern merchandizing methods. Associated with Mr. Russell from boyhood, first as employee and then as partner, was A. J. Osborne, who has succeeded to the control and management of the concern. Mr. Osborne is one of the men who may be said to have a



*Fig. 1.—General View of Floor Devoted to House Furnishing Goods.*

**Genius for Retail Business,**

and a visit to his place in Holyoke could not fail to be stimulating and suggestive to any one engaged in a similar line. His talent shows itself not only in his management of the Hardware department, including Staples, Tools, Implements, &c., but especially in broadening out the business to embrace House Furnishing Goods, Fancy Metal Ware, Lamps, specialties, &c., which he stocks and handles on a scale rarely attempted by the average Hardware merchant. In this his store is a particularly good example of

**A Well Recognized Tendency**

in the trade to-day, no pains or expense being spared to make it as convenient and attractive as possible, not only to men but to women, whose trade is especially cultivated and solicited with most profitable results. Much emphasis has been laid by *The Iron Age* on the opportunities of developing the Hardware business in this direction, and no better example can be found of the success of such a policy than the establishment referred to in this article.

Passing by, at least for the present, all reference to the excellent facilities of this firm for handling and displaying shelf Hardware, Tools, Builders' Hardware and similar general lines, it is our purpose to refer at this time only to the House Furnishing Goods department, which indeed furnishes ample opportunity for profitable study. Some idea of the

**Size and Scope of the Department**

may be gained from the photographs herewith reproduced. Fig. 1 is a general view of the second floor of the store, which is entirely given up to household lines. Fig. 2 shows a smaller section of the same floor, containing selling assortments of Nickel Plated Tea Kettles, Coffee Pots, Tinware, &c. The Enameled Ware department is shown in Fig. 3, three different lines being carried—gray, blue and white—each occupying a separate triple deck display table. In Fig. 4 appears the section of wall shelving accommodating the less attractive lines of kitchen goods, such as Frying Pans, Dripping Pans, Cast Iron Hollow Ware, &c. Fig. 5 shows a large

**Glass Counter Case**

located on the main floor of the store, in which is displayed the exceedingly attractive stock of fancy ware, such as Cut Glass, Silver Ware, Chafing Dishes, Percolators, Thermometers, &c., all paying a handsome profit. It may well be imagined what an attraction this counter has for any one entering the store, and it is wisely located in the most prominent place. Behind it will be observed a large wall case, with several sliding glass doors, containing a handsome assortment of tools, such as Hammers, Hatchets, Bit Braces, Saws, Levels, Drawing Knives, etc.

A corresponding glass counter case on the other side



*Fig. 2.—Stock of Nickel Plated Ware, Tinware, &c.*

of the store, containing Carving Sets and other fine Cutlery, is shown in Fig. 6. Behind this appears a section of wall space fitted with natural wood shelf boxes with samples effectively arranged on their fronts. The stenciled marking on the shelf boxes and drawers indicating the goods which they contain could not be brought out in the photograph.

**Convenient Arrangement.**

Returning now to the House Furnishing Goods department on the second floor, special attention is commanded by the convenience of its arrangement. The triple deck tables already referred to were built to order for the places they occupy and of course correspond in size, construction and finish. The upper deck of each rests on upright metal posts, with collars at the top and bottom as shown in the illustrations. Between each table there is an aisle, wide enough for the convenience of customers and clerks in passing through. The wall shelving is also well arranged and easy of access. In conducting this department it has been found desirable to keep a



*Fig. 3.—Stock of Enameled Ware, a Different Line on Each Table.*

**Separate Catalogue File,**

which occupies the drawers shown at the left in Fig. 4. Here also are the records of the department buyer, including want book, order book, containing duplicates of orders given, invoices, records of costs, selling prices, etc.

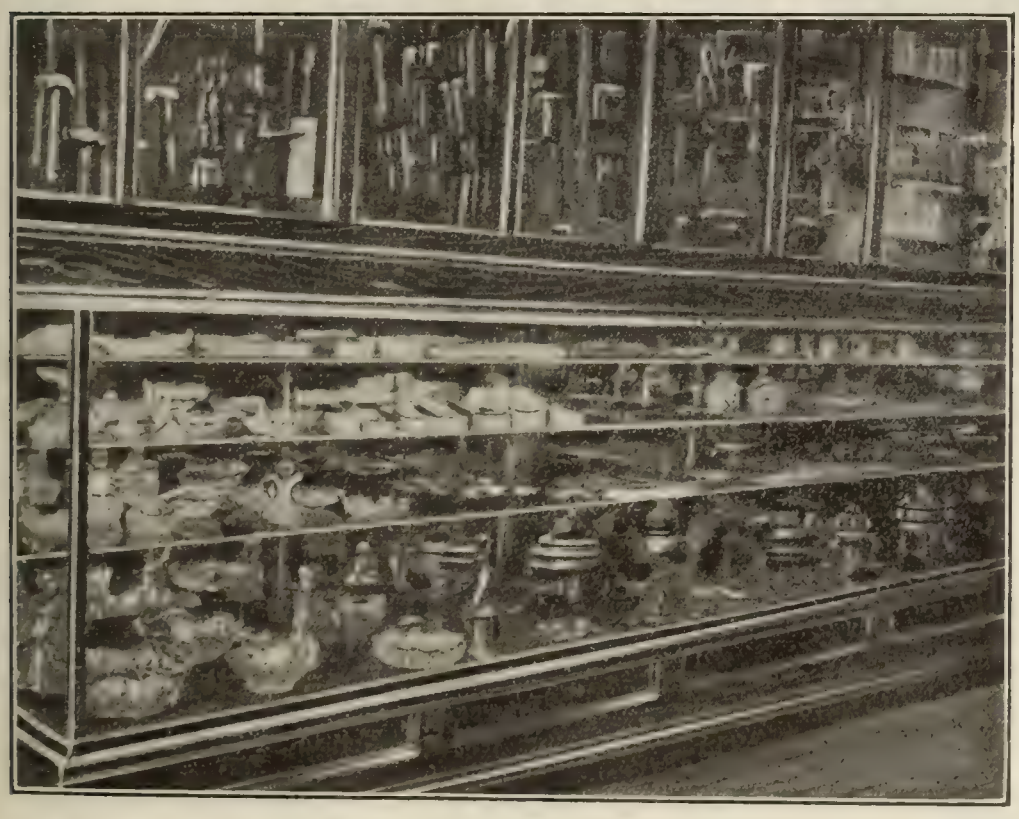


*Fig. 5.—Showcase Containing Cut Glass, Chafing Dishes, Percolators, &c., with Tool Wall Case in the Rear.*

**The Methods of Cultivating Trade**

and handling stock employed by Mr. Osborne may be covered by the statement that his standard requires the most careful, intelligent and high grade service that can be given. Conducted along these lines the house furnishing goods business has been built up to a profitable basis, and he does not propose to let it deteriorate in any respect. Indeed, the tendency is the opposite, and encouragement is found for expanding the scope of the department from time to time. For instance, it is expected shortly to add an attractive line of China and Crockery. The highest grade goods are carried in every line, the object being to provide particular trade with a class of goods not to be found, at least in great variety.



*Fig. 4.—Stock of Frying Pans, Dripping Pans, Iron Kettles, &c., with Department Catalogue File in Drawers at the Left.*

in the average store. Much attention is paid to the matter of

**Intelligent Salesmanship,**

the importance of which cannot be overestimated, especially in pushing the sale of more expensive articles as against cheaper ones which customers might be likely to take unless the merits and advantages of better goods were suggested and explained. When a customer asks the price of a Wringer, Tea Kettle or Coffee Pot, for instanse, he is *Always Quoted on the Best* and highest priced article of the kind in stock. Then, of course, if necessary, it is possible to come down to something a little cheaper if the customer is unwilling to pay the figure named. Usually, however, it is easy to convince him that he will get better value by paying the highest price.

**Giving Personal Attention to Trade**

is a matter which Mr. Osborne considers exceedingly important. He believes that the proprietor of a retail store can accomplish more for the business by meeting customers and waiting on them personally wherever possible than he can in his managerial capacity.

"If you cannot attend to both," says Mr. Osborne, "hire a manager and buyer and attend to the clerking yourself. People like to trade with the proprietor of a store or, at least, to see him around and have him take some notice of their patronage. When things go wrong it is especially important that the proprietor should be in close touch with the selling force. Then he will know of any dissatisfaction or complaints and can be sure that proper adjustment is made, so that customers will not feel disgruntled. If a proprietor shuts himself up in his office he is certain to be in the dark about many matters which are going on in the store. People will never hunt him up with complaints. Because of some trifling matter not tactfully handled by a clerk they may become sore and stay away from the store altogether. Thus customers of great value may be lost by one firm and gained by a competitor. If, however, the proprietor is always about and accessible to everybody his customers will come to have a personal feeling toward him which will show distinctly in the frequency of their calls."

**Cleanliness and Order**

are the final points emphasized and insisted on by the management of this establishment. It is the duty of every clerk to see that stock is always arranged in the most neat and attractive manner and that goods, counters, showcases, &c., are kept well dusted and absolutely clean. The ladies whose patronage is so greatly desired and solicited must be able to walk about the store and even brush against goods and counters without danger to their dresses, while they must be able to handle any articles in which they are interested without soiling their gloves. This is a point often overlooked in a Hardware store, but it is an important one



*Fig. 6.—Showcase Containing Carving Sets and Cutlery, with Shelving in the Rear.*

and if properly attended to is certain to have a favorable effect upon customers.

**Storage Facilities.**

Concluding this article, it is pertinent to explain that where salesrooms are kept up in the manner which has been described, it is of course necessary to have plenty of room for surplus stock, dirty, heavy and bulky goods, &c., in other quarters. The firm has ample storage space on the three floors above its salesrooms as well as in the basement, and a separate storehouse and salesroom are maintained for bulky lines, such as implements and vehicles.

## Price-Lists, Circulars, Etc.

*Manufacturers in Hardware and related lines are requested to send us copies of catalogues, price-lists, &c., for our Catalogue Department in New York; and at the same time to call attention to any new goods or additions to their lines, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.*

GREENE, TWEED & Co., 109 Duane street, New York: Illustrated catalogue of Brass Specialties, containing 170 pages. Some former patterns have been omitted, and many new styles added, together with innumerable additions of both larger and smaller sizes. The line includes Hinges, Lifts, Hooks, Catches, Turns, Bolts, Corners, Fasteners, Numbers, Brackets, Holders, Hasps, Escutcheons, Handles, Pulleys, Cleats, Pulls, &c., in great variety.

WILLIAM JOHNSON, Newark, N. J.: Price sheet illustrating and listing an extensive line of brick and plastering Trowels, Masons' Jointers, Masons' Tool Bags, &c. Special attention is called to Trowels Nos. 185, 186 and 186P, which have extra wide heels, and are peculiarly adapted to the requirements of workmen.

GRAHAM MFG. COMPANY, Derby, Conn.: Catalogue No. 12, relating to Keys, Checks, Lock Strikes, Bell Cranks, Padlocks, Trunk Locks, &c.

SOUTHERN STOVE WORKS, Richmond, Va.: Catalogue No. 12, illustrating and describing the Tip Top line of Stoves and Ranges, including Cast Iron Cooks, Ranges and Heaters, Air Tight Wood and Coal Heaters. The catalogue also refers to Stove supplies, such as Casters, Stove Boards, Polish, Pots, Pans, &c.

R. WOODMAN MFG. & SUPPLY COMPANY, Boston, Mass.: Illustrated catalogue and price-list of Ticket Punches and railroad, traction, hotel and steamship supplies, including Badges, Checks, Lead Seals and Wires, Daters, Perforating Machines, Tally Registers, &c.

HART & COOLEY COMPANY, New Britain, Conn.: Illustrated catalogue B, referring to H. & C. metal Lockers, which are made in several types and a wide range of sizes. The catalogue fully describes the construction of the Lockers, locking devices, &c., and gives all necessary information for ordering.

GEM MFG. COMPANY, Pittsburgh, Pa.: Supplement to bulletin No. 3, referring to Meg indestructible polished steel Oilers, screw top Engineers' Fillers, steel tallow Pots, brazed steel pyramid Torches, &c.

AMERICAN STEEL & WIRE COMPANY, Chicago, Pamphlet containing price- lists and tables referring to W. & M. Telephone Wire.

KLEIN-LOGAN COMPANY, Pittsburgh, Pa.: Illustrated catalogue covering a complete line of Picks and Mattocks, Hoes, Hammers, Sledges, Wedges, Bars and Blacksmiths', Mining and Railroad Track Tools, &c.

WHITE LILY MFG. COMPANY, Davenport, Iowa: Illustrated catalogue referring to the White Lily Gasoline Engine and calling especial attention to its adaptation to the requirements of the farm.

CLENDENIN BROS., Baltimore, Md.: Illustrated catalogue referring to an extensive line of Soldering Coppers for all purposes; also Plumbers' Hatchets and Swivel Hatchet Coppers, Gas Soldering Tips with Nipples, Copper Hammers, &c.

AMERICAN POST COMPANY, Bloomfield, Ind.: Illustrated booklet referring to Galvanized Tubular Metal Fence Posts, and showing the method of setting, bracing and attaching fence.

GOULDS MFG. COMPANY, Seneca Falls, N. Y.: Illustrated booklet referring to Columbia, Thresher and Star Force Pumps, Well Lift Pumps, Hydraulic Rams, Yard Hydrants, &c. Also calendar for August.

ACME SHEAR COMPANY, Bridgeport, Conn.: Illustrated catalogue and price-list referring to a complete line of Solid Steel and Cast Shears, Scissors and Tinners' Snips, including several new patterns.

BRANDT CASHIER COMPANY, Chicago: Illustrated circular referring to the Brandt Automatic Cashier, a machine operated by keys, which is said to count, gather and put into pay envelopes any required amount of coin.

H. G. OSBORNE, 74 Cortlandt street, New York: Booklet describing Osborne Extension Brick Drills and giving full information concerning sizes, net prices, methods of packing, &c. New ways of drilling holes through brick walls by means of drill heads are explained, and special articles are devoted to the application of these tools to the work of plumbers, electricians, steam fitters, &c.

THE SESSIONS CLOCK COMPANY, Forestville, Conn., has added a department for the manufacture of Marine Clocks, resuming in Forestville an industry which had its beginning there. In 1848 Banbridge Barnes succeeded in perfecting a marine movement, which gave satisfactory results, and a company was formed to manufacture it, producing the first Marine Clocks that the world had known. Eventually the business suffered a decline, and finally disappeared in Forestville, only to be resumed in 1908 by the Sessions Clock Company.

## Chamberlain Cost Keeper.

The Dey Time Register Company, Flatiron Building, New York City, has recently added to its extensive line of Time Recorders the Chamberlain Cost Keeper, shown in Fig. 1. The company has for some time made a Cost Keeper that would record on a separate card the time spent by a workman on a single job. The feature of the new machine is that it will record on one card or sheet decimally the elapsed time a workman spends on the various jobs of a day, eliminating the large number of cards necessary where a separate card is used for each operation. Another condition which the machine meets is where manufacturing work is of such a nature that a time sheet must be issued to follow an order through the plant, accumulating time as the work progresses. With this clock it is possible to get a record of the elapsed time each man works on this job entered directly opposite his number, so that when the job is completed, this one ticket has recorded on it the total labor time consumed in its production, this doing away with the clerical work of transcribing and compiling records from various cards, slips, &c. Possible errors in transcription are also avoided, the records being produced in such a form that the original figures can be filed for reference. Where piece work is done and a coupon tag is used indicating the price paid and the number completed, the time consumed can be recorded on this coupon permitting a comparison of the piece price with the daily wage system. To sum up, it is stated that this cost clock will record time decimally on any kind of a time card or sheet, and will record as many times as may be required. While the portion of record card reproduced in Fig. 2 is a convenient and popular form of record, it represents only one of a great variety which may be used in the machine, according to the requirements of different manufacturers. Any kind of recording wheels can be furnished, but the standard is one having the minute wheel divided into hundredths instead of sixtieths of an hour, with an hour wheel which records from 1 to 23 hr., eliminating the noon hour instead of recording 1 to 12 and 1 to 12 again. The noon hour is automatically deducted. Referring to Fig. 1 a flat or table surface will be seen in the front of the machine; this is 3 in. wide and 12 in. long. Behind and directly above is a metal plate containing a guide, by the use of which the record may be properly spaced. When the sheet is put in place on the table, the lever located at the left is pulled down, releasing a hammer which will always give a uniform blow, ringing a bell, and making the record at the top of the sheet. For the next record, the sheet is merely moved to the right as long or as short a distance as necessary to bring the entry in the proper place. Having the beginning time, B, below the stopping time, S, makes subtraction easy to obtain the elapsed time, which is figured in the next column to the left. As this is automatically given in decimals, it is only necessary to multiply by the hourly rate to get the cost of the operation.

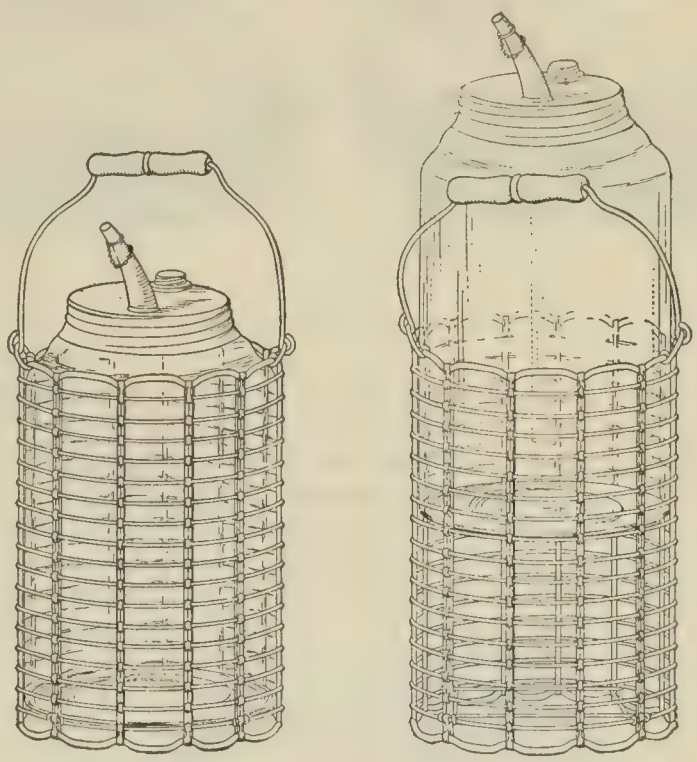


*Fig. 1.—Chamberlain Cost Keeper.*

THE ROGERS & BALDWIN HARDWARE COMPANY, Springfield, Mo., wholesale Shelf and Heavy Hardware, has decided to increase its capital stock from $175,000 to $200,000. Plans are now under way for the enlargement of the store and the installation of modern handling facilities. The business was established in 1884, being first incorporated in 1901, and is now one of the most important institutions of its kind in southern Missouri. The territory covered by its salesmen includes Missouri, northern Arkansas, Oklahoma and Kansas, and in addition to goods comprised in regular Hardware stocks, the company handles a line of farm Implements, having the agency for several well known brands of Plows, Cultivators, Corn Planters, &c.

## Hold 'Em Oil Can.

The Worcester Wire Novelty Company, Canton, Ohio, has added to its line of Hold 'Em specialties the oil can shown in the accompanying illustrations. The can, which is of glass, is held and protected by a wire jacket with bail, from which it may be readily removed, as shown in Fig. 2. The jacket is made of heavy wire, and has double steel ribs running vertically, to which the horizontal wires are securely bound at each intersection. The company states that the cans are calculated to withstand all the knocks and jars to which they are likely to be subjected in ordinary use.



Can in Place. Removing Can.

*Hold 'Em Oil Can.*

| NAME James Morris | | No. 27 | | | DATE JAN 31 1908 | | | RATE 30¢ | |
|---|---|---|---|---|---|---|---|---|---|
| ARTICLE OR DESCRIPTION | OPERATION | QUANTITY | ACCEPTED | REJECTED | PARTS NO | ORDER NO | AMOUNT | ELAPSED TIME | CLOCK RECORD |
| Spindles | Drilling | 9 | 9 | | H-4-1 | 707 | .354 | 1.15 / 25 / 40 | S 868 / B 750 |
| Lever | Slotting | 37 | 37 | | H-11-1 | 695 | .930 | 1.10 / 30 / 2340 | S 978 / B 868 |
| Spindles | Milling | 100 | 98 | 2 | H-9 | 647 | .396 | 1.32 / 30 / 3960 | S 1110 / B 978 |
| | | | | | | | | | S / B |
| | | | | | | | | | S / B |

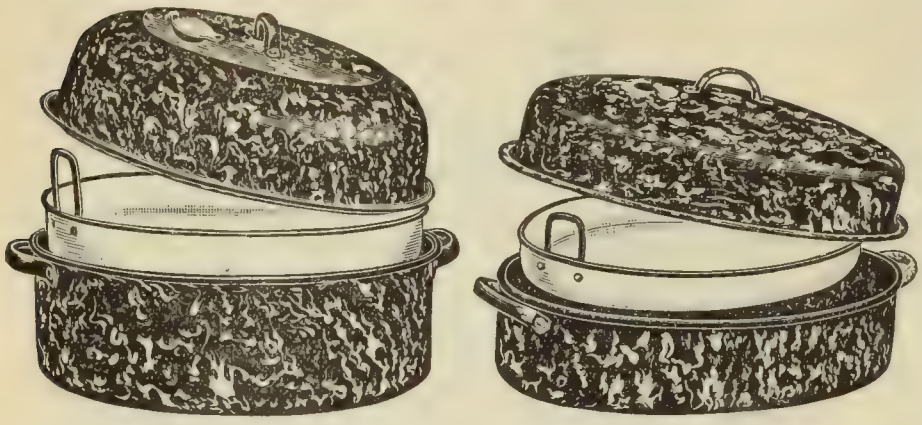
*Fig. 2.—Cost Sheet, Showing Record Kept with Chamberlain Cost Keeper.*

## Rollis Parallel Jaw Pin Vise.

The M. W. Robinson Company, 79 Chambers street, New York, has added to a well selected assortment of fine mechanics' hand tools the Rollis Pin Vise in Nos. 3 and 4. It has parellel jaws, drop forged of steel, and the handle, which is hollow, so wire or rods can pass through its center, has the marked advantage of countersunk or beveled openings at each inner end, the material used thus having quick and easy access whichever way it is inserted. This tool is especially serviceable for machinists, jewelers, &c., and is polished and nickel plated.

## Delft and Van Dyke Enameled Roasters.

The enameled roasters here represented are being put on the market by the Simmons Hardware Company, St. Louis. The Delft is blue as the name implies, and the Van Dyke is brown. Two shapes are offered, round and oval, as illustrated. The company states that the utensils are triple coated, guaranteed against chipping and leaking as well as against the action of any acids, and that they are full size. The lower section, cover and removable meat pan, are seamless, and the handles are



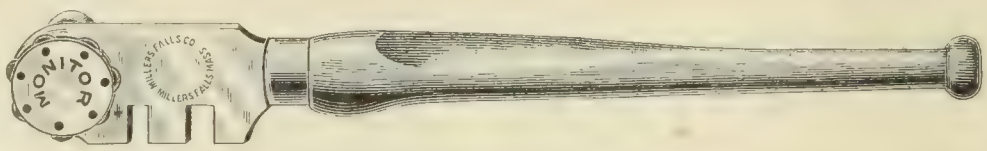
Round. Oval.

*Delft and Van Dyke Enameled Roasters.*

riveted. The bottom or lower section of the roaster has four indentations on which the meat pan rests, thus leaving a space between them which prevents the inner pan resting on the flat surface of the bottom. This, it is explained, gives it a uniform circulation of heat. The meat pan is white enamel and has a smooth bottom so arranged that at all times juices and steam will gather in the center, thus causing the meat to lie constantly in the juice and prevents burning. As the juice and steam continue to baste after being in a uniformly heated oven for 1½ hr., the meat is said to become tender and well flavored. The roaster has no crevices or corners in which grease, &c., can gather, and is therefore sanitary and easy to clean.

## Monitor Glass Cutter No. 100.

The Millers Falls Company, Millers Falls, Mass., is manufacturing the glass cutter illustrated herewith. The tool has a revolving turret provided with seven cutter wheels, which can quickly be removed and replaced as they become dull. A further valuable feature to which attention is called is that the axles upon which the cutter wheels revolve can be removed and replaced if they become worn. The cutter frame is made of steel stock highly polished and nickel plated, while the handle is of polished cocobola. The turret is made of steel and is




*Monitor Glass Cutter No. 100.*

held in place by a knurled thumb nut on the back of the frame. It is revolved to bring the cutter wheel in correct position by simply loosening the thumb nut. The cutter wheels are made of the best steel available, and are scientifically hardened. The manufacturers state that every wheel is carefully tested before it is sent out.

THE WHEELING CORRUGATING COMPANY, Wheeling, W. Va., and 47 Cliff street, New York, has arranged with C. E. Schofield, formerly manager of the New York store of Merchant & Evans Company, Philadelphia, Pa., to become sales manager of its New York City department. Robert Joy, who was formerly in charge of this department, will hereafter give his attention principally to the export trade. Both Mr. Joy and Mr. Schofield are men of long and varied experience in the sheet metal trade.

## Yale Cloak and Hat Trees, Racks, Etc.

The illustrations herewith show examples of the line of metal cloak and hat racks and trees, made by Victor



*Fig. 1.—Yale Coat and Hat Tree No. 69.*

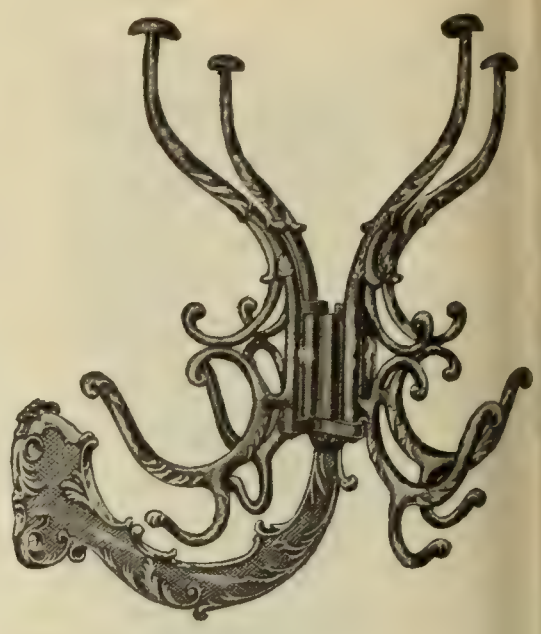


*Fig. 2.—Yale Wall Cluster Rack No. 66.*

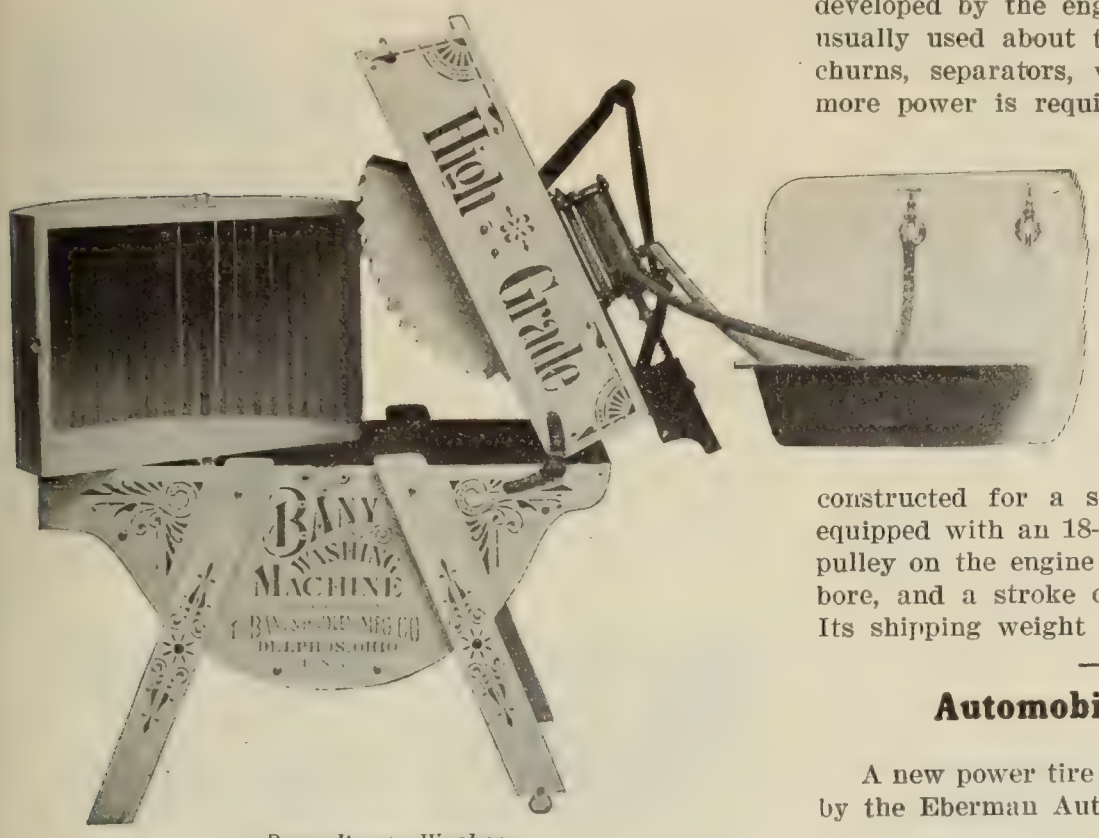


*Fig. 3.—Yale Coat and Hat Hook No. 41.*

M. Grab & Co., Chicago. Fig. 1 represents the Yale cloak and hat tree. It is so constructed as to occupy very little space and is arranged to hold hats, coats and wraps of any sort, as well as umbrellas. Notwithstanding it has strength enough to sustain a load of 200 lb., its weight is only 15 lb., and it is therefore easily moved from place to place as desired. It is built of steel and iron throughout and is finished in ebony, old iron finish, polished old copper or old brass. The hook cluster at the top revolves on a pivot making any part of it readily accessible even when placed in a corner. The central shaft can be extended affording an adjustment in hight of rack from a minimum of 53 in. to 72 in. over all. It can be quickly disassembled and arranged in compact form for shipping. In the rack here shown the hooks have a length of 11 in. and spread of 12 in., while the legs forming the base have a spread of 24 in. Fig. 2 shows a convenient wall cluster 12 in. in hight, with 6-in. projections, which is furnished in the same finishes as the tree. The clusters weigh 38 lb. per dozen and are packed in ¼-doz. boxes. Fig. 3 shows a single hook 9 in. high with 4-in. projections weighing 8 lb. per dozen and packed 1 doz. in a box. The line made by the company includes various other styles of trees and clusters.

## Bany Power Washer.

The Bany & Hadley Mfg. Company, Delphos, Ohio, is just putting on the market the Washing Machine shown in the accompanying illustration. It differs from many other machines in that it is not a rotary washer, but has double acting rub boards working independently of each other, and in opposite directions, the operation of which is said to be similar to washing by hand. As shown in the illustration, the lower cylinder can be taken out when

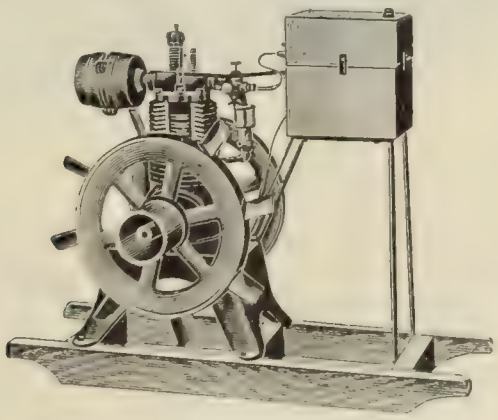



*Bany Power Washer.*

cleaning and drying the machine. Space is left between the lower cylinder and the bottom of the machine where dirt and lint may settle so that they are not kept in circulation among the clothes. The motor, attached as shown in the illustration, is guaranteed for one year, and is said to produce a maximum of power with a minimum of water pressure. It is stated by the company that rubbing of wrist bands and neck bands is unnecessary with this machine, and that anything from the finest fabric to the heaviest blankets can be washed without injury to the articles.

## The White Lily Gasoline Engine.

The 3 hp. gasoline engine here illustrated is a late design manufactured and put on the market by the White Lily Mfg. Company, Davenport, Iowa. Extreme sim-



*The White Lily Gasoline Engine.*

plicity of construction coupled with lightness and ease of control are features that especially adapt it to the driving of machinery on the farm and in small shops. The engine is equipped with an automatic governor, which breaks the electric spark current when it cuts off the fuel, thereby effecting a considerable saving in burnt out spark coils, spark plugs and battery cells. It is air cooled by means of a series of wide flange rings on the cylinder supplemented by wing fans on the flywheel. The exact point of maximum explosion efficiency is maintained by a spark advance lever of the automobile type, which requires no skill or special knowledge of the mechanism to operate. Cranking of the engine is facilitated by use of the spark lever, which, it is claimed, starts it at once without the annoyance of kicking from back explosion. It can be compactly mounted with its tank on skids, as shown in the illustration, in which form it can be conveniently moved from place to place, and is ready to run when screwed to the floor or staked to the ground. The engine is applicable to different types of farm machinery, and the 3 hp. developed by the engine is sufficient for most machines usually used about the house or barn, such as pumps, churns, separators, wood saws, and the like. But if more power is required for driving heavier machinery the maker recommends the use of two 3 hp. units, with countershaft, making a twin engine plant. The advantage of this arrangement is that when required only for light service, fuel and power are saved by running each engine separately or one at a time as desired. The engine is 32 in. in hight over all, occupies a floor space 18 x 22 in., and is constructed for a speed of 550 rev. per min. It is equipped with an 18-in. flywheel, and carries a 5 x 5 in. pulley on the engine shaft. It has a cylinder with 4-in. bore, and a stroke of 4 in. with compression of 45 lb. Its shipping weight is 325 lb.

## Automobile Power Tire Pump.

A new power tire pump recently placed on the market by the Eberman Auto Appliance Company, 1205 Monad-

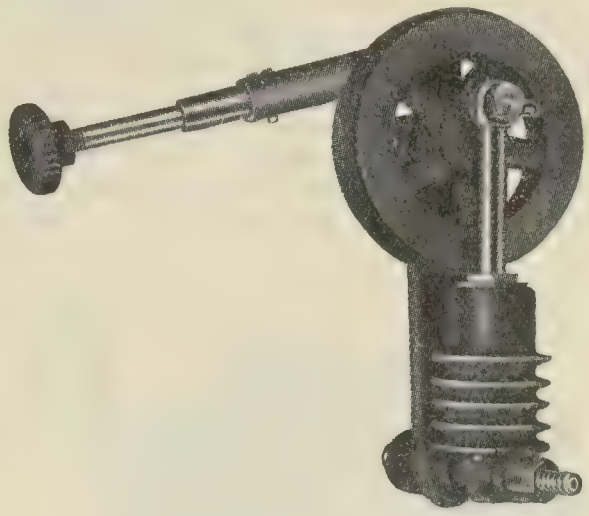


*Fig. 1.—Automobile Power Tire Pump.*

nock Block, Chicago, Ill., and illustrated herewith, has been designed to overcome all the labor and inconvenience incident to inflating tires by hand pumping inasmuch as it



*Fig. 2.—Pump Attached to a Car.*

is operated entirely by power taken direct from the engine flywheel. The pump, as shown in Fig. 2, is permanently attached to the car in a position to be instantly put into

action when needed by simply pushing a lever. The power is taken from the engine flywheel, the engine being run at a speed of from two to three hundred revolutions per minute, or even faster, without any injury to the pump, as it is an oscillating, direct acting, single cylinder pump of few parts, and built to withstand the most severe service. If necessary the pump will, it is stated, compress air to 120 pounds pressure, and will inflate any ordinary tire to its full pressure in less than two minutes. The pump is small and compact, occupying a space of only 5 x 9 in., and may be attached in any position around the flywheel, depending upon the type of car and the space available for it. When the tire is ready to be inflated the air tube is connected to the valve stem, the engine is started at slow speed, and the pump is started by simply pressing the friction drive wheel against the engine flywheel, and in less than two minutes' time the tire is filled.

## The Beyer Watchman's Portable Clock.

Because of the vigilant care and watchfulness required to guard against fire and other losses in commercial and industrial plants, the accuracy and dependability of time detectors designed to check the faithfulness of watchmen in the proper discharge of their duties is of the utmost importance. With a view to embodying every practical safeguard suggested by years of experience in the manufacture of such devices Hardinge Brothers, 1034-1036 Lincoln avenue, Chicago, Ill., have recently perfected the single record watchman's portable clock, shown in the accompanying illustrations. Among the new features designed to furnish added security are an embossed record made by a direct motion of the key, which leaves its imprint in the proper time space division without danger of working the recording dial loose upon its driving pins; and an automatic lock shutter and patent detective lock for the case. In Fig. 1 is shown the clock in its case, together with the case locking key and the key for unlocking the station box. The record on the dial is guarded by the recording lever on the side of the clock, and this cannot be operated until the key is properly inserted in its place. The latter is pressed in a direct line against the paper dial, and under the contact of male



*Fig. 1.—The Beyer Watchman's Portable Clock.*

and female dies the letters and figures of the records are embossed on the paper, as shown in Fig. 2. Incorporated in this mechanism is a device which regulates the pressure of the key, making it at all times uniform. Another advantage claimed for it is that when once the key is inserted and the recording operation started the key cannot be removed until it is finished. The clock is also supplied with a new automatic closed keyhole, which shields the dial from exposure and the chance of being mutilated or improperly operated from without by false keys or other improvised instruments. Accuracy as a timepiece is quite important, and to secure this the clock is fitted with an 11 jeweled special movement with heavy plates and hardened pinions. It is finished with all the precision and accuracy of a fine watch, from which it differs only in size and strength. In Fig. 3 are seen the station box and key to be used in the clock, and the weighted chain to which the key is attached, and by means of which it is automatically drawn back into its place when released after using. The possibility of its being misplaced through design or otherwise is thus prevented, and the watchman has only to close the door,

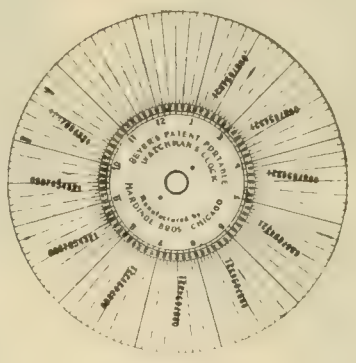


*Fig. 2.—Paper Clock Dial.*

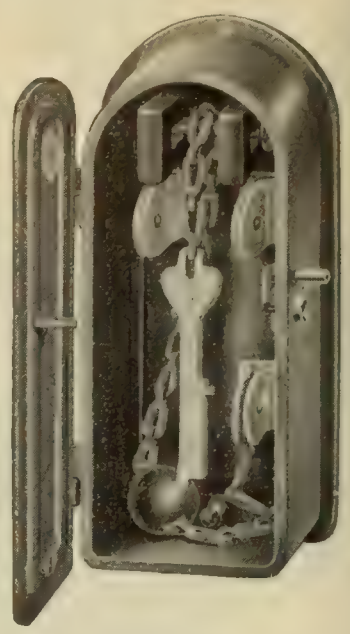


*Fig. 3.—Station Box and Key.*

which is self-locking. To guard against the temporary removal of the cast iron station boxes from their fixed position they are fastened in place with three strong metallic seals held by six 1-in. screws, whose heads are covered and sealed so that they cannot be tampered with without detection. Both clock and station are, it is stated, inspected, numbered, labeled and approved by the Underwriters' Laboratories, Inc., and therefore carries the credits allowed on such devices.

## Sidney No. 115 Concrete Barrow.

The Sidney Steel Scraper Company, Sidney, Ohio, has added to its product a new concrete wheelbarrow, as shown in the accompanying illustration. It has a deep



*Sidney No. 115 Concrete Barrow.*

riveted tray with angle, steel legs and braces, and metal tipped extension handles 69 in. long, 2½ in. wide and 1¾ in. thick. The tray is made of No. 16 gauge steel, and is 34 in. long by 22⅛ in. wide. It is 17½ in. on the slant in front and 9 in. in the back. Its capacity is 4 cu. ft. The wheel is 16 in. in diameter, with ⅜ x 1½ in. tire and eight ½-in. spokes. The axle is 11½ in. long and ⅝ in. in diameter. The shipping weight of this barrow is about 70 lb. It is also made as No. 116, with 14 gauge tray, the weight of which is 85 lb. These barrows are especially designed for the rapid, convenient and economical handling of soft concrete or mortar.

Hoover Bros., St. Marys, Kan., have sold out their Hardware business to Morris Bros. & Chroninger, who are preparing to move into a new building about August 1.

## The Yale Safety Razor.

The chief distinguishing feature of the safety razor made by the Yale Safety Razor Company, 3000 Lake Park avenue, Chicago, Ill., and here illustrated, is that it can be used with a free hand gliding stroke in the same manner as an ordinary razor. This, it is claimed, makes practice unnecessary to secure satisfactory results, and also renders difficult spots easy of access. The blades have double cutting edges, both of which can be used without changing position of the holder. They are fastened to the holder by a stationary pin and a retaining screw which engage the slotted ends. Adjustment is thus made positive and automatic, and the use of springs is entirely eliminated. Because of its simplicity and freedom of inaccessible holes and recesses no difficulty is experienced in keeping it clean, as both blade and holder can be quickly and easily wiped dry after using. An equally simple stropping holder is included in the set, by means of which the same set of blades can be kept in condition indefinitely. Stropping is recommended not so much for the purpose of sharpening as for polishing the cutting edge and keeping it free from the minute roughness caused by oxidation. The complete Yale safety

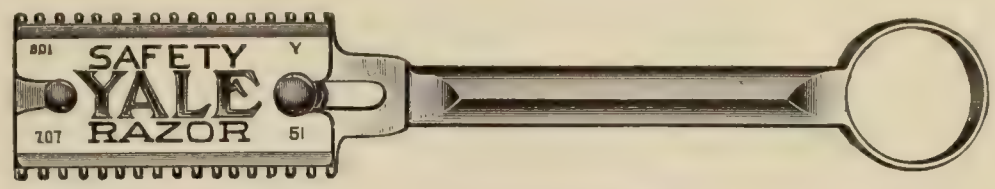



*Fig. 1.—The Yale Safety Razor.*

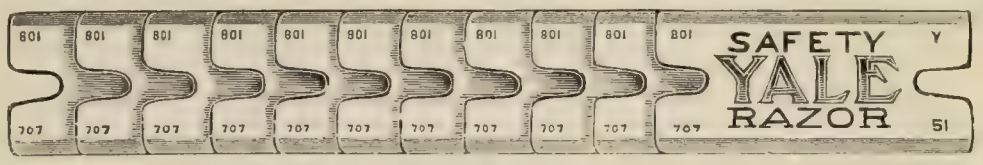



*Fig. 2.—Twelve Yale Safety Razor Blades.*

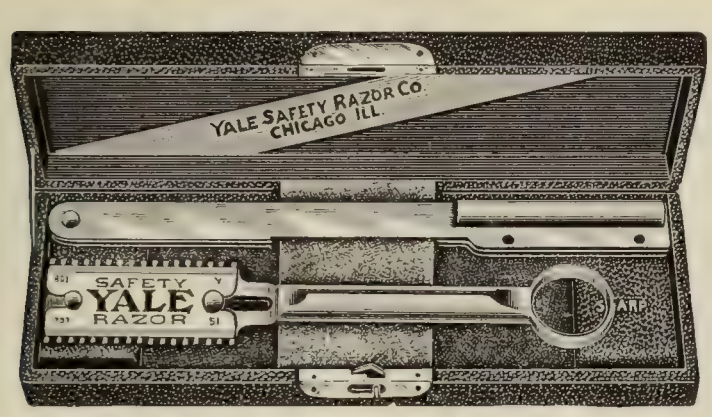
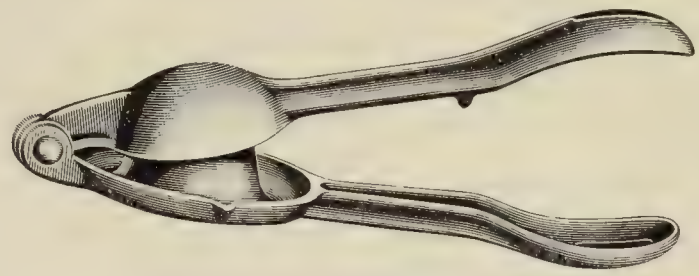



*Fig. 3.—Yale Safety Razor Set.*

razor set consists of a triple plated silver plate holder, nickel plated stropper and a set of Yale double edged blades packed in plush lined case.

## The Victor Lemon Squeezer.

The Taplin Mfg. Company, New Britain, Conn., is putting on the market the lemon squeezer shown herewith. It is made of malleable iron, electro plated. It is of strong, simple and compact design, easy to handle, and made for durability. Particular emphasis is placed on the advantage of the check on the upper handle, which prevents the upper part of the squeezer being pressed down too far when in use.



*The Victor Lemon Squeezer No. 7.*

JOHN H. GRAHAM & Co., 113 Chambers street, New York, have become sales representatives of the Hero Fruit Jar Company, Philadelphia, for both domestic and export trade. In addition to the complete line of Oilers made by this company, the firm will sell the fruit jar Caps, Can Screws, Sprinkler roses, Miners' Lamps, &c., of which the Hero Fruit Jar Company is a large manufacturer.

# PAINTS, OILS AND COLORS

### Animal, Fish and Vegetable Oils—

| | ℔ gal. |
|---|---|
| Linseed, State and Western, raw | .41 @42 |
| City, Boiled | .45 @46 |
| City, Raw | .44 @45 |
| Raw, Calcutta, in bbls | .70 @.. |
| Lard, Prime, Winter | .68 @69 |
| Extra No. 1 | .54 @56 |
| No. 1 | .47 @52 |
| Cotton-seed, Crude, f.o.b. mill | .32 @35 |
| Summer Yellow, prime | .43¾@45 |
| Summer White | .48 @49 |
| Yellow Winter | .48 @49 |
| Tallow, Acidless | 52 @55 |
| Menhaden, Brown, Strained | .38 @.. |
| Southern | @.. |
| Light Strained | .38 @.. |
| Bleached Winter | .40 @.. |
| Ex. Bleached Winter | .42 @.. |
| Cocoanut, Ceylon ℔ lb | 6¾@ 6½ |
| Cochin ℔ lb | 7 @ 7⅛ |
| Cod, Domestic, Prime | .42 @44 |
| Newfoundland | .43 @45 |
| Red, Elaine | .39 @41 |
| Saponified ℔ & | 5¾@ 5⅞ |
| Olive, Yellow | .67 @69 |
| Neatsfoot, Prime | .55 @58 |
| Palm, Lagos ℔ lb | 5¾@ 6 |

### Mineral Oils—

| | ℔ gal. |
|---|---|
| Black, 29 gravity, 25@30 cold test | .13 @13½ |
| 29 gravity, 15 cold test | .13½@14 |
| Summer | .12½@13 |
| Cylinder, light filtered | .20½@21 |
| Dark, filtered | .18 @19 |
| Paraffine, 903-907 sp. gravity | .14½@15 |
| 903 sp. gravity | .13½@14 |
| 883 sp. gravity | .11 @11½ |
| Red | .13½@14 |

### Miscellaneous—

| | |
|---|---|
| Barytes: | |
| White, Foreign ℔ ton | $18.50@20.50 |
| Amer., floated ℔ ton | 18.00@20.00 |
| Off color ℔ ton | 13.00@16.50 |
| Chalk, in bulk ℔ ton | 3.00@ 3.40 |
| China Clay, Imported ℔ ton | 11.50@18.00 |

| | ℔ gal. |
|---|---|
| Cobalt, Oxide ℔ 100 lb | 1.45@ 2.60 |
| Whiting, Commercial ℔ 100 lb | .42@ .52 |
| Gilders ℔ 100 lb | .55@ .60 |
| Ex. Gilders ℔ 100 lb | .60@ .65 |

### Putty, Commercial—

| | ℔ 100 lb |
|---|---|
| In bladders | $1.70 @1.80 |
| In bbls. or tubs | 1.20 @1.45 |
| In 1 lb to 5 lb cans | 2.65 @2.95 |
| In 12½ to 50 lb cans | 1.50 @1.90 |

### Spirits Turpentine—

| | ℔ gal. |
|---|---|
| In Oil bbls | .40½@41 |
| In machine bbls | .41 @41½ |

### Glue—

| | ℔ lb |
|---|---|
| Cabinet | .12 @15 |
| Common Bone | .7½@ 9 |
| Extra White | .18 @24 |
| Fish, liquid, 50 gal. bbls., per gallon | .60 @1.20 |
| Foot Stock, White | .12 @14 |
| Foot Stock, Brown | .9 @11 |
| German Common Hide | .10 @12 |
| German Hide | .12 @18 |
| French | .10 @40 |
| Irish | .13 @16 |
| Low Grade | .10 @12 |
| Medium White | .14 @17 |

### Gum Shellac—

| | ℔ lb |
|---|---|
| Bleached, Commercial | .26 @27 |
| Bone Dry | .31 @32 |
| Button | @.. |
| Diamond I | .47 @48 |
| Fine, Orange | .34 @35 |
| A. C. Garnet | .27 @28 |
| G. A. L. | .20 @21 |
| Kala Button | .18 @19 |
| D. C. | .48 @49 |
| Octagon B | .39 @40 |
| T. N. | .27½@29 |
| V. S. O. | .47 @48 |

### Colors in Oil—

| | ℔ lb |
|---|---|
| Black, Lampblack | .12 @14 |
| Blue, Chinese | .36 @46 |
| Blue, Prussian | .32 @36 |
| Blue, Ultramarine | .13 @16 |
| Brown, Vandyke | .11 @14 |
| Green, Chrome | .12 @16 |
| Green, Paris | @24 |
| Sienna, Raw | .12 @15 |
| Sienna, Burnt | .12 @15 |
| Umber, Raw | .11 @14 |
| Umber, Burnt | .11 @14 |

### White and Red, Lead &c.—

| | ℔ lb |
|---|---|
| Lead, English white, in Oil | .10⅛@10⅝ |
| Lead, American White: | |
| Dry and in Oil, 100, 250 and 500 lb kegs | 7 |
| Dry and in Oil, 25 and 50 lb kegs | 7¼ |
| Dry and in Oil, 12½ lb kegs | 7½ |
| In Oil, 25 lb tin pails | 7½ |
| In Oil, 12½ lb tin pails | 8 |
| In Oil, 1, 2, 3 and 5 lb tin cans, ass't | 9 |
| Red Lead and Litharge: | |
| In 100 lb kegs | 7 |
| In 25 and 50 lb kegs | 7¼ |
| In 12½ lb kegs | 7½ |
| In lots of less than 500 lbs, ½¢ ℔ lb advance over above prices of White and Red Lead and Litharge. | |
| Lead, American. Terms: On lots of 500 lbs and over, 60 days, or 2 for cash if paid in 15 days from date of invoice. | |

### Zinc, Dry—

| | ℔ lb |
|---|---|
| American, dry | 5⅛@ 5⅝ |
| Red Seal (French process) | 6¾@ 7 |
| Green Seal | 7⅛@ 7½ |
| German Red Seal (French process) | 6½@ 6⅞ |
| Green Seal | 7⅛@ 7½ |
| White Seal | 7⅞@ 8⅛ |
| French, Red Seal | 8¼@ 8½ |
| Green Seal | 10¼@10½ |

### Dry Colors—

| | ℔ lb |
|---|---|
| Black, Carbon | 6½@10 |
| Black Drop, American | 3½@ 8 |
| Black Drop, English | 5 @15 |
| Black, Ivory | .16 @20 |
| Lamp, commercial | 4 @ 6 |
| Blue, Celestial | 4 @ 6 |
| Blue, Chinese | .31 @33 |
| Blue, Prussian | .29 @31 |
| Blue, Ultramarine | 3½@15 |
| Brown, Spanish | ½@ 1 |
| Carmine, No. 40 | $3.10@3.25 |
| Green, Chrome, ordinary | 3½@ 5 |
| Green, Chrome, pure | .17 @25 |
| Ocher, American ℔ ton | $8.50@16.00 |
| American Golden | 2½@ 3¼ |
| French | 1¼@ 2 |
| Foreign Golden | 3 @ 4 |
| Orange Mineral, English | .10 @12 |
| French | .12¾@13 |
| German | .12 @.. |
| American | 9 @.. |
| Red, Indian, English | 4½@ 6 |
| American | 3 @ 5¼ |
| Red, Turkey, English | 4 @10 |
| Red, Tuscan, English | 7 @.. |
| Red, Venetian, Amer ℔ 100 lb | $1.50@2.25 |
| English ℔ 100 lb | $1.75@2.60 |
| Sienna, Italian, Burnt and Powdered | .3 @ 8 |
| Italian, Raw, Powdered | .5 @ 7 |
| American, Raw | 1½@ 2 |
| American Burnt and Powd | 1½@ 2 |
| Tale, French ℔ ton | $18.00@25.00 |
| American ℔ ton | 15.00@25.00 |
| Terra Alba, French ℔ 100 lb | .90@ 1.00 |
| English ℔ 100 lb | .80@ 1.00 |
| American ℔ 100 lb, No. 1 | .75@ .80 |
| American ℔ 100 lb, No. 2 | .60@ .65 |
| Umber, Turkey, Brnt. & Pow. | 2¾@ 3 |
| Turkey, Raw and Powdered | 2¾@ 3 |
| Burnt, American | 1½@ 2 |
| Raw, American | 1½@ 2 |
| Yellow, Chrome, Pure | .13¾@15 |
| Vermilion, American Lead | 7 @25 |
| Quicksilver, bulk | .65 @.. |
| Quicksilver, bags | @66 |
| English, Imported | .35 @70 |
| Chinese | $0.90@1.00 |

# Current Hardware Prices.

**General Goods.**—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

**Special Goods.**—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

**Range of Prices.**—A range of prices is indicated by means of the symbol @. Thus 33⅓ @ 33⅓ & 10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

**Names of Manufacturers.**—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1907, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

**Standard Lists.**—"The Iron Age Standard Hardware Lists" contains the list prices of many leading goods.

**Additions and Corrections.**—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

## Adjusters, Blind—

Columbian and Domestic.....33⅓%
North's .....10%
Zimmerman's See Fasteners, Blind.

### Window Stop—

Ives' Patent.....35%
Taplin's Perfection.....35%

## Ammunition—See *Caps, Cartridges, Shells, &c.*

## Anti-Rattlers—

Fernald Mfg. Co. Burton Anti-Rattlers, ℔ doz. pairs, Nos. 1, $0.75; 2, $0.60; 4, $1.00; 5, $0.50.
Fernald Quick Shifter, ℔ doz. pairs .....$2.00@$3.00

## Anvils—American—

Eagle Anvils.....℔ lb @8½¢
Hay-Budden, Wrought.....9½@9¾¢
Trenton .....℔ lb 9½@9¾¢

### Imported—

Swedish Solid Steel Sisco, Superior, ℔ lb.....10@10½¢
Peter Wright & Sons, ℔ lb. 84 to 349 lb. 11¢; 350 to 600 lb, 11½¢.

## Anvil, Vice and Drill—

Millers Falls Co., $18.00.....15&10%

## Apple Parers— See *Parers, Apple, &c.*

## Aprons, Blacksmiths'—

Livingston Nail Co.....10%

## Augers and Bits—

*Com. Double Spur....75&10@80%*
*Jennings' Patn., Bright.65&10@70%*
*Black Lip or Blued...65@65&5%*
*Boring Mach. Augers.....70%*
*Car Bits, 12-in. twist.....40&10%*
Ford's Auger and Car Bits.....40&5%
Ft. Washington Auger Co., Conard's .....35%
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip. R. Jennings' list, 25&7½%
No. 30, R. Jennings' list.....50%
Russell Jennings'.....25&10&2½%
L'Hommedieu Car Bits.....15%
Mayhew's Countersink Bits.....45%
Pugh's Black.....20%
Pugh's Jennirgs' Pattern.....35%
Snell's Auger Bits.....60%
Snell's Bell Hangers' Bits.....60%
Snell's Car Bits, 12-in. twist.....60%
Snell's King Auger Bits.....50%
Wright's Jennings' Bits.....50%

### Bit Stock Drills—

See *Drills, Twist.*

### Expansive Bits—

Clark's Pattern, No. 1, ℔ doz., $26; No. 2, $18.....60&10%
Ford's, Clark's Pattern.....66⅔&5%
C. E. Jennings & Co., Steer's Pat..25%
Lavigne Pat., small size, $18.00; large size, $26.00.....60&10%
Swan's .....60%

### Gimlet Bits—

*Per gro.*
*Common Dbl. Cut.....$3.00@3.25*
*German Pattern, Nos. 1 to 10, $4.75; 11 to 13, $5.75*

### Hollow Augers—

*Bonney Pat., per doz..$5.50@6.00*
Ames .....25&10
Universal .....20

### Ship Augers and Bits—

*Ship Augers.....40&10@—%*
Ford's .....33⅓&5%
C. E. Jennings & Co.:
L'Hommedieu's .....6%
Watrous' .....33⅓&7½%
Snell's .....48%

## Awl Hafts—See *Handles, Mechanics' Tool.*

## Awls—

*Brad Awls:*
*Handled .....gro. $2.75@3.00*
*Unhdled, Shldered...gro.63@66¢*
*Unhandled, Patent..gro.66@70¢*
*Peg Awls:*
*Unhandled, Patent..gro. 31@34¢*
*Unhdled, Shldered..gro. 65@70¢*
*Scratch Awls:*
*Handled, Com...gro. $3.50@4.00*
*Handled, Socket.gro.$11.50@12.00*

## Awl and Tool Sets—See *Sets, Awl and Tool.*

## Axes—

*Single Bit, base weights: Per doz.*
*First Quality.....$4.75@5.00*
*Second Quality.....$4.25@4.50*
*Double Bit, base weights:*
*First Quality.....$7.00@7.50*
*Second Quality.....$6.50@6.75*

### Axle Grease—

See *Grease, Axle.*

## Axles— *Iron or Steel.*

*Concord, Loose Collar...4¼@4½¢*
*Concord, Solid Collar....4½&5 ¢*
*No. 1 Common, Loose...3½@4 ¢*
*No. 1½ Com., New Style.4¼@4¾¢*
*No. 2 Solid Collar.....4¼@4¾¢*
*Half Patent:*
*Nos. 7, 8, 11 and 12.....70%*
*Nos. 13 to 14.....70%*
*Nos. 15 to 18...70&10@70&10&5%*
*Nos. 19 to 22...70&10@70&10&5%*

### Boxes, Axles—

*Common and Concord, not turned .....lb., 5@6¢*
*Common and Concord, turned, lb., 6@7¢*
*Half Patent.....lb., 9½@10¢*

## Bait— Fishing—

Hendryx:
A Bait.....20%
B Bait.....25%
Competitor Bait.....20&5%

## Balances— Sash—

Caldwell new list.....50&10%
Pullman .....50&10%

### Spring—

*Light Spring Balances.60@60&5%*
Chatillon's:
Light Spg. Balances.....50@50&10
Straight Balances.....40@40&10%
Circular Balances.....50&10%
Large Dial.....30%

## Barb Wire—See *Wire, Barb.*

## Bars— Crow—

*Steel Crowbars, 10 to 40 lb.... per lb., 2¼@2½¢*

### Towel—

No. 10 Ideal, Nickel Plate..℔ gro. $8.50

## Beam, Scale—

*Scale Beams.....40%*
Chattillon's No. 1.....30
Chatillon's No. 2.....40%

## Beaters, Carpet—

Holt-Lyon Co.:
No. 12 Wire Coppered ℔ doz. $0 80; Tinned .....$0.85
No. 11 Wire Coppered ℔ doz. $1.15; Tinned .....$1.20
No. 10 Wire Tinned.....℔ doz. $1.50

### Beaters Egg—

Dover Stamping & Mfg. Co.:
Genuine Dover, per gro., No. 1, Tumbler Size, $7.50; No. 2, Family Size, $7.50; No. 3, Extra Family Size, $24.00; No. 4, Hotel Size, $30.00.
Holt-Lyon Co.:
Holt, per doz., No. 5, Jap'd, $0.80; No. A, Jap'd, $1.15; No. B, Jap'd, $1.85; No. 6, Jap'd, $1.65.
Lyon, Jap'd, per doz., No. 2, $1.35.
Taplin Mfg. Co.:
Improved Dover, per gro., No. 60, $6.00; No. 75, $6.50; No. 100, $7.00; No. 102, Tin'd, $8.50; No. 150, Hotel, $15.00; No. 152, Hotel Tin'd, $17.00; No. 200, Tumbler, $8.50; No. 202, Tumbler Tin'd, $9.50; No. 300, Mammoth, per doz., $25.00.

## Bellows—

*Blacksmith, Standard List:*
*Split Leather.....60&10@65%*
*Grain Leather.....50@5@10%*

### Hand—

| *Inch..* | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|
| *Doz..* | $5.00 | 5.50 | 6.00 | 6.50 | 7.50 |

### Molders—

| *Inch..* | 10 | 12 | 14 | 16 |
|---|---|---|---|---|
| *Doz..* | $7.50 | 9.00 | 12.00 | 15.00 |

*Net Prices.*

## Bells— Cow—

*Wrought Cow Bells.....75%*
Jersey .....75&10
Texas Star.....50%

### Door—

Home, R. & E. Mfg. Co.'s.....55&10%

### Hand—

*Polished, Brass.....60@60&10%*
*White Metal.....60@60&10%*
*Nickel Plated.....50&10%*
*Swiss .....50&10%*
Cone's Globe Hand Bells.....33⅓@35

### Miscellaneous—

*Farm Bells.....lb., 2¼@2½¢*
*Church and School....60@60&10%*

## Belting— Leather—

*Standard .....70&10@70&10&5%*
*Light .....75&10%*
*Cut Leather Lacing..60@60&10%*
*Leather Lacing Sides, per sq. ft. 20¢*

### Rubber—

*Competition (Low Grade), 70&10@75%*
*Standard .....60&10@70%*
*Best Grades.....40@50%*

## Bench Stops—

See *Stops, Bench*

## Benders and Upsetters, Tire—

Green River Tire Benders and Upsetters .....20%

## Bicycle Goods—

John S. Leng's Son & Co.'s 1907 list:
Chain, Parts, Spokes.....50%
Tubes .....60%

## Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

## Blocks Tackle—

*Common Wooden.....75@75&5%*
B. & L. B. Co.:
Boston Wood Snatch, 50%; Eclipse Steel, 75%; Hollow Steel, 50&10%; Star Wire Rope, 50%; Tarbox Metal Snatch, 50%; Tarbox New Style Steel, 50&10%; Wire Rope Snatch, 50%.
Lane's Patent Automatic Lock and Junior .....30%
See also Machines, Hoisting.

## Boards, Stove—

*Paper and Wood Lined.....55%*
*Embossed .....55%*

## Boards, Wash—

See *Washboards.*

## Bobs, Plumb—

Keuffel & Esser Co.....33⅓%

## Bolts

### Carriage, Machine, &c,—

*Common Carriage (cut thread):*
*⅜ x 6 and smaller..75&5@—%*
*Larger and longer.....70@—%*
*Phila. Eagle, $3.00 list...80@—%*
*Bolt Ends.....70@—%*
*Machine (Cut Thread):*
*⅜ x 4 and smaller..75&10@—%*
*Larger and longer.....70@—%*

### Door and Shutter—

*Cast Iron Barrel, Japanned, Round Brass Knobs:*

| *Inch* | 3 | 4 | 5 | 6 | 8 |
|---|---|---|---|---|---|
| *Per doz..* | $0.30 | .35 | .45 | .60 | .80 |

*Cast Iron Spring Foot, Jap'd:*

| *Inch* | 6 | 8 | 10 |
|---|---|---|---|
| *Per doz.....* | $1.20 | 1.50 | 2.25 |

*Cast Iron Chain, Flat, Japanned:*

| *Inch* | 6 | 8 | 10 |
|---|---|---|---|
| *Per doz.....* | $1.00 | 1.40 | 1.65 |

*Cast Iron Flat Shutter, Jap'd, Brass Knobs:*

| *Inch* | 6 | 8 | 10 |
|---|---|---|---|
| *Per doz.....* | $0.75 | .95 | 1.25 |

*Wrought Barrel Japanned, 80&10@80&10&5%*
*Barrel Bronzed.....60&10%*
*Spring .....70&10@70&10&10%*
*Shutter .....50&5@50&10&5%*
*Square Neck.....75@75&10%*
*Square .....70&10@10@80%*
Ives' Patent Door.....55
Ives' Wrought Metal.....45

### Expansion—

F. H. Evans' Crescent.....40@60%
Richards Mfg. Co.....55&10%
Steward & Romain Mfg. Co.:
Style No. 13, Double.....60%
Style No. 1, Single.....60%
Style No. 100, Dbl. Jaw, Single..55%
Lag Screw.....66⅔%

### Plow and Stove—

*Plow .....65&5@70%*
*Stove .....85@85&5%*

### Tire—

*Common Iron.....80@80&5%*
*Norway Iron.....80@80&5%*
American Screw Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84...82½%
Bay State, list Dec. 28, '99.....80%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84...82½%
Eclipse, list Dec. 28, '99.....80%
Russell, Burdsall & Ward Bolt & Nut Co.:
Empire, list Dec. 28, '99.....80%
Norway Phila., list Oct. '84.....80%
Eagle .....82½%
Shelton Co.:
Tiger Brand, list Dec. 28, '99....80%
Phila., Eagle, list Oct. 16, 1884..82½%
Upson Nut Co.:
Tire Bolts.....72½%

## Borers, Bung—

*Borers Bung, Ring, with Handle:*

| *Inch.....* | 1¼ | 1½ | 1¾ | 2 |
|---|---|---|---|---|
| *Per doz...* | $4.80 | 5.60 | 6.40 | 8.00 |
| *Inch.....* | 2¼ | 2½ | | |
| *Per doz.....* | $8.65 | 11.50 | | |

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.75; No. 3, $2.50 each.....25%

## Boxes, Mitre—

C. E. Jennings & Co.....25%
Langdon, New Langdon and Langdon Improved, 20&10%; Langdon Acme .....15&10%
Perfection .....40%
Seavey .....45%

## Braces—

*Comman Ball, American....$1.50*
Barber's .....50&10&10@60&10%
Fray's Genuine Spofford's.....60%
Fray's No. 61, 166, 206, 614.....50%
C. E. Jennings & Co.....50&5%
Mayhew's Ratchet.....60%
Mayhew's Quick Action Hay Pat...50%
Millers Falls Drill Braces.....25&10%
P., S. & W. Co., Peck's Pat....60&10%

## Brackets—

*Wrought Steel.75&10@75&10&10%*
Bradley Metal Clasp...80&10@80&10&5
Griffin's Pressed Steel.....75@75&10%
Griffin's Folding Brackets.....70&10%
Taplin Victor Handy Egg Beater Bracket .....℔ doz. $1.50

## Bright Wire Goods—

See *Wire and Wire Goods.*

## Broilers—

Kilbourne Mfg. Co.....75&20%
Wire Goods Co.....75%

## Buckets, Galvanized —

*M'fr's list, price per gross.*

| *Quart..* | 10 | 12 | 14 |
|---|---|---|---|
| *Water, Reg...* | 26.85 | 29.50 | 33.50 |
| *Water, Hvy...* | 45.35 | 48.00 | 52.00 |
| *Fire, Rd. Btm.* | 32.00 | 34.65 | 38.65 |
| *Well .....* | 37.35 | 41.35 | 45.35 |

*10&7½&5&5%*

## Bull Rings—See *Rings, Bull.*

## Butts— Brass—

*Wrought, High List, Oct. 26,'06.55%*
Cast Brass, Tiebout's.....40%

### Cast Iron—

*Fast Joint, Broad....40&10@50%*
*Fast Joint, Narrow...40&10@50%*
*Loose Joint.....70&10@75%*
*Loose Pin.....70&10@75%*
*Mayer's Hinges.....70@70&5*
*Parliament Butts.....70@70&5*

### Wrought Steel—

*Bright.*
*Light Narrow, Light Reversible .....70&5%*
*Reversible and Broad..70&5%*
*Loose Joint, Narrow, Light Inside Blind, &c.....70%*
*Back Flaps, Table Chest.65% Japanned.*
*Light Narrow, Loose Pin. 40&5%*
*Light Narrow, Ball Tip..60%*
*Broad .....40&5%*
*Steeple Tipped.....70%*
*Ball Tipped.....70%*

*Extra, 10@—*

## Cages, Bird—

Hendryx Brass: Series 3000, 5000, 1100, net list; 1200, 15%; 200, 300, 900 ..... 30%
Hendryx Bronze: Series 700, 800....30
Hendryx Enameled..... 35%

## Calipers—See *Compasses.*

## Calks, Toe and Heel—

*Blunt, 1 prong, per lb.....4@4½¢*
*Sharp, 1 prong, per lb...4½@5¢*
Burke's, Blunt, 4@4¾¢; Sharp, 4½@5¼¢
Lautier, Blunt, 4@4¼¢; Sharp, 4½@4¾¢
Perkins', Blunt, ℔ lb, 3.65¢; Sharp, 4.15¢

## Can Openers—

See *Openers, Can.*

## Caps, Percussion—

*Eley's E. B.....52@55¢*
*G. D.....per M 34@35¢*
*F. L.....per M 40@42¢*
*G. E.....per M 48@50¢*
*Musket.....per M 62@63¢*

### Primers—

*Berdan Primers, $2 per M..20&5%*
*Primer Shells and Bullets..15&10%*
*All other primers per M..$1.52@1.60*

## Carpet Stretchers—

See *Stretchers, Carpet.*

## Cartridges—

*Blank Cartridges:*
*32 C. F., $5.50.....10&5%*
*38 C. F., $7.00.....10&5%*
*22 cal. Rim, $1.50.....10&5%*
*32 cal. Rim, $2.75.....10&5%*
*B. B. Caps, Con. Ball, Swgd. $1.90*
*B. B. Caps, Round Ball....$1.40*
*Central Fire.....25%*
*Target and Sporting Rifle.15&5%*
*Primed Shells and Bullets.15&10%*
*Rim Fire, Sporting.....50%*
*Rim Fire, Military.....15&5%*

## Casters—

*Bed.....65&10@70%*
*Plate.....60&5@60&10%*
*Philadelphia.....70&10@75%*
Acme, Ball Bearing.....35%
Gem (Roller Bearing).....70&10&10&5
Steel Gem.....50%
Standard Ball Bearing.....45%
Yale (Double Wheel) low list...40&10%

## Cattle Leaders—

See *Leaders, Cattle.*

## Chain, Proof Coil—

*American Coil, Straight Link:*

| 3-16 | ¼ | 5-16 | ⅜ | 7-16 | ½ | ⅝ |
|---|---|---|---|---|---|---|
| $8.15 | 5.55 | 4.60 | 3.95 | 3.75 | 3.65 | 3.55 |

¾ 7-16 1⅛ to 1¼ inch.
$4.45 3.55

*In cask lots, deduct 25¢.*
*German Coil.....60@60&5%*
*German Pattern Coil:*
*6-0 to 1.....70&5@70&10%*
*2 and 3..60&10&10@60&10&10&5%*
*4, 5 and 6.....50&10@50&10&5%*

### Halter—

*Halter Chains.....60&5@60&10%*
*German Pattern Halter Chains, list July 24, '97....60&10&5@70%*
Covert Mfg. Co.:
Halter ..... 35&5%

## Cow Ties—

See *Halters and Ties.*

## Trace, Wagon, &c.—

*Traces, Western Standard: 100 pr.*
*6½—6-3, Straight, with ring..$28.00*
*6½—6-2, Straight, with ring..$29.00*
*6½—8-2, Straight, with ring..$32.00*
*6½—10-2, Str'ght, with ring..$37.00*

*NOTE.—Add 2c per pair for Hooks Twist Traces: add per pair for Nos. 2 and 3, 2c; No. 1, 3c; No. 0, 4c to price of Straight Link.*

*Eastern Standard Traces, Wagon Chain, &c...60&10@60&10&5%*

### Miscellaneous—

*Jack Chain, list July 10, '93:*
*Iron.....60&10&7½%*
*Brass.....65%*
*Safety and Plumbers' Chain.75%*
*Gal. Pump Chain....lb., 4½@5%*
Bridgeport Chain Co.:
Triumph Halter and Coil.35&2½@40%
Triumph Dog.....50&10@60%
Brown Halter and Coil....45@50&5%
Covert Mfg. Co.:
Breast, Halter, Heel, Rein, Stallion ..... 40%
Oneida Community:
American Halter, Dog and Kennel Chains ..... 35&2½@40%
Niagara Dog Leads and Kennel Chains ..... 45@50&5%
Wire Goods Co.:
Dog Chain.....70%
Universal Dbl.-Jointed Chain.....50%

## Chain and Ribbon, Sash—

Oneida Community:
Steel Chain.....60%
Pullman:
Bronze Chain, 60%; Steel Chain, Coppered ..... 60&10%
Sash Chain Attachments, per set..8¢
Aluminoy Sash Ribbon, per 100 ft. ..... $2.00@$5.00
Sash Ribbon Attachments, per set..8¢

## Chalk—(From Jobbers.)

*Carpenters' Blue.....gro., 50¢*
*Carpenters' Red.....gro., 45¢*
*Carpenters' White.....gro., 40¢*

## Checks, Door—

Bardsley's ..... 45%
Pullman, per gro..... $54.00
Russwin ..... 33⅓%

## Chests, Tool—

American Tool Chest Co.:
Boys' Chests, with Tools.....55%
Youths' Chests, with Tools.....40
Gentlemen's Chests, with Tools..30%
Farmers', Carpenters, etc., Chests, with Tools ..... 20%
Machinists' and Pipe Fitters' Chests, Empty..... 45%
Tool Cabinets..... 45%
C. E. Jennings & Co.'s Machinists' Tool Chests..... 7½%

## Chisels—

### Socket Framing and Firmer

*Standard List.....80&10@—%*
Buck Bros..... 30%
C. E. Jennings & Co.:
Socket Firmer No. 10.....25&7½%
Socket Framing No. 15.....25&7½%
Swan's ..... 66⅔@70%
L. & I. J. White & Co.....30@30&5%

### Tanged—

*Tanged Firmers.....30&5@35%*
Buck Bros..... 30%
C. E. Jennings & Co. Nos. 191, 181..25%
L. & I. J. White Co.....25&5%

### Cold—

*lb.*
*Cold Chisels, good quality..13@15¢*
*Cold Chisels, fair quality..11@12¢*
*Cold Chisels, ordinary....9@10¢*

## Chucks—

Almond Drill Chucks..... 35%
Almond Turret Six-Tool Chuck..... 40%
Beach Pat, each $8.00.....35&5%
Empire ..... 25%
Blacksmiths' ..... 25%
Jacobs' Drill Chucks..... 35%
Pratt's Positive Drive..... 25%
Skinner Patent Chucks:
Independent Lathe Chucks.....35%
Universal, Reversible Jaws.....35%
Combination, Reversible Jaws....35%
Drill Chucks, New Model, 25%; Standard, 45%; Skinner Pat., 25%; Positive Drive..... 40%
Planer Chucks..... 20%
Face Plate Jaws..... 35%
Standard Tool Co.:
Improved Drill Chuck..... 45%
Union Mfg. Co.:
Combination, Nos. 1, 2, 3, 4, 5, 6, 7, 8 and 17, 40%; No. 21.....35%
Scroll Combinations, Nos. 83 and 84 ..... 30%
Geared Scroll, Nos. 33, 34 and 35..25%
Independent Iron, Nos. 18 and 318.35%
Independent Steel, No. 64.....25%
Union Drill, Nos. 000, 00, 100, 101, 102, 103, 104..... 35%
Union Czar Drill..... 25%
Universal, 11, 12, 16, 17, 13, 14, 15..40%
Universal No. 42..... 35%
Iron Face Plate Jaws, Nos. 28, 30, 48 and 50..... 35%
Steel Face Plate Jaws, Nos. 70 and 72 ..... 30%
Westcott Patent Chucks:
Lathe Chucks..... 50%
Little Giant Auxiliary Drill.....50%
Little Giant Double Grip Drill...50%
Little Giant Drill, Improved.....50%
Oneida Drill..... 50%
Scroll Combination Lathe.....50%
Whitaker Mfg. Co.:
National Drill..... 25%

## Clamps—

Adjustable Hammers.....20@20&5%
Carriage Makers', P., S. & W. Co. ..... 50&10%
Besly, Parallel.....33⅓&10%
Myers' Hay Rack..... 45%
Lineman's Swedish Neverturn.....65%
Wood Workers' Hammers.....40&10%
Saw Clamps, see Vises, Saw Filers'

## Cleaners, Drain,

Iwan's Champion, Adjustable..... 50%
Iwan's Champion, Stationary..... 40%

### Sidewalk—

Star Socket. All Steel..℔ doz. $4.05 net
Star Shank. All Steel..℔ doz. $3.24 net
W. & C. Shank, All Steel, ℔ doz., 7½ in., $3.00; 8 in., $3.25.

## Cleavers, Butchers'—

Foster Bros..... 30%
Fayette R. Plumb..... 30
L. & I. J. White Co..... 30

## Clippers, Horse and Sheep—

Chicago Flexible Shaft Co.:
1902 Chicago Horse, each..$10.75
20th Century Horse, each...$5.00
Lightning Belt Horse, each..$15.00
Chicago Belt Horse, each..$20.00
Stewart's Enclosed Gear Horse, each..... $6.75
Stewart's Patent Sheep Shearing Machine, each..... $12.75
Stewart Enclosed Gear Shearing Machine, No. 8, each..$9.75
} 30%

## Clips, Axle—

*Regular Styles, list July 1, '05, 80&80&10%*

## Cloth and Netting, wire

—See *Wire, &c.*

## Cocks, Brass—

*Hardware list:*
*Plain Bibbs, Globe, Kerosene, Racking, Liquor, Bottling, &c.....75%*
*Compression Bibbs.....70%*

## Coffee Mills—

See *Mills, Coffee.*

## Collars, Dog—

Nickel Chain, Walter B. Stevens & Son's list ..... 40%
Leather, Walter B. Stevens & Son's list ..... 10

## Compasses, Dividers, &c.

*Ordinary Goods.....70&10&5%*

## Conductor Pipe,—

*L. C. L. to Dealers:*

| | Gal. Steel. | Charcoal. |
|---|---|---|
| *Northeastern* | *70&10%* | *50&10&7½%* |
| *Eastern* | *75%* | *50&10&7½%* |
| *Pittsburgh* | *75&10&5%* | *60%* |
| *Central* | *75&10%* | *60%* |
| *Northwestern.* | *75&7½%* | *60%* |
| *Western* | *70&12½%* | *50&12½%* |
| *Tennessee* | *70&10%* | *50&12½%* |
| *Southern* | *70%* | *50&12½%* |
| *Southwestern.* | *70%* | *50&5%* |

*Terms, 60 days: 2% cash 10 days. Factory shipments generally delivered.*
See also Eave Troughs.

## Coolers, Water—

L. & G. Mfg. Co.:

| Gal. | 2 | 3 | 4 | 6 | 8 |
|---|---|---|---|---|---|
| Galvanized, ea. | $1.85 | $2.00 | $2.25 | $2.90 | $3.90 |

Galvanized, Lined, side handles,

| Gal. | 2 | 3 | 4 | 6 | 8 |
|---|---|---|---|---|---|
| Each | $1.95 | $2.15 | $2.40 | $3.30 | $4.15 |

White Enameled..... 10%
Agate Lined..... 10%

## Coppers' Tools—

See *Tools, Coopers'.*

## Coppers, Soldering—

*Soldering Coppers, 3 lb. to pair and heavier, 20¢; lighter than 3 lb. to pair.....22¢*

## Cord—Sash—

*Braided, Drab.....lb. 35¢*
*Braided, White, Com., Nos. 8 to 12, 20¢; No. 7, 20½¢; No. 6, 21½¢. In lots of 12 doz. or over, 1 cent less per pound.*
*Cable Laid Italian, lb., No. 18..37¢*
*Italian, lb., A, No. 18, 25¢; B, 22¢*
*Common India.....lb., 11@11½¢*
*Cotton Sash Cord, Tw'ted..18@20¢*
*Patent Kassia.....lb....20¢*
*Cable Laid Russia.....lb...21¢*
*India Hemp, Br'd'd.....lb...21¢*
*India Hemp, Twisted...lb..13@14¢*
*Patent India, Twisted..lb...17¢*
Pearl Braided, cotton, No. 6, ℔ lb. 27½¢; No. 7, 26½¢; Nos. 8 to 12, 26¢
Eddystone, Braided, Nos. 8 to 12, 26¢; 7, 26½; 6, 27½¢.
Harmony Cable Laid Italian, Nos. 7 to 10.....℔ lb 23¢
Pullman:
Wire Sash Cord..... 10%
Sash Cord Attachments, per 100..$2.00
Samson, Nos. 8 to 12:
Braided, ℔ lb., Drab Cotton, 55¢; Italian Hemp, 40¢@50¢; Linen, 65¢; White Cotton, 50¢; Spot Cord.....50¢
Massachusetts, White...℔ lb 40¢
Massachusetts, Drab...℔ lb 45¢
} 15%
Phoenix, White, Nos 8 to 12....27¢
Silver Lake, per lb.:
A, Drab, 45¢; A, White, 40¢; B, Drab, 40¢; B, White, 35¢; Italian Hemp, 40¢; Linen....57½¢
See also Chain and Ribbon.

## Wire, Picture—

*Full Length.....90@—%*
*Short Length.....90&20@—%*
Hendryx Standard Wire Picture Cord, old list, 85&10%
Turner & Stanton Co. Wire Picture Cord ..... 90%

## Cradles—

*Grain.....50%*

## Crayons—

*White Round Crayons, Cases, 100 gro., $8.00, $8.50 and $9.00 according to grade.*
Zelnicker's Lumber: ℔ gro.
White and Purple, Indelible....$7.50
Blue, Red, Green, Yellow and Terra Cotta, $6.50; Black.....$4.50
Giant Lumber, 5¼ in. x 15-16 in. round, all colors, $12.00; Indelibles, $14.00; Blacks.....$10.00
Genuine Soapstone, Metal Workers', 5 in. x ¼ in. Round, $2.50; 5 in. x ¼ in. Square, $1.75; 5 x ½ x 3 16, $2.50; 5 x 1¼ x 3-16.....$3.00
Suremark, Black, $2.25; Blue, Red and Yellow..... $2.50

## Crooks, Shepperds'—

Fort Madison, per doz., Heavy, $5.50; Light ..... $5.00

## Crow Bars—See *Bars, Crow.*

## Cultivators—

Victor Garden..... 50%

## Cutlery, Table—

International Silver Company:
No. 12 M'd'm Knives, 1847, ℔ doz. $3.50
Star, Eagle, Rogers & Hamilton and Anchor.....℔ doz. $3.00
Wm. Rogers & Son.....℔ doz. $2.50

## Cutters—Glass—

H. H. Mayhew Co..... 40%
Red Devil..... 60
B. Mfg. Co..... 40
Woodward ..... 50%

## Meat and Food—

American ..... 30%

| Nos. | 401 | 402 | 403 | 404 | 405 | 406 | 407 |
|---|---|---|---|---|---|---|---|
| Each | $5 | $7 | $10 | $12 | $25 | $50 | $60 |

Enterprise:

| Nos. | 5 | 10 | 12 | 22 | 32 |
|---|---|---|---|---|---|
| Each | $2 | $3 | $2 75 | $4.50 | $6 |

25@25&7½%
No. 202, $1 50 ..... 10&7½%
P., S. & W. Co.:
Dixon's .....℔ doz. 33⅓%

| Nos... | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| | $14.00 | $17 00 | $19.00 | $30 00 |

Ideal ..... 40&10&5%
Hales ..... 60&10&5%
Little Giant .....℔ doz 40&50%

| Nos | 305 | 310 | 312 | 320 | 322 |
|---|---|---|---|---|---|
| | $35.00 | $18 00 | $41 00 | $72.00 | $68 00 |

New Triumph No 665, ℔ doz $24 00. 40&10%
Russwin Food, No. 1, $24.00; No. 2, $27 00 ..... 15&10&10%

| | $15.00 | $18.00 |
|---|---|---|

Enterprise Beef Shavers.....25@30

## Slaw and Kraut—

Henry Disston & Sons:
Slaw and Kraut Cutters..... 35%
Corn Graters..... 30
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife....℔ doz. $3.00
Combined Slaw Cutter and Corn Grater .....℔ doz. $4.00

## Tobacco—

*All Iron, Cheap...doz. $4.25@4.50*
Enterprise ..... 25@30
National, ℔ doz., No. 1, $21; No. 2, $18 ..... 40%

## Diggers, Post Hole, &c—

Disston's:
Rapid, ℔ doz., $24.00..... 25%
Samson, ℔ doz., $34.00..... 25%
Iwan's Imp'ved Post Hole Auger..40%
Vaughan Pattern Post Hole Augers, ℔ doz., $7.00
Perfection Post Hole Diggers, ℔ doz. ..... $8.75
Split Handle Post Hole Diggers, ℔ doz., $7.75
Hercules Pattern, ℔ doz.....$10.00
Kohler's, ℔ doz., Universal, $15.00; Little Giant, $12.00; Hercules, $10.00; Invincible, $9.00; Rival, $8.50; Pioneer..... $7.50
Never-Break Post Hole Diggers, ℔ doz., $24.00..... 60%

## Dividers—See *Compasses.*

## Drawing Knives—

See *Knives, Drawing.*

## Dressers Emery Wheel—

Sterling Emery Wheel Dressers.....35%
Sterling Wheel Dresser Cutters.....35%

## Drills and Drill Stocks—

*Blacksmith's Common Drilling Machines .....$1.50@1.75*
Breast, Millers Falls..... 15&10%
Breast, P., S. & W..... 33⅓%
Goodell Automatic Drills.50&10@60&10%
Millers Falls Automatic Drills.33⅓&10%
Ratchet, Curtis & Curtis..... 25%
Ratchet, Parker's..... 40%
Ratchet, Weston's..... 40%
Ratchet, Weston's, Style H Improved ..... 40%
Ratchet, No. 012..... 40%
Ratchet, Celebrated..... 40%
Ratchet, Whitney's, P., S. & W., 50&5%
Whitney's Hand Drill, No. 1, $10.00; Adjustable, No. 10, $12.00.....33⅓%

### Twist Drills—

*Bit Stock.....70@70&5%*
*Taper and Straight Shank, 60&10@70%*

## Drivers, Screw—

*Screw D'ver Bits, per doz..45@50¢*
Balsey's Screw Holder and Driver, ℔ doz., 2½-in., $6; 4-in., $7.50; 6-in., $9 ..... 50%
Buck Bros.' Screw Driver Bits.....30%
Champion ..... 50%
Disston's ..... 70%
Fray's Hol. H'dle Sets, No. 3, $12..50%
Ford's Brace Screw Drivers....40&10%
Gay's Double Action Ratchet.....35%
Goodell's Auto.....65@65&10%
Mayhew's Black Handle..... 40%
Mayhew's Monarch..... 40%
Millers Falls, Nos. 20 and 21....25&10%
Millers Falls, Nos. 11, 12, 41, 42..15&10%
Smith & Hemenway Co., Neverturn, 66⅔%; Elmora, [illegible]ar. 30&10%
Swan's:
Nos. 7565 to 7568, 60%; No. 7540, 40&10%

## Eave Trough, Galvanized—

| Territory... | Gal. Steel. | Charcoal. Iron. |
|---|---|---|
| *Northeastern* | *75&10&5%* | *60&20%* |
| *Eastern* | *80&2½%* | *60&20%* |
| *Pittsburgh* | *80&20* | *65&10%* |
| *Central* | *80&10&10&2½%* | *65&10%* |
| *Northwestern.* | *80&10&10%* | *65&10%* |
| *Western* | *80&10%* | *60&10&5%* |
| *Tennessee* | *80&5%* | *60&10&5%* |
| *Southern* | *80%* | *60&10&5%* |
| *Southwestern.* | *75&10&2½%* | *60&5%* |

*Terms.—2% for cash. Factory shipments generally delivered.*
*Note.—Lower prices are made in some sections.*
See also Conductor Pipe and Elbows.

## Elbows and Shoes—

*Factory shipments, all territories: Galv. Steel and Galv. C. I.*
*Standard Gauge.....85@85&10%*
*No. 26.....50%*
*No. 24.....25%*
*No. 22.....10%*

## Elbows, Stove Pipe—

Edwards, Standard Blue... 10&10&10
Edwards, Royal Blue.....40&10&10
Reeves, Dover, one piece .....40&10

## Emery, Turkish—

| | ¼ to ½: | ½ to 2: | Flour. |
|---|---|---|---|
| *Kegs.....lb.* | *5¢* | *5½¢* | *3½¢* |
| *½ Kegs.....lb.* | *5¼¢* | *5¾¢* | *3¾¢* |
| *¼ Kegs.....lb.* | *5½¢* | *6¢* | *4¢* |
| *10-lb. cans, 10 in case....* | *6½¢* | *7¢* | *6¢* |
| *10 lb. cans, less than 10.....* | *10¢* | *10¢* | *8¢* |
| *Less quantity..* | *10¢* | *10¢* | *8¢* |

*NOTE. In lots 1 to 3 tons a discount of 10% is given.*

## Extractors, Lemon Juice—

—See *Squeezers, Lemon.*

## Fasteners, Blind—
Zimmerman's .....50&10%
Walling's .....40&10
Upson's Patent.....40%

### Cord and Weight—
Ives and Titan.....33⅓%

### Corrugated—
Acme Corrugated Fasteners.....70%

### Faucets—
*Cork Lined.....50&10@60%*
*Metallic Key, Leather Lined, ..60&10@70%*
*Red Cedar.....40&5@40&10&5%*
*Petroleum .....70&10@75%*
B. & L. B. Co.:
Metal Key.....60&10%
Star .....60%
West Lock.....50&10%
John Sommer's Peerless Tin Key....40%
John Sommer's Boss Tin Key.....50%
John Sommer's Victor Mtl. Key.50&10%
John Sommer's Duplex Metal Key..60%
John Sommer's Diamond Lock.....40%
John Sommer's I.X.L. Cork Lined..50%
John Sommer's Reliable Cork Lined..50&10%
John Sommer's Chicago Cork Lined.60%
John Sommer's O. K. Cork Lined...50%
John Sommer's No Brand, Cedar....50%
John Sommer's Perfection, Cedar....40%
Self Measuring:
Enterprise, ₱ doz. $36.00.....40&10%
Lane's, ₱ doz. $36.00.....40&10%
National Measuring, ₱ doz. $36.40&10%

### Felloe Plates—
See *Plates, Felloe.*

### Files— Domestic—
*List Nov. 1, 1899.*
*Best Brands.....70&10@75&10%*
*Standard Brands.....75&10@80%*
*Lower Grade....75&10&10@80&10%*

### Imported—
*Stubs' Tapers, Stubs' list, July 24, '97.....33⅓@40%*

### Fixtures, Fire Door—
Allith Underwriters' Approved.....50%
Richards Mfg. Co.:
Universal, No. 103; Special, No. 104 .....$3.75
Fusible Links, No. 96.....50%
Expansion Bolts, No. 107.....60&10%

### Grindstone—
*Net Prices:*

| *Inch* | *15* | *17* | *19* | *21* |
|---|---|---|---|---|
| *Per doz.* | *$3.60* | *3.85* | *4.15* | *4.65* |

P., S. & W. Co.....25%
Reading Hardware Co.....60%

### Fodder Squeezers—
See *Compressors.*

### Forks—
*NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.*
Iowa Dig-Ezy Potato.....60&10%
Victor, Hay.....60&15&2½%
Victor, Manure.....66⅔%
Victor, Header.....65%
Champion, Hay.....66⅔%
Champion, Header.....65%
Champion, Manure.....60&15&2½%
Columbia, Hay.....60&20%
Columbia, Manure.....70%
Columbia, Spading.....70&12½%
Hawkeye Wood Barley.....40%
W. & C. Potato Digger.....60&10%
Acme Hay.....60&20%
Acme Manure, 4 tine.....60&10&5%
Dakota Header.....60&20%
Jackson Steel Barley.....60&20%
Kansas Header .....65%
W. & C. Favorite Wood Barley....40%
Plated.—See Spoons.

### Frames— Wood Saw—
*White, S'g't Bar, per doz.75@80¢*
*Red, S'g't Bar, per doz..$1.00@1.25*
*Red, Dbl. Brace, per doz.$1.40@1.50*

### Freezers, Ice Cream—

| *Qt.....* | *1* | *2* | *3* | *4* | *6* |
|---|---|---|---|---|---|
| *Each....* | *$1.25* | *$1.60* | *$1.90* | *$2.20* | *$2 80* |

### Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

### Fry Pans—See *Pans, Fry.*

### Fuse— *Per 1000 Feet.*
*Hemp .....$2.75*
*Cotton ..... 3.20*
*Waterproof Sgl. Taped.. 3.65*
*Waterproof Dbl. Taped.. 4.40*
*Waterproof Tpl. Taped.. 5.15*
10&2½%

## Gates, Molasses and Oil—
*Stebbins' Pattern.....80@80&5%*

### Gauges—
*Marking, Mortise, &c..50@50&10%*
Chapin-Stephens Co.:
Marking, Mortise, &c.....50&50&10%
Disston's Marking, Mortise, &c..67½%
Wire, Brown & Sharpe's.....33⅓%
Wire, Morse's.....25
Wire, P., S. & W. Co.....33⅓%

### Gimlets— Single Cut—
*Numbered assortments, per gro.*
*Nail, Metal, No. 1, $2.00; 2, $2.30*
*Spike, Metal, No. 1, $4.00; 2, $4.30*
*Nail, Wood Handled, No. 1, $2.30; 2, $2.60*
*Spike, Wood Handled, No. 1, $4.30; 2, $4.60*

### Glass, American Window
See *Trade Report.*

### Glasses, Level—
Chapin-Stephens Co.....65@65&10%

### Glue, Liquid Fish—
*Bottles or Cans, with Brush, 25&10@50%*
Elwell's .....40%

### Grease, Axle—
*Common Grade...gro.$6.00@$6.50*
Dixon's Everlasting, 10-lb. pails, ea. 85¢; in boxes, ₱ doz., 1 lb, $1.20; 2 lb.....$2.00
Helmet Hard Oil.....25%

### Griddles, Soapstone—
Pike Mfg. Co.....33⅓@33⅓&10%

### Grinders—
Royal Mfg. Co.:
Alundum Grinding Machines, each, Nos. 01, $1,75; 1A, $2.50; 10, $5.00 .....30%
Alundum Sickle Grinders, each, Nos. 20, $5.00; 20A, $6.00; 20A Combined, $6.50.....30%
Alundum Disc Grinders, each, $2.50 .....30%

### Grindstones—
Pike Mfg. Co.:
Improved Family Grindstones, ₱ inch, ₱ doz., $2.00.....33⅓%
Richards Mfg. Co., Eli and Cycle, Ball Bearing, mounted.....40%

### Grips, Nipple—
Perfect Nipple Grips.....40&10&2%

## Halters and Ties—
*Cow Ties.....65@65&10%*
Bridgeport Chain Co.:
Triumph Coil and Halters.35&2½@40%
Brown Coil and Halters...45@50&5%
Brown Cow Ties.....50&5@50&10&5%
Brown Tie Outs.....70&10@75&5%
Covert Mfg. Co.:
Web .....30&2%
Jute Rope.....35%
Sisal Rope.....20%
Cotton Rope.....45%
Hemp Rope.....45%
Oneida Community:
Am. Coil and Halters.....40@40&5%
Am. Cow Ties.....45@50%
Niagara Coil and Halters...45@50&5%
Niagara Cow Ties.....45&5@50&10&5%

### Hammers—
### Handled Hammers—
Heller's Machinists'....55&10@55&10&5%
Heller's Farriers.....40&5@40&10&5%
Peck, Stow & Wilcox Co.:
Crucible Steel.....40&10%
Farriers' .....40&10%
Riveting .....40&10%
Machinists' .....60&10%
Blacksmiths' .....50%
Fayatte R. Plumb:
A. E. Nail.....40&2½@40&12½%
Eng. and B. S. Hand.50&10&5@60&5%
Machinists' Hammers.....60@60&10%
Rivet and Tinners'.40&7½@40&12½&5%

### Heavy Hammers and Sledges—
*Under 3 lb., per lb., 50¢...80&10%*
*3 to 5 lb., per lb., 40¢...80&10&10%*
*Over 5 lb., per lb., 30¢.....*
*Over 5 lb., per lb., 30¢.80&10&10%*

### Handles—
### Agricultural Tool Handles
*Axe, Pick, &c....60&10@60&10&5%*
*Hoe, Rake, &c.....40%*
*Fork, Shovel, Spade, &c.:*
*Long Handles.....40%*
*D Handles.....40%*

### Cross-Cut Saw Handles—
Atkins' .....40%
Champion .....50%
Disston's .....50%

### Mechanics' Tool Handles—
*Auger, assorted...gro.$3.00@$3.50*
*Brad Awl.....gro.$1.65@$1.75*
*Chisel Handles, Ass'd, per gro.:*
*Tanged Firmer, Apple, $2.40@$2.65; Hickory.....$2.15@2.40*
*Socket Firming, Apple, $1.75@$1.95; Hickory.....1.60@1.75*
*Socket Framing, Hickory, $1.60@$1.75*
*File, assorted.....gro.$1.30@$1.40*
*Hammer, Hatchet, &c., 60&10@60&10&5%*
*Hand Saw, Varnished, doz., 80&85¢; Not Varnished.....65@75¢*
*Plane Handles:*
*Jack, doz., 30¢; Fore, doz...45¢*
Chapin-Stephens Co.:
Carving Tool.....30@30&10%
Chisel .....60@60&10%
File and Awl.....60@60&10%
Saw and Plane.....30@30&10%
Screw Driver.....30@30&10%
Millers Falls Adj. and Ratchet Auger Handles .....15&10%
Nicholson Simplicity File Handle.... ₱ gro. $0.85@$1.50
J. L. Osgood:
Indestructible File and Tool, ₱ gro., No. 1, $8.00; No. 2, $8.50; No. 3, $9.00; No. 4, $9.50; No. 5, $10.00.....gro. lots 10%
W. A. Zelnicker Supply Co.:
Hammer, ₱ doz., 12 in., $2.00; 14 in., $2.00; 16 in., $2.30; 18 12., $2.50; 20 in., $2.70; 22 in., $3.00; 24 in., $3.30; 26 in., $3.50; 30 in., $3.80.
Sledge, ₱ doz., oval, 30 in., $3.80; octagon, 30 in., $3.80; oval, 36 in., $4.00; octagon, 36 in., $4.00.
Axe, ₱ doz., 28 to 34 in., $5.60; 36 in., $5.80.
Adze, ₱ doz., 36 in., $5.80; 36 in., $7 80.
Pick, ₱ doz., R. R., 36 in., $8.00; coal, 34 in., $5.80.
Hatchet, ₱ doz., 12 to 14 in., $2.00.
Extra 5@10% often given.

### Hangers—
*NOTE.—Barn Door Hangers are generally quoted per pair, without track and Parlor Door Hangers per double set with track, &c.*
Allith Mfg. Co.:
Reliable, Nos. 1 and 2; Allith, No. 3; Allith Adjustable, No. 6; Reliable Parlor Door.....50%
Chicago Spring Butt Co.:
Friction .....25%
Oscillating .....25%
Big Twin.....25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door.....50%
Elevator .....30%
Railroad .....50%
Cronk & Carrier Mfg. Co.:
Loose Axle.....60&2½%
Roller Bearing.....70&2½%
Griffin Mfg. Co.:
Solid Axle, No. 10, $12.00..60&10%
Roller Bearing, No. 11, $15.00, 60&10%
Roller Bearing, Ex. Hy., No. 22, $18.00.....60&10%
Bull Dog, $24.00.....70%
Lane Bros. Co.:
Parlor, Ball Bearing, $4.00; Standard, $3.15; No. 105, $2.85; New Model, $2.80; New Champion .....$2.25
Barn Door, Standard.....60&10%
Hinged .....net $6.08
Covered .....60&5%
Special .....70&5%
Lawrence Bros.:
Advance .....55&10%
Cleveland .....70&7½%
Clipper, No. 75.....60%
Crown .....55&10%
Cyclone, No. 40.....net $6.50
Tandem, No. 50.....net $7.50
New York.....55&10%
McKinney Mfg. Co.:
Roller Bearing, Nos. 1 and 2..70%
Anti-Friction .....60
Hinged Hangers, King Charm.60%
Richards Mfg. Co.:
Hangers, Nos. 47, 48, 147, 247, 60&5%
Pioneer Wood Track, No. 3..$2.25
Roller B'r'g St'l Track No. 12.$2.20
Roller B'r'g St'l Track No. 13.$2.50
Roller B'r'g, Nos. 39, 41, 43, 70&7½%
Hero, Adj. Track No. 19..50&10%
Adjustable Track Tandem Trolley Track No. 16.....50&10%
Seal, Steel Track No. 8.....$2.25
Auto Adj. Track No. 22..50&5%
Trolley B. D. No. 17, $1.25; F. D. No. 120, $2.25; No. 121, $2.45; No. 150.....$2.50
Safety Underwriters F. D. No. 101 .....50%
Tandem No. 41..2½ and 3 60&10%
Palace, Adjustable Track No. 132 .....50&5%
Royal, Adjustable Track No. 122 .....50&10%
Ives' Wood Track No. 1.....$2.25
Trolley B. D. No. 20.....50&10%
Trolley B. D. No. 24, $1.30; No. 27, $1.40; No. 28.....$1.60
Roller Bearings, Nos. 37, 38, 39, 41, 43, 44, Sizes 1 and 2.70&7½%
Anti-friction, No. 42; No. 44, sizes 2½ and 3.....60%
Hinged Tandem No. 48....60&5%
Folding Door B. B. Swivel No. 135 .....40%
Taylor & Boggis F'y Co.'s Kidder's Roller Bearing.50&15&10&5%
Myers' Stayon Hangers.....60%

### Hangers— Garment—
Pullman Trouser, ₱ gro., No. 1 $9.00; No. 4, $24.00; No. 5, $16.50; No. 8, Black Enamel, $7.50; No. 10, $21.00; No. 12, $8.00; No. 15, Rods, $9.00; No. 18, Loops.....$10.00
Victor Folding.....₱ gro. $9.60

### Gate—
Myers' Patent Gate Hangers, ₱ doz. net .....$4.50

### Joist and Timber—
Lane Bros. Co.....30%

### Hasps—
Griffin's Security Hasp.....50&10%
McKinney's Perfect Hasp, ₱ doz..60%

### Hatchets—
*Regular list, first qual.40&12½@—*
*Second quality.....50&10&5@—*

### Heaters, Carriage—
Clark, No. 5, $1.75; No. 5B, $2.00; No. 3, $2.25; No. 3D, $2.75; No. 7D, $3.00; No. 3E, $3.25; No. 1, $3.50.....25%
Clark Coal, ₱ doz., $0.75.....20%

### Hinges—
### Blind and Shutter Hinges
*Surface Gravity Locking Blind: (Victor; National; 1868 O. P.; Niagara; Clark's O. P.; Clark's Tip; Buffalo.)*

| *No.* | *1* | *3* | *5* |
|---|---|---|---|
| *Doz. pair* | *$0.75* | *1.35* | *2.70* |

*Mortise Shutter: (L. & P., O. S., Acme, &c.)*

| *No.* | *1* | *1½* | *2* | *2½* |
|---|---|---|---|---|
| *Doz. pair* | *$0.70* | *.65* | *.60* | *.55* |

*Mortise Reversible Shutter (Buffalo, &c.):*

| *No.* | *1* | *1½* | *2* |
|---|---|---|---|
| *Doz. pair* | *$0.70* | *.65* | *.60* |

North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%
Charles Parker Co.....70@75%
Parker Wire Goods Co.
Hale & Benjamin Automatic Blind Hinges .....20%
Hale's Blind Awning Hinges, No. 110, for wood, $9.00; No. 111, for brick, $9.00.....20%
Reading's Gravity.....60%
Stanley's Steel Gravity Blind Hinges, No. 1647½, ₱ doz. sets, without screws, $0.95; with screws, $1.25.
Wrightsville Hardware Co.:
O. S., Lull & Porter.....75&5%
Acme, Lull & Porter.....75%
Queen City Reversible.....75%
Shepard's Noiseless, Nos. 60, 65, 55 .....75&5%
Niagara, Gravity Locking, Nos. 1, 3 & 5.....75&5%
Tip Pat'n, No. 1.....75&10%
No. 3.....75&5%
Buffalo Gravity Locking, Nos. 1, 3 & 5.....70&10&5%
Shepard's Double Locking.....75%
Champion Gravity Locking.....75&5%
Pioneer .....75&10%
Empire .....65
W. H. Co.'s Mortise Gravity Locking, No. 2.....60&10%

### Gate Hinges—
*Clark's or Shepard's—Doz. sets:*

| *No.* | *1* | *2* | *3* |
|---|---|---|---|
| *Hinges with L't'chs.* | *$2.00* | *2.70* | *5.00* |
| *Hinges only.....* | *1.25* | *1.90* | *3.50* |
| *Latches only.....* | *.70* | *.75* | *.85* |

*New England:*
*With Latch.....doz..@$2.00*
*Without Latch.....doz..@$1.60*
*Reversible Self-Closing:*
*With Latch.....doz..@$1.75*
*Without Latch...doz. ...@$1.35*
*Western:*
*With Latch.....doz. $1.75*
*Without Latch.....doz..$1.15*
Wrightsville Hardware Co.:
Shepard's or Clark's Hinges and Latches, Hinges only or Latches only, Nos. 1, 2, or 3.....70%

### Pivot Hinges—
Bommer Bros. Pivot.....40%
Lawson Mfg. Co. Matchless.....50%

### Spring Hinges—
*Holdback, Cast Iron...$6.75@$7.00*
*Non-Holdback, C'st Iron$6.50@$6.75*
J. Bardsley:
Bardsley's Non-Checking Mortise Floor Hinges.....40%
Bardsley's Patent Checking.33⅓%
Bommer Bros.:
Bommer Ball Bearing Floor..40%
Bommer Spring Hinges.....40%
No. 999 Wrot. Steel Hold Back, ₱ gro. $9.00
Chicago Spring Butt Co.:
Chicago Spring Hinges.....25%
Triple End Spring Hinges....50%
Chicago (Ball Bearing) Floor.50%
Garden City Engine House...25%
Keene's Saloon Door.....25%
Columbian Hardware Co.:
Acme, Wrought Steel.....30%
Acme, Brass.....25%
American .....30%
Columbia, ₱ gr., No. 14, $9.00; No. 18.....$25.00
Columbia, Adj., No. 7, ₱ gr.$12.00
Columbian Hinges.....60&10%
Gem, new list.....30%
Clover Leaf and Acoru, gro. lots, $5.10; ½ gro. lots.....$6.00
Oxford, new list.....30%
Floor Spring Hinges.....65&10%
Lawson Mfg. Co., Matchless...30%
Richards Mfg. Co.:
Superior Double Acting Floor Hinges .....40%
Shelby Spring Hinge Co.:
Buckeye All Steel Holdback Screen Door.....₱ gr. $9.00
Chief Ball Bearings Floor Hinge .....50%
Ball Bearing Door.....25%
No. 777, Sheet Steel Holdb'k, ₱ gr. pr.....$9.00
Standard Mfg. Co.:
Champion Double Acting Door Hinge .....25&10&10%
Standard Double Acting Floor Hinge .....25&10&10%
Superior Spring Hinge Co.:
Superior Floor Hinges.....33⅓%
Extra 10% often given on most of these Hinges.

### Wrought Iron Hinges—
*Strap and T Hinges, &c., list December 20, 1904:*
*Light Strap Hinges..50&10%*
*Heavy Strap Hinges..60&5%*
*Light T Hinges.....50%*
*Heavy T Hinges.....40%*
*Extra Hvy. T Hinges.50&10%*
*Hinge Hasps.....33⅓%*
*Cor. Heavy Strap....60&5%*
*Cor. Ex. Heavy T...50&10%*
*Extra 10&7½&2%.*

*Screw Hook and Strap.*
*6 to 12 in..lb.3½¢*
*14 to 20 in..lb.3¼¢*
*22 to 36 in..lb.3 ¢*

*Screw Hook and Eye:*
*3, to 1 inch .....lb.6¼¢*
*⅝-inch .....lb.7½¢*
*½-inch .....lb.8½¢*

### Hitchers, Stall—
Covert Mfg. Co., Stall Hitchers..30&2%

### Hods— Coal—

| *M'f'gr's list, price per gross:* | | | | |
|---|---|---|---|---|
| *Inch* | *15* | *16* | *17* | *18* |
| *Galv. Open....* | *$35* | *$39* | *$42* | *$46* |
| *Jap. Open.....* | *26* | *28* | *31* | *35* |
| *Galv. Funnel...* | *43* | *48* | *52* | *56* |
| *Jap. Funnel....* | *33* | *36* | *59* | *43* |

*10&7½&5%*

### Masons' Etc.
Cleveland Wire Spring Co.:
Steel Brick, No. 162.....each $1.05
Steel Mortar, No. 158.....each $1.35

### Hoes— Eye—
*Scovil and Oval Pattern, 60&10@60&10&10%*
*Grub, list Feb. 23, 1899, 70&10@70&10&10%*
D. & H. Scovil.....27½%
Am. Fork & Hoe Co. (Scovil Pattern) .....60%

### Handled—

*NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.*

Cronk's Weeding, No. 1, $2.00; No. 2, $2.50
Star Double Bit.....$3.20
Ft. Madison Cotton Hoe....70&10%
Ft. Madison Crescent Cultivator Hoe, ₱ doz.....70&10%
Ft. Madison Mattock Hoes:
Regular Weight.....₱ doz. 40&5%
Junior Size.....₱ doz. $4.00
Ft. Madison Sprouting Hoe, ₱ doz., 60&10%
Ft. Madison Dixie Tobacco Hoe.....75&10&7½%
Kretsinger's Cut Easy.....70&10%
Warren Hoe.....45&10%
W. & C. Ivanhoe.....75&2%
B. B. 6 in., Cultivator Hoe.....$3.40
B. B., 6½ in.....$3.50
Acme Wedding.....₱ doz., net, $4.35
W. & C. L'tning Shuffle Hoe, ₱doz.$5.25

### Hoisting Apparatus—

See *Machines, Hoisting.*

### Holders— Bit—

Angular, ₱ doz. $24.00.....45&10%

### Door—

Bardsley's, Iron, 40%; Brass and Bronze.....25%
Empire.....50%
Pullman.....25%
Richards Mfg. Co.: No. 117, Ever-ready, 40%; Nos. 118, 119, Sure Grip.....50%
Superior.....33⅓%

### File and Tool—

Nicholson File Holders and File Handles.....33⅓@40%

### Fruit Jar—

Triumph Fruit Jar Holder, ₱ gross, $18.00; ₱ doz.....$2.00

### Trace and Rein—

Fernald Double Trace Holder, ₱ doz. pairs.....$1.25
Dash Rein Holder, ₱ doz. pairs.$1.25

### Hones—Razor—

Pike Mfg. Co., Belgian and Swaty, 50%; German.....33⅓%

### Hooks—Cast Iron—

Bird Cage, Reading.....40%
Clothes Line, Reading List.....40%
Coat and Hat, Reading.....45&20%
Coat and Hat, Wrightsville.....60&5
Harness, Reading List.....40%

### Wire—

*Belt*.....80%
*Wire C. & H. Hooks..80@80&10%*
Bradley Metal Clasp Wire, Coat and Hat, 70&10%; Ceiling.....70&10%
Columbian Hdw. Co., Gem.....70&5%
Parker Wire Goods Co., King..70&10%
Wire Goods Co.:
Acme, 60&10%; Chief, 70%; Crown, 75%; Czar, 65%; V Brace, 75%; Czar Harness, 50&10%.

### Wrought Iron—

*Box, 6 in., per doz., $0.90; 8 in., $1.15.*
*Cotton.....doz.$1.25@$1.50*
Wrought Staples, Hooks, &c.—
See Wrought Goods.

### Miscellaneous—

*Hooks, Bench,* see *Stops, Bench.*
*Bush, Light, doz., $6.20; Medium, $6.75; Heavy, $7.65*
*Grass, best, all sizes, per doz., $2.75@$3.00*
*Grass, common grades, all sizes, per doz.....$1.25@$1.50*
*Whiffletree.....lb.5¾@6c*
*Hooks and Eyes:*
*Brass.....60@60&10%*
*Malleable Iron.....70@70&10%*
Covert Mfg. Co. Gate and Scuttle Hooks.....40%
Ft. Madison Cut-Easy Corn Hooks, ₱ doz. $3.25 net
Turner & Stanton Co. Cup and Shoulder.....85&10%
Bench Hooks—See Bench Stops.
Corn Hooks—See Knives, Corn.

### Horse Nails—

See *Nails, Horse.*

### Horseshoes—

See *Shoes, Horses.*

### Hose, Rubber—

*Garden Hose, ¾-inch:*
*Competition.....ft. 6@6½¢*
*3-ply Guaranteed....ft. 8½@9¢*
*4-ply Guaranteed....ft. 9½@12¢*
*Cotton Garden, ¾-in., coupled:*
*Low Grade.....ft. 8@ 9c*
*Fair Quality.....ft.10@11¢*

### Irons— Sad—

*From ¼ to 10.....lb.2½@2¾¢*
*B. B. Sad Irons.....lb.3¼@3½¢*
*Mrs. Potts', cents per set:*

| | Nos. 50 | 55 | 60 | 65 |
|---|---|---|---|---|
| *Jap'd Tops* | 83 | 80 | 93 | 91 |
| *Tin'd Tops* | 88 | 85 | 98 | 95 |

*New England Pressing..lb.3¾@4¢*

### Bar and Corner—

Richards Mfg. Co., Bar, 60&10%; Corner.....60%

### Pinking—

*Pinking Irons.....doz.60@65¢*

### Irons, Soldering

See *Coppers.*

### Jacks, Wagons—

Covert Mfg. Co.:
Auto Screw.....30&2%; Steel, 15%
Lockport.....50%
Lane's Steel.....30&5%
Richards' Tiger Steel, No. 130...50&10%
Smith & Hemenway Co.'s.....25%

### Ladder—

Richards Mfg. Co., Ladder Jacks..50%

## Kettles—

*Brass, Spun, Plain.....20@25%*
Enameled and Cast Iron See Ware, Hollow.

### Knives—

### Butcher, Kitchen, &c.—

Foster Bros.' Butcher, &c.....30%
Wilkinson Shear & Cutlery Co....60%

### Corn—

Columbian Cutlery Co., Wilcut Brand Knives and Hooks.....60%
Withington Acme, ₱ doz., $2.65; Dent, $2.75; Adj. Serrated, $2.20; Serrated, $2.10; Yankee No. 1, $1.50; Yankee No. 2, $1.15.

### Drawing—

*Standard List.....80&10@—%*
C. E. Jennings & Co., Nos. 45, 46, 25&7½%
Jennings & Griffin, Nos. 41, 42, 66⅔&7½%
Swan's.....66⅔@70%
Watrous.....16⅔%
L. & I. J. White.....20&5@25%

### Hay and Straw—

*Serrated Edge, per doz.$5.00@5.50*
Iwan's Sickle Edge.....₱ doz. $9.50
Iwan's Serrated.....₱ doz. $10.00

### Miscellaneous—

*Farriers'.....doz.$2.60@3.55*
Wostenholm's.....₱ doz. $3.00@3.25

### Knobs—

*Base, 2½-inch, Birch or Maple, Rubber Tip.....gro.$1.25@1.40*
*Carriage, Jap., Drive, all sizes, gro.35@40¢*
*Door, Mineral.....doz.65@70¢*
*Door, Por. Jap'd.....doz.70@75¢*
*Door, Por. Nickel..doz.$2.05@2.15*
Bardsley's Wood Door, Shutters, &c.15%

## Lacing, Leather—

See *Belting, Leather*

### Ladders, Store, &c.—

Allith Mfg. Co., Reliable.....50%
Lane's Store.....25%
Myers' Noiseless Store Ladders....50%
Richards Mfg. Co.:
Improved Noiseless, No. 112.....50%
Climax Shelf, No. 113.....50%
Trolley, No. 109.....50%

### Ladles, Melting—

L. & G. Mfg. Co. (low list).....20%
P., S. & W.....40&10%
Reading.....60%

### Lanterns—Tubular—

*Regular, No. 0.....doz.$4.35@4.50*
*Side Lift, No. 0.....doz.$4.60@4.75*
*Hinge Globe, No. 0.doz.$4.60@4.75*
*Other Styles.....40@40&10%*

### Bull's Eye Police—

*3-inch.....$3.75@4.00*

### Latches— Thumb—

*Roggin's Latches, Jap'd, with Screws.....doz.35@40¢*

### Door—

Allith Mfg. Co., Reliable and Alligator, 50%; Reliable Cold Storage, 50%
Cronk & Carrier Mfg. Co., No. 101, ₱ doz. $2.00
Richards' Bull Dog, Heavy, No. 125.....50&5%
Richards' Trump, No. 127.....$1.50

### Leaders, Cattle—

*Small.....doz.50¢; large, 60¢*
Covert Mfg. Co.:
Cotton, 45%; Hemp, 45%; Jute, 35%; Sisal, 20%.

### Leathers, Pump—

See *Pumps—*

### Lifters, Transom—

R. & E.....10%

### Lines—

| *Wire Clothes, Nos.* | *18* | *19* | *20* |
|---|---|---|---|
| *100 feet* | *$2.30* | *1.95* | *1.75* |
| *75 feet* | *$1.95* | *1.65* | *1.50* |

Samson Cordage Works:
Solid Braided Chalk, Nos. 0 to 3..40%
Solid Braided Masons'.....30%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50.....₱ gr. 20%
Masons' Lines, Shade Cord, &c.; White Cotton, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50; Colors, No. 3½, $1.75; No. 4, $2.25; No. 4½, $2.75; Linen, No. 3½, $2.50; No. 4, $3.50; No. 4½, $4.50.....20%
Tent and Awning Lines: No. 5, White Cotton, $7.50; Drab Cotton, $8.50.....20%
Clothes Lines, White Cotton: 50 ft., $2.75; 60 ft., $3.25; 70 ft., $3.75; 75 ft., $4.00; 80 ft., $4.25; 90 ft., $4.75; 100 ft., $5.25.....20%
Turner & Stanton Co.:
Solid Braided Chalk, Masons' and Awning Lines.....40%
Clothes Lines, White Cotton....20%
Shade Cord, Cotton or Linen....20%

### Locks— Cabinet—

*Cabinet Locks....33⅓@33⅓@5%*

### Door Locks, Latches, &c.—

*NOTE.—Net Prices are very often made on these goods.*
Reading Hardware Co.....10%
R. & E. Mfg. Co.....10%

### Padlocks—

R. & E. Mfg. Co. Wrought Steel and Brass.....75&10%

### Sash, &c.—

Ives' Patent:
Bronze and Brass 55&5%; Crescent, 60%; Iron 60%; Window Ventilating, 40&20%; Robinson Pat. Ventilating Sash Lock 33⅓%.
Pullman Patent Ventilating Lock 25%
Reading Sash Locks.....40%

## Machines—Boring—

*Com. Upr't, without Augers, $2.00@2.25*
*Com. Angl'r, without Augers, $2.25@2.50*
Swan's Improved.....40&10
Jennings', Nos. 1 and 4.....25&7½
Millers' Falls.....5.75
Snell's, Upright, $2.65; Angular, $2.90

### Corking—

Reisinger Invincible Hand Power...₱ doz. $48.00

### Fence—

Williams' Fence Machines....each, $5.50

### Hoisting—

Moore's Anti-Friction Chain Hoist,30%
Moore's Hand Hoist, with Lock Brake.....20%
Moore's Cyclone High Speed Chain Hoist.....25%

### Ice Cutting—

Chandler's.....12½%

### Washing

| Boss Washing Machine Co.: | Per doz. |
|---|---|
| Boss No. 1 | $57.00 |
| Boss Rotary | $57.00 |
| Champion Rotary Banner No. 1 | $57.00 |
| Standard Champion No. 1 | $50.00 |
| Standard Perfection | $27.00 |
| Cincinnati Square Western | $33.00 |
| Uneeda American, Round | $33.60 |

### Mallets—

*Hickory.....45&5@50%*
*Lignumvita.....45&5@50%*
*Tinners' Hickory and Applewood.....doz.45&5@50%*

### Mangers, Stable—

Swett Iron Works.....50%

### Mats, Door—

Acme Flexible Steel.....50%
Elastic Steel (W. G. Co.), new list.50%

### Mattocks—

See *Picks and Mattocks.*

### Milk Cans—See *Cans, Milk.*

### Mills, Coffee, &c.—

Enterprise Mfg. Co.....20@25%
National list Jan. 1, 1902.....30%
Parker's Columbia and Victoria..33⅓%
Parker's Box and Side.....50&10%
Swift, Lane Bros. Co.....30%

### Motors, Water—

Divine's Red Devil.....30%
Lippincott's.....30%

### Mowers, Lawn—

*NOTE.—Net prices are generally quoted*
*Cheapest, 10-in., $2.00; advance 10¢ for each size.*
*Cheap, 10-in., $2.25; advance 15@20¢ for each size.*
*Better Grade, 10-in., $3.00; advance 25¢ for each size.*

| | 12 | 14 | 16 | 18-in. |
|---|---|---|---|---|
| *High Grade* | *$4.50* | *4.75* | *5.00* | *5.25* |

Continental.....60%
Great American.....70%
Great American Ball B'r'g, new list.70%
Quaker City.....70%
Pennsylvania.....60%
Pennsylvania, Jr., Ball Bearing, 50&10&5%
Pennsylvania Golf.....50%
Pennsylvania Horse.....33⅓&5%
Pennsylvania Pony.....40&5%
Granite State:
Style A, Low Wheel.....70%
Style B, Low Wheel.....70%
Style C, High Wheel, spcl. list, 70&10%
Style D, High Wheel, spcl. list..70%
Philadelphia:
Styles M., S., C., K., T....70&10&5%
Style A, all Steel.....60&10&5%
Style E, High Wheel.....70&10&5%
Drexel and Gold Coin, special list.40%
Horse.....40&5%
Pony.....40&5%
36-in. Horse.....30&10%
Eagle Horse.....30&5%
I. X. L. Horse.....50%

## Nails—

*Wire Nails and Brads, Miscellaneous.....85&5@85&10%*
*Cut and Wire.* See *Trade Report.*
*Hungarian, Finishing, Upholsterers', &c.* See *Tacks.*

### Horse—

| Nos. | 6 | 7 | 8 | 9 | 10 | |
|---|---|---|---|---|---|---|
| Anchor | 23 | 21 | 20 | 19 | 18 | ...40&5% |
| Coleman | 13 | 12 | 12 | 11 | 11 | .....net |
| New Haven.. | 23 | 21 | 20 | 19 | 18 | ...40&5 |
| Livingston .. | 19 | 18 | 17 | 16 | 16 | .....10 |
| Western | | | | | | ₱ lb 8½¢ |

*Jobbers' Special Brands, per lb.9¢*

### Picture—

| | 1½ | 2 | 2½ | 3 in. |
|---|---|---|---|---|
| *Brass Hd. gro.* | *.45* | *.55* | *.60* | *.70* |
| *Por. Head, gro.* | *1.10* | *1.10* | *1.10* | |

### Upholsters—

*Brass*.....30%
*Plated*.....30&10%

### Nippers—

See *Pliers and Nippers.*

### Nipples—

Standard Nipple Co.:
Wrought Pipe Nipples...80@80&10%

### Nuts— *Blank or Tapped.*

| *Cold Punched:* | *Off list* |
|---|---|
| *Square* | *5.40@5.50¢* |
| *Hexagon* | *6.00@6.10¢* |
| *Square, C., T. & R.* | *5.80@5.90¢* |
| *Hexagon, C., T. & R.* | *6.60@6.70¢* |
| *Hot Pressed:* | |
| *Square* | *5.80¢* |
| *Hexagon* | *6.30¢* |

## Oakum—

*Best*.....lb.6½¢
*U. S. Navy*.....lb.6 ¢
*Navy*.....lb.5 ¢
*Plumbers' Spun Oakum..2¾@3 ¢*

### Oil Tanks—See *Tanks, Oil.*

### Oilers—

*Steel, Copper Plated*.....75%
*Chase or Paragon:*
*Brass and Copper*.....50&10%
*Zinc*.....65&10%
*Railroad*.....60&10&10%
Malleable, Hammers' Improved, Nos. 11, 12 and 13, 20; Old Pattern, Nos. 1, 2, 3, 50%.
American Tube & Stamping Co.:
Spring Bottom Cans.....70@70&10%
Railroad Oilers, &c.....60@60&10%
Maple City Mfg. Co.:
Spring Bottom Cans.....70@70&10%
Railroad Oilers, &c.....60@60&10%

### Openers—Packing Box—

Herculever, ₱ doz., $24.....30%

### Can Openers—

*Per doz.*
*Sprague, Iron Handle....30@35¢*
*Sprague, Wood Handle.....40¢*
*Surdine Scissors.....$1.75@3.00*
Yankee Can and Bottle Opener, ₱ doz., net, $0.75; Little Gem, ₱ doz., net.....$0.65

### Egg—

Hartigan Nickel Plate, ₱ doz., $2.00; Silver Plate, $4.00.

## Packing—

*Asbestos Packing, Wick and Rope, any quantity.....18@20¢*

### Rubber—

*(Fair quality goods.)*
*Sheet, C. I.*.....11@12¢
*Sheet, C. O. S.*.....11@12¢
*Sheet, C. B. S.*.....12@13¢
*Sheet, Pure Gum*.....40@45¢
*Sheet, Red*.....40@50¢
Jenkins' '96, ₱ lb, 80¢.....25%

### Miscellaneous—

*American Packing....lb. 7@10 ¢*
*Cotton Packing.....lb.16@25 ¢*
*Italian Packing.....lb. 9@10¢*
*Jute*.....lb. 4@4¼¢
*Russia Packing*.....lb. 9@10¢

### Pails, Water, Well, &c.—

See *Buckets.*

### Pans— Dripping—

*Standard List...70&10@70&10&5%*
Edwards, Royal Blue.....65&7½%

### Fry—

*Common Lipped:*

| *Nos.* | *1* | *2* | *3* | *4* | *5* |
|---|---|---|---|---|---|
| *Per doz* | *$0.75* | *0.80* | *0.90* | *1.10* | *1.30* |

### Refrigerator, Galva.—

| *Inch* | *12* | *14* | *16* | *18* |
|---|---|---|---|---|
| *Per doz* | *$1.75* | *2.25* | *2.80* | *3.15* |

### Paper—Building Paper

*Asbestos:* *lb.*
*Roll Board or Building Felt, 6 to 30 lb., per 100 sq. ft...2½¢*
*Roll Board or Building Felt, 3-32 and ⅛ in., 45 to 60 lb., per 100 sq. ft.....3½¢*
*Mill Board, Sheet, 40 x 40 in., 1-32 to ½ in.....3¢*
*Per roll.*
*Rosin Sized Sheathing: 500 sq. ft.*
*Light weight, 25 lbs. to roll, 48@58¢*
*Medium weight, 30 lbs. to roll, 56@70¢*
*Heavy weight, 40 lbs. to roll, 75@78¢*
*Black Water Proof Sheathing, 500 sq. ft., 1 ply, 65¢; 2 ply, 85¢; 3 ply, $1.10; 4 ply, $1.25.*
*Deafening Felt, 9, 6 and 4½ sq. ft. to lb., ton.....$54.50*
*Red Rope Roofing, 250 sq. ft. per roll.....$1.75*

### Tarred Paper—

*1 ply (roll 400 sq. ft.), ton, $34.00@$38.00*
*2 ply, roll 108 sq. ft.*.....65¢
*3 ply, roll 108 sq. ft.*.....88¢
*Slater's Felt (roll 500 sq. ft.).80¢*

### Sand Paper and Cloth—

*Flint and Emery*.....50&10%
*Garnet Paper and Cloth*.....25%

### Parers—Apple—

Goodell Co.:
Family Bay State.....₱ doz. $15.00
Improved Bay State.....₱ doz. $36.00
New Lightning.....₱ doz. $7.00
Turn Table 98.....₱ doz. $6.00
White Mountain.....₱ doz. $5.00
Bonanza Improved.....each $7.50
Dandy.....each $10.00
Eureka Improved.....each $20.00
New Century.....each $40.00
Ruger.....each $25.00
Livingston Nail Co.:
Dusy.....₱ doz. $4.00
Little Star.....₱ doz. $5.00
Rocking Table.....₱ doz. $6.20
Reading Hardware Co.:
Advance.....₱ doz. $4.00
Baldwin.....₱ doz. $4.00
Reading 72.....₱ doz. $3.25
Reading 78.....₱ doz. $6.25

### Potato—

Saratoga.....₱ doz. $7.00
White Mountain.....₱ doz. $6.00

### Picks and Mattocks—

*(List Jan., 1908.)*
*List*.....70&10@70&10&10%
Cronk's Handled Garden Mattock, ₱ doz., No. 2, $2.60; No. 3, $6.10.

### Pinking Irons—

See *Irons, Pinking.*

### Pins, Escutcheon—

*Brass* .....50@50&10%
*Iron, list Nov. 11, '85*..60@60&10%

### Pipe, Cast Iron Soil—

*Standard, 2-6 in*.....70@—%
*Extra Heavy, 2-6 in*..75&10@—%
*Fittings, Standard and Heavy,* 80&10@80&10&10%

### Pipe, Merchant—

| | Consumers, Steel. Blk. | Galv. | Carloads, Iron. Blk. | Galv. |
|---|---|---|---|---|
| | % | % | % | % |
| ⅛ and ¼ in. | 66 | 50 | 64 | .. |
| ⅜ in. | 68 | 54 | 66 | 52 |
| ½ in. | 70 | 58 | 68 | 56 |
| ¾ to 6 in. | 74 | 64 | 72 | 62 |
| 7 to 12 in. | 71 | 56 | 69 | 54 |

### Pipe, Vitrified Sewer—

*Carload lots.*
*Standard Pipe and Fittings, 3 to 24 in., f.o.b. factory:*
*First-class* .....87%
*Second-class* .....90%

### Pipe, Stove—

| | Per 100 joints. C. L. | L. C. L. |
|---|---|---|
| Edwards' Nested: | | |
| 5 in., Standard Blue | $6.25 | $7.25 |
| 6 in., Standard Blue | 6.75 | 7.75 |
| 7 in., Standard Blue | 7.75 | 8.75 |
| 5 in., Royal Blue | 7.00 | 8.00 |
| 6 in., Royal Blue | 7.50 | 8.50 |
| 7 in., Royal Blue | 8.50 | 9.50 |
| Wheeling Corrugating Co.'s Nested: | | |
| 5 in., Uniform Color | $6.15 | $7.15 |
| 6 in., Uniform Color | 6.65 | 7.65 |
| 7 in., Uniform Color | 7.65 | 8.65 |

### Planes and Plane Irons—

#### Wood Planes—

*Bench, first qual*.....30@30&10%
*Bench, second qual*...40@40&10%
*Molding* .....25@25&10%
Chapin-Stephens Co.:
Bench, First Quality.....30%
Bench, Second Quality.....40%
Molding and Miscellaneous.....25%
Toy and German.....30%
Union .....60%

#### Iron Planes -

Chaplin's Iron Planes.....50&10%
Union .....60%

#### Plane Irons—

*Wood Bench Plane Irons, list Dec. 12, '06*.....25%
Buck Bros.....30%
Chapin-Stephens Co.....25%
Union .....50%
L. & I. J. White.....20&5@25%

### Planters, Corn, Hand—

Kohler's Eclipse.....℔ doz. $8.00

### Plates—

*Felloe* .....*lb.* 3¾@4¢

### Pliers and Nippers -

*Button Pliers*....75&5@75&10&5%
*Gas Burners, per doz., 5 in., $1.25 @$1.30; 6 in., $1.45 $1.50.*

| *Gas Pipe*.. | 7 | 8 | 10 | 12-in. |
|---|---|---|---|---|
| | $2.00 | $2.25 | $2.75 | $3.50 |

Acme Nippers.....50&5%
Cronk & Carrier Mfg. Co.:
American Button.....80%
Improved Button.....75&10%
Cronk's .....60%
No. 80 Linemen's.....50%
Stub's Pattern.....45%
Combination and others.....33⅓%
Heller's Farriers' Nippers, Pincers and Tools.....40&5@40&10&5%
P., S. & W. Tinners' Cutting Nippers .....40%
Swedish Side, End and Diagonal Cutting Pliers.....50%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds....40%

### Plumbs and Levels—

Chapin-Stephens Co.:
Plumbs and Levels.....30@30&10%
Chapin's Imp. Brass Cor..40@40&10%
Pocket Levels.....30@30&10%
Extension, Sights.....30@30&10%
Machinists' Levels.....40@40&10%
Disston's Plumbs and Levels....60&10%
Disston's Pocket Levels.....60&10%
Stanley's Dulex.....35%
Woods' Extension.....33⅓%

### Points, Glaziers'—

*Bulk and 1-lb. papers*....℔. 9 ¢
*½ lb. papers*.....*lb.* 9½¢
*¼-lb. papers*.....*lb.* 10 ¢

### Police Goods—

*Manufacturers' Lists*..25@25&5%
Tower's .....25%

### Polish—Metal, Etc—

Prestoline Liquid, No. 1 (½ pt.), ℔ doz., $3.00; No. 2 (1 qu.), $9.00...40%
Prestoline Paste.....40%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, ℔ doz. 50¢; ℔ gro. $4.50; ½ lb boxes, ℔ doz. $1.25; 1 lb boxes, ℔ doz. $2.25.
U. S. Liquid, 8 oz. cans, ℔ doz., $1.25.
Barkeepers' Friend Metal Polish, ℔ doz., $1.75.

### Stove—

Black Eagle Benzine Paste, 5 lb cans, ℔ lb 10¢
Black Eagle, Liquid, ½ pt. cans.. ℔ doz. 75¢
Black Jack Paste, ¾ lb cans, ℔ gr. $9.00
Black Kid Paste, 5 lb can...each, $0.65
Ladd's Black Beauty Liquid, per 100 tins.....$6.75
Joseph Dixon, ℔ gr. $5.75.....10%
Dixon's Plumbago.....℔ lb 8¢
Fireside .....℔ gr. $2.50
Gem, ℔ gr. $4.50.....10%
Japanese .....℔ gr. $3.50
Jet Black.....℔ gr. $3.50
Peerless Iron Enamel, 10 oz. cans.. ℔ doz. $1.50

### Window Polish—

Benj. P. Forbes:
Glasbright, No. 2, gal pails, ℔ doz., $24.00; each, $2.50; 1 lb cans, each .....75¢
Glasbright Powder, bbls., ℔ lb..20¢

### Poppers, Corn—

*1 qt. Square..doz.$0.80; gro.$8.75*
*1 qt. Round..doz.$0.90; gro.$10.00*
*1½ qt. Square.doz.$1.20; gro..$12.00*
*2 qt. Square..doz.$1.50; gro..$15.00*

### Post Hole and Tree Augers and Diggers—

See also *Diggers, Post Hole, &c.*

### Posts, Steel—

Steel Fence Posts, each, 5 ft., 42¢; 6 ft., 46¢; 6½ ft., 48¢.
Steel Hitching Posts.....each $1.30

### Potato Parers—

See *Parers, Potato.*

### Pots, Glue—

*Enameled* .....40%
*Tinned* .....30&10%

### Powder—

*In Canisters:*
*Duck, 1 lb*.....*each* 45¢
*Fine Sporting, 1 lb*....*each* 75¢
*Rifle, ¼-lb*.....*each* 15¢
*Rifle, 1 lb*.....*each* 25¢
*In Kegs:*
*12½-lb. kegs*.....$3.50
*25-lb. kegs*.....$4.50
King's Semi-Smokeless:
Keg (25 lb bulk).....$6.50
Half Keg (12½ lb bulk).....$3.50
Quarter Keg (6¼ lb bulk).....$1.90
Case 24 (1 lb cans bulk).....$8.50
Half case (1 lb cans bulk).....$4.50

| King's Smokeless: | Shot Gun. | Rifle. |
|---|---|---|
| Keg (25 lb bulk) | $12.00 | $15.00 |
| Half Keg (12½ lb bulk) | 6.25 | 7.75 |
| Quarter Keg (6¼ lb bulk) | 3.25 | 4.00 |
| Case 24 (1 lb cans bulk) | 14.00 | 17.00 |
| Half case 12 (1 lb c. bk) | 7.25 | 8.75 |

### Presses—

#### Fruit and Jelly—

Enterprise Mfg. Co.....20@25%

#### Seal Presses—

Morrill's No. 1, ℔ doz., $20.00.....50%

### Pruning Hooks and Shears

See *Shears.*

### Pullers, Nail—

Cyclops .....50%
Miller's Falls, No. 3, ℔ doz., $12.00.. 33⅓&10%
Morrill's No. 1, Nail Puller, ℔ doz. $20.00 .....50%
Pearson No. 1, Cyclone Spike Puller, each $30.00.....50%
The Scranton Co. Case Lots:
No. 2B (large).....$5.50
No. 3B (small).....$5.00
Smith & Hemenway Co.:
Diamond B.....70%
Giant .....50%
Staple Pullers, Utica and Davison .....60%

### Pulleys, Single Wheel—

| *Inch* | 1½ | 1¾ | 2 | 3 |
|---|---|---|---|---|
| *Awning or Tackle, doz.* | $0.30 | .45 | .60 | 1.05 |
| *Hay Fork, Swivel or Solid Eye, doz., 4 in., $1.25; 5 in., $1.55* | | | | |
| *Inch* | 2 | 2¼ | 2½ | |
| *Hot House, doz*... | $0.65 | .85 | 1.20 | |
| *Inch* | 1¼ | 1½ | 1¾ | 2 |
| *Screw, doz*.... | $0.16 | .19 | .23 | .30 |
| *Inch* | 1¾ | 2 | 2¼ | 2½ |
| *Side, doz*..... | $0.25 | .40 | .55 | .60 |
| *Inch* | 1½ | 1¾ | 2 | 2½ |

### Sash Pulleys—

*Common Frame; Square or Round End, per doz., 1¾ and 2 in*.....17@20¢
*Auger Mortise, no Face Plate, per doz., 1¾ and 2 in*....20@21¢
Acme, No. 35..1¾ in., 19¢; 2 in., 20½¢
American Pulley Co.:
Wrought Steel American Plain Axle .....50&10%
Wrought Steel, Eagle.....17@20¢
Top Notch, Electrically Welded, Nos. 3 and 4.....19¢
Fox-All-Steel, Nos. 3 and 7, 2 in.... ℔ doz. 50%
Grand Rapids All Steel Noiseless..50%
Niagara, No. 25, 1¾ in., 19¢; 2 in. .....20½¢
No. 26 Troy..1¾ in., 14½¢; 2 in., 16½¢
Star, No. 26....1¾ in., 19¢; 2 in., 20½¢
Tackle Blocks—See Blocks.

### Pumps—

*Cistern* .....60%
*Pitcher Spout*.....75&5@75&10%
*Wood Pumps, Tubing, &s*....50%
Barnes Dbl. Acting (low list)....40&5%
Barnes Pitcher Spout.....75&10%
Contractors' Rubber Diaphragm, No. 2, B. & L. Block Co.....$16.00
Daisy Spray Pump.....℔ doz. $6.50
Flint & Walling's Fast Mail Hand (low list).....50%
Flint & Walling's Fast Mail (low list) .....50%
Flint & Walling's Tight Top Pitcher .....75&10%
National Specialty Mfg. Co., Measuring, Nos. 2, $6.00; 3, $5.50.....30%
Myers' Pumps (low list).....40&5%
Myers' Power Pumps.....40&5%
Myers' Spray Pumps.....40&5%

### Pump Leathers—

*Plunger and Valve Leathers—Per gro.:*

| *No.* | 1 | 2 | 3 | 4 | 30% |
|---|---|---|---|---|---|
| | $5.00 | 6.00 | 7.00 | 8.00 | |
| *Cup Leathers—Per 100:* | | | | | |
| *Inch*.... | 2½ | 3 | 3½ | 4 | |
| | $5.00 | 7.00 | 9.00 | 12.00 | |

### Punches—

*Saddlers' or Drive, good, doz.50@75¢*
*Spring, single tube, good quality* .....$1.75
*Revolving (4 tubes)*....*doz.*$3.50
Bemis & Call Co.'s Cast St'l Drive.50%
Morrill's Nos. 1AA, 1A, 1B, 1C, 1D, $15.00.....50%
Hercules, 1 die, each $5.00.....50%
Niagara Hollow Punches.....40%
Niagara Solid Punches.....55&10%
Tinners' Hollow, P., S. & W. Co..40%
Tinners' Solid, P., S. & W. Co., ℔ doz., $1.44.....40%

### Rail—Barn Door, &c.—

*Sliding Door, Painted Iron, 2½@2¾¢*
*Sliding Door, Wrought Brass, 1⅛ in., lb., 36¢*.....30%
Allith Mfg. Co.: Reliable Hanger Track .....50%
Cronk's:
Double Braced Steel Rail..℔ ft. 3¼¢
O. N. T. Rail.....$3.12
Griffin's:
xxx, ℔ 100 ft., 1 x 3-16 in., $3.25; 1¼ x 3-16 in., $3.75.
Hinged Hanger, ℔ 100 ft., 1 x 3-16 in., $3.50; 1¼ x 3-16 in., $4.00.
Lane's:
Hinged Track, ℔ 100 ft.....$3.45
O. N. T., ℔ 100 ft., 1 in., $3.00; 1¼ in., $3.45; 1½ in., $4.00.
Standard, 1¼ in.....℔ 100 ft. $4.00
Lawrence Bros.:
1 x 3-16 in., ℔ 100 ft., $7.50; 1¼ x 3-16 in., $8.75.....55&7½%
McKinney's:
Hinged Hanger Track, ℔ ft., 11¢. 60&5%
1 x 3-16 Track.....55&7½%
Myers' Stayon Track.....60&5%
Richards Mfg. Co.:
Common, 1 x 3-16 in., $3.00; 1¼ x 3-16, $3.25; 1¼ x 3-16, $3.50.
Special Hinged Hanger Rail..60&10%
Lag Screw Rail, No. 65.....50%
Gauge Trolley Track, ℔ ft., No. 31, 9¢; No. 32, 14¢; No. 33, 20¢.
No. 50.....60&10%
Nos. 61, $3.00; 62, $3.25; 63, $3.50; 64, $4.00; 45, $3.25; 46, $3.50; 49, No. 1, $3.25; 49, No. 2, $3.50.

### Rakes—

*NOTE.—Many goods are sold at net prices.*
Fort Madison Red Head Lawn....$3.25
Fort Madison Blue Head Lawn....$2.70
Cronk's:
Steel Garden: Champion, 75%; Ideal, 80%; Victor.....80&25%
Queen City Lawn, ℔ doz., 20 teeth, $2.85; 24, $3.00.....net
Anticlog Lawn, ℔ doz.....$4.00
Malleable Garden.....70&10%
Ideal Steel Garden, ℔ doz., 12 teeth, $15.00; 14, $16.00; 16, $18.00.....80%
Kohler's:
Lawn Queen, 20-tooth....℔ doz. $3.15
Lawn Queen, 24-tooth....℔ doz. $3.25
Paragon, 20-tooth.....℔ doz. $2.70
Paragon, 24-tooth.....℔ doz. $2.75
Steel Garden, 14-tooth....℔ doz. $2.40
Malleable Garden, 14-tooth, ℔ doz. $2.00@2.25

### Rasps, Horse—

Disston's .....75%
Heller Bros.'.....70&5@70&10&5%
Liveright Bros.' Gold Medal.70&10@75%
McCaffrey's American Standard..... 60&10&5%
New Nicholson.....70&10@75%
See also Files.

### Razors—

Liana Bo-ras-ic.....60%
Fox Razors, ℔ doz., No. 42, $20.00; No. 44, $20.00; No. 82, Platina, $25.00. } Dis. 40%
Red Devil.....65%

### Reels, Fishing—

Hendryx:
M 6, Q 6, A 6, B 6, M 9¼, M 16, Q 16, A 16, B 16, 4008, Rubber, Populo, Nickeled Populo.....20%
Aluminum, German Silv., Bronze.25%
1240 N, 124 N.....20%
3004 N, 06 N, 6 RM, G 9.....25%
4 N, 6 PN, 24 N, 26 PN .....20%
2904 P., 33⅓%; 2904 PN., 33⅓%; 0924 N., 33⅓%; 02084 N., 33⅓%; 002904 PN., 33⅓%; 802 N., 33⅓%; 986 PN, 2904 N, 974 PN.....25%
5009 PN, 5009 N.....20%
Competitor, 102 P, 102 PN, 202 P, 202 PN, 102 PR, 202 PR.....20%
304 P, 304 PN, 00304 P, 00304 PN.33⅓%

### Registers—*List July 1, 1903.*

*Japanned, Electroplated and Bronzed* .....70%
*White Porcelain Enamel*..50&10%
*Solid Brass or Bronze Metal*.40%

### Revolvers—

*Single Action*.....95¢@$1.00
*Double Action, except 44 cal*.$2.00
*Double Action, 44 caliber*...$2.00
*Automatic* .....$4.00
*Hammerless* .....$4.50

### Riddles, Hardware Grade

*16 in*.....*per doz*.$2.50@$2.75
*17 in*.....*per doz*.$2.75@$3.00
*18 in*.....*per doz*.$3.00@$3.25

### Rings and Ringers—

#### Bull Rings—

| | 2 | 2½ | 3 inch. |
|---|---|---|---|
| *Steel* | $0.70 | 0.75 | 0.80 *doz.* |
| *Copper* | $1.10 | 1.25 | 1.65 *doz.* |

#### Hog Rings and Ringers—

*Hill's Rings, gro. boxes.$4.50@$4.50*
*Hill's Ringers, Gray Iron, doz., 60@75¢*
*Hill's Ringers, Malleable Iron, doz.80@95¢*
*Blair's Rings..per gro.$5.00@$5.50*
*Blair's Ringers...per doz.75@90¢*

### Rivets and Burrs—

*Copper* .....50@50&10%
*Carriage, Coopers', Tinners', &c.:*
*Black* .....70&10%
*Metallic Tinned*.....70%

### Bifurcated and Tubular—

*Assorted in Boxes.*
*Bifurcated, per doz. boxes, pasteboard boxes, 50 count, 23@25¢; Tin boxes, 100 count, 29@32¢.*
*Tubular, per doz. boxes, 50 count, 29@32¢; 100 count, 51@58¢.*

### Rollers—

Cronk's Stay, No. 50.....$1.00
Cronk's Brinkerhoff No. 55, $0.60; No. 56, $0.75; No. 60.....$0.75
Lane's Stay.....40%
Richards' Stay:
Handy Adj. and Reversible No. 53.75¢
O. K. Adj. and Reversible No. 58.50¢
Lag Screw, Nos. 55 and 57.....50%
Underwriters', Nos. 59, 60.....50%
Favorite, No. 54.....60%

### Rope—

*Manila, 7-16 in. diam. and larger:*
*Pure* .....*lb.* 9½@10¢
*Sisal, 7-16 in. diam. and larger:*
*Pure* .....*lb.* 6¼@6½¢
*Sisal, Hay, Hide and Bale Ropes, Medium and Coarse:*
*Pure* .....*lb.* 6¾@7 ¢
*Sisal, Tarred, Medium Lath Yarn:*
*Pure* .....*lb.* 5¾@6 ¢
*Cotton Rope:*
*Best, ¼-in. and larger*...18@20¢
*Medium, ¼-in. and larger.16@17¢*
*Common, ¼-in. and larger*..10¢
*In coils, ½¢ advance.*
*Jute Rope:*
*Thread, No. 1, ¼-in. and up, lb.* .....6¼¢
*Thread, No. 2, ¼-in. and up, lb.* .....5¾¢

#### Wire Rope—

*Galvanized* .....37½&2½%
*Plain* .....45&2½%

### Ropes, Hammock—

Covert Mfg. Co.:
Jute, 35%; Sisal.....20%

### Rules

*Boxwood* .....60@60&10%
*Ivory* .....35&10@35&10&5%
Chapin-Stephens Co.:
Boxwood .....60%
Flexifold .....40%
Ivory .....25@25&10%
Miscellaneous .....50@50&10%
Stephens' Combination.....55%
Stationers' .....50@50&10%
Keuffel & Esser Co.:
Folding, Wood.....35&10%
Folding, Steel.....33⅓&10%
Lufkin's Steel.....50&10%
Lufkin's Lumber.....50&10%
Upson Nut Co.:
Boxwood .....60@60&10%
Ivory .....35&10@35&10&10%

### Sash Balances—

See *Balance, Sash.*

### Sash Locks—See *Locks, Sash.*

### Sash Weights—

See *Weights, Sash.*

### Sausage Stuffers or Fillers

See *Stuffers or Fillers, Sausage.*

### Saw Frames—

See *Frames, Saw.*

### Saw Sets—See *Sets, Saw.*

### Saw Tools—See *Tools, Saw.*

### Saws—

Atkins':
- Circular ..... 45%
- Band ..... 50@50&10%
- Butcher Saws ..... 50%
- Cross Cuts ..... 35%
- One-Man Cross Cut ..... 40%
- Narrow Cross Cut ..... 50%
- Hand, Rip and Panel ..... 35&5%
- Miter Box and Compass ..... 40%
- Mulay, Mill and Drag ..... 45%
- Wood Saws ..... 40&10%

Chapin-Stephens Co.:
- Turning Saws and Frames .30@30&10%

Diamond Saw & Stamping Works:
- Sterling Kitchen Saws ....30&10&10%

Disston's:
- Circular, Solid and Ins'ted Tooth .50%
- Band, 2 to 18 in. wide ..... 60%
- Band, ¼ to 1¾ ..... 60%
- Crosscuts ..... 45%
- Narrow Crosscuts ..... 50%
- Mulay, Mill and Drag ..... 50%
- Framed Woodsaws ..... 25%
- Woodsaw Blades ..... 25%
- Woodsaw Rods, Tinned ..... 15%
- Hand Saws, Nos. 12, 99, 9, 16, d100, 108, 120, 76, 77, 8 ..... 25%
- Hand Saws, Nos. 7, 107, 107½, 3, 1, 0, 00, Combination ..... 30%
- Compass, Key Hole, &c ..... 25%
- Butcher Saws and Blades ..... 30%

C. E. Jennings & Co.'s:
- Back Saws ..... 16⅔%
- Butcher Saws ..... 25&7½%
- Compass and Key Hole Saws, 33⅓&7½%
- Framed Wood Saws ..... 25&7½%
- Hand Saws ..... 12½%
- Wood Saw Blades ..... 33⅓&7½%

Millers Falls:
- Butcher Saws ..... 15&10%
- Star Saw Blades ..... 15&10%

Massachusetts Saw Works:
- Victor Kitchen Saws ..... 40&10&50%
- Butcher Saws Blades ..... 35@40%

Peace & Richardson's Hand Saws .30%

Simonds':
- Circular Saws ..... 45%
- Crescent Ground Cross Cut Saws .30%
- One Man Cross Cuts ..... 40&10%
- Gang Mill, Mulay and Drag Saws .45%
- Band Saws ..... 50%
- Back Saws ..... 25@25&7½%
- Butcher Saws ..... 35@35&7½%
- Hand Saws ..... 25@25&7½%
- Hand Saws, Bay State Brand .... 45%
- Compass, Key Hole, &c. .25@25&7½%
- Wood Saws ..... 40&7½%

Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws ..... 50%

### Hack Saw Blades and Frames—

Atkins' Hack Saw Blades A A A .. 25%

Disston's:
- Concave Blades ..... 25%
- Keystone Blades ..... 35%
- Hack Saw Frames ..... 30%

Simonds File Co ..... 35%

C. E. Jennings & Co.'s:
- Hack Saw Frames, Nos. 175, 180 .... 40&7½%
- Hack Saws, Nos. 175, 180, complete, 40&7½%

Goodell's Hack Saw Blades .... 40&10%
Griffin's Hack Saw Frames .. 35&5&10%
Griffin's Hack Saw Blades .... 35&5&10%
Star Hack Saws and Blades .... 15&10%
Sterling Hack Saw Blades .. 30&10&5%
Sterling Hack Saw Frames .. 30&10&10%
Sterling Power Hack Saw Machines, each, No. 1, $25.00; No. 2, $30.00 .. 10%
Victor Hack Saw Blades ..... 20%
Victor Hack Saw Frames ..... 40%

Whitaker Mfg. Co.:
- National Hand Blades ..... 40%
- National Hand Frames ..... 30&5%
- National Power Blades ..... 30&10%

### Scroll—

Barnes, No. 7, $15 ..... 25%
Barnes' Scroll Saw Blades ..... 40%
Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20 ..... 20%
Lester, complete, $10.00 ..... 15&10%
Rogers, complete, $3.50 and $4.00 .. 15&10%

### Scales—

*Union Platform, Plain .$2.10@2.20*
*Union Platform, Stpd .$2.20@2.30*

Chatillon's:
- Eureka ..... 25%
- Favorite ..... 40%
- Grocers' Trip Scales ..... 50%

The Standard Portables ..... 40%
The Standard R. R. and Wagon ..... 50&10%

### Scrapers—

*Box, 1 Handle ..... doz. $1.85@2.10*
*Box, 2 Handle ..... doz. $2.35@2.50*
*Ship ... Light, $2.00; Heavy, $4.50*

Chapin-Stephens Co., Box .. 30@30&10%
Richards Mfg. Co., Foot ..... 60%

### Screws—Bench and Hand

*Bench, Iron, doz., 1 in., $2.50@2.75; 1⅛, $3.00@3.25; 1¼, $3.50@3.75*
*Bench, Wood ..... 20@20&10%*
*Hand, Wood .... 70&10@70&10&10%*

Chapin-Stephens Co., Hand ..... 70@70&10&2½%

### Coach, Lag and Hand Rail—

*Lag, Cone Point ... 80&5@80&10%*
*Coach, Gimlet Point .. 80@80&5%*
*Hand Rail ..... 70&10@75%*

### Jack Screws—

*Standard List ..... 70&10@75%*

Millers Falls ..... 50&10&10
Swett Iron Works ..... 70@75%

### Machine—

*Cut Tread, Iron, Brass or Bronze:*
*Flat Head or Round Head, 50@50&10%*
*Fillister Head ..... 40@40&10%*
*Rolled Thread, F. H. or R. H., Iron ..... 75&10%*
*F. H. or R. H., Brass, Nos. 8 to 14 ..... 65&10%*

### Set and Cap—

*Set (Iron) ..... 75&10&7½%*
*Set (Steel), net advance over Iron ..... 25%*
*Sq. Hd. Cap ..... 70&10&7½%*
*Hex. Hd. Cap ..... 70&10&7½%*
*Rd. Hd. Cap ..... 50&7½%*
*Fillister Hd. Cap ..... 60&7½%*

### Wood—

*List July 23, 1903.*
*Flat Head, Iron ..... 87½&5@..%*
*Round Head, Iron .... 85&5@..%*
*Flat Head, Brass ..... 80&5@..%*
*Round Head, Brass .. 77½&5@..%*
*Flat Head, Bronze .... 75&5@..%*
*Round Head, Bronze . 72½&5@..%*
*Drive Screws ..... 87½&5@..%*

### Scroll Saws—

See *Saws, Scroll.*

### Scythes—

*Per doz.*

*Grass, No. 1, Plain ..... $7.00*
*Clipper, Bronzed Webb ..... $7.25*
*No. 3 Clipper, Pol'd Webb ... $7.50*
*No. 6 Clipper and Solid Steel. $7.75*
*Bush, Weed and Bramble, Nos. 11, 12 and 13 ..... $7.25*
*Grain, No. 1 ..... $9.00@9.50*
*Bronzed Webb, No. 1 ... $9.25@9.75*
*Nos. 3 and 4 Clipper, Grain, $9.50@10.00*
*Solid Steel, No. 6 .... $10.00@10.50*

### Seeders, Raisin—

Enterprise ..... 25@30%

### Sets— Awl and Tool—

Fray's Adj. Tool Handles, Nos. 1, $12; 2, $16; 3, $12 ..... 50%
Millers Falls Adj. Tool Handles, No. 1, $12; No. 4, $12; No. 5, $18 .. 20&10%

### Garden Tool Sets—

Ft. Madison Three Plows, Hoe, Rake and Shovel ..... ℔ doz. sets $9.00

### Sets, Nail—

*Octagon ..... gro. $3.50@3.75*

Buck Bros ..... 27½%
Cannon's Diamond Point, ℔ gro. $12, 40&10%
Mayhew's ..... ℔ gro. $9.00
Snell's Corrugated, Cup Pt ..... 40&10%
Snell's Knurled, Cup Pt ..... 40&10%
Victor Knurled, Cup Pt .... ℔ gro. $7.50

### Rivet—

*Regular list ..... 75@75&10%*

### Saw—

Atkin's:
- Criterion ..... 40%
- Adjustable ..... 40%

Disston's Star, Monarch and Triumph ..... 30%

Morrill's No. 1 ..... $15.00
Nos. 3 and 4, Cross Cut .... $20.60
No. 5, Mill ..... $30.00
Nos. 10, 11, 95 ..... $15.60
No. 1 Old Style ..... $10.00
Special ..... $16.25
} 50%

Giant Royal Cross Cut ..... ℔ doz. $8.00
Royal, Hand ..... ℔ doz. $4.50
Taintor Positive ..... ℔ doz. $6.75

### Shaving—

Fox Shaving Sets, No. 30 ..... ℔ doz., net, $24.00
Smith & Hemenway Co.'s ..... 75%

### Sharpeners, Knife—

Pike Mfg. Co.:
- Fast Cut Pocket Knife Hones, ℔ doz ..... $1.50
- Mounted Kitchen Sand Stone, ℔ doz ..... $1.50
- Natural Grit Carving Knife Hones, ℔ doz ..... $3.00
- Quick Cut Emery Carving Knife Hones, ℔ doz ..... $1.50
- Quick Edge Pocket Knife Hones, ℔ doz ..... $2.50

} 50%

### Skate—

Smith & Hemenway Co., Eureka .. 50%

### Shaves, Spoke—

*Iron ..... doz. $1.25*
*Wood ..... doz. $2.00*

Bailey's (Stanley R. & L. Co.) ..... 45%
Chapin-Stephens Co ..... 30@30&10%
Goodell's, ℔ doz. $9.00 ..... 15&10%

### Shears—

| | Cast Iron.. 7 | 8 | 9 in. |
|---|---|---|---|
| *Best* | *$16.00* | *18.00* | *20.00 gro.* |
| *Good* | *$13.00* | *15.00* | *17.00 gro.* |
| *Cheap* | *$5.00* | *6.00* | *7.00 gro.* |

*Straight Trimmers, &c.:*
- *Best quality Jap .... 70@70&10%*
- *Best quality Nickel .. 60@60&10%*

*Tailors' Shears ..... 40@40&10%*

Acme Cast Shears ..... 40@40&5%
Heinisch's Tailor's Shears ..... 10%
National Cutlery Co.'s Nickel Plated, 60&10%; Japan Handles ..... 70&10%
Wilkinson Shear & Cutlery Co.:
- Sheep, 1900 list ..... 30&10&5%
- Grass ..... 50&10%
- Horse or Mule ..... 50&10%

J. Wiss & Sons Co.:
- Best Quality Jap'd ..... 60&10%
- Best Quality Nickeled ..... 50&10%
- Tailors' ..... 25%

### Tinners' Snips—

*Steel Blades ..... 20&5@20&10%*
*Steel Laid Blades ..... 40&10@50%*

Forged Handles, Steel Blades, Berlin ..... 50%
Heinisch's Snips ..... 40%
Jennings & Griffin Mfg. Co.'s 6½ to 10 in ..... 33⅓&7½%
National Cutlery Co.'s Forged Steel .50%
Niagara Snips ..... 40%
P., S. & W. Forged Handles, 25'; W. R. W ..... 40&10%
J. Wiss & Sons Co.:
- Wiss Forged Steel ..... 25%

### Pruning Shears—

Cronk's Hand Shears ..... 33⅓%
Cronk's Wood Handle Shears .... 33⅓%
Disston's Combined Pruning Hook and Saw, ℔ doz. $18.00 ..... 25%
Disston's Pruning Hook only, ℔ doz., $12.00 ..... 25%
John T. Henry Mfg. Co.:
- Pruning Shears, all grades ..... 40%

P., S. & W. Co ..... 40&10%
Columbian Cutlery Co.:
- Hedge, Wilcut Brand ..... 60&10%
- Lawn and Border, Wilcut Brand, 60&10%

### Sheaves— Sliding Door—

Reading ..... 40
R. & E. list ..... 15%

### Sliding Shutter—

Reading list ..... 40%
R. & E. list ..... 10%

### Shells—Shells, Empty—

Brass Shells, Empty:
- Climax, 10 and 12 gauge ..... 65&10%
- Club, Rival, 65&5%; First Quality, 60&5%

Paper Shells, Empty:
- New Rapid, 10, 12, 16 and 20 gauge, 25&10%
- Climax, 10 and 12 gauge; Acme, 10, 12, 16 and 20 gauge; Ideal, 10, 12, 16 and 20 gauge; Leader grade, 25&5%
- Union League, 12 and 12 gauge; Rival Grade ..... 25%
- New Climax, Defiance, 10, 12, 14, 16 and 20 gauge; Climax, 14, 16 and 20 gauge ..... 20&5%
- Challenge, Monarch, 10, 12, 16 and 20 gauge; League, Union, 14, 16 and 20 gauge; Repeater Grade .. 20%

### Shells, Loaded—

*Loaded with Black Powder .. 40%*
*Loaded with Smokeless Powder, medium grade ..... 40&5%*
*Loaded with Smokeless Powder, high grade ..... 40&10&10%*

Union Metallic Cartridge Co.:
- New Club, Black Powders ..... 40%
- Nitro Club, Smokeless Powders .40&5%
- Arrow, Smokeless Powders .40&10&10%

Winchester:
- Smokeless Repeater Grade ..... 40&5%
- Smokeless Leader Grade ... 40&10&10%
- Black Powder ..... 40%

### Shingles, Metal— Per Sq.

| Edwards Mfg. Co.: | Painted. | Galv. |
|---|---|---|
| 14 x 20 | $4.25 | $6.00 |
| 10 x 14 | 4.50 | 6.25 |
| 7 x 10 | 4.75 | 6.50 |

Wheeling Corrugating Co.:

| | | |
|---|---|---|
| Dixie, 14 x 20 in. | $4.25 | $5.50 |
| Dixie, 10 x 14 in. | 4.50 | 6.00 |
| Dixie, 7 x 10 in. | 5.00 | 6.75 |

### Shoes, Horse, Mule, &c.—

*F.o.b. Pittsburgh:*
*Iron ..... per keg. $4.10*
*Steel ..... per keg. $3.85*

Burden's, all sizes ..... ℔ keg $3.90

### Shot—

*25-lb. bag.*

*Drop, up to B ..... $1.80*
*Drop, B and larger ..... 2.05*
*Buck ..... 2.05*
*Chilled ..... 2.05*
*Dust ..... 2.30*

### Shovels and Spades—

*Association List, Nov. 15, 1902 .40%*

Avery Stamping Co ..... 40%

### Snow Shovels—

*Long Handle ..... $3.25@$3.50*
*Wood and Mall, D Handle, $3.75@$4.00*

### Sieves and Sifters—

*Hunter's Imitation, gro .... $9.50*
*Hunter's Genuine, per gro .. $12.00*

### Sifters, Ash—

Acme Ball Bearing Sales Co., Acme Automatic Ash Sifter, each, $3.25; ℔ doz ..... $39.00

### Sieves, Seamless Metallic

| | —Per dozen.— | | | |
|---|---|---|---|---|
| Mesh | 14 | 16 | 18 | 20 |
| Iron Wire | $1.05 | 1.05 | 1.10 | 1.20 |
| Tinned Wire | $1.15 | 1.15 | 1.20 | 1.30 |

### Sieves, Wooden Rim—

*Nested, 10, 11 and 12 Inch.*

*Mesh 18, Nested .... doz. $0.90@0.95*
*Mesh 20, Nested .... doz. $1.00@1.05*
*Mesh 24, Nested .... doz. $1.30@1.40*

### Sinks, Cast Iron—

*Painted, Standard list:*
- *12 x 12 to 22 x 36 in ..... 60%*
- *20 x 24 to 24 x 50 in ..... 50%*
- *24 x 60 to 24 x 120 in ..... 30%*

Barnes' low list:
- Up to and including 20 x 36 in .. 50&5%
- 20 x 40 to 24 x 50 in ..... 45%

*NOTE.—There is not entire uniformity in lists used by jobbers.*

### Skeins, Wagon—

*Cast Iron ..... 70@75&10%*
*Steel ..... 40@45%*

### Slates, School—

*Factory Shipments.*
*"D" Slates ..... 50@50&10%*
*Eureka, Unexcelled Noiseless .. 60&7 tens.*
*Victor A, Noiseless .60&4 tens &5%*

### Slaw Cutters—See *Cutters.*

### Snaps, Harness—

*German ..... 40@40&10%*

Covert Mfg. Co.:
- Derby, 25%; Yankee, 30&2%; Yankee Roller, 30&2%.
- High Grade, 40%; Trojan ..... 40%
- Jockey ..... 25%

### Snaths—

*Scythe ..... 60%*

### Snips, Tinners—See *Shears.*

### Spoons and Forks—

#### Silver Plated—

*Good Quality ..... 50&10@60&5%*
*Cheap ..... 60@60&10%*

International Silver Co:
- 1847 Rogers Bros., 40&10%; Rogers & Hamilton ..... 50&10%
- Rogers & Bro., William Rogers' Eagle Brand ..... 50&10%
- Anchor, Rogers Brand ..... 60%
- Wm. Rogers & Son ..... 60&10%

#### Miscellaneous

*German Silver ..... 60@60&5%*

#### Tinned Iron—

*Teas ..... per gro. 50@55¢*
*Tables ..... per gro. $0.90@$1.00*

### Springs— Door—

Bardsley's Spring and Check ..... 40%
Chicago (Coil) ..... 40&10%
Gem (Coil) ..... 20%
Pullman Door and Gate ..... 10%
Reliance (Coil) ..... 40&10%
Star (Coil) ..... 30%
Torrey's Rod, 39 in ..... ℔ doz. $1.10

### Carriage, Wagon, &c.—

*1¼ in. and Wider: Per 100 lb.*
- *Black ..... $4.75@$5.00*
- *Half Bright ..... $4.75@$5.00*
- *Bright ..... $5.25@$5.50*

*Painted Seat Springs:*
- *1½ x 2 x 26 .... per pair. 45@47¢*
- *1½ x 3 x 28 .... per pair. 68@71¢*

### Sprinklers, Lawn—

American Foundry & Mfg. Co.:
- Cactus, 65%; Japanese, 70%; National, ℔ doz ..... $12.00

Enterprise ..... 25@30%
Philadelphia No. 1, ℔ doz. $12; No. 2, $15; No. 3, $20 ..... 30%

### Squares—

*Nickel plated .. } List Jan. 5, 1900.*
*Steel and Iron . } 80@80&5%*
*Rosewood Hdl. Try Square and T-Bevels ..... 60&10&10@70%*
*Iron Hdl. Try Squares and T-Bevels ..... 40&10@40&10&10%*

Disston's Try Squares and Bevels, Rosewood Handle, 60 & 10%; Iron Stock and Bevel ..... 15%

### Squeezers, Lemon

*Wood, Porcelain Lined:*
- *Cheap ..... doz. $1.00*
- *Good Grade ..... doz. $1.25*

*Tinned Iron ..... doz. $0.75@1.00*
*Iron, Porcelain Lined ... doz. $1.75*

### Staples—

*Barbed Blind ..... 85&5@85&10%*
*Electricians' ..... 80&10&10@85%*
*Fence Staples, Polished, $2.05; Galvanized ..... $2.35*
*Poultry Netting Staples ..... per lb. 3¼@3½¢*

### Steels, Butchers'—

Dick's ..... 30%
Foster Bros.' ..... 30%

### Steelyards— .... 30@30&10%

### Stocks and Dies—

*Blacksmiths' ..... 50@50&10%*

Curtis Rev'ble Ratchet Die Stock .. 25%
Derby Screw Plates ..... 25%
Green River ..... 25%
Lightning Screw Plate ..... 25%
Little Giant ..... 25%
Reece's New Screw Plate ..... 25%

### Stoners, Cherry—

Enterprise ..... 25@30%

### Stones—Oil, &c.

Pike Mfg. Co., 1907 list: ℔ ft.
- Arkansas St. No. 1, 3 to 5½ in $2.80
- Arkansas St. No. 1, 5½ to 8 in. $3.50
- Arkansas Slips No. 1 ..... $1.40
- Lily White Washita, 4 to 8 in. 60¢
- Rosy Red Washita, 4 to 8 in. 60¢
- Washita St., Extra, 4 to 8 in. 50¢
- Washita St., No. 1, 4 to 8 in. 40¢
- Washita St., No. 2, 4 to 8 in. 25¢
- Lily White Slips ..... 90¢
- Rosy Red Slips ..... 90¢
- Washita Slips, Extra ..... 80¢
- Washita Slips, No. 1 ..... 70¢
- Washita Slips, No. 2 ..... 40¢

} 33⅓%

India Oil Stones (entire list) .. 33⅓%
Quickcut Emery and Corundum Oil Stone, Double Grit ..... 40%
Quickcut Emery and Corundum Axe Stone, Double Grit ..... 33⅓%
Quickcut Emery Rubbing Bricks .. 40%

Hindostan No. 1, R'g'lar ℔ lb. 8¢
Hindostan No. 1, Small .. ℔ lb 10¢
Axe Stones (all kinds) .....
Turkey Oil Stones, Extra, 5 to 8 in. ..... ℔ lb 80¢
Queer Creek Stones, 4 to 8 in. 20¢
Queer Creek Slips ..... 10¢
Sand Stone ..... 6¢

} 33⅓%

### Scythe Stones—

Pike Mfg. Co., 1901 list:
Black Diamond S. S. ℔ gro. $12.00
Lamoille S. S. ℔ gro. $11.00
White Mountain S. S. ℔ gro. $9.50
Green Mountain S. S. ℔ gro. $7.00
Extra Indian Pond S. S. ℔ gro. $8.00
No. 1 Indian Pond S. S. ℔ gro. $7.50
No. 2 Indian Pond S. S. ℔ gro. $5.00
Leader Red End S. S. ℔ gro. $5.00
Quick Cut Emery.... ℔ gro. $10.00
Pure Corundum..... ℔ gro. $18.00
Crescent ..... $7.00
Emery Scythe Rifles, 2 Coat. $8.80
Emery Scythe Rifles, 3 Coat. $11.00
Emery Scythe Rifles, 4 Coat. $13.20
Balance of 1904 list 33⅓%
Electro (Artificial), ℔ gro., $12.00 ..... 33⅓%
Lightning (Artificial), ℔ gro., $18.00 ..... 33⅓%

### Stoppers, Bottle—

Victor Bottle Stoppers..... ℔ gro. $9.00

### Stops— Bench—

Millers Falls..... 15&10%
Morrill's, ℔ doz., No. 1, $10.00.... 50%
Morrill's, No. 2, $12.50..... 50%

### Door—

Chapin-Stephens Co..... 50@50&10%

### Plane—

Chapin-Stevens Co..... 20%

### Straps— Box—

Acme Embossed, case lots.. 20&10&10%
Cary's Universal, case lots... 20&10&10%

### Stretchers, Carpet—

*Cast Iron, Steel Points.. doz. 55¢*
*All Steel Socket... doz. $2.00@2.25*
Excelsior Stretcher and Tack Hammer Combined, ℔ doz., $6.00.... 20%

### Stuffers, Sausage—

Enterprise Mfg. Co..... 25@25&7½%
National Specialty Co., list Jan. 1, 1902 ..... 30&5%
P., S. & W. Co..... 40&10&5%

### Sweepers, Carpet—

| | ℔ doz. |
|---|---|
| Bissell Carpet Sweeper Co.: | |
| Superba, Crotch Mahogany..... | $36.00 |
| Triumph, Fancy Veneers..... | $33.00 |
| Parlor Queen, Fig. Rosewood.. | $30.00 |
| Elite, Hungarian Ash..... | $29.00 |
| Am. Queen, Fig. Mahogany.... | $27.00 |
| Ideal, Bird's-Eye Maple..... | $25.00 |
| Grand Rapids, Nickel, Japan ..... | $24.00; $22.00 |
| Standard, Nickel, $22.00; Japan. | $20.00 |
| Crown Jewel, Nickel, $21.00; Jap. | $19.00 |
| Crystal, Glass Top..... | $36.00 |
| Grand, 17 in. wide..... | $36.00 |
| Parlor Grand..... | $48.00 |
| Club, 24 in. wide..... | $54.00 |
| Hall 28 in. wide..... | $60.00 |

*NOTE.—Rebates: 50c per dozen on three dozen lots; $1 per dozen on five-dozen lots; $2 per dozen on ten-dozen lots; $2.50 per dozen on twenty-five dozen lots.*

### Tacks, Finishing Nails, &c.

*American Carpet Tacks... 90&40%*
*American Cut Tacks..... 90&40%*
*Swedes' Cut Tacks..... 90&40%*
*Swedes' Upholsterers'.... 90&50%*
*Gimp Tacks..... 90&50%*
*Lace Tacks..... 90&50%*
*Trimmers' Tacks..... 90&40%*
*Looking Glass Tacks..... 65%*
*Bill Posters' and Railroad Tacks, 90&50&10%*
*Hungarian Nails..... 80&20%*
*Finishing Nails..... 70%*
*Trunk and Clout Nails... 80&10%*

*NOTE.—The above prices are for Straight Weights.*

### Miscellaneous—

*Double Pointed Tacks, 90&6 tens@—%*
Se also Nails, Wire.

### Tanks, Oil and Gasoline—

| Wilson & Friend Co.: Gal. | Gasoline | Oil |
|---|---|---|
| 30 | $2.75 | $3.00 |
| 60 | $3.50 | $4.00 |
| 110 | $5.00 | $5.75 |

### Tapes, Measuring—

*American Asses' Skin....50@—%*
*Patent Leather..... 25@30&5%*
*Steel ..... 33⅓&5%*
*Chesterman's ..... 25@25&5%*
Keuffel & Esser Co.:
Favorite, Ass Skin..... 40&10@50%
Favorite, Duck and Leather..... 25&5@25&10%
Metallic and Steel, lower list, 35@35&5%; Pocket, 35@35&5%.
Lufkins:
Asses' Skin..... 40&10@50%
Metallic ..... 30@30&5%
Patent Bend, Leather... 25&5@25&10%
Pocket ..... 40@40&5%
Steel ..... 33⅓@35%
Wiebusch & Hilger:
Chesterman's Metallic, No. 34L, etc. ..... 25%
Chesterman's Steel, No. 1038L, etc. ..... 35%

### Teeth, Harrow—

*Steel Harrow Teeth, plain or headed, ⅝-inch and larger, per 100 lb..... $2.55@$2.80*

### Thermometers—

*Tin Case, Cabinet, Flange, Dairy, &c..... 30@35%*

### Ties, Bale—Steel Wire—

*Single Loop..... 82½&10%*
*Monitor, Cross Head, &c. 70&2½%*

### Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

### Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

### Tire Benders, Upsetters, &c.

See *Benders and Upsetters, Tire.*

### Tools—Coopers'—

L. & I. J. White..... 20@20&5%

### Haying—

Myers' Hay Tools..... 45%

### Ice Tools—

Gifford-Wood Co..... 15%

### Miniature—

Smith & Hemenway Co.'s, Davidson, ℔ doz., Nickel Plated, $1.50; Gold Plated..... $2.00

### Saw—

Atkins' Cross Cut Saw Tools.... 35&5%
Simond's Improved..... 33⅓%
Simonds' Crescent..... 25%

### Ship—

L. & I. J. White..... 25%

### Transom Lifters—

See *Lifters, Transom.*

### Traps—Fly—

*Balloon, Globe or Acme, doz., $1.15@$1.25; gro.... $11.50@12.00*
*Harper, Champion or Paragon, doz., $1.25@1.40; gro. $13.00@13.50*

### Game—

*Imitation Oneida..... 75@10%*
Newhouse ..... 45@45&5%
Hawley & Norton..... 65%
Victor ..... 75@75&10%
Oneida Community Jump..... 50%
Hector ..... 75@75&10%

### Mouse and Rat—

*Mouse, Wood, Choker, doz. holes, 12¢*
*Mouse, Round or Square Wire, doz. 85@90¢*
Marty French Rat and Mouse Traps (Genuine):
No. 1, Rat, ℔ doz., $13.25..$11.50 doz.
No. 3, Rat, ℔ doz., $6.50...$5.75 doz.
No. 3½, Rat, ℔ doz., $5.25. $4.70 doz.
No. 4, Mouse, ℔ doz., $3.85. $3.00 doz.
No. 5, Mouse, ℔ doz., $3.00. $2.25 doz.
Oneida Community:
Out o' Sight, Mouse, ℔ doz..... $0.60
Out o' Sight, Rat, ℔ doz..... 1.25
Easy Set, Mouse, ℔ doz..... .35
Easy Set, Rat, ℔ doz..... 1.00
Wood Choker, Rat, ℔ doz. holes. .12
Premier Tin Choker, 5 hole, ℔ doz. traps..... .75

### Trowels—

Disston Brick and Pointing..... 25%
Disston Plastering..... 20%
Disston "Standard Brand" and Garden Trowels..... 30%
Kohler's Steel Garden Trowels, ℔ gro., 5 in., $4.80; 6 in., $6.00.
Never-Break Steel Garden Trowels.. ℔ gro. $6.00
Woodrough & McParlin, Plastering. 25%

### Trucks, Warehouse, &c.—

B. & L. Block Co.:
New York Pattern..... 50&10%
Western Pattern..... 60&10%
Handy Trucks..... ℔ doz. $16.00
Grocery ..... ℔ doz $15.00
McKinney Trucks..... each, net $10.00
Model Stove Trucks..... ℔ doz $18.50

### Tubs, Wash—

*M'f'gr's list, price per gross.*

| | No. 0 | 1 | 2 | 3 |
|---|---|---|---|---|
| *Galvanized.* | $67 | $79 | $89 | $99 |

*10&7½&5%*

### Twine, Miscellaneous—

*Flax Twine:*
*No. 9, ¼ and ½-lb. Balls. 21@23¢*
*No. 12, ¼ and ½-lb. Balls. 19@21¢*
*No. 18, ¼ and ½-lb. Balls. 16@18¢*
*No. 24, ¼ and ½-lb. Balls. 15½@17½¢*
*No. 36, ¼ and ½-lb. Balls. 15@17¢*
*Chalk Line, Cotton ½-lb Balls ..... 24@29¢*
*Cotton Mops, 6, 9, 12 and 15 lb to doz..... 8½@19¢*
*Cotton Wrapping, 5 Balls to lb according to quality.. 13½@19¢*
*American 2-Ply Hemp, ¼ and ½-lb. Balls..... 12½@15¢*
*American 3-Ply Hemp, ½-lb Balls ..... 13½@16¢*
*India 2-Ply Hemp, ¼ and ½-lb Balls (Spring Twine)... 7½@9¢*
*India 3-Ply Hemp, 1-lb. Balls 7¼@9¢*
*India 2-Ply Hemp, 1½-lb. Balls. 7@8½¢*
*2, 3, 4 and 5-Ply Jute, 1½-lb. Balls ..... 9@1¢*
*Mason Line, Linen, ½-lb. Bls. 17¢*
*No. 264 Mattress, ¼ and ½ lb. Balls, according to quality, 30@60¢*
*Wool, 3 to 6 ply....B 6¢; A 7½¢*

## Vises—

*Solid Box..... 50&5&50&10&5%*

### Parallel—

Athol Machine Co.:
Simpson's Adjustable..... 40%
Standard ..... 40%
Amateur ..... 25%
Columbian Hdw. Co..... 40%
Fisher & Norris Double Screw, net, each, Nos. 2, $10.50; 3, $16.00; 4, $20.50; 5, $27.00.
Fulton Mach. & Vise Co.:
Reed, Swivel..... 25%
Star, Solid Jaw..... 40%
Hollands':
Machinists' ..... 40@40&5%
Keystone ..... 65&5@70%
Lewis Tool Co.:
Adjustable Jaw..... 30%
Monarch, 50%; Solid Jaw..... 50%
Massey Vise Co.:
Clincher ..... 40%
Perfect, 15%; Lightning Grip..... 15%
Merrill's ..... 20%
Millers Falls Oval Slide Pattern. 60&10%
Parker's:
Victor, 20@25%; Regulars.... 20@25%
Vulcan's ..... 40@45%
Combination Pipe..... 55@60%
Prentiss ..... 20@25%
Rock Island..... 25%
Snediker's X. L..... 33⅓%
Stephens' ..... 33⅓%

### Saw Filers

Disston's D 3 Clamp and Guide, ℔ doz., $24.00, 30%; Clamps..... 30%
Perfection Saw Clamps, ℔ doz.... $4.50
Reading ..... 60%

### Wood Workers—

Fulton Mach. & Vise Co.:
Reed ..... 25%
Star ..... 40%
Massey Vise Co.:
Lightning Grip, 15%; Perfect.... 15%
Wyman & Gordon's Quick Action, 6 in., $6.00; 9 in., $7.00; 14 in., $8.00.

### Miscellaneous—

Holland's Combination Pipe.. 60@60&5%
Massey's Quick Action Pipe..... 40%
Parker's Combination Pipe:
87 Series, 60%; 187 Series, 60&5%; No. 870, 40%.
Rock Island Pipe..... 25%

## Wads—*Price per M.*

*B. E., 11 up..... 60¢*
*B. E., 9 and 10..... 70¢*
*B. E., 8..... 80¢*
*B. E., 7..... 80¢*
*P. E., 11 up..... $1.00*
*P. E., 9 and 10..... 1.25*
*P. E., 8..... 1.50*
*P. E., 7..... 1.50*
*Dis. 15%*
*Ely's B. E., 11 and larger. $1.70@1.75*
*Ely's P. E., 12 to 20.... $3.00@3.25*

### Ware, Hollow—Cast Iron, Hollow—

*Stove Hollow Ware:*
*Enameled ..... 45&10%*
*Ground ..... 50&5%*
*Plain or Unground..... 60%*
*Country Hollow Ware, per 100 lbs ..... $2.75@$3.00*
*White Enameled Ware:*
*Maslin Kettles..... 65&10%*
*Covered Wares:*
*Tinned and Turned..... 35&10%*
*Enameled ..... 45&10%*
See also *Pots, Glue.*

### Enameled—

Agate Nickel Steel Ware..... 33⅓%
Iron Clad Ware..... 70&10%
Lava and Volcanic, Enameled.. 40&10%

### Tea Kettles—

*Galvanized Tea Kettles:*

| *Inch* | *6* | *7* | *8* | *9* |
|---|---|---|---|---|
| *Each* | *45¢* | *50¢* | *55¢* | *65¢* |

### Steel Hollow Ware—

Avery Spiders and Griddles.. 65@65&5%
Avery Kettles..... 60%
Porcelained ..... 50&5@50&10%
Never Break Spiders and Griddles.. 65&5%
Never Break Kettles..... 60%
Solid Steel Spiders and Griddles. 65&5%
Solid Steel Kettles..... 60%

### Warmers, Foot—

Pike Mfg. Co., Soapstone.... 40@40&10%

### Washboards—

| Solid Zinc: | ℔ doz. |
|---|---|
| Crescent, family size, bent frame. | $4.05 |
| Red Star, family size, stationary protector ..... | $4.05 |
| Double Zinc Surface: | |
| Saginaw Globe, family size, stationary protector..... | $3.55 |
| Cable Cross, family size, stationary protector..... | $3.60 |
| Single Zinc Surface: | |
| Naiad, family size, open back, perforated ..... | $3.00 |
| Single Saginaw Globe..... | $2.85 |
| Brass Surface: | |
| Brass King, Single Surface, open back ..... | $4.05 |
| Nickel Plate Surface: | |
| No. 1001 Nickel Plate, Single Surface ..... | $3.60 |
| Glass Surface: | |
| Glass King, Single Surface, open back ..... | $3.95 |
| Enamel Surface: | |
| Enamel King, Single Surface, ventilated back..... | $3.95 |

### Washers—Leather, Axle—

*Solid ..... 90@90&10%*
*Patent ..... 90@90&5%*

| *Coil:* | *¾* | *1* | *1⅛* | *1¼ inch.* |
|---|---|---|---|---|
| | *9¢* | *10¢* | *11¢* | *14¢ per box.* |

### Iron or Steel—

*Size bolt.... 5-16 ⅜ ½ ⅝ ¾*
*Washers.... $4.65 3.75 2.45 2.25 2.05*
*The above prices are based on $6.75 off list.*
*In lots less than one keg add ½¢ per lb.; 5-lb. boxes add ½¢ to list.*

### Cast Washers—

*Over ½-inch, barrel lots, per lb. 1½@1¾¢*

### Wedges—

*Oil Finish..... lb., 2¼@2¾¢*

### Weights—Hitching—

Covert Mfg. Co..... 30&2%

### Sash—

*Per net ton, f.o.b. factory:*
*Eastern District.... $21.00@—*
*Western and Central Districts ..... $20.00@$22.00*

### Wheels, Well—

*8-in., $2.00; 10-in., $2.30; 12-in., $3.00; 14-in., $4.45.*

### Wire and Wire Goods—

*Bright and Annealed:*
*6 to 9..... 72&10&7½%*
*10 to 18..... 72½&10&10%*
*19 to 26..... 75&10&10&2½%*
*27 to 36..... 77½&7½%*
*Galvanized:*
*6 to 9..... 72½&10%*
*10 to 14..... 72½&10&5%*
*15 to 16..... 72½&10&5%*
*17 to 18..... 72½%*
*19 to 26..... 70&5&2½%*
*27 to 36..... 65&10&10%*
*Coppered:*
*6 to 9..... 65&10&10%*
*10 to 14..... 70&10&5%*
*15 to 18..... 65&10&10&10%*
*19 to 26..... 70&5&2½%*
*27 to 36..... 72½&10&2½%*
*Tinned:*
*6 to 18..... 67&10&10%*
*Brass ..... 15½¢ lb., base*
*Copper ..... 15¢ lb., base*
*Cast Steel Wire..... 50%*

### Spooled Wire—

*Annealed and Tinned..... 75%*
*Brass and Copper..... 70%*
*Retailers' Assortments, per box, $2.00@$2.25*
Wire Clothes Line, See Lines.
Wire Picture Cord, see Cord.

### Bright Wire Goods—

*Steel Wire Goods..... 90&40%*
*Brass Wire Goods..... 90&40%*
*Brass Cup and Shoulder Hooks, 85&10%*

### Wire Cloth and Netting—

*Galvanized Poultry Netting, 80&2½@80&7½%*
*Painted Screen Cloth, 100 ft., $1.35*
*Standard Galv. Hardware Grade: 100 ft. rolls, 24 to 48 in. wide, Per 100 sq. ft.*
*Nos. 2, 2½ and 3 Mesh.... $2.75*
*Nos. 4 and 5 Mesh..... $3.00*
*No. 6 Mesh..... $3.25*
*Nos. 7 and 8 Mesh..... $3.75*

### Wire, Barb—See *Trade Report*

### Wrenches—

*Agricultural ..... 80&10&10%*
*Alligator or Crocodile.. 70&10@75%*
*Baxter Pattern S Wrenches... 70&5@70&10%*
*Drop Forged S..... 45@45&5%*
Acme ..... 60&10%
Alligator Pattern, 70%; Bull Dog.. 70%
Bemis & Call's:
Adjustable S, 40%; Adjustable S Pipe, 40%; Briggs Pattern, 40%; Combination Bright, 40%.
Steel Handle Nut..... 50%
Combination Black..... 40&5%
Merrick Pattern..... 50%
Boardman's ..... 40%
Coes' Genuine Knife Hdl.. 40&10&5&5%
Coes' Genuine Steel Hdl.. 40&10&5&5%
Coes' Genuine Key Model.. 40&10&5&5%
Coes' Genuine Hammer Handle..... 40&10&5&5%
Coes' "Mechanics'"... 40&10&10&5&5%
Donohue's Engineer..... 40&10%
Eagle ..... 70%
Gem Pocket..... 30%
Hercules ..... 70%
W. & B. Machinist:
Case lots..... 50&5%
Less than case lots..... 50%
W. & B. Railroad Special:
Case lots..... 50%
Less than case lots..... 40&10&5%
Solid Handles, P., S. & W.. 50&10%; full cases..... 50&10&5%
Standard Nipple Mfg. Co.:
Duplex Chain..... 50%
Stillson ..... 65%
Uwanta Wrench Co.:
Uwanta Special, Iron Handle.... 40&10&5%
Other Wrenches..... 50%
Vulcan and Agrippa Chain..... 50%
Whitaker Machinists':
Case Lots..... 50&10%
Less than case lots..... 50%

### Fruit Jar—

Benj. P. Forbes, Triumph, ℔ gro., $7.50; per doz..... $0.90

### Wrought Goods—

*Staples, Hooks, &c., list March 17, '92..... 90@—%*

## Zinc— (*Cask lots at mill.*)

*Sheet..... per 100 lb., $7.00*

# THE IRON AGE

New York, Thursday, August 6, 1908.

## The Industrial Village at Roebling, N. J.

*(With Supplement.)*

One of the marked tendencies in connection with industrial progress at the present day is found in the provisions made by large manufacturing concerns for the comfortable housing of their employees and those dependent upon them. It goes without saying that laborers whose home surroundings are attractive and pleasant and who can enjoy to probably the fullest extent the comforts of life compatible with the circumstances of wage earners, are likely to prove more efficient than those who are otherwise domiciled. There is the incentive on the part of the men to become more and more proficient in the department of work in which they are engaged, so that their term of service may be lengthened and they and their families continue to enjoy the privileges and comforts which come from a residence in the model village provided for them. It is doubtless with this idea in mind that so many projects for the betterment of the workingmen's condition have been started in this and other countries, and with results in many instances which have strikingly demonstrated the wisdom of the undertaking.

One of the more recent efforts to provide a model industrial village for its workingmen and one which has been attended with marked success is that which the John A. Roebling's Sons Company has built at Roebling, N. J., 10 miles below the city of Trenton, on the south bank of the Delaware River. When it was decided some three years ago to erect a steel plant at this place it was obvious that dwelling houses for the workmen would be required, as there were no housing accommodations in that vicinity. As a result, while the steel plant, or "Lower Works," as it is called, was in process of construction a village was laid out immediately adjacent thereto, the idea being to make it a model in its way and provide comforts which would render the place attractive to the workmen as a home for themselves and their families.

### The New Steel Works.

In this connection it is interesting to note that the new plant at Roebling, which is simply an addition to the company's extensive manufacturing facilities at Trenton, consists of a steel mill, a blooming mill, a rod mill and a wire mill, with possible additions in the near future. Construction work is still in progress, and at present the company is giving employment at this place to about 1000 hands. F. W. Roebling has the active management of the commercial and selling departments of the company, while Charles G. Roebling is in charge of the manufacturing and engineering departments, giving personal attention to all the details of the mill and village work, all plans of houses, &c., being submitted to him for approval before anything is done.

A few days ago a representative of *The Iron Age* had the extreme pleasure of visiting this model village at Roebling and gathering some facts concerning it, which are here presented, together with several illustrations, all of which afford an excellent idea of this most interesting community of working people.

### The Village Site.

The tract upon which the village is located was originally land comprising three farms of a total area of about 250 acres and extending along the south side of the Delaware River for a distance of about 1½ miles. The whole property is about 40 ft. above the surface of the water, the face of the bluff being several hundred yards back from the river bank. The land as purchased was very rolling, requiring much grading to be done in order to produce the present finely leveled surface. In many places there are "fills" ranging from 8 to 23 ft. The soil is very sandy and in order to stimulate the growth of lawn grass in the extensive park bordering the river front, along the sidewalks and in front of the houses, immense quantities of loam were required as a top dressing. The park is laid off with winding walks bordered here and there with rustic benches, the whole making with the natural growth of trees along the bluff an attractive and restful place of retreat, at the same time commanding a fine view of the river. At one end of this park, which covers probably an area of 10 acres or more, are tennis courts for the use of the villagers.

Ground was broken for the work of construction in June, 1905, and the first year 72 houses were erected. In the second year there were 241 of various types put up, making a total of 313, not including three hotels and two store buildings. The main hotel, known as Roebling Inn, and facing the park and river, was built the first year, together with one store building. In the second year the two workingmen's hotels were erected and the remaining store building. The current year little or no construction in the way of houses has been done, as the housing accommodations at present provided are ample for the needs of the community for probably another year or two to come.

In the layout of the village the streets are 80 and 100 ft. in width, running parallel with and at right angles to the bank of the river, and lying in a nearly east and west and north and south direction. The wider streets have been planted with maple trees along both sides near the curb line, and the space in front of the houses not occupied by the sidewalks has been cultivated in grass plots. The sidewalks are of crushed stone bounded with yellow pine curbing, and the two driveways in the 100 ft. streets are 20 ft. wide, paved with macadam, while in the 80 ft. streets the single drive is 30 ft. wide.

### Types of Houses.

In the village at present are 10 types of houses all constructed of brick with slate roofs in a most substantial manner, and fitted with the modern conveniences. It may be interesting to mention that type No. 1 is a two story four room and attic dwelling, with a shed extension in the rear containing toilet. This type of house has yellow pine trim finished natural, and is built in blocks or rows of 10. These houses are occupied by the foreign laborers, and the rental is $8.50 per month. The foreign laborers are principally Hungarians and Slavs, and their houses are inspected regularly to prevent overcrowding, no one house being allowed to shelter more than six adults.

The house known as Type No. 2 is a semidetached two-story and attic dwelling, or as some would call it, a "twin" or "double" house, containing seven rooms, including a shed kitchen. This house has yellow pine trim, finished natural, and rents for $9.50 per month.

Type No. 3 is also semidetached, two stories and attic in hight, and contains eight rooms, with bath. It is steam heated, has cypress trim, finished natural, and rents for $15 per month.

Type No. 4 contains six rooms, with bath and shed extension, is steam heated, and is of the semidetached style; renting for $12 per month.

Coming to the better class of dwelling and designed for employees receiving a larger income we find Type No. 5, also of the semidetached style and two stories and attic in hight. This has nine rooms, with bath, reception

hall, butler's pantry and shed extension. The interior trim is of cypress, finished natural. This type of house is heated by steam and is lighted by electricity. It has a laundry located in the cellar.

Type No. 6 is three stories in hight and contains 10 rooms and bath, thus adapting it to still larger family requirements. Each house of this style is 20 ft. wide, has yellow pine trim, finished natural, laundry in the cellar, is steam heated and lighted by electricity. This type is built eight houses to the street block.

Type No. 7 is two stories and attic in hight, has eight rooms and bath, butler's pantry, reception hall and vestibule, has cypress trim, finished natural, steam heat, electric lights and laundry in the cellar.

Type No. 8 is semidetached, two stories and attic in hight, contains eight rooms and bath, with reception hall and vestibule, and has cypress trim, natural finish. It is heated by steam, lighted by electricity and has a laundry in the cellar.

Type No. 9 is two stories and attic in hight, contains eight rooms and bath, has cypress trim, natural finish, steam heat and electric lights.

Types Nos. 5, 6, 7 and 8 rent for $20 per month, while Type No. 9 brings $18 per month. The exterior treatment of these houses is varied to produce attractive street architecture, the resultant effects being such as to reflect great credit upon the designer of them.

A handsome detached cottage two stories and attic in hight represents Type No. 10, which contains 11 rooms and bath, with modern plumbing, butler's pantry and reception hall. This house is trimmed in cypress, finished natural, is heated by hot water and is lighted by electricity. It cost to build about $7000, not including the land, and has every convenience of a thoroughly up to date residence. It rents for $25 per month.

It may be here stated that the rents of the various types of houses are based on the cost of each, and are so proportioned that the interest on the original investment is but a small amount after deducting the cost of operation. The entire idea is to afford to the employees of the company a maximum of convenience and comfort in the way of living accommodations for the amount of capital invested and to meet all reasonable requirements.

All houses, except types Nos. 1 and 6, are built on lots 30 ft. wide by 100 ft. deep. Those designated as Type No. 1 occupy lots 16 ft. wide by 100 ft. deep, and houses of Type No. 6 occupy lots 20 ft. front by 120 ft. deep. All backyards are enclosed on three sides by a substantial fence of wire netting 4 ft. high, supported by a strong framework. Through the center of all blocks extend 10 ft. alleys for the convenient collection of ashes and garbage and also for the accommodation of delivery wagons, so that all material enters and goes out by way of the backyards. This tends to keep the streets free from litter and reduces the labor of keeping clean to a minimum. The lawns or grass plots between the stoop line and the curb are maintained by the company, which sees to it that the grass is kept cut and the surroundings rendered neat and attractive in appearance. All the tenant has to do is to look out for his back yard and keep it clear of rubbish, although in some instances it is utilized as a vegetable garden.

At the present time the construction of houses has not progressed further than the easterly side of Sixth avenue, extending from Riverside Park to Knickerbocker Way, but the village can gradually be extended westward to the limit of the tract of land acquired as the growth of the industrial plant demands it.

### The Workingmen's Hotels.

The company maintains a licensed hotel known as Roebling Inn, beautifully situated, overlooking the river, where the only licensed bar in the village, a billiard room and bowling alleys are run for the benefit of the workmen and where transients may be comfortably accommodated. There are also two hotels for single men, where good board and a single room may be had for the modest sum of $5 per week. The latter buildings are finished in a thoroughly first-class manner, are light and airy and equipped throughout with the modern conveniences. On the main floor is a sitting or reading room, a large dining room, a well lighted and equipped kitchen, and at the counter near the entrance are periodicals, cigars and other equipment, such as is to be found in the usual hotel lobby. On the second and third floors are 63 single sleeping rooms and two large double rooms. The smaller rooms are each furnished with a single bed, two chairs, chiffonier and table, with a rug of sufficient size to nearly cover the entire floor area. The lighting is by electricity and the heating is by steam. On the second floor is also a sitting or lounging room. The lavatory on this floor is fitted with porcelain basins, while to the left are the water closets and to the right the shower baths, all with open plumbing and nickel plated fixtures. In the basement is a lunch or "grill" room, as it might be termed, where the wants of the transient visitor may be supplied. The second workingmen's hotel is arranged similar to the one just described, located at the corner of the street, except that it has no "grill" room in the basement.

### The General Store.

A feature of every community of workingmen's homes controlled by an industrial concern giving employment to a large number of hands is the general or company store, where the villagers may obtain supplies of all description. In the present instance a store is maintained by the company in the village of Roebling, but it differs from many, in that it is conducted on a cash basis, or if preferred, accounts may be settled weekly, depending upon the credit of the customer. No script is issued by the company to its men and no money is deducted from the pay envelope for store purchases. It is left optional with the men whether they trade at the store or secure their supplies elsewhere, as nothing is done to restrict the free exercise of their wishes as to the place they may wish to purchase their goods. There is strong competition by reason of the stores in Trenton, which is only 10 miles away, and by the fact that peddlers are permitted to sell their goods through the streets of the village.

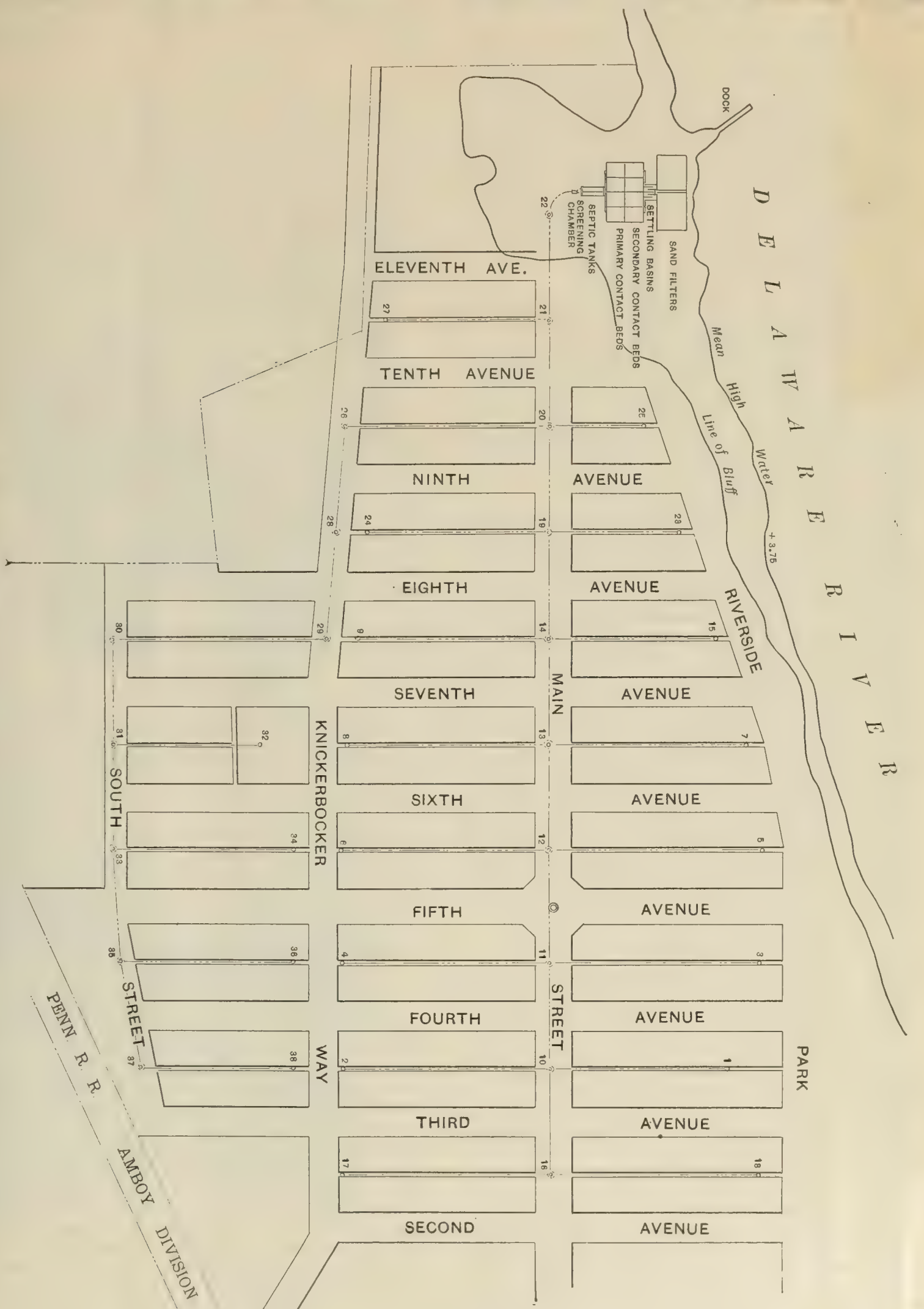
It is interesting to note that the store was opened in June just two years ago, Manager Samuel Major, who is also postmaster of the village, starting with two clerks when there were only nine families in the town. At present 22 clerks and four teams are kept busy in the various departments supplying the wants of a population which is in the neighborhood of 1400 souls. As showing the growing popularity of the store, it may be stated that June of the current year showed the largest volume of business since the store was opened. As Manager Major puts it, the establishment is a cross between a "general store and a department store, but is gradually working toward the department idea."

In connection with the store is a drug department, which, however, will shortly have quarters of its own immediately adjoining the Emergency Hospital, in the building occupied as the Town Hall. The post office was started in December last and has 172 lock boxes.

### The Model Bakery.

Separated by only a few feet from the store is the model bakery, operated independently of the store, but the product of which is retailed by it. A point emphasized in connection with the bread baked here is that it is 2 oz. heavier than the regulation loaf. The bakery is on the main street, the bake room being on the ground floor and lighted by four large windows, thus enabling passers by to watch from the outside the operations which are going on within. The bake room is lined with white enameled brick or tile, and the ovens are fired from the rear, so that there is no dust or ashes in the bake room. Up to date machinery for mixing the dough and for doing other work constitutes the equipment. Much of the bread that is baked is the Hungarian loaf of rye, which is extensively used by the foreign employees of the company. On the second floor are the lockers and shower baths for the bakers, also storeroom for the supply of flour, which is sent down through a hopper to the first floor. The arrangement, equipment and general conduct of this bakery has won for it the commendation of the State Inspector, who has pronounced it "the finest in the State."

The village has a regularly organized Volunteer Fire




Map of the Industrial Village at Roebling, N. J., Showing Sewage Disposal System.

fire fighter, and the members take great interest in it. They expect at no very distant date to have independent quarters of their own, which will be more in the nature of a social club.

**The Town Hall.**

The Town Hall contains on the second floor the Executive Offices of the village and an Assembly Room or hall with a seating capacity of 250, where meetings, entertainments, dances, fairs, &c., are held. The use of this hall is given free of charge for the meetings of the various religious denominations, the time being divided according to preference, so that the hours of meeting will not conflict. At the present time no one denomination is sufficiently strong to maintain a church of its own, and therefore the services are held in this hall until such time as the natural growth of the village warrants the erection of church edifices or chapels.

Occupying the ground floor on the Fourth avenue side of the building is the barber shop of the village, presided

over by the only native of sunny Italy in the place. There is also a graded school for the children of the community and an Emergency Hospital, fully equipped throughout and in which is the office of the resident physician in charge, who is employed by the company. He also has his private practice among the villagers.

In the hospital next to the doctor's office is the operating room, fully equipped with all the latest appliances likely to be required in case of accident to any of the villagers or employees of the steel works, and beyond this is a ward containing three cots. There is also a dietary kitchen equipped with all that is necessary in this line, as well as linen closet, cabinets, &c. The walls of the operating room and ward are white glazed tile and the woodwork is quartered oak, rubbed to a dead oil finish. Stretchers are used for the transportation of patients to the hospital, the population at present not being sufficiently large to justify the maintenance of an ambulance. An assistant is always in attendance at the hospital.

Referring to the halftone supplement accompanying this article, the upper left hand picture of the group is a view looking down Sixth avenue with the house occupied by the resident physician immediately in the foreground. This house and the three beyond it are Type No. 5. The next four are Type No. 9, and the one at the corner of the street in the distance is Type No. 8. The lower left hand picture of the group is a view down Third avenue, showing rows of houses occupied by the foreign laborers. The houses on the left are Type No. 1, and those on the right are Type No. 4.

The picture at the top in the center of the halftone is a view down Fifth avenue, showing the water standpipe at the intersection of Main street. This is one of the principal cross streets of the village, having a parkway down the center. The houses in the foreground are Type No. 3. The central picture of the group is the Town Hall and bakery, with the general store at the left. The official shown in uniform in the picture is the chief of police. The picture at the bottom of the central group is the gateway which affords communication between the village and the steel works. A row of laborers' houses is shown at the left in the picture.

The upper right hand picture shows the two workingmen's hotels or boarding houses for single men. The lower right hand picture is a view looking down Main street, showing the water standpipe in the center and houses of Type No. 8 on the corners of the street in the foreground. The chimneys in the distance are those of the steam power plant at the steel works. On the right the second and third houses are Type No. 7 and the fourth house is Type No. 8.

### Lighting, Water and Sewer Systems.

The streets are lighted by arc lamps and all public buildings, together with the better class of houses, as already stated, are lighted by incandescent lamps, the power being furnished by the company at a very low rate. The electricity for the lights is supplied from the power station of the steel works, use being made of a high tension current, transformed to low voltage at each building. Illuminating gas is supplied to the village from an outside corporation, but the Roebling Company owns its own street mains and furnishes every house desiring it with gas at $1 per 1000 cu. ft.

The village is supplied with a system of water works with fire hydrants on every block and a standpipe pressure sufficient for fire protection. The standpipe is located about in the center of the village at the intersection of Fifth avenue and Main street. It is distinctly shown with its surroundings in several of the views of the village constituting the basis of our supplemental plate. The water system is extended to every house and supplies an unlimited amount of filtered water, which costs the tenant nothing beyond the price of his rent.

A separate system of sewers is in operation, to which every house is connected, even the cheapest dwellings being provided with kitchen sinks and sanitary toilets. In the diagram showing the layout of the village the sewer system is clearly indicated, together with a sewage disposal plant which is in contemplation, and which will probably be built in the near future. This includes screening chamber, septic tanks, primary and secondary contact beds, settling basins and sand filters.

A trolley line running between Trenton and Camden passes along the southern boundary of the village, and with the steam railroad, affords ready transportation facilities for the community.

### Miscellaneous Facilities.

At the approach to the village from the station on the Amboy Division of the Pennsylvania Railroad coal pockets are in course of construction and a coal yard is being established, from which supplies of coal will be retailed to the villagers at cost. Near by is a large storage yard for such impedimenta as a model village of this character would likely require. There is also an ice house, from which ice is supplied to the tenants of the village. A frame garage nearing completion, adjoining the storage yard, is for sheltering the automobile of one of the foremen of the steel works.

Many of the villagers are owners of motor, rowing or other pleasure boats, for the use of which the Delaware River affords excellent opportunity. For the convenience of these boat owners the company is building at a convenient point a dock of sufficient size to allow even of the landing of river excursion steamers. Several hundred yards above the dock are bathing houses for the free use of the villagers, and no expense is being spared to provide everything within reason for the comfort and health of those in the community.

For the temporary detention of malefactors a small prison containing three cells is provided at the left in the building constituting the gateway to the steel works, and which is located at the foot of the main street of the village. On the right of the gateway is the timekeeper's office, the time of each employee being taken as he passes to work and again when he returns to the village.

### Credit for the Work.

It is interesting to state that all of the engineering work in connection with the project of this model village has been done by the regular employees of the John A. Roebling's Sons Company, the designing of the buildings and the supervision of their construction being in the hands of Isaac Harby, C. E., ably assisted by C. S. Arms, the resident engineer of the village, who is also a duly elected Justice of the Peace.

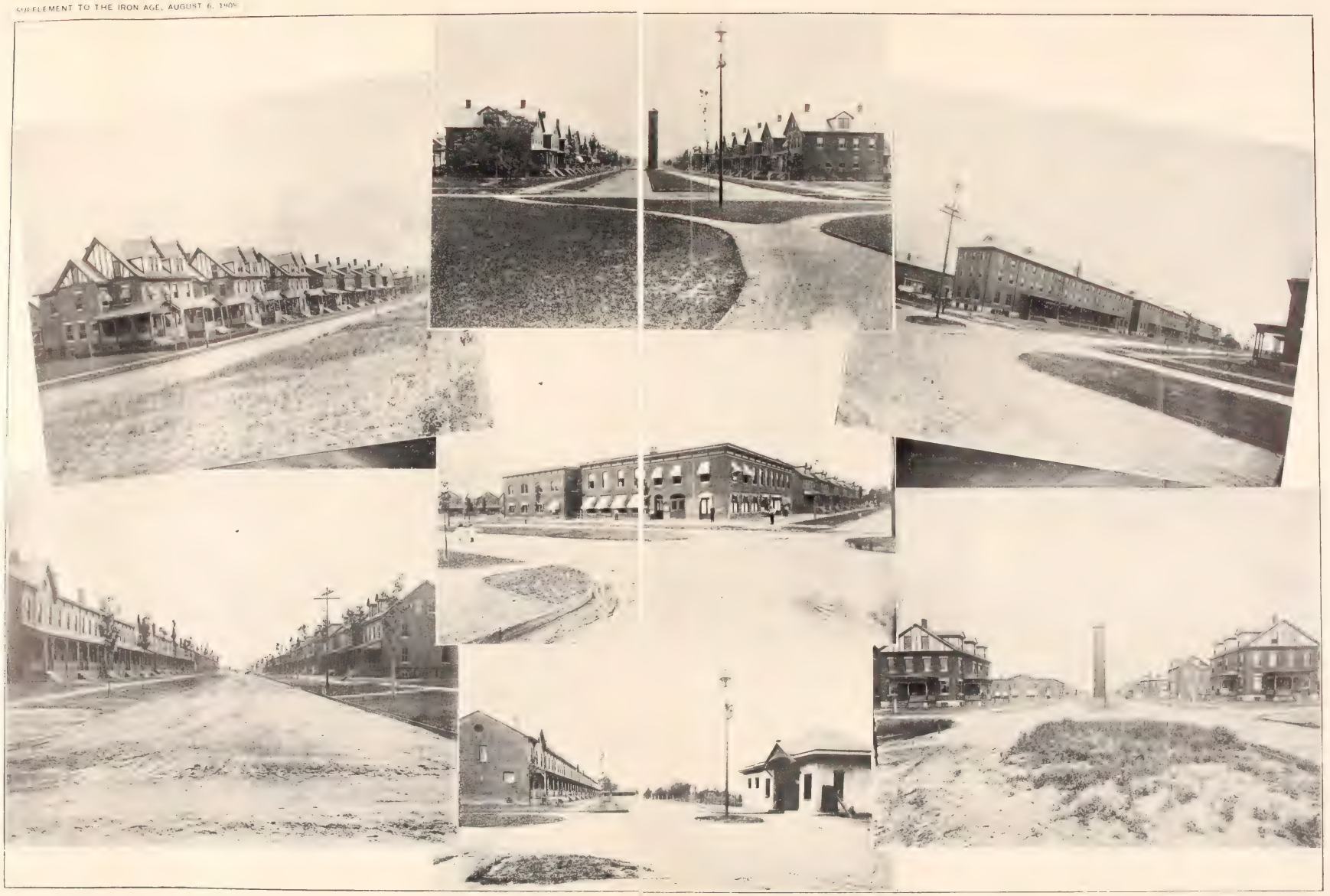
The ownership and management of the entire property is strictly a private enterprise in the hands of the company, and it is not the present intention to dispose of any of its holdings to employees. The village is incorporated, which leaves its administration to its owners.

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**Insulated or Uninsulated Feed Wires for Trolley Lines.**—The railroad commissioners of Connecticut have granted the New York, New Haven & Hartford Railroad authority to use uninsulated feed wires in the construction of the proposed trolley line from Willimantic to South Coventry, thus establishing an important precedent in the State, and one that may have its influence on electric railroad practice elsewhere. The company frankly stated that a saving of one-third in expense would result from the change. The argument made was that insulated wires soon become uncovered because the insulation wears off, thus giving a false sense of security, which would never exist were the wires uncovered in the beginning. The commissioners impose strict conditions as to the use of insulators at all points where the breaking of the feeder supporters would make it possible for the wire to come in contact with buildings or other property.

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The Lackawanna Steel Company is arranging to operate by Niagara Falls power the quarries which it has leased from the Indians of the Tuscarora reservation, situated in Niagara County, N. Y. Power will be furnished by the Niagara, Lockport & Ontario Power Company, which has secured a franchise for a transmission line across the reservation lands from the Indians.



Row of Houses in Sixth Avenue.
Houses Occupied by Foreign Laborers.

Looking Down Fifth Avenue.
Town Hall with Store at Left.
View in Second Avenue, Gateway at Right.

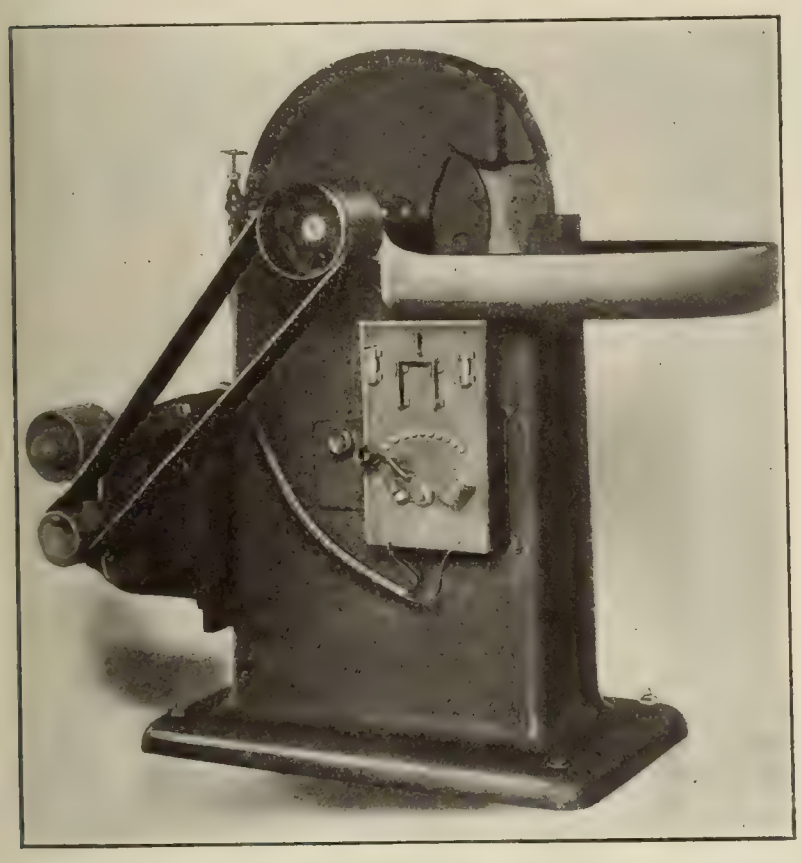
The Two Hotels for Workingmen.
View Down Main Street—Steel Works in the Distance.

## THE INDUSTRIAL VILLAGE OF JOHN A. ROEBLING'S SONS COMPANY AT ROEBLING, N. J.

## A Ransom Motor-Driven Tool Grinder.

A water tool grinder fitted with motor drive and variable speed control, as made by the Ransom Mfg. Company, Oshkosh, Wis., is shown in the accompanying illustration. The belt driven type of this machine was described in *The Iron Age* September 5, 1907, and the controlling device now furnished on this machine with the motor drive was described November 7, 1907, as applied to the double wheel motor driven dry grinder made by this company. Its application in the present instance differs only in the form of connection between the rheostat and the controlling guide. In this case the arm of a field rheostat is joined to the adjustable water guard on the front hood. As the wheel wears down the guard is depressed to keep it as near the circumference as possible and in this way the connecting link or lever moves the arm on the rheostat, increasing the speed of the motor. In this way as the diameter of the wheel decreases its speed is accelerated to maintain practically the same peripheral speed.

Instead, as in former practice, of using the base of the machine as a reservoir for water and depending on



A Motor Driven Water Tool Grinder Built by the Ransom Mfg. Company, Oshkosh, Wis., and Fitted with Constant Wheel Speed Control.

a hand hole in the bottom of the frame for withdrawing sediment, an iron tank, cast in one piece with the side cover plate, is now fitted in the bottom of the base at the opposite side of the machine, as shown in the engraving. This tank holds several pails of water, and the settling pan is large enough to render frequent clearing unnecessary. The advantage of this arrangement is apparent in that the entire tank with contents can be removed and carried outside of the shop for cleaning.

Water is forced up to the wheel by a centrifugal pump located in the bottom of the tank, and having no wearing surfaces below the water, it is not affected by deposits of grit. The pump is driven through a vertical spindle carrying a pulley on its upper end and by a belt from a driving pulley on the wheel shaft on the reverse side of the machine, as seen in the view here shown. The belt runs at a quarter turn over a pair of idlers attached to the tank cover plate, which also serve as belt tighteners. Regulation of the water supply is governed by the valve at the rear of the machine.

The tool rest set in the apron in front of the wheel, instead of having a solid top, has openings that permit the water to shoot through without spattering the operator.

A motor of any size or make or for any current may be used to operate this grinder, but unless otherwise specified an open type made by the General Electric Company is supplied. Tension of the driving belt is regulated by an adjustable idler attached to the rear of the grinder above the motor. A speed controller can be furnished with these machines when a direct current motor is applied, but being a separate attachment is not included as a regular part of the grinder.

The machine here shown carries a wheel 20 x 1½ in. on an arbor 1 9-16 in. in diameter, with a driving pulley 6 x 4½ in.; the base is 20 x 33 in., and the tool with its equipment as here described weighs 950 lb.

## Magnalium, a Light Weight Alloy.

Magnalium is a new alloy of aluminum and magnesium, lighter than aluminum. This metal has recently been made a commercial possibility to American users, being manufactured in Germany and imported and sold in this country by Morris R. Machol, 32 Park place, New York City. Supplied in the form of bars and ingots for casting or in finished shapes, such as sheets, tubes, plates and practically any form in which brass is furnished, it is available for a wide range of uses. In Europe it has been employed in the construction of airships and dirigible æroplanes.

Cast in dry sand, the usual grade of magnalium has a tensile strength of 18,000 to 21,000 lb. per square inch and an elongation of 3.75 per cent.; cast in iron chills, the tensile strength rises to 22,000 to 25,000 lb. Soft rolled sheets of the alloy show 42,000 lb. tensile strength and 15 per cent. elongation, and when hard rolled 52,000 lb. tensile strength and 3 per cent. reduction of area.

Magnalium is closer grained, and takes a good polish. Its color is whiter than the grayish looking aluminum. While the specific gravity of aluminum is 2.64, that of magnalium, according to the alloy, is 2.4 to 2.57. It melts at 640 to 676 degrees F., and resists oxidation better than aluminum. Its electric conductivity is about 56 per cent. of that of pure copper, aluminum being 63.20 per cent. Some special treatment must be given to the alloy in melting, casting, forging, rolling, annealing, drawing, machining, pickling and coating, to secure the best results. This has been worked out carefully.

## The Lake Superior Corporation's Affairs.

Six banks and two trust companies of Philadelphia on July 29 bid in stocks and bonds of the Lake Superior Corporation with a par value of $6,666,500, which had been held as collateral by these institutions against a loan to the Canadian Improvement Company of $1,611,000. The securities were sold at $1,592,687, which nearly equals the amount of the financial institutions' loan. Each institution bid on its own holdings with no opposition.

The sale does not affect the status of the reorganized Lake Superior property, but simply transfers the control of the Lake Superior Corporation from the New York interests identified with the Canadian Improvement Company to the Philadelphia institutions that hold the loan. The foreclosure of the collateral at public sale resulted from an attempt of the Canadian Improvement Company to finance the organization of the Consolidated Lake Superior Company through loans placed in Philadelphia and New York, and the failure of the former to make satisfactory arrangements for an extension of time on the 6 per cent. notes held by the Philadelphia banks.

It was reported that the United States Steel Corporation had bought the securities, but this is denied by President W. E. Corey.

The William Tod Company, Youngstown, Ohio, is about ready to install four gas driven blowing engines at the two new blast furnaces of the Ohio Works of the Carnegie Steel Company, Youngstown. These engines have 42-in. gas cylinders, 80-in. air cylinders and are of 60-in. stroke. The William Tod Company is also building a 32 and 64 x 48 in. horizontal vertical steam engine for the Struthers plant of the Youngstown Sheet & Tube Company.

# The Utica Drop Forge & Tool Company's Plant.

While not remarkable for its size, there are few plants more interesting in their details than that of the Utica Drop Forge & Tool Company, at Whitesboro, near Utica, N. Y. In design, construction, equipment and operation it embodies many of the most modern features supplemented with not a few original ones, and it is admirably conformed to its purpose, which is the manufacture of nippers and pliers exclusively. The building, in accordance with a much advocated practice, is merely a shell to protect from the weather and does not carry the weight of any of the machinery and equipment, these being supported entirely from the floor. A lighter and therefore cheaper construction is consequently possible and extensions and changes can easily be made without interrupting operation. The building is of saw tooth roof construction, but the skylighted faces of the roof are not pointed directly to the north, being purposely given enough eastern exposure to admit sunlight for a short time in the morning, which prevents dampness and conduces to healthfulness. Equal consideration for the comfort and health of the employes is shown in the sanitary arrangements.

Reasons for some of the unique features of the plant are apparent when the circumstances under which it was erected are explained. On June 25, 1907, the old factory was completely destroyed by fire, with an approximate total loss of $250,000. Instead of laying off the operating force, which would have meant losing many of the men permanently by their going to other places for employment, they were invited to remain at their old wages and rebuild the plant. Practically all of them elected to do this, and the second day after the fire they were set to work clearing away the ruins. Then, under the direction of the superintendent of the works, who designed the new plant, the rebuilding was begun. To get the outside work done and the machinery under cover before winter set in the most easily obtainable and quickest erected material was selected for the construction, wood frame, side walls and roof and wrought iron pipe supporting columns. The foundations are concrete and the arrangement is such that at any time the wooden walls may be replaced by walls of brick or concrete, doing the work in sections, so as not to interfere with the carrying on of manufacturing operations. In eight months from the time of the fire the new plant was erected, equipped and in operation, and the men were back at their old work, proud of their "home-made" factory. It was unquestionably because of the personal interest which the employes had in the work, and which could not have been expected of an outside contractor's men, that the reconstruction was accomplished so rapidly.

### The Building.

Profiting, as was natural, by the experience of the fire, the new building has been made practically fireproof. Although the walls, roof and partitions are of wood in most cases, they are well protected by a sprinkler system, but as the floor is of concrete, as substantially no inflammable material is used in the shop, and as the forge department is isolated by a concrete wall, the danger of a fire is very far removed. The low insurance rate which has been given on the new plant is splendid evidence of this.

The shape of the building, the arrangement of the departments, the tracks of the industrial railway system and the points from which the different views given in the other illustrations were taken are indicated in the plan, Fig. 1. The interior is of standard mill construction with an 18-ft. clear hight under the main beams of the saw tooth roof. This hight was necessary in the forge department to accommodate the drop hammers, and was maintained throughout, not only to preserve the continuity of the building, but to give extra air space. The excellent lighting is evident from the interior views, and this has been aided very materially by avoiding overhead obstructions and painting the interior walls a light color. No direct sunlight enters the building after 10 or 11 o'clock in the morning, except through the side windows, and these have opaque shades to exclude the hot sun's rays from the west in the afternoon. All through it has been the purpose to make the shop light, airy, comfortable and attractive, and complete in conveniences that are not too elegant to be freely used. More concerning these general features will be given later.

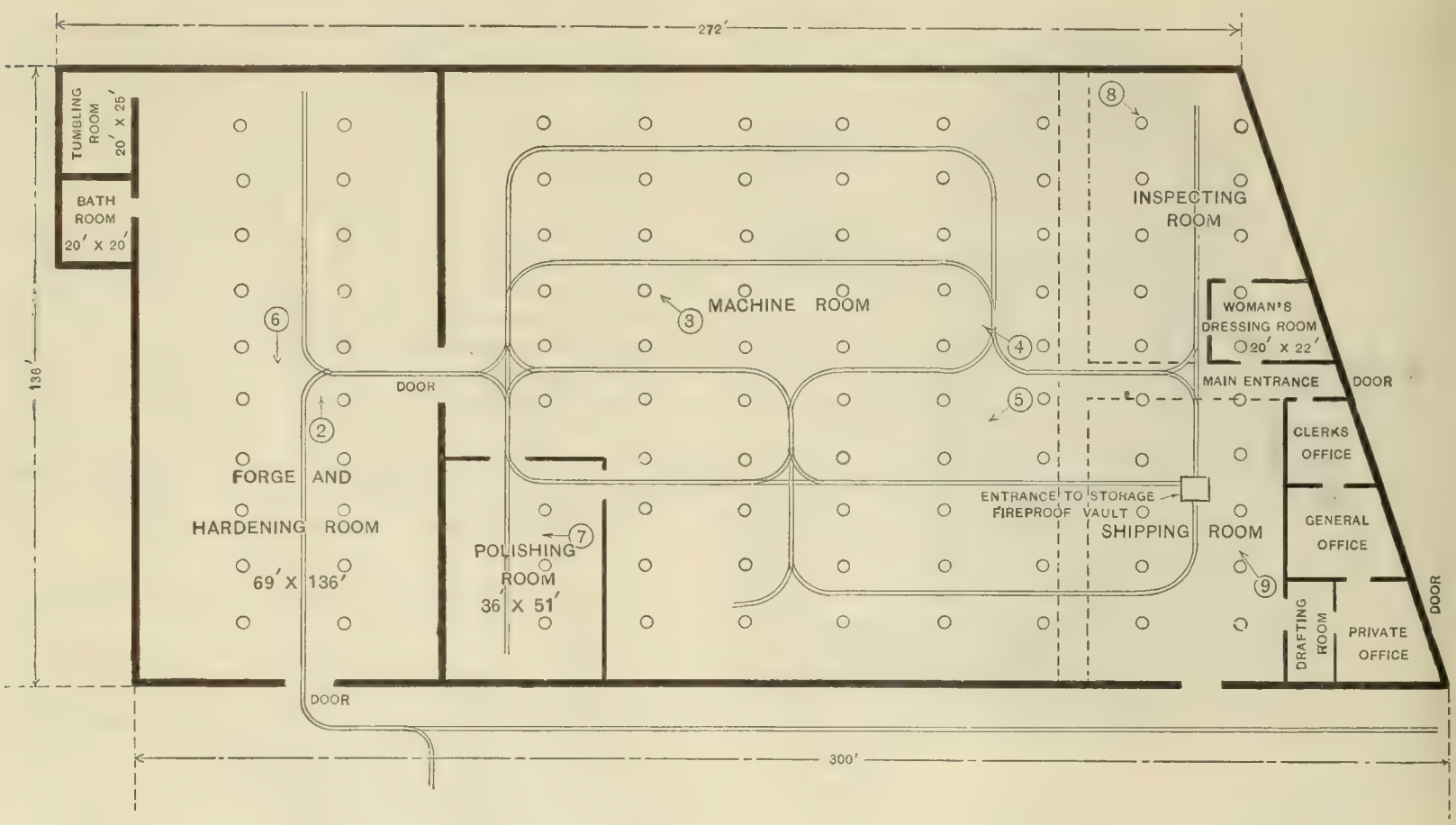



Fig. 1.—Plan of the New Plant of the Utica Drop Forge & Tool Company, Showing the Relation of Departments, Industrial Track System and a Key to the Photographs Shown in the Following Pages.

### The Shop and Its Equipment.

The departments in which the consecutive operations on the product are performed are located so that the work progresses from the rear or south end to the front or north end, or from left to right, as viewed on the plan, Fig. 1. There is a loop made, however, from the inspection department to the grinding and polishing department and back again as the work is inspected between operations.

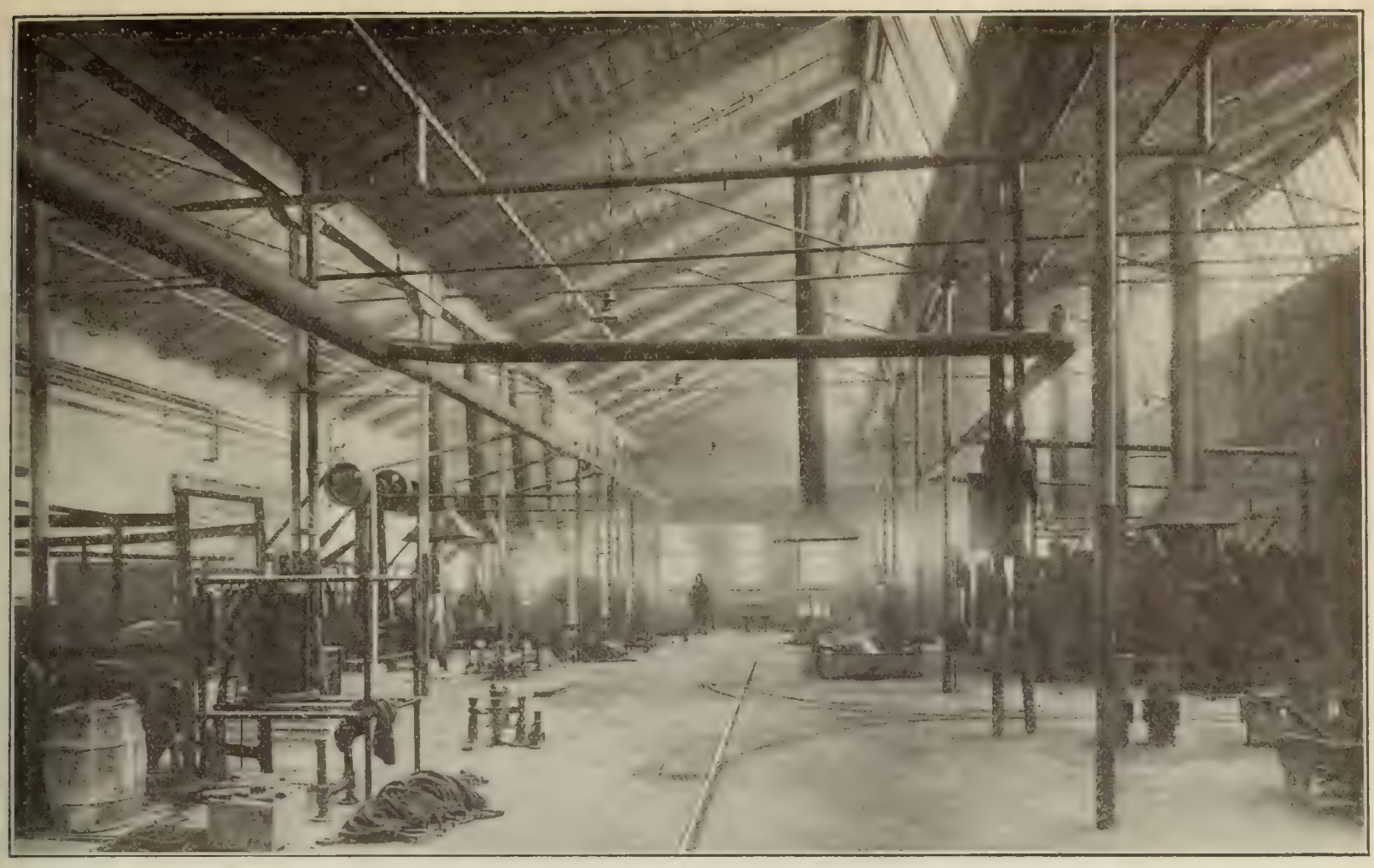


Fig. 2.—The West End of the Forge and Hardening Department.—Forges and Hammers at the Left and Annealing and Hardening Furnaces at the Right.

This work is done by girls, who see that any defective parts are thrown out or sent back to be repaired. The continuous movement of the work is in charge of persons solely responsible for it. An electric locomotive and cars covers the narrow gauge track system once every so often according to a schedule, and no wait is made for work which is not ready. This avoids clogging in any one department and has been found to expedite the handling. As giving some idea of the quantity of material handled it is stated that at times a single load will amount to nearly five tons.

In the forge room, views of which are given in Figs. 2 and 6, are the forges, hammers and annealing and hardening furnaces. The hammers at present installed are rated from 500 to 1500 lb., and foundations are laid and provision made for the addition of more whenever they are needed. A motor-driven blower furnishes air for the blast for the forge fires, for blowing scale from the dies and for augmenting the ventilation. The pipes for the latter extend nearly to the floor and discharge cool air toward the operator of each hammer. Brown & Sharpe annealing furnaces are installed, as well as gas

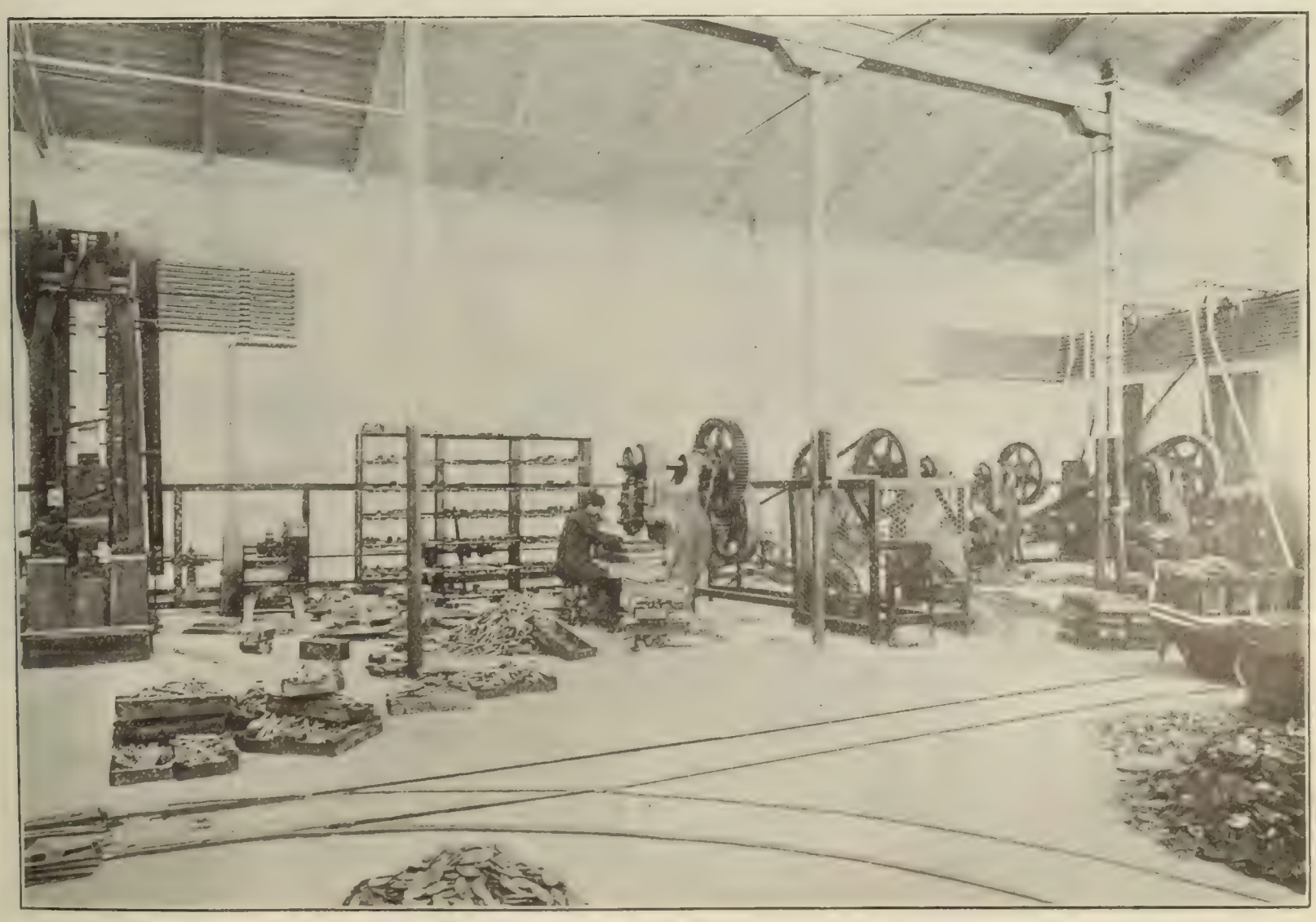


Fig. 3.—The Trimming Presses at the South End of the Machine Department.

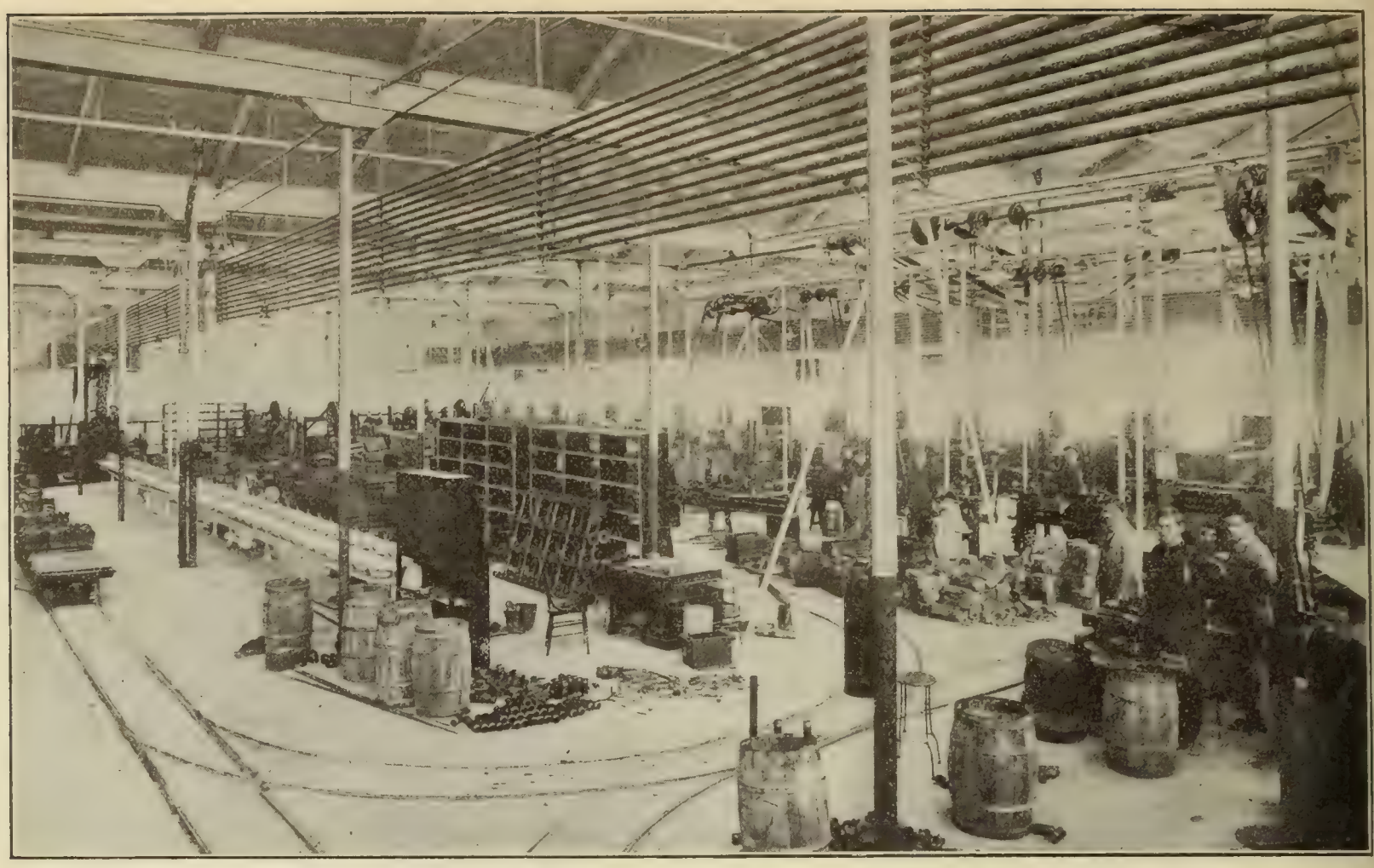


Fig. 4.—The Tool Department in the Center of the Machine Shop.—Shows the Heating Coils, Lavatories and Electric Locomotive and Cars at the Left.

furnaces, for annealing and hardening the product. Being fitted with pyrometers, the heats can be controlled positively, while, as a check on the operator, a set of Bristol recording instruments in the manager's office makes a 24-hour record of the heat fluctuations in the furnaces.

From the forge department, after tumbling, the work is sent to the trimming presses, shown in the view of the south end of the machine department, Fig. 3. After the work is trimmed it goes to the section of the machine department illustrated in Fig. 5, where the different drilling, milling and bench operations are performed, after which the tools are ready for hardening.

In the grinding and polishing department, Fig. 7, are located the numerous machines for performing this work rapidly and effectively. The machines are hooded and are connected to a motor-driven exhaust fan, which draws all dust and loose emery from the room and discharges it outside the building. So well is this accomplished that the doors of this room can be wide open and no inconvenience be experienced from flying emery settling on any other machinery, and even the floor in the



Fig. 5.—The East Side of the Machine Department.—Shows the Manner of Supporting Countershafting.

room shows no signs of the grinding dust. The nickel plating and buffing are also done in this department; the equipment, though small, is complete enough for the company's needs.

The tool department, Fig. 4, is responsible for making or keeping in repair, or both, the necessary drills, reamers, counterbores, milling cutters, arbors, jigs, fixtures and special tools. All supplies needed in the manufacturing operations are given from this room on orders and record made for the purpose of keeping the cost system, as well as the office record from which the respective supplies are ordered.

After the final inspection in the inspection department, Fig. 8, the product is delivered to the shipping department, Fig. 9, at the north end of the building, where it is boxed for shipment or placed in stock in the fireproof vault, which is excavated below the ground level and is reached only through the shipping room. This department also receives and distributes the raw materials and supplies to the various departments, or to the tool room, where they are reissued on order. In all of the handling of the product up to the time that it is received by the shipping department the parts are carried in sheet metal trays or boxes. The pliers, before they are assembled, are routed in these boxes, but with the boxes inverted and the loose pieces inserted in holes in the bottoms of the boxes. As all of the boxes or trays are the same size and have the same number of holes in their bottoms, it is easy to calculate the number of parts at all stages of the handling, and if any disappear at any time they must be accounted for, which is an effective check on dishonesty.

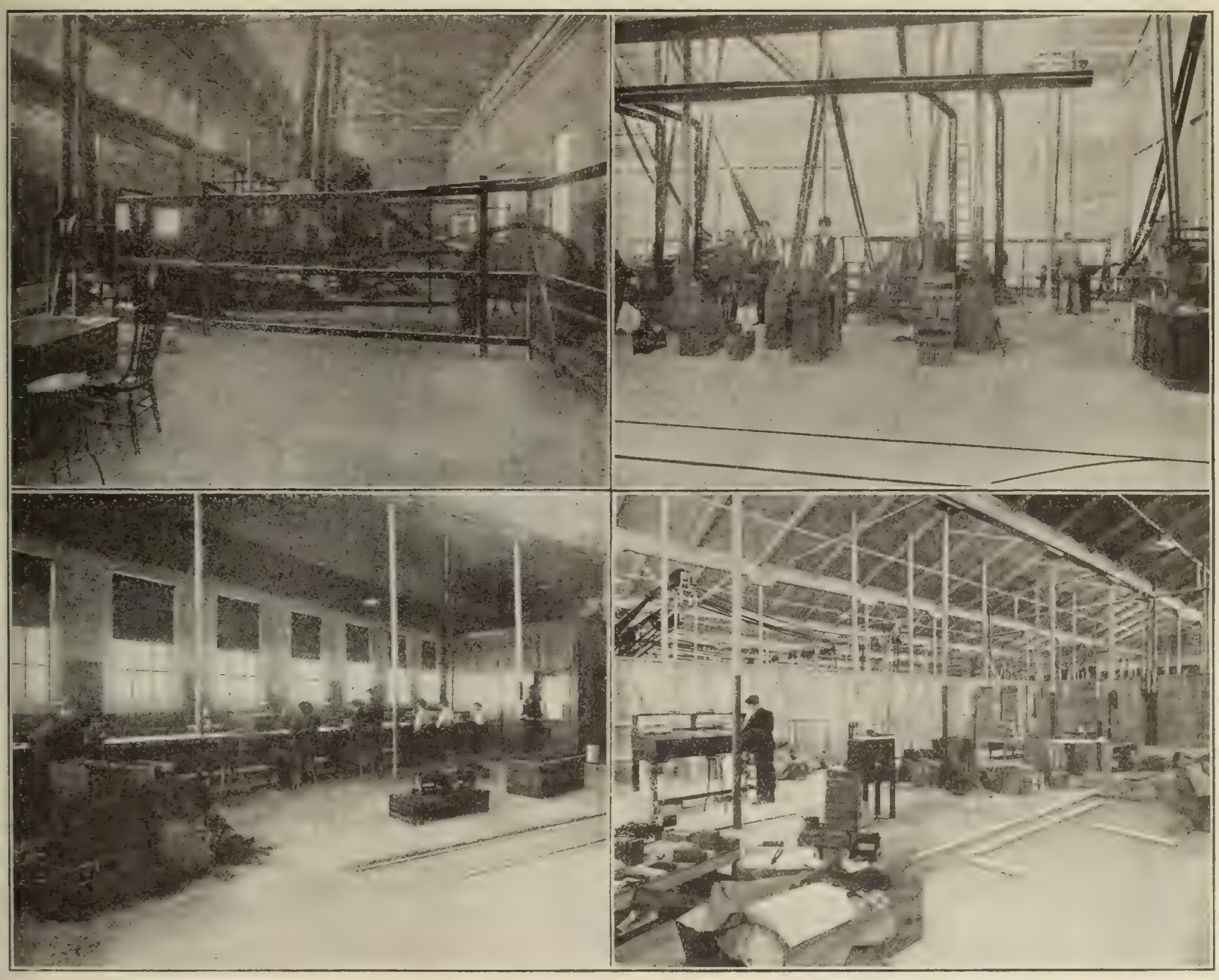


Fig. 6.—The East End of the Forge Department.
Fig. 8.—The Inspection Department.
Fig. 7.—The Polishing Department.
Fig. 9.—The Shipping Department.

### Offices and Drafting Room.

The offices, consisting of three rooms, are in the northeast corner of the plant, and are finished in oak. In the first room the clerical work is done; in the next the general factory business is conducted, and here also is located the stenographic force, while the last room is the private office of the vice-president and works manager. A drafting room, complete in its equipment, adjoins the last mentioned office and is conveniently near the manager when he has occasion to consult with the draftsmen over drawings and designs. All work requiring it is made from drawings or sketches, which are preserved as a check on the work done and allow making duplicate parts at any time in years to come.

### Power Supply.

The entire plant is driven by electricity (using a total of 275 hp.) purchased from the local company and generated at Trenton Falls, N. Y., 18 miles away. Each department is run by a separate motor, controlled by an autostarter and also at the switchboard by a circuit breaker. The main feed wire entering the transformer vault carries a current of 2200 volts, which, after being stepped down to 440 volts, is carried underground in water tight lead cable incased in fiber conduit to the main switchboard, where the connection is made to the circuit breaker. It is then taken underground again to each motor; the only wiring above ground is that where connection is made to the motor.

The electric light wires are introduced in the same way, and after passing the circuit breaker are carried underground to one of the building columns and follow the latter in the conduit pipe to the roof, where connection is made to the respective lights.

All the main shafting is on the floor, so as to be easily reached and perfectly safe, besides which it does not interfere with the light. Instead of being connected in one continuous length, as ordinarily done, each length is independent and is driven by a clutch, so that any one length, except the center one with which the motor is connected, can be thrown out without stopping the others. Plenty of room is allowed for a person to walk and clean behind each shaft and the oiling can be accomplished with prac-

tically no risk to the attendant. Each shaft is inclosed by a screen wire guard 6 ft. high, within which inclosure none but authorized persons are permitted to go.

All countershafts are mounted on iron frames made of 2-in. wrought iron pipe, and driven, when possible, from the line shaft on the floor. When it is necessary to have extra driving shafts they also are mounted on the iron framework. The main advantage of so arranging a line of countershafts is, that should it ever be necessary to move any department the whole arrangement of piping can be taken down and reassembled in a new location or moved intact, and it can be done easily without much expense.

**Heating, Ventilating and Lighting.**

All windows on the side of the building open, while those in the roof do not, except in the forge department, where the heat from the fires makes the opening of the roof windows necessary. Provision is made for ventilating the main part of the building by 36 30-in. ventilators of a design that can be opened or closed in winter or summer when necessary to properly control the temperature. The ventilators in the forge and hardening department are fitted with smoke flues terminating in hoods at their lower ends just over the operator to carry away the heat and smoke from his vicinity. An opening around each flue allows the heat and gases collecting in the upper part of the room to escape.

The heating is done by a low pressure steam system. Two 100-hp. boilers, located in the forge room, as shown in Fig. 6, fitted with automatic damper and feed water regulators, furnish steam at a maximum pressure of 15 lb. Only one boiler at a time is in use, the other being held in reserve, but the boilers are used alternately, so as to keep both in working order. Means are provided for operating both boilers together if it ever becomes necessary. The steam is conducted to the center of the building through an 8-in. pipe, then delivered to the separate coils which heat the building. These coils are suspended from the main beams of the roof trusses at a hight which brings their lowest point above the water line of the boilers, so that the condensation is returned by gravity. Hanging the coils at this hight also serves to keep the roof free from snow and ice, which is sometimes a difficulty with a saw-tooth roof. The heat rising before it warms the lower part of the room makes the roof the warmest part of the building. Though the temperature is only 65 degrees F. near the floor, it is considerably more at the roof, and the melted ice and snow drains to the gutters. From the latter the water is taken in leaders through the building to a sewer under ground below the frost line. The gutters slope 5-16 in. per ft, the longest slope being 27 ft. Last winter when the snow on the ground was two feet deep, and the temperature below zero, no trouble was experienced from choked gutters.

The natural light in the daytime through the roof and side windows is nearly equal to that outside, there being an almost total absence of shadows, as will be seen from the interior views. A plentiful supply of artificial light for dark days and early twilights is afforded by 96 Nernst electric lamps, while 23 2000-cp. gas lamps are kept in reserve, should the electric light fail.

**Sanitary Conveniences**

Individual wash bowls of white enamel, arranged to give each employe hot and cold water, are provided, and individual metal lockers, so placed as to accommodate each department to the best advantage, are also installed. In the forge and hardening department, where the work is more or less dirty, there is a bathroom of white enamel brick, fitted with a combination hot and cold water shower bath, as well as wash bowls. The idea of building the room of white enamel brick was that once a day a hose connection with the hot water supply could be used to wash the entire room, thus keeping it clean. The water closets are standard siphon jet, arranged in enclosed spaces 3 x 4 ft. The enclosing walls are made of sheet metal painted so that they can be scraped and repainted at intervals.

**Fire Protection and General Features.**

Connection with the city water mains, as well as with a 35,000-gal. steel water tank, affords very complete protection against repetition of the fire. The entire mill, including the vault, is fitted with sprinkler heads, and on the grounds outside are four hydrants.

A telephone system connects the different departments with each other, and any instrument can be connected with the outside service.

A rather odd thing is the signaling for starting and stopping work, there being no whistle on the outside, but on the inside each department has a small whistle, which is blown by compressed air. For the female help employed in the office and inspecting room a rest or recreation room is provided adjoining the inspection department.

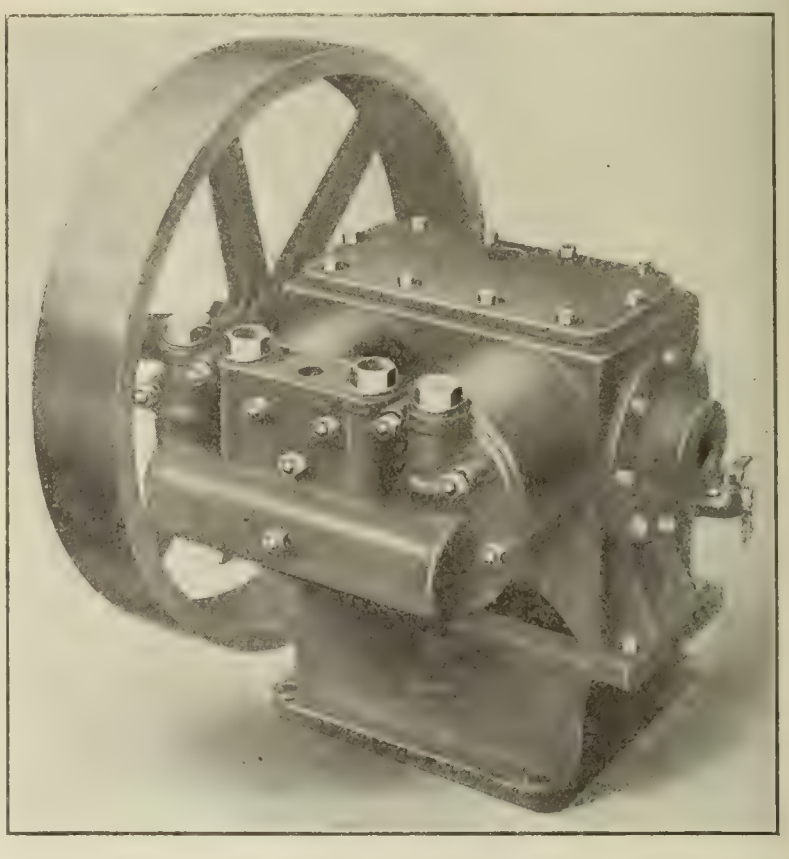
Chances are given the men in the employ of the company to learn tool making or to work up to the skilful, best paying operations.

**Organization.**

The Utica Drop Forge & Tool Company was organized in 1895. The main office is in Utica and the officers of the company are W. Pierrepont White, president; Henry F. Kellemen, vice-president and superintendent, to whom is due the credit for the design of the new plant, and Hugh White, secretary and treasurer.

## A New Westinghouse Air Compressor.

In many cases air compressors of the standard types, as used with airbrake equipments, have been applied successfully for other industrial purposes where compressed



A New Airbrake Type of Compressor for Industrial Service Made by the Westinghouse Traction Brake Company.

air is required. So great has become the demand for them that the Westinghouse Traction Brake Company, Wilmerding, Pa., has recently produced a line of belt-driven compressors similar to its motor-driven compressor for industrial service where the only power available is from shafting or where it is not expedient to use either an engine or electric motor for driving.

The illustration shows this type F-B belt-driven air compressor, as it is designated. It is made in four different sizes, F-1-B, F-2-B, F-3-B, and F-4-B, the capacities of which are, respectively, 15, 26, 44½, and 54½ cu. ft. of free air per minute, at the standard speeds, 220 rev. per min. for the F-1-B and F-2-B, and 200 rev. per min. for the F-3-B and F-4-B compressors. To operate the compressors against a pressure of 100 lb. requires 3, 5, 9, and 11 hp., respectively, for the four different sizes. They will operate successfully against pressures up to 200 lb. per square inch, and may be had with or without water-jacketed air cylinders as occasion requires.

The F-B compressor is very compact in design, being similar in all respects to the motor-driven compressor, except that the motor is replaced by a belt wheel keyed on the crank shaft of the compressor. It is of the duplex, horizontal, single-acting type, is portable, is applicable to any industrial service, and may be maintained at small cost.

## Canadian Shipbuilding and Protection.

By orders-in-council, and by amendment to the tariff act of 1996, the Canadian government is quickly traveling toward the goal of bounties that the shipbuilding and the shipping interests set before the members of the Cabinet who were of the Tariff Commission of 1905-1906. In March last an order-in-council, which has practically the force of an act of Parliament, was passed at Ottawa, which will after this season exclude a fleet of large modern Norwegian cargo boats from the coal trade between Nova Scotia and the St. Lawrence ports. At the end of June a second order-in-council was passed which will exclude from the Pacific coasting trade any but Canadian or British vessels and restrict to these vessels the carrying of Canadian merchandise in bond between United States Pacific ports and the ports of British Columbia.

### The New Duty on Repairs.

About the time that this last concession was made to protect Canadian shipping already in service, the tariff act of 1906 was so amended as to provide for a duty of 25 per cent. on all repairs to Canadian vessels made in United States shipyards. The United States is, of course, not mentioned in the new clause which has gone into the tariff; but no other nation does any repairs for Canadian vessels in the coasting and lake trade, and the intent of the amendment to the law is obviously to prevent Canadian railroads and other transport companies that have steel vessels in service on the Great Lakes from sending them to Buffalo, Lorain, Chicago, Detroit or Bay City for repairs.

The Ontario shipbuilding interests had been working for this change in the law for two years, and recently when they were seeking the aid of the boards of trade in the Canadian lake and coast cities they made the statement that in 1907 Canadian owners of steel vessels spent $500,000 in repairs at American lake yards. Early in the agitation this year, at least as far back as March, the Dominion Marine Association, in which the owners of lake vessels are organized, protested against a duty on repairs; and in doing so laid much stress on the statement that such a duty would work much inconvenience and hardship to owners of Canadian steamers on the lakes because at present there are not adequate facilities at Canadian ports for making extensive repairs. As concerns steamers which need overhauling in dry dock, this statement of the Dominion Marine Association is correct. There are as yet probably only five shipyards with modern equipment in Canada. All but one are on the Great Lakes, and only at the Collingwood yard is there a dry dock in which the newer and larger vesseis now engaged in the Canadian lake passenger and freight service can be handled. But there was much pressure from Ontario for this protection for the lake yards, and as the recent provincial elections in Ontario have shown that the Ottawa Government is admittedly in great danger there at the coming general election, it gave way and inserted the repairs clause in the tariff as urged by the lake shipbuilding interests.

### Atlantic Coast Interests.

Except on the Great Lakes the duty on repairs will not much affect the Canadian shipbuilding industry. Emergency work on trans-atlantic steamers in the St. Lawrenec trade has hitherto been done mostly at Levis, opposite Quebec, while for the Maritime Provinces there is a large dry dock at Halifax which is available for both coasting and trans-atlantic vessels. There are few modern steel vessels on the Canadian register in the coastwise trade of the Maritime Provinces, scarcely sufficient to keep the repair shops at Halifax and St. John fully employed.

It was a grievance with the shipyard interests at Halifax that at times when the big Norwegian steamers in the Sydney and Montreal coal trade needed repairs at the end of the St. Lawrence season they were taken to American ports on the Atlantic coast. This passing by of the Halifax dry dock by the Norwegian steamers and the failure of the managers to buy supplies at Nova Scotia ports were responsible for the Maritime Province agitation which ended in the exclusion of the Norwegian boats from the coastwise trade in which they were doing a large and growing business. The larger of these Norwegian steamers, which were built in English shipyards, never competed with any Canadian vessels for the St. Lawrence coal trade, simply because there have never been any such Canadian vessels at the Maritime Province ports. All vessels on the Canadian coastwise register that are large and modern are engaged in the lake trade; for comparatively little Canadian capital has gone into steel vessels for tidewater coastwise business on either the Atlantic or the Pacific coast.

### Increased Agitation for Bounties.

These concessions to the shipbuilding and shipping industry, all made since the tariff commission investigation of 1905-1906, have stimulated anew the movement for bounties to shipbuilders. As part of this agitation there have been questions in the House of Commons with a view to ascertaining how much Government money has in recent years been spent on additions to the fleets of the Department of Marine and Fisheries and of other State Departments at Ottawa, and what proportion of the total sum has gone to British shipyards; for the promoters of this movement are as anxious for protection against the Clyde and the Tyne as for protection against American lake yards in the competition for repair work.

The return made in answer to these questions covered the period from 1900 to June, 1908. It showed that in these seven and a half years the Government had acquired 34 vessels. Nine of these vessels, representing an expenditure of $1,279,267, were built for the Government in English and Scotch yards. The other 25, representing an expenditure of $2,167,503, were built in Canada. Sixteen of these, including four dredges which cost from $95,000 to $501,400, and a number of tugs, were built at Sorel on the St. Lawrence in the Province of Quebec, where the Department of Marine and Fisheries has a yard and also a dry dock. Most of the other vessels were built at Ontario yards. E. P.

## General Electric Business Increasing.

The General Electric Company in the past week has booked orders for more than $1,000,000 worth of equipment, most of which has come from foreign countries. The aggregate of these orders represents the largest quantity of orders booked in a similar period for a number of months. Following is a list of the orders received and which will result in the Schenectady factory working a full force of men:

From Isthmian Canal Commission: Six vertical Curtis turbine units, 1500 kw., 25 cycle, 220 volts, each complete with individual base condenser, air and circulating pumps and necessary piping; electrical equipment for one 20-ton traveling crane; four 35-kw. 125-volt direct current turbines, driven by exciters; four 500-kw. 600-volt rotary converters, each complete with three air blast type transformers; six 100-kw. 2200-6600 volt single phase oil cooled transformers; six 110-kw. air blast type transformers; two switchboard equipments. From Mitsui & Co., Japan: Fifty G. E. No. 52 railroad motor equipments, also rotary converters, transformers, &c.; 20 G. E. No. 52 double motor equipments, with headlights and spare parts; three 1000-kw. alternating current generators. From Australian General Electric Company: Seventy four-motor type M control equipments for G. E. No. 81 railroad motors. From Santos Dock Company, Brazil: Six 3000-kw. transformers and five 50-light constant current transformers; one motor generator set; 628 arc lamps; one switchboard. Small motors and transformers: Pueblo Tramway Light & Power Company, Mexico City, 10 water cooled 1500-kw. 60-cycle transformers.

The Brier Hill Iron & Coal Company, Youngstown, Ohio, has about completed the remodeling of its blast furnace. The steel work was done by the William B. Pollock Company and a new blowing engine was supplied by the William Tod Company, both of Youngstown. It has not been decided when the furnace will be started.

# The Alton-Standard Oil Case.

## A Review of the Facts.

BY R. L. ARDREY.

The prosecution of the Standard Oil Company of Indiana, based upon shipments made over the Chicago & Alton Railroad, is one of the most remarkable cases ever tried by any tribunal, and a brief review of the facts shown in the "transcript of record," a document of 1154 pages, may be of interest to shippers. The shipments amounted to 1903 cars, from September 2, 1903, to February 28, 1905, from Whiting, Ind., to East St. Louis, Ill., and St. Louis, Mo. There were 1903 counts in the indictment originally returned by the federal grand jury, one for each car, but 400 odd counts were dropped on account of insufficient proof.

### The Cause of the Suit.

Whiting is a suburb of Chicago, lying a few miles east of the city boundary and the Illinois State line, but this and other towns in the surrounding industrial district in Indiana are included in the railroad switching limits of Chicago. The shipments were made from Whiting over a belt road, the Chicago Terminal Transfer, to Chappell, Ill., the junction of the belt line with the Alton. The belt charge from Whiting to Chappell, shown in a tariff filed at Washington, was a flat switching rate of $5 per car, regardless of contents. From Chappell to East St. Louis the Alton charged an Illinois commodity rate of 6 cents per 100 lb., and on cars going to St. Louis an additional 1½ cents, the bridge or ferry rate over the Mississippi.

The charges were paid twice a month by the Chicago office of the Standard Oil Company of Indiana to the auditor's office of the Alton in Chicago. The belt road collected its switching charge from the Alton. There was no "rebate" question involved in the case. The oil people paid the 6 and 7½ cent rates and no money was refunded by the railroad. The question whether the rate paid was high or low was not considered. Tariffs offered in evidence by the Government showed that other commodities paid 5 to 8 cents for the same movement; hence, the rate of 6 cents may be considered a fair and reasonable charge for oil in the quantities in which it was handled, in average carloads of perhaps 50,000 lb. There was no charge of discrimination, because there was no other refinery within 50 miles of Chicago shipping oil in carloads.

The theory of the Government was that the legal rate which should have been paid was 18 cents from Whiting to East St. Louis and 19½ cents from Chappell to St. Louis. There was no direct, specific tariff filed with the Interstate Commerce Commission on oil from Whiting or from Chappell over the Alton to the destinations named. No single document, taken alone, would show any rate on oil. Tariffs were not posted at Whiting in accordance with the law, although they had a case full of miscellaneous tariffs. The agent of the belt road at Whiting testified that when anybody asked him for a rate he telegraphed to the general freight agent at Chicago. The Alton did not make or publish any tariffs to St. Louis, its rates all being made to East St. Louis, Ill., on all classes of freight.

### The Evidence Submitted.

Two witnesses for the Government, employees of the Interstate Commerce Commission, furnished the evidence to establish the 18 and 19½ cent rates. There was a tariff filed with the commission, Tariff No. 24 of the Chicago & St. Louis Traffic Association, a joint tariff of all the roads between Chicago and East St. Louis, in which a fifth-class rate was named of 18 cents. Oil was not mentioned, but this tariff was based on the Illinois classification, in which petroleum products are rated fifth class. There was a tariff or "application sheet" filed by the Alton in 1901, a separate document, which specified that Whiting and numerous other towns were to take Chicago rates. The Government witnesses experessed the opinion that this chain of three documents established a legal rate of 18 cents from Whiting to East St. Louis.

Horace Tucker, chairman of the Chicago & St. Louis Traffic Association, testified that Tariff No. 24 was not intended to cover oil, nor three other commodities—coal, coke and grain—on which the roads were supposed to issue their individual tariffs. The Alton "application sheet," which was filed with the commission, apparently authorized commodity tariffs from Chicago and the stations named, including Whiting, provided the rates were not lower than 6 cents, carloads. The Alton freight department formally made a commodity tariff of 6 cents from Chicago. This tariff was not filed itself at Washington, but was bound in a volume of several hundred similar tariffs and was kept in the general office in Chicago, where the clerks quoted rates to shippers or any one who inquired. Hollands, the chief tariff clerk of the Alton, who was one of the principal Government witnesses, testified that he understood the "application sheet" filed at Washington made any lawful rate from Chicago apply to Whiting, but the court would not permit him to testify whether it applied to the 6-cent rate.

Edward Bogardus, traffic manager of the Standard Oil Company at Chicago, testified that Hollands had told him the 6-cent rate was filed and was a legal rate; that during the time the shipments were made he had never heard of an 18-cent rate on oil from Whiting to East St. Louis; that he had always paid 6 cents; that he believed absolutely that he was shipping at a legal rate; and that he had not seen a copy of Tariff No. 24 until late in the period covered by these shipments, when he had asked the Burlington people to make a rate on empty barrels from a point in Illinois to Whiting, and they had called his attention to this tariff, which they said covered barrels and made it unnecessary to issue a tariff.

### How the Illinois Classification Was Used.

One of the links in the chain of documents used by the Government to establish the 18-cent rate was the Illinois Classification, issued by State authority, by the Illinois Railroad and Warehouse Commission. If this document were excluded from the record the Government could show no rate at all over the Alton from the files of the commission. The witnesses from Washington produced from the files of the commission a copy of this Illinois Classification. How it got there was not shown. It was not filed by the Alton nor any other railroad. The Interstate Commerce act does not recognize the tariffs of State commissions, nor legalize them, nor provide for filing them. It only requires carriers to file tariffs and legalize them when filed. The document was apparently transmitted to Washington as an act of courtesy by the Illinois Commission, but this was not shown in the evidence. In Illinois a commodity rate, when lower, takes preference over the State classification as a legal rate. The Interstate Commerce Commission has ruled that a commodity rate supersedes a class rate, whether higher or lower.

Several witnesses for the defense were railroad traffic men of long experience in the making and application of tariffs, one of them having been a member of a committee of eight who had been invited by the Interstate Commerce Commission to advise the commission in making rules and regulations regarding tariffs. All of these witnesses showed that it was proper for the Alton road, under the "application sheet" which it had filed at Washington, to apply the 6-cent rate from Whiting. The defense offered to show by one of these witnesses that it was the general custom of Chicago roads to use commodity rates in this manner, but the court would not permit this evidence to go before the jury.

The Government had made a point that in the "application sheet" there was a list of several tariffs, and that it extended to Whiting only the rates shown in these tariffs. All the witnesses for the defense, including Hollands of the Alton, a Government witness, asserted that the application was not limited to these few tariffs, but would cover any lawful tariff made by the Alton from Chicago; and they all stated that the tariff making the 6-cent rate was a regular commodity tariff. The defense offered to show by one of its witnesses, who had had correspondence with the commission on the subject, that formerly, during the time covered by these shipments, the commission had not required the railroads to include in an application sheet a list of the tariffs it covered, and

to limit its scope to the list so shown, but that recently, since the passage of the Hepburn law, and since the time covered by these shipments, the commission had issued a circular making this requirement. The court would not allow this evidence to be presented.

**A Most Peculiar State of Affairs Shown.**

To one who has no interest in the case except to read the transcript of the record, the evidence shows a peculiar state of affairs. There was no specific rate on oil, such as is contemplated by the law, between the two points, Whiting and East St. Louis, over the Alton road. The switching road which took the oil from Whiting did not make any through tariffs. The two Government witnesses from the office of the commission constructed a rate of 18 cents by using as one link a State classification which was not legally a part of the rate records of the commission. It has been widely heralded that there was a legal rate of 18 cents; but in the evidence this rate existed only in the opinions of two witnesses. On the other hand, all the expert witness for the defense showed by their evidence, based on their experience in handling rates, that the 6-cent rate was properly applied to the shipments, and important evidence to support their position was excluded.

The rate of 19½ cents from Chappell to St. Louis was constructed by the Government witnesses from Tariff No. 24, the Illinois Classification, and bridge tariffs of 1½ cents which were filed with the commission. Chappell, however, was not mentioned in Tariff No. 24, and to connect it with that tariff one of the witnesses had recourse to the long and short haul clause of the law, to apply the 18-cent class rate from Chicago to East St. Louis. The defense offered as evidence a Lake Shore tariff filed with the commission, which made a rate of 17 cents from Toledo to East St. Louis, through Chappell via the Alton, which by reference to the long and short clause would have made the 18-cent rate from Chappell illegal. This Lake Shore tariff contained a specific clause, "Rates from and to intermediate points will not exceed these rates on freight going in the same direction," and the Alton road was a party to this tariff. The court would not permit this tariff, nor any evidence regarding it, to go before the jury.

**Much Evidence for the Defense Excluded.**

It is one of the remarkable features of this case that the trial court, presumably following the strict rules of evidence in such a case, excluded so much evidence that would have been favorable to the defendant. The Toledo tariff would in itself, if admitted, have overturned the contention of the prosecution that the legal rate was 18 cents from either Whiting or Chappell. Hollands, the Alton witness, was at one time examined in the absence of the jury, to find out what he would say in answer to certain questions, and he made statements to justify the application of the 6-cent rate, but he was not permitted to make the same statements before the jury. The defense offered to prove that since 1891 the rate was 6 cents over the Alton from Whiting, but the court would not permit this to go before the jury.

The defense offered to show that in 1895 the Chicago & Eastern Illinois Railroad, a competitor of the Alton, had filed with the Interstate Commerce Commission a tariff which made a rate of 6¼ cents from Whiting to East St. Louis, and that owing to a difference in switching charges this was equivalent to the 6-cent rate over the Alton; and that this tariff had been in the files of the commission from 1895 until 1906, after the time covered by these shipments. The point the defense sought to make was that it had no motive for making any secret deal with the Alton to obtain a 6-cent rate, when it already had an equivalent rate, of unquestioned legality, over another road. One of the Government witness knew all about this document and testified to its history, but the court would not permit this tariff, or any evidence regarding the rate in it, to go before the jury.

The Government attorneys who handled the case showed an almost incredible grasp of details in presenting the evidence. They had the shipping orders for every car, the waybills of the belt road and the Alton, the "statements of billing" on which the freight was paid, and a complete chain of documentary evidence on every car involved in the case. They had as witnesses all the railroad clerks who handled the shipments and the conductors who had charge of the trains. By the masterly manner in which they handled the case they demonstrated that the Government can hold its own with the greatest corporation in a contest that depends upon legal ability.

## Lake Shipowners Are Having a Bad Season.

DULUTH, MINN., July 30, 1908.—It does not look like a very good year for ships which are dependent upon what tonnage may be handed them by shippers who own their own vessels, sufficient, in part at least, for the ore to be carried. There has been a heavy overbuilding of lake ore ships on account of the ease with which these ships have been financed. The custom has been to arrange with lake shipbuilders for underwriting steamship bonds to 50 per cent. of the cost of the vessels, these bonds being due in 10 annual equal installments, bearing 5 per cent. interest, secured by a mortgage on the ship, and covered by insurance in reliable marine companies. Thus each year a tenth of the debt has been paid off, and so far there never has been a single instance in which either principal or interest on these bonds has been defaulted. The shipbuilding companies have had no difficulty in placing these bonds, chiefly with individual and corporate investors along the lakes, and one individual is known who not long ago held more than $4,000,000 of such bonds. By the annual payment of one-tenth the value of the ship, the security is continually improved, and the entire mortgage is held till the final payment by the mortgagee.

It has been the custom in recent fat years for managers of ships built under these conditions to keep a sinking fund, ample for interest and the retirement of bonds due the following year, and in most cases the earnings above this charge have been paid in dividends. These dividends have frequently run as high as 25 and 30 per cent. annually. Some vessel men have maintained a continuous 10 per cent. rate, putting all above that into surplus, and these may be able to pay something this year. The others can scarcely do so, for earnings of independent vessels, with few cargoes, and those at a cut rate from that paid of late, are not worth mentioning. Few ships financed under this general plan have been in commission long enough to pay off the entire bond issue, but many of them have nearly done so, in which case their interest charge is, to be sure, slight. None of these steel shipping operators figure much on the item of depreciation, for there has been no case on the lakes where a well built steel ore freighter, constructed along standard lines, has shown depreciation. Lake shipping firms have been anxious to increase their fleets, and have pushed construction, for several reasons, and in some cases without any apparent regard for the inevitable day of reckoning, when there should be temporarily too many ships for the trade. The customary charge for managing a ship per season is $1000, and this, if an office controls by construction a fleet of from 25 to 100 ships, makes a very nice thing; then there are sometimes other emoluments, not so apparent to the naked eye. D. E. W.

In an official opinion made public August 1 Attorney General Bonaparte holds that a national bank which conforms to a State law for guaranteeing bank deposits gives just cause for the forfeiture of its charter. Under this ruling of the head of the Department of Justice no national bank in Oklahoma can permit itself to be taxed, as its State banks are for the creation of a depositors' guarantee fund.

Of the 32 blast furnaces in the Pittsburgh District proper owned and operated by the Carnegie Steel Company, 22 stacks were in blast and 10 idle on August 1. The idle stacks are four Edgar Thomson, one Lucy, three Isabella and the two Donora. The company blew in Carrie No. 2 July 7, Clairton No. 2 July 14, Carrie No. 1 July 22 and Duquesne No. 2 July 23.

## The World's Production of Tin in 1907.

WASHINGTON, August 3, 1908.—The metallic tin produced in the United States in 1907 amounted to 62 tons, derived from 89 tons of concentrates, valued at $33,285, according to the forthcoming report of the United States Geological Survey, prepared by Frank L. Hess. In addition several hundred pounds of metallic tin were produced in an experimental way by a mining company in South Dakota. A considerable quantity of tin ore, mostly low grade, which is not included in the production, was reported as mined and left on the dumps. The output of the United States, therefore, was only about one-twentieth of 1 per cent. of the world's total production for the year, but there was great activity in prospecting in Alaska, Washington, South Dakota, Texas and North and South Carolina, where tin deposits of more or less importance have been located.

As nearly as can be estimated from sources at this time available, the world's production of tin in 1907 seems to have been a little less than in 1906, being approximately 113,000 net tons in 1907, against between 115,000 and 120,000 net tons in 1906. The following table shows how the production was distributed:

*World's Production of Tin in 1907.*

| | Net tons. | |
|---|---|---|
| Southeastern Asiatic area: | | |
| Federated Malay States | 54,242 | |
| Banka | 12,675 | |
| Billiton | 2,404 | |
| Singkep | 437 | |
| Siam | 4,645 | |
| Burma | 108 | |
| China | 4,500 | |
| Japan | 30 | |
| | | 79,041 |
| Australia: | | |
| Queensland | 3,454 | |
| New South Wales | 1,883 | |
| Victoria | 67 | |
| Tasmania | 2,918 | |
| Western Australia | 1,091 | |
| | | 9,413 |
| The Americas: | | |
| Bolivia | 18,306 | |
| United States | 62 | |
| Mexico | 4 | |
| | | 18,372 |
| Europe: | | |
| Cornwall | 4,860 | |
| Portugal | 16 | |
| Spain, Austria, Germany (estimated) | 100 | |
| | | 4,976 |
| Africa: | | |
| Cape Colony | 140 | |
| Transvaal | 878 | |
| Other portions of South Africa | 432 | |
| | | 1,450 |
| Total | | 113,252 |

In spite of high prices in the first part of the year, the output did not increase owing to a number of reasons, principal among which are the working out of many placers in the Federated Malay States, Billiton and Banka; drouth in the Australian tin fields, so that water for working was scarce; and lack of transportation facilities and of labor in Bolivia. The high export duty charged by the British Government upon all tin shipped from the Federated Malay States should probably also be given as a reason. This duty amounts ordinarily to 10 per cent., but certain favored companies pay only 8 per cent. The value of the metal is fixed by the latest quotations for Straits tin at Singapore. The duty on ore is 33½ per cent. ad valorem, unless it is to be smelted in a country under British rule, in which case the duty is 10 per cent. on the contained tin. These duties are levied whether the producing mine pans a profit or not. Thus a mine which might otherwise pay over 11 per cent. profit cannot be operated under the present impost. On the other hand, railroads and other roads built from the proceeds of the tax allow mining to be carried on in otherwise impossible places.

Forces which upheld production, besides the high prices of the early part of the year, were the efforts of the Dutch to obtain more coolies for working in their East Indian islands, the increased working of the Siamese mines, and the excellent work of the New South Wales dredges.

In 1907 the United States imported for consumption 41,257 net tons of pig tin, valued, as entered, at $32,074,263, an average of 38.871 cents per pound.

The recovery of tin from scrap, dross, type metal, babbitt and other friction metals, bronze, &c., is growing, and should grow even faster. The amount of tin wasted in tin cans that have been used and thrown away and the solder used on them is very great and is an extravagance which from a broad economic view is deplorable. During the year 16 companies recovered tin amounting to 1662 net tons, valued at $914,404. Of this amount 93 tons was recovered and sold as tin, and 1569 tons went into babbitt, bronze, type metal and other alloys. A large but unknown recovery of tin from secondary sources was also made in Europe. W. L. C.

## The Socialist Centerpiece of the New Australian Tariff Killed.

From July, 1907, to the end of May, 1908, the Federal Parliament of Australia was engaged on the new protective tariff, with its bounty system on the Canadian model for the iron and steel industry, and with its extraordinary scheme for denying the advantage of the high duty schedules to manufacturers who did not produce their wares under conditions imposed by the Excise Board as to wages and hours of labor. London was kept advised by the Commonwealth Government of every change in the schedules and with the fate in the Lower House of Parliament of the 238 "requests" for higher or lower duties which were made by the Senate. But the news that the bill had passed all its stages in Parliament had scarcely reached London when there was a cablegram to the effect that the centerpiece of the whole scheme—no protection for manufacturers who would not meet the Excise Board's conditions as to hours and pay for labor—had been knocked out by a judgment of the Federal High Court. Three out of the five judges held that this part of the tariff act was outside the power of taxation conferred upon the Commonwealth by the constitution.

The Australian constitution, like that of the Dominion of Canada, is embodied in an act passed by the British Parliament. Only the British Parliament can amend the constitution of any self-governing colony. Therefore, if the scheme for securing that part of the protection given by the new tariff to manufacturers shall go to their workpeople is to be set up again, one of two things must happen. There will either be an appeal to Westminster for an amendment of the British law, or all the States in the Australian Commonwealth will have to come to an agreement to transfer to the Federal Government certain of the powers as regards taxation and industrial legislation which are now inherent in the States.

The Deakin Cabinet, with which the protective tariff and the excise scheme originated, has been kept in power by the protectionist and the labor members. Labor is stronger in politics in Australia than in any other British colony except New Zealand, and another scheme will have to be quickly devised by the Deakin Cabinet or there will be widespread discontent with the new tariff and its high schedules. It was the socialist centerpiece that carried it through the Lower House of the Commonwealth Parliament, and with this as a useless piece of legislative lumber the labor group in Parliament will naturally exert its power to compel the government either to lower duties or to find a substitute for the excise scheme that will stand the test of the law courts. As it stood, the excise scheme provided for an internal revenue duty on every article manufactured in Australia that was protected by the tariff. The rate was 50 per cent. of the import duty on any given article; and it was only when a manufacturer had complied with the wages and labor regulations of the Excise Board that this internal revenue duty was to be remitted.

The Railroad & Car Material Company, 802 Bessemer Building, Pittsburgh, has recently been appointed selling agent for the line of drop forgings manufactured by the Transue & Williams Company, Alliance, Ohio.

## The Conkling Reversing Drive.

A gear driven reversing device designed to take the place of the usual belt shifting arrangement for reversing machinery drives is here illustrated. The first application of this mechanism was made by the manufacturer, the Conkling Company, Chicago, to a rotary laundry washer with satisfactory results, and with some modification it has since been fitted for attachment to ordinary metal planers, as shown in Fig. 1. The objects sought in this application were an easy, jarless stop and reversal of the platen, its speedy return, and change of cutting speeds without altering the return speed.

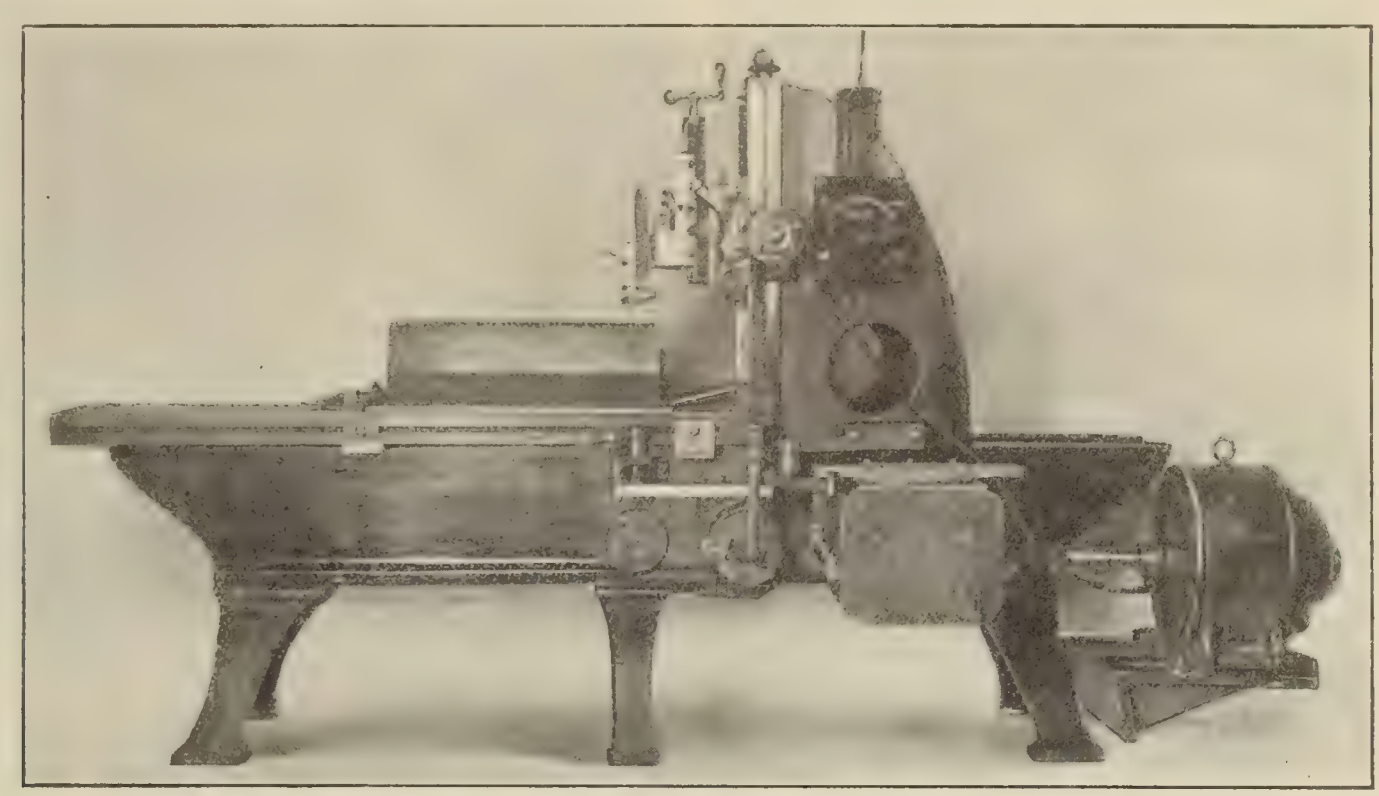


Fig. 1.—A Planer Equipped with the Power Transmission Reversing Drive Made by the Conkling Company, Chicago.



Fig. 2.—Detail of the Reversing Drive with Cover Removed to Show the Interior.

Fig. 2 shows the gear case with the top removed exposing its mechanism. The shaft at the right couples to the planer shaft and the driving shaft in front is directly connected to the motor which, through a bevel pinion between the two opposing bevel gears, revolves them continuously in opposite directions. The backward stroke of the platen is controlled by the right gear through a large spur gear on the same shaft, while the cutting stroke is run in the same manner by the opposite train of gears.

The principle involved in the reversing mechanism is that of a friction clutch, but it is upon the manner of its application that the chief claims of merit are based. Powerful friction clutches fitted within the two cylinders seen at the back of the device in Fig. 2 are made to alternately engage and release the planer spindle by means of a reversing yoke actuated by the contact of the planer dogs with a compound lever connected to the yoke. The yoke is shown in position in Fig. 2, but it removed in the view given in Fig. 3.

The bands of the friction clutches are expanded by screws contained in the cylinders, which are actuated by a lateral movement of the reversing yoke when the platen reaches its limits of travel. The clutch members carrying the gears are loose except when alternately engaged to the internal clutch members, both of which are keyed to the driven shaft. The gripping of the clutch by the drawing action of a screw is the distinguishing feature of the appliance. It is claimed that the even graduation of pressure thus brought to bear upon the platen driving spindle cushions the shock incident to the sudden stops and starts. On this account it is likewise claimed that higher speeds are practicable, and on planers varying in size from 24 to 40 in., a speed of 200 ft. per minute is attainable on the return stroke.

Though not shown in Figs. 2 and 3, the device is now fitted with two additional gears on the spindle, by which

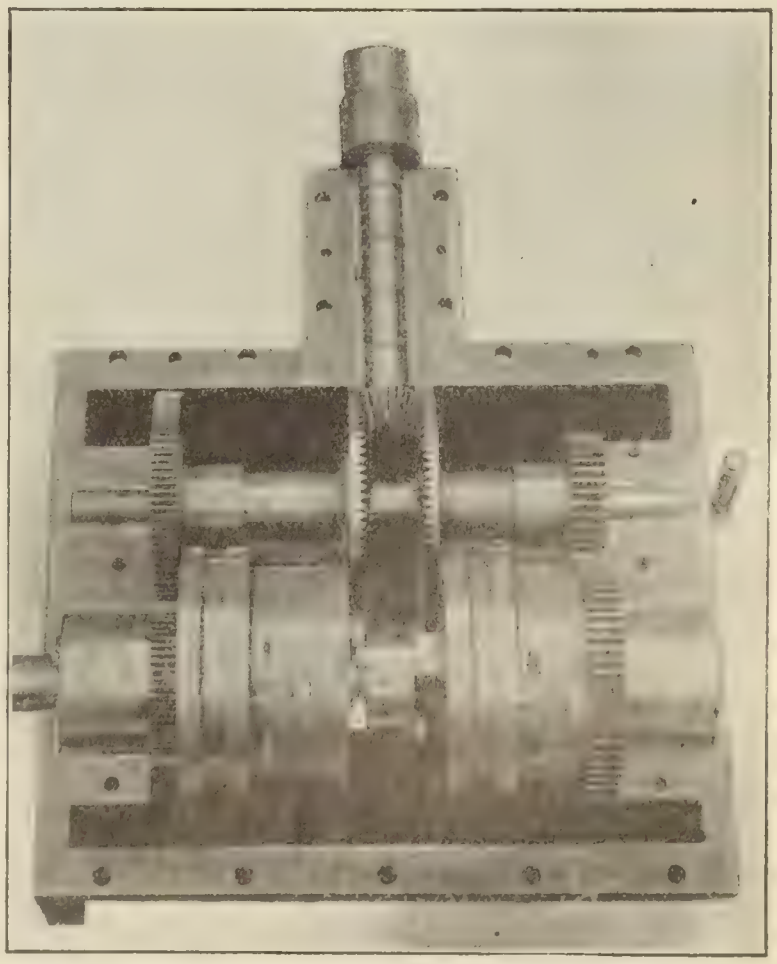


Fig. 3.—Another View of the Mechanism of the Conkling Reversing Drive.

three speed changes in cutting travel are obtained without affecting the return stroke of the platen. The length of stroke can be independently controlled by a small hand lever connected with the reversing yoke lever by which the clutches can be shifted at any point in the stroke.

Being inclosed in a tight fitting case the gears are run in an oil bath, the depth of which can be observed in an oil gauge on the front of the case, as seen in Fig. 1. Although here shown in connection with a motor drive, the device can be belt driven with equal facility by fitting a pulley to the driving shaft. Its adaptability to other machines of various kinds which require reversing is feasible, and it is believed by the maker to be susceptible of such modification in form as would fit it to the peculiar requirements of automobile service. Its capabilities so far have been demonstrated by actual use in connection with metal planers and laundry washers.

## A New Method of Wet Excavating.

BY C. M. RIPLEY, NEW YORK.

Although Gary, Ind., is scarcely two years old, it already has over 10 miles of paved streets, 20 miles of gas mains, an electric light plant, full telegraph and telephone service, both local and long distance, and now an elaborate system of sewers about 20 miles long is nearing completion. The sewer system will cost about $350,000, and about half of this contract was let to the Green & Sons Company, contractor, of Chicago, Ill. This article deals with the methods employed in overcoming the difficulties of the quicksand, which will flow in from a radius of 15 ft. when an excavation 1 ft. deep is left unconfined. This sand, when dry, is so impalpable that it is ankle deep. So low is the land, also, in comparison with Lake Michigan, that in many places there are surface ponds 3 and 4 ft. deep.

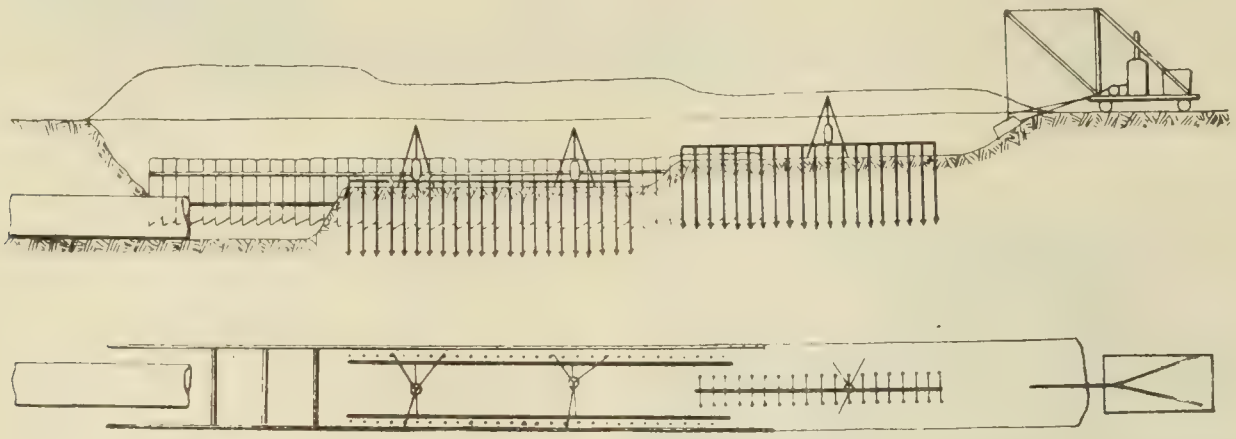
In advancing the trench three vacum pumps were used. The first drained the excavation immediately adjacent to the scraper bucket excavator, and was followed by two others which increased the depth drained. To the suction of the first pump was connected a horizontal 4-in. pipe and from this branches were taken to 2-in. well points 3 ft. long driven in a double row near the center of the trench. This arrangement allowed the sheeting to be driven on either side. This pump drew water from 132 2-in. well points sunk 16 ft. below water level, one 4-in. well point sunk 16 ft. below water level, and one 4-in. suction pipe with strainer placed on the front end of the horizontal header and draining surface water.

The pumps were all hung by chain falls from A frames. The first A frame was mounted on rollers placed on planks to facilitate its being moved forward as the excavation progressed. The sheeting prevented the others being so mounted. Each vacuum pump had a 5-in. suction and a 4-in. discharge pipe, and a 725 gal. per min. capacity. The pumps were made by the Emerson Steam Pump Company, Alexandria, Va., and are designated as the No. 3 size.

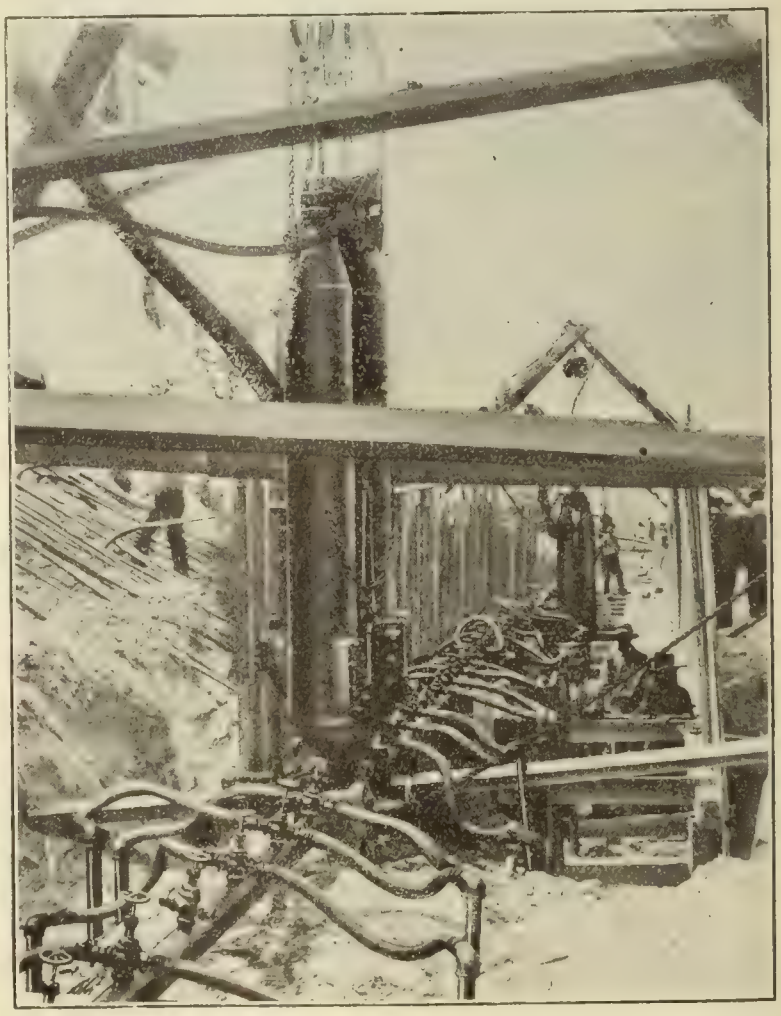
The 4-in. horizontal header mentioned in connection with pump No. 1 was made up of six sections joined by flanges. As the work progressed 22 ft. (that being the length of each section) the rear section was removed and placed in front, and so on. Gate valves at frequent intervals made it possible to do this without shutting down. Thus the pump could remain in one position until the excavation had been carried forward approximately 120 ft. The vertical pipes leading down to the well points had ells at the top, and a 4-ft. length of hard wire lined rubber suction hose made the connection to the main header. Each 22-ft. length of this header had 11 cross valves, with two bushings each to take the rubber connections.

After the draining had been carried on for a couple of hours in the first of the six sections attached to pump No. 1, wooden sheeting was driven by mauls on both sides of the sixth section. Then excavating was started by the shovelers and carried down about 6 ft. more. Next the well points attached to pumps Nos. 2 and 3 were jetted down another 16 ft., so that they penetrated below the bottom of the lowest excavation and 6 ft. below the bottom of the sheeting. Thus the total depth of the trench was made up of the following stages: 8 ft. down to water level by bucket excavator, 6 ft. near pump No. 1 by shovelers and 16 ft. under pumps Nos. 2 and 3 by shovelers. The entire excavation was comparatively dry sand and would stand at ½ to 1, although if wet it would not stand better than 15 to 1.

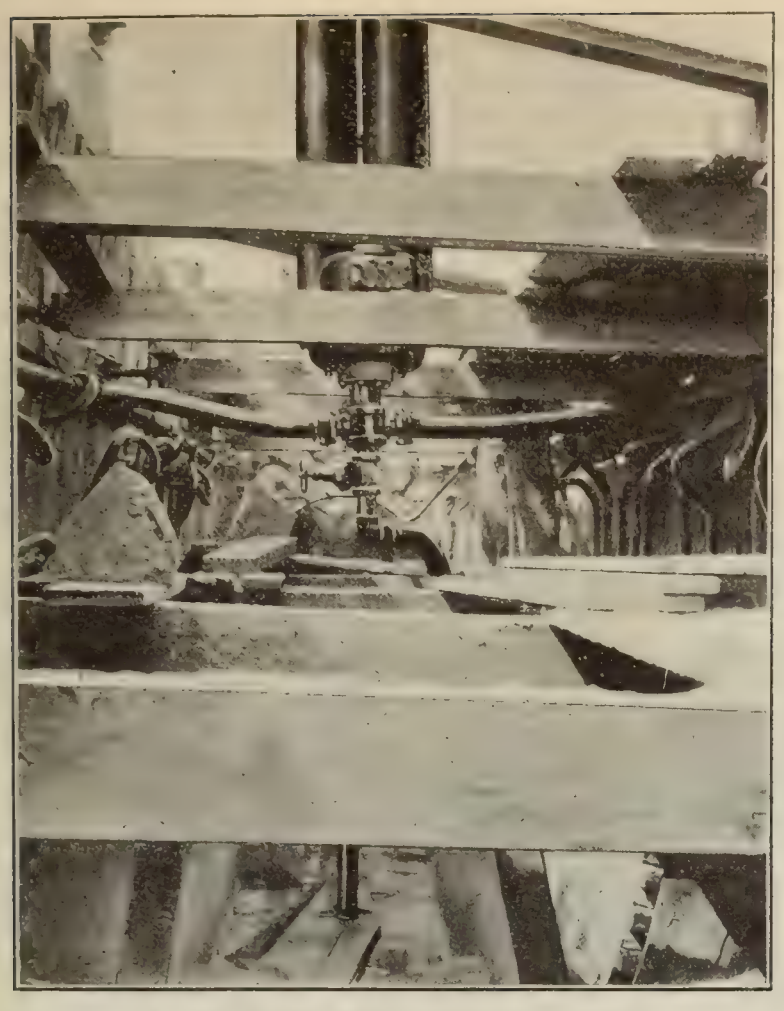
The second and third Emerson pumps had their suction pipes connected in parallel—that is, they both drew water from the same piping system, which included for each pump one 4-in. suction hose directly below the pump, one leading to the right and one to the left. This arrange-



Elevation and Plan Showing the Three Stages of Excavation.—Each Arrow Represents a Pair of Well Points.



A View of the Work at the First Stage.



A View of the Work in the Third Stage.

ment was effected by means of a four-way connection in the suction of each pump and about 1 ft. below it. The two pieces of 4-in. rubber hose branching off horizontally from the four-way connection and at right angles to the trench were only long enough to connect through a tee with 2-in. iron pipes, also horizontal, which extended along the sides of the trench just inside the sheeting. To the latter pipes the 1¼-in. well points were connected and jetted down as close as possible to the sheeting, so that the shovelers could work between the vertical drain pipes without hindrance.

Gate valves at frequent intervals allowed considerable flexibility, so that lengths could be shifted from rear to front as the digging proceeded. Another advantage was that the pumping could be made stronger in any part of the excavation where specially large quantities of water were encountered. When necessary the combined capacities of both pumps could be concentrated on those well points in the wettest part of the work by closing the gate valves and shutting off the vacuum from other parts of the trench pipe line. This would have been impossible with an ordinary sump pump, for as the work went ahead new sumps would have had to be dug and braced and additional pumps hung at a considerable total expense. The idea of a distributed suction, as used at Gary, makes the pumping more efficient than the old sump method, because the water is only drained from the exact location of the excavation instead of from a circular area, mostly outside the limits of the trench, and within a certain radius of the pump.

Two men were timed while using a 1-in. pipe for jetting down the well points. The water pressure was about 100 lb. per square inch, and the two men sunk four 1¼-in. well points 16 ft. in 1 min. This obviously does not include the time of making connections with rubber hose to the horizontal 2-in. headers.

The numerous connections between flanges, rubber hose, ells and suction pipes could be made absolutely air tight, and with the high vacuum inside a considerable amount of air found its way into the suction of the pumps. This fact, however, did not seem to hinder the action of these pumps, owing probably to the large volume of the chambers in which the condensed steam forms the vacuum. G. H. Olmstead, 407 Dearborn street, Chicago, who furnished most of the pumping equipment, stated in an interview with the writer: "A centrifugal or reciprocating pump could not be used under these conditions without needing frequent priming owing to the air in the suction. Moreover, the sand which comes in with the water would necessitate a frequent renewal of the valves, brasses, &c., a trouble which we have not experienced, as is proved by an uninterrupted run night and day for four months."

It is interesting to contrast this vacuum method with the pneumatic caisson method of penetrating water bearing strata. In the latter compressed air forces the water downward away from the sand or other soil, and the excavation can frequently be carried down below the edges of the caisson. In this new, or vacuum, method the digging is carried 2 or 3 ft. below the bottom of the wooden sheeting—and this in very fluid material—showing that the draining of water from below is as effective as the displacing of the water from above.

## The Hebb Coke Drawing Machine.

Since the publication in *The Iron Age* of April 23, 1908, of an article descriptive of the history and the latest design of the Hebb coke drawing machine for beehive coke ovens, the machine has been in continual operation at the Second avenue plant of the Jones & Laughlin Steel Company, Pittsburgh, and data have been obtained on points which only greater service could determine. Experience has so taught the operators that now all the coke is extracted from the oven, leaving it in shape to be recharged immediately. Based upon the earlier work, it was estimated that the Hebb machine would draw an average of five ovens an hour. The actual time is from 8 to 9 min. per oven, which allows the operator 15 to 20 min. to take his time to oil up the machinery, move his machine and the car into which he is loading, and still have time to spare. The construction of the machine being very strong and simple, there have been no break downs. This is important, since after the installation of the machine the hand operators are gone, and in the absence of a crew the output of the plant depends upon the machine. Continual operation has shown not only that there is a minimum of wear and tear on the machine, but that the oven itself is not injured in any way. Operating expenses, including power, labor, maintenance, &c., are very low, and it has been ascertained that the coke is more uniform and larger than that obtained by hand drawing.

## International Scientific Symbols.

At the request of the British Electrotechnical Commission's Subcommittee on Symbols, Miles Walker (The Cottage, Leicester Road, Hale, Altrincham, England) has sent out to the scientific and technical papers suggestions for a number of new symbols to represent physical quantities. The purpose is to invite criticism and discussion in the hope that it may lead to definite action on the part of those in authority to make some such symbols standard in the different countries.

The symbols so far proposed deal principally with electric and magnetic quantities, but it is believed that the system might be extended with advantage to embrace other important quantities in physical science. In the examples which follow it will be noticed that effort has been made to choose a symbol which suggests some association with the quantity it represents. For example, for temperature the sign ϑ is suggested, this being a simple outline of a thermometer; for force the sign ƒ is one that might be modified to represent various forces, for instance, the sign ϟ for electromotive force (the conventional representation of lightning), and the sign ∩ for magnetomotive force.

Where the sign ϑ is chosen to represent temperature in any unit or according to one of the standard thermometer scales if it was desired to express temperature in degrees centigrade above absolute zero another slightly modified sign might be used such as ϑ꜀.

It is emphasized that these are merely suggestions, and that the commission which is now considering it is anxious to have the subject widely discussed and improvements recommended by those interested.

It is hoped that writers, printers and readers may give this matter their attention and communicate through the papers or direct to Mr. Walker expressing their views, so that the commission may be advised of the probable chance of such symbols being appreciatively received.

# A Newton Special Cylinder Boring Machine.

The machine illustrated in Fig. 1, built by the Newton Machine Tool Works, Inc., Philadelphia, Pa., is especially designed for boring at one setting the cylinder or cylinders and piston valve chamber of any class of simple or compound engine. Fig. 2 shows one class of boring done on the machine. The cylinder, after being planed, is set on parallel strips on the table, and the high and low pressure cylinders and valve chamber are bored successively by manipulating the vertical, longitudinal and traverse adjustments of the machine. As there is no resetting the alignment of the cylinders is insured, and by using gauges the proper centers are maintained.

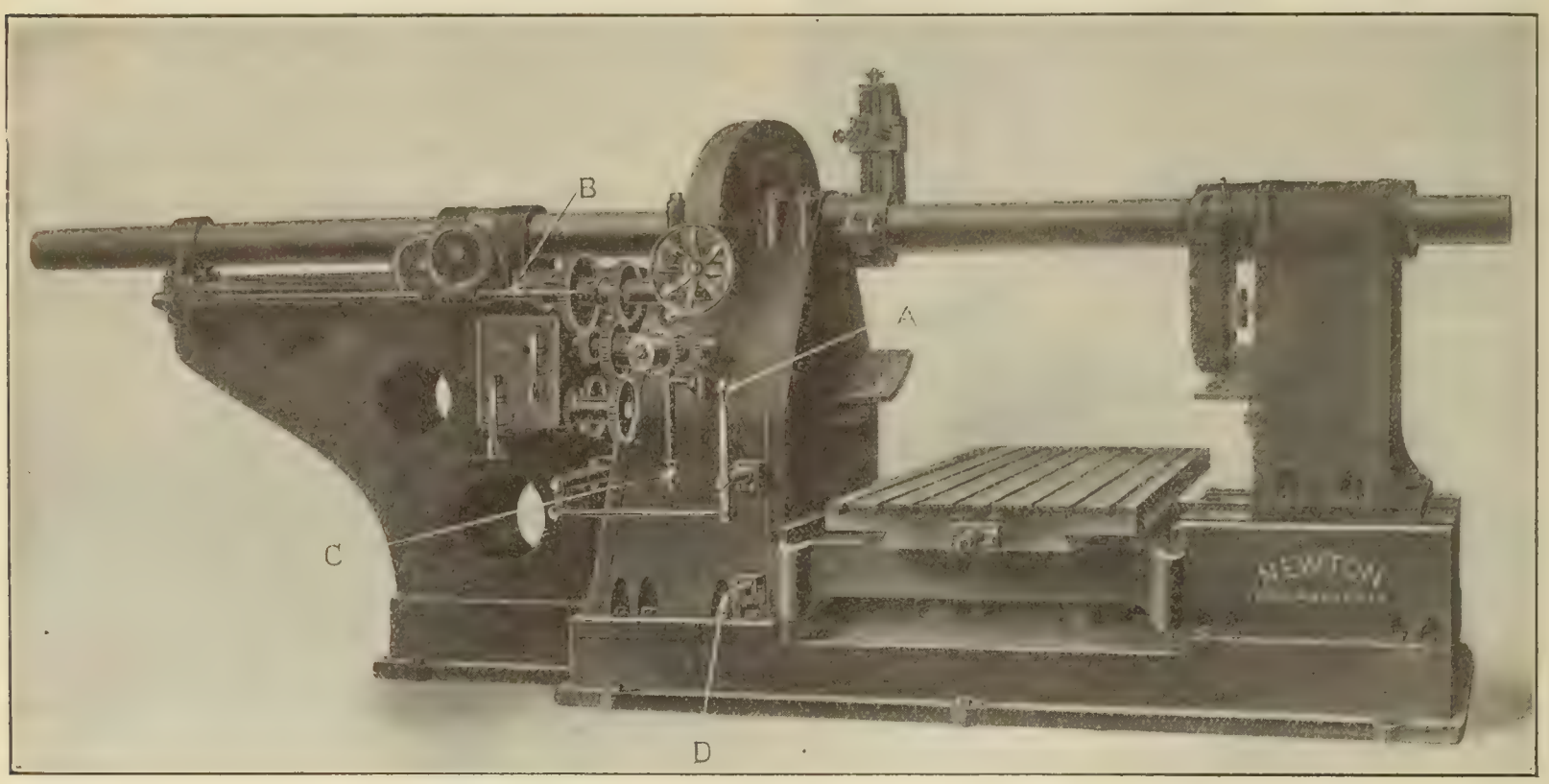



Fig. 1.—A Special Cylinder and Valve Chamber Boring Machine Built by the Newton Machine Tool Works, Philadelphia, Pa.

The spindle of the machine is 7 in. in diameter and is made of 0.5 carbon steel. It has two splines for driving,

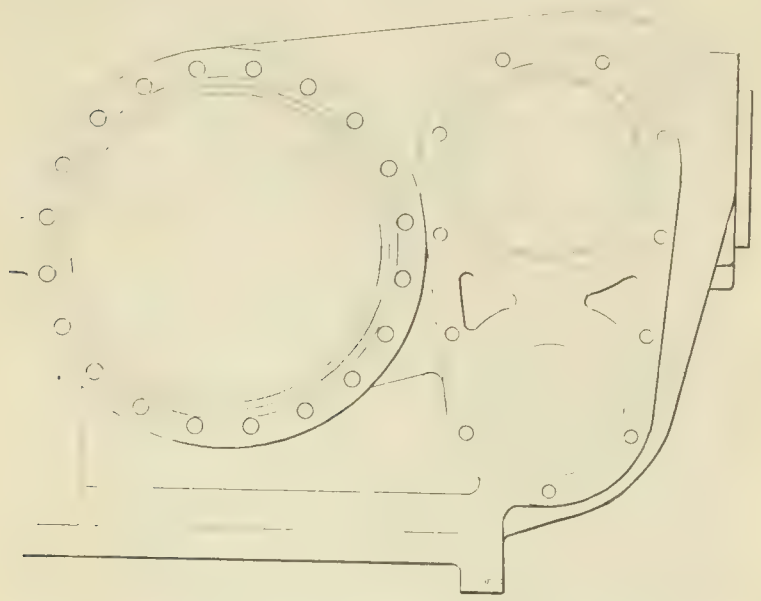


Fig. 2.—An Example of a Locomotive Cylinder Casting That Can Be Bored at One Setting on the New Machine.

and is accurately ground and fitted in sleeves. The sleeve in the main pedestal is used for driving the spindle by means of a phosphor bronze worm wheel 41 in. in diameter and a hardened steel worm with roller thrust bearings. The worm and worm wheel are inclosed and run in oil. The other sleeve is fitted in the outboard bearing and is keyed to and revolves with the spindle. Both of these sleeves are lapped in the hole for the spindle to insure a proper bearing, and are ground on the outside and fitted in brass bushings which are accurately scraped. A cap bearing is provided to compensate for wear.

To each of these sleeves is fitted a special design of facing arm, which can be engaged or disengaged without stopping the spindle. On each facing arm is mounted a tool slide with in and out adjustment for setting the depth of cut. This tool slide has a feed in either direction on the arm, by means of a star wheel and pins. The spindle is fed forward by a trolley operated by a screw and nut, and has a continuous motion of 140 in., so that it can be entirely withdrawn for removing cylinders without stopping to take a double grip on the bar.

Six changes of feed in either direction are supplied to the spindle, amounting to 1-16, 1-10, 1-6, 1-3, 2-3 and 1 in. per revolution of the spindle, and quick power motion in either direction is supplied at the rate of 10 feet per minute. The spindle has a speed range of from 4 to 15 rev. per min., and is operated either by a four-step cone or a 20-hp. 3-to-1 variable speed motor. The drive is through a clutch, so that the spindle can be stopped and started without stopping the motor or countershaft. A flywheel is attached to the motor to overcome the shock of engaging and disengaging the clutch.

The outboard bearing is adjustable by a rack and pinion, to give a minimum distance between the facing arms of 45 in. and a maximum distance of 60 in.

The cross adjusting table is fitted with steel plates on the top, which provide steel wings for the T slots and prevent their breaking out, and maintain the alignment of the top of the table. This cross adjusting table has hand or power adjustment or both, as desired, and is adjustable longitudinally on the knee to bring different lengths of cylinders central between the facing arms.

The knee is accurately fitted between the bed and is supported by four screws, each 6 in. in diameter, which support the table and are used to raise and lower it. The minimum distance from the center of the spindle to the top of the table is 43 in. and the maximum distance 51 in. The table is raised and lowered by power and has a fine hand adjustment.

The method of driving and feeding conduces to a smooth cut in the cylinder, and is especially valuable for boring the valve chambers, as the steady motion of the worm drive and screw feed prevents gouging at the bridges, which is a serious fault as it permits steam to escape around the valve chamber bushing.

In Fig. 1 the reference letters designate the controlling handles. Lever A is used for starting and stopping the spindle motion; lever B when thrown toward the feed box engages the feed and when moved toward the hand wheel engages the quick traverse. Both of these movements are reversed by the lever C. Hand adjustment of the table vertically is accomplished by a ratchet through the shaft D. Another lever not shown on the engraving is used for raising and lowering the table by power. When desired levers A, B and C are the adjust-

ing hand wheel are duplicated on the outboard bearing.

It is possible on this machine to bore a simple cylinder in 5 hr. An auxiliary table is furnished which can be swiveled at an angle of 20 degrees for boring inclined cylinders without requiring an additional setting.

## A Cleveland Grab Bucket Mono-Rail Crane.

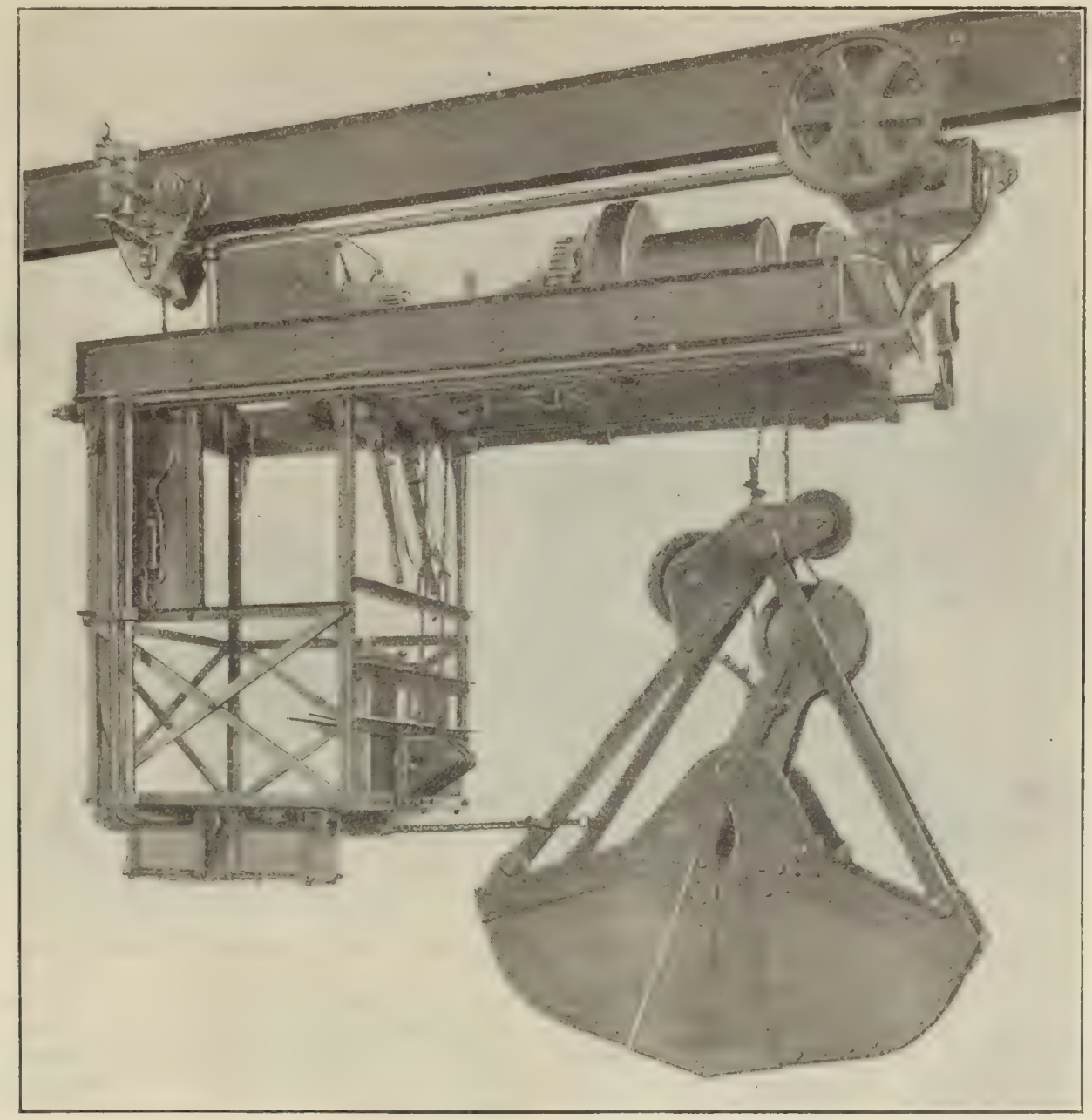
The mono-rail crane illustrated is for use on an I-beam runway and was designed and built by the Cleveland Crane & Car Company, Wickliffe, Ohio, under the direction of Thos. B. Davis, chief engineer. It is provided with swivel trucks so as to enable it to go around a curve of short radius, and is regularly furnished with a two-line grab bucket.

Especial attention is called to the fact that both the hoisting and holding drums are operated by one motor, by means of friction clutches controlled from the operator's cage. The lowering of the bucket and the operations of opening and closing it are effected by gravity. This arrangement is considered preferable to one involving separate motors for the hoisting and holding lines, since the rotative speed of the armature of a series motor in lowering the load will not exceed twice the hoisting speed; whereas with the gravity fall any speed of lowering can be obtained, as the motor is inoperative when the bucket is being lowered or opened. This is an important item, especially on high lifts, and its virtues are at once apparent.

After the bucket has been lowered to the stock pile or car and is closed, the clutch for the holding drum is engaged and both drums are utilized for lifting the load. When the bucket has reached its highest position it is sustained by a self-lubricating mechanical brake of the double friction type, thus eliminating the necessity of the constant care of the operator and the liability of dropping the bucket should his attention be interrupted at any time.

To relieve the hoisting clutches of undue wear during the process of lowering the bucket, the hoisting drums are provided with band brakes controlled by foot levers from the operator's cage. The friction clutches used for raising the load act as safety devices in case of overhoisting, since the clutches are so designed that they would slip before the stresses had reached a dangerous point.

The intermediate hoisting shaft is extended to the rear end of the operator's cage, and is provided with a drum that rotates at about twice the peripheral speed of the hoisting drums. This drum has attached to it a rope which extends to the grab bucket and is used for steadying it, not only while it is being elevated, but after the bucket has reached the required hight and is being carried to its destination. The rope is continuously kept taut by a friction drum revolving between two disks keyed to the shaft with feather keys and held against the drum by spiral springs made adjustable for wear and also to vary the pressure between the friction surfaces. The strength of the springs is such as to exert a pull on the steadying rope of from 250 to 300 lb. while the bucket is being raised or lowered.



A Grab Bucket Mono-Rail Crane for Coal Handling Built by the Cleveland Crane & Car Company, Wickliffe, Ohio.

The racking motor is attached to the driving truck and its speed is regulated by a drum type controller located in the operator's cage. The travel of the hoist may be made to suit almost any condition, but in ordinary practice a speed of from 300 to 500 feet per minute will be found sufficient for coal handling plants, especially where there is a curve or bend in the I beam along the runway.

The treads of the track wheels for the driving and trailing trucks are made spherical instead of cone shaped as is sometimes done, the object being to eliminate friction as far as possible, as it is well known that a cone shaped wheel running on the lower flange of an I beam

will have rolling contact along one diameter only, while the other parts of the wheel will be in sliding contact and subjected to wear as well as imposing greater load on the racking motor.

While compactness is desirable, it is considered by the designer to be of secondary importance to accessibility, and although the first has been obtained in a remarkable degree, it was at no sacrifice of the second characteristic. In fact, the result is a creditable combination of the two features.

None of the points so far mentioned are of any greater importance than ample strength and reliability, and no hoist, however ingenious, convenient or commendable in other particulars, will be a success unless it is mechanically sound and sufficient for its work. Since a coal handling crane of this type is desired principally for light and medium loads and is intended to be operated by unskilled workmen, it must be capable of withstanding without injury large overloads and inconsiderate handling. The design of the mono-rail hoist is favorable to the making of all parts very strong. This and the making of all wearing surfaces larger than usually considered necessary has been found possible without exceeding the dimensions and weight that is considered standard for hoists of the same rated capacity. The hoist of the type shown herewith was designed to handle from 20 to 30 tons of coal per hour from a car or stock pile about 150 ft. distant from the power house, with a vertical lift of about 60 ft.

The advantages claimed for this class of coal handling machinery are; Low cost of handling the material, as only one man is required to load the bucket, carry it to its destination, empty it and return it to the point of starting; low cost of installation; a low maintenance charge on account of the small number and size of the working parts; large area served; and low power consumption.

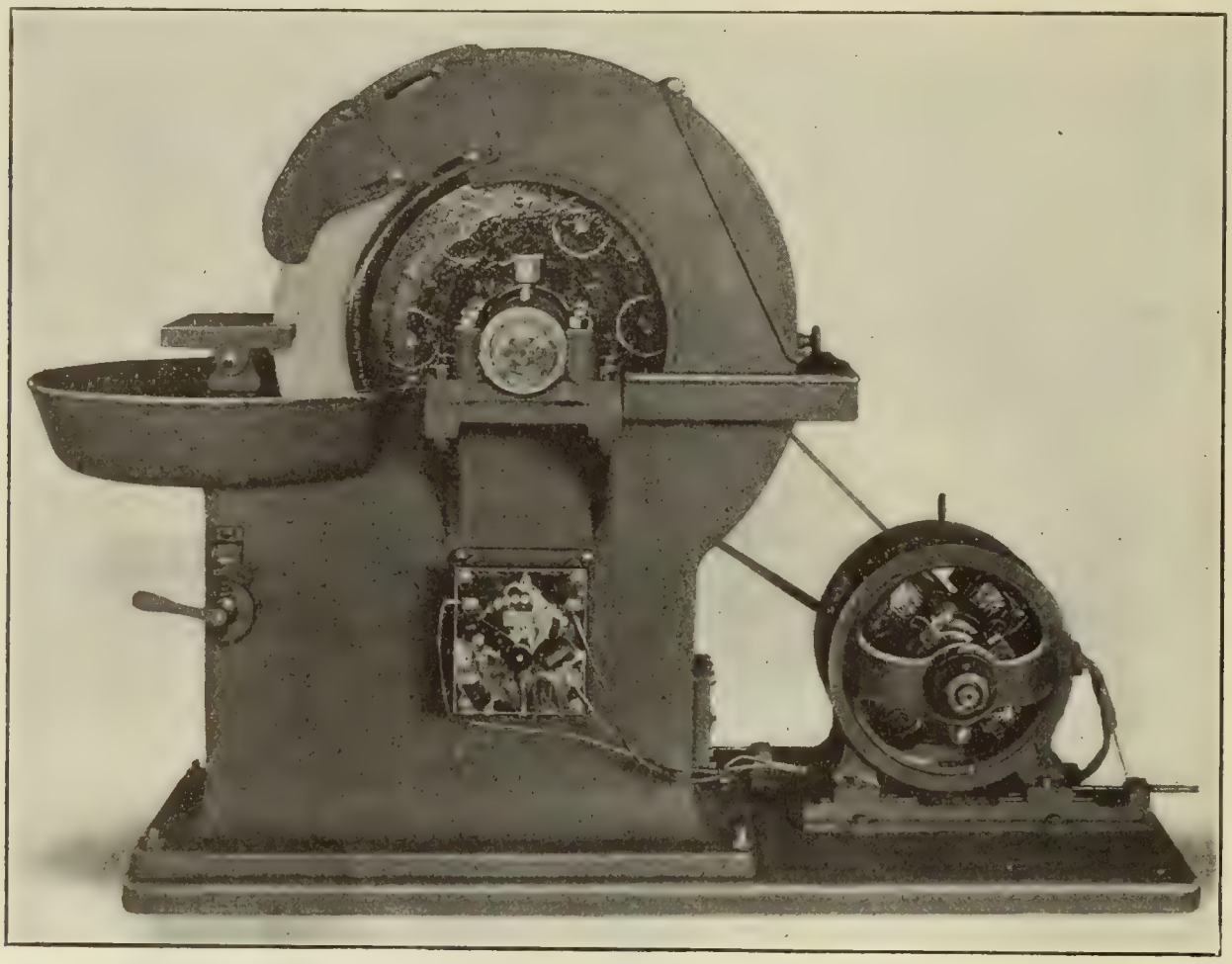
The Canonsburg Iron & Steel Company, Canonsburg, Pa., is making some improvements to its plant, including additional boilers of 300 hp. capacity and a new roofing department with corrugating machines, &c. The company expects to have everything in readiness so that it can resume operations early this month.

G. L. Pollock, purchasing agent of the Wabash-Pittsburgh Terminal and West Side Belt railroads, Pittsburgh, will soon place orders for 12 new locomotives, to cost approximately $204,000.

## The Safety Emery Wheel Company's New Motor-Driven Tool Grinder.

Herewith is illustrated a new form of motor driven wet tool grinder recently placed on the market by the Safety Emery Wheel Company, Springfield, Ohio. After a careful study of the various methods for transmitting power from the motor to the grinding wheel, the one as illustrated has been adopted because it offers the following advantages in connection with this type of grinder: The motor is easy of access; it can be fully inclosed to protect it from injury; a clear space is left in front and at the sides of the grinder; the renewal of the wheel is facilitated; the belt tension is readily adjusted; and the belt connection prevents any undue shock on the wheel from being transmitted to the motor.

By properly proportioning the sizes of the pulleys it is possible to use any standard motor, thus avoiding the additional cost of special windings, &c. Any of the company's standard sizes of grinding machines can be supplied with this style of drive. The motor is mounted on a subbase of cast iron and is placed where its position is the least obstructive and where there is the minimum danger of injuring it. The belt tension is adjusted by moving the motor on rails. The motor starting box is attached to the machine as shown.



A Motor Driven Wet Tool Grinder Built by the Safety Emery Wheel Company, Springfield, Ohio.

The grinding of long tools, bars, &c., can be accomplished by opening the door in the rear of the machine. The motor is shielded from any water which may spray over it during this operation. There is no tendency to topheaviness with this style of motor mounting, as all of the weight is near the base. Any make of motor operating on either direct or alternating current can be applied.

The Alliance Machine Company, Alliance, Ohio has received a contract from the War Department for building two 12-in. disappearing gun carriages, the contract price being $72,000, and an order from an automobile builder for eight steam hammers with a capacity of from 1000 to 4000 lb. In addition to these a number of smaller orders have been taken recently. The company reports that its July bookings were larger than in any previous month of the year, and that inquiries are far more plentiful than a month ago, some of those now pending being quite large. The company's plant is still operated night and day, and the output in the first six months of the year exceeded that of the first six months of 1907.

# The Brown Ores of Alabama.—V.

BY WILLIAM B. PHILLIPS.

The exploitation of a brown ore property calls for the exercise of considerable experience and skill. The fact that the ore does not lie in regular veins, which may be explored both laterally and vertically with precision, interferes with prospecting. The usual procedure is not applicable, and to a considerable extent each deposit has to be judged for and by itself. In many cases the ore does not outcrop at all, but is covered with drift and clay, sometimes even by rocks which have been crowded in above the ore. For the most part, however, a brown ore deposit is indicated by the presence of float ore, either in gravel or in lumps, and by the deep purplish color of the surface clays.

### Washing the Overburden.

If the deposit lies on the slope of a hill and toward a drainage basin the overlying clays may be of considerable thickness, from 10 to 30 ft., and this overburden has to be removed by steam shovel or by hand. Sometimes it will pay to wash this overburden, for it may contain fine ore visible only after washing. Repeated tests of the ground are necessary, and for this purpose a set of screens and a tub of water are required. One hundred lb. of the material should be taken and washed carefully over two screens, one of ¼-in. and the other of ⅛-in. mesh. The material remaining on the two screens should be air dried and weighed, and a simple calculation will give the amount of ore obtained from each screen, and a close inspection of it will determine, with a fair degree of accuracy, its quality. The total weight of the material on both screens will give the percentage of ore, chert, &c., from the 100 lb. of raw material. By then taking 5 or 10 lb. of each size and picking out by hand the impurities one can determine what the yield of commercial ore will be from 100 lb. of "bank" dirt.

A better plan still is to use a small hand jig for jigging the material on the screens, and the following form is suggested, having been found to give good results: A box 12 in. long, 8 in. wide and 6 in. deep is provided with a convenient handle so that it may be moved up and down in a tub of water. The bottom is covered with a wire screen of 10 meshes to the inch, and this is fastened on with strips so that it may easily be removed and another put on. The material to be jigged is placed in this box, in water, and the box is given an up and down movement so as to force the ore to the bottom and the chert, sand, rock, &c., to the top. The action of a slow moving or a rapid moving jig can be closely approximated in this manner and after a few trials almost any one can operate it successfully. A quick motion down and a slow motion up, or *vice versa*, can be used, according to the material to be tested. A single experiment in the use of this small jig may be given to show what it will do. A certain car of small ore was sampled and 100 lb. taken. This was divided into 10-lb. lots and several of them jigged separately, so as to arrive at a fair average. The unjigged ore carried 37 per cent. of metallic iron and the jigged ore carried 45 per cent. of metallic iron, an increase of 8 points. The ore with 37 per cent. of iron was not salable; the other was worth $1.50 per ton, f.o.b. mines. Wire screens of different sizes may be used on the bottom of the box so as to test the effect of the different sizes, &c. While this hand jig is best used with dirt containing fine ore, yet it may be used on material passing a ½-in. screen, or even coarser material.

It often happens that one is called on for advice concerning the treatment of brown ore after it has passed the washer. In order to answer such inquiries intelligently he must know the exact mixture of materials with which he has to do, the fineness of it and the proportion of ore to chert, sand, rock, &c.

### Exploring a Brown Ore Deposit.

For exploring a brown ore deposit it is recommended that the area be cross sectioned into 1-acre lots and a simple topographic survey be made with a compass and hand level, or with the new Verschoyle compass and transit, a most convenient instrument. At least one test pit should be put down on each acre, and more than this when the circumstances demand it. Test pits are much better than borings and they can be put down for $1 to $1.50 per foot, 4 x 4 ft., using a windlass. It is best to construct the windlass so that it may easily be taken down with a monkey wrench and moved from place to place. Loose planks will serve for the platform, but the framing of the windlass itself should be held together with bolts, not nailed. In arranging the drop of the windlass it is well to have the handles at their lowest point touch the leg just above the knee.

The earth from each pit should be closely examined and an accurate record kept of the nature of the ground, kind of clay found, thickness of each kind of clay, whether the ore is mixed with chert or with fragments of sandstone, limestone, &c. The ore-bearing clays should be washed over a screen, as already mentioned, and the percentage and quality of the ore approximated.

Many a brown ore deposit has been condemned because of the inefficient manner in which it was prospected. Brown ore treatment should not be the wasteful thing it really is in many cases. There is known to the writer a brown ore plant where the accumulation of tailings amounts to about 30,000 tons. These tailings carry 30 per cent. of iron. They are already in good condition for jigging or for treating over a Wetherill separator or machine of similar type, such as the Payne.

But one cannot know what to do with a brown ore deposit until he knows the nature of the material he has to handle. It is freely granted that this may and often does change from day to day, but these changes are already known and provided for if the ground has been thoroughly prospected. In other words, it is maintained that if one enters upon the brown ore business with all of the information that may be obtained the risks are greatly diminished. The trouble with many deposits is that they have been opened without this information, and when the obstacles are met (they always will be met) the deposit is condemned, the machinery withdrawn and another cry raised against the treacherous nature of brown ores. It is held that if the same care be given to prospecting brown ore beds as is given to other kinds of mining, previous to the installation of costly machinery, houses, equipment, &c., there would be a marked decrease in the number of failures.

### The Relation of Cost to Value.

It may be urged that ore which sells for $1.50 a ton at the mines cannot stand much expense, and this is also granted, if the present system is to be continued. It has also to be remembered that the base price is $1.50 a ton for ore that carries 45 per cent. of iron, and that for each unit above the base the price increases by 10 cents. An ore of 50 per cent. of iron is worth $2 a ton, as against $1.50 for a 45 per cent. ore. It is to be remarked that a brown ore deposit which will yield 45 per cent. ore regularly from the ordinary washers is not to be found every day. Over a period of one month shipments from the same mine have been known to vary from 11 to 26 per cent. in silica and from 37 to 47 per cent. in iron. If any further comment on the irregularity to which brown ore, as now prepared, is subject is needed it can be supplied from the writer's notebooks.

Just here we come upon one of the obstacles to the further extension of brown ore mining—the irregularity of the ore as shipped. Not all of the mines are subject to this complaint (there are some notable exceptions), but that this irregularity does exist no one who has had intimate acquaintance with the business can deny. In some cases this objection has been removed, to a great extent, by crushing the ore after the first preliminary washing and then washing it again. This procedure is rendered necessary by the clay inclusions in the larger ore lumps, but it does not affect the chert. Unless the ore itself is sandy, high silica means chert, and high alumina nearly always means inefficient washing and retained clay. It must always be borne in mind that there are two classes of impurities to be removed from brown ore, first the clay, which can be removed by washing in the ordinary log washer or the disintegrating screen, and, second, chert (with fragments of sandstone, limestone, &c.), which can be removed only by a thorough system of jigging, preceded by a proper sizing of the material.

# THE IRON AGE

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## Hot House Prosperity.

It is a fair inference that if an entire business community can be frightened into paralysis, as was ours last fall, and if sentiment played an important part, then concerted efforts to better the temper of the timid ought to contribute powerfully to recovery. At first there was a disposition to deny flatly that there were any causes for alarm and to attribute the panic to the collapse of an outrageous speculation in Wall Street of which the country at large was virtuously free.

When the gravity of the situation was finally borne upon those who had held that view; when it was realized that, however large a part of the banking interests of the country may have been to blame for cowardice, some groups of great financiers had acted courageously to protect their own interests and those of the country at large, then a movement spread to stimulate business by a systematic publicity of optimism, both volunteer and organized.

Much of what was done was hysterical, and accomplished little more than to make those ridiculous who bawled so loudly. A much more dangerous class comprised those who coupled with their shouting promises to act which they either quietly ignored or carried out only in a half hearted way. Some were insincere when they joined in the movement, working on the theory that by influencing the sanguine it would be for the general good and incidentally help them. They were willing to persuade others to take the risks involved, but they themselves proposed to keep a clear head and act upon a judgment sounder than that of the emotionally inclined. There has also been some downright lying, for the good of the cause.

In other words, the prosperity agitation has been a curious mixture of honest efforts to convince and dishonest attempts to fool. The former has no doubt had some measure of success, but much more would have been accomplished if the movement had not been tainted by the latter. It is true that those who are sacrificing themselves for the common good in sincere efforts to allay distrust and cultivate optimism in business circles repudiate those who have discredited and hurt the movement until it may be aptly termed "hot house" prosperity.

The gap between the receipts and expenditures of the National Government has widened instead of diminishing. July, the first month of the new fiscal year, closed with a deficit of $24,868,544, or nearly $1,000,000 for every business day of the month. When it is considered that nearly $5,000,000 in Pacific Railroad payments was sent in in advance and operated as an "extraordinary receipt," it is seen that the true deficit on the operations of the month was approximately $30,000,000. The immediate outlook for national revenues is so unfavorable that a deficit of $20,000,000 in August is deemed quite probable. It is fortunate that the Treasury still has a comfortable surplus available. In the approaching revision of the customs and revenue laws it may be necessary to provide for an increase in the annual revenue of $75,000,000 to $100,000,000 in order to maintain even a small surplus.

## The Cost System to Assist Workmen.

The point has been raised as to whether, when a record of the time required to do a certain piece of work exists in a cost system, a workman is entitled to know that record when a similar task is given him. Under modern cost systems, a record is kept of the time and cost of each part or operation on the part for each individual lot that goes through the factory. Cost of material is also entered, but the separate item of labor stands out distinctly by itself, so that when a new lot, say of machines, is to be manufactured, an intelligent and in fact almost exact idea of its labor cost may be had beforehand. The various pieces which go to make up a part for each machine are turned over to a workman and he proceeds with the task required. The question is, shall he be told the time per piece at which his predecessors on a similar job turned it out?

Considered from the personal side of the mechanic, various elements enter into the subject. He may be ambitious from love of his work or so slothful as to be indifferent with regard to the results shown, or he is stimulated by fear, if this term may be applied to the nervous condition of mind which impels some men to do their best work in order that they may be sure to retain their positions. A certain proportion of workmen always do their best, because the spirit of ambition is strong within them. From this high degree of intellectual exaltation the incentive to work shades down to fear and to the laziness of sloth or the inefficiency of moral perversity.

The really ambitious mechanic does not need to know the time in which a fellow workman has accomplished a task. He will go at the work with a will, bringing to bear all the application and skill in his makeup. But there is no doubt that the movements of most men will be quickened by the knowledge that some other person has done the work in a specified time, and by the realization that in the record of the job any increase in time and resultant cost of production will be put down with name or shop number of the workman against it. In a typical example of this case, a man was given a certain job to do, the record of which was 47.8 min. per piece. He knew nothing of the record. The foreman, noting that the work seemed to lag, asked him how many pieces he had finished, and a simple calculation showed that up to this point he had taken 63 min. per piece. He was told the record and by whom it was made. The characteristic remark was that if Blank could do the work in 47 min. he thought he could, and he did. So rapid was his pace that in spite of the slow start he finished the lot with an average equal to the record.

It is argued by those who believe in taking the workman into the confidence of the cost department that in a great majority of cases a greater speed is obtained. There is, of course, the class of men who will not work faster than they are compelled to do, and occasionally a man is found in that class who is a really capable work-

man. Give him a record of work and he may feel compelled to equal it, but he will not strive to better it. Then again, there is the restrictive influence of certain union rules which may compel those who are too ambitious or proficient to hold themselves back that those who come after may not be set too fast a pace. Probably in such cases ignorance of the record for the work would bring fully as good results. But it is maintained that these are the exceptions to the general rule.

Another reason is given for permitting the record of a job to be known to the man to whom a similar task is assigned. It happens frequently that conditions attending the work are modified. The designers may have made changes, such as lengthening a spindle or a bushing; the new castings furnished may be unusually hard, or steel castings may have been substituted for iron, or any one of a number of other possible variations may crop out. The foreman is, of course, presumed under the modern theory of manufacturing to know the record of the work that he gives out, or some other means is supposed to be provided for observing with intelligence the time of production while it is going on. But the workman can co-operate better if he has the basis of previous records to guide his judgment.

In the great majority of manufacturing establishments, the workman does not receive the information, except, perhaps, when his showing for a job proves poor by comparison. Doubtless the chief reason for this is that many manufacturers have not sufficiently developed their cost systems to have them always available for records, while those who have first rate systems have not provided means for watching the progress of work with records in mind. There is a lack of co-operation between the cost department and the works. The costs find their way to the proper department, but not until the work is done. Any discrepancy between the cost of a lot of parts and the record for the work must come to some one's attention when the new cost is entered on the card, but then it is too late to do more than perhaps prejudice a workman's standing or discover the remedy after unnecessary expense has been incurred. When the cost goes to the foreman and from him to the workman before the work is begun, there would seem to be a far less chance for unnecessary expenditure of time of the workman and of the machine which he operates.

## The New Freight Marking Rule.

Shippers of certain classes of freight claim to be somewhat seriously affected by the new rule of the transportation companies governing the marking of less than carload shipments. As now in effect, this rule requires that "each package, bundle or piece of less than carload freight must be plainly marked by brush, stencil, pasted label or securely fastened tag, showing the name of consignee and the name of the station, town or city, and the State to which destined, and the name of the county if there is more than one place of the name in a State." This rule, details of which were published in *The Iron Age* of May 28, is aimed at the common practice of marking certain classes of freight with initials, symbols or hieroglyphics.

One of the best illustrations of difficulties encountered in the enforcement of this rule is found in merchant steel and iron, too large for convenient and economical bundling, yet consisting of many pieces. It can readily be seen that a shipper of merchant steel or iron may be put to considerable expense to have each piece marked with brush or stencil with the full name and address of the consignee. It requires a long time to mark even half a carload. A tag or a pasted label may be made to apply in such cases, though up to the present time some leading railroads have not taken this view of the matter.

Railroad men themselves are wondering what rule will apply in certain classes of bulk freight. A less than carload lot of brick is used as an extreme illustration. Certainly the transportation companies would not compel a shipper to mark each brick of a shipment with the name and full address of the consignee, nor to paste a label or tie a tag on each. Small lots of other freights would be similarly outside the rule from their very nature. Therefore it may be argued that what should apply in these extreme cases would with equal justice apply to such shipments as steel bars or rods, the difference in character being only relative.

The transportation companies state that they have good cause for the action. Losses in transit constitute a serious item of cost, a large percentage of which is attributed to the custom of marking freight with symbolic characters, the key to which is presumed to be in the bill of lading. No doubt there is some justice in this contention, but the shippers assert that the fault is not with the symbol system, but with lack of system on the part of the railroads and the carelessness of their employees.

It is to be presumed that the matter will adjust itself in practice. A rule is usually somewhat elastic, and it is to be hoped that the railroads will see to it that no exceptional hardship is imposed upon their customers. If this proves to be the attitude of the transportation companies, shippers will become reconciled to the new order of things. If, as the railroads maintain, their losses in transit due to the old system of marking foot into a noticeable percentage of gross earnings then there must have been much friction from this cause between the shipper and his consignee over delays and failures to deliver goods as agreed. A rule that would eliminate this trouble must have its advantages to others than the transportation companies, provided the latter assume a reasonable attitude in its interpretation.

## Accidents in the German Machinery and Hardware Industries.

The 1907 report of the association handling the accidents for the machinery and hardware industries of Germany shows that it embraced 7735 plants at the end of that year. The wages paid increased from 260,000,000 marks in 1906 to 289,000,000 marks in 1907; the average earnings per workman, based on 300 days, increasing from 1404 marks in 1906 to 1448 marks in 1907. The average earnings were 1253 marks in 1902. The number employed rose from 211,327 in 1906 to 227,091 in 1907.

There were 2319 accidents in 1907, against 1951 in 1906 and 1854 in 1905. Of these, 27 were due to the employer, 1071 due to the workmen, and 1221 due to other causes. Of the total of 2319 accidents, 922 happened with machinery and machinery appliances. In 1907 there was paid, as damages and relief, 2,283,133 marks for 11,024 accidents occurring in former years, and 469,886 marks for the 2319 accidents in 1907. In 1906 the total sum was 2,494,966 marks.

The total cost of accident insurance in the machinery and hardware industries in 1907 amounted to 3,266,950 marks, or roughly $800,000, which included damages, 2,757,146 marks; additions to reserve fund, 224,986 marks; cost of administration, 144,333 marks, and costs of examinations of accidents, of arbitration and of accident prevention, 128,997 marks. The working capital of the organization was 3,057,047 marks, and the reserve fund was 5,207,561 marks at the end of 1907.

## Customs Decisions.

### Malleable Iron Castings.

The Board of General Appraisers has upheld the contention of W. A. Fleetham, Detroit, Mich., regarding the classification under the tariff of malleable iron castings, which the customs authorities had assessed at 45 per cent. ad valorem under the provision in the tariff act for "manufactures of metal." The importer alleged that the articles should be admitted at 9-10 cent. per pound as "castings," not specially provided for. In his decision for the board, General Appraiser Howell says that the articles are castings of iron upon which no labor or manufacture has been bestowed subsequent to the casting process. Not having been advanced beyond the condition of castings, they are held dutiable as claimed. The general appraiser states that the authorities are clearly in error in returning the articles as manufactures of metal.

### Iron and Steel Grit for Polishing.

Judge Lowell, in the United States Circuit Court at Boston, has refused the petition of the Harrison Supply Company, asking for a reversal of a decision of the Board of General Appraisers relative to the classification of so-called iron sand, iron shot, iron grit, steel shot, or diamond steel. The articles are used for sawing and polishing granite and stone and similar purposes. When the issue was before the board that tribunal upheld the collector of customs in his assessment of duty at the rate of 45 per cent. under the provision in the tariff act for manufactures of metal. The importer alleged that the merchandise should be returned for duty under paragraph 124 at 5-10 cent per pound. This paragraph provides for iron less finished than iron in bars and more advanced than pig iron, except castings. As an alternative claim, the importer specified the tariff provision for metallic mineral substances in a crude state and unwrought metals at 20 per cent.

### Needles and Their Cases.

It has been decided by the Board of United States General Appraisers that in instances where needles and their cases are invoiced separately they are not to be assessed for duty as entireties. The importations the subject of the board's ruling were made by Watson, Porter, Giles & Co., New York. The hand needles were contained in small cylindrical metal cases, and were classified as manufactures of metal with a duty of 45 per cent. In upholding the contention of the importers for separate classification of the articles General Appraiser Howell accords free entry to the needles, while the cases are found to be properly dutiable at the 45 per cent. rate.

### Air Ships.

The progress now being made in the development of the airship will probably result in the incorporation in the next tariff act of a special provision covering this new engine of aerial navigation. The present tariff law contains no provision for airships, although balloons are specified and pay duty as the rate of 30 per cent ad valorem. When the Dingley bill was drawn, in 1897, airships were at such a low stage of evolution that the framers of the law ignored their existence. Customs officials have, therefore, fallen back to the section of the present revenue act which specifies that imported articles not enumerated in the law shall pay duty according to the component material of chief value. It thus happens that this "catch-all" provision has had the effect of bringing airships, for purposes of duty, under the metal schedule, with a duty of 45 per cent. The metal classification accrues owing to the fact that the motors and other metal parts of the ship exceed in value any other given component.

So far the importation of airships at the port of New York has probably not exceeded half a dozen, but the custom house authorities are alive to the possibilities of the not distant future, and Congress will be urged to recognize specifically the march of invention by setting aside a special paragraph in the next tariff for airships. As matters stand at the present time, it is said the duty levied on airships is made without due regard to the actual cost of such machines. The 45 per cent. duty is exacted precisely as though the ship were composed entirely of metal, no regard being paid to the other materials entering into the construction of the machine.

### General Appraisers Well Up with Their Work.

Recent criticisms of the Board of United States General Appraisers, to the effect that it is falling behind in its work, are met with a flat denial by Marion De Vries, president of the board. He declares that the alleged congestion of the suspended files is not indicative of remissness on the part of the board and says that were every appeal decided by the courts at once the board could and would dispose of all these protests within a period of 60 days. The statement further points out that by January next there will be fewer suspended cases than at any period since the organization of the tribunal. The president is emphatic in the statement that at the close of the fiscal year, as well as at present, the work of the board was up to the possibilities of that day.

## The Metal Trades Department of the American Federation of Labor.

The Boston Branch of the National Metal Trades Association makes the following announcement in a recent bulletin:

The American Federation of Labor has finally organized its metal trade department, which will have an office in Washington, D. C. Nine unions have become members of this department and have paid the initiation fee of $5, as follows: International Molders' Union, International Association of Machinists, International Union of Stove Mounters and Steel Range Workers, Metal Polishers', Buffers' and Platers' International Union, International Brotherhood of Blacksmiths and Helpers, International Brotherhood of Foundry Employees, International Association of Steam, Hot Water and Power Pipe Fitters and Helpers, International Union of Steam Engineers, Patternmakers' League of North America. Other metal trade unions may join this council by the payment of the requisition initiation fee.

James O'Connell, president of the International Association of Machinists, was elected president of the new organization. The vice-presidents are Jos. F. Valentine (Molders' Union), A. B. Grout (Metal Polishers), J. W. Kline (Brotherhood of Blacksmiths), Geo. F. Dunn (Boilermakers' Union). James L. Gernon of the Patternmakers' League was elected secretary-treasurer. His salary will be $1800 per year.

The constitution and by-laws of the new organization state the objects to be "to advance the interests and welfare of the metal trade industry; to adjust trade disputes along practical lines as they arise, and to establish more harmonious relations between employer and employee." The real object is to strengthen the position of the unions and make successful sympathetic strikes. Vigorous efforts will be made to organize the membership of these unions into local metal trade branches in all large employing centers. Wherever there are three or more local unions of affiliated trades in any locality they are compelled by this new arrangement to organize themselves into a local Metal Trades Council. The council will be supported by the levy of a tax of one-quarter of 1 cent for each individual member belonging to the respective organizations.

The Colonial Steel Company, Pittsburgh, which intends to increase its capital stock in the sum or $750,000 of preferred 7 per cent. cumulative stock, states that it is not contemplating extensive additions to its plant at this time, but desires the additional capital for use in new lines, more particularly the manufacture of composite steel and brass and steel and copper, which is now developing into a large business.

The plant of the Neafie & Levy Ship & Engine Building Company on the Delaware River at Philadelphia, Pa., was sold at auction July 28 for $50,000, subject to a mortgage and ground rent of $297,000. Frank D. Somers, attorney for the Camden Bank, was the successful bidder. This step by the receiver, Howard E. Connell, made a final adjustment of the company's affairs.

# The Naval Strength of the Nations.

BY SIDNEY GRAVES KOON.

As has been the case continuously for nearly 200 years, Great Britain occupies the premier naval position at the present time, with 193 ships of upward of 9000 tons each, active and building, as compared with 117 for Germany, 110 for the United States and 96 for France. The list following tabulates the situation at the moment for the leading eight powers, with the results of such combinations as the Anglo-Saxon, the Franco-Russian, the Dreibund (Germany, Italy and Austria), and the sum of the two latter:

| | Ships. | Displacement. Tons. | Guns. | Average. Tons. | Knots. | Ships over 10,000 tons. | Ships over 16,000 tons. |
|---|---|---|---|---|---|---|---|
| Great Britain | 193 | 1,897,860 | 7,540 | 9,833 | 20.15 | 103 | 20 |
| United States | 110 | 837,208 | 3,955 | 7,611 | 18.97 | 41 | 12 |
| France | 96 | 788,573 | 3,235 | 8,048 | 19.09 | 37 | 6 |
| Germany | 117 | 780,720 | 3,844 | 6,673 | 19.1 | 33 | 9 |
| Japan | 48 | 422,709 | 1,829 | 8,806 | 19.97 | 18 | 4 |
| Russia | 50 | 339,689 | 1,747 | 6,794 | 18.38 | 13 | 2 |
| Italy | 43 | 321,872 | 1,681 | 7,485 | 20.16 | 13 | 1 |
| Austria | 27 | 171,991 | 866 | 6,370 | 19.67 | 6 | .. |
| All others | 156 | 558,285 | 3,550 | 3,580 | 17.9 | 3 | 3 |
| Totals | 840 | 6,118,907 | 28,247 | 7,284 | 19.44 | 267 | 57 |
| Anglo-Saxon | 303 | 2,735,068 | 11,495 | 9,027 | 19.79 | 144 | 32 |
| Franco-Russian | 146 | 1,128,262 | 4,982 | 7,727 | 18.87 | 50 | 8 |
| Dreibund | 187 | 1,274,583 | 6,391 | 6,816 | 19.44 | 52 | 10 |
| Continental | 333 | 2,402,845 | 11,373 | 7,216 | 19.18 | 102 | 18 |

Such figures as these do not tell the whole story. For instance, the fastest navy is that of Chile, with an average speed of 20.74 knots. Brazil comes next, with 20.18 knots, followed closely by Italy and Great Britain, while Argentina, with 18.88 knots, is ahead of Russia; otherwise the order may be picked from the table. In average size of ships no nation in the table has an average as great as has Austria, the lowest listed. The only ships of over 10,000 tons belonging to any nation outside the eight tabulated are three battleships building for Brazil in England, and said in some quarters to be ultimately destined for Japan.

An examination of the table shows that the Anglo-Saxon combination is superior to the five combined continental nations in displacement, guns, average size and speed, and much superior in the number of large ships. In total number of ships only are we inferior. Of course, the large advantages accruing from a common language and common ideals would be of enormous benefit should it ever be necessary to measure strengths.

Taking up the eight leading nations in a little more detail, and omitting further all ships under 3000 tons and all unarmored ships under 18 knots, we get two tables, one covering battleships only, while the second covers cruisers, both armored and protected. In each case the divisions are somewhat arbitrary, but they are thoroughly uniform, and totally fair.

| Battleships. | First class. Ships. | Tons. | Speed. | Second class. Ships. | Tons. | Speed. | Third class. Ships. | Tons. | Speed. |
|---|---|---|---|---|---|---|---|---|---|
| Great Britain | 56 | 862,000 | 19.08 | 14 | 152,070 | 17.29 | 2 | 18,660 | 14.43 |
| United States | 31 | 445,679 | 18.54 | .. | ..... | .... | 11 | 45,339 | 12.83 |
| France | 22 | 313,956 | 18.66 | 8 | 84,362 | 15.98 | 10 | 66,789 | 15.33 |
| Germany | 20 | 314,290 | 19.63 | 14 | 152,581 | 17.61 | 13 | 66,634 | 14.98 |
| Japan | 15 | 231,752 | 19.8 | 3 | 36,308 | 18.04 | 3 | 18,126 | 14.91 |
| Russia | 8 | 112,134 | 17.71 | 4 | 37,753 | 16.47 | 5 | 32,923 | 14.7 |
| Italy | 10 | 135,528 | 21.04 | 5 | 62,317 | 17.74 | .. | ..... | .... |
| Austria | 3 | 43,500 | 20 | 6 | 55,923 | 20.15 | 5 | 28,549 | 17.02 |

| Cruisers. | Armored. Ships. | Tons. | Speed. | First class. Ships. | Tons. | Speed. | Second class. Ships. | Tons. | Speed. |
|---|---|---|---|---|---|---|---|---|---|
| Great Britain | 35 | 417,360 | 23.01 | 23 | 213,710 | 20.75 | 39 | 176,320 | 20.11 |
| United States | 15 | 186,651 | 22.19 | 3 | 20,620 | 22.58 | 12 | 47,117 | 21.27 |
| France | 18 | 190,796 | 22.07 | 4 | 29,655 | 22.14 | 16 | 80,230 | 19.33 |
| Germany | 8 | 78,381 | 21.15 | .. | ..... | .... | 27 | 107,996 | 21.84 |
| Japan | 9 | 81,412 | 21.53 | 1 | 6,500 | 23.7 | 8 | 33,931 | 21.49 |
| Russia | 6 | 62,644 | 20.67 | 6 | 38,935 | 23.14 | 6 | 32,100 | 19.46 |
| Italy | 7 | 61,250 | 21.61 | 1 | 6,000 | 25 | 3 | 17,303 | 19.44 |
| Austria | 1 | 7,185 | 22.01 | .. | ..... | .... | 5 | 22,804 | 20.68 |

These two tables should be supplemented by another giving the totals, the total battleships and the total armored fleets, as follows:

| | Grand totals. Ships. | Tons. | Speed. | Total armored. Ships | Tons. | Speed. | Total battleships. Ships. | Tons. | Speed. |
|---|---|---|---|---|---|---|---|---|---|
| Great Britain | 169 | 1,840,120 | 20.06 | 107 | 1,450,090 | 19.95 | 72 | 1,032,730 | 18.73 |
| United States | 72 | 745,406 | 19.39 | 57 | 677,669 | 19.16 | 42 | 491,018 | 18.01 |
| France | 78 | 765,788 | 19.12 | 58 | 655,903 | 18.97 | 40 | 465,107 | 17.7 |
| Germany | 82 | 719,882 | 19.27 | 55 | 611,886 | 18.81 | 47 | 533,505 | 18.47 |
| Japan | 39 | 408,629 | 19.98 | 30 | 367,598 | 19.77 | 21 | 286,186 | 19.33 |
| Russia | 35 | 316,489 | 18.68 | 23 | 245,454 | 17.87 | 17 | 182,810 | 16.91 |
| Italy | 26 | 282,398 | 20.39 | 22 | 259,095 | 20.37 | 15 | 197,845 | 20 |
| Ausrtia | 20 | 157,961 | 19.71 | 15 | 135,157 | 19.55 | 14 | 127,972 | 19.1 |

One further table will conclude our s[illegible]ss was practquestion. This deals with the batteries of [illegible]ng scarcely ships, arranged according to the size of gun. [illegible]ospects for column shows the number of guns of 12-in. ca[illegible]l. upward carried on the ships listed, with the b[illegible] fire in parenthesis. The second column shows t[illegible] of 8-in. and upward, but under 12-in.; the third those between 3.9-in. (10 cm.) and 8-in., while the shows the smaller guns and torpedo tubes: [illegible]el & [illegible]ed.

| | 12-in. guns. | 8 to 12 in. | 3.9 to 8 in. | Small |
|---|---|---|---|---|
| Great Britain | 312 (298) | 172 (134) | 1,915 (1,047) | 4,725 |
| United States | 172 (172) | 224 (162) | 728 (374) | 2,23[illegible] |
| France | 103 (100) | 108 (62) | 859 (472) | 1,870 |
| Germany | .. .. | 326 (299) | 741 (371) | 2,187 |
| Japan | 66 (66) | 126 (89) | 428 (218) | 1,080 |
| Russia | 50 (46) | 83 (53) | 379 (204) | 1,035 |
| Italy | 44 (44) | 97 (69) | 310 (161) | 788 |
| Austria | 17 (15) | 63 (51) | 210 (108) | 448 |

It will be noted that, with regard to number and aggregate displacement of fighting ships, the United States, France and Germany are running a very close race, standing in that order in armored ships, but with little room for choice. When we examine the batteries carried, however, the immense superiority of the United States in heavy guns, and particularly in 12-in. guns, becomes at once apparent. Germany has no guns over 11 in. In those of 8 in. and upward the United States carries 396, to 326 for Germany (averaging smaller in size) and 211 for France. It will be remembered that in the war of 1812 a large part of the American success at sea was attributed, and rightly, to the American guns and the way they were handled. We have to-day a navy with heavier guns on the average than those carried by the ships of any other power, not even excepting England, and reports of target practice leave little doubt that our gunnery is without an equal on the face of the globe. So it will be seen that American traditions in this respect are being followed out in the present force in such measure that we can rightly say that "ship for ship, and gun for gun, our navy is without a peer"

## The Pope Mfg. Company's Reorganization.

A rehabilitation of the properties composing the Pope Mfg. Company, which became bankrupt August 15, 1907, as a result of its inability to obtain necessary accommodations from the banks in various States, has been arranged by the Reorganization Committee consisting of Harry Bronner of Hallgarten & Co.; Frederick H. Ecker of the Metropolitan Life Insurance Company, and August Hecksher, through the formation of a new corporation with a capital of $2,500,000 of preferred and $4,000,000 of common stock. This new company will purchase all of the manufacturing plants and other property of the old concern and will operate the factories in Hartford, Conn., and in Westfield, Mass., selling other properties. It is believed that the receivers will have at the time of the sale of the properties of the old company an amount in cash sufficient, together with the funds which will be paid in, to settle all claims of creditors in full as well as all reasonable and equitable expenses of the receivership.

The new company will authorize an issue of $800,000 of 6 per cent. short term notes to be dated August 1. These notes are to be secured by a mortgage to the Central Trust Company on all the new company's property. All the stock of the new company, except the directors' qualifying shares, will be issued to voting trustees, who will vote the stock until August 1, 1911.

Harrington, Robinson & Co., Boston, are now the sole New England agents for Toledo high speed steel, manufactured by Jno. Hy. Andrew & Co., Ltd., Sheffield, England, and carry in their warehouse, 272-276 Franklin street, Boston, a complete stock in all sizes.

## PERSONAL.

The Boa[illegible]y 22 a large number of leading members of the tention of [illegible]ron Trade Associated assembled in London to classificat[illegible] to James Stephen Jeans, the occasion being his which t[illegible]ent, owing to ill health, from the position of secent. a[illegible], to which he was appointed in 1877. The presentafor "[illegible] took the form of a handsome and massive silver the [illegible]l with handles in the shape of panthers, a pair of as [illegible]ndlesticks and a mirror, accompanied by an illuminated fordress. Among the speakers were Alexander Findlay, a[illegible]the president of the association; Lord Airedale, Lord [illegible] Glantawe, and H. J. Skelton.

Edgar S. Cook, president of the Warwick Iron & Steel Company, Pottstown, Pa., has returned from a brief trip to Europe.

Joseph G. Butler, Jr., Youngstown, Ohio, has arrived in Berlin, Germany.

R. H. Wolff, of New York, the representative in this country of the Héroult electric furnace and process, has sailed for Europe for a stay of some weeks.

Ralph McCarty has severed all connections with the Stoever Foundry & Mfg. Company, Myerstown, Pa., and will devote his time to other interests.

Paul W. Webster, formerly with the Variety Iron & Steel Works Company, Cleveland, Ohio, and for the past 18 months assistant manager of M. H. Treadwell & Co. of Pennsylvania, Lebanon, Pa., has been elected general manager.

W. E. Farrell, while retaining the vice-presidency of M. H. Treadwell & Co. of Pennsylvania, Lebanon, Pa., has resigned his position as general manager, and has been elected president of the Stoever Foundry & Mfg. Company, Myerstown, Pa., of which company he is also general manager.

Herman S. Hastings, formerly connected with local organizations in New England of the National Metal Trades Association and the National Founders' Association, has recently been elected commissioner of the United Metal Trades Association of the Pacific Coast, with headquarters at the main office of the association, 319 Pioneer Building, Seattle, Washington.

W. L. Kaufman, for some years general manager of the Youngstown plant of the National Tube Company, Youngstown, Ohio, has resigned and is connected temporarily with the Ohio Iron & Steel Company, operating Mary Furnace at Lowellville, Ohio.

A. A. Fowler, resident partner in New York of Rogers, Brown & Co., expects to start next week for a shooting trip in the Yukon country.

Dr. R. W. Raymond, of New York, secretary of the American Institute of Mining Engineers, has returned from England, where he was associated with the efforts to secure an extension of the Gayley dry blast process patent.

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Corrigan, McKinney & Co. expect soon to begin the erection of a large blast furnace plant in Cleveland, Ohio. They have just closed negotiations for the purchase of 40 acres of land on the upper river bed in that city as a site, on which it is the intention to build two large furnaces. Work on one will probably be started early this fall, and the erection of the second will be started when the first is near completion. It is expected that one of the stacks will be ready for operation in about a year. Plans have not yet been prepared, and the capacity of the furnaces has not been decided upon. As a part of the undertaking, extensive ore docks will be erected along the river front. Corrigan, McKinney & Co. ceased to operate a furnace in Cleveland a year ago when their lease on the River Furnace expired and that furnace reverted to its owner, the Upson Nut Company, which is operating it at the present time.

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The Driggs-Seabury Ordnance Corporation, Sharon, Pa., manufacturer of ordnance, forgings, drop forgings and general machine work, has placed a contract with the Wm. B. Scaife & Sons Company, Pittsburgh, for the structural steel for an addition to one of its buildings. This addition is to be 80 x 100 ft., the approximate amount to be spent for building, machinery, &c., being $40,000. The Driggs-Seabury Ordnance Corporation has been making pressed steel parts in a small way, but is now going after this business on a larger scale.

## OBITUARY.

### HARRIS TABOR.

Harris Tabor of the Tabor Mfg. Company, Philadelphia, died July 29. His death was the result of an automobile accident which occurred July 4, 1907, while on his way to visit a friend in New Jersey. He was laid up until the first of September, shortly after which he resumed his duties with the Tabor Company. His improvement was slow, and in March he contracted a heavy cold, forcing him to bed in May, and this, together with his weakened condition, brought about his death.

Mr. Tabor was born in Clarence, Erie County, N. Y., January 26, 1843. He received a common school education. He was of a studious disposition and possessed a retentive mind, which developed to a rare analytical, executive and inventive ability in things mechanical. At the age of 21 he enlisted as a private in the Union Army, serving for a term of two years. His mechanical training started as an apprentice in the shop of his brother, Leroy Tabor, Sr., at Tioga, Pa., where he remained two years up to the time of his enlistment. After his discharge from the army he went to work as a machinist for S. Payne at Troy, Pa. From there he went to B. W. Payne & Sons, Corning, N. Y., and when this firm moved to Elmira, N. Y., he was made superintendent. In the early eighties he moved to Hartford, Conn., to assume the position of superintendent of the Hartford Steam Engine Works. After one year's service at Hartford he went to Pittsburgh as superintendent of the Westinghouse Machine Company, where he remained about three years. Up to this time his work had been along the lines of steam engineering, and he had invented and placed on the market a steam engine indicator and a throttle governor. The former was sold to, and is now being manufactured by, the Ashcroft Mfg. Company. It was during his service with the Westinghouse Company that he made observations in the foundry and conceived the idea of a molding machine operable by power, recognizing the great commercial value of a machine of this type.

At this juncture, in 1885, he associated himself with Manning, Maxwell & Moore, with the understanding that they were to assist him in developing, perfecting and marketing the molding machine. He then resigned his position as superintendent of the Westinghouse Company and took up quarters in New York City, where he could give the development of the molding machine his full attention. During 1886 and 1887 he also brought out a throttle governor which was manufactured by the James Brady Company, Brooklyn, N. Y. For a period of three years, from 1885, he had been experimenting with and building molding machines at the B. W. Payne & Sons Company plant at Elmira, N. Y., and in 1888 he placed on the market the first successful power molding machine operated by steam, with a cylinder overhead.

In the fall of 1888 the manufacture of the machines was transferred to the Pond Tool Works, Plainfield, N. J., and continued there until the early nineties, when he reorganized the Tabor Mfg. Company and transferred their manufacture to the S. L. Moore Sons Company, Elizabeth, N. J. It was here that he brought out vibrator molding and built the first molding machine operated by compressed air. In 1900 he sold out the greater portion of his interest in the company and retired from the presidency, although he still continued in the capacity of consulting engineer to give the company the benefit of his large experience and knowledge of the needs of the foundry trade.

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JOHN D. INGRAM, district manager of the American Car & Foundry Company, died at Louisville, Ky., July 25, aged 53 years. He was born in Jeffersonville, Ind., and had been promoted to his responsible position after long and faithful service in the car works at that place.

## June Exports and Imports of Iron and Steel.

The June report of the Bureau of Statistics of the Department of Commerce and Labor shows that only a slight gain was made on the falling off in domestic exports of iron and steel which had been shown for the month of May. The total June value of such exports, not including ore, was $11,677,944, against $11,281,425 in May. Taking the commodities for which quantities are given, the total exports for June were 69,778 gross tons, against 64,020 tons in May, 93,522 tons in April, 96,437 tons in March, 81,755 tons in February and 74,352 tons in January. The following table gives the details of the exports of such commodities for June and for the complete fiscal year ending with June, as compared with the corresponding periods of the previous year:

*Exports of Iron and Steel.*

| | June. | | Twelve months. | |
|---|---|---|---|---|
| | 1908. | 1907. | 1908. | 1907. |
| | Gross tons. | Gross tons. | Gross tons. | Gross tons. |
| Pig iron | 4,906 | 5,977 | 52,518 | 85,000 |
| Scrap | 1,991 | 1,945 | 20,518 | 22,152 |
| Bar iron | 622 | 1,505 | 13,065 | 41,484 |
| Wire rods | 462 | 677 | 6,534 | 10,250 |
| Steel bars | 3,022 | 7,768 | 63,128 | 52,300 |
| Billets, blooms, &c | 5,583 | 3,750 | 92,893 | 113,866 |
| Hoop, band, &c | 274 | 419 | 8,560 | 5,886 |
| Steel rails | 15,759 | 18,358 | 278,867 | 291,322 |
| Iron sheets and plates | 3,124 | 2,462 | 42,024 | 29,620 |
| Steel sheets and plates | 3,881 | 7,517 | 60,507 | 98,196 |
| Tin and terne plates | 113 | 661 | 15,010 | 8,881 |
| Structural iron and steel | 8,417 | 11,495 | 134,299 | 125,132 |
| Wire | 10,415 | 11,727 | 156,960 | 161,241 |
| Cut nails | 528 | 664 | 6,481 | 7,871 |
| Wire nails | 1,234 | 3,601 | 35,541 | 39,952 |
| All other nails, including tacks | 491 | 1,582 | 5,774 | 7,512 |
| Pipes and fittings | 8,956 | 12,888 | 168,591 | 128,579 |
| Totals | 69,778 | 92,996 | 1,161,270 | 1,229,244 |

The imports of iron and steel for June show a slight increase over the figures for May. The total June value of such imports, not including ore, was $1,759,651, against $1,347,332 in May. Taking the commodities for which quantities are given, the June total was 21,109 gross tons, against 13,584 tons in May, 12,342 tons in April, 15,885 tons in March, 19,054 tons in February and 28,008 tons in January. The following table shows the details of the imports of such commodities for June and for the full fiscal year ending with June, as compared with the corresponding periods of the previous year:

*Imports of Iron and Steel.*

| | June. | | Twelve months. | |
|---|---|---|---|---|
| | 1908. | 1907. | 1908. | 1907. |
| | Gross tons. | Gross tons. | Gross tons. | Gross tons. |
| Pig iron | 9,341 | 44,885 | 204,092 | 564,846 |
| Scrap | 537 | 3,714 | 17,614 | 21,439 |
| Bar iron | 859 | 4,322 | 32,504 | 38,600 |
| Rails | 206 | 663 | 2,839 | 4,610 |
| Hoop, band, &c | 5 | 2 | 473 | 4,369 |
| Billets, bars and steel in forms n.e.s | 1,099 | 903 | 16,499 | 18,520 |
| Sheets and plates | 241 | 240 | 2,623 | 3,429 |
| Tin and terne plates | 7,650 | 3,880 | 62,652 | 63,629 |
| Wire rods | 1,110 | 1,603 | 13,571 | 17,907 |
| [illegible]ctural iron and [illegible] | 61 | 230 | 1,530 | 9,326 |
| [illegible] | 21,109 | 60,442 | 354,397 | 746,675 |

[illegible] of iron ore in June were 43,429 gross [illegible]1,780 tons in May. The total iron ore im[illegible] fiscal year ending with June, 1908, were [illegible], against 1,096,717 tons in the fiscal year 1907. [illegible]tal value of all kinds of exports of iron and [illegible] including ore, for the fiscal year ending with [illegible]908, was $183,982,182, against $181,530,871 in the [illegible]year 1907. The total value of similar imports for [illegible]scal year 1908 was $27,607,909, against $40,587,865 [illegible]ne fiscal year 1907.

Some press reports relative to the operations of Spang, Chalfont & Co., Inc., Etna Iron & Tube Works, Pittsburgh, are untrue and misleading. To begin with, their mills have not been shut down completely at any one time this year, nor have they been operated in full at any time. The butt weld department is running to half capacity night and day, while a fair percentage of the entire capacity now in operation is 70 per cent. The June business of this concern was the largest it has enjoyed since last October, and July business was practically the same as June, the difference being scarcely noticeable, both as to tonnage and value. Prospects for the future at about the same rate are very good.

## The Sloss-Sheffield Ore Properties.

President J. C. Maben of the Sloss-Sheffield Steel & Iron Company, in his annual report, recently issued, places the company's iron ore land holdings at 51,125 acres. He states that in the hard ore field, where the vein runs irregularly, about 2060 acres have been developed, while in the brown ore fields about 1924 tons have been worked. It is estimated that the ore in the hard ore fields approximates 72,600,000 tons, while that in the brown ore fields totals 26,000,000 tons. In the undeveloped vein of hard ore, it is believed there is a total of 419,000,000 tons, or 17,000 tons to the acre. In the Russellville tract, Mr. Maben states, the company owns 18,600 acres of brown ore land on which a mining engineer estimated a few years ago that there was an aggregate of 110,400,000 tons of 2240 lb. each. By way of summary, he says:

> Taking the report as a basis and making due allowances for any overestimate, and after deducting 25,000,000 tons from our total estimate, and not including any interest in the Champion mine, we feel that it is conservative to estimate the brown ore owned by your company at 133,500,000 tons.

This added to the 492,400,000 tons, the estimated amount of hard ore developed and undeveloped, would make the aggregate ore holdings of the Sloss-Sheffield Company 625,900,000 tons.

Mr. Maben estimates that the company's coal lands extend for more than 65,000 acres, while the coal contained therein approximates 1,438,090,348 tons.

The Youngstown Sheet & Tube Company expects to have its first blast furnace in operation by September 15 and the second one a month later. One new pipe mill is now in operation, and the company expects to start a new lapweld mill about October 1. The new galvanizing plant and the last pipe mill which was authorized will not be finished before February 1 of next year. The company is not adding any more finishing mills, but is putting in a new 2500-hp. engine at its rod mill and will double its wire and wire nail capacity. It is also putting in two galvanizing plants for galvanizing wire.

The annual meeting of stockholders of the Youngstown Sheet & Tube Company was held in Youngstown, Ohio, last week. The entire present board of directors was re-elected, consisting of J. A. Campbell, H. G. Dalton, C. D. Hine, Robert Bentley, George D. Wick, John L. Severance, William Wilkoff, H. H. Stambaugh, E. L. Ford, J. G. Butler, Jr., and Richard Garlick. Reports of the various officers for the year were read, showing the great strides made by the company in the past year and the progress being made in the improvements and additions now under way at the plant.

The Chester B. Albree Iron Works Company, Allegheny, Pa., has the contract for the metal railing on the great Blackwell's Island Bridge, New York City. One approach of this bridge is completed, but the bridge itself and the other approach, which together are some 6300 ft. long, are yet in process of construction. The company is working on what is known as its type C railing, which is of the ordinary lattice design, but about 6 ft. high and quite heavy. There is some 12,000 ft. of this type of railing and it will keep a night turn busy for some time to come.

The Youngstown Car Mfg. Company, Youngstown, Ohio, has received an order for 24 slag cars for the Ohio Works of the Carnegie Steel Company, Youngstown. These cars are to be of double truck, platform construction, and all steel. An order for 20 cars of 80,000 lb. capacity each, for the Honolulu Iron Works, has just been completed. These cars will be shipped by rail to San Francisco.

# Trade Publications.

**Centrifugal Fans.**—Jeffrey Mfg. Company, Columbus, Ohio. Catalogue 26, 6¼ x 9¼ in., 24 pages. Fans especially adapted for mine ventilation are treated of, and it is explained that the company has devised a type of mine fan of high efficiency at low speeds and against heavy resistance. The special features are that the wheel vanes discharge the air in a radial direction, and that by the use of conical scoops it is claimed the air is prevented from gushing from the inlet. Several sizes of fans and fan casings are shown and line drawings illustrate typical settings. A page of engineering formulæ is included.

**Machine Tools.**—Gisholt Machine Company, Madison, Wis. Booklet. A compact presentation of the entire line of machine tools made the company, including turret lathes, vertical boring mills, grinders, horizontal milling machines, gear testing machines, &c. Standard types of machines are illustrated, together with standard tools furnished with them. Methods of finishing machine parts with Gisholt tools are illustrated by diagrams and samples of lathe work are shown. A number of the machines illustrated are shown with motor drives.

**Cableways.**—Lidgerwood Mfg. Company, New York. Catalogue, 9 x 12 in., 168 pages. Important engineering operations on which Lidgerwood cableways are in use are described and illustrated, and the volume forms a complete textbook on cableway practice. Cableways in use for coaling at sea, for excavating purposes, for use at dry docks, coal conveying, &c., are shown. All the illustrations are accompanied by descriptive text which clearly explains the important details of the equipment.

**Foundry Equipment.**—J. W. Paxson Company, Philadelphia, Pa. Bulletin No. 18. Briefly describes sand blast machines, firebrick lining, molding sand, flux and other foundry specialties handled by the company, and some space is given to the Paxson freight lines explaining the company's waterway freight lines and showing that the company does towing, lightering, stevedoring, &c., for the trade, and describing its fleet of boats.

**Oil Filters and Systems and Exhaust Heads.**—Standard Gauge Mfg. Company, Syracuse, N. Y. Bulletin No. 1. Contains an exposition of the Eclipse oil filters and Eclipse continuous oiling system and their advantages. The bulletin illustrates special forms for particular conditions, explains the component parts of the system. Oil filter fittings, oil storage tanks and other oil service equipment is shown.

**Belt Lacing.**—The Bristol Company, Waterbury, Conn. Booklet. Shows patent steel belt lacing and gives directions for applying and price-lists.

**Engines and Boilers.**—Erie Engine Works, Erie, Pa. Catalogue, 6 x 9 in., 52 pages. Automatic cut-off engines are shown, including center crank, side crank, medium speed engines and a double automatic cut-off engine. Stationary engines and portable engines, stationary tubular boilers, locomotive boilers, portable boilers and vertical boilers are also illustrated, together with the Erie special shaking and dumping grate and the Hardwick feed water heater.

**Electrical Equipment.**—General Electric Company, Schenectady, N. Y. Three bulletins and circular. No. 4575 shows type F, form K-7, oil break switches, designed to meet the requirements of induction motor installations; No. 4596 illustrates numerous types of inclosed globes for arc lamps; No. 4597, superseding No. 4315, illustrates the Thompson astatic instruments for continuous current switchboards, and circular No. 3664 shows a new lamp locking socket. This socket is so made that the lamp cannot be removed without the use of a key.

**Motors and Dynamos.**—The Holtzer-Cabot Electric Company, Brookline Station, Boston, Mass. Three bulletins. No. 307B, displacing 307A, shows alternating and direct current buffing and grinding motors for large work which are adapted to driving wheels from 4 to 10 in. in diameter; No. 314A, displacing 314, is devoted to motors and dynamos for direct current; No. 316 shows small size direct current motors, type LM.

**Hoisting Engines and Contractors' Equipment.**—John F. Byers Machine Company, Ravenna, Ohio. Catalogue No. 11, 9 x 11 in., 75 pages. Several types of hoisting engines adaptable for contractors' work are illustrated in this book, and the company's standard hoisting engines are graphically described. Double cylinder bridge erecting engines, industrial locomotives, gantry cranes, material elevators, traveling derricks and other contractors' equipment is shown, with prices and directions for ordering.

**Coal Cleaners.**—Pennsylvania Crusher Company, Philadelphia, Pa. Bulletin No. 510. This is a card, arranged for hanging up, containing drawings and descriptive matter explaining the Pennsylvania Bradford coal cleaner, which acts as a combined crusher and mechanical separator.

**Crucible Steel Castings.**—New Process Steel Company, Marshall, Mich. Booklet entitled "The Effect of Vanadium on Steel." Explains the advantage of this ingredient in steel and refers to the company's New Process steel, in which ferrovanadium is used.

**Induction Motors.**—Crocker-Wheeler Company, Ampere, N. J. Bulletin No. 105, superseding No. 88. Treats of Polyphase induction motors, which are made in up to 250-hp. sizes. Several installations of such motors are shown.

**Belting.**—J. A. & W. Bird Company, Boston, Mass. Bulletins 3 and 4 in a series of six semitechnical talks on belting. No. 3 treats of pulley arrangements, belt dressing, joints, &c., and gives other hints. No. 4 gives rules for arranging pulleys, method of setting guide pulleys, and argues that the company's line of canvas belting needs no belt dressing because of the fact that a heavy gum enters into the manufacture. The bulletins also refer to a computer for determining belt transmission calculations, which can be had for 10 cents in stamps.

**Steel Pipe Couplings.**—S. R. Dresser Mfg. Company, Bradford, Pa. Supplementary catalogue. Devoted principally to Dresser pipe couplings and sleeves. Views of the construction of East Ohio Gas Company's trunk line made last summer, where Dresser couplings and sleeves are used, are given, together with views showing the evolution of the couplings and illustrations of standard sizes.

**Welding.**—Pittsburgh Welding Company, Pittsburgh, Pa. Booklet. Advocates the company's welding outfits, which are furnished complete for welding cast iron, steel, tool steel, brass and copper.

**Reinforced Concrete.**—Turner Construction Company, 11 Broadway, New York. Bulletin No. 4. Gives numerous views of a large warehouse at Jersey City erected by the company, and arguments are given favoring the use of reinforced concrete for factories, warehouses, power plants, &c.

**Electric Motors.**—Emerson Electric Mfg. Company, St. Louis, Mo. Five bulletins. No. 3128, replacing No. 3112, shows a small single phase induction motor (1-20 hp.) especially adapted for running electric fans, &c.; No. 3129, replacing bulletin 3114, shows a similar 1-6-hp. motor and explains its manufacture by diagrams; No. 3130, replacing 3118, describes a condensed type single phase induction motor made in ⅛ and 1-6 hp. sizes; No. 3131 shows a 1-15-hp. motor, light load start type, adaptable for intermittent service; No. 3132 shows the same in a full load start type, and No. 3906 concerns motors suitable for family sewing machines.

**Woodworking Machinery.**—S. A. Woods Machine Company, Boston, Mass. Circular on "Increasing the Business and Specializing the Product," reproduced from the May issue of *Selling Magazine*. This explains the company's policy of concentrating its efforts on the manufacture of three special machines where formerly it manufactured a wide variety.

**Machine Tools and Special Machinery.**—Taylor & Fenn Company, Hartford, Conn. Catalogue. Various styles of single and multiple drill presses are illustrated, and a 7-in. bench lathe, spring foot press, disk grinder and an automatic screw slotting machine are illustrated and described with comprehensive text matter. It is also explained that the company makes special machinery to order. The automatic screw slotter was described in *The Iron Age* April 30, 1908.

**Coal Chute Windows.**—H. M. Richardson Steel & Iron Company, 220 West Second street, Cincinnati, Ohio. Folder. Illustrates the Ideal coal or wood window which serves as a fuel chute. The body is made of heavy steel plate and it is lighted by transparent celluloid. A steel shield which works automatically is included in the window and can be easily removed.

**Flexible Brass Joints.**—Barco Brass & Joint Company, 56 North Jefferson street, Chicago, Ill. Catalogue, 6 x 9 in., 16 pages. Shows the Barco flexible joint, which is adaptable for use between sections of pipe wherever flexible conveyors are required for steam, compressed air, gas or liquids. The joint is made in three parts and has two nonmetallic gaskets which prevent the contact of metal to metal at any point. This, it is claimed, makes it impossible for the ball to grind itself in spots and the joint to become leaky. A liquid joint, particularly for conveying oil or liquids, is also shown, and several applications of both joints are illustrated.

**Grinders.**—Luther Brothers Company, Milwaukee, Wis. Catalogue No. 16, 6 x 9 in., 47 pages. Shows principally the Luther Diamond grinders, which are made particularly for grinding farm tools and cutlery. Grinders operated by pedal attachment and gears similar to those of a bicycle are shown, together with hand grinders, grinders operated by electric motors, &c. Some space is given to other equipment, such as small power saws, small gasoline engines, countershafts, floor scrapers and hardware specialties. Several circulars illustrating these specialties accompany the book.

**Grinding Machinery.**—Norton Company, Worcester, Mass. Booklet entitled "Helps—Dont's, for All Who Grind." Contains directions for selecting grinders for various purposes, with instructions for mounting and operating and general directions covering maintenance.

**Punches and Shears.**—Cleveland Punch & Shear Works Company, Cleveland, Ohio. Catalogue A, supplement to catalogue No. 6, 9 x 12 in., 65 pages. Several types of shears man-

ufactured by the company are shown, together with bending rolls, planers, punches, &c. Space is given to the company's line of standardized tools for punching machinery, and numerous stock punches and dies are illustrated by line drawings. A number of sheets for ordering punching tools are also contained in the catalogue.

**Tool Grinders.**—Gisholt Machine Company, Madison, Wis. Loose-leaf circular. Shows the Gisholt tool grinder, designed especially for the grinding of lathe and planer tools. A set of 57 tools, embracing the ordinary shapes used in the machine shops, can be furnished with the machines, together with the charts showing the correct angles for grinding tools.

**Tool and Cutter Grinders.**—Greenfield Machine Company, Greenfield, Mass. Catalogue No. 3, 6 x 9 in., 55 pages. Illustrates the Greenfield universal grinder with its various attachments as a frontispiece, and following it the various operations it can perform with the attachments and the work that can be ground. Usually 13 regular attachments are furnished, and a number of special attachments can also be had. The standard machine is made with 6⅜ in. swing and 21 in. between centers, and is capable of grinding cutters up to 11 in. in diameter. The book should be useful to operators, as the methods of cutting and grinding various tools are clearly illustrated.

**Water Heaters.**—Kellogg-Mackay-Cameron Company, Chicago, Ill. Booklet. Illustrates and describes the Spence water heaters. Space is also given to the Soleil steam boiler and Kewanee radiators, for steam and hot water heating.

**Milling Cutters.**—National Tool Company, Cleveland, Ohio. Catalogue and price-list; 68 pages. Lists plain and side milling cutters, metal slitting saws, angular cutters, end mills, inserted tooth milling cutters, and various kinds of formed cutters, made in high speed and carbon steels. Also gives useful formulas and tables for determining dimensions of gears, &c.

**Tumbling Barrels.**—Henderson Brothers, Waterbury, Conn. Catalogue No. 9, 6 x 9¼ in., 24 pages. Shows a number of tumbling barrels in operation and also illustrates and gives prices on both wooden and cast iron tumbling barrels for grinding or polishing, tumbling barrels particularly adapted for brass castings, octagonal water tumbling barrels, cylindrical water tumbling barrels and three-compartment water tumbling barrels with cylinders of steel and lined with wood. Barrels of any size or form are made to order.

**Electrical Equipment.**—Cutler-Hammer Mfg. Company, Milwaukee, Wis. Booklet, entitled "Stage Lighting." Devoted to the company's line of Simplicity dimmers for use in theatres, lodge rooms, &c., for diminishing lights.

**Saw Machinery.**—Covel Mfg. Company, 1217 Fisher Building, Chicago, Ill. Catalogue, 6 x 9 in., 87 pages. Treats of the company's complete line of saw machinery, including saw filers, scarfing machines, shears stretchers, &c., especially adapted for band saw work and other equipment for making, sharpening and repairing saws of all descriptions and sizes. Some of the larger machines, such as band saw sharpeners, gang saw sharpeners, movable roll saw stretchers, scarfing machines, &c., are illustrated and the volume is comprehensively indexed.

**Threading and Tapping Machinery.**—Foote-Burke Company, Cleveland, Ohio. Catalogue, 6 x 9 in., 54 pages. Shows several Reliance bolt cutters which are made in sizes up to 6 in. for either belt or motor drive. The Reliance die head is illustrated unassembled and complete, and price lists and illustrations of taps, chucks, nut taps, &c., are given. The book includes directions for making and recutting dies and useful tables of information.

**Gas and Gasoline Engines.**—Olds Gas Power Company, Lansing, Mich. Catalogue, 7 x 10 in., 48 pages, and bulletins. In the catalogue a number of the company's engines are illustrated; one view, to indicate the range of sizes built, shows a 3-hp. engine mounted on a 300-hp. engine. Engines particularly adapted for operating centrifugal pumps, wood saws and portable equipment for driving concrete mixers and farm machinery are illustrated, together with sectional views of standard machines. Bulletin No. 1 shows Type A engines adapted for small power purposes; No. 2 describes the Type K engine, one suitable for operating on producer gas; No. 4 describes a 600-hp. suction gas producer plant, and No. 5 covers the Type G gas or gasoline engine.

**Alternating Current Motors.**—Century Electric Company, Nineteenth and Olive streets, St. Louis, Mo. Bulletin No. 10. Illustrates and describes single-phase motors, to the manufacture of which this company is exclusively devoted. Sectional views of standard machines are shown and motors are illustrated operating centrifugal pumps, presses, dough mixers, floor surfacing machines and similar equipment where small motors are adaptable.

**Logging Machinery.**—Clyde Iron Works, Duluth, Minn. Catalogue, 9 x 12 in., 95 pages. Devoted chiefly to the McGiffert loader for use in logging operations. Detailed views of the machine are given, showing the general construction, but the volume is largely taken up with excellent views taken in logging camps throughout the country, showing the loader at work. Some space is given to the Decker log loader, a type of self-propelling loader also made by the company. These machines are furnished with engines of any type desired.

**Recording Thermometers.**—Bristol Company, Waterbury, Conn. Bulletin No. 92. Lists standard sizes of recording thermometers and shows specimen sections of charts.

## Scrap Classification of the Republic Iron & Steel Company.

A revised classification of scrap iron, under date of July 15, 1908, has been issued by the Republic Iron & Steel Company, Pittsburgh, Pa., as follows:

**Iron Axles.**—Iron railroad car axles, M. C. B. sizes, free from locomotive axles or defective or imperfect forgings.

**Steel Axles.**—Steel railroad car axles, M. C. B. sizes, free from locomotive axles or defective or imperfect forgings.

**Iron Rails.**—Standard section T-rails, original weight 50 lb. per yard or heavier, minimum length 5 ft., free from frogs, guards, switches, turntable and curved rails.

**Steel Rails.**—Standard section T-rails, suitable for rerolling, original weight 50 lb. per yard or heavier, minimum length 5 ft., free from split heads, frogs, guards, switches, curved and turntable rails.

**A—No. 1 Railroad Wrought.**—Heavy wrought iron from railroad shops and cars, 6 in. and longer, including iron links and pins.

**B—No. 2 Wrought.**—Heavy wrought iron and soft steel scrap from railroad shops and cars, 2 in. long, 2 in. wide or wider, and longer, including track bolts and nuts, iron angle bars and plain splices, free from patent joints, steel angles and splices, steel channel bars and track spikes.

**BX—Track Scrap.**—Railroad bolts, nuts, spikes; may include iron angle bars and plain splices.

**C—Shafting.**—Iron and soft steel, 1½ to 4 in. round and square; 4 ft. and longer, in straight bars.

**D—No. 1 Wrought.**—Heavy wrought iron and soft steel fagoting scrap; bars ⅝ to 4 in., round or square; flats ¼ in. thick and heavier, 4 in. long or longer, including wagon axles, horseshoes and wagon tires, exclusive of other shapes or bent pieces.

**E—No. 1 Country Wrought.**—Heavy wrought iron and soft steel scrap (the latter not over 0.12 carbon), including buggy tires, horseshoes; all fagoting scrap.

**F—No. 1 Mill.**—Iron and soft steel bars, not less than ⅜ in. round or square, and flats not thinner than No. 12 wire gauge, including heavy railroad sheet; tank in separate sheets and rings, boiler sheet and rings, clean pipes and flues, heavy punchings and clippings and strictly soft steel agricultural implement shapes. All steel must be under 0.12 carbon.

**G—No. 2 Mill.**—Iron and soft steel hoops and sheets, railroad sheet, cotton tie clippings and ties, skeleton sheet scrap and iron too light for No. 1 mill; scrap shall be free from galvanized, tinned or badly rusted material.

**H—No. 1 Busheling.**—Iron and soft steel pipes and flues (clean); tank and bands No. 12 and heavier, boiler plate punchings and clippings, and soft steel and iron drop forgings and trimmings; nothing to be over 8 in. long or wide, free from galvanized or tinned stock. All steel must be under 0.12 carbon.

**I—No. 2 Busheling.**—Cut hoops, sheet, cotton ties and similar light material; nothing to be over 8 in. long or wide; free from dirt, galvanized or tinned material, or other similar inferior scrap.

**JK—Axle Turnings.**—Wrought iron and soft steel railroad car axle turnings and chips. Free from tire turnings.

**L—Turnings.**—Machine wrought and soft steel, clean and free from borings and drillings, other metals, dirt and lumps.

**M—Drillings.**—Wrought or soft steel, clean and free from other metals, dirt and lumps.

**NO—Mixed Borings and Turnings, and Cast Borings.**—Clean and free from other metals, dirt and lumps.

**P—No. 1 Boilers, Cut.**—Boiler sheets and rings not under 30 in. diameter, all rivets cut. Metal not over ¾ in. thick.

**Q—No. 2 Boilers, Cut.**—Boiler sheets and rings, under 30 in. in diameter, and riveted flues, not under 16 in. in diameter, all rivets cut. Metal not over ¾ in. thick.

**R—Boiler Shop Scrap and Shipbuilding Shop Scrap.**—Wrought and soft steel bar, shape and plate ends, punchings and shearings, free from curly clippings and hard steel.

**S—No. 1 Cast.**—Machinery and railroad cast, no pieces to weigh over 75 lb.

**T—Stove Plate.**—Stove plate and railroad locomotive grate bars, free from burnt iron.

**U—Bundled Sheet Scrap.**—New sheet clippings and shearings, securely bundled; bundles not over 15 in. in hight, width or length (may be round or square), and weighing not over 40 lb. each of uniform solidity, not pressed by machinery.

**V—Pipes and Flues.**—Wrought and soft steel. Must be free from dirt or lime and from riveted seams.

# Pig Iron Production.

## A Marked Increase in July.

### On August 1 the Rate Was 1,000,000 Tons a Year More Than on July 1.

Pig iron production in July shows a substantial gain over that for June—a total of 1,217,897 gross tons of coke and anthracite iron in the 31 days of last month, as compared with 1,092,131 tons in June. The number of furnaces active at the beginning of the month was 161, a net gain of 10 over the number one month previous. The weekly coke and anthracite capacity active August 1 was 284,590 tons; on July 1 it was 264,452 tons, a gain of over 20,000 tons, or at a yearly rate of more than 1,000,000 tons. The daily rate of production was 39,287 tons in July, as against 36,444 tons in June, steel works and merchant furnaces showing nearly the same ratio of gain in the month. The daily output of the steel works and merchant furnaces, respectively, in the first seven months of the year was as follows:

*Daily Rate of Production.—Gross Tons.*

| | Steel works. | Merchant. | Total. |
|---|---|---|---|
| January | 21,432 | 12,286 | 33,718 |
| February | 25,717 | 11,446 | 37,163 |
| March | 27,145 | 12,474 | 39,619 |
| April | 24,185 | 14,104 | 38,289 |
| May | 24,505 | 13,098 | 37,603 |
| June | 23,923 | 12,521 | 36,444 |
| July | 25,762 | 13,525 | 39,287 |

It will be seen that after a steady reduction in the daily rate of pig iron production for three months, July shows a distinct upturn, bringing the total almost up to that of March, the high month of the year.

#### Capacity in Blast August 1 and July 1.

In the following table is given the weekly capacity of coke and anthracite furnaces in blast August 1 and July 1, based largely on their performance in the preceding month in each case:

*Coke and Anthracite Furnaces in Blast.*

| Location of furnaces. | Total number of stacks. | August 1. Number in blast. | August 1. Capacity per week. | July 1. Number in blast. | July 1. Capacity per week. |
|---|---|---|---|---|---|
| New York: | | | | | |
| Buffalo | 14 | 6 | 13,076 | 6 | 12,022 |
| Other New York | 7 | 2 | 1,942 | 2 | 1,712 |
| New Jersey | 8 | 2 | 3,358 | 2 | 3,725 |
| Spiegel | 2 | 0 | 0 | 0 | 0 |
| Pennsylvania: | | | | | |
| Lehigh Valley | 25 | 6 | 6,328 | 6 | 6,150 |
| Spiegel | 3 | 1 | 133 | 1 | 130 |
| Schuylkill Valley | 15 | 4 | 5,670 | 4 | 5,557 |
| Low. Susquehanna | 7 | 2 | 3,367 | 2 | 3,564 |
| Spiegel | 1 | 0 | 0 | 0 | 0 |
| Lebanon Valley | 10 | 3 | 2,242 | 4 | 3,683 |
| Pittsburgh Dist. | 45 | 28 | 72,860 | 22 | 60,949 |
| Spiegel | 3 | 2 | 2,150 | 2 | 2,574 |
| Shenango Valley | 20 | 9 | 19,588 | 7 | 14,874 |
| West. Penn. | 27 | 10 | 14,371 | 10 | 14,075 |
| Maryland | 4 | 2 | 3,811 | 2 | 4,142 |
| Wheeling Dist. | 14 | 3 | 4,676 | 2 | 3,859 |
| Ohio: | | | | | |
| Mahoning Valley | 18 | 9 | 22,162 | 10 | 23,522 |
| Central and North. and Michigan | 22 | 11 | 25,887 | 7 | 18,172 |
| Hocking Valley and Hanging Rock | 12 | 6 | 4,154 | 6 | 4,741 |
| Illinois and Indiana | 24 | 14 | 32,431 | 15 | 36,538 |
| Spiegel | 2 | 1 | 709 | 1 | 1,012 |
| Minnesota | 1 | 0 | 0 | 0 | 0 |
| Wisconsin | 6 | 2 | 2,490 | 2 | 2,275 |
| Missouri | 1 | 1 | 882 | 1 | 705 |
| Colorado | 6 | 2 | 3,802 | 2 | 3,892 |
| The South: | | | | | |
| Virginia | 23 | 9 | 6,347 | 8 | 6,202 |
| Kentucky | 7 | 0 | 0 | 1 | 1,218 |
| Alabama | 46 | 19 | 27,524 | 19 | 25,172 |
| Tennessee | 18 | 6 | 4,196 | 6 | 3,537 |
| Georgia and Texas | 3 | 1 | 434 | 1 | 450 |
| Totals | 394 | 161 | 284,590 | 151 | 264,452 |

Among furnaces blown out in July were Robesonia in the Lebanon Valley, McKeefrey and Tod in the Mahoning Valley, two South Works furnaces of the Illinois Steel Company at South Chicago, Norton in Kentucky, Belfont in the Hanging Rock District, and No. 5 Shenango in the Shenango Valley.

The list of furnaces blown in in July includes two Carrie, one Duquesne, one Edgar Thomson, one Clairton and one Monongahela in the Pittsburgh District; Ella, one New Castle and No. 1 Shenango in the Shenango Valley; Iron Gate in Virginia; Martin's Ferry in the Wheeling District; one Columbus, one Lorain, one Toledo, Newburgh and Bessie in Ohio, Federal in Illinois, and Mary in the Mahoning Valley.

#### July Product by Districts.

The table below gives the production of coke and anthracite furnaces in July and the four months preceding:

*Monthly Pig Iron Production.—Gross Tons.*

| | March. (31 days) | April. (30 days) | May. (31 days) | June. (30 days) | July. (31 days) |
|---|---|---|---|---|---|
| New York | 49,231 | 62,263 | 64,746 | 61,249 | 66,498 |
| New Jersey | 23,243 | 22,701 | 20,889 | 15,963 | 14,830 |
| Lehigh Valley | 39,105 | 28,919 | 28,712 | 26,357 | 28,028 |
| Schuylkill Val. | 29,104 | 28,654 | 25,566 | 23,814 | 25,115 |
| Lower Susquehanna and Lebanon Val. | 23,907 | 28,315 | 29,943 | 31,058 | 26,204 |
| Pittsburgh Dis. | 325,953 | 276,883 | 284,571 | 259,771 | 303,645 |
| Shenango Val. | 76,377 | 71,970 | 53,720 | 58,244 | 82,978 |
| West. Penn. | 62,782 | 54,570 | 54,185 | 59,521 | 63,433 |
| Md., Va., and Kentucky | 41,452 | 48,955 | 49,273 | 46,802 | 46,035 |
| Wheeling Dis. | 18,988 | 17,930 | 18,121 | 16,539 | 19,405 |
| Mahoning Val. | 105,310 | 94,780 | 99,788 | 89,238 | 95,053 |
| Central and North Ohio. | 94,952 | 88,047 | 88,995 | 70,283 | 93,084 |
| Hocking Valley and Hanging Rock | 20,108 | 18,772 | 21,259 | 20,342 | 20,187 |
| Mich.,Minn.,Mo., Wis., Colo. | 39,327 | 36,808 | 36,831 | 34,363 | 40,029 |
| Chicago Dis. | 147,014 | 157,633 | 165,291 | 153,162 | 152,981 |
| Alabama | 114,295 | 94,754 | 104,697 | 110,196 | 121,904 |
| Tennessee, Georgia and Texas | 17,056 | 17,648 | 19,101 | 15,229 | 18,488 |
| Totals | 1,228,204 | 1,149,602 | 1,165,688 | 1,092,131 | 1,217,897 |

#### Production of Steel Companies.

Returns from all the plants of the United States Steel Corporation, the Cambria, Pennsylvania, Maryland, Lackawanna, Wheeling, Republic, Youngstown Sheet & Tube Company, Jones & Laughlin, La Belle, Bethlehem, Calumet, Inland, Colorado and Tennessee (Ensley) companies show the following totals of product month by month. We give separately a statement of the output of spiegeleisen and ferromanganese, which is included for each month in the total production:

*Production of Steel Companies.—Gross Tons.*

| | Pig.—Total production.— 1906. | 1907. | 1908. | Spiegeleisen and ferromanganese. 1907. | 1908. |
|---|---|---|---|---|---|
| January | 1,358,015 | 1,406,397 | 664,415 | 21,477 | 20,254 |
| February | 1,226,760 | 1,317,923 | 745,802 | 19,444 | 9,402 |
| March | 1,400,395 | 1,424,827 | 841,502 | 31,091 | 13,750 |
| April | 1,333,591 | 1,446,788 | 725,548 | 26,527 | 12,363 |
| May | 1,372,423 | 1,470,080 | 759,674 | 28,822 | 17,823 |
| June | 1,293,437 | 1,457,230 | 717,689 | 30,942 | 15,958 |
| July | 1,323,391 | 1,452,557 | 798,639 | 25,343 | 10,250 |
| August | 1,237,485 | 1,445,685 | ..... | 23,696 | ..... |
| September | 1,264,380 | 1,417,153 | ..... | 30,270 | ..... |
| October | 1,452,200 | 1,514,521 | ..... | 35,105 | ..... |
| November | 1,411,350 | 1,084,114 | ..... | 21,861 | ..... |
| December | 1,445,528 | 659,459 | ..... | 19,480 | ..... |

#### A Record of Active Capacity.

The active weekly capacity in coke and anthracite iron has shown the following fluctuations since January 1, 1903:

| | Capacity per week. | | Capacity per week. |
|---|---|---|---|
| August 1 | 284,590 | October 1 | 445,468 |
| July 1 | 264,452 | September 1 | 412,563 |
| June 1 | 259,284 | August 1 | 410,088 |
| May 1 | 268,674 | July 1 | 408,617 |
| April 1 | 264,890 | June 1 | 443,092 |
| March 1 | 267,437 | May 1 | 452,031 |
| February 1 | 241,925 | April 1 | 439,564 |
| January 1, 1908 | 232,652 | March 1 | 403,157 |
| December 1, 1907 | 347,372 | February 1 | 405,792 |
| November 1 | 491,436 | January 1, 1905 | 377,879 |
| October 1 | 511,397 | December 1, 1904 | 357,846 |
| September 1 | 507,768 | November 1 | 334,249 |
| August 1 | 513,471 | October 1 | 319,249 |
| July 1 | 528,170 | September 1 | 291,573 |
| June 1 | 523,220 | August 1 | 246,092 |
| May 1 | 524,538 | July 1 | 272,301 |
| April 1 | 496,456 | June 1 | 336,107 |
| March 1 | 511,035 | May 1 | 368,244 |
| February 1 | 492,359 | April 1 | 337,257 |
| January 1, 1907 | 507,397 | March 1 | 308,751 |
| December 1, 1906 | 513,860 | February 1 | 273,692 |
| November 1 | 500,580 | January 1, 1904 | 185,636 |
| October 1 | 469,665 | December 1, 1903 | 244,156 |
| September 1 | 441,426 | November 1 | 273,715 |
| August 1 | 449,908 | October 1 | 353,142 |
| July 1 | 460,570 | September 1 | 360,197 |
| June 1 | 472,622 | August 1 | 353,681 |
| May 1 | 484,031 | July 1 | 384,825 |
| April 1 | 484,240 | June 1 | 388,178 |
| March 1 | 479,737 | May 1 | 373,496 |
| February 1 | 482,156 | April 1 | 386,215 |
| January 1, 1906 | 463,673 | March 1 | 347,424 |
| December 1, 1905 | 475,814 | February 1 | 335,239 |
| November 1 | 460,449 | January 1, 1903 | 346,073 |

At a meeting of the new Board of Directors of the Halcomb Steel Company, Syracuse, N. Y., held July 31, the following officers were elected for the ensuing year: President, C. H. Halcomb; vice-president, F. B. Scott; treasurer, F. R. Hazard; secretary, F. E. Wade; assistant treasurer, H. S. Fulmer; assistant secretary, W. A. MacKenzie; Chairman of Board of Directors, L. C. Smith.

# NEWS OF THE WORKS.

### Iron and Steel.

The recent statement in these columns that the Texas Rolling Mill Company, Fort Worth, Texas, which succeeded the Fort Worth Iron & Steel Company, will have $160,000 capital stock and will equip the plant to produce cotton ties, is incorrect. The capital stock of the company will be $175,000, and the plant will be equipped to produce merchant bar iron, track spikes and bolts, truss rods, concrete bars, cross arm braces and wrought iron washers.

A Pennsylvania charter has been granted to the Stalnaker Iron Company, Pittsburgh, Pa. The company is composed of J. F. Robinson and Thomas A. Orr, well known in the iron and steel business in Pittsburgh, and H. D. Stalnaker.

The Harrisburg Rolling Mill Company, Harrisburg, Pa., will start its mills, which have been idle since May.

The Clark Steel Hoop Company, Punxsutawney, Pa., has been granted a charter, the directors being S. A. Rinn, Lon Pantall, J. A. Mader, E. E. McKibben and H. G. Bowers.

Plans are being perfected for the reorganization of the Southern Car Wheel Iron Company, Tallapoosa, Ga., which is in the hands of A. V. Howe as trustee. It is the intention to place the plant in operation at an early date.

The report that the Phillips Sheet & Tin Plate Company, Clarksburg, W. Va., is to enlarge its plant is somewhat in error, as the company is only making some alterations in the finishing departments.

The Algoma Steel Company, Sault Ste. Marie, Ont., whose steel plant was closed down July 17, hopes to place it in operation again at an early date.

The Temple Iron Company, Reading, Pa., has completed important improvements to its furnace, increasing the weekly capacity from 750 to 1200 tons. The report that the furnace will blow in in two weeks is incorrect, the company stating that the furnace will not be put in blast until the demand for iron increases materially.

No. 1 Etowah Furnace of the Alabama Consolidated Coal & Iron Company at Gadsden, Ala., recently banked, has again been put in operation.

The Keystone Steel Company, which, as previously announced in these columns, has purchased the Wilmington Rolling Mills, formerly operated by the Seidel & Hastings Company, Wilmington, Del., is rebuilding and remodeling the plant and adding a 90-in. plate mill, which will give the company 48, 54, 80 and 90 in. plate and sheet mills. When these improvements are completed a bar mill will be added. The charcoal iron forge department will also be remodeled and put in economical working condition. The company will manufacture special Keystone wrought steel floor plates, of ribbed, diamond and checkered patterns, up to 72 in. wide, for which the necessary special machinery will be installed. The manufacture of knobbled hammered charcoal iron blooms and plates, made by the same process that was used by the Seidel & Hastings Company, will be continued. In the new bar mill special attention will be given to concrete bars, both twisted and plain, and special shapes. The new company is closely allied with the Rogers-Shear Company, Warren, Pa.

The Zenith Furnace Company expects to start up its furnace at West Duluth, Minn., in September, after relining and repairs.

One furnace of the Maryland Steel Company, Sparrows Point, Md., is being relined. A second furnace is idle and the other two are in blast.

It is now expected that the first four blast furnaces of the Gary, Ind., group of the Indiana Steel Company will be ready for blast about January 1.

The furnace of the Rockdale Iron Company, Rockdale, Tenn., which was put on ferrophosphorus July 3, is expected to continue on that product until August 15.

No. 1 furnace of the New Castle group of the Carnegie Steel Company was blown in July 7.

No. 1 furnace of the Shenango Furnace Company, Sharpsville, Pa., was blown in July 8, and No. 4 furnace of the same company was blown out July 29.

Furnaces Nos. 1, 2 and 4 of the National Tube Company, at McKeesport, Pa., are now in operation, No. 2 having been blown in July 16. Furnace No. 3 is still idle and no date has been set for its resumption.

The Wickwire Steel Company expects to put its new furnace, at Buffalo, N. Y., in blast in September.

The improvements being made at the Secaucus, N. J., furnace of the Hudson Iron Company will mean the practical rebuilding of the furnace. It will be made 80 ft. high, with 18-ft. bosh. Four new firebrick stoves will be built and new boilers added.

The No. 2 furnace of Richard Heckscher & Sons Company, Swedeland, Pa., is being relined.

The Sharpsville Furnace Company, Sharpsville, Pa., has completed the rebuilding of its furnace.

One of the two Allen's Creek furnaces of the Bon Air Coal & Iron Company, at Mannie, Tenn., is being relined.

The charcoal furnace of the Antrim Iron Company, Mancelona, Mich., which has been under repairs for some weeks, is now ready for blast.

The furnace of the Norton Iron Works, Ashland, Ky., was blown out July 12.

The Martins Ferry, Ohio, furnace of the Wheeling Steel & Iron Company, Wheeling, W. Va., was blown in July 18.

The Newburgh Furnace of the American Steel & Wire Company, Cleveland, Ohio, was blown in in July.

The Columbus Iron & Steel Company, Columbus, Ohio, now has one of its two furnaces in blast. Both have been idle for a number of months.

The No. 3 furnace of the Lorain, Ohio, group of the National Tube Company was blown in July 12.

The furnace of the Bessie Ferro-Silicon Company at New Straitsville, Ohio, was blown in July 15.

The furnace of the Belfont Iron Works Company, Ironton, Ohio, was blown out July 15.

### General Machinery.

The Fawcus Machine Company, Pittsburgh, has received an order for eight pairs of cut gears, which will be used in connection with sugar cane machinery in Cuba. The gears are 153 in. in diameter, 18 in. face, 5¼ in. pitch, made of cast steel with cut teeth. Other contracts include the operating machinery for Bascule draw and lift bridges in New York, Hammond, Ind.; New Orleans, La.; Aurora, Ill., and Sacramento, Cal.

The Sweet's Steel Company, Williamsport, Pa., is rebuilding its machine shop, which was recently destroyed by fire. The new building will be 46 x 163 ft., two stories high. As none of the large machines were burned, the damage being largely to the small tools, the company is replacing the latter as they are needed.

The business of A. C. Layman, Wilmington, Del., manufacturer of leather working machinery, &c., has been taken over by the A. C. Layman Machine Company, recently incorporated with a capital stock of $10,000. Alfred C. Layman is president; Frederick W. Balston, treasurer, and H. Hugh Layman, secretary.

The Dobbie Foundry & Machine Company, Niagara Falls, N. Y., has closed a deal with a prominent engineering company through George F. Nye, vice-president, by which it will manufacture locomotive cranes. While the company will enter a new field, increasing its line somewhat, it does not expect to add to its equipment or increase its present capacity at the present time.

The Ontario Iron Works, Pulaski, N. Y., will erect a two story brick addition to its plant, 54 x 150 ft., to be used as a machine shop.

E. A. Keiner, 60 North Main street, Gloversville, N. Y., is planning to erect a complete automobile garage, in connection with which he will install a well equipped machine shop. Work of erecting the building for the garage will start inside the next 60 days.

### Power Plant Equipment.

Plans are being prepared by E. T. Archer, Kansas City, Mo., for an addition to the municipal lighting plant at Atlantic, Iowa. T. E. Nichols is City Clerk.

The Theresa Woolen Company, Theresa, N. Y., is starting construction on a 700-hp. hydro-electric power plant, which will be located back and below the stone mill. The plans call for first-class equipment in every respect, with steel flume and penstock and modern water wheels. The only work done so far is excavating for the power house building.

The Elmira Power Company, Elmira, N. Y., has plans under way for adding another 3000 hp. turbine engine at the electric power station. This unit will be a twin unit to the big engine that is at present generating all the power used at the plant.

The Council at De Funiak Springs, Fla., will receive bids until August 14 for the installation of a water works system to include a 75,000-gal. elevated tank, 500 gal. duplex pump, 60 hp. boiler, about three miles of 4 to 10 in. mains, deep well pump, 31 hydrants, valves, valve boxes, &c.

The Leland Electric Company, Leland, Mich., with a capital of $30,000, has purchased the Leland Dam and will build a power house to generate enough electricity to light the towns of Leland, Northport, Suttons' Bay, Provement and Omena. Work has already commenced on this project, and it is expected to have the plant in operation by November 1, machinery equipment for which has already been purchased. F. E. Hatch is manager of the company.

At a recent election the citizens of Cumberland, Wis., voted to rebuild the electric light plant, and a committee has been appointed to consider the question. A. F. Wright is City Clerk.

Work has commenced on the construction of a new power station of 2850 hp. capacity for the Wausau Street Railway Company, Wausau, Wis., which will be equipped with two pairs

of turbine water wheels, generators and an exciter set. The contract for this equipment has been let to the Allis-Chalmers Company. It is expected to have the plant completed this year.

We are advised by T. E. Newby, City Clerk, Sidney, Iowa, that the Sidney Light, Heat & Power Company has secured a franchise for the establishment of an electric light plant in that city.

The hydro-electric plant being constructed on the Wallkill River at Walden, N. Y., by the Wallkill River Company is expected to be ready for operation this fall, developing 1720 hp. A fall of 33 ft. is obtained, and it is intended to eventually develop 3200 hp. The equipment has been purchased and will consist of one 800-hp. Risdon-Alcott turbine water wheel, direct connected to 525-kw. Westinghouse generator; two 460-hp. wheels, each direct connected to 300-kw. generators, and two 50-hp. wheels for direct connection to exciter units. Power will be supplied to the electric railroad running between Walden and Newburg and to the Wallkill Valley Light & Power Company, New York Knife Company and other local industries.

The Onondaga County Commissioners, Court House Building, Syracuse, N. Y., are having plans prepared for detached power house building, with capacity for 1000 lights, to furnish power, heating and lighting at the Onondaga County Home. Specifications will be finished and bids called for about September 1. The power plant will contain three horizontal tubular boilers with capacity of 150 hp. each, equipped with shaking grates, ash and coal handling machinery, &c., and three generators direct connected to automatic high speed engines with capacity to generate 75 kw. each. The installation is to be made in connection with the new County Home buildings, which are now under construction at a cost of $300,000.

The Water Commissioners, Dunkirk, N. Y., will receive bids for one 500 kw. turbo generator to be installed at the municipal pumping station, arc meters, transformers and arc lamps for the new 50-light series.

### Foundries.

The Magnus Metal Company, Chicago, Ill., has established a foundry at South Pryor street and Southern Boulevard, Atlanta, Ga., for the manufacture of journal bearings and engine brass castings. The foundry is 80 x 200 ft., and is equipped with modern machinery. T. F. Kent has been appointed district manager at Atlanta.

The Board of Contract and Supplies, Yonkers, N. Y., will receive bids until August 17 for 1000 lengths of 8-in. B. and S. cast iron pipe, weighing 625 lb. per length, and 100 lengths of 4-in. pipe, weighing 280 lb. per length, the pipe to be delivered before October 1 at the Public Dock at Yonkers.

The Beggs Pipe & Foundry Company, North Birmingham, Ala., has suspended operations for an indefinite period.

The Iron City Foundry Company, Lebanon, Pa., has recently been formed to engage in the manufacture of cast washers, separators, special washers and hard iron castings. It will operate the foundry plant recently built in Lebanon by Harvey Ream and others. The officers of the company are: W. O. Steele, president; Frank H. Lehman, vice-president; Richard J. Boyer, secretary, and Harvey P. Dougherty, treasurer.

### Bridges and Buildings.

The Fort Pitt Bridge Works, Canonsburg, Pa., is shipping three truss bridges, aggregating about 1400 tons, to the Chicago, Milwaukee & St. Paul Railroad, Seattle, Wash. These will be used in connection with that railroad's Pacific Coast extension. The company is also shipping two large viaducts, 500 tons each, one for East Canonsburg and one for Thompsonville, and 15 small bridges for the Pittsburgh Railway Company's extensions into Canonsburg, Pa.

The McClintic-Marshall Construction Company, Pittsburgh, works at Rankin, Carnegie and Pottstown, Pa., has recently made a shipment to the Chicago & Northwestern Railroad of 56 cars loaded with 1500 tons of structural steel, including 96 girders each 60 ft. in length, together with braces, cross frames and other shapes to be used in the erection of a bridge a mile east of Kansas City.

The New York Central Railroad has finished plans and bids will soon be called for the following steel viaducts to be erected in Buffalo: one at Elk street, over New York Central Railroad dock line tracks, 300 ft. span, 56 ft. roadway; one at Kensington avenue, over New York Central Railroad belt line tracks, 75 ft. span, 50 ft. roadway; 10 four-track railroad bridges ranging from 50 to 99 ft. spans over subways of Broadway & Belt Line tracks. Walden avenue, Box avenue, East Delavan avenue, East Ferry street, Fougeron street, Urban street, French street, Sycamore street, Genesee street, and belt line tracks.

The Buffalo Structural Steel Company, Buffalo, N. Y., has been awarded the steel work for a $25,000 church building to be erected at Military road and Grote street.

The Wm. B. Scaife & Sons Company, Pittsburgh, Pa., has received contract for the new steel frame buildings required for the extension to the plant of the Driggs-Seabury Ordnance Corporation at Sharon, Pa.

Boller & Hodge, consulting engineers, 1 Nassau street, New York, are completing plans for a 1400-ft. double track structural steel viaduct with concrete abutments, to be constructed near Westfield, N. Y., for the Western New York Construction Company, acting in the interest of the Buffalo & Lake Erie Traction Company, of which W. A. Alderman is chief engineer, 530 Brisbane Building, Buffalo. Bids will be received by the engineers in New York and by owners at Buffalo.

Plans are being prepared in the office of the State Engineer, Frederick Skene, Capitol Building, Albany, N. Y., for the construction of three steel bridges at Ithaca at the following streets: Buffalo street, State street and Seneca street. Bids will soon be called for by the State Commissioner of Public Works. The appropriation for the work is $125,000.

The Lehigh Valley Railroad, Walter G. Berg, chief engineer of bridges and roadway, New York, has awarded contract to the Pennsylvania Steel Company for erecting a steel bridge over Fall Creek in Ithaca, N. Y.

### Fires.

The plant of the Enterprise Foundry Company, Sackville, N. B., was destroyed by fire July 30, the loss being about $40,000.

On July 31 the plant of the E. D Jones Steel Ball Bearing Company, on Military road, a short distance north of Buffalo, N. Y., was damaged by fire to the extent of $150,000. Foundry No. 1, a two-story building 200 x 200 ft., was completely destroyed. The new buildings, recently completed and occupied, were saved from serious damage. Many thousand dollars' worth of machinery were destroyed and will have to be replaced. The main offices are in Boston, Mass.

### Hardware.

R. F. Struthers, Peoria, Ill., has leased a three-story and basement structure, 44 x 132 ft., of brick construction, in Omaha, Neb., for manufacturing copper cable lightning rods and ornaments, fencing, gates and iron posts. Mr. Struthers also operates plants of similar nature in Peoria, Ill., and Des Moines, Iowa.

### Miscellaneous.

Under the title of Huntsville & Chattanooga Interurban Electric Railway & Power Company a new corporation has been formed at Huntsville, Ala., with a capital of $50,000, to build an electric road to the Fair Grounds. It is the purpose of the company to build a power house near the Fair Grounds for the operation of this road, but for the present power will be supplied by the Nashville, Chattanooga & St. Louis Railroad.

The Johnston Harvester Company, Batavia, N. Y., has let contract for the tearing down of its present blacksmith shop of brick and replacing it with a concrete building 80 x 176 ft., with monitor roof and second-story balcony rooms at sides, which will be used as bolt room and sample room, respectively. A new building will also be constructed for the knife department, 43 x 200 ft., one story in hight, in which material from the dismantled blacksmith shop will be utilized in part.

The Board of Aldermen, Vicksburg, Miss., will receive bids until September 7 for a complete system of house sewers, approximating 30 miles of 8 to 27 in. pipe, with 400 manholes and 100 flush tanks. Specifications can be secured from Walter G. Kirkpatrick, engineer, Jackson, Miss.

The Rochester Railway & Light Company, Rochester, N. Y., R. M. Searle, general manager, is arranging to install oil burning apparatus in its steam power plant on the river flats north of the Platt street bridge, for the purpose of eliminating smoke. Crude oil will be used and a storage tank with a capacity of 1,000,000 gal. will be constructed. Work on construction will start about October 1.

The General Fireproofing Company, Youngstown, Ohio, is furnishing cold twisted lug bars to be used as a reinforcement for a concrete roof on a new engine house at Mattie Furnace of the Girard Iron Company, Girard, Ohio.

The report that the Brier Hill Coke Company of Youngstown will build a large addition to its coke plant at Brier Hill, Fayette County, Pa., is untrue. This plant now contains 400 ovens, only part of which are in operation.

The Third Avenue Railroad Company is receiving estimates on the construction of a four-story car barn, 129 x 136 ft., on 130th Street, New York.

The Buffalo, Lockport & Rochester Rolling Stock Company of Niagara Falls, N. Y., with a capital stock of $50,000, has been incorporated to build railroad equipment by S. F. Carr, R. D. Moore and W. M. Wheeler. Offices for the present will be at 45 Erie County Bank Building, Buffalo.

Horning & Wolf have filed plans for a two-story brick factory building to be erected at 163 Adams street, Buffalo, N. Y., which will be operated as a tin can factory. The factory will be running about November 15.

The Tennessee Blow Pipe Company, Chattanooga, Tenn., recently incorporated with a capital stock of $25,000, has taken over the completely equipped shop and business of the old company of the same name. The organization has been completed by the election of R. L. Wright, president; C. A. Ryerson, vice-president, and C. C. Crawford, secretary and treasurer. The general management of the business will be under the direction of Mr. Crawford, and Mr. Ryerson will be in charge of the shop work.

# The Iron and Metal Trades

Pig Iron production in July shows a substantial gain over that for June—a total of 1,217,897 gross tons of Coke and Anthracite Iron in the 31 days of last month, as compared with 1,092,131 tons in June. The number of furnaces active at the beginning of the month was 161, a net gain of 10 over the number one month previous. The weekly Coke and Anthracite capacity active August 1 was 284,590 tons; on July 1 it was 264,452 tons—a gain of over 20,000 tons, or at a yearly rate of more than 1,000,000 tons. The daily rate of production was 39,287 tons in July, as against 36,444 tons in June, Steel works and merchant furnaces showing nearly the same ratio of gain in the month.

Our Cleveland correspondent reports that the contract has just been signed for the sale of about 1,000,000 tons of Lake Ore for delivery over a series of years. A number of long time contracts are expiring and negotiations for renewal are under way. Eastern furnacemen have thus far purchased but little Ore, but the feeling is gaining that no concessions need be expected.

There has been quite a pronounced movement in Pig Iron, our Cincinnati correspondent reporting sales of Southern Iron to Cast Iron Pipe manufacturers, agricultural implement makers and stove and heater manufacturers aggregating 60,000 tons. There has been further business in moderate lots of Foundry Iron in New England and in different parts of the seaboard territory. It is reported also, but not confirmed, that a firm of merchants has purchased a large block of Southern Iron. An Eastern Pennsylvania Plate mill has taken 10,000 tons of Basic Pig. On the whole, all this business was closed at the prices recently prevailing, but there is a disposition now in the South and elsewhere to withdraw from the market at that level.

A number of the mills have shared in the Baltimore & Ohio Steel Rail order, which amounts to about 14,000 tons. The Chesapeake & Ohio order, calling for about 10,000 tons, has now been entered, as has also that of the Boston & Maine for 7000 tons.

Some good work is in prospect for the Structural mills. It is expected that within 30 days the order will be given out for 12,000 tons for the new City Hall at Chicago, and during the fall the Northwestern is to begin on terminals in Chicago, which will ultimately require 33,000 tons. In New York there are coming up 7000 tons for the Hoyt Estate, 5000 to 6000 tons for Emigrant Savings Bank, and the material for a 22 story office building on the Everett House site, about 5000 tons. This week 2250 tons of bridge work for the Seaboard Air Line was contracted for. During July the total amount of fabricated work is estimated to have been 60,000 tons, of which the American Bridge Company booked 19,000 tons.

While the bids have been opened for the Steel Pipe line on Long Island, it is not quite sure what course will be pursued. If Riveted Steel Pipe is adopted, made of ⅜-in. Plates, the tonnage will mount up to about 26,000 tons. If it is decided to make the line of Lock Bar Pipe with 7-16-in. Plates, the amount of Plates will be between 16,000 and 17,000 tons.

The National Tube Company will probably soon commence the manufacture of 120 miles of 20-in. Merchant Pipe and 60 miles of 18-in. Pipe for a gas line to Cincinnati, for which the company recently closed. Some large tonnages of Line Pipe are also on the books.

In the Copper market the most interesting feature is that exporters have again entered the market at the present level. There has been some good buying by domestic consumers for delivery as far as October, the market closing at 13⅛ cents for Electrolytic.

Spelter, too, has joined this upward movement and is now quoted at 4.80c., New York. Lead has risen to 4.60c., that price being announced to-day by the American Smelting & Refining Company.

## A Comparison of Prices.

**Advances Over the Previous Month in Heavy Type, Declines in Italics.**

At date, one week, one month and one year previous.

| | Aug. 5, 1908. | July 29, 1908. | July 1, 1908. | Aug. 7, 1907. |
|---|---|---|---|---|
| **PIG IRON,** Per Gross Ton: | | | | |
| Foundry No. 2, Standard, Philadelphia | $16.50 | $16.50 | $16.50 | $22.00 |
| Foundry No. 2, Southern, Cincinnati | *15.00* | 14.75 | 15.25 | 23.25 |
| Foundry No. 2, Local, Chicago | *17.00* | 17.00 | 17.50 | 24.50 |
| Basic, delivered Eastern Penn. | *15.00* | 15.00 | 15.25 | 21.00 |
| Basic, Valley furnace | 15.00 | 15.00 | 15.00 | 21.00 |
| Bessemer, Pittsburgh | *16.40* | 16.55 | 16.90 | 22.90 |
| Gray Forge, Pittsburgh | 14.90 | 14.90 | 14.90 | 21.90 |
| Lake Superior Charcoal, Chicago | *19.50* | 20.00 | 20.00 | 27.50 |
| **BILLETS, &c.,** Per Gross Ton: | | | | |
| Bessemer Billets, Pittsburgh | 25.00 | 25.00 | 25.00 | 29.50 |
| Forging Billets, Pittsburgh | 27.00 | 27.00 | 27.00 | 33.00 |
| Open Hearth Billets, Phila | 26.20 | 26.20 | 26.20 | 31.75 |
| Wire Rods, Pittsburgh | 33.00 | 33.00 | 33.00 | 36.00 |
| Steel Rails, Heavy, Eastern Mill | 28.00 | 28.00 | 28.00 | 28.00 |
| **OLD MATERIAL,** Per Gross Ton: | | | | |
| Steel Rails, Melting, Chicago | **13.50** | 13.50 | 12.50 | 17.00 |
| Steel Rails, Melting, Phila | **14.50** | 13.50 | 13.50 | 17.50 |
| Iron Rails, Chicago | **16.50** | 16.50 | 15.50 | 20.75 |
| Iron Rails, Philadelphia | **19.00** | 18.00 | 18.00 | 21.50 |
| Car Wheels, Chicago | **15.00** | 14.50 | 13.00 | 24.50 |
| Car Wheels, Philadelphia | **14.50** | 13.50 | 13.50 | 25.00 |
| Heavy Steel Scrap, Pittsburgh | **14.75** | 14.50 | 14.00 | 17.75 |
| Heavy Steel Scrap, Chicago | **12.50** | 12.50 | 11.50 | 15.50 |
| Heavy Steel Scrap, Phila | **14.50** | 14.00 | 13.50 | 17.00 |
| **FINISHED IRON AND STEEL,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Refined Iron Bars, Philadelphia | **1.40** | 1.35 | 1.35 | **1.95** |
| Common Iron Bars, Chicago | 1.50 | 1.50 | 1.50 | **1.78** |
| Common Iron Bars, Pittsburgh | 1.40 | 1.40 | 1.40 | **1.70** |
| Steel Bars, Tidewater, New York | 1.56 | 1.56 | 1.56 | **1.86** |
| Steel Bars, Pittsburgh | 1.40 | 1.40 | 1.40 | **1.60** |
| Tank Plates, Tidewater, New York | 1.76 | 1.76 | 1.76 | **1.86** |
| Tank Plates, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Beams, Tidewater, New York | 1.76 | 1.76 | 1.76 | **1.86** |
| Beams, Pittsburgh | 1.60 | 1.60 | 1.60 | **1.70** |
| Angles, Tidewater, New York | 1.76 | 1.76 | 1.76 | **1.86** |
| Angles, Pittsburgh | 1.60 | 1.60 | 1.60 | **1.70** |
| Skelp, Grooved Steel, Pittsburgh | 1.45 | 1.45 | 1.45 | **1.85** |
| Skelp, Sheared Steel, Pittsburgh | 1.50 | 1.50 | 1.50 | **1.95** |
| **SHEETS, NAILS AND WIRE,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Sheets, No. 27, Pittsburgh | 2.40 | 2.40 | 2.40 | **2.50** |
| Wire Nails, Pittsburgh | 1.95 | 1.95 | 1.95 | **2.00** |
| Cut Nails, Pittsburgh | 1.75 | 1.75 | 1.75 | **2.10** |
| Barb Wire, Galv., Pittsburgh | 2.40 | 2.40 | 2.40 | **2.45** |
| **METALS,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Lake Copper, New York | **13.60** | 13.25 | 12.87½ | **19.50** |
| Electrolytic Copper, New York | **13.50** | 13.07½ | 12.62½ | **19.00** |
| Spelter, New York | **4.80** | 4.45 | 4.50 | **5.80** |
| Spelter, St. Louis | **4.70** | 4.35 | 4.35 | **5.75** |
| Lead, New York | **4.60** | 4.55 | 4.50 | **5.15** |
| Lead, St. Louis | **4.45** | 4.40 | 4.40 | **5.00** |
| Tin, New York | **30.70** | 30.40 | 27.20 | **38.60** |
| Atimony, Hallett, New York | *8.00* | 8.00 | 8.25 | **10.00** |
| Nickel, New York | 45.00 | 45.00 | 45.00 | **45.00** |
| Tin Plate, 100 lb., New York | $3.89 | $3.89 | $3.89 | **$4.09** |

## Chicago.

FISHER BUILDING, August 5, 1908.—(*By Telegraph.*)

General business conditions throughout the West are improving steadily, and important lines in the Iron trade are beginning to feel the recovery. Building operations are active in the country, and this is reflected in the demand for Wire Nails which for the month of July exceeded the business done in the corresponding month of last year. The strong financial position of the farmer is also manifested in liberal specifications for the past week for agricultural Bars, which have awakened increased activity in the Bar mills. The railroads, although they are buying only for urgent repair work, are contributing a larger aggregate of smaller orders for Bars and track material, which has produced a better feeling in these lines. There is also a more active demand for Structural Steel for building purposes, and the architects report considerable business in prospect for the near future. The fabricators have had but little demand for bridge work in the past week, and other lines also report slow improvement. Sheets and Pipe are holding their own and Merchant Steel is more active. The stronger tone in Old Material has had a tendency to stiffen the prices of all finished products which are in any way based upon Scrap. To a considerable extent the strength in the Scrap market grows out of an increase in the consumptive demand, but this element is reinforced by the influence of large dealers who look for greater activity in the near future. Old Car Wheels have advanced again, as the Car Wheel foundries are more active and have been bidding for Old Wheels in the hands of dealers. There is increased buying of Copper and

Pig Iron, and on the whole it may be said that conditions are materially better. The reports from the Northwest of damage to spring wheat have excited some alarm in speculative circles, but general business conditions will not be seriously affected. Harvesting is already in progress in South Dakota and southern Minnesota, and will begin in North Dakota next week. There is some local damage from rust, but the country as a whole is assured of a good wheat crop, and corn is making good progress toward a large yield.

**Pig Iron.**—Western melters have not responded to the activity in the East by coming forward with any large orders or inquiries, but there has been a considerable increase in the aggregate of small orders for immediate shipment. The movement is not large, as compared with other years, but it adds an encouraging tone to the situation. Some of the Southern interests are holding for $12.50, Birmingham; others are doing a fair volume of business at $12, in small lots, and reports continue persistent that considerable No. 2 Iron is being sold at $11.50. Northern Iron is being held at $17, Chicago, but there are unconfirmed reports that Ohio furnaces are shading this price for Chicago delivery. It is the consensus of opinion that the foundries are melting a little more each week, and the growing volume of inquiries confirms the impression that their requirements are steadily increasing. Little business is being done for the fourth quarter. The favorite policy of buyers is to carry a small stock and replenish it by orders from week to week, in accordance with prospective requirements. The feeling seems to prevail among buyers that present quotations offer a fair profit to the furnace, and that for some months to come there will be furnace capacity to take care of the demand as it develops. Current orders show a tendency to outgrow the one car size and some lots handled the past week amounted to several hundred tons each. One inquiry pending from St. Louis is for 2000 tons. The following quotations are for August and September delivery, f.o.b. Chicago:

| | |
|---|---|
| Lake Superior Charcoal | $19.50 to $20.00 |
| Northern Coke Foundry, No. 1 | 17.50 to 18.00 |
| Northern Coke Foundry, No. 2 | 17.00 to 17.50 |
| Northern Coke Foundry, No. 3 | 16.50 to 17.00 |
| Northern Scotch, No. 1 | 18.00 to 18.50 |
| Southern Coke, No. 1 | 16.35 to 16.85 |
| Southern Coke, No. 2 | 15.85 to 16.35 |
| Southern Coke, No. 3 | 15.35 to 15.85 |
| Southern Coke, No. 4 | 14.85 to 15.35 |
| Southern Coke, No. 1 Soft | 16.35 to 16.85 |
| Southern Coke, No. 2 Soft | 15.85 to 16.35 |
| Southern Gray Forge | 14.35 to 14.85 |
| Southern Mottled | 14.10 to 14.60 |
| Malleable Bessemer | 17.50 to 18.00 |
| Standard Bessemer | 18.40 to 18.90 |
| Jackson Co. and Kentucky Silvery, 6% | 19.90 to 20.40 |
| Jackson Co. and Kentucky Silvery, 8% | 20.90 to 21.40 |
| Jackson Co. and Kentucky Silvery, 10% | 22.90 to 23.40 |

*(By Mail.)*

**Billets and Rods.**—The only users of Billets in this market remain inactive, on account of the lack of orders for railroad equipment. The price of Forging Billets continues unchanged at $28.50, base, Chicago. On Wire Rods the demand is nominal, and we quote: Bessemer, $33; Basic, $34; Chain, $33, all at Pittsburgh.

**Rails and Track Supplies.**—No developments of importance are reported in Standard Rails, but there is considerable improvement in orders for Light Rails from mining and lumbering interests. In Light Sections last week was the best since September in the tonnage of orders booked, and this followed a considerable improvement the previous week. In Track Supplies there is also a notable improvement in the volume of small orders, one seller reporting the receipt of orders for 400 tons in the first mail this week. The railroads are placing fair orders for Spikes and Track Bolts for immediate shipment. The Santa Fé, which has not been in the market for months, ordered 2000 kegs of Spikes this week, and other roads are also contributing their quota to improved conditions in this line. Specifications for Angle Bars, amounting to more than 1000 tons, were received in this market last week. The Pennsylvania Steel Company is furnishing 800 tons of special Track work for the Chicago Railways Company. We quote, as follows: Angle Bars, accompanying Rail orders, 1908 delivery, 1.50c.; car lots, 1.60c.; Spikes, 1.80c. to 1.90c., according to delivery; Track Bolts, 2.20c. to 2.25c., base, Square Nuts, and 2.35c. to 2.40c., base, Hexagonal Nuts. The store prices on Track Supplies range from 0.15c. to 0.20c. above mill prices. Light Rails, 25 to 45 lb., $28; 20-lb., $29; 16-lb., $30; 12-lb., $31. Standard Sections, $28, f.o.b. mill, full freight to destination.

**Structural Material.**—Bridge contracts have been few and far between. One amounting to 400 tons for a bridge at Chico Landing, Cal., was taken by the Toledo-Massillon Bridge Company, and one for the Salt Lake Depot of the Oregon Short Line, amounting to about 200 tons, went to the Minneapolis Steel & Machinery Company. The American Bridge Company booked less than 300 tons last week in small orders against an aggregate of 1400 tons the week before. In Structural Building Material conditions are more favorable. The tonnage booked last week was larger than for any week since October, and the month of July showed considerable improvement over previous months. The city officials expect to place within 30 days the contract for 12,000 tons of Structural Steel for the new City Hall, and the Northwestern Railroad expects to begin work this fall on its new passenger terminal, which will call for 33,000 tons. A notable feature of the market the past month was the large number of small orders for Building Material. Prices from store are 1.95c. to 2c. Mill prices at Chicago are as follows: Beams and Channels, 3 to 15 in., inclusive, 1.78c.; Angles, 3 to 6 in., ¼-in. and heavier, 1.78c.; larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 15 in., 1.88c.; Zees, 3 in. and over, 1.78c.; Tees, 3 in. and over, 1.83c.

**Plates.**—The improvement in the demand for Plates is not so pronounced, but conditions are slightly better. The Sheared Plate mill at the Illinois Steel Company's South Works started up this week, but the accumulation of specifications is not large. There is a better demand for light Plates, and store shipments also show improvement. We quote mill shipments as follows: Tank Plates, ¼-in. and heavier, wider than 6¼ and up to 100 in. wide, inclusive, car lots, Chicago, 1.78c.; 3-16 in., 1.88c.; Nos. 7 and 8 gauge, 1.93c.; No. 9, 2.03c.; Flange quality, in widths up to 100 in., 1.88c., base, for ¼-in. and heavier, with the same advance for lighter weights; Sketch Plates, Tank quality, 1.88c.; Flange quality, 1.98c. Store prices on Plates are as follows: Tank Plates, ¼-in. and heavier up to 72-in. wide, 2c. to 2.10c.; from 72 to 96 in. wide, 2.10c. to 2.20c.; 3-16 in. up to 60 in. wide, 2.10c. to 2.25c.; 72 in. wide, 2.30c. to 2.40c.; No. 8, up to 60 in. wide, 2.10c. to 2.15c.; Flange and Head quality, 0.25c. extra.

**Sheets.**—Roofing Sheets are doing better than other lines, and the trade on the whole is keeping an even course. Specifications are about in the same volume as last week, being restricted to immediate needs. We quote mill shipments as follows, Chicago: Blue Annealed, No. 10, 1.98c.; No. 12, 2.05c.; No. 14, 2.08c.; No. 16, 2.18c.; Box Annealed, Nos. 17 to 21, 2.43c.; Nos. 22 to 24, 2.48c.; Nos. 25 and 26, 2.53c.; No. 27, 2.58c.; No. 28, 2.68c.; No. 29, 2.78c.; No. 30, 2.88c.; Galvanized Sheets, Nos. 10 to 14, 2.63c.; Nos. 15 and 16, 2.83c.; Nos. 17 to 21, 2.98c.; Nos. 22 to 24, 3.13c.; Nos. 25 and 26, 3.33c.; No. 27, 3.53c.; No. 28, 3.73c.; No. 30, 4.23c.; Black Sheets from store: Blue Annealed, No. 10, 2.15c.; No. 12, 2.20c; No. 14, 2.25c.; No. 16, 2.35c.; Box Annealed, Nos. 18 to 21, 2.60c.; Nos. 22 to 24, 2.65c.; No. 26, 2.70c.; No. 27, 2.75c.; No. 28, 2.85c.; No. 30, 3.25c.; Galvanized from store: Nos. 10 to 16, 3c.; Nos. 18 to 20, 3.15c.; Nos. 22 to 24, 3.30c.; No. 26, 3.50c.; No. 27, 3.70c.; No. 28, 3.90c.; No. 30, 4.40c. to 4.45c.

**Bars.**—Specifications have been very satisfactory for Steel Bars. No new contracts of any importance have been taken, as the implement manufacturers have covered their requirements and no other interests are in the market, but the mills are getting enough specifications to give them a fair run for this month. The Republic Iron & Steel Company has started its Tudor Works at East St. Louis, and the Inland Steel Company has started its new mill. The railroads are also sending in specifications in encouraging volume for Bars for immediate shipment. They are starting their repair shops to get their equipment in shape for moving the fall crops, but the independent car shops have not shared as yet in this activity. Prices are unchanged and quotations, Chicago, are as follows: Steel Bars, 1.58c., with half extras; Iron Bars, 1.50c.; Hoops, No. 13 and lighter, 1.98c., full extra Hoop card; Bands, No. 12 gauge and heavier, 1.58c., half extra Steel Bar card; Soft Steel Angles and Shapes, 1.68c., half extras. Store prices are as follows: Bar Iron, 2c. to 2.15c.; Steel Bars, 1.90c. to 2c.; Steel Bands, 1.90c., as per Bar card, half extras; Soft Steel Hoops, 2.25c. to 2.35c., full extras.

**Merchant Pipe.**—The improvement in the Pipe trade is slow and conditions are not yet satisfactory, although each week shows a little improvement. Specifications are confined to current needs and come in small lots, although the aggregate tonnage makes a fair showing. The following mill discounts are quoted: Black Pipe, ¾ to 6 in., 73.2; 7 to 12 in., 70.2; Galvanized, ¾ to 6 in., 63.2. These discounts are subject to one point on the base. From store, in small lots, Chicago jobbers quote 73 per cent. on Black Steel Pipe, ¾ to 6 in. About three points above these prices is asked for Iron Pipe.

**Merchant Steel.**—There has been a noticeable general improvement in the demand for general lines of Merchant Steel, and the implement manufacturers have made their appearance in the market with specifications for their requirements for the coming year. We quote, as follows: Cold Rolled Shafting, on contracts for 100 tons and over, 57 per cent. off; carloads, 56 per cent. off, and less than carloads, 52 per cent. off, on which carload freight is allowed within base territory. Smooth Finished Machinery Steel, 1.80c. to 1.90c.; Flat Sleigh Shoe, 1.75c. to 1.85c.; Cutter Shoe Steel, 2.15c. to 2.25c.; Toe Calk, 1.90c. to 1.95c.; Railroad Spring Steel, 1.60c. to 1.75c., the higher price being for Pennsylvania Railroad analysis. Carriage Spring Steel is 1.80c.; Tire Steel, Iron finished, 1½ x ½ in. and heavier, 1.40c.;

under 1½ in., 1.55c. Planished Tire Steel is 1.60c., all f.o.b., at mill.

**Boiler Tubes.**—This line is responding more slowly to the general improvement than the other branches of the Iron trade, but a little progress is reported in the volume of inquiries and sales from day to day. The reopening of railroad repair shops is making more demand for Locomotive Tubes for repair work, these orders being for immediate shipment in small lots. Mill quotations for future delivery on the base sizes are as follows: 2¾ to 4½ in., inclusive, Steel Tubes, 63.2; Iron, 50.2; Seamless, 50.2; 2½ in. and smaller, and lengths over 18 ft., and 2½ in. and larger, and lengths over 22 ft., 10 per cent. extra. Store prices are as follows:

| | Steel. | Iron. | Seamless. |
|---|---|---|---|
| 1 to 1½ in. | 35 | 35 | 35 |
| 1¾ to 2¼ in. | 50 | 35 | 35 |
| 2½ in. | 52½ | 35 | 35 |
| 2¾ to 5 in. | 60 | 47½ | 47½ |
| 6 in. and larger | 50 | 35 | .. |

**Cast Iron Pipe.**—The contract for 1000 tons which was pending at Milwaukee last week was awarded to a local contracting firm which will make the purchase from the foundry. A considerable tonnage of small lots was bought last week, and the demand for Gas Pipe is improving. We quote nominally, per net ton, Chicago, as follows: Water Pipe, 4 in., $27; 6 to 12 in., $26; 16-in. and up, $25, with $1 extra for Gas Pipe.

**Old Material.**—The market for Old Material continues to show a stronger tone. There are more inquiries and orders from consumers for small lots, and the dealers who are working for higher prices feel encouraged. The foundries are more liberal in specifications for No. 1 Cast, and Turnings, Borings and Melting Steel are also stronger. The only offerings from railroads this week are a small lot of 400 tons from the Wisconsin Central and a list of between 4500 and 5000 tons from the Baltimore & Ohio. Old Car Wheels are bringing better prices. The leading Car Wheel foundries have been in the market the past week, but offers of $15.25 only bring out small lots, as the dealers who took in Wheels last winter are holding for higher prices. We quote per gross ton, f.o.b. Chicago, as follows:

| | |
|---|---|
| Old Iron Rails | $16.50 to $17.00 |
| Old Steel Rails, rerolling | 15.50 to 16.00 |
| Old Steel Rails, less than 3 ft | 13.50 to 14.00 |
| Relaying Rails, standard sections, subject to inspection | 19.00 to 20.00 |
| Old Car Wheels | 15.00 to 15.50 |
| Heavy Melting Steel Scrap | 12.50 to 13.00 |
| Frogs, Switches and Guards, cut apart. | 13.50 to 14.00 |
| Mixed Steel | 10.25 to 10.75 |

The following quotations are per net ton:

| | |
|---|---|
| Iron Fish Plates | $15.50 to $16.00 |
| Iron Car Axles | 17.50 to 18.00 |
| Steel Car Axles | 16.50 to 17.00 |
| No. 1 Railroad Wrought | 12.25 to 12.75 |
| No. 2 Railroad Wrought | 11.25 to 11.75 |
| Railway Springs | 12.50 to 13.00 |
| Locomotive Tires, smooth | 13.00 to 13.50 |
| No. 1 Dealers' Forge | 10.00 to 10.50 |
| Mixed Busheling | 7.50 to 8.00 |
| Iron Axle Turnings | 6.50 to 7.00 |
| Soft Steel Axle Turnings | 6.50 to 7.00 |
| Machine Shop Turnings | 6.50 to 7.00 |
| Cast Borings | 5.25 to 5.75 |
| Mixed Borings, &c | 5.00 to 5.50 |
| No. 1 Mill | 7.50 to 8.00 |
| No. 2 Mill | 6.00 to 6.50 |
| No. 1 Boilers, cut to Sheets and Rings. | 9.50 to 10.00 |
| No. 1 Cast Scrap | 12.75 to 13.25 |
| Stove Plate and Light Cast Scrap | 11.00 to 11.50 |
| Railroad Malleable | 11.75 to 12.25 |
| Agricultural Malleable | 11.00 to 11.50 |
| Pipes and Flues | 9.50 to 10.00 |

**Metals.**—A better movement in Copper is noticed this week, and consumers are buying for stock instead of hand to mouth manner that has ruled for the past six months. Pig Tin, Lead, Desilverized, and Corroding are a little stronger. The gain in New Metals is reflected in Old Metals, for which there is considerable improvement in the demand. We quote as follows: Casting Copper, 13½c.; Lake, 13¾c. to 14c., in car lots for prompt shipment; small lots, ¼c. to ⅜c. higher; Pig Tin, car lots, 33c.; small lots, 35c.; Lead, Desilverized, 4.65c. to 4.75c., for 50-ton lots; Corroding, 5c. to 5.10c., for 50-ton lots; in car lots, 2¼c. per 100 lb. higher; Spelter, 4.85c.; Cookson's Antimony, 10½c., and other grades, 9¾c. to 10¼c.; Sheet Zinc is $7, list, f.o.b. La Salle, in car lots of 600-lb. casks. On Old Metals we quote: Copper Wire, 12¾c.; Heavy Copper, 12¾c.; Copper Bottoms, 10¾c.; Copper Clips, 11c.; Red Brass, 11½c.; Yellow Brass, 8¾c.; Light Brass, 6½c.; Lead Pipe, 4c.; Zinc, 3¾c.; Pewter, No. 1, 21c.; Tin Foil, 24c.; Block Tin Pipe, 27c.

The Passaic Steel Company, Paterson, N. J., has been ordered sold by the United States Court at Trenton. It will be sold under foreclosure of the mortgage held by the Citizens' Trust Company, as trustee of the 1902 issue of $2,500,000 bonds. The court orders that the standing of the merchandise creditors with unsecured claims be in no wise prejudiced by the sale.

## San Francisco.

SAN FRANCISCO, CAL., July 29, 1908.

After quite a period of dull times, the prospects have improved for the financing of a number of new projects in California and elsewhere on the Coast. Several large blocks of the new San Francisco city bonds have been spoken for, and there is every indication that the entire issue will be acceptable to investors, in spite of former adverse predictions in certain quarters. The validity of all the steps taken in the $18,200,000 bond issue has just been certified to by Dillon & Hubbard, the New York experts, in a communication read before the Board of Supervisors. The bonds approved were the fire protection issue of $5,200,000, the sewer issue of $4,000,000, the school issue of $5,000,000, the hospital issue of $2,000,000, the Hall of Justice issue of $1,000,000 and the garbage system issue of $1,000,000. Plans have been announced recently for the erection of a number of new buildings of large size. Competitive designs will be received for the new structure which is to be erected upon the site of the old Hall of Justice on Kearny street.

**Structural Material.**—The building situation continues to be very active, and quite a number of Steel frame buildings are still in course of construction. Several more contracts for Steel frames are pending, but it is more than possible that the great bulk of the Steel erection work for the present year will have been awarded before long. During the balance of the season, however, a large force of mechanics will be occupied in finishing a number of large Class A structures that it will require about a year to complete. The Roebling Construction Company and others have taken contracts, amounting to $133,476, to erect a six-story Class A building for the Doe Estate, near the southwest corner of Sutter and Kearny streets. The American Bridge Company will supply 800 tons of Steel for this fine store building. The Smith-Rice Company will haul and erect the Steel for $7246, and the Merle Ornamental Iron Company will furnish Ornamental Iron work, &c., for $19,600. Contracts for Steel for two highway bridges in Sacramento County have been taken by the American Bridge Company, aggregating about 250 tons. A small Steel contract has also been taken by the same company for a Steel frame for a new saw mill for the San Vicente Lumber Company, near Santa Cruz, Cal. Steel shipments are coming through from the East in good time. Some of the local manufacturers are still agitating the subject of depending more upon local concerns for their supplies of Steel and ornamental Iron for building construction, although in many cases they would perhaps be unable to fill contracts direct in the required time owing to limited stocks of materials and high wages.

**Pig Iron.**—There is scarcely any improvement in the Pig Iron situation. Foundry work is still slack and materials are purchased from hand to mouth. The improvement in the mining districts will possibly help the local plants some before the end of the year. No Pig Iron has arrived by sea this month. Prices of English, Scotch and Chinese Pig Iron are about $27 to $28 per ton, ex-yard.

**Cast Iron Pipe.**—Business is looking up in this line, there being many inquiries in California. Prices are a little off owing to the continued low price of Pig Iron. The Dalziel-Moller Company has been awarded a contract to supply a quantity of 10-in. Pipe for the San Francisco Park Commission at $32.50 per ton. The Board of Works of San Diego, Cal., will order Pipe for the University Heights water line at once. The United States Cast Iron Pipe & Foundry Company has been awarded the contract for 975 tons of Gas Pipe for the City Gas Company, Los Angeles, Cal. It is ordinary bell and spigot Pipe in sizes of 4, 6, 10 and 12 in. Eastern capitalists have arranged to purchase the bond issue of the Owens River aqueduct system authorized by the city of Los Angeles in the sum of $23,000,000. The money for the first block of the bonds purchased will be available within a few months. The Board of Water Commissioners of Santa Barbara, Cal., will purchase about 18,000 ft. of Pipe for new mains. The prices of Cast Iron Pipe, f.o.b. Pacific Coast terminals, are about as follows: 6, 8, 10 and 12 in., $32 to $33; 4-in., $33 to $34.

**Merchant Pipe.**—While stocks are reduced considerably, there is not much of a demand for Merchant Pipe at present. Increased buying by the local jobbers will be necessary before long. Discounts on Steel Pipe are about as follows on jobbers' carloads:

| | Steel. Black. | Galv. |
|---|---|---|
| | % | % |
| ⅛ to ¼ in. | 56.5 | 40.5 |
| ⅜ in. | 58.5 | 44.5 |
| ½ in. | 60.5 | 48.5 |
| ¾ to 6 in. | 64.5 | 54.5 |
| 7 to 12 in. | 61.5 | 46.5 |
| Extra strong, plain ends: | | |
| ⅛ to ⅜ in. | 49.5 | 37.5 |
| ½ to 4 in. | 56.5 | 44.5 |
| 4½ to 8 in. | 52.5 | 40.5 |
| Double extra strong, plain ends: | | |
| ½ to 8 in. | 45.5 | 34.5 |

**Coke.**—The Coke market is rather quiet, there not being much local demand for foundry purposes. The smelters are

in the market as usual for the cheaper grades, of which there is a moderate stock on hand. The Selby Smelting & Lead Company's plant at Selby, Contra Costa County, which was a large consumer of Coke, is still closed down on account of an injunction suit brought by farmers, who alleged damage from the fumes. The only arrival of Coke since the first of July was a shipment of 2400 tons from Newcastle, Australia, July 14, consigned to H. M. Newhall & Co. Comparatively little Coke is now en route from foreign countries to this port. The demand for Australian Coke is weaker than a year or two ago. English and Scotch Foundry Coke are quoted in this market at about $14 per ton; German Syndicate, $13, and Australian, $9.

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The Risdon Iron Works has been awarded the contract for repairs to the army transport Logan, the price being $275,000. The repairs are expected to occupy several months. The repairs on the transport Sherman, which were to cost about $300,000, have been temporarily postponed owing to lack of an appropriation.

## Pittsburgh.

PARK BUILDING, August 5, 1908.—(*By Telegraph.*)

**Pig Iron.**—There is more snap to the Pig Iron market than for some time. Inquiries are out for a great deal of tonnage for prompt shipment and also for delivery over the balance of the year. Production is gaining, to keep up with the increased consumption. Prices of Pig Iron are fairly steady, with the exception of Bessemer, which is weak, and lower. There are several rather aggressive sellers of Bessemer just now, and several lots have been sold as low as $15.40, Valley furnace, or $16.30, Pittsburgh. We quote sand cast Bessemer Iron at $15.50; Malleable Bessemer at $15; Basic, $15; No. 2 Foundry, $14.50 to $14.75, and Gray Forge, nominally, $14, all at Valley furnace, the freight to Pittsburgh being 90c. a ton. We note sales of 600 tons of Bessemer at $15.50, and one lot of 300 tons, and one lot of 200 tons, the latter for Cleveland delivery, at $15.40, Valley furnace. A sale is also reported of 1000 tons of Standard Bessemer for delivery in the Newcastle, Pa., District, at $15.40, Valley furnace.

**Steel.**—We note a sale of 500 tons of Sheet Bars and 1000 tons of Tin Bars at full official prices. There is practically no new business coming up in Billets. We quote Bessemer and Open Hearth Billets, 3⅞ in. and larger, up to and including 0.25 carbon, $25; 0.26 to 0.60 carbon, $1 extra; over 0.60 carbon, $2 extra, all f.o.b. Pittsburgh. For Wheeling, Martins Ferry, Follansbee, Newcastle, Sharon, Steubenville and Washington (Pa.) delivery, half the freight or 50c. additional is charged. Sheet and Tin Bars in random lengths are $27 f.o.b. Pittsburgh. Forging Billets take $2 advance over Rolling Billets

(*By Mail.*)

We continue to report improved conditions in the Steel trade. These were decidedly more pronounced in the past week, and there is no doubt in the minds of a majority that the long expected turn has come and that the whole Steel trade is on the way to better things. If the railroads were buying one-half or even one-fourth of their usual requirements the Steel trade would be in splendid condition. As it is, with the railroads buying practically nothing, more than 50 per cent. of the Steel capacity is active, this demand coming entirely from consumers aside from the railroads. There is a prospect of some early business in Steel Rails, a start having been made by the Baltimore & Ohio, which has placed 14,000 tons, and the Chesapeake & Ohio, 5000 tons. More inquiries are out for Pig Iron, and the market is fairly firm with the exception of Bessemer, which has gone down squarely to $15.50 at furnace, several small sales having been made as low as $15.40 at furnace. The Steel plants are running to better capacity than for some time, and the Carnegie Steel Company will start up its Mingo Junction plant, in part, during the latter part of August. The demand for Finished Iron and Steel is showing betterment, jobbers and large consumers placing orders more freely and for larger tonnages. Plates are showing a little better demand, and some large tonnage has been closed in Pipe. The Scrap trade is more active than for some months, and prices on some lines have again advanced. A peculiar feature of the situation just now is that Heavy Steel Scrap is bringing higher prices than Basic Pig Iron. A few months ago Basic Iron was selling as much as $3 a ton higher than Scrap. The Coke trade continues very quiet and prices do not show any betterment whatever.

**Ferromanganese.**—We continue to quote foreign 80 per cent. Ferro at $44, seaboard, or $45.95, Pittsburgh, for balance of this year delivery. For early shipment $43.50, seaboard, or less, could be done, and we note a sale of about 100 tons for spot shipment to a large Western consumer on the basis of about $43.50, seaboard.

**Ferrosilicon.**—We continue to quote 50 per cent. at $67.50 to $70, Pittsburgh. We do not hear of any recent sales in this market.

**Muck Bar.**—It is reported that one or two mills rolling Iron Bars are quietly feeling the market for a fairly large tonnage of Muck Bar, but as yet nothing has actually been done. We continue to quote best grades of Muck Bar made from all Pig Iron at $26, Pittsburgh, but on a firm offer it is probable a less price would be made.

**Rods.**—Although not much inquiry is reported, the market is fairly strong. We continue to quote Bessemer Rods at $33; Basic, $34, and Chain Rods, $33, Pittsburgh.

**Skelp.**—Reports are going of some very low prices being made on Steel Skelp rolled on universal mills. The demand is showing betterment and some business has recently been closed. We quote: Grooved Steel Skelp, 1.45c. to 1.50c.; Sheared Steel Skelp, 1.50c. to 1.60c.; Grooved Iron Skelp, 1.60c. to 1.70c., and Sheared Iron Skelp, 1.70c. to 1.75c., f.o.b. Pittsburgh.

**Steel Rails.**—Prospects in the Steel Rail trade are better, and it is believed that within the next month some fairly large orders will be given out. The Baltimore & Ohio Railroad has placed 14,000 tons, of which Carnegie Steel Company will roll about one-half, and the Chesapeake & Ohio has placed 5000 tons, most of which came to Pittsburgh. Some fairly large foreign orders for both Standard Sections and Light Rails have recently been placed; in fact, the actual tonnage entered for some time by the Carnegie Steel Company for export has been larger than in domestic. The three Edgar Thomson Rail mills of the Carnegie Steel Company are operating to about 35 per cent. of capacity. A leading rerolling Rail mill has advised us that it has again advanced its prices on rerolled Light Rails $1 a ton. Prices now being generally quoted on Light Rails are as follows: $25 for 25 to 45 lb. Sections, with $1 advance for 20 lb.; $2 advance for 16 lb., and $4 advance for 12 lb. Standard Sections are $28, at mill, and Angle Splice Bars 1.65c., at mill.

**Plates.**—The contract has not yet been placed for the 26,000 tons of Plates to be used in making Steel Pipe for the extensions to the Brooklyn Water Works, but the T. A. Gillespie Company, of this city, was the lowest bidder. If it gets the work the Plates will be furnished by a Pittsburgh mill. The general demand for Plates is showing betterment, consumers placing orders more often and for larger tonnages. The Carnegie Steel Company will furnish the Plates for a very large gas line for Cincinnati, recently closed by the National Tube Company. We quote, Tank Plates, ¾ in. thick, 6¼ in. up to 100 in. wide, 1.60c., base, at mills, Pittsburgh. Extras over this price are as follows:

Tank, Ship and Bridge quality, ¼ in. thick on edges, 100 in. wide, down to but not including 6 in. wide, is taken as base.

Steel Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per square foot, shall be considered ¼-in. Plate. Steel Plates over 72 in. wide must be ordered ¼-in. thick on edge, or not less than 11 lb. per square foot, to take base price. Steel Plates over 72 in. wide ordered less than 11 lb. per square foot down to the weight of 3-16-in. shall take the place of 3-16 in.

Percentages as to overweight on Plates, whether ordered to gauge or weight, to be governed by the Association of American Steel Manufacturers' Standard Specifications.

| | |
|---|---|
| Gauges under ¼-in. to and including 3-16-in. Plates on thin edges | $0.10 |
| Gauges under 3-16-in. to and including No. 8 | .15 |
| Gauges under No. 8 to and including No. 9 | .25 |
| All sketches (excepting straight taper Plates varying not more than 4 in. in width at ends, narrowest end being not less than 30 in.) | .10 |
| Complete Circles | .20 |
| Boiler and Flange Steel Plates | .10 |
| "A. B. M. A." and ordinary Firebox Steel Plates | .20 |
| Still Bottom Steel | .30 |
| Marine Steel | .40 |
| Locomotive Firebox Steel | .50 |
| Shell grade of Steel is abandoned. | |
| For widths over 100 in. up to 110 in | .05 |
| For widths over 110 in. up to 115 in | .10 |
| For widths over 115 in. up to 120 in | .15 |
| For widths over 120 in. up to 125 in | .25 |
| For widths over 125 in. up to 130 in | .50 |
| For widths over 130 in | 1.00 |

TERMS. Net cash in 30 days. Pacific Coast base, 1.50c., f.o.b. Pittsburgh.

**Structural Material.**—Inquiries are decidedly better, and the leading Structural interests inform us that more actual new tonnage is being placed than for some time. The McClintic-Marshall Construction Company has taken 600 tons for a new building for the Marion Steam Shovel Company, Marion, Ohio, and about 600 tons for a building to cover the puddling mill to be built by A. M. Byers & Co. at Girard, Ohio. Local work in sight includes a new bridge across the Monongahela River between Allegheny and Washington counties, near Monongahela City, Pa., which will take 5000 to 6000 tons. Plans for this structure are to be ready about August 15. We quote as follows, f.o.b. mill, Pittsburgh: I Beams, H. Beams and Channels, 3 to 15 in., inclusive, 1.60c. net; Beams over 15 in., 1.70c. net; Angles, 3 to 6 in., inclusive, ¼ in. and up, 1.60c. net; Angles, over 6 in.,

1.70c. net; Angles, 3 x 3 in. and up, less than ¼ in., 1.50c., base, half extras, Steel Bar card; Tees, 3 in. and up, 1.65c. net; Zees, 3 in. and up, 1.60c. net; Angles, Channels and Tees under 3 in., 1.50c., base, half extras, Steel Bar card; Deck Beams and Bulb Angles, 1.90c. net; Hand Rail Tees and Z-19, 3c. net; Checkered and Corrugated Plates, 3c. net.

**Sheets.**—The demand for Black and Galvanized Sheets continues to improve for the lighter gauges, and July business showed a large gain over June. The American Sheet & Tin Plate Company is now operating about 50 per cent. of its capacity. Prices are fairly well maintained, being shaded by only two or three of the outside mills. For mill shipment we quote: Blue Annealed Sheets, No. 10 and heavier, 1.80c.; Nos. 11 and 12, 1.85c.; Nos. 13 and 14, 1.90c.; Nos. 15 and 16, 2c.; Box Annealed, Nos. 17 to 21, 2.25c.; Nos. 22 to 24, 2.30c.; Nos. 25 and 26, 2.35c.; No. 27, 2.40c.; No. 28, 2.50c.; No. 29, 2.60c.; No. 30, 2.70c. Galvanized Sheets: Nos. 10 and 11, 2.45c.; Nos. 12 and 14, 2.55c.; Nos. 15 and 16, 2.65c.; Nos. 17 to 21, 2.80c.; Nos. 22 and 24, 2.95c.; Nos. 25 and 26, 3.15c.; No. 27, 3.35c.; No. 28, 3.55c.; No. 29, 3.70c.; No. 30, 3.95c. No. 28 Painted Roofing Sheets, $1.75 per square, and Galvanized Roofing Sheets, No. 28, $3.10 per square, for 2½-in. corrugations. These prices are subject to a rebate of 5c. per 100 lb. to the large trade under the usual conditions, jobbers charging the usual advances for small lots from store.

**Tin Plate.**—The new demand for Tin Plate is very dull, but the mills are fairly busy on specifications against contracts which are being received in good volume. Tin Plate prices continue firm, and we quote at $3.70 for 100-lb. Cokes, 14 x 20, f.o.b. Pittsburgh, terms 30 days, less 2 per cent. off for cash in 10 days, this price being subject to the usual rebate of 5c. per base box in large lots.

**Hoops and Bands.**—Some increase is seen in the amount of new business, and specifications against contracts are coming in at a fairly satisfactory rate. Regular prices are as follows: Steel Hoops, 1.80c., base, full Hoop card prices; Steel Bands, 1.40c., base, half Steel card extra, all f.o.b. cars, Pittsburgh, in carload lots, for delivery during 1908.

**Iron and Steel Bars.**—The large consumers of both Iron and Steel Bars are now covered by contracts placed some time ago, and as a result not many new orders are being placed, but the mills are fairly busy on specifications against these contracts which are now being received in good volume. The leading makers of Steel Bars—the Republic, Carnegie and Jones & Laughlin companies—are now running to over 50 per cent. of their capacity, with good prospects of operating more fully in the near future. The demand for Iron Bars is only fair, but is showing some betterment. The market is firm, and we are advised that regular prices are being held. We quote Iron Bars at 1.40c., base, for Pittsburgh delivery, and 1.35c., base, for Western points, to which freight is added, except Chicago, the price for which is 1.50c., delivered. We quote Steel Bars at 1.40c., Pittsburgh, for base sizes.

**Merchant Steel.**—Some miscellaneous orders are being received, but in a general way new business is light, and were it not for the fact the consumers have commenced to specify against contracts the mills would have very little tc do. We are advised that the July shipments of three or four of the leading mills showed some increase over June. We quote: Cold Rolled Shafting, on contracts for 100 tons and over, 57 per cent. off; carloads, 56 per cent. off, and less than carloads, 52 per cent. off, on which carload freight is allowed within base territory. Smooth Finished Machinery Steel, 1.80c. to 1.90c.; Flat Sleigh Shoe, 1.75c. to 1.85c.; Cutter Shoe Steel, 2.15c. to 2.25c.; Toe Calk, 1.90c. to 1.95c.; Railroad Spring Steel, 1.60c. to 1.75c., the higher price being for Pennsylvania Railroad analysis. Carriage Spring Steel is 1.80c.; Tire Steel, Iron finish, 1½ x ½ in. and heavier, 1.40c.; under 1½ in., 1.55c. Planished Tire Steel is 1.60c., all f.o.b., at mill.

**Railroad Spikes.**—Two or three of the leading roads are in the market with inquiries for a fairly large tonnage, but as yet little actual business has been closed. The Spike trade so far this year has been unsatisfactory, being less than one-fourth of what it was in the same period last year. We quote: Standard sizes, 4½ x 9-16 in., at $1.70, and the smaller sizes at $1.80 per 100 lb. in carload and larger lots, with an advance of 5c. per 100 lb. for less than carload, f.o.b. Pittsburgh.

**Merchant Pipe.**—It is probable that within a short time the National Tube Company will commence to roll 120 miles of 20-in. and 60 miles of 18-in. Line Pipe for a natural gas line in Cincinnati, for which the company recently closed a contract. The Hope Natural Gas Company, an interest of the Standard Oil Company, has placed some large tonnages in Line Pipe in the past month. In a general way, the Pipe mills are quite busy on lap weld Pipe, but in butt weld are not so active. Shipments in July by the leading Pipe mills showed a slight increase over June. We are advised that regular prices on Pipe are being firmly maintained. Discounts on Steel Pipe, ¾ to 6 in., to the large trade are now 76 and 5 per cent. off list. Regular discounts are as follows:

*Merchant Pipe.*

| | Jobbers, carloads, Steel. Black. % | Galv. % |
|---|---|---|
| ⅛ to ¼ in | 67 | 51 |
| ⅜ in | 69 | 55 |
| ½ in | 71 | 59 |
| ¾ to 6 in | 75 | 65 |
| 7 to 12 in | 72 | 57 |
| Extra strong, plain ends: | | |
| ⅛ to ⅜ in | 60 | 48 |
| ½ to 4 in | 67 | 55 |
| 4½ to 8 in | 63 | 51 |
| Double extra strong, plain ends: | | |
| ½ to 8 in | 56 | 45 |

Discounts on Genuine Iron Pipe are as follows:

| | Black. % | Galv. % |
|---|---|---|
| ⅛ to ¼ in | 65 | .. |
| ⅜ in | 67 | 53 |
| ½ in | 69 | 57 |
| ¾ to 6 in | 73 | 63 |
| 7 to 12 in | 70 | 55 |
| Extra strong, plain ends: | | |
| ⅛ to ⅜ in | 58 | 46 |
| ½ to 4 in | 65 | 53 |
| 4½ to 8 in | 61 | 49 |
| Double extra strong, plain ends: | | |
| ½ to 8 in | 54 | 43 |

**Boiler Tubes.**—There has been some buying of Railroad Tubes by the railroads, and more business is pending. The demand for Merchant Tubes is only fair. Regular discounts on Merchant Tubes in small lots, on which an extra 5 per cent. is allowed in carloads, but which discounts are being shaded, are as follows:

*Boiler Tubes.*

| | Iron. | Steel. |
|---|---|---|
| 1 to 1½ in | 42 | 47 |
| 1¾ to 2¼ in | 42 | 59 |
| 2½ in | 47 | 61 |
| 2¾ to 5 in | 52 | 65 |
| 6 to 13 in | 42 | 59 |

2½ in. and smaller, over 18 ft. long, 10 per cent. net extra.
2¾ in. and larger, over 22 ft. long, 10 per cent. net extra.

**Iron and Steel Scrap.**—The improved condition in the Scrap trade noted in this report for the past two or three weeks continues. The demand is more active, and better prices are being obtained than for some months. The advent of the Pittsburgh Steel Company into the market as a heavy buyer of Steel and other kinds of Scrap has no doubt stimulated the market to some extent. It is reported that this company has bought in the past two or three months upward of 15,000 tons of Heavy Steel Scrap, its purchases having been made through a local dealer. Prices on Scrap are firm, and we quote per gross ton: Heavy Steel Scrap, for Pittsburgh, Steubenville and Sharon delivery, $14.75 to $15; Cast Iron Borings, $9.25 to $9.50; No. 1 Railroad Wrought Scrap, $14.50 to $15; No. 1 Cast Scrap, $14.50 to $14.75; Bundled Sheet Scrap, $12 to $12.25; Sheet Bar Crop Ends, $18 to $18.25; No. 1 Busheling Scrap, $13.50 to $14; No. 2, $10 to $10.50; Iron Axles, $20.50 to $21; Steel Axles, $19 to $19.50; Low Phosphorus Melting Stock, 0.04 and under, $19; Rerolling Rails, $15.50 to $16; Machine Shop Turnings, $10.25 to $10.50; Grate Bars, $12.50 to $13; Railroad Malleable Scrap, $13.50 to $14; Old Car Wheels, $14.50 to $15. We note sales of 1000 tons of Heavy Steel Scrap at prices ranging from $14.50 up to $15; 500 tons of Cast Iron Borings, at $9.75, and 1000 tons of Turnings, at $10.50, f.o.b. Pittsburgh.

**Coke.**—The Coke trade does not show much if any betterment, either in demand or prices, but we note that the Frick Coke Company has started up some more ovens, due to the heavier demand for Furnace Coke from the Carnegie Steel Company, which has recently started some additional furnaces. We quote Standard Connellsville Furnace Coke for prompt shipment at $1.50 to $1.55, and for shipment over balance of the year at $1.65 to $1.75, at oven. Connellsville 72-hr. Foundry Coke is held at $2 to $2.25 for balance of the year shipment, but other grades are offered as low as $1.85, at oven. The output of Coke last week in the Upper and Lower Connellsville region was 188,799 tons, an increase over the previous week of about 3000 tons.

## St. Louis.

ST. LOUIS, August 3, 1908.

Bank clearings are increasing month by month. In the beginning of the year the loss in clearings when compared with those of the corresponding month last year was 12 per cent., and now it is only 5 per cent. In the last two weeks there has been a gain. This conclusively proves that general business is improving slowly, but surely. The railroad situation is getting better, and all interests dependent on supplying materials report an increased demand from the leading lines in this section. Inquiry for Pig Iron is now extending into the first half of 1909, and a somewhat pronounced speculative inquiry is developing for Spelter, Pig Lead and Zinc. In finished Iron and Steel, the largest interest reports the past week brought the greatest tonnage in orders since the first of year.

**Coke.**—The demand for Coke continues fairly active, though mainly for small contracts. The market holds steady and firm at $2.15 to $2.50, f.o.b. ovens, Connellsville, for 72-hr. Foundry. Virginia is held at $2.25 to $2.50, at oven.

**Pig Iron.**—At the close of the past week more interest had developed for Pig Iron. While early in the week there were reports of transactions around $11.50, Birmingham, for No. 2 Foundry, it is thought if such sales were made it was reselling of purchases made speculatively. So far as known, Iron is not being offered by local parties at less than $12. A leading seller reports inquiry for 1500 tons for last quarter, and another for 500 to 1000 tons for the same delivery. We learn also of the sale of 1000 tons, delivery over first half of 1909. All of the above inquiries and sales are for Southern Iron.

**Finished Iron and Steel.**—Sales agents report the continuance of a good demand for Structural Material, and also a growing demand for Track Supplies. From jobbers, orders are more liberal for Bars, &c.

**Lead and Spelter.**—The market is more active, and prices are higher. A marked disposition toward speculative buying has recently developed. For Spelter, 4.60c. is bid, for August and September, for any quantity. Lead is stronger, at 4.45c. bid, and 4.50c. asked. Zinc Ore is higher, $35 per ton, Joplin basis, being bid, with an upward tendency at the close. A good demand is noted for the finished products.

**Old Materials.**—Such activity as exists is mainly confined to dealers, among whom a feeling of confidence is increasing with respect to there soon being more demand from consumers. There is more inquiry for Car Wheels, and the price has advanced. We quote dealers' prices, per gross ton, f.o.b. cars, St. Louis, as follows:

| | |
|---|---|
| Old Iron Rails | $14.50 to $15.00 |
| Old Steel Rails, rerolling | 13.50 to 13.75 |
| Old Steel Rails, less than 3 ft | 13.00 to 13.50 |
| Relaying Rails, standard sections, subject to inspection | 23.00 to 24.00 |
| Old Car Wheels | 13.50 to 14.00 |
| Heavy Melting Steel Scrap | 12.50 to 13.00 |
| Frogs, Switches and Guards, cut apart | 13.00 to 13.50 |
| Mixed Steel | 9.00 to 9.50 |

The following quotations are per net ton:

| | |
|---|---|
| Iron Fish Plates | $12.50 to $13.00 |
| Iron Car Axles | 16.00 to 16.50 |
| No. 1 Railroad Wrought | 12.50 to 12.75 |
| No. 2 Railroad Wrought | 11.25 to 11.50 |
| Railway Springs | 10.50 to 11.50 |
| Locomotive Tires, smooth | 12.00 to 12.50 |
| No. 1 Dealers' Forge | 9.50 to 10.00 |
| Mixed Borings, &c | 4.00 to 4.50 |
| Machine Shop Turnings | 7.00 to 7.50 |
| No. 1 Boilers, cut to Sheets and Rings | 7.00 to 8.00 |
| No. 1 Cast Scrap | 11.00 to 11.50 |
| Stove Plate and Light Cast Scrap | 9.00 to 9.50 |
| Railroad Malleable | 9.75 to 10.25 |
| Agricultural Malleable | 9.00 to 9.50 |
| Pipes and Flues | 8.00 to 8.50 |

The Standard Sanitary Mfg. Company, Pittsburgh, manufacturer of plumbing supplies, has leased a large store at Fourth and Chestnut streets, and will establish a branch depot at St. Louis.

The Commonwealth Steel Company reports the demand from railroads improving, and it is now employing 400 men. The fiscal year, which has just closed, shows a balance on the right side of the ledger.

The Hoyt Metal Company states that the market is stronger, and the demand for manufactured products is better. It looks for a good business in August.

The National Enameling & Stamping Company will reopen its plants next week, employing 4000 men.

The Elliot Frog & Switch Company, East St. Louis, will give employment to 400 additional men August 15. The Republic Iron & Steel Company will put on 200 more men, increasing its force to 1000. The American Car & Foundry Company, it is reported, will give employment to 800 men at its Madison, Ill., plant in a week or two.

## Birmingham.

BIRMINGHAM, ALA., August 3, 1908.

**Pig Iron.**—A decided change in the status of the Pig Iron market has taken place. Considerably more interest is manifested by purchasers, while the aggregate of actual engagements is very satisfactory in all cases. The tonnage available at lower figures than $12, Birmingham, on a No. 2 Foundry basis, seems to have entirely disappeared, and for early shipment there is even a tendency to advance quotations. One large producer has adopted a schedule of $12.50, Birmingham, and quotes only for the remainder of the third quarter. Another large interest adheres firmly to a similar schedule, while two additional concerns are known to have refused round tonnages in the past week at figures slightly under $12.50 per ton. In still another instance, 1000 tons only was accepted where 6000 tons was available at the same price. Among the sales reported, the principal one is a lot of 2000 tons of No. 2 Foundry, for third quarter delivery, at $12 per ton, Birmingham. The sale of 1000 tons, for the last quarter, was effected at a slight departure from a basis of $12.50, Birmingham. A lot of 1000 tons of 2 to 2.50 per cent. Silicon, for prompt shipment, brought $12.50, Birmingham, and 300 tons for immediate delivery and Silicon over 3 per cent. specified sold at $13.50 per ton. The sale of 100 tons of No. 2 Soft at $12, Birmingham, is reported, as well as an aggregate of 2000 tons, for delivery within three months, at $11.75 per ton. The latter tonnage represents transactions early in the week, however. The indifference of all producers as to 1909 engagements is marked, but there has been a number of inquiries for such delivery. A Cast Iron Pipe manufacturer is making inquiries for 25,000 tons for delivery extending into next year, and lots of 2000 and 1500 tons each, for the remainder of this year, are pending. The production has not been curtailed by reason of the scarcity of fuel, but all operators are more or less apprehensive.

**Cast Iron Pipe.**—The principal order reported placed during the week was for 800 tons of Water Pipe for the city of Burlington, N. C., awarded to the United States Cast Iron Pipe & Foundry Company. A number of smaller lots bas recently been booked, but the aggregate is considerably under the report of last week. There are no new lettings of consequence added to the list for the near future. Developments relative to the advance in freight rates are being awaited with much interest by producers, and the present inactivity is not greatly deplored. No doubt the slight demand is partially due to the general vacation of purchasing interests usually expected at this season. The output of all Southern plants is being moved satisfactorily, and the capacity in operation is close to normal. We quote Water Pipe as follows, per net ton, f.o.b. cars here: 4 to 6 in., $23; 8 to 12 in., $22; over 12-in., average $21, with $1 per ton extra for Gas Pipe.

**Old Material.**—Further indications of an improvement in the demand are in evidence, and quotations are not without additional strength. The fact that announcement has again been made that the mills of the former largest consumer in this district will soon be put in operation is the most encouraging feature, but the tonnage actualy being moved increases gradually. Nominal quotations on some grades are revised, and we quote as follows, per gross ton, f.o.b. cars here:

| | |
|---|---|
| Old Iron Rails | $14.50 to $15.00 |
| Old Iron Axles | 15.50 to 16.00 |
| Old Steel Axles | 12.50 to 13.00 |
| No. 1 Railroad Wrought | 13.00 to 13.50 |
| No. 2 Railroad Wrought | 9.50 to 10.50 |
| No. 1 Country Wrought | 10.00 to 10.50 |
| No. 2 Country Wrought | 9.00 to 9.50 |
| No. 1 Machinery | 10.00 to 10.50 |
| No. 1 Steel | 9.50 to 10.00 |
| Wrought Pipe and Flues | 8.50 to 9.00 |
| Light Cast and Stove Plate | 8.50 to 9.00 |
| Cast Borings | 5.00 to 5.50 |

## Philadelphia.

PHILADELPHIA, PA., August 4, 1908.

The market has taken on a somewhat better appearance the past week, and the tonnage of orders placed, both for Pig Iron and some classes of finished materials, shows an improvement. While the individual orders are usually small, the number shows an increase, and the trade generally is quite optimistic regarding future business. The trend of the market appears to be in the right direction, and it is believed that if we can continue to maintain during August and September the slight steady gains which have been recently experienced, the trade will be on a fair way toward more rapid improvement during the fall months, but it is not believed that anything like normal conditions can be attained during the remainder of the present year.

**Pig Iron.**—A somewhat better volume of business has come out the past week, and the market is taking on a somewhat stronger tone. Sales of Foundry Iron in varying tonnages have been made, usually at full prices, and buyers show more disposition to place orders. In a number of instances furnaces report shipments in the month of July to have exceeded their present productive capacity, some by as much as 25 per cent., while many sellers have their output for the next month or so pretty well sold up. On some grades a number of producers are practically out of the market as far as third quarter deliveries are concerned, and they show little disposition to force fourth quarter business, even at an advance in price. Sales of No. 2X Foundry have been more numerous and range from carloads for prompt shipment to lots running up to 1000 tons for third quarter delivery, prices ranging from $16.50 to $17, delivered, dependent on brand and how anxious the seller is for business. A sale of 600 tons of No. 2 Plain for prompt shipment is reported at $16.25, delivered. Some good inquiries for No. 2X Foundry are before the trade, running from 1000 to 4000 tons, for delivery in the last four months of the year. Some fair lots of this grade for August and September shipment are also being inquired for, while several lots of 1000 and 1500 tons of No. 2 Plain for fairly prompt shipment are being quoted on. New England and central and northern Pennsylvania interests appear to be the chief buyers at the

time, the melters in this immediate territory, except the Pipe foundries, being rather quiet. The Virginia furnaces in some cases report pretty heavy sales the past week. One interest disposed of a total of 4000 tons, mostly No. 2X Foundry, the greater portion of which was for shipments beginning at once and extending over the next two and three months. This Iron was largely for shipment to foundries in the central part of the State, at prices equivalent to $17 for No. 2X, delivered, in this territory. Some smaller lots of Virginia No. 2X Foundry for shipment in the last half of the year are also reported at $17.25, delivered, in this vicinity. For strictly fourth quarter shipment this grade is being pretty firmly held at close to $17.50, delivered. Southern Foundry Iron appears to be somewhat stronger, and while it is still understood that $11.50, Birmingham, might be done for No. 2 Foundry in a few instances, other sellers who have been taking orders for the third quarter at $12 for this grade have advanced their price for such delivery to $12.50, Birmingham. Little activity, however, has been shown in Southern Iron. Some of the Pipe foundries are in the market for fair sized lots, but it is understood that the business has not yet been placed. Forge Iron has not been active, but there are more inquiries in the market for this grade and sellers generally are pretty firm on the price. A sale of 300 tons for prompt shipment at full prices is reported. Some business continues to be done in Basic Iron, a sale to one of the Eastern Steel plants being reported, covering about 10,000 tons for last half delivery at a price believed to be close to the market. Low Phosphorus Iron is quiet but firm. The general situation is stronger, and some sellers who have sold up pretty fully for the next three months talk higher prices, but there is still a plentiful supply of Foundry Irons around at figures represented by the following quotations, for delivery in buyers' yards, eastern Pennsylvania and nearby territory, during the third quarter; for strictly fourth quarter delivery, however, an advance of 50 cents a ton rules, dependent on brand and tonnage:

| | |
|---|---|
| Eastern Pennsylvania, No. 2 X Foundry | $16.50 to $17.00 |
| Eastern Pennsylvania, No. 2 Plain | 16.00 to 16.50 |
| Virginia, No. 2 X Foundry | 17.00 to 17.25 |
| Virginia, No. 2 Plain | 16.50 to 16.75 |
| Gray Forge | 15.00 to 15.50 |
| Basic | 15.00 to 15.25 |
| Low Phosphorus | 21.00 to 21.25 |

**Ferromanganese.**—The demand is light, the only sale reported during the week being a single carload for prompt shipment. Prices still show a wide range. Some sellers offer prompt Ferro in small lots at $43.50 to $44, seaboard. For shipment during the last half, however, quotations vary from $44 to $46, Baltimore.

**Steel.**—The demand is irregular. Orders coming out are for small tonnages only, and practically all for prompt shipment. The outlook is not very encouraging. Prices are unchanged. For delivery in this territory Ordinary Rolling Steel is quoted at $26.20, with Forging Steel at $28.20, subject to the usual extras for high carbons and special shapes.

**Plates.**—A material improvement was noted in the demand for Steel Plates the past week. Orders were larger and more numerous, and specifications on contracts came out more freely. Mills have gained in tonnage and show an increased output. Several good propositions are before the trade. Some fair orders for bridge, tank, boiler and locomotive Steel were placed during the week, and the trade feels more encouraged regarding future business. Prices are firm, as follows, for delivery in this territory:

| | Carloads. Cents. | Parts carload. Cents. |
|---|---|---|
| Tank, Bridge and Boat Steel | 1.75 | 1.80 |
| Flange or Boiler Steel | 1.85 | 1.95 |
| Commercial Firebox | 1.95 | 2.00 |
| Marine | 2.15 | 2.20 |
| Locomotive Firebox Steel | 2.25 | 2.30 |

The above are base prices for ¼-in. and heavier. The following extras apply:

| | Extra per 100 lb. |
|---|---|
| 3-16-in. thick | $0.10 |
| Nos. 7 and 8, B. W. G. | .15 |
| No. 9, B. W. G. | .25 |
| Plates over 100 to 110 in. | .05 |
| Plates over 110 to 115 in. | .10 |
| Plates over 115 to 120 in. | .15 |
| Plates over 120 to 125 in. | .25 |
| Plates over 125 to 130 in. | .50 |
| Plates over 130 in. | 1.00 |

**Structural Material.**—A fair demand continues for Structural Shapes, and some mills notice a continued slight gain in tonnage. Producers in this territory report the month of July as the best so far this year, and feel much encouraged in regard to future business. Orders are usually of a miscellaneous character, and range from small to medium in size. Some large building propositions are being figured on, but nothing in the way of a large tonnage has been recently closed. Prices are firm, and range from 1.75c. to 1.90c., according to specification, for delivery in this territory.

**Sheets.**—Business continues fairly active, but the tonnages placed are small and for prompt shipment. Mills continue to operate at full capacity, but have little forward business on their books, being dependent on current orders to keep them occupied. Quotations for mill shipments range as follows, a tenth extra being added for small lots: Nos. 18 to 20, 2.50c.; Nos. 22 to 24, 2.60c.; Nos. 25 to 26, 2.70c.; No. 27, 2.80c.; No. 28, 2.90c.

**Bars.**—The market for Iron Bars shows further strength. Orders come out more freely, and are of larger size, and mills, as a rule, show an increase in production, although nearly all are still running on a restricted basis. Prices are stronger, and while it is still possible to place desirable orders at 1.35c., delivered, the majority of sellers hold Refined Iron Bars at 1.40c. to 1.45c., delivered in this territory. Steel Bars are dull, at 1.55c., delivered in this vicinity, with Rerolled Bars at 1.50c.

**Coke.**—The market has been rather quiet. Some little business has been done in Foundry Coke, for delivery over the balance of the year, but buyers in a number of cases would like to contract for 12 months' supply, which sellers are not inclined to do at to-day's prices. Furnace Coke is quiet. Quotations are unchanged, Foundry Coke ranging from $2.15 to $2.35, at oven, with Furnace Coke at $1.50 to $1.75, at oven. For delivery in this territory the following range of prices is quoted:

| | |
|---|---|
| Connellsville Furnace Coke | $3.65 to $3.90 |
| Foundry Coke | 4.30 to 4.50 |
| Mountain Furnace Coke | 3.25 to 3.50 |
| Foundry Coke | 3.90 to 4.10 |

**Old Material.**—Sales during the week have been small, but the market grows steadily stronger. Firm offers of $14.50 for Heavy Melting Scrap are reported, but the majority of holders decline to let any large tonnage go at that price. The railroad lists out this week, from lines in this territory, offer about 25,000 tons of Rerolling Rails and 5000 tons of Heavy Melting Steel for sale, but it is believed that bids will have to be better than ruling prices to get the Material, as the railroads are apparently inclined to hold for higher prices. The Pennsylvania Railroad is said to have sold about 6000 tons of Rerolling Rails at about $16 on the line of road. Sales of small lots of rolling mill Scrap are reported, but sellers are not disposing of a heavy tonnage at to-day's figures. Prices on the leading grades show an advance over those of last week. Mills, however, largely refuse to enter the market at the present level, and most of the business has been transacted between dealers. We quote nominally as follows for deliveries in buyers' yards, eastern Pennsylvania and adjoining territory:

| | |
|---|---|
| No. 1 Steel Scrap and Crops | $14.50 to $15.00 |
| Low Phosphorus | 18.00 to 18.50 |
| Old Steel Axles | 19.00 to 19.50 |
| Old Iron Axles | 22.00 to 22.50 |
| Old Iron Rails | 19.00 to 19.50 |
| Old Car Wheels | 14.50 to 15.00 |
| Choice No. 1 R. R. Wrought | 17.00 to 17.50 |
| Machinery Cast | 14.00 to 14.50 |
| Railroad Malleable | 13.00 to 13.50 |
| Wrought Iron Pipe | 13.50 to 14.00 |
| New Bundled Sheets | 12.00 to 12.50 |
| No. 1 Forge Fire Scrap | 11.50 to 12.00 |
| No. 2 Light Iron | 7.50 to 8.00 |
| Wrought Turnings | 10.50 to 11.00 |
| Stove Plate | 12.00 to 12.50 |
| Cast Borings | 9.50 to 10.00 |
| Grate Bars | 12.50 to 13.00 |

## Cincinnati.

CINCINNATI, OHIO, August 5, 1908.—(*By Telegraph*).

If August's opening may be taken as a criterion, the third quarter bids fair to make a beginning of the anxiously awaited and long deferred improvement in Iron and Steel, gauged by the inquiries and actual transactions in Pig Iron. The machinery markets do not show up to special advantage, aside from some very good sales of the heavier and more expensive types. The average manufacturers of small and medium-sized standard tools do not report encouragingly, but the close relationship does suggest that the tool market must soon respond to the activity of the crude product. Local manufacturers who have been visited evidence a decidedly optimistic trend, and as a rule all establishments are anticipating a resumption of shop activity in the early fall. Late correspondence contains some good inquiries, some of which comes from the railroads. With preparations under way and arrangements made, the close of the third quarter should show but one idle plant in this center. One large foundry, a rolling mill and several small concerns which have been shut down for some time are arranging for the early resumption of work.

**Pig Iron.**—An estimate based on a personal visit and inside knowledge places the tonnage of Southern Iron sold within the past week at not less than 60,000 distributed among Pipe companies, the harvest people and stove and heater manufacturers. Of this amount an agency representing the largest commercial interest has disposed of probably 25,000 tons. A number of Southern furnace interests have advised their representatives here that they have withdrawn from the market. Others name a price of $12.50, Birmingham, No. 2, withholding authority to quote anything less for the third and fourth quarter. A wire from one of the largest Southern interests to its local representatives this afternoon withdraws all quotations and suggests that offers be submitted to the furnace direct at not

less than $12.50 basis. The Pipe interest, most conspicuous in the week's transactions, bought for August and September delivery from one Southern furnace 6500 tons at a price of about $11.50, Birmingham, for delivery to Anniston, Chattanooga and Addiston plants. It is understood that the selling price was immediately put up to the $12 basis. A large manufacturer of sanitary appliances bought in this market on Monday about 2800 tons of Southern Iron for delivery to its Southern plant. The original inquiry was for 8000 tons, divided between 3300 tons of Northern and 4700 tons of Southern. It is expected that the Northern business will go to Valley interests through Pittsburgh. Of the Southern inquiry, divided into 500 tons of Forge, 1800 tons of No. 2 Soft, 800 tons of No. 2 Foundry and 700 tons of No. 3, about 2800 tons was secured in this market, the Foundry Iron selling on a basis of about $11.50, Birmingham, for No. 2, and the Forge at about $10.50, only small lots of this grade been available. Some investment Iron is said to have been secured at the minimum figure, about 5000 tons going, it is said, to certain capitalists who are interested in the Old Material markets. There are a number of inquiries, ranging from a couple of cars to 350 and 4000 tons. Among these a central Ohio melter asks for two carloads of Foundry Iron running 2.25 per cent. and over in Silicon, and a Michigan automobile concern for 350 tons of various grades, both Northern and Southern. A large agricultural implement manufacturer asks for 5000 to 6000 tons for shipment to its Ohio plant, August and September delivery, and some a little later. A manufacturer of heating apparatus asks for prices on 5000 tons of Northern analysis Iron for delivery to its Illinois plant. A central Ohio stove maker wants 500 tons of low grade. A Michigan agricultural implement interest would like quotations on 2000 to 3000 tons of analysis Iron for the first half, and in this one of the newest of the Ohio furnaces is likely to figure prominently. Ohio Silvery, 8 per cent. Silicon, is still quotable at $18.50, at furnace. In this connection are strenuous denials that any Ohio interest has taken a pound of business at less than this price, which has been established some time in this market. There is some demand for standard Car Wheel Irons, Southern Charcoal being quoted at $19, at furnace, and Northern at $21.75. Northern Foundry Iron is not specially active, but the price of $15, at furnace, seems to be well maintained on all ordinary transactions. For immediate delivery and to close of fourth quarter we quote, f.o.b. Cincinnati, as follows, freight rates being $3.25 from Birmingham, and $1.20 from the Hanging Rock District:

| | |
|---|---|
| Southern Coke, No. 1 | $15.50 to $16.00 |
| Southern Coke, No. 2 | 15.00 to 15.50 |
| Southern Coke, No. 3 | 14.50 to 15.00 |
| Southern Coke, No. 4 | 14.25 to 14.75 |
| Southern Coke, No. 1 Soft | 15.50 to 16.00 |
| Southern Coke, No. 2 Soft | 15.00 to 15.50 |
| Southern Coke, Gray Forge | 14.00 to 14.50 |
| Ohio Silvery, 8 per cent. Silicon | 19.70 |
| Lake Superior Coke, No. 1 | 16.70 to 17.20 |
| Lake Superior Coke, No. 2 | 16.20 to 16.70 |
| Lake Superior Coke, No. 3 | 15.70 to 16.20 |
| Standard Southern Car Wheel | 22.25 to 22.75 |
| Lake Superior Car Wheel | 21.75 to 22.25 |

*(By Mail.)*

**Coke.**—The Coke market has undergone little change since our last report. Production is increased slightly in the Connellsville field, as, also, in the Virginia districts, to take care of furnace demands in the South because of strike troubles there. In the case of the Wise County product, it is reported that the ovens are sold up for two months, the price ranging from $1.75 to $1.85, at oven. Indicating that Alabama operators are not confident themselves of being able to abate the strike before the first of the year, a sale involving the shipment of 12,000 tons a month for the last half is cited. The Pocahontas product is weak because of continued inactivity in that district. Standard Foundry grades are quotable in this market at $2 to $2.10, at oven, for spot shipment, and on contract about $2.25.

**Finished Iron and Steel.**—July closed with a fair showing of business for the times, but taken as a whole the local market is sluggish. Dealers are holding prices, and the hand to mouth purchases that are being made now are at prices that have governed for the better part of a year. Some Structural Steel has been sold for Southern shipment and some Sheet piling and twisted Bars for State work at Columbus. Consumers are not taking material on contract as rapidly as dealers would desire, and collections are only fair. Iron Bars are dull, and Steel Bars are duller. Dealers' prices to the trade are as follows, f.o.b. Cincinnati: Iron Bars, carload lots, 1.65c., base, with half extras; small lots from store, 1.85c., base, half extras; Steel Plates, carload lots, 1.75c., base, with half extras; small lots from store, 1.85c., base, half extras; Base Angles, carload lots, 1.85c., base; small lots from store, 2.10c.; Beams, Channels and Structural Angles, 1.85c., base; small lots from store, 2.10c.; Plates, ¼-in. and heavier, carload lots, 1.85c.; small lots from store, 2c.; Blue Annealed Sheets, heavy, No. 16, carload lots, 2.15c.; small lots from store, 2.50c.; No. 14, carload lots, 2.05c.; small lots from store, 2.40c.; No. 10, and heavier, carload lots, 1.95c.; small lots from store, 2.20c.; No. 12, carload lots, 2c.; small lots from store, 2.30c.; Sheets (Light), Black, No. 28, carload lots, 2.65c.; Galvanized Sheets, No. 28, carload lots, 3.70c.; Steel Tire, 4-in. and heavier, carload lots, 1.95c.; Plates, 3-16 and No. 8, carload lots, 2c.; small lots from store, 2.20c.

**Old Material.**—August has opened with little or no interest manifested in the Scrap markets, and prices show weakening in all the large markets, save Chicago. An exception might be made also of Heavy Melting Steel Scrap, which has gained in strength steadily; and the price here is firm at about $12 to $13 per gross ton. Offerings from railroads include the New York Central, the Pennsylvania, Big Four and Pan Handle. Since in some instances these offerings are duplicates of former ones, it is assumed by the dealers that railroads are simply feeling and are apparently determined to hold their Scrap for the higher prices which they feel inevitable soon. There is little or no demand for Relayers. Some Cast Scrap has been sold from this market recently, but railroad Cast is very dull, with little or no movement. We quote dealers' prices f.o.b. cars Cincinnati, as follows:

| | |
|---|---|
| No. 1 R. R. Wrought, net ton | $10.50 to $11.50 |
| Cast Borings, net ton | 4.50 to 5.00 |
| Heavy Melting Steel Scrap, gross ton | 12.00 to 13.00 |
| Steel Turnings, net ton | 5.50 to 6.50 |
| No. 1 Cast Scrap, net ton | 11.00 to 12.00 |
| Burnt Cast, net ton | 8.00 to 9.00 |
| Old Iron Axles, net ton | 14.50 to 15.50 |
| Old Iron Rails, gross ton | 13.00 to 14.00 |
| Old Steel Rails, long, gross ton | 11.00 to 12.00 |
| Old Steel Rails, short, gross ton | 11.00 to 12.00 |
| Relaying Rails, 56 lb. and up, gross ton | 19.00 to 20.00 |
| Old Car Wheels, gross ton | 12.50 to 13.00 |
| Low Phosphorus Scrap, gross ton | 13.00 to 14.00 |

## Cleveland.

CLEVELAND, OHIO, August 4, 1908.

**Iron Ore.**—No change has developed in the condition of the market, and only a small amount of buying is being done. The most important transaction the past week was the closing of a long time contract for about 1,000,000 tons of Ore, the delivery of which is to run over a period of several years. It is understood that this deal was virtually closed a number of weeks ago, but the contract was not signed until last week. A number of the long time contracts under which some of the furnace interests have been getting their Ore expire this year. Very little Ore has as yet been sold to Eastern consumers, but dealers say that the outlook for thus disposing of some Ore is somewhat better. The majority of the furnaces that bought Ore earlier in the season were in need of at least a portion of it for early consumption, and shipments are being freely taken on those contracts. Merchant Ore firms are following a conservative policy, and are not taking the chances of mining a large quantity of Ore which they might not be able to sell later in the season and thus be forced to keep it in stock piles until next year. Many of the consumers who are expected to place contracts before the close of the season are not ready to buy yet, and not much activity is expected in the market this month. A little more activity has been shown the past week in chartering vessel tonnage for Ore shipments, contracts having been closed for shipping about 500,000 tons of Ore. The Ore shipments are still light, although they show some improvement. Dock space is getting scarce, and it is probable that nearly all the Ore that is shipped late in the season will have to go forward directly to the furnaces. Ore prices at Lake Erie docks, per gross ton, are as follows: Old Range Bessemer, $4.50; Mesaba Bessemer, $4.25; Old Range Non-Bessemer, $3.70; Mesaba Non-Bessemer, $3.50.

**Pig Iron.**—The market was slightly more active the past week than in the few previous weeks. While the sales were small in number, several fair sized tonnages were disposed of in this territory. We note the sales by one interest of 1200 tons of Malleable Bessemer for last half and first quarter delivery, at $15.50; three lots of No. 2 Northern Foundry Iron, one of 300 tons, one of 1200 tons, and the other of 2500 tons, all at $15.25 for last half delivery, at Ohio furnace. Another sale was 1000 tons of Foundry Iron by a local furnace on the basis of $15.65, for No. 2, delivered, Cleveland. There was an inquiry from a southeastern Ohio consumer for 500 tons of Northern Foundry Iron, but it is understood that the order was placed in another territory. Local furnaces quote No. 2 Foundry Iron at $15 to $15.50, at furnace, the latter price being for local delivery. Valley furnaces quote No. 2 at $14.75 for spot shipment and $15 for balance of the year. A local furnace interest reports an improvement in inquiries for Basic Iron, having received inquiries in the past few days aggregating about 7000 tons. Prospective purchasers seem anxious to buy for a portion of their next year's requirements, the inquiries being for the balance of the year and the first and second quarters of 1909. While inquiries for Foundry Iron are scarce, furnacemen regard the outlook as somewhat better. The melt in this territory in July showed quite an increase over June, and a further increase in the consump-

tion is expected during August. Ella Furnace of Pickands, Mather & Co. has gone in blast on Bessemer Iron. For prompt shipment and for the balance of the year we quote, delivered, Cleveland, as follows:

| | |
|---|---|
| Bessemer | $16.55 to $16.90 |
| Northern Foundry, No. 1 | 15.75 to 16.25 |
| Northern Foundry, No. 2 | 15.40 to 15.75 |
| Northern Foundry, No. 3 | 15.00 to 15.40 |
| Southern Foundry, No. 2 | 15.85 to 16.35 |
| Gray Forge | 14.90 |

**Coke.**—The market is very quiet and prices are weak. Considerable spot Furnace Coke has been thrown on the market at low prices, which has had the effect of lowering the contract price. We note the sale of one lot of Connellsville Furnace Coke at $1.50, at oven, for third quarter delivery, and lower prices for spot shipment are reported. For the balance of the year delivery we quote Connellsville Furnace Coke at $1.65 to $1.75. For the same delivery we quote 72-hr. Foundry Coke at $2 to $2.15, at oven.

**Finished Iron and Steel.**—The improvement noted last week in specifications has kept up in a very satisfactory manner during the past week. A fair volume of orders for about all lines of Finished Material has been entered for early shipment. The orders are well scattered among the manufacturers and implement makers in this territory. During the week a leading producer closed contracts for about 50,000 tons of Finished Material. About all the important consumers are now under contract. Good sized specifications have been received from local jobbers for Structural Angles and Steel Bars. Mills that reroll hard Steel Bars report the closing of contracts for a fair volume of tonnage, and one rerolling mill that has been quite active in this territory among the implement people has advanced its base price on hard Steel Bars from 1.25c. to 1.30c. and 1.35c. While there is no additional work in sight requiring a large tonnage of Structural Material, there is good inquiry for small lots. In addition local plants are figuring on some important contracts for the Government in Panama and on the Pacific Coast, and other contracts in Canada that will require considerable tonnage of Structural Shapes and Plates. The Bar Iron situation shows no improvement, the demand being light. Some orders that are usually placed here have been taken by Eastern mills that are cutting the price $1 or more a ton. The Union Rolling Mill, which has been idle since July 3, resumed operations yesterday, and the Empire, which closed down at the same time, will start up next week. Neither has much tonnage on its books. Jobbers report a slight increase in the volume of both their mill and warehouse orders. The demand for Sheets shows a slight improvement, although it is still light. Outside of some reported cutting by smaller mills on Sheets and Plates, prices are being well maintained. We quote Iron Bars at 1.45c., Cleveland, for car lots; Steel Bars at 1.50c., Cleveland, for car lots, half extras; Beams and Channels, 1.70c., base, Cleveland; and Plates, ¼-in. and heavier, 1.70c., Cleveland. We quote Sheets, mill shipments, car lots, Cleveland, as follows: Blue Annealed, No. 10, 1.90c.; Box Annealed, No. 28, 2.60c.; Galvanized, No. 28, 3.65c. Jobbers quote Steel Bars out of stock at 1.65c. to 1.70c. Beams and Channels out of stock are 2c., and Plates, ¼-in. and heavier, 1.90c. Warehouse prices on Sheets are as follows: Blue Annealed, No. 10, 2.10c.; Box Annealed, No. 28, 2.70c.; Galvanized, No. 28, 3.80c. Warehouse prices on Boiler Tubes, 2¾ to 5 in., are 64 per cent. discount, and on Black Merchant Iron Pipe, base sizes, 71 per cent. discount.

**Old Material.**—The market is firmer, and advances in price were made in several grades during the week. Not many actual sales are reported, the market being unchanged in this regard, but there are more inquiries, especially for Steel Scrap, although inquiries are believed to be mainly for the purpose of testing the market. Many of the dealers are asking about 50c. a ton above the ruling market quotations, and expecting a further advance in price are not anxious to sell. Consumers are unwilling as yet to pay the advance in price. The railroad offerings this week include about 1000 tons to be sold by the Pennsylvania, 2500 tons by the Lake Shore and from 3000 to 4000 tons by the Baltimore & Ohio. Dealers' prices to the trade, per gross ton, f.o.b. Cleveland, are as follows:

| | |
|---|---|
| Old Steel Rails | $14.00 to $14.50 |
| Old Iron Rails | 15.50 to 16.00 |
| Steel Car Axles | 17.50 to 18.00 |
| Old Car Wheels | 14.50 to 15.00 |
| Relaying Rails, 50 lb. and over | 22.00 to 23.00 |
| Heavy Melting Steel | 14.00 to 14.50 |
| Railroad Malleable | 12.50 to 13.00 |
| Agricultural Malleable | 11.00 to 11.50 |
| Light Bundled Sheet Scrap | 9.00 to 9.50 |

The following quotations are per net ton, f.o.b. Cleveland:

| | |
|---|---|
| Iron Car Axles | $16.00 to $16.50 |
| Cast Borings | 6.50 to 7.00 |
| Iron and Steel Turnings and Drillings | 7.50 to 8.00 |
| Steel Axle Turnings | 8.50 to 9.00 |
| No. 1 Busheling | 11.50 to 12.00 |
| No. 1 Railroad Wrought | 13.00 to 13.50 |
| No. 1 Cast | 12.50 to 13.00 |
| Stove Plate | 10.00 to 10.50 |
| Bundled Tin Scrap | 8.00 to 9.00 |

## Buffalo.

BUFFALO, N. Y., August 4, 1908.

**Pig Iron.**—The same condition prevails in the Pig Iron market that has existed for the past three weeks—a hopeful feeling with a slow but steady improvement—although the consumptive demand is small in the aggregate. There is very little inquiry for deliveries beyond the present half of the year, and furnaces do not encourage such buying. Prices are substantially the same as quoted last week, being approximately as below:

| | |
|---|---|
| No. 1 X Foundry | $16.00 to $16.25 |
| No. 2 X Foundry | 15.25 to 15.75 |
| No. 2 Plain | 15.00 to 15.25 |
| No. 3 Foundry | 14.75 to 15.00 |
| Malleable Bessemer | 16.00 to 17.00 |
| Gray Forge | 14.75 to 15.00 |
| Charcoal | 20.00 to 20.50 |

**Finished Iron and Steel.**—The general conditions in Structural Material and other Finished Iron and Steel are better, and there is an undercurrent of optimism. Although orders are slow in materializing and the propositions now in hand are small, there are encouraging indications of larger business later.

**Old Material.**—The market is a little stronger with some improvement in demand; but it is principally a dealers' market, with a limited amount of business coming from consumers. Prices have advanced slightly, and there is an upward tendency. We quote, per gross ton, f.o.b. Buffalo, as follows:

| | |
|---|---|
| Heavy Melting Steel Scrap | $13.50 to $14.00 |
| No. 1 Railroad Wrought | 14.00 to 14.50 |
| No. 1 Railroad and Machinery Cast Scrap | 14.00 to 14.75 |
| Old Steel Axles | 16.00 to 16.50 |
| Old Iron Axles | 18.00 to 18.50 |
| Old Car Wheels | 13.50 to 14.00 |
| Railroad Malleable | 12.50 to 13.00 |
| Boiler Plate | 11.50 to 12.00 |
| Stove Plate | 12.00 to 12.50 |
| Grate Bars | 11.00 to 11.50 |
| Pipe | 11.00 to 11.50 |
| Wrought Iron and Soft Steel Turnings | 7.00 to 7.50 |
| Clean Cast Iron Borings | 6.00 to 6.50 |
| No. 1 Busheling Scrap | 11.75 to 12.25 |

## The German Iron Market.

BERLIN, July 21, 1908.

The situation in the Iron trade continues to grow worse. Various market reports agree that there is a steady deterioration of the general position. Everywhere supply exceeds demand, and prices, where not fixed by trade organizations, are being cut right and left. Consumers are still pursuing their policy of the past half-year of buying only for immediate requirements. The Stahlwerksverband, in making the previously mentioned price reduction on Billets, undertook to bring pressure on consumers to compel them to place longer contracts by making that reduction apply only to orders placed prior to July 15. That date has now passed, yet there is no news at hand indicating that the old price has been restored.

### Pig Iron Production Declining.

The June statistics of Pig Iron production indicate that the deterioration of the trade position is beginning to tell more directly in reducing the output of this commodity. The make of the empire for that month was only 956,425 metric tons, which was the lowest production for any month since February, 1906. It was 54,492 tons less than in May, and 87,911 tons less than in June, 1907. The half-year's production reached 6,049,721 tons, which was 306,232 tons less than for the first half of 1907. The reduction, which was somewhat less than 5 per cent., fell chiefly in the June quarter.

This reduction may be regarded as very slight, in view of the most unsatisfactory state of the Iron trade generally. The cause for the maintenance of such a high rate of production under these circumstances is to be found chiefly in the fact that the great mixed works which use furnace gases for power development cannot blow out a furnace without seriously deranging their machinery plant. The gases have become such a valuable product that the furnaces are kept at full blast for their sake, even though Pig Iron may accumulate at the furnaces. By a curious coincidence the same thing is going on in the Coking industry. The gases from Coke ovens are largely utilized for heating boilers; and there is a steady market, with good prices, for the by-products. Thus Coke is accumulating in unusual quantities at the ovens, being already stated at 750,000 tons. The stocks of Pig Iron have risen to 500,000 tons or somewhat more; and the accumulation is almost wholly with the great mixed works which need the furnace gases. This curious development was aptly described by one of our journals a few days ago, which remarked that Pig Iron has become a valuable by-product of the furnaces and Coke ovens.

### Exclusive Pig Iron Makers Dissatisfied.

The great companies can well afford to accumulate Pig, for they can be sure that it will be needed at their own

mills as soon as prosperity returns. Many of them had even to buy additional supplies during the past few years; what they accumulate is therefore but a guarantee against their own excessive requirements at some future time. With the numerous detached furnaces, however, the case is quite different. They cannot afford to smelt Iron and let it lie several years till they can find a market for it; hence the curtailment in production has fallen almost wholly upon them. That this has not tended to increase their satisfaction with existing syndicate arrangements goes without saying.

The greatest interest therefore attaches to the existing negotiations looking toward consolidating the four Pig Iron syndicates. Several meetings have been held on the subject, and a committee representing the four groups has been appointed to take the matter in hand and try to arrange satisfactory terms for a great national syndicate. The best informed authorities, however, speak of the difficulties in the way as being well-nigh insurmountable; and at this moment it looks extremely doubtful whether all the divergent furnace interests can be brought, as the Germans say, "under one hat." The uncertainty in this matter is at the moment one of the most depressing factors in the trade—it is causing consumers to hold back with their contracts, while producers are quite in the dark as to what market conditions are to be expected after the end of the year.

### Controversy as to Import Duties.

Another factor causing a feeling of uncertainty is the quarrel over the duties on crude Iron and Steel and Scrap, to which reference was made a month ago in this correspondence. The open-hearth Steel men and the independent rollers are vigorously pushing their petition for the abolition of the duties, and, according to last accounts, nearly 60 works had signed. These concerns bitterly resent the course of the great mixed works of the Verband in representing the independent mills as behind the times and as engaged in a losing game because their mills cannot be run as economically as those of the great works, which begin with their own Ore and Coal supplies and carry the product through all stages of production. They claim, on the contrary, that many of the independent mills are better equipped for turning out high-class special products than the great works running on staples.

This controversy over the import duties has recently taken a new turn through a movement among the Siegerland mine owners in favor of putting a duty on Iron Ores. They claim that their mines have now been worked out to such a deep level that they need protection to compensate them for the increased cost of mining. The Siegerland Ore producers have just voted a 50 per cent. restriction of production, after having been running for some time on a 20 per cent. reduction. Although they recently reduced their price for roasted Ores to 16.50 marks in 10-ton lots, consumers show no inclination to buy. Some of the big companies displayed a disposition to place orders at lower prices; but these offers were rejected on the ground that the price just quoted already means a loss to the mine owners.

### Steel Syndicate Shipments.

The shipments of the Verband in June amounted to 378,361 metric tons of Billets, Rails, and Structural Shapes, against 414,885 tons in May and 514,664 tons in June, 1907. With the exception of last December, the shipments of Billets were the lightest for three years or more. In Structural Shapes the movement was the lightest for four months. In the export trade with England the German mills are feeling the competition of Belgian producers of Billets; the latter are making prices there, and the Germans have to meet them or get themselves ruled out of competition. Billets and Muck Bars are sold at slightly above 75 marks, f.o.b. seaport. Basic Steel ingots and heavy blooms cost in the home market 82.50 marks, with 15 marks thrown off where the finished product is exported. The price of rough-rolled Ingots is 87.50 marks; Billets, 95; Muck Bars of the usual dimensions, 97.50, with 5 marks higher for Open Hearth Steel. Ordinary hardened Bessemer Steel for tool making purposes has been reduced to 132.50 to 135 marks, according to the quantities taken.

The price of Bars has been beaten down sharply by several of the big mixed works—the price of this commodity not being fixed by the Verband. They are selling at 95 marks, for export, f.o.b. seaport. Few if any mills are selling for home consumption below 100 marks, and some are demanding slightly more than that. Bars of Open Hearth Steel cost as much as 110 marks. Bars of Wrought Iron, in the ordinary commercial forms, have recently been reduced to 127.50 marks, delivered, when bought by nearby parties.

In heavy Plates there is sharp competition for what business comes on the market. Prices have accordingly been cut very low, and even then the mills are short of work in this line. Some Ship Plates are being taken for the navy, but orders for commercial vessels have almost entirely ceased to come in. There is also short buying of Boiler Plates, and consumers show a disposition to depress prices; but these seem to be held somewhat more firmly than hitherto. In Thin Sheets the situation has become slightly better, through increased export business. In Tin Plates prices have been reduced, and makers are thus able to hold off English competition more successfully. The prices for ordinary Tank Plates of Basic Steel range between 110 and 112.50 marks, with 117.50 to 120 marks for Open Hearth. Basic Boiler Plates are seldom sold under 122.50 to 125 marks.

### The Hardware Trade.

Conditions in all sections of the hardware trade are most unsatisfactory. The depression in the building trades has been severely felt by manufacturers of builders' hardware; and the export of such goods is light. At Solingen the cutlery trade is in a state of great prostration. Business with the United States remains at a low ebb, some of the shops having lost fully three-fourths of their usual volume of trade with America.

The manufacturers of firearms are pretty well employed, and the same thing is partly true of the machine tool shops; but the situation with the latter is gradually growing worse. At a recent meeting of the manufacturers in this branch rather pessimistic forecasts of the future were given. Most branches of the hardware trade are complaining that the prices of their materials are kept too high by the trade combinations in the iron industry.

## Metal Market.

NEW YORK, August 5, 1908.

**Pig Tin.**—The visible supply throughout the world on July 31 was 15,962 tons, according to the statistics of the Tin trade, compiled by C. Mayer. This is the largest visible supply since February, 1904, at which time the price of Tin was hovering around 28c. per lb. The deliveries into consumption in the United States during July were smaller than expected, being 2300 tons. The stock in the United States, exclusive of Pacific ports, was 1390 tons, compared with 1543 tons at the end of the previous month. The shortage in the local supply which has been growing more troublesome for weeks will be relieved when the Verona arrives, which is expected August 10. This is the steamer which carries over 900 tons of Tin, and was delayed some three weeks. Trade this week has been light and the London holiday, August 3, caused a practical cessation of trade here that day. The news of the small deliveries in this country caused a slump in London August 4. Price changes during the week have been as follows:

| | Cents. |
|---|---|
| July 30 | 30.60 |
| July 31 | 30.75 |
| August 4 | 30.50 |
| August 5 | 30.70 to 30.75 |

Tin was sold August 4, for delivery during the last half of the month, at 30.35c. The arrivals so far are 135 tons, and there are afloat for American ports, 2245 tons. The London market closes at £137 12s. 6d., for spot, and £138 17s. 6d., for futures.

**Copper.**—Buying by domestic consumers continues, and prices have advanced easily and rapidly. Lake Copper is held at 13.60c. and Electrolytic at 13.50c. Sales of the latter have been made to exporters at this figure. It is difficult to determine whether actual business has increased so as to warrant the rapid advance, for apparently domestic consumption has not yet reached much over two-thirds of normal. That there has been good buying, however, is not disputed, and some sales have been made for September and October delivery. This is not the first move above 13.25c. since the panic, for on November 6 by an injudicious move Electrolytic was advanced to 14.75c., and the price was then allowed to sag to 13c. as far as domestic consumers were concerned until after an advance to around 14c. at the end of January. Late in March another movement carried the price to 13.25c. Considerable Lake has been disposed of for September and October delivery, and Electrolytic has likewise been purchased for those later months. Coupled with this continued buying of American consumers comes a further demand from Europe. The buying of foreign interests, although not aggressive, is persistent. The advance in Standard Warrants has been sharp, and amounts to about £1 15s. in the week. The London market closes to-day at £61 for spot and £61 17s. 6d. for futures. The exports of Copper in July were 17,790 tons, making an exportation of 181,661 tons for the first seven months of 1908, compared with 97,288 tons in the same months of 1907. The imports in June, statistics of which are now available, were 6100 tons. The total importation for the first six months was 39,000 tons, compared with 65,400 tons last year. The price of base Copper Wire was advanced for the third time in as many days. The latest price—Wednesday afternoon—was 15c., base, in carload lots.

**Waterbury Average.**—The Waterbury average for July was 13c.

**Spelter.**—Prices have advanced suddenly in a way peculiar to the Spelter market. Prime Western brands are now quoted at 4.80c. to 4.85c., New York, and 4.70c., St. Louis. This may be the result of some concerted action on the part of Spelter producers, as there has been no very heavy

buying movement. Many brass mills still have Spelter that cost them more money, and the activity at the galvanizing works is not pronounced as yet.

**Pig Lead.**—The market is firm but quiet. The leading interest to-day advanced the price of shipment Lead to 4.60c. in 50-ton lots. Spot Lead is also quoted at 4.60c. The St. Louis market is firm at 4.45c. to 4.50c.

**Antimony.**—The volume of business is small, and quotations continue largely normal, Hallett's being held at 8c. to 8.25c., Cookson's at 8.25c. to 8.50c., and outside brands at 7.75c. to 8c.

**Nickel.**—Prices are unchanged at 45c. for ton lots and 50c. to 55c. for smaller quantities.

**Aluminum.**—The base price of the leading producer continues unchanged at 33c. for No. 1 Ingots. Rods and Wire are held at 38c. and Sheets at 40c.

**Tin Plates.**—New business is quiet, but prices are absolutely unchanged at $3.89, New York, and $3.70, Pittsburgh, for 100-lb. IC, New York brands. In Swansea Welsh Plates are unchanged at 14s. 4½d.

**Old Metals.**—Prices have advanced ¼c. to ½c. per pound, but at the expense of the volume of business. Ideas of buyers and sellers are at a wider variance than usual, and in consequence the range in the following dealers' selling prices is somewhat wider than usual:

| | Cents. |
|---|---|
| Copper, Heavy Cut and Crucible | 12.50 to 13.00 |
| Copper, Heavy and Wire | 12.25 to 12.75 |
| Copper, Light and Bottoms | 11.25 to 11.50 |
| Brass, Heavy | 9.25 to 9.50 |
| Brass, Light | 7.50 to 7.75 |
| Heavy Machine Composition | 12.00 to 12.50 |
| Clean Brass Turnings | 8.25 to 8.50 |
| Composition Turnings | 9.50 to 10.00 |
| Lead, Heavy | 4.25 |
| Lead, Tea | 3.90 |
| Zinc Scrap | 3.25 to 3.50 |

**Production of Spelter in 1907.**—The U. S. Geological Survey has just issued an advance statement on the production of Spelter in 1907, compiled by C. E. Siebenthal. The production in the United States was 249,860 tons of 2000 lb., an increase of 11.2 per cent. over the previous year. The consumption of Spelter in 1907 is given at 228,509 tons, and in 1906 at 221,781 tons. The world's production in 1906 and 1907 is given as follows, in tons of 2000 lb. each:

| Country. | 1906. | 1907. |
|---|---|---|
| Australia | 1,131 | 1,098 |
| Austria and Italy | 11,883 | 12,522 |
| Belgium | 168,067 | 170,307 |
| France and Spain | 59,293 | 61,438 |
| Great Britain | 57,971 | 61,286 |
| Holland | 16,150 | 16,526 |
| Poland | 10,595 | 10,735 |
| Rhine District | 75,729 | 77,459 |
| Silesia | 150,282 | 152,611 |
| United States | 224,770 | 249,860 |
| Totals | 775,871 | 813,842 |

## New York.

NEW YORK, August 5, 1908.

**Pig Iron.**—Inquiries are growing more numerous, and the market is more active. Quite a number of round lots of Foundry and Malleable Iron have been placed in New England, one interest purchasing 4000 tons of Foundry Iron. The Buffalo producers have again participated to a considerable extent in the New England market. We quote, at tidewater: Northern No. 1 Foundry, $16.75 to $17; No. 2 Foundry, $16 to $16.50, and No. 2 Plain, $15.25 to $15.50. Alabama Irons are quoted, $16.50 to $17, for No. 1 Foundry, and $16 to $16.25 for No. 2 Foundry.

**Steel Rails.**—The Baltimore & Ohio Railroad has placed orders amounting to something more than 14,000 tons. The Carnegie Steel Company was given 5200 tons and the Illinois Steel Company 1500 tons, most of the remainder going to the Pennsylvania Steel Company and the Bethlehem Steel Company, while it is expected some tonnage will be given the Cambria Steel Company. The Chesapeake & Ohio order for 10,000 tons has been finally placed, and announcement is made of a 7000-ton contract by the Boston & Maine, which the Lackawanna Steel Company booked some time ago.

**Structural Material.**—The amount of business figured on in recent weeks indicates a very considerable improvement in the Structural situation, and some of the fabricating shops have recently increased working time and forces. One feature of current inquiry is that manufacturers are figuring on additions, something that the market has been a stranger to for a good many months. While there are no large projects of this character, the aggregate of a number of modest ones is significant. It is also evident that not as many fabricating companies are willing to quote extremely low prices as figured in the sharply competitive estimates of a short time back. Yet enough slashing is done to make it certain that in one way or another 1.60c. Steel is not the basis on which all bidders are figuring. In July the largest amount of business estimated on in any month this year came before the fabricators—a total of about 105,000 tons, apart from a considerable aggregate of local work of a sort that never comes to the attention of the larger companies. Of this total about 30,000 tons will not go any farther. It may not be dead, but to all intents and purposes it is so, for the present, at least. Of about 60,000 tons let in July, the American Bridge Company took about 19,000 tons. The mills have found specifications increasing of late, and the outlook is regarded as more encouraging than at any time this year. In the past week the Seaboard Air Line placed 2250 tons with the Virginia Bridge & Iron Company; the New York Central placed 700 tons with the Jones & Laughlin Steel Company, and the Pennsylvania Lines, West, contracted for 500 tons of bridge work with the Fort Pitt Bridge Company. In New York City some good-sized jobs are coming up. For the Hoyt Estate apartment house, between Eighty-fifth and Eighty-sixth streets and Broadway and Amsterdam avenue, about 7000 tons will be needed; for the Emigrant Savings Bank, on Chambers street, 5000 to 6000 tons, and a large tonnage for the 22-story office building on the Everett House site, at Seventeenth street and Union Square. There is also a project of some size which the U. S. Realty & Improvement Company has under way, on Wall street, while at 11 and 13 Cliff street the Golden Hill Corporation will put up a loft and office building, requiring about 350 tons. The project for a 38-story building, at 44-50 Broadway, on a site of which a portion is now occupied by the Tower Building, the first Steel building in New York, is not far enough advanced to be considered alive. As a preliminary step a permit has been taken out, and the Steel for such a building as is talked of would amount to about 4500 tons. We continue to quote on mill shipments of plain material, tidewater delivery, as follows: Beams, Channels, Angles and Zees, 1.76c.; Tees, 1.81c. On Beams, 18 to 24 in., and Angles over 6 in., the extra is 0.10c. From store Structural Material is sold at about 2¼c.

**Bars.**—Manufacturers of Bar Iron report a continued improvement in the demand, although the volume of business is not yet sufficient to enable the leading mills to operate much more than half their capacity. Prices are fairly strong, being influenced by the firmness of Old Material. While some inferior qualities of Bar Iron may still be had at 1.36c. to 1.41c., tidewater, the manufacturers of Best Refined Iron are usually naming 1.46c. and upward, according to quality and brand. Manufacturers are even more cautious than they have been in making quotations on inquiries for long time deliveries. Steel Bars are held at 1.56c., tidewater.

**Plates.**—Plate manufacturers are deeply interested in the outcome of the bids on about 16 miles of 72-in. Steel Pipe for the extension of the Brooklyn water system, which were opened last Friday. The bids were so varied in character that careful comparison has been necessary, and the award has not yet been made. In some cases the bids were made on ⅝-in. Plates, and in others on 7-16 in., while some manufacturers bid on riveted Pipe and others on Pipe of the lock-bar type. The bids were as follows, per foot of Pipe, for furnishing, delivering, and laying: T. A. Gillespie Company, or East Jersey Pipe Company, $19.90 for lock-bar and $21.75 for riveted; Ryan Parker Construction Company, $20; Cooper, Evans, Brice & Co., $20.75; James H. Holmes, $21.75; James J. Hart Company, $22.90; S. K. Stanley Company, $23; Henry B. Reid, $24.85. It is stated that if 7-16 in. Plate is used in connection with the lock-bar type of Pipe this will reduce the quantity of Plates required to between 16,000 and 17,000 tons. It will of course not be known who will furnish the Plates until the contract has been awarded to one of the Pipe manufacturers named. The general demand for Plates continues quiet, current orders calling for rather small lots. Standard sized Plates are quoted as follows, at tidewater: Sheared Plates, 1.76c. to 1.86c.; Flange Plates, 1.86c. to 1.96c.; Marine Plates, 2.16c. to 2.26c.; Firebox Plates, 2.65c. to 3.50c., according to specifications.

**Old Material.**—A tendency is observed among rolling mill manufacturers to take a little more material, but the demand in this direction is not sufficient to cause any change in prices. Some movement has occurred in Heavy Melting Steel Scrap, but principally among dealers. The foundries are buying rather sparingly. A little better demand, however, is observed in Old Car Wheels, on which prices are slightly higher. We quote as follows per gross ton, New York and vicinity:

| | |
|---|---|
| Old Girder and T Rails for melting | $11.00 to $11.50 |
| Heavy Melting Steel Scrap | 11.00 to 11.00 |
| Old Steel Rails, rerolling lengths | 12.50 to 13.50 |
| Relaying Rails | 21.00 to 22.00 |
| Old Iron Rails | 15.00 to 15.50 |
| Standard Hammered Iron Car Axles | 16.50 to 17.00 |
| Old Steel Car Axles | 15.00 to 15.50 |
| No. 1 Railroad Wrought | 14.00 to 14.50 |
| Iron Track Scrap | 10.00 to 10.50 |
| No. 1 Yard Wrought, long | 12.50 to 13.00 |
| No. 1 Yard Wrought, short | 11.00 to 11.50 |
| Light Iron | 6.00 to 6.50 |
| Cast Borings | 6.00 to 6.50 |
| Wrought Turnings | 7.00 to 7.50 |
| Wrought Pipe | 10.00 to 10.50 |
| Old Car Wheels | 14.00 to 14.50 |
| No. 1 Heavy Cast, broken up | 13.00 to 14.00 |
| Stove Plate | 10.50 to 11.00 |
| Locomotive Grate Bars | 11.00 to 11.50 |
| Malleable Cast | 12.50 to 13.00 |

## Iron and Industrial Stocks.

NEW YORK, August 5, 1908.

No untoward development menaced the strength of the stock market in the past week. On the other hand, favorable reports were circulated regarding the gradual improvement in business, and the financial statement of the United States Steel Corporation was better than had been expected, while increasing strength in the price of copper caused a decidedly upward movement in copper stocks. The good statement of the United States Steel Corporation is largely accountable for the advance in the preferred stock, which is now selling close to its record price. The range of prices on active iron and steel stocks from Thursday of last week to Tuesday of the present week was as follows: United States Steel common 44½ to 46½, preferred 108½ to 111½; Car and Foundry common 39 to 40¼, preferred 102⅜; Locomotive common 53¾ to 57¾, preferred 107 to 109; Bethlehem Steel common 19½ to 21, preferred 50 to 51; Steel Foundries preferred 43; Cambria Steel 36 to 36⅞ ex div.; Colorado Fuel 31¾ to 33⅞; Crucible Steel common 6 to 6¼, preferred 44¾ to 47¾; Pressed Steel common 32 to 34, preferred 92½ to 97; Railway Spring common 44½ to 45½; Republic common 20¾ to 21⅜, preferred 73⅛ to 74¾; Sloss-Sheffield common 61¼ to 63, preferred 100 to 100⅛; Cast Iron Pipe common 24⅞ to 26, preferred 72¼ to 73; Can common 5⅝ to 5⅞, preferred 56 to 61. Last transactions up to 1.30 p.m. to-day are reported at the following prices: United States Steel common 46¼, preferred 111⅜; Car & Foundry common 40⅜, preferred 102⅜; Locomotive common 56¾, ex-dividend, preferred 109; Colorado Fuel 33¾; Pressed Steel common 34, preferred 96¼, ex-dividend; Railway Spring common 46¼; Republic common 21½, preferred 75⅞; Sloss-Sheffield common 63½; Cast Iron Pipe common 26¾, preferred 72¾; Can common 5¾, preferred 60⅝.

The Pittsburgh Coal Company has deposited $194,647 with the Union Trust Company of Pittsburgh as trustee, on account of the purchase of 50,000 shares of Monongahela River Consolidated Coal & Coke Company preferred stock, which was bought in 1903. This is the tenth semiannual installment, and amounts to $3.89 a share, making $33.54 per share paid, and leaving $11.46 a share to be paid in subsequent installments.

In accordance with the statement recently made by the president of the United States Cast Iron Pipe & Foundry Company, a suit has been brought in the Court of Chancery, Newark, N. J., to determine whether the company can pay a preferred stock dividend out of its surplus. The suit has been brought by a holder of common stock.:

**Dividends.**—The American Radiator Company has declared the regular quarterly dividend of 1¾ per cent. on the preferred stock, payable August 15, and 1 per cent. on the common stock, payable September 30.

The Electric Properties Company, a Westinghouse interest, has declared a quarterly dividend of 1½ per cent. on the preferred stock, payable August 10.

## South and Central American Notes.

SAN JOSE, C. A., July 1, 1908.

The railroad to Bolivia from Jajuy and Salta (Argentina) has been opened to the public as far as La Quiaca. The governors of the different states and representatives of the presidents of Bolivia and Argentina were present at the formal opening. A great deal of business is expected from the junction of this line to the Transandine of Chile and Argentina.

The new Palace of Justice at Buenos Aires will cost over $4,500,000. Most of the framework will be steel.

All effects of the recent earthquake are rapidly disappearing both at Valparaiso and Santiago. Iron and steel are being used everywhere in frames and buildings now, the roofs in many cases being corrugated iron. The old stone wharves and piers at Valparaiso harbor are being rebuilt with steel. The custom house buildings are steel frames with stone filling. Telegraph and telephone wires are being put under ground. For the last few months the port business at Valparaiso has increased by 100,000 tons. Two new lines from Europe, via the Magellan Straits, now touch at this port.

Many Uruguayans are going to Rio Grande, due to the revolutionary condition of Uruguay at present. Exports of cereals from the ports of Paranagua, Rio Grande and Porto Alegre are increasing rapidly, being already 25 per cent. larger than at this period last year. The new German liners are now running to the above mentioned ports and to Rio de Janeiro and Santos.

The chief of the revolutionists in Peru has been captured, and business goes on as usual. Exports of copper and silver bars continue from the Peruvian mines and those of Chonarcillo. Nitrates from the Atacama District are looking up in price; over 5000 men are at work in the district.

Chilian engineers are supervising the new lines in Bolivia. A committee of the London bondholders of the Paraguay railroads has lately been in Asuncion, and after studying the country and its possibilities has approved the new lines connecting with Bolivia, Argentina and Brazil.

Chile and Peru have apparently agreed over the routes of the Bolivian Central Railroad, and work is proceeding briskly. La Paz, Sucre and the Mamoré and Madeira country are to be connected soon by this route with the Pacific. Much of the capital will come from England and some of it from Valparaiso and Santiago. It is reported that the rolling stock will come from the United States.

This railroad in Bolivia will throw open a country in central South America which is half as large as the United States. Mines of copper, gold and silver abound, but have been worked sparingly in many cases, due to want of communication with the coast and foreign lands. Large sections on the Mamoré and Madeira are rubber producing, while coffee, cacao and all tropical fruits are abundant, and the most valuable medicinal plants are found in all the low sections. Several Americans are trying to get contracts from the Bolivian Government for a line Eastward into Brazil and to the coast, possibly to Santos.

Argentina is doing its best to influence the Paraguayan Government to build through from Entre Rios to Asuncion, thus giving a new outlet to the commerce of Paraguay, southern Bolivia and northern Argentina, by way of the Transandean Railroad, which is steadily being pushed through the Andes. For this line a number of bridges have been ordered from the United States.

Porto Alegre, Pelotas and Paranagua are to have steam dredges from America, and several new steel piers are to be built. Just now most of the commerce of this section goes to Germany. A new line of steamers is soon to be put on between Hamburg and Rio Grande.

The port of La Union on the Pacific is to be dredged by an American company; the old modern piers will be replaced by steel and every improvement made for the accommodation of large steamers and freighters. This port would thus be the main commercial highway for southern Salvador, Honduras and the interior of Central America. A large coffee traffic is carried on in this section; also rice, cotton and spices are produced. Much American mining machinery goes to the gold and silver mines, eastward of La Union. The recent disturbances in Nicaragua have not helped business there.

The navigation of the Ulua River by light draft steamers is being agitated in Honduras, and a number of American contractors are consulting the government about this matter. The Ulua drains a practically virgin country, containing valuable forests of precious woods, with grazing lands for hundreds of thousands of cattle. The building of a dozen steel bridges over the Ulua and its branches would be worth millions to this traffic. C.

The Frick Coke Company, Pittsburgh, has placed an order with the Phœnix Iron Works Company for four 150-hp. return tubular boilers, to be installed in its Filbert coal mine in the Connellsville region. The latter concern has also received an order from the Belmont Coal Company, Neff, Ohio, for one 150-hp. return tubular boiler.

The Mesta Machine Company, Pittsburgh, has recently shipped to the Central Iron & Steel Company, Harrisburgh, Pa., a No. 6 cast steel lever shear and has received an order from the Indiana Steel Company for a similar shear of a larger size, which will be built entirely of cast steel and will be operated by a 150-hp. motor.

# The Machinery Trade.

NEW YORK, August 5, 1908.

Machinery houses report a slight increase in sales in July over June, but as the latter month was about the dullest of the year with many, the increase is more indicative of a continuation of the spasmodic demand that has prevailed for some time than of a gradual and steady improvement. A few companies state that their sales of July totaled larger than those of any previous month in the year, but these are exceptions, and in most cases the increased demand was for special products. Business has been at such a low level that the increase in sales can in many instances be attributed to the Government orders. While there has been a great deal said about the coming prosperity and an optimistic feeling undoubtedly prevails, actual business varies but little, and according to many in the trade renewed activity will not occur until the railroads and large industrial corporations come into the market more freely. At the present time there are no signs of a large buying movement being started in the near future, and consequently a quiet summer is looked for. In the past week there were possibly a few more small inquiries, but aside from these the developments were not such as to indicate a noticeable improvement.

Efforts that have been made of late on the part of machinery manufacturers to obtain export trade are bringing good results, as it is reported in the trade generally that despite the prevailing lack of domestic demand for equipment export orders continue in a fairly good volume. The European demand is somewhat slow, but there has been an encouraging call for equipment from the Far East, and South American and Central American trade has been buying for railway and electric lighting equipment. The manufacturers in the power machinery line have been greatly benefited by this demand. The demand for equipment for Cuba and the East Indies, particularly in the way of sugar machinery and power equipment, has been good and export men generally are busy with inquiries. The Van Dyck-Churchill Company reports an encouraging export demand, having received several orders of late for machine tools for export.

### Heine Safety Boiler Company's New Plant.

The Board of Directors of the Heine Safety Boiler Company, St. Louis, Mo., has decided to proceed with the construction of the new boiler works which it has had in contemplation for some time past, and about which mention has several times been made in these columns. The new buildings will be erected on a tract of about 6½ acres in extent, with a frontage of 770 ft. on the terminal railroad, at a cost of about $300,000, and as soon as they are completed the present plant, which is located on leased property on Merchant street, will be abandoned. There will be a main building, 140 x 400 ft.; flange shop, 60 x 180 ft., and a power house, 75 x 80 ft., the buildings to be of structural steel, with cinder concrete roofs and brick walls. It is the intention to equip the plant with modern machinery, and there will be required practically a full equipment of boiler shop tools, including traveling and jib cranes, hoists, &c. The machinery will be motor driven, and in addition to the motors, engines and generators, pneumatic and hydraulic tools will form a part of the power house equipment. No list of the required machines has been prepared, and it is not probable that a complete schedule of the machinery requirements will be sent out for bids.

New York houses are figuring on the following tools for equipping an addition to the plant of the Reeves Bros. Company, Alliance, Ohio, manufacturer of cement machinery: One 14 in. by 18 ft. toolroom lathe, toolroom shaper, back geared toolroom press, universal cutter and tool grinder, automatic twist drill grinder, universal tool grinding and shaping machine, No. 3 mandrel press for bench, one 36 to 42 in. radial drill, 42 x 42 in. by 10 ft. heavy duty planer, motor driven; 16 in. by 10 ft. screw cutting lathe, 48 x 52 in. plain heavy duty triple geared lathe, motor driven; 5-ft. boring mill, 32 in. by 10 ft. lathe and a 20 in. by 14 ft. lathe.

The Worth Brothers Company, Coatesville, Pa., is now receiving bids for all the mechanical equipment and materials required for the construction of its proposed new blast furnace, which will have modern equipment throughout. The furnace, which will be constructed under the direction of the company's engineering staff, will be 85 ft. high and will have a daily capacity of 400 to 450 tons of basic pig iron. An ore bridge will also be built. The company expects to begin placing contracts soon for the entire equipment.

Within a short time a considerable amount of machine tool equipment will probably be purchased by the Carolina, Clinchfield & Ohio Railroad, whose headquarters are at Johnson City, Tenn. This railroad is a reorganization of the South & Western Railroad, and is to erect a modern plant capable of handling the largest motive power and is now preparing plans for the new shops. These will be the principal shops of the road and will be equipped with modern machinery.

The Tamaqua Mfg. Company, Tamaqua, Pa., whose plant was recently destroyed by fire, will erect a new building, 95 x 276 ft. Plans are being perfected which will show the arrangement and kind of machines that will be installed, and as soon as these are completed the company will prepare a list of its mechanical requirements.

H. L. Gilman, consulting engineer, 26 Linden place, Brookline, Mass., who is preparing plans for the erection of a large industrial plant on the water front in South Boston, will probably soon ask bids on considerable equipment, including coal handling apparatus, 2000 hp. of steam boilers for heating, pipe and fittings for steam, gas, water and compressed air; fire, boiler feed and elevator pumps; 1500-ft. steam driven air compressor, 2000 hp. of gas engines, with suction producers, direct connected to alternating current generators, &c. The plant will contain 3,000,000 sq. ft. of floor space to be rented for manufacturing purposes, the tenants to be furnished with electric current for power and light, steam and hot water heat, gas and compressed air, all generated and furnished from one central power plant. There will be 20 or more buildings, all eight stories high, of reinforced concrete construction, the work of construction to extend over five years. In addition to the buildings there is to be a wharf of over 1,000,000 sq. ft. of area located on the deep water channel, having direct rail connection with all railroads in Boston by means of car ferry and lighter systems. The entire plant will cost about $10,000,000.

Contracts have been awarded by the Coney Island & Brooklyn Railroad Company for the equipment for the large power house being erected at the corner of Smith and Ninth streets, Brooklyn, on which Ford, Bacon & Davis are consulting engineers. The equipment will include two 2000-kw. Curtis turbine engines, three 600-hp. Babcock & Wilcox boilers and an Alberger condenser. The General Electric Company will furnish all the electrical equipment. There is room in the new power house for equipment to develop 1200 additional horsepower.

The State Commission of Lunacy, Albany, N. Y., will receive bids until August 12 for four horizontal tubular boilers for the Hudson River State Hospital at Poughkeepsie, N. Y.

### Business Changes.

Jesse L. Law, 459 Van Buren street, Brooklyn, N. Y., who is well known in the machinery trade, having been connected with the New York store of the Niles Tool Works for many years, is now representing the Powell Tool Company, Worcester, Mass., and has completed negotiations with the Niles-Bement-Pond Company, New York, for the sale of the new patent Powell high speed accelerating cut forge type planer through its agencies. This planer is attracting considerable attention in the trade.

Patterson, Gottfried & Hunter, Ltd., New York, dealers in machinery, hardware, tools and supplies, announce their removal to their new building at 211-215 Centre street, extending back to Lafayette street.

# Chicago Machinery Market.

CHICAGO, ILL., August 4, 1908.

Movements observed in the machinery market during the week have not developed strength enough in any direction to excite particular comment. In some lines improvement is reported, but such statements are in almost every instance qualified by the explanation that the gains made are slight. Electrical equipment is in relatively better demand than almost any other kind of machinery, and seems to be slowly gaining ground. The sale of small units in gas and gasoline engines has not at any time declined in proportion to motive power equipment of the same and other kinds in large horse powers. Wide and constantly increasing diversity of uses to which such machines are being adapted has been an important factor in sustaining the demand, and their growing popularity as a motive power for farm machinery has likewise been a strong sustaining influence. The quietness in machine tools is unrelieved, dealers having nothing more to report than a moderate run of incidental orders, most of which are for smaller tools. A few fair-sized millers have been sold in the past week, and inquiries are out for several more, which will probably result in early purchases. The general feeling among machine tool dealers seems to be that no radical change in the situation can reasonably be expected for several weeks, but that the beginning of a steady upward trend may be looked for before long, which will gradually raise the market to its normal level of activity.

How long it will take to fully accomplish this result, is, of course, a matter of conjecture, but it will surely follow a general resumption of industrial activity which must of necessity precede it.

As a result of inducements offered by the citizens of Springfield, Ill., Fetzer & Co., Middletown, Ohio, builders of farm machinery, have decided to move their business to that city, where a new implement factory will be built for its accommodation. In addition to a factory site a cash donation of $15,000 is being raised by the Springfield Business Men's Association and Chamber of Commerce for the furtherance of this project. The new plant will require a considerable amount of new machinery equipment, including the following items, for which the company is now in the market: Five-ton crane, with controlling pendent; air compressor, 8 x 8 in. double cylinder; molding machines; squeezers; wheel machine for making steel wheels; chipping hammer; rattlers with exhaust; cupola, 10 to 12 ton; cupola fan; grinding stands; bull dozer; punches; shear, shapers; blacksmith forges; blacksmith fan; power hammers; metal planer; lathes; drill presses; wood planers; wood drill machine; sticker; shaving fan; wood wheel machine; sander; tennon machine, and full equipment of factory motors.

The Huntington Brewing Company, Huntington, Ind., is interested in the organization of a company with a capital of $10,000 for the manufacture of wire fence, and would be pleased to receive correspondence from the manufacturers of wire fence machines. H. W. Hoch is secretary and treasurer.

Very little new construction or improvements involving considerable equipment in electric traction lines has been coming up in the past 12 months within which period activities have been restricted to the actual necessities of maintenance. It is encouraging therefore to note that occasional projects of this character are beginning to develop as a direct result of easier financial conditions. An instance of this kind is noted in the proposed construction of 14 miles of road by the Southern Traction Company of Illinois, which will extend from East St. Louis to Belleville, Ill. For the overhead construction of this line both the bracket and wire span will be used. The initial machinery equipment of the power station will include three 366 hp. water tube boilers, two 500 kw., 6600 volt, 25 cycle turbo generators; and 500 kw. rotary converter; besides which there will be one 500 kw. rotary installed in the substation. No contracts have as yet been let for construction, but the right of way has been secured and some track laid in the city of Belleville and East St. Louis. Harpter Bros., engineers, 21 North Main street, East St. Louis, Ill., are the engineers in charge of this work.

The Lost River Light & Power Company advises that a power plant using the water of Cedar Creek, near Mackay, Idaho, will be built, and will furnish power and light to the town of Mackay and large copper mines in that vicinity. A transmission line of 11,500 volts to carry power 10 miles will be built, and arrangements are being made to extend the line and raise the voltage to 23,000 volts a little later on. The equipment of the plant will consist of two sets of high speed turbines and direct connected generators under a head of 245 ft., and a pipe line 700 ft. long will be laid. R. L. Rockwell, Ontario, Oregon, manager and superintendent, has charge of the design and construction of the system, and Hon. W. J. McConnell, Boise, Idaho, is president.

The question of re-equipping the municipal electric light plant of Logansport, Ind., is now up for consideration, and specifications for the new machinery required are being prepared by Prof. Esterline of Purdue University. The necessary equipment will be purchased as soon as appropriations are made for this purpose by the City Council and Board of Public Works.

The Tipton Light & Heating Company, Tipton, Iowa, operating a three-wire, direct current, 110 volt system, is in the market for a new unit of from 100 kw. to 120 kw. The company contemplates the installation of a direct connected unit, but generators belted direct will also be considered. The company will also purchase several thousand feet of copper wire.

The Washington Water, Light & Power Company, Washington, Ind., recently incorporated, purchased the water plant in that city at a receiver's sale. The new company intends to install a new 1,500,000 gal. centrifugal pump direct connected to steam engine; 20 fire hydrants, and lay 2 miles of new mains. The officers of the company are James P. Goodrich, president; Henry C. Starr, vice-president; E. H. Cates, treasurer; Carl R. Semans, secretary; J. T. Moorman, assistant secretary and treasurer. The company states it will not embark in the light and heating business for the present.

W. B. Krause, city clerk of Port Washington, Wis., will receive bids until August 25 for three 100 hp. water tube boilers, one 100 hp. and one 200 hp. tandem compound condensing Corliss engines, one 75 kw. and one 150 kw. three-phase, 60-cycle, 2300-volt generators, three panel switch board, 60 hp. induction motor, feed water pump, heaters, condensers and other accessories, also for the construction of an addition to the power house and the building of a stack.

## Philadelphia Machinery Market.

PHILADELPHIA, PA., August 4, 1908.

The month of July, usually a dull one, was in some respects better than had been expected. There was no marked general improvement in the demand for machine tools, but there was enough new business to lend considerable encouragement to the trade regarding the future. While the railroads and the larger industrial plants have shown no inclination to come into the market, there have been some few orders for emergency tools from these sources, but before they can become active buyers of equipment it will be necessary for these important factors in the trade to get at least a part of their large percentage of idle equipment and machine tools into service. Not until they do so, can we expect them to enter the market very freely. The bulk of the business placed recently has come from the smaller buyers. Minor plants for the manufacture of specialties, which have been established in a small way, have been the chief buyers, taking mostly equipment of the smaller size. Occasionally an order running into a few thousand dollars has developed, but they were scarce, and when received aided materially in the sale totals for the month. While the volume of business has been far below the average, the trade still expresses most optimistic opinions regarding the future. The immediate business in sight, however, is not large. Inquiries are not so numerous or large individually as might be desired, but there are some few good propositions in the way of equipment for steel casting plants and proposed shop extensions before the trade, some of which are expected to close during the present month. The trade will be pretty well satisfied if the small moderate gain which has been generally noticeable in the machinery as well as the iron and steel trade can be maintained until the coming election, after which, it is expected, there will be a more general forward movement toward permanent better conditions.

Manufacturers report irregular business the past week. In a number of cases gains have been made, but the improvement has not yet enabled many plants to extend their productive capacities far beyond the 50 per cent. mark, and in the majority of cases, particularly in the larger size establishments, that percentage has not yet been reached, and if it has it has been seldom maintained for any length of time. The small plants have as a rule been more successful in this respect and they have been able pretty generally to maintain a higher percentage of activity.

Sales during the week have again been rather irregular. Here and there a sale of moderate size was reported, but the larger portion of the current business has been made up of the smaller tools, with some fair business in the way of special equipment.

The export trade has been rather quiet. There have been few inquiries of importance, and but little business has been taken in this territory. Manufacturers transacting a regular export trade in power transmission and other specialties report orders to have been fewer and materially smaller in volume.

The business transacted in second-hand machine tools aggregates a fair total. Under existing conditions, much of the trade which would naturally go to the manufacturer and dealer in new tools drifts to the second-hand field, where tools suitable for the work contemplated can frequently be found at a lower cost. Sales are largely of an individual character, but cover the usual range of the medium and smaller metal and woodworking tools. Second-hand boilers and engines have been in fair demand only, as has also new equipment of this class.

The iron and steel casting plants have not been actively engaged. Some new business has been taken, but not sufficient to warrant any steady increased production at plants. This trade, on the whole, is dull, and will no doubt so continue until more activity is shown in railroad, machinery and general business circles.

The Belleville & Reedsville Railroad Company was incorporated recently to construct and operate a trolley road, 10 miles long, between the towns named, which are located in Mifflin County. The capital of the company is $100,000, and the officers are: President, L. M. Yoder, Belleville, Pa.; vice-president, S. M. Patterson, Avondale, Pa.; treasurer, F. W. Warner, Belleville, Pa.

The city of Brunswick, Md., has, it is understood, awarded a contract to the Specialty Construction Company, Norfolk, Va., for the construction of water works, including the laying of mains, erection of fire plugs, boring artesian well, and furnishing engine, pumps, tanks, &c.

The Tabor Mfg. Company, manufacturer of molding machines, &c., reports the volume of new business in the month of July as better than any previous month this year. Molding machines of the hinge type have been in better demand, while there have also been fair sales of power turnover machines and squeezers. A moderate demand is also reported for Taylor-Newbold saw blades. While the business

coming in has not enabled the company to run its plant over 50 per cent. of its capacity, it is much encouraged regarding future business.

The city of Scranton, Pa., has provided for an issue of bonds to the amount of $100,000, the funds to be used for the construction of a garbage disposal plant, for which bids were opened by the Board of Public Works the past week.

Bids will be received until August 13 by W. F. Shay, president, or Dr. B. Meredith, superintendent, of the State Hospital for the Insane, at Danville, Pa., for additions to the building and the mechanical filter plant.

## Cincinnati Machinery Market.

CINCINNATI, OHIO, August 4, 1908.

Conditions in the Ohio and Miami Valley machinery manufacturing sections show a marked improvement in tone of inquiry, taking a broad view of the market, while still indicating a regrettable backwardness in the shop labor and foundry departments. Tool manufacturers have not as yet felt any really encouraging signs, such as would lead them to put on men in numbers and increase running time of departments; such orders as have come out being usually for single tools, such as they could easily and quickly fill from stock. A number of manufacturers in this locality feel that dealers will furnish the real key to the situation, as the condition of their stock floors and order books, in a great measure, governs the character and size of the factory output. The correspondence with dealers, therefore, is being carefully weighed just now, and careful note taken of the sellers' impressions of crop conditions, collections, &c. A large local manufacturer of a standard tool, one of the largest specialists in the world in this line, notes the first (to him) legitimate and encouraging evidences of the railroads' intention to buy. The correspondence of the past week was, in the main, promising, and with the larger concerns the volume of inquiries and actual business for July was better than June; 20 per cent. better in the opinion of a large local tool interest. With the smaller manufacturers, however, July was not any better than June, and with some not so good; really being the lightest business month of the year so far.

In the line of bakers' machinery, sheet metal working machinery, electrical power machinery and the like, business has steadily improved; each month showing up better than its predecessor. One of the largest manufacturers of bakers' machinery in the country sums up the situation thus: "July was better than June; June was better than May. Our business is very fair; we feel that the tide has turned, and although business at the present time is from 15 to 20 per cent. less than it was this time last year, we feel that it is not so far out of line compared with that of normal times."

Local machinery manufacturers are pleased to learn that the old plan permitting consolidation of carload shipments is to be restored. For about a year manufacturers of machinery have been seriously hampered when loading less than car lots to other than Pacific Coast points, and are accordingly pleased to learn that the old custom is to be restored, power of attorney from consignee being, it is understood, the only stipulation required in availing themselves of the concession. Formal notice from railroad headquarters is expected this week.

The Cincinnati Car Company, builder of traction cars, has experienced something in the nature of a boom within the past few days, a three days' period showing up more satisfactory entries for the order book than the preceding three weeks. Among orders received by this company for equipment very recently are noted the Oneonta & Mohawk Valley Traction Company of New York State; Marion, Bluffton & Eastern Company of Indiana, West Pennsylvania Railway Company of Pennsylvania, and Capital Traction Company of Washington, D. C.

Engineering concerns report a gradual improvement in inquiry and a more satisfactory tone to correspondence involving preparation of plans for large enterprises in which machinery specifications will figure.

Among late incorporations in which machinery men are taking some interest is the Borings-Briquetting Company, which has organized by electing Charles G. Alton, a chemist and former Pittsburgh man, as president; J. C. Long, vice-president; G. Sheldon Browne, treasurer, and E. A. Schwab, secretary. These, with Harry Raine as general manager, complete the board and are owners of all the $30,000 stock. The company will manufacture a chemical which is to be used in coagulating the borings and fine powder which has hitherto been allowed to waste in the foundries. The press to be manufactured by the company and sold to concerns melting iron, molds the collected matter into bricks in handy form to be used again. A demonstration is scheduled for the coming week in one of the large Mill Creek Valley manufacturing plants, to which superintendents and managers of concerns all over the country are to be invited. These are called tests, and are to be made in various parts of the country.

The Rauh Mfg. Company has incorporated with $10,000 capital stock and will manufacture oil burners. It has taken over the business heretofore conducted by H. Rauh. The incorporators are: H. Rauh, R. A. Le Blond, C. O'Hearn, A. S. Bowling and E. Hoffman.

The Wessling Brothers Foundry Company has been incorporated with a capital of $30,000 to reopen the Weber Foundry, which was closed under proceedings in bankruptcy for some time. The Wesslings recently purchased the plant, and will arrange immediately to put the foundry in shape for conducting a general foundry business. Additional capital and influence which should prove very valuable to the new company is assured in the presence in the board of President Charles Kruse and Treasurer George W. Kleinschmidt of the Kruse Hardware Company of Cincinnati. Such portion of the company's supplies as can be will be supplied from the foundry.

Conditions at the various large plants in the Lima, Ohio, district are improving steadily. The Lima Locomotive & Machine Company continues to add men, and it is said may reach its normal running capacity by the middle or last of the current month. Relatively improved also are conditions at the nearby plant of the Ohio Steel Foundry Company, which manufactures all the steel castings used by the locomotive concern, and which resumed operations August 1.

The new furnace at Hamilton, Ohio, of the Hamilton Iron & Steel Company is expected to go into blast on or before August 15. The officers of this company elected at the last meeting of stockholders are as follows: President, George L. Pearson; vice-president, Edwin N. Ohl; secretary-treasurer, Reamy E. Field of the Field & Longstreth Company, Cincinnati. Directors: William R. Todd, Frank F. Dinsmore, N. S. Keith, and O. V. Parrish.

The elevator of the American Sheet & Tin Plate Company's plant, at Wellsville, Ohio, was partially destroyed by fire a few days ago.

A new electric power plant will be erected on the site of the old Franklin paper mill, at Hamilton, Ohio, by the Hamilton Hydraulic Company, under the direction of T. A. Jones, superintendent of the Harding Paper Mill of Excello, Ohio.

Reports from Toledo, Ohio, indicate a satisfactory improvement in conditions at most machinery manufacturing concerns there. The Toledo Machine & Tool Company recently shipped two carloads of punch presses and drop hammers to a central Ohio city and a carload of drop hammers to Philadelphia. An order from a Massachusetts concern manufacturing automobile parts calls for a punch press weighing 110,000 lb.; another weighing about 90,000 lb. goes to a New York concern making steel burial caskets. The company has reached about 80 per cent. of its normal output.

Work is expected to begin within a few days on the plant of the Continuous Water Power Machine Company at Alexandria, Ind. The former site of the Kelley Axe Company, now located in Charleston, W. Va., is to be used, and new buildings with proper equipment to cost approximately $50,000 are to be erected. The plant is to be in operation with not fewer than 100 employees on March 1, 1909, and a year later is to have not fewer than 500 men at work.

Orders recently issued at the plant of the Ohio Elevator & Machine Company, at Columbus, Ohio, place the working force on a 10-hr. per day schedule, and it is expected to increase the pay roll in a short time. Business is reported to be increasing, and quite satisfactory.

The American Rolling Mill Company started its Zanesville plant at midnight July 26, with a force of 200 men, working in eight-hour shifts. Nearly 100 more were put on last week, and it is expected that additions will be made gradually, until by fall the normal force will be employed. The plant has been closed with the exception of a week in May, since last November.

Plans have been prepared for new shops for the Northern Ohio Railroad Company, a division of the New York Central Railroad, at Delphos, Ohio.

The Marion Gray Iron Foundry Company, Marion, Ind., has secured the old plant of the Ward Fence Company in that city and will remodel it and install machinery necessary for enlarging its operations.

The brief strike of employees at the plant of the Newport Rolling Mill Company at Newport, Ky., was satisfactorily settled, after a two days' shutdown, on Friday, July 31, and on Monday, August 3, the 10 finishing mills were all started, anticipating a steady run till the holidays. Concessions were made by both the Amalgamated Association and the Andrews people. The company agreed to abandon its demand for the discharge of the men who originated the trouble, and the association officials agreed to the making up of the payrolls the same as at other mills at Middletown, Ashland, and Wheeling, W. Va.—namely, two weeks' pay will be held back at a time and payment made accordingly. The mill is to continue running in event of any further disagreement, pending settlement by an arbitration board. It is stated that eight modern annealing ovens will be built in place of the old puddling and bar mills abandoned since the company has been making its own steel.

The Droeges, who founded the business many years ago of the Licking Rolling Mill Company in Covington, Ky.,

have finally triumphed in the litigation which has been on for over a year over stock control of the property. John Droege, Fred Droege, and William Droege have acquired a quitclaim to the property for $25,000, and expect to have the mill running by the middle of August, with a force of 300 men.

## Cleveland Machinery Market.

CLEVELAND, OHIO, August 4, 1908.

The volume of orders taken by the local machine tool dealers during the past week showed no particular change as compared with the previous week. In fact, the condition of the market has remained about stationary since the beginning of summer, and dealers report that their July sales were about the same as those of June. Although there is no improvement in actual sales dealers report a slight improvement in inquiries, and the general feeling and outlook is somewhat better. Sales are limited mostly to single tools in small sizes, and few of the new inquiries are for more than one or two tools. The automobile makers are still buying some machine tools for the purpose of improving their plants, and in some cases adding to their capacity, preparatory to commencing work on their next season's output. Outside of the automobile plants the demand is largely from comparatively new industrial concerns that started business in a small way and are now adding to their equipment. Some orders for single tools are also being placed by large manufacturing concerns that are overhauling their plants. Now that the general outlook has improved a somewhat better demand is expected from this source.

There is a fair demand for second-hand tools, but the supply is somewhat limited and some of the dealers have very few in stock.

Tool builders report the volume of business still light, but some notice an improvement in inquiries. There is a better demand for special tools than for the standard tools. In heavy machinery an improvement is noted both in the volume of orders and inquiries. This is particularly true of cranes. For some time past there has been a limited volume of orders for small single cranes, but now a number of larger inquiries have developed, each for several cranes. Orders for locomotive cranes also show some improvement. An encouraging sign is the fact that builders of heavy machinery have received instructions to go ahead with some orders that have been held up for several months. An improvement is noted in the demand for air compressors and for pneumatic pumps from small municipalities that are installing water works systems.

The Interstate Engineering Company, Cleveland, reports a satisfactory improvement in the volume of its orders during July as compared with the preceding months. The company has recently secured contracts for the structural steel work for the new Hughes High School in Cincinnati, Grand avenue viaduct in Milwaukee, Wis., and for an addition to the silk ribbon mill of Kaltebach & Stephens, East Allentown, Pa. The company has recently completed the erection of a cast house, engine and boiler house and hoist tower for the plant of the Hamilton Iron & Steel Company, Hamilton, Ohio. The company reports the outlook good for a further increase in its business.

The Canton Mfg. Company, sheet metal worker, Canton, Ohio, reports its business very good. The company has so many orders on hand that it is necessary to keep the plant running three nights a week, and it has enough work to keep the plant running every night if the men could stand the night work during the hot weather.

Sealed proposals will be received by the secretary of the Board of Public Service, Cleveland, until August 11, for a compound engine directly connected to a 35-kw. generator, to furnish excitation to two generators at the Cleveland municipal electric lighting plant.

The Board of Service of Newton Falls, Ohio, will receive bids until August 10 for a steel water tower and tank having a capacity of 60,000 gal. Copies of the plans and specifications can be secured from the Town Clerk or from the Reliance Engineering Company, Cincinnati.

The Niles Board of Trade has succeeded in raising the $3000 bonus needed to secure the plant of the Youngstown Furnace & Supply Company. It is the intention to locate it in the former plant of the Niles Mine & Mill Supply Company.

Owing to an increase in the volume of orders the Warren City Boiler Works has been able to put on a larger force and increase the working hours in the plant.

The Davis Clutch Company, which recently established a plant in Cleveland, reports that orders are coming in in a satisfactory manner. The company, which began business in a small way, expects to be in the market soon for some additional machine tool equipment.

## Government Purchases.

WASHINGTON, D. C., August 4, 1908.

The Isthmian Canal Commission will receive bids until August 31, Circular No. 460, for railroads with grip cars, electric railroads with motor cars, traveling cranes, and other supplies.

The Isthmian Canal Commission will receive bids until August 24, Circular No. 450, for rock drills, &c.

The Bureau of Yards and Docks, Navy Department, Washington, will receive bids until August 15 for four boilers with stokers, super-heaters and stack for the Philadelphia Navy Yard.

The following bids were opened July 28 for supplies for the navy yards:

Class 11.—One motor driven rotary blower—Bidder 29. Brewster Engineering Company, Hoboken, N. J., $898.40 and $686; 198, P. H. & F. M. Roots Company, New York, $541.20; 219, B. F. Sturtevant Company, Hyde Park, Mass., $1071.

Class 242.—One 4-ton electric hoist—Bidder 20, Bigelow & Dowse Company, Boston, Mass., $400; 91, Hoisting Machinery Company, New York, $396; 222, Shepard Electric Crane & Hoist Company, Montour Falls, N. Y., $370.50; 252, Yale & Towne Mfg. Company, New York, $388.

Class 335.—One mast crane—Bidder 97, Hilles & Jones Company, Wilmington, Del., $145.

The following awards have been made for machinery for the Isthmian Canal Commission, bids from which were opened June 8, Circular No. 442:

Fox Bros. & Co., New York, class 2, one universal radial drill, $1559.

William Sellers & Co., Philadelphia, Pa., class 3, one slotter, $1535.

Drew Machinery Agency, Manchester, N. H., class 4, one staybolt cutter, $638.

Manning, Maxwell & Moore, New York, class 5, one elevating crank pin and small wheel press, $437; class 9, one flanging clamp, $338.

Prentiss Tool & Supply Company, New York, class 6, one power hack saw, $17.25.

Vandyck-Churchill Company, New York, class 7, one cold saw, $935.

The following awards have been made for supplies for the navy yards, bids for which were opened July 14:

General Electric Company, Schenectady, N. Y., class 71, 145 electric motors, $19,146.

Prentiss Tool & Supply Company, New York, class 81, one heavy double engine lathe, $11,975.

## Austrian Convicts as Farm Laborers.

United States Consul Charles B. Harris reports to the Department of Commerce and Labor from Reichenburg that, owing to the scarcity of farm laborers in that part of Austria, the civil authorities are experimentally hiring out to farmers convicts for work in the fields. He says:

The experiment is said to be proving successful, especially to the farmers. The selection of the convicts for such work is made from the most orderly and well behaved and from among those who it is thought will not attempt to escape. The prisoners so far employed are much pleased with the work, and their employment is an incentive to others to behave well in the prison that they also may be taken to the fields. The work by the convicts is willingly and well done, and as much labor is performed by them as is done by the regular farm employees, if not more. The prisoners are taken every morning to the field, carrying with them their food, except a small lunch consisting of bread and butter which is furnished by the farmer. The farmer pays the State 1 crown and 40 hellers per day, equal to 28 cents United States currency. Of this sum 30 hellers, or 6 cents, are credited to the account of the prisoner and paid to him upon his discharge from imprisonment. It is stated that there is no objection among the labor and trade guilds or the people to the employment of convicts in the fields as agricultural laborers.

The Bantam Anti-Friction Company, Bantam, Conn., has issued the Bantam *Anti-Friction Booster* for the purpose of advertising its specialties in the line of ball and roller bearings of all types. The publication is a four-page folder in imitation of a country daily paper. The inside pages constitute the advertising section and the outside pages are used for editorials, news items of local happenings and select miscellany. The reading contents are exceedingly bright, and even the most hurried reader will be sure to be attracted by something which will excite his interest and his risibles. The advertising section is deeply serious, and the company states that the information given on these pages consists of reliable facts duly sworn to by the officials.

# HARDWARE

THE falling off in business, whatever may be said on the other side, has certainly put the employers of labor, and especially of skilled labor, in a comparatively comfortable position. A year or two ago it was difficult in many lines to get competent workmen and to retain them if secured, while there was at the same time a general tendency on their part to shirk their responsibilities and slight their duties. The large demand for their services developed also a restlessness among the men that kept them moving from place to place, so that not a little was done to break up the old and very desirable permanence in the relations between employers and their men. The condition of things is illustrated in the remark of a prominent manufacturer that every morning there would be from 25 to 50 men looking for a place, but that if five of them were employed three would probably be gone before noon and the fourth at the end of the week. Many a manufacturer will be ready to testify that such an experience was usual rather than exceptional. It illustrates the unfortunate tendency which prevailed in the days of exceptional pressure on business.

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It is now quite different. Employees are under present conditions more anxious to please and are taking an interest in their work. The force in nearly all factories has been reduced, and this has naturally been by laying off the least efficient workmen. This reduction of force has the double effect of making those still employed anxious to retain their places, and to do this by earning credit for good service. It must be admitted that this condition of affairs has of late been somewhat disturbed by the exaggerated reports in the daily press of improvement in business in various localities. When men who are employed only four or five days in a week read that factories in their line at some other point have been put on full time and with a full force, they naturally assume that something is lacking in the management of the works with which they are connected and feel like looking for a better place. On investigation, however, they may find, as our own inquiries have frequently disclosed, that manufacturers in such cases had been keeping their establishments idle for some time and bunched their orders to make a good run, with the intention of stopping as soon as the work on their books should be turned out. When the stoppage occurs, that fact may not be reported in the daily papers. Hence, those who are cautious enough to inquire carefully before they abandon a position which gives them four or five days' work a week will stay where they are.

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The proportionate efficiency of the whole establishment is now increased. The output is as a rule more satisfactory. Mistakes are fewer and the whole plant is easier to handle because the men doing the work are competent. The question of wages, too, has been a comparatively simple one. Advances are not expected. While there have been few reductions, the tendency is rather that way. The men know it. It may or may not be necessary to reduce wages, but in the present juncture those who have work are anxious to keep it. This state of things is not only comfortable for the employers, but unquestionably good for the men, who are not under the demoralizing influences of an excessive demand for their labor. They are better for feeling that they must do their best.

## Condition of Trade.

The undercurrent of the correspondence of business houses and the reports of salesmen are interpreted as indicative of substantial improvement and upward tendencies, trade communications reflecting a spirit of greater confidence and better feeling than has manifested itself so far this year. Stocks of goods are unquestionably light everywhere, and warehouses are depleted, so that even moderate trade increases will compel a greater output than so far has been advisable, some taking the ground that later months will find merchants short of goods. The sharp competition of the last six months has evidently caused the smaller dealers to realize on their stocks, causing some to sell at or about cost, and in instances even less than cost. The representatives of some factories having wide connections assert that orders are coming in much better and of a more satisfactory character and for somewhat larger quantities. Railroad buying is alluded to as on a larger scale, and manufacturers are operating their plants more hours than has been the case for several months. Collections are much better. Houses having Southern connections report a better feeling and excellent crops, incidentally mentioning the fact that the saw mills are beginning to get business. Other manufacturing industries call attention to fairly good out of town business, which is coming along slowly but surely, although less is to be said for current local business. One representative company alludes to July business as unusually good in comparison with preceding months, and it looks for a steady improvement this fall, present conditions appearing encouraging not only in the East but in other sections. A conservative, closely managed house finds a decrease in its business for July of only 10 per cent. as against July last year, instead of 39 per cent. for a period of eight months, compared with the corresponding period of the preceding year. Favorable crop conditions are having due weight, and a better business in Mechanics' Tools points to the employment of hitherto idle workmen.

### Chicago.

In the sense that business for the month of July may be regarded as having squared with general expectations it has not, either as to volume or trend of developments, proved disappointing. Forces that might be counted on to give substantial impetus to market movements are, as a rule, not aggressively active in the dullest month of the year, and therefore hopes of vigorous reaction from existing conditions in this period were not seriously entertained. At the same time signs of promise concerning the future have been eagerly watched for, and unless they are strangely misunderstood indications enough of a favorable nature have been noted to warrant the conclusion that such vigils have not been in vain. For one thing, it is reflected that each succeeding day of fine growing weather of the kind the country has recently enjoyed adds multiplied wealth to the resources of agricultural communities, which will later on find its way into trade channels. Then, too, it is observed that even in those sections of the market where no distinct improvement is yet apparent a more optimistic feeling prevails, and there is everywhere less disposition to view the situation through blue glasses. But what affords even more encouragement and satisfaction is the fact that in some directions evidences of onward progress are beginning to take the concrete form of a gradually increasing volume of business. This seems to be true of Builders' Hardware. Manufacturers are reporting noticeable improve-

ment, especially in the demand for medium grades of Locks, Butts, Hinges and finishings commonly used in small residences, apartments and other buildings of moderate size. In this connection attention is called to a paragraph of the Chicago Hardware letter in issue of July 23, wherein the market on Hinges was classed along with Machine and Carriage Bolts as an open one. To clear this statement of ambiguity, it should have been explained that it was not meant to convey the idea that bars on prices had been thrown down; but rather that no efforts are now being made by manufacturers to influence the maintenance of a jobber's resale price on Hinges. In the sense, therefore, that each jobber is guided solely by his own judgment in fixing the selling price on these goods the market is an open one; but only in this sense, for with the exception of a few strongly competitive grades and sizes, the line is fairly firm and even. Manufacturers affirm that prices are, if anything, stronger and more uniform than at any time since the depression began. Of the market as a whole, however, nothing new respecting values has developed, although there seems to be less distrust than there was of the present stability of prices in general.

## St. Louis.

NORVELL-SHAPLEIGH HARDWARE COMPANY.—Business continues to improve steadily. All our salesmen are back from their vacations and every man is on his territory. Orders are longer and more "meaty." Merchants are buying with more confidence.

During the summer we have closed 30 min. earlier every day and given a half holiday on Saturday. The pressure of business has compelled us to lengthen our hours and to discontinue Saturday closing. While it has been customary to close early on Saturdays during the summer months, this year is the first time we ever experimented with shortening the hours of the day's work during the dull period. The experiment seems to have proved a success. Our employees appreciated the shorter hours and we do not see where our business suffered.

It seems to us it would be a good idea for jobbing houses to give the question of hours more consideration. We cannot afford to reduce our force during the dull periods. In order to give good service we must preserve our organization intact. We must naturally conclude if a certain fixed force of employees can handle a large volume of business in the busy spring and fall, the same number of people cannot be fully employed during quiet times. Therefore, the problem resolves itself into a question of having a force of employees adjusted to take care of a volume of business in quiet times, making it necessary to do constant night work in busy times, or of adjusting your force to take care of the business comfortably in busy times with shorter hours in quiet times.

We are quite sure all jobbers will agree night work is uneconomical and unprofitable. Good service cannot be got out of a man working steadily in stock or at a desk from 14 to 16 hr. a day. Such work is deadening. What is gained the night before is lost the following day. We believe it is demoralizing to allow employees to waste any time in business hours—we believe in separating work and play—but we do lean strongly towards the idea of shorter hours in the dull times in the summer and the dull times around the holidays.

Probably these remarks may be read by traveling salesmen and they may conclude the shorter hours apply to them. If they do, they are very much mistaken. The work of a traveling salesman is the healthiest in the world. Traveling salesmen as a class—leaving out those who are dissipated—are the healthiest men on earth.

A salesman who desires to succeed cannot work fixed hours. He enjoys many liberties. No man who works for wages is as independent as a successful traveling salesman. Some salesmen, however, seem to forget the advantages they enjoy. A good many salesmen show a disposition to combine all the advantages of a road job with all the advantages of a house job, and attempt to eliminate the disadvantages of both. A salesman in covering his territory enjoys change and variety. The social side is a large part of his work. He has plenty of time to read on the train and even when driving.

On the other hand, house work is a long and steady grind. In these days of large cities and great areas the house employee living in the suburbs must get away from home very early and he returns late.

The writer of this article has worked for many years both in the house and on the road, and when it comes to a question of work his sympathies are almost entirely with the house employee. As a matter of fact, the 10 years he spent as a salesman are looked back upon as a very pleasant and enjoyable experience, but he does not look back in exactly the same way to the days when he was a stock clerk and worked three or four nights a week.

On account of the good crops throughout the larger part of our territory, we confidently expect a very heavy fall business.

Let us all quit talking about either the panic or prosperity. These things are now dead issues that should be stored away in the attic with a well selected lot of reformers—National, State and municipal.

We are told that Cato in the Forum always ended every speech with the same expression: "I am also of the opinion; Carthage must be destroyed." So we will close: "I am also of the opinion the tariff must be revised."

## Cleveland.

W. BINGHAM COMPANY.—It is gratifying to note the improvement in business in almost all lines. Railroads are having more freight offered to them and many idle cars are being put in motion. Manufacturing plants are opening up almost all of their departments and putting to work many unemployed men. With the immense crops in sight and better feeling all around it is hoped that there will be no necessity for reduction in wages, and that all will soon be fully employed.

Midsummer vacations are still with us, and many employees and customers are off duty, so that those who remain to look after the business at the old stand in some instances have double duty to perform. However, it is hoped by the middle of August or not later than the first of September that all will have returned to their posts with renewed vigor and help to push along the prosperity for which we are all looking.

General Hardware trade at this time of the year considering the times is very good. Orders are coming in frequently from the country and are larger in size. Orders for future shipment are being placed much more freely, no particular line of goods having its special innings. There is a marked increase in orders for mechanics' Tools and Builders' Hardware over a few months ago.

Prices for the most part are firm, and it is not so much the price of the goods as it is ability to fill orders satisfactorily that merchants want. The better class of trade has no use for salesmen whose sole capital in trade seems to be price cutting on certain articles, expecting to be able to square themselves on others. Weak salesmen's jobs are not a stable article. What the trade wants and demands is fair treatment, moderate prices, quick shipments and as few back orders as possible.

## Nashville.

GRAY & DUDLEY HARDWARE COMPANY.—Business in the South for the month of July was far ahead of June, but July has always been much better for volume than June. This year the increase is more noticeable. While July has been a much more satisfactory month than June, at the same time the increase in volume is not quite in keeping with splendid crop prospects throughout our Southern country. People seem to be very cautious and conservative, and prefer to buy late and in small quantities. We cannot doubt but that the fall trade, although late, will be quite satisfactory. The reports which we are receiving from our traveling men, in a measure, confirm the Government reports on crop conditions. If good crops make good trade we can expect to work nights through the coming fall and winter.

Prices seem to be fairly well maintained. Jobbers seem to keep pace with the manufacturers in any changes of prices that they see proper to make. We have a fairly

steady iron market. Nearly all of the Tennessee and Alabama furnaces have a pretty good supply of orders on hand. We notice some increase in the earnings of the railroads. This is very encouraging.

Collections have not been quite up to the standard for the past 30 days, but there ought now to be some improvement in certain sections of the South on account of the wheat, vegetable and fruit crops, which are now being marketed. We believe that conditions will improve as the fall season advances.

### Omaha.

LEE-GLASS-ANDREESEN HARDWARE COMPANY.—The month of July closes with trade conditions in the trans-Missouri region healthy and satisfactory. The basis of business in this part of the coutry is the crop. The small grains just harvested have proved very gratifying as to quantity and quality. The weather continues propitious for the ripening of corn, which is our staple product, and every indication points to a large yield.

Prices of all farm products remain at remunerative values, and with these essential features existing a continuance of flourishing business conditions is assured for an indefinite period.

As far as fluctuations in prices are concerned, the Hardware market is comparatively featureless, and it is expected that values in a general way will remain about where they are for the remainder of the year.

### Baltimore.

CARLIN & FULTON.—There was a time when the Hardware trade in common with most other lines, such as dry goods, notions, boots and shoes and clothing, had but two seasons in the year, the spring and the fall, while "between seasons" there was little to do.

While this continues in other lines the Hardware business has changed, and the inventive genius of our manufacturers constatly bringing out some new article, at first perhaps a luxury, but later a necessity, provides something for every month in the year and gives opportunities for endless activity. To be sure some goods are adapted to one season and not to another, but there are no months in the year when there are no goods to be found suited to that particular time.

The passing of July brings us one month nearer to what is termed the fall season, when it is generally expected there is to be a decided improvement in business, and perhaps a volume of trade which, while not equaling the abnormal business of the early fall of 1907, will compare favorably with the preceding four or five years.

The basis for this expected revival of trade is the satisfactory condition of our agricultural sections, and the fact that once again the crops will bring to the producers billions of dollars to be added to the wealth of the country. With but one exception the grain crops of this year have never been surpassed.

The cotton crop will exceed all previous records. The prices have been excellent and the average farmer has never been more independent. These immense crops mean a great deal to the transportation interests of the country. They mean a immense demand for rolling stock and for railroad hands, and those roads which have allowed their physical condition to depreciate in the interest of mistaken economies and for the sake of dividends will find perhaps it had been better to have prepared for the inevitable business which is to come unless all signs fail. The B. & O. Railroad, after declaring an unearned dividend, have shut down their repair shops here, throwing probably 2000 hands out of work, in order to reduce expenses. This is undoubtedly hard upon the working man and has been severely criticised.

The dullest sections are the manufacturing and mining sections; but this cannot continue much longer.

According to the statement of the United States Steel Corporation, it has now 72 per cent. of the full capacity of its plants in operation, while three months ago only 45 per cent. were active. This improvement is not confined to any one section or industry, but is undoubtedly gathering headway everywhere, but the forward movement is being made with caution and conservatively.

Goods are not being bought or sold speculatively, but to meet the absolute requirements of an immense population whose daily needs are great and the fact that the market is not overloaded, that stocks are at a minimum wherever held, that a demand is certain, that the caprices of fashion have no part in the distribution of Hardware, all help to give us reasons for a belief in a good healthy trade the balance of the year.

### Louisville.

BELKNAP HARDWARE & MFG. COMPANY.—The market is singularly unresponsive, if we may believe the newspaper reports of large increased trade in sight. It ought to have that brisk character of buying and selling with a certain amount of anxiety of getting in at the bottom, but until buyers are persuaded that it is especially advantageous to buy now rather than later, we hardly expect to see the order books of the mills swollen to uncomfortable proportions.

We do not believe that any of them have had to take those prophylactic pills which are advertised on the billboards for "that full feeling." Things are reasonably low and nobody is expecting a break or serious decline. For whatever there is needed they are willing to pay present prices, but certain it is there is no scrambling to get into the band wagon, or whatever the vehicle is that goes before a boom. We are in the midst of politics and political terms naturally suggest themselves. If we are to believe the crop and other reports we have the three conditions which go to make up active business—namely, easy money, good crops in sight and a depletion of stocks to narrow proportions. It will be very singular if they fail to operate in this one case.

### St. Paul.

FARWELL, OZMUN, KIRK & CO.—Harvest is now here. Haying has been in progress for the last two or three weeks and will continue for some time. The hay crop is heavy except in the lowlands and will be of great value.

This has been an exceptionally favorable year for the growth of all the grasses, and meadows as well as pastures have had abundant growth. The Northwest has never appeared to better advantage than it now displays in its livery of trees and grasses in green and its fields of golden grain about ready for the sickle.

Barley and oats are being harvested. The former is a good crop, and if it can be got to the thresher in good shape the returns will be very satisfactory. The oat crop will be only fair. Rust and other causes have helped to reduce it. Still it will be fair.

Wheat, which is the crop that usually creates the most anxiety, as well as expectation, comes in at this time for the usual share. This is no longer "a one crop country," but it is still given up too much to raising wheat; partly for the reason that, as it is now raised here, it is "the lazy man's crop," partly for the reason that it turns quickly into money and partly because the raising of wheat can be carried on in a larger scale with a small amount of hired help than most kinds of farming. Less acreage in wheat and better farming are likely to grow in favor in the Northwest. Just now wheat is in the critical stage, and farmers and merchants are watching with intense interest the weather and the reports from the fields.

The wheat plant has so many enemies and its progress from early spring, when it first puts in an appearance, until the golden grain pours out from the thresher, is beset with so many interferences as to make one wonder that a successful realization ever comes. It is "too much rain" or "too little"; the winds blow hot or sometimes too cold, or it may be rust or something else, but, anyhow, all the while it is one thing or the other from start to finish.

Under present conditions fairly good returns from the small grain crops are essential, not only to the farmer, but also to the yearly balance sheet of the retail and wholesale merchant, and it will be a great relief to all to see a fair crop harvested in the next few weeks.

The present conditions promise a fair crop. Hot weather has hurt certain sections to some extent. There is just now some talk of black rust, but still the conditions are fair. The weather is now very favorable, and

it is probable that the crop will come on satisfactorily. It will not be a "bumper" crop, but it should be about that of last year, and with fair prices, which may be expected, the Northwest hopes to be in good shape at the end of the year.

Trade is fair, also collections, and business interests are very hopeful.

### Portland, Oregon.

FAILING-MCCALMAN COMPANY.—Business in Portland, and we understand in all the Pacific Coast territory, has been decidedly looking up during the last 30 days. All the local jobbers report a large increase in business this month over any previous month this year, and we are beginning to look forward to a six months equal to the first six months of 1907. Whether these conditions prevail all over the country we are unable to say, but we certainly hope they do. At any rate, the Pacific Northwest is no longer worrying over the result of the election, but has decided that we are going to have prosperity anyway, and is doing its best to make this belief come true. We certainly hope the rest of the country look at it the same way, for if they do nothing can stop us from taking up the course of business where we left it last fall.

### Philadelphia.

SUPPLEE HARDWARE COMPANY.—Trade continues fair. When we say this we mean equal to what it has been during the various months from January 1. When we think of the feeling that has existed throughout the country since October last we cannot wonder that trade has not reached to the exceedingly large proportions of the same period in 1906 and 1907.

When persons ask us, as they frequently do, how trade this year compares with the above two years, we answer that we have during the past year more particularly compared our trade with the year 1905, and business has been equal to that year, but, of course, it does not run to the basis of the years 1906 and 1907. Everything, however, points to improvement, although perhaps not until after the Presidential election will trade be what the country would like to see it, but after that we hope we can look for further improvement.

The conditions of the agricultural products as reported by the Government are certainly generally satisfactory. Factories have largely increased their production and taken back many of their employees, and it has been stated by some of them that the number now out of employment is no greater than the number of foreigners who have arrived in our country during the past two years.

Bank conditions throughout the country are certainly in a generally improved condition, and not only improved but good condition, and money is sufficiently plentiful in the hands of bankers that persons should be able to pay their bills when they become due, because the amount of interest banks are charging now is no greater than it was one year ago, and, of course, fully one-half less than it was four months ago.

We now feel that in the next few months persons in trade should again be able to feel happy and keep their stocks in good condition and pay for them when due, and the producers of all agricultural products in the North, South, East and West continue happy.

## NOTES ON PRICES

**Wire Nails.**—A continued increase in demand, made up, for the most part, of orders for small lots, is an encouraging sign of a larger consumption of Nails. Jobbers are carrying light stocks and are not anticipating their wants, as there are no indications of an immediate advance in price. Quotations for base sizes are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

| | |
|---|---|
| Carloads, to jobbers | $1.95 |
| Carload lots to retail merchants | 2.00 |
| Less than carloads to jobbers | 2.00 |
| Less than carloads to retail merchants | 2.10 |

*New York.*—A slightly better demand is noted in the local market, but business continues of moderate propor-

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tions. Nails are held on the basis of $2.30 per keg in small lots at store.

*Chicago.*—Conditions have been very favorable in this line and shipments for July have run several thousand tons ahead of last year. Orders are practically all for immediate shipment. Specifications from Texas and Southwestern points for Nails and Barb Wire have been liberal in anticipation of an advance in freight rates, which becomes effective August 10. Quotations are as follows: $2.13, in car lots to jobbers, and $2.18 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

*Pittsburgh.*—New business in Wire Nails is showing some increase, but as yet the demand is mostly for small lots for current needs. Most orders being sent in are for prompt shipment, showing that jobbers are carrying very light stocks. The opinion is steadily growing that prices on Wire Nails will not be any lower, but if a change is made it will be an advance. There is nothing to indicate that this will be made at an early date, but at the same time the Wire Nail market is showing steady betterment, both in demand and shipments by the mills. Quotations for base sizes are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

| | |
|---|---|
| Carloads, to jobbers | $1.95 |
| Carload lots to retail merchants | 2.00 |

Galvanized Nails are quoted at $1 over the price of the regular Nails.

**Cut Nails.**—Requirements continue moderate as reflected by mill shipments, which are for small lots. The volume of business shows but little increase. Quotations on Steel Nails are on the basis of $1.80 per keg, at mill, $1.75 being obtainable on the most desirable business. In the Western market Iron Cut Nails are held at an advance of 10 cents per keg over Steel Cut Nails, but this differential is not observed in the East.

*New York.*—Requirements continue light in the local market, resulting in a moderate demand. Steel Cut Nails are held on the basis of $2.15 per keg, for small lots at store.

*Chicago.*—Sales of Cut Nails have shown a slight improvement in line with general business conditions in the West. Prices are unchanged. We quote Chicago prices as follows: In car lots to jobbers, Iron Cut Nails, $2.08; Steel Cut Nails, $1.98. In small lots from store: Iron Cut Nails, $2.25; Steel Cut Nails, $2.15.

*Pittsburgh.*—The demand continues to be confined to small lots for current needs, and shipments by the mills are not very heavy. The Cut Nail trade so far this year has been extremely unsatisfactory, but an early demand is looked for with the opening up of fall trade. Quotations on Steel Nails are on the basis of $1.80 per keg, at mill, $1.75 being obtainable on the most desirable business. In the Western market Iron Cut Nails are held at an advance of 10 cents per keg over Steel Cut Nails, but this differential is not observed in the East.

**Barb Wire.**—Mills are shipping on specifications against contracts, and with this exception demand is light. Quotations are as follows, f.o.b. Pittsburgh, 60 days, 2 per cent. discount for cash in 10 days:

| | Painted. | Gal. |
|---|---|---|
| Jobbers, carload lots | $2.10 | $2.40 |
| Retailers, carload lots | 2.15 | 2.45 |
| Retailers, less than carload lots | 2.25 | 2.55 |

*Chicago.*—There is a little more activity than usual at this season of the year, chiefly owing to the demand from the South and Southwest in anticipation of higher freight rates. Specifications are for immediate shipment. Quotations are as follows: Jobbers, Chicago, car lots, Painted, $2.28; Galvanized, $2.58; to retailers, car lots, Painted, $2.33; Galvanized, $2.63; retailers, less than car lots, Painted, $2.45; Galvanized, $2.75; Staples, bright, in car lots, $2.25; Galvanized, $2.25; car lots, to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

*Pittsburgh.*—New business is very light, but a fair amount of tonnage is being shipped out by the mills on specifications against contracts. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

| | Painted. | Gal. |
|---|---|---|
| Jobbers, carload lots | $2.10 | $2.40 |
| Retailers, carload lots | 2.15 | 2.45 |
| Retailers, less than carload lots | 2.25 | 2.55 |

**Plain Wire.**—An increased demand is noted in anticipation of a good fall business in goods manufactured from Wire, especially Wire Fencing. Quotations per 100 lb. to jobbers in carload lots are as follows, on a basis of $1.80 for Plain and $2.10 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the price to retailers being 5 cents additional:

| Nos. | 6 to 9 | 10 | 11 | 12&12½ | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|
| Annealed | $1.80 | 1.85 | 1.90 | 1.95 | 2.05 | 2.15 | 2.25 | 2.35 |
| Galvanized | 2.10 | 2.15 | 2.20 | 2.25 | 2.35 | 2.45 | 2.85 | 2.95 |

*Chicago.*—There has been an increase in activity in this line, as the Implement manufacturers are offering specifications more freely for their requirements. The Fence manufacturers are making specifications in moderate volume. We quote as follows: Car lots to jobbers, $1.98, f.o.b. Chicago, and to retailers, $2.05.

*Pittsburgh.*—More orders are being placed and for larger tonnage than for some time. Fence makers are now enlarging their stocks in the expectation of a good fall trade. Prices are firm, and, we are advised, are being rigidly held. Shipments by the mills in July was reported as showing a material increase over June. Quotations per 100 lb. to jobbers in carload lots are as follows, on a basis of $1.80 for Plain and $2.10 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the price to retailers being 5 cents additional:

| Nos. | 6 to 9 | 10 | 11 | 12&12½ | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|
| Annealed | $1.80 | 1.85 | 1.90 | 1.95 | 2.05 | 2.15 | 2.25 | 2.35 |
| Galvanized | 2.10 | 2.15 | 2.20 | 2.25 | 2.35 | 2.45 | 2.85 | 2.95 |

**Copper and Brass Goods.**—Bare Copper Wire, for electrical purposes, was advanced August 4 to 14¾ cents, base, per pound, which put it back to where it was previous to July 20. On the latter date it was reduced to 14¼ cents, and on July 31 advanced te 14½ cents per pound, base, mill shipments, f.o.b. Another advance of ¼c. on August 5 makes the current base 15c. On August 1, manufacturers of Brass Goods issued a new price-list, showing changes both ways on some goods.

**Window Glass.**—The bullish feeling in the Window Glass market is manifested by advancing prices and the possibility of further advances. As stated in these columns last week, the Eastern Jobbers' Window Glass Association made an advance of about 5 per cent. A meeting of the Western jobbers is scheduled for this week at which it is anticipated that an advance in prices will be made. The American Window Glass Company voluntarily advanced the wages of its cutters and flatteners, and this action was followed by an advance in its quotations, which are reported to be as follows: First three brackets, single strength, 90 and 20 per cent. discount; 16 x 20 single, 90 and 10 per cent. discount; balance of single strength sizes, 90 and 15 per cent. discount. Double strength, A quality, 90 and 15 per cent. discount; first five brackets B quality, 90 and 25 per cent. discount; balance of double strength B quality sizes, 90 and 20 per cent. discount. A meeting of hand blown Glass manufacturers is expected to be held in the near future, at which time it is thought that they will advance the price of single strength at least 2½ per cent., and double strength at least 5 per cent. From the foregoing it will be recognized that more stability is shown at this time than for many months, from the movement to get prices nearer the statistical condition of the market. Manufacturers' stocks are referred to as being rather light, while jobbers are said to be carrying fairly heavy stocks. The Eastern Jobbers' Window Glass Association's price for Greater New York is as follows: Single, 90 and 25 per cent. discount; Double Strength Glass, 90 and 30 per cent. discount, from jobbers' list of October 1, 1903.

**Rope.**—More activity is reported in the Rope market, orders being more frequent and in some instances for larger quantities. Prices appear to be fairly well maintained on the basis of the following quotations for Rope 7-16 in. in diameter and larger: Pure Manila, 9½ to 10 cents; Pure Sisal, 7¼ to 7½ cents; No. 1 Jute, ¾ in. and up, 5¾ cents; No. 2 Jute, ¼ in. and up, 5¼ cents.

**White Lead.**—The demand for White Lead in Oil at this season is never very heavy, but a fairly satisfactory business is reported. Quotations are unchanged, as follows, for best brands: For lots of 500 pounds and over in packages of 100 pounds and upward, 7 cents per pound. In lots of less than 500 pounds, 7½ cents per pound.

**Linseed Oil.**—There has been quite a marked advance in the price of Flaxseed during the week and some crushers have advanced their price 1 cent per gallon in car lots. Other crushers have made no advance. No change has been made in the price of one to five barrel lots. The price of Seed is said to justify an asking price of 45 cents per gallon for Western Raw Oil, but lack of demand keeps the price down. Quotations in barrel lots are as follows: State and Western Raw, 42 to 44 cents; City Raw, 44 to 45 cents per gallon. Boiled Oil is 1 cent per gallon advance on Raw.

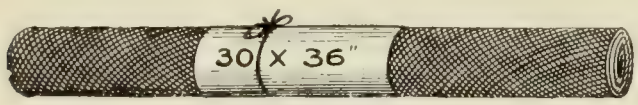
**Spirits Turpentine.**—A better demand at Southern points resulted in a stronger market, which has again eased off. Local demand is light and the New York market is represented by the following quotations: Oil Barrels, 40 to 40½ cents; Machine Made Barrels, 40½ to 42 cents per gallon.

## Getting Rid of Odds and Ends.

*To the Editor:* We have taken note of the article in your issue of July 23, headed, "Odds and Ends of Wire Cloth." Mr. Haskell's method is a good one to use if the remnants accumulate, but we have found what seems to us a better way.

We do not let them accumulate. The writer has just gone over our remnants of Wire Cloth and finds that we have 11 of them on hand, while we have cut up about 100 rolls of Wire Cloth thus far this season.

We accomplish this by taking each remnant as it is made and rolling it up with a piece of paper around it, marking the size plainly on the paper. We lay all these remnants near our Wire Cloth rack and instruct the clerks when they have a call for a small piece of Wire Cloth to look over the remnants before cutting it from the roll, and if they find one that comes near the size to cut it down. It takes very little time to look over the accumulation of remnants, as by the above method we keep them reduced down to a dozen or so, and we are enabled to get full price for the pieces cut from these




*Remnant of Wire Cloth Wrapped Up for Sale.*

remnants, while by Mr. Haskell's method one gets little if any more than the cost of the goods.

We think by this method the loss is reduced to a minimum and we also gain the point of not having a large accumulation of remnants lying around, with the possibility of carrying them through the winter.

We apply this method to other lines also and it has always been our policy to keep all odds and ends as well as damaged or out of date goods worked off as fast as they accumulate, believing that in this way we can realize much more on them than we could to get a large accumulation and then be forced to make some kind of a drive to work the goods off.

LEWISTON, MAINE. GEO. A. WHITNEY & Co.

The Parsons Hardware & Furniture Company, Parsons, W. Va., has recently taken possession of its new building. The salesroom is 50 x 120 ft. in size, and is exceptionally well arranged, being fitted up with Warren shelving, handsome showcases and other modern fixtures. In addition to a general line of Hardware and furniture the company carries Roofing, Cement, Lime, Sewer Pipe, Wall Paper and Carpets and Matting.

Hutchison, Sehorn & Hipp have lately commenced the Implement and Vehicle business at Charlotte, N. C. They are occupying the old stand of the Charlotte Hardware Company.

## Home Made Wrench Rack.

THE Wrench rack here illustrated is home made, but none the less has been found effective and convenient in displaying and carrying the retail stock of



*Fig. 1.—Home Made Wrench Rack.*

Wrenches handled by S. A. A. Walker, Gibbon, Neb. It was planned and constructed by C. A. Gordon, one of Mr. Walker's employees. The uprights are made of 1 x 4 in. dressed stuff, 3 ft. high, while the base is 24 in. long. Between the uprights are nailed V-shaped shelves, as shown in Fig. 2, made of two pieces of wood nailed together at whatever angle it is desired to have the Wrenches hang. This arrangement throws the handles of the Wrenches out clear of the Wrenches below them. The Wrenches are hung on both sides of the V-shaped shelves by opening the jaws just enough to hang on the pieces. The top shelf of the rack illustrated accommodates 20 6-in. Wrenches, the next shelf 18 8-in. Wrenches, the third shelf 16 10-in. Wrenches and the lower one 14 12-in. Wrenches on each side. The cost and selling prices of the Wrenches are marked on a card on the side of the upright. The rack is located on the end of a counter, and when a Wrench is sold from the front side the space is filled with a Wrench taken from the rear, thus keeping the front of the rack filled all the time. It is obvious that a rack of this kind can be made of any size to accommodate the stock of Wrenches.

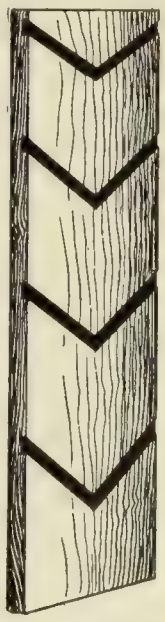


*Fig. 2.—The Shelves Between the Uprights.*

Harmon & Dixon, 117 Chambers street, New York, have been appointed exclusive agents in New York, New Jersey, Vermont, Canada and for export, by the Zelnicker Crayon Works, St. Louis, Mo. This company manufactures lumber and genuine soapstone crayons, as well as the "Suremark" brand of crayons for shipping purposes. The agents will carry a full stock of the line in New York from which to promptly execute orders.

Short Brothers have succeeded F. H. Dudley in the Shelf Hardware, Stove and Paint business, at 2033 O street, Lincoln, Neb.

# THE OSTER SYSTEM OF KEEPING RECORDS OF JOBS.

THE system of keeping records of jobs described in the following article was adopted by Oster Hardware Company, Minneapolis, Minn., after trying several other methods. The company also gives attention to sheet metal work, roofing, &c.

### The Job Under Consideration

was done for Albert N. Oster. The work was measured up by the estimator, and the estimated cost of material, including labor, was entered on a white estimate blank, with carbon copy on buff colored duplicate, as shown in Fig. 1. The estimate blank is 4¼ x 8½ in. in size, and indicates that the company offers to do the work for $113. This price was acceptable to the customer, and an order was given for the work to be done.

• • ESTIMATE BLANK • •

OSTER HARDWARE CO.

Minneapolis, Minn. 12/28 1907

Mr. Albert N. Oster

Res. 3432 Portland Ave So

Job at 2142-26 St. N.

We herewith submit specifications and bid on Sheet Metal work and Roofing as follows.

| AMOUNT | IN. | | | |
|---|---|---|---|---|
| 160 | 20 | Gutters I.C. Tin | 24 | 00 |
| 90 | 14 | Valleys " " | 9 | 00 |
| | | Flashing " " | | |
| 580 | | Front Deck " " | 58 | 00 |
| | | Rear " " | | |
| | | Bay " " | | |
| | | Bay " " | | |
| 112 | 3 | Galv. Conductor Pipes | 11 | 20 |
| | | " conductor " | | |
| 20 | 3 | Galv. Elbows | 3 | 00 |
| | | " " | | |
| 60 | 4½ | Ridge Roll | 4 | 80 |
| | | Hip Tins | | |
| 400 | 4x6 | Shingle Tins | 3 | 00 |
| | | Tar Roof | | |
| | | | 113 | 00 |

The work will be done in a neat, substantional and workmanlike manner. We offer to do the above work and furnish materials for One hundred thirteen 113 00/100

OSTER HARDWARE CO.

Per Andrew N. Oster

ACCEPTANCE

The foregoing specifications are satisfactory and hereby authorize the same executed

Date 12/28 1907 Signed Albert N. Oster

*Fig. 1.—Estimate Blank, Actual Size 4¼ x 8½ In.*

shown in Fig. 2, under the heading "estimate of material." This page, which is 6 x 9 in. in size, also shows the actual cost of the job figured out, indicating labor and material cost $76.44, against the contract price of $113, a profit of $36.56. The job book is made up of permanent white leaves, between which are perforated buff leaves, which are torn out after receiving a carbon copy of the job. The leaves of the job book are numbered consecutively in advance on a line with "No. of job," the carbon copy receiving the same number. This page number indicates the number of the job appearing on same, and is also used when charging the job in the sales book. The duplicates of both the estimate blank and the job book entry are given to the shop foreman, who files them alphabetically in an ordinary letter file kept in the shop.

TIME CARD
OSTER HARDWARE COMPANY

| | Date | No. | Hours | Name or Address |
|---|---|---|---|---|
| Mon. | 12/30/07 | 2 | 16 | Albert N. Oster |
| Tues. | 12/31 | 3 | 24 | |
| Wed | | | | 1386 |
| Thur. | | | | |
| Fri. | 1/17/08 | 1 | 10 | |
| Sat. | 1/18 | 2 | 20 | |
| Sun. | | | | |

| Materials | In. | Report | Materials | In. | Report |
|---|---|---|---|---|---|
| Gutter I.C. | 20 | 156 | Mitres | | |
| | | | Ridge Roll | 4½ | 64 |
| Valley | 14 | 94 | Hipp. Tin | | |
| | | | Shingle " | 4x6 | 400 |
| Flashing | | | Chimney " | | |
| | | | Galv. Iron | | |
| Deck | | 568 | Solder | | |
| " | | | | | |
| " | | | Tar Felt | | |
| " | | | " Pitch | | |
| Cond. | 3 | 108 | Gravel | | |
| | | | | | |
| Ells | 3 | 22 | | | |
| ) | | | | | |

N. B Do not fail to make correct entries.

Sign Name here

*Fig. 3.—Time Card, Actual Size 4 x 7 In.*

### Time and Material.

When the job is commenced a memorandum is made by the foreman af all material taken to the job on the reverse side of job book duplicate. In Fig. 3 is shown a time card which is of buff paper, 4 x 7 in. in size, being bound in pad form. This shows the entire time and all material used entered on it, for comparsion with the entries on the job book, Fig. 2. In actual practice the time cards are turned in to the foreman each day, upon which each workman records the time he worked on the job and the material used. A new time card is furnished each workman every morning, upon which the foreman writes the name of the party for whom the work is being done and the job number, and each evening the cards are returned, filled out, to the foreman. He enters the material report on the shop duplicate, after which he turns the time cards over to the bookkeeper to enter the time

12/28 '07 Job Taken — Amount $ 113.00

1/18 '08. Job Finished — Cost $ 76.44 — Profit $ 36.56

OSTER HARDWARE CO.

Sold to Albert N. Oster

Address 3432 Portland Ave So.

Job at 2142 N. 26th St. No of Job 1386

| Estimate of Material | Report | Net Cost per foot | Net cost | Price per ft. | Amount | Date 07 | Hours | Name | Cost labor | Labor |
|---|---|---|---|---|---|---|---|---|---|---|
| 160' 20" I.C. Gutter | 156 | 7 | 11.20 | 15 | 24.00 | Dec 30 | 8 | AL | 3.20 | |
| 90' 14" Valley | 94 | 4 | 3.76 | 10 | 9.00 | " 30 | 8 | GL | 3.20 | |
| 112' 3" Cond. | 108 | 4 | 4.32 | 10 | 11.20 | " 31 | 8 | AL | 3.20 | |
| 20' 3" Ells | 22 | 10 | 2.20 | 15 | 3.00 | " 31 | 8 | GL | 3.20 | |
| 580' I.C. Deck | 568 | 4 | 22.72 | 10 | 58.00 | " 31 | 8 | AL | 3.20 | |
| 60' 4½ Ridge Rolls | 64 | 3½ | 2.24 | 8 | 4.80 | Jan 08 17 | 10 | GL | 4.00 | |
| 400 4x6 Shingle T... | 400 | 50 | 200 | 75c | 30.00 | " 18 | 10 | AL | 4.00 | |
| | | | 48.44 | | 113.00 | " 18 | 10 | GL | 4.00 | |
| | | | 28.00 | | | | | | 28.00 | |
| | | | 76.44 | | | | | | | |

*Fig. 2.—Page of Job Book, Actual Size 6 x 9 In.*

### Entry in the Job Book.

The estimator then makes a copy of the estimate on the job book kept in the office, a page of which is

on the job book. This is done to enable the bookkeeper to pay wages without referring to the shop records.

**The Unused Material,**

tools, &c., are noted on the back of a time card upon completion of the job, and the foreman makes a comparison of used material as reported by workmen with the memorandum of material taken to the job, which was made on the reverse side of job book duplicate. This comparison enables the foreman to detect and correct errors, if any. Tools and unused material are taken to the shop immediately upon the completion of a job, or as early after as possible. The foreman then turns in to the bookkeeper the job book duplicate upon which the material used has been entered, as it was reported to the foreman during the progress of the work. The bookkeeper enters in the job book items not already there, afterward charging the customer in the sales book the amount contracted for, also entering the number of the job for future reference.

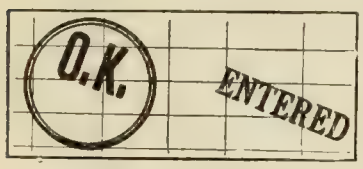



*Fig. 4.—Job Book Stamped O. K. Entered.*

After the charge has been made the job book is stamped "O. K. entered," as shown in Fig. 4.

The method which has been described pertains to contract work only. When doing work by the hour the time and material are entered on the job book, as already described, using the last column for the amount of labor charged the customer.

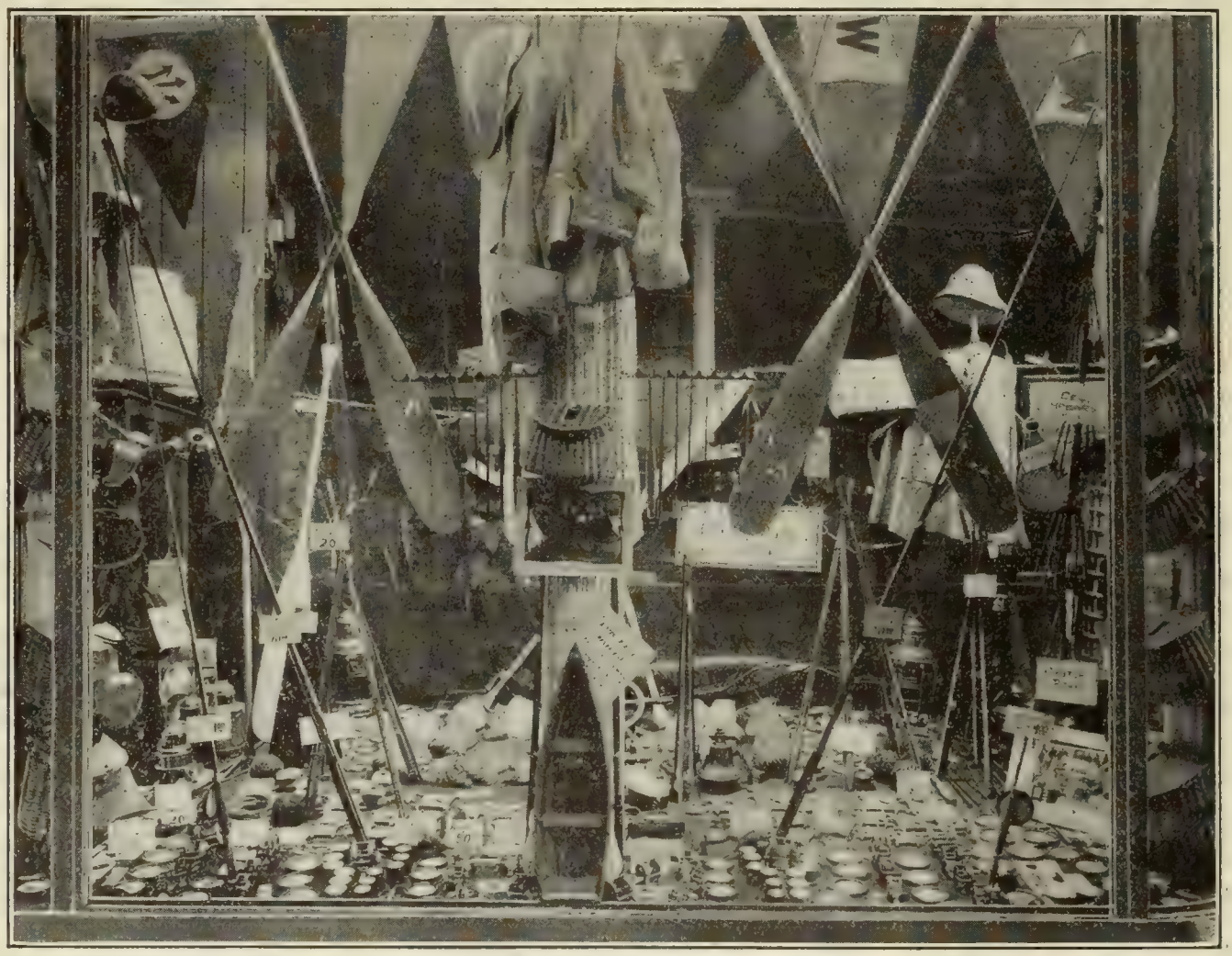
The Hardware business of R. H. Norris, Childress, Texas, has been incorporated with a capital stock of $50,000, under the title of the R. H. Norris Hardware Company, the officers being R. H, Norris, president; V. Norris, vice-president; W. G. Norris, secretary and treasurer. It is the purpose of the new organization to do both a wholesale and retail Hardware business.

W. W. Chamberlain & Co., Utica, N. Y., have just organized with a capital of $20,000 and are about to open a new store for handling Hardware, Harness, Saddlery, &c. Those interested are William W. Chamberlain, Joseph T. White and Walter E. Lewis, all of Utica.

## FISHING TACKLE AND BOAT HARDWARE WINDOW.

THE ASPINWALL HARDWARE COMPANY., Providence, R. I., makes a specialty of boat supplies and yacht Hardware. Some months ago the company moved into a fine new store, which is of good size, and may be described as a well equipped up to date establishment. It is situated on an important business street, where there is much passing, and naturally a good deal of attention is given to window displays. There are two large front windows, one of which is shown in the accompanying illustration, as dressed with Fishing Tackle and boating supplies.

The background of the window is composed of seines for catching shrimp, for bait. They are from 3 to 12 ft. long, by 4 ft. wide, and are arranged with corks and wood floats and small lead sinkers. The window contains a post or pillar, put in to strengthen a beam overhead. This is not draped or decorated, but has nickel plated arms screwed on it from which are hung small bamboo trunk rods and also steel rods to be carried in dress suit cases. In the center of the window will be observed a home made rack, which holds from 6 to 12 Poles of different sizes. The gilt fish, which will be seen in the background, is sometimes hung outside the store on the awning frame, and sometimes used in the window with appropriate displays. In the front of the window is a model of a Skiff, for which orders may be taken.



*Fishing Tackle and Boat Hardware Window.*

In addition to these features the window contains Bristol and Rainbow steel Rods and tarpon Rods, for salt water fishing; also a display of Megaphones, for use on yachts and Paddles of all kinds for Canoes. Then there are Fish Baskets, Waterproof Silk Lines, and Tarpon Lines, put up in 250-yd. reels, Ship Bells, and Ship Clocks, with Bell Attachments, light weight, waterproof Oil Skin Suits and Hats, for ladies as well as men, wood, galvanized iron and cork mooring Buoys, ring and folding Life Preservers, Ensigns, yacht club Flags, running and riding lights, &c. The display is certainly a comprehensive and suggestive one, sure to attract and hold the attention of an angler or a sailor man.

M. J. Wentz Hardware Company has bought the Hardware and Implement business heretofore carried on by O. H. Davis, Medalia, Minn.

# Hardware Organizations.

## Michigan Retail Hardware Association.

The programme for the fourteenth annual convention of the Michigan Retail Hardware Association has just been issued. The association will meet at Detroit, August 12, 13 and 14, with headquarters at the Hotel Cadillac. Among the formal papers read at the meeting will be the following: "Specialization in the Hardware Business," by H. J. Fueller, Abram Cox Stove Company, Philadelphia; "Does It Pay to Advertise?" by Marshall H. Mackey, South Haven, Mich.; "Getting a Profit," by ex-President George W. Hubbard, Flint, Mich.; "Freight Overcharges," by H. H. Renshaw, manager of the freight bureau of the Wholesalers' Association of Detroit; "The Association as Viewed by the Salesmen," by Henry A. Pickert. The programme also includes addresses by A. T. Stebbins, president of the National Retail Hardware Association, Rochester, Minn., and by W. P. Bogardus, Mt. Vernon, Ohio, ex-president of the National Association.

A special feature of the programme will be a lecture, illustrated by stereopticon views, on Wednesday evening by George H. Maxwell of Chicago, editor of *The Talisman*. Mr. Maxwell's subject will be "The Future of Our Nation," in which he will touch on parcel post and other topics of vital interest to the trade. The Question Box will as usual come in for a good deal of attention. A suitable receptacle will be provided in the reception hall, and delegates are requested to write out and deposit any questions which they would like to have brought before the convention for discussion. Among topics already handed in for treatment are the following:

On what class of goods, if any, do you find the greatest difficulty in competing with the mail order houses?

With what success does the average Hardwareman meet in selling Lightning Rods, Cream Separators and Sewing Machines?

What is the best plan to follow in showing our farmer customers that the operation of the parcel post bill would not be to their interests?

Do the farmers in your locality buy goods co-operatively, and, if so, do they appear satisfied with the results?

Would you consider that a department for the exchange of goods that have proven unsalable in your section would be of benefit?

Among the entertainment features will be a trip through Riverside Park on Thursday evening, during which the visitors will be the guests of the wholesalers and manufacturers of Detroit, and also a visit to the extensive plant of the Michigan Stove Company. A. J. Scott, Marine City, secretary of the association, advises us that the indications are that the attendance this year will be larger than ever before.

## Inland Empire Implement and Hardware Association.

THE Board of Directors of the Inland Empire Implement and Hardware Association, E. W. Evenson, Spokane, secretary, held its regular semiannual meeting in the office of the secretary on July 19. Questions of needed legislation were taken up with the Legislative Committee, and with the aid of the association's attorney amendments will be asked to laws affecting mortgages and contract notes. A peddler's license law will be approved, and copies will be circulated among retail merchants asking them to see candidates for the Legislature with a view to pledging them to the support of the new measure when it comes up for consideration.

Plans for the first annual Hardware, Vehicle and Implement show were laid before the board by Mr. Evenson, and these were approved, and the secretary authorized to proceed with the arrangements. As the initial exhibition of the kind ever held on the Coast, it will doubtless attract much attention. The armory at Spokane has been engaged, and as this covers a block of ground, all on one floor, ample room will be provided for the exhibits. An architect is engaged at the present time in drawing plans for the division of the hall into booths. The decorations and lighting will be elaborate. Directly following the meeting of the Inland Empire Association the Pacific Federation of Hardware and Implement Associations will hold its convention in Spokane on January 22, 1909, and the Hardware show will remain open during the deliberations of the latter association to enable the delegates attending to inspect the displays. Hardware, Implement and Vehicle merchants from Montana, Idaho, Washington, Oregon and California will thus be given an opportunity to see the latest in the different lines in which they are interested. In the evenings it is proposed to have the exhibition thrown open to the general public at a small admission fee, the visiting merchants being admitted free by badge. A stage will be constructed and a vaudeville show given in the evenings, a band or orchestra being also in attendance.

## New England Hardware Dealers' Association.

The New England Hardware Dealers' Association held their annual summer outing at Nantasket Beach, Boston Harbor, on Saturday, 1st inst. The party left Rowe's Wharf, Boston, at 1.20 p.m., and on arrival at Nantasket paraded to the ball field, led by the Arab Patrol on camels, G. T. Curtis, Simonds Mfg. Company, Fitchburg, Mass., and E. E. Stevens, Stanley Works, New Britain, Conn., showing the way. An interesting and exciting baseball game followed between nines representing the merchants and the Knights of the Grip. The traveling men finally won out by the score of 8 to 3. The merchants' nine was captained by F. E. Stacy, Springfield, and comprised M. L. Jarvis, Windsor Locks, Conn.; M. Shier, Middletown, Conn.; R. Chase, Holyoke; J. R. Morrisey, Indian Orchard; H. W. Stacy, Springfield; H. L. Russell, Holyoke; J. J. Chandler, New Haven, Conn.; E. Farland, Tremont. J. W. Rathburn, S. W. Card Mfg. Company, Mansfield, Mass., captained the travelers' team, which included W. R. Ross, Standard Tool Company, Cleveland, Ohio; E. Von Campe, Standard Tool Company, New York; H. P. Peabody, Chandler & Farquhar Company, Boston; B. P. Mansfield, Harrison & Bros., Boston; G. M. Pearse, Brown & Sharpe Mfg. Company, Providence; R. L. Van Buskirk, Frye, Phipps Company, Boston; J. F. Mitchell, Boston; W. W. Beal, Lunkenheimer Company, Cincinnati, Ohio. A. G. Bowman, Russell & Erwin Mfg. Company, New Britain, Conn., was score keeper, and Mayor W. E. Sanderson of Springfield, was umpire.

After witnessing a balloon ascension the Hardwaremen sat down to a fine shore dinner at the Palm Garden. There were no speeches, but the assembly was handsomely entertained by the Hardware Glee Club, assisted by H. F. Blaney, "the man who sings to beat the band," and who prepared an intersting parody for the occasion based on the popular song, "I'm Afraid to Go Home in the Dark." At 6 p.m. the party, led by W. A. Dow, started down the line for the numerous amusements of Paragon Park, the inspection of which occupied so much time that a run had to be made to catch the last boat for Boston. The committee having in charge the arrangements for and conduct of this most enjoyable outing were F. Alexander Chandler, Boston, chairman; W. H. Sawyer, Providence, R. I.; H. M. Sanders, Boston; S. H. Thompson, Lowell; C. L. Underhill, Somerville; H. L. Russell, Holyoke, and F. E. Stacy, Springfield.

AT a recent meeting of the Executive Board of the Retail Dealers' Hardware and Implement Association of Texas, J. W. McManus, secretary, Dallas, that city was chosen as the place for holding the next annual convention. The convention dates are January 19, 20 and 21, 1909.

At the recent meeting of the Pacific Coast Hardware and Metal Association, the following officers were chosen for the ensuing year: President, T. D. Honeyman, Honeyman Hardware Company, Portland, Ore.; vice-presidents: E. T. Messinger, Hunt & Mottet Company, Tacoma, Wash.; William Schaw, Schaw-Batcher Company, Sacramento, Cal.; H. R. Boynton, H. R. Boynton & Co., Los Angeles, Cal., and A. A. Watkins, W. W. Montague & Co., San Francisco, Cal.; treasurer, F. J. Baker, George H. Tay Company, San Francisco, and secretary, Eugene Goodwin, San Francisco.

# THE JONES ACCOUNT.

BY WESTMOUNT.

"I'D like to meet the man who invented all that rot about doing your duty to your employers and they in turn will look after you—perhaps."

No doubt you will think this is pretty strong, but just wait a minute till you hear the facts of the case, and I'm inclined to think you will sympathize with the speaker. He happens to be a young man of about 22 years, with a widowed mother to look after. We will call him Jimmy Parks. Seven years ago he secured a position in the large wholesale Hardware establishment of Brooks, Beamish & Co. He had worked himself up until he was in charge of the city sales department. The position, although a fairly good one from some points of view, was not at all satisfactory to our young friend, who had certain ideas of his own worth, which his recent conference with the power behind the desk showed that that particular individual did not seem to share.

### Turned Down.

In plain words, Jimmy had just been endeavoring to convince the old man that he was well enough versed in the intricacies of selling goods to be put on the traveling force. The old man, however, seemed to think that more experience was necessary before a young man could be intrusted with a bundle of expense money and the good name of a firm of the magnitude of Brooks, Beamish & Co. The interview was short but to the point, and Jimmy retired from the presence with no great love for vice-presidents in general nor old Nelson Beamish in particular, as our opening paragraph readily shows.

"It's no use, mother," he said on his arrival home that evening, "the stingy old lobster won't do anything for me. He says I'm only a youngster yet and to have a little patience and my turn will come. Patience! Haven't I been patient for seven years? Haven't I done the very best I could for the firm, and that's all the thanks I get from him—patience! Well, I've got to look for a better job. We can't go on forever scrimping ourselves as we've been doing. At the rate I'm going, it'll take about 87 years to get up to a position where we can live comfortably. Fifty dollars is a princely roll to collect every month after seven years' work, isn't it?"

"Never mind, my boy, don't take it so much to heart. We've got along very well so far and another year won't make much difference. Just have a little pati——"

"Now, mother, if you don't want me to commit suicide don't start in on that patience racket. I've heard enough of that to-day already. To-morrow morning I'm going to have another go at him."

"I wouldn't bother him too much," said Mrs. Parks, "he may get angry and discharge you."

"Don't fear about that, mother. I won't give him a chance to fire me, although I may quit of my own free will. Besides, I'm not going to ask him about the road any more, but just try and drive it through his skull that 'ends' are several inches apart now and in order to make them meet, it's necessary to have some more of the long green added to my monthly roll."

* * * * * * *

### More Patience.

"Well, sir, I'm in a position where I must have more money. If you can't see your way clear to give it to me, I'll have to look for it somewhere else. I'm very sorry to do so, but I must ask you to accept my resignation."

"Now don't be foolish, Parks, and spoil your prospects here. If you must have it, my reason for refusing your request is not because I don't think you deserve it, but because owing to the state of things in general, just at present, we are practically making no money and it's absolutely necessary that we cut our expenses down to the very lowest possible mark. In the fall, when I presume things will pick up, I will very gladly give you the increase you ask for. What's more, should your work during the winter warrant such a step, I might—remember I make no promise—give you a chance on the road in the spring. Now that I have given you this explanation, I hope you will do the best you can for the present. The only way we can hope to pass safely through this —— depression is for every member of the staff to work with us. Think it over, my boy."

* * * * * * *

### An Old Sore.

"See here, young feller, this is about the twenty-eleventh time I've cursed your hide and told ye there was nothin' doin'. I've told ye before and I'll keep right on tellin' ye every time ye come here that I wouldn't take nothin' from Brooks, Beamish & Co. if they was runnin' a free refreshment booth. They're the worst bunch of robbers thet ever crost the pike, and they ain't never goin' to unload no more goods in Three Forks so long as Servius Jones runs this here emporium."

"Now, Mr. Jones, do you think that's quite the square way to treat a fellow? The boss has practically threatened to sack me if I don't close an order with you for something this trip."

"Serves ye durn well right if ye do lose yer job. Y'ought to heve more sense than to work fer a bunch of highway robbers like ye represent."

"That's all right, Mr. Jones, but you forget I have to live, and Brooks, Beamish & Co., pay me a salary. Anyway, I don't see why you should be so hard on the firm. They offered to take back all the goods you had left over from that bill Saunders sold you."

"Sure they did after they seen thet I was finished with them. They come scoutin' round to try and square theirselves. But nothin' more would Servius Jones hev to do with them. The balance of thet overload is up in the attic yet, Mr. Man, and if it takes all the rest of me life to give it away, I'd rather do it than give yer bum firm the satisfaction of takin' it back. Good day to ye."

From the above, the reader will probably deduce that Servius Jones was a pretty sore man. So he was and I don't know that I altogether blame him. He ran a general store at Three Forks, which from the position of that village at the juncture of three roads, made it the commercial metropolis of the surrounding country. Although by no means an up to date business man, Servius Jones did fairly well, and his patronage was eagerly sought after by several of the big wholesalers. Up to about three years ago Brooks, Beamish & Co. had enjoyed all his business as far as Hardware and kindred lines were concerned, but at that time they placed a new man on the territory, which included Three Forks. Saunders was his name—a clever, young chap, but rather green, and he knew nothing about the evil resulting from "overloading" an easy customer with any lines.

Jones had generally left his buying in the hands of the travelers, who knew better than he did what he wanted. Saunders, however, wanted to make a good impression with the boss and was after big orders. Jones was a mark for him and he gave him an overdose in several slow selling lines.

Jones raised such a fuss over the affair that Saunders lost his job and the firm offered to take back any of the goods remaining unsold after one year, but Jones got his back up and in spite of the efforts of Brooks, Beamish & Co.'s best salesmen, who in turn had called upon him, from that day to this he had not bought a cent's worth from the firm.

* * * * * * *

### An Opportunity.

"Good morning, Mr. Jones. I want to get a few Fish Hooks and some Lines. How's your stock?"

"G'mornin', sir. If it's Fishin' Tackle ye're lookin' for, I guess I can fix ye up all right. I got a stock of Fishin' Tackle on hand that would fit out a whalin' fleet. Step this way, sir. If ye don't find what ye want here, I got plenty more upstairs."

"What, do you carry an emergency stock? I shouldn't think in a village of this size you would find it necessary to do that. I understand that the twentieth century way of doing business is to carry a small supply of a number of lines. Mail orders are filled so quickly now that I shouldn't think it would pay you to tie up your capital in stock."

"Right ye are, but a fresh young salesman sold me such a bill of goods a couple of years back thet I could jest about start doin' business as a wholesaler in some lines."

"By Jove, this must be the Jones that Saunders overloaded," thought Jimmy Parks to himself. "I wonder if I can't get next the old boy and win him back for the firm.

"If I could get rid of that stuff we might get back his account, and maybe the old man wouldn't be tickled to death.

"Would you be willing to sell that stuff if you got a chance to, Mr. Jones, even if you lost something on the deal?"

"Sure, I'd sell it, and fer half what it cost me. Why, I'd almost give it away, but there ain't nobody round these diggin's has any use fer it in quantities, and thet's the only way I'd ever git rid of it."

"Ever try advertising?"

"Once. Put an ad. in the Three Forks *Weekly Eagle*, sayin': 'Servius Jones, dealer in general merchandise, has a big stock of hardware for sale, cheap.' It didn't seem to bring no trade, though, and as it cost about half a dollar, I reckoned I was wastin' money and didn't try no more."

"Will you let me sell those things for you, Mr. Jones, and be willing to accept anything I can get for them?"

"Sure, me boy—if ye can sell them—go ahead, but I'm thinkin' ye'll have to mesmerize the natives hereabouts before ye do it."

### An Idea.

"Oh, I don't know! Listen. Do the natives about here like auction sales?"

"Do they! Why, there ain't a gazabo within 20 miles wouldn't let the crops rot in his fields to attend an auction. Why, I——"

"Is there a good auctioneer in the neighborhood?"

"Sure—Zeke Squires. Lives jest over the hill yonder. He could sell space in Purgatory."

"Good! Now listen. I propose to get a few bills printed and put them up at all the prominent places for 20 miles around, and also put a big advertisement in the *Eagle* on Saturday, saying there is going to be a big auction in front of your store on the 27th. Most of the goods you have upstairs have gone up in price in the last few years, and if Squires is the man you say, he should be able to sell them, so you will get half, at least, of what you paid for them. How does that strike you?"

* * * * * * *

**Renewing the Account.**

"Well, Mr. Jones, how did the auction come off?" asked Jimmy the day after that great event.

"Come off! Why, we didn't hev half enough stock to satisfy thet bunch when they got to biddin'. We cleared out the attic, and they wasn't satisfied till half the stock in me store besides had gone under the hammer. The funny part of it was they paid more fer it than they'd 'a' done over the counter. Never had such a lively time fer years, and Servius Jones, Esq., cleared up a tidy sum. But how can I thank you, me friend?"

"Don't thank me. I want to ask you a favor."

"No need to ask. It's granted already."

"Sure?"

"Sure."

"Well, Mr. Jones, I want you to go over your stock of hardware and give me an order for anything you happen to be in need of. I work for Brooks, Beamish & Co., and if I get your account back for our house it will mean a great deal to me."

"Well, I——" said Mr. Jones, but he kept his word, and every time Jimmy makes Three Forks he gets a good order for Brooks, Beamish & Co.

## Price-Lists, Circulars, Etc.

*Manufacturers in Hardware and related lines are requested to send us copies of catalogues, price-lists, &c., for our Catalogue Department in New York; and at the same time to call attention to any new goods or additions to their lines, of which appropriate mention will be made, besides the brief reference to the catalogue or price list in this column.*

OTWAY COOPER, Urbana, Ohio: Catalogue F, July, 1908, 40 pages, devoted to the Cooper Rope Horse Goods, covering Horse Ties, Cattle Ties, a large assortment of Halters, &c.

UNITED STORE SERVICE & TUBE COMPANY, Boston, Mass.: Bulletin file containing bulletins issued during the past few months covering Meteor Direct Single Wire Catapult Propulsion Cash Carrier, Foot Power Pneumatic Tubes, Electric Cable Cash Carriers, Pneumatic Dispatch Tubes for store service, Cable Messengers and Pouch Carriers, and Belt Conveyors and Package Carriers.

BIDDLE HARDWARE COMPANY, 513-517 Commerce street, Philadelphia: Fall and winter Catalogue, 68 pages, devoted to Roofing, Harness, Food Choppers, Wringers, Apple Parers, Ice Skates, Sleds, Sleigh Bells, Weather Strips, Thermometers, Lanterns, Saws, Wheelbarrows, Husking Pins and Gloves, Alarm Clocks, Watches and Clocks, Pocket Cutlery, Padlocks, &c.

BUTLER BROTHERS, New York, Chicago, Minneapolis and St. Louis: Catalogue No. 676, August, 1908, in which special attention is called to their annual school sale and semiannual $2.25 sale, the latter covering a number of items in the Hardware line which are sold at the uniform price of $2.25 per dozen.

R-N LEATHER DRESSING COMPANY, Pawtucket, R. I.: Circulars descriptive of R-N Carriage Top Dressing, Automobile Top Dressing, Pantasote Dressing, Harness Dressing, Leather Cleaner, Stains, &c.

HUBBARD & Co., Pittsburgh, Pa., have issued a handsome illustrated bound catalogue, 141 pages, showing the products of the company, including Railway Track Tools, Hammers, Sledges, Mauls, Coal Miners' Tools, Picks, Blacksmiths' Tools, Mattocks, Grub Hoes, &c. The company also manufactures Shovels, Spades and Scoops, plain and galvanized Pole Line Hardware, Bolts, Hot Pressed Nuts, Wrought Washers and Forgings. Several of the early pages of the catalogue contain illustrations of the method of making a few of the company's railroad track tools from solid steel, showing a few of the operations through which the tools pass in the process of manufacture. The catalogue is also accompanied by circular giving report of tests made by the Pittsburgh Testing Laboratory of the company's Open Hearth Steel Picks.

## Requests for Catalogues, Etc.

*The trade is given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.*

**REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate:**

FROM ED. T. WOODS, Seibert, Colo., who has just opened up in business, handling Shelf and Heavy Hardware, Stoves, Sporting Goods, &c.

FROM H. J. MERRICK COMPANY, Adams, Neb., which has purchased the business in Shelf and Heavy Hardware, Stoves, Agricultural Implements, Paints and Oils and Sporting Goods formerly conducted by C. J. Klein.

FROM S. W. COLLINS HARDWARE COMPANY, which has been organized with a capital of $50,000, fully paid, to carry on a retail and wholesale business in general Hardware, mining supplies and machinery at Fallon, Fairview and Rawhide, Neb., the main office and headquarters being at Fairview. S. W. Collins, V. B. Leonard and L. N. French are interested in the company.

FROM J. C. LAUGHLIN, 3935 Main street, Kansas City, Mo., who has commenced business, handling Hardware, Paints, Oils, Glass and Furnaces. Mr. Laughlin has acquired the stock of the Natural Gas Supply Company.

FROM MATOAKA HARDWARE COMPANY, Matoaka, W. Va., wholesale and retail Hardware, Mill Supplies, Building Materials, Paints and Oils, Roofing, &c., which has reorganized its office system and now has excellent facilities for accommodating catalogues and other literature of the trade.

FROM ROBERT PROWELL STOVE COMPANY, 313 North Twentieth street, Birmingham, Ala., which has lately been organized with a capital stock of $15,000, fully paid. In connection with Stoves and Ranges, the company will carry an extensive line of House Furnishing Goods.

THE HERCULEVER COMPANY, Hardware Building, New York City, manufacturer of the Herculever Packing Box Opener and Board Remover, with a view to co-operating with merchants in the sale of this article, will mail without expense to the recipient with every dozen Herculevers purchased, 100 attractive illustrated circulars, 12½ x 15 in., with name and address of the merchant thereon. These circulars are intended for local distribution by the merchant to parties whom he regards as likely purchasers of the Herculever. The company is also ready to furnish Hardwaremen with handsome show cards for window and store display, and upon request will also send up to date electrotypes for use in local newspaper advertising. The company will be pleased to answer any inquiries which the trade may send for particulars in regard to its co-operative selling campaign.

THE GLOBE STOVE & RANGE COMPANY, Kokomo, Ind., has issued an especially handsome catalogue, bound in flexible leather covers, illustrating and describing its complete line of Stoves and Ranges. Ranges made of planished steel are shown in six distinct styles in all sizes. There are also steel Cook Stoves and cast Ranges, as well as Heating Stoves of different patterns, burning slack, soft coal, hard coal and wood, and Laundry Stoves. The Ranges and Stoves are attractive in appearance and afford many excellent talking points for the merchant.

O. F. McGray, Douglas, N. D., has engaged W. H. Rowe, a well-known Implement salesmen as manager of his Hardware, Stove, Implement, Paint and Sporting Goods business.

## Pike's Stock and Display Cabinet.

The Pike Mfg. Company, Pike, N. H., is introducing the cabinet here illustrated, in connection with its India oil stones and whetstones. The cabinet is about 31 x 24 x 12 in., finished in golden oak with plate glass front. It has two compartments, the front one for displaying a




*Pike's Stock and Display Cabinet.*

line of samples, and back of that are shelves for containing stock. The display compartment is lined with silk plush, with the stones attractively arranged against the plush background. In the stock department the stock can be suitably assorted and separated into groups by means of the shelves. The compartment is large enough to accommodate stock sufficient for an up to date merchant. The cases are furnished with a stock comprising only India oil stones, or with a mixed stock comprising India oil and the natural grit stones. The cases are arranged to open either back or front as the merchant prefers. Those which open in back are designed for merchants having space to display it on a counter, and those which open in front are designed to fasten on the wall. The company issues a circular describing an assortment of stones with which it will furnish one of the cabinets free of charge.

## Handihook.

August Goertz & Co., 276-284 Morris avenue, Newark, N. J., have put on the market the Handihook, here shown. As is implied, it affords a handy vehicle for hanging innumerable light articles in office, den, library, factory or wherever frames, signs, calendars, clothing, kitchen utensils, &c., may be appropriately, quickly and easily suspended without perceptible damage, a thumb push being sufficient in plaster or wood. The hook will sustain weights up to 10 lb., and with the exercise of




Fig. 1.—Front View.

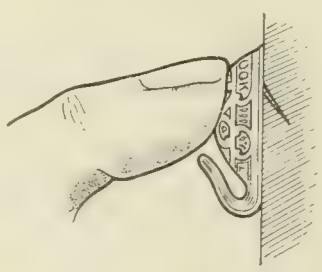


Fig. 2.—Side View.

*Handihook.*

some ingenuity greater weights may be hung. For example, a frame of 20 lb. weight, with two hooks and two independent wires or cords leading vertically from screw eyes to hooks, would safely distribute the weight. Fig. 1, front view, shows actual diameter, there being a depth of 3-16 in., inside of which is a brace of the same material into which the strong but finely tapered steel pin is imbedded. Fig. 2 gives a side view of the button and steel pin, but the actual dimensions are 15-16 in. from the top to bottom of hook. There are four attractive finishes, including natural brass, and the goods are put up in pasteboard boxes of 12 hooks each. For show windows or counter display having suitable advertising matter, 12 boxes are mounted on an easel back card from which to sell.

## Robinson Tool Set.

The M. W. Robinson Company, 79 Chambers street, New York, has added the Robinson Tool Set, No. 7, here shown, to its line of pin vises and kindred small tools for working metals. The tool, made entirely of steel, is 6¼ in. long, ⅞ in. diameter of handle and chuck and is

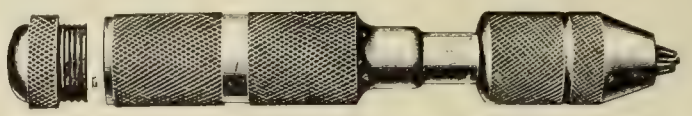


*Fig. 1.—Robinson Metal Tool Set.*

handsomely finished by knurling, polishing and nickeling. The eight tools carried in the hollow handle are uniformly 2 in. long, with shanks about ⅛ in. diameter, and consist of two fluted drills and one each twist drill, awl, reamer, scriber, chisel and screw driver of fine quality, tempered to a straw color; both handle and tools being absolutely guaranteed. The chuck jaws, of high grade tool steel, are slotted transversely near their base, so that

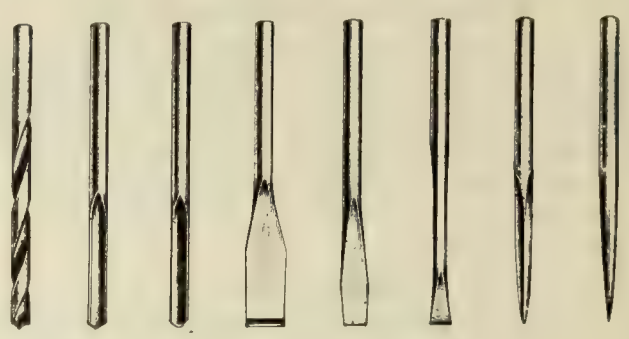
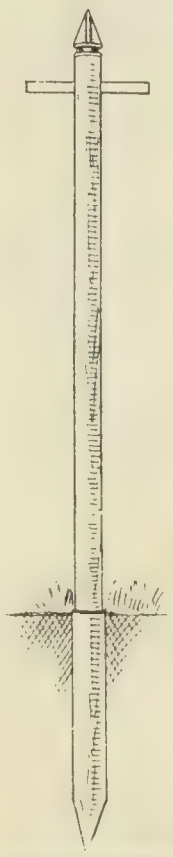


*Fig. 2.—Accompanying Tools, Five-eighths Size.*

they may be easily and positively carried for opening or closing by means of three longitudinal spring steel members, actuated by revolving the tubular handle. There are no spiral springs or other working parts to easily get out of order, each tool being packed individually in a neat telescope pasteboard box and labeled on top and end.

## Portable Steel Clothes Post.



*Portable Steel Clothes Post.*

The Milwaukee Steel Fence Post Company, Milwaukee, Wis., is introducing the portable steel clothes post shown herewith. The posts are made of high carbon steel tubing, 1¼ in. in diameter, 6½ ft. above ground and filled with cement, which is said to add 75 per cent. to their strength and prevents rusting inside. The base or part under ground is separate from the post, and is made 2½ or 3 ft., as may be desired. They are driven level with the ground and left there, while the post, which fits into the base, can be inserted or removed whenever desired. Among the advantages possessed by the posts the following may be mentioned: That they are practically indestructible; that no holes have to be dug, as the bases are easily driven into the ground, and that the posts can be readily removed, leaving the lawn free for mowing the grass or other purposes.

O. H. Davis, Madelia, Minn., has sold his Hardware, Stove, Implement and Vehicle business to Martin J. Wentz.

## Willis Double Section Key Ring.

The Willis-Du Bois Company, 150 Nassau street, New York, which is also the New York office and general sales manager of the New Jersey Aluminum Company, has just brought out the Willis double section key ring, here shown. It can be marketed as merchandise in the usual way or purchased in quantities for gratuitous distribution as a souvenir, in which case it is preferably stamped with such lettering as the purchaser desires, of which the illustration is an example. Some of its principal features are that it is light, being cut with a die at one operation from high grade sheet steel, approximately 3-64 in. thick, and afterward polished and nickeled; that household keys may be accommodated on one side and business or other keys on the other; that keys may be instantly snapped on or off without difficulty, while the surface, one or both sides, may be utilized for a business card or device, according to the publicity sought. One advantage as a souvenir, aside from the slight cost, is that in serving a necessary and useful purpose it possesses the merit of being a continual reminder of the donor and always carried.



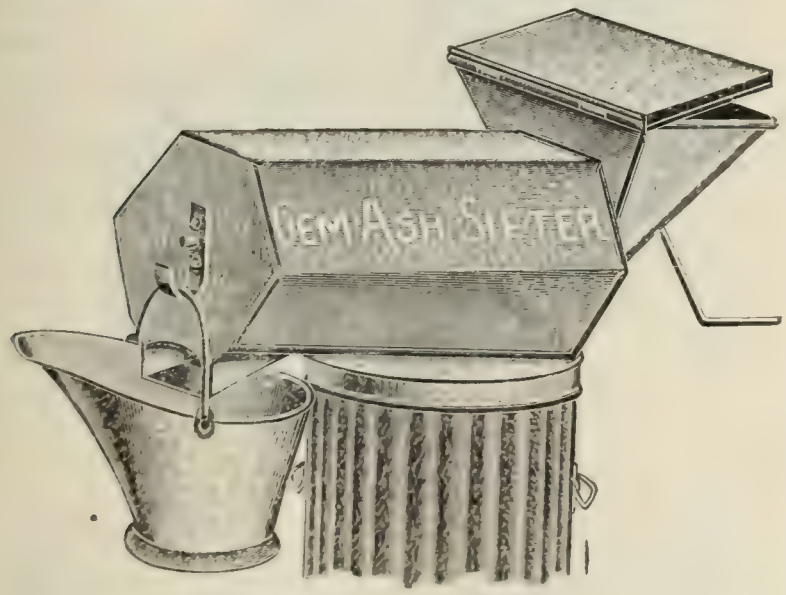

*Willis Double Section Key Ring.*

## The Acme Shear Company.

The Acme Shear Company, Bridgeport, Conn., manufacturer of high grade solid steel, cast shears, scissors and tinners' snips, is showing in its W-2 catalogue and price-list recently issued among new goods, oval steel screw cast straight and bent trimmers, left hand cast shears, Hicks' pattern shears and the American bevel button hole scissors. Three special cards showing different assortments of shears and scissors have also been added to its line. Half-tone illustrations of the company's plate etching work are likewise presented. Wiebusch & Hilger, Ltd., 106-110 Lafayette street, New York, are the company's special representatives, and carry a complete sample line of its shears.

## The Gem Rotary Ash Sifter.

The Gem Mfg. Company, Chelsea Station, Boston, Mass., is manufacturing the new form rotary ash sifter, shown herewith. It is made of heavy steel throughout,




*The Gem Rotary Ash Sifter.*

with a hexagonal barrel, all sections being double seamed together, and after being assembled is galvanized as a unit by the hot bath process to produce a strong and lasting machine. The barrel gives the impression of generous dimensions, and has a hopper with a capacity of two coal hods, which delivers freely to the screening cylinder; being unobstructed, it is shown, because of the unique manner in which the cylinder is supported upon its shaft. The delivery of the screened coal is said to be equally easy, while the long cylinder gives ample opportunity to thoroughly screen all the dross from the coal. The screening cylinder, which is referred to as being a true cylinder, has ends and supports of pressed steel, into which the wire mesh is forced and closed in. The bearings of the crankshaft are of pressed steel, resulting in the shaft and screen revolving accurately. The screening cylinder can be assembled or dismounted quickly to make renewals cheap and easy.

## Barron Sanitary Water Cooler.



*Fig. 1.—Barron Sanitary Water Cooler.*

The water cooler here illustrated is manufactured by the G. F. Barron Cooler Company, Rochester, N. Y. It is referred to as especially sanitary because neither the ice nor the outside air comes in contact with the water. The construction of the cooler will be understood from the sectional view shown in Fig. 2. It may be attached to the regular city water pressure, the intake being through the pipe on the right hand side of the illustration. The water is received into a narrow chamber running all the way round the center compartment which holds the ice. Around the outside of the

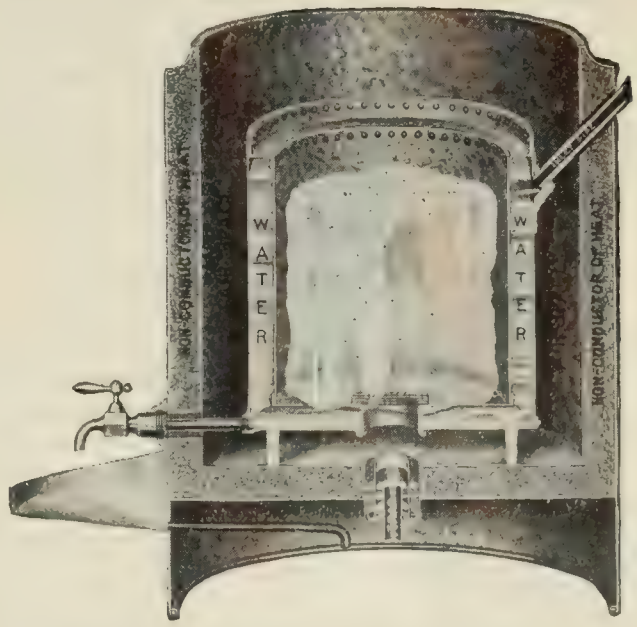



*Fig. 2.—Barron Water Cooler, Interior View.*

cooler is a nonconductor, keeping out the heat, because of which the ice is said to melt very slowly, making the cooler economical. Several sizes and capacities of coolers are offered.

## Vaughn's Improved Screw Driver.

Edwin C. Walker, who has succeeded Chas. A. Vaughn, Seitzland, Pa., in the manufacture of hardware specialties, has moved the stock and equipment to a new factory in Urbana, Ohio, where special attention is given to the manufacture of Vaughn's improved screw drivers, which are made in a number of styles and a variety of sizes. The blade of the screw driver is of forged steel with a square shank, entering a ferrule cast of mild steel, which has inwardly projecting lugs designed to imbed themselves in the wood when the handle is forced into the ferrule. The hole in the ferrule, at the end where the blade enters, is cast square, and is then machined out part way through to receive the round portion of the blade. The screw drivers are warranted by the manufacturer.

## The American Savings Bank.

The Johnson Mfg. Company, New Haven, Conn., is putting on the market the savings bank here illustrated. It is 5 in. high and 3½ in. in diameter, and registers nickels, dimes, quarters and half dollars up to $25 in amount. When the bank is open the indicating figures can be set back to O by turning the knob. All coins




*The American Savings Bank.*

are dropped into one slot, and the value of each is automatically added to the amount already contained in the bank, the total amount deposited being shown in plain figures. Each coin is fully registered before it drops into the receptacle at the bottom. The registering mechanism is alluded to as being a new mechanical principle of extreme simplicity, while the bank is pleasing in appearance, substantial and durable. It is locked by a practically unpickable five-tumbler lock, with small, flat key.

## The Globe Quick Acting Vises.

Characteristic features of a line of woodworking vises made by the Globe Vise & Truck Company, Grand Rapids, Mich., are quick action, even grip and strength of construction. Fig. 1 shows style 10-H of these vises, and its general construction is shown in sectional view, Fig. 2. The use of a coarse thread on the screw gives a very large wearing surface, both on the nut and screw. This is obtained by the combination of an auxiliary in-

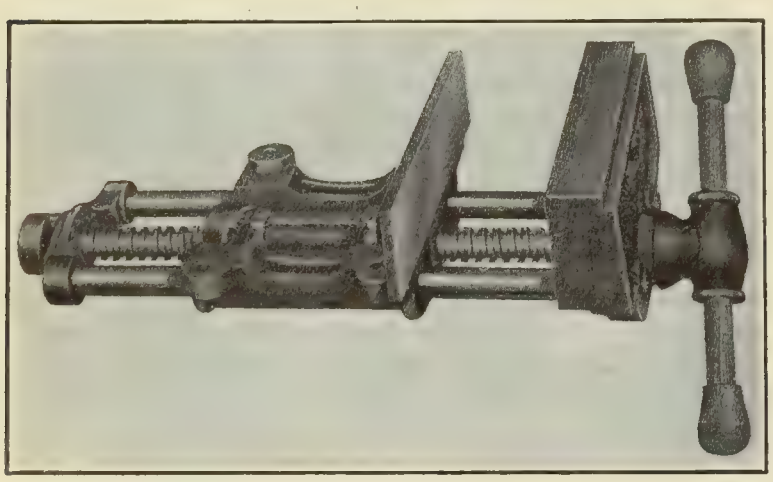


*Fig. 1.—The Globe Quick Acting Vise.*

cline with the screw, which, it is claimed, practically doubles its gripping power and constitutes one of its distinctive advantages. The nut, which is 7 in. long, made of hard lubricating brass, revolves with the screw, and is carried backward by means of the incline on the nut at a point where the threads always mesh with the threads of the screw, causing the jaw to grip readily. A jaw movement from 7-16 to ⅝ in. is effected by one turn of the handle. The vise is fitted with a screw made of 1⅛-in. 20-carbon steel, with longitudinal cuts through the thread sections, which permit the vise to be quickly opened or closed by sliding the screw backward

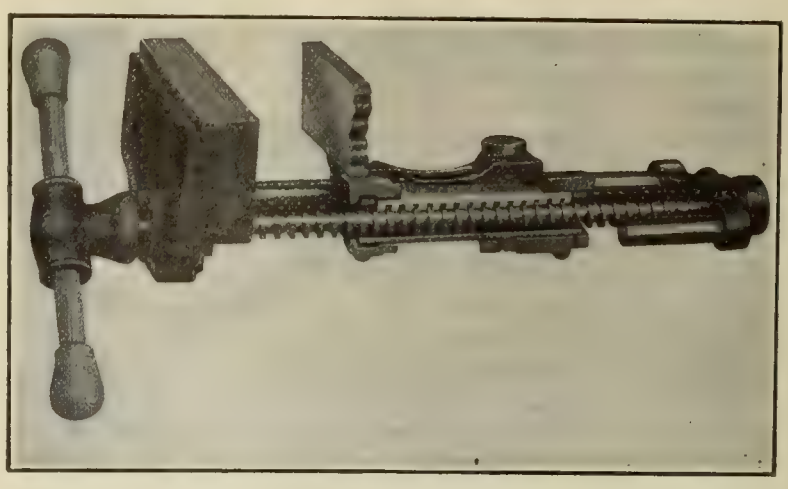
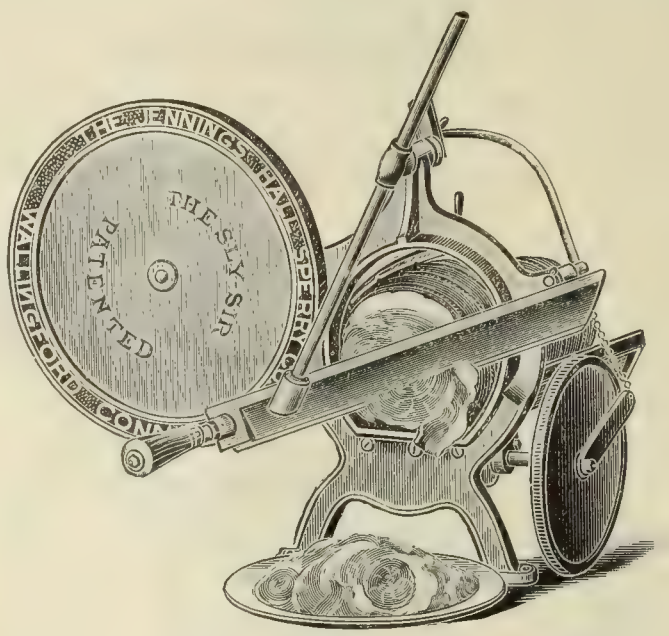


*Fig. 2.—Sectional View of Quick Acting Vise.*

or forward. A lining of kiln dried maple covers the front jaw, while the rear compressing surface, in this style, is iron. The entire absence of springs contributes much to durability of the vise and greatly diminishes the chance of breakage and the expense and annoyance incident thereto. The vise is described as containing no delicate castings liable to breakage under stress of service with every part built to stand a maximum amount of wear. It is furnished with lugs by means of which it is bolted to the under side of the bench. Style 10-H here shown is especially adapted for manual training school use and is of the following dimensions: Width of jaw, 10 in.; depth of jaw, 4 in.; opening of jaw, 8 in.; shipping weight, 38 lb.

## The Sly-Sir Meat Slicing Machine.

The Jennings-Hall-Sperry Company, Wallingford, Conn., is putting on the market a new meat slicing machine, shown herewith. The cutting is not circular, but




*The Sly-Sir Meat Slicing Machine.*

approaches very closely the motion made in slicing meats by hand, a downward shearing stroke. As the knife stroke is completed, the ham, bacon or other meat to be sliced is moved forward automatically, a gauge on the machine permitting the user to cut slices from paper thinness up to ⅝ in. in thickness. All of the meat may be sliced. The company states that the machine may be used for slicing bread, cheese, &c., as well as meat. The thin tempered steel blades may be purchased of the company for 25 cents, which is practically as cheap as the cost of sharpening the old blades.

## Toledo Steering Coaster.

The Toledo Metal Wheel Company, Toledo, Ohio, manufacturer of express wagons, tricycles, velocipedes, hand cars and other children's and dolls' vehicles, has added to its line the steering coaster here shown. It is made of steel and thoroughly seasoned second growth ash. All woodwork is natural color, varnished and decorated. The runners, which are enameled carmine, are made of Buttonhead Tee steel, which is oval on the bottom and said to give great swiftness and at the same time making the runner comparatively light in weight. Another feature is the knees, which are in the form

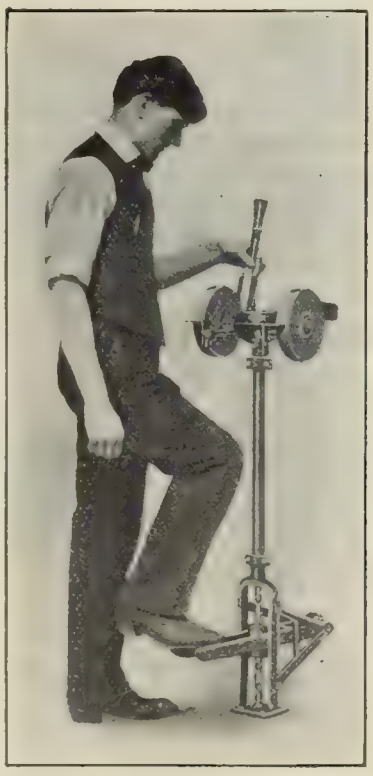


*Toledo Steering Coaster.*

of arches. The ash frame is used in preference to metal to give the sled greater flexibility. Three sizes are offered: No. 32½, which is 36 in. long, 12 in. wide and 5½ in. high; No. 33, 40 x 13 x 5½ in., and No. 34, 46 x 15 x 6½ in.

## The Hummer Diamond Tool Grinder.

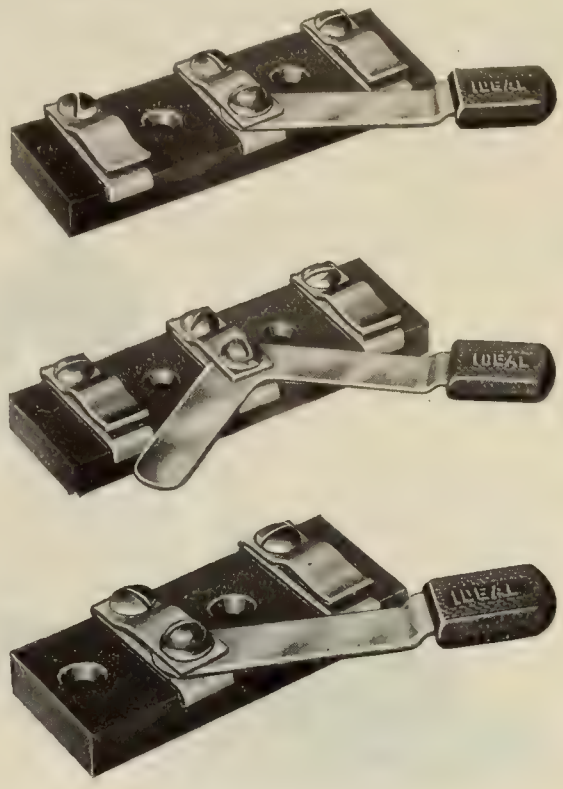
Included in the line of grinders made by the Luther Brothers Company, Milwaukee, Wis., is the foot power tool grinder, here illustrated. It is exceedingly simple in its construction and is designed as a ready shop convenience for sharpening tools. Power is supplied by a lever treadle connected with a sliding sleeve fitting a screw groove on the lower end of the driving shaft. Motion is communicated to the grinding wheels by miter gears at the top of the shaft, which are enclosed in a case filled with grease, from which all bearings are lubricated. The frame consists of a hollow casting with yoke set on a base which furnishes a bottom bearing for the perpendicular driving shaft, the whole forming a support for the gears and arbor bearings above. The means of propulsion adopted does away with the use of a ratchet, and, besides affording ample power, it is not subject to rapid wear because of the large wearing surface afforded. There are but three bearings in the grinder, the principal one of these being a ball-bearing. The machine carries two 7 x 1¼ in. carborundum wheels, which are secured by large flanges. Beside two tool rests adjustable in all directions, the machine is supplied with a chisel and plane bit guide which is independent of the regular tool rest and is always in position for use. Other special attachments for the grinding of twist drills and skates are furnished on order. The machine stands 40 in. high and weighs crated 68 lb. It is furnished with one 7 x 1¼ in. fine grit and one 7 x 1¼ in. medium grit wheels, and will carry wheels up to 10 in. in diameter.



*The Hummer Diamond Tool Grinder.*

## Ideal Side Acting Switches.

The Ideal Switch Company, Incorporated, Plainville, Conn., is bringing out a line of side acting switches, three styles of which are shown in the accompanying illustrations. They are especially designed for use on motor boats and gas engines. The company's self-locking spring



*Ideal Side Acting Switches.*

contacts are employed in a new form, as will appear from the illustrations, and the switches may be mounted with blades hanging down, which is declared to be their natural position.

## Morris Peanut Vending Machine.

The Coleman Hardware Company, Morris, Ill., manufacturer of Builders' and Cabinet Hardware, light grey iron castings and specialties, is putting on the market the machine for vending salted peanuts shown in the accompanying illustration. The mechanism is of brass, nickel plated, and the iron case is electro plated both in old copper and nickel. The glass globe which contains the nuts is of heavy, seamless plate glass, and is fastened to the base and top with a patent fastener. There are no rods to interfere with cleaning inside, but the machine has an agitator which prevents salt settling in the bottom and stale nuts collecting in the corners, thus insuring clean, fresh nuts. The nuts are deposited in a swinging cup, from which they are received into the the hand. The coin detecting device is said to be simple and accurate. It will receive a slug and deposit it in the cash box, but will not deliver the goods unless a good coin is used. It is stated that nuts which cost from 6 to 10 cents per pound are sold in the machine for 38 cents per pound.



*Morris Peanut Vending Machine.*

J. H. Gilbert & Sons have opened a new store in Greeley, Colo., and will handle Implements, Vehicles, Fencing, &c.

## The Electric Suction Sweeper.

The electric suction sweeper, shown herewith, combines the cleaning effects of the broom by an electrically operated brush with the dust prevention and absorption of the vacuum process by an electrical section fan which is designed to draw every particle of sand, dust and lint into the dirt bag. The device is a combined sweeper and vacuum cleaner, and is handled like an ordinary carpet sweeper, going into corners and crevices to absorb all the

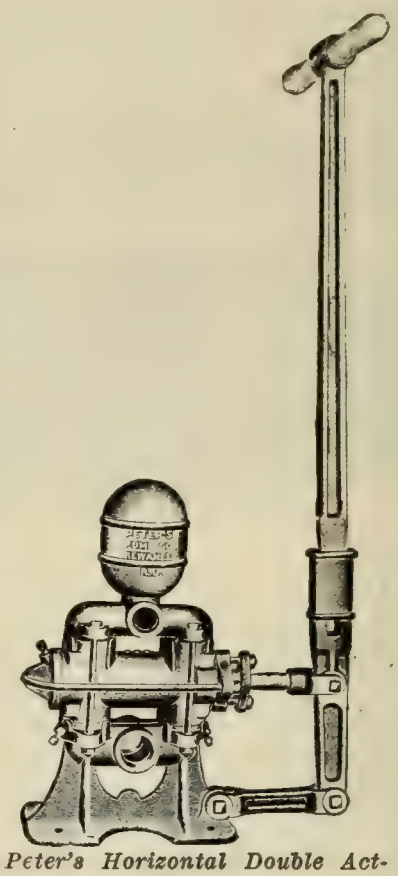


*The Electric Suction Sweeper.*

dust with the dirt. It is pointed out that the device is so simple that it can be operated by a child, as the electric current does the actual work. The sweeper is readily attached to any light circuit by a reinforced cord. The fact is emphasized that the sweeper does its work without spreading dust and germs, thus avoiding injury to furniture and health. The sweeper is strongly built, well finished and simple in construction. It is being put on the market by the Electric Suction Sweeper Company, Canton, Ohio.

## Peter's Horizontal Double Acting Force Pump.

A newly designed double acting force pump, shown in the accompanying illustration, is being made and offered by the Peter's Pump Company, Kewanee, Ill. Besides rendering efficient service in the ordinary work for which low down pumps of this type are usually required, it is especially adapted to the combined pumping of water and air for private water works systems. The pump differs from the usual construction in that it has two perpendicular barrels, at either end of the cylinder, in which the valves are located; the suction valves being below the main cylinder and the outlet valves above. It is claimed that by means of this construction, which compels an upward travel of water and air, the presence of ports and pockets that might interfere with its successful operation as an air pump is eliminated. Among other features of advantage claimed are that, being tapped on both sides for suction pipe, it may be set right or left without making changes, and that the cylinder heads, being secured by a yoke held in position by two nuts, are easily removable. An extra long stuffing box provides adequate support to the piston rod. Besides drain plugs at the bottom of each valve there is a prime plug at the rear head. A large air chamber and ample valve openings contribute to the free flow of water and ease of operation. The pump has a 2½ in. brass lined cylinder, a ⅝ in. solid brass piston rod, and uses any ordinary 2½ in. check valve leathers. When pumping air one of the suction inlets is plugged and tapped for an ⅛ in. pet cock, which obviates the necessity of tapping the suction pipe for an air cock.



*Peter's Horizontal Double Acting Force Pump.*

# PAINTS, OILS AND COLORS

### Animal, Fish and Vegetable Oils—

| | ₱ gal. | |
|---|---|---|
| Linseed, State and Western, raw | .41 | @42 |
| City, Boiled | .45 | @46 |
| City, Raw | .44 | @45 |
| Raw, Calcutta, in bbls | .70 | @.. |
| Lard, Prime, Winter | .68 | @69 |
| Extra No. 1 | .54 | @56 |
| No. 1 | .47 | @52 |
| Cotton-seed Crude, f.o.b. mill | .. | @.. |
| Summer Yellow, prime | .42¾ | @43¼ |
| Summer White | .45½ | @46 |
| Yellow Winter | .47¾ | @48½ |
| Tallow, Acidless | .52 | @55 |
| Menhaden, Brown, Strained | .38 | @.. |
| Southern | .. | @.. |
| Light Strained | .38 | @.. |
| Bleached Winter | .40 | @.. |
| Ex. Bleached Winter | .42 | @.. |
| Cocoanut, Ceylon | ₱ lb 6⅜ | @6½ |
| Cochin | ₱ lb 7 | @7⅛ |
| Cod, Domestic, Prime | .42 | @44 |
| Newfoundland | .43 | @45 |
| Red Elaine | .39 | @41 |
| Saponified | ₱ lb 5¾ | @5⅞ |
| Olive, Yellow | .67 | @69 |
| Neatsfoot, Prime | .55 | @58 |
| Palm, Lagos | ₱ lb 5¾ | @6 |

### Mineral Oils—

| | ₱ gal. | |
|---|---|---|
| Black 29 gravity, 25@30 cold test | .13 | @13½ |
| 29 gravity, 15 cold test | .13½ | @14 |
| Summer | .12½ | @13 |
| Cylinder, light filtered | .20½ | @21 |
| Dark filtered | .18 | @19 |
| Paraffine, 905-907 sp. gravity | .14½ | @15 |
| 902 sp. gravity | .13½ | @14 |
| 883 sp. gravity | .11 | @11½ |
| Red | .13½ | @14 |

### Miscellaneous—

| | | |
|---|---|---|
| Barytes: | | |
| White, Foreign | ₱ ton $18.50 | @20.50 |
| American, floated | ₱ ton 18.00 | @20.00 |
| Off color | ₱ ton 13.00 | @16.50 |
| Chalk, in bulk | ₱ ton 3.00 | @3.50 |
| China Clay, Imported | ₱ ton 11.50 | @18.00 |
| Cobalt, Oxide | ₱ 100 lb 1.45 | @2.60 |
| Whiting, Commercial | ₱ 100 lb .42 | @.52 |
| Gilders | ₱ 100 lb .55 | @.60 |
| Ex. Gilders | ₱ 100 lb .60 | @.65 |

### Putty, Commercial—₱ 100 lb

| | | |
|---|---|---|
| In bladders | $1.70 | @1.80 |
| In bbls. or tubs | 1.20 | @1.45 |
| In 1 lb to 5 lb cans | 2.65 | @2.95 |
| In 12½ to 50 lb cans | 1.50 | @1.90 |

### Spirits Turpentine—₱ gal.

| | | |
|---|---|---|
| In Oil bbls | .40½ | @41 |
| In machine bbls | .41 | @41½ |

### Glue—

| | ₱ lb | |
|---|---|---|
| Cabinet | .12 | @15 |
| Common Bone | .7½ | @9 |
| Extra White | .18 | @24 |
| Fish, liquid, 50 gal. bbls., per gallon | .60 | @1.20 |
| Foot Stock, White | .12 | @14 |
| Foot Stock, Brown | .9 | @11 |
| German Common Hide | .10 | @12 |
| German Hide | .12 | @18 |
| French | .10 | @40 |
| Irish | .13 | @16 |
| Low Grade | .10 | @12 |
| Medium White | .14 | @17 |

### Gum Shellac—

| | ₱ lb | |
|---|---|---|
| Bleached, Commercial | .26 | @27 |
| Bone Dry | .31 | @32 |
| Button | .30 | @40 |
| Diamond I | .47 | @18 |
| Fine, Orange | .34 | @35 |
| A. C. Garnet | .27 | @28 |
| G. A. L. | .20 | @21 |
| Kala Button | .18 | @19 |
| D. C. | .48 | @49 |
| Octagon B | .39 | @40 |
| T. N. | .27½ | @29 |
| V. S. O. | .47 | @48 |

### Colors in Oil—

| | ₱ lb | |
|---|---|---|
| Black, Lampblack | .12 | @14 |
| Blue, Chinese | .36 | @46 |
| Blue, Prussian | .32 | @36 |
| Blue, Ultramarine | .13 | @16 |
| Brown, Vandyke | .11 | @14 |
| Green, Chrome | .12 | @16 |
| Green, Paris | .. | @24 |
| Sienna, Raw | .12 | @15 |
| Sienna, Burnt | .12 | @15 |
| Umber, Raw | .11 | @14 |
| Umber, Burnt | .11 | @14 |

### White and Red, Lead &c.—

| | ₱ lb | |
|---|---|---|
| Lead, English white, in Oil | .10⅛ | @10⅜ |
| Lead, American White: | | |
| Dry and in Oil, 100, 250 and 500 lb kegs | 7 | |
| Dry and in Oil, 25 and 50 lb kegs | 7¼ | |
| Dry and in Oil, 12½ lb kegs | 7½ | |
| In Oil, 25 lb tin pails | 7½ | |
| In Oil, 12½ lb tin pails | 8 | |
| In Oil, 1, 2, 3 and 5 lb tin cans, ass't | 9 | |
| Red Lead and Litharge: | | |
| In 100 lb kegs | 7 | |
| In 25 and 50 lb kegs | 7¼ | |
| In 12½ lb kegs | 7½ | |
| In lots of less than 500 lbs, ½¢ ₱ lb advance over above prices of White and Red Lead and Litharge. | | |

Lead, American. Terms: On lots of 500 lbs and over, 60 days, or 2% for cash if paid in 15 days from date of invoice.

### Zinc, Dry—

| | ₱ lb | |
|---|---|---|
| American, dry | 5½ | @5⅝ |
| Red Seal (French process) | 6⅜ | @7 |
| Green Seal | 7¼ | @7½ |
| German Red Seal (French process) | 6½ | @6⅞ |
| Green Seal | 7¼ | @7½ |
| White Seal | 7⅜ | @8⅛ |
| French, Red Seal | 8¼ | @8¾ |
| Green Seal | 10¼ | @10½ |

### Dry Colors—

| | ₱ lb | |
|---|---|---|
| Black, Carbon | .6½ | @10 |
| Black Drop, American | .3½ | @8 |
| Black Drop, English | .5 | @15 |
| Black, Ivory | .16 | @20 |
| Lamp, commercial | .4 | @6 |
| Blue, Celestial | .4 | @6 |
| Blue, Chinese | .31 | @33 |
| Blue, Prussian | .29 | @31 |
| Blue, Ultramarine | .3½ | @15 |
| Brown, Spanish | .½ | @1 |
| Carmine, No. 40 | .$3.10 | @3.25 |
| Green, Chrome, ordinary | .3½ | @5 |
| Green, Chrome, pure | .17 | @25 |
| Ocher, American | ₱ ton $8.50 | @16.00 |
| American Golden | .2½ | @3¼ |
| French | .1¼ | @2 |
| Foreign Golden | .3 | @4 |
| Orange Mineral, English | .10 | @12 |
| French | .12¾ | @13 |
| German | .12 | @13 |
| American | .9 | @10 |
| Red, Indian, English | .4½ | @6 |
| American | .3 | @3¼ |
| Red, Turkey, English | .4 | @10 |
| Red, Tuscan, English | .7 | @10 |
| Red, Venetian, Amer. | ₱ 100 lb $0.50 | @1.25 |
| English | ₱ 100 lb $1.15 | @1.60 |
| Sienna, Italian, Burnt and Powdered | .3 | @9 |
| Italian, Raw, Powdered | .3 | @7 |
| American, Raw | .1½ | @2 |
| American Burnt and Pow'd | .1½ | @2 |
| Talc, French | ₱ ton $18.00 | @25.00 |
| American | ₱ ton 15.00 | @25.00 |
| Terra Alba, French | ₱ 100 lb .90 | @1.00 |
| English | ₱ 100 lb .80 | @1.00 |
| American ... | ₱ 100 lb, No. 1. .75 | @.80 |
| American ... | ₱ 100 lb, No. 2. .60 | @.65 |
| Umber, T'key, Bnt, & Pow. | .2¾ | @3 |
| Turkey, Raw and Powdered | .2¾ | @3 |
| Burnt, American | .1¼ | @2 |
| Raw, American | .1½ | @2 |
| Yellow, Chrome, Pure | .13¾ | @15 |
| Vermilion, American Lead | .7 | @25 |
| Quicksilver, bulk | .65 | @.. |
| Quicksilver, bags | .. | @66 |
| English, Imported | .55 | @70 |
| Chinese | .$0.90 | @1.00 |

# Current Hardware Prices.

**General Goods.**—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

**Special Goods.**—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

**Range of Prices.**—A range of prices is indicated by means of the symbol @. Thus 33⅓ @ 33⅓ & 10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

**Names of Manufacturers.**—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1907, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

**Standard Lists.**—"The Iron Age Standard Hardware Lists" contains the list prices of many leading goods.

**Additions and Corrections.**—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

### Adjusters, Blind—

Columbian and Domestic.....33⅓%
North's .....10%
Zimmerman's—See Fasteners, Blind.

### Window Stop—

Ives' Patent.....35%
Taplin's Perfection.....35%

### Ammunition—See *Caps, Cartridges, Shells, &c.*

### Anti—Rattlers—

Fernald Mfg. Co. Burton Anti-Rattlers, ℔ doz. pairs, Nos. 1, $0.75; 2, $0.60; 4, $1.00; 5, $0.50.
Fernald Quick Shifter, ℔ doz. pairs .....$2.00@$3.00

### Anvils—American—

Eagle Anvils.....℔ lb @8½¢
Hay-Budden, Wrought.....9½@9¾¢
Trenton .....℔ lb 9½@9¾¢

### Imported—

Swedish Solid Steel Sisco, Superior, ℔ lb.....10@10½¢
Peter Wright & Sons, ℔ lb, 84 to 349 lb, 11¢; 350 to 600 lb, 11½¢.

### Anvil, Vice and Drill—

Millers Falls Co., $18.00.....15&10%

### Apple Parers— See *Parers, Apple, &c.*

### Aprons, Blacksmiths'—

Livingston Nail Co.....10%

### Augers and Bits—

*Com. Double Spur....75&10@80%*
*Jennings' Patn., Bright.65&10@70%*
*Black Lip or Blued...65@65&5%*
*Boring Mach. Augers.....70%*
*Car Bits, 12-in. twist.....40&10%*
Ford's Auger and Car Bits.....40&5%
Ft. Washington Auger Co., Conard's .....35%
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip. R. Jennings' list. 25&7½%
No. 30, R. Jennings' list.....50%
Russell Jennings'.....25&10&2½
L'Hommedieu Car Bits.....15%
Mayhew's Countersink Bits.....45%
Pugh's Black.....20%
Pugh's Jennings' Pattern.....35%
Snell's Auger Bits.....60
Snell's Bell Hangers' Bits.....60
Snell's Car Bits, 12-in. twist.....60
Snell's King Auger Bits.....50
Wright's Jennings' Bits.....50%

### Bit Stock Drills—

See *Drills, Twist.*

### Expansive Bits—

Clark's Pattern, No. 1, ℔ doz., $26; No. 2, $18.....60&10%
Ford's, Clark's Pattern.....66⅔&5
C. E. Jennings & Co., Steer's Pat..25%
Lavigne Pat., small size, $18.00; large size, $26.00.....60&10%
Swan's .....60

### Gimlet Bits—

*Per gro.*
*Common Dbl. Cut.....$3.00@3.25*
*German Pattern, Nos. 1 to 10. $4.75; 11 to 13, $5.75*

### Hollow Augers—

*Bonney Pat., per doz..$5.50@6.00*
Ames .....25&10
Universal .....20

### Ship Augers and Bits—

*Ship Augers.....40&10@—%*
Ford's .....33⅓&5
C. E. Jennings & Co.:
L'Hommedieu's .....60
Watrous' .....33⅓&7½
Snell's .....48

### Awl Hafts—See *Handles, Mechanics' Tool.*

### Awls—

*Brad Awls:*
*Handled .....gro. $2.75@3.00*
*Unhdled, Shldered...gro.63@66¢*
*Unhandled, Patent..gro.66@70¢*
*Peg Awls:*
*Unhandled, Patent..gro. 31@34¢*
*Unhdled, Shldered..gro. 65@70¢*
*Scratch Awls:*
*Handled, Com...gro. $3.50@4.00*
*Handled, Socket..gro.$11.50@12.00*

### Awl and Tool Sets—See *Sets, Awl and Tool.*

### Axes—

*Single Bit, base weights: Per doz.*
*First Quality.....$4.75@5.00*
*Second Quality.....$4.25@4.50*
*Double Bit, base weights:*
*First Quality.....$7.00@7.50*
*Second Quality.....$6.50@6.75*

### Axle Grease—

See *Grease, Axle.*

### Axles— *Iron or Steel.*

*Concord, Loose Collar...4¼@4½¢*
*Concord, Solid Collar....4½@5 ¢*
*No. 1 Common, Loose...3½@4 ¢*
*No. 1½ Com., New Style.4¼@4¾¢*
*No. 2 Solid Collar.....4¼@4¾¢*
*Half Patent:*
*Nos. 7, 8, 11 and 12.....70%*
*Nos. 13 to 14.....70%*
*Nos. 15 to 18...70&10@70&10&5%*
*Nos. 19 to 22...70&10@70&10&5%*

### Boxes, Axles—

*Common and Concord, not turned .....lb., 5@6¢*
*Common and Concord, turned, lb., 6@7¢*
*Half Patent.....lb., 9½@10¢*

### Bait— Fishing—

Hendryx:
A Bait.....20%
B Bait.....25%
Competitor Bait.....20&5%

### Balances— Sash—

Caldwell new list.....50&10%
Pullman .....50&10%

### Spring—

*Light Spring Balances.60@60&5%*
Chatillon's:
Light Spg. Balances.....50@50&10%
Straight Balances.....40@40&10%
Circular Balances.....50&10%
Large Dial.....30%

### Barb Wire—See *Wire, Barb.*

### Bars— Crow—

*Steel Crowbars, 10 to 40 lb.... per lb., 2¼@2½¢*

### Towel—

No. 10 Ideal, Nickel Plate..℔ gro. $8.50

### Beam, Scale—

*Scale Beams.....40%*
Chattillon's No. 1.....30%
Chatillon's No. 2.....40%

### Beaters, Carpet—

Holt-Lyon Co.:
No. 12 Wire Coppered ℔ doz. $0.80; Tinned .....$0.85
No. 11 Wire Coppered ℔ doz. $1.15; Tinned .....$1.20
No. 10 Wire Tinned.....℔ doz. $1.50

### Beaters Egg—

Dover Stamping & Mfg. Co.:
Genuine Dover, per gro., No. 1, Tumbler Size, $7.50; No. 2, Family Size, $7.50; No. 3, Extra Family Size, $24.00; No. 4, Hotel Size, $30.00.
Holt-Lyon Co.:
Holt, per doz., No. 5, Jap'd. $0.80; No. A, Jap'd, $1.15; No. B, Jap'd, $1.85; No. 6, Jap'd, $1.65.
Lyon, Jap'd, per doz., No. 2, $1.35.
Taplin Mfg. Co.:
Improved Dover, per gro., No. 60, $6.00; No. 75, $6.50; No. 100, $7.00; No. 102, Tin'd, $8.50; No. 150, Hotel, $15.00; No. 152, Hotel Tin'd, $17.00; No. 200, Tumbler, $8.50; No. 202, Tumbler Tin'd, $9.50; No. 300, Mammoth, per doz., $25.00.

### Bellows—

*Blacksmith, Standard List:*
*Split Leather.....60&10@65%*
*Grain Leather.....50@50&10%*

### Hand—

| *Inch..* | *6* | *7* | *8* | *9* | *10* |
|---|---|---|---|---|---|
| *Doz..* | *$5.00* | *5.50* | *6.00* | *6.50* | *7.50* |

### Molders—

| *Inch..* | *10* | *12* | *14* | *16* |
|---|---|---|---|---|
| *Doz..* | *$7.50* | *9.00* | *12.00* | *15.00* |

Net Prices.

### Bells— Cow—

*Wrought Cow Bells.....75%*
Jersey .....75&10
Texas Star.....50

### Door—

Home, R. & E. Mfg. Co.'s.....55&10%

### Hand—

*Polished, Brass.....60@60&10%*
*White Metal.....60@60&10%*
*Nickel Plated.....50&10%*
*Swiss .....50&10%*
Cone's Globe Hand Bells.....33⅓@35%

### Miscellaneous—

*Farm Bells.....lb., 2¼@2½¢*
*Church and School....60@60&10%*

### Belting— Leather—

*Standard .....70&10@70&10&5%*
*Light .....75&10%*
*Cut Leather Lacing..60@60&10%*
*Leather Lacing Sides, per sq. ft. 20¢*

### Rubber—

*Competition (Low Grade), 70&10@75%*
*Standard .....60&10@70%*
*Best Grades.....40@50%*

### Bench Stops—

See *Stops, Bench*

### Benders and Upsetters, Tire—

Green River Tire Benders and Upsetters .....20%

### Bicycle Goods—

John S. Leng's Son & Co.'s 1907 list: Chain, Parts, Spokes.....50%
Tubes .....60%

### Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

### Blocks Tackle—

*Common Wooden.....75@75&5%*
B. & L. B. Co.:
Boston Wood Snatch, 50%; Eclipse Steel, 75%; Hollow Steel, 50&10%; Star Wire Rope, 50%; Tarbox Metal Snatch, 50%; Tarbox New Style Steel, 50&10%; Wire Rope Snatch, 50%.
Lane's Patent Automatic Lock and Junior .....30%
See also Machines, Hoisting.

### Boards, Stove—

*Paper and Wood Lined.....55%*
*Embossed .....55%*

### Boards, Wash—

See *Washboards.*

### Bobs, Plumb—

Keuffel & Esser Co.....33⅓%

### Bolts Carriage, Machine, &c.—

*Common Carriage (cut thread):*
*⅜ x 6 and smaller..75&5@—%*
*Larger and longer.....70@—%*
*Phila. Eagle, $3.00 list...80@—%*
*Bolt Ends.....70@—%*
*Machine (Cut Thread):*
*⅜ x 4 and smaller..75&10@—%*
*Larger and longer.....70@—%*

### Door and Shutter—

*Cast Iron Barrel, Japanned, Round Brass Knobs:*

| *Inch* | *3* | *4* | *5* | *6* | *8* |
|---|---|---|---|---|---|
| *Per doz..* | *$0.30* | *.35* | *.45* | *.60* | *.80* |

*Cast Iron Spring Foot, Jap'd:*

| *Inch* | *6* | *8* | *10* |
|---|---|---|---|
| *Per doz.....* | *$1.20* | *1.50* | *2.25* |

*Cast Iron Chain, Flat, Japanned:*

| *Inch* | *6* | *8* | *10* |
|---|---|---|---|
| *Per doz.....* | *$1.00* | *1.40* | *1.65* |

*Cast Iron Flat Shutter, Jap'd, Brass Knobs:*

| *Inch* | *6* | *8* | *10* |
|---|---|---|---|
| *Per doz.....* | *$0.75* | *.95* | *1.25* |

*Wrought Barrel Japanned, 80&10@80&10&5%*
*Barrel Bronzed.....60&10*
*Spring .....70&10@70&10&10*
*Shutter .....50&5@50&10&5%*
*Square Neck.....75@75&10*
*Square .....70&10@10@80%*
Ives' Patent Door .....55
Ives' Wrought Metal .....45

### Expansion—

E. H. Evans' Crescent.....10@60
Richards Mfg. Co. .....55&10
Steward & Romain Mfg. Co.:
Style No. 13 Double.....60
Style No. 1 Single.....60
Style No. 100, Dbl. Jaw, Single 55
Lag Screw.....66⅔%

### Plow and Stove—

*Plow .....65&5@70%*
*Stove .....85@85&5%*

### Tire—

*Common Iron.....80@80&5%*
*Norway Iron.....80@80&5%*
American Screw Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84...82½%
Bay State, list Dec. 28, '99.....80%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84...82½%
Eclipse, list Dec. 28, '99.....80%
Russell, Burdsall & Ward Bolt & Nut Co.:
Empire, list Dec. 28, '99.....80%
Norway Phila., list Oct. '84.....80%
Eagle .....82½%
Shelton Co.:
Tiger Brand, list Dec. 28, '99....80%
Phila., Eagle, list Oct. 16, 1884..82½%
Upson Nut Co.:
Tire Bolts.....72½%

### Borers, Bung—

*Borers Bung, Ring, with Handle:*

| *Inch.....* | *1¼* | *1½* | *1¾* | *2* |
|---|---|---|---|---|
| *Per doz...* | *$4.80* | *5.60* | *6.40* | *8.00* |
| *Inch.....* | | *2¼* | | *2½* |
| *Per doz.....* | | *$8.65* | | *11.50* |

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.75; No. 3, $2.50 each.....25%

### Boxes, Mitre—

C. E. Jennings & Co.....25%
Langdon, New Langdon and Langdon Improved, 20&10%; Langdon Acme .....15&10%
Perfection .....40
Seavey .....15

### Braces—

*Comman Ball, American....$1.50*
Barber's .....50&10&10@60&10
Fray's Genuine Spofford's.....60
Fray's No. 61, 166, 206, 614.....50%
C. E. Jennings & Co.....50&5
Mayhew's Ratchet.....60
Mayhew's Quick Action Hay Pat...50%
Millers Falls Drill Braces.....25&10
P., S. & W. Co., Peck's Pat....60&10

### Brackets—

*Wrought Steel..75&10@75&10&10%*
Bradley Metal Clasp...80&10@80&10&5
Griffin's Pressed Steel.....75@75&10
Griffin's Folding Brackets.....70&10
Taplin Victor Handy Egg Beater Bracket .....℔ doz. $1.50

### Bright Wire Goods—

See *Wire and Wire Goods.*

### Broilers—

Kilbourne Mfg. Co.....75&20%
Wire Goods Co.....75

### Buckets, Galvanized —

*M'fr's list, price per gross.*

| *Quart..* | *10* | *12* | *14* |
|---|---|---|---|
| *Water, Reg...* | *26.85* | *29.50* | *33.50* |
| *Water, Heg...* | *45.35* | *48.00* | *52.00* |
| *Fire, Rd. Btm..* | *32.00* | *34.65* | *38.65* |
| *Well .....* | *37.35* | *41.35* | *45.35* |

Extra, 10@65%

### Bull Rings—See *Rings, Bull.*

### Butts— Brass—

*Wrought, High List, Oct. 16, '84.....75*
Cast Brass, Tinned .....10

### Cast Iron—

*Fast Joint, Broad.....40&10&5%*
*Fast Joint, Narrow...40&10&5%*
*Loose Joint.....70&10&5%*
*Loose Pin.....70@70&5%*
*Mayer's Hinges.....70@70&5*
*Parliament Butts.....70@70&5*

### Wrought Steel—

*Bright*
*Light Narrow, Light Reversible .....70&5*
*Reversible and Broad..70&5%*
*Loose Joint, Narrow, Light Inside Blind, &c.....70%*
*Back Flaps, Table Chest..65%*
*Japanned.*
*Light Narrow, Loose Pin. 40&5%*
*Light Narrow, Ball Tip..60%*
*Broad .....40&5%*
*Steeple Tipped.....70%*
*Ball Tipped.....70%*

Extra, 10@—

## Cages, Bird—

Hendryx Brass: Series 3000, 5000, 1100, net list; 1200, 15%; 200, 300, 900 ..... 30%
Hendryx Bronze: Series 700, 800.... 30%
Hendryx Enameled..... 35%

## Calipers—See *Compasses.*

## Calks, Toe and Heel—

*Blunt, 1 prong, per lb.....4@4½¢*
*Sharp, 1 prong, per lb...4½@5¢*
Burke's, Blunt, 4@4¾¢; Sharp, 4½@5¼¢
Lautier, Blunt, 4@4¼¢; Sharp, 4½@4¾¢
Perkins', Blunt, ℔ lb, 3.65¢; Sharp, 4.15¢

## Can Openers—

See *Openers, Can.*

## Caps, Percussion—

*Eley's E. B.....52@55¢*
*G. D.....per M 34@35¢*
*F. L.....per M 40@42¢*
*G. E.....per M 48@50¢*
*Musket.....per M 62@63¢*

### Primers—

*Berdan Primers, $2 per M..20&5%*
*Primer Shells and Bullets..15&10%*
*All other primers per M. $1.52@1.60*

## Carpet Stretchers—

See *Stretchers, Carpet.*

## Cartridges—

*Blank Cartridges:*
*32 C. F., $5.50.....10&5%*
*38 C. F., $7.00.....10&5%*
*22 cal. Rim, $1.50.....10&5%*
*32 cal. Rim, $2.75.....10&5%*
*B. B. Caps, Con. Ball, Swgd. $1.90*
*B. B. Caps, Round Ball....$1.49*
*Central Fire.....25%*
*Target and Sporting Rifle. 15&5%*
*Primed Shells and Bullets. 15&10%*
*Rim Fire, Sporting.....50%*
*Rim Fire, Military.....15&5%*

## Casters—

*Bed.....65&10@70%*
*Plate.....60&5@60&10%*
*Philadelphia.....70&10@75%*
Acme, Ball Bearing..... 35%
Gem (Roller Bearing).....70&10&10&5
Steel Gem..... 50%
Standard Ball Bearing..... 45%
Yale (Double Wheel) low list...40&10%

## Cattle Leaders—

See *Leaders, Cattle.*

## Chain, Proof Coil—

*American Coil, Straight Link:*

| 3-16 | ¼ | 5-16 | ⅜ | 7-16 | ½ | ⅝ |
|---|---|---|---|---|---|---|
| $8.15 | 5.55 | 4.60 | 3.95 | 3.75 | 3.65 | 3.55 |

¾-⅞-1 1⅛ to 1¼ inch.
$3.45 3.55
*In cask lots, deduct 25¢.*
*German Coil.....60@60&5%*
*German Pattern Coil:*
*6-0 to 1.....70&5@70&10%*
*2 and 3..60&10&10@60&10&10&5%*
*4, 5 and 6.....50&10@50&10&5%*

### Halter—

*Halter Chains.....60&5@60&10%*
*German Pattern Halter Chains, list July 24, '97....60&10&5@70%*
Covert Mfg. Co.:
Halter ..... 35&5%

## Cow Ties—

See *Halters and Ties.*

## Trace, Wagon, &c.—

*Traces, Western Standard: 100 pr.*
*6½—6-3, Straight, with ring. $28.00*
*6½—6-2, Straight, with ring. $29.00*
*6½—8-2, Straight, with ring. $32.00*
*6½—10-2, Str'ght, with ring. $37.00*
*NOTE.—Add 2c per pair for Hooks Twist Traces: add per pair for Nos. 2 and 3, 2c: No. 1, 3c; No. 0, 4c to price of Straight Link.*
*Eastern Standard Traces, Wagon Chain, &c..60&10@60&10&5%*

### Miscellaneous—

*Jack Chain, list July 10, '93:*
*Iron.....60&10&7½%*
*Brass.....65%*
*Safety and Plumbers' Chain. 75%*
*Gal. Pump Chain....lb., 4½@5%*
Bridgeport Chain Co.:
Triumph Halter and Coil. 35&2½@40%
Triumph Dog..... 50&10@60%
Brown Halter and Coil....45@50&5%
Covert Mfg. Co.:
Breast, Halter, Heel, Rein, Stallion ..... 40%
Oneida Community:
American Halter, Dog and Kennel Chains ..... 35&2½@40%
Niagara Dog Leads and Kennel Chains ..... 45@50&5%
Wire Goods Co.:
Dog Chain..... 70%
Universal Dbl.-Jointed Chain..... 50%

## Chain and Ribbon, Sash—

Oneida Community:
Steel Chain..... 60%
Pullman:
Bronze Chain, 60%; Steel Chain, Copper'd ..... 60&10%
Sash Chain Attachments, per set..8¢
Aluminoy Sash Ribbon, per 100 ft ..... $2.00@$5.00
Sash Ribbon Attachments, per set..8¢

## Chalk—(From Jobbers.)

*Carpenters' Blue.....gro., 50¢*
*Carpenters' Red.....gro., 45¢*
*Carpenters' White.....gro., 40¢*

## Checks, Door—

Bardsley's ..... 45%
Pullman, per gro..... $54.00
Russwin ..... 33⅓%

## Chests, Tool—

American Tool Chest Co.:
Boys' Chests, with Tools..... 55%
Youths' Chests, with Tools..... 40%
Gentlemen's Chests, with Tools..30%
Farmers', Carpenters, etc., Chests, with Tools ..... 20%
Machinists' and Pipe Fitters' Chests, Empty..... 45%
Tool Cabinets..... 45%
C. E. Jennings & Co.'s Machinists' Tool Chests..... 7½%

## Chisels—

### Socket Framing and Firmer

*Standard List.....80&10@—%*
Buck Bros..... 30%
C. E. Jennings & Co.:
Socket Firmer No. 10..... 25&7½%
Socket Framing No. 15..... 25&7½%
Swan's ..... 66⅔@70%
L. & I. J. White & Co..... 30@30&5%

### Tanged—

*Tanged Firmers.....30&5@35%*
Buck Bros..... 30%
C. E. Jennings & Co. Nos. 191, 181..25%
L. & I. J. White Co..... 25&5%

### Cold—

| | lb. |
|---|---|
| *Cold Chisels, good quality* | *.13@15¢* |
| *Cold Chisels, fair quality* | *.11@12¢* |
| *Cold Chisels, ordinary* | *.... 9@10¢* |

## Chucks—

Almond Drill Chucks..... 35%
Almond Turret Six-Tool Chuck..... 40%
Beach Pat, each $8.00..... 35&5%
Empire ..... 25%
Blacksmiths' ..... 25%
Jacobs' Drill Chucks..... 35%
Pratt's Positive Drive..... 25%
Skinner Patent Chucks:
Independent Lathe Chucks..... 35%
Universal, Reversible Jaws..... 35%
Combination, Reversible Jaws....35%
Drill Chucks, New Model, 25%; Standard, 45%; Skinner Pat., 25%; Positive Drive..... 40%
Planer Chucks..... 20%
Face Plate Jaws..... 35%
Standard Tool Co.:
Improved Drill Chuck..... 45%
Union Mfg. Co.:
Combination, Nos. 1, 2, 3, 4, 5, 6, 7, 8 and 17, 40%; No. 21..... 35%
Scroll Combinations, Nos. 83 and 84 ..... 30%
Geared Scroll, Nos. 33, 34 and 35..25%
Independent Iron, Nos. 18 and 318.35%
Independent Steel, No. 64..... 25%
Union Drill, Nos. 000, 00, 100, 101, 102, 103, 104..... 35%
Union Czar Drill..... 25%
Universal, 11, 12, 16, 17, 13, 14, 15..40%
Universal No. 42..... 35%
Iron Face Plate Jaws, Nos. 28, 30, 48 and 50..... 35%
Steel Face Plate Jaws, Nos. 70 and 72 ..... 30%
Westcott Patent Chucks:
Lathe Chucks..... 50%
Little Giant Auxiliary Drill..... 50%
Little Giant Double Grip Drill...50%
Little Giant Drill, Improved..... 50%
Oneida Drill..... 50%
Scroll Combination Lathe..... 50%
Whitaker Mfg. Co.:
National Drill..... 25%

## Clamps—

Adjustable Hammers..... 20@20&5%
Carriage Makers', P., S. & W. Co. ..... 50&10%
Besly, Parallel..... 33⅓&10%
Myers' Hay Rack..... 45%
Lineman's Swedish Neverturn..... 65%
Wood Workers' Hammers..... 40&10%
Saw Clamps, see Vises, Saw Filers'

## Cleaners, Drain,

Iwan's Champion, Adjustable..... 50%
Iwan's Champion, Stationary..... 40%

### Sidewalk—

Star Socket. All Steel..℔ doz. $4.05 net
Star Shank. All Steel..℔ doz. $3.24 net
W. & C. Shank, All Steel, ℔ doz., 7½ in., $3.00; 8 in., $3.25.

## Cleavers, Butchers'—

Foster Bros..... 30%
Fayette R. Plumb..... 30%
L. & I. J. White Co..... 30%

## Clippers, Horse and Sheep—

Chicago Flexible Shaft Co.:
1902 Chicago Horse, each..$10.75
20th Century Horse, each...$5.00
Lightning Belt Horse, each.$15.00
Chicago Belt Horse, each..$20.00
Stewart's Enclosed Gear Horse, each..... $6.75
Stewart's Patent Sheep Shearing Machine, each..... $12.75
Stewart Enclosed Gear Shearing Machine, No. 8, each..$9.75
} 20%

## Clips, Axle—

*Regular Styles, list July 1, '05, 80&80&10%*

## Cloth and Netting, wire

—See *Wire, &c.*

## Cocks, Brass—

*Hardware list:*
*Plain Bibbs, Globe, Kerosene, Racking, Liquor, Bottling, &c.....75%*
*Compression Bibbs.....70%*

## Coffee Mills—

See *Mills, Coffee.*

## Collars, Dog—

Nickel Chain, Walter B. Stevens & Son's list..... 40%
Leather, Walter B. Stevens & Son's list ..... 40%

## Compasses, Dividers, &c.

*Ordinary Goods.....70&10@75%*

## Conductor Pipe,—

*L. C. L. to Dealers:*

| | Gal. Steel. | Charcoal. |
|---|---|---|
| *Northeastern* | *.70&10%* | *50&10&7½%* |
| *Eastern* | *.... 75%* | *50&10&7½%* |
| *Pittsburgh* | *..75&10&5%* | *60%* |
| *Central* | *....75&10%* | *60%* |
| *Northwestern,* | *75&7½%* | *60%* |
| *Western* | *....70&12½%* | *50&12½%* |
| *Tennessee* | *...70&10%* | *50&12½%* |
| *Southern* | *.... 70%* | *50&12½%* |
| *Southwestern.* | *70%* | *50&5%* |

*Terms, 60 days: 2% cash 10 days. Factory shipments generally delivered.*
See also Eave Troughs.

## Coolers, Water—

L. & G. Mfg. Co.:

| Gal..... | 2 | 3 | 4 | 6 | 8 |
|---|---|---|---|---|---|
| Galvanized, ea. | $1.85 | $2.00 | $2.25 | $2.90 | $3.90 |
| Galvanized, Lined, side handles, Gal..... | 2 | 3 | 4 | 6 | 8 |
| Each ..... | $1.95 | $2.15 | $2.40 | $3.30 | $4.15 |

White Enameled..... 10%
Agate Lined..... 10%

## Coppers' Tools—

See *Tools, Coopers'.*

## Coppers, Soldering—

*Soldering Coppers, 3 lb. to pair and heavier, 20¢; lighter than 3 lb. to pair.....22¢*

## Cord—Sash—

*Braided, Drab.....lb. 35¢*
*Braided, White, Com., Nos. 8 to 12, 20¢; No. 7, 20½¢; No. 6, 21½¢. In lots of 12 doz. or over, 1 cent less per pound.*
*Cable Laid Italian, lb., No. 18. 37¢*
*Italian, lb., A, No. 18, 25¢; B, 22¢*
*Common India.....lb., 11@11½¢*
*Cotton Sash Cord, Tw'ted. 18@20¢*
*Patent Russia.....lb....20¢*
*Cable Laid Russia.....lb....21¢*
*India Hemp, Br'd'd.....lb....21¢*
*India Hemp, Twisted...lb. 13@14¢*
*Patent India, Twisted..lb...17¢*
Pearl Braided, cotton, No. 6, ℔ lb, 27½¢; No. 7, 26½¢; Nos. 8 to 12, 26¢
Eddystone, Braided, Nos. 8 to 12, 26¢; 7, 26½; 6, 27½¢.
Harmony Cable Laid Italian, Nos. 7 to10.....℔ lb 23¢
Pullman:
Wire Sash Cord..... 10%
Sash Cord Attachments, per 100..$2.00
Samson, Nos. 8 to 12:
Braided, ℔ lb., Drab Cotton, 55¢; Italian Hemp, 40¢@50¢; Linen, 65¢; White Cotton, 50¢; Spot Cord.....50¢
Massachusetts, White...℔ lb 40¢
Massachusetts, Drab...℔ lb 45¢
Phoenix, White, Nos 8 to 12....27¢
} 15%
Silver Lake, per lb.:
A, Drab, 45¢; A, White, 40¢; B, Drab, 40¢; B, White, 35¢; Italian Hemp, 40¢; Linen....57½¢
See also Chain and Ribbon.

## Wire, Picture—

*Full Length.....90@—%*
*Short Length.....90&20@—%*
Hendryx Standard Wire Picture Cord, old list. 85&10%
Turner & Stanton Co. Wire Picture Cord ..... 90%

## Cradles—

*Grain.....50%*

## Crayons—

*White Round Crayons, Cases, 100 gro., $8.00, $8.50 and $9.00 according to grade.*
Zelnicker's Lumber: ℔ gro.
White and Purple, Indelible....$7.50
Blue, Red, Green, Yellow and Terra Cotta, $6.50; Black.....$4.50
Giant Lumber, 5¼ in. x 15-16 in. round, all colors, $12.00; Indelibles, $14.00; Blacks.....$10.00
Genuine Soapstone, Metal Workers', 5 in. x ¼ in. Round, $2.50; 5 in. x ¼ in. Square, $1.75; 5 x ½ x 3-16, $2.50; 5 x 1¼ x 3-16.....$3.00
Suremark, Black, $2.25; Blue, Red and Yellow.....$2.50

## Crooks, Shepperds'—

Fort Madison, per doz., Heavy, $5.50; Light ..... $5.00

## Crow Bars—See *Bars, Crow.*

## Cultivators—

Victor Garden..... 50%

## Cutlery, Table—

International Silver Company:
No. 12 M'd'm Knives, 1847. ℔ doz. $3.50
Star, Eagle, Rogers & Hamilton and Anchor..... ℔ doz. $3.00
Wm. Rogers & Son..... ℔ doz. $2.50

## Cutters—Glass—

H. H. Mayhew Co..... 40%
Red Devil..... 60%
B. Mfg. Co..... 40%
Woodward ..... 50%

## Meat and Food—

American ..... 30%

| Nos. | 401 | 402 | 403 | 404 | 405 | 406 | 407 |
|---|---|---|---|---|---|---|---|
| Each | $5 | $7 | $10 | $12 | $25 | $50 | $60 |

Enterprise:

| Nos..... | 5 | 10 | 12 | 22 | 32 | |
|---|---|---|---|---|---|---|
| Each | $2 | $3 | $2.75 | $4.50 | $6 | 25@25&7½% |

No. 202, $1.50..... 40&7½%
P., S. & W. Co.:
Dixon's ..... ℔ doz. 33⅓%

| Nos... | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| | $14.00 | $17.00 | $19.00 | $30.00 |

Ideal ..... 40@10&5%
Hales ..... 60&10&5%
Little Giant..... ℔ doz. 40@50%

| Nos.. | 305 | 310 | 312 | 320 | 322 |
|---|---|---|---|---|---|
| | $35.00 | $48.00 | $44.00 | $72.00 | $68.00 |

New Triumph No. 605, ℔ doz. $24.00. 40&10%
Russwin Food, No. 1, $24.00; No. 2, $27.00 ..... 45&10&10%

| | $15.00 | $18.00 |
|---|---|---|

Enterprise Beef Shavers.....25@30%

## Slaw and Kraut—

Henry Disston & Sons:
Slaw and Kraut Cutters..... 35%
Corn Graters..... 30%
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife....℔ doz. $3.00
Combined Slaw Cutter and Corn Grater ..... ℔ doz. $4.00

## Tobacco—

*All Iron, Cheap...doz, $4.25@4.50*
Enterprise ..... 25@30%
National, ℔ doz., No. 1, $21; No. 2, $18 ..... 40%

## Diggers, Post Hole, &c—

Disston's:
Rapid, ℔ doz., $24.00..... 25%
Samson, ℔ doz., $34.00..... 25%
Iwan's Imp'ved Post Hole Auger..40%
Vaughan Pattern Post Hole Augers, ℔ doz., $7.00
Perfection Post Hole Diggers, ℔ doz. ..... $8.75
Split Handle Post Hole Diggers, ℔ doz., $7.75
Hercules Pattern, ℔ doz..... $10.00
Kohler's, ℔ doz., Universal, $15.00; Little Giant, $12.00; Hercules, $10.00; Invincible, $9.00; Rival, $8.50; Pioneer..... $7.50
Never-Break Post Hole Diggers, ℔ doz., $24.00..... 60%

## Dividers—See *Compasses.*

## Drawing Knives—

See *Knives, Drawing.*

## Dressers Emery Wheel—

Sterling Emery Wheel Dressers..... 35%
Sterling Wheel Dresser Cutters..... 35%

## Drills and Drill Stocks—

*Blacksmith's Common Drilling Machines .....$1.50@1.75*
Breast, Millers Falls..... 15&10%
Breast, P., S. & W..... 33⅓%
Goodell Automatic Drills. 50&10@60&10%
Millers Falls Automatic Drills. 33⅓&10%
Ratchet, Curtis & Curtis..... 25%
Ratchet, Parker's..... 40%
Ratchet, Weston's..... 40%
Ratchet, Weston's, Style H Improved ..... 40%
Ratchet, No. 012..... 40%
Ratchet, Celebrated..... 40%
Ratchet, Whitney's, P., S. & W., 50&5%
Whitney's Hand Drill, No. 1, $10.00; Adjustable, No. 10, $12.00..... 33⅓%

### Twist Drills—

*Bit Stock.....70@70&5%*
*Taper and Straight Shank, 60&10@70%*

## Drivers, Screw—

*Screw D'ver Bits, per doz. 45@50¢*
Balsey's Screw Holder and Driver, ℔ doz., 2½-in., $6; 4-in., $7.50; 6-in., $9 ..... 50%
Buck Bros.' Screw Driver Bits..... 30%
Champion ..... 50%
Disston's ..... 70%
Fray's Hol. H'dle Sets, No. 3, $12..50%
Ford's Brace Screw Drivers....40&10%
Gay's Double Action Ratchet..... 35%
Goodell's Auto..... 65@65&10%
Mayhew's Black Handle..... 40%
Mayhew's Monarch..... 40%
Millers Falls, Nos. 20 and 21....25&10%
Millers Falls, Nos. 11, 12, 41, 42..15&10%
Smith & Hemenway Co., Neverturn, 66⅔%; Elmora, [illegible]ar. 30&10%
Swan's:
Nos. 7565 to 7567, [illegible]%; No. 7540, 40&10%

## Eave Trough, Galvanized—

| Territory... | Gal. Steel. | Charcoal. Iron. |
|---|---|---|
| *Northeastern* | *.75&10&5%* | *60&20%* |
| *Eastern* | *.....80&2½%* | *60&20%* |
| *Pittsburgh* | *..80&20%* | *65&10%* |
| *Central* | *...80&10&10&2½%* | *65&10%* |
| *Northwestern* | *.80&10&10%* | *65&10%* |
| *Western* | *....80&10%* | *60&10&5%* |
| *Tennessee* | *...80&5%* | *60&10&5%* |
| *Southern* | *.... 80%* | *60&10&5%* |
| *Southwestern* | *.75&10&2½%* | *60&5%* |

*Terms.—2% for cash. Factory shipmeets generally delivered.*
*Note.—Lower prices are made in some sections.*
See also Conductor Pipe and Elbows.

## Elbows and Shoes—

*Factory shipments, all territories: Galv. Steel and Galv. C. I. Standard Gauge.....85@85&10%*
*No. 26.....50%*
*No. 24.....25%*
*No. 22.....10%*

## Elbows, Stove Pipe—

Edwards, Standard Blue....40&10&10%
Edwards, Royal Blue.....40&10&10%
Reeves, Dover, one piece.....40&10%

## Emery, Turkish—

| | 4 to 46: | 54 to 220: | Flour. |
|---|---|---|---|
| *Kegs.....lb.* | *5 ¢* | *5½¢* | *3½¢* |
| *½ Kegs.....lb.* | *5¼¢* | *5¾¢* | *3¾¢* |
| *¼ Kegs.....lb.* | *5½¢* | *6 ¢* | *4 ¢* |
| *10-lb. cans, 10 in case....* | *6½¢* | *7 ¢* | *6 ¢* |
| *10-lb. cans, less than 10.....* | *10 ¢* | *10 ¢* | *8 ¢* |
| *Less quantity..* | *10 ¢* | *10 ¢* | *8 ¢* |

*NOTE.—In lots 1 to 3 tons a discount of 10% is given.*

## Extractors, Lemon Juice—

—See *Squeezers, Lemon.*

## Fasteners, Blind—
Zimmerman's .....50&10%
Walling's .....40&10%
Upson's Patent.....40%

## Cord and Weight—
Ives and Titan.....33⅓%

## Corrugated—
Acme Corrugated Fasteners.....70%

## Faucets—
*Cork Lined.....50&10@60%*
*Metallic Key, Leather Lined, ..60&10@70%*
*Red Cedar.....10&5@10&10&5%*
*Petroleum .....70&10@75%*
B & L. B. Co.:
Metal Key.....60&10%
Star .....60%
West Lock.....50&10%
John Sommer's Peerless Tin Key....40%
John Sommer's Boss Tin Key.....50%
John Sommer's Victor Mtl. Key.50&10%
John Sommer's Duplex Metal Key..60%
John Sommer's Diamond Lock.....40%
John Sommer's I.X.L. Cork Lined..50%
John Sommer's Reliable Cork Lined..50&10%
John Sommer's Chicago Cork Lined.60%
John Sommer's O. K. Cork Lined...50%
John Sommer's No Brand, Cedar....50%
John Sommer's Perfection, Cedar....40%
Self Measuring:
Enterprise, ₱ doz. $36.00.....40&10%
Lane's, ₱ doz. $36.00.....40&10%
National Measuring, ₱ doz. $36.40&10%

## Felloe Plates—
See *Plates, Felloe.*

## Files— Domestic—
*List Nov. 1, 1899.*
*Best Brands.....70&10@75&10%*
*Standard Brands.....75&10@80%*
*Lower Grade....75&10&10@80&10%*

## Imported—
*Stubs' Tapers, Stubs' list, July 24, '97.....33⅓@40%*

## Fixtures, Fire Door—
Allith Underwriters' Approved.....50%
Richards Mfg. Co.:
Universal, No. 103; Special, No. 104 .....$3.75
Fusible Links, No. 96.....50%
Expansion Bolts, No. 107.....60&10%

## Grindstone—
*Net Prices:*

| *Inch* | *15* | *17* | *19* | *21* |
|---|---|---|---|---|
| *Per doz.* | *$3.60* | *3.85* | *4.15* | *4.65* |

P., S. & W. Co.....25%
Reading Hardware Co.....60%

## Fodder Squeezers—
See *Compressors.*

## Forks—
*NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.*
Iowa Dig-Ezy Potato.....60&10%
Victor, Hay.....60&15&2½%
Victor, Manure.....66⅔%
Victor, Header.....65%
Champion, Hay.....66⅔%
Champion, Header.....65%
Champion, Manure.....60&15&2½%
Columbia, Hay.....60&20%
Columbia, Manure.....70%
Columbia, Spading.....70&12½%
Hawkeye Wood Barley.....40%
W. & C. Potato Digger.....60&10%
Acme Hay.....60&20%
Acme Manure, 4 tine.....60&10&5%
Dakota Header.....60&20%
Jackson Steel Barley.....60&20%
Kansas Header.....65%
W. & C. Favorite Wood Barley....40%
Plated.—See Spoons.

## Frames— Wood Saw—
*White, S'g't Bar, per doz.75@80¢*
*Red, S'g't Bar, per doz.$1.00@1.25*
*Red, Dbl. Brace, per doz.$1.40@1.50*

## Freezers, Ice Cream—

| *Qt.....* | *1* | *2* | *3* | *4* | *6* |
|---|---|---|---|---|---|
| *Each....* | *$1.25* | *$1.60* | *$1.90* | *$2.20* | *$2 80* |

## Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

## Fry Pans—See *Pans, Fry.*

## Fuse— *Per 1000 Feet.*
*Hemp .....$2.75*
*Cotton .....3.20*
*Waterproof Sgl. Taped..3.65*
*Waterproof Dbl. Taped..4.40*
*Waterproof Tpl. Taped..5.15*
10&2½%

## Gates, Molasses and Oil—
*Stebbins' Pattern.....80@80&5%*

## Gauges—
*Marking, Mortise, &c..50@50&10%*
Chapin-Stephens Co.:
Marking, Mortise, &c.....50&50&10
Disston's Marking, Mortise, &c..67½
Wire, Brown & Sharpe's.....33⅓%
Wire, Morse's.....25
Wire, P., S. & W. Co.....33⅓%

## Gimlets— Single Cut—
*Numbered assortments, per gro.*
*Nail, Metal, No. 1, $2.00; 2, $2.30*
*Spike, Metal, No. 1, $1.00; 2, $1.30*
*Nail, Wood Handled, No. 1, $2.30; 2, $2.60*
*Spike, Wood Handled, No. 1, $1.30; 2, $1.60*

## Glass, American Window
See *Trade Report.*

## Glasses, Level—
Chapin-Stephens Co.....65@65&10

## Glue, Liquid Fish—
*Bottles or Cans, with Brush, 25&10@50%*
Elwell's .....40%

## Grease, Axle—
*Common Grade...gro.$6.00@$6.50*
Dixon's Everlasting, 10-lb. pails, ea. 85¢; in boxes, ₱ doz., 1 lb, $1.20; 2 lb.....$2.00
Helmet Hard Oil.....25%

## Griddles, Soapstone—
Pike Mfg. Co.....33⅓@33⅓&10%

## Grinders—
Royal Mfg. Co.:
Alundum Grinding Machines, each, Nos. 01, $1.75; 1A, $2.50; 10, $5.00 .....30%
Alundum Sickle Grinders, each, Nos. 20, $5.00; 20A, $6.00; 20A Combined, $6.50.....30%
Alundum Disc Grinders, each, $2.50 .....30%

## Grindstones—
Pike Mfg. Co.:
Improved Family Grindstones, ₱ inch, ₱ doz., $2.00.....33⅓%
Richards Mfg. Co., Eli and Cycle, Ball Bearing, mounted.....40%

## Grips, Nipple—
Perfect Nipple Grips.....40&10&2%

## Halters and Ties—
*Cow Ties.....65@65&10%*
Bridgeport Chain Co.:
Triumph Coil and Halters.35&2½@40%
Brown Coil and Halters...45@50&5%
Brown Cow Ties.....50&5@50&10&5%
Brown Tie Outs.....70&10@75&5%
Covert Mfg. Co.:
Web .....30&2%
Jute Rope.....35%
Sisal Rope.....20%
Cotton Rope.....45%
Hemp Rope.....45%
Oneida Community:
Am. Coil and Halters.....40@40&5%
Am. Cow Ties.....45@50%
Niagara Coil and Halters...45@50&5%
Niagara Cow Ties.....45&5@50&10&5%

## Hammers—
### Handled Hammers—
Heller's Machinists'....55&10@55&10&5%
Heller's Farriers.....40&5@40&10&5%
Peck, Stow & Wilcox Co.:
Crucible Steel.....40&10%
Farriers' .....40&10%
Riveting .....40&10%
Machinists' .....60&10%
Blacksmiths' .....50%
Fayatte R. Plumb:
A. E. Nail.....40&2½@40&12½%
Eng. and B. S. Hand.50&10&5@60&5%
Machinists' Hammers.....60@60&10%
Rivet and Tinners'.40&7½@40&12½&5%

### Heavy Hammers and Sledges—
*Under 3 lb., per lb., 50¢...80&10%*
*3 to 5 lb., per lb., 40¢...80&10&10%*
*Over 5 lb., per lb., 30¢.....*
*Over 5 lb., per lb., 30¢.80&10&10%*

## Handles—
### Agricultural Tool Handles
*Axe, Pick, &c....60&10@60&10&5%*
*Hoe, Rake, &c.....40%*
*Fork, Shovel, Spade, &c.:*
*Long Handles.....40%*
*D Handles.....40%*

### Cross-Cut Saw Handles—
Atkins' .....40%
Champion .....50%
Disston's .....50%

### Mechanics' Tool Handles—
*Auger, assorted...gro.$3.00@$3.50*
*Brad Awl.....gro.$1.65@$1.75*
*Chisel Handles, Ass'd, per gro.:*
*Tanged Firmer, Apple, $2.40@$2.65; Hickory.....$2.15@2.40*
*Socket Firming, Apple, $1.75@$1.95; Hickory.....1.60@1.75*
*Socket Framing, Hickory, $1.60@$1.75*
*File, assorted.....gro.$1.30@$1.40*
*Hammer, Hatchet, &c., 60&10@60&10&5%*
*Hand Saw, Varnished, doz., 80&85¢; Not Varnished.....65@75¢*
*Plane Handles:*
*Jack, doz., 30¢; Fore, doz...45¢*
Chapin-Stephens Co.:
Carving Tool.....30@30&10%
Chisel .....60@60&10%
File and Awl.....60@60&10%
Saw and Plane.....30@30&10%
Screw Driver.....30@30&10%
Millers Falls Adj. and Ratchet Auger Handles .....15&10%
Nicholson Simplicity File Handle....₱ gro. $0.85@$1.50
J. L. Osgood:
Indestructible File and Tool, ₱ gro., No. 1, $8.00; No. 2, $8.50; No. 3, $9.00; No. 4, $9.50; No. 5, $10.00.....gro. lots 10%
W. A. Zelnicker Supply Co.:
Hammer, ₱ doz., 12 in. $2.00; 14 in., $2.09; 16 in., $2.30; 18 12., $2.50; 20 in., $2.70; 22 in., $3.00; 24 in., $3.30; 26 in., $3.50; 30 in., $3.80.
Sledge, ₱ doz., oval, 30 in., $3.80; octagon, 30 in., $3.80; oval, 36 in., $4.00; octagon, 36 in., $4.00.
Axe, ₱ doz., 28 to 34 in., $5.60; 36 in., $5.80.
Adze, ₱ doz., 36 in., $5.80; 36 in., $7.80.
Pick, ₱ doz., R. R. 36 in., $8.00; coal, 34 in., $5.80.
Hatchet, ₱ doz., 12 to 14 in., $2.00.
Extra 5@10% often given.

## Hangers—
*NOTE—Barn Door Hangers are generally quoted per pair, without track and Parlor Door Hangers per double set with track, &c.*
Allith Mfg. Co.:
Reliable, Nos. 1 and 2; Allith, No. 3; Allith Adjustable, No. 6; Reliable Parlor Door.....50
Chicago Spring Butt Co.:
Friction .....25%
Oscillating .....25%
Big Twin.....25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door.....50%
Elevator .....30
Railroad .....50%
Cronk & Carrier Mfg. Co.:
Loose Axle.....60&2½%
Roller Bearing.....70&2½
Griffin Mfg. Co.:
Solid Axle, No. 10, $12.00..60&10%
Roller Bearing, No. 11, $15.00, 60&10%
Roller Bearing, Ex. Hy., No. 22, $18.00.....60&10%
Bull Dog, $24.00.....70%
Lane Bros. Co.:
Parlor, Ball Bearing, $4.00; Standard, $3.15; No. 105, $2.85; New Model, $2.80; New Champion .....$2.25
Barn Door, Standard.....60&10%
Hinged .....net $6.08
Covered .....60&5%
Special .....70&5%
Lawrence Bros.:
Advance .....55&10%
Cleveland .....70&7½%
Clipper, No. 75.....60%
Crown .....55&10%
Cyclone, No. 40.....net $6.50
Tandem, No. 50.....net $7.50
New York.....55&10%
McKinney Mfg. Co.:
Roller Bearing, Nos. 1 and 2..70%
Anti-Friction .....60%
Hinged Hangers, King Charm.60%
Richards Mfg. Co.:
Hangers, Nos. 47, 48, 147, 247, 60&5%
Pioneer Wood Track, No. 3..$2.25
Roller B'r'g St'l Track No. 12.$2.20
Roller B'r'g St'l Track No. 13.$2.50
Roller B'r'g, Nos. 39, 41, 43, 70&7½%
Hero, Adj. Track No. 19..50&10%
Adjustable Track Tandem Trolley Track No. 16.....50&10%
Seal, Steel Track No. 8.....$2.25
Auto Adj. Track No. 22..50&5%
Trolley B. D. No. 17, $1.25; F. D. No. 120, $2.25; No. 121, $2.45; No. 150.....$2.50
Safety Underwriters F. D. No. 101 .....50%
Tandem No. 44..2½ and 3 60&10%
Palace, Adjustable Track No. 132 .....50&5%
Royal, Adjustable Track No. 122 .....50&10%
Ives' Wood Track No. 1.....$2.25
Trolley B. D. No. 20.....50&10%
Trolley B. D. No. 24, $1.30; No. 27, $1 40; No. 28.....$1.60
Roller Bearings, Nos. 37, 38, 39, 41, 43, 44, Sizes 1 and 2.70&7½%
Anti-friction, No. 42; No. 44, sizes 2½ and 3.....60%
Hinged Tandem No. 48....60&5%
Folding Door B. B. Swivel No. 135 .....40%
Taylor & Boggis F'y Co.'s Kidder's Roller Bearing.50&15&10&5%
Myers' Stayon Hangers.....60%

## Hangers— Garment—
Pullman Trouser, ₱ gro., No. 1 $9.00; No. 4, $24.00; No. 5, $16.50; No. 8, Black Enamel, $7.50; No. 10, $21.00; No. 12, $8.00; No. 15, Rods, $9.00; No. 18, Loops.....$10.00
Victor Folding.....₱ gro. $9.60

## Gate—
Myers' Patent Gate Hangers, ₱ doz. net .....$4.50

## Joist and Timber—
Lane Bros. Co.....30%

## Hasps—
Griffin's Security Hasp.....50&10%
McKinney's Perfect Hasp, ₱ doz..60%

## Hatchets—
*Regular list, first qual.40&12½@—*
*Second quality.....50&10&5@—*

## Heaters, Carriage—
Clark, No. 5, $1.75; No. 5B, $2.00; No. 3, $2.25; No. 3D, $2.75; No. 7D, $3.00; No. 3E, $3.25; No. 1, $3.50.....25%
Clark Coal, ₱ doz., $0.75.....20%

## Hinges—
### Blind and Shutter Hinges
*Surface Gravity Locking Blind: (Victor; National; 1868 O. P.; Niagara; Clark's O. P.; Clark's Tip; Buffalo.)*

| *No.* | *1* | *3* | *5* |
|---|---|---|---|
| *Doz. pair.....* | *$0.75* | *1.35* | *2.70* |

*Mortise Shutter: (L. & P., O. S., Acme, &c.)*

| *No.* | *1* | *1½* | *2* | *2½* |
|---|---|---|---|---|
| *Doz. pair....* | *$0.70* | *.65* | *.60* | *.55* |

*Mortise Reversible Shutter (Buffalo, &c.):*

| *No.* | *1* | *1½* | *2* |
|---|---|---|---|
| *Doz. pair.....* | *$0.70* | *.65* | *.60* |

North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10
Charles Parker Co.....70@75
Parker Wire Goods Co.
Hale & Benjamin Automatic Blind Hinges .....20
Hale's Blind Awning Hinges, No. 110, for wood, $9.00; No. 111, for brick, $9.00.....20%
Reading's Gravity.....60%
Stanley's Steel Gravity Blind Hinges, No. 1647½, ₱ doz. sets, without screws, $0.95; with screws, $1.25.
Wrightsville Hardware Co.:
O. S., Lull & Porter.....75&5%
Acme, Lull & Porter.....75%
Queen City Reversible.....75%
Shepard's Noiseless, Nos. 60, 65, 55 .....75&5%
Niagara, Gravity Locking, Nos. 1, 3 & 5.....75&5%
Tip Pat'n, No. 1.....75&10%
No. 3.....75&5%
Buffalo Gravity Locking, Nos. 1, 3 & 5.....70&10&5%
Shepard's Double Locking.....75%
Champion Gravity Locking.....75&5%
Pioneer .....75&10%
Empire .....65%
W. H. Co.'s Mortise Gravity Locking, No. 2.....60&10%

### Gate Hinges—
*Clark's or Shepard's—Doz. sets:*

| *No.* | *1* | *2* | *3* |
|---|---|---|---|
| *Hinges with L't'chs.* | *$2.00* | *2.70* | *5.00* |
| *Hinges only.....* | *1.25* | *1.90* | *3.50* |
| *Latches only.....* | *.70* | *.75* | *.35* |

*New England:*
*With Latch.....doz..@$2.00*
*Without Latch.....doz..@$1.60*
*Reversible Self-Closing:*
*With Latch.....doz..@$1.75*
*Without Latch.....doz....@$1.35*
*Western:*
*With Latch.....doz. $1.75*
*Without Latch.....doz..$1.15*
Wrightsville Hardware Co.:
Shepard's or Clark's Hinges and Latches, Hinges only or Latches only, Nos. 1, 2 or 3.....70%

### Pivot Hinges—
Bommer Bros. Pivot.....40%
Lawson Mfg. Co. Matchless.....50%

### Spring Hinges—
*Holdback, Cast Iron...$6.75@$7.00*
*Non-Holdback, C'st Iron$6.50@$6.75*
J. Bardsley:
Bardsley's Non-Checking Mortise Floor Hinges.....40%
Bardsley's Patent Checking.33⅓%
Bommer Bros.:
Bommer Ball Bearing Floor..40%
Bommer Spring Hinges.....40%
No. 999 Wrot. Steel Hold Back, ₱ gro. $9.00
Chicago Spring Butt Co.:
Chicago Spring Hinges.....25%
Triple End Spring Hinges....50%
Chicago (Ball Bearing) Floor.50%
Garden City Engine House...25%
Keene's Saloon Door.....25%
Columbian Hardware Co.:
Acme, Wrought Steel.....30%
Acme, Brass.....25%
American .....30%
Columbia, ₱ gr., No. 14, $9.00; No. 18.....$25.00
Columbia, Adj., No. 7, ₱ gr.$12.00
Columbian Hinges.....60&10%
Gem, new list.....30%
Clover Leaf and Acorn, gro. lots, $5.10; ½ gro. lots.....$6.00
Oxford, new list.....30%
Floor Spring Hinges.....65&10%
Lawson Mfg. Co., Matchless...30%
Richards Mfg. Co.:
Superior Double Acting Floor Hinges .....40%
Shelby Spring Hinge Co.:
Buckeye All Steel Holdback Screen Door.....₱ gr. $9.00
Chief Ball Bearings Floor Hinge .....50%
Ball Bearing Door.....25%
No. 777, Sheet Steel Holdb'k, ₱ gr. pr.....$9.00
Standard Mfg. Co.:
Champion Double Acting Door Hinge .....25&10&10%
Standard Double Acting Floor Hinge .....25&10&10%
Superior Spring Hinge Co.:
Superior Floor Hinges.....33⅓%
Extra 10% often given on most of these Hinges.

### Wrought Iron Hinges—
*Strap and T Hinges, &c., list December 20, 1904:*
*Light Strap Hinges..50&10%*
*Heavy Strap Hinges..60&5%*
*Light T Hinges.....50%*
*Heavy T Hinges.....40%*
*Extra Hvy. T Hinges.50&10%*
*Hinge Hasps.....33⅓%*
*Cor. Heavy Strap....60&5%*
*Cor. Ex. Heavy T...50&10%*
*Extra 10&7½%.*

*Screw Hook and Strap.*
*6 to 12 in..lb..3½¢*
*1½ to 20 in..lb..3½¢*
*22 to 36 in..lb..3¢*

*Screw Hook and Eye:*
*to 1 inch.....lb..6¼¢*
*⅝-inch .....lb..7½¢*
*½ inch .....lb..8½¢*

### Hitchers, Stall—
Covert Mfg. Co., Stall Hitchers..30&2%

### Hods— Coal
*M'f'gr's list, price per gross:*

| *Inch* | *15* | *16* | *17* | *18* |
|---|---|---|---|---|
| *Galv. Open....* | *$3.5* | *$3.9* | *$4.2* | *$4.6* |
| *Jap. Open....* | *26* | *28* | *31* | *35* |
| *Galv. Funnel...* | *43* | *48* | *52* | *56* |
| *Jap. Funnel....* | *33* | *36* | *39* | *43* |

10&7½&5%

### Masons' Etc.
Cleveland Wire Spring Co.:
Steel Brick, No. 162 .....each $1.05
Steel Mortar, No. 158 .....each $1.35

### Hoes— Eye—
*Scovil and Oval Pattern, 60&10@60&10&10%*
*Grub, list Feb. 23, 1899, 70&10@70&10&10%*
D. & H. Scovil.....27½%
Am. Fork & Hoe Co. (Scovil Pattern) .....60%

### Handled—

*NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.*

Cronk's Weeding, No. 1, $2.00; No. 2, $2.50
Star Double Bit.....$3.20
Ft. Madison Cotton Hoe.....50&10&10%
Ft. Madison Crescent Cultivator Hoe, ₱ doz.....70&10
Ft. Madison Mattock Hoes:
Regular Weight.....₱ doz. 10&5
Junior Size.....₱ doz. $4.00
Ft. Madison Sprouting Hoe, ₱ doz., 60&10
Ft. Madison Dixie Tobacco Hoe.....75&10&7½%
Kretsinger's Cut Easy.....70&10
Warren Hoe.....45&10
W. & C. Ivanhoe.....75&2
B. B. 6 in., Cultivator Hoe.....$3.40
B. B., 6½ in.....$3.50
Acme Wedding.....₱ doz., net, $4.35
W. & C. L'tning Shuffle Hoe, ₱ doz. $5.25

### Hoisting Apparatus—

See *Machines, Hoisting.*

### Holders— Bit—

Angular, ₱ doz. $24.00.....45&10%

### Door—

Bardsley's, Iron, 40%; Brass and Bronze.....25%
Empire.....50%
Pullman.....25%
Richards Mfg. Co.: No. 117, Ever-ready, 40%; Nos. 118, 119, Sure Grip.....50%
Superior.....33⅓%

### File and Tool—

Nicholson File Holders and File Handles.....33⅓@40%

### Fruit Jar—

Triumph Fruit Jar Holder, ₱ gross, $18.00; ₱ doz.....$2.00

### Trace and Rein—

Fernald Double Trace Holder, ₱ doz. pairs.....$1.25
Dash Rein Holder, ₱ doz. pairs. $1.25

### Hones—Razor—

Pike Mfg. Co., Belgian and Swaty, 50%; German.....33⅓%

### Hooks—Cast Iron—

Bird Cage, Reading.....40%
Clothes Line, Reading List.....40%
Coat and Hat, Reading.....45&20%
Coat and Hat, Wrightsville.....60&5
Harness, Reading List.....40%

### Wire—

*Belt, Nos. 1 to 15....75&10@80%*
*Wire C. & H. Hooks..80@80&10%*
Bradley Metal Clasp Wire, Coat and Hat, 70&10%; Ceiling.....70&10
Columbian Hdw. Co., Gem.....70&5
Parker Wire Goods Co., King..70&10%
Wire Goods Co.:
Acme, 60&10%; Chief, 70%; Crown, 75%; Czar, 65%; V Brace, 75%; Czar Harness, 50&10%.

### Wrought Iron—

*Box, 6 in., per doz., $0.90; 8 in., $1.15.*
*Cotton.....doz. $1.25@$1.50*
Wrought Staples, Hooks, &c. See Wrought Goods.

### Miscellaneous—

*Hooks, Bench, see Stops, Bench.*
*Bush, Light, doz., $6.20; Medium, $6.75; Heavy, $7.65*
*Grass, best, all sizes, per doz., $2.75@$3.00*
*Grass, common grades, all sizes, per doz.....$1.25@$1.50*
*Whiffletree.....lb. 5¼@6c*
*Hooks and Eyes:*
*Brass.....60@60&10%*
*Malleable Iron.....70@70&10%*
Covert Mfg. Co. Gate and Scuttle Hooks.....40%
Ft. Madison Cut-Easy Corn Hooks, ₱ doz. $3.25 net
Turner & Stanton Co. Cup and Shoulder.....85&10%
Bench Hooks. See Bench Stops.
Corn Hooks. See Knives, Corn.

### Horse Nails—

See *Nails, Horse.*

### Horseshoes—

See *Shoes, Horses.*

### Hose, Rubber—

*Garden Hose, ¾-inch:*
*Competition.....ft. 6@6½¢*
*3 ply Guaranteed....ft. 8½@9¢*
*4-ply Guaranteed....ft. 9½@12¢*
*Cotton Garden, ¾-in., coupled:*
*Low Grade.....ft. 8@9¢*
*Fair Quality.....ft. 10@11¢*

### Irons— Sad—

*From ¼ to 10.....lb. 2½@2¾¢*
*B. B. Sad Irons.....lb. 3¼@3½¢*
*Mrs. Potts', cents per set:*

| | Nos. 50 | 55 | 60 | 65 |
|---|---|---|---|---|
| *Jap'd Tops* | 83 | 89 | 93 | 91 |
| *Tin'd Tops* | 88 | 85 | 98 | 95 |

*New England Pressing..lb. 3¾@4¼¢*

### Bar and Corner—

Richards Mfg. Co., Bar, 60&10%; Corner.....60%

### Pinking—

*Pinking Irons.....doz. 60@65¢*

### Irons, Soldering

See *Coppers.*

### Jacks, Wagons—

Covert Mfg. Co.:
Auto Screw.....20&2%; Steel, 15%
Lockport.....50%
Lane's Steel.....30&5%
Richards' Tiger Steel, No. 130...50&10%
Smith & Hemenway Co.'s.....25%

### Ladder—

Richards Mfg. Co. Ladder Jacks..50%

### Kettles—

*Brass, Spun, Plain.....20@25%*
Enameled and Cast Iron—See Ware, Hollow.

### Knives—

### Butcher, Kitchen, &c.—

Foster Bros.' Butcher, &c.....30%
Wilkinson Shear & Cutlery Co....60%

### Corn—

Columbian Cutlery Co., Wilcut Brand Knives and Hooks.....60%
Withington Acme, ₱ doz., $2.65; Dent, $2.75; Adj. Serrated, $2.20; Serrated, $2.10; Yankee No. 1, $1.50; Yankee No. 2, $1.15.

### Drawing—

*Standard List.....80&10@—%*
C. E. Jennings & Co., Nos. 45, 46, 25&7½%
Jennings & Griffin, Nos. 41, 42, 66⅔&7½%
Swan's.....66⅔@70%
Watrous.....16⅔%
L. & I. J. White.....20&5@25%

### Hay and Straw—

*Serrated Edge, per doz. $5.00@5.50*
Iwan's Sickle Edge.....₱ doz. $9.50
Iwan's Serrated.....₱ doz. $10.00

### Miscellaneous—

*Farriers'.....doz. $2.60@3.55*
Wostenholm's.....₱ doz. $3.00@3.25

### Knobs—

*Base, 2½-inch, Birch or Maple, Rubber Tip.....gro. $1.25@1.40*
*Carriage, Jap., Drive, all sizes, gro. 35@40¢*
*Door, Mineral.....doz. 65@70¢*
*Door, Por. Jap'd.....doz. 70@75¢*
*Door, Por. Nickel..doz. $2.05@2.15*
Bardsley's Wood Door, Shutters, &c. 15%

### Lacing, Leather—

See *Belting, Leather*

### Ladders, Store, &c.—

Allith Mfg. Co., Reliable.....50%
Lane's Store.....25%
Myers' Noiseless Store Ladders....50%
Richards Mfg. Co.:
Improved Noiseless, No. 112.....50%
Climax Shelf, No. 113.....50%
Trolley, No. 109.....50%

### Ladles, Melting—

L. & G. Mfg. Co. (low list).....20%
P., S. & W.....40&10%
Reading.....60%

### Lanterns—Tubular—

*Regular, No. 0.....doz. $4.35@4.50*
*Side Lift, No. 0.....doz. $4.60@4.75*
*Hinge Globe, No. 0. doz. $4.60@4.75*
*Other Styles.....40@40&10%*

### Bull's Eye Police—

*3-inch.....$3.75@4.00*

### Latches— Thumb—

*Roggin's Latches, Jap'd, with Screws.....doz. 35@40¢*

### Door—

Allith Mfg. Co., Reliable and Alligator, 50%; Reliable Cold Storage, 50%
Cronk & Carrier Mfg. Co., No. 101, ₱ doz. $2.00
Richards' Bull Dog, Heavy, No. 125.....50&5%
Richards' Trump, No. 127.....$1.50

### Leaders, Cattle—

*Small.....doz. 50¢; large, 60¢*
Covert Mfg. Co.:
Cotton, 45%; Hemp, 45%; Jute, 35%; Sisal, 20%.

### Leathers, Pump—

See *Pumps—*

### Lifters, Transom—

R. & E.....10%

### Lines—

| *Wire Clothes, Nos.* | *18* | *19* | *20* |
|---|---|---|---|
| *100 feet* | *$2.30* | *1.95* | *1.75* |
| *75 feet* | *$1.95* | *1.65* | *1.50* |

Samson Cordage Works:
Solid Braided Chalk, Nos. 0 to 3..40%
Solid Braided Masons'.....30%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50.....₱ gr. 20%
Masons' Lines, Shade Cord, &c.; White Cotton, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50; Colors, No. 3½, $1.75; No. 4, $2.25; No. 4½, $2.75; Linen, No. 3½, $2.50; No. 4, $3.50; No. 4½, $4.50.....20%
Tent and Awning Lines: No. 5, White Cotton, $7.50; Drab Cotton, $8.50.....20%
Clothes Lines, White Cotton: 50 ft., $2.75; 60 ft., $3.25; 70 ft., $3.75; 75 ft., $4.00; 80 ft., $4.25; 90 ft., $4.75; 100 ft., $5.25.....20%
Turner & Stanton Co.:
Solid Braided Chalk, Masons' and Awning Lines.....40
Clothes Lines, White Cotton....20%
Shade Cord, Cotton or Linen....20%

### Locks— Cabinet—

*Cabinet Locks....33⅓@33⅓@5%*

### Door Locks, Latches, &c.—

*NOTE.—Net Prices are very often made on these goods.*
Reading Hardware Co.....40
R. & E. Mfg. Co.....10

### Padlocks—

R. & E. Mfg. Co. Wrought Steel and Brass.....75&10

### Sash, &c.—

Ives' Patent:
Bronze and Brass, 55&5%; Crescent, 60%; Iron, 60%; Window Ventilating, 40&20%; Robinson Pat. Ventilating Sash Lock 33⅓%.
Pullman Patent Ventilating Lock..25%
Reading Sash Locks.....40%

### Machines—Boring—

*Com. Upr't, without Augers. $2.00@2.25*
*Com. Angl'r, without Augers, $2.25@2.50*
Swan's Improved.....40&10
Jennings', Nos. 1 and 4.....25&7½
Millers' Falls.....5.75
Snell's, Upright, $2.65; Angular, $2.90

### Corking—

Reisinger Invincible Hand Power... ₱ doz. $48.00

### Fence—

Williams' Fence Machines....each, $5.50

### Hoisting—

Moore's Anti-Friction Chain Hoist.30%
Moore's Hand Hoist, with Lock Brake.....20%
Moore's Cyclone High Speed Chain Hoist.....25%

### Ice Cutting—

Chandler's.....12½%

### Washing

| Boss Washing Machine Co.: | Per doz. |
|---|---|
| Boss No. 1 | $57.00 |
| Boss Rotary | $57.00 |
| Champion Rotary Banner No. 1 | $57.00 |
| Standard Champion No. 1 | $50.00 |
| Standard Perfection | $27.00 |
| Cincinnati Square Western | $33.00 |
| Uneeda American, Round | $33.60 |

### Mallets—

*Hickory.....45&5@50%*
*Lignumvitæ.....45&5@50%*
*Tinners' Hickory and Applewood.....doz. 45&5@50%*

### Mangers, Stable—

Swett Iron Works.....50%

### Mats, Door—

Acme Flexible Steel.....50%
Elastic Steel (W. G. Co.), new list.50%

### Mattocks—

See *Picks and Mattocks.*

### Milk Cans—See *Cans, Milk.*

### Mills, Coffee, &c.—

Enterprise Mfg. Co.....20@25%
National list Jan. 1, 1902.....30%
Parker's Columbia and Victoria..33⅓%
Parker's Box and Side.....50&10%
Swift, Lane Bros. Co.....30%

### Motors, Water—

Divine's Red Devil.....30%
Lippincott's.....30%

### Mowers, Lawn—

*NOTE.—Net prices are generally quoted*
*Cheapest, 10-in., $2.00; advance 10¢ for each size.*
*Cheap, 10-in., $2.25; advance 15@20¢ for each size.*
*Better Grade, 10-in., $3.00; advance 25¢ for each size.*

| | *12* | *14* | *16* | *18-in.* |
|---|---|---|---|---|
| *High Grade* | *$4.50* | *4.75* | *5.00* | *5.25* |

Continental.....60%
Great American.....70%
Great American Ball B'r'g, new list.70%
Quaker City.....70%
Pennsylvania.....60%
Pennsylvania, Jr., Ball Bearing, 50&10&5%
Pennsylvania Golf.....50%
Pennsylvania Horse.....33⅓&5%
Pennsylvania Pony.....40&5%
Granite State:
Style A, Low Wheel.....70%
Style B, Low Wheel.....70%
Style C, High Wheel, spcl. list, 70&10%
Style D, High Wheel, spcl. list..70%
Philadelphia:
Styles M., S., C., K., T....70&10&5%
Style A, all Steel.....60&10&5
Style E, High Wheel.....70&10&5%
Drexel and Gold Coin, special list.40%
Horse.....40&5%
Pony.....40&5%
36-in. Horse.....30&10%
Eagle Horse.....30&5%
I. X. L. Horse.....50%

### Nails—

*Wire Nails and Brads, Miscellaneous.....85&5@85&10%*
*Cut and Wire.* See *Trade Report.*
*Hungarian, Finishing, Upholsterers', &c.* See *Tacks.*

### Horse—

| Nos. | 6 | 7 | 8 | 9 | 10 | |
|---|---|---|---|---|---|---|
| Anchor | 23 | 21 | 20 | 19 | 18 | ...40&5% |
| Coleman | 13 | 12 | 12 | 11 | 11 | .....net |
| New Haven | 23 | 21 | 20 | 19 | 18 | ...40&5 |
| Livingston | 19 | 18 | 17 | 16 | 16 | .....10% |

Western.....₱ lb 8½¢
*Jobbers' Special Brands, per lb. 9¢*

### Picture—

| | *1½* | *2* | *2½* | *3 in.* |
|---|---|---|---|---|
| *Brass Hd. gro.* | *.45* | *.55* | *.60* | *.70* |
| *Por. Head, gro.* | *1.10* | *1.10* | *1.10* | |

### Upholsters—

*Brass.....30%*
*Plated.....30&10%*

### Nippers—

See *Pliers and Nippers.*

### Nipples—

Standard Nipple Co.:
Wrought Pipe Nipples....80@80&10%

### Nuts— *Blank or Tapped.*

*Cold Punched: Off list.*
*Square.....5.40@5.50¢*
*Hexagon.....6.00@6.10¢*
*Square, C., T. & R..5.80@5.90¢*
*Hexagon, C., T. & R.6.60@6.70¢*
*Hot Pressed:*
*Square.....5.80¢*
*Hexagon.....6.80¢*

### Oakum—

*Best.....lb. 6½¢*
*U. S. Navy.....lb. 6¢*
*Navy.....lb. 5¢*
*Plumbers' Spun Oakum..2¾@3¢*

### Oil Tanks—See *Tanks, Oil.*

### Oilers—

*Steel, Copper Plated.....75%*
*Chase or Paragon:*
*Brass and Copper.....50&10%*
*Zinc.....65&10%*
*Railroad.....60&10&10%*
Malleable, Hammers' Improved, Nos. 11, 12 and 13, 20%; Old Pattern, Nos. 1, 2, 3, 50%.
American Tube & Stamping Co.:
Spring Bottom Cans.....70@70&10%
Railroad Oilers, &c.....60@60&10%
Maple City Mfg. Co.:
Spring Bottom Cans.....70@70&10%
Railroad Oilers, &c.....60@60&10%

### Openers—Packing Box—

Herculever, ₱ doz., $24.....30%

### Can Openers—

| | *Per doz.* |
|---|---|
| *Sprague, Iron Handle* | *30@35¢* |
| *Sprague, Wood Handle* | *40¢* |
| *Sardine Scissors* | *$1.75@3.00* |

Yankee Can and Bottle Opener, ₱ doz., net, $0.75; Little Gem, ₱ doz., net.....$0.65

### Egg—

Hartigan Nickel Plate, ₱ doz., $2.00; Silver Plate, $4.00.

### Packing—

*Asbestos Packing, Wick and Rope, any quantity.....18@20¢*

### Rubber—

*(Fair quality goods.)*
*Sheet, C. I.....11@12¢*
*Sheet, C. O. S.....11@12¢*
*Sheet, C. B. S.....12@13¢*
*Sheet, Pure Gum.....40@45¢*
*Sheet, Red.....40@50¢*
Jenkins' '96, ₱ lb, 80¢.....25%

### Miscellaneous—

*American Packing....lb. 7@10¢*
*Cotton Packing.....lb. 16@25¢*
*Italian Packing.....lb. 9@10¢*
*Jute.....lb. 4@4¼¢*
*Russia Packing.....lb. 9@10¢*

### Pails, Water, Well, &c.—

See *Buckets.*

### Pans— Dripping—

*Standard List...70&10@70&10&5%*
Edwards, Royal Blue.....65&7½%

### Fry—

*Common Lipped:*

| *Nos.* | *1* | *2* | *3* | *4* | *5* |
|---|---|---|---|---|---|
| *Per doz.* | *$0.75* | *0.80* | *0.90* | *1.10* | *1.30* |

### Refrigerator, Galva.—

| *Inch* | *12* | *14* | *16* | *18* |
|---|---|---|---|---|
| *Per doz.* | *$1.75* | *2.25* | *2.80* | *3.15* |

### Paper—Building Paper

| *Asbestos:* | *lb.* |
|---|---|
| *Roll Board or Building Felt, 6 to 30 lb., per 100 sq. ft.* | *2½¢* |
| *Roll Board or Building Felt, 3-32 and ⅛ in., 45 to 60 lb., per 100 sq. ft.* | *3½¢* |
| *Mill Board, Sheet, 40 x 40 in., 1-32 to ½ in.* | *3¢* |
| | *Per roll.* |
| *Rosin Sized Sheathing: 500 sq. ft. Light weight, 25 lbs. to roll,* | *48@58¢* |
| *Medium weight, 30 lbs. to roll,* | *56@70¢* |
| *Heavy weight, 40 lbs. to roll.* | *75@78¢* |
| *Black Water Proof Sheathing, 500 sq. ft., 1 ply, 65¢; 2 ply, 85¢; 3 ply, $1.10; 4 ply, $1.25.* | |
| *Deafening Felt, 9, 6 and 4½ sq. ft. to lb., ton.....* | *$54.50* |
| *Red Rope Roofing, 250 sq. ft. per roll.....* | *$1.75* |

### Tarred Paper—

*1 ply (roll 400 sq. ft.), ton,* *$34.00@$38.00*
*2 ply, roll 108 sq. ft.....65¢*
*3 ply, roll 108 sq. ft.....88¢*
*Slater's Felt (roll 500 sq. ft.).80¢*

### Sand Paper and Cloth—

*Flint and Emery.....50&10%*
*Garnet Paper and Cloth.....25%*

### Parers—Apple—

| | | |
|---|---|---|
| Goodell Co.: | | |
| Family Bay State | ₱ doz. | $15.00 |
| Improved Bay State | ₱ doz. | $36.00 |
| New Lightning | ₱ doz. | $7.00 |
| Turn Table '98 | ₱ doz. | $6.00 |
| White Mountain | ₱ doz. | $5.00 |
| Bonanza Improved | each | $7.50 |
| Dandy | each | $10.00 |
| Eureka Improved | each | $20.00 |
| New Century | each | $20.00 |
| Ranger | each | $25.00 |
| Livingston Nail Co.: | | |
| Daisy | ₱ doz. | $4.00 |
| Little Star | ₱ doz. | $5.00 |
| Rocking Table | ₱ doz. | $6.20 |
| Reading Hardware Co.: | | |
| Advance | ₱ doz. | $4.00 |
| Baldwin | ₱ doz. | $4.00 |
| Reading 72 | ₱ doz. | $3.25 |
| Reading 78 | ₱ doz. | $6.25 |

### Potato—

| | | |
|---|---|---|
| Saratoga | ₱ doz. | $7.00 |
| White Mountain | ₱ doz. | $6.00 |

### Picks and Mattocks—

*(List Jan., 1903.)*

*List.....70&10@70&10&10%*
Cronk's Handled Garden Mattock, ₱ doz., No. 2, $2.60; No. 3, $6.40.

### Pinking Irons—
See *Irons, Pinking.*

### Pins, Escutcheon—
*Brass* .....50@50&10%
*Iron, list Nov. 11, '85*..60@60&10%

### Pipe, Cast Iron Soil—
*Standard, 2-6 in*.....70@—%
*Extra Heavy, 2-6 in*..75&10@—%
*Fittings, Standard and Heavy,* 80&10@80&10&10%

### Pipe, Merchant—

| | Consumers, Steel. Blk. | Galv. | Carloads, Iron. Blk. | Galv. |
|---|---|---|---|---|
| | % | % | % | % |
| ⅛ and ¼ in. | 66 | 50 | 64 | .. |
| ⅜ in. | 68 | 54 | 66 | 52 |
| ½ in. | 70 | 58 | 68 | 56 |
| ¾ to 6 in. | 74 | 64 | 72 | 62 |
| 7 to 12 in. | 71 | 56 | 69 | 54 |

### Pipe, Vitrified Sewer—
*Carload lots.*
*Standard Pipe and Fittings, 3 to 24 in., f.o.b. factory:*
*First-class* .....87%
*Second-class* .....90%

### Pipe, Stove—

| | Per 100 joints. C. L. | L. C. L. |
|---|---|---|
| Edwards' Nested: | | |
| 5 in., Standard Blue | $6.25 | $7.25 |
| 6 in., Standard Blue | 6.75 | 7.75 |
| 7 in., Standard Blue | 7.75 | 8.75 |
| 5 in., Royal Blue | 7.00 | 8.00 |
| 6 in., Royal Blue | 7.50 | 8.50 |
| 7 in., Royal Blue | 8.50 | 9.50 |
| Wheeling Corrugating Co.'s Nested: | | |
| 5 in., Uniform Color | $6.15 | $7.15 |
| 6 in., Uniform Color | 6.65 | 7.65 |
| 7 in., Uniform Color | 7.65 | 8.65 |

### Planes and Plane Irons—

#### Wood Planes—
*Bench, first qual*.....30@30&10%
*Bench, second qual*...40@40&10%
*Molding* .....25@25&10%
Chapin-Stephens Co.:
Bench, First Quality.....30%
Bench, Second Quality.....40%
Molding and Miscellaneous.....25%
Toy and German.....30%
Union .....60%

#### Iron Planes
Chaplin's Iron Planes.....50&10%
Union .....60%

#### Plane Irons—
*Wood Bench Plane Irons, list Dec. 12, '06*.....25%
Buck Bros.....30%
Chapin-Stephens Co.....25%
Union .....50%
L. & I. J. White.....20&5@25%

### Planters, Corn, Hand—
Kohler's Eclipse.....℔ doz. $8.00

### Plates—
*Felloe* .....*lb.* 3¾@4¢

### Pliers and Nippers
*Button Pliers*....75&5@75&10&5%
*Gas Burners, per doz., 5 in., $1.25 @$1.30; 6 in., $1.45 $1.50.*

| *Gas Pipe*.. | 7 | 8 | 10 | 12-in. |
|---|---|---|---|---|
| | $2.00 | $2.25 | $2.75 | $3.50 |

Acme Nippers.....50&5%
Cronk & Carrier Mfg. Co.:
American Button.....80%
Improved Button.....75&10%
Cronk's .....60%
No. 80 Linemen's.....50%
Stub's Pattern.....45%
Combination and others.....33⅓%
Heller's Farriers' Nippers, Pincers and Tools.....40&5@40&10&5%
P., S. & W. Tinners' Cutting Nippers .....40%
Swedish Side, End and Diagonal Cutting Pliers.....50%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds....40%

### Plumbs and Levels—
Chapin-Stephens Co.:
Plumbs and Levels.....30@30&10%
Chapin's Imp. Brass Cor..40@40&10%
Pocket Levels.....30@30&10%
Extension Sights.....30@30&10
Machinists' Levels.....40@40&10
Disston's Plumbs and Levels....60&10%
Disston's Pocket Levels.....60&10%
Stanley's Dulex.....35%
Woods' Extension.....33⅓%

### Points, Glaziers'—
*Bulk and 1-lb. papers*.....*lb.* 9 ¢
*½-lb. papers*.....*lb.* 9½¢
*¼-lb. papers*.....*lb.* 10 ¢

### Police Goods—
*Manufacturers' Lists*...25@25&5%
Tower's .....25%

### Polish—Metal, Etc—
Prestoline Liquid, No. 1 (½ pt.), ℔ doz., $3.00; No. 2 (1 qu.), $9.00...40%
Prestoline Paste.....40%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, ℔ doz. 50¢; ℔ gro. $4.50; ½ lb boxes, ℔ doz. $1.25; 1 lb boxes, ℔ doz. $2.25.
U. S. Liquid, 8 oz. cans, ℔ doz., $1.25.
Barkeepers' Friend Metal Polish, ℔ doz., $1.75.

### Stove—
Black Eagle Benzine Paste, 5 lb cans, ℔ lb 10¢
Black Eagle, Liquid, ½ pt. cans.. ℔ doz. 75¢
Black Jack Paste, ¾ lb cans, ℔ gr. $9.00
Black Kid Paste, 5 lb can...each, $0.65
Ladd's Black Beauty Liquid, per 100 tins.....$6.75
Joseph Dixon, ℔ gr. $5.75.....10%
Dixon's Plumbago.....℔ lb 8¢
Fireside .....℔ gr. $2.50
Gem, ℔ gr. $4.50.....10%
Japanese .....℔ gr. $3.50
Jet Black.....℔ gr. $3.50
Peerless Iron Enamel, 10 oz. cans.. ℔ doz. $1.50

### Window Polish—
Benj. P. Forbes:
Glasbright, No. 2, gal pails, ℔ doz., $24.00; each, $2.50; 1 lb cans, each .....75¢
Glasbright Powder, bbls., ℔ lb..20¢

### Poppers, Corn—
*1 qt. Square..doz. $0.80; gro. $8.75*
*1 qt. Round..doz. $0.90; gro. $10.00*
*1½ qt. Square. doz. $1.20; gro..$12.00*
*2 qt. Square..doz. $1.50; gro..$15.00*

### Post Hole and Tree Augers and Diggers—
See also *Diggers, Post Hole, &c.*

### Posts, Steel—
Steel Fence Posts, each, 5 ft., 42¢; 6 ft., 46¢; 6½ ft., 48¢.
Steel Hitching Posts.....each $1.30

### Potato Parers—
See *Parers, Potato.*

### Pots, Glue—
*Enameled* .....40%
*Tinned* .....30&10%

### Powder—
*In Canisters:*
*Duck, 1 lb*.....*each 45¢*
*Fine Sporting, 1 lb*....*each 75¢*
*Rifle, ½-lb*.....*each 15¢*
*Rifle, 1 lb*.....*each 25¢*
*In Kegs:*
*12½-lb. kegs*.....*$3.50*
*25-lb. kegs*.....*$6.50*
King's Semi-Smokeless:
Keg (25 lb bulk).....$6.50
Half Keg (12½ lb bulk).....$3.50
Quarter Keg (6¼ lb bulk).....$1.90
Case 24 (1 lb cans bulk).....$8.50
Half case (1 lb cans bulk).....$4.50

| King's Smokeless: | Shot Gun. | Rifle. |
|---|---|---|
| Keg (25 lb bulk) | $12.00 | $15.00 |
| Half Keg (12½ lb bulk) | 6.25 | 7.75 |
| Quarter Keg (6¼ lb bulk) | 3.25 | 4.00 |
| Case 24 (1 lb cans bulk) | 14.00 | 17.00 |
| Half case 12 (1 lb c. bk) | 7.25 | 8.75 |

### Presses—

#### Fruit and Jelly—
Enterprise Mfg. Co.....20@25%

#### Seal Presses—
Morrill's No. 1, ℔ doz., $20.00.....50%

### Pruning Hooks and Shears
See *Shears.*

### Pullers, Nail—
Cyclops .....50%
Miller's Falls, No. 3, ℔ doz., $12.00.. 33⅓&10%
Morrill's No. 1, Nail Puller, ℔ doz. $20.00 .....50%
Pearson No. 1, Cyclone Spike Puller, each $30.00.....50%
The Scranton Co. Case Lots:
No. 2B (large).....$5.50
No. 3B (small).....$5.00
Smith & Hemenway Co.:
Diamond B.....70%
Giant .....50%
Staple Pullers, Utica and Davison .....60%

### Pulleys, Single Wheel—

| *Inch* | 1½ | 1¾ | 2 | 3 |
|---|---|---|---|---|
| *Awning or Tackle, doz.* | $0.90 | .45 | .60 | 1.05 |
| *Hay Fork, Swivel or Solid Eye, doz., 4 in., $1.25; 5 in., $1.55* | | | | |
| *Inch* | 2 | 2¼ | 2½ | |
| *Hot House, doz..* | $0.65 | .85 | 1.20 | |
| *Inch* | 1¼ | 1½ | 1¾ | 2 |
| *Screw, doz....* | $0.16 | .19 | .23 | .30 |
| *Inch* | 1¾ | 2 | 2¼ | 2½ |
| *Side, doz.....* | $0.25 | .40 | .55 | .60 |
| *Inch* | 1½ | 1¾ | 2 | 2½ |

#### Cash Pulleys—
*Common Frame; Square or Round End, per doz., 1¼ and 2 in*.....17@20¢
*Auger Mortise, no Face Plate, per doz., 1¾ and 2 in*....20@21¢
Acme, No. 25..1¾ in., 2 i...
American Pulley Co:
Wrought Steel American Pl... Axle .....
Wrought Steel, Eagle.....
Top Notch, Electrically Welded, Nos. 3 and 4.....
Fox-All-Steel, Nos. 3 and 7, 2 in.. ℔ doz. 50
Grand Rapids All Steel Noiseless 50
Niagara, No. 25, 1¾ in., 19¢; 2 in.,
No. 26, Troy..1¾ in., 14½¢; 2 in., 16½¢
Star, No. 26....1¾ in., 19¢; 2 in., 20½¢
Tackle Blocks—See Blocks.

### Pumps—
*Cistern* .....60%
*Pitcher Spout*.....75&5@75&10%
*Wood Pumps, Tubing, &c*....50%
Barnes Dbl. Acting (low list)....40&5%
Barnes Pitcher Spout.....75&10%
Contractors' Rubber Diaphragm, No. 2, B. & L. Block Co.....$16.00
Daisy Spray Pump.....℔ doz. $6.50
Flint & Walling's Fast Mail Hand (low list).....50%
Flint & Walling's Fast Mail (low list) .....50%
Flint & Walling's Tight Top Pitcher .....75&10%
National Specialty Mfg. Co., Measuring, Nos. 2, $6.00; 3, $5.50.....30%
Myers' Pumps (low list).....40&5%
Myers' Power Pumps.....40&5%
Myers' Spray Pumps.....40&5%

### Pump Leathers—
*Plunger and Valve Leathers—Per gro.:*

| *No.* | 1 | 2 | 3 | 4 | 30% |
|---|---|---|---|---|---|
| | $5.00 | 6.00 | 7.00 | 8.00 | |
| *Cup Leathers—Per 100:* | | | | | |
| *Inch* | 2½ | 3 | 3½ | 4 | |
| | $5.00 | 7.00 | 9.00 | 12.00 | |

### Punches—
*Saddlers' or Drive, good, doz.* .....50@75¢
*Spring, single tube, good quality* .....$1.75
*Revolving (4 tubes)*....*doz. $3.50*
Bemis & Call Co.'s Cast St'l Drive.50%
Morrill's Nos. 1AA, 1A, 1B, 1C, 1D, $15.00.....50%
Hercules, 1 die, each $5.00.....50%
Niagara Hollow Punches.....40%
Niagara Solid Punches.....55&10%
Tinners' Hollow, P., S. & W. Co..40%
Tinners' Solid, P., S. & W. Co., ℔ doz., $1.44.....40%

## Rail—Barn Door, &c.—
*Sliding Door, Painted Iron, 2½@2¾¢*
*Sliding Door, Wrought Brass, 1⅛ in., lb., 36¢*.....30%
Allith Mfg. Co.: Reliable Hanger Track .....50%
Cronk's:
Double Braced Steel Rail..℔ ft. 3¼¢
O. N. T. Rail.....$3.12
Griffin's:
xxx, ℔ 100 ft., 1 x 3-16 in., $3.25; 1¼ x 3-16 in., $3.75.
Hinged Hanger, ℔ 100 ft., 1 x 3-16 in., $3.50; 1¼ x 3-16 in., $4.00.
Lane's:
Hinged Track, ℔ 100 ft.....$3.45
O. N. T., ℔ 100 ft., 1 in., $3.00; 1¼ in., $3.45; 1½ in., $4.00.
Standard, 1¼ in.....℔ 100 ft. $4.00
Lawrence Bros.:
1 x 3-16 in., ℔ 100 ft., $7.50; 1¼ x 3-16 in., $8.75.....55&7½%
McKinney's:
Hinged Hanger Track, ℔ ft., 11¢. 60&5%
1 x 3-16 Track.....55&7½%
Myers' Stayon Track.....60&5%
Richards Mfg. Co.:
Common, 1 x 3-16 in., $3.00; 1¼ x 3-16, $3.25; 1¼ x 3-16, $3.50.
Special Hinged Hanger Rail..60&10%
Lag Screw Rail, No. 65.....50%
Gauge Trolley Track, ℔ ft., No. 31, 9¢; No. 32, 14¢; No. 33, 20¢.
No. 50.....60&10%
Nos. 61, $3.00; 62, $3.25; 63, $3.50; 64, $4.00; 45, $3.25; 46, $3.50; 49, No. 1, $3.25; 49, No. 2, $3.50.

### Rakes—
*NOTE.—Many goods are sold at net prices.*
Fort Madison Red Head Lawn....$3.25
Fort Madison Blue Head Lawn....$2.70
Cronk's:
Steel Garden: Champion, 75%; Ideal, 80%; Victor.....80&25%
Queen City Lawn, ℔ doz., 20 teeth, $2.85; 24, $3.00.....net
Anticlog Lawn, ℔ doz.....$4.00
Malleable Garden.....70&10%
Ideal Steel Garden, ℔ doz., 12 teeth, $15.00; 14, $16.00; 16, $18.00.....80%
Kohler's:
Lawn Queen, 20-tooth....℔ doz. $3.15
Lawn Queen, 24-tooth....℔ doz. $3.25
Paragon, 20-tooth.....℔ doz. $2.70
Paragon, 24-tooth.....℔ doz. $2.75
Steel Garden, 14-tooth....℔ doz. $2.40
Malleable Garden, 14-tooth, ℔ doz. $2.00@2.25

### Rasps, Horse—
Disston's .....75%
Heller Bros.'.....70&5@70&10&5%
Liveright Bros.' Gold Medal.70&10@75
McCaffrey's American Standard..... 60&10&5%
New Nicholson.....70&10@75%
See also Files.

### Razors—
Lister Bro-sic.....60%
Fox Razors, ℔ doz., No. 42, $20.00; No. 44, $20.00; No. 82, Platina, $25.00 } 25%
Red Devil.....65%

### Reels, Fishing—
He[illegible]:
M. G. Q. G. A. G. B. G. M. G. M. G. Q. G. A. G. B. G. 40-8 Rubber Pendulum Nickel Plated.....20%
[illegible] N. 3[illegible] N. 6 [illegible] G. 6.....20%
[illegible] N. 3[illegible] N. 6 [illegible] G. 6.....25%
[illegible] N. [illegible] N. [illegible] N. [

### Saws—

Atkins':
Circular ....45%
Band ....50@50&10%
Butcher Saws....50%
Cross Cuts....35%
One-Man Cross Cut....40%
Narrow Cross Cut....50%
Hand, Rip and Panel....35&5%
Miter Box and Compass....40
Mulay, Mill and Drag....45
Wood Saws....40&10%
Chapin-Stephens Co.:
Turning Saws and Frames.30@30&10%
Diamond Saw & Stamping Works:
Sterling Kitchen Saws....30&10&10%
Disston's:
Circular, Solid and Ins'ted Tooth.50%
Band, 2 to 18 in. wide....60%
Band, ¼ to 1¾....60%
Crosscuts....15%
Narrow Crosscuts....50%
Mulay Mill and Drag....50
Framed Woodsaws....25%
Woodsaw Blades....25%
Woodsaw Rods, Tinned....15%
Hand Saws, Nos. 12, 99, 9, 16, d100, D8, 120, 76, 77, 8....25%
Hand Saws, Nos. 7, 107, 107½, 3, 1, 0, 00, Combination....30%
Compass, Key Hole, &c....25%
Butcher Saws and Blades....30%
C. E. Jennings & Co.'s:
Back Saws....16⅔%
Butcher Saws....25&7½%
Compass and Key Hole Saws, 33⅓&7½%
Framed Wood Saws....25&7½%
Hand Saws....12½%
Wood Saw Blades....33⅓&7½%
Millers Falls:
Butcher Saws....15&10%
Star Saw Blades....15&10%
Massachusetts Saw Works:
Victor Kitchen Saws....40&10&50%
Butcher Saws Blades....35@40%
Peace & Richardson's Hand Saws.30%
Simonds':
Circular Saws....45%
Crescent Ground Cross Cut Saws.30%
One-Man Cross Cuts....40&10%
Gang Mill, Mulay and Drag Saws.45%
Band Saws....50%
Back Saws....25@25&7½%
Butcher Saws....35@35&7½%
Hand Saws....25@25&7½%
Hand Saws, Bay State Brand....45%
Compass, Key Hole, &c..25@25&7½%
Wood Saws....40&7½%
Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws....50%

### Hack Saw Blades and Frames—

Atkins' Hack Saw Blades A A A..25%
Disston's:
Concave Blades....25%
Keystone Blades....35%
Hack Saw Frames....30%
Simonds File Co....35%
C. E. Jennings & Co.'s:
Hack Saw Frames, Nos. 175, 180....40&7½%
Hack Saws, Nos. 175, 180, complete, 40&7½%
Goodell's Hack Saw Blades....40&10%
Griffin's Hack Saw Frames..35&5&10%
Griffin's Hack Saw Blades....35&5&10%
Star Hack Saws and Blades....15&10%
Sterling Hack Saw Blades..30&10&5%
Sterling Hack Saw Frames..30&10&10%
Sterling Power Hack Saw Machines, each, No. 1, $25.00; No. 2, $30.00..10%
Victor Hack Saw Blades....20%
Victor Hack Saw Frames....40%
Whitaker Mfg. Co.:
National Hand Blades....40%
National Hand Frames....30&5%
National Power Blades....30&10%

### Scroll—

Barnes, No. 7, $15....25%
Barnes' Scroll Saw Blades....40%
Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20....20%
Lester, complete, $10.00....15&10%
Rogers, complete, $3.50 and $4.00..15&10%

### Scales—

*Union Platform, Plain.$2.10@2.20*
*Union Platform, Stpd.$2.20@2.30*
Chatillon's:
Eureka....25%
Favorite....40%
Grocers' Trip Scales....50%
The Standard Portables....40%
The Standard R. R. and Wagon....50&10%

### Scrapers—

*Box, 1 Handle....doz.$1.85@2.10*
*Box, 2 Handle....doz.$2.35@2.50*
*Ship...Light, $2.00; Heavy, $4.50*
Chapin-Stephens Co., Box..30@30&10%
Richards Mfg. Co., Foot....60%

### Screws—Bench and Hand

*Bench, Iron, doz., 1 in., $2.50@2.75; 1⅛, $3.00@3.25; 1¼, $3.50@3.75*
*Bench, Wood....20@20&10%*
*Hand, Wood....70&10@70&10&10%*
Chapin Stephens Co., Hand....70@70&10&2½%

### Coach, Lag and Hand Rail—

*Lag, Cone Point...80&5@80&10%*
*Coach, Gimlet Point..80@80&5%*
*Hand Rail....70&10@75%*

### Jack Screws—

*Standard List....70&10@75%*
Millers Falls....50&10&10
Swett Iron Works....70@75

### Machine—

*Cut Tread, Iron, Brass or Bronze:*
*Flat Head or Round Head, 50@50&10%*
*Fillister Head....40@40&10%*
*Rolled Thread, F. H. or R. H., Iron....75&10%*
*F. H. or R. H., Brass, Nos. 8 to 14....65&10%*

### Set and Cap—

*Set (Iron)....75&10&7½%*
*Set (Steel), net advance over Iron....25%*
*Sq. Hd. Cap....70&10&7½%*
*Hex. Hd. Cap....70&10&7½%*
*Rd. Hd. Cap....50&7½%*
*Fillister Hd. Cap....60&7½%*

### Wood—

*List July 23, 1903.*
*Flat Head, Iron....87½&5@..%*
*Round Head, Iron....85&5@..%*
*Flat Head, Brass....80&5@..%*
*Round Head, Brass..77½&5@..%*
*Flat Head, Bronze....75&5@..%*
*Round Head, Bronze..72½&5@..%*
*Drive Screws....87½&5@..%*

### Scroll Saws—

See *Saws, Scroll.*

### Scythes— *Per doz.*

*Grass, No. 1, Plain....$7.00*
*Clipper, Bronzed Webb....$7.25*
*No. 3 Clipper, Pol'd Webb...$7.50*
*No. 3 Clipper and Solid Steel.$7.75*
*Bush, Weed and Bramble, Nos. 11, 12 and 13....$7.25*
*Grain, No. 1....$9.00@9.50*
*Bronzed Webb, No. 1...$9.25@9.75*
*Nos. 3 and 4 Clipper, Grain, $9.50@10.00*
*Solid Steel, No. 6....$10.00@10.50*

### Seeders, Raisin—

Enterprise....25@30%

### Sets— Awl and Tool—

Fray's Adj. Tool Handles, Nos. 1, $12; 2, $16; 3, $12....50%
Millers Falls Adj. Tool Handles, No. 1, $12; No. 4, $12; No. 5, $18..20&10%

### Garden Tool Sets—

Ft. Madison Three Plows, Hoe, Rake and Shovel....℔ doz. sets $9.00

### Sets, Nail—

*Octagon....gro.$3.50@3.75*
Buck Bros....27½%
Cannon's Diamond Point, ℔ gro. $12, 40&10%
Mayhew's....℔ gro. $9.00
Snell's Corrugated, Cup Pt....40&10%
Snell's Knurled, Cup Pt....40&10%
Victor Knurled, Cup Pt....℔ gro. $7.50

### Rivet—

*Regular list....75@75&10%*

### Saw—

Atkin's:
Criterion....40%
Adjustable....40%
Disston's Star, Monarch and Triumph....30%
Morrill's No. 1....$15.00
Nos. 3 and 4, Cross Cut....$20.60
No. 5, Mill....$30.00
Nos. 10, 11, 95....$15.60
No. 1 Old Style....$10.00
Special....$16.25
} 50%
Giant Royal Cross Cut....℔ doz. $8.00
Royal, Hand....℔ doz. $4.50
Taintor Positive....℔ doz. $6.75

### Shaving—

Fox Shaving Sets, No. 30....℔ doz., net, $24.00
Smith & Hemenway Co.'s....75%

### Sharpeners, Knife—

Pike Mfg. Co.:
Fast Cut Pocket Knife Hones, ℔ doz....$1.50
Mounted Kitchen Sand Stone, ℔ doz....$1.50
Natural Grit Carving Knife Hones, ℔ doz....$3.00
Quick Cut Emery Carving Knife Hones, ℔ doz....$1.50
Quick Edge Pocket Knife Hones, ℔ doz....$2.50
} 50%

### Skate—

Smith & Hemenway Co., Eureka..50%

### Shaves, Spoke—

*Iron....doz.$1.25*
*Wood....doz.$2.00*
Bailey's (Stanley R. & L. Co.)....45%
Chapin-Stephens Co....30@30&10%
Goodell's, ℔ doz. $9.00....15&10%

### Shears—

| | 7 | 8 | 9 in. |
|---|---|---|---|
| *Cast Iron..* | | | |
| *Best* | *$16.00* | *18.00* | *20.00 gro.* |
| *Good* | *$13.00* | *15.00* | *17.00 gro.* |
| *Cheap* | *$5.00* | *6.00* | *7.00 gro.* |

*Straight Trimmers, &c.:*
*Best quality Jap....70@70&10%*
*Best quality Nickel..60@60&10%*
*Tailors' Shears....40@40&10%*
Acme Cast Shears....40@40&5%
Heinisch's Tailor's Shears....10%
National Cutlery Co.'s Nickel Plated, 60&10%; Japan Handles....70&10%
Wilkinson Shear & Cutlery Co.:
Sheep, 1900 list....30&10&5%
Grass....50&10%
Horse or Mule....50&10%
J. Wiss & Sons Co.:
Best Quality Jap'd....60&10%
Best Quality Nickeled....50&10%
Tailors'....25%

### Tinners' Snips—

*Steel Blades....20&5@20&10%*
*Steel Laid Blades....40&10@50%*
Forged Handles, Steel Blades, Berlin....50%
Heinisch's Snips....40%
Jennings & Griffin Mfg. Co.'s 6½ to 10 in....33⅓&7½%
National Cutlery Co.'s Forged Steel.50%
Niagara Snips....40%
P., S. & W. Forged Handles, 25%; W. R. W....40&10%
J. Wiss & Sons Co.:
Wiss Forged Steel....25%

### Pruning Shears—

Cronk's Hand Shears....33⅓%
Cronk's Wood Handle Shears....33⅓%
Disston's Combined Pruning Hook and Saw, ℔ doz. $18.00....25%
Disston's Pruning Hook only, ℔ doz., $12.00....25%
John T. Henry Mfg. Co.:
Pruning Shears, all grades....40%
P., S. & W. Co....40&10%
Columbian Cutlery Co.:
Hedge, Wilcut Brand....60&10%
Lawn and Border, Wilcut Brand, 60&10%

### Sheaves— Sliding Door—

Reading....40%
R. & E. list....15%

### Sliding Shutter—

Reading list....40%
R. & E. list....10%

### Shells—Shells, Empty—

Brass Shells, Empty:
Climax, 10 and 12 gauge....65&10%
Club, Rival, 65&5%; First Quality, 60&5%
Paper Shells, Empty:
New Rapid, 10, 12, 16 and 20 gauge, 25&10%
Climax, 10 and 12 gauge; Acme, 10, 12, 16 and 20 gauge; Ideal, 10, 12, 16 and 20 gauge; Leader grade, 25&5%
Union League, 12 and 12 gauge; Rival Grade....25%
New Climax, Defiance, 10, 12, 14, 16 and 20 gauge; Climax, 14, 16 and 20 gauge....20&5%
Challenge, Monarch, 10, 12, 16 and 20 gauge; League, Union, 14, 16 and 20 gauge; Repeater Grade..20%

### Shells, Loaded—

*Loaded with Black Powder..40%*
*Loaded with Smokeless Powder, medium grade....40&5%*
*Loaded with Smokeless Powder, high grade....40&10&10%*
Union Metallic Cartridge Co.:
New Club, Black Powders....40%
Nitro Club, Smokeless Powders.40&5%
Arrow, Smokeless Powders.40&10&10%
Winchester:
Smokeless Repeater Grade....40&5%
Smokeless Leader Grade...40&10&10%
Black Powder....40%

### Shingles, Metal— Per Sq.

| Edwards Mfg. Co.: | Painted. | Galv. |
|---|---|---|
| 14 x 20 | $4.25 | $6.00 |
| 10 x 14 | 4.50 | 6.25 |
| 7 x 10 | 4.75 | 6.50 |
| Wheeling Corrugating Co.: | | |
| Dixie, 14 x 20 in. | $4.25 | $5.50 |
| Dixie, 10 x 14 in. | 4.50 | 6.00 |
| Dixie, 7 x 10 in. | 5.00 | 6.75 |

### Shoes, Horse, Mule, &c.—

*F.o.b. Pittsburgh:*
*Iron....per keg.$4.10*
*Steel....per keg.$3.85*
Burden's, all sizes....℔ keg $3.90

### Shot—

*25-lb. bag.*
*Drop, up to B....$1.80*
*Drop, B and larger....2.05*
*Buck....2.05*
*Chilled....2.05*
*Dust....2.30*

### Shovels and Spades—

*Association List, Nov. 15, 1902..40%*
Avery Stamping Co....40%

### Snow Shovels—

*Long Handle....$3.25@$3.50*
*Wood and Mall, D Handle, $3.75@$4.00*

### Sieves and Sifters—

*Hunter's Imitation, gro....$9.50*
*Hunter's Genuine, per gro..$12.00*

### Sifters, Ash—

Acme Ball Bearing Sales Co., Acme Automatic Ash Sifter, each, $3.25; ℔ doz....$39.00

### Sieves, Seamless Metallic

| | Per dozen. | | | |
|---|---|---|---|---|
| *Mesh* | *14* | *16* | *18* | *20* |
| *Iron Wire* | *$1.05* | *1.05* | *1.10* | *1.20* |
| *Tinned Wire* | *$1.15* | *1.15* | *1.20* | *1.30* |

### Sieves, Wooden Rim—

*Nested, 10, 11 and 12 Inch.*
*Mesh 18, Nested....doz. $0.90@0.95*
*Mesh 20, Nested....doz. $1.00@1.05*
*Mesh 24, Nested....doz. $1.30@1.40*

### Sinks, Cast Iron—

*Painted, Standard list:*
*12 x 12 to 22 x 36 in....60%*
*20 x 24 to 24 x 50 in....50%*
*24 x 60 to 24 x 120 in....30%*
Barnes' low list:
Up to and including 20 x 36 in..50&5%
20 x 40 to 24 x 50 in....45%
***NOTE.—There is not entire uniformity in lists used by jobbers.***

### Skeins, Wagon—

*Cast Iron....70@75&10%*
*Steel....40@45%*

### Slates, School—

*Factory Shipments.*
*"D" Slates....50@50&10%*
*Eureka, Unexcelled Noiseless.. 60&7 tens.*
*Victor A, Noiseless..60&4 tens &5%*

### Slaw Cutters—See *Cutters.*

### Snaps, Harness—

*German....40@40&10%*
Covert Mfg. Co.:
Derby, 25%; Yankee, 30&2%; Yankee Roller, 30&2%.
High Grade, 40%; Trojan....40%
Jockey....25%

### Snaths—

*Scythe....60%*

### Snips, Tinners—See *Shears.*

### Spoons and Forks—

### Silver Plated—

*Good Quality....50&10@60&5%*
*Cheap....60@60&10%*
International Silver Co:
1847 Rogers Bros., 40&10%; Rogers & Hamilton....50&10%
Rogers & Bro., William Rogers' Eagle Brand....50&10%
Anchor, Rogers Brand....60%
Wm. Rogers & Son....60&10%

### Miscellaneous

*German Silver....60@60&5%*

### Tinned Iron—

*Teas....per gro.50@55¢*
*Tables....per gro.$0.90@$1.00*

### Springs— Door—

Bardsley's Spring and Check....40%
Chicago (Coil)....40&10%
Gem (Coil)....20%
Pullman Door and Gate....10%
Reliance (Coil)....40&10%
Star (Coil)....30%
Torrey's Rod, 39 in....℔ doz. $1.10

### Carriage, Wagon, &c.—

*1¼ in. and Wider: Per 100 lb.*
*Black....$4.75@$5.00*
*Half Bright....$4.75@$5.00*
*Bright....$5.25@$5.50*
*Painted Seat Springs:*
*1½ x 2 x 26....per pair.45@47¢*
*1½ x 3 x 28....per pair.68@71¢*

### Sprinklers, Lawn—

American Foundry & Mfg. Co.:
Cactus, 65%; Japanese, 70%; National, ℔ doz....$12.00
Enterprise....25@30%
Philadelphia No. 1, ℔ doz. $12; No. 2, $15; No. 3, $20....30%

### Squares—

*Nickel plated..* } *List Jan. 5, 1900.*
*Steel and Iron.* } *80@80&5%*
*Rosewood Hdl. Try Square and T-Bevels....60&10&10@70%*
*Iron Hdl. Try Squares and T-Bevels....40&10@40&10&10%*
Disston's Try Squares and Bevels, Rosewood Handle, 60 & 10%; Iron Stock and Bevel....15%

### Squeezers, Lemon

*Wood, Porcelain Lined:*
*Cheap....doz. $1.00*
*Good Grade....doz. $1.25*
*Tinned Iron....doz.$0.75@1.00*
*Iron, Porcelain Lined...doz. $1.75*

### Staples—

*Barbed Blind....85&5@85&10%*
*Electricians'....80&10&10@85%*
*Fence Staples, Polished, $2.05; Galvanized....$2.35*
*Poultry Netting Staples....per lb. 3¼@3½¢*

### Steels, Butchers'—

Dick's....30%
Foster Bros.,....30%

### Steelyards— ....30@30&10%

### Stocks and Dies—

*Blacksmiths'....50@50&10%*
Curtis Rev'ble Ratchet Die Stock..25%
Derby Screw Plates....25%
Green River....25%
Lightning Screw Plate....25%
Little Giant....25%
Reece's New Screw Plate....25%

### Stoners, Cherry—

Enterprise....25@30%

### Stones—Oil, &c.

Pike Mfg. Co., 1907 list: ℔ lb
Arkansas St. No. 1, 3 to 5½ in.$2.80
Arkansas St. No. 1, 5½ to 8 in.$3.50
Arkansas Slips No. 1....$4.00
Lily White Washita, 4 to 8 in.60¢
Rosy Red Washita, 4 to 8 in..60¢
Washita St., Extra, 4 to 8 in..50¢
Washita St., No. 1, 4 to 8 in..40¢
Washita St., No. 2, 4 to 8 in..25¢
Lily White Slips....90¢
Rosy Red Slips....90¢
Washita Slips, Extra....80¢
Washita Slips, No. 1....70¢
Washita Slips, No. 2....40¢
} 33⅓%
India Oil Stones (entire list)..33⅓%
Quickcut Emery and Corundum Oil Stone, Double Grit....40%
Quickcut Emery and Corundum Axe Stone, Double Grit....33⅓%
Quickcut Emery Rubbing Bricks..40%
Hindostan No. 1, R'g'lar ℔ lb 8¢
Hindostan No. 1, Small..℔ lb 10¢
Axe Stones (all kinds)....
Turkey Oil Stones, Extra, 5 to 8 in....℔ lb 80¢
Queer Creek Stones, 4 to 8 in.20¢
Queer Creek Slips....10¢
Sand Stone....6¢
} 33⅓%

### Scythe Stones—

Pike Mfg. Co., 1901 list.
Black Diamond S. S., ₱ gro. $12.00
Lamoille S. S., ₱ gro. $11.00
White Mountain S. S., ₱ gro. $9.50
Green Mountain S. S., ₱ gro. $7.00
Extra Indian Pond S. S., ₱ gro. $8.00
No. 1 Indian Pond S. S., ₱ gro. $7.50
No. 2 Indian Pond S. S., ₱ gro. $5.00
Leader Red End S. S., ₱ gro. $5.00
Quick Cut Emery, ₱ gro. $10.00
Pure Corundum, ₱ gro. $18.00
Crescent, $7.00
Emery Scythe Rifles, 2 Coat. $8.80
Emery Scythe Rifles, 3 Coat. $11.00
Emery Scythe Rifles, 4 Coat. $13 20
Balance of 1904 list 33⅓%
Electro (Artificial), ₱ gro., $12.00 33⅓%
Lightning (Artificial), ₱ gro., $18.00 33⅓%

### Stoppers, Bottle—

Victor Bottle Stoppers, ₱ gro. $9 00

### Stops—Bench—

Millers Falls 15&10%
Morrill's, ₱ doz., No. 1, $10.00 50%
Morrill's, No. 2, $12.50 50%

### Door—

Chapin-Stephens Co. 50@50&10%

### Plane—

Chapin-Stevens Co. 20%

### Straps—Box—

Acme Embossed, case lots..20&10&10%
Cary's Universal, case lots...20&10&10

### Stretchers, Carpet—

*Cast Iron, Steel Points..doz. 55c*
*All Steel Socket...doz. $2.00@2.25*
Excelsior Stretcher and Tack Hammer Combined, ₱ doz., $6.00....20%

### Stuffers, Sausage—

Enterprise Mfg. Co. 25@25&7½%
National Specialty Co., list Jan. 1, 1902 30&5%
P., S. & W. Co. 40&10&5%

### Sweeper, Carpet—

| | ₱ doz. |
|---|---|
| Bissell Carpet Sweeper Co.: | |
| Superba, Crotch Mahogany | $36.00 |
| Triumph, Fancy Veneers | $33.00 |
| Parlor Queen Fig. Rosewood | $30.00 |
| Elite, Hungarian Ash | $29.00 |
| Am. Queen, Fig. Mahogany | $27.00 |
| Ideal, Bird's-Eye Maple | $25.00 |
| Grand Rapids, Nickel, $24.00; Japan | $22.00 |
| Standard, Nickel, $22.00; Japan | $20.00 |
| Crown Jewel, Nickel, $21.00; Jap. | $19.00 |
| Crystal, Glass Top | $36.00 |
| Grand, 17 in. wide | $36.00 |
| Parlor Grand | $48.00 |
| Club, 24 in. wide | $54.00 |
| Hall 28 in. wide | $60.00 |

*NOTE.—Rebates: 50c per dozen on three dozen lots; $1 per dozen on five-dozen lots; $2 per dozen on ten-dozen lots; $2.50 per dozen on twenty-five dozen lots*

## Tacks, Finishing Nails, &c.

*American Carpet Tacks...90&40%*
*American Cut Tacks....90&40%*
*Swedes' Cut Tacks....90&40%*
*Swedes' Upholsterers'....90&50%*
*Gimp Tacks....90&50%*
*Lace Tacks....90&50%*
*Trimmers' Tacks....90&40%*
*Looking Glass Tacks....65%*
*Bill Posters' and Railroad Tacks, 90&50&10%*
*Hungarian Nails....80&20%*
*Finishing Nails....70%*
*Trunk and Clout Nails...80&10%*

*NOTE.—The above prices are for Straight Weights.*

### Miscellaneous—

*Double Pointed Tacks, 90&6 tens@—%*
See also Nails, Wire.

### Tanks, Oil and Gasoline—

Wilson & Friend Co.:

| Gal. | Gasoline | Oil |
|---|---|---|
| 30 | $2.75 | $3.00 |
| 60 | $3.50 | $4.00 |
| 110 | $5.00 | 5.75 |

### Tapes, Measuring—

*American Asses' Skin....50@—%*
*Patent Leather....25@30&5%*
*Steel....33⅓&5%*
*Chesterman's....25@25&5%*
K. & E. & Esser Co.:
Favorite, Ass Skin....40&10&50
Favorite, Duck and Leather....25&5@25&10
Metallic and Steel, lower list, 35@5&5; Pocket, 35@35&5
Lufkins:
Asses' Skin....40&10@50%
Metallic....35@35&5
Patent Bend, Leather...25&5@25&10
Pocket....40@40&5%
Steel....35—@35
Wabash & Hilger:
Chesterman's Metallic, No. 3HL, etc....25%
Chesterman's Steel, No. 1928L, etc....35%

### Teeth, Harrow—

*Steel Harrow Teeth, plain or headed, ¾-inch and larger, per 100 lb....$2.55@$2.80*

### Thermometers—

*Tin Case, Cabinet, Flange, Dairy, &c....30@35%*

### Ties, Bale—Steel Wire—

*Single Loop....82½&10%*
*Monitor, Cross Head, &c. 70&21½%*

### Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

### Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

### Tire Benders, Upsetters, &c.

See *Benders and Upsetters, Tire.*

### Tools—Coopers'—

L. & I. J. White....20@20&5%

### Haying—

Myers' Hay Tools....45%

### Ice Tools—

Gifford-Wood Co....15%

### Miniature—

Smith & Hemenway Co.'s, Davidson, ₱ doz., Nickel Plated, $1.50; Gold Plated....$2.00

### Saw—

Atkins' Cross Cut Saw Tools....35&5%
Simond's Improved....33⅓%
Simonds' Crescent....25%

### Ship—

L. & I. J. White....25%

### Transom Lifters—

See *Lifters, Transom.*

### Traps—Fly—

*Balloon, Globe or Acme, doz., $1.15@$1.25; gro....$11.50@12.00*
*Harper, Champion or Paragon, doz., $1.25@1.40; gro. $13.00@13.50*

### Game—

*Imitation Oneida....75@10%*
Newhouse....45@45&5%
Hawley & Norton....65%
Victor....75@75&10%
Oneida Community Jump....50%
Hector....75@75&10%

### Mouse and Rat—

*Mouse, Wood, Choker, doz. holes, 12¢*
*Mouse, Round or Square Wire, doz. 85@90¢*
Marty French Rat and Mouse Traps (Genuine):
No. 1, Rat, ₱ doz., $13.25..$11.50 doz.
No. 3, Rat, ₱ doz., $6.50...$5.75 doz.
No. 3½, Rat, ₱ doz., $5.25. $4.70 doz.
No. 4, Mouse, ₱ doz., $3.85. $3.00 doz.
No. 5, Mouse, ₱ doz., $3.00. $2.25 doz.
Oneida Community:
Out o' Sight, Mouse, ₱ doz....$0.60
Out o' Sight, Rat, ₱ doz....1.25
Easy Set, Mouse, ₱ doz....35
Easy Set, Rat, ₱ doz....1.00
Wood Choker, Rat, ₱ doz. holes. .12
Premier Tin Choker, 5 hole, ₱ doz. traps....75

### Trowels—

Disston Brick and Pointing....25%
Disston Plastering....20%
Disston "Standard Brand" and Garden Trowels....30%
Kohler's Steel Garden Trowels, ₱ gro., 5 in., $4.80; 6 in., $6.00.
Never-Break Steel Garden Trowels.. ₱ gro. $6.00
Woodrough & McParlin, Plastering.25%

### Trucks, Warehouse, &c.—

B. & L. Block Co.:
New York Pattern....50&10%
Western Pattern....60&10
Handy Trucks....₱ doz. $16.00
Grocery....₱ doz $15.00
McKinney Trucks....each, net $10.00
Model Stove Trucks....₱ doz $18.50

### Tubs, Wash—

*M'f'gr's list, price per gross.*

| No. | 0 | 1 | 2 | 3 | |
|---|---|---|---|---|---|
| *Galvanized* | $67 | $79 | $89 | $99 | 10&7½&5&5% |

### Twine, Miscellaneous—

*Flax Twine:*
*No. 9, ¼ and ½-lb. Balls. 21@23¢*
*No. 12, ¼ and ½-lb. Balls. 19@21¢*
*No. 18, ¼ and ½-lb. Balls. 16@18¢*
*No. 24, ¼ and ½-lb. Balls. 15½@17½¢*
*No. 36, ¼ and ½-lb. Balls. 15@17¢*
*Chalk Line, Cotton ½-lb. Balls....24@29¢*
*Cotton Mops, 6, 9, 12 and 15 lb to doz....8½@19¢*
*Cotton Wrapping, 5 Balls to lb., according to quality..13½@19¢*
*American 2-Ply Hemp, ¼ and ½-lb. Balls....12½@15¢*
*American 3-Ply Hemp, 1 lb Balls....13½@16¢*
*India 2-Ply Hemp, ¼ and ½ lb Balls (Spring Twine)...7½@9¢*
*India 3-Ply Hemp, 1-lb. Balls 7½@9¢*
*India 3-Ply Hemp, 1½-lb. Balls, 7@8¢*
*2, 3, 4 and 5 Ply Jute, 1 lb Balls....9@12¢*
*Mason Line, Linen, ½-lb Bls 15¢*
*No. 264 Mattress, ¼ and ½ lb. Balls, according to quality 50@60¢*
*Wool, 3 to 6 plu....B 6¢: 1 7½¢*

## Vises—

*Solid Box....50&5@50&10&5%*

### Parallel—

Athol Machine Co.:
Simpson's Adjustable....10%
Standard....40%
Amateur....25%
Columbian Hdw. Co....10%
Fisher & Norris Double Screw, net, each. Nos. 2, $10.50; 3, $16.00; 4, $20.50; 5, $27.00.
Fulton Mach. & Vise Co.:
Reed, Swivel....25%
Star, Solid Jaw....10%
Hollands':
Machinists'....40@40&5%
Keystone....65&5@70%
Lewis Tool Co.:
Adjustable Jaw....30%
Monarch, 50; Solid Jaw....50%
Massey Vise Co.:
Clincher....40%
Perfect, 15%; Lightning Grip....15%
Merrill's....20%
Millers Falls Oval Slide Pattern.60&10%
Parker's:
Victor, 20@25%; Regulars....20@25%
Vulcan's....40@45%
Combination Pipe....55@60%
Prentiss....20@25%
Rock Island....25%
Snediker's X. L....33⅓%
Stephens'....33⅓%

### Saw Filers

Disston's D 3 Clamp and Guide, ₱ doz., $24.00, 30"; Clamps....30%
Perfection Saw Clamps, ₱ doz....$1.50
Reading....60%

### Wood Workers—

Fulton Mach. & Vise Co.:
Reed....25%
Star....40%
Massey Vise Co.:
Lightning Grip, 15%; Perfect....15%
Parker's Combination Pipe:
87 Series, 60%; 187 Series, 60&5%; No. 870, 40%.
Rock Island Pipe....25%

## Wads—*Price per M.*

*B. E., 11 up....60¢*
*B. E., 9 and 10....70¢*
*B. E., 8....80¢*
*B. E., 7....80¢*
*P. E., 11 up....$1.00*
*P. E., 9 and 10....1.25*
*P. E., 8....1.50*
*P. E., 7....1.50*
*Dis. 15%*
*Ely's B. E..11 and larger.$1.70@1.75*
*Ely's P. E., 12 to 20....$3.00@3.25*

### Ware, Hollow—Cast Iron, Hollow—

*Stove Hollow Ware:*
*Enameled....45&10%*
*Ground....50&5%*
*Plain or Unground....60%*
*Country Hollow Ware, per 100 lbs....$2.75@$3.00*
*White Enameled Ware:*
*Maslin Kettles....65&10%*
*Covered Wares:*
*Tinned and Turned....35&10%*
*Enameled....45&10%*
See also *Pots, Glue.*

### Enameled—

Agate Nickel Steel Ware....33⅓%
Iron Clad Ware....70&10%
Lava and Volcanic, Enameled..40&10%

### Tea Kettles—

*Galvanized Tea Kettles:*

| *Inch* | *6* | *7* | *8* | *9* |
|---|---|---|---|---|
| *Each* | *45¢* | *50¢* | *55¢* | *65¢* |

### Steel Hollow Ware—

Avery Spiders and Griddles..65@65&5%
Avery Kettles....60%
Porcelained....50&5@50&10%
Never Break Spiders and Griddles.. 65&5%
Never Break Kettles....60%
Solid Steel Spiders and Griddles.65&5%
Solid Steel Kettles....60%

### Warmers, Foot—

Pike Mfg. Co., Soapstone....40@40&10%

### Washboards—

| Solid Zinc: | ₱ doz. |
|---|---|
| Crescent, family size, bent frame | $4.05 |
| Red Star, family size, stationary protector | $4.05 |
| Double Zinc Surface: | |
| Saginaw Globe, family size, stationary protector | $3.55 |
| Cable Cross, family size, stationary protector | $3.60 |
| Single Zinc Surface: | |
| Naiad, family size, open back, perforated | $3.00 |
| Single Saginaw Globe | $2.85 |
| Brass Surface: | |
| Brass King, Single Surface, open back | $4.05 |
| Nickel Plate Surface: | |
| No. 1001 Nickel Plate, Single Surface | $3.60 |
| Glass Surface: | |
| Glass King, Single Surface, open back | $3.95 |
| Enamel Surface: | |
| Enamel King, Single Surface, ventilated back | $3.95 |

### Washers—Leather, Axle—

*Solid....90@90&10%*
*Patent....90@90&5%*
*Coil:* 7/8 — 9¢; 1 — 10¢; 1¼ — 11¢; 1¼ inch — 14¢ per box.

### Iron or Steel—

*Size bolt....* 5-16 | ⅜ | ½ | ⅝ | ¾
*Washers....* $4.65 | 3.75 | 2.75 | 2.25 | 2.05
*The above prices are based on $6.75 off list.*
*In lots less than one keg add ½¢ per lb.; 5-lb. boxes add ½¢ to list.*

### Cast Washers—

*Over ½-inch, barrel lots, per lb. 1½@1¾¢*

### Wedges—

*Oil Finish....lb., 2¼@2¾¢*

### Weights—Hitching—

Covert Mfg. Co....30&2%

### Sash—

*Per net ton, f.o.b. factory:*
*Eastern District....$21.00@—*
*Western and Central Districts....$20.00@$22.00*

### Wheels, Well—

*8-in., $2.00; 10-in., $2.30; 12-in., $3.00; 14-in., $4.45.*

### Wire and Wire Goods—

*Bright and Annealed:*
*6 to 9....72&10&7½%*
*10 to 18....72½&10&10%*
*19 to 26....75&10&10&2½%*
*27 to 36....77½&7½%*
*Galvanized:*
*6 to 9....72½&10%*
*10 to 14....72½&10&5%*
*15 to 16....72½&10&5%*
*17 to 18....72½%*
*19 to 26....70&5&2½%*
*27 to 36....65&10&10%*
*Coppered:*
*6 to 9....65&10&10%*
*10 to 14....70&10&5%*
*15 to 18....65&10&10&10%*
*19 to 26....70&5&2½%*
*27 to 36....72½&10&2½%*
*Tinned:*
*6 to 18....67&10&10%*
*Brass....15½¢ lb., base*
*Copper....15¢ lb., base*
*Cast Steel Wire....50%*

### Spooled Wire—

*Annealed and Tinned....75%*
*Brass and Copper....70%*
*Retailers' Assortments, per box. $2.00@$2.25*
Wire Clothes Line, See Lines.
Wire Picture Cord, see Cord.

### Bright Wire Goods—

*Steel Wire Goods....90&40%*
*Brass Wire Goods....90&40%*
*Brass Cup and Shoulder Hooks, 85&10%*

### Wire Cloth and Netting—

*Galvanized Poultry Netting, 80&2½@80&7½%*
*Painted Screen Cloth, 100 ft., $1.35*
*Standard Galv. Hardware Grade: 100 ft. rolls, 24 to 48 in. wide, Per 100 sq. ft.*
*Nos. 2, 2½ and 3 Mesh....$2.75*
*Nos. 4 and 5 Mesh....$3.00*
*No. 6 Mesh....$3.25*
*Nos. 7 and 8 Mesh....$3.75*

### Wire, Barb—See *Trade Report*

### Wrenches—

*Agricultural....80&10&10%*
*Alligator or Crocodile..70&10@75%*
*Baxter Pattern S Wrenches... 70&5@70&10%*
*Drop Forged S....45@45&5%*
Acme....60&10
Alligator Pattern, 70%; Bull Dog..70
Bemis & Call's:
Adjustable S, 40%; Adjustable S Pipe, 40°; Briggs Pattern, 40°; Combination Bright, 40%.
Steel Handle Nut....50%
Combination Black....40&5%
Merrick Pattern....50%
Boardman's....40%
Coes' Genuine Knife Hdl...40&10&5&5
Coes' Genuine Steel Hdl...40&10&5&5
Coes' Genuine Key Model..40&10&5&5
Coes' Genuine Hammer Handle.... 40&10&5&5
Coes' "Mechanics'"...40&10&10&5&5
Donohue's Engineer....40&10
Eagle....70
Gem Pocket....50
Hercules....70
W. & B. Machinist:
Case lots....50&5
Less than case lots....50
W. & B. Railroad Special:
Case lots....50
Less than case lots....10&5
Solid Handles, P., S. & W...50&10
full cases....50&10&5
Standard Nipple Mfg. Co.:
Duplex Chain....50
Stillson....65
Uwanta Wrench Co.:
Uwanta Special, Iron Handle.... 40&10&5
Other Wrenches....
Vulcan and Alligator Chain....50
Whitaker Machinists':
Case Lots....50&10
Less than case lots....50%

### Fruit Jar—

Beni, P. Forbes, Triumph, ₱ gro. $7.50; per doz....$0.90

### Wrought Goods—

*Staples, Hooks, &c., list March 17, '02....90@—%*

## Zinc—*(Cask lots at mill.)*

*Sheet....per 100 lb., $7.00*

# CURRENT METAL PRICES.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

## IRON AND STEEL—

### Bar Iron from store—

Refined Iron:

1 to 1⅞ in. round and square } ₩ lb 1.80¢
1½ to 4 in. x ⅜ to 1 in. }
1½ to 4 in. x ¼ to 5-16 ₩ lb 2.00¢
Rods—⅝ and 11-16 round and square ₩ lb 2.00¢

Angles: Cts ₩ lb

3 in. x ¼ in. and larger 2.25¢
3 in. x 3-16 in. and ⅛ in. 2.30¢
1½ to 2½ in. x ⅛ in. 2.10¢
1½ to 2¾ in. x 3-16 in. and thicker 2.05¢
1 to 1¼ in. x 3-16 in. 2.10¢
1 to 1¼ x ⅛ in. 2.15¢
⅞ x ⅛ in. 2.30¢
¾ x ⅛ in. 2.40¢
⅝ x ⅛ in. 3.45¢
⅛ x 3-32 in. 3.95¢

Tees:

1 in. 2.40¢
1¼ in. 2.20¢
1½ to 2½ in. 2.10¢
3 in. and larger 2.35¢

Beams 2.25¢
Channels, 3 in. and larger 2.25¢
Bands—1½ to 6 x 3-16 to No. 8 2.25¢
"Burden's Best" Iron, base price 3.15¢
Burden's "H. B. & S." Iron, base price 2.95¢
"Ulster" 3.20¢
Norway Bars 3.30¢

### Merchant Steel from Store—

per lb

Bessemer Machinery 1.90¢
Toe Calk, Tire and Sleigh Shoe 2.50@3.00¢
Best Cast Steel, base price in small lots 7¢

### Sheets from Store—

#### Black

| | One Pass, C.R. Soft Steel. | R. G. Cleaned. |
|---|---|---|
| No. 14 | ₩ lb 2.50 | 2.90¢ |
| Nos. 18 to 21 | ₩ lb 2.95 | 3.10¢ |
| No. 27 | ₩ lb 3.15 | 3.40¢ |
| No. 28 | ₩ lb 3.20 | 3.50¢ |

#### Russia, Planished, &c.

Genuine Russia, according to assortment, W. Deweeswood ₩ lb 11¾@14½¢
Patent Planished ₩ lb A, 10¢; B, 9¢, net.

#### Galvanized.

Nos. 14 to 16 ₩ lb, 3.15¢
Nos. 22 to 24 ₩ lb, 3.55¢
No. 27 ₩ lb, 4.00¢
No. 28 ₩ lb, 4.25¢
No. 20 and lighter 36 inches wide, 25¢ higher.

### Tin Plates—

#### American Charcoal Plates (per box.)

"A.A.A." Charcoal:
IC, 14 x 20 $6.40
IX, 14 x 20 7.65
A. Charcoal:
IC, 14 x 20 $5.45
IX, 14 x 20 6.55

#### American Coke Plates—Bessemer-

IC, 14 x 20 .....107 lb ..... $4.45
IX, 14 x 20 ..... 5.45

#### American Terne Plates—

IC, 20 x 28 with an 8 lb. coating $8 60
IX, 20 x 28 with an 8 lb. coating 10.60

### Seamless Brass Tubes—

List December 4, 1905. Base price 18¢

### Brass Tubes, Iron Pipe Sizes—

List December 4, 1905. Base price 18¢

### Copper Tubes

List December 4, 1905. Base price 21¢

### Brazed Brass Tubes—

List June 6, 1898. 21 ¢ ₩ lb

### High Brass Rods—

14¾¢ ₩ lb

### Roll and Sheet Brass—

List June 6, 1898. 14⅛¢ ₩ lb

## METALS—

### Tin—

Straits Pig ₩ lb 32 @32½¢

### Copper—

Lake Ingot ₩ lb 14 @14¼¢
Electrolytic ₩ lb 14 @14¼¢
Casting ₩ lb 13⅝@13¾¢
Sheet Copper Hot Rolled, 16 oz ₩ lb 17 ..¢
" " 14 " " " 18 ..¢
Sheet Copper Cold Rolled, 1¢ ₩ lb advance over Hot Rolled.
Sheet Copper Polished 20 in. wide and under, 1¢ advance over Cold Rolled.
Sheet Copper Polished over 20 in. wide, 2¢ advance over Cold Rolled.
Bottoms, Pits and Flats ₩ lb 21¢ basis
Planished Copper, 1¢ ₩ lb more than Polished.

### Spelter—

Western ₩ lb 5½@5¾¢

### Zinc.

No 9, base, casks, ₩ lb 7.50¢ | Open ₩ lb 8.00¢

### Lead.

American Pig ₩ lb 5 @5¼¢
Bar ₩ lb 6 @6¼¢

### Solder.

½ & ½, guaranteed ₩ lb 20½@20¾¢
No. 1 ₩ lb 17¾@18 ¢
Refined ₩ lb 15¾@16 ¢
Prices of Solder indicated by private brand vary according to composition.

### Antimony—

Cookson ₩ lb ..@11¢
Halletts @10½¢
Other Brands @9½¢

### Bismuth—

Per lb $1.90@$2.00

### Aluminum—

No. 1 Aluminum (guaranteed over 99% pure), in ingot for remelting:
Small lots 38¢
100-lb lots 36¢
Rods & Wire Base Price 38¢
Sheets Base Price 40¢

### Old Metals.

*Dealers' Purchasing Prices Paid in New York*

| | Cents |
|---|---|
| Copper, Heavy and Wire | ₩ lb 11.00@11.25¢ |
| Copper, Light and Bottoms | ₩ lb 10.25@10.50¢ |
| Brass, Heavy | ₩ lb 7.75@ 8.00¢ |
| Heavy Machine Composition | ₩ lb 10 50@10.75¢ |
| Clean Brass Turnings | ₩ lb 7.0 @ 7.25¢ |
| Composition Turnings | ₩ lb 8.25@ 8.50¢ |
| Lead, Heavy | ₩ lb ....@ 3.90¢ |
| Tea Lead | ₩ lb ....@ 3.60¢ |
| Zinc Scrap | ₩ lb ....@ 3.30¢ |


# THE IRON AGE

*The oldest paper in the world devoted to the interests of the Hardware, Iron, Machinery and Metal Trades, and a standard authority on all matters relating to those branches of industry.*

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ENTERED AT THE POST OFFICE, NEW YORK, AS SECOND CLASS MATTER

# THE IRON AGE

New York, Thursday, August 13, 1908.

## New Norwalk Compressors and Unloading Devices.

The latest pattern air compressors built by the Norwalk Iron Works Company, South Norwalk, Conn., are equipped with an unloading mechanism of unique design, which is operated automatically by air pressure, and is applicable to steam or belt driven machines, with valves of either the Corliss or autopoppet type. The method of unloading is to hold the intake valves wide open. The mechanism is so sensitive and so positive in its action that the highest compressor speeds are made practicable. By means of it the machine starts up with no load, and runs with full load, part load or no load, according to the demand upon it. When desired, as in compressors driven by electric motors, the mechanism unloads when the speed falls off or the machine stops, and resumes load only when working speed is again attained, thus regulating automatically by motor speed, which constitutes an important element of control with electric motors.

Fig. 1 shows a steam driven compressor, with change speed governor gear and an unloader operating Corliss valves. Fig. 2 is a high speed compressor for electric motor drive, also equipped with Corliss valve control for full load, part load or no load. Fig. 3 is a belt driven compressor for moderate speeds, with air control for full load or no load.

The designers of the new unloader claim for it substantial advantages in its adaptation to modern power practice, among them being sensitiveness, rapidity and power of action, which render it practical for very high speeds, thus bringing an important influeence upon the design of machines driven by belt from electric motors. Greater efficiency is obtained where the compressor is designed to run at a speed so high that its belt wheel is of moderate diameter, not greatly in excess of the motor pulley, for as the driven wheel approaches the size of the driver (in this case the motor pulley) the belt has a greater angle of contact upon the driving pulley and can hold to it without being excessively tight. Slipping and creeping are thus avoided, and as a result there is a saving of power and a full output from the compressor.

That unloading is accomplished and compression stopped is proved by the fact that the indicator diagram from the unloaded cylinder, taken with the same spring as for the regular work, is a straight line drawn at atmospheric pressure. There are no changes in temperature, except the cooling effect of flushing the cylinders with cold air from the outside. No vacuum can be formed to promote the creation of gas from lubricating oil.

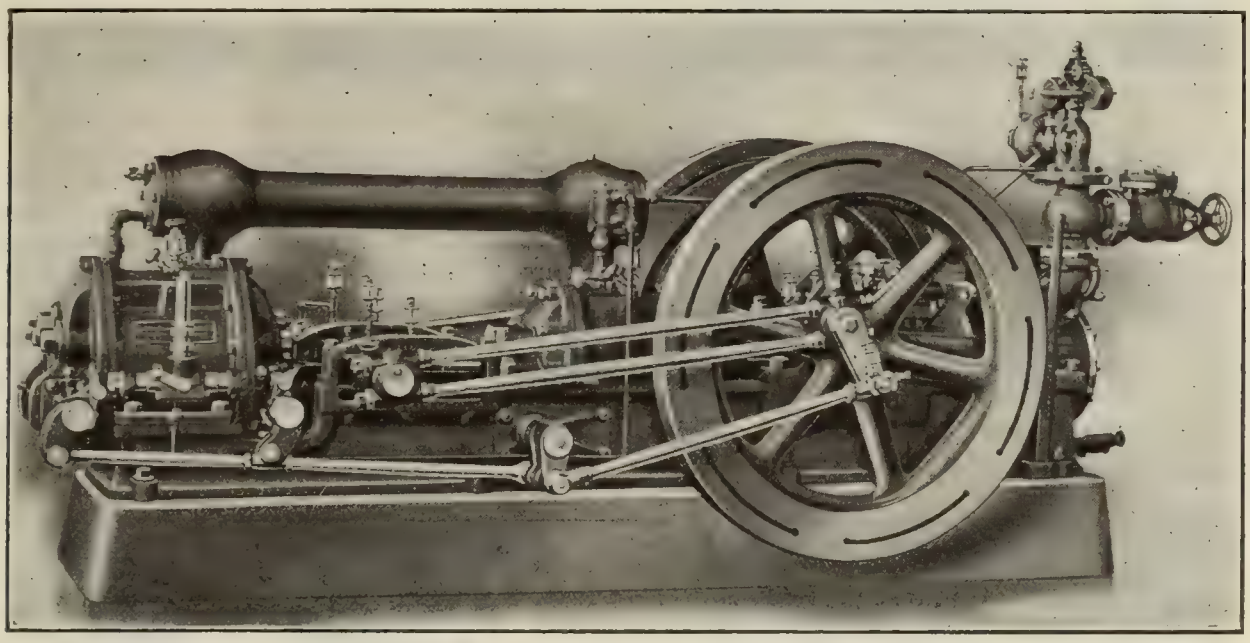


Fig. 1.—A Steam Driven Norwalk Compressor with Unloading Corliss Valves.

### How the Unloading Is Accomplished.

The method of unloading is to hold the intake valves wide open by means of the air pressure itself, except when starting up a compressor equipped with Corliss valves; then the unloader is operated by hand by the sliding of a button, the valves being held open until the machine is up to speed, from which point the unloading is entirely automatic.

There are two ways in which the pressure is regulated. In the first, the object is to control the air supply according to the demand for air, in which case the inlet valves are governed through an air control that operates with the pressure. In the second the object is to unload the compressor when its speed is below the fixed minimum, for which purpose the air for operating the unloader is under the control of a small centrifugal governor which is affected by speed alone, a particularly desirable feature with electric motors which should not be loaded until they obtain their full speed, and also with some oil engines which require instant, automatic unloading when they begin to fall off in speed through momentary defective valve or feed action.

### The Air Controlling Device.

The air control, shown in section in Fig. 4, and also set in tandem for progressive, partial unloading, resembles a safety valve in appearance, but has quite a different function. The valve has two seats, one above and one below. It is held to the lower seat against the pressure of air entering at *a* by a spring which can be set at any desired compression. When the air pressure reaches the predetermined point the valve lifts, acting with a slight pop effect, and flies to the upper seat, only 1-32 in. above. This closes the exit to the atmosphere, and the air, passing the lower valve seat, is led through the side passage *b* to the unloader, where the full pressure acts to hold open the intake valves. When the air pressure falls below the fixed maximum point the spring forces the control valve to its lower seat, shutting off the pressure from the reservoir and releasing the air from the unloader by way of the upper seat, the valve mechanism resuming its normal function. These actions are so quick that the unaccustomed eye finds it difficult to catch the movement. The range of variation of pressure is about equal to the width of the pointer on the air pressure gauge.

In order that no dirt or speck of inside coating of pipes may get into the valves or other parts of the unloaders, all air is filtered on its way to the control. The filter consists of two small cylinders filled with material

which collects all particles, and which need not be renewed oftener than once every two years.

**The Two Types of Unloaders.**

The unloaders are of two patterns, one for the poppet valves, the other for the Corliss valves. For poppet valves the unloader, shown in Fig. 5, is simply a piston placed above the inlet valve. The pressure from the air control depresses the piston, as shown, forcing open the intake valve *c* and holding it inactive so long as unloading is required. On the return of the piston of the compressor cylinder the air which was taken in on the advance stroke is rejected and returned to the atmosphere through a wide open port specially designed for the purpose, so that there is practically no resistance to its entrance or exit.

The unloader for the Corliss valves is shown in Fig. 7, arranged for progressive unloading, by operating first against one valve to unload one-half of the cylinder, and then against the other valve should complete unloading become necessary because of the continued rise in pressure, as will be explained later. This unloader consists of a piston within a cylinder. The air pressure, received from the control, works against the piston with a decided pop, powerfully and quickly, and efficiently even for compressors working at highest speeds. The motion is positive in both directions. The piston trips the latch on the intake valve stem, holding the valve wide open. It operates only when the valve is at its wide open point, with no pressure upon it, and consequently little force is required and no wear of parts results. The latch is of hardened steel, and bears against a hardened steel plate on its operating cam. With the renewed demand for compression the control releases the pressure from the unloader and the valve resumes its work, the piston being withdrawn by its spring.

When a compressor is first started up with no pressure in the reservoir, it will begin pumping at once, for there is no air pressure to unload it. To meet this contingency the unloader for Corliss valves is arranged to be operated by hand, as already mentioned, its piston being actuated by the moving of the button in its slot, as seen in Fig. 7, a device which comes into use under many circumstances, especially with some oil and gas engines which sometimes must have quick relief to prevent entire shutdown when oil supply or gas feed is out of adjustment.

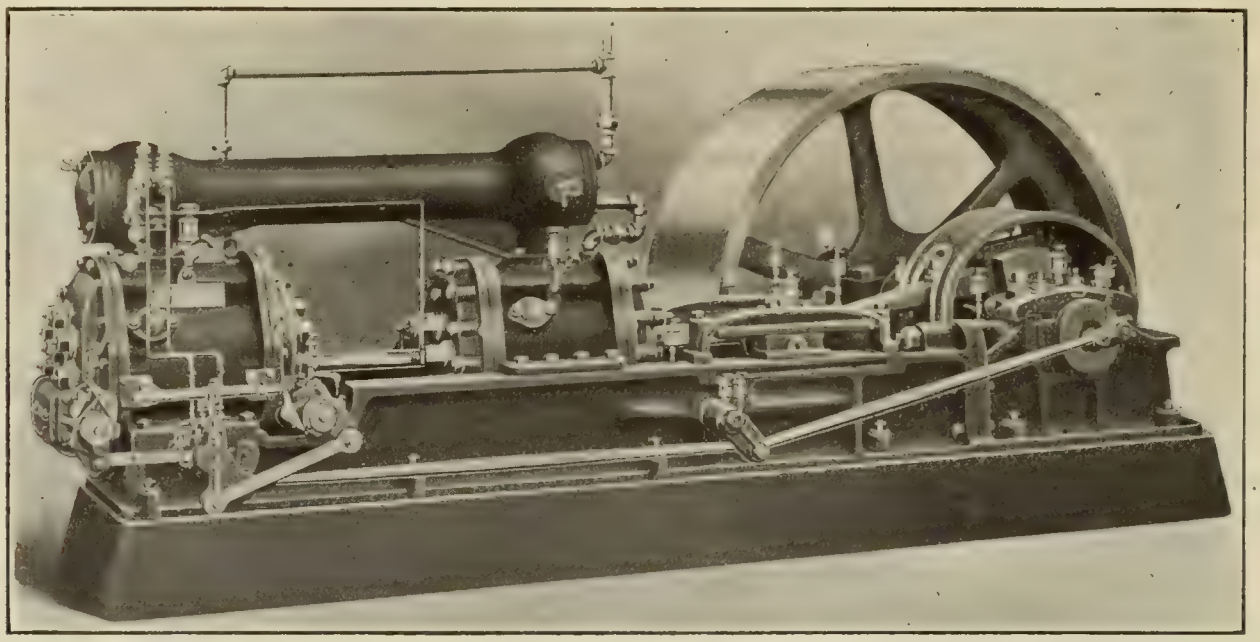


Fig. 2.—A High Speed Compressor for Motor Drive with Corliss Valve Control for All Stages of Load.

When the speed of a compressor falls below the minimum working point the same unloaders are employed, but the air pressure that actuates them is admitted through a tiny valve, Fig. 6, which is under the control of a small centrifugal governor. When the governor is up to speed the air valve *d* is closed, and the compressor is unloaded under the regulation of the air pressure control already described. But with the diminution of speed and the consequent relaxing of the governor balls the valve is opened to admit air to the unloaders, relieving the compressor of all work. With accelerating speed the air valve closes, and the machine is again governed by the regular air control.

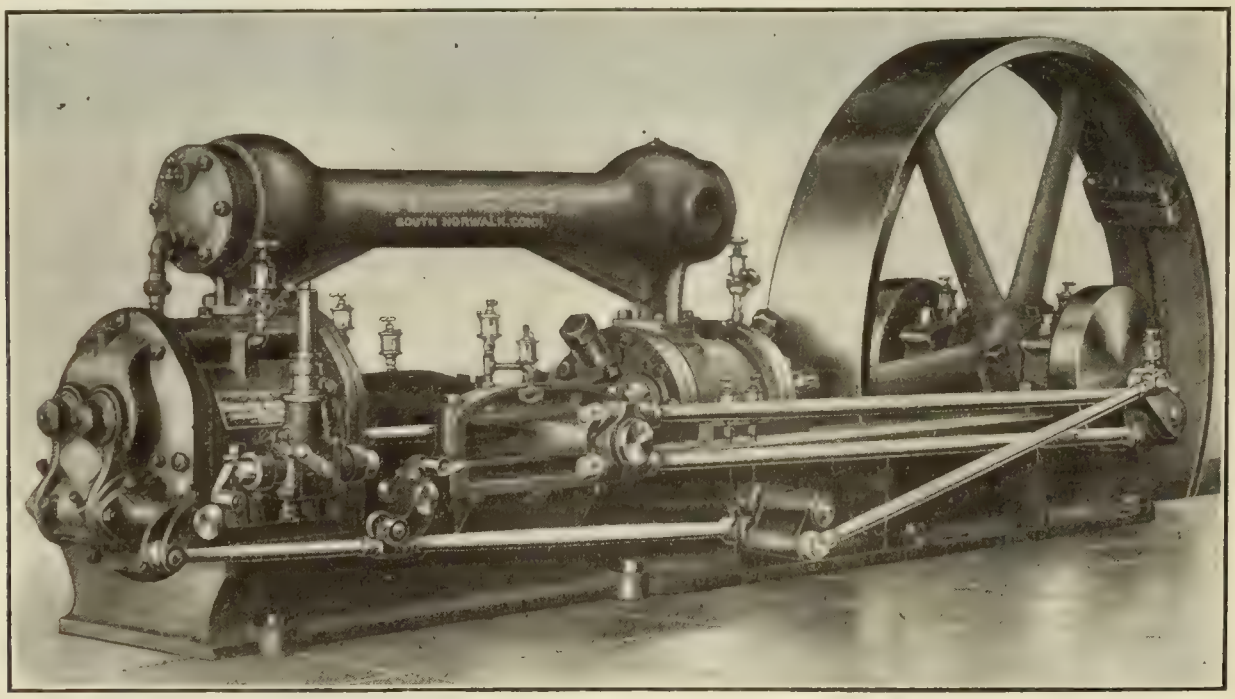


Fig. 3.—A Belt Driven Moderate Speed Compressor with Air Control for Full or No Load.

**Advantages of the Unloader.**

With many sources of power, as gas engines and electric motors, it is important that they be started without load, and the load thrown on only after full speed is attained. Frequently the compressor must be called upon to start against pressure in the discharge pipe and reservoir, either from a previous run or from other com-

pressors then at work. As the cylinder of the compressor is full of air before the start it must be driven out at the first revolution, which is quickly accomplished with the intake ports open.

Another advantage claimed for this system in connection with electric drive is that starting with no load, even rapidly, requires not more than one-third the capacity of the motor, whereas to start a loaded compressor from rest requires a motor greatly oversize as compared to that needed for the same machine when it is working up to speed. With the Norwalk system of unloading the load cannot come on until speed is attained, neither can an imperfection in the valve cause electrical trouble, for the effect of a leak is to unload the machine. Thus it is stated that with the Norwalk compressor, as now equipped, a small motor can be used, which is economical of current. A compressor requiring 100 hp. can be equipped with an 80-hp. motor, because when the compressor is fully loaded the motor will be overloaded only 25 per cent., and when it is at half load the motor will be only 62½ per cent. loaded. All the work is practically within these limits.

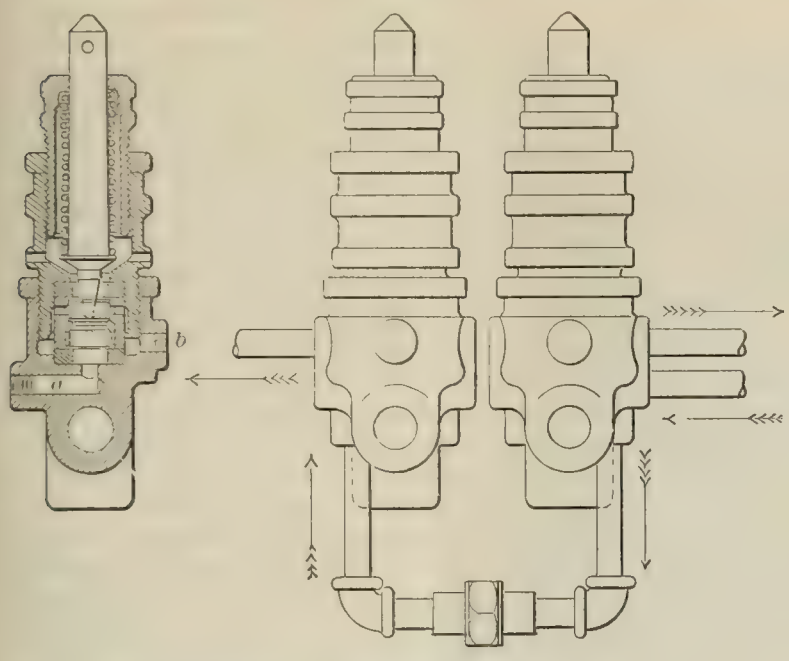


Fig. 4.—Sectional View of Air Controlling Device and a Tandem Arrangement for Progressive Unloading.

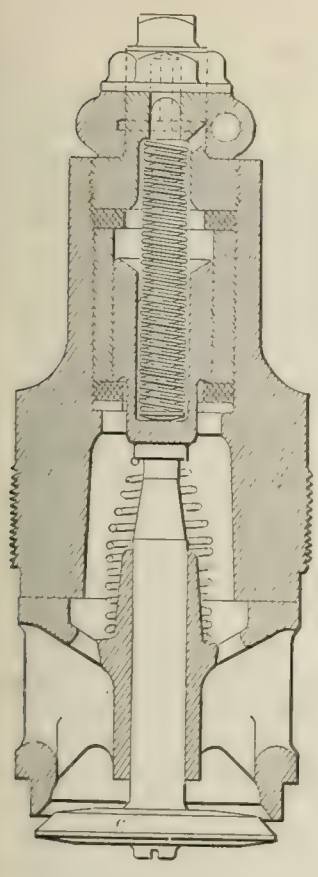


Fig. 5.—Unloader for Poppet Valves.

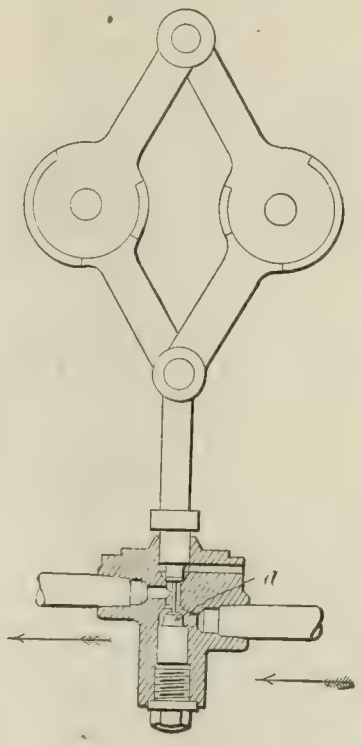


Fig. 6.—Governor Control for Unloader.

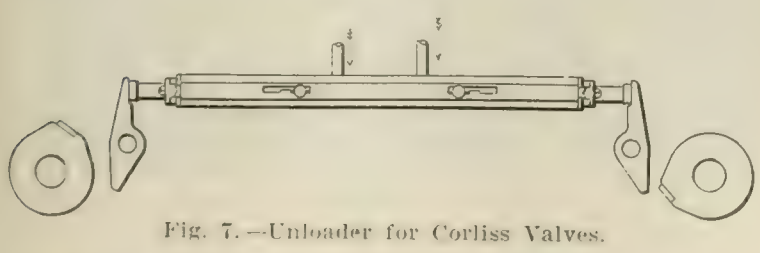


Fig. 7.—Unloader for Corliss Valves.

The new type of compressor unloads progressively, instead of following the common practice of running either with full or no load. In the usual arrangement the first air control unloads the machine only one half, but the discharge side of the control is also connected to a second air control, which is set to act at a slightly higher pressure. When the higher pressure is reached the second control acts and completes the unloading and the machine runs free. The difference between the action of the two controls can be adjusted as fine as may be desired, but a convenient practical working difference is about 2 lb.

### Modifications of Use.

In unloading a two-cylinder compound compressor the first of two air controls unloads one end of each cylinder, leaving the opposed or complimentary ends in operation, preserving the proportions of compression between the two cylinders by balancing the reduced load in each direction, for in compound compression the same amount of work is done in each cylinder. In the large duplex, twin-tandem, compound machines the first act of unloading is to drop one half of the load of the right hand machine, reducing capacity 25 per cent. If the pressure still shows a tendency to rise, the left hand machine drops one half its load, making the total reduction 50 per cent. If even this reduction is insufficient, the right hand machine unloads entirely, making the reduction 75 per cent., leaving the machine with only 25 per cent. capacity, and if the use of air has suspended completely the whole machine is unloaded and runs free. In regular work it is not necessary to go through all these steps in progression, for the machine will on demand instantly resume work in whole or in part from any one of the points of partial load to meet the requirements up to full load.

On steam driven machines three controls are placed in tandem. The first acts on the governor, slowing down the machine; the second unloads the machine one half, and the third completes the unloading.

## Lake Superior Ore Shipments.

The movement of Lake Superior iron ores down the lakes amounted to 7,235,281 gross tons up to August 1 this year, as compared with 17,534,741 tons up to August 1 last year, a falling off of 10,299,460 tons, or nearly 59 per cent. The July shipments came much nearer to those of July, 1907, than might have been judged from the pessimistic comments of Cleveland vessel interests, the total last month being 4,364,283 tons, against 4,849,117 tons for July last year. The shipments by ports up to August 1 for the two years were as follows in gross tons:

| | To August 1, 1908. | To August 1, 1907. |
|---|---|---|
| Escanaba | 754,293 | 2,812,879 |
| Marquette | 345,789 | 1,349,805 |
| Ashland | 592,939 | 1,707,107 |
| Superior | 1,111,887 | 3,081,664 |
| Duluth | 2,819,934 | 5,151,365 |
| Two Harbors | 1,610,439 | 3,431,921 |
| Totals | 7,235,281 | 17,534,741 |

Duluth shows the smallest percentage of decrease from 1907, having to its credit 39 per cent. of this year's ore up to August 1, as against 29 per cent. to August 1 last year.

G. W. McClure, Son & Co., Bessemer Building, Pittsburgh, have received an order from the Bethlehem Steel Company, South Bethlehem, Pa., for five McClure hot blast stoves, 100 x 22 ft. in size, which, when completed, will make a total of 12 McClure stoves at that plant. The firm has just completed 12 of the 32 McClure hot blast stoves to be erected at the eight blast furnaces of the Indiana Steel Company, at Gary, Ind., and has started work on seven McClure stoves for the Tennessee Coal, Iron & Railroad Company at Ensley, Ala., which will make a battery of 20 McClure stoves at that plant.

# Little Ore Under Mesaba Slates.

## An Extensive Test Bears Out the Theory.

DULUTH, MINN., August 6, 1908.—An important exploration firm on the Mesaba Range recently completed the sinking of a drill hole of much interest and of great geological significance. The geological theory, advanced by Prof. C. R. Van Hise, C. K. Leith and others, who have spent much study and time in the consideration of the problems of the formation and deposition of Mesaba ores, is, very briefly, that these ores are the product of water concentration from the raw ferruginous chert of the iron bearing formation, and that therefore where this free flow of water through the chert is impeded, there will not be the concentration sufficient to admit the deposition of merchantable ores. This water circulation is above the underlying quartzite and exists where there is no impervious capping over the cherts. That being the case, there should be no ore below the overlying strata of slates. In fact, there is so little ore under the slates as to bear out the theory.

Previous to the exploration referred to, there never had been any test drilling under the slates, except for a very short distance, say a few score or 100 ft. The exploration in question was started with the purpose of determining, so far as one drill might, what is the condition at such a distance under the slates as to preclude the probability of disturbance or of water circulation running in for a short distance. This drill hole was sunk vertically more than two miles south of the south outcropping of the iron bearing formation, and the same distance south of the north line of the slates. It was sunk 2000 ft., and into the underlying quartzite of the older rocks. There was the expected thickness of drift overburden, then 1500 ft. of black slate, then about the thickness expected of the iron bearing cherts, and then a short penetration was made into quartzite.

The point of the experiment was that the ferruginous chert showed no concentration, or no results of water circulation. It was what the Mesaba explorers call "hungry looking taconite," apparently without change, and such as is occasionally found in the banded taconite formation in the exposed portion of the range at points where water action would naturally be at a minimum. For there are localities in the jasper outcrops of the Mesaba where the probabilities of any considerable water action in the past are very slight. This hole bears out the geological theory; shows, as far as it goes, the continuity of the formations, and will probably deter any other explorers from going far under the slates.

### A Great Pit at Hibbing.

The Oliver Iron Mining Company is doing an enormous work at Hibbing, Minn., and will have a mining pit there more than 7500 ft. long and about 1200 ft. wide, running west from the little swale lying half a mile west of the town, to and including the Hull pit. To this pit will be joined the vast Mahoning pit of more than 160 acres. Already the stripped area of the Mahoning and Hull, which join and form one opening, covers more than 200 acres. The new Rust stripping will run south and east of this. To all this will be added ultimately the entire area of the east extension of the Mahoning, which lies adjoining and north of the Rust, and there will then be a pit 1.5 miles long and half a mile wide, extending from near the western limits of Hibbing to the west side of the present Mahoning and south to the Utica and Agnew. To this will be added the 40 acre tract comprising the Penobscot Mine, now idle, and heretofore operated underground. This will make the great pit about 4000 ft. in extreme width.

Operations toward the opening of the Rust pit are now under way; several tracks have been graded in from the south, connecting with a stripping dump, and the main line of the Great Northern Railroad running across Penobscot and Rust ground is being cut away, the high fill taken out, and a trestle placed in its stead. When Mahoning, Hull, Rust and Penobscot mines are stripped, the tonnage of ore exposed will be well up in the hundreds of millions, nearly all of which is of high grade and very much better than the average of ore shipped from the range in the past year or two. Stripping on this vast pit will average about 40 ft., and the ultimate yardage cannot be less than 14,000,000 tons.

### The Steam Shovels on the Mesaba.

The Oliver Company has in its operations in the territory immediately surrounding Hibbing, that is in the Hull, Rust, Burt, Sellers, Morris, Hartley and one or two other mines, a total of 47 steam shovels and 52 attendant locomotives. Its shipments from this small district last year were about the same as the entire tonnage taken by all companies from the Menominee and Marquette ranges, or 9,250,000 tons—the two ranges mentioned shipping 9,353,000 tons in that period. This year most of these mines, with the exception of Morris, where four shovels and a number of locomotives are idle, are reasonably busy. In all, this company has a total of 67 steam shovels running. Of those operating, some 90 per cent. are working double time. The majority of these shovels are of large type, many of them of the 90 ton size, and the greater part of the rest of 65 tons.

It is an interesting comparison to figure the Mesaba shovels against the shovels of the Panama Commission, which number 102, including a larger number of small machines than is to be found in the equipment of the Oliver Company. In addition to the 97 shovels of the Oliver Company, there are 27 large machines operating for that and other companies on contract for stripping, 20 of them day and night, and some 40 more owned by and in part operating for independent mining companies in both stripping and mining. This makes 164 steam shovels on the Mesaba Range. At present some of them are idle.

### New Developments.

Some of the explorations that have been going on west of the Mississippi River the past year or two have been successful, and one interest has discovered two shipping mines, one at least a stripping property. They are rather low grade, but the two contain better than 5,000,000 tons, and amply repay a good deal of work. Other developments there have not been as fruitful as these.

On the Cuyuna Range, the Rogers-Brown Ore Company has elected to take up several of its options, transferring them to leases and beginning the royalty obligations, though its work in what properties it is developing presents no more flattering features than before. But the fact that this company, which has spent more money than any other concern in the actual development of the mining industry on that range, is taking additional properties, is significant.

The Cleveland-Cliffs Iron Company, whose operations have been chiefly at Ishpeming and Negaunee, is becoming interested in Iron River prospects on the Menominee, and will probably take up something there for immediate exploration and development. This company has been branching out considerably in the past, especially in the Swanzey District, where it is opening several mines and proposes to open more until it has a very important group there. The future of this district is probably not fully appreciated by those who do not know that the Cleveland-Cliffs Company will, in time, have as high as 9 or 10 mines there. Four are opened now, two with concrete shafts.

D. E. W.

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The Argentina Railroad, Argentine Republic, South America, has placed an order with the Brooks plant of the American Locomotive Works, Dunkirk, N. Y., for 30 locomotives. To take care of this order an increase in the working force of the plant is necessary. It is certain now that the Brooks plant will be run until the end of the year. At the present time the plant is engaged on an order for locomotives for the Chicago, Milwaukee & St. Paul Railroad.

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The Youngstown Foundry & Machine Company, Youngstown, Ohio, has elected W. J. Wallis, president and general manager; F. A. Williams, vice-president and general sales agent, and B. G. Parker, secretary and treasurer.

# A Case Coal and Ash Handling Machine.

The accompanying illustrations show an I-beam bucket operating hoist mounted on a cantilever gantry, recently built by the Case Mfg. Company, Columbus, Ohio, for the Wabash Railroad Company. Fig. 1 shows the machine as installed at the railroad's Decatur, Ill., shops, from which it will be seen that the gantry serves the cinder pits on either side of the center tracks and can be arranged for handling coal from cars to engine tenders if desired.

This machine is equipped with three 60-cycle three-phase alternating current motors, one for the bridge travel, one for hoisting and operating the bucket, and one for traveling the trolley. The hoisting speed is about 75 ft. per minute, the trolley speed 150 to 250 ft. per minute, and the traveling speed of the gantry 150 to 200 ft. per minute.

The general arrangement of the machinery for driving the bridge is clearly to be seen in Fig. 1. The motor drives direct into a gear casing in which are placed the first reducing gears; this gear casing is in the center of the machine. The shaft is extended and drives through a pair of bevel gears at each end of the gantry down through the vertical shaft to the truck wheels. All gears are entirely inclosed in



Fig. 1.—Traveling Gantry with Trolley Bucket Hoist for Handling Coal and Ashes, Built by the Case Mfg. Company and Installed for the Wabash Railroad at Decatur, Ill.

casings and are provided with step bearings for the vertical shafts.

A detail of the trolley hoist is given in Fig. 2. The trolley has steel wheels, which operate on the lower flange of a standard I-beam. Swivel trucks are provided for traveling on a curved track when desired. The cage is attached directly to the trolley, and in it are located the controllers, switchboard and resistances.

The hoist has two drums and the necessary brakes for operating the auxiliary drum. The grab bucket is of two cubic yards capacity, and is arranged with one closing and two holding ropes, which prevent twisting and turning of the bucket. The bucket operating mechanism is so arranged that the bucket can be hoisted or lowered either open or closed. Since the load is carried at all times through an automatic load brake, dropping the bucket through carelessness of the operator or temporary interruption of the electric current is prevented. The hoist is also provided with a limit switch, which prevents

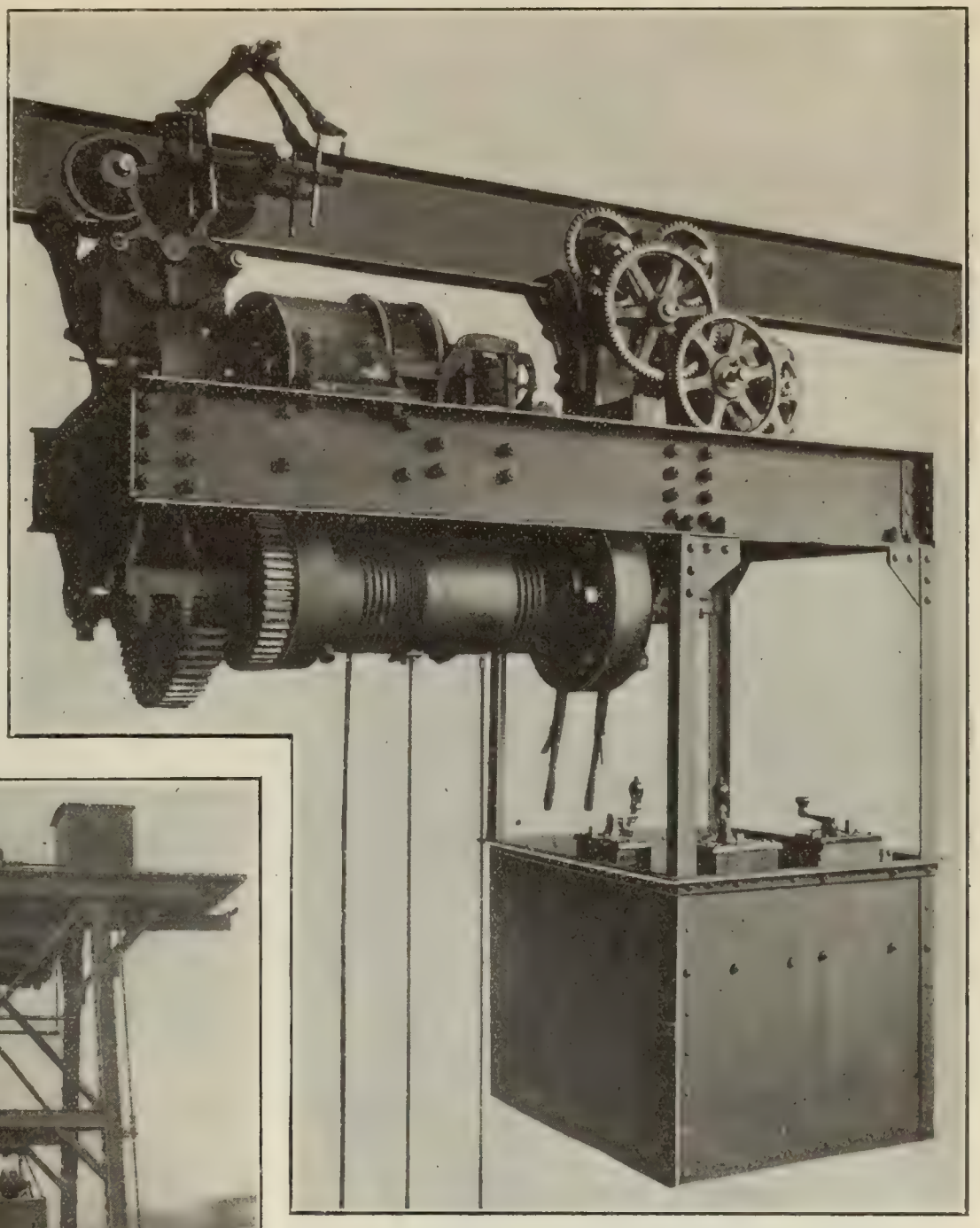


Fig 2.—The Trolley Hoisting Drums and Operator's Cage.

any overtravel of the hoist and consequent damage to the bucket machinery. The load brake and first reducing gears are inclosed in a gear casing.

The operation of this machine is quite simple. Assuming that the bucket is lowered open, with the brake levers in central position, the operator immediately reverses the hoist controller, which closes the bucket; the auxiliary drum takes care of the slack in the holding ropes automatically. When the bucket is closed and starts upward it is necessary to throw in the clutch lever, which makes both drums travel at the same speed. It is now possible to hoist or lower with the bucket closed, and when the bucket is in proper position for dumping the brake lever may be set and the clutch lever released. Reversing the hoist clutch and releasing the brake lever lowers the bucket for the next load.

This hoist is 9 ft. long over all, 5½ ft. from the back of the cage to the center of the hook and 3½ ft. from the center of the hook to the outside of the truck wheels. The cage is 3 ft. 3 in. long by 3 ft. 9 in. wide, which is the maximum width of the machine outside of the bucket. The bottom of the cage is 8½ ft. below the bottom of the I-beam.

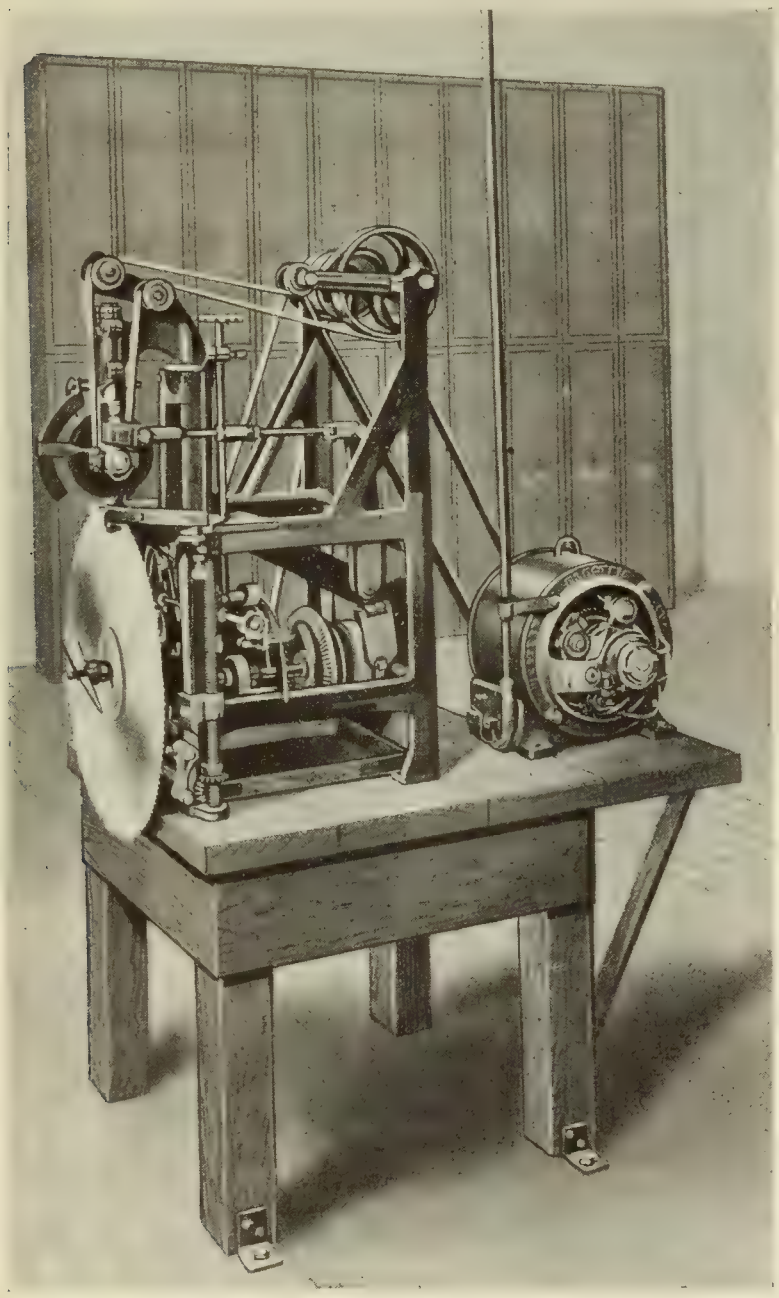
On account of the desirability of having this machine as light and compact as possible, all castings are of steel, and the truck wheel frames are supported on ball bea-

ings with 2½-in. chrome steel pintle pins. In addition to this, a steel yoke is arranged to fit around the lower flange of the beam so that if the pins should break by crystalizing after long use or other cause, the yoke will prevent the hoist from falling. All of the gears are steel.

## A Motor Driven Saw Sharpener.

Of the many interesting examples of individual electric motor drive to be seen at the Hawthorne Works of the Western Electric Company, Chicago, one of the most unique is a saw sharpener in the carpenter shop. This machine not only rapidly and accurately sharpens circular saws of varying diameters and pitch, but does it automatically.

The grinder and motor are mounted on a table for convenience and connected by a short driving belt, as shown in the accompanying illustration. The mechanism necessary to operate the various parts of the machine is driven from a short countershaft. The saw to be ground is keyed to a horizontal shaft, which is slowly revolved, bringing each tooth in turn under the emery wheel. This emery wheel has two motions; one a circular motion and the other an oscillating motion, which enables the grinder



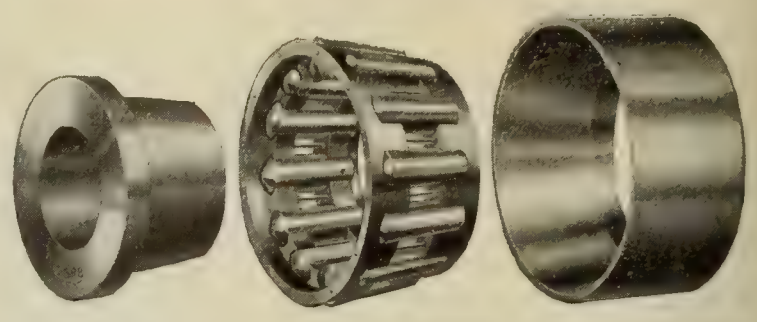
A Motor Driven Saw Sharpener in the Hawthorne Works of the Western Electric Company, Chicago, Ill.

to cut one edge of the tooth and then the other. This is accomplished by a most ingenious system of levers and cams. One of these levers has a turnbuckle, by means of which any desired pitch can be given the teeth. The emery wheel can be raised or lowered to suit the diameter of the saw. The operation of this device is so simple that a saw can be keyed to the shaft, adjusted, and the machine started in a remarkably short time; and when once in operation no attention whatever is necessary.

The smoothness with which this machine runs makes it free from vibration, assuring evenly and accurately ground saw teeth. This is made possible only by a positive drive, such as is obtained by this motor. The motor is a direct current motor manufactured by the Western Electric Company. The wiring to the motor is inclosed in conduit, providing a fireproof installation, so essential in a woodworking shop.

## The Improved Grant Roller Bearing.

The first conical roller bearing placed on the market is said to have been the Grant bearing, made by the Standard Roller Bearing Company, Philadelphia, Pa. This



The Improved Grant Roller Bearing Made by the Standard Roller Bearing Company, Philadelphia, Pa.

company has now brought out a new form of this bearing, which also has conical or tapered rollers, but is improved in several respects, and is claimed to be both theoretically and mechanically correct in construction and design.

The new bearing, the three principal parts of which are herewith illustrated, has races and cones made of special steel, with the temper drawn, so that they are very tough and will not chip or break under very severe service.

The cage or retainer holding the roller is of the same general type as that used by this company for many years on its standard journal roller bearing. It consists of individual sockets or races, in which the ends of the rolls rest, and is made of solid steel with the two end rings riveted together by a special electric riveter, giving what is considered to be the strongest form of cage or retainer that can be devised. The hot riveting makes the cage substantially solid or one-piece. It is practically impossible for it to twist or get out of shape, and, as there are no small journals or pins on the rollers, the bearing is exceedingly strong.

The cone has an especially wide shoulder, against which the rollers have a bearing from their ends practically to their centers. The shoulder has the same degree of bevel as the ends of the rolls. The entire thrust is thus taken in a manner which makes the bearing durable and strong. This bearing is guaranteed to be capable of carrying much more than its rated load. Being made in standard sizes, it is interchangeable with any other form of conical or tapered roller bearing.

**Cast Iron Brazing by the Weldarine Process.**—The Buffalo Brazing Company, Buffalo, N. Y., has been organized with a plant at 53 The Terrace, to do all kinds of cast iron brazing under the rights of the Weldarine Mfg. Company, Topeka, Kan., using the Weldarine process. By this process broken parts of cast iron can be brazed and made stronger at the union than the original metal, and cast iron can also be brazed to steel, malleable iron, brass or copper, something that has not been successfully accomplished heretofore. The successful use of Weldarine for these purposes is due to the fact that the welding is done at a low temperature and the life of the iron is not destroyed by decarbonization. Weldarine is claimed to have a tensile strength of 20,000 lb. to the square inch, making it practical to weld cast iron to steel and other metals of a higher tensile strength than cast iron. Many uses are being found for this process in the manufacture and repair of automobile parts, engines, general machinery, farm implements, &c. G. A. Kinkel, who is president and general manager of the company, has also organized the Weldarine Agency Company and secured the Weldarine process rights for 18 Eastern States, Canada, Cuba and the West Indian Islands. The new company has disposed of the Canadian rights to Alderson, Hammond & Ritchey of Toronto, who expect to establish 20 brazing plants throughout the Dominion within the next year.

# The New Dreses 48-In. Radial Drill.

A number of the features of the new 48-in. radial drill illustrated in Fig. 1 and built by the Dreses Machine Tool Company, Cincinnati, Ohio, have been retained from previous designs of this company which have already been described in *The Iron Age*. These include the quick return of the spindle, the mechanism for starting, stopping and reversing the spindle, and the principle of the construction of the speed variator.

The construction of the double column upon which the arm swings is shown in Fig. 2. The inner column is fixed and the outer column turns upon a roller bearing. It will be noticed that the clamping band *a* grips the inner and outer columns, but exerts no pressure on the top of the bearing. In the bearing large and small rollers alternate, so that there is no sliding friction between the load carrying rollers.

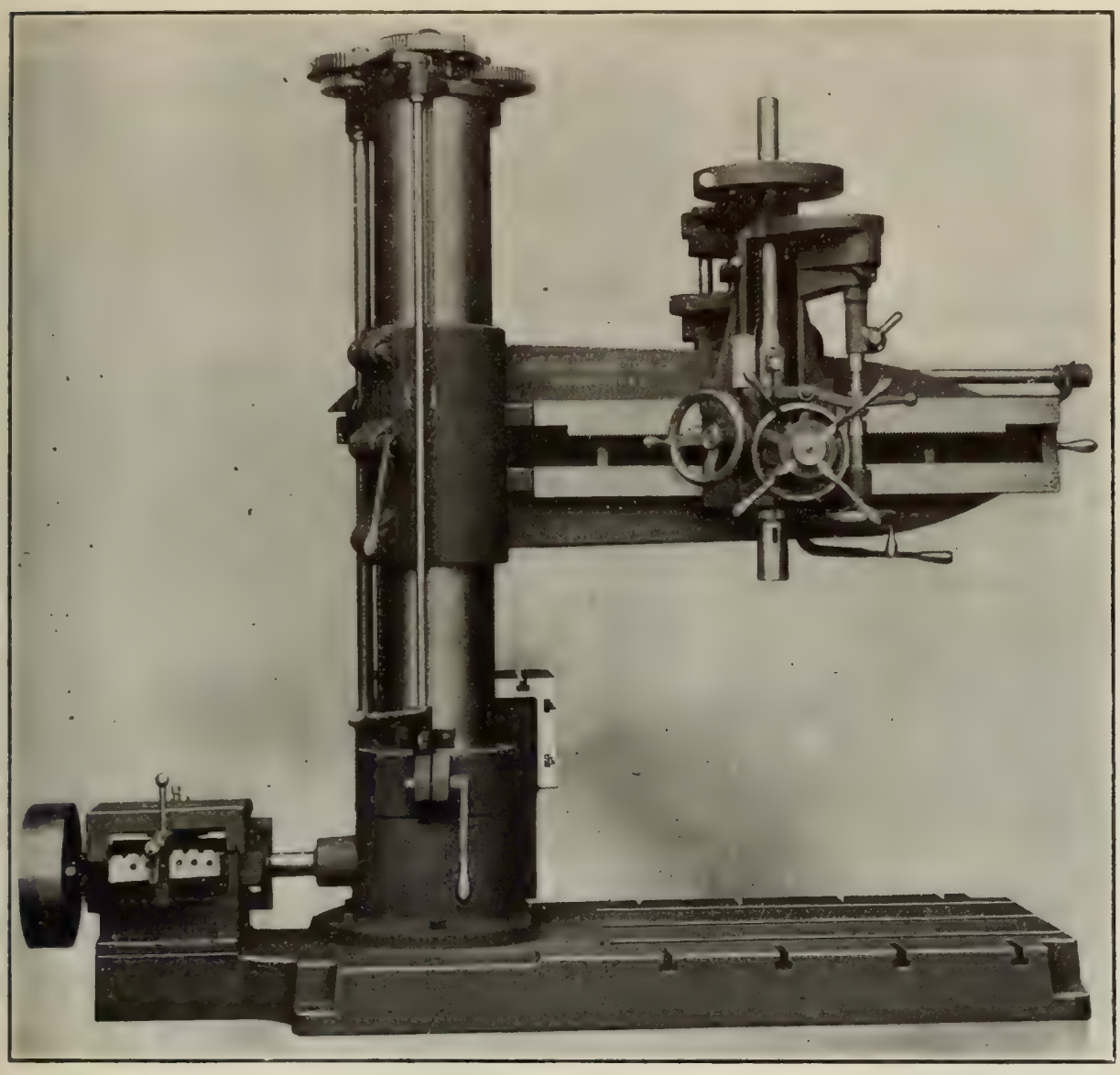


Fig. 1.—The New 48-In. Radial Drill Built by the Dreses Machine Tool Company, Cincinnati, Ohio.

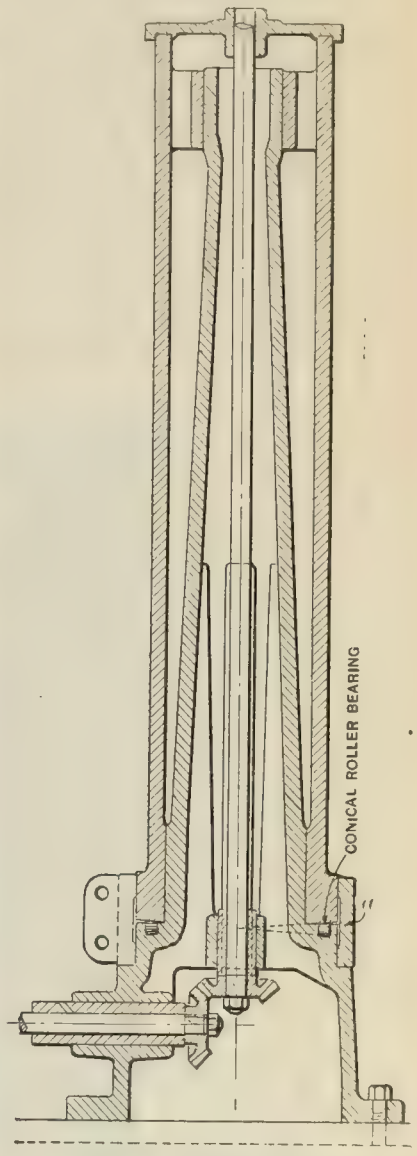



Fig. 2.—Detail of the Construction of the Double Column.

The speed variator allows the machine to run always at the slowest speed, so that the momentum is not excessive when making the changes. In this speed variator a new simple and effective overrunning clutch has been introduced. The gear *b*, Figs. 3 and 4, runs loose on the variable speed shaft, but is clutched by four pawls, *p p p p*, located in the fixed gears *c*. These pawls are kept in contact with the inner surface of the gear *b* by the spiral springs *s*, and by limiting their faces to about 5-16 in. circumferential width they will clutch the gear *b* to gear *c* when run in the direction of the arrow, but will release when *c* runs faster than *b*. It was found that the circumferential width of the faces of the pawls is a very important point; when made too small the pawls make dents on the inner face of the gear *b* and when left too wide the pawls will not clutch at all.

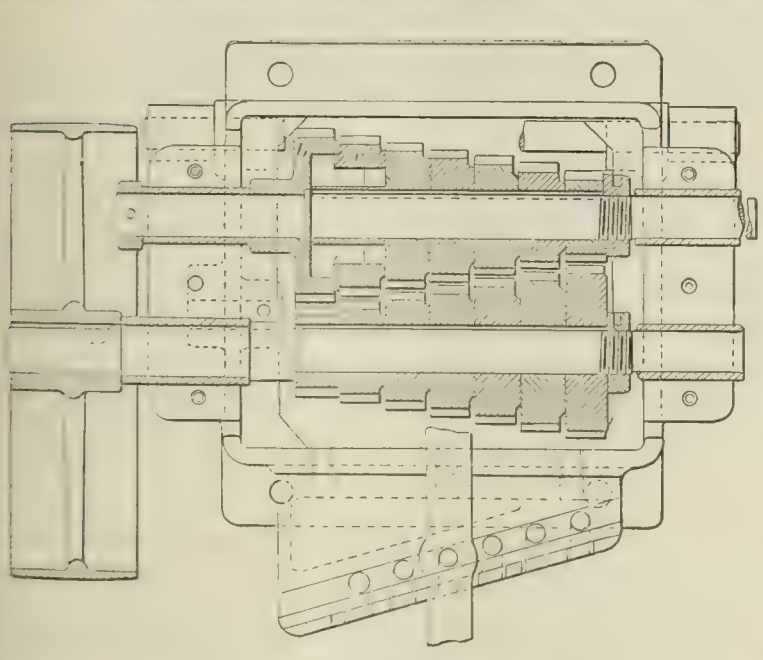


Fig. 3.—Detail of the Speed Variator.

The spindle sleeve on this machine is made of bar steel and the bearings are lined with phosphor bronze bushes. The rack is cut directly on the sleeve, which brings the pressure close to the center and allows a perfectly round hole to be bored and reamed in the headstock for the sleeve, which is impossible when a groove must be left for the rack.

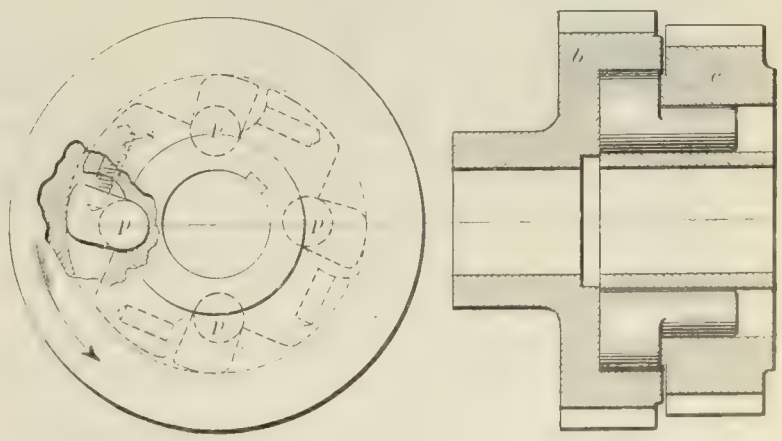


Fig. 4.—Detail of the Over-Running Clutch.

The lever shown below the arm stops, starts and reverses the spindle by means of a friction clutch. The so-called back gears are on the rear of the headstock, and are engaged and disengaged by the handle shown at the left side of the head while the machine is running. The

feed mechanism gives four changes and is operated by the little handle shown on the worm shaft by means of a rack and diving key. The feed drive is of the all geared type, but a frictional connection is interposed, yielding just before the breaking point of the weakest gear. The quick return mechanism has four operating levers; each when engaged disengages the feeding mechanism instantly, and a locking plug keeps it disengaged when feeding by hand or when tapping. The elevating device of the arm is so designed that the gears are idle when not in use; the ratio is about 2 to 1 ascending and descending.

All the high speed bearings on this machine are lined with removable phosphor bronze bushes; all the bevel gears and pinions below 6 in. are of bar or forged steel. All gears which could possibly be dangerous to the operator are thoroughly enclosed. It will be noticed that simplicity has been an object in the design, but not at the expense of the modern features which are regarded as necessary to rapid production.

## The Du Bois Suction Gas Producer.

It would seem almost like "carrying coals to New Castle" to install a gas producer plant in the natural gas field of Central Pennsylvania, but the Du Bois Iron Works, Du Bois, Pa., considers that it has made such a commercial proposition. The suction producer which it now builds was designed by the company's chief engineer, Peter Eyermann, and is an independent plant offered as a competitor in economy with dependent natural gas plants.

Du Bois is located where natural gas can be had at 20 cents per 1000 ft. This fuel when used for power purposes is consumed at an average rate of about 10 to 12 cu. ft. per horsepower per hour, varying somewhat with the quality of the gas, the heating value of which often runs considerably below 1000 B.t.u. per cubic foot. In this same district hard coal can be had at about $4.50 per ton, yielding about 150,000 cu. ft. of gas in the suction gas producer. Such gas would therefore cost 3 cents per 1000 cu. ft., as compared with 20 cents for natural gas. However, the consumption of an engine run on producer gas is higher, so that approximately 70 cu. ft. per horsepower per hour is required, or in the neighborhood of six times as much as for natural gas, so that the fuel costs compared become 18 to 20 cents. On this basis producer gas for power appears to be as cheap as naural gas.

Fig. 1 herewith shows the general appearance of a producer of the new type. Fig. 2 shows a sectional diagram of the apparatus as connected to a gas engine and also gives a thermal analysis of the heat supplied, that lost at different points, and the heat equivalent of the power realized at the engine, assuming the coal charges to have a calorific value of 13,500 B.t.u. In 4-hr. test runs of this plant the coal consumption ran as low as ¾ lb. per horsepower per hour. Fig. 3 is a view of the engine installed at the Du Bois Works, which as may be seen is driving an electric generator belted to the engine. The engine is of the Du Bois standard tandem type.

The producer or gas generator is of the automatic suction type, in which the gas is produced as determined by the suction action of the engine according to its load—*i. e.*, the gas is automatically generated in corresponding amounts. The air for the combustion and gasification of the fuel in the producer enters the latter near its bottom, already warmed to a certain temperature proportioned to suit the conditions. The air is also saturated with moisture before it enters beneath the grate. The grates are of the plain horizontal type as used on ordinary boiler furnaces, and are easy to attend. Attention once an hour is usually sufficient. Tests were made with a three-quarter load on the engine running for 16 hr. without any other attention to either the engine or the producer.

The producer is contained in a single shell resembling a boiler shell, strong enough to withstand any explosion pressure which might be created within it from ignorant

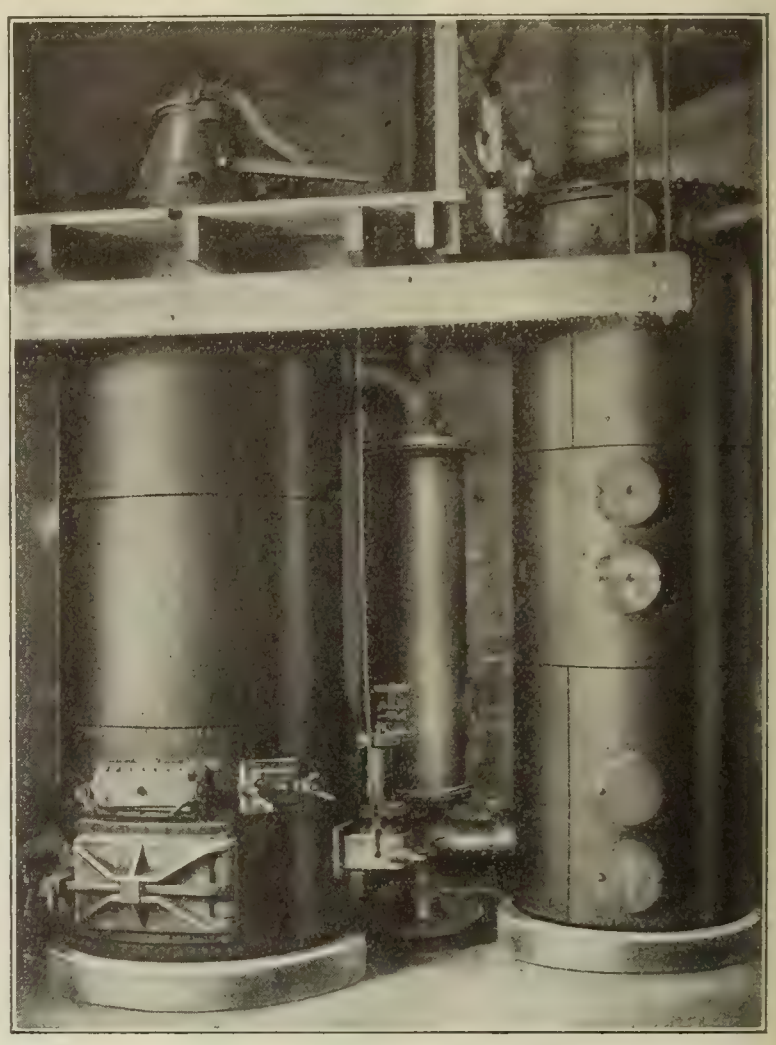


Fig. 1.—An Installation of the New Suction Gas Producer Built by the Du Bois Iron Works, Du Bois, Pa.

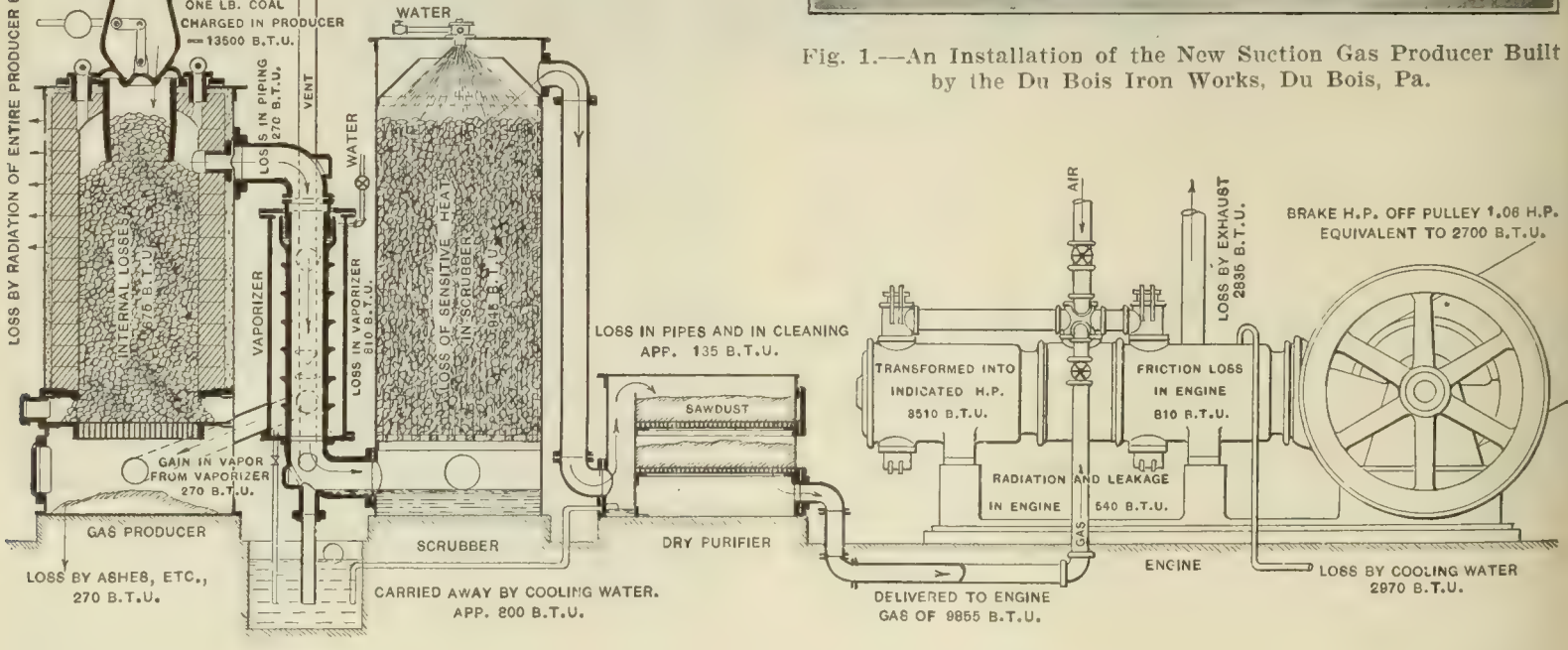



Fig. 2.—Diagrammatic Elevation of the Parts of a Complete Du Bois Gas Power Plant, Showing Also the Approximate Heat Evolution, Dissipation and Transformation.

or careless attendants. The top of the producer is protected from the intense heat of the inside fire by arch bricks which prevent damage to the upper part. On producers that are not protected in this respect it frequently happens that the top plate or the feeding hoppers crack, putting the producer out of commission. In this producer the cool feeding apparatus is simple, consisting merely of the upper seal, the middle bell and the lower magazine. Poke holes are provided through which the fire may be poked as required by a bar which fits in ball joints ground in independent bushings, so that there is no interruption to the continuous evolution of gas in the producer, even while the poking is going on.

From the producer the gas is discharged near the top, and passes through the combined vaporizer and economizer. This vessel is located between the producer and scrubber, and is made of cast iron to insure long life. Soft steel is not as suitable for this part on account of its being affected by moisture and sulphur. The device used in this producer plant does away with one usually inconvenient feature, since it has no stuffing boxes to repack or pipes to calk. The hot gas passes through a water seal, and automatically overflows to the vaporizer, as the latter is constructed on the principle of a flash boiler. A large water volume is not required in producer vaporizers, as is the case in boilers on account of the varying load on the engine. On the contrary, large water volumes are detrimental, as they require too long a time to be heated up properly for the start of a gas engine. The Du Bois producer is, therefore, admirably adapted to deliver the proper quality of gas at any time. The upper water seal allows also an entirely independent expansion of the producer and vaporizer, avoiding leaks in the hot gas pipe flange joints.

The scrubber and drain arrangements are designed in accordance with the best practice in such devices. There are no parts in them likely to become plugged, and after the water inlet valve is once properly regulated nothing further needs attention. Perhaps the most important feature in this part is the water sprinkler, which can be taken out and cleaned from deposits while the engine is running and without interfering with the operation of the plant. The gas before entering the engine passes through a dry purifier to remove the last particles of coal dust or water which may have been carried on with the gas.

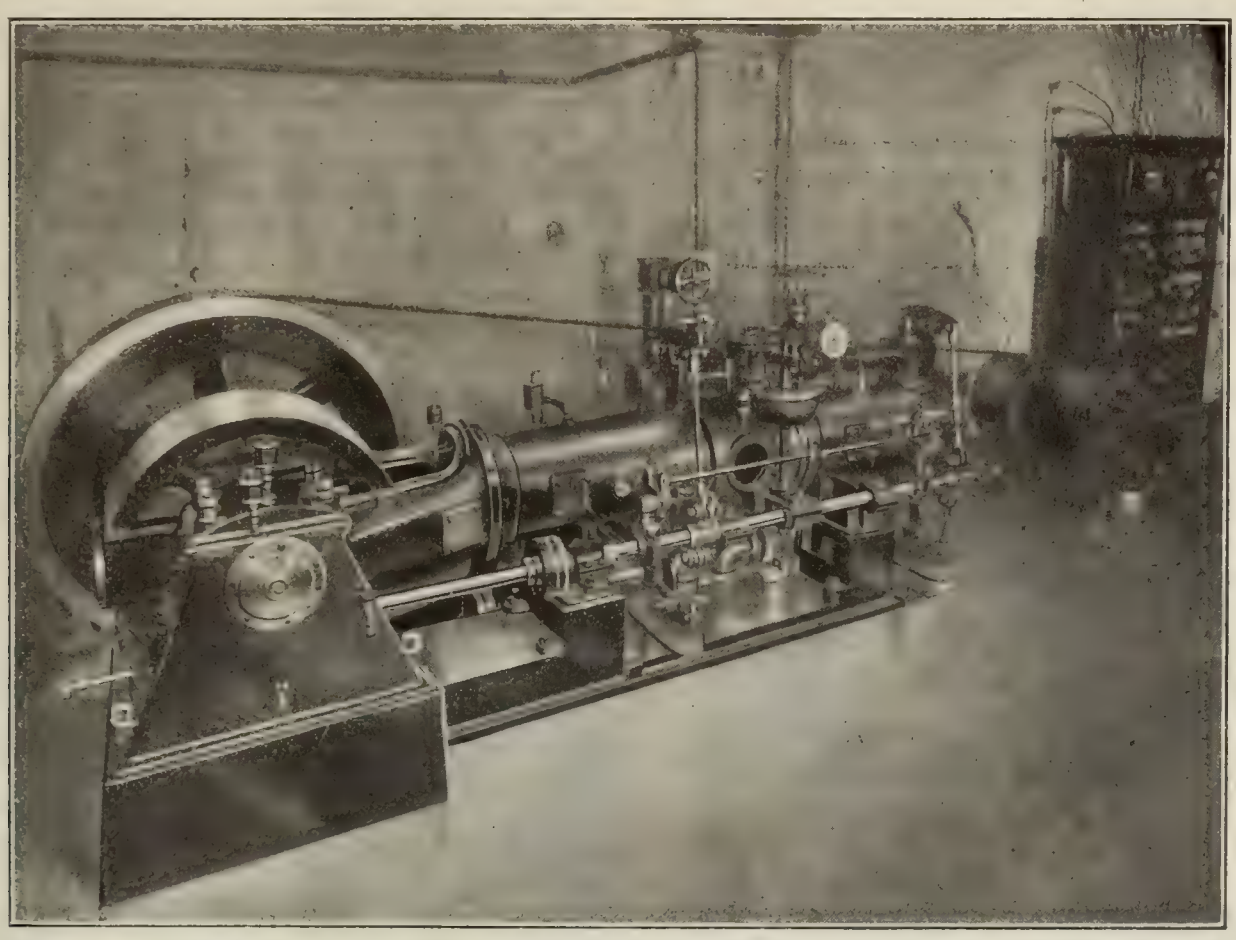


Fig. 3.—The Du Bois Tandem Engine Installed in Connection with the Producer Shown in Fig. 1.

The Expanded Metal Company, Braddock, Pa., is operating its plant slightly below capacity. The company manufactures expanded metal for reinforcing concrete work, metallic lathing material and similar products. Contracts were recently received from dealers in Cuba, Mexico, New York, Philadelphia, Boston and other American cities.

## The French Brill Company Organized.

Compagnie J. G. Brill, 14 Place de Laborde, Paris, France, has been organized to handle the business of the J. G. Brill Company, Philadelphia, in France and Spain. Brill trucks and equipment have been largely used for a number of years in Paris and throughout France and Spain, and the formation of the French Brill Company is indicative of the growth and magnitude of the Brill interests in these countries. A plant is to be established and Brill trucks will be built by French workmen, under French supervision and with French machinery.

As an indication of the extent of the use of Brill types of trucks in France, it may be said that the Brill No. 21-E type is in general use wherever four-wheeled carts are operated, and that the Maximum Traction and short base pivoted types are well represented in Paris and other large cities. The high speed truck of the No. 27-E type has met with the approval of French railroad officials and is in service on lines running out of Paris.

The solid forged side frames used in the construction of all types of Brill trucks have had much to do with the high favor in which these trucks are held in France, and the foremost French truck builders have followed the practice. The stability and easy riding qualities of the Brill single truck have commended it for use under the double deck cars still used on a number of systems. In the larger cities the Maximum Traction truck is repeating the remarkable success it has obtained in the United States and Great Britain. For faster and heavier traffic the equalized short base truck of the No. 27-G type, which the builder claims is used in larger numbers in the United States than any other one type, is coming into vogue in suburban service. The decision to erect a plant and construct trucks in France is apparently a wise one, and well warranted by the large demand and the excellent reputation established.

Compagnie J. G. Brill, 14 Place de Laborde, Paris, will handle all of the business for the J. G. Brill Company in France and Spain which has heretofore been cared for by Jacques Worms, 97 Rue de Courcelles, and all correspondence relating to French or Spanish business should be addressed to the first named company.

# Steel Oil Well Derricks.

A relatively new use of steel is its substitution for wood in the construction of oil and gas well derricks. Although some 80-ft. steel derricks have been in use for five years in the West Virginia oil fields, it is only lately that they have been made a standard commercial product. The rigs herein described are now regularly obtainable from the Oil Well Supply Company, Pittsburgh, Pa., and are built by the Carnegie Steel Company on specifications of that company's engineer, in accordance with plans supplied by the Oil Well Supply Company.

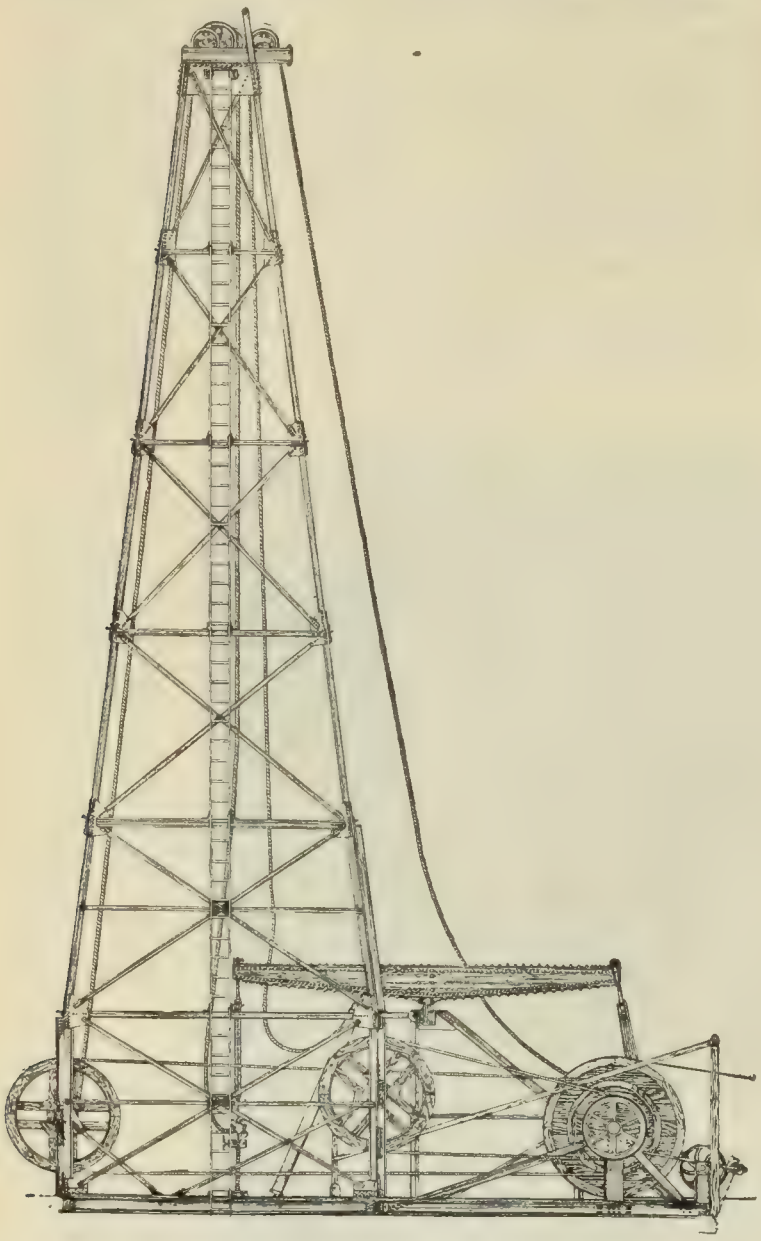


Fig. 1.—Side Elevation of a 72-Ft. Steel California Oil Well Derrick.

As compared with wooden derricks steel derricks have the advantages that they can be readily moved from place to place; that they are more economical; that they can be calculated for strength to a nicety; that they are lighter and of fewer and more easily handled parts, and that their life is vastly greater particularly when there is much re-erecting. No elaborate equipment is necessary to erect a steel derrick. It is shipped, knocked down with the legs, braces, &c., in separate pieces. The gusset plates connecting the legs of the upper panel to the lower are riveted to the lower panels, and the pieces are bolted together in the field by ordinary machine bolts. Erecting panel by panel by the use of planks laid across the corners from one horizontal brace to another does away with gin poles or other appliances necessary in erecting steel buildings. After one panel is completed the planks can be moved to the next higher one, and so on, the separate pieces being hauled up from the ground by simple tackle. Equally simple is the tearing down of the derrick, beginning at the top and lowering the pieces as the bolts are removed.

At present there are in use in the United States two general types of rigs. One, the Standard type, is furnished in either 72 or 80 ft. hights, and is substantially a square tower resembling a water tank or windmill tower, with the hoist attachment on one side at the bottom. Fig. 1 herewith shows the California rig, as it is called, which derives its name from the fact that it was first used in California. It differs from the standard rig in having an extra set of wheels for handling casing. While the company is prepared to furnish these rigs, including walking beam, machine and rig supports, and house, all of steel, it has so designed the parts that any portion can be used, and the remainder made of the usual wood construction.

The same rig irons are used with the steel rigs as with the wooden rigs. The bull wheels and band wheel are built up of wooden cants, and there is no change in the working parts of the rig. With the regular rig irons are included special babbitted boxes for the jack posts, sand wheel, bull wheel and calf wheel, and also for the ends of the walking beam for the temper screw and for the Pitman bearings.

Where a wooden walking beam is not easily obtained a steel beam can be used to good advantage. It can be mounted on the Samson post, with the regular rig iron side irons and saddles, and the temper screw and pitman



Fig. 2.—The Lower Part of a California Rig.—Photographed While Being Constructed.

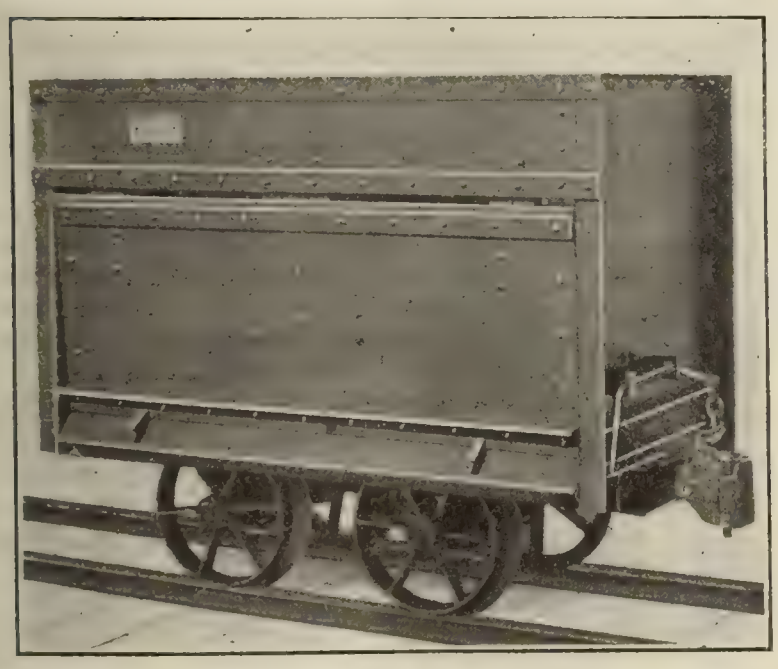
are suspended from the end of the steel beam in the same way as in the wooden rig. The steel beam is designed to withstand a load of 34,000 lb. on the center bearings, corresponding to a pull of 17,000 lb. each on the pitman and temper screw. This corresponds in strength to a 12 x 24 in. white oak walking beam as used for deep drilling.

In proportioning the parts of the derrick there are three points to be considered—the direct load due to the weight of the casing, drilling tools, &c.; the impact due to the exigencies of the drilling service, and the tendency to overturn under high winds. The derricks described are designed to withstand a wind load of 30 lb. per square foot on the exposed surfaces and a drilling load concentrated on top of the derrick of 80,000 lb. The members are selected on the basis of being subjected to not over 10,000 lb. per square inch tensile stress, which corresponds to a factor of safety of 6, as 60,000 lb. is a conservative ultimate tensile strength for the steel used in this class of construction.

The horizontal and diagonal braces and legs are angles, flat bars and plates, giving a high degree of strength, stiffness and stability. In a 72-ft. rig the total weight of the structural material used is 34,000 lb., and in an 80-ft. rig 41,000 lb. The derrick proper in each case weighs respectively 17,100 and 24,000 lb. Complete with all of the rig irons a 72-ft. Standard rig weighs 44,700 lb.; an 80-ft. Standard rig, 51,700 lb., and a 72-ft. California rig, 46,800 lb. Fig. 2 herewith shows the lower portion of a California rig from a photograph taken while it was being constructed. In addition to these derricks the Oil Well Supply Company furnishes all of the equipment necessary in the work for which they are intended.

## A New Koppel Mine Car.

A new type of mine car especially designed for the Copper Queen Consolidated Mining Company, of Bisbee, Ariz., by the Arthur Koppel Company, Machesney Building, Pittsburgh, Pa., is herewith illustrated. Two hundred of these cars have just been completed at the builder's works at Koppel, Pa. The cars are of all steel construction of the gable-bottom type, and have a capacity of 21 cu. ft. and a gauge of 20¼ in. The side doors and end plates are built of 3-16 in. steel, while the floors are steel plates 1.4 in. thick. These plates are put together in such a manner that all possibility of a strain on one point is eliminated.



A New Type of Mine Car Built by the Arthur Koppel Company, Pittsburgh, Pa.

A feature of the car which commends itself is the arrangement of the door operating mechanism. This is actuated by a trip located between the rails at any point on the line where it is desired to discharge the car. The mechanism is secured to the underframe of the car and is in no way connected to the floor of the car, which is the general practice on cars of this type. The main advantage of this arrangement is that there are no rivet heads or bolt heads on the inside face of the floor plates to interfere with the discharge of the load. This was required by the purchaser because it has had some trouble with obstructed floor plates in other cars. The doors relock automatically when they fall into position after the load has been discharged.

The car complete weighs 1368 lb., is 6 ft. 1 in. long, 2 ft. 8 in. wide and 3 ft. 10 in. high over all. The wheel base is 21 in., which allows it to take curves of a radius as small as 15 ft. with comparative ease. The wheels are spoke wheels of cast steel and are equipped with Siamese roller bearings. The whole design of the car is simple, and it was put together with a view to durability and economy. All plates are riveted together, thus lessening the chances of the cars getting out of order through the slipping of nuts, screws or other parts.

## The British Pig Iron and Finished Iron Markets.

For the first month since February, 1906, the stocks of Cleveland pig iron in Connal's stores, at Middlesbrough, England, increased in July. The smallest quantity in store since 1900 was recorded at the beginning of July—47,949 tons. On July 29 the total was 53,896 tons. The exports of pig iron from the Cleveland District were unsatisfactory in July, the shipments to Scotland showing a marked falling off. The total to July 29 was 101,830 tons, against 141,285 tons to the same date in July, 1907, and 119,629 tons to July 29, 1906. In June, this year, exports were 116,062 tons to the 29th. For No. 3 foundry iron the quotation at the close of July was 50 shillings for prompt delivery. The blast furnace companies have been accumulating in their yards chiefly lower grades of iron, so that the production of No. 3 is not so much beyond current requirements as might be supposed. There is practically no buying for forward delivery.

Demand is slack in all finished lines, both for steel and iron. The average price realized by iron manufacturers in the northeast of England for the finished iron delivered by them in May and June was £6 13s. 10.61d. a ton, or 3 shillings 7½ pence a ton less than in the previous two months. According to the sliding scale arrangement, wages at the finished iron works in the northeast of England for August and September were reduced 2½ per cent., and the rate for puddling fell 3 pence a ton, or to 8 shillings 9 pence a ton. This price of $2.12½ for puddling compares with $5.37½ in Western mills in the United States for July and August, as determined by the settlement made at the end of June. The average price for iron bars received by mills in the northeast of England in May and June, $33.18 a gross ton, compares with an average of about $30.75 a gross ton received by Western mills in the United States in the same months. English iron rolling mills turned out scarcely half as much product in May and June as in the corresponding months of last year.

## The National Machine Tool Builders' Association.

P. E. Montanus, Springfield, Ohio, secretary of the National Machine Tool Builders' Association, announces that the regular annual convention of that association will take place this year in New York City. The time will be Tuesday and Wednesday, October 20 and 21, and the headquarters will be the Hotel Imperial, at Broadway and Thirty-second street.

**Another Warehouse for the Obermayer Company.**—The constantly increasing trade of the S. Obermayer Company in and around Erie, Pa., has made it necessary for the company to open a branch warehouse in that city. W. L. Scott, well known to the foundry trade in that section, is in charge. A full line of foundry facings, core compounds, plumbago and blackings will be carried for the present, and as soon as conditions warrant doing so a complete line of other foundry supplies manufactured by the company will be carried in stock there.

# The Alton-Standard Oil Case.

## The Principles Involved.

BY RICHARD W. HALE, BOSTON.

The facts of the Standard Oil Company conviction and reversal were fully set forth in *The Iron Age* of last week. The principles involved are even more important to shippers than thus stated, and cover a wide field in which the particular case occupies only a small place.

### The Plan of Campaign.

This was only one of numerous prosecutions against the Standard Oil Company. Two others, each permitting of as many maximum fines, were pending in Illinois. A special term of court will meet November 8 in Tennessee to try a case which, before this reversal, was appraised at $30,000,000 worth of fine, and Olean, N. Y., rates, &c., have been the basis of still other suits. Now criminal law, as it is worth while to remind ourselves every once in a while, exists for two purposes, to deter and to punish. Both were undertaken with regard to this corporation on a scale even greater than its wealth, its strength or its past success.

It was the purpose of the Federal Department of Justice to teach the Standard Oil Company that anything would in the future be better than taking rebates, and to teach all shippers that the published rate must be discovered and observed, no matter what the skill, labor and pains involved. On the other hand, the theory was that there were enormous ill-gotten gains and that the Standard Oil Company ought to be convicted and fined enough to leave the balance of gain and loss from railroad rebates on the other side of the ledger.

### The Means Adopted.

It is the opinion of some that for this procedure the end was magnified and the means forgotten. If an impartial and fair minded prosecuting officer had begun by stating the principles proper of application to such a case, he would probably have stated the right means for the enforcement of the Elkins law to be as follows: First, to contend for a construction in the practical application of which to facts in diverse instances those who were in fault in their behavior about rates would be found guilty, and those who were innocent would not be punished. Second, to choose an assorted lot of offenders upon such principles that the guilty of each and every class would have punishment brought home to them individually, or by the fear which comes when one sees the man next to him punished and would also be deterred by the feeling that there was no policy of pursuing a particular class of offenders which would "let the others out."

Now the charge of Judge Landis on the first matter said in effect: "It is the duty of every shipper to understand the details of rate quoting; to know that a particular rate is spelt out from a classification, a general tariff, a commodity tariff and an application sheet; to know where it should be filed and of whom to inquire whether it is filed, there and then to make diligent inquiry on each and every point, and decide right about the legal bearing of each answer given." Think of the burden on the shipper! Would it be possible to prosecute all who would err in conforming to such a Procrustean standard? On the second matter, the defendant was clearly chosen because of its reputation and not because of the reputation which the offense to be proved against it bore among moralists. This is made quite clear because the trial developed that many other commodity rates on the Alton were at least as illegal as the oil rate, and yet no attempt was made to pursue any one else. The other shippers by such commodity tariffs never felt a moment's insecurity.

### The Principles Laid Down on Appeal.

When these methods had resulted in a millionaire fine in the trial court an appeal was taken, and among a couple of hundred assignments of error three only were considered and decided on appeal. First, the court said, in striking language most unfortunately omitted from the current press reports of its decision, that the standard of duty for shippers must be one which would promote commerce, not prohibit it, and must be one under which the average householder could safely ship his furniture, the farmer send or the shop keeper receive freight; second, it disposed of the monster fine by a very little extreme simplicity of thought and clearness of statement. The statute makes the maximum fine for an offense committed $20,000, and says that the offense shall be accepting a concession. The court above scarcely does more than reverse the words. It asks, "How many times was any concession accepted? There are just that many crimes and no more."

Many critics of the decision have urged that by making annual settlements the cost of offenses resulting in large pecuniary profit could be kept down to $20,000 a year. Such critics only show their own ignorance of the law, for the profit side of the offense is dealt with by a separate part of the statute, which fixes three times the profit as the fair retribution, and makes it recoverable as a penalty. They show also by their criticism that they have not considered the unworkable character of the rule which Judge Landis laid down, for in the case of a shipper of milk who ships daily, say, five cans, to different addresses, they would make the minimum fine for a week's business on a wrong rate $35,000 in their anxiety to make their rule fit the particular offender rather than the nature of the crime.

The third principle decided has been the source of more wrong-headed criticism even than the other two put together. The case involved the principles upon which to fine a corporation controlled by another corporation, and Judge Landis took the size and assumed offensiveness of the latter as his standard. The Court of Appeals decided that it was the criminal only which should be considered, not its untried owner. Critics have interpreted this to offer a chance to offenders. It is said that they need only incorporate the hand with which they offend to free the rest of the body from punishment. But such criticism merely reminds one of Mrs. Mary Ellen Lease of populist fame to whom a mortgage was a living, breathing, offending rascal. Every crime in this world is committed by an individual, and no rebate can be a crime at all unless there is an individual who can be both fined and imprisoned. All who act in getting the rebate are individual criminals punishable accordingly. There is no one higher up who can escape, if he is proved guilty, by saying, "My tool did it," or even by proving that his tool has paid the maximum fine.

A corporation is a legal fiction, no more human than a mortgage. Its agents are as human as mortgagees. Now the law enables us to fine the corporation also, and thus make many innocent people suffer because they take the profits and must bear the burdens also, but neither law nor decency can permit the fining of shareholders who are neither guilty nor pledged to the result of the fiction by their charter. These three principles, each vital to every reader of *The Iron Age* and to every shipper, were stated in this trial.

### The Future.

Each citizen must decide for himself whether he would prefer to have Judge Landis or Judge Grosscup sit in his own case when it is reached. Assuming here, however, that the decision in the Court of Appeals will stand, what is the future of rebate prosecutions? Can the Government, if it will, stop rebating? What means are now open to that end? Yes. Rebating can be stopped. The Government has access to and control over the carrier's books and papers. It has proved that it can secure the witnesses and try the cases.

In the Alton-Standard Oil case there may be $720,000 of fines if guilt is proved. Fines and penalties are enough and deterrent. The standard of proof required for conviction is not an extreme one. It scarcely does more than require proof of some immorality or negligence in the defendant. What it does do is to enforce again the principle which is at the bottom of freedom under the law. In the ringing phrase of John Adams, it requires "a government of laws and not of men." It brushes aside the desire of a ruler for punishment of a

particular offender because he thinks there was an offense, and it requires the decision of a court that there is an offense after all. In after days, when the alleged emergency is forgotten and the necessity for building all law and law enforcement on a lasting foundation is clearly understood, the whole attempt to crush down one defendant, regardless of proofs, will seem as topsy turvy as the Queen of Hearts in the trial in the Nonsense Book crying "silence first, verdict afterward," and "off with her head."

## Alaska Trade Helps Northwest's Business.

SEATTLE, August 7, 1908.—The opening of the Alaska season has enlivened business in all lines. In the hardware trade this influence of northern activity has been particularly felt, for the gold camps close to the Arctic are sending out for all sorts of supplies and mining paraphernalia. Estimates compiled from the different northern districts indicate that the gold output of Alaska will be far greater this year than ever before. The figures are placed at more than $26,000,000, and the first gold shipments indicate that this is conservative. This will make Alaska the greatest American gold producing district. Almost $7,000,000 in dust was received in Seattle from the North in the space of two weeks after the Yukon River cleared of ice and permitted navigation.

Steel to the amount of 7,000 tons will be used in the construction of the two bridges that the Copper River & Northwestern Railway engineers will place across that stream in central Alaska. Chief Engineer E. C. Hawkins of the Northwestern line returned to Seattle recently to complete plans for the two bridges, and orders have been received from New York to hurry the work. The Copper River enterprise carries the name of the Morgan-Guggenheim syndicate, but according to information generally credited, J. P. Morgan is interested in it as the trustee for Mrs. Marcus Daly of Montana, who has advanced some $2,500,000 for the Alaska projects, and the Guggenheim influence has passed into the hands of John D. Rockefeller, Jr. S. W. Eccles, president of the railroad company, is in Alaska on an inspection trip over the property. He is desirous of hastening construction work so that the ores of the Bonanza copper mines may be brought down the river on boats to meet the railroad at its junction with the Copper River. He expresses the belief that it is unlikely the road will be extended across Alaska to the Tanana District, as the main object of its construction is the development of the mining properties, which are of great value. In connection with the development of the mineral deposits the company is preparing to open the Bering Lake coal fields, the product of which has remarkably high test reports from the Navy Department. The last session of Congress passed a bill approved by the Interior Department prohibiting a monopoly from acquiring control of the Alaskan coal deposits.

The Moran Company, Seattle, is preparing to enlarge its shipbuilding plant to include the manufacture of structural steel. Officers of the company have set aside $500,000 for the installation of machinery for turning out this product. The argument for the investment is that the cities of the Northwest are using more and more steel in the construction of tall buildings, and great economy may be effected by manufacturing this at home. Officials say that even though the present site of the plant is sold the establishment will not leave the limits of the city of Seattle. It is asserted that the premature report of the sale of the Moran water frontage and site to the Chicago, Milwaukee & St. Paul Railroad has delayed the consummation of the deal. Richard S. Storrs of New York, representing the Eastern capital in the Moran Company, recently visited the city and considered the plans for enlargement. Assurances of a positive character have been given the Moran Company that at least two of the submarine boats authorized by the last session of Congress will be constructed in this city. The cost of the two is placed at $750,000. In preparation for larger work in the future the company is improving eight acres of ground lying to the south of the present site.

Logging operations, which require supplies from the iron and steel trade, are beginning again in the Northwest after a suspension of eight months, and this fact is giving a certain amount of life to trade. The resumption of work in the forest follows the recent decision of the Interstate Commerce Commission giving to the lumbermen decidedly the better of the long struggle they have had with the railroads on the question of rates. The commission restored the old rates west of the Missouri River, and allowed only a limited advance east of that line. That has made the outlook much brighter for the lumber industry, but as yet the mills have not resumed their old activity.

The Clarkson Washer & Nut Lock Company is a newly incorporated concern which plans to operate a manufacturing plant at Tenino, not far from Tacoma. The capitalization is $50,000, and the incorporators are W. R. Clarkson, Fred Stevens, J. W. Van Norman, S. W. Fenton, C. A. Kenworthy, W. Pope, W. H. Lewis, S. E. Lewis, O. McInnis, S. P. Huston and Anton Anderson.

W. T. P.

## C. C. Schneider's Report on the Quebec Bridge.

The results of an investigation by C. C. Schneider (consulting engineer of the American Bridge Company and past president of the American Society of Civil Engineers) of the collapse of the Quebec Bridge have just been published. Mr. Schneider's inquiry was undertaken for the Canadian Government, which particularly desired light on future procedure. His report is summarized by the *Engineering News*. Taking up first the question whether the design of the bridge satisfied the specifications, Mr. Schneider says that the trusses do not meet the specification requirements because the assumed dead load was considerably lower than the actual weights. At much length the question is discussed, What unit stresses may be allowed? The important question from the standpoint of the Government was whether any of the old material—that for the north half of the bridge not yet erected—could be used in a new bridge. Mr. Schneider answers in the negative. Strengthening the deficient members of the trusses by adding section is considered impracticable from a manufacturing standpoint. The building of new trusses to the original outline and spacing, so as to permit using the floor and bracing, is pronounced so difficult as to be impracticable. Mr. Schneider believes that the present design of the trusses can be improved upon, and that, therefore, the new design should be worked out on entirely different lines to avoid many of the complications and objectionable features existing in the present design.

Referring to a new design, Mr. Schneider does not object to the present span length and general type of truss. He speaks only in a general way of what should be avoided in a new bridge:

> The polygonal lower chords of the cantilever and anchor arms are not well adapted for a cantilever bridge on account of the difficulties in fabrication and proper fitting, which make them not only more costly than chords forming a straight line, but also less safe. The polygonal chords of the present design produce a reversal of strains in some web members, which on that account require not only more material than members with strains in one direction only, but also cause unnecessary complications in their details and connections.
>
> The wind forces in a rationally designed bridge should produce strains in the chords, the lateral and sway bracing only. On account of the shape of the chords of the Quebec Bridge, the wind strains affect also the web members of the trusses, producing in these members additional strains, consequently requiring in these members more material and more complicated details.
>
> The writer considers that in a rationally designed structure the strains should be carried in the most direct line to the piers. The more complicated the design and the oftener the strains have to change their direction before reaching their destination, the more assumptions have to be made, which again reduce the degree of accuracy of the results of the computations; therefore, the simpler the design, the safer it will be with the same unit strains.

The stockholders of the Hostetter-Connellsville Coke Company, Pittsburgh, have decided to increase the indebtedness of the company by $210,000, the money to be used in repairing and enlarging its coke plants in the Connellsville region.

# Charcoal and Coke as Blast Furnace Fuels.*

BY R. H. SWEETSER, COLUMBUS, OHIO.

So many conditions affect blast furnace results that it is hard to get satisfactory comparative data on the working of two furnaces, and much more difficult to get comparable results from the use of two entirely different fuels. The several advantages of charcoal over coke as a blast furnace fuel have doubtless been apparent to many managers; but probably the conditions for comparative tests of the two were never so favorable as during the year 1905, at the works of the Algoma Steel Company, Sault Ste. Marie, Ontario, which comprise two modern blast furnaces, well equipped, though of comparatively small capacity. For four consecutive months one of these furnaces was run with charcoal and the other with coke. Then the charcoal furnace ran for a while with part charcoal and part coke; and, still later, with coke only. The ore mixtures were about the same in the two furnaces, and, of course, all the climatic conditions were identical.

The dimensions of the two furnaces, and their work with the different fuels, are given in Table I.

*Table I.—Dimensions and Working of Furnaces at Sault Ste. Marie.*

| | Furnace No. 1. | Furnace No. 2. |
|---|---|---|
| Hight | 70 ft. 0 in. | 80 ft. 0 in. |
| Bosh diameter | 13 ft. 6 in. | 15 ft. 6 in. |
| Hearth | 8 ft. 6 in. | 10 ft. 0 in. |
| Stock-line | 9 ft. 6 in. | 10 ft. 6 in. |
| Bell | 6 ft. 0 in. | 7 ft. 0 in. |
| Cubic contents | 6,119 cu. ft. | 8,913 cu. ft. |
| Number of tuyeres | 9 | 9 |
| Diameter of tuyeres | 5 in. | 5 in. |

| | Charcoal. | Coke. | Coke. |
|---|---|---|---|
| Maximum day's product, tons | 173 | 237† | 339 |
| Maximum week's product, tons | 1,004 | 1,453 | 2,175 |
| Maximum month's product, tons | 4,071 | 6,131‡ | 8,027 |
| Date blown in | March 6, '05. | July 16, '05.§ | October 17, '04. |

† February 4, 1906. ‡ March, 1906. § Changed from charcoal and coke to all coke.

Two important facts were demonstrated during the four months' run of No. 1 with charcoal: 1. That a modern blast furnace of approved form and construction, equipped with up-to-date machinery, and 70 ft. high, can be successfully operated with charcoal as fuel. 2. That, with few exceptions, the equipment and the blast furnace practice best suited to successful coke furnaces are also well adapted for the charcoal furnace.

Tables II. and III. give the averages of the results obtained during the three months of the period under consideration. No allowances have been made for lost time, although furnace No. 2 was shut down for several days in April to put on a new tuyere jacket.

By comparing these two sets of results it will be seen that charcoal has the following metallurgical advantages:

1. The furnace consumes considerably less charcoal than coke per ton of pig.

2. Only about one-third as much limestone per ton of pig iron is required in a charcoal furnace as in a coke furnace.

3. The requirement of blast by a charcoal furnace is only about 65 per cent. of that by a coke furnace of the same productive capacity.

4. The "critical temperature" in a charcoal furnace may be lower than in a coke furnace.

These four advantages involve many other smaller ones which affect the cost of equipment and of operating: *i. e.*, less fuel and limestone to handle; less blowing engine equipment; less steam; less hot blast stove area for heating the blast; lower blast pressure on the engines, stoves and connections; less flue dust carried over by the waste gases, and, consequently, a little higher yield from the same ores; less cooling protection in the hearth and bosh walls, and practically entire freedom from any high sulphur pig iron.

It was very evident during the three months of the above comparison that the charcoal furnace could not do itself justice on account of the poor quality and the insufficient supply of the charcoal. But even under these adverse conditions the results of three months' work showed the advantages of the charcoal.

*Table II.—Data of Results of Furnace Operations.*

FURNACE NO. 1, CHARCOAL.

| 1905. | Theoretical yield. Per cent. | Actual yield. Per cent. | Loss in yield. Per cent. | Mesabi ore. Per cent. | Cubic feet blast per ton pig. | Fuel Pounds per ton. | Quantity of stone per ton of pig. Pounds. | Product for month. Tons. | Average quantity per 24 hr. Tons. | Quantity of blast per pound of fuel. Cu. ft. |
|---|---|---|---|---|---|---|---|---|---|---|
| April | 57.20 | 56.40 | 0.80 | 33.4 | 91,421 | 2,120 | 393 | 3,722 | 124.1 | 43.11 |
| May | 58.51 | 58.30 | 0.21 | 33.7 | 83,899 | 2,016 | 308 | 4,040 | 130.3 | 41.60 |
| June | 57.73 | 55.60 | 2.13 | 34.0 | 99,495 | 2,114 | 403 | 3,732 | 118.9 | 46.94 |
| Average | 57.81 | 56.76 | 1.05 | 33.7 | 91,605 | 2,083 | 368 | 3,831 | 124.4 | 43.88 |
| 91,605 cu. ft. of air = 7,338.4 lb. = 3.27 tons of air per ton of pig (charcoal). | | | | | | | | | | |
| FURNACE 2, COKE. | | | | | | | | | | |
| April | 57.30 | 54.70 | 2.60 | 23.5 | 134,739 | 2,171 | 1,036 | 5,267 | 205.3 | 60.17 |
| May | 58.79 | 57.80 | 0.99 | 26.9 | 140,307 | 2,107 | 1,037 | 7,148 | 230.6 | 66.52 |
| June | 58.16 | 55.00 | 3.16 | 28.3 | 148,103 | 2 343 | 1,050 | 6,670 | 227.8 | 63.20 |
| Average | 58.08 | 55.83 | 2.25 | 26.2 | 141,049 | 2,207 | 1,041 | 6,361 | 221.2 | 63.29 |
| 141,049 cu. ft. of air = 11,283.9 lb. = 5.03 tons of air per ton of pig (coke). | | | | | | | | | | |

*Table III.—Analyses of Pig Iron and Slag.*

FURNACE NO. 1.

| | Analysis of pig iron. | | | | Analysis of slag. | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1905. | Si. Per cent. | S. Per cent. | P. Per cent. | Mn. Per cent. | $SiO_2$. Per ct. | $Al_2O_3$. Per ct. | $SiO_2+Al_2O_3$ total. Per ct. | Fe. Per ct. | Mn. Per ct. | CaO. Per ct. | MgO. Per ct. | S. Per ct. |
| April | 1.22 | 0.010 | 0.086 | 0.52 | 42.15 | 11.02 | 53.17 | 0.74 | 0.62 | 43.00 | 1.25 | 0.24 |
| May | 1.63 | 0.014 | 0.083 | 0.61 | 44.49 | 12.02 | 56.51 | 0.87 | ... | .... | ... | ... |
| June | 1.53 | 0.010 | 0.082 | 0.51 | 45.76 | 9.99 | 55.75 | 1.29 | ... | .... | ... | ... |
| Average | 1.46 | 0.011 | 0.0836 | 0.546 | 44.13 | 11.01 | 55.14 | 0.966 | 0.62 | 43.00 | 1.25 | 0.24 |
| FURNACE NO. 2. | | | | | | | | | | | | |
| April | 1.48 | 0.031 | 0.074 | 0.49 | 37.48 | 11.84 | 49.32 | 0.63 | 0.34 | 48.10 | 1.46 | 1.32 |
| May | 1.39 | 0.027 | 0.072 | 0.53 | 38.12 | 11.77 | 49.89 | 0.62 | ... | .... | ... | ... |
| June | 1.50 | 0.029 | 0.067 | 0.54 | 39.17 | 10.94 | 50.11 | 0.74 | ... | .... | ... | ... |
| Average | 1.46 | 0.029 | 0.071 | 0.52 | 38.26 | 11.51 | 49.77 | 0.663 | 0.34 | 48.10 | 1.46 | 1.32 |

### Quantity of Fuel Per Ton of Pig.

In comparing the quantity of fuel required per ton of pig, the results given are based on the net tonnage of pig delivered to the Bessemer department, and the gross tonnage of coke and charcoal delivered to the furnaces, including waste. On account of the frightfully poor quality of the charcoal, this waste, at times, amounted to 16 per cent. The results for the period of three months show a consumption per ton of pig iron of 2083 lb. of charcoal, as compared with 2207 lb. of coke.

The work for a coke furnace was exceptionally good.

* Presented at the New York meeting of the American Institute of Mining Engineers, February, 1908.

while for a charcoal furnace it was very poor. Every pound of coke less than 2240 lb. per ton of pig will be an almost unlooked-for gain at the Soo unless the yield of the ores is much higher than at present. During 1905 the average quantity of coke per ton of pig iron required by the furnaces in the Mahoning and Shenango valleys, exclusive of those of the United States Steel Corporation, was 2311 lb. Including these latter furnaces, making a total of 89 furnaces, it was 2234 lb.

The quantity of charcoal consumed per ton of pig—namely, 2083 lb.—was excessive. If the quality had been good the consumption would have been nearer 1800 lb. Some furnaces using good charcoal have made iron with 1600 lb. of charcoal per ton of pig. It is safe to count on a saving of 400 lb. of fuel in favor of charcoal.

On account of the practical absence of mineral matter in the charcoal, there is no fuel consumed to slag the ash, nor is there need of limestone to flux it. Moreover, the entire absence of sulphur in the charcoal makes it possible to have a very acid slag, which is consequently much less refractory than the slag necessary for the same ores using coke as fuel.

**Limestone Per Ton of Pig.**

A comparison of the analyses given in Table III shows that much less lime is required in the charcoal iron slag than in the coke iron slag. The chief reason for this is that there is scarcely any sulphur to be carried off in the charcoal slag. In addition to this advantage there is also a greater gain by not having to flux the ash. But the practice with charcoal at the Soo differed somewhat from that in northern Michigan, where much less limestone is used. At the suggestion of William Wilkins, Ashland, Wis., less limestone was tried, but the results were less satisfactory. A slag containing $SiO_2$, 40.78; $Al_2O_3$, 13.20; and Fe, 0.35 per cent. was all right, and the furnace worked smoothly on it under a blast temperature of 1200° F. A slag with $SiO_2$, 38.74; $Al_2O_3$, 12.35; and Fe, 0.20 per cent. was a little limey, and one with $SiO_2$, 37.12; $Al_2O_3$, 11.54; and Fe, 0.25 per cent. was too limey. A slag with $SiO_2$, 55.52; $Al_2O_3$, 9.13; and Fe, 0.90 per cent. worked very badly.

In a charcoal furnace there is the same chance as in a coke furnace to have the mixture too dry. The volume of slag must be sufficient to make the furnace work smoothly, and eliminate troubles arising from a cold, stiff-running slag.

One charcoal furnace manager wrote me that he used only 175 lb. of limestone per ton of pig iron, with ores carrying about 6 per cent. of silica.

The small amount of limestone required in a charcoal furnace gives less weight of material to handle and less bulk in the furnace itself, which reduces the cost of stocking and charging. It also gives less slag to handle and reduces the cost of switching and of repairs to the cinder ladle.

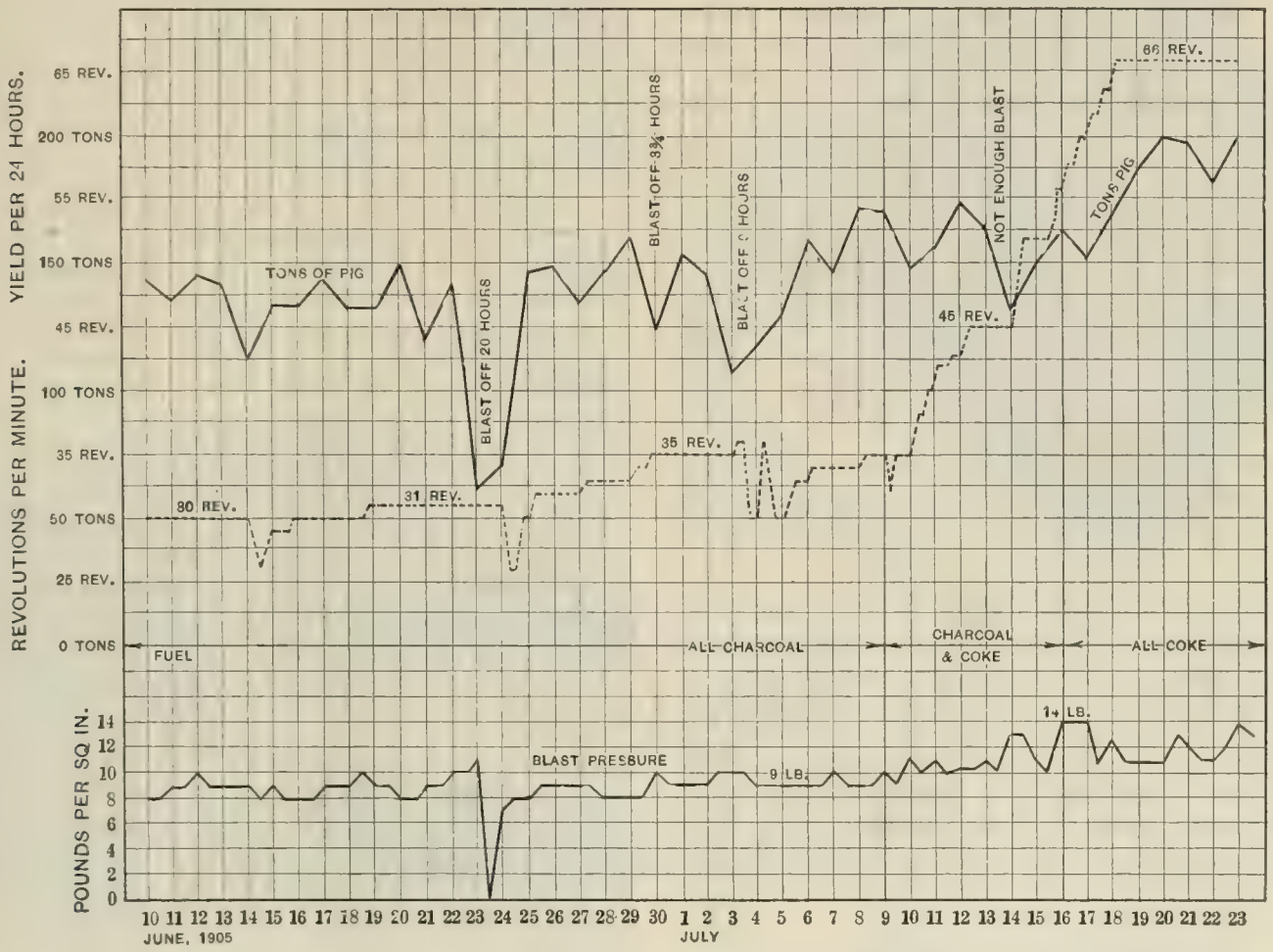
**Air Per Ton of Pig.**

One of the great advantages of the use of charcoal over coke is the smaller quantity of blast required per ton of pig. A pound of coke requires nearly 50 per cent. more air for its combustion than does a pound of charcoal. This great saving allows cheaper blowing engines, less boiler capacity and less hot blast stove capacity; consequently, the lesser cost for installing and operating engines, boilers, stoves, pumps, steam lines, blast mains, gas mains and connections. Moreover, the labor for operating and for repairs is less.

Another advantage of this smaller quantity of blast is the smaller margin of loss, as shown in Table II, by a comparison of the difference between the theoretical and the actual yields. The loss in yield of the charcoal furnace was only 1.05 as compared with 2.25 per cent. of the coke furnace. The charcoal furnace carried 7.5 per cent. more Mesaba ores than the coke furnace. This smaller quantity of blast naturally carries much less moisture per ton of pig into the furnace.

The great difference in blast volume for the two fuels was most clearly demonstrated when the change was made from charcoal to coke. No stop or interval was made, the coke being gradually substituted for charcoal, and the engine revolutions increased to meet the demand for more air.

The accompanying chart shows the average blast pressure, tons of pig iron per day, and average number of revolutions per minute from June 10 to July 23. During the greater part of this period the furnace was running on charcoal, and the quantity of blast blown (and consequently the amount of pig iron made) was regulated by the daily supply of charcoal, which was never sufficient to blow the furnace as hard as it should have been blown for most advantageous working. Two abnormal results were brought about by this light blowing: 1. The blast pressure of from 9 to 10 lb. was higher than it should have been. 2. The furnace had practically a ring scaffold, which was gradually worked off later, after coke




Data of Operations of Furnace No. 1, Algoma Steel Company, Sault Ste. Marie, On

was used and more blast was blown into the furnace.

During the last week in June, when it was seen that the use of charcoal must be abandoned, a small extra supply was obtained, and the engine revolutions were increased for a while, which gave an increased product, but there was no increase in the blast pressure. Trouble with the hoist and a shortage of charcoal on July 3 caused a shutdown of 9 hr. But from July 6 to 10 there was enough charcoal to allow blowing at the rate of from 34 to 35 rev. per min. Under these conditions the consumption of charcoal per ton of pig was 1725 lb. and the quantity of product arose to 173 tons per day. Then, for a week, a mixture of charcoal and coke was used, the proportion of coke being gradually increased until all the charcoal was replaced, which occurred at the second charge on the day turn of July 16. Although endeavors were made to increase the quantity of blast fast enough to take care of the coke as it came to the tuyeres, it was not fast enough on the 13th and 14th, and consequently the rate of production dropped back. A more rapid increase in volume of blast brought the expected increase in product. During the transition from charcoal to coke both fuels could be easily seen at the tuyeres mixed together.

**The Critical Temperature.**

The construction of the furnace was not changed after supplanting charcoal by coke. But the increase in blast volume and temperature of the hearth soon began to affect the brick work of the hearth, the tuyere circle and bosh walls. Extra bosh plates were inserted between the tuyere coolers, and later much trouble arose from thin walls all around and above the tuyeres. Our experience showed that in a coke furnace stronger walls and more water cooling devices are necessary than in a charcoal furnace.

In order to obtain pig iron having the same percentage of silicon the hearth of the coke furnace was hotter than the hearth of the charcoal furnace, the slag in the former being more refractory than in the latter.

**The Product.**

The average silicon in the pig iron made during the three months' run was identical in the two furnaces, but the average sulphur in the charcoal iron was only 0.011 per cent., as compared with 0.029 per cent. Rarely did the sulphur in the charcoal iron exceed 0.021 and never more than 0.032 per cent. On account of the higher phosphorus content of the charcoal, the charcoal iron contained more phosphorus than the coke iron from the same ores. The manganese is both kinds of iron was about the same.

**Disadvantages of Charcoal.**

There are two serious disadvantages in using charcoal instead of coke, although both can be overcome. The first is the difficulty of getting a sufficient supply of good charcoal. The cord wood needed for making the daily supply of charcoal for a furnace producing 150 tons of iron per day would make a pile half a mile long. The necessary areas of maple and birch forests are becoming less and less plentiful in the United States, although in Canada there are immense tracts of wooded lands waiting to be cleared for settlers, which contain much of the wood that is better suited for making charcoal than it is for use as lumber.

The second disadvantage is the readiness with which charcoal catches fire, a danger which is not past until the charcoal reaches the tuyeres. Even in the upper part of the furnace there is a chance of serious trouble from the flaming charcoal if the furnace should make a heavy slip. Furnace No. 1 made many heavy slips on account of dirty charcoal and insufficient blast pressure, and almost always the fine charcoal dust would ignite as it was thrown out of the top explosion doors. At times the flames would reach the ground. But all this could be avoided with a sufficient supply of good charcoal from kilns close to the furnace.

It is interesting to note that during the time furnace No. 1 was running on charcoal and making the largest recorded outputs for charcoal furnaces there was also in blast in Canada what are probably the smallest charcoal blast furnaces in active operation in the world. In Drummondville, Quebec, two small stone stack charcoal furnaces of the old French type, built in 1880 and 1881, were operated in the most primitive style and gave a total daily output of 3.5 tons of pig iron per furnace. The dimensions of one of these furnaces are: 31 ft. high, 10 ft. long and 3 ft. 8 in. wide, and of the other 32 ft. high, 9 ft. long and 3 ft. 8 in. wide.

## The Sloss-Sheffield Steel & Iron Company.

In last week's issue of *The Iron Age*, page 387, an extract was given from President J. C. Maben's annual report to the stockholders of the Sloss-Sheffield Steel & Iron Company, setting forth the extent of the company's iron ore and coal resources. Following is the financial statement from the same report for the fiscal year ending November 30, 1907:

*Resources.*

| | |
|---|---|
| Property account | $21,629,344.53 |
| Treasury securities | 244,218.11 |
| Stocks and bonds of other companies | 392,557.17 |
| Cash, bills and accounts receivable | 1,399,086.51 |
| Supplies, raw and finished material, at cost | 657,722.45 |
| Stocks in company's stores and warehouses, at cost | 118,790.41 |
| Extraordinary repair and renewal fund | 218,823.57 |
| Insurance and taxes unexpired | 6,284.95 |
| Total | $24,666,827.70 |

*Liabilities.*

| | | |
|---|---|---|
| Capital stock, preferred | $6,700,000 | |
| Capital stock, common | 10,000,000 | |
| | | $16,700,000.00 |
| Sloss Iron & Steel Company: | | |
| Mortgage 6 per cent. bonds, 1920 | $2,000,000 | |
| Mortgage 4½ per cent. bonds, 1918 | 2,000,000 | |
| | | 4,000,000.00 |
| Current accounts | | 527,896.99 |
| Loans | | 200,000.00 |
| Pay rolls (current month) | | 77,350.57 |
| Profit and loss | | 3,161,580.14 |
| Total | | $24,666,827.70 |

EARNINGS FOR FISCAL YEAR ENDING NOVEMBER 30, 1907.

| | |
|---|---|
| Profit on pig iron shipped: | |
| After charges against cost for depreciation on iron ore, 25 cents per ton on iron for extraordinary repairs and renewals and 35 cents per ton profit on coke | $1,400,391.64 |
| Profit on coal after charge for depreciation | 61,361.95 |
| Profit on coke | 135,126.81 |
| Rents, royalties, stores and other revenues | 137,307.82 |
| Ore and dolomite sales | 8,739.39 |
| Interest and exchange | 36,745.68 |
| Total | $1,779,673.29 |
| Deductions: | |
| General expenses not charged in cost sheets | $39,325.59 |
| Taxes and license | 50,684.94 |
| | 90,010.53 |
| | $1,689,662.76 |
| Year's bond interest | 210,000.00 |
| Surplus for 1907 | $1,479,662.76 |
| Dividends paid: | |
| 7 per cent. on preferred stock | $469,000.00 |
| 5 per cent. on common stock | 500,000.00 |
| | 969,000.00 |
| Year's surplus after dividends | $510,662.76 |
| Surplus November 30, 1906, after adjustment | 2,650,917.38 |
| Surplus, November 30, 1907 | $3,161,580.14 |

COMPARATIVE STATEMENT FOR YEARS ENDING NOVEMBER 30, 1906, AND 1907.

| | 1907. | 1906. | Change. |
|---|---|---|---|
| Gross sales and earnings | $6,654,303 | $6,290,014 | Inc. $364,289 |
| Operating expenses, taxes and maintenance | 4,831,457 | 4,938,268 | Dec. 106,811 |
| Net earnings | $1,822,846 | $1,351,746 | Inc. $471,100 |
| Fixed charges | 210,000 | 210,000 | ..... |
| Balance | $1,612,846 | $1,141,746 | Inc. $471,100 |
| Depreciation | 133,183 | 140,901 | Dec. 7,718 |
| Surplus | $1,479,663 | $1,000,845 | Inc. $478,818 |

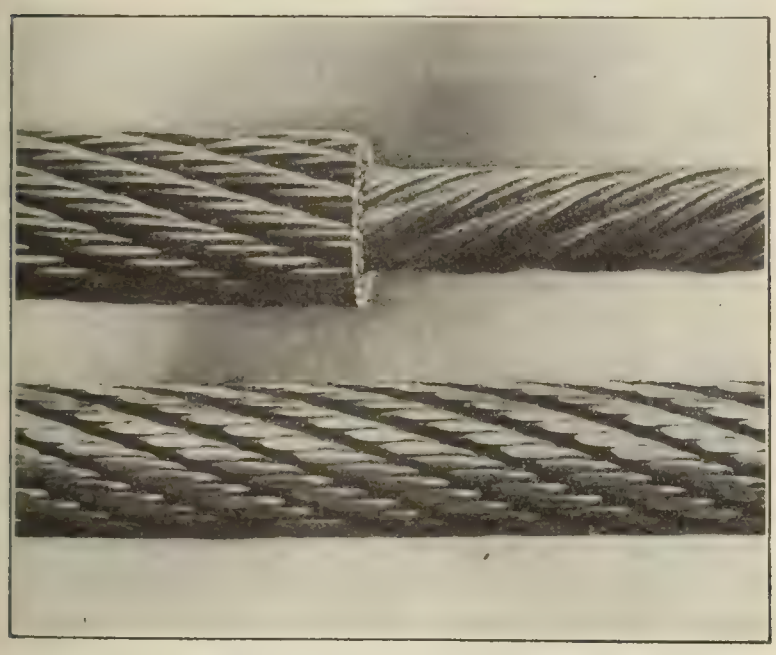
In view of the small proportions to which the trade in high speed steel has shrunk in the Sheffield District, England, the price of tungsten has fallen to as low as 1s. 9d. a pound, as compared with 4s. 4d. a year ago, or from $1.05 to 43 cents. However, there has been little or no reduction in the price of high speed steel.

## The American Nonspinning Wire Rope.

A standard wire hoisting rope will cause a load suspended by a single line to rotate while being hoisted, because the weight tends to untwist the strands. This spinning of the load is often attended by danger, making it necessary to carefully guide the load in its ascent or descent. To obviate this objectionable feature of spinning, an original form of rope construction has been patented by Olof Tangring, an engineer of the American Steel & Wire Company, and is made and sold by that company. The new rope is especially suitable in mining, quarrying, building and bridge construction work, where it is often desirable to use a single rope.

One of the first of these nonspinning American wire ropes was tried on a single line hoisting derrick at the Vermont Marble Company, at West Rutland, Vt., and was pronounced a success. A block of marble suspended by the single line was raised from a depth of more than 250 ft. without making a half turn in its ascent. No guide rope was necessary, as the block was hoisted and swung into place for temporary storage alongside the railroad tracks. The boom slewing line was attached to the outer end of the boom and not to the load. The success attained has led to the adoption of these nonspinning ropes in other quarries, and is rapidly extending to other plants where hoisting is done on the free end of a single line. Experience has proved that either a closed socket or an open socket makes the best fastening in the hoisting end of these lines.

The above patent is the first to cover the important basic principles of a nonspinning rope. The construction, as shown in the upper view in the illustration, is as follows: An inner series of wire strands is wound in one direction over a core, and an outer series of wire strands is wound in the opposite direction about the inner series as a core. The wires which make up each of the individual inner strands are twisted in the same direction as the lay of the strands; but in the outer strands the individual wires are laid in opposite direction to the lay of the strands. The number of strands required for the second or outer layer must of course be greater than the number of strands in the inner layer. For this reason the inner layer has the wires as well as the strands all laid in one direction as described, thereby giving them a tendency to untwist very much faster than if they were twisted in the direction opposite to the lay of the strands. The wires in the outer layer, being laid in an opposite direction to the lay of the strands, do not tend to untwist as fast as the inner layer. The strands in the outer layer, however, counteract the tendency of untwisting the rope as a whole. When a weight is applied to the end of the rope, the greater number of strands of the outer layer has a tendency to untwist in one direction, whereas the fewer strands of the inner layer have a tendency to untwist very much faster in the opposite direction, and it is found in practice that these two actions almost perfectly balance each other.



The Construction of the Nonspinning Rope and Its Appearance After Long Use.

The lower view in the engraving shows the effect of wear on a rope of this construction that has been subjected to long and heavy use. The rope is smoother than when new and presents an increased surface of contact that is valuable to resist abrasion.

## The Flint-Rim Sprocket Wheels.

The sprocket wheel, a section of the rim of which is illustrated by the engraving herewith, has been developed for service under severe conditions imposed when handling abrasive materials, and for other work where the regular type of cast iron wheel is not sufficiently durable. The teeth and rim exposed to the wearing action of chain contact are hardened to a considerable depth, and the surface is made smooth and uniform.




A Section of the Rim of a Flint-Rim Sprocket Wheel as Now Made by the Link-Belt Company.

This improvement in sprocket wheels not only makes the wheel more durable, but actually prolongs the life of the chain by maintaining the original accuracy of fit between the links and the sprocket teeth. The maker, the Link-Belt Company, Philadelphia, Pa., has coined and copyrighted a trade name "Flint-Rim" for the new wheels, which are now available for use in connection with most of the active sizes of the Ewart chains.

## American Screw Threads in Gas Apparatus.

The American Society of Mechanical Engineers was represented at the international conference for the standardization of threads in apparatus for the use of gas, held in Paris a few weeks ago, by invitation of the Société Technique de l'Industrie de Gaz en France, by Lawrence V. Benet, administrateur-directeur, Société Anonyme des Anciens Etablissements Hotchkiss & Cie. As the result of several conferences held in New York, at which manufacturers of gas pipe fittings and supplies were represented, an exhibit of screw threads, as used in the United States, was prepared under the auspices of the American Gas Institute. This was presented to the French Society and exhibited at the conference. The exhibit consisted of drawings and blue prints with sample bolts, nuts, cap screws, set screws, &c.; gauges for United States standard threads; standard machine screws, stove bolts, pipe threads, &c., and threads used in connections to light meters in different sections of this country. The exhibits were mounted on walnut boards, and were prepared so as to show the threads in section. The results of the Paris conference have not yet been officially promulgated.

# THE IRON AGE

Established in 1855.

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## The British and German Iron Trade Status.

The unfavorable conditions in the German and British iron trades are attracting more attention. In both countries 1907 was a year of abounding prosperity. In both the late months of the year were attended by some signs of recession—not pronounced, but such as indicated a disposition to await the later effects of the panic in the United States. Now that more than seven months of 1908 have passed, it is found that the fears of increasingly untoward conditions in the leading iron and steel countries of Europe have been realized. What gives food for thought in connection with our own troubles is that in both Germany and Great Britain the responsibility for the industrial depression through which they are passing is laid, to a large extent, at the door of the United States. It is not new that the closing of international gaps commercially and politically in the past decade is making more and more an injury to one important country's prosperity the concern of all. But recent years have shown also a great sensitiveness of the money markets of Europe to conditions affecting so large a user of capital as the United States. The drain of the war of Russia and Japan upon the world's money supply accented this. More recently the railroads of the United States have disposed of additional millions of bonds to European buyers, again demonstrating the attractiveness of American securities in the eyes of foreign capitalists. This fact and the ability of the United States to draw heavily at times on the supply of gold at European money centers in settlement of trade balances are additional reasons for the interest taken in Great Britain and Germany in any indications of improvement in the American industrial situation.

So far as market reviews are an indication, the iron trade outlook in Great Britain is less hopeful than in the United States. Not even in the weeks immediately following the October panic, when our iron and steel works were running at about one-third capacity, did the feeling in this country sink to such pessimism as now prevails in England. A recent Middlesbrough market letter says that iron manufacturers in that district report trade "worse than it has been at any time during the last ten years, and still it is thought that an even less satisfactory period will be experienced." At the beginning of August the only hopeful advices reported by British iron masters were those indicating betterment in the United States. Buoyancy is not a British weakness, but pessimism is, and apparently the extent of the iron trade recession there and in this country in the past nine months has been in inverse ratio to the amount of wailing over it. British rail mills have something to do, but every other finished line is depressed, the absence of shipbuilding orders being marked. Prices and production have declined. Monthly pig iron statistics are not collected, so that the measure of the falling off there cannot be taken, but 59 more blast furnaces were in operation at the close of July, 1907, than at the same time this year. The decline in prices is seen in the following, taken from the market reports of the London *Iron and Coal Trades Review:*

| | July 30, 1908. £ s. d. | August 1, 1907. £ s. d. |
|---|---|---|
| Rubio ore, Middlesbrough | 15 0 | 22 3 |
| No. 3 foundry iron, Middlesbrough | 50 0 | 57 6 |
| Bessemer warrants, West Coast | 57 10 | 77 6 |
| Common bars | 6 7 6 | 7 10 0 |
| Steel rails, Middlesbrough | 5 17 6 | 6 17 6 |
| Angles, Glasgow | 6 0 0 | 7 7 6 |
| Ship plates, Glasgow | 6 2 6 | 7 12 6 |

By contrast with what has happened in the United States, the declines in British markets have been greatest in finished materials. Thus, against $6 to $7.50 in foundry grades here, British foundry irons have fallen $1.75 in the year. Steel rails are now about $5 less there than in August, 1907, while no change has been made here. In common iron bars the reductions are nearly on a parity—$5.50 there and $6 here. In angles the British and American declines have been $6.65 and $2 a ton, respectively, and in plates $7.40 and $2, respectively.

Germany is like Great Britain in the absence of precipitate plunges from high level production. While late reports indicate that the German iron situation is steadily growing worse, production has been held up surprisingly. In the first half of the year the pig iron output was 6,049,721 metric tons, against 6,918,004 gross tons in the United States. We must go back to the panic year 1894 to find any such approximation of the pig iron output of the two countries, Germany in that year producing 5,380,039 tons and the United States 6,657,388 tons. In the past seven or eight years Germany's production has ranged from 50 to 60 per cent. of that in this country. As our German correspondent has explained, the reduction in pig iron output there this year has not been proportioned to the falling off in business. While the former has been but 306,232 tons, or less than 5 per cent., from the 6,355,953 tons of the first half of 1907, there has been an accumulation of over 500,000 tons of pig iron and over 750,000 tons of coke, many blast furnaces being now operated chiefly for the gas power they furnish, while coke is being made and piled up at the ovens because of the gases and tar products resulting from their operation.

The existence of so many iron and steel syndicates has both helped and hurt the German situation. A desperate struggle for business at cut-throat prices has been prevented in most products, but the diverse situations of syndicated and nonsyndicated industries and the dissatisfaction over the dislocations of prices on exports and on products marketed at home have been piling up trouble for the future. Yet the test of eight months of ebbing prosperity has been well withstood by German financial houses and manufacturing companies. No such unsoundness as caused the crash in the United States in October has developed, and there is no probability of the repetition of the depression that held Germany in its grip for several years up to the middle of 1903. The formation of stock companies has been halted, the first five months of the year showing a decline to $113,000,000 of new issues of such stocks from $157,000,000 in the first five months of 1907. Apparently the country is going through something like the experience of the United States in 1904, with the added complication, which may yet prove more formidable, of the heavy demands upon capital made by

the plans of the Imperial authorities for a sharp increase in revenues. In the steel industry the strike at the Stettin shipyards and the lockout following may prove a considerable check upon consumption.

What is plain is that the three chief iron producing countries will fall back in 1908 approximately to their pig iron record of 1904, when they produced together 35,249,000 tons of pig iron, whereas their total for 1907 was 48,580,000 tons. About nine-tenths of this shrinkage can be attributed to the spectacular reversal of conditions in the United States.

## The Crop Outlook.

In every year of trade depression the crop situation receives unusual consideration. It is, of course, always a matter of prime importance to this country to have good grain crops, as so much depends upon the returns from agriculture, but when general trade is inactive great anxiety is felt lest nature may withhold its usual bounties and thus cause business to be further curtailed. While this question has not yet been completely settled, the time is at hand for the agricultural outcome of this season to emerge from the haze of uncertainty into the clearer atmosphere of fulfillment. This has already been the case with the winter wheat crop, the harvesting of which has been accomplished. Spring wheat is rapidly advancing toward the same stage, much of this crop being now in shock. Even corn has nearly passed its critical time, having only to face a short period of heat or drought possibilities, with the remote danger of a premature frost. Under these circumstances the Government report as to the condition of grain crops, which was made public August 7, is of exceptional interest. This report makes the following showing for August 1, as compared with last year's harvest:

*Indicated Harvests.*

| | August, 1908. | Harvest of 1907. |
|---|---|---|
| Winter wheat: | | |
| Bushels | 425,940,000 | 409,442,000 |
| Acreage | 29,751,000 | 28,132,000 |
| Spring wheat: | | |
| Bushels | 249,711,000 | 224,645,000 |
| Acreage | 17,710,000 | 17,079,000 |
| Total wheat: | | |
| Bushels | 675,651,000 | 634,087,000 |
| Acreage | 47,461,000 | 45,211,000 |
| Corn: | | |
| Bushels | 2,716,000,000 | 2,592,320,000 |
| Acreage | 100,996,000 | 99,931,000 |

This year's indicated wheat crop has been but thrice exceeded, namely, in 1901, 1905 and 1906. The corn crop promise has been exceeded but once, which was in 1906, when the quantity garnered was 2,927,416,091 bushels. Some disappointment is felt because the showing made for this year is not up to the high figures indicated earlier in the season, when the most glowing expectations of bumper crops were entertained. Hence, some unfavorable comments have appeared, which would seem to demonstrate that the indicated results are not satisfactory to general trade interests. Such a conclusion does not appear to be warranted. When the wheat and corn crops come so close to the largest production ever attained, affording a very comfortable surplus over domestic requirements, that should be a cause of rejoicing. Those whose interests lie close to the prosperity of the grain growing sections feel assured of a substantial basis for the coming year's business, and this is of cheerful portent to the rest of the country. If the outcome of the cotton crop should show as good a proportionate yield the South will be well favored and another set of great business interests will be benefited. The Western farmer and the Southern planter will be liberal buyers of not only necessities but of luxuries. The traffic of the railroads will be measurably increased, possibly again approaching the volume of normal times. Short crops in Europe promise a demand for our grain surplus at a very satisfactory price. When these expectations are realized all branches of trade will feel a quickening impulse.

## Conspicuous Failures of Government Arbitration.

Two exceedingly important failures in the arbitration of labor disputes have recently occurred. One of these is in the case of the mechanics employed in the shops of the Canadian Pacific Railway and the other concerns the spinners of Fall River, Mass. In both instances labor differences had been adjusted under the direct supervision of Government officials, and in both the employees are rejecting the terms of the arbitration.

Much had been expected of the Lemieux law of Canada which authorizes conciliation boards for the purpose of avoiding disastrous labor troubles. The machinists of the Canadian Pacific Railway made a number of demands, among which were the restriction of the number of apprentices to one to every five journeymen and the prohibition of any helper, however competent, from operating certain machines. When these demands were made, the company desired to effect its own settlement and withdrew its representative from the Board of Conciliation, but the place was then filled by the Canadian Government. A hearing was had, and the board decided on a compromise, allowing, for instance, one apprentice to four journeymen instead of one to three, as desired by the company. Reluctant assent was given to the decision of the board by the company, but the men were not satisfied and struck because they did not get all they wanted.

In the case of the spinners of Fall River, a commission was appointed by the Governor of Massachusetts to investigate conditions at Fall River during the great strike several years ago, and this commission was successful in securing an agreement between the employers and the Spinners' Union under which the scale of wages was to be based on the average prices of cotton cloth of the previous six months. Under this agreement a material advance in wages was made by the employers, but when the depression in trade came it caused a drop in prices and a decrease of 18 per cent. in wages was recently announced. The union is dissatisfied with this result, and has passed a resolution that "the agreement has proved a failure so far as the workers are concerned," and that the Spinners' Union be given the necessary three months' notice of withdrawal.

These occurrences would seem to prove the futility of trying to provide by law for conciliation or arbitration in labor troubles. The result must be satisfactory to the workmen, as when it is otherwise they refuse to be bound by any agreements.

"Every caller upon the purchasing department of this company is given a hearing." In so saying, a representative of one of the largest manufacturing companies in the country added: "It is recognized that nearly every concern that sells anything to it is at the time or may become a customer of the ———— company." The explanatory remark puts the practice referred to under the general head of enlightened self-interest. But the policy of some buyers in the treatment of salesmen who call upon them—or, for that matter, those not known to be salesmen—has much less than that amount of enlightenment behind it. Much as has been written on this subject, it is astonishing what indifference is still noticed—

though it is the exception—to the matter of the courteous reception of callers at the offices of manufacturing companies. The old-time injunction as to carefulness in "entertaining strangers" and the added incentive that "thereby some have entertained angels unawares," are suggestive. Moreover, the man who calls to sell may have just as good a title to be put in the last named class as the man who calls to buy.

## Pittsburgh as an Iron Trade Barometer.

Naturally much has been made this year of the industrial situation in the Pittsburgh District, in the effort to measure the hoped for improvement from month to month. Pittsburgh represents such a concentration of steel manufacture that as it goes so goes the country, so far as that great industry is concerned. Hence the incentive to enlarge upon the facts about mill resumption there. It would have simplified the whole operation of diagnosing iron trade conditions in the first half of the year if closer watch were kept on the statistics of pig iron production. Apart from the changes in stocks, the blast furnace figures tell the story quite accurately. There has been a deal of juggling with percentages since the hard times came, but there has been no necessity for mystery about the real basis on which the iron trade has been going. For the first half of the year production was slightly above 50 per cent. It may be worth while, since the news from Pittsburgh has told of a much closer approach to prosperity there, to make a comparison between the first and second six months of 1907 and the first half of 1908 in pig iron production and compute the percentages. We take the following from the statistics of the American Iron and Steel Association:

*Pig Iron Production in the United States and in Allegheny County.—Gross Tons.*

| | United States. | Allegheny County. | Per cent. Allegheny County. |
|---|---|---|---|
| First half of 1907 | 13,478,044 | 2,851,098 | 21.15 |
| Second half of 1907 | 12,303,317 | 2,587,135 | 21.03 |
| First half of 1908 | 6,918,004 | 1,697,658 | 24.54 |

The inference is that the Pittsburgh District was measurably ahead of the rest of the country in the activity of its steel works in the first half of the year. This conclusion is reinforced by the fact that in Allegheny county, where the production of merchant pig iron is an exceedingly small fraction of the total, the operation of blast furnaces has been presumably in close adjustment to the needs of connected steel works. On the other hand, the production of pig iron in the entire country the first half of the year includes an increase—and in some districts not a small one—in the stocks of iron at merchant furnaces between December 31, 1907, and June 30, 1908.

## The Production of Manganese Ores in 1907.

An advance chapter from the "Mineral Resources of the United States" for the calendar year 1907 has been published in a pamphlet entitled "The Production of Manganese Ores in 1907," prepared by E. C. Harder for the United States Geological Survey. In 1907 less than 20 manganese mines were in operation in this country, less than half of that number being operated steadily. The Valley and the Piedmont districts of Virginia produced by far the greater part of the output in 1907, the total for Virginia being 4604 tons, apart from which the production of the country was only 1000 tons, 800 tons coming from South Carolina, 100 tons from California and 100 tons from Tennessee. Under present conditions domestic manganese cannot compete with the foreign high grade product. The average price of the Virginia manganese ores mined in 1907 was $12.27, of the Tennessee ores $15, and of the South Carolina and California ores $6 a ton. The imports of manganese ore last year amounted to 209,032 gross tons, valued at $1,793,143. These figures compare with 221,260 tons in 1906, valued at $1,696,043. Considerable American capital is already invested in manganese ore deposits in India and that country contributed 95,300 tons, or nearly half of the imports of last year. From Brazil 52,922 tons was brought in, from Cuba 30,006 tons, and from the East Indies 12,552 tons. The following table gives the latest available statistics of the world's production of manganese ore in gross tons and metric tons:

| | | Tons. |
|---|---|---|
| North America: | | |
| United States | 1907 | 5,604 |
| Canada* | 1906 | 83 |
| Cuba | 1907 | 34,171 |
| South America: | | |
| Brazil* | 1905 | 233,950 |
| Chile | 1905 | 1,324 |
| Europe: | | |
| Austria | 1906 | 13,400 |
| Bosnia and Herzegovina | 1905 | 4,129 |
| Hungary | 1905 | 9,943 |
| France | 1906 | 11,200 |
| Germany | 1906 | 52,500 |
| Greece | 1905 | 8,171 |
| Italy | 1906 | 3,000 |
| United Kingdom | 1906 | 22,762 |
| Portugal | 1903 | 30 |
| Russia | 1905 | 426,813 |
| Spain | 1905 | 26,020 |
| Sweden | 1906 | 2,700 |
| Turkey* | 1905 | 28,600 |
| Norway | 1904 | 22 |
| Asia: | | |
| India | 1905 | 253,896 |
| Japan | 1905 | 11,162 |
| Java | 1905 | 1,600 |
| Oceania: | | |
| Queensland | 1905 | 1,517 |
| New Zealand | 1905 | 55 |

* Exports.

### Manganiferous Ores.

The principal manganiferous ores mined in the United States are manganiferous iron ores and manganiferous silver ores. Deposits of high grade manganiferous iron ores occur in the Appalachian region, but there has been no production in recent years. In the Lake Superior district much of the ore contains between 1 per cent. and 10 per cent. metallic manganese, but this ore is not used for the manufacture of ferromanganese or spiegeleisen, the manganese content being often rather an obstacle than a benefit. Manganiferous silver ores occur at Leadville, Col., in large deposits, consisting of a black mixture of manganese and iron oxide, with lead carbonate and silver. The manganese content varies from 10 per cent. to 40 per cent., and according as the manganese is high the iron is low, and conversely. In 1907 the production of manganiferous ores in the United States amounted to 103,844 gross tons. The only portion of the above used in the production of ferromanganese and spiegeleisen was 67,514 tons, valued at $153,328—the Leadville manganiferous silver ore.

At zinc oxide works in New Jersey, in the roasting of crude ore, consisting of a mixture of franklinite and willemite, the bulk of the zinc is removed as zinc oxide and the residuum, a mass of manganese and iron oxide, is used for the manufacture of spiegeleisen and ferromanganese. The production of manganiferous zinc residuum in 1907 was 93,413 tons, valued at $3 a ton, as against $1 a ton for the similar product in 1906 and 1905.

The production of ferromanganese in the United States in 1907 was 55,918 tons, and of spiegeleisen 283,430 tons. The imports for the fiscal year ending June 30, 1907, were 94,543 tons of ferromanganese and 82,423 tons of spiegeleisen.

At the mining exhibition held in London, England, in July, the Gröndal-Kjellin Company, Ltd., showed sections of rails rolled from steel produced in Germany in the Röchling-Rodenhauser modification of the Kjellin induction furnace. About 1500 tons of such rails have been delivered to the Prussian Government, and contracts for 5000 tons have been placed by the French, Swiss and Italian governments.

## American Holdings in Indian Manganese Mines.

In an article recently published by the *Mail*, Madras, India, on manganese mining in India, reference is made to the acquisition by the Carnegie Steel Company of the rich manganese deposit at Ukua-Samnapur in the Ballaghat District of the Central Provinces. In the same district is a deposit at Ramrama, belonging to the Tata Iron & Steel Company, whose plans for the establishment of steel works in India were described fully in *The Iron Age* of July 12, 1906, American, British and Bombay capital being interested. The article says that only a few manganese workings in India are located close to seaports, and the freight charge is a great handicap to the competition of these ores with those of Russia and Brazil. Several British interests have acquired manganese properties in India, including the purchase of mines near Kumasi by the Workington Iron & Steel Company. The mining companies of largest capital are the new Mysore Manganese Company, Ltd., capital £150,000; the General Sandur Mining Company, registered in London in 1907, capital £320,000, and the Central Provinces Prospecting Syndicate, capital £300,000.

Only a few manganese mining companies in India have made a study of the business, and provision was not made against the fall in prices which has come in the past year. Companies with good connections in the steel trade have been able to make forward contracts, one of these being for 1,000,000 tons of ore, to be delivered in the next 10 years. In the summer of 1907 ore containing over 50 per cent. metallic manganese sold at 1 shilling 4 pence per unit, c.i.f., while 1 shilling 3 pence per unit was paid for 47 to 50 per cent. ore, and 1 shilling per unit for ore containing 40 to 47 per cent. metallic manganese. These prices are now down to 10, 9 and 8 pence per unit, respectively. The result is that all but three or four companies have closed their mines. The high manganese content of the Indian ores has made possible their export in large quantities even to the United States, and their high quality would give them a practical monopoly of the American market, it is stated, except for the proximity of the Brazilian mines with their lower freights to this country.

## Advances in Freight Rates.

The advanced rates to Texas common points became effective August 10, raising the charges on the principal manufactures of iron and steel 3 to 6 cents per 100 lb. In line with this movement the Southwestern roads, effective September 1, have raised their rates to Arkansas points, iron and steel articles being advanced 3 to 5 cents, in connection with a horizontal increase of 10 per cent. in class rates. The higher rates from Eastern and Northern points to territory south of the Ohio River were delayed by legal proceedings, but it is now understood that these tariffs will take effect, and their reasonableness will be determined by subsequent proceedings.

The Interstate Commerce Commission has in prospect a year of strenuous work, as the shipping interests in each section where rates are advanced are filing complaints with the commission. A proceeding to contest the reasonableness of a rate involves a vast amount of evidence, and imposes considerable expense on the shippers interested in each case. The litigation will involve revenues of fully $100,000,000 a year from interstate traffic.

The Crescent Portland Cement Company, Wampum, Pa., has commenced erecting a large cement plant, which when completed will have a daily capacity of about 3000 barrels. The eight buildings will be constructed of reinforced concrete, with steel trusses and cement tile roofing. Contract for the concrete work has been let to the National Supply & Construction Company, Ellwood City, Pa.; structural steel work to the Interstate Engineering Company, Bedford, Ohio; roofing to the American Cement Tile Mfg. Company, Wampum, Pa. Contracts have been closed with the Ball & Wood Engine Company, Elizabethport, N. J., for three Ball & Wood engines, 1200-hp., each engine to be directly connected to 1000-kw. Western Electric Company generators, with Western Electric Company, Chicago, for electrical equipment; with Ricard Boiler & Engine Company, Toledo, Ohio, for six 300-hp. McNaul boilers; with the Vulcan Iron Works, Wilkes-Barre, Pa., for six 8 x 125 ft. rotary kilns; with Broomell, Schmidt, Steacy Company, York, Pa., for three rotary clinker coolers; with Raymond Brothers Impact Pulverizer Company, Chicago, for 13 improved pulverizing mills; with Kent Mill Company, New York, for four Maxecon pulverizers; with Thos. Prosser & Son, New York, six 6 x 22 ft. tube mills; with Power & Mining Machinery Company, Cudahy, Wis., for crushers and crushing rolls. Contracts for the balance of the machinery are being let as rapidly as possible. Deliveries of the machinery will commence about September 20, and continue until the mill is completed, which will be about May 1, 1909.

## Mechanical Properties of Seamless Steel Tubing

In a booklet of 94 pages, entitled "The Mechanical Properties of Shelby Steel Tubing," the National Tube Company, Pittsburgh, Pa., presents much valuable information. The data are from advance sheets of a handbook the company is preparing, based on investigations of Prof. Reid T. Stewart. These researches will require considerable time for completion, and as different portions of the work are finished further advance sheets will be promptly available. In the present publication the material is divided into seven sections, as follows: Strength of Tubes to Resist Internal Fluid Pressure; Mechanical Properties of Solid and Tubular Beams; Mechanical Properties of Solid and Tubular Columns and Struts; Safety Factors and Safe Working Fiber Stresses; Properties of Solid and Tubular Beams and Column Sections; Tables of Mechanical Properties of Solid and Tubular Beams of Uniform Cross Section; Tables of the Properties of Shelby Standard Cold Drawn Mechanical Tubing.

Standard handbooks contain little matter that deals directly with the mechanical properties of wrought tubes and pipe, and the 20 tables given in the publication before us are entirely new with the exception of three. Special attention is directed to the table of the mechanical properties of tubes and round bars, which is considered to be in the best form for application to special sizes of mechanical tubing. In the tables devoted to Shelby tubing, the data given are those of most frequent use—namely, the sectional areas, weights, fluid capacities, surface areas, safe internal and external fluid pressures, moments of inertia, section moduli and radii of gyration.

**Interesting to Users of Galvanized Nails.**—The United States Electro Galvanizing Company, 1 to 9 Park avenue, Brooklyn, N. Y., is meeting with gratifying success in introducing its patent automatic galvanizing barrel for galvanizing nails. The company has made arrangements for undertaking the installation of complete plants for users of galvanized nails; the intention being to furnish plants for making nails as well as galvanizing them successfully. The company further asks any user of 1000 lb. up per day to investigate this process, as it claims that a saving of $25 to $30 per ton can be accomplished, so that the cost for an output of 1 ton per day will pay for itself in about four months, and a saving of the same amount will be accomplished thereafter every four months.

The Youngstown Sheet & Tube Company, Youngstown, Ohio, has contracted with the William B. Scaife & Sons Company, Pittsburgh, Pa., for an addition to its present 15,000-hp. water softening and purifying system to provide for the 8000-hp. boilers which are being added for the operation of the new blast furnaces. The present water softening and purifying system is of the We-Fu-Go intermittent type, and consists of four large treating and settling tanks and four mechanical gravity filters. When the additional apparatus is installed the system will consist of six large treating and settling tanks and seven mechanical gravity filters, and the total capacity will provide for 23,000-hp. boilers, or 92,000 gal. of water per hour.

# Trade Publications.

**Foundry Equipment.** — Calumet Engineering Works, Harvey, Ill. Four circulars. Deal respectively with crane ladles, air hoists, foundry equipment (cupolas, ladles and tumblers), and industrial railways and cars. All are illustrated with views of standard equipment.

**Bolt and Nut Machinery.**—Landis Machine Company, Waynesboro, Pa. Catalogue, 6 x 9 in., 40 pages. Several types of bolt cutters arranged for both belt and motor drive are shown, together with a standard Landis pipe and nipple threading machine and Landis die head and a stay bolt cutter, which was described in *The Iron Age* January 30, 1908.

**Soap Machinery.**—Thomas F. Condon & Co., 50 Church street, New York. Catalogue, 6 x 9 in., 27 pages. Illustrates a complete line of soap making machinery, from mixers to wrapping machines. A view of a completely equipped toilet soap plant is given, showing the entire process of manufacture.

**Hydraulic Tools, Cranes and Machinery.**—R. D. Wood & Co., Philadelphia, Pa. Catalogue, 8½ x 10½ in., 122 pages. This volume contains numerous illustrations of a general line of hydraulic equipment, including hydraulic pumps, riveters, flanging presses, forging presses, pumps, beam shears, billet shears, jib cranes, &c.

**Cold Saws.**—Burke Machinery Company, Cleveland, Ohio. Folder. Illustrates a new cold saw built by the company for sawing iron stock and removing sprues from castings. This machine was described in *The Iron Age* June 4, 1908.

**Chaplets and Stems.**—Pawtucket Mfg. Company, Pawtucket, R. I. Folder. Lists prices of wrought iron chaplets and stems and doublehead chaplets, chaplets or anchors and pointed hook chaplets.

**Hoisting Machinery.**—Brown Hoisting Machinery Company, Cleveland, Ohio. Catalogue 0. Given principally to machinery for rapid coal and coke handling, particularly as applied to the needs of artificial gas, coke and electric light companies. Views of some particularly large conveying apparatus are shown and a list of recent installations is given.

**Spline Milling Machines.**—Pratt & Whitney Company, Hartford, Conn. Catalogue, 9 x 12 in., 22 pages. Describes a new type of milling machine particularly designed for slot milling. The machine consists of a frame with two cutter heads cast integral with the frame and having a work-carrying slide which traverses back and forth between the two cutter spindles. Several illustrations are given of the machine complete, its parts and examples of the wide variety of work it will do.

**Water and Steam Boilers.**—Peters Pump Company, Kewanee, Ill. Catalogue No. 5, 6 x 9 in., 23 pages. Includes a treatise on the advantages of hot water heating over other systems, followed by a description of the Gunther hot water and steam boilers, detailing their manufacture and showing a number of standard boilers. It is claimed that the Gunther boiler is the only horizontal boiler constructed on the arch shaped plan, and it is claimed that all the heating surfaces are directly exposed to the fire.

**Roller Grates.**—New England Roller Grate Company, Springfield, Mass. Agent, J. B. Hackett, 5-7 Beekman street, New York. Circulars. One shows the New England roller grate, a recently devised shaking grate. In this grate the whole weight of the grate bars and fire is supported by and moved on anti-friction rollers. Another circular treats of the Lindstrom Corliss valve steam trap, also handled by J. B. Hackett Company.

**Fire Extinguishing Apparatus.**—Waterous Engine Works Company, St. Paul, Minn. Booklet, "Modern Fire Apparatus." Shows a varied line of fire fighting equipment, including gasoline fire engines, automobile fire engines, hose carts, trucks, &c., together with illustrations of tests and views of scenes after fires in villages where there has not been adequate protection

**Vises.**—Globe Vise & Truck Company, Grand Rapids, Mich. Catalogue, 7 x 9 in., 16 pages. Shows several types of Globe quick acting vises. The gripping power of these vises is obtained by the screw and an auxiliary incline. The nut revolves with the screw and is carried backward by an incline on the nut at a point where the threads mesh with the threads on the screw, causing the jaw to grip readily. Vises especially adapted for cabinet makers' use, for ordinary bench work and other special purposes are shown.

**Hot Metal Mixers.**—William B. Pollock Company, Youngstown, Ohio. Supplementary book No. 11. Contains photographs of some 250 and 300 ton hot metal mixers which they have recently built for various steel companies.

**Recording Instruments and Belt Lacing.** — Bristol Company, Waterbury, Conn. Bulletins. No. 30 deals with indicating electric pyrometers, including the switchboard and portable types; No. 39 gives prices of Bristol's patent steel belt lacing for all kinds of belts; No. 41 refers to Bristol voltmeters, ammeters, Wattmeters, portable and standard form gauges, thermometers and water level gauges, and No. 50 to Bristol recording pressure, vacuum and combination gauges.

**Switchboard Panels and Generators.** — Fort Wayne Electric Works, Fort Wayne, Ind. Bulletins. No. 1107, superseding 1089, illustrates and describes the standard A. C. single-phase switchboard panels, giving dimensions and diagrams of the various types. No. 1108, superseding 1073, pertains to the form A multiphase revolving field belted generators, the parts of which are shown. Type AE rheostats, which form part of the equipment, are also dealt with.

**Power Presses.**—Zeh & Hahnemann Company, Newark, N. J. Pamphlet. Gives illustrations and brief specifications of inclinable power, horn, punching, arch, wedge adjustment, straight sided, double crank, armature disk notching, double action screw and drop presses.

**Iron, Brass and Bronze Castings.**—Lackawanna Foundries, Dover, N. J. Catalogue. Size, 9¼ x 12¼ in.; pages, 25. Contains full page half-tone illustrations of the company's works, including the foundry building, shipping room, cast iron foundry room, foundry room and equipment, cupola room, engine room, &c. Some illustrations from old and modern masters of sculpture for reproduction in bronze by the Lackawanna Foundries is given. A brief history of the company and a list of its equipment are included.

**Soldering Coppers.**—Clendenin Brothers, Baltimore, Md. Catalogue. Size, 4 x 9 in. Illustrates and describes soldering coppers for various purposes, including those used by tinners, plumbers and roofers. Special forms of soldering coppers for canners' use are illustrated, including floating, capping and tipping patterns. Other specialties include coppers for soldering trolley wires and gas tips. Copper hammers for machinists' use are likewise shown.

**Superheaters and Boilers.**—Heine Safety Boiler Company, St. Louis, Mo. Two pamphlets, entitled "Superheater Logic" and "Boiler Logic." The first gives very briefly some of the considerations covering superheater design that seem to the company to be logical ones, and following them is a description of the Heine superheater, which is supplemented by illustrations and gives a clear understanding of the apparatus. The other pamphlet is intended to indicate to boiler users, engineers and others the company's position in the boiler field, and gives a complete description of its product, which is materially aided by half-tones and line drawings.

**Anti-Friction Metal.** — Glacier Metal Company, 116 Broad street, New York City. Circular. Size, 6 x 9 in.; pages, 20. Describes and gives results of the use of Glacier metal as a bearing, together with crushing and temperature tests. Illustrates methods of using metal in bearings of various kinds.

**Coal and Ore Handling Machinery.** — Jeffrey Mfg. Company, Columbus, Ohio. Bulletin No. 25. Size, 6 x 9 in.; pages, 48. Contains advance pages from catalogues Nos. 20-A and 28, which are to be issued by the company, and suggests the wide range and superior character of Jeffrey installations for handling coal and ores. The photographs show coal tipples, screens, weigh baskets, chutes, pan carriers, shaking screens, hoisting towers, car hauls, conveyors, crushers, coal washeries, coke bins, bucket elevators, &c. Jeffrey centrifugal mine fan, crab locomotive, A-5 electric rotary drill, and 26-B "Shortwall" coal cutter are also included.

**Gas and Gasoline Engines.**—Du Bois Iron Works, Du Bois, Pa. Catalogue. Deals with Du Bois horizontal gas engines designed to operate on natural gas, illuminating gas or gasoline, and shows the latest improved types for general power purposes and electric lighting service. The operation and construction of the parts are illustrated and described, and tables of dimensions, weights, &c., are given. Bulletin G-No. 8, under the same cover, deals likewise with Du Bois gasoline engines of stationary and portable types.

**Air Brake Valves.**—Westinghouse Air Brake Company, Pittsburgh, Pa. Instruction Pamphlet No. 5034; pages, 28. Describes the type L triple valve, which is of the quick-action, automatic, pipeless type, and is intended for use only in high-speed passenger service. The special features of this valve are four in number, being as follows: Quick recharge, by which a rapid recharging of the brake system is secured; quick service, by which a very quick serial service action of the brakes throughout the train is secured; graduated release, which permits of partially or entirely releasing the brakes on the entire train at will; high emergency cylinder pressure, which greatly increases the available braking power in emergency applications over the maximum obtainable with a full service reduction. Illustrations are given, both perspective and sectional, which enable the accompanying instructions for operation to be thoroughly understood.

**Power Presses.**—Lucas Machine Tool Company, Cleveland, Ohio. Folder calling attention to the Lucas power forcing press, which is controlled by one wheel.

**Continuous Roller Presses.**—Kutztown Foundry & Machine Company, 116 North Broad street, Philadelphia, Pa. Catalogue. These presses are especially adapted for pressing garbage pulp and other slushy materials, particularly where sanitary conditions are required. Sectional views of the press are shown, and it is claimed that one of the principal features of the machine is that the material is not exposed to the air during the process.

## PERSONAL.

E. R. Euston, who has been manager of the New York office of the Stoever Foundry & Mfg. Company for the past six years, has been elected vice-president of the company and general sales manager, with offices at 140 Cedar street, New York. All sales of the company's product will in the future be handled from the New York office. The plant is at Myerstown, Pa., and the product consists of high grade pipe threading and cutting machines and pipe bending machinery.

G. O. Scanland has been appointed acting district manager of the American Car & Foundry Company, at Jeffersonville, Ind. He has been assistant general auditor of the company in St. Louis.

F. P. Van Horne, secretary to President F. N. Hoffstot of the Pressed Steel Car Company, has been appointed assistant treasurer of the company, with headquarters in Pittsburgh. J. H. King succeeds him as secretary to Mr. Hoffstot.

John W. Gates does not aspire to political honor and has declined the nomination for Congress from the district of Texas in which he is conducting important enterprises.

Charles M. Pepper, special trade commissioner of the Department of Commerce and Labor, sailed for England last week. He will spend several months in Great Britain and in Continental countries, gathering data for use in connection with the expected revision of the tariff at Washington in the coming year, and will pay a good deal of attention to the iron industry.

President Thomas P. Egan of the J. A. Fay & Egan Company, Cincinnati, is now in the East. Under his energetic direction, the Cincinnati Chamber of Commerce, of which he was recently elected president, has been growing in importance, and has added many influential members. During his stay in the East it is expected that he will take up several matters of consequence to that organization.

James Gayley, second vice-president of the United States Steel Corporation, has returned from Europe. There have been closed lately contracts for licensing eight furnace companies i this country to use the Gayley dry air process.

## Statistics of Freight on Manhattan Island.

William J. Wilgus, the well-known engineer, has addressed the following letter to a number of leading concerns in New York:

"At the request of the Public Service Commission of the First District, I have made a report on the so-called West Side problem for treating the freight tracks of the New York Central & Hudson River Railroad Company between Spuyten Duyvil and St. John's Park, and in so doing I have made suggestions for a broad plan of improvement in methods of handling freight traffic on lower Manhattan Island.

"It is probable that this report will receive the attention of the commission in September, and in the meantime it is desirable that reasonably accurate statistics should be gathered, showing the tonnage of freight of all kinds handled on Manhattan Island. I have secured from the water and rail carriers the tonnage of inbound and outbound freight, but there is no well defined source through which I can obtain the percentage of the inbound tonnage that is redistributed for consumption in Manhattan. May I therefore ask if it will be possible for you to give me the following information:

"1. Approximate inbound tonnage of your business per annum redistributed in Manhattan.

"2. If you have no records that will enable you to give me the information requested in 1, will you kindly keep an account of your inbound tonnage redistributed in Manhattan for a period of 10 days, and give me the result?

"If the record does not give the tonnage at the most prosperous period of your business, please state the percentage of increase from the tonnage at present.

"I assure you that the information above requested is to be used for the best interests of the city and of its shippers, and that it will be treated as strictly confidential, the names of the firms not to be used in the published data."

## The Horton Wire Drawing Machines in England.

The British Steel & Wire Company has been organized in London. The capital of this company is £225,000 in 125,000 6 per cent. cumulative participating preference shares of £1 each and 100,000 ordinary shares of £1 each. There are offered for subscription 100,000 6 per cent. participating preference shares. They are entitled to a fixed cumulative dividend at the rate of 6 per cent. per annum, and further to one-third of the surplus profits, which may be distributed in dividends for any year. They are also entitled to priority in repayment of capital upon a winding up, and to one-third of the surplus assets after repayment of such preference capital.

The prospectus states that the company is formed to acquire from the Wire Syndicate (which is the promoter as well as the vendor) the patents granted for the manufacture of steel wire by the Horton continuous wire drawing and die setting machines and process, and all improvements upon the inventions of which the vendor may become possessed, and to work them commercially, in addition to an option on about 10 acres of land situated at Trafford Park, near Manchester, upon which it is proposed to erect suitable works.

The chief advantage claimed for this new system is that it effects economies in point of labor cost amounting alone to between 50 to 90 per cent., as compared with the usual methods of drawing wire, from which it differs essentially. The vendor acquires from Frank S. Andrews the rights which it is transferring to the company for £84,500, payable as to £6500 in cash, £14,000 either in cash or fully paid preference shares of the company, and the balance of £64,000 in fully paid ordinary shares of the company. Mr. Andrews acquired the rights in 1907, and has upon the establishment of this company to pay the sum of £6000 in cash. The purchase price payable by the company has been fixed by the vendor at £120,000, payable as to £5000 in cash and £15,000 either in cash or in fully paid up preference shares, at the option of the company, and as to the balance in 100,000 fully paid ordinary shares of the company.

## German Steel Syndicate Shipments.

The annual report of the German Steel Syndicate, which reviews the history of business for the period of April 1, 1907, to March 31, 1908, contains some interesting figures showing the shipments of group A products for the domestic market and for export, in metric tons, as follows:

| | Domestic markets. | Export markets. | Total, 1907-08. | Total. 1906-07. |
|---|---|---|---|---|
| Billets, &c. | 1,187,121 | 269,324 | 1,456,445 | 1,795,328 |
| Rails and track material | 1,624,473 | 744,185 | 2,368,658 | 2,033,237 |
| Shapes | 1,176,136 | 425,759 | 1,601,895 | 1,928,232 |

The shipments of billets were 3.64 per cent. below the allotment of 1,456,445 tons. The rail and track material allotment was 2,383,533 tons, so that the shipments fell 0.62 per cent. below it; while in shapes the shipments were only 1,601,895 tons on an allotment of 2,307,307 tons, thus showing a deficiency of 705,412 tons, or 30.57 per cent. In the previous fiscal year the shipments had been 1,928,232 tons. On the whole the proportions of home and foreign shipments remained fairly stationary in the different lines, the business in rails counterbalancing the falling off in shapes.

The Worth Brothers Company, Coatesville, Pa., at the solicitation of the manufacturers of vanadium, began last week to make some experiments with it in the manufacture of steel plates.

# NEWS OF THE WORKS.

### Iron and Steel.

Rome Furnace, at Rome, Ga., Thos. J. Deane, lessee, was put in blast August 3. Coke iron is being made.

Mary Furnace of the Ohio Iron & Steel Company, Lowellville, Ohio, was blown in July 20 after repairs. Foundry iron is being made, while the last run was on Bessemer iron.

The furnace of the Embree Iron Company, Embreeville, Tenn., which has been out for relining since May 25, is expected to blow in about August 25.

At the recent annual meeting of the Knoxville Iron Company, Knoxville, Tenn., W. P. Chamberlain was elected president; T. I. Stephenson, vice-president and general manager, and O. A. Brown, secretary and treasurer. A quarterly dividend of 1½ per cent. was declared.

No. 2 furnace of the Alabama Consolidated Coal & Iron Company's plant at Ironaton, Ala., has been put in blast after having been relined. This lining was completed by five men in 178 hours, which is considered record time for such work in this district.

The trustees of the Quinn Furnace Company, Gadsden, Ala., which was thrown into bankruptcy a few months ago, have made application to the Federal Court to sell the property. Some time ago the trustees were granted permission to operate the furnace in order to work up the raw material on hand for the benefit of the creditors, which has been done.

Eight trains of 40 cars each were required to transport the 13,000-ton first order of ore en route from the Mesaba Range from Toledo, Ohio, to the new blast furnace of the Hamilton Iron & Steel Company at Hamilton, Ohio. Two boats were employed in the lake portion of the shipment, of 6000 and 7000 tons capacity each. The first cargo came into Toledo aboard the lake freighter Edward N. Ohl, which by a singular coincidence is the name of the vice-president of the consignee company. It is expected that the new stack will be blown in the last week of the current month.

### General Machinery.

The Watkins Machine & Foundry Company, Hattiesburg, Miss., has increased its capital stock to $100,000.

R. L. Ahles, president of the Sweet's Steel Company, Williamsport, Pa., who purchased the plant of the Demorest Mfg. Company, has incorporated the Lycoming Foundry & Machine Company, with a capital stock of $50,000, to continue the business. The new company will do a general foundry and machine business and will also continue the manufacture of sewing machines and operate the japanning and nickeling departments.

The Lexington Railway Company, Lexington, Ky., has let contract for the construction of a car barn, 100 x 200 ft., part of which is to be equipped as a repair shop, the latter including machine shop, blacksmith shop, carpenter shop and paint shop. The company also contemplates enlarging its power plant. Work has been started on the construction of a 12-mile interurban line to Nicholasville, Ky., and 56 interurban cars have been delivered from the builder, the J. G. Brill Company, Philadelphia. John B. Crawford is general manager.

### Power Plant Equipment.

The Board of Trustees of Rockville, Ind., will receive bids until August 24 for a water works plant, to consist of a brick pumping station, two vertical boilers, two 170-gal. horizontal duplex pumps, and about 2½ miles of 6 or 8 in. cast iron pipe. Plans and specifications may be obtained from F. E. Strouse, engineer, Rockville, or Dabney H. Maury, consulting engineer, Peoria, Ill.

The Chaumont Electric Light Company, Chaumont, N. Y., has closed a deal for the purchose of a lot on Mill street, and will soon start construction of a fireproof brick building, 25 x 50 ft., one story high, for the accommodation of its steam engine, boiler and dynamo. At some later date the company contemplates the installation of a steel tube flume and water turbines.

Contract has been awarded to A. L. Willey, Binghamton, N. Y., for reinforced concrete septic tanks and pumping equipment for sewage disposal plant for Lancaster, N. Y., which includes two vertical centrifugal pumps direct connected to motors, 500 gal. capacity.

### Foundries.

The American Malleable Company, Lancaster, N. Y., has had plans prepared for a one-story brick addition, 100 x 200 ft., to its foundry, which it will build at once.

The Junction City Mfg. Company, Junction City, Ga., expects to have its plant in operation by February 1, manufacturing stoves, ranges and hollow ware. Furnace and other equipment will be purchased shortly. C. W. Moore is president.

Superintendent Flynn of the Board of Public Works, Fulton, N. Y., is in the market for 350 ft. of 18-in. cast iron pipe, to be used in relaying the sewer along the canal banks out of the Oswego Falls Pulp & Paper Company's plant.

### Bridges and Buildings.

The Ketcham Iron Works Company, New York, has been awarded the contract by the New York Central Railroad, at $75,000, for furnishing and erecting the steel work for the new erecting shop at West Albany. The building is to be 90 x 450 ft.

The National Metal Molding Company has decided to enlarge its factory at Economy, Pa. Contract for the structural steel work has been awarded to the Wm. B. Scaife & Sons Company, Pittsburgh, Pa.

### Fires.

The main building of the Jenkins Rubber Company, Elizabeth, N. J., was destroyed by fire August 6, the loss being about $50,000.

The automobile repair shop of Dalley & Schill, Philadelphia, Pa., was damaged $10,000 by fire August 8.

The knitting mill of the Jonesville Mfg. Company, at Jonesville, S. C., was destroyed by fire August 10, the loss being about $150,000.

### Hardware.

In a recent issue reference was made to the formation of a company with a capital stock of $15,000, by Wesley Kouns, Salina, Kan., for the manufacture of the Kouns galvanized steel hay and grain rake, loader and stacker combined, and galvanized steel push rakes. The amount of capital stock as thus stated was in error, as Mr. Kouns already has $50,000 represented in his business, with subscription papers out for $100,000, making the total capital $150,000.

The Franklin Stove Company, Columbus, Ohio, has lately been incorporated with the following officers: F. Habercorn, president; J. W. Hastings, vice-president; C. A. Evans, secretary, and P. C. Carroll, treasurer, these persons with Mrs. Barbara Habercorn constituting the Board of Directors. The company's officers are men who have had large experience in the stove manufacturing line, Mr. Habercorn having been a designer for more than 20 years with one of the largest stove concerns in the country. The company will manufacture a general line of gas ranges and heaters and at the present time is designing a gas heater that, we are advised, will be a work of art and be constructed on the most modern plan as regards economy, durability and efficiency of service. Mr. Hastings is general manager and Mr. Carroll superintendent of the plant.

The large chimney of the New Haven Machine Screw Company's plant, at New Haven, Conn., which was struck by lightning on the 5th inst., has been repaired and the company is running full time and catching up on orders which were delayed owing to the mishap.

### Miscellaneous.

The Kerr Murray Mfg. Company, Fort Wayne, Ind., has been awarded a contract by the Citizens' Gas Company, Indianapolis, Ind., for the construction of a storage gas holder of 1,000,000 cu. ft. capacity, the dimensions of the steel tank being 31 x 125 ft. The holder is to have three lifts or sections, and steel web plate columns and lattice girders, the tank connections to be 24 in. in diameter. A relief holder of single lift type in steel tank for the water gas set of 20,000 cu. ft. will also be constructed. The contract price for this work is $65,000.

The Board of Trustees of the Department of Water Works of Evansville, Ind., will receive bids until September 24 for the construction of a mechanical filtration plant, consisting of foundations, coagulating basins, 12 filter units, together with suitable buildings, chemical storage, necessary machinery and equipment.

The reports of the recent burning of the Buffalo, N. Y., plant of the E. J. Jones Company, Boston, Mass., manufacturer of steel, brass, bronze and bell metal balls, were much exaggerated. The damage to the plant was only slight, and the company expects to have it in operation within the next three weeks.

John W. Danforth & Co., 72 Ellicott street, Buffalo, N. Y., has received contract for high pressure piping, exhaust steam piping, cold water piping and oil piping to be installed at the plant of the Wickwire Steel Company, on Rattlesnake Island, Niagara River, north of Buffalo. The installation will consist of eight 500-hp. water tube gas burning Sterling boilers, 14, 10 and 8 in. wrought iron high pressure piping, 42-in. exhaust main and 16, 18 and 24 in. cast iron piping.

The American District Steam Company will at once rebuild its plant at North Tonawanda, N. Y., recently damaged by fire to the extent of $150,000. Plans have been prepared for the construction of two large brick and steel buildings to replace those destroyed.

L. H. Durland, Son & Co., Watkins, N. Y., have been awarded the contract for an extensive water works system, to be installed at the Starkey Seminary in Lakemont. The contract includes over 60,000 lb. of 4-in. cast iron pipe.

The recent note in these columns concerning the option on the old plant of the Susquehanna Hardware Mfg. Company, at Susquehanna, Pa., by the Will & Baumer Company, Syracuse, N. Y., was incorrect in stating that the company has an interest in the Susquehanna Hardware Mfg. Company or the Brass Specialty Company, it having no interest whatsoever in the latter companies.

Negotiations are under way for the consolidation of the Maxwell-Briscoe Motor Company, Tarrytown, N. Y., and the Buick Motor Company, Flint, Mich., under the name of the International Motor Company.

# The Iron and Metal Trades

Those who are impatiently expecting a rapid improvement in the demand for Iron and Steel seem doomed to disappointment. There is a gradual, expanding tendency in the demand, but it is not without its halts here and there.

Having made liberal sales, and being in a good position for months to come, the leading Southern furnaces are naming $12.50 and $13 at furnace for No. 2 Foundry, which is equivalent to withdrawing from the market, since other sellers are naming $12, and the furnace companies in the competitive territory north of the Ohio and the Potomac are willing to sell at old prices.

It is estimated that there was a stock in Birmingham and north Alabama yards, in the first days of this month, of 67,500 tons, not counting Iron for Steel making purposes.

There has been a fair tonnage of Foundry Iron orders in New England, the bulk of which has been taken by Buffalo furnaces on the basis of $15 at furnace for No. 2 Foundry. Quite a number of serious inquiries are at hand in nearly all the leading distributing markets, and many moderate sized orders are being taken at practically unchanged prices for Northern Irons, the Valleys being on the basis of $14.50 for No. 2 Foundry.

A transaction worthy of notice in Steel is the sale of 6000 tons of Rolling Billets, 1½ to 3 in., in the Chicago District, to a Horse Shoe manufacturer. In Cleveland there is an inquiry for 5000 tons of Coiled Rods for the manufacture of small Bolts.

In the Rail trade the only large sale has been that of 28,000 tons of Steel Rails for the Cananea, Yaqui River & Pacific to be shipped around the Horn to Guaymas, Mexico. The Canadian Commission is in the market for 43,000 tons, of which a part will probably come to this side. The McKenzie-Mann order for 20,000 tons has not yet been placed.

Car builders are figuring on 7000 cars for the Harriman lines, the first order of magnitude for many months.

Only moderate business has been done by the Structural mills, and a number of the large contracts are still in abeyance. There is a fresh inquiry for 4600 tons for Bridge work for the Long Island Railroad, and the Harriman lines, too, are to call for material.

In the lighter lines, specifications are improving, and the mills are gaining in the rate of operations. This is particularly true of Steel Bars. The Wire trade is moving along and the Sheet mills are better employed. A heavier tonnage of orders is expected in Merchant Steel, a number of leading agricultural implement makers having concluded after a conference that they will enter the market.

Export markets are showing a more cheerful tone and business is developing. Among the inquiries is a lot of 6000 tons of Ingots for Italy. In spite of the apparently high relative level of Southern Iron, as compared with Middlesbrough, small quantities of Pig Iron from the Alabama District are finding their way into the European markets.

Electrolytic Copper has advanced again, and sales have been made at 13.85c. September Lake Copper has fetched 14c. A good deal of metal has been sold to domestic consumers on the rise.

## A Comparison of Prices.

**Advances Over the Previous Month in Heavy Type, Declines in Italics.**

At date, one week, one month and one year previous.

| | Aug. 12, 1908. | Aug. 5, 1908. | July 8, 1908. | Aug. 14, 1907. |
|---|---|---|---|---|
| **PIG IRON,** Per Gross Ton: | | | | |
| Foundry No. 2, Standard, Philadelphia | $16.50 | $16.50 | $16.50 | $22.00 |
| Foundry No. 2, Southern, Cincinnati | 15.25 | 15.00 | 15.25 | 23.25 |
| Foundry No. 2, Local, Chicago | *17.00* | 17.00 | 17.50 | 24.50 |
| Basic, delivered Eastern Pa. | *15.00* | 15.00 | 15.25 | 21.00 |
| Basic, Valley Furnace | *14.75* | 15.00 | 15.00 | 21.00 |
| Bessemer, Pittsburgh | *16.30* | 16.40 | 16.90 | 22 90 |
| Gray Forge, Pittsburgh | *14.65* | 14.90 | 14.90 | 21.90 |
| Lake Superior Charcoal, Chicago | *19.50* | 19.50 | 20.00 | 27.50 |
| **BILLETS, &c.,** Per Gross Ton: | | | | |
| Bessemer Billets, Pittsburgh | 25.00 | 25.00 | 25.00 | 29.50 |
| Forging Billets, Pittsburgh | 27.00 | 27.00 | 27.00 | 33.00 |
| Open Hearth Billets, Phila | 26.20 | 26.20 | 26.20 | 31.75 |
| Wire Rods, Pittsburgh | 33.00 | 33.00 | 33.00 | 36.00 |
| Steel Rails, Heavy, Eastern Mill | 28.00 | 28.00 | 28.00 | 28.00 |
| **OLD MATERIAL,** Per Gross Ton: | | | | |
| Steel Rails, Melting, Chicago | **14.25** | 13.50 | 12.50 | 17.00 |
| Steel Rails, Melting, Phila | **14.50** | 14.50 | 13.50 | 17.50 |
| Iron Rails, Chicago | **16.50** | 16.50 | 15.50 | 20.75 |
| Iron Rails, Philadelphia | **19.00** | 19 00 | 18.00 | 20.50 |
| Car Wheels, Chicago | **15.50** | 15.00 | 13.00 | 24.50 |
| Car Wheels, Philadelphia | **14.50** | 14.50 | 13.50 | 23.50 |
| Heavy Steel Scrap, Pittsburgh | **15.00** | 14.75 | 14.00 | 17.75 |
| Heavy Steel Scrap, Chicago | **13.00** | 12.50 | 11.25 | 15.00 |
| Heavy Steel Scrap, Philadelphia | **14.50** | 14.50 | 13.50 | 17.00 |
| **FINISHED IRON AND STEEL,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Refined Iron Bars, Philadelphia | **1.40** | 1.40 | 1.35 | 1.85 |
| Common Iron Bars, Chicago | 1.50 | 1.50 | 1.50 | 1.78 |
| Common Iron Bars, Pittsburgh | 1.40 | 1.40 | 1.40 | 1.70 |
| Steel Bars, Tidewater, New York | 1.56 | 1.56 | 1.56 | 1.86 |
| Steel Bars, Pittsburgh | 1.40 | 1.40 | 1.40 | 1.60 |
| Tank Plates, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Tank Plates, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Beams, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Beams, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Angles, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Angles, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Skelp, Grooved Steel, Pittsburgh | 1.45 | 1.45 | 1.45 | 1.85 |
| Skelp, Sheared Steel, Pittsburgh | 1.50 | 1.50 | 1.50 | 1.95 |
| **SHEETS, NAILS AND WIRE,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Sheets, No. 27, Pittsburgh | 2.40 | 2.40 | 2.40 | 2.50 |
| Wire Nails, Pittsburgh | 1.95 | 1.95 | 1.95 | 2.00 |
| Cut Nails, Pittsburgh | 1.75 | 1.75 | 1.75 | 2.10 |
| Barb Wire, Galv., Pittsburgh | 2.40 | 2.40 | 2.40 | 2.45 |
| **METALS,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Lake Copper, New York | **14.00** | 13.60 | 12.87½ | 19.00 |
| Electrolytic Copper, New York | **13.85** | 13.50 | 12.62½ | 18.00 |
| Spelter, New York | **4.75** | 4.80 | 4.45 | 5.75 |
| Spelter, St. Louis | **4.62½** | 4.70 | 4.30 | 5.65 |
| Lead, New York | **4.60** | 4.60 | 4.50 | 5.15 |
| Lead, St. Louis | **4.45** | 4.45 | 4.35 | 5.00 |
| Tin, New York | **30.50** | 30.70 | 28.05 | 36.20 |
| Antimony, Hallett, New York | *8.00* | 8.00 | 8.25 | 9.00 |
| Nickel, New York | 45.00 | 45.00 | 45.00 | 45.00 |
| Tin Plate, 100 lb., New York | $3.89 | $3.89 | $3.89 | $4.09 |

## Chicago

FISHER BUILDING, August 12, 1908.—(*By Telegraph.*)

The distinctive feature of the market is the better feeling that pervades every department. That it is not wholly founded on sentiment is evident from the progressive improvement seen in nearly all lines. Practically, all the impetus to market movements is supplied by the present and prospective strength of the agricultural interests, the railroads not yet having contributed much to help things along. Until they enter the market in a more nearly normal way, there will be lacking the volume of business necessary to fully supply Iron and Steel plant capacities. A slight increase in general railroad purchases is noticed, and it is probable that they will continue to grow rather than diminish; but no general movement involving the placing of large orders is yet in sight. The receipt of specifications of fair tonnage for Standard Section Rails has extended the rolling schedule of the South Works Rail mill which continues to run at about 50 per cent. capacity. The Steel Bar mills are also running a little fuller, though in view of the large contracts placed by implement makers' specifications are not coming out as freely as they should. A larger volume of orders is expected as soon as these interests get fairly started on their output for the spring trade. Quite a number of contracts for Structural Material are being closed by fabricators, but they include no projects involving important tonnage, being made up mainly of small building structures and work of a miscellaneous character. There is a noticeable scarcity of railroad bridge work, which earlier in the season was fairly active. In other lines of finished material

the demand is slowly growing better, and is particularly strong in Wire and Wire Products. With present active furnace capacity fairly well filled for the last half, Southern furnaces are generally taking a more determined stand respecting prices, which are now fairly strong at $12 to $12.50, Birmingham. No buying of consequence is reported at the latter figure, but there are fewer sellers at the minimum price. There is no doubt that the foundry melt is increasing, though the implement foundries continue to be the chief contributors to this activity. Scrap is in good demand, with an upward tendency in values which has this week resulted in further advances on a few grades. The appearance in the market of some of the leading Car Wheel foundries as buyers has had the effect of raising Old Wheels to $16, and even this price has not resulted in bringing out any large lots. Following an upward turn in Copper, which advanced the price about ½c. per pound, buyers came into the market last week for more liberal quantities than have been traded in for some time. Orders for carloads and for lots of larger size from important consumers were not infrequent, and some buyers covered for requirements 60 to 90 days ahead.

**Pig Iron.**—From a condition of sentimental strength Southern Iron has advanced to a distinctly firmer position, which practically eliminates the minimum price of $11.50, Birmingham, base, that for some time has been available from a few furnaces. This result is doubtless due in a large measure to the recent liberal buying by the Pipe interests, which within the past two weeks have contracted for quantities aggregating upward of 50,000 tons, and the effects of unsettled labor conditions growing out of the coal miners' strike in that territory. All the leading Alabama and Tennessee furnaces are now holding at $12.50 for deliveries through the last half and a few have advanced to $13. Woodstock, at Anniston, which up to a week ago was accepting orders at $12, is among the latter class, having this week raised its price to $13. There are, however, a few sellers who are apparently willing to take on lots of moderate tonnage at $12, but even this price is far less general than was the case a week ago. Some inquiries are beginning to come in for deliveries, extending through the first quarter, but they are regarded as wholly tentative and have so far failed to develop into orders. Furnace interests generally are not inclined to fill up their capacity that far ahead at the present prices, so that trading is confined to last half deliveries. Orders for moderate lots were more numerous for the week just closed than for two or three weeks previous. Inquiries also are more plentiful, though they include no individual tonnage of important size. Among these is one for 1500 tons from a local stove foundry and another for 1000 tons from a manufacturer of machinery. A Northern Malleable foundry, whose product is principally taken by the railroads, is in the market for 2000 tons of Charcoal Malleable. The position of the Northern furnaces is essentially the same as it was a week ago, the prevailing price being $17, at furnace. Owing to the uneven distribution of work among the jobbing foundries it is difficult to determine to what extent they have shared in the general improvement, though it is believed that there is a slight increase in their average melt. The following quotations are for August and September delivery, f.o.b. Chicago:

| | |
|---|---|
| Lake Superior Charcoal | $19.50 to $20.00 |
| Northern Coke Foundry, No. 1 | 17.50 to 18.00 |
| Northern Coke Foundry, No. 2 | 17.00 to 17.50 |
| Northern Coke Foundry, No. 3 | 16.50 to 17.00 |
| Northern Scotch, No. 1 | 18.00 to 18.50 |
| Southern Coke, No. 1 | 16.85 to 17.35 |
| Southern Coke, No. 2 | 16.35 to 16.85 |
| Southern Coke, No. 3 | 15.85 to 16.35 |
| Southern Coke, No. 4 | 15.35 to 15.85 |
| Southern Coke, No. 1 Soft | 16.85 to 17.35 |
| Southern Coke, No. 2 Soft | 16.35 to 16.85 |
| Southern Gray Forge | 14.85 to 15.35 |
| Southern Mottled | 14.60 to 15.10 |
| Malleable Bessemer | 17.50 to 18.00 |
| Standard Bessemer | 18.40 to 18.90 |
| Jackson Co. and Kentucky Silvery, 6 % | 19.90 to 20.40 |
| Jackson Co. and Kentucky Silvery, 8 % | 20.90 to 21.40 |
| Jackson Co. and Kentucky Silvery, 10 % | 22.90 to 23.40 |

(*By Mail.*)

**Billets and Rods.**—Last week's transactions included the placing of 6000 tons of 1½ to 3 in. Rolling Billets by the Phoenix Horseshoe Company with the leading local producer. This constitutes the most important tonnage reported for many weeks. A few carload orders for Forging Billets are being entered, and some improvement in inquiries from the smaller users is noted. The price of Forging Billets remains at $28.50, base, Chicago. Reflecting the gradual increase in demand for Wire Products, a decidedly better movement in Wire Rods is noticed. Regular quotations, which are reported to be firmly held, are as follows: Bessemer, $33; Basic, $34; Chain, $33, all at Pittsburgh.

**Rails and Track Supplies.**—No orders of important tonnage for Standard Section Rails have been entered during the week, the principal item being 1500 tons placed by the Baltimore & Ohio with the Illinois Steel Company. Specifications against existing contracts are being furnished in fairly liberal volume, which enables the South Works mill to continue in operation at about 50 per cent. of capacity. Business in Light Rails is gradually increasing, the entry of orders for the past 10 days being at the rate of about 4000 tons per month. An encouraging feature in this connection is a stronger tendency toward firmer prices on Light Rails, which are no longer subject to the extreme concessions that have been made from regular prices. Prices are now fairly firm, at $25. While no orders of notable size for Track Supplies have been received, the demand is becoming more general, and prompt shipment is almost invariably demanded. Of 480 tons of Tie Plates secured by the Pennsylvania Steel Company, 400 tons was placed by the Delaware, Lackawanna & Western, and 80 tons by the Chicago Railways Company. We quote as follows: Angle Bars, accompanying Rail orders, 1908 delivery, 1.50c.; car lots, 1.60c.; Spikes, 1.80c. to 1.90c., according to delivery; Track Bolts, 2.20c. to 2.25c., base, Square Nuts, and 2.35c. to 2.40c., base, Hexagonal Nuts. The store prices on Track Supplies range from 0.15c. to 0.20c. above mill prices. Light Rails, 25 to 45 lb., $28; 20-lb., $29; 16-lb., $30; 12-lb., $31. Standard Sections, $28, f.o.b. mill, full freight to destination.

**Structural Material.**—Building structures and miscellaneous work supplied practically all of the tonnage taken by fabricators in the past week. Included in the 1700 tons secured by the American Bridge Company was an order of 1000 tons from the Bitter Root Valley Irrigation Company for an irrigation pipe line near Hamilton, Mont. An order for 500 tons for the Meyer-Simon Company Building at Kansas City went to the Kansas City Structural Steel Company, to whom was also awarded the contract for a tank building to be erected by the Armour Packing Company, Kansas City. An order for 105 tons for the Auerbach Theatre, Salt Lake City, Utah, was taken by Silver Brothers of that city. It is expected that the fabricated work for the Meier-Frank Building, Portland, Ore., will be let to-day. The only local work of note included in the week's transactions was 800 tons for the Northwestern Elevated extension, which was awarded by the Brennen Construction Company, general contractors to the Morava Construction Company. While some extremely low prices are still heard of, it is believed that competition of this character is not so general as it was. Prices from store are 1.95c. to 2c. Mill prices at Chicago are as follows: Beams and Channels, 3 to 15 in., inclusive, 1.78c.; Angles, 3 to 6 in., ¼-in. and heavier, 1.78c.; larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 15 in., 1.88c.; Zees, 3 in. and over, 1.78c.; Tees, 3 in. and over, 1.83c.

**Plates.**—While the business offered includes no large tonnages, there is, nevertheless, a noticeable improvement in the general volume of orders. The fact that boiler shops and other Plate users are coming into the market more frequently indicates a better consumptive demand. Were it not that the mills are able to make unusually prompt shipments, the buying would of necessity be less of a hand to mouth character. As it is, consumers feel safe in restricting their purchases to immediate needs and are not disposed to place extensive stock orders. We quote mill shipments as follows: Tank Plates, ¼-in. and heavier, wider than 6¼ and up to 100 in. wide, inclusive, car lots, Chicago, 1.78c.; 3-16 in., 1.88c.; Nos. 7 and 8 gauge, 1.93c.; No. 9, 2.03c.; Flange quality, in widths up to 100 in,, 1.88c., base, for ¼-in. and heavier, with the same advance for lighter weights; Sketch Plates, Tank quality, 1.88c.; Flange quality, 1.98c. Store prices on Plates are as follows: Tank Plates, ¼-in. and heavier up to 72-in. wide, 2c. to 2.10c.; from 72 to 96 in. wide, 2.10c. to 2.20c.; 3-16 in. up to 60 in. wide, 2.10c. to 2.25c.; 72 in. wide, 2.30c. to 2.40c.; No. 8, up to 60 in wide, 2.10c. to 2.15c.; Flange and Head quality, 0.25c. extra.

**Sheets.**—As far as local mill operations are concerned there is no distinct improvement to record; nor can it be said, on the other hand, that there is less doing than a week ago. The same conservative practice of buying in small lots for immediate consumption is generally adhered to by all manufacturing interests, and jobbers are not increasing their stocks beyond the actual needs of replenishment. With the exception of occasional slight concessions made by a few small producers, prices are firmly maintained. We quote mill shipments as follows, Chicago: Blue Annealed, No. 10, 1.98c.; No. 12, 2.05c.; No. 14, 2.08c.; No. 16, 2.18c.; Box Annealed, Nos. 17 to 21, 2.43c.; Nos. 22 to 24, 2.48c.; Nos. 25 and 26, 2.53c.; No. 27, 2.58c.; No. 28, 2.68c.; No. 29, 2.78c.; No. 30, 2.88c.; Galvanized Sheets, Nos. 10 to 14, 2.63c.; Nos. 15 and 16, 2.83c.; Nos. 17 to 21, 2.98c.; Nos. 22 to 24, 3.13c.; Nos. 25 and 26, 3.33c.; No. 27, 3.53c.; No. 28, 3.73c.; No. 30, 4.23c.; Black Sheets from store: Blue Annealed, No. 10, 2.15c.; No. 12, 2.20c.; No. 14, 2.25c.; No. 16, 2.35c.; Box Annealed, Nos. 18 to 21, 2.60c.; Nos. 22 to 24, 2.65c.; No. 26, 2.70c.; No. 27, 2.75c.; No. 28, 2.85c.; No. 30, 3.25c.; Galvanized from store: Nos. 10 to 16, 3c.; Nos. 18 to 20, 3.15c.; Nos. 22 to 24, 3.30c.; No. 26, 3.50c.; No. 27, 3.70c.; No. 28, 3.90c.; No. 30, 4.40c. to 4.45c.

**Bars.**—Interest in Steel Bars now centers mainly in specifications, and within the past week these have begun to come out in considerably better volume. All the mills in this district are running to fuller capacity, and the prospects are

good for increased activity within the next few weeks. The Implement makers are not specifying far ahead, but it is noticed that they are asking for prompt shipment on every order. Under present conditions no difficulty is experienced by the mills in meeting these requirements, but as they fill up with work slower execution and shipment of orders will result, which will naturally lead to more liberal specifications. The Bay View mills of the Illinois Steel Company has six of its seven mills in operation this week. The demand for Bar Iron holds fairly even, and is on the whole slightly improved, but like other mill products its movement is controlled by the present requirements of consumers, which seem to be pretty generally increasing, though in a very gradual way. Prices, we are advised, are being uniformly maintained. Quotations, Chicago, are as follows: Steel Bars, 1.58c., with half extras; Iron Bars, 1.50c.; Hoops, No. 13 and lighter, 1.98c., full extra Hoop card; Bands, No. 12 gauge and heavier, 1.58c., half extra Steel Bar card; Soft Steel Angles and Shapes, 1.68c., half extras. Store prices are as follows: Bar Iron, 2c. to 2.15c.; Steel Bars, 1.90c. to 2c.; Steel Bands, 1.90c., as per Bar card, half extras; Soft Steel Hoops, 2.25c. to 2.35c., full extras.

**Merchant Pipe.**—While the market is bare of large orders, buying is generally of a more liberal character, so that in the aggregate each month's business shows a moderate gain. The point has not yet been reached where jobbers are ready to place orders in anticipation of future demand, but the maintenance of stocks adequate to meet current requirements necessitates more frequent and somewhat larger purchases. The effect of prompt mill shipment, here as elsewhere, operates against the necessity for accumulating stocks. The following mill discounts, which are reported to be uniformly held, are quoted as follows: Black Pipe, ¾ to 6 in., 73.2; 7 to 12 in., 70.2; Galvanized, ¾ to 6 in., 63.2. These discounts are subject to one point on the base. From store, in small lots, Chicago jobbers quote 73 per cent. on Black Steel Pipe, ¾ to 6 in. About three points above these prices is asked for Iron Pipe.

**Boiler Tubes.**—Reflecting a moderate degree of improvement in Boiler shop activities, there is a little better demand for Merchant Tubes, although the progress in this direction has not yet assumed definite proportions. The movement in Locomotive Tubes is relatively better, but as yet the railroads are buying only in a desultory way for necessary repair work. Mill quotations for future delivery on the base sizes are as follows: 2¾ to 4½ in., inclusive, Steel Tubes, 63.2; Iron, 50.2; Seamless, 50.2; 2½ in. and smaller, and lengths over 18 ft., and 2½ in. and larger, and lengths over 22 ft., 10 per cent. extra. Store prices are as follows:

| | Steel. | Iron. | Seamless. |
|---|---|---|---|
| 1 to 1½ in. | 35 | 35 | 35 |
| 1¾ to 2¼ in. | 50 | 35 | 35 |
| 2½ in. | 52½ | 35 | 35 |
| 2¾ to 5 in. | 60 | 47½ | 47½ |
| 6 in. and larger | 50 | 35 | .. |

**Merchant Steel.**—A few straggling contracts from the implement makers are still being closed, but the great tonnage in this line has already been placed. Specifications are slower than usual in coming out, but are gradually increasing in volume. Trade in Shafting is extremely quiet, and some concessions from regular discounts are being made on desirable orders. We quote as follows: Planished or Smooth Finished Tire Steel, 1.78c.; Iron Finish, up to 1½ x ½ in., 1.73c., base, Steel card; Iron Finish, 1½ x ½ in. and larger, 1.58c., base, Tire card; Channels for solid Rubber Tires, ¾ to 1 in., 2.08c., and 1⅛ in. and larger, 1.98c.; Smooth Finished Machinery Steel, 2.08c.; Flat Sleigh Shoe, 1.63c.; Concave and Convex Sleigh Shoe, 1.83c.; Cutter Shoe, 2.05c.; Toe Calk Steel, 2.13c.; Railroad Spring, 1.98c.; Crucible Tool Steel, 7¼c. to 8c., and still higher prices are asked on special grades. Cold Rolled Shafting on contracts for 100 tons and over, 57 per cent. off; 56 per cent. off in car lots; 52 per cent. in less than car lots, on which carload freight is allowed within base territory.

**Cast Iron Pipe.**—Outside of regular routine business but little tonnage was entered by founders during the week. What few lettings were awarded were of unimportant size, none of them exceeding 300 tons. The city of Cheyenne, Wyo., is reported to be negotiating for 1000 tons, which it is understood has not yet been placed. We quote nominally, per net ton, Chicago, as follows: Water Pipe, 4 in., $27; 6 to 12 in., $26; 16-in. and up, $25, with $1 extra for Gas Pipe.

**Old Material.**—The Scrap market has not only held the advance in values made in the past few weeks, but on some of the leading grades prices are this week from 25c. to 50c. a ton higher. As far as can be learned, there have been no lots of considerable tonnage taken by consumers, though inquiries in the market from such sources has had a strengthening influence. The recent moderate tonnages offered by the railroads have been disposed of at fair prices, the most of it going to dealers. A lot of 200 tons of Frogs, Switches and Guards sold by the Chicago & Northwestern is reported to have brought $14.80 per gross ton. Old Car Wheels are decidedly stronger, $16 having been realized on recent sales of small lots. A large amount of Old Car Wheels bought speculatively at low prices by dealers is being held for a wide margin of profit on an ultimate rise in the market, and very few holdings of this character are available to purchasers at the present level. Trading is, therefore, confined principally to the small lots offered by the railroads. The following lists are scheduled for disposal this week: Atchison, Topeka & Santa Fé, 1800 tons; Cincinnati, Hamilton & Dayton, 665 tons; Chicago, Milwaukee & St. Paul, 1075 tons; Chicago & Alton, 100 tons. We quote, per gross ton, f.o.b. Chicago, as follows:

| | |
|---|---|
| Old Iron Rails | $16.50 to $17.00 |
| Old Steel Rails, rerolling | 15.50 to 16.00 |
| Old Steel Rails, less than 3 ft. | 14.25 to 14.75 |
| Relaying Rails, standard sections, subject to inspection | 19.00 to 20.00 |
| Old Car Wheels | 15.50 to 16.00 |
| Heavy Melting Steel Scrap | 13.00 to 13.50 |
| Frogs, Switches and Guards, cut apart | 14.50 to 15.00 |
| Mixed Steel | 10.25 to 10.75 |

The following quotations are per net ton:

| | |
|---|---|
| Iron Fish Plates | $15.50 to $16.00 |
| Iron Car Axles | 17.50 to 18.00 |
| Steel Car Axles | 16.50 to 17.00 |
| No. 1 Railroad Wrought | 12.50 to 13.00 |
| No. 2 Railroad Wrought | 11.25 to 11.75 |
| Railway Springs | 12.50 to 13.00 |
| Locomotive Tires, smooth | 13.00 to 13.50 |
| No. 1 Dealers' Forge | 10.00 to 10.50 |
| Mixed Busheling | 7.50 to 8.00 |
| Iron Axle Turnings | 6.75 to 7.25 |
| Soft Steel Axle Turnings | 6.75 to 7.25 |
| Machine Shop Turnings | 6.75 to 7.25 |
| Cast Borings | 5.25 to 5.75 |
| Mixed Borings, &c | 5.00 to 5.50 |
| No. 1 Mill | 7.50 to 8.00 |
| No. 2 Mill | 6.00 to 6.50 |
| No. 1 Boilers, cut to Sheets and Rings | 9.50 to 10.00 |
| No. 1 Cast Scrap | 12.75 to 13.25 |
| Stove Plate and Light Cast Scrap | 11.00 to 11.50 |
| Railroad Malleable | 12.00 to 12.50 |
| Agricultural Malleable | 11.00 to 11.50 |
| Pipes and Flues | 9.50 to 10.00 |

**Metals.**—A definite rise in Copper has been followed by a buying movement, which, though moderate, is of a more pronounced character than has been noted during the present year. In addition to a considerable increase in carload buying, some of the larger consumers have come in for round lots representing forward requirements. Other Metals are sympathetically stronger without any distinct advances. While Old Metals have not moved up correspondingly a more active movement has developed, which if sustained will probably result in raising these values from their present low levels. We quote as follows: Casting Copper, 14c.; Lake, 14¼c. to 14½c., in carlots for prompt shipment; small lots, ¼c. to ⅜c. higher; Pig Tin, car lots, 33c.; small lots, 35c.; Lead, Desilverized, 4.65c. to 4.75c., for 50-ton lots; Corroding, 4.90c. to 5c., for 50-ton lots; in car lots, 2¼c. per 100 lb. higher; Spelter, 4.85c.; Cookson's Antimony, 10½c., and other grades, 9¾c. to 10¼c.; Sheet Zinc is $7, list, f.o.b. La Salle, in car lots of 600-lb. casks. On Old Metals we quote: Copper Wire, 12¾c.; Heavy Copper, 12¾c.; Copper Bottoms, 10⅝c.; Copper Clips, 11c.; Red Brass, 11½c.; Yellow Brass, 8¾c.; Light Brass, 6½c.; Lead Pipe, 4c.; Zinc, 3¾c.; Pewter, No. 1, 21c.; Tin Foil, 24c.; Block Tin Pipe, 27c.

## Philadelphia.

PHILADELPHIA, PA., August 11, 1908.

Conditions in the local Iron and Steel markets have shown but little change. A moderate buying of Pig Iron continues, although sales recently have been small, and usually for prompt shipment. Interest now centers in Pig Iron for the fourth quarter, for which a considerable number of inquiries are before the trade. Business so far in August is generally reported as being good, particularly when the general conditions and the season of the year are taken into consideration. Not a great deal of new business is expected the present month, although a further buying movement is looked for early in September. Finished materials show a slight betterment, and the trade feels much encouraged regarding the outlook for the future, particularly as little of the business placed has been coming from the railroads, which are expected to be quite active buyers during the fall months.

**Pig Iron.**—The market, as far as this immediate territory is concerned, continues dull and uninteresting. The larger consumers in a number of cases have bought about as much Iron as they want for third quarter shipment, and are now considering the matter of purchasing for fourth quarter and further extended delivery. A certain amount of business in small lots for prompt shipment continues to be done at full prices, and while these are individually small the aggregate tonnage is quite fair for a usually dull month. Sellers are somewhat at sea regarding prices for forward shipment, and a diversity of policies in this respect is to be noted. Some furnaces refuse to quote for deliveries for strictly fourth quarter shipment, and practically all refuse, at this time, to consider business for next year. Others are not willing to book orders for the last quarter except at an advance over prices for third quarter, while still others will take moderate orders for such delivery at about the top of

the present market, while for shipments extending over the balance of the year, beginning at once, the low level of the market might be done in some instances. On third quarter delivery practically all of the eastern Pennsylvania furnaces are very firm, $16, furnace, being about the best price for No. 2 X Foundry Iron that can be done. In a number of instances, furnaces report increased shipping instructions, which would seem to indicate the melting was increasing slightly, but a tendency on the part of the consumer to carry a somewhat better stock on hand than was the custom some months ago is also to be noted. Foundries on the whole do not increase production greatly, although the prospect for more active business early in the fall is considered much more encouraging. Sales of Foundry Iron recently have been principally of small lots for prompt shipment, at prices ranging from $16.50 to $17, delivered, for No. 2 X, but some larger tonnages of No. 2 X and No. 2 Plain for delivery over the last half of the year at prices ranging from $16.75 for the latter have also been reported. New England is still in the market for some fair quantities of Foundry Iron, inquiries being out for lots of several thousand tons each for fourth quarter delivery. Virginia furnaces have made some further sales for August and September shipment, one interest having sold 900 tons of No. 2 Plain and 300 tons of No. 2 X to one of the local Cast Iron Pipe plants at full prices. The same seller reports orders for 1200 tons of No. 2 Plain and 500 tons of No. 2 X Foundry at full prices, for Western shipment, August, September, and October delivery. Southern Iron has been inactive, some few sales of small lots having been made at the $12, Birmingham, basis for No. 2 Foundry. The Eastern Cast Iron Pipe plants are understood to be still in the market for some low grade Southern Iron, but sellers have not yet met their views regarding prices. Forge Iron shows a shade more activity, there being more inquiry for this grade, but furnaces as a rule are pretty well sold up, and have but little tonnage for early delivery for sale. Some small lots, for prompt shipment, have been sold at prices ranging from $15 to $15.25, delivered. Basic Iron has been more quiet, melters having largely covered for their immediate needs, although a bridge plant in this territory is making inquiries for 2500 tons for prompt shipment. More interest in Low Phosphorus Iron has developed, inquiries for one lot of 3000 tons and another of 1000 tons, both for fourth quarter delivery, coming out during the week. The market on the whole, notwithstanding the lack of immediate business, continues strong, prices are firm, and a decidedly optimistic feeling regarding the future prevails. For third quarter delivery in buyers' yards, eastern Pennsylvania and nearby territory, the following range of prices is quoted:

| | |
|---|---|
| Eastern Pennsylvania, No 2 X Foundry | $16.50 to $17.00 |
| Eastern Pennsylvania, No. 2 Plain | 16.00 to 16.50 |
| Virginia, No. 2 X Foundry | 17.00 to 17.25 |
| Virginia, No. 2 Plain | 16.50 to 16.75 |
| Gray Forge | 15.00 to 15.50 |
| Basic | 15.00 to 15.25 |
| Low Phosphorus | 21.00 to 21.25 |

**Ferromanganese.**—Buying is light, business being practically at a standstill. Offerings for prompt shipment range from $43.50 to $44 seaboard, with $45.50 to $46 for delivery over the last half of the year.

**Steel.**—Little new business comes out, and orders are almost entirely for small lots for prompt shipment. The amount of business is not sufficient to keep mills running for any length of time, even on the present restricted basis. Prices are firm and unchanged, ordinary Rolling Steel for delivery in this territory being quoted at $26.20, with Forging Steel at $28.20, subject to the usual extras for high carbons and special shapes.

**Plates.**—Mills continue to book a good volume of business, and some makers report the first week of August as being the best this year, while several characterize the volume of business taken in July as the best for any month since last October. Orders are running in better size, and specifications on contracts more satisfactory. Quite a few good orders for Boat, Boiler, Tank and Bridge Plates have recently been taken, and the trade is quite optimistic regarding fall business. Prices are firmly maintained, the following quotations being named for delivery in this territory:

| | Carloads. Cents. | Parts carloads. Cents. |
|---|---|---|
| Tank, Bridge and Boat Steel | 1.75 | 1.80 |
| Flange or Boiler Steel | 1.85 | 1.95 |
| Commercial Firebox | 1.95 | 2.00 |
| Marine | 2.15 | 2.20 |
| Locomotive Firebox Steel | 2.25 | 2.30 |

The above are base prices for ¼-in. and heavier. The following extras apply:

| | Extra per 100 lb. |
|---|---|
| 3-16-in. thick | $0.10 |
| Nos. 7 and 8, B. W. G. | .15 |
| No. 9, B. W. G. | .25 |
| Plates over 100 to 110 in. | .05 |
| Plates over 110 to 115 in. | .10 |
| Plates over 115 to 120 in. | .15 |
| Plates over 120 to 125 in. | .25 |
| Plates over 125 to 130 in. | .50 |
| Plates over 130 in. | 1.00 |

**Structural Material.**—An even demand continues, but orders are mostly small and of a miscellaneous character. The aggregate tonnage is fairly large, and mills continue to note a small increase in its volume. Some good propositions are being estimated on, but these develop slowly. Prices are unchanged, ranging from 1.75c. to 1.90c., according to specification, for delivery in this territory.

**Sheets.**—Orders are small but numerous, and enable mills to continue in full operation. But little business is ahead, practically all the orders being for prompt shipment, and mills depend on the current demand to maintain their production. Quotations for mill shipments range as follows, a tenth extra being added for small lots: Nos. 18 to 20, 2.50c.; Nos. 22 to 24, 2.60c.; Nos. 25 to 26, 2.70c.; No. 27, 2.80c.; No. 28, 2.90c.

**Bars.**—A fair volume of business continues, and mills show a small gain in the tonnage of orders taken. Most of the orders are for early delivery, some of the mills still refusing to accept business for extended delivery. Prices are unchanged, and while it might still be possible to get Bars on desirable specification as low as 1.35c., delivered in this territory, makers of the better grades of Refined Iron Bars hold at 1.40c. to 1.45c., delivered. Steel Bars are inactive at 1.55c., delivered, with Rerolled Bars at 1.50c.

**Coke.**—Some little business has been done in Foundry Coke, but Furnace Coke is extremely quiet. Contracts for small tonnages of the former, extending over a year, have been made at $2.25, at oven. Quotations are unchanged. Foundry Coke ranging from $2.15 to $2.35, at oven, with Furnace Coke at $1.50 to $1.75, at oven. For delivery in this territory, the following range of prices is quoted:

| | |
|---|---|
| Connellsville Furnace Coke | $3.65 to $3.90 |
| Foundry Coke | 4.30 to 4.50 |
| Mountain Furnace Coke | 3.25 to 3.50 |
| Foundry Coke | 3.90 to 4.10 |

**Old Material.**—Notwithstanding the absence of sales in any quantity, the market shows increased strength. A difference exists between dealers and consumers of Heavy Steel Melting Scrap, mills not being willing to pay over $14 to $14.50, delivered, while dealers refuse to let any large tonnage go at the present price level, and therefore practically no business has been done. Rolling mills continue to take small quantities of rolling mill grades, some of which have become somewhat scarce and prices of some classes again show an advance. We quote nominally as follows for delivery in buyers' yards, eastern Pennsylvania and adjoining territory:

| | |
|---|---|
| No. 1 Steel Scrap and Crops | $14.50 to $15.00 |
| Low Phosphorus | 18.00 to 18.50 |
| Old Steel Axles | 19.50 to 20.00 |
| Old Iron Axles | 22.00 to 22.50 |
| Old Iron Rails | 19.00 to 19.50 |
| Old Car Wheels | 14.50 to 15.00 |
| Choice No. 1 R. R. Wrought | 17.50 to 18.00 |
| Machinery Cast | 14.00 to 14.50 |
| Railroad Malleable | 13.00 to 13.50 |
| Wrought Iron Pipe | 13.50 to 14.00 |
| New Bundled Sheets | 12.00 to 12.50 |
| No. 1 Forge Fire Scrap | 11.50 to 12.00 |
| No. 2 Light Iron | 8.50 to 9.00 |
| Wrought Turnings | 11.00 to 11.50 |
| Stove Plate | 12.50 to 13.00 |
| Cast Borings | 10.00 to 10.50 |
| Grate Bars | 12.50 to 13.00 |

## Birmingham.

BIRMINGHAM, ALA., August 10, 1908.

**Pig Iron.**—The market is firm, with a schedule of $12.50, Birmingham, for No. 2 Foundry well established. This price is being maintained on early deliveries, and could probably be had on tonnage for delivery during the remainder of the year, although there has been no perceptible change in the attitude of any producing interests as to commitments for shipment further advanced than the third quarter. By reason of the recent activity one large interest has found an increase in its output necessitated, but has practically withdrawn from the market other than for comparatively small lots to be shipped promptly. As to the comparison of order books with the rate of production in other cases a definite statement is not warranted. It is known that tonnage engaged within the past fortnight aggregates well up in the thousands, one concern alone being accredited with the sale of approximately 30,000 tons, and it has been fairly well distributed among producers, but the movement from furnace yards during that time was unusually heavy. It is announced that operations will be resumed at the plant of one of the small concerns, which has been idle for months undergoing repairs, within two weeks. The present output of the active capacity is considerably less than it should be, which is accounted for by the season and the accompanying humidity of the atmosphere, but there has been no accumulation of off grades. As a matter of fact, a number of unsuccessful efforts to secure Forge Iron for future requirements are reported. Among the sales reported for the week just ended is an aggregate of 18,000 tons for delivery covering the remainder of the third quarter, at a higher average price than $12 per ton, Birmingham. Lots of 500 and 100 tons each for the third and fourth quarters are reported

at $12 per ton, while a lot of 1000 tons of No. 4 Foundry for last quarter delivery was placed at $11.50 per ton. The sale of 250 tons of 1.75 per cent. and better Silicon is reported at $12.25, and 500 tons of Clifton High Manganese to be delivered during the last quarter brought $13. The principal inquiry reported is for 5000 tons for delivery covering the remainder of the year, which comes from a manufacturer of plumbing goods.

**Cast Iron Pipe.**—The reports for the past week fail to indicate an active market, but producers are apparently satisfied with the situation as presented. A curtailment of production has not resulted in any case, and in view of recent purchases of raw material such action is hardly anticipated. The fact that leading interests have covered for their Pig Iron requirements to some extent, since the advance in prices, is a significant one and will no doubt affect future bids materially. There has recently developed some improvement in the demand for Cast Iron Soil Pipe, but prices received are still unsatisfactory and the idle capacity is very much in evidence. We quote Water Pipe as follows, per net ton, f.o.b. cars here: 4 to 6 in., $23; 8 to 12 in., $22; over 12-in., average, $21, with $1 per ton extra for Gas Pipe.

**Old Material.**—With some inquiries pending, and the Pig Iron market apparently on a firmer basis than for some months past, sentiment in the market for Old Material continues to improve. The business actually transacted is still insufficient to affect market values, but dealers adhere more firmly to quotations and material shading would hardly result even if orders for tonnages of unusual proportions were offered. Dealers' asking prices are as follows, per gross ton, f.o.b. cars here:

| | |
|---|---|
| Old Iron Rails | $14.50 to $15.00 |
| Old Iron Axles | 15.50 to 16.00 |
| Old Steel Axles | 12.50 to 13.00 |
| No. 1 Railroad Wrought | 13.00 to 13.50 |
| No. 2 Railroad Wrought | 9.50 to 10.50 |
| No. 1 Country Wrought | 10.00 to 10.50 |
| No. 2 Country Wrought | 9.00 to 9.50 |
| No. 1 Machinery | 10.00 to 10.50 |
| No. 1 Steel | 9.50 to 10.00 |
| Wrough Pipe and Flues | 8.50 to 9.00 |
| Light Cast and Stove Plate | 8.50 to 9.00 |
| Cast Borings | 5.00 to 5.50 |

## Pittsburgh.

PARK BUILDING, August 12, 1908.—(*By Telegraph.*)

**Pig Iron.**—A feature of the market is that a number of consumers are inquiring for Bessemer, Malleable Bessemer, and Foundry Iron for delivery over the first half of next year. The Pig Iron market just now is altogether in favor of consumers, and furnaces are not disposed to quote today's prices by any means for next year delivery. The Standard Sanitary Mfg. Company has closed up its purchases of Pig Iron, which amounted to 9600 tons. Of this about 5000 tons was Northern No. 2 Foundry, for its Allegheny and New Brighton works, which went at $14.50, Valley furnace; 4100 tons was Southern Foundry and Forge, which went on the basis of $11.50 to $12, Birmingham, for No. 2, and $10.25, Birmingham, for Forge. The other 500 tons was Virginia Iron, which went at $13.50, at furnace. A local consumer is in the market for 1500 tons each of Basic and Bessemer, which is now being figured on, but the business has not been closed. A local Steel casting concern has practically closed its entire requirements of Basic Iron for a period of three years on a sliding scale basis. Prices of Bessemer, Malleable Bessemer, and Basic Iron seem to be weak, and there is no doubt that some sales have been made at prices below cost to the furnaces. We quote Bessemer Iron at $15.40 to $15.50; Malleable Bessemer, $15; Basic, $14.75 to $15; No. 2 Foundry, $14.50, and Forge, $13.75 to $14, all at Valley furnace, the freight to Pittsburgh being 90c. a ton. A local concern is in the market for 2000 tons of Forge Iron, and has been named a very low price by a local furnace.

**Steel.**—Specifications against contracts for Sheet and Tin Bars have fallen off to some extent, due to the light demand for Sheets and Tin Plate. There is more inquiry for Forging Billets, and some fair-sized lots have been sold. We quote Bessemer and Open Hearth Billets, 3⅞ in. and larger, up to and including 0.25 carbon, $25; 0.26 to 0.60 carbon, $1 extra; over 0.60 carbon, $2 extra, all f.o.b. Pittsburgh. For Wheeling, Martins Ferry, Follansbee, Newcastle, Sharon, Steubenville and Washington (Pa.) delivery, half the freight, or 50c. additional, is charged. Sheet and Tin Bars in random lengths are $27, f.o.b. Pittsburgh. Forging Billets take $2 advance over Rolling Billets.

(*By Mail.*)

The Harriman interests are in the market for 7000 cars, the greater part of which will be all Steel cars, while the balance will be box cars with Steel underframes. Three of the leading Steel car interests have this inquiry, and are now figuring on the business. It is pointed out that this is a most opportune time to place orders for Steel cars, as all the makers are short of work, and are in position to turn them out quickly and make prompt deliveries. The large Steel Plate interests are watching this inquiry very closely, and all are hoping that the order will be placed, because, if it is, it will only be the beginning of more orders for Steel cars and other equipment. General conditions in the Steel trade continue to show betterment and a conservative estimate places the total capacity in operation as about 55 per cent. It is predicted that when September is reached it will be running close to 70 per cent. More tonnage is being placed in Pig Iron than for some time, but prices are weak, especially on Bessemer and Basic. The Steel plants are running to upward of 60 per cent. of capacity, and the Mingo Junction plant of the Carnegie Steel Company, which has been shut down since last fall, is scheduled to start up to partial capacity next Sunday night.

**Ferromanganese.**—A sale has been made of about 75 tons of foreign 80 per cent. for September and October delivery at $43.50, seaboard, or $45.45, Pittsburgh. For balance of the year delivery importers are quoting about $44, seaboard.

**Ferrosilicon.**—Not much inquiry is reported and 50 per cent. is quoted at $67.50 to $70, Pittsburgh.

**Muck Bar.**—The first sale of any moment reported in this market for some time is one of 500 tons for August and September delivery at a shade under $26, Pittsburgh. We quote best grades of Muck Bar, made from all Pig Iron at this price, but if any large tonnage were offered a lower figure would be named.

**Rods.**—More inquiry is reported than for some time, and several fair sized sales of Bessemer and Chain Rods have recently been made by a local mill. The market is firm, and we continue to quote Bessemer Rods at $33, Basic $34 and Chain Rods $33, Pittsburgh.

**Skelp.**—Some new business is being placed with the mills. One local consumer has bought 500 tons of Sheared Iron Skelp at 1.75c., Pittsburgh. We quote: Grooved Steel Skelp, 1.45c. to 1.50c.; Sheared Steel Skelp, 1.50c. to 1.60c.; Grooved Iron Skelp, 1.60c. to 1.70c., and Sheared Iron Skelp, 1.70c. to 1.75c., f.o.b. Pittsburgh.

**Steel Rails.**—The Carnegie Steel Company has already rolled at its Edgar Thomson Works over 3000 tons of the contract for 26,000 tons of Rails placed last week with the Steel Corporation mills by the Harriman interests. It is persistently stated that some other large contracts for Rails have been placed, but for certain reasons details of these contracts are being held up. We note an active demand for Light Rails, the Carnegie Steel Company having taken upward of 2000 tons last week. A good part of the tonnage in Standard Sections and Light Rails being turned out at the Edgar Thomson Works is for export to fill orders taken by the United States Steel Products Export Company. The three Edgar Thomson mills are running steadily to about 35 per cent. of capacity, but with more tonnage booked than for some months. Prices now generally quoted on Light Rails, which, however, continue to be shaded about $2 a ton by rerolling Rail mills, are as follows: $25 for 25 to 45 lb. Sections, with $1 advance for 20 lb.; $2 advance for 16 lb., and $4 advance for 12 lb. Standard Sections are $28, at mill, and Angle Splice Bars, 1.65c., at mill.

**Structural Material.**—No large contracts have come out in the past week, but a good deal of tonnage is under way. The Carnegie Steel Company will soon commence to roll at its Homestead Works the plain material, 10,300 tons, for the Oliver Building in this city, this material to be fabricated and the Steel work erected by the American Bridge Company. A State educational building at Albany, N. Y., about 6000 tons, which has been hanging fire for some months, is liable to be placed at any time. General inquiries are better, and the outlook is more encouraging than for some time. We quote as follows, f.o.b. mill, Pittsburgh: I Beams, H Beams and Channels, 3 to 15 in., inclusive, 1.60c., net; Beams over 15 in., 1.70c. net; Angles, 3 to 6 in., inclusive, ¼ in. and up, 1.60c., net; Angles, over 6 in., 1.70c., net; Angles, 3 x 3 in. and up, less than ¼ in., 1.50c., base, half extras, Steel Bar card; Tees, 3 in. and up, 1.65c., net; Zees, 3 in. and up, 1.60c., net; Angles, Channels and Tees under 3 in., 1.50c., base, half extras, Steel Bar card; Deck Beams and Bulb Angles, 1.90c., net; Hand Rail Tees and Z-19, 3c., net; Checkered and Corrugated Plates, 3c. net.

**Plates.**—The Carnegie Steel Company is furnishing about 2000 tons of Plates for the extension to the Seattle, Wash., Water Works, contract for which was taken by James McNeil & Brother of this city, and has also about finished the shipment of a large tonnage for the Arizona Power Company. It has been carefully figured out that the various projects under way for extensions to water systems and power plants throughout the country will require upward of 600,000 tons of Plates. Of course, all these projects will not go through by any means, but if one-half of them develop and a good demand sets in for Steel cars, it will not be long until the Plate mills are filled with work. We are advised that regular prices on Plates are being maintained, with the exception that a few of the outside mills occasionally shade prices from $1 to $1.50 a ton on the narrow sizes. We quote, Tank Plates, ¾ in. thick, 6¼ in. up to 100

in. wide, 1.60c., base, at mills, Pittsburgh. Extras over this price are as follows:

Tank, Ship and Bridge quality, ¼ in. thick on edges, 100 in. wide, down to but not including 6 in. wide, is taken as base.

Steel Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per square foot, shall be considered ¼-in. Plate. Steel Plates over 72 in. wide must be ordered ¼-in. thick on edge, or not less than 11 lb. per square foot, to take base price. Steel Plates over 72 in. wide ordered less than 11 in. per square foot down to the weight of 3-16-in. shall take the place of 3-16-in.

Percentages as to overweight on Plates, whether ordered to gauge or weight, to be governed by the Association of American Steel Manufacturers' Standard Specifications.

| | |
|---|---|
| Gauges under ¼-in. to and including 3-16-in. Plates on thin edges | $0.10 |
| Gauges under 3-16-in. to and including No. 8 | .15 |
| Gauges under No. 8 to and including No. 9 | .25 |
| All sketches (excepting straight taper Plates varying not more than 4 in. in width at ends, narrowest end being not less than 30 in.) | .10 |
| Complete Circles | .20 |
| Boiler and Flange Steel Plates | .10 |
| "A. B. M. A." and ordinary Firebox Steel Plates | .20 |
| Still Bottom Steel | .30 |
| Marine Steel | .40 |
| Locomotive Firebox Steel | .50 |
| Shell grade of Steel is abandoned. | |
| For widths over 100 in. up to 110 in | .05 |
| For widths over 110 in. up to 115 in | .10 |
| For widths over 115 in. up to 120 in | .15 |
| For widths over 120 in. up to 125 in | .25 |
| For widths over 125 in. up to 130 in | .50 |
| For widths over 130 in | 1.00 |

TERMS.—Net cash 30 days. Pacific Coast base, 1.50c., f.o.b. Pittsburgh.

**Sheets.**—A moderate volume of business is being placed in Roofing Sheets, but, in a general way, the Sheet trade is only fairly satisfactory. The American Sheet & Tin Plate Company is operating this week about 60 per cent. of its Sheet capacity, and will start up next Monday its Hyde Park plant, which contains five hot mills. Prices for forward delivery are being well maintained, but occasional concessions are made on orders for prompt shipment. For mill shipment we quote: Blue Annealed Sheets, No. 10 and heavier, 1.80c.; Nos. 11 and 12, 1.85c.; Nos. 13 and 14, 1.90c.; Nos. 15 and 16, 2c.; Box Annealed, Nos. 17 to 21, 2.25c.; Nos. 22 to 24, 2.30c.; Nos. 25 and 26, 2.35c.; No. 27, 2.40c.; No. 28, 2.50c.; No. 29, 2.60c.; No. 30, 2.70c. Galvanized Sheets: Nos. 10 and 11, 2.45c.; Nos. 12 and 14, 2.55c.; Nos. 15 and 16, 2.65c.; Nos. 17 to 21, 2.80c.; Nos. 22 and 24, 2.95c.; Nos. 25 and 26, 3.15c.; No. 27, 3.35c.; No. 28, 3.55c.; No. 29, 3.70c.; No. 30, 3.95c.; No. 28 Painted Roofing Sheets, $1.75 per square, and Galvanized Roofing Sheets, No. 28, $3.10 per square, for 2½-in. corrugations. These prices are subject to a rebate of 5c. per 100 lb. to the large trade under the usual conditions, jobbers charging the usual advances for small lots from store.

**Tin Plate.**—The Tin Plate trade for this year is pretty well over, only small miscellaneous orders now being received by the mills. Some contracts are still on the books against which specifications are coming in at a fairly satisfactory rate. The American Sheet & Tin Plate Company is operating this week 57 per cent. of its Tin Plate capacity. Prices continue firm, and we quote at $3.70 for 100-lb. Cokes, 14 x 20, f.o.b. Pittsburgh, terms 30 days, less 2 per cent. off for cash in 10 days, this price being subject to the usual rebate of 5c. per base box in large lots.

**Hoops and Bands.**—Some tonnage is being placed, made up of small orders, but the output of the mills is mostly on specifications against contracts. Regular prices are as follows: Steel Hoops, 1.80c., base, full Hoop card prices; Steel Bands, 1.40c., base, half Steel card extra, all f.o.b. cars, Pittsburgh, in carload lots, for delivery during 1908.

**Iron and Steel Bars.**—The large Steel Bar mills report that specifications against the contracts placed in June are now coming in at a satisfactory rate, and the railroads are also commencing to place some orders for Bars for early shipment, so that the position of these mills is better than at any time in some months. The Republic, Carnegie and Jones & Laughlin companies are operating to larger capacity in their Steel Bar mills than at any time since last fall. Conditions in the Iron Bar trade are not so satisfactory, but a moderate amount of new business is being placed, which, with specifications against contracts, serves to keep the Iron mills in operation to about 50 per cent. of capacity. We quote Iron Bars at 1.40c., base, for Pittsburgh delivery, and 1.35c., base, for Western points, to which freight is added, except Chicago, the price for which is 1.50c., delivered. We quote Steel Bars at 1.40c., Pittsburgh, for base sizes.

**Merchant Steel.**—Some heavy tonnage is pending in the various grades of Merchant Steel, a number of the largest implement makers having recently held a meeting and decided that they would now come in the market and cover their requirements for the next year up to July 1. A fair business is being placed by the general trade, and the mills are running to larger capacity than for some months. We quote: Cold Rolled Shafting, on contracts for 100 tons and over, 57 per cent. off; carloads, 56 per cent. off, and less than carloads, 52 per cent. off, on which carload freight is allowed within base territory. Smooth Finished Machinery Steel, 1.80c. to 1.90c.; Flat Sleigh Shoe, 1.75c. to 1.85c.; Cutter Shoe Steel, 2.15c. to 2.25c.; Toe Calk, 1.90c. to 1.95c.; Railroad Spring Steel, 1.60c. to 1.75c., the higher price being for Pennsylvania Railroad analysis. Carriage Spring Steel is 1.80c.; Tire Steel, Iron finish, 1½ x ½ in. and heavier, 1.40c.; under 1½ in., 1.55c. Planished Tire Steel is 1.60c., all f.o.b., at mill.

**Railroad Spikes.**—Two or three of the Western roads have some pretty heavy inquiries out. We quote: Standard sizes, 4½ x 9-16 in., at $1.70, and the smaller sizes at $1.80 per 100 lb. in carload and larger lots, with an advance of 5c. per 100 lb. for less than carload, f.o.b. Pittsburgh.

**Merchant Pipe.**—Conditions in this trade are showing slow but steady improvement, and at this time it is estimated that about 60 per cent. of the Pipe capacity is active. Some very large tonnages in Pipe for oil and gas lines are pending, among which are 80 miles of 6-in. for Indian Territory and 40 miles of 8-in. for a gas company. The mills are pretty comfortably filled on lap weld sizes, but have only a fair tonnage on their books in butt weld sizes. It is stated that regular prices on Pipe are being absolutely maintained. Discounts on Steel Pipe, ¾ to 6 in., to the large trade are now 76 and 5 per cent. off list. Regular discounts are as follows:

*Merchant Pipe.*

| | Jobbers, carloads, Steel. Black. % | Galv. % |
|---|---|---|
| ⅛ to ¼ in | 67 | 51 |
| ⅜ in | 69 | 55 |
| ½ in | 71 | 59 |
| ¾ to 6 in | 75 | 65 |
| 7 to 12 in | 72 | 57 |
| Extra strong, plain ends: | | |
| ⅛ to ⅜ in | 60 | 48 |
| ½ to 4 in | 67 | 55 |
| 4½ to 8 in | 63 | 51 |
| Double extra strong, plain ends: | | |
| ½ to 8 in | 56 | 45 |

Discounts on Genuine Iron Pipe are as follows:

| | Black. % | Galv. % |
|---|---|---|
| ⅛ to ¼ in | 65 | .. |
| ⅜ in | 67 | 53 |
| ½ in | 69 | 57 |
| ¾ to 6 in | 73 | 63 |
| 7 to 12 in | 70 | 55 |
| Extra strong, plain ends: | | |
| ⅛ to ⅜ in | 58 | 46 |
| ½ to 4 in | 65 | 53 |
| 4½ to 8 in | 61 | 49 |
| Double extra strong, plain ends: | | |
| ½ to 8 in | 54 | 43 |

**Boiler Tubes.**—A number of railroads have recently started up idle repair shops, and this is bringing about more demand for Locomotive Tubes, orders for which are for small lots and prompt shipment. The demand for Merchant Tubes is quiet, but is showing betterment. Regular discounts on Merchant Tubes in small lots, on which an extra 5 per cent. is allowed in carloads, but which discounts are being shaded, are as follows:

*Boiler Tubes.*

| | Iron. | Steel. |
|---|---|---|
| 1 to 1½ in | 42 | 47 |
| 1¾ to 2¼ in | 42 | 59 |
| 2½ in | 47 | 61 |
| 2¾ to 5 in | 52 | 65 |
| 6 to 13 in | 42 | 59 |

2½ in. and smaller, over 18 ft. long, 10 per cent. net extra.
2¾ in. and larger, over 22 ft. long, 10 per cent. net extra.

**Spelter.**—This always erratic material has shown a sharp advance in the past week, and we now quote prime grades of Western Spelter at 4.62½c. to 4.65c., East St. Louis, equal to 4.75c. and 4.77½c., Pittsburgh. A sale of 50 tons has been made to an Ohio Steel mill at 4.65c., East St. Louis.

**Iron and Steel Scrap.**—Improved conditions in the Scrap trade continue, and a moderate tonnage is being sold right along, with prices quite firm, and on some grades higher. The Pennsylvania Railroad sold a heavy quantity of Scrap last week, and obtained the best prices for it that have prevailed for some months. Included in this was a large tonnage of Heavy Steel Scrap, for which better than $15 was obtained, for Alliance and Steubenville delivery; 500 to 600 tons of Rerolling Rails, which went at $16.50, Pittsburgh; a fairly large tonnage of Wrought Iron Turnings, at $11; Borings, at $8.75, and Railroad Wrought Scrap, at $15. The fact that Heavy Steel Scrap is now selling at about the same price as Bessemer Pig Iron will probably prevent any marked advance in prices of Steel Scrap until the Pig Iron market improves. Consumers who use a larger proportion of Scrap when it is lower in price than Bessemer Iron will now reverse their policy, and will use more Pig Iron. There have been some fairly heavy sales of Steel Scrap and also of Rerolling Rails, the latter being in strong demand, and the recent advance in prices is being firmly held. Dealers quote, per gross ton, as follows: Heavy Steel Scrap, for Pittsburgh, Sharon and Steubenville delivery, $15 to $15.50, most dealers refusing to shade $15.25; Cast Iron Borings, $9.25 to $9.50; No. 1 Railroad Wrought Scrap, $15 to $15.25; No. 1 Cast, $14.50 to $14.75; Bundled Sheet Scrap, $12.25 to $12.50; Sheet Bar Crop Ends, $18 to $18.25; No. 1 Busheling Scrap, $13.50 to $14; No. 2, $10 to $10.50; Iron Axles, $21 to $21.50; Steel Axles, $18.50 to $19; Low Phosphorus Melting Stock, 0.04 and under, $19 to $19.50; Rerolling Rails, $16.50; Machine

Shop Turnings, $10.25 to $10.50; Grate Bars, $13 to $13.25; Railroad Malleable, $14 to $14.25; Old Car Wheels, $14.50 to $15. We note sales of about 2000 tons of Heavy Steel Scrap at $15.25, delivered at Sharon, Pa., and 600 tons at about the same price, for Pittsburgh delivery; 6000 tons of Old Rails, on the basis of about $16.50, Pittsburgh; 350 tons of Light Steel Scrap, at $15, Pittsburgh, and 500 tons of Railroad Wrought Scrap at $15.50, Pittsburgh.

**Coke.**—Some little betterment in demand for both Furnace and Foundry Coke is reported, but on the whole the Coke trade is not in satisfactory condition. Two or three inquiries are in the market for Furnace Coke for balance of the year shipment and for delivery through first half of next year. Best grades of Connellsville Furnace Coke can still be obtained at $1.50 to $1.55 for spot shipment, while for delivery over balance of the year $1.65 to $1.75 is quoted. A furnace interest is reported to have closed on its supply of Coke for the rest of this year, about 15 cars a day, on the basis of $1.65, at oven. Connellsville 72-hr. Foundry Coke is sold at $2 to $2.25 for balance of the year shipment, but for spot delivery $1.90 could be done. Other grades of Foundry Coke made outside the Connellsville region are offered as low as $1.75 a ton at oven for spot shipment. The output of Coke in the Upper and Lower Connellsville regions last week was 189,423 tons, practically the same as in the previous week.

## Cleveland.

CLEVELAND, OHIO, August 11, 1908.

**Iron Ore.**—The market is showing a little more activity. Several sales have been made, including at least one 25,000-ton lot, and salesmen who have been visiting the furnacemen in the past few days report that the outlook is good for a considerable improvement in the demand within the next two or three weeks. Some of the consumers that have as yet bought no Ore this season are about ready to buy. The demand for non-Bessemer Ore is far better than that for Bessemer Ore. Some Siliceous non-Bessemer Ore has been sold at $2.15. At the time the reduction in Ore prices was made no action was taken on the price of Siliceous Ore, this being left to the individual action of the Merchant Ore firms. Last year the price of Siliceous non-Bessemer was $2.35 to $2.60. Some inquiries are pending for Siliceous Bessemer Ore, and a price of $2.40 to $2.50 has been quoted, last year's price having been $2.75. The movement of Ore down the lakes shows little improvement. Ore firms are having trouble in getting shipping orders from the furnaces. The docks at the lower lake ports are well filled up, and boats are being seriously delayed in unloading their cargoes. Shipments are not expected to show much, if any, improvement before September. The docks of the Great Northern Railroad, at Superior, were tied up August 8 by a strike of the Ore handlers, who quit work when their demand for an increase of 25c. per day was refused. Ore prices on Lake Erie docks, per gross ton, are as follows: Old Range Bessemer, $4.50; Mesaba Bessemer, $4.25; Old Range non-Bessemer, $3.70; Mesaba non-Bessemer, $3.50.

**Pig Iron.**—A fair demand is noted for Foundry Iron, the inquiries coming mostly from outside of this territory. The largest sale during the week was 3000 tons of Nos. 2, 3, and 4, to the Massillon Iron & Steel Company, for third quarter delivery. Sales of a few lots of 400 and 500 tons are also reported. Among the inquiries is one from central Ohio for 1000 tons of Foundry Iron for early delivery. We quote No. 2 Northern Foundry Iron at $14.50 to $15, Valley furnace. Several furnace interests are unwilling to quote at lower than the latter price, and are virtually out of the market. Local furnaces continue to quote No. 2 Foundry at about $15.50, at furnace, for Cleveland delivery, and $15 for outside shipment. An inquiry is out for 4000 tons of half Malleable and half Bessemer Iron, for delivery in the Pittsburgh District. This is the only inquiry of any size for either Malleable or Bessemer Iron. A fair inquiry is observed for Basic Iron, but no sales are reported, sellers holding for higher prices than buyers are willing to pay. Furnacemen are looking with considerable satisfaction on the situation at present, owing to the fact that Foundry Iron consumers are freely taking Iron on contract. The melt continues to improve, and withhold orders are very scarce. In the case of at least one furnace the entire output during July was shipped out, and the stock pile was slightly reduced, as well. Consumers are still slow in taking Malleable Iron on old contracts. For prompt shipment and for the balance of the year we quote, delivered Cleveland, as follows:

| | |
|---|---|
| Bessemer | $16.40 |
| Northern Foundry, No. 1 | $15.65 to 16.15 |
| Northern Foundry, No. 2 | 15.40 to 15.65 |
| Northern Foundry, No. 3 | 14.90 to 15.40 |
| Southern Foundry, No. 2 | 16.35 |
| Gray Forge | 14.90 |

**Coke.**—The market shows no improvement, with practically no inquiry for either Furnace or Foundry Coke. For shipment over the balance of the year we quote standard Connellsville Furnace Coke at $1.65 to $1.75, at oven, lower prices being named for spot shipment. For the balance of the year we quote 72-hr. Foundry Coke at $2 to $2.25, at oven.

**Finished Iron and Steel.**—Specifications on contracts continue to come in in a very satisfactory manner. Good orders are being received from the implement makers for Steel Bars, and a fair tonnage is being taken by other consumers. Some improvement is also noted in the demand for Iron Bars, which had been light for several weeks. The railroads are buying a little more freely for car repairs, and a little better demand is being felt from other sources. It is understood that the Lake Shore Railroad will soon begin considerable car repair work and will be in the market for Iron Bars. As a result of the improvement in the demand it is expected that the two local rolling mills will be able to run at 60 per cent. of their capacity this month. Some of the mills are reported to be making concessions to the railroads by agreeing to furnish Bars according to the buyer's specifications at the regular base price. The demand for Plates continues to improve slowly. Some fairly good specifications for Tank Plates were received. An improvement is seen in the demand for small Billets for drop forgings and for Forging Billets. The sale of several carload lots of the latter is reported at $27.75, delivered, Cleveland. The demand for Structural Material is fairly good, specifications coming from fabricating shops to replenish stocks. Bids will be received soon for a new concrete bridge to be built by Cuyahoga County at Rocky River. It will require 200 tons of Beams and 250 tons of Bars. The new Bradley Building, for which the contract will soon be awarded, will require about 300 tons of reinforcing bars. A local bolt maker has an inquiry in the market for 5000 tons of coiled Rods for making small bolts. There is some improvement in the demand for Light Rails, but prices are still weak. The demand for Sheets is light. Warehouse business is improving somewhat, the change being satisfactory to the jobbers, who had not looked for any particular improvement during the summer months. We quote Iron Bars at 1.45c., Cleveland, for car lots; Steel Bars, 1.50c., Cleveland, for car lots, half extras; Beams and Channels, 1.70c., base, Cleveland. and Plates, ¼-in. and heavier, 1.70c., Cleveland. We quote Sheets, mill shipments, car lots, Cleveland, as follows: Blue Annealed, No. 10, 1.90c.; Box Annealed, No. 28, 2.60c.; Galvanized, No. 28, 3.65c. Jobbers quote Steel Bars out of stock at 1.65c. to 1.70c. Beams and Channels out of stock are 2c., and Plates, ¼-in. and heavier, 1.90c. Warehouse prices on Sheets are as follows: Blue Annealed, No. 10, 2.10c.; Box Annealed, No. 28, 2.70c.; Galvanized, No. 28, 3.80c. Warehouse prices on Boiler Tubes, 2¾ to 5 in., are 64 per cent. discount, and on Black Merchant Iron Pipe, base sizes, 71 per cent. discount.

**Old Material.**—The market shows less activity, owing to the fact that the majority of existing contracts have been pretty well filled and dealers are not so anxious to buy. The actual demand from consumers is light, and no new contracts of any size are reported. In spite of the present dullness, however, prices remain firm. While some expect the market to sag slightly, owing to the fact that it has been a dealers' market for some time, dealers as a rule do not take this view of the situation, and are holding for higher prices, especially on Steel Scrap. Old Material sold by the Lake Shore Railroad last week brought good prices. Dealers' prices to the trade, f.o.b. Cleveland, are as follows, an advance being noted in a few grades:

| | |
|---|---|
| Old Steel Rails | $14.00 to $14.50 |
| Old Iron Rails | 15.50 to 16.00 |
| Steel Car Axles | 17.50 to 18.00 |
| Old Car Wheels | 14.50 to 15.00 |
| Relaying Rails, 50 lb and over | 22.00 to 23.00 |
| Heavy Melting Steel | 14.00 to 14.50 |
| Railroad Malleable | 13.50 to 14.00 |
| Agricultural Malleable | 11.00 to 11.50 |
| Light Bundled Sheet Scrap | 9.00 to 9.50 |

The following quotations are per net ton, f.o.b. Cleveland:

| | |
|---|---|
| Iron Car Axles | $16.00 to $16.50 |
| Cast Borings | 7.00 to 7.50 |
| Iron and Steel Turnings and Drillings | 8.00 to 8.50 |
| Steel Axle Turnings | 8.50 to 9.00 |
| No. 1 Busheling | 11.50 to 12.00 |
| No. 1 Railroad Wrought | 13.50 to 14.00 |
| No. 1 Cast | 12.50 to 13.00 |
| Stove Plate | 10.00 to 10.50 |
| Bundled Tin Scrap | 8.00 to 9.00 |

## Buffalo.

BUFFALO, N. Y., August 11, 1908.

**Pig Iron.** Some improvement is noticeable in inquiries from jobbing interests, and a number of orders have been placed for quantities ranging from 300 to 1000 tons. We quote, Buffalo delivery, as follows:

| | |
|---|---|
| No. 1 X Foundry | $16.00 to $16.25 |
| No. 2 X Foundry | 15.25 to 15.75 |
| No. 2 Plain | 15.00 to 15.25 |
| No. 3 Foundry | 14.75 to 15.00 |
| Malleable Bessemer | 16.00 to 17.00 |
| Gray Forge | 14.75 to 15.00 |
| Charcoal | 20.00 to 20.50 |

**Finished Iron and Steel.**—A perceptible improvement in inquiry is reported, and the weekly average of the busi-

ness placed is steadily increasing, both for Structural and for other Finished Iron and Steel, although still small in the aggregate, as compared with the corresponding time last year.

**Old Material.**—The local market has been dull. Prices have not quotably changed from last week's report, and are firm, notwithstanding the limited amount of business transacted. We quote, per gross ton, f.o.b. Buffalo, as follows:

| | |
|---|---|
| Heavy Melting Steel Scrap | $13.50 to $14.00 |
| No. 1 Railroad Wrought | 14.00 to 14.50 |
| No. 1 Railroad and Machinery Cast Scrap | 14.00 to 14.75 |
| Old Steel Axles | 16.00 to 16.50 |
| Old Iron Axles | 18.00 to 18.50 |
| Old Car Wheels | 13.50 to 14.00 |
| Railroad Malleable | 12.50 to 13.00 |
| Boiler Plate | 11.50 to 12.00 |
| Stove Plate | 12.00 to 12.50 |
| Grate Bars | 11.00 to 11.50 |
| Pipe | 11.00 to 11.50 |
| Wrought Iron and Soft Steel Turnings | 7.00 to 7.50 |
| Clean Cast Iron Borings | 6.00 to 6.50 |
| No. 1 Busheling Scrap | 11.75 to 12.25 |

## Cincinnati.

CINCINNATI, OHIO, August 12, 1908.—(*By Telegraph.*)

In the modest improvement of business conditions in the Ohio Valley, the Iron trade undoubtedly takes precedence this week. Enough tonnage, particularly of Southern Iron, has been contracted for to send the price up a 50c. notch, and this, too, without any appreciable increase in consumption. The immediate effect has seemingly been to stimulate the sluggish markets in Finished Material, and its effects are also seen in the Scrap market, which is stronger. Building operations are drawing upon Structural Iron and Steel supplies, and such forms of the latter as are used in concrete structures are in active demand. The speculative spirit which has dominated the large Scrap dealers in buying so heavily during the months of depression has interested itself in Pig Iron, and several thousand tons of Southern Iron have been contracted for by these merchants in the past few days. The foundries are beginning to awaken and are inquiring for Iron. The largest in this section has just bought something over 1200 tons for early delivery after several weeks of delay and negotiating. Machinery is still backward, and manufacturers are chafing over what appear to be unaccountable difficulties in closing business.

**Pig Iron.**—Southern ironmasters are in the limelight this week, and a number of the largest interests have withdrawn from the market, save for urgent shipments to special customers, and in small lots. The asking price for third and fourth quarter delivery is $12.50, although it is still possible to close some business at $12, Birmingham. Northern Iron has not advanced, but is firm, at $15, at Ironton furnace. Good sales of Northern Irons have been made. About half the tonnage secured by the Modern Foundry Company of Cincinnati was Ohio Iron. A large central Ohio manufacturer of engines took about 1000 tons of Foundry Iron from a northern or central Ohio furnace. It is understood that a large part of the tonnage to be made by the new Hamilton Furnace has been sold for the balance of the year. Late inquiries deal largely with requests for 1909 prices, but as far as can be learned here only one interest has quoted on that business aside from the sale of 10 days or so ago, which extended into next year, at approximately $11.50, Birmingham. This furnace has given a price of $13 for early deliveries in 1909 on straight No. 2 Foundry, and the opinion is hazarded that a little Northern Iron might be picked up for the same delivery at present prices. One agency here announces inquiries aggregating 10,000 tons for early delivery, at $12, Birmingham, which had to be turned down, having nothing to offer at less than $12.50. Very little Forge Iron is available, and the asking price is from $10.50 to $11. Bessemer is weak in this market, and is quoted at about $15.50, Valley furnace. Basic is quotable at $12.50, Birmingham, and about $15, Valley furnace. The price on 8 per cent. Ohio Silvery is stationary, at $18.50. Among the larger inquiries are 3000 tons to analyze about Nos. 3 and 4 Foundry, 350 and 400 tons a month, respectively, from an Ohio Pipe maker; one from a large boiler manufacturer for delivery to its Ohio factory, for 2000 tons of Northern Foundry, deliveries extending over 12 months, and several small lots of 50 to 300 tons, from interests asking hurry shipments. For immediate delivery, and balance of the year, we quote, f.o.b. Cincinnati, as follows, the freight rates being $3.25 from Birmingham, and $1.20 from the Hanging Rock District:

| | |
|---|---|
| Southern Coke, No. 1 | $15.75 to $16.25 |
| Southern Coke, No. 2 | 15.25 to 15.75 |
| Southern Coke, No. 3 | 14.75 to 15.25 |
| Southern Coke, No. 4 | 14.50 to 15.00 |
| Southern Coke, No. 1 Soft | 15.75 to 16.25 |
| Southern Coke, No. 2 Soft | 15.25 to 15.75 |
| Southern Coke, Gray Forge | 14.00 to 14.50 |
| Ohio Silvery, 8 per cent. Silicon | 19.70 |
| Lake Superior Coke, No. 1 | 16.70 to 17.20 |
| Lake Superior Coke, No 2 | 16.20 to 16.70 |
| Lake Superior Coke, No. 3 | 15.70 to 16.20 |
| Standard Southern Car Wheel | 22.25 to 22.75 |
| Lake Superior Car Wheel | 21.75 to 22.25 |

(*By Mail.*)

**Coke.**—The market is active, and the Virginia product is gaining strength because of the continuance of the Alabama strike. Wise County Furnace Coke, on contract, is firm at $2, at oven, and spot business at $1.90 to $2. Reports from the ovens indicate that they are nearly sold up on this character of business. No change is noted in the price of Connellsville Foundry grades, which are still quotable at $2 to $2.10 on spot business, and on contract $2.25. Pocahontas Coke is gaining ground through the demands of Southern furnaces, and a shipment of 50 cars to that section is reported at about $1.50, at oven. One agency here has shipped 75,000 tons of Virginia Coke to Alabama since July 1. An order was booked late last week for 5000 tons from the Imboden and the Intermont companies of the Wise County field at $1.85.

**Finished Iron and Steel.**—Business is reported as improving and prices are firm. One large jobber reports more inquiries since August 1 than for three months previous. Some difficulty is experienced in getting deliveries from the mills, about three weeks being the best that can be done. Some specifications for carload shipments are being received, and for small lots the orders are always "hurry shipment." Iron Bars are stronger, and some improvement is noted in the Steel Bar situation, which has been sluggish here. Structural Shapes are in fair demand, with a gradually increasing call for Twisted Steel Bars for concrete work, which are quite active in this section. Dealers' prices to the trade are as follows, f.o.b. Cincinnati: Iron Bars, carload lots, 1.65c., base, with half extras; small lots from store, 1.85c., base, half extras; Steel Plates, carload lots, 1.75c., base, with half extras; small lots from store, 1.85c., base, half extras; Base Angles, carload lots, 1.85c., base; small lots from store, 2.10c.; Beams, Channels and Structural Angles, 1.85c., base; small lots from store, 2.10c.; Plates, ¼-in. and heavier, carload lots, 1.85c.; small lots from store, 2c.; Blue Annealed Sheets, heavy, No. 16, carload lots, 2.15c.; small lots from store, 2.50c.; No. 14, carload lots, 2.05c.; small lots from store, 2.40c.; No. 10, and heavier, carload lots, 1.95c.; small lots from store, 2.20c.; No. 12, carload lots, 2c.; small lots from store, 2.30c.; Sheets (Light), Black, No. 28, carload lots, 2.65c.; Galvanized Sheets, No. 28, carload lots, 3.70c.; Steel Tire, 4-in. and heavier, carload lots, 1.95c.; Plates, 3-16 and No. 8, carload lots, 2c.; small lots from store, 2.20c.

**Old Material.**—It is practically a dealers' market, with prices generally a little weaker, but on certain items gaining strength. There is no buying in quantities, and such transactions as assume more than minor importance in this regard are largely speculative. Certain local interests have turned their attention to Pig Iron since August 1, and one large concern is known to have bought something over 11,000 tons for investment. Another purchased 1000 tons. Old Steel Rails are a little stronger. We quote dealers' prices, f.o.b. cars, Cincinnati, as follows:

| | |
|---|---|
| No. 1 R. R. Wrought, net ton | $10.75 to $11.75 |
| Cast Borings, net ton | 4.50 to 5.00 |
| Heavy Melting Steel Scrap, gross ton | 12.00 to 12.50 |
| Steel Turnings, net ton | 5.50 to 6.50 |
| No. 1 Cast Scrap, net ton | 11.00 to 12.00 |
| Burnt Cast, net ton | 8.00 to 9.00 |
| Old Iron Axles, net ton | 14.50 to 15.50 |
| Old Iron Rails, gross ton | 13.00 to 14.00 |
| Old Steel Rails, long, gross ton | 11.50 to 12.50 |
| Old Steel Rails, short, gross ton | 11.50 to 12.50 |
| Relaying Rails, 56 lb. and up, gross ton | 19.00 to 20.00 |
| Old Car Wheels, gross ton | 12.50 to 13.00 |
| Low Phosphorus Scrap, gross ton | 13.00 to 14.00 |

In *The Iron Age* of July 23, page 234, in the article on "An Important Ruling on Industrial Switching," a statement was made concerning the adverse decision of the Interstate Commerce Commission on the claims of the General Electric Company and the Solvay Process Company for services rendered railroads in connection with internal switching over the tracks of the two manufacturing companies. In the same article it was stated that a similar complaint was filed some time ago by the Buffalo Union Furnace Company, Buffalo, N. Y. This latter statement should be qualified by saying that the Buffalo Union Furnace Company's complaint, while it relates to the same kind of service rendered by the shippers, differs from the others in that it involves the question of discrimination. No decision on this complaint has yet been rendered by the commission.

In the first half of 1908 the new security issues of the railroads of the United States either put upon the market or prepared for early flotation amounted to $175,000,000 in stocks and $650,000,000 in bonds and debenture operations. The *Railroad Gazette* estimates that $600,000,000 of the total of $825,000,000 has been placed, making no allowance for the short loans of a nonpublic character, which reach a very considerable total.

## New York.

NEW YORK, August 12, 1908.

**Pig Iron.**—There has been a good run of sales of moderate lots, and some more important transactions, notably in New England. One sale of 1500 tons of Forge Iron is noted to a railroad shop. We quote, at tidewater: Northern No. 1 Foundry, $17 to $17.50; No. 2 Foundry, $16.25 to $16.75, and No. 2 Plain, $15.50 to $15.75. Alabama Irons are quoted, nominally, $17.25 to $17.50, for No. 1 Foundry, and $16.50 to $17, for No. 2 Foundry.

**Steel Rails.**—The order for the Harriman line in Mexico, the Cananea, Yaqui River, and Pacific Railroad, was an important addition to Rail tonnage the past week. It amounts to 28,000 tons of Bessemer Rails and complete deliveries are to be made in August and September. The Pittsburgh District mill booked 1000 tons of scattering orders last week, and the Pennsylvania Steel Company received an order from the Stone & Webster Engineering Corporation, Boston, for 1000 tons of high T Rails, for the Seattle Electric Company.

**Structural Material.**—The improvement recently noted continues, and the fabricating mills are less disposed to load up at the low prices made in recent months. A fair business is being closed each week, while a very considerable amount, including a number of jobs of unusual size, is at the point where the purchase of the Steel may be announced any week. A continuing feature is the inquiry on account of extensions to manufacturing plants, something that has been little heard of in the past year. The Pennsylvania Railroad has let some main line bridge work, about 500 tons, and an equal amount for its tunnel terminal on Long Island. The Long Island Railroad has inquired for 4600 tons of bridge and viaduct work. From the Harriman lines, which have done some buying recently, further requisitions are expected in the near future. The American Bridge Company has taken considerable Pacific Coast work recently, and the Toledo & Massillon Bridge Company and the Minneapolis Steel & Machinery Company have also participated in business in that section. The First National Bank and the Doe Estate buildings, at San Francisco, taken by the American Bridge Company, amount to about 900 tons, and the Crocker Estate Building, 1200 tons, is pending. We quote as follows, on mill shipments of plain material, tidewater deliveries: Beams, Channels, Angles and Zees, 1.76c.; Tees, 1.81c. On Beams, 18 to 24 in., and Angles, over 6 in., the extra is 0.10c. From store Structural Material, cut to length, is sold at about 2¼c.

**Ferroalloys.**—The market is broader, and inquiries are more numerous. Prices, however, are unchanged, at $44.50, seaboard, for 80 per cent. Ferromanganese, and $70, at maker's works, for 50 per cent. Ferrosilicon.

**Bars.**—Bar Iron manufacturers are experiencing a sustained improvement in the demand, and recent orders have shown a tendency to increase in size. Buyers are more willing to make contracts at current prices, but the leading manufacturers are advancing their quotations for extended deliveries. Some are now refusing to book any orders below 1.40c. at mill, equivalent to 1.50c. tidewater. Most of the business recently placed for prompt delivery has been taken at 1.41c. to 1.46c. tidewater. Steel Bars continue to be quoted at 1.56c. tidewater, but sharp competition has developed on orders for Twisted Bars for concrete reinforcement.

**Plates.**—A taxpayers' action, alleging that the specifications prepared by the Department of Water Supply, Gas and Electricity favored a special kind of Pipe, and that the granting of the contract to the lowest bidder would be illegal, has prevented the awarding of the contract on the Steel Pipe for the extension of the Brooklyn water system. The case came up for adjudication on Tuesday, and until a decision is made the contract will be held up. This action continues the interest of the proposed contract among the Plate manufacturers who have given prices on Plates to the Steel Pipe makers. The general demand for Plates is still rather quiet, but an indication of better conditions in this direction is shown by an occasional placing of contracts for fair quantities. Standard sized Plates are quoted as follows, at tidewater: Sheared Plates, 1.76c. to 1.86c.; Flange Plates, 1.86c. to 1.96c.; Marine Plates, 2.16c. to 2.26c.; Firebox Plates, 2.65c. to 3.50c., according to specifications.

**Cast Iron Pipe.**—Meriden, Conn., will open bids on about 600 tons of Cast Iron Pipe to-day, and Decatur, Ill., on 980 tons August 17. New York City will place contracts for about 1000 tons next week and 1800 tons the following week. Quite a number of smaller lettings are coming up, and inquiries in general are somewhat better than they have been. Quotations on carload lots of 6-in. Pipe are continued at $23.50 to $24.50, tidewater.

**Old Material.**—The market is characterized as steady but quiet. Rolling mills, having supplied their principal requirements by direct purchases from railroads, are at present drawing but lightly from dealers' stocks, and consequently Wrought Scrap is neglected. Some little business is being done in Heavy Melting Steel Scrap, but the aggregate tonnage changing hands in this way is small. Foundries have recently been taking no large quantities, but small lots of Cast Scrap are fairly active. Inquiry is noted for Old Car Wheels, but most holders are not disposed to sell at current quotations, looking for a stronger demand and better prices in the early future. Relaying Rails are quiet. We quote as follows per gross ton, New York and vicinity:

| | |
|---|---|
| Old Girder and T Rails for melting | $11.00 to $11.50 |
| Heavy Melting Steel Scrap | 11.00 to 11.50 |
| Old Steel Rails, rerolling lengths | 12.50 to 13.50 |
| Relaying Rails | 21.00 to 22.00 |
| Old Iron Rails | 15.00 to 15.50 |
| Standard Hammered Iron Car Axles | 16.50 to 17.00 |
| Old Steel Car Axles | 15.00 to 15.50 |
| No. 1 Railroad Wrought | 14.00 to 14.50 |
| Iron Track Scrap | 10.00 to 10.50 |
| No. 1 Yard Wrought, long | 12.50 to 13.00 |
| No. 1 Yard Wrought, short | 11.00 to 11.50 |
| Light Iron | 6.00 to 6.50 |
| Cast Borings | 6.00 to 6.50 |
| Wrought Turnings | 7.00 to 7.50 |
| Wrought Pipe | 10.00 to 10.50 |
| Old Car Wheels | 14.00 to 14.50 |
| No. 1 Heavy Cast, broken up | 13.00 to 14.00 |
| Stove Plate | 10.50 to 11.00 |
| Locomotive Grate Bars | 11.00 to 11.50 |
| Malleable Cast | 12.50 to 13.00 |

## Metal Market.

NEW YORK, August 12, 1908.

**Pig Tin.**—Business has been quiet, and until Monday prices were steady. On that day, however, a sharp drop in the London market caused concessions to be made, particularly for future deliveries. The volume of business that day was the largest of any during the week under review, but undoubtedly the deliveries into consumption for the month will not go much above last month's figures. Price changes during the week have been as follows:

| | Cents. |
|---|---|
| August 5 | 30.70 to 30.80 |
| August 6 | 30.80 |
| August 7 | 30.75 to 30.80 |
| August 10 | 30.62½ to 30.65 |
| August 11 | 30.55 |
| August 12 | 30.50 |

On Monday futures were sold at 30.40c., and some business was also done for delivery during the last week of August at 30.25c. To-day the London market is again easier, closing at £137 10s. for spot and £137 15s. for futures. The arrivals so far this month aggregate 716 tons, and there are afloat for American ports 2225 tons. Direct steamers from London will probably bring more metal this month than last, the Mesaba yesterday bringing about 500 tons and the Minnehaha will arrive August 17 with 375 tons. The shortage of spot supplies so apparent early in the month has to a large degree disappeared, the leading consumers being well supplied, and others probably having sufficient for present needs. A feature of the week was the refusal of the New York market to respond to the advance in London.

**Copper.**—Buying by domestic consumers continues, and prices have advanced to new high figures. Lake is selling at 14c., and Electrolytic at 13.85c. to 13.90c. Exporters even are compelled to pay from 13.75c. to 13.85c., and although there is some business in this quarter, it is not of large proportions. The domestic buying is good, and some inquiries for September and October delivery have been received, one Lake order for September being booked at 14c., and the same price was refused by another producer for October shipment. Notwithstanding the fact that there has been much speculation and stock exchange manipulation, a considerable quantity of metal has been sold for actual consumption. The higher prices have been paid by the small consumer. As has been pointed out on other occasions, this has been the largest buying movement in nearly a year and a half, and the metal is needed for work at hand. The fact should not be lost sight of, however, that the Brass mills in the Naugatuck Valley are not working more than 60 per cent. normal, and the wire drawers even less, and electrical machinery manufacturing companies about two-thirds of their capacity, much of their work being on small parts and machines. One of the most interesting features of this market is the enormous and widespread speculative movement. This is, of course, common on the London Exchange, but the sending of circulars by American representatives of London Metal Exchange houses to stock exchange houses in Wall Street offering to transact business in future Copper on the London Exchange is something new. Undoubtedly many contracts have been entered into in the London market as a hedge for American consumers and dealers, but this new move apparently is a pure and unvarnished bid for speculative business. London prices are slightly easier, the high figure of £61 17s. 6d. being reached on Monday for spot, and to-day's closing price being £60 5s. for spot and £61 for futures. The exports for the first 11 days of the month were 7027 tons. The price of Sheet Copper has been advanced to 18c., base. Bare Copper Wire is now 15¼c., f.o.b. mills, and Sheet Brass is 1c. per pound higher.

**Pig Lead.**—Prices are firm, but unchanged, at 4.60c., New York, and 4.45c. to 4.50c., St. Louis. The advance a week ago by the leading producer gave a better tone to the market. It is commented on in the metal trade that the Lead situation has been skillfully handled, for since the low price of 3.50c., in December, last, the advance, although slow and steady, has been continuous, without any setback. The advance has also been carefully timed, so that prices have never gone above the London market with the duty added. Markets such as this apparently give buyers more confidence.

**Spelter.**—The sudden uprush last week encountered much metal at the high figures, and quotation sagged back from 5 to 7½ points. Little Spelter was sold, but seemingly much was offered. To-day's prices are more or less nominal, at 4.62½ to 4.65c., St. Louis, and 4.75c., New York, for prime Western brands.

**Antimony.**—Prices are without change, and, in the absence of manipulation, business is dull. Cookson's is quoted at 8c. to 8.25c., Hallett's at 8.25c. to 8.50c. and outside brands at 7.75c. to 8c.

**Tin Plate.**—Business continues below the high record set during the first half of the year, but prices are firm. For 100-lb. IC Coke Plates $3.89 is quoted, New York, and $3.70, Pittsburgh.

**Old Metals.**—More inquiry is observed, and prices are higher but the volume of business has fallen off. Buyers are anxious for quotations, but apparently these are too high, and the large consumers, especially, are holding off. The following dealers' selling prices are from ¼c. to ½c. higher than last week:

| | Cents. |
|---|---|
| Copper, Heavy and Crucible | 13.00 to 13.50 |
| Copper, Heavy and Wire | 12.75 to 13.25 |
| Copper, Light and Bottoms | 11.75 to 12.00 |
| Brass, Heavy | 9.50 to 9.75 |
| Brass, Light | 7.50 to 8.00 |
| Heavy Machine Composition | 12.25 to 12.50 |
| Clean Brass Turnings | 8.50 to 8.75 |
| Composition Turnings | 9.50 to 10.00 |
| Lead, Heavy | 4.35 |
| Lead, Tea | 4.00 |
| Zinc Scrap | 3.25 to 3.50 |

The Metallurgical Company of America, 52 Broadway, is sending out the fourteenth annual issue of the comparative statistics of Copper, Tin and other metals, compiled by the Metallgesellschaft and the Metallurgische Gesellschaft A.-G., Frankfort-on-the-Main. As in former years these statistics include the production, estimated consumption and stocks of the principal metals at the beginning and end of the year. There is also included a record of the import and export movements to and from the principal producing and consuming countries, and separate estimates of the largest producers. Special attention has been paid to the compilation of prices, a list of these being given extending over a long series of years, not only in cents per pound in New York City, but in pounds sterling per ton in London. The range of prices for Copper is especially interesting, a table having been compiled of monthly prices of Tough Copper from 1780 to 1900.

## Iron and Industrial Stocks.

NEW YORK, August 12, 1908.

Transactions on the Stock Exchange increased heavily in the period covered since last week's report. Extraordinary activity occurred on Friday, that day having been with one exception the heaviest of the year in the total number of shares changing hands. The iron and steel stocks participated prominently in the transactions, with prices steadily advancing, until Tuesday afternoon, when a reaction took place, which caused quite a decline. The range of prices on active stocks from Thursday of last week to Tuesday of this week was as follows: United States Steel common 46⅛ to 48, preferred 109¼ to 110½; Car & Foundry common 40 to 42¼, preferred 103 to 103½; Locomotive common 56 to 58⅛, preferred 108 to 109; Bethlehem Steel common 21¾ to 24¾, preferred 51¼ to 55; Steel Foundries common 8 to 9, preferred 40 to 41, new stock 33 to 37¼; Cambria Steel 36 to 37; Colorado Fuel 33 to 37½; Crucible Steel common 7¼ to 7¾, preferred 48¼ to 50½; Pressed Steel common 34⅞ to 36¾, preferred 96 to 97¼; Railway Spring common 43⅞ to 46⅜; Republic common 21⅝ to 25⅜, preferred 76 to 82½; Sloss-Sheffield common 62⅜ to 64¾, preferred 101; Cast Iron Pipe common 26⅛ to 28⅝, preferred 74 to 78⅞; Can common 5¾ to 6⅝, preferred 60 to 61¾. Last transactions, up to 1.30 p.m. to-day are reported at the following prices: United States Steel common 47⅜, preferred 110⅝, bonds 100; Car & Foundry common 41⅝, preferred 103½; Locomotive common 58¾, preferred 108; Colorado Fuel 36½; Pressed Steel common 35⅞, preferred 96; Railway Spring common 44; Republic common 24⅛, preferred 81½; Sloss-Sheffield common 64; Cast Iron Pipe common 27⅝, preferred 78; Can common 6½, preferred 61.

**Dividends.**—The International Harvester Company has declared the regular quarterly dividend of 1¾ per cent. on the preferred stock, payable September 1.

The Niles-Bement-Pond Company has declared the regular quarterly dividend of 1½ per cent. on the preferred stock, payable August 15, and 1½ per cent. on the common stock, payable September 19.

The Pratt & Whitney Company has declared the regular quarterly dividend of 1½ per cent. on the preferred stock, payable August 15.

The Sloss-Sheffield Steel & Iron Company has declared a quarterly dividend of 1 per cent. on the common stock, payable September 1.

**The Refined Iron & Steel Company in Receiver's Hands.**—A bill in equity was filed at Pittsburgh last week by George A. Koehler, Jacob P. Koehler and the Koehler & Streng Company, asking that a receiver be appointed for the Refined Iron & Steel Company, alleging that the company is hopelessly involved financially. The company is capitalized at $300,000, but only $237,500 of the stock has been issued. The court appointed Meyer Streng receiver, and fixed his bond at $30,000. The bill of complaint sets forth that George A. Koehler is a stockholder of the company and holds its bonds to the amount of $105,000; that Jacob P. Koehler is a stockholder, and that the Koehler & Streng Company is a creditor for $60,974.81. It is stated that the company has a bonded indebtedness of $150,000, and that the plant was being operated at a loss until recently, when it closed down indefinitely.

The Otis Steel Company, Cleveland, Ohio, has decided to erect a 152-in. plate mill to replace its 126-in. mill. Contracts have not yet been closed, but it is the intention to begin construction work at an early date. As soon as the new mill is ready for operation the present one will be taken out. The decision of the Otis company to build a larger mill is due mainly to the increased demand from locomotive builders for wider plates for fire box purposes. There is only one other 152-in. plate mill in the country, that of the Worth Brothers Company at Coatesville, Pa.

The European Churchward Steel Company has been incorporated in New Jersey and Charles M. Dally, New York, has been elected secretary and treasurer. The office of the company is at 29 Broadway, New York. The company will not manufacture steel, but, it is stated, controls patents covering the treatment of steel, particularly the introduction of vanadium and other metals in varying percentages and within specific ranges of temperature.

A boiler which supplied steam to a large engine in the center of the York Rolling Mill of the Susquehanna Iron Company, at York, Pa., exploded August 10, killing eight of the workmen, injuring others so seriously that some may die, and wrecking a portion of the plant. The mill had been closed down for a week and a force of men was engaged in making repairs to the engine.

The Amalgamated Association of Iron and Steel Workers, Pittsburgh, has discontinued strikes at the plants of the Washington Tin Plate Company, Washington, Pa.; Standard Tin Plate Company, Canonsburgh, Pa., and Republic Iron & Steel Company, Birmingham, Ala. Members of the Amalgamated Association are now permitted to work in these mills and retain their membership in that organization.

The White Star Steamship Company is negotiating with the London & Southwestern Railway Company for the construction of an immense dry dock at Southampton, England, capable of accommodating liners 1000 ft. in length. This move is in connection with the approaching construction at Belfast of two steamships of nearly that size for the White Star company.

Traffic on the lines of the Pennsylvania Railroad is showing a healthy increase. Since August 1 10,000 cars have been added to the active list, and the number of idle cars, 78,400, is now the smallest since the period of business depression set in.

## High Silicon Steel for Transformer Sheets.

Nearly 20 years ago the engineers of the Thomson-Houston Company, the predecessor of the General Electric Company, made the discovery that certain impurities in iron greatly improved its electrical characteristics, and that these impurities existed to much more nearly the desired amount in commercial open hearth steel than in pure Norway iron. There are four essential qualities for iron or steel when it is to be subjected to magnetization by alternating current—namely, high permeability, low hysteresis, high specific resistance (to limited eddy currents), and permanence with reference to hysteresis.

The principal materials which appear as impurities in iron are carbon, sulphur, manganese, silicon and phosphorus, which elements exist in quantities varying from a few hundredths to 0.2 of 1 per cent. The extent to which each of these materials is found in steel affects both the mechanical and magnetic characteristics of the steel, and many of them affect one characteristic more than they affect another. It is not strange, therefore, that experimenting for the best possible steel with the above four characteristics has had to be largely a "cut and try" process, and that real improvement has only been obtainable after the expenditure of much time and money.

### Open Hearth Steel Found to Be Superior to Iron.

The improvement in the steel adopted by the Thomson-Houston Company over the various grades of iron previously used were along all four essential lines mentioned above, but particularly with reference to the permanence, in that while the best Norway iron carefully annealed had losses little if any in excess of the grades of steel adopted, the improvement was not maintained, but in the course of time even the moderate temperatures to which the material was subjected in ordinary operation resulted in these losses increasing immensely. The open hearth steel, on the other hand, not only responded to the annealing, but the low losses obtained thereby were almost entirely permanent.

The improvement of open hearth steel over Norway iron was practically 100 per cent., or twice as good, taking everything into consideration. It was found that the commercial open hearth steel first used could be further improved for magnetic purposes by very careful attention to composition of material and also the temperatures and length of time to which it was submitted in annealing. For many years slight, but constant, improvements were made by the General Electric Company with its electrical sheets, and a great amount of time and money was expended in investigations and in determining the best results.

Several years ago Dr. John F. Kelly, then with the Stanley Electric Mfg. Company, found that steel having a small amount of silicon showed some improvement over ordinary open hearth steel, and a patent covering this was issued to him. At that time, however, difficulties at the mills in obtaining the material prevented its use.

### Silicon Contents Greatly Increased.

Several years ago the General Electric Company investigated the beneficial effects of using silicon in proportion of 10 to 30 times greater than the amount of the impurities previously existing in good steel, and succeeded in overcoming the very serious problems involved in the making and rolling of such steel. This material to an even greater extent than mild steel disproves the theory that pure soft iron is the best possible magnetic material, first, because it is so very far from pure iron that the silicon should be classed as an alloy rather than an impurity; and, second, because even with the most thorough annealing it is never soft.

Sheet steel having silicon in proper proportions and properly produced in the mill, not only gives far lower hysteresis loss than ever obtained before, but also gives a very large reduction of the eddy current loss due to the fact that the alloy increases the specific resistance three to five times. In addition, it establishes the magnetic stability of the steel so that the material is practically nonaging, even when subjected to imperfect conditions in manufacture or excessive temperatures in use to an extent never approximate with other materials.

The General Electric Company, notwithstanding its greatly increased cost, put this material into use in all its transformers, so that at the present time there are practically 250,000 of these transformers now in service. Laboratory tests regarding the permanence of the material have been confirmed by tests on many transformers which had considerable service.—*Electrical World.*

## OBITUARY.

CHARLES GORDON ZUG, vice-president and general manager of the Zug Iron & Steel Company, Pittsburgh, Pa., died at his summer home at Flushing, L. I., August 10, aged 36 years. He had been in ill health for several months.

FRED W. SACK, vice-president of the Bassett-Presley Company, jobber in iron and steel, Cleveland, Ohio, died August 10, after being in poor health for several months. He was 36 years of age and had been connected with the company about 20 years.

SAMUEL E. MOORE, for some years auditor of the Pressed Steel Car Company, Pittsburgh, died August 10, aged 58 years. He was born in Pittsburgh, and when a youth entered the employ of the Pennsylvania Railroad under D. A. Stewart, freight agent, where he remained several years. In 1868 he obtained his actual start in a commercial and business life with James Wood & Co., iron manufacturers. He made a specialty of accounting, and his experience thus gained was utilized to such good purpose that he soon established his title to be called the father of the system of accounts now in use by all progressive steel and iron firms in Pittsburgh. When D. A. Stewart became chairman of Carnegie Brothers & Co. he took Mr. Moore into the company's employ. He was promoted rapidly, and in 1884 was appointed auditor and finally became a partner. He continued with the Carnegie Steel Company until 1891, when he severed that connection. For several years following he conducted extensive enterprises in various lines of business activity, and in 1902 was appointed auditor of the Pressed Steel Car Company, holding that post until his death. His foresight and executive ability were recognized wherever he directed his energies, and he was known as one of the most active business men of Pittsburgh. He leaves a widow.

**Alabama Coal Operators Organize.**—The coal operators of Alabama met August 8 in Birmingham and formed a permanent State organization. Furnace, commercial and independent companies participated in the meeting, and it is stated that over 90 per cent. of the tonnage of Alabama was represented. G. B. McCormack was elected president and John W. Sibley vice-president. A constitution was adopted, which, condensed, explains the scope of the association as follows: "Its object shall be to promote stable, just, harmonious and business-like relations between the coal operators of Alabama, their employees and the public; to aid in seeing that suspension of operations in violation of contract is visited with adequate penalties; to see that any member of the association suffering from strike in violation of contract is sustained and supported; to compile coal mine statistics, and in general to promote in all lawful ways the interests of coal operators of the State."

W. N. Kratzer & Co., Pittsburgh, have received a contract for the structural steel for a new power building and an electric crane for the Heppenstall Forge & Knife Company, Pittsburgh, and are also erecting the steel work for a new building for the Federal Glass Company, Point Marion, Pa.

The Pittsburgh Gage & Supply Company, Pittsburgh, has completed the equipment of the blast furnace of the Jackson Iron & Steel Company, Jackson, Ohio, with high pressure steam piping. This furnace was blown in last week.

# The Machinery Trade.

NEW YORK, August 12, 1908.

Business with machinery houses the past week was rather light and in many quarters the slight increase of the first week of the month was not maintained, though with some very little difference in volume was noticed. There is, however, so little business that but a small number of additional orders makes a noticeable increase. The several projects that will necessitate the purchase of considerable amounts of machinery are apparently being held up for the present—that is, those that have reached the point of consideration of mechanical equipment. This is attributed to some extent to the number of officials away on their summer vacations, and several weeks are expected to elapse before these matters will be passed on and equipment bids received. As a result the great proportion of transactions cover small lots of tools, a $1000 order being considered at the present time a good sale to houses that in normal times it would not be worthy of especial mention. In spite of the light demand prices are well maintained; a manufacturer recently turned down an order for two or three good sized machines at a 5 per cent. reduction. Notwithstanding the continued dullness in the trade merchants are optimistic as to business this fall, when it is expected some of the projects will materialize. The New York Central Railroad is going ahead with the construction of its new shops at West Albany, N. Y.

The fall meeting of the National Machine Tool Builders' Association will be held October 20 and 21, at the Hotel Imperial, Broadway and Thirty-second street, New York.

Machinery houses are keeping in close touch with contractors for the construction of the new cut-off on the Delaware, Lackawanna & Western Railroad between Lake Hopatcong and the Delaware Water Gap, as it is expected that a considerable amount of contractors' machinery will have to be purchased to complete the work. This is the largest piece of railroad construction of the kind undertaken in this country in some years, and will entail the expenditure of about $10,000,000. As the cut-off extends through a particularly difficult country for railroad construction considerable buying will probably have to be done in the way of rock drills, excavating machinery, rock conveying apparatus, &c. Some of the contractors have not yet decided just what machinery they will have to purchase. For the construction of section 7 the Smith-McCormack Company, Portland, Pa., has not yet determined what machinery it will require, and neither Reiter, Curtis & Hill, Philadelphia, Pa., nor the Waltz & Reece Construction Company, Netcong, N. J., are in the market at the present time for machinery for doing the work on sections 6 and 2, for which they have the respective contracts.

The Grand Trunk Pacific Railroad, Montreal, Canada, of which Frank W. Morse is vice-president and general manager, is preparing plans for the construction of new shops at Winnipeg. This company is building an extensive railroad system in Canada, and will undoubtedly come into the market for a large amount of mechanical equipment in the near future.

Reports have been current in the trade the past few weeks to the effect that the E. I. Du Pont de Nemours Powder Company, Wilmington, Del., intends to erect a plant for the manufacture of cartridges. The company has been looking into the requirements of a plant for the manufacture of fixed ammunition, but does not contemplate embarking in the business at the present time.

T. H. Symington, president of the T. H. Symington Company, whose main office is in Baltimore and plant at Corning, N. Y., met with the Business Men's Association of Corning several times the past week, in an effort to secure through the assistance of the association the underwriting of $500,000 of bonds, the money to be used in erecting a new plant in Corning. The approximate cost of the new plant, which will cover over 30 acres, is $850,000, and will require 1500 workmen. The malleable plant, which the company proposes to erect, will be used for the manufacture of railroad journal boxes and lids, various malleable and ball bearings. Mr. Symington started the plant in Corning with a force of 80 workmen, which has increased to 800 at the present time. If the bonds can be placed, and indications seem very favorable, construction will be started on the buildings immediately. Locations have been considered in several cities, but, with conditions equal, the new plant will be erected in addition to the present plant in Corning.

In the recent note in these columns concerning the International Car Company, which is to build a new plant at New Orleans, La., is was erroneously stated that C. A. Ralston, who is president of the company, was also at the head of the McKeen Motor Car Company, which is to install a large plant at Omaha, Neb. Mr. Ralston is not connected with the McKeen Motor Car Company, which is a Harriman interest, but is president of the Ralston Car Company, which is building a plant at Ralston, Neb., a suburb of Omaha, for the building and repairing of cars, &c. In this connection it is of interest to note that the McKeen Motor Car Company has been incorporated with a capital stock of $1,000,000.

It is stated that the Public Service Commission of the Second District has ordered the Albion Power Company, Albion, N. Y., to spend about $20,000 in improvements to its plant in Albion, Waterport, Clark Mills and Brockport. The improvements are to include the installation of new boilers in the Albion power house, new shaft and water wheel at Waterport, and three 500-kw. transformers with necessary connections, new arc lamp system, exciter regulators, single phase feeder regulators, &c.

The Board of Water Supply, New York, will receive bids until September 1 for the construction of a 3-mile concrete conduit, 17 ft. high by 17½ ft. wide inside, between Ireland Corners and New Hurely in Gardner, Plattkill and Shawangunk, Ulster County, N. Y. This work is part of the Catskill Aqueduct, for which a number of contracts have already been let. This work is being followed closely by the machinery trade, as it is expected that a number of the contractors will have to purchase considerable in the way of machinery equipment to complete their contracts.

Under bids opened August 11 by the Superintendent of Public Works, Albany, N. Y., for contract 31 for the improvement of the Erie Canal at Little Falls, five bids were received, the lowest of which was that of Casey & Murray, Rochester, N. Y., whose bid was $829,770, as against the engineer's estimate of $813,800.

### Business Changes.

The business formerly carried on by the Hans Reisert Company, Ltd., has been acquired by the Purification & Engineering Company, 50 Church street, New York, which becomes sole owner of the Reisert patents in the United States for water softeners and filters.

The business of Arturo Tuddenham, Peru 359, Buenos Aires, has been acquired by Ritchie, Tuddenham & Cia, Calle B. Mitre 1353, where they have taken extensive showrooms and offices. They import from the United States small tools, machinery of all kinds for industrial purposes, railroad and contractors' supplies and modern building materials, and always carry a considerable stock.

**Catalogues Wanted.**—The F. A. Calhoun Company, 3019 Boulevard, Jersey City, N. J., contracting machinist, desires catalogues of mechanical equipment for its files.

# Philadelphia Machinery Market.

PHILADELPHIA, PA., August 11, 1908.

The actual volume of business taken by machine tool manufacturers and merchants shows little variation from week to week. Orders continue to come out in an irregular fashion. One manufacturer or dealer may have a fairly active week, only to fall back into a period of almost entire inactivity the following week. Business is much scattered, and a large proportion of the orders placed are in the nature of private sales between seller and customer without the formality of much shopping around by the buyer. This condition is particularly noticeable in cases where purchases of the better class of tools are made, and covers largely sales of individual tools. When the medium or smaller tools are wanted there appears to be a much wider range of inquiry.

Sales of lathes, grinders, drills and some tools of a more special nature are reported by the various dealers and manufacturers, but no individual orders of any size have been closed. Inquiries are reported as being fairly good, but possible buyers show no disposition to hurry orders, and prices are, in instances, being obtained for equipment that will be needed should business increase in any marked degree during the early fall months. The trade on the whole continues to express decidedly optimistic views regarding the future. Reports of crop conditions are considered most favorable for a resumption in business, financial conditions continue to improve, and confidence has, to a certain extent, been restored, as has been evidenced by the increasing volume of business coming from the general buyer. The only drawback to increased activity at this time is the fact that the railroads and the larger industrial plants continue out of the market. The uncertainty of the coming national election is also a factor, and a large volume of business will no doubt continue to be withheld until its probable outcome can be more clearly discerned.

While an improvement has been noted in some few cases, the volume of orders coming in has not been large enough to warrant any continued increase in the production of machine tools. The majority of the tool builders have not increased their output beyond the 50 per cent. of capacity mark, and hardly expect to do so until buying becomes more active. The export trade, as far as this territory is con-

cerned, continues dull. Inquiries of any volume have been few and the resulting business has been light. Those transacting a more or less regular trade abroad report no increase in the volume of orders.

The second-hand machine tool trade is moderately active. A fair general run of sales has been reported, mostly for the smaller metal and woodworking tools. Single tool transactions predominate. The trade, however, is fairly well satisfied with the condition of business generally, which is somewhat better than in the new tool and machinery field.

A little more business has been reported from both iron and steel casting plants, but the volume coming out is not sufficient to increase production to any marked degree. Practically all of the business placed has been for prompt shipment, although some few orders for delivery over the remainder of the year have been booked. The demand for machinery castings does not seem to increase, and foundries dependent on this class of business do not show any particular improvement. Very few plants in this territory have been able to operate up to 50 per cent. of their capacity and the majority fall considerably below that figure.

The contract for the erection of a manufacturing building for Bayuk Brothers, at Third and Spruce streets, has been awarded to the Wm. Steele & Sons Company. The building will be 80 x 101 ft., five stories, of reinforced concrete.

James F. Fisher, city engineer, Williamsport, Pa., has prepared a tentative report on the construction of a sewage disposal plant for that city, which, in accordance with a notification from the State authorities, must be completed by May, 1910. The engineer estimates the cost of a suitable plant at about $350,000.

The County Commissioners of Salisbury, Del., will receive bids, until August 18, for the construction of a steel plate girder draw bridge, over Wicomico River. Information may be obtained from H. M. Clark, engineer, Salisbury.

The West Chester & Pottstown Railway Company has decided to go ahead with the work of constructing and equipping the road, and it is said that a contract has already been entered into with Charles F. Goldstrom, Pittsburgh, Pa., for its construction. About $600,000 is reported to be the estimated cost of the work.

The State Hospital Commission, Henry F. Walton, Real Estate Trust Building, this city, chairman, has decided to reject all the bids recently opened for the construction of a number of buildings for the State Hospital for the Criminal Insane at Fairview, Pa., the bids being considered too high. New proposals will be received until September 3.

The E. H. Mumford Company, manufacturer of foundry molding machines, reports sales during the past week of 22 plain power squeezers, with vibrator attachments for match plate work, and two split pattern machines, to malleable iron foundries in different sections in the East: an A 3 Standard Universal hydraulic molding machine to a local locomotive plant, and a large jolt ramming machine, and several other standard machines to miscellaneous buyers. The demand for molding machines has improved, the orders booked showing a material increase. The company considers the outlook for business for the remainder of the year as quite favorable.

## Cincinnati Machinery Market.

CINCINNATI, OHIO, August 11, 1908.

If any special characteristic be conspicuous just now in the machinery market it is undoubtedly that of uncertainty as to the final disposition of some really promising inquiries which have been followed up with systematic office practice, but which hang fire. Practically all the largest manufacturers of tools in this section report improvement in inquiry, and some correspondence with dealers and others from whom came wholesale cancellations in October and November, which looks exceedingly promising, but for some unaccountable reason orders for shipment are not forthcoming, except in a few cases where tools are badly needed to take care of increasing demands in repair shops and the like.

Notable among those who have profited since the opening of the month may be mentioned one of the largest manufacturers of planers, another a maker of milling machines and another a specialist in upright drills. In planers very recent entries in the order books call for two 60-in., two 48-in., three 72-in. and one 42-in., shipped a few days ago to the New York Central Railroad. Shaper manufacturers have also come in for some improved business in August, one firm which has some good foreign connections having sold several machines for export. Although the tone of correspondence is greatly improved and some scattering orders are received by the lathe manufacturers and makers of miscellaneous tools for the handling of iron and steel, superintendents are not adding to the shop forces, save in a very few instances, and a number of establishments in this territory are still running with a handful of men, or, as in a number of cases, keeping the best workmen employed by running alternate weeks. Some concerns which have had some good Government inquiries and had practically closed for business are chafing over what seems to them unaccountable delay and unusual red tape.

Foundries are gradually gaining ground and increasing their activities, although still a long way from normal. Very few are pouring more than three heats a week; those cases where five or six are being done have been brought about principally through the experiments of owners and foremen in dividing up 75 or 100 tons output per week into 12 and 15 ton heats instead of 25 or 30 as usual.

Dealers in this territory report business a little improved in larger and heavier types of machinery, with some fairly good sales closed or in process of negotiation. The activity in pig iron has attracted the attention of all factors in the finished lines, and the recent heavy purchases by parties in the East and Central West for plumbing and agricultural implement manufacturing establishments have greatly encouraged both the manufacturers and dealers.

In second-hand machines there has been some irregular buying, but mostly of smaller tools and of standard types which have been disposed of by those frightened at the beginning of the slump and sacrificed to dealers at greatly reduced prices to move them.

In electrical equipment machinery there is a steadily growing demand, and manufacturers of medium and smaller size dynamos and motors are engaged to a very fair proportion of their normal capacity. In boiler equipment business has slumped off considerably, and what little is going is largely for the fire tubes for installation where less than 150 hp. is required. There are very few inquiries out from water tube plants. Since June manufacturers of boiler equipment have noticed for the most part a gradual falling off in orders and inquiries.

Word from Columbus indicates that the East Columbus plant of the Ralston Steel Car Company is gradually replacing men in all departments and that the inquiries are better. Particularly active is the steel underframe department. President J. S. Ralston, since his return late in July from a business trip East, has given every department of the big establishment his careful and personal scrutiny, convinced that it will not be long ere each will have attained its normal activity.

The Platt Iron Works, Dayton, Ohio, secured the contract for furnishing that city with one duplex dry vacuum pump at a cost of $1714.

The steel plant at Norwalk, Ohio, has increased its force and on August 5 started a double shift in several departments.

The plant of the Vincennes Pipe & Casting Company, Vincennes, Ind., has resumed operations, and reports from that city indicate that under the receivership the business has prospered, with prospects good for increasing activity in every department.

Manufacturers of stoves and ranges in this section are in receipt of a call from Secretary Allen W. Williams of the Central Association of Stove Manufacturers to meet in Columbus September 15. The last meeting was held in Cincinnati early in the year and the organization materially strengthened by the addition of a number of prominent manufacturers. Secretary Williams talks optimistically of the future, but does not report very encouragingly of the present or past business conditions in the stove trade, dating from the first of the year. It is expected that the trade will show a material improvement with the beginning of fall.

A number of tool manufacturers and makers of general machinery in this section are planning, as has already been noted in the columns of *The Iron Age*, to make an extended tour of manufacturing South America. These plans are gradually gathering weight and character, and it is thought that by September the complete plan with itinerary may be available. One new feature of the proposed trip contemplates shipping on the vessel, which is to be chartered at London instead of New York or other American port. E. H. Hargrave, president of the Cincinnati Tool Company, is the chairman of the committee of the Manufacturers' Club which is agitating the matter, and Frank B. Wiborg of the Ault & Wiborg Printing Ink Company is also prominent and enthusiastic in the enterprise.

The newly organized Borings-Briquetting Company, Cincinnati, with headquarters in the First National Bank Building, gave a special test of its product on August 6 at the plant of a large pump manufacturer in the suburbs before an audience of iron and steel men. It has in contemplation more tests in cities of Ohio and neighboring States, and has selected so far Canton and Piqua for early experiments.

The Clark Car Company has been organized with headquarters at Pittsburgh, with a paid up capital of $50,000. Charles H. Clark, the president, was formerly chief engineer of the Tennessee Coal, Iron & Railroad Company; George E. Slater is secretary, and Justin R. Swift treasurer. It is stated that the company will not build a plant for some time, but for the present will confine itself to designing steel equipment.

## New England Machinery Market.

WORCESTER, MASS., August 11, 1908.

August has brought no appreciable change in the volume of orders for machine tools booked by the dealers, nor have the machinery builders noted any material improvement, except in a few instances where the tools are special or semi-special, as compared with standard types. In Boston, Providence and elsewhere the stores are quiet, visiting buyers being rare. The salesmen are bringing in some orders, usually for single machines of the less expensive types, and they report promise of orders yet to be placed, which are still held up in pursuance of the policy of hesitation pending developments in the general situation. There is some activity in second hand machinery, of which there is plenty to be had. Several lots are being sold out by Boston dealers, and the Thomas & Lowe Machinery Company, Providence, has disposed of a sizable list. Many buyers of second-hand tools seem to be actuated in their purchases by the chance to pick up bargains, rather than by the carrying out of a definite plan of improvement or enlargement of manufacturing facilities. Prices are low, as compared with what they were a year ago.

The automobile trade is still exerting an influence by buying machinery, additional orders having been placed in New England, together with inquiries indicating others to come. A moderate amount of foreign business is being booked, much of it from countries which do not often figure as important buyers in the American machinery market. Some manufacturers of general products are mildly complaining that they are bothered with small rush orders with delivery by express. The pig iron salesmen are telling their New England customers that they are booking more business than they have been of late, and stress is being placed on this fact as a favorable indication for the finished product.

A slight improvement is noted in general manufacturing in Providence, R. I., and vicinity. This section of New England was hit exceptionally hard by the failure of the Union Trust Company, one of the largest banking institutions in New England. The tying up of deposits running into millions of dollars, coupled with the elimination of a most important source of financial accommodation, served to accentuate a situation which in itself was far from good, in common with the rest of the country. The failure of a bank in the neighboring town of Attleboro complicated business still further. Now the financial atmosphere of the community has been cleared. The Union Trust Company has been reorganized on a substantial basis, including a board of directors made up of men representing the best conservative interests of the city. The deposits have been released without loss to customers. All this has had its influence in bringing about a betterment in industrial conditions. The improvement is not great in itself; it is not even universal. But it is nevertheless important. A few additional men are being taken on as works gradually increase capacity. Some plants are shut down for vacation, among them that of the Brown & Sharpe Mfg. Company, which is continuing its custom of closing for a period at mid-summer, this time for a month, instead of 10 days. The machine tool builders of Providence report no marked increase in orders, but inquiries seem to be more numerous and more promising. The jewelry manufacturers of Providence and Attleboro, constituting an industry of large magnitude, are not as a whole busy for this time of year, yet an optimistic sentiment exists among them, it is said. Certain miscellaneous lines of manufacturing are running full on orders.

The Boston dealers have cause to appreciate the existence of Government workshops in New England, for purchases of machine tools, though not so large as in some other years, have served to add in an important way to the summer's total of business. The Watertown Arsenal is the largest buyer. Some $20,000 worth of machinery is now being purchased on requisition, only Boston dealers having been asked to bid. The list includes eight engine lathes, two horizontal boring machines, a 30-in. planer, and a heavy bar turret machine. The awards have not yet been made. The Portsmouth Navy Yard has bought a 48-in. double head lathe—a costly tool—and a radial drill. The Naval Station at Newport has been buying some machinery, but Boston got only a small share of this business. The Charlestown Navy Yard, largest of the New England naval bases, has not yet signified whether it will be in the market this summer or not.

The bids for Government business have demonstrated that prices are still maintained by the dealers. The lists remain unchanged, and concessions to customers are unimportant, their character and amount being little if any different from the customs of prosperous times. The manufacturers decline to concede favors asked by dealers for customers, if the requests mean reduced prices. The lesson has been thoroughly learned that the volume of orders in the machinery trade is affected but little by low prices. Looking backward over the exceedingly dull year, and then forward into a future which should soon become much brighter, there are plentiful causes for congratulation that the temptation to cut prices has been so generally resisted. It is realized that the trade will be in a very advantageous position, in that it will meet the rising market with prices already where they should be, which latter fact is now usually conceded by buyers as well as sellers. Of course, it is not too late for price cutting to begin, but small danger exists, it is believed, of an action which would be foolish enough at a time when improvement is so confidently looked for.

The Brownell Machinery Company has taken over the machine tool business of the Thornton Machinery Company, Providence, R. I., and will continue the store at 21-23 Exchange Place. The Brownell Machinery Company is a new Rhode Island corporation, with capital stock of $15,000. C. T. Brownell is the president and manager, Harry V. Prentice treasurer, and Albert E. Newton secretary. Mr. Prentice and Mr. Newton are residents of Worcester, Mass., and officers of the Prentice Brothers Company of that city, manufacturer of drills and lathes. The new company will confine itself to machine tools, discontinuing the line of textile machinery, which was the more important factor in the business of the Thornton Machinery Company. It will carry the tools included in the product of the Prentice Brothers Company and the Garvin Machine Company, and will act as agent for the Union Belt Company. The manager, Mr. Brownell, has had a long experience with the machine tool trade in Providence, first with the A. B. Pitkin Machinery Company and afterward with the Thornton Machinery Company.

The Smith & Winchester Mfg. Company, South Windham, Conn., manufacturer of paper mill, paper cutting and paper bag machinery, is having plans prepared by the Berlin Construction Company, Berlin, Conn., with the purpose of erecting a new plant. A new machine shop will be 80 x 210 ft., with traveling crane and other modern improvements. At one end of the machine shop will be erected a building 50 x 90 ft. and three stories, which will be used for stock and storage room, drafting room, pattern shop and pattern storage. These buildings will be erected this year. Later it is planned to remodel the company's foundry and old shops, though details of these improvements are not yet decided upon. The changes will give 30 or 40 per cent. increase in manufacturing floor space.

The Marine Hardware Company, Peabody, Mass., is building an addition to its plant and states that additional machinery will be needed later, though at the present time it is not in the market for equipment.

The Terry Steam Turbine Company, Hartford, Conn., manufacturer of low speed steam turbines, is having plans drawn for a new shop to be erected on Windsor street extension, which will be 80 x 200 ft. and one story, together with a power plant. The company states that some new machinery will be required for the enlarged works.

The Chandler & Farquhar Company, Boston, is selling out the machinery equipment of the Stratton Rotating Engine Company, Fitchburg, Mass. The large number of machine tools were bought comparatively recently and are practically new. The list includes nine engine lathes, two Jones & Lamson and Fay & Scott turret lathes, upright and sensitive drills, a 48-in. Bickford vertical boring machine, and a B. F. Barnes and No. 2 Betts horizontal boring machines, Cincinnati milling machine, woodworking machinery, motors and a miscellaneous lot of machines and tools.

The equipment and stock of the Electro Radiation Company B 287 Atlantic avenue, Boston, were sold at Auction August 10. Everything, including the few machine tools, brought low prices.

## Government Purchases.

WASHINGTON, D. C., August 11, 1908.

Proposals will be received until August 31 at the office of the United States Engineer, Boston, Mass., for electrical machinery, cable, rails, trolley and track material, &c.

The Isthmian Canal Commission will soon ask bids for two steam pile driving hammers for the Gatun handling plant.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until August 25 for two hydraulic jacks, two motors, two punch shears; September 1, one planing mill exhauster, seven lathes, one boring and drilling machine, one planing machine, one shaping machine, one saw bench machine, one drilling machine, one band saw, and until September 15, one locomotive crane, one steam hammer, one engine lathe and one compressed air locomotive.

The following bids were opened August 4 for supplies for the navy yards:

Class 1.—For construction of water supply system at the Naval Magazine—Bidder 37, Elliott Bay Iron Works, Seattle, Wash., $36,450; 46, C. F. Graff, Seattle, Wash., $19,995; 63, International Contract Company, Seattle, Wash., $25,576; 98, Pacific Engineering Company, Seattle, Wash., $43,971; 105, T. Ryan, Seattle, Wash., $31,500.

Class 2.—One auxiliary hoist—Bidder 92, Niles-Bement-Pond Company, New York, $2080.

Class 11.—One induction motor—Bidder 45, General Electric Company, Schenectady, N. Y., $504; 75, Lincoln Electric Company, Cleveland, Ohio, $485; 139, Westinghouse Electric & Mfg. Company, Pittsburgh, Pa., $509; 143, Wagner Electric Mfg. Company, St. Louis, Mo., $578.50; 144, Western Electric Company, New York, $554.

Class 32.—One automatic saw and dado machine—Bidder 47, Greenlee Brothers Company, Chicago, Ill., $263.

Class 33.—One double head tenoning machine—Bidder 2. American Wood Working Machinery Company, Rochester, N. Y., $257; 11, Bentell & Margdant Company, Hamilton, Ohio, $210 and $190; 40, J. A. Fay & Egan Company, Cincinnati, Ohio, $275; 47, Greenlee Brothers Company, Chicago, Ill., $275; 120, H. B. Smith Machine Company, Smithville, N. J., $272; 129, John T. Townsley Mfg. Company, Cincinnati, Ohio, $237.

Class 34.—One upright drill—Bidder 44, Frevert Machinery Company, New York, $62 and $68; 48, Garvin Machine Company, New York, $75 and $70; 87, Manning, Maxwell & Moore, New York, $65 and $67; 92, Niles-Bement-Pond Company, New York, $80; 101, Prentiss Tool & Supply Company, New York, $59.80.

Bids for the construction of a coal handling plant for the power house, navy yard, New York, were received on August 1 at the Bureau of Yards and Docks, Navy Department, Washington, D. C., as follows:

Item 1. Net price for coal handling plant complete in accordance with plans and specifications, supplemented by those submitted by the bidder.

Item 2. Same as item 1, but omitting the ash handling plant as specified in paragraph 20.

Item 3. Amounts to be deducted from items 1 and 2 if foundations required by the contractor's designs are installed by the Government.

Item 4. Price for one coal handling plant, outside of building 41, complete and in accordance with the spirit of these specifications, allowing sufficient space for the extension of the boiler plant.

Item 5. Same as item 4, but with the omission of the ash handling plant.

Item 6. Price for spare parts required for one year's operation of coal handling plant complete.

Item 7. Price for spare parts required for one year's operation of plant if the ash handling plant is omitted.

Item 8. Under this item bidders may submit proposals for the complete work in accordance with the spirit of the specifications, but with such modification of methods and details as they desire, provided all such modifications are fully specified or indicated upon plans accompanying the proposal.

Guaranty Construction Company, New York, item 1, $36,340; 2, $29,350; 3, $2625 and $2325; 6, $900; 7, $400.

Chas. O. Lenz, New York, item 4, $47,753; 5, $42,953; 8, $47,753; alternate for item 8, $49,553.

C. O. Bartlett & Snow Company, Cleveland, Ohio, item 1, $21,354; 2, $20,521; 3, $1600.

Belmont Iron Works, Philadelphia, Pa., item 1, $26,480; alternate, $24,130.

Burgin Point Iron Works, New York, item 1, $27,237 and $31,876; 2, $22,497; 3, $2596, $2986 and $2206; 6, $140.60 and $104; 7, $104.

Link-Belt Company, Nicetown, Philadelphia, Pa., item 1, $35,520; 2, $31,345; 3, $4160 and $4150; 4, $35,666; 5, $31,491; 6, $310; 7, $285; 8, $208; alternates, $150, $2035, $2108 and $5310.

Dobbie Foundry & Machine Company, New York, item 1, $30,209.65; 2, $29,719; 3, $1508; 6, $561.80; 7, $525; 8, $30,661; alternate add $1061; alternate, $31,411 and $30,836.

Darley Engineering Company, New York, item 8, $7417.

William J. Haskins, New York, item 1, $27,644; 3, $3060; 6, $500.

G. & W. Mfg. Company, New York, item 1, $31,913; 2, $31,000; 3, $1200.

Conveying Machinery Company, New York, proposal A, item 1, $41,669.43; 2, $39,464; 3, $35,200; 4, $42,646; 5, $42,012; 6, $575; 7, $455; 8, $38,412; proposal B, item 1, $39,179.75; 2, $38,607; 3, $34,784; 6, $200; proposal C, item 4, $44,387.75; 5, $43,812; 6, $575; 7, $255; 8, $44,387.75; proposal D, item 4, $45,111.90; 5, $44,913; 6, $575; 7, $455; 8, $45,101.90.

The following bids were received by the lighthouse engineer, Boston, Mass., for one locomotive type boiler for the Cape Elizabeth, Maine, station:

Robb-Mumford Boiler Company, South Framingham, Mass., $728, accepted. Roberts Iron Works Company, Cambridgeport, Mass., $737. Hodge Boiler Works, Boston, $787. Ames Iron Works, Oswego, N. Y., $851. E. Keeler Company, Boston, Mass., $942. Portland Company, Portland, Maine, $985. Estle & O'Brien Boiler Company, Portland, Maine, $1000. J. F. Foster, Boston, Mass., $625, incomplete.

Bids were opened at the office of the Isthmian Canal Commission July 20, for one dynamo and one engine as per specifications, as follows:

Westinghouse Electric & Mfg. Company, Baltimore, Md., $785. General Electric Company, Schenectady, N. Y., $750.

The following awards have been made for machinery for the navy yard, bids for which were opened May 26:

American Wood Working Machinery Company, Rochester, N. Y., class 153, one pony planer, $647.

B. F. Sturtevant Company, Hyde Park, Mass., class 154, one motor driven fan and condenser outfit, $558.95.

H. B. Smith Machine Company, Smithville, N. J., class 155, two wet emery grinders, $277.50.

The following awards have been made for machinery for the Isthmian Canal Commission, bids for which were opened June 8, Circular No. 442:

Becker-Brainard Milling Machine Company, Hyde Park, Mass., class 1, one universal milling machine, $1086.

C. E. Robidoux, St. Louis, Mo., class 8, one engine lathe, $780.

The following awards have been made for machinery for the navy yards, bids for which were opened June 16:

American Tool & Machine Company, Boston, Mass., class 72, one tailstock turret brass lathe, $720.

Pratt & Whitney Company, Hartford, Conn., class 73, one turret hand screw machine, $845.

Fairbanks Company, New York, class 74, one precision milling machine, $697.77.

Prentiss Tool & Supply Company, New York, class 75, one internal keyway cutting machine, $775.

G. & W. Mfg. Company, New York, class 80, 12 chain hoists, $612.

Under bids opened July 16, Circular No. 448, for supplies for the Isthmian Canal Commission, the General Electric Company, Schenectady, N. Y., has been awarded class 32, two 75 hp. motors, $2350.

Under bids opened July 21 for machinery for the navy yards, the Reading Crane & Hoist Works, Reading, Pa., has been awarded class 71, one hand power single I-beam overhead traveling crane, $390.

## A New British Aluminum Works.

The London *Times Engineering Supplement* states that the new Aluminum Corporation, Ltd., Wallsend-on-Tyne, England, has put the first of its furnaces in operation. The aluminum produced is stated to have proved to be of high quality, having in fact never fallen below 99 per cent. of the pure metal. In conjunction with the furnace house, carbon works have been erected on an adjoining site capable of manufacturing carbon electrodes to supply the whole of the company's requirements at Dolgarrog, as well as at Wallsend, and one of the three carbon furnaces has been put to work.

The lease of valuable bauxite properties in the Var district of France has recently been acquired by the Aluminum Corporation, which is now mining its own bauxite for the production of alumina, and arrangements have been made with the United Alkali Company, Newcastle-on-Tyne, whose works at Hebburn are quite close to Wallsend, for the formation of a subsidiary company, which has been registered under the title of the Bauxite Refining Company. The Aluminum Corporation holds three-fourths of the capital of this new company, and the remainder is held by the United Alkali Company, which has leased to the new company four or five acres of land at Hebburn-on-Tyne for the purpose of establishing new works. The subsidiary company will purchase bauxite from the corporation at a fixed price, and in return will supply alumina. The location of these bauxite refining works at Hebburn-on-Tyne is, from the point of view of cheap fuel, power, transport facilities, and material, claimed to be an ideal one. As the most modern plant is to be installed, it is stated that alumina will be here produced more economically than at any other place in Great Britain. These new works are expected to be ready in January.

To meet the growing demand for aluminum sheets, it is understood that the Aluminum Corporation has recently concluded an agreement with an important Teesside company to erect and equip, in the neighborhood of Middlesbrough, rolling mills to supply its requirements for aluminum in sheets and for the drawing of its wires.

At the recent New Haven meeting of the American Chemical Society a division of Industrial Chemists and Chemical Engineers was organized. Arthur D. Little, of Boston, was elected chairman of the division and vice-president of the society, and indicated in his address the broad field awaiting development by the new organization. The division will include a large proportion of the membership of the society, and especially those engineering chemists whose work is directly concerned with industrial development and progress. The division will begin the publication at an early day of the *Journal of Industrial and Engineering Chemistry*, for which a strong board of editors was elected.

The Carnegie Steel Company expects to start up its Mingo Junction Works at Mingo Junction, Ohio, to about three-fourths capacity on Sunday night, August 16. This plant has been completely idle for about nine months, and the present intention is to start two of the four blast furnaces, the blooming and sheet bar mills and the Bessemer plant.

# HARDWARE

WITHOUT going beyond the bounds of our own country, and omitting the intricate questions which concern international relations and world-wide tendencies, there are questions of surpassing interest presented in the conditions surrounding the American business man at the present time.

A perplexing problem is found in the question now engrossing much attention as to when there is to be something like a complete recovery from the existing depression. The answer is obviously not to be in the terms of those who take a pessimistic view of things on the one hand, nor of those on the other hand who are proclaiming a fictitious and premature prosperity in the hope that the real thing will materialize because positively announced.

Is it safe to assume that the forces now at work will correct former evils and thus result in a better state of things and contribute to the public welfare?

In what way are business men to adjust their methods to the new conditions?

How far will consolidation or co-operation take the place of competition which has always been a potent factor in business?

What is to be the outcome of the tendency to regulate public corporations, and to what extent will this regulation be applied to private corporations?

Granting that this control or supervision will correct some evils and accomplish desirable results, how far is it going to restrain enterprise and militate against the public good?

Where lies the happy mean between government ownership and uncontrolled corporate management?

What will be the final attitude of the law which at present recognizes no difference between reasonable and unreasonable agreements in restraint of trade, as all are alike illegal?

Or to descend to matters that come home to many a merchant with peculiar practical force—what is to be the future of the catalogue house in its relation to thousands of small traders throughout the country?

Is parcel post in any of its forms to be an ally of the great concerns in the large cities, thus helping to crush out more and more the life of the smaller communities?

How far is the narrowing of the margins of profit to go?

Fortunately these problems, while they remind the merchant or the manufacturer of the difficulty as well as of the dignity of his calling, do not interfere with careful attention to his business, which makes constant appeal for the best and wisest management and for persistent and practical enterprise and effort, with the prospect of a comfortable and honorable livelihood and a good, perhaps large, measure of success.

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Apropos of the discussion which is continually cropping up in regard to jobbers' special brands, a suggestive expression was recently heard in the office of some well-known manufacturers not 100 miles from New York. Their output is large, but only a small percentage of their goods goes on the market under their own name. "These goods," it was stated, "are counted on to maintain our reputation. Wherever you see them with our name on you may be sure that they contain only the best material put together in the most workmanlike way. As to the balance of our product, since it cannot be traced to us, we naturally turn it out so as to net us the largest possible profit. If anything goes wrong it affects the distributers, not us. Why shouldn't we be satisfied with the arrangement?" They then went on to express themselves as content to make special brands. If they had seen fit to give a more complete statement of the case they would probably have remarked that there is a wide difference in the attitude of the parties for whom they make the special brand goods, as some of them insist on quality almost as tenaciously as a manufacturer does for his own brands, while others are willing that quality should be sacrificed so long as the articles are reasonably good, attractive in appearance and furnished at a low price.

## Condition of Trade.

The individual seeking information regarding actual commerce is somewhat baffled by cross currents and a lack of uniformity in forecasting a return to a more normal situation than has prevailed for nearly a year; but making necessary allowances for hot weather and vacation dullness, there is, nevertheless, an undercurrent of opinion regarding the immediate future that is decidedly encouraging. While as yet no noticeable change has occurred in products fabricated from iron and steel, the recent advances in ingot copper have led to several increases in copper and brass lines. Reports are also gratifying as to the excellent trade enjoyed in farm tools and implements, which, considered in connection with the promise of further helpful developments from the crops already harvested and the predictions from authoritative sources regarding good prospects for later crops, is an advance in the right direction. An abundance of low interest money is being offered for safe investment, which should stimulate repairs, betterments and extensions, long deferred, a revival of which will greatly increase consumption. In some lines supply houses have been busy in the last fortnight, and the improvement is marked enough to indicate satisfactory progress. In general hardware some manufacturers find a noteworthy gain in output, but there is still much complaint regarding sales, although in certain instances orders are a little more numerous and an increase in quantities is noted. The care and circumspection with which stocks have been replenished for over a year afford proof enough that the shelves and warehouses of wholesalers and retailers will require substantial additions to meet promptly any material demands. The old adage that "the time to buy goods is when no one wants them, and the time to sell is when every one wants them" has now, perhaps, more than the usual significance. From various sources June and July are alluded to as better than the latter part of last spring, but in some sections the trade of the last 10 days has been slow, which doubtless may be largely attributed to sultry weather and customary vacation absences. Reports are received of more and better buying by railroad interests, and in some instances reference is made to an insistent demand for prompt deliveries, one large company specializing this trade reporting that August so far is from 5 to 10 per cent. better than July in sales.

## NOTES ON PRICES

**Wire Nails.**—The feeling among the larger buyers, which is more or less general, that the maintenance of prices indicates a continued firm market, has stimulated buying to some extent, and a few jobbers are placing contract orders. In addition, the demand for prompt shipments of small lots indicates light stocks in jobbers' hands. These are regarded as encouraging features in the situation. Quotations for base sizes are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

| | |
|---|---|
| Carloads, to jobbers | $1.95 |
| Carload lots to retail merchants | 2.00 |
| Less than carloads to jobbers | 2.00 |
| Less than carloads to retail merchants | 2.10 |

*New York.*—Local demand is still of moderate proportions and prices unchanged. Nails are held on the basis of $2.30 per keg in small lots at store.

*Chicago.*—The opening week of August has fully sustained the satisfactory showing made in July, which in point of tonnage was in excess of that of the same month a year ago. These results have been accomplished in face of the fact that orders have been principally for current requirements and included no large quantities for extended delivery. The same conditions continue to prevail, but there is an imperative demand for prompt shipment, which is regarded as conclusive evidence of reduced stocks. The firm maintenance of prices is emphasized, and the conviction is growing that any change in prices will be upward rather than the contrary. Quotations are as follows: $2.13, in car lots to jobbers, and $2.18, in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

*Pittsburgh.*—New demand for Wire Nails continues quite active, shipments by the mills being heavier than for some time. An encouraging feature of the situation is that some of the large jobbers are now placing contracts, and are already specifying liberally against them. Specifications from Texas and other Southwestern States have been quite heavy, due to the advance in freight rates to these points, which went into effect yesterday. The feeling is growing that prices on Wire Nails will not be any lower, and this is having the effect of causing buyers to place more liberal orders. Quotations for base sizes are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

| | |
|---|---|
| Carloads, to jobbers | $1.95 |
| Carload lots to retail merchants | 2.00 |

Galvanized Nails are quoted at $1 over the price of the regular Nails.

**Cut Nails.**—A meeting of the Eastern Cut Nail Association was held on the 5th inst., at which the base price of $1.80, f.o.b. Pittsburgh, was reaffirmed. The improved feeling in the raw material market is making Nail manufacturers less inclined to shade regular prices. Comparatively few of the Nail mills are running, and most of these on short time. Some improvement is reported in the way of an increased business at mill, but orders are confined to small lots. Quotations on Steel Nails are on the basis of $1.80 per keg, at mill, $1.75 being obtainable on the most desirable business. In the Western market Iron Cut Nails are held at an advance of 10 cents per keg over Steel Cut Nails, but this differential is not observed in the East.

*New York.*—Business in the local market continues light. Steel Cut Nails are held on the basis of $2.15 per keg, for small lots at store.

*Chicago.*—To a very limited extent Cut Nails have shared the improved demand for Wire Nails. Orders are somewhat more frequent, but are generally restricted to small lots. So far as prices are concerned market conditions are unchanged. We quote Chicago prices as follows: In car lots to jobbers, Iron Cut Nails, $2.08; Steel Cut Nails, $1.98. In small lots from store: Iron Cut Nails, $2.25; Steel Cut Nails, $2.15.

*Pittsburgh.*—In sympathy with improved general business conditions, the demand for Cut Nails is showing some betterment, and the mills are entering more new business than for some time. Orders, however, are still confined to small lots for actual needs. Quotations on Steel Nails are on the basis of $1.80 per keg, at mill, $1.75 being obtainable on the most desirable business. In the Western market Iron Cut Nails are held at an advance of 10 cents per keg over Steel Cut Nails, but this differential is not observed in the East.

**Barb Wire.**—With the exception of a somewhat early demand from the Southwest, owing to an advance in freight rates taking effect on the 10th inst., no new demand has been in evidence. Mills are still making shipments against contract orders. Quotations are as follows, f.o.b. Pittsburgh, 60 days, 2 per cent. discount for cash in 10 days:

| | Painted. | Gal. |
|---|---|---|
| Jobbers, carload lots | $2.10 | $2.40 |
| Retailers, carload lots | 2.15 | 2.45 |
| Retailers, less than carload lots | 2.25 | 2.55 |

*Chicago.*—Fall trade is beginning to develop in the Southwest, and is particularly active in Texas, where it started earlier than usual, owing to an advance in freight rates effective August 10. In anticipation of the new freight tariff hurried shipments were insisted upon. The prospect for a growing volume of business, as the demand extends Northward, is promising. Quotations are as follows: Jobbers, Chicago, car lots, Painted, $2.28; Galvanized, $2.58; to retailers, car lots, Painted, $2.33; Galvanized, $2.63; retailers, less than car lots, Painted, $2.45; Galvanized, $2.75; Staples, bright, in car lots, $2.25; Galvanized, $2.25; car lots, to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

*Pittsburgh.*—There is practically no new demand as the season is over, but the mills are still making shipments against contracts. The market is firm, and it is stated that regular prices are being absolutely maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

| | Painted. | Gal. |
|---|---|---|
| Jobbers, carload lots | $2.10 | $2.40 |
| Retailers, carload lots | 2.15 | 2.45 |
| Retailers, less than carload lots | 2.25 | 2.55 |

**Plain Wire.**—The demand for Plain Wire is showing improvement, both from manufacturers of Wire Fencing and makers of implements. Mills have a larger tonnage of orders on their books than at any time this year. Quotations per 100 lb. to jobbers in carload lots are as follows, on a basis of $1.80 for Plain and $2.10 for Galvanized f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the price to retailers being 5 cents additional:

| Nos. | 6 to 9 | 10 | 11 | 12 & 12½ | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|
| Annealed | $1.80 | 1.85 | 1.90 | 1.95 | 2.05 | 2.15 | 2.25 | 2.35 |
| Galvanized | 2.10 | 2.15 | 2.20 | 2.25 | 2.35 | 2.45 | 2.85 | 2.95 |

*Chicago.*—Encouraged by the outlook for prosperous agricultural conditions, fence makers are buying more liberally than at any time this year. Orders are not now so closely restricted to immediate requirements as has been the case for months past. At the same time under existing conditions, which permit of prompt deliveries, there is no pressing need at present of anticipating needs far in advance. We quote as follows: Car lots to jobbers, $1.98, f.o.b. Chicago, and to retailers, $2.05.

*Pittsburgh.*—New business being entered by the mills is larger than for some time, especially for Wire Fencing, demand for which is quite active. The implement manufacturers are specifying freely, and shipments by the mills and the tonnage of actual orders on books are reported heavier than for several months. Quotations per 100 lb. to jobbers in carload lots are as follows, on a basis of $1.80 for Plain and $2.10 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the price to retailers being 5 cents additional:

| Nos. | 6 to 9 | 10 | 11 | 12 & 12½ | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|
| Annealed | $1.80 | 1.85 | 1.90 | 1.95 | 2.05 | 2.15 | 2.25 | 2.35 |
| Galvanized | 2.10 | 2.15 | 2.20 | 2.25 | 2.35 | 2.45 | 2.85 | 2.95 |

**Copper and Brass Goods.**—Higher prices for ingot copper, now 14c. flat, have compelled several increases in materials into which copper enters. Bare Copper Wire for electrical purposes, f. o. b. mill, car lots, was ad-

vanced August 11 a quarter cent to 15¼c. base per lb. August 10, sheet Copper moved up a cent to 18c base, Sheet Brass to 15¼c base, and Brazed Brass Tubing to 21¾c base, per lb. Brass Rods and Wire went to 15½c base, each, and Soldering Coppers are now 18c per lb. base, in lots of 300 lbs. and over, with increases as usual for smaller quantities and small sizes. The month of July has shown marked improvement in Copper and Brass materials, over preceding months this year, and August, it is believed, with trade from present indications, will witness further betterment. Important interests in these lines look forward to more favorable business, until at least November 1, to which date they can now see ahead.

**Brass and Bronze Wire, Rods, Etc.**—Under date of August 1 the manufacturers have revised lists of Brass and Bronze Rods; Brass, Bronze and Gilding Wire in Coils; and Roll and Sheet Brass, Bronze, Oreide and Gilding. In the new lists it will be observed that the prices per pound are no longer given, but instead the extras over base price. In the price-list of Brazed Brass, Bronze and Copper Tubing now in use have been included, Brazed German Silver and Zinc Tubing, without any change in extras over base price. The revised price-lists are as follows:

*Brass and Bronze Rods.*

Brown & Sharpe's Gauge the Standard.
Extras Over Base Prices.

| | Inc. No. 11 to ⅛ in. | Inc. ⅛ to ¼ in. | Inc. ¼ to ½ in. | Inc. ½ in. Inc. 1 in. | Over 1 in. Inc. 3 in. |
|---|---|---|---|---|---|
| Round | 6½ | 2½ | ½ | Base. | 3 |
| Hexagon, octagon and square. | 8½ | 4½ | 2½ | 2 | 5 |
| Rectangular and half round. | 10½ | 6½ | 4½ | 4 | 7 |

*Brass, Bronze and Gilding Wire in Coils.*

Brown & Sharpe's Gauge the Standard.
Extras Over Base Prices.

| | ¼-in. and larger. | Smaller than ¼ in. and larger than No. 5. | Nos. 5, 6, 7. | Nos. 8, 9, 10. | Nos. 11, 12, 13. | Nos. 14, 15, 16. | Nos. 17, 18. | Nos. 19, 20. |
|---|---|---|---|---|---|---|---|---|
| Round | Base. | ½ | 1 | 1½ | 2 | 3 | 3½ | 4½ |
| Flat, square and half round | 4 | 4½ | 5 | 5½ | 6 | 7 | 7½ | 8½ |

*Roll and Sheet Brass, Bronze, Oreide and Gilding.*

Brown & Sharpe's Gauge the Standard.
Extras Over Base Prices.

| | | In. 2 | In. 12 | In. 14 | In. 16 | In. 18 | In. 20 | In 22 | In. 24 | In. 26 | In. 28 | In. 30 | In. 32 | In. 34 | In. 36 | In. 38 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Wider than | | | | | | | | | | | | | | | | |
| and including | | 12 | 14 | 16 | 18 | 20 | 22 | 24 | 26 | 28 | 30 | 32 | 34 | 36 | 38 | 40 |
| To and including No. | 20 | 0.0319 | Base. | 1 | 3 | 5 | 7 | 9 | 11 | 14 | 17 | 20 | 24 | 28 | 33 | 38 | 43 |
| | 21 | 0.0284 | " | 2 | 4 | 6 | 8 | 10 | 12 | 15 | 18 | 21 | 25 | 29 | 34 | 39 | 46 |
| | 22 | 0.0253 | " | 2 | 4 | 6 | 8 | 10 | 12 | 15 | 18 | 21 | 25 | 29 | 34 | 39 | 46 |
| | 23 | 0.0225 | " | 2 | 4 | 6 | 8 | 10 | 12 | 15 | 18 | 21 | 25 | 29 | 34 | 39 | .. |
| | 24 | 0.0201 | " | 2 | 4 | 6 | 8 | 10 | 12 | 15 | 18 | 21 | 25 | 29 | 34 | 39 | .. |
| | 25 | 0.0179 | 1 | 2½ | 5 | 7 | 9 | 11 | 13 | 16 | 19 | 22 | 26 | 30 | .. | .. | .. |
| | 26 | 0.0159 | 1 | 2½ | 5 | 7 | 9 | 11 | 13 | 16 | 19 | 22 | 26 | 30 | .. | .. | .. |
| | 27 | 0.0142 | 1 | 3 | 6 | 8 | 10 | 12 | 14 | 17 | 20 | 23 | .. | .. | .. | .. | .. |
| | 28 | 0.0126 | 1 | 3 | 6 | 8 | 10 | 12 | 14 | 17 | 20 | 23 | .. | .. | .. | .. | .. |
| | 29 | 0.0112 | 1½ | 3½ | 6½ | 8½ | 10½ | 12½ | 14½ | 17½ | 20½ | 23½ | .. | .. | .. | .. | .. |
| | 30 | 0.0100 | 2 | 4 | 7 | 9 | 11 | 13 | 15 | 18 | 21 | 24 | .. | .. | .. | .. | .. |
| | 31 | 0.0089 | 2½ | 4½ | 7½ | 9½ | 11½ | 13½ | 15½ | 18½ | .. | .. | .. | .. | .. | .. | .. |
| | 32 | 0.0079 | 3 | 5 | 8 | 10 | 12 | 14 | 16 | 19 | .. | .. | .. | .. | .. | .. | .. |
| | 33 | 0.0071 | 3½ | 5½ | 8½ | 10½ | 12½ | 14½ | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| | 34 | 0.0063 | 4 | 6 | 9 | 11 | 13 | 15 | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| | 35 | 0.0056 | 4½ | 6½ | 9½ | 11½ | 13½ | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| | 36 | 0.0050 | 5 | 7 | 10 | 12 | 14 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| | 37 | 0.0044 | 5½ | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| | 38 | 0.0039 | 6 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |

**Window Glass.**—At a meeting of the Eastern Window Glass Jobbers' Association, held on August 6, the price was made uniform on single and double strength Glass of all sizes in all territory east of the Mississippi River, the discount being 90 and 20 per cent. The Western Window Glass Jobbers' Association had previously adopted the same price, thus the same discount from jobbers' list, October 1, 1903, on all hand blown Glass applies to the entire country. Manufacturers' stocks are reported as being small and broken, and one manufacturer is reported to have said at the Eastern meeting that probably by the middle of the month manufacturers would advance prices 10 to 15 per cent., and that within 30 days manufacturers would be getting 90 per cent. discount for Glass. Future advances will, of course, depend largely upon demand. Only one or two hand factories are now supposed to be in operation, and the American Window Glass Company's output has been somewhat curtailed by necessary repairs on tanks. An improved demand is reported over that of 30 days ago.

**Linseed Oil.**—Actual demand has been light during the week, being confined to actual requirements. The market has eased off somewhat on carload business, and some buyers were offering carload shipments for August-September deliveries at 42 cents per gallon. Quotations are as follows, for barrel lots: State and Western Raw, 43 to 44 cents; City Raw, 44 to 45 cents per gallon. Boiled Oil is 1 cent per gallon advance on Raw.

**Spirits Turpentine.**—The market during the week has been weak on account of conditions at Southern points. Within the last day or two the condition has improved a little, as more buying is reported at Savannah. Demand in New York has been light, and the market is represented by the following quotations: Oil Barrels, 39½ to 40 cents; Machine Made Barrels, 40 to 40½ cents per gallon.

WILLIAM DWIGHT EDWARDS of the Edwards & Chamberlin Hardware Co., Kalamazoo, Mich., died on the 7th inst., after an illness extending over a period of six months, of valvular heart trouble. Mr. Edwards was born in that city April 7, 1851. Soon after becoming of age he accepted a position in Detroit, in which city he obtained a practical Hardware training, having been identified with the business now known as the Fletcher Hardware Company, for more than a quarter of a century, being promoted step by step from clerk, until he finally became vice-president. When the Edwards & Chamberlin Hardware Company was organized in Kalamazoo Mr. Edwards bought an interest in it, and about seven years ago increased his holdings and became the company's secretary. Since the death of Mr. Chamberlin Mr. Edwards had occupied the position also of treasurer.

THE Wiley & Russell Mfg. Company, Greenfield, Mass., has issued a blue print circular calling attention to some tests made of the Lightning Machine Relieved Taps. These tests, it is stated, were not made by the company or parties in any way connected with it, but by factories disinterested further than a desire to obtain better Taps. In one of the tests made on ¾-in. malleable iron Nuts, tough and gritty, 20,000 Nuts were tapped with one Tap only. In another test made on ordinary punched Nuts. Tap No. 1, 7-16, tapped 38,000 Nuts; No. 2, 7-16, tapped 41,000 Nuts; No. 3, ⅜, tapped 29,400 Nuts; and No. 4, ⅜, tapped 43,700 Nuts.

## New England Merchant's Telegram Circular.

THE clever telegram circular reproduced herewith about one-half actual size has lately been issued by Homer F. Livermore, 85 Pearl street, Boston, Mass. It

Form No. L-500.

**THE WIRELESS TIP TELEGRAPH COMPANY.**

ORIGINATED BY US

50,000 POUNDS IN STOCK. BEST SERVICE IN NEW ENGLAND.

HOMER F. LIVERMORE, 85 Pearl Street, Boston.

| Receiver's No | Time Filed | Check |
|---|---|---|
| | | |

**SEND** us your orders. We assure you Best Material, Prompt Deliveries, Right Prices.

July 30, 1908.

Buy Brass and Copper at Present Prices Buy Now

HOMER F. LIVERMORE.

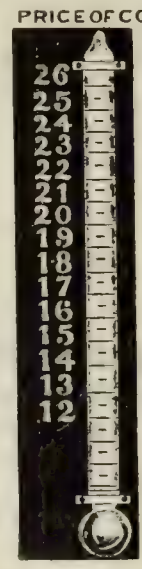
(Paid)
(9.25 A.M.)

☞ READ THE NOTICE AND ADVERTISEMENT ON BACK. ☜

*Face of Telegram Circular Sent Out by Homer F. Livermore, Boston.*

will be regarded as an effective method of calling attention to his business and the desirability of placing early orders for Brass and Copper, which Mr. Livermore handles largely. The illustrated argument which appears on the back of the circular is well borne out by the present condition of the market and its higher tendencies.

PRICE OF COPPER




PRICE 1907

PRICE NOW

IT IS A FOREGONE CONCLUSION THAT THE WORST IS OVER AND THINGS ARE SHAPING THEMSELVES SO THAT BUSINESS WILL BE RUSHING.

AS STOCKS OF MERCHANDISE ARE SO THOROUGHLY DEPLETED IT IS ONLY A SENSIBLE DEDUCTION —THAT LATER, THOSE WHO HAVE NOT ANTICIPATED THEIR REQUIREMENTS WILL FIND DIFFICULTY IN GETTING THEIR ORDERS FILLED PROMPTLY, EVEN AT HIGHER PRICES THAT ARE SURE TO COME.

WE ARE PREPARED TO FILL ORDERS NOW FOR BRASS & COPPER IN ALL FORMS.

LET US HEAR FROM YOU.

HOMER F. LIVERMORE, 85 Pearl St., Boston.

*Back of Telegram Circular with Its Illustrated Argument as to Higher Prices.*

## Hardware Merchants' Advertising Announcements.

THE Towne Hardware Company, Saratoga, N. Y., has recently issued a store paper under the title of "Our Hustler." It consists of eight pages, about 12½ x 9 in., in the form of a folder. A number of selections from the company's line, especially seasonable goods, are thus effectively presented. A column is devoted to "Some Exceptional Bargains," on which attractive prices are named.

C. E. Pipp, Otsego, Mich., recently issued a four-page folder, 12 x 9 in., in which several selections from his line of Sewing Machines were attractively presented. Those who received the circular were reminded that the price asked for any of the Machines was as low, if not lower, than that demanded by a catalogue house, and in addition, customers were enabled to see just what they were getting, and there was no trouble in regard to freight, money orders, possible breakage, &c. The circular showed three Machines, one of which was listed at $12.50 or $12 cash, another at $16.50, 5 per cent. cash, and a third at $22.50, with the same amount off for cash.

The August number of the monthly bulletin issued by C. B. Smith, Shrewsbury, Pa., calls attention to Washing Machines, Wringers, Enameled Ware, Food Choppers, Sad Irons, &c. A page is devoted to announcements in regard to Oil Stoves, Hammocks, Croquet Sets and Lawn Mowers, which are offered at attractive prices with a view to closing them out before the end of the season. A new feature of the bulletin is a department under the head of "New Goods," in which Safety Razors, Knives, Shears, Aluminum Ware, &c., are given special attention. Mr. Smith has been using this sort of advertising for the past two years, and is very much gratified with the business results. It enables him to draw attention to seasonable goods and also to push goods that are slow sellers, also keeping the people alive to the fact that the publisher of the bulletin is an up-to-date and energetic merchant.

THE Pritchard-Strong Company, Rochester, N. Y., is sending out a folder in which attention is effectively called to its life-size "Brother Bill" lithograph cut-out and its trade winning qualities when placed in the show window of a store. It is accompanied by a postal, to be filled out and returned by the merchant containing order for sample assortment of Prisco Money-Back Metal ware, with which "Brother Bill" will be sent free.

THE annual gathering of the traveling salesmen of F. E. Myers & Bro., Ashland, Ohio, manufacturers of Pumps and Hay Tools, took place July 28 to 31. Nearly 30 of the traveling representatives of the company from all parts of the country were in attendance, and business and pleasure were blended in a way that was doubtless advantageous to both employers and employees.

## Trade Items.

THE John B. Varick Company, Manchester, N. H., one of the oldest and best known Hardware houses of New England, which added a department covering jewelry, sterling silver goods and cut glass 12 years ago, has lately moved this part of the business into a new store adjacent to and connecting with the main establishment. The new wareroom is exceptionally handsome and well appointed. The floor is Italian marble, and the fixtures throughout are of solid mahogany, except in the case of the cut glass division, which is in a room separated from the remainder of the store by a graceful archway. The finish of the cut glass room is black oak, and an ingenious system of electric lighting renders the room exceptionally attractive. In addition to a beautiful line of jewelry, silver ware and cut glass the company is now carrying a very large assortment of watches and clocks; also fine leather goods, choice stationery for the invitations, visiting cards, &c. The company's extensive line of photographic goods is also accommodated in this addition.

THE failure of the Bank of Solingen, Solingen, Germany, last month, from late advices, turns out to have been a disastrous one, affecting seriously some of the larger manufacturers of cutlery, and also involving about 40 of the smaller firms. The larger houses, we are advised, had little or no connection with this country, their goods going principally to South America and other points. The capital stock of the bank was 3,600,000 marks (about $900,000), with surplus of 800,000 marks. The failure was for 4,000,000 to 5,000,000 marks. The managing director, it appears, had been mismanaging the bank's affairs for some years and has committed suicide as a result of the failure. The property is now in the hands of a receiver.

THE Royal Mfg. Company, Lancaster, Pa., has issued a booklet entitled "Questions and Answers," which will be of value to Hardware merchants as containing selling points on behalf of the company's hand power and foot power Tool Grinders. The company will be pleased to furnish quantities of booklets on application from the trade.

THE catalogue of materials and supplies required at the Rock Island Arsenal, Rock Island, Ill., for use during the fiscal year July 1, 1908, to June 30, 1909, specifies Osgood's Patent Indestructible File and Tool Handles, which are manufactured by J. L. Osgood, Buffalo, N. Y.

JUST prior to the recent Congressional election in Texas, J. W. McManus, Dallas, secretary of the Retail Dealers' Hardware and Implement Association, sent out a circular letter to all the Hardware, Implement and Vehicle merchants of the State, in which attention was called to the danger of the enactment of a parcel post measure by Congress. The suggestion was thrown out that the merchants of the State should ascertain before voting for him how a candidate for Congress stood on this important question, with a view to sending to Washington only men who are unalterably opposed to any legislation of this sort. The association has also entered a vigorous protest against the arbitrary raising of freight rates, which went into effect August 10.

J. N. LIMEBURNER, 84-86 Chambers street, New York, is the American representative of a British company, which is equipped to produce wholly or partially American patented specialties for sale in that market, so as to comply with the English patent laws requiring manufacture in the United Kingdom of at least a part of the article in question within a certain time to preserve patent rights. For instance, if the American manufacturer is unable for any reason to install a plant of his own there (and similar principles apply in other European countries) the goods may be made entirely under this arrangement, or partially manufactured in the United States and completed there. This proposition relates to manufacturing under contract, the goods themselves being marketed by the American organization or its foreign representatives.

R. S. HICKEY has resigned as manager of the Chicago office of the Columbian Hardware Company, Cleveland, and now represents Sargent & Co., Hardware manufacturers, in the States of Colorado, Wyoming, Montana, Utah, Arizona and New Mexico.

## Requests for Catalogues, Etc.

*The trade is given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.*

**REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate:**

FROM T. F. KENDALL, Freewater, Ore., who has purchased from Alvah Bicknell the business recently acquired by him from William Saager. The stock carried comprises Shelf and Heavy Hardware, Stoves and Tinware, Implements, Paints and Sporting Goods.

FROM THE ADKINS-SNEAD HARDWARE COMPANY, INC., Lynchburg, Va., wholesale and retail, Shelf Hardware, Stoves and Tinware, Paints and Oils, Sporting Goods, &c. The company has been incorporated with a capital of $10,000 to $30,000 common stock, with privilege to issue $20,000 preferred.

FROM CAUDLE-GRAHAM HARDWARE COMPANY, Springdale, Ark., handling Shelf and Heavy Hardware, Stoves, Agricultural Implements, Paints, Sporting Goods, &c. W. T. Graham has lately purchased an interest in the company.

FROM COWAN, HOBBS & DALE COMPANY, Fayetteville, Tenn., who have succeeded Hobbs & Dale, dealing in Hardware, Agricultural Implements, House Furnishings, Cutlery, &c. The new company has a capital of $15,000, paid in. W. G. Cowan, president and general manager of the company, formerly represented the Simmons Hardware Company, St. Louis, on the road for a period of more than 10 years.

FROM G. P. LAMBERTON, who has bought the General Hardware business formerly conducted by E. T. Wilson, Gas City, Kan.

## AMONG THE HARDWARE TRADE.

M. Rubin has disposed of the Hardware business formerly conducted at 1945 Washington street, Boston, Mass., to W. H. Tukey, Chelsea, Mass.

J. B. Sauser has purchased the Carlson Hardware store, Crofton, Neb. Mr. Sauser has added Cream Separators, Sewing Machines and Threshers to the former stock.

T. O. Gundlach, Livingston, Wis., has purchased the interest of his partner, William Miller, in the General Hardware, flour and feed business, which will be continued under his own name.

O. H. Davis, Madelia, Minn., has sold his Hardware, Stove, Implement and Vehicle business to Martin J. Wentz.

A loss by fire amounting in all to $9000 has been sustained by John Lawrence & Son, Hardware merchants, Killarney, Manitoba. The insurance carried amounted to $4500.

The Hardware store of M. L. Hickle, Pleasant City, Ohio, was destroyed by fire a short time since. Mr. Hickle will rebuild in the near future.

McKinney & Van Allen have taken over the stock and business of Wardner Hardware Company, Wardner, Idaho, and moved it to Spirit Lake, Idaho. The stock carried by the firm includes Shelf and Heavy Hardware, Stoves, Tinware and Sporting Goods.

F. H. Churchill, Roseburg, Ore., retail Shelf and Heavy Hardware, Stoves, Agricultural Implements, Paints, Sporting Goods, &c., expects to move into new quarters during the next few months.

# MAKING A STORE POPULAR.

BY FAR WEST.

IN conducting a business there is a sentiment that tends largely toward its success, which is—make it popular with the public. The problem from the storekeeper's point of view is, How much can I do for the public to make my store popular, without cost to them? Among the first things he can do is to install in his store the best fixtures he can get, even straining a point to provide the most attractive showcases, display stands and fixtures. These must be kept clean, as well as the entire storeroom. Good fixtures are desirable because they make the store attractive, in addition to which the goods displayed in them take on an added appearance of quality. The effect of surroundings plays an important part in the deportment of clerks, and proprietor as well. If the goods are smartly dressed and displayed the silent influence tells upon the whole force, inculcating in them habits of neatness and order that tend toward bringing business.

### Get Weighed Free.

A splendid addition to the fixtures is a platform scale with high beam, gotten up in good style, with nickel plated trimmings. Place an invitation in the window reading, "Come in and get weighed, free." Keep the scale as far back in the store as possible, so that visitors may get a good view of your store and stock as they pass back and forth.

### Taking Care of Woman Customers.

There is no valid reason why public conveniences should be confined to the department and drug stores. It is simply a matter of business. The more people you attract to your store, the more opportunities you have of making sales. The comfort of the people who come into your store should be thought of. More and more women are coming to the Hardware stores, not only because of the purchases they make on their own account, but also because they are often the appointed purchasing agents of the household. Therefore, when it is at all possible a part of the store should be separated by a low railing from the main room, containing a table, comfortable chairs and telephone. Where this cannot be done, chairs, or at least stools, should be provided, that they may be at ease in making their purchases, or while waiting. Elderly people accompanying some of the younger members of the family, frequently, for want of a better resting place, hang on the edge of an Ice Box, or lean against a showcase, and, being uncomfortable, are urging the one doing the buying to hurry up. This is not good business, and Hardware stores are particularly negligent in this respect.

### Avoid Catch Penny Schemes.

There is a fascination, to most of us, in the thought of getting something for nothing. Others there are of a more suspicious turn of mind, who are held back by the fear of the string they think is tied to some alluring offer.

Without resorting to any catch penny devices, the Hardwareman has many opportunities of placing the obligation upon the public, and it is the placing of this obligation that makes them feel like patronizing the merchant in return for any favors received. A liberal weight and measure is recommended, especially in filling orders brought by children. Test the scales frequently and keep them in balance. Scraps of Poultry Netting or Wire Cloth are of no use to the dealer, therefore in measuring wire, if there is a small remnant over exact quantity ordered, let it go to the customer.

### Making Presents.

When the intended bride and her mother come with a long list of Enameled Ware or other housekeeping sundries for the new home, pack with the goods some acceptable article with a card, reading: "Compliments of ——." Let it be a surprise, and an article the firm need not be ashamed of, and your store will stand high in the opinion of the buying partner of the new household.

In some sections the building contractors expect the gift of a Knife every time they settle a bill. If they are allowed to select any Knife in the case it will cause quite a run on the expensive Pearl Knives. For this reason it is recommended to have plush rolls kept in the office with such Knives as you have selected from stock. A good many people think that salesmen's samples are better than the regular run of goods. The plush rolls have the appearance of salesmen's sample rolls, and the fact of being allowed to select from them leaves a good impression.

### No Charge!

There is nothing that sounds so good to the ears of the questioner who asks: "How much?" as the answer, "No charge!" There are many opportunities for the storekeeper to produce this agreeable sensation—a Bolt in a Baby Carriage, Knob riveted on a Teapot, a bit of string, a few Screws, if given cheerfully, promote a kindly feeling for your store.

### Demonstrations Should Be Lively Affairs.

Demonstrations in the store should be so conducted that during the hour given over to that feature the movement around that part of the store should be lively. If you are baking cakes on a Soapstone Griddle to prove they will bake with grease, or showing how biscuits will brown in your Gas Range, pass them out lively. It is better to keep things moving for half an hour than to have a prolonged demonstration with no interest.

### Taking Back Defective Tools.

Tools that are guaranteed, when returned as defective, whether so or not, should be exchanged cheerfully, avoiding any argument with the purchaser. In asking questions relating to damaged Tools explain in advance that the information is desired so you can get credit with the manufacturer, as questions are nearly always resented as reflecting upon the skill of the user.

### Loaning Tools.

Keep all the Tools that are not returnable to the jobber or maker for loaning. Some establishments have notices suspended announcing that no Tools are loaned. Requests for the loan of Tools are usually made by those having dealings in some way at the store. The defective Tools are just what is needed for accommodating these persons. These Tools should be hung on hooks, with a tag attached to the hook. On one side of tag note the name, address of borrower and date loaned. On the reverse place name and date returned. If a borrower does not find the particular Tool he wants, he leaves the store with no ill will. Frequently your willingness to oblige results in making a sale.

### Exchanging Goods.

A popular store is always generous in exchanging or returning money for regular goods. When, owing to some special reason, goods have been run off at cut prices, or are useful only as seasonable goods, the fact should be announced before sale is made that they will not be taken back or exchanged. Sometimes goods are returned without the customer being entirely at fault, although it may appear so to the merchant.

An Oil Stove of standard make had been delivered, once to a regular customer, together with an Oven. The next day word was brought over the telephone that the oil leaked out, and to send some one to repair it, or else a new Stove. Instructions were telephoned from the store to tighten the pipes. The next day another telephone message brought the information that the Stove still leaked—more instructions were sent from the store, and the incident forgotten until the next day, when the final telephone message came, to the effect that the Stove and Oven could be called for, and they would look elsewhere. It was true there was nothing the matter with the Stove that a few minutes' time could not right. As it was, the Oven was returned with the bottom covered with part of a spilled pie, which took a man an hour to clean off. The proprietor and the customer were both out of humor, each blaming the other for the trouble and loss. All of which could have been avoided if a few minutes had been devoted to testing and explaining the working of the Stove in the presence of the customer when it was delivered.

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The Valley Hardware Company has succeeded to the Hardware business of Sherod & Hall, Wallowa, Ore.

## Fourth of July Window Displays of Knapp-Cramer Hardware Company.

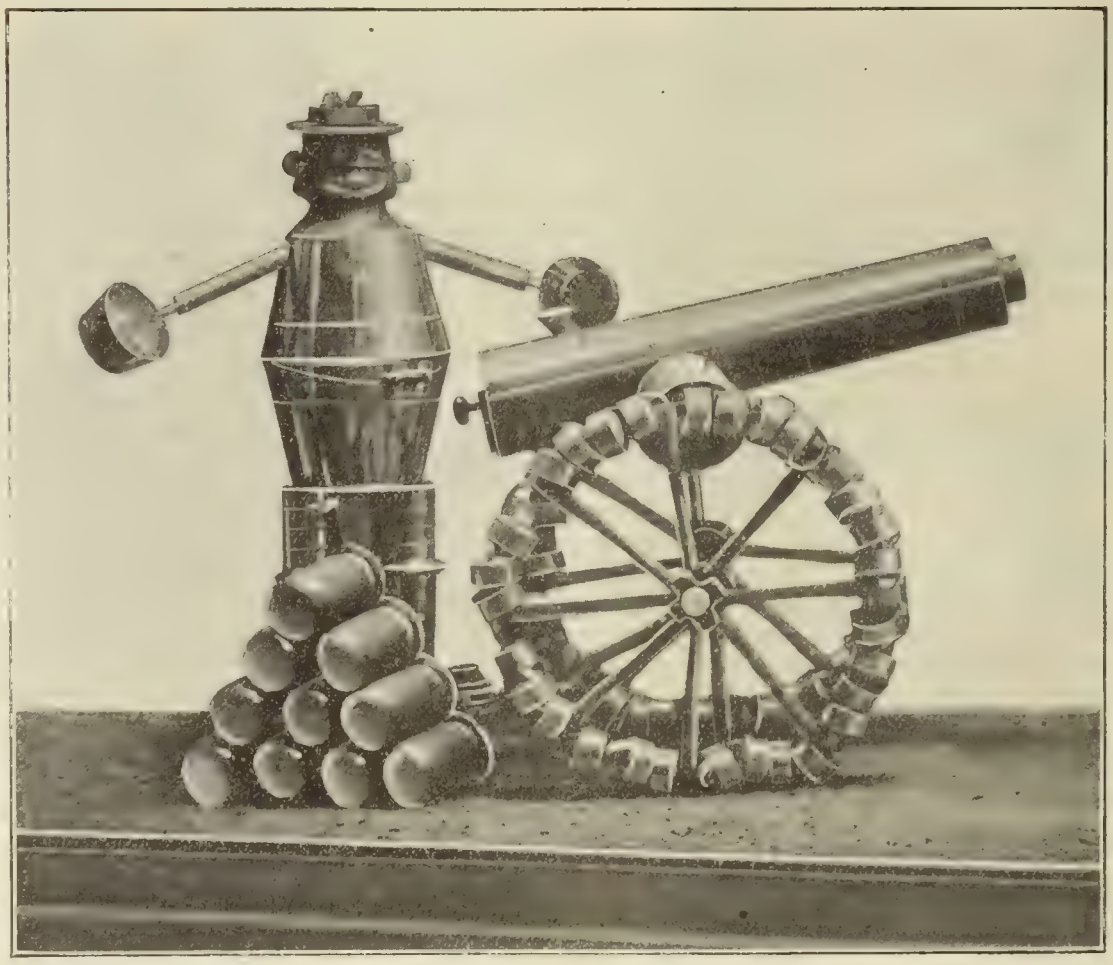
TWO of the show windows of the large establishment of the Knapp-Cramer Hardware Company, North Tonawanda, N. Y., attracted much attention during Fourth of July week, containing as they did the effective exhibits reproduced herewith. A Hardware battleship was given a commanding position in one of the windows, while the other presented a cannon with gunner on duty.



*Battleship Display of Knapp-Cramer Hardware Company.*

The sides of the battleship were made of two Cross Cut Saws bolted together at each end with Round Head Stove Bolts. A fancy Brass Hinge answered for the scroll work on the bow. The anchor was made of a Nickel Plated Ceiling Hook fastened with a piece of No. 12 Iron Jack Chain. A Nickel Plated Basin stay was used for the timber head, while two Brass Plumb Bobs furnished the capstan. Four 1½ in. Galvanized Elbows, painted red on the inside and aluminum bronzed on the outside answered for the ventilators, and two pieces of 2½ in. Stove Pipe constituted the stacks. Coat and Hat Hooks were used for the davits, and Asbestos Tourists's Sad Iron Handles made very pretty life boats. The big guns were Brass Hose Nozzles projecting over the sides of the ship on either side, while the rapid fire guns forward and aft were made with a Floor Flange screwed to the deck, a Nipple and a Three Way Elbow and two long slender Hose Nozzles. The spars were made up of three half pint cans of Paint, a No. 4 Zinc Oil Can, a Mortise Gauge and a narrow Rule for the cross tree. The fighting top was a round Mouse Trap, with four Hose Menders protruding from each hole for machine guns. Picture Wire was used for cable and stays. Other material used in the makeup of the ship included Brass Cleats, Cotton Rope, Pipe Couplings, Brass Pipe, Reducing Couplings, 8d Wire Nails, Oil Cup Glasses, Brass Safety Chain, Brass Jack Chain, Brass Screws, Brass Headed Tacks, 8 ounce Carpet Tacks, Screw Hooks, Tea Bell. Electric Plug, Electric Flash Light, Copper Wire, Wrapping Twine, &c. In all, 287 pieces were used in the construction of the ship.

The frame of the cannon was made of assorted Valves and Fittings such as Globe Valves, Check Valves, Gate Valves, Nipples, Couplings, Reducing Couplings, Unions, Elbows, Bushings, &c., while the barrel was supported by two Tin Dippers. The wheels were made of 12-in. Machinist's Hammer Handles. Two 1-in. Flange Unions served as the hubs, while the tires were made of Doughnut Cutters strung on wire. The barrel was a tapered joint of Stove Pipe and a half joint of Stove Pipe, at one end of which was a reducing Chimney Thimble. At the other end a round block of wood fitted into the pipe, in the center of which a small hole was bored. A Rim Lock and Knob and Spindle were screwed to this block. A small Funnel was used for the primer, while plumbers' Head Drum Traps were used for bullets.



*Cannon and Gunner in Window Display.*

The gunner was a conspicuous feature of this display.

Beginning at the bottom, the legs were made by taking six 1-quart graduated tin measures, three for each leg, and the body consisted of two 14-quart flaring Tin Pails. The arms were made by taking two pieces of 1½-in. tin Conductor Pipe and two tin Dippers, which were tacked to the sides of the body with solder. The head was formed by taking a granite Cuspidor and turning it upside down, upon which was placed a small round granite Bowl. Two small wire Tea Strainers answered for the ears. A little steel wool, such as painters use, was used for the hair, while the hat was made by taking an 8-in. tin Kettle cover and a round Mouse Trap. The eyes, eyebrows, nose, mouth, whiskers, &c., were drawn with a piece of school crayon. Not one piece of stock used in making up this display was soiled or ruined.

The make-up of these windows was simple and inexpensive, and we are advised that they created more talk than anything in this direction thus far done by the company.

## Keen Kutter Cork Screws.

The Simmons Hardware Company, St. Louis, Mo., has lately added to its line of cork screws those described below. No. 8 is a cork screw of standard type, having a screw with convex twist, forged from high grade crucible steel, carefully tempered, nickeled and fitted with varnished maple wood handles, tapering from the center to both ends. This style is 4½ in. long over all, and a similar cork screw, No. 10, is offered, 5 in. long and a half heavier. No. 23, with crown opener, possesses the same characteristics, except that combined with it is a seal lifter and wire breaker for bottles. This style is 5⅝ in. long over all, and weighs about 2½ lb. to the dozen.

At the last annual convention of the New York State Retail Hardware Association, the time and place for holding the next meeting of the exposition was referred to a committee, consisting of Louis J. Ernst, Rochester, chairman; John G. Ferres, Johnstown; Arthur E. Towne, Saratoga; L. G. Mattison, Newark, and John Holley Bradish, Batavia, with power to act. This committee met at Rochester a few days since, and, after carefully considering the hotel accommodations and exposition conveniences of different cities of the State, unanimously adopted a resolution that the next convention and exposition be held in Rochester, March 1 to 5, 1909. Mr. Ernst was elected manager of the exposition, which will be held in the new convention hall.

The Western Hardware & Implement Company, Vollmer, Idaho, wholesale and retail Shelf and Heavy Hardware, Stoves, Paints and Oils and Agricultural Implements, has erected a new warehouse.

## THE HUBER-WOLFE HARDWARE COMPANY'S STOCK RECORD AND BOOKKEEPING METHODS.

THE accompanying illustrations relate to the system of keeping record of stock and of shop work in practical use by the Huber-Wolfe Hardware Company, Port Clinton, Ohio. The forms shown are printed on white paper in black ink.

### Stock Record.

For keeping a record of stock, which is, in fact, a perpetual inventory, loose leaf books are used with sheets, 11 x 14 in. in size, indexed from A to Z. Under each letter each class of goods is listed on a separate sheet. For instance, Padlocks are given a page; also Axes; Common Rim Locks, Common Mortise Locks, High Grade Mortise Locks, Front Door Locks, and so on through the entire list of Hardware. In Fig. 1 is shown one of these sheets devoted to Lock Sets. The left hand portion of the sheet has printed headings for Invoice Number, Date Received in Stock, From Whom, Quantity, Number or Name, Cost, Selling Price in Small and Large Quantities, Profit, Freight and Lim. Lim. is an abbreviation for Limit, under which is sometimes placed the extreme limit in price, below which the salesmen cannot go under any pretext.

THE HUBER-WOLFE HARDWARE CO.
PORT CLINTON, OHIO
STOCK RECORD
ARTICLE: Lock sets

| Invoice No. | Date received in stock | From Whom | Quantity | No. or Name | Cost | SELL Beg. | SELL Quan | Profit | Frt | Lim. | SALES | | | | | Total Sales | No. on hand | Present Value |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4286 | 1/6/08 | LT H.Co. | 1Dz | #42 | 71 | 60 | 50 | JX | 35 | JX | No. sold | 4 | 3 | 1 | 2 | | | |
| | | | | | | | | | | | Date | 1/10 | 2/1 | 2/4 | 2/19 | | | |
| | | | | | | | | | | | Salesman | O | J | J | O | | | |
| | | | | | | | | | | | How sold | Chg. | Check | Cash | Cash | | | |
| | | | | | | | | | | | Amount | 240 | 180 | 60 | 120 | | | |
| 4301 | 1/14/08 | B.H. Co. | 5Dz | #50 #100½ Corbin | C7 | 50 | 48 | 7X | 89 | 70 | No. sold | 8 | 2 | | | | | |
| | | | | | | | | | | | Date | 2/15 | 2/20 | | | | | |
| | | | | | | | | | | | Salesman | O | C | | | | | |
| | | | | | | | | | | | How sold | Chg. | chg | | | | | |
| | | | | | | | | | | | Amount | 384 | 160 | | | | | |
| | | | | | | | | | | | No. sold | | | | | | | |
| | | | | | | | | | | | Date | | | | | | | |
| | | | | | | | | | | | Salesman | | | | | | | |
| | | | | | | | | | | | How sold | | | | | | | |
| | | | | | | | | | | | Amount | | | | | | | |

*Fig. 1.—Stock Record, Actual Size, 11 x 14 In.*

### Sales Slip.

In Fig. 2 is shown a sales slip, 3½ x 6 in. in size, representing a sale made on February 20. This is written in duplicate by the aid of carbon paper. The duplicate goes to the customer, while the original is kept on file, and the amount is charged to the customer's account, and so marked. As will be noticed, there is a place for the initials of the salesmen, and, as these goods are charged the space after "Am't Rec'd" is used for noting how the order was received. Red and blue check marks are indicated, and refer to postings, the red one for Stock Record, and the blue one for Customer's Account.

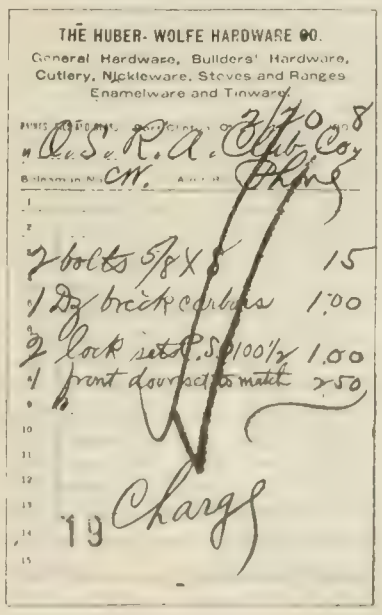



*Fig. 2.—Sales Slip, Actual Size, 3½ x 6 In.*

### Additional Use Is Made of the Slips

both charge and cash sales, for filling out the "sales" portion of the Stock Record, Fig. 1. This is done daily by the bookkeeper, who posts from the sales slips to the Stock Record, giving the number sold, date, salesman, whether sold for cash or charged, and the amount. As

ACCOUNT NO. 36847
SHEET NO. 1
PORT CLINTON, OHIO, Jan'y 31st, 1908. 190
E. H. P A L L,
City.
To HUBER-WOLFE HARDWARE CO. DR.
GENERAL HARDWARE. CUTLERY. STOVES RANGES. TINWARE ENAMELED WARE PAINTS, OILS GLASS, ETC.
TIN AND SLATE ROOFING. SPOUTING. REPAIRING. FURNACE WORK AND HOT WATER HEATING

| | | | | | |
|---|---|---|---|---|---|
| Jan'y | 2 | 6 lock sets Corbin PS0100-1/2 | 55 | $3 | 30 |
| | | 10 lbs. 8d finishing nails | | | 40 |
| | | 15- 10 lb. sash weights, 150¢ | | | |
| | | 8- 4 lb. do. 32 | | | |
| | | 4- 8 lb. do. 32 214¢ | 2 | 4 | 28 |
| | 6 | 4-1/2 lbs. Silver Lake sash cord | 38 | 1 | 71 |
| | | 15 lbs. 20d com. nails | | | 60 |
| | | | | $10 | 89 |

*Fig. 3.—Original of Loose Leaf Ledger Page, Actual Size 17 x 14 In.*

an example of how this is accomplished, it will be seen that one of the entries on the Sales Slip, Fig. 2, is "2 Lock Sets, P. S. O. 100—½." On the Stock Record under date 2-20, this sale is recorded, C being put down as salesman.

### Advantages of Stock Record.

By scanning the headings on the Stock Record form it will be seen that a clear and concise record of the stock is kept from the time it is received until it is sold. This proves an invaluable guide to the sales manager, buyer and general manager as to the exact condition of the stock on hand, how it moves, how much was bought for any special period, comparative prices, &c. It also insures a uniform selling price, as any irregularity will show on the Record, and the salesman's attention can be called to the matter.

### Charging and Billing.

In the bookkeeping department of the company, a loose leaf ledger is used, and charges are made daily from sales slips to the page devoted to any customers' account. This work is done with typewriter in duplicate, as shown in Figs. 3 and 4. The pages are 17 in. long and 14 in. wide, when open. The printed heading, Fig. 3, is perforated along the right hand edge, and folds back on the duplicate page, leaving a margin of ⅞ in. on the carbon copy page, Fig. 4, exposing the holes for the

36847
1
E H. P A L L,
City
Jan'y 31st, 1908.

| | | | | | |
|---|---|---|---|---|---|
| Jan'y | 2 | 6 lock sets Corbin PS0100-1 2 | 55 | $3.30 | |
| | | 10 lbs. 8d finishing nails | | | .40 |
| | | 15- 10 lb. sash weights, 150¢ | | | |
| | | 8- 4 lb. do. 32 | | | |
| | | 4- 8 lb. do. 32 214¢ | 2 | 4.28 | |
| | 6 | 4-1/2 lbs. Silver Lake sash cord | 38 | 1.71 | |
| | | 15 lbs. 20d com. nails | | | .60 |
| | | | | $10.29 | |

*Fig. 4.—Duplicate of Loose Leaf Ledger Page.*

binding posts. This method of making charges saves the labor of writing charges in a journal and posting to ledger accounts. It also results in having a complete detailed record of a customer's account at the end of the month, and saves making out monthly statements, as the original is detached and mailed to the customer while the duplicate is kept in the ledger. When the account is settled it is so marked on the carbon copy, and is transferred to a file or permanent binder or future reference. The ledger thus contains none but live and unpaid accounts.

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## Fall Painting Campaign.

THE education and commercial section, Ernest T. Trigg, director, of the Bureau of Promotion and Development of the Paint Manufacturers' Association of United States, the Bourse, Philadelphia, announces its intention during this month and September and October to put into the hands of 100,000 merchants, painters and architects such advertising matter as will enable them to carry on one of the best fall campaigns in the history of the Paint business. Under date of the 1st inst. letters have been sent out especially addressed to the painter, the architect and the merchant. The letter to the merchant is in the form of a folder, and calls attention to the fact that the bureau has held a number of conferences with leading master painters and architects during the past year, at which the subject of suitable combinations both as to appearance and permanency were thoroughly discussed. As the outcome of these conferences several color schemes or combinations suited to different styles of architecture have been selected, and will be presented by the association as suggestions for house painting. A booklet, entitled "The Fashion in House Painting," will soon be issued showing the different combinations recommended for the different styles of architecture.

The folder addressed to the merchants also presents five strong reasons why painting should be done in the fall, as follows:

1. In the fall the surface is thoroughly dry. During the spring a surface which needs repainting is sure to contain moisture and dampness or frost, and it cannot be successfully painted until it has thoroughly dried out.

2. When the wood is dry, it absorbes more of the paint; the paint penetrates deeper into the wood, therefore gets a firmer hold on it, giving the paint coating greater tenacity or holding qualities.

3. Paint cannot be as successfully applied in damp, cloudy or unsettled weather as in warm, sunny weather. In the fall the weather is more settled and uniform and is warmer, therefore it is an excellent time for painting.

4. A house needs its protecting coat of paint more in the winter months than at any other time. A house in need of painting should never be allowed to go over the winter without this protection.

5. It is easier to keep the winter's moisture and dampness out by applying a coat of paint in the fall, when the surface is dry, than it is to get moisture or dampness out of the wood if you want to apply a coat of paint in the spring.

In connection with the folder a cardboard hanger, about 9 x 7 in. in dimensions, is sent out which merchants are urged to display prominently in the store and show windows from now on until the fall business is over. The hanger reads, "Five Strong Reasons for Fall Painting—Ask the Clerk," and it is suggested that the merchant post his clerk on these reasons so that he may be in a position to answer all questions promptly and intelligently. The bureau will be pleased to send as many of these hanger cards as the merchant can use to advantage.

## Price-Lists, Circulars, Etc.

*Manufacturers in Hardware and related lines are requested to send us copies of catalogues, price-lists, &c., for our Catalogue Department in New York; and at the same time to call attention to any new goods or additions to their lines, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.*

CLEVELAND TWIST DRILL COMPANY, Cleveland, Ohio, and 62 Reade street, New York: Folder entitled, "What to Do with Broken Tangs," in which the economy in tool expense afforded by the company's Perfect Double Tang Sockets is enforced.

SKINNER CHUCK COMPANY, New Britain, Conn., and 94 Reade street, New York: Folder illustrating and giving price-list and dimensions of Skinner Planer Chucks.

MODEL HEATING COMPANY, 142 North Tenth street, Philadelphia: Booklet in which the Model Boiler is fully illustrated and described.

BATEMAN MFG. COMPANY, Grenloch, N. J.: Summer edition of the *Iron Age Farm and Garden Years*, 16 pages, in which attention is called to Potato Diggers, Cultivators, Hand Carts, &c. Among the latest productions of the company are Asparagus Knife, Hilling Attachment for Double Wheel Hoes, Fertilizer Drill, Fertilizer Drill Attachment and Vine Separator Attachment for elevator of Potato Digger. The publication also gives a list of the fairs throughout the country during the next two or three months at which the company will have exhibits of its Farm and Garden Implements.

GEUDER & PAESCHKE MFG. COMPANY, Milwaukee, Wis.: Illustrated catalogue describing its line of Cream City Fishing Tackle Boxes, Bait Boxes, Minnow Buckets, Fish Scalers and Minnow Floats in great variety.

DAYTON MALLEABLE IRON COMPANY, Dayton, Ohio: Folder giving illustrations of a new series of oblong shaped steps for cut-under Runabouts and cut-under Carriages, designed and produced by the company.

## Colt Army Special Revolver.

The Colt's Patent Fire Arms Mfg. Company, Hartford, Conn., has just put on the market the Colt army special revolver here shown. This model supersedes its "new army" and "new navy" revolver, the result sought being an all-around arm in power, strength, medium weight and smooth, even pull. An entire change in limb work or action simplifies and makes stronger the important working parts, and while the "bar to accident" embodied in the Colt positive lock revolver has been incorporated, no complications have been added to the mechanism and the company asserts that it is absolutely impossible to discharge the arm without pulling the trigger. One important change lies in having the cylinder



*Colt Army Special Revolver.*

revolve to the right, so that in cocking the piece the crane binds more securely in correct position and with the hand and bolt, which revolve and lock the cylinder, working together, but in opposite directions, perfect alignment of cylinder and barrel is obtained when the arm is ready for firing. A tapered shoulder in the cartridge chambers causes the bullet to lie snugly in the forward end and permits of easier cleansing of the cylinder. A loose nose firing pin gives the advantage of a reduced opening to the recoil plate and a more direct centered blow to the primer. The new design latch contributes to the comfort of the well known full Colt grip, and with new stocks of attractive design and slight modifications in general outline this latest product of the company is designed to meet the requirements incidental to a fine general service revolver. The new weapon is adapted for the .32-20 rifle cartridge and the .38 Colt and S. & S. special cartridges with varying loads, and in common with all Colt revolvers, is fully guaranteed for use with standard factory loaded ammunition having either black or smokeless powders.

FARWELL, OZMUN, KIRK & CO., St. Paul, Minn., as exclusive Northwestern distributers of the Favorite Stoves and Ranges, are sending out an attractively printed circular of 12 large pages, in which selections from this line are illustrated and fully described. The first page of the circular, which is printed in red and black, presents a view of the imposing establishment of the company, while the last page gives an idea of the appearance of the Stove sample room.

## W. & B. Douglas.

W. & B. Douglas, Middletown, Conn., manufacturers of power pumps, have adapted the marine type of combustion engine to a portable pumping outfit for use in spraying trees in the fight against the gypsy and brown tail moths. The initial outfits have been furnished the commission which has charge of the work in Massachusetts. The problem was one of a high pressure pump with a minimum of floor space and weight. The combination of pump and engine is capable of delivering 40 to 60 gal. per minute against a pressure of 250 lb. per square inch. The company is the first to employ the marine type of engine for the purpose.

## The Allwin Iceless Refrigerator.

A novel and ingenious method of cooling and preserving meat, milk, butter, vegetables, &c., is offered in what is described as an iceless refrigerator made by the Allwin Refrigerator Company, Galesburg, Ill., and illustrated in Fig. 1. The device consists of a circular receptacle made of galvanized sheet steel fitted with a vertical sliding door of the same material and provided with simple and convenient mechanism for lowering and raising in and out of a well, cistern, cellar or a special hole dug in the ground in a convenient place. This mechanism, Fig. 2, consists of a ratchet lever by means of which is driven a gear, meshing with a smaller gear attached to a galvanized wire cable, the lower end of which is fastened to the bottom of the refrigerator. By working the lever backward and forward the refrigerator is raised above the floor; and by pressing the handle to one side a friction brake is applied, lowering it again as slowly or rapidly as desired. The cover over the floor opening is closed when the cylinder is let down, Fig. 3, and when the lever, which is removable, is taken out it cannot be raised. When used in a well or cellar the cupboard or refrigerator slides up and down between angle steel guides placed on either side, which extend down as far as it is intended to be lowered. It may be surrounded by galvanized steel casing or, as shown in Fig. 1, by tile, when placed in a hole dug specially for it. It is claimed by the maker that, while the refrigerator may be operated at any convenient depth, it is unnecessary to go down more than 8 ft. below the surface, since a temperature of from 40 to 55 degrees F. can be maintained at that depth. It is further stated that the temperature of the ground that far below the surface is practically the same the year around. The cupboard is 4 ft. high by 16 in. in diameter, and is furnished with four shelves, which are adjustable to any distance apart or may be removed entirely. The sliding door, which opens full length, is closed and latched automatically when the cylinder is let down.

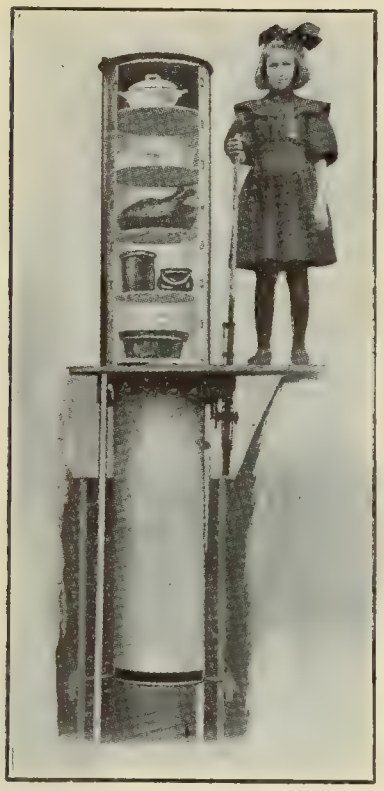


*Fig. 1.—The Allwin Iceless Refrigerator.*

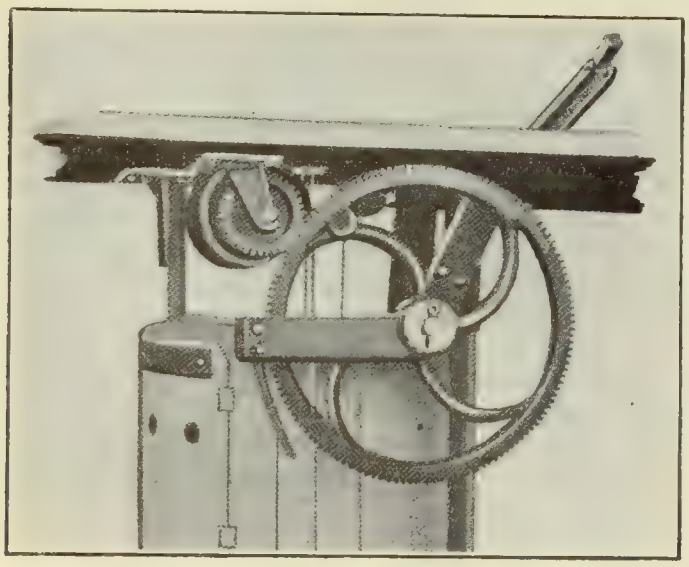


*Fig. 2.—Mechanism of Allwin Iceless Refrigerator.*

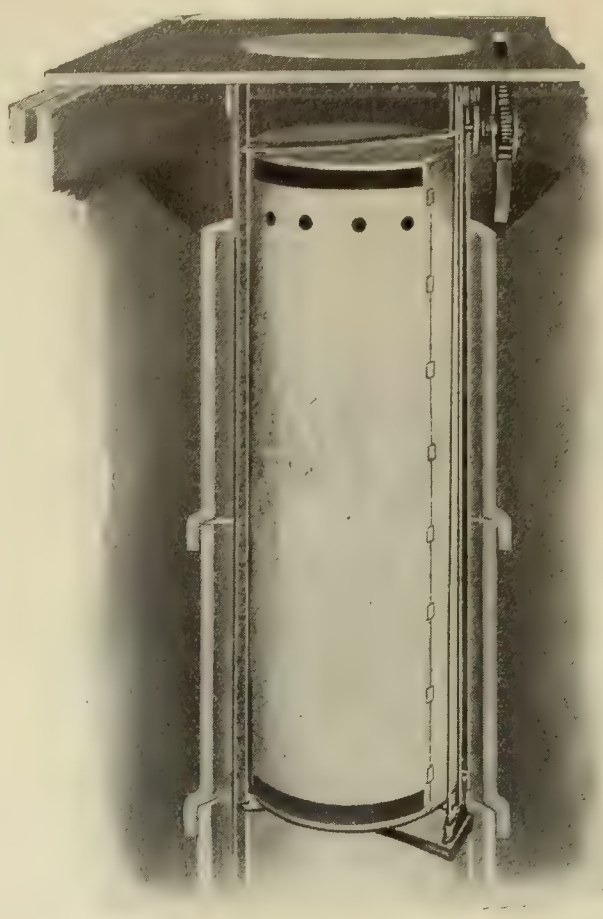


*Fig. 3.—Cover Over Floor Opening.*

## A New Towel Bar.

The Bridgeport Wire Goods Company, Bridgeport, Conn., is offering to the trade the towel bar shown herewith, the construction of which allows dry towels to be hung at the back and used towels along the front. The bar is 5-16-in. coppered Bessemer steel, nickel plated. The ends of the bar are hollow milled, and are riveted right up against the shoulder of a 20-gauge plate by which it is fastened to the wall. The bars are put up a dozen in a box.



*A New Towel Bar.*

## Scoops with Harveyized Points.

The Conneaut Shovel Company, Conneaut, Ohio, is putting on the market a line or scoops for general purposes, running in sizes from No. 2 to No. 10, having specially tempered points to give the longest wearing life. In addition, the sides at the point are cut back further than is the case in the ordinary scoop, to enable the shoveler to force the scoop into coal or other material easier than with the regular line. The scoops also have a little more flare to the front to allow a larger load per size to be carried than on the ordinary scoop. These special scoops, like the company's other line of special shovels, are made in all lengths of handles, both D and straight. Before putting this line of scoops on the market they were put to unusually severe tests by the company. The addition of the new line brings the company's assortment up to something over 60 different kinds of special shovels.

## Glue Cooker.

The Westinghouse Electric & Mfg. Company, Pittsburgh, Pa., is manufacturing among its Hadaway electric heating devices, a line of glue cookers similar to that shown in the accompanying illustration. They are furnished in capacities ranging from 5 to 25 gal., and are used especially by bookbinders and manufacturers of printing press rollers as well as in large cabinet work shops where it is necessary to melt and keep in working condition large quantities of glue or other compositions for replenishing the smaller glue pots used on the bench. The cookers are arranged with two heats, a high heat for melting down raw stock, and a low heat for holding it

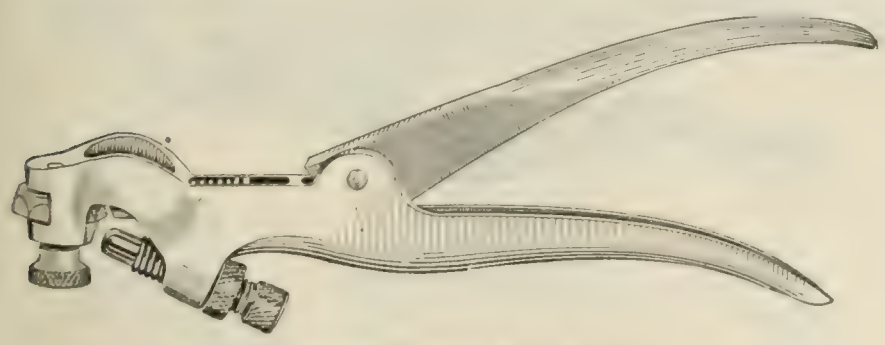


*Glue Cooker.*

at the working consistency. Referring to the illustration, the base of the cooker is of sheet iron and contains the heater. Above are two tanks made of copper, forming a double boiler. Water is poured into the outer tank through the lip opening near the top, and the amount inside is indicated by the gauge glass, which is well protected against accidental breakage. Glue is put into the inner tank by removing the cover. It is drawn off through a pipe leading from the inner tank through the outside tank to the gate shown in the illustration. In addition to these large cookers the company makes a line of electrically heated portable and bench glue pots adapted to all uses.

## The Bergman Improved Saw Set.

The saw set shown herewith has a lock nut and numbered dial and is so arranged that the mechanic can see the plunger striking the teeth of the saw. The set is



*The Bergman Improved Saw Set.*

made of malleable iron, while the plunger is of tool steel and has a shoulder in place of a pin to hold the spring in place. The tool is put on the market by the Bergman Hardware & Tool Company, 19-21 Douglas street, Buffalo, N. Y.

## Minnow Bucket and Float.

The Geuder & Paeschke Mfg. Company, Milwaukee, Wis., has added to its line of fishing accessories the Success minnow bucket and Novelty minnow float. Fig. 1 illustrates the bucket which is oval in shape, with floating galvanized wire inset; no cover on outside pail. It is made from IX tin plate, finished in a rich red japan and artistically decorated. The top edge is reinforced with wire, and there is a hinged, perforated, self-locking cover on inset. There is sufficient room for ice between the top of inset and top of bucket. The solid tin bottom pan will contain enough water for minnows when transferring floater from bucket to lake or stream. Two sizes are made, No. 525, 10 x 7 x 8 in., and No. 535, 11 x 7½ x 8½ in. The Novelty minnow float, Fig. 2, has the same capacity as a 10-quart minnow bucket. It is made both in tin, japanned a dark green and galvanized iron japanned light green, the enamel being baked on for greater dura-




*Fig. 1.—Success Minnow Bucket.*

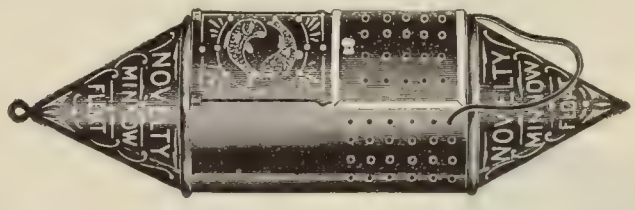
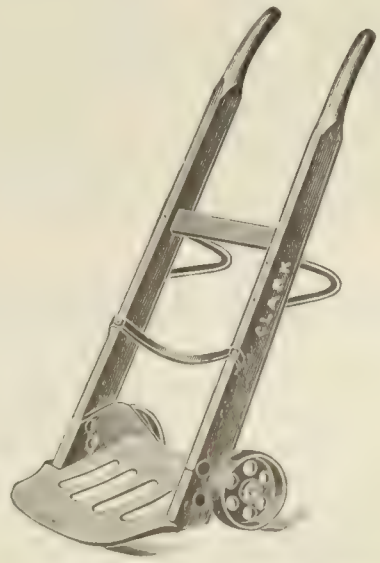



*Fig. 2.—Novelty Minnow Float.*

bility, while the decorations are in gold and silver bronze. There is a self-locking cover with seamless metal knob, which can be operated with one hand, leaving the other free to take out minnows. Some of the advantages claimed for this construction are that it will keep minnows alive and fresh a long time; that the cylindrical body with conical ends facilitates passage through weeds, and that it will go through the water easily when the boat is propelled, admitting an abundance of fresh air and water, and at the same time affording ample security to the minnows both from the motion of the boat or because of rough water.

## Clark's Monarch Barrel Truck.

The George P. Clark Company, Windsor Locks, Conn., has just put on the market Clark's Monarch barrel truck here illustrated. This truck is designed especially for transporting barrels, kegs, boxes, light castings and especially open barrels, wholly or partially filled with loose materials, filings, &c., in or about factories, mills, stores, railroad stations or wherever such packages are moved about. The long, deep nose and circular brace makes it particularly serviceable. The truck is referred to by the




*Clark's Monarch Barrel Truck.*

company as thoroughly well made, the handles being of hardwood, nose of malleable iron and wheels set flush with the sides.

## The American Steel Fence Post.

The steel fence post made by the American Post Company, Inc., Bloomfield, Ind., and shown in the accompanying illustrations, is declared to be cheaper than wood and more durable. It is made of galvanized metal sheets from 1-16 in. to ⅛ in. in thickness, in diameters of from 1 in. to 5 in., and in lengths from 3 to 10 ft. Line posts are carried in stock in two lengths only, 78 and 84 in. over all. The posts are made of 16-gauge galvanized iron

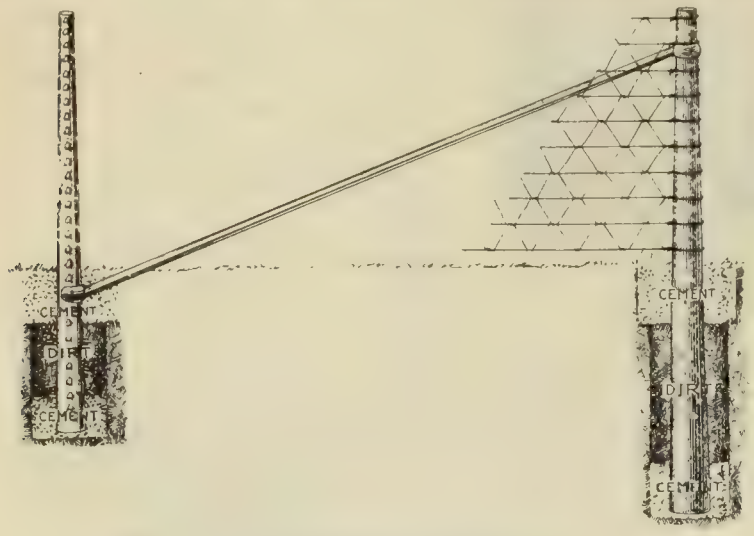



*Fig. 1.—The American Steel Fence Post.*

in taper tubes 2 in. at the bottom and 1 in. at the top, and are intended to set 24 in. in the ground. Other sizes are furnished as desired. The line made by the company also includes end posts, corner posts, gate posts, hitch posts, lawn gates and drive gates, &c. Fig. 1 shows the method of setting the post and the bracing used for end and gate posts. Each line post, it will be observed by reference to Fig. 2, has a tongue punched out at intervals of 1½ in. to hold the wire, and these fasteners are located near enough together for the fastening, not only of smooth or barb wire, but woven wire fence and poultry netting as well. No special tools are needed for this work. Posts are set in the ground the same as an ordinary wood post, with the exception that the first 4 in. of filling is concrete. The method of filling the hole with dirt to within 5 in. of the top and then putting in a ring of cement or concrete, as shown in Fig. 1, is cheaper and, it is claimed, as strong as when the entire hole is filled with cement or concrete. The principal advantages claimed for the posts are that they are self-anchoring, and, being galvanized, will not readily rust or rot and will not burn, and that they combine durability, strength and cheapness.

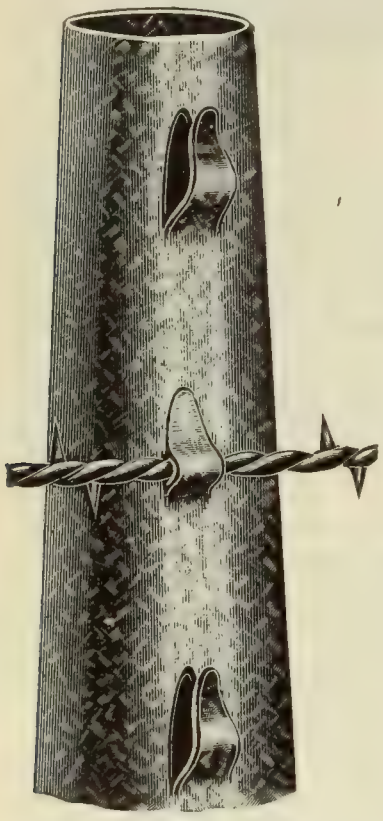


*Fig. 2.—Enlarged View of American Post, Showing Tongues Punched Out.*

## Ideal Patent Metal Gas Check Bullets.

The Ideal Mfg. Company, New Haven, Conn., is now prepared to supply sportsmen with the Ideal patent metal gas check bullets for the various standard American made rifles, including Remington, Winchester, Marlin, Savage, Springfield, &c. The bullets are cast from Ideal bullet metal, sized, lubricated and packed in boxes of 50 or 25. These bullets will be sold only to military organizations, clubs or individuals; not through the trade, as the company casts them from the various Ideal molds, which it sells to any one for individual casting, when the same results may be obtained by the possessor of a mold. Care is taken to emphasize the fact that the company is not in a position to manufacture bullets, except as stated, and in the same way as any individual, all of which is fully described in a circular just issued.

## The New Smith Wire Stretcher.

The Smith wire stretcher shown in the accompanying illustrations is easily operated and powerful for stretching short runs of woven wire fencing. It is especially adapted for stretching long runs of poultry netting, barb wire, telephone and plain wire. In stretching woven wire and poultry netting, the use of ½ in. iron pipe, 5 ft. in length, is suggested in place of a clamp bar, fastening the ends of the wire about the pipe, as shown in Fig. 1. The use of the stretcher for barb wire is shown in Fig. 2. The stretcher can also be used as a hoist in work



*Fig. 1.—The New Smith Wire Stretcher.*

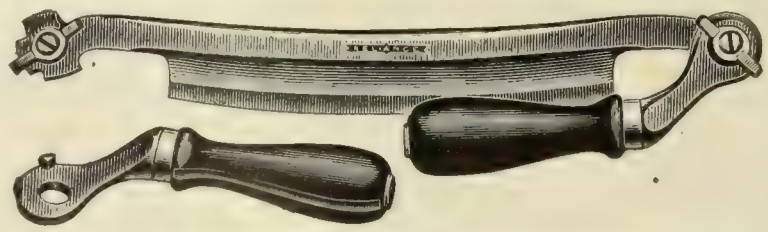


*Fig. 2.—The New Smith Wire Stretcher Used for Barb Wire.*

about a farm. The stretcher is self locking and weighs 6 lb. complete. It is being put on the market by C. F. Smith Company, De Kalb, Ill.

## Reliance Folding Handle Drawing Knife.

The Reliance Edge Tool Company, Youngstown, Ohio, and with New York City office at 74 Murray street, is offering the folding handle drawing knife shown herewith. The folding handles swing into four positions, and are quickly adjusted. When the parts are moved into place the lock is said to be perfectly solid and secure against slipping while in use. The handles are of mahog-



*Reliance Folding Handle Drawing Knife.*

any stain, highly polished and fitted with heavy ferrules. The knife is made with 7, 8, 9 and 10 in. blades for stock sizes. Other lengths may be had on special order. The knives when sent out are sharpened and set ready for use, with temper guaranteed by the maker. The illustration shows the appearance of the knife with one handle folded and the other detached, thus clearly indicating the general construction of the tool. The goods are furnished in standard, special and mirror finish.

## The New Meaker Combination Coin Cashier.

The coin cashier illustrated herewith is a strictly one hand machine, works rapidly and has graduated coin trays arranged to hold the amounts frequently used, other than the regular bank package. The machine is constructed without a single spring or a screw. The mechanism is termed loose acting, and is not affected by heat, cold, dust or rust. All steel parts are hardened, and the machine is finished in oxidized copper and nickel. The space at the left on the top tray holds 45 silver dollars, five in each space. The next space holds 50 half dollars, 10 halves in each space; the next space contains 48 quarters, 8 in each space; the next holds 60 dimes, 10 in each space; the next contains 50 nickels, 10 in each space; the next 36 quarters, 4 quarters in each space; the next 45 dimes, 5 in each space, and the last 35 nickels, 5 in each space. The cup at the right is to hold foreign coin, or coin not to be put out again. The bottom tray, which is partially pulled out, is a duplicate of the top tray, a storage tray. The key arrangement, which is attached to the inclined tray in front, is as follows: The key marked 1 gives one cent; 2 gives two cents; 2 and 1 give three cents; 2 and 2 give four cents; 5 gives nickels; 5 and 1 give six cents; 5 and 2 give seven cents; 5, 2, 1 give eight cents; 5, 2, 2 give nine cents, &c. In Fig. 1 is shown the method of obtaining 40 cents in one hand by one motion. The trays above the keys marked 1, 2, 2 hold 240 pennies, and the capacity of the trays combined is $215.40. The change is computed as it falls.

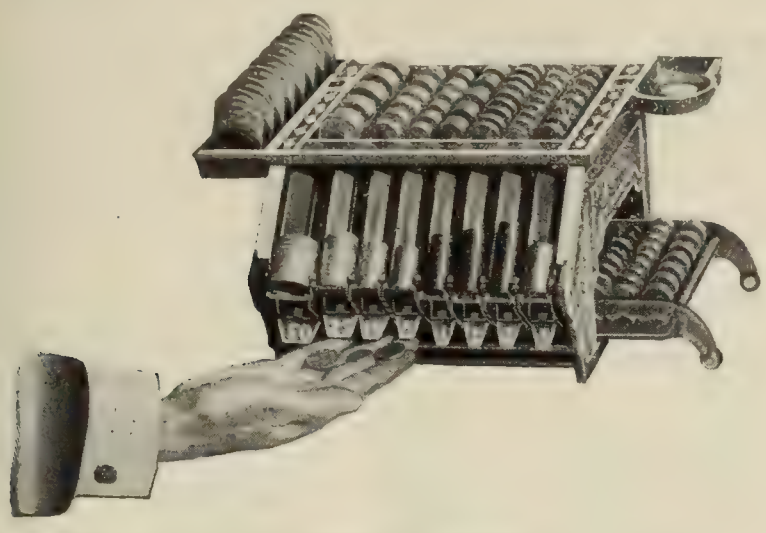


*Fig. 1.—The New Meaker Combination Coin Cashier.*

so that no further counting is necessary, as the coins are not bunched as they would be from a spout. In operation the cashier faces the customer, makes change with one hand, using one or more keys at any distance from which the machine can be reached. When the cash is balanced at night it is not necessary to recount in the morning, as the trays can be removed as shown in Fig. 2. The machine is designed for use by banks, paymasters, department stores, gas offices, electric light and power companies, railroad offices, county treasurers and in any place where speed and accuracy are required in handling coin. The machine is put on the market by the Ireland & Matthews Mfg. Company, Detroit, Mich.

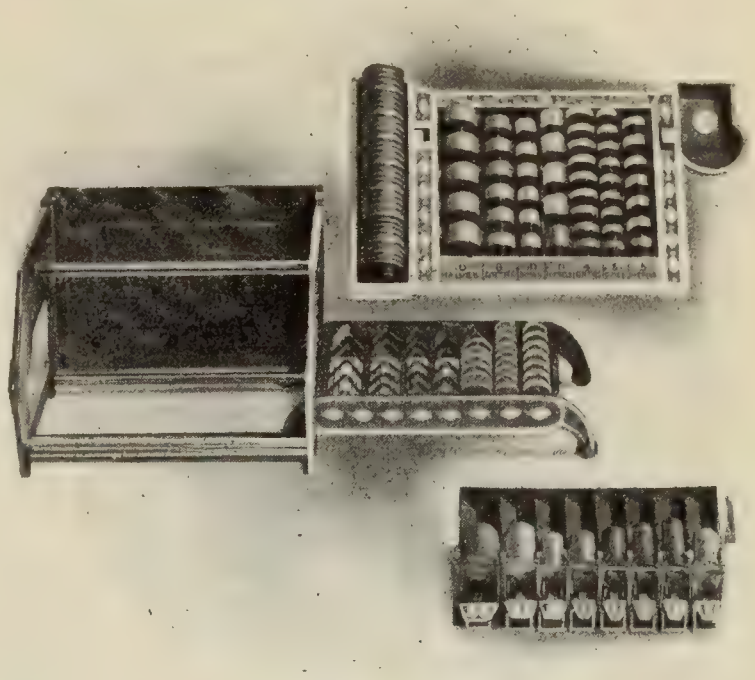


*Fig. 2.—Trays of Coin Cashier Removed for Putting in Safe at Night.*

## The Victor Magnetic Hammer.

The Taplin Mfg. Company, New Britain, Conn., has added to its line a light tack hammer, with cast iron head, wooden handle and malleable iron claw in the end of the handle. The head is magnetized so that it can pick up tacks and drive them direct, thus avoiding bruised fingers. The hammer is furnished both nickeled and japanned.

# PAINTS, OILS AND COLORS

### Animal, Fish and Vegetable Oils—

| | ₱ gal |
|---|---|
| Linseed, State and Western, raw | 42 @43 |
| City, Boiled | 45 @46 |
| City, Raw | 44 @45 |
| Raw, Calcutta, in bbls | 70 @ |
| Lard, Prime, Winter | 68 @69 |
| Extra No. 1 | 54 @56 |
| No. 1 | 47 @52 |
| Cotton-seed Crude, f.o.b. mill | @.. |
| Summer Yellow, prime | 42¾@43¼ |
| Summer White | 45½@46 |
| Yellow Winter | 47¾@48½ |
| Tallow, Acidless | 52 @55 |
| Menhaden, Brown, Strained | 38 @.. |
| Southern | @.. |
| Light Strained | 38 @.. |
| Bleached Winter | 40 @.. |
| Ex. Bleached Winter | 42 @.. |
| Cocoanut, Ceylon ₱ lb | 6¾@6½ |
| Cochin ₱ lb | 7 @7⅛ |
| Cod, Domestic, Prime | 42 @44 |
| Newfoundland | 43 @45 |
| Red, Elaine | 39 @41 |
| Saponified ₱ lb | 5¾@5⅞ |
| Olive, Yellow | 67 @69 |
| Neatsfoot, Prime | 55 @58 |
| Palm, Lagos ₱ lb | 5¾@6 |

### Mineral Oils—

| | ₱ gal. |
|---|---|
| Black, 29 gravity, 25@30 cold test | 13 @13½ |
| 29 gravity, 15 cold test | 13½@14 |
| Summer | 12½@13 |
| Cylinder, light filtered | 20½@21 |
| Dark, filtered | 18 @19 |
| Paraffine, 903-907 sp. gravity | 14¼@15 |
| 903 sp. gravity | 13½@14 |
| 883 sp. gravity | 11 @11½ |
| Red | 13½@14 |

### Miscellaneous—

| | |
|---|---|
| Barytes: | |
| White, Foreign ₱ ton | $18.50@20 50 |
| Amer., floated ₱ ton | 18.00@20 00 |
| Off color ₱ ton | 13.00@16.50 |
| Chalk, in bulk ₱ ton | 3.00@3.40 |
| China Clay, Imported ₱ ton | 11.50@18.00 |

| | ₱ gal. |
|---|---|
| Cobalt, Oxide ₱ 100 lb | 1.45@2.60 |
| Whiting, Commercial ₱ 100 lb | .42@.52 |
| Gilders ₱ 100 lb | .55@.60 |
| Ex. Gilders ₱ 100 lb | .60@.65 |

### Putty, Commercial—₱ 100 lb

| | |
|---|---|
| In bladders | $1.70 @1.80 |
| In bbls. or tubs | 1.20 @1.45 |
| In 1 lb to 5 lb cans | 2.65 @2.95 |
| In 12½ to 50 lb cans | 1.50 @1.90 |

### Spirits Turpentine—₱ gal.

| | |
|---|---|
| In Oil bbls | @.. |
| In machine bbls | @39 |

### Glue—

| | ₱ lb |
|---|---|
| Cabinet | 12 @15 |
| Common Bone | 7½@9 |
| Extra White | 18 @24 |
| Fish, liquid, 50 gal. bbls., per gallon | 60 @1.20 |
| Foot Stock, White | 12 @14 |
| Foot Stock, Brown | 9 @11 |
| German Common Hide | 10 @12 |
| German Hide | 12 @18 |
| French | 10 @40 |
| Irish | 13 @16 |
| Low Grade | 19 @12 |
| Medium White | 14 @17 |

### Gum Shellac—

| | ₱ lb |
|---|---|
| Bleached, Commercial | 26 @27 |
| Bone Dry | 31 @32 |
| Button | 30 @40 |
| Diamond I | 47 @48 |
| Fine, Orange | 34 @35 |
| A. C. Garnet | 27 @28 |
| G. A. L. | 20 @21 |
| Kala Button | 18 @19 |
| D. C. | 18 @19 |
| Octagon B | 39 @40 |
| T. N. | 27½@29 |
| V. S. O. | 47 @48 |

### Colors in Oil—

| | ₱ lb |
|---|---|
| Black, Lampblack | 12 @14 |
| Blue, Chinese | 36 @46 |
| Blue, Prussian | 32 @36 |
| Blue, Ultramarine | 13 @16 |
| Brown, Vandyke | 11 @14 |
| Green, Chrome | 12 @16 |
| Green, Paris | @24 |
| Sienna, Raw | 12 @15 |
| Sienna, Burnt | 12 @15 |
| Umber, Raw | 11 @14 |
| Umber, Burnt | 11 @14 |

### White and Red, Lead &c.—

| | ₱ lb |
|---|---|
| Lead, English white, in Oil | 10⅛@10⅜ |
| Lead, American White: | |
| Dry and in Oil, 100, 250 and 500 lb kegs | 7 |
| Dry and in Oil, 25 and 50 lb kegs | 7¼ |
| Dry and in Oil, 12½ lb kegs | 7½ |
| In Oil, 25 lb tin pails | 7½ |
| In Oil, 12½ lb tin pails | 8 |
| In Oil, 1, 2, 3 and 5 lb tin cans, ass't | 9 |
| Red Lead and Litharge: | |
| In 100 lb kegs | 7 |
| In 25 and 50 lb kegs | 7¼ |
| In 12½ lb kegs | 7½ |
| In lots of less than 500 lbs, ½¢ ₱ lb advance over above prices of White and Red Lead and Litharge. | |
| Lead, American. Terms: On lots of 500 lbs and over, 60 days, or 2 for cash if paid in 15 days from date of invoice. | |

### Zinc, Dry—

| | ₱ lb |
|---|---|
| American, dry | 5¼@5⅝ |
| Red Seal (French process) | 6¾@7 |
| Green Seal | 7¼@7½ |
| German Red Seal (French process) | 6½@6⅞ |
| Green Seal | 7¼@7½ |
| White Seal | 7¾@8¼ |
| French, Red Seal | 8¼@8¾ |
| Green Seal | 10¼@10½ |

### Dry Colors—

| | ₱ lb |
|---|---|
| Black, Carbon | 6½@10 |
| Black Drop, American | 3½@8 |
| Black Drop, English | 5 @15 |
| Black, Ivory | 16 @20 |
| Lamp, commercial | 4 @6 |
| Blue, Celestial | 4 @6 |
| Blue, Chinese | 31 @33 |
| Blue, Prussian | 29 @31 |
| Blue, Ultramarine | 3½@15 |
| Brown, Spanish | ½@1 |
| Carmine, No. 40 | $3.10@3.25 |
| Green, Chrome, ordinary | 3 @5 |
| Green, Chrome, pure | 17 @25 |
| Ocher, American ₱ ton | $8.50@16.00 |
| American Golden | 2½@3¼ |
| French | 1½@2 |
| Foreign Golden | 3 @4 |
| Orange Mineral English | 10 @12 |
| French | 12½@13 |
| German | 12 @13 |
| American | 9 @10 |
| Red, Indian, English | 4½@6 |
| American | 3 @3¼ |
| Red, Turkey, English | 4 @10 |
| Red, Tuscan, English | 7 @10 |
| Red, Venetian, Amer ₱ 100 lb | $0.50@1.25 |
| English ₱ 100 lb | $1.50@1.60 |
| Sienna, Italian, Burnt and Powdered | 3 @9 |
| Italian, Raw Powdered | 3 @7 |
| American Raw | 1½@2 |
| American Burnt and Pow'd | 1½@2 |
| Talc, French ₱ ton | $18.00@25.00 |
| American ₱ ton | 15.00@25.00 |
| Terra Alba, French ₱ 100 lb | .90@1.00 |
| English ₱ 100 lb | .80@1.00 |
| American ₱ 100 lb, No. 1 | .75@.80 |
| American ₱ 100 lb, No. 2 | .60@.65 |
| Umber, Turkey, Bnt. & Pow. | 2¾@3 |
| Turkey, Raw and Powdered | 2¾@3 |
| Burnt, American | 1½@2 |
| Raw, American | 1½@2 |
| Yellow, Chrome, Pure | 13¾@15 |
| Vermilion, American Lead | 7 @25 |
| Quicksilver, bulk | 65 @.. |
| Quicksilver, bags | @66 |
| English, Imported | 65 @70 |
| Chinese | $0.90@1.00 |

# Current Hardware Prices.

**General Goods.**—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

**Special Goods.**—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

**Range of Prices.**—A range of prices is indicated by means of the symbol @. Thus 33⅓ @ 33⅓ & 10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

**Names of Manufacturers.**—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1907, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

**Standard Lists.**—"The Iron Age Standard Hardware Lists" contains the list prices of many leading goods.

**Additions and Corrections.**—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

## Adjusters, Blind—

Columbian and Domestic.....33⅓%
North's .....10%
Zimmerman's—See Fasteners, Blind.

### Window Stop—

Ives' Patent.....35%
Taplin's Perfection.....35%

## Ammunition—See *Caps, Cartridges, Shells, &c.*

## Anti—Rattlers—

Fernald Mfg. Co. Burton Anti-Rattlers, ℔ doz. pairs, Nos. 1, $0.75; 2, $0.60; 4, $1.00; 5, $0.50.
Fernald Quick Shifter, ℔ doz. pairs .....$2.00@$3.00

## Anvils—American—

Eagle Anvils.....℔ lb @8½¢
Hay-Budden, Wrought.....9½@9¾¢
Trenton .....℔ lb 9½@9¾¢

### Imported—

Swedish Solid Steel Sisco, Superior, ℔ lb.....10@10½¢
Peter Wright & Sons, ℔ lb, 84 to 349 lb, 11¢; 350 to 600 lb, 11½¢.

## Anvil, Vice and Drill—

Millers Falls Co., $18.00.....15&10%

## Apple Parers— See *Parers, Apple, &c.*

## Aprons, Blacksmiths'—

Livingston Nail Co.....10%

## Augers and Bits—

*Com. Double Spur....75&10@80%*
*Jennings' Patn., Bright.65&10@70%*
*Black Lip or Blued...65@65&5%*
*Boring Mach. Augers.....70%*
*Car Bits, 12 in. twist.....40&10%*
Ford's Auger and Car Bits.....40&5
Ft. Washington Auger Co., Conard's .....35%
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip. R. Jennings' list, 25&71½%
No. 30, R. Jennings' list.....50
Russell Jennings'.....25&10&21½%
L'Hommedieu Car Bits.....15%
Mayhew's Countersink Bits.....45%
Pugh's Black.....20%
Pugh's Jennings' Pattern.....35%
Snell's Auger Bits.....60%
Snell's Bell Hangers' Bits.....60%
Snell's Car Bits, 12-in. twist.....60%
Snell's King Auger Bits.....50
Wright's Jennings' Bits.....50

## Bit Stock Drills—

See *Drills, Twist.*

### Expansive Bits—

Clark's Pattern, No. 1, 1 doz., $26; No. 2, $18.....60&10%
Ford's, Clark's Pattern.....66⅔&5
C. E. Jennings & Co., Steer's Pat..25%
Lavigne Pat., small size, $18.00; large size, $26.00.....60&10%
Swan's .....60%

### Gimlet Bits—

*Per gro.*
*Common Dbl. Cut.....$3.00@3.25*
*German Pattern, Nos. 1 to 10, $4.75; 11 to 13, $5.75*

### Hollow Augers—

*Bonney Pat., per doz..$5.50@6.00*
Ames .....25&10
Universal .....20

### Ship Augers and Bits—

*Ship Augers.....40&10@—%*
Ford's .....33⅓&5
C. E. Jennings & Co.:
L'Hommedieu's .....6
Watrous' .....33⅓&7½
Snell's .....48%

## Awl Hafts—See *Handles, Mechanics' Tool.*

## Awls—

*Brad Awls:*
*Handled .....gro. $2.75@3.00*
*Unhdld, Shldered...gro.63@66¢*
*Unhandled, Patent..gro.66@70¢*
*Peg Awls:*
*Unhandled, Patent..gro. 31@3½¢*
*Unhdld, Shldered..gro. 65@70¢*
*Scratch Awls:*
*Handled, Com...gro. $3.50@4.00*
*Handled, Socket..gro.$11.50@12.00*

## Awl and Tool Sets—See *Sets, Awl and Tool.*

## Axes—

*Single Bit, base weights: Per doz.*
*First Quality.....$4.75@5.00*
*Second Quality.....$4.25@4.50*
*Double Bit, base weights:*
*First Quality.....$7.00@7.50*
*Second Quality.....$6.50@6.75*

## Axle Grease—

See *Grease, Axle.*

## Axles— *Iron or Steel.*

*Concord, Loose Collar...4¼@4½¢*
*Concord, Solid Collar....4½&5 ¢*
*No. 1 Common, Loose...3¼@4 ¢*
*No. 1½ Com., New Style. 4¼@4¾¢*
*No. 2 Solid Collar.....4¼@4¾¢*
*Half Patent:*
*Nos. 7, 8, 11 and 12.....70%*
*Nos. 13 to 14.....70%*
*Nos. 15 to 18...70&10@70&10&5%*
*Nos. 19 to 22...70&10@70&10&5%*

### Boxes, Axles—

*Common and Concord, not turned .....lb., 5@6¢*
*Common and Concord, turned, lb., 6@7¢*
*Half Patent.....lb., 9½@10¢*

## Bait— Fishing—

Hendryx:
A Bait.....20%
B Bait.....25%
Competitor Bait.....20&5%

## Balances— Sash—

Caldwell new list.....50&10%
Pullman .....50&10%

### Spring—

*Light Spring Balances..60@60&5%*
Chatillon's:
Light Spg. Balances.....50@50&10%
Straight Balances.....40@40&10
Circular Balances.....50&10
Large Dial.....30

## Barb Wire—See *Wire, Barb.*

## Bars— Crow—

*Steel Crowbars, 10 to 40 lb.... per lb., 2¼@2½¢*

### Towel—

No. 10 Ideal, Nickel Plate..℔ gro. $8.50

## Beam, Scale—

*Scale Beams.....40%*
Chattillon's No. 1.....30%
Chatillon's No. 2.....40%

## Beaters, Carpet—

Holt-Lyon Co.:
No. 12 Wire Coppered ℔ doz. $0.80; Tinned .....$0.85
No. 11 Wire Coppered ℔ doz. $1.15; Tinned .....$1.20
No. 10 Wire Tinned.....℔ doz. $1.50

### Beaters Egg—

Dover Stamping & Mfg. Co.:
Genuine Dover, per gro., No. 1, Tumbler Size, $7.50; No. 2, Family Size, $7.50; No. 3, Extra Family Size, $24.00; No. 4, Hotel Size, $30.00.
Holt-Lyon Co.:
Holt, per doz., No. 5, Jap'd, $0.80; No. A, Jap'd, $1.15; No. B, Jap'd, $1.85; No. 6, Jap'd, $1.65.
Lyon, Jap'd, per doz., No. 2, $1.35.
Taplin Mfg. Co.:
Improved Dover, per gro., No. 60, $6.00; No. 75, $6.50; No. 100, $7.00; No. 102, Tin'd, $8.50; No. 150, Hotel, $15.00; No. 152, Hotel Tin'd, $17.00; No. 200, Tumbler, $8.50; No. 202, Tumbler Tin'd, $9.50; No. 300, Mammoth, per doz., $25.00.

## Bellows—

*Blacksmith, Standard List:*
*Split Leather.....60&10@65%*
*Grain Leather.....50@50&10%*

### Hand—

| *Inch..* | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|
| *Doz..* | $5.00 | 5.50 | 6.00 | 6.50 | 7.50 |

### Molders—

| *Inch..* | 10 | 12 | 14 | 16 |
|---|---|---|---|---|
| *Doz..* | $7.50 | 9.00 | 12.00 | 15.00 |

Net Prices.

## Bells— Cow—

*Wrought Cow Bells.....75%*
Jersey .....75&10
Texas Star.....50

### Door—

Home, R. & E. Mfg. Co.'s.....55&10%

### Hand—

*Polished, Brass.....60@60&10%*
*White Metal.....60@60&10%*
*Nickel Plated.....50&10%*
*Swiss .....50&10%*
Cone's Globe Hand Bells.....33⅓@35%

### Miscellaneous—

*Farm Bells.....lb., 2¼@2½¢*
*Church and School....60@60&10%*

## Belting— Leather—

*Standard .....70&10@70&10&5%*
*Light .....75&10%*
*Cut Leather Lacing..60@60&10%*
*Leather Lacing Sides, per sq. ft. 20¢*

### Rubber—

*Competition (Low Grade), 70&10@75%*
*Standard .....60&10@70%*
*Best Grades.....40@50%*

## Bench Stops—

See *Stops, Bench*

## Benders and Upsetters, Tire—

Green River Tire Benders and Upsetters .....20%

## Bicycle Goods—

John S. Leng's Son & Co.'s 1907 list: Chain, Parts, Spokes.....50%
Tubes .....60%

## Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

## Blocks Tackle—

*Common Wooden.....75@75&5%*
B. & L. B. Co.:
Boston Wood Snatch, 50%; Eclipse Steel, 75; Hollow Steel, 50&10; Star Wire Rope, 50%; Tarbox Metal Snatch, 50%; Tarbox New Style Steel, 50&10%; Wire Rope Snatch, 50%.
Lane's Patent Automatic Lock and Junior .....30%
See also Machines, Hoisting.

## Boards, Stove—

*Paper and Wood Lined.....55%*
*Embossed .....55%*

## Boards, Wash—

See *Washboards.*

## Bobs, Plumb—

Keuffel & Esser Co.....33⅓%

## Bolts Carriage, Machine, &c,—

*Common Carriage (cut thread):*
*⅜ x 6 and smaller..75&5@—%*
*Larger and longer.....70@—*
*Phila. Eagle, $3.00 list...80@—%*
*Bolt Ends.....70@—%*
*Machine (Cut Thread):*
*⅜ x 4 and smaller..75&10@—%*
*Larger and longer.....70@—%*

### Door and Shutter—

*Cast Iron Barrel, Japanned, Round Brass Knobs:*

| *Inch* | 3 | 4 | 5 | 6 | 8 |
|---|---|---|---|---|---|
| *Per doz..* | $0.30 | .35 | .45 | .60 | .80 |

*Cast Iron Spring Foot, Jap'd:*

| *Inch* | 6 | 8 | 10 |
|---|---|---|---|
| *Per doz.....* | $1.20 | 1.50 | 2.25 |

*Cast Iron Chain, Flat, Japanned:*

| *Inch* | 6 | 8 | 10 |
|---|---|---|---|
| *Per doz.....* | $1.00 | 1.40 | 1.65 |

*Cast Iron Flat Shutter, Jap'd, Brass Knobs:*

| *Inch* | 6 | 8 | 10 |
|---|---|---|---|
| *Per doz.....* | $0.75 | .95 | 1.25 |

*Wrought Barrel Japanned, 80&10@80&10&5%*
*Barrel Bronzed.....60&10%*
*Spring .....70&10@70&10&10%*
*Shutter .....50&5@50&10&5%*
*Square Neck.....75@75&10%*
*Square .....70&10&10@80%*
Ives' Patent Door.....55
Ives' Wrought Metal.....45

### Expansion—

E. H. Evans' Crescent.....10@60%
Richards Mfg. Co.....55&10
Steward & Romain Mfg. Co.:
Style No. 13 Double.....60%
Style No. 1 Single.....60%
Style No. 100, Dbl. Jaw, Single 55%
Lag Screw.....66⅔%

### Plow and Stove—

*Plow .....65&5@70%*
*Stove .....85@85&5%*

### Tire—

*Common Iron.....80@80&5%*
*Norway Iron.....80@80&5%*
American Screw Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84...82½%
Bay State, list Dec. 28, '99.....80%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84...82½%
Eclipse, list Dec. 28, '99.....80%
Russell, Burdsall & Ward Bolt & Nut Co.:
Empire, list Dec. 28, '99.....80%
Norway Phila., list Oct. '84.....80%
Eagle .....82½%
Shelton Co.:
Tiger Brand, list Dec. 28, '99...80%
Phila., Eagle, list Oct. 16, 1884..82½%
Upson Nut Co.:
Tire Bolts.....72½%

## Borers, Bung—

*Borers Bung, Ring, with Handle:*

| *Inch.....* | 1¼ | 1½ | 1¾ | 2 |
|---|---|---|---|---|
| *Per doz...* | $4.80 | 5.60 | 6.40 | 8.00 |
| *Inch.....* | 2¼ | 2½ | | |
| *Per doz.....* | $8.65 | 11.50 | | |

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.75; No. 3, $2.50 each.....25%

## Boxes, Mitre—

C. E. Jennings & Co.....25%
Langdon, New Langdon and Langdon Improved, 20&10%; Langdon Acme .....15&10%
Perfection .....40%
Seavey .....45%

## Braces—

*Comman Ball, American....$1.50*
Barber's .....50&10&10@60&10%
Fray's Genuine Spofford's.....60%
Fray's No. 61, 166, 206, 614.....50%
C. E. Jennings & Co.....50&5%
Mayhew's Ratchet.....60%
Mayhew's Quick Action Hay Pat...50%
Millers Falls Drill Braces.....25&10%
P., S. & W. Co., Peck's Pat....60&10%

## Brackets—

*Wrought Steel.75&10@75&10&10%*
Bradley Metal Clasp...80&10@80&10&5
Griffin's Pressed Steel.....75@75&10%
Griffin's Folding Brackets.....70&10%
Taplin Victor Handy Egg Beater Bracket .....℔ doz. $1.50

## Bright Wire Goods—

See *Wire and Wire Goods.*

## Broilers—

Kilbourne Mfg. Co.....75&20%
Wire Goods Co.....75%

## Buckets, Galvanized —

*M'fr's list, price per gross.*

| *Quart..* | 10 | 12 | 14 |
|---|---|---|---|
| *Water, Reg...* | 26.85 | 29.50 | 33.50 |
| *Water, Hvy...* | 45.35 | 48.00 | 52.00 |
| *Fire, Rd. Btm..* | 32.00 | 34.65 | 38.65 |
| *Well .....* | 37.35 | 41.35 | 45.35 |

10@12½&5&5%

## Bull Rings—See *Rings, Bull.*

## Butts— Brass—

*Wrought, High List, Oct. 26,'06.55%*
Cast Brass, Tiebout's.....40%

### Cast Iron—

*Fast Joint, Broad....40&10@50%*
*Fast Joint, Narrow...40&10@50%*
*Loose Joint.....70&10@75%*
*Loose Pin.....70&10@75%*
*Mayer's Hinges.....70@70&5*
*Parliament Butts.....70@70&5*

### Wrought Steel—

*Bright*
*Light Narrow, Light Reversible .....70&5%*
*Reversible and Broad..70&5%*
*Loose Joint, Narrow, Light Inside Blind, &c.....70%*
*Buck Flaps, Table Chest.65% Japanned.*
*Light Narrow, Loose Pin, 40&5%*
*Light Narrow, Ball Tip..60%*
*Broad .....40&5%*
*Steeple Tipped.....70%*
*Ball Tipped.....70%*

Extra, 10@—

## Cages, Bird—

Hendryx Brass: Series 3000, 5000, 1100, net list; 1200, 15; 200, 300, 900 ..... 30%
Hendryx Bronze: Series 700, 800.... 30
Hendryx Enameled..... 35

## Calipers—See *Compasses.*

## Calks, Toe and Heel—

*Blunt, 1 prong, per lb.....¼@1½¢*
*Sharp, 1 prong, per lb...4½@5¢*
Burke's, Blunt, 4@4¼¢; Sharp, 4½@5¼¢
Lautier, Blunt, 4@4¼¢; Sharp, 4½@4¾¢
Perkins', Blunt, ₱ lb. 3.65¢; Sharp, 4.15¢

## Can Openers—

See *Openers, Can.*

## Caps, Percussion—

*Eley's E. B.....52@55¢*
*G. D.....per M 34@35¢*
*F. L.....per M 40@42¢*
*G. E.....per M 48@50¢*
*Musket.....per M 62@65¢*

### Primers—

*Berdan Primers, $2 per M..20&5%*
*Primer Shells and Bullets..15&10%*
*All other primers per M..$1.52@1.60*

## Carpet Stretchers—

See *Stretchers, Carpet.*

## Cartridges—

*Blank Cartridges:*
*32 C. F., $5.50.....10&5%*
*38 C. F., $7.00.....10&5%*
*22 cal. Rim, $1.50.....10&5%*
*32 cal. Rim, $2.75.....10&5%*
*B. B. Caps, Con. Ball, Swgd. $1.00*
*B. B. Caps, Round Ball.....$1.40*
*Central Fire.....25%*
*Target and Sporting Rifle..15&5%*
*Primed Shells and Bullets..15&10%*
*Rim Fire, Sporting.....50*
*Rim Fire, Military.....15&5%*

## Casters—

*Bed.....65&10@70%*
*Plate.....60&5@60&10%*
*Philadelphia.....70&10@75%*
Acme, Ball Bearing.....35
Gem (Roller Bearing).....70&10&10&5
Steel Gem.....50%
Standard Ball Bearing.....45
Yale (Double Wheel) low list...40&10

## Cattle Leaders—

See *Leaders, Cattle.*

## Chain, Proof Coil—

*American Coil, Straight Link:*

| 3-16 | ¼ | 5-16 | ⅜ | 7-16 | ½ | ⅝ |
|---|---|---|---|---|---|---|
| $8.15 | 5.55 | 4.60 | 3.95 | 3.75 | 3.65 | 3.55 |

¾-⅞-1 1⅛ to 1¼ inch.
$3.45 3.55

*In cask lots, deduct 25c.*
*German Coil.....60@60&5%*
*German Pattern Coil:*
*6-0 to 1.....70&5@70&10%*
*2 and 3..60&10&10@60&10&10&5%*
*4, 5 and 6.....50&10@50&10&5%*

### Halter—

*Halter Chains.....60&5@60&10%*
*German Pattern Halter Chains, list July 24, '97....60&10&5@70%*
Covert Mfg. Co.:
Halter ..... 35&5

## Cow Ties—

See *Halters and Ties.*

## Trace, Wagon, &c.—

*Traces, Western Standard: 100 pr.*
*6½—6-3, Straight, with ring..$28.00*
*6½—6-2, Straight, with ring..$29.00*
*6½—8-2, Straight, with ring..$32.00*
*6½—10-2, Str'ght, with ring..$37.00*
*NOTE.—Add 2c per pair for Hooks Twist Traces; add per pair for Nos. 2 and 3, 2c; No. 1, 3c; No. 0, 4c to price of Straight Link.*
*Eastern Standard Traces, Wagon Chain, &c...60&10@60&10&5%*

### Miscellaneous—

*Jack Chain, list July 10, '93:*
*Iron.....60&10&7½%*
*Brass.....65%*
*Safety and Plumbers' Chain..75%*
*Gal. Pump Chain....lb., 4½@5%*
Bridgeport Chain Co.:
Triumph Halter and Coil..35&2½@40
Triumph Dog.....50&10@60
Brown Halter and Coil....45@50&5
Covert Mfg. Co.:
Breast, Halter, Heel, Rein, Stallion .....40
Oneida Community:
American Halter, Dog and Kennel Chains .....35&2 20&10
Niagara Dog Leads and Kennel Chains .....45@50&5
Wire Goods Co.:
Dog Chain.....70
Universal Dbl. Twisted Chain.....50

## Chain and Ribbon, Sash—

Oneida Community:
Steel Chain.....60
Pullman:
Bronze Chain, 60; Steel Chain, Coppered .....60&10
Sash Chain Attachments, per set, 8c
Aluminum Sash Ribbon, per 100 ft .....$2.00@$3.00
Sash Ribbon Attachments per set, 8c

## Chalk—(From Jobbers.)

*Carpenters' Blue.....gro., 50¢*
*Carpenters' Red.....gro., 45¢*
*Carpenters' White.....gro., 40¢*

## Checks, Door—

Bordsley's ..... 15%
Pullman per gro..... $4.00
Russwin ..... 33⅓%

## Chests, Tool—

American Tool Chest Co.:
Boys' Chests, with Tools.....55
Youths' Chests, with Tools.....40%
Gentlemen's Chests, with Tools..30
Farmers', Carpenters, etc., Chests, with Tools .....20
Machinists' and Pipe Fitters' Chests, Empty.....45
Tool Cabinets.....45
C. E. Jennings & Co.'s Machinists' Tool Chests.....7½

## Chisels—

### Socket Framing and Firmer

*Standard List.....80&10@—*
Buck Bros.....30
C. E. Jennings & Co.:
Socket Firmer No. 10.....25&7½
Socket Framing No. 15.....25&7½
Swan's .....66⅔@70
L. & I. J. White & Co.....30@30&5%

### Tanged—

*Tanged Firmers.....30&5@35%*
Buck Bros.....30
C. E. Jennings & Co. Nos. 191, 181..25%
L. & I. J. White Co.....25&5%

### Cold—

*lb.*
*Cold Chisels, good quality..13@15¢*
*Cold Chisels, fair quality..11@12¢*
*Cold Chisels, ordinary....9@10¢*

## Chucks—

Almond Drill Chucks.....35%
Almond Turret Six-Tool Chuck.....40
Beach Pat, each $8.00.....35&5
Empire .....25
Blacksmiths' .....25
Jacobs' Drill Chucks.....35
Pratt's Positive Drive.....25
Skinner Patent Chucks:
Independent Lathe Chucks.....35
Universal, Reversible Jaws.....55
Combination, Reversible Jaws.....55
Drill Chucks, New Model, 25; Standard, 45%; Skinner Pat., 25; Positive Drive.....40
Planer Chucks.....20
Face Plate Jaws.....35
Standard Tool Co.:
Improved Drill Chuck.....45
Union Mfg. Co.:
Combination, Nos. 1, 2, 3, 4, 5, 6, 7, 8 and 17, 40; No. 21.....35
Scroll Combinations, Nos. 83 and 84 .....30
Geared Scroll, Nos. 33, 34 and 35..25
Independent Iron, Nos. 18 and 318.35%
Independent Steel, No. 64.....25
Union Drill, Nos. 000, 00, 100, 101, 102, 103, 104.....35%
Union Czar Drill.....25%
Universal, 11, 12, 16, 17, 13, 14, 15..40%
Universal No. 42.....35
Iron Face Plate Jaws, Nos. 28, 30, 48 and 50.....35%
Steel Face Plate Jaws, Nos. 70 and 72 .....30%
Westcott Patent Chucks:
Lathe Chucks.....50%
Little Giant Auxiliary Drill.....50
Little Giant Double Grip Drill...50%
Little Giant Drill, Improved.....50%
Oneida Drill.....50%
Scroll Combination Lathe.....50%
Whitaker Mfg. Co.:
National Drill.....25%

## Clamps—

Adjustable Hammers.....20@20&5%
Carriage Makers', P., S. & W. Co. .....50&10%
Besly, Parallel.....33⅓&10%
Myers' Hay Rack.....45%
Lineman's Swedish Neverturn.....65%
Wood Workers' Hammers.....10&10%
Saw Clamps, see Vises, Saw Filers'

## Cleaners, Drain,

Iwan's Champion, Adjustable.....50%
Iwan's Champion, Stationary.....40%

### Sidewalk—

Star Socket. All Steel..₱ doz. $1.05 net
Star Shank. All Steel..₱ doz. $3.24 net
W. & C. Shank, All Steel, ₱ doz., 7½ in., $3.00; 8 in., $3.25.

## Cleavers, Butchers'—

Foster Bros.....30%
Fayette R. Plumb.....30
L. & I. J. White Co.....30

## Clippers, Horse and Sheep—

Chicago Flexible Shaft Co.:
1902 Chicago Horse, each..$10.75
20th Century Horse, each...$5.00
Lightning Belt Horse, each.$15.00
Chicago Belt Horse, each..$20.00
Stewart's Enclosed Gear Horse each.....$6.75
Stewart's Patent Sheep Shearing Machine, each.....$12.75
Stewart Enclosed Gear Shearing Machine, No. 8, each..$9.75
} 20%

## Clips, Axle—

*Regular Styles, list July 1, '05, 80&80&10%*

## Cloth and Netting, wire

—See *Wire, &c.*

## Cocks, Brass—

*Hardware list:*
*Plain Bibbs, Globe, Kerosene, Racking, Liquor, Bottling, &c .....75%*
*Compression Bibbs.....70*

## Coffee Mills—

See *Mills, Coffee.*

## Collars, Dog—

Nickel Chain, Walter B. Stevens & Son's list .....40%
Leather, Walter B. Stevens & Son's list .....40

## Compasses, Dividers, &c.

*Ordinary Goods.....70&10@75%*

## Conductor Pipe,—

*L. C. L. to Dealers:*

| | *Gal. Steel.* | *Charcoal.* |
|---|---|---|
| *Northeastern* | *70&10%* | *50&10&7½%* |
| *Eastern* | *75%* | *50&10&7½%* |
| *Pittsburgh* | *75&10&5%* | *60%* |
| *Central* | *75&10%* | *60%* |
| *Northwestern* | *75&7½%* | *60%* |
| *Western* | *70&12½%* | *50&12½%* |
| *Tennessee* | *70&10%* | *50&12½%* |
| *Southern* | *70%* | *50&12½%* |
| *Southwestern* | *70%* | *50&5%* |

*Terms, 60 days: 2% cash 10 days. Factory shipments generally delivered.*
See also Eave Troughs.

## Coolers, Water—

| L. & G. Mfg. Co.: Gal. | 2 | 3 | 4 | 6 | 8 |
|---|---|---|---|---|---|
| Galvanized, ea. | $1.85 | $2.00 | $2.25 | $2.90 | $3.90 |

| Galvanized, Lined, side handles, Gal. | 2 | 3 | 4 | 6 | 8 |
|---|---|---|---|---|---|
| Each | $1.95 | $2.15 | $2.40 | $3.30 | $4.15 |

White Enameled.....10
Agate Lined.....10%

## Coppers' Tools—

See *Tools, Coopers'.*

## Coppers, Soldering—

*Soldering Coppers, 3 lb. to pair and heavier, 20¢; lighter than 3 lb. to pair.....22¢*

## Cord—Sash—

*Braided, Drab.....lb. 35¢*
*Braided, White, Com., Nos. 8 to 12, 20¢; No. 7, 20½¢; No. 6, 21½¢. In lots of 12 doz. or over, 1 cent less per pound.*
*Cable Laid Italian, lb., No. 18..37¢*
*Italian, lb., A, No. 18, 25¢; B, 22¢*
*Common India.....lb., 11@11½¢*
*Cotton Sash Cord, Tw'ted..18@20¢*
*Patent Russia.....lb....20¢*
*Cable Laid Russia.....lb...21¢*
*India Hemp, Br'd'd.....lb...21¢*
*India Hemp, Twisted...lb.13@14¢*
*Patent India, Twisted..lb...17¢*
Pearl Braided, cotton, No. 6, ₱ lb, 27½¢; No. 7, 26½¢; Nos. 8 to 12, 26¢
Eddystone, Braided, Nos. 8 to 12, 26¢; 7, 26½; 6, 27½¢.
Harmony Cable Laid Italian, Nos. 7 to10.....₱ lb 23¢
Pullman:
Wire Sash Cord.....10%
Sash Cord Attachments, per 100..$2.00
Samson, Nos. 8 to 12:
Braided, ₱ lb., Drab Cotton, 55¢; Italian Hemp, 40¢@50¢; Linen, 65¢; White Cotton, 50¢; Spot Cord.....56¢
Massachusetts, White...₱ lb 40¢
Massachusetts, Drab...₱ lb 45¢
} 15%
Phoenix, White, Nos 8 to 12....27¢
Silver Lake, per lb.:
A, Drab, 45¢; A, White, 40¢; B, Drab, 40¢; B, White, 35¢; Italian Hemp, 40¢; Linen....57½¢
See also Chain and Ribbon.

## Wire, Picture—

*Full Length.....90@—%*
*Short Length.....90&20@—%*
Hendryx Standard Wire Picture Cord, old list, 85&10%
Turner & Stanton Co. Wire Picture Cord .....90%

## Cradles—

*Grain .....50%*

## Crayons—

*White Round Crayons, Cases, 100 gro., $8.00, $8.50 and $9.00 according to grade.*
Zelnicker's Lumber: ₱ gro.
White and Purple, Indelible....$7.50
Blue, Red, Green, Yellow and Terra Cotta, $6.50; Black.....$4.50
Giant Lumber, 5¼ in. x 15-16 in, round, all colors, $12.00; Indelibles, $14.00; Blacks.....$10.00
Genuine Soapstone, Metal Workers', 5 in. x ¼ in. Round, $2.50; 5 in. x ¼ in. Square, $1.75; 5 x ½ x 3-16, $2.50; 5 x 1¼ x 3-16.....$3.00
Suremark, Black, $2.25; Blue, Red and Yellow.....$2.50

## Crooks, Shepperds'—

Fort Madison, per doz., Heavy, $5.50; Light .....$5.00

## Crow Bars—See *Bars, Crow.*

## Cultivators—

Victor Garden.....50

## Cutlery, Table—

International Silver Company:
No. 12 M'd'm Knives, 1847..₱ doz. $3.50
Star, Eagle, Rogers & Hamilton and Anchor.....₱ doz. $3.00
Wm. Rogers & Son.....₱ doz. $2.50

## Cutters—Glass—

H. H. Mayhew Co.....40
Red Devil.....60
R. Mfg. Co.....40
Woodward .....50

### Meat and Food—

American .....30

| Nos. | 401 | 402 | 403 | 404 | 405 | 406 | 407 |
|---|---|---|---|---|---|---|---|
| Each | $5 | $7 | $10 | $12 | $25 | $50 | $60 |

Enterprise:

| Nos. | 5 | 10 | 12 | 22 | 32 |
|---|---|---|---|---|---|
| Each | $2 | $3 | $2.75 | $4.50 | $6 |

No. 202, $1.50 .....10&7½
P., S. & W. Co.:
Dixon's .....₱ doz 33⅓

| Nos. | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| | $14.00 | $17.00 | $19.00 | $30.00 |

Ideal .....40&10&5
Hades .....60&10&5
Little Giant .....₱ doz. $4.50
Nos. 205 210 215 220 230

| | | | | |
|---|---|---|---|---|
| $35.00 | $48.00 | $44.00 | $72.00 | $68.00 |

New Triumph No. 605, ₱ doz. $4.00 .....40&10
Russia Food, No. 1, $24.00; No. 2 $27.00 .....45&10&5
$15.00 $18.00
Enterprise Beef Shavers.....25&10

## Siaw and Kraut—

Henry Disston & Sons:
Slaw and Kraut Cutters.....35
Corn Graters.....30
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife....₱ doz. $3.00
Combined Slaw Cutter and Corn Grater .....₱ doz. $4.00

## Tobacco—

*All Iron, Cheap...doz, $4.25@4.50*
Enterprise .....25@30
National, ₱ doz., No. 1, $21; No. 2, $18 .....40%

## Diggers, Post Hole, &c—

Disston's:
Rapid, ₱ doz., $24.00.....25%
Samson, ₱ doz., $34.00.....25%
Iwan's Imp'ved Post Hole Auger..40%
Vaughan Pattern Post Hole Augers, ₱ doz., $7.00
Perfection Post Hole Diggers, ₱ doz. .....$8.75
Split Handle Post Hole Diggers, ₱ doz., $7.75
Hercules Pattern, ₱ doz.....$10.00
Kohler's, ₱ doz., Universal, $15.00; Little Giant, $12.00; Hercules, $10.00; Invincible, $9.00; Rival, $8.50; Pioneer.....$7.50
Never-Break Post Hole Diggers, ₱ doz., $24.00.....60%

## Dividers—See *Compasses.*

## Drawing Knives—

See *Knives, Drawing.*

## Dressers Emery Wheel—

Sterling Emery Wheel Dressers.....35%
Sterling Wheel Dresser Cutters.....35%

## Drills and Drill Stocks—

*Blacksmith's Common Drilling Machines .....$1.50@1.75*
Breast, Millers Falls.....15&10
Breast, P., S. & W.....33⅓
Goodell Automatic Drills.50&10@60&10
Millers Falls Automatic Drills.33⅓&10
Ratchet, Curtis & Curtis.....25
Ratchet, Parker's.....40
Ratchet, Weston's.....40
Ratchet, Weston's, Style H Improved .....40
Ratchet, No. 012.....40
Ratchet, Celebrated.....40%
Ratchet, Whitney's, P., S. & W.. 50&5%
Whitney's Hand Drill, No. 1, $10.00; Adjustable, No. 10, $12.00.....33⅓%

### Twist Drills—

*Bit Stock.....70@70&5%*
*Taper and Straight Shank, 60&10@70%*

## Drivers, Screw—

*Screw Diver Bits, per doz..45@50¢*
Balsey's Screw Holder and Driver, ₱ doz., 2½-in., $6; 4-in., $7.50; 6-in., $9 .....50%
Buck Bros.' Screw Driver Bits.....30%
Champion .....50%
Disston's .....70%
Fray's Hol. H'dle Sets, No. 3, $12..50%
Ford's Brace Screw Drivers....40&10%
Gay's Double Action Ratchet.....35%
Goodell's Auto.....65@65&10%
Mayhew's Black Handle.....40%
Mayhew's Monarch.....40%
Millers Falls, Nos. 20 and 21....25&10%
Millers Falls, Nos. 11, 12, 41, 42..15&10%
Smith & Hemenway Co.'s Neverturn, 66⅔%; Elmora, 60%.....ar. 30&10%
Swan's:
Nos. 7565 to 7567, 40%; No. 7540, 40&10%

## Eave Trough, Galvanized—

| *Territory...Gal. Steel.* | *Charcoal Iron.* |
|---|---|
| *Northeastern..75&10&5%* | *60&20%* |
| *Eastern.....80&2½%* | *60&20%* |
| *Pittsburgh..80&20%* | *65&10%* |
| *Central...80&10&10&2½%* | *65&10%* |
| *Northwestern..80&10&10%* | *65&10%* |
| *Western....80&10%* | *60&10&5%* |
| *Tennessee...80&5%* | *60&10&5%* |
| *Southern....80%* | *60&10&5%* |
| *Southwestern..75&10&2½%* | *60&5%* |

*Terms, 2% for cash. Factory shipments generally delivered.*
*Note. Lower prices are made in some sections.*
See also Conductor Pipe and Elbows.

## Elbows and Shoes—

*Factory shipments, all territories:*

| | *Galv. Steel and Galv. C. I. Standard Gauge* | *Tinned* |
|---|---|---|
| *No. 26* | | |
| *No. 24* | | |
| *No. 22* | | |

## Elbows, Stove Pipe—

Edwards, Standard Blue..40&10&10
Edwards, Royal Blue.....45&10&10
Reeves Dover, Standard Blue.....40&10

## Emery, Turkish—

| | ½ to ⅝: | ¾ to 2½: | Flour. |
|---|---|---|---|
| *Kegs.....lb.* | *5¢* | *5½¢* | *8½¢* |
| *½ Kegs.....lb.* | *5½¢* | *5¾¢* | *8¾¢* |
| *¼ Kegs.....lb.* | *5½¢* | *6¢* | *9¢* |

*10-lb. cans,*

| | | | |
|---|---|---|---|
| *10 in case...* | *6½¢* | *7¢* | *9¢* |
| *10 lb. cans, less than 10...* | *10¢* | *10¢* | *8¢* |
| *Less quantity..* | *10¢* | *10¢* | *8¢* |

*NOTE. In lots 1 to 3 tons a discount of 10% is given.*

## Extractors, Lemon Juice—

—See *Squeezers, Lemon.*

## Fasteners, Blind—
Zimmerman's .....50&10%
Walling's .....40&10%
Upson's Patent.....40%

## Cord and Weight—
Ives and Titan.....33⅓%

## Corrugated—
Acme Corrugated Fasteners.....70%

## Faucets—
*Cork Lined.....50&10@60%*
*Metallic Key, Leather Lined, .. 60&10@70%*
*Red Cedar.....40&5@40&10&5%*
*Petroleum .....70&10@75%*
B. & L. B. Co.:
Metal Key.....60&10%
Star .....60%
West Lock.....50&10%
John Sommer's Peerless Tin Key....40%
John Sommer's Boss Tin Key.....50%
John Sommer's Victor Mtl. Key.50&10%
John Sommer's Duplex Metal Key..60%
John Sommer's Diamond Lock.....40%
John Sommer's I.X.L. Cork Lined..50%
John Sommer's Reliable Cork Lined.. 50&10%
John Sommer's Chicago Cork Lined.60%
John Sommer's O. K. Cork Lined...50%
John Sommer's No Brand, Cedar....50%
John Sommer's Perfection, Cedar....40%
Self Measuring:
Enterprise, ℔ doz. $36.00.....40&10%
Lane's, ℔ doz. $36.00.....40&10%
National Measuring, ℔ doz. $36.40&10%

## Felloe Plates—
See *Plates, Felloe.*

## Files— Domestic—
*List Nov. 1, 1899.*
*Best Brands.....70&10@75&10%*
*Standard Brands.....75&10@80%*
*Lower Grade....75&10&10@80&10%*

## Imported—
*Stubs' Tapers, Stubs' list, July 24, '97.....33⅓@40%*

## Fixtures, Fire Door—
Allith Underwriters' Approved.....50%
Richards Mfg. Co.:
Universal, No. 103; Special, No. 104 .....$3.75
Fusible Links, No. 96.....50%
Expansion Bolts, No. 107.....60&10%

## Grindstone—
*Net Prices:*

| *Inch* | *15* | *17* | *19* | *21* |
|---|---|---|---|---|
| *Per doz.* | *$3.60* | *3.85* | *4.15* | *4.65* |

P., S. & W. Co.....25%
Reading Hardware Co.....60%

## Fodder Squeezers—
See *Compressors.*

## Forks—
*NOTE.— Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.*
Iowa Dig-Ezy Potato.....60&10%
Victor, Hay.....60&15&2½%
Victor, Manure.....66⅔%
Victor, Header.....65%
Champion, Hay.....66⅔%
Champion, Header.....65%
Champion, Manure.....60&15&2½%
Columbia, Hay.....60&20
Columbia, Manure.....70
Columbia, Spading.....70&12½
Hawkeye Wood Barley.....10
W. & C. Potato Digger.....60&10%
Acme Hay.....60&20
Acme Manure, 4 tine.....60&10&5%
Dakota Header.....60&20
Jackson Steel Barley.....60&20%
Kansas Header.....65%
W. & C. Favorite Wood Barley....40%
Plated.—See Spoons.

## Frames— Wood Saw—
*White, S'g't Bar, per doz.75@80¢*
*Red, S'g't Bar, per doz.$1.00@1.25*
*Red, Dbl. Brace, per doz.$1.40@1.50*

## Freezers, Ice Cream—

| *Qt.....* | *1* | *2* | *3* | *4* | *6* |
|---|---|---|---|---|---|
| *Each....* | *$1.25* | *$1.60* | *$1.90* | *$2.20* | *$2 80* |

## Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

## Fry Pans—See *Pans, Fry.*

## Fuse— *Per 1000 Feet.*
*Hemp .....$2.75*
*Cotton .....3.20*
*Waterproof Sgl. Taped..3.65*
*Waterproof Dbl. Taped..4.40*
*Waterproof Tpl. Taped..5.15*
10&2½%

## Gates, Molasses and Oil—
*Stebbins' Pattern.....80@80&5%*

## Gauges—
*Marking, Mortise, &c..50@50&10%*
Chapin-Stephens Co.:
Marking, Mortise, &c.....50&50&10
Disston's Marking, Mortise, &c. 67½
Wire, Brown & Sharpe's.....33⅓%
Wire, Morse's.....25
Wire, P., S. & W. Co.....33⅓%

## Gimlets— Single Cut—
*Numbered assortments, per gro.*
*Nail, Metal, No. 1, $2.00; 2, $2.30*
*Spike, Metal, No. 1, $1.00; 2, $1.30*
*Nail, Wood Handled, No. 1, $2.30; 2, $2.60*
*Spike, Wood Handled, No. 1, $1.30; 2, $1.60*

## Glass, American Window
See *Trade Report.*

## Glasses, Level—
Chapin-Stephens Co.....65@65&10%

## Glue, Liquid Fish—
*Bottles or Cans, with Brush, 25&10@50%*
Elwell's .....40%

## Grease, Axle—
*Common Grade...gro.$6.00@$6.50*
Dixon's Everlasting, 10-lb. pails, ea. 85¢; in boxes, ℔ doz., 1 lb, $1.20; 2 lb.....$2.00
Helmet Hard Oil.....25%

## Griddles, Soapstone—
Pike Mfg. Co.....33⅓@33⅓&10%

## Grinders—
Royal Mfg. Co.:
Alundum Grinding Machines, each, Nos. 01, $1.75; 1A, $2.50; 10, $5.00 .....30%
Alundum Sickle Grinders, each, Nos. 20, $5.00; 20A, $6.00; 20A Combined, $6.50.....30%
Alundum Disc Grinders, each, $2 50 .....30%

## Grindstones—
Pike Mfg. Co.:
Improved Family Grindstones, ℔ inch, ℔ doz., $2.00.....33⅓%
Richards Mfg. Co., Eli and Cycle, Ball Bearing, mounted.....40%

## Grips, Nipple—
Perfect Nipple Grips.....40&10&2%

## Halters and Ties—
*Cow Ties.....65@65&10%*
Bridgeport Chain Co.:
Triumph Coil and Halters.35&2½@40%
Brown Coil and Halters...45@50&5%
Brown Cow Ties.....50&5@50&10&5%
Brown Tie Outs.....70&10@75&5%
Covert Mfg. Co.:
Web .....30&2%
Jute Rope.....35%
Sisal Rope.....20%
Cotton Rope.....45%
Hemp Rope.....45%
Oneida Community:
Am. Coil and Halters.....40@40&5%
Am. Cow Ties.....45@50%
Niagara Coil and Halters...45@50&5%
Niagara Cow Ties.....45&5@50&10&5%

## Hammers—
### Handled Hammers—
Heller's Machinists'....55&10@55&10&5%
Heller's Farriers.....40&5@40&10&5%
Peck, Stow & Wilcox Co.:
Crucible Steel.....40&10%
Farriers' .....40&10%
Riveting .....40&10%
Machinists' .....60&10%
Blacksmiths' .....50%
Fayatte R. Plumb:
A. E. Nail.....40&2½@40&12½&5%
Eng. and B. S. Hand.50&10&5@60&5%
Machinists' Hammers.....60@60&10%
Rivet and Tinners'.40&7½@40&12½&5%

### Heavy Hammers and Sledges—
*Under 3 lb., per lb., 50¢...80&10%*
*3 to 5 lb., per lb., 40¢...80&10&10%*
*Over 5 lb., per lb., 30¢.....*
*Over 5 lb., per lb., 30¢.80&10&10%*

## Handles—
### Agricultural Tool Handles
*Axe, Pick, &c....60&10@60&10&5%*
*Hoe, Rake, &c.....40%*
*Fork, Shovel, Spade, &c.:*
*Long Handles.....40%*
*D Handles.....40%*

### Cross-Cut Saw Handles—
Atkins' .....40%
Champion .....50%
Disston's .....50%

### Mechanics' Tool Handles—
*Auger, assorted...gro.$3.00@$3.50*
*Brad Awl.....gro.$1.65@$1.75*
*Chisel Handles, Ass'd, per gro.:*
*Tanged Firmer, Apple, $2.40@$2.65; Hickory.....$2.15@2.40*
*Socket Firming, Apple, $1.75@$1.95; Hickory.....1.60@1.75*
*Socket Framing, Hickory, $1.60@$1.75*
*File, assorted.....gro.$1.30@$1.40*
*Hammer, Hatchet, &c., 60&10@60&10&5%*
*Hand Saw, Varnished, doz., 80&85¢; Not Varnished.....65@75¢*
*Plane Handles:*
*Jack, doz., 30¢; Fore, doz...45¢*
Chapin-Stephens Co.:
Carving Tool.....30@30&10%
Chisel .....60@60&10
File and Awl.....60@60&10
Saw and Plane.....30@30&10
Screw Driver.....30@30&10%
Millers Falls Adj. and Ratchet Auger Handles .....15&10%
Nicholson Simplicity File Handle.... ℔ gro. $0.85@$1.50
J. L. Osgood:
Indestructible File and Tool, ℔ gro., No. 1, $8.00; No. 2, $8.50; No. 3, $9.00; No. 4, $9.50; No. 5, $10.00.....gro. lots 10%
W. A. Zelnicker Supply Co.:
Hammer, ℔ doz., 12 in., $2.00; 14 in., $2.00; 16 in., $2.30; 18 12., $2.50; 20 in., $2.70; 22 in., $3.00; 24 in., $3.30; 26 in., $3.50; 30 in., $3.80.
Sledge, ℔ doz., oval, 30 in., $3.80; octagon, 30 in., $3.80; oval, 36 in., $4.00; octagon, 36 in., $4.00.
Axe, ℔ doz., 28 to 34 in., $5.60; 36 in., $5.80.
Adze, ℔ doz., 36 in., $5.80; 36 in., $7.80.
Pick, ℔ doz., R. R., 36 in., $8.00; coal, 34 in., $5.80.
Hatchet, ℔ doz., 12 to 14 in., $2.00.
Extra 5@10% often given.

## Hangers—
*NOTE—Barn Door Hangers are generally quoted per pair, without track and Parlor Door Hangers per double set with track, &c.*
Allith Mfg. Co.:
Reliable, Nos. 1 and 2; Allith, No. 3; Allith Adjustable, No. 6; Reliable Parlor Door.....50%
Chicago Spring Butt Co.:
Friction .....25%
Oscillating .....25%
Big Twin.....25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door.....50%
Elevator .....30%
Railroad .....50%
Cronk & Carrier Mfg. Co.:
Loose Axle.....60&2½%
Roller Bearing.....70&2½%
Griffin Mfg. Co.:
Solid Axle, No. 10, $12.00..60&10%
Roller Bearing, No. 11, $15.00, 60&10%
Roller Bearing, Ex. Hy., No. 22, $18.00.....60&10%
Bull Dog, $24.00.....70%
Lane Bros. Co.:
**Parlor, Ball Bearing, $4.00;** Standard, $3.15; No. 105, $2.85; New Model, $2.80; New Champion .....$2.25
Barn Door, Standard.....60&10%
Hinged .....net $6.08
Covered .....60&5%
Special .....70&5%
Lawrence Bros.:
Advance .....55&10%
Cleveland .....70&7½%
Clipper, No. 75.....60%
Crown .....55&10%
Cyclone, No. 40.....net $6.50
Tandem, No. 50.....net $7.50
New York.....55&10%
McKinney Mfg. Co.:
**Roller Bearing, Nos. 1 and 2..70%**
Anti-Friction .....60
**Hinged Hangers, King Charm.60%**
Richards Mfg. Co.:
Hangers, Nos. 47, 48, 147, 247, 60&5%
Pioneer Wood Track, No. 3..$2.25
Roller B'r'g St'l Track No. 12.$2.20
Roller B'r'g St'l Track No. 13.$2.50
Roller B'r'g, Nos. 39, 41, 43, 70&7½%
Hero, Adj. Track No. 19..50&10%
Adjustable Track Tandem Trolley Track No. 16.....50&10%
Seal, Steel Track No. 8.....$2.25
Auto Adj. Track No. 22..50&5%
Trolley B. D. No. 17, $1.25; F. D. No. 120, $2.25; No. 121, $2.45; No. 150.....$2.50
Safety Underwriters F. D. No. 101 .....50%
Tandem No. 44..2½ and 3 60&10%
Palace, Adjustable Track No. 132 .....50&5%
Royal, Adjustable Track No. 122 .....50&10%
Ives' Wood Track No. 1.....$2.25
Trolley B. D. No. 20.....50&10%
Trolley B. D. No. 24, $1.30; No. 27, $1.40; No. 28.....$1.60
Roller Bearings, Nos. 37, 38, 39, 41, 43, 44, Sizes 1 and 2.70&7½%
Anti-friction, No. 42; No. 44, sizes 2½ and 3.....60%
Hinged Tandem No. 48....60&5%
Folding Door B. B. Swivel No. 135 .....40%
Taylor & Boggis F'y Co.'s Kidder's Roller Bearing.50&15&10&5%
Myers' Stayon Hangers.....60%

## Hangers— Garment—
Pullman Trouser, ℔ gro., No. 1 $9.00; No. 4, $24.00; No. 5, $16.50; No. 8, Black Enamel, $7.50; No. 10, $21.00; No. 12, $8.00; No. 15, Rods, $9.00; No. 18, Loops.....$10.00
Victor Folding.....℔ gro. $9.60

## Gate—
Myers' Patent Gate Hangers, ℔ doz. net .....$4.50

## Joist and Timber—
Lane Bros. Co.....30%

## Hasps—
Griffin's Security Hasp.....50&10%
McKinney's Perfect Hasp, ℔ doz..60%

## Hatchets—
*Regular list, first qual.40&12½@—*
*Second quality.....50&10&5@—*

## Heaters, Carriage—
Clark No. 5, $1.75; No. 5B, $2.00; No. 3, $2.25; No. 3D, $2.75; No. 7D, $3.00; No. 3E, $3.25; No. 1, $3.50.....25%
Clark Coal, ℔ doz., $0.75.....20%

## Hinges—
### Blind and Shutter Hinges
*Surface Gravity Locking Blind: (Victor; National; 1868 O. P.; Niagara; Clark's O. P.; Clark's Tip; Buffalo.)*

| *No.* | *1* | *3* | *5* |
|---|---|---|---|
| *Doz. pair* | *$0.75* | *1.35* | *2.70* |

*Mortise Shutter: (L. & P., O. S., Acme, &c.)*

| *No.* | *1* | *1½* | *2* | *2½* |
|---|---|---|---|---|
| *Doz. pair* | *$0.70* | *.65* | *.60* | *.55* |

*Mortise Reversible Shutter (Buffalo, &c.):*

| *No.* | *1* | *1½* | *2* |
|---|---|---|---|
| *Doz. pair* | *$0.70* | *.65* | *.60* |

North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%
Charles Parker Co.....70@75%
Parker Wire Goods Co.
Hale & Benjamin Automatic Blind Hinges .....20%
Hale's Blind Awning Hinges No. 110, for wood, $9.00; No. 111, for brick, $9.00.....20%
Reading's Gravity.....60%
Stanley's Steel Gravity Blind Hinges, No. 1647½, ℔ doz. sets, without screws, $0.95; with screws, $1.25.
Wrightsville Hardware Co.:
O. S., Lull & Porter.....75&5%
Acme, Lull & Porter.....75%
Queen City Reversible.....75%
Shepard's Noiseless, Nos. 60, 65, 55 .....75&5%
Niagara, Gravity Locking, Nos. 1, 3 & 5.....75&5%
Tip Pat'n, No. 1.....75&10
No. 3.....75&5%
Buffalo Gravity Locking, Nos. 1, 3 & 5.....70&10&5%
Shepard's Double Locking.....75
Champion Gravity Locking.....75&5%
Pioneer .....75&10
Empire .....6
W. H. Co.'s Mortise Gravity Locking, No. 2.....60&10
Extra 10, often given on most of these Hinges.

### Gate Hinges—
*Clark's or Shepard's—Doz. sets:*

| *No.* | *1* | *2* | *3* |
|---|---|---|---|
| *Hinges with L't'chs.* | *$2.00* | *2.70* | *5.00* |
| *Hinges only* | *1.25* | *1.90* | *3.50* |
| *Latches only* | *.70* | *.95* | *.35* |

*New England:*
*With Latch.....doz..@$2.00*
*Without Latch.....doz..@$1.60*
*Reversible Self-Closing:*
*With Latch.....doz..@$1.75*
*Without Latch...doz. ...@$1.35*
*Western:*
*With Latch.....doz. $1.75*
*Without Latch.....doz..$1.15*
Wrightsville Hardware Co.:
Shepard's or Clark's Hinges and Latches, Hinges only or Latches only, Nos. 1, 2 or 3.....70%

### Pivot Hinges—
**Bommer Bros. Pivot.....40%**
Lawson Mfg. Co. Matchless.....50%

### Spring Hinges—
*Holdback, Cast Iron...$6.75@$7.00*
*Non-Holdback, C'st Iron$6.50@$6.75*
J. Bardsley:
Bardsley's Non-Checking Mortise Floor Hinges.....40%
Bardsley's Patent Checking.33⅓%
Bommer Bros.:
Bommer Ball Bearing Floor..40%
Bommer Spring Hinges.....40%
No. 999 Wrot. Steel Hold Back, ℔ gro. $9.00
Chicago Spring Butt Co.:
Chicago Spring Hinges.....25%
Triple End Spring Hinges....50%
Chicago (Ball Bearing) Floor.50%
Garden City Engine House...25%
Keene's Saloon Door.....25%
Columbian Hardware Co.:
Acme, Wrought Steel.....30%
Acme, Brass.....25%
American .....30%
Columbia, ℔ gr., No. 14, $9.00; No. 18.....$25.00
Columbia, Adj., No. 7, ℔ gr.$12.00
Columbian Hinges.....60&10%
Gem, new list.....30%
Clover Leaf and Acorn, gro. lots, $5.10; ½ gro. lots.....$6.00
Oxford, new list.....30%
Floor Spring Hinges.....65&10%
Lawson Mfg. Co., Matchless...30%
Richards Mfg. Co.:
Superior Double Acting Floor Hinges .....40%
Shelby Spring Hinge Co.:
Buckeye All Steel Holdback Screen Door.....℔ gr. $9.00
Chief Ball Bearings Floor Hinge .....50%
Ball Bearing Door.....25%
No. 777, Sheet Steel Holdb'k, ℔ gr. pr.....$9.00
Standard Mfg. Co.:
Champion Double Acting Door Hinge .....25&10&10%
Standard Double Acting Floor Hinge .....25&10&10%
Superior Spring Hinge Co.:
Superior Floor Hinges.....33⅓%
Extra 10, often given on most of these Hinges.

### Wrought Iron Hinges—
*Strap and T Hinges, &c., list December 20, 1904:*
*Light Strap Hinges..50&10%*
*Heavy Strap Hinges..60&5%*
*Light T Hinges.....50%*
*Heavy T Hinges.....40%*
*Extra Hvy. T Hinges.50&10%*
*Hinge Hasps.....33⅓%*
*Cor. Heavy Strap....60&5%*
*Cor. Ex. Heavy T...50&10%*
*Extra 10&7½%.*

*Screw Hook and Strap.*
*6 to 12 in..lb.3½¢*
*1½ to 20 in..lb.3¼¢*
*22 to 36 in..lb.3 ¢*

*Screw Hook and Eye:*
*¾-inch .....lb.6¼¢*
*⅝-inch .....lb.7¼¢*
*½-inch .....lb.8½¢*

## Hitchers, Stall—
Covert Mfg. Co., Stall Hitchers..30&2%

## Hods— Coal—
*M'f'gr's list, price per gross:*

| *Inch* | *15* | *16* | *17* | *18* |
|---|---|---|---|---|
| *Galv. Open* | *$35* | *$39* | *$42* | *$46* |
| *Jap. Open* | *26* | *28* | *31* | *35* |
| *Galv. Funnel* | *43* | *48* | *52* | *56* |
| *Jap. Funnel* | *33* | *36* | *59* | *43* |

*10&7½&5%*

## Masons' Etc.
Cleveland Wire Spring Co.:
Steel Brick, No. 162.....each $1.05
Steel Mortar, No. 158.....each $1.35

## Hoes— Eye—
*Scovil and Oval Pattern, 60&10@60&10&10%*
*Grub, list Feb. 23, 1899, 70&10@70&10&10%*
D. & H. Scovil.....27½%
Am. Fork & Hoe Co. (Scovil Pattern) .....60%

### Handled—

*NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.*

Cronk's Weeding, No. 1, $2.00; No. 2, $2.50
Star Double Bit.....$3.20
Ft. Madison Cotton [illegible]
Ft. Madison Crescent Cultivator Hoe, ₱ doz.....70&10%
Ft. Madison Mattock Hoes:
Regular Weight.....₱ doz. 40&5%
Junior Size.....₱ doz. $4.00
Ft. Madison Sprouting Hoe, ₱ doz., 60&10%
Ft. Madison Dixie Tobacco Hoe.....75&10&7½%
Kretsinger's Cut Easy.....70&10%
Warren Hoe.....45&10%
W. & C. Ivanhoe.....75&2%
B. B. 6 in., Cultivator Hoe.....$3.10
B. B. 6½ in.....$3.50
Acme Wedding.....₱ doz., net, $4.35
W. & C. Liming Shuffle Hoe, ₱ doz. $5.25

### Hoisting Apparatus—

See *Machines, Hoisting.*

### Holders— Bit—

Augmar, ₱ doz. $24.00.....45&10%

### Door—

Bardsley's, Iron, 40%; Brass and Bronze.....25%
Empire.....50%
Pullman.....25%
Richards Mfg. Co.: No. 117, Ever-ready, 40%; Nos. 118, 119, Sure Grip.....50%
Superior.....33⅓%

### File and Tool—

Nicholson File Holders and File Handles.....33⅓@40%

### Fruit Jar—

Triumph Fruit Jar Holder, ₱ gross, $18.00; ₱ doz.....$2.00

### Trace and Rein—

Fernald Double Trace Holder, ₱ doz. pairs.....$1.25
Dash Rein Holder, ₱ doz. pairs. $1.25

### Hones—Razor—

Pike Mfg. Co., Belgian and Swaty, 50%; German.....33⅓%

### Hooks—Cast Iron—

Bird Cage, Reading.....40%
Clothes Line, Reading List.....40%
Coat and Hat, Reading.....45&20%
Coat and Hat, Wrightsville.....60&5%
Harness, Reading List.....40%

### Wire—

*Belt, Nos. 1 to 15....75&10@80%*
*Wire C. & H. Hooks..80@80&10%*
Bradley Metal Clasp Wire, Coat and Hat, 70&10%; Ceiling.....70&10%
Columbian Hdw. Co., Gem.....70&5%
Parker Wire Goods Co., King..70&10%
Wire Goods Co.:
Acme, 60&10%; Chief, 70%; Crown, 75%; Czar, 65%; V Brace, 75%; Czar Harness, 50&10%.

### Wrought Iron—

*Box, 6 in., per doz., $0.90; 8 in., $1.15.*
*Cotton.....doz. $1.25@$1.50*
Wrought Staples, Hooks, &c.—
See Wrought Goods.

### Miscellaneous—

*Hooks, Bench,* see *Stops, Bench.*
*Bush, Light, doz., $6.20; Medium, $6.75; Heavy, $7.65*
*Grass, best, all sizes, per doz., $2.75@$3.00*
*Grass, common grades, all sizes, per doz.....$1.25@$1.50*
*Whiffletree.....lb. 5½@6¢*
*Hooks and Eyes:*
*Brass.....60@60&10%*
*Malleable Iron.....70@70&10%*
Covert Mfg. Co. Gate and Scuttle Hooks.....40%
Ft. Madison Cut-Easy Corn Hooks, ₱ doz. $3.25 net
Tanner & Stanton Co. Cup and Shoulder.....85&10%
Bench Hooks—See Bench Stops.
Corn Hooks—See Knives, Corn.

### Horse Nails—

See *Nails, Horse.*

### Horseshoes—

See *Shoes, Horses.*

### Hose, Rubber—

*Garden Hose, ¾-inch:*
*Competition.....ft. 6@6½¢*
*3 ply Guaranteed.....ft. 8½@9¢*
*4-ply Guaranteed....ft. 9½@12¢*
*Cotton Garden, ¾-in., coupled:*
*Low Grade.....ft. 8@ 9c*
*Fair Quality.....ft. 10@11¢*

### Irons— Sad—

*From ½ to 16.....lb. 2½@2¾¢*
*B. B. Sad Irons.....lb. 3¼@3½¢*
*Mrs. Potts', cents per set:*

| | Nos. 50 | 55 | 60 | 65 |
|---|---|---|---|---|
| *Jap'd Tops* | 83 | 80 | 93 | 91 |
| *Tin'd Tops* | 88 | 85 | 98 | 95 |

*New England Pressing..lb. 3¾@4¢*

### Bar and Corner—

Richards Mfg. Co., Bar, 60&10%; Corner.....60%

### Pinking—

*Pinking Irons.....doz. 60@65¢*

### Irons, Soldering

See *Coppers.*

### Jacks, Wagons—

Covert Mfg. Co.:
Auto Screw.....30&2%; Steel, 45%
Lockport.....50%
Lane's Steel.....30&5%
Richards' Tiger Steel, No. 130...50&10%
Smith & Hemenway Co.'s.....25%

### Ladder—

Richards Mfg. Co., Ladder Jacks..50%

## Kettles—

*Brass, Spun, Plain.....20@25%*
Enameled and Cast Iron—See Ware, Hollow.

### Knives—

### Butcher, Kitchen, &c.—

Foster Bros.' Butcher, &c.....30%
Wilkinson Shear & Cutlery Co....60%

### Corn—

Columbian Cutlery Co., Wilcut Brand Knives and Hooks.....60%
Withington Acme, ₱ doz., $2.65; Dent, $2.75; Adj. Serrated, $2.20; Serrated, $2.10; Yankee No. 1, $1.50; Yankee No. 2, $1.15.

### Drawing—

*Standard List.....80&10@—%*
C. E. Jennings & Co., Nos. 45, 46, 25&7½%
Jennings & Griffin, Nos. 41, 42, 66⅔&7½%
Swan's.....66⅔@70%
Watrous.....16⅔%
L. & I. J. White.....20&5@25%

### Hay and Straw—

*Serrated Edge, per doz. $5.00@5.50*
Iwan's Sickle Edge.....₱ doz. $9.50
Iwan's Serrated.....₱ doz. $10.00

### Miscellaneous—

*Farriers'.....doz. $2.60@3.55*
Wostenholm's.....₱ doz. $3.00@3.25

### Knobs—

*Base, 2½-inch, Birch or Maple, Rubber Tip.....gro. $1.25@1.40*
*Carriage, Jap., Drive, all sizes, gro. 35@40¢*
*Door, Mineral.....doz. 65@70¢*
*Door, Por. Jap'd.....doz. 70@75¢*
*Door, Por. Nickel..doz. $2.05@2.15*
Bardsley's Wood Door, Shutters, &c. 15%

## Lacing, Leather—

See *Belting, Leather*

### Ladders, Store, &c.—

Allith Mfg. Co., Reliable.....50%
Lane's Store.....25%
Myers' Noiseless Store Ladders....50%
Richards Mfg. Co.:
Improved Noiseless, No. 112.....50%
Climax Shelf, No. 113.....50%
Trolley, No. 109.....50%

### Ladles, Melting—

L. & G. Mfg. Co. (low list).....20%
P., S. & W.....40&10%
Reading.....60%

### Lanterns—Tubular—

*Regular, No. 0.....doz. $4.35@4.50*
*Side Lift, No. 0....doz. $4.60@4.75*
*Hinge Globe, No. 0. doz. $4.60@4.75*
*Other Styles.....40@40&10%*

### Bull's Eye Police—

*3-inch.....$3.75@4.00*

### Latches— Thumb—

*Roggin's Latches, Jap'd, with Screws.....doz. 35@40¢*

### Door—

Allith Mfg. Co., Reliable and Alligator, 50%; Reliable Cold Storage, 50%
Cronk & Carrier Mfg. Co., No. 101, ₱ doz. $2.00
Richards' Bull Dog, Heavy, No. 125.....50&5%
Richards' Trump, No. 127.....$1.50

### Leaders, Cattle—

*Small.....doz. 50¢; large, 60¢*
Covert Mfg. Co.:
Cotton, 45%; Hemp, 45%; Jute, 35%; Sisal, 20%.

### Leathers, Pump—

See *Pumps—*

### Lifters, Transom—

R. & E.....10%

### Lines—

| *Wire Clothes, Nos.* | *18* | *19* | *20* |
|---|---|---|---|
| *100 feet* | *$2.30* | *1.95* | *1.75* |
| *75 feet* | *$1.95* | *1.65* | *1.59* |

Samson Cordage Works:
Solid Braided Chalk, Nos. 0 to 3..40%
Solid Braided Masons'.....30%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50.....₱ gr. 20%
Masons' Lines, Shade Cord, &c.; White Cotton, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50; Colors, No. 3½, $1.75; No. 4, $2.25; No. 4½, $2.75; Linen, No. 3½, $2.50; No. 4, $3.50; No. 4½, $4.50.....20%
Tent and Awning Lines: No. 5, White Cotton, $7.50; Drab Cotton, $8.50.....20%
Clothes Lines, White Cotton: 50 ft., $2.75; 60 ft., $3.25; 70 ft., $3.75; 75 ft., $4.00; 80 ft., $4.25; 90 ft., $4.75; 100 ft., $5.25.....20%
Turner & Stanton Co.:
Solid Braided Chalk, Masons' and Awning Lines.....40%
Clothes Lines, White Cotton....20%
Shade Cord, Cotton or Linen....20%

### Locks— Cabinet—

*Cabinet Locks....33⅓@33⅓@5%*

### Door Locks, Latches, &c.—

*NOTE.—Net Prices are very often made on these goods.*
Reading Hardware Co.....40%
R. & E. Mfg. Co.....10%

### Padlocks—

R. & E. Mfg. Co. Wrought Steel and Brass.....75&10%

### Sash, &c.—

Ives' Patent:
Bronze and Brass, 55&5%; Crescent, 60%; Iron, 60%; Window Ventilating, 40&2½%; Robinson Pat. Ventilating Sash Lock 33⅓%.
Pullman Patent Ventilating Lock..25%
Reading Sash Locks.....40%

## Machines—Boring—

*Com. Upr't, without Augers. $2.00@2.25*
*Com. Angl'r, without Augers. $2.25@2.50*
Swan's Improved.....40&10
Jennings', Nos. 1 and 4.....25&7½
Millers' Falls.....5.75
Snell's, Upright, $2.65; Angular, $2.90

### Corking—

Reisinger Invincible Hard Power... ₱ doz. $48.00

### Fence—

Williams' Fence Machines....each, $5.50

### Hoisting—

Moore's Anti-Friction Chain Hoist.30%
Moore's Hand Hoist, with Lock Brake.....20%
Moore's Cyclone High Speed Chain Hoist.....25%

### Ice Cutting—

Chandler's.....12½%

### Washing

| Boss Washing Machine Co.: | Per doz. |
|---|---|
| Boss No. 1 | $57.00 |
| Boss Rotary | $57.00 |
| Champion Rotary Banner No. 1 | $57.00 |
| Standard Champion No. 1 | $50.00 |
| Standard Perfection | $27.00 |
| Cincinnati Square Western | $33.00 |
| Uneeda American, Round | $33.60 |

### Mallets—

*Hickory.....45&5@50%*
*Lignumvitæ.....45&5@50%*
*Tinners' Hickory and Apple-wood.....doz. 45&5@50%*

### Mangers, Stable—

Swett Iron Works.....50%

### Mats, Door—

Acme Flexible Steel.....50%
Elastic Steel (W. G. Co.), new list.50%

### Mattocks—

See *Picks and Mattocks.*

### Milk Cans—See *Cans, Milk.*

### Mills, Coffee, &c.—

Enterprise Mfg. Co.....20@25%
National list Jan. 1, 1902.....30%
Parker's Columbia and Victoria..33⅓%
Parker's Box and Side.....50&10%
Swift, Lane Bros. Co.....30%

### Motors, Water—

Divine's Red Devil.....30%
Lippincott's.....30%

### Mowers, Lawn—

*NOTE.—Net prices are generally quoted*
*Cheapest, 10-in., $2.00; advance 10¢ for each size.*
*Cheap, 10-in., $2.25; advance 15@20¢ for each size.*
*Better Grade, 10-in., $3.00; advance 25¢ for each size.*

| | *12* | *14* | *16* | *18 in.* |
|---|---|---|---|---|
| *High Grade* | *$4.50* | *4.75* | *5.00* | *5.25* |

Continental.....60%
Great American.....70%
Great American Ball B'r'g, new list.70%
Quaker City.....70%
Pennsylvania.....60%
Pennsylvania, Jr., Ball Bearing. 50&10&5%
Pennsylvania Golf.....50%
Pennsylvania Horse.....33⅓&5%
Pennsylvania Pony.....40&5%
Granite State:
Style A, Low Wheel.....70%
Style B, Low Wheel.....70%
Style C, High Wheel, spcl. list, 70&10%
Style D, High Wheel, spcl. list..70%
Philadelphia:
Styles M., S., C., K., T....70&10&5%
Style A, all Steel.....60&10&5%
Style E, High Wheel.....70&10&5%
Drexel and Gold Coin, special list.40%
Horse.....40&5%
Pony.....40&5%
36-in. Horse.....30&10%
Eagle Horse.....30&5%
I. X. L. Horse.....50%

## Nails—

*Wire Nails and Brads, Miscellaneous.....85&5@85&10%*
*Cut and Wire.* See *Trade Report.*
*Hungarian, Finishing, Upholsterers', &c.* See *Tacks.*

### Horse—

| Nos. | 6 | 7 | 8 | 9 | 10 | |
|---|---|---|---|---|---|---|
| Anchor | 23 | 21 | 20 | 19 | 18 | ...40&5% |
| Coleman | 13 | 12 | 12 | 11 | 11 | .....net |
| New Haven | 23 | 21 | 20 | 19 | 18 | ...40&5 |
| Livingston | 19 | 18 | 17 | 16 | 16 | .....10% |

Western.....₱ lb 8½¢
*Jobbers' Special Brands, per lb. 9¢*

### Picture—

| | *1½* | *2* | *2½* | *3 in.* |
|---|---|---|---|---|
| *Brass Hd. gro.* | *.45* | *.55* | *.60* | *.70* |
| *Por. Head, gro.* | *1.10* | *1.10* | *1.10* | |

### Upholsters—

*Brass.....30%*
*Plated.....30&10%*

### Nippers—

See *Pliers and Nippers.*

### Nipples—

Standard Nipple Co.:
Wrought Pipe Nipples....80@80&10%

### Nuts— *Blank or Tapped.*

| *Cold Punched:* | *Off list.* |
|---|---|
| *Square* | *5.40@5.50¢* |
| *Hexagon* | *6.00@6.10¢* |
| *Square, C., T. & R.* | *5.80@5.90¢* |
| *Hexagon, C., T. & R.* | *6.60@6.70¢* |
| *Hot Pressed:* | |
| *Square* | *5.80¢* |
| *Hexagon* | *6.80¢* |

## Oakum—

*Best.....lb. 6½¢*
*U. S. Navy.....lb. 6¢*
*Navy.....lb. 5¢*
*Plumbers' Spun Oakum..2¾@3¢*

### Oil Tanks—See *Tanks, Oil.*

### Oilers—

*Steel, Copper Plated.....75%*
*Chase or Paragon:*
*Brass and Copper.....50&10%*
*Zinc.....65&10%*
*Railroad.....60&10&10%*
Malleable, Hammers' Improved, Nos. 11, 12 and 13, 25%; Old Pattern, Nos. 1, 2, 3, 50%.
American Tube & Stamping Co.:
Spring Bottom Cans.....70@70&10%
Railroad Oilers, &c.....60@60&10%
Maple City Mfg. Co.:
Spring Bottom Cans.....70@70&10%
Railroad Oilers, &c.....60@60&10%

### Openers—Packing Box—

Herculever, ₱ doz., $24.....30%

### Can Openers—

| | *Per doz.* |
|---|---|
| *Sprague, Iron Handle* | *30@35¢* |
| *Sprague, Wood Handle* | *40¢* |
| *Sardine Scissors* | *$1.75@3.00* |

Yankee Can and Bottle Opener, ₱ doz., net, $0.75; Little Gem, ₱ doz., net.....$0.65

### Egg—

Hartigan Nickel Plate, ₱ doz., $2.00; Silver Plate, $4.00.

## Packing—

*Asbestos Packing, Wick and Rope, any quantity.....18@20¢*

### Rubber—

*(Fair quality goods.)*
*Sheet, C. I.....11@12¢*
*Sheet, C. O. S.....11@12¢*
*Sheet, C. B. S.....12@13¢*
*Sheet, Pure Gum.....40@45¢*
*Sheet, Red.....40@50¢*
Jenkins' '96, ₱ lb, 80¢.....25%

### Miscellaneous—

*American Packing....lb. 7@10¢*
*Cotton Packing.....lb. 16@25¢*
*Italian Packing.....lb. 9@10¢*
*Jute.....lb. 4@4¼¢*
*Russia Packing.....lb. 9@10¢*

### Pails, Water, Well, &c.—

See *Buckets.*

### Pans— Dripping—

*Standard List...70&10@70&10&5%*
Edwards, Royal Blue.....65&7½%

### Refrigerator, Galva.—

| *Inch* | *12* | *14* | *16* | *18* |
|---|---|---|---|---|
| *Per doz.* | *$1.75* | *2.25* | *2.80* | *3.15* |

### Paper—Building Paper

| *Asbestos:* | *lb.* |
|---|---|
| *Roll Board or Building Felt, 6 to 30 lb., per 100 sq. ft.* | *2½¢* |
| *Roll Board or Building Felt, 3-32 and ⅛ in., 45 to 60 lb., per 100 sq. ft.* | *3½¢* |
| *Mill Board, Sheet, 40 x 40 in., 1-32 to ½ in.* | *3¢* |
| | *Per roll.* |
| *Rosin Sized Sheathing: 500 sq. ft. Light weight, 25 lbs. to roll,* | *48@58¢* |
| ***Medium weight, 50 lbs. to roll*** | *56@70¢* |
| *Heavy weight, 40 lbs. to roll.* | *75@78¢* |
| *Black Water Proof Sheathing, 500 sq. ft., 1 ply, 65¢; 2 ply, 85¢; 3 ply, $1.10; 4 ply, $1.25.* | |
| *Deafening Felt, 9, 6 and 4½ sq. ft. to lb., ton* | *$54.50* |
| *Red Rope Roofing, 250 sq. ft. per roll* | *$1.75* |

### Tarred Paper—

*1 ply (roll 400 sq. ft.), ton. $34.00@$38.00*
*2 ply, roll 108 sq. ft.....65¢*
*3 ply, roll 108 sq. ft.....88¢*
*Slater's Felt (roll 500 sq. ft.).80¢*

### Sand Paper and Cloth—

*Flint and Emery.....50&10%*
*Garnet Paper and Cloth.....25%*

### Pears—Apple—

Goodell Co.:
Family Bay State.....₱ doz. $15.00
Improved Bay State.....₱ doz. $26.00
New Lightning.....₱ doz. $7.00
Turn Table '98.....₱ doz. $6.00
White Mountain.....₱ doz. $6.00
Bonanza Improved.....each $7.50
Dandy.....each $14.00
Eureka Improved.....each $20.00
New Century.....each $23.00
Ranger.....each $25.00
Livingston Nail Co.:
Daisy.....₱ doz. $4.00
Little Star.....₱ doz. $4.00
Rocking Table.....₱ doz. $6.20
Reading Hardware Co.:
Advance.....₱ doz. $4.00
Baldwin.....₱ doz. $4.00
Reading 72.....₱ doz. $3.25
Reading 78.....₱ doz. $6.25

### Potato—

Saratoga.....₱ doz. $7.00
White Mountain.....₱ doz. $6.00

### Picks and Mattocks—

*(List Jan., 1908.)*
*List.....70&10@70&10&10%*
Cronk's Handled Garden Mattock, ₱ doz., No. 2, $2.60; No. 3, $6.40.

### Pinking Irons—
See *Irons, Pinking.*

### Pins, Escutcheon—
*Brass* .....50@50&10%
*Iron, list Nov. 11, '85*..60@60&10%

### Pipe, Cast Iron Soil—
*Standard, 2-6 in*.....70@—%
*Extra Heavy, 2-6 in*..75&10@—%
*Fittings, Standard and Heavy,* 80&10@80&10&10%

### Pipe, Merchant—

| | Consumers, Steel. Blk. | Galv. | Carloads, Iron. Blk. | Galv. |
|---|---|---|---|---|
| | % | % | % | % |
| ⅛ and ¼ in. | 66 | 50 | 64 | .. |
| ⅜ in. | 68 | 54 | 66 | 52 |
| ½ in. | 70 | 58 | 68 | 56 |
| ¾ to 6 in. | 74 | 64 | 72 | 62 |
| 7 to 12 in. | 71 | 56 | 69 | 54 |

### Pipe, Vitrified Sewer—
*Carload lots.*
*Standard Pipe and Fittings, 3 to 24 in., f.o.b. factory:*
*First-class* .....87%
*Second-class* .....90%

### Pipe, Stove—

| | Per 100 joints. C. L. | L. C. L. |
|---|---|---|
| Edwards' Nested: | | |
| 5 in., Standard Blue | $6.25 | $7.25 |
| 6 in., Standard Blue | 6.75 | 7.75 |
| 7 in., Standard Blue | 7.75 | 8.75 |
| 5 in., Royal Blue | 7.00 | 8.00 |
| 6 in., Royal Blue | 7.50 | 8.50 |
| 7 in., Royal Blue | 8.50 | 9.50 |
| Wheeling Corrugating Co.'s Nested: | | |
| 5 in., Uniform Color | $6.15 | $7.15 |
| 6 in., Uniform Color | 6.65 | 7.65 |
| 7 in., Uniform Color | 7.65 | 8.65 |

### Planes and Plane Irons—

#### Wood Planes—
*Bench, first qual*.....30@30&10%
*Bench, second qual*...40@40&10%
*Molding* .....25@25&10%
Chapin-Stephens Co.:
Bench, First Quality.....30%
Bench, Second Quality.....40%
Molding and Miscellaneous.....25%
Toy and German.....30%
Union .....60%

#### Iron Planes -
Chaplin's Iron Planes.....50&10%
Union .....60%

#### Plane Irons—
*Wood Bench Plane Irons, list Dec. 12, '06*.....25%
Buck Bros.....30%
Chapin-Stephens Co.....25%
Union .....50%
L. & I. J. White.....20&5@25%

### Planters, Corn, Hand—
Kohler's Eclipse.....℔ doz. $8.00

### Plates—
*Felloe* .....*lb.* 3¾@4¢

### Pliers and Nippers -
*Button Pliers*....75&5@75&10&5%
*Gas Burners, per doz., 5 in., $1.25 @$1.30; 6 in., $1.45 $1.50.*

| *Gas Pipe*.. | 7 | 8 | 10 | 12-in. |
|---|---|---|---|---|
| | $2.00 | $2.25 | $2.75 | $3.50 |

Acme Nippers.....50&5%
Cronk & Carrier Mfg. Co.:
American Button.....80%
Improved Button.....75&10%
Cronk's .....60%
No. 80 Linemen's.....50%
Stub's Pattern.....45%
Combination and others.....33⅓%
Heller's Farriers' Nippers, Pincers and Tools.....40&5@40&10&5%
P., S. & W. Tinners' Cutting Nippers .....40%
Swedish Side, End and Diagonal Cutting Pliers.....50%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds....40%

### Plumbs and Levels—
Chapin-Stephens Co.:
Plumbs and Levels.....30@30&10%
Chapin's Imp. Brass Cor..40@40&10%
Pocket Levels.....30@30&10%
Extension Sights.....30@30&10%
Machinists' Levels.....40@40&10%
Disston's Plumbs and Levels....60&10%
Disston's Pocket Levels.....60&10%
Stanley's Dulex.....35%
Woods' Extension.....33⅓%

### Points, Glaziers'—
*Bulk and 1-lb. papers*....*lb.* 9 ¢
*½-lb. papers*.....*lb.* 9½¢
*¼-lb. papers*.....*lb.* [illegible] ¢

### Police Goods—
*Manufacturers' Lists*...25@25&5%
Tower's .....25%

### Polish—Metal, Etc—
Prestoline Liquid, No. 1 (½ pt.), ℔ doz., $3.00; No. 2 (1 qu.), $9.00...40%
Prestoline Paste.....40%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, ℔ doz. 50¢; ℔ gro. $4.50; ½ lb boxes, ℔ doz. $1.25; 1 lb boxes, ℔ doz. $2.25.
U. S. Liquid, 8 oz. cans, ℔ doz., $1.25.
Barkeepers' Friend Metal Polish, ℔ doz., $1.75.

### Stove—
Black Eagle Benzine Paste, 5 lb cans, ℔ lb 10¢
Black Eagle, Liquid, ½ pt. cans.. ℔ doz. 75¢
Black Jack Paste, ¾ lb cans, ℔ gr. $9.00
Black Kid Paste, 5 lb can...each, $0.65
Ladd's Black Beauty Liquid, per 100 tins.....$6.75
Joseph Dixon, ℔ gr. $5.75.....10
Dixon's Plumbago.....℔ lb 8¢
Fireside .....℔ gr. $2.50
Gem, ℔ gr. $1.50.....10
Japanese .....℔ gr. $3.50
Jet Black.....℔ gr. $3.50
Peerless Iron Enamel, 10 oz. cans.. ℔ doz. $1.50

### Window Polish—
Benj. P. Forbes:
Glasbright, No. 2, gal pails, ℔ doz., $24.00; each, $2.50; 1 lb cans, each .....75¢
Glasbright Powder, bbls., ℔ lb..20¢

### Poppers, Corn—
*1 qt. Square..doz.$0.80; gro.$8.75*
*1 qt. Round..doz.$0.90; gro.$10.00*
*1½ qt. Square.doz.$1.20; gro..$12.00*
*2 qt. Square..doz.$1.50; gro..$15.00*

### Post Hole and Tree Augers and Diggers—
See also *Diggers, Post Hole, &c.*

### Posts, Steel—
Steel Fence Posts, each, 5 ft., 42¢; 6 ft., 46¢; 6½ ft., 48¢.
Steel Hitching Posts.....each $1.30

### Potato Parers—
See *Parers, Potato.*

### Pots, Glue—
*Enameled* .....40%
*Tinned* .....30&10%

### Powder—
*In Canisters:*
*Duck, 1 lb*.....*each* 45¢
*Fine Sporting, 1 lb*....*each* 75¢
*Rifle, ½-lb*.....*each* 15¢
*Rifle, 1 lb*.....*each* 25¢
*In Kegs:*
*12½-lb. kegs*.....$3.50
*25-lb. kegs*.....$4.50
King's Semi-Smokeless:
Keg (25 lb bulk).....$6.50
Half Keg (12½ lb bulk).....$3.50
Quarter Keg (6¼ lb bulk).....$1.90
Case 24 (1 lb cans bulk).....$8.50
Half case (1 lb cans bulk).....$4.50

| King's Smokeless: | Shot Gun. | Rifle. |
|---|---|---|
| Keg (25 lb bulk) | $12.00 | $15.00 |
| Half Keg (12½ lb bulk) | 6.25 | 7.75 |
| Quarter Keg (6¼ lb bulk) | 3.25 | 4.00 |
| Case 24 (1 lb cans bulk) | 14.00 | 17.00 |
| Half case 12 (1 lb c. bk) | 7.25 | 8.75 |

### Presses—

#### Fruit and Jelly—
Enterprise Mfg. Co.....20@25%

#### Seal Presses—
Morrill's No. 1, ℔ doz., $20.00.....50%

### Pruning Hooks and Shears
See *Shears.*

### Pullers, Nail—
Cyclops .....50%
Miller's Falls, No. 3, ℔ doz., $12.00.. 33⅓&10%
Morrill's No. 1, Nail Puller, ℔ doz. $20.00 .....50%
Pearson No. 1, Cyclone Spike Puller, each $30.00.....50%
The Scranton Co. Case Lots:
No. 2B (large).....$5.50
No. 3B (small).....$5.00
Smith & Hemenway Co.:
Diamond B.....70%
Giant .....50%
Staple Pullers, Utica and Davison .....60%

### Pulleys, Single Wheel—

| *Inch* | 1½ | 1¾ | 2 | 3 |
|---|---|---|---|---|
| *Awning or Tackle, doz.* | $0.30 | .45 | .60 | 1.05 |

*Hay Fork, Swivel or Solid Eye, doz., 4 in., $1.25; 5 in., $1.55*

| *Inch* | 2 | 2¼ | 2½ |
|---|---|---|---|
| *Hot House, doz*... | $0.65 | .85 | 1.20 |
| *Inch* | 1¼ | 1½ | 1¾ | 2 |
| *Screw, doz*.... | $0.16 | .19 | .23 | .30 |
| *Inch* | 1¾ | 2 | 2¼ | 2½ |
| *Side, doz*..... | $0.25 | .40 | .55 | .60 |
| *Inch* | 1½ | 1¾ | 2 | 2½ |

### Sash Pulleys—
*Common Frame; Square or Round End, per doz., 1¾ and 2 in*.....17@20¢
*Auger Mortise, no Face Plate, per doz., 1¾ and 2 in*....20@21¢
Acme, No. 35..1¾ in., 19¢; 2 in., 20½¢
American Pulley Co.:
Wrought Steel American Plain Axle .....50&10%
Wrought Steel, Eagle.....17@20¢
Top Notch, Electrically Welded, Nos. 3 and 4.....19¢
Fox-All-Steel, Nos. 3 and 7, 2 in.... ℔ doz. 50%
Grand Rapids All Steel Noiseless..50%
Niagara, No. 25, 1¾ in., 19¢; 2 in.....20½¢
No. 26 Troy 1¾ in., 14½¢; 2 in., 16½¢
Star, No. 26....1¾ in., 19¢; 2 in., 20½¢
Tackle Blocks—See Blocks.

### Pumps—
*Cistern* .....60%
*Pitcher Spout*.....75&5@75&10%
*Wood Pumps, Tubing, &c*....50%
Barnes Dbl. Acting (low list)....40&5%
Barnes Pitcher Spout.....75&10%
Contractors' Rubber Diaphragm, No. 2, B. & L. Block Co.....$16.00
Daisy Spray Pump.....℔ doz. $6.50
Flint & Walling's Fast Mail Hand (low list).....50%
Flint & Walling's Fast Mail (low list) .....50%
Flint & Walling's Tight Top Pitcher .....75&10
National Specialty Mfg. Co., Measuring, Nos. 2, $6.00; 3, $5.50.....30%
Myers' Pumps (low list).....40&5
Myers' Power Pumps.....40&5
Myers' Spray Pump.....40&5

### Pump Leathers—
*Plunger and Valve Leathers—Per gro.:*

| *No.* | 1 | 2 | 3 | 4 | 30% |
|---|---|---|---|---|---|
| | $5.00 | 6.00 | 7.00 | 8.00 | |

*Cup Leathers—Per 100:*

| *Inch*.... | 2½ | 3 | 3½ | 4 | 30% |
|---|---|---|---|---|---|
| | $5.00 | 7.00 | 9.00 | 12.00 | |

### Punches—
*Saddlers' or Drive, good, doz.*.....50@75¢
*Spring, single tube, good quality* .....$1.75
*Revolving (4 tubes)*....*doz.*.$3.50
Bemis & Call Co.'s Cast Steel Drive.)
Morrill's Nos. 1AA, 1A, 1B, 1C, 1D, $15.00.....50%
Hercules, 1 die, each $5.00.....50
Niagara Hollow Punches.....50
Niagara Solid Punches.....55&10%
Tinners' Hollow, P., S. & W. Co..40%
Tinners' Solid, P., S. & W. Co., ℔ doz., $1.44.....40%

## Rail—Barn Door, &c.—
*Sliding Door, Painted Iron,* 2½@2¾¢
*Sliding Door, Wrought Brass, 1⅛ in., lb., 36¢*.....30%
Allith Mfg. Co.: Reliable Hanger Track .....50%
Cronk's:
Double Braced Steel Rail..℔ ft. 3¼¢
O. N. T. Rail.....$3.12
Griffin's:
xxx, ℔ 100 ft., 1 x 3-16 in., $3.25; 1¼ x 3-16 in., $3.75.
Hinged Hanger, ℔ 100 ft., 1 x 3-16 in., $3.50; 1¼ x 3-16 in., $4.00.
Lane's:
Hinged Track, ℔ 100 ft.....$3.45
O. N. T., ℔ 100 ft., 1 in., $3.00; 1¼ in., $3.45; 1½ in., $4.00.
Standard, 1¼ in.....℔ 100 ft. $4.00
Lawrence Bros.:
1 x 3-16 in., ℔ 100 ft., $7.50; 1¼ x 3-16 in., $8.75.....55&7½%
McKinney's:
Hinged Hanger Track, ℔ ft., 11¢. 60&5%
1 x 3-16 Track.....55&7½%
Myers' Stayon Track.....60&5%
Richards Mfg. Co.:
Common, 1 x 3-16 in., $3.00; 1¼ x 3-16, $3.25; 1¼ x 3-16, $3.50.
Special Hinged Hanger Rail..60&10%
Lag Screw Rail, No. 65.....50%
Gauge Trolley Track, ℔ ft., No. 31, 9¢; No. 32, 14¢; No. 33, 20¢.
No. 50.....60&10%
Nos. 61, $3.00; 62, $3.25; 63, $3.50; 64, $4.00; 45, $3.25; 46, $3.50; 49, No. 1, $3.25; 49, No. 2, $3.50.

### Rakes—
*NOTE.—Many goods are sold at net prices.*
Fort Madison Red Head Lawn....$3.25
Fort Madison Blue Head Lawn....$2.70
Cronk's:
Steel Garden: Champion, 75%; Ideal, 80%; Victor.....80&25%
Queen City Lawn, ℔ doz., 20 teeth, $2.85; 24, $3.00.....net
Anticlog Lawn, ℔ doz.....$4.00
Malleable Garden.....70&10%
Ideal Steel Garden, ℔ doz., 12 teeth, $15.00; 14, $16.00; 16, $18.00.....80%
Kohler's:
Lawn Queen, 20-tooth....℔ doz. $3.15
Lawn Queen, 24-tooth....℔ doz. $3.25
Paragon, 20-tooth.....℔ doz. $2.70
Paragon, 24-tooth.....℔ doz. $2.75
Steel Garden, 14-tooth....℔ doz. $2.40
Malleable Garden, 14-tooth, ℔ doz. $2.00@2.25

### Rasps, Horse—
Disston's .....75%
Heller Bros.'.....70&5@70&10&5%
Liveright Bros.' Gold Medal.70&10@75%
McCaffrey's American Standard..... 60&10&5%
New Nicholson.....70&10@75%
See also Files.

### Razors—
Liana Bo-ras-ic.....60%
Fox Razors, ℔ doz., No. 42, $20.00; No. 44, $20.00; No. 82, Platina, $25.00. } Dis. 40%
Red Devil.....65%

### Reels, Fishing—
Hendryx:
M 6, Q 6, A 6, B 6, M 9¼, M 16, Q 16, A 16, B 16, 4008, Rubber, Populo Nickeled Populo.....20%
Aluminum, German Silv., Bronze.25%
1210 N, 124 N.....20%
3004 N, 06 N, 6 RM, G 9.....25%
4 N, 6 PN, 24 N, 26 PN .....20%
2904 P., 33⅓%; 2904 PN., 33⅓%; 0924 N., 33⅓%; 02084 N., 33⅓%; 072904 PN., 33⅓%; 802 N., 33⅓%; 986 PN, 2904 N, 974 PN. .....25%
5909 PN 5009 N.....20%
Competitor, 102 P, 102 PN, 202 P 202 PN 102 PR, 202 PR .....20%
304 P, 304 PN, 00304 P, 00304 PN.33⅓%

### Registers—*List July 1, 1903.*
*Japanned, Electroplated and Bronzed* .....70%
*White Porcelain Enamel*..50&10%
*Solid Brass or Bronze Metal*.40%

### Revolvers—
*Single Action*.....95¢@$1.00
*Double Action, except 44 cal*.$2.00
*Double Action, 44 caliber*...$2.00
*Automatic* .....$4.00
*Hammerless* .....$4.50

### Riddles, Hardware Grade
*16 in*.....*per doz*.$2.50@$2.75
*17 in*.....*per doz*.$2.75@$3.00
*18 in*.....*per doz*.$3.00@$3.25

### Rings and Ringers—

#### Bull Rings—

| | 2 | 2½ | 3 inch. |
|---|---|---|---|
| *Steel* | $0.70 | 0.75 | 0.80 *doz.* |
| *Copper* | $1.10 | 1.25 | 1.65 *doz.* |

#### Hog Rings and Ringers—
*Hill's Rings, gro. boxes.$4.50@$4.50*
*Hill's Ringers, Gray Iron, doz., 60@75¢*
*Hill's Ringers, Malleable Iron, doz.*.80@95¢
*Blair's Rings..per gro.$5.00@$5.50*
*Blair's Ringers...per doz.75@90¢*

### Rivets and Burrs—
*Copper* .....50@50&10%
*Carriage, Coopers', Tinners', &c.:*
*Black* .....70&10%
*Metallic Tinned*.....70%

### Bifurcated and Tubular—
*Assorted in Boxes.*
*Bifurcated, per doz. boxes, pasteboard boxes, 50 count, 23@25¢; Tin boxes, 100 count, 29@32¢.*
*Tubular, per doz. boxes, 50 count, 29@32¢; 100 count, 51@58¢.*

### Rollers—
Cronk's Stay, No. 50.....$1.00
Cronk's Brinkerhoff No. 55, $0.60; No. 56, $0.75; No. 60.....$0.75
Lane's Stay.....40%
Richards' Stay:
Handy Adj. and Reversible No. 53.75¢
O. K. Adj. and Reversible No. 58.50¢
Lag Screw, Nos. 55 and 57.....50%
Underwriters', Nos. 59, 60.....50%
Favorite, No. 54.....50%

### Rope—
*Manila, 7-16 in. diam. and larger:*
*Pure* .....*lb.* 9½@10¢
*Sisal, 7-16 in. diam. and larger:*
*Pure* .....*lb.* 7¼@7½¢
*Sisal, Hay, Hide and Bale Ropes, Medium and Coarse:*
*Pure* .....*lb.* 7¾@8¢
*Sisal, Tarred, Medium Lath Yarn:*
*Pure* .....*lb.* 6¾@7¢
*Cotton Rope:*
*Best, ¼-in. and larger*...18@20¢
*Medium, ¼-in. and larger.16@17¢*
*Common, ¼-in. and larger..10¢*
*In coils, ½¢ advance.*
*Jute Rope:*
*Thread, No. 1, ¼-in. and up, lb.* .....6¼¢
*Thread, No. 2, ¼-in. and up, lb.* .....5¾¢

#### Wire Rope—
*Galvanized* .....37½&2½%
*Plain* .....45&2½%

### Ropes, Hammock—
Covert Mfg. Co.:
Jute, 35%; Sisal.....20%

### Rules
*Boxwood* .....60@60&10%
*Ivory* .....35&10@35&10&5%
Chapin-Stephens Co.:
Boxwood .....60%
Flexifold .....10%
Ivory .....25@25&10%
Miscellaneous .....50@50&10%
Stephens' Combination.....55%
Stationers' .....50@50&10%
Keuffel & Esser Co.:
Folding, Wood.....35&10%
Folding, Steel.....33⅓&10%
Lufkin's Steel.....50&10%
Lufkin's Lumber.....50&10%
Upson Nut Co.:
Boxwood .....60@60&10%
Ivory .....35&10@35&10&10

## Sash Balances—
See *Balance, Sash.*

### Sash Locks—See *Locks, Sash.*

### Sash Weights—
See *Weights, Sash.*

### Sausage Stuffers or Fillers
See *Stuffers or Fillers, Sausage.*

### Saw Frames—
See *Frames, Saw.*

### Saw Sets—See *Sets, Saw.*

### Saw Tools—See *Tools, Saw.*

### Saws—

Atkins':
Circular ..... 45%
Band ..... 50@50&10%
Butcher Saws ..... 50%
Cross Cuts ..... 35%
One-Man Cross Cut ..... 40%
Narrow Cross Cut ..... 50%
Hand, Rip and Panel ..... 35&5%
Miter Box and Compass ..... 40%
Mulay, Mill and Drag ..... 45%
Wood Saws ..... 40&10%
Chapin-Stephens Co.:
Turning Saws and Frames. 30@30&10%
Diamond Saw & Stamping Works:
Sterling Kitchen Saws ..... 30&10&10%
Disston's:
Circular, Solid and Ins'ted Tooth. 50%
Band, 2 to 18 in. wide ..... 60%
Band, ¼ to 1¾ ..... 60%
Crosscuts ..... 45%
Narrow Crosscuts ..... 50%
Mulay Mill and Drag ..... 50%
Framed Woodsaws ..... 25%
Woodsaw Blades ..... 25%
Woodsaw Rods, Tinned ..... 15%
Hand Saws, Nos. 12, 99, 9, 16, d100, D8, 120, 76, 77, 8 ..... 25%
Hand Saws, Nos. 7, 107, 107½, 3, 1, 0, 00, Combination ..... 30%
Compass, Key Hole, &c. ..... 25%
Butcher Saws and Blades ..... 30%
C. E. Jennings & Co.'s:
Back Saws ..... 16⅔%
Butcher Saws ..... 25&7½%
Compass and Key Hole Saws, 33⅓&7½%
Framed Wood Saws ..... 25&7½%
Hand Saws ..... 12½%
Wood Saw Blades ..... 33⅓&7½%
Millers Falls:
Butcher Saws ..... 15&10%
Star Saw Blades ..... 15&10%
Massachusetts Saw Works:
Victor Kitchen Saws ..... 40&10&50%
Butcher Saws Blades ..... 35@40%
Peace & Richardson's Hand Saws. 30%
Simonds':
Circular Saws ..... 45%
Crescent Ground Cross Cut Saws. 30%
One-Man Cross Cuts ..... 40&10%
Gang Mill, Mulay and Drag Saws. 45%
Band Saws ..... 50%
Back Saws ..... 25@25&7½%
Butcher Saws ..... 35@35&7½%
Hand Saws ..... 25@25&7½%
Hand Saws, Bay State Brand ..... 45%
Compass, Key Hole, &c. .25@25&7½%
Wood Saws ..... 40&7½%
Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws ..... 50%

### Hack Saw Blades and Frames—

Atkins' Hack Saw Blades A A A .. 25%
Disston's:
Concave Blades ..... 25%
Keystone Blades ..... 35%
Hack Saw Frames ..... 30%
Simonds File Co. ..... 35%
C. E. Jennings & Co.'s:
Hack Saw Frames, Nos. 175, 180 .... 40&7½%
Hack Saws, Nos. 175, 180, complete, 40&7½%
Goodell's Hack Saw Blades .... 40&10%
Griffin's Hack Saw Frames .. 35&5&10%
Griffin's Hack Saw Blades .... 35&5&10%
Star Hack Saws and Blades .... 15&10%
Sterling Hack Saw Blades .. 30&10&5%
Sterling Hack Saw Frames .. 30&10&10%
Sterling Power Hack Saw Machines, each, No. 1, $25.00; No. 2, $30.00 .. 10%
Victor Hack Saw Blades ..... 20%
Victor Hack Saw Frames ..... 40%
Whitaker Mfg. Co.:
National Hand Blades ..... 40%
National Hand Frames ..... 30&5%
National Power Blades ..... 30&10%

### Scroll—

Barnes, No. 7, $15 ..... 25%
Barnes' Scroll Saw Blades ..... 40%
Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20 ..... 20%
Lester, complete, $10.00 ..... 15&10%
Rogers, complete, $3.50 and $4.00 .. 15&10%

### Scales—

*Union Platform, Plain. $2.10@2.20*
*Union Platform, Stpd. $2.20@2.30*
Chatillon's:
Eureka ..... 25%
Favorite ..... 40%
Grocers' Trip Scales ..... 50%
The Standard Portables ..... 40%
The Standard R. R. and Wagon ..... 50&10%

### Scrapers—

*Box, 1 Handle ..... doz. $1.85@2.10*
*Box, 2 Handle ..... doz. $2.35@2.50*
*Ship ... Light, $2.00; Heavy, $4.50*
Chapin-Stephens Co., Box .. 30@30&10
Richards Mfg. Co., Foot ..... 60%

### Screws—Bench and Hand

*Bench, Iron, doz., 1 in., $2.50@2.75; 1¼, $3.00@3.25; 1¼, $3.50@3.75*
*Bench, Wood ..... 20@20&10%*
*Hand, Wood .... 70&10@70&10&10%*
Chapin-Stephens Co., Hand ..... 70@70&10&2½%

### Coach, Lag and Hand Rail—

*Lag, Cone Point ... 80&5@80&10%*
*Coach, Gimlet Point .. 80@80&5%*
*Hand Rail ..... 70&10@75%*

### Jack Screws—

*Standard List ..... 70&10@75%*
Millers Falls ..... 50&10&10
Sweet Iron Works ..... 70@75

### Machine—

*Cut Tread, Iron, Brass or Bronze:*
*Flat Head or Round Head, 50@50&10%*
*Fillister Head ..... 40@40&10%*
*Rolled Thread, F. H. or R. H., Iron ..... 75&10%*
*F. H. or R. H., Brass, Nos. 8 to 14 ..... 65&10%*

### Set and Cap—

*Set (Iron) ..... 75&10&7½%*
*Set (Steel), net advance over Iron ..... 25%*
*Sq. Hd. Cap ..... 70&10&7½%*
*Hex. Hd. Cap ..... 70&10&7½%*
*Rd. Hd. Cap ..... 50&7½%*
*Fillister Hd. Cap ..... 60&7½%*

### Wood—

*List July 23, 1903.*
*Flat Head, Iron ..... 87½&5@.. %*
*Round Head, Iron .... 85&5@.. %*
*Flat Head, Brass ..... 80&5@.. %*
*Round Head, Brass .. 77½&5@.. %*
*Flat Head, Bronze .... 75&5@.. %*
*Round Head, Bronze. 72½&5@.. %*
*Drive Screws ..... 87½&5@.. %*

### Scroll Saws—

See *Saws, Scroll.*

### Scythes—

*Per doz.*
*Grass, No. 1, Plain ..... $7.00*
*Clipper, Bronzed Webb ..... $7.25*
*No. 3 Clipper, Pol'd Webb ... $7.50*
*No. 6 Clipper and Solid Steel. $7.75*
*Bush, Weed and Bramble, Nos. 11, 12 and 13 ..... $7.25*
*Grain, No. 1 ..... $9.00@9.50*
*Bronzed Webb, No. 1 ... $9.25@9.75*
*Nos. 3 and 4 Clipper, Grain, $9.50@10.00*
*Solid Steel, No. 6 .... $10.00@10.50*

### Seeders, Raisin—

Enterprise ..... 25@30%

### Sets— Awl and Tool—

Fray's Adj. Tool Handles, Nos. 1, $12; 2, $16; 3, $12 ..... 50%
Millers Falls Adj. Tool Handles, No. 1, $12; No. 4, $12; No. 5, $18 .. 20&10%

### Garden Tool Sets—

Ft. Madison Three Plows, Hoe, Rake and Shovel ..... ℔ doz. sets $9.00

### Sets, Nail—

*Octagon ..... gro. $3.50@3.75*
Buck Bros. ..... 27½%
Cannon's Diamond Point, ℔ gro. $12, 40&10%
Mayhew's ..... ℔ gro. $9.00
Snell's Corrugated, Cup Pt. ..... 40&10%
Snell's Knurled, Cup Pt. ..... 40&10%
Victor Knurled, Cup Pt. ... ℔ gro. $7.50

### Rivet—

*Regular list ..... 75@75&10%*

### Saw—

Atkin's:
Criterion ..... 40%
Adjustable ..... 40%
Disston's Star, Monarch and Triumph ..... 30%
Morrill's No. 1 ..... $15.00
Nos. 3 and 4, Cross Cut .... $20.60
No. 5, Mill ..... $30.00
Nos. 10, 11, 95 ..... $15.60
No. 1 Old Style ..... $10.00
Special ..... $16.25
} 50%
Giant Royal Cross Cut .... ℔ doz. $8.00
Royal, Hand ..... ℔ doz. $4.50
Taintor Positive ..... ℔ doz. $6.75

### Shaving—

Fox Shaving Sets, No. 30 ..... ℔ doz., net, $24.00
Smith & Hemenway Co.'s ..... 75%

### Sharpeners, Knife—

Pike Mfg. Co.:
Fast Cut Pocket Knife Hones, ℔ doz. ..... $1.50
Mounted Kitchen Sand Stone, ℔ doz. ..... $1.50
Natural Grit Carving Knife Hones, ℔ doz. ..... $3.00
Quick Cut Emery Carving Knife Hones, ℔ doz. ..... $1.50
Quick Edge Pocket Knife Hones, ℔ doz. ..... $2.50
} 50%

### Skate—

Smith & Hemenway Co., Eureka .. 50%

### Shaves, Spoke—

*Iron ..... doz. $1.25*
*Wood ..... doz. $2.00*
Bailey's (Stanley R. & L. Co.) ..... 45%
Chapin-Stephens Co. ..... 30@30&10%
Goodell's, ℔ doz. $9.00 ..... 15&10%

### Shears—

| | | | |
|---|---|---|---|
| *Cast Iron .. 7* | *8* | *9 in.* | |
| *Best ... $16.00* | *18.00* | *20.00* | *gro.* |
| *Good ... $13.00* | *15.00* | *17.00* | *gro.* |
| *Cheap .. $5.00* | *6.00* | *7.00* | *gro.* |

*Straight Trimmers, &c.:*
*Best quality Jap .... 70@70&10%*
*Best quality Nickel .. 60@60&10%*
*Tailors' Shears ..... 40@40&10%*
Acme Cast Shears ..... 40@40&5
Heinisch's Tailor's Shears ..... 10%
National Cutlery Co.'s Nickel Plated, 60&10%; Japan Handles ..... 70&10%
Wilkinson Shear & Cutlery Co.:
Sheep, 1900 list ..... 30&10&5%
Grass ..... 50&10
Horse or Mule ..... 50&10
J. Wiss & Sons Co.:
Best Quality Jap'd ..... 60&10%
Best Quality Nickeled ..... 50&10
Tailors' ..... 25

### Tinners' Snips—

*Steel Blades ..... 20&5@20&10%*
*Steel Laid Blades ..... 40&10@40&10%*
Forged Handles, Steel Blades, Berlin ..... 50%
Heinisch's Snips ..... 40%
Jennings & Griffin Mfg. Co.'s 6½ to 10 in. ..... 33⅓&7½%
National Cutlery Co.'s Forged Steel. 50%
Niagara Snips ..... 40%
P., S. & W. Forged Handles, 25%; W. R. W. ..... 40&10%
J. Wiss & Sons Co.:
Wiss Forged Steel ..... 25%

### Pruning Shears—

Cronk's Hand Shears ..... 33⅓%
Cronk's Wood Handle Shears .... 33⅓%
Disston's Combined Pruning Hook and Saw, ℔ doz. $18.00 ..... 25%
Disston's Pruning Hook only, ℔ doz., $12.00 ..... 25%
John T. Henry Mfg. Co.:
Pruning Shears, all grades ..... 40%
P., S. & W. Co. ..... 40&10%
Columbian Cutlery Co.:
Hedge, Wilcut Brand ..... 60&10%
Lawn and Border, Wilcut Brand, 60&10%

### Sheaves— Sliding Door—

Reading ..... 40%
R. & E. list ..... 15%

### Sliding Shutter—

Reading list ..... 40%
R. & E. list ..... 10%

### Shells—Shells, Empty—

Brass Shells, Empty:
Climax, 10 and 12 gauge ..... 65&10%
Club, Rival, 65&5%; First Quality, 60&5%
Paper Shells, Empty:
New Rapid, 10, 12, 16 and 20 gauge, 25&10%
Climax, 10 and 12 gauge; Acme, 10, 12, 16 and 20 gauge; Ideal, 10, 12, 16 and 20 gauge; Leader grade, 25&5%
Union League, 12 and 12 gauge; Rival Grade ..... 25%
New Climax, Defiance, 10, 12, 14, 16 and 20 gauge; Climax, 14, 16 and 20 gauge ..... 20&5%
Challenge, Monarch, 10, 12, 16 and 20 gauge; League, Union, 14, 16 and 20 gauge; Repeater Grade .. 20%

### Shells, Loaded—

*Loaded with Black Powder .. 40%*
*Loaded with Smokeless Powder, medium grade ..... 40&5%*
*Loaded with Smokeless Powder, high grade ..... 40&10&10%*
Union Metallic Cartridge Co.:
New Club, Black Powders ..... 40%
Nitro Club, Smokeless Powders. 40&5%
Arrow, Smokeless Powders. 40&10&10%
Winchester:
Smokeless Repeater Grade ..... 40&5%
Smokeless Leader Grade ... 40&10&10%
Black Powder ..... 40%

### Shingles, Metal— Per Sq.

| | Painted. | Galv. |
|---|---|---|
| Edwards Mfg. Co.: | | |
| 14 x 20 | $4.25 | $6.00 |
| 10 x 14 | 4.50 | 6.25 |
| 7 x 10 | 4.75 | 6.50 |
| Wheeling Corrugating Co.: | | |
| Dixie, 14 x 20 in. | $4.25 | $5.50 |
| Dixie, 10 x 14 in. | 4.50 | 6.00 |
| Dixie, 7 x 10 in. | 5.00 | 6.75 |

### Shoes, Horse, Mule, &c.—

*F.o.b. Pittsburgh:*
*Iron ..... per keg. $4.10*
*Steel ..... per keg. $3.85*
Burden's, all sizes ..... ℔ keg $3.90

### Shot—

*25-lb. bag.*
*Drop, up to B ..... $1.80*
*Drop, B and larger ..... 2.05*
*Buck ..... 2.05*
*Chilled ..... 2.05*
*Dust ..... 2.30*

### Shovels and Spades—

*Association List, Nov. 15, 1902. 40%*
Avery Stamping Co. ..... 40%

### Snow Shovels—

*Long Handle ..... $3.25@$3.50*
*Wood and Mall, D Handle, $3.75@$4.00*

### Sieves and Sifters—

*Hunter's Imitation, gro .... $9.50*
*Hunter's Genuine, per gro .. $12.00*

### Sifters, Ash—

Acme Ball Bearing Sales Co., Acme Automatic Ash Sifter, each, $3.25; ℔ doz. ..... $39.00

### Sieves, Seamless Metallic

| | Per dozen. | | | |
|---|---|---|---|---|
| *Mesh* | *14* | *16* | *18* | *20* |
| *Iron Wire* | *$1.05* | *1.05* | *1.10* | *1.20* |
| *Tinned Wire* | *$1.15* | *1.15* | *1.20* | *1.30* |

### Sieves, Wooden Rim—

*Nested, 10, 11 and 12 Inch.*
*Mesh 18, Nested .... doz. $0.90@0.95*
*Mesh 20, Nested .... doz. $1.00@1.05*
*Mesh 24, Nested .... doz. $1.30@1.40*

### Sinks, Cast Iron—

*Painted, Standard list:*
*12 x 12 to 22 x 36 in ..... 60%*
*20 x 24 to 24 x 50 in ..... 50%*
*24 x 60 to 24 x 120 in ..... 30%*
Barnes' low list:
Up to and including 20 x 36 in. 50&5%
20 x 40 to 24 x 50 in. ..... 45%

*NOTE.—There is not entire uniformity in lists used by jobbers.*

### Skeins, Wagon—

*Cast Iron ..... 70@75&10%*
*Steel ..... 40@45%*

### Slates, School—

*Factory Shipments.*
*"D" Slates ..... 50@50&10%*
*Eureka, Unexcelled Noiseless .. 60&7 tens.*
*Victor A, Noiseless. 60&4 tens &5%*

### Slaw Cutters—See *Cutters.*

### Snaps, Harness—

*German ..... 40@40&10%*
Covert Mfg. Co.:
Derby, 25%; Yankee, 30&2%; Yankee Roller, 30&2%.
High Grade, 40%; Trojan ..... 40%
Jockey ..... 25%

### Snaths—

*Scythe ..... 60%*

### Snips, Tinners—See *Shears.*

### Spoons and Forks—

### Silver Plated—

*Good Quality ..... 50&10@60&5%*
*Cheap ..... 60@60&10%*
International Silver Co:
1847 Rogers Bros., 40&10%; Rogers & Hamilton ..... 50&10%
Rogers & Bro., William Rogers' Eagle Brand ..... 50&10%
Anchor, Rogers Brand ..... 60%
Wm. Rogers & Son ..... 60&10%

### Miscellaneous

*German Silver ..... 60@60&5%*

### Tinned Iron—

*Teas ..... per gro. 50@55¢*
*Tables ..... per gro. $0.90@$1.00*

### Springs— Door—

Bardsley's Spring and Check ..... 40%
Chicago (Coil) ..... 40&10%
Gem (Coil) ..... 20%
Pullman Door and Gate ..... 10%
Reliance (Coil) ..... 40&10%
Star (Coil) ..... 30%
Torrey's Rod, 39 in. ..... ℔ doz. $1.10

### Carriage, Wagon, &c.—

*1¼ in. and Wider: Per 100 lb.*
*Black ..... $4.75@$5.00*
*Half Bright ..... $4.75@$5.00*
*Bright ..... $5.25@$5.50*
*Painted Seat Springs:*
*1½ x 2 x 26 .... per pair. 45@47¢*
*1½ x 3 x 28 .... per pair. 68@71¢*

### Sprinklers, Lawn—

American Foundry & Mfg. Co.:
Cactus, 65%; Japanese, 70%; National, ℔ doz. ..... $12.00
Enterprise ..... 25@30%
Philadelphia No. 1, ℔ doz. $12; No. 2, $15; No. 3, $20 ..... 30%

### Squares—

*Nickel plated .. } List Jan. 5, 1900.*
*Steel and Iron . } 80@80&5%*
*Rosewood Hdl. Try Square and T-Bevels ..... 60&10&10@70%*
*Iron Hdl. Try Squares and T-Bevels ..... 40&10@40&10&10%*
Disston's Try Squares and Bevels, Rosewood Handle, 60 & 10%; Iron Stock and Bevel ..... 15%

### Squeezers, Lemon

*Wood, Porcelain Lined:*
*Cheap ..... doz. $1.00*
*Good Grade ..... doz. $1.25*
*Tinned Iron ..... doz. $0.75@1.00*
*Iron, Porcelain Lined ... doz. $1.75*

### Staples—

*Barbed Blind ..... 85&5@85&10%*
*Electricians' ..... 80&10&10@85%*
*Fence Staples, Polished, $2.05; Galvanized ..... $2.35*
*Poultry Netting Staples ..... per lb. 3¼@3½¢*

### Steels, Butchers'—

Dick's ..... 30%
Foster Bros.' ..... 30%

### Steelyards— .... 30@30&10%

### Stocks and Dies—

*Blacksmiths' ..... 50@50&10%*
Curtis Rev'ble Ratchet Die Stock .. 25%
Derby Screw Plates ..... 25%
Green River ..... 25%
Lightning Screw Plate ..... 25%
Little Giant ..... 25%
Reece's New Screw Plate ..... 25%

### Stoners, Cherry—

Enterprise ..... 25@30%

### Stones—Oil, &c.

| | | |
|---|---|---|
| Pike Mfg. Co., 1907 list: | ℔ | lb |
| Arkansas St. No. 1, 3 to 5½ in. | $2.80 | |
| Arkansas St. No. 1, 5½ to 8 in. | $3.50 | |
| Arkansas Slips No. 1 | | $1.00 |
| Lily White Washita, 4 to 8 in. | | 60¢ |
| Rosy Red Washita, 4 to 8 in. | | 60¢ |
| Washita St., Extra, 4 to 8 in. | | 50¢ |
| Washita St., No. 1, 4 to 8 in. | | 40¢ |
| Washita St., No. 2, 4 to 8 in. | | 25¢ |
| Lily White Slips | | 90¢ |
| Rosy Red Slips | | 90¢ |
| Washita Slips, Extra | | 80¢ |
| Washita Slips, No. 1 | | 70¢ |
| Washita Slips, No. 2 | | 40¢ |
| Indian Oil Stones, same list | | 33⅓% |
| Quickcut Emery and Corundum Oil Stone, Double Grit | | 40% |
| Quickcut Emery and Corundum Axe Stone, Double Grit | | 33⅓% |
| Quickcut Emery Rubbing Bricks | | 40% |
| Hindostan No. 1, Regular | ℔ | 8¢ |
| Hindostan No. 1 Small | ℔ | 10¢ |
| Axe Stones (all kinds) | | |
| Turkey Oil Stones, Extra, 5 to 8 in. | ℔ | 80¢ |
| Queer Creek Stones, 4 to 8 in. | | 20¢ |
| Queer Creek Slips | | 10¢ |
| Sand Stone | | 6¢ |

33⅓%

### Scythe Stones—

Pike Mfg. Co., 1901 list:
Black Diamond S. S. ℔ gro. $12.00
Lamoille S. S. ℔ gro. $11.00
White Mountain S. S. ℔ gro. $9.50
Green Mountain S. S. ℔ gro. $7.00
Extra Indian Pond S. S. ℔ gro. $8.00
No. 1 Indian Pond S. S. ℔ gro. $7.50
No. 2 Indian Pond S. S. ℔ gro. $5.00
Leader Red End S. S. ℔ gro. $5.00
Quick Cut Emery ℔ gro. $10.00
Pure Corundum ℔ gro. $18.00
Crescent $7.00
Emery Scythe Rifles, 2 Coat. $8.80
Emery Scythe Rifles, 3 Coat. $11.00
Emery Scythe Rifles, 4 Coat. $13.20
Balance of 1904 list 33⅓%
Electro (Artificial), ℔ gro., $12.00 33⅓%
Lightning (Artificial), ℔ gro., $18.00 33⅓%

### Stoppers, Bottle—

Victor Bottle Stoppers ℔ gro. $9.00

### Stops— Bench—

Millers Falls 15&10%
Morrill's, ℔ doz., No. 1, $10.00 50%
Morrill's, No. 2, $12.50 50%

### Door—

Chapin-Stephens Co. 50@50&10%

### Plane—

Chapin-Stevens Co. 20%

### Straps— Box—

Acme Embossed, case lots. 20&10&10%
Cary's Universal, case lots. 20&10&10%

### Stretchers, Carpet—

*Cast Iron, Steel Points . . doz. 55¢*
*All Steel Socket . . . doz. $2.00@2.25*
Excelsior Stretcher and Tack Hammer Combined, ℔ doz., $6.00 20%

### Stuffers, Sausage—

Enterprise Mfg. Co. 25@25&7½%
National Specialty Co., list Jan. 1, 1902 30&5%
P., S. & W. Co. 40&10&5%

### Sweepers, Carpet—

Bissell Carpet Sweeper Co.: ℔ doz.
Superba, Crotch Mahogany $36.00
Triumph, Fancy Veneers $33.00
Parlor Queen, Fig. Rosewood $30.00
Elite, Hungarian Ash $29.00
Am. Queen, Fig. Mahogany $27.00
Ideal, Bird's-Eye Maple $25.00
Grand Rapids, Nickel, $24.00; Japan $22.00
Standard, Nickel, $22.00; Japan $20.00
Crown Jewel, Nickel, $21.00; Jap. $19.00
Crystal, Glass Top $36.00
Grand, 17 in. wide $36.00
Parlor Grand $48.00
Club, 24 in. wide $54.00
Hall 28 in. wide $60.00

*NOTE.—Rebates: 50c per dozen on three dozen lots; $1 per dozen on five-dozen lots; $2 per dozen on ten-dozen lots; $2.50 per dozen on twenty-five dozen lots.*

### Tacks, Finishing Nails, &c.

*American Carpet Tacks . . . 90&40%*
*American Cut Tacks . . . . . 90&40%*
*Swedes' Cut Tacks . . . . . 90&40%*
*Swedes' Upholsterers' . . . . 90&50%*
*Gimp Tacks . . . . . 90&50%*
*Lace Tacks . . . . . 90&50%*
*Trimmers' Tacks . . . . . 90&40%*
*Looking Glass Tacks . . . . . 65%*
*Bill Posters' and Railroad Tacks, 90&50&10%*
*Hungarian Nails . . . . . 80&20%*
*Finishing Nails . . . . . 70%*
*Trunk and Clout Nails . . . 80&10%*

*NOTE.—The above prices are for Straight Weights.*

### Miscellaneous—

*Double Pointed Tacks, 90&6 tens@—%*
Se also Nails, Wire.

### Tanks, Oil and Gasoline—

| Wilson & Friend Co.: Gal. | Gasoline | Oil |
|---|---|---|
| 30 | $2.75 | $3.00 |
| 60 | $3.50 | $4.00 |
| 110 | $5.00 | $5.75 |

### Tapes, Measuring—

*American Asses' Skin . . . . 50@—%*
*Patent Leather . . . . . 25@30@5%*
*Steel . . . . . 33⅓@5%*
*Chesterman's . . . . . 25@25@5%*
Keuffel & Esser Co.:
Favorite, Ass Skin . . . . . 40&10@50%
Favorite, Duck and Leather . . . . . 25&5@25&10%
Metallic and Steel, lower list, 35@35&5%; Pocket, 35@35&5%.
Lufkin's:
Asses' Skin . . . . . 40&10@50%
Metallic . . . . . 30@30&5%
Patent Bend, Leather . . . 25&5@25&10%
Pocket . . . . . 40@40&5%
Steel . . . . . 33⅓@35%
Warbasse & Hilger:
Chesterman's Metallic, No. 34L, etc. . . . . 25%
Chesterman's Steel, No. 1038L, etc. . . . . 35%

### Teeth, Harrow—

*Steel Harrow Teeth, plain or headed, 5/8-inch and larger, per 100 lb. . . . . $2.55@$2.80*

### Thermometers—

*Tin Case, Cabinet, Flange, Dairy, &c. . . . . 30@35%*

### Ties, Bale—Steel Wire—

*Single Loop . . . . . 82½&10%*
*Monitor, Cross Head, &c. 70&2½%*

### Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

### Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

### Tire Benders, Upsetters, &c.

See *Benders and Upsetters, Tire.*

### Tools—Coopers'—

L. & I. J. White . . . . . 20@20&5%

### Haying—

Myers' Hay Tools . . . . . 45%

### Ice Tools—

Gifford-Wood Co. . . . . 15%

### Miniature—

Smith & Hemenway Co.'s, Davidson, ℔ doz., Nickel Plated, $1.50; Gold Plated . . . . . $2.00

### Saw—

Atkins' Cross Cut Saw Tools . . . . 35&5%
Simond's Improved . . . . . 33⅓%
Simonds' Crescent . . . . . 25%

### Ship—

L. & I. J. White . . . . . 25%

### Transom Lifters—

See *Lifters, Transom.*

### Traps—Fly—

*Balloon, Globe or Acme, doz., $1.15@$1.25; gro. . . . $11.50@12.00*
*Harper, Champion or Paragon, doz., $1.25@1.40; gro. $13.00@13.50*

### Game—

*Imitation Oneida . . . . . 75@10%*
Newhouse . . . . . 45@45&5%
Hawley & Norton . . . . . 65%
Victor . . . . . 75@75&10%
Oneida Community Jump . . . . . 50%
Hector . . . . . 75@75&10%

### Mouse and Rat—

*Mouse, Wood, Choker, doz. holes, 12¢*
*Mouse, Round or Square Wire, doz. 85@90¢*
Marty French Rat and Mouse Traps (Genuine):
No. 1, Rat, ℔ doz., $13.25 . . $11.50 doz.
No. 3, Rat, ℔ doz., $6.50 . . . $5.75 doz.
No. 3½, Rat, ℔ doz., $5.25. $4.70 doz.
No. 4, Mouse, ℔ doz., $3.85. $3.00 doz.
No. 5, Mouse, ℔ doz., $3.00. $2.25 doz.
Oneida Community:
Out o' Sight, Mouse, ℔ doz. . . . . $0.60
Out o' Sight, Rat, ℔ doz. . . . . 1.25
Easy Set, Mouse, ℔ doz. . . . . .35
Easy Set, Rat, ℔ doz. . . . . 1.00
Wood Choker, Rat, ℔ doz. holes. .12
Premier Tin Choker, 5 hole, ℔ doz. traps . . . . . .75

### Trowels—

Disston Brick and Pointing . . . . . 25%
Disston Plastering . . . . . 20%
Disston "Standard Brand" and Garden Trowels . . . . . 30%
Kohler's Steel Garden Trowels, ℔ gro., 5 in., $4.80; 6 in., $6.00.
Never-Break Steel Garden Trowels . . ℔ gro. $6.00
Woodrough & McParlin, Plastering . 25%

### Trucks, Warehouse, &c.—

B. & L. Block Co.:
New York Pattern . . . . . 50&10%
Western Pattern . . . . . 60&10%
Handy Trucks . . . . . ℔ doz. $16.00
Grocery . . . . . ℔ doz $15.00
McKinney Trucks . . . . . each, net $10.00
Model Stove Trucks . . . . . ℔ doz $18.50

### Tubs, Wash—

*M'f'gr's list, price per gross.*

| No. | 0 | 1 | 2 | 3 | |
|---|---|---|---|---|---|
| *Galvanized* | *$67* | *$79* | *$89* | *$99* | *10&7½&5%* |

### Twine, Miscellaneous—

*Flax Twine:*
*No. 9, ¼ and ½-lb. Balls . 21@23¢*
*No. 12, ¼ and ½-lb. Balls . 19@21¢*
*No. 18, ¼ and ½-lb. Balls . 16@18¢*
*No. 24, ¼ and ½-lb. Balls . 15½@17½¢*
*No. 36, ¼ and ½-lb. Balls . 15@17¢*
*Chalk Line, Cotton ½-lb. Balls . . . . . 24@29¢*
*Cotton Mops, 6, 9, 12 and 15 lb. to doz. . . . . 8½@19¢*
*Cotton Wrapping, 5 Balls to lb., according to quality . . 13½@19¢*
*American 2-Ply Hemp, ¼ and ½-lb. Balls . . . . . 12½@15¢*
*American 3-Ply Hemp, 1-lb. Balls . . . . . 13½@16¢*
*India 2-Ply Hemp, ¼ and ½-lb Balls (Spring Twine) . . . 7½@9¢*
*India 3-Ply Hemp, 1-lb. Balls 7½@9¢*
*India 2-Ply Hemp, 1½-lb. Balls, 7@8½¢*
*2, 3, 4 and 5-Ply Jute, 1½-lb. Balls . . . . . 9@11¢*
*Mason Line, Linen, ½-lb. Bls. 47¢*
*No. 264 Mattress, ¼ and ½ lb. Balls, according to quality, 30@60¢*
*Wool, 3 to 6 ply . . . . B 6¢; A 7½¢*

### Vises—

*Solid Box . . . . . 50&5@50&10&5%*

### Parallel—

Athol Machine Co.:
Simpson's Adjustable . . . . . 40%
Standard . . . . . 40%
Amateur . . . . . 25%
Columbian Hdw. Co. . . . . 40%
Fisher & Norris Double Screw, net, each, Nos. 2, $10.50; 3, $16.00; 4, $20.50; 5, $27.00.
Fulton Mach. & Vise Co.:
Reed, Swivel . . . . . 25%
Star, Solid Jaw . . . . . 40%
Hollands':
Machinists' . . . . . 40@40&5%
Keystone . . . . . 65&5@70%
Lewis Tool Co.:
Adjustable Jaw . . . . . 30%
Monarch, 50%; Solid Jaw . . . . . 50%
Massey Vise Co.:
Clincher . . . . . 40%
Perfect, 15%; Lightning Grip . . . . . 15%
Merrill's . . . . . 20%
Millers Falls Oval Slide Pattern . 60&10%
Parker's:
Victor, 20@25%; Regulars . . . . 20@25%
Vulcan's . . . . . 40@45%
Combination Pipe . . . . . 55@60%
Prentiss . . . . . 20@25%
Rock Island . . . . . 25%
Snediker's X. L. . . . . 33⅓%
Stephens' . . . . . 33⅓%

### Saw Filers

Disston's D 3 Clamp and Guide, ℔ doz., $24.00, 30%; Clamps . . . . . 30%
Perfection Saw Clamps, ℔ doz. . . . $4.50
Reading . . . . . 60%

### Wood Workers—

Fulton Mach. & Vise Co.:
Reed . . . . . 25%
Star . . . . . 40%
Massey Vise Co.:
Lightning Grip, 15%; Perfect . . . . 15%
Wyman & Gordon's Quick Action, 6 in., $6.00; 9 in., $7.00; 14 in., $8.00.

### Miscellaneous—

Holland's Combination Pipe . . 60@60&5%
Massey's Quick Action Pipe . . . . . 40%
Parker's Combination Pipe:
87 Series, 60%; 187 Series, 60&5%; No. 870, 40%.
Rock Island Pipe . . . . . 25%

### Wads—*Price per M.*

*B. E., 11 up . . . . . 60¢*
*B. E., 9 and 10 . . . . . 70¢*
*B. E., 8 . . . . . 80¢*
*B. E., 7 . . . . . 80¢*
*P. E., 11 up . . . . . $1.00*
*P. E., 9 and 10 . . . . . 1.25*
*P. E., 8 . . . . . 1.50*
*P. E., 7 . . . . . 1.50*
*Dis. 15%*
*Ely's B. E., 11 and larger. $1.70@1.75*
*Ely's P. E., 12 to 20 . . . . $3.00@3.25*

### Ware, Hollow—Cast Iron, Hollow—

*Stove Hollow Ware:*
*Enameled . . . . . 45&10%*
*Ground . . . . . 50&5%*
*Plain or Unground . . . . . 60%*
*Country Hollow Ware, per 100 lbs . . . . . $2.75@$3.00*
*White Enameled Ware:*
*Maslin Kettles . . . . . 65&10%*
*Covered Wares:*
*Tinned and Turned . . . . . 35&10%*
*Enameled . . . . . 45&10%*
See also *Pots, Glue.*

### Enameled—

Agate Nickel Steel Ware . . . . . 33⅓%
Iron Clad Ware . . . . . 70&10%
Lava and Volcanic, Enameled . . 40&10%

### Tea Kettles—

*Galvanized Tea Kettles:*

| *Inch* | *6* | *7* | *8* | *9* |
|---|---|---|---|---|
| *Each* | *45¢* | *50¢* | *55¢* | *65¢* |

### Steel Hollow Ware—

Avery Spiders and Griddles . . 65@65&5%
Avery Kettles . . . . . 60%
Porcelained . . . . . 50&5@50&10%
Never Break Spiders and Griddles . . 65&5%
Never Break Kettles . . . . . 60%
Solid Steel Spiders and Griddles . 65&5%
Solid Steel Kettles . . . . . 60%

### Warmers, Foot—

Pike Mfg. Co., Soapstone . . . . 40@40&10%

### Washboards—

Solid Zinc: ℔ doz.
Crescent, family size, bent frame . $4.05
Red Star, family size, stationary protector . . . . . $4.05
Double Zinc Surface:
Saginaw Globe, family size, stationary protector . . . . . $3.55
Cable Cross, family size, stationary protector . . . . . $3.60
Single Zinc Surface:
Naiad, family size, open back, perforated . . . . . $3.00
Single Saginaw Globe . . . . . $2.85
Brass Surface:
Brass King, Single Surface, open back . . . . . $4.05
Nickel Plate Surface:
No. 1001 Nickel Plate, Single Surface . . . . . $3.60
Glass Surface:
Glass King, Single Surface, open back . . . . . $3.95
Enamel Surface:
Enamel King, Single Surface, ventilated back . . . . . $3.95

### Washers—Leather, Axle—

*Solid . . . . . 90@90&10%*
*Patent . . . . . 90@90&5%*
*Coil: ¾ 1 1¼ 1¼ inch.*
*9¢ 10¢ 11¢ 14¢ per box.*

### Iron or Steel—

*Size bolt . . . . 5-16 ⅜ ½ ⅝ ¾*
*Washers . . . . $4.65 3.75 2.45 2.25 2.05*
*The above prices are based on $6.75 off list.*
*In lots less than one keg add ½¢ per lb.; 5-lb. boxes add ½¢ to list.*

### Cast Washers—

*Over ½-inch, barrel lots, per lb. 1½@1¾¢*

### Wedges—

*Oil Finish . . . . . lb., 2¼@2¾¢*

### Weights—Hitching—

Covert Mfg. Co. . . . . 30&2%

### Sash—

*Per net ton, f.o.b. factory:*
*Eastern District . . . . $21.00@—*
*Western and Central Districts . . . . . $20.00@$22.00*

### Wheels, Well—

*8-in., $2.00; 10-in., $2.30; 12-in., $3.00; 14-in., $4.45.*

### Wire and Wire Goods—

*Bright and Annealed:*
*6 to 9 . . . . . 72&10&7½%*
*10 to 18 . . . . . 72½&10&10%*
*19 to 26 . . . . . 75&10&10&2½%*
*27 to 36 . . . . . 77½&7½%*
*Galvanized:*
*6 to 9 . . . . . 72½&10%*
*10 to 14 . . . . . 72½&10&5%*
*15 to 16 . . . . . 72½&10&5%*
*17 to 18 . . . . . 72½%*
*19 to 26 . . . . . 70&5&2½%*
*27 to 36 . . . . . 65&10&10%*
*Coppered:*
*6 to 9 . . . . . 65&10&10%*
*10 to 14 . . . . . 70&10&5%*
*15 to 18 . . . . . 65&10&10&10%*
*19 to 26 . . . . . 70&5&2½%*
*27 to 36 . . . . . 72½&10&2½%*
*Tinned:*
*6 to 18 . . . . . 67&10&10%*
*Brass . . . . . 15½¢ lb., base*
*Copper . . . . . 15¢ lb., base*
*Cast Steel Wire . . . . . 50%*

### Spooled Wire—

*Annealed and Tinned . . . . . 75%*
*Brass and Copper . . . . . 70%*
*Retailers' Assortments, per box. $2.00@$2.25*
Wire Clothes Line, See Lines.
Wire Picture Cord, see Cord.

### Bright Wire Goods—

*Steel Wire Goods . . . . . 90&40%*
*Brass Wire Goods . . . . . 90&40%*
*Brass Cup and Shoulder Hooks, 85&10%*

### Wire Cloth and Netting—

*Galvanized Poultry Netting, 80&2½@80&7½%*
*Painted Screen Cloth, 100 ft., $1.35*
*Standard Galv. Hardware Grade: 100 ft. rolls, 24 to 48 in. wide, Per 100 sq. ft.*
*Nos. 2, 2½ and 3 Mesh . . . . $2.75*
*Nos. 4 and 5 Mesh . . . . . $3.00*
*No. 6 Mesh . . . . . $3.25*
*Nos. 7 and 8 Mesh . . . . . $3.75*

### Wire, Barb—See *Trade Report*

### Wrenches—

*Agricultural . . . . . 80&10&10%*
*Alligator or Crocodile . . 70&10@75%*
*Baxter Pattern S Wrenches . . . 70&5@70&10%*
*Drop Forged S . . . . . 45@45&5%*
Acme . . . . . 60&10%
Alligator Pattern, 70%; Bull Dog . 70%
Bemis & Call's:
Adjustable S, 40%; Adjustable S Pipe, 40°; Briggs Pattern, 40%; Combination Bright, 40%.
Steel Handle Nut . . . . . 50%
Combination Black . . . . . 40&5%
Merrick Pattern . . . . . 50%
Boardman's . . . . . 40%
Coes' Genuine Knife Hdl. . 40&10&5&5%
Coes' Genuine Steel Hdl. . 40&10&5&5%
Coes' Genuine Key Model . 40&10&5&5%
Coes' Genuine Hammer Handle . . . . . 40&10&5&5%
Coes' "Mechanics'" . . . 40&10&10&5&5%
Donohue's Engineer . . . . . 40&10%
Eagle . . . . . 70%
Gem Pocket . . . . . 30%
Hercules . . . . . 70%
W. & B. Machinist:
Case lots . . . . . 50&5%
Less than case lots . . . . . 50%
W. & B. Railroad Special:
Case lots . . . . . 50%
Less than case lots . . . . . 40&10&5%
Solid Handles, P., S. & W. . 50&10%; full cases . . . . . 50&10&5%
Standard Nipple Mfg. Co.:
Duplex Chain . . . . . 50%
Stillson . . . . . 65%
Uwanta Wrench Co.:
Uwanta Special, Iron Handle . . . . 40&10&5%
Other Wrenches . . . . . 50%
Vulcan and Agrippa Chain . . . . . 50%
Whitaker Machinists':
Case Lots . . . . . 50&10%
Less than case lots . . . . . 50%

### Fruit Jar—

Beni, P. Forbes, Triumph, ℔ gro., $7.50; per doz . . . . . $0.90

### Wrought Goods—

*Staples, Hooks, &c., list March 17, '92 . . . . . 90@—%*

### Zinc— (*Cask lots at mill.*)

*Sheet . . . . . per 100 lb., $7.00*

For the Table of "Current Metal Prices" see the First Issue of Every Month.

# THE IRON AGE

New York, Thursday, August 20, 1908.

## Alliance Electric Traveling Bucket Cranes.

As an economical means of handling loose material, electric traveling cranes with clam-shell buckets have unquestionable merits. The cranes can span any number of railroad tracks, and can load or unload cars on any of the tracks, even with cars standing on all the remaining tracks. The operator's cage can be attached to the trolley so that the operator is always directly over his work, or it can be secured anywhere on the bridge. Cranes for such work are built by the Alliance Machine Company, Alliance, Ohio, to operate on either direct or alternating current. The illustrations herewith show three typical equipments.



Fig. 1.—An Alliance Bucket Gantry Crane in the Scranton, Pa., Yards of the Delaware, Lackawanna & Western Railroad.

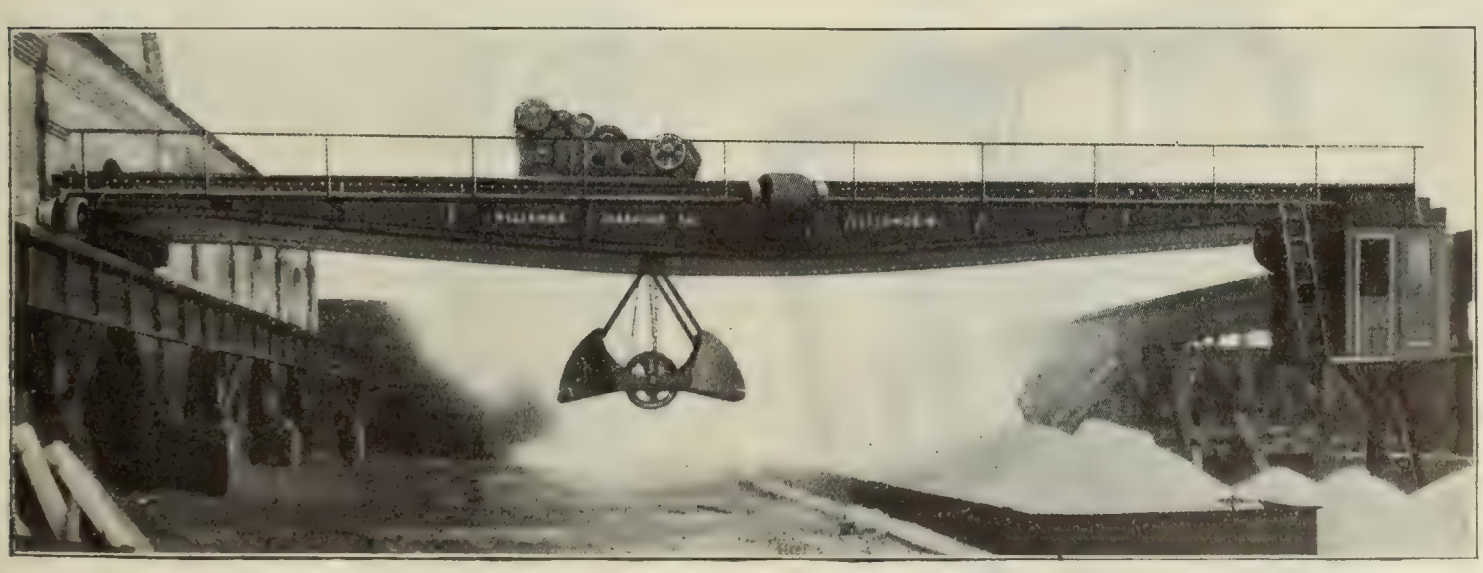


Fig. 2.—A 10-Ton Alliance Crane for Handling Cinder at the National Tube Company's McKeesport Works.

Fig. 1 shows a gantry crane for handling ashes from an ash pit in the yard of the Delaware, Lackawanna & Western Railroad Company at Scranton, Pa. This crane operates from a three phase 440 volt alternating current system. Its capacity is 3½ tons, the span is 59 ft. 6 in., its hoist, hold and bridge motors are 22 hp. each, and the trolley motor is 6 hp. Fig. 2 illustrates a standard traveling crane for handling cinder at the National Tube Company's McKeesport Works. This crane operates from a 220 volt direct current system. Its capacity is 10 tons, the span is 70 ft., the lift is 40 ft., the hoist motor is 50 hp., the hold and bridge motors are each 30 hp., and the trolley motor is 10 hp. Fig. 3 shows a standard traveling crane in use in the cement works of the Universal Portland Cement Company at Indiana Harbor, Ind. Its capacity is 10 tons, the span is 30 ft., its hoist, hold and bridge motors are each 37 hp., and its trolley motor is 11 hp. A similar one is installed for the same company at Munhall, Pa. These cranes operate from a three phase 110 volt alternating current system.

The trolleys for these cranes can be designed to handle any type of bucket, and can be arranged so that the bucket opens at right angles to or parallel with the runway girders. The cranes are provided with one motor for traveling the trolley, one motor for hoisting and closing the bucket, and one motor for holding the bucket

while dumping. The crane bridge is driven either by one or two motors, depending upon the capacity of the crane and upon the speed required.

Much can be said in favor of the gantry type of crane, especially when constructed with cantilever ends, as such a crane does not require elevated runways. There is no difficulty in arranging the bridge wheels of the gantry crane so that they will cross railroad tracks which may pass in and out of the space covered by the crane. There are many cases, however, where the standard traveling crane running on elevated runways is undoubtedly the economical arrangement; this is especially true where the crane has a comparatively short longitudinal travel.

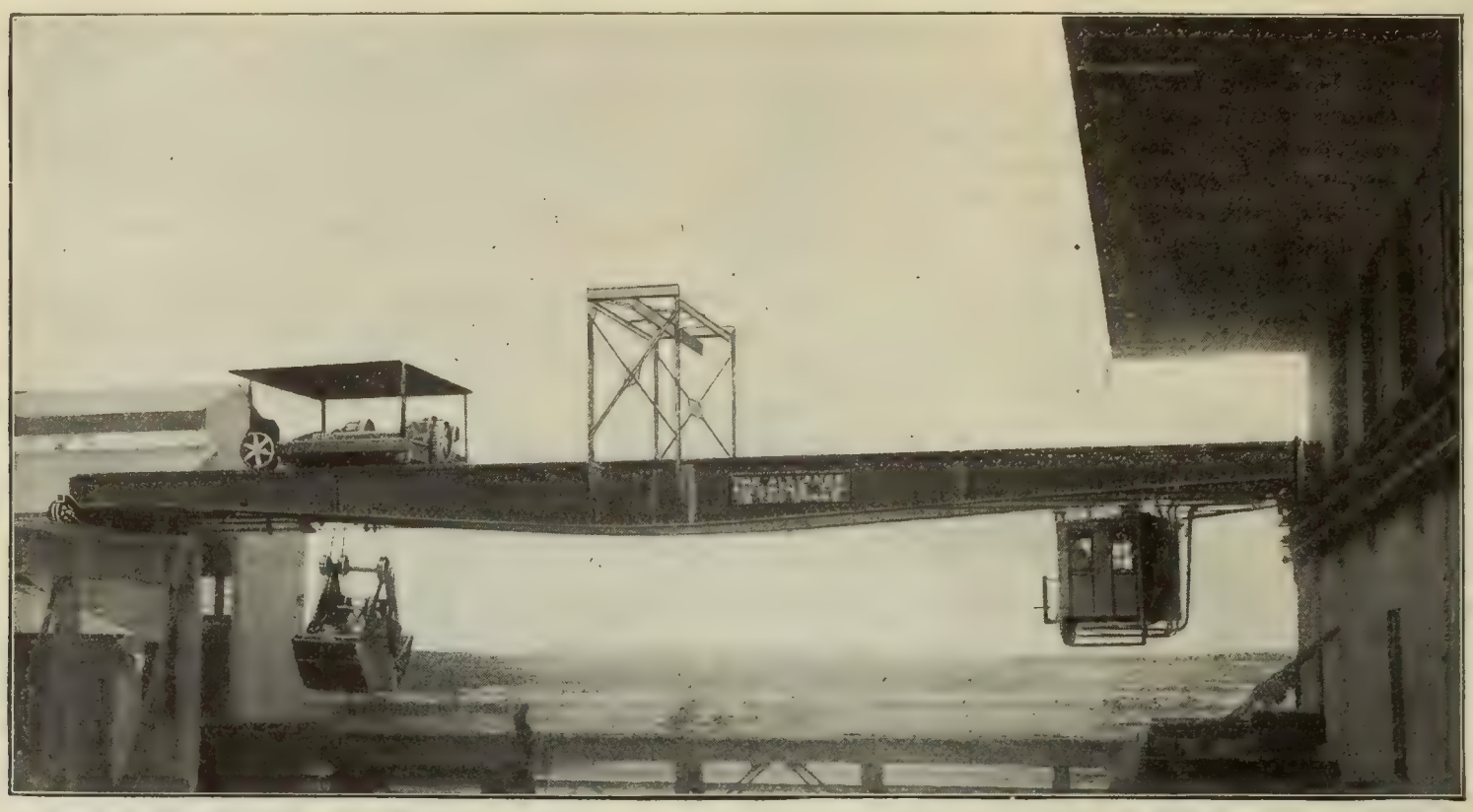
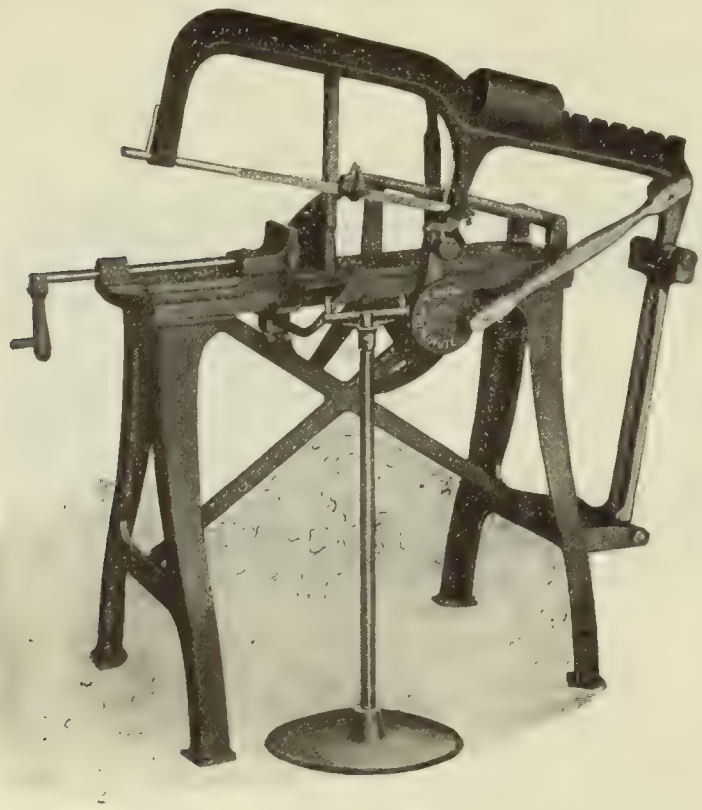


Fig. 3.—A 10-Ton Alliance Bucket Crane at the Indiana Harbor, Ind., Plant of the Universal Portland Cement Company.

## A Hoefer Power Metal Saw.

The new power metal saw made by the Hoefer Mfg. Company, Freeport, Ill., illustrated in the accompanying



A New Automatic Power Metal Saw Made by the Hoefer Mfg. Company, Freeport, Ill.

engraving, has met with favor among users by reason of the simplicity of its construction and operation. It is light, compact and durable, but the most important feature claimed for it is that a steady and uniform pressure is maintained on the saw blade during the forward stroke, while on the return stroke the weight is lifted from the blade due to the pivoting of the connecting arms. The result is longer life and saving in the maintenance of the blades. The machine requires no attention after the work is secured in the vise and the saw started, and can be easily operated by a boy.

The saw accurately cuts off the work and leaves the end square and smooth, thus accomplishing a saving in the metal. When the cutting is completed, the saw automatically lifts from the work and stops. The automatic operation and simplicity of this saw are features which will appeal to seekers of labor saving tools. It is made in two sizes: No. 1 cutting round or square stock up to 4½ in., and No. 2 cutting up to 6 x 8 in. The floor rest shown in the illustration is furnished with each saw without extra charge. The saw can be readily equipped with motor or belt drive.

## The American Manganese Bronze Company.

The American Manganese Bronze Company, 99 John street, New York, announces the completion of its works at Holmesburg Junction, Philadelphia, on the New York Division of the Pennsylvania Railroad. The buildings are of reinforced concrete and steel framework construction, with brick curtain walls, and consist of melting plant and foundry, metal storehouse, core shop and office, with complete chemical and testing laboratories, light and power plant and machine shop.

The main building is equipped with a 10-ton Niles electric crane, which, together with a one-ton electric hoist, serves the entire plant. Special attention has been given to light and ventilation. The plant is equipped with pneumatic tools for the cleaning of castings, and its 600 ft. of siding running the entire length of the plant insures economical handling of raw material and shipments. Nothing has been omitted in the construction of the plant that would tend to make it thoroughly modern and up to date in every particular.

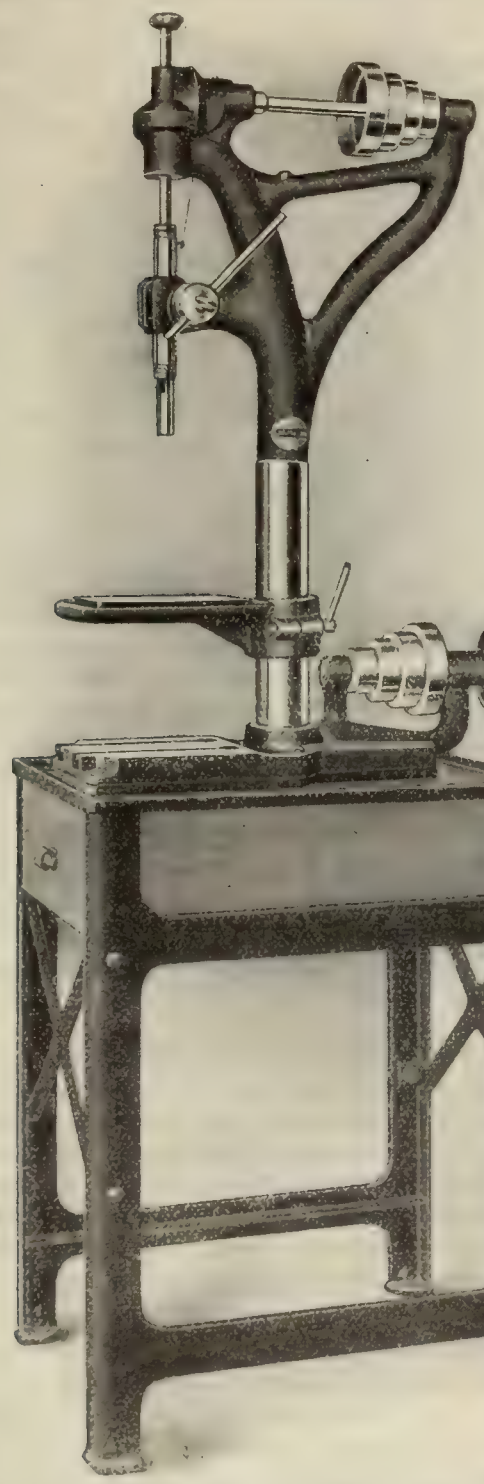
The products of the American Manganese Bronze Company comprise ingots, billets, forgings, rods and sheets, together with both large and small castings. It has the facilities to supply bronze castings up to 20,000 lb. each, and in this particular it occupies the unique position of being able to produce the largest bronze castings in this country. In addition to its special Spare's manganese bronze, Spare's white bronze and Spare's hydraulic bronze alloys, the company produces standard United States Government compositions and other high grade alloys designed to meet the most severe engineering requirements. U. T. Hungerford is president and W. A. Locke is secretary and treasurer.

## The Stecher High Speed Bench Drill.

The high speed bench drill here illustrated has just been brought out by the Charles Stecher Company, 19 South Jefferson street, Chicago. It is designed for light work, having a capacity for drilling up to ½ in. holes, and is described as an especially desirable machine for tool room and manufacturing purposes.

The drill spindle has four speed changes supplied by a four-step cone and is driven through a pair of mitre gears. To secure steadiness of motion and quiet operation at high speeds a rawhide gear is used on the horizontal shaft; the mitre gear on the spindle is a cut cast iron gear. These gears are of eight pitch and of ample dimensions for the speed and power service required, and are inclosed in a tight case.

The drill spindle is counterbalanced, has extra long travel, and is provided with an adjustable stop collar on its upper end. It is also provided with a ball thrust



A High Speed Bench Drill and Bench Made by the Charles Stecher Company, Chicago.

bearing at the lower end of its sleeve, and the drift hole is below this bearing. The lower end is bored for a standard No. 1 Morse taper. The hand lever for feeding the drill is adjustable in position. It operates the spindle sleeve through a cut steel pinion engaging rack teeth in the sleeve.

The base, 8 x 10 in. in size, is planed and has two T slots for jig work. It is cast in one piece with the countershaft frame, which carries a four-step cone for 1-in. belt, and tight and loose pulleys 5 x 1⅛ in. The table clamped to the column by a split collar has lateral and perpendicular adjustment and can be dropped all the way down to the base. There is an oil groove cast around the table.

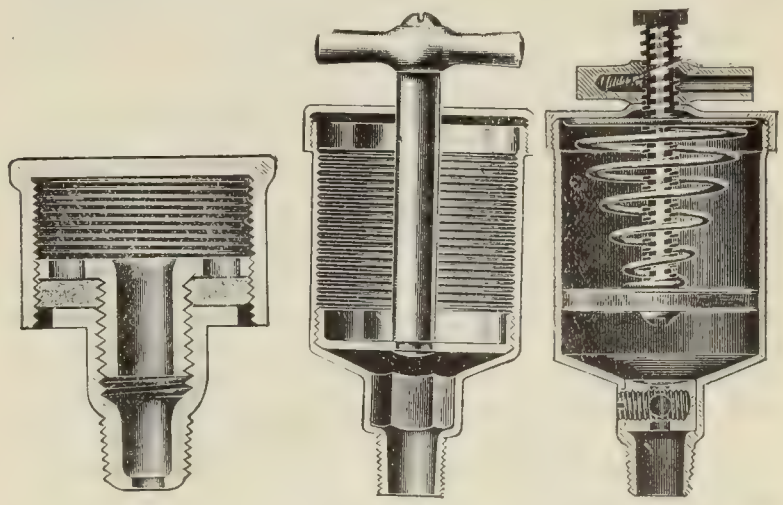
All bearings are split to provide for taking up wear and are bushed with seamless brass tubing; no babbitt is used in the construction of the drill. By the use of jigs and special tools all machined parts are made interchangeable. Though the drill is rated for a safe working speed of 2400 rev. per min. with high speed drills, the highest speed recommended for ordinary work is 1200 rev. per min.

The company also makes the drill bench shown in the engraving, which is specially designed for the convenient mounting of the drill. It is constructed of a well braced cast iron frame and is fitted with a wooden tool drawer for storing drills and other tools.

The general dimensions of the drill are as follows: Swing, 10 in.; size of table, over all, 8 x 10 in.; maximum distance table to spindle, 14 in., and of bed to table, 18 in.; diameter of spindle, ⅝ in.; feed of spindle, 4 in.; hight over all 41 in., and net weight, 130 lb.

## The Empress Grease Cups.

The Bowen Mfg. Company, Auburn, N. Y., claims to be the first to make a line of spring compression and marine grease cups from sheet metal. Illustrations are herewith given of some of the leading styles of these cups, which are placed on the market as the Empress line, and are made in steel or brass. The illustrations are sectional, so as to show the interior construction. The engraving marked No. 1 is the plain compression cup, No. 2 is the marine compression cup and No. 3 is the spring compression cup. The plain compression cup is fitted with a leather washer. The leather can be adjusted by a spanner to a tight fit at all times, making a



No. 1. No. 2. No. 3.

Sectional Views of Some of the Empress Grease Cups Made by the Bowen Mfg. Company, Auburn, N. Y.

leakage of grease impossible, though the cup be used in a warm place. Although all these cups are lighter than cast brass or iron cups, they are stronger and of neat appearance. All the spring compression cups are equipped with a good heavy spring and an excellent feed regulating arrangement, so that the amount of grease can be regulated to suit the bearing. The company claims to be the first to place on the market a marine grease cup with a leather packed plunger. The regular pipe thread is furnished unless otherwise specified. Although the Bowen Mfg. Company but recently completed its new plant, it has since added a wing, 66 x 138 ft., four stories. In addition to the manufacture of oil and grease cups, attention is given to general brass or steel stampings and machine screw work.

As illustrating what the railroads have to meet in the way of expense, owing to the requirements of the Interstate Commerce Commission relative to the filing of freight tariffs at all stations after this year, the Panhandle Railroad furnishes an example. It finds that filing cabinets alone will cost nearly $20,000, as more than 500 stations must be covered. As the cabinets cost from $28 to $150 each, the expense to great railroad systems will be readily appreciated.

# The Working Requirement in Patent Law.

## Shall the United States Enact Such a Requirement?

BY JOHN D. MORGAN.*

The United States is to-day according rights and privileges to foreign inventors much greater than those accorded to our inventors in foreign countries. This condition was rendered more extreme, and attention called to it more forcibly, by the recent change of attitude of Great Britain toward foreign inventors.

The points of difference between the attitude toward foreign patentees of the United States and the principal foreign countries are two in number, and are as follows: First, in most countries, in addition to the fees for examination and issuance of a patent, an annual tax is imposed upon each patent, and, second, the patentee is required to "work" the patent in the granting country. In the United States, on the other hand, the patentee is required to pay only the fees required by the Government for filing the application and issuing the patent. He is not burdened by any annual tax levy nor is he obliged to "work" the patent; that is, to put the invention into actual commercial practice.

Every foreign country of any importance from a patent standpoint has long imposed such an annual tax upon the owners of patents, and with the exception of Great Britain required also a "working" of the invention. Great Britain, in common with the other principal commercial countries, imposed a tax on patents, but until about a year ago there was no requirement in the English law that an invention must be "worked" or put into commercial practice in the United Kingdom in order to maintain the validity of the patent.

### The Liberal Attitude of the United States.

The United States differs from all other important countries in the matter of the non-taxing of patents, and now with the change of attitude of England this is true also with regard to the working of patents. The practical effect of the "working" requirement is to stop the importation of the patented thing and, in some countries, to compel its manufacture within the patenting country on pain of losing the patent. The United States, therefore, now stands alone in permitting the importation of patented things, American inventors at the same time being estopped from selling abroad patented things manufactured in this country.

The proportion of patents taken out by citizens of the United States in the principal foreign countries is much greater than the number of patents taken out by the citizens of each of these countries, respectively, in the United States. Also, exports to Great Britain, France and Germany are far greater than imports therefrom, although these totals compared included in all cases raw as well as manufactured materials. In view of these facts, it seems reasonable to presume that the United States exports more than it imports of patented manufactures. It will thus be seen that the net burden of disadvantage to foreign inventors arising from the imposition of such restrictions falls upon the United States.

### The General Disadvantage.

The disadvantage falls both upon the nation and upon the individual patentee. In its national aspect it tends to turn the balance of trade in favor of the country demanding the working of inventions, as it causes to be manufactured within the country things that otherwise would have been imported. It serves thus to cut down the imports into such country while in itself not affecting the volume of export business. On the other hand, however, a very great effect on the volume of export business in a given country would be had by other countries in turn enacting laws of a similar character. In other words, the disadvantage to any country by loss in manufacturing and exports would be counteracted in some degree by that country enacting a corresponding law. Whether such a law shall be enacted is one of the questions the United States must decide. The degree in which it could be counteracted might be regarded as proportionate to the relative importation by each country from the other of manufactures patented in the importing country.

The effect nationally would be further felt as a benefit in the country requiring the working by the growing up of manufacturing establishments to supply the demand for the things upon the importation of which the law has laid its inhibition. This would likewise operate disadvantageously to the country of the patentee, as the gain in business in the specific form indicated would be drawn directly from his own country. The operation of this factor is multifold. The value of taxable property is increased by the advent of new factories, and the money expended in establishing these manufacturing plants goes to enrich the general business community. Where the foreign patentees still maintain control of their inventions, this gain is absolute; that is, the gross gain and the net gain are substantially the same. In England this will be the condition under which most of the large and important American concerns will comply with the law, as the business now supplied by importation into that country is sufficiently extensive and valuable to make this the more desirable course.

In the next place the employment of operatives in the patenting country is increased, and many such operatives are naturally among the most skilled and highest priced workmen. It will be unnecessary to revert to the more remote advantages growing out of this employment, such as the expenditure by the workmen of the greater part of their earnings with landlords and tradesmen. In the next place a new market is created for raw materials used in the manufacture of the patented thing, and usually there will be found a source of supply within the country.

This is not intended as an exhaustive analysis of the entire effects of the operation of the "working" law in the case of foreign patentees, but is intended to show that other important interests for the nation are involved outside of the national dignity or honor, or the supposed necessity of treating foreigners on the same terms that are accorded us abroad. These other interests certainly appear more substantial and tangible so far as the manufacturers of machinery and other patented things are concerned.

Yet these reasons of national dignity and insistence upon as liberal treatment by others as we accord to them are by no means unimportant. The treatment of this phase of the question, however, is political rather than commercial or industrial, and need not be discussed at any length here.

### The Disadvantage to the Patentee.

So far as the owner of the foreign patent is concerned, the requirement of working in the foreign country detracts greatly from the financial value of his patent right. The patentee usually hopes to secure his profit upon his foreign rights either by sale of the patents outright or by manufacturing the goods at home and sending them to the foreign country, depending upon his patent monopoly there to ward off competition and assure to him the profits of the monopolist rather than those of one in commercial competition.

There can be no doubt that the working requirement within a limited number of years operates disadvantageously to the sale outright of foreign patents. Large sums have been frequently paid for important patent monopolies, the demanding of such sums by the seller of the monopoly being based upon the supposed discounting of great prospective earnings, while, on the other hand, capitalists have been willing to make such payments because of the hope of duplicating the vast earnings of other inventions already successfully exploited. Negotiations in such important transactions are necessarily more or less slow, and it is not difficult to conceive of the foreign inventor being left, by such deferred negotiations and hopes, with too little time in which to effect his workings on important machines involving great outlay of time and money, and thus being forced into price concessions on his monopoly that would represent a grave loss. Outside of such contingencies, his patent monopoly is obviously depreciated in value by the mere fact that

* Of the New York Patent Bar.

unless he sells he must go to the labor and expense of working. This reasoning of course does not apply with proportionate force in the matter of small articles and inexpensive machinery. It, however, applies with tremendous force to the manufacturers of complicated and costly machines, and to patentees of extensive lines of machinery.

In case the patentee does not wish to sell his rights, the taking away of the privilege of importing frequently involves heavy losses. Important among these is the necessity for duplication of plant. The necessity for sinking a large sum in a foreign factory is sometimes a formidable thing. It is far more costly than an extension of the home factory to enable it to meet both the domestic and the foreign demands in output. Where the home factory is already adequate and designed to meet this demand, the investment in the foreign factory becomes practically a dead charge. Nor is the maintenance of an additional administrative staff a negligible matter in many instances. The organization abroad necessary for handling and selling the imported products may be insignificant compared with that required for a branch factory.

It is a fact recognized by those experienced in the mechanic arts that the mechanical genius of the workmen of different nations runs in different lines and that machinery which might be manufactured in one country with practically no difficulties along this line might be almost impossible of production in another country. It would be impracticable to convey to one unfamiliar with manufacturing processes the seriousness, or even the existence, of difficulties of this character. To those who know, either from experience or observation, further comment is unnecessary. It is well known to those informed along such lines that in this country certain kinds of machines which are manufactured successfully in certain States could not be produced at all in others under existing industrial conditions, even when those others are active along other mechanical lines.

### Effect of Change of Attitude.

It will not be difficult, therefore, to realize what an important question to foreign patentees and manufacturers is this question of working of patents in a particular country. It will be understood further how those difficulties are intensified through a sudden change of attitude upon such a question by an important consuming nation such as Great Britain. The necessity of action in order to save vested and exceedingly valuable interests is thus forced upon many concerns. That this works injury to the nation as well as to the individual cannot be doubted. Further, while the legal right of a nation to such a change of front in a matter of this kind may not be open to challenge, yet its moral and commercial right to do this may be questioned. In fact, it may be found that the injuries inflicted on foreigners who have long had commercial relations with the country may be such that the home government of such foreigners may feel it their duty to retaliate in kind.

With respect to Germany, the conditions have been stable for many years, and though conditions were disadvantageous both to the United States as a nation and to its citizens holding patents in Germany, the conditions were foreseen and foreknown. In Great Britain, however, this was not the case, and American manufacturers feel that the English law was aimed directly at them. It cannot be doubted that the inroads upon English commerce by German products protected by English patents were also an important factor. This condition obtained especially with regard to electrical machinery and the products of industrial chemistry. In the first field Germany is a strenuous competitor of the United States, and in the second she is without a rival.

If, however, it had been the purpose of the English Parliament, acting in response to the pressure of English commercial influences, to shut off German competition alone, its law could have been framed to apply only to nations which placed the same requirements upon English inventors. That the law was not so framed is regarded as showing unquestionably that the heavy importations of commercial and special machinery from the United States above and beyond all else actuated the English commercial interests in demanding such a law of Parliament.

### What Will Determine the Attitude of the United States?

The question of whether or not the United States will enact a similar law will probably come before Congress at the next session. Whether such a law is enacted will depend especially upon whether the conditions which brought about the passage of such a law in England will obtain here. That is, it lies with the manufacturing interests of the country to bring to bear upon Congress such pressure as to secure the enactment of a "working" law, if it is to be passed. If there is no such demand from industrial circles, it is highly improbable that the principle of retaliation or maintaining an attitude of equal dignty toward foregn nations will serve to bring about the enactment of such a law. In passing, it is well to remember that the American high tariff is somewhat of a sore spot in the consciousness of both England and Germany, and the conditions which brought the tariff system into being were very similar to those which caused the enactment of the provision of the English patent law under discussion, namely, an overwhelming internal commercial sentiment operating against and overcoming a known disapproval by other countries.

Another factor entering into the question of whether the United States shall change its attitude on this subject is a different interpretation of the fundamental moral or common law right underlying the statutes authorizing the granting of the patent monopoly. The German law lays the requirement of "working" a patent upon both native and foreign inventors alike. The new English statute puts it upon foreign inventors only. The United States has left immune from such a requirement both native and foreign inventors.

It will be seen, therefore, that the basic ideas of what constitutes a dedication by the inventor of his invention to the public, or in other words what constitutes a giving of his invention, are different in the United States and in Germany. In this country it is held sufficient that an inventor merely gives what may be called an intellectual disclosure of his invention to secure a bestowal upon him of the patent monopoly, while in Germany an eventual actual commercial exploitation is considered as the disclosure which bestows upon the inventor the right to his monopoly. England, by adopting a different attitude toward native and foreign inventors respectively, departs from any consistent basic principle upon which to base the granting of patents generally. The foregoing is not an adequate ultimate analysis of this point, but is probably sufficient for the purposes of this article.

### Wording of the German and English Laws.

The provisions as to "working" in the German and English patent laws, respectively, are as follows:

GERMANY.

A patent can be revoked after the lapse of three years, calculated from the day after the publication (Sec. 26, Sec. 1) of the grant of the patent:

1. If the patentee neglects to work his invention in the country (the German Empire) to an adequate extent, or to do all that was requisite for securing the said working;

2. When it appears conducive to the public interest that permission to use the invention be granted to others, and the patentee refuses to grant such permission for a reasonable compensation and on good security.

ENGLAND.

1. At any time not less than four years after the date of a patent and not less than one year after the passing of this act, any person may apply to the comptroller for the revocation of the patent on the ground that the patented article or process is manufactured or carried on exclusively or mainly outside the United Kingdom.

2. The comptroller shall consider the application, and if after inquiry he is satisfied that the allegations contained therein are correct, then, subject to the provisions of this section, and unless the patentee proves that the patented article or process is manufactured or carried on to an adequate extent in the United Kingdom, or gives satisfactory reasons why the article or process is not so manufactured or carried on, the comptroller may make an order revoking the patent either:

(*a*) forthwith; or

(*b*) after such reasonable interval as may be specified in the order, unless in the meantime it is shown to his satisfaction that the patented article or process is manufactured or carried on within the United Kingdom to an adequate extent:

Provided, that no such order shall be made which is at variance with any treaty, convention, arrangement or engagement with any foreign country or British possession.

3. If within the time limited in the order the patented article or process is not manufactured or carried on within the United Kingdom to an adequate extent, but the patentee gives satisfactory reasons why it is not so manufactured or carried on, the comptroller may extend the period mentioned in the previous order for such period not exceeding 12 months as may be specified in the subsequent order.

4. Any decision of the comptroller under this section shall be subject to appeal to the court, and on any such appeal the law officer or such other counsel as he may appoint shall be entitled to appear and be heard.

No discussion is necessary to show that the English statute is specifically directed against importation and sale of patented articles, whereas the German law, as previously stated, seems to be directed against nonuser of all patents in the German Empire.

**What Has Been Done.**

Various bills were introduced in the last United States Congress looking to the enactment of a law upon this subject. If such a law is passed, however, it will be the result of careful consideration between the patent committees of the two houses of Congress and the Commissioner of Patents. There is no doubt, however, that all three of these will be glad to have an expression of opinion both from patentees and manufacturing concerns who would be affected, and also from those who are versed in the patent laws of the various countries.

**A General or Retaliatory Statute?**

One question which must be decided at the very outset is whether the law will be a general law changing the policy and attitude of the Federal Government toward all patentees or whether it will be frankly in the nature of retaliatory legislation. In the United States the doctrine that nonuser of the patented invention does not abrogate or invalidate the legal rights of the patentee has the sanction of the Supreme Court. There is even a question as to whether every whit as much protection would not be given to the nonusing patentee as to the one who has commercially exploited his invention.

There has developed, therefore, in the United States a tremendous array of what is known as "paper patents"; that is, patents which never have and never will be used industrially by the patentees or owners. So it will be seen that wrapped up with this question of our attitude toward inventors of foreign nations is that of a change of attitude toward native inventors. Should the United States decide to impose working requirements only upon inventors from countries making similar requirements upon our inventors, its action would be merely that of adopting a retaliatory attitude toward those governments, while if the requirement were made general it would mean a change of attitude amounting to a revolution in the basic theory of our patent law.

A general law, therefore, requiring working by all patentees would amount to a reversal of attitude which, even were Congress to attempt it, would be effectually prevented by the strenuous opposition of many great interests, including concerns depending on unused patents to protect their businesses, which are opposed to any change of attitude in this respect. Should a frank retaliatory measure be enacted, there would of course be nothing to disturb the serenity of the internal or domestic patent situation.

**The Effect Abroad.**

On the other hand, it would not be at all astonishing if a certain part of the English manufacturing and commercial world should awaken to a sense that it was being hurt, perhaps seriously, by such an American law. Its only strong argument, however, in the face of the maintenance of the English law against American patentee importers, would be that we were throwing a double protection around our manufacturers—first, by our high tariff on manufactured articles and, second, by the specific inhibitory legislation which we have been considering. Nor is this entirely without force. Imagine the English patentee with a superior article, perhaps, confronted by an import duty of, say, 40 per cent. He would maintain that this handicap alone was surely equal to that imposed upon the American patentee who was obliged to manufacture in England.

The practical answer to this, however, is that the tariff is an old story and the English working law a new one, and that as England has seen fit at this time to disturb the commercial equilibrium she cannot use as an equilibrating factor any disadvantages against herself that were counted in to make a former balance. Furthermore, representations made to Great Britain by the United States on the subject of the English law were without effect; hence it is unlikely that the English Government would take any active steps whatever. The English manufacturer affected by such a law here would probably be left, as were American importing patentee manufacturers by England, to find his own way out of his difficulties.

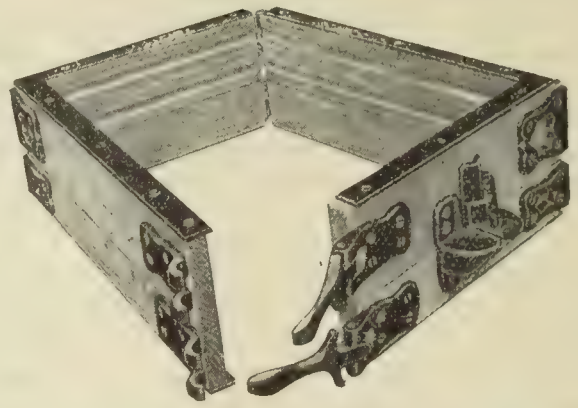
If Germany should wish to protest on the ground that our law was aimed against foreign importers only while her own law was a general provision applicable to Germans and others alike, our own Government might in reply refer to a tariff system which in many of its features was not confined to manufactured articles, and certain of whose provisions were aimed directly at American importations wholly commercial as distinguished from technical or industrial products.

**A Law Should Be Passed.**

In fact, the passage of such a law by the United States would seem to be entirely justified either on the basis of industrial necessity or that we cannot consistently accord to citizens of other countries privileges denied American citizens in those countries, or on the other hand that the imposition of equal requirements by the Government of all important industrial countries of restrictions against foreign inventors might lead to a mutual waiver of such restrictions when other means looking to that end fail. That the United States is at present in an undesirable position in this matter seems hardly open to question. That the future attitude of the Government in the matter will depend largely upon the expressions of the industrial and manufacturing elements interested is also equally certain.

## The Obermayer Molding Machine Snap Flask.

The new flask for machine molding recently put on the market by the S. Obermayer Company herewith illustrated, is claimed to combine all the good points



The Obermayer Molding Machine Snap Flask.

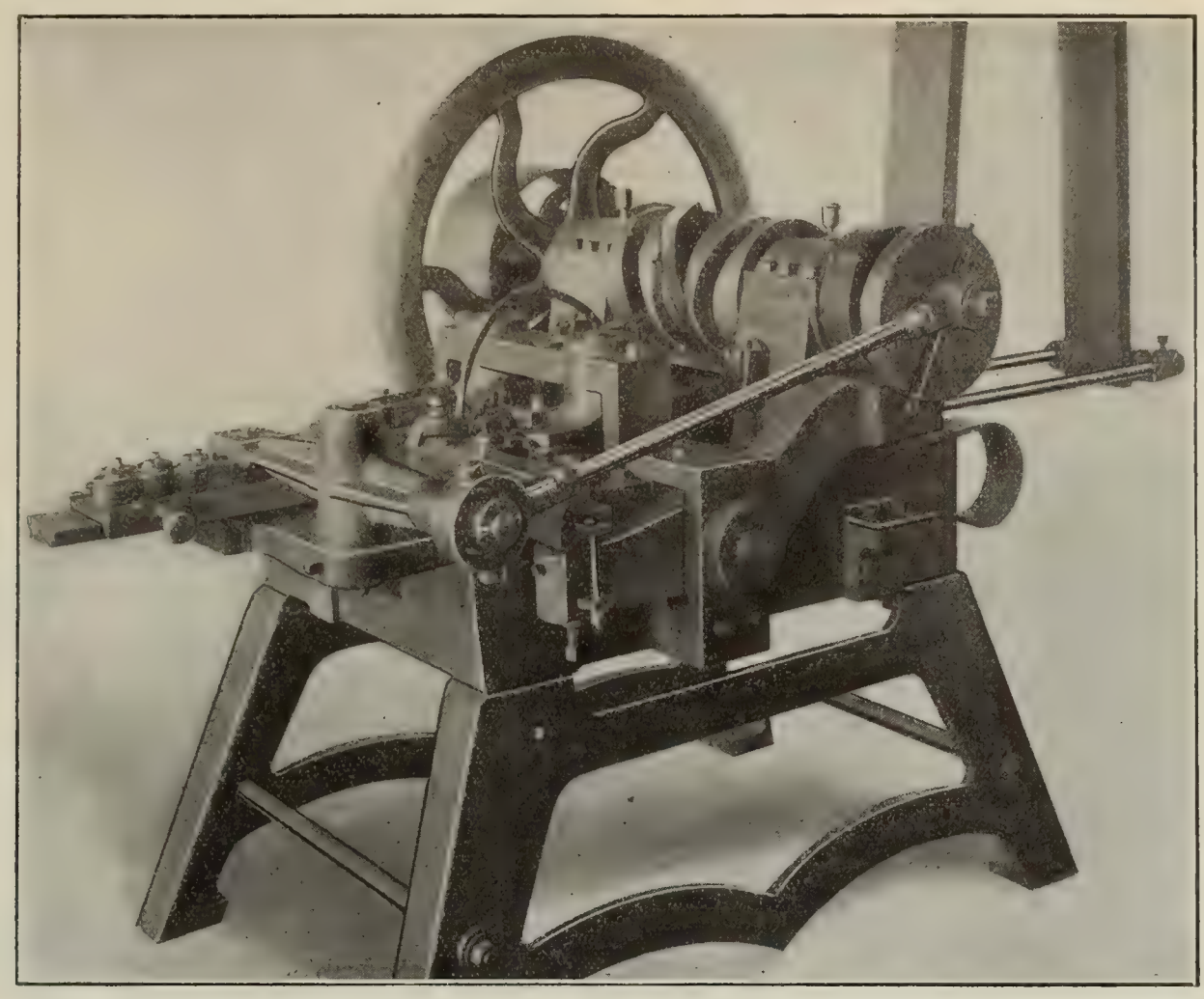
needed in a flask of this kind. It is made of 1⅛-in. kiln dried cherry, grooved, has machine locked corners, is bound top and bottom with iron bands, securely screwed to the flask with solid corners welded. A perfectly rigid flask is thus secured. The corner plates are of extra heavy malleable iron. The hinges are also malleable with machined bearings the entire length of the flask. The hollow V-shaped pin and guides insure close contact and permit the sand to drop between the pin and flask. The snap used on this flask is simple, strong and efficient, and made either in the hook or lever type. It can be procured from the S. Obermayer Company's offices in Cincinnati, Chicago or Pittsburgh.

The New England Foundrymen's Association held the second of its summer outings at the Squantum Club, Providence, R. I., August 14, with a large attendance, the attraction of a Rhode Island shore dinner being always a strong one. The Committee of Arrangements consisted of Henry A. Carpenter, General Fire Extinguisher Company; Alfred J. Miller and William A. Viall of the Brown & Sharpe Mfg. Company, all of Providence.

## The Perkins Spiral Head Wire Nail Machine.

The new spiral head wire nail machine shown in the illustration forms large thin heads on nails for slating, roofing, or other purposes where such a head is desired. It is declared to embody the best features of the domestic and foreign nail machines, together with improvements suggested by the experience of the builder, the Henry Perkins Company, Bridgewater, Mass. The machine will make a ½-in. head on No. 9 wire, or a regular head on No. 6 wire. It is liberally proportioned, with main spindle bearings 4 x 7 in., and all wearing surfaces larger and longer than is usual in machines of this size. The spindle, header and gripping lever carrying the moving die are open hearth steel forgings, and all parts subject to heavy duty are of tempered tool steel.

The spring that makes the head is of hickory, fastened at the base by straps to a heavy cast iron V-block, and is reinforced at the base by flat steel springs ⅜ in. thick by 3 in. wide, and at the working end by a heavy spiral spring. The dies are of stock 1½ in. square for the gripping dies and ¾ in. square for the pointing dies, and each is fastened in the machine by a strap bearing on the corner of the die in the same way as in the regular Perkins machine, permitting the dies to be taken out and replaced when necessary in much less than the time usually required. The mechanism to feed and straighten the wire in its reverse or backward motion works in a half revolution of the machine. The machine can be run at 110 revolutions a minute, and weighs 3700 lb.

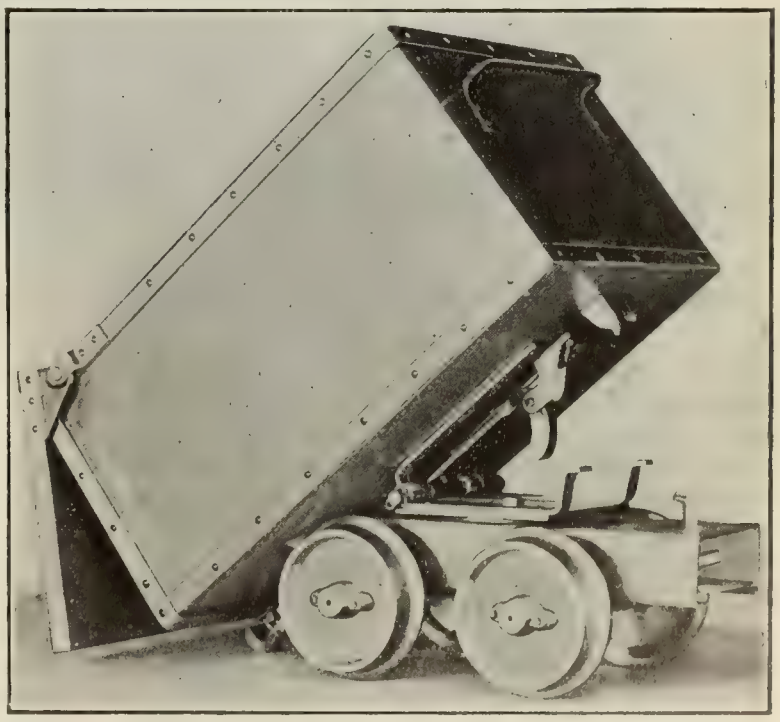


The New Spiral Head Wire Nail Machine Built by the Henry Perkins Company, Bridgewater, Mass.

## A New Kilbourne & Jacobs Mine Car.

A mine car having a unique mechanism for automatically discharging the load, is a new product of the Kilbourne & Jacobs Mfg. Company, Columbus, Ohio. The door opening device is extremely simple but effective. It is comprised of a rod, one end of which is pivoted to an eccentric locking cam, the opposite end being attached to the lock. The lock consists of a pivoted hook, the pivot of which slides in a yoke having a curved bearing surface. When the door is locked, the pivot is within the yoke and the hook is held upright, while the locking cam is against the face of the turntable. On raising the car body to an angle of seven or eight degrees, the locking cam is released and the weight of the load opens the door. The door is securely locked again by merely righting the car. The whole device is entirely beneath the car body, so that it is protected from injury.

Among the important features, the durable construction of the door and the method by which it is attached, together with the strength of the hinges, are prominent. The door is reinforced at the top and bottom by strong bars, and its side edges are flanged. The hinges consist of triangular gusset plates reinforced at the pivot and working on individual hinge bolts. There is no rod across the car, and no obstruction is offered by the hinge bolts either inside or outside of the car.



An Automatic Dumping Mine Car Made by the Kilbourne & Jacobs Mfg. Company, Columbus, Ohio.

The H. L. Dixon Company, Pittsburgh, Pa., has lately taken the sole agency for the Herrick patented gas producers in the United States and Canada for their exclusive use in the glass trade and its adjuncts. All other contracts for these producers between James A. Herrick, New York, and his former agents have expired by limitation.

# The Turner-Fricke Gas Engine.

## Some Improvements in a Standard Type of Vertical Engine.

The type of gas engine illustrated herewith is the result of over 10 years of experience with installations in various kinds of continuous and intermittent service. These engines are built in sizes ranging from 25 to 325 h. p. by the Turner-Fricke Mfg. Company of Sharon and Pittsburgh, Pa. The design upon which they are built, as stated by the company, is simply the harnessing of old successful principles in a good substantial machine, made in consideration of the fact that every machine in active service needs occasional adjustment and repairs. These, however, are minimized by extra large wearing surfaces on all moving parts, and by having all stationary parts extra heavy and rigidly constructed. The Turner-Fricke gas engine, of which a perspective view is given in Fig. 1, is of the four cycle, multiple cylinder, vertical, inclosed type. Large covered manholes—both front and rear—are provided so that all moving parts are easily accessible for inspection or adjustment, and, in addition to a splash system, the main and crank journals are lubricated by a forced feed system.

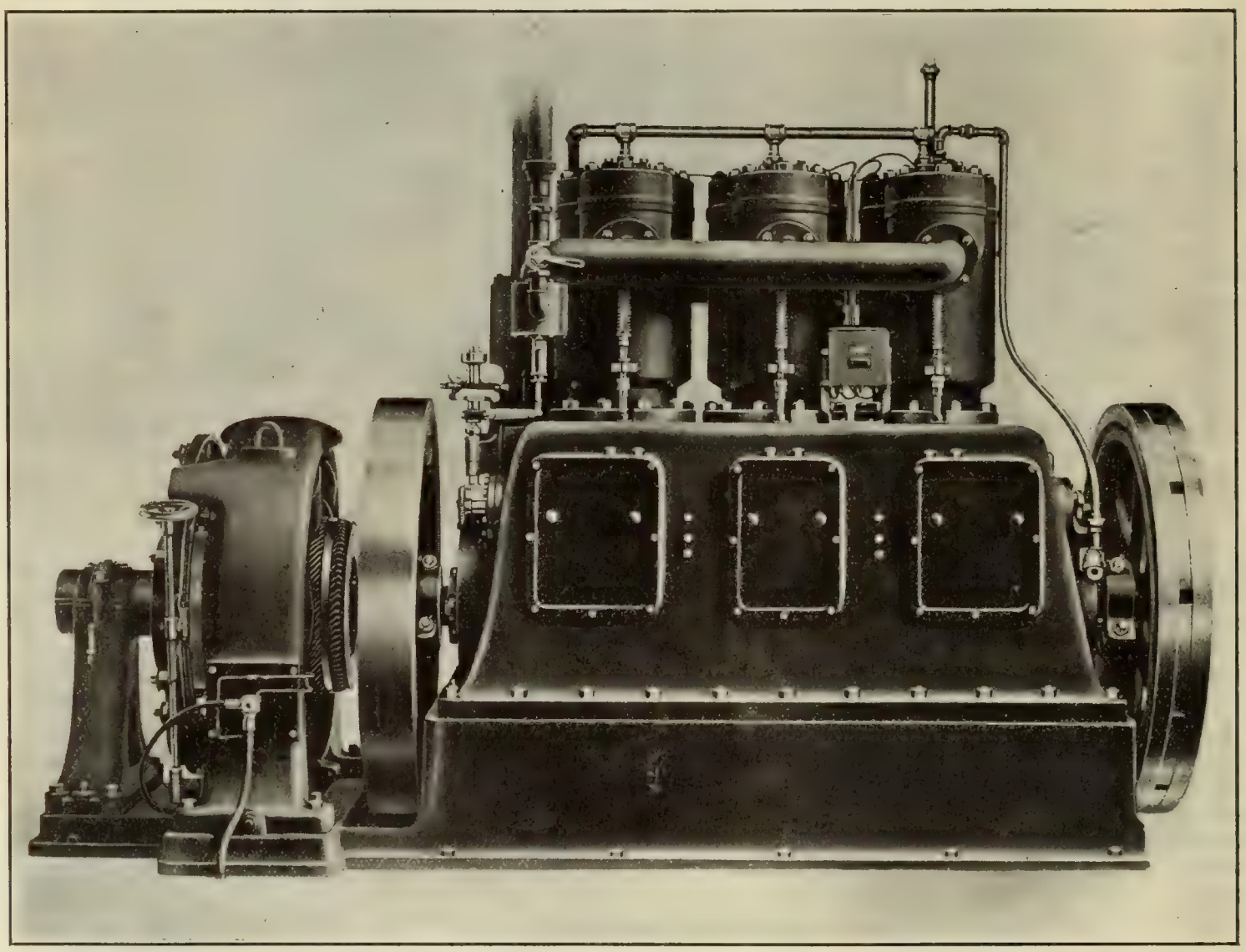


Fig. 1.—A 150-Hp. Turner-Fricke Gas Engine Directly Connected to a 90-Kw. Generator.

Occasionally an engine is wrecked or put out of service temporarily by the breaking of a crank shaft from no apparent cause. In almost every case this is due to the imperfect alignment of the main bearings. This springs the shaft, gradually crystallizes the steel and ultimately results in a fracture and the accompanying losses. In the engine here illustrated the crank shaft bearing pillow blocks are cast as a part of the base, which makes it impossible to disturb the lateral alignment of the crank shaft. To facilitate accurate machining, and thus establish the correct and permanent line for the shaft, the engine base has been cast separately from the crank case. Being a single acting engine, the wear on the bearings is on the lower half. The shaft is in alignment when up against the bearing caps, which are bolted, without shims, to the top of the pillow blocks, and thus fixed in their correct location. Adjustment for wear is easily made by means of wedge bolts. No outside reference marks or loose gauges are required for aligning the shaft; danger of springing the shaft is entirely eliminated; and compression in the cylinders is not decreased by the shaft gradually wearing to a lower center.

Valve trouble is one of the chief grievances of gas engine operators. This may arise from various causes, as follows: Inadequate cooling, poor materials, faulty actuating mechanism, or improper location. It is essential that the seat be sufficiently and evenly cooled to prevent burning or warping. Locating a valve in a removable cage does not give the benefit of water jacketing on account of the distance between the valve seat and the water, which this arrangement necessitates. It has been repeatedly proved that metal-to-metal is a good conductor of heat only when the joint is fused or a tightly driven fit. Using poor material causes the seat to pit and cut, and makes it impossible to maintain a tight valve even with frequent regrinding. Inferior material is also responsible for valves breaking off of the stems and getting into the clearance space between the piston and cylinder head, with disastrous results. Too often the actuating mechanism is complicated, or is not adjustable, or does not act in a straight line, thus tipping the valve on its seat and wearing the guide out of true. Generally this mechanism is located on, or so as to interfere with, some parts that should be removed for occasional inspection or adjustment.

Valves are best located on a vertical axis in a water jacket completely surrounding the seat. They should be so arranged as to be always in alignment with the actuating mechanism, which should move in coincidence with the axis of the valve. A wise precaution is to have the valve and clearance space so designed that there shall be no pockets to retard rapid combustion and complete scavenging, and still so as to prevent a valve from getting into the cylinder, should one happen to break from its stem. That these conditions give ideal results has been demonstrated in the Turner-Fricke engine, in which exhaust valves have been used in almost continuous service for more than a year without regrinding and yet showing only the slightest wear. The arrangement of the valves in this engine is shown very clearly in Fig. 2—

inlet in front and exhaust in the rear, each controlled independently by separate cam shafts. In this illustration will be noticed a small ground joint cover directly over each valve. This obviates the necessity of removing a head or breaking water connections to inspect or regrind valves. It will also be noticed that the heads carry no moving parts, and hence may be removed readily for inspecting cylinders and pistons without interfering with any of the mechanism. A section through a valve, with its water jacket, is shown in Fig. 3.

The governor is driven by means of a pair of bevel gears, from the inlet camshaft on which there is little torque or wear on account of the ease with which the inlet valves are operated, and therefore gives close and steady regulation. It is of the throttling fly-ball type, with heavy weights and stiff springs. The gas and air mixing valve, Fig. 4, is of the balanced piston type, with

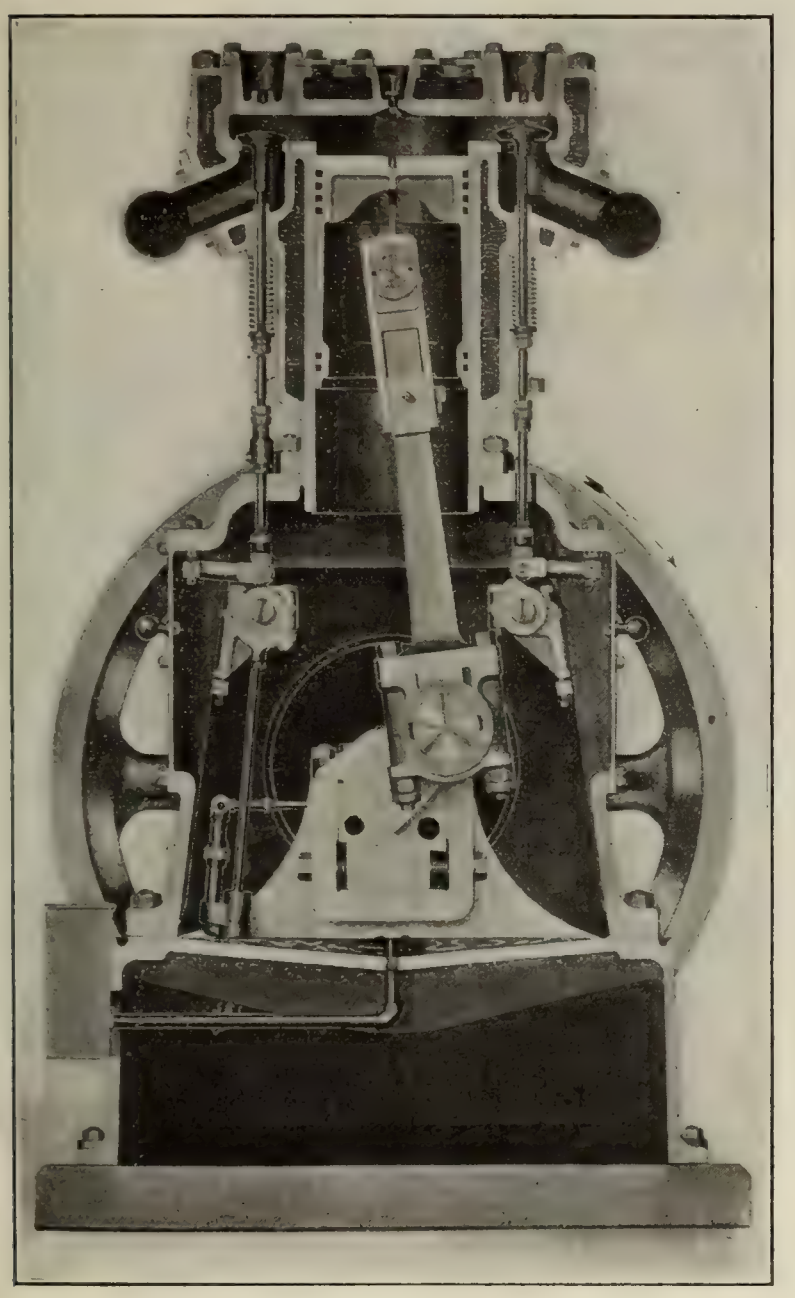


Fig. 2.—Section Through a Turner-Fricke Gas Engine.

ports so arranged that the proper proportions of gas and air are automatically maintained under all loads. The ports are so located that a thorough mixture is assured. The proportion of air and gas may be regulated by means of a hand lever while the engine is running.

Automobile builders have been responsible for many of the improvements in modern gas engines, although the developments have been of smaller size than on stationary engines. Among other things, they have impressed the advantages of a good lubricating system, which increases the mechanical efficiency and greatly prolongs the life of the wearing parts. Supplementary to a splash system, the Turner-Fricke engine has a forced feed system which is shown in Figs. 2 and 5. Oil is pumped into the main bearings, Fig. 6, thence through oil holes in the crank shaft to the crank pins. This oil, which also supplies the splash system, is drained through filters and is continually kept in circulation, flooding the bearings. The oil pump, operated from the exhaust cam shaft, together with the oil piping, is inclosed in the crank case, making it easy to keep the engine clean and giving it a neat appearance. Where only the splash system is used, there is a tendency to prevent oil from reaching the crank pin journals, due to centrifugal force caused by the high rotating speed of the cranks.

A notable feature of the Turner-Fricke engine is the

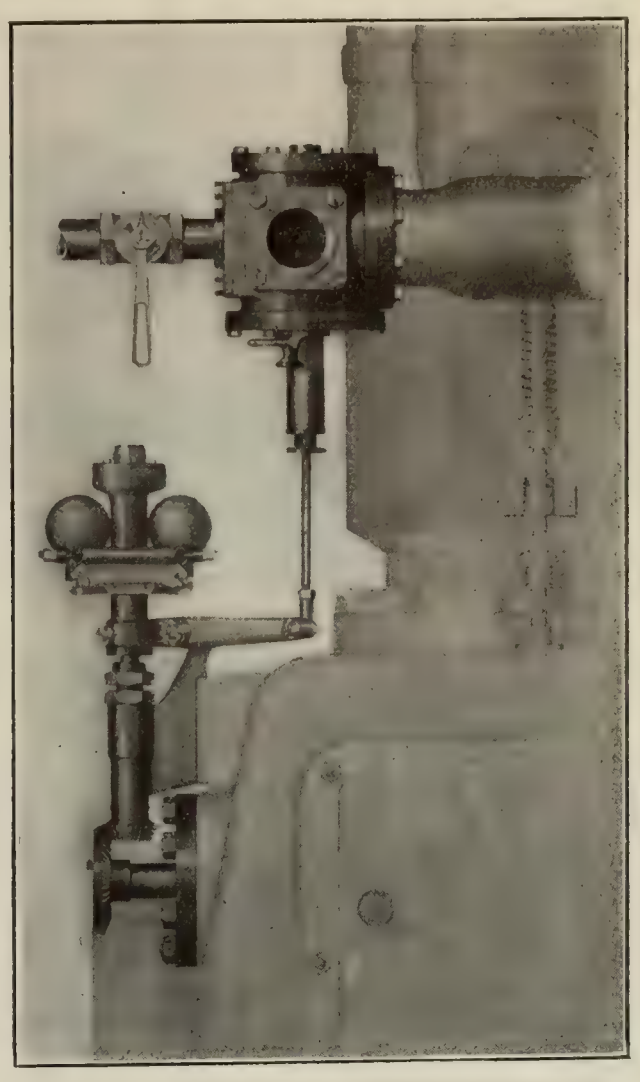


Fig. 4.—The Governor and Mixing Valve.

compressed air starting device, Fig. 7. It is actuated by a cam on one end of the inlet camshaft, and is automatically thrown into service by turning on the air supply, dropping out of use when the air is shut off. The

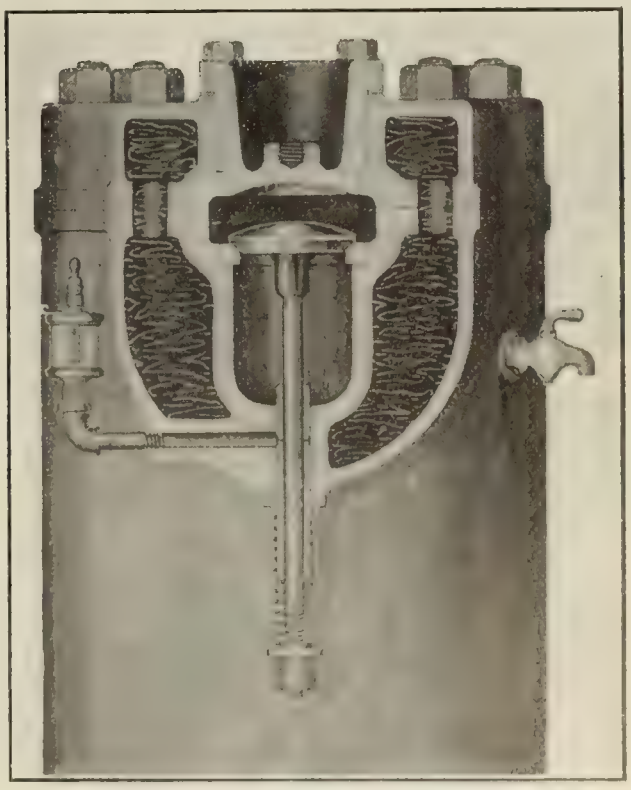


Fig. 3.—Section Through a Valve Showing the Water Jacket.

air pressure takes the place of springs, and there are no small valves or mechanism to get out of order. A simple jack on the exhaust valve push rod enables the valve to be kept open to prevent compression in one or more cylinders while starting the engine. A special device is provided on the inlet valve to keep it closed while start-

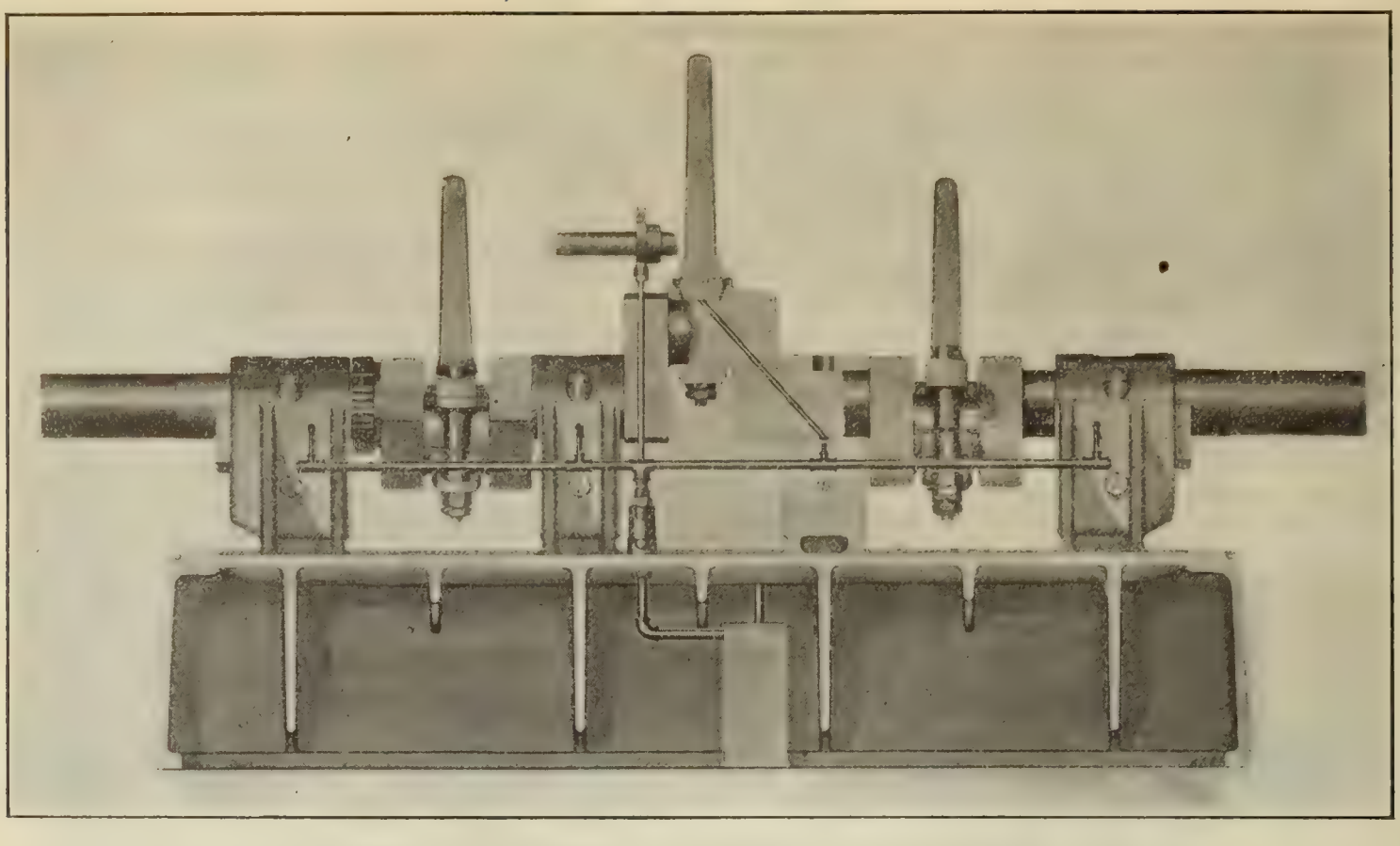


Fig. 5.—Section Showing the Forced Feed Lubricating System.

ing with compressed air. These contrivances also enable the operator to cut out any cylinder while the engine is running.

Complete satisfaction has been derived from the use in this engine of jump spark ignition. Besides presenting mechanical and electrical advantages which should not be overlooked, there are no springs to stick, no push rods or lever arms to adjust and oil, and no transmission mechanism to keep in repair. A small adjustable timing device on one end of the exhaust camshaft regulates the time of ignition of the explosive mixture. The igniter plug enters the center of the compression space through the cylinder head, and is well water jacketed, thus assuring long service and preventing premature explosions. There are no pockets in the clearance space to cause slow combustion or to retard scavenging, and no projections to become overheated and cause premature explosions or "back shots." The location of inlet and exhaust valves on opposite sides of the cylinder permits the fresh incoming charge to sweep out almost all of the spent gases, and leave a rich, quick igniting mixture for every impulse.

The finished parts of the engine are made in accurate jigs and templates by machines especially adapted to this particular grade of work. This assures interchangeability of like pieces, and minimizes the number of patterns and castings necessary to be carried in stock for construction purposes and for emergency repair cases. All nuts, bolts, and, in fact, all parts that might otherwise possibly work loose, are securely locked and pinned, thus safeguarding against mishaps.

By means of the large covored manholes in the crank case, all of the moving parts—including the upper end of the connecting rod—are easily accessible for inspection and repairs. Lack of consideration for the operating engineer, making it irksome for him to care properly for his engines, generally results in costly repairs and loss of time, which would have been prevented could he have made regular inspections conveniently.

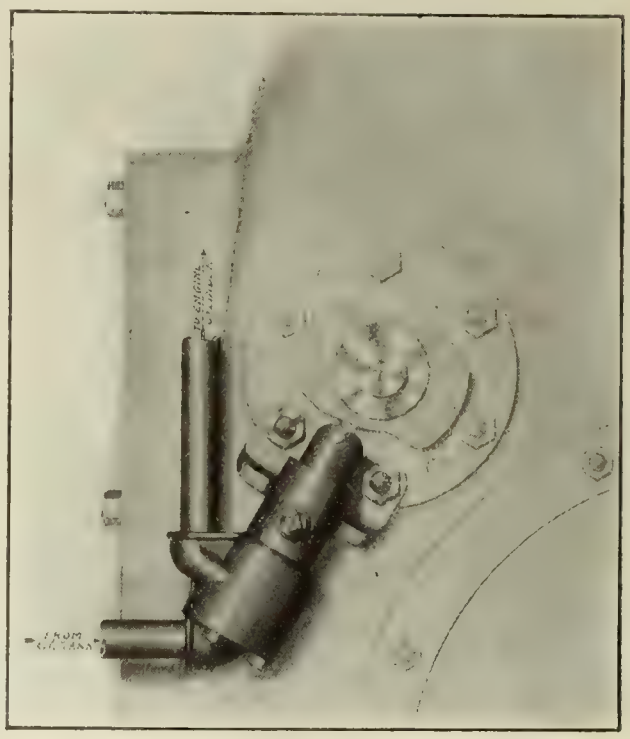


Fig. 7.—The Compressed Air Starting Device.

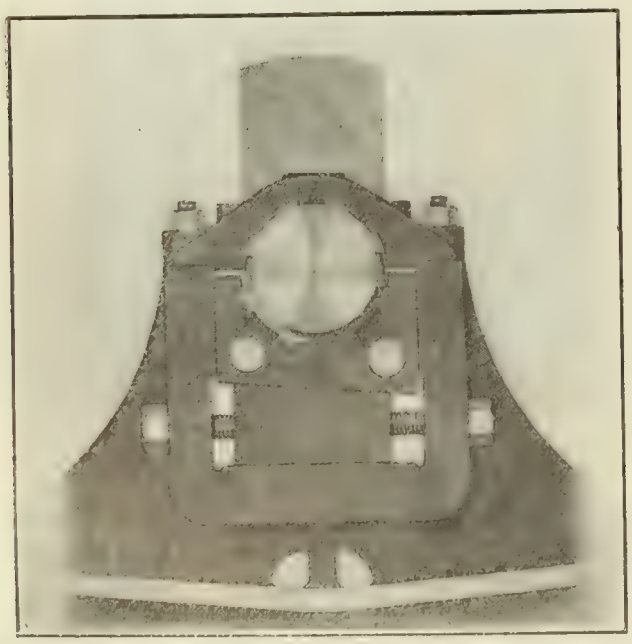


Fig. 6.—Main Bearing of a Turner Fricke Gas Engine

With the present competition among engine builders, it is essential that a gas engine which would maintain a hold in the trade should be properly designed and constructed so as to run smoothly, quietly and continually, capable of handling varying loads steadily and efficiently, and with a minimum cost for maintenance and repairs. Reliability, which has been satisfactorily attained in the high grade gas engine, is a very important factor, in view of the loss which an unexpected shut-down entails.

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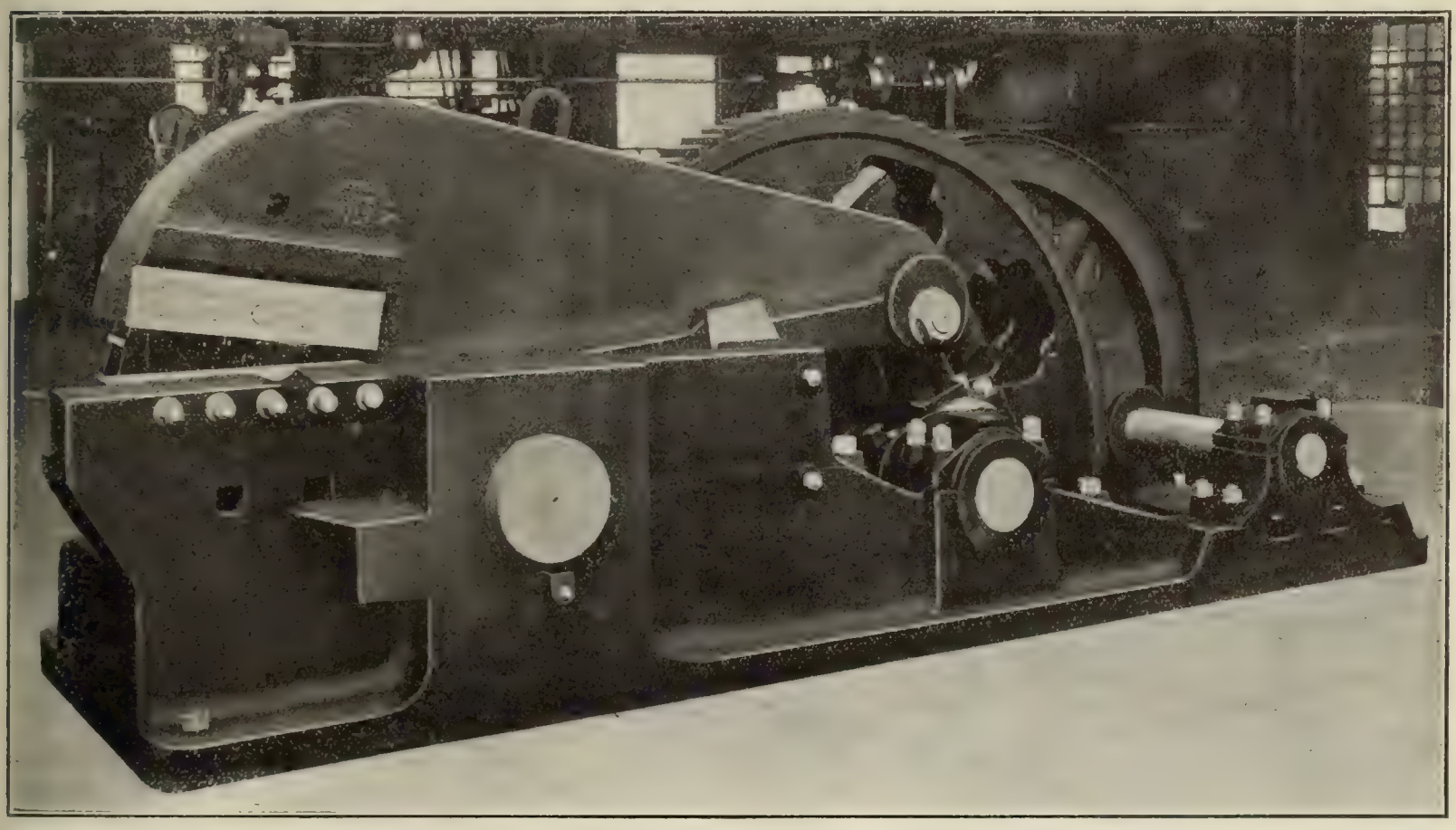
The Crucible Steel Company of America has completed the removal of its entire stock of steel and bar and sheet copper from its old quarters at 64-66 South Clinton street, Chicago, to its new warehouse at 117, 119 and 121 West Washington boulevard, Chicago.

## A Large Mesta All Steel Shear.

The special feature of the large shear shown in the accompanying engraving and recently built by the Mesta Machine Company, Pittsburgh, Pa., for the Central Iron & Coal Company, Lebanon, Pa., is that all of its castings are steel. These include not only the lever but also the entire bed and housing. Steel castings were used instead of cast or air furnace iron to meet the heavy service brought about by the increase in section in so much of the material now being rolled.

This shear, which has a capacity of 6 x 6 in. cold steel of 0.5 per cent. carbon is designed to operate at the rate of 12 cuts per minute, and, as seen in the illustration, is belt driven. The weight is 145,000 lb. The knives are 30 in. long, and, following the customary practice, are reversible, thus affording four cutting edges. The main pin and crank shaft are unusually large. The cast steel gear and pinion were molded on a Mesta gear molding machine, by which process all the teeth are molded from the same tooth block and machine spaced. The large gear is 10½ ft. in diameter, 4½ in. circular pitch, 14½ in. face and 17½ in. over the shrouds.

Since this shear was shipped the Mesta Machine Company has received an order from the Indiana Steel Company for the next size larger shear, which is also to be built entirely of cast steel, and is to be driven by a 150-hp. motor.



A Powerful All Steel Shear Built by the Mesta Machine Company, Pittsburgh, Pa.

**The British View of the 1000-Ft. Tower.**—Of the proposals for further New York buildings of record-breaking hights, and 900 and 1000-ft. towers, the London *Times Engineering Supplement* says: "On this side of the Atlantic it is difficult to conceive the state of the public conscience which allows and encourages the construction of lofty buildings which detract so much from the appearance of a city, which darken the streets by shutting out sunlight, and which offer no compensating advantages, for many of these high structures in New York and Chicago are not commercial successes. It may easily be shown by a few figures that the compressive strength of the steel of which the framework of such buildings is composed allows a much higher limit to the hight with a reasonable factor of safety than has so far been attained or suggested, but the increasing sections of the supporting columns to carry the enormous loads detract from the available floor area and therefore from the earning capacity. The chief limitation to hight is, however, the increased area absorbed by the system of elevators as the number of floors is increased. The elevator wells already absorb a very large proportion of the total floor area in the high structures."

## Canadian Mid-Year Pig Iron Statistics.

The blast furnaces of Canada produced 307,062 gross tons of pig iron in the first half of 1908, according to the statistics of the American Iron and Steel Association, or within a few thousand tons of their high record of 311,046 tons in the second half of 1907. This is quite in contrast with the great difference between the outputs in these two periods in the United States, due to the panic and depression. However, while 14 furnaces in Canada were in blast all or a part of the first six months of the year, only seven were running June 30. The following table gives the half yearly production of pig iron in Canada since 1905:

| | 1905. | 1906. | 1907. | 1908. |
|---|---|---|---|---|
| First half | 210,206 | 282,010 | 270,100 | 307,062 |
| Second half | 257,797 | 259,947 | 311,046 | ..... |
| Totals | 468,003 | 541,957 | 581,146 | ..... |

The production of Bessemer pig iron in the first half of 1908 was 60,225 tons, against 81,887 tons in the last half of 1907 and 73,023 tons in the first half of that year. The production of basic pig iron amounted to 195,209 tons, against 179,854 tons in the last half of 1907 and 161,403 tons in the first half. The production of malleable Bessemer, foundry, forge, ferrosilicon, and other grades not enumerated above was 51,628 tons, against 49,305 tons in the last half of 1907 and 35,674 tons in the first half.

The production of coke pig iron in the first half of 1908 was 301,673 tons, against 306,772 tons in the last half of 1907 and 265,253 tons in the first half. The charcoal pig iron made in the first half of 1908 amounted to 4798 tons, as compared with 4124 tons in the last half of 1907 and 4847 tons in the first half. In addition, in the first half of 1908 and in the second half of 1907 small quantities of ferrosilicon were made by electricity.

On June 30, 1908, Canada had 16 completed blast furnaces, of which 7 were in blast and 9 were idle. Of this total, 13 are coke and 3 charcoal furnaces. In addition, 3 coke furnaces were partly erected, work on which was indefinitely suspended some time ago. In the first half of 1908 the number of furnaces in Canada actually in blast for the whole or a part of the period was 14, of which 11 used coke and 3 used charcoal.

Canada imports considerable pig iron, especially for

the manufacture of Bessemer and basic open hearth steel. In 1907 exports of pig iron to Canada from the United States alone amounted to 68,296 gross tons. Canada is also a large exporter of steel billets, slabs, &c., sending to the United States alone 64,898 gross tons in 1907.

# The Republic Iron & Steel Company.

## Report for a Year Marked by Depression.

The ninth annual report of the Republic Iron & Steel Company, covering the fiscal year ending June 30, 1908, has been published in the past week. The gross volume of business naturally showed a large falling off, being $18,693,881, as against $31,227,423 for the year ending June 30, 1907, and $26,196,439 for the year ending June 30, 1906. As will be seen in the comments of Chairman John A. Topping, there are some offsets to the unfavorable features as a reduction of about $2,300,000 is shown in current liabilities and the net quick assets are $6,713,821. The net profits for the year after deducting the maintenance charges of over $1,000,000 and $637,000 for depreciation and extinguishment, equaled 7 per cent. on the preferred stock and nearly 2 per cent. on the common. This showing was made on a volume of business approximately 54 per cent. of that of the preceding year. Thus, while tonnage was reduced 46 per cent., the profits were reduced only 42½ per cent. The improvement in conditions in recent months is shown in unfilled orders on hand June 30 amounting to 63 per cent. of the tonnage on June 30, 1907, when this figure reached high point. The following statement gives a comparison of earnings, surplus, etc., with the showing of the previous year:

| | 1908. | 1907. | Decrease. |
|---|---|---|---|
| Total profits | $3,046,619 | $5,027,741 | $1,981,122 |
| Reconstruction, depreciation, interest, &c. | 1,075,199 | 1,298,496 | 223,297 |
| Net profit | $1,971,420 | $3,729,245 | $1,757,825 |
| Preferred dividends | 1,071,887 | 1,429,183 | 357,296 |
| Surplus | $899,533 | $2,300,062 | $1,400,529 |
| Previous surplus | 3,799,994 | 3,133,283 | †666,711 |
| Total surplus | $4,699,527 | $5,433,345 | $733,818 |
| Charged off | ..... | *1,633,351 | 1,633,351 |
| Surplus | $4,699,527 | $3,799,994 | †$899,533 |

* Arrears of dividends on preferred stock.
† Increase.

The condensed general balance sheet of June 30, 1908, is compared with that of one year previous in the following:

| *Assets.* | 1908. | 1907. |
|---|---|---|
| Cost properties | $53,998,189 | $53,092,153 |
| Other investments | 863,336 | 853,949 |
| Cash deposited with trustees for redemption of notes and bonds | 2,895 | 577,995 |
| Inventories | 4,547,999 | 4,278,143 |
| Ore contract payments (ore at Lake Erie dock) | 800.906 | ..... |
| Accounts and bills receivable | 2,368,248 | 4,764,039 |
| Cash | 667,963 | 1,695,326 |
| Deferred charges (mine work) | 715,294 | 827,575 |
| Totals | $63,964,830 | $66,089,180 |
| *Liabilities.* | | |
| Common stock | $27,191.000 | $27,191,000 |
| Preferred stock | 20,416,900 | 20,416,900 |
| First mortgage gold bonds | 8,546,000 | 8,625,000 |
| Collateral trust 5 per cent. notes | ..... | 563,000 |
| Potter Ore Company bonds | 345,000 | 350,000 |
| Mineral extinguishment fund | 706,738 | 584,544 |
| Furnace relining fund | 54,707 | 125,873 |
| Fire and accident insurance fund | 237,812 | 228,071 |
| Contingent fund | 95.850 | 199,206 |
| Accounts payable | 1,362,025 | 3,047,284 |
| Ore contract balances | 96,335 | ..... |
| Taxes accrued | 103,365 | 75,078 |
| Interest accrued | 106,825 | 114,850 |
| Dividend, preferred, payable July 1 | *2,746 | 768,380 |
| Profit and loss surplus | 4,699,527 | 3,799,994 |
| Totals | $63,964,830 | $66,089,180 |

* Unclaimed preferred dividends.

The balance of net working assets on June 30, 1908, was $6,713,821, as compared with $6,731,917 on June 30, 1907, and $7,974,044 on June 30, 1906.

### Income and Profits.

Chairman Topping comments as follows on the financial condition of the company and the operations of the past year:

Your income figures for the year ending June 30, 1908, show severe declines as compared with the high mark of earnings recorded during the previous year. While normal earnings were realized during the first quarter of the fiscal year ending June 30, 1908, subsequent periods were seriously affected by the October panic, which caused complete paralysis of the company's business for approximately two months. This condition was followed by a slow business recovery, beginning in January with a volume of shipments approximately 25 per cent. of normal, the succeeding months showing a slow gain in volume to June, which recorded a maximum tonnage 52 per cent. of normal. While the volume of your business suffered seriously by the disordered condition of business generally, yet the iron and steel markets passed through the trying period of liquidation and readjustment in an orderly manner, due to the friendly co-operative efforts of the principal manufacturers, with the result that the large losses heretofore sustained during panic periods, both by producers and consumers, were avoided.

Notwithstanding the reduced volume of business, your manufacturing costs have not only been maintained, but show reductions as compared with periods of normal operations. This favorable showing has been influenced somewhat by the greater efficiency of labor and by general retrenchment, but is more largely due to the better physical condition of your properties and to a more nearly self-contained operation.

As a measure of this increased efficiency, you will observe that while your gross tonnage of business declined 46 per cent., your manufacturing profits were reduced but 42½ per cent., notwithstanding the reduction of profits due to lower selling prices for your commodities. Your total income for the year was $3.046,618.84, and your net income was $2,408,720.08. In determining your net income your usual policy of accounting has been followed, of liberal charges for maintenance, reconstruction, depreciation, extinguishment and inventory shrinkage. The amount absorbed for maintenance and repairs was $1,000,071; reconstruction, depreciation and extinguishment, $637,898.76.

After providing for interest on bonds and other charges there was appropriated for preferred stock dividends $1,071,887.25, leaving a balance due on dividend account for the year of $357.295.75. If the full dividend had been paid the net surplus over dividends, depreciation and extinguishment requirements would have been $542,237.08. The actual amount carried to surplus, after deduction for dividends paid, depreciation and extinguishment requirements was $899,532.83.

On the recommendation of your Executive Committee your Board of Directors deemed it wise to defer payment of the July 1 preferred quarterly dividend, because a provision in your general mortgage requires that your net quick assets shall be maintained at not less than $6,500,000, while the uncanceled or outstanding amount of bonds is not less than the sum of $6,500,000. Your committee was of the opinion that the net balance of quick assets could not be maintained at the required figure, under the then existing conditions of business, without suspending expenditures on account of improvements and development, or deferring dividend payments.

### Plant and Properties.

The principal changes to your plant account were improvements and additions to your Sylvan works, Inland works, Republic coke works, Pioneer and Atlantic furnaces, and iron mines, both north and south. The principal changes in land account were the sale of the Mitchell Tranter works property, Terre Haute mill site, and for surface land acquired at Republic, Pa., for use in connection with your operations there. The additions to your property account during the year aggregated $837,142.71. A comparison with previous years is as follows:

| Year ending June 30, | New construction. | Property additions. | Property sold.* | Balance. |
|---|---|---|---|---|
| 1906.. | $2.021,168.58 | $196,997.17 | $365,390.69 | $51,053,393.53 |
| 1907.. | 1,978,797.37 | 132,717.35 | 72,755.45 | 53,092,152.80 |
| 1908.. | 837,142.71 | 298.992.13 | 230,098.61 | 53,998,189.03 |

* Including amount written off for depreciation.

The distribution of total expenditures to June 30, 1908, is as follows:

| | |
|---|---|
| Northern District: | |
| Blast furnaces | $2,542,968.21 |
| Bessemer steel plant | 3,168,751.27 |
| Rolling mills | 1,586,490.62 |
| Coke plants | 854,261.12 |
| Northern mines | 552,910.75 |
| Total Northern District | $8,705,381.97 |
| Southern District: | |
| Blast furnaces | $1,718,603.49 |
| Coke ovens at blast furnaces | 176,917.54 |
| Tenant houses at blast furnaces | 58,077.25 |
| Rolling mills | 133,567.62 |
| Mines and coke ovens | 1,171,059.54 |
| Limestone quarries | 127,070.46 |
| Total Southern District | $3,385,295.90 |
| Grand total | $12,090,677.87 |

**Blast Furnaces.**

No new furnaces have been constructed in the year, but further improvement is to be noted by additions to equipment at Atlantic Furnace, Hannah Furnace and the reconstruction of No. 3 Pioneer Furnace, which it is expected will not only increase the output but bring about economies in production. The output of pig iron, owing to reduced demand, shows a falling off, but the percentage of loss is not as serious as in other products. Comparative figures are as follows:

*Pig Iron Production.*

| | Gross tons. |
|---|---|
| Year ending June 30, 1906 | 493,344 |
| Year ending June 30, 1907 | 614,954 |
| Year ending June 30, 1908 | 494,676 |

While increased output will be obtained by the improvements noted, no change in theoretical capacity is made:

| | Tons annually. |
|---|---|
| Northern District | 650,000 |
| Southern District | 250,000 |
| Total | 900,000 |

**Steel Works and Rolling Mills.**

Further improvements have been made and are now under way, such as changes and additions to rail and sheet bar mill, which should increase output and reduce costs, and also allow greater flexibility of operations in the manufacture of semifinished steel products. The reduced production shown by the comparative tables following was due entirely to market conditions:

| Year ending | Ingots. Tons. | Rails, sheet bars, slabs and billets. Tons. |
|---|---|---|
| June 30, 1906 | 511,768 | 454,859 |
| June 30, 1907 | 546,645 | 488,251 |
| June 30, 1908 | 341,985 | 303,328 |

The work of concentration of plants has been substantially completed, and beyond liberal appropriations for betterments and reconstruction no noteworthy changes have been made during the year. Production shows a heavy shrinkage in tonnage, due entirely to restricted demand:

*Finished and Semifinished Products.*

| | Tons. |
|---|---|
| Year ending June 30, 1906 | 742,435 |
| Year ending June 30, 1907 | 804,360 |
| Year ending June 30, 1908 | 434,230 |

Production of semifinished products used for conversion is excluded.

**Iron Ore Mines.**

Active work in exploring and developing your iron ore lands both North and South has brought about an increased output from mines and has also resulted in further additions to iron ore reserves. Additional expenditures have been recently authorized which, when completed, will increase the annual output of iron ore. You will observe from the following table that the year 1908 shows your record output:

| Year ending | Ore production. Gross tons. |
|---|---|
| June 30, 1906 | 970,106 |
| June 30, 1907 | 947,069 |
| June 30, 1908 | 1,025,460 |

Including the additions and allowing for depletion of iron ore lands by mining operations, the reserves of ore as estimated are indicated by the following comparative figures:

| Year ending | North. Gross tons. | South. Gross tons. | Total. Gross tons. |
|---|---|---|---|
| June 30, 1906 | 22,870,755 | 49,041,800 | 71,912,555 |
| June 30, 1907 | 31,556,500 | 89,041,800 | 120,598,300 |
| June 30, 1908 | 35,427,796 | 88,685,439 | 124,113,235 |

**Coke, Coal and Limestone.**

The work of development at your Republic mine is complete and the output is now sufficient to operate the full complement of beehive ovens. The experiments reported in the last report as to washing Gans coal have been successfully concluded and a coal washing plant is now recommended. Your Southern mines are all in good condition and your coke production would have established new records had blast furnace requirements called for full operation. The following comparative figures are submitted:

| Year ending | Coke production. Tons. |
|---|---|
| June 30, 1906 | 343,485 |
| June 30, 1907 | 521,561 |
| June 30, 1908 | 426,968 |

The 538 coke ovens in the Northern district (Gans, 138, and Republic, 400) have a capacity of 322,800 tons a year, and the 1010 ovens in the Southern district (Thomas, 910, and Warner, 100) have a capacity of 606,000 tons a year—a total of 928,800 tons for 1548 ovens.

No change is made in coal tonnage reserves except allowance made for mine depletion during the fiscal year.

| | Coking. | Steam. | Total. |
|---|---|---|---|
| Northern District | 13,350,928 | 12,500,000 | 25,850,928 |
| Southern District | 91,760,807 | 81,203,400 | 172,964,207 |
| Totals | 105,111,735 | 93,703,400 | 198,815,135 |

Aside from the interest held in Northern stone quarries operated independent of your company, two quarries are directly operated in the South, the limestone lands being owned in fee simple, and your engineers estimate the stone reserves at 31,546,800 gross tons.

**Labor and Employment.**

The total expenditure for labor in the year was $5,832,631, as compared with $8,686,604 in the preceding year and $7,735,903 in the year ending June 30, 1906. The average number of men employed at Northern works was 5895 in the fiscal year, as against 10,679 and 9065, respectively, in the two preceding years. The average number employed at Southern works was 2652, as against 3216 and 2600, respectively. The average number at all works was 8547, as against 13,895 and 11,665, respectively, in the preceding years.

With reduced demand for iron and steel, the market values of products suffered declines, and to assist in bringing about lower costs to meet the change in business conditions labor schedules were generally revised. Your committee is gratified to say that reduced labor rates were put into effect without disturbance to your amicable relations with labor, except at the Alabama mines, where a part of the miners are out on a strike, but no serious interference to operations has resulted, and full operation South is anticipated in a short time.

**Unfilled Orders.**

The statement of unfilled orders on hand reflects recent improvement in demand for pig iron, bar iron and steel products. As compared with the two preceding years, the following figures will be of interest:

*Finished and Semifinished Products.*

| | Tons. |
|---|---|
| June 30, 1906 | 377,349 |
| June 30, 1907 | 448,627 |
| June 30, 1908 | 283,743 |

*Pig Iron.*

| | |
|---|---|
| June 30, 1906 | 74,607 |
| June 30, 1907 | 74,500 |
| June 30, 1908 | 59,196 |

Since the first of July, 1908, order bookings have added substantially to the totals herein reported so that total bookings offer the most substantial hope that normal production will be realized within a reasonable period.

John George & Sons, Ltd., whose offices were at 18 Great Alie street, have removed to Norfolk House, Laurence Pountney Hill, London, E. C., England.

## The Salesmen's Prosperity Convention.

The United Commercial Travelers of America and the Travelers' Protective Association held a joint convention in New York City August 14 and 15 for the purpose of promoting the growth of confidence and hastening the return of prosperity. The convention was officially designated the Commercial Travelers' Interstate Congress. The attendance was large, all sections of the country being represented. The opening session or reception was held in the rooms of the Merchants' Association and the business session in the assembly hall of the Metropolitan Life Insurance Building. Herman A. Metz, Comptroller of the city, president of the congress, presided at the reception. Patrick F. McGowan, the acting Mayor, made a short speech, welcoming the delegates. This was responded to by C. W. Rice, national traveling representative of the United Commercial Travelers. Some of the other speakers at the reception were J. C. Klinck, secretary of the Northwestern Traveling Men's Association, who told of the returning conditions of prosperity in the section covered by the organization; Henry O. Gray, national president of the Travelers' Protective Association; Col. John S. Harwood of Richmond, Va., chairman of the National Legislative Committee, who spoke on commercial travelers' organizations.

At the business session addresses were made by Henry Clews, the New York banker; George Fred Williams of Massachusetts, and a number of others. The most interesting of these addresses was that made by E. C. Simmons, the veteran hardware merchant of St. Louis, who was introduced by Mr. Metz as the man "who has employed more commercial travelers than any other employer in the United States," and discussed the relation of commercial travelers to prosperity. Mr. Simmons gave it as his belief that the traveling men are the best advance agents of prosperity. "Nobody," he averred, "can talk better than a traveling man. Would it not be strange, indeed, if he did not master the capacity of speech?" Mr. Simmons read telegrams from many sections of the country, all of which tended to substantiate his assertion that prosperity has arrived. Following are some extracts from his address:

### Remarks by E. C. Simmons.

The message we want you to carry to the merchant—and the message we want you to convey to the farmer, through the merchant—is that fundamentally conditions are all right. There is nothing in the world to interfere with a return to a full measure of prosperity quickly—and by that we mean not later than December 31, 1908—except the restoration of confidence, which was so badly shattered—in fact, I may say so "everlastingly smashed"—by the panic of the fall of 1907. Tell them that good times have returned in great measure in that great productive and constructive region of the Southwest—represented by Missouri, Arkansas, Oklahoma, Texas and other cotton-growing States. I doubt if the manufacturing interests of Pennsylvania, New York and New England realize how great a measure of prosperity has returned to us in the Southwest; and, gentlemen of the East it is traveling your way, and traveling mighty fast. Don't stay in your house and wait for it to knock at your door, but go out into the road and meet it half way—grasp it by the hand and invite it into your homes and firesides.

Think over the results of the panic, and you will realize that the agricultural sections have been touched very lightly indeed; the bad effects of the panic in that part of the country devoted to agriculture have been so trifling that today it is but a memory and no longer has existence in fact. The effects are largely in the manufacturing and cotton-growing districts—the second of which is now recovering with marvelous rapidity. Tell them that the price of farm products has been kept up by the buying power of the laboring classes and especially railroad employees. This class of people are the greatest spenders we have among us. When they have full employment at big wages, they live well and spend their money freely.

Tell the people that you meet that the railroads are the greatest buyers on the face of the earth; that last year their purchases of raw material and manufactured products amounted to one and one-fourth billions of dollars; that the deficit in their purchases for the first half of 1908, as compared with the corresponding period of 1907, was about $500,000,000, and until they begin to buy again we cannot and will not have a full measure of prosperity. Tell them that they purchased 35 per cent. of all the manufactured products of iron and steel last year, and 25 per cent. of all the lumber that was cut, and that out of every dollar they have received in the way of earnings they paid out 43 cents in the way of wages to their employees. Tell them that the railroads are the greatest friends of the laboring man—and especially are they the greatest friends of the farmer there are in the world.

Tell the people not to condemn 100 per cent. of the railroads because 10 per cent. of them have been guilty of sharp practice or crooked work; tell them not to "burn down their barns trying to smoke out a few rats"; tell them to stop "rocking the boat."

Try to think of all the good things you can say about the railroads and their value to the community at large, and not speak of their shortcomings, which in the past have been many. I think the people of the United States deserve the best railroads in the world. They already have the best paid employees and the lowest rates.

Just a word on the subject of advance in freight rates. We are opposed to that at present. We believe the time is inopportune. All interests have suffered alike—manufacturing, jobbing, general distributing and railroad interests. It is no more than fair to ask that they bear with us the burdens brought on by the panic for a while longer, to see whether the enormous increase in business—which we believe is now at our very threshold—will not help them to an extent that will render it unnecessary for any advance in freight rates; and we should wait until about December 1 to test this question.

The congress, by formal resolution, put itself on record as favoring any measure which will give employment to those out of work. The preamble and resolution adopted unanimously set forth that the commercial depression was caused partly by a lack of confidence in the managers of the common carriers and the lack of an adequate banking system. The resolution pledged the congress to work for the passage of amendments which will enlarge the powers of the Interstate Commerce Commission. Currency legislation is favored with a view to the establishment by law of a guarantee fund. It was recommended that prosperity conventions be held in the several States or groups of States as may be most convenient. Provision was also made for the employment of a permanent secretary in New York City to further the aims of the congress.

The convention closed with a banquet at the Manhattan Hotel, at which addresses were delivered by excellent speakers representing various sections of the country.

## The Dunbar Furnace Company's Varied Interests.

Few blast furnace plants in the United States combine modern equipment and progressive management with so long a record of practically uninterrupted operation as that of the Dunbar Furnace Company, Dunbar, Pa. The company has two stacks, with a capacity of 250 to 300 tons a day each, and produces foundry, forge, malleable, car wheel and basic iron. The first furnace was put in blast in 1791, and with the exception of the intervals of rebuilding and the interruptions due to relining there has been a constant production of pig iron in the interval of 117 years. One of the two furnaces has been kept in operation through the present depression, and is still going. The company was one of the first to introduce by-product coke ovens, and uses exclusively in its furnaces the product of its 110 Semet-Solvay retort ovens, which with the recovery plant are located near the furnaces. Coal comes from the company's two mines situated in a valley one on either side of the coke ovens. An allied interest, the Dunbar Electric Company, furnishes power and light throughout the plant, also in the subway in which ore is handled and in addition supplies light for the town of Dunbar. Another industry controlled by the company is the manufacture of silica sand, the capacity being 600 to 700 tons daily, from crushed, screened and washed silica rock quarried from a large deposit in the hills above the sand mills. The company is interested also in the Continuous Glass Press Company, which employs about 100 men. The fuel for the latter company is the surplus gas from the Semet-Solvay ovens, and the sand for glass manufacture comes from the sand plant which, like the coke ovens, is only a stone's throw from the glass works.

At the blast furnaces, coke ovens, coal mines and

sand mill about 700 men are employed. The Dunbar Furnace Company owns in and around Dunbar approximately 8000 acres of land, on which are coal, iron ore, limestone, sand rock, clay, bluestone and timber. It has 159 tenement houses occupied by employees. The water supply for the furnaces, ovens, mines and glass works comes from Dunbar Creek, a few miles distant in the mountains, where four large reservoirs are located. The sand mill has a reservoir water supply of its own from Irishtown Run, another creek in the mountains. The furnace company's railroad, the New Haven & Dunbar, has 12 miles of track connecting with mines and quarries. The blast furnaces are equipped with a pig casting machine, and the accessory plant consists of four blacksmith shops, a carpenter shop, machine shop, boiler shop and foundry.

The evolution from the original stack at Dunbar to the present modern plant is interesting. The first furnace was built in 1790 by Isaac Meason, and was put in blast in March, 1791. It was known as Union Furnace, and was located about 300 yards up the Dunbar Creek from the site of the present stacks. It was a small affair, built of stone and was the second blast furnace built west of the Alleghenies. In 1793 Isaac Meason and Moses Dillon enlarged the furnace and established a forge near by, also building a forge at the mouth of Dunbar Creek. In 1816 they established in Fayette County, northwest of Dunbar, the second rolling mill west of the Alleghenies and the first to puddle iron and roll iron bars. In those days the Fayette County product was hauled across the country either to the Yioughiogheny or the Monongahela River and loaded in flat boats for shipment to Pittsburgh. In 1844 the firm of Jones & Miller owned Union Furnace. By them it was sold to D. Creigh, who changed the name from Union to Dunbar. At this time it made only about 2 tons of pig iron a day and employed eight men. Charcoal was used exclusively as fuel, until 1854 when Baldwin & Cheny became the proprietors and introduced the use of coke. The output was increased to about 10 tons of iron a day. In 1865 the Yioughiogheny Coal & Iron Company changed the location to the present site and built a stone stack with a capacity of 17 tons a day. The Dunbar Iron Company acquired the property in 1866, rebuilding the stack and making improvements. The present Dunbar Furnace Company became the owner in 1876, and the plant underwent extensive improvements. Other betterments have been made from time to time since. The present 80-ft. stack, with skip hoist, was blown in in November, 1906. The other stack, also 80 ft. high, now out of blast for relining, was built in 1900.

**The Tod-Stambaugh Company's Ore Development.**—The contract for the engineering work in connection with the power plant, surface works and equipment for the new mining property that will be developed by the Tod-Stambaugh Company at Hibbing, Minn., in the Mesaba Range, has been awarded to John W. Seaver, consulting and contracting engineer, Cleveland. He will receive bids soon for the mechanical equipment. In the power plant there will be installed boilers aggregating 900 hp., electric generators, a steam hoisting engine, air compressor, water supply pumps, and tank, &c. A tram system of locomotives and cars will be installed in the mine. It has not yet been decided whether to use electricity or steam for the motive power for the cars. The shaft house and bins will have automatic dumping skips, shields, &c. The work of sinking the shaft is in progress at present. It will have a diameter of 21 ft., with reinforced concrete casing. The buildings will be of concrete and steel. It is the intention of the Tod-Stambaugh Company to try and make its new mine the best equipped mining property in the upper lake region. It is expected that it will be ready for operation in about a year.

The Lima Locomotive & Machine Company, Lima, Ohio, has received orders for extensive repairs on a number of Wheeling & Lake Erie locomotives, several of which are now being shipped to Lima. The total number of engines to be repaired will depend on conditions at the railroad shops and the Lima plant, and may be as high as 40.

## Trademarks in Japan and Chile.

### Japan.

Information has been received at the Department of State by cablegram from the American Embassy at Tokyo that the Japanese Government has ratified the trademark treaty between the two countries, which included features in regard to goods in Korea and China. The Department of State impresses upon Americans that in Japan the system is priority of registration and in the United States a priority of use, and that the Japanese is the one in use in a majority of countries; consequently, every American who wants protection for his industrial property in China, Japan and Korea should register at the earliest possible moment at the Tokyo patent office.

Japan is disposed to recognize priority of use by a liberal interpretation of the existing laws, such as by refusing to entertain wrongful registration and by even going so far as to cancel registrations previously made. An American whose trademark or other such right has been pirated should lose no time in seeking registration and in moving for the annulment of the wrongful registration from which his business is suffering.

### Chile.

Consul Alfred A. Winslow of Valparaiso gives the essential features of the Chilean laws governing trademarks in that country, and urges registration by American manufacturers. He says that American manufacturers are losing much in Chile, and will find themselves badly crippled when they get into that field in earnest after business because they have not registered their trademarks or the names given their special brands of goods. Attention should be given this matter, because as the different American goods become better known the greater will be the temptation to take an unjust advantage. Any person may register a trademark in Chile, even after a certain brand of goods has been in the Chilean market for several years, and thus drive the original maker of the goods from the country, unless the brand or trademark was registered in time. He gives a translation of the Chilean law now in force bearing on these matters as follows:

1. A register is open for the registration of trade and commercial marks, both national and foreign.

2. The name "trademark" is used to designate the marks placed by the manufacturers or producers on manufactured articles, either Chilean or foreign, while the name "commercial mark" designates the mark placed on the articles by the merchant who sells them.

3. Proper names, emblems or any other signs adopted by a manufacturer or merchant to distinguish the article he makes or sells will be considered as trade or commercial marks. In addition, they must carry the inscription, "Marca de Fabrica," or the initials "M. de F.," or "Marca Commercial" (M. C.)

4. The name given a country estate, foundry, factory or mill shall be the exclusive property of the owner of the said estate, foundry, factory or mill.

5. The person registering a trade or commercial mark has the sole right to use the same.

6. Transfers of marks or permission that may be given to others to use said marks, must be noted in the register and advertised for 10 days in the newspapers.

7. Registration must be renewed after 10 years, otherwise it becomes void.

8. The register referred to will be opened in the office of the National Agricultural Society, under the direction of the president of the society and a delegate named by the council, who must be a member of the Board of Directors of the society.

9. The entry in the register must state the day and hour in which the entry is made; the name of the proprietor, his name and domicile; the name of the place where the factory is established; the class of goods or commerce designated by the mark, and a facsimile of the mark. To this must be added the number of the order that corresponds to the mark deposited, and any other data that may be thought necessary. Both the register and the copy thereof given to the interested party must be signed by the president of the agricultural society or his deputy, by the interested party, and two witnesses.

10. A fee of 12 pesos will be paid to the society for the entry of a trademark, 3 pesos for a commercial mark, and 1 peso for an authenticated copy of the inscription.

11. Any person falsifying or making fraudulent use of a trade or commercial mark spoken of in the present law will be subject to the penalties prescribed by the penal code.

12. Articles bearing false marks will be confiscated for the benefit of the injured party, while the instruments of falsification will be destroyed.

13. A list of the marks registered will be published in August of each year.

# THE IRON AGE

Established in 1855.

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## The Position of the Jobber.

In at least two ways the question of the iron and steel jobber's relation to the market has had consideration from the manufacturers in the present depression. At the beginning of the concerted movement to maintain prices one argument against reduction was the fact that jobbers were loaded up with stocks bought at the prices maintained during the boom, and would suffer heavy loss if the market were not held until these could be worked off. The argument had its weight, and for more than six months after the panic the steel manufacturers maintained a position which, while not primarily designed as a protection to the jobber, operated very effectively to that end.

When the price reductions came the position of the jobber again entered into the councils of the manufacturers. Some questions arose as to the treatment accorded large jobbing interests by certain manufacturers, and as an important part of the readjustment in the prices of bars, structural material and plates, an effort was made to define, in a way never attempted before, the status of the jobber in these lines. The maintenance of a warehouse from which the orders of his customers are filled was made the prime requisite to classification as a jobber. The particularly revolutionary feature accompanying this action is that only on shipments from mill to the jobber's warehouse does the latter obtain any concession. Shipments direct from mill to the consumer are treated as business belonging to the manufacturer, and whereas a number of important jobbers have long had customers whose orders were handled in this way, there is now no room left for a jobber's profit on this business. That the jobber's margin in times past has now and then been divided with his large customer, so that the latter has had a lower price than the mill would give him, may be taken as a partial explanation of the change. On shipments made to the jobber's warehouse and there rehandled the margin allowed under the new arrangement is not such as to pay handling and leave a profit, unless a store price is charged the consumer.

The broker, it is evident, is given no standing in the new adjustment. In fact the policy of the manufacturers has been such in recent years as to leave less and less room for the middleman who had no distributing organization behind him. With their highly organized sales department the manufacturers of steel take the position that the intervention of such a third party on business handled directly from the mill either argues that weakness exists in their own selling mechanism or that the customer is taking this method of securing a cut from the mill price. The prediction made when the large consolidations were launched that they would seek to do all business directly with the consumer, has been borne out, so far as mere brokerage is concerned. On the other hand, there has been no failure to recognize the important place the jobbing interests occupy in the machinery of distribution. The leading houses of this class are plainly stronger to-day than at any time in their history. Thus far the give and take spirit has sufficiently dominated the relations of manufacturer and jobber to insure peace and co-operation. The recent action of the manufacturers in restricting somewhat the field of operations of the important jobbers may be better received in view of the manufacturers' action in standing behind the jobbers' market after the panic. Moreover, the shortening to three months of the jobbers' contract period on bars, structural shapes and plates may tend to a more orderly recovery as the market emerges from depression, saving the mills from the competition of jobbers' stocks bought at the lowest prices.

But time and the test of a nearer approach to normal business must demonstrate how far the new regulations will go toward establishing the relations of jobber and manufacturer on a basis of mutual satisfaction and profit.

## Commodity Rate Advances.

The railroads have encountered so much opposition to the proposed advance in class rates that they have turned their attention to commodity tariffs, and a long list of commodities has been "checked" for advances in the territory of the Eastern trunk lines and the Central Freight Association, as well as on Western lines. This movement will affect the manufacturing interests more directly than an advance in class rates.

The class rates usually apply on the outgoing products and distribution through the wholesale trade, the charges being paid ultimately by the consumer. Nearly all the materials used in manufacturing are carried at commodity rates. The freight is paid by the manufacturer as a part of his cost of production, and it is not always possible to add any increase in the charge to the selling price. Many shippers assert that one of the underlying causes of the present business depression was the increase in factory costs that preceded it, carrying prices beyond the limit which the majority of consumers could afford to pay; and they are disposed to contest any increase in commodity rates, as an additional item of factory cost, at a time when every effort is being bent toward a reduction in cost.

A change in a commodity tariff as a rule affects only one industrial group of shippers, who cannot make a contest that will awaken any public interest. A large number of commodity tariffs affecting isolated groups of shippers, can be changed without bringing together any united opposition, such as can be concentrated on a proposal for a general advance in class rates.

As an example, the commodity rate on cast iron pipe north of the Ohio River will be advanced 25 cents per ton September 15. This follows a similar advance of 40 cents per ton last year, making a total increase of about 40 per cent. on one commodity. An extensive list of commodity tariffs will be advanced in the same quiet manner.

The Western roads have encountered a more stubborn obstacle than public opinion to any advance in their class rates. The Missouri distance tariff, established by State authority, fixes the maximum rate across the State from Hannibal to St. Joseph. This rate is the basis of the interstate tariffs of all the Western roads between the Mississippi and Missouri rivers, and other roads can-

not raise their rates without leaving a low competitive gateway open through Hannibal—an impossible situation. In the same manner the Transcontinental lines have stubbed their toes on the Spokane case, which is pending before the Interstate Commerce Commission and is not likely, according to unofficial reports, to be decided in the near future. The Western roads have therefore decided to confine their efforts to commodity tariffs.

## Reciprocal Rights of Employer and Employed.

Inability to recognize what are the reciprocal rights of employers and employees is one of the weaknesses of those who are supposed to represent the "appeal to reason" of the trade union position. For example, the *Iron Molders' Journal* says this:

> No one is entitled to special privileges; every man is entitled to equal justice before the law. When the time arrives, as it has to-day, that our courts declare that an employer has every right to discharge his union employees, but that the union men cannot strike against the introduction of nonunion conditions; that the employer has the legal right to advertise the fact that he will not employ union men, while the trade unionists are forbidden to tell their friends that they do not patronize the product of a certain firm, the time has arrived to do serious thinking, and to take definite action.

What is the right of union labor that corresponds to the right of an employer to discharge his union employees? Plainly, it is the right to refuse to work for any but an employer who recognizes the union and employs exclusively union men. And what court has ever denied the right of union men to strike against nonunion conditions? It is not the denial of its right to strike that the union has complained of, but the denial of its right by threats and violence to compel nonunion men to cease working where union men have struck and to compel employers to cease operating their shops with nonunion men. If such compulsion is a "right" of labor which the courts must recognize, then the corresponding "right" of the employer who objects to union men is to use every means to compel employers of union men to discharge them and to compel all union men who may have taken places vacated by nonunion men to give up their jobs.

Passing to the second of the contrasts presented in the above, we have the right of the employer to employ whom he chooses set over against the "right" of labor union men to wage war against a business and its products with the purpose of destroying its trade. The right of the union which corresponds to the right of the employer to reject union applicants is to refuse employment and to require its members to refuse employment in any shop not operated under union rules. The courts have not denied the right of unions to publish the fact that certain shops were "struck" shops, or to instruct their members to remain away from them. A conspiracy to ruin a business by coercing the public to abstain from buying its products, and for no other reason than that the owners choose to operate their works without subscribing to the rules and regulations of a labor organization—that is a very different kind of "right."

It is the labor union habit to scorn as "academic" the rights of labor which the courts of justice have set out as corresponding to those which the same courts have guaranteed to employers. The trouble is there is no place in these "academic rights" for violence, conspiracy and coercion. The labor union is the one organization in the United States which insists on the "right" to force its decrees upon others by the use of any means it may select; and, further, if there be any laws or court decisions which stand in the way, their operation must be suspended in any and all cases of labor disputes. That is the gospel of labor union "rights" in a nutshell.

## The Productive Hour System of Burden Costs.

Nothing in the consideration of manufacturing costs is attracting as much attention at this time as the apportionment of overhead or general expense, or burden, among the manufactured product. Conspicuous in deliberations where expert knowledge is brought to bear on the subject is the argument in favor of the average productive hour as the more correct method. The National Machine Tool Builders' Association has given great prominence to this element of the question in its preparation of a model cost system that shall be comprehensive yet simple in the effort to procure the universal adoption of this all important feature of industrial management to the end that the market may not be disturbed by the presence of low-bidding competitors who are misled by an exaggerated notion of the cheapness of their product. Manufacturers as individuals are paying closer attention to overhead costs in the knowledge that they may be upsetting the exactness of their system through the absence of an equitable distribution of a large part of the expense of conducting their business.

In the average productive hour system the entire overhead cost for a given period, comprising all expenses except those of raw materials and actual productive labor, is divided by the total number of productive hours. The result of the division is a fixed sum which is added to every productive hour of the works, or, if the burden is distributed between departments in varying amount, to every productive hour of the department. It does not matter what wages a workman receives; the addition for overhead cost is always the same for every hour worked by an employee in producing. If the total number of hours worked by all employees in a plant in the period covered was 10,000 and the overhead expense for the same time was $2000, the average would be 20 cents, and this amount would be added for every hour of productive labor worked in the establishment, until the books should again be balanced and a new average obtained.

The more common system has been to find the relation of the total of overhead expense to the total productive labor account and then add the percentage obtained to all productive labor. If the productive labor expense is $10,000 and the total overhead $5000, then 50 per cent. is taken as the overhead for all labor, regardless of whether it is skilled or unskilled, working at a cheap or an expensive machine or at the bench; or on cheap or expensive products. The exponents of the average productive hour method assert that the percentage basis cannot be a fair one, especially if there is any variation in products. They cite such examples as this: Suppose that Workman A receives 40 cents an hour and works a 10-hr. day at a bench, while Workman B at 15 cents an hour works his 10 hours on a machine consuming a large amount of power and representing a considerable investment. The percentage system would not distribute the overhead expense fairly, for 50 per cent. added to A's job would be $2, while to B's would be added only 75 cents, though the machine work should certainly be given at least as large a share of the burden as the bench work. Under the average productive hour system each man's job would have $2 added to its cost, at 20 cents an hour overhead, which in this instance would be a much fairer distribution of the burden. Again, two employees may be operating lathes, one a 10 cents per hour boy, and the other a journeyman at $3 a day. Under the percentage system, at 50 per cent., the boy's work would have but 50 cents added to its cost, while the man's would have $1.50. It is easy to see that the average productive hour basis would work to better advantage in such a case.

Of course no apportionment of overhead expense can be scientifically exact; in fact, there is no necessity that it should be. The purpose is to get it sufficiently close, so that there shall be no wide discrepancy. In either system the burden is taken care of, but the trouble may be that one product carries too great a share and the other too small, which in the extreme case brings one back to the days when the modern cost system had not been developed. Under the old system, or rather lack of system, the manufacturer had his total payroll and his total for raw materials, and the balance of expenditure constituted his overhead cost, but he did not know what any one thing cost for productive labor, nor how much time it consumed in manufacturing. He simply added a fixed amount to everything to cover burden and profit. Margins of profit were wider, and it did not make so much difference if one article was sold close to cost while another brought excessive profits, a condition which is usually ruinous to-day, for it would mean the securing of business in some lines without a profit and the failure to meet competitors in the market on the too high priced goods. On the other hand, there may be extremes of accuracy which are costly because of the expense involved in maintaining them.

Overhead costs should be fairly apportioned, so that all classes of products may share equally in them. In many works this means divisions of this expense into two items—one the general expense that applies to the entire works, and the other the expense which applies to each individual department and not to the others, variations of this sort sometimes being very important. Refinements and adaptations have to be worked out to meet the requirements of different industries, no two establishments having exactly the same problems to meet in this respect. The most important element to consider is the basic principle upon which the system shall be built up. If of the two accepted methods of apportioning overhead expense one is the more accurate and at the same time no more expensive of installation and maintenance, then of course it is wisdom to select that which will be the more effective. There may be some difference of opinion as to the relative merits of the two systems, but at the present time the average productive hour is growing in favor among the experts.

**Improvements at Hokendauqua.**—This week the Thomas Iron Company, Easton, Pa., will blow in the remodeled No. 1 furnace at Hokendauqua, it being expected that the furnace will make 300 tons per day. No. 3 furnace, which is also being rebuilt, will be completed ready for blast the latter part of the year. The two new furnaces are equipped with steel stock bins, incline hoists and automatic filling tops, the No. 1 furnace being 82 ft., and No. 3 furnace 85 ft. high. The entire improvement was designed by the Brown Hoisting Machinery Company, Cleveland, Ohio. There are 10 ore and 10 fuel and limestone bins, the material being conveyed to the incline hoists by an electric larry. In addition to these two modern furnaces, the Hokendauqua plant has two older furnaces, Nos. 5 and 6, with a weekly capacity of 1200 tons. In all, at its different works, the company has nine blast furnaces on the active list.

The Thomas Furnace Company, Wilwaukee, Wis., has torn down its old stack and expects to blow in its new 18¾ x 80 ft. blast furnace in September. The new plant includes a Mullen gas washer, a device for bringing ore and limestone from the dock to the furnace and new railroad trestles. The company has purchased a piece of land south of Milwaukee to be used as a storage yard, as the ground at the furnace affords storage room for only 3000 to 4000 tons of pig iron. A locomotive crane has been purchased for the handling of pig iron.

## The National Enameling & Stamping Company.

The income account of the National Enameling & Stamping Company for the year ended June 30, 1908, with comparisons, is as follows:

| | 1908. | 1907. | | Changes. |
|---|---|---|---|---|
| Profit | $311,822 | $1,703,400 | Dec. | $1,391,578 |
| Interest on bonds | 52,214 | 64,583 | Dec. | 12,369 |
| Preferred dividends | 598,262 | 598,262 | | ..... |
| Balance | *$338,654 | $1.040,555 | Dec. | $1,379,209 |
| Previous surplus | 1,648,603 | 858,048 | Inc. | 790,555 |
| Total surplus | $1,309,949 | $1,898,603 | Dec. | $588,654 |
| Less amount to general reserve | 250,000 | 250.000 | | ..... |
| Profit and loss surplus | $1,059,949 | $1,648,603 | Dec. | $588,654 |

* Deficit.

The amount to the credit of general reserve on June 30, 1908, was $1,500,000, which, added to the profit and loss surplus as above, makes the total undivided profits on June 30, 1908, $2,559,949.

The report states that the plants of the company have been kept in the highest state of efficiency throughout the year, and the cost of maintenance has been charged against the profits. The decreased earnings of the company during the past year, as compared with previous years, are entirely attributable to the unusual and general business depression which was first felt in July, 1907, and continued down to June 30 last. Consequently, the plants of the company have not been operated to their full capacity.

The balance sheet as of June 30, 1908, compares as follows:

| *Assets.* | 1908. | 1907. |
|---|---|---|
| Real estate, merchandise, plant, &c. | $24,647,367 | $24,548,687 |
| Stocks, merchandise and material on hand | 4,198,682 | 5,392,782 |
| National Enameling & Mfg. Company of Louisiana | 139,246 | 129,746 |
| Accounts and bills receivable | 718,360 | 1,203,260 |
| Adv. pay | 104,334 | 101,676 |
| Cash | 752,805 | 336,364 |
| Totals | $30,560,845 | $31,712,517 |
| *Liabilities.* | | |
| Preferred stock | $8,546,600 | $8,546,600 |
| Common stock | 15,501,800 | 15,501,300 |
| First mortgage bonds | 1,000,000 | 1,250,000 |
| Accrued interest | 16,667 | 20,833 |
| Bills and accounts payable | 2,696,263 | 3,255,114 |
| Dividends | 149,665 | 149,565 |
| General reserve account | 1,500,000 | 1,250,000 |
| Profit and loss surplus | 1,059,949 | 1,648,603 |
| Totals | $30,560,845 | $31,712,517 |

At the annual meeting held in Jersey City, August 11, Albert W. Niedringhaus was elected a director to succeed his father, William F. Niedringhaus, deceased, and Oliver Neidringhaus was elected a director to succeed his father, Alexander Niedringhaus, resigned. Otherwise no changes were made in the directorate.

The new directorate of the company has made the following changes: F. G. Niedringhaus, formerly president, becomes chairman of directors, while F. A. W. Kieckhefer, former first vice-president, succeeds him as president. Thomas K. Niedringhaus becomes first vice-president, and George W. Niedringhaus becomes second vice-president. George V. Hagerty succeeds F. G. Niedringhaus as a member of the Executive Committee. An Advisory Committee to the Executive Committee has been created, consisting of George W. Niedringhaus and A. M. Steinhardt.

The Jamison Coal & Coke Company, Frick Building, Pittsburgh, has invited the members of the Pittsburgh Foundrymen's Association to visit its works on the Crab Tree branch of the Pennsylvania Railroad, near Greensburg, Pa., to witness the operation of making foundry coke. The party will leave Union Station, Pittsburgh, at 9 a.m., on Monday, September 7, and lunch will be served on the return trip at Greensburg, Pa. The Jamison Coal & Coke Company has a very complete plant at the above place, and in addition has several other plants in the Greensburg District, being one of the largest makers of furnace and foundry coke.

# The Production of Coke in 1907.

## Construction of By-Product Ovens Falling Off Markedly.

WASHINGTON, August 18, 1908.—The production of coke in the United States in 1907 was 12.02 per cent. greater in quantity and 21.76 per cent. greater in value than in 1906, according to the annual report of the United States Geological Survey, prepared by E. W. Parker. Ordinary gas house coke obtained as a by-product in the manufacture of illuminating gas is not considered as coming within the scope of this report. Owing, however, to changes taking place in the last few years it is not possible to confine the term "coke" to that which is used exclusively for furnace or foundry purposes. Where retort ovens are used coke is sometimes the primary product, and is strictly metallurgical fuel. In other cases gas, either for illuminating or fuel purposes, is the primary product and coke becomes the secondary product, some of it being used in metallurgical establishments, while some goes into other manufacturing, railroad or domestic trade.

### New By-Product Ovens Decreasing.

From 1893, when the first plant of 12 by-product ovens was completed by the Semet-Solvey Company of Syracuse, N. Y., to the close of 1904, there was a noteworthy increase in the construction of retort or by-product ovens in the United States. In the last three years, however, there has been a decided falling off in the number of new ovens built or contracted for. On December 31, 1903, 1335 product ovens were under construction, 832 in 1904, 417 in December, 1905, while on December 31, 1906, the number had fallen to 112. On December 31, 1907, there were 330 new retort ovens under construction, 280 in Illinois and 50 in Ohio. When the enormous waste which attends the manufacture of coke in beehive ovens is considered, the relatively small development of the retort oven industry in the United States is difficult to understand. The value of the by-products (gas, tar and ammonia) of retort ovens in the United States in 1907 was $7,548,071, obtained from the distillation of 7,460,587 tons of coal. The quantity of coal made into coke in beehive ovens in 1907 was 54,485,522 tons. At the same ratio the value of the gas, tar and ammonia wasted in the beehive oven practice in 1907 would have amounted to over $55,000,000.

### Production.

The total production of coke in the United States in 1907 amounted to 40,779,564 net tons, valued at $111,539,126, against $36,401,217 tons, valued at $91,608,034, in 1906. The production in 1907, as in 1906 and in 1905, passed all previous records in the history of coke making in the United States. The increase in 1907 over 1906 was 4,378,347 tons in quantity and $19,931,092 in value. The average price per ton at the ovens advanced from $2.52 in 1906 to $2.74 in 1907, this last being the highest price reported in the 28 years the statistics have been compiled by the Geological Survey.

Of the total production in 1907, 35,171,665 net tons, or 86.25 per cent., was produced in beehive ovens, against 31,843,060 tons of beehive coke in 1906. The production from retort or by-product ovens in 1907 was 5,607,899 net tons, or 13.75 per cent. of the total, against 4,558,127 net tons, or 12.52 per cent. of the total in 1906.

### Coal and Coke Values.

In the case of large corporations producing coke for their own use the value of the coke shipped from one department to another is sometimes arbitrarily fixed. In other cases ruling market prices determine. The quantity of coal consumed in the manufacture of coke in 1907 was 61,946,109 net tons, valued at $72,784,851. The value of the coke produced from this coal was $111,539,126, a difference of $38,754,275, which represents the profits on the coking operations less the cost of manufacturing and the expenses of administration and selling. In 1906 the value of the coal used was $62,232,524 and the value of the coke produced was $91,608,034, a difference to cover all expenses of manufacture, administration and profits of $29,375,510. So marked was the decline in prices after the panic that Connellsville furnace coke, which in the first part of the year had been selling for $3.50 to $3.75 per net ton, sold for $2 to $2.50 in November and December, while foundry coke, which had ranged from $4 to $4.50 in the first part of the year, sold for $2.50 to $2.75 at the close.

### Ovens in Operation.

At the close of 1907 there were 99,980 coke ovens in the United States, against 93,901 in 1906, an increase of 5779. Of the total ovens in existence in 1907, 4934 were idle during the entire year, leaving 94,746 active ovens, which produced 40,779,564 net tons of coke, an average of 430.4 tons per oven. The 88,596 active ovens in 1906 produced 36,401,217 net tons of coke, an average of 410.9 tons per oven. The idle ovens in 1907 included 81 retort ovens, of which 56 were the bank of Newton-Chambers ovens at Pocahontas, Va., which have never been operated to any extent. The total number of by-product recovery ovens in existence at the close of 1907 was 3892. The average production from the 3811 active retort ovens was 1472 tons. The total number of active beehive ovens in 1907 was 90,935, and the total production of beehive coke was 35,171,665 net tons. The average production from each beehive oven has increased from 365.8 tons in 1905 to 373.6 tons in 1906, and to 386.8 in 1907, while the average production for the retort ovens increased from 1158.8 tons in 1905 to 1356 tons in 1906 and to 1472 tons in 1907. In 1905 the average production from by-product ovens was a little more than three times that of the beehive, while in 1907 it was nearly four times as great.

### Ovens under Construction.

At the close of 1907 there were 2546 ovens in course of construction, this being the smallest number reported as in process of construction since 1899. Of the ovens building 330, or nearly 13 per cent., were by-product recovery ovens. Of these 50 were of the United-Otto type at Kokotto, Ohio, and 280 were Kopper regenerative ovens built at Joliet, Ill., by the Illinois Steel Company.

The number of completed retort ovens has almost doubled in four years, and almost quadrupled in eight years, there being 3892 ovens in existence at the close of 1907, as compared with 1956 in 1903 and 1020 in 1899. In 1902 the production of by-product coke was 1,403,588 tons, or 5.5 per cent. of the total; in 1903 it was 1,882,394 tons, or 7.4 per cent. of the total; in 1904 it was 2,608,229 tons, or 11 per cent. of the total; in 1906 it was 4,558,127, or 12.5 per cent. of the total, and in 1907 it was 5,607,899 tons, or 13.75 per cent. of the total. Considering each bank of ovens as a separate establishment, the returns for 1907 show a total of 552 establishments, compared with 532 in 1906 and 519 in 1905. There were 67 idle establishments throughout the year in 1907, compared with 69 in 1906 and 75 in 1905.

### Output by States.

The statistics of the production of coke in 1906 and 1907 are presented by States and Territories in the following table:

*Production of Coke in 1907 and 1906.*

| | 1907. Net tons. | 1906. Net tons. |
|---|---|---|
| Alabama | 3,021,754 | 3,034,501 |
| Colorado and Utah | 1,421,579 | 1,455,900 |
| Georgia | 71,934 | 70,280 |
| Illinois | 372,697 | 268,293 |
| Kansas | 6,274 | 1,69[illegible] |
| Kentucky | 67,068 | 7[illegible] |
| Montana | 40,711 | [illegible] |
| New Mexico | 265,125 | 1[illegible] |
| Ohio | 270,634 | 293,5[illegible] |
| Oklahoma | 19,089 | 49,[illegible] |
| Pennsylvania | 26,513,214 | 23,060,511 |
| Tennessee | 167,199 | 18[illegible] |
| Virginia | 1,545,280 | 1,577,659 |
| Washington | 52,028 | 4[illegible] |
| West Virginia | 4,112,896 | 3,713,514 |
| Other States | 2,528,739 | 2,085,617 |
| Totals | 40,779,564 | 36,401,217 |

The production of Illinois was largely increased by the operations of the by-product oven plant at South Chicago, this State showing an increase of 104,004 tons, or 38.71 per cent. In 1905 the State of Illinois produced only 10,307 tons of coke. In 1907 it produced 372,697 tons.

W. L. C.

# Ontario's Transmission System.

## How Electrical Power Is to Be Utilized.

TORONTO, August 15, 1908.—The contract for building transmission lines for the Hydro-Electric Power Commission of Ontario was awarded August 13 to the McGuigan Construction Company. The head of this company is F. H. McGuigan, formerly fourth vice-president and chief superintendent of the Grand Trunk Railway Company, and more recently of like status in the Great Northern Railway Company. The McGuigan Company's tender was $250,000 less than the commission's estimate of the cost. The company is to build the lines specified for $1,270,000, and if called upon by next February to construct another set of lines of equal length it is to do so at the same rate. The total length of line to be built at the present time is 293 miles. It is to radiate from Niagara Falls in two directions—westward to St. Thomas, and eastward to Toronto. It is to be completed by December 1, 1909. Tenders came from companies in the United States and in the United Kingdom, some being for the towers, others for the aluminum cable, others for the erection of the line. Of the 27 tenders only one other was like the McGuigan Company's, for the whole work.

The articles to be used must be of Canadian production. For the towers, which are to be 3176 in number and are to be 66 ft. high, 7340 tons of steel will be required. They are to be manufactured by the Canada Bridge Company, Walkerville, Ont., and by the Ontario Iron & Steel Company, Welland, Ont. Of aluminum cable 1,014,209 lb. will be used, and of telephone wire 140,000 lb. This will be made by the Northern Aluminum Company of America in its works at Shawinigan Falls, Que. The contractor undertakes upon due notice not only to double the mileage at the same rate, but also to furnish at the contract prices from 50 to 125 tons additional of aluminum cable for the construction of low tension lines. This is to provide for any extensions that may be desired from municipalities on the high tension lines to neighboring towns and villages.

### Provision for Extension.

The provision for the doubling of the high tension lines is in preparation for possible demands for power on the part of municipalities tributary to other natural power centers in the province. Thus in Eastern Ontario the Trent Valley has great power potentialities which have been reported upon by the commission. The Ottawa Valley and the leading streams of Northwestern Ontario have likewise been reported upon. There may be municipal power leagues organized in these several valleys on the model of the league in the Niagara District, for which transmission lines are now to be built.

### The Power League.

In what may be called the Niagara League the following municipalities were supposed to be associated for the purpose of taking power from the Hydro-Electric Power Commission: The cities of Toronto, West Toronto, Hamilton, London, Brantford, Guelph, Stratford, St. Thomas, Woodstock; the towns of Ingersoll, Berlin, Galt, Hespeler, St. Mary's, Preston, Paris, Waterloo; the valleys of New Hamburg and Weston. Last January the ratepayers of these several municipalities went to the polls and gave authority to their respective councils to enter into contracts with the Hydro-Electric Power Company for the supplying of stated quantities of electrical energy at delivery prices not exceeding specified rates. In pursuance of the by-laws thus approved by the ratepayers the executive heads of the majority of the municipalities named have signed contracts to take power from the commission. In the case of Hamilton, however, the City Council has decided not to act upon the authority enabling it to deal with the commission. Instead, it has elected to obtain its supply from the Cataract Power Company, a corporation made up largely of Hamilton men and already supplying from its Decew Falls plant the energy for the lighting and traction uses of the city and for operating many of its industries. This company offered the city power at practically the latter's own rate, and the Council considered this preferable to paying the rates of the Hydro-Electric Commission, notwithstanding that these were so much lower than those previously ruling. Hamilton's defection from the league may be followed by that of Brantford. As the municipalities in contract with the commission have to pay such prices as will cover all charges, both on operating and on capital account, the fewer the contracting municipal parties are the higher will be the rates. The whole policy is based on the support of the consumers. The Ontario Government, through the Hydro-Electric Power Commission, builds the transmission lines and supplies the power, but the debt and other charges incurred are recovered in the 30-year period of the contract and of the bond issue.

The detaching of members of the league by private competitors of the commission in the power business may not be confined to the case of Hamilton. The Cataract Power Company, whose enterprise brought great production works and transmission lines and traction systems into existence, will certainly continue the struggle to hold its business against this Government ownership competition. The Electrical Development Company, whose productive works are at Niagara Falls and whose transmission line extends to Toronto, will scarcely retire from the contest for Toronto's demand. There appears to be some doubt as to the ability of the Electrical Development Company—through its local distributing agency, the Toronto Electric Light Company—to make Toronto such an offer as the Cataract Power Company has made Hamilton. Were it to do so, Toronto might be hindered from going on with its municipal power scheme in spite of the contract with the commission.

The vulnerable feature in the commission's policy is that it rests on contracts with municipalities. If these for any reason become inoperative, the cost of the transmission works would have no municipal basis to rest on and would have to be shouldered by the province, in whose name the debt is formed. Not only the transmission lines and the right of way thereof, but also wholesale supplies of power are engaged by the commission. Its power is to be supplied by the Ontario Power Company, whose works are at Niagara Falls. It is provided in the agreement, however, that unless notice is duly given for the delivery of power at the commission's initial structures at the Falls, no power is to be paid for.

### Industrial Development.

If the commission's policy is a success, whatever may become of the private power companies on which it has opened its state competition, it can hardly fail to be creative of industrial enterprise. Hydro-electric power supplied at prices much below half those hitherto prevailing must attract manufacturers to the municipalities in the league. No other part of the Dominion is so gridironed by the railroads as is that in what for power purposes is known as the Niagara District. In no other part is population so dense. Hence, if the commission's calculations are verified in practice, there is almost certain to be a great flowering out of manufacturing enterprise on the transmission lines.

In a rich province that has no coal of its own, that must pay a stiff duty on all the soft coal it imports, and that has widely distributed streams on which fine natural falls occur at many points, hydro-electric power is certain to become a great impulse to manufacturing activity, especially when the state intervenes with competition that insures the utmost cheapness of the power. The building of costly distributing systems in the associated municipalities will call for an outlay of several millions. This money will be brought into the country by loans floated in England. The new development has, of course, the good wishes of the companies engaged in the manufacture of electrical plant and equipment. C. A. C. J.

M. A. Hanna & Co., Cleveland, Ohio, are making some improvements in their mining property at Diorite, Mich., which consist of the installation of three 250 hp. Rust water tube boilers and three furnaces. All of the brick and flue work is being done by Vollkommer & Hagan, furnace contractors and engineers, Empire Building, Pittsburgh.

## PERSONAL.

J. N. Sherer, who for the past two years has been associated with Crocker Brothers, New York, has resigned his position to assume the management of the Bellefonte Furnace Company, Bellefonte, Pa.

W. C. Franz, Charleston, W. Va., until recently general manager of the Kanawha & West Virginia Railway Company, has been appointed general manager of the Lake Superior Corporation, Sault Ste. Marie, Ontario, and its subsidiary companies.

W. P. Snyder, president, and C. D. Dyer, vice-president, of the Shenango Furnace Company, Pittsburgh, together with some friends, have gone up the lakes on the company's ore boat Wilpen, and will be absent several weeks.

H. G. Stalnaker, of the Stalnaker Iron Company, dealer in iron and steel scrap, Farmers' Bank Building, Pittsburgh, will sail this week from Philadelphia to Antwerp, and will then take a trip on the Continent, for the benefit of his health and expects to be away about six weeks.

Ambrose Beard, who has a wide practical experience in the manufacture of fine sheet steel and high grade tin plate, has been appointed assistant sales manager of the Follansbee Brothers Company, Pittsburgh, maker of black and galvanized sheets, tin and terne plate, with mills at Follansbee, W. Va.

Lewis E. Fulton has been elected treasurer of the Waterbury Farrel Foundry & Machine Company, Waterbury, Conn., to fill the vacancy caused by the resignation of his father, William E. Fulton. William Shirley Fulton becomes assistant treasurer. The other officers are: President, William E. Fulton; vice-president, George R. Lamb; secretary, D. C. Griggs.

The Republic Iron & Steel Company announces that Hardy Greenwood has been appointed its selling agent in the Southwest, with headquarters at San Antonio, Texas.

Allen D. Woods, naval architect, announces the establishment of an office in the Hudson Terminal Building, 50 Church street, New York City. He makes a specialty of designing vessels and their machinery and of surveying and supervising construction or repairing.

Robert A. McKean, of the firm of Coffin & McKean, contracting engineers, Fulton Building, Pittsburgh, has sailed for Europe to be gone two months.

Azor R. Hunt has completed a service of 21 years with the Carnegie Steel Company. For a number of years he has been general manager of the Homestead Steel Works. He was tendered a banquet at the Carnegie Hotel, Munhall, Pa., August 15, and was presented with a large silver loving cup, the presentation speech being made by J. S. Unger, assistant general manager.

W. R. Balsinger, assistant to the president of the Carnegie Steel Company, has received a communication from the Navy Department at Washington, giving the consent of the Secretary of the Navy to place on exhibition at the Pittsburgh Exposition this season a complete model of the new battleship Connecticut, which was Admiral Evans's flagship. The Connecticut was practically built of Pittsburgh material.

A. C. Campbell, secretary and superintendent of the E. J. Manville Machine Company, Waterbury, Conn., has just returned from a trip to Europe.

Joseph G. Butler, Jr., who has recently been motoring in England, will sail for home August 21 on the Amerika.

Jenkins Bros., 71 John street, New York, recently made an unusually large shipment of their Jenkins Y valves in 6 and 8 in. sizes to a new plant, which when completed will be one of the largest and most modern sugar refineries in the world. These valves are especially adapted for service in such plants or in any place where the passage of thick fluids is required, or as blow-off valves. As the seat is set at an angle of 45 degrees, little resistance is offered to the full flow of steam or any fluid. The valves thus have a full opening nearly in line with the pipe. They are fitted with renewable seat rings and disks, so that the parts most subject to wear can be readily replaced when worn. When made in brass they are supplied in two patterns, namely, standard, for ordinary pressures of steam, and extra heavy, for high pressures. Both types are extensively used, the latter being especially suitable for high pressure boilers. Valves in iron body are made either screwed or flanged, with substantial bolted bonnets, known in the trade as "Boston hub."

## OBITUARY.

ALLEN F. FLETCHER, founder and principal owner of the Athol Pump Company, Athol, Mass., died August 6, aged 69 years. He was a native of Athol. As a young man he was employed for some time by the John Russell Cutlery Company; then learned the tinware business and engaged in that line for himself in 1858. In 1862 he added the manufacture of pumps to his line of trade, and in 1868 sold the interest in the tinware business to his brother for the purpose of giving his exclusive attention to pumps. He invented a number of valuable appliances connected with pumps, including the suction and force pump which he made and sold extensively. In 1863 he built the first brass foundry in Athol. He leaves a widow, a daughter and a son. The son, Edgar A. Fletcher, has been associated with his father in the pump business and participated in its management.

### The Gayley Dry Air Blast.

The Gayley dry air blast is now receiving a wider recognition of its merits as a result of the work that has been accomplished at the furnaces of the Warwick Iron & Steel Company, at Pottstown, Pa., the South Chicago furnaces of the Illinois Steel Company and at the Cardiff furnaces in Wales. These locations represent different climatic conditions, yet practically the same far reaching economy has been obtained as was secured with the first installation at the Isabella furnaces of the Carnegie Steel Company in Pittsburgh. License for new equipment has been granted to the following companies:

Toledo Furnace Company, Toledo, Ohio. Two stacks.
Federal Furnace Company, Chicago, Ill. Two stacks.
Northwestern Iron Company, Mayville, Wis. Two stacks.
Youngstown Sheet & Tube Company, Youngstown, Ohio. Two stacks.
Cleveland-Cliffs Iron Company, Marquette, Mich. One stack.

In addition to the above, the United States Steel Corporation, as the result of a two months' test with the Bessemer process at the South Works of the Illinois Steel Company, has authorized an expenditure for a permanent installation to the Bessemer plant.

The adaptability of the dry air blast appears to be very wide. In the blast furnace important economies are secured through the establishment of uniformity in its operations, by means of a uniform blast supply, and in the Bessemer converter a more uniform and certain quality of steel is secured with greater economy.

**An International Congress of the Refrigerating Industries.**—There is to be held in Paris, from October 5 to October 11, 1908, the first international congress of the refrigerating industries, under the presidency of André Lebon, the secretary being J. de Loverdo. A series of committees has been appointed to take charge of the six sections, namely, "Low Temperatures and Their General Effects," "Refrigerating Appliances," "The Application of Refrigeration to Food," "The Application of Refrigeration to Other Industries," and "The Application of Refrigeration in Commerce and Transport." On the first day, October 5, C. von Linde of Munich will deliver the principal address, while the closing paper of the meeting will be by M. d'Arsonval, on liquid air and very low temperatures. The president of the American Committee is Homer McDaniel of Cleveland, and the secretary is J. F. Nickerson, editor of *Ice and Refrigeration*, of Chicago.

# NEWS OF THE WORKS.

### Iron and Steel.

George H. Lowe, 324 Irvine place, Elmira, N. Y., in connection with six others, is about to consummate a deal to take over the plant recently occupied by the Elmira Heights Rolling Mill Company at Elmira Heights. Arrangements have also been made with one of the local companies to take over the entire product of the plant, which will eliminate the expense of keeping up a sales department. As the plant has not been in operation for some time, it will be necessary to make some extensive repairs before putting it in operation. The capacity of the plant will be increased, which will necessitate the purchase of considerable new equipment. The plant will be managed entirely by the partners about to enter the deal, all of whom are practical steel men. About 200 men will be employed at the start, but as conditions warrant more will be added from time to time.

No. 2 Furnace of the Woodward Iron Company, at Woodward, Ala., has been blown out for relining.

Announcement is made that the furnace of the Woodstock Iron and Steel Corporation, at Anniston, Ala., will be put in blast September 1.

The rolling mill of the Tennessee Coal, Iron & Railroad Company at Bessemer, Ala., has again been put in operation.

The La Belle Works of the American Sheet & Tin Plate Company, at Wheeling, W. Va., after a long and very successful run, has been shut down to allow some needed improvements and additions to be made. This plant contains 10 hot mills and 10 cold mills, the product being black plate for tinning, and the annual capacity about 25,000 tons per year.

Josephine Furnace of the Josephine Furnace & Coke Company, at Josephine, Pa., has started up after being idle about three months.

### General Machinery.

The Walnut Lighting & Mfg. Company, Walnut, Ill., is building a machine shop and expects to manufacture electrical and other specialties. The company also does a general plumbing and heating business.

W. Gordon Brown and Clay Hanna, receivers of the Penn Shovel Mfg. Company, Warren, Ohio, state that the report that the plant has been sold to some Pittsburgh parties is incorrect. A deal is on covering the sale of the works, but nothing definite has been done as yet.

Walter Losch, Topton, Pa., has installed a machine shop for general machine and repair work and has work ahead for four or five months.

The Springfield Drop Forging Company, Springfield, Mass., whose plant has been operated for the past five years under lease to the Page-Storms Drop Forging Company, has again come into possession of the plant and will continue to manufacture the same line of drop forgings. Many improvements have been made to the plant, which will be placed in operation this week.

The Goldschmidt Thermit Company, 90 West street, New York, is building a new foundry and machine shop, 34 x 90 ft., in the rear of its present plant in Jersey City, which is to be fitted up for the better handling of the extensive repair work which is now done at the plant. Traveling cranes and modern equipment will be installed, making it the most complete thermit repair shop in the country. Special attention will be given to the quick repair of electric motor cases, truck frames, cast steel gear wheels, crank shaftings, and any wrought iron and steel sections not exceeding 2000 lb. in weight.

### Power Plant Equipment.

The Chanute Electric Railway Company, Chanute, Kan., has been organized, with a capital stock of $500,000, to build and operate 10 miles of railroad in and about Chanute. The officers of the company are W. M. Gray, president; J. M. Massey, vice-president; D. M. Kennedy, treasurer; S. W. Brewster, secretary.

The Royalton Power & Light Company, Royalton, Miss., recently incorporated with a capital stock of $10,000, has purchased the water power on the Platte River and will erect a new lighting plant, which it is expected will be completed and ready for operation by November 1, 1908. Oscar Claussen, St. Paul, Minn., has been engaged as engineer and is drawing plans and specifications for the plant. The officers of the company are A. C. Wilson, president; Mark Murphy, vice-president; Charles R. Rhoda, secretary and treasurer.

The Colfax Springs Railway Company, Colfax, Iowa, has been incorporated, with a capital stock of $25,000, and will build an electric railroad from Colfax to Colfax Springs, a distance of about 2 miles. The officers of the company are Frank B. Hooper, president; James P. Donahue, vice-president and treasurer; John W. Martin, secretary. The general contractor for the work is the Tri-City Construction Company, Davenport, Iowa.

The city of Atkins, Ark., has granted a franchise to W. F. Turner of that city to build and operate an electric light system.

The North Beach power house of the United Railroads of San Francisco, Cal., which was severely damaged by the earthquake, is now being repaired and additional machinery installed, consisting of one 5000-kw. Curtis turbine unit, with all auxiliaries, boilers, condensers, pumps, &c.

The Jasper Water & Light Company, Jasper, Fla., has recently incorporated, with a capital stock of $25,000, and is officered as follows: W. A. Smith, president; C. W. Smith, vice-president; B. B. Blackwell, secretary and treasurer.

The Robinson Water, Light & Heat Company, Robinson, Ill., will spend $35,000 in the reconstruction of its water and light plant, which will include the purchase of 27,000 ft. of water mains. E. B. Pollister is manager.

The new boiler house, which is an extension of the municipal water and light plant, at Coldwater, Mich., is nearing completion. The new boilers to be installed in this plant, however, will not be purchased until some time during the summer of 1909. William H. Friedrich is superintendent.

The Mayor and Aldermen of Clarksdale, Miss., will receive bids until August 24 for constructing 250,000-gal. roofed reservoir, constructing reinforced concrete chimney, 300-kw. three-phase engine type generator, and 450-hp. simple Corliss or four-valve engine for the generator. For specifications address Walter G. Kirkpatrick, engineer, Jackson, Miss.

The Schutte & Koerting Company, Philadelphia, Pa., has secured two orders for the Koerting patent oil firing system, one for equipping the new battleship North Dakota, now in course of construction at the plant of the Fore River Shipbuilding Company, and another for the Delaware, which is being built by the Newport News Shipbuilding Company. The Koerting system is in successful use in the English and German navies.

### Foundries.

The recent statement in these columns that the Beggs Pipe & Foundry Company, North Birmingham, Ala., had suspended operations at its plant for an indefinite period is incorrect. The company closed down its plant for a few days for some badly needed repairs, but expects to start up again within a few days, as it is behind with orders and short on a good many lines of fittings. The company reports business good and that it is getting very satisfactory prices for its products.

The Southern Pipe & Foundry Company, North Birmingham, Ala., has suspended operations for an indefinite period.

### Hardware.

The Stanley Rule & Level Company, New Britain, Conn., has completed plans for a new brick factory building, three stories and basement, of heavy mill, slow burning construction. The walls will be heavy enough to permit of raising the building several stories when desired. The structure will be used mainly for storage purposes, and neither power nor elevator will be installed. A steel bridge will connect with the present factory

### Fires.

The plant of the United States Hame Company on Watt street, Buffalo, was damaged to the extent of $8000 by fire on the 16th inst. The loss is covered by insurance.

Fire destroyed the main building of the Jenkins Rubber Company, at Magnolia avenue and Division street, Elizabeth, N. J., August 6, causing a loss which is estimated at $100,000, including considerable machinery.

The machine shop of the Austin Machine Works, Minneapolis, Minn., was badly damaged by fire August 7.

The main building of the Albany Iron Company, Albany, Ore., was recently destroyed by fire, the loss being about $20,000.

### Miscellaneous.

The Asheville & Carolina Railway Company, Asheville, N. C., recently incorporated with a capital stock of $200,000, to construct an electric railroad from Asheville to the South Carolina State line, a distance of 35 miles, will take over the franchise of the Asheville & Hendersonville Railway Company, which owns the right of way of the proposed Asheville-Hendersonville electric line, and this right of way will be included in the line of the company. Work of construction will be started this month. The company has also been granted a charter with capital stock of $100,000 in South Carolina to construct an electric railroad from Greenville, S. C., to the North Carolina boundary, a distance of 40 miles. The South Carolina section of the road will be known as the Greenville & Carolina Railway, the two roads forming one continuous line from Greenville to Asheville. The power plant will be located in the Blue Ridge Mountains about 20 miles from Asheville. The Carolina Construction Company, Asheville, has been awarded contract for the building of the road.

The installation of a 10-ton ice plant this winter is being considered by the Alma Light & Ice Company, Alma, Kan.

After a copartnership of 15 years, Deetz & Co., Duluth, Minn., has been incorporated under this same name with a capital of $50,000. The company manufactures a complete line of sheet metal fire proof windows and doors, cornice and skylights, steel ceilings, ventilators and wrought iron work. The officers are A. W. Deetz, president and manager; E. W. Deetz, secretary and treasurer.

The National Metal Molding Company will enlarge its factory at Economy, Pa., and has placed a contract for the structural steel work with the Wm. B. Scaife & Sons Company, Pittsburgh, Pa.

# The Iron and Metal Trades

Favorable agricultural conditions find direct expression in the demand for the many lighter lines of iron, steel and hardware which the farmer consumes, and in these the requirements are rapidly approaching the normal volume. In the heavier lines the business is still spotty, but there is a more cheerful tone, with greater confidence, which is causing the mills to buy raw material more courageously. The strength in the markets for Old Material reflects this fairly well.

Sellers of Foundry Pig Iron are considerably less urgent, but large buyers, while feeling the market, do not seem to be convinced that concessions cannot be secured. Their point of view receives some support from the weakness of Bessemer and Basic Pig Iron in the Central West, where sales of about 20,000 tons of these grades are reported at lower prices than hitherto prevailing. Stocks, generally speaking, are decreasing, those of the United States Steel Corporation being down to about 77,000 tons, the lowest on record, not counting the Tennessee Company.

There is more employment in the heavier lines, and a fair prospect of an increase. Thus the car builders have inquiries in hand, including the Harriman order, for about 12,000 cars. A number of the railroads are putting cars and locomotives into order so that requirements from that direction are larger. The Steel Corporation will probably at an early date place an order for two ore boats, the first work of that kind coming to the Lake yards for a long time.

In Structural Material the most interesting development of the week has been the sale of a lot of 10,000 tons for shipment to Canada.

In the domestic markets the competition of the fabricators continues very keen. During the week very little work has been actually placed. It includes 2700 tons for the building to be erected on the site of the Everett House in this city, and 2000 tons for the Panhandle Bridge at Steubenville, Ohio. It is estimated that between 20,000 and 25,000 tons of bridge work is now on the market, this including 6000 tons for the Carolina, Clinchfield & Ohio, 3700 tons for an eight track lift bridge over the Chicago Drainage Canal, and 1000 tons for the Grand Trunk.

At Springfield, Mass., bids will be opened on the 9th of September for a 12-mile 42-in. pipe line. If Cast Iron Pipe is adopted the tonnage will be 18,500 tons. If a Steel Pipe line is selected there will be required between 8000 and 9000 tons of Steel Plates. Press reports of a record breaking order for Line Pipe having been placed with the National Tube Company by the Standard Oil Company are untrue. No unusual business has been taken. It is a fact, however, that the Standard Oil Company has this year ordered a greater tonnage than ever before, among the orders being one for 550 miles of 6-in. line pipe, on which shipments are now nearly completed.

No new business of any consequence has been done by the Rail mills. There are some heavy inquiries in the market for Rails for export.

The speculators in Copper, who often operate simultaneously in stocks, seem to have overshot the mark. The price has sagged back to 13½c. for Electrolytic and 13⅝c. for Lake, with little buying on the part of consumers.

Spelter has eased off to 4.65c., New York.

## A Comparison of Prices.

**Advances Over the Previous Month in Heavy Type, Declines in Italics.**

At date, one week, one month and one year previous.

| | Aug.19, 1908. | Aug.12, 1908. | July15, 1908. | Aug.21, 1907. |
|---|---|---|---|---|
| **PIG IRON,** Per Gross Ton: | | | | |
| Foundry No. 2, Standard, Philadelphia | $16.50 | $16.50 | $16.50 | $22.00 |
| Foundry No. 2, Southern, Cincinnati | **15.25** | 15.25 | 15.00 | 22.75 |
| Foundry No. 2, Local, Chicago | 17.00 | 17.00 | 17.00 | 24.50 |
| Bessemer, Pittsburgh | *15.30* | 16.30 | 16.90 | 22.90 |
| Basic, delivered Eastern Pa. | 15.00 | 15.00 | 15.00 | 20.50 |
| Basic, Valley Furnace | *14.50* | 14.75 | 15.00 | 21.00 |
| Gray Forge, Pittsburgh | *14.65* | 14.65 | 14.90 | 21.90 |
| Lake Superior Charcoal, Chicago | *19.50* | 19.50 | 20.00 | 27.50 |
| **BILLETS, &c.,** Per Gross Ton: | | | | |
| Bessemer Billets, Pittsburgh | 25.00 | 25.00 | 25.00 | 29.00 |
| Forging Billets, Pittsburgh | 27.00 | 27.00 | 27.00 | 33.00 |
| Open Hearth Billets, Phila. | 26.20 | 26.20 | 26.20 | 31.50 |
| Wire Rods, Pittsburgh | 33.00 | 33.00 | 33.00 | 36.00 |
| Steel Rails, Heavy, Eastern Mill | 28.00 | 28.00 | 28.00 | 28.00 |
| **OLD MATERIAL,** Per Gross Ton: | | | | |
| Steel Rails, Melting, Chicago | **14.25** | 14.25 | 12.75 | 17.00 |
| Steel Rails, Melting, Phila. | **14.50** | 14.50 | 13.50 | 17.00 |
| Iron Rails, Chicago | **16.50** | 16.50 | 16.00 | 20.50 |
| Iron Rails, Philadelphia | **20.00** | 19.00 | 18.00 | 20.50 |
| Car Wheels, Chicago | **15.50** | 15.50 | 13.00 | 24.50 |
| Car Wheels, Philadelphia | **15.00** | 14.50 | 13.50 | 23.50 |
| Heavy Steel Scrap, Pittsburgh | **15.00** | 15.00 | 14.00 | 17.75 |
| Heavy Steel Scrap, Chicago | **13.00** | 13.00 | 11.50 | 14.75 |
| Heavy Steel Scrap, Philadelphia | **14.50** | 14.50 | 14.00 | 16.75 |
| **FINISHED IRON AND STEEL,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Refined Iron Bars, Philadelphia | **1.40** | 1.40 | 1.35 | 1.85 |
| Common Iron Bars, Chicago | 1.50 | 1.50 | 1.50 | 1.78 |
| Common Iron Bars, Pittsburgh | 1.40 | 1.40 | 1.40 | 1.70 |
| Steel Bars, Tidewater, New York | 1.56 | 1.56 | 1.56 | 1.86 |
| Steel Bars, Pittsburgh | 1.40 | 1.40 | 1.40 | 1.60 |
| Tank Plates, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Tank Plates, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Beams, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Beams, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Angles, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Angles, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Skelp, Grooved Steel, Pittsburgh | 1.45 | 1.45 | 1.45 | 1.85 |
| Skelp, Sheared Steel, Pittsburgh | 1.50 | 1.50 | 1.50 | 1.95 |
| **SHEETS, NAILS AND WIRE,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Sheets, No. 27, Pittsburgh | 2.40 | 2.40 | 2.40 | 2.50 |
| Wire Nails, Pittsburgh | 1.95 | 1.95 | 1.95 | 2.00 |
| Cut Nails, Pittsburgh | 1.75 | 1.75 | 1.75 | 2.10 |
| Barb Wire, Galv., Pittsburgh | 2.40 | 2.40 | 2.40 | 2.45 |
| **METALS,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Lake Copper, New York | **13.62½** | 14.00 | 12.97½ | 19.00 |
| Electrolytic Copper, New York | **13.50** | 13.85 | 12.75 | 18.00 |
| Spelter, New York | **4.65** | 4.75 | 4.45 | 5.70 |
| Spelter, St. Louis | **4.50** | 4.62½ | 4.30 | 5.55 |
| Lead, New York | **4.60** | 4.60 | 4.45 | 5.10 |
| Lead, St. Louis | **4.45** | 4.45 | 4.27½ | 5.00 |
| Tin, New York | **29.50** | 30.50 | 29.20 | 37.20 |
| Antimony, Hallett, New York | *8.00* | 8.00 | 8.25 | 9.00 |
| Nickel, New York | 45.00 | 45.00 | 45.00 | 45.00 |
| Tin Plate, 100 lb., New York | $3.89 | $3.89 | $3.89 | $4.09 |

## Chicago.

FISHER BUILDING, August 19, 1908.—(*By Telegraph.*) The Iron industry in the West is somewhat like a six-horse team in which the horses do not pull together. In some branches of the trade the volume of business is very satisfactory, and others are doing fairly well in view of the general business conditions, while some are lagging behind. In Wire products, for example, which are controlled largely by agricultural conditions, business is quite active, and jobbers occasionally have difficulty in getting as prompt shipment as they desire for round lots. The Bar mills are making a fair run on specifications that are coming in on current contracts from the railroads for repair work and from the implement manufacturers for their fall trade, as well as from other sources. In Structural Material there is a gratifying increase in the volume of small orders, which furnishes conclusive evidence of the growth of fireproof construction. No large contracts have been taken recently in this market, and the fabricators are disappointed at the small tonnage of bridge work that is coming out. Prospects, however, are more encouraging than the business in hand. The new eight-track rolling lift bridge over the Drainage Canal will require 3700 tons of Steel besides 200 tons of machinery. The Union Depot, which the Pennsylvania Railroad proposes to erect on the site of the building now in use, will extend south from the new northwestern passenger terminal along the Chicago River, and will be a large structure. The present depot is used by the Chicago, Milwaukee & St. Paul; Chicago, Burlington & Quincy, and Chicago & Alton, as well as by the Pennsylvania lines. Track Supplies are selling well,

and there is a steady improvement in Sheets, Plates and Pipe. The stiffening in the price of Southern Pig Iron has had a dampening effect on the general buying movement, as foundrymen are not yet reconciled to the advance. Old Material continues strong, and dealers report a general increase in orders for small lots.

**Pig Iron.**—The activity in Southern Iron, which was reported last week, has had a noticeable effect in strengthening the situation among the Southern furnaces, and there are no prices openly quoted in this market lower than $12.50 for No. 2 Foundry, Birmingham, this price being asked for the High Phosphorus Irons of northern Alabama, while some of the Birmingham interests are holding for $13. No sales have been reported in this market at $13, Birmingham, but one lot of 500 tons was closed last week at $12.50. Some current business in small lots is also reported at the latter figure, but the leading sellers admit that the advance has checked the general buying movement for the present. The general impression is that the furnaces will not accept less than $12.50 on new business, and if any concessions are made from this price they are limited to resale Iron. The demand for Northern Iron is improving slowly. The leading sellers are holding firmly for their regular prices, and they believe that in the course of time the weak spots will be eliminated. The foundry situation is somewhat mixed. Many instances are reported where foundries are running with full force, and others are doing a fair volume of business, but some of the jobbing foundries are not so well supplied with orders. On the whole, it is believed that the melt continues to increase. A feature of the trade which excites some comment is that in all the large tonnages contracted for in the past few months there are practically no requests to delay deliveries, and the current business generally calls for immediate or prompt shipment. This is considered a good indication that consumption is following closely the actual movement of Iron from the furnaces. The following quotations are for August and September delivery, f.o.b. Chicago:

| | |
|---|---|
| Lake Superior Charcoal | $19.50 to $20.00 |
| Northern Coke Foundry, No. 1 | 17.50 to 18.00 |
| Northern Coke Foundry, No. 2 | 17.00 to 17.50 |
| Northern Coke Foundry, No. 3 | 16.50 to 17.00 |
| Northern Scotch, No. 1 | 18.00 to 18.50 |
| Southern Coke, No. 1 | 16.85 to 17.35 |
| Southern Coke, No. 2 | 16.35 to 16.85 |
| Southern Coke, No. 3 | 15.85 to 16.35 |
| Southern Coke, No. 4 | 15.35 to 15.85 |
| Southern Coke, No. 1 Soft | 16.85 to 17.35 |
| Southern Coke, No. 2 Soft | 16.35 to 16.85 |
| Southern Gray Forge | 14.85 to 15.35 |
| Southern Mottled | 14.60 to 15.10 |
| Malleable Bessemer | 17.50 to 18.00 |
| Standard Bessemer | 18.40 to 18.90 |
| Jackson Co. and Kentucky Silvery, 6 % | 19.90 to 20.40 |
| Jackson Co. and Kentucky Silvery, 8 % | 20.90 to 21.40 |
| Jackson Co. and Kentucky Silvery, 10 % | 22.90 to 23.40 |

(*By Mail.*)

**Billets and Rods.**—The week has passed without any notable transactions in Billets. Contracts in this line are closed at rare intervals in this district, owing to the small number of consumers. The price of Forging Billets remains at $28.50, base, Chicago. There is a more active and steady demand for Wire Rods, as the sales of Wire products have reached a volume that keeps all branches of the Wire industry active. Regular quotations are maintained as follows: Bessemer, $33; Basic, $34; Chain, $33; all at Pittsburgh.

**Rails and Track Supplies.**—No important orders were booked for Standard Section Rails the past week, but the demand for Light Rails is quite active, especially from the lumber and mining interests, which are increasing their operations. There is also a general increase in orders for Track Fastenings, especially from the Western roads, which are pushing necessary repair work to take care of the crop movement. There were no large orders received last week, but the volume of mail orders shows a satisfactory gain, Monday morning's mail being the best this year. We quote as follows: Angle Bars, accompanying Rail orders, 1908 delivery, 1.50c.; car lots, 1.60c.; Spikes, 1.80c. to 1.90c., according to delivery; Track Bolts, 2.20c. to 2.25c., base, Square Nuts, and 2.35c. to 2.40c., base, Hexagonal Nuts. The store prices on Track Supplies range from 0.15c. to 0.20c. above mill prices. Light Rails, 25 to 45 lb., $28; 20-lb., $29; 16-lb., $30; 12-lb., $31. Standard Sections, $28, f.o.b. mill, full freight to destination.

**Structural Material.**—The tonnage of bridge contracts was small the past week, the American Bridge Company having booked only 750 tons distributed in small lots. The fabricators, however, feel more cheerful over the outlook for the immediate future. The Sanitary District of Chicago will open bids September 2 for an eight-track Scherzer rolling lift bridge of single leaf design over the Drainage Canal, equal to four double track single leaf bridges. It is also reported that the Pennsylvania Railroad has definitely decided to begin work in the near future on a large passenger terminal to replace the present Union Depot west of the Chicago River. In Structural building material there is a steady growth in the aggregate of small orders, owing to the general increase in the use of Steel in business and residence structures. Prices from store are 1.95c. to 2c. Mill prices at Chicago are as follows: Beams and Channels, 3 to 15 in., inclusive, 1.78c.; Angles, 3 to 6 in., ¼-in. and heavier, 1.78c.; larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 15 in., 1.88c.; Zees, 3 in. and over, 1.78c.; Tees, 3 in. and over, 1.83c.

**Plates.**—No special activity is shown in the demand for Plates, but a steady improvement is noted in the specifications for early delivery. One Chicago mill is running at full capacity on Light Plates, and all sales offices report a steady improvement in the demand for Sheared Plates. We quote mill shipments as follows: Tank Plates, ¼-in. and heavier, wider than 6¼ and up to 100 in. wide, inclusive, car lots, Chicago, 1.78c.; 3-16 in., 1.88c.; Nos. 7 and 8 gauge, 1.93c.; No. 9, 2.03c.; Flange quality, in widths up to 100 in., 1.88c., base, for ¼-in. and heavier, with the same advance for lighter weights; Sketch Plates, Tank quality, 1.88c.; Flange quality, 1.98c. Store prices on Plates are as follows: Tank Plates, ¼-in. and heavier up to 72-in. wide., 2c. to 2.10c.; from 72 to 96 in. wide, 2.10c. to 2.20c.; 3-16 in. up to 60 in. wide, 2.10c. to 2.25c.; 72 in. wide, 2.30c. to 2.40c.; No. 8 up to 60 in. wide, 2.10c. to 2.15c.; Flange and Head quality, 0.25c. extra.

**Sheets.**—A good demand is coming from jobbers for Galvanized Sheets. There are also more buyers for Blue Annealed and one order for 200 tons was refused by a local mill because the buyer wanted delivery in a week, but the mill could not make shipment in less than four or five weeks. We quote mill shipments as follows, Chicago: Blue Annealed, No. 10, 1.98c.; No. 12, 2.05c.; No. 14, 2.08c.; No. 16, 2.18c.; Box Annealed, Nos. 17 to 21, 2.43c.; Nos. 22 to 24, 2.48c.; Nos. 25 and 26, 2.53c.; No. 27, 2.58c.; No. 28, 2.68c.; No. 29, 2.78c.; No. 30, 2.88c.; Galvanized Sheets, Nos. 10 to 14, 2.63c.; Nos. 15 and 16, 2.83c.; Nos. 17 to 21, 2.98c.; Nos. 22 to 24, 3.13c.; Nos. 25 and 26, 3.33c.; No. 27, 3.53c.; No. 28, 3.73c.; No. 30, 4.23c.; Black Sheets from store: Blue Annealed, No. 10, 2.15c.; No. 12, 2.20c.; No. 14, 2.25c.; No. 16, 2.35c.; Box Annealed, Nos. 18 to 21, 2.60c.; Nos. 22 to 24, 2.65c.; No. 26, 2.70c.; No. 27, 2.75c.; No. 28, 2.85c.; No. 30, 3.25c.; Galvanized from store: Nos. 10 to 16, 3c.; Nos. 18 to 20, 3.15c.; Nos. 22 to 24, 3.30c.; No. 26, 3.50c.; No. 27, 3.70c.; No. 28, 3.90c.; No. 30, 4.40c. to 4.45c.

**Bars.**—Little new business has been booked, but specifications are improving, and the mills are making a fair run on the business in hand. The railroads are taking a good quantity in small lots for repair work, and the manufacturers are also furnishing larger orders. One buyer has given specifications for the entire year on his contract, and others until January 1. The inquiries for Iron Bars are light at present, but the stiffening in prices of Old Material has given a stronger tone to the prices of Iron Bars. Quotations, Chicago, are as follows: Steel Bars, 1.58c., with half extras; Iron Bars, 1.50c.; Hoops, No. 13 and lighter, 1.98c., full extra Hoop card; Bands, No. 12 gauge and heavier, 1.58c., half extra Steel Bar card; Soft Steel Angles and Shapes, 1.68c., half extras. Store prices are as follows: Bar Iron, 2c. to 2.15c.; Steel Bars, 1.90c. to 2c.; Steel Bands, 1.90c., as per Bar card, half extras; Soft Steel Hoops, 2.25c. to 2.35c., full extras.

**Merchant Pipe.**—Jobbers are increasing their orders, especially from the Northwest, and there is a fairly satisfactory growth in business. The building activity in the West creates a good demand for plumbing and heating Pipe. The following mill discounts are quoted: Black Pipe, ¾ to 6 in., 73.2; 7 to 12 in., 70.2; Galvanized, ¾ to 6 in., 63.2. These discounts are subject to one point on the base. From store, in small lots, Chicago jobbers quote 73 per cent. on Black Steel Pipe, ¾ to 6 in. About three points above these prices is asked for Iron Pipe.

**Boiler Tubes.**—The railroads are buying Locomotive Tubes only for necessary repairs, and there is no demand for new construction. The boiler shops are doing some business, and creating a little more demand in their line. Mill quotations for future delivery on the base sizes are as follows: 2¾ to 4½ in., inclusive, Steel Tubes, 63.2; Iron, 50.2; Seamless, 50.2; 2½ in. and smaller, and lengths over 18 ft., and 2½ in. and larger, and lengths over 22 ft., 10 per cent. extra. Store prices are as follows:

| | Steel. | Iron. | Seamless. |
|---|---|---|---|
| 1 to 1¼ in. | 35 | 35 | 35 |
| 1¾ to 2¼ in. | 50 | 35 | 35 |
| 2½ in. | 52½ | 35 | 35 |
| 2¾ to 5 in. | 60 | 47½ | 47½ |
| 6 in. and larger | 50 | 35 | .. |

**Merchant Steel.**—New business is light in volume, but specifications are coming forward in a more satisfactory manner on contracts for the year. Some of the implement manufacturers have specified in advance for several months, and a more liberal tendency is noted in this line. The demand for Shafting and Machine Steel is not showing as much progress. We quote as follows: Planished or Smooth Finished Tire Steel, 1.78c.: Iron Finish, up to 1½ x ½ in., 1.73c., base, Steel card; Iron Finish, 1½ x ½ in. and larger, 1.58c., base, Tire card: Channels for solid Rubber Tires. ¾ to 1 in., 2.08c., and 1⅛ in. and larger, 1.98c.; Smooth Fin

ished Machinery Steel, 2.08c.; Flat Sleigh Shoe, 1.63c.; Concave and Convex Sleigh Shoe, 1.83c.; Cutter Shoe, 2.05c.; Toe Calk Steel, 2.13c.; Railroad Spring, 1.98c.; Crucible Tool Steel, 7¼c. to 8c., and still higher prices are asked on special grades. Cold Rolled Shafting on contracts for 100 tons and over, 57 per cent. off; 56 per cent. off in car lots; 52 per cent. in less than car lots, on which carload freight is allowed within base territory.

**Cast Iron Pipe.**—The market has been quiet and little has been booked excepting small current lots. Bids for supplying 1000 tons of Water Pipe for the city of Decatur, Ill., are being received. No change is reported in prices, which we quote nominally per net ton, Chicago, as follows: Water Pipe, 4 in., $27; 6 to 12 in., $26; 16-in. and up, $25, with $1 extra for Gas Pipe.

**Old Material.**—A strong tone is maintained in the Scrap market, and dealers are asking higher prices, especially for Wrought Scrap. Relaying Rails are scarce and in good demand for yard extensions and similar purposes. There are no new railroad lists in the market this week, but good prices were realized on those closed last week. The Santa Fé obtained $13.50 for a lot of No. 1 Wrought, $16 for Rerolling Rails and $13.20 for No. 1 Cast. The Wisconsin Central recently obtained $16.25 for a lot of Old Car Wheels, which went to a dealer. Consumers are not willing to pay more than $16, apparently. There is a more active general demand from consumers for material, but they are buying in relatively small lots. Dealers are very confident of the future, and inquiries for any large tonnage would undoubtedly stiffen prices. There is a feeling that the prices of mill Scrap have about reached the limit that the mills can afford to pay until they can realize better prices for Iron Bars than they have obtained recently. The dealers have been fortunate thus far in forecasting the developments in the Iron trade, and they are confident of a more active demand from consumers in the near future. We quote, per gross ton, f.o.b. Chicago, as follows:

| | |
|---|---|
| Old Iron Rails | $16.50 to $17.00 |
| Old Steel Rails, rerolling | 15.75 to 16.25 |
| Old Steel Rails, less than 3 ft | 14.25 to 14.75 |
| Relaying Rails, standard sections, subject to inspection | 20.00 to 21.00 |
| Old Car Wheels | 15.50 to 16.00 |
| Heavy Melting Steel Scrap | 13.00 to 13.50 |
| Frogs, Switches and Guards, cut apart | 14.00 to 14.50 |
| Mixed Steel | 10.25 to 10.75 |

The following quotations are per net ton:

| | |
|---|---|
| Iron Fish Plates | $15.50 to $16.00 |
| Iron Car Axles | 17.50 to 18.00 |
| Steel Car Axles | 16.50 to 17.00 |
| No. 1 Railroad Wrought | 13.00 to 13.50 |
| No. 2 Railroad Wrought | 11.75 to 12.25 |
| Railway Springs | 12.75 to 13.25 |
| Locomotive Tires, smooth | 13.00 to 13.50 |
| No. 1 Dealers' Forge | 10.00 to 10.50 |
| Mixed Busheling | 7.50 to 8.00 |
| Iron Axle Turnings | 6.75 to 7.25 |
| Soft Steel Axle Turnings | 6.75 to 7.25 |
| Machine Shop Turnings | 6.75 to 7.25 |
| Cast Borings | 5.50 to 6.00 |
| Mixed Borings, &c. | 5.50 to 6.00 |
| No. 1 Mill | 7.50 to 8.00 |
| No. 2 Mill | 6.00 to 6.50 |
| No. 1 Boilers, cut to Sheets and Rings | 9.50 to 10.00 |
| No. 1 Cast Scrap | 12.75 to 13.25 |
| Stove Plate and Light Cast Scrap | 11.00 to 11.50 |
| Railroad Malleable | 12.00 to 12.50 |
| Agricultural Malleable | 11.00 to 11.50 |
| Pipes and Flues | 9.50 to 10.00 |

**Metals.**—The dropping off of large inquiries for Copper in the Eastern market, which caused a fractional decrease in the price, has been reflected in this market, and this week quotations are ¼c. lower. The aggregate of small orders placed last week was well up with that of the two previous weeks, but no large orders were placed. Pig Tin is off a little, but the rest of the items hold firm, although there is not much of a demand. Last week's transactions in Old Metals, while fairly good, were not up to those of the previous two weeks. We quote as follows: Casting Copper, 13¾c.; Lake, 14c. to 14¼c., in car lots for prompt shipment; small lots, ¼c. to ⅜c. higher; Pig Tin, car lots, 32½c.; small lots, 34½c.; Lead, Desilverized, 4.65c. to 4.75c., for 50-ton lots; Corroding, 4.90c. to 5c., for 50-ton lots; in car lots, 2¼c. per 100 lb. higher; Spelter, 4.85c.; Cookson's Antimony, 10½c., and other grades, 9¾c. to 10¼c.; Sheet Zinc is $7, list, f.o.b. La Salle, in car lots of 600-lb. casks. On Old Metals we quote: Copper Wire, 13¼c.; Heavy Copper, 13c.; Copper Bottoms, 10⅝c.; Copper Clips, 11c.; Red Brass, 11½c.; Yellow Brass, 9c.; Light Brass, 6½c.; Lead Pipe, 4c.; Zinc, 3¾c.; Pewter, No. 1, 21c.; Tin Foil, 23c.; Block Tin Pipe, 25c.

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The Harlan & Hollingsworth Corporation, Wilmington, Del., states that the reports which have appeared in the daily press regarding its absorption by the Bethlehem Steel Company are more or less in error. The corporation is a subsidiary of the Bethlehem Steel Corporation. It is a builder of steel vessels and passenger cars, and is now simply contemplating tearing down two of its old shops and replacing these with a new building. This matter, however, has not yet taken definite shape.

## San Francisco.

SAN FRANCISCO, CAL., August 12, 1908.

The first few days of August have shown an improvement over July in some respects, although that month made a very good building record. The local manufacturing situation has not improved materially, but the outlook is rather more encouraging. The stagnation in coastwise steamer business consequent upon the demoralization of lumber prices has caused the tying up of many vessels, and few new engines are being constructed for steam schooners in local engineering works. The great activity in the oil regions of California and the gradual improvement in the mining and smelting lines will eventually result in the placing of many good orders with machine shops and foundries. The prices of crude petroleum are still firm, and there is a probability that they will go higher. When oil reaches $1.25 per barrel, however, Coal will again be in demand as a competitor of the liquid fuel.

**Structural Materials.**—The actual demand for fabricated Steel and Iron for the immediate construction of buildings has been limited to comparatively small orders the past week or two. Several large contracts for Structural Shapes for good buildings are still held in abeyance, awaiting the final acceptance of plans or the completion of financial arrangements. The State Harbor Commission has awarded Robert Wakefield a construction contract, amounting to $302,400, for a new wharf on the San Francisco water front, which is to be designated Pier 40. The price was $40,000 below the estimate made by the State Engineer. The new pier will be constructed of Steel and concrete, and will have a Steel shed with a railroad track extending down the center. San Francisco's building permits for July numbered 569, with a total valuation of $3,139,027, an increase of $787,000 over the figures for June. In Los Angeles 571 permits were issued during the month, with a valuation of $1,352,290.

**Pig Iron.**—There is little change in the local market. The foundry demand is still light and no large orders are being placed with local importers. There is ample stock on hand for present requirements and comparatively few shipments are being made from foreign countries to this port. The slight fluctuations in the prices of American Pig Iron on the Atlantic Coast do not have any particular effect on prices here. No cargoes of foreign Pig Iron have been received here since last report. Prices of No. 1 English, No. 1 Scotch and Chinese Pig Iron are about $27 per ton, ex-yard.

**Cast Iron Pipe.**—Just now there is a lull in the inquiries for Cast Iron Pipe, which were quite numerous last month, but the year's total tonnage will undoubtedly make a good showing, as several important jobs are expected in the future. In Los Angeles, for instance, the requirements for the new distribution system in connection with the increased municipal water supply will be large. The water supply situation in San Francisco is still rather mixed, but after much opposition from interested sources money has been provided for a preliminary examination of the Hetch-Hetchy supply from the high Sierras by competent engineers. An option has been taken on a site for a diverting dam, &c., in the Hetch-Hetchy Valley in Tuolumne County. Los Angeles advices say that if any of the seven bids put in for the construction of the Jawbone Canyon section of the Owens River Aqueduct is accepted by the Board of Works the contract will be awarded to John Moran of that city. His bid of $2,286,247 was the lowest. The city of Santa Barbara has just taken bids for 350 tons of Cast Iron Pipe for the municipal water system. A great variety of Cast Iron fittings and 31 4-in. fire hydrants were also included in the proposals. Present prices on Cast Iron Pipe per ton, f.o.b. Pacific Coast terminals, are about as follows: 4-in., $34.50; 6-in., $33.50; 10 and 12 in., $33.

**Merchant Pipe.**—No improvement is noted in the demand for Merchant Pipe, and there is a growing disposition on the part of local jobbers to cut retail prices under increasing competition. Much second-hand Pipe is offered at very low prices. The differential remains unchanged. Discounts on Steel Pipe are about as follows on jobbers' carloads:

| | Steel. Black. | Steel. Galv. |
|---|---|---|
| | % | % |
| ⅛ to ¼ in | 56.5 | 40.5 |
| ⅜ in | 58.5 | 44.5 |
| ½ in | 60.5 | 48.5 |
| ¾ to 6 in | 64.5 | 54.5 |
| 7 to 12 in | 61.5 | 46.5 |
| Extra strong, plain ends: | | |
| ⅛ to ⅜ in | 49.5 | 37.5 |
| ½ to 4 in | 56.5 | 44.5 |
| 4½ to 8 in | 52.5 | 40.5 |
| Double extra strong, plain ends: | | |
| ⅛ to 8 in | 45.5 | 34.5 |

**Coke.**—The local market for Foundry Coke has not improved and there is a very light demand, with good sized stocks on hand. There is always some demand for the cheaper grades of Coke, principally Australian, for the smelters in operatioin along the coast. A consignment of 1504 tons of English Foundry Coke has just been received by Girvin & Eyre. The steamship Boveric, which arrived

August 11 from Sydney, brought 2505 tons of Australian Coke, consigned to J. J. Moore & Co. Coke prices per ton in this market are now about as follows: English and Scotch, $13; German Syndicate, $12; Australian, $9.

During the past nine months comparatively little money has been invested in new engineering projects of an electrical nature on the Pacific Coast. Promotion has been almost at a standstill for want of financial support, and most of the engineers have been idle since the financial stringency struck the Coast last fall. Now, however, there is a change taking place, and the Pacific Coast agencies of the leading electrical manufacturing companies are busy making estimates for several large projects which have good prospects for securing financial support. Engineers predict that the coming winter and spring will find them very busy

The United Railroads of San Francisco, which is enlarging its North Beach steam driven electric power plant and installing a 5000-kw. Curtis turbine and General Electric three-phase 13,200-volt direct connected unit, is figuring on a still further increase of capacity there. Also negotiations are on foot for acquiring the partly constructed hydro-electric plant of the Stanislaus Power Company, which will transmit power more than 100 miles to this city. The machinery is on the ground for two 13,000-hp. direct connected units, driven by Pelton water wheels made in San Francisco. A number of the Steel towers of the transmission line have been erected, and the plant could be placed in condition to supply the street railroad company with all the power it needs in a comparatively short time.

W. B. Bourn, formerly president of the San Francisco Gas & Electric Company, who now holds a controlling interest in the Spring Valley Water Company of San Francisco, controls valuable water rights in the Sierra Nevada Mountains which can be developed so as to furnish thousands of horsepower for electric transmission to this city. Estimates have been secured and there is a possibility that this phase of the project may be carried out, although the proposition was intended primarily to supply city water for San Francisco. The outcome of the question whether the city will construct its own system from the Hetch-Hetchy Valley or buy out the Spring Valley Company will have much bearing upon Bourn's electric project.

The Pacific Gas & Electric Company, which supplies San Francisco with power and has the largest system of hydro-electric plants and transmission lines on this Coast, has purchased an additional 5000-kw. three-phase Curtis turbine G. E. unit for installation in its steam plant in Oakland. This company recently placed its new 8000-hp. Deer Creek hydro-electric plant in commercial operation, and it is officially stated that there is no present shortage of power, notwithstanding the unusually long dry season. However, the thousands of patrons of the company have been advised to avoid any preventable waste of electric current in order to prevent a possible shortage of water later on. It is said that the company now has 85 per cent. of the full storage capacity of its numerous reservoirs available.

The Kings River Power Company, Los Angeles, has filed a claim to 40,000 miners' inches of water of Kings River to be diverted in Fresno. Situated midway between San Francisco and Los Angeles, a power plant could serve both cities.

A syndicate of capitalists of Portland, Ore., and Salt Lake City has perfected plans for the immediate construction of a 2000-barrel cement mill on a 15-acre site in a suburb of the former city. Lime rock will be transported by rail from Roseburg, Ore., to the new plant. Cheap electric power will be available at the site.

## Birmingham.

BIRMINGHAM, ALA., August 17, 1908.

**Pig Iron.**—In the week just ended the activity in this market was not so marked as in the week previous, but the advance in quotations has been maintained. A smaller proportion of inquiries from competitive points has resulted in sales since a firmer basis for quotations has been established, but the outlook for Southern producers is such that their intended policy is apparently unaffected. Reports from all sources indicate a new low record for stock accumulations, and notwithstanding the fact that the rate of production is soon to be increased, it is generally conceded that the tonnage available for the remainder of the year is comparatively small. For strictly last quarter delivery a basis of $13, Birmingham, has been adopted by practically all concerns and could hardly be shaded. The sale of 1000 tons for shipment covering the remainder of the year is reported at this price, resulting in further advance in quotations by the interest who entered the tonnage. A number of carloads for early shipment sold at $12.50 per ton during the week, which is believed to be the lowest price consideration among transactions reported. The sale of 150 tons of Clifton High Manganese, with Silicon unusually high, was effected at $14.50 per ton, Birmingham. Of the inquiries reported pending, a lot of 5000 tons, for shipment to commence immediately, is the principal. The aggregate of smaller lots to be placed reaches well into round figures. Some of the leading Pipe manufacturing interests are expected to enter the market for additional tonnage to cover requirements for the remainder of the year. The idle capacity in this district has recently been increased, but the actual melt shows a material increase and is conservatively estimated at 70 per cent. of what would have been expected ordinarily.

**Cast Iron Pipe.**—The principal transaction for the past week was the awarding of 1000 to 1500 tons of Water Pipe for the city of Cheyenne, Wyo. This contract was placed with the American Cast Iron Pipe Company, Birmingham, but the price received is not made public. A number of orders for 250 to 600 tons each are among the reports, which were placed at a higher average price than published quotations. The aggregate tonnage represented by pending inquiries for small lots is quite attractive. Among the small municipalities expected to enter the market are Prattville, Ala., and Fall City, Neb. There is no addition to the list of large contracts being advertised. Quotations are generally considered firmer, but a change is not authorized and we continue to quote as follows, per net ton, f.o.b. cars here: 4 to 6 in., $23; 8 to 12 in., $22; over 12-in., average $21, with $1 per ton extra for Gas Pipe.

**Old Material.**—The volume of business transacted in this market shows a material improvement. There has been a perceptible strengthening in the demand for Cast and Wrought Scrap and Stove Plate, and dealers have revised their asking prices accordingly. The demand for Steel Scrap is still very light, but a departure from the appended schedule of prices could hardly be effected. Revised quotations of dealers are as follows, per gross ton, f.o.b. cars here:

| | |
|---|---|
| Old Iron Rails | $14.50 to $15.00 |
| Old Iron Axles | 15.50 to 16.00 |
| Old Steel Axles | 13.00 to 13.50 |
| No. 1 Railroad Wrought | 13.00 to 13.50 |
| No. 2 Railroad Wrought | 10.50 to 11.00 |
| No. 1 Country Wrought | 11.00 to 11.50 |
| No. 2 Country Wrought | 9.50 to 10.00 |
| No. 1 Machinery | 10.50 to 11.00 |
| No. 1 Steel | 9.50 to 10.00 |
| Wrought Pipe and Flues | 8.50 to 9.00 |
| Stove Plate and Light Cast | 8.50 to 9.00 |
| Cast Borings | 5.00 to 5.50 |

## Pittsburgh.

PARK BUILDING, August 19, 1908.—(*By Telegraph.*)

**Pig Iron.**—Inquiries are more plentiful and more sales are being made, but prices are lower. During the week upward of 20,000 tons of Standard Bessemer, Malleable Bessemer and Basic have been sold, mostly for this year's delivery, at the lowest prices these grades of Iron have reached in a long time. There are several very persistent sellers who are taking practically all the business offering and are making prices that will do it. We quote sand cast Bessemer Iron at $15.40, Malleable Bessemer at $14.50 to $14.75 and Basic at $14.50 to $14.75, all at Valley furnace, or 90c. higher for Pittsburgh delivery. We quote No. 2 Foundry at $14.50 to $14.75, Valley furnace, but in some cases $15 is obtained in small lots for preferred makes. Forge is very dull, and is nominally $13.75, Valley furnace, but on a firm offer it is probable that $13.50 could be done. A sale has been made of 1000 tons of No. 2 Foundry, deliveries 250 tons a month from September, at $14.50, Valley furnace, and another sale of 500 tons of Basic at about $14.60, Valley furnace.

**Steel.**—The market is very dull, and there is little business offering in Billets or Sheet or Tin Bars. We quote Bessemer and Open Hearth Billets, 3⅞ in. and larger, up to and including 0.25 carbon, $25; 0.26 to 0.60 carbon, $1 extra; over 0.60 carbon, $2 extra, all f.o.b. Pittsburgh. For Wheeling, Martins Ferry, Follansbee, Newcastle, Sharon, Steubenville and Washington (Pa.) delivery, half the freight, or 50c. additional, is charged. Sheet and Tin Bars in random lengths are $27, f.o.b. Pittsburgh. Forging Billets take $2 advance over Rolling Billets.

(*By Mail.*)

While all signs point to better conditions in the Steel trade, there is a lull which is creating some uneasiness. It is not generally believed that the lull will continue long, but, on the contrary, the prevailing impression is that early in September there will be a more active buying movement in all lines than at any time this year. The inquiry of the Harriman interests for upward of 7000 Steel cars is still in the market. It is believed that the order will be eventually placed. There are also reports of large Rail orders pending, but nothing official has been given out. It is estimated that at present at least 50 per cent. of the Pig Iron and Steel making capacity is active, and this in spite of the fact that the railroads are buying practically nothing. The Pig Iron market is fairly active, but at the expense of prices. Bessemer, Basic and Foundry Iron have been sold in the past week at the lowest prices touched in this market for three or four years. Some large Pig Iron deals are

under way, and are expected to be closed in the next week or two, consumers being attracted by the low prices ruling. Not much new business is coming out in Billets, Sheet or Tin Bars, and mill shipments of the last have recently fallen off, owing to the decline in demand for Tin Plate. This week the Carnegie Steel Company is operating the Homestead Steel Works practically full in all departments, and at Youngstown the Republic and Youngstown Sheet & Tube companies are operating nearly full. The demand for Finished Iron and Steel is fair, and inquiries for Structural Steel are showing betterment. Some large inquiries are in the market for line Pipe, and the mills are fairly busy. The Coke and Scrap trades are quiet, with prices on the latter only fairly steady.

**Ferromanganese.**—With little new inquiry the market is fairly steady. We quote 80 per cent. foreign Ferro for prompt delivery at $43 to $43.50, Baltimore, and for shipment over balance of this year at $43.50 to $44, the rate from Baltimore to Pittsburgh being $1.95 a ton.

**Ferrosilicon.**—We quote 50 per cent. at about $67.50, Pittsburgh, but no sales are reported.

**Muck Bar.**—Two or three fair sized inquiries are in the market, and a sale is reported of 400 to 500 tons on the basis of about $25.50, Pittsburgh. We quote best grades of Muck Bar, made from all Pig Iron, at $25.50 to $26, Pittsburgh.

**Rods.**—Sales of 1800 to 2000 tons of Basic Rods are reported at $34, Pittsburgh. Inquiries for Rods are better than for some time, and a fair tonnage has been sold in the last two or three weeks. We quote Bessemer Rods at $33, Basic $34 and Chain Rods $33, Pittsburgh.

**Skelp.**—The only local mill rolling Skelp is shut down at present, and may be idle for some time. There is a fair amount of inquiry, but no large tonnage has been sold. We quote: Grooved Steel Skelp, 1.45c. to 1.50c.; Sheared Steel Skelp, 1.50c. to 1.60c.; Grooved Iron Skelp, 1.60c. to 1.70c., and Sheared Iron Skelp, 1.70c. to 1.75c., f.o.b. Pittsburgh.

**Steel Rails.**—Local advices are that the Harriman inquiry for 28,000 tons has not yet been placed. The time is short, as it is understood that deliveries of the entire quantity are to be made in this and next month. No large orders are being placed by the railroads, and the belief is becoming stronger that there will not be much Rail buying this year. The demand for Light Rails is fairly active, and the two recent advances in prices are being held. The three Edgar Thomson Rail mills of the Carnegie Steel Company continue in operation to about 35 per cent. of capacity. Prices now generally quoted on Light Rails which, however, continue to be shaded about $2 a ton by rerolling Rail mills, are as follows: $25 for 25 to 45 lb. Sections, with $1 advance for 20 lb.; $2 advance for 16 lb., and $4 advance for 12 lb. Standard Sections are $28, at mill, and Angle Splice Bars, 1.65c., at mill.

**Structural Material.**—Inquiries are better than for some time, and a good deal of work is under way. Contracts taken during the week include about 2000 tons for replacement of a part of the Panhandle Railroad bridge at Steubenville, 2000 tons, which went to the Pennsylvania Steel Company. The American Bridge Company has received about 800 tons of material for the new Oliver Building, which it will fabricate at its shops at Ambridge, Pa. The Riter-Conley Mfg. Company has taken about 1000 tons for a new boiler shop for the Heine Safety Boiler Company, St. Louis. Inquiries will be out in a few days for the First National Bank Building, Fifth avenue and Wood street, Pittsburgh, and there will be two propositions, one for a five-story structure, about 1200 tons, to be used for banking purposes, exclusively, and the other for a 25-story building, for bank and office purposes, 4500 tons. It is probable that the smaller building will be the one selected. Complaint is still heard of the very low prices ruling for fabricated work, which give rise to the suspicion that full prices are not always paid for the plain Material. We quote as follows, f.o.b. mill, Pittsburgh: I Beams, H Beams and Channels, 3 to 15 in., inclusive, 1.60c., net; Beams, over 15 in., 1.70c., net; Angles, 3 to 6 in., inclusive, ¼ in. and up, 1.60c., net; Angles, over 6 in., 1.70c., net; Angles, 3 x 3 in. and up, less than ¼ in., 1.50c., base, half extras, Steel Bar card; Tees, 3 in. and up, 1.65c., net; Zees, 3 in. and up, 1.60c., net; Angles, Channels and Tees under 3 in., 1.50c., base, half extras, Steel Bar card; Deck Beams and Bulb Angles, 1.90c., net; Hand Rail Tees and Z-19, 3c., net; Checkered and Corrugated Plates, 3c., net.

**Sheets.**—An increased demand is reported for Corrugated Sheets, and there are some fair sized inquiries in the market. In a general way, the Sheet trade is unsatisfactory as regards volume of business, but prices are being fairly well maintained. The American Sheet & Tin Plate Company started up yesterday its Hyde Park Works, containing five hot mills, and is now running to a little over 60 per cent. of capacity. For mill shipment we quote: Blue Annealed Sheets, No. 10 and heavier, 1.80c.; Nos. 11 and 12, 1.85c.; Nos. 13 and 14, 1.90c.; Nos. 15 and 16, 2c.; Box Annealed, Nos. 17 to 21, 2.25c.; Nos. 22 to 24, 2.30c.; Nos. 25 and 26, 2.35c.; No. 27, 2.40c.; No. 28, 2.50c.; No. 29, 2.60c.; No. 30, 2.70c. Galvanized Sheets: Nos. 10 and 11, 2.45c.; Nos. 12 and 14, 2.55c.; Nos. 15 and 16, 2.65c.; Nos. 17 to 21, 2.80c.; Nos. 22 and 24, 2.95c.; Nos. 25 and 26, 3.15c.; No. 27, 3.35c.; No. 28, 3.55c.; No. 29, 3.70c.; No. 30, 3.95c.; No. 28, Painted Roofing Sheets, $1.75 per square, and Galvanized Roofing Sheets, No. 28, $3.10 per square, for 2½-in. corrugations. These prices are subject to a rebate of 5c. per 100 lb. to the large trade under the usual conditions, jobbers charging the usual advances for small lots from store.

**Plates.**—A fair amount of new business is being placed in Plates from the general trade, and it is believed that consumption is a little heavier, as consumers are buying more freely and in larger quantities. Prices are being well maintained, but are sometimes slightly shaded by some of the smaller outside mills that do not make the larger sizes. We quote, Tank Plates, ¾ in. thick, 6¼ in. up to 100 in. wide, 1.60c., base, at mills, Pittsburgh. Extras over this price are as follows:

Tank, Ship and Bridge quality, ¼ in. thick on edges, 100 in. wide, down to but not including 6 in. wide, is taken as base.

Steel Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per square foot, shall be considered ¼-in. Plate. Steel Plates over 72 in. wide must be ordered ¼-in. thick on edge, or not less than 11 lb. per square foot, to take base price. Steel Plates over 72 in. wide ordered less than 11 in. per square foot down to the weight of 3-16-in. shall take the place of 3-16-in.

Percentages as to overweight on Plates, whether ordered to gauge or weight, to be governed by the Association of American Steel Manufacturers' Standard Specifications.

| | |
|---|---|
| Gauges under ¼-in. to and including 3-16-in. Plates on thin edges | $0.10 |
| Gauges under 3-16-in. to and including No. 8 | .15 |
| Gauges under No. 8 to and including No. 9 | .25 |
| All sketches (excepting straight taper Plates varying not more than 4 in. in width at ends, narrowest end being not less than 30 in.) | .10 |
| Complete Circles | .20 |
| Boiler and Flange Steel Plates | .10 |
| "A. B. M. A." and ordinary Firebox Steel Plates | .20 |
| Still Bottom Steel | .30 |
| Marine Steel | .40 |
| Locomotive Firebox Steel | .50 |
| Shell grade of Steel is abandoned. | |
| For widths over 100 in. up to 110 in | .05 |
| For widths over 110 in. up to 115 in | .10 |
| For widths over 115 in. up to 120 in | .15 |
| For widths over 120 in. up to 125 in | .25 |
| For widths over 125 in. up to 130 in | .50 |
| For widths over 130 in | 1.00 |

TERMS.—Net cash 30 days. Pacific Coast base, 1.50c., f.o.b. Pittsburgh.

**Tin Plate.**—Not much new business is being placed, only a few scattering orders now being received by the mills. About 50 per cent. of the entire Tin Plate capacity is active at present. Prices continue firm, and we quote at $3.70 for 100-lb. Cokes, 14 x 20, f.o.b. Pittsburgh, terms 30 days, less 2 per cent. off for cash in 10 days, this price being subject to the usual rebate of 5c. per base box in large lots.

**Hoops and Bands.**—A fair volume of new business is being placed in small orders for actual needs, but shipments by the mills are largely on specifications against contracts. Regular prices are as follows: Steel Hoops, 1.80c., base, full Hoop card prices; Steel Bands, 1.40c., base, half Steel card extra, all f.o.b. cars, Pittsburgh, in carload lots, for delivery during 1908.

**Bars.**—Specifications against the heavy contracts placed in June are now being received by the mills in fairly large volume, and shipments are greater than at any time this year, with prospects good for increased activity in the next two or three weeks. A little better demand is reported for Iron Bars, and the mills are able to operate to about half capacity. We quote Iron Bars at 1.40c., base, for Pittsburgh delivery, and 1.35c., base, for Western points, to which freight is added, except Chicago, the price for which is 1.50c., delivered. We quote Steel Bars at 1.40c., Pittsburgh, for base sizes.

**Merchant Steel.**—Most of the heavy business expected from the implement makers has been placed, and specifications against these contracts are now being received by the mills is a fairly large volume. The demand for Shafting is quiet, and existing discounts are sometimes slightly shaded. We quote: Cold Rolled Shafting, on contracts for 100 tons and over, 57 per cent. off; carloads, 56 per cent. off, and less than carloads, 52 per cent. off, on which carload freight is allowed within base territory. Smooth Finished Machinery Steel, 1.80c. to 1.90c.; Flat Sleigh Shoe, 1.75c. to 1.85c.; Cutter Shoe Steel, 2.15c. to 2.25c.; Toe Calk, 1.90c. to 1.95c.; Railroad Spring Steel, 1.60c. to 1.75c., the higher price being for Pennsylvania Railroad analysis. Carriage Spring Steel is 1.80c.; Tire Steel, Iron finish, 1½ x ½ in. and heavier, 1.40c.; under 1½ in., 1.55c. Planished Tire Steel is 1.60c., all f.o.b., at mill.

**Railroad Spikes.**—Several large inquiries are in the market, but no heavy orders have been placed for some time, and all the mills making Spikes are short of work. We quote: Standard sizes, 4½ x 9-16 in., at $1.70, and the smaller sizes at $1.80 per 100 lb. in carload and larger lots, with an advance of 5c. per 100 lb. for less than carload, f.o.b. Pittsburgh.

**Merchant Pipe.**—Press reports regarding the line Pipe being placed by the Standard Oil Company with the National

Tube Company are usually much exaggerated. It is true that the latter company furnishes Pipe to the Standard Company right along, but no contracts out of the ordinary have recently been placed. Some time ago the Standard Company placed an order with the National Company for 550 miles of 6-in. line Pipe, on which shipments have been nearly completed. There is a good deal of inquiry for line Pipe, the Kansas Gas & Cement Company being in the market for 25 miles of 6-in., for the Emporia, Kan., field, and the United Gas Company of St. Catherines, Canada, for 25 miles of 6¼-in. casing. Discounts on Steel Pipe, ¾ to 6 in., to the large trade, are now 76 and 5 per cent. off list. Regular discounts are as follows:

*Merchant Pipe.*

| | Jobbers, carloads, Steel. | |
|---|---|---|
| | Black. | Galv. |
| | % | % |
| ⅛ to ¼ in | 67 | 51 |
| ⅜ in | 69 | 55 |
| ½ in | 71 | 59 |
| ¾ to 6 in | 75 | 65 |
| 7 to 12 in | 72 | 57 |
| Extra strong, plain ends: | | |
| ⅛ to ⅜ in | 60 | 48 |
| ½ to 4 in | 67 | 55 |
| 4½ to 8 in | 63 | 51 |
| Double extra strong, plain ends: | | |
| ½ to 8 in | 56 | 45 |

Discounts on Genuine Iron Pipe are as follows:

| | Black. | Galv. |
|---|---|---|
| | % | % |
| ⅛ to ¼ in | 65 | .. |
| ⅜ in | 67 | 53 |
| ½ in | 69 | 57 |
| ¾ to 6 in | 73 | 63 |
| 7 to 12 in | 70 | 55 |
| Extra strong, plain ends: | | |
| ⅛ to ⅜ in | 58 | 46 |
| ½ to 4 in | 65 | 53 |
| 4½ to 8 in | 61 | 49 |
| Double extra strong, plain ends: | | |
| ½ to 8 in | 54 | 43 |

**Boiler Tubes.**—The railroads are placing some scattering orders for Locomotive Tubes, and bookings for this product have picked up a good deal in the last month or so. There is also a little better demand for Merchant Tubes, but consumers are still confining their orders to small lots for actual needs. Regular discounts on Merchant Tubes in small lots, on which an extra 5 per cent. is allowed in carloads, but which discounts are being shaded, are as follows:

*Boiler Tubes.*

| | Iron. | Steel. |
|---|---|---|
| 1 to 1½ in | 42 | 47 |
| 1¾ to 2¼ in | 42 | 59 |
| 2½ in | 47 | 61 |
| 2¾ to 5 in | 52 | 65 |
| 6 to 13 in | 42 | 59 |

2½ in. and smaller, over 18 ft. long, 10 per cent. net extra.
2¾ in. and larger, over 22 ft. long, 10 per cent. net extra.

**Spelter.**—The market has reacted from the sharp advance of a week or two ago and is five points or more lower. We quote prime grades of Western Spelter at 4.60c., East St. Louis, and on a firm offer and for a large tonnage this price might be shaded several points.

**Iron and Steel Scrap.**—At present there is a lull in the Scrap trade, and the tone of the market is only fairly strong. A number of leading consumers, such as the Pittsburgh Steel Company, Page Woven Wire Fence Company, Sharon Steel Hoop Company and others are pretty well filled up with Scrap, and are not in the market. It is stated that the Pittsburgh Steel Company has upward of 25,000 tons piled up in its yards at Monessen, Pa., which will keep it running for several months. This company has built an open hearth plant having eight 60-ton furnaces, of which four are in operation. When the plant is running full, it will use about 500 tons of Scrap a day and about the same tonnage of Basic Pig Iron. Dealers quote, per gross ton, as follows: Heavy Steel Scrap, for Pittsburgh, Sharon and Steubenville delivery, $15 to $15.50, most dealers refusing to shade $15.25; Cast Iron Borings, $9.25 to $9.50; No. 1 Railroad Wrought Scrap, $15 to $15.25; No. 1 Cast, $14.50 to $14.75; Bundled Sheet Scrap, $12.25 to $12.50; Sheet Bar Crop Ends, $18 to $18.25; No. 1 Busheling Scrap, $13.50 to $14; No. 2, $10 to $10.50; Iron Axles, $21 to $21.50; Steel Axles, $18.50 to $19; Low Phosphorus Melting Stock, 0.04 and under, $19 to $19.50; Rerolling Rails, $16.50; Machine Shop Turnings, $10.25 to $10.50; Grate Bars, $13 to $13.25; Railroad Malleable, $14 to $14.25; Old Car Wheels, $14.50 to $15.

**Coke.**—Some improvement is reported in the demand for Furnace Coke, but prices continue low. In fact, both Furnace and Foundry Coke are selling to-day at the lowest prices touched for several years. All the Coke regions are suffering severely from a famine in water supply, and one or two plants have been compelled to close down. Unless heavy rains come soon a number of others will be compelled to close. We quote strictly Connellsville Furnace Coke for prompt delivery at $1.50 to $1.55, and on contracts $1.65 to $1.75, at oven. Connellsville 72-hr. Foundry Coke is held at $1.90 to $2.25, at oven. Outside makes of Furnace Coke for prompt shipment are quoted at $1.35 and lower, at oven, and Foundry Coke from $1.75 to $1.90, at oven. The output of Coke in the Upper and Lower Connellsville regions last week was 192,845 tons, a gain over the previous week of about 3000 tons.

## Philadelphia.

PHILADELPHIA, PA., August 18, 1908.

Buying in the local Iron and Steel markets is extremely light. Characteristic midsummer dullness appears to be the leading feature, and the trade on the whole seems to be pretty generally affected by the vacation season. Not much improvement is expected the balance of the month, but the trade generally is decidedly optimistic regarding the future and a resumption in buying is looked for early in September. In some branches of Finished Materials the gains made by the mills during the past month are being fully maintained. Some little scattered railroad business has been placed and more is pending, so that the outlook in this direction shows some improvement.

**Pig Iron.**—A certain volume of business for prompt shipment continues to come out, but the tonnages are usually small, although sales in the aggregate reach a fair total for the season. Sales of the Foundry grades for deliveries extending up to the end of September predominate, on which eastern Pennsylvania sellers as a rule maintain established prices pretty firmly. Some shading for desirable lots is rumored on the part of the same interests which were cutting prices earlier in the year, but it is understood to have extended to a few old customers only. When such concessions are made, however, the facts are so carefully guarded that authentic information regarding them is hard to obtain. The basis of $16, at furnace, for No. 2 X Foundry continues to be held by the leading eastern Pennsylvania producers, and some ask higher figures. As a rule $16.50, delivered, can be done for standard No. 2 X Foundry for shipment over the remainder of the third quarter, with $16.75 to $17 asked for some brands. For delivery through the last half of the year the same grade commands from $16.75 to $17.25, with $16.75 to $17.50 asked for strictly fourth quarter delivery, dependent on brand and tonnage. Inquiry for delivery over the last four months of the year shows an improvement, with some feeling of the market for part of 1909, but sellers usually withhold quotations for such extended deliveries. The Cast Iron Pipe interests continue in the market for low grade Irons for shipment during the fourth quarter, one concern having an inquiry out for 10,000 tons, while others would buy smaller quantities if they could be had at what they consider right prices. Southern Iron shows decided strength; prices have been marked up, and some of the furnaces are now practically out of the market. Sales of Southern in this territory have been rather light, with some small lots for August and September delivery reported on both a $12 and $12.50, Birmingham basis, for No. 2 Foundry. Virginia Irons have not been active, but several lots of Nos. 2 X and 2 Plain of a few hundred tons each have been sold for delivery in this territory, with light sales to New England and the Middle West, all at full prices. Some further inquiry is to be noted for Forge Iron, but sales have been light and $15, delivered, is about the best that can be done for this grade, although some High Sulphur Iron might be had at a slightly lower figure. Steel makers continue in the market for both Basic and Low Phosphorus Iron. A further inquiry for 5000 tons of Basic for the last quarter is announced, but no new business has developed in Low Phosphorus, and the former inquiries for this grade are still pending. Melters as a rule do not seem to be inclined to place orders hurriedly nor do sellers show any tendency to force the market. Prices continue firm and appear to be gaining strength, and the trade anticipates a further buying movement early in the coming month. Quotations are practically unchanged, ranging as follows for delivery in buyers' yards, eastern Pennsylvania and adjoining territory, for the balance of the third quarter:

| | |
|---|---|
| Eastern Pennsylvania, No. 2 X Foundry | $16.50 to $17.00 |
| Eastern Pennsylvania, No. 2 Plain | 16.00 to 16.50 |
| Virginia, No. 2 X Foundry | 17.00 |
| Virginia, No. 2 Plain | 16.50 to 16.75 |
| Gray Forge | 15.00 to 15.50 |
| Basic | 15.00 to 15.25 |
| Low Phosphorus | 21.00 to 21.25 |

**Ferromanganese.**—Few inquiries have come out, and offerings by merchants meet with little or no response on the part of consumers. Prices are practically unchanged, and for prompt delivery range from $43.50 to $44, at seaboard, with $45.50 to $46.50, for delivery over the balance of the year.

**Steel Billets.**—Some few orders have been placed, but the tonnages continue small, and practically all the business has been for prompt shipment. The situation, on the whole, shows no particular improvement, and mills do not find much encouragement in the outlook for business in the near future. Prices are unchanged, ordinary Rolling Steel for delivery in this territory being quoted at $26.20, with Forging Steel at $28.20, subject to the usual extras for high carbons and special sizes.

**Plates.**—Orders are coming out quite freely, although individually small in size. Mills report a good aggregate,

however, and continue to show slight gains in production. Specifications are more numerous and cover a miscellaneous class of work. Shipyards are taking some fair quantities of Plates, while numerous small lots are being ordered by boiler and bridge shops. A small run of orders from some of the railroads continues, this class of orders being largely for repair work. Prices are unchanged, the following quotations being named for delivery in this territory:

| | Carloads. Cents. | Parts carload. Cents. |
|---|---|---|
| Tank, Bridge and Boat Steel | 1.75 | 1.80 |
| Flange or Boiler Steel | 1.85 | 1.95 |
| Commercial Firebox | 1.95 | 2.00 |
| Marine | 2.15 | 2.20 |
| Locomotive Firebox Steel | 2.25 | 2.30 |

The above are base prices for ¼-in. and heavier. The following extras apply:

| | Extra per 100 lb. |
|---|---|
| 3-16-in. thick | $0.10 |
| Nos. 7 and 8, B. W. G. | .15 |
| No. 9, B. W. G. | .25 |
| Plates over 100 to 110 in. | .05 |
| Plates over 110 to 115 in. | .10 |
| Plates over 115 to 120 in. | .15 |
| Plates over 120 to 125 in. | .25 |
| Plates over 125 to 130 in. | .50 |
| Plates over 130 in. | 1.00 |

**Structural Material.**—Immediate purchases continue along narrow lines, but the outlook is better. The Pennsylvania Railroad is in the market for some round lots in the way of bridge material, and a number of moderate inquiries for building material are before the trade. A good portion of these are expected to develop into orders early in the coming month. Prices are being fully maintained, quotations for delivery in this territory ranging from 1.75c. to 1.90c., according to specification.

**Sheets.**—A fairly even demand continues, and mills have been able to maintain production at about full capacity. The usual run of business is still small, and but few orders for heavy quantities or for extended delivery come out. Prices are firm, quotations for mill shipments ranging as follows, a tenth being added for small lots: Nos. 18 to 20, 2.50c.; Nos. 22 to 24, 2.60c.; Nos. 25 to 26, 2.70c.; No. 27, 2.80c.; No. 28, 2.90c.

**Bars.**—The market for Refined Iron Bars is gradually growing stronger. Mills are booking better orders, and prices show more firmness. While several weeks ago prompt shipment could be had at 1.35c., delivered, in this territory, hardly any mill will now do better than 1.40c. to 1.45c., and some of the better grades are being held firmly, at 1.50c., delivered. There seems to be more disposition on the part of buyers to contract for forward shipment, but some mills will only take such business at the top price. Steel Bars have not been active, and are quoted at 1.55c., with Rerolled Bars at 1.50c., delivered, in this territory.

**Coke.**—The demand has been somewhat irregular. Sales of Foundry Coke, for delivery during the balance of the year, have been made at unchanged prices, but in no case have the contracts been large. Furnace Coke is dull, no sales of any consequence being reported. Prices are unchanged, Foundry Coke being quoted at $2.15 to $2.35, at oven, and Furnace Coke at $1.50 to $1.75, at oven. For delivery in this territory quotations range about as follows:

| | |
|---|---|
| Connellsville Furnace Coke | $3.65 to $3.90 |
| Foundry Coke | 4.30 to 4.50 |
| Mountain Furnace Coke | 3.25 to 3.50 |
| Foundry Coke | 3.90 to 4.10 |

**Old Material.**—Buyers and sellers appear to be as wide apart in their views regarding prices of some grades of Scrap, as they have been for the past few weeks. The market is stronger sentimentally, and prices of some grades have again been marked up on small sales. Consumers of Heavy Melting Steel still keep out of the market, while holders of this grade refuse to sell any large tonnage at the present level. Rolling Mill Scrap has been taken more freely, but, owing to considerable quantities being held in storage in dealers' yards, an apparent shortage has developed in some grades. Under the circumstances, actual quotations are hard to name, the business transacted in many cases having been entirely between dealers, and the prices tabulated below for delivery in buyers' yards, eastern Pennsylvania and nearby territory, are largely nominal:

| | |
|---|---|
| No. 1 Steel Scrap and Crops | $14.50 to $15.00 |
| Low Phosphorus | 18.00 to 18.50 |
| Old Steel Axles | 20.00 to 20.50 |
| Old Iron Axles | 22.50 to 23.00 |
| Old Iron Rails | 20.00 to 20.50 |
| Old Car Wheels | 15.00 to 15.50 |
| Choice No. 1 R. R. Wrought | 17.75 to 18.25 |
| Machinery Cast | 14.50 to 15.00 |
| Railroad Malleable | 13.00 to 13.50 |
| Wrought Iron Pipe | 13.50 to 14.00 |
| New Bundled Sheets | 12.50 to 13.00 |
| No. 1 Forge Fire Scrap | 12.00 to 12.50 |
| No. 2 Light Iron | 8.50 to 9.00 |
| Wrought Turnings | 11.00 to 11.50 |
| Stove Plate | 13.00 to 13.50 |
| Cast Borings | 10.25 to 10.75 |
| Grate Bars | 13.00 to 13.50 |

Pilling & Crane, Iron, Steel, Ore, Coal and Coke merchants, who have been located in the Girard Trust Building, will remove September 1 to rooms 1405 to 1412, inclusive, in the Real Estate Trust Building, southeast corner of Broad and Chestnut streets, Philadelphia.

## Cleveland.

CLEVELAND, OHIO, August 18, 1908.

**Iron Ore.**—Some buying of Ore has taken place the past week, but all in small lots, the largest reported being 35,000 tons. The market does not yet show the improvement that the merchant firms had expected for August. Sellers are warning buyers not to delay their purchases much longer. They say that unless purchases are made soon consumers will be disappointed in not getting all the Ore they want before the close of navigation shuts off shipments. The movement down the lakes shows little improvement, and August shipments will not be much larger than those in July. Shipments have been delayed somewhat the past week by the strike of the dock workers at Superior and Marquette. At the former port many of the old men have returned to work, and the strike is said to be practically over. A steady run of shipping orders for last year's Ore on the docks continues to come from furnace interests that have not yet bought any 1908 Ore, but shipments from the docks are less than the new tonnage that is being placed on the dock stockpiles, so that space is getting quite scarce and boats are delayed in unloading their cargoes. The lake trade, taken as a whole, shows a little improvement, and vesselmen are making preparations to place a few more boats in commission. Ore prices at Lake Erie docks, per gross ton, are as follows: Old Range Bessemer, $4.50; Mesaba Bessemer, $4.25; Old Range non-Bessemer, $3.70; Mesaba non-Bessemer, $3.50.

**Pig Iron.**—A moderate volume of buying continues in this territory. Sales and inquiries, however, are limited almost entirely to Foundry Iron. Among the sales of the week were several lots, ranging from 100 to 500 tons, to local consumers for the balance of the year delivery. The Eastern demand for Foundry Iron continues quite active, and a local interest reports a number of such sales in lots ranging from carloads to 1500 tons. Prices remain about stationary. We quote No. 2 Northern Foundry at $15.25 to $15.50, delivered, Cleveland. The present established price in the Valley for No. 2 Foundry seems to be $14.50, although some tonnage was sold during the week on the basis of $14.40, Valley furnace, for No. 2. Some of the Valley interests are refusing to quote as low as the present ruling prices, continuing to ask not less than $14.75 for No. 2. Corrigan, McKinney & Co. have placed in blast their two furnaces, which have been idle several months. Their Josephine Furnace was blown in last week, and their Genesee Furnace went in blast a few days previously. The melt of Foundry Iron in this territory continues to improve slowly, and the August consumption is expected to be considerably larger than that of July. The Bessemer and Malleable Iron market is quiet, and inquiries for Basic, which were quite active for a week or two, have disappeared. Local sales agents quote Southern Foundry Iron at $12.50, Birmingham, for No. 2, but no sales are reported. For prompt shipment and for the balance of the year we quote, delivered, Cleveland, as follows:

| | |
|---|---|
| Bessemer | $16.30 to $16.50 |
| Northern Foundry, No. 1 | 15.50 to 16.00 |
| Northern Foundry, No. 2 | 15.25 to 15.50 |
| Northern Foundry, No. 3 | 14.90 to 15.25 |
| Southern Foundry, No. 2 | 16.35 |
| Gray Forge | 14.25 to 14.65 |

**Coke.**—The market continues quiet, and prices are stationary. On contract for the balance of the year we quote standard Connelsville Furnace Coke at $1.65 to $1.75, at oven, and 72-hr. Foundry Coke at $2 to $2.25, at oven.

**Finished Iron and Steel.**—While only a moderate volume of new business is being placed, the demand continues to show some improvement and the outlook is regarded as encouraging. Specifications continue to come in in a satisfactory manner on recent contracts. The implement makers are specifying freely for Steel Bars, and there is a fair volume of specifications from other manufacturers, a number of whom have recently received some good contracts. There is a decided improvement in the demand from boiler shops, some fairly good orders having been placed for Plates and Boiler Tubes. Among the inquiries from this source is one for 3000 to 4000 tons of Structural Shapes. The demand for Iron Bars shows a little improvement, some new contracts being closed. Prices are rather weak, concessions being reported for Western shipments. An improvement is seen in inquiries for Structural Material in small lots for building purposes. Fabricators are still quoting low prices on Structural work. The demand for Billets shows an improvement. Some orders for Forging Billets were placed during the week in addition to a number of car lot sales at $27.75, base, delivered, Cleveland. There is a slight improvement in the demand for Sheets, some orders coming from the railroads for repair work. The prices of Sheets and Plates are being fairly well maintained. Some interurban traction projects are pending, but it is not expected that any of them will result in the placing of Rail orders this sea-

son. Jobbers report quite an improvement in both warehouse business and mill orders, the latter being mostly for small lots for immediate needs. Warehouse prices are being firmly maintained. We quote Iron Bars at 1.45c., Cleveland, for car lots; Steel Bars, 1.50c., Cleveland, for car lots, half extras; Beams and Channels, 1.70c., base, Cleveland, and Plates, ¼-in. and heavier, 1.70c., Cleveland. We quote Sheets, mill shipments, car lots, Cleveland, as follows: Blue Annealed, No. 10, 1.90c.; Box Annealed, No. 28, 2.60c.; Galvanized, No. 28, 3.65c. Jobbers quote Iron and Steel Bars out of stock at 1.65c. to 1.70c. Beams and Channels from warehouse are 2c., and Plates, ¼-in. and heavier, 1.90c. Warehouse prices on Sheets are as follows: Blue Annealed, No. 10, 2.10c.; Box Annealed, No. 28, 2.70c.; Galvanized, No. 28, 3.80c. Warehouse prices on Boiler Tubes, 2¾ to 5 in., are 64 per cent. discount, and on Black Merchant Iron Pipe, base sizes, 71 per cent. discount.

**Old Material.**—The market is not quite as firm as it has been, particularly in Iron Scrap. Local mills are pretty well stocked up and are not buying much at present. Yard dealers are still accumulating considerable Old Material which they are holding for better prices. Dealers say they cannot buy Scrap at prices that would allow them to sell it below the present market quotations. Dealers' prices to the trade, per gross ton, are as follows, f.o.b. Cleveland:

| | |
|---|---|
| Old Steel Rails | $14.00 to $14.50 |
| Old Iron Rails | 17.00 to 17.50 |
| Steel Car Axles | 18.00 to 18.50 |
| Old Car Wheels | 15.00 to 15.50 |
| Relaying Rails, 50 lb. and over | 22.00 to 23.00 |
| Railroad Malleable | 13.50 to 14.00 |
| Agricultural Malleable | 12.00 to 12.50 |
| Light Bundled Sheet Scrap | 9.50 to 10.00 |

The following quotations are per net ton, f.o.b., Cleveland:

| | |
|---|---|
| Iron Car Axles | $17.00 to $18.00 |
| Cast Borings | 7.00 to 7.50 |
| Iron and Steel Turnings and Drillings | 8.00 to 8.50 |
| Steel Axle Turnings | 8.50 to 9.00 |
| No. 1 Busheling | 11.50 to 12.00 |
| No. 1 Railroad Wrought | 13.50 to 14.00 |
| No. 1 Cast | 12.50 to 13.00 |
| Stove Plate | 10.00 to 10.50 |
| Bundled Tin Scrap | 8.00 to 9.00 |

## Cincinnati.

CINCINNATI, OHIO, August 19, 1908.—(*By Telegraph.*)

Accepting the general opinion that the railroads must furnish the backbone of trade in the anxiously awaited revival, recent developments in that quarter suggest encouragement. The International Railroad Master Blacksmiths' Association is in session here this week, and as these men are in very close touch with working conditions, their observations are of interest. A composite opinion from expressions on the subject indicates that the roads are venturing cautiously along improvement lines in hours and forces, and that since August 1 there is perceptible improvement in almost all parts of the country. The greatest gain is seen in the repair departments, where there is developing a real activity. A better feeling exists among the supply men also, representing prominent concerns exhibiting at the convention. In the Pig Iron markets there is not the actual buying that prevailed last week, but the Southern companies have stiffened up on their product, and the greater number of them claim to have withdrawn from the market altogether, or are naming the prohibitive price of $13, Birmingham, for No. 2.

**Pig Iron.**—The local market is not so active, and both buyers and manufacturers seem to have settled back into the relatively independent position of a few months ago. Inquiries have slumped off considerably since Southern makers jumped the price from $11 and $11.50, to $12.50 and $13, and the conviction seems to prevail that the very light consumption, coupled with the heavy buying of a few weeks ago, must of necessity bring about a condition to develop lower prices on Iron and comparatively soon. There is no change to be noted in the price of the Northern product, save that evidences of shading continue to accumulate in recording sales of Valley Iron. High Silicons have stiffened up a little at the prevailing price of $18.50 for 8 per cent., along with which comes a rumor that the newest furnace in Jackson County has not yet definitely decided upon a date for its initial blast. One of the largest local agencies announces that it has nothing to offer in Foundry Irons for less than $13, Birmingham, for No. 2. The largest merchant interest in the Alabama District, which is represented in that office, announces withdrawal from the market, and will require submission of all business for confirmation. Rockwood is said to be sold up with practically 40,000 tons booked ahead. It is authoritatively stated that orders for 10,000 to 20,000 tons have been turned down at $12, although it is believed that there may still be obtained some Tennessee Iron in small lots at that figure. No prices are obtainable on next year's deliveries. Prominent dealers in Scrap continue to interest themselves in the Pig Iron markets, and a number of deals are in negotiation for quite a considerable tonnage. Some interests, however, refuse to entertain offers from this class of business, preferring to limit their deliveries to consuming interests. A large producer of Iron in the southern and central Ohio districts here to-day estimates a total of 24,000 to 25,000 tons of Foundry Iron on furnace yards at present in the Hanging Rock and Ironton districts, exclusive of Ashland. Of this amount, a large Cincinnati agency owns or controls about half. There is some inquiry for Car Wheel Irons. Standard Southern is quoted $19 to $19.50, for Nos. 1 and 2, and $20 for chilling grades, at furnace. Some fairly good sales of Basic have been made. Southern Basic selling at about $12 to $12.50. Bessemer, which is dull, is quotable at about $15.40, Valley Furnace. The Standard Sanitary Mfg. Company is in the market again for several thousand tons, for November and December delivery, of which a goodly portion is said to be Forge Iron because of failure of the furnace to acquiesce in the reported price of at least 25c. below the market. A large manufacturer of machine tools in southern Ohio is asking for prices on 3000 tons, half each of Northern and Southern Foundry, for the last half. The Pennsylvania Railroad has ordered some Iron for delivery to its Altoona shops on an old contract. Some Michigan concerns want some Malleable. A central Ohio manufacturer is asking for some No. 2 Foundry, and some High Silicon and Manganese Iron. For immediate delivery, and extending into the fourth quarter, we quote, f.o.b. Cincinnati, as follows, freight rates being, from Hanging Rock District, $1.20, and from Birmingham, $3.25:

| | |
|---|---|
| Southern Coke, No. 1 | $15.75 to $16.25 |
| Southern Coke, No. 2 | 15.25 to 15.75 |
| Southern Coke, No. 3 | 14.75 to 15.25 |
| Southern Coke, No. 4 | 14.50 to 15.00 |
| Southern Coke, No. 1 Soft | 15.75 to 16.25 |
| Southern Coke, No. 2 Soft | 15.25 to 15.75 |
| Southern Coke, Gray Forge | 14.00 to 14.50 |
| Ohio Silvery, 8 per cent. Silicon | 19.70 |
| Lake Superior Coke, No. 1 | 16.70 to 17.20 |
| Lake Superior Coke, No. 2 | 16.20 to 16.70 |
| Lake Superior Coke, No. 3 | 15.70 to 16.20 |
| Standard Southern Car Wheel | 22.25 to 22.75 |
| Lake Superior Car Wheel | 21.75 to 22.25 |

(*By Mail.*)

**Coke.**—The market is particularly active in Furnace grades; the strike troubles in Alabama reflecting strongly in the Virginia, where the Wise County product is said to be practically sold up for the balance of the year at the present rate of production. Connellsville Foundry grades are also stronger, the price ranging from $2 to $2.25 on spot and extended business. Wise County Furnace Coke is selling at $1.90 to $2, at oven, for shipment within 30 days or so. Pocahontas brands are also advancing; Furnace Coke, which was nominally $1.50, at oven, now bringing $1.60 to $1.75. Contracting is now running in 2000 to 5000 ton orders, although there are some 10,000-ton contracts being negotiated.

**Old Material.**—It is still a dealers' market, and the large traffickers in Scrap are keeping an eye on the Pig Iron markets, with a frequent purchase arising from a speculative spirit purely. Rolling mills in this section made some heavy purchases earlier in the year, and since then have bought directly from the railroads. There is still some fairly good buying of Heavy Melting Steel Scrap. Foundries are taking but little interest in the Scrap markets. There have been some inquiries for Old Car Wheels and also for Old Steel Rails, but little buying has resulted, there being a wide difference of opinion between buyer and seller in the matter of prices. We quote dealers' prices, f.o.b. Cincinnati, as follows:

| | |
|---|---|
| No. 1 R. R. Wrought, net ton | $10.75 to $11.75 |
| Cast Borings, net ton | 4.50 to 5.00 |
| Heavy Melting Steel Scrap, gross ton | 12.00 to 12.50 |
| Steel Turnings, net ton | 5.50 to 6.50 |
| No. 1 Cast Scrap, net ton | 11.00 to 12.00 |
| Burnt Cast, net ton | 8.00 to 9.00 |
| Old Iron Axles, net ton | 14.50 to 15.50 |
| Old Iron Rails, gross ton | 13.00 to 14.00 |
| Old Steel Rails, long, gross ton | 11.50 to 12.50 |
| Old Steel Rails, short, gross ton | 11.50 to 12.50 |
| Relaying Rails, 56 lb. and up, gross ton | 19.00 to 20.00 |
| Old Car Wheels, gross ton | 12.50 to 13.00 |
| Low Phosphorus Scrap, gross ton | 13.00 to 14.00 |

**Finished Iron and Steel.**—Business with all local concerns shows improvement, although conditions are not yet near normal. The feature of this market is the frequency of "hurry shipment" coming from all directions. Stocks have been allowed to run so low in the country stores and smaller manufacturing establishments that any business at all necessitates quick action. There has been no change in store prices, and none is contemplated. A noticeable increase is observed in the inquiry for Hoops and Bands; one large concern reporting an increase of 25 per cent. in these lines in the past 30 days. The shops making a specialty of railroad repair work are giving out some business in Iron Bars, and an improvement is noticed also in Steel Bars. The demand for Structural Material shows a little improvement. Dealers' prices to the trade are as follows, f.o.b. Cincinnati: Iron Bars, carload lots, 1.65c., base, with half extras; small lots from store, 1.85c., base, half extras; Steel Plates, carload lots, 1.75c., base, with half extras; small lots from store, 1.85c., base, half extras; Base Angles, carload lots, 1.85c., base; small lots from store, 2.10c.; Beams, Channels and Structural Angles, 1.85c., base; small lots from

store, 2.10c.; Plates, ¼-in. and heavier, carload lots, 1.85c.; small lots from store, 2c.; Blue Annealed Sheets, heavy, No. 16, carload lots, 2.15c.; small lots from store, 2.50c.; No. 14, carload lots, 2.05c.; small lots from store, 2.40c.; No. 10, and heavier, carload lots, 1.95c.; small lots from store, 2.20c.; No. 12, carload lots, 2c.; small lots from store, 2.30c.; Sheets (Light), Black, No. 28, carload lots, 2.65c.; Galvanized Sheets, No. 28, carload lots, 3.70c.; Steel Tire, 4-in. and heavier, carload lots, 1.95c.; Plates, 3-16 and No. 8, carload lots, 2c.; small lots from store, 2.20c.

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Rome Furnace at Rome, Ga., operated by Thomas J. Deane, blew in August 3, on Foundry Iron. The capacity of this furnace, the output of which is sold exclusively by Rogers, Brown & Co., is 2500 tons per month. The product is marketed under the name Silver Creek. The furnace had been out of blast since last October.

The Haley & Black Company is a new incorporation, to handle Pig Iron and Coke. The officers are J. W. Haley, a prominent commission man, president, and Herbert Black, for a number of years prominently identified with the Robert Field Company, which recently went into liquidation, vice-president and manager. The company will have offices in the First National Bank Building, Cincinnati.

## Buffalo.

BUFFALO, N. Y., August 18, 1908.

**Pig Iron.**—A few orders have been closed, covering specifications recently figured on, and a good business has been coming in from some of the radiator manufacturers. Prices are substantially the same as quoted last week, being approximately as follows, f.o.b. Buffalo:

| | |
|---|---|
| No. 1 X Foundry | $16.00 to $16.50 |
| No. 2 X Foundry | 15.25 to 15.75 |
| No. 2 Plain | 15.00 to 15.50 |
| No. 3 Foundry | 14.75 to 15.25 |
| Malleable Bessemer | 16.00 to 17.00 |
| Gray Forge | 14.75 to 15.00 |
| Charcoal | 20.00 to 20.50 |

**Finished Iron and Steel.**—Business shows a slight gain in volume, although marked with no orders of notable size. The vacation season tends to hold back some pending orders, and one or two Structural orders from local sources which were expected to materialize before this are still in abeyance.

**Old Material.**—The local market has been dull, with few sales consummated. Prices, however, have been firm, with slight advances in some items. We quote as follows per gross ton, f.o.b. Buffalo:

| | |
|---|---|
| Heavy Melting Steel Scrap | $13.50 to $14.00 |
| No. 1 Railroad Wrought | 15.00 to 15.50 |
| No. 1 Railroad and Machinery Cast Scrap | 14.75 to 15.25 |
| Old Steel Axles | 16.50 to 17.00 |
| Old Iron Axles | 18.50 to 19.00 |
| Old Car Wheels | 14.00 to 14.50 |
| Railroad Malleable | 13.00 to 13.50 |
| Boiler Plate | 11.50 to 12.00 |
| Stove Plate | 12.25 to 12.75 |
| Locomotive Grate Bars | 11.50 to 12.00 |
| Pipe | 11.50 to 12.00 |
| Wrought Iron and Soft Steel Turnings | 7.50 to 8.00 |
| Clean Cast Iron Borings | 6.50 to 7.00 |
| No. 1 Busheling Scrap | 12.00 to 12.50 |

## New York.

NEW YORK, August 19, 1908.

**Pig Iron.**—Moderate sized lots of Foundry Iron have been placed in this market and at Hudson River points, both southern and eastern Pennsylvania furnaces participating. One of the large Pipe manufacturers is figuring on about 10,000 tons, but no business has yet resulted. We quote, at tidewater: Northern No. 1, $17 to $17.50; No. 2 Foundry, $16.50 to $16.75, and No. 2 Plain, $15.50 to $15.75. Alabama Irons are quoted, nominally, $17.25 to $17.50 for No. 1 Foundry, and $16.50 to $17 for No. 2 Foundry.

**Bars.**—A moderate business is reported in Bar Iron, with prices ranging from 1.41c. to 1.46c., tidewater. Steel Bars continue to be held at 1.56c., tidewater.

**Plates.**—Some betterment is noted in the local demand, but it is hardly sufficient to cause much activity. It is observed more particularly in the slight swelling of the size of orders. It is understood that some little irregularity in prices which had begun to crop out last month has now been corrected, and all the manufacturers are firmly maintaining the following quotations on standard sized Plates, at tidewater: Sheared Plates, 1.76c. to 1.86c.; Flange Plates, 1.86c. to 1.96c.; Marine Plates, 2.16c. to 2.26c.; Firebox Plates, 2.65c. to 3.50c., according to specifications.

**Cast Iron Pipe.**—The most important proposition now before the trade comes from the city of Springfield, Mass., which will open bids September 9 for about 12 miles of 42-in. Pipe. Bids will be received on both Cast Iron Pipe and Steel Pipe, but the award will be made for only one form of Pipe. If Cast Iron Pipe is selected, the quantity required will be about 18,500 tons. If Steel Pipe is selected, about 8000 to 9000 tons of Plates will be required. New York City to-day opens bids for furnishing and laying 1000 tons, and on August 26 will open bids for furnishing 1800 tons of Cast Pipe. The Warren Foundry & Machine Company secured the contract for Pipe awarded by Meriden, Conn., last week. R. D. Wood & Co. were successful in bidding for 350 tons desired by the city of Yonkers, N. Y. It is understood that the Yonkers contract was awarded at a shade under $22 per net ton, which is said to be the lowest price named this year in this vicinity. On August 18 Brandon, Vt., will open bids on 1500 tons, and on August 22 Plainville, Mass., will let a contract for 470 tons. While considerable improvement has occurred in the past month in the volume of business placed, the general demand at present is inclined to quietness. Quotations on carload lots of 6-in. Pipe are continued, at $23.50 to $24.50, tidewater.

**Structural Material.**—Locally the letting of the Steel work for the new building at Fourth avenue and Seventeenth street, on the site of the Everett House, is the principal contract of the week. About 2700 tons will be needed. Railroad bridge work pending is of larger proportions, amounting now to 20,000 to 25,000 tons. A contract is about to be let by the Carolina, Clinchfield & Ohio for 6000 tons, and the Grand Trunk is in the market for 1000 tons. The New York Central's four burned piers at East Boston, Mass., will be replaced, and it is reported that one for the Cunard Steamship Company will be the first to be built. The fabricating companies have not been asked to bid as yet. The Erie Railroad is figuring on some small bridges, and the Lackawanna has begun preliminary work on a bridge over the Susquehanna River on the Cayuga Division, to replace one built in 1882. The Educational Building at Albany, which calls for a large amount of Steel, is still a waiting contract. Some low prices are understood to have been named on this work, and several important fabricators are out of the reckoning. The Norfolk & Southern is planning a considerable amount of trestle and bridge work for Albemarle Sound. It will be chiefly of wood, but a draw span and two Plate Girder spans will require about 1800 tons of Steel. In the West and Central West steel work of a miscellaneous character has been fairly plentiful, and local considerations have given the preference in a number of cases to firms in those sections. Shipments of plain material from mill are being made in good volume, and the outlook is considered encouraging. We quote mill shipments, tidewater deliveries, as follows: Beams, Channels, Angles and Zees, 1.76c.; Tees, 1.81c. On Beams, 18 to 24 in., and Angles, over 6 in., the extra is 0.10c. From store Structural Material, cut to length, is sold at about 2¼c.

**Old Material.**—This market is in a peculiar condition. Purchases by consumers from dealers are confined to a few lines, comprising foundry stock and such rolling mill specialties as Iron and Steel Shafting and Car Axles. In other classes of Scrap, dealers and brokers are figuring much more largely than consumers. For some time Steel companies and rolling mill operators have been covering their requirements by direct purchases from the railroads, but the dealers and brokers have latterly been overbidding such consumers and are understood to be storing the material thus purchased if they find that it cannot be immediately disposed of to the works. While some demand is noted for Steel Scrap from several companies, they are by no means disposed to pay the prices asked, and will probably increase the proportion of Pig Iron which they melt. Rerolling Rails have recently been in much better demand. Old Car Wheels are stronger, as a result of the slight improvement in the demand for railroad equipment. We quote as follows, per gross ton, New York and vicinity:

| | |
|---|---|
| Old Girder and T Rails for melting | $11.25 to $11.75 |
| Heavy Melting Steel Scrap | 11.25 to 11.75 |
| Old Steel Rails, rerolling lengths | 13.00 to 14.00 |
| Relaying Rails | 21.50 to 22.50 |
| Old Iron Rails | 15.50 to 16.00 |
| Standard Hammered Iron Car Axles | 17.00 to 17.50 |
| Old Steel Car Axles | 15.50 to 16.00 |
| No. 1 Railroad Wrought | 14.00 to 14.50 |
| Iron Track Scrap | 10.50 to 11.00 |
| No. 1 Yard Wrought, long | 13.00 to 13.50 |
| No. 1 Yard Wrought, short | 11.50 to 12.00 |
| Light Iron | 6.00 to 6.50 |
| Cast Borings | 6.00 to 6.50 |
| Wrought Turnings | 7.00 to 7.50 |
| Wrought Pipe | 10.50 to 11.00 |
| Old Car Wheels | 14.50 to 15.00 |
| No. 1 Heavy Cast, broken up | 13.00 to 14.00 |
| Stove Plate | 11.00 to 12.00 |
| Locomotive Grate Bars | 11.00 to 11.50 |
| Malleable Cast | 12.50 to 13.00 |

**Ferroalloys.**—Business is less active, but there is considerable interest among sellers of Ferromanganese in an inquiry in the market for a large lot. This lot has not yet been purchased and it is felt that low figures may be made on it. The general market is unchanged at $44 to $44.50, at seaboard, for 80 per cent. Ferromanganese. In the Pittsburgh District, however, there have been a number of resales of carload lots on a basis of $43 to $43.50, seaboard. The price of 50 per cent. Ferrosilicon is unchanged at $70, at maker's works, but shipments are being accepted freely.

# Metal Market.

NEW YORK, August 19, 1908.

**Pig Tin.**—A further contraction of business has been observed during the week, and prices steadily declined until Monday and now they are fully 1c. lower than last week. Stocks continue to accumulate, and there is no longer any complaint heard of lack of Spot Tin in New York. Price changes for the week have been as follows:

| | Cents. |
|---|---|
| August 12 | 30.45 |
| August 13 | 30.25 |
| August 14 | 30.00 |
| August 17 | 29.30 |
| August 18 | 29.40 |
| August 19 | 29.50 |

The break on Monday was occasioned by the news cabled from the Straits Settlements that the shipments for the first half of August would be 3700 tons, and the probable shipments for the month 5800 tons. The visible supply continuing to mount up in this way of course has its effect on prices, and at this time when the Tin Plate mills in this country are shut down to such an extent it may be that even lower prices will be reached. The arrivals for the first 18 days this month aggregate 1257 tons, and there are afloat for American ports 2635 tons. The London market closes lower to-day at £133 for spot and £133 15s. for futures.

**Copper.**—The advance to around a 14c. level for Lake was evidently too much for the market to stand at this juncture and prices quickly slipped back to 13.62½c. to 13.75c. cash for Lake and 13.50c. to 13.62½c. cash for Electrolytic. The firmer market in London had some influence on prices this afternoon, but business was at a standstill. Buying has fallen off in still greater proportion than the prices, but there seems to be a speculative interest which is keeping up considerable activity in London. The attempt to awaken renewed interest in speculation by American merchants may have the effect of again advancing the price. While the conditions in the Copper market have vastly improved, there is nothing in the situation now to warrant a sudden return to high prices. Consumption in this country has undoubtedly increased and will probably be in the neighborhood of 16,000 tons in August, yet there will be available for consumption here nearly 20,000 tons, unless shipments to Europe should be unusually heavy. It may take several months under ordinary conditions for trade to recover or consumption in this country to increase so as to take care of the larger production now coming from the mines. It is a singular thing that Copper producers, speaking of the situation as a whole, contend that there has been little or no increase in production, yet, when referring to their individual properties, they speak in glowing terms of the increased amount of metal coming out of the mines. The London market closes to-day at £60 17s. 6d. for spot and £61 12s. 6d. for futures. L. Vogelstein & Co. give the deliveries into consumption of foreign Copper in Germany for the months of January to June, 1908, as 79,090 tons, as against deliveries during the same period in 1907 of 55,507 tons.

**Pig Lead.**—The market is steady, bnt not as firm now at 4.60c., New York, as it was two weeks ago at 4.50c. Considerable selling of small lots at, or close to, the price of carloads is reported. Producers are more anxious to secure orders than for several weeks. The market in St. Louis is also steady at 4.45c.

**Spelter.**—In common with other metals a marked curtailment of business is noted. In Spelter this has been accompanied by a further easing of prices, and Prime Western brands can be had at 4.50c. to 4.55c., St. Louis. In New York the market is quoted at 4.65c. to 4.70c.

**Antimony.**—The price of Antimony is again unchanged and business is dull. Cookson's is quoted at 8c. to 8.25c., Hallett's at 8.25c. to 8.50c. and outside brands at 7.75c. to 8c.

**Tin Plate.**—Operations in the Tin Plate line continue on a reduced scale, but this is not at all unexpected. Prices are firm, and for 100-lb. IC Coke Plates $3.89 is quoted, New York, and $3.70, Pittsburgh.

**Old Metals.**—Business has been very dull since the Copper market turned, and those who were anxious to buy at ¼c. under the market a week ago will not touch like concessions this week, when the market is from ¼c. to ½c. lower. Dealers' selling prices are easy, as follows:

| | Cents. |
|---|---|
| Copper, Heavy and Crucible | 12.75 to 13.00 |
| Copper, Heavy and Wire | 12.50 to 12.75 |
| Copper, Light and Bottoms | 11.50 to 11.75 |
| Brass, Heavy | 9.25 to 9.50 |
| Brass, Light | 7.25 to 7.50 |
| Heavy Machine Composition | 12.00 to 12.25 |
| Clean Brass Turnings | 8.25 to 8.50 |
| Composition Turnings | 9.50 to 9.75 |
| Lead, Heavy | 4.35 |
| Lead, Tea | 4.00 |
| Zinc Scrap | 3.25 to 3.50 |

The Allentown Foundry & Machine Company, Allentown, Pa., was placed in the hands of a receiver August 17. The failure is stated to be the direct result of a strike in 1907 in a Philadelphia manufacturing establishment to which the company furnished castings. The Allentown workmen went out in sympathy, although having no personal grievances, and a boycott resulted which greatly injured the company's business. The petition for the receivership states an indebtedness to banks of $147,500, upon various notes of $145,000, and floating debt of $8847.71. John F. Wanner was named as receiver.

## Iron and Industrial Stocks.

NEW YORK, August 19, 1908.

The stock market was unable to keep up its rapid pace and prices broke considerably on Thursday of last week, after which there were several days of weakness. Some improvement has taken place in the opening days of the current week. The range of prices on active stocks from Thursday of last week, when the highest prices were realized, to Tuesday of this week, was as follows: United States Steel common 44 to 47⅜, preferred 108⅛ to 110½; Car & Foundry common 39⅞ to 46½, preferred 102 to 103⅛; Locomotive common 54⅝ to 59⅝, preferred 107; Bethlehem Steel common 21⅞ to 23, preferred 52⅞ to 53¼; Steel Foundries common 8½, new stock 37½; Cambria Steel 34¾ to 36½; Colorado Fuel 32 to 36¼; Crucible Steel common 7¼ to 7⅝, preferred 47 to 51; Pressed Steel common 33⅝ to 36, preferred 95½ to 96; Railway Spring common 42⅜ to 46, preferred 100; Republic common 21¾ to 24, preferred 76 to 80¾; Sloss-Sheffield common 62⅜ to 64⅞; Cast Iron Pipe common 27⅛ to 28, preferred 76¼ to 76½; Can common 6¼ to 6½, preferred 60⅞ to 61.

Last transactions up to 1.30 p.m. to-day are reported at the following prices: United States Steel common 45½, preferred 108⅝; Car & Foundry common, 40½, preferred 102½; Locomotive common 55¾, preferred 107; Colorado Fuel 33¾; Pressed Steel common 35¼, preferred 96; Railway Spring common 42⅝; Republic common 23, preferred 78¼; Sloss-Sheffield common 61½; Cast Iron Pipe common 27¼, preferred 78; Can common 6⅛, preferred 60½.

**Dividends.**—The Pittsburgh Valve, Foundry & Construction Company has declared a quarterly dividend of 1¼ per cent., payable August 31.

The National Enameling & Stamping Company has declared a dividend of 7 per cent. on the preferred stock, payable in quarterly installments of 1¾ per cent. each.

The Houston Car Wheel & Machine Company, Houston, Texas, is successor to the Waterman Car Wheel & Foundry Company, and is also operating the Houston Engineering & Machine Company. It has well equipped foundry and machine shops, which are stated to be as thoroughly up to date as any in the Southwest, and consequently it is enabled to undertake any character of large or small work. The company manufactures chilled car wheels, engine truck wheels, railroad castings, heavy forgings, dredge machinery, oil and sawmill machinery, compress work, hydraulic cylinders and head trees, as well as doing a general line of repair work. Robert E. Masters is manager.

The Duncannon Iron Company, Duncannon, Pa., with principal offices in Philadelphia, has been placed in the hands of receivers—William A. Moore, J. B. Lessig and W. L. Conver, appointed by the local court. For several weeks efforts have been made by the company and its creditors to arrive at some plan to continue the operation of the plant, but they were unsuccessful. It is understood that the company made no objection to the receivership.

La Porte, Ind., will have a "home coming" August 23 and 29. A souvenir of the occasion has been prepared, entitled "Pictorial La Porte," which is now being distributed. This publication is profusely illustrated, showing leading manufacturing establishments and public buildings as well as some of its imposing residences and points of interest. It also contains an enumeration of the city's importance in manufactures and commerce.

The Electro Metals, Ltd., of Welland, Ont., produced several hundred tons of ferrosilicon by electricity in the first six months of 1908. Almost all of the ferrosilicon made contained over 50 per cent. of silicon.

# The Machinery Trade.

NEW YORK, August 19, 1908.

Considering the fact that the vacation season is at its hight, machinery dealers should not be discouraged over the present business situation, as even in times when there is a rush of trade a noticeable lull occurs during the hot summer months. A number of local houses report that their business has not fallen off during the past two weeks as against the sales of July, and many houses have been doing a better business this month than they did in June. There are no new lists of any size before the trade, and the extensive list sent out by the International Steam Pump Company some time ago has not been bought against as yet, according to all available reports. The railroads have no lists out, but are doing some scattering buying. It is hard to judge the extent of the business they are placing because of the fact that many in the trade have no knowledge of their inquiries, where if a list was sent out the trade in general would know about it and could base some estimate on the amount of business being done.

The Government continues to buy equipment for the Panama Canal, and a good list of cement machinery is expected from that source. It is said in the trade that bids will be shortly asked for furnishing about 200 steel dump cars for use in the Canal Zone.

The market is being largely supported by export business, one or two houses having reported some fair sales in South America and Australia. A little business is being done with the sugar interests of Cuba and Porto Rico, and while the Japanese are not placing any noticeably large orders, their purchasing houses here are doing some steady buying and their trade has gone far toward helping the business situation.

There seems to be a general tendency on the part of the trade to accept the situation philosophically, and machinery houses appear to be satisfied with the present outlook as regards their sales. At least one big machine tool selling firm reports a noticeable increase in sales over the last three months, and while the proportion of inquiries that result in sales is not as large as might be expected, the fact that there is a good steady inflow of inquiries to most houses is taken as an indication that many manufacturers as a rule are inclined to buy, and will do so as soon as they can see their way clear to increasing their expenditures. The Fore River Shipbuilding Company has been doing a fair amount of buying in the trade, and the New York Central Railroad continues to make scattering purchases, principally of special equipment.

The Menominee & Marinette Traction Company, Menominee, Mich., is having constructed a hydro-electrical power plant at Grand Rapids, on the Menominee River, about 18 miles north of that city. The plans and specifications were prepared under the direction of Jacobson & De Guere of Grand Rapids, Mich., and that company is superintending the construction work. The plant will generate about 7000 hp., and the plans call for a solid concrete dam about 500 ft. long and a dike 1000 ft. long. The power house will be of reinforced concrete and the construction work will include the building of a flume and a 4000-ft. canal. It is understood that a large part of the machinery equipment has not been purchased as yet.

H. W. Dexter, 323 Empire Building, Atlanta, Ga., has inquiries out for an extensive list of machine shop equipment, including a general line of machine tools. Mr. Dexter is acting for other parties and he desires communications on the subject to be addressed to him at 96 Liberty street, New York. The requirements include planers, radial drills, upright drill, presses, shapers, engine lathes, pulley lathes, driving wheel lathes, bolt and nut machinery, pipe threading machines, flue welders, air compressors for lifting machines and a general line of shop equipment for installation in a large sawmill machine shop. It is desired to purchase the machinery as soon as possible, and if first-class second-hand machinery can be obtained it will be given consideration.

The National Scale Company, Beaver Falls, Pa., is in communication with the Board of Trade of Chicopee, Mass., with a view to locating in that city. The National Scale Company manufactures weighing and counting machinery and its business has outgrown its present plant. For some time the company has had under consideration a change of location with a view to enlarging its output, and if it does not locate at Chicopee it is stated that some other point will be decided upon shortly. It is probable that before long the trade will hear of some machinery requirements for this enterprise.

The Wilcomb Machine Company, Norristown, Pa., will be in the market before long, it is expected, for machinery and equipment for an addition to its plant. The company manufactures knitting machinery and an extensive addition is now in course of construction. It is stated that the machinery expenditures will amount to about $50,000.

The Public Service Commission, Albany, N. Y., has granted a charter to the Citizens' Electric Service Company, Bath, N. Y., permitting construction of electric lighting plant in Bath and surrounding villages. E. J. G. Tower of the King Iron Works, 226 Ohio street, Buffalo, who is manager of the company, states that specifications for the machinery and equipment are being completed, and that contracts will be shortly awarded. The plant will consist of three direct connected gas engine driven units, to be operated on producer gas, a three-panel switchboard, transformers, converters and complete modern equipment.

The Schaeffer & Budenberg Mfg. Company has disposed of its factory building at Foxboro, Mass., to other parties, and on September 1 will move its main office, works and New York salesroom to 963-965 Kent avenue, Brooklyn.

**Catalogues Wanted.**—J. Coulange, who for the past 12 years has been designer for the Fabrique Nationale d'Armes de Guerre of Belgium and who is a member of the Brussels Trading Chamber, has opened an office in Liege as an inventing and constructing mechanical engineer, to make a specialty of machine tools and special machinery, and he desires American and foreign catalogues on all classes of machinery manufactured.

# Cincinnati Machinery Market.

CINCINNATI, Ohio, August 18, 1908.

Very complex in character is the machinery and machine tool trade in this section just now. At a plant making standard tools a good sized order causes hasty notes of request from superintendents and foremen, asking laid-off employees to report at an early day; while at others near by the pay roll continues to be cut. In strict justice to the trade in general, and with a proper regard for what it means to commerce and trade in particular, it must be stated that the first named acts are not in the majority. It is difficult to draw a fairly truthful picture of the machinery market at this time. Concerns which last week entered some nice specifications in order books and which sold some expensive machines in stock are this week complaining of a lack of inquiry while some others which were practically shut down are calling in men and starting idle wheels.

A glance at the machinery manufacturing establishments in the smaller cities and districts of relatively less importance shows a gain in practically every branch, and this is particularly true of concerns which are fitted for repair work on cars, locomotives, agricultural implements and kindred tools. Good reports come from Dayton, Columbus, Lima, Hamilton, Springfield and Middletown, Ohio, and Indianapolis, Ind.

Reports from the Barney & Smith Car Mfg. Company, Dayton, and the Ralston Pressed Steel Car Company, Columbus, show that both are taking on additional men and gradually enlarging their capacity to take care of long delayed business in their special lines.

In Hamilton, Ohio, practically all the larger machinery and tool manufacturing plants are increasing time and forces. One of the largest tool manufacturing establishments in this district is running about 70 per cent. of normal with a splendid line of inquiries on hand, and another making a specialty of heavy punching and shearing machinery is rapidly taking on its accustomed activity. The blowing in of the large furnace of the Hamilton Iron & Steel Company on Wednesday of this week is regarded as an epoch in the industrial life of this community. The directors of the company met August 14 in the office of Field, Longstreth & Co., in Cincinnati, and considered a report of President George Pearson, who announced the arrival of ore and all in readiness for applying the torch.

An enterprise of the Shunk Plow Company at Bucyrus, Ohio, is receiving the attention of those interested in manufacturing. Tests have recently been made by officials of that concern of an automobile buggy manufactured entirely at the Bucyrus plant; and these tests, it is reported, have encouraged the directors to proceed with the enterprise. The new vehicle, of which successful tests have just been made, is a double cylinder machine, capable of developing from 12 to 15 hp. It is expected that the various departments will be started to work soon on a stock order of 100 cars. Additional machinery is to be installed, and some enlargements made in the company's plant as the patronage may justify.

The plant of the Indiana Steel & Wire Company at Boyceton, Ind., near Muncie, has resumed work in all departments. A number of necessary repairs were made, and some improvements added during the recent shutdown.

A building has been secured for an extension to the foundry business of the Marion Gray Iron Foundry Company at Marion, Ind. It is reported that this company has received sufficient orders to justify the enlargement in question and the practical doubling of its capacity.

The Fort Wayne Foundry & Machine Company, Fort Wayne, Ind., is accredited with the greatest amount of orders for structural iron work in its history. A recent order from the Delphos Mfg. Company, Delphos, Ohio, calls for a gas engine of 100 hp. and a 150-hp. gas producer.

The Krein Mfg. Company, Wapakoneta, Ohio, manufacturer of chains, is now running on practically full time with a good sized order book and reports conditions materially improved.

A new idea in woven wire fencing has been developed and patented by Charles Birch, Crawfordsville, Ind. The special feature of the fence is the knot, where the meshes are secured, the claim being advanced that this knot is more rigid and better in every way than those of other types. A machine for the manufacture of the new fencing has been designed, and the product will be marketed from the Birch foundry in that city.

George Pike, a mining engineer from Teller, Alaska, is in Cincinnati, superintending the manufacture of some special mining machinery to be installed in that place. He reports conditions improving in the mining districts, with plenty of work in all branches of industry.

Conditions in the Panama Canal Zone are reported good by J. A. Evans of Richmond, Ky., who is here on leave of absence. He says that in the Culebra cut 67 shovels are at work, each taking out an average of 2000 cu. yd. earth a day.

The International Railroad Master Blacksmiths' Association will be in session here beginning to-day, and continuing till Thursday night. The Supply Association officials and members were the first on the ground and began arriving Monday at Grand Hotel headquarters. A. L. Guilford, Ajax Mfg. Company, Chicago, is president; D. B. Cram, Railway Materials Company, Chicago, secretary, and J. W. Williams, Brown & Co., St. Louis, treasurer of the Supply Association. J. B. Judy, Allegheny, Pa., is president of the Blacksmiths' Association, and A. L. Woodward is secretary. Denver, Colo., is in the field for the next place of meeting.

## Philadelphia Machinery Market.

PHILADELPHIA, PA., August 18, 1908.

While business is dull at the moment, considerable encouragement for the future is taken from the conditions surrounding the iron and steel trades. More activity has developed in some of these lines, and the trade believes that the continued slight gain in the business of the steel making and industrial plants, the car builders and closely identified interests, is bringing nearer the time of buying equipment for these plants, which it is expected will be needed, and that promptly, should a busness revival be experienced, as expected during the coming fall months. While the railroads in this territory still show but little indication of coming into the market for machine tools, they have made some few purchases in other directions, and, it is understood, have increased the volume of repair work being done. Some roads outside the territory show more activity and are planning to make more extended purchases of rolling stock. Crop reports continue most favorable, and a large percentage of the railroads will be unable, unless their motive power and rolling stock is put into better condition, to care adequately for the usual heavy movement during the fall months. Tool builders, therefore, consider the outlook for the future as most hopeful, and a strong undertone of confidence and strength is to be pretty generally noted. The foreign demand continues very quiet, with little business pending, and the orders taken in this territory have been exceedingly few.

The second-hand machinery market, while showing no particular improvement, continues fairly active. There is a certain volume of day to day business, which in the aggregate shows a pretty good total. The demand runs largely to the medium and smaller tools, with occasional inquiries for heavy tools and equipment of a somewhat special nature.

Conditions in the foundry trade are unchanged. The tonnage coming out is not large, consumers ordering in small quantities to meet their immedaite needs. Steel casting plants are reported to have taken on a somewhat better volume of business, but are still considerably below the normal. Jobbing foundries run irregularly, and those making a specialty of machinery castings report no marked improvement in the demand.

The Wilcomb Machine Company, Norristown, Pa., is enlarging its plant, and has awarded contract to build a two-story brick addition, 40 x 88 ft.

C. C. Knight & Co., iron and steel merchants, Sixteenth and Callowhill streets, have had plans prepared by Watson & Hacket, architects, for a six-story fireproof warehouse building, to be erected at the above location. The structure is to be 100 x 180 ft., of brick and reinforced concrete.

The Department of Public Safety, city of Philadelphia, will open bids August 19 for a pipe threading and cutting machine; a shaper, 18-in. stroke; a universal milling machine, a 16-in. lathe, a three-spindle drill press, a screw machine, five 3-in. jaw bench vises, blacksmith vises, a combination forge and muffle, emery wheel and stand, chucks of various sizes, &c. This equipment is to be installed in a repair shop to be established for the Electrical Bureau in the City Hall.

The American Ice Company is having borings for wells made at Glenwood street and Montgomery avenue, with a view of establishing there a 150-ton ice plant. It is also understood to be preparing plans for a 100-ton ice plant, to be located at Forty-seventh street and Girard avenue, together with an ice storage plant of 7500 tons capacity.

## Chicago Machinery Market.

CHICAGO, ILL., August 18, 1908.

Sealed bids will be received by W. B. Krause, city clerk, Port Washington, Wis., until 7.30 p.m., August 25, for three 100-hp. water tube boilers, one 100-hp. and one 200-hp. tandem compound condensing Corliss engines, one 75-kw. and one 150-kw. three-phase 60-cycle 2300-volt generators, one three-panel switchboard, one 75-light arc transformer and regulator, one 60-hp. induction motor, together with accessories such as exciters, feed pumps, heaters, condensers, piping, belting, boiler settings, &c. Also one brick addition to power house and one stack. Plans and specifications are on file at the city clerk's office, Port Washington, Wis.; at 31 Vroman Building, Madison, Wis.; at Builders' and Traders' Exchange, Milwaukee, Wis., and at the office of F. W. Dodge Company, Monadnock Block, Chicago, Ill.

Plans which were completed about a year ago for the erection of a modern machine shop by the Great Falls Iron Works, Great Falls, Mont., manufacturer of mining and milling machinery, and put aside owing to the financial crisis which developed at that time, will now be carried out. The company has commenced work on a building of brick and steel construction, 65 x 80 ft. and 30 ft. high, to be located at the corner of Eighth avenue North and Fourteenth street, the estimated cost of which is $15,000. Machinery of the latest pattern will be installed in the building, including two cranes, one electric and one hand power.

The Jackson-Church-Wilcox Company, Saginaw, Mich., manufacturer of light machinery and automobile parts, will erect a new two-story plant of brick and steel construction, 53 x 217 ft., with two additions, or wings, 40 x 50 ft. Power to run the plant will be supplied by the Jackson & Church Company, Saginaw. It is also expected to install a heating plant, using the low pressure system. New machinery will probably be purchased when the company moves into the new buildings.

The Electric Light & Ice Plant, A. W. Lewis, manager, Hoisington, Kan., is making considerable changes in its equipment and has recently purchased two new Westinghouse electric generators of 75 and 30 kw. each. Additional equipment to be purchased, for which it is now in the market, includes a 120-hp. Corliss and a 40-hp. high speed engine. The change will leave on hand a McEwen engine and switchboard for 1100 volts and 45-kw. generator.

The city of Stickney, S. D., will receive bids until August 22 for the construction of complete water works system, to cost about $8000, which will include the digging of six wells, approximately 450 ft. deep; the laying of 2500 ft. of 4 and 6 in. mains, with hydrants, &c.; the purchase of one 15-hp. gasoline engine and deep well pumping outfit; the construction of 90-ft. steel tower, with cypress tank 18 x 20 ft.

Changes to be made this winter in the equipment of the municipal electric light plant of Harbor Springs, Mich., include the installation of an additional generator and engine with a rating of from 350 to 450 kw. H. L. Metz is manager.

The Hico Electric Company, Hico, Texas, will during the next 12 months consider the question of changing its system from 133 cycles to 60-cycle three-phase, which will include the installation of a 75-kw. alternating current generator. H. Gleason is manager.

The city of Park River, N. D., is in the market for a 10 x 8 x 12 in. duplex pump for installation in the municipal electric light and water works. The city is also considering installing a new boiler of 100 or 125 hp. and a heater and purifier, but may not do anything in regard to the matter this year. G. Anderson is superintendent of the Park River Electric Light & Water Works.

The city of Graceville, Minn., has under consideration the question of increasing the output of the municipal electric light plant, and if it materializes the equipment will be increased by the addition of a larger boiler, engine and generator. H. A. Raitz is superintendent.

The city of Okolona, Miss., is contemplating the purchase of two new 100-hp. boilers for installation in the water and light works. Dr. T. M. Braty is purchasing agent, Okolona, Miss.

Extensions to be made this fall to the equipment of

the municipal electric light plant, Thorntown, Ind., include a 50-kw. dynamo and gas or gas producer engine. W. E. Young is manager.

The city of Marion, Ind., is now working on plans and specifications for the enlargement and rebuilding of the municipal electric light plant, in which new equipment will be installed. Specifications will be completed in about a week, when bids will be asked. Otis Weesner, 318 East Grant street, Marion, Ind., is superintendent of the electric light department.

The Neosho Electric Light Company, Neosho, Mo., is in the market for one horizontal tubular boiler for 160 lb. working pressure, dimensions to be 72 in. by 18 ft. long, complete with all fittings, and stack 76 ft. long of No. 10 iron. The boiler should have flush heads, full front settings, but no smoke rings. S. W. Carver is manager.

Additions to the machinery equipment of the plant of the Pike Light & Power Company, Pikeville, Ky., are being planned by that company, but it is not known as yet just what equipment will be needed or when estimates will be received. It is stated, however, that the new equipment to be installed will probably include a 150-hp. boiler, a 75-kw. 220-volt direct connected generator and an engine of 100 hp. The company also expects to start a day circuit next spring. L. L. Stone is manager.

To provide for day service the Medora Electric Light Plant, Frank Watson, proprietor, Medora, Ill., expects to install a direct connected unit to use in connection with either natural gas or gasoline. Before going ahead with the purchase of this unit the company is awaiting developments being made to supply it with natural gas. In the meantime the company desires catalogues, &c., relating to direct connected units of 10 to 15 kw., 125-volt, natural gas or gasoline.

The Braymer Light & Fuel Company, Braymer, Mo., recently purchased a three-story brick building, which will be used as a power station. Additions to the equipment of the company's plant are being made, including a 100-hp. engine and two 25-kw. 125-volt dynamos. C. P. Dorsey is manager.

The citizens of Hillyard, Wash., have voted bonds in the sum of $55.000 for the construction of water works. The plans call for the installation of two centrifugal pumps capable of delivering 500 gal. or better per minute in a well 210 ft. deep to pump water to a tank of 100,000 gal. capacity on a tower 70 ft. high, both to be constructed of steel. The water mains will be iron or steel pipe in the following sizes: 4, 6, 8, 10 and 12 in. About 60 fire hydrants will be required. M. H. Gordon is Mayor.

Bids will be received on August 25, 1908, at 1 o'clock p.m., by the County Commissioners, Warsaw, Ind., for the erection of a steel water tank and tower, complete with foundation and frost proof covering, and two new boilers 54 in. by 14 ft. John C. Beagle is County Auditor and secretary to the commissioners.

The Morganfield Light & Power Company, Morganfield, Ky., is considering the installation of a 100-kw. 500-volt d. c. generator to furnish power to adjacent mills. Nothing definite, however, has yet been done.

The installation of a 300-kw. revolving field two-phase belt driven generator and three turbine water wheels to operate it is contemplated by the Oregon Electric Light & Power Company, Oregon, Ill., of which company F. G. Jones is president and manager.

The Clanton Light & Power Company, Clanton, Ala., will add to the present equipment of its plant one 40-hp. automatic engine and one 100 hp. internally fired return tubular boiler. J. P. Van Derveer is general manager of the company.

Max J. L. Tower, 444 Vinewood avenue, Detroit, Mich., is preparing plans for the erection of a bridge and structural steel plant, to be built on a site which has been purchased beside the Michigan Central Railway freight yards, in Detroit. The site for the plant is about 7½ acres, and has a frontage on the railroad of about 200 ft. Mr. Tower is preparing to incorporate a company with about $300,000 capital, a large part of which he expects to subscribe for himself. The company will make a specialty of structural steel and bridge work. No details as to the size of the proposed plant are available as yet, other than it will occupy a large part of the purchased property.

## New England Machinery Market.

WORCESTER, MASS., August 18, 1908.

With the vacation season at its hight, nothing better could be expected in the machine tool trade than that business would hold its own. This it has done. The week has been a repetition of the summer preceding it, with a few orders and inquiries numerous enough considering that New England is taking a vacation on a large scale. Customers are seizing the opportunity to enjoy the warm weather at the shore or mountains or abroad, to an extent, in the way of duration, that has not been feasible for most business men in several years past. As it is not necessary for them to stick so closely to their desks, they are leaving their offices to their assistants, either for weeks at a time or for long week ends. Assisting in the vacation condition quite a large number of manufacturing plants are shut down for longer vacations than usual. As a result, there is greatly reduced opportunity to sell machine tools. Even were the manufacturing industry twice as active few orders would be expected at the hight of so unusual a migration of buyers.

It is noticed that as some of the works resume operations after vacation their productive capacity is increased, partly because of the accumulation of business during the shutdown and partly because there seems to be a real improvement in the volume of orders. This is much more noticeable in some lines than others. It applies only in a slight degree to the machine tool industry. In lines closer to the consumer of manufactured products the change is more marked and the outlook generally brighter.

Steam engine builders report that the week has brought an important improvement in business, and that they expect to find the change a permanent one. For example, one of the larger New England builders has booked orders in the past few days totalling several thousand horse power, an amount of business in large units practically equalling the entire bookings of the company for the first half of the year. The total volume of orders for steam engines has been almost microscopic, compared with the normal. Of Corliss engines only 50, averaging $8000, a total of $400,000, were sold between Jan. 1 and July 1. This insignificant business, comprising the orders of all American manufacturers of the Corliss type, is only a small per cent. of the normal product. Yet, during this same period the inquiries reached a record total of prospective orders. Users of power turned their attention to their power plants when the slackening of business released them from concentration on manufacturing proper, and they have been planning improvements. They are only beginning to place their orders, however, and the engine people fear they are to be flooded later by a simultaneous action of customers in entering the market to buy. It is undoubtedly a fact that those who will place their orders for power equipment immediately will be spared the annoyance of long delayed deliveries.

The supply of automobile engines is much below the demand. Several thousand units would be absorbed immediately, and the builders of this type of motor are rushing production in the knowledge that the automobile manufacturers will buy as fast as engines can be delivered. Last fall it was not believed that the automobile business could keep up, and the engine builders decided to curtail production, a fact which they have since regretted. A large percentage of automobile engines are now built for the manufacturers by outside parties.

Certain lines carried by the supply dealers have escaped the general depression. Typical cases are those of gasoline and gas engines of small power, and that of scales. The demand for these products has been exceptionally brisk, a fact which the dealers do not try to explain.

Stocks in the supply trade are very low. A prominent dealer remarked yesterday that "if a customer were to offer an order for 100 doz. files on condition that it be filled the same day no house in Boston could accept it." This may be an exaggerated statement, yet it illustrates a known condition in this trade. As business improves manufacturers should feel a quick response from the supply dealers, for present stocks would be quickly exhausted. The same thing is true of other classes of customers, including those of the dealers as well as those of the manufacturers. The purchasing departments of the railroads have approved requisitions literally in stacks, ready to become orders as soon as the powers at the financial heads loosen on the pursestrings and make available the necessary funds. Every department has large numbers of requisitions, totalling impressive amounts, awaiting the action of the purchasing agent, and many of the needs embodied in the requisitions are classed as imperative, and constitutes but a skeleton of the requirements which will come with the resumption of active traffic. In manufacturing plants the same general condition exists, purchases being still confined to wants which no makeshift can satisfy.

Hill, Clarke & Co., Inc., Boston, have made extensive improvements to their store at Oliver and Purchase streets. A new finished hard wood floor has been laid, and upon it is shown the stock of machine tools, from all of which the skids have been removed, so that they appear as in a shop, an attractive practice followed by dealers abroad, but rarely in America. The new demonstrating shop of the store has been equipped with line shafting and powerful electric drive. Belted up for practical operation is a representative group of the company's lines, including Whitcomb and Gray planers, Flather engine lathe, Snyder drills, Chicago hand millers, Lapointe broaching machine, Milwaukee miller, Henry & Wright drill, Western radial; a Flather gear shaper, representative of the American type, installed beside a German gear hobbing machine, the Pfidtler; a Consolidated press; tilted turret lathe, with automatic continuous bar feed, built by the Wood Turret Machine Company, Terra Haute, Ind., and a Rogers boring mill.

The United States Gas Furnace Company, Providence

R. I., has established a business in a shop at 143 Eddy street, corner of Pine street. It is a co-partnership, with W. E. Chase as general manager, and manufactures a line of gas blast furnaces, a specialty in which Mr. Chase has had a long experience.

The awards of the machine tools, comprising the lists of the Watertown arsenal, mentioned last week, have been delayed for some reason, and are awaited with eagerness by the Boston dealers, who are the only bidders.

The American Battery Holder Company, Worcester, Mass., has established a factory at 65 Beacon street, where the O. K. battery holder, a new device, will be manufactured. C. B. Russell is the manager of the business.

The New England Butt Company, Providence, R. I., builder of twisting, cable and rubber covering machinery, has increased its capacity very considerably because of new orders for machinery. The company's foundry is also increasing production because of outside orders.

The builders of steam engines complain that prices are very low, owing to cutting that has been going on in the effort to obtain whatever business may come up. The trade has an association, but it is young and consequently not in a position to secure so logical a co-operation among its members as has existed in the National Machine Tool Builders' Association, with the result of a maintenance of lists under the most adverse conditions of the trade. It is believed, however, that with better acquaintance and mutual understanding among its members the engine builders' association will finally get into a position so that the various concerns interested, comprising a large majority of the trade in the United States, will be markedly benefited, both in good times and in dull. It is well realized among the engine people that had they been organized to the same degree of perfection as the machine tool manufacturers, prices would now be much higher, the volume of orders booked during the past year would have been practically as large in numbers and larger in amount, and there would be very great advantage in approaching the rising market. In New England the engine business shows some signs of improvement, builders state, but competition is so keen, taking the form of lowering prices, that profits are far from satisfactory. There is business for the future, however, which should be profitable, for a large share of it will not be booked probably until after the upward turn of business has reached the proportions of a strong market.

A new industry to be known as the Bristol Engineering Company, Bristol, Conn., is being organized to manufacture parts of taxicabs, including engines, transmissions, clutches and other automobile parts, and work on the erection of a factory will begin immediately. The organizers of the business are prominent men, comprising Albert F. Rockwell, president, and Dewitt Page, treasurer of the New Departure Mfg. Company, Bristol, and F. E. Moskovics, Kingston, N. Y., who is prominently known as an inventor of automobile parts. Mr. Rockwell will be president of the new corporation, Mr. Page vice-president, and Mr. Moskovics secretary and treasurer. It is believed that the future of the taxicab will be an important one, and that the demand for the new company's product will be correspondingly great. Mr. Rockwell has recently returned from Europe where he has given the subject of taxicabs careful investigation.

F. B. Farnsworth, New Haven, Conn., of the McLagon Foundry Company, has been made trustee in bankruptcy of the Branford Mfg. Company, manufacturer of locks, and has been instructed to continue the business until ordered otherwise by the referee.

The business of the Westmacott Gas Furnace Company, Providence, R. I., has been reorganized under new management, with W. C. Buell as president and treasurer, and W. C. Buell, Jr., secretary and general manager. The company is located at 159-161 Orange street, and manufactures gas blast furnaces for annealing, hardening, tempering, etc.

The Hampton Company, Easthampton, Conn., manufacturer of textiles, is to build an addition to its works, 93 x 142 ft. and two stories.

## Government Purchases.

WASHINGTON, D. C., August 18, 1908.

The Isthmian Canal Commission will soon ask for bids for three 3-hp. and two 8-hp. marine motors, and for the Gatun handling plant 12 electric locomotives, flat cars and other accessories for a complete electrical industrial railroad.

The following bids were opened August 11 for machinery for the navy yards:

Class 4.—One Dow vertical triple plunger pump—Bidder 26, George E. Dow Pumping Engine Company, San Francisco, Cal., $800; 29, Dean Steam Pump Company, New York, $470 and $507; 30, M. T. Davidson, Brooklyn, New York, $680; 80, Manning, Maxwell & Moore, New York, $442.45; 91, National Electrical Supply Company, Washington, D. C., $590.

Class 51.—One gang drill—Bidder 40, Fairbanks Company, New York, $573; 60, Handlan-Buck Mfg. Company, St. Louis, Mo., $650; 80, Manning, Maxwell & Moore, New York, $625.

Class 62.—One motor driven splitting shear—Bidder 80, Manning, Maxwell & Moore, New York, $1210; 118, Scully Steel & Iron Co., Chicago, Ill., $1397; 121, Toledo Machine & Tool Company, Toledo, Ohio, $1274.

Class 63.—One motor driven countersinking machine—Bidder 45, $1730.

Class 64.—One gravity molder and six flasks—Bidder 14, A. Buck's Sons Company, Elizabethtown, Pa., $2500.

Class 65.—One electric traveling hoist—Bidder 9, Alfred Box & Co., Philadelphia, Pa., $650; 21, Case Mfg. Company, Columbus, Ohio, $700; 25, Cleveland Crane & Car Company, Wickliffe, Ohio, $775; 40, Fairbanks Company, New York, $996; 62, Hoisting Machinery Company, New York, $670; 92, Niles-Bement-Pond Company, New York, $740; 102, Pawling & Harnischfeger, Milwaukee, Wis., $995.50; 113, Sprague Electric Company, New York, $950; 116, Sheppard Electric Crane & Hoist Company, Montour Falls, N. Y., $585; 134, Yale & Towne Mfg. Company, New York, $996.

Class 66.—One core box machine—Bidder 43, J. A. Fay & Egan Company, Cincinnati, Ohio, $525; 44, Fox Machine Company, Grand Rapids, Mich. $305.90.

Class 67.—One two-piece crank shaper—Bidder 40, Fairbanks Company, New York, $916; 49, Garvin Machine Company, New York, $910; 80, Manning, Maxwell & Moore, New York, $885; 92, Niles-Bement-Pond Company, New York, $823; 106, Springfield Machine Tool Company, Springfield, Ohio, $805; 128, Vandyck-Churchill Company, New York, $665.

Class 68.—One full universal radial drilling machine—Bidder 40, Fairbanks Company, New York, $1458; 80, Manning, Maxwell & Moore, New York, $1300 and $1400; 92, Niles-Bement-Pond Company, New York, $1521; 122, Tucker Tool & Machine Company, New York, $1444; 128, Vandyck-Churchill Company, New York, $1775.

Class 69.—One vertical turret boring and turning machine—Bidder 13, Bullard Machine Tool Company, Bridgeport, Conn., $1401.42; 80, Manning, Maxwell & Moore, New York, $1398; 92, Niles-Bement-Pond Company, New York, $1393; 99, Prentiss Tool & Supply Company, New York, $1398; 128, Vandyck-Churchill Company, New York, $1490.

Class 70.—One motor driven keyseater—Bidder 80, Manning, Maxwell & Moore, New York, $578 and $619; 83, Mitts & Merrill, Saginaw, Mich., $550 and $575; 99, Prentiss Tool & Supply Company, New York, $580.

Class 71.—Two motor driven pipe machines—Bidder 39, Frevert Machinery Company, New York, $784; 40, Fairbanks Company, New York, $515 and $539; 41, W. H. Foster Company, New York, $1350; 60, Handlan-Buck Mfg. Company, St. Louis, Mo., $1047.50; 80, Manning, Maxwell & Moore, New York, $1012.50; 92, Niles-Bement-Pond Company, New York, $837; 99, Prentiss Tool & Supply Company, New York, $1345 and $1295; 122, Tucker Tool & Machine Company, New York, $560 and $609; 136, Central Metal & Supply Company, Baltimore, Md., $1025.

Class 72.—One electric water tool grinder—Bidder 39, Frevert Machinery Company, New York, $289; 40, Fairbanks Company, New York, $112.25; 80, Manning, Maxwell & Moore, New York, $200; 93, Northern Electric Mfg. Company, Madison, Wis., $350.

Class 73.—One double duty shaper—Bidder 39, Frevert Machinery Company, New York, $780; 40, Fairbanks Company, New York, $1350; 80, Manning, Maxwell & Moore, New York, $1060; 92, Niles-Bement-Pond Company, New York, $617.

Class 74.—Three screw cutting engine lathes—Bidder 40, Fairbanks Company, New York, $1064; 49, Garvin Machine Company, New York, $1028 and $1043; 61, Hendey Machine Company, Torrington, Conn., $1260; 69, I. H. Johnson, Jr., & Co., Philadelphia, Pa., $1222; 80, Manning, Maxwell & Moore, New York, $1230; 92, Niles-Bement-Pond Company, New York, $1098; 99, Prentiss Tool & Supply Company, New York, $1348; 106, Springfield Machine Tool Company, Springfield, Ohio, $1025; 128, Vandyck-Churchill Company, New York, $970 and $1095.

Class 75.—One extension gap lathe—Bidder 39, Frevert Machinery Company, New York, $1274; 40, Fairbanks Company, New York, $1620; 60, Handlan-Buck Mfg. Company, St. Louis, Mo., $1625; 80, Manning, Maxwell & Moore, New York, $1448; 92, Niles-Bement-Pond Company, New York, $1598; 122, Tucker Tool & Machine Company, New York, $1618.75.

Class 76.—Two quick change engine lathes—Bidder 39, Frevert Machinery Company, New York, $893; 40, Fairbanks Company, New York, $1044; 49, Garvin Machine Company, New York, $1013; 61, Hendey Machine Company, Torrington, Conn., $1373; 69, I. H. Johnson, Jr., & Co., Philadelphia, Pa., $1252; 80, Manning, Maxwell & Moore, New York, $1365; 92, Niles-Bement-Pond Company, New York, $1078; 106, Springfield Machine Tool Company, Springfield, Ohio, $1076; 128, Vandyck-Churchill Company, New York, $1060.

Class 77.—One constant speed electric motor—Bidder 31, Diehl Mfg. Company, Elizabethport, N. J., $213; 32, D'Olier Engineering Company, Philadelphia, Pa., $355; 93, Northern Electric Mfg. Company, Madison, Wis., $233.16; 110, B. F. Sturtevant Company, Hyde Park, Mass., $271; 132, Western Electric Company, New York, $347; 133, Westinghouse Electric & Mfg. Company, Pittsburgh, Pa., $245.

Class 161.—Two portable boilers—Bidder 3, Ames Iron Works, Philadelphia, Pa., $565; 24, Canton Boiler & Engineering Company, Canton, Ohio, $600; 27, Donnigan & Swift, New York, $571.50 and $624; 35, Erie City Iron Works, Erie, Pa., $612; 46, Frick Company, Waynesboro, Pa., $805; 51, G. & W. Mfg. Company, New York, $523.50; 52, A. D. Granger Company, New York, $549 and $561; 88, New Jersey Foundry & Machine Company, New York, $555; 96, Oil City Boiler Works, New York, $598; 130, Vermilye & Power, New York, $498.50.

The following bids were opened August 10, Circular No. 456, for supplies for the Isthmian Canal Commission:

Class 1.—One locomotive crane—Bidder 4, American Hoist & Derrick Company, St. Paul, Minn., $6958; 12, Brown Hoisting Machinery Company, Cleveland, Ohio, $8800; 13, Browning Engineering Company, Cleveland, Ohio, $8000; 54, Industrial Works, Bay City, Mich., $8900.

Class 2.—Two derricks and accessories—Bidder 4, American Hoist & Derrick Company, St. Paul, Minn., $1625.84 and $1722.58; 30, Dobbie Foundry & Machine Company, New York, $1722.50; 38, Fox Bros. & Co., New York, $1735.58; 40, G. & W. Mfg. Company, New York, $1410.97; 97, J. J. Shannon & Co., Philadelphia, Pa., $1618.75.

Class 3.—Eleven radial drilling and countersinking machines—Bidder 21, Cleveland Punch & Shear Works, Cleveland, Ohio, $430; 27, Detrick & Harvey Machine Company, Baltimore, Md., $429; 37, Fairbanks Company, New York, $355 and $321; 38, Fox Bros. & Co., New York, $371.37; 67, Manning, Maxwell & Moore, New York, $318 and $414; 96, Jos. T. Ryerson & Son, Chicago, Ill., $500.

Class 4.—One 5-kw. turbo-generator—Bidder 44, General Electric Company, Schenectady, N. Y., $649; 105, B. F. Sturtevant Company, Hyde Park, Mass., $709.

Class 23.—Twelve upright drills—Bidder 15, Buffalo Forge Company, Buffalo, N. Y., $209.40 and $190.80; 37, Fairbanks Company, New York, $330; 38, Fox Bros. & Co., New York,

$142.56; 66, Manhattan Supply Company, New York, $246; 67, Manning, Maxwell & Moore, New York, $138; 89, Queen City Supply Company, Cincinnati, Ohio, $183; 95, H. A. Rodgers Company, New York, $149.88; 97, J. J. Shannon & Co., Philadelphia, Pa., $198; 111, Vermilye & Power, New York, $230.40; 119, J. B. Kendall Company, Washington, D. C., $162.

The following bids were opened August 7, Circular No. 455, for one single and six duplex cableways for the Isthmian Canal Commission:

Class 1.—S. Flory Mfg. Company, Bangor, Pa., $278,400; Lidgerwood Mfg. Company, $309,000; New York Cableway & Engineering Company, New York, $277,800; Balanced Cable Crane Company, New York, $177,825.

The following bids were opened August 8 for the construction of a 100-ton floating derrick having a 15-ton auxiliary hoist for the navy yard, Puget Sound, Wash.:

Item 1. Price for one floating derrick complete in accordance with plan and specification.

Item 2. Price for one floating derrick complete in accordance with plan and specification, except that the pontoon and fittings for pontoon will be furnished by the Government.

Item 3. Under this item bidders may submit proposals for the complete work in accordance with the spirit of the specification, but with such modification of methods and details as they desire, provided all such modifications are fully specified or indicated upon plans accompanying the proposal.

Interstate Engineering Company, Bedford, Ohio, item 2, $238,796; item 3, $334,726.

Wellman-Seaver-Morgan Company, Cleveland, Ohio, item 1, $230,000; item 2, $150,900; item 3, $250,000, alternate $164,000.

Morgan Engineering Company, Alliance, Ohio, item 3, $248,185, alternate $173,975; deduct $10,000 if only one generator unit is used.

Brown Hoisting Machinery Company, New York, item 3a, $281,600, without pontoon $212,200; item 3b, $240,000, without pontoon $174,400; 3c, $250,200, without pontoon $183,600.

Variety Iron & Steel Works, Cleveland, Ohio, item 3 complete, $234,000, $242,100, $243,800, $239,800 and $244,100; without pontoon $171,000, $171,700, $167,700 and $170,000.

The following bids were opened August 6 for four steam boilers for the new National Museum, Washington:

Oil City Boiler Works, New York, $19,792 for Roney stokers; $22,542 for Taylor stokers.

York Engineering Company, York, Pa., $17,825.

Heine Safety Boiler Company, Philadelphia, Pa., $21,098 for Roney stokers; $22,738 for Taylor stokers.

Babcock & Wilcox Company, New York, $20,638 for Roney stokers; $23,551 for Taylor stokers.

The following awards have been made for machinery for the navy yards, bids for which were opened July 14:

Berlin Machine Works, Beloit, Wis., class 41, one double surface planer, $1804.15.

American Woodworking Machinery Company, Rochester, N. Y., class 42, one self-feed circular rip saw, $260.

Under bids opened August 4 for supplies for the navy yards the Greenlee Brothers Company, Chicago, Ill., has been awarded class 32, one automatic saw and dado machine, $263.

**New Blooming Mill Contract.**—Mackintosh, Hemphill & Co., Pittsburgh, have received a contract from the National Tube Company for a 40-in. two-high reversing blooming mill to be installed in the Bessemer steel department of its National Works at McKeesport, Pa., to roll blooms of all sizes and slabs about 24-in. x 3-in. in various lengths. The top roll will be balanced by hydraulic cylinders covered by the builders' own patents. The screw down arrangement for the top roll will be operated by a motor, as well as the tables proper. The majority of the table rollers will be of solid forged steel. The manipulator will be a combination of the patents owned by Julian Kennedy and Mackintosh, Hemphill & Co. The reversing engines to drive the mill are being shipped from the plant of the Illinois Steel Company at South Chicago, were built by the Mesta Machine Company, Pittsburgh, and are of the direct connected type, with cylinder 50 in. in diameter and 60-in. stroke. The mill is to be completed within four months.

**Allegheny Steel Company Changes.**—Some changes among officials of the Allegheny Steel Company, Pittsburgh, operating an open hearth steel plant and sheet and plate mills at Avenue, Pa., near Pittsburgh, have recently been made. The stock formerly owned by Captain Alfred Hicks has been taken over by other stockholders, and the following officers have been elected: Harry E. Sheldon, president and general manager; R. D. Campbell, vice-president and treasurer; F. H. Stephens, secretary and auditor. The company is operating its open hearth department 100 per cent.; sheet mill department, 65 per cent., and plate mill department, 70 per cent., and reports that business is slowly improving.

## The British Foundrymen's Association.

At the fifth annual meeting of the British Foundrymen's Association at New Castle-on-Tyne, England, August 4 to 6, the membership of the association was reported as 320, a net gain of 70 in the preceding year. F. J. Cook, Birmingham, was elected president, and J. E. H. Allbut, Derby, secretary. R. W. Kenyon, Accrington, read a paper on "Securing Co-operation of Workmen in the Improvement of Shop Methods," and P. Munnoch, Middlesbrough, a paper on the "Application of Chemistry to the Foundry." Papers on foundry methods were presented by J. Smith and G. M. Riches. J. E. Stead, Bessemer medalist, Middlesbrough, gave a lecture on "Sulphur and Phosphorus in Iron." The speaker described the Bauman auto-sulphur printing process by which an approximation of the amount of sulphur in cast iron can be made by any intelligent boy in a foundry. Briefly it is as follows: "Pieces of ordinary bromide silver paper are soaked in 3 per cent. solution of strong sulphuric acid and water. These slips of paper are laid upon the polished surface, left in contact for one minute and then removed. Stains of sulphide of silver are thus obtained on the paper corresponding to the actual amount of sulphur in the casting." Another simple method by which a fair estimate can be made of the amount of phosphorus in pig iron or castings was given by Mr. Stead. It was shown that on etching the phosphorus portions with a 20 per cent. solution of nitric acid, these portions being quite independent of the other parts of the metal, they remain bright and clear, all the other parts having a darkened color. The comparison between Cleveland iron, containing 1.5 per cent. of phosphorus, and hematite, containing 0.04 per cent. of phosphorus, was very pronounced. In the former a large portion of the whole area consisted of white particles, while the white particles in hematite pig were distributed as minute spots over the surface.

In the United States Circuit Court for the Northern District of Ohio, Judge Tayler has filed an opinion in favor of the Westinghouse Electric & Mfg. Company in a suit brought by the company against the Electric Controller & Mfg. Company of Cleveland, in which the plaintiff alleged an infringement of the Lange and Lamme controller patent granted April 24, 1894. The claims sued upon relate to an improved construction of the controller drum whereby it can be easily and cheaply constructed and the electric circuits insulated from each other and from the controller shaft or ground. It is stated that only a limited number of controllers of this type has been built by the Electric Controller & Mfg. Company and that their manufacture was voluntarily given up three years ago; also that the decision of Judge Tayler has no bearing upon the standard lines of controllers manufactured by this company, which are widely used in the iron and steel industry. The case has been appealed to the United States Circuit Court of Appeals sitting at Cincinnati, Ohio.

The annual report of the Canadian General Electric Company for the 12 months ended December 31, 1907, shows profit on operation of $722,433, against $853,675 in 1906 and a deficit after dividends of $133,773, against $21,728. As a result the previous surplus has been turned into a profit and loss deficit of $64,738. On April 1, 1908, a quarterly dividend of 1¾ per cent. was paid on the $4,700,000 common stock and a semiannual dividend of 3½ per cent. on the new preferred stock, reducing the annual rate on the common stock to 7 per cent. President W. R. Brock says: "The company has continuously, for the past nine years, paid a dividend of 10 per cent., but the directors have considered it prudent to make the reduction (to 7 per cent.) in view of the present uncertainty of trade conditions, which we may all hope will only be temporary."

The Youngstown Steel Company is rebuilding its Tod Furnace, at Youngstown, Ohio, and in addition is putting up a new steel bin system. The new furnace is expected to be ready for operation in November.

# HARDWARE

BILLBOARD advertising appears to have been overdone. The aggressive methods of the billboard advertising agencies in seeking locations likely to catch the eyes of large numbers of persons have awakened the resentment of those whose trade is sought. A strong feeling now exists against the defacement of landscapes in the rural districts and the wearisome obtrusion of advertising matter from all sorts of structures in cities and towns. It may be that merchants and even manufacturers will some day have to reckon with direct losses that will come from the use of billboard advertising. This was indicated shortly after the subway was opened in New York City. When it was observed that the beautifully tiled walls of the stations were beginning to be covered by billboards, the outburst of indignation was general, and though the boards were not removed their number has not grown. It is known that some of the most liberal advertisers decided that it would be injudicious to disregard the temper of the public. If the number of persons to whom billboards are offensive becomes large enough the possibilities of the loss of their trade will be worth considering.

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A movement to abolish or at least reduce the billboard nuisance, which has crystalized in some localities in the passage of corrective ordinances, has assumed a national scope through the activity of the American Civic Association, an organization "for a better and more beautiful America." This society, which numbers among its officers and members many responsible citizens prominent for their public spirit, is now conducting a systematic campaign of education which is not unlikely to achieve results along the desired line. The association is, of course, attacking all forms of outdoor advertising which are unqualifiedly mischievous, such as those which are obscene or tend to lower public morals, those which represent an illegitimate use of public or private property and those which tend to jeopardize health or safety because they are unsanitary or calculated to increase danger from fire. Abuses in this category are declared to be of such character that they may be corrected by existing statutes.

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It is recognized, however, that the billboard often represents merely an æsthetic offense which can hardly be dealt with except through an aroused public opinion. The association is therefore approaching the subject from the educational point of view and is circulating literature discussing various phases of the subject, and stating what has been done in certain American cities as well as in several foreign countries. One point which seems to be well taken is that to obtrude upon the public view glaring advertisements is just as objectionable as maintaining a nuisance which gives forth a foul odor or produces an irritating noise. As a result of this campaign many persons may make it a matter of principle not to patronize those who offend in this way. Of course, it will depend largely upon the line the merchant carries or the manufacturer produces whether he will be a loser by this form of objectionable publicity. In one case the damage done would be trifling as compared with the gain: the class of people addressed would make this so. On the other hand, those who carry or manufacture the more expensive classes of goods or cater to the well-to-do public would undoubtedly experience no little harm as a result of the sentiment thus cultivated.

## Condition of Trade.

The swift passing of the midsummer season is marked by few changes or noteworthy occurrences in the Hardware market. An exception is found, however, in the moderate advance which has taken place in Brass and Copper lines. In its fundamental features the business situation shows little alteration, although observers who cover the widest fields still maintain that they detect a steady though slight improvement in trade conditions. This, of course, is more distinct in some sections than in others, and is modified, especially in the larger centers, by the effects of the vacation season. Many large buyers are still pursuing a hand-to-mouth policy, and all are conducting their purchases on conservative lines, but there is here and there a hardening tendency in prices, which, if continued, is likely to encourage the placing of stock orders. In some instances extreme concessions have been withdrawn, and manufacturers in making their quotations are emphasizing the phrase "subject to change without notice." Further ground for the hope of material improvement in the volume of trade is found in the good crop prospects and the maintained improvement in the financial situation. Activity in some seasonable lines has now begun. Salesmen returning to their territories report that stocks are low and conditions promising for the fall trade.

### Cleveland.

THE W. BINGHAM COMPANY.—The volume of merchant trade for the month of July just past shows up very favorably as against July of last year, for we find that the greatest falling off of trade is in the larger cities where dealers supply the manufacturing plants, mines and railroads. It would seem that they must come into the market soon to replenish the depleted stocks in their storehouses, and with the immense crop of grain and fruit in sight we believe that trade and traffic in these branches of business will open up soon.

Orders from the country merchants are getting longer and for larger amounts, and the requests that accompany these orders are to ship at once. Merchants who put off ordering seasonable goods may have some difficulty in getting their orders filled promptly later on, for manufacturers and jobbers cannot always have in stock just what the customers want quickly, because there are so many different sizes and styles of the different lines, and it is impossible to keep an assorted stock on hand, especially at the time of the year when everybody wants goods shipped immediately. So our advice would be for merchants to anticipate their wants at least 60 days ahead of time in order that they may get the kind and assortment of goods they want. The prices are established and there will be no incentive to hold off on that account.

It is no trouble now to get from the larger jobbers the regular lines of goods that are sold every day, as their stocks are always complete on these lines, but the short season goods, such as stove boards, elbows, coal hods, axes, snow shovels, ice skates, hand sleds and the like, should be ordered months ahead of the time they are needed in order that manufacturers may have plenty of time to make them up properly, and the jobbers to have them in stock, so that they can be shipped to their customers at the proper time.

A large amount of ore is coming down from Lake Superior by the big freighters to be distributed to the different furnaces in Ohio and Pennsylvania, and they are carrying back to the Northwest vast quantities of coal.

On account of the large number of trunk lines centering in Cleveland, and also the many elegant passenger

boats that are daily plying between eastern, western and northern ports, thousands of excursionists are coming to and going through Cleveland. These outings put a lot of money into circulation. The rates are low and the people in the interior we think are taking advantage of the excursions this year more than ever on account of the good accommodations and extremely warm weather we have had in the last sixty days. We Americans are a restless lot and must keep on the move.

On the whole, considering the times, trade and traffic with merchants is quite satisfactory.

### Nashville.

GRAY & DUDLEY HARDWARE COMPANY.—While business so far in August has been better than it was in July, at the same time it has been a disappointment. Crop prospects throughout our territory are better than they have been for many years. Crops have so far advanced now that the splendid prospects ought to stimulate business. At this time in 1907 the crop prospect wasn't nearly so good, yet we had all the business we could handle. Collections are not as good as they should be under the circumstances.

Notwithstanding the dull business of the past ten months, people are optimistic and believe that surrounded by prosperous conditions that they now have trade will be good later on. We hope the time will again come when good crops will mean good business.

The Tennessee Retail Hardware Association held its first annual convention in this city last week. They had a pretty good attendance of representative retailers from the various sections of the state. They seemed to be pleased with the result of the past year's work. They all report Fall trade as opening up late, but all expect good business.

### Omaha.

LEE-GLASS-ANDREESEN HARDWARE COMPANY.—The month of August is seldom marked by any special activity in jobbing circles. The volume of current business still continues satisfactory. Trade conditions throughout the corn belt east and west of the Missouri River are in excellent shape. The real foundation of national prosperity, the season's crops, shows unmistakable stability, the cereal yield promising to be in excess of that of last year, the home consumptive demand greater than ever before, and the demand for export in excess of last year, which was something of a record breaker.

On the whole, prospects point to stronger conditions during the coming autumn and winter, and to complete retrievement before the end of the present year from the effect of the late New York crisis.

### Portland, Oregon.

FAILING-MCCALMAN COMPANY.—Business continues on the upgrade in all lines here as nearly as we can find out. The approach of election time seems to have no lessening effect on the gradual improvement of business, and we can see no reason why it should have any in the future. Conditions on the North Pacific coast should improve rapidly as well as steadily. Already there is more business being done in most lines in this city than there was one year ago to-day, and we look for a still further increase before the end of the year. We anticipate that, from all we can hear, this improvement will be general throughout the Coast. Our crops, as a whole, have turned out very well and we expect to get a fair price for them. As a result, collections are more than fair.

### Louisville.

BELKNAP HARDWARE & MFG. COMPANY.—The market shows only moderate signs of animation. There is a fair run of orders, nobody excited enough to struggle to get in before the advance, no promise of advance in the near future. The weakest feature of the situation probably is the widespread publicity given to every little purchase of a few hundred tons of this or that kind of pig iron. Big head-lines are rushed in when a few cars or a small bridge is ordered, as though it were a matter of supreme importance, and bound to affect the destiny of the nation at large. The "Prosperity" and "Sunshine" go to cackling like hens in a barnyard—each one claims to have laid that particular egg.

Salesmen never were more industrious than they have to be right now. On the other hand, vacations were never so numerous, nor were they ever more willingly granted, as we are waiting more or less of the time for business to catch up with the organization, even with somewhat reduced numbers.

We get "Sunshine circulars" from one place, and prosperity assurances from another, with the broad information that we are over-happy, if we only knew it. We get comparative figures on exports showing how many more millions of dollars are flowing out in this way to our credit than have ever flowed before; then we read in some dependable commercial sheet that the shipping interests are in despair over the small tonnage which is going abroad, and that there are more empty bottoms afloat than can be counted.

Those who keep records of their own sales day by day and month by month realize the difficulty of making a profit when the plant is operating only part of the time. What is the reason of this? is the universal conundrum. The farmer certainly is getting good prices for his product. The laborer who can do any sort of work decently is not without employment, at full wages. Of course, the vast army of the inefficient, who enlist under the banner of Coxey at the slightest provocation, those, we have always with us, and they only wait for the suggestion of free soup houses to bring them to the surface.

One plausible theory is that after several years of prosperity, such as we have enjoyed, the people's wants are more nearly supplied. Implements, clothing, even luxuries, pianos, parlor organs and talking machines, have been supplied in such numbers that the general desire has been gratified and we must await a new generation of buyers, which may spring up in one year or two, we cannot tell.

Another theory is that this is legitimately the era of saving. The process of harboring one's resources is more attractive than spending. It does not stay this way long, however, and if the latter is the true state of the case there will shortly be a change.

For the present people can have what they want in a reasonable way, but if they do not want much it makes a dull market.

### St. Louis.

NORVELL-SHAPLEIGH HARDWARE COMPANY.—We continue to receive very favorable reports from both the corn and cotton crops. The hay crop has been harvested and it is the greatest in the history of the country. If present favorable conditions continue this year we will be blessed with a bumper corn crop and a very large cotton crop. It has been said in years past that the country never had a great corn crop and a great cotton crop the same year. But the exception often proves the rule.

The numbers of our orders, both from our salesmen and by mail, show a considerable increase over last year, but the total volume of our business still fails behind.

An analysis of our business the first six months indicates the principal loss was in what we call "future orders," that is, orders taken by our salesmen for future shipment. Our current business, that is, goods for immediate shipment from stock, has all along been running very close to the figures for the same class of business last year. Quantities have been smaller and therefore it has taken more orders to make up the same volume.

In the agricultural sections, not only in the far West but in the South, it is evident from the way merchants are buying that they have more confidence in the situation. As merchants have not placed large advance orders for seasonable lines, if there is a very active demand from consumers for these goods there should be a heavy late business on this class of merchandise.

We have noted this characteristic in our business during the Spring months. On many lines of seasonable goods the sale from stock was much heavier than in previous years when retail merchants ordered early and we shipped the goods direct from the factory to our customers.

In times like these the value of the jobber's stock to

the retail merchant is emphasized. The jobber is practically a warehouse from which the retail dealer can draw his goods without delays in large or small quantities, just as he needs them.

The fact that our mail order sales have been better in proportion than any other part of our business is an indication that retail merchants are running their stocks very close, buying goods often, and are sending mail orders instead of waiting the visits of salesmen.

A hopeful sign of the times is in the number of new stock orders that are being placed. In one mail this week we received three complete new stock orders. In the month of July the number of new stocks we sold was only one less than in the same month last year.

We are receiving many inquiries from merchants for good places in which to start business or for opportunities to buy established stocks. We are receiving more letters from merchants who desire to go into business than from those who desire to sell out. We have a regular bureau for this class of correspondence. We keep an up-to-date record of good openings. This information is given us by our one hundred and seventy-five traveling salesmen from all parts of the country. We also give information of this nature, monthly, in our little house organ, "The Gimlet."

There is a marked difference in the condition of business this year in the large cities and manufacturing towns when compared with the agricultural districts. Where manufacturers have reduced their force or reduced the numbers of hours of work it of course has seriously affected the buying power of their workingmen. If these manufacturers do not resume this Fall savings will be used up and it will be a hard winter for many workers and their families.

A prominent packer informs me while the demand for the best cuts of meat has continued almost without interruption, there has been a heavy falling off in the call for the cheaper grades of meat. He states this means the workingman has not been eating as much meat. This packer states this condition has led to the recent unusual advances in the price of hides. He tells me formerly hides were simply one of the by-products, but now they are becoming an important source of revenue to the butcher. He also remarked that low-priced meat is passing away with low-priced land, that in these days cheap ranges for cattle have become a thing of the past.

Among the interesting changes taking place in the trade is the passing of the barber and of the palatial tonsorial parlor. It is now almost impossible to find a first-class barber. The best men are leaving the business. Money is not being invested in fairy palaces of barber shops with mirrors, gilding and frescoed walls. The barber shops are leaving the main-traveled thoroughfares for side streets and basements. The boss barbers tell me it is almost impossible to get good men. Only the inefficient are staying in the trade. All this is clearly the result of the safety razor. The call of "next" has ceased to be heard in the land. A new idea has almost completely changed the conditions surrounding a great industry. The world waits for the invention of a patent home hair cutter.

The world do move!

## NOTES ON PRICES

**Wire Nails.**—Conditions continue to show improvement, and some Wire Nail manufacturers are running their mills nearer their full capacity. Jobbers' orders are larger in volume and requests are for prompt shipment, while some contracts are also being placed. The increased business is attributed to the present and prospective stability of the market. Quotations for base sizes are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

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| Carloads, to jobbers | $1.95 |
| Carload lots to retail merchants | 2.00 |
| Less than carloads to jobbers | 2.00 |
| Less than carloads to retail merchants | 2.10 |

*New York.*—Local demand keeps in the same volume as for some time, requirements being met by small lots. Nails are held on the basis of $2.30 per keg in small lots at store.

*Chicago.*—Wire Nails continue to make the best showing of any branch of the iron trade in the West, owing to the activity in building operations in the agricultural sections, where advantage is being taken of the low price of lumber. The mills are running about 80 per cent. of capacity and are not always able to respond to the demands for immediate shipment. Quotations are as follows: $2.13, in car lots to jobbers, and $2.18, in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

*Pittsburgh.*—The impression is becoming stronger among the large buyers of Wire Nails that the market will not be any lower, but on the contrary, if a change in prices is made, it will be an advance, and for this reason they are placing larger orders and buying ahead for the first time in some months. While the volume of new business is not abnormally heavy, it is larger than for some time, and the leading makers of Wire Nails are able to operate to nearly full capacity. Stocks held by jobbers are light, which is indicated by the fact that nearly all orders carry a request for prompt shipment. We are advised that prices are being maintained absolutely by the leading mills. Quotations for base sizes are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

| | |
|---|---|
| Carloads, to jobbers | $1.95 |
| Carload lots to retail merchants | 2.00 |

Galvanized Nails are quoted at $1 over the price of the regular Nails.

**Cut Nails.**—A slight improvement is noted in the demand from mill, but neither the size of orders nor volume of business is large. Quotations on Steel Nails are on the basis of $1.80 per keg, at mill, $1.75 being obtainable on the most desirable business. In the Western market Iron Cut Nails are held at an advance of 10 cents per keg over Steel Cut Nails, but this differential is not observed in the East.

*New York.*—The local demand for Cut Nails is somewhat less than the usual proportion to Wire Nails. Steel Cut Nails are held on the basis of $2.15 per keg, for small lots at store.

*Chicago.*—There is a fair volume of business, but no large orders are being placed. Jobbers buy only in small lots for immediate shipment. We quote Chicago prices as follows: In car lots to jobbers, Iron Cut Nails, $2.08; Steel Cut Nails, $1.98. In small lots from store: Iron Cut Nails, $2.25; Steel Cut Nails, $2.15.

*Pittsburgh.*—The tone of the market is slightly stronger, and the amount of new business being placed with the mills is a little larger. However, buyers are usually confining their purchases to small lots for actual needs. Quotations on Steel Nails are on the basis of $1.80 per keg, at mill, $1.75 being obtainable on the most desirable business. In the Western market Iron Cut Nails are held at an advance of 10 cents per keg over Steel Cut Nails, but this differential is not observed in the East.

**Barb Wire.**—New business continues light, and mills are still shipping on old contracts. The demand is satisfactory for the season, with prospects for increased volume later on. Regular prices are reported as being maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, 2 per cent. discount for cash in 10 days:

| | Painted. | Gal. |
|---|---|---|
| Jobbers, carload lots | $2.10 | $2.40 |
| Retailers, carload lots | 2.15 | 2.45 |
| Retailers, less than carload lots | 2.25 | 2.55 |

*Chicago.*—The wire mills are enjoying the advantage of being in touch with the farmer and sharing in his prosperity. The volume of business is very satisfactory for this season of the year, with some difficulty in making shipments as promptly as the jobbers are disposed to demand. Quotations are as follows: Jobbers, Chicago, car lots, Painted, $2.28; Galvanized, $2.58; to retailers, car lots, Painted, $2.33; Galvanized, $2.63; retailers, less than car lots, Painted, $2.45; Galvanized, $2.75; Staples, bright, in car lots, $2.25; Galvanized, $2.25; car

lots, to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

*Pittsburgh.*—The mills have little new demand, but are mainly shipping against contracts placed some time ago. A larger demand is expected in the near future, particularly from the Northwest. The leading mills are absolutely maintaining prices. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

| | Painted. | Gal. |
|---|---|---|
| Jobbers, carload lots | $2.10 | $2.40 |
| Retailers, carload lots | 2.15 | 2.45 |
| Retailers, less than carload lots | 2.25 | 2.55 |

**Plain Wire.**—A decided improvement is reported in demand from both manufacturers of Wire Fencing and Implements, as well as from other sources. The market is reported firm at regular prices. Quotations per 100 lb. to jobbers in carload lots are as follows, on a basis of $1.80 for Plain and $2.10 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the price to retailers being 5 cents additional:

| Nos. | 6 to 9 | 10 | 11 | 12&12½ | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|
| Annealed | $1.80 | 1.85 | 1.90 | 1.95 | 2.05 | 2.15 | 2.25 | 2.35 |
| Galvanized | 2.10 | 2.15 | 2.20 | 2.25 | 2.35 | 2.45 | 2.85 | 2.95 |

*Chicago.*—The high prices which farmers have been receiving for live stock this year and good crop conditions have stimulated the demand for Wire Fence, and the Wire mills are booking good orders from the Fence manufacturers. In other directions the demand for Plain Wire is also improving. We quote as follows: Car lots to jobbers, $1.98, f.o.b. Chicago, and to retailers, $2.05.

*Pittsburgh.*—New business in Plain Wire is getting heavier, Fence manufacturers and Implement makers buying in larger quantities than for some time. It is stated that the leading mills now have a larger tonnage in Plain Wire on their books than at any time this year. The market is firm, and there are intimations of an advance in prices, but these are not officially confirmed and are thought to be incorrect. Quotations per 100 lb. to jobbers in carload lots are as follows, on a basis of $1.80 for Plain and $2.10 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the price to retailers being 5 cents additional:

| Nos. | 6 to 9 | 10 | 11 | 12&12½ | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|
| Annealed | $1.80 | 1.85 | 1.90 | 1.95 | 2.05 | 2.15 | 2.25 | 2.35 |
| Galvanized | 2.10 | 2.15 | 2.20 | 2.25 | 2.35 | 2.45 | 2.85 | 2.95 |

**Brass Cocks.**—The improvement in the Brass and Copper market has not been without effect on the steam and water Brass goods handled by the Hardware trade. Quotations on Valves, Stop and Waste Cocks, Compression Bibbs and Hardware Grade Cocks are from 5 to 10 per cent. higher than a few weeks ago and are decidedly firm. Considerable buying is said to have been done by the larger trade in anticipation of the advance.

**Coil Chain.**—A movement is on foot on the part of leading manufacturers of Coil Chain to correct the conditions which have for some months kept this market in a demoralized state. It is reported that a conference was called for the present week, which may result in greater regularity and a moderate advance in prices.

**Lace Leather.**—Owing to the advance in the price of green hides to close to record figures, there has been a sharp upward movement in Leather Belt Lacing. The change in the market is felt more quickly in Lace than in belting, because the former is nearer to the green hides. Cut Lace may now be quoted at a discount of 50 and 10 per cent., and Sides at 22 to 23 cents per square foot.

**Scythes.**—Those who have a good interest in that trade are giving some attention to the Scythe market, which will open shortly. As the arrangements of last year are unlikely to be continued, and there has been a material change in general conditions, some reduction in price would not be unexpected.

**Bolts and Nuts.**—The market for Bolts and Nuts shows a hardening tendency. Considerable buying is going on and some manufacturers have withdrawn their extreme quotations.

**Lawn Mowers.**—The quotations of most manufacturers of Lawn Mowers confirm the impression previously held that there would be few, if any, changes from last season's prices.

**Shot.**—A decline in Shot of 5 cents per 25 lb. bag has been announced by the leading lead companies. Quotations are now as follows:

| | Bags. | Per bag. | Bag. | Per bag. |
|---|---|---|---|---|
| Drop Shot, sizes smaller than B | 25 lb. | $1.75 | 5 lb. | $0.40 |
| Drop Shot, B and larger sizes | 25 lb. | 2.00 | 5 lb. | .45 |
| Buck and Chilled Shot | 25 lb. | 2.00 | 5 lb. | .45 |
| Dust Shot | 25 lb. | 2.30 | 5 lb. | .50 |

The usual concession of 10 cents per bag of 25 lb. is offered on ton lots or larger.

**Window Glass.**—To-day (Wednesday), there is scheduled a meeting of the manufacturers of hand blown Glass at Atlantic City, where among other matters an advance in prices, it is supposed, will be considered. Conservative manufacturers think an advance at the present time would be ill advised, as it would induce small manufacturers to start up their factories to the injury of jobbers who have fairly large stocks on hand. It is reported that the sliding scale of wages has been extended to cover the month of September, while it is understood by some that the arrangement covers the entire fire. Another matter will probably be brought to the front at to-day's meeting of manufacturers, and that is the organization of hand manufacturers with some plan for the distribution of their product. In this plan is included the co-operation of the hand manufacturers and the American Window Glass Company for the general good of the trade. Manufacturers are reported as regarding the distribution of Window Glass as showing no recent change in volume. Jobbers' quotations from jobbers' list, October 1, 1903, for all sizes of single and double strength Glass for the entire country is 90 and 20 per cent. discount.

**Rope.**—The movement of Rope continues as good as at the date of our last report. Some manufacturers report sales for June and July fully up to those for the corresponding months of last year. This, however, is an exception to the general rule. A quotation of 9¼ cents was recently made on Pure Manila Rope as the result of competition. Sisal Rope is also somewhat easier. Quotations for Rope 7-16 in. in diameter and larger, are as follows: Pure Manila, 9½ cents; Pure Sisal, 7 cents; No. 1 Jute, ¾ in. and up, 5¾ cents; No. 2 Jute, ¼ in. and up, 5¼ cents.

**Linseed Oil.**—The substantial advances in the price of seed resulted in the advance of Oil. The advance brings the price of car lots up to those which have been asked for jobbing lots of five barrels or more, and also brings the price of State and Western up to those of city brands, which have not as yet been advanced. Under normal trade conditions, with the present high prices of seed and the light stocks of both seed and Oil in crushers' hands, Oil would probably command between 50 and 60 cents per gallon. It is probable that out-of-town Raw in car lots could be obtained on a bid of 43 cents. Quotations are as follows: Western Raw, car lots, 43 to 44 cents; State and Western Raw, barrel lots, 44 to 45 cents per gallon. Boiled Oil is 1 cent per gallon advance on Raw.

**Spirits Turpentine.**—Following the easier tone of the Savannah market, prices have fallen off 1 cent per gallon from last week's quotations. Demand at this point is light and of a hand-to-mouth character. The New York market is represented by the following quotations: Oil Barrels, 38½ to 39 cents; machine made Barrels, 39 to 39½ cents per gallon.

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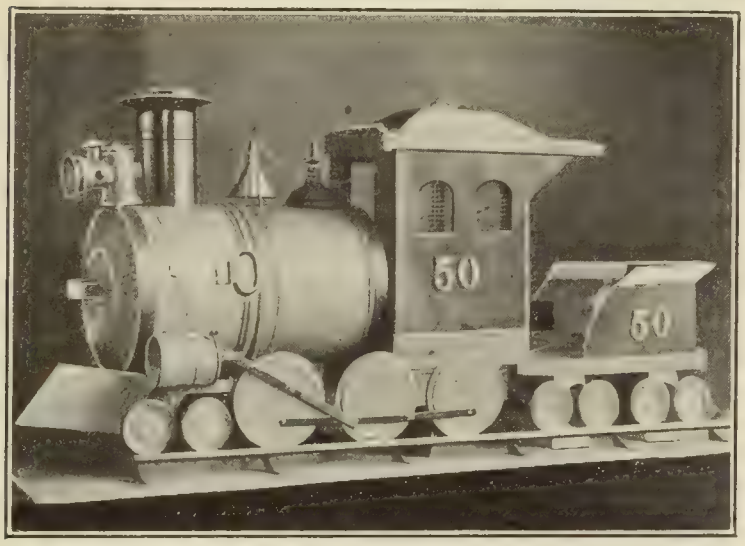
THE LISK MFG. COMPANY, Canandaigua, N. Y., has resumed operations and reports a large number of orders on hand. The company states that over 70 salesmen are on the road, and the prospects are regarded as excellent for a good volume of business this fall.

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ARTHUR S. HOBDAY, for the past 10 years North Carolina representative of the Biddle Hardware Company, Philadelphia, has accepted a position to travel for the Peck & Mack Company, 356 Broadway, New York City.

## Hardware Locomotive.

THE accompanying illustration shows a locomotive made of Hardware commodities which was used as a window attraction by A. Melohn in the Belmont avenue branch store of F. Melohn, Chicago. A Garbage Can set on a One-Burner Gas Plate was used to represent the Boiler with a Bicycle Lamp in front for a headlight. An inverted Funnel with a piece of Picture Chain attached served as Bell and Bell Strap, while a Gas Cock took the place of the Whistle. The smokestack was made of 5-in. Stove Pipe with a collar at the top. The cowcatcher was made of a piece of Tin and Tinpot Covers served as drive wheels, with a 1-pint Pail as a cylinder and a 5-ft. Rule as a piston and connecting rod. The cab was made of four Ash Sifters, a Wash Board and a Roasting Pan Cover, and the sides of Roofing Paper. The tender was built of Roofing Paper, tacked on a Wash Board as a floor. Pint Pail Covers represented the small wheels, and six Bread Pans served as carriages above the axles. The




*Hardware Locomotive in Window of F. Melohn, Chicago.*

numbers were Aluminum House Numbers. Five-foot Barn Door Rail served as a track, affording a very natural setting for the machine, which attracted much attention and favorable comment.

## Louisville Axe & Tool Company.

THE LOUISVILLE AXE & TOOL COMPANY, Highland Park, Ky., a suburb of Louisville, which entered the market originally about March 1, shut down on August 1, for the purpose of installing additional manufacturing equipment. The factory had been steadily turning out goods, but conditions warranted increased facilities, which it was decided should be put in now. W. J. Sager, general manager, formerly with the Warren Axe & Tool Company, reports that there are orders enough now in hand to keep the plant busy for some time, and that the betterments will give the company a producing capacity of 150 dozen axes per day. M. T. Christopher, vice-president, in charge of the New York office, 97 Warren street, is looking after the export and domestic trade in the East. The other officers are J. A. Stewart, president; B. F. Fitch, second vice-president, and J. D. Augustus, secretary and treasurer. The product includes many patterns of axes and some styles of edge tools of kindred character.

## Hermann Boker & Co.'s New Tool Department.

HERMANN BOKER & CO., 101-103 Duane street, New York, for some years sole agents for the United States and Canada for Jonas & Colver, Ltd., Continental Steel Works, Sheffield, England, manufacturers of Novo and Intra Steels, have been compelled to largely increase their facilities at the above address. They have taken the street floor and basement in their building for a new department in the steel business. Originally they marketed the raw material to be fabricated into tools, &c., by manufacturers, but the question frequently arose as to the adaptability of the raw material for certain uses. Sometimes this phase of the question caused the house to demonstrate practically their faith in the product, which resulted in the putting on the market of various small tools. Started in a small way, the goods, we are informed, became so popular that the line has gradually grown until now it includes comprehensive assortments of Twist Drills, Milling Cutters, Taps, Tool Holder Bits, Hack Saws, &c., all of which are manufactured here. While at first the goods were made as a convincing demonstration of the quality of the material to influence sales of steel, the response has been such that customers are continually increasing their purchases and the line is being enlarged as a permanent business. The Novo Steel is particularly for high speed tools, the Intra brand being an intermediate quality between high speed grade and a good carbon steel.

## TENNESSEE RETAIL HARDWARE ASSOCIATION.

THE Tennessee Retail Hardware Association, which was organized last summer, held its first annual convention at the Tulane Hotel, Nashville, on the 12th and 13th inst. The attendance was gratifying, members of firms from all sections of the State being present. Addresses of welcome were delivered on the part of the city by Hon. Joseph W. Byrns, and on behalf of the local Hardware jobbers and manufacturers by R. M. Dudley, president of the Gray & Dudley Hardware Company. A response to the addresses of welcome was made by M. A. Walker, Covington, on behalf of the association. Charles H. Williams, Streator, Ill., vice-president, represented the National Retail Hardware Association, and spoke in a general way of the work of the various State organizations as affiliated with the national body. The report of Secretary-Treasurer M. Richardson, Lawrenceburg, Tenn., showed that the association was in good financial condition.

On Wednesday afternoon the members visited the plant of the Phillips & Buttorff Mfg. Company, where they were handsomely entertained. The Thursday morning session was adjourned early, to permit the members to participate in a trolley ride, after which they were taken to the Duncan Hotel for dinner, the Gray & Dudley Hardware Company being the host for both functions.

About 20 new members were taken into the association at the meeting, and it now numbers more than 50 houses.

Chattanooga was decided on as the place for the next convention, the date being left to the Executive Committee.

### Election of Officers.

The election of officers for the ensuing year resulted as follows:

PRESIDENT, J. D. Dobbins, Columbia.
FIRST VICE-PRESIDENT, William Hager, Hartsville.
SECOND VICE-PRESIDENT, Fred J. Warner, Memphis.
SECRETARY-TREASURER, M. Richardson, Lawrenceburg.
EXECUTIVE COMMITTEE: J. D. Dobbins, Columbia; M. A. Ewing, Gallatin; J. G. Vaughan, Winchester; William Tucker, Jr., Ripley, and J. F. Parker, Martin.

### Jobbers Selling to Consumers.

The Question Box was, of course, a feature of the association programme, and brought about a good deal of discussion on topics of practical interest. Perhaps the most interesting question of the series was "Should legitimate dealers and members of this Association patronize jobbers who maintain a retail department in connection with their jobbing business?" It was unanimously conceded that the selling by jobbers to contractors and consumers generally was more detrimental to the regular Hardware merchant than the competition of the mail order houses. The members felt that they would like to see the jobbers confine themselves to jobbing and permit the retail merchant to do the retailing. In this connection, the injustice done the Hardware retailer by the jobber when selling the druggist baseball supplies and fishing tackle (which he carries a stock of) to sell him also Screen Doors or an Ice Cream Freezer for the druggist's own use, was enforced. It was felt that the latter goods should be bought by the druggist from the local Hardware merchant handling them.

### Benefits of Selling Hardware for Cash.

The following suggestive and stimulating paper, pointing out the benefits derived from conducting the Hard-

ware business on a cash basis, was read by W. A. Hutton, W. A. Hutton & Co., Gallatin, Tenn.:

Every retail dealer, large or small, who sells on credit is deeply interested in the cash system, and it may be said there is not a single merchant who would not prefer to abandon credit for cash if he thought it could safely be done. The question is one which concerns particularly the dealer in the small town, for here credit is deeply rooted, and there is an element of the population which must be delicately handled in breaking away from the time honored customs.



W. A. HUTTON.

**Cash Merchant Has an Advantage.**

In the first place, I wish to state that the man who can adjust his business so as to get down to a strictly cash basis will have an advantage over his brother who gives credit that will fortify him against every possible chance of failure. That is, he will if he is a business man. No tradesman can have as satisfactory and money making an occupation as the one who deals for cash or its equivalent. Men may argue that it is possible to grow rich and succeed in giving credit, but look over the cause of business failures and 90 per cent. of them will be found to have done an abnormal amount of credit giving to irresponsible parties.

**Excuses Offered for Not Adopting Cash Basis.**

The first excuse a dealer gives for not coming right down to selling goods for cash is that he can't afford it: he is afraid he will offend some one. Another frequent excuse given by dealers against changing from credit to cash is that farmers cannot pay every time when getting goods.

Right here I want to state that they can pay better than any other class. Did any dealer ever know of farmers selling their grain, hay, horses, cattle, chickens or anything else on six months' time? And yet, if you permit it, farmers will ask you to sell them your goods (which represent cash, labor and raw material just as much as their produce does) on credit, to be paid for when they feel like it. It is not a fair division of burden, and dealers who give credit carry the heavy end.

**A Matter of Education Simply.**

Credit business or cash business is but a matter of education. If a farmer has been taught he can buy goods on long time he will continue to ask for credit, even with money in the bank or in his pocket. And this same man who has been educated to credit will not pay for his purchases until forced to do so.

On the other hand, if a dealer has established a reputation for selling only for cash no one asks him to extend credit. Men who want his goods always manage to have the necessary amount of cash, or are willing to give a bankable note when purchases are made.

A credit giving dealer is asked to sell goods as close as competing cash stores and mail order houses. Customers who want credit in most cases demand cash prices.

Cash discounts, so necessary to the success of any business, cannot be taken advantage of at all times by dealers who have goods trusted out, unless they go to the bank for accommodation. This being true, the dealer must pay interest for said accommodation, while he cannot charge interest upon the amounts due him on open accounts on his ledger.

**Can Sell 10 Per Cent. Cheaper on Cash Basis.**

It has been roughly estimated that goods can be sold on a strictly cash basis 10 per cent. cheaper than where promiscuous credit is extended. The one great item of expense in doing a credit business is the unavoidable loss from bad accounts, which will amount to 2 to 3 per cent. of the yearly sales, no matter how good a system of credit ratings is maintained. If 50 per cent. of sales are credit sales, this means a proportionate loss of from 4 to 6 per cent. of the credit sales only. The cost of bookkeeping, collection, loss of interest on outstanding capital and neglected opportunities of taking advantage of cash discounts will easily swell the cost of doing a credit business up to 8 or 10 per cent. of gross business done.

There is a vast saving in bookkeeping to the man whose transactions are made on the cash basis. In fact, this part of his business needs to be only the simplest possible. Having no bills receivable, the cash dealer does not need statements, dunning letters and postage stamps to urge customers to pay up when their accounts are overdue.

When an article is sold for cash the transaction is buttoned up right there. The deal is closed up when the article is delivered and the money in the cash drawer. Where can any credit doings be as profitable or ideal as this?

**Credit Does Not Beget Friendliness.**

There is not a friendly feeling between debtor and creditor. It is well known that a man who owes another either fears or hates his creditor. Therefore credit is contrary to nature.

This does not apply to those who meet their bills promptly. About 50 per cent. meet their obligations promptly and always pay before you have to send them a statement. It is the 50 per cent. that do not settle until you send two or three statements, or finally a letter, that causes the unfriendly feeling I refer to.

**It's a Good Way to Live,**

this selling for cash. No worry, no bother, no losses, no failures. The man who buys and sells for cash always has the goods that represent his expenditures, or the cash that represents sales and profits.

Every man who buys and sells for cash is in position successfully to cope with the catalogue houses. He can meet their prices and in some instances undersell them. Every transaction turns its quota of profits in to the proprietor. No part of it can be considered as possibly lost through some buyer who does not or cannot settle.

**Cash Merchant Can Buy Cheaper.**

At the outset the man in business who sells only for cash can go into the open market and buy cheaper than the one who uses his rating. Having money to pay for what he buys, he can take advantage of every turn of the market that lowers prices. It often happens that manufacturers and jobbers are willing to give still greater inducements than their regular discounts for cash to the customer who will offer to pay cash upon delivery of goods. The time will come when the credit system will everywhere be a relic of the past.

**Merchant Can Hold His Own.**

The dealer will hold his own against outside competition in just that degree in which he adopts systems which have been tried out and found successful in large towns and cities whence his severe competition comes. The growing use of retailers' catalogues and mail order systems, as well as suburban electric railroads, which are tapping his territory and making it easier for people to go to the city to do their shopping, will force him to adopt the cash system sooner or later.

**Qualifications Required.**

Any dealer with a reasonable amount of capital, good judgment, a little experience, plenty of knowledge of human nature, and nerve sufficient to stand on his own feet, can make his business a success and put same on a good solid footing on the cash system or settlement basis.

Of course the "never pay" will object to this, but the dealer does not want this class of trade, and it would not be long before the "never pay" would be a thing of the past. The sooner dealers get this cash system established and conduct their business along these lines the sooner they will be in position to meet the competition of their more progressive competitors.

**Giving Time on a Cash Basis.**

When necessary to give a man time to sell him on a cash basis, then sell him on the time he needs same as if he went to the bank to borrow the money, by adding the same rate of interest, and have him give a note that can be used at the bank. Such a transaction is practically the same as a cash deal, and would put the dealer in such a position that he would be able to use same as collateral should it be necessary to take care of his own obligations in order to secure his best cash prices. Credit is nothing more than a loan of money without security or interest.

Personal credit is a remnant of old methods which must go. A retail store should not be a loan institution where customers are given free use of the dealer's money for a period of time, pay it back or not as they please. If the dealer is compelled to pay his bills in 30 or 60 days is it good business to allow customers anywhere from six months to a year's time, as many are doing?

**More Customers Are Lost by Allowing Credit**

than by refusing it, and the ones driven away by refusing credit to them almost always come back, while the man who owes you what he does not intend to pay will never come back.

So much for argument against giving credit. There is not a city or town where a cash business cannot be successfully inaugurated and carried out. The only question is, Are you ready to make the change? Study this proposition carefully, for, as stated, it will have to come sooner or later.

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THE name of the Southington Cutlery Company, Southington, Conn., has been changed to the Southington

Hardware Company. The company disposed of its Cutlery business a few years ago, it being divided among different manufacturers, and does not now make Cutlery or Razors. Consequently the old name became misleading and the change to the Southington Hardware Company was made. The company states that it is enlarging its regular line of Carpenters' Tools, consisting of Squares, Try Squares and Bevels, Curry Combs and Hardware specialties, and is making a complete line of Wood Screws. C. E. Jennings is the president and treasurer, J. H. Baldwin, secretary, and M. B. Wilcox, assistant treasurer.

# Michigan Retail Hardware Association.

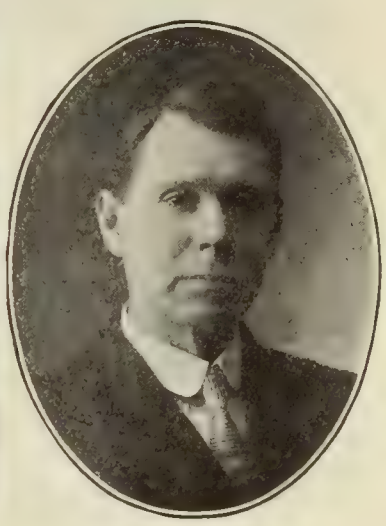
THE fourteenth annual convention of the Michigan Retail Hardware Association was held at the Hotel Cadillac, Detroit, on the 12th, 13th, and 14th inst. It was a notable convention and was largely attended by the members and by representatives of manufacturers and jobbers. The registry was a little short of 400 members and associate members, though there were quite a number in the city who did not register. Instead of the entertainment features being handled by the local Hardware and other interests they were this year taken care of by the manufacturers and wholesale merchants comprising all industries in Detroit, the date of the meeting being arranged coincidently with the Buyers' Excursion to Detroit, when inducements for merchants in different lines of trade to visit the city were offered. As a result, there were perhaps as many as 5000 outside merchants in Detroit during the week.

As in former years, the exhibits of Hardware manufacturers and jobbers were an important feature of the convention. These were installed upon a portion of the ground floor and the first and second floors of the Cadillac. A number of representatives who were in attendance made no display of goods, but kept open house for the entertainment of visitors.

Among the distinguished guests present were A. T. Stebbins, Rochester, Minn., president of the National Retail Hardware Association; S. R. Miles, Mason City, Iowa, and W. P. Bogardus, Mount Vernon, Ohio, former presidents of the National Association; C. F. Ladner, St. Cloud, Minn., president of the Minnesota Hardware Mutual Fire Insurance Company; C. A. Peck, Berlin, Wis., secretary of the Wisconsin Retail Hardware Association; J. R. Hambly, Barrie, Ontario, president of the Ontario Retail Hardware and Stove Association, and George M. Gray, Coshocton, Ohio, secretary of the Ohio Hardware Dealers' Mutual Fire Insurance Company. All of these gentlemen were called upon during the convention and made addresses.



P. A. WRIGHT.



C. M. ALDEN.



CHAS. A. IRELAND.



A. J. SCOTT.

### Convention Committees.

The following committees to serve the convention were appointed by President C. M. Alden:

CREDENTIALS: P. A. Wright, Holly; Mr. Stadt, Grand Rapids; H. C. Waters, Paw Paw.

NOMINATIONS: Chas. A. Ireland, Ionia; John Popp, Saginaw; M. A. Benson, Saranac; S. S. Boyce, Port Huron; E. J. Hallett, Pontiac; R. M. Porter, Williamston; Charles Drury, Cadillac.

QUESTION BOX: C. A. Peck, Berlin, Wis.; H. R. Rice, Croswell; Wm. DeKreif, Levering; J. W. Hallett, Carson City.

RESOLUTIONS: F. A. Marshall, Ovid; C. E. Dickinson, St. Joseph; A. Harshaw, Detroit.

AUDITING: Geo. J. Frank, Bay City; O. H. Hall, Albion; J. M. Williams, North Adams.

CONSTITUTION AND BY-LAWS: Frank J. Trude, Traverse City; E. S. Hart, St. Clair; I. Truax, Birmingham.

J. H. Temmerink, Greenville, and J. J. Vander Meer, Grand Rapids, were appointed sergeant-at-arms and assistant sergeant-at-arms, respectively.

### President Alden's Address.

C. M. Alden, Grand Rapids, delivered an able address as president, and from it we make the following extracts:

Our association is now convening for the fourteenth time. Born in 1895 in the midst of the panic with a membership of 95, we have grown to nearly 700, and having passed through one of the greatest periods of prosperity ever experienced by the American people, we are compelled to face once more another flurry of commercial depression.

I say compelled, because it seems to have been forced upon us, but thanks to the American grit, we are gradually but surely beating back the demon of despair, whose clouds obscured for a while the sunlight of confidence, and with optimistic eye, we discern the return once more, of prosperity.

The past year has been one of test for the association. As individuals we have been engaged in a commercial struggle with this financial stringency, and with limited sales and profits. As an association we have been kept busy fighting the catalogue house and parcel post through our Legislative Committee and have demonstrated our strength and our influence upon the action of legislators, also upon manufacturers and jobbers selling to catalogue houses. Over these discouragements, we have conquered, and as we look back over the years of our existence, we can record another year of success.

### A Dignified Business.

The more we make a careful study of our business and endeavor to conduct it on the proper basis, we are impressed not only with the dignity it bears, but its tendency to intelligently educate and elevate. Among the many dealers in merchandise, the Hardwareman is the most honorable, in one respect. He is the last one to encroach upon a commercial territory of other lines.

While you see dry goods stores, groceries and many other stores with Hardware upon their shelves, it is very seldom that you find any other merchandise than Hardware upon our shelves.

These other merchants adopt the department store plan and select a cheap grade of goods, and often sell them regardless of cost, using this method to attract trade their way. It is a piece of commercial felony, which legislation cannot check, the solution of which depends wholly on the moral modesty of honest men to refrain from its practice.

Notwithstanding our sentiments on the department store question, the fact remains that being legitimate they have come to say. They have absorbed to a great extent our stove trade in large cities. They are in a positioin to furnish our customers all they require to furnish a home complete on one book account or lease on the easy payment plan, and the problem is up to the Hardware dealers either to adopt this plan, or go out of the stove trade. Many hardware merchants are adding furniture and other household goods to their line, which is proving to be very satisfactory.

It would be well for us to study this matter, very thoroughly, at any rate, do not lay down in despair. It is the man that succeeds who discovers in himself, the ability to do things, and realizes that power to grasp opportunities by the forelock instead of by the coat tail.

**Parcel Post Legislation.**

This address would be incomplete, and disappointing to my hearers, if the question of domestic parcel post was overlooked. It is a question that has ever been before us, and never will be allowed to get behind us. The postal system of the United States was originally based on a single object, that of the transmission of intelligence, and was never intended as a means of competition in a commercial way, with private, or corporate transportation companies.

After conversing with the average citizen on this subject, two facts are evident:

1. The difference between foreign and domestic Parcel Post is not thoroughly understood.

2. When clearly understood, domestic Parcel Post will meet with public disfavor.

The popular American mind can be trusted to decide any issue right in nine cases out of ten, if it has had a chance to understand it. Therefore a systematic method of instruction should be started, and literature condemnatory to its establishment, showing its evil effects, in a public way sent broadcast throughout the country.

This, with personal work on the part of merchants interested, will bring victory, eventually.

**The Catalogue House Problem.**

The question of catalogue house competition is a trying one—its solution is far in the distant future, yet we can console ourselves with one condition, as a result of association work. We've got them on the run.

It is difficult for them to obtain any goods of a standard brand, being confined to seconds and products of inferior manufacturers, for the list of manufacturers and jobbers who refuse to sell catalogue houses is increasing yearly.

In summing up this question, I would make three suggestions to meet this unfair competition:

1. That the Hardwaremen endeavor, with as little publicity as possible, to organize all merchants in their respective towns and through committees, appointed for that purpose, compare their prices with those of the catalogue house, and as far as possible revise them on a basis of quality and expense of transaction; also ascertain the names of parties purchasing from catalogue houses, and by honorable methods, persuade these people to trade with home merchants. I understand that in Scottville, Mich., this plan is successful to the extent that when one of these catalogue fiends brings his produce to town for sale, the merchant kindly suggests to him that he take it to Chicago, to the catalogue house where he trades.

2. That the secretary for the State Association obtain from National Secretary M. L. Corey a list of manufacturers and jobbers, who do not sell to catalogue houses, that this list be printed and mailed to each member of our association that by this means we may know who our friends are.

3. I would further suggest that we abandon, as much as possible, the old system of credit and face the fact that the only legitimate basis on which to conduct a mercantile traffic is the cash system, because thereby each participant receives the benefit of the minimum cost of the transaction, and that the credit system, necessarily but unjustly, compels the cash customer to pay enough to offset the loss sustained in lengthy and very often worthless accounts.

**Fire Insurance.**

In the matter of insurance, it is like preparing for war in time of peace, consequently few are intensely interested in the subject. If any one of us was offered from 10 cents to 25 cents on a dollar for our stock of Hardware and fixtures, we would laugh at it as ridiculous, but we are unconsciously willing to burn out on that basis, for very few of us ever carry enough of fire protection.

The question of insurance is mentioned here as a danger signal, in order to call your attention to a question exceedingly important, and to urge each individual member to examine his fire risk at once, and to waste no time until conditions are on a safe basis.

## Secretary Scott's Report.

The interesting report of A. J. Scott, Marine City, the efficient secretary of the association, was as follows:

During the past year the secretary's office has made a determined effort to keep closely in touch with the members through the medium of circular letters, and an unusually large volume of mail matter has been sent out from this office, as will be seen from the report of the stamps used during the past year. Communications have been sent out whenever it appeared that we had something of interest to tell our members, but it has many times occurred to me that instead of preparing these communications it might be better for the association to issue a regular monthly bulletin in leaflet form containing the news of the association.

**Moving Dead Stock.**

The idea has also suggested itself to me that in this communication we might introduce a plan by which our members could find a market for commodities of which they have a supply on hand but which do not sell well in their territory. At one of our past conventions I remember having disposed to a member from Saginaw of a quantity of tinting colors which threatened to become dead stock upon our shelves. There was a good demand for these goods in Saginaw, and it was good policy for me to dispose of them at a price which made them a good purchase for the dealer in that city.

If the members think that it would be an advantage to them to have a medium through which to tell the several hundred other Hardware dealers in our association about some special deal of this kind, I trust the matter will be taken up at this convention and some action taken looking toward the adoption of this suggestion during the coming year.

**Decrease in Catalogue House Sales.**

You have probably all recently read of the financial statement issued by one of the largest retail mail order houses, and we can't help feeling gratified at knowing that one of our principal competitors in this line is having difficulty in keeping up with the record of sales, which, if I am not mistaken, has shown a steady increase annually until the past year. Of course unusual conditions have maintained since last fall, but we are justified in believing that the alertness of the retail merchant and the educational work which is being carried on through this and other associations is having the much to be desired effect of keeping the trade of the farmers at home where it belongs.

**Literature for the Farmers.**

The advantage of having some good literature placed in the hands of the farmers, devoted to showing them the fallacy of buying merchandise by mail in the large cities. has become more apparent than ever, as there are a number of class publications apparently devoted to the farmers' interests, whose editorial utterances, naturally influenced by the advertising patronage of the mail order houses, are calculated to create a sentiment against the local merchant and to lead the farmer to believe that the retailer has no interest in him other than to charge him extortionate profits for what he requires.

**Complaints During the Year.**

Our records have been comparatively free from complaints by members since the time of our last report, five having been filed with the secretary during the current year. There are one or two of these which have not been entirely settled up, but I hope at this meeting to meet with those who have lodged the complaints and discuss with them some method of adjusting the matter satisfactorily.

**Sounding Candidates for Office.**

It is hardly necessary, I take it, for me to urge our members at this time to get in personal touch with their representatives and with candidates for office and find out how each stands on federal legislation in which we are interested. Each one of us will wield considerable influence if we will only take the time to present our views in person.

**Mutual Insurance Companies a Credit to Hardwaremen.**

While we will hear from the representatives of the different strong Hardware dealers' mutual fire insurance companies at this convention, I wish to emphasize the fact that these companies have been the means of saving our members a large amount of money in the past and will continue to do so in the future. I consider it a great credit to the Hardware merchants of the country that they should have succeeded in building up such strong mutual companies for their own protection. In addition to saving policyholders a good round sum each year, the mutual companies have made an enviable reputation in the manner in which they have settled up their fire losses.

**Membership.**

In the matter of membership, the past year has been a peculiar one on account of the exceedingly large number of changes that have occurred. In the Hardware business, as in most other lines, a great many firms entered business during the past few years with very limited capital. The stringent financial conditions for some months past have compelled a great many of these to take up some other line, and the effect upon our membership is shown in the following statement: The secretary's report last year showed a membership of 679. Of these 17 have resigned, 59 have gone out of business and 30 have been dropped for nonpayment of dues, the majority of whom I believe are also out of business, as I failed to receive any replies from them. This makes 106 of the names reported last year who are not on our list to-day, leaving a balance of 573. During the year we have taken in 100 new members, making a total membership at present of 673.

## Treasurer's Report.

The report made by William Moore, Detroit, treasurer of the association, showed that the total receipts during

the year had been $6560.63, and the disbursements $3302.21, leaving a handsome balance amounting to $3258.42.

### Hardware Advertising.

Marshall H. Mackey, South Haven, Mich., read an interesting paper, in which he discussed the question "Does It Pay to Advertise?" Mr. Mackey spoke, in part, as follows:

One "Ad" writer defines advertising as "the act of creating a want and turning the consequent demand toward your supply." This definition seems to cover a multitude of sins for "advertising after all is only a gamble, a conundrum and an uncertain quantity," but on the other hand it is also a science which is governed by certain laws and may be reduced to basic principles capable of definite calculation.

The first step in reducing advertising to a science is to analyze the goods from every standpoint. When you have studied all the strong points of the goods you can easily decide whether or not they are advertisable. I am not now talking to inventors or manufacturers, however. The retailer can decide offhand that his goods are advertisable. He handles many commodities which have been advertised successfully by the makers.

#### Difficulty Not a Real One.

One of the greatest stumbling blocks for many would-be advertisers is expressed as follows: "I can't advertise, I don't know how." Merchants who say this think the matter very difficult. They bring up a lot of imaginary troubles. Really advertising shouldn't be such a bugbear to a man who can write, talk and think. The trouble lies a great deal in the fact that many advertisers try to make every piece of their copy a "stunt," and therefore when results are not forthcoming they are discouraged and give up.

#### Getting Results.

Simple ads of common sense bring forth better results and rarely ever do we find the successful advertiser varying from this plan. Try and take the consumer's point of view, if possible, and imagine the effect it will have in his mind—and pocketbook. If your consumer is a woman, secure ideas from your wife, sister or daughter and see what especially appeals to them. A piece of copy dictated by an intelligent woman is often worth more than that of an expert "ad" writer.

If you neglect analyzing your goods correctly you cannot blame the science of advertising on account of your failure to sell the goods. You are not compelled to trust to luck in advertising to any great degree. You may not reap the results of your advertising this year, but results will surely come next year or the next. No advertising is wasted if the advertiser builds his campaign on knowable certainties. The only real uncertainty in advertising is economic conditions of the country. People may be too hard up to buy but when the stringency is over you can rest assured that the demand will be turned toward your supply.

#### New Goods.

A dealer's stock may be complete and his prices right, but still whenever he gets in new and desirable articles it is up to him to let the public know about them if he expects to sell the article. He may have a new safety razor or an improved sad iron, but if he wants the article to move he will have to advertise or his competitor who handles another line may get the people headed his way and do the business.

#### The Show Window.

The window display connected with a newspaper "ad" makes a most effective mode of advertising new goods. Your windows are one of your best paying advertising mediums, for though they may not bring immediate results you will have people coming in the store months after the display has been taken out and asking for an article that you had displayed sometime before.

#### Money Wasted.

I feel that thousands of dollars are thrown away each year by the merchant on musical, church, literary and society programs as well as the telephone and business directory, and the special writeup editions of papers, but as much of this kind of advertising is taken and paid for as a charitable act or a personal duty, results are not always expected. However, losses in this kind of advertising often tend to turn the merchant to the legitimate channels which will produce results. Advertising solicitors, with all kinds of schemes, invade your office, but unless they can show you something new that will obtain results you are wasting time and money listening to them.

#### A Store Bulletin.

Personally, I believe that catalogue and newspaper advertising are the best. The firm of which I am a member has tried and are now doing both. We issue an 8 x 11-12 page catalogue twice a year, one as a spring and summer number and the other as a fall and winter edition.

We claim one thousand circulation for the Bulletin, as we have named it, half the copies being mailed to a selected list of farmers, while the balance are distributed in the city. The cost of printing averages about $25 for the thousand, while the postage is one cent each. We make up our own composition and are helped greatly in this by the many cuts furnished us by the manufacturers and the good ideas secured from the leading trade journals.

We believe that newspaper advertising well repays the advertiser. The public now reads more newspapers than ever before. There is scarcly a man who does not purchase several papers daily. He cannot overlook the advertisements. These attract his eye becouse of the handsome typographical make up and he is led to buy goods of the merchant whose name appears in the advertisement, believing him progressive.

#### Nice Calendars Pay.

Another mode of advertising that I believe pays is the calendar. Not the cheap kind like the general run, but a calendar which people will keep. We issue one each year and have many customers who look for it as regularly as the year rolls around. Many have tried this mode of advertising and condemn it, but you will find that it is because they have failed to put out a calendar which people will hang in their home or office on account of its attractiveness. Invest in good calendars and your advertising money will have been well spent.

Give your advertising as much consideration as you do the hiring of your help. If you have tried advertising and seemingly failed find out the cause, for ninety out of every hundred will tell you that it pays and your failure can be turned to success by finding the fault and applying the remedy.

#### Brief Suggestions.

If you choose the newspaper as one of your modes of advertising make the "ads" breezy and don't try to make a "hit" every time you write your copy. Change the copy often for people rarely ever read an ad more than once.

If you wish to get out a catalogue of your own, combine your ideas with those who have given the matter a trial.

If you wish to use the billboard, see that your advertising sheet is large and that you get prominent space.

If you wish to use fence signs, tack them up out of reach so that they cannot be torn down by passersby, and put them up as thickly as possible so that the number will be noticeable.

No progressive merchant should waste any time in considering whether he shall advertise. That question has been retired from the field of controversy. What he wants to know is how he shall advertise. That point is deserving of careful consideration. Important results depend upon his answer to that question. He may gain the knowledge he requires by close study and careful experimenting or he may call expert assistance to his aid.

### Getting Profits.

An able paper, entitled "Getting Profits," was read by Geo. W. Hubbard, Flint, a former president of the association. Mr. Hubbard's paper was listened to with close attention, containing, as it did, many good suggestions as to business conduct. The publication of the paper is deferred until a later issue.

### Increasing Profits and Curtailing Competition.

A very practical paper under the title of "Specialization in the Hardware Business" was read by Harvey J Fueller, secretary and sales manager of the Abram Cox Stove Company, Philadelphia. It dealt with some methods and policies which might be adopted with advantage by the Hardwareman, and was in part as follows:

My early business training was acquired on the road in the stern school of practical salesmanship. Though my direct business experience has been confined as a manufacturer to the stove, range and furnace department of the Hardware trade, yet I have spent no inconsiderable part of my life in retail Hardware stores and in contact with Hardware merchants. My somewhat extensive observation of the conditions which generally prevail in your business is my excuse for venturing to direct your attention to certain views which I entertain regarding methods and policies that I believe could be adopted by retail Hardware merchants for increasing their profits and curtailing the evils of unwise competition.



HARVEY J. FUELLER.

It is plain that in order to make money you must sell your goods at an increase over the amount you pay for them, plus your cost or expense of conducting business. But do not jump to the conclusion that the higher your selling prices are the greater your profits will be. Unduly high selling prices are ultimately as destructive of profit as unduly low selling prices.

**Profits Should Be Computed Upon Money Invested in the Business.**

One of the most difficult tasks which confronts the Hardware merchants is that of fixing proper selling prices on the different classes of goods which he handles. On certain goods it seems to him that he must ignore his general percentage of expense in fixing the selling price or be outside of the market entirely. In my opinion it is an error for a merchant to compute his profits on the volume of his sales. They should be computed upon the investment in the business.

The retail fruit dealer, who on the average turns his entire capital weekly, will make a far greater profit by selling his goods for 10 per cent. more than he pays for them than the jeweler, who turns his capital on the average once each year, will make by selling his goods at an advance of 100 per cent. over his purchase price.

Say that in a given Hardware business the merchant finds that his total expenses, including interest on his capital, his own salary and those of other executives, rent, insurance, wages, office force, shipping, taxes, light, heat, advertising, bad accounts and all other costs of conducting business, amount to 20 per cent. of the purchase price of all goods which he has sold during the year; yet it is apparent that it has cost him less than 20 per cent. to sell some of the quick moving, cheaply handled goods, and it has cost him much more than 20 per cent. to sell some of the other goods which he must carry a long time and on which his selling expenses are heavier.

**Six Profits Versus One Profit.**

Some merchants consider that the only difference to them in profit between a class of goods on which they turn their capital every 60 days and another class on which they can turn their capital annually is 10 months' interest at the current rate, but this is a great mistake, as in one case they make six profits in one year on a given investment, and in the other case they make but one profit in one year on a given investment.

Of course the carrying of book accounts is an element in the turning of capital which must always be taken into account, and if the Hardware merchants generally realized the great importance of prompt collections as a factor for producing profit they would devote more attention to this feature of the business.

**Classification and Division of Goods.**

The Hardware merchant, to enable him to understand what he is doing, to know what classes of goods it will pay him to push to maintain a price scheme which will bring the best results, should analyze his business thoroughly and should classify the goods which he handles into divisions, showing separately in groups those in which he turns his capital, respectively, in 60 days, in 4 months, in 6 months, in 8 months, in 10 months, in 1 year, in 18 months, in 2 years, &c.

An additional account should be opened for each specialty to which the merchant devotes particular attention and on which he aims to secure more than the ordinary rate of profit, and, of course, such specialties should not be grouped with other goods.

Such specialties might be Ranges, Heating Stoves, different branches of the Cutlery business, Paints, Wall Paper, a line of high grade Wooden Ware, and in season Firearms and Ammunition.

**Expense Percentage for Each Class.**

He can then, using his own good judgment and justly estimating other factors known to him, apportion to each class the percentage of expenses which it should rightly bear.

In apportioning this expense the merchant should be very certain to have the total apportionment equal his entire expense as based upon his previous year's experience. After adding the proper percentage for expenses to each article or kind of merchandise, he will have the real cost thereof.

He can then open an account with each separate group of merchandise, charging it with all of its costs and crediting it with its sales. He will then know at the close of the year just where each class of goods stands as a profit earner. There is no mistake more common than the failure to include the full expense of doing business in calculating costs and selling prices.

Unless conditions are radically changed, there are some classes of goods which it is practically obligatory for retail Hardware merchants to handle on which it will never be possible for them to make a reasonable profit. As an offset to this unprofitable business they should develop a trade on specialties upon which they can secure a profit above the ordinary rate.

**Good Profits Secured Through Specialties.**

There are many specialties in different lines of manufacture which the shrewd Hardware merchant can push and advertise and promote until he has a valuable franchise in the continuous profit accruing to him from their sale. In many cases he can control the sale of special goods of certain kinds, and then can very profitably work up a reputation for them which will permeate the entire community.

For example, most Hardware merchants handle ranges, and the profit thereon, considering the cost of selling and handling them, is usually very moderate. Many Hardware merchants try to increase their profits in the range business by scouring the market for the lowest price ranges they can find, thinking thus to be able to undersell their competitors and build up a large business. But what they can do in purchasing cheap and nasty ranges can be duplicated by their competitors, and they can never build up a good reputation nor establish a profitable trade by handling such goods.

On the other hand, it has been frequently demonstrated that if the merchant will select a strictly first-class, high grade range, with special features of merit, and push it as a specialty, he can build up a permanent profitable trade on it which cannot be taken away from him by means of any price concessions which his competitors may make on other ranges.

And what can be done on ranges can be done on many other specialties on which it is possible for the skillful Hardware merchant to develop and maintain a profitable and practically an exclusive business.

Along this line of developing a trade on specialties lies the greatest of opportunities for the Hardware merchant to increase his profits. Too frequently the Hardware merchants of a town follow each other along the same path of business policy, like a flock of sheep. If each would specialize his business to the greatest possible extent and seek to develop his trade along the lines of profit for himself, the evils of competition would be greatly reduced.

**An Example of Specialization.**

As most Hardware merchants are engaged in the heating business, I desire to direct attention to warm air furnace heating and ventilation as a most striking example of specialization, through which, if properly conducted, they could build up a profitable and highly satisfactory trade.

Cheap competitive bidding has performed its sinister work in the furnace business, until furnaces of utterly inadequate capacity are merely thrown into cellars or basements and installed without regard for the proper proportioning of the piping system or for any other elements necessary to right results. As a result of these poor methods of installation and of the use of furnaces of too small capacity, warm air furnace heating to-day is seldom given the slightest consideration for first-class or even medium priced residences. Yet with a good furnace of the proper size, with the piping correctly proportioned and with first-class installation in other respects, there is no other plan of heating so practical, so successful or so satisfactory as warm air furnace heating.

This is an age of sanitation, and from the standpoint of healthfulness warm air furnace heating is immeasurably superior to direct water or steam heating. When furnace heating was discredited by the evil demon of "cheapness," which meant deficient capacity and defective workmanship, the people who built good houses turned eagerly to steam and water, believing that these were sure and sound methods of heating. And thus the heating of good residences was taken away from the furnace merchant by a system that cost much more than good furnace heating.

This proves that it was really the low price of furnace heating, necessarily accompanied by inferior quality, that drove it from the market to such a marked extent. And that this better method of heating would never have been supplanted if a high standard of installation had been maintained. Furnace heating has been discredited because the average furnace dealer mistakenly supposes that he can get work only on the low price of the job. And even those few furnace dealers who pride themselves on getting what they call good prices go only half way and do not attempt to do strictly first-class highest grade work, through which alone can furnace heating be brought into the favor and standing to which its merits entitle it.

If the members of this organization, regardless of how expert they believe themselves to be, would make a study of the furnace business and would start a determined and systematic crusade in favor of strictly first-class warm air furnace heating, a very large proportion of all first-class residences could unquestionably be captured for this superior method. And while you would be giving your customers far better value for their money than they could possibly receive with any other system of heating, you could legitimately make much larger profits for yourselves than it would be possible to make by installing any other method of heating. For strictly first-class warm air furnace heating and ventilating there is no reason why the house owner should not pay at least as much as the price of the inferior and unsanitary direct steam or water system. The field is not liable soon to be overcrowded, and those who start in to do strictly first-class heating and ventilation are not likely to have much serious competition, for only those who have the insight and the foresight to get out of the beaten path of custom will enter this rich field, and they are not likely to

be large enough in number to crop off the pasturage for a long time to come.

**How Spare Cash May Be Invested to Advantage.**

Other directions in which specialization can be successfully practiced will readily occur to the alert Hardware merchant who catches the spirit of the scheme and appreciates its advantages and possibilities. I desire to emphasize the fact that there are, for every Hardware merchant, possibilities for increasing his profits by realizing the difference in relative importance between the different classes and departments of his business, and that the time spent in planning for the specialization of his business will be profitably employed. Many a merchant who has a surplus of cash sallies forth to find an investment, and not infrequently tests the stock market because of seemingly seductive prospects of profit that seem to lie in that field, whereas by investing the money to develop some special line or department of his own business he could probably make much better returns for himself than others are likely to make for him.

**Training Clerks.**

The employees of a house usually reflect the tone and character of the establishment. Indifferent and slipshod clerks and salesmen usually betoken indifferent and inefficient business methods on the part of their employers. Many Hardware merchants could promote their own interests by devoting more time and pains to training and drilling their employees and studying plans for increasing their profits, and spending less time in doing work and attending to details which could be taken care of quite as well by subordinates.

**Local Organization Benefits.**

While you can do much to increase your prosperity by your own efforts in wisely planning your business methods and policies, you can also greatly improve the conditions which constitute your business environment by means of co-operation through your association. While your organization can never bring about that millennium of the socialist where competition will be abolished, yet it can, through wise agreement and co-operation, remove the abuses and evils of that jealous and reckless struggle for trade which is frequently destructive of all legitimate profit.

You could not use your local organization, even if you so desired, to maintain prices at an exorbitant level, for the operation of the natural laws of trade would quickly break your scheme. But if your understandings and agreements are formed on the basis of securing fair, reasonable, just conditions for yourselves they can be maintained if you are true to each other. Public sentiment and the laws of business will sustain you in any rightly directed efforts you may make to secure reasonable returns on your capital. If each of you will do his part your organization can make business conditions much pleasanter and more satisfactory for all of you than they would be without the organization. In addition to the larger reforms which you can accomplish through your association, it can be made the means of eliminating the little pin pricks and minor annoyances of competition which so often exist when those engaged in a common business in the same community regard each other as strangers and enemies. The mere social contact between the members which is brought about by the existence of your association is not among the least of the good features of your organization.

**Ouestion Box.**

The contents of the Question Box afforded a good deal of discussion at several sessions. Among the questions thus brought to the attention of the gathering were the following:

*How can we meet catalogue house prices?*

This question aroused a good deal of interest and was freely discussed. One member reciting an incident from his own experience said that a woman came into the store and asked for a washing machine, the price of which was $5. She declared that she could buy the same machine from a Chicago catalogue house for $4. The merchant in response said: "Certainly, madam, I have a similar washer in the attic of my store which I could sell for $4." "Let me see it," replied the woman. "No," said the merchant; "I will sell the washer in the same way the catalogue houses sell their goods. You pay me cash for the washer and in a day or two I will deliver it to you." Mr. Harshaw said that his policy was to sell at the same price as the catalogue house, the customer paying the cost of delivery and other expenses. Presilent Alden said that prices in such cases should be determined by three conditions: First, quality of the

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goods; second, expense of transportation, and, third, whether the transaction was of a cash or credit character. Mr. Wattles said he bought a wagon sold by a catalogue house and advertised it for sale at $5 less than it cost him. Notwithstanding the price at which it was offered he had it on his hands a long time and in the meantime sold a good many wagons from his regular stock.

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*Can rural free delivery carriers deliver mailable packages weighing less than 4 lb?*

The discussion that followed the presentation of the question indicated a wide difference of opinion as to the law upon this subject. At the same time it was pretty generally accepted as a fact that such packages could not be legally accepted for delivery by the rural route..

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*How can we best meet the competition of racket stores?*

Speaking from experience in handling such competition one merchant declared the best way was to establish 5 and 10 cent counters in the store and keep on them in plain sight such goods as were commonly sold in racket stores. The trouble seemed to be that people do not think to ask for such small articles when in a hardware store, but pick them up when they see them displayed upon the counter.

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*Why not sell hardware on a strictly cash basis?*

Some pertinent experiences were recited which upon the whole tended to show that a more determined effort to do a strictly cash business would in most cases result in at least lessening if not wholly eliminating the loss of money through unwise credits. J. B. Sperry, Port Huron, said that after 17 months' trial of the cash method of doing business he was handling more trade on a cash basis than he formerly did on credit—and he didn't mean cash in thirty days, but with the order. Mr. Stadt, Grand Rapids, also said that he was doing a strictly cash business and was very well satisfied with the change. About two weeks before he inaugurated this method of carrying on business he sent out something like 500 letters to his customers, in which he boldly announced his intention. He said it sometimes required nerve to turn down an old customer who asked for credit, but by insisting on it the money was generally obtained.

Closely related to this topic and equally important was that of the effectiveness of some of the various collective methods and agencies offered to the trade. It is apparent that quite a number of the local associations have satisfactory organizations of this kind and many instances of their usefulness were recited in course of the discussion.

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*Have any members had experience with steel range peddlers, and, if so, how have they handled this form of competition?*

National President Stebbins suggested that the most effective thing to do was for the local merchants in the territory visited to get out advertising and spread it broadcast over the country covered by the peddlers. Mr. Stebbins said that the merchants in his territory had had only one experience with peddlers and by aggressive advertising and canvassing they were able to drive them out before they had inflicted any material mischief.

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*Is it wise to sell nails by the pound at a big profit?*

In reply to this question quite a number of the members signified that they were getting from 3 to 3½ and 4 cents per pound for nails.

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*Does the stove business pay the Hardwareman?*

The consensus of opinion was that the Hardwareman should handle stoves, and that they should be of good quality.

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*Does it pay to run specials for certain days at a low price?*

One of the members said that he had tried out specials and found them a success.

## Resolutions Adopted.

Among the resolutions adopted were the following:

*Whereas,* It has come to our knowledge that a renewed effort will be made at the next session of Congress to pass a parcel post bill, and

*Whereas,* It being the honest opinion and belief of our best writers and thinkers that such a measure would be detrimental to the best interests of the country, in that it would tend to build up the already congested centers and thus depopulate the smaller cities and rural communities; now, therefore, be it

*Resolved,* That the Michigan Retail Hardware Association is ever and always opposed to the enactment of such a measure, believing it to be class legislation in the interest of the few against the many; and be it further

*Resolved,* That our members of Congress be requested to use their best efforts to defeat any such proposition.

*Whereas,* The lecture of Geo. W. Maxwell of Chicago, editor of the *Talisman,* was a most able appeal for the betterment and uplifting of the race, be it

*Resolved,* That we pledge ourselves, individually and as an association to co-operate with him in the important educational work he is doing

Resolutions of thanks were extended to the manufacturers and jobbers of Detroit for courtesies received at their hands, and to the trade journals for their able support given to the association during the past year. Resolutions of sympathy for families of deceased members, including W. T. Leckie, Dowagiac; T. B. Rayl, Detroit; George A. Earle, Mason; W. B. Rorick, Morenci, and W. D. Edwards, Kalamazoo, were also adopted.

## Election of Officers.

The election of officers resulted in the choice of the following:

PRESIDENT, Porter A. Wright, Holly.
VICE-PRESIDENT, Chas. A. Ireland, Ionia.
SECRETARY, Arthur J. Scott, Marine City.
TREASURER, Wm. Moore, Detroit.
EXECUTIVE COMMITTEE (two years): C. M. Alden, Grand Rapids; Henry C. Webel, Detroit; F. M. Brockett, Battle Creek; Alex. Lempkie, Detroit. One year, to fill vacancy: Arthur Schoeneberg, Saginaw.

## Next Meeting Place.

A letter from the Saginaw Board of Trade to hold its next meeting in that city was read, and a letter of similar nature was received from the Hotel Victor, Put-In Bay. It has been in the minds of some of the members for a number of years that it would be an ideal plan to hold the convention on board a steamer making a three days' round trip from Detroit westward to Mackinaw or some other suitable point that might be chosen. The advisability of undertaking such a programme for next year was freely discussed at this time, but it seemed to be the consensus of opinion that while it would be highly desirable to effect such an arrangement, it had better be deferred until a subsequent year, when the whole proposition could be investigated and brought before the meeting in definite form. A motion offered to accept the invitation of Saginaw was carried unanimously.

## Convention Notes.

A large and enthusiastic audience greeted Geo. H. Maxwell, Chicago, editor of *The Talisman,* at the Detroit Opera House, Wednesday evening, whose address on "The Future of Our Nation," illustrated by stereopticon views, was one of the most instructive and entertaining features of the convention.

Henry A. Pickert read a paper in which he endeavored to reflect the views of the great body of traveling salesmen respecting the influence of the Hardware associations upon their welfare and interests. He was strongly of the opinion that the educational advantages offered by the association had made its members broader minded and more capable merchants than they were before.

Handsome suit cases were presented to F. E. Woolley and R. C. Wessels, as prizes offered by the association for the securing of the greatest number of members. An elegant umbrella was also presented to Mrs. Daisy Adams, who favored the convention with a number of cornet solos and led the singing of America and other songs.

Telegrams of greeting were received from Charles W. Asbury, president of the American Hardware Manufacturers' Association; E. C. Simmons, Simmons Hardware Company, St. Louis, and Frank A. Bare, secretary of the Ohio Hardware Association.

## EXHIBITS.

ACME WHITE LEAD & COLOR WORKS, Detroit: Paints, Enamels, Stains and Varnishes. Represented by Dan Davies, H. F. Whitaker, L. J. Fasquelle, W. J. Reinecke, A. D. Hoag and G. C. Burnham, Jr.

AMERICAN STEEL & WIRE COMPANY, Chicago: Wire Fence. Represented by W. H. Crawford, T. G. Fletcher and L. N. Silverman.

AMERICAN WRINGER COMPANY, New York City: "Chemical" Clothes Wringers. Represented by N. B. Hutton.

ART STOVE COMPANY, Detroit: Stoves and Ranges. Represented by E. J. Wagner.

E. C. ATKINS & COMPANY, Indianapolis, Ind.: Saws. Represented by W. E. Stalnaker and Robert Eoeland.

BALDWIN STOVE COMPANY, Cleveland, Ohio: Ranges. Represented by H. E. Watkins.

BANY & HADLEY MFG. COMPANY, Delphos, Ohio: Power Washing Machines. Represented by Guy A. Johnston.

BERRY BROTHERS, Ltd., Detroit: Baking Enamels, Dryers, Shellacs, Asphaltum, Paint and Varnish Removers and Varnishes. Represented by Frank A. McCall, T. D. Baker and P. B. Weeks.

BILLINGS-CHAPIN COMPANY, Cleveland: Paints and Varnishes. Represented by W. W. Rankin and M. Sherwood.

BOSTWICK-BRAUN COMPANY, Toledo, Ohio: Wholesale Hardware. Represented by H. W. Aulsbro, W. J. Breay, W. S. Beebe, H. D. Ranney, S. W. Johnson, C. P. Louch, C. W. Brown and M. H. Nusbaum.

BOYDELL BROTHERS WHITE LEAD & COLOR COMPANY, Detroit: Paints. Represented by J. Frank Boydell, Wm. Rennie, E. Stiling, W. H. Addison, Joseph Meyers and Andrew Bindmarsh.

E. S. BRACE COMPANY, Niagara Falls, N. Y.: Extension Sweep Brace. Represented by G. M. D. Heard.

BROWN STAMPING COMPANY, Toledo, Ohio: Oil Cans. Represented by A. L. Baker and H. W. Bulton.

BUHL SONS COMPANY, Detroit: Wholesale Hardware. Represented by W. E. Buhl, A. H. Buhl, H. W. Horton, J. M. Thurber, C. V. Hetts, H. P. Smith, W. J. Laffrey, J. F. Putnam, C H. Bryant, A. H. Lee, A. H. Nichols and C. M. Moulton.

CANTON ART METAL COMPANY, Canton, Ohio: Steel Ceilings and Furniture. Represented by W. W. Clark, W. H. Gardner and C. S. Watters.

CARBORUNDUM COMPANY, Niagara Falls, N. Y.: Abrasive Materials. Represented by George N. Allen, F. D. Gridley and C. G. Emery.

CONSTANTINE NOVELTY COMPANY, Ltd., Constantine, Mich.: Churns. Represented by J. H. Putnam.

CONWAY STEEL RANGE COMPANY, Bellevue, Ohio: Stoves and Ranges. Represented by J. D. Conway.

CO-OPERATIVE FOUNDRY COMPANY, Rochester, N. Y.: Stoves and Ranges. Represented by F. F. Saxton and R. H. Reed.

DANGLER STOVE COMPANY Division American Stove Company, Cleveland, Ohio: Vapor Stoves. Represented by W. J. Best.

DETROIT WHITE LEAD WORKS, Detroit: Paints, Enamel, &c. Represented by J. G. Riley and H. P. Barringer.

E. I. DU PONT DE NEMOURS POWDER COMPANY, Wilmington, Del.: Powder. Represented by C. A. Newton, W. J. McHenry and W. T. Stannard.

EMPIRE RUBBER MFG. COMPANY, Chicago: Mechanical Rubber Goods. Represented by E. B. McKay and H. H. Todd.

FREE SEWING MACHINE COMPANY, Chicago: The Free Sewing Machines. Represented by C. B. St Clair.

HEATH & MILLIGAN MFG. COMPANY, Chicago: Paints and Colors. Represented by A. D. Grain and J. B. Campbell.

INDEPENDENT STOVE COMPANY, Detroit: Renown Stoves and Ranges. Represented by R. G. Waddell and F. E. Wirlley.

LOWE BROTHERS COMPANY, Dayton, Ohio: Paints and Varnishes. Represented by F. O. Downer, E. K. Springer and Fred W. Schroeder.

MCINTOSH HARDWARE CORPORATION, Cleveland, Ohio: Wholesale Hardware. Represented by J. S. Harris, Geo. Abbott, Geo. Edelman, C. E. Barton and C. E. Clark.

MALLEABLE STEEL RANGE MFG. COMPANY, South Bend, Ind.: Stoves and Ranges. Represented by H. A. Todd.

MARCELONA SCREEN COMPANY, Marcelona, Mich.: Screen Doors and Window Screens. Represented by A. M. Gifford.

MARVEL MFG. COMPANY, Ionia, Mich.: Washing Machines. Represented by O. R. Herron.

MANSON-CAMPBELL COMPANY, Detroit: Fireless Cook Stoves. Represented by E. S. Gunn.

NIAGARA MACHINE COMPANY, Niagara Falls, N. Y.: Represented by G. M. D. Heard.

OMAHA LIGHTNING ROD & ELECTRIC COMPANY, Omaha, Neb.: Lightning Rods. Represented by T. B. Adams.

ONE MINUTE WASHER COMPANY, Sandusky Ohio: Washing Machines. Represented by A. J. Leake.

PITTSBURGH STEEL COMPANY, Pittsburgh: Poultry and Garden Fence. Represented by F. A. Tower and E. M. Morey.

REMINGTON ARMS COMPANY, Ilion, N. Y.: Fire Arms. Represented by W. F. Evans and John T. Cole, Jr.

REPUBLIC METALWARE COMPANY, Buffalo, N. Y.: Stamped, Pieced, Japanned, Galvanized and Enameled Ware, Oil Tanks, House Furnishing Specialties, &c. Represented by M. Kinney and O. M. Chapman.

ROCHESTER STAMPING COMPANY and ROBESON CUTLERY COMPANY, Rochester, N. Y.: Metalware and Cutlery. Represented by H. M. Rogers and E. C. Gale.

SIMONDS MFG. COMPANY, Chicago, and Fitchburg, Mass.: Saws. Represented by Will J. Feddery, J. O. Brown and R. D. Baldwin.

JAMES B. SIPE & COMPANY, Pittsburgh, Pa.: Sipe's Japan Oils. Represented by S. H. Hart.

STANDARD PAINT COMPANY, New York City: Paints. Represented by Ben H. Weeks.

STANDART-SIMMONS HARDWARE COMPANY, Toledo, Ohio: Wholesale Hardware. Represented by C. B. Bennett, F. M. Moulton, E. C. Weeber, A. L. Peck, A. G. Weeber and F. R. Russell.

SUN TYPEWRITER COMPANY, New York City: Typewriting Machines. Represented by W. A. Mudge.

UNION METALLIC CARTRIDGE COMPANY, Bridgeport, Conn.: Ammunition. Represented by W. F. Evans and John T. Cole, Jr.

UNITED STATES REGISTER COMPANY, Ltd., Battle Creek, Mich.: Jones Registers. Represented by A. O. Jones.

VERMONT FARM MACHINE COMPANY, Bellows Falls, Vt.: Cream Separators. Represented by John Lacht.

WINCHESTER REPEATING ARMS COMPANY, New Haven, Conn.: Fire Arms. Represented by J. E. French.

YOST GEARLESS MOTOR COMPANY, Springfield, Ohio: Washing Machines. Represented by George L. Miller.

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Rockford & Lunt have opened an Implement, Vehicle and supply store at Arkansas City, Kan.

## Price-Lists, Circulars, Etc.

*Manufacturers in Hardware and related lines are requested to send us copies of catalogues, price-lists, &c., for our Catalogue Department in New York; and at the same time to call attention to any new goods or additions to their lines, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.*

FORSYTH MFG. COMPANY, Buffalo, N. Y.: Catalogue C, illustrating and listing a line of solid brass bathroom accessories and Lenox bathroom outfits.

NATIONAL SCALE COMPANY, Beaver Falls, Pa.: Illustrated circulars, &c., referring to computing Scales and Counting Machines, with booklet giving the names of many users of the company's machines.

LORD & BURNHAM COMPANY, Irvington, N. Y.: Hand book of greenhouse construction, covering all materials necessary to erect and equip a greenhouse, which are classified, grouped and indexed for ready reference.

COBURN TROLLEY TRACK MFG. COMPANY, Holyoke, Mass.: Illustrated catalogue No. 35, referring to overhead tramrail traveling Cranes, Electric Carriers and appliances, Door Hangers, Fire Doors and Shutters, Fire Escapes, rolling store Ladders, &c.

H. B. IVES MFG. COMPANY, New Haven, Conn.: 1908 illustrated catalogue No. 13, with accompanying price book No. 1, referring to an extensive line of Builders' Hardware specialties, including Sash Locks, Crescent Sash Fasteners, Window Stop Adjusters, Mortise Door Bolts, &c. Among the new goods noted are Sash Fasts and Lifts, Transom Catches and automatic gravity Locks made in malleable iron for metal sash.

REPUBLIC STAMPING & ENAMELING COMPANY, Canton, Ohio: Illustrated catalogue attractively bound and printed in two colors, describing and listing Old English Gray Enameled Ware.

MARLIN FIREARMS COMPANY, New Haven, Conn.: Illustrated catalogue of Firearms, Ammunition, parts &c.

W. R. OSTRANDER & Co., 22 Dey street, New York: Large illustrated catalogue, containing about 700 pages, with accompanying trade discount sheet, referring to Speaking Tube Hardware, electrical supplies, Telephone and Telegraph Instruments, &c.

## Requests for Catalogues, Etc.

*The trade is given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.*

**REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate:**

FROM SWARTZ THE STOVE MAN, 833 Race street, Philadelphia, Pa., incorporated with a capital of $5000, and handling Stoves, plumbing and steam, hot air and hot water heating.

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FROM RIDGEWAY & STRAWN, Pittsburgh, Kan., who have bought the Hardware, Tinware, and Sporting Goods business of Miller Bros.

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FROM THE TINKLING HARDWARE COMPANY, Kenbridge, Va., which has been incorporated with a capital of $10,000 to $25,000.

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FROM BURKEY BROS., Alma, Neb., who have purchased the Hardware, Stove, Tinware, and Sporting Goods business of H. T. Moore.

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FROM J. B. FELTUS, who has returned from California to Oelwein, Iowa, and has again engaged in business there with his son, under the title of Feltus Hardware Company, buying out the firm of Campbell & King.

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J. F. Joss has disposed of his Hardware, Stove, Agricultural Implement, Sporting Goods and Furniture business in Fairview, Kan., to W. H. Meyer, who will continue at the old stand.

## Can the Stove Trade Be Rejuvenated?

A DISCUSSION is going on in the columns of *The Metal Worker, Plumber and Steam Fitter* as to plans by which the marketing of Stoves through Hardware and Stove merchants may be increased. During recent years the trade in this line has drifted more and more away from the merchant and into the hands of the catalogue and mail order houses, department stores and furniture dealers. In response to the invitation of our contemporary, Robert L. Morley, manager of the Chicago branch of the Michigan Stove Company, Detroit, presents the following diagnosis of the situation, which will be read with interest by Hardwaremen:

"What is the matter with the Stove business?" would better be considered by changing the form and substance of the question to, What is the matter with the retail Stove merchant? for herein is the essence of the inquiry. The blame for present conditions unfortunately must, to a large extent, be laid upon the shoulders of the merchants. They are indifferent to the Stove branch of their business, claim it does not pay, that it takes up too much of their time and attention to sell the goods, requires too much room that they can use to better advantage, and demands too much investment of capital.

They have, therefore, slighted the business, and the growing interest in it of furniture and department stores has widened the breach, and the climax to the whole subject has been reached by mail order and catalogue houses until the retail merchants generally are utterly demoralized, and in no part of their business is this felt to a larger extent than in the Stove department.

**The Stove Business Repays Intelligent Enterprise.**

That the fundamental objection to the business—that it does not pay—has or should have no foundation in fact, is clearly demonstrated by the prices obtained by the principal competitor of the Stove merchants, the furniture houses, which make prices on their Stoves not dreamed of by the Stove man.

The different business methods in some measure account for this, as the long-time payment plan appeals to those who do not have the ready money, yet there are plenty of Stove buyers that do, and the saving of 10 to 25 per cent. through the Stove man would be just as attractive to them as the easy payment plan to the others, and the Stove merchants would get the business if they cared to, as a very large proportion of them still do.

The other objections are largely the outcome of unsatisfactory profit, but this can be avoided by placing the business on a paying basis of prices and maintaining them. Better few sales with good living profit than many at a loss.

But competition regulates prices and profits! The bugaboo of competition may, when we let our fears control our actions. Let the competitor sell at unprofitable prices if he desires, the sooner he will cease to be a competitor, but "as for me and my house we will serve" the god of profit with its attending benefits. The profits of the business do not come from a campaign of low prices on low quality goods, as active competition on these lines continually lowers the grade and price until there is no bottom to the downward movement. Quality goods only at living profit must be relied on for permanent success.

**The Merchant Must Co-operate.**

The evolution of the Stove business has gone too far to retrace its steps. It is bound to go still farther. What is to stop it, concerted action on the part of manufacturers? They cannot force the retail merchants against their will, nor even secure their full co-operation when sought. All right thinking manufacturers and jobbers would much prefer to distribute their goods through what might be termed the legitimate sources of the business, the retail Stove and Hardware merchants, but none of them can stand idly by and see the Stove business drift away to so large an extent from the Stove dealers without making an effort to secure some of the business.

The company with which I am connected, until comparatively recent years sought the co-operation of the Stove merchants to the exclusion of all furniture houses selling Stoves until it was forced to abandon this position because it could not afford to resign so large a percentage of the business to its competitors without an effort to secure its share.

The conditions are immeasurably worse in this respect to-day than they were 10 or 12 years ago. The manufacturer must have an output for his productions, and must grasp the opportunities presented by the rapidly changing business conditions. The business policy of to-day may not meet the conditions of to-morrow, hence the progressive producer has to march forward with the conditions or be relegated to the rear.

**The Survival of the Fittest.**

My opinion, based on a close experience with the environments of the Stove business, is that the opportunity has passed from the retail Stove man and that he cannot recover it. Certainly nothing short of a revolution in the methods and interests of and by the retail Stove merchants can produce material changes in the marketing of Stoves as a whole.

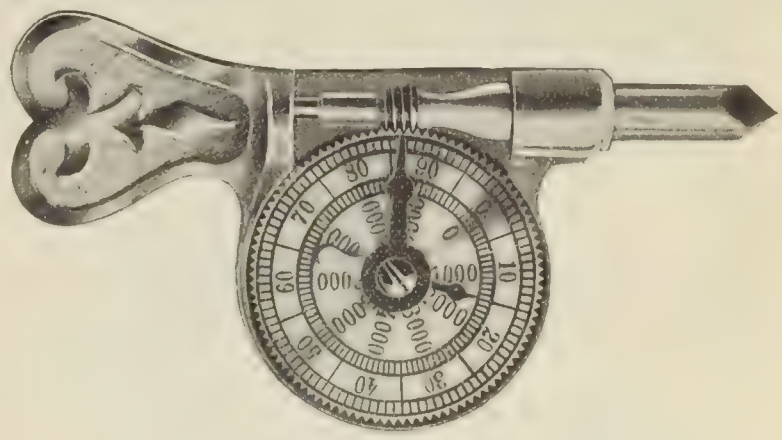
The volume of output through other sources has become so great that no manufacturer can ignore it without material loss in sales and profits.

In its evolution, the Stove business presents no different features from other lines of business. It is a case of the "survival of the fittest," and those merchants who have come through the transforming processes have demonstrated their fitness for a higher sphere of merchandising, have recognized the changing conditions, and, by ability, tact and perseverance, have wrested success from them where others have met disappointment and failure. In the last analysis it is the man himself who counts.

By co-operation of the retail merchants, jobbers and manufacturers much even yet might be done to encourage and sustain those who so far have fought the fight and won, and thus keep conditions as much as possible from going from bad to worse, but the bad is incurable.

## Revolution Counter.

Schuchardt & Schütte, 136 Liberty street, New York, are marketing the Revolution counter here illustrated, nearly full size. The outer graduations record units, the lines of the inner circle signifying 100s for each mark, recording thus in a single revolution of the dial a total of 10,000, and repeat if necessary. The worm on the spindle actuates the notched dial plate. The units hand



*Revolution Counter.*

is stationary, but the inner hand recording hundreds and thousands moves, and may be quickly brought back to 0 when the result is obtained for a fresh start by a finger pressure on the brass thumbpiece extension of the smaller and inner hand. The tool is made of nickel plated brass, except the steel driving spindle and worm. The counter is suitable for such purposes as ascertaining the speed of motors, machine tools, shafting, engines, spinning and textile machinery, printing presses or for finding the actual revolutions in a given period in connection with anything of a revolving character. The counter is 3½ in. long, and is put up singly in a cloth covered sliding pasteboard box.

## Bay State Carriage and Tire Bolt Ratchet Wrench.

The Tudor Mfg. Company, Taunton, Mass., has added to its line the double end carriage and tire bolt ratchet wrench here illustrated. The company states that the

tool is of sound mechanical construction, and made of the best material. The nuts are turned on or off by merely reversing the handle. Three sizes are offered: No. 1 for 3-16 and ¼ tire bolts, No. 2 for 5-16 and ⅜ bolts and No. 3 for 7-16 and ½ bolts. They are 6, 7 and 8 in. long, respectively. Nos. 2 and 3 take hexagon

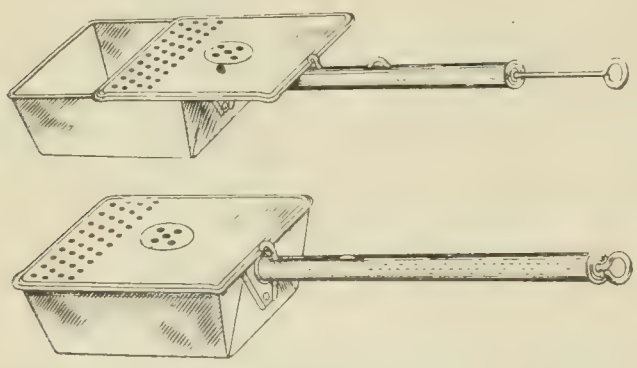



*Bay State Double End Carriage and Tire Bolt Ratchet Wrench.*

as well as square nuts. The wrenches are put up in pasteboard boxes holding one dozen and packed in gross cases.

## The Delphos Improved Sheet Iron Corn Popper.

The accompanying illustrations represent a sheet iron corn popper, open and closed, as made by the Delphos Mfg. Company, Delphos, Ohio. The lid is opened and closed by the rod contained in the handle, having a kink, as shown in the lower illustration, which holds the lid firmly wherever placed, whether entirely covering the



*The Delphos Improved Sheet Iron Corn Popper.*

pan or half open to remove contents. The rod does not become heated and can be used without burning the fingers. When the lid is closed imperfect or unpopped grains may be shaken through the holes in front. On the depression in the center of the lid seasoning may be placed without taking off the lid. The popper is made of polished blued steel, lacquered and neatly packed, 1 doz. in a crate.

## The Magic Cooker.

The American Woodenware Mfg. Company, Toledo, Ohio, is offering the fireless cooker shown herewith. The company emphasizes the fact that the jacket, Fig. 1, is made of quartered white oak, similar in construction to liquor kegs. This is a close fiber wood with grain running crosswise, and will not seep, soak or absorb. The patent steel top is light, flexible, strong and convenient, so that the jacket is sealed air tight by a turn of the eccentric knuckle. The steel bails on the top of cover afford convenient handles. The cooking receptacle, Fig. 2, is arranged to rest on a steel rim, so that the can does not come in contact with the jacket, thus leaving a vacuum chamber between the outer and inner wall. This affords an insulator, and is a nonconductor of heat or cold. A table is given in the company's illustrated booklet showing the time required to boil articles of food on a stove before placing them in the fireless cooker, the time varying from 5 to 30 min. Another table gives the time required for food to remain in the fireless cooker before it is done. After an article has been properly started over a fire the kettle with its boiling contents is transferred to the cooker can, Fig. 2, after placing from ½ to 1 gal. of boiling water in the cooker can. Various articles may be included in the cooker at the same time.




*Fig. 1.—The Magic Cooker.*

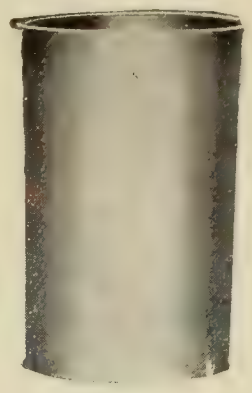


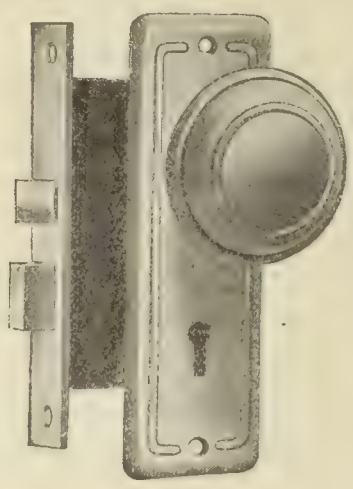
*Fig. 2.—Inner Can to Cooker.*



*Fig. 3.—Cooking Utensils that Fit Inside of Cooker Can.*

When the cooker has been filled the cover is fastened in place by the lever. It is stated that food cannot be overcooked, burned or spoiled by leaving it an indefinite time in the fireless cooker.

## Door Sets of Kent Design.



*Door Set of Kent Design.*

The accompanying illustration is of a neat and attractive design of inside door set placed on the market by the Taylor & Boggis Foundry Company, Cleveland, Ohio. It is made in both wrought steel and wrought bronze metal and furnished in all finishes. The design is supplied, in addition to inside door sets, in mortise latch sets, sliding door sets, Bit key front and vestibule door sets, cylinder front and vestibule door sets, push plates, push buttons and flush sash lifts.

## Universal Self-Locking Stayput Pulley.



*Universal Self-Locking Stayput Pulley.*

The Evan L. Reed Mfg. Company, Sterling, Ill., is manufacturing the Stayput pulley, one of which suspending a bunch of bananas is here illustrated. The company recommends it especially for such purposes as squeezing corn in the shock, in connection with trap doors and windows, for getting harness and blankets out of the reach of rats and other destructive agents, for hanging and taking up slack in clothes lines, for use with display devices, and as a wire stretcher or for suspending articles of any kind. The pulleys are made of pressed steel, japanned, and are supplied with cord ready for use.

F. Nicholas of the Wilton-Nicholas Hardware Company, Harrisonburg, Va., has disposed of his stock in the company to E. C. Wilton. The concern is a stock company chartered under the laws of Virginia, and the management will continue practically without change.

## The Speedy Lever Rotary Washer.

An improved washing machine recently added to the line made by the H. F. Brammer Mfg. Company, Davenport, Iowa, is here illustrated. Simplicity, strength and compactness of gearing are points particularly emphasized in the machine, together with ease of operation. It is described as composed of few parts, all of which are relatively proportioned with respect to weight and strength, and the gearing is securely covered to guard against the possibility of accident to the operator. The movement is provided with an automatic action which causes the dasher or agitator to reverse its action at regular intervals, and is operated by a lever arm, so arranged as to permit the washer to be worked while the operator is seated. An even, steady motion of the machine is secured by the momentum of the flywheel, which is geared to rotate at a high speed to overcome the inertia due to the load and reverse motions, with the expenditure of comparatively little power. Both sides and bottoms of the tub are corrugated like a washboard, thus increasing the extent of rubbing surface. The body of the tub is free from bolts or bolt holes, and the flywheel revolves on a ball bearing. The machine is firmly supported on legs formed of extended staves, which are securely reinforced by cross bracing near the bottom ends. A tight fitting lid of double thickness serves to retain




*The Speedy Lever Rotary Washer.*

the steam and heat and prevents undue cooling of the contents of the tub. Opposite the lever is a shelf for the attachment of the wringer. The washer is constructed of Louisiana red cypress and is finished in the natural color of the wood, with gold bronze hoops and gearing and flywheel painted green, giving it an attractive appearance. A one-year guarantee against defective material and poor workmanship is furnished by the company.

## The Diagraph Stencil Cutter.

The stencil cutting machine here illustrated is made by the American Diagraph Company, St. Louis, Mo., and is designed for use by both shippers and carriers to insure plain and correct marking. The machine here shown is designed to cut cardboard stencils, which it is claimed can be cut at a cost of about 1-10 cent each. The letter cutting dies are carried on a revolving wheel, which rotates either to the right or left with a touch. An indicator on a stationary dial points to each character as it comes under the depressing lever, rendering its accurate operation an easy matter. Each depression of the lever cuts one character and moves the cardboard one space into position for the next cut. Spacing is accomplished by a half depression of the lever, which moves the stencil board one space without cutting. The machine is simple not only in construction, but can be readily and rapidly worked with no special skill or practice. All parts are interchangeable, so that should a die wear out it could be supplied separate from the plunger. The device is made in two sizes, which are designated as the Regular and the Baby; the former cuts letters ⅞ in. high, in six lines of any length, and the latter cuts letters ½ in. high up to and including six lines. The Regular is described as suitable for all lines handling small articles, boxes or packages, while the Baby is especially

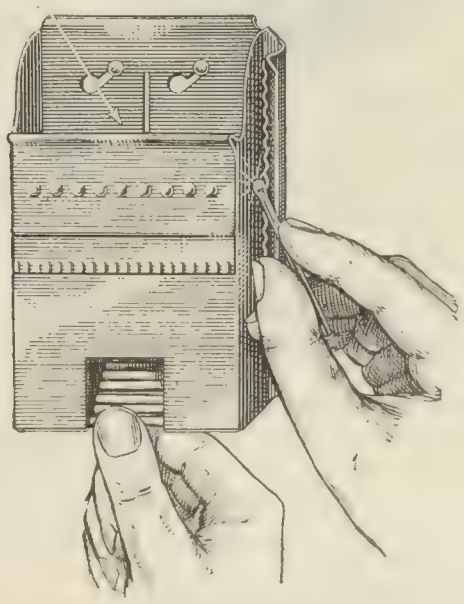



*The Diagraph Stencil Cutter.*

adapted for marking on surfaces of small area. The only difference in the two machines is the size of the letter and the number of lines cut.

## The Lusk Match Safe.

The Dayton Company, 438 Plymouth avenue, Buffalo, N. Y., is putting on the market the match safe herewith illustrated. It is made of sheet metal and is substantially and durably constructed. The match safe is ornamental and offered in five different finishes—buffed, brushed and oxidized copper, brushed brass and nickel plated. The corrugated strip on which the matches are struck is protected by a special spark guard against fire, which might be caused by flying sparks or match heads. The safe holds over 200 matches at one time. The interior of the safe is so arranged that the matches are taken from the bottom one at a time, and are easily removed. A sliding plate, which completely covers the matches, follows them down by gravitation as they are removed from the bottom, leaving a space for the burned matches, which are put in the top of the safe, and are



*The Lusk Match Safe.*

kept separate from the unused matches by the plate. Thus the 200 burned matches are accommodated in the space that the good matches first occupied. After the good matches have all been used and the space filled with the burned ones, the safe may be easily removed from the wall for emptying and refilling. The scratcher avoids the necessity of scratching matches on the woodwork or wall paper. It is pointed out that in hotels a safe will pay for itself every month in the matches usually taken by guests, as they are not likely to go to the trouble of pulling out a quantity of them one by one.

## All Steel Sash Pulleys.

The two sash pulleys here illustrated are examples of the Triple all steel type made by the Bridgeport Sash Pulley Company, Grand Rapids, Mich., at its Bridgeport, Conn., factory. Being stamped with dies from sheet steel, uniformity of size is assured, and in the interest of strength and durability the wheels are mounted on ¼-in. steel axles with heavy steel bushings. The two pulleys here shown in Figs. 1 and 2, designated respectively as No. 111 and No. 11, differ only in the means provided for fastening into the mortise. Fig. 2 represents the latest pattern having saw tooth projections on each end, which when driven into the mortise are designed to hold it securely. No screws or nails are used in either case. No. 111 is recommended for use in soft pine frames, and No. 11 is described as especially adapted for service in harder woods, such as yellow pine. The pulleys are furnished without special finish unless bronze, brass or copper oxidized plated finishes are desired.



*Fig. 1.—All Steel Sash Pulley No. 111.*

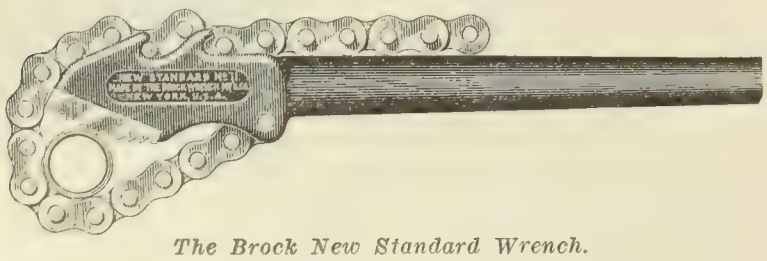


*Fig. 2.—All Steel Sash Pulley No. 11.*

They can also be supplied with Brassoline lacquer on face and wheel. The pulleys are packed and shipped in barrels of 100 dozen, each weighing about 100 lb., all shipments being made from the factory at Bridgeport, Conn.

## The Brock New Standard Wrench.

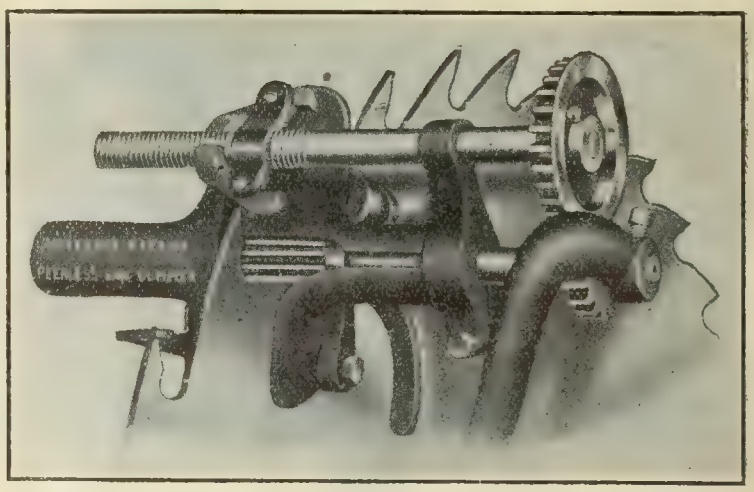
The Brock Wrench Mfg. Company, 18 Dey street, New York, is offering the wrench herewith illustrated. It has an interchangeable jaw and effects quick adjustment of chain. It is made in sizes to take ½ to 16 in. pipe. The adjustments are made for intermediate sizes of pipe by having each pin on each link catching in the claw. The solid jaw permits the wrench being used on any pipe fitting, flange, valve, nut or bolt. The wrench is of new design, and includes a heavier head and extra strong round handle. Each wrench is tested before leaving the factory and the goods are fully guaranteed.



*The Brock New Standard Wrench.*

## The New Mixter Patent Peerless Saw Gummer.

The saw gummer shown herewith is put on the market by the J. W. Mixter Saw Tool Company, Plymouth, Mass. It is referred to as a marked advance upon the company's Champion burr gummer, and is said to retain all the advantages of burr gummers while obviating the disadvantages. Instead of feeding vertically into the gullet of the saw tooth, the feed is horizontal from the side. The gumming is done by a taper reamer cutter 4 in. long. It is the taper of this reamer, 9-32 in., which does the gumming. The reamer cutter is detachable from the cutter arbor, and therefore inexpensive, being made in sizes from ⅜ in. to 1 in. There are two bearing wheels or trolleys, one on the outer end of the reamer and one on the cutter arbor next the inner end of the reamer, which insures the entire absence of spring in the cutting part while the machine is at work. These bearing wheels are kept from revolving, and so wearing the main casting by means of lug pins which travel in slots provided for them. The arbor and cutter end turn in the bearing wheels. The chips of steel made by the gumming fall down through the slots and so do not interfere with the wearing of the bearings. The machine is fastened to the saw by means of a cam lever and toggle, adjustable for the different thicknesses of saws, which is referred to as being far more easily and quickly done than with hand screws or thumb screws. There is a gauge, adjustable in two directions, for securing the proper position on the saw tooth and insuring that all the teeth will be gummed alike. The placing in position to gum at the proper angle is said to be much more easily accomplished than with the ordinary burr gummer. The drive of the feed is automatic and obtained from a threaded arbor, distinct from the cutter arbor, which works in a clutch nut. When the tooth is gummed the clutch nut disengages itself, and, being held open by the thumb and finger, the whole feed part and cutter arbor are quickly drawn back for another operation. There is a flange on the outer side of the gear on the feed arbor which forces the reamer cutter into the gullet of the tooth. The crank is attachable in two places—to the small arbor gear by a clutch, thus saving key pins, and to the arbor itself by a set screw, so that it can be readily used at full length or shortened for quick work on thin saws. The bearing for the cutter arbor is slotted and has a bolt for tightening which admits of taking up the play as it wears. There is nothing in the gummer, it is explained, that will wear out by constant use, except the reamer cutter, and that, it is pointed out, is much more durable than an old style burr, as the reamer cuts with a shearing cut and the teeth cannot chip off by turning backward or from taking hold unevenly. Also the whole of the reamer cutter is used automatically in each operation and no care has to be taken to oscillate from side to side, as with the old style burrs. The chief distinctive features of the gummer, as enumerated by the manufacturer, are the detachable reamer cutter, the cam lever and toggle device for quick attachment to the saw, and the durability of all parts and resulting cheapness of maintenance.



*The New Mixter Patent Peerless Saw Gummer.*

## Solid Steel Wrench.

The Peck, Stow & Wilcox Company, Southington, Conn., and 27 Murray street, New York, has just put on the market the solid steel Screw Wrench, here shown. Fig. 1 illustrating it as used, and Fig. 2 showing the three parts disassembled. The noteworthy peculiarity in this construction is the method of drop forging from one piece of steel the entire head, bar and handle, which is then machined accurately, insuring a smooth, easy movement of the parts when in use. The sliding jaw is assembled on the bar, under the company's patents, by

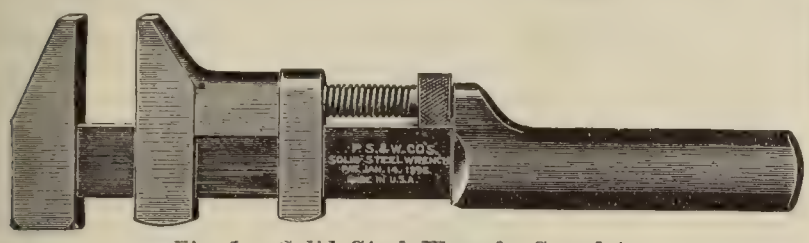


*Fig. 1.—Solid Steel Wrench, Complete.*

opening both jaw loops in center of back, inclosing the bar, and securely riveting the closed openings, so that the operation can scarcely be seen, this in no way impairing the strength of that part, as the strain is on the other side. This is the same method as used in connection with the company's solid handle wrench, long familiar to the trade, the essential difference in the two wrenches being

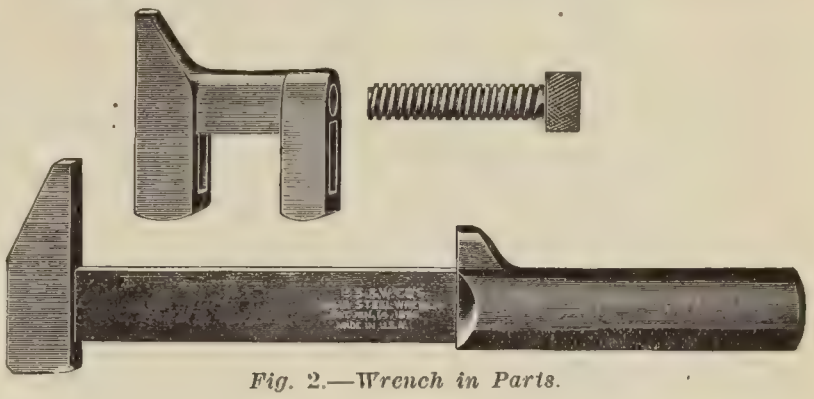


*Fig. 2.—Wrench in Parts.*

that the older wrench has two wood scales riveted on to the solid handle, while the new wrench is largely a single bar of steel, capable of withstanding the hardest usage. The fact that there are but three parts in all makes the wrench extremely simple as well as strong. It is made in the seven regular sizes, 6 in. to 21 in., inclusive.

## PAINTS, OILS AND COLORS

### Animal, Fish and Vegetable Oils—

| | ℔ gal. |
|---|---|
| Linseed, State and Western, raw | 42 @45 |
| City, Boiled | 45 @46 |
| City, Raw | 44 @45 |
| Raw, Calcutta, in bbls | 70 @71 |
| Lard, Prime, Winter | 68 @69 |
| Extra No. 1 | 54 @56 |
| No. 1 | 47 @52 |
| Cotton-seed Crude, f.o.b. mill | @.. |
| Summer Yellow, prime | 39 @39½ |
| Summer White | 39½@40 |
| Yellow Winter | 44½@44¾ |
| Tallow, Acidless | 56 @58 |
| Menhaden, Brown, Strained | 35 @36 |
| Southern | 25 @.. |
| Light Strained | 35 @36 |
| Bleached Winter | 37 @39 |
| Ex. Bleached Winter | 39 @41 |
| Cocoanut, Ceylon ℔ lb | 6⅛@ 6⅜ |
| Cochin ℔ lb | 6⅞@ 7⅛ |
| Cod, Domestic, Prime | 41 @43 |
| Newfoundland | 43 @45 |
| Red, Elaine | 38 @40 |
| Saponified ℔ lb | 5¾@ 5⅞ |
| Olive, Yellow | 78 @80 |
| Neatsfoot, Prime | 55 @58 |
| Palm, Lagos ℔ lb | 5¾@ 6 |

### Mineral Oils—

| | ℔ gal. |
|---|---|
| Black, 29 gravity, 25@30 cold test | 13 @13½ |
| 29 gravity, 15 cold test | 13½@14 |
| Summer | 12½@13 |
| Cylinder, light filtered | 20½@21 |
| Dark, filtered | 18 @19 |
| Paraffine, 903-907 sp. gravity | 11½@15 |
| 903 sp. gravity | 13½@14 |
| 883 sp. gravity | 11 @11½ |
| Red | 13½@14 |

### Miscellaneous—

| | |
|---|---|
| Barytes: | |
| White, Foreign ℔ ton | $18.50@20 50 |
| Amer., floated ℔ ton | 18.00@20 00 |
| Off color ℔ ton | 13.00@16.50 |
| Chalk, in bulk ℔ ton | 3.00@ 3 40 |
| China Clay, Imported ℔ ton | 11.50@18.00 |

| | ℔ gal. |
|---|---|
| Cobalt, Oxide ℔ 100 lb | 1.45@ 2.60 |
| Whiting, Commercial ℔ 100 lb | 42 @52 |
| Gilders ℔ 100 lb | .55@ .60 |
| Ex. Gilders ℔ 100 lb | .60@ .65 |

### Putty, Commercial—℔ 100 lb

| | |
|---|---|
| In bladders | $1.70 @1.80 |
| In bbls. or tubs | 1.20 @1.45 |
| In 1 lb to 5 lb cans | 2.65 @2.95 |
| In 12½ to 50 lb cans | 1.50 @1.90 |

### Spirits Turpentine— ℔ gal.

| | |
|---|---|
| In Oil bbls | 38½@39 |
| In machine bbls | 39 @39½ |

### Glue—

| | ℔ lb |
|---|---|
| Cabinet | 12 @15 |
| Common Bone | 7½@ 9 |
| Extra White | 18 @24 |
| Fish, liquid, 50 gal. bbls., per gallon | 60 @1.20 |
| Foot Stock, White | 12 @14 |
| Foot Stock, Brown | 9 @11 |
| German Common Hide | 10 @12 |
| German Hide | 12 @18 |
| French | 10 @40 |
| Irish | 13 @16 |
| Low Grade | 10 @12 |
| Medium White | 14 @17 |

### Gum Shellac—

| | ℔ lb |
|---|---|
| Bleached, Commercial | 24 @28 |
| Bone Dry | 30 @35 |
| Button | 30 @40 |
| Diamond I | 46 @47 |
| Fine, Orange | 34 @35 |
| A. C. Garnet | 27 @28 |
| G. A. L. | 20 @21 |
| Kala Button | 18 @19 |
| D. C. | 47 @48 |
| Octagon B | 30 @39 |
| T. N. | 27 @28 |
| V. S. O. | 46 @47 |

### Colors in Oil—

| | ℔ lb |
|---|---|
| Black, Lampblack | 12 @14 |
| Blue, Chinese | 36 @46 |
| Blue, Prussian | 32 @36 |
| Blue, Ultramarine | 13 @16 |
| Brown, Vandyke | 11 @14 |
| Green, Chrome | 12 @16 |
| Green, Paris | @24 |
| Sienna, Raw | 12 @15 |
| Sienna, Burnt | 12 @15 |
| Umber, Raw | 11 @14 |
| Umber, Burnt | 11 @14 |

### White and Red, Lead &c.—

| | ℔ lb |
|---|---|
| Lead, English white, in Oil | 10⅛@10⅜ |
| Lead, American White: | |
| Dry and in Oil, 100, 250 and 500 lb kegs | 7 |
| Dry and in Oil, 25 and 50 lb kegs | 7¼ |
| Dry and in Oil, 12½ lb kegs | 7½ |
| In Oil, 25 lb tin pails | 7½ |
| In Oil, 12½ lb tin pails | 8 |
| In Oil, 1, 2, 3 and 5 lb tin cans, ass't | 9 |
| Red Lead and Litharge: | |
| In 100 lb kegs | 7 |
| In 25 and 50 lb kegs | 7¼ |
| In 12½ lb kegs | 7½ |
| In lots of less than 500 lbs, ½¢ ℔ lb advance over above prices of White and Red Lead and Litharge. | |

Lead, American. Terms: On lots of 500 lbs and over, 60 days, or 2% for cash if paid in 15 days from date of invoice.

### Zinc, Dry—

| | ℔ lb |
|---|---|
| American, dry | 5⅛@ 5⅝ |
| Red Seal (French process) | 6¾@ 7 |
| Green Seal | 7¼@ 7½ |
| German Red Seal (French process) | 6⅝@ 7 |
| Green Seal | 7¼@ 7⅝ |
| White Seal | 7⅞@ 8¼ |
| French, Red Seal | 8¼@ 8¾ |
| Green Seal | 10¼@10½ |

### Dry Colors—

| | ℔ lb |
|---|---|
| Black, Carbon | 6½@10 |
| Black Drop, American | 3½@ 8 |
| Black Drop, English | 5 @15 |
| Black, Ivory | 16 @20 |
| Lamp, commercial | 4 @ 6 |
| Blue, Celestial | 4 @ 6 |
| Blue, Chinese | 31 @33 |
| Blue, Prussian | 29 @31 |
| Blue, Ultramarine | 3½@15 |
| Brown, Spanish | ½@ 1 |
| Carmine, No. 40 | $3.10@3.25 |
| Green, Chrome, ordinary | 3½@ 5 |
| Green, Chrome, pure | 17 @25 |
| Ocher, American ℔ ton | $8.50@16.00 |
| American Golden | 2½@ 3¼ |
| French | 1¼@ 2 |
| Foreign Golden | 3 @ 4 |
| Orange Mineral, English | 10 @12 |
| French | 12¾@13 |
| German | 12 @13 |
| American | 9 @10 |
| Red, Indian, English | 4½@ 6 |
| American | 3 @ 3¼ |
| Red, Turkey, English | 4 @10 |
| Red, Tuscan, English | 7 @10 |
| Red, Venetian, Amer. ℔ 100 lb | $0.50@1.25 |
| English ℔ 100 lb | $1.15@1.60 |
| Sienna, Italian, Burnt and Powdered | 3 @ 9 |
| Italian, Raw, Powdered | 3 @ 7 |
| American, Raw | 1½@ 2 |
| American Burnt and Pow'd | 1½@ 2 |
| Talc, French ℔ ton | $18.00@25.00 |
| American ℔ ton | 15.00@25.00 |
| Terra Alba, French ℔ 100 lb | .90@ 1.00 |
| English ℔ 100 lb | .80@ 1.00 |
| American ℔ 100 lb, No. 1 | .75@ .80 |
| American ℔ 100 lb, No. 2 | .60@ .65 |
| Umber, T'key, Bnt, & Pow. | 2⅜@ 3 |
| Turkey, Raw and Powdered | 2¾@ 3 |
| Burnt, American | 1½@ 2 |
| Raw, American | 1½@ 2 |
| Yellow, Chrome, Pure | 13¾@15 |
| Vermilion, American Lead | 7 @23 |
| Quicksilver, bulk | 65 @.. |
| Quicksilver, bags | @66 |
| English, Imported | 65 @70 |
| Chinese | $0.90@1.00 |


# THE IRON AGE

*The oldest paper in the world devoted to the interests of the Hardware, Iron, Machinery and Metal Trades, and a standard authority on all matters relating to those branches of industry.*

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# Current Hardware Prices.

**General Goods.**—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

**Special Goods.**—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

**Range of Prices.**—A range of prices is indicated by means of the symbol @. Thus 33⅓ @ 33⅓ & 10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

**Names of Manufacturers.**—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1907, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

**Standard Lists.**—"The Iron Age Standard Hardware Lists" contains the list prices of many leading goods.

**Additions and Corrections.**—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

### Adjusters, Blind—

Columbian and Domestic.....33⅓%
North's .....10%
Zimmerman's—See Fasteners, Blind.

### Window Stop—

Ives' Patent.....35%
Taplin's Perfection.....35%

### Ammunition—See *Caps, Cartridges, Shells, &c.*

### Anti—Rattlers—

Fernald Mfg. Co. Burton Anti-Rattlers, ℔ doz. pairs, Nos. 1, $0.75; 2, $0.60; 4, $1.00; 5, $0.50.
Fernald Quick Shifter, ℔ doz. pairs .....$2.00@$3.00

### Anvils—American—

Eagle Anvils.....℔ lb @8½¢
Hay-Budden, Wrought.....9½@9¾¢
Trenton .....℔ lb 9½@9¾¢

### Imported—

Swedish Solid Steel Sisco, Superior, ℔ lb.....10@10½¢
Peter Wright & Sons, ℔ lb, 84 to 349 lb, 11¢; 350 to 600 lb, 11½¢.

### Anvil, Vice and Drill—

Millers Falls Co., $18.00.....15&10%

### Apple Parers—See *Parers, Apple, &c.*

### Aprons, Blacksmiths'—

Livingston Nail Co.....10%

### Augers and Bits—

*Com. Double Spur....75&10@80%*
*Jennings' Patn., Bright.65&10@70%*
*Black Lip or Blued...65@65&5%*
*Boring Mach. Augers.....70%*
*Car Bits, 12-in. twist.....40&10%*
Ford's Auger and Car Bits.....40&5%
Ft. Washington Auger Co., Conard's .....35%
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip. R. Jennings' list, 25&7½%
No. 30, R. Jennings' list.....50%
Russell Jennings'.....25&10&2½%
L'Hommedieu Car Bits.....15%
Mayhew's Countersink Bits.....45%
Pugh's Black.....20%
Pugh's Jennings' Pattern.....35%
Snell's Auger Bits.....60%
Snell's Bell Hangers' Bits.....60%
Snell's Car Bits, 12-in. twist.....60%
Snell's King Auger Bits.....50%
Wright's Jennings' Bits.....50%

### Bit Stock Drills—

See *Drills, Twist.*

### Expansive Bits—

Clark's Pattern, No. 1, ℔ doz., $26; No. 2, $18.....60&10%
Ford's, Clark's Pattern.....66⅔&5
C. E. Jennings & Co., Steer's Pat..25%
Lavigne Pat., small size, $18.00; large size, $26.00.....60&10%
Swan's .....60%

### Gimlet Bits—

*Per gro.*
*Common Dbl. Cut.....$3.00@3.25*
*German Pattern, Nos. 1 to 10, $4.75; 11 to 13, $5.75*

### Hollow Augers—

*Bonney Pat., per doz..$5.50@6.00*
Ames .....25&10
Universal .....20

### Ship Augers and Bits—

*Ship Augers.....40&10@—%*
Ford's .....33⅓&5%
C. E. Jennings & Co.:
L'Hommedieu's .....6%
Watrous' .....33⅓&7½%
Snell's .....48%

### Awl Hafts—See *Handles, Mechanics' Tool.*

### Awls—

*Brad Awls:*
*Handled .....gro. $2.75@3.00*
*Unhdld, Shldered...gro.63@66¢*
*Unhandled, Patent..gro.66@70¢*
*Peg Awls:*
*Unhandled, Patent..gro. 31@34¢*
*Unhdld, Shldered..gro. 65@70¢*
*Scratch Awls:*
*Handled, Com...gro. $3.50@4.00*
*Handled, Socket.gro.$11.50@12.00*

### Awl and Tool Sets—See *Sets, Awl and Tool.*

### Axes—

*Single Bit, base weights: Per doz.*
*First Quality.....$4.75@5.00*
*Second Quality.....$4.25@4.50*
*Double Bit, base weights:*
*First Quality.....$7.00@7.50*
*Second Quality.....$6.50@6.75*

### Axle Grease—

See *Grease, Axle.*

### Axles—Iron or Steel.

*Concord, Loose Collar...4¼@4½¢*
*Concord, Solid Collar....4½@5 ¢*
*No. 1 Common, Loose...3½@4 ¢*
*No. 1½ Com., New Style.4¼@4¾¢*
*No. 2 Solid Collar.....4¼@4¾¢*
*Half Patent:*
*Nos. 7, 8, 11 and 12.....70%*
*Nos. 13 to 14.....70%*
*Nos. 15 to 18...70&10@70&10&5%*
*Nos. 19 to 22...70&10@70&10&5%*

### Boxes, Axles—

*Common and Concord, not turned .....lb., 5@6¢*
*Common and Concord, turned, lb., 6@7¢*
*Half Patent.....lb., 9½@10¢*

### Bait—Fishing—

Hendryx:
A Bait.....20%
B Bait.....25%
Competitor Bait.....20&5%

### Balances—Sash—

Caldwell new list.....50&10%
Pullman .....50&10%

### Spring—

*Light Spring Balances.60@60&5%*
Chatillon's:
Light Spg. Balances.....50@50&10%
Straight Balances.....40@40&10%
Circular Balances.....50&10%
Large Dial.....30%

### Barb Wire—See *Wire, Barb.*

### Bars—Crow—

*Steel Crowbars, 10 to 40 lb.... per lb., 2¼@2½¢*

### Towel—

No. 10 Ideal, Nickel Plate..℔ gro. $8.50

### Beam, Scale—

*Scale Beams.....40%*
Chattillon's No. 1.....30%
Chatillon's No. 2.....40%

### Beaters, Carpet—

Holt-Lyon Co.:
No. 12 Wire Coppered ℔ doz. $0.80; Tinned .....$0.85
No. 11 Wire Coppered ℔ doz. $1.15; Tinned .....$1.20
No. 10 Wire Tinned.....℔ doz. $1.50

### Beaters Egg—

Dover Stamping & Mfg. Co.:
Genuine Dover, per gro., No. 1, Tumbler Size, $7.50; No. 2, Family Size, $7.50; No. 3, Extra Family Size, $24.00; No. 4, Hotel Size, $30.00.
Holt-Lyon Co.:
Holt, per doz., No. 5, Jap'd, $0.80; No. A, Jap'd, $1.15; No. B, Jap'd, $1.85; No. 6, Jap'd, $1.65.
Lyon, Jap'd, per doz., No. 2, $1.35.
Taplin Mfg. Co.:
Improved Dover, per gro., No. 60, $6.00; No. 75, $6.50; No. 100, $7.00; No. 102, Tin'd, $8.50; No. 150, Hotel, $15.00; No. 152, Hotel Tin'd, $17.00; No. 200, Tumbler, $8.50; No. 202, Tumbler Tin'd, $9.50; No. 300, Mammoth, per doz., $25.00.

### Bellows—

*Blacksmith, Standard List:*
*Split Leather.....60&10@65%*
*Grain Leather.....50@50&10%*

Net Prices.

Hand—

| *Inch..* | *6* | *7* | *8* | *9* | *10* |
|---|---|---|---|---|---|
| *Doz..* | *$5.00* | *5.50* | *6.00* | *6.50* | *7.50* |

Molders—

| *Inch..* | *10* | *12* | *14* | *16* |
|---|---|---|---|---|
| *Doz..* | *$7.50* | *9.00* | *12.00* | *15.00* |

### Bells—Cow—

*Wrought Cow Bells.....75%*
Jersey .....75&10%
Texas Star.....50%

### Door—

Home, R. & E. Mfg. Co.'s.....55&10%

### Hand—

*Polished, Brass.....60@60&10%*
*White Metal.....60@60&10%*
*Nickel Plated.....50&10%*
*Swiss .....50&10%*
Cone's Globe Hand Bells.....33⅓@35%

### Miscellaneous—

*Farm Bells.....lb., 2¼@2½¢*
*Church and School....60@60&10%*

### Belting—Leather—

*Standard .....70&10@70&10&5%*
*Light .....75&10%*
*Cut Leather Lacing..60@60&10%*
*Leather Lacing Sides, per sq. ft. 20¢*

### Rubber—

*Competition (Low Grade), 70&10@75%*
*Standard .....60&10@70%*
*Best Grades.....40@50%*

### Bench Stops—

See *Stops, Bench*

### Benders and Upsetters, Tire—

Green River Tire Benders and Upsetters .....20%

### Bicycle Goods—

John S. Leng's Son & Co.'s 1908 list:
Chain, Parts, Spokes.....50%
Tubes .....60%

### Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

### Blocks Tackle—

*Common Wooden.....75@75&5%*
B. & L. B. Co.:
Boston Wood Snatch, 50%; Eclipse Steel, 75%; Hollow Steel, 50&10%; Star Wire Rope, 50%; Tarbox Metal Snatch, 50%; Tarbox New Style Steel, 50&10%; Wire Rope Snatch, 50%.
Lane's Patent Automatic Lock and Junior .....30%
See also Machines, Hoisting.

### Boards, Stove—

*Paper and Wood Lined.....55%*
*Embossed .....55%*

### Boards, Wash—

See *Washboards.*

### Bobs, Plumb—

Keuffel & Esser Co.....33⅓%

### Bolts Carriage, Machine, &c.—

*Common Carriage (cut thread):*
*⅜ x 6 and smaller..75&5@—%*
*Larger and longer.....70@—%*
*Phila. Eagle, $3.00 list...80@—%*
*Bolt Ends.....70@—%*
*Machine (Cut Thread):*
*⅜ x 4 and smaller..75&10@—%*
*Larger and longer.....70@—%*

### Door and Shutter—

*Cast Iron Barrel, Japanned, Round Brass Knobs:*

| *Inch ...* | *3* | *4* | *5* | *6* | *8* |
|---|---|---|---|---|---|
| *Per doz..* | *$0.30* | *.35* | *.45* | *.60* | *.80* |

*Cast Iron Spring Foot, Jap'd:*

| *Inch .....* | *6* | *8* | *10* |
|---|---|---|---|
| *Per doz.....* | *$1.20* | *1.50* | *2.25* |

*Cast Iron Chain, Flat, Japanned:*

| *Inch .....* | *6* | *8* | *10* |
|---|---|---|---|
| *Per doz.....* | *$1.00* | *1.40* | *1.65* |

*Cast Iron Flat Shutter, Jap'd, Brass Knobs:*

| *Inch .....* | *6* | *8* | *10* |
|---|---|---|---|
| *Per doz.....* | *$0.75* | *.95* | *1.25* |

*Wrought Barrel Japanned, 80&10@80&10&5%*
*Barrel Bronzed.....60&10%*
*Spring .....70&10@70&10&10%*
*Shutter .....50&5@50&10&5%*
*Square Neck.....75@75&10%*
*Square .....70&10&10@80%*
Ives' Patent Door.....55%
Ives' Wrought Metal.....45%

### Expansion—

F. H. Evans' Crescent.....40@60%
Richards Mfg. Co.....55&10%
Steward & Romain Mfg. Co.:
Style No. 13, Double.....60%
Style No. 1, Single.....60%
Style No. 100, Dbl. Jaw, Single..55%
Lag Screw.....66⅔%

### Plow and Stove—

*Plow .....65&5@70%*
*Stove .....85@85&5%*

### Tire—

*Common Iron.....80@80&5%*
*Norway Iron.....80@80&5%*
American Screw Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84...82½%
Bay State, list Dec. 28, '99.....80%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84...82½%
Eclipse, list Dec. 28, '99.....80%
Russell, Burdsall & Ward Bolt & Nut Co.:
Empire, list Dec. 28, '99.....80%
Norway Phila., list Oct. '84.....80%
Eagle .....82½%
Shelton Co.:
Tiger Brand, list Dec. 28, '99....80%
Phila., Eagle, list Oct. 16, 1884..82½%
Upson Nut Co.:
Tire Bolts.....72½%

### Borers, Bung—

*Borers Bung, Ring, with Handle:*

| *Inch.....* | *1¼* | *1½* | *1¾* | *2* |
|---|---|---|---|---|
| *Per doz...* | *$4.80* | *5.60* | *6.40* | *8.00* |
| *Inch.....* | | *2¼* | | *2½* |
| *Per doz.....* | | *$8.65* | | *11.50* |

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.75; No. 3, $2.50 each.....25%

### Boxes, Mitre—

C. E. Jennings & Co.....25%
Langdon, New Langdon and Langdon Improved, 20&10%; Langdon Acme .....15&10%
Perfection .....40%
Seavey .....45%

### Braces—

*Comman Ball, American....$1.50*
Barber's .....50&10&10@60&10%
Fray's Genuine Spofford's.....60%
Fray's No. 61, 166, 206, 614.....50%
C. E. Jennings & Co.....50&5%
Mayhew's Ratchet.....60%
Mayhew's Quick Action Hay Pat...50%
Millers Falls Drill Braces.....25&10%
P., S. & W. Co., Peck's Pat....60&10%

### Brackets—

*Wrought Steel.75&10@75&10&10%*
Bradley Metal Clasp...80&10@80&10&5%
Griffin's Pressed Steel.....75@75&10%
Griffin's Folding Brackets.....70&10%
Taplin Victor Handy Egg Beater Bracket .....℔ doz. $1.50

### Bright Wire Goods—

See *Wire and Wire Goods.*

### Broilers—

Kilbourne Mfg. Co.....75&20%
Wire Goods Co.....75%

### Buckets, Galvanized—

*M'fr's list, price per gross.*

| *Quart..* | *10* | *12* | *14* |
|---|---|---|---|
| *Water, Reg...* | *26.85* | *29.50* | *33.50* |
| *Water, Hvy...* | *45.35* | *48.00* | *52.00* |
| *Fire, Rd. Btm.* | *32.00* | *34.65* | *38.65* |
| *Well .....* | *37.35* | *41.35* | *45.35* |

10&7½&5&5%

### Bull Rings—See *Rings, Bull.*

### Butts—Brass—

*Wrought, High List, Oct. 26,'06.55%*
Cast Brass, Tiebout's.....40%

### Cast Iron—

*Fast Joint, Broad....40&10@50%*
*Fast Joint, Narrow...40&10@50%*
*Loose Joint.....70&10@75%*
*Loose Pin.....70&10@75%*
*Mayer's Hinges.....70@70&5*
*Parliament Butts.....70@70&5*

### Wrought Steel—

*Bright.*
*Light Narrow, Light Reversible .....70&5%*
*Reversible and Broad..70&5%*
*Loose Joint, Narrow, Light Inside Blind, &c.....70%*
*Back Flaps, Table Chest.65%*
*Japanned.*
*Light Narrow, Loose Pin, 40&5%*
*Light Narrow, Ball Tip..60%*
*Broad .....40&5%*
*Steeple Tipped.....70%*
*Ball Tipped.....70%*

Extra, 10@—

## Cages, Bird—

Hendryx Brass: Series 3000, 5000, 1100, net list; 1200, 15%; 200, 300, 900 ..... 30%
Hendryx Bronze: Series 700, 800....30%
Hendryx Enameled.....35%

## Calipers—See *Compasses.*

## Calks, Toe and Heel—

*Blunt, 1 prong, per lb.....½@4½¢*
*Sharp, 1 prong, per lb. ..4½@5¢*
Burke's, 1 pg. Blunt Toe, 3¾¢; 2 pg. Blunt Toe, 4¼¢; 1 pg. Short Toe, 4¼¢; 2 pg. Sharp, 4¾¢; Blunt Heel, 4¾¢; Sharp Heel.....4¾¢
Lautter Blunt, 4@4¼¢; Sharp, 4½@4¾¢
Perkins', Blunt, ₩ lb, 3.65¢; Sharp, 4.15¢

## Can Openers—

*See Openers, Can.*

## Caps, Percussion—

*Eley's E. B.....52@55¢*
*G. D.....per M 34@35¢*
*F. L.....per M 40@42¢*
*G. E.....per M 48@50¢*
*Musket .....per M 62@63¢*

### Primers—

*Berdan Primers, $2 per M..20&5%*
*Primer Shells and Bullets..15&10%*
*All other primers per M..$1.52@1.60*

## Carpet Stretchers—

See *Stretchers, Carpet.*

## Cartridges—

*Blank Cartridges:*
*32 C. F., $5.50.....10&5%*
*38 C. F., $7.00.....10&5%*
*22 cal. Rim, $1.50.....10&5%*
*32 cal. Rim, $2.75.....10&5%*
*B. B. Caps, Con. Ball, Swgd..$1.90*
*B. B. Caps, Round Ball.....$1.40*
*Central Fire.....25%*
*Target and Sporting Rifle..15&5%*
*Primed Shells and Bullets..15&10%*
*Rim Fire, Sporting.....50%*
*Rim Fire, Military.....15&5%*

## Casters—

*Bed .....65&10@70%*
*Plate .....60&5@60&10%*
*Philadelphia .....70&1.@75%*
Acme, Ball Bearing.....35%
Gem (Roller Bearing)....70&10&10&5
Steel Gem.....50%
Standard Ball Bearing.....45%
Yale (Double Wheel) low list...40&10%

## Cattle Leaders—

See *Leaders, Cattle.*

## Chain, Proof Coil—

*American Coil, Straight Link:*

| 3/16 | ¼ | 5-16 | ⅜ | 7-16 | ½ | ⅝ |
|---|---|---|---|---|---|---|
| $8.15 | 5.55 | 4.60 | 3.95 | 3.75 | 3.65 | 3.55 |

¾-⅞-1 1⅛ to 1¼ inch.
3.45 3.55

*In cask lots, deduct 25¢.*
*German Coil.....60@60&5%*
*German Pattern Coil:*
*6-0 to 1.....70&5@70&10%*
*2 and 3..60&10&10@60&10&10&5%*
*4, 5 and 6.....50&10@50&10&5%*

### Halter—

*Halter Chains.....60&5@60&10%*
*German Pattern Halter Chains, list July 24, '97....60&10&5@70%*
Covert Mfg. Co.:
Halter .....35&5%

### Cow Ties—

See *Halters and Ties.*

## Trace, Wagon, &c.—

*Traces, Western Standard: 100 pr.*
*6-0-3, Straight, with ring..$28.00*
*6½—6-2, Straight, with ring..$29.00*
*6½—8-2, Straight, with ring..$32.00*
*6½—10-2, Straight, with ring..$37.00*

*NOTE.—Add 2c per pair for Hooks Trace Traces: add per pair for Nos. 2 and 3, 2c; No. 1, 3c; No. 0, 4c to price of Straight Link.*

*Eastern Standard Traces, Wagon Chain, &c...60&10@60&10&5%*

### Miscellaneous—

*Jack Chain, list July 10, '93:*
*Iron .....60&10&7½%*
*Brass .....65%*
*Safety and Plumbers' Chain..75%*
*Gal. Pump Chain....lb., 4½@5%*
Bridgeport Chain Co.:
Triumph Halter and Coil..35&2½@40
Triumph Dog.....50&10@60
Brown Halter and Coil....45@50&5
Covert Mfg. Co.:
Breast, Halter, Heel, Rein, Stallion .....40%
Oneida Community:
American Halter, Dog and Kennel Chains .....35&2½@40
Niagara Dog Leads and Kennel Chains .....45@50&5
Wire Goods Co.:
Dog Chain.....70%
Universal Dbl.-Jointed Chain.....50%

## Chain and Ribbon, Sash—

Oneida Community:
Steel Chain.....60%
Pullman:
Bronze Chain, 60%; Steel Chain, Coppered .....60&10%
Sash Chain Attachments, per set..8¢
Aluminoy Sash Ribbon, per 100 ft. .....$2.00@$5.00
Sash Ribbon Attachments, per set..8¢

## Chalk—

*Carpenters' Blue.....gro., 50¢*
*Carpenters' Red.....gro., 50¢*
*Carpenters' White.....gro., 40¢*

## Checks, Door—

Berkshire's .....45%
Pullman, per gro.....$54.00
Russwin .....33⅓%

## Chests, Tool—

American Tool Chest Co.:
Boys' Chests, with Tools.....55%
Youths' Chests, with Tools.....40%
Gentlemen's Chests, with Tools..30%
Farmers', Carpenters, etc., Chests, with Tools .....20%
Machinists' and Pipe Fitters' Chests, Empty.....45%
Tool Cabinets.....45%
C. E. Jennings & Co.'s Machinists' Tool Chests.....7½%

## Chisels—

### Socket Framing and Firmer

*Standard List.....80&10@—%*
Buck Bros.....30
C. E. Jennings & Co.:
Socket Firmer No. 10.....25&7½%
Socket Framing No. 15.....25&7½
Swan's .....66⅔@70
L. & I. J. White & Co.....30@30&5%

### Tanged—

*Tanged Firmers.....30&5@35%*
Buck Bros.....30
C. E. Jennings & Co. Nos. 191, 181..25%
L. & I. J. White Co.....25&5%

### Cold—

*lb.*
*Cold Chisels, good quality..13@15¢*
*Cold Chisels, fair quality..11@12¢*
*Cold Chisels, ordinary.... 9@10¢*

## Chucks—

Almond Drill Chucks.....35%
Almond Turret Six-Tool Chuck.....40%
Beach Pat, each $8.00.....35&5%
Empire .....25%
Blacksmiths' .....25%
Jacobs' Drill Chucks.....35%
Pratt's Positive Drive.....25%
Skinner Patent Chucks:
Independent Lathe Chucks.....35%
Universal, Reversible Jaws.....35%
Combination, Reversible Jaws....35%
Drill Chucks, New Model, 25%; Standard, 45%; Skinner Pat., 25%; Positive Drive.....40%
Planer Chucks.....20%
Face Plate Jaws.....35%
Standard Tool Co.:
Improved Drill Chuck.....45%
Union Mfg. Co.:
Combination, Nos. 1, 2, 3, 4, 5, 6, 7, 8 and 17, 40%; No. 21.....35%
Scroll Combinations, Nos. 83 and 84 .....30%
Geared Scroll, Nos. 33, 34 and 35..25%
Independent Iron, Nos. 18 and 318..35%
Independent Steel, No. 64.....25%
Union Drill, Nos. 000, 00, 100, 101, 102, 103, 104.....35%
Union Czar Drill.....25%
Universal, 11, 12, 16, 17, 13, 14, 15..40%
Universal No. 42.....35%
Iron Face Plate Jaws, Nos. 28, 30, 48 and 50.....35%
Steel Face Plate Jaws, Nos. 70 and 72 .....30%
Westcott Patent Chucks:
Lathe Chucks.....50%
Little Giant Auxiliary Drill.....50%
Little Giant Double Grip Drill...50%
Little Giant Drill, Improved.....50%
Oneida Drill.....50%
Scroll Combination Lathe.....50%
Whitaker Mfg. Co.:
National Drill.....25%

## Clamps—

Adjustable Hammers.....20@20&5%
Carriage Makers', P., S. & W. Co. .....50&10%
Besly, Parallel.....33⅓&10%
Myers' Hay Rack.....45%
Lineman's Swedish Neverturn.....65%
Wood Workers' Hammers.....40&10%
Saw Clamps, see Vises, Saw Filers'

## Cleaners, Drain,

Iwan's Champion, Adjustable.....50%
Iwan's Champion, Stationary.....40%

### Sidewalk—

Star Socket. All Steel..₩ doz. $4.05 net
Star Shank. All Steel..₩ doz. $3.24 net
W. & C. Shank, All Steel, ₩ doz., 7½ in., $3.00; 8 in., $3.25.

## Cleavers, Butchers'—

Foster Bros.....30%
Fayette R. Plumb.....30%
L. & I. J. White Co.....30%

## Clippers, Horse and Sheep—

Chicago Flexible Shaft Co.: (20%)
1902 Chicago Horse, each..$10.75
20th Century Horse, each...$5.00
Lightning Belt Horse, each.$15.00
Chicago Belt Horse, each..$20.00
Stewart's Enclosed Gear Horse, each.....$6.75
Stewart's Patent Sheep Shearing Machine, each.....$12.75
Stewart Enclosed Gear Shearing Machine, No. 8, each..$9.75

## Clips, Axle—

*Regular Styles, list July 1, '05, 80&80&10%*

## Cloth and Netting, wire

—See *Wire, &c.*

## Cocks, Brass—

*Hardware list:*
*Plain Bibbs, Globe, Kerosene, Racking, Liquor, Bottling, &c .....75%*
*Compression Bibbs.....70%*

## Coffee Mills—

*See Mills, Coffee.*

## Collars, Dog—

Nickel Chain, Walter B. Stevens & Son's list.....40%
Leather, Walter B. Stevens & Son's list .....40%

## Compasses, Dividers, &c.

*Ordinary Goods.....70&10@75%*

## Conductor Pipe,—

*L. C. L. to Dealers:*

| | Gal. Steel. | Charcoal. |
|---|---|---|
| *Northeastern* | *.70&10%* | *50&10&7½%* |
| *Eastern* | *.75%* | *50&10&7½%* |
| *Pittsburgh* | *..75&10&5%* | *60%* |
| *Central* | *....75&10%* | *60%* |
| *Northwestern,* | *75&7½%* | *60%* |
| *Western* | *....70&12½%* | *50&12½%* |
| *Tennessee* | *...70&10%* | *50&12½%* |
| *Southern* | *.... 70%* | *50&12½%* |
| *Southwestern.* | *70%* | *50&5%* |

*Terms, 60 days: 2% cash 10 days. Factory shipments generally delivered.*
See also Eave Troughs.

## Coolers, Water—

L. & G. Mfg. Co.:

| Gal. | 2 | 3 | 4 | 6 | 8 |
|---|---|---|---|---|---|
| Galvanized, ea. | $1.85 | $2.00 | $2.25 | $2.90 | $3.90 |
| Galvanized, Lined, side handles, Gal. | 2 | 3 | 4 | 6 | 8 |
| Each | $1.95 | $2.15 | $2.40 | $3.30 | $4.15 |

White Enameled.....10%
Agate Lined.....10%

## Coppers' Tools—

See *Tools, Coopers'.*

## Coppers, Soldering—

*Soldering Coppers, 3 lb. to pair and heavier, 20¢; lighter than 3 lb. to pair.....22¢*

## Cord—Sash—

*Braided, Drab.....lb. 35¢*
*Braided, White, Com., Nos. 8 to 12, 20¢; No. 7, 20½¢; No. 6, 21½¢. In lots of 12 doz. or over, 1 cent less per pound.*
*Cable Laid Italian, lb., No. 18..37¢*
*Italian, lb., A, No. 18, 25¢; B, 22¢*
*Common India.....lb., 11@11½¢*
*Cotton Sash Cord, Tw'ted..18@20¢*
*Patent Russia.....lb...20¢*
*Cable Laid Russia.....lb...21¢*
*India Hemp, Br'd'd.....lb...21¢*
*India Hemp, Twisted...lb..13@14¢*
*Patent India, Twisted..lb...17¢*
Pearl Braided, cotton, No. 6, ₩ lb, 20½¢; No. 7, 19½¢; Nos. 8 to 12, 19½¢, in 12 doz. to 100 doz. lots.
Eddystone, Braided, Nos. 8 to 12, 26¢; 7, 26½; 6, 27½¢.
Harmony Cable Laid Italian, Nos. 7 to10.....₩ lb 23¢
Pullman:
Wire Sash Cord.....10%
Sash Cord Attachments, per 100..$2.00
Samson, Nos. 8 to 12: (15%)
Braided, ₩ lb., Drab Cotton, 55¢; Italian Hemp, 40¢@50¢; Linen, 65¢; White Cotton, 50¢; Spot Cord.....50¢
Massachusetts, White...₩ lb 40¢
Massachusetts, Drab....₩ lb 45¢
Phoenix, White, Nos 8 to 12....27¢
Silver Lake, per lb.:
A, Drab, 45¢; A, White, 40¢; B, Drab, 40¢; B, White, 35¢; Italian Hemp, 40¢; Linen....57½¢
See also Chain and Ribbon.

## Wire, Picture—

*Full Length.....90@—%*
*Short Length.....90&20@—%*
Hendryx Standard Wire Picture Cord, old list, 85&10%
Turner & Stanton Co. Wire Picture Cord .....90%

## Cradles—

*Grain .....50%*

## Crayons—

*White Round Crayons, Cases, 100 gro., $8.00, $8.50, $9.00 and $10.00 according to grade.*
Zelnicker's Lumber: ₩ gro.
White and Purple, Indelible....$7.50
Blue, Red, Green, Yellow and Terra Cotta, $6.50; Black.....$4.50
Giant Lumber, 5¼ in. x 15-16 in. round, all colors, $12.00; Indelibles, $14.00; Blacks.....$10.00
Genuine Soapstone, Metal Workers', 5 in. x ¼ in. Round, $2.50; 5 in. x ¼ in. Square, $1.75; 5 x ½ x 3-16, $2.50; 5 x 1¼ x 3-16.....$3.00
Suremark, Black, $2.25; Blue, Red and Yellow.....$2.50

## Crooks, Shepperds'—

Fort Madison, per doz., Heavy, $5.50; Light .....$5.00

## Crow Bars—See *Bars, Crow.*

## Cultivators—

Victor Garden.....50%

## Cutlery, Table—

International Silver Company:
No. 12 M'd'm Knives, 1847, ₩ doz. $3.50
Star, Eagle, Rogers & Hamilton and Anchor.....₩ doz. $3.00
Wm. Rogers & Son.....₩ doz. $2.50

## Cutters—Glass—

H. H. Mayhew Co.....40%
Red Devil.....60
B. Mfg. Co.....40
Woodward .....50%

## Meat and Food—

American .....30%

| Nos. | 401 | 402 | 403 | 404 | 405 | 406 | 407 |
|---|---|---|---|---|---|---|---|
| Each | $5 | $7 | $10 | $12 | $25 | $50 | $60 |

Enterprise:

| Nos. | 5 | 10 | 12 | 22 | 32 | |
|---|---|---|---|---|---|---|
| Each | $2 | $3 | $2.75 | $4.50 | $6 | 25@25&7½ |

No. 202, $1.50.....40&7½
P., S. & W. Co.:
Dixon's .....₩ doz. 33⅓

| Nos. | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| | $14.00 | $17.00 | $19.00 | $30.00 |

Ideal .....40&10&5
Hales .....60&10&5
Little Giant.....₩ doz. 40@50

| Nos. | 305 | 310 | 312 | 320 | 322 |
|---|---|---|---|---|---|
| | $35.00 | $18.00 | $44.00 | $72.00 | $68.00 |

New Triumph No. 605, ₩ doz. $24.00, 40&10%
Russwin Food, No. 1, $24.00; No. 2, $27.00 .....45&10&10%

| | $15.00 | $18.00 |
|---|---|---|

Enterprise Beef Shavers.....25@30%

## Slaw and Kraut—

Henry Disston & Sons:
Slaw and Kraut Cutters.....35
Corn Graters.....30
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife....₩ doz. $3.00
Combined Slaw Cutter and Corn Grater .....₩ doz. $4.00

## Tobacco—

*All Iron, Cheap...doz, $4.25@4.50*
Enterprise .....25@30
National, ₩ doz., No. 1, $21; No. 2, $18 .....40

## Diggers, Post Hole, &c—

Disston's:
Rapid, ₩ doz., $24.00.....25%
Samson, ₩ doz., $34.00.....25%
Iwan's Imp'ved Post Hole Auger..40%
Vaughan Pattern Post Hole Augers, ₩ doz., $7.00
Perfection Post Hole Diggers, ₩ doz. .....$8.75
Split Handle Post Hole Diggers, ₩ doz., $7.75
Hercules Pattern, ₩ doz.....$10.00
Kohler's, ₩ doz., Universal, $14.00; Little Giant, $12.00; Hercules, $10.00; Invincible, $9.00; Rival, $8.50; Pioneer.....$7.50
Never-Break Crucible Steel Post Hole Diggers .....60%

## Dividers—See *Compasses.*

## Drawing Knives—

See *Knives, Drawing.*

## Dressers Emery Wheel—

Sterling Emery Wheel Dressers.....35%
Sterling Wheel Dresser Cutters.....35%

## Drills and Drill Stocks—

*Blacksmith's Common Drilling Machines .....$1.50@1.75*
Breast, Millers Falls.....15&10%
Breast, P., S. & W.....33⅓%
Goodell Automatic Drills.50&10@60&10%
Millers Falls Automatic Drills,33⅓&10%
Ratchet, Curtis & Curtis.....25%
Ratchet, Parker's.....40%
Ratchet, Weston's.....40%
Ratchet, Weston's, Style H Improved .....40%
Ratchet, No. 012.....40%
Ratchet, Celebrated.....40%
Ratchet, Whitney's, P., S. & W.. 50&5%
Whitney's Hand Drill, No. 1, $10.00; Adjustable, No. 10, $12.00.....33⅓%

### Twist Drills—

*Bit Stock.....70@70&5%*
*Taper and Straight Shank, 60&10@70%*

## Drivers, Screw—

*Screw Driver Bits, per doz..45@50¢*
Balsey's Screw Holder and Driver, ₩ doz., 2½-in., $6; 4-in., $7.50; 6-in., $9 .....50%
Buck Bros.' Screw Driver Bits.....30%
Champion .....50%
Disston's .....70%
Fray's Hol. H'dle Sets, No. 3, $12..50%
Ford's Brace Screw Drivers....40&10%
Gay's Double Action Ratchet.....35%
Goodell's Auto.....65@65&10
Mayhew's Black Handle.....40%
Mayhew's Monarch.....40%
Millers Falls, Nos. 20 and 21....25&10%
Millers Falls, Nos. 11, 12, 41, 42..15&10%
Smith & Hemenway Co., Neverturn, 66⅔%; Elmora, [illegible] ear. 30&10%
Swan's:
Nos. 7565 to 7568, 60%; No. 7540, 40&10%

## Eave Trough, Galvanized—

| Territory... | Gal. Steel. | Charcoal. Iron. |
|---|---|---|
| *Northeastern* | *.75&10&5%* | *60&20%* |
| *Eastern* | *.....80&2½%* | *60&20%* |
| *Pittsburgh* | *..80&20%* | *65&10%* |
| *Central* | *...80&10&10&2½%* | *65&10%* |
| *Northwestern* | *.80&10&10%* | *65&10%* |
| *Western* | *....80&10%* | *60&10&5%* |
| *Tennessee* | *...80&5%* | *60&10&5%* |
| *Southern* | *.... 80%* | *60&10&5%* |
| *Southwestern* | *.75&10&2½%* | *60&5%* |

*Terms, 2% for cash. Factory shipments generally delivered.*
*Note. Lower prices are made in some sections.*
See also Conductor Pipe and Elbows.

## Elbows and Shoes—

*Factory shipments, all territories:*
*Galv. Steel and Galv. C. I. Standard Gauge.....85&5&10%*
*No. 26.....50%*
*No. 24.....*
*No. 22.....40%*

## Elbows, Stove Pipe—

Edwards, Standard Blue....40&10&10
Edwards, Royal Blue.....40&10&10
Reeves, Dover, one piece.....40&10

## Emery, Turkish—

| | ¼ to ½ in. | ⅝ to 2 in. | Flour. |
|---|---|---|---|
| *Kegs* | *.....lb 5 ¢* | *5½¢* | *3½¢* |
| *½ Kegs* | *.....lb. 5½¢* | *5¾¢* | *3¾¢* |
| *¼ Kegs* | *.....lb. 5½¢* | *6 ¢* | *4 ¢* |
| *10-lb. cans, 10 in case* | *....6½¢* | *7 ¢* | *6 ¢* |
| *10-lb. cans, less than 10* | *.....10 ¢* | *10 ¢* | *8 ¢* |
| *Less quantity* | *..10 ¢* | *10 ¢* | *8 ¢* |

*NOTE. In lots 1 to 3 tons a discount of 10% is given.*

## Extractors, Lemon Juice—

—See *Squeezers, Lemon.*

## Fasteners, Blind—
Zimmerman's Jap'd and Galv. .. & 5%; Bronze and Plated.....50%
Walling's .....50%
Upson's Patent.....40%

### Cord and Weight—
Ives and Titan.....33⅓%

### Corrugated—
Acme Corrugated Fasteners.....70%

### Faucets—
*Cork Lined.....50&10@60%*
*Metallic Key, Leather Lined, .. 60&10@70%*
*Red Cedar.....40&5@40&10&5%*
*Petroleum .....70&10@75%*
B. & L. B. Co.:
Metal Key.....60&10%
Star .....60%
West Lock.....50&10%
John Sommer's Peerless Tin Key....40%
John Sommer's Boss Tin Key.....50%
John Sommer's Victor Mtl. Key.50&10%
John Sommer's Duplex Metal Key..60%
John Sommer's Diamond Lock.....40%
John Sommer's I.X.L. Cork Lined..50%
John Sommer's Reliable Cork Lined.. 50&10%
John Sommer's Chicago Cork Lined.60%
John Sommer's O. K. Cork Lined...50%
John Sommer's No Brand, Cedar....50%
John Sommer's Perfection, Cedar....40%
Self Measuring:
Enterprise, ℔ doz. $36.00.....40&10%
Lane's, ℔ doz. $36.00.....40&10%
National Measuring, ℔ doz. $36.40&10%

### Felloe Plates—
See *Plates, Felloe.*

### Files— Domestic—
*List Nov. 1, 1899.*
*Best Brands.....70&10@75&10%*
*Standard Brands.....75&10@80%*
*Lower Grade....75&10&10@80&10%*
Gold Medal.....70%

### Imported—
*Stubs' Tapers, Stubs' list, July 24, '97.....33⅓@40%*

### Fixtures, Fire Door—
Richards Mfg. Co.:
Universal, No. 103; Special, No. 104 .....$3.75
Fusible Links, No. 96.....50%
Expansion Bolts, No. 107.....60&10%

### Grindstone—
*Net Prices:*

| | | | | |
|---|---|---|---|---|
| *Inch* | *.15* | *17* | *19* | *21* |
| *Per doz.* | *$3.60* | *3.85* | *4.15* | *4.65* |

P., S. & W. Co.....25%
Reading Hardware Co.....60%

### Fodder Squeezers—
See *Compressors.*

### Forks—
***NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.***
Iowa Dig-Ezy Potato.....60&10%
Victor, Hay.....60&15&2½%
Victor, Manure.....66⅔%
Victor, Header.....65%
Champion, Hay.....66⅔%
Champion, Header.....65%
Champion, Manure.....60&15&2½%
Columbia, Hay.....60&20%
Columbia, Manure.....70%
Columbia, Spading.....70&12½%
Hawkeye Wood Barley.....40%
W. & C. Potato Digger.....60&10%
Acme Hay.....60&20%
Acme Manure, 4 tine.....60&10&5%
Dakota Header.....60&20%
Jackson Steel Barley.....60&20%
Kansas Header.....65%
W. & C. Favorite Wood Barley....40%
Plated.—See Spoons.

### Frames— Wood Saw—
*White, S'g't Bar, per doz.75@80¢*
*Red, S'g't Bar, per doz.$1.00@1.25*
*Red, Dbl. Brace, per doz.$1.40@1.50*

### Freezers, Ice Cream—

| *Qt.....* | *1* | *2* | *3* | *4* | *6* |
|---|---|---|---|---|---|
| *Each....* | *$1.25* | *$1.60* | *$1.90* | *$2.20* | *$2.80* |

### Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

### Fry Pans—See *Pans, Fry.*

### Fuse— *Per 1000 Feet.*
*Hemp .....$2.75*
*Cotton .....3.20*
*Waterproof Sgl. Taped..3.65*
*Waterproof Dbl. Taped..4.40*
*Waterproof Tpl. Taped..5.15*
} 10&2½%

## Gates, Molasses and Oil—
*Stebbins' Pattern.....80@80&5%*

### Gauges—
*Marking, Mortise, &c..50@50&10%*
Chapin-Stephens Co.:
Marking, Mortise, &c.....50&50&10%
Disston's Marking, Mortise, &c..67½%
Wire, Brown & Sharpe's.....33⅓%
Wire, Morse's.....25%
Wire, P. S & W. Co.....33⅓%

### Gimlets— Single Cut—
*Numbered assortments, per gro.*
*Nail, Metal, No. 1, $2.00; 2, $2.30*
*Spike, Metal, No. 1, $4.00; 2, $4.30*
*Nail, Wood Handled, No. 1, $2.30; 2, $2.60*
*Spike, Wood Handled, No. 1, $4.30; 2, $4.60*

### Glass, American Window
See *Trade Report.*

### Glasses, Level—
Chapin Stephens Co.....65@65&10%

### Glue, Liquid Fish—
*Bottles or Cans, with Brush, 25&10@50%*
Elwell's .....40%

### Grease, Axle—
*Common Grade...gro.$6.00@$6.50*
Dixon's Everlasting, 10-lb. pails, ea. 85¢; in boxes, ℔ doz., 1 lb, $1.20; 2 lb.....$2.00
Helmet Hard Oil.....25%

### Griddles, Soapstone—
Pike Mfg. Co.....33⅓@33⅓&10%

### Grinders—
Royal Mfg. Co.:
Alundum Grinding Machines, each, Nos. 01, $1.75; 1A, $2.50; 10, $5.00 .....30%
Alundum Sickle Grinders, each, Nos. 20, $5.00; 20A, $6.00; 20A Combined, $6.50.....30%
Alundum Disc Grinders, each, $2.50 .....30%

### Grindstones—
Pike Mfg. Co.:
Improved Family Grindstones, ℔ inch, ℔ doz., $2.00.....33⅓%
Richards Mfg. Co., Eli and Cycle, Ball Bearing, mounted.....40%

### Grips, Nipple—
Perfect Nipple Grips.....40&10&2%

## Halters and Ties—
*Cow Ties.....65@65&10%*
Bridgeport Chain Co.:
Triumph Coil and Halters.35&2½@40%
Brown Coil and Halters...45@50&5%
Brown Cow Ties.....50&5@50&10&5%
Brown Tie Outs.....70&10@75&5%
Covert Mfg. Co.:
Web .....30&2%
Jute Rope.....35%
Sisal Rope.....20%
Cotton Rope.....45%
Hemp Rope.....45%
Oneida Community:
Am. Coil and Halters.....40@40&5%
Am. Cow Ties.....45@50%
Niagara Coil and Halters...45@50&5%
Niagara Cow Ties.....45&5@50&10&5%

### Hammers—
### Handled Hammers—
Heller's Machinists'....55&10@55&10&5%
Heller's Farriers.....40&5@40&10&5%
Peck, Stow & Wilcox Co.:
Crucible Steel.....40&10%
Farriers' .....40&10%
Riveting .....40&10%
Machinists' .....60&10%
Blacksmiths' .....50%
Fayatte R. Plumb:
A. E. Nail.....40&2½@40&12½%
Eng. and B. S. Hand.50&10&5@60&5%
Machinists' Hammers.....60@60&10%
Rivet and Tinners'.40&7½@40&12½&5%

### Heavy Hammers and Sledges—
*Under 3 lb., per lb., 50¢...80&10%*
*3 to 5 lb., per lb., 40¢...80&10&10%*
*Over 5 lb., per lb., 30¢.....*
*Over 5 lb., per lb., 30¢.80&10&10%*

### Handles—
### Agricultural Tool Handles
*Axe, Pick, &c....60&10@60&10&5%*
*Hoe, Rake, &c.....40%*
*Fork, Shovel, Spade, &c.:*
*Long Handles.....40%*
*D Handles.....40%*

### Cross-Cut Saw Handles—
Atkins' .....40%
Champion .....50%
Disston's .....50%

### Mechanics' Tool Handles—
*Auger, assorted...gro.$3.00@$3.50*
*Brad Awl.....gro.$1.65@$1.75*
*Chisel Handles, Ass'd, per gro.:*
*Tanged Firmer, Apple, $2.40@$2.65; Hickory.....$2.15@2.40*
*Socket Firmer, Apple, $1.75@$1.95; Hickory.....1.60@1.75*
*Socket Framing, Hickory, $1.60@$1.75*
*File, assorted.....gro.$1.30@$1.40*
*Hammer, Hatchet, &c., 60&10@60&10&5%*
*Hand Saw, Varnished, doz., 80¢ 85¢; Not Varnished.....65@75¢*
*Plane Handles:*
*Jack, doz., 30¢; Fore, doz...45¢*
Chapin-Stephens Co.:
Carving Tool.....30@30&10%
Chisel .....60@60&10%
File and Awl.....60@60&10%
Saw and Plane.....30@30&10%
Screw Driver.....30@30&10%
Millers Falls Adj. and Ratchet Auger Handles .....15&10%
Nicholson Simplicity File Handle.... ℔ gro. $0.85@$1.50
J. L. Osgood:
Indestructible File and Tool, ℔ gro., No 1, $8.00; No. 2, $8.50; No. 3, $9.00; No. 4, $9.50; No. 5, $10.00.....gro. lots 10%
W. A. Zelnicker Supply Co.:
Hammer, ℔ doz., 12 in, $2.00; 14 in., $2.00; 16 in., $2.30; 18 12., $2.50; 20 in., $2.70; 22 in., $3.00; 24 in., $3.30; 26 in., $3.50; 30 in., $3.80.
Sledge, ℔ doz., oval, 30 in., $3.80; octagon, 30 in., $3.80; oval, 36 in., $4.00; octagon, 36 in., $4.00.
Axe, ℔ doz., 28 to 34 in., $5.60; 36 in., $5.80.
Adze, ℔ doz., 36 in., $5.80; 36 in., $7.80.
Pick ℔ doz. R. R., 36 in., $8.00; coal, 34 in., $5.80.
Hatchet, ℔ doz., 12 to 14 in., $2.00
} 25&10%

### Hangers—
***NOTE.—Barn Door Hangers are generally quoted per pair, without track and Parlor Door Hangers per double set with track, &c.***

Chicago Spring Butt Co.:
Friction .....25%
Oscillating .....25%
Big Twin.....25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door.....50%
Elevator .....30%
Railroad .....50%
Cronk & Carrier Mfg. Co.:
Loose Axle.....60&2½%
Roller Bearing.....70&2½%
Griffin Mfg. Co.:
Solid Axle, No. 10, $12.00..60&10%
Roller Bearing, No. 11, $15.00, 60&10%
Roller Bearing, Ex. Hy., No. 22, $18.00.....60&10%
Bull Dog, $24.00.....70%
Lane Bros. Co.:
Parlor, Ball Bearing, $4.00; Standard, $3.15; No. 105, $2.85; New Model, $2.80; New Champion per set of 4 Hangers, complete with track.....$2.25
Barn Door, Standard.....60&10%
Hinged .....net $6.08
Covered .....60&5%
Special .....70&5%
Trolley Hangers and track...50%
Lawrence Bros.:
Advance .....55&10%
Cleveland .....70&7½%
Clipper, No. 75.....60%
Crown .....55&10%
Cyclone, No. 40.....net $6.50
Tandem, No. 50.....net $7.50
New York.....55&10%
McKinney Mfg. Co.:
Roller Bearing, Nos. 1 and 2..70%
Anti-Friction .....60%
Hinged Hangers, King Charm.60%
Richards Mfg. Co.:
Hangers, Nos. 47, 48, 147, 247, 60&5%
Pioneer Wood Track, No. 3..$2.25
Roller B'r'g St'l Track No. 12.$2.20
Roller B'r'g St'l Track No. 13.$2.50
Roller B'r'g, Nos. 39, 41, 43, 70&7½%
Hero, Adj. Track No. 19..50&10%
Adjustable Track Tandem Trolley Track No. 16.....50&10%
Seal, Steel Track No. 8.....$2.25
Auto Adj. Track No. 22..50&5%
Trolley B. D. No. 17, $1.25; F. D. No. 120, $2.25; No. 121, $2.45; No. 150.....$2.50
Safety Underwriters F. D. No. 101 .....50%
Tandem No. 41..2½ and 3 60&10%
Palace, Adjustable Track No. 132 .....50&5%
Royal, Adjustable Track No. 122 .....50&10%
Ives' Wood Track No. 1.....$2.25
Trolley B. D. No. 20.....50&10%
Trolley B. D. No. 24, $1.30; No. 27, $1.40; No. 28.....$1.60
Roller Bearings, Nos. 37, 38, 39, 41, 43, 44, Sizes 1 and 2.70&7½%
Anti-friction, No. 42; No. 44, sizes 2½ and 3.....60%
Hinged Tandem No. 48....60&5%
Folding Door B. B. Swivel No. 135 .....40%
Taylor & Boggis F'y Co.'s Kidder's Roller Bearing.50&15&10&5%
Myers' Stayon Hangers.....60%

Extra 5@10% often given.

### Hangers— Garment—
Pullman Trouser, ℔ gro., No. 1 $9.00; No. 4, $24.00; No. 5, $16.50; No. 8, Black Enamel, $7.50; No. 10, $21.00; No. 12, $8.00; No. 15, Rods, $9.00; No. 18, Loops.....$10.00
Victor Folding.....℔ gro. $9.60

### Gate—
Myers' Patent Gate Hangers, ℔ doz. net .....$4.50

### Joist and Timber—
Lane Bros. Co.....35%

### Hasps—
Griffin's Security Hasp.....50&10%
McKinney's Perfect Hasp, ℔ doz..60%

### Hatchets—
*Regular list, first qual.40&12½@—*
*Second quality.....50&10&5@—*

### Heaters, Carriage—
Clark No. 5, $1.75; No. 5B, $2.00; No. 3, $2.25; No. 3D, $2.75; No. 7D, $3.00; No. 3E, $3.25; No. 1, $3.50.....25%
Clark Coal, ℔ doz., $0.75.....20%

### Hinges—
### Blind and Shutter Hinges
*Surface Gravity Locking, Blind: (Victor; National; 1868 O. P.; Niagara; Clark's O. P.; Clark's Tip; Buffalo.)*

| *No.* | *1* | *3* | *5* |
|---|---|---|---|
| *Doz. pair* | *$0.75* | *1.35* | *2.70* |

*Mortise Shutter: (L. & P., O. S., Acme, &c.)*

| *No.* | *1* | *1½* | *2* | *2½* |
|---|---|---|---|---|
| *Doz. pair* | *$0.70* | *.65* | *.60* | *.55* |

*Mortise Reversible Shutter (Buffalo, &c.):*

| *No.* | *1* | *1½* | *2* |
|---|---|---|---|
| *Doz. pair* | *$0.70* | *.65* | *.60* |

North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%
Charles Parker Co.....70@75%
Parker Wire Goods Co.
Hale & Benjamin Automatic Blind Hinges .....20%
Hale's Blind Awning Hinges, No. 110, for wood, $9.00; No. 111, for brick, $9.00.....20%
Reading's Gravity.....60%
Stanley's Steel Gravity Blind Hinges, No. 1617½, ℔ doz. sets, without screws, $0.95; with screws, $1.25.

Wrightsville Hardware Co.:
O. S., Lull & Porter.....75&5%
Acme, Lull & Porter.....75%
Queen City Reversible.....75%
Shepard's Noiseless, Nos. 60, 65, 55 .....75&5%
Niagara, Gravity Locking, Nos. 1, 3 & 5.....75&5%
Tip Pat'n, No. 1.....75&10%
No. 3.....75&5%
Buffalo Gravity Locking, Nos. 1, 3 & 5.....70&10&5%
Shepard's Double Locking.....75%
Champion Gravity Locking.....75&5%
Pioneer .....75&10%
Empire .....65%
W. H. Co.'s Mortise Gravity Locking, No. 2.....60&10%

### Gate Hinges—
*Clark's or Shepard's—Doz. sets:*

| *No.* | *1* | *2* | *3* |
|---|---|---|---|
| *Hinges with L't'chs* | *$2.00* | *2.70* | *5.00* |
| *Hinges only* | *1.25* | *1.90* | *3.50* |
| *Latches only* | *.70* | *.75* | *.35* |

*New England:*
*With Latch.....doz..@$2.00*
*Without Latch.....doz..@$1.60*
*Reversible Self-Closing:*
*With Latch.....doz..@$1.75*
*Without Latch...doz. ...@$1.35*
*Western:*
*With Latch.....doz. $1.75*
*Without Latch.....doz..$1.15*
Wrightsville Hardware Co.:
Shepard's or Clark's Hinges and Latches, Hinges only or Latches only, Nos. 1, 2 or 3.....70%

### Pivot Hinges—
Bommer Bros. Pivot, Ball Bearing .....40%
Lawson Mfg. Co. Matchless.....50%

### Spring Hinges—
*Holdback, Cast Iron...$6.75@$7.00*
*Non-Holdback, C'st Iron$6.50@$6.75*
J. Bardsley:
Bardsley's Non-Checking Mortise Floor Hinges.....40%
Bardsley's Patent Checking.33⅓%
Bommer Bros.:
Spring Butt Hinges.....40%
Surface Floor, Ball Bearing .....40%
Mortise Floor, Ball Bearing.40%
Lavatory Hinges.....40%
Non-Holdback Screen Door, Nos. 2000 and 900.....40%
Holdback Screen Door, No. 999.....℔ gro. $9.00
Chicago Spring Butt Co.:
Chicago Spring Hinges.....25%
Triple End Spring Hinges....50%
Chicago (Ball Bearing) Floor.50%
Garden City Engine House...25%
Keene's Saloon Door.....25%
Columbian Hardware Co.:
Acme, Wrought Steel.....30%
Acme, Brass.....25%
American .....30%
Columbia, ℔ gr., No. 14, $9.00; No. 18.....$25.00
Columbia, Adj., No. 7, ℔ gr.$12.00
Gem, new list.....30%
Clover Leaf and Acorn, per gro. .....$12.00
Oxford, new list.....30%
Floor Spring Hinges.....65&10%
Columbian Steel.....65&10%
Lawson Mfg. Co., Matchless...30%
Richards Mfg. Co.:
Superior Double Acting Floor Hinges .....40%
Shelby Spring Hinge Co.:
Buckeye All Steel Holdback Screen Door.....℔ gr. $9.00
Chief Ball Bearings Floor Hinge .....50%
Ball Bearing Door.....25%
No. 777, Sheet Steel Holdb'k, ℔ gr. pr.....$9.00
Standard Mfg. Co.:
Champion Double Acting Door Hinge .....25&10%
Standard Double Acting Floor Hinge .....25&10&10%
Superior Spring Hinge Co.:
Superior Floor Hinges.....33⅓%

Extra 10% often given on most of these Hinges.

### Wrought Iron Hinges—
*Strap and T Hinges, &c., list December 20, 1904:*
*Light Strap Hinges..50&10%*
*Heavy Strap Hinges..60&5%*
*Light T Hinges.....50%*
*Heavy T Hinges.....40%*
*Extra Hvy. T Hinges.50&10%*
*Hinge Hasps.....33⅓%*
*Cor. Heavy Strap....60&5%*
*Cor. Ex. Heavy T...50&10%*
} *Extra 10&7½%.*

*Screw Hook and Strap.*
*6 to 12 in..lb.3½¢*
*1¼ to 20 in..lb.3¼¢*
*22 to 36 in..lb.3 ¢*

*Screw Hook and Eye:*
*to 1 inch.....lb.6½¢*
*⅝-inch .....lb.7½¢*
*½-inch .....lb.8½¢*

### Hitchers, Stall—
Covert Mfg. Co., Stall Hitchers..30&2%

### Hods— Coal—
*M'f'gr's list, price per gross:*

| *Inch* | *.15* | *16* | *17* | *18* |
|---|---|---|---|---|
| *Galv. Open* | *$35* | *$39* | *$42* | *$46* |
| *Jap. Open* | *26* | *28* | *31* | *35* |
| *Galv. Funnel* | *43* | *48* | *52* | *56* |
| *Jap. Funnel* | *33* | *36* | *59* | *43* |

*10&7½&5%*

### Masons' Etc.
Cleveland Wire Spring Co.:
Steel Brick, No. 162 .....each $1.05
Steel Mortar, No. 158.....each $1.35

### Hoes— Eye—
*Scovil and Oval Pattern, 60&10@60&10&10%*
*Grub, list Feb. 23, 1899, 70&10@70&10&10%*
D. & H. Scovil.....27½%
Am. Fork & Hoe Co. (Scovil Pattern) .....60%

### Handled—

*NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.*

Cronk's Weeding, No. 1, $2.00; No. 2, $2.50
Star Double Bit.....$3.20
Ft. Madison Cotton Hoe....70&10&10%
Ft. Madison Crescent Cultivator Hoe, ₱ doz.....70&10%
Ft. Madison Mattock Hoes:
Regular Weight.....₱ doz. 40&5%
Junior Size.....₱ doz. $4.00
Ft. Madison Sprouting Hoe, ₱ doz., 60&10%
Ft. Madison Dixie Tobacco Hoe.....75&10&7½%
Kretsinger's Cut Easy.....70&10%
Warren Hoe.....45&10%
W. & C. Ivanhoe.....75&2%
B. B. 6 in., Cultivator Hoe.....$3.40
B. B. 6½ in.....$3.50
Acme Wedding.....₱ doz., net, $4.35
W. & C. L'tning Shuffle Hoe, ₱ doz. $5.25

### Hoisting Apparatus—

See *Machines, Hoisting.*

### Holders— Bit—

Angular, ₱ doz. $24.00.....45&10%

### Door—

Bardsley's, Iron, 40%; Brass and Bronze.....25%
Empire.....50%
Pullman.....25%
Richards Mfg. Co.: No. 117, Ever-ready, 40%; Nos. 118, 119, Sure Grip.....50%
Superior.....33⅓%

### File and Tool—

Nicholson File Holders and File Handles.....33⅓@40%

### Fruit Jar—

Triumph Fruit Jar Holder, ₱ gross, $18.00; ₱ doz.....$2.00

### Trace and Rein—

Fernald Double Trace Holder, ₱ doz. pairs.....$1.25
Dash Rein Holder, ₱ doz. pairs. $1.25

### Hones—Razor—

Pike Mfg. Co., Belgian and Swaty, 50%; German.....33⅓%

### Hooks—Cast Iron—

Bird Cage, Reading.....40%
Clothes Line, Reading List.....40%
Coat and Hat, Reading.....45&20%
Coat and Hat, Wrightsville.....60&5%
Harness, Reading List.....40%

### Wire—

*Belt, Nos. 1 to 15....75&10@80%*
*Wire C. & H. Hooks..80@80&10%*
Bradley Metal Clasp Wire, Coat and Hat, 70&10; Ceiling.....70&10%
Columbian Hdw. Co., Gem.....75&10%
Parker Wire Goods Co., King..70&10%
Wire Goods Co.:
Acme, 60&10%; Chief, 70%; Crown, 75%; Czar, 65%; V Brace, 75%; Czar Harness, 50&10%.

### Wrought Iron—

*Box, 6 in., per doz., $0.90; 8 in., $1.15.*
*Cotton.....doz. $1.25@$1.50*
Wrought Staples, Hooks, &c. See Wrought Goods.

### Miscellaneous—

*Hooks, Bench,* see *Stops, Bench.*
*Bush, Light, doz., $6.20; Medium, $6.75; Heavy, $7.65*
*Grass, best, all sizes, per doz., $2.75@$3.00*
*Grass, common grades, all sizes, per doz.....$1.25@$1.50*
*Whiffletree.....lb. 5¼@6¢*
*Hooks and Eyes:*
*Brass.....60@60&10%*
*Malleable Iron.....70@70&10%*
Covert Mfg. Co. Gate and Scuttle Hooks.....40%
Ft. Madison Cut-Easy Corn Hooks, ₱ doz. $3 25 net
Turner & Stanton Co. Cup and Shoulder.....85&10%
Bench Hooks—See Bench Stops.
Corn Hooks—See Knives, Corn.

### Horse Nails—

See *Nails, Horse.*

### Horseshoes—

See *Shoes, Horses.*

### Hose, Rubber—

*Garden Hose, ¾-inch:*
*Competition.....ft. 6@6½¢*
*3 ply Guaranteed....ft. 8½@9¢*
*4 ply Guaranteed....ft. 9½@12¢*
*Cotton Garden, ¾-in., coupled:*
*Low Grade.....ft. 8@ 9¢*
*Fair Quality.....ft. 10@11¢*

### Irons— Sad—

*From ¼ to 10.....lb. 2½@2¾¢*
*B. B. Sad Irons.....lb. 3¼@3½¢*
*Mrs. Potts', cents per set:*

| | Nos. 50 | 55 | 60 | 65 |
|---|---|---|---|---|
| *Jap'd Tops* | 83 | 89 | 93 | 91 |
| *Tin'd Tops* | 88 | 85 | 98 | 95 |

*New England Pressing..lb. 3¾@4¢*

### Bar and Corner—

Richards Mfg. Co., Bar, 60&10%; Corner.....60

### Pinking—

*Pinking Irons.....doz. 60@65¢*

### Irons, Soldering

See *Coppers.*

### Jacks, Wagons—

Covert Mfg. Co.:
Auto Screw.....30&2%; Steel, 45%
Lockport.....50%
Lowe's Steel.....30&5%
Richards' Tiger Steel, No 130...50&10%
Smith & Hemenway Co.'s.....25%

### Ladder—

Richards Mfg. Co., Ladder Jacks..50%

### Kettles—

*Brass, Spun, Plain.....20@25%*
Enameled and Cast Iron—See Ware, Hollow.

### Knives—

### Butcher, Kitchen, &c.—

Foster Bros.' Butcher, &c.....30%
Wilkinson Shear & Cutlery Co....60%

### Corn—

Columbian Cutlery Co., Wilcut Brand Knives and Hooks.....60%
Withington Acme, ₱ doz., $2.65; Dent, $2.75; Adj. Serrated, $2.20; Serrated, $2.10; Yankee No. 1, $1.50; Yankee No. 2, $1.15.

### Drawing—

*Standard List.....80&10@—%*
C. E. Jennings & Co., Nos. 45, 46, 25&7½%
Jennings & Griffin, Nos. 41, 42, 66⅔&7½%
Swan's.....66⅔@70%
Watrous.....16⅔%
L. & I. J. White.....20&5@25%

### Hay and Straw—

*Serrated Edge, per doz. $5.00@5.50*
Iwan's Sickle Edge.....₱ doz. $9.50
Iwan's Serrated.....₱ doz. $10.00

### Miscellaneous—

*Farriers'.....doz. $2.60@3.55*
Wostenholm's.....₱ doz. $3.00@3.25

### Knobs—

*Base, 2½-inch, Birch or Maple, Rubber Tip.....gro. $1.25@1.40*
*Carriage, Jap., Drive, all sizes, gro. 35@40¢*
*Door, Mineral.....doz. 65@70¢*
*Door, Por. Jap'd.....doz. 70@75¢*
*Door, Por. Nickel..doz. $2.05@2.15*
Bardsley's Wood Door, Shutters, &c. 15%

### Lacing, Leather—

See *Belting, Leather*

### Ladders, Store, &c.—

Lane's Store.....25%
Myers' Noiseless Store Ladders....50%
Richards Mfg. Co.:
Improved Noiseless, No. 112.....50%
Climax Shelf, No. 113.....50%
Trolley, No. 109.....50%

### Ladles, Melting—

L. & G. Mfg. Co. (low list).....20%
P., S. & W.....40&10%
Reading.....60%

### Lanterns—Tubular—

*Regular, No. 0.....doz. $4.35@4.50*
*Side Lift, No. 0.....doz. $4.60@4.75*
*Hinge Globe, No. 0. doz. $4.60@4.75*
*Other Styles.....40@40&10%*

### Bull's Eye Police—

*3-inch.....$3.75@4.00*

### Latches— Thumb—

*Roggin's Latches, Jap'd, with Screws.....doz. 35@40¢*

### Door—

Cronk & Carrier Mfg. Co., No. 101, ₱ doz. $2.00
Richards' Bull Dog, Heavy, No. 125.....50&5%
Richards' Trump, No. 127.....$1.50

### Leaders, Cattle—

*Small.....doz. 50¢; large, 60¢*
Covert Mfg. Co.:
Cotton, 45%; Hemp, 45%; Jute, 35%; Sisal, 20%.

### Leathers, Pump—

See *Pumps—*

### Lifters, Transom—

R. & E.....10%

### Lines—

| *Wire Clothes, Nos.* | *18* | *19* | *20* |
|---|---|---|---|
| *100 feet* | *$2.30* | *1.95* | *1.75* |
| *75 feet* | *$1.95* | *1.65* | *1.50* |

Samson Cordage Works:
Solid Braided Chalk, Nos. 0 to 3..40%
Solid Braided Masons'.....30%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50.....₱ gr. 20%
Masons' Lines, Shade Cord, &c.; White Cotton, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50; Colors, No. 3½, $1.75; No. 4, $2.25; No. 4½, $2.75; Linen, No. 3½, $2.50; No. 4, $3.50; No. 4½, $4.50.....20%
Tent and Awning Lines: No. 5, White Cotton, $7.50; Drab Cotton, $8.50.....20%
Clothes Lines, White Cotton: 50 ft., $2.75; 60 ft., $3.25; 70 ft., $3.75; 75 ft., $4.00; 80 ft., $4.25; 90 ft., $4.75; 100 ft., $5.25.....20%
Turner & Stanton Co.:
Solid Braided Chalk, Masons' and Awning Lines.....40%
Clothes Lines, White Cotton.....20%
Shade Cord, Cotton or Linen.....20%

### Locks— Cabinet—

*Cabinet Locks....33⅓@33⅓@7%*

### Door Locks, Latches, &c —

*NOTE.—Net Prices are very often made on these goods.*
Reading Hardware Co.....40%
R. & E. Mfg. Co.....10%

### Padlocks—

R. & E. Mfg. Co. Wrought Steel and Brass.....75&10%

### Sash, &c.—

Ives' Patent:
Bronze and Brass, 55&5%; Crescent, 60%; Iron, 60%; Window Ventilating, 40&20%; Robinson Pat. Ventilating Sash Lock, 33⅓%.
Pullman Patent Ventilating Lock, 25%
Reading Sash Locks.....40%

### Machines—Boring—

*Com. Upr't, without Augers, $2.00@2.25*
*Com. Angl'r, without Augers, $2.25@2.50*
Swan's Improved.....40&10%
Jennings', Nos. 1 and 4.....25&7½%
Millers' Falls.....5.75
Snell's, Upright, $2.65; Angular, $2.90

### Corking—

Reisinger Invincible Hand Power... ₱ doz. $48.00

### Fence—

Williams' Fence Machines....each, $5.50

### Hoisting—

Moore's Anti-Friction Chain Hoist, 30%
Moore's Hand Hoist, with Lock Brake.....20%
Moore's Cyclone High Speed Chain Hoist.....25%

### Ice Cutting—

Chandler's.....12½%

### Washing

| Boss Washing Machine Co.: | Per doz. |
|---|---|
| Boss No. 1 | $57.00 |
| Boss Rotary | $57.00 |
| Champion Rotary Banner No. 1 | $57.00 |
| Standard Champion No. 1 | $50.00 |
| Standard Perfection | $27.00 |
| Cincinnati Square Western | $33.00 |
| Uneeda American, Round | $33.60 |

### Mallets—

*Hickory.....45&5@50%*
*Lignumvitæ.....45&5@50%*
*Tinners' Hickory and Applewood.....doz. 45&5@50%*

### Mangers, Stable—

Swett Iron Works.....50%

### Mats, Door—

Acme Flexible Steel.....50%
Elastic Steel (W. G. Co.), new list. 50%

### Mattocks—

See *Picks and Mattocks.*

### Milk Cans—See *Cans, Milk.*

### Mills, Coffee, &c.—

Enterprise Mfg. Co.....20@25%
National list Jan. 1, 1902.....30%
Parker's Columbia and Victoria..33⅓%
Parker's Box and Side.....50&10%
Swift, Lane Bros. Co.....30%

### Motors, Water—

Divine's Red Devil.....30%
Lippincott's.....30%

### Mowers, Lawn—

*NOTE.—Net prices are generally quoted*
*Cheapest, 10-in., $2.00; advance 10¢ for each size.*
*Cheap, 10-in., $2.25; advance 15@20¢ for each size.*
*Better Grade, 10-in., $3.00; advance 25¢ for each size.*

| | 12 | 14 | 16 | 18-in. |
|---|---|---|---|---|
| *High Grade* | *$4.50* | *4.75* | *5.00* | *5.25* |

Continental.....60%
Great American.....70
Great American Ball B'r'g, new list. 70%
Quaker City.....70%
Pennsylvania.....60%
Pennsylvania, Jr., Ball Bearing, 50&10&5%
Pennsylvania Golf.....50%
Pennsylvania Horse.....33⅓&5%
Pennsylvania Pony.....40&5%
Granite State:
Style A, Low Wheel.....70%
Style B, Low Wheel.....70
Style C, High Wheel, spcl, list, 70&10%
Style D, High Wheel, spcl, list..70%
Philadelphia:
Styles M., S., C., K., T....70&10&5%
Style A, all Steel.....60&10&5
Style E, High Wheel.....70&10&5
Drexel and Gold Coin, special list. 40%
Horse.....40&5
Pony.....40&5%
36-in. Horse.....30&10%
Eagle Horse.....30&5%
I. X. L. Horse.....50%

### Nails—

*Wire Nails and Brads, Miscellaneous.....85&5@85&10%*
*Cut and Wire,* See *Trade Report.*
*Hungarian, Finishing, Upholsterers', &c.* See *Tacks.*

### Horse—

| Nos. | 6 | 7 | 8 | 9 | 10 | |
|---|---|---|---|---|---|---|
| Anchor | 23 | 21 | 20 | 19 | 18 | ...40&5% |
| Coleman | 13 | 12 | 12 | 11 | 11 | .....net |
| New Haven.. | 23 | 21 | 20 | 19 | 18 | ...40&5 |
| Livingston .. | 19 | 18 | 17 | 16 | 16 | .....10% |

Western.....₱ lb 8½¢
*Jobbers' Special Brands, per lb. 9¢*

### Picture—

| | 1½ | 2 | 2½ | 3 in. |
|---|---|---|---|---|
| *Brass Hd, gro.* | *.45* | *.55* | *.60* | *.70* |
| *Por. Head, gro.* | *1.10* | *1.10* | *1.10* | |

### Upholsters—

*Brass.....30%*
*Plated.....30&10%*

### Nippers—

See *Pliers and Nippers.*

### Nipples—

Standard Nipple Co.:
Wrought Pipe Nipples....80&30&10%

### Nuts— *Blank or Tapped.*

| *Cold Punched:* | *Off list.* |
|---|---|
| *Square* | *5.40@5.50¢* |
| *Hexagon* | *6.00@6.10¢* |
| *Square, C., T. & R.* | *5.80@5.90¢* |
| *Hexagon, C., T. & R.* | *6.60@6.70¢* |
| *Hot Pressed:* | |
| *Square* | *5.80¢* |
| *Hexagon* | *6.30¢* |

### Oakum—

*Best.....lb. 6½¢*
*U. S. Navy.....lb. 6 ¢*
*Navy.....lb. 5 ¢*
*Plumbers' Spun Oakum..2¾@3 ¢*

### Oil Tanks—See *Tanks, Oil.*

### Oilers—

*Steel, Copper Plated.....75%*
*Chase or Paragon:*
*Brass and Copper.....50&10%*
*Zinc.....65&10%*
*Railroad.....60&10&10%*
Malleable, Hammers' Improved, Nos. 11, 12 and 13, 20%; Old Pattern, Nos. 1, 2, 3, 50%.
American Tube & Stamping Co.:
Spring Bottom Cans.....70@70&10%
Railroad Oilers, &c.....60@60&10%
Maple City Mfg. Co.:
Spring Bottom Cans.....70@70&10%
Railroad Oilers, &c.....60@60&10%

### Openers—Packing Box—

Herculever, ₱ doz., $24.....30%

### Can Openers—

| | *Per doz.* |
|---|---|
| *Sprague, Iron Handle* | *30@35¢* |
| *Sprague, Wood Handle* | *40¢* |
| *Sardine Scissors* | *$1.75@3.00* |

Yankee Can and Bottle Opener, ₱ doz., net, $0.75; Little Gem, ₱ doz., net.....$0.65

### Egg—

Hartigan Nickel Plate, ₱ doz., $2.00; Silver Plate, $4.00.

### Packing—

*Asbestos Packing, Wick and Rope, any quantity.....18@20¢*

### Rubber—

*(Fair quality goods.)*
*Sheet, C. I.....11@12¢*
*Sheet, C. O. S.....11@12¢*
*Sheet, C. B. S.....12@13¢*
*Sheet, Pure Gum.....40@45¢*
*Sheet, Red.....40@50¢*
Jenkins' '96, ₱ lb, 80¢.....25%

### Miscellaneous—

*American Packing....lb. 7@10 ¢*
*Cotton Packing.....lb. 16@25 ¢*
*Italian Packing.....lb. 9@10¢*
*Jute.....lb. 4@4¼¢*
*Russia Packing.....lb. 9@10¢*

### Pails, Water, Well, &c.—

See *Buckets.*

### Pans— Dripping—

*Standard List...70&10@70&10&5%*
Edwards, Royal Blue.....65&7½%

### Refrigerator, Galva.—

| *Inch* | *12* | *14* | *16* | *18* |
|---|---|---|---|---|
| *Per doz.* | *$1.75* | *2.25* | *2.80* | *3.15* |

### Paper—Building Paper

| *Asbestos:* | *lb.* |
|---|---|
| *Roll Board or Building Felt, 6 to 30 lb., per 100 sq. ft.* | *2½¢* |
| *Roll Board or Building Felt, 3-32 and ⅛ in., 45 to 60 lb., per 100 sq. ft.* | *3½¢* |
| *Mill Board, Sheet, 40 x 40 in., 1-32 to ½ in.* | *3¢* |
| | *Per roll.* |
| *Rosin Sized Sheathing: 500 sq. ft. Light weight, 25 lbs. to roll,* | *48@58¢* |
| *Medium weight, 30 lbs. to roll,* | *56@70¢* |
| *Heavy weight, 40 lbs. to roll,* | *75@78¢* |
| *Black Water Proof Sheathing, 500 sq. ft., 1 ply, 65¢; 2 ply, 85¢; 3 ply, $1.10; 4 ply, $1.25.* | |
| *Deafening Felt, 9, 6 and 4½ sq. ft. to lb., ton.....* | *$54.50* |
| *Red Rope Roofing, 250 sq. ft. per roll.....* | *$1.75* |

### Tarred Paper—

*1 ply (roll 400 sq. ft.), ton, $34.00@$38.00*
*2 ply, roll 108 sq. ft.....65¢*
*3 ply, roll 108 sq. ft.....88¢*
*Slater's Felt (roll 500 sq. ft.).80¢*

### Sand Paper and Cloth—

*Flint and Emery.....50@10%*
*Garnet Paper and Cloth.....25%*

### Parers—Apple—

Goodell Co.:
Family Bay State.....₱ doz. $7.00
Improved Bay State.....₱ doz. $9.00
New Lightning.....₱ doz. $7.50
Turn Table '98.....₱ doz. $6.00
White Mountain.....₱ doz. $5.00
Bonanza Improved.....each $7.50
Dandy.....each $10.00
Eureka Improved.....each $20.00
New Century.....each $24.00
Ranger.....each $25.00
Livingston Nail Co.:
Daisy.....₱ doz. $4.00
Little Star.....₱ doz. $5.00
Rocking Table.....₱ doz. $6.50
Reading Hardware Co.:
Advance.....₱ doz. $3.00
Baldwin.....₱ doz. $4.00
Reading 72.....₱ doz. $3.25
Reading 78.....₱ doz. $6.25

### Potato—

Saratoga.....₱ doz. $7.50
White Mountain.....₱ doz. $6.00

### Picks and Mattocks—

*(List Jan., 1908.)*
*List.....70&10@70&10&10%*
Cronk's Handled Garden Mattock, ₱ doz., No. 2, $2.60; No. 3, $6.40

### Pinking Irons—
See *Irons, Pinking.*

### Pins, Escutcheon—
*Brass* .....50@50&10%
*Iron, list Nov. 11, '85*..60@60&10%

### Pipe, Cast Iron Soil—
*Standard, 2-6 in*.....70@—%
*Extra Heavy, 2-6 in*..75&10@—%
*Fittings, Standard and Heavy,* 80&10@80&10&10%

### Pipe, Merchant—

| | Consumers, Steel. Blk. | Galv. | Carloads, Iron. Blk. | Galv. |
|---|---|---|---|---|
| | % | % | % | % |
| ⅛ and ¼ in. | 66 | 50 | 64 | .. |
| ⅜ in. | 68 | 54 | 66 | 52 |
| ½ in. | 70 | 58 | 68 | 56 |
| ¾ to 6 in. | 74 | 64 | 72 | 62 |
| 7 to 12 in. | 71 | 56 | 69 | 54 |

### Pipe, Vitrified Sewer—
*Carload lots.*
*Standard Pipe and Fittings, 3 to 24 in., f.o.b. factory:*
*First-class* .....87%
*Second-class* .....90%

### Pipe, Stove—

| | Per 100 joints. C. L. | L. C. L. |
|---|---|---|
| Edwards' Nested: | | |
| 5 in., Standard Blue | $6.25 | $7.25 |
| 6 in., Standard Blue | 6.75 | 7.75 |
| 7 in., Standard Blue | 7.75 | 8.75 |
| 5 in., Royal Blue | 7.00 | 8.00 |
| 6 in., Royal Blue | 7.50 | 8.50 |
| 7 in., Royal Blue | 8.50 | 9.50 |
| Wheeling Corrugating Co.'s Nested: | | |
| 5 in., Uniform Color | $6.15 | $7.15 |
| 6 in., Uniform Color | 6.65 | 7.65 |
| 7 in., Uniform Color | 7.65 | 8.65 |

### Planes and Plane Irons—
#### Wood Planes—
*Bench, first qual*.....30@30&10%
*Bench, second qual*...40@40&10%
*Molding* .....25@25&10%
Chapin-Stephens Co.:
Bench, First Quality.....30%
Bench, Second Quality.....40%
Molding and Miscellaneous.....25%
Toy and German.....30%
Union .....60%

#### Iron Planes -
Chaplin's Iron Planes.....50&10%
Union .....60%

#### Plane Irons—
*Wood Bench Plane Irons, list Dec. 12, '06*.....25%
Buck Bros.....30%
Chapin-Stephens Co.....25%
Union .....50
L. & I. J. White.....20&5@25%

### Planters, Corn, Hand—
Kohler's Eclipse.....℔ doz. $7.50

### Plates—
*Felloe* .....*lb.* 3¾@4¢
Avery Stamping Co.:
Standard Wrot, Steel in 100 lb kegs, per 100 lb, ¾-in. to 1⅛ in., $4.00 net; 1¼ in. to 2 in., inclusive, $3.75 net.

#### Steel Pipe Hook—
Never-Break .....75&10%

### Pliers and Nippers -
*Button Pliers*....75&5@75&10&5%
*Gas Burners, per doz., 5 in., $1.25 @$1.30; 6 in., $1.45 $1.50.*

| Gas Pipe.. | 7 | 8 | 10 | 12-in. |
|---|---|---|---|---|
| | $2.00 | $2.25 | $2.75 | $3.50 |

Acme Nippers.....50&5%
Cronk & Carrier Mfg. Co.:
American Button.....80%
Improved Button.....75&10%
Cronk's .....60%
No. 80 Linemen's.....50%
Stub's Pattern.....45%
Combination and others.....33⅓%
Heller's Farriers' Nippers, Pincers and Tools.....40&5@40&10&5%
P., S. & W. Tinners' Cutting Nippers .....40%
Swedish Side, End and Diagonal Cutting Pliers.....50%
Utica Drop Forge & Tool Co.: Pliers and Nippers, all kinds....40%

### Plumbs and Levels—
Chapin-Stephens Co.:
Plumbs and Levels.....30@30&10%
Chapin's Imp. Brass Cor..40@40&10%
Pocket Levels.....30@30&10%
Extension Sights.....30@30&10%
Machinists' Levels.....40@40&10%
Disston's Plumbs and Levels....60&10%
Disston's Pocket Levels.....60&10%
Stanley's Dulex.....35%
Woods' Extension.....33⅓%

### Points, Glaziers'—
*Bulk and 1-lb. papers*....℔ 9 ¢
*½ lb. papers*.....*lb.* 9½¢
*¼-lb. papers*.....*lb.* 10 ¢

### Police Goods—
*Manufacturers' Lists*...25@25&5%
Tower's .....25%

### Polish—Metal, Etc—
Prestoline Liquid, No. 1 (½ pt.), ℔ doz., $3.00; No. 2 (1 qu.), $9.00...40%
Prestoline Paste.....40%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, ℔ doz. 50¢; ℔ gro. $4.50; ½ lb boxes, ℔ doz. $1.25; 1 lb boxes, ℔ doz. $2.25.
U. S. Liquid, 8 oz. cans, ℔ doz., $1.25.
Barkeepers' Friend Metal Polish, ℔ doz., $1.75.

#### Stove—
Black Eagle Benzine Paste, 5 lb cans, ℔ lb 10¢
Black Eagle, Liquid, ½ pt. cans.. ℔ doz. 75¢
Black Jack Paste, ¾ lb cans, ℔ gr. $9.00
Black Kid Paste, 5 lb can...each, $0.65
Ladd's Black Beauty Liquid, per 100 tins.....$6.75
Joseph Dixon, ℔ gr. $5.75.....10%
Dixon's Plumbago.....℔ lb 8¢
Fireside .....℔ gr. $2.50
Gem, ℔ gr. $4.50.....10%
Japanese .....℔ gr. $3.50
Jet Black.....℔ gr. $3.50
Peerless Iron Enamel, 10 oz. cans.. ℔ doz. $1.50

#### Window Polish—
Benj. P. Forbes:
Glasbright, No. 2, gal pails, ℔ doz., $21.00; each, $2.50; 1 lb cans, each .....75¢
Glasbright Powder, bbls., ℔ lb..20¢

### Poppers, Corn—
*1 qt. Square..doz.$0.80; gro.$8.75*
*1 qt. Round..doz.$0.90; gro.$10.00*
*1½ qt. Square.doz.$1.20; gro..$12.00*
*2 qt. Square..doz.$1.50; gro..$15.00*

### Post Hole and Tree Augers and Diggers—
See also *Diggers, Post Hole, &c.*

### Posts, Steel—
Steel Fence Posts, each, 5 ft., 42¢; 6 ft., 46¢; 6½ ft., 48¢.
Steel Hitching Posts.....each $1.30

### Potato Parers—
See *Parers, Potato.*

### Pots, Glue—
*Enameled* .....40%
*Tinned* .....30&10%

### Powder—
*In Canisters:*
*Duck, 1 lb*.....*each* 45¢
*Fine Sporting, 1 lb*....*each* 75¢
*Rifle, ½-lb*.....*each* 15¢
*Rifle, 1 lb*.....*each* 25¢
*In Kegs:*
*12½-lb. kegs*.....$3.50
*25-lb. kegs*.....$4.50
King's Semi-Smokeless:
Keg (25 lb bulk).....$6.50
Half Keg (12½ lb bulk).....$3.50
Quarter Keg (6¼ lb bulk).....$1.90
Case 24 (1 lb cans bulk).....$8 50
Half case (1 lb cans bulk).....$1.50

| King's Smokeless: | Shot Gun. | Rifle. |
|---|---|---|
| Keg (25 lb bulk) | $12.00 | $15.00 |
| Half Keg (12½ lb bulk) | 6 25 | 7.75 |
| Quarter Keg (6¼ lb bulk) | 3.25 | 4.00 |
| Case 24 (1 lb cans bulk) | 14.00 | 17.00 |
| Half case 12 (1 lb c. bk) | 7.25 | 8.75 |

### Presses—
#### Fruit and Jelly—
Enterprise Mfg. Co.....20@25%

#### Seal Presses—
Morrill's No. 1, ℔ doz., $20.00.....50%

### Pruning Hooks and Shears
See *Shears.*

### Pullers, Nail—
Cyclops .....50%
Miller's Falls, No. 3, ℔ doz., $12.00.. 33⅓&10%
Morrill's No. 1, Nail Puller, ℔ doz. $20.00 .....50%
Pearson No. 1, Cyclone Spike Puller, each $30.00.....50%
The Scranton Co. Case Lots:
No. 2B (large).....$5,50
No. 3B (small).....$5.00
Smith & Hemenway Co.:
Diamond B.....70%
Giant .....50%
Staple Pullers, Utica and Davison .....60%

### Pulleys, Single Wheel—

| *Inch* | 1½ | 1¾ | 2 | 3 |
|---|---|---|---|---|
| *Awning or Tackle, doz* | $0.30 | .45 | .60 | 1.05 |
| *Hay Fork, Swivel or Solid Eye, doz., ¼ in., $1.25; 5 in., $1.55* | | | | |
| *Inch* | 2 | 2¼ | 2½ | |
| *Hot House, doz*... | $0.65 | .85 | 1.20 | |
| *Inch* | 1¼ | 1½ | 1¾ | 2 |
| *Screw, doz*.... | $0.16 | .19 | .23 | .30 |
| *Inch* | 1¾ | 2 | 2¼ | 2½ |
| *Side, doz*..... | $0.25 | .40 | .55 | .60 |
| *Inch* | 1½ | 1¾ | 2 | 2½ |

#### Sash Pulleys—
*Common Frame; Square or Round End, per doz., 1¾ and 2 in*.....*17@20¢*
*Auger Morise, no Face Plate, per doz., 1¾ and 2 in*....*20@21¢*
Acme, No. 35..1¾ in., 19¢; 2 in., 20½¢
American Pulley Co.:
Wrought Steel American Plain Axle .....50&10%
Wrought Steel, Eagle.....17@20¢
Top Notch, Electrically Welded, Nos. 3 and 4.....19¢
Common Sense.....℔ doz. 20¢
Fox-All-Steel, Nos. 3 and 7, 2 in.... ℔ doz. 50%
Grand Rapids All Steel Noiseless..50%
Niagara, No. 25, 1¾ in., 19¢; 2 in. .....20½¢
No. 26 Troy..1¾ in., 14½¢; 2 in., 16½¢
Star, No. 26....1¾ in., 19¢; 2 in., 20½¢
Tackle Blocks—See Blocks.

### Pumps—
*Cistern* .....60%
*Pitcher Spout*.....75&5@75&10%
*Wood Pumps, Tubing, &c*....50%
Barnes Dbl. Acting (low list).....45%
Barnes Pitcher Spout.....80%
Contractors' Rubber Diaphragm, No. 2, B. & L. Block Co.....$16.00
Daisy Spray Pump.....℔ doz. $6.50
Flint & Walling's Fast Mail Hand (low list).....50%
Flint & Walling's Fast Mail (low list) .....50%
Flint & Walling's Tight Top Pitcher .....75&10%
National Specialty Mfg. Co., Measuring, Nos. 2, $6.00; 3, $5.50.....30%
Myers' Pumps (low list).....40&5%
Myers' Power Pumps.....40&5%
Myers' Spray Pumps.....40&5%

#### Pump Leathers—
*Plunger and Valve Leathers—Per gro.:*

| *No.* | 1 | 2 | 3 | 4 | |
|---|---|---|---|---|---|
| | $5.00 | 6.00 | 7.00 | 8.00 | 30% |
| *Cup Leathers—Per 100:* | | | | | |
| *Inch*.... | 2½ | 3 | 3½ | 4 | |
| | $5.00 | 7.00 | 9.00 | 12.00 | |

### Punches—
*Saddlers' or Drive, good, doz.*.....50@75¢
*Spring, single tube, good quality* .....*$1.75*
*Revolving (4 tubes)*....*doz.$3.50*
Bemis & Call Co.'s Cast St'l Drive.50%
Morrill's Nos. 1AA, 1A, 1B, 1C, 1D, $15.00.....50%
Hercules, 1 die, each $5.00.....50%
Niagara Hollow Punches.....40%
Niagara Solid Punches.....55&10%
Tinners' Hollow, P., S. & W. Co..40%
Tinners' Solid, P., S. & W. Co., ℔ doz., $1.44.....40%

### Rail—Barn Door, &c.—
*Sliding Door, Painted Iron, 2½@2¾¢*
*Sliding Door, Wrought Brass, 1⅛ in., lb., 36¢*.....30%
Cronk's:
Double Braced Steel Rail..℔ ft. 3¼¢
O. N. T. Rail.....$3.12
Griffin's:
xxx, ℔ 100 ft., 1 x 3-16 in., $3.25; 1¼ x 3-16 in., $3.75.
Hinged Hanger, ℔ 100 ft., 1 x 3-16 in., $3.50; 1¼ x 3-16 in., $4.00.
Lane's:
Hinged Track, ℔ 100 ft.....$3.45
O. N. T., ℔ 100 ft., 1 in., $3.00; 1¼ in., $3.45; 1½ in., $4.00.
Standard, 1¼ in.....℔ 100 ft. $4.00
Lawrence Bros.:
1 x 3-16 in., ℔ 100 ft., $7.50; 1¼ x 3-16 in., $8.75.....55&7½%
McKinney's:
Hinged Hanger Track, ℔ ft., 11¢; 60&5%
1 x 3-16 Track.....55&7½%
Myers' Stayon Track.....60&5%
Richards Mfg. Co.:
Common, 1 x 3-16 in., $3.00; 1⅛ x 3-16, $3.25; 1¼ x 3-16, $3.50.
Special Hinged Hanger Rail..60&10%
Lag Screw Rail, No. 65.....50%
Gauge Trolley Track, ℔ ft., No. 31, 9¢; No. 32, 14¢; No. 33, 20¢.
No. 50.....60&10%
Nos. 61, $3.00; 62, $3.25; 63, $3.50; 64, $4.00; 45, $3.25; 46, $3.50; 49, No. 1, $3.25; 49, No. 2, $3.50.

### Rakes—
*NOTE.—Many goods are sold at net prices.*
Fort Madison Red Head Lawn....$3.25
Fort Madison Blue Head Lawn....$2.70
Cronk's:
Steel Garden: Champion, 75%; Ideal, 80%; Victor.....80&25%
Queen City Lawn, ℔ doz., 20 teeth, $2.85; 24, $3.00.....net
Anticlog Lawn, ℔ doz.....$4.00
Malleable Garden.....70&10%
Ideal Steel Garden, ℔ doz., 12 teeth, $15.00; 14, $16.00; 16, $18.00.....80%
Kohler's:
Jumbo Lawn, 36-tooth....℔ doz. $5.00
Lawn Queen, 20-tooth....℔ doz. $2.85
Lawn Queen, 24-tooth....℔ doz. $3.00
Paragon, 20-tooth.....℔ doz. $2.65
Paragon, 24-tooth.....℔ doz. $2.75
Steel Garden, 14-tooth....℔ doz. $2.40
Malleable Garden, 14-tooth, ℔ doz. $1.75@2.00

### Rasps, Horse—
Disston's .....75%
Heller Bros.'.....70&5@70&10&5%
Liveright Bros.' Gold Medal.70&10@75%
McCaffrey's American Standard..... 60&10&5%
New Nicholson.....70&10@75%
See also Files.

### Razors—
Liana Bo-ras-ic.....60%
Fox Razors, ℔ doz., No. 42, $20.00; No 44, $20.00; No. 82, Platina, $25.00. } Dis. 40%
Red Devil.....65%

### Reels, Fishing—
Hendryx:
M 6, Q 6, A 6, B 6, M 9¼, M 16, Q 16, A 16, B 16, 4008, Rubber, Populo, Nickeled Populo.....:...20%
Aluminum, German Silv., Bronze.25%
1240 N, 124 N.....20%
3004 N, 06 N, 6 RM, G 9.....25%
4 N, 6 PN, 24 N, 26 PN.....20%
2904 P., 33⅓%; 2904 PN., 33⅓%; 0924 N., 33⅓%; 02081 N., 33⅓%; 002904 PN., 33⅓%; 802 N., 33⅓%; 986 PN, 2904 N, 974 PN.....25%
5009 PN, 5009 N.....20%
Competitor, 102 P, 102 PN, 202 P, 202 PN, 102 PR, 202 PR.....20%
304 P, 304 PN, 00304 P, 00304 PN.33⅓%

### Registers—*List July 1, 1903.*
*Japanned, Electroplated and Bronzed* .....70%
*White Porcelain Enamel*..50&10%
*Solid Brass or Bronze Metal*.40%

### Revolvers—
*Single Action*.....*95¢@$1.00*
*Double Action, except 44 cal.$2.00*
*Double Action, 44 caliber*...$2.00
*Automatic* .....*$4.00*
*Hammerless* .....*$4.50*

### Riddles, Hardware Grade
*16 in*.....*per doz.$2.50@$2.75*
*17 in*.....*per doz.$2.75@$3.00*
*18 in*.....*per doz.$3.00@$3.25*

### Rings and Ringers—
#### Bull Rings—

| | 2 | 2½ | 3 inch. |
|---|---|---|---|
| *Steel* | $0.70 | 0.75 | 0.80 doz. |
| *Copper* | $1.10 | 1.25 | 1.65 doz. |

#### Hog Rings and Ringers—
*Hill's Rings, gro. boxes.$4.50@$4.50*
*Hill's Ringers, Gray Iron, doz., 60@75¢*
*Hill's Ringers, Malleable Iron, doz.80@95¢*
*Blair's Rings..per gro.$5.00@$5.50*
*Blair's Ringers...per doz.75@90¢*

### Rivets and Burrs—
*Copper* .....50@50&10%
*Carriage, Coopers', Tinners', &c.:*
*Black* .....70&10%
*Metallic Tinned*.....70%

### Bifurcated and Tubular—
*Assorted in Boxes.*
*Bifurcated, per doz. boxes, pasteboard boxes, 50 count, 23@25¢; Tin boxes, 100 count, 29@32¢.*
*Tubular, per doz. boxes, 50 count, 29@32¢; 100 count, 51@58¢.*

### Rollers—
Cronk's Stay, No. 50.....$1.00
Cronk's Brinkerhoff No. 55, $0.60; No. 56, $0.75; No. 60.....$0.75
Lane's Stay.....40%
Richards' Stay:
Handy Adj. and Reversible No. 53.75¢
O. K. Adj. and Reversible No. 58.50¢
Lag Screw, Nos. 55 and 57.....50%
Underwriters', Nos. 59, 60.....50%
Favorite, No. 54.....60%

### Rope—
*Manila, 7-16 in. diam. and larger:*
*Pure* .....*lb.* 9½@10¢
*Sisal, 7-16 in. diam. and larger:*
*Pure* .....*lb.* 7¼@7½¢
*Sisal, Hay, Hide and Bale Ropes, Medium and Coarse:*
*Pure* .....*lb.* 7¾@8¢
*Sisal, Tarred, Medium Lath Yarn:*
*Pure* .....*lb.* 6¾@7¢
*Cotton Rope:*
*Best, ¼-in. and larger*...18@20¢
*Medium, ¼-in. and larger.16@17¢*
*Common, ¼-in. and larger*..10¢
*In coils, ½¢ advance.*
*Jute Rope:*
*Thread, No. 1, ¼-in. and up, lb.* .....6¼¢
*Thread, No. 2, ¼-in. and up, lb.* .....5¾¢

#### Wire Rope—
*Galvanized* .....37½&2½%
*Plain* .....45&2½%

### Ropes, Hammock—
Covert Mfg. Co.:
Jute, 35%; Sisal.....20%

### Rules
*Boxwood* .....60@60&10%
*Ivory* .....35&10@35&10&5%
Chapin-Stephens Co.:
Boxwood .....60%
Flexifold .....40%
Ivory .....25@25&10%
Miscellaneous .....50@50&10%
Stephens' Combination.....55%
Stationers' .....50@50&10%
Keuffel & Esser Co.:
Folding, Wood.....35&10%
Folding, Steel.....33⅓&10%
Lufkin's Steel.....50&10%
Lufkin's Lumber.....50&10%
Upson Nut Co.:
Boxwood .....60@60&10%
Ivory .....35&10@35&10&10%

### Sash Balances—
See *Balance, Sash.*

### Sash Locks—See *Locks, Sash.*

### Sash Weights—
See *Weights, Sash.*

### Sausage Stuffers or Fillers
See *Stuffers or Fillers, Sausage.*

### Saw Frames—
See *Frames, Saw.*

### Saw Sets—See *Sets, Saw.*

### Saw Tools—See *Tools, Saw.*

### Saws—

Atkins':
Circular ..... 45%
Band ..... 50@50&10%
Butcher Saws ..... 50%
Cross Cuts ..... 35%
One-Man Cross Cut ..... 40%
Narrow Cross Cut ..... 50%
Hand, Rip and Panel ..... 35&5%
Miter Box and Compass ..... 40%
Mulay, Mill and Drag ..... 45%
Wood Saws ..... 40&10%
Chapin-Stephens Co.:
Turning Saws and Frames. 30@30&10%
Diamond Saw & Stamping Works:
Sterling Kitchen Saws ..... 30&10&10%
Disston's:
Circular, Solid and Ins'ted Tooth. 50%
Band, 2 to 18 in. wide ..... 60%
Band, ¼ to 1¾ ..... 60%
Crosscuts ..... 45%
Narrow Crosscuts ..... 50%
Mulay Mill and Drag ..... 50%
Framed Woodsaws ..... 25%
Woodsaw Blades ..... 25%
Woodsaw Rods, Tinned ..... 15%
Hand Saws, Nos. 12, 99, 9, 16, d100, D8, 120, 76, 77, 8 ..... 25%
Hand Saws, Nos. 7, 107, 107½, 3, 1, 0, 00, Combination ..... 30%
Compass, Key Hole, &c. ..... 25%
Butcher Saws and Blades ..... 30%
C. E. Jennings & Co.'s:
Back Saws ..... 16⅔%
Butcher Saws ..... 25&7½%
Compass and Key Hole Saws ..... 33⅓&7½%
Framed Wood Saws ..... 25&7½%
Hand Saws ..... 12½%
Wood Saw Blades ..... 33⅓&7½%
Millers Falls:
Butcher Saws ..... 15&10%
Star Saw Blades ..... 15&10%
Massachusetts Saw Works:
Victor Kitchen Saws ..... 40&10&50%
Butcher Saws Blades ..... 35@40%
Peace & Richardson's Hand Saws. 30%
Simonds':
Circular Saws ..... 45%
Crescent Ground Cross Cut Saws. 30%
One-Man Cross Cuts ..... 40&10%
Gang Mill, Mulay and Drag Saws. 45%
Band Saws ..... 50%
Back Saws ..... 25@25&7½%
Butcher Saws ..... 35@35&7½%
Hand Saws ..... 25@25&7½%
Hand Saws, Bay State Brand ..... 45%
Compass, Key Hole, &c. .25@25&7½%
Wood Saws ..... 40&7½%
Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws ..... 50%

### Hack Saw Blades and Frames—

Atkins' Hack Saw Blades A A A. .25%
Disston's:
Concave Blades ..... **25%**
Keystone Blades ..... 35%
Hack Saw Frames ..... 30%
Simonds File Co. ..... 35%
C. E. Jennings & Co.'s:
Hack Saw Frames, Nos. 175, 180 .... 40&7½%
Hack Saws, Nos. 175, 180, complete, 40&7½%
Goodell's Hack Saw Blades .... 40&10%
Griffin's Hack Saw Frames. .35&5&10%
Griffin's Hack Saw Blades .... 35&5&10%
Star Hack Saws and Blades .... 15&10%
Sterling Hack Saw Blades. .30&10&5%
Sterling Hack Saw Frames. .30&10&10%
Sterling Power Hack Saw Machines, each, No. 1, $25.00; No. 2, $30.00. .10%
Victor Hack Saw Blades ..... 20%
Victor Hack Saw Frames ..... 40%
Whitaker Mfg. Co.:
National Hand Blades ..... 40%
National Hand Frames ..... 30&5%
National Power Blades ..... 30&10%

### Scroll—

Barnes, No. 7, $15 ..... 25%
Barnes' Scroll Saw Blades ..... 40%
Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20 ..... 20%
Lester, complete, $10.00 ..... 15&10%
Rogers, complete, $3.50 and $4.00 .. 15&10%

### Scales—

*Union Platform, Plain. $2.10@2.20*
*Union Platform, Stpd. $2.20@2.30*
Chatillon's:
Eureka ..... 25%
Favorite ..... 40%
Grocers' Trip Scales ..... 50%
The Standard Portables ..... 40%
The Standard R. R. and Wagon ..... 50&10%

### Scrapers—

*Box, 1 Handle ..... doz. $1.85@2.10*
*Box, 2 Handle ..... doz. $2.35@2.50*
*Ship ... Light, $2.00; Heavy, $4.50*
Chapin-Stephens Co., Box. .30@30&10
Richards Mfg. Co., Foot ..... 60%

### Screws—Bench and Hand

*Bench, Iron, doz., 1 in., $2.50@ 2.75; 1¼, $3.00@3.25; 1½, $3.50@3.75*
*Bench, Wood ..... 20@20&10%*
*Hand, Wood .... 70&10@70&10&10%*
Chapin-Stephens Co., Hand ..... 70@70&10&2½%

### Coach, Lag and Hand Rail—

*Lag, Cone Point ... 80&5@80&10%*
*Coach, Gimlet Point .. 80@80&5%*
*Hand Rail ..... 70&10@75%*

### Jack Screws—

*Standard List ..... 70&10@75%*
Millers Falls ..... 50&10%
Swett Iron Works ..... 70@75%

### Machine—

*Cut Tread, Iron, Brass or Bronze:*
*Flat Head or Round Head, 50@50&10%*
*Fillister Head ..... 40@40&10%*
*Rolled Thread, F. H. or R. H., Iron ..... 75&10%*
*F. H. or R. H., Brass, Nos. 8 to 14 ..... 65&10%*

### Set and Cap—

*Set (Iron) ..... 75&10&7½%*
*Set (Steel), net advance over Iron ..... 25%*
*Sq. Hd. Cap ..... 70&10&7½%*
*Hex. Hd. Cap ..... 70&10&7½%*
*Rd. Hd. Cap ..... 50&7½%*
*Fillister Hd. Cap ..... 60&7½%*

### Wood—

*List July 23, 1903.*
*Flat Head, Iron .... 87½&5@.. %*
*Round Head, Iron .... 85&5@.. %*
*Flat Head, Brass .... 80&5@.. %*
*Round Head, Brass .. 77½&5@.. %*
*Flat Head, Bronze .... 75&5@.. %*
*Round Head, Bronze. 72½&5@.. %*
*Drive Screws ..... 87½&5@.. %*

### Scroll Saws—

See *Saws, Scroll.*

### Scythes— *Per doz.*

*Grass, No. 1, Plain ..... $7.00*
*Clipper, Bronzed Webb ..... $7.25*
*No. 3 Clipper, Pol'd Webb ... $7.50*
*No. 6 Clipper and Solid Steel. $7.75*
*Bush, Weed and Bramble, Nos. 11, 12 and 13 ..... $7.25*
*Grain, No. 1 ..... $9.00@9.50*
*Bronzed Webb, No. 1 ... $9.25@9.75*
*Nos. 3 and 4 Clipper, Grain, $9.50@10.00*
*Solid Steel, No. 6 .... $10.00@10.50*

### Seeders, Raisin—

Enterprise ..... 25@30%

### Sets— Awl and Tool—

Fray's Tool Handles, Nos. 1, $12; 2, $16; 3, $12 ..... 50%
Millers Falls Adj. Tool Handles, No. 1, $12; No. 4, $12; No. 5, $18. .20&10%

### Garden Tool Sets—

Ft. Madison Three Plows, Hoe, Rake and Shovel ..... ℔ doz. sets $9.00

### Sets, Nail—

*Octagon ..... gro. $3.50@3.75*
Buck Bros. ..... 27½%
Cannon's Diamond Point, ℔ gro. $12, 40&10%
Mayhew's ..... ℔ gro. $9.00
Snell's Corrugated, Cup Pt. .... 40&10%
Snell's Knurled, Cup Pt. ..... 40&10%
Victor Knurled, Cup Pt. .... ℔ gro. $7.50

### Rivet—

*Regular list ..... 75@75&10%*

### Saw—

Atkin's:
Criterion ..... 40%
Adjustable ..... 40%
Disston's Star, Monarch and Triumph ..... 30%
Morrill's No. 1 ..... $15.00
Nos. 3 and 4, Cross Cut .... $20.60
No. 5, Mill ..... $30.00
Nos. 10, 11, 95 ..... $15.60
No. 1 Old Style ..... $10.00
Special ..... $16.25
Giant Royal Cross Cut ..... ℔ doz. $7.50
Royal, Hand ..... ℔ doz. $4.50
Taintor Positive ..... ℔ doz. $6.75

(50%)

### Shaving—

Fox Shaving Sets, No. 30 ..... ℔ doz., net, $24.00
Smith & Hemenway Co.'s ..... 75%

### Sharpeners, Knife—

Pike Mfg. Co.:
Fast Cut Pocket Knife Hones, ℔ doz. ..... $1.50
Mounted Kitchen Sand Stone, ℔ doz. ..... $1.50
Natural Grit Carving Knife Hones, ℔ doz. ..... $3.00
Quick Cut Emery Carving Knife Hones, ℔ doz. ..... $1.50
Quick Edge Pocket Knife Hones, ℔ doz. ..... $2.50

(50%)

### Skate—

Smith & Hemenway Co., Eureka. .50%

### Shaves, Spoke—

*Iron ..... doz. $1.25*
*Wood ..... doz. $2.00*
Bailey's (Stanley R. & L. Co.) ..... 45%
Chapin-Stephens Co. ..... 30@30&10%
Goodell's, ℔ doz. $9.00 ..... 15&10%

### Shears—

| | | | |
|---|---|---|---|
| *Cast Iron.. 7* | *8* | *9 in.* | |
| *Best ...$16.00* | *18.00* | *20.00* | *gro.* |
| *Good ...$13.00* | *15.00* | *17.00* | *gro.* |
| *Cheap .. $5.00* | *6.00* | *7.00* | *gro.* |

*Straight Trimmers, &c.:*
*Best quality Jap .... 70@70&10%*
*Best quality Nickel. .60@60&10%*
*Tailors' Shears ..... 40@40&10%*
Acme Cast Shears ..... 40@40&5%
Heinisch's Tailor's Shears ..... 10%
National Cutlery Co.'s Nickel Plated, 60&10%; Japan Handles ..... 70&10%
Wilkinson Shear & Cutlery Co.:
Sheep, 1900 list ..... 30&10&5%
Grass ..... 50&10%
Horse or Mule ..... 50&10%
J. Wiss & Sons Co.:
Best Quality Jap'd ..... 60&10%
Best Quality Nickeled ..... 50&10%
Tailors' ..... 25%

### Tinners' Snips—

*Steel Blades ..... 20&5@20&10%*
*Steel Laid Blades ..... 40&10@50%*
Acme Cast Snips ..... 40@45&5%
Forged Handles, Steel Blades, Berlin ..... 50%
Heinisch's Snips ..... 40%
Jennings & Griffin Mfg. Co.'s 6½ to 10 in. ..... 33⅓&7½%
National Cutlery Co.'s Forged Steel. 50%
Niagara Snips ..... 40%
P., S. & W. Forged Handles, 25%; W. R. W. ..... 40&10%
J. Wiss & Sons Co.:
Wiss Forged Steel ..... 25%

### Pruning Shears—

Cronk's Hand Shears ..... 33⅓%
Cronk's Wood Handle Shears .... 33⅓%
Disston's Combined Pruning Hook and Saw, ℔ doz, $18.00 ..... 25%
Disston's Pruning Hook only, ℔ doz., $12.00 ..... 25%
John T. Henry Mfg. Co.:
Pruning Shears, all grades ..... 40%
P., S. & W. Co. ..... 40&10%
Columbian Cutlery Co.:
Hedge, Wilcut Brand ..... 60&10%
Lawn and Border, Wilcut Brand, 60&10%

### Sheaves—Sliding Door—

Reading ..... 40%
R. & E. list ..... 15%

### Sliding Shutter—

Reading list ..... 40%
R. & E. list ..... 10%

### Shells—Shells, Empty—

Brass Shells, Empty:
Climax, 10 and 12 gauge ..... 65&10%
Club, Rival, 65&5%; First Quality, 60&5%
Paper Shells, Empty:
New Rapid, 10, 12, 16 and 20 gauge, 25&10%
Climax, 10 and 12 gauge; Acme, 10, 12, 16 and 20 gauge; Ideal, 10, 12, 16 and 20 gauge; Leader grade, 25&5%
Union League, 12 and 12 gauge; Rival Grade ..... 25%
New Climax, Defiance, 10, 12, 14, 16 and 20 gauge; Climax, 14, 16 and 20 gauge ..... 20&5%
Challenge, Monarch, 10, 12, 16 and 20 gauge; League, Union, 14, 16 and 20 gauge; Repeater Grade. .20%

### Shells, Loaded—

*Loaded with Black Powder. .40%*
*Loaded with Smokeless Powder, medium grade ..... 40&5%*
*Loaded with Smokeless Powder, high grade ..... 40&10&10%*
Union Metallic Cartridge Co.:
New Club, Black Powders ..... 40%
Nitro Club, Smokeless Powders. 40&5%
Arrow, Smokeless Powders. 40&10&10%
Winchester:
Smokeless Repeater Grade ..... 40&5%
Smokeless Leader Grade ... 40&10&10%
Black Powder ..... 40%

### Shingles, Metal— Per Sq.

| | Painted. | Galv. |
|---|---|---|
| Edwards Mfg. Co.: | | |
| 14 x 20 | $4.25 | $6.00 |
| 10 x 14 | 4.50 | 6.25 |
| 7 x 10 | 4.75 | 6.50 |
| Wheeling Corrugating Co.: | | |
| Dixie, 14 x 20 in. | $4.25 | $5.50 |
| Dixie, 10 x 14 in. | 4.50 | 6.00 |
| Dixie, 7 x 10 in. | 5.00 | 6.75 |

### Shoes, Horse, Mule, &c.—

*F.o.b. Pittsburgh:*
*Iron ..... per keg. $4.10*
*Steel ..... per keg. $3.85*
Burden's, all sizes ..... ℔ keg $3.90

### Shot—

*25-lb. bag.*
*Drop, up to B ..... $1.80*
*Drop, B and larger ..... 2.05*
*Buck ..... 2.05*
*Chilled ..... 2.05*
*Dust ..... 2.30*

### Shovels and Spades—

*Association List, Nov. 15, 1902. 40%*
Avery Stamping Co. ..... 40%

### Snow Shovels—

*Long Handle ..... $3.25@$3.50*
*Wood and Mall, D Handle, $3.75@$4.00*

### Sieves and Sifters—

*Hunter's Imitation, gro. .... $9.50*
*Hunter's Genuine, per gro. . $12.00*

### Sifters, Ash—

Acme Ball Bearing Sales Co., Acme Automatic Ash Sifter, each, $3.25; ℔ doz. ..... $39.00

### Sieves, Seamless Metallic

*Per dozen.*

| *Mesh* | *14* | *16* | *18* | *20* |
|---|---|---|---|---|
| *Iron Wire* | *$1.05* | *1.05* | *1.10* | *1.20* |
| *Tinned Wire* | *$1.15* | *1.15* | *1.20* | *1.30* |

### Sieves, Wooden Rim—

*Nested, 10, 11 and 12 Inch.*
*Mesh 18, Nested .... doz. $0.90@0.95*
*Mesh 20, Nested .... doz. $1.00@1.05*
*Mesh 24, Nested .... doz. $1.30@1.40*

### Sinks, Cast Iron—

*Painted, Standard list:*
*12 x 12 to 22 x 36 in ..... 60%*
*20 x 24 to 24 x 50 in ..... 50*
*24 x 60 to 24 x 120 in ..... 30*
Barnes' low list ..... 60%

*NOTE.—There is not entire uniformity in lists used by jobbers.*

### Skeins, Wagon—

*Cast Iron ..... 70@75&10%*
*Steel ..... 40@45%*

### Slates, School—

*Factory Shipments.*
*"D" Slates ..... 50@50&10%*
*Eureka, Unexcelled Noiseless .. 60&7 tens.*
*Victor A, Noiseless. 60&4 tens &5%*

### Slaw Cutters—See *Cutters.*

### Snaps, Harness—

*German ..... 40@40&10%*
Covert Mfg. Co.:
Derby, 25%; Yankee, 30&2%; Yankee Roller, 30&2%.
High Grade, 40%; Trojan ..... 40%
Jockey ..... 25%

### Snaths—

*Scythe ..... 60%*

### Snips, Tinners—See *Shears.*

### Spoons and Forks—

### Silver Plated—

*Good Quality ..... 50&10@60&5%*
*Cheap ..... 60@60&10%*
International Silver Co:
1847 Rogers Bros., 40&10%; Rogers & Hamilton ..... 50&10%
Rogers & Bro., William Rogers' Eagle Brand ..... 50&10%
Anchor, Rogers Brand ..... 60%
Wm. Rogers & Son ..... 60&10%

### Miscellaneous

*German Silver ..... 60@60&5%*

### Tinned Iron—

*Teas ..... per gro. 50@55¢*
*Tables ..... per gro. $0.90@$1.00*

### Springs— Door—

Bardsley's Spring and Check ..... 40%
Chicago (Coil) ..... 40&10%
Gem (Coil) ..... 20%
Pullman Door and Gate ..... 10%
Reliance (Coil) ..... 40&10%
Star (Coil) ..... 35%
Torrey's Rod, 39 in. ..... ℔ doz. $1.00

### Carriage, Wagon, &c.—

*1¼ in. and Wider: Per 100 lb.*
*Black ..... $4.75@$5.00*
*Half Bright ..... $4.75@$5.00*
*Bright ..... $5.25@$5.50*
*Painted Seat Springs:*
*1½ x 2 x 26 .... per pair. 45@47¢*
*1½ x 3 x 28 .... per pair. 68@71¢*

### Sprinklers, Lawn—

American Foundry & Mfg. Co.:
Cactus, 65%; Japanese, 70%; National, ℔ doz. ..... $12.00
Enterprise ..... 25@30%
Philadelphia No. 1, ℔ doz. $12; No. 2, $15; No. 3, $20 ..... 30%

### Squares—

*Nickel plated .. } List Jan. 5, 1900.*
*Steel and Iron . } 80@80&5%*
*Rosewood Hdl. Try Square and T-Bevels ..... 60&10&10@70%*
*Iron Hdl. Try Squares and T-Bevels ..... 40&10@40&10&10%*
Disston's Try Squares and Bevels, Rosewood Handle, 60 & 10%; Iron Stock and Bevel ..... 15%

### Squeezers, Lemon

*Wood, Porcelain Lined:*
*Cheap ..... doz. $1.00*
*Good Grade ..... doz. $1.25*
*Tinned Iron ..... doz. $0.75@1.00*
*Iron, Porcelain Lined ... doz. $1.75*

### Staples—

*Barbed Blind ..... 85&5@85&10%*
*Electricians' ..... 80&10&10@85%*
*Fence Staples, Polished, $2.05; Galvanized ..... $2.35*
*Poultry Netting Staples ..... per lb. 3¼@3½¢*

### Steels, Butchers'—

Dick's ..... 30%
Foster Bros.' ..... 30%

### Steelyards— .... *30@30&10%*

### Stocks and Dies—

*Blacksmiths' ..... 50@50&10%*
Curtis Rev'ble Ratchet Die Stock. .25%
Derby Screw Plates ..... 25%
Green River ..... 25%
Lightning Screw Plate ..... 25
Little Giant ..... 25
Reece's New Screw Plate ..... 25

### Stoners, Cherry—

Enterprise ..... 25@30%

### Stones—Oil, &c.

Pike Mfg. Co., 1907 list: ℔ lb
Arkansas St. No. 1, 3 to 5½ in. $2.80
Arkansas St. No. 1, 5½ to 8 in. $3.50
Arkansas Slips No. 1 ..... $1.90
Lily White Washita, 4 to 8 in. 60¢
Rosy Red Washita, 4 to 8 in. 60¢
Washita St., Extra, 4 to 8 in. 50¢
Washita St., No. 1, 4 to 8 in. 40¢
Washita St., No. 2, 4 to 8 in. 25¢
Lily White Slips ..... 90¢
Rosy Red Slips ..... 90¢
Washita Slips, Extra ..... 80¢
Washita Slips, No. 1 ..... 70¢
Washita Slips, No. 2 ..... 40¢
India Oil Stones (price list) ..... 33⅓%
Quickcut Emery and Corundum Oil Stone, Double Grit ..... 40%
Quickcut Emery and Corundum Axe Stone, Double Grit ..... 33⅓%
Quickcut Emery Rubbing Bricks. 40%
Hindostan No. 1, R'g'lar ℔ lb 8¢
Hindostan No. 1 Small ℔ lb 10¢
Axe Stones (all kinds) .....
Turkey Oil Stones, Extra, 5 to 8 in. ..... ℔ lb 80¢
Queer Creek Stones, 4 to 8 in. 20¢
Queer Creek Slips ..... 40¢
Sand Stone ..... 6¢

(33⅓%)
(33⅓%)

### Scythe Stones—

Pike Mfg. Co., 1901 list:
Black Diamond S. S., ₱ gro. $12.00
Lamoille S. S., ₱ gro. $11.00
White Mountain S. S., ₱ gro. $9.50
Green Mountain S. S., ₱ gro. $7.00
Extra Indian Pond S. S., ₱ gro. $8.00
No. 1 Indian Pond S. S., ₱ gro. $7.50
No. 2 Indian Pond S. S., ₱ gro. $5.00
Leader Red End S. S., ₱ gro. $5.00
Quick Cut Emery, ₱ gro. $10.00
Pure Corundum, ₱ gro. $18.00
Crescent, $7.00
Emery Scythe Rifles, 2 Coat, $8.80
Emery Scythe Rifles, 3 Coat, $11.00
Emery Scythe Rifles, 4 Coat, $13.20
Balance of 1904 list 33⅓%.
Electro (Artificial), ₱ gro., $12.00, 33⅓%
Lightning (Artificial), ₱ gro., $18.00, 33⅓

### Stoppers, Bottle—

Victor Bottle Stoppers, ₱ gro. $9.00

### Stops— Bench—

Millers Falls, 15&10%
Morrill's, ₱ doz., No. 1, $10.00, 50%
Morrill's, No. 2, $12.50, 50%

### Door—

Chapin-Stephens Co., 50@50&10%

### Plane—

Chapin-Stevens Co., 20%

### Straps— Box—

Acme Embossed, case lots, 20&10&10%
Cary's Universal, case lots, 20&10&10%

### Stretchers, Carpet—

*Cast Iron, Steel Points, doz. 55¢*
*All Steel Socket, doz. $2.00@2.25*
Excelsior Stretcher and Tack Hammer Combined, ₱ doz., $6.00, 20%

### Stuffers, Sausage—

Enterprise Mfg. Co., 25@25&7½%
National Specialty Co., list Jan. 1, 1902, 30&5%
P., S. & W. Co., 40&10&5%

### Sweepers, Carpet—

| | ₱ doz. |
|---|---|
| Bissell Carpet Sweeper Co.: | |
| Superba, Crotch Mahogany | $36.00 |
| Triumph, Fancy Veneers | $33.00 |
| Parlor Queen, Fig. Rosewood | $30.00 |
| Elite, Hungarian Ash | $29.00 |
| Am. Queen, Fig. Mahogany | $27.00 |
| Ideal, Bird's-Eye Maple | $25.00 |
| Grand Rapids, Nickel, $24.00; Japan | $22.00 |
| Standard, Nickel, $22.00; Japan | $20.00 |
| Crown Jewel, Nickel, $21.00; Jap. | $19.00 |
| Crystal, Glass Top | $36.00 |
| Grand, 17 in. wide | $36.00 |
| Parlor Grand | $48.00 |
| Club, 24 in. wide | $54.00 |
| Hall 28 in. wide | $60.00 |

*NOTE.—Rebates: 50c per dozen on three dozen lots; $1 per dozen on five-dozen lots; $2 per dozen on ten dozen lots; $2.50 per dozen on twenty-five dozen lots*

### Tacks, Finishing Nails, &c.

*American Carpet Tacks, 90&40%*
*American Cut Tacks, 90&40%*
*Swedes' Cut Tacks, 90&40%*
*Swedes' Upholsterers', 90&50%*
*Gimp Tacks, 90&50%*
*Lace Tacks, 90&50%*
*Trimmers' Tacks, 90&40%*
*Looking Glass Tacks, 60%*
*Bill Posters' and Railroad Tacks, 90&50&10%*
*Hungarian Nails, 80&20%*
*Finishing Nails, 70%*
*Trunk and Clout Nails, 80&10%*
*NOTE.—The above prices are for Straight Weights*

### Miscellaneous—

*Double Pointed Tacks, 90&6 tens@—%*
See also Nails, Wire.

### Tanks, Oil and Gasoline—

Wilson & Friend Co.:

| Gal. | Gasoline | Oil |
|---|---|---|
| 30 | $2.75 | $3.00 |
| 60 | $3.50 | $4.00 |
| 110 | $5.00 | $5.75 |

### Tapes, Measuring—

*American Asses' Skin, 50@—%*
*Patent Leather, 25@30@5%*
*Steel, 33⅓@5%*
*Chesterman's, 25@25@5%*
Keuffel & Esser Co.:
Favorite, Ass Skin, 40&10@50%
Favorite, Duck and Leather, 25&5@25&10%
Metallic and Steel, lower list, 35@35&5%; Pocket, 35@35&5%.
Lufkins:
Asses' Skin, 40&10@50%
Metallic, 30@30&5%
Patent Bend, Leather, 25&5@25&10%
Pocket, 40@40&5%
Steel, 33⅓@35%
Wiebusch & Hilger:
Chesterman's Metallic, No. 34L, etc., 25%
Chesterman's Steel, No. 1038L, etc., 35%

### Teeth, Harrow—

*Steel Harrow Teeth, plain or headed, ⅝-inch and larger, per 100 lb., $2.55@$2.80*

### Thermometers—

*Tin Case, Cabinet, Flange, Dairy, &c., 30@35%*

### Ties, Bale—Steel Wire—

*Single Loop, 82½&10%*
*Monitor, Cross Head, &c. 70&2½%*

### Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

### Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

### Tire Benders, Upsetters, &c.

See *Benders and Upsetters, Tire.*

### Tools—Coopers'—

L. & I. J. White, 20@20&5%

### Haying—

Myers' Hay Tools, 45%

### Ice Tools—

Gifford-Wood Co., 15%

### Miniature—

Smith & Hemenway Co.'s, Davidson, ₱ doz., Nickel Plated, $1.50; Gold Plated, $2.00

### Saw—

Atkins' Cross Cut Saw Tools, 35&5%
Simond's Improved, 33⅓
Simonds' Crescent, 25%

### Ship—

L. & I. J. White, 25%

### Transom Lifters—

See *Lifters, Transom.*

### Traps—Fly—

*Balloon, Globe or Acme, doz., $1.15@$1.25; gro., $11.50@12.00*
*Harper, Champion or Paragon, doz., $1.25@1.40; gro. $13.00@13.50*

### Game—

*Imitation Oneida, 75@10%*
Newhouse, 45@45&5%
Hawley & Norton, 65%
Victor, 75@75&10%
Oneida Community Jump, 50%
Hector, 75@75&10%

### Mouse and Rat—

*Mouse, Wood, Choker, doz. holes, 12¢*
*Mouse, Round or Square Wire, doz. 85@90¢*
Marty French Rat and Mouse Traps (Genuine), ₱ doz.:

| | Crate lots. | Small lots. |
|---|---|---|
| No. 1, Rat | $11.50 | $14.50 |
| No. 3, Rat | $5.75 | $6.50 |
| No. 3½, Rat | $4.70 | $5.25 |
| No. 5, Mouse | $2.25 | $3.00 |

Animal Trap Co.:
Out o' Sight, Mouse, ₱ doz., $0.66
Out o' Sight, Rat, ₱ doz., 1.20
Easy Set, Mouse, ₱ doz., .33
Easy Set, Rat, ₱ doz., .85
Out o' Sight Chockers, ₱ doz. holes, .12
Out o' Sight, Tin, 5-hole, ₱ doz. traps, .75

### Trowels—

Disston Brick and Pointing, 25%
Disston Plastering, 20%
Disston "Standard Brand" and Garden Trowels, 30%
Kohler's Steel Garden Trowels, ₱ gro., 5 in., $4.80; 6 in., $6.00
Never-Break, Forged Steel Garden Trowels, in bulk, net ₱ gro. $5.50
In 1 doz. boxes, ₱ gro. $6.00
Woodrough & McParlin, Plastering, 25%

### Trucks, Warehouse, &c.—

B. & L. Block Co.:
New York Pattern, 50&10
Western Pattern, 60&10
Handy Trucks, ₱ doz. $16.00
Grocery, ₱ doz $15.00
McKinney Trucks, each, net $10.00
Model Stove Trucks, ₱ doz $18.50

### Tubs, Wash—

*M'f'gr's list, price per gross.*

| No. | 0 | 1 | 2 | 3 |
|---|---|---|---|---|
| Galvanized | $67 | $79 | $89 | $99 |

*10&7½ 6&5%*

### Twine, Miscellaneous—

*Flax Twine:*
*No. 9, ¼ and ½-lb. Balls, 21@23¢*
*No. 12, ¼ and ½-lb. Balls, 19@21¢*
*No. 18, ¼ and ½-lb. Balls, 16@18¢*
*No. 24, ¼ and ½-lb. Balls, 15½@17½¢*
*No. 36, ¼ and ½-lb. Balls, 15@17¢*
*Chalk Line, Cotton Balls, 24@29¢*
*Cotton Mops, 6, 9, 12 and 16 to doz., 8½@19¢*
*Cotton Wrapping, 3 Balls to lb., according to quality, 13½@19¢*
*American 3 Ply Hemp, ½-lb. Balls, 12½@15¢*
*American 3 Ply Hemp, Balls, 13½@16¢*
*India 2-Ply Hemp, ¼ and ½ Balls (Spring Twine), 7½@9¢*
*India 3-Ply Hemp, ½-lb. Balls, 7½@9¢*
*India 3-Ply Hemp, 1½-lb. Balls, 7@8½¢*
*2, 3, 4 and 5-Ply Jute, 1½-lb. Balls, 9@11¢*
*Mason Line, Linen, ½-lb. Bls. 17¢*
*No. 264 Mattress ¼ and ½ lb. Balls, according to quality, 30@60¢*
*Wool, 3 to 6 ply, B 6¢; A 7½¢*

### Vises—

*Solid Box, 50&5@50&10&5%*

### Parallel—

Athol Machine Co.:
Simpson's Adjustable, 40%
Standard, 40%
Amateur, 25%
Columbian Hdw. Co., 40&5% slide, 65%
Fisher & Norris Double Screw, net, each, Nos. 2, $10.50; 3, $16.00; 4, $20.50; 5, $27.00.
Fulton Mach. & Vise Co.:
Reed, Swivel, 25%
Star, Solid Jaw, 10
Hollands':
Machinists', 10@10&5%
Keystone, 65&5@70%
Lewis Tool Co.:
Adjustable Jaw, 30%
Monarch, 50%; Solid Jaw, 50%
Massey Vise Co.:
Clincher, 40%
Perfect, 15%; Lightning Grip, 15%
Merrill's, 20%
Millers Falls Oval Slide Pattern, 60&10%
Parker's:
Victor, 20@25%; Regulars, 20@25%
Vulcan's, 40@45%
Combination Pipe, 55@60%
Prentiss, 20@25%
Rock Island, 25%
Snedikers X. L., 33⅓%
Stephens', 33⅓%

### Saw Filers

Disston's D 3 Clamp and Guide, ₱ doz., $24.00, 30%; Clamps, 30%
Perfection Saw Clamps, ₱ doz., $1.50
Reading, 60%

### Wood Workers—

Fulton Mach. & Vise Co.:
Reed, 25%
Star, 40%
Massey Vise Co.:
Lightning Grip, 15%; Perfect, 15%
Wyman & Gordon's Quick Action, 6 in., $6.00; 9 in., $7.00; 14 in., $8.00.

### Miscellaneous—

Holland's Combination Pipe, 60@60&5%
Massey's Quick Action Pipe, 40%
Parker's Combination Pipe:
87 Series, 60%; 187 Series, 60&5%; No. 870, 40%.
Rock Island Pipe, 25%

### Wads— *Price per M.*

*B. E., 11 up, 60¢*
*B. E., 9 and 10, 70¢*
*B. E., 8, 80¢*
*B. E., 7, 80¢*
*P. E., 11 up, $1.00*
*P. E., 9 and 10, 1.25*
*P. E., 8, 1.50*
*P. E., 7, 1.50*
*Dis. 15%*
*Ely's B. E., 11 and larger, $1.70@1.75*
*Ely's P. E., 12 to 20, $3.00@3.25*

### Ware, Hollow—

### Cast Iron, Hollow—

*Stove Hollow Ware:*
*Enameled, 45&10%*
*Ground, 50&5%*
*Plain or Unground, 60%*
*Country Hollow Ware, per 100 lbs., $2.75@$3.00*
*White Enameled Ware:*
*Maslin Kettles, 65&10%*
*Covered Wares:*
*Tinned and Turned, 35&10%*
*Enameled, 45&10%*
See also *Pots, Glue.*

### Enameled—

Agate Nickel Steel Ware, 33⅓%
Iron Clad Ware, 70&10%
Lava and Volcanic, Enameled, 40&10%

### Tea Kettles—

*Galvanized Tea Kettles:*

| Inch | 6 | 7 | 8 | 9 |
|---|---|---|---|---|
| Each | 45¢ | 50¢ | 55¢ | 65¢ |

### Steel Hollow Ware—

Avery Stamping Co.:
Never Break Spiders and Griddles, 65&10%
Steel Kettles, Maslins Scotch Bowls, Tin'd, 60%
Steel Stew Pans, Stew Pots, etc., Porcelained, 50%
Solid Steel Spiders and Griddles, 65&5%
Solid Steel Kettles, 60&5%

### Warmers, Foot—

Pike Mfg. Co., Soapstone, 40@40&10%

### Washboards—

| Solid Zinc: | ₱ doz. |
|---|---|
| Crescent, family size, bent frame | $4.05 |
| Red Star, family size, stationary protector | $4.05 |
| Double Zinc Surface: | |
| Saginaw Globe, family size, stationary protector | $3.55 |
| Cable Cross, family size, stationary protector | $3.60 |
| Single Zinc Surface: | |
| Naiad, family size, open back, perforated | $3.00 |
| Single Saginaw Globe | $2.85 |
| Brass Surface: | |
| Brass King, Single Surface, open back | $4.05 |
| Nickel Plate Surface: | |
| No. 1001 Nickel Plate, Single Surface | $3.60 |
| Glass Surface: | |
| Glass King, Single Surface, open back | $3.95 |
| Enamel Surface: | |
| Enamel King, Single Surface, ventilated back | $3.95 |

### Washers—Leather, Axle—

*Solid, 90@90&10%*
*Patent, 90@90&5%*
*Coil: ⅞ 1 1⅛ 1¼ Inch.*
*9¢ 10¢ 11¢ 14¢ per box.*

### Iron or Steel—

*Size bolt, 5-16 ⅜ ½ ⅝ ¾*
*Washers, $4.65 3.75 2.45 2.25 2.05*
*The above prices are based on $6.75 off list.*

*In lots less than one keg add ½¢ per lb.; 5-lb. boxes add ½¢ to list.*
Avery Stamping Co.:
Standard, in 200 lb kegs, $6.00 ₱ 100 lb. discl.; in 100 lb kegs, add 10¢ net ₱ 100 lb; in 5 or 10 lb boxes, add 50¢ net ₱ 100 lb; in 1 lb boxes, add $1.00 net ₱ 100 lb.

### Cast Washers—

*Over ½-inch, barrel lots, per lb. 1½@1¾¢*

### Wedges—

*Oil Finish, lb., 2¼@2¾¢*

### Weights—Hitching—

Covert Mfg. Co., 30&2%

### Sash—

*Per net ton, f.o.b. factory:*
*Eastern District, $21.00@—*
*Western and Central Districts, $20.00@$22.00*

### Wheels, Well—

*8-in., $2.00; 10-in., $2.30; 12-in., $3.00; 14-in., $4.45.*

### Wire and Wire Goods—

*Bright and Annealed:*
*6 to 9, 72¢10¢7½%*
*10 to 18, 72½¢10¢10%*
*19 to 26, 75¢10¢10¢2½%*
*27 to 36, 77½¢7½%*
*Galvanized:*
*6 to 9, 72½¢10%*
*10 to 14, 72½¢10¢5%*
*15 to 16, 72½¢10¢5%*
*17 to 18, 72½%*
*19 to 26, 70¢5¢2½%*
*27 to 36, 65¢10¢10%*
*Coppered:*
*6 to 9, 65¢10¢10%*
*10 to 14, 70¢10¢5%*
*15 to 18, 65¢10¢10¢10%*
*19 to 26, 70¢5¢2½%*
*27 to 36, 72½¢10¢2½%*
*Tinned:*
*6 to 18, 67¢10¢10%*
*Brass, 15½¢ lb., base*
*Copper, 15¼¢ lb., base*
*Cast Steel Wire, 50%*

### Spooled Wire—

*Annealed and Tinned, 75%*
*Brass and Copper, 70%*
*Retailers' Assortments, per box. $2.00@$2.25*
Wire Clothes Line, See Lines.
Wire Picture Cord, see Cord.

### Bright Wire Goods—

*Steel Wire Goods, 90&10%*
*Brass Wire Goods, 90&10%*
*Brass Cup and Shoulder Hooks, 85&10%*

### Wire Cloth and Netting—

*Galvanized Poultry Netting, 80&2½@80&7½%*
*Painted Screen Cloth, 100 ft., $1.35*
*Standard Galv. Hardware Grade: 100 ft. rolls, 24 to 48 in. wide, Per 100 sq. ft.*
*Nos. 2, 2½ and 3 Mesh, $2.75*
*Nos. 4 and 5 Mesh, $3.00*
*No. 6 Mesh, $3.25*
*Nos. 7 and 8 Mesh, $3.75*

### Wire, Barb—See *Trade Report*

### Wrenches—

*Agricultural, 80&10&10%*
*Alligator or Crocodile, 70&10@75%*
*Baxter Pattern S Wrenches, 70&5@70&10%*
*Drop Forged S, 45@45&5%*
Acme, 60&10
Alligator Pattern, 70%; Bull Dog, 70%
Bemis & Call's:
Adjustable S, 40&5%; Adjustable S Pipe, 40&5%; Briggs Pattern, 40%; Combination Bright, 50%.
Steel Handle Nut, 50&5%
Combination Black, 50&5
Merrick Pattern, 50&5%
Boardman's, 40
Coes' Genuine Knife Hdl., 40&10&5&5
Coes' Genuine Steel Hdl., 40&10&5&5
Coes' Genuine Key Model, 40&10&5&5%
Coes' Genuine Hammer Handle, 40&10&5&5%
Coes' "Mechanics'", 40&10&10&5&5%
Donohue's Engineer, 40&10%
Eagle, 70%
Gem Pocket, 30%
Hercules, 70%
W. & B. Machinist:
Case lots, 50&5%
Less than case lots, 50%
W. & B. Railroad Special:
Case lots, 50%
Less than case lots, 40&10&5
Solid Handles, P., S. & W., 50&10%; full cases, 50&10&5%
Standard Nipple Mfg. Co.:
Duplex Chain, 50%
Stillson, 65%
Uwanta Wrench Co.:
Uwanta Special, Iron Handle, 40&10&5%
Other Wrenches, 50%
Vulcan and Agrippa Chain, 50%
Whitaker Machinists':
Case Lots, 50&10%
Less than case lots, 50%

### Fruit Jar—

Beni, P. Forbes, Triumph, ₱ gro., $7.50; per doz., $0.90

### Wrought Goods—

*Staples, Hooks, &c., list March 17, '02, 90@—%*

### Zinc— *(Cask lots at mill.)*

*Sheet, per 100 lb., $7.00*

For the Table of "Current Metal Prices" see the First Issue of Every Month.

# THE IRON AGE

New York, Thursday, August 27, 1908.

# THE SHORE SCLEROSCOPE.

## An Instrument for the Measurement of Hardness.--Some Important Applications.

BY J. F. SPRINGER.

The need of some method of determining degrees of hardness in metals was no doubt felt in very early times. Even before the file came into use, it would seem probable that men used very hard substances, such as the diamond, to test for hardness. But all such methods are exceedingly crude. What is needed in modern scientific work is a mode of procedure that will bring to light small differences in hardness. Thus, in electric motors, it is sometimes the spindle that is worn by the box; sometimes the box and spindle are equally worn, and sometimes the box is worn by the spindle. Of course, the last case is the only one which should be allowed to occur. But as the difference in hardness between box and spindle is a small one, it is necessary to employ some sensitive means of disclosing it. The scleroscope, to be described later, seems to be such a means. Just the one application referred to for such a device is important. It enables the manufacturer to make sure that nowhere in his machines has he an expensive part in sliding contact with a harder inexpensive part.

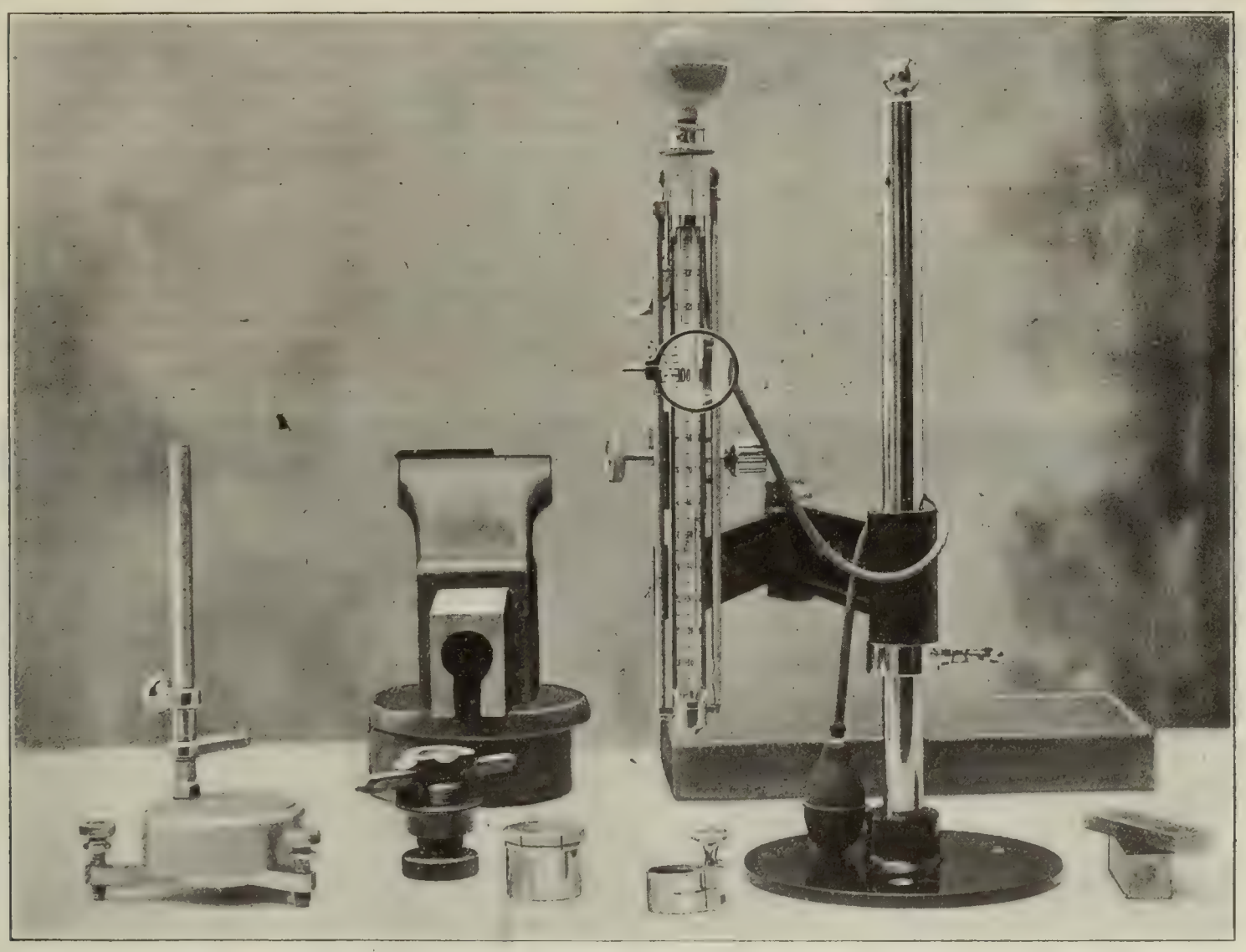


Fig. 1.—The Scleroscope and Attachments.—Specimen to Be Tested Seen in Clamp.

### A Definition of Hardness.

The question what is to be understood by hardness is by no means an easy one. We say that brass is hard and lead is soft. The file gives us reliable information as to this. But when we turn to manganese selfhardening steel and pure carbon tool steel, we may find that a specimen of the alloy steel offers the same resistance to the file as the pure carbon steel, but that the alloy is really softer. Some other quality of the alloy steel is furnishing resistance to the file in addition to hardness. This appears to be the toughness. It would seem that particles of the alloy yield somewhat to the file at first, but resist actual separation, producing a total resistance to the file equal to that afforded by the pure steel. It appears thus as if time were a factor, the particles of the alloy suffering a slight displacement which occupies time, but in the end resisting determinedly any further displacement. This is the case also with tar asphaltum. A sharp, quick blow will shatter a block instantly into fragments, whereas it will yield under the mere weight of the hammer if time be allowed. The same may be said of sealing wax. It is comparatively hard for instantaneous impacts of tools, but soft for slow ones.

Let us provisionally define hardness, then, as the resistance set up to instantaneous displacements. If displacements can be effected with an instantaneous effort which would fail if slowly operating, it would appear in the latter case that a second quality is assisting, namely, toughness. Perhaps we may say that the degree of hardness varies with the recuperative power of a substance subjected to instantaneous and permanent deformation.

About a century ago a method of testing for hardness by means of the diamond was proposed in Germany. This process of scratching with a diamond point was improved in England and proved of value, especially, it would seem, where toughness did not enter. With tough substances, however, the diamond, like the file, seems



Fig. 2.—Method of Using the Scleroscope in Testing Hardness.

to have failed. A more modern method is that developed under the name of the Brinell test. This consists essentially in pressing a steel ball into the specimen and then measuring the depth or diameter of the permanent displacement effected. This is, no doubt, a practical improvement over the file and the diamond point. The deeper the depression, other things being kept equal, the softer the metal is judged to be. As the pressure is applied slowly, it would seem doubtful, however, that this process would be successful in eliminating the element of toughness.

**Details of the New Instrument.**

Recently an invention by Albert F. Shore (Shore Instrument & Mfg. Company, 226 West Twenty-fourth street, New York City) has been put upon the market. If the provisional definitions heretofore given be accepted, this new instrument would seem to supply the means of effecting accurate and scientifically correct measurements of hardness, for with it an instantaneous blow is struck, and the recuperative power of the specimen is then measured by determining the extent of the rebound of the striking hammer, the elastic limit of the metal being tested having been exceeded. Fig. 1 gives on the right a front view of this instrument. There is an upright glass tube back of which is a graduated scale running from 0 to 140. This tube is entirely open at the bottom. In the same figure may be seen a specimen secured in a clamp and ready to be tested. This should be put in such position that the particular spot to be tested is immediately under the lower opening in the tube. The rubber bulb seen at the top is for the purpose of sucking up the hammer, which is a small piece of steel fitting snugly but smoothly the bore of the tube. The hammer is perfectly free, having no attachment to any portions of the instrument. Upon releasing the upper bulb sharply, after having compressed it, the little hammer will be drawn to the top of the tube and there retained by a suitable device until it is desired to strike the blow.

To make the test, the finger hook near the top and on the left side is first pressed down. Then by compressing the rubber bulb, seen resting on the base, and connected with the upper portion of the glass tube by a piece of small rubber tubing, the hammer will be permitted to fall. Upon striking the specimen it rebounds. The amount of this rebound, as read upon the scale, is

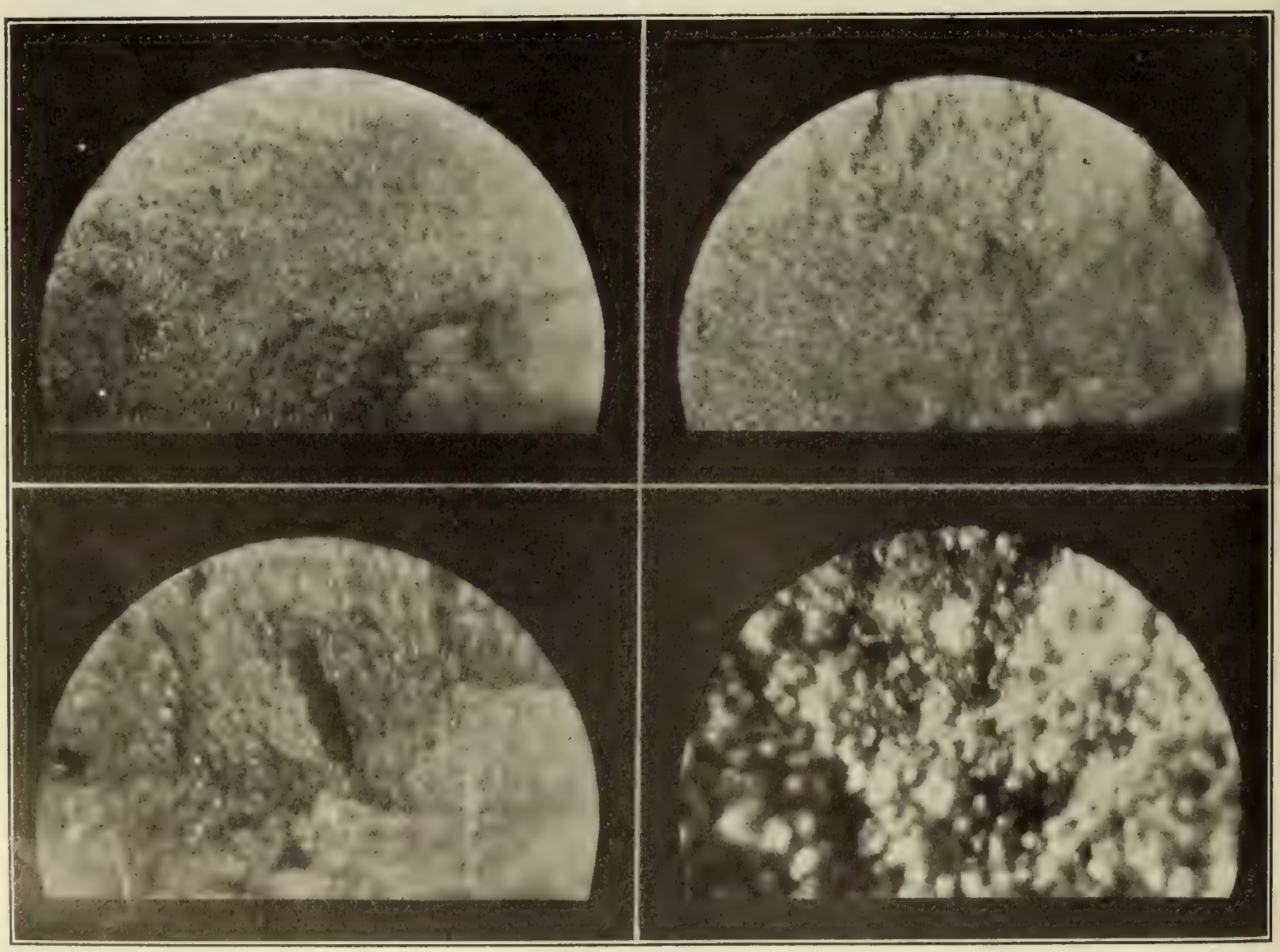


Fig. 3.—105 Hardness; 1350 Degrees F.
Fig. 4.— 98 Hardness; 1425 Degrees F.
Fig. 5.— 90 Hardness; 1500 Degrees F.
Fig. 6.— 70 Hardness; 1800 Degrees F.

Photomicrographs of Specimens of 1.65 Carbon Steel, Showing Decrease in Hardness Due to Overheating.

regarded as a numerical statement of the degree of hardness. A small rod will be seen to the left of the glass tube. This affords rigidity and at the same time supplies a means of supporting a sliding holder. In the holder is secured a magnifying glass by which the rebound may be observed distinctly and accurately. However, not all operators use this glass, as a little practice is sufficient usually to enable the users to dispense with such assistance in reading the rebounds. Three thumb screws support the alternative base (seen to the left), and afford means of leveling it. To test whether the base is level—or rather, whether the tube is vertical—a plumb rod is employed. This may be seen at the right of the glass tube, where it swings freely from the upper support.

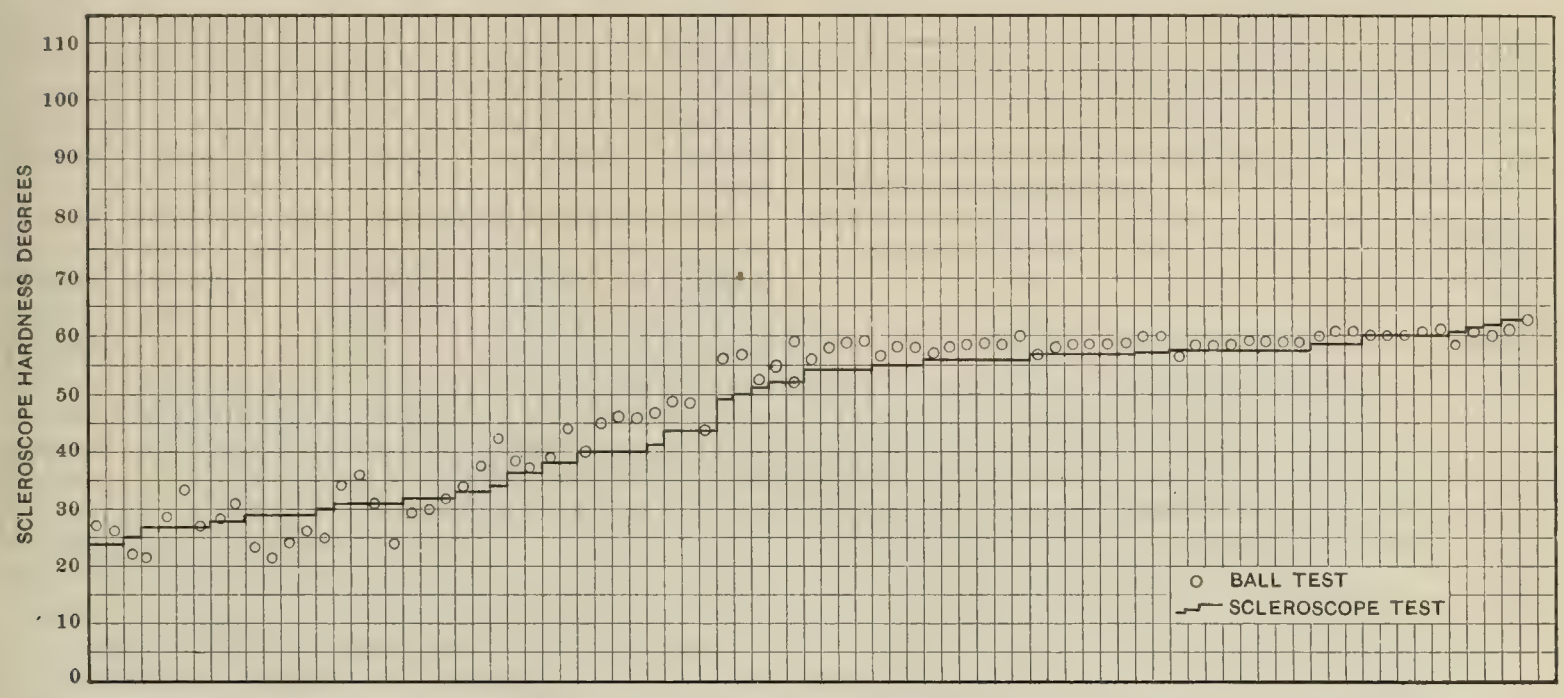



Fig. 7.—Diagram Showing the Correspondence Between Hardness Tests Made with Balls and with the Scleroscope on Pieces of Tool Steel, Unhardened.

The instrument proper may be disengaged from all supports. It may then be employed in testing pieces which are not adapted to ordinary handling. However, as shown in Fig. 1, secured to the swinging bracket, it is applicable to a great variety of uses. An illustration of this is shown in Fig. 2. It will readily be understood that it is necessary to have a horizontal surface at the point where the hammer strikes the specimen. If the specimen is very irregular so that it cannot be properly held in position by the ordinary methods in which a clamp vise or the table base is used, a special means of mounting may be necessary. The piece may be imbedded in a mixture of tar and asphalt and so oriented that it presents in a horizontal position the spot where the actual test is to be made. The tar asphaltum combination is used, as it affords a suitable support, fitting the irregularities, and at the same time is practically unyielding to instantaneous shocks, such as those made by the falling hammer. The little cylindrical box seen in the middle of the foreground of Fig. 1 is supposed to contain this substance. The ring seen in the foreground to the right of this box is an attachment which may be secured to the instrument when it is detached from the base. It serves the purpose of affording a support into which a finger may be placed when the instrument is used in the free way.

### The Development of the Hammer.

The hammer is really the most important element in the entire instrument. When Mr. Shore made his first model he employed a steel ball. This was dropped in a glass tube. In making comparative tests between glass-hard steel and that having spring temper, he found that while the rebound for the softer steel was less, the difference was quite small. Still there was a difference, and Mr. Shore persisted in his experiments, developing a number of instruments. He obtained some good results and some discouraging. The method was almost abandoned when he met Dr. Paul Heroult, the French metallurgist and manufacturer, who made some valuable suggestions. By following these the present perfected blow is desirable, a hammer with a rounded point is used.

But it was a very difficult problem actually to carry out such a design in practice. The sharpened point had to withstand an impact of 75,000 lb. to the square inch. Its form was unsuited to this, the particles actually struck being insufficiently supported. The diamond and other jewels were tried, but were unequal to the requirements. Prolonged investigation in the treatment of tool steel, however, resulted in producing a material that is at once tough and extremely hard. The instrument itself assisted in carrying on the experiments. In fact,



Fig. 8.—The Use of the Scleroscope for the Rejection of Inferior Product.

it is, perhaps, not too much to say that a successful result would have been doubtful apart from it.

The new instrument has been named the scleroscope. The final syllable is from the Greek meaning "I see," and the first part of the word contains the stem of the Greek word meaning "hard." The word then signifies an instrument capable of distinguishing hard things.

**Some Hardness Determinations.**

It will be interesting to know some of the determinations of hardness as made by the scleroscope. The following table gives a number of these. The table is arranged to show, in the case of a number of metals, the effect of compression in increasing hardness.

*Table of Degrees of Hardness.*

| | Uncompressed. | Compressed. |
|---|---|---|
| Lead | 2 | 3 |
| Babbitt metal | 4 to 9 | .... |
| Copper | 6 | 14 to 20 |
| Zinc | 8 | 20 |
| Brass | 12 | 26 |
| Gold (coin) | .... | 14 |
| Wrought iron | 18 | 30 |
| Type metal | 20 | 21 |
| Hard brass | 20 to 25 | 35 to 40 |
| Nickel | 27 | .... |
| Hard brass | 30 | 35 |
| Steel rails, 0.45 to 0.50 % carbon, annealed | 26 to 30 | .... |
| Tool steel, 1 % (and over) carbon, annealed | 31 to 35 | .... |
| Mild steel, cold rolled | .... | 35 |
| Tool steel, 1 % (and over), carbon, after being cold rolled in form of drill rod | .... | 35 to 40 |
| Gray iron (cast) | 39 | .... |
| Tool steel, 1 % (and over) carbon, unannealed | 40 to 50 | .... |
| Tool steel, self-hardening | 60 to 85 | .... |
| Tool steel, unalloyed, hardened | 90 to 110 | .... |
| High speed tool steel, hardened | 80 to 105 | .... |
| Porcelain | 120 | .... |
| Glass | 130 | .... |

The indentation made by the instrument is very small and unobjectionable. The hammers have a commercial life. They may be readily repointed and their replacement is a trifling expense.

**The Basis of Comparisons.**

Now, if the definition of hardness as the recuperative energy instantaneously available upon permanent deformation be correct, then the scleroscope would appear to afford a reliable measure. For if the recuperative energy is nil the rebound is zero and is so indicated on the scale. If the recuperative energy in one case is double that in another, then the amount of work accomplished in the former case will be double that in the latter. But a rebound through double the space means double the work accomplished. So that when the scleroscope records a rebound of 90 gradations in one case and 45 in another, these indicate recuperative energies in the same ratio of 2 to 1. Now this seems to contrast with the Brinell indentations. For even granting that the latter vary with the hardness (inversely, of course), it can scarcely be contended that an indentation of double the concave area means double the hardness. In fact, much more than double the energy is required to produce double the area. Where is the guarantee that the rate is proportional to the decrease in hardness?

Referring back to the table of hardness, let us notice the effect of compression. Thus, lead shows a marked improvement in hardness due to compression of its particles. This is generally the case, as may be seen by glancing over the table. Copper and zinc are especially noticeable for the very considerable changes arising from this source. The inventor finds that babbitt metal has a tendency in the opposite direction. The whole subject connected with the changes in hardness (and toughness) incident to hammering and rolling is well worth a thorough inquiry.

**Applications of the Scleroscope.**

In comparison with devices relying on the magnetizing effect of the electric current, the field for the scleroscope is very much wider, since it is applicable to any and all metals. Further, it would seem that its reading for various metals may be compared with each other. Thus it would be applicable to cases where the hardness of a brass box and a steel shaft needed to be compared. Further, the variations of hardness as they occur at different points over the surface may be determined.

A further use to which it is thought the instrument may be put is in testing for crystalline structure in hardened steel. Of course, we may break the piece and look for crystals. This is somewhat like testing the quality of a match by striking it. That match is gone. The process as indicated by Mr. Shore is first to determine whether possibly the suspected piece has had its temper accidentally drawn. If, however, the file discloses unaffected hardness, the piece is next to be tested with the scleroscope. If this test discloses a loss of hardness amounting to 10 or 15 points, then the steel is crystallized.

The decrease in hardness due to overheating may be seen by referring to Figs. 3 to 6. They all represent a single piece of high carbon steel (1.65 per cent.). This piece was overheated and quenched. As different parts had arrived at different heats, the results of overheating and quenching are unlike each other. The temperature of the heating is estimated and given. The hardness as shown by scleroscope tests is also given. The decrease in hardness corresponding to the rise in the temperature is seen to be very marked.

There can be no question that there is an extremely extensive field for an instrument testing hardness, whose readings show not only progressive degrees of hardness, but may be relied on to disclose the relative amounts of hardness. To illustrate: The inventor lays down a law that cutting tools should be three or four times as hard as the work to be cut. When this proportion is adhered to, a strong, effective tool with a long life is the result. This law would seem to be very important. It introduces scientific methods where guesswork has long been supreme. We have all known that the cutting tool must be harder. But how much harder? It is possible we shall get a reliable answer from the scleroscope.

The ball test is now some years old, and its results are accepted as affording some idea of relative hardness. It is interesting, therefore, to learn that the Firth-Sterling Steel Company has tested with the ball a great number of specimens of steel and that tests by the scleroscope were made by the makers of the instrument upon the same pieces. The steel company then made a tabulation of the two sets of results. The substantial agreement is quite marked. Fig. 7, a graphical comparison drawn up by the inventor, exhibits these two series of hardness numbers (the reciprocals of one series being, of course, taken in order to make them comparable). Each space between lines as one goes from left to right represents a distinct specimen. The position of the short horizontal line as measured above the base line indicates the result of the scleroscope test upon the specimen. The distance of the circle above the base line measures the result of the ball test upon the same piece of steel. It will be seen at a glance that we have here a very close agreement.

The use of the scleroscope in testing product before shipment is illustrated in Fig. 8. Such tests make it possible to detect in time goods that are below the standard.

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The Railway Equipment Company, Portland, Ore., has moved its offices from the Chamber of Commerce Building to 72 and 74 First street, where a larger and more complete line of railroad supplies will be carried. The move was made necessary from the fact that this firm, although in business but four years, and in spite of the recent depression, has been doing a large and increasing business throughout the Pacific Coast country.

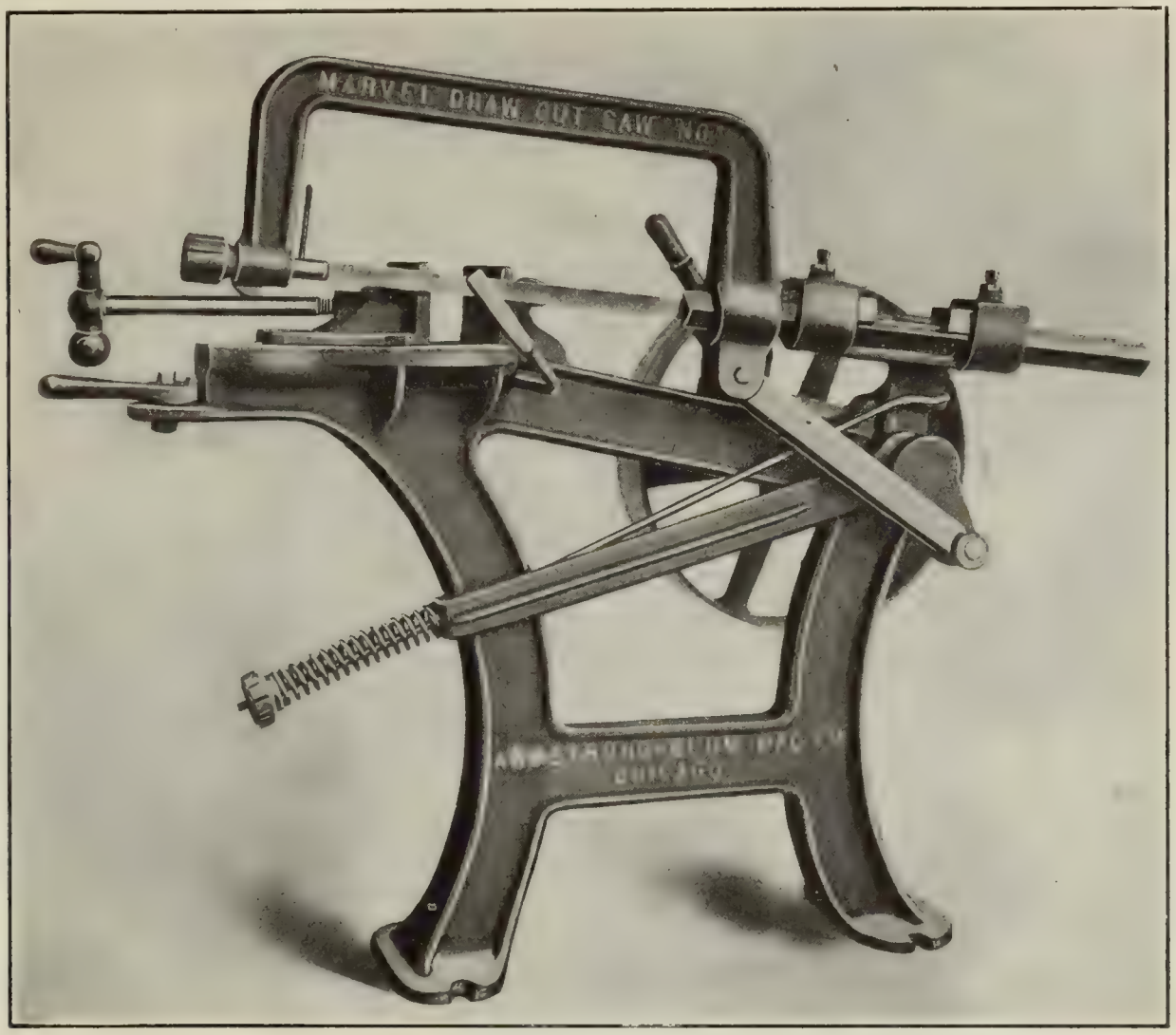
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The results of investigations by Dr. Goerans, to determine whether, in cases of welding by the oxy-acetylene flame, any process of carbonizing is set up at the weld, are given in detail by *Stahl und Eisen*. It is found as the outcome of the experiments that no brittleness results, and that no difference is perceptible in the structure of the metal whether the oxyhydrogen flame or the oxy-acetylene flame is employed.

## The Marvel Draw Cut Hack Saw.

In line with the demand for increased cutting capacity and more accurate work of such tools there have been some recent important advances in the design and construction of power hack saws. The one here illustrated is a new machine just placed on the market by Armstrong-Blum Mfg. Company, Chicago. Characteristic features of the saw are the draw cut and the spring tension appliance to bring pressure upon the blade on its cutting stroke.

The saw frame is mounted on a square sliding bar held in two adjustable guide collars, which are cast in one piece with a rocking arm pivoted on the main driving shaft. By means of a rod hooked to the back of this arm and extending forward through a coil spring with a tension nut on the end and a side bar fitted on an eccentric on the inside of the crank, pressure is applied to the saw on the draw cut. On the opposite stroke the spring tension is released by the action of the eccentric and the blade is driven forward, carrying only the weight of the frame.




The No. 1 Marvel Draw Cut Power Hack Saw Made by the Armstrong-Blum Mfg. Company, Chicago.

The saw is equipped with a quick acting vise, the front jaw of which is fitted with a rack tooth ratchet enabling it to be quickly set up close to the work and then clamped by a hand screw. A lever at the rear of the machine, connecting with a sliding wedge engaging a projection of the rocking arm, raises and lowers the saw to any desired angle and holds it in position. The saw blades run close to the vise, and a bracket table in one piece, with the frame extends beyond the line of cut forming a rest for material on both sides of the saw. An automatic trip at the front of the frame serves to stop the machine automatically when the cut is finished.

The drive shaft is provided with bronze bearings, and the slide bar bearings are lubricated through receptacles filled with oiled waste. The saw carries a 12-in. blade, and is designed to run at from 60 to 90 rev. per min. It has capacity for cutting 4 x 4 in., and weighs 110 lb.

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According to complete data just published, the firm of Fried. Krupp, of Essen, Germany, contributed to workmen's insurance, accident, pension and other funds, during the year 1906 a total of 9,847,218.74 marks, or, roughly, $2,460,000. The payments under the laws of the empire were 1,398,883.87 marks for sick funds; 1,557,014.46 marks for accident insurance, and 514,934.29 marks for old age pensions, a total of 3,465,832.62 marks. Besides these legal contributions, the firm has a series of special funds to which the payments were 15,038.38 marks, to aid and family funds; 1,347,754.69 marks, to workmen's pensions, and 286,145.70 marks to officers' pensions, a total of 1,648,938.77 marks. Then there was contributed to welfare work a total of 4,732,447.35 marks, which carries the amount to the total named.

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## Production of Lead in 1907.

The United States Geological Survey has issued an advance statement on the production of lead in 1907 by C. E. Siebenthal, who says:

The following statement of the production of refined lead embraces all desilverized lead produced at works in this country and the pig lead recovered from the Mississippi Valley lead ores. It is exclusive of a product of 9910 tons of antimonial lead reported by refineries. Of the pig lead derived from Mississippi Valley ores 29,809 tons were desilverized and are therefore included under desilverized lead and not under soft lead.

*Production of Refined Lead in Tons of 2000 Lb.*

| | 1906. | 1907. |
|---|---|---|
| Production of desilverized lead | 313,886 | 314,241 |
| Production of soft lead | 90,783 | 99,948 |
| Total production of refined lead | 404,669 | 414,189 |

Regarding the consumption of lead, the author states that it was impossible to obtain the domestic stocks held at the close of the year; hence, that available for consumption in the United States only is given as 391,000 tons. In 1906 the apparent consumption of lead was 376,000 tons. Of course the consumption in 1907 was less than in 1906.

---

The Bessemer & Lake Erie Railroad, operated by the Carnegie Steel Company, handled in July 741,000 tons of ore from Conneaut Harbor to the blast furnaces in the Pittsburgh District, this being the second largest tonnage handled by the road in any one month in its history.

# A NEW EBERHARDT GEAR CUTTER.

## An Automatic Machine for Doing a Wide Range of Work.

An automatic gear cutting machine of new design, by the Eberhardt Brothers Machine Company, Newark, N. J., is herewith illustrated. It will accommodate a large range of work, including spur, bevel, skew and face gears, all of which can be cut entirely automatically. It has been placed on the market to fill the requirements of those needing a heavy machine to rough out bevel gears preparatory to finishing on a bevel gear planer, as well as to afford the jobbing and repair shops a machine for finishing bevel gears by the milling method, and yet without limiting the capacity of the machine for spur gear work. The design, therefore, is not an adaptation of the present type of machines as built by this company which cut spur gears only, but it is a distinctly separate product, in which the only purpose has been to produce a rigid form of construction and yet provide the necessary conveniences of operation and insure the accuracy of production which a machine of this type should embody.

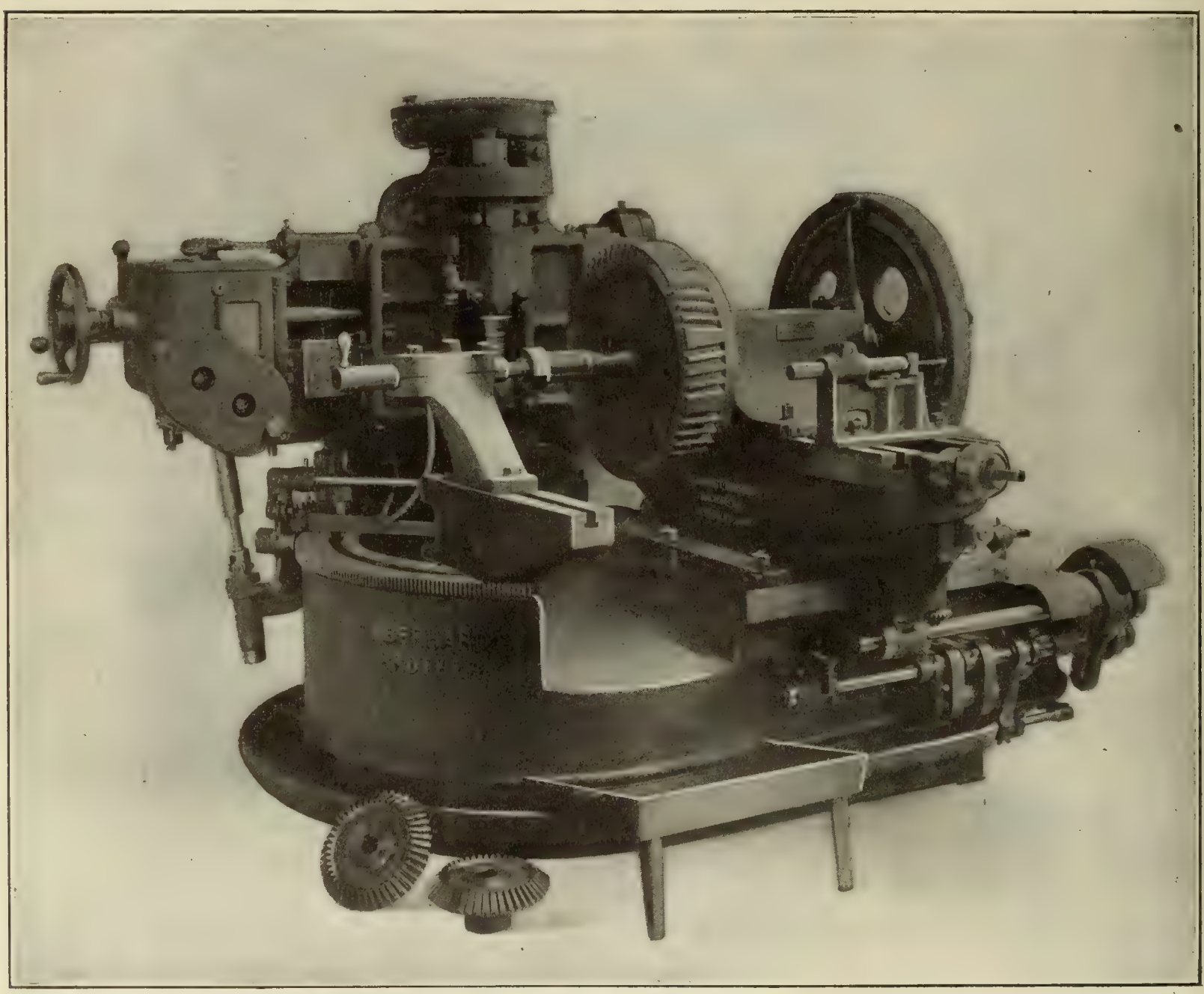


Fig. 1.—Front View of the New Automatic Gear Cutting Machine Made by the Eberhardt Brothers Machine Company, Newark, N. J.

The machine uses a rotary milling cutter, or "gear cutter," as it is usually called, although the general appearance of the machine itself is similar to that of the now accepted types of bevel gear planers.

The method employed in cutting the large variety of gears above-named may be readily understood from the front view of the machine, Fig. 1. This view shows a cast iron wheel in place on the work arbor, the teeth of which include spur teeth, right and left hand "skew" teeth, and face gear teeth. These were all cut automatically. The "gashed" worm wheel teeth were cut by feeding the blank into the cutter by hand. It may be explained here that "skew" teeth are used in many cases instead of hobbed worm wheel teeth, for meshing with a worm. The miter gears shown on the floor were cut entirely automatically, one having been roughed out only with one central cut, and the other being finished in two side cuts.

As may be seen, the work head is adjustable in two directions. One is the adjustment which accommodates the different diameters of blanks, and sets the depth to be cut in the gear blank, while the other is at right angles to the first, and is used as such to accommodate bevel gears and pinions with various lengths of hub. This also is of course used to set the depth when cutting face gears. Adjustable dials are provided on both screws, graduated to read to thousandths of an inch. The long screw, that which adjusts the head for different diameters of blanks, has a square on both ends for convenience in setting, so that it may be operated at either end.

The angular adjustment required for cutting bevel gears is made by means of the stanchion which supports the cutter carriage. This stanchion, clearly shown in Fig. 2, is adjustable through an angle of 90 degrees, in a horizontal plane, and is pivoted about the center of the machine. The stanchion is secured to the bed by means of bolts in the circular T slots. For making the angular adjustment, a worm is provided, engaging the circular rack, which is secured to the bed. The worm carries a dial graduated to read to minutes of a degree, each whole degree being a whole turn of the crank.

The illustration plainly shows that the stanchion is equally rigid at every angle, whether set for spur gears, bevel gears, or even when adjusted through the entire

90 degrees for face gears. It was this factor of uniform stiffness that decided in favor of this type of construction, especially for a heavy duty machine, in preference to the usual type of machine in which the cutter carriage is elevated for bevel gears.

Fig. 3, the line drawing, explains the "swivel slide," which is adjustable in a vertical plane, being pivoted about the trunnion, which is shown. This slide is operated by means of the vertical screw, and graduations indicate the angle at which the "swivel slide" is set. The slide is securely bolted to the stanchion, and when loosened, while making the adjustment, is automatically held from sagging away from the joint. By swiveling this slide, the cutter carriage, which is mounted upon it, is thus made to travel in a path at an angle with the axis of the work spindle. This adjustment is used for cutting right and left hand skew gears, and for taking side cuts on bevel gears, thereby obviating the necessity of "rolling" the blank. The rolling method of cutting bevel gears may be used, however, as there may be work on which this method is desired, and the indexing worm is therefore graduated, to facilitate this adjustment. The "swivel slide" is also used to set the cutter at the angle of the worm thread, when gashing worm-wheels.

The rotary cutter is mounted upon the vertical cutter arbor, the spindle bearing being adjustable vertically, to set the cutter central. A dial is provided, to be used to indicate the offset of the cutter, when taking side cuts on bevel gears. The lower end of the cutter arbor is supported by an out board bearing.

An outside support is also furnished for the work-arbor, as shown in Fig. 1. This accommodates wheels up to the full diameter of the machine. The support is easily removed. Rim rests are provided to support the rim of large gears against the thrust of the cutter. A face plate is also furnished, with jacks and drivers to positively secure and drive large wheels. The cutter spindle and work spindle have taper holes, and each is provided with a draw-in bolt, to draw in and force out the arbors positively.

Fig. 1 further shows the convenient hight of the machine, and the accessibility of all parts, such as the hand indexing lever and feed lever at the left of the machine, near the feed hand wheel. These are used when setting the machine, and are always within easy reach, being about four feet from the floor.

The drive may be traced from Fig. 3, which shows the single pulley running at constant speed, supplying the power for the entire machine. The arrangement is ideal for attaching a constant speed motor drive, when desired. The driving pulley runs on the cast iron sleeve which is bolted to the bed, thus relieving the shaft of the pull of the belt. The driving shaft then drives through the miter gears, shown in the center of the machine, this being the pivoted point about which the stanchion is adjusted when setting the cutting angle for bevel gears.

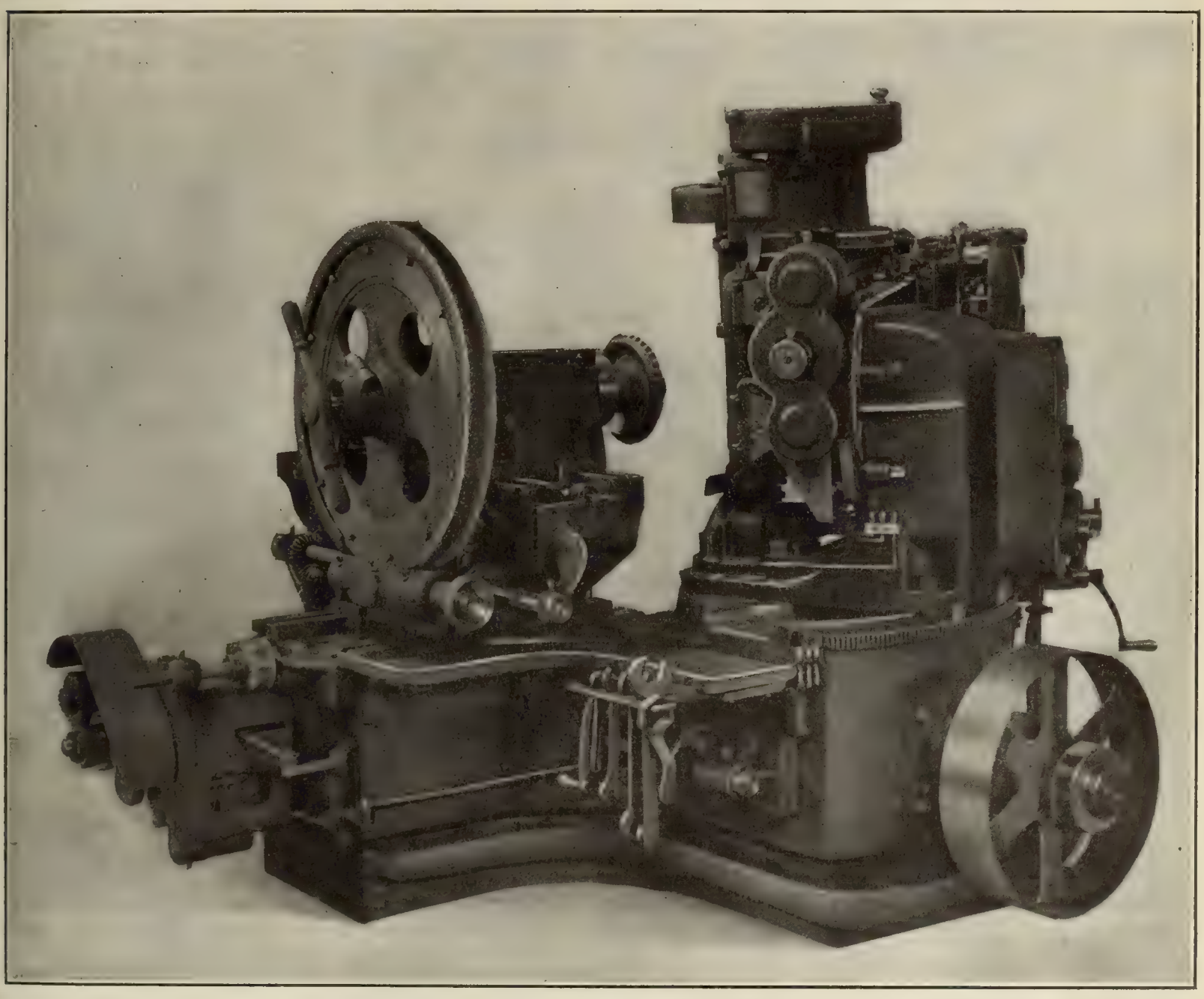


Fig. 2.—Rear View of the New Eberhardt Gear Cutting Machine.

The cross-over shaft then drives through spur gears, and across to the center of the "swivel slide," to a pair of miter gears. The driven miter gear is secured on the shaft which operates the cutter driving train on one end and the cutter-carriage feed and return mechanism on the other end. The cutter drive is obtained by means of spur gears of powerful ratio, operated by change gears for obtaining the different rates of cutter speed, these being arranged in geometrical progression. The feed of the cutter carriage is changed by gears in similar manner, but the return of the carriage is at a constant high rate of travel, which is independent of the speed or feed of the cutter. The cutter speeds and feed are also independent of each other.

It will be noticed that there is an entire absence of ball joints and telescopic shafts in the drive train. The driving shafts run at constant speed, all changes being made at the last drivers. This is a great factor in reduc-

ing vibration under heavy duty, there being no shafts under excessive strain, whether the cutter is running at a high or a low speed.

The cutter carriage is of exceptional length and travels on long guiding surfaces, of the same construction as the spur gear cutting machines made by the Eberhart Brothers Machine Company. The cutter spindle is in the center of the length of the carriage; this prevents the usual lifting or "gouging" tendency of the cutter, when starting in each tooth.

The thrust bearings for the feed screw are placed at each end, so that the screw is under no compression strain during either the feed or the return of the cutter carriage; this "draw cut" principle reducing vibration and chattering, as the screw operates under tension only.

The indexing mechanism is positive, and is operated by means of a rod from the feed-box trip mechanism, as is usual on the spur gear cutting machines made by the company. As the rod operates through the center of the machine, no adjustment or readjustment whatever is required when the stanchion or swivel slide has been moved for different angles, or when the head has been moved in either direction. The use of all chains is eliminated. There are only the two usual dogs to be set to suit the various lengths of face of the gear blanks; the mechanism governing the operation of the indexing movement being taken care of automatically. The indexing worm runs in a bath of oil, and engages the large master-wheel. This wheel is made in halves, to insure accuracy.

Among the minor conveniences may be mentioned the hinged covers for the change gears, as well as the guards incasing all gearing. Oiling facilities have been carefully studied out and provided. The bearings of shafts and spindles which operate in a vertical position have spiral oil grooves cut of the opposite hand to which the shaft runs, to retard the downward flow of the oil. Felt wipers are arranged on all the plane bearing surfaces, to keep dirt and chips out, and hold the oil in. The work spindle is a machinery steel forging. The cutter spindle and arbor are of tool steel, and all driving shafts are of high carbon machinery steel. Shafts and spindles are accurately ground. An oil pump, driven by spur gears, supplies the cutting lubricant to be used when cutting steel; the lubricant being returned to the suction pipe by means of the oil pan.

The machine has a capacity of 48 in. diameter and 10 in. face, and will cut 3 diametral pitch in steel, and 2½ diametral pitch in cast iron. Heavier pitches can, of course, be cut by taking stocking out cuts; for example, one of the first lot of these machines is cutting 2 diametral pitch in steel as regular work.

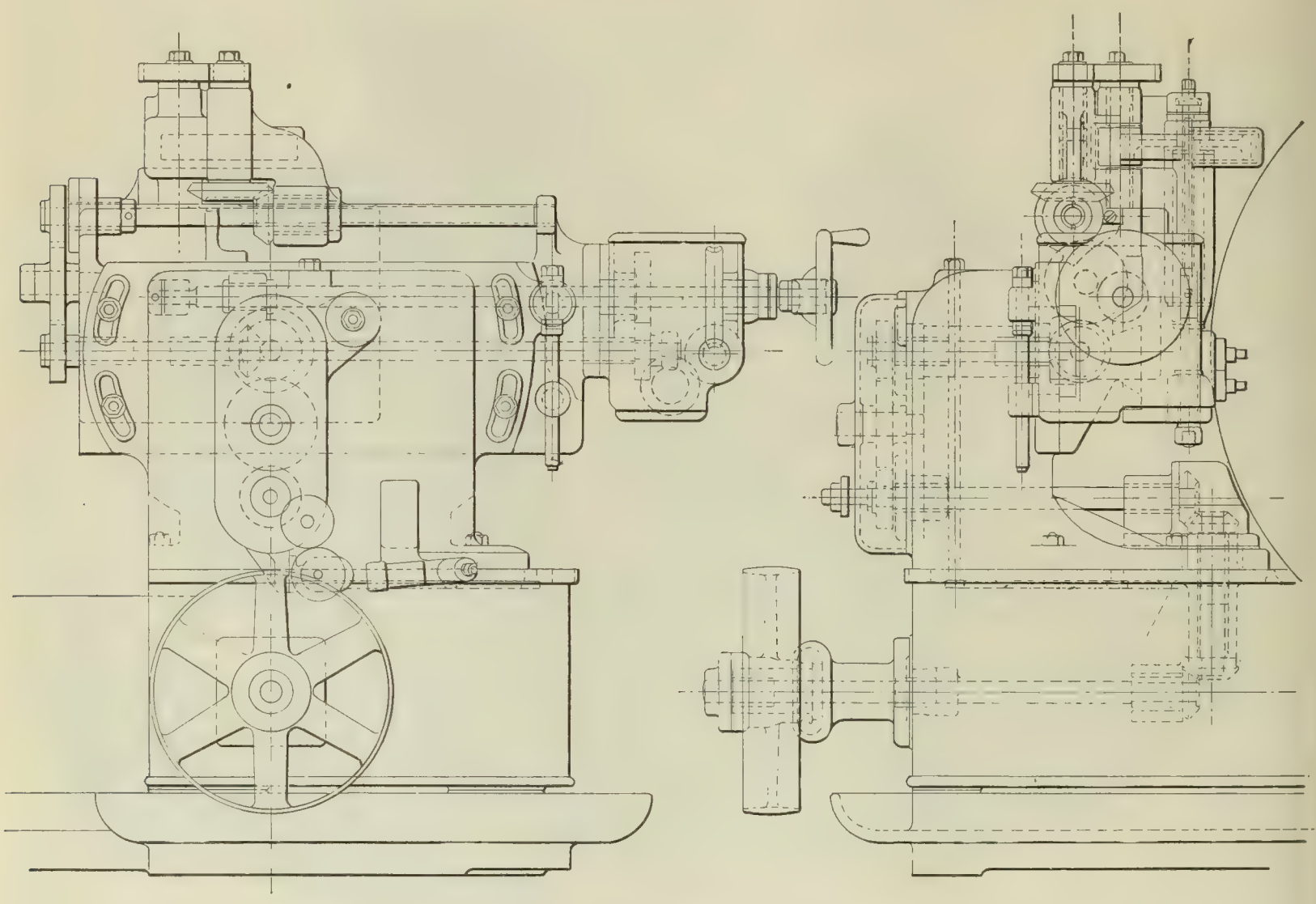


Fig. 3.—Details of Construction of the New Eberhardt Gear Cutting Machine.

Temperature tables relating to the working of iron and steel and other metals, together with information on the use of fire brick and refractories, are given in a booklet recently published by the Brighton Fire Brick Company, Inc., New Brighton, Pa. The "Brighton" fire brick are made for blast furnace inwalls and tops, hot blast stoves and pipe, heating and soaking pit furnaces, open hearth furnace checker work, &c., while the "Brighton S" is a plastic clay brick used for boiler settings, gas producers, jacket walls, cupolas, gas flues and gas washers. The Brighton special shape brick are the subjects of numerous illustrations in the new pamphlet.

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The Independent Pneumatic Tool Company, Chicago, has appointed the well-known firm of H. W. Petrie, Ltd., 131 Front street, West, Toronto, and 22 Victoria square, Montreal, and Vancouver, B. C., as exclusive agent for the sale of its Thor pneumatic tools and appliances in the Dominion of Canada. A complete stock of pneumatic tools will be carried in the various stores belonging to this agency, which will in consequence be able to make prompt deliveries from each of the several points named.

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There were 17 bids submitted under the opening of August 13 for 10 40-ton locomotives and 50 6-yd. dump cars for the Isthmian Canal Commission. The lowest tender for the locomotives was that submitted by the H. K. Porter Company, Pittsburgh, which offered to deliver them at Colon for $59,450, while the lowest bid for the dump cars was that of Vermilye & Powers, New York, for $23,250.

## Lackawanna Steel Sheet Piling.

A new form of steel sheet piling is now manufactured by the Lackawanna Steel Company, Buffalo, N. Y., each piece being complete in itself as it comes from the rolls and requiring no fabrication. The piling is a special rolled one-section bar, consisting of a web portion with flanges of like form at each edge, adapted to engage with similar flanges of an adjacent section. Each pile interlocks with the one previously driven. As shown in Fig. 1, the shorter flanges of the new pile are hook shaped and engage with the corresponding hooked flange of the adjacent section. The longer flanges are shaped to form a guard around the hook of the adjacent section. When the piling is driven the hooked flanges prevent longitudinal displacement, while the guard flanges prevent lateral displacement, and assist to prevent longitudinal displacement of the sections. The joint has three points of bearing which produce a positive and double interlock, offering in a built up wall a rigid resistance to the strain such a wall is subjected to, particularly the longitudinal strain, and the side or buckling strains. At the same time this interlock, with a bearing on both sides of the web, holds the piling in line while being driven, and the result is a straight wall.

Before these sections were offered for general use, an experimental cofferdam was driven with 32-ft. lengths of 12¾ in. sheet piling. The material inclosed was subsequently excavated in order to ascertain the condition of the piling after driving. It was found that the interlock was perfect, and that the joints were practically watertight. The average of tests conducted to determine the strength of the interlock, showed that with two 12¾-in. sections interlocked the joint has in tension a value of 9700 lb. per linear inch of bar. Ability to turn various angles and still maintain a perfect interlock is also a feature of this bar, the shape of the interlocking flanges and hooks permitting a change in direction with a line of piling in case boulders are encountered. When these piles are driven in clay or quicksand, enough of the soil works into the joints to make them practically watertight. If driven in clear water the usual methods of packing, if necessary, may be employed to produce a watertight joint. The friction area in the interlock being three narrow surfaces, is at a minimum, so that the piling can be driven and withdrawn a number of times, and when it has outlived its usefulness the discarded material can be sold for scrap. The table below shows the standard weights and widths of sections rolled:

| A. Thickness of web. Inches. | Weight per square foot of wall Pounds. | B. Distance c. to c. of joints. Inches. | Weight per linear foot. Pounds. | C. Width of joint over all. Inches. |
|---|---|---|---|---|
| ½ | 40 | 12¾ | 42.500 | 3 45/64 |
| ⅜ | 35 | 12¾ | 37.187 | 3 45/64 |
| ¼ | 19.70 | 7 | 11.500 | 1 53/64 |

An ordinary piledriver is used, the head of the piling being fitted with an iron cap having a wooden cushion interposed between the iron cap and the hammer of the pile driver. In driving, satisfactory results have been obtained in keeping the vertical alignment of the bar. This is especially important where a long wall is driven and long lengths are used. In the closing of rectangular pockets the vertical alignment must be true so that the closing pile may drive freely for its full length and not strain the interlock.

Fabricated corners are formed, as in Fig. 2, by fitting the edges of two half sections at the desired angle by means of structural steel angles. Junction members for cross walls are made up of a full section, a half section and two angles riveted together. Both styles of fabricated corners are shown.

The 12¾-in. Lackawanna bar has been adopted for the construction of the cofferdam for the new Government ship lock in Black Rock Harbor, Niagara River, at Buffalo, N. Y. This will be one of the largest ship canal locks in the world. About 7000 tons of piling will be required for the complete cofferdam—the largest single order of this sort ever placed for Government work. The cofferdam is 947 ft. long, 245 ft. wide outside dimensions at one end, and 250 ft. at the other end, and requires lengths of 44 ft. to 50 ft. of piling. The wall of the cofferdam is made of two lines of piling 30 ft. apart, with division walls at 30 ft. intervals, forming 30 ft. pockets. Later these pockets will be filled with clay to form the solid wall of the cofferdam.

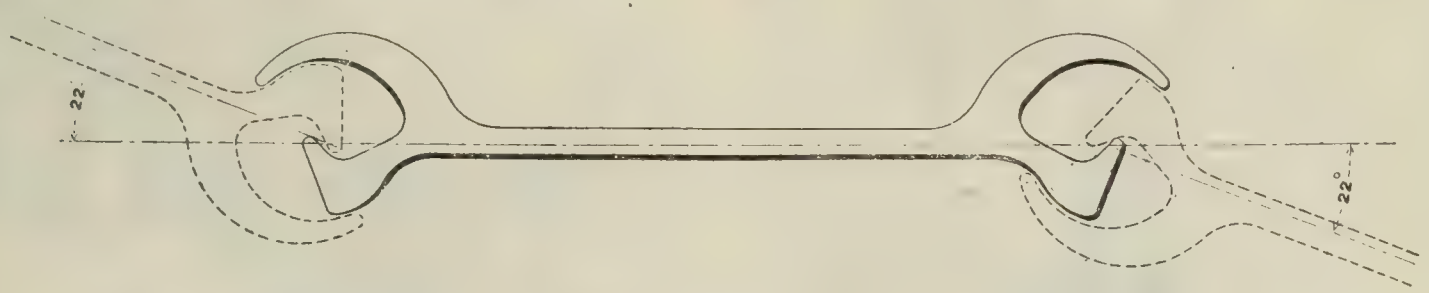



Fig. 1.—Lackawanna Steel Sheet Piling. Flanges of Similar Design on Same Side of Web.

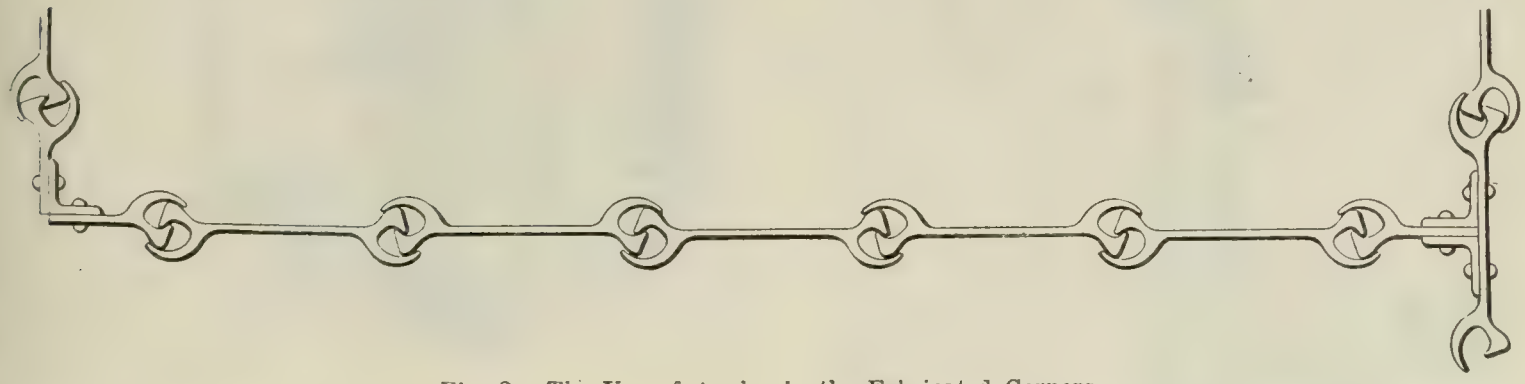


Fig. 2.—The Use of Angles in the Fabricated Corners.

The Allis-Chalmers Company, Milwaukee, Wis., has sold a heavy rolling mill engine to the Pittsburgh Steel Company, Pittsburgh, Pa.; large power driven air compressors to the Tennessee Coal, Iron & Railway Company, Birmingham, Ala., and Casparis Stone Company, Columbus, Ohio, and four huge vertical blowing engines to the Sloss-Sheffield Iron & Steel Company, Birmingham, Ala., and the Worth Brothers Company, Coatesville, Pa. The Allis-Chalmers Company has also closed a contract with the Southwestern States Portland Cement Company for two horizontal tandem gas engines rated at 2000 hp., to be installed in the new mill at Eagle Ford, Texas.

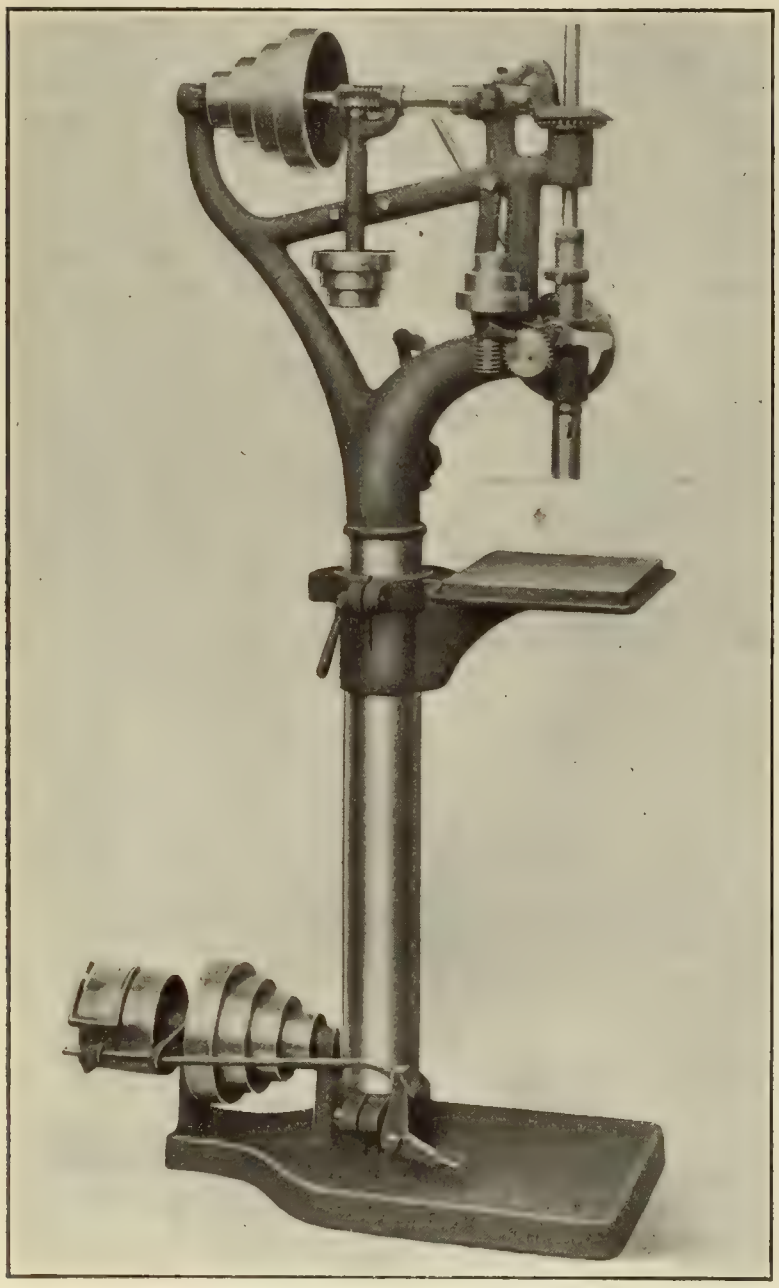
Within two months and possibly before, five new blast furnaces in the Youngstown District will be ready for operation. Two of these are being built by the Youngstown Sheet & Tube Company, two at the Ohio Works of the Carnegie Steel Company, and one by the Brier Hill Iron & Coal Company. The five furnaces will make from 2000 to 2500 tons of iron per day. Tod Furnace, of the Youngstown Steel Company, is being rebuilt, but will not be ready for blast before November.

## The Hoefer Drill Power Feed Attachment.

A slight departure from the regular method of attaching has been made in the new power feed attachment recently designed by the Hoefer Mfg. Company, Freeport, Ill., for its line of 16 in. drills.

In the design of the feed, two worms are used to reduce the speed from that of the upper shaft to that required to give the proper feed to the spindle. The pulleys are placed vertically. To engage the feed a small lever is thrown upward and the worm is brought into mesh with the worm wheel. A trip is placed on the sleeve of the spindle and the throwing out of the power feed is quickly and very easily accomplished.

The feeds derived from the attachment on the 16 in. drill for which it was designed are 0.004, 0.008 and 0.012



A 16-In. Drill with Improved Power Feed Attachment Built by the Hoefer Mfg. Company, Freeport, Ill.

per revolution of the spindle, which have proved ample for all purposes. In construction the power feed device is simple and effective, and in applying it no sacrifice has been made of the convenience of the lever feed, for the right hand is free to use the lever feed if desired.

A census of the working force of the Krupp plants made on January 1, 1908, shows that there were employed 63,084 persons, including 6198 officials. The Essen Works and the proving grounds employed 32,952; the Friedrich Alfred plant at Rheinhausen, 5372 men; the Gruson Works at Buckau, 4336; the Germania shipbuilding plant at Kiel, 3580; the collieries, 9447; the plants on the Middle Rhine, 1108; the steel works at Annen, 1002, and the iron ore mines, 5171.

The Titusville Iron Company, Titusville, Pa., states that the reports that it will spend $500,000 in building large additions to its plant are entirely incorrect. It has no improvements under way or contemplated at the present time.

## A Gravity Feed Gang Press.

A double pitman gang press of a new pattern has been brought out by the Toledo Machine & Tool Company, Toledo, Ohio. It is designed for operating a gang of six sets of dies for cutting out can tops or buttons and is adapted for operating dies for various other classes of work of a similar nature. The machine is set in an inclined position for the purpose of having the sheet of metal feed through by gravity. The accompanying reproduction of a photograph shows its general design and proportions and the drawing will serve to indicate the operation of the machine.

A cam actuated shaft is shown for operating the gauges for locating the sheet. These gauges are raised automatically at the same time that the sheet is stripped from the punches after the cutting and forming operation is completed, permitting the sheet to slide forward where it is again correctly located for the following operation by the gauges referred to.

The hand lever shown in Fig. 1 and just visible on the

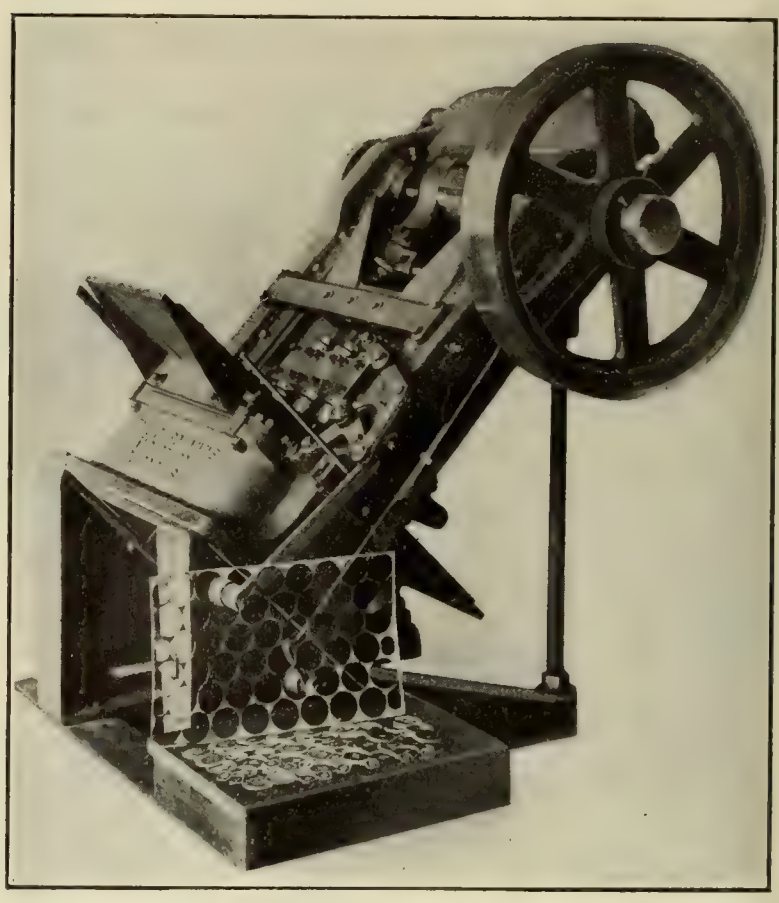


Fig. 1.—Gravity Feed Gang Press Made by the Toledo Machine & Tool Company, Toledo, Ohio.

left hand side of the press is used when first placing the sheet in the press, after which the press is started by the foot treadle in the regular manner, and runs continuously for the required number of strokes to finish the sheet. The press at this point is automatically stopped with a cam movement of the disk on the front right hand side of the housing which disengages the locking device for the foot treadle, in this manner releasing the clutch.

The vertical hand lever shown on the right hand side enables the operator to release the clutch mechanism instantly at any stroke when required before the completion of the entire sheet.

The relative position of the dies is shown in Fig. 2. In this sketch is also shown in the sectional view the construction of the dies, and the independent means of control of each die. As will be seen in Fig. 1, the slide proper or main ram is very long, having bearings practically twice the length of the similar bearings in ordinary presses. The dies are arranged in two rows of three each, one in the front and one in the rear of the slide proper. Each of the upper dies fits in a recess or socket and is securely clamped in position by beans of a cap and four studs. The punch holders or upper dies are provided with an adjustment obtained by a threaded shank on which sleeves or collars are fitted above and below the socket or cap, providing in this manner an easy accessible adjustment of quick and accurate form, and which is in addition to the regular twin gear adjust-

ment provided for the slide or ram proper. The cutting and forming punches or upper dies are screwed to the end of the shanks or plungers referred to and can be removed for repairs or renewals or other dies of similar size and shape may be substituted when desired. An automatic positive knock out to the upper dies is provided.

As indicated in Fig. 2, the six dies are set in an alternate or staggered position in order to have the blanks intersect each other in the manner shown by a sheet of scrap in Fig. 1. The diameter of the cutting edges shown is 3½ in. each. The lower dies are each mounted separately in independent holders which are in turn set in recesses in the main bolster or bed plate, to obtain in this manner a positively correct alignment of the upper and lower dies at all times.

It is intended to notch the sheet to provide a proper accurate gauging surface at the same operation and stroke of the press in which the stampings are cut. In the illustration shown, however, this operation is completed in a separate press which was provided for and is used to recover the small amount of scrap left in the three places at each end of the sheet out of which small stampings for rectangular can bottoms, as shown, have been cut.

A few of the features in connection with this equipment are enumerated herewith: It is not required to square the sheets to prepare them for this press, in this manner an operation is avoided. The capacity of the press is obtained without the use of an automatic feeding attachment applied to the sheet. The amount of waste or scrap is reduced to the smallest minimum practical and yet have the web of the sheet hold together to prevent clogging up or buckling in the dies, there being actually less than 1-16 in. of scrap between the cut openings. Each die or set of dies in the group of six may be removed, replaced and adjusted independently of any other in the same manner employed when using similar dies in single die presses, in this way overcoming one of the greatest objections and inconveniences heretofore experienced in the use of gang presses. The press is accredited a capacity for producing at the rate of 200,000 pieces per day of 10 hr.

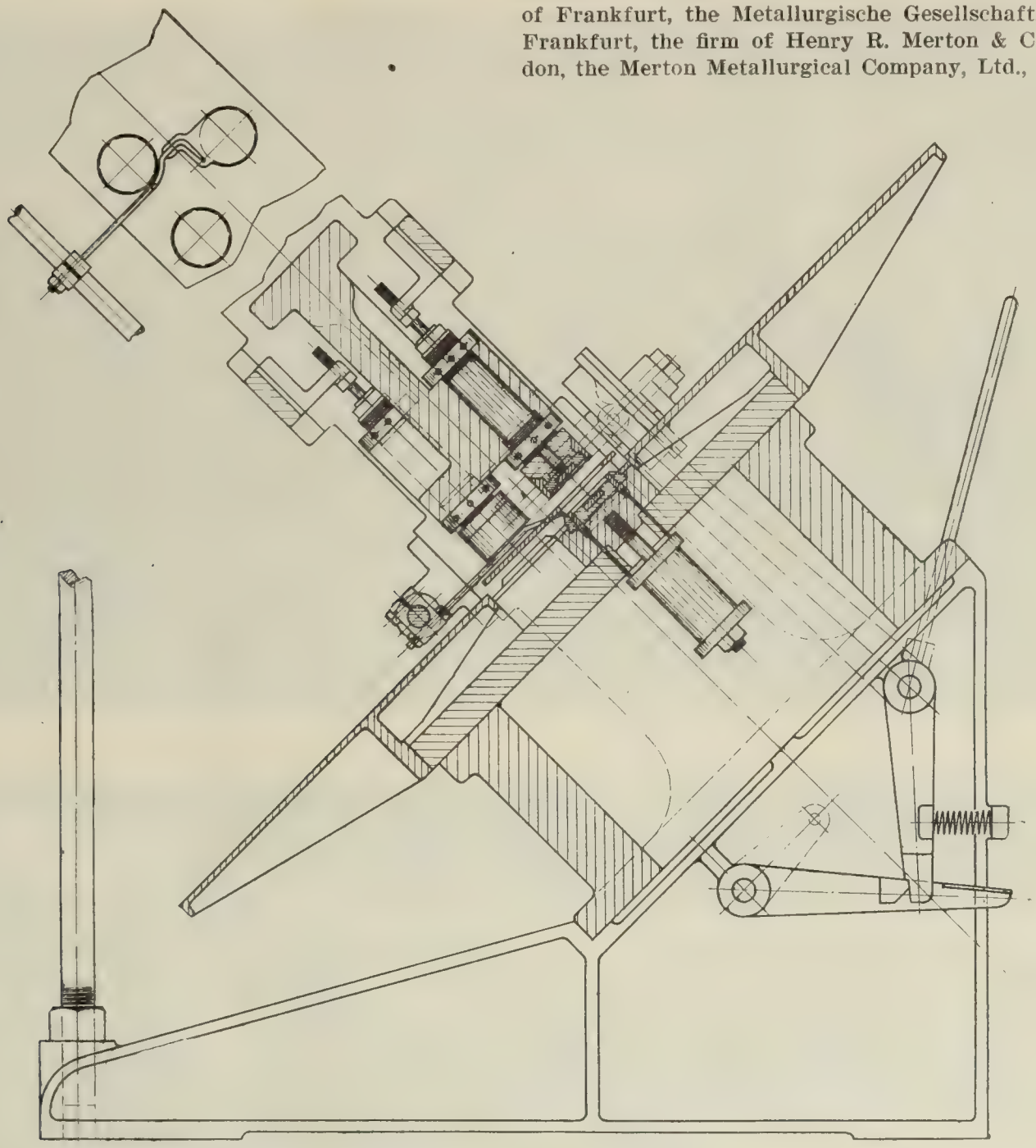


Fig. 2.—Section Through New Toledo Gang Press, to Show Scheme of Operation.

The second annual report of the Berg und Metall Bank of Frankfurt-a-M., Germany, which covers the first complete fiscal year, ending March 31, has just been issued. The bank is interested in the Metall-gesellschaft of Frankfurt, the Metallurgische Gesellschaft, A. G., of Frankfurt, the firm of Henry R. Merton & Co., of London, the Merton Metallurgical Company, Ltd., of London, formed in 1907, the American Metal Company, Ltd., of New York, and the Metallurgical Company of America, of New York. Including 112,433.18 marks brought forward, the gross profits amounted to 2,486,330.47 marks, and the net profit was 2,262,917.66 marks, after deducting 223,412.81 marks for expenses. There are to be paid 70,155.46 marks as interest in the profits to officers, the board of directors proposing a dividend of 6 per cent., or 2,040,000 marks, on the paid in capital stock of 34,000,000 marks.

Exports of merchandise from the United States in July amounted to $86,406,316, as compared with $124,764,063 last year, and imports to $103,200,219, as compared with $128,765,354, the excess of exports over imports being $16,793,903, against $4,001,291 in July, 1907. The large gain in excess of exports, $12,792,602 for the month and $178,967,781 for the period since January 1 is a fact whose significance should not be overlooked.

# The Inland Steel Company's New Morgan Merchant Mill.

The Inland Steel Company, Chicago, has just completed the erection of a merchant mill of the semicontinuous type at its works at Indiana Harbor, Ind. A plan view of these works was printed on page 202 of *The Iron Age*, January 16, 1908. The new mill, which was then in course of construction, is shown on the plan, being designated as "continuous mill No. 2," at the extreme left of the drawing. It is understood to be the only exclusive open hearth steel bar mill in the country, the steel made by the plant being exclusively open hearth steel.

The new mill was designed and built by the Morgan Construction Company, Worcester, Mass., and is similar in general layout to mills built for the Wisconsin Steel Department of the International Harvester Company and for a number of European customers. Some changes, however, have been made in the grouping of the intermediate passes to insure greater flexibility for working a wide range of product. The mill is designed to finish from ⅜-in. to 1½-in. rounds, or equivalent sections, including flats, angles, channels, &c. A general idea of its arrangement is given in Fig. 2, while the interior is shown quite well in Fig. 1,

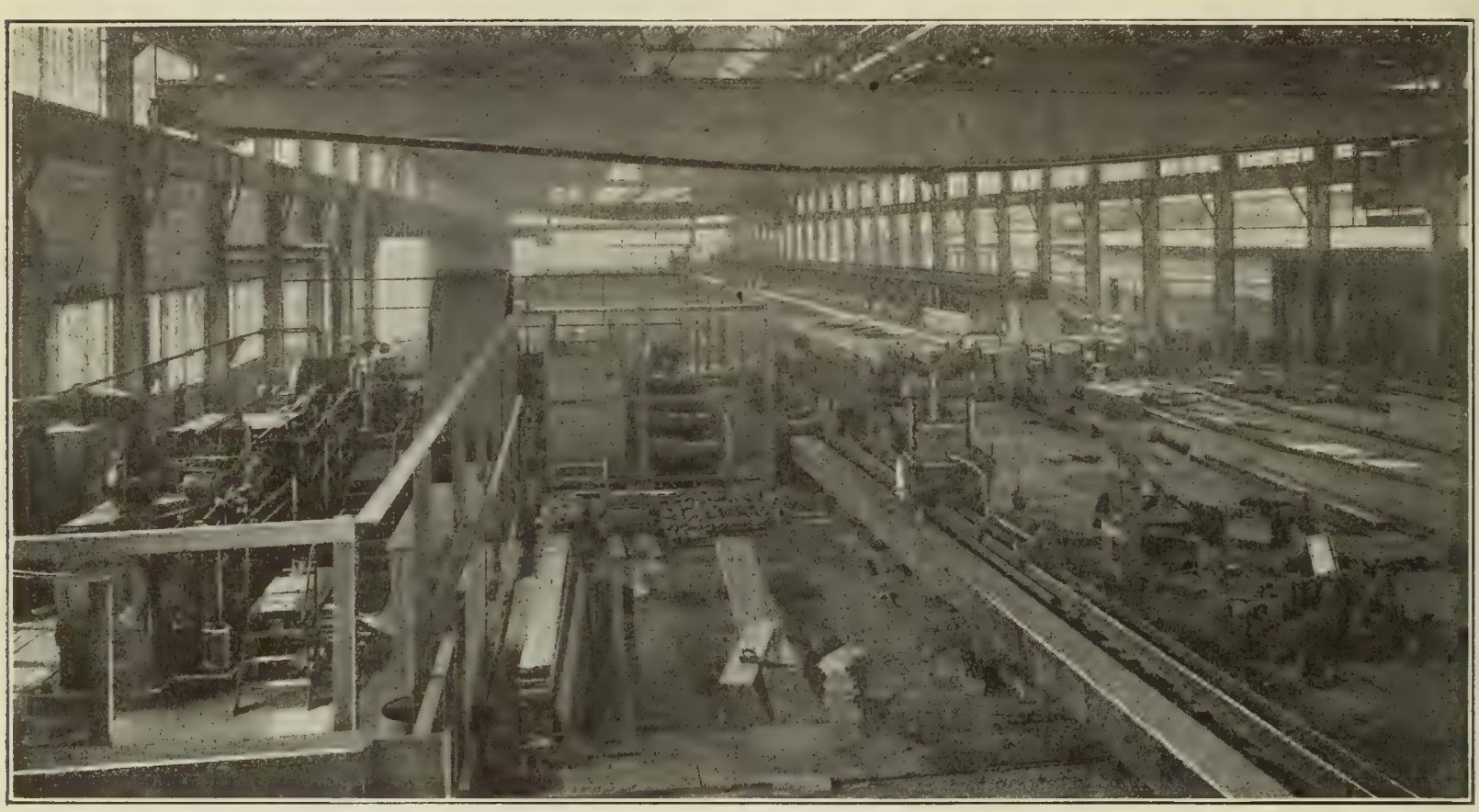


Fig. 1.—General View of the Interior of the Inland Steel Company's New Mill.



Fig. 3.—Arrangement of the Roll Trains in the Inland Steel Company's New Mill.

### The Furnaces and Gas Producers.

The 4-in. billets with which the mill is to be supplied are delivered to the back of the heating furnaces on cars, from which they are lifted and deposited on an inclined platform. They are then rolled down one by one in front of the pusher, which consists of two heavy swinging arms actuated by a steam cylinder located under the platform. This arrangement is much more compact than that in which direct plunger pushers are used. The furnaces, of which there are two, are arranged to receive billets approximately 11 ft. long, but can be worked with shorter material or with material of reduced cross section if desired. They are of the Morgan continuous gravity discharge type, with water cooled skid pipes, which are slightly inclined toward the

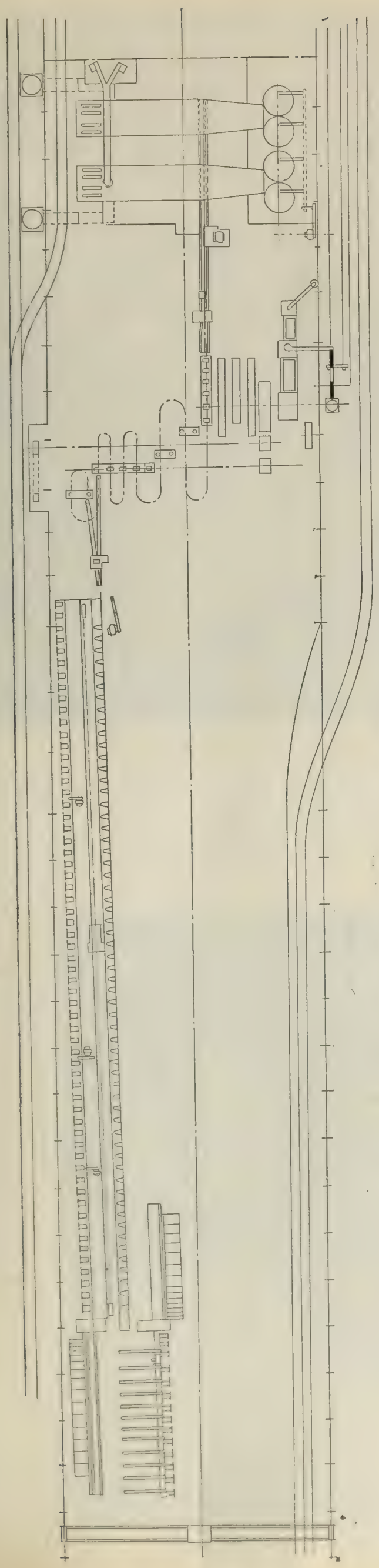


Fig. 2.—Sketch Showing the Plan of the New Mill of the Inland Steel Company.

front to assist the movement of the billets. These are worked along by the pusher to the hottest part of the furnace, from which they drop through swinging doors in the front of the furnace directly on a billet conveyor.

The furnaces are provided with reversing regenerators filled with checker work for preheating the air. The air blast is furnished by two Sturtevant fans, each supplied with a self-contained motor. The gas is supplied from a battery of four 10-ft. Morgan gas producers fitted with George automatic feeders, located directly in front of and only a short distance away from the furnace. The use of automatic feeds in this installation is particularly desirable on account of the short connections to a furnace, which insures a hot gas, but necessitates uniform feeding of the producers.

The conveyor from the furnaces to the continuous roughing rolls is divided into two sections by a hydraulic shear, which is fitted with an adjustable stop to permit of cutting the billets into any length from 30 to 60 in.

### The Arrangement of the Trains of Rolls.

The above mentioned conveyor delivers the billet direct to the first pass of a continuous roughing mill, Fig. 3, composed of six trains of 14-in. rolls, which, together with the No. 7 train, are driven by spur gears direct connected to the engine shaft.

A few feet beyond the continuous train and at one side is located the No. 7 train, with one pair of 14-in. rolls. A few feet beyond and to the side of No. 7 is the No. 8 train, with one pair of 14-in. rolls, and again beyond and to the side of No. 8 is an 11-in. train containing stands Nos. 9, 10, 11 and 12, driven through a stand of three-high pinions. A few feet farther on and to the side of this train are two trains, each with one stand of 8-in. two-high rolls, with its separate pair of pinion housings.

There is no manual labor from the time the cold billet is placed on the furnace pusher until after the eighth pass has been completed. The four or six remaining passes cover such an unlimited range and varying conditions as to render automatic working impracticable. The smaller sections are finished by looping in the first end. The heavier and stiffer sections are allowed to run clear, the last end at one pass being the first end at the next pass.

### The Cooling Bed.

From the finishing trains the stock passes directly to a cooling bed 300 ft. long, shown in Fig. 4. This bed is arranged so that it may be operated as a whole or in halves, depending upon the length of sections rolled. It is of the Edwards inclined escapement type, similar to beds installed for the Carnegie Steel Company, Jones & Laughlin Steel Company and others, but of heavier construction and of more ample dimensions, and with a number of new features.

The bar passes along the top of this bed over a conveyor consisting of conical rolls with axes slightly out of square. This keeps the bar at the large end and at maximum speed. When the entire bar is on the bed the axes of the cone rolls are all slightly shifted. The bar instantly crosses the face of the rolls to the small end, and consequently to slow speed. The bar now lies directly over the top fingers of the transverse conveyor, and is at once lifted from the cone rolls and slid broadside into the first notch of the cooling bed down which it travels, notch by notch, as subsequent bars are received, until it reaches the collecting grid, by which time it is cooled.

A conveyor at the bottom of the bed carries the bars to a shear, located at the further end, by which they are cut in multiple to any suitable length. To this shear is connected a back shear table with positive driven rolls in gear with those in front and fitted with an adjustable stop. As the rods are cut to length a series of pusher arms deposits them in a pocket at the side of the table resting on a scale platform, and after a sufficient bundle has been accumulated it is transferred in slings by an overhead crane either directly into railroad cars or to other parts of the building.

If the specifications call for rods to be cut to very short lengths the shear above mentioned could not handle the product from the cooling bed, and, therefore, a sec-



Fig. 4.—Rear End of the Inclined Cooling Bend, with Shear Table and Scales, in the Inland Steel Company's New Mill.

ond or reshearing shear, together with a short conveyor and a back shear table and gauge, with pockets similar in every way to the first, is provided. The first shear can then supply the material cut to some multiple of the finished length, and these long bars are transferred to skids from which they are fed to the reshearing shear.

Special attention has been given to the finishing end of the mill to provide ample facilities and space for handling a heavy tonnage.

The mill is driven by a C. & G. Cooper engine, Fig. 5, the main shaft of which is direct connected through a coupling to a train of spur gears driving the first seven

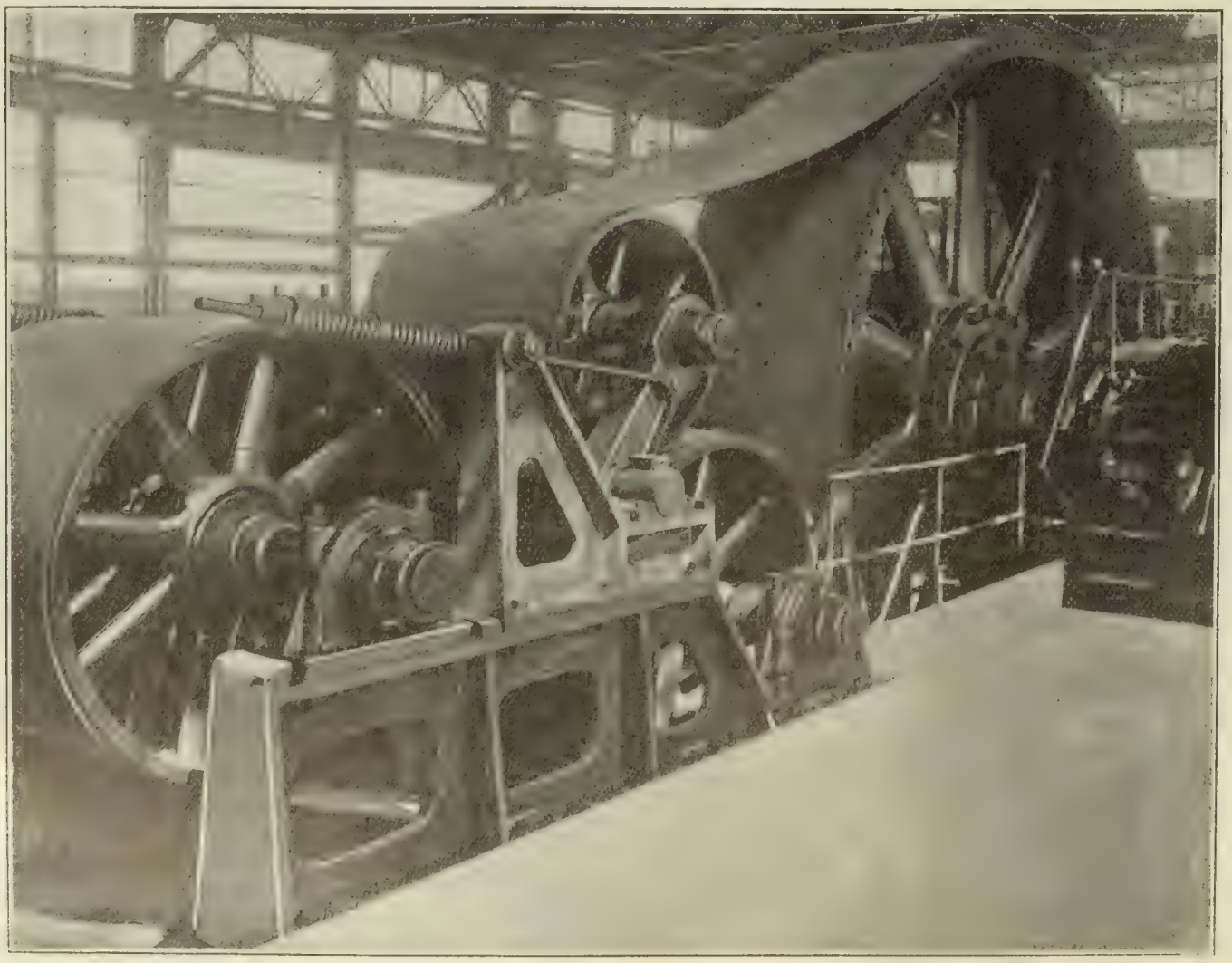


Fig. 5. The Cooper Engine Operating the New Mill of the Inland Steel Company

stands of the mill. The engine is also belted to two jack shafts driving the finishing trains.

The main building is 115 x 700 ft., of steel construction, with 8-in. concrete side walls. A depressed switch track entering an 80-ft. opening at the left of the building, as seen in Fig. 2, parallels the shipping floor and accommodates 10 cars. The shipping floor is of ample dimensions, being 500 x 90 ft. The cranes shown in Fig. 1 are two 15-ton 111 ft. 6-in. span, made by the Alliance Machine Company, Alliance, Ohio. The engines, which are shown uncovered in Fig. 1, will be inclosed in an engine room constructed of galvanized iron on a steel frame, the framework of which is seen in this view.

The shear table shown in Fig. 4 is equipped with scales for the weighing of bars. After being cut to proper lengths they are dropped into the iron trough on the scale platform, whence they are readily lifted by the cranes and carried to the shipping floor. The crane operating over this end of the mill has an overhanging lift with a double hook sling for the convenient handling of long material.

In connection with the completion of the new bar mill, it may be noted that three new sheet mills have been added to the plant, making 10 sheet mills in all. The old 26-in. blooming mill has been taken out and a new 36-in. mill made by the United Engineering & Foundry Company has been installed. This mill is driven by a 50 x 56 in. twin engine built by the Mesta Machine Company, Pittsburgh. There has also been completed a new 24-in. sheet bar mill, which was installed by the United Engineering & Foundry Company.

In order to take care of this added equipment the steam generative plant has been increased by the installation of eight new Sterling boilers in units of 500 hp.

The Wisconsin Steel Company, with a similar Morgan merchant mill of earlier design, has made some excellent records, which have previously been reported, but which it may be well to report again. Its year's record is 92,254 gross tons in 614 turns, or an average of 150 tons per turn. The monthly record is 11,146 gross tons, and the following month 1860 gross tons of sizes smaller than ½-in. rounds were rolled in addition to 5356 gross tons of larger sizes. The 24-hr. record is 642 gross tons of 1⅜-in. rounds. The production of the small sections above mentioned is particularly interesting, when compared with the productions of the ordinary mills.

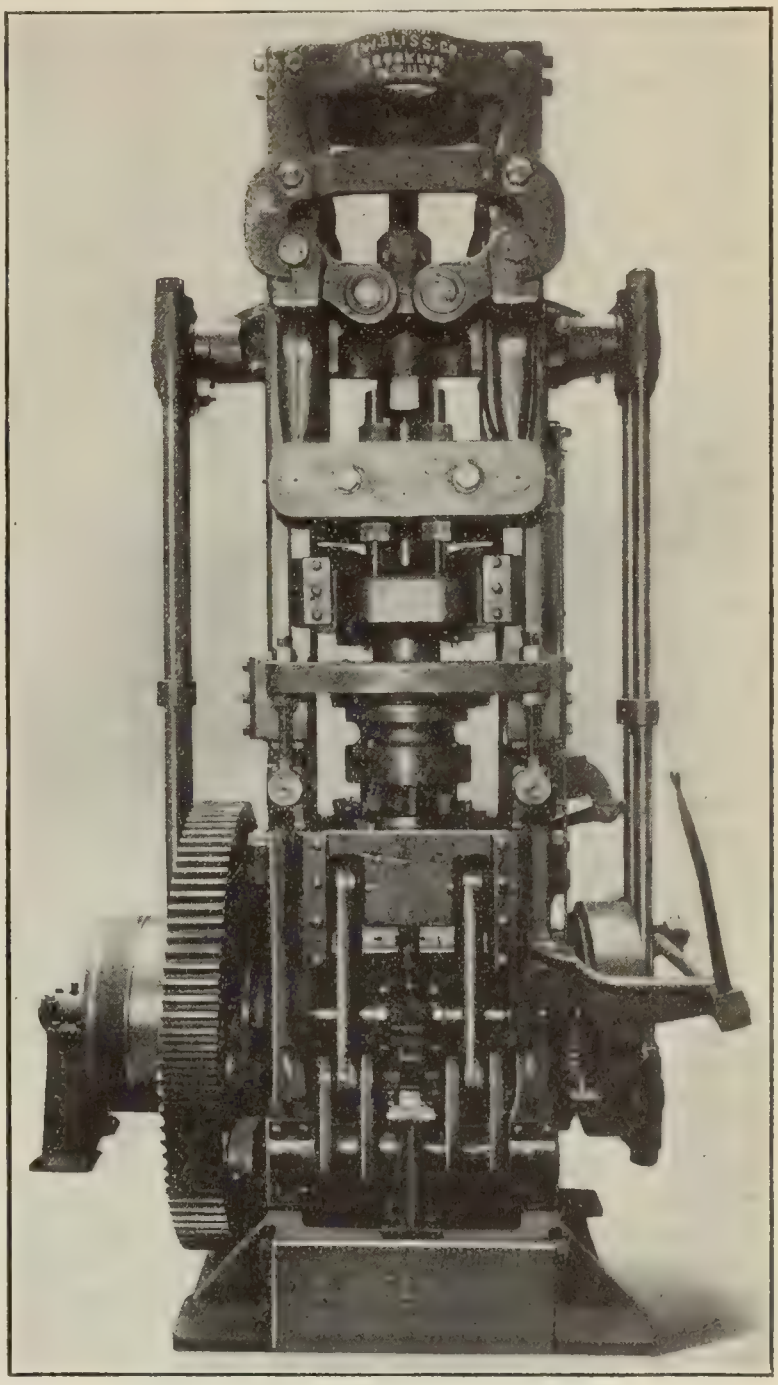
## A New Bliss Triple Action Drawing Press.

To do in one handling what originally requires several means materially reducing manufacturing cost. The combining of several operations in one machine is the important thing accomplished in the new triple action drawing press shown in the accompanying illustration, and built by the E. W. Bliss Company, 11 Adams street, Brooklyn, N. Y. It is the development of the Bliss patent toggle drawing press which is used for drawing all kinds of sheet metal goods. This type is offered as especially useful and economical for drawing deep seamless shells. In addition to the plunger it has two slides each of which has an independent dwell, thus permitting of making in one operation work that has hitherto required two. This method does away with handling or annealing the first operation shells, inasmuch as the second operation immediately follows the first, making the second draw while the metal is still warm from the first operation.

The press shown will receive a blank 25 in. diameter of No. 24 U. S. standard gauge maximum thickness, and a drawing punch up to 16 in. in diameter. It will draw and lift out up to 9½ in.

The press has been designed along new lines, and its special features and operation are interesting. The lower table carrying the dies with the blank, is raised to meet the stationary blank holder by toggles, when the first operation punch comes into action and makes the first draw, after which this punch becomes the second operation blank holder, and the center plunger carrying the second operation punch acting in turn draws the blank through the second operation die; finally the lower table carrying the dies recedes, which action, in conjunction with the lower positive knockout, places the drawn shell free on top of the die ready for removal.

The press is of compact construction, as will be seen from the illustration, and occupies no more room than any double action press of the corresponding size for the second operation shell. The machine occupies a floor space of 111 in. front and back, by 131 in. right and left overall; the hight from the top of the frame to the floor is 198 in.; ratio of gearing 21½ to 1; the flywheel is 54 in. diameter by 8 in. face, and weighs 2300 lb.; the total weight of the machine is approximately 60,000 lb.




A New Triple-Action Drawing Press Built by the E. W. Bliss Company, Brooklyn, N. Y.

**Marking Goods for Railroad Shipment.**—The Public Service Commission for New York State, outside of Greater New York, has made a final order modifying the rule put in effect July 1 by the steam railroads requiring that each package, bundle or piece of less than carload freight, must be plainly marked by brush, stencil, pasted label or securely fastened tag. The commission's order provides that where articles are not boxed, barreled, crated or sacked and are shipped loose in pieces, two pieces, lots or bundles out of 10, shall be marked and one for every additional 10 pieces, lots or bundles. Each marking must show the total number of pieces, lots or bundles in the entire consignment. Flour, feed, cement, &c., in sacks, and a number of other commodities also come under special exceptions.

**The Mining Engineers.**—On account of the existing labor troubles in Alabama, the next meeting of the American Institute of Mining Engineers, which was to be held at Birmingham, Ala., will take place at Chattanooga, Tenn., beginning October 1.

# The Unlawful Use of Patented Machine Tools.

## The Tindel-Morris Company Enjoins the Chester Forging and Engineering Company.

A most peculiar case, involving the unlawful use of patented machine tools, has developed in the Philadelphia district. The Tindel-Morris Company, Eddystone, Pa., has secured an injunction in the United States Circuit Court restraining the further use by the Chester Forging & Engineering Company of two patented machines for the turning of crank shafts. These machines formerly belonged to the Tindel-Morris Company, but possession of them was unlawfully obtained by the Chester Forging & Engineering Company. The decision of the court embodying the order for issuing the injunction reviews the testimony, of which the following is an abstract:

The defendant company was organized early in 1907, as a rival of the complainants in the crank shaft business, by two men—Tomkins and Arnhold—who were in their employ. When this was discovered by the complainants Tomkins and Arnhold were discharged, Arnhold, who was foreman of the shop, being retained till the end of the month to close up certain matters. The latter part of February, while he was still in charge, the complainants had occasion to sell some old hacksaws to a junk dealer, who was also asked to make an offer for the cast iron scrap scattered around in piles. There were stored away at the time on a platform over the warehouse, in a place provided for unused machinery, the complete parts of two dismantled crank lathes, made under the patents held by the complainants, which were somewhat out of order, by reason of wear, but were capable, with slight repairs, of being put in an operative condition. Some of these parts were of steel, with phosphor bronze bushings, and under no circumstances would be classed as scrap, nor were any of them in the scrap piles examined by and sold to the junk man. In some unexplained way, however, they were taken down from the place where they were stored and loaded up and carted off with the scrap in the junk wagons. There is evidence that this was by the direction of Arnhold.

Within a day or two afterward the junk dealer was notified by telephone, either by Tomkins or Arnhold (he is not sure which), that they would come and look over the scrap, and might want to select some things out of it. This they did, taking the different parts of the two crank lathes in question, for which they paid him $100, directing them to be hauled to the shop of the defendant company. As scrap, this material had cost the junk dealer $18 a ton, the whole amount paid by him being $37. As machinery it was worth at least $1500. Since coming into the hands of the defendant company the lathes have been put together, suitable bed plates constructed, and other parts supplied to put them in complete running order. None of this latter is covered by the complainants' patents, but the machines as so assembled and set up are admittedly within and infringe upon them, unless, under the circumstances, the defendants have acquired the right to use them.

Had the machines which are in controversy here been advisedly sold to the junk man, he in turn could have sold them, as he did, to Tomkins or to Tomkins and Arnhold, and the defendant company, buying from them, would undoubtedly have been protected. The complainants having parted with them in this way, if that was the fact, the right of property which thereby passed would have carried with it, as of course, the right of user. But it is manifest that, to have this effect the sale must have been actually intended. And it must have been of the machines as such, and not of the dismantled parts as scrap. A sale as scrap was a sale, not to use, but to destroy, and cannot be wrested into a sale of the patented machines, because the different parts could be picked up and put together out of it. Wortendyke *v.* White, 2 Ban. & Ard., 25; Cotton Tie Company *v.* Simmons, 106 U. S., 89. Even assuming then that there was no fraud, and that the patented parts were merely included by mistake in the scrap that was sold to the junk man, this would give no authority to him, or to any one buying from him, to rig them up into a machine in disregard of the patents.

That the complete parts of the two machines were included in the scrap, hauled off by the junk man, not only with the acquiescence, but with the connivance of Arnhold, there can be little question. * * * It is difficult to resist the conclusion, in view of the sequel, that it was done with a purpose, it being very peculiar also, that two entire machines, with all the minor parts complete, should afterward be able to be picked out from the scrap of which he had supervised the loading. * * * Tomkins, as he says, and Witteman also, for that matter—they both seem anxious that the company should proceed on an approved legal basis—took counsel and was advised that he had a right to buy these machines of the junk man, as he did, and that the company in acquiring title through him, would be entitled to set them up and use them.

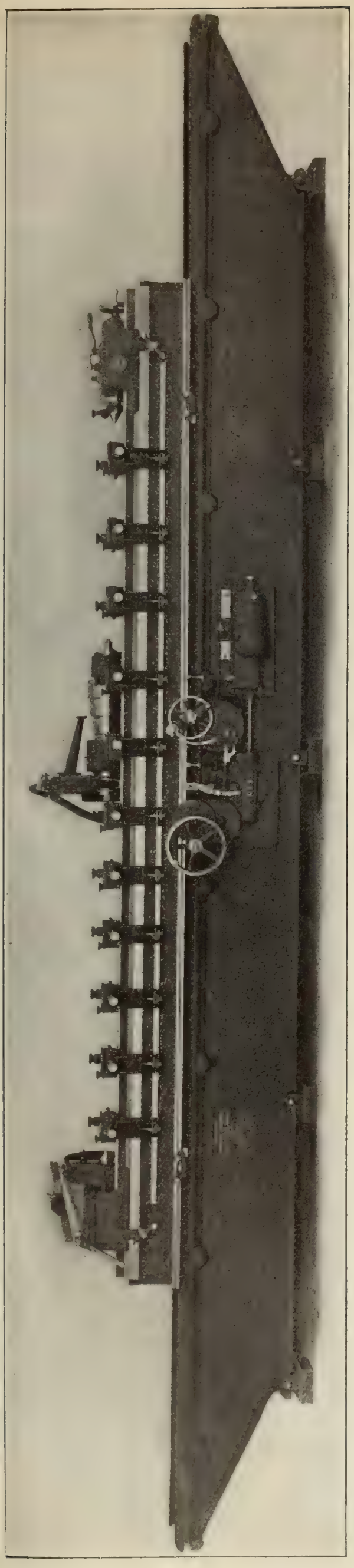
Putting all these things together, there is but one reasonable conclusion to be drawn, and that is that the defendants proposed, in the words of Arnhold, "to steal a march on Tindel," who would not sell the machines—of which, by the way, Arnhold claims that he, and not Tindel and Albrecht, is the real inventor, which may have something to do with his conduct—trusting to their ability to hold and use them, once they got them into their possession. Equity will see, however, that this is not successful. For whatever title passed to the dismembered parts as scrap, by virtue of the sale to the junk man, having now got into the hands of those who concocted the scheme, it is against all conscience that they should be allowed to carry it out or get the fruits of it. As to them, the rights of the complainants remain as at the start, unaffected by the motions which have been gone through with, which the fraud vitiates. And this is the case, patents or no patents, dispensing with the necessity for going into the question of their validity, which is raised, or requiring it to be first adjudicated or acquiesced in, according to the ordinary rule which prevails in applications of this kind.

# Norton Grinders for Long and Heavy Work.

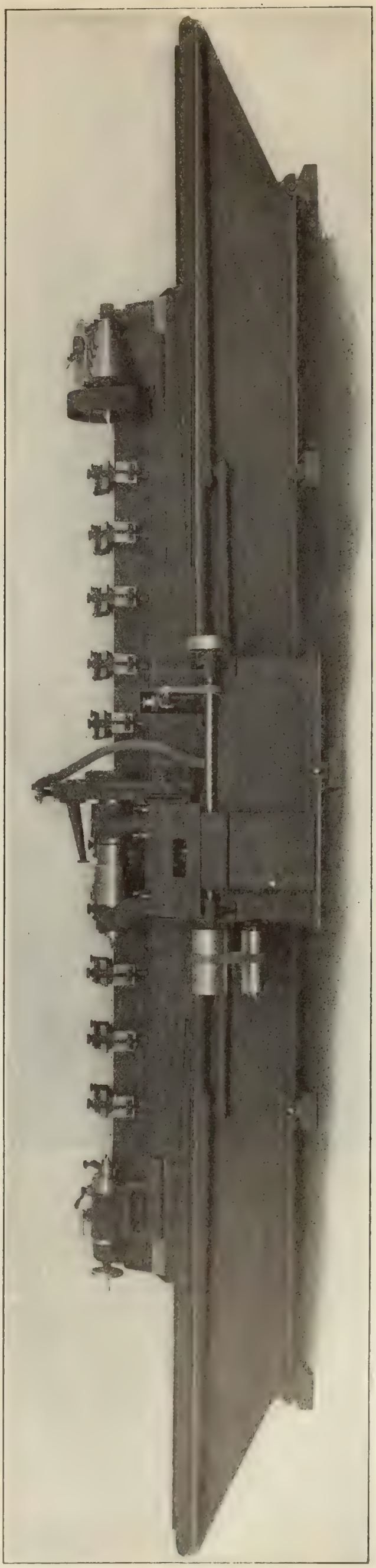
The type of grinding machine shown in the illustrations on the opposite page, in front and rear views, is designed to be made in several lengths, all with 20 in. swing, the sizes being 96, 120, 144, 168, 192, 216, 240 and 264 in. That shown is a 20 by 192 in. machine, with a base 30 ft. long. When built in greater lengths the base is made in three pieces. The machine for grinding 264 in. between centers has a base 42 ft. long. These machines are for grinding long and heavy shafts for stationary engines for shafts used in marine work, as well as for spindles. In shorter lengths, up to 120 in., the purpose is the grinding of rolls and similar work. There is no provision for grinding tapers, the effort of the designer being toward simplicity and rigidity in order that accurate and heavy parallel work may be done without complications due to adjustment of the table itself. There is, however, an adjustment on the footstock to correct alignment of centers in case of wear of the center points.

The base of the machine is unusually heavy, and the ways are very wide, and the oiling rolls are placed near together to secure long life and continued accuracy of the guiding ways. The general features are of the standard types embodied in the line of its builder, the Norton Grinding Company, Worcester, Mass. The grinder is driven from overhead, or can be built with self-contained electric drive similar to that of the Norton machine described in *The Iron Age*, July 30. This machine will require 20 hp. commercially for its heaviest work, and a range of from 5 to 20 hp. should be provided for different classes of work. The weight of the 192-in. machane is 15 tons. The grinding wheel for the machine is furnished in various widths to suit different kinds of work, and ranges from 2 to 4 in. face, by 24 in. diameter.

Because of its unusual length, special provision is



Front or Working Side.



Rear or Driving Side.

A 20 x 192 In Belt-Driven Cylindrical Grinder Built by the Norton Grinding Company, Worcester, Mass.

made for leveling and straightening, a foundation being necessary. The plates shown on the floor in the illustrations will be imbedded in the foundation to a straight edge and level. The wedges are adjusted by two nuts, one on either side of the raised end of the wedge, and operated on threaded studs fixed in the base of the machine. Both plates and wedges are machined to insure broad, permanent contact.

## The Electric Fault Finder.

A new and useful instrument has just been brought out by the Electric Controller & Mfg. Company, Cleveland, Ohio, for detecting and locating grounds, short circuits, open circuits, leaks and other faults in armature coils, field coils, control circuits, switchboard wiring or any other electrical circuit. Its name, the electric fault finder, truly describes its use, since it not only indicates



Fig. 1.—The Electric Fault Finder Made by the Electric Controller & Mfg. Company, Cleveland, Ohio.

trouble, which is all that a magnet will do, but finds or locates the trouble. With it, for instance, in a motor armature, a faulty coil can be absolutely located and the nature of the trouble definitely told. If a field coil is damaged the layer in which the fault lies can be accurately determined. If there is trouble in a bunch of control wires, in a multiple unit, train control, or other magnetic switch control, the faulty wire or pair of wires can be promptly located and the nature of the fault quickly found.

As will be seen from the accompanying views, Figs. 1 and 2, the instrument consists of a small box provided with a strap, so that it can be slung over the shoulder when testing motors in place, such as under a car or on

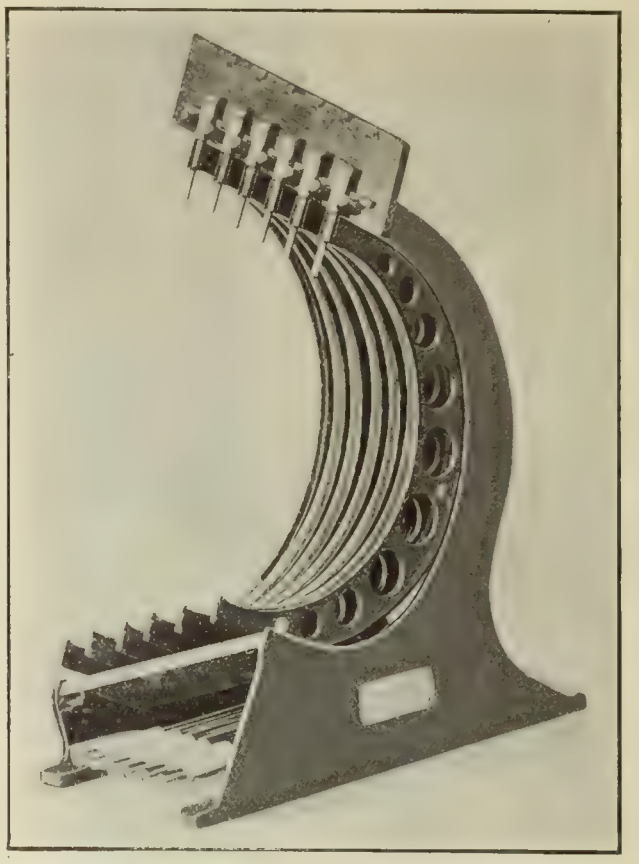


Fig. 2.—An Illustration of the Manner in Which the Electric Fault Finder Is Used.—Testing an Armature.

an electric overhead traveling crane. From this small box leads go to a telephone receiver, fitted with a headpiece so as to leave both hands free for testing. For working in very noisy places, such as bridge and boiler shops, or some parts of steel mills, the headpiece may be fitter with two receivers, one for each ear, which will shut out all sound save that received from the instrument. This arrangement not only allows perfect testing to be done in noisy places, but enables partially deaf persons to use the instrument. In one case by adjusting the rheostat to give a very loud sound (more than the normal ear could stand) and using two receivers, a very deaf man did accurate work with this instrument. From the box leads of convenient length go also to two test terminals. The instrument is cheap, small, portable and requires no outside current to operate. It takes only one man to operate it under any conditions, so that there is no excuse for the tester desiring a helper. The company has prepared a booklet giving instructions in its use.

## Slocomb Micrometer Calipers.

A set of micrometer calipers measuring directly all diameters or overall dimensions between 13 and 18 in. is shown in the accompanying illustration. This set is made by the J. T. Slocomb Company, Providence, R. I., and is known as the No. 23 micrometer set. With this set is furnished a set of end measures from 13 to 18 in.,



The No. 23 Micrometer Caliper Set Made by the J. T. Slocomb Company, Providence, R. I.

varying by 1 in. steps. The end measures are 7-16 in. in diameter and are fitted with tubular rubber covers so that the temperature will not be changed in handling, causing them to give inaccurate readings because of expansion or contraction. The calipers are supported in the rack as shown, and the end measures lie in grooves in the board at the base of the rack.

## British Plants for American Companies.

Publication is made in London of the names of the following German and American companies which have acquired works or land in Great Britain for the manufacture of their products in view of the going into effect of the new Patent and Designs act:

1. Elberfelder Farbenfabriken (represented by the Bayer Company, Ltd), acquired 24 acres of land at Port Sunlight, Cheshire.
2. Hoechlisfarhwerke Company, acquired 7 acres of land at Ellesmere Port, Cheshire.
3. Gillette Razor Company, works, Leicester.
4. Sanatogen Food Company, land, Cornwall.
5. Pintsch Suction Gas Plant Company, works, London.
6. National Cash Register Company, works, London.

A London firm which negotiates sales of industrial property writes the London *Iron and Coal Trades Review* that there are good prospects of the opening in the near future of a number of idle British works. It says: "We are in negotiation with numerous German and American manufacturers requiring sites and factories in different parts of England. The trades to be carried on consist principally of chemical, engineering and pottery industries. We feel certain, having gauged the feeling abroad, on the effect the passing of the Patent and Designs Act is having on manufacturers, that the movement is only beginning, and there will be a big development of it, principally among German manufacturers, who are makers of numerous chemical products largely used in dyeing, &c. The American industry, being more in machinery, is not so much affected, but from the match, electrical, pottery and other industries we may have firms opening up works in England."

## British Iron Trade Notes.

The depression in British shipbuilding is indicated by Lloyds' returns, which showed 1,250,000 tons building in June, 1907, and only 800,000 tons in June of this year. It is necessary to go back to December, 1896, to find a lower figure.

Reports recently circulated of the formation of a combination among British manufacturers of wrought iron are reported unfounded. The competition in finished iron products has been very sharp in the last few months. Attempts have been made at consolidation in previous years, but without success.

Bolckow, Vaughan & Co., Middlesbrough, Eng., will pay a dividend of 6 per cent. to ordinary shareholders for the year ending June 30. Out of the profits of the year £145,296 was provided for extensions of plant and £168,733 was carried to surplus.

The market for hematite pig iron has been very much depressed, and makers of East Coast hematite have recently sold at 55 shillings a ton, and even somewhat less. This is an exceedingly low figure compared with 51 shillings 3 pence for No. 3 Cleveland pig iron. Rubio ore is held at 14 shillings 9 pence at Middlesbrough, and Spanish mine owners are represented as preferring to keep their ore at the mines to shipping it at less than 11 shillings per ton at Bilbao.

The Dunderland Iron Ore Company, Ltd., recently gave notice of the laying off of 400 employees pending improvements to the company's concentrating and briquetting plant at Guldsmedvik-i-Ranen, Norway. The company has sent a protest to the Norwegian Storthing against the duty of 25 öre (about 6 cents) per ton levied on exported iron ore. It is stated that many difficulties have been met with in establishing the new plant, and that further capital is necessary. Meantime the company says that while the treatment of low grade Norwegian ore is in its infancy, the export duty will seriously affect its operations and the iron ore industry generally.

The exports of iron and steel from Great Britain in the seven months ending with July were 2,437,952 tons, or 730,000 tons less than in the corresponding period of 1907. Pig iron furnished considerably more than half the decrease, as shown by exports of 1,244,828 tons in the first seven months of 1907 and 760,834 tons to July 31, 1908. The falling off in pig iron exports to the United States was nearly half the above decrease, or the difference between 365,081 tons in the first seven months of last year and 27,212 tons to July 31, this year. The imports of iron and steel to Great Britain in the first seven months of this year were 608,347 tons, as compared with 501,608 tons in the corresponding period of 1907. The principal increase was in semifinished steel—ingots, blooms and sheet and tin plate bars—of which the total was 291,693 tons to July 31, this year, against 176,774 tons for the first seven months of 1907.

**The Southern Steel Company's Cash Requirements.**—The following details of the status of the Southern Steel Company's reorganization plans have been given out, showing the number of assents to the plan:

| | Outstanding. | Assenting. | Per ct. |
|---|---|---|---|
| First mortgage bonds | $3,000,000 | $2,699,000 | 90 |
| Collateral trust notes | 2,000,000 | †1,715,000 | 85 |
| General creditors | *1,265,135 | 1,146,365 | 91 |
| Preferred stock | 10,000,000 | 3,074,000 | 30 |
| Common stock | 15,000,000 | 6,293,800 | 42 |

* Amount of claims adjusted, proved and allowed in the bankruptcy proceedings.

† Including amount acquired by the committee.

What remains to be done now is to form an underwriting syndicate to provide the company with $2,000,000. Counsel for the reorganization committee says that in order that the properties of the Georgia Steel Company, the Lacey-Buek Iron Company, and the Chattanooga Coal & Iron Company may be preserved for the new company, and that their mortgage indebtedness should be protected and foreclosure suits avoided, provision has been made for their cash requirements as follows: Georgia Steel, $335,000; Lacey-Buek, $52,000, and Chattanooga Coal & Iron, $40,000. It is likewise contemplated to make arrangements for meeting the cash requirements of the foregoing subsidiaries for the next six months, estimated at approximately $400,000.

## A Larger Future for Steam.

In Bulletin No. 325 of the United States Geological Survey, issued under the title "A Study of Four Hundred Steaming Tests," and edited by Lester B. Breckenridge, a thorough resume is given of the tests made at the Government fuel testing plant at St. Louis, Mo., in 1904, 1905 and 1906. Power users will find of special moment the rather daring prophecy contained in the portion of the report devoted to "Commercial Considerations," which is given below. Particular interest attaches to what is said of the possibilities of increasing the efficiency of boilers; also to the portion relating to the strengthening of the steam turbine against the competition of the gas engine. The commercial considerations are summed up in four paragraphs:

General.—Inasmuch as the boiler plant is at present the expensive portion of a steaming outfit, and as it probably is possible to cut its cost down to a fraction of the present cost and at the same time obtain a higher efficiency, it is felt that there is good ground for anticipating an enormous improvement in the production of steam power within the next few years. If so, it will not be the first time that a new arrival in a field has spurred on older forms of enterprise to a higher prosperity than they ever dreamed of before. The competition of the gas engine may be the best thing that ever happened to steam engines and turbines. The statements, theories and proposals made in this study are widely scattered and may not have been plain because they are mathematically involved. For this reason a short summary will be made of the possibility of so improving the system of working steam turbine plants that they may be permanently kept above commercial competition from gas producer and gas engine plants in large powers. Of course there is little doubt that a great field awaits the gas engine in smaller plants, say, under 500 hp. All these suggestions are tentative only.

Boilers.—The authors see no reason why boilers cannot be constructed and properly operated with entire satisfaction which will produce about ten times the amount of steam now obtained per square foot of heating surface and with no difficulty in maintaining dry steam. The efficiency from coal to steam should easily be made considerably higher than that of a good performance of to-day. Such a plant would require only a fraction of the present investment in steam plant building and real estate. Perry states in his book, "The Steam Engine, Gas and Oil Engine," that he thinks boilers should be made to do 10 and possibly 20 times the work they do at present.

Furnaces.—It will probably be found on attempting this reduction of dimensions and cost that the limit will be not in the boiler as such, but in the combustion chamber. Burning a large amount of coal on a small grate area is largely a question of draft and continual riddance of ash, but the rate of travel of gases through a combustion chamber is dependent practically only on the amount of carbon burned in a unit of time, the rate being about the same, no matter what the air supply per pound of carbon. As combustion chambers are now constructed for Western coals they are too small, but small is a word not to be understood in this connection as referring to volume or length alone. By a small combustion chamber is meant a chamber in which either the time spent by the gas in traveling from the front to the rear of the boiler is short or the mixing devices are inefficient or absent. In the discussion of mass action, it was stated that mere length of combustion chamber counts for little—that mixing is what counts—and thus there is a possibility of enormously increasing the efficiency of a combustion chamber as a burner of volatile matter. Effort in completing a steam generating outfit of small dimensions must be largely concerned with the construction of a combustion chamber containing many gas mixing appliances.

Turbines.—The work on turbines is provisional only, but it is believed that all the assumptions made are on the side of safety; that is, that the overall efficiency of the turbines working with high superheat and low pressure will probably be greater than estimated.

# THE IRON AGE

Established in 1855.

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## Railroad Buying and the Iron Trade.

It has been taken for granted in all attempts to account for the present industrial recession, and to take the measure of future demand, that full consumption by the railroads is essential to prosperity in the iron trade. So much is said on this subject, moreover, that the conclusion might easily be drawn that railroad purchases of iron and steel and of equipment into which they enter is the source of most of the iron trade's activity. It is true that the transportation of raw materials and the finished products of manufacture and of the yield of fields and mines is a gauge of industrial operations; but it does not follow that there is an even-paced correspondence between the rate of the inflow of revenue to the railroads and the rate of distribution of so much of it as goes to the iron trade. For example, 12 years of good crops have preceded 1908, and good crops have always been the token of railroad prosperity, but the variations in the yearly investments of railroad money in rails, cars, locomotives and all else into which iron and steel enter have been pronounced.

A railroad policy of caution in buying may be in force for months before the ultimate channels of iron and steel consumption, through which pass a multitude of articles to the last man in the line—the individual buyer at the counter—begin to show any shrinkage. In 1903 as securities kept falling, the railroads stopped buying, and 1905 had come before they resumed. But at that same time in 1903 many manufacturers using iron and steel had business enough ahead to last well into 1904, and they saw only a depression in Wall Street. It is a matter of record that if the causes putting a check on railroad consumption operate for but a brief period their effect upon other lines of iron and steel consumption may indeed be very slight, since the latter keep on after the railroads have taken alarm and find stimulus for a new forward movement when the railroads take a fresh hold.

Illustrating what has just been said, the course of the iron trade in 1904 is instructive. The lighter lines—wire, tin plate, sheets, bars, hoops and bands—were really the pillars of the trade, while the brunt of the blow to confidence was taken by the rail and plate mills and to a much less extent by the structural mills. A comparative showing of the production in pig iron and various finished materials in 1903, 1904 and 1905 is of interest:

| | 1903, Gross tons. | 1904, Gross tons. | 1905, Gross tons. |
|---|---|---|---|
| Pig iron | 18,009,252 | 16,497,033 | 22,992,380 |
| Steel rails | 2,991,810 | 2,283,840 | 3,375,611 |
| Wire rods | 1,503,455 | 1,699,028 | 1,808,688 |
| Plates and sheets | 2,599,665 | 2,421,398 | 3,532,230 |
| Tin plates | 480,000 | 458,000 | 493,500 |
| Structural shapes | 1,095,813 | 949,146 | 1,660,519 |

The outstanding fact in the above table is not that the loss of railroad consumption in 1904 was costly to the iron trade, but that when railroad demand came again in the following year, it pulled up with it the consumption in other lines, which meantime had been not at all meager. It is noteworthy that wire and wire nails, as represented by wire rods, exceeded in 1905 their consumption in 1904, showing how a line of products closely reflecting agricultural conditions may prosper, even when the railroads have ceased to buy. The story of the steel rail totals in the three years is palpable. The plate and sheet totals for 1903 and 1904 are in remarkably close accord, considering that carbuilding was suspended in 1904. Sheet consumption, like that of wire, evidently increased. The tinplate trade was little affected. Building operations, with lower labor cost, went on, though railroad bridge building fell away, to be renewed on a great scale in 1905.

It would seem, from the above showing, that the tendency has been to put too much emphasis on railroad buying as essential to any approach to prosperous conditions in the iron trade. Long ago steel manufacturers ceased to regard rail production as the main dependence of the industry. More recently, as the steel car has become a feeder of the plate mills, the estimates of the railroads' contribution to the iron trade have risen to 50 per cent. of the total business, though probably 40 per cent. would be nearer the actual. It is plain that the present depression, unlike the slackening in 1904, has far more serious consequences to the iron and steel industry than the cutting off of a large portion of the railroad demand. Suppose two-thirds of the railroad consumption of last year to have been cut off, and other lines to have gone on as before, we should now be turning out finished products at 75 per cent. of last year's record pace, instead of about 55 per cent., as indicated by the latest pig iron statistics. Inability of the railroads to get funds for further expansion, the commonly assigned cause of the iron trade depression, is only a secondary cause. The primary cause, which has made itself felt in all directions, leaving no industry untouched, is a continued lack of confidence, in view of the number of still unsettled questions vitally related to the business interests of the country. In the process of recovery there is this fortunate factor: the people have had their spell of hysteria and are quieting down, after the campaign of attack and exposure that has been waged for many months. They may now be more disposed to give the railroads and the other corporations a chance and refuse to be worked into a frenzy for politics' sake. Such a refusal would greatly reinforce good crops in helping the country back to prosperity.

## Measuring the Hardness of Metals.

In the control of conditions at various steps in the processes of manufacture distinct advances have been made in iron and steel metallurgy in recent years. Pyrometry has contributed in no small way to these results. The control of conditions in service by the use of materials meeting service requirements is also a great desideratum. As a rule the qualitative factors are easy of determination. The accurate determination of quantitative factors is usually difficult, and the development of methods for the measurement of such factors is a matter of importance. Of all the properties of metals, that of hardness is among those least susceptible of accurate definition and measurement. In the article on the measurement of hardness in the early pages of this issue it is pointed out that hardness and tenacity are apt to be con-

fused. For this among other reasons we have been long without a reliable method of testing and valuing this property of metals.

The article referred to describes a recently developed method for determining hardness, that of Albert F. Shore, who has devised an instrument to measure the energy of rebound of a minute hammer striking the specimen with sufficient intensity to cause a permanent displacement of metal. The invention does not measure elasticity, since the limit of elasticity has been exceeded. What the scleroscope does measure, it is claimed, is the energy of resistance at the moment of exceeding the elastic limit. This, in the view of the writer of the article, is what is meant by hardness. When a tool abrades metal the instantaneous resistance to abrasion is practically divorced from tenacity, and the action of the scleroscope hammer is represented to be just this. Time is not a factor, as the blow is instantaneous. The amount of the rebound, it is argued, represents the resistance when permanent deformation takes place.

The portability and adaptability of the new instrument are valuable in making it possible to measure the hardness of machine parts without removal of the parts. High speed steel may be tested while hot and thus its hardness known when it is at the temperature of actual service. Importance attaches, moreover, to the rule promulgated as the result of recent tests, that a cutting tool must be from three to four times as hard as the work in order to have a reasonably long life. It is desirable that further and independent confirmation of this conclusion may be had, though it is understood that the matter has been gone into thoroughly by the inventor. Most interesting also are the comparisons made by the Firth-Sterling Steel Company between the hardness numbers deducible from the Brinell ball test and those by the scleroscope method. Careful calculations have been made from numerous specimens and the agreement between the two series of numbers is quite marked.

The accurate measurement of small differences of hardness would seem to have a considerable future before it in connection with the assembling of machine parts. For, as the harder cuts the softer, parts may be so assembled that the expensive piece or the one removable with difficulty is associated with the less expensive and softer part or with the easily removable and softer. This would make decidedly for economy and is a matter well worthy of attention.

## Savings Bank Annuities for Wage Earners.

Annuity and life insurance as a part of the savings bank system of Massachusetts, recently gone into effect, will be watched as an experiment of unusual importance in its bearing upon the question of the care of the wage earner when his producing days are ended. Abroad the same subject has been given very serious consideration in recent years, and several nations have established systems for the support of the aged. Great Britain has just passed an old age pension bill that provides for annuities, which will be paid from a fund raised by general taxation. Germany cares for its old working people by compulsory insurance, the employees paying part of the premium, his contribution being held back from his wages; the employer pays another part and the State yet another. It is believed that France will soon adopt a similar system.

The whole theory of these methods is repugnant to American ideals. The compulsory payment of insurance premiums—the spending of a portion of a man's earnings without giving him a voice in the matter—is contrary to the spirit of individual independence as it is held in this country. Neither do American minds accept kindly the taxation of the community to provide comfortable maintenance for the unworthy, as well as the worthy, poor in their superannuation. The public funds must stand between poverty and privation, but the putting of a premium on improvidence by the promise to care for all in their later years would probably not meet with the approval of our legislative bodies. The wage earner must act upon his own volition, and the generally accepted idea is by means of inducement and education to stimulate a provident spirit. The advocates of savings bank insurance believe the system will work effectively toward this end. Although its practical operation is just beginning, manufacturers and other large employers of labor are already actively co-operating in the plan, a wise provision of the law that authorizes savings banks to issue insurance being that agencies may be established in labor employing establishments to receive applications for insurance and to collect the premiums. Employers who have looked into the matter believe that their people will be benefited by its workings, not only because it constitutes protection for their families in case of death and an annuity during old age, but also that it is an inducement to save, the money paid in premiums drawing interest as its share in the net profits on invested premium funds.

The Massachusetts plan is to furnish cheap insurance to residents of the State (none other being entitled to the privilege) on monthly payment of premiums. It is in a general way similar to the insurance issued by some of the large companies, which seek small risks, requiring the weekly payment of premiums to collectors sent out for the purpose. The savings banks, however, are not permitted to employ solicitors of insurance nor the house to house collection of premiums, and expenses are otherwise kept down to the minimum, so that insurance is materially cheaper, it is stated. The State assists in a practical way by providing the services of an actuary and medical director, and otherwise helps to keep down costs.

Three forms of insurance are issued as follows: One is a straight life policy which requires the payment of premiums until the age of 75 years, and payable at death. Another is an endowment policy with benefit, payable at the age of 65 or at previous death. The third is an annuity and insurance policy with insurance payable at death previous to 65 years, and with annuity commencing at that age. It is this last form of policy that is specially intended to take care in their old age of those who could not hope to accumulate a principal the income of which would be a competence. This policy is interesting employers, and it is largely because of this feature of the savings bank system that agencies are being established in works where many people are employed, making the payment of premiums easy and at the same time encouraging the taking out of insurance. One of the objections raised to the system has been that as no solicitors are employed, workmen will not be actively educated to take out insurance, nor will the average policy holder take the trouble to go to the bank each month to pay his premium, which he would do if dunned by a collector. The agencies alluded to serve to offset these objections. Another inducement to keep up insurance is that a policy holder may make its payment automatic from his savings bank deposit by request to the bank.

The insurance benefit of the annuity policy, in common with all insurance issued under the act, is limited to $500, and the annuity to $200 a year. Apparently,

several policies, in different banks, could be taken out by one person, but the single institution is limited by law, just as it is in the amount of deposits it may receive on one account. The applicant must pass a physical examination as in other insurance. The premium must be deposited each month until the age of 65, when the amount of the annuity is credited to the insured's account, that he may draw against it. The policy acquires a loan value, and the bank must grant the application for a loan, which might assist in the payment of a premium if the insured should be unable otherwise to meet it. No policy shall lapse after six months' premiums have been paid; it shall be binding on the bank either for a cash surrender value or paid up insurance. Under the annuity system, if death comes before the age of 65, the beneficiary receives the face value of the policy. If death occurs after the payment of the annuity commences, but before the insured reaches the age of 69—if, in other words, an amount equal to the full face value of the policy has not been paid in annuities—then the beneficiary shall receive the balance. A man who insures at the age of 21, and pays 25 cents a month, carries $111 of insurance and has the promise of an annuity of $22 a year. For $1 a month his insurance is $444 and his annuity $89. At 35 years at date of insurance, 25 cents a month gives $65 insurance and $13 annuity; $1 procures $247 insurance and $49 annuity. These are the guaranteed amounts; in addition, the policy will receive its share of the profits earned by the investment of premium funds, which should mean a relatively considerable amount in a period of years. The investments by the bank are very conservative, the classes of securities which may be purchased being strictly defined, that there may be absolute safety. Yet the accumulations on paid-in premiums should not be small. The banks are completely mutual; no stock is issued and all earnings go to the policy holders. It may be added that while residents of Massachusetts only may take out this insurance, removal from the State after becoming insured in no way prejudices a policy.

## CORRESPONDENCE.

### The New Freight Marking Rule.

*To the Editor:* We have read your article entitled "The New Freight Marking Rule," published in issue of August 6, and note some objections made to it by shippers of certain commodities. From a shipping as well as a receiving standpoint we are greatly in favor of the rule. It is, in our estimation, a good move in the right direction. We believe ordinarily all packages tendered transportation companies for transmission should be as carefully and plainly marked as a letter tendered the Government for mailing.

HIEROGLYPHICS ANNOY THE CONSIGNEE.

Manufacturers as a rule do not realize the annoyance which their customers are caused through packages, and sometimes entire shipments, going astray, more especially during the lake and rail season, owing to the number of times shipments are transferred in transit. Therefore, every reasonable move made for the purpose of reducing to a minimum the chance for loss or delay will certainly have our sanction and support. In no better way can we explain the annoyance we are subjected to by the use of marks or hieroglyphics by shippers than to cite the following instance:

In a certain town in northern New York there are two manufacturers of identically the same article, and naturally considerable rivalry and jealousy exist between them. It became so strong that representatives of each would make it a point to pass through the freight house and note all shipments made by the other concern. In order to defeat the purpose of that feature they resorted to placing on the packages instead of the full name and address a certain mark, which in our case was OZ.

It was the intention of the shipping clerk, inasmuch as this mark appeared on the receipt as well as the packages, to have the bill clerk show corresponding marks on his way bill. This, in almost every instance, he failed to do, so when the goods arrived (if they ever did) unloading clerks at destination not being able to read the mark on the package would make a blind tally to correspond, and usually place these packages in that portion of the house intended for consignees whose names started with O. By that arrangement you can clearly see the trouble we experienced in getting our goods. We would send our bills to the freight house to pick up freight for F., O., K. & Co., and the delivery clerk would go to the F and deliver whatever was in that pile for us, and we would check short the packages marked OZ, and it was only after a long time that we found them.

Up to a few years ago we did resort to marking our packages with the initials of the customer only; for instance, "H. O. A., Clear Lake, Minn." The agent at Clear Lake, knowing who H. O. A. was (being the only merchant in the town with those initials), it was an easy matter to make delivery. In many instances also, where we would have a large number of kegs of nails, or rolls of building paper, or spools of barbed wire, or sacks of binding twine, and packages of that sort, we would mark them "W," &c., but we were finally convinced that this is not the proper way of marking goods, so we changed, and have adopted our present system.

STENCILING THE FULL NAME IS DESIRABLE.

We have used for the past three years a stencil machine, and all cases that go out of this house have our customer's full name, town and State stenciled on them. In addition to that, there is written with carbon by the packer the serial number of that order, the same number showing on each package contained therein. In this way if a board is broken off upon which the customer's name is written, or a strip upon which the town is shown becomes detached and lost and the number still remained, we could easily give the full reference to the shipment. Of course, this entails considerable work, but when the information is needed at all it is needed badly, and for that reason we have found it profitable to adhere closely to this system of marking.

In addition to the marking of the consignee's full name and address on packages, we have gone further. We have asked our manufacturers to stencil or mark on all packages their name, and place on each package a number. For instance, if a shipment consisted of five cases, these were to be numbered 325-6-7-8-9. These numbers appearing on the receipts and forwarding bills, the railroad clerks are supposed to include them when way billing the freight; so, when the shipment arrives at destination, the freight bill showing these numbers enables us to pick up the identical freight applying thereon.

It occurs quite frequently (and even more so during the lake and rail season) that packages go astray; in fact, during 1907 we took up at the freight houses over 600 deadhead bills (one-twentieth of our total receipts), representing freight delivered to us that had become separated from the balance of the shipment or its way bill. The packages delivered on the deadhead bills all being numbered, and the corresponding numbers appearing thereon, you can readily see what an easy matter it is to determine at any date what shipment certain packages received from time to time apply on, but without some means of identification it is absolutely impossible to keep a clear, concise and intelligible "freight received" record

Our receiving room is held responsible for goods received from the railroad companies, and it is likewise held responsible for goods delivered to the various departments, so those in charge of it must satisfy themselves upon receiving goods from transportation company what shipments they apply on before allowing packages to leave their hands.

SIMPLE AND SUCCESSFUL METHODS OF MARKING.

We have tried many schemes for handling our large volume of incoming freight, and have hit upon this

method as not only the most reliable, but the simplest. All we require of a shipping clerk is, when marking a case, to place a number on it. It does not matter what number is used so long as he avoids 1, 2, 3, and 4, because if every shipping clerk shipping only a few boxes would start each time with No. 1 we would receive a large number of boxes numbered alike each day.

Several large manufacturing concerns have adopted a unique method which is working out very successfully. They start at the first of the year with No. 1 and run serial numbers throughout the year, so that if they shipped us during the year between 600 and 700 packages their last case would be numbered in the 600 series. In this way, if a box would turn up at the end of the year that bore a small number, we could readily determine that it was a box that applied on a shipment originating at an early date of the same year, and it would be traced back easily. Without that mark of identification we could not tell by referring to our invoices what shipment that particular case applied on.

In our estimation the time has arrived, on account of the large shipments of L. C. L. lots, and the increased tonnage which is bound to occur as the country develops, when every precaution should be taken to prevent packages going astray. If we all do our part in the proper marking of packages, we have no doubt that the railroad companies will do theirs in the handling of them.

There is no doubt but that there should be some exception made to the rule, as in cases similar to the one you mention in your article—brick in L. C. L. shipments. Regarding shipments of iron, bar or band, it would appear to us a very easy matter for shippers to put a number of pieces in a bundle, wiring them securely, and placing thereon a tag bearing their name as well as the consignee's name and address. This would incur additional expense above the old way of shipping bar and band iron, but, we think, leaving the interests of the railroads wholly out of the question, the receivers of freight are entitled to this consideration. FARWELL, OZMUN, KIRK & Co.

GEO. H. SHARP, Traffic Manager.

ST. PAUL, MINN., August 22, 1908.

## Steel for Mine Timber.

The Carnegie Steel Company, Pittsburgh, Pa., devotes a late pamphlet of 30 pages to "Steel Mine Timbers." Various types of construction are illustrated and views are given of installations at Pennsylvania coal mines. The Carnegie Company has designed 4-in., 5-in., 6-in. and 8-in. sections for mining work. The 4-in. section, weighing 13.6 lb. per linear ft., replaces 8-in. yellow pine timbers, while an 8-in. H section weighing 34.6 lb. per linear ft. is of equivalent strength to a 15-in. round yellow pine timber. A statement in detail is given of an installation made for the Lehigh & Wilkesbarre Coal Company, replacing with steel the 24-in. round yellow pine timber used in the company's gangways. The gangway set consisted of the ordinary collar, 17 ft. between supports, with legs 10 ft. 6 in. long. Each set required the handling and erection of 126 cu. ft. of wood weighing 6280 lb. The steel which takes its place will weigh from 2500 lb. down to 1670 lb., according to the steel used. Where 20-in. 65-lb. beams were used for collars and 8-in. H sections for legs, the total weight was 1690 lb. per set. Erection charges for the steel timbers are figured at not more than one-third those of the corresponding timber sets. The original sets of timber put in two and a half years ago cost $15 erected. The steel will cost $40 a set erected on concrete bases. Assuming that the steel lasts 15 years, which is considered a low estimate, and figuring 6 per cent. compound interest, the cost of the steel set will represent at the end of 15 years an investment of $95.86, while six wooden sets would stand on the books at $153.36. The steel sets, when taken out will be worth $12.03 for scrap, while the wood has no value. The saving on the steel is thus figured at $69.73, on the basis of 1.70c Pittsburgh for structural shapes. It is stated that the steel already installed in mines in the United States has shown no serious corrosion, the protective treatment being confined to the use of good preservative paint.

## Trade Publications.

**Cutter Grinders.**—R. K. Le Blond Machine Tool Company, Cincinnati, Ohio. Catalogue; size, 6 x 9 in.; pages, 63. Illustrates and describes the Le Blond No. 1 universal cutter and tool grinder, giving an interesting diagram of its characteristics, information on its operation, together with specifications, practical directions for grinding, remarks on the care of emery wheels, &c. Many illustrations show ways of grinding various kinds of work, but even these give only a limited idea of the range and capacity of the machine. Reference tables are appended.

**Alundum.**—Norton Company, Worcester, Mass. Booklet. Illustrates and describes the company's electric furnace plant for the manufacture of alundum at Niagara Falls, N. Y., and its grinding wheel works at Worcester, Mass., and gives a thorough and most interesting description of alundum and its method of manufacture. This process was the subject of an article in *The Iron Age* November 8, 1906.

**Dixon's Ticonderoga Flake Graphite.**—Joseph Dixon Crucible Company. Jersey City, N. J. Booklet on friction and lubrication. Each page deals with some particular phase of the graphite subject, and at the bottom of the page is given a "third party's" testimony bearing whenever possible on the particular phase treated on that page.

**Simplex Car and Track Jacks.**—Templeton, Kenly & Co., Ltd., 10 Sloan street, Chicago. Catalogue. Illustrates and describes the full line of jacks manufactured by this firm for the use of railroads and industrial plants. The line comprises a wide variety of sizes and styles. The mechanism of the jacks is illustrated in sectional drawings, while illustrations are further given of the detached parts. The different portions are made of malleable iron, crucible steel, drop forgings or brass according to the service required for each particular part and for the purpose of securing the special material best adapted for durability.

**Morison Suspension Furnaces for Internal Furnace Boilers.**—The Continental Iron Works (Borough of Brooklyn), New York. Catalogue; seventh edition; cloth bound; 66 pages; size of page, 9 x 11 in. This handsomely illustrated and splendidly printed publication gives practical information for the use of boiler makers and mechanical engineers regarding the method of construction of the Morison furnaces, with scale drawing showing designs of boilers from 50 to 300 hp., as well as forms of specifications to be used in making orders for these furnaces. The book gives a large number of testimonials, together with a partial list of installations showing the prominence of users of these furnaces among the institutions of the country.

**Rope Drives, Conveyors, &c.**—H. W. Caldwell & Son Company, Chicago, Ill. Pamphlet. Size, 6 x 9 in.; pages, 31. This is entitled "Something Better," and calls attention to details of construction of machinery furnished by this company to the Hecker-Jones-Jewell Mill in New York City, whose equipment is out of the ordinary. The machinery furnished includes rope drives, double disk clutch, automatic barrel elevators, spiral lowering chutes, wheat bins, Caldwell conveyors, and special sheet metal work. Photographic reproductions of this equipment are given.

**Generators.**—Northern Electrical Mfg. Company, Madison, Wis. Bulletin No. 55, 24 pages, 8 x 10½ in. Describes in detail, with illustrations, the Type L direct connected engine driven generator for direct current power and lighting. Special attention directed to the construction of the field frame, field coils and armature, the latter being marked by the number and openness of ventilating ducts. Brush rigging and commutator detail are separately illustrated. Type L generators are made in standard ratings from 25 to 1000 kw., and are wound for speeds suitable for connection to high speed automatic engines, moderate speed four-valve engines and slow speed Corliss engines. Special ratings suitable for connection to gas engines furnished for mounting on an extension of engine shaft and base or for coupling to end of engine shaft.

**Ball Bearings.**—R. I. V. Company, 1771 Broadway, New York City. Pamphlet. Gives illustrations, specifications, prices, dimensions, &c., of radial bearings and ball thrust collar bearings. The R. I. V. hanger and thrust bearings and the bearings mounted in the front hub of a motor car are shown.

**Cranes.**—Northern Engineering Works, Detroit, Mich. Booklet No. 24. Illustrates in condensed form many of the company's designs of electric traveling cranes, hand power cranes, electric hoists, &c.

**Valves.**—Ever Clean Valve Company, Pittsburgh, Pa. Leaflet illustrating and describing the Ever Clean rotary blow off valve, which automatically self-cleans its disk and seat.

**Sheet Metal Stampings.**—Acme Stamping & Tool Works, Hamilton, Ont. Booklet, 4 x 7 in., 20 pages. Illustrates hardware specialties and sheet metal stampings. Also inclined and horizontal tumbling barrels, steel shop boxes and wire spools. Formulæ given for determining size and speed of pulleys or gears, together with tables of weights and sizes of bars, hoops and bands; also standard wire gauges.

# The Production of Iron Ore in 1907.

WASHINGTON, D. C., August 25, 1908.—The forthcoming annual report of the United States Geological Survey upon the production of iron ores in the United States, prepared by Edwin C. Eckel, states the output of 1907 to have been 51,720,619 gross tons, valued at $131,996,147, as compared with 47,749,728 tons, valued at $100,597,106 in 1906. Preliminary figures of production were published in *The Iron Age* of February 27, when it was estimated that between 52,000,000 and 54,000,000 tons had been mined. Following is an advance abstract of Mr. Eckel's report:

By far the greater bulk of the Lake ore shipments for 1907 had left the mines before the depression set in, and the iron ore output for 1907 therefore shows a heavy increase over that of 1906. An unprecedented proportion of this tonnage, however, was carried over in stock for the 1908 season. In the following table the production of 1906 and 1907 is given by States:

### Production.

*Quantity and Value of Iron Ore Produced in the United States, 1906 and 1907, by States.*

| | 1906. | | 1907. | |
|---|---|---|---|---|
| | Gross tons. | Value. $ | Gross tons. | Value. $ |
| Alabama | 3,995,098 | 5,123,539 | 4,039,453 | 4,863,129 |
| Arkansas and Texas | 36,600 | 36,600 | 118,667 | 120,060 |
| Colorado | 14,078 | 22,525 | 11,714 | 21,085 |
| Connecticut and Massachusetts | 31,343 | 94,129 | 37,166 | 136,440 |
| Georgia | 411,230 | 734,780 | 444,114 | 827,102 |
| Kentucky, Maryland and West Virginia | 46,940 | 58,175 | 62,208 | 95,891 |
| Michigan | 11,822,874 | 31,145,087 | 11,830,342 | 36,441,330 |
| Minnesota | 25,364,077 | 51,799,256 | 28,969,658 | 76,668,836 |
| Missouri | 80,910 | 158,109 | 111,768 | 226,286 |
| Montana, Nevada, New Mexico, Utah and Wyoming | 792,190 | 946,551 | 819,544 | 967,190 |
| New Jersey | 542,518 | 1,570,578 | 549,760 | 1,815,586 |
| New York | 1,041,992 | 2,635,639 | 1,375,020 | 2,820,135 |
| North Carolina | 56,057 | 75,638 | 50,439 | 113,488 |
| Ohio | 17,384 | 29,706 | 23,589 | 41,081 |
| Pennsylvania | 949,429 | 1,246,267 | 837,287 | 1,298,717 |
| Tennessee | 870,734 | 1,307,433 | 813,690 | 1,325,134 |
| Virginia | 828,081 | 1,579,817 | 786,856 | 1,538,920 |
| Wisconsin | 848,133 | 2,033,217 | 838,744 | 2,665,737 |
| Totals | 47,749,728 | 100,597,106 | 51,720,619 | 131,996,147 |

The production credited to Arkansas and Texas in 1906 was all produced in Texas. The production of Missouri in 1907 includes the output of Iowa, and the figures for Montana, Nevada, New Mexico, Utah and Wyoming in 1907 also embrace the output of California and Washington.

In the table presented below the total production in the United States is classified according to variety of ore. It will be seen that the group of hematites is not only the most important, producing now almost nine-tenths of the total, but that its relative importance increases each year.

*The Production Classified According to Variety.*

| | 1906. Gross tons. | 1907. Gross tons. |
|---|---|---|
| Brown ore | 2,781,063 | 2,957,477 |
| Red hematite | 42,481,375 | 46,060,486 |
| Magnetite | 2,469,294 | 2,679,067 |
| Carbonate | 17,996 | 23,589 |
| Totals | 47,749,728 | 51,720,619 |

The figures showing the average price per gross ton of iron ore are intended to represent value at the mouth of the mine, and are taken directly from the replies of the producers to inquiries made by the Survey. It is probably unnecessary to caution the reader that any such figures must be accepted as merely a fair approximation to the truth. The element of inaccuracy arises from conditions in the iron ore business, and cannot be readily overcome. By far the greater bulk of the iron ore produced in the United States is mined directly by pig iron producers for use in their own furnaces and the value which they put on such ores is therefore entirely a matter of accounting.

The average price of the total output of brown ore in 1907 was $1.81. The highest price was reported in Connecticut and Massachusetts, at $3.67, while the lowest price, $1.01, was reported from Arkansas and Texas.

The average of the total production of red hematite was $2.63. The highest figure, $3.44, was reported from Wisconsin, Michigan coming next with $3.08. The lowest price, $1.06, was reported from Kentucky, Maryland and West Virginia.

The average price of magnetite was $2.03. The highest price, $3.38, was reported from New Jersey, while the lowest price, $1.04, was reported from California, Nevada, New Mexico, Utah and Wyoming.

The only carbonate reported in 1907 was mined in Ohio, and the average price of $1.74 per ton was returned for this output.

During 1907, 169 mines produced over 50,000 gross tons of iron ore each, the maximum production of any one mine being 2,900,624 tons from the Hull-Rust of Minnesota. Ten mines, all except one being located in Minnesota, produced over 1,000,000 tons each. The one 1,000,000-ton mine not located in Minnesota was the Red Mountain of Alabama, which during 1907 produced 1,370,849 tons and ranked seventh in the list.

### Principal Ore Producing Districts.

For the convenience in description, it is advisable to group the producing States in four natural districts defined by geographic and trade considerations as follows:

1. Lake Superior—Michigan, Minnesota and Wisconsin.
2. Southern—Alabama, Georgia, North Carolina, Tennessee, the Virginias, Maryland, Kentucky, Arkansas, Missouri and Texas.
3. Northern—New England, New York, New Jersey, Pennsylvania, Ohio and Iowa.
4. Western—Colorado, Utah, Wyoming, New Mexico, California, Washington, Nevada and Montana.

The present relative importance of these four districts as iron ore producers is well brought out by the following table, which gives the output for 1906 and 1907, and the percentage of the total output produced by each district in those years:

*The Relative Importance of the Several Districts.*

| | 1906. Gross tons. | 1906. Percentage of total. | 1907. Gross tons. | 1907. Percentage of total. |
|---|---|---|---|---|
| Lake Superior | 38,035,084 | 79.66 | 41,638,744 | 80.51 |
| Southern | 6,325,710 | 13.24 | 6,427,195 | 12.42 |
| Northern | 2,582,666 | 5.41 | 2,823,422 | 5.46 |
| Western | 806,268 | 1.69 | 831,258 | 1.61 |
| Totals | 47,749,728 | 100.00 | 51,720,619 | 100.00 |

Inspection of these figures will show that the increase during 1907 was very unequally divided among the four districts. The average increase shown by the entire country was 8.32 per cent., as compared with 1906. The Lake Superior District shows an increase over 1906 of 9.5 per cent.; the Northern District, 9.3 per cent.; the Southern District, 1.6 per cent., and the Western District, 3.1 per cent.

The statistics of Cuban ore production have been collected directly by the Survey from the producers. During 1907 the Cuban iron mines produced 681,393 gross tons, as compared with 640,574 tons in 1906. Of the output of 1907, 500,330 tons were credited to the Spanish-American Iron Company and 181,063 tons to the Juragua Iron Company, Ltd. W. L. C.

## Panama Canal Progress.

The report of the special commission which recently investigated conditions on the Isthmus of Panama has just been given out by President Roosevelt. Of the progress of the work the report says: "This year more than two and one-third million cubic yards were excavated in each of the winter months, the dry season in Panama, a million yards being approximately equal to a square mile 1 ft. deep. To prepare this immense mass for removal 405 tons of dynamite were used a month, an average of 17 tons per work day. To 'make the dirt fly' to this extent 32 95-ton steam shovels, 37 70-ton, 10 45-ton and 24 others, in all 103 steam shovels, were in constant use. Five hundred 50-ton steel flat cars, 1800 40-ton wood frame flat cars, 1159 American and 650 French dump cars and 37 miscellaneous cars, a total of 4146 cars, and 164 American and 138 French locomotives moved this mass to the dumps. Expedition and economy of labor were promoted by four 25-ton pull unloaders and 26 60-

ton pull unloaders, 23 50-ton dirt spreaders completed the excavation outfit. A fleet of 18 barges, 15 dredges and 31 other vessels was at work in the dredging service."

Referring to the difficulty of holding skilled workmen, the commission says that the wages paid on the Isthmus are only about 10 per cent. higher than those for building construction work in New York City. It recommends that no reductions be made. Colonel Goethals, chairman of the Isthmian Canal Commission, is now of the opinion that the digging of the canal can be finished in five years.

## Canada's Free List Enlarged.

TORONTO, August 22, 1908.—Upon condition that they shall be used as material in the manufacture of specified finished products, certain articles have been placed on the free list and certain others have been subjected to duties lower than those at which they were previously admitted. The order-in-council establishing these changes was passed this week, and comes into effect to-day. The majority of the changes pertain to forms of iron and steel for particular applications. They are as follows:

Brass, in bars and rods, in coil or otherwise, not less than 6 ft. in length, and brass in strips, sheets or plates, not polished, planished or coated.

Asphaltum oil, for use only for paving purposes.

Pressed felt, elastic webbing and hollow blocks of wood, when imported by manufacturers of artificial limbs, for use only in the manufacture of artificial limbs.

Iron or steel rods, rolled or drawn, not less than 5-16 in. in diameter, when imported by manufacturers of chain, for use only in the manufacture of chain, in their own factories.

Tinsel thread and tinsel wire, when imported by manufacturers of braids, cords, tassels, ribbons or trimmings, for use only in the manufacture of such articles in their own factories, to be subject to the following reduced duty: British preferential tariff, 5 per cent. ad valorem; intermediate tariff, 7½ per cent. ad valorem; general tariff, 10 per cent. ad valorem.

Finished parts of iron or steel, for repairs of portable engines, of traction engines for farm purposes, to be subject to the following reduced duty: British preferential tariff, 15 per cent. ad valorem; intermediate tariff, 17½ per cent. ad valorem; general tariff, 20 per cent. ad valorem.

Flat steel, cold rolled, not over ½ in. thick, for use only in the manufacture of cups and cones for ball bearings, when imported by manufacturers for such ball bearings: British preferential tariff, free; intermediate tariff, 5 per cent. ad valorem; general tariff, 5 per cent. ad valorem.

C. A. C. J.

**Central Iron & Coal Company Bond Issue.**—The Central Iron & Coal Company, with blast furnace and other property at Tuscaloosa, Ala., the entire capital stock of the company being owned by the Central Foundry Company, has disposed of $1,000,000 first mortgage 5 per cent. bonds out of a total authorized issue of $2,000,000, dated August 1, 1908, and due August 1, 1938. Half the new issue will be used to take up $500,000 of 6 per cent. notes which matured August 1, and the proceeds of the other $500,000 will reimburse the treasury for expenditures made in extensions and improvements. The real estate holdings embrace about 8000 acres. The plant consists of a blast furnace of 200 tons daily capacity, 164 beehive coke ovens, 40 by-product coke ovens, 175 houses and stores and an equipment of locomotives, cars and machinery. The mortgage provides a sinking fund of 5 cents on each ton of coal, 8 cents on each ton of brown iron ore and 10 cents on each ton of red iron ore mined by the company. The earnings for 1907 and for the first half of 1908 were as follows:

| | Year 1907. | Six months, 1908. |
|---|---|---|
| Net earnings | $300,808 | $88,356 |
| Other income | 9,145 | 3,651 |
| Total net income | $309,953 | $92,007 |
| Deduct— | | |
| Depreciation charges | $65,629 | $23,120 |
| Interest on notes now retired | 30,000 | 15,000 |
| Balance, surplus for period | $214,324 | $53,887 |

The surplus earnings of the Central Iron & Coal Company were nearly sufficient last year to cover the interest charges on the Central Foundry Company's $3,863,000 6 per cent. debenture bonds. The above facts are given in a letter of August 11 written by August Heckscher, president of the Central Foundry Company.

## The Washburn Wire Company's Improvements.

The Washburn Wire Company is completing extensive additions to its works at Phillipsdale, R. I., and expects to be operating with the enlarged manufacturing facilities by September 1. The new buildings comprise a rod mill and engine room, a boiler house, and a structure devoted in part to cleaning and annealing department, and in part to the wire drawing and wire nail department. The machinery of the plant at Auburn, R. I., has been moved to Phillipsdale and installed in the new buildings, together with new equipment, and still more machinery, especially in the wire drawing department, will be added later.

The rod mill has a capacity of 150 to 175 tons in 24 hours. The building is 115 x 180 ft., and its engine room, occupying a lean-to, is 50 x 180 ft. The Auburn mill has been installed, with improvements to give additional capacity. The furnace is of a new type, and is believed to embody noteworthy features. The two engines which drive the mill are of the Corliss type. One, of 1200 hp., is directly connected to the roughing rolls; the other, of 1500 hp., drives the continuous and Belgian rolls through the medium of a belt. The entire works will be operated by electric power. Two direct connected 150 kw. Westinghouse units have been set up in the engine room, and are ready to operate the new wire mill. Two other units of the same type, of 100 hp. each, now running in another part of the plant, will be installed there later. Pumps, transformers and other auxiliaries of the power plant are in the basement of the building.

In the boiler house, which is 50 x 96 ft., are seven Stewart boilers, totaling 2500 hp., equipped with Roney stokers. A Barryman feed water heater and two Worthington high-service pumps are used. The condenser is also of the Worthington type. The cleaning and annealing house occupies 91 feet of the 164 ft. of the new mill building, which is 84 ft. wide. The remainder of the space is given over to wire drawing, ample space being left for the addition of frames later, and to the wire nail department. The basement will be devoted to wet wire frames, and to the cutting and straightening department.

**The Harmet Process at St. Etienne.**—On the occasion of the celebration of the 50th anniversary of the French Société de l'Industrie Minerale, a visit was paid to the St. Etienne Works, the manager of which is Henri Harmet, the inventor of the process for compressing steel ingots, which bears his name. The installation includes one 5000 ton press for ingots varying in weight from 12 to 34 tons, a 2000 ton press for 5 to 12 ton ingots, three 1.25 ton presses for 1.2 to 5 ton ingots, and four 0.5 ton presses for 0.4 to 1.2 ton presses. The capacity of these presses is as follows, per day of 24 hours: The 5000 ton press, two 28 to 34 ton ingots, or three 18 to 25 ton ingots, or four 12 ton ingots; the 2000 ton press, four 8 to 12 ton ingots, or six 5 to 7 ton ingots; the three 1250 ton presses, 18 ingots of 4 to 5 tons, or 30 ingots of 1.2 to 2.4 tons, and the four 500 ton presses, 48 ingots of 0.5 to 1.2 tons.

The National Valve & Mfg. Company, Thirty-first street and Liberty avenue, Pittsburgh, is completing a contract for the Pittsburgh-Buffalo Company for all of the piping, including steam and water service, for its new plant at Mariana, near Ellsworth, Pa. This order amounts to about $19,000. The company recently finished work on a low pressure water line at the Sandusky filter plant, Sandusky, Ohio.

A decision has been rendered by Judge Tayler of the Circuit Court of the United States for the Northern District of Ohio, in favor of the Alliance Machine Company, Alliance, Ohio, in an infringement suit against the Morgan Engineering Company, on the four girder ladle crane.

The plant of the Canonsburg Steel & Iron Company, Canonsburg, Pa., has undergone some extensive repairs. Two sections of the mill, one 60 x 100 ft. and the other 20 x 100 ft., have been raised, new boilers have been put in, and the water tanks have been torn out and rebuilt.

# NEWS OF THE WORKS.

### Iron and Steel.

Press reports to the effect that the furnace at Roanoke, Va., of the West End Furnace Company, Harrisburg, Pa., is to be sold are denied by James B. Bailey, president of the company.

The Pittsburgh Eastern Company, Cannon Place, Troy, N. Y., will sublet portion of barge canal work near Schenectady, N. Y., containing 18,522 square feet of sheet steel piling. Now ready for bids.

The charcoal furnace of the Shelby Iron Company at Shelby, Ala., has been put in operation.

### General Machinery.

The Burdick Nut & Bolt Machinery Company has been incorporated at Buffalo, N. Y., with a capital stock of $10,000 to continue the business of the unincorporated company of the same name. The Howard Iron Works will continue to manufacture the nut and bolt machinery for the company under the contract as heretofore, the officers and directors being members of both companies. The officers of the new company are Orrin C. Burdick, president; Richard W. Gardner, vice-president and treasurer, and George H. Gardner, secretary.

### Power Plant Equipment.

At an election in the city of Crofton, Neb., on August 4, it was decided to issue bonds in the sum of $10,000 for the construction of water works.

The city of La Moure. N. D., will construct water works, consisting of a system of water mains fed by artesian wells, at a cost estimated at $28,000.

The Canton Electric Light & Power Company, Canton, N. Y., has purchased an acre of land just north of the corporation line and will at once start construction of a substation, where it will install the large transformers which will take the power from the Northern Power Company's line from Hannawa Falls. The new building will be of concrete and steel.

### Bridges and Buildings.

The John Eichleay, Jr., Company, South Twentieth street, Pittsburgh, fabricator and erector of structural steel, has received an order from the Railway Steel Spring Company for an extension to a crane runway at its Latrobe works.

The Pittsburgh Steel Construction Company, Pittsburgh, works at Economy, Pa., has secured a contract for 1800 tons of structural steel for the Pope Building at Cleveland, Ohio, and is also furnishing the steel work for new buildings for the Erie Foundry Company, Erie, Pa. It is operating its structural shops to about 75 per cent. of capacity.

### Foundries.

The United States Malleable Iron Company, recently incorporated at Toledo, Ohio, will have a capital of $100,000, instead of $60,000 as mentioned in a recent issue. E. C. Hagener is treasurer of the company.

The Ohio Steel Foundry Company, Lima, Ohio, has recently received orders from various carbuilding concerns for cast steel center plates to equip 1200 freight cars.

The plant of the Howard Stove Company, at Beaver Falls, Pa., which has been idle about two months, started up in full August 17, with good prospects for a steady run.

Harry C. Egbert, connected with the Trinity & Brazos Valley Railroad at Teague, Texas, has been investigating conditions at San Angelo, Texas, with a view to establishing a foundry and machine shop.

The Stockham Pipe & Fitting Company, Birmingham, Ala., has commenced the construction of a new plant on the site occupied before the fire and will probably have it ready for operation within 30 days.

The plant of the Campbell Mfg. Company at Gadsden, Ala., has been completed and will probably be in operation within a short time.

The Erie Foundry Company, Erie, Pa., whose plant was damaged by fire recently, has let contracts for rebuilding the burned portion of the plant. The pattern storage and pattern shop were designed by the Osborn Engineering Company, Cleveland, Ohio, and are now being erected by the Howard Shenk Company, Erie, Pa., the steel being furnished by the Pittsburgh Steel Construction Company, Pittsburgh. The plans for the new machine shop are now being drawn by the Osborn Engineering Company, and will be ready for bids within a week or 10 days. The foundry and the power plant were damaged to some extent, but have been entirely repaired and are now in operation.

The Torrence Iron Company, George L. French, manager, Hudson avenue, Green Island, N. Y., now has its new malleable iron foundry ready for roof and will be ready to commence operations by November 1 of this year. The new foundry which is being erected between the Delaware & Hudson and West Shore R. R. in the city of Troy, N. Y., is a one-story steel frame building 75 x 400 ft. and is being equipped with exhaust blowers and tumblers and a 150-hp. fuel oil engine. Mr. French reports that practically all of the equipment with the exception of a few smaller items, such as tools, &c., has been purchased.

George T. Bolton, city engineer, Cohoes, N. Y., is preparing plans for a quantity of water main extensions in connection with the new filtration plant which is to be constructed, and invitation for bids will soon be issued by the Water Works Commissioners for the following quantities of cast iron pipe: 2500 lin. ft. of 30-in. cast iron pipe and about 2500 lin. ft. of 24-in. cast iron pipe.

### Fires.

The factory of the Consolidated Electric Lamp Company, Danvers, Mass., was burned August 13, with a loss of $20,000.

G. O. Jenkins' leather board mill, at Pratttown, Bridgewater, Mass., was burned August 16, with loss of $150,000.

The factory of the Westboro Bedstead Company, Westboro, Mass., was damaged to the extent of $14,000 August 19. The chief loss was to the shipping and store rooms.

### Hardware.

For the second time within a year the Martin-Senour Company, Chicago, manufacturer of Monarch paints, has found it necessary to increase its plant capacity. The latest addition to the plant is a four-story building of mill construction, which will not only increase the annual output, but will afford improved facilities for handling the product.

The Cole Mfg. Company, 3218 Western avenue, Chicago, has purchased 3½ acres of vacant property adjoining its present plant, upon which additional buildings will be erected. Plans are now being prepared for an up to date steel and concrete structure to cover this property, and when completed and equipped the company will be in position largely to increase its output of cold blast stoves, the growing demand for which has made necessary the contemplated improvements.

### Miscellaneous.

The Paxton Electric Company, Paxton, Ill., has the installation of an 18 or 20 ton ice plant under consideration. J. W. M. Burton is president.

On August 10 the citizens of Gothenburg, Neb., voted that a sum of $35,000 be expended for the construction of a sewerage system and water works, the latter to cost $28,000. C. F. Williams is the city clerk.

A contract which will call for the use of a large amount of steel rails, structural steel for bridges, viaducts and culverts, also wire for telephone lines, &c., was awarded last week to the William J. Oliver Construction Company, Knoxville, Tenn., by E. H. Gay & Co., bankers, Boston, Mass., acting in the interest of the Pittsburgh, Binghamton & Eastern Railroad, with offices in Pittsburgh, Boston and New York. Major H. A. Schwanecke, formerly of Pittsburgh, is president and chief engineer of the company. The aggregate of contracts awarded to the Oliver Company was $13,000,000, covering a total of 310 miles of railroad. Work will be started at once on a stretch of 33 miles, extending from Canton, Pa., to the Orange coal fields. Another section will extend from Pittsburgh to Towanda, Pa., where connection will be had with the Lehigh Valley Railroad. The last section will extend to Binghamton, which will be the New York State terminal of the road.

The buildings of the plant of the British Canadian Smelter Company at Chippewa, Ont., on the Niagara River, just above Niagara Falls, were completed last week. Everything is in readiness for operation and the new plant will be started up within a few days. Not only electric smelting will be carried on, but the refining of gold, silver, lead and copper as well.

The Pittsburgh Wire Bound Box Company, Pittsburgh, has increased its authorized capital from $5000 to $75,000.

The Beler Water Heater Company, 627 Second avenue, Pittsburgh, which has heretofore been manufacturing a line of small storage tank heaters, and an automatic thermostatic instantaneous heater of 4 gal. capacity, is now preparing to supply the latter to the trade in 6 and 8 gal. capacity. On August 15 the company received advices from the Patent Office that a patent had been granted it and would be issued on the hydro-carbon burner which is used on all its instantaneous and large sized storage heaters. The company is now arranging to have the Beler line represented in large Eastern and Western cities.

The State of Pennsylvania has awarded the contract for the construction of the new ventilation system in the legislative chambers to the B. F. Sturtevant Company, Boston, Mass., at $5000. The State Department of Health has awarded the contract for a steel garbage disposal plant to the Dixon Engineering & Construction Company, Toledo, Ohio, at $2200.

Chas. C. Force & Son, proprietors of the Madison Iron Works, Madison, N. J., have completed plans for the rebuilding of the works, which were burned January 23. One week after the fire a temporary building was erected which enabled business to be resumed. The new building will be 78 ft. 6 in. wide x 132 ft. long, constructed of steel, brick and concrete, and thoroughly fireproof. It will be equipped with downdraft forges, a trip hammer, power punches and shears, and a line of machine tools, operated by a steam plant on the premises. The business was established in 1842 and comprises a variety of wrought iron work and the building of boilers and engines. Wrought iron fences and gates are built in plain and ornamental designs.

The Atlantic Coast Line has placed an order for 500 box cars with the receivers of the South Baltimore Steel Car & Foundry Company, Baltimore, Md.

# The Iron and Metal Trades

In the Birmingham District, in Virginia, in eastern Pennsylvania and in the Chicago District producers of Pig Iron are maintaining a considerably firmer attitude and are booking some business at better prices. The Buffalo District is selling quite freely in New England, is dominating the Hudson River Valley, and is shipping into the Metropolitan District, with the aid of canal freights. In the Central West, in the Pittsburgh District and in southern Ohio the attitude of makers is more uncertain

Statistics covering 43 blast furnaces in eastern and central Pennsylvania and in Virginia show a decline in stocks of close to 15,000 tons, and an increase, during one month, in orders, from close to 238,000 tons to over 285,000 tons.

There has been a considerable movement in Pig Iron in the East during the past week, and there is quite a large inquiry. One maker of Cast Iron Pipe purchased 15,000 tons. The Pennsylvania Railroad has bought an aggregate of 10,500 tons of Pig Iron, taking 6500 tons of Foundry Iron from two Eastern coke furnaces, and 4000 tons of Charcoal Iron, of which 1900 tons was from New England, 1500 tons Lake Superior, and 600 tons Southern. Sales of Basic Pig include one lot of 5000 tons of Virginia, for a New England plant, 1500 tons, eastern Pennsylvania, also for New England, and 5000 tons for the Philadelphia District.

There is some reference made from time to time to the subject of shading of established prices. It is true that such concessions are being quite widely made, but they do not extend beyond one or two dollars per ton, and are not regarded as troublesome. Some weeks since the Plate makers had occasion to compare notes and promise a stricter adherence.

In the Light Rail trade, in which the rerolling mills play so important a part, the situation is more serious, and the large Steel mills are taking a hand in the struggle. New Rails, weighing from 25 to 45 lb. have been sold as low as $22 per ton.

The placing of an order for 1000 standard Steel cars by the Chicago & Alton road, which would call for 9000 tons of Steel, is regarded as the forerunner of more liberal buying in this direction.

The Harriman system has given to the American Bridge Company 4000 tons of additional specifications on an existing contract. It is reported that the material, amounting to about 10,000 tons, for the Educational Building at Albany, has been covered. Among the smaller contracts awarded are 1800 tons for the Pope Building at Cleveland, and about 1200 tons for Milwaukee. There is a chance that from 6000 to 8000 tons of material may be required for the First National Bank Building at Pittsburgh, provided the price is made satisfactory.

Low prices continue to rule in the Cast Iron Pipe trade. There has been ordered, and there is in sight, for this city, a total tonnage of 6800 tons.

Some Steel Bar makers report a good run of additional work. The Sheet trade is steadily improving, and the business in Merchant Pipe is enlarging. There has just been sold by the leading interest Pipe for 22 miles of a 6¼-in. line in Canada.

For the first time since last spring the Standard Oil Company has purchased Tin Plate abroad for its export trade.

## A Comparison of Prices.

**Advances Over the Previous Month in Heavy Type, Declines in Italics.**

At date, one week, one month and one year previous.

| | Aug.26, 1908. | Aug.19, 1908. | July22, 1908. | Aug.28, 1907. |
|---|---|---|---|---|
| **PIG IRON,** Per Gross Ton: | | | | |
| Foundry No. 2, Standard, Philadelphia | $16.50 | $16.50 | $16.50 | $21.50 |
| Foundry No. 2, Southern, Cincinnati | **15.50** | 15.25 | 14.75 | 22.25 |
| Foundry No. 2, Local, Chicago | 17.00 | 17.00 | 17.00 | 24.50 |
| Basic, delivered Eastern Pa. | 15.00 | 15.00 | 15.00 | 19.75 |
| Basic, Valley Furnace | *14.50* | 14.50 | 15.00 | 21.00 |
| Bessemer, Pittsburgh | *15.90* | 16.30 | 16.90 | 22.90 |
| Gray Forge, Pittsburgh | *14.65* | 14.65 | 14.90 | 21.40 |
| Lake Superior Charcoal, Chicago | *19.50* | 19.50 | 20.00 | 27.50 |
| **BILLETS, &c.,** Per Gross Ton: | | | | |
| Bessemer Billets, Pittsburgh | 25.00 | 25.00 | 25.00 | 29.00 |
| Forging Billets, Pittsburgh | 27.00 | 27.00 | 27.00 | 33.00 |
| Open Hearth Billets, Phila | 26.20 | 26.20 | 26.20 | 31.50 |
| Wire Rods, Pittsburgh | 33.00 | 33.00 | 33.00 | 36.00 |
| Steel Rails, Heavy, Eastern Mill | 28.00 | 28.00 | 28.00 | 28.00 |
| **OLD MATERIAL,** Per Gross Ton: | | | | |
| Steel Rails, Melting, Chicago | **14.25** | 14.25 | 13.00 | 17.00 |
| Steel Rails, Melting, Phila | **14.50** | 14.50 | 13.50 | 16.50 |
| Iron Rails, Chicago | **16.75** | 16.50 | 16.00 | 20.50 |
| Iron Rails, Philadelphia | **20.00** | 20.00 | 18.00 | 20.50 |
| Car Wheels, Chicago | **16.00** | 15.50 | 13.00 | 24.50 |
| Car Wheels, Philadelphia | **15.00** | 15.00 | 13.50 | 23.00 |
| Heavy Steel Scrap, Pittsburgh | *14.50* | 15.00 | 14.75 | 17.75 |
| Heavy Steel Scrap, Chicago | **13.00** | 13.00 | 12.00 | 14.75 |
| Heavy Steel Scrap, Philadelphia | **14.50** | 14.50 | 14.00 | 16.50 |
| **FINISHED IRON AND STEEL,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Refined Iron Bars, Philadelphia | **1.40** | 1.40 | 1.35 | 1.85 |
| Common Iron Bars, Chicago | 1.50 | 1.50 | 1.50 | 1.78 |
| Common Iron Bars, Pittsburgh | 1.40 | 1.40 | 1.40 | 1.70 |
| Steel Bars, Tidewater, New York | 1.56 | 1.56 | 1.56 | 1.86 |
| Steel Bars, Pittsburgh | 1.40 | 1.40 | 1.40 | 1.60 |
| Tank Plates, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Tank Plates, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Beams, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Beams, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Angles, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Angles, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Skelp, Grooved Steel, Pittsburgh | 1.45 | 1.45 | 1.45 | 1.85 |
| Skelp, Sheared Steel, Pittsburgh | 1.50 | 1.50 | 1.50 | 1.95 |
| **SHEETS, NAILS AND WIRE,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Sheets, No. 27, Pittsburgh | 2.40 | 2.40 | 2.40 | 2.50 |
| Wire Nails, Pittsburgh | 1.95 | 1.95 | 1.95 | 2.00 |
| Cut Nails, Pittsburgh | **1.80** | 1.75 | 1.75 | 2.10 |
| Barb Wire, Galv., Pittsburgh | 2.40 | 2.40 | 2.40 | 2.45 |
| **METALS,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Lake Copper, New York | **13.62½** | 13.62½ | 13.00 | 18.25 |
| Electrolytic Copper, New York | **13.50** | 13.50 | 12.75 | 17.50 |
| Spelter, New York | **4.65** | 4.65 | 4.45 | 5.60 |
| Spelter, St. Louis | **4.50** | 4.50 | 4.35 | 5.45 |
| Lead, New York | **4.57½** | 4.60 | 4.47½ | 5.10 |
| Lead, St. Louis | **4.40** | 4.45 | 4.32½ | 4.95 |
| Tin, New York | *29.25* | 29.50 | 29.75 | 37.40 |
| Antimony, Hallett, New York | *8.00* | 8.00 | 8.25 | 9.00 |
| Nickel, New York | 45.00 | 45.00 | 45.00 | 45.00 |
| Tin Plate, 100 lb., New York | $3.89 | $3.89 | $3.89 | $4.09 |

## Chicago.

FISHER BUILDING, August 26, 1908. (*By Telegraph.*)

While only a slow and gradual improvement is observed in the actual development of the Iron trade in the West, there is a feeling of confidence in the future which adds considerably to the tone of the market. Current business is gaining headway, not so apparent from one day to the next, but very encouraging if present conditions are compared with those of a month or two months ago. Large railroad orders are beginning to drop into the market, and those in touch with conditions seem to have information regarding the near future which contributes to their optimistic spirit. The contract let by the Harriman lines for 10,000 tons of fabricated material may prove the forerunner of a more liberal policy on the part of the railroads. The Chicago & Alton has placed an order with the Standard Steel Car Company for 1000 Steel gondola cars of 50 tons' capacity. The Wisconsin Central has ordered 2500 wooden cars of various classes, and the carbuilders are figuring on inquiries from the Harriman lines for from 5000 to 7000 cars of Steel construction or with Steel underframes. The Rail mills in this market are running on old contracts for standard sections, but new business in Light Rails is increasing. In Plates, Sheets and Merchant Pipe there are no notable features, but contracts were let last week for a good tonnage of Cast Iron Pipe, and Wire products continue to make a very favorable showing. The Car Wheel foundries are doing better than at any time since last year, one important group of these foundries being operated at about 50 per cent. of capacity.

Dealers in Old Material are holding for higher prices, and consumers are apparently taking a larger tonnage.

**Pig Iron.**—Consumers are not coming forward with large or notable inquiries, but a considerable tonnage of Northern Iron is being sold in lots ranging from a carload to 500 tons. There is also some new business in Southern Iron, but it is confined to small lots, as the melters seem unwilling to commit themselves at the present time for any large tonnage, and several important Southern interests have practically withdrawn from the market on account of the Coal strikes in Alabama. The Southern furnaces have all booked good tonnages, which in some cases amount to 75 per cent. of their capacity to the end of the year, and there is a disposition to await a settlement of the Coal strike before taking on any important additional contracts. The minimum quoted in this market is based on $12.50, Birmingham, for No. 2, and all grades of Southern Iron seem to be held firmly on this basis, while important sellers are asking $13, and some small lots have actually been sold at that price. The foundry interests in the West have pretty well covered their requirements to the end of the year for their present limited output, and current orders in the way of new business are for small lots. In the last few days there have been more inquiries for Northern Iron, partly as a result of the strength in the Southern situation and partly due to the natural increase in the demand. There have been many inquiries for 1909 deliveries on Northern Iron, but the leading sellers are discouraging this movement, as they believe, or, at least, hope, that conditions later on will be more favorable and that they will be able to get better prices. The following quotations are for August and September delivery, f.o.b. Chicago:

| | |
|---|---|
| Lake Superior Charcoal | $19.50 to $20.00 |
| Northern Coke Foundry, No. 1 | 17.50 to 18.00 |
| Northern Coke Foundry, No. 2 | 17.00 to 17.50 |
| Northern Coke Foundry, No. 3 | 16.50 to 17.00 |
| Northern Scotch, No. 1 | 18.00 to 18.50 |
| Southern Coke, No. 1 | 17.35 to 17.85 |
| Southern Coke, No. 2 | 16.85 to 17.35 |
| Southern Coke, No. 3 | 16.35 to 16.85 |
| Southern Coke, No. 4 | 15.85 to 16.35 |
| Southern Coke, No. 1 Soft | 17.35 to 17.85 |
| Southern Coke, No. 2 Soft | 16.85 to 17.35 |
| Southern Gray Forge | 15.35 to 15.85 |
| Southern Mottled | 15.10 to 15.60 |
| Malleable Bessemer | 17.50 to 18.00 |
| Standard Bessemer | 18.40 to 18.90 |
| Jackson Co. and Kentucky Silvery, 6 % | 20.40 to 20.90 |
| Jackson Co. and Kentucky Silvery, 8 % | 21.40 to 21.90 |
| Jackson Co. and Kentucky Silvery, 10 % | 23.40 to 23.90 |

*(By Mail.)*

**Billets and Rods.**—A steady demand is experienced for Forging Billets in lots of 25 to 100 tons, and there is also a growing demand for Wire Rods, as Wire products continue to make the better showing of any branch of the Steel industry in the West. The price of Forging Billets remains at $28.50, base, Chicago. Regular quotations are maintained on Wire Rods as follows: Bessemer, $33; Basic, $34; Chain, $33, all at Pittsburgh.

**Rails and Track Supplies.**—The reports current in financial circles of large orders to be placed for Standard Rails have not been followed as yet by the actual placing of any important new business in this market. The mills are rolling a fair tonnage on old contracts, and some new business is received from time to time in small lots. Orders for Light Rails improve right along, the demand having shown a continuous growth this last month. Track Supplies are maintaining considerable activity on scattered buying by the railroads, the aggregate of small lots footing up a respectable aggregate with a steady growth. We quote as follows: Angle Bars, accompanying Rail orders, 1908 delivery, 1.50c.; car lots, 1.60c.; Spikes, 1.80c. to 1.90c., according to delivery; Track Bolts, 2.20c. to 2.25c., base, Square Nuts, and 2.35c. to 2.40c., base, Hexagonal Nuts. The store prices on Track Supplies range from 0.15c. to 0.20c. above mill prices. Light Rails, 25 to 45 lb., $28; 20-lb., $29; 16-lb., $30; 12-lb., $31. Standard Sections, $28, f.o.b. mill, full freight to destination.

**Structural Material.**—The American Bridge Company has closed a contract with the Harriman lines for 10,000 tons of bridge work to be covered by specifications during the next six or eight months, and it is understood that other important Western railroads have under consideration contracts for fabricated material which they will require this fall. Small contracts for bridge construction only amounted to about 500 tons this week. There is much complaint regarding prices on current business, as some of the fabricators are getting contracts by making very low figures. Structural building material shows a good tonnage of small orders, but the demand in this line is apparently not as active in the West as in Eastern territory. A contract for 1000 Steel freight cars which has been let by the Chicago & Alton Railroad will call for about 9000 tons of Steel. Prices from store are 1.95c. to 2c. Mill prices at Chicago are as follows: Beams and Channels, 3 to 15 in., inclusive, 1.78.; Angles, 3 to 6 in., ¼-in. and heavier, 1.78c.; larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 15 in., 1.88c.; Zees, 3 in. and over, 1.78c.; Tees, 3 in. and over, 1.83c.

**Plates.**—The mills report nothing more than routine business, but it is growing steadily in volume, and makes a satisfactory showing for the mills that are now in operation. The demand for both Sheared and Light Plates seems to share in the general improvement which appears in all lines of mill products. We quote mill shipments as follows: Tank Plates, ¼-in. and heavier, wider than 6¼ and up to 100 in. wide, inclusive, car lots, Chicago, 1.78c.; 3-16 in., 1.88c.; Nos. 7 and 8 gauge, 1.93c.; No. 9, 2.03c.; Flange quality, in widths up to 100 in., 1.88c., base, for ¼-in. and heavier, with the same advance for lighter weights; Sketch Plates, Tank quality, 1.88c.; Flange quality, 1.98c. Store prices on Plates are as follows: Tank Plates, ¼-in. and heavier, up to 72-in. wide, 2c. to 2.10c.; from 72 to 96 in. wide, 2.10c. to 2.20c.; 3-16 in. up to 60 in. wide, 2.10c. to 2.25c.; 72 in. wide, 2.30c. to 2.40c.; No. 8, up to 60 in. wide, 2.10c. to 2.15c.; Flange and Head quality, 0.25c. extra.

**Sheets.**—The jobbers continue to furnish a good tonnage of specifications and the industrial demand is also improving. The gain in tonnage has been very satisfactory within the last couple of weeks. We quote mill shipments as follows, Chicago: Blue Annealed, No. 10, 1.98c.; No. 12, 2.05c.; No. 14, 2.08c.; No. 16, 2.18c.; Box Annealed, Nos. 17 to 21, 2.43c.; Nos. 22 to 24, 2.48c.; Nos. 25 and 26, 2.53c.; No. 27, 2.58c.; No. 28, 2.68c.; No. 29, 2.78c.; No. 30, 2.88c.; Galvanized Sheets, Nos. 10 to 14, 2.63c.; Nos. 15 and 16, 2.83c.; Nos. 17 to 21, 2.98c.; Nos. 22 to 24, 3.13c.; Nos. 25 and 26, 3.33c.; No. 27, 3.53c.; No. 28, 3.73c.; No. 30, 4.23c.; Black Sheets from store: Blue Annealed, No. 10, 2.15c.; No. 12, 2.20c.; No. 14, 2.25c.; No. 16, 2.35c.; Box Annealed, Nos. 18 to 21, 2.60c.; Nos. 22 to 24, 2.65c.; No. 26, 2.70c.; No. 27, 2.75c.; No. 28, 2.85c.; No. 30, 3.25c.; Galvanized from store: Nos. 10 to 16, 3c.; Nos. 18 to 20, 3.15c.; Nos. 22 to 24, 3.30c.; No. 26, 3.50c.; No. 27, 3.70c.; No. 28, 3.90c.; No. 30, 4.40c. to 4.45c.

**Bars.**—Current business is confined almost entirely to specifications, as there is very little new business. All the interests report a satisfactory volume of specifications and encouraging prospects. The demand for Iron Bars is increasing, and the mills are paying higher prices for Old Material. Quotations, Chicago, are as follows: Steel Bars, 1.58c., with half extras; Iron Bars, 1.50c.; Hoops, No. 13 and lighter, 1.98c., full extra Hoop card; Bands, No. 12 gauge and heavier, 1.58c., half extra Steel Bar card; Soft Steel Angles and Shapes, 1.68c., half extras. Store prices are as follows: Bar Iron, 2c. to 2.15c.; Steel Bars, 1.90c. to 2c.; Steel Bands, 1.90c., as per Bar card, half extras; Soft Steel Hoops, 2.25c. to 2.35c., full extras.

**Merchant Pipe.**—The mills are increasing their production and it is expected that they will reach a normal volume of business within a few months at the present rate of gain in the demand for Pipe and Fittings. Jobbers are filling out their stocks for fall trade and expect to do a good volume of business. The following mill discounts are quoted: Black Pipe, ¾ to 6 in., 73.2; 7 to 12 in., 70.2; Galvanized, ¾ to 6 in., 63.2. These discounts are subject to one point on the base. From store, in small lots, Chicago jobbers quote 73 per cent. on Black Steel Pipe, ¾ to 6 in. About three points above these prices is asked for Iron Pipe.

**Boiler Tubes.**—This is one of the backward lines in the way of current business, but some improvement is noted reflecting the general gain in business conditions throughout the West. The trade, however, is featureless, consisting only of small orders. Mill quotations for future delivery on the base sizes are as follows: 2¾ to 4½ in., inclusive, Steel Tubes, 63.2; Iron, 50.2; Seamless, 50.2; 2½ in. and smaller, and lengths over 18 ft., and 2½ in. and larger, and lengths over 22 ft., 10 per cent. extra. Store prices are as follows:

| | Steel. | Iron. | Seamless. |
|---|---|---|---|
| 1 to 1¼ in. | 35 | 35 | 35 |
| 1¾ to 2¼ in. | 50 | 35 | 35 |
| 2½ in. | 52½ | 35 | 35 |
| 2¾ to 5 in. | 60 | 47½ | 47½ |
| 6 in. and larger | 50 | 35 | .. |

**Merchant Steel.**—Nothing of interest has developed in this line the past week except that a little general improvement is noted in all forms of Merchant Steel. Specifications are satisfactory on the larger contracts that have been taken and there is a little improvement in current new business. We quote as follows: Planished or Smooth Finished Tire Steel, 1.78c.; Iron Finish, up to 1½ x ½ in., 1.73c., base, Steel card; Iron Finish, 1½ x ½ in. and larger, 1.58c., base, Tire card; Channels for solid Rubber Tires, ¾ to 1 in., 2.08c., and 1⅛ in. and larger, 1.98c.; Smooth Finished Machinery Steel, 2.08c.; Flat Sleigh Shoe, 1.63c.; Concave and Convex Sleigh Shoe, 1.83c.; Cutter Shoe, 2.05c.; Toe Calk Steel, 2.13c.; Railroad Spring, 1.98c.; Crucible Tool Steel, 7¼c. to 8c., and still higher prices are asked on special grades. Cold Rolled Shafting on contracts for 100 tons and over, 57 per cent. off; 56 per cent. off in car lots; 52 per cent. in less than car lots, on which carload freight is allowed within base territory.

**Cast Iron Pipe.**—Lettings amounting to about 3000 tons were awarded to the United States Cast Iron Pipe & Foundry Company the past week. These were for Water Pipe for the cities of Milwaukee, Wis.; Beloit, Kan.; Oak Park,

Ill.: Madisonville, Ohio, and Robinson, Ill. The largest contract was for 800 tons at Robinson, Ill. There was also a good tonnage booked during the week for Gas Pipe and jobbing lines. Prices are unchanged, which we quote nominally per net ton, Chicago, as follows: Water Pipe, 4 in., $27; 6 to 12 in., $26; 16-in. and up, $25, with $1 extra for Gas Pipe.

**Old Material.**—A better demand from consumers, coincident with light offerings from the railroads the past month and the stiffening in Southern Iron, has added considerably to the values of Old Material in the last couple of weeks, and the leading dealers have taken full advantage of this tendency in the market. The Open Hearth Steel mills which work Scrap seem to be getting more than their ordinary percentage of the trade in their finished products, and they have been liberal buyers of Scrap in the last couple of months. This affects all the lines of Melting Steel, as well as Malleable Scrap, which is used for mixing. The Bar Iron mills are also buying cautiously to increase their stocks of material, and the foundries are taking a considerable tonnage of No. 1 Cast and Stove Plate. The only railroad list in the market this week is from the Chicago, Burlington & Quincy, offering about 2500 tons. The Car Wheel foundries are doing more business than at any time since last year, and dealers who have stocks of Old Wheels are asking higher prices than present quotations. We quote per gross ton, f.o.b. Chicago, as follows:

| | |
|---|---|
| Old Iron Rails | $16.75 to $17.25 |
| Old Steel Rails, rerolling | 15.75 to 16.25 |
| Old Steel Rails, less than 3 ft | 14.25 to 14.75 |
| Relaying Rails, standard sections, subject to inspection | 20.00 to 21.00 |
| Old Car Wheels | 16.00 to 16.50 |
| Heavy Melting Steel Scrap | 13.00 to 13.50 |
| Frogs, Switches and Guards, cut apart | 14.00 to 14.50 |
| Mixed Steel | 10.25 to 10.75 |

The following quotations are per net ton:

| | |
|---|---|
| Iron Fish Plates | $16.00 to $16.50 |
| Iron Car Axles | 18.50 to 19.00 |
| Steel Car Axles | 17.50 to 18.00 |
| No. 1 Railroad Wrought | 13.00 to 13.50 |
| No. 2 Railroad Wrought | 12.00 to 12.50 |
| Railway Springs | 13.50 to 14.00 |
| Locomotive Tires, smooth | 13.25 to 13.75 |
| No. 1 Dealers' Forge | 10.25 to 10.75 |
| Mixed Busheling | 8.00 to 8.50 |
| Iron Axle Turnings | 6.75 to 7.25 |
| Soft Steel Axle Turnings | 6.75 to 7.25 |
| Machine Shop Turnings | 6.75 to 7.25 |
| Cast Borings | 5.75 to 6.25 |
| Mixed Borings, &c | 5.75 to 6.25 |
| No. 1 Mill | 8.00 to 8.50 |
| No. 2 Mill | 6.00 to 6.50 |
| No. 1 Boilers, cut to Sheets and Rings | 9.50 to 10.00 |
| No. 1 Cast Scrap | 12.75 to 13.25 |
| Stove Plate and Light Cast Scrap | 11.50 to 12.00 |
| Railroad Malleable | 12.50 to 13.00 |
| Agricultural Malleable | 11.50 to 12.00 |
| Pipes and Flues | 9.75 to 12.25 |

**Metals.**—While no large inquiries for Copper appeared in the market last week, a satisfactory business of small orders were placed. The railroads have come in the market and purchased considerable quantities of all grades under the Metal list; orders from the Chicago, Indiana & Southern and the Chicago, Burlington & Quincy amounting to carload lots, while others ordered in small quantities. Prices remain firm on all grades at present quotations. Consumers of Old Metals bought considerably on the upward trend of the market a few weeks ago, and consequently there is not much doing, as they are well filled for the present, at least. We quote as follows: Casting Copper, 13¾c.; Lake, 14c. to 14¼c., in car lots for prompt shipment; small lots, ¼c. to ⅜c. higher; Pig Tin, car lots, 32½c.; small lots, 34½c.; Lead, Desilverized, 4.65c. to 4.75c., for 50-ton lots; Corroding, 4.90c. to 5c., for 50-ton lots; in car lots, 2¼c. per 100 lb. higher; Spelter, 4.85c.; Cookson's Antimony, 10½c., and other grades, 9¾c. to 10¼c.; Sheet Zinc is $7, list, f.o.b. La Salle, in car lots of 600-lb. casks. On Old Metals we quote: Copper Wire, 13¼c.; Heavy Copper, 13c.; Copper Bottoms, 10⅝c.; Copper Clips, 11c.; Red Brass, 11½c.; Yellow Brass, 9c.; Light Brass, 6½c.; Lead Pipe, 4c.; Zinc, 3¾c.; Pewter, No. 1, 21c.; Tin Foil, 23c.; Block Tin Pipe, 25c.

## Birmingham.

BIRMINGHAM, ALA., August 24, 1908.

**Pig Iron.**—The market is quiet, but additional strength in quotations is evinced. Recent efforts to secure prompt deliveries at lower figures than $12.50, Birmingham, were wholly unsuccessful, and for shipment to be made in the last quarter the schedule of $13 for No. 2 Foundry is being firmly adhered to. Of the sales recently effected, two lots of 2000 tons each are the most significant. This tonnage was placed at $12.50, Birmingham, and is for delivery covering the remainder of the year. The sale of 1200 tons of Nos. 2, 3 and 4 Foundry is reported at figures around a basis of $13 for No. 2, with shipment to commence immediately. A lot of 150 tons for prompt delivery brought $12.50, Birmingham, as well as a number of carload lots. Within the week one of the leading producers has announced its output for the remainder of the year disposed of. Another interest has nothing to offer for the third quarter, with a limited tonnage available for fourth quarter delivery. Its output could be increased on short notice, but additional engagements are not being solicited. The present largest producer in this district is known to be well sold up, but its output will likely be increased in the near future. Notwithstanding the manifested attitude of producers, the number of inquiries that have come forward since the improvement in market conditions hardly indicates an eagerness among melters to cover for anticipated requirements. The aggregate of tonnage being negotiated for is attractive, but there is no evidence of speculative purposes other than usually accompany such transactions. Delivery of tonnage engaged is being effected as promptly as specified, and the number of instances where shipment is urged can but indicate a gradual increase in the melt. The demand for Charcoal Iron has warranted an increase in the rate of production. A recent sale of this grade is reported at $20 per ton, f.o.b. furnace.

**Cast Iron Pipe.**—The business transacted in this market the past week was composed almost entirely of small orders for maintenance work and extensions. As was the case at the time of last report, the average price received shows an advance over published prices, but there has been no recent transactions involving figures that could be considered a criterion of values. The status of the Pig Iron market is an encouraging feature to producers, and there is reason to believe that competition for contracts that are now in sight will be of a different nature than experienced for some months past. Practically all plants in this district are in full operation, and the output is being moved satisfactorily. We quote Water Pipe as follows, per net ton, f.o.b. cars here: 4 to 6 in., $23; 8 to 12 in., $22; over 12 in., average, $21, with $1 per ton extra for Gas Pipe.

**Old Material.**—The movement during the week just ended was considerably in excess of the aggregate reported at any time since January 1. The prices received are satisfactory to dealers, all conditions considered, and the market as a whole presents a decidedly more encouraging aspect. There is no evidence of a disposition to depart from asking prices on grades for which the demand is still very light, and we quote dealers' prices as firm, which follow, per gross ton, f.o.b. cars here:

| | |
|---|---|
| Old Iron Rails | $14.50 to $15.00 |
| Old Iron Axles | 15.50 to 16.00 |
| Old Steel Axles | 13.00 to 13.50 |
| No. 1 Railroad Wrought | 13.00 to 13.50 |
| No. 2 Railroad Wrought | 10.50 to 11.00 |
| No. 1 Country Wrought | 11.00 to 11.50 |
| No. 2 Country Wrought | 9.50 to 10.00 |
| No. 1 Machinery | 10.50 to 11.00 |
| No. 1 Steel | 9.50 to 10.00 |
| Wrought Pipe and Flues | 8.50 to 9.00 |
| Stove Plate and Light Cast | 8.50 to 9.00 |
| Cast Borings | 5.00 to 5.50 |

## St. Louis.

ST. LOUIS, August 24, 1908.

While the improvement in business conditions, speaking broadly, is slow, it is sure, and the gain in nearly all cases is held. With some interests, this season of the year is normally the quiet time, but even these are making preparations for starting up. More activity is observed among the railroads, and parties who supply material report the receipt of urgent requests to hasten delivery of orders in hand. A leading Steel interest states that in finished products (principally Bolts) over 50 per cent. of its capacity is sold up to July, 1909, and there is an improved demand for Bar Steel from agricultural and implement manufacturers. One of the large foundrymen reports more doing in railroad repair work in Steel Castings. The demand for Tube stock is better, mainly from jobbers for special sizes to keep up assortment. On a number of large buildings, principally of a public character, bids will soon be asked requiring a considerable tonnage of Structural Steel.

**Coke.**—A fair demand is reported, with prices ruling steady. It is believed that with a material increase in the inquiry from foundries there would be an advance in the market. We quote $2.25 to $2.50, f.o.b. oven, Connellsville, for 72-hr.

**Pig Iron.**—Some Southern furnaces have withdrawn from the market delivery for balance of the year unless buyers are disposed to pay $13. The demand for round lots has been checked by the recent advance, but inquiry from small buyers has been quite active. Recent heavy sales have brought about a scarcity, and Iron for immediate shipment will command a premium. A leading local house reports an inquiry pending for 2000 tons, and its morning mail brought orders from several parties for carload lots. Another house reports sales of three lots (1000, 500 and 250 tons, respectively) of Southern Soft and Foundry grades, shipment through balance of the year. We quote $12.50 to $13, f.o.b. Birmingham, for No. 2 Foundry.

**Finished Iron and Steel.**—The demand for Structural Material is marked by numerous orders for small lots, and more disposition is manifested to lay in stock on the part of dealers. Bar conditions are better, with an improving demand from jobbers. Plates are slow. Standard Rails are

dull, but Light Rails are active. A growing demand is coming from railroads for construction material, including Tank Steel, Tees, Angles, Plates, Bars and Shafting.

**Lead and Spelter.**—Lead is seasonably quiet, yet making due allowance for midsummer conditions, August business has been fairly good. We quote 4.47½c., St. Louis, with special brands higher. Spelter is dull, but as stocks are considerably reduced producers are holding higher. Consumers have been in the market during the summer, and the outlook for Spelter is much improved. The Ore market is firm and higher, at $37 per ton, Joplin, paid for most of the Ore. This has encouraged some of the producers to resume mining operations in anticipation of a further increase in demand. We quote 4.55c., St. Louis.

**Old Materials.**—Though still a dealers' market, so far as current transactions are concerned, an increased disposition is manifested by the mills to enter the market and purchase supplies of Scrap Iron for stock. The tone of the situation is growing stronger, and doubtless the recent advance in Pig Iron is aiding the holders of Scrap Iron and imparting a speculative tendency. Relaying Rails are scarce. The only offering to report is that of the Burlington Railroad—about 3000 tons. An increase in offerings is expected, as many of the railroad shops are now open. We quote per gross ton, f.o.b. St. Louis, as follows:

| | |
|---|---|
| Old Iron Rails | $15.50 to $16.00 |
| Old Steel Rails, rerolling | 14.50 to 15.00 |
| Old Steel Rails, less than 3 ft | 13.75 to 14.00 |
| Relaying Rails, standard sections, subject to inspection | 20.50 to 21.50 |
| Old Car Wheels | 14.50 to 15.00 |
| Heavy Melting Steel Scrap | 13.00 to 13.50 |
| Frogs, Switches and Guards, cut apart | 13.00 to 13.50 |
| Mixed Steel | 10.25 to 10.75 |

The following quotations are per net ton:

| | |
|---|---|
| Iron Fish Plates | $14.50 to $15.00 |
| Iron Car Axles | 17.50 to 18.00 |
| No. 1 Railroad Wrought | 12.50 to 13.00 |
| No. 2 Railroad Wrought | 11.50 to 12.00 |
| Railway Springs | 12.00 to 12.50 |
| Locomotive Tires, smooth | 13.00 to 13.25 |
| No. 1 Dealers' Forge | 10.50 to 11.50 |
| Mixed Borings, &c | 5.50 to 6.00 |
| Machine Shop Turnings | 8.00 to 8.50 |
| No. 1 Boilers, cut to Sheets and Rings | 9.50 to 10.00 |
| No. 1 Cast Scrap | 12.00 to 12.50 |
| Stove Plate and Light Cast Scrap | 10.50 to 11.00 |
| Railroad Malleable | 11.00 to 11.50 |
| Agricultural Malleable | 10.00 to 10.50 |
| Pipes and Flues | 8.75 to 9.50 |

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E. W. Tenny succeeds W. P. Foote as superintendent of the St. Louis Furnace Company. In former years, when the plant was operated by the Missouri Furnace Company, Mr. Tenny was in charge, and thus brings his past experience to bear on his duties.

The lowest bidder on the Houston County (Texas) Court House was John Barden of Fort Worth, who will probably secure the contract.

The Helmbaccher rolling mill of the American Car & Foundry Company is running, and there being a little more repair work coming on, the Madison and St. Louis plants are being operated in part.

At East St. Louis the plants of the Republic Iron & Steel Company and the Commonwealth Steel Company are being operated.

The Hoyt Metal Company reports business as being better for the past fortnight than at any previous time this year.

The Bethlehem Steel Company states that July was its best month thus far for 1908, the demand being large for all forgings. The outlook is good for a large tonnage in Structural Material being placed in St. Louis territory in the near future.

The leading Steel interest reports the sale of 500 tons of Rails to the Midland Valley Railroad, Muscogee, Okla.

The Handlan Buck Mfg. Company finds the demand from railroads for supplies increasing and settlements satisfactory.

Machinery merchants extract some encouragement from the marked increase in the inquiry, which covers both new and second-hand machines, and some sales are resulting.

An organization of building contractors and allied interests of the city was effected this week. The new organization will be known as the Building Industries Association, and its membership is expected to include all the contractors, subcontractors and material men of St. Louis, and thus it is likely to become one of the leading business associations of the city.

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Press reports to the effect that the American Locomotive Company will make large additions to equipment in its Pittsburgh Works, Allegheny, Pa., are untrue. No improvements are to be made to that plant at this time.

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The Stiles Foundry & Supply Company, Parkersburg, W. Va., intends to manufacture a new design of engine lathe which will be ready for the market within a short time.

## Pittsburgh.

PARK BUILDING, August 26, 1908.—(*By Telegraph.*)

**Pig Iron.**—Little has been done in the Pig Iron market in the past week. Consumers are buying very carefully, and usually in small lots for current needs, not being satisfied that prices have touched bottom. We quote sand cast Bessemer Iron at $15.25, Valley furnace, reports being that on some fairly large tonnage recently closed this price was shaded. We quote Malleable Bessemer at $14.50, Basic at $14.50, No. 2 Foundry at $14.50 and Forge at $13.75, all at Valley furnace, plus a 90 cent freight rate for Pittsburgh delivery.

**Steel.**—We note a sale of about 300 tons of Tin Bars at the full regular price of $27, Pittsburgh, for random lengths. Not much new business is offering in Billets, Sheet or Tin Bars, but a fair tonnage is being shipped out by the mills on specifications against contracts. As far as we can learn, full regular prices on Steel are being obtained on the small tonnage that is selling. We quote Bessemer and Open Hearth Billets, 3⅞ in. and larger, up to and including 0.25 carbon, $25; 0.26 to 0.60 carbon, $1 extra; over 0.60 carbon, $2 extra, all f.o.b. Pittsburgh. For Wheeling, Martins Ferry, Follansbee, Newcastle, Sharon, Steubenville and Washington (Pa.) delivery, half the freight, or 50c. additional, is charged. Sheet and Tin Bars in random lengths are $27, f.o.b. Pittsburgh. Forging Billets take $2 advance over Rolling Billets.

(*By Mail.*)

The lull in the Steel business continues, but it is not giving serious apprehension, being believed to be only temporary. July was a fairly active month, showing an increase in tonnage over June, but August will hardly make as good a record as did July. Some lines of Finished Material are now out of season, notably Tin Plate, and it is getting so late in the year that large projects cannot be started and completed before cold weather. It appears settled that the railroads will hardly be buyers of material to any large extent for delivery this year, and until there is a demand for Iron and Steel products from this source recovery in the Steel business is bound to be slow. The Presidential election is only a little over two months away, and the campaign will open actively next month. This always has the effect of causing a halt in the Iron trade until it is known whether there is to be a change in the administration. Underlying conditions are good, all reports of the crops are satisfactory, money is plentiful, and all that is needed to bring about normal conditions in the Steel line is for the railroads to be able to raise money to buy much needed materials. The Pig Iron market has quieted down and there is not much inquiry. Consumers are buying cautiously, not being satisfied that prices have reached bottom. When present prices of Ore, Coke, Limestone and labor are considered it would seem that Bessemer Iron at $15, Basic at $14.50, and Northern No. 2 Foundry at $14.50, at furnace, do not leave much chance for further decline. New business in Billets, Sheet and Tin Bars is light, and specifications against contracts have shown a falling off, notably in Tin Bars. No Rail tonnage of moment is being placed, but on some lines of Finished Iron and Steel, notably Black and Galvanized Sheets and Pipe, there is some betterment. It is estimated that the total active capacity at present is about 55 per cent., and it is predicted that before the close of the year this will have increased to 75 per cent. The Scrap market is dull and prices on some lines, notably Heavy Steel Scrap, are lower. The situation as a whole is not discouraging by any means, but it seems to be accepted that recovery will be slow.

**Ferromanganese.**—Consumers being pretty well covered and out of the market, there is not much inquiry at present. We quote 80 per cent. foreign Ferro for prompt delivery at $43 to $43.50, Baltimore, and for shipment over balance of this year at $43.50 to $44, the rate from Baltimore to Pittsburgh being $1.95 a ton.

**Ferrosilicon.**—An inquiry is in the market for 50 tons, which may be closed this week. We quote 50 per cent. at $67.50 to $70, depending on tonnage and deliveries wanted.

**Muck Bar.**—The market is quiet, and we quote best grades, made from all Pig Iron, at $25 to $25.50, Pittsburgh.

**Rods.**—A better inquiry is reported, and some sales are being made for delivery over balance of the year. Upward of 2500 tons of Bessemer and Chain Rods has been sold on the basis of $33, Pittsburgh. We quote Bessemer Rods at $33, Basic $34, and Chain Rods $33, Pittsburgh.

**Skelp.**—The situation is very quiet, some of the mills actively seeking business, and prices are easier. We quote: Grooved Steel Skelp, 1.45c. to 1.50c.; Sheared Steel Skelp, 1.50c. to 1.60c.; Grooved Iron Skelp, 1.60c. to 1.70c., and Sheared Iron Skelp, 1.70c. to 1.75c., f.o.b. Pittsburgh.

**Steel Rails.**—A few scattering orders for small lots are coming to the mills. Several large inquiries for export are in the market, and a good part of the product now being turned out by the Edgar Thomson mills of the Carnegie Steel Company is for foreign delivery. Reports that the Pennsylvania Railroad would shortly place its order for Rails for 1909 delivery are not confirmed here. The order for 55,000 tons placed by this interest in February last has never been filled by the mills, which could not come to an agreement with the company on prices and specifications. Prices quoted on Light Rails, which, however, continue to be shaded about $2 a ton by rerolling Rail mills, are as follows: $25 for 25 to 45 lb. Sections, with $1 advance for 20 lb., $2 advance for 16 lb., and $4 advance for 12 lb. Standard Sections are $28, at mill, and Angle Splice Bars, 1.65c., at mill.

**Structural Material.**—Reports are conflicting, some setting forth a better condition, while others say the situation could hardly be worse. The latter is certainly true as far as prices for work are concerned, the policy of some of the large Steel interests in taking contracts to furnish the Steel for contemplated structures practically shutting out the fabricating interests, who are unable to compete. Prices at which some jobs have recently been taken indicate clearly that, while the plain material may have been figured at regular prices, the fabricating was done at much below actual cost. An inquiry is in the market for 6000 tons of bridge work for a Southern railroad, and a building for the Young Men's Christian Association at Canton, Ohio, will take 600 tons. The McClintic-Marshall Construction Company has taken 600 tons for Steel buildings in Tennessee, and the Pittsburgh Steel Construction Company 1800 tons for the Pope Building at Cleveland. The First National Bank Building, this city, is likely to be placed this week. It is probable that the five-story structure, about 1200 tons, will be the one selected. We quote, f.o.b. mill, Pittsburgh: I-Beams, H-Beams and Channels, 3 to 15 in., inclusive, 1.60c., net; Beams over 15 in., 1.70c., net; Angles, 3 to 6 in., inclusive, ¼ in. and up, 1.60c., net; Angles, over 6 in., 1.70c., net; Angles, 3 x 3 in. and up, less than ¼ in., 1.50c., base, half extras, Steel Bar card; Tees, 3 in. and up, 1.65c., net; Zees, 3 in. and up, 1.60c., net; Angles, Channels and Tees under 3 in., 1.50c., base, half extras, Steel Bar card; Deck Beams and Bulb Angles, 1.90c., net; Hand Rail Tees and Z-19, 3c., net; Checkered and Corrugated Plates, 3c., net.

**Plates.**—Practically no business is coming in from the Steel car interests or the lake boat builders, and with only a fair demand from the general trade the situation in Plates is naturally dull and does not hold out much hope for improvement in the near future. Nothing has been heard of the reported Harriman order for 6000 to 7000 Steel cars, and the opinion is expressed in some quarters that nothing will come of it. Some shading is still being done by two or three of the outside mills on Plates, but, as a rule, this does not amount to more than about $1 a ton. We quote: Tank Plates, ¾ in. thick, 6¼ in. up to 100 in. wide, 1.60c., base, at mills, Pittsburgh. Extras over this price are as follows:

Tank, Ship and Bridge quality, ¼ in. thick on edges, 100 in. wide, down to but not including 6 in. wide, is taken as base.

Steel Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per square foot, shall be considered ¼-in. Plate. Steel Plates over 72 in. wide must be ordered ¼-in. thick on edge, or not less than 11 lb. per square foot, to take base price. Steel Plates over 72 in. wide ordered less than 11 in. per square foot down to the weight of 3-16-in. shall take the place of 3-16-in.

Percentages as to overweight on Plates, whether ordered to gauge or weight, to be governed by the Association of American Steel Manufacturers' Standard Specifications.

| | |
|---|---|
| Gauges under ¼-in. to and including 3-16-in. Plates on thin edges | $0.10 |
| Gauges under 3-16-in. to and including No. 8 | .15 |
| Gauges under No. 8 to and including No. 9 | .25 |
| All sketches (excepting straight taper Plates varying not more than 4 in. in width at ends, narrowest end being not less than 30 in.) | .10 |
| Complete Circles | .20 |
| Boiler and Flange Steel Plates | .10 |
| "A. B. M. A." and ordinary Firebox Steel Plates | .20 |
| Still Bottom Steel | .30 |
| Marine Steel | .40 |
| Locomotive Firebox Steel | .50 |
| Shell grade of Steel is abandoned. | |
| For widths over 100 in. up to 110 in | .05 |
| For widths over 110 in. up to 115 in | .10 |
| For widths over 115 in. up to 120 in | .15 |
| For widths over 120 in. up to 125 in | .25 |
| For widths over 125 in. up to 130 in | .50 |
| For widths over 130 in | 1.00 |

TERMS.—Net cash 30 days. Pacific Coast base, 1.50c., f.o.b. Pittsburgh.

**Sheets.**—We can report some betterment in the demand for Black and Galvanized Sheets. This week the American Sheet & Tin Plate Company is operating 63 per cent. of its capacity, the best record for some months. Some shading is being done by a few mills on both Black and Galvanized Sheets on orders for prompt delivery, but not over $2 a ton, and this has not so far seriously disturbed the market. For shipments from mill regular prices are as follows: Blue Annealed Sheets, No. 10 and heavier, 1.80c.; Nos. 11 and 12, 1.85c.; Nos. 13 and 14, 1.90c.; Nos. 15 and 16, 2c., Box Annealed, Nos. 17 to 21, 2.25c.; Nos. 22 to 24, 2.30c.; Nos. 25 and 26, 2.35c.; No. 27, 2.40c.; No. 28, 2.50c.; No. 29, 2.60c.; No. 30, 2.70c. Galvanized Sheets: Nos. 10 and 11, 2.45c.; Nos. 12 and 14, 2.55c.; Nos. 15 and 16, 2.65c.; Nos. 17 to 21, 2.80c.; Nos. 22 and 24, 2.95c.; Nos. 25 and 26, 3.15c.; No. 27, 3.35c.; No. 28, 3.55c.; No. 29, 3.70c.; No. 30, 3.95c.; No. 28, Painted Roofing Sheets, $1.75 per square, and Galvanized Roofing Sheets, No. 28, $3.10 per square, for 2½-in. corrugations. These prices are subject to a rebate of 5c. per 100 lb. to the large trade under the usual conditions, jobbers charging the usual advances for small lots from store.

**Tin Plate.**—New buying of Tin Plate for this year is pretty well over, and shipments now being made by the mills are mostly on contracts entered some time ago. The American Sheet & Tin Plate Company is operating to about 50 per cent. of capacity, and this is also about the average for the independent mills. Reports are heard of price concessions, but if these are true they are small in amount, and have not seriously affected the market. We quote $3.70 for 100-lb. Cokes, 14 x 20, f.o.b. Pittsburgh, terms 30 days, less 2 per cent. off for cash in 10 days, this price being subject to the usual rebate of 5c. per base box in large lots.

**Hoops and Bands.**—Little new business is being placed, and only a fair tonnage is going out on specifications against contracts. Regular prices are as follows: Steel Hoops, 1.80c., base, full Hoop card prices; Steel Bands, 1.40c., base, half Steel card extra, all f.o.b. cars, Pittsburgh, in carload lots, for delivery during 1908.

**Bars.**—New business in both Iron and Steel Bars is light, but there is more specifying against contracts, and shipments by the mills are fairly heavy. The railroads are placing a few small orders for repair work, but are not giving out anything of moment for new work. Prices are fairly steady, but hardly enough is being done to test the market. We quote Iron Bars at 1.40c., base, for Pittsburgh delivery, and 1.35c., base, for Western points, to which freight is added, except Chicago, the price for which is 1.50c., delivered. We quote Steel Bars at 1.40c., Pittsburgh, for base sizes.

**Merchant Steel.**—While new orders are only fair, specifications are coming in against contracts, notably from the implement manufacturers, who are now making requisitions for several months ahead. The market is fairly strong, but in some cases prices have been shaded. The demand for Shafting is light, the low prices ruling not having stimulated business, and in some cases these low discounts are being slightly shaded. We quote: Cold Rolled Shafting, on contracts for 100 tons and over, 57 per cent. off; carloads, 56 per cent. off, and less than carloads, 52 per cent. off, on which carload freight is allowed within base territory. Smooth Finished Machinery Steel, 1.80c. to 1.90c.; Flat Sleigh Shoe, 1.75c. to 1.85c.; Cutter Shoe Steel, 2.15c. to 2.25c.; Toe Calk, 1.90c. to 1.95c.; Railroad Spring Steel, 1.60c. to 1.75c., the higher price being for Pennsylvania Railroad analysis. Carriage Spring Steel is 1.80c.; Tire Steel, Iron finish, 1½ x ½ in. and heavier, 1.40c.; under 1½ in., 1.55c. Planished Tire Steel is 1.60c., all f.o.b., at mill.

**Merchant Pipe.**—A slow but steady betterment in new orders is observed in Merchant Pipe, each month showing a slight gain over the previous month. Inquiries are in the market for over 100 miles of line Pipe, part for delivery in Kansas and part for Canada, but as yet none of this business has been placed. The Standard Oil Company has been a heavy buyer of line Pipe this year and has placed a large business with the National Tube Company. The leading Pipe mills are able to operate to a little over 50 per cent. of capacity and believe that the fall demand will be quite active. Prices on Steel Pipe are being maintained, but on Iron Pipe are sometimes slightly shaded on orders for immediate shipment. Discounts on Steel Pipe, ¾ to 6 in., to the large trade are now 76 and 5 per cent. off list. Regular discounts are as follows:

*Merchant Pipe.*

| | Jobbers, carloads, Steel. Black. | Galv. |
|---|---|---|
| | % | % |
| ⅛ to ¼ in. | 67 | 51 |
| ⅜ in. | 69 | 55 |
| ½ in. | 71 | 59 |
| ¾ to 6 in. | 75 | 65 |
| 7 to 12 in. | 72 | 57 |
| Extra strong, plain ends: | | |
| ⅛ to ⅜ in. | 60 | 48 |
| ½ to 4 in. | 67 | 55 |
| 4½ to 8 in. | 63 | 51 |
| Double extra strong, plain ends: | | |
| ½ to 8 in. | 56 | 45 |

Discounts on Genuine Iron Pipe are as follows:

| | Black. | Galv. |
|---|---|---|
| ⅛ to ¼ in. | 65 | .. |
| ⅜ in. | 67 | 53 |
| ½ in. | 69 | 57 |
| ¾ to 6 in. | 73 | 63 |
| 7 to 12 in. | 70 | 55 |
| Extra strong, plain ends: | | |
| ⅛ to ⅜ in. | 58 | 46 |
| ½ to 4 in. | 65 | 52 |
| 4½ to 8 in. | 61 | 49 |
| Double extra strong, plain ends: | | |
| ½ to 8 in. | 54 | 43 |

**Railroad Spikes.**—The railroads are very slow in placing business, no large orders having come from this source for some time. Two of the Western lines were in the market with good inquiries recently, but they have not resulted in orders. The mills have only a small amount of work on their books, and none of the Spike makers is able to run to more than half capacity, if that much. We quote: Standard sizes, 4½ x 9-16 in., at $1.70, and the smaller sizes at $1.80 per 100 lb. in carload and larger lots, with an advance of 5c. per 100 lb. for less than carload, f.o.b. Pittsburgh.

**Boiler Tubes.**—Scattering orders are being received from the railroads for Tubes for repairs. A little better demand is reported from the boiler shops, and new business in Merchant Tubes is slightly better. Regular discounts on Merchant Tubes in small lots, on which an extra 5 per cent. is allowed in carloads, but which discounts are being shaded, are as follows:

*Boiler Tubes.*

| | Iron. | Steel. |
|---|---|---|
| 1 to 1½ in. | 42 | 47 |
| 1¾ to 2¼ in. | 42 | 59 |
| 2½ in. | 47 | 61 |
| 2¾ to 3 in. | 52 | 65 |
| 6 to 13 in. | 42 | 59 |

2½ in. and smaller, over 18 ft. long, 10 per cent. net extra.
2¾ in. and larger, over 22 ft. long, 10 per cent. net extra.

**Spelter.**—The demand has fallen off very materially, and prices have also eased off to some extent. We quote prime Western grades at 4.50c., East St. Louis, equal to 4.62½c. Pittsburgh, but on large lots this price would likely be shaded.

**Iron and Steel Scrap.**—The market is very quiet, leading consumers being filled up and declining to entertain offers of Scrap, except at extremely low prices, which the dealers do not care to consider. The continued decline in prices of Bessemer and Basic Iron has had the effect of weakening prices on Heavy Steel Scrap, which has eased off to the extent of about 50c. a ton. We quote Heavy Steel Scrap for Pittsburgh, Sharon and Steubenville delivery $14.50 to $15, while Steel Scrap for hand charged open hearth furnaces, ranging in weight from 10 lb. minimum to 300 lb. maximum, is held about $1 a ton higher. Prices on other grades of Scrap are easier, nominal quotations being as follows per gross ton, Pittsburgh: Cast Iron Borings, $9.25 to $9.50; No. 1 Railroad Wrought Scrap, $15 to $15.25; No. 1 Cast, $14.50 to $14.75; Bundled Sheet Scrap, $12.25 to $12.50; Sheet Bar Crop Ends, $18 to $18.25; No. 1 Busheling Scrap, $13.50 to $14; No. 2, $10 to $10.50; Iron Axles, $21 to $21.50; Steel Axles, $18.50 to $19; Low Phosphorus Melting Stock, 0.04 and under, $19 to $19.50; Rerolling Rails, $16.50; Machine Shop Turnings, $10.25 to $10.50; Grate Bars, $13 to $13.25; Railroad Malleable, $14 to $14.25; Old Car Wheels, $14.50 to $15. On a firm offer it is probable that these prices could be slightly shaded.

**Coke.**—Prices continue low, and there does not seem to be much prospect of betterment in this direction in the near future. A large number of new ovens have been built by the Frick Coke Company and other concerns, and as soon as the demand for Coke improves some of them will be started. There is still a shortage of water in the Coke regions, and some of the plants are crippled for this reason. Strictly Connellsville Furnace Coke for prompt delivery is held at $1.50, at oven, and on contracts at $1.65 to $1.75 for balance of this year delivery. Outside makes of Furnace Coke are selling as low as $1.35 a ton at oven. Connellsville 72-hr. Foundry Coke is held at $1.90 to $2.15, and outside makes at $1.75 to $1.85. The output of Coke in the Upper and Lower Connellsville regions last week was 193,492 tons, an increase of about 1000 tons over the previous week.

## Philadelphia.

PHILADELPHIA, PA., August 25, 1908.

The local market for Iron and Steel has taken on a somewhat better appearance the past week, and although orders generally have not been large, they show more disposition to enter the market on the part of the buyers. The most interesting feature of the week was the placing of orders by the Pennsylvania Railroad Company for 10,500 tons of Foundry Iron, for delivery over the balance of the year. This is the first buying of Pig Iron of any account on the part of the railroads in this territory for some time, and the trade takes considerable encouragement from this purchase. Several fair sales of Pig Iron to foundries, Steel mills and rolling mills have been reported recently, and more inquiry has also developed for Iron for next year's delivery. Finished materials have not shown any particular increase in demand during the week, but mills are reported as holding their former gains, and producers feel encouraged regarding business during the fall months.

**Pig Iron.**—The feature of the week has been the business placed by the Pennsylvania Railroad Company for its Altoona shops. This order included 4100 tons of special analysis Foundry Iron from one producer and 2400 tons of special analysis Iron of a somewhat different grade for foundry purposes from another furnace, both in this territory; 1500 tons of Lake Superior Charcoal Iron; 1900 tons of New England Charcoal Iron, and 600 tons of Southern Charcoal Iron. These sales were all at private terms, delivery at points on the company's tracks. Several other orders for fair tonnages of Foundry Iron for delivery during the balance of the year were also reported. One lot of 2000 tons of No. 2 X for shipment during the last quarter was made at $17, delivered, while several moderate lots of No. 2 Plain were sold at $16.50, delivered. A number of smaller sales, ranging up to 500 tons, for prompt shipment, have also been made, usually at full prices. Virginia Foundry Irons continue in good demand, and some Virginia furnaces have booked some very fair orders for deliveries in different sections of the country. One seller has disposed of over 3000 tons during the week, made up mostly of lots ranging from 100 to 500 tons. These Irons are firm at $17 for No. 2 X, delivered, in this territory, with No. 2 Plain at $16.50 to $16.75. Several lots of No. 2 X Virginia, a few hundred tons each, for forward shipment to New England points, at $18 and $18.50, delivered, are also reported. Forge Iron has been quietly bought during the past 10 days. One lot of 1500 tons was sold for delivery in the next three months at $15.25, delivered. The same seller reports transactions of smaller size amounting in the aggregate to 1000 tons, for September and October delivery, at practically the same price. The better known brands of Forge Iron are scarce, and prices for this grade are being firmly held. Some scattered sales of Basic Iron are reported, one lot of 5000 tons for delivery during the balance of the year being reported at current prices. Another sale of 5000 tons Virginia Basic, for New England delivery, was made at $13.75, furnace, while a further sale of 1500 tons of Northern Basic was made for New England delivery at $14, furnace. Low Phosphorus inquiries, previously reported, are still pending, sellers not being inclined to place business, even at somewhat lower prices than recently reported. Inquiries for Iron for delivery in the first quarter of next year continue to come out, but the majority of sellers refuse to quote for such deliveries. On the other hand, one producer has about reached the point when he will be willing to book orders for such deliveries, and will accept moderate orders for No. 2 X Foundry at $17.50 in this territory. For delivery in the last quarter that grade can now be pretty freely done at $17, and for spot delivery $16.50 to $16.75 appears to be the usual range. The tone of the market on the whole is strong, and orders have increased during the month. In the eastern Pennsylvania territory reports from a number of producers would indicate that the increase in orders over the previous month was something like 50,000 tons, while stocks on furnace banks show a decline in comparison with last month of about 15,000 tons. One Hokendauqua furnace was blown in by the Thomas Iron Company during the week, and will, it is reported, go on Basic Iron. Some of the other producers are reducing stocks rapidly and are getting nearer the point of increasing capacity, which they say they will not do at the present price level. Prices are somewhat stronger, and but little tendency to shade current quotations for standard brands is reported. For delivery in buyers' yards, eastern Pennsylvania and adjoining territory, for the remainder of the third quarter, the following range of prices is quoted:

| | |
|---|---|
| Eastern Pennsylvania, No. 2 X Foundry | $16.50 to $17.00 |
| Eastern Pennsylvania, No. 2 Plain | 16.00 to 16.50 |
| Virginia, No. 2 X Foundry | 17.00 |
| Virginia, No. 2 Plain | 16.50 to 16.75 |
| Gray Forge | 15.00 to 15.50 |
| Basic | 15.00 to 15.25 |
| Low Phosphorus | 20.50 to 21.00 |

**Ferromanganese.**—Somewhat more activity has developed for prompt Ferromanganese, and sales of a lot of 1000 tons for delivery during September and October at $42.50, seaboard, and a lot of 300 tons for prompt shipment at $43.50, Baltimore, are reported. Little demand has developed in forward Ferro, although it is believed that several buyers will shortly come into the market. A considerable range is still to be noted regarding prices, $43 to $44 being quoted for prompt lots, with $45.50 to $46.50, seaboard, named for deliveries over the balance of the year.

**Steel Billets.**—Little improvement in the demand is to be noted. Buying continues light and is almost entirely for prompt shipment. Prices are unchanged, ordinary Rolling Steel for delivery in this territory being quoted at $26.20, with Forging Steel at $28.20, subject to the usual extras for high carbons and special sizes.

**Structural Material.**—While the individual tonnages of orders in this immediate territory continue small, both mills and fabricators are bidding on considerable work in other nearby sections. Some small bridge and building contracts have been let, but orders are largely of a miscellaneous character. Prices continue unchanged. For delivery in this territory, 1.75c. to 1.90c. is quoted, according to specification.

**Plates.**—While there has been no appreciable increase in the volume of business taken by some of the mills in this territory during the week, the former gains are being fully maintained and the outlook for a fair run of business in the near future is considered favorable. Current business is of a miscellaneous character, although some fair propositions

in boat and bridge material are pending. A scattered amount of railroad business continues to be placed and a larger tonnage for this class of work is anticipated during the fall months. Quotations for delivery in this territory are unchanged and range as follows:

| | Carloads. Cents. | Parts carload. Cents. |
|---|---|---|
| Tank, Bridge and Boat Steel | 1.75 | 1.80 |
| Flange or Boiler Steel | 1.85 | 1.95 |
| Commercial Firebox | 1.95 | 2.00 |
| Marine | 2.15 | 2.20 |
| Locomotive Firebox Steel | 2.25 | 2.30 |
| The above are base prices for ¼-in. and heavier. The following extras apply: | | Extra per 100 lb. |
| 3-16-in. thick | | $0.10 |
| Nos. 7 and 8, B. W. G. | | .15 |
| No. 9, B. W. G. | | .25 |
| Plates over 100 to 110 in | | .05 |
| Plates over 110 to 115 in | | .10 |
| Plates over 115 to 120 in | | .15 |
| Plates over 120 to 125 in | | .25 |
| Plates over 125 to 130 in | | .50 |
| Plates over 130 in | | 1.00 |

**Sheets.**—The business placed shows no material increase. Orders are small, and usually for prompt shipment. In the aggregate, they are sufficient to keep mills fully occupied, although they have but little booked ahead. For mill shipments no change in price is to be noted, the following range being named, with a tenth added on small lots: Nos. 18 to 20, 2.50c.; Nos. 22 to 24, 2.60c.; Nos. 25 to 26, 2.70c.; No. 27, 2.80c.; No. 28, 2.90c.

**Bars.**—There has been a somewhat better demand. Buyers show a desire to contract for future shipment, but most of the mills will do only a current business. The tonnage coming out is larger, and specifications on old orders are somewhat better. Prices are stronger, as Scrap has advanced considerably recently, and some grades are scarce, with the result that few low price Bars are to be had. The ruling quotations for Refined Iron Bars, delivered in this territory, are 1.40c. to 1.45c., with some sellers holding at 1.50c. Steel Bars are dull and are quoted at 1.55c., with rerolled Steel Bars at 1.50c., delivered in this territory.

**Coke.**—The demand continues quiet. A little business has been done in spot Foundry Coke, while some few contracts for delivery over the balance of the year have also been closed. Furnace Coke shows a little movement, there being several inquiries before the trade. Prices are unchanged. Foundry Coke is quoted at $2.15 to $2.35 at oven, with Furnace Coke at $1.50 to $1.75, at oven. For delivery in this territory the following range of prices is quoted:

| | |
|---|---|
| Connellsville Furnace Coke | $3.65 to $3.90 |
| Foundry Coke | 4.30 to 4.50 |
| Mountain Furnace Coke | 3.25 to 3.50 |
| Foundry Coke | 3.90 to 4.10 |

**Old Material.**—The situation in the Old Material market continues unchanged. Buyers and sellers do not seem to be getting any closer together in their views regarding prices, and the business transacted during the week has been small and unimportant. Sales have been largely in odd lots, at close to ruling prices, which are nominally quoted as follows for prompt shipment in buyers' yards, eastern Pennsylvania and adjoining territory:

| | |
|---|---|
| No. 1 Steel Scrap and Crops | $14.50 to $15.00 |
| Low Phosphorus | 18.00 to 18.50 |
| Old Steel Axles | 20.00 to 20.50 |
| Old Iron Axles | 22.50 to 23.00 |
| Old Iron Rails | 20.00 to 20.50 |
| Old Car Wheels | 15.00 to 15.50 |
| Choice No. 1 R. R. Wrought | 17.75 to 18.25 |
| Machinery Cast | 14.50 to 15.00 |
| Railroad Malleable | 13.00 to 13.50 |
| Wrought Iron Pipe | 13.50 to 14.00 |
| New Bundled Sheets | 12.50 to 13.00 |
| No. 1 Forge Fire Scrap | 12.00 to 12.50 |
| No. 2 Light Iron | 8.50 to 9.00 |
| Wrought Turnings | 11.00 to 11.50 |
| Stove Plate | 13.00 to 13.50 |
| Cast Borings | 10.25 to 10.75 |
| Grate Bars | 13.00 to 13.50 |

## Buffalo.

BUFFALO, N. Y., August 25, 1908.

**Pig Iron.**—A number of specifications of fair size have been figured on, several orders above recent averages in tonnage have been placed, and better things are hoped for in the near future. One local furnace interest has booked an order for 1500 tons, with others aggregating more than as much additional. Stack A of the Buffalo Union Furnace Company's plant was blown in on Monday of this week, and all three of that company's furnaces are now in blast. Prices are somewhat firmer and sellers are holding for higher prices than are offered, but there has been no material advance as yet. We quote as follows, Buffalo delivery:

| | |
|---|---|
| No. 1 X Foundry | $16.00 to $16.50 |
| No. 2 X Foundry | 15.50 to 16.00 |
| No. 2 Plain | 15.00 to 15.50 |
| No. 3 Foundry | 14.75 to 15.25 |
| Malleable Bessemer | 16.00 to 17.00 |
| Gray Forge | 14.75 to 15.00 |
| Charcoal | 20.00 to 20.50 |

**Finished Iron and Steel.**—Estimates have been furnished on a number of Structural contracts of good proportions, from which orders may develop later, but very little new business has been booked. The Buffalo architects who designed the St. Mary's Hospital building in Milwaukee have awarded the contract for the delivery and erection of the Structural work complete, amounting to about 1200 tons, to Worden & Allen of that city.

**Old Material.**—The market has been featureless, with few transactions; but prices are firm and remain unchanged, being approximately as below per gross ton, f.o.b. Buffalo:

| | |
|---|---|
| Heavy Melting Steel Scrap | $13.50 to $14.00 |
| No. 1 Railroad Wrought | 15.00 to 15.50 |
| No. 1 Railroad and Machinery Cast Scrap | 14.75 to 15.25 |
| Old Steel Axles | 16.50 to 17.00 |
| Old Iron Axles | 18.50 to 19.00 |
| Old Car Wheels | 14.00 to 14.50 |
| Railroad Malleable | 13.00 to 13.50 |
| Boiler Plate | 11.50 to 12.00 |
| Stove Plate | 12.25 to 12.75 |
| Locomotive Grate Bars | 11.50 to 12.00 |
| Pipe | 11.50 to 12.00 |
| Wrought Iron and Soft Steel Turnings | 7.50 to 8.00 |
| Clean Cast Iron Borings | 6.50 to 7.00 |
| No. 1 Busheling Scrap | 12.00 to 12.50 |

## Cleveland.

CLEVELAND, OHIO, August 25, 1908.

**Iron Ore.**—A little more activity is observed in the market than earlier in the month, but the improvement is less than sellers had been anticipating. The sales made during the week were all of small lots, so that the aggregate tonnage was not large. While the merchant firms are not looking for a rush by the furnace interests to buy Ore later in the season, it is expected that sales will continue in small lots until near the close of navigation. The movement of Ore down the lakes has shown some improvement. The Steel Corporation has started ten additional boats carrying Ore. There was some wild chartering for Ore shipments during the week, but the vessel tonnage exceeds the demand. It is estimated that the Ore movement during August will be from 300,000 to 500,000 tons greater than during July, making the total movement until September 1 about 12,000,000 tons, or a falling off of slightly over 12,000,000 tons, as compared with the corresponding time last year. Early in the season it was estimated that the total shipments this season would not exceed 20,000,000 tons, and Ore men at present see no reason for revising these figures. Last year's Ore continues to move slowly from the dock stock piles. Ore prices at Lake Erie docks, per gross ton, are as follows: Old Range Bessemer, $4.50; Mesaba Bessemer, $4.25; Old Range non-Bessemer, $3.70; Mesaba non-Bessemer, $3.50.

**Pig Iron.**—The demand for Foundry Iron continues fairly good. No large lots were sold during the week, but among the sales were two of 500 tons, one of 300 tons and a number of smaller transactions. An improvement is reported in the demand for car lots for immediate delivery, a number of such sales being reported. A local interest reports the sale of 300 tons of No. 2 Foundry at $14.75, Valley furnace. Local sales were made at $15 at furnace for No. 2 for outside shipment, and at $15.25 at furnace for local delivery. While one or two Valley interests have been selling No. 2 Foundry Iron at $14.50 at furnace, the majority are holding firmly to $14.75 and $15. The demand in the Toledo territory continues fairly good and the sale of a number of small lots is noted at $15.25 at furnace for No. 2 Foundry. A local interest also reports that the demand for Foundry Iron in small lots in the East continues fairly good. Consumers are taking Foundry Iron freely on contracts, no requests being made to withhold shipments. The demand for Malleable Bessemer is showing an improvement, and inquiries came in during the week for 3000 tons of Malleable for the balance of the year delivery and another for 500 tons. An encouraging feature in the Malleable situation is the fact that several large consumers have sent in shipping orders for the balance of their high priced Malleable Iron due on old contracts. One Malleable Iron concern has thus given shipping orders for 3000 tons. The Bessemer and Basic Iron market continues quiet. Owing to the fact that at present prices Southern Foundry Iron is considerably higher than Northern delivered in this territory, there is very little inquiry for the former. For prompt shipment and for the balance of the year we quote, delivered, Cleveland, as follows:

| | |
|---|---|
| Bessemer | $16.30 to $16.65 |
| Northern Foundry, No. 1 | 15.65 to 16.00 |
| Northern Foundry, No. 2 | 15.40 to 15.50 |
| Northern Foundry, No. 3 | 14.90 to 15.25 |
| Southern Foundry, No. 2 | 16.35 to 16.85 |
| Gray Forge | 14.40 to 14.65 |

**Coke.**—Inquiries and sales are still scarce, the market failing to show any improvement. We quote Standard Connellsville Furnace Coke at $1.65 to $1.75 at oven for the balance of the year delivery, and at $1.50 to $1.55 for spot shipment. Connellsville 72-hr. Foundry Coke is held at $2 to $2.25, at oven.

**Finished Iron and Steel.**—New business has been

rather light, but a good volume of specifications has come in for nearly all kinds of Finished Material on contracts. The demand for Steel Bars and for Structural Shapes is better than for other lines of Finished Material. Jobbers report a satisfactory increase from week to week in the volume of both their mill and warehouse orders. Prices are being fairly well maintained, and there are fewer complaints from consumers of dissatisfaction with prices than a few weeks ago. Some good inquiries that have been made in the past few weeks have not resulted in the placing of orders for large tonnages, consumers finding that they could not secure more favorable terms on large orders than in buying from time to time in small lots. While no new work has developed requiring large tonnages, the demand for Structural Material in small lots continues good. There is a better demand than ever before for concrete reinforcing Bars, as the result of the increased use of concrete in building and bridge construction. The contract for a new State Hospital at Lima, Ohio, has been awarded to the National Concrete Fireproofing Company of this city. This contract will require about 500 tons of reinforcing Bars. Some small contracts for Iron Bars were made during the week, but the demand is still light and the established price is being shaded by some of the mills for desirable orders. Some orders for small lots of Iron Bars are being received from the railroads. There is a little better demand for Plates, but the demand for Sheets is still light. While prices of Sheets and Plates are being shaded by some of the smaller mills, reports of price cutting are less frequent. A new interurban traction project has resulted in an inquiry for 3000 to 5000 tons of Standard Rails. If the project is carried out it is not believed that the Rails will be needed before next spring. We quote: Iron Bars at 1.45c., Cleveland, for car lots; Steel Bars, 1.50c., Cleveland, for car lots, half extras; Beams and Channels, 1.70c., base, Cleveland, and Plates, ¼-in. and heavier, 1.70c., Cleveland. We quote Sheets, mill shipments, car lots, Cleveland, as follows: Blue Annealed, No. 10, 1.90c.; Box Annealed, No. 28, 2.60c.; Galvanized, No. 28, 3.65c. Jobbers quote Iron and Steel Bars out of stock at 1.65c. to 1.70c. Beams and Channels from warehouse are 2c., and Plates, ¼-in. and heavier, 1.90c. Warehouse prices on Sheets are as follows: Blue Annealed, No. 10, 2.10c.; Box Annealed, No. 28, 2.70c.; Galvanized, No. 28, 3.80c. Warehouse prices on Boiler Tubes, 2¾ to 5 in., are 64 per cent. discount, and on Black Merchant Iron Pipe, base sizes, 71 per cent. discount.

**Old Material.**—The market is still quiet, and as a result prices are not quite so firm, weakness being more apparent in Heavy Melting Steel than in other grades of Scrap. While some dealers are said to have made sales at slight concessions, the majority are holding up prices firmly, however, and are quoting higher prices than consumers are willing to pay. They seem content to hold their Scrap until they can get their prices. Inquiries are scarce. Local mills have some Scrap on hand, and what they are buying is only for immediate needs, no contracts being closed for future delivery. Dealers' prices to the trade per gross tons f.o.b. Cleveland are as follows:

| | |
|---|---|
| Old Steel Rails | $14.50 to $15.00 |
| Old Iron Rails | 17.00 to 17.50 |
| Steel Car Axles | 18.00 to 18.50 |
| Old Car Wheels | 15.00 to 15.50 |
| Heavy Melting Steel | 14.50 to 15.00 |
| Relaying Rails, 50 lb. and over | 22.00 to 23.00 |
| Railroad Malleable | 13.50 to 14.00 |
| Agricultural Malleable | 12.00 to 12.50 |
| Light Bundled Sheet Scrap | 9.50 to 10.00 |

The following quotations are per net ton, f.o.b., Cleveland:

| | |
|---|---|
| Iron Car Axles | $17.00 to $18.00 |
| Cast Borings | 7.00 to 7.50 |
| Iron and Steel Turnings and Drillings | 8.00 to 8.50 |
| Steel Axle Turnings | 8.50 to 9.00 |
| No. 1 Busheling | 11.50 to 12.50 |
| No. 1 Railroad Wrought | 13.50 to 14.00 |
| No. 1 Cast | 12.50 to 13.00 |
| Stove Plate | 10.00 to 10.50 |
| Bundled Tin Scrap | 8.00 to 9.00 |

## Cincinnati.

CINCINNATI, OHIO, August 26, 1908.—(*By Telegraph.*)

The month of August, nearing its close, furnishes the 31-day record of the year so far in point of trade in Iron and Steel and machinery lines in this section, and had the last half equaled the first half in volume of new business it would compare very favorably with the big business months of early 1907. Business for the first half of August with a number of representative tool manufacturing concerns in this market was very good, but it has slumped off considerably the last half. One large tool manufacturing concern, comparing August's first half with the past, finds that August 1 to 15, 1908, was the heaviest half month since the two first weeks of June, 1907. There is a generally better feeling among all branches of the machinery manufacturing districts, and there has been a big tonnage of Iron bought during the month, a large part of which, however, has been on speculation. The markets for the remainder of August will not close as strong as they opened, unless the unexpected happens. In Finished Material lines there is a marked improvement in sales with larger concerns which handle a miscellaneous stock. Collections are only fair and shipments are being rushed.

**Pig Iron.**—Southern furnacemen maintain an independent attitude, and the price of $12.50, Birmingham, for No. 2 seems to be firmly established, although with very little buying. There are repeated inquiries for prices for next year, but about the best one can do at this stage is to get quotations of $13 for the last quarter. A price of $12 is heard as having been done within the past few days, but it cannot be traced to a standard Alabama brand. A sale consummated to-day after considerable shopping by one of the larger manufacturing establishments of the country probably represents best the actual market. Asking for about 3000 tons of Northern and Southern—half each—it purchased 750 tons of each. The Northern Iron comes from the Ironton District, and was sold on a basis of $15 at furnace for No. 2. The Southern was sold at $12.50 at Birmingham furnace, and it is rumored that an equal amount of Northern Iron has been purchased from the new Hamilton furnace, just blown in, at a commensurate price. Information which should be official announces the following furnaces in the Southern territory due to be blown in within the next two weeks: Embreeville, 150 tons per day; Citico, 125 tons; Woodstock, 200 tons; Rockdale, 60 tons, and Florence, 175 tons. Rome furnace was blown in August 3. With the acknowledged low condition of stocks on Southern yards at this time, this additional output is expected to hold the price down to the close of the year at least, notwithstanding the strike troubles in Alabama. Northern Iron is quoted in this market, Southern Ohio product, at $15 at furnace, but stocks have undoubtedly accumulated, and from the present rate of consumption it would seem that there is little inducement for the blowing in of new furnaces. A competent authority gives the following figures representing stocks on furnace yards at this time: Ashland, Miscellaneous Iron, 25,000 tons; Wellston Foundry and Malleable, 15,000 tons; Hanging Rock Foundry, 30,000 tons; Belfont and Norton, Bessemer, 25,000 tons; Globe and Star, High Silicon, 5000 tons. Ohio Silveries, 8 per cent. Silicon, are still quotable at $18.50 at furnace. The largest inquiry heard to-day is from a prominent Indiana manufacturer, who asks for 1000 to 2000 tons of Malleable for the first half of next year or for delivery over the four months March to June. A concern in Illinois wants about 200 tons of Foundry Iron, and there are a few other inquiries out for small lots ranging from 50 to 200 tons for early shipment. For immediate delivery and for the balance of the year we quote, f.o.b. Cincinnati, the freight rate being $3.25 from Birmingham and from the Hanging Rock District $1.20, as follows:

| | |
|---|---|
| Southern Coke, No. 1 | $16.00 to $16.50 |
| Southern Coke, No. 2 | 15.50 to 16.00 |
| Southern Coke, No. 3 | 15.00 to 15.50 |
| Southern Coke, No. 4 | 14.75 to 15.25 |
| Southern Coke, No. 1 Soft | 16.00 to 16.50 |
| Southern Coke, No. 2 Soft | 15.50 to 16.00 |
| Southern Coke, Gray Forge | 14.25 to 14.75 |
| Ohio Silvery, 8 per cent. Silicon | 19.70 |
| Lake Superior Coke, No. 1 | 16.70 to 17.20 |
| Lake Superior Coke, No. 2 | 16.20 to 16.70 |
| Lake Superior Coke, No. 3 | 15.70 to 16.20 |
| Standard Southern Car Wheel | 22.25 to 22.75 |
| Lake Superior Car Wheel | 21.75 to 22.25 |

(*By Mail.*)

**Coke.**—The market continues active in both the Pocahontas and Virginia fields for prompt shipment, due to the continued strike troubles in Alabama, and it is understood that a large part of the Wise County field has capacity orders booked for the balance of the year. Some of this last brand of Coke was sold the past few days in this market at $1.85, at oven. Little is doing in Foundry grades. A price of $2 represents about what any one of the favorite brands of Foundry Coke will bring for nearby shipment. Pocahontas Furnace Coke is now quoted at $1.65 to $1.85 for nearby shipment, although some has been sold in this market within the past few days at $1.55, at oven, for immediate shipment. Little is heard in this market of the Connellsville product.

**Finished Iron and Steel.**—Dealers differ materially concerning reports of business for the current month in finished lines. One large dealer who handles a general line, and a very comprehensive one, states that August will show 50 per cent. increase in sales over July. Another dealer, whose line is limited to a half dozen specialties, reports that August will not be so good as July. An improvement is noted with all dealers in Iron and Steel Bars, and there have been some very good shipments of Structural Steel during the month. Collections are only fair. Dealers' prices to the trade are as follows, f.o.b. Cincinnati: Iron Bars, carload lots, 1.65c., base, with half extras; small lots from store, 1.85c., base, half extras; Steel Plates, carload lots, 1.75c., base, with half extras; small lots from store, 1.85c., base, half extras; Base Angles, carload lots, 1.85c., base; small lots from store, 2.10c.; Beams, Channels and Structural Angles, 1.85c., base; small lots from store, 2.10c.; Plates, ¼-in. and heavier, carload lots, 1.85c.; small lots from store, 2c.; Blue Annealed Sheets, heavy, No. 16, carload lots, 2.15c.; small lots from

store, 2.50c.; No. 14, carload lots, 2.05c.; small lots from store, 2.40c.; No. 10 and heavier, carload lots, 1.95c.; small lots from store, 2.20c.; No. 12, carload lots, 2c.; small lots from store, 2.30c.; Sheets (Light), Black, No. 28, carload lots, 2.65c.; Galvanized Sheets, No. 28, carload lots, 3.70c.; Steel Tire, 4-in. and heavier, carload lots, 1.95c.; Plates, 3-16 and No. 8, carload lots, 2c.; small lots from store, 2.20c.

**Old Material.**—It continues a dealers' market, and the large concerns differ as to the volume of business going. The majority of local Scrap dealers report the market dull and listless and the attitude of the railroads somewhat mystifying. The latter seem to be determined to run prices of Old Material higher before they will part with it. A report stating that the Pennsylvania Railroad has sold a tonnage of assorted Scrap on strict specifications to mills in the Pittsburgh District at $15 is not generally believed here. One dealer has bought in Mexico for shipment abroad from Vera Cruz port a large tonnage of Old Iron Rails, and will clear, it is said, a handsome profit. We quote dealers' prices f.o.b. Cincinnati, as follows:

| | |
|---|---|
| No. 1 R. R. Wrought, net ton | $11.25 to $12.25 |
| Cast Borings, net ton | 5.00 to 5.50 |
| Heavy Melting Steel Scrap, gross ton | 12.50 to 13.00 |
| Steel Turnings, net ton | 6.00 to 7.00 |
| No. 1 Cast Scrap, net ton | 11.50 to 12.50 |
| Burnt Cast, net ton | 8.00 to 9.00 |
| Old Iron Axles, net ton | 14.50 to 15.50 |
| Old Iron Rails, gross ton | 13.00 to 14.00 |
| Old Steel Rails, long, gross ton | 11.50 to 12.50 |
| Old Steel Rails, short, gross ton | 11.50 to 12.50 |
| Relaying Rails, 56 lb. and up, gross ton | 19.00 to 20.00 |
| Old Car Wheels, gross ton | 12.50 to 13.00 |
| Low Phosphorus Scrap, gross ton | 13.00 to 14.00 |

The Licking Rolling Mill Company, Covington, Ky., which has recently been reorganized under the direction of the Droeges, has announced its intention to begin rolling Bars on Monday, August 31, after a several months' shutdown, partly due to the fire of last February, which did considerable damage. Fred Droege is president and superintendent, under the reorganization; T. H. Carruthers, of the Globe Rolling Mill Company, is vice-president, and John Droege is treasurer. The capacity of the mills is about 2500 tons a month, and the output for the present will be confined to 5 in. to ⅜ in. round and 8 in. to ¾ in. flat.

All 10 mills at the new plant of the Andrews Steel Company, Newport, Ky., are now in operation, running three turns a day of 24 hours, and with 400 men on the pay roll. The output is from 350 to 400 tons a day.

## New York.

NEW YORK, August 26, 1908.

**Pig Iron.**—The chief event in this district during the week has been the placing of orders for 15,000 tons of Pig Iron by a pipe shop, at private terms. There is a good deal more interest in the market, and some good buying by important interests is in sight. Makers are firmer and are holding out for better prices. Still some distant Irons are being sold in this market at a lower price. We quote, at tidewater, Northern No. 1 Foundry, $17 to $17.50; No. 2 Foundry, $16.50 to $16.75, and No. 2 Plain, $15.50 to $16.00. Alabama Irons are quoted $17.50 to $17.75 for No. 1 Foundry and $16.75 to $17.25 for No. 2 Foundry.

**Steel Rails.**—The standard section market is still conspicuously inactive. A frog and crossing works has ordered 2000 tons in the past week and a 500-ton lot for the Parkersburg, Marietta & Interurban trolley line, with miscellaneous orders, bring the total to about 4500 tons. Any talk of contracts for 1909 is quite premature. The producers of Light Rails, the steel works on the one side and the re-rolling mills on the other, are scrambling for what business is offered, and the Steel manufacturers have named some pretty low prices—uncomfortably low for re-rolling mills paying current prices for re-rollers.

**Structural Material.**—The Harriman bridge orders recently talked about turn out to be the enlargement to the extent of 4000 tons of specifications on current contract with the American Bridge Company, and amounts to that much new business, though not for new work. The two jobs on which bids have gone in in the past week—4600 tons for the Long Island and 6000 tons for the Carolina, Clinchfield & Ohio—are still unawarded. The contractors for the Educational Building at Albany, 10,000 tons of Steel, are said to have placed the fabrication with the Hay Foundry & Machine Company, but the destination of the plain material is not yet known. The Lackawanna Steel Company will furnish the Steel, except the Plates, for the new building on the Everett House site. There is still a large volume of business ahead of the fabricators, but it takes shape slowly. The cutting of prices is not so much a thing of the past as the situation a few weeks ago seemed to promise. Eagerness to get tonnage into the mills has led to some further marked concessions recently. On plain material we quote, mill shipments, tidewater delivery, as follows: Beams, Channels, Angles and Zees, 1.76c.; Tees, 1.81c. On Beams, 18 to 24 in., and Angles, over 6 in., the extra is 0.10c. From store Structural Material, cut to length, is sold at about 2¼c.

**Bars.**—Bar Iron is in light demand, with prices ranging from 1.41c. to 1.46c., tidewater. Steel Bars are maintained at 1.56c., tidewater.

**Plates.**—Local business has been confined to small lots and inquiries do not indicate an early increase. Manufacturers make the following quotations on standard sized Plates at tidewater: Sheared Plates, 1.76c. to 1.86c.; Flange Plates, 1.86c. to 1.96c.; Marine Plates, 2.16c. to 2.26c.; Firebox Plates, 2.65c. to 3.50c., according to specifications.

**Cast Iron Pipe.**—A feature of current business is the greatly augmented inquiry for Cast Iron flange work, such as is used in high pressure steam piping, high pressure water connections, &c., in manufacturing plants, thus indicating that manufacturers are better engaged than they were. It is understood that the 1000 tons of Pipe to be used in the Pipe laying contract placed by New York City last Wednesday goes to a Virginia foundry. The city opens bids to-day for 1800 tons, and will shortly be in the market for about 4000 tons more. Aside from this, the most important contract coming out is that of Springfield, Mass., on which bids will be opened September 9. It is understood that a foundry in central New York secured the contract for 1400 tons for Brandon, Vt., at $24.20, delivered. An eastern Pennsylvania firm was awarded the contract for 650 tons for Newport, R. I., at $22.25, delivered. Unless business improves decidedly in the next few weeks, it is regarded as quite likely that few Northern Pipe foundries will be in operation this winter. Quotations on carload lots of 6-in. are continued at $23.50 to $24.50, tidewater.

**Old Material.**—Old Steel Rails are in somewhat better demand. The railroads have been holding such stock for higher prices and consumers have been unsuccessful in their efforts to weaken the position of holders, consequently both consumers and dealers have recently been more disposed to meet the views of the railroads and make purchases. The foundries are doing a little more buying, and it is noteworthy that the New England foundries are now somewhat more active in the market. The cheaper classes of rolling mill stock, such as Borings, Turnings, &c., are moving in fair volume. Some buying of Heavy Melting Steel Scrap is also observed. The market, however, is still mainly a dealers' market, the dealers being firm in their opinion that they will be able to hold prices even though trade may be dull for some little time. They look for much better business before winter opens, expecting that consumers will then be obliged to draw on their supplies. We quote as follows, per gross ton, New York and vicinity:

| | |
|---|---|
| Old Girder and T Rails for melting | $11.25 to $11.75 |
| Heavy Melting Steel Scrap | 11.25 to 11.75 |
| Old Steel Rails, rerolling lengths | 13.00 to 14.00 |
| Relaying Rails | 21.50 to 22.50 |
| Old Iron Rails | 15.50 to 16.00 |
| Standard Hammered Iron Car Axles | 17.00 to 17.50 |
| Old Steel Car Axles | 15.50 to 16.00 |
| No. 1 Railroad Wrought | 14.00 to 14.50 |
| Iron Track Scrap | 10.50 to 11.00 |
| No. 1 Yard Wrought, long | 13.00 to 13.50 |
| No. 1 Yard Wrought, short | 11.50 to 12.00 |
| Light Iron | 6.00 to 6.50 |
| Cast Borings | 6.00 to 6.50 |
| Wrought Turnings | 7.00 to 7.50 |
| Wrought Pipe | 10.50 to 11.00 |
| Old Car Wheels | 14.50 to 15.00 |
| No. 1 Heavy Cast, broken up | 13.00 to 14.00 |
| Stove Plate | 11.00 to 12.00 |
| Locomotive Grate Bars | 11.00 to 11.50 |
| Malleable Cast | 12.50 to 13.00 |

**Ferroalloys.**—Considerable interest is evident in the market for Ferromanganese, but the price is unchanged, at $44 to $44.50, seaboard. Some resales, however, have been made at slightly lower prices. Numerous orders are in the market for low grade Ferrosilicon, but 50 per cent. is unchanged, at $70, makers' works.

## Iron and Industrial Stocks.

NEW YORK, August 26, 1908.

The stock market maintains its strength, despite the widespread belief that security values have advanced much beyond the level warranted by either present business conditions or the promise of the immediate future. The past week was noteworthy for exhibitions of flagrant manipulation in both railroad and industrial stocks, which culminated in a spectacular performance on Saturday, which is now being made the subject of investigation by the officers of the Stock Exchange with a view to punishing the offenders. The performance on Saturday caused a feeling of uneasiness which greatly diminished transactions in the current week. The range of prices on active iron and steel stocks from Thursday of last week to Tuesday of this week was as follows: United States Steel common 44⅝ to 46, preferred 107½ to 108⅞; Car & Foundry common 39½ to 40⅛, preferred 103 to 103¼; Locomotive common 53¾ to 56½, preferred 105 to 107; Bethlehem Steel common 21 to 23, preferred 49⅞ to 51⅝; Steel Foundries, new, 32 to 36; Cambria Steel, 34

to 35; Colorado Fuel, 32⅞ to 34; Crucible Steel common 7¼, preferred 47 to 48; Pressed Steel common 33¼ to 34½, preferred 96; Railway Spring common 41½ to 43; Republic common 22 to 23¼, preferred 76¾ to 78¾; Sloss-Sheffield common 60½ to 62; Cast Iron Pipe common 26 to 27, preferred 75 to 76; Can common 5¾ to 6⅛, preferred 60½. Last transactions up to 1.30 p.m. to-day are reported at the following prices: United States Steel common 45⅜, preferred 108¼, bonds 100; Car & Foundry common 39⅞, preferred 103; Locomotive common 55¼, preferred 107; Colorado Fuel 33½; Pressed Steel common 34, preferred 96; Railway Spring common 41½; Republic common 22⅝, preferred 77; Sloss-Sheffield common 61; Cast Iron Pipe common 26, preferred 75; Can common 6, preferred 60½.

The Chicago Pneumatic Tool Company has issued a financial statement for the six months ended June 30, 1908, which compares as follows with the first six months of 1907:

| | 1908 | 1907. |
|---|---|---|
| Net earnings | $149,958 | $507,528 |
| Depreciation, repairs and renewals | 47,122 | 108,633 |
| Balance | $102,836 | $398,895 |
| Bond interest | 59,750 | 57,500 |
| Balance | $43,086 | $341,395 |
| Sinking fund reserve | 25,000 | 25,000 |
| Available for dividends | $18,086 | $316,395 |
| Dividends | ..... | 125,575 |
| Surplus for six months | $18,086 | $190,820 |
| Previous surplus | 1,008,074 | 878,409 |
| Total surplus | $1,026,160 | $1,069,229 |

The company includes a statement covering the six years ended December 31, 1907, as follows:

| | |
|---|---|
| Gross profits | $4,771,273 |
| Depreciation, repairs, renewals, &c | 904,433 |
| Interest and sinking fund | 992,129 |
| Available for dividends | 2,874,711 |
| Dividends | 1,494,209 |
| Surplus | $1,380,502 |
| Appropriation for improvements and development | 372,428 |
| Profit and loss surplus, December 31, 1907 | $1,008,074 |

## Metal Market.

NEW YORK, August 26, 1908.

**Pig Tin.**—Business has been exceedingly dull and declining prices continue. It is estimated that the business during the week has been less than 200 tons. Price changes for 5-ton lots of Spot Tin, New York City delivery, have been as follows:

| | Cents. |
|---|---|
| August 19 | 29.35 |
| August 20 | 29.30 |
| August 21 | 29.25 |
| August 24 | 29.20 |
| August 25 | 28.85 |
| August 26 | 29.25 |

The sharp drop in London on Tuesday was undoubtedly the result of lack of business on this side and also prospects for a further increase in the visible supply. Arrivals so far this month are 2267 tons, and there are afloat for American ports 1905 tons. The London market closes about £1 lower than last week, at £132 10s. for Spot and £133 5s. for Futures.

**Copper.**—The market is at a standstill, with very little inquiry, and almost no business from either domestic or foreign consumers. Prices are, perhaps, a shade lower, and Lake can probably be had from second hands at 13.62½c. to 13.75c., although producers are asking 14c. Two of the three principal sellers of Electrolytic are out of the market—one because the present supply has been disposed of, and the other holding for higher prices. The third is not very aggressively pushing business, but is willing to accept orders on a basis of 13.50c., cash. Foreign consumers can probably buy at about 13.40c. A firmer tendency was noted in the market this afternoon. Lake producers are undoubtedly in a good position, comparatively speaking, having disposed of most of September's output and the greater part of October's. Exports to Europe were large, amounting to 21,125 tons for the first 25 days of the month. Notwithstanding this, stocks continue to increase in America. The London market is about 10s. lower than last week, closing to-day at £60 7s. 6d. for spot and £61 2s. 6d. for futures.

**Pig Lead.**—Outside sellers of Lead are shading the market, and spot metal can be had at 4.57½c., and possibly 4.55c., New York. The leading interest continues to ask 4.60c. for shipment Lead in 50-ton lots. The market at St. Louis is slightly easier at 4.40c. to 4.45c.

**Spelter.**—No further reduction in price is noted, but the market is without animation. Prime Western brands are held at 4.50c. to 4.55c., St. Louis, and 4.65c. to 4.70c., New York.

**Antimony.**—The price is unchanged, Cookson's being quoted at 8c., Hallett's at 8.25c. to 8.50c. and outside brands at 7.75c. to 8c.

**Tin Plate.**—The only interesting feature in the Tin Plate market is the news that the leading consumer of Oil Plates in America has again begun to buy foreign Plates, and the market in Swansea has advanced 1½d., now being quoted at 12s. 4½d. For 100-lb. I. C. Coke Plates the price is unchanged, at $3.89, New York, and $3.70, Pittsburgh.

**Old Metals.**—Business continues dull and dealers' selling prices are unchanged from last week, as follows:

| | Cents. |
|---|---|
| Copper, Heavy and Crucible | 12.75 to 13.00 |
| Copper, Heavy and Wire | 12.50 to 12.75 |
| Copper, Light and Bottoms | 11.50 to 11.75 |
| Brass, Heavy | 9.25 to 9.50 |
| Brass, Light | 7.25 to 7.50 |
| Heavy Machine Composition | 12.00 to 12.25 |
| Clean Brass Turnings | 8.25 to 8.50 |
| Composition Turnings | 9.50 to 9.75 |
| Lead, Heavy | 4.35 |
| Lead, Tea | 4.00 |
| Zinc Scrap | 3.25 to 3.50 |

## Late Pittsburgh News.

PITTSBURGH, PA., August 26, 1908.—(*By Telegraph.*)—New business has been coming to the Standard Underground Cable Company, Pittsburgh, so rapidly during the last few months that J. W. Marsh, vice-president and general manager, states that within the next few weeks all its plants will be running to its fullest capacity. The company is now employing 65 per cent. of its normal force of men. It has three plants. One is in Pittsburgh, at Sixteenth street and the Allegheny Valley Railroad, employing 200 men when running full; another is at Perth Amboy, N. J., employing 750 when in full operation, and the third is at Oakland, Cal., employing 50 when operating full. The company manufactures bar and insulated wire and underground, aerial and submarine cables for electrical uses.

The Youngstown Car Mfg. Company, Youngstown, Ohio, manufacturer of industrial cars, has received an interesting order from the United States Government, calling for a freight car of the unusually large capacity of 160,000 lb. The car will be built entirely of steel, to carry the enormous weight, and will be of special design, to meet the conditions of the navy yard in California, to which point it will be shipped.

The First National Bank, Pittsburgh, this week will place the contract for its new building to be erected at Fifth avenue and Wood street. If a satisfactory price to the directors is made on the 25-story office building, that will be the one selected, and will require 6000 to 8000 tons of steel. If the directors believe the price on this structure is too high, a five-story building, to be devoted entirely to banking purposes, will be erected, which will require about 1000 tons.

The National Tube Company, Pittsburgh, has received an order through the United States Steel Products Export Company, for 22 miles of 6¼ in. casing, to be furnished to the United States Gas Company, St. Catherines, Canada.

Spang, Chalfant & Co., Pittsburgh, will dismantle the mill building covering the present 16 in. mill, plate and puddling mills, and will replace it with a modern steel building, requiring 600 to 800 tons of structural steel. The building to be torn down was erected in 1828.

Reports that the Best Mfg. Company, Pittsburgh, manufacturer of valves and pipe fittings, had sold its business to the Crane Company, Chicago, are officially denied. There has been no basis whatever for the report.

Fire practically destroyed the plant of the Baltimore Retort & Fire Brick Company, Baltimore, Md., August 17. The loss is estimated at $50,000, well protected by insurance. The company states that the fire did not injure its stock of finished goods, orders for which can be filled promptly. Temporary buildings will be erected at once and manufacturing resumed.

There has been just issued the first number of an illustrated monthly, *As Duas Americas*, which, printed in Portuguese, is to devote itself to the service of the trade with Brazil. The president of the company, with headquarters in the Pulitzer Building, New York, is Dr. Moniz de Bettencourt, while the editor and manager is L. De F. Branco.

Vivian Bond & Co., importers and dealers in metals and ferroalloys, have opened a branch office in Pittsburgh. This will be in the Frick Building Annex, in charge of Andrew C. Daft.

# The Machinery Trade.

NEW YORK, August 26, 1908.

General conditions are without change. There is a slight picking up of small business, indicating that replacements necessitated by the natural wear and tear upon machinery of such portions of the industries as have kept in motion are increasing. The business which is going through nowadays indicates that the smaller and medium sized concerns are taking care of their plants in much better shape than are the larger corporations. Machinery houses who cater to the smaller purchasers are now in a much better frame of mind than the big merchants whose organizations and fixed charges are keyed up to the pitch of large transactions. Of course the big merchants are getting their share of the increase as well as their smaller competitors, but they need orders of some magnitude before they will feel that they are really doing business. One of the large machinery merchants of Liberty street yesterday spoke of his machine tool business increasing $36,000 in the last week, but this he characterized as a mere "flea bite" as compared with the business which would be necessary to make itself felt in his large organization. In this connection it is interesting to note that this merchant has kept his entire organization intact throughout the depression. This has been a rather expensive procedure, but amply justified by the remark "but we are ready for the avalanche when it does come, and no one can tell just when that may be." Going still further, this machine tool merchant has had his men out on the road studying conditions and doing missionary work. One of his men has just concluded a very thorough tour of the Pacific Coast and Western States, sending home comprehensive reports of general conditions wherever he traveled. These reports are first hand information, upon which his house gauges its operations. It will be seen that this particular merchant keeps his ear very close to the ground and his present efforts will be repaid handsomely when the turn comes, for he will be ready to meet it intelligently. This particular merchant says that present indications point to no great resumption before the first of next year. He expects still further retrenchment on the part of some of the big corporations before election time, but a short whirlwind campaign immediately preceding the election and a satisfactory result at the polls. His traveling men report that great injury has been done by the over-optimistic reports circulated by the daily press, which, instead of buoying things up, as was intended, have sown distrust. He summarized his conclusion by saying: "The only thing the American business man can do is to 'stand pat' absolutely, maintain a bold front, and, without overestimating the influence of every little development, hold himself and his organization in readiness for a return of prosperity which must come and will come as soon as the people are assured of stability at Washington for the next four years, and manufacturers are assured that the tariff upon which their business rests will not be knocked from underneath them."

An important move in connection with prices is a reduction of 10 per cent. made by a leading manufacturer of power presses and similar machinery. It is stated in the trade that this change will doubtless be followed by other manufacturers of this class of machinery, as the prices of the company making the reduction have always been regarded as a standard with which other prices were compared.

The International Steam Pump Company reports that nothing has been done as yet in connection with the machine tool list, which has been in hand for some weeks past. That this company is disposed to proceed with necessary improvements, however, is evidenced by the fact that it has just ordered Manning, Maxwell & Moore, Inc., to make deliveries on about $25,000 worth of machine tools which were ordered about nine months ago, but on which deliveries were delayed by mutual agreement. Purchasing Agent Morris of the Pump Company reports that he has had a very busy month placing orders for miscellaneous equipment and supplies, which in the aggregate foot up to a large total, although lacking importance so far as individual purchases are concerned.

Solon O. Friede, import and export merchant of Harbin, Manchuria, is in the market for complete equipment, and materials for constructing a sugar manufacturing plant of about 100 tons daily capacity for the utilization of either beets or cane. He is also in the market for the complete equipment and construction of a cordage plant to have an annual capacity of about 500 to 1000 tons. He is desirous of receiving from manufacturers a complete proposition, with all particulars and drawings pertaining to these plants.

W. H. Dexter, who is the Southern representative of the Lidgerwood Mfg. Company, 96 Liberty street, New York, and who, as noted in *The Iron Age* last week, is in the market for a large equipment of machine tools for a saw mill repair shop in the South, has not made any of the purchases as yet. It is expected that the matter will be closed in about a month.

The Connellsville Iron Works, New Haven, Pa., manufacturer of boilers, coal mine and coke plant equipment, steel vehicles, tanks, stacks and plate work, is extending its plant so as to increase its capacity for the production of a new type of steel body dump wagon, and is now in the market for additional machinery. The principal tools required at present are one rotary shear, one universal shear, one angle bender and a complete air compressing plant. The addition is to be 30 x 60 ft., of steel construction, with aluminum coated corrugated steel sheets manufactured by the Wilder Metal Coating Company, Connellsville, Pa., for siding and roofing. It is expected that before the end of this year the company will erect another building of about the same size to be used as a machine shop. This will necessitate the purchase of drill presses, shapers, lathes, planers and a number of other machine tools not yet decided upon. J. Whitaker, manager of the company, is in charge of the new work.

The Curtin-Hebert Mfg. Company, manufacturer of glove machinery, Gloversville, N. Y., is completing the incorporation of a company with a view of erecting a large new plant at Kingsboro. The new plant is to be a consolidation of the Curtin-Hebert Mfg. Company, and the business of H. J. Anthony, who is the proprietor of a large machine shop in Gloversville. The interested parties have already purchased a large acreage of land, where it is intended to erect a new modern machine shop and foundry. The plans for building have not been completed as yet, and it is possible that the actual work of construction will not be commenced until next spring.

Ground has been broken for a new plant at Pottstown, Pa., for the Wilbraham-Green Blower Company, Inc., of Philadelphia, Pa., manufacturer of Green rotary pressure blowers and gas exhausters. It is intended to erect an entire new system of shops which are to be completed by October 15, to be occupied by the company before November 1. David T. Jones, treasurer and general manager of the company, is in charge of the work.

Details are at hand concerning the 7000 barrel cement plant which is to be constructed near Alsen, N. Y., for the Seaboard Portland Cement Company, by the Fuller Engineering Company, Allentown, Pa. The buildings being constructed at the present time will have the following dimensions: Stone crushing house, 54 x 60 ft.; raw mill, 64 x 144 ft.; clinker mill, 64 x 144 ft.; gypsum storage, 22 x 44 ft.; engine room, 60 x 275 ft.; boiler house, 68 x 72 ft.; stock house, 114 x 256 ft.; packing house, 64 x 114 ft.; stone and clay storage, 104 x 160 ft.; kiln building and dryers, 84 x 324 ft.; gypsum house, 24 x 40 ft.; coal mill, 50 x 96 ft.; coal storage, 64 x 80 ft.; pumps and heaters, 16 x 48 ft.; pumping station, 30 x 40 ft. Contracts for the majority of the machinery have been placed, including kilns, dryers, with the Vulcan Iron Works, Wilkes-Barre, Pa.; boilers, with the Rust Boiler Company, Pittsburgh, Pa., engines, from the Nordberg Mfg. Company, Milwaukee, Wis.; Fuller-Lehigh mills from the Lehigh Car, Wheel & Axle Works, Catasauqua, Pa. Bids are now being received on the electrical equipment, and plans and specifications will soon be ready for some 600 to 800 tons of structural steel work for the plant. Bids will also be received shortly for transmission machinery. The plant is to be in operation April 1, 1909. H. G. Barnhurst of the Fuller Engineering Company is the mechanical engineer in charge of the work.

At a meeting of the Board of Directors of the Pennsylvania Power Company, Ellwood City, Pa., held August 18, it was decided to purchase a 500-kw. steam turbo generator in connection with the rebuilding of the company's plant, recently destroyed by fire. No further action was taken as to the purchase of equipment, and we are advised by Samuel A. Roelofs, vice-president of the company, that the development of the water power end of the plant is a matter that will be taken up later on and may possibly be delayed until next spring.

The Albany & Hudson River Railroad Company, with main office at 100 Broadway, New York City, and division office at Albany, N. Y., in charge of General Manager R. H. Smith, is planning extensive improvements at its power plant located at Stuyvesant Falls, N. Y. The improvements consist of one 2000-hp. steam turbine driven alternating generator, a 500-kw. motor generator set and the erection of a new boiler house. Work on installation of this equipment will be taken up late this fall or early in the spring of 1909.

S. P. Whinery, 95 Liberty street, New York, has recently completed arrangements with the Wilson-Snyder Mfg. Company, Pittsburgh, Pa., to handle its steam pumps in New York City and vicinity.

H. W. Petrie, Ltd., general machinery dealers of Toronto, Canada, are making inquiries in this market concerning American manufacturers of rock crushers of all types.

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The Youngstown Sheet & Tube Company, Youngstown, Ohio, has started up its Alice Furnace at Sharpsville, Pa., which has been idle for some months. The stack has a daily capacity of about 250 tons.

## New England Machinery Market.

WORCESTER, MASS., August 25, 1908.

Contact with manufacturers in many lines of industry serves to accentuate the fact that general manufacturing business continues to show improvement, usually slight, though occasionally on a larger scale. This does not, however, apply to the machine tool trade. The week past seems to have struck the bottom of business with both the machinery and supply dealers, it being the culmination of the summer dullness as usually happens in mid-August. There is no anomaly in the difference between the condition of business with the machine tool people and that of their customers. The dealers look upon improvement in other lines as the unavoidable preliminary to better conditions in their own trade. They are booking some orders, but the volume is small. Inquiries are common enough, and some interest is manifested in the form of calls at the stores of the dealers. It seems as if the warm weather was affecting even those buyers who have sought and received formal bids for machinery, for they are in no hurry to close contracts. Such a case is that of the Watertown Arsenal, its recent bids under requisition still being held up for some reason unknown to the dealers, who are fretting over the delay, each wishing to book his share, whatever that may be, in his August business.

It is interesting to note that the total of business which some, if not all, of the dealers are receiving is greater than in the corresponding period of 1904, which was the last time of dullness. One of the important machinery houses of Boston was much surprised in looking back for comparison to find that business now is about 33 1-3 per cent. better than it was in 1904, although it should be worse, taking everything into account, including the normal four years' growth of the market served by the company. This does not mean that the machine tool business possesses any degree of strength at this time, but it indicates that each month's totals are larger by comparison than is generally realized.

It is not expected by the trade that business will revive as rapidly in New England as in the West and South, where the influences of the crops act more quickly. But a great harvest, coming as yet another in a long series, is looked to as a factor which should have a strongly beneficial effect sooner or later in every line in all parts of the country. The manufacturers whose products go direct to the farms are already very busy either in taking care of immediate demand or preparing for the wants of the agricultural sections for next season.

Dealers in the large centers of the country are preparing carefully for a very vigorous campaign, which will begin as soon as the market returns to a somewhat more active condition. Some houses are adding to their selling forces, either by taking back men who were laid off because of the great dullness, or else by adding new men. It is the belief that the present is an excellent time to train young men as salesmen. One house is taking on four young graduates of engineering schools, who will be employed in the Chicago District. They will be given work in the store to begin with and will be pushed on as rapidly as their development will permit. It is expected that this new blood will play an important part in the market in the next few years.

The plant of the Providence Steel Casting Company, Providence, R. I., has been sold at public auction to Frank C. Stender & Co. of that city. The new owners are engaged in business foreign to metal manufacturing, the purchase being made because the price was so low as to warrant the transaction as a speculation. They state that they have no definite plans for the operation of the foundry; the property may be sold outright, or it may be dismantled, or the new owners may finally decide to resume its operation as a steel foundry. The plant is equipped to manufacture steel castings by the Tropenas process. Built and equipped several years ago, it has never been operated at a profit, and for a year or more has been in the hands of a receiver, by whom the recent sale was made.

The International Power Company will hereafter manufacture the Amoskeag steam fire engine at Providence, R. I., having removed the business from Manchester, N. H., where the engine has been built for years under contract with the Manchester Locomotive Works. Hereafter the industry will be located in the Corliss Works of the American & British Mfg. Company, a constituent corporation of the International Power Company. The Amoskeag Company takes its patterns and jigs and some special tools to Providence, and the equipment of the American & British plant will serve its purposes otherwise, excepting that sheet metal work and nickel plating will be done by outside parties for the present. The sale of the Amoskeag engine is now being pushed with vigor, and it is believed its manufacture will develop into an important industry. It is thought by the American & British management that new machinery will be required in the future for the new department of the business.

The Bristol Engineering Corporation, Bristol, Conn., which will manufacture automobile parts and complete automobiles, with a specialty of taxicabs, as mentioned last week, will occupy a new plant containing 20,000 sq. ft. of floor space. The machinery has been purchased. The company has a capital stock of $500,000. A. F. Rockwell is the president, De Witt Page, vice-president, and F. E. Moskovics, secretary and treasurer.

A commission of which David F. Slade, Fall River, Mass., is the chairman, is seeking a site for a new industrial school which will constitute a part of the correctionary system of Massachusetts. An act of the last legislature provided for the establishment of this institution and appropriated $85,000 as an initial fund for the purpose. The intention is to combine industrial training with reformatory treatment of boys. It is understood that the school will be equipped in a manner similar to the industrial schools connected with the general educational systems of many of the cities and larger towns.

The Woonsocket Machine & Press Company, Woonsocket, R. I., manufacturer of textile machinery, has awarded the contract for an addition to its large plant. The building will be 200 ft. long and will contain 38,000 sq. ft. of floor space, which will be utilized for machine shop purposes. The company states that present tools will contribute largely toward the equipment of the new building, but that some new machinery will probably be wanted later, though this is a matter that is not entirely settled, and purchases may be deferred.

The American & British Mfg. Company has been held back in its plans for the rebuilding of that portion of its works at Providence, R. I., that was destroyed by fire several months ago, because of delay in the settlement of the insurance, and it is doubtful if anything is done in the way of new buildings before next spring. Makeshift repairs will be made, in walling off from the open air those parts of the buildings that were saved, and power and heat installed. A small amount of machinery has been purchased to replace absolutely necessary tools, but the bulk of the new equipment will not be bought until the new buildings are ready, probably next season.

## Chicago Machinery Market.

CHICAGO, ILL., August 25, 1908.

The North Platte Electric Light & Power Company, North Platte, Neb., contemplates improvements to its plant which will necessitate the purchase of one 250-hp. boiler; two generator sets, one of 150 kw. and the other 100 kw. capacity, 60 cycle, and an engine of 125 hp. It is also planned to install a series of street lighting system of 8 arcs and 100 32 or 50 cp. incandescents, probably using tungsten lamps.

The La Junta Electric Company, La Junta, Colo., is preparing to change all of its remaining direct current machines for the alternating current type. This improvement will probably necessitate the purchase of another alternating current generator and a motor generating set for furnishing direct current on an unexpired long time contract. Two of the old engines will probably be discarded and one new Corliss installed in their place. More permanent changes are awaiting the development of the Kansas, Colorado & Railroad Company, which organization claims that when its contemplated plants are in operation it can supply power to all companies along the Arkansas Valley for less than it is now being developed by the individual companies.

The Boca Ancha Mining Company, S. A., Ayutla, Jalisco, Mexico, expects to supplement the power derived from its present steam plant by a hydro-electric installation on a nearby river, which will develop from 100 to 300 hp. This work will be begun soon after October 1, and to complete the installation the company will purchase a water wheel of Pelton class, an alternating generator, transformers, motors, electric pumps, copper wire, line material, &c. C. E. Lee is treasurer.

The Stillwater Public Service Company, Stillwater, Okla., has secured a franchise from the City Council for the installation of an electric light plant and water works system. It is understood that the pumps of the water works system will be operated by electricity. The construction and equipment of this plant will be in charge of Burns & Co., 705 Isabella Building, Chicago, who will purchase the machinery and material required for the installation.

Additions to the equipment of its plant being considered by the Duncan Light & Ice Company, Duncan, Okla., include a 100-kw. direct current, three-wire, 250-volt generator, direct connected. The secretary of the company is W. L. Bumpass.

The Yoder Ice & Electric Company, Van Alstyne, Texas, contemplates increasing the efficiency of its plant, and present plans call for the installation of an 18 to 20 kw. single phase generator, 1000 volts, 60 cycle, with exciter, and engine with belted drive. D. P. Yoder is superintendent and manager.

The Pipestone Electric Light, Heat & Power Company,

Pipestone, Minn., will install a direct connected 100-kw., 250-volt, direct current generator in its plant. The superintendent of the company is Carl Oppen.

J. H. O'Rourke, proprietor of the electric light plant at Clio, Mich., has completed the erection of new poles and extension of transmission lines in the city, and contemplates the installation of a new boiler. The latter improvement, however, will not be undertaken until some time next year.

The Marseilles Land & Water Power Company, Marseilles, Ill., will build transmission lines to Ottawa, Ill., which will be supported by reinforced concrete poles. The company has in view the construction of a new power house and the installation of two 600-kw., 2300-volt, 60-cycle, three-phase generators, but plans for this improvement have not been fully developed and will not be undertaken at present.

The Ava Electric Light Plant, William C. Dean, president and proprietor, Ava, Ill., is contemplating the installation of an ice plant and desires information concerning, and estimated cost of, a 5-ton ice plant, with and without engine. The ice machine will probably be connected to the dynamo or engine with a silent running chain.

The Houghton County Traction Company, Houghton, Mich., has contracted with the Stone & Webster Engineering Corporation, Boston, Mass., for the extension of its lines from Wolverine, Mich., to Mohawk, Mich. The contract includes the construction of the track, bridges, overhead work, a car barn, a small substation, and the purchase of some new cars. The work as planned will cost about $125,000.

**Catalogues Wanted.**—W. L. Morrison of Conway, Iowa, dealer in farm machinery, windmills, vehicles and hardware, is desirous of receiving prices and catalogues of hand presses for stamping galvanized iron and tin plate.

## Cincinnati Machinery Market.

CINCINNATI, OHIO, August 25, 1908.

With the approach of September comes a sense of relief to most of the larger tool and machinery manufacturing plants of this section, to judge from their words, for nine-tenths of them believe that it is the dawn of a new era in business and many are making preparations accordingly. An evidence of this is seen at the headquarters of the Cincinnati and National Metal Trades associations, where more activity is observed than had been noticed at either place for many months. At the office of the Cincinnati Metal Trades Association Employment Bureau, presided over by Secretary John M. Manley, the records show applications increasing daily from the larger manufacturing plants asking for hands. One day shortly after the middle of the month inquiries for help from 12 establishments summed up as follows: Eight patternmakers, 2 boring mill, 1 planer, 1 scraper and spotter, 6 lathe, 1 vise, 1 milling machine and 1 Jones & Lamson lathe hands; 2 craters and boxers and 2 monitor lathe hands; and in the interval there have been requests for foundry laborers, and especially those skilled in brass and valve work.

The vacation season is at its hight in this territory in the month of August and has been specially marked the last two weeks, so that the office end of the big manufacturing concerns does not show up to its normal advantage; but from those in charge it is learned that the correspondence sections evidence a very decided increase in inquiries which look promising. There is still much difficulty experienced in closing up deals, and several of the planer, shaper, lathe and milling machine manufacturers have deals on which are hanging fire.

The most encouragement continues to come from the East, although manufacturers of small and medium sized units in electric power report considerable business from the far West and Northwest mining regions. The automobile industry has proved of immense value to tool builders of this section, particularly the last few months. Some expensive tools have been sold within four or five weeks, and the greater part have gone to the builders of automobiles. One of the largest builders of upright drills in the world, whose works are located here, feels much encouraged over recent inquiries. This concern is getting out some new patterns, and its foundry is already at work on some heavy and intricate castings to be used mainly in setting up a series of special gang drills.

The Triumph Electric Company is busy on small work and has some correspondence, which looks promising, for several large dynamos.

Commissioner Wuest of the National Metal Trades Association has just returned from Kenosha, Wis., where he was in conference with the officials of the Badger Brass Mfg. Company, which has just concluded a stubborn but successful struggle with a strike. As a direct result of the National Association's good work in handling this trouble, applications were secured from every eligible manufacturing plant in Kenosha for membership in the organization, and this encouraging information is being sent out in bulletin form to the membership throughout the United States. Reports on file at the national headquarters indicate a better feeling in all sections, with a marked improvement in the East. Secretary Nelson W. Dingwall of the National Association returned to-day from an important business trip to the East.

Railroad supply men in Cincinnati are being very generally congratulated by those familiar with the circumstances which developed such a successful meeting of the International Association of Railroad Blacksmiths just concluded. These supply houses co-operated liberally with the organization's officers in furnishing funds with which the entertainment was provided. Secretary and Treasurer A. L. Woodworth (who was re-elected), speaking for the organization, said: "Our meeting here (Cincinnati) has been the most successful in the history of our order." Niagara Falls was selected as the place for the 1909 meeting, Philadelphia losing by one vote. The officers elected are: President, J. W. Russell, Renova, Pa.; first-vice-president, G. W. Kelly, Elizabeth, N. J.; second vice-president, John Connors, Montgomery, Ala.; secretary-treasurer, A. L. Woodworth, Lima, Ohio; chemist, G. H. Williams, Boston, Mass.

Supply dealers do not yet enthuse over conditions. There are some fairly good sales being made of standard tools and special machinery, but prices are closely contested. Collections are only fair.

The foundries are slowly increasing their melts, but as yet only a small part of their output is going to tool manufacturers, who are still selling largely from the stock floor.

One large local foundry, whose business should be a fair index to the general situation and which has been doing from 12 to 15 tons a day and taking off five heats a week, has increased to six heats a week of 20 tons a day; but this is practically all structural work, very little being for the tool and machinery trade.

The activity in Southern pig iron and the large purchases made in this territory the past few weeks have encouraged foundrymen to believe that the future holds good promise for this branch of the trade, and as a consequence the foundry business is in pretty good shape.

Reports from Hamilton, Ohio, indicate that Charles Buran and J. C. Manson, well known in iron and steel circles of that city, are in Jonesboro, Ark., organizing a company to build a plant for the manufacture of boilers.

The Ohio Corrugated Culvert Company, Middletown, Ohio, has been making some tests of its product for the benefit of county commissioners and others interested in this character of piping. The material used in the manufacture of the company's culverts is American ingot iron, produced by the American Rolling Mill Company of the same city. The claim is made that this iron is used by 30 of the 33 concerns in the country engaged in the manufacture of corrugated culverts.

The torch was applied to the new furnace of the Hamilton Iron & Steel Company at Hamilton, Ohio, at 11.15 a.m. on Saturday, August 22. President Pearson was in charge of the ceremonies, and prominent among those in attendance were Secretary Reamy Field, N. S. Keith and F. R. Williams of the Cincinnati Trust Company, and L. F. Walter and Robert Nicholas of Walter-Wallingford & Co. The first cast was made on Sunday morning, 23 hr. and 35 min. after firing. The product is to be known as Miami, a typical Northern foundry iron, and is to be marketed exclusively by Walter-Wallingford & Co. of Cincinnati and Pittsburgh.

## Philadelphia Machinery Market.

PHILADELPHIA, PA., August 25, 1908.

Recent buying in the local machinery market has been of a desultory character. The volume of business coming out is small. Inquiries have been light and confined largely to single tool propositions, although some fair business is pending, the most important being the requirements for a repair shop for the Electrical Bureau of the city, for which bids were opened last week, but awards have not yet been made. The bids have not yet been scheduled, and no definite date has been set on which the awards will be announced. Some of the smaller concerns have been in the market for a few tools, but there seems to be no haste in placing orders. Several larger concerns have made some tentative inquiries for equipment, but as these are dependent to a large extent on materially improved business conditions in the near future, their value as order producers is somewhat uncertain.

No extensive buying from industrial plants is anticipated in the immediate future. In fact, but few of these are running much over 50 per cent. of their capacity, and until they get their present equipment more fully employed they can hardly be expected to purchase much in the way of machinery unless it may be for something of a special nature. There has been some scattered municipal business for special equipment placed and more orders of this char-

acter are pending, but the demand for the usual run of machine tools is comparatively light.

The trade, however, is encouraged with the outlook for business during the fall months. The placing of large contracts for equipment in the near future by the Government will, it is believed, help the situation to a considerable extent. The railroads have also shown a little better disposition to make repairs to equipment, and while shops are not running full time the number of employees engaged has increased. There is also some slight improvement to be noted in the general buying of the railroads, but its effect has not yet been felt by the machine tool trade.

Here and there improvement in business is to be noted by manufacturers of machine tools, and particularly special tool builders. A few scattered plants are now working full time, but orders on the books are not sufficient to enable them to maintain that rate of production for any length of time, unless there is a decided improvement in buying in the near future. The majority of tool builders, particularly those operating plants of any size, find it hard to get over the 60 per cent. mark, and quite a number are not that fully engaged.

The foreign demand has been particularly quiet. No business of any account has developed the past week. Those transacting a more or less regular export business report the demand dull and conditions generally unchanged.

There has been a fair run of business in the second-hand machinery market, although hardly as active as it was a month or so ago. The orders taken have usually been small and confined to purchases of single tools. Occasional inquiries come out for heavy tools, and those of a special nature, but the business in this direction has been rather light. The second-hand boiler business is dull. Some scattered business is pending, but it is largely for equipment of the small and medium classes. A little better demand is reported for new power equipment, in which some small business has been placed and more is pending, but the market is rather bare of new propositions of any size.

The foundry trade continues rather dull. There have been somewhat better inquiries out, but the business placed is comparatively small and largely for prompt shipment. Foundrymen who make a specialty of machine tool castings report no appreciable increase in orders.

The Pilgrim Laundry, Broad street and Glenwood avenue, is having plans prepared for a two-story boiler house and stack to be erected at the above location. It is also in the market for a 150-hp. boiler, water tube preferred, as well as some minor equipment.

Plans are being prepared by Charles Balderson, architect and engineer, for a 10-story concrete factory building, 120 x 150 ft., to be erected at the northwest corner of Juniper and Cherry streets, understood to be for George F. Lasher.

Albert F. Damon, Jr., engineer, Darby, Pa., has begun plans for a sewage disposal plant, to cost about $150,000, for the disposal of sewage from the boroughs of Colwyn, Darby, Lansdowne, Upper Darby, Clifton Heights, Collingdale, Sharon Hill, Norwood and Prospect Park, Delaware County, Pa., the combined population of which is over 30,000.

The Department of Public Works, Bureau of Water, Philadelphia, will open bids September 3 under what is known as Contract No. 152, for special apparatus for cleaning slow sand filters, for the Upper and Lower Roxborough and Torresdale filtration plants.

The Tindel-Morris Company, Eddystone, Pa., is running full time in all departments. The demand for forgings has been quite active, and orders for various classes of the company's standard tools, as well as those of a special nature, have been fairly good. Recent orders include a 17-in. crank shaft lathe and a grinding machine for the Navy Yard, Norfolk, Va., as well as a special saw grinder for the Baldwin Locomotive Works, for its Eddystone plant. Several machines of a special nature are also being built for customers in New York. The outlook for further business is considered favorable, inquiries have been good, and orders are expected to develop in a short time. This company has just completed a second-story addition to its office building, which will afford increased facilities for drawing rooms and general office work.

The Filbert Paving & Construction Company has been awarded the contract for coal and ash handling machinery and other items for the Lardner's Point Pumping Station by the Department of Public Works, Philadelphia. Proposals covered the following items: No. 1, for wharf, dredging, tracks, scales, grading, walls, with all appurtenances; No. 2, for elevator tower, ash tunnel, oil vault, bridges, coal bins, &c.; No. 3, for all coal and ash handling machinery, with supports and electrical equipment and all appurtenances. The work was let as one contract at $129,229, and is to be completed in 150 days.

The Mesta Machine Company, Pittsburgh, Pa., has recently sold to the Sweet's Steel Company, Williamsport, Pa., a 16-in. rerolling rail mill, consisting of one stand of cast steel machine molded pinions and two stands of rolls.

## Cleveland Machinery Market.

CLEVELAND, OHIO, August 25, 1908.

The demand for coal, ore and other kinds of conveying machinery has improved materially. Some good orders for machinery of this character have been taken by machinery builders in this territory, and other good inquiries that are pending are expected to result in the closing of contracts shortly. As a result of the improvement in conditions, a number of builders of heavy machinery have been able to increase the working forces in their plants. Railroads are coming into the market for cranes and other handling machinery, and some good orders have been received from this source as well as from mining companies and industrial plants. Other railroad inquiries are pending. Orders for locomotive cranes have improved somewhat, and builders of heavy and special machinery report a better demand for shears, punches and hammers. Boiler makers, also, report an improvement in the volume of their orders, and the majority of the boiler shops are working on fuller capacity than a few weeks ago.

The machine tool market shows little, if any, change as compared with earlier in the summer. The orders received by dealers are nearly all for single tools, the volume of their sales being about the same as during July. Some dealers report a little improvement in small inquiries, but buyers are slow in placing orders. Not much change was expected in the machine tool market during July, but dealers are looking for more activity after the vacation season is over in September.

The outlook in the lake shipbuilding industry is not very encouraging, and in view of the present condition of the lake trade and the number of idle boats, it is not expected that many new freighters will be ordered for the spring of 1909 delivery. Although this is the time for the placing of boat contracts, the leading shipbuilding company on the Great Lakes has not yet taken an order for a new freight boat.

The jobbing foundry situation shows little improvement. There is an occasional spurt in the demand for castings, but orders are mostly for small lots for immediate needs.

The Pittsburgh & Conneaut Dock Company has placed a contract with the Wellman-Seaver-Morgan Company, Cleveland, for a large ore unloading and handling plant to be erected on the docks of the Lake Shore Railroad at Ashtabula, Ohio. Four Hulett ore handling machines will be erected. They will be similar in general construction to other Hulett machines erected by this company, but they will be about 50 per cent. heavier and have 50 per cent. greater capacity than the 10-ton machines now in use. The new machines will be of 15-ton capacity, and it is expected that each machine will have a capacity of unloading 700,000 tons of ore in a vessel season. Each machine will have a hopper of 50-ton capacity and a scale larry of 30-ton capacity. The work of erecting the new plant will be started at once.

The American Shipbuilding Company has awarded to the American Bridge Company the contract for the erection of its new boiler and machine shop in Lorain. The building will be of steel, 110 x 200 ft. The equipment in one of the company's shops in Cleveland will be removed to Lorain, and the company states that it will purchase no new boiler shop equipment. Nothing will be done at present about equipping the new machine shop, and this may be delayed until next year. The new building will be equipped with Fenestra steel sash, the contract for the sash and glazing having been awarded to A. G. Hathaway & Co., Cleveland. Later the shipbuilding company will be in the market for pumps for a new drydock that it will build in Buffalo, and for another in Superior that is being enlarged.

The Alliance Machine Company, Alliance, Ohio, reports considerable improvement in the volume of its small orders for cranes, shears, punches and hammers, and some good inquiries for larger installations, which make the outlook for the company's business during the balance of the year very favorable.

The McMyler Mfg. Company has secured a contract from the Toledo & Ohio Central Railroad for a McMyler car dumping plant to be erected in Toledo. The machine will be similar to one built by the McMyler Company for the Hocking Valley Railroad in Toledo last year. Among other contracts just received by this company is one for a 15-ton gantry crane to be built for the Delaware, Lackawanna & Western Railroad at Hoboken, N. J., and for a locomotive crane for the sand handling plant of the Builders' Supply Company, Detroit, Mich.

The C. O. Bartlett & Snow Company, maker of crushing, elevating and conveying machinery, reports a large increase in the volume of its orders. In the past two weeks the company received more orders for dryers than during any two months previously during the year. Among the recent orders is one for a coal crushing and ash handling plant for the Ohio Soldiers' Home at Dayton. The company has increased its working force to the full day capacity, and expects to put on a night force soon.

The contract for what is claimed will be the largest bituminous coal tipple in North America has been awarded by the Crows Nest Pass Mining Company, Fernie, British Columbia, to F. C. Greene, mining engineer, Cleveland. The greater part of the plant, including the Greene car hauls and elevating and conveying machinery, will be built by the C. O. Bartlett & Snow Company, Cleveland. Owing to the Canadian tariff the structural work will be done by a Hamilton, Ont., fabricator.

The plant of the Penn Shovel Mfg. Company, Warren, Ohio, which has been in the hands of receivers for several months, has been sold to Pittsburgh capitalists, who intend to convert the rolling mill department into a tube mill and to operate the shovel and handle works departments. Remodeling of the plant will start at once. A company will be formed, with a capitalization of $150,000, to operate the plant. Among those interested in the new company are Thomas M. Latimer, Major Joy and Mathias Slater.

A number of Canton men, headed by A. B. Clark, of the Canton Art Metal Company, are forming a rolling mill company to operate a plant in Massillon. Mr. Clark and his associates have purchased a five-mill plant now located in Waynesburg, Pa., which will be moved to Massillon. The mill, besides turning out sheet steel, has a tin making equipment, but the latter will not be used for the present.

Promoters of a new rolling mill have promised to build a plant in Canton provided a site is given as a bonus. The Canton Board of Trade has taken up the matter, and expects to raise sufficient funds to provide the necessary site.

The Johnson & Jennings Company will add to its plant on Addison road, by the building of an erection shop. It will be 50 x 100 ft., of brick and steel construction. The company will build a crane in its own shop, to be installed in the addition, and will not be in the market for any machinery. The company reports an improvement in inquiries for rolling mill machinery, but prospective purchasers are as yet slow in placing orders.

The Borden Company, Warren, Ohio, maker of die stocks, pipe cutting machinery, &c., reports a very satisfactory improvement in the volume of its orders, as a result of which the company's plant is now being run on full time, with its full force of workmen.

Samuel Woodhouse, chain maker, has built a new plant at Union avenue and Eighty-second street, to replace the one that was destroyed by fire two months ago. The building is of brick construction, 32 x 100 ft.

The Meech Foundry Company, Cleveland, has been incorporated with a capitalization of $10,000 by Edward C. Hoffman and others.

The Board of Public Affairs, Minerva, Ohio, will receive bids until September 24 for a 150-hp. boiler, 150 lb. steam pressure, for the municipal electric light and water plant.

## OBITUARY.

EDWARD H. LLEWELLYN, secretary of the Chicago Malleable Castings Company, died August 16, aged 53 years. Born in Wales, most of his business life was spent in Milwaukee. After being connected for a time with the Chicago office of the Jones & Laughlin Steel Company, he and his brothers Silas J., president of the Interstate Steel Company, and John T., organized in 1899 the Chicago Malleable Castings Company, of which the last named is vice-president and treasurer. He was unmarried.

F. A. DILWORTH, assistant general manager of sales of the Tennessee Coal, Iron & Railroad Company, died at Birmingham, Ala., August 25. He had been connected with the Carnegie Steel Company's selling organization for a number of years, going from the New York office to the Pittsburgh office about five years ago, later being appointed sales manager at Atlanta, Ga., and going from that post to Birmingham shortly after the Tennessee company was taken over by the United States Steel Corporation.

It is reported as the result of the Newport, R. I., conference of the Board of Construction of the Navy Department, that it has been practically decided that the armor belt on battleships hereafter built will be lowered, and that there will be less heavy armor above the water line.

The Sheeler-Memsher Company, Philadelphia, Pa., recently cast an aluminum plate 10 ft. long, 3 ft. wide, and only ¼ in. thick, said to be the largest aluminum plate of this thickness thus far cast. Three ribs, ½ x ½ in., run the length of the plate. The total weight was 115 lb.

## PERSONAL.

J. G. Holcombe has resigned the position of division engineer in charge of the municipal engineering division of the Isthmian Canal Commission in Panama, taking effect September 1, to accept the office of Chief Engineer and Director of Public Works of the Republic of Panama. He has spent years in the tropics, having been Chief Engineer of the Philippine Islands when Secretary Taft was Governor.

H. T. Whigham, London representative of the United States Steel Products Export Company, is making a brief business trip to this country.

Alfred A. Corey, general superintendent of the Donora works of the Carnegie Steel Company, returns this week from a stay in Europe.

Charles A. Vogt, auditor of the American Steel & Wire Company, Cleveland, Ohio, has returned from a European trip.

David D. Lamond, of the firm of D. Lamond & Son, contracting engineers, Ferguson Block, Pittsburgh, Pa., sailed August 21 for Europe, expecting to be away about six weeks.

H. L. Mills, formerly in the sales department of the Whiting Foundry Equipment Company, has resigned to accept the presidency of the American Specialty Company, 1440 Monadnock Building, Chicago, which is marketing the Use-Em-Up drill socket.

J. A. Galligar, for the past two years sales manager for Pickands, Brown & Co., at their Milwaukee headquarters, has been advanced to the position of head of all their coke sales departments, with headquarters at Chicago, the appointment to take effect September 1.

J. A. Dolben, 3 Prescott street, East Boston, Mass., who formerly represented the Brighton Fire Brick Company, New Brighton, Pa., has associated himself with Mr. Sullivan of that city, under the name of Dolben & Sullivan, and the firm has opened offices at 161 Devonshire street, Boston, and 81 Appleton street, Lowell, Mass., where it will continue to represent the Brighton products.

John E. Murray has resigned as assistant superintendent of the blast furnaces of the Pennsylvania Steel Company at Steelton, Pa. He was formerly connected with furnaces in Illinois.

Frank S. Witherbee, of Witherbee, Sherman & Co., Port Henry, N. Y., has gone abroad.

John W. England, who has been assistant superintendent at the furnaces of the Sloss-Sheffield Steel & Iron Company at Birmingham, Ala., for a number of years, has been appointed superintendent of the Warner Furnace Company's plant at Cumberland, Tenn.

Lyman Bartlett has been promoted to the position of general sales agent of the Morgan Spring Company, Worcester, Mass. He has been connected with the company for a number of years and is well known in the trade through a long connection with the sales department.

Baylor Hickman, of Hickman, Williams & Co., resident partner at Louisville, Ky., who has been living with his family at Oxford, England, during the summer, is expected to arrive in New York September 5.

John R. Scott, manager of sales of the Carnegie Steel Company at Cleveland, Ohio, sails for Europe this week.

The No. 4 blast furnace of the Eliz. group of the Jones & Laughlin Steel Company, Pittsburgh, Pa., was blown in August 26. It has been entirely rebuilt of 1 in. double butt strapped steel plates. No explosion doors are provided or any relief in case of slips. All the furnaces of this company are now in operation except the small Soho stack.

The Chapman Valve Mfg. Company, Indian Orchard, Mass., has opened a district show room and warehouse at 49 John street, New York, where a full stock of standard goods will be kept for prompt shipment.

# HARDWARE

COMPARISONS are odious, runs an old saying. While this originally applied to reflections of a personal character, its bearing has been widened with usage, and it has been made to apply to impersonal matters. But while the expression is frequently used, its application depends on the viewpoint. A comparison may be exceedingly agreeable if it shows results in favor of that which has invoked the drawing of a parallel. For a wearisome stretch of months business comparisons of a decidedly odious and unpleasant character have been made. The showing realized by the sales of every month of 1908 has cut a sorry figure when placed in juxtaposition with the achievements of the corresponding month of the halcyon period experienced in the first seven or eight months of 1907. Comparison of these figures has certainly thrown odium on 1908, with its record of half and sometimes less than half the volume of business done by its more favored predecessor in the march of time. Happily, this condition has been changing, and soon, if indeed it cannot be done now, a comparison made with the corresponding week or month of 1907 will show better results for 1908. Merchants and manufacturers are doing a larger volume of business now than in the spring months of this year, and, of course, very much larger than in the first quarter, when the effects of the depression were most severe.

The experience in this respect of a leading Hardware house, whose business ramifications cover most if not the whole of that part of the country lying west of Ohio, is exceedingly interesting. In the early months of this year its sales were but 50 per cent. of those of the corresponding months of 1907. The second quarter brought some improvement, May working up to 60 per cent. of the previous May, while June showed a further expansion to 70 per cent. of last year's business in the corresponding month. Since then the sales of the house in question have shown further growth, and, of course, the time is fast approaching when the comparison will be heavily in favor of this year. Trade in 1907 visibly diminished in the fall months, the sharpest drop occurring in the panic month of October. The tendency of all branches of the Hardware trade is now toward further improvement in the demand, and it would be by no means surprising if the volume of business should be well sustained until the rigors of winter check the activities which can only be conducted in favorable weather. The outcome of the crops in practically every section of the country bids fair to be more than satisfactory, thus assuring bountiful returns from agriculture, which so largely affords the basis for the prosperity of the Hardware merchant and manufacturer. Indeed, the stimulus of flattering conditions in agricultural sections is already observed in the increasing demand for wire products and other of the lighter forms of manufactured iron and steel marketed through the Hardware merchant. While the lack of anything like normal demand from the railroads keeps the volume of business in the iron and steel trades much under what it should be, this is not such an important deterring influence in the Hardware trade. In point of fact, there have been noteworthy periods of excellent Hardware demand when the manufacturing interests dependent on trade originating with the railroads were complaining of exceedingly dull business. Hence, it may be well for those who are obliged to plan their operations for a reasonable distance ahead not to be too unfavorably impressed by the present lack of buying power shown by the railroads.

## Condition of Trade.

In many Hardware lines which have been conspicuously weak for several months the declining tendency appears to have been checked. Among these may be instanced Bolts and Nuts, Wire Goods, Galvanized Ware and several lines of Tools. The stay in the downward movement, however, is ascribed rather to the fact that quotations have reached a point beyond which manufacturers cannot afford to go without further substantial declines in raw material and labor costs. It is somewhat discouraging, in view of these recognized facts, that the larger trade still evinces no desire to make important purchases, and the majority of merchants are keeping their stocks as low as at the opening of the summer. There are other lines, some of them seasonable in character, in which there has been little reaction from the best prices of last year. In these there is still room for moderate readjustments in recognition of lower costs and the period of slackened demand through which we have been passing. At present business is spasmodic. Here and there a slight improvement in volume of orders is noted from time to time, only to be followed by renewed dullness. In the West and in the smaller agricultural districts of the East trade continues much better than in manufacturing and business centers. As pointed out in another column, we are rapidly approaching the period when comparisons with last year's volume will be less unfavorable, and, indeed, may be expected to result in favor of 1908. Such a change will doubtless have no small effect in imparting a more cheerful aspect to the situation.

## NOTES ON PRICES

**Wire Nails.**—A continuance of demand, with some increase, particularly in the West, includes orders for immediate shipments and the placing of contracts. Jobbers have increased the assortment of sizes, but their stocks are still comparatively light. Quotations for base sizes are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days.

| | |
|---|---|
| Carloads, to jobbers | $1.95 |
| Carload lots to retail merchants | 2.00 |
| Less than carloads to jobbers | 2.00 |
| Less than carloads to retail merchants | 2.10 |

*New York.*—Local demand is somewhat spasmodic, some days being better than others, aggregating a moderate volume of business. Nails are held on the basis of $2.30 per keg in small lots at store.

*Chicago.*—Manufacturers report that there is no check in the strong demand that has prevailed throughout the West for several weeks. Jobbers in all parts of the country are ordering round lots for immediate shipment, and in some cases deliveries cannot be made as promptly as desired. Quotations are as follows: $2.13 in car lots to jobbers, and $2.18 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

*Pittsburgh.*—The demand for Wire Nails continues fairly satisfactory, and the large trade is now placing more liberal orders for delivery ahead. The larger interests are still pursuing the policy of only accepting contracts for shipment within 60 days from date, but a good deal of tonnage has been entered for this delivery. A

report is current that a meeting of the Wire Nail interests was held Tuesday in Cleveland, but if this is true it is not confirmed here. It is not believed any change in prices is contemplated at present, but it is stated that if the demand continues to improve a slight advance later in the season is not improbable. Stocks held by jobbers are light, but they are now carrying a larger assortment of sizes than for some time, and the mills are able to make prompt shipments. Quotations for base sizes are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

| | |
|---|---|
| Carloads, to jobbers | $1.95 |
| Carload lots to retail merchants | 2.00 |

Galvanized Nails are quoted at $1 over the price of the regular Nails.

**Cut Nails.**—Orders now being placed with the mills are for more liberal quantities than for some time, jobbers assorting up their stocks. Steel Cut Nails are regarded as comparatively low in price, based on the present cost of Steel slabs. The general market is represented by the quotation of $1.80, base, per keg, f.o.b. Pittsburgh, but $1.75 is the extreme market, on carloads and over, to the large trade. In the Western market Iron Cut Nails are held at an advance of 10 cents per keg over Steel Cut Nails, but this differential is not observed in the East.

*New York.*—The demand at this point continues moderate. Steel Cut Nails are held on the basis of $2.15 per keg for small lots at store.

*Chicago.*—Orders continue in fairly satisfactory volume for fall trade, chiefly from jobbers who are filling out their stocks. We quote Chicago prices as follows: In car lots to jobbers, Iron Cut Nails, $2.08; Steel Cut Nails, $1.98. In small lots from store: Iron Cut Nails, $2.25; Steel Cut Nails, $2.15.

*Pittsburgh.*—Reports are that the demand for Cut Nails is showing some betterment, the trade placing more liberal orders than for some time. It is stated that prices based on the present market on Steel Slabs are very close to actual cost. The general market is represented by the quotation of $1.80 per keg, f.o.b. Pittsburgh, but $1.75 is the extreme market, on carloads and over, to the large trade. In the Western market Iron Cut Nails are held in an advance of 10 cents per keg over Steel Cut Nails, but this differential is not maintained for delivery in the Eastern territory.

**Barb Wire.**—In the Western section of the country demand has improved in view of the fine crop conditions, while in other sections business is only moderate. Regular prices are reported as being maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, 2 per cent. discount for cash in 10 days:

| | Painted. | Gal. |
|---|---|---|
| Jobbers, carload lots | $2.10 | $2.40 |
| Retailers, carload lots | 2.15 | 2.45 |
| Retailers, less than carload lots | 2.25 | 2.55 |

*Chicago.*—The mills are doing a very satisfactory volume of business, as the good crops and high prices which the farmers are receiving for live stock have put considerable life into the jobbing trade. Quotations are as follows: Jobbers, Chicago, car lots, Painted, $2.28; Galvanized, $2.58; to retailers, car lots, Painted, $2.33; Galvanized, $2.63; retailers, less than car lots, Painted, $2.45; Galvanized, $2.75; Staples, bright, in car lots, $2.25; Galvanized, $2.55; car lots, to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

*Pittsburgh.*—A very small amount of tonnage is being shipped out by the mills, new business being almost at a standstill, and contracts are pretty well cleaned up. We are advised that the mills are holding prices firm. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

| | Painted. | Gal. |
|---|---|---|
| Jobbers, carload lots | $2.10 | $2.40 |
| Retailers, carload lots | 2.15 | 2.45 |
| Retailers, less than carload lots | 2.25 | 2.55 |

**Plain Wire.**—A heavy demand upon Wire Fence manufacturers has created larger requirements for Wire, and the mills are making comparatively large shipments on specifications and on new orders. It is reported that regular prices are being maintained. Quotations per 100 lb. to jobbers in carload lots are as follows, on a basis of $1.80 for Plain and $2.10 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the price to retailers being 5 cents additional:

| Nos. | 6 to 9 | 10 | 11 | 12&12½ | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|
| Annealed | $1.80 | 1.85 | 1.90 | 1.95 | 2.05 | 2.15 | 2.25 | 2.35 |
| Galvanized | 2.10 | 2.15 | 2.20 | 2.25 | 2.35 | 2.45 | 2.85 | 2.95 |

*Chicago.*—The Fence manufacturers are doing well in their sales for fall trade, and are placing very satisfactory specifications with the mills. In other lines there is also a good demand for Plain Wire. Wire products on the whole continue to show the largest output in proportion to capacity of any branch of the Steel industry. We quote as follows: Car lots to jobbers, $1.98, f.o.b. Chicago, and to retailers, $2.05.

*Pittsburgh.*—The large crops throughout the West and the high prices farmers are obtaining for their products have led to a heavy demand for Wire Fencing, and the mills are making fairly heavy shipments on new orders and specifications against contracts. It is stated that regular prices are being absolutely maintained. Quotations per 100 lb. to jobbers in carload lots are as follows, on a basis of $1.80 for Plain and $2.10 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the price to retailers being 5 cents additional:

| Nos. | 6 to 9 | 10 | 11 | 12&12½ | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|
| Annealed | $1.80 | 1.85 | 1.90 | 1.95 | 2.05 | 2.15 | 2.25 | 2.35 |
| Galvanized | 2.10 | 2.15 | 2.20 | 2.25 | 2.35 | 2.45 | 2.85 | 2.95 |

**Sash Weights.**—The demand is unevenly distributed throughout the country, some sections showing more business than others. The advancing tendency in lower grades of Scrap indicates that prices are likely to become firmer. Prices have been fairly well maintained, with the exception of some shading which has been done by small foundries that are making comparatively few Weights. Business has shown some improvement in this line and a steady increase is anticipated.

**Coil Chain.**—As hinted in our last issue, manufacturers of Coil Chain held a meeting last week, with the object of correcting the extreme irregularity which has for some time prevailed in the Chain market. An advance of about 5 per cent. has since been announced, and all allowances for delivery have been withdrawn, quotations being f.o.b. factory. The market on Chain may be represented by a price of $3.50 to $3.75 per 100 lb. for ⅜ in.

**Window Glass.**—At the meeting of hand operated Glass manufacturers, held in Atlantic City on August 19, the following discounts, from manufacturers' list of January 1, 1901, were adopted: For A single and double strength Glass, 90 and 15 per cent.; for B single and double, 90 and 20 per cent. Glass of A quality is reported as being scarce, and business as being confined to actual requirements. A number of factories are said to have fired in, calculating on making Glass on or before September 1. No definite conclusion has been reached regarding the organization of hand manufacturers, looking to the distribution of their product. Jobbers' quotations from jobbers' list, October 1, 1903, for all sizes of single and double strength Glass for the entire country is 90 and 20 per cent. discount.

**Rope.**—Manufacturers report a gradual, though small, improvement in demand, which they are in hopes will continue to increase. Quotations for Rope 7-16 in. in diameter and larger, are as follows: Pure Manila, 9½ cents; Pure Sisal, 7 cents; No. 1 Jute, ¾ in. and up, 5¾ cents; No. 2 Jute, ¼ in. and up, 5¼ cents.

**Linseed Oil.**—A decline in the price of Seed occurred the first of the week, and while this had no effect on quotations of Oil, it was regarded as indicating an easier tone. Buying is confined to small lots, covering immediate requirements. Quotations are as follows: Western Raw, car lots, 43 to 44 cents; State and Western Raw, barrel lots, 44 to 45 cents per gallon. Boiled Oil is 1 cent per gallon advance on Raw.

**Spirits Turpentine.**—The market has taken on a firmer tone during the week as a result of the stronger position at Southern points. Local demand is light, but the market is steady. The New York market is represented by the following quotations: Oil Barrels, 39½ to 40 cents; machine made barrels, 40 to 40½ cents per gallon.

## Paint Manufacturers' Bureau of Promotion and Development.

TWO years since a bureau of promotion and development was organized by the Paint Manufacturers' Association of the United States. The bureau was really the outgrowth of a committee appointed by the association, formerly known as the Advertising Committee. The scope of the work of this committee, however, embraced a field so much wider than that of advertising alone that it was decided by the association to change the name. The work of this bureau and the committee which it succeeded has been conducted along broad lines and with much zeal and ability, and in view of the gratifying results accomplished some details in regard to the bureau may be of interest.

**Three Divisions of Work.**

The object, as its name implies, is to promote and develop the Paint business of the country in every possible way. All the work of the bureau is entirely impersonal, nothing whatever being done in behalf of any particular manufacturer. The bureau at present consists of five members, each being personally connected with the Paint manufacturing business. The time and thought of these gentlemen are given to the bureau work freely and willingly for the purpose of advancing general trade conditions and without any expense whatever to the association. To facilitate the work and concentrate effort, the bureau is divided into three sections—namely, the Scientific Section, the Professional and Industrial Section and the Educational and Commercial Section.

**The Scientific Section.**

The work of the Scientific Section is along the lines of investigation and scientific research. It has a regular force of chemists constantly at work examining samples of various materials, testing out different combinations of pigments and liquids in a practical manner and furthering in every possible way the scientific development of the Paint business. There is perhaps no commodity in general use to-day about which so little is known by the public rank and file as Paint. To produce a proper Paint is by no means a small matter, but, on the contrary, it is a very well developed science, requiring on the part of the manufacturer a thorough knowledge of the chemical and physical nature of each ingredient used.

Through the work of the Scientific Section the members of the association are kept constantly in touch with new developments, and are enabled to work more intelligently with the materials known at present in the Paint field. While the Scientific Section will in no way undertake work in the personal interest of any one, whether a member of the association or not, it is constantly on the lookout for ideas which will be of benefit to the trade as a whole.

The three association test fences are under the supervision of the Scientific Section. These are located at Fargo, N. D.; Pittsburgh, Pa., and Atlantic City, N. J. On these fences are being tested various typical formulas, not of any particular manufacturer, but representing different combinations of the crude materials now generally used in Paint making. These fences are carefully examined at regular intervals, and a complete record kept of the condition of each combination at different stages of its wearing. The Scientific Section has already accumulated a large amount of very valuable data and information along scientific lines, which has been placed in the hands of the members of the association.

**The Professional and Industrial Section**

devotes itself principally to practical work with architects and master painters. This section is responsible for the number of conferences held late last year with the manufacturers and painters of the United States, the outcome of which was the fashion colors or combinations which have lately been presented to the trade as desirable combinations for painting different styles of architecture.

This section has held conferences with chapters of the American Institute of Architects, the principal conference being one held several months ago with the Detroit Chapter, at which something over 100 local architects were present. Several papers were read on that occasion by members of the bureau, the principal feature of the conference being an illustrated talk on Paint technology. The Professional and Industrial Section co-operates with the Scientific Section in the conferences and lectures given, the latter section where advisable furnishing the scientific knowledge required.

**The Educational and Commercial Section**

is carrying on a campaign of education with merchants handling Paint, architects and master painters throughout the country. The list to which matter prepared by this section is sent consists of 60,000 merchants, 30,000 master painters and 10,000 architects, or a total of 100,000 in all.

It is the intention and aim of this section to place before the parties whose names appear on these lists practical and intelligent information and new light on the Paint industry, which will enable them to take advantage of the progress which has been made in Paint manufacturing, they in turn conveying it to the general public and giving the public the benefit of present day Paint service and economy.

The Educational and Commercial Section works very closely with both the Scientific and Professional and Industrial sections, obtaining from these two sections information of value to those on its lists and distributing it broadcast throughout the country.

## Requests for Catalogues, Etc.

*The trade is given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.*

**REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate:**

FROM F. A. HULL & SON, Danbury, Conn., whose catalogue files were entirely destroyed some months since and who request manufacturers to favor them with duplicates of catalogues, discount sheets, &c.

FROM THE S. W. COLLINS HARDWARE COMPANY, which has lately been organized with a paid up capital of $50,000, to carry on the general Hardware and mining supply business at Fallon, Fairview and Rawhide, Nev., the main office and headquarters being at Fallon. The officers of the company are S. W. Collins, president, R. E. McCoy, vice-president, and L. N. French, secretary.

FROM THE R. H. NORRIS HARDWARE COMPANY, Childress, Texas, successor to R. H. Norris, which handles Shelf Hardware, Stoves, Tinware, Sporting Goods and Mill Supplies.

FROM KILGORE-HAYDON-HOLIFIELD COMPANY, San Angelo, Texas, successor to Kilgore, Haydon & Payne, which will handle Shelf and Heavy Hardware and Tools. Tinware and House Furnishing Goods at wholesale and retail.

THE retail department of Rice Lewis & Sons, Toronto, Ontario, was badly damaged by fire on the 22d inst. Owing to the presence of a fire wall between the two departments, the wholesale part of the business was not affected. The loss by fire and water is estimated at $25,000 on the building and more than $100,000 on the stock, which is fully covered by insurance. The retail part of the business will be continued temporarily in the iron yards. This house is one of the oldest and best known Hardware concerns in Ontario, having been continuously in business as a firm and joint stock company for more than 60 years.

THE E. L. GERARD COMPANY, Grenada, Miss., manufacturers' sales agent, and manager of the Dixie Distributing Sales Company, is contemplating opening a sales office shortly in New Orleans, and is soliciting further accounts.

# A HARDWARE CLERK'S SEARCH FOR A JOB.

BY LONGBEACH.

*Oreville, Miss.*

*Mr. John Steel.*

*Dear Sir: You did at one time answer an advertisement for an experienced Hardware man. If you will come here and talk the matter over with us, we will agree to pay half of your expenses.*

*Yours truly,*

THE HAMMERSTEIN HARDWARE COMPANY.

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A young man standing on the edge of a broad lawn in a small town in Ohio received and read the above letter which he had selected and opened from a number the postman had handed him. Hurrying into the house, the members of the family were called around him, and the other letters were forgotten, as John read aloud the one he had received. The younger brothers and sisters were interested, and somewhat envious of the prospect of a holiday trip the letter implied. The look the father and mother exchanged over the heads of the excited group foretold the pain of separation and the possible loss of their oldest son.

Four years previous the father had bought a half interest in a local Hardware store, taking in with him his oldest son as clerk. Failing to agree with his partner, the dissension reached the point where the proposition either to buy out or sell out resulted in the retirement of the Steels some six months before this incident. Watching the help wanted ads in the trade papers, John had answered one, but three months had passed with no reply, so that the coming of the letter at this time caused a great deal of comment from the various members of the family. "You can tell from this letter that that firm don't amount to much," was the pessimistic comment of John's only brother, just entering High School, "or they would have left off the verb 'did.' And another thing; they don't say a word about the wages. It's a wild goose chase; sure thing." The rest of the family were agreed that, it being summer, the opportunity to visit a distant part of the country at so small a cost, even if nothing substantial resulted, was an opportunity too good to be lost.

### The Trip South.

The next week was busy with preparation, and John reveled in the prospects that danced before his glowing imagination. The day for departure soon came. It was decided that John should go by rail to Cincinnati, and from there by boat down the Ohio and Mississippi rivers. He had fortified himself by taking with him several letters of recommendation, one being a certificate of health from the family physician. The family bade John farewell, feeling that he was going to leave home for good, except his brother, who said: "What are you folks making such a fuss about? John will be back in two weeks."

The trip by boat was his first experience of travel on the broad but treacherous waves of these inland waters. The odd looking steamboats with the immense wheel at the rear, the swinging landing stage, the shuffling trot of the colored roustabouts, singing as they loaded and unloaded the freight at the various landings, made upon him an ineffaceable impression. At St. Louis a transfer was made to the Mississippi boat, and a consequent shifting of passengers resulted. Among the newcomers were several Louisianians of French descent; these would gather at the bow of the boat, singing in the moonlight, songs of old France, varied with tales of the African hoodoo man. Others, bearing the hallmark of prosperity, told tales of their various successes. Not one told of their failures.

### Arrival at Oreville.

One afternoon in the latter part of June, the boat made the Oreville landing. At one time Oreville was directly upon the banks of the river, but the stream in later years, asserting its prerogative of changing its course, had left the town a mile or so away, with a succession of swamps between. Registering at the only hotel in town, John strolled out immediately after supper to furtively size up the establishment of Hammerstein & Co. This he found to be a substantial brick building of three stories, the windows displaying Planters' Hoes and Tools, of which he had no knowledge, supposing them to be connected with the cotton raising industry. Satisfied that the store had much to offer, he returned to the hotel. Seeking his room, he was somewhat alarmed at the prospect of sleep at seeing the bed enveloped in mosquito netting. The New Jersey mosquito has won enduring fame from the size of his bill, but a hot night and the Mississippi buzzing torments make a sleep annihilating combination that defies competition.

### A Restless Night.

Being unable to sleep, he spent the night revolving in his mind how to approach the proprietor. The breakfast hour found him unnerved, and, as he passed and repassed the store, on the other side of the street, he was tempted to throw up the whole thing and return North. The longer he hesitated the worse he felt. Finally he rushed blindly for the door, asking the first clerk he met for the proprietor, only to find that he was out and would not be back until the afternoon. Again outside, he became conscious that he had the whole thing to do over again. Walking along the street with the brisk swing of the North, he suddenly awoke to the fact that he was attracting the attention of the few people passing. These were walking very slowly, with their coats off, carrying umbrellas as a shield against the burning rays of the sun. It was late in the afternoon by the time he again entered the center of the town.

### Mr. Hammerstein.

This time he found Mr. Hammerstein at the store, a sharped eyed man, with a German accent, who seemed to strip him at a glance. Discussing the town, they slowly went over the store, which in its three stories and basement carried a stock seemingly out of proportion to the size of the town. As they went through the various departments John expected Mr. Hammerstein would broach the subject uppermost in his thoughts. Reaching the basement, with the object of his visit still untouched, John, rendered desperate by the uncertainty, said, "Having seen your various departments, I would like to know if you are ready to make me any proposition?" "Vell, I tell you," replied Mr. Hammerstein, slowly puffing at his cigar, "you don't look very strong——" "But I am," interrupted John; "and here is a letter from our doctor——" "Tut, tut!" exclaimed Mr. Hammerstein, pushing aside the proffered letter. "Dot is nutting. A man in good health don't need any doctor's say so. But, anyway, I don't want a clerk. I go to Europe sometimes. What I want is a man to represent me. So you see the bookkeeper and give him your expenses." The next day, having received $35 as half of the expenses of his trip, John started North.

### Home Again.

The evening of John's arrival home the family gathered around him, eager to hear his experience. His brother good naturely reminded him of his own superior insight into the future. "Now, Charlie," said his father, "being Grand Master of the Order of I Told You So's is a very cheap position. I believe John has learned some things he did not know before." "You are right, father," spoke up John. "One thing I have learned is that the next place I try for will be one that I can fill. Mr. Hammerstein told the truth. While it hurt at the time, I cannot but see he was right. I am not experienced enough in the larger affairs of business to manage a big store. But I do know one thing—I am not afraid to stand alongside any Hardware clerk."

## Trade Items.

THE AMERICAN STEEL & WIRE COMPANY, Chicago, Ill., has issued *W. & M. Telephone Wire News* for August, which contains a number of interesting illustrated articles referring to the stringing and maintenance of a line of Telephone Wire, as well as other information regarding this product, which will be of interest to the trade. The publication is attractive in appearance, and much of the information which it contains is said to have never before appeared in print. It was compiled direct from linemen working in different localities, and is believed to be absolutely authentic.

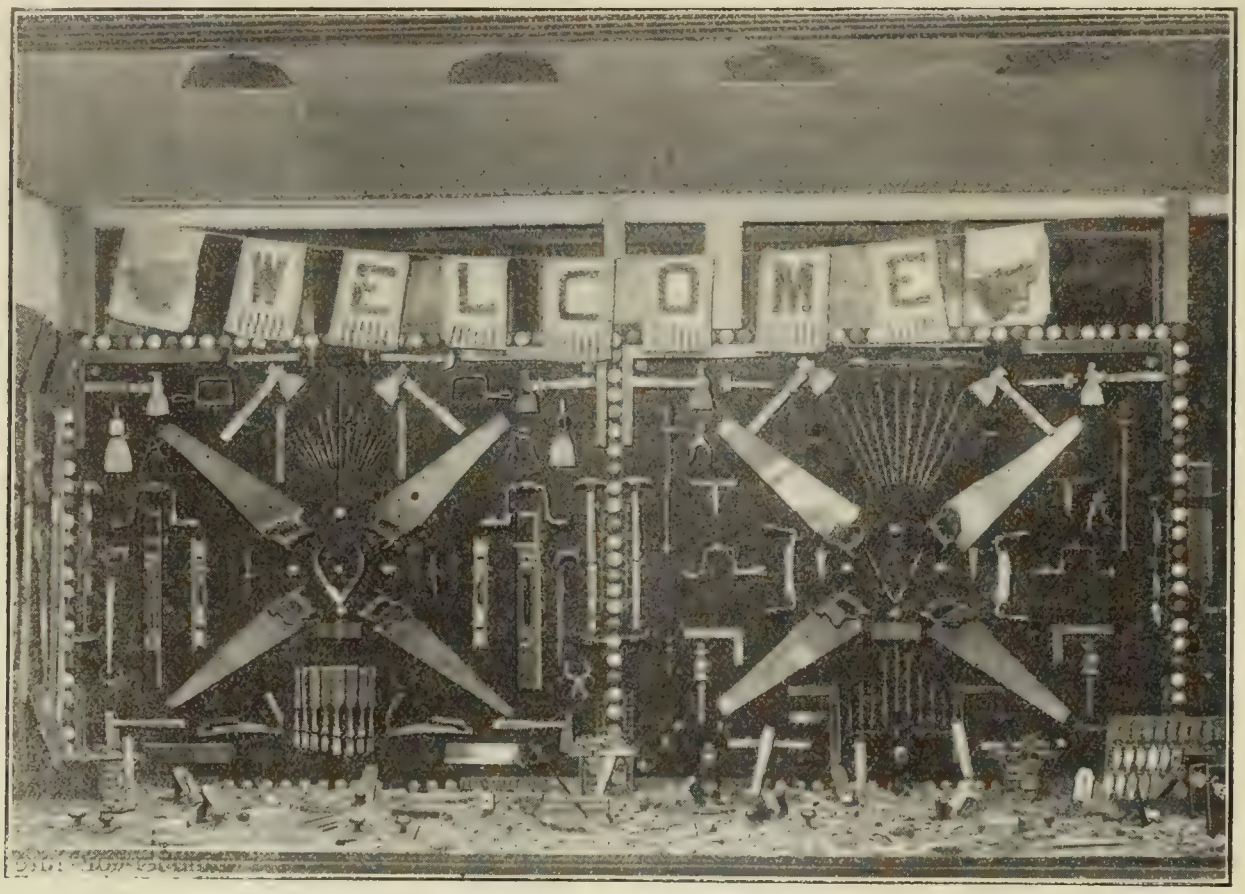
THE CONNEAUT SHOVEL COMPANY, Conneaut, Ohio, has had a new label designed to be placed on the "D" of its Scoop Handles. It is shaped like a shield, bearing the phrase "Conneaut Special Shovels," under which will be marked the number and size. The label will be printed on a special grade of varnish paper, which will stand the weather, and may be cleaned with a damp cloth if soiled in stock or storage.

THE SPITZLI MFG. COMPANY, Utica, N. Y., maker of carriage Hardware and specialties, has sold the Thill Coupling and Anti-Rattler branch of its business to the Fernald Mfg. Company, North East, Pa., and will give its entire time to the manufacture and sale of Roller Chafe Irons and other lines of carriage accessories, which will be added in the near future. The Fernald Mfg. Company will continue to manufacture the Shaft Couplings, as well as a complete line of Anti-Rattlers, Buggy Boot Springs, &c.

THE address on "The Commercial Traveler and His Relation to Prosperity," by E. C. Simmons, St. Louis, president of the National Prosperity Association, before the Commercial Travelers' Interstate Prosperity Congress in New York city, August 14th, has been issued in pamphlet form for general circulation. Extracts from this interesting address appeared in our last issue.

## Window Display of Morrow-Thomas Hardware Company.

THE Hardware display herewith reproduced occupied one of the show windows of Morrow-Thomas Hardware Company, Amarillo, Texas. The sign "Welcome" indicates the occasion of the display, which was the annual meeting of the Cattle Raisers' Association in that city. After the convention was over the flags were taken down and the space was occupied by Paint Brushes. The window is 18 ft. wide and 8 ft. deep. It was illuminated by reflectors, shown at the top of the photograph. The background consisted of heavy black cloth stretched over a paneled section made for the purpose. Upon it were arranged an assortment of the company's "Panhandle" brand Tools, including Saws, Bits, Squares, Levels, Hatchets and a general line of Edge Tools. Around these goods was arranged a border made of pieces of Carpenter's Chalk fastened to the background. The floor of the window was covered with long bright shavings and was set with Bailey Planes, Hand Saws, Hammers, Hatchets, Mason's Tools, &c. The window was decorated by A. L. Daily, one of the company's clerks. The company's salesroom is 45 feet wide by 145 feet long, and has two show windows of equal dimensions.




*Window Display of Morrow-Thomas Hardware Company.*

## Price-Lists, Circulars, Etc.

*Manufacturers in Hardware and related lines are requested to send us copies of catalogues, price-lists, &c, for our Catalogue Department in New York; and at the same time to call attention to any new goods or additions to their lines, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.*

W. C. HELLER & Co., Montpelier, Ohio: Catalogue referring to the Simple System construction of Hardware Shelving and Steel Shelf Boxes, Cases, &c., together with Adjustable Shelf Brackets, Tool Brackets, Steel Store Ladders, &c

HENRY T. SEYMOUR SHEAR COMPANY, Wiebusch & Hilger, Ltd., 106-110 Lafayette street, New York, sole agents: Catalogue illustrating and listing a complete line of Shears and Scissors, covering Straight and Bent Trimmers, Bankers', Paper Hangers' and Tailors' Shears, Ladies' Scissors, Pocket Scissors, Dental Snips, Tinners' Snips, &c.

M. W. ROBINSON COMPANY, 79 Chambers street, New York: Illustrated descriptive catalogue No. 4, 32 pages, showing among other goods Davis' Plumbs and Levels, Carew's Wire Cutters, Dikeman Chain Drilling Attachment, Robinson's S Wrenches, Jacob's Miter Boxes, Rollis', Buell's and Robinson's Tool Sets, and Hafts, Pin Vises, Awls, Screw Drivers, Tap Wrenches, Hack Saw Frames and Copper and File Handles.

ELLER MFG. COMPANY, Canton, Ohio: Illustrated catalogue No. 17, referring to Stamped Steel Ceilings and an extensive line of Metal Interior Decorations.

E. C. ATKINS & Co., Indianapolis, Ind.: Illustrated booklet referring to wood Saws and listing 10 different styles of frames and 22 blades, which may be combined to suit the purchaser.

AMERICAN WOODENWARE MFG. COMPANY, Toledo, Ohio: Illustrated catalogue referring to Magic Fireless Cookers, and giving directions for use, recipes, &c.

BUTLER BROS., Chicago: Fall issue of "Our Drummer" catalogue, referring especially to fall and holiday goods. Attention is also called to a special offer of goods to retail at 50 cents and $1, many of which are of interest to the Hardware trade. This issue of the catalogue contains a fine bird's-eye view of the city of St. Louis.

MARSHALL-WELLS HARDWARE COMPANY, Duluth, Minn.: Handsome souvenir postal card in colors showing the company's slip and building in Duluth.

COLEMAN HARDWARE COMPANY, Chicago: Illustrated catalogue of Sash, Side and Awning Pulleys, Stove and Furniture Casters, Spring Hinges, Ceiling and Coat Hooks, Window Lifts and other Hardware specialties.

DUST PROOF FURNITURE COMPANY, Rochelle Ill.: Supplement to catalogue of Sanitary Office Furniture with accompanying price-lists.

THE ACME STAMPING & TOOL WORKS, Hamilton, Ont., has issued a booklet calling attention to the classes of goods which it is prepared to manufacture to order. These include Hardware specialties of sheet metal and Wire, sheet metal stampings, patented articles and parts which have to be produced with accuracy. The company is also a manufacturer of Tumbling Barrels, Steel Shop Boxes, Wire Spools, &c.

THE COLEMAN HARDWARE COMPANY, Chicago, Ill., has discontinued its contract to manufacture Sash Pulleys, &c., for the Gardner Sash Balance Company, and will hereafter market its own product in this line direct to the trade.

## LETTERS FROM THE TRADE.

*Our readers are invited to discuss in these columns questions of trade interest connected with the manufacture or sale of Hardware. We shall be pleased to have a free expression of opinion on subjects deserving the attention of Hardware merchants and manufacturers.*

### Another Way to Fight Catalogue House Competition.

*To the Editor:* Doubtless every reader of *The Iron Age* sees in some of the other newspapers and magazines he reads advertisements of catalogue houses appealing to the public for business. All of these advertisements that we have seen misrepresent the goods offered. Recently they advertised "The best Range in the world for $24." Now, every Hardware dealer knows that the best Ranges cannot be bought for $24, much less sold for that. There has been a crusade among the better class of newspapers and magazines against advertising fake schemes, fake medicines; in fact, they really prefer strictly legitimate advertising. Now, if every Hardwareman in the country will write to the publishers of the newspapers or magazines that he takes, in which catalogue house advertising appears, calling their attention to this evil and to this illegitimate competition, it will only be a short time before these houses cannot obtain space in any paper which will be of any material benefit to them. Let everybody try it and see how it results.

MISSOURI.

### Stoves as a Profitable Addition to a Merchant's Business.

*To the Editor:* Many merchants when appealed to by a representative of a foundry or manufacturer to take on a line of Stoves in addition to other lines of goods handled object, simply because, they say, they have not got the space to display them properly. Of course a merchant when he takes on a line of Stoves should conclude to make a proper display of them, and this can often be done by compactly arranging other goods without detracting in the least from the proper display of such goods.

Stoves properly blacked should be placed on the floor in regular column and graduated—that is, the smaller Stoves in front and the larger to the rear. They should be so arranged that each part of the Stove will be easily accessible when demonstrating to a prospective buyer.

When a merchant has earned a reputation for handling good, reliable Stoves and can augment his business, so that he can during the season handle a carload of them, thus securing lowest prices and lowest freight rates, he will find that the business will prove very remunerative. In fact, many merchants have testified that their Stove business is their most profitable line.

SALESMAN.

## Red Devil Auger Bit Demonstrations.

THE W. A. IVES MFG. COMPANY, Wallingford, Conn., and 299 Broadway, New York, is conducting a campaign of show window demonstrations in Hardware stores of the Red Devil Auger Bit, recently put on the market. The design and construction of this wood boring tool is said to present several new features in Bit making, causing the management to put on the road an expert factory force with several complete outfits. These demonstrators are competent not only to show in convincing manner by actual use the salient merits of the tool, but also to arrange in connection with the demonstration in each instance attractive window displays. Usually a young man in the window costumed as a Red Devil catches the crowd's fancy and gives actual demonstrations with the Bit. The idea has also inspired some merchants with reference to their advertising, the John E. Bassett & Co., New Haven, Conn., for instance, attributing some of the recent torrid weather to the Red Devil's presence. The exhibits are said to be very fetching, people going inside to buy not only the Red Devil Auger Bits, but other merchandise as well. The displays have been made in live New England towns as a rule so far, but now exhibitions are being arranged for in New York State. The window exhibits contain the Auger Bits, singly and in sets or dozens, with various ways of packing, and the company's Bit Braces. Occupying a conspicuous place in front is a line of the Bits in the different stages of manufacture, each piece having accompanying explanatory cards, while distributed about the window are placards with instructive matter relating to the goods.

## P. & F. Corbin's New Contract Department.

P. & F. CORBIN are now comfortably settled in their contract department in the recently erected Castle Building at 39 West Thirty-eighth street, New York City. It will be recalled that when the main New York house moved into its new building at 106 Lafayette street (formerly Elm street), the contract department was detached and located uptown, in charge of W. D. Holmes, who is secretary of P. & F. Corbin of New York. It was determined to have the contract and art department in closer touch with the contractors, architects, builders and kindred interests, now mainly located north of Fourteenth street, in view of the increasing difficulty in getting clients to visit sample and display rooms downtown when choosing designs in Builders Hardware.

They occupy the street floor, about 25 x 100 ft., and basement, having about same floor space, the latter being utilized for carrying and handling all stock applying to contract work. A portion of the main floor is set apart for the accommodation and convenience of salesmen whose specialty is the handling of contract business, which necessitates special training and expert ability in the proper treatment of this most complex portion of the business. In this room there is a capacious drafting table with 180 sq. ft. of space, large enough to spread out any set of plans, and containing also an abundance of drawers for the reception of plans, blue prints, designs, &c. Being separated from the main office and accounting department, visitors are free from interruption and other distracting influences, thus enabling them to concentrate their attention on estimates and details.

The office is finished in plain quartered oak with mahogany panels, all in the natural wood. The sample room is practically a duplication of the handsome room which was a part of the late Murray street quarters, with parquet floor, large rugs, upholstered furniture and polished mahogany drawers and cupboards; the doors of the latter are glazed with ornamental leaded glass, in keeping with the tasteful surroundings, and the whole abundantly lighted, both naturally and electrically. The walls, decorated in color, are paneled in harmony with the wainscoting. There are also some small reception rooms for customers and visitors with accompaniments in the way of telephone booth, lavatory, toilet, &c., the doors leading to which harmonize in treatment with other portions of the room. The staff at this branch numbers about 20, whose sole business is the proper handling of complicated contract work.

## Duncan K. Major.

DUNCAN K. MAJOR, 261 Broadway, New York, who has had many years' experience in Hardware and kindred trade circles, is now the New York resident sales agent for several manufacturers for both domestic and foreign business. The latest addition to houses represented by him is the Standard Horse Shoe Company, Boston, Mass., which manufactures Horse and Mule Shoes. Among other interests served by him are the Bergman Hardware & Tool Mfg. Company, Buffalo, N. Y., whose Hardware specialties include Saw Sets, Combination Pliers, Tinners' Snips, Corner Bit Braces, Steel Universal Joints, Tap Wrenches, &c.; Jackson Mfg. Company, Jackson, Ohio, which makes the Jackson solid center stem Auger Bits in all sizes in the regular Auger Bit, Car Bit and "Ship Auger Car" Bit styles, packed in solid sizes or put up in sets, both in hinged cover wood boxes and cloth rolls, and Conneaut Shovel Company, Conneaut, Ohio, which manufactures Shovels, Scoops and Spades, many of which are designed for special purposes, and including what are known as the Romberg Ore, Coal, Track and similar Shovels, made under the Mikkola patent.

Barrett & Dally have succeeded Marsteller & Peterson in the Hardware, Stove and Paint business at Wayne, Neb.

## AN OHIO MERCHANT'S NEWSPAPER ADVERTISING.

JUNIUS W. HAMILTON, Bellefontaine, Ohio, is a firm believer in the efficacy of newspaper advertising, and uses liberal space throughout the year. In addition, several times a year, at the beginning and in the spring and fall, he spreads himself in advertisements occupying a whole page in the two dailies or two weeklies published in his vicinity. An example of one of these page advertisements is reproduced in part herewith, the upper half of the announcement being shown. It will be observed that in his "Heart to Heart Talk" Mr. Hamilton calls attention to the fact that his buying is done directly with the manufacturers, many of them, with brief mention of their product, being named. In his buying it is suggested that quality as well as price is considered, and as a result, if the goods bought by his customers are not satisfactory and just as represented, he stands ready to refund the money—and cheerfully, too. It will be observed also that many lines are guaranteed unconditionally.

The lower half of the advertisement, besides giving an exterior view of the establishment, calls attention to such lines as Paints, Blankets and Robes, Harness and miscellaneous Hardware, on which attractive prices are mentioned. Mr. Hamilton manufactures Harness, and has built up an extensive trade in this line.

At the time of the appearance of these large advertisements Mr. Hamilton also has the printer run off 5000 to 10,000 circulars of the same size, which are distributed freely and included in all packages sent out of the store. During the year he is in the habit of giving out 2000 or 3000 Yardsticks, which, besides proving useful to those who receive them, are intended to advertise his store and business. Mr. Hamilton's trade covers considerable territory, and two or three men are kept in the field visiting farmers, distributing advertising matter, much of which is received from manufacturers, and soliciting business for the store.

EVERYTHING IN HARDWARE

**JUNIUS W HAMILTON**
**BELLEFONTAINE, OHIO**

ANYTHING IN HARNESS

## A HEART TO HEART TALK

We want your business on the business principle of justice, and money's worth. Give us a chance to meet any price that seems attractive to you, and allow us to save you all extra expense, such as transportation, etc.

Why not come in and see us and our goods, get acquainted even if you are not in the market now; you will be some time soon.

We appreciate the fact that you are entitled to the best quality of goods at the lowest prices obtainable.

We are in the position to take care of your business at less expense than any concern in the country, and ready to meet ANY AND ALL COMPETITION, because WE BUY DIRECT from the MANUFACTURERS, in all branches of our business, and it is certainly reasonable and plausible, that we can save you the middle man's profit on anything that you purchase. We will give you fair treatment and the best quality of goods, as cheap as you can buy any place in America. If the goods are not as represented, we will cheerfully refund your money. We quote a few prices below to give you an idea as to some of the bargains that we have to offer, and we cordially invite you to come and see us at any time that it is convenient, whether you are ready to purchase or not. We are offering some special bargains in the way of harness, general hardware, paints, varnishes, etc., the year round. If you are not our customer, we candidly believe that it will pay you to give us a trial, FOR WE CERTAINLY MEAN BUSINESS, and we are going to try to have your friendship as well as your business. Every business transaction is treated strictly confidential, and we have not anything to say against our FRIENDS OR NEIGHBORS, or COMPETITORS, but we are willing TO GIVE YOU A SQUARE DEAL if you will kindly give us the opportunity.

We represent many of the best manufacturers in the United States, and consider quality of goods, as well as the price in the purchasing of stock, and we will give YOU AN OPPORTUNITY TO INSPECT EVERY PIECE OF GOODS THAT YOU BUY OF US, before purchasing, and we assure you that the QUALITY WILL BE REMEMBERED LONG AFTER THE PRICE IS FORGOTTEN.

Farmers' Fence Co., Bellefontaine, Ohio.
Russell & Erwin Mfg. Co., New York, builders' hardware.
Sherwin & Williams Co, Cleveland, paints and varnish.
John L. Whiting, Boston, brushes.
Schatt & Morgan, Titusville, Pa., cutlery.
E. C. Atkins Co, Indianapolis tools
Wm. Ayres & Sons, Philadelphia, 6-A blankets and robes.
Indianapolis Saddlery Co, Indianapolis, harness, etc.
Junius W. Hamilton, Own Make of Harness.
Eastern Granite Roofing Co., New York, Granitoid roofing.
Detroit Stove Works, Detroit, Jewel stoves.

A. & W. Sign Co, electric signs.
Ohio Varnish Co, Cleveland, Silk Namel
National Sweeper Co., Marion, Ind., Newark, N. J., ball bearing sweepers.
Brilliant Electric Co, Cleveland, incandescent lamps.
National Paint and Varnish Co, Cleveland, Uncle Sam's Graphic Elastic Roof Paint
Jackson Shear and Razor Co, shears, scissors etc.
Junius W. Hamilton, own brand scissors and shears
Hunt, Helm & Ferris, Harvard, Ill., Star ranges, gas and barn fixtures.
H. C. Tack Co., Cleveland, tacks and nails.
Boss Washing Machine Co, Cincinnati, washing machines

Fletcher Mfg. Co., Newport, Ky., water motor washing machines.
Gibson Gas and Electric Mfg. Co, gas and electric fixtures
National Lead Co, Cincinnati, Anchor white lead.
Dolphin White Lead and Color Works, mixed paints
Pratt & Lambert, Buffalo and Chicago, varnishes.
Gillette Sales Co., New York, Gillette Razors.
American Razor Co, New York, Ever Ready safety razors.
Stevens Arms Co, Chicopee Falls, Mass., rifles, etc
Mass. Foos & Co, Springfield, Ohio, lawn mowers.
New York Belting and Packing Co, New York, rubber hose.
Croak & Conner Mfg. Co, Elmira, N. Y., garden tools, etc.
And many other articles not mentioned.

We have many lines of goods that we absolutely GUARANTEE UNCONDITIONALLY therefore, you are never running any risks when you trade with us. We PROTECT OUR CUSTOMERS in every way against any FRAUDULENT GOODS as we make it our business to PURCHASE THE VERY BEST GOODS at the VERY LOWEST PRICES from the VERY BEST MANUFACTURERS, and being thoroughly acquainted with our business, from many years of experience, we do not pick up a lot of JIM-CRACK BARGAINS, just in order to sell something at a very low price, and which has not any real intrinsic value, and the facts of the case being that such goods are ready for the junk pile before the purchaser gets home with them. If you buy anything of us that is not what it is represented to be and not worth the money, all we ask of you is to kindly return the goods unused, and get your money.

*Upper Half of a Page Advertisement of an Ohio Merchant.*

## A HARDWARE MERCHANT'S HINTS TO CLERKS.

A CARD containing hints to clerks, as reproduced herewith, has lately been hung up in the store of the Hale-Reynolds Hardware & Supply Company, Tulsa, Okla. The hints were prepared by M. C. Hale, president and general manager of the company. The actual size of the card is about 14 x 11 in. We are advised that the posting of these hints in the store has been followed by gratifying results and that several faults noticed in the clerks have been corrected. There has been a noticeable change for the better all along the line, and Mr. Hale expresses the conviction that a card with pointers of this character could with advantage be given a place in every retail store.

### HINTS TO CLERKS.

By M. C. Hale, President of the Hale-Reynolds Hardware Supply Co., Tulsa, Okla.

1. The clerk who finds nothing to do, simply isn't looking for work.

2. A clerk's spare time should be spent in arranging and cleaning the stock.

3. The clerk who watches the clock will never make a success.

4. Clerks should start toward a customer the moment one enters the store. The customer should not have to hunt up a clerk.

5. Clerks should not smoke during business hours. It is offensive to all ladies and some men.

6. Clerks should not loaf in front of the store. It obstructs the show window and is a poor advertisement for the business.

7. A clerk who isn't capable of selling any article in the store is not a full fledged clerk, merely an assistant.

8. A good clerk can very nearly earn his salary by selling goods the customer doesn't call for.

9. A good clerk will do even better when his employer is out than when he is in.

10. A clerk is either honest or he is a thief.

11. The clerks' position is an important one and the success of the business depends largely upon them.

*Some Oklahoma Pointers for Clerks.*

J. W. Dunn has opened a Hardware and Harness store at Trent, S. D.

# GETTING PROFITS.

A PAPER READ BY GEORGE W. HUBBARD, FLINT, MICH., AT THE RECENT ANNUAL CONVENTION OF THE MICHIGAN RETAIL HARDWARE ASSOCIATION.

I am told the generally expressed views of the retail merchants on the outlook for the future sound like wails from broken hearts. I think this is unfortunate, unsound and uncalled for, and is an impediment to prosperity. I unhesitatingly say that I believe the opportunities for profit and increased business were never better than now, and the outlook for the same conditions are likely to continue, but not if the majority are pessimists looking through smoked glasses and thinking over the back trail.



GEO. W. HUBBARD.

It is an old saying that "a man will be what you tell him he is." It is equally true your business will be what you think it is and make it. To the courageous old and the hopeful young who will blaze fresh trails through the new business forests there is no occasion for lukewarmness or discouragement. I plainly see a demand for drastic changes in conducting the retail Hardware business. The race is on for increased volume, conducted on safe though narrow margins. You must get out of the old ruts and study the ways of the successful manufacturer, mail order hustler and catalogue house of to-day and you will see the one word "Volume" printed on all their banners.

### The Spirit of the Times.

Our population is increasing rapidly and it is possible for every one of us to increase our business to an extent not usually appreciated. If you are not lazy there is no good reason why you cannot hold that old line of customers and add many new ones. The average merchant has not kept up with the improvements and betterments the spirit of the times has brought into his office and store, such as the type writer, adding machine, printing press and telephone, the fruits of which the rural delivery stands with open arms to receive and distribute. Unused or misused, the force of them is lost and makes you look like 30 cents. Unless awake to their real values these valuable assets become dead and can be used only to decorate your dying business. They are the guns which carry the bullets to the hearts of your game. Are you loading and firing them with accuracy and to their full capacity?

### Financial Management of Business.

The success or failure of your business depends upon your financial management, and never in the history of merchandising has it been so important, which importance is increasing each year. The time for doing too much business for your capital is past; everything that is not now being done on a cash basis soon will be. The cash discounts must be had and it is the one important stepping stone to securing profits. The cash discount is a double edged sword, cutting down the amount you have to pay out and building up your buying power, two active agents pushing you on to larger volume of business, strengthening your purchasing powers and establishing your reputation for paying cash. You will then have much more to say about how much you will pay for goods. Your business will be sought without any interview with Messrs. Dun and Bradstreet. You become your own sponsor. There is plenty of money in banks and rich estates within your reach if you have a reputation that entitles you to their confidence; if you haven't it, and cannot secure it, sell out your business the first opportunity you have and get out of the race, but if you are honest, industrious and energetic there will be no necessity for doing so.

I would say to the young man: do not waste the best days of your life struggling with a limited capital if by honest means you can connect yourselves with capital. To do it approach it with delicacy, treat it honestly and life will take on new ideas and your ability to succeed become unquestioned.

### The Matter of Salesmanship.

"If the cow won't give milk you have to take it from her." See that your stock is complete and well adapted to the wants of your trade. Don't get married to anybody's line of goods or any particular brand. Rarely has anything been manufactured but what someone else made a better or equally good piece of the same kind. Lead your competitors by showing the new lines first instead of waiting until your trade has gone elsewhere for them. This is the duty of your buyer.

One of the most important factors in profit getting is salesmanship. Some dealers, as well as some salesmen, depend upon low prices to sell their goods. This is not salesmanship. A good salesman is one who has faith in good goods and the ability to convince his customers that they are the cheapest at any price. In other words, instead of showing the prospective purchaser a range bought at $20 and marked to sell at $24.98 to compete with the catalogue houses he should show, and if he is fairly well posted will show, one that costs $35 and retails at $45, thereby nearly doubling his sales and absolutely doubling his profits without adding one cent to the fixed charges of doing business.

Your builders' Hardware salesman finds it easy to sell those lock sets at 34c. each that cost you probably 29c., but if he will take the time and trouble to show the builder that by increasing the cost of the new house not to exceed one per cent. he can sell him a lock set for $1.25 each that costs you $9 a dozen that will be durable as well as ornamental; at the same time will be doing him a favor and making a profit for your business.

Don't blame your clerks for your failures if you have furnished them only cheap competitive goods. Place the blame on your own shoulders, where it belongs. Buy good quality of goods so a salesman has *talking points* which only good goods possess, and then insist on your salesman becoming familiar with your stock and thoroughly showing them from A to Z.

Raise the standard of your business by discarding cheap goods and cheap clerks. The combination of good goods and good clerks go a long way toward solving the difficult problem of competition.

### Stock Taking—A Suggestion.

Stock taking is the "bogy man" that shows up once a year and whose visits are never welcome. It means from two to four weeks of hard work for all hands. The real trouble with the average merchant is he does not enjoy the work, and unfortunately sometimes he does not enjoy the results of that work. That is especially true when he padded his inventory the year before and takes an honest one this year. If he would take it four times a year he would learn to love the work; he wouldn't be half as scared at the end of the year if he knew four times a year just how he was coming out. I do not mean to be understood that I would take four regular inventories a year, but I do mean to be understood as saying that I would go through my stock, and do, not less than four times a year, giving it a thorough cleaning, bringing forward unsalable goods and looking up the wants. This hard work will net the following:

You will know what you have on hand, what you need to strengthen your stock, and keep your stock in perfect balance. It will make you stronger, your clerks more interested and your store fresher. It means more work, better discipline, injects an atmosphere of business into your store life and will give a better standing with the public than if you and your clerks become expert gum chewers and smokers.

### Want Book an Asset of Great Value.

Next in usefulness to the family Bible comes the daily Want Book. If you want to be real good and popular with an agent save him his time and hotel expenses by having your wants ready instead of detaining him while you hunt over the shelves and run through the cellar.

The Want Book closely watched is the best book asset you possess. It takes care of the thousand and one little needs that go to make up a perfect stock from which comes our easiest profits. It is made up, and written up, when you and the clerks are calm and free from any tendency to overbuying. You avoid reckless buying, discuss with your clerks, styles, qualities and quantities, determine what to buy on your own unbiased judgment, which, under the circumstances, is just what your stock needs in every way, while if you buy, prompted by the presence of an interested agent, you are running all the usual risks of overloading, which is one of the flowery paths to later insolvency.

### Courtship by Mail.

The importance of this part of your daily business cannot be over-estimated. You buy goods from people you have never seen and who never saw you. It really is a courtship by mail. You are judged by the character of your correspondence. If you write a good, honest, fair letter it will not matter if you spell God with a J and violate all grammatical rules; those trifles will not count against your credit and standing so much as a single mean letter, even though it be written in faultless English and the penmanship most artistic. Never be too positive in your position; any of us are liable to be mistaken. Your grievances and complaints are half settled by means of the first courteous letter you write. That letter certainly removes every taint of suspicion the other party may have entertained or any unfairness. When that is removed amicable settlements are always in sight. When you feel like writing a mean letter—don't write it; if you forget yourself far enough to do so, tear it up before you mail it. It will make you feel better and the other fellow will never know you wrote it.

### Advertising the Store.

Next to the follies of youth come the follies of advertising. In both cases a lot of money and time is mis-spent.

The very best advertising that I can recommend comes through educating the public to know and believe that you carry a complete stock of goods; that you price that stock at a system of market changes, and that you have only one price in regular retail quantities. You keep your clerks near the front door with a cheerful, honest welcome for all. You have a Christian sister or brother at your telephone who always answers politely, never noticing what words or tone comes from the party of the second part who is talking. Omit mean postscripts on your statements sent overdue customers; they may deserve all you say, but it don't help collections, leaves a bad taste, and is poor advertising.

The power of advertising is originality; coin your own trademark. Eastman copyrighted "touch the button, we do the rest," and it made a market for kodaks. "Jones pays the freight" sold for Jones enough scales to send him to Congress. "I sold your grandfather ox yokes in 1865" and "We sell Hardware but never sell farmers' notes" have been effective sentences in my advertising methods. It hasn't sent me to Congress, nor it hasn't made me rich, but it has made me known in a limited section and I think has been one of the means of bringing good results.

You receive much valuable advertising matter from manufacturers. Get it out and keep it out in sight; don't run it up in the garret or down in the cellar, or treat it with the disrespect of using it for wrapping paper. Manufacturers who have been to the expense of putting this property (and it is nothing else) into your hands, are entitled to the little effort it costs you to get it before the public, where both you and they are bound to receive pronounced benefits.

**Warranting Goods.**

More mistakes are made in handling customers who return warranted goods than inexperienced dealers realize. This is a golden opportunity if taken advantage of and cannot come too often to a quick-witted merchant or clerk; badly handled, although you may take back the article, replace it or refund the money, it possesses no advantage and may be an injury to you. If you have unwisely questioned the customer's word or his integrity; if you have intimated that he did not know enough to file or set his saw properly or that he has ground his axe too thin; in fact, if you have in any way raised the question of his imposing on you, you are treading on dangerous ground.

The chances are that he has imposed upon you, but you must not intimate it to him and you must take back the piece of goods as though it were a pleasure if you want the result to bear profitable advertising fruit. While it is true you cannot honestly or even wisely return the condemned article for credit, I do not regard this of much importance. My experience teaches me you can afford to take them back, sell them again at a reduced price without sustaining much, if any, loss. You have thereby given satisfaction to your customer, held his future business and his neighbors, who he will refer you to because of your fairness and promptness in always adjusting trifles.

This might properly have been referred to under the head of advertising, as I regard it one of the best means of advertising presented us. Summed up you will not find $25 worth of returned goods on hand at the end of each year, and if this spirit of quickly satisfying your customers on any little disputed points in your business is followed up you will have made five hundred additional friends and customers that will certainly recompense you for the little investment you have made in that small amount of returned goods.

**Clerks and Their Development.**

You may be "it" in your business, but the case and main spring don't make the whole watch, any more than the body, rubber tired wheels and honk-honk horn make an automobile. In each and every complete piece of machinery there must be important minor parts, made of good material and finished even better than the larger parts. Your clerks are the real working wheels in your machine. You are only the frame that holds them in position. For the protection of the frame pay the price good working wheels are worth, and make them get busy. If the frame feels the jog of a soft spot in one of the small wheels stop the machinery long enough to throw out the soft wheel and put in a new and better one.

Teach your clerks independence of thought and action by trusting them and throwing responsibilities on them. Half the time the lack of development of clerks can be charged up to the lack of confidence of the proprietor. After a course of such discipline you will have developed your clerks into such a condition of usefulness that you will be going to school to your clerks fully half the time. If they have any brains and are well bred, there is no danger of their growing heady and chesty. If they do it affords you another opportunity to put in another wheel. The boys in the store are not very different from the boys at home; the home boy copies the father, the store clerk copies the proprietor; in some cases it is very unfortunate for the boys.

Your stock and profits will improve when you advise more with the boys, awake their interest in things that interest you, which you can do by awakening your interest in things that interest them.

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### "Front Door Clerk."

It will pay any Hardware merchant who is doing a business of $25,000 or more a year to station his best and highest priced clerk near the front door, and, if required, wear a label on his coat or visor of his cap bearing the words "Front door clerk." Attach him to the front door latch by a rope not to exceed thirty feet in length. The rope suggestion is to be used only in those cases where you find it impossible to teach your help the importance of staying within the limits assigned. The first thirty feet of every retail store is the principal battle-ground of business and should never be without one good clerk or the proprietor. Customers are first met there and there first impressions are created. The click of the front door latch is a signal of approaching profits; there should be no delay in extending that click a hearty welcome.

Delays are dangerous and in no part of your business are delays more so than where they consume your customers' time, which neglect created by you is frequently resented by them. The fact that they have touched your door latch is evidence that they are making friendly overtures to do business with you. It is up to you to take advantage of these opportunities and show your desire and willingness to serve him in the best possible manner and with greatest friendliness. Competition is abundant and customers will not spend their time hunting up your lost clerks.

### Cultivate Your Competitor.

There is no sense in the theory that two men in the same line of business should be unfriendly. There are many sound business reasons why they should be friendly, and I believe we are growing to be more so. I am well satisfied that this is the condition and that the condition will continue improving. It is brought about by increased business and modern methods of doing it. Only broadminded, modern merchants will survive in the present race for business. They will have no time to consider what their neighbors are doing or how they do it, having all they can attend to floating their own affairs successfully. When you're busy you have no time for unkind words or unkind thoughts of your competitors.

Cultivate each others' acquaintance as you do the acquaintance of other merchants not in direct competition. Pull together, buy goods together, meet oftener and get better acquainted, and you will learn that the other fellow is just as good as you are and he will learn that you are just the same, but both have been a long time finding it out. There is certainly more profit and satisfaction in brotherly love than the best conducted hair-pulling contest ever pulled off.

### Hats Off to the Traveling Man.

I approach my friend—the traveling agent—with uncovered head. The wisest of us can learn something from the most foolish of them. Their name is Legion; each representing a limited number of special lines. Along their own special lines they become experts. We carry all they represent, consequently we do not become experts in any of them. That is the simple reason why I elevate the traveling man to the teacher's rostrum. If used to the best advantage they are certainly profit-getters for us. Welcome their arrival and get down to business as promptly as you do with your other business associates or your best customers. They all have some good things up their sleeves. They don't have to bring them to you, they may take these plums to your competitor who did not make their last visit personally disagreeable to them. Assumed knowledge on our part is very transparent to the experienced traveler, and while he will not show he is "on" by look or word while in your presence, he will look with pity on your deficiencies and mentally register you at just your real value.

Don't overlook an agent's rights, he has them. Greet him courteously; faithfully and promptly keep your appointments with him and despatch your business in reference to your own time and his expense account. Jobbers and manufacturers are represented nowadays on the road by the cleanest, brightest and strongest men from the best families in the country. They are selected in reference to their special fitness in the work assigned them. They command good salaries and the respect of the capital that employs them, and are made to get results, which they do, or leave the road.

Agents are our profit getters when we give them a fair chance. Our interests are largely their interests, our successes become their successes.

### No Easy Road to Success.

I cannot point out an easy road to profit getting for any retailer. Success depends entirely upon the amount of energy and force you give your business. It always has and it always will make great drafts on mind and body because of the long hours and close application demanded of you. Methods have changed but not principles. We have one comfort remaining, that we are in a work of manly nature, naturally along safe lines; our goods are not subject to loss by decay or whims of fashion. It is absolutely without speculation or excitement.

Cultiviate contentment, renew your State membership, encourage the officers of the association and pay your dues promptly.

## Poster Cards of Keen Kutter Design.

THE SIMMONS HARDWARE COMPANY, St. Louis, Mo., has issued a series of poster cards to be furnished to customers. A feature of the cards is that they are printed in different languages, English, French, Spanish and German, so that when strung together with cord or ribbon, as shown in the illustration, their legend may



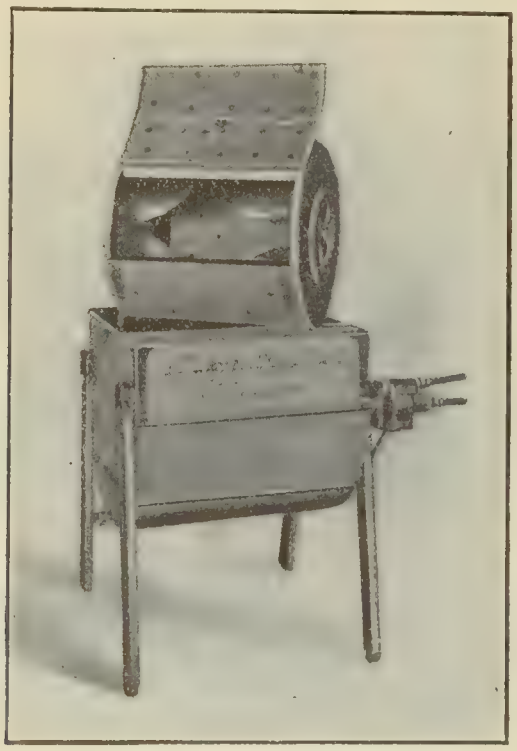

*Poster Card in English, French, Spanish and German Advertising Keen Kutter Safety Razors.*

be understood by a person reading any one of these four tongues. This form of advertising matter has been prepared by the company for use in connection with its large export business. The cards are attractively printed in colors, the familiar Keen Kutter design being in red with white letters, as usual in the company's printed matter. In addition to Safety Razors, represented by the cards illustrated, the lines referred to include Lawn Mowers, Meat Cutters, Food Choppers, &c.

## The Coffield Power Washer.

P. T. Coffield & Son, Dayton, Ohio, are putting on the market the washing machine shown in the accompanying illustration. It is operated by a water motor, shown on the right hand side of the tub, which is driven by city water pressure. The motion of the motor is transmitted to the cylinder by means of a small gear, which engages the large gear on the side of the cylinder in which the clothes are placed. In the illustration this cylinder is removed, and is shown resting on top of the tub. The motor is made of brass throughout, doing away with the possibility of rust, and is said to be simple in construction, and requiring no adjustment on the part of the operator. It is of the reciprocating type, but is made without a center, so that it has no point where it can be stopped that it will not start when the water is turned on. The makers state that the speed of the machine can be regulated to suit any material from the heaviest of blankets to the finest of lace curtains. The machine is con-

nected with the ordinary faucet by means of hose, which is also used to conduct the exhaust water from the motor to the sink. The tub is made of cypress and nicely finished. Clothes are put in the cylinder by opening the lid, which is hung in the middle. In closing, the lid slips free under two clamps at either end, while the middle hinge is provided with hooks which snap under screws when the lid goes in position. The cylinder is perforated, and as it revolves the suction of the scalding suds through and through the perforations dissolves and removes the dirt from the clothes. This action is quickened by the

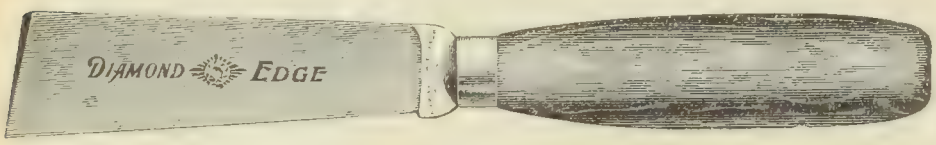


*Coffield Power Washer.*

tumbling of the clothes, which are carried to the top of the cylinder as it revolves and then drop down through the boiling water. There is a faucet at the bottom of the tub which drains it dry, thus avoiding the necessity of lifting. Rollers on the front legs of the washer and a handle on the back make it easy to roll it about, even when full.

## The Diamond Edge Utility Knife.

The Norvell-Shapleigh Hardware Company, St. Louis, Mo., has put on the market the knife herewith illustrated. The handle is round, and the blade is made out of the same steel as used in the company's Diamond Edge pocket knives. Great care is used in grinding, and the




*The Diamond Edge Utility Knife.*

knife can be easily sharpened, and will retain a keen edge. The knife is alluded to by the company as made on different lines and of different shape from other knives. It is called Utility because it is adapted to many uses, among which are cutting leather, card board, paper and wood, sharpening pencils, as a kitchen and butcher knife, &c.

## Hoxieized Cartridges.

The Hoxie Ammunition Company, Chicago, Ill., Hoxieizes all standard makes of cartridges by special machinery of its own invention without disturbing the original contents of the shell. The company guarantees the same accuracy as if purchased direct from the original makers. To emphasize the accuracy of this bullet a target is shown with ten shots at 200 yards off-hand, made with a model 1886 Winchester 0.33 caliber, U. M. C. cartridges and Hoxie bullets, and scoring 90 out of a possible 100. All the shots were within 5¼ in., which is offered as pretty good evidence of the accuracy of the company's product.

## New Model Yale Rim Night Latches.

The accompanying illustrations show two new models of Yale rim night latches, put on the market by the Yale & Towne Mfg. Company, 9 Murray street, New York. A special feature is the arrangement whereby the spring

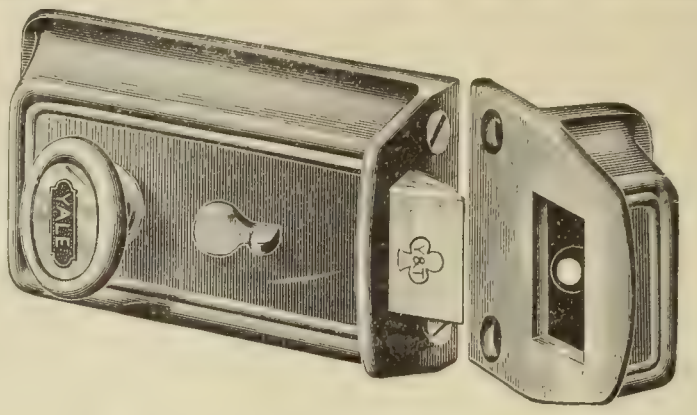



*Fig. 1.—Yale Rim Night Latch No. 42½.*

latch bolt, which is usually sufficient for use in the day time, may be deadlocked at night or whenever desired. Thus they combine the convenience of the night latch with the security of the deadlock. Two sizes are now made. The No. 42½, Fig. 1, is the same size and appearance as the Yale No. 42, except that it has an oval knob of polished brass, and an improved stop. The latter may

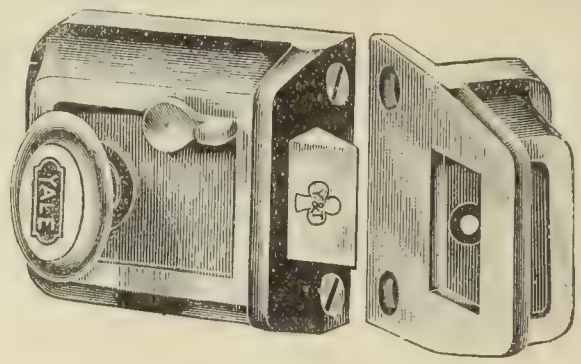



*Fig. 2.—Yale Rim Night Latch No. 442½.*

be used to hold the latch back out of use, or to deadlock it from the inside. The bolt is deadlocked from the outside by a slight backward turn of the key. The bolt may be retracted in one motion by inserting the key in the usual manner. The backset or distance from front to center of knob and cylinder of this lock is 2⅜ in. No. 442½, Fig. 2, differs both in size and appearance. Its



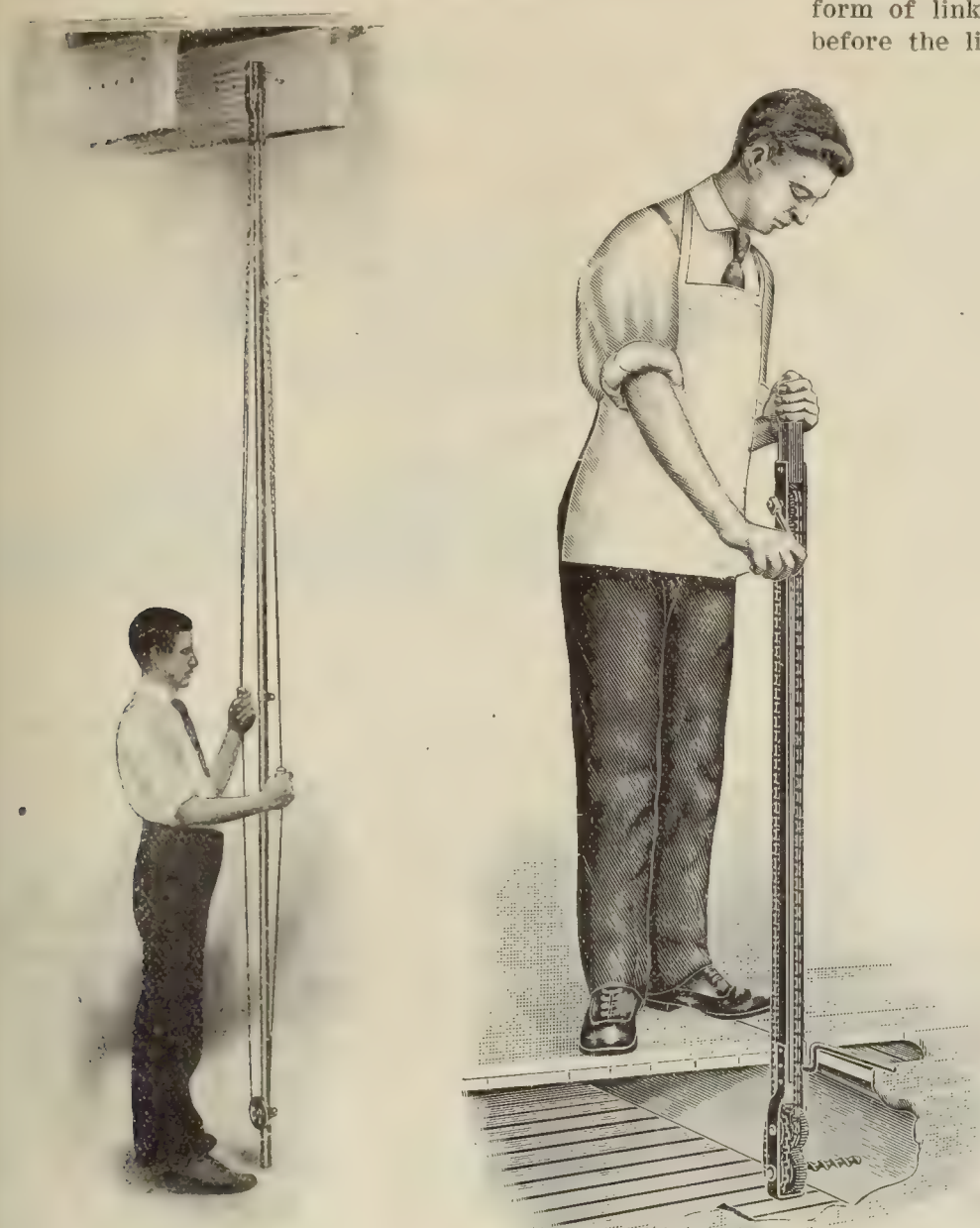

*Fig. 3. Cylinder Head and Keys for Yale Rim Night Latches.*

dimensions are 2⅜ x 2½ x 1 in., and it has a backset of 1⅝ in. The short case makes this lock suitable for doors with narrow stiles. Both locks are reversible and may be used on doors of either hand from ⅞ to 2½ in. in thickness. They have the regular Yale pin tumbler mechanism with paracentric key, and may be master keyed if desired. The locks are packed one in a paper box complete, with all screws and fittings.

Julia B. Glover, Ardsley, N. Y., is now prepared to furnish to the trade the Glover Improved Mixing Spoon, which is especially designed for batters, cake, bread, pastry, eggs, salad, &c. As originally made, the Spoon had a series of teeth on the outside of the bowl, to which have been added a number of slots and perforations calculated to facilitate the process of mixing. These features do not interfere with the general usefulness of the utensil as a Spoon, but are said to effect a considerable saving of time and labor.

## The Standard Boring Machine.

The Ford Auger Bit Company, Holyoke, Mass., is putting on the market the boring machine, illustrated herewith, particularly designed for the use of electricians. The machine is made with various modifications to adapt it to special uses. No. 1 in Fig. 1 represents the machine made with two tempered steel tubes. It can be quickly adjusted to any hight. The sprockets and chain, Fig. 2, are of the well-known bicycle construction. The machine will work in narrow spaces, it being less than 3 in. from front to rear, and any length bit can be used. The machine has handles that can be adjusted to any position, and is operated by pulling down, first with one hand, and then with the other. The internal ratchets have bronze bearings to make them durable. No. 2, Fig. 1, shows the below boring fixture, for work in old houses or buildings. The fixture is used with the head shown in Fig. 2, the same head as on the overhead machine, No. 1. In Fig. 3 is shown the base partition machine, which does away with the necessity of tearing off base boards. The wiring may be done without injuring anything. The bit may be inserted so as to bore in the opposite direction from that shown in the illustration.



No. 1. No. 2.

*Fig. 1.—The Standard Boring Machine.*

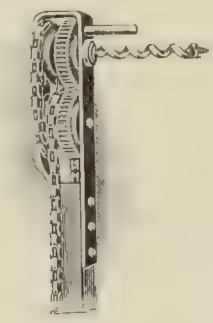


*Fig. 2.—Sprocket and Chain Used on Machine No. 1.*

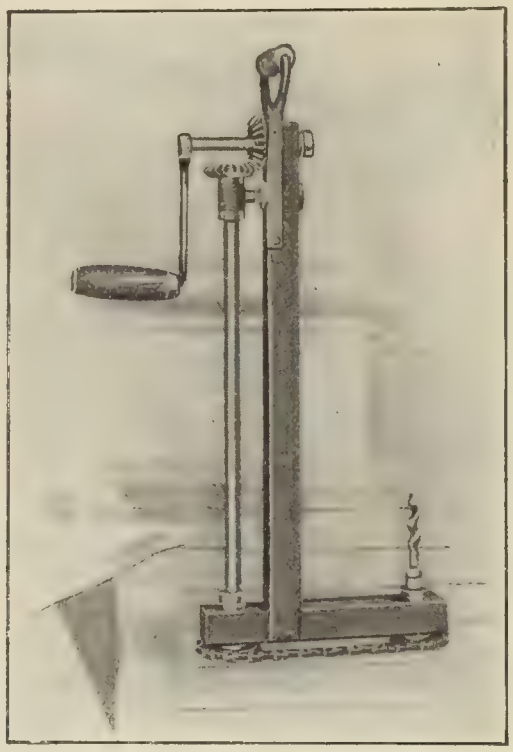
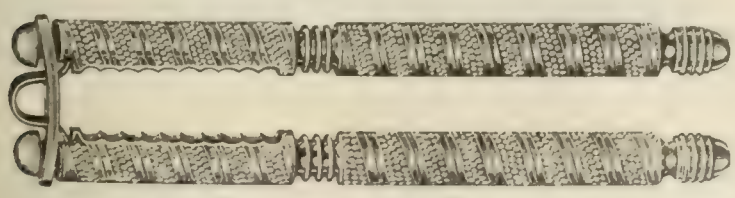


*Fig. 3.—Base Partition Machine.*

## The Quackenbush Link Nut Cracker.

H. M. Quackenbush, Herkimer, N. Y., has just put on the market the patented link nut cracker shown herewith.

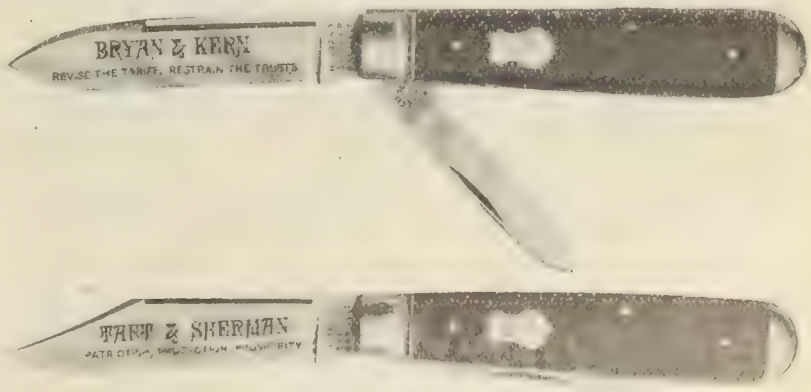


*The Quackenbush Link Nut Cracker.*

As the link lies crosswise the nut to be cracked can be placed nearer to the fulcrum of the link and handles, than with the usual form of cracker, enabling more pressure to be obtained in breaking the nut. The flat spring holds the handles in place, and also serves the purpose of keeping the handles against the palm of the hand when the crack is being used. It has been found by test that the form of link is strong, and that the handles will bend before the link finally gives way. There is nothing to bind or to work hard and the crack presents an attractive appearance, retaining the good features of the ordinary form of crack while embodying new ones.

## Campaign Pocket Knives.

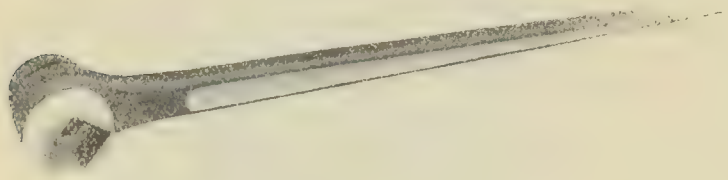
Hibbard, Spencer, Bartlett & Co., Chicago, Ill., are offering the campaign pocket knives here illustrated. The patterns are furnished in cocoa, wood and stag horn handles, with spear point or clip point blade, as desired, etched with the names of the Presidential candidates of the Republican, Democratic, Prohibition, Socialist, and other parties. The knife itself is stamped on the tang Hibbard, Spencer, Bartlett & Co., and is an American knife, made of the very best English steel, and fully warranted. It is 3½ in. long, brass lined, clean inside, with double bolsters and shield. The large blade is crocused, or mirror polished on one side, upon which the names of the candidates are nicely etched. With each shipment of knives, the retailer is furnished a striking sign for counter and window display purposes. The sign is red in color, with black lettering.




*Campaign Pocket Knives.*

## M. & J. Ratchet Track Wrench.

The Buffalo Railway Wrench Company, Buffalo, N. Y., is putting on the market the ratchet wrench here shown. It is designed for track work on steam and electric railroads, and is made to withstand the rough usage incident to such service. All parts are made extra large, and the wearing parts are exceptionally heavy and hardened to insure long life and a minimum of wear. The tool is also very simple in construction, consisting of only five pieces: the handle, two jaws, the spring and the ratchet pin. The jaws project on either side of the head; one puts on a nut and the other removes it. For reversing it is only necessary to turn the wrench around. The company declares that there is nothing exposed to get broken, and that the tool cannot be clogged by dirt, snow or ice. The point is also made that the ratchet device enables a workman to accomplish much more work in

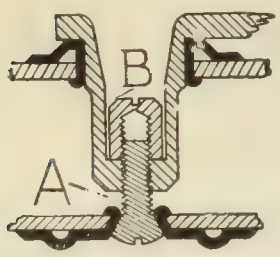


*M. & J. Ratchet Track Wrench.*

the same time than with an ordinary wrench, which has to be put on and taken off many times in setting up a nut. Sizes are made to fit the standard square or hexagon nuts on the regular ¾, ⅞, 1 and 1⅛ in. bolts in use on steam and electric roads. All sizes have a handle 30 in. long from center of head to end.

## K E C O Steel Tapes.

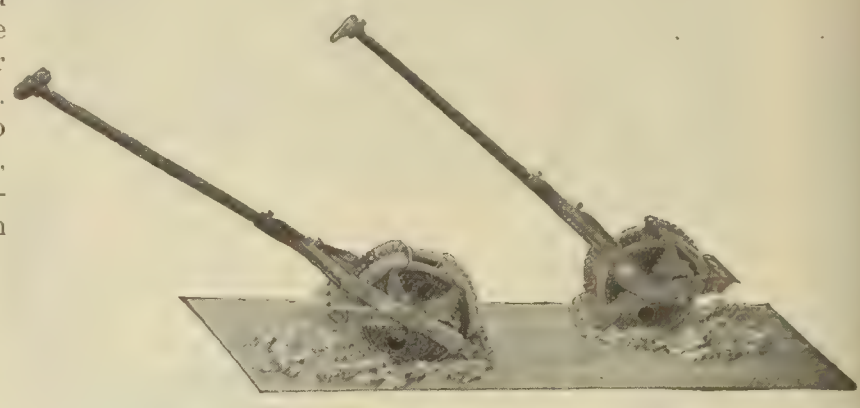
The Keuffel & Esser Company, 127 Fulton street, New York, has enhanced the quality of its entire line of steel tapes by the adoption of two improvements. One is the "K E C O" finish (coined from the initials of the corporate name), which makes a much greater contrast between the body of the tape and the bright graduations, thereby rendering readings of the symbols exceptionally easy. Equally important is the fact that the character of the finish protects the steel surface of the ribbon from the corrosive influences of atmospheric moisture or such as is imparted in the necessary handling by salesman or customer, as the goods are shown. The purpose of the new finishing treatment is to assure the preservation of the merchandise in the merchant's possession pending sale, so that regardless of humidity, handling or other rust producing conditions, the tapes reach the consumer fresh and in good salable order. The other betterment permits of an easy readjustment of the winding mechanism to compensate for or take up the wear of the working parts resulting from much use. It also affords a sure and easy regulation of the winding portion, when for any reason it is too tight or too loose as time elapses. The distance apart of the metal plates on both sides of the center may be regulated and fixed by means of an inner sleeve nut threaded on the center post of the plate, and which is slotted for screw driver operation. As all the steel tapes are now made, the entire winding device may be removed by reversing the center pinion screw on one side. As the inner end of the tape is a loop that slips off the side post of the reel or barrel, the user can readily adjust the tension and reduce any possible bulge to original proportions and as quickly assemble the parts. The details of the adjusting mechanism differ somewhat in the different styles of steel tapes, but the same result is accomplished by tightening or loosening a slotted nut, another form of which is here illustrated.




*One of Several Methods of Readjusting K E C O Steel Tapes.*

## Weber Double Acting Floor Scraper.

The Weber Mfg. Company, West Allis, Wis., is manufacturing the double-acting floor scraper, two views of which are presented herewith, showing the position of the knives when the scraper is being pushed forward, and also when it is being pulled backward. The construction is such that it may be pushed forward or pulled backward, according to the wish of the operator. It is equipped with half ball bearing socket plate holders, the



*The Weber Double Acting Floor Scraper.*

latter being adjustable by means of set screws for holding the cutting edge in the best position for scraping different kinds of floors. The scraper is referred to as being strong and durable; has five different attachments; can be used on a shearing cut, and has an automatic sharpening device that can be used to sharpen the knives without removing them from the machine. Points which the manufacturer strongly emphasizes are that the scraper can be used in small and confined spaces; that it can be taken in three parts for transportation from one story to another, and that it can be used with one or two weights, according to the requirements of the case.

## Kokomo Globe Steel Range.

The Globe Stove & Range Company, Kokomo, Ind., has put on the market the new steel range shown here-




*The Kokomo Globe Steel Range.*

with. The company states that the stove is constructed along established lines, and has practically all the devices, accessories, &c., which experience has shown to be desirable. Its distinguishing features, however, are its size, shape, and appearance, in which respects it is said

to follow a change in the character of the demand. This shows a decided tendency in favor of plain finished stoves, which have been furnished mainly in the higher grades. This range, it is believed, will meet the demand for a medium priced piece of goods designed along these lines.

## Initiative Revolution Counter.

Schuchardt & Schütte, 136 Liberty street, New York, have put on the market the Initiative revolution counter, here reproduced. It will register in quickly read figures



*Initiative Revolution Counter.*

from 0 to 10,000 in either direction, and then repeat. It can be expeditiously set to 0 from any number, and the count is read like an ordinary number, all digits being lined up in a row. This feature, it is said, is peculiar to this indicator, giving instantaneous results. Its compact size, easy way of registering, and the fact that the record may be read naturally from left to right, makes it especially convenient and serviceable. The counters are arranged for both right and left recording. For adjusting, a pinion with small toothed wheel at the back of the counter is screwed into the hole marked R or L. If set at R, the counter must be used solely for recording right hand revolutions and vice versa. The counter has a zero, so that the units may be turned back to 0 by means of the spindle, while the tens and hundreds are brought back to 0 by the middle screw at the back, and the thousands by a second screw. The tens as well as the other numbers may be moved backward or forward if the units stand at 1. If they stand at 0, it is impossible to move the other numbers by the back screw. As already stated, the tens and hundreds are moved by a screw, which can be turned forward as far as desired, and if turned forward beyond 10 and 100, respectively, the thousands can also be moved by this screw. Reverse turning is only possible until both are at 0. The thousands can only be moved forward.

# PAINTS, OILS AND COLORS

### Animal, Fish and Vegetable Oils—

| | ₱ gal |
|---|---|
| Linseed, State and Western, raw | 43 @45 |
| Linseed, Boiled | 45 @46 |
| Linseed, Raw | 44 @45 |
| Linseed, Calcutta, in bbls | 70 @71 |
| Lard, Prime, Winter | 68 @69 |
| Lard, No. 1 | 49 @52 |
| No. 1 | 46 @48 |
| Cottonseed, Crude, f.o.b. mill | @.. |
| Summer Yellow, prime | 37 @37½ |
| Summer White | 39½@40 |
| Yellow Winter | 45 @45¾ |
| Tallow, Acidless | 56 @58 |
| Menhaden, Brown, Strained | 35 @36 |
| Sperm | 25 @.. |
| Light Strained | 35 @36 |
| Bleached Winter | 37 @39 |
| Ex. Bleached Winter | 39 @41 |
| Cocoanut, Ceylon | ₱ lb 6¼@6½ |
| Cochin | ₱ lb 6⅞@7⅛ |
| Cod, Domestic, Prime | 41 @43 |
| Newfoundland | 43 @45 |
| Red, Elaine | 38 @40 |
| Saponified | ₱ lb 5¾@5⅞ |
| Olive, Yellow | 80 @85 |
| Neatsfoot, Prime | 55 @58 |
| Palm, Lagos | ₱ lb 5¾@6 |

### Mineral Oils—

| | ₱ gal. |
|---|---|
| Black, 29 gravity, 25@30 cold test | 13 @13½ |
| 29 gravity, 15 cold test | 13½@14 |
| Summer | 12½@13 |
| Cylinder, light filtered | 20½@21 |
| Dark, filtered | 18 @19 |
| Paraffine, 903-907 sp. gravity | 14½@15 |
| 900 sp. gravity | 13½@14 |
| 880 sp. gravity | 11 @11½ |
| Red | 13½@14 |

### Miscellaneous—

| | |
|---|---|
| Baryte: | |
| White, Foreign | ₱ ton $18.50@20.50 |
| Amer., floated | ₱ ton 18.00@20.00 |
| Off color | ₱ ton 13.00@16.50 |
| Chalk, in bulk | ₱ ton 3.00@3.40 |
| China Clay, Imported | ₱ ton 11.50@18.00 |

| | ₱ gal. |
|---|---|
| Cobalt, Oxide | ₱ 100 lb 1.45@2.60 |
| Whiting, Commercial | ₱ 100 lb 42 @52 |
| Gilders | ₱ 100 lb .55@.60 |
| Ex. Gilders | ₱ 100 lb .60@.65 |

### Putty, Commercial—

| | ₱ 100 lb |
|---|---|
| In bladders | $1.70 @1.80 |
| In bbls. or tubs | 1.20 @1.45 |
| In 1 lb to 5 lb cans | 2.65 @2.95 |
| In 12½ to 50 lb cans | 1.50 @1.90 |

### Spirits Turpentine—

| | ₱ gal. |
|---|---|
| In Oil bbls | 38½@39 |
| In machine bbls | 39 @39½ |

### Glue—

| | ₱ lb |
|---|---|
| Cabinet | 12 @15 |
| Common Bone | 7½@9 |
| Extra White | 18 @24 |
| Fish, liquid, 50 gal. bbls., per gallon | 60 @1.20 |
| Foot Stock, White | 12 @14 |
| Foot Stock, Brown | 9 @11 |
| German Common Hide | 10 @12 |
| German Hide | 12 @18 |
| French | 10 @40 |
| Irish | 13 @16 |
| Low Grade | 10 @12 |
| Medium White | 14 @17 |

### Gum Shellac—

| | ₱ lb |
|---|---|
| Bleached, Commercial | 24 @28 |
| Bone Dry | 30 @35 |
| Button | 30 @40 |
| Diamond I | 46 @47 |
| Fine, Orange | 34 @35 |
| A. C. Garnet | 27 @28 |
| G. A. L. | 20 @21 |
| Kala Button | 18 @19 |
| D. C. | 47 @48 |
| Octagon B | 39 @40 |
| T. N. | 27 @28 |
| V. S. O. | 46 @47 |

### Colors in Oil—

| | ₱ lb |
|---|---|
| Black, Lampblack | 12 @14 |
| Blue, Chinese | 36 @46 |
| Blue, Prussian | 32 @36 |
| Blue, Ultramarine | 13 @16 |
| Brown, Vandyke | 11 @14 |
| Green, Chrome | 12 @16 |
| Green, Paris | @24 |
| Sienna, Raw | 12 @15 |
| Sienna, Burnt | 12 @15 |
| Umber, Raw | 11 @14 |
| Umber, Burnt | 11 @14 |

### White and Red, Lead &c.—

| | ₱ lb |
|---|---|
| Lead, English white in Oil | 10⅛@10⅜ |
| Lead, American White: | |
| Dry and in Oil, 100, 250 and 500 lb kegs | 7 |
| Dry and in Oil, 25 and 50 lb kegs | 7¼ |
| Dry and in Oil, 12½ lb kegs | 7½ |
| In Oil, 25 lb tin pails | 7½ |
| In Oil, 12½ lb tin pails | 8 |
| In Oil, 1, 2, 3 and 5 lb tin cans, ass't | 9 |
| Red Lead and Litharge: | |
| In 100 lb kegs | 7 |
| In 25 and 50 lb kegs | 7¼ |
| In 12½ lb kegs | 7½ |
| In lots of less than 500 lbs, ½¢ ₱ lb advance over above prices of White and Red Lead and Litharge. | |

Lead, American. Terms: On lots of 500 lbs and over, 60 days, or 2% for cash if paid in 15 days from date of invoice.

### Zinc, Dry—

| | ₱ lb |
|---|---|
| American, dry | 5⅛@5⅝ |
| Red Seal (French process) | 6¾@7 |
| Green Seal | 7¼@7½ |
| German Red Seal (French process) | 6⅝@7 |
| Green Seal | 7¼@7⅝ |
| White Seal | 7¾@8¼ |
| French, Red Seal | 8⅜@8⅞ |
| Green Seal | 10⅜@10⅝ |

### Dry Colors—

| | ₱ lb |
|---|---|
| Black, Carbon | 6½@10 |
| Black, Drop, American | 3½@8 |
| Black, Drop, English | 5 @15 |
| Black, Ivory | 16 @20 |
| Lamp, commercial | 4 @6 |
| Blue, Celestial | 4 @6 |
| Blue, Chinese | 31 @33 |
| Blue, Prussian | 29 @31 |
| Blue, Ultramarine | 3½@15 |
| Brown, Spanish | ½@1 |
| Carmine, No. 40 | $3.10@3.25 |
| Green, Chrome, ordinary | 3½@5 |
| Green, Chrome, pure | 17 @25 |
| Ocher, American | ₱ ton $8.50@16.00 |
| American Golden | 2½@3¼ |
| French | 1¼@2 |
| Foreign Golden | 3 @4 |
| Orange Mineral, English | 10 @12 |
| French | 12¾@13 |
| German | 12 @13 |
| American | 9 @10 |
| Red, Indian, English | 4½@6 |
| American | 3 @3¼ |
| Red, Turkey, English | 4 @10 |
| Red, Tuscan, English | 7 @10 |
| Red, Venetian, Amer. | ₱ 100 lb $0.50@1.25 |
| English | ₱ 100 lb $1.15@1.60 |
| Sienna, Italian, Burnt and Powdered | 3 @9 |
| Italian, Raw, Powdered | 3 @7 |
| American, Raw | 1½@2 |
| American Burnt and Pow'd | 1½@2 |
| Talc, French | ₱ ton $13.00@25.00 |
| American | ₱ ton 11.00@25.00 |
| Terra Alba, French | ₱ 100 lb .90@1.00 |
| English | ₱ 100 lb .80@1.00 |
| American ... | ₱ 100 lb, No. 1. .75@.80 |
| American ... | ₱ 100 lb, No. 2. .60@.65 |
| Umber, T'key, Bnt, & Pow. | 2¾@3 |
| Turkey, Raw and Powdered | 2¾@3 |
| Burnt, American | 1½@2 |
| Raw, American | 1½@2 |
| Yellow, Chrome, Pure | 13¾@15 |
| Vermilion, American Lead | 7 @25 |
| Quicksilver, bulk | 65 @.. |
| Quicksilver, bags | @66 |
| English, Imported | 65 @70 |
| Chinese | $0.90@1.00 |


# THE IRON AGE

*The oldest paper in the world devoted to the interests of the Hardware, Iron, Machinery and Metal Trades, and a standard authority on all matters relating to those branches of industry*

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# Current Hardware Prices.

**General Goods.**—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

**Special Goods.**—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

**Range of Prices.**—A range of prices is indicated by means of the symbol @. Thus 33⅓ @ 33⅓ & 10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

**Names of Manufacturers.**—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1907, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

**Standard Lists.**—"The Iron Age Standard Hardware Lists" contains the list prices of many leading goods.

**Additions and Corrections.**—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

### Adjusters, Blind—

Columbian and Domestic.....33⅓%
North's .....10%
Zimmerman's See Fasteners, Blind.

### Window Stop—

Ives' Patent.....35%
Taplin's Perfection.....35%

### Ammunition—See *Caps, Cartridges, Shells, &c.*

### Anti—Rattlers—

Fernald Mfg. Co. Burton Anti-Rattlers, ℔ doz. pairs, Nos. 1, $0.75; 2, $0.60; 4, $1.00; 5, $0.50.
Fernald Quick Shifter, ℔ doz. pairs .....$2.00@$3.00

### Anvils—American—

Eagle Anvils.....℔ lb @8 ¢
Hay-Budden, Wrought. .....9½@9¾¢
Trenton .....℔ lb 9½@9¾¢

### Imported—

Swedish Solid Steel Sisco, Superior, ℔ lb.....10@10½¢
Peter Wright & Sons, ℔ lb, 84 to 349 lb, 11¢; 350 to 600 lb, 11½¢.

### Anvil, Vice and Drill—

Millers Falls Co., $18.00.....15&10%

### Apple Parers—See *Parers, Apple, &c.*

### Aprons, Blacksmiths'—

Livingston Nail Co.....10%

### Augers and Bits—

*Com. Double Spur....75&10@80%*
*Jennings' Patn., Bright.65&10@70%*
*Black Lip or Blued...65@65&5%*
*Boring Mach. Augers.....70%*
*Car Bits, 12-in. twist.....40&10%*
Ford's Auger and Car Bits.....40&5%
Ft. Washington Auger Co., Conard's .....35%
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip. R. Jennings' list 25&7½
No. 30, R. Jennings' list.....50
Russell Jennings'.....25&10&2½
L'Hommedieu Car Bits.....15
Mayhew's Countersink Bits.....45
Pugh's Black.....20%
Pugh's Jennings' Pattern.....35%
Snell's Auger Bits.....60%
Snell's Bell Hangers' Bits.....60%
Snell's Car Bits, 12-in. twist.....60%
Snell's King Auger Bits.....50%
Wright's Jennings' Bits.....50%

### Bit Stock Drills

See *Drills, Twist.*

### Expansive Bits—

Clark's Pattern, No. 1, ℔ doz., $26; No. 2, $18.....60&10%
Ford's, Clark's Pattern...60&5@60&10%
C. E. Jennings & Co., Steer's Pat..25%
Lavigne Pat., small size, $18.00; large size, $26.00.....60&10%
Swan's .....60%

### Gimlet Bits—

*Per gro.*
*Common Dbl. Cut.....$3.00@3.25*
*German Pattern, Nos. 1 to 10, $4.75; 11 to 13, $5.75*

### Hollow Augers—

*Bonney Pat., per doz..$5.50@6.00*
Ames .....25&10
Universal .....20

### Ship Augers and Bits—

*Ship Augers.....40&10@—%*
Ford's .....33⅓&5%
C. E. Jennings & Co.:
L'Hommedieu's .....6[illegible]
Warren's .....33⅓&7½%
Snell's .....48%

### Awl Hafts—See *Handles, Mechanics' Tool.*

### Awls—

*Brad Awls:*
*Handled .....gro. $2.75@3.00*
*Unhdld., Shldered...gro.63@66¢*
*Unhandled, Patent..gro.66@70¢*
*Peg Awls:*
*Unhandled, Patent..gro. 31@34¢*
*Unhdld., Shldered..gro. 65@70¢*
*Scratch Awls:*
*Handled, Com...gro. $3.50@4.00*
*Handled, Socket.gro.$11.50@12.00*

### Awl and Tool Sets—See *Sets, Awl and Tool.*

### Axes—

*Single Bit, base weights: Per doz.*
*First Quality.....$4.75@5.00*
*Second Quality.....$4.25@4.50*
*Double Bit, base weights:*
*First Quality.....$7.00@7.50*
*Second Quality.....$6.50@6.75*

### Axle Grease—See *Grease, Axle.*

### Axles—Iron or Steel.

*Concord, Loose Collar...4¼@4½¢*
*Concord, Solid Collar....4½@5 ¢*
*No. 1 Common, Loose...3½@4 ¢*
*No. 1½ Com., New Style.4¼@4¾¢*
*No. 2 Solid Collar.....4¼@4¾¢*
*Half Patent:*
*Nos. 7, 8, 11 and 12.....70%*
*Nos. 13 to 14.....70%*
*Nos. 15 to 18...70&10@70&10&5%*
*Nos. 19 to 22...70&10@70&10&5%*

### Boxes, Axles—

*Common and Concord, not turned .....lb., 5@6¢*
*Common and Concord, turned, lb., 6@7¢*
*Half Patent.....lb., 9½@10¢*

### Bait—Fishing—

Hendryx:
A Bait.....20%
B Bait.....25%
Competitor Bait.....20&5%

### Balances—Sash—

Caldwell new list.....50&10
Pullman .....50&10%

### Spring—

*Light Spring Balances.60@60&5%*
Chatillon's:
Light Spg. Balances.....50@50&10%
Straight Balances.....40@40&10%
Circular Balances.....50&10%
Large Dial.....30%

### Barb Wire—See *Wire, Barb.*

### Bars—Crow—

*Steel Crowbars, 10 to 40 lb.... per lb., 2¼@2½¢*

### Towel—

No. 10 Ideal, Nickel Plate..℔ gro. $8.50

### Beam, Scale—

*Scale Beams.....40%*
Chattillon's No. 1.....30%
Chatillon's No. 2.....40%

### Beaters, Carpet—

Holt-Lyon Co.:
No. 12 Wire Coppered ℔ doz. $0.80; Tinned .....$0.85
No. 11 Wire Coppered ℔ doz. $1.15; Tinned .....$1.20
No. 10 Wire Tinned.....℔ doz. $1.50

### Beaters Egg—

Dover Stamping & Mfg. Co.:
Genuine Dover, per gro., No. 1, Tumbler Size, $7.50; No. 2, Family Size, $7.50; No. 3, Extra Family Size, $24.00; No. 4, Hotel Size, $30.00.
Holt-Lyon Co.:
Holt, per doz., No. 5, Jap'd, $0.80; No. A, Jap'd, $1.15; No. B, Jap'd, $1.85; No. 6, Jap'd, $1.65.
Lyon, Jap'd, per doz., No. 2, $1.35.
Taplin Mfg. Co.:
Improved Dover, per gro., No. 60, $6.00; No. 75, $6.50; No. 100, $7.00; No. 102, Tin'd, $8.50; No. 150, Hotel, $15.00; No. 152, Hotel Tin'd, $17.00; No. 200, Tumbler, $8.50; No. 202, Tumbler Tin'd, $9.50; No. 300, Mammoth, per doz., $25.00.

### Bellows—

*Blacksmith, Standard List:*
*Split Leather.....60&10@65%*
*Grain Leather.....50@50&10%*

### Hand—

| *Inch..* | *6* | *7* | *8* | *9* | *10* |
|---|---|---|---|---|---|
| *Doz..* | *$5.00* | *5.50* | *6.00* | *6.50* | *7.50* |

### Molders—

| *Inch..* | *10* | *12* | *14* | *16* |
|---|---|---|---|---|
| *Doz..* | *$7.50* | *9.00* | *12.00* | *15.00* |

*Net Prices.*

### Bells—Cow—

*Wrought Cow Bells.....77%*
Jersey .....75&10
Texas Star .....50

### Door—

Home, R. & E. Mfg. Co.'s.....55&10%

### Hand—

*Polished, Brass.....60@60&10%*
*White Metal.....60@60&10%*
*Nickel Plated.....50&10%*
*Swiss .....50&10%*
Cone's Globe Hand Bells.....33⅓@35%

### Miscellaneous—

*Farm Bells.....lb., 2¼@2½¢*
*Church and School....60@60&10%*

### Belting—Leather—

*Standard .....70&10@70&10&5%*
*Light .....75&10%*
*Cut Leather Lacing.....50&10%*
*Leather Lacing Sides, per sq. ft. 22@23¢*

### Rubber—

*Competition (Low Grade), 70&10@75%*
*Standard .....60&10@70%*
*Best Grades.....40@50%*

### Bench Stops—See *Stops, Bench*

### Benders and Upsetters, Tire—

Green River Tire Benders and Upsetters .....20%

### Bicycle Goods—

John S. Leng's Son & Co.'s 1908 list:
Chain, Parts, Spokes.....50%
Tubes .....60%

### Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

### Blocks Tackle—

*Common Wooden.....75@75&5%*
B. & L. B. Co.:
Boston Wood Snatch, 50%; Eclipse Steel, 75%; Hollow Steel, 50&10%; Star Wire Rope, 50%; Tarbox Metal-Snatch, 50%; Tarbox New Style Steel, 50&10%; Wire Rope Snatch, 50%.
Lane's Patent Automatic Lock and Junior .....30%
See also Machines, Hoisting.

### Boards, Stove—

*Paper and Wood Lined.....55%*
*Embossed .....55%*

### Boards, Wash—

See *Washboards.*

### Bobs, Plumb—

Keuffel & Esser Co.....33⅓&10%

### Bolts Carriage, Machine, &c,—

*Common Carriage (cut thread):*
*¾ x 6 and smaller..75&5@—%*
*Larger and longer.....70@—%*
*Phila. Eagle, $3.00 list...80@—%*
*Bolt Ends.....70@—%*
*Machine (Cut Thread):*
*⅜ x 4 and smaller..75&10@—%*
*Larger and longer.....70@—%*

### Door and Shutter—

*Cast Iron Barrel, Japanned, Round Brass Knobs:*

| *Inch ...* | *3* | *4* | *5* | *6* | *8* |
|---|---|---|---|---|---|
| *Per doz..* | *$0.30* | *.35* | *.45* | *.60* | *.80* |

*Cast Iron Spring Foot, Jap'd:*

| *Inch .....* | *6* | *8* | *10* |
|---|---|---|---|
| *Per doz.....* | *$1.20* | *1.50* | *2.25* |

*Cast Iron Chain, Flat, Japanned:*

| *Inch .....* | *6* | *8* | *10* |
|---|---|---|---|
| *Per doz.....* | *$1.00* | *1.40* | *1.65* |

*Cast Iron Flat Shutter, Jap'd, Brass Knobs:*

| *Inch .....* | *6* | *8* | *10* |
|---|---|---|---|
| *Per doz.....* | *$0.75* | *.95* | *1.25* |

*Wrought Barrel Japanned, 80&10@80&10&5%*
*Barrel Bronzed.....60&10%*
*Spring .....70&10@70&10&10%*
*Shutter .....50&5@50&10&5%*
*Square Neck.....75@75&10%*
*Square .....70&10&10@80%*
Ives' Patent Door.....55
Ives' Wrought Metal.....45%

### Expansion—

F. H. Evans' Crescent.....40@60%
Richards Mfg. Co.....55&10%
Star Expansion Bolt Co.:
Star Lag Screw Type..60&10&5&2%
Star, Wood Screw Type .....40%
Star, Machine, Single Wedge....60%
Star, Machine, Double Wedge....60%
Steward & Romain Mfg. Co.:
Style No. 13, Double.....60%
Style No. 1, Single.....60%
Style No. 100, Dbl. Jaw, Single..55%
Lag Screw.....66⅔%

### Plow and Stove—

*Plow .....65&5@70%*
*Stove .....85@85&5%*

### Tire—

*Common Iron.....80@80&5%*
*Norway Iron.....80@80&5%*
American Screw Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84...82½%
Bay State, list Dec. 28, '99.....80%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84...82½%
Eclipse, list Dec. 28, '99.....80%
Russell, Burdsall & Ward Bolt & Nut Co.:
Empire, list Dec. 28, '99.....80%
Norway Phila., list Oct. '84.....80%
Eagle .....82½%
Shelton Co.:
Tiger Brand, list Dec. 28, '99....80%
Phila., Eagle, list Oct. 16, 1884..82½%
Upson Nut Co.:
Tire Bolts.....72½%

### Borers, Bung—

| *Borers Bung, Ring, with Handle: Inch.....* | *1¼* | *1½* | *1¾* | *2* |
|---|---|---|---|---|
| *Per doz...* | *$4.80* | *5.60* | *6.40* | *8.00* |
| *Inch.....* | | *2¼* | | *2½* |
| *Per doz.....* | | *$8.65* | | *11.50* |

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.75; No. 3, $2.50 each.....25%

### Boxes, Mitre—

C. E. Jennings & Co.....25%
Langdon, New Langdon and Langdon Improved, 20&10%; Langdon Acme .....15&10%
Perfection .....40%
Seavey .....45%

### Braces—

*Comman Ball, American....$1.50*
Barber's .....50&10&10@60&10%
Fray's Genuine Spofford's.....60%
Fray's No. 61, 166, 206, 614.....50%
C. E. Jennings & Co.....50&5%
Mayhew's Ratchet.....60%
Mayhew's Quick Action Hay Pat...50%
Millers Falls Drill Braces.....25&10%
P., S. & W. Co., Peck's Pat....60&10%

### Brackets—

*Wrought Steel.75&10@75&10&10%*
Bradley Metal Clasp...80&10@80&10&5%
Griffin's Pressed Steel.....75@75&10%
Griffin's Folding Brackets.....70&10%
Taplin Victor Handy Egg Beater Bracket .....℔ doz. $1.50

### Bright Wire Goods—See *Wire and Wire Goods.*

### Broilers—

Kilbourne Mfg. Co.....75&20%
Wire Goods Co.....75%

### Buckets, Galvanized—

*M'fr's list, price per gross.*

| | *Quart..* | *10* | *12* | *14* | |
|---|---|---|---|---|---|
| *Water, Reg...* | | *26.85* | *29.50* | *33.50* | 10@7½&5&5% |
| *Water, Hvy...* | | *45.35* | *48.00* | *52.00* | |
| *Fire, Rd. Btm.* | | *32.00* | *34.65* | *38.65* | |
| *Well .....* | | *37.35* | *41.35* | *45.35* | |

### Bull Rings—See *Rings, Bull.*

### Butts—Brass—

*Wrought, High List, Oct. 26,'06.55%*
Cast Brass, Tiebout's.....40%

### Cast Iron—

*Fast Joint, Broad....40&10@50%*
*Fast Joint, Narrow...40&10@50%*
*Loose Joint.....70&10@75%*
*Loose Pin.....70&10@75%*
*Mayer's Hinges.....70@70&5%*
*Parliament Butts.....70@70&5%*

### Wrought Steel—

*Bright.*
*Light Narrow, Light Reversible .....70&5%*
*Reversible and Broad..70&5%*
*Loose Joint, Narrow, Light Inside Blind, &c.....70%*
*Back Flaps, Table Chest.65%*
*Japanned.*
*Light Narrow, Loose Pin, 40&5%*
*Light Narrow, Ball Tip..60%*
*Broad .....40&5%*
*Steeple Tipped.....70%*
*Ball Tipped.....70%*

*Extra, 10@—*

## Cages, Bird—

Hendryx Brass: Series 3000, 5000, 1100, net list; 1200, 15%; 200, 300, 900 ..... 30%
Hendryx Bronze: Series 700, 800.... 30
Hendryx Enameled..... 35%

## Calipers—See *Compasses.*

## Calks, Toe and Heel—

*Blunt, 1 prong, per lb.....4@4½¢*
*Sharp, 1 prong, per lb...4½@5¢*
Burke's, 1 pg. Blunt Toe, 3¾¢; 2 pg. Blunt Toe, 4¼¢; 1 pg. Sharp Toe, 4¼¢; 2 pg. Sharp, 4¾¢; Blunt Heel, 4¼¢; Sharp Heel.....4¾¢
Lautier Blunt, 4@4¼¢; Sharp, 4½@4¾¢
Perkins', Blunt, ₱ lb, 3.65¢; Sharp, 4.15¢

## Can Openers—

*See Openers, Can.*

## Caps, Percussion—

*Eley's E. B.....52@55¢*
*G. D.....per M 34@35¢*
*E. L.....per M 40@42¢*
*G. E.....per M 48@50¢*
*Musket.....per M 62@63¢*

### Primers—

*Berdan Primers, $2 per M..20@25%*
*Primer Shells and Bullets..15&10%*
*All other primers per M..$1.52@1.60*

## Carpet Stretchers—

See *Stretchers, Carpet.*

## Cartridges—

*Blank Cartridges:*
*32 C. F., $5.50.....10&5%*
*38 C. F., $7.00.....10&5%*
*22 cal. Rim, $1.50.....10&5%*
*32 cal. Rim, $2.75.....10&5%*
*B. B. Caps, Con. Ball, Swgd..$1.90*
*B. B. Caps, Round Ball....$1.49*
*Central Fire.....25%*
*Target and Sporting Rifle..15&5%*
*Primed Shells and Bullets..15&10%*
*Rim Fire, Sporting.....50%*
*Rim Fire, Military.....15&5%*

## Casters—

*Bed.....65&10@70%*
*Plate.....60&5@60&10%*
*Philadelphia.....70&10@75%*
Acme Ball Bearing.....35%
Gem Roller Bearing.....70&10&10&5
Steel Gem.....50%
Standard Ball Bearing.....45%
Yale (Double Wheel) low list...40&10%

## Cattle Leaders—

See *Leaders, Cattle.*

## Chain, Proof Coil—

*American Coil, Straight Link:*

| 5-16 | 3/8 | 7-16 | 1/2 | 5/8 |
|---|---|---|---|---|
| 5.55 | 4.60 | 3.95 | 3.75 | 3.65 | 3.55 |

*1/4 to 1 1/4 inch.*
*3.55*
*In cask lots, deduct 25c.*
*German Coil.....60@60&5%*
*German Pattern Coil:*
*6-9 to 1.....70&5@70&10%*
*2 and 3..60&10&10@60&10&10&5%*
*4, 5 and 6.....50&10@50&10&10&5%*

### Halter—

*Halter Chains.....60&5@60&10%*
*German Patent Halter Chain*
*List July 24, '97....60&10&5@70%*
Garrett Mfg. Co.:
Halter .....35&5%

## Cow Ties—

*See Halters and Ties.*

## Trace, Wagon, &c.—

*Traces, Western Standard: 100 pr.*
*No. 2—6 3, Straight, with ring..$28.00*
*No. 2—6 2, Straight, with ring..$29.00*
*No. 2—8 2, Straight, with ring..$32.00*
*No. 2—10-2, Str'ght, with ring..$37.00*
*NOTE.—Add 2c per pair for Hooks Over Traces; add per pair for Nos. 2 and 3: No. 1, 3c; No. 0, 4c to price of Straight Link.*
*Eastern Standard Traces, Wagon Chain, &c...60&10@60&10&5%*

## Miscellaneous—

*Jack Chain, list July 10, '97:*
*Iron.....60&10&7½%*
*Brass.....65%*
*Safety and Plumbers' Chain..75%*
*Gal. Pump Chain....lb..7½@8%*
Bridgeport Chain Co.:
Triumph Halter and Coil.35&2½@40
Triumph Dog.....50&10@60
Brown Halter and Coil....45@50&5
Covert Mfg. Co.:
Breast, Halter, Heel, Rein, Stallion .....40%
Oneida Community:
American Halter, Dog and Kennel Chains .....35&2½@40
Niagara Dog Leads and Kennel Chains .....45@50&5
Ware Goods Co.:
Dog Chain.....70
Universal Dbl.-Jointed Chain.....50

## Chain and Ribbon, Sash—

Oneida Community:
Steel Chain.....60%
Pullman:
Bronze Chain, 60%; Steel Chain, Copper .....60&10%
Sash Chain Attachments, per set..8¢
Aluminum Sash Ribbon, per 100 ft. .....$2.00@$5.00
Sash Ribbon Attachments, per set..8¢

## Chalk—

*Carpenters' Blue.....gro., 50¢*
*Carpenters' Red.....gro., 50¢*
*Carpenters' White.....gro., 50¢*

## Checks, Door—

Berkshire .....45%
Pullman per gro.....$54.00
Russwin .....33⅓%

## Chests, Tool—

American Tool Chest Co.:
Boys' Chests, with Tools.....55%
Youths' Chests, with Tools.....40
Gentlemen's Chests, with Tools..30
Farmers', Carpenters, etc., Chests, with Tools .....20
Machinists' and Pipe Fitters' Chests, Empty.....45%
Tool Cabinets.....45%
C. E. Jennings & Co.'s Machinists' Tool Chests.....7½%

## Chisels—

### Socket Framing and Firmer

*Standard List.....80&10@—%*
Buck Bros.....30%
C. E. Jennings & Co.:
Socket Firmer No. 10.....25&7½%
Socket Framing No. 15.....25&7½%
Swan's .....66⅔@70%
L. & I. J. White & Co.....30@30&5%

### Tanged—

*Tanged Firmers.....30&5@35%*
Buck Bros.....30
C. E. Jennings & Co. Nos. 191, 181..25
L. & I. J. White Co.....25&5%

### Cold—

*lb.*
*Cold Chisels, good quality..13@15¢*
*Cold Chisels, fair quality..11@12¢*
*Cold Chisels, ordinary....9@10¢*

## Chucks—

Almond Drill Chucks.....35%
Almond Turret Six Tool Chuck.....40
Beach Pat, each $8.00.....35&5%
Empire .....25%
Blacksmiths' .....25%
Jacobs' Drill Chucks.....35%
Pratt's Positive Drive.....25%
Skinner Patent Chucks:
Independent Lathe Chucks.....35%
Universal, Reversible Jaws.....35%
Combination, Reversible Jaws....35%
Drill Chucks, New Model, 25%; Standard, 45%; Skinner Pat., 25%; Positive Drive.....40%
Planer Chucks.....20%
Face Plate Jaws.....35%
Standard Tool Co.:
Improved Drill Chuck.....45%
Union Mfg. Co.:
Combination, Nos. 1, 2, 3, 4, 5, 6, 7, 8 and 17, 40%; No. 21.....35%
Scroll Combinations, Nos. 83 and 84 .....30%
Geared Scroll, Nos. 33, 34 and 35..25%
Independent Iron, Nos. 18 and 318.35%
Independent Steel, No. 64.....25%
Union Drill, Nos. 000, 00, 100, 101, 102, 103, 104.....35%
Union Czar Drill.....25%
Universal, 11, 12, 16, 17, 13, 14, 15..40%
Universal No. 42.....35%
Iron Face Plate Jaws, Nos. 28, 30, 48 and 50.....35%
Steel Face Plate Jaws, Nos. 70 and 72 .....30%
Westcott Patent Chucks:
Lathe Chucks.....50%
Little Giant Auxiliary Drill.....50
Little Giant Double Grip Drill...50
Little Giant Drill, Improved.....50%
Oneida Drill.....50%
Scroll Combination Lathe.....50
Whitaker Mfg. Co.:
National Drill.....25%

## Clamps—

Adjustable Hammers.....20@20&5%
Carriage Makers', Star, P., S. & W. Co. .....50%
Besly, Parallel.....33⅓&10
Myers' Hay Rack.....50
Lineman's Swedish Neverturn.....65
Wood Workers' Hammers.....40&10%
Saw Clamps, see Vises, Saw Filers'

## Cleaners, Drain,

Iwan's Champion, Adjustable.....50%
Iwan's Champion, Stationary.....40%

### Sidewalk—

Star Socket, All Steel..₱ doz. $1.05 net
Star Shank, All Steel..₱ doz. $3.24 net
W. & C. Shank, All Steel, ₱ doz., 7½ in., $3.00; 8 in., $3.25.

## Cleavers, Butchers'—

Foster Bros.....30%
Fayette R. Plumb.....30%
L. & I. J. White Co.....30%

## Clippers, Horse and Sheep—

Chicago Flexible Shaft Co.: 20%
1902 Chicago Horse, each..$10.75
20th Century Horse, each...$5.00
Lightning Belt Horse, each..$15.00
Chicago Belt Horse, each..$20.00
Stewart's Enclosed Gear Roll Bearing Horse, each.....$6.75
Stewart's New Model Sheep Shearing Machine, each..$12.75
Stewart Enclosed Gear Shearing Machine, No. 8, each..$9.75

## Clips, Axle—

*Regular Styles, list July 1, '05, 80&80&10%*

## Cloth and Netting, wire

*See Wire, &c.*

## Cocks, Brass—

*Hardware list:*
*Plain Bibbs, Globe, Kerosene, Racking, Liquor, Bottling, &c .....75%*
*Compression Bibbs.....70%*

## Coffee Mills—

See *Mills, Coffee.*

## Collars, Dog—

Nickel Cham. Walter B. Stevens & Son's list.....10%
Leather Walter B. Stevens & Son's list .....40

## Compasses, Dividers, &c.

*Ordinary Goods.....70&10@75%*

## Conductor Pipe,—

*L. C. L. to Dealers:*

| | Gal. Steel. | Charcoal. |
|---|---|---|
| *Northeastern* | 70&10% | 50&10&7½% |
| *Eastern* | 75% | 50&10&7½% |
| *Pittsburgh* | 75&10&5% | 60% |
| *Central* | 75&10% | 60% |
| *Northwestern* | 75&7½% | 60% |
| *Western* | 70&12½% | 50&12½% |
| *Tennessee* | 70&10% | 50&12½% |
| *Southern* | 70% | 50&12½% |
| *Southwestern* | 70% | 50&5% |

*Terms, 60 days: 2% cash 10 days. Factory shipments generally delivered.*
See also Eave Troughs.

## Coolers, Water—

L. & G. Mfg. Co.:

| Gal. | 2 | 3 | 4 | 6 | 8 |
|---|---|---|---|---|---|
| Galvanized, ea. | $1.85 | $2.00 | $2.25 | $2.90 | $3.90 |
| Galvanized, Lined, side handles, Gal. | 2 | 3 | 4 | 6 | 8 |
| Each | $1.95 | $2.15 | $2.40 | $3.30 | $4.15 |

White Enameled.....10%
Agate Lined.....10%

## Coppers' Tools—

See *Tools, Coopers'.*

## Coppers, Soldering—

*Soldering Coppers, 3 lb. to pair and heavier, 20¢; lighter than 3 lb. to pair.....22¢*

## Cord—Sash—

*Braided, Drab.....lb. 35¢*
*Braided, White, Com., Nos. 8 to 12, 20¢; No. 7, 20½¢; No. 6, 21½¢. In lots of 12 doz. or over, 1 cent less per pound.*
*Cable Laid Italian, lb., No. 18..37¢*
*Italian, lb., A, No. 18, 25¢; B, 22¢*
*Common India.....lb., 11@11½¢*
*Cotton Sash Cord, Tw'ted..18@20¢*
*Patent Russia.....lb....20¢*
*Cable Laid Russia.....lb...21¢*
*India Hemp, Br'd'd.....lb...21¢*
*India Hemp, Twisted...lb.13@14¢*
*Patent India, Twisted..lb...17¢*
Pearl Braided, cotton, No. 6 ₱ lb, 20½¢; No. 7, 19½¢; Nos. 8 to 12, 19½¢, in 12 doz. to 100 doz. lots.
Eddystone Braided, Nos. 8 to 12, 26¢; 7, 26½; 6, 27½¢.
Harmony Cable Laid Italian, Nos. 7 to 10.....₱ lb 23¢
Pullman:
Wire Sash Cord.....10%
Sash Cord Attachments, per 100..$2.00
Samson, Nos. 8 to 12: 15%
Braided, ₱ lb., Drab Cotton, 55¢; Italian Hemp, 40¢@50¢; Linen, 65¢; White Cotton, 50¢; Spot Cord.....50¢
Massachusetts, White...₱ lb 40¢
Massachusetts, Drab....₱ lb 45¢
Phoenix, White, Nos 8 to 12....27¢
Silver Lake, per lb.:
A, Drab, 45¢; A, White, 40¢; B, Drab, 40¢; B, White, 35¢; Italian Hemp, 40¢; Linen....57½¢
See also Chain and Ribbon.

### Wire, Picture—

*Full Length.....90@—%*
*Short Length.....90&20@—%*
Hendryx Standard Wire Picture Cord, old list, 85&10
Turner & Stanton Co. Wire Picture Cord .....90

## Cradles—

*Grain .....50%*

## Crayons—

*White Round Crayons, Cases, 100 gro., $8.00, $8.50, $9.00 and $10.00 according to grade.*
Zehnicker's Lumber: ₱ gro.
White and Purple, Indelible....$7.50
Blue, Red, Green, Yellow and Terra Cotta, $6.50; Black.....$4.50
Giant Lumber, 5¼ in. x 15-16 in. round, all colors, $12.00; Indelibles, $14.00; Blacks.....$10.00
Genuine Soapstone, Metal Workers', 5 in. x ¼ in. Round, $2.50; 5 in. x ¼ in. Square, $1.75; 5 x ½ x 3-16, $2.50; 5 x 1¼ x 3 16.....$3.00
Suremark, Black, $2.25; Blue, Red and Yellow.....$2 50

## Crooks, Shepperds'—

Fort Madison, per doz., Heavy, $5.50; Light .....$5.00

## Crow Bars—See *Bars, Crow.*

## Cultivators—

Victor Garden.....50%

## Cutlery, Table—

International Silver Company:
No. 12 M'd'm Knives, 1847, ₱ doz. $3.50
Star, Eagle, Rogers & Hamilton and Anchor.....₱ doz. $3.00
Wm. Rogers & Son.....₱ doz. $2.50

## Cutters—Glass—

H. H. Mayhew Co.....40
Red Devil.....60
B. Mfg. Co.....40
Woodward .....50

## Meat and Food—

American .....30

| Nos. | 401 | 402 | 403 | 404 | 405 | 406 | 407 |
|---|---|---|---|---|---|---|---|
| Each | $5 | $7 | $10 | $12 | $25 | $50 | $— |

Enterprise:

| Nos. | 5 | 10 | 12 | 22 | 32 |
|---|---|---|---|---|---|
| Each | $2 | $3 | $2.75 | $4.50 | $6 |

25@25&7%
No. 202, $1.50 ..... 15&7%
P., S. & W. Co.:
Ideal .....40@40&5
Hales .....60&5
Little Giant .....₱ doz. 40&5%

| Nos. | 305 | 310 | 312 | 320 | 322 |
|---|---|---|---|---|---|
| | $35.00 | $48.00 | $44.00 | $72.00 | $68.00 |

New Triumph No. 605 ₱ doz. $24.00
40
Russwin Food, No. 1, $24.00, No. 2 $27.00 .....45&10&10
$15.00 $18.00
Enterprise Beef Shavers.....25@30

## Slaw and Kraut—

Henry Disston & Sons:
Slaw and Kraut Cutters.....35%
Corn Graters.....30%
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife....₱ doz. $3.00
Combined Slaw Cutter and Corn Grater .....₱ doz. $4.00

## Tobacco—

*All Iron, Cheap...doz, $4.25@4.50*
Enterprise .....25@30%
National, ₱ doz., No. 1, $21; No. 2, $18 .....40%

## Diggers, Post Hole, &c—

Disston's:
Rapid, ₱ doz., $24.00.....25%
Samson, ₱ doz., $34.00.....25%
Iwan's Pat. Post Hole and Well Auger .....40%
Vaughan Pattern Post Hole Augers, ₱ doz., $7.00
Perfection Post Hole Diggers, ₱ doz. .....$8.50
Split Handle Post Hole Diggers, ₱ doz., $7.50
Hercules Pattern, ₱ doz.....$9.50
Kohler's, ₱ doz., Universal, $14.00; Little Giant, $12.00; Hercules, $10.00; Invincible, $9.00; Rival, $8.50; Pioneer.....$7.50
Never-Break Crucible Steel Post Hole Diggers .....60%

## Dividers—See *Compasses.*

## Drawing Knives—

See *Knives, Drawing.*

## Dressers Emery Wheel—

Sterling Emery Wheel Dressers.....35%
Sterling Wheel Dresser Cutters.....35%

## Drills and Drill Stocks—

*Blacksmith's Common Drilling Machines .....$1.50@1.75*
Breast, Millers Falls.....15&10%
Breast, P., S. & W.....33⅓%
Goodell Automatic Drills.50&10@60&10%
Millers Falls Automatic Drills,33⅓&10%
Ratchet, Curtis & Curtis.....25%
Ratchet, Parker's.....40%
Ratchet, Weston's.....40%
Ratchet, Weston's, Style H Improved .....40@40&5%
Ratchet, No. 012.....40@40&5%
Ratchet, Celebrated.....40@40&5%
Ratchet, Whitney's, P., S. & W., 40&10@50%
Whitney's Adjustable, No. 10, $12.00, 33⅓%

### Twist Drills—

*Bit Stock.....70@70&5%*
*Taper and Straight Shank, 60&10@70%*

## Drivers, Screw—

*Screw Driver Bits, per doz..45@50¢*
Balsey's Screw Holder and Driver, ₱ doz., 2½-in., $6; 4-in., $7.50; 6-in., $9 .....50%
Buck Bros.' Screw Driver Bits.....30%
Champion .....50%
Disston's .....70%
Fray's Hol. H'dle Sets, No. 3, $12..50%
Ford's Brace Screw Drivers....40&10%
Gay's Double Action Ratchet.....35%
Goodell's Auto.....65@65&10%
Mayhew's Black Handle.....40%
Mayhew's Monarch.....40%
Millers Falls, Nos. 20 and 21....25&10%
Millers Falls, Nos. 11, 12, 41, 42..15&10%
Smith & Hemenway Co.: Neverturn, 66⅔%; Elmora, [illegible]ar, 30&10%
Swan's:
Nos. 7565 to 7568, 60%; No 7540, 40&10%

## Eave Trough, Galvanized—

| Territory... | Gal. Steel. | Charcoal. Iron. |
|---|---|---|
| *Northeastern* | 75&10&5% | 60&20% |
| *Eastern* | 80&2½% | 60&20% |
| *Pittsburgh* | 80&20% | 65&10% |
| *Central* | 80&10&10&2½% | 65&10% |
| *Northwestern* | 80&10&10% | 65&10% |
| *Western* | 80&10% | 60&10&5% |
| *Tennessee* | 80&5% | 60&10&5% |
| *Southern* | 80% | 60&10&5% |
| *Southwestern* | 75&10&2½% | 60&5% |

*Terms.—2% for cash. Factory shipments generally delivered.*
*Note.—Lower prices are made in some sections.*
See also Conductor Pipe and Elbows.

## Elbows and Shoes—

*Factory shipments, all territories:*

| | Galv. Steel and Galv. C. I. Standard Gauge | No. 26 | No. 24 | No. 22 |
|---|---|---|---|---|
| | 85@85&10% | 50% | 25% | 10% |

## Elbows, Stove Pipe—

Edwards, Standard Blue [illegible]
Edwards, Royal Blue...
Reeves Dover [illegible]

## Emery, Turkish—

| | ½ to 1 lb. | 1¼ to 220 lb. | Flour. |
|---|---|---|---|
| *Kegs* | 7¢ | 5½¢ | 3½¢ |
| *1½ Kegs* | 7½¢ | 5¾¢ | 3¾¢ |
| *1¾ Kegs* | 8¼¢ | 6¢ | 4¢ |
| *10 lb. cans,* | | | |
| *10 in case* | 7½¢ | 7¢ | 6¢ |
| *10 lb. cans, less than 10* | 10¢ | 10¢ | 8¢ |
| *Less quantity* | 10¢ | 10¢ | 8¢ |

*NOTE—In lots 1 to 3 tons a discount of 10% is given.*

## Extensions, Bit—

Ford's Auger Bit Extensions.....40&5%

## Extractors, Lemon Juice—

—See *Squeezers, Lemon*

## Fasteners, Blind—
Zimmerman's Jap'd and Galv., 50 & 5%; Bronze and Plated.....50%
Walling's .....50%
Upson's Patent.....40%

### Cord and Weight—
Ives and Titan.....33⅓%

### Corrugated—
Acme Corrugated Fasteners.....70%

### Faucets—
*Cork Lined.....50&10@60%*
*Metallic Key, Leather Lined, .. 60&10@70%*
*Red Cedar.....40&5@40&10&5%*
*Petroleum .....70&10@75%*
B. & L. B. Co.:
Metal Key.....60&10%
Star .....60%
West Lock.....50&10%
John Sommer's Peerless Tin Key....40%
John Sommer's Boss Tin Key.....50%
John Sommer's Victor Mtl. Key.50&10%
John Sommer's Duplex Metal Key..60%
John Sommer's Diamond Lock.....40%
John Sommer's I.X.L. Cork Lined..50%
John Sommer's Reliable Cork Lined.. 50&10%
John Sommer's Chicago Cork Lined.60
John Sommer's O. K. Cork Lined...50%
John Sommer's No Brand, Cedar....50%
John Sommer's Perfection, Cedar....40%
Self Measuring:
Enterprise, Self Measuring and Pump, ₱ doz., $36.00.....40&10%
Lane's, ₱ doz., $36.00.....40&10
National Measuring, ₱ doz. $36.40&10%

### Felloe Plates—
See *Plates, Felloe.*

### Files— Domestic—
*List Nov. 1, 1899.*
*Best Brands.....70&10@75&10%*
*Standard Brands.....75&10@80%*
*Lower Grade....75&10&10@80&10%*
Gold Medal.....70%

### Imported—
*Stubs' Tapers, Stubs' list, July 24, '97.....33⅓@40%*

### Fixtures, Fire Door—
Richards Mfg. Co.:
Universal, No. 103; Special, No. 104 .....$3.75
Fusible Links, No. 96.....50
Expansion Bolts, No. 107.....60&10%

### Grindstone—
*Net Prices:*

| | | | | |
|---|---|---|---|---|
| *Inch* | *15* | *17* | *19* | *21* |
| *Per doz* | *$3.60* | *3.85* | *4.15* | *4.65* |
| *In* | *15* | *17* | *19* | *21* | *24* |
| | *$4.00* | *4.40* | *4.75* | *5.50* | *6.50* | *..30%* |

P., S. & W. Co.....25%
Reading Hardware Co.....60%

### Fodder Squeezers—
See *Compressors.*

### Forks—
*NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.*
Iowa Dig-Ezy Potato.....60&10%
Victor, Hay.....60&15&2½%
Victor, Manure.....60&2½%
Victor, Header.....65%
Champion, Hay.....66⅔%
Champion, Header.....65%
Champion, Manure.....60&15&2½%
Columbia, Hay.....60&20%
Columbia, Manure.....70%
Columbia, Spading.....70&12½%
Hawkeye Wood Barley.....40%
W. & C. Potato Digger.....60&10%
Acme Hay.....60&20
Acme Manure, 4 tine.....60&10&5%
Dakota Header.....60&20
Jackson Steel Barley.....60&20%
Kansas Header.....65%
W. & C. Favorite Wood Barley....40%
Plated.—See Spoons.

### Frames— Wood Saw—
*White, S'g't Bar, per doz.75@80¢*
*Red, S'g't Bar, per doz.$1.00@1.25*
*Red, Dbl. Brace, per doz.$1.40@1.50*

### Freezers, Ice Cream—

| *Qt* | *1* | *2* | *3* | *4* | *6* |
|---|---|---|---|---|---|
| *Each* | *$1.25* | *$1.60* | *$1.90* | *$2.20* | *$2.80* |

### Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

### Fry Pans—See *Pans, Fry.*

### Fuse— *Per 1000 Feet.*
*Hemp .....$2.75*
*Cotton .....3.20*
*Waterproof Sgl. Taped..3.65*
*Waterproof Dbl. Taped..4.40*
*Waterproof Tpl. Taped..5.15*
10&2½%

## Gates, Molasses and Oil—
*Stebbins' Pattern.....80@80&5%*

### Gauges—
*Marking, Mortise, &c..50@50&10%*
Chapin-Stephens Co.:
Marking, Mortise, &c.....50&50&10%
Disston's Marking, Mortise, &c..67½
Wire, Brown & Sharpe's.....33⅓%
Wire, Morse's.....25
Wire, P. S. & W. Co.....33⅓%

### Gimlets— Single Cut—
*Numbered assortments, per gro.*
*Nail, Metal, No. 1, $2.00; 2, $2.30*
*Spike, Metal, No. 1, $4.00; 2, $4.30*
*Nail, Wood Handled, No. 1, $4.30; 2, $4.60*
*Spike, Wood Handled, No. 1, $4.30; 2, $4.60*

### Glass, American Window
See *Trade Report.*

### Glasses, Level—
Chapin-Stephens Co.....65@65&10

### Glue, Liquid Fish—
*Bottles or Cans, with Brush, 25&10@50%*
Elwell's .....40%

### Grease, Axle—
*Common Grade...gro.$6.00@$6.50*
Dixon's Everlasting, 10-lb. pails, ea. 85¢; in boxes, ₱ doz., 1 lb, $1.20; 2 lb.....$2.00
Helmet Hard Oil.....25%

### Griddles, Soapstone—
Pike Mfg. Co.....33⅓@33⅓&10%

### Grinders—
Pike Mfg. Co.:
Hand and Foot Power, Pyko Nos. 1, 2, 3; Pyko Primo; Pyko Peerless; Pyko Spiral (foot power).33⅓%
Royal Mfg. Co.:
Alundum Grinding Machines, each, Nos. 01, $1.75; 1A, $2.50; 10, $5.00 .....30%
Alundum Sickle Grinders, each, Nos. 20, $5.00; 20A, $6.00; 20A Combined, $6.50.....30%
Alundum Disc Grinders, each, $2.50 .....30%

### Grindstones—
Pike Mfg. Co.:
Improved Family Grindstones, ₱ inch, ₱ doz., $2.00.....33⅓%
Richards Mfg. Co., Eli and Cycle, Ball Bearing, mounted.....40%

### Grips, Nipple—
Perfect Nipple Grips.....40&10&2%

## Halters and Ties—
*Cow Ties.....65@65&10%*
Bridgeport Chain Co.:
Triumph Coil and Halters.35&2½@40%
Brown Coil and Halters...45@50&5%
Brown Cow Ties.....50&5@50&10&5%
Brown Tie Outs.....70&10@75&5%
Covert Mfg. Co.:
Web .....30&2%
Jute Rope.....35%
Sisal Rope.....20%
Cotton Rope.....45%
Hemp Rope.....45%
Oneida Community:
Am. Coil and Halters.....40@40&5%
Am. Cow Ties.....45@50%
Niagara Coil and Halters...45@50&5%
Niagara Cow Ties.....45&5@50&10&5%

### Hammers—
#### Handled Hammers—
Heller's Machinists'....55&10@55&10&5%
Heller's Farriers.....40&5@40&10&5%
Peck, Stow & Wilcox Co.:
Crucible Steel.....40&10@50%
Farriers' .....40&10@50%
Riveting .....40&10@50%
Machinists' .....66⅔@5%
Blacksmiths' .....50%
Fayette R. Plumb:
A. E. Nail.....40&2½@40&12½%
Eng. and B. S. Hand.50&10&5@60&5%
Machinists' Hammers.....60&10&5%
Rivet and Tinners'.10&7½@40&12½&5%

#### Heavy Hammers and Sledges—
*Under 3 lb., per lb., 50¢...80&10%*
*3 to 5 lb., per lb., 40¢...80&10&10%*
*Over 5 lb., per lb., 30¢.....*
*Over 5 lb., per lb., 30¢.80&10&10%*

### Handles—
#### Agricultural Tool Handles
*Arc, Pick, &c....60&10@60&10&5%*
*Hoe, Rake, &c.....40%*
*Fork, Shovel, Spade, &c.:*
*Long Handles.....40%*
*D Handles.....40%*

#### Cross-Cut Saw Handles—
Atkins' .....40%
Champion .....50%
Disston's .....50%

#### Mechanics' Tool Handles—
*Auger, assorted...gro.$3.00@$3.50*
*Brad Awl.....gro.$1.65@$1.75*
*Chisel Handles, Ass'd, per gro.:*
*Tanged Firmer, Apple, $2.40@ $2.65; Hickory.....$2.15@2.40*
*Socket Firming, Apple, $1.75@ $1.95; Hickory.....1.60@1.75*
*Socket Framing, Hickory, $1.60@$1.75*
*File, assorted.....gro.$1.30@$1.40*
*Hammer, Hatchet, &c., 60&10@60&10&5%*
*Hand Saw, Varnished, doz., 80¢ 85¢; Not Varnished.....65@75¢*
*Plane Handles:*
*Jack, doz., 30¢; Fore, doz...45¢*
Chapin-Stephens Co.:
Carving Tool.....30@30&10%
Chisel .....60@60&10
File and Awl.....60@60&10%
Saw and Plane.....30@30&10%
Screw Driver.....30@30&10%
Millers Falls Adj. and Ratchet Auger Handles .....15&10%
Nicholson Simplicity File Handle.... ₱ gro. $0.85@$1.50
J. L. Osgood:
Indestructible File and Tool, ₱ gro., No 1, $8.00; No. 2, $8.50; No. 3, $9.00; No. 4, $9.50; No. 5, $10.00.....gro. lots 10%
W. A. Zelnicker Supply Co.:
Hammer, ₱ doz., 12 in., $2.00; 14 in., $2.00; 16 in., $2.30; 18 12., $2.50; 20 in., $2.70; 22 in., $3.00; 24 in., $3.30; 26 in., $3.50; 30 in., $3.80.
Sledge, ₱ doz., oval, 30 in., $3.80; octagon, 30 in., $3.80; oval, 36 in., $4.00; octagon, 36 in., $4.00.
Axe, ₱ doz., 28 to 34 in., $5.60; 36 in., $5.80.
Adze, ₱ doz., 36 in., $5.80; 36 in., $7.80
Pick, ₱ doz., R. R., 36 in., $8.00; coal, 34 in., $5.80.
Hatchet, ₱ doz., 12 to 14 in., $2.00.

### Hangers—
*NOTE.—Barn Door Hangers are generally quoted per pair, without track and Parlor Door Hangers per double set with track, &c.*
Chicago Spring Butt Co.:
Friction .....25%
Oscillating .....25%
Big Twin.....25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door.....50%
Elevator .....30%
Railroad .....50%
Cronk & Carrier Mfg. Co.:
Loose Axle.....60&10%
Roller Bearing.....70%
Griffin Mfg. Co.:
Solid Axle, No. 10, $12.00..60&10%
Roller Bearing No. 11, $15.00, 60&10
Roller Bearing, Ex. Hy., No. 22, $18.00 .....60&10
Bull Dog, $24.00.....70
Lane Bros. Co.:
Parlor, Ball Bearing, $4.00; Standard Steel, No. 105, $2.85; New Model, $2.50; New Champion per set of 4 Hangers, complete with track, .....$2.25
Barn Door, Standard.....60&10
Hinged .....net $6.08
Covered .....60&5
Special .....70&5
Trolley Hangers and track ..50%
Lawrence Bros.:
Advance .....55&10
Cleveland .....70&7½
Clipper, No. 75.....60
Crown .....55&10
Cyclone, No. 40.....net $6.50
Tandem, No. 50.....net $7.50
New York.....55&10
McKinney Mfg. Co.:
Roller Bearing, Nos. 1 and 2..70%
Anti-Friction .....60
Hinged Hangers, King Charm.60
Richards Mfg. Co.:
Hangers, Nos. 47, 48, 147, 247, 60&5%
Pioneer Wood Track, No. 3..$2.25
Roller B'r'g St'l Track No. 12.$2.20
Roller B'r'g St'l Track No. 13.$2.50
Roller B'r'g, Nos. 39, 41, 43, 70&7½%
Hero, Adj. Track No. 19..50&10%
Adjustable Track Tandem Trolley Track No. 16.....50&10%
Seal, Steel Track No. 8.....$2.25
Auto Adj. Track No. 22..50&5%
Trolley B. D. No. 17, $1.25; F. D. No. 120, $2.25; No. 121, $2.45; No. 150.....$2.50
Safety Underwriters F. D. No. 101 .....50%
Tandem No. 41..2½ and 3 60&10%
Palace, Adjustable Track No. 132 .....50&5%
Royal, Adjustable Track No. 122 .....50&10%
Ives' Wood Track No. 1.....$2.25
Trolley B. D. No. 20.....50&10%
Trolley B. D. No. 24, $1.30; No. 27, $1.40; No. 28.....$1.60
Roller Bearings, Nos. 37, 38, 39, 41, 43, 44, Sizes 1 and 2.70&7½%
Anti-friction, No. 42; No. 44, sizes 2½ and 3.....60%
Hinged Tandem No. 48....60&5%
Folding Door B. B. Swivel No. 135 .....40%
Taylor & Boggis F'y Co.'s Kidder's Roller Bearing.50&15&10&5%
Myers' Stayon Hangers.....60%

### Hangers— Garment—
Pullman Trouser, ₱ gro., No. 1 $9.00; No. 4, $24.00; No. 5, $16.50; No. 8, Black Enamel, $7.50; No. 10, $21.00; No. 12, $8.00; No. 15, Rods, $9.00; No. 18, Loops.....$10.00
Victor Folding.....₱ gro. $9.60

### Gate—
Myers' Patent Gate Hangers, ₱ doz. net .....50%

### Joist and Timber—
Lane Bros. Co.....35%

### Hasps—
Griffin's Security Hasp.....50&10%
McKinney's Perfect Hasp, ₱ doz..60%

### Hatchets—
*Regular list, first qual.40&12½@—*
*Second quality.....50&10&5@—*

### Heaters, Carriage—
Clark, No. 5, $1.25; No. 5B, $1.50; No. 3, $1.75; No. 3D, $2.00; No. 7D, $2.25; No. 3E, $2.50; No. 1, $3.00.....25%
Clark Coal, ₱ doz., $0.75.....20%

### Hinges—
#### Blind and Shutter Hinges
*Surface Gravity Locking Blind: (Victor; National; 1868 O. P.; Niagara; Clark's O. P.; Clark's Tip; Buffalo.)*

| *No.* | *1* | *3* | *5* |
|---|---|---|---|
| *Doz. pair* | *$0.75* | *1.35* | *2.70* |

*Mortise Shutter: (L. & P., O. S., Acme, &c.)*

| *No.* | *1* | *1½* | *2* | *2½* |
|---|---|---|---|---|
| *Doz. pair* | *$0.70* | *.65* | *.60* | *.55* |

*Mortise Reversible Shutter (Buffalo, &c.):*

| *No.* | *1* | *1½* | *2* |
|---|---|---|---|
| *Doz. pair* | *$0.70* | *.65* | *.60* |

North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%
Charles Parker Co.....70@75°
Parker Wire Goods Co.
Hale & Benjamin Automatic Blind Hinges .....20%
Hale's Blind Awning Hinges, No. 110, for wood, $9.00; No. 111, for brick, $9.00.....20%
Reading's Gravity.....60%
Stanley's Steel Gravity Blind Hinges, No. 1617½, ₱ doz. sets, without screws, $0.95; with screws, $1.25.
Wrightsville Hardware Co.:
O. S., Lull & Porter.....75&5
Acme, Lull & Porter.....75
Queen City Reversible.....75
Shepard's Noiseless, Nos. 60, 65, 55 .....75&5
Niagara, Gravity Locking, Nos. 1, 3 & 5.....75&5
Tip Pat'n, No. 1.....75&10%
No. 3.....75&5
Buffalo Gravity Locking, Nos. 1, 3 & 5.....70&10&5
Shepard's Double Locking.....75%
Champion Gravity Locking.....75&5
Pioneer .....75&10%
Empire .....65%
W. H. Co.'s Mortise Gravity Locking, No. 2.....60&10%

#### Gate Hinges—

| *Clark's or Shepard's—Doz. sets:* | | | |
|---|---|---|---|
| *No.* | *1* | *2* | *3* |
| *Hinges with L't'chs* | *$2.00* | *2.70* | *5.00* |
| *Hinges only* | *1.25* | *1.90* | *3.50* |
| *Latches only* | *.70* | *.75* | *.85* |

*New England:*
*With Latch.....doz..@$2.00*
*Without Latch.....doz..@$1.60*
*Reversible Self-Closing:*
*With Latch.....doz..@$1.75*
*Without Latch...doz....@$1.55*
*Western:*
*With Latch.....doz. $1.75*
*Without Latch.....doz..$1.15*
Wrightsville Hardware Co.:
Shepard's or Clark's Hinges and Latches. Hinges only or Latches only, Nos. 1, 2 or 3.....70%

#### Miscellaneous—
Griffin Mfg. Co., Fleur de Lis Surface Hinges, ₱ doz. prs.....$1.00

#### Pivot Hinges—
Bommer Bros. Pivot, Ball Bearing .....40%
Lawson Mfg. Co. Matchless.....30

#### Spring Hinges—
*Holdback, Cast Iron...$6.75@$7.00*
*Non-Holdback, C'st Iron$6.50@$6.75*
J. Bardsley:
Bardsley's Non-Checking Mortise Floor Hinges.....40%
Bardsley's Patent Checking.33⅓%
Bommer Bros.:
Spring Butt Hinges.....40%
Surface Floor, Ball Bearing .....40%
Mortise Floor, Ball Bearing.40%
Lavatory Hinges.....40%
Non-Holdback Screen Door, Nos. 2000 and 900.....40%
Holdback Screen Door, No. 999.....₱ gro. $9.00
Chicago Spring Butt Co.:
Chicago Spring Hinges.....25
Triple End Spring Hinges....50
Chicago (Ball Bearing) Floor.50
Garden City Engine House...25
Keene's Saloon Door.....25
Columbian Hardware Co.:
Acme, Wrought Steel.....30
Acme, Brass.....25
American .....30
Columbia, ₱ gr., No. 14, $9.00 No. 18.....$27.00
Columbia, Adj., No. 7, ₱ gr.$12.00
Gem, new list.....30
Clover Leaf and Acorn, per gro. .....$12.00
Oxford, new list.....30
Floor Spring Hinges..... 65&10
Columbian Steel.....65&10%
Lawson Mfg. Co., Matchless....30
Richards Mfg. Co.:
Superior Double Acting Floor Hinges .....40
Shelby Spring Hinge Co.:
Buckeye All Steel Holdback Screen Door.....₱ gr. $9.00
Chief Ball Bearings Floor Hinge .....50
Ball Bearing Door.....25%
No. 777, Sheet Steel Holdb'k, ₱ gr. pr.....$9.00
Standard Mfg. Co.:
Champion Double Acting Door Hinge .....25&10&10%
Standard Double Acting Floor Hinge .....25&10&10%
Superior Spring Hinge Co.:
Superior Floor Hinges.....33⅓%

Extra 5&10 often given.

Extra 10 often given on most of these Hinges.

#### Wrought Iron Hinges—
*Strap and T Hinges, &c., list December 20, 1904:*
*Light Strap Hinges..50&10%*
*Heavy Strap Hinges..60&5%*
*Light T Hinges.....50%*
*Heavy T Hinges.....40%*
*Extra Hvy. T Hinges.50&10%*
*Hinge Hasps.....33⅓%*
*Cor. Heavy Strap....60&5%*
*Cor. Ex. Heavy T...50&10%*
Extra 10&7½%.

| | | |
|---|---|---|
| *Screw Hook and Strap.* | *6 to 12 in..lb* | *3½¢* |
| | *14 to 20 in..lb* | *3¼¢* |
| | *22 to 36 in..lb* | *3 ¢* |

*Screw Hook and Eye:*

| | |
|---|---|
| *¾ to 1 inch* | *lb. 6¼¢* |
| *⅝-inch* | *lb. 7½¢* |
| *½-inch* | *lb. 8½¢* |

### Hitchers, Stall—
Covert Mfg. Co., Stall Hitchers..30&2%

### Hods— Coal—
*M'f'gr's list, price per gross:*

| *Inch* | *15* | *16* | *17* | *18* |
|---|---|---|---|---|
| *Galv. Open* | *$35* | *$39* | *$42* | *$46* |
| *Jap. Open* | *26* | *28* | *31* | *35* |
| *Galv. Funnel* | *43* | *48* | *52* | *56* |
| *Jap. Funnel* | *33* | *36* | *59* | *43* |

10&7½&2½%

### Masons' Etc.
Cleveland Wire Spring Co.:
Steel Brick, No. 162.....each $1.05
Steel Mortar, No. 158.....each $1.35

### Hoes— Eye—
*Scovil and Oval Pattern, 60&10@60&10&10%*
*Grub, list Feb. 23, 1899, 70&10@70&10&10%*
D. & H. Scovil.....27½%
Am. Fork & Hoe Co. (Scovil Pattern) .....60%

### Handled—

*NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.*

Cronk's Weeding, No. 1, $2.00; No. 2, $2.50
Star Double Bit.....$2.50
Ft. Madison Cotton Hoe....70&10&10%
Ft. Madison Crescent Cultivator Hoe, ℔ doz.....70&10%
Ft Madison Mattock Hoes:
Regular Weight.....℔ doz. 40&5%
Junior Size.....℔ doz. $4.00
Ft. Madison Sprouting Hoe, ℔ doz.. 60&10%
Ft. Madison Dixie Tobacco Hoe..... 75&10&7½%
Kretsinger's Cut Easy.....70&10
Warren Hoe.....45&10
W. & C. Ivanhoe.....75&2
B. B. 6 in., Cultivator Hoe.....$3.40
B. B., 6½ in.....$3.50
Acme Wedding.....℔ doz., net, $4.35
W. & C. L'tning Shuffle Hoe, ℔ doz. $5.25

### Hoisting Apparatus—

See *Machines, Hoisting.*

### Holders— Bit—

Angular, ℔ doz. $24.00.....45&10%

### Door—

Bardsley's, Iron, 40%; Brass and Bronze .....25%
Empire .....50%
Pullman .....25%
Richards Mfg. Co.: No. 117, Ever-ready, 40%; Nos. 118, 119, Sure Grip .....50%
Superior .....33⅓%

### File and Tool—

Nicholson File Holders and File Handles .....33⅓a@40%

### Fruit Jar—

Triumph Fruit Jar Holder, ℔ gross, $18.00; ℔ doz.....$2.00

### Trace and Rein—

Fernald Double Trace Holder, ℔ doz. pairs .....$1.25
Dash Rein Holder, ℔ doz.....$1.25

### Hones—Razor—

Pike Mfg. Co., Belgian and Swaty, 50%; German.....33⅓%

### Hooks—Cast Iron—

Bird Cage, Reading.....40%
Clothes Line, Reading List.....40%
Coat and Hat, Reading.....45&20%
Coat and Hat, Wrightsville.....60&5%
Harness, Reading List.....40%

### Wire—

*Belt, Nos. 1 to 15....75&10@80%*
*Wire C. & H. Hooks..80@80&10%*
Bradley Metal Clasp Wire, Coat and Hat, 75&10@80%; Ceiling..75&10@80
Columbian Hdw. Co., Gem.....75&10%
Parker Wire Goods Co., King..70&10%
Wire Goods Co.:
Acme, 60&10%; Chief, 70%; Crown, 75%; Czar, 65%; V Brace, 75%; Czar Harness, 50&10%.

### Wrought Iron—

*Box, 6 in., per doz., $0.90; 8 in., $1.15.*
*Cotton .....doz. $1.25@$1.50*
Wrought Staples, Hooks, &c.—See Wrought Goods.

### Miscellaneous—

*Hooks, Bench,* see *Stops, Bench.*
*Rush, Light, doz., $6.20; Medium, $6.75; Heavy, $7.65*
*Grass, best, all sizes, per doz., $2.75@$3.00*
*Grass, common grades, all sizes, per doz.....$1.25@$1.50*
*Whiffletree .....lb. 5¼@6¢*
*Hooks and Eyes:*
*Brass .....60@60&10%*
*Malleable Iron.....70@70&10%*
Covert Mfg. Co. Gate and Scuttle Hooks .....40%
Ft. Madison Cut-Easy Corn Hooks, ℔ doz. $3.25 net
Turner & Stanton Co. Cup and Shoulder .....85&10%
Bench Hooks—See Bench Stops.
Corn Hooks—See Knives, Corn.

### Horse Nails—

See *Nails, Horse.*

### Horseshoes—

See *Shoes, Horses.*

### Hose, Rubber—

*Garden Hose, ¾-inch:*
*Competition .....ft. 6@6½¢*
*3-ply Guaranteed.....ft. 8½@9¢*
*4-ply Guaranteed....ft. 9½@12¢*
*Cotton Garden, ¾-in., coupled:*
*Low Grade.....ft. 8@ 9¢*
*Fair Quality.....ft. 10@11¢*

### Irons— Sad—

*From 4 to 10.....lb. 2½@2¾¢*
*B. B. Sad Irons.....lb. 3¼@3½¢*
*Mrs. Potts', cents per set:*

| | Nos. 50 | 55 | 60 | 65 |
|---|---|---|---|---|
| *Jap'd Tops* | 83 | 80 | 93 | 91 |
| *Tin'd Tops* | 88 | 85 | 98 | 95 |

*New England Pressing..lb. 3¾@4¢*

### Bar and Corner—

Richards Mfg. Co., Bar, 60&10%; Corner .....60%

### Pinking—

*Pinking Irons.....doz. 60@65¢*

### Irons, Soldering

See *Coppers.*

### Jacks, Wagons—

Covert Mfg. Co.:
Auto Screw.....30&2%; Steel, 45%
Lockport .....50%
Lane's Steel.....30&5%
Richards' Tiger Steel, No. 130...50&10%
Smith & Hemenway Co.'s.....25%

### Ladder—

Richards Mfg. Co., Ladder Jacks..50%

### Jointers—

Pike Mfg. Co., Saw Jointers, $7.00..40%

### Kettles—

*Brass, Spun, Plain.....20@25%*
Enameled and Cast Iron See Ware, Hollow.

### Knives—

### Butcher, Kitchen, &c.—

Foster Bros.' Butcher, &c.....30%
Wilkinson Shear & Cutlery Co....60%

### Corn—

Columbian Cutlery Co., Wilcut Brand Knives and Hooks.....60%
Withington Acme, ℔ doz., $2.65; Dent, $2.75; Adj. Serrated, $2.20; Serrated, $2.10; Yankee No. 1, $1.50; Yankee No. 2, $1.15.

### Drawing—

*Standard List.....80&10@—%*
C. E. Jennings & Co., Nos. 15, 46, 25&7½%
Jennings & Griffin, Nos. 41, 42, 66⅔&7½%
Swan's .....66⅔@70%
Watrous .....16⅔%
L. & I. J. White.....20&5@25%

### Hay and Straw—

*Serrated Edge, per doz. $5.00@5.50*
Iwan's Sickle Edge.....℔ doz. $9.50
Iwan's Serrated.....℔ doz. $10.00

### Miscellaneous—

*Farriers' .....doz. $2.60@3.55*
Wostenholm's .....℔ doz. $3.00@3.25

### Knobs—

*Base, 2½-inch, Birch or Maple, Rubber Tip.....gro. $1.25@1.40*
*Carriage, Jap., Drive, all sizes, gro. 35@40¢*
*Door, Mineral.....doz. 65@70¢*
*Door, Por. Jap'd.....doz. 70@75¢*
*Door, Por. Nickel..doz. $2.05@2.15*
Bardsley's Wood Door, Shutters, &c. 15%

### Lacing, Leather—

See *Belting, Leather*

### Ladders, Store, &c.—

Lane's Store.....25%
Myers' Noiseless Store Ladders....50%
Richards Mfg. Co.:
Improved Noiseless, No. 112.....50%
Climax Shelf, No. 113.....50%
Trolley, No. 109.....50%

### Ladles, Melting—

L. & G. Mfg. Co., Melting and Plumbers' .....25%
P., S. & W.....40&10%
Reading .....60%

### Lanterns—Tubular—

*Regular, No. 0.....doz. $4.35@4.50*
*Side Lift, No. 0....doz. $4.60@4.75*
*Hinge Globe, No. 0. doz. $4.60@4.75*
*Other Styles.....40@40&10%*

### Bull's Eye Police—

*3-inch .....$3.75@4.00*

### Latches— Thumb—

*Roggin's Latches, Jap'd, with Screws .....doz. 35@40¢*

### Door—

Cronk & Carrier Mfg. Co., No. 101, ℔ doz. $2.00
Richards' Bull Dog, Heavy, No. 125 .....50&5%
Richards' Trump, No. 127.....$1.50

### Leaders, Cattle—

*Small.....doz. 50¢; large, 60¢*
Covert Mfg. Co.:
Cotton, 45%; Hemp, 45%; Jute, 35%; Sisal, 20%.

### Leathers, Pump—

See *Pumps—*

### Lifters, Transom—

R. & E.....10%

### Lines—

| *Wire Clothes, Nos.* | *18* | *19* | *20* |
|---|---|---|---|
| *100 feet* | *$2.30* | *1.95* | *1.75* |
| *75 feet* | *$1.95* | *1.65* | *1.50* |

Samson Cordage Works:
Solid Braided Chalk, Nos. 0 to 3..40%
Solid Braided Masons'.....30%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50.....℔ gr. 20%
Masons' Lines, Shade Cord, &c.; White Cotton, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50; Colors, No. 3½, $1.75; No. 4, $2.25; No. 4½, $2.75; Linen, No. 3½, $2.50; No. 4, $3.50; No. 4½, $4.50.....20%
Tent and Awning Lines: No. 5, White Cotton, $7.50; Drab Cotton, $8.50 .....20%
Clothes Lines, White Cotton: 50 ft., $2.75; 60 ft., $3.25; 70 ft., $3.75; 75 ft., $4.00; 80 ft., $4.25; 90 ft., $4.75; 100 ft., $5.25.....20%
Turner & Stanton Co.:
Solid Braided Chalk, Masons' and Awning Lines.....40%
Clothes Lines, White Cotton....20%
Shade Cord, Cotton or Linen....20%

### Locks— Cabinet—

*Cabinet Locks....33⅓@33⅓@5%*

### Door Locks, Latches, &c.—

*NOTE.—Net Prices are very often made on these goods.*
Reading Hardware Co.....40%
R. & E. Mfg. Co.....10%

### Padlocks—

R. & E. Mfg. Co. Wrought Steel and Brass .....75&10%

### Sash, &c.—

Ives' Patent:
Bronze and Brass, 55&5%; Crescent, 60%; Iron, 60%; Window Ventilating, 40&20%; Robinson Pat. Ventilating Sash Lock 33⅓%.
Pullman Patent Ventilating Lock..25%
Reading Sash Locks.....40%

### Machines—Boring—

*Com. Upr't, without Augers, $2.00@2.25*
*Com. Angl'r, without Augers, $2.25@2.50*
Ford Auger Bit Co.....$22.00
Jennings', Nos. 1 and 4.....25&7½%
Millers' Falls.....5.75
Snell's, Upright, $2.65; Angular, $2.90
Swan's Improved.....40&10%

### Corking—

Reisinger Invincible Hand Power... ℔ doz. $48.00

### Fence—

Williams' Fence Machines....each, $5.50

### Hoisting—

Moore's Anti-Friction Chain Hoist.30%
Moore's Hand Hoist, with Lock Brake .....20%
Moore's Cyclone High Speed Chain Hoist .....25%

### Ice Cutting—

Chandler's .....12½%

### Washing

| Boss Washing Machine Co.: | Per doz. |
|---|---|
| Boss No. 1 | $57.00 |
| Boss Rotary | $57.00 |
| Champion Rotary Banner No. 1 | $57.00 |
| Standard Champion No. 1 | $50.00 |
| Standard Perfection | $27.00 |
| Cincinnati Square Western | $33.00 |
| Uneeda American, Round | $33.60 |

### Mallets—

*Hickory .....45&5@50%*
*Lignumvitæ .....45&5@50%*
*Tinners' Hickory and Applewood .....doz. 45&5@50%*

### Mangers, Stable—

Swett Iron Works.....50%

### Mats, Door—

Acme Flexible Steel.....50%
Elastic Steel (W. G. Co.), new list.50%

### Mattocks—

See *Picks and Mattocks.*

### Milk Cans—See *Cans, Milk.*

### Mills, Coffee, &c.—

Enterprise Mfg. Co.....20@25%
National list Jan. 1, 1902.....30%
Parker's Columbia and Victoria..33⅓%
Parker's Box and Side.....50&10%
Swift, Lane Bros. Co.....30%

### Motors, Water—

Divine's Red Devil.....30%

| No. | 1. | 2 | 3 | 4 | |
|---|---|---|---|---|---|
| $2.50 | 3.50 | 10.00 | 15.00 | | 33⅓% |

Lippincott's .....30%
Pike Mfg. Co., Tool and Knife Grinding .....33⅓%

### Mowers, Lawn—

*NOTE.—Net prices are generally quoted*
*Cheapest, 10-in., $2.00; advance 10¢ for each size.*
*Cheap, 10-in., $2.25; advance 15@20¢ for each size.*
*Better Grade, 10-in., $3.00; advance 25¢ for each size.*

| | *12* | *14* | *16* | *18-in.* |
|---|---|---|---|---|
| *High Grade* | *$4.50* | *4.75* | *5.00* | *5.25* |

Continental .....60%
Great American.....70%
Great American Ball B'r'g, new list.70%
Quaker City.....70%
Pennsylvania .....60%
Pennsylvania, Jr., Ball Bearing. 50&10&5%
Pennsylvania Golf.....50%
Pennsylvania Horse.....33⅓&5%
Pennsylvania Pony.....40&5%
Granite State:
Style A, Low Wheel.....70%
Style B, Low Wheel.....70%
Style C, High Wheel, spcl. list, 70&10%
Style D, High Wheel, spcl. list..70%
Philadelphia:
Styles M., S., C., K., T....70&10&5%
Style A, all Steel.....60&10&5%
Style E, High Wheel.....70&10&5%
Drexel and Gold Coin, special list.40%
Horse .....40&5%
Pony .....40&5%
36-in. Horse.....30&10%
Eagle Horse.....30&5%
I. X. L. Horse.....50%

### Nails—

*Wire Nails and Brads, Miscellaneous .....85&5@85&10%*
*Cut and Wire.* See *Trade Report.*
*Hungarian, Finishing, Upholsterers', &c.* See *Tacks.*

### Horse—

| Nos. | 6 | 7 | 8 | 9 | 10 | |
|---|---|---|---|---|---|---|
| Anchor | 23 | 21 | 20 | 19 | 18 | ..℔ lb. net, 12¢ |
| Coleman | 13 | 12 | 12 | 11 | 11 | ..net |
| New Haven.. | 23 | 21 | 20 | 19 | 18 | ..℔ lb. net, 12¢ |
| Livingston | 19 | 18 | 17 | 16 | 16 | ..10% |

Western .....℔ lb 8½¢
*Jobbers' Special Brands, per lb. 9¢*

### Picture—

| | *1½* | *2* | *2½* | *3 in.* |
|---|---|---|---|---|
| *Brass Hd, gro.* | *.45* | *.55* | *.60* | *.70* |
| *Por. Head, gro.* | *1.10* | *1.10* | *1.10* | |

### Upholsters—

*Brass .....30%*
*Plated .....30&10%*

### Nippers—

See *Pliers and Nippers.*

### Nipples—

Standard Nipple Co.:
Wrought Pipe Nipples....80@80&10%

### Nuts— *Blank or Tapped.*

| *Cold Punched:* | *Off List.* |
|---|---|
| *Square* | *5.40@5.50¢* |
| *Hexagon* | *6.00@6.10¢* |
| *Square, C., T. & R.* | *5.80@5.90¢* |
| *Hexagon, C., T. & R.* | *6.60@6.70¢* |
| *Hot Pressed:* | |
| *Square* | *5.80¢* |
| *Hexagon* | *6.30¢* |

### Oakum—

*Best .....lb. 6½¢*
*U. S. Navy.....lb. 6 ¢*
*Navy .....lb. 5 ¢*
*Plumbers' Spun Oakum..2¾@3 ¢*

### Oil—

Pike Mfg. Co., Stonoil.....40%

### Oil Tanks—See *Tanks, Oil.*

### Oilers—

*Steel, Copper Plated.....75%*
*Chase or Paragon:*
*Brass and Copper.....50&10%*
*Zinc .....65&10%*
*Railroad .....60&10&10%*
Malleable, Hammers' Improved, Nos. 11, 12 and 13, 20%; Old Pattern, Nos. 1, 2, 3, 50%.
American Tube & Stamping Co.:
Spring Bottom Cans.....70@70&10%
Railroad Oilers, &c.....60@60&10%
Maple City Mfg. Co.:
Spring Bottom Cans.....70@70&10%
Railroad Oilers, &c.....60@60&10%

### Openers—Packing Box—

Herculever, ℔ doz., $24.....30%

### Can Openers—

| | *Per doz.* |
|---|---|
| *Sprague, Iron Handle....* | *30@35¢* |
| *Sprague, Wood Handle.....* | *40¢* |
| *Sardine Scissors.....* | *$1.75@3.00* |

Yankee Can and Bottle Opener, ℔ doz., net, $0.75; Little Gem, ℔ doz., net.....$0.65

### Egg—

Hartigan Nickel Plate, ℔ doz., $2.00; Silver Plate, $4.00.

### Packing—

*Asbestos Packing, Wick and Rope, any quantity.....18@20¢*

### Rubber—

*(Fair quality goods.)*

*Sheet, C. I.....11@12¢*
*Sheet, C. O. S.....11@12¢*
*Sheet, C. B. S.....12@13¢*
*Sheet, Pure Gum.....40@45¢*
*Sheet, Red.....40@50¢*
Jenkins' '96, ℔ lb, 80¢.....25%

### Miscellaneous—

*American Packing....lb. 7@10 ¢*
*Cotton Packing.....lb. 16@25 ¢*
*Italian Packing.....lb. 9@10¢*
*Jute .....lb. 4@4¼¢*
*Russia Packing.....lb. 9@10¢*

### Pails, Water, Well, &c.—

See *Buckets.*

### Pans— Dripping—

*Standard List..70&10@70&10&5%*
Edwards, Royal Blue.....75%

### Refrigerator, Galva.—

| *Inch* | *12* | *14* | *16* | *18* |
|---|---|---|---|---|
| *Per doz.* | *$1.75* | *2.25* | *2.80* | *3.15* |

### Paper—Building Paper

*Asbestos:* *lb.*
*Roll Board or Building Felt, 6 to 30 lb., per 100 sq. ft..2½¢*
*Roll Board or Building Felt, 3-32 and ⅛ in., 45 to 60 lb., per 100 sq. ft.....3½¢*
*Mill Board, Sheet, 40 x 40 in., 1-32 to ½ in.....3¢*
*Per roll.*
*Rosin Sized Sheathing: 500 sq. ft.*
*Light weight, 25 lbs. to roll, 48@58¢*
*Medium weight, 30 lbs. to roll. 56@70¢*
*Heavy weight, 40 lbs. to roll, 75@78¢*
*Black Water Proof Sheathing, 500 sq. ft., 1 ply, 65¢; 2 ply, 85¢; 3 ply, $1.10; 4 ply, $1.25.*
*Deafening Felt, 9, 6 and 4½ sq. ft. to lb., ton.....$54.50*
*Red Rope Roofing, 250 sq. ft. per roll.....$1.75*

### Tarred Paper—

*1 ply (roll 400 sq. ft.), ton, $34.00@$38.00*
*2 ply, roll 108 sq. ft.....65¢*
*3 ply, roll 108 sq. ft.....88¢*
*Slater's Felt (roll 500 sq. ft.).80¢*

### Sand Paper and Cloth—

*Flint and Emery.....50&10%*
*Garnet Paper and Cloth.....25%*

### Parers—Apple—

Goodell Co.:
Family Bay State.....℔ doz. $15.00
Improved Bay State.....℔ doz. $36.00
New Lightning.....℔ doz. $7.00
Turn Table '98.....℔ doz. $6.00
White Mountain.....℔ doz. $5.00
Bonanza Improved.....each $7.50
Dandy .....each $10.00
Eureka Improved.....each $20.00
New Century.....each $20.00
Ranger .....each $30.00
Livingston Nail Co.:
Daisy .....℔ doz. $4.00
Little Star .....℔ doz. $5.00
Rocking Table.....℔ doz. $6.20
Reading Hardware Co.:
Advance .....℔ doz. $4.00
Baldwin .....℔ doz. $4.00
Reading 72 .....℔ doz. $3.25
Reading 78.....℔ doz. $6.25

### Orange—

Goodell Co. Success.....each $20.00

### Potato—

Saratoga .....℔ doz. $7.00
White Mountain.....℔ doz. $6.00

### Picks and Mattocks—

*(List Jan., 1908.)*

*List .....70&10@70&10&10%*
Cronk's Handled Garden Mattock ℔ doz., $3.00.....33⅓%

### Pinking Irons—
See *Irons, Pinking.*

### Pins, Escutcheon—
*Brass* .....50@50&10%
*Iron, list Nov. 11, '85*..60@60&10%

### Pipe, Cast Iron Soil—
*Standard, 2-6 in*.....70@—%
*Extra Heavy, 2-6 in*..75&10@—%
*Fittings, Standard and Heavy,* 80&10@80&10&10%

### Pipe, Merchant—

| | Consumers, Steel. Blk. % | Galv. % | Carloads, Iron. Blk. % | Galv. % |
|---|---|---|---|---|
| 1/8 and 1/4 in. | 66 | 50 | 64 | .. |
| 3/8 in. | 68 | 54 | 66 | 52 |
| 1/2 in. | 70 | 58 | 68 | 56 |
| 3/4 to 6 in. | 74 | 64 | 72 | 62 |
| 7 to 12 in. | 71 | 56 | 69 | 54 |

### Pipe, Vitrified Sewer—
*Carload lots.*
*Standard Pipe and Fittings, 3 to 24 in., f.o.b. factory:*
*First-class* .....87%
*Second-class* .....90%

### Pipe, Stove—

| | Per 100 joints. C. L. | L. C. L. |
|---|---|---|
| Edwards' Nested: | | |
| 5 in., Standard Blue | $6.25 | $7.25 |
| 6 in., Standard Blue | 6.75 | 7.75 |
| 7 in., Standard Blue | 7.75 | 8.75 |
| 5 in., Royal Blue | 7.00 | 8.00 |
| 6 in., Royal Blue | 7.50 | 8.50 |
| 7 in., Royal Blue | 8.50 | 9.50 |
| Wheeling Corrugating Co.'s Nested: | | |
| 5 in., Uniform Color | $6.15 | $7.15 |
| 6 in., Uniform Color | 6.65 | 7.65 |
| 7 in., Uniform Color | 7.65 | 8.65 |

### Planes and Plane Irons—
#### Wood Planes—
*Bench, first qual*.....30@30&10%
*Bench, second qual*...40@40&10%
*Molding* .....25@25&10%
Chapin-Stephens Co.:
Bench, First Quality.....30%
Bench, Second Quality.....40%
Molding and Miscellaneous.....25%
Toy and German.....30%
Union .....60%

#### Iron Planes -
Chaplin's Iron Planes.....50&10%
Union .....60%

#### Plane Irons—
*Wood Bench Plane Irons, list Dec. 12, '06*.....25%
Buck Bros.....30%
Chapin-Stephens Co.....25%
Union .....50%
L. & I. J. White.....20&5&25%

### Planters, Corn, Hand—
Kohler's Eclipse.....℔ doz. $7.50

### Plates—
*Felloe* .....*lb.* 3¾@4¢
Avery Stamping Co.:
Standard Wrot. Steel Felloe Plates in 100 lb kegs, per 100 lb, ¾-in. to 1⅛-in., $4.00 net; 1¼-in. to 2-in., inclusive, $3.75 net.

### Steel Pipe Hook—
Never-Break .....75&10%

### Pliers and Nippers -
*Button Pliers*....75&5@75&10&5%
*Gas Burners, per doz., 5 in., $1.25 @$1.30; 6 in., $1.45 $1.50.*

| Gas Pipe.. 7 | 8 | 10 | 12-in. |
|---|---|---|---|
| $2.00 | $2.25 | $2.75 | $3.50 |

Acme Nippers.....50&5%
Cronk & Carrier Mfg. Co.:
American Button.....80%
Improved Button.....75&10%
Cronk's .....60%
No. 89 Linemen's.....50%
Stub's Pattern.....45%
Combination and others.....33⅓%
Heller's Farriers' Nippers, Pincers and Tools.....40&5@40&10&5%
P., S. & W. Tinners' Cutting Nippers .....40%
Swedish Side, End and Diagonal Cutting Pliers.....50%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds....40%

### Plumbs and Levels—
Chapin-Stephens Co.:
Plumbs and Levels.....30@30&10%
Chapin's Imp. Brass Cor..40@40&10%
Pocket Levels.....30@30&10%
Extension Sights.....30@30&10%
Machinists' Levels.....40@40&10%
Disston's Plumbs and Levels....60&10%
Disston's Pocket Levels.....60&10%
Stanley's Dulex.....35%
Woods' Extension.....33⅓%

### Points, Glaziers'—
*Bulk and 1-lb. papers*....*lb.* 9 ¢
*2-lb. papers*.....*lb.* 9½¢
*¼-lb. papers*.....*lb.* 10 ¢

### Police Goods—
*Manufacturers' Lists*...25@25&5%
Tower's .....25%

### Polish—Metal, Etc—
Ladd Co.:
Putzade Liquid, ℔ gro., ½ pts., $12.00; 1 pts., $20.00; 1 qts., $40.00; ℔ doz., ½ gals., $6.35; 1 gals., $12.00.
Prestoline Liquid, No. 1 (½ pt.), ℔ doz., $3.00; No. 2 (1 qu.), $9.00....40%
Prestoline Paste.....40%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, ℔ doz. 50¢; ℔ gro. $4.50; ½ lb boxes, ℔ doz. $1.25; 1 lb boxes, ℔ doz. $2.25.
U. S. Liquid, 8 oz. cans, ℔ doz., $1.25.
Barkeepers' Friend Metal Polish, ℔ doz., $1.75.

### Stove—
Black Eagle Benzine Paste, 5 lb cans, ℔ lb 10¢
Black Eagle, Liquid, ½ pt. cans.. ℔ doz. 75¢
Black Jack Paste, ¾ lb cans, ℔ gr. $9.00
Black Kid Paste, 5 lb can...each, $0.65
Ladd's Black Beauty Liquid, per 100 tins.....$6.75
Joseph Dixon, ℔ gr. $5.75.....10%
Dixon's Plumbago.....℔ lb 8¢
Fireside .....℔ gr. $2.50
Gem, ℔ gr. $4.50.....10%
Japanese .....℔ gr. $3.50
Jet Black.....℔ gr. $3.50
Peerless Iron Enamel, 10 oz. cans.. ℔ doz. $1.50

### Window Polish—
Benj. P. Forbes:
Glasbright, No. 2, gal pails, ℔ doz., $24.00; each, $2.50; 1 lb cans, each .....75¢
Glasbright Powder, bbls., ℔ lb..20¢

### Poppers, Corn—
*1 qt. Square..doz.$0.80; gro.$8.75*
*1 qt. Round..doz.$0.90; gro.$10.00*
*1½ qt. Square.doz.$1.20; gro..$12.00*
*2 qt. Square..doz.$1.50; gro..$15.00*

### Post Hole and Tree Augers and Diggers—
See also *Diggers, Post Hole, &c.*

### Posts, Steel—
Steel Fence Posts, each, 5 ft., 42¢; 6 ft., 46¢; 6½ ft., 48¢.
Steel Hitching Posts.....each $1.30

### Potato Parers—
See *Parers, Potato.*

### Pots, Glue—
*Enameled* .....40%
*Tinned* .....30&10%

### Powder—
*In Canisters:*
*Duck, 1 lb*.....*each* 45¢
*Fine Sporting, 1 lb*....*each* 75¢
*Rifle, ½-lb*.....*each* 15¢
*Rifle, 1 lb*.....*each* 25¢
*In Kegs:*
*12½-lb. kegs*.....$3.50
*25-lb. kegs*.....$4.50
King's Semi-Smokeless:
Keg (25 lb bulk).....$6.50
Half Keg (12½ lb bulk).....$3.50
Quarter Keg (6¼ lb bulk).....$1.90
Case 24 (1 lb cans bulk).....$8.50
Half case (1 lb cans bulk).....$4.50

| King's Smokeless: | Shot Gun. | Rifle. |
|---|---|---|
| Keg (25 lb bulk) | $12.00 | $15.00 |
| Half Keg (12½ lb bulk) | 6.25 | 7.75 |
| Quarter Keg (6¼ lb bulk) | 3.25 | 4.00 |
| Case 24 (1 lb cans bulk) | 14.00 | 17.00 |
| Half case 12 (1 lb c. bk) | 7.25 | 8.75 |

### Presses—
#### Fruit, Wine and Jelly—
Enterprise Mfg. Co.....20@25%

#### Seal Presses—
Morrill's No. 1, ℔ doz., $20.00.....50%

### Pruning Hooks and Shears
See *Shears.*

### Pullers, Nail—
Cyclops .....50%
Miller's Falls, No. 3, ℔ doz., $12.00.. 33⅓&10%
Morrill's No. 1, Nail Puller, ℔ doz. $20.00 .....50%
Pearson No. 1, Cyclone Spike Puller, each $30.00.....50%
The Scranton Co. Case Lots:
No. 2B (large).....$5.50
No. 3B (small).....$5.00
Smith & Hemenway Co.:
Diamond B.....70%
Giant .....50%
Staple Pullers, Utica and Davison .....60%

### Pulleys, Single Wheel—

| *Inch* | 1½ | 1¾ | 2 | 3 |
|---|---|---|---|---|
| *Awning or Tackle, doz.* | $0.30 | .15 | .60 | 1.05 |
| *Hay Fork, Swivel or Solid Eye, doz., 4 in., $1.25; 5 in., $1.55* | | | | |
| *Inch* | 2 | 2¼ | 2½ | |
| *Hot House, doz* | $0.65 | .85 | 1.20 | |
| *Inch* | 1¼ | 1½ | 1¾ | 2 |
| *Screw, doz.* | $0.16 | .19 | .23 | .30 |
| *Inch* | 1¾ | 2 | 2¼ | 2½ |
| *Side, doz.* | $0.25 | .40 | .55 | .60 |
| *Inch* | 1½ | 1¾ | 2 | 2½ |

#### Sash Pulleys—
*Common Frame; Square or Round End, per doz., 1¾ and 2 in*.....*17@20¢*
*Auger Mortise, no Face Plate, per doz., 1¾ and 2 in*....*20@21¢*
Acme, No. 35..1¾ in., 19¢; 2 in., 20½¢
American Pulley Co.:
Wrought Steel American Plain Axle .....50&10%
Wrought Steel, Eagle.....17@20¢
Top Notch, Electrically Welded, Nos. 3 and 4.....19¢
Common Sense.....℔ doz. 20¢
Fox-All-Steel, Nos. 3 and 7, 2 in.... ℔ doz. 50%
Grand Rapids All Steel Noiseless..50%
Niagara, No. 25, 1¾ in., 19¢; 2 in. .....20½¢
No. 26 Troy..1¾ in., 14½¢; 2 in., 16½¢
Star, No. 26....1¾ in., 19¢; 2 in., 20½¢
Tackle Blocks—See Blocks.

### Pumps—
*Cistern* .....60%
*Pitcher Spout*.....75&5@75&10%
*Wood Pumps, Tubing, &s*....50%
Barnes Dbl. Acting (low list).....45%
Barnes Pitcher Spout.....80%
Contractors' Rubber Diaphragm, No. 2, B. & L. Block Co.....$16.00
Daisy Spray Pump.....℔ doz. $6.50
Flint & Walling's Fast Mail Hand (low list).....50&5%
Flint & Walling's Fast Mail (low list) .....50&5%
Flint & Walling's Tight Top Pitcher .....80%
National Specialty Mfg. Co., Measuring, Nos. 2, $6.00; 3, $5.50.....30%
Myers' Pumps (low list).....
Myers' Power Pumps.....
Myers' Spray Pumps..... } 50%

### Pump Leathers—
*Plunger and Valve Leathers—Per gro.:*

| *No.* | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| | $5.00 | 6.00 | 7.00 | 8.00 |

*Cup Leathers—Per 100:*

| *Inch* | 2½ | 3 | 3½ | 4 |
|---|---|---|---|---|
| | $5.00 | 7.00 | 9.00 | 12.00 |

} 30%

### Punches—
*Saddlers' or Drive, good, doz.50@75¢*
*Spring, single tube, good quality* .....$1.75
*Revolving (4 tubes)*....*doz.*$3.50
Bemis & Call Co.'s Cast St'l Drive.50%
Morrill's Nos. 1AA, 1A, 1B, 1C, 1D, $15.00.....50%
Hercules, 1 die, each $5.00.....50%
Niagara Hollow Punches.....40%
Niagara Solid Punches.....55&10%
Tinners' Hollow, P., S. & W. Co..40%
Tinners' Solid, P., S. & W. Co., ℔ doz., $1.44.....40&10%

## Rail—Barn Door, &c.—
*Sliding Door, Painted Iron, 2½@2¾¢*
*Sliding Door, Wrought Brass, 1⅛ in., lb., 36¢*.....30%
Cronk's:
Double Braced Steel Rail..℔ ft. 2¾¢
O. N. T. Rail.....2¾¢
Griffin's:
xxx, ℔ 100 ft., 1 x 3-16 in., $3.25; 1¼ x 3-16 in., $3.75.
Hinged Hanger, ℔ 100 ft., 1 x 3-16 in., $3.50; 1¼ x 3-16 in., $4.00.
Lane's:
Hinged Track, ℔ 100 ft.....$3.45
O. N. T., ℔ 100 ft., 1 in., $3.12½; 1¼ in., $3.45; 1½ in., $4.00.
Standard, 1¼ in.....℔ 100 ft. $4.00
Lawrence Bros.:
1 x 3-16 in., ℔ 100 ft., $7.50; 1¼ x 3-16 in., $8.75.....55&7½%
McKinney's:
Hinged Hanger Track, ℔ ft., 11¢. 60&5%
1 x 3-16 Track.....55&7½%
Myers' Stayon Track.....60&5%
Richards Mfg. Co.:
Common, 1 x 3-16 in., $3.00; 1⅛ x 3-16, $3.25; 1¼ x 3-16, $3.50.
Special Hinged Hanger Rail..60&10%
Lag Screw Rail, No. 65.....50%
Gauge Trolley Track, ℔ ft., No. 31, 9¢; No. 32, 14¢; No. 33, 20¢.
No. 50.....60&10%
Nos. 61, $3.00; 62, $3.25; 63, $3.50; 64, $4.00; 45, $3.25; 46, $3.50; 49, No. 1, $3.25; 49, No. 2, $3.50.

### Rakes—
*NOTE.—Many goods are sold at net prices.*
Fort Madison Red Head Lawn....$3.25
Fort Madison Blue Head Lawn....$2.70
Cronk's:
Steel Garden: Champion, ℔ doz., 12-tooth, $3.75; 14-tooth, $4.00; 16-tooth, $4.25; Ideal, ℔ doz., 12-tooth, $3.00; 14-tooth, $3.30; 16-tooth, $3.60.
Victor, 12-tooth, $2.25; 14-tooth, $2.50; 16-tooth, $2.75.
Queen City Lawn, ℔ doz., 20 teeth, $2.85; 24, $3.00.....net
Anticlog Lawn, ℔ doz.....$4.00
Malleable Garden.....70&10%
Ideal Steel Garden, ℔ doz., 12 teeth, $15.00; 14, $16.00; 16, $18.00.....80%
Kohler's:
Jumbo Lawn, 36-tooth....℔ doz. $5.00
Lawn Queen, 20-tooth....℔ doz. $2.85
Lawn Queen, 24-tooth....℔ doz. $3.00
Paragon, 20-tooth.....℔ doz. $2.65
Paragon, 24-tooth.....℔ doz. $2.75
Steel Garden, 14-tooth....℔ doz. $2.10
Malleable Garden, 14-tooth, ℔ doz. $1.75@2.00

### Rasps, Horse—
Disston's .....75%
Heller Bros.'.....70&5@70&10&5%
Liveright Bros.' Gold Medal.70&10@75%
McCaffrey's American Standard..... 60&10&5%
New Nicholson.....70&10@75%
See also Files.

### Razors—
Liana Bo-ras-ic.....60%
Fox Razors, ℔ doz., No. 42, $24.00; No. 44, $20.00; No. 82, Platina, $36.00. } Dis. 50%
Red Devil.....65%

### Reels, Fishing—
Hendryx:
M 6, Q 6, A 6, B 6, M 9¼, M 16, Q 16, A 16, B 16, 4008, Rubber, Populo, Nickeled Populo.....20%
Aluminum, German Silv., Bronze.25%
1240 N, 124 N.....20%
3004 N, 06 N, 6 RM, G 9.....25%
4 N, 6 PN, 24 N, 26 PN .....20%
2904 P., 33⅓%; 2904 PN., 33⅓%; 0924 N., 33⅓%; 02084 N., 33⅓%; 002904 PN., 33⅓%; 802 N., 33⅓%
986 PN, 2904 N, 974 PN.....25%
5009 PN 5009 N.....20%
Competitor, 102 P, 102 PN, 202 P, 202 PN 102 PR, 202 PR.....20%
304 P, 304 PN, 00304 P, 00304 PN.33⅓%

### Registers—*List July 1, 1903.*
*Japanned, Electroplated and Bronzed* .....70%
*White Porcelain Enamel*..50&10%
*Solid Brass or Bronze Metal*.40%

### Revolvers—
*Single Action*.....$5¢@$1 00
*Double Action, except 44 cal*.$2.00
*Double Action, 44 caliber*...$2.00
*Automatic* .....$4.00
*Hammerless* .....$4.50

### Riddles, Hardware Grade
*16 in*.....*per doz.*$2.50@$2.75
*17 in*.....*per doz.*$2.75@$3.00
*18 in*.....*per doz.*$3.00@$3.25

### Rings and Ringers—
#### Bull Rings—

| | ⅝ | 2½ | 3 inch. |
|---|---|---|---|
| *Steel* | $0.70 | 0.75 | 0.80 doz. |
| *Copper* | $1.10 | 1.25 | 1.65 doz. |

#### Hog Rings and Ringers—
*Hill's Rings, gro. boxes.$4.50@$4.50*
*Hill's Ringers, Gray Iron, doz., 60@75¢*
*Hill's Ringers, Malleable Iron, doz.80@95¢*
*Blair's Rings..per gro.$5.00@$5.50*
*Blair's Ringers...per doz.75@90¢*

### Rivets and Burrs—
*Copper* .....50@50&10%
*Carriage, Coopers', Tinners', &c.:*
*Black* .....70&10%
*Metallic Tinned*.....70%

### Bifurcated and Tubular—
*Assorted in Boxes.*
*Bifurcated, per doz. boxes, pasteboard boxes, 50 count, 23@25¢; Tin boxes, 100 count, 29@32¢.*
*Tubular, per doz. boxes, 50 count, 29@32¢; 100 count, 51@58¢.*

### Rollers—
Cronk's Stay, No. 50.....$1.00
Cronk's Brinkerhoff No. 55, $0.60; No. 56, $0.75; No. 60.....$0.75
Lane's Stay.....40%
Richards' Stay:
Handy Adj. and Reversible No. 53.75¢
O. K. Adj. and Reversible No. 58.50¢
Lag Screw, Nos. 55 and 57.....50%
Underwriters', Nos. 59, 60.....50%
Favorite, No. 54.....60%

### Rope—
*Manila, 7-16 in. diam. and larger. Pure* .....*lb.* 9½¢
*Sisal, 7-16 in. diam. and larger: Pure* .....*lb.* 7¢
*Sisal, Hay, Hide and Bale Ropes, Medium and Coarse: Pure* .....*lb.* 7½@7¾¢
*Sisal, Tarred, Medium Lath Yarn: Pure* .....*lb.* 6½@6¾¢
*Cotton Rope:*
*Best, ¼-in. and larger*...18@20¢
*Medium, ¼-in. and larger.16@17¢*
*Common, ¼-in. and larger*..10¢
*In coils, ½¢ advance.*
*Jute Rope:*
*Thread, No. 1, ¼-in. and up, lb.* .....6¼¢
*Thread, No. 2, ¼-in. and up, lb.* .....5¾¢

#### Wire Rope—
*Galvanized* .....37½&2½%
*Plain* .....45&2½%

### Ropes, Hammock—
Covert Mfg. Co.:
Jute, 35%; Sisal.....20%

### Rules
*Boxwood* .....60@60&10%
*Ivory* .....35&10@35&10&5%
Chapin-Stephens Co.:
Boxwood .....60%
Flexifold .....40%
Ivory .....25@25&10%
Miscellaneous .....50@50&10
Stephens' Combination.....55%
Stationers' .....50@50&10%
Keuffel & Esser Co.:
Folding, Wood.....35&10%
Folding, Steel.....33⅓&10%
Lufkin's Steel.....50&10%
Lufkin's Lumber.....50&10%
Upson Nut Co.:
Boxwood .....60@60&10%
Ivory .....35&10@35&10&10%

## Sash Balances—
See *Balance, Sash.*

### Sash Locks—See *Locks, Sash.*

### Sash Weights—
See *Weights, Sash.*

### Sausage Stuffers or Fillers
See *Stuffers or Fillers, Sausage.*

### Saw Frames—
See *Frames, Saw.*

### Saw Sets—See *Sets, Saw.*

### Saw Tools—See *Tools, Saw.*

### Saws—

Atkins':
Circular .....45%
Band .....50@50&10%
Butcher Saws.....50%
Cross Cuts.....35%
One-Man Cross Cut.....40%
Narrow Cross Cut.....50%
Hand, Rip and Panel.....35&5%
Miter Box and Compass.....40%
Mulay, Mill and Drag.....45%
Wood Saws.....40&10%
Chapin-Stephens Co.:
Turning Saws and Frames.30@30&10%
Diamond Saw & Stamping Works:
Sterling Kitchen Saws....30&10&10%
Disston's:
Circular, Solid and Ins'ted Tooth.50%
Band, 2 to 18 in. wide.....60%
Band, ¼ to 1¾.....60%
Crosscuts .....45%
Narrow Crosscuts.....50%
Mulay, Mill and Drag.....50%
Framed Woodsaws.....25%
Woodsaw Blades.....25%
Woodsaw Rods, Tinned.....15%
Hand Saws, Nos. 12, 99, 9, 16, d100, D8, 120, 76, 77, 8.....25%
Hand Saws, Nos. 7, 107, 107½, 3, 1, 0, 00, Combination.....30%
Compass, Key Hole, &c.....25%
Butcher Saws and Blades.....30%
C. E. Jennings & Co.'s:
Back Saws.....16⅔%
Butcher Saws.....25&7½%
Compass and Key Hole Saws, 33⅓&7½%
Framed Wood Saws.....25&7½%
Hand Saws.....12½%
Wood Saw Blades.....33⅓&7½%
Millers Falls:
Butcher Saws.....15&10%
Star Saw Blades.....15&10%
Massachusetts Saw Works:
Victor Kitchen Saws.....40&10&50%
Butcher Saws Blades.....35@40%
Peace & Richardson's Hand Saws.30%
Simonds':
Circular Saws.....45%
Crescent Ground Cross Cut Saws.30%
One-Man Cross Cuts.....40&10%
Gang Mill, Mulay and Drag Saws.45%
Band Saws.....50%
Back Saws.....25@25&7½%
Butcher Saws.....35@35&7½%
Hand Saws.....25@25&7½%
Hand Saws, Bay State Brand....45%
Compass, Key Hole, &c..25@25&7½%
Wood Saws.....40&7½%
Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws.....50%

### Hack Saw Blades and Frames—

Atkins' Hack Saw Blades A A A..25%
Disston's:
Concave Blades.....25%
Keystone Blades.....35%
Hack Saw Frames.....30%
Simonds File Co.....35%
C. E. Jennings & Co.'s:
Hack Saw Frames, Nos. 175, 180.... 40&7½%
Hack Saws, Nos. 175, 180, complete, 40&7½%
Goodell's Hack Saw Blades....40&10%
Griffin's Hack Saw Frames..35&5&10%
Griffin's Hack Saw Blades....35&5&10%
Star Hack Saws and Blades....15&10%
Sterling Hack Saw Blades..30&10&5%
Sterling Hack Saw Frames..30&10&10%
Sterling Power Hack Saw Machines, each, No. 1, $25.00; No. 2, $30.00..10%
Victor Hack Saw Blades.....20%
Victor Hack Saw Frames.....40%
Whitaker Mfg. Co.:
National Hand Blades.....40%
National Hand Frames.....30&5%
National Power Blades.....30&10%

### Scroll—

Barnes, No. 7, $15.....25%
Barnes' Scroll Saw Blades.....40%
Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20.....20%
Lester, complete, $10.00.....15&10%
Rogers, complete, $3.50 and $4.00.. 15&10%

### Scales—

*Union Platform, Plain.$2.10@2.20*
*Union Platform, Stpd.$2.20@2.30*
Chatillon's:
Eureka .....25%
Favorite .....40%
Grocers' Trip Scales.....50%
The Standard Portables.....40%
The Standard R. R. and Wagon .....50&10%

### Scrapers—

*Box, 1 Handle.....doz. $1.85@2.10*
*Box, 2 Handle.....doz. $2.35@2.50*
*Ship...Light, $2.00; Heavy, $4.50*
Chapin-Stephens Co., Box..30@30&10
Richards Mfg. Co., Foot.....60%

### Screws—Bench and Hand

*Bench, Iron, doz., 1 in., $2.50@ 2.75; 1¼, $3.00@3.25; 1¼, $3.50@3.75*
*Bench, Wood.....20@20&10%*
*Hand, Wood....70&10@70&10&10%*
Chapin-Stephens Co., Hand..... 70@70&10&2½%

### Coach, Lag and Hand Rail—

*Lag, Cone Point...80&5@80&10%*
*Coach, Gimlet Point..80@80&5%*
*Hand Rail.....70&10@75%*

### Jack Screws—

*Standard List.....70&10@75%*
Millers Falls..... 50&10&10
Swett Iron Works..... 70@75

### Machine—

*Cut Tread, Iron, Brass or Bronze:*
*Flat Head or Round Head. 50@50&10%*
*Fillister Head.....40@40&10%*
*Rolled Thread, F. H. or R. H., Iron .....75&10%*
*F. H. or R. H., Brass, Nos. 8 to 14.....65&10%*

### Set and Cap—

*Set (Iron).....75&10&7½%*
*Set (Steel), net advance over Iron .....25%*
*Sq. Hd. Cap.....70&10&7½%*
*Hex. Hd. Cap.....70&10&7½%*
*Rd. Hd. Cap.....50&7½%*
*Fillister Hd. Cap.....60&7½%*

### Wood—

*List July 23, 1903.*
*Flat Head, Iron.....87½&5@..%*
*Round Head, Iron....85&5@..%*
*Flat Head, Brass.....80&5@..%*
*Round Head, Brass..77½&5@..%*
*Flat Head, Bronze....75&5@..%*
*Round Head, Bronze..72½&5@..%*
*Drive Screws.....87½&5@..%*

### Scroll Saws—

See *Saws, Scroll.*

### Scythes—

*Per doz.*
*Grass, No. 1, Plain.....$7.00*
*Clipper, Bronzed Webb.....$7.25*
*No. 3 Clipper, Pol'd Webb...$7.50*
*No. 6 Clipper and Solid Steel.$7.75*
*Bush, Weed and Bramble, Nos. 11, 12 and 13.....$7.25*
*Grain, No. 1.....$9.00@9.50*
*Bronzed Webb, No. 1...$9.25@9.75*
*Nos. 3 and 4 Clipper, Grain, $9.50@10.00*
*Solid Steel, No. 6....$10.00@10.50*

### Seeders, Raisin—

Enterprise .....25@30%

### Sets— Awl and Tool—

Fray's Tool Handles, Nos. 1, $12; 2, $16; 3, $12.....50%
Millers Falls Adj. Tool Handles, No. 1, $12; No. 4, $12; No. 5, $18..20&10%

### Garden Tool Sets—

Ft. Madison Three Plows, Hoe, Rake and Shovel.....℔ doz. sets $9.00

### Sets, Nail—

*Octagon .....gro. $3.50@3.75*
Buck Bros.....27½%
Mayhew's .....℔ gro. $9.00
Snell's Corrugated, Cup Pt.....40&10
Snell's Knurled, Cup Pt.....40&10%
Victor Knurled, Cup Pt....℔ gro. $7.50

### Rivet—

*Regular list.....75@75&10%*

### Saw—

Atkin's:
Criterion .....40%
Adjustable .....40%
Disston's Star, Monarch and Triumph .....30%
Morrill's No. 1.....$15.00
Nos. 3 and 4, Cross Cut....$20.60
No. 5, Mill.....$30.00
Nos. 10, 11, 95.....$15.60
No. 1 Old Style.....$10.00
Special .....$16.25
Giant Royal Cross Cut.....℔ doz. $7.50
Royal, Hand.....℔ doz. $4.50
Taintor Positive.....℔ doz. $6.75

### Shaving—

Fox Shaving Sets, No. 30..... ℔ doz., net, $24.00
Smith & Hemenway Co.'s.....75%

### Sharpeners, Knife—

Pike Mfg. Co.:
Fast Cut Pocket Knife Hones, ℔ doz.....$1.50
Mounted Kitchen Sand Stone, ℔ doz.....$1.50
Natural Grit Carving Knife Hones, ℔ doz.....$3.00
Quick Cut Emery Carving Knife Hones, ℔ doz.....$1.50
Quick Edge Pocket Knife Hones, ℔ doz.....$2.50
(50%)

### Skate—

Smith & Hemenway Co., Eureka..50

### Shaves, Spoke—

*Iron .....doz. $1.25*
*Wood .....doz. $2.00*
Bailey's (Stanley R. & L. Co.).....45%
Chapin-Stephens Co.....30@30&10%
Goodell's, ℔ doz. $9.00.....15&10%

### Shears—

| | 7 | 8 | 9 in. |
|---|---|---|---|
| *Cast Iron..* | | | |
| *Best* | *$16.00* | *18.00* | *20.00 gro.* |
| *Good* | *$13.00* | *15.00* | *17.00 gro.* |
| *Cheap* | *$5.00* | *6.00* | *7.00 gro.* |

*Straight Trimmers, &c.:*
*Best quality Jap....70@70&10%*
*Best quality Nickel..60@60&10%*
*Tailors' Shears.....40@40&10%*
Acme Cast Shears.....40@40&5%
Heinisch's Tailor's Shears.....10%
National Cutlery Co.'s Nickel Plated, 60&10%; Japan Handles.....70&10%
Wilkinson Shear & Cutlery Co.:
Sheep, 1900 list.....30&10&5%
Grass .....50&10%
Horse or Mule.....50&10%
J. Wiss & Sons Co.:
Best Quality Jap'd.....60&10%
Best Quality Nickeled.....50&10%
Tailors' .....25%

### Tinners' Snips—

*Steel Blades.....20&5@20&10%*
*Steel Laid Blades.....40&10@50%*
Acme Cast Snips.....40@45&5%
Forged Handles, Steel Blades, Berlin .....50%
Heinisch's Snips.....40%
Jennings & Griffin Mfg. Co.'s 6½ to 10 in.....33⅓&7½%
National Cutlery Co.'s Forged Steel.50%
Niagara Snips.....40%
P., S. & W. Forged Handles, 25%; W. R. W.....50%
J. Wiss & Sons Co.:
Wiss Forged Steel.....25%

### Pruning Shears—

Cronk's Hand Shears.....33⅓%
Cronk's Wood Handle Shears....33⅓%
Disston's Combined Pruning Hook and Saw, ℔ doz. $18.00.....25%
Disston's Pruning Hook only, ℔ doz., $12.00.....25%
John T. Henry Mfg. Co.:
Pruning Shears, all grades.....40%
P., S. & W. Co.....40&10%
Columbian Cutlery Co.:
Hedge, Wilcut Brand.....60&10%
Lawn and Border, Wilcut Brand, 60&10%

### Sheaves— Sliding Door—

Reading .....40%
R. & E. list.....15%

### Sliding Shutter—

Reading list.....40%
R. & E. list.....10%

### Shells—Shells, Empty—

Brass Shells, Empty:
Climax, 10 and 12 gauge.....60&5%
Club, Rival, 65&5%; First Quality, 60&5%
Paper Shells, Empty:
New Rapid, 10, 12, 16 and 20 gauge, 25&10%
Climax, 10 and 12 gauge; Acme, 10, 12, 16 and 20 gauge; Ideal, 10, 12, 16 and 20 gauge; Leader grade, 25%
Union League, 12 and 12 gauge; Rival Grade.....25%
New Climax, Defiance, 10, 12, 14, 16 and 20 gauge; Climax, 14, 16 and 20 gauge.....20%
Challenge, Monarch, 10, 12, 16 and 20 gauge; League, Union, 14, 16 and 20 gauge; Repeater Grade..20%

### Shells, Loaded—

*Loaded with Black Powder..40%*
*Loaded with Smokeless Powder, medium grade.....40&5%*
*Loaded with Smokeless Powder, high grade.....40&10&10%*
Union Metallic Cartridge Co.:
New Club, Black Powders.....40%
Nitro Club, Smokeless Powders.40&5%
Arrow, Smokeless Powders.40&10&10%
Winchester:
Smokeless Repeater Grade.....40&5%
Smokeless Leader Grade...40&10&10%
Black Powder.....40%

### Shingles, Metal— Per Sq.

| Edwards Mfg. Co.: | Painted. | Galv. |
|---|---|---|
| 14 x 20 | $4.25 | $6.00 |
| 10 x 14 | 4.50 | 6.25 |
| 7 x 10 | 4.75 | 6.50 |
| Wheeling Corrugating Co.: | | |
| Dixie, 14 x 20 in. | $4.25 | $5.50 |
| Dixie, 10 x 14 in. | 4.50 | 6.00 |
| Dixie, 7 x 10 in. | 5.00 | 6.75 |

### Shoes, Horse, Mule, &c.—

*F.o.b. Pittsburgh:*
*Iron .....per keg. $4.10*
*Steel .....per keg. $3.85*
Burden's, all sizes.....℔ keg $3.90

### Shot—

*25-lb. bag.*
*Drop, up to B.....$1.75*
*Drop, B and larger..... 2.00*
*Buck ..... 2.00*
*Chilled ..... 2.10*
*Dust ..... 2.30*

### Shovels and Spades—

*Association List, Nov. 15, 1902.40%*
Avery Stamping Co.....40%

### Snow Shovels—

*Long Handle.....$3.25@$3.50*
*Wood and Mall, D Handle, $3.75@$4.00*

### Sieves and Sifters—

*Hunter's Imitation, gro.....$9.50*
*Hunter's Genuine, per gro..$12.00*

### Sifters, Ash—

Acme Ball Bearing Sales Co., Acme Automatic Ash Sifter, each, $3.25; ℔ doz.....$39.00

### Sieves, Seamless Metallic

| Mesh | Per dozen. 1 | 16 | 18 | 20 |
|---|---|---|---|---|
| *Iron Wire* | *$1.05* | *1.05* | *1.10* | *1 20* |
| *Tinned Wire* | *$1.15* | *1.15* | *1.20* | *1.30* |

### Sieves, Wooden Rim—

*Nested, 10, 11 and 12 Inch.*
*Mesh 18, Nested....doz. $0.90@0.95*
*Mesh 20, Nested....doz. $1.00@1.05*
*Mesh 24, Nested....doz. $1.30@1.40*

### Sinks, Cast Iron—

*Painted, Standard list:*
*12 x 12 to 32 x 36 in.....60%*
*20 x 24 to 24 x 50 in.....50%*
*24 x 60 to 24 x 120 in.....30%*
Barnes' low list.....60%

*NOTE.—There is not entire uniformity in lists used by jobbers.*

### Skeins, Wagon—

*Cast Iron.....70@75&10%*
*Steel .....40@45%*

### Slates, School—

*Factory Shipments.*
*"D" Slates.....50@50&10%*
*Eureka, Unexcelled Noiseless.. 60&7 tens.*
*Victor A, Noiseless.60&4 tens &5%*

### Slaw Cutters—See *Cutters.*

### Snaps, Harness—

*German .....40@40&10%*
Covert Mfg. Co.:
Derby, 25%; Yankee, 30&2%; Yankee Roller, 30&2%.
High Grade, 40%; Trojan.....40%
Jockey .....25%

### Snaths—

*Scythe .....60%*

### Snips, Tinners—See *Shears.*

### Spoons and Forks—

### Silver Plated—

*Good Quality.....50&10@60&5%*
*Cheap .....60@60&10%*
International Silver Co:
1847 Rogers Bros., 40&10%; Rogers & Hamilton.....50&10%
Rogers & Bro., William Rogers' Eagle Brand.....50&10%
Anchor, Rogers Brand.....60%
Wm. Rogers & Son.....60&10%

### Miscellaneous

*German Silver.....60@60&5%*

### Tinned Iron—

*Teas .....per gro. 50@55¢*
*Tables .....per gro. $0.90@$1.00*

### Springs— Door—

Bardsley's Spring and Check.....40%
Chicago (Coil).....40&10%
Gem (Coil).....20%
Pullman Door and Gate.....10%
Reliance (Coil).....40&10%
Star (Coil).....35%
Torrey's Rod, 39 in.....℔ doz. $1.00

### Carriage, Wagon, &c.—

*1¼ in. and Wider: Per 100 lb.*
*Black .....$4.75@$5.00*
*Half Bright.....$4.75@$5.00*
*Bright .....$5.25@$5.50*
*Painted Seat Springs:*
*1½ x 2 x 26....per pair. 45@47¢*
*1¾ x 3 x 28....per pair. 68@71¢*

### Sprinklers, Lawn—

American Foundry & Mfg. Co.:
Cactus, 65%; Japanese, 70%; National, ℔ doz.....$12.00
Enterprise .....25@30%
Philadelphia No. 1, ℔ doz. $12; No. 2, $15; No. 3, $20.....30%

### Squares—

*Nickel plated.. } List Jan. 5, 1900.*
*Steel and Iron. } 80@80&5%*
*Rosewood Hdl. Try Square and T-Bevels .....60&10&10@70%*
*Iron Hdl. Try Squares and T-Bevels .....40&10@40&10&10%*
Disston's Try Squares and Bevels, Rosewood Handle, 60 & 10%; Iron Stock and Bevel.....15%

### Squeezers, Lemon

*Wood, Porcelain Lined:*
*Cheap .....doz. $1.00*
*Good Grade.....doz. $1.25*
*Tinned Iron.....doz. $0.75@1.00*
*Iron, Porcelain Lined...doz. $1.75*

### Staples—

*Barbed Blind.....85&5@85&10%*
*Electricians' .....80&10&10@85%*
*Fence Staples, Polished, $2.05; Galvanized .....$2.35*
*Poultry Netting Staples..... per lb. 3¼@3½¢*

### Steels, Butchers'—

Dick's .....30%
Foster Bros.'.....30%

### Steelyards— ....30@30&10%

### Stocks and Dies—

*Blacksmiths' .....50@50&10%*
Curtis Rev'ble Ratchet Die Stock..25%
Derby Screw Plates.....25%
Green River.....25%
Lightning Screw Plate.....25%
Little Giant.....25%
Reece's New Screw Plate.....25%

### Stoners, Cherry—

Enterprise .....25@30%

### Stones, Axe—

Pike Mfg. Co., Axe Stones (all kinds) .....33⅓%

### Glass Cutters' Stones—

Pike Mfg. Co., Glass Cutters' Stones and Supplies.....10%

### Stones, Oil, &c.—

Pike Mfg. Co., 1907 list: ℔ lb
Arkansas St. No. 1, 3 to 5½ in.$2.80
Arkansas St. No. 1, 5½ to 8 in.$3.50
Arkansas Slips No. 1.....$4.00
Lily White Washita, 4 to 8 in..60¢
Rosy Red Washita, 4 to 8 in..60¢
Washita St., Extra, 4 to 8 in..50¢
Washita St., No. 1, 4 to 8 in..40¢
Washita St., No. 2, 4 to 8 in..25¢
Lily White Slips.....90¢
Rosy Red Slips.....90¢
Washita Slips, Extra.....80¢
Washita Slips, No. 1.....70¢
Washita Slips, No. 2.....40¢
(33⅓%)
India Oil Stones (entire list)..33⅓%
Quickcut Emery and Corundum Oil Stone, Double Grit.....40%
Quickcut Emery and Corundum Axe Stone, Double Grit.....33⅓%
Quickcut Emery Rubbing Bricks..40%
Hindustan No. 1, R'g'lar ℔ lb 8¢
Hindustan No. 1 Small ℔ lb 10¢
Turkey Oil Stones, Extra 5 to 8 in..... ℔ lb 80¢
Queer Creek Stones, 4 to 8 in.20¢
Queer Creek Slips.....16¢
Sand Stone.....6¢
(33⅓%)

### Scythe Stones—

Pike Mfg. Co., 1907 list:
Black Diamond S. S. ℔ gro. $12.00
Lamoille S. S. ℔ gro. $11.00
White Mountain S. S. ℔ gro. $9.50
Green Mountain S. S. ℔ gro. $7.00
Extra Indian Pond S. S. ℔ gro. $8.00
No. 1 Indian Pond S. S. ℔ gro. $7.50
No. 2 Indian Pond S. S. ℔ gro. $5.00
Leader Red End S. S. ℔ gro. $5.00
Quick Cut Emery ℔ gro. $10 00
Pure Corundum ℔ gro. $18.00
Crescent $7.00
Emery Scythe Rifles, 2 Coat. $8.80
Emery Scythe Rifles, 3 Coat. $11.00
Emery Scythe Rifles, 4 Coat. $13.20
Balance of 1904 list 33⅓%
Electro (Artificial), ℔ gro., $12.00 33⅓%
Lightning (Artificial), ℔ gro., $18.00 33⅓%

### Stoppers, Bottle—

Victor Bottle Stoppers ℔ gro. $9.00

### Stops— Bench—

Millers Falls 15&10%
Morrill's, ℔ doz., No. 1, $10.00 50%
Morrill's, No. 2, $12.50 50%

### Door—

Chapin-Stephens Co. 50@50&10%

### Plane—

Chapin-Stevens Co. 20%

### Straps— Box—

Acme Embossed, case lots. 20&10&10%
Cary's Universal, case lots. 20&10&10%

### Stretchers, Carpet—

*Cast Iron, Steel Points . . doz. 55¢*
*All Steel Socket . . . doz. $2.00@2.25*
Excelsior Stretcher and Tack Hammer Combined, ℔ doz., $6.00 20%

### Stuffers, Sausage—

Enterprise Mfg. Co., Stuffers and Lard Presses 25@25&7½%
National Specialty Co., list Jan. 1, 1902 30&5%
P., S. & W. Co. 40&10&5%

### Sweepers, Carpet—

Bissell Carpet Sweeper Co.: ℔ doz.
Superba, Crotch Mahogany $36.00
Triumph, Fancy Veneers $33.00
Parlor Queen, Fig. Rosewood $30.00
Elite, Hungarian Ash $29.00
Am. Queen, Fig. Mahogany $27.00
Ideal, Bird's-Eye Maple $25.00
Grand Rapids, Nickel, $21.00; Japan $22.00
Standard, Nickel, $22.00; Japan $20.00
Crown Jewel, Nickel, $21.00; Jap. $19.00
Crystal, Glass Top $36.00
Grand, 17 in. wide $36.00
Parlor Grand $48.00
Club, 21 in. wide $54.00
Hall 28 in. wide $60.00

*NOTE.—Rebates: 50c per dozen on three dozen lots; $1 per dozen on five-dozen lots; $2 per dozen on ten-dozen lots; $2.50 per dozen on twenty-five dozen lots.*

### Tacks, Finishing Nails, &c.

*American Carpet Tacks . . . 90&40%*
*American Cut Tacks . . . . . 90&40%*
*Swedes' Cut Tacks . . . . . 90&40%*
*Swedes' Upholsterers' . . . . 90&50%*
*Gimp Tacks . . . . . 90&50%*
*Lace Tacks . . . . . 90&50%*
*Trimmers' Tacks . . . . . 90&40%*
*Looking Glass Tacks . . . . . 65%*
*Bill Posters' and Railroad Tacks, 90&50&10%*
*Hungarian Nails . . . . . 80&20%*
*Finishing Nails . . . . . 70%*
*Trunk and Clout Nails . . . 80&10%*

*NOTE.—The above prices are for Straight Weights.*

### Miscellaneous—

*Double Pointed Tacks, 90&6 tens@—%*
Se also Nails, Wire.

### Tanks, Oil and Gasoline—

Wilson & Friend Co.:

| Gal. | Gasoline | Oil |
|---|---|---|
| 30 | $2.75 | $3.00 |
| 60 | $3.50 | $4.00 |
| 110 | $5.00 | $5.75 |

### Tapes, Measuring—

*American Asses' Skin . . . . 50@—%*
*Patent Leather . . . . . 25@30&5%*
*Steel . . . . . 33⅓&5%*
*Chesterman's . . . . . 25@25&5%*
Keuffel & Esser Co.:
Favorite, Ass Skin . . . . . 40&10@50%
Favorite, Duck and Leather . . . . . 25&5@25&10%
Metallic and Steel, lower list, 35@35&5%; Pocket, 35@35&5%.
Lufkins:
Asses' Skin . . . . . 40&10@50%
Metallic . . . . . 30@30&5%
Patent Bend, Leather . . . 25&5@25&10%
Pocket . . . . . 40@40&5%
Steel . . . . . 33⅓@35%
Wiebusch & Hilger:
Chesterman's Metallic, No. 34L, etc. . . . . 25%
Chesterman's Steel, No. 1038L, etc. . . . . 35%

### Teeth, Harrow—

*Steel Harrow Teeth, plain or headed, ¾-inch and larger, per 100 lb. . . . . $2.55@$2.80*

### Thermometers—

*Tin Case, Cabinet, Flange, Dairy, &c. . . . . 30@35%*

### Ties, Bale—Steel Wire—

*Single Loop . . . . . 82½&10%*
*Monitor, Cross Head, &c. 70&2½%*

### Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

### Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

### Tire Benders, Upsetters, &c.

See *Benders and Upsetters, Tire.*

### Tools—Coopers'—

L. & I. J. White . . . . . 20@20&5%

### Haying—

Myers' Hay Tools . . . . . 50%

### Ice Tools—

Gifford-Wood Co. . . . . 15%

### Miniature—

Smith & Hemenway Co.'s, Davidson, ℔ doz., Nickel Plated, $1.50; Gold Plated . . . . . $2.00

### Saw—

Atkins Cross Cut Saw Tools . . . . 35&5%
Simond's Improved . . . . . 33⅓%
Simonds' Crescent . . . . . 25%

### Ship—

L. & I. J. White . . . . . 25%

### Transom Lifters—

See *Lifters, Transom.*

### Traps—Fly—

*Balloon, Globe or Acme, doz., $1.15@$1.25; gro. . . . $11.50@12.00*
*Harper, Champion or Paragon, doz., $1.25@1.40; gro. $13.00@13.50*

### Game—

*Imitation Oneida . . . . . 75@10%*
Newhouse . . . . . 50&5%
Hawley & Norton . . . . . 65&10%
Victor . . . . . 75@75&10%
Oneida Community Jump . . . . . 70&5%
Stop Thief . . . . . 60%
Tree Trap . . . . . 60%
Hector . . . . . 75@75&10%

### Mouse and Rat—

*Mouse, Wood, Choker, doz. holes, 12¢*
*Mouse, Round or Square Wire, doz. 85@90¢*
Marty French Rat and Mouse Traps (Genuine), ℔ doz.:

| | Crate lots. | Small lots. |
|---|---|---|
| No. 1, Rat | $11.50 | $14.50 |
| No. 3, Rat | $5.75 | $6.50 |
| No. 3½, Rat | $4.70 | $5.25 |
| No. 5, Mouse | $2.25 | $3.00 |

Animal Trap Co.:
Out o' Sight, Mouse, ℔ doz. . . . . $0.66
Out o' Sight, Rat, ℔ doz. . . . . 1.20
Easy Set, Mouse, ℔ doz. . . . . .33
Easy Set, Rat, ℔ doz. . . . . .85
Out o' Sight Chockers, ℔ doz. holes . . . . . .12
Out o' Sight, Tin, 5-hole, ℔ doz. traps . . . . . .75

### Trowels—

Disston Brick and Pointing . . . . . 25%
Disston Plastering . . . . . 20%
Disston "Standard Brand" and Garden Trowels . . . . . 30%
Kohler's Steel Garden Trowels, ℔ gro., 5 in., $4.80; 6 in., $6.00.
Never-Break, Forged Steel Garden Trowels, in bulk, net ℔ gro. $5.50
In 1 doz. boxes . . . . . ℔ gro. $6.00
Woodrough & McParlin, Plastering . . . . . 25%

### Trucks, Warehouse, &c.—

B. & L. Block Co.:
New York Pattern . . . . . 50&10%
Western Pattern . . . . . 60&10%
Handy Trucks . . . . . ℔ doz. $16.00
Grocery . . . . . ℔ doz $15.00
McKinney Trucks . . . . . each, net $10.00
Model Stove Trucks . . . . . ℔ doz $18.50

### Tubs, Wash—

*M'f'gr's list, price per gross.*

| No. | 0 | 1 | 2 | 3 | |
|---|---|---|---|---|---|
| *Galvanized* | $67 | $79 | $89 | $99 | 10&7½&5&5% |

### Twine, Miscellaneous—

*Flax Twine:*
*No. 9, ¼ and ½-lb. Balls . 21@23¢*
*No. 12, ¼ and ½-lb. Balls . 19@21¢*
*No. 18, ¼ and ½-lb. Balls . 16@18¢*
*No. 24, ¼ and ½-lb. Balls. 15½@17½¢*
*No. 36, ¼ and ½-lb. Balls . 15@17¢*
*Chalk Line, Cotton ½-lb. Balls . . . . . 24@29¢*
*Cotton Mops, 6, 9, 12 and 15 lb. to doz. . . . . 8½@19¢*
*Cotton Wrapping, 5 Balls to lb., according to quality . . 13½@19¢*
*American 2-Ply Hemp, ¼ and ½-lb. Balls . . . . . 12½@15¢*
*American 3-Ply Hemp, 1-lb. Balls . . . . . 13½@16¢*
*India 2-Ply Hemp, ¼ and ½-lb. Balls (Spring Twine) . . . 7½@9¢*
*India 3-Ply Hemp, 1-lb. Balls 7¼@9¢*
*India 3-Ply Hemp, 1½-lb. Balls, 7@8½¢*
*2, 3, 4 and 5-Ply Jute, 1½-lb. Balls . . . . . 9@11¢*
*Mason Line, Linen, ½-lb. Bls. 17¢*
*No. 264 Mattress, ¼ and ½ lb. Balls, according to quality, 30@60¢*
*Wool, 3 to 6 ply . . . . B 6¢; A 7½¢*

### Vises—

*Solid Box . . . . . 50&5@50&10&5%*

### Parallel—

Athol Machine Co.:
Simpson's Adjustable . . . . . 40%
Standard . . . . . 40%
Amateur . . . . . 25%
Columbian Hdw. Co., Slide . . . . . 40&5%; 65%
Fisher & Norris Double Screw, net, each, Nos. 2, $10.50; 3, $16.00; 4, $20.50; 5, $27.00; 6, $32.00.
Fulton Mach. & Vise Co.:
F. & R. Double Swivel Machinists' . . . . . 40%
Star, Solid Jaw, Machinists' . . . . 40%
Hollands':
Machinists' . . . . . 40@40&5%
Keystone . . . . . 65&5@70%
Lewis Tool Co.:
Adjustable Jaw . . . . . 30%
Monarch, 50%; Solid Jaw . . . . . 50%
Massey Vise Co.:
Clincher . . . . . 40%
Perfect, 15%; Lightning Grip . . . . . 15%
Merrill's . . . . . 25%
Millers Falls Oval Slide Pattern . 60&10%
Parker's:
Victor, 20@25%; Regulars . . . . 20@25%
Vulcan's . . . . . 40@15%
Combination Pipe . . . . . 55@60%
Prentiss . . . . . 20@25%
Rock Island . . . . . 25%
Snediker's X. L. . . . . 33⅓%
Stephens' . . . . . 33⅓%

### Saw Filers

Disston's D 3 Clamp and Guide, ℔ doz., $24.00, 30%; Clamps . . . . . 30%
Perfection Saw Clamps, ℔ doz. . . . $4.50
Reading . . . . . 60%

### Wood Workers—

Fulton Mach. & Vise Co.:
F. & R. Double Swivel Coachman's . . . . . 40%
Star Solid Jaw Woodworkers' . . . . 60%
Massey Vise Co.:
Lightning Grip, 15%; Perfect . . . . 15%
Wyman & Gordon's Quick Action, 6 in., $6.00; 9 in., $7.00; 14 in., $8.00.

### Miscellaneous—

Fulton Machine & Vise Co., Combination Pipe . . . . . 70%
Holland's Combination Pipe . . 60@60&5%
Massey's Quick Action Pipe . . . . . 40%
Parker's Combination Pipe:
87 Series, 60%; 187 Series, 60&5%; No. 870, 40%.
Rock Island Pipe . . . . . 25%

### Wads—*Price per M.*

*B. E., 11 up . . . . . 60¢*
*B. E., 9 and 10 . . . . . 70¢*
*B. E., 8 . . . . . 80¢*
*B. E., 7 . . . . . 80¢*
*P. E., 11 up . . . . . $1.00*
*P. E., 9 and 10 . . . . . 1.25*
*P. E., 8 . . . . . 1.50*
*P. E., 7 . . . . . 1.50*
*Dis. 15%*
*Ely's B. E., 11 and larger . $1.70@1.75*
*Ely's P. E., 12 to 20 . . . . $3.00@3.25*

### Ware, Hollow—

### Cast Iron, Hollow—

*Stove Hollow Ware:*
*Enameled . . . . . 45&10%*
*Ground . . . . . 50&5%*
*Plain or Unground . . . . . 60%*
*Country Hollow Ware, per 100 lbs . . . . . $2.75@$3.00*
*White Enameled Ware:*
*Maslin Kettles . . . . . 65&10%*
*Covered Wares:*
*Tinned and Turned . . . . . 35&10%*
*Enameled . . . . . 45&10%*
See also *Pots, Glue.*

### Enameled—

Agate Nickel Steel Ware . . . . . 33⅓%
El-an-ge . . . . . 60&10%
Iron Clad Ware . . . . . 70&10%
Lava and Volcanic, Enameled . . 40&10%

### Tea Kettles—

*Galvanized Tea Kettles:*

| *Inch* | *6* | *7* | *8* | *9* |
|---|---|---|---|---|
| *Each* | *45¢* | *50¢* | *55¢* | *65¢* |

### Steel Hollow Ware—

Avery Stamping Co.:
Never-Break Spiders and Griddles . . . . . 65&10%
Steel Kettles, Maslins Scotch Bowls, Tin'd . . . . . 60%
Steel Stew Pans, Stew Pots, etc., Porcelained . . . . . 50%
Cleveland Stamping & Tool Co.:
Solid Steel Spiders and Griddles . . . . . 65&5%
Solid Steel Kettles . . . . . 60&5%

### Warmers, Foot—

Pike Mfg. Co., Soapstone . . . . 40@40&10%

### Washboards—

Solid Zinc: ℔ doz.
Crescent, family size, bent frame . $4.05
Red Star, family size, stationary protector . . . . . $4.05
Double Zinc Surface:
Saginaw Globe, family size, stationary protector . . . . . $3.55
Cable Cross, family size, stationary protector . . . . . $3.60
Single Zinc Surface:
Naiad, family size, open back, perforated . . . . . $3.00
Single Saginaw Globe . . . . . $2.85
Brass Surface:
Brass King, Single Surface, open back . . . . . $4.05
Nickel Plate Surface:
No. 1001 Nickel Plate, Single Surface . . . . . $3.60
Glass Surface:
Glass King, Single Surface, open back . . . . . $3.95
Enamel Surface:
Enamel King, Single Surface, ventilated back . . . . . $3.95

### Washers—Leather, Axle—

*Solid . . . . . 90@90&10%*
*Patent . . . . . 90@90&5%*
*Coil: ⅞ 1 1⅛ 1¼ inch. 9¢ 10¢ 11¢ 14¢ per box.*

### Iron or Steel—

*Size bolt . . . 5-16 ⅜ ½ ⅝ ¾*
*Washers . . . . $4.65 3.75 2.45 2.25 2.05*
*The above prices are based on $6.75 off list.*
*In lots less than one keg add ½¢ per lb.; 5-lb. boxes add ½¢ to list.*

Avery Stamping Co.:
Standard, in 200 lb kegs, $6.00 ℔ 100 lb. disct.; in 100 lb kegs, add 10¢ net ℔ 100 lb; in 5 or 10 lb boxes, add 50¢ net ℔ 100 lb; in 1 lb boxes, add $1.00 net ℔ 100 lb.

### Cast Washers—

*Over ½-inch, barrel lots, per lb. 1½@1¾¢*

### Wedges—

*Oil Finish . . . . . lb., 2¼@2¾¢*

### Weights—Hitching—

Covert Mfg. Co. . . . . 30&2%

### Sash—

*Per net ton, f.o.b. factory:*
*Eastern District . . . . $21.00@—*
*Western and Central Districts . . . . . $20.00@$22.00*

### Wheels, Corundum and Emery—

Pike Mfg. Co., Corundum, 65%; Emery . . . . . 75%

### Well—

*8-in., $2.00; 10-in., $2.30; 12-in., $3.00; 14-in., $4.45.*

### Wire and Wire Goods—

*Bright and Annealed:*
*6 to 9 . . . . . 72&10&7½%*
*10 to 18 . . . . . 72½&10&10%*
*19 to 26 . . . . . 75&10&10&2½%*
*27 to 36 . . . . . 77½&7½%*
*Galvanized:*
*6 to 9 . . . . . 72½&10%*
*10 to 14 . . . . . 72½&10&5%*
*15 to 16 . . . . . 72½&10&5%*
*17 to 18 . . . . . 72½%*
*19 to 26 . . . . . 70&5&2½%*
*27 to 36 . . . . . 65&10&10%*
*Coppered:*
*6 to 9 . . . . . 65&10&10%*
*10 to 14 . . . . . 70&10&5%*
*15 to 18 . . . . . 65&10&10&10%*
*19 to 26 . . . . . 70&5&2½%*
*27 to 36 . . . . . 72½&10&2½%*
*Tinned:*
*6 to 18 . . . . . 67&10&10%*
*Brass . . . . . 15½¢ lb., base*
*Copper . . . . . 15¼¢ lb., base*
*Cast Steel Wire . . . . . 50%*

### Spooled Wire—

*Annealed and Tinned . . . . . 75%*
*Brass and Copper . . . . . 70%*
*Retailers' Assortments, per box, $2.00@$2.25*
Wire Clothes Line, See Lines.
Wire Picture Cord, see Cord.

### Bright Wire Goods—

*Steel Wire Goods . . . . . 90&40%*
*Brass Wire Goods . . . . . 90&40%*
*Brass Cup and Shoulder Hooks, 85&10%*

### Wire Cloth and Netting—

*Galvanized Poultry Netting, 80&2½@80&7½%*
*Painted Screen Cloth, 100 ft., $1.35*
*Standard Galv. Hardware Grade: 100 ft. rolls, 24 to 48 in. wide, Per 100 sq. ft.*
*Nos. 2, 2½ and 3 Mesh . . . . $2.75*
*Nos. 4 and 5 Mesh . . . . . $3.00*
*No. 6 Mesh . . . . . $3.25*
*Nos. 7 and 8 Mesh . . . . . $3.75*

### Wire, Barb—See *Trade Report*

### Wrenches—

*Agricultural . . . . . 80&10&10%*
*Alligator or Crocodile . . 70&10@75%*
*Baxter Pattern S Wrenches, 70&5@70&10%*
*Drop Forged S . . . . . 45@45&5%*
Acme . . . . . 60&10%
Alligator Pattern, 70%; Bull Dog . . 70%
Bemis & Call's:
Adjustable S, 40&5%; Adjustable S Pipe, 40&5%; Briggs Pattern, 40%; Combination Bright, 50%.
Steel Handle Nut . . . . . 50&5%
Combination Black . . . . . 50&5%
Merrick Pattern . . . . . 50&5%
Boardman's . . . . . 40%
Coes' Genuine Knife Hdl. . . 40&10&5&5%
Coes' Genuine Steel Hdl. . . 40&10&5&5%
Coes' Genuine Key Model . . 40&10&5&5%
Coes' Genuine Hammer Handle . . . . . 40&10&5&5%
Coes' "Mechanics'" . . . 40&10&10&5&5%
Donohue's Engineer . . . . . 40&10%
Eagle . . . . . 70%
Gem Pocket . . . . . 30%
Hercules . . . . . 70%
W. & B. Machinist:
Case lots . . . . . 50&5%
Less than case lots . . . . . 50%
W. & B. Railroad Special:
Case lots . . . . . 50%
Less than case lots . . . . . 40&10&5%
Solid Handles, P., S. & W. . 50&10%; full cases . . . . . 50&10&5%
Standard Nipple Mfg. Co.:
Duplex Chain . . . . . 50%
Stillson . . . . . 65%
Uwanta Wrench Co.:
Uwanta Special, Iron Handle . . . . 40&10&5%
Other Wrenches . . . . . 50%
Vulcan and Agrippa Chain . . . . . 50%
Whitaker Machinists':
Case Lots . . . . . 50&10%
Less than case lots . . . . . 50%

### Fruit Jar—

Benj. P. Forbes, Triumph, ℔ gro., $7.50; per doz . . . . . $0.90

### Wrought Goods—

*Staples, Hooks, &c., list March 17, '92 . . . . . 90@—%*

### Zinc— (*Cask lots at mill.*)

*Sheet . . . . . per 100 lb., $7.00*

# THE IRON AGE

New York, Thursday, September 3, 1908.

## New Le Blond Milling Machine Attachments.

A number of new attachments for milling machines have recently been brought out by the R. K. Le Blond Machine Tool Company, Cincinnati, Ohio. One of these is believed to be the first milling machine attachment for hobbing spur and worm gears that has proved a practical success. Earlier attempts have been made to adapt a milling machine for performing hobbing operations by gearing the work with the spindle of the machine, but these generally have been suitable only for special jobs. The new attachment, as Figs. 1 to 4 indicate, will hob all classes of work and of any number of divisions within its capacity.

The attachments shown in the remainder of the illustrations include a universal spiral gear cutting attachment (Fig. 5), a universal milling attachment (Fig. 6), a circular milling attachment (Fig. 7), a slotting attachment (Fig. 8), a rack spacing attachment (Fig. 9), and a vertical index head (Fig. 10). Descriptions of all of the attachments, beginning with the one for hobbing gears, are given in the following, and in the order in which they have been mentioned above.

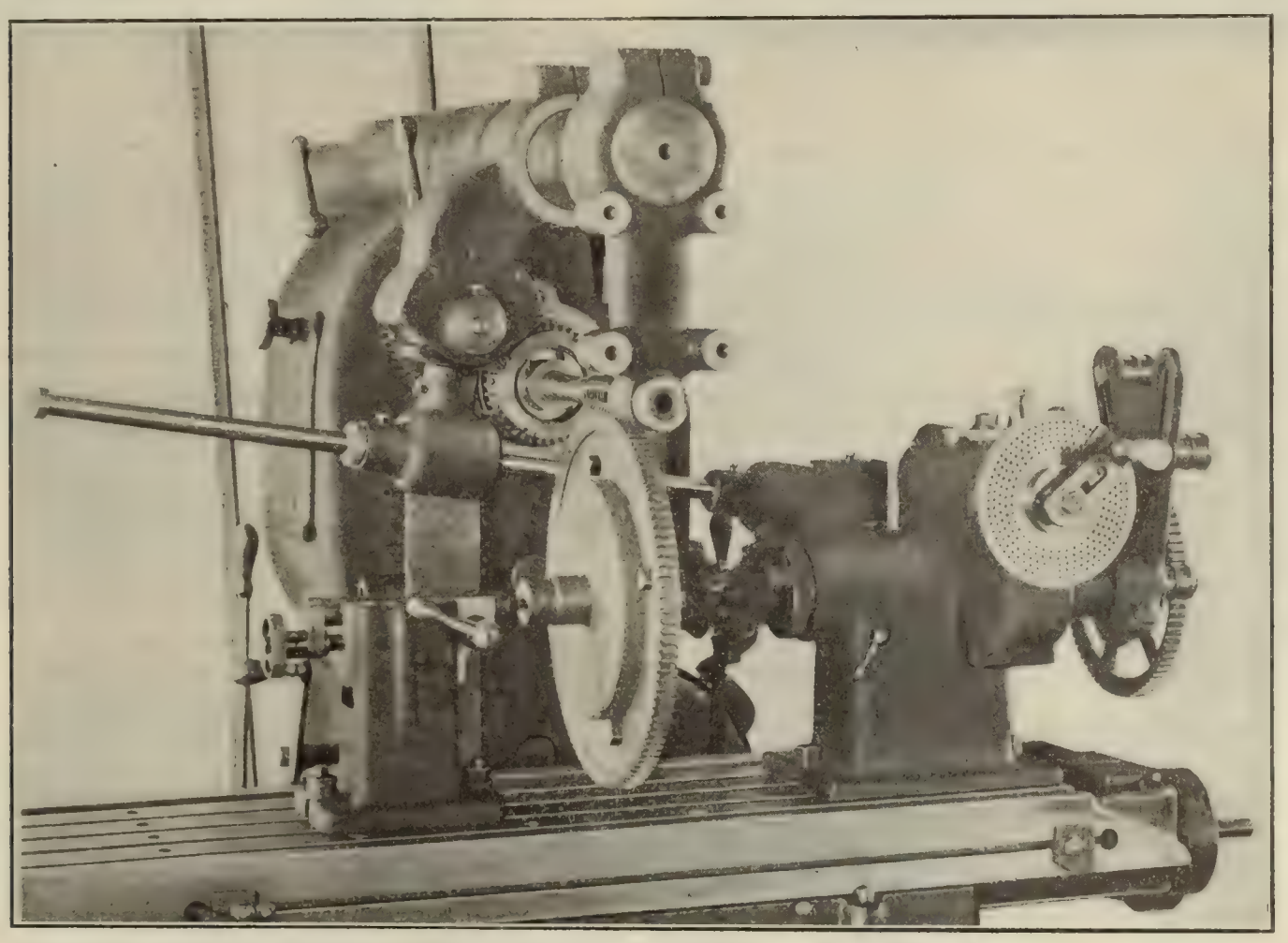


Fig. 1.—Hobbing a Large Worm Wheel on a Milling Machine with the New Attachment Made by the R. K. Le Blond Machine Tool Company, Cincinnati, Ohio.

### Worm and Spur Gear Hobbing Attachment.

Equipped with this attachment the milling machine assumes all of the capabilities of a machine especially designed for hobbing gears and worm wheels and possesses the same advantages; that one hob will cut all numbers of teeth of a given pitch; that it generates correctly formed teeth; that it cuts continuously, no time being lost in returning the cutter and indexing the blank, and that in cutting worm wheels the hobbing attachment is particularly efficacious, as the preliminary operation of gashing each tooth is dispensed with, resulting in gears being produced in one-fourth or one-fifth the usual time, depending upon the gear. A very fine feed is provided, and the work can be fed into the hob automatically and stopped when the proper depth of tooth has been cut.

The attachment includes means for connecting the driving spindle of the milling machine with the main spindle of the dividing head through flexible bevel gear joints and a shaft to drive the dividing head spindle with a positive speed ratio to the cutter spindle. Various ratios of speed between the two spindles for cutting various numbers of teeth are obtained by quadrant and change gears. The attachment is bolted to the company's standard plain dividing head and its upper end is supported by the overhanging arm of the machine. It is driven by a gear screwed on the spindle nose. The splined shaft on the attachment is connected at each end by a pair of miter gears supported in swivel bearings. This combination makes a universal joint, which, unlike a knuckle joint, transmits motion evenly and positively in any position. The quadrant and change gears are carried at the end of the attachment, and are so arranged that the driving shaft can be connected either directly to the spindle for cutting low numbered divisions, or through the worm and worm wheel for large numbers of teeth.

A set of compound gears is furnished for giving a 20 to 1 reduction of the feed. This is required because the feed per revolution of the cutter is proportional to the number of teeth in the gear. For example, if when cutting a spur gear with 60 teeth it is desired to feed the work transversely to the cutter at the rate of 0.06 in. per revolution, it will be necessary to set the feed for one-sixtieth of this amount, or 0.0001 in., to obtain the required rate of table feed. Change gears are furnished for cutting all numbers of teeth from 9 to 100.

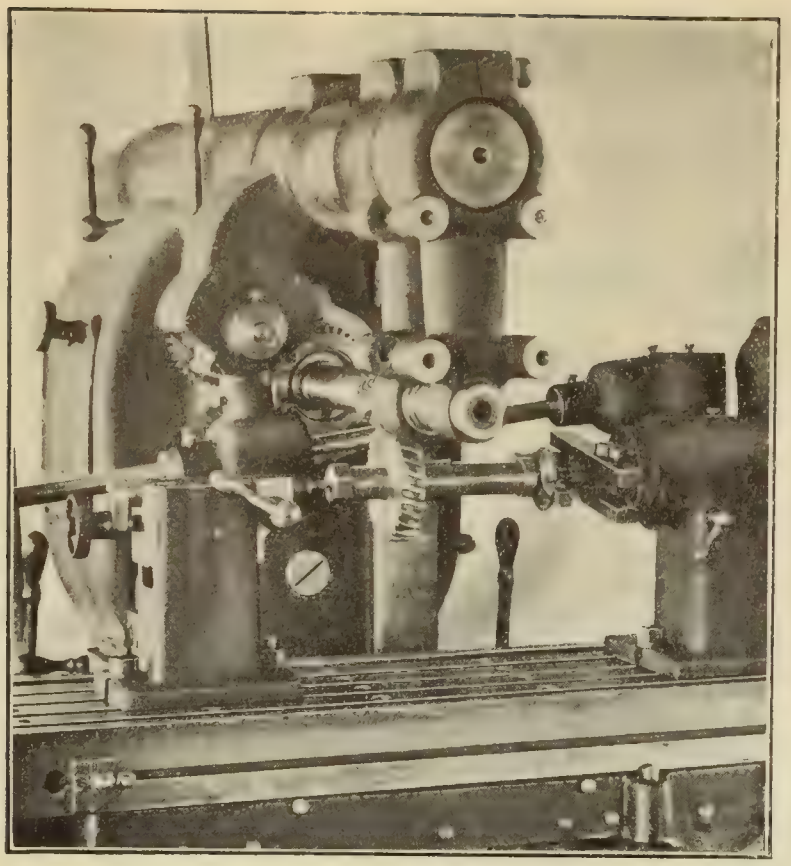


Fig. 2.—The Attachment Applied to Spiral Gear Cutting.

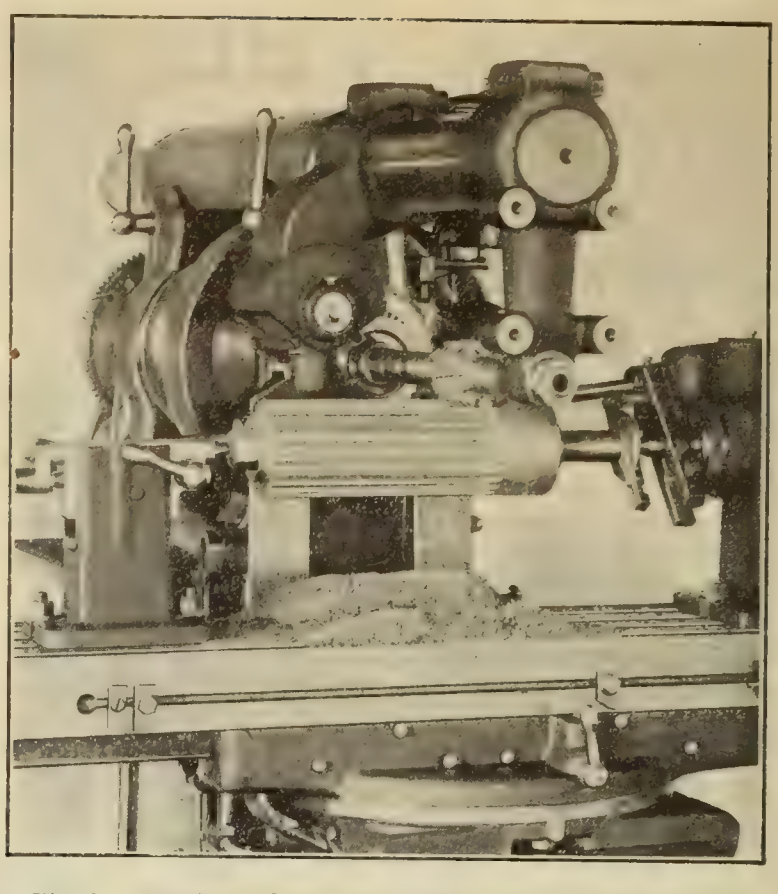


Fig. 3.—Hobbing a Long Spur Pinion with the Attachment.

The use of the attachment on various classes of work is illustrated in Figs. 1 to 4. In Fig. 1 a large worm wheel is being hobbed on a plain milling machine, without previous notching. This gear has 120 teeth, 0.39 in. circular pitch, and is about 15⅛ in. diameter. Fig. 2 shows the setting for cutting a coarse pitch worm or spiral gear. The gear has 26 teeth, 6 pitch, quadruple thread, and is 2⅝ in. diameter. The attachment in this case is geared direct to the spindle at a ratio of 6½ to 1. The work is fed into the hob with power feed, and when the proper depth is cut it is automatically tripped. These gears are hobbed complete in 12 min. apiece.

To cut spur gears it is necessary to use the attachment in connection with a universal milling machine where the table can be swiveled to correspond with the angle of the spiral on the hob. The hobbing of a long spur pinion of 6 pitch, 24 teeth and 14 in. long is shown in Fig. 3. Such a long gear, it is stated, cannot be cut on any standard automatic gear cutting machine. A contrast in an operation of the same kind is the one illustrated in Fig. 4—the cutting of large spur gears of 8 pitch and 102 teeth. The drive in this case is through the worm and worm wheel of the dividing head. Gears 16 in. in diameter can be cut in this way.

### Universal Spiral Gear Cutting Attachment.

This attachment, shown in Fig. 5, is designed for cutting spirals or worms on a plain milling machine. The swivel movement to the cutter head, which allows it to be turned through a complete circle, well adapts it for cutting racks, screws, &c. On a universal milling machine the attachment can be used for cutting gears of greater than 50-degree angle, such as gas engine spiral gears, for which the swiveling movement of the table of the machine would not be sufficient.

There are several novel features in the design of this

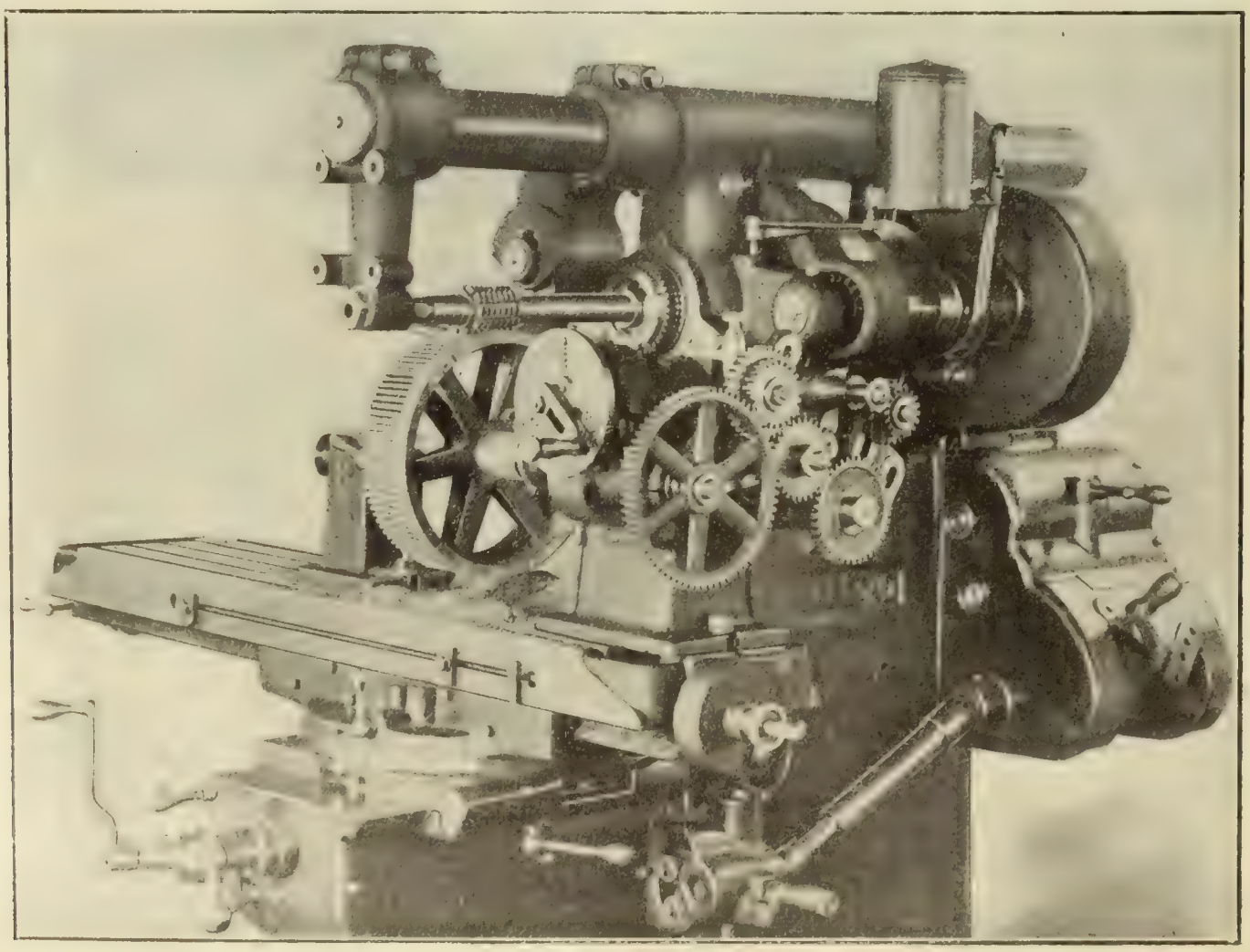


Fig. 4.—Two Larger Gears Being Cut at One Setting with the New Hobbing Attachment.

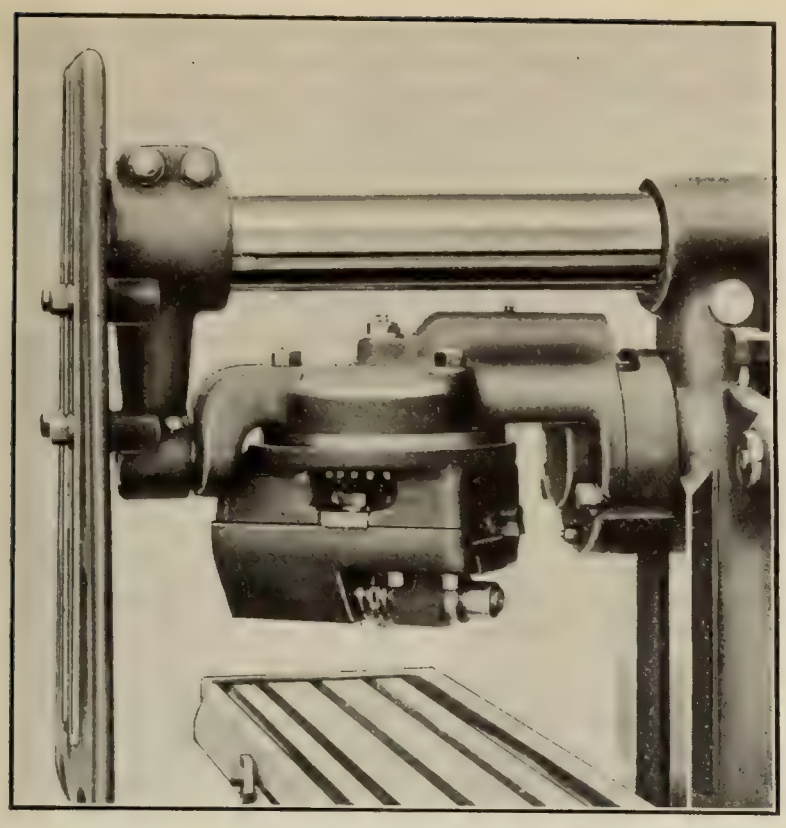


Fig. 5.—The Le Blond Universal Spiral Gear Cutting Attachment.

attachment. It is bolted to the column and the outer end is supported by the overhanging arm of the machine. The drive is from a clutch gear on the spindle, through a series of spur and bevel gears to the cutter spindle. The cutter spindle is carried in a slide which can be moved longitudinally—*i. e.*, parallel to the axis of the cutter spindle—by an adjusting screw. When the required adjustment is made the slide is clamped in position. The cutter is mounted between two bearings, one of which is removable to permit inserting the cutter. In setting the cutter the main slide is adjusted until the center line on the cutter coincides with the swivel axis of the attachment. This is done by first setting the point of the footstock center to coincide with the line on the attachment, and then adjusting the cutter to suit. Thereafter the attachment can be swiveled to any angle, and the correct relation of the center of the work and cutter is always maintained.

**Universal Milling Attachment.**

Fig. 6 shows a new universal milling attachment, the cutter spindle of which can be swiveled to any position in a horizontal or vertical plane. It is therefore applicable to all kinds of work involving drilling, milling or key seating at any angle. The attachment is bolted to the column of the machine, and the outer end is supported by the overhanging arm. The cutter spindle is driven by a clutch on the main spindle through two pairs of miter gears. The front bearing, which is tapered, is hardened and ground. The rear bearing is straight and is adjusted by drawing in a taper bush.

**Circular Milling Attachment.**

As shown by Fig. 7, this attachment is very compact, particularly in hight, to give all possible distance for work when the attachment is used in conjunction with a vertical or universal milling attachment. The worm wheel, which is large, having 120 teeth, is driven by a worm made in one piece with its shaft. The worm is carried in an eccentric sleeve, by which it can be withdrawn from engagement with the worm wheel to permit the table to be turned by hand. The end thrust of the worm is taken by ball bearings.

Power feed may be obtained from the feed box of the machine through an independent shaft, which does not interfere with the regular feeds to the table. Hence it is possible to use automatic feed for milling pieces of irregular shape, or of both straight and circular outline. The attachment can be operated in either direction, and has trip dogs, which automatically trip the feed to a line at any point. The feed is reversed by bevel gears.

This attachment is also arranged for spacing. The head wheel can be removed and an index plate or a sector substituted. Accurate dividing can be done, and the same number of divisions obtained as on the standard dividing head. The table has a taper hole at the center to receive a plug for use in gear cutting.

**Slotting Attachment.**

Fig 8 shows a new slotting attachment that can be swiveled to any angle in a plane parallel to the face of the column, enabling slotting to be done at any angle from vertical to horizontal. The slotter head is driven

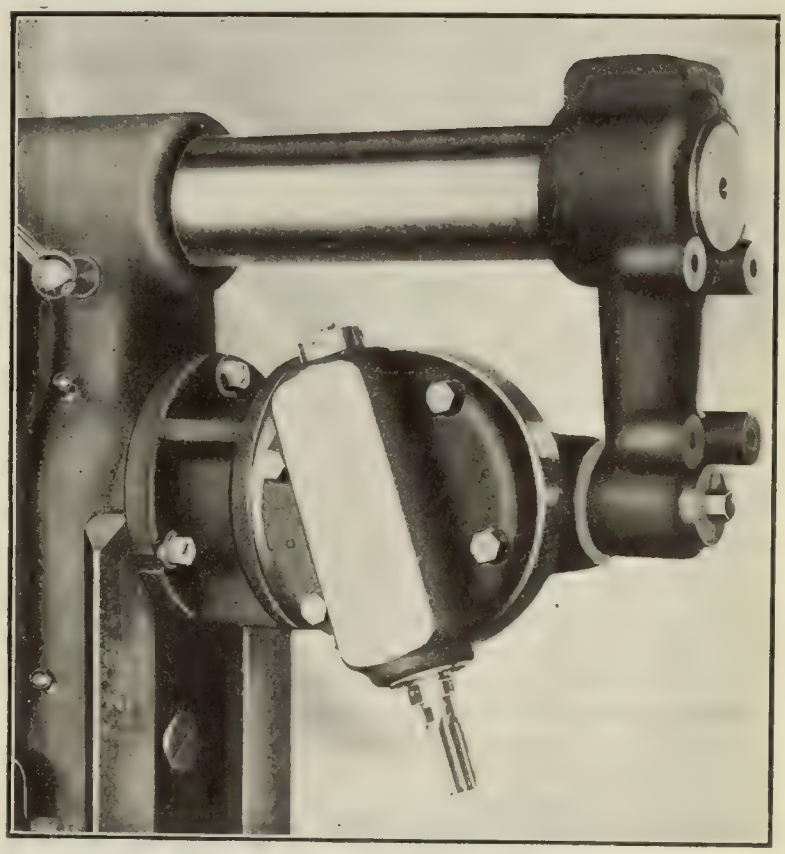


Fig. 6.—The Universal Milling Attachment.

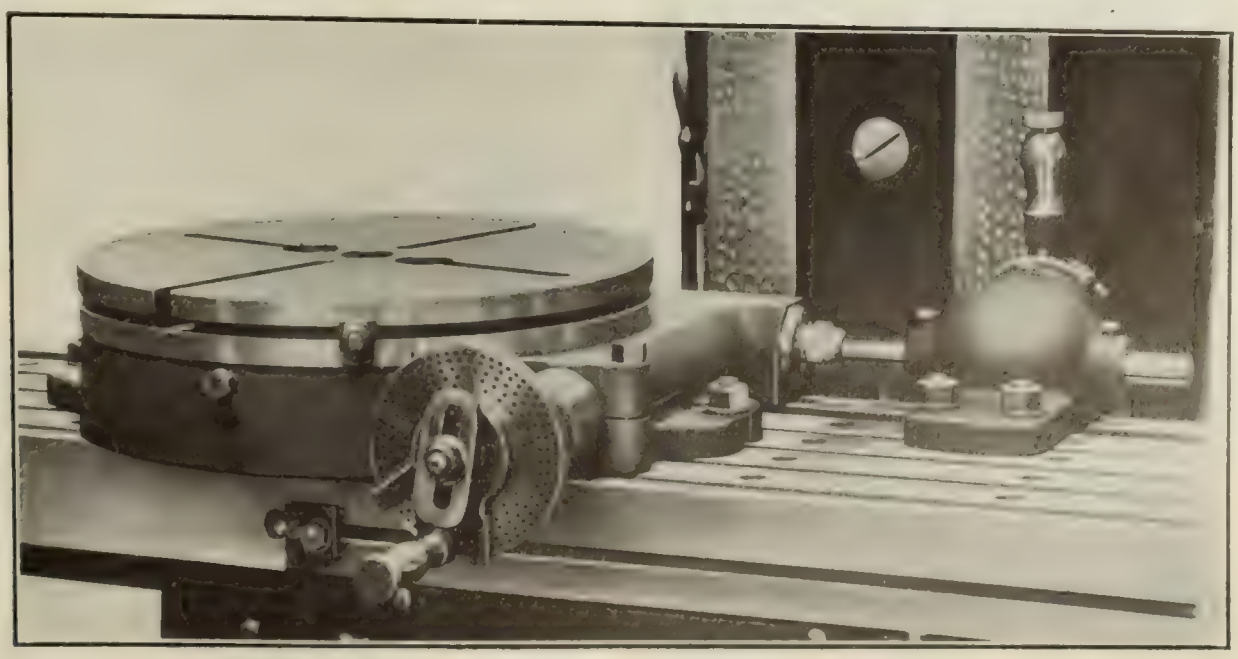


Fig. 7.—The Le Blond Circular Milling Attachment.

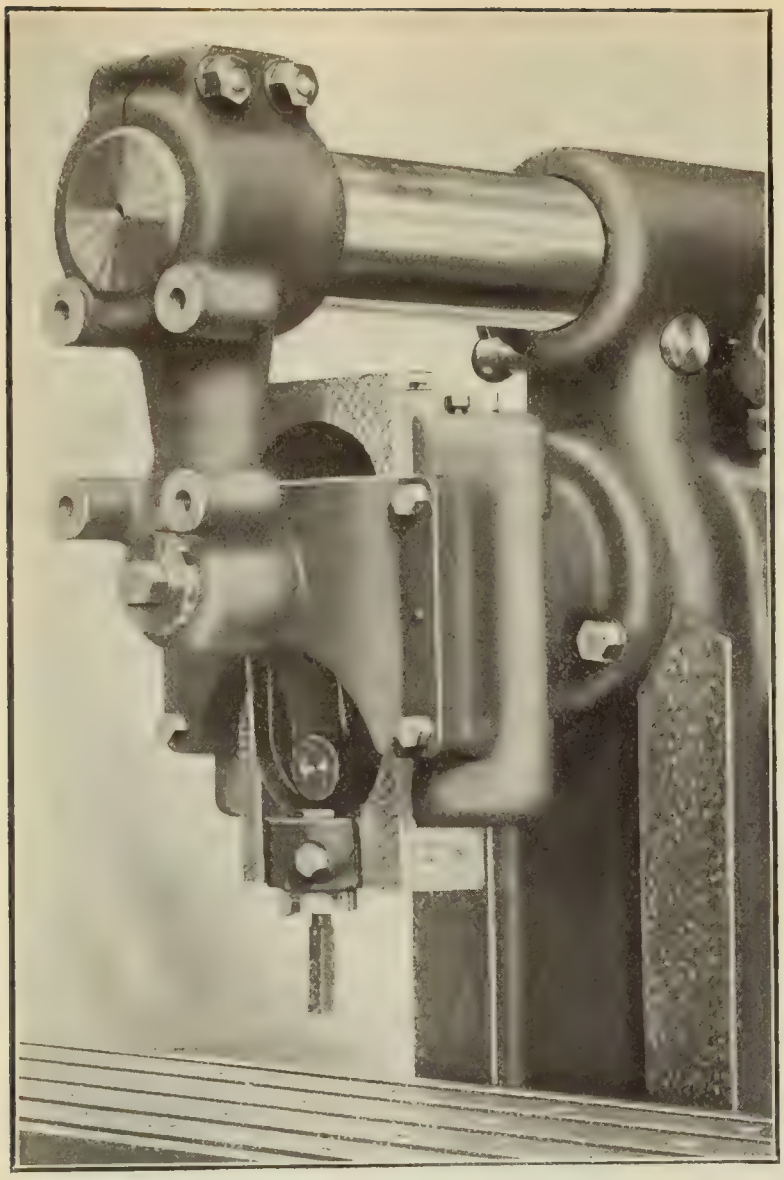


Fig. 8.—The Slotting Attachment.

from a clutch on the spindle nose of the machine and is adjustable to any length of stroke up to its maximum. The tool holder is graduated and can be swiveled in its bearing and clamped, so that the cutting edge of the tool can be set in correct relation to the work without disturbing the adjustment of the work.

**Rack Spacing Attachment.**

For use in connection with a rack cutting attachment or the attachment shown in Fig. 5, when applied to the cutting of racks, the rack spacing attachment, Fig. 9, has been developed. This attachment consists of mechanism for advancing the table between cuts when milling rack teeth, without depending on the graduated collar on the longitudinal feed screw of the table.

It is bolted to the table and carries a quadrant and change gears to connect the feed screws with the locking disk. This locking disk is made in two sections, and is reversible—one side containing two notches, the other side one, for spacing whole and half revolutions. Fifteen change gears are furnished for spacing all diametral pitches from 3 to 6 by half pitches, 6 to 16 by whole pitches, and 16 to 32 by two pitches, or all circular pitches from 1-16 to ½ in. by thirty-seconds of an inch, and ½ to 1 in. by sixteenths of an inch.

**Vertical Indexing Head.**

This head, Fig. 10, facilitates such work as the milling of the teeth of positive jaw clutches, the heads of screws, &c. The divisions are made by a vertical notched plate, which can be handled very rapidly. After the division is made the small lever shown in the side of the spindle locks it securely in position. The spindle is tapered and the front flange is extended to cover and protect the index plate from chips, &c. The spindle has a No. 11 B. & S. taper hole. The whole attachment is rigid and will stand up to very severe work.

**Editorial Comment.**

Without meaning to detract from the credit that is due the other standard forms of machine tools, each of which has its special purpose for which it is more suitable than any other tool, it is indisputable that a universal milling machine, especially when equipped with such attachments as those that have been described in the foregoing, is the most versatile single piece of equipment that can be put in a machine shop. In an emergency it can

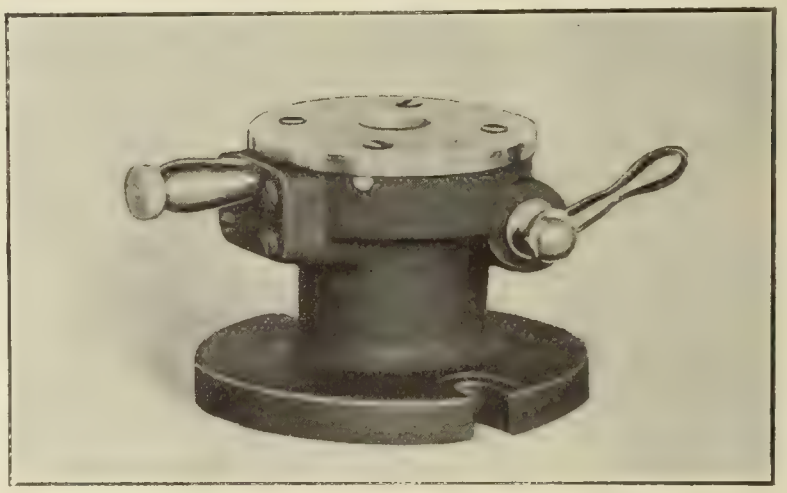


Fig. 10.—The Le Blond Vertical Indexing Head.

perform the functions of almost any other tool, or at least approximate the same result in the work done, assuming, of course, that the work is not too large or too heavy to be handled by a miller. To an extent the same may be said of a lathe, but when it branches out much beyond its ordinary field, as when the work and tool change places, it is converted practically into a milling machine itself. What is more important than the fact

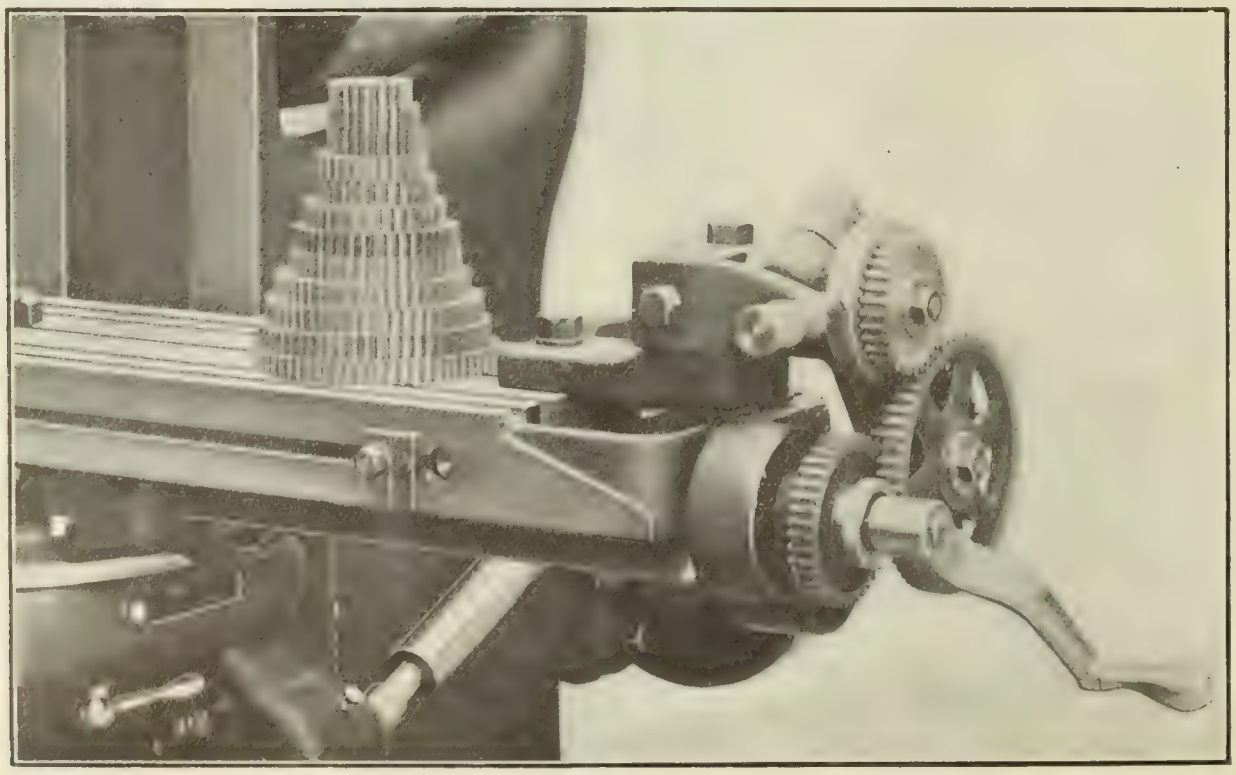


Fig. 9.—The Le Blond Rack Spacing Attachment.

that a milling machine can be substituted for most other tools, although that is not a practice to be commended where the obviously proper tools can be afforded, the milling machine has its own particular lines of work that no other tool can perform, unless it be a special machine that is an adaption of the milling machine principle.

## The Evolution of Spur Gearing.

A paper by Thomas Humpage on "The Evolution and Manufacture of Spur Gearing" was read at the recent meeting in England of the Institution of Mechanical Engineers. The writer reviewed the development of gear cutters, both in Great Britain and the United States, and presented illustrations and details of various types of machines. The London *Times Engineering Supplement* gives the following partial synopsis:

One of the first known makers of wheel cutting machines was J. C. Bodmer, whose works were at Manchester. In 1835 Joseph Whitworth was granted a patent for a wheel cutting machine, and in all probability this was the first machine to generate involute teeth. The early formed milling cutters were very expensive, owing to the fact that it was impossible to sharpen them without spoiling them, and this gradually brought about the introduction of the backed off cutter. In 1874 Brown & Sharpe brought out complete sets of machine relieved involute gear cutters, and in 1880 P. R. Jackson & Co. introduced the double helical spur gearing. The Gleason Works of Rochester, N. Y., made machines for planing the teeth of spur gears up to 24 ft. diameter by 24-in. face and 6-in. pitch. Other machines are the Bilgram spur gear generating shaper and the Fellows gear shaper, while other links in the development of wheel cutting machinery are exemplified in the Brainard, the Sellers, the Thompson & Fitton, Birch's, Gibson's (worm and bevel wheel cutter), Smith & Coventry's, and the Oerlikon machines. In all these machines one tooth must be finished before the next is begun, but in the gear hobbing machine the teeth are generated in circles, and they are all begun and finished practically simultaneously. During recent years there has been a great tendency toward grinding the teeth of change gears for motor cars, and Messrs. Reinecker have brought out a machine on the same principle as that employed in the Fellows gear shaper. Gears ground by these machines show a great improvement over those which have not been ground.

The writer referred to his own machine for grinding the involute teeth of gear wheels, which work on the principle of the hobbing machine. He had ground up several cast iron wheels of 7 pitch on the experimental machine. In the best results so far obtained a cast iron wheel of 70 teeth, 7 pitch and 1¼-in. face was completely ground in 8 min. In an improved machine an arrangement will be provided to bring about even wearing of the corundum worm. He believed that every kind of metal should be ground in the soft state, no matter for what purpose the wheels were required. The wheels should be roughed out rapidly in the gear hobbing machine, with no attempt at finish, and then sent to the grinding machine to be finished.

**A World Record in Steam Power Efficiency.**—F. E. Junge, writing in *Power*, makes this interesting statement: That the manufacturers of high-grade steam engines have not been slow improving their products while gas power is making such forcible strides ahead, will be realized from the figures which Professor Gutermuth, of Darnstadt, reports of a Wolf "lokomobile." This is the name for a type of semi-stationary steam engines working with superheat (boilers and engines combined in one unit), which are manufactured in various sizes in the Wolf works in Magdeburg-Buckau. The engine tested had a capacity of 100 effective horsepower. The steam consumption per effective horsepower was determined as 3.93 kg. (8.6 lb.), and the coal consumption as 0.473 kg., or 1.04 lb. Figuring on coal as costing $5 per ton in the particular locality, the fuel cost per horsepower comes out as low as 0.22 cent per hour. This is probably the best coal consumption figure ever attained in the generation of steam power.

## Canada's Trade Outlook.

TORONTO, August 29, 1908.—Trade in Canada improves, though less rapidly than some of the forecasters calculated. Production in the fundamental industries, such as farming and mining, never declined to the low state that most people were prepared for early last winter. The dairy industry, fostered by weather that has been almost steadily favorable since the early spring, has given a splendid account of itself, as have some branches of the live stock business. In the Cobalt region mining has kept up very well, as it has also done in the coal regions on the Atlantic, on the Pacific and in the Western interior. In some lines of manufacture, notably in agricultural machinery and mining machinery, operations were fairly well sustained, even in the dullest period. Ontario has yielded a fairly good grain crop, and the Western provinces will have at least 100,000,000 bushels of wheat this harvest. Its crop of oats will also be a fine asset. Trade should show brisk improvement when the marketing of the crop gets well started.

Canada's foreign trade in the first four months of the current fiscal year, opening April 1, shows the effects of the reaction. The exports fell off only $6,485,346 by comparison with those of the same four months of 1907, but the imports declined $39,915,809. That the exports kept so nearly up to the large volume of those of 1907 that they are compared with is to be attributed pretty much to the same home conditions as is the waning of the imports. Imports declined almost exactly $40,000,000 for the reason undoubtedly that Canadian consumers could not afford to buy so much foreign stuff as they bought in the same period of last year. Exports kept relatively high, not because production was energetic, but because consumption was in low tone. Canadians were as unable to buy of the usual quantum of their own products as they were unable to buy the usual quantum of foreign products. Hence, goods that would otherwise have been absorbed at home went to swell the exports.

It is altogether improbable that the trade of the next twelvemonth will be of the magnitude of that done in the twelvemonth immediately preceding the last one. In 1906-1907 Canadian trade was at high tide. In 1907-1908 it was probably at its lowest ebb. In 1908-1909 it will probably come somewhat short of its high water mark. Yet the money value of the natural products that the next twelvemonth starts with is far greater than that of the 1906-1907 yield. But there will be more caution in the coming year than there was in Canada's biggest trade year. The banks were not proof against the spirit of almost reckless optimism that prevailed for some years up to the latter half of 1907. There seemed to be a general feeling that there could be but one direction of movement for Canada's trade and that was forward. Setbacks in a country with such great headway, and with such a clear stretch before it, seemed out of the question. A setback, however, came, and the lesson of it that the banks are now impressing is to adhere to a conservative policy. Expansion must not be allowed to project greatly over the foundation lines of financial resources. Those who were before indulged by the banks have now to restrict their operations closely to the limits of their own solid security. It is the present policy of the banks to induce their customers to get in all that is owing to them, and thus manage to do with lighter advances. That being so, farmers who are in debt will have to pay their bills and notes before they will be allowed to begin spending on a large scale. As the total indebtedness to be liquidated by crop raisers is very large, and as bankers are likely to be exceedingly careful about making advances, the increased activity looked for in trade is certain not to get out of hand.

C. A. C. J.

Last month there was started at the Rombach Works, in Germany, the great universal structural mill designed by H. Sack, of Rath, near Duesseldorf.

## The Bollinger-Andrews Construction Company.

The Bollinger-Andrews Construction Company, 409-411 Empire Building, Pittsburgh, fabricator and erector of structural steel of all kinds, is making extensive additions to its plant at Verona, near Pittsburgh. The company owns over 20 acres of land and is erecting several new buildings. One of these is a pattern shop, 50 x 84 ft., of steel construction, with composition roof. The Briggs Machinery Company, Pittsburgh, has an order for its equipment, including universal saw table, hand joiners, band saw machines, Smith patternmakers' lathe, Perkins trimmers, &c., which will be operated by 25 and 40 hp. Westinghouse motors. Another new building is a power house, 35 x 50 ft., of steel and brick construction, which will contain two 175-hp. Westinghouse gas engines, direct connected to 100-kw. Westinghouse generators for furnishing current for lighting and power purposes; two Chicago Pneumatic Tool Company's air compressors, making a total of three machines, with a capacity of 1600 ft. of air for operating the pneumatic tools, &c.

A third new structure is a large steel building, 130 x 320 ft., which will house the foundry, where castings for structural supports, for the company's own use, as well as a line of heavy mill castings and ingot molds, will be made. The foundry equipment consists of two 84-in. Whiting cupolas, of 250 tons daily capacity, a Whiting elevator, ladles and a No. 6 Piqua positive pressure blower purchased through Samuel W. Hay's Sons, Pittsburgh; three Morgan 20-ton electric cranes, &c. An addition is being made to the structural building, and rotary planers, lathes, punches, beam shears, blacksmith tools and a 1050-lb. hammer are being installed. All machinery will be operated by Westinghouse motors, and when finished the structural department will have a monthly capacity of about 3500 tons. A new Standard Scale & Supply Company's scale is also being installed, and a siding two miles in length over the company's own property is being built. The company is now contracting for its supply of foundry and Bessemer pig iron, expecting to have the new additions in operation by about October 1. Thomas L. Andrews, formerly superintendent of the Marshall Foundry Company, Pittsburgh, will have charge of the foundry operations.

## The New 16-In. Walcott Engine Lathe.

The new 16-in. Walcott engine lathe, shown in Fig. 1, contains an interesting device in the quick change feed mechanism. This gives six changes of feed by the action of two lever handles, and can be used in connection with thread cutting. It is a plain manufacturing lathe, with ample stiffness and cutting power. The back gear ratio is 10 to 1, with generous width of belt on the driving cone. The lathe is positive in its drive; the apron, of effective design, being without friction. The machine is built by the Walcott & Wood Machine Tool Company, Jackson, Mich.

The details of the quick change feed mechanism are shown in Fig. 2. On the rear end of the spindle are the sliding gears *a*, *b* and *c*, actuated by the handle *g*, also shown, at the head of the machine, in Fig. 1. The sliding gears engage gears *d*, *e* and *f*, according to the position of the handle, position one giving the slow speed, position two the fast and position three the medium. The number of changes of feed is doubled by means of the lever *k*, Fig. 2, also seen at the end of the bed in Fig. 1, this lever actuating a spline, engaging either gears *h* or *i* with intermediate gears *l* or *m*, thus securing the two series of feeds. It will be noted that this mechanism is a simple one, yet serves its purpose with ample efficiency.

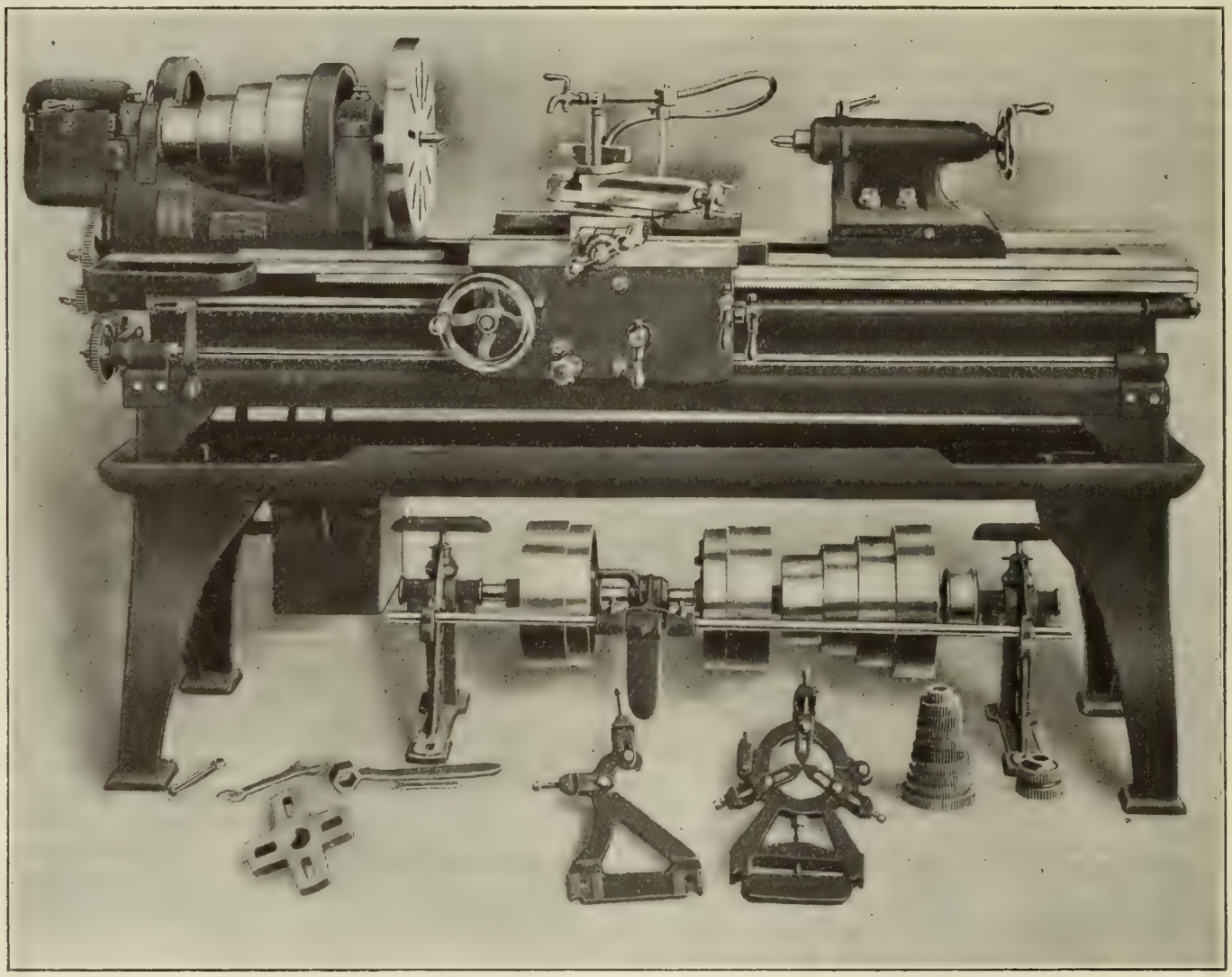


Fig 1.—The New 16-In. Engine Lathe Built by the Walcott & Wood Machine Tool Company, Jackson, Mich.

In thread cutting, the gear box at the head of the spindle is used. By this means only about one-half of the changes commonly required are necessary in getting the different pitches. The index plate corresponds with the figure numbers 1, 2 and 3 on the gear box for the different pitches. However, the thread cutting feature was not considered seriously in designing the feed box, the aim being to get a positive feed, quick change mechanism as constituting a very important feature in a manufacturing lathe.

The apron, as already stated, contains no friction whatever, being positive by means of gears, as will be noted in the detailed drawing, Fig. 3. Both the longitudinal and cross feeds in either direction can be accomplished from the apron, and the two feeds cannot be thrown in together. The binding arrangement and the means of throwing in the screw nut for thread cutting are at the front of the apron, easily accessible to the

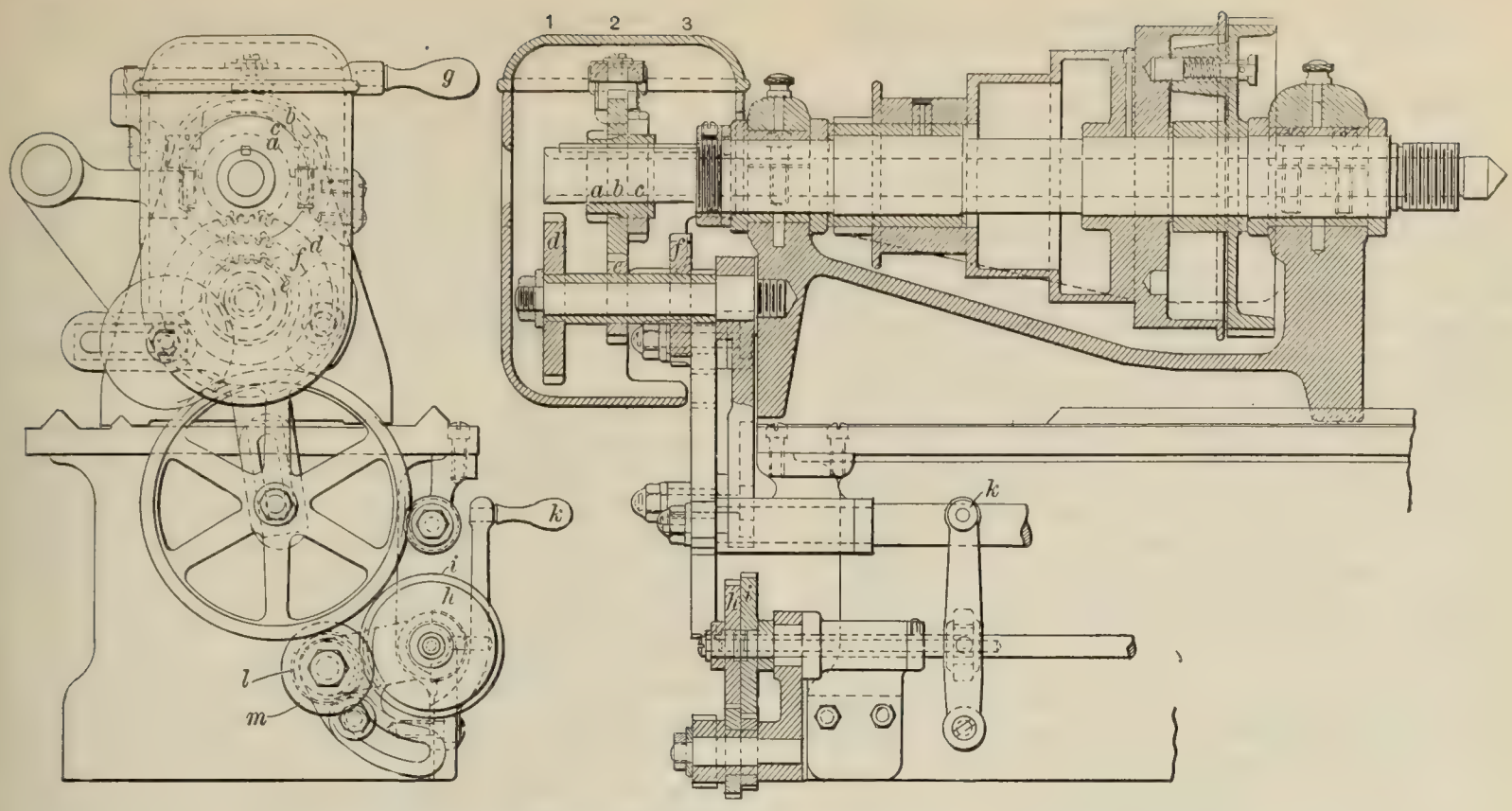



Fig. 2.--Details of the Quick Change Feed Mechanism of the Walcott Lathe.

operator. In thread cutting, one turn of the hand wheel moves the carriage approximately 1 in., so that the carriage can be moved back by hand, and by keeping count of the number of whole turns on the hand wheel the lead screw nut can be thrown in to engage at the desired point.

The lathe is designed to meet the severe service with high speed steel, with its high speeds and heavy cuts. The bed is deep and cross ribbed at short intervals its entire length. The headstock is very heavy and is bolted rigidly to the bed. The heavily constructed tailstock is provided with a set-over for turning tapers, and is offset to allow the compound rest to swivel parallel to the bed. The cones have four steps, with 2 9-16-in. face for 2½-in. belt, the largest step being 9⅜ in. in diameter. The spindle, of high carbon steel, accurately ground, has a front bearing 2½ in. diameter and 4¼ in. long, and has a 1 1-16-in. hole its entire length. The bearings are of phosphor bronze, with ample provision for oiling. The massive carriage has a deep bridge and a continuous bearing 22 in. on the ways. The lathe is tested to an alignment of 0.002 in. in both longitudinal and cross feeds.

The lathe swings over all 16⅜ in. The beds are from 6 to 10 ft. in even lengths, as desired, the 6-ft. bed taking 3 ft. 3 in. between centers. A double friction countershaft is used with pulleys 12 in. diameter by 3½ in. face, with speed forward 220 revolutions; backward, 250 revolutions. The machine will cut threads ranging from 3 to 36 to the inch. Its net weight is 1700 lb.

**The Clark Steel Hoop Company.**—This company, recently organized, has received a charter in which the following incorporators are named: S. A. Rinn, J. A. Weber, E. C. McKibben, J. M. Grubb, Lon Pantall, J. B. Eberhart and H. E. Bowers, all of Punxsutawney, Pa. The company proposes to build a plant at Punxsutawney for the manufacture of steel hoops and bands. Actively connected with the company is Frank L. Clark, formerly of the Sharon Steel Hoop Company at Sharon, Pa., and before that with William Clark's Son & Co., operating the Solar Iron & Steel Works at Pittsburgh, which was taken over by the American Steel Hoop Company.

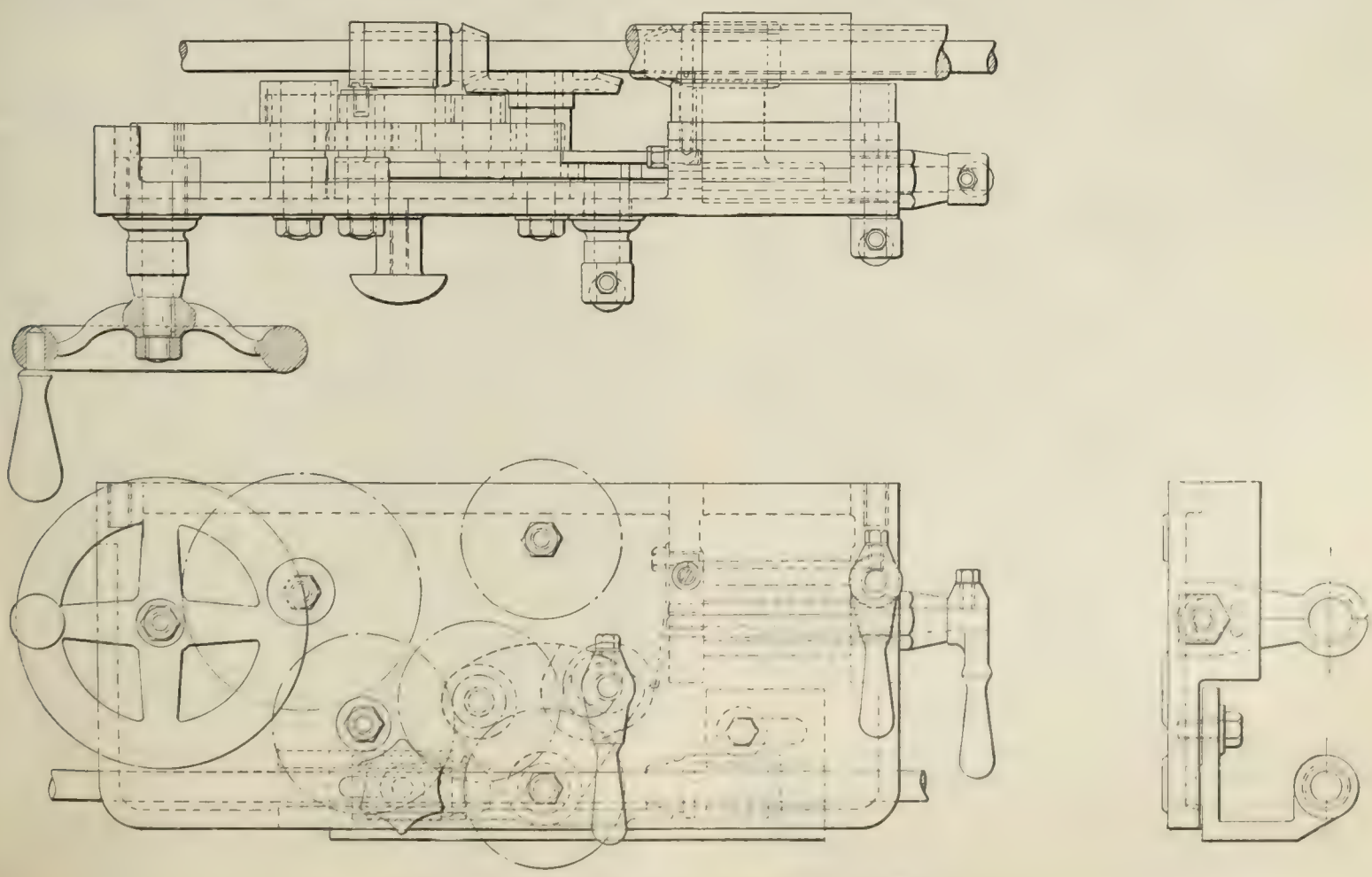


Fig. 3.—Details of the Positive Drive Apron of the Walcott Lathe

# Results of the Piecework System.

## Output Increased 52 Per Cent. and Earnings of Machinists 33 Per Cent.

A remarkable showing is made for the piecework system in a report recently prepared by the mechanical superintendent of a large railroad, which is not named, and published in the *Railroad Age Gazette.* The results to the road and to its machinists are summarized in this sentence: "If the 772 engines repaired in 1906 had received general repairs to tires, boxes, flues and machinery under the non-piece-work conditions existing in 1904 and 1905, the additional cost to the company would have been $163,470, or $211.75 per engine, whereas the average rate per hour for all machinists working piecework on the system in January, 1907, was 34.2 cents, as against 25.9 cents, average rate for day work during the same month—a gain to the individual workman of one-third."

Interesting details of the operation of the system are furnished and some extracts from these are given below, taking up first the

### Piecework Organization.

as it was introduced September 1, 1904:

(a) The mechanical superintendent, whose final approval of each price is necessary before it is put into effect.

(b) The assistant mechanical superintendent in charge of shop work, who approved all prices before they were submitted to the mechanical superintendent. This office has since been abolished.

(c) The shop specialist or piecework expert, who has general charge of making all schedules and putting into effect the piecework prices in all the different shops along the line and who reports directly to the mechanical superintendent.

(d) The master mechanic of the shop, who passes on all prices before they are submitted to the shop specialist.

(e) The general foreman of the shop, who personally signs all prices before they are submitted to the master mechanic.

(f) The assistant to the general foreman, who times all operations on which it is desired to make piecework prices, giving in detail the time necessary to perform the operation, which if performed on a machine would include:

Time to get machine ready.
Time to take rough cut.
Time to remove work from machine.
Kind of casting.
Kind and number of machine.
Name of man performing work.
Number of pieces machined.
Time to set up work.
Time to take finish cut.
Time to set and grind tools.
Kind of tool steel used.
Speed and feed.
His day rate.
Total cost per piece.
The piecework price finally fixed for the work.

The workman must know in every instance that he is being timed for a piecework price, and he may also know, if he desires, the actual time that it took him to perform the operation and the piecework price that is going to be recommended for same. He has a perfect right to raise a question at any time when he is performing an operation on which it is intended to fix a piecework price.

(g) The piecework checkers who are employed in the different departments check up the amount of piecework performed by each man from day to day and make an accurate record of same on a blank card prepared for this purpose.

### Comparative Efficiency.

The following statement shows shop output and cost under piecework as compared with day work. The figures include all costs in connection with the piecework organization, except the salary of the shop specialist and his office force, consisting at present of one man:

*Statement Showing Cost of Engines Receiving General Repairs for the Year—January to December, Inclusive—as Compared with Fiscal Year Ending June 30, 1905.*

| | July to June, 1904-1905. | | | | January to December, inclusive, 1906. | | | |
|---|---|---|---|---|---|---|---|---|
| | TBMF | Cost. | TBM | Cost | TBMF | Cost. | TBM | Cost. |
| Shop A.... | 36 | $39,661 | 27 | $19,749 | 79 | $63,243 | 8 | $4,305 |
| Shop B.... | 130 | 160,417 | 51 | 35,485 | 207 | 193,280 | 7 | 3,729 |
| Shop C.... | 75 | 68,776 | 19 | 9,386 | 161 | 116,286 | 1 | 457 |
| Shop D.... | 113 | 113,293 | 4 | 1,394 | 198 | 173,612 | 4 | 1,659 |
| Shop E.... | 37 | 30,438 | 2 | 733 | 72 | 50,544 | 0 | .... |
| Shop F.... | 23 | 25,630 | 12 | 4,165 | 55 | 56,722 | 12 | 7,018 |
| Totals... | 414 | $438,215 | 115 | $71,912 | 772 | $653,687 | 32 | $17,248 |
| Aver. cost*. | | $1,058.49 | | $625.32 | | $846.74 | | $539.00 |

* Per engine.

TBMF. = engines receiving general repairs to tires, boxes, flues and machinery.

TBM. = engines receiving all necessary repairs except flues.

| | |
|---|---|
| Increase in shop output | 52 per cent. |
| Saving per engines, TBMF. repairs 1906 over 1904-5 | $211.75 |
| Saving per engine, TBM. repairs 1906 over 1904-5.. | 86.32 |
| On this basis had the 772 engines in 1906 received TBMF. repairs under same conditions as existed in 1904-5, they would each have cost $211.75 more, or a total of | $163,470.00 |
| If the 32 TBM. engines had been overhauled under conditions as cited above, they would each have cost $86.32 more, or a total of | 2,762.24 |
| Therefore, total net saving on engines receiving general repairs in 1906 is | $166,232.24 |

The year 1906 shows an increase in output over 1904-5 of 275 engines receiving general repairs, and it is worthy of notice that but 32 engines received TBM repairs in 1906 as against 115 engines in 1904-5. In other words, in 1906 we gave practically all the engines that went through the back shop a thorough overhauling, thereby making them good for the maximum amount of service. The normal output of our locomotive shops is about 1000 general repair engines per year, and on this basis the above figures would show a saving of over $200,000.

### Explanation of Output Statement.

It is not claimed, of course, that piecework is responsible for all the saving shown above. The new machinery, consisting principally of lathes, planers, boring mills, shapers, slotting machines and such other machines as are used on the machine side of the back shop had a great deal to do with reducing the cost of output.

But in this connection it is fair to assume that the large increase of output in the new machinery was much of it due to the fact that we were making a systematic study of this work and that when piecework prices were once fixed the workmen were then required to perform the work in at least the fixed time in order to make their day rate, and when the earnings of the men were increased the increase in output was of course in exactly the same proportion.

As one among hundreds of cases illustrating this fact we might cite the operation of boring tires on a new 90-in. Niles boring mill in Shop D. The machine had been run for some months on a day work basis with an output averaging about five tires per day of 10 hr., day rate of workman 25 cents per hour, but the next day after a piecework price of 17 cents per tire was fixed the same workman bored 20 tires in 10 hr., thereby increasing his earnings 36 per cent., while the capacity of the machine was increased 300 per cent.

It should be remembered also that in places like F. E and A very few improvements have been made in the boiler shop, blacksmith shop, tank shop, paint shop, carpenter shop, fitting department, tin and pipe shop and erecting shop. The improvements at these points consist chiefly of the new machinery placed on the machine side of the shop. It is a fact, however, that the addition of pneumatic hammers, air hoists, special devices for handling certain classes of work in the departments enumerated above, some new furnaces in the blacksmith shops, with a new steam hammer here and there and an occasional small power hammer, has added very much to increasing the output, but it must not be forgotten that new tools alone will add little to the output of any shop unless they are worked up to their capacity.

### The Gain to Employees.

Piecework benefits the employee by affording him an opportunity to increase his earnings, as illustrated in the following statement:

*Gain Per Cent. Per Hour, by Piece Work Over Day Work for All Machinists Working Piece Work on the System, Month of January,* 1907.

| | Piece work. | | | Average rate | Gain per hr. piece |
|---|---|---|---|---|---|
| | Total hours worked. | Total earnings. | Aver. rate per hour. | per hour, day work. | work, per ct. |
| Shop A..... | 7,028 | $2,167.57 | $0.308 | $0.249 | 23.7 |
| Shop B..... | 2,436 | 723.72 | 0.297 | 0.244 | 21.7 |
| Shop C..... | 1,430 | 569.48 | 0.390 | 0.277 | 40.7 |
| Shop D..... | 2,059 | 782.49 | 0.380 | 0.278 | 36.7 |
| Shop E..... | 1,916 | 692.82 | 0.361 | 0.273 | 31.9 |
| Shop F..... | 3,881 | 1,414.77 | 0.360 | 0.254 | 41.7 |
| Shop G.....15,888 | | 4,977.11 | 0.313 | 0.244 | 28.2 |
| Shop H..... | 9,969 | 3,931.07 | 0.394 | 0.261 | 50.9 |
| Totals....44,607 | | $15,259.03 | 0.342 | 0.259 | 33.0 |

We use the above rates, which apply to machinists only because we had the figures at hand. The per cent. of gain to workmen in other departments is substantially the same. The increase in shop output, as shown by a preceding table, is 52 per cent., while the increased earnings of the men amount to 33 per cent.

The month of January was selected because this usually is the coldest month in the year, and if any difficulties could arise which would retard the speed of the workmen and decrease their earning power they would show up at this time.

### Attitude of the Men.

We do not believe our workmen as individuals are opposed to piecework. It is only when we come in contact with the organizations to which some of our employees belong that we find an antagonistic feeling towards this method of shop organization. This statement is proved to be true from the fact that since September 1, 1904, when we first commenced to introduce piecework in all shops along the line we have had no trouble whatever with our blacksmiths, boilermakers, tin and pipe fitters, tank men, painters and carpenters.

None of the above classes of labor have been organized within the time specified except the blacksmiths. This department had the remains of an organization when we commenced the introduction of the present piecework system, but as the piecework went into effect the organization gradually went out of business.

### Organization's Objections to Piecework.

The Machinists' Union objects to piecework because, as it claims, it puts one man against another, father against son and son against father in the scramble to increase their daily earnings. As a matter of fact, it simply places every man, regardless of relation, on his own merits. When the piecework price is once fairly established, it presents to all alike an equal opportunity to increase their daily earnings in direct proportion to the effort. Labor organizations always have maintained that a uniform day rate should prevail for each individual class of mechanics. Piecework, of course, is diametrically opposed to this proposition, because it fixes a fair price on the individual operation and then leaves it open for each workman to earn wages in proportion to his ability.

The foregoing tables clearly demonstrate this fact, because while the piecework prices are practically the same and in many respects the conditions are the same, a study of the figures will show that some shops earn much more than others on the same class of work. This is directly due to the intelligence, mechanical ability and efforts of the workmen. The principal effect, however, of a piecework organization is that it reduces to a minimum the number of mechanics required in the different departments of the shop, because the number of men must be reduced in direct proportion to the increase in efficiency of each individual mechanic.

It is a selfevident fact, however, that the more mechanics a shop employs in a certain line of work, the more money there is in it for the labor organizations, and it is therefore to their interest to maintain a stubborn fight against the further introduction of a fixed price for a given amount of work.

McCoy & Brandt, 619 Ferguson Building, Pittsburgh, have recently been appointed local agents by the American Electric Fuse Company, Muskegon, Mich., for its line of Allen-Bradley electric crane controllers.

## The Gröndal Continuous Charcoal Kiln.

The recently published literature of the American Gröndal Kjellin Company, 45 Wall Street, New York, describes the Gröndal charcoal kiln, which has been extensively used in Sweden, though no plant has thus far been erected in the United States. The general arrangement of the kiln, which is designed by Dr. Gustav Gröndal, takes the form of a long tunnel divided into two main compartments, one for charring and the other for cooling. There is a lock at each end of the kiln to facilitate charging and discharging the cars. The wood is stacked vertically in open steel cars with a capacity of 250 cu. ft. These cars have latticed sides and ends, giving free circulation of hot gases. The cars are in contact throughout the length of the kiln, and as a car of timber is charged through the entrance lock a car of charcoal is discharged from the lock at the other end. The heavier by-products drip through the open lattices of the car and collect in a channel between the rails. There are cross leads at intervals, and these drain through into an outside sump. The gaseous by-products ascend to the crown of the kiln and are led off through condensers. The crude by-products are treated in a series of heating and distilling vessels working in a vacuum according to Bergstrom's distillation process, the surplus heat of the kiln being utilized.

Details are given of the results of three months' operation of a Gröndal kiln. The wood used was sodden spruce board edgings from sawmills, averaging 6 ft. long, 2 to 6 in. wide and ¾ in. to 2 in. thick. The gas producer which furnished heat for the charring chamber was supplied with the same edgings and with sawdust, the consumption being equal to 15 per cent. of the wood charged into the kiln.

The charcoal recovered amounted to 74 per cent. of the wood charged, or 74 bushels per cord, and the average output per kiln was 2270 bushels in 24 hours. The average recovery of by-products over the three months was as follows: Raw turpentine, 1.36 gal.; thick tar, 2.36 gal.; tar oil, 6.5 gal.; concentrate, 289 gal.—all per cord. From the concentrate 5.46 gal. of acetic acid per cord was derived, and 2 gal. of methyl alcohol. Naturally the rate at which cars pass through the kiln depends on the amount of moisture in the wood. With sodden saw edgings of pine the average number of cars withdrawn in 24 hr. is 22 per kiln. With forest air dried timber the number runs up to 36 cars in 24 hr. Owing to the specially designed regenerative system on which the kiln works uncondensed gases are returned to the gas producer to be burned, and in the case of forest air dried timber these gases suffice to do all the necessary heating.

The number of men per shift required for working two kilns is 20, of which number 9 are employed in filling cars. The total wages paid per shift for two kilns was 76 shillings 6 pence. On an output of 4540 bushels per shift the labor cost per bushel of charcoal is thus 0.2025 penny, or about 0.4 cents.

**Ingot Iron Sheets.**—Recent literature of the American Rolling Mill Company, Middletown, Ohio, calls attention to the work this company undertook, following out the suggestion of Dr. Allerton S. Cushman of the Department of Agriculture, Washington, D. C., as to methods of making steel less liable to corrosion. In line with his discoveries, connecting electrolytic action with rusting, Dr. Cushman urged that iron and steel be freed as far as possible from other metals which differ electro-chemically from iron. The American Rolling Mill Company says that it has succeeded in manufacturing an iron sheet which is "99.94 per cent. pure." It offers this product as less liable to corrosion than charcoal iron and very much less liable to rust than steel. It is claimed that when used for roofing, guttering, spouting, corrugated culverts and for all service in which rapid rusting ordinarily occurs, ingot iron will demonstrate the value of the special methods followed in its manufacture.

# The New Plant of the Standard Welding Company.

The gradual development of electric welding during the past few years in the lines to which it was originally applied, and the new uses to which it has been found well adapted, have resulted in important extensions of electric welding plants. Keeping abreast of the greater demand for welded articles the Standard Welding Company of Cleveland has from time to time increased the capacity of its plant. Finally the limit of economical extension of the old buildings seemed to have been reached and an entirely new plant of modern design and equipment, to accommodate the company's present business and to provide for future growth, has been erected.

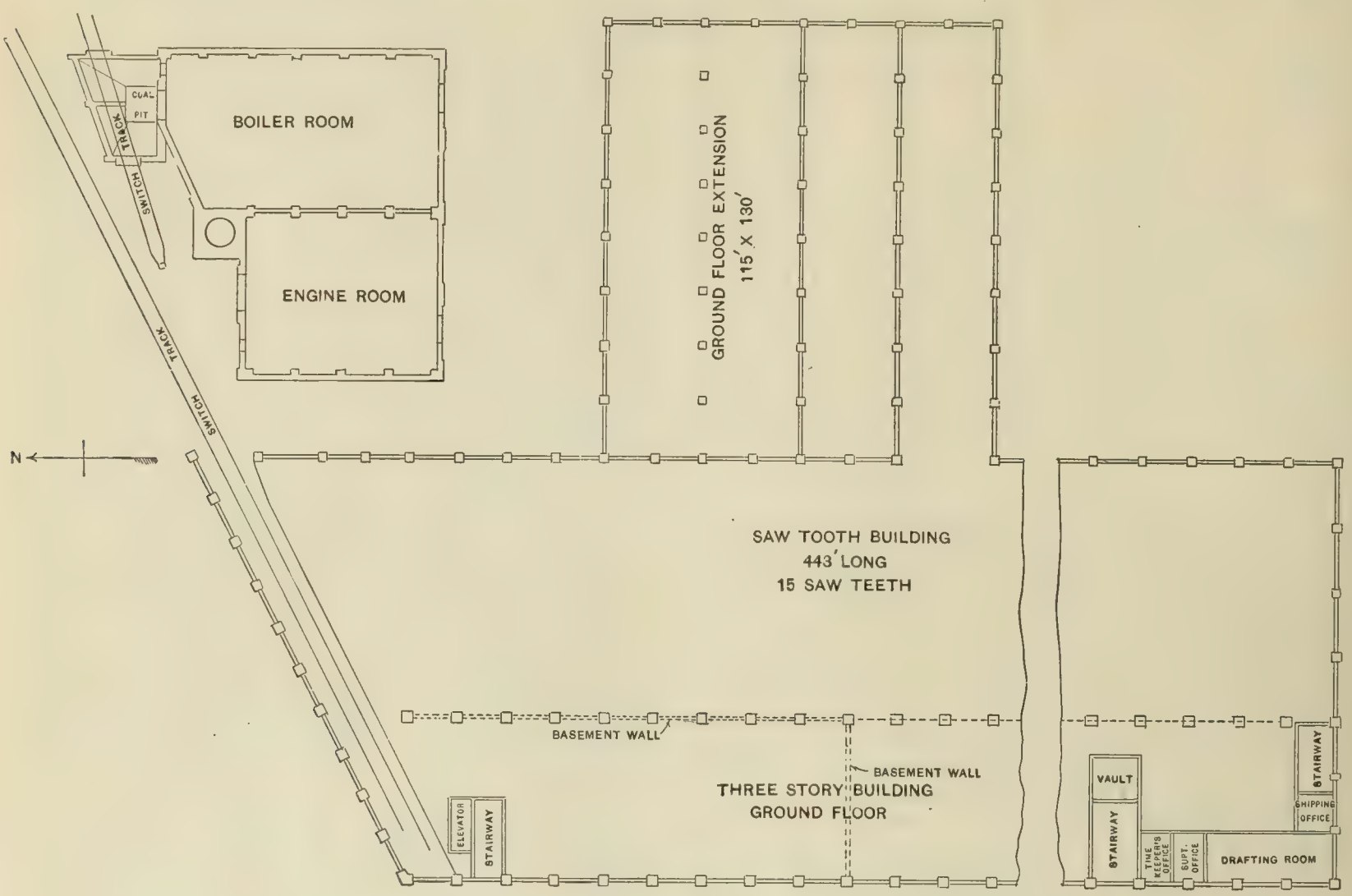



Fig. 1.—Plan of the Standard Welding Company's New Plant at Cleveland, Ohio.

The Standard Welding Company was organized July 1, 1899, and first occupied 20,000 sq. ft. of floor space. As the business grew this was increased gradually to 50,000 sq. ft., with a further expansion to 125,000 sq. ft. in the new plant. At first the product was tubes and electrically welded seat posts and other bicycle parts. Six years ago clincher rims for automobiles were added and later rims for single tube tires. Four years ago the manufacture of detachable and removable rims was commenced, and the demand is such that the output of the latter largely exceeds that of the clincher and single tube rims. Besides rims the company electrically welds other parts for a large number of automobile makers. It also makes channel rims for commercial vehicles, for solid rubber tires, metal rims for all types of vehicles, and specialties, such as forgings for shovel tongs, seamless steel packages for high pressure for air, gas and mercury, special tubular stock for magazines for firearms, bands for pipe couplings, chuck rings for universal chucks, cream separator bowls, transmission shafts, pipe hangers, &c.

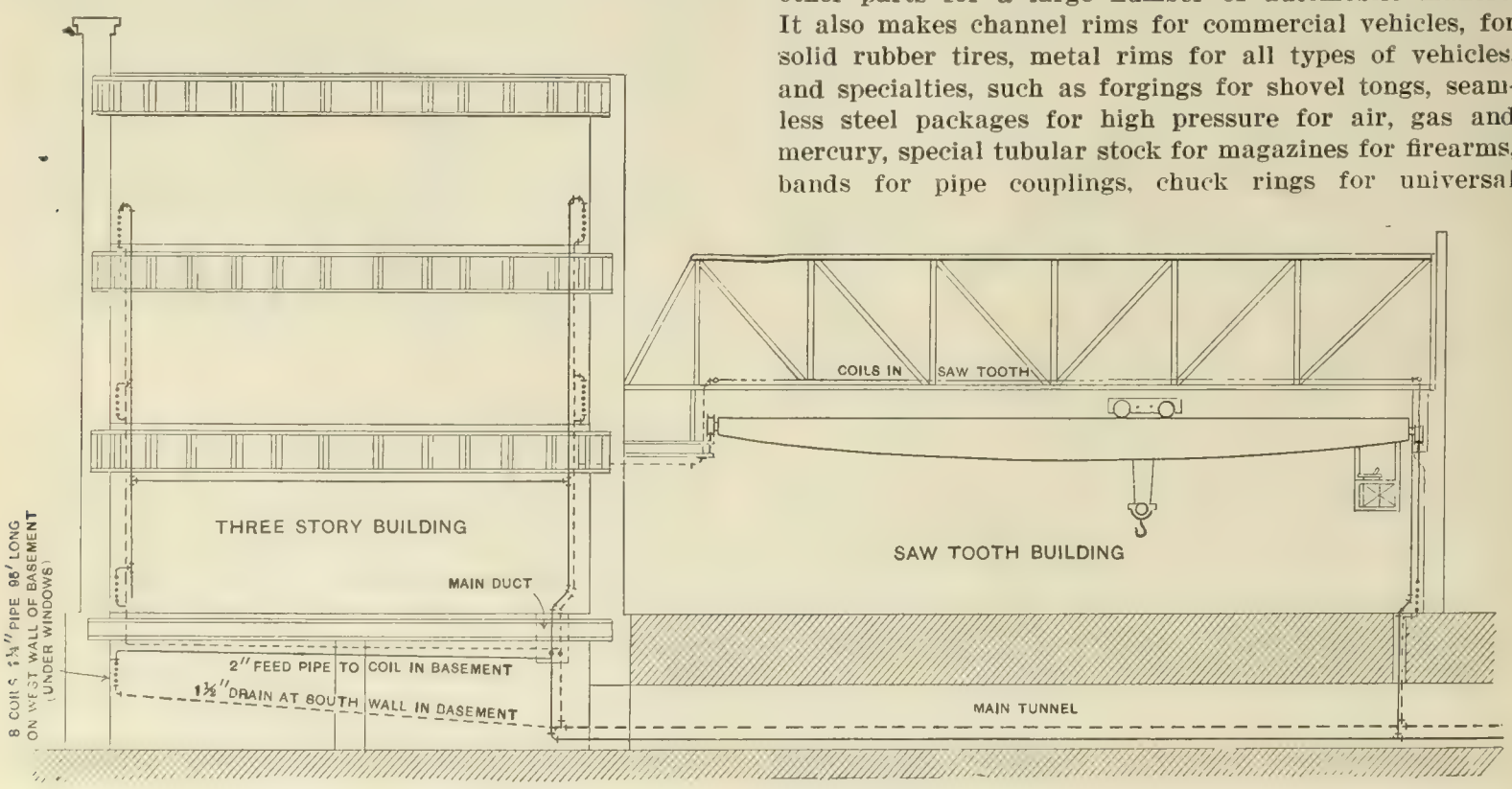



Fig. 2.—Section Through Main Building, Showing Position of Heating Coils.

As a site for the new plant the company selected a tract of land on West Seventy-sixth street, adjoining the

Lake Shore & Michigan Southern Railroad tracks. On this was built a main building of brick and steel construction, with floors of mill construction. A plan view is shown in Fig. 1. The extreme length is 443 ft., and, as shown in the illustrations, the main portion is three stories high for a width of 50 ft., while the ground floor is 125 ft. wide, being covered for its larger portion by a saw-tooth roof. There is also a ground floor extension, 115 x 130 ft., making a total width of 255 ft. on a large section of the ground floor. This gives a very large capacity and was built by the Case Mfg. Company, Columbus, Ohio. The machinery in the tube department is driven from power transmission in conduits, all the shafting being motor driven. The heating pipes, service pipes, sprinkler mains, and lighting, power and welding lines are run through tunnels, so that the overhead space is left entirely free. The plant is lighted throughout with Cooper-Hewitt mercury vapor electric lights. The machinery is largely special and mostly of the company's own design. Some of the electric welding machines were

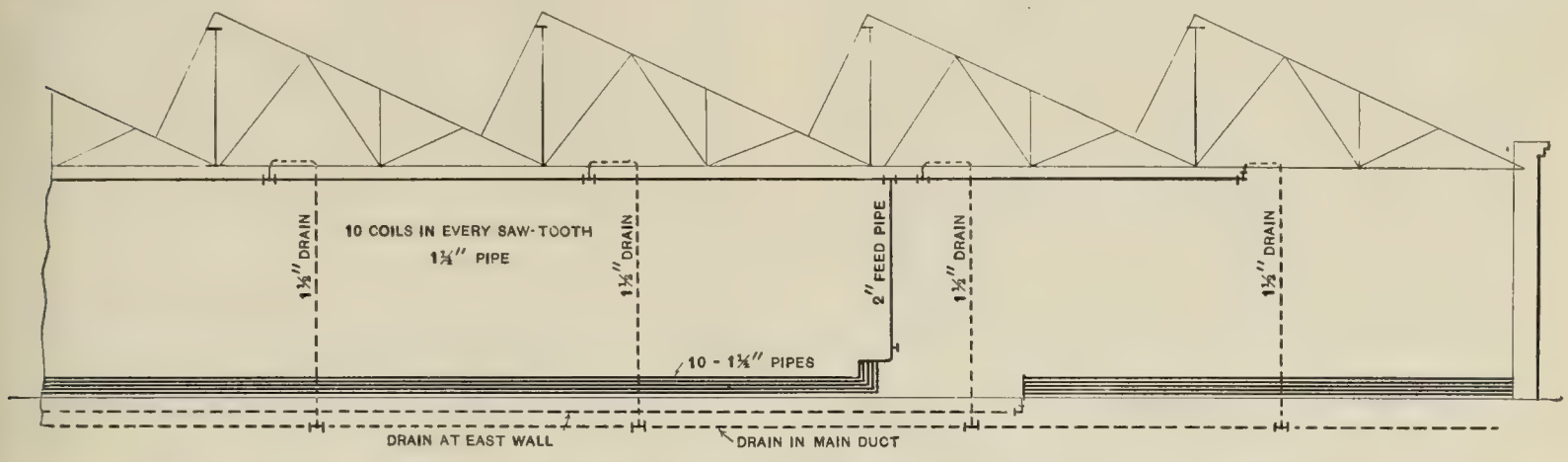



Fig. 3.—Longitudinal Section of Saw Tooth Building with Arrangement of Heating System.



Fig. 4.—View of the Tube Department in Saw Tooth Building.

ground floor space, entirely open, with the exception of one row of posts, and served over a large area by an electric traveling crane. Figs. 2 and 3 are sectional views of the building, which give some details of the heating installation.

The ground floor is used for the tubing department, a view of which is given in Fig. 4. On the second floor are the electric welding department and the machine shop, and the third floor is devoted to rims and rim products. The machinery is so placed that material is in continuous progress from its entrance in the factory until it reaches the shipping room. The crane is of 10 tons designed by the company and others were designed by the Thomson Electric Welding Company of Lynn, Mass.

In connection with the business is a large galvanizing plant with a daily capacity of 5 tons, and a copper plating plant with a daily capacity of from 3 to 4 tons. There are also three large gas and coke annealing furnaces for annealing products for special work. The plant is equipped with a conveying system which handles all rim products. There is 475 ft. of auxiliary track from the Lake Shore Railroad, which reaches into the factory, so that three cars at a time can be loaded and discharged under cover.

Adjoining the main building is the power plant, 80 x 96 ft., shown in Fig. 5. It contains one 310-hp. horizontal Buckeye engine, directly connected with a 200-kw. d. c. generator; a 500-hp. vertical Ball & Wood engine, directly connected with a 350-kw. a. c. generator; a 200-hp. vertical Reeves engine, directly connected with a 125-kw. direct current generator, and a 510-hp. vertical Buckeye engine, directly connected with a 350-kw. alternating current generator. The generators are of the General Electric and Allis-Chalmers types. In addition there are two Worthington feed water pumps and a fire pump. In the boiler room there are two batteries, each of two 250-hp. boilers, with chain grate stokers. Adjoining the power plant is a steel water tower and tank having a capacity of 50,000 gal., for use in connection with the sprinkler system.

The entire plant was built in accordance with plans prepared by W. S. Gorton, general manager, and E. I. Heinsohn, general superintendent of the Standard Welding Company. The structural work was designed and constructed by the Forest City Steel & Iron Company of Cleveland, and the power house was designed by the Cleveland Engineering Company. The plant furnishes employment for 400 workmen.

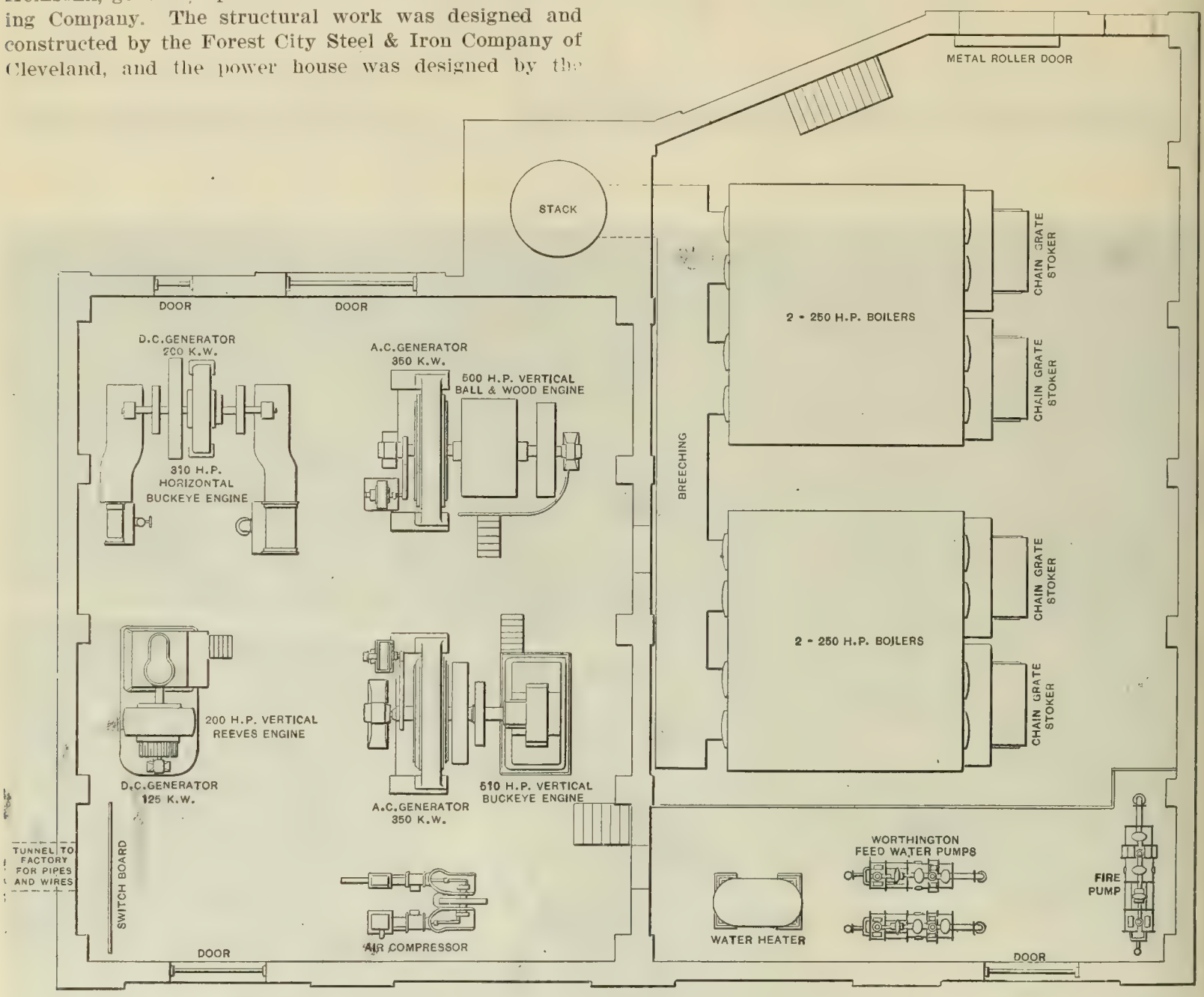



Fig. 5.—Plan of Power House.

**Safety Razor Blade Drawback.**—The Treasury Department has issued regulations under which a drawback of 99 per cent. of the duty paid will be allowed to the Gillette Safety Razor Company, Boston, Mass., on the exportation of safety razor blades manufactured wholly with the use of imported Swedish and English ribbon steel. "In liquidation, the quantities of imported steel which may be taken as a basis for the allowance of drawback may equal the quantities consumed as declared in the drawback entry; but in no case shall the same exceed the net weight of the exported merchandise, officially verified, with an allowance for worthless waste not to exceed 79 per cent. of said net weight."

The Amalgamated Association gives the names of 27 Western and Central Western rolling mills outside of those of the Republic Iron & Steel Company and the Western Bar Association, which have signed its scale for the year beginning July 1, 1908.

## Profits of Guest, Keen & Nettlefolds, Ltd.

The report of Guest, Keen & Nettlefolds, Ltd., for the year ending June 30 shows a profit of £454,716, against £470,511, the high record for 1907. After paying dividends of 5 per cent. on the preferred and a final 10 per cent. on the common stock, with bonus of 1 shilling a share on the latter, placing £50,000 to accident and fire insurance fund and £100,000 to reserve (previously £1,000,000), the company carries forward £190,235. The total common stock dividend for the year was 15 per cent., thus maintaining the increased distribution of 1907.

The *Iron and Coal Trades Review* says the report dispels the fears entertained that the operations of this important iron and steel company had been materially affected by the "heavy curtailment of the foreign demand for British iron and steel goods which has been the most striking, not to say alarming feature of the past six months' depression. * * * The profits publicly announced from year to year are apparently exclusive of the large sums known to have been spent on various forms of improvements and extensions; and of the net profits of £2,152,614 earned in the short period of six years, £900,000 has been placed to reserve (this sum being inclusive of the £100,000 now standing to the credit of the accident and fire insurance fund), and over £1,250,000 has been distributed among the preference and ordinary shareholders. These aggregate net profits represent actually over 80 per cent. on the company's combined ordinary and preference capital of £2,685,000—and all earned in six years!—while the company's investments are set down at the huge figure of £2,241,315."

## Possibility of a Car Shortage.

The reports compiled by the American Railway Association show a decrease of 28,618 in the number of idle freight cars in the two weeks ending August 19, leaving a surplus of 253,003. The largest surplus reported this year was 413,605 for April 29. The present surplus is equal to about 13 per cent. of the total equipment in service, as the railroads covered by these reports own about 2,000,000 cars. The highest number of idle cars reported, in April, was equal to more than 20 per cent. of the total, so there has been a substantial gain in traffic.

**Delay in Repairing Bad Order Cars.**

In the face of these figures showing an enormous number of idle cars, shipping interests in the West are expressing fears that there will be a shortage of equipment early the coming winter. These fears are based upon the delay on the part of the carriers in repairing their bad order cars. The surplus reported by the American Railway Association does not include "shop" cars, or those marked for shop repairs, but the figures do include those in bad order, which can be repaired on track without going to the shop. The fact is well known to shippers that a large proportion of the cars now in service are more or less in need of repairs, and there is a well defined suspicion that except on a few roads practically all the so-called idle cars have been set out for repairs.

While no figures are published to show the total number of "shop" cars, it is known that the total is considerably in excess of 200,000. This, added to the number of surplus cars, would make a total of about 25 per cent. of equipment that has been out of service the past summer. The carriers have delayed their repair work so long that they may have difficulty in handling the double volume of repairs, taking care of current work as well as getting their stored cars in condition for service to move the crops and handle the growing tonnage of general traffic.

The Western granger roads have a surplus of 50,000 box cars, which will no doubt carry them through the crop moving season. The movement of grain has been light since January 1, the receipts at the principal Western markets having run about 10,000,000 bushels per month less than the preceding year, but the large crops to be moved this fall will restore the traffic of the Western roads to normal proportions.

**Trouble Likely in Western Coal Equipment.**

Officials of Eastern roads do not have any apprehension of trouble in taking care of their traffic, but there is a prospect of a serious shortage of coal equipment west of Chicago. The roads between Indiana and the Rocky Mountains have about 150,000 coal, gondola and hopper cars. The surplus reported August 5 was only 7000, or about 5 per cent.. The movement of coal in the West has been considerably below the normal tonnage at this season. There will be a rush of orders for domestic coal at the first sign of cold weather, which will tax the facilities of the carriers to the utmost, and it will be well for industrial consumers to forestal this movement, as the demand will be greater than either the mines can supply or the carriers can handle.

A year ago the country dealers, with the experience of the preceding year fresh in their recollection, laid in good stocks of coal in August and September, but a mild winter left them with some of this coal still on hand. This year they are deaf to all advice to buy early. Some of the Western roads have strongly endeavored to induce dealers on their lines to start an early movement, but their efforts have been rewarded by a very light movement of threshing coal. The retail dealers lost money last winter on the stocks they bought early in the fall. Their customers, the consumers, refuse to buy now, and the dealers prefer to wait and buy only when they are sure of a profit from immediate sale.

The conditions that will grow out of a shortage of cars will prove fortunate for the coal industry, but troublesome for manufacturers and other large buyers of coal. A shortage of equipment makes spot coal sell at a premium, and few coal firms can resist the temptation to delay deliveries on their yearly contracts. The margin on these contracts is very small, only a few cents per ton, and the temptation to sell the coal to spot buyers at a profit of 50 cents to $1 per ton is well-nigh irresistible. The coal men have not had an opportunity to do this for several years.

**Conditions in the East and South.**

East of Chicago there is apparently no prospect of serious trouble. The carriers operating in the Pennsylvania, Ohio and West Virginia coal fields have a large surplus of coal equipment, and also a large surplus of box cars which are not likely to be needed for some months. Until this year the Eastern roads could not keep their cars at home, and they always had 50,000 less cars on their rails than the number they owned. The Southern and Western roads, however, have sent all these Eastern cars home to save paying per diem on them, and this will protect the Eastern carriers against shortage a long time after trouble has begun in the South and West.

There is every prospect of a severe car shortage in the South. Lumbermen are having trouble already, although their shipments have not yet reached their normal volume, and when the cotton season comes on, with an increased movement of lumber, iron and other commodities, the equipment available will be wholly inadequate. The Southern roads have always used a large proportion of Northern equipment, and the cars that have been sent home to save per diem will be missed.

## The Passing of the Iron Warrant.

Under the above caption the London *Statist* of August 15 discusses the recent course of events in the iron warrant market in Scotland and England, concluding as follows:

"But the iron market is no longer controlled by the warrant market. The entire transactions of a month nowadays hardly exceed the operations of a single day in the eighties. A Scotch warrant represents 300 tons of No. 1 and 200 tons of No. 3 ordinary Scotch iron. A Cleveland warrant represents just 500 tons of Cleveland No. 3 foundry iron. It is not, then, the same thing as a Scotch warrant, but it has taken the place of the former as the vehicle of speculation. Now the Scotch warrant was instituted some 60 years ago, when purchasers for the rise had acquired a large quantity of iron which they did not wish to take delivery of or could not conveniently pay for. There were also some who were able and willing to pay for their purchases, but not to take delivery as the iron was made. Heretofore local buyers had accepted the delivery orders of the smelters in return for their cash payments when immediate shipments were not required; but this did not seem good enough to English and other buyers, who wanted to hold the stuff. Moreover, the Scotch law of hypothec aroused doubts as to the ownership of iron in a maker's yard in the event of bankruptcy. Anyhow, Messrs. Connal & Co., who were extensive bonded storekeepers and timber warehousemen, were asked to provide accommodation for pig iron, and they turned over one of their timber yards for the purpose, giving their receipts for the iron handed over to them. These vouchers rapidly became as negotiable as stocks and shares, and an iron warrant could be as easily exchanged for cash as a banknote. When this negotiability was once established it became the easiest thing in the world to finance the making of and speculating in pig iron. In dull times makers could turn their output into cash merely by trundling it into Connal's, and a speculator for the rise had merely to deposit the warrants with his banker to obtain an advance of 75 per cent. of their market value.

"Thus was speculation in pig iron stimulated until it became one of the most noted avenues of adventure in the world. And so the warrant market became also a sort of barometer of trade, while the iron ring became an arena in which fortunes were made and lost year by year. But these days are gone. Whatever economic value the warrant stock of pig iron may have had—and it had some, as well as some ethical evil—is now lost. The iron warrant is nowadays little more than a figure of speech."

## The Dill Variable Speed Drive.

A variable speed power transmission through which any ratio of speed can be obtained within wide limits is a new product of the T. C. Dill Machine Company, Philadelphia, Pa. As may be seen in Fig. 1, its special features are two series of thin, hardened steel disks connecting two shafts through an intermediate one, the disks of each series overlapping one another. The disks on the two outer shafts are flat—that is, have parallel sides, and the disks on the intermediate shaft have tapered sides, being thicker at the center than at the periphery. All of the disks have square holes in the center and are fitted loosely on square shafts. To maintain the disks perpendicular with their shafts two heavy cast iron collar disks are provided on each side of the disks on the intermediate shaft. The outer cast iron disk in each case is fixed rigidly to the shaft, while the other or inner one has a long hub and is permitted a lateral movement on the intermediate shaft. The coil spring tends to force these inner disks outwardly, so as to press the thin disks together between the fixed and movable collars. The points of contact of the flat disks are always at the peripheral edges, while the points of contact of the tapered disks vary along their entire faces. The intermediate shaft being mounted on rocker arms may be moved by a lever so that a movement in either direction causes a deeper intermeshing of one of the series of disks and a shallower intermeshing of the other, thus changing the diameter ratios and varying the speed of the driven shaft, while the driving shaft speed remains constant.

Since there is only a small area of contact between the flat and taper disks, and as the disks have a rolling action upon one another, the frictional resistance is comparatively small. Great power with exceptional endurance is provided by first determining the proper pressure for one disk from the standpoint of endurance, and then adding disks sufficient to multiply the power to that required. The tension of the spring upon the inner collar disks of the intermediate shaft is adjustable at one end, where the spring terminates in a collar threaded on the hub of one of the inner collar disks. The spring pressure is thus regulated to suit the load at a given speed, and as the speed is increased the pressure is reduced and *vice versa*. A constant horsepower is transmitted by so constructing the spring that its tension varies with the speed due to the difference in thickness of the taper disks. As the flat disks approach near the center where the taper disks are the thickest the spring is forced back and thus exerts greater pressure the slower the speed. By giving this spring the right length and size the difference in strength may be proportioned in relation to the variation in speed, which results in constant horsepower.

Three shafts and four sets of disks in two groups are used in the type illustrated. To give a large range of speeds with small disks and permit the driving and driven shafts to have fixed centers the speed variator may be so designed as to make the receiving or constant speed shaft the high speed one, and all variations of speed will then be made with a reduction, or the constant speed shaft may be driven at what is the required medium speed, and the minimum and maximum speeds of the variable speed shaft will then be lower and higher than that of the constant speed shaft. The former style of drive is believed by the maker to be admirably adapted to embodiment in the headstock of a lathe or boring mill.

Fig. 3 shows the drive applied as a part of a counter-

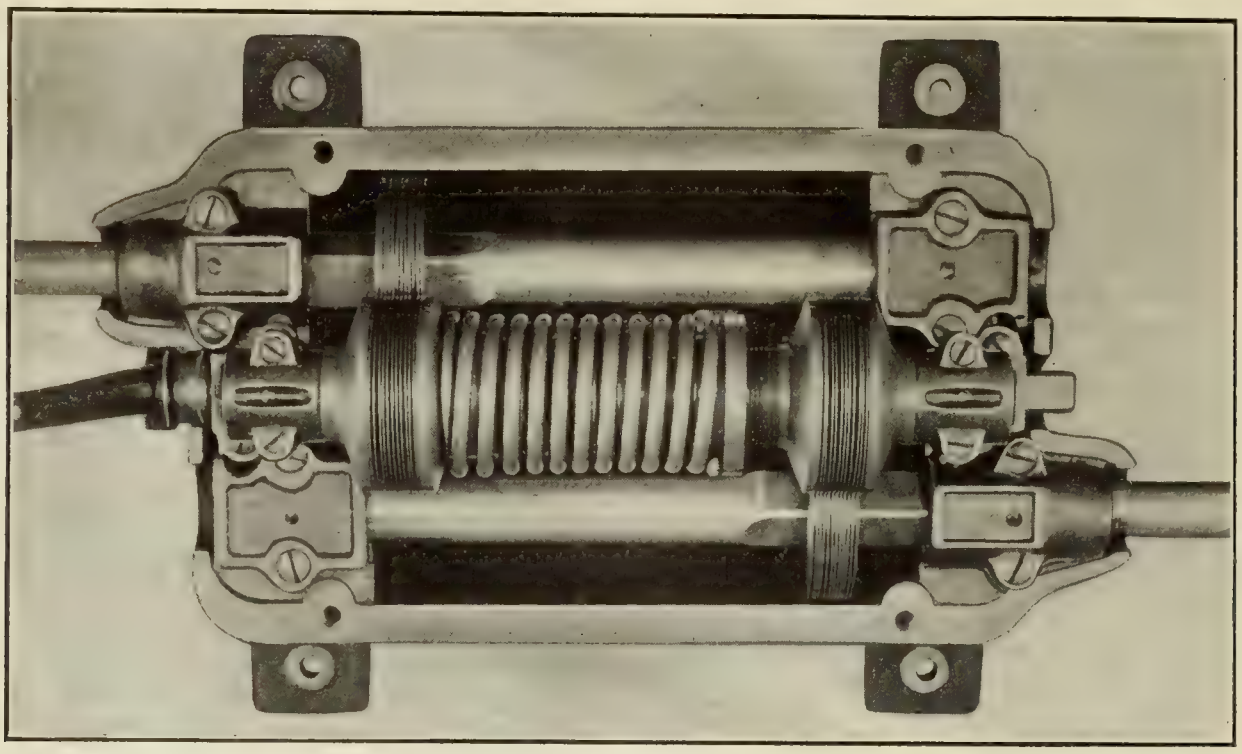


Fig. 1.—The Variable Speed Transmission with Cover Removed, Made by the T. C. Dill Machine Company, Philadelphia, Pa.

shaft driving a 20-in. lathe. In this arrangement a range of speeds of 30 to 1 is obtained, and any intermediate speed within that range is available. It also shows an ingenious connection between the slide rest of the lathe and the feed variator, so that a practically constant cutting speed is maintained, regardless of the diameter of the work. The connections are better shown in the detail given in Fig. 4. When the slide rest is moved toward the lathe center the variator operating lever is shifted so that the rotary speed of the lathe is increased. In facing work, as the diameter of the work at the cutting point decreases the lathe runs faster and faster, keeping the cutting speed very closely constant.

In one form of the device contained in a lathe headstock the flat disks fitted directly to the spindle are 14

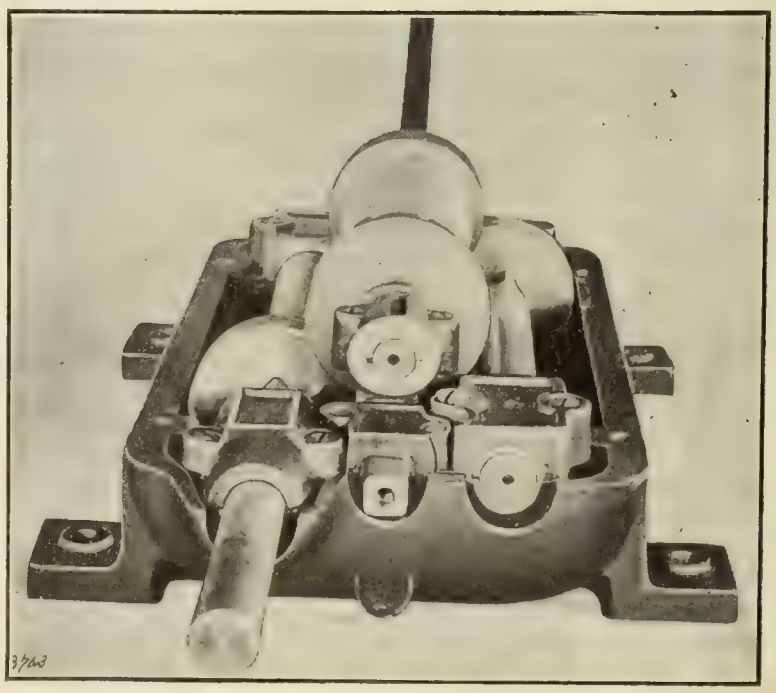


Fig. 2.—An End View of the Dill Drive, Also with the Cover Removed.

in. diameter and mesh with taper disks in their group on the intermediate shaft 12 in. diameter. On the other end of the intermediate shaft is another series of flat disks of 12 in. diameter which intermesh with taper disks on the constant speed driving shaft, which are also 12 in. in diameter. The points of contact of the taper disks will vary from the full diameter to nearly the diameter of the shaft, and by using only a small number of disks a sufficient amount of power is obtained.

The general advantage of using this drive is that since the cone pulleys of the lathes are not required to change the speeds a wider belt may be employed by mounting over the cone a pulley of wider face. In the lathe connection, as shown in Fig. 4, the hand lever on the rock shaft at the rear of the lathe is available for changing the speed of the lathe at will when the notched link to the slide rest is lifted out of engagement with the curved lever on the rock shaft. It is to be noticed that the curved lever which accomplishes the automatic variation of speed with decreasing diameters is clamped to the rock shaft with a friction hold. This is for the purpose of introducing a yielding point in the connection, so that if the speed unintentionally becomes too great and would introduce a strain on any of the mechanism the clamp hold on the rock shaft will give and prevent any damage. The hand lever is splined to the rock shaft so as to have longitudinal movement upon it, and being fitted to the carriage is always convenient to the operator. A similar automatic arrangement can be provided on the device when built in the headstock of a lathe. In such an arrangement the same advantages are obtained of a wider belt on a larger diameter pulley, giving greater power, and instantaneous speed changing to any speed within the range of the device.

The Figs. 1 and 2 show the device with the cover removed in the form in which it is put on the market as a countershaft or speed box for general use. These are made in several sizes ranging from ½ hp. up, and with a speed range of 5 to 1, although a greater or less range can be had if desired. In this drive the taper disks are all on the intermediate shaft with the heavier cast iron collar disks and springs. Constant horsepower is obtained throughout the speed range by the same principle as already explained. The speed of the constant speed shaft is midway between the minimum and maximum speeds of the variable speed driven shaft, thus giving a medium initial speed.

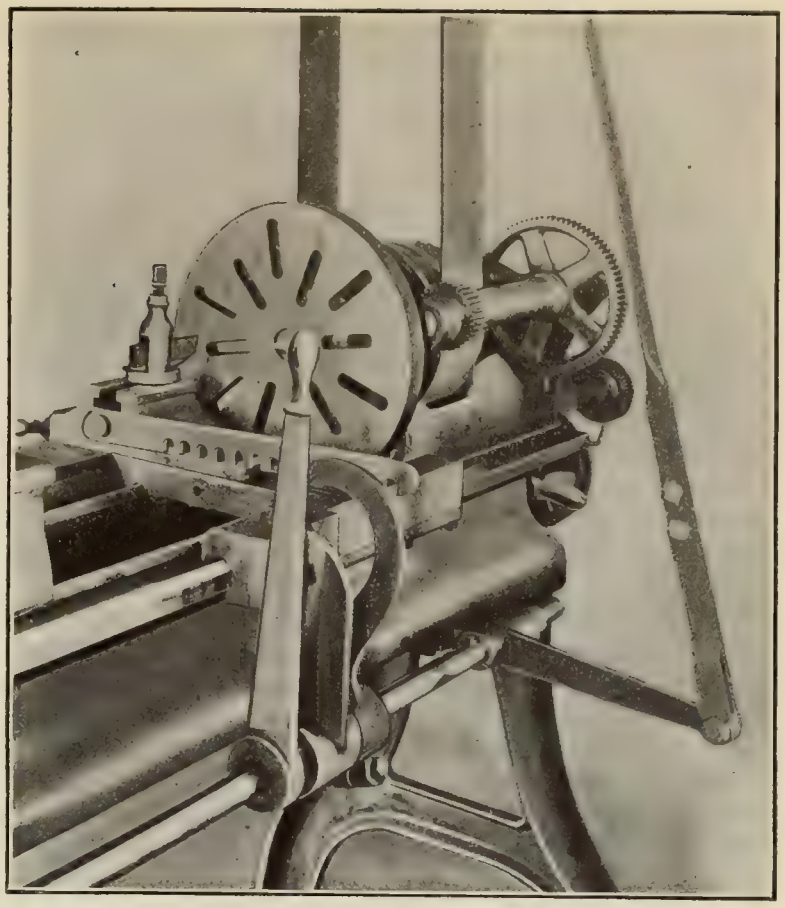


Fig. 4.—Rear View of the Same Lathe, Showing the Connections for Varying the Speed According to the Diameter of the Work.

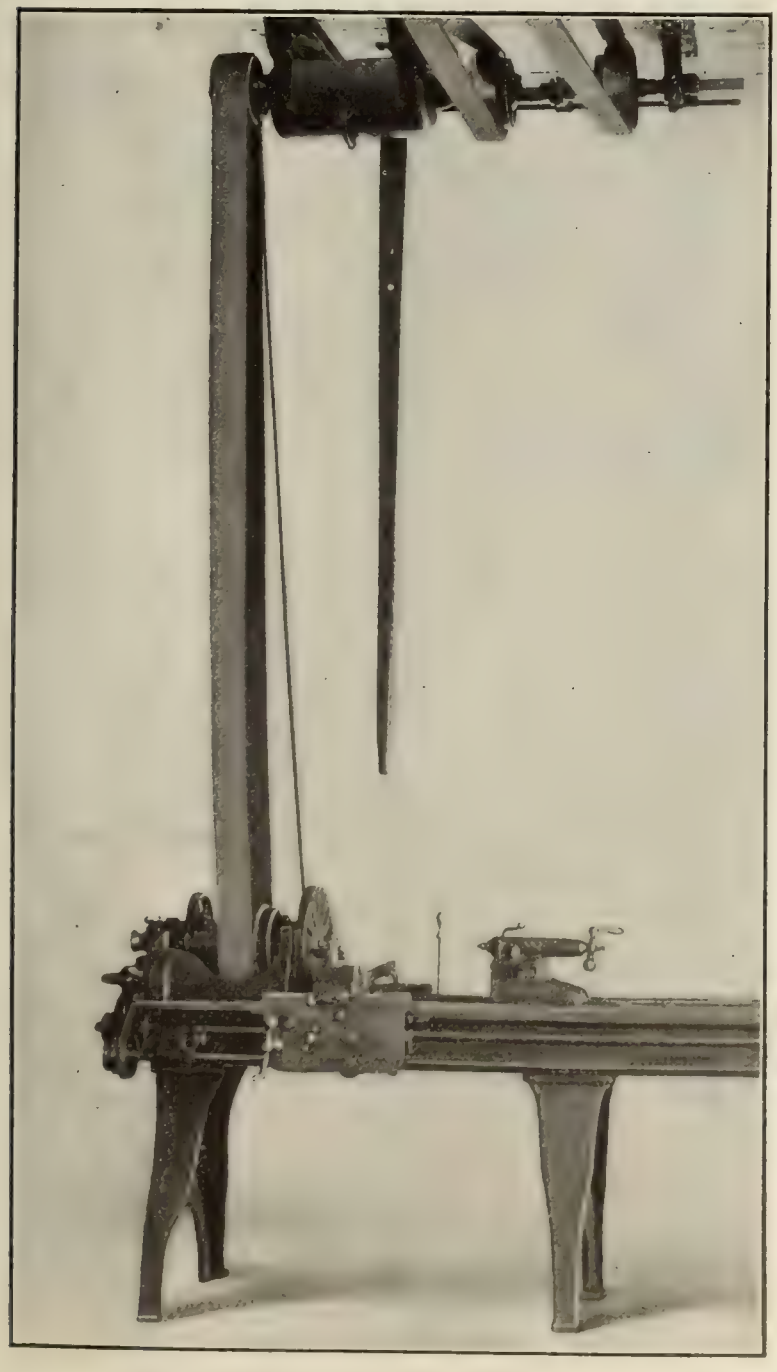


Fig. 3.—The Dill Drive as Applied in a Countershaft Connected to a Lathe.

The drive shown in the first two illustrations is capable of transmitting 5 hp. It measures 23 in. long and 15 in. wide over all, including the extension for the feet and bearings. The frame proper is 19 in. long by 11 in. wide and 9 in. high. The disks are 4 in. diameter and 3-64 in. thick. The constant speed shaft is intended to run at about 400 rev. per min. With the oil tight cover which is provided the mechanism is entirely inclosed, so that it can run in an oil bath. The device can be operated in any position, either on the floor or inverted on the ceiling, or mounted against the base of a machine, and may be operated by a lever, chain or rope, as may be preferred.

Bion J. Arnold has reported to the Public Service Commission of New York City on the ventilation of the subway. Refrigeration and cooling by water are discussed, but are rejected as too expensive. The blocking open of the automatic louvres installed two years ago as a relief measure is recommended, and the building of a center wall between opposite direction tracks, so as to create piston ventilation. The cost of a 4-in. terra cotta division wall extending from Ninety-sixth street to Brooklyn Bridge is put at $76,900, and of a concrete wall at $130,000.

The Carnegie Steel Company, Pittsburgh, will have a complete exhibit of its steel cross ties, steel sheet piling and steel wheels at the convention of the American Street and Interurban Railway Association, to be held at Atlantic City, N. J., from October 12 to 16. The exhibit will occupy spaces 700 to 706, second floor, Marine Hall, Young's Pier.

The fourth annual meeting of the West Virginia Board of Trade of Wheeling, W. Va., will be held at Clarksburg, W. Va., November 10 and 11. Committees appointed at the executive council meeting held in Wheeling, July 27, are now at work on different subjects for consideration.

# The Brown Ores of Alabama.—VI.

## Their Use in the Blast Furnace.

BY WM. B. PHILLIPS.

Having discussed the geological conditions under which brown ore exists in Alabama, and the chief circumstances which surround its mining and treatment, this article, the closing one in the series, will be devoted to a consideration of the use of brown ore in the blast furnace. Practically all of the charcoal iron made in this State has been made from brown ores, and this amount is about 670,000 tons since 1872. Prior to that time no reliable statistics are available, but it is not improbable that 1,000,000 tons of charcoal iron, worth not less than $30,000,000, has been made in this State from brown ore since pig iron was first made here. A great part of this ore was calcined in open piles, using charcoal "breeze" as fuel, but a portion of it was calcined in a gas fired furnace, as, for instance, at Shelby. The calcination of brown ore not only removes ordinary water, but the combined water as well and renders the ore much more porous, unless the operation has been conducted to the point of sintering. In this case while the water is, of course, entirely removed, the porosity of the ore has been decreased.

### Moisture in the Ore.

It is not now the custom in Alabama to calcine the ore at all; it is shipped direct from the mines and used without further treatment. As received and used it may carry as much as 10 per cent. of ordinary water, the general average being 7 per cent. It contains all of its original combined water, and the amount of this present depends upon the percentage of metallic iron. The amount of combined water—*i. e.*, such as is not removed under a red heat—may be as much as 16 per cent., but ordinary brown ore seldom contains, even when pure, more than 14.44 per cent. of combined water. The composition of ordinary brown ore is taken at 85.56 per cent. of oxide of iron and 14.44 per cent. of combined water when entirely pure. This would correspond to 59.89 per cent. of metallic iron. If the combined water were removed we would have a simple oxide of iron containing 70 per cent. of metallic iron.

In commerce, however, we never have so pure a brown ore. It always contains silica, alumina, &c., and the metallic iron in stockhouse ore may be as low as 40 per cent. It is not likely that the brown ore used in Alabama will contain more than 45 per cent. of metallic iron, although some of the better ores will contain as much as 57 per cent. This class of ore, however, is very scarce, and commands always a much better price.

Allowing that the stockhouse ore contains 45 per cent. of metallic iron, 7 per cent. of ordinary water and 7 per cent. of combined water, if we should remove the water entirely the metallic iron would be 52.3 per cent., a gain of 7.3 points. In addition to this advantage, the porosity of the ore and consequent reducibility would be greatly increased. If we allow that 14 per cent. of water, that is of no use to any one, can be removed from brown ore before it goes to the furnace, we find that some one has paid freight on 1,489,922 tons of water since 1890 at a cost of not less than $500,000, or about $30,000 a year for 17 years. If this water were of the least use to any one there might be some explanation of so constant a drain. To the cost of the freight must be added the cost of handling so much dead material at the furnace and the cost of removing the water in the furnace.

Every pound of material that goes into the furnace must either be expelled or melted, and to do either calls for a steady consumption of coke. Without going into any further calculations, it may be said that the cost of the water in brown ore used during the last 17 years in Alabama will approximate $1,000,000, this being inclusive of the freight, the handling in the stockhouse, the consumption of extra coke and the effect upon the furnace walls and the quality of the gas. This charge goes on from year to year without any counterbalancing gain.

### Analyses of Red and Brown Ores.

In order to set forth the current furnace practice in Alabama with respect to the raw materials used, two tables have been prepared. These have been rearranged from the tables given by the writer in his "Iron Making in Alabama" in 1896 and 1898. Some brief explanation of the terms used may be necessary before discussing the results given. The hard ore referred to is the limy ore of the Birmingham District. It is the red fossil ore carrying enough lime to flux the silica and alumina. In its best estate it has the following composition:

*Composition of Hard Red (Limy) Ore.*

| | Per cent. | | Per cent. |
|---|---|---|---|
| Water | 0.50 | Alumina | 3.18 |
| Metallic iron | 37.00 | Phosphorus | 0.37 |
| Silica | 13.44 | Sulphur | 0.07 |
| Lime | 16.20 | Carbonic acid | 12.24 |

When the lime is present in sufficient amount to provide only for one half of the silica and alumina the ore is termed "semihard," and when the lime is in considerable excess the ore is termed "extra hard." This ore is mined and used in large quantities, and is to-day the chief dependence of the ironmaster. It is the extension on the dip and under cover of the soft, red ore, the composition of which is as follows:

*Composition of Soft Red Ore.*

| | Per cent. | | Per cent. |
|---|---|---|---|
| Water | 7.00 | Lime | 1.12 |
| Metallic iron | 47.24 | Phosphorus | 0.40 |
| Silica | 17.20 | Sulphur | 0.10 |
| Alumina | 3.35 | Carbonic acid | 1.00 |

This represents a better soft ore than is now being used in the district generally. The composition of a good brown ore may be taken as follows:

*Composition of Brown Ore.*

| | Per cent. | | Per cent. |
|---|---|---|---|
| Hygroscopic water | 7.00 | Alumina | 3.61 |
| Combined water | 6.00 | Lime | 0.84 |
| Metallic iron | 48.54 | Phosphorus | 0.38 |
| Silica | 11.22 | Sulphur | 0.09 |

Much of the brown ore now used is considerably lower in iron and higher in silica and alumina than appears from this analysis. The limestone used carries from 1.50 to 2 per cent. of silica, and the coke will range from 10 to 12.50 per cent. in ash. With these explanations we may proceed to the discussion of the tables:

*Table I.—Illustrative of Coke Furnace Practice with Hard (Limy) and Soft Red Ore.—Increasing Percentage of Hard Ore, from 48.2 to 100.—Tons of 2,240 Lb.*

| No. of charges. | Per ct. of ore burden. Hard ore. | Soft ore. | Per cent. of total burden. Hard ore. | Soft ore. | Limestone. | Coke. | Iron made, tons. Per charge. | Total. | Per cent. f'dry grades. | Consumption, tons, per ton of iron. Ore. | Stone. | Coke. | Total. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,872 | 48.2 | 51.8 | 24.0 | 26.3 | 17.2 | 32.5 | 1.45 | 4,157 | 83.9 | 2.26 | 0.79 | 1.57 | 4.62 |
| 2,708 | 50.9 | 49.1 | 27.0 | 26.1 | 15.6 | 31.3 | 1.54 | 4,155 | 68.3 | 2.54 | 0.77 | 1.47 | 4.78 |
| 2,870 | 50.9 | 49.1 | 28.1 | 27.1 | 15.8 | 29.0 | 1.72 | 4,943 | 96.2 | 2.54 | 0.72 | 1.32 | 4.55 |
| 2,954 | 50.9 | 49.1 | 27.7 | 26.7 | 15.5 | 30.1 | 1.66 | 4,912 | 99.2 | 2.39 | 0.68 | 1.34 | 4.41 |
| 2,742 | 51.1 | 48.9 | 26.5 | 25.3 | 15.8 | 32.4 | 1.47 | 4,037 | 88.6 | 2.42 | 0.73 | 1.52 | 4.67 |
| 3,029 | 52.3 | 47.7 | 27.2 | 24.8 | 16.0 | 32.0 | 1.62 | 4,932 | 90.2 | 2.27 | 0.69 | 1.39 | 4.35 |
| 3,033 | 52.3 | 47.7 | 26.2 | 24.1 | 16.6 | 33.1 | 1.49 | 4,495 | 87.0 | 2.32 | 0.73 | 1.52 | 4.57 |
| 1,508 | 65.9 | 34.1 | 36.6 | 19.0 | 10.3 | 34 1 | 1.97 | 2,970 | 95 7 | 2.48 | 0.45 | 1.52 | 4.45 |
| 1,343 | 65.9 | 34.1 | 36.4 | 18.7 | 10.0 | 34.9 | 1.95 | 2,615 | 87.8 | 2.51 | 0.46 | 1.60 | 4.57 |
| 1,512 | 65.9 | 34.1 | 36.9 | 19.1 | 9.7 | 34.3 | 1.92 | 2,898 | 93.2 | 2.57 | 0.44 | 1.58 | 4.59 |
| 1,805 | 80.7 | 19.3 | 47.4 | 11.2 | 5.7 | 35.7 | 1.83 | 3,315 | 93.8 | 2.68 | 0.26 | 1.63 | 4.57 |
| 1,995 | 91.5 | 8.5 | 57.3 | 5.2 | 2.3 | 35.2 | 1.96 | 3,901 | 83.9 | 2.78 | 0.10 | 1.56 | 4.44 |
| 1,576 | 100.0 | ... | 63.8 | ... | ... | 36.2 | 1.91 | 3,005 | 59.4 | 2.87 | ... | 1.63 | 4.50 |

This table is based on 29,917 charges, representing 50,335 tons of pig iron.

**Furnace Results with Hard and Soft Red Ores.**

Table I is illustrative of coke furnace practice with a burden composed of hard and soft ore, the proportion of hard ore rising, as will be seen, from 48.2 to 100 per cent. There were 29,917 charges, and the make of pig iron was 50,335 tons. The amount of ore used per ton of iron varied from 2.26 tons, when the ore burden was composed of 48.2 per cent. of hard and 51.8 per cent. of soft ore, to 2.87 tons when there was no soft ore in the burden. The amount of limestone used per ton of iron made varied from nothing to 0.79 ton. The amount of coke used per ton of iron made varied from 1.32 ton, with an ore burden of about equal parts of hard and soft ore, to 1.63 ton, with an ore burden of 80.7 per cent. hard ore and 19.3 per cent. of soft ore. The lowest consumption of coke, therefore, was 2956.8 lb. per ton of iron and the largest was 3651.2 lb., a difference of 694.4 lb. There are four principal deductions to be made from this table:

1. The amount of ore used per ton of iron made increases with the increasing percentage of hard ore used.

2. The amount of limestone used decreases with the increasing percentage of hard ore. With 50 per cent. of hard ore in the ore burden the consumption of stone was 1545 lb. per ton of iron made; with 66 per cent. of hard ore it was 1008 lb.; with 90 per cent. it was 269 lb., and it was nothing when all hard ore was used.

3. The amount of coke used per ton of iron made increases with the increase in hard ore, varying from 1.32 ton (2956.8 lb.) with 50.9 per cent. of hard ore, 1.52 ton (3404.8 lb.) with 65.9 per cent., and 1.63 ton (3651.2 lb.) with 100 per cent. of hard ore. In the case of one furnace carrying an ore burden of 50.6 per cent. of hard ore, the consumption of coke per ton of iron during a period of three months, was 1.52 tons (3404.8 lb.). But there are cases on record where with a very heavy hard ore burden the consumption of coke did not exceed 2800 lb. per ton of iron. In this table the total amount of coke used in making the 50,335 tons of iron was 75,079 tons, or a consumption of 3337 lb. per ton of iron. On the average and with different proportions of hard ore it is thought that the consumption of coke per ton of iron should not exceed 3300 lb., and the best practice would seem to indicate a consumption of about 2800 lb.

On the average and with increasing proportions of hard ore the consumption of coke is about 300 lb. more per ton of iron than when using increasing proportions of brown ore in a mixed burden.

**Results with Red and Brown Ores.**

We can now proceed to a brief discussion of a table illustrative of coke furnace practice with a mixture of hard ore, soft ore and brown ore, the proportion of brown ore rising from 1.3 per cent. of the ore burden to 100 per cent. Table II is based on 40,270 charges, representing 66,653 tons of pig iron.

per cent. hard, 17.7 per cent. soft and 66.3 per cent. of brown ore. The higher results would indicate a poor quality of brown ore.

2. The consumption of limestone varies from 0.29 ton (649.6 lb.) with an ore burden of 70.3 per cent. hard, 9.3 per cent. soft and 20.4 per cent. brown ore, to 0.89 ton (1997.6 lb.) with 100 per cent. of brown ore.

3. The consumption of coke per ton of iron varies from 1.72 ton (3852.8 lb.) with an ore burden of 53.7 per cent. hard, 34.2 per cent. soft and 12.1 per cent. of brown ore, to 1.16 ton (2598.4 lb.) with 100 per cent. of brown ore. The variation in coke consumption is thus 1254.4 lb. Up to 10.4 per cent. of brown ore in the ore burden the average consumption of coke per ton of iron was 3068.8 lb., the make of iron being 33,246 tons. From 10.4 to 47.6 per cent. of brown ore the consumption of coke was 3427.2 lb., the make of iron being 19,688 tons. From 48.4 per cent. of brown ore to 100 per cent. of brown ore the consumption of coke was 2912 lb., the make of iron being 13,719 tons. We have, then, three groups, in the first and third of which the consumption of coke per ton of iron is about 3000 lb. (3068.8 and 2912 lb.), and in the other 3427.2 lb. But there are two cases in the middle group in which the consumption of coke is abnormally high (3852.8 and 3606.4 lb.). If these be excluded the consumption of coke in the middle group falls to 3248 lb., and the average of the three groups becomes 3076.3 lb. of coke per ton of iron.

**Economy of Larger Percentages of Brown Ore.**

It may be concluded that with different proportions of brown ore in a mixed burden the consumption of coke should not exceed 3000 lb. per ton of iron, and with the best practice may be a good deal less. The marked tendency of the third group, in which the proportion of brown ore rises from 47.6 to 100 per cent. toward a lower coke consumption than either of the other two groups, would seem to indicate that brown ore should comprise not less than 50 per cent. of the ore burden. This would mean that the production of brown ore would have to be more than doubled in order to meet the demand, allowing that the quality remains the same. It would also mean a very large saving in coke. Taking this saving at 300 lb. per ton of iron made, it would amount to nearly $250.000 on the coke iron output of Alabama in 1907. If the brown ore should be calcined the saving would be a good deal larger, perhaps as much as $300,000 a year.

**Summary.**

In view of what has been said in these articles, it appears that there are three things to be recommended in the brown ore industry:

1. The thorough exploitation of the deposits.

2. The treatment of the ore in a modern and up to date concentration plant, including the crushing, washing and jigging of the ore.

*Table II.—Illustrative of Coke Furnace Practice with Hard (Limy) and Soft Red Ore and Brown Ore.—Increasing Percentage of Brown Ore, from 1.3 to 100.—Tons of 2,240 Lb.*

| Per cent. of ore burden. | | | Per cent. of total burden. | | | | | Iron made, tons. | | | Consumption, tons, per ton of iron. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. of charges. | Hard ore. | Soft ore. | Brown ore. | Hard ore. | Soft ore. | Brown ore. | Lime-stone. | Coke. | Per charge. | Total. | Per cent. f'dry grades. | Ore. | Stone. | Coke. | Total. |
| 2,687 | 33.4 | 65.3 | 1.3 | 17.0 | 33.1 | 0.6 | 16.9 | 32.4 | 1.69 | 4,568 | 95.8 | 2.22 | 0.73 | 1.44 | 4.39 |
| 2,945 | 47.1 | 51.5 | 1.4 | 24.4 | 26.7 | 0.6 | 16.8 | 31.5 | 1.57 | 4,635 | 97.9 | 2.37 | 0.75 | 1.45 | 4.57 |
| 2,690 | 48.5 | 50.0 | 1.5 | 26.5 | 27.3 | 0.7 | 15.9 | 29.6 | 1.79 | 4,818 | 99.7 | 2.29 | 0.64 | 1.24 | 4.17 |
| 2,962 | 46.6 | 50.0 | 3.4 | 23.2 | 24.9 | 1.6 | 18.7 | 31.6 | 1.69 | 5,002 | 97.6 | 2.11 | 0.78 | 1.34 | 4.23 |
| 2,957 | 48.4 | 46.8 | 4.8 | 25.1 | 24.3 | 2.5 | 16.6 | 33.5 | 1.65 | 4,886 | 99.5 | 2.23 | 0.72 | 1.37 | 4.32 |
| 2,833 | 42.4 | 50.8 | 6.8 | 22.1 | 26.5 | 3.7 | 17.1 | 30.6 | 1.64 | 4,659 | 99.2 | 2.35 | 0.77 | 1.38 | 4.50 |
| 2,847 | 42.1 | 50.7 | 7.2 | 21.8 | 26.3 | 3.7 | 17.6 | 30.6 | 1.63 | 4,678 | 94.5 | 2.34 | 0.78 | 1.38 | 4.50 |
| 1,635 | 57.1 | 42.5 | 10.4 | 31.9 | 23.8 | 0.3 | 10.6 | 33.4 | 2.01 | 3,291 | 83.1 | 2.48 | 0.47 | 1.48 | 4.43 |
| 1,819 | 53.7 | 34.2 | 12.1 | 28.5 | 18.2 | 6.3 | 10.6 | 36.4 | 1.88 | 3,418 | 92.0 | 2.51 | 0.49 | 1.72 | 4.72 |
| 1,712 | 70.3 | 9.3 | 20.4 | 40.0 | 5.2 | 11.6 | 6.4 | 36.8 | 1.88 | 3,209 | 86.9 | 2.55 | 0.29 | 1.61 | 4.45 |
| 1,609 | 58.5 | 20.4 | 21.1 | 32.3 | 11.2 | 11.7 | 8.4 | 36.4 | 1.89 | 3,011 | 90.0 | 2.50 | 0.44 | 1.52 | 4.49 |
| 1,994 | 53.7 | 19.2 | 27 1 | 29.9 | 10.7 | 15.1 | 9.7 | 34.6 | 2.01 | 3,990 | 89.2 | 2.40 | 0.41 | 1.49 | 4.30 |
| 1,904 | 17.3 | 35.1 | 47.6 | 8.9 | 18.2 | 24.6 | 19.2 | 29.1 | 1.34 | 2,569 | 92.8 | 2.37 | 0.88 | 1.32 | 4.57 |
| 1,900 | 18.3 | 33.3 | 48.4 | 10.0 | 17.6 | 25.3 | 18.6 | 28.5 | 1.29 | 2,456 | 99.9 | 2.45 | 0.87 | 1.35 | 4.68 |
| 1,983 | 21.0 | 28.1 | 50.9 | 10.5 | 14.0 | 25.3 | 20.0 | 30.2 | 1.37 | 2,708 | 99.2 | 2.16 | 0.86 | 1.31 | 4.33 |
| 1,909 | 23.8 | 24.8 | 51.4 | 12.4 | 13.0 | 26.8 | 18.2 | 29.6 | 1.23 | 2,369 | 92.1 | 2.50 | 0.87 | 1.41 | 4.78 |
| 2,076 | 16.0 | 17.7 | 66.3 | 8.8 | 9.8 | 36.7 | 18.1 | 26.6 | 1.37 | 2,844 | 98.1 | 2.68 | 0.88 | 1.28 | 4.84 |
| 1,802 | ... | ... | 100.0 | ... | ... | 52.9 | 20.4 | 26.7 | 1 53 | 2,766 | 99.1 | 2.31 | 0.89 | 1.16 | 4.36 |

This table is based on 40,270 charges, representing 66,653 tons of pig iron.

An examination of Table II will show:

1. The consumption of ore per ton of iron varies from 2.11 tons, when using a burden composed of 46.6 per cent. of hard ore, 50 per cent. of soft ore and 3.4 per cent. of brown ore, to 2.68 tons when using an ore burden of 16

3. The calcination of the ore before it is shipped from the mines. These call for additional capital and additional skilled labor. The benefits would be beyond question of great advantage to the iron industry.

(THE END.)

## A Crank Shaft Cold Saw Cutting-Off Machine.

A crank shaft cold saw cutting-off machine of special design was recently furnished to the Erie Forge Company, Erie, Pa., by the Newton Machine Tool Works, Inc., Philadelphia. As the illustrations show, it carries two 28-in. inserted tooth saw blades, which are mounted on an extension spindle 8 in. in diameter, and are fitted with spacing washers giving any desired width of throat from ½ to 12 in., in variations of ⅛ in. A novel feature of the machine is the arrangement of the vises or V-blocks for holding the work. Three of these are shown, each 17 in. wide and 35 in. long, with a capacity in the V's, which are faced with tool steel plates, up to 15 in. in diameter. The work is held by means of strap clamps, which are open at one end. The clamping bolts are hinged to permit of clearance when changing the work. In addition to the V-block, there is also a surface fitted with T-slots for clamping the crank shafts, supported below by the jack A, shown in Fig. 1, which has a bearing in the yoke bar E, fitted through the V-blocks. This jack screw has a ball and socket fit with the contact-piece, which permits a solid bearing under angular work. The drive is through intermediate and worm gearing (a steep lead worm of bronze and a worm wheel of hardened steel, both running in oil) by belt from the armature shaft, as shown in Fig. 2. The drive and quick traverse, while obtained from the motor shaft, are independent of each other. This permits of withdrawing the saw blades when not in motion, a desirable feature, as many times the unequal strain developing after removal of metal causes the work to close on the saw blade. In that case the rotation of the blade would result in the breakage of a number of teeth, while withdrawing when not in motion would simply mean pulling them from the sockets.

All the movements in the operation of the machine are controlled from one point. The lever A', Fig. 1, controls the variation of feed, which ranges from 0.35 to 2 in. per minute. The levers B operate the feed drive and automatic release, while lever C is connected with the driving pulley and lever D with the quick return. The manufacturer supplies with this machine a scale, shown on the side of the saddle in Fig. 1, which gives the depth of cut. The machine is supplied with pump and piping for the lubrication arrangement illustrated in Fig. 2.

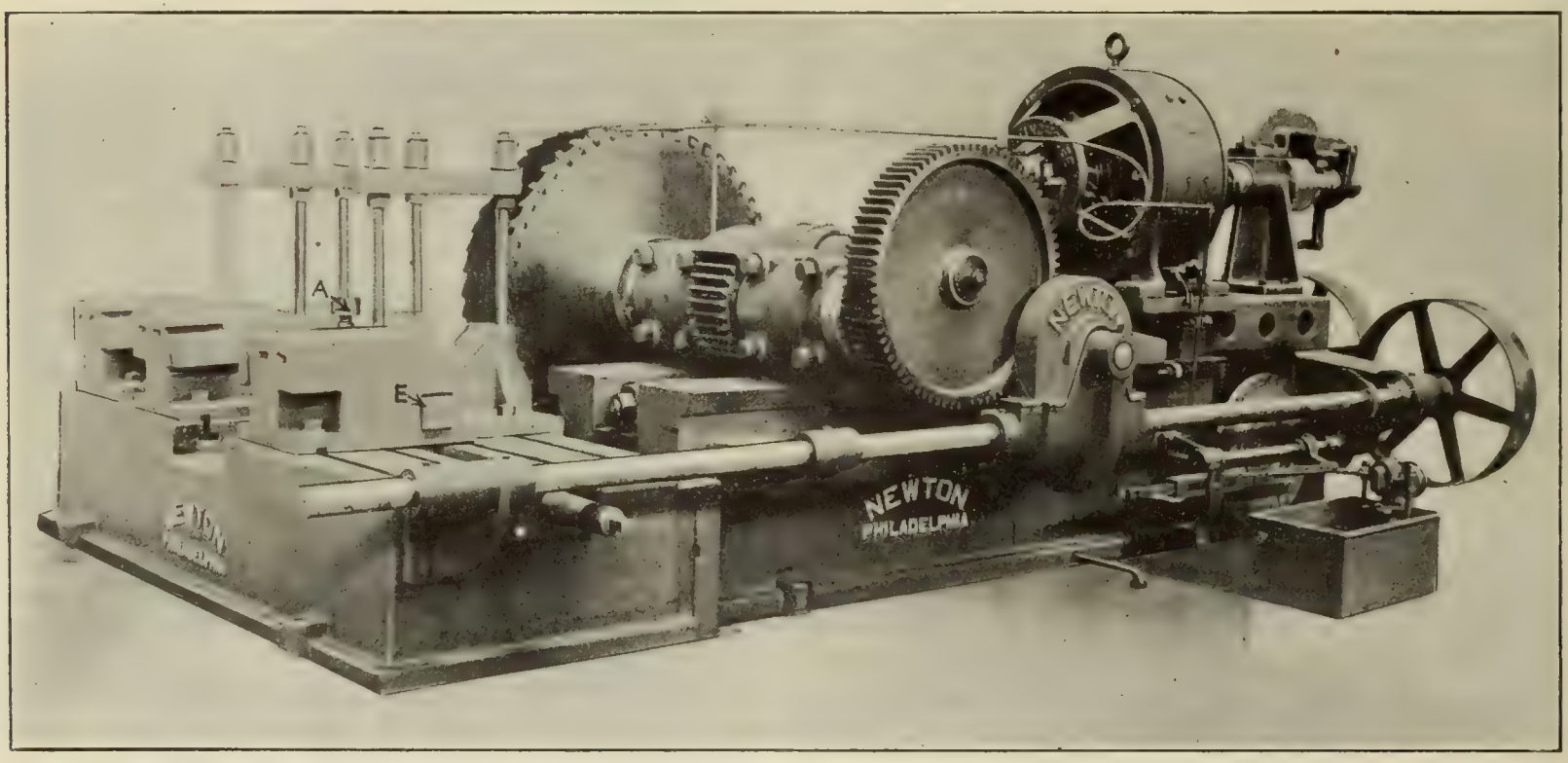



Fig. 1.—A Special Crank Shaft Cold Saw Cutting-Off Machine Built by the Newton Machine Tool Works, Philadelphia, Pa.

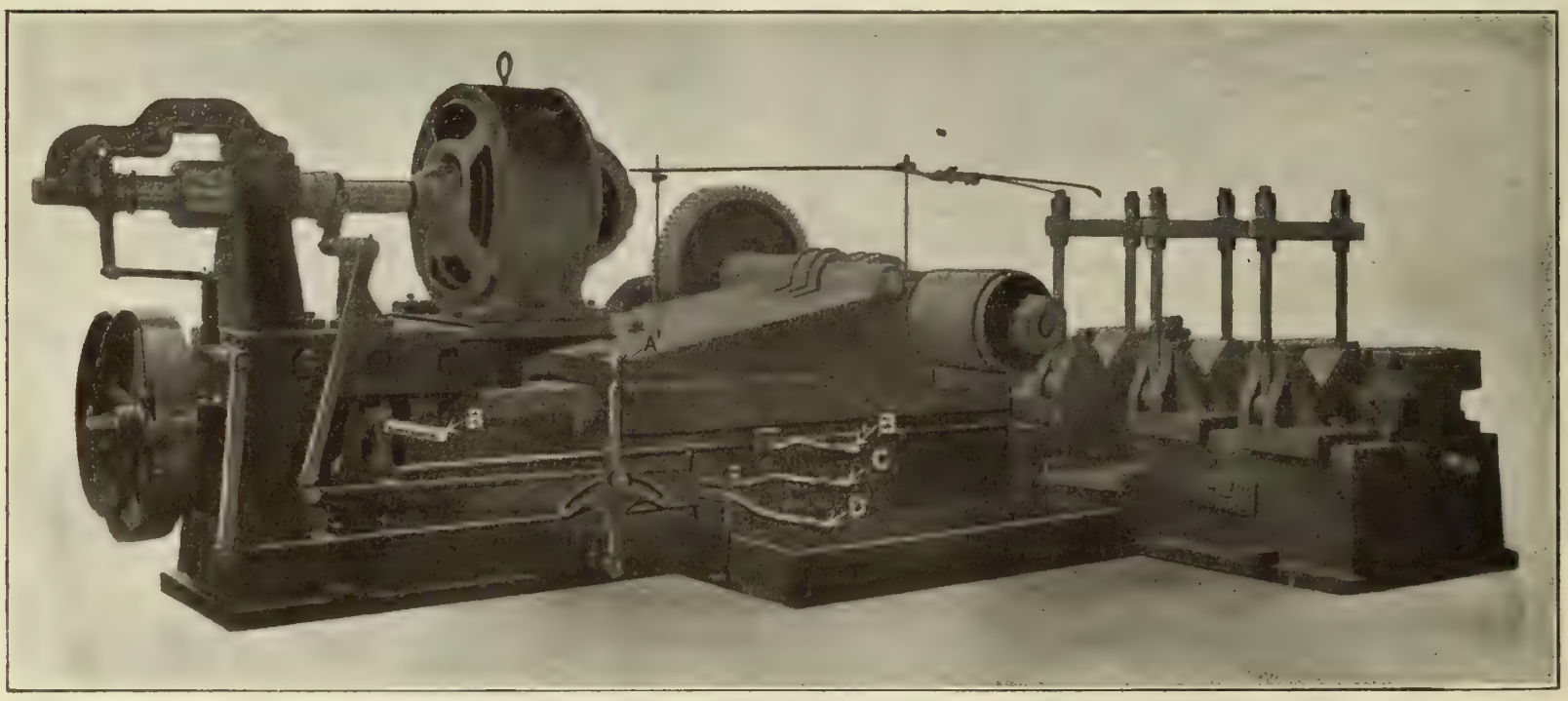



Fig 2.—Opposite Side of the Machine, Showing the Controlling Levers.

The following companies have recently signed the puddling scale of the Sons of Vulcan, composed of puddlers in the Pittsburgh District: Pittsburgh Forge & Iron Company, Wayne Iron & Steel Company, Colonial Steel Company, Zug Iron & Steel Company, Crucible Steel Company of America, Lockhart Iron & Steel Company, and A. M. Byers & Co., Inc.

# The New Cincinnati Lathe Feed.

A new positive geared feed is now being supplied on the lathe made by the Cincinnati Lathe & Tool Company, Cincinnati, Ohio. Fig. 1 shows a 16-in. engine lathe with three-step cone and double gears, equipped with the new positive feeding device, and No. 2 is a diagram showing a development of the mechanism laid out in a common plane. This new lathe is an addition to the company's line, for it will continue to manufacture its change gear lathe for cutting screws which gives 40 changes without removing a gear. These lathes have been on the market for some years, and are suitable for any variety of work, light or heavy, and are claimed to be of high efficiency with regard to quality and quantity of output, and time and expense of producing it. In both lathes all shafts are made of high grade machinery steel, turned and ground, and all plain bearings are scraped to surface plates.

The double back geared lathes, with extra wide three-step cone pulleys, of which the illustration, Fig. 1, shows an example, are equipped with steel cone pinions and steel back gear quills, both ends of each of which are bushed with bronze. All gears are made of bar steel, and those working on loose shafts are bushed with bronze. The strength of all parts is such that the machine will take any cut which the main driving belt will pull.

With the new gear device six feeds can be obtained, ranging from 16 to 100 per inch, and all simply by moving the lever G, Fig. 1. The device is simple in construction, consisting of only two parts, the lever mentioned and the gear box on the bed. The feeds are independent, therefore may be operated without having the lead screw continually in action.

Referring to Fig. 2 the operation will be understood from the following: The drive from the spindle is taken through gears to the shaft *m*, to which is keyed the bevel gear *a*. The latter drives the pinion *b*, and through it the shaft *r* and worm *c*. These parts are supported by the bracket *g* swinging on the shaft *m*, so as to allow *g* to move up and down. When either of the gears *i* or *h*

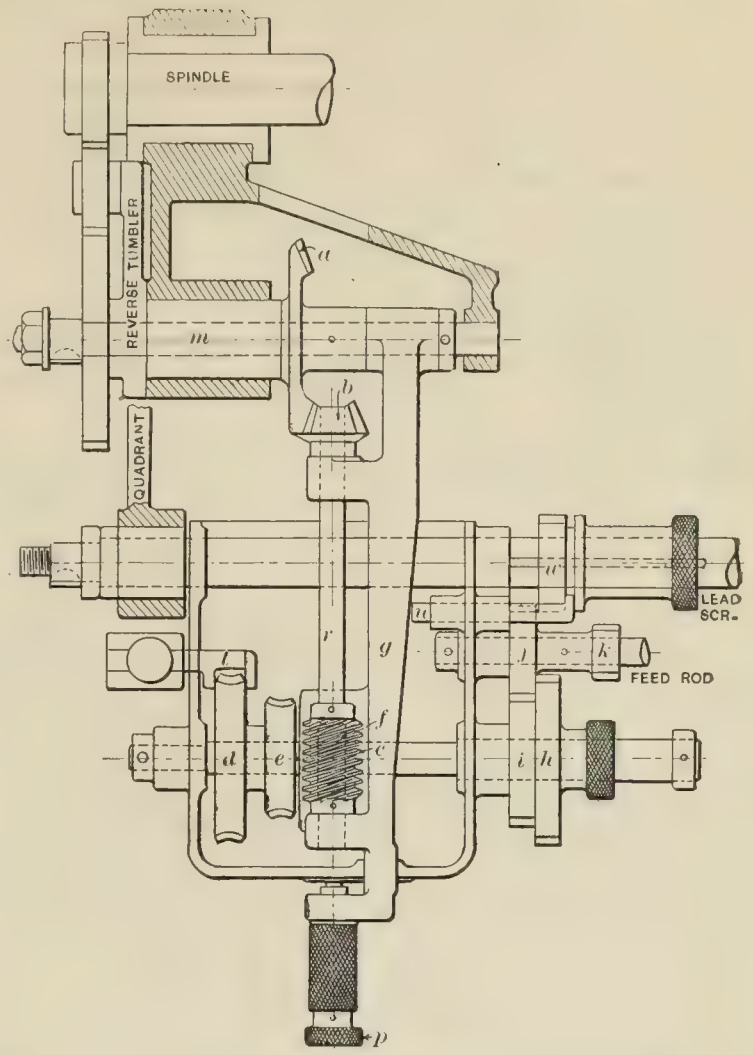



Fig. 2.—Development of the Gears in the Positive Feed Drive.

ting. The safety stop *u* prevents both feeds from being engaged at the same time. By placing the pin *p* in holes in the gear casing the worm *c* is retained in mesh with any one of the worm gears *g*, *e* and *f* (the latter is not clearly shown in Fig. 2, but is located just underneath the worm *c*). From the different sizes of these three worm wheels three different rates of feed are obtained. The fork *t* is used to shift the worm wheels into engage-

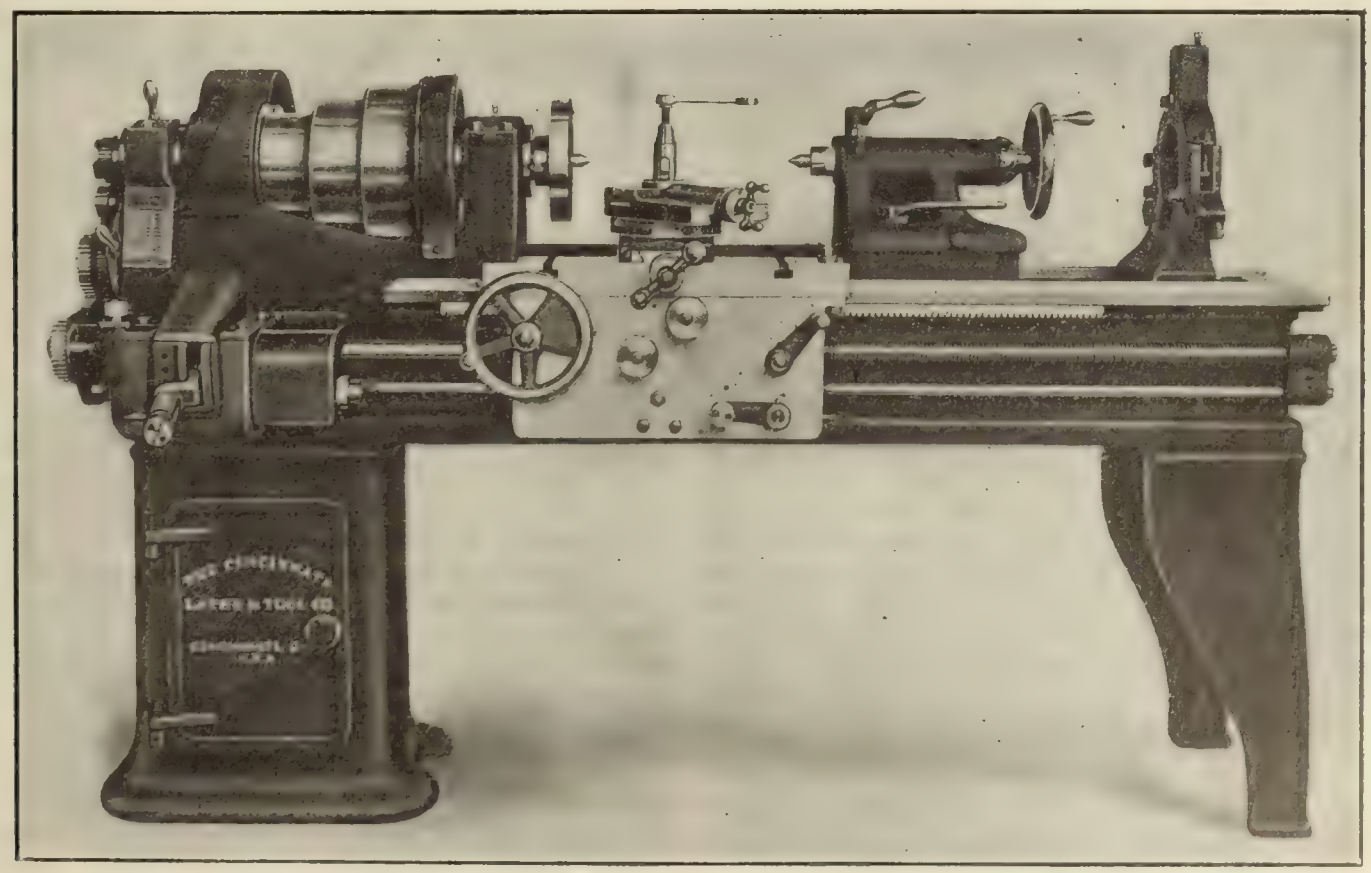


Fig. 1.—A 16-In. Engine Lathe with the New Positive Feed. Built by the Cincinnati Lathe & Tool Company, Cincinnati, Ohio.

are engaged with their corresponding gears *j* or *k* on the feed rod, the feeding device gives the six changes instantly. These are sufficient for a 16-in. lathe used for general manufacturing. Twenty-two additional feed changes can be obtained, however, ranging from 5 to 64 per inch, by the sliding gear *w* on the lead screw when it is in mesh with the gear *a* on the feed rod. The four pitch steel lead screw cuts threads 2 to 24 per inch, including 11½. An unlimited range of feeds may be secured by ordering extra change gears for screw cut-

ment with the worm *c*. The reservoir beneath these gears contains oil into which they dip so that they are kept constantly lubricated.

Each lathe is furnished with a plain or compound rest, with center and follow rest, large and small face plates, the necessary wrenches, and a self-oiling friction countershaft. A taper attachment may be furnished to be added to the lathe at any time. This travels with the carriage and permits turning tapers up to 4 in. to

also furnished with draw-in attachments, oil pan, turret on the carriage, and with either three or five step cones.

The principal dimensions of the 16-in. lathe are as follows: Swing over bed, 16½ in.; swing over carriage, 10¼ in.; width of belt on a three-step cone, 3¼ in.; ratio of the back gears, with a three-step cone, 3 1-3 and 9½ to 1; taper spindle socket, No. 4 Morse taper; length of bed, 6, 8, 10, or 12 ft.; hole in spindle, 1¼ in.; distance between centers on a 6-ft. bed, 34 in.; net weight of 6-ft. lathe, 2000 lb.

# The Water Supply of the City of Pittsburgh.

## The Main Pumping Stations and Filtration Plant.

BY H. G. MANNING.

Prior to the recent installation of a filtration plant, the city of Pittsburgh, not including the annexed districts, was supplied with water pumped directly from the Allegheny River, the only settling of the water occurring in the distributing reservoirs. The main pumping station known as the Brilliant Station is situated seven miles from the City Hall up the Allegheny River, and all of its 10 pumping engines, with a total normal capacity of 130,000,000 gal. per 24 hr., are now cut off from any communication with the river, the suction trunk leading directly from the filtered water basin of the new filtration plant.

When it is considered that all the pumps in the Brilliant Station are high duty, pumping against a head of some 350 ft., while the sedimentation reservoirs of the filtration plant are only 50 ft. above the ordinary hight of the river, it will be seen that it became necessary to provide a pumping plant of at least the equal capacity of the Brilliant Station to pump the muddy water of the river to the filtration plant reservoirs. This new plant, known as the Ross Station, now in operation, is situated half a mile up and across the Allegheny River from the Brilliant Station, and looking to future needs, has been installed with a total normal capacity of 140,000,000 gal. per 24 hr., with space for more pumps as needed.

The accompanying plan shows the general location of the two pumping plants, filtration beds and reservoirs. It will be observed in the plan that the "normal pool elevation" of the Allegheny River is 25 ft. When the water is at this stage in the river, the elevation of the filtered water basin is only 25 ft. above it. The elevation figures given in the plan are "above datum," or when the water is out of the dam in the river.

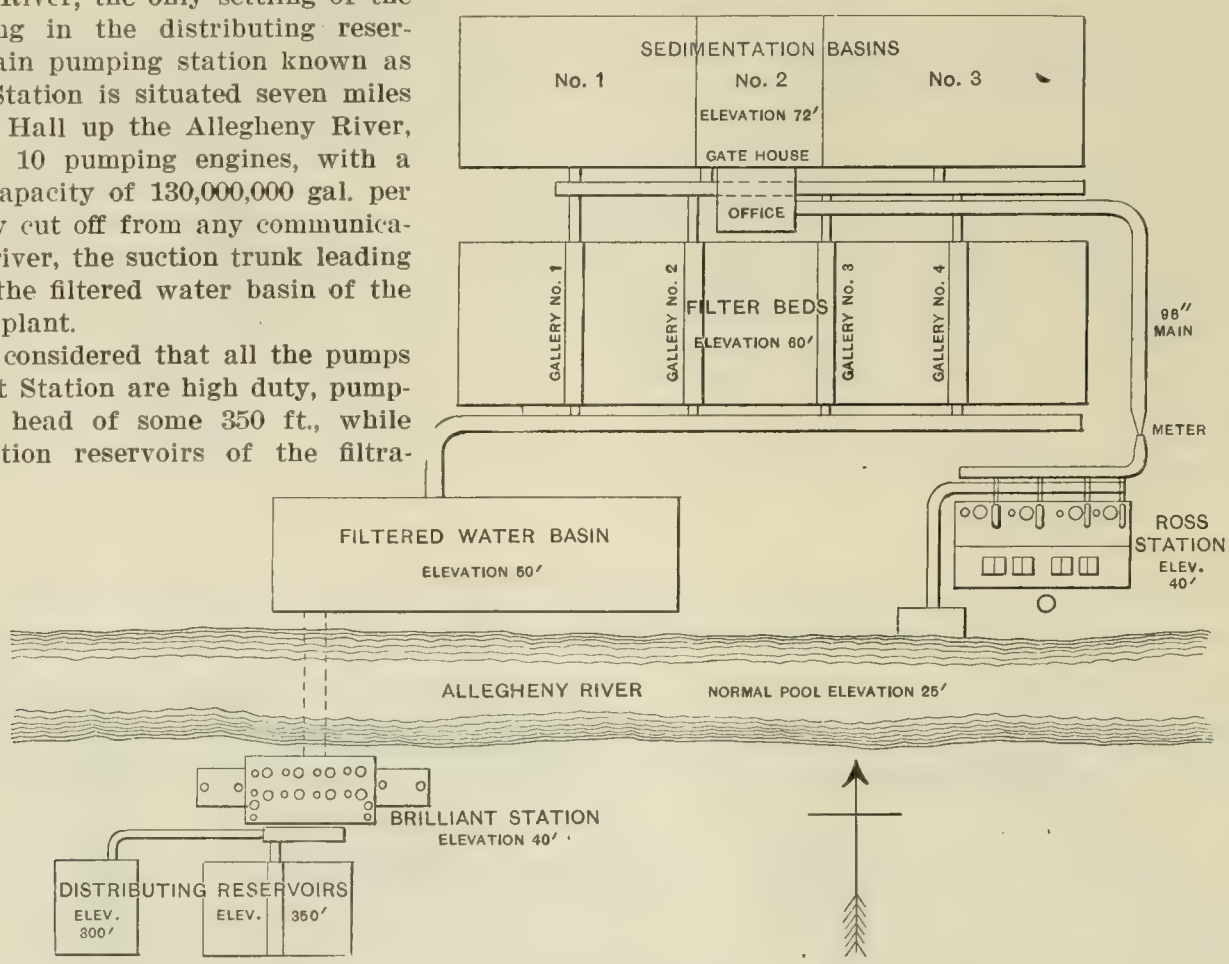
### The Brilliant Station.

The equipment of the Brilliant Station consists of 10 vertical cross compound condensing engines, weighing from 600 to 800 tons each, with a total of approximately 7000 tons of working machinery under one roof and in one room.

With the late addition of two 15,000,000 gal, engines, included in the 10 above mentioned, the Brilliant Station has clinched its position at the head of high duty pumping stations of the world, a place which it has held for a number of years. This means that there is no single station in any city of the world which has the capacity under the high pumping head which this station has. To perform this work there are required 37 boilers of different types, including both fire and water tube, the majority of which have mechanical stokers. A total operating force of 90 men is used in three shifts of 8 hr. each.

The following table gives the principal data of the several engines, all being vertical cross compound condensing, as above stated:

| No. | Cylinders. | Plungers. | Builders. |
|---|---|---|---|
| 1. | 42 and 84 x 56 in. | 21-in. double acting. | Holley. |
| 2. | 42 and 84 x 56 in. | 21-in. doublt acting. | Allis-Chalmers. |
| 3. | 50 and 92 x 64 in. | 22½-in. single acting. | Allis-Chalmers. |
| 4. | 50 and 92 x 64 in. | 22½-in. single acting. | Allis-Chalmers. |
| 5. | 50 and 92 x 64 in. | 22½-in. single acting. | Allis-Chalmers. |
| 6. | 50 and 92 x 64 in. | 22½-in. single acting. | Allis-Chalmers. |
| 7. | 48 and 92 x 64 in. | 36-in. single acting. | Allis-Chalmers. |
| 8. | 48 and 92 x 64 in. | 36-in. single acting. | Allis-Chalmers. |
| 9. | 50 and 96 x 64 in. | 36-in. single acting. | Allis-Chalmers. |
| 10. | 50 and 96 x 64 in. | 36-in. single acting. | Allis-Chalmers. |




Main Pumping Stations and Filtration Plant of the City of Pittsburgh, Pa.

### The New Ross Station.

The new Ross Station, as previously mentioned, is designed to pump directly from the river to the settling and distributing reservoirs of the filtration plant. The water is then distributed to the several filter beds, of which there are 46, each covering an acre. An addition of 10 filter beds is soon to be made to cover the needs of the Allegheny section of Greater Pittsburgh. From the filter beds the filtered water flows to the filtered water basin and from there goes through the suction trunk running under the river bed to the suction wells of the Brilliant Station, to be pumped into the city mains.

The pumps at the Ross Station are of the centrifugal type, directly connected to vertical cross compound condensing Allis-Chalmers engines, having Corliss valve gear. The speed of the pumps is 115 rev. per min., and they were designed for a normal capacity of 35,000,000 gal. per day, under a total head of 46 ft. There are four of these pumps and engines, each having cylinders 16 and 34 in. diameter by 36 in. stroke, with a pump impeller 12 ft. in diameter. These centrifugal pumps are the largest that have been built for direct connection to an engine shaft up to the present time. Each pump is connected to a Wheeler Condenser & Engineering Company's surface condenser, with circulating water flowing around the tubes. The circulating water is supplied either from

the main suction trunk by an auxiliary motor driven centrifugal pump, or directly from the filtration reservoir as desired. A triplex Edwards air pump is directly connected to the main engine shaft, delivering the water of condensation to a hot well from which the boiler feed is taken, the feed water being forced through sand and gravel filters on its way to the boiler. The following table gives the principal data of the engines in this station:

| No. | Type. | Cylinders. | Plungers. | Builders. |
|---|---|---|---|---|
| 1. | Vertical cross compound condensing | 16 and 34 x 36 | 12-ft. impellor | Allis-Chalmers. |
| 2. | Vertical cross compound condensing | 16 and 34 x 36 | 12-ft. impellor | Allis-Chalmers. |
| 3. | Vertical cross compound condensing | 16 and 34 x 36 | 12-ft. impellor | Allis-Chalmers. |
| 4. | Vertical cross compound condensing | 16 and 34 x 36 | 12-ft. impellor | Allis-Chalmers. |
| 6. | Horizontal duplex tandem compound condensing | 12 and 24 x 24 | 14-in. double acting | D'Auria Builders Iron Foundry Company. |
| 7. | Horizontal duplex tandem compound condensing | 12 and 24 x 24 | 14-in. double acting | D'Auria Builders Iron Foundry Company. |
| 8. | Horizontal duplex tandem compound condensing | 10 and 20 x 18 | 11-in. double acting. | |
| 10. | Vertical cross compound condensing | 14 and 27 x 14 | | Shepherd Eng'g. Co. |
| 11. | Vertical cross compound condensing | 14 and 27 x 14 | | |
| 12. | Vertical cross compound condensing | 14 and 27 x 14 | | |

For washing the sand of the filter beds, the Ross Station is equipped with three D'Auria duplex tandem compound condensing plunger pumps with a discharge pressure of 100 lb. and suction pressure of 10 lb. received from the filtration plant. Two of these pumps are of 5,000,000 gal. capacity and one is 3,000,000. Each large pump is fitted with a triplex Edwards motor driven air pump operating in conjunction with a C. H. Wheeler surface condenser located in the suction line. The air pumps of one of the 5,000,000 D'Auria pumps also cares for the condensation of the 3,000,000 D'Auria.

### The Electric System, Boiler Plant, &c.

The Ross Station is also fitted with three vertical cross compound condensing Shepherd engines, directly connected to 175 k.w. Westinghouse generators, wired for the three-wire system. A triplex Edwards air pump, motor driven, in conjunction with a Wheeler Condenser & Engineering Company's surface condenser, cares for all three electric power engines. The electricity generated is used for lighting the station and filtration plant and for driving the auxiliaries of the pumping station and the motors around the filtration plant. All the large water valves are also electrically operated.

All engines, except the D'Auria pumps, are supplied with oil from a gravity system, the reservoir for which is located in the engine room above the crane, giving an oil pressure on all engine feeds of about 25 lb. The oil is filtered through a Star oil system and returned to the supply reservoir.

The boiler room is fitted with eight 350 hp. Babcock & Wilcox boilers, built by the Sterling Consolidated Boiler Company. They are laid out in two banks of two batteries, with a green fuel economizer for each bank. Steam is carried at 150 lb. pressure.

Coal is delivered by rail into a hopper beneath the tracks, the outlet of the hopper being 15 ft. below the boiler room floor. The coal runs from this hopper into a two ton bucket, and is hoisted to the coal bunkers above the boiler, thence carried to any boiler, dumped and returned to the starting point automatically. This apparatus was supplied by the Sprague Electric Company.

The coal bunkers are divided into bins covering one battery of two boilers, with a capacity of 200 tons, or a total storage capacity of 800 tons. The Babcock & Wilcox type of chain grate is used, the coal dropping from the bunker through automatic weighing hoppers into chutes conducting the coal to the grate hoppers. The ashes drop from the grates into hoppers beneath the floor, an ash tunnel connecting them all. The ashes are removed by water pressure driving them into an open space alongside the station, and are used for filling purposes.

A total operating force of 40 men is required at the Ross Station, divided into three shifts of 8 hr. each.

The station is also supplied with one 10 ton electric crane, and one each of the following machine tools, electrically operated: 12 in. speed lathe, 24 in. shaper, 12 in. x 8 ft. engine lathe, 24 in. x 10 ft. engine lathe, 24 in. drill press, 18 in. emery grinder, twist drill grinder, grindstone, pipe threading machine.

An H. K. Porter & Co. air locomotive, supplied with compressed air by a Clayton air compressor, is used for shifting coal cars from the railroad siding to the coal siding.

The Ross Station is a beautifully designed building inside and out, fitted with the most modern machinery suitable for the work in hand, and is a credit to the city of Pittsburgh. The work of this station has been executed under the direction of A. B. Shepherd, superintendent of the Water Bureau, and at present acting Director of Public Works. Associated with him have been Rutan & Russell, architects; F. H. Robbins, mechanical engineer; H. E. Fernald, chief engineer of the two stations; Morris Knowles, chief engineer of the filtration plant, and S. B. Waring, mechanical engineer for the city.

## Short Weight Shipments to Foundries.

B. M. Shaw, chairman; A. A. Miller, secretary, and J. L. Anthony, who were appointed to prepare a statement concerning the meeting held in Philadelphia, March 18, 1908, to deal with the question of short weights in pig iron shipments, have just filed their report with Henry A. Carpenter, chairman of the original committee, appointed by the New England Foundrymen's Association. The Philadelphia meeting, it will be recalled, was attended by representatives of consignors, transportation companies and consignees of pig iron, coal and coke. The report says:

The question of discrepancies in shipping and outturn weights of pig iron, coal and coke was taken up. The discussion of the various topics covers an extensive range, stenographic report of which comprises some 104 pages. Under the circumstances, there being present at this meeting representatives of so many diversified interests—foundrymen, rail and water transportation companies and coke and iron producers—it was impossible to pass any formal resolutions harmonizing the views of all present regarding the outcome of the day's discussion.

In a general way, however, it may be said that an understanding was in a measure arrived at with some of the transportation interests and shippers, particularly regarding coke, whereby methods of check weighing might be employed to meet the railroads' requirements to establish losses of material in transit, and also to establish the correctness or incorrectness of the marked tare weight on cars. The representatives of transportation interests declared that, to obtain a check weight establishing a loss of coke in transit it would be necessary for the consignee to use the same methods in weighing at delivery point as at the shipping point. Cars must be weighed on railroad track scales by representatives of the railroad company and the marked tare used as the light weight of the car. Errors in marked tare may be arrived at by the same method of weighing, after the car has been cleaned out to the satisfaction of the railroad company's representative. A number of the representatives of the transportation companies expressed a willingness to allow for shortages, if established to their satisfaction by approved methods, and after such allowances had been made by the railroads, the shippers (where railroad weights govern the shipment) expressed a willingness to reimburse the consignee for shortages in material delivered.

As far as overcoming discrepancies in the short weight of pig iron is concerned, little of particular interest was accomplished. The discrepancies in all-rail shipments did not appear to be very extensive, and when such did occur there seemed to be little difficulty in making an adequate adjustment. In rail and water shipments, however, it was impossible to obtain from the representative of this interest any definite statement which would lead to the solution of the difficulty in shipments of that class.

It was decided that the stenographic report be edited and printed, and your committee, therefore, takes pleasure in forwarding to you as a part of its report a copy of the proceedings.

## The Reagan Device for Mechanical Stoking.

A new device for mechanically stoking bituminous fires under boilers has recently been patented and placed before the trade by the Reagan Grate Bar Company, 209 North Front street, Philadelphia, Pa. It is designed to obviate the use of the stoker bar in slicing the fire, and to permit the fire to be uniformly stoked without opening the fire door, thus eliminating the greatest hardship on the fireman and also resulting in a considerable saving of labor. With this device the fire can be kept in a porous condition at all times, its movement being such as will break up clinkers in their infancy and thereby induce a continuous supply of air through the fire, and result in the perfect combustion of the fuel. Under ordinary conditions, when the fire door of a boiler is opened to permit of hand stoking with a bar, a large inrush of cold air passes over the fire, retarding combustion, producing smoke and also reducing the temperature of the boiler.

The construction of the device is quite simple, but its use is confined, by the design, to grates of the Reagan type. It consists principally of a series of lifting fire bars, as shown in Fig. 1, extending throughout the length of the grate, which vary in size according to the size of the grate. In a 6-ft. grate the lifting grates are in a series of three, which, according to the width of the grate, are spaced 18 in. apart. They are about 18 in. long and 6 in. wide, the back of the bars being solid, except for openings left to permit access of air to the fire, so that in raising the bars no part of the fire body is permitted to drop through into the ash pit. Each lifting grate is hinged at one end, the bottom of the grates being connected by means of a continuous rod, which is attached to the operating levers at the front of the firebox, the raising operation being performed by a removable hand lever. Each series of grates is operated at one movement of the lever, Fig. 2, raising the lifting grates to a maximum hight of 11 in. above the grate surface, of which they form a part when not in action, and like other portions of the grate are thoroughly air cooled.

A complete breaking up of the fire body is insured by the operation of these lifting grates, while the clinkers and ash, falling to the right and left, drop within the range of the chopping device, attached to the grate. The chopping device or grates, the operation of which is shown more particularly in Fig. 3, consist of a series of hinged grates 12 in. long and 6 in. wide, the rotary movement of which is at the center. These run throughout the length of the grate and on each side of the lifting grate, and when not in service form a part of the grate proper. They are operated by a rod and lever movement of the same type as that used for the lifting grates, and can be operated either independently or together with the lifting grates. The function of the chopping grates is to clean the fire. The upward movement extends several inches above the grate surface, and, when raised, provides openings through which the ash and disintegrated clinker can drop through to the ash pit. The Reagan mechanical stoking device can be attached to any size of the Reagan grate, which has been before the trade for a number of years. The manufacturer claims that with its use the evaporation of 25 per cent. more water than by the usual methods of firing and stoking can be obtained.



Fig. 1.—The Reagan Device for Mechanical Stoking, Made by the Reagan Grate Bar Company, Philadelphia, Pa.



Fig. 2.—The Stoking Device in Action.

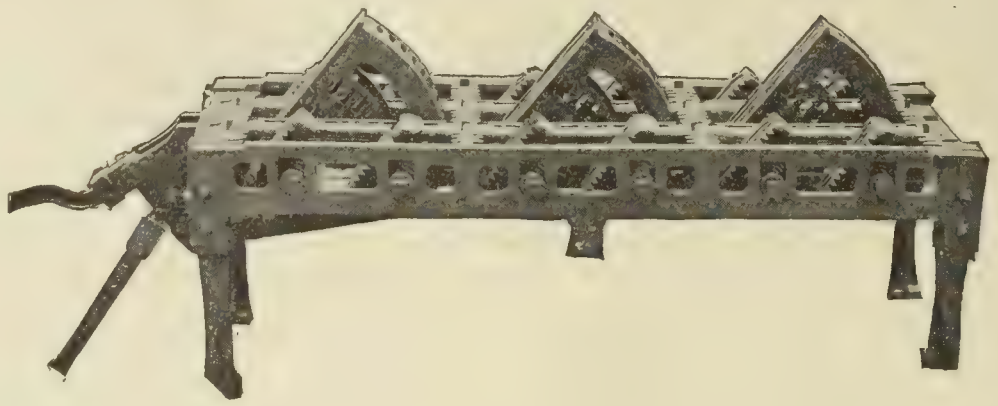


Fig. 3.—The Stoking Device and Choppers in Action.

## The Tariff in the Canadian Election.

The tariff is one of the issues in the Parliamentary campaign which is going on in Canada in view of the general election in October. The Laurier Government is seeking to justify the numerous tariff enactments and orders-in-council which have come into force since 1897, practically all for the extension of the national policy, originated by the Conservatives in 1879, and for the exclusion of imports. The Conservatives, who are now in opposition, are making the attack, and they are committed by their utterances in Parliament to a tariff that would still further restrict imports from the United States and would deny to British imports into Canada any of the preference conceded by the Liberals since 1897, until Great Britain goes on a protective basis and establishes a preference at the customs houses for imports from Canada.

It was by the Parliament elected in 1904, and that will come to an end this autumn, that the tariff of 1897 was revised and the bounty system overhauled and extended. The Conservatives at no time offered any opposition to the higher duties enacted in the tariff that was before the House of Commons in the winter of 1906-1907. Nor did they offer the least objection to the renewal of the bounty laws—a renewal which is to-day costing the Dominion at the rate of $2,800,000 a year. All this legislation was welcomed by the Conservatives as an indorsement and extension of the national policy which they inaugurated nearly 30 years ago. The complaint on which they laid most emphasis was that duties were not high enough to give the Canadian manufacturers absolute control of the trade of the Dominion, and that it was needless generosity to concede preferences to British manufacturers until Great Britain should make concessions to Canadian exporters.

Since the tariff was revised the Conservatives have given their support to all the pleas of manufacturers who have urged that the revision of 1906-1907 left them with inadequate protection. On this policy they will go into the elections in Eastern Canada, in the urban centers where industries are congregated. For the West there must be a variation in their programme, for, as was made plain when the Tariff Commission was in Western Ontario, Manitoba, Saskatchewan and Alberta, in the autumn of 1905, farmers and stockmen are almost unanimously, without regard to political affiliations, opposed to higher duties on imports. In particular they are opposed to any increase in the tariff on farm machinery, builders' hardware and stoves. They were so resolute in their opposition to any further concessions to Canadian manufacturers in these lines of industry, and they made their opposition so obvious to the Tariff Commission, that the Government, when it revised the tariff, reduced by 2½ or 5 per cent. the duties on farm implements, compensating the manufacturers by reducing the duty on their raw materials.

The country that lies beyond North Bay is extremely delicate ground for either Liberal or Conservative Parliamentary candidates when they begin to talk tariff and national policy. At this election the Conservatives will have to walk warily in managing their electoral campaign in the prairie provinces, where there is little manufacuring on a large scale. Unusual caution on the tariff will be necessary because the Conservatives are relying on the scandals exposed at Ottawa since 1905 to secure such a popular vote all over the Dominion as will result in their return to power after 12 years of opposition in the Dominion Parliament.

The most serious of these scandals, certainly of those for which there is a good basis of fact, arise out of the particular care that the Government has shown for its friends when equipment and supplies for the various departments were purchased. But almost equal stress is being laid on the revelations as to the financing of the Quebec Bridge Company, and the circumstances under which the Government gave it a subsidy of $1,000,000 and guaranteed its bonds to the extent of $7,000,000. New Brunswick and Ontario have in the present year returned Conservative provincial governments to power with tremendous majorities. In the Quebec provincial elections the Liberals also suffered considerable loss in Parliamentary strength, and the popular tide has gone so far against them that to-day Nova Scotia, Prince Edward Island, Quebec, Saskachewan and Alberta—all small except Quebec—are the only provinces in which Liberals remain in control of the Government.

It is because there is a likelihood that the Conservatives may be returned to power this autumn that the Parliamentary utterances of Mr. Borden and Mr. Foster, the Conservative leaders in the House of Commons, on the tariff since 1897, are of significance to all American manufacturers who do any considerable business with the Dominion. If the Laurier Government comes back to power, it will be safe to assume that the tariff as it has stood since November, 1906, will remain much as is is for three or four years to come, and that all existing bounty legislation will be renewed as the several laws expire. On the other hand, if the Conservatives carry the elections, and a government with Mr. Borden as Premier succeeds the present administration, the Conservatives are committed to a revision of the tariff—a revision in which all the protective duties will be greatly increased.

P.

## Proposed Drainage and Power Canal at Buffalo.

The Erie & Ontario Sanitary Canal Company has been incorporated at Buffalo to build a $20,000,000 drainage and power canal from Lake Erie at South Buffalo to Lake Ontario, providing the Federal Government consents to the diversion of the necessary water from Lake Erie, which is estimated at 6000 cu. ft. per second. The canal is to be 38 miles in length, 100 ft. wide and 20 ft. deep. It is proposed to circle around Buffalo to the east and connect with the Erie Barge Canal, so that canal barges may also navigate the sanitary canal, as dockage and manufacturing sites will be provided along its course for factories, which will utilize the electric power to be developed at Lockport. The fall between Lake Erie and Lake Ontario is 326 ft.

Buffalo River, Smoke's Creek and Ellicott Creek, in the engineer's plan, will have their currents reversed and flow into the sanitary canal instead of into Lake Erie and Niagara River. Besides the development of power, the canal will dispose of the sewage of Buffalo, South Buffalo, West Seneca and the towns along its course, and thus remove the danger of sewage pollution of the water supply of Buffalo and the cities of Tonawanda and Niagara Falls. It would also abate the spring floods and freshets to which Buffalo River is now subject. The plan provides that the railroads entering Buffalo will not be interfered with, as the canal will pass under them by a tunnel four miles long, having its northerly entrance at Williamsville.

The company back of the proposition is now capitalized at $100,000. Millard F. Bowen, formerly secretary of the Manufacturers' Club, who is the originator of the project, states that eminent engineers have indorsed the canal plan as practicable and that plenty of capital will be available for construction work as soon as the War Department consents to the use of the necessary flow of water from Lake Erie, and the Public Service Commission passes on the electrical development feature.

## Pennsylvania Corporation Laws.

HARRISBURG, PA., August 31, 1908.—Some important changes in the laws relative to Pennsylvania's corporation taxation are now being discussed in advance of the meeting of the Legislature, which will assemble on the first Monday of January in biennial session, especially relative to taxation of manufacturing companies and the periods in which corporations must make their reports to the Auditor-General for settlement of taxes.

At the last session of the Legislature a bill for the taxation of capital stock of manufacturing companies—iron, steel, glass, cement and the like—was seriously considered, and it is not improbable in view of the heavy demands which will be made for appropriations for road construction and other public works next session that a similar bill will be heard of. The proposition made at that time was 5 mills on the dollar. The manufacturing corporations at present pay no tax on capital stock which is actually engaged in manufacturing, but are required to pay a tax on loans and gross receipts.

Another change, which has received hearty support from all parts of the State, is a proposed amendment to the act of 1811 creating the office of Auditor-General, which requires all corporations to make reports to the official showing business for the fiscal year ending the first Monday of November. This was an ancient requirement, devised so that the Auditor-General could inform the Legislature of the probable revenue when it met in January. At present there are over 22,000 corporations reporting to the department, and, as the bulk of them are run on a calandar year basis, the old statute provision works a hardship on the companies, and piles up so much work that the Auditor-General's force cannot settle the taxes for months. It is planned to secure uniformity in the time of reports by making the calendar year the period.

The State fiscal authorities are preparing for a test of the question whether a lien for State taxes is a preferred claim in one of the courts of the Commonwealth. It is a question which has been ruled upon various ways and one of vital interest to corporations. Under authority of acts of 1829 and 1889 the Auditor-General's Department, which has charge of the collection of all taxes for the State, has been insisting that State taxes should have priority in settlements, and has enforced the statute which permits the State to file claim for interest if a State tax is not settled within 30 days after settlement is made by the Auditor-General. This has been resisted by some corporations, and an action will now be brought to determine the matter once for all.

# Foundry Warehouse Methods.*

BY F. C. EVERITT, TRENTON, N. J.

With a few exceptions, probably no subject under the general head of "System" involves wider variations, due to local conditions of plant and line of goods manufactured, than "Foundry Warehouse Methods." To present any one method that might be generally used for the profitable handling of goods and that the majority of manufacturers would not object to if applied to their particular case would be impossible. It is true that local conditions can be changed to conform with a given method; but this is not always advisable, as it might involve a greater expense and more confusion than could be overcome in a long time, whereas a few changes in the method would give entire satisfaction with little expense.

In submitting the method here detailed we confine ourselves to those plants which conduct a warehouse in connection with a foundry and mounting or finishing departments. For convenience we will consider a plant operating a foundry, a mounting or finishing department and a warehouse. We will assume also that the plant has been in operation for a given period. This will provide us with some knowledge of the demand for the different articles manufactured. We may then decide what points are most important for careful consideration before applying our method. Taking these in order we have:

(*a*) Method of storing the finished stock in the warehouse. Its location and records.

(*b*) Method of ordering completed goods for warehouse stock.

(*c*) Means of ascertaining quantities sold in the past in order to judge what quantities to order for stock, preventing an overstock and guarding against the article becoming obsolete before stock is exhausted.

(*d*) Method of handling orders for shipment which might be held for shipping instructions. Location of these prepared orders.

(*e*) The storage and handling of castings before mounting and the method of ordering on the foundry.

### Stock in Store.

(a) With the first item it will be necessary, according to the construction of the warehouse, carefully and systematically to arrange the different floors into sections or bins as the case may suggest, the floors, sections and bins being numbered in the order named, *i. e.*, floor No. 1, section 25, bin 50. We can then very readily refer to the location in a simple manner (location 1, 25, 50). This is a very simple scheme and one undoubtedly used by many manufacturers. With this part of our plan established we may prepare the warehouse office "Stock and Order Book," a sample sheet of which is shown in Fig. 1. On these sheets, bound in loose leaf binders, we will enter the name of the article and its size, maximum and minimum quantities to be carried in stock and its location. (One sheet or page to be used for a single article). As the orders are received in the general office and recorded, copies are sent to the warehouse office and entered immediately on the "Stock and Order Book" in the columns under the heading "Orders." The stock on hand having been previously entered in the "Stock" column, we readily note that we have 300 on hand and can ship at once. A warehouse memorandum slip, bearing the order number, customer's name, article and its location, is handed to the man in charge of the stock to prepare the goods for shipment, after which he reports to the warehouse office goods ready to ship. When shipped the ticket or original order is again referred to the stock order clerk, who enters the shipment in the "Shipped" column, and the balance on hand is reckoned and entered in the "Stock" column.

ARTICLE Nameless Size #1 — SHEET NO. —
MAX. 200 MIN. 250 LOCATION OF STOCK — FLOOR — BIN —
TOTAL SHIPPED 1907 2000 / " " 190 — / " " 190 — / " " 19 —

| ORDERS. | | | | SHIPPED. | | | REQUISITION FOR STOCK. | | | RECEIVED. | | APPLIED ON ORDERS. | | | STOCK. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DATE. | ORDER NO. | CUSTOMER. | QUAN. | DATE. | QUAN. | DATE. | REQ'N NO. | QUAN. | DATE. | QUAN. | DATE. | ORDER NO. | QUAN. | DATE | REQUIRED. | ON HAND. | |
| 4-1-08 | 2561 | Jones & Co | 100 | 4-2-08 | 100 | | | | | | | | | 4-1-08 | 100 | 300 | |
| 4-14-08 | 2843 | Smith & Son | 125 | 4-14-08 | 125 | 4-2-08 | 480 | 500 | 4-3-08 | 25 | | Stock | | 4-2-08 | | 200 | |
| | | | | | | | | | 4-4-08 | 50 | | " | | 4-4-08 | | | |
| 4-16-08 | 3001 | Brown & Co | 200 | | | | | | 4-8-08 | 200 | | " | | 4-8-08 | | | |
| | | | | | | | | | 4-13-08 | 225 | | " | | 4-13-08 | | | |
| | | | | | | | | | | | | | | 4-14-08 | 125 | | |
| | | | | | | | | | | | | | | 4-15-08 | | 575 | |
| | | | | | | | | | | | | | | 4-16-08 | 200 | | |

Fig. 1.—Sample Sheet of Warehouse Office Stock and Order Book.

ARTICLE. — TOTAL SHIPPED 19 — / " " 19 — / " " 19 —
PLATE NO.

| | ORDERS. | | | | SHIPMENTS. | | | | |
|---|---|---|---|---|---|---|---|---|---|
| DUE. | DATE. | ORDER NO. | CUSTOMER. | QUAN. | DATE. | ORDER NO. | DATE. | QUAN. | REMARKS. |
| | | | | | | | | | |

Fig. 2.—Record of Orders and Shipments.

STOCK. MAX. — MIN. — YEAR.

| LOCATION | ARTICLE. | ORDERS ISSUED. | | | PUT IN. | | TAKEN OUT. | | ON HAND. | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | DATE. | ORDER NO. | QUAN. | DATE. | QUAN. | DATE. | QUAN. | DATE. | QUAN. |
| | | | | | | | | | | |

Fig. 3.—Stock Record of Castings and of Orders Issued on the Foundry.

* A paper read at the Toronto, Can., convention of the American Foundrymen's Association, June, 1908.

**Replenishing Warehouse Stock.**

(b) As the stock falls below the minimum quantity, a requisition is at once issued on the mounting or finishing department. As the goods are received from this department, a daily report is made by the warehouse man to the stock order clerk, who makes the proper entries in the "Received" column, the quantity in each case being carried to "Stock" column and showing a total.

**Use of Accumulated Records.**

(c) If this method be continued for a period of one or two years it is very plain to see that we will have a volume of valuable information that can be applied to a good advantage. We are able to tell at all times the number of orders on hand for any one article, requisitions issued for goods to go in stock, quantities received, stock on hand and the quantities sold for the above mentioned period, the last item of which will enable us to fix intelligently the maximum and to know what quantities to order for stock to meet future demands. In placing these requisitions for stock on the departments we must not lose sight of one important question: Do we know or are we in any position to tell, with the above information at hand, whether the demand for any one article will be as great during the year to come as was the case with the year just past? We do not; for while the outlook for the next year's business may be unusually favorable we may have discovered by referring to our records of two or three years that size No. 1 of a given article sold during one year at the rate of 2000 and size No. 2 sold at the rate of 500. Another year has shown that No. 1 decreased and No. 2 increased in sales, which might have again reversed during a third year. If we have placed our maximum during the last year at 2000 and wish to place a requisition on the mounting or finishing department for a six months' stock, we must endeavor to keep the stock within salable quantities and the conclusion is simply a matter of good judgment. We may decide that a six months' stock order will be 700 instead of 1000, which will, according to our best judgment, prevent an overstock and keep it within the danger line of decreased business.

What conclusions are we now able to draw from the above information? Simply that we have data at hand which will serve as a guide in preventing the undesirable overstock that so often results in goods becoming dead and obsolete. We cannot say that the method would entirely obliterate this, but it would tend to minimize such possibilities and be a big step in the right direction.

**Goods Held for Shipment.**

(d) Returning again to our stock order book, we must endeavor to avoid all confusion and have our records simple and accurate. With this in mind we will take, for example, goods reported for shipment and held pending shipping instructions. The goods must be placed in a section of the warehouse nearest the shipping floor, this location having been noted on the warehouse memorandum before being reported to the stock order clerk. We will note in the "Order" column of the sample sheet an order for Brown & Co., 200 articles, and in the "Stock" column, under "Required," 200, with no balance made and no entry having been made of shipment. This will show at a glance that the goods on this order are being held and the memorandum on file will give the location of the order ready for shipment. If this precaution is not taken and the entries and balances made when goods are reported, we will have a false statement of stock on hand, as well as being liable to overlook these prepared orders when taking inventory from the stock books at the end of the year.

The method as outlined above has been made as general as possible under the conditions mentioned and we might add that where the articles named are completed as one, it is simple and easily handled. However, if the articles are composed of many parts, any one of which might form a part of several other articles, it might be wise to rely on a second method briefly outlined below. This can be applied to good advantage in the departments where the many parts are used to make the assembled article and in conjunction with the warehouse stock order book.

While this record (see sample sheet, Fig. 2) may seem a duplication of the warehouse record and apparently call for unnecessary clerical work, it is a great advantage to the department inasmuch as it shows at all times an accurate record of the requisitions on file for goods to be made up for warehouse stock and orders from other departments that may be in the plant. The two methods worked together would undoubtedly be subject to many changes due to the size of the plant, the number of departments and the general disposition of the goods manufactured.

**Castings Stored Before Mounting.**

(e) The forms shown, Fig. 2 and Fig. 3, are intended to be used in the same department, but are to be handled entirely independent of each other, Fig. 2 being a record of orders and shipments, and Fig. 3 a stock record of castings and a record of orders issued on the foundry. This form is simple and needs little explanation. The method of locating the stock would, of course, be the same as outlined for the warehouse and a single sheet or page in this book used for each casting. Ample space is allowed for the name and description of the part, as well as a rough sketch if desired. The maximum and minimum quantities to be carried in stock can be ascertained precisely as in the first method. The columns for orders issued on the foundry, date and quantities received, taken out and on hand, are simple and need no further explanation.

The two methods here outlined worked in conjunction or separately may fulfill all requirements, but will without a doubt be subject to the changes found necessary in various plants owing to differing conditions.

## Additions at the Duquesne Works.

The improvements and new construction under way at the Duquesne Steel Works and blast furnaces of the Carnegie Steel Company, Duquesne, Pa., are nearly completed. The old Bessemer works at this plant has been torn down to make room for 18 new 60-ton basic open hearth furnaces, of which six have been finished and are now in operation, and the other 12 will be completed in about six months. The plant originally contained 14 50-ton furnaces, and with the new 18 60-ton furnaces will have a daily capacity of about 4,000 tons of open hearth blooms. The 21-in. mill, on which 4 x 4 in. billets, sheet bars and splice bars are rolled, has been remodeled, and a new engine, built by Mackintosh, Hemphill & Co. of Pittsburgh, is about ready to install to drive the 40-in. mill. Two new blast furnaces, Nos. 5 and 6, are being added and are nearly finished. These are 23 x 94 ft., and each has four Massicks and Crookes hot blast stoves, 22 x 100 ft. The two stacks will be blown in before the first of the year, and the six furnaces will have a monthly capacity of about 90,000 tons of iron. This will all be basic, which will be used in the open hearth furnaces, as hereafter no Bessemer steel will be made at the Duquesne works. The two new blast furnaces will be driven by four Snow gas blowing engines, and there will be two steam engines for spares.

The statistics of failures in August fail for the first time in several months to show an improvement. *Dun's Review* says: "Commercial failures in August were 1,199, with $23,782,378 in liabilities. This compares with 850 failures and $15,197,749 liabilities in the same month last year. Manufacturing failures were 253, against 217 last year, while liabilities of $15,152,880 compared with $11,047,249 in 1907. There is no striking increase in number in this department, and if two large failures for about $10,000,000 are eliminated, the remaining suspensions involved only $5,152,880, or less than half the total manufacturing losses last year.

The postponement until 1917 of the Japanese International Exposition, which was to have been held in 1912, is officially announced. The action is due to economic reasons, and to the lack of time to make the proper preparations.

# A New Rubber Insulating Machine.

The New England Butt Company, Providence, R. I., is building a new type of rubber covering machine for insulating wires and cables, which is shown in one of the larger sizes in the accompanying Fig. 1. By means of compression rolls, which also act as cutters, rubber strips are firmly pressed against and around the wire, adhering to it, from above and below, while the cutters remove the residue of the covering material, leaving a round product, with a slight ridge at each seam, due to a necessary beveling of the rolls at the points of intersection of the grooves. This method of insulating is comparatively new in this country, although it has been employed abroad with machines of radically different design. The more common process has been similar to that of making rubber tubing. Many electric companies now insulate their own wire, and consequently a regular market has been established for machinery for the purpose. The machine in question is designed for handling cables up to 3½ in. in diameter, and can be arranged to cover two or more smaller sizes of wires or cables, the cutters being grooved to correspond to the number to be insulated. The cutters are of hardened steel, 9 in. in diameter.

The machine consists of a rigid bed with heads driven through bevel gearing from a main shaft running along the back side of the bed. A friction device, consisting of two cast iron disks, between which is a disk of leather, is employed in the drive of each of two of the heads, in order to relieve any variation in feed between heads due to differences that may exist between the diameters of the several pairs of cutters. It is to be noted that the rollers serve not only as cutters and to press the rubber upon the wires, but also as feed rolls, in which work they are assisted by the reel that takes the finished product. The feed can be no faster in any part of the machine than that of the last head to take the wire, so that there is no need of furnishing that head with a friction. But in each of the other heads the friction, set at a predetermined tension, permits the rolls to slip should they feed at a speed different from that of another pair of rolls. By this arrangement, trouble due to the buckling of the wire or cable between heads is obviated. In the drive of each head compensating gearing is included, so that cutters may be turned down when dull and used until considerably reduced in diameter. One housing of each head, that at the front of the machine, can be removed to permit of the changing of cutters without interfering with either shafting or gearing, the removal of four bolts making this possible. Each head is furnished at the back with a wire guide and with an arrangement for holding the spools upon which are wound the rubber strips used in the insulation. The spools are held in either horizontal or vertical plane, the position depending upon whether a single horizontally supported spool is used with a folding guide, which laps the rubber over the wires, or two spools in vertical position, where two strips are employed, as shown in the illustration. For the single spools arms are furnished, fastened to the side of the head, holding the spools in alternation on the sides of the bed. The rolls of rubber can be used up to 14 in. diameter by 12 in. wide.

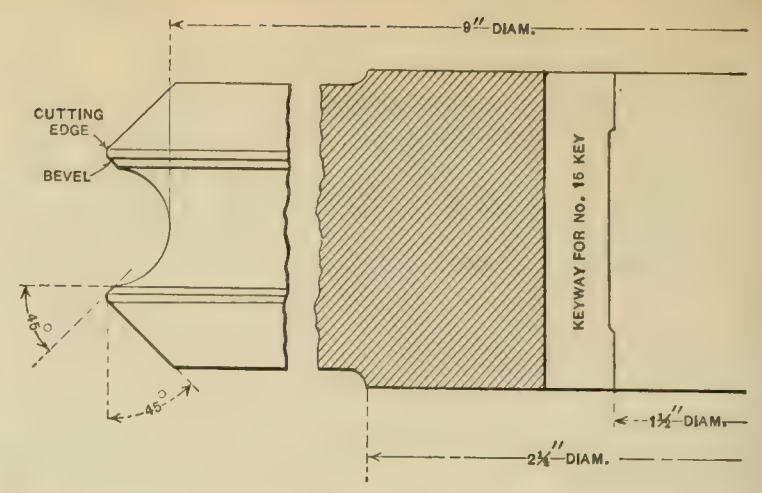



Fig. 2.—Section of a Single Groove Forming and Trimming Roll.

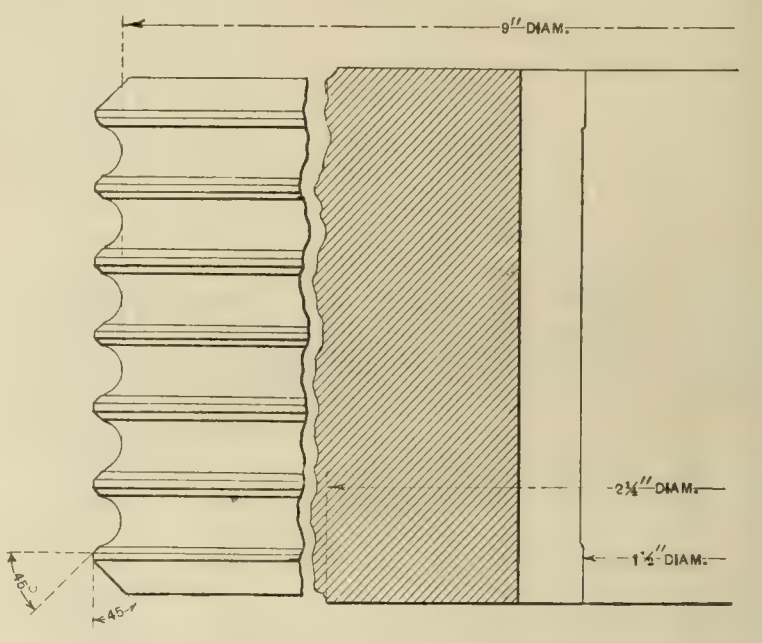



Fig. 3.—A Six-Groove Roll for Covering Several Wires at Once.

The wire and its two coverings, either two strips or the one folded strip, pass together into the rolls, two types of which are shown in Figs. 2 and 3. The grooves correspond in size to that of the product as it passes from the head, and are beveled away at the cutting edge, the purpose being to give a greater surface of contact between the edges of the strips of the insulation during the squeezing process. The cutters, of the same piece

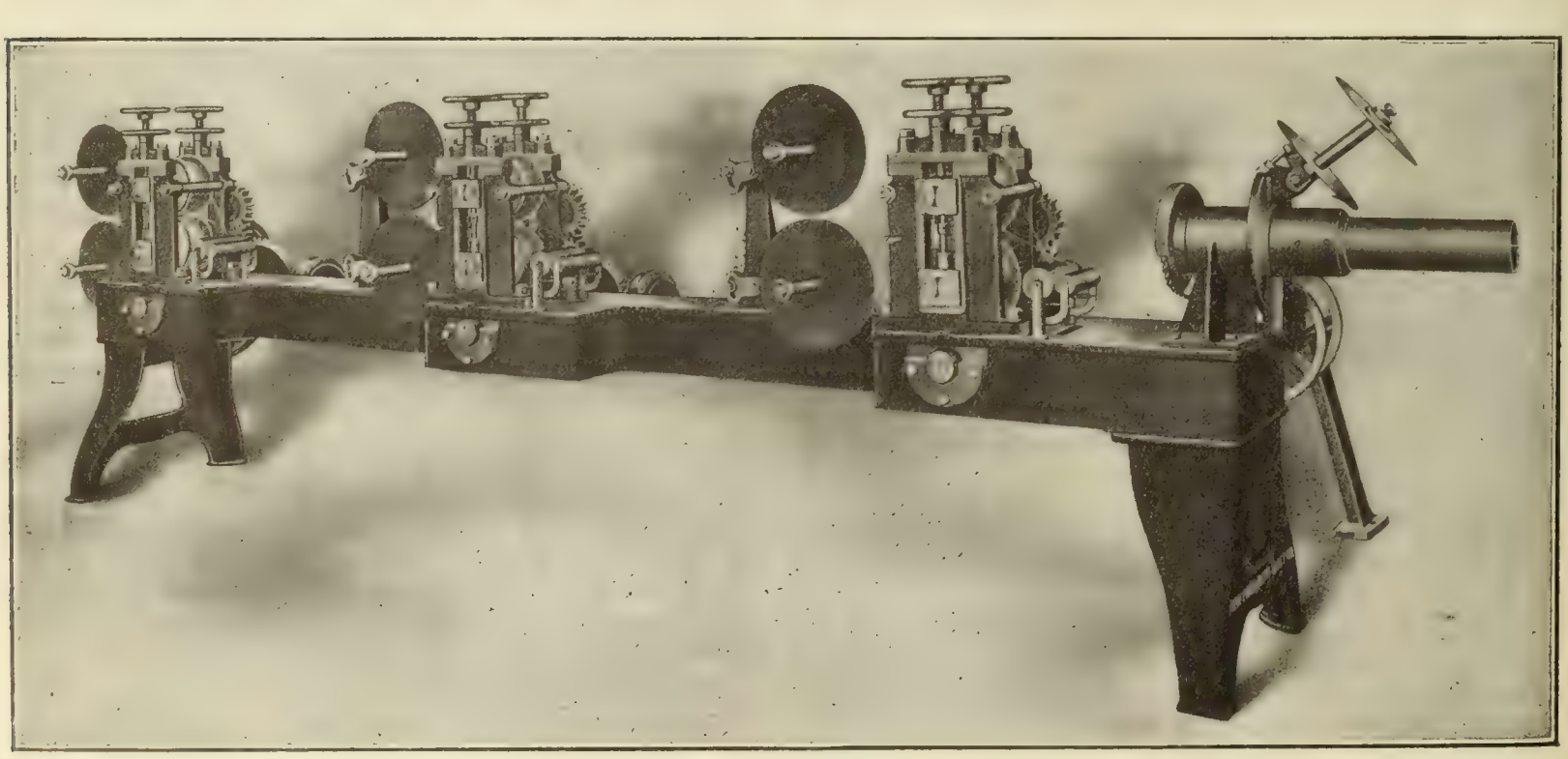


Fig. 1.—A Three-Head Rubber Covering Machine for Insulating Wires and Cables, Built by the New England Butt Company, Providence, R. I.

with the rolls, are little more than narrow rolls themselves, and remove the residue rubber by compression. Sharp edges would be impossible, because two such edges working one against the other would soon lose their keenness.

From one head the covered wire passes on to the next, where the process is repeated, as many coverings being applied as there are heads. By this means different qualities of rubber may be used for the several layers, which is an important advantage, as certain compositions work to best advantage in different relative layers.

The taping head, driven by gears and sprocket chain from the main shaft, gives a final covering of tape, as, for example, of paper or cloth, to the finished insulated wire, and will hold rolls of tape up to 6 in. wide and 10½ in. diameter. It is arranged with change gearing, giving lays of from 8 to 12 in.—*i. e.*, the spool carrying the tape can be revolved around the wire to give any pitch to the spiral from 8 to 12 in. The sprocket and driving chain are protected by a guard. The main driving shaft is driven by a 24-in. pulley carrying a 6-in. belt and running 150 rev. per min., which gives to the cutters a surface speed of 56 ft. per minute.

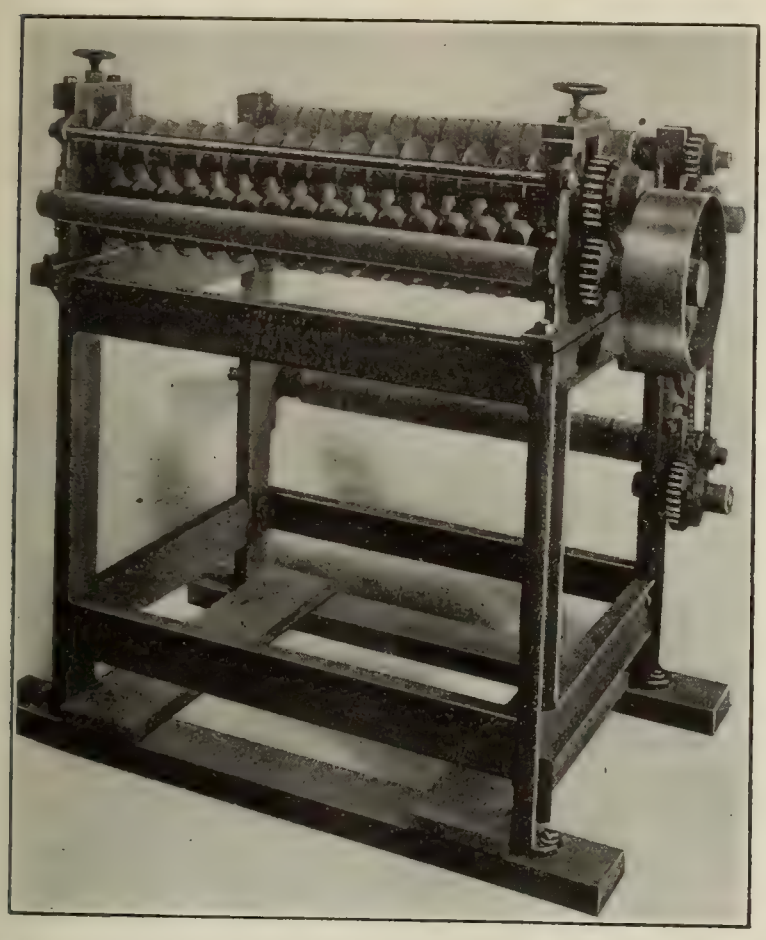


Fig. 4.—The Slitting Machine for Cutting Rubber Sheets Into Strips.

The pulley shown at the side of the bed, mounted on a cross shaft, is used for driving the winding-up fixture, which carries and operates the reel that takes the finished wire from the machine. It is designed to work a little faster than the machine itself, but its driving pulley slips to conform with the feed of the wire from the last head and taping attachment.

The rubber used is first rolled in sheets 36 in. wide and then cut up into strips of the required width by means of the rubber strip cutting machine, shown in Fig. 4. The rubber sheet is fed to the machine over a wooden roller to a gang of rotary shears set at the required distance apart for the desired width of strips. At the back of the machine are two shafts driven by adjustable frictions which carry the spools upon which the strips are wound, the strips passing alternately to the two shafts in order that there may be no interference between them. The cutters can be set for different widths, from ¾ in. up. The machine has a 10 x 3 in. driving pulley, which gives to the cutters a speed of 70 rev. per min.

The Pennsylvania Railroad has begun the use of concrete telegraph poles. Experiments will be conducted with such poles in the coming winter on a stretch of track between Pittsburgh and Chicago. It is believed they will better resist storms and will be longer-lived than wooden poles.

## The Production of Abrasives in 1907.

The United States Geological Survey has issued its report on the production of abrasive materials in the United States in 1907, as prepared by W. C. Phalen. The value of the production of natural abrasives showed a substantial increase over that of 1906. In the following table natural abrasives are classified and total values are given for 1907 and the two preceding years:

*Value of Natural Abrasives Produced in the United States, 1905-1907.*

| Kind of abrasive. | 1905. | 1906. | 1907. |
|---|---|---|---|
| Oilstones and scythestones.. | $244,546 | $268,070 | $264,188 |
| Grindstones and pulpstones. | 777,606 | 744,894 | 896,022 |
| Buhrstones and millstones.. | 37,974 | 48,590 | 31,741 |
| Pumice ..... | 5,540 | 16,750 | 33,818 |
| Infusorial earth and tripoli. | 64,637 | 72,108 | 104,406 |
| Abrasive quartz..... | *88,118 | *121,671 | *126,582 |
| Garnet ..... | 148,095 | 157,000 | 211,686 |
| Corundum and emery..... | 61,464 | 44,310 | 12,294 |
| Totals..... | $1,427,980 | $1,473,393 | $1,680,737 |

* Including feldspar used for abrasive purposes.

The statistics are given also of the production of artificial abrasives, which include alundum, carborundum and crushed steel. In 1907 their production was 14,632,000 lb., valued at $1,027,240, as against 11,774,300 lb., valued at $777,081 in 1906, and 9,820,000 lb., valued at $701,400 in 1905. There was no production of corundum in the United States in 1907, the item of "corundum and emery" in the above table representing for that year emery alone. The importations of emery and corundum in 1907 were valued at $412,630, and of all abrasives at $754,140. The value of all abrasive materials consumed in the United States in 1907 was $3,462,123, against $3,160,438 in 1906 and $2,784,001 in 1905. Canada is a producer of corundum, the output last year being 1892 net tons, compared with 2274 tons in 1906.

Carborundum is manufactured by a single firm in the United States, the Carborundum Company, Niagara Falls, N. Y. The foreign demand has increased so rapidly that the company has built at Düsseldorf, Germany, for the manufacture of carborundum wheels and abrasive articles, a plant which started up in February, 1907. Carborundum has been used for some time in the plate glass and granite industry, and more recently in the marble industry, a complete line of machinery having been developed, so that carborundum is rapidly dispensing with the old style machine tools and with skilled labor. It is being introduced into the woodworking and paper industries, and into the hat trade. Other applications are in nonslipping stair treads, carriage treads, nonslipping horseshoes and also in the construction of cement pavements and sidewalks.

Alundum is manufactured by the Norton Company, at Niagara Falls, from the mineral bauxite. The product of the calciners and electric furnaces at Niagara Falls is shipped to the company's plant at Worcester, Mass., where it is put through the various operations of alundum wheel manufacture. A recent application of alundum is as a refractory material. It melts at 2300 degrees C., and has a very low coefficient of expansion. It is moreover very inert chemically, and tests made in the basic open hearth furnace show that it is not appreciably affected by slags in these processes. A lining of the Deville furnace does not show deterioration after repeated burns at 1800 degrees C. It is yet to be determined just how much better alundum is than other standard refractories, as it is necessarily quite expensive. It is believed, however, that for a number of special purposes it will prove of value.

No new developments are reported concerning crushed steel abrasives, which are manufactured by the Pittsburgh Crushed Steel Company. They are chiefly used in the stone, brick, glass and metal trades, the size of the steel used depending on the character of the stone to be cut, rubbed, ground or polished.

## The Schmitz Wire Flattening Mill.

The Walzmaschinenfabrik August Schmitz of Duesseldorf, Germany, manufacturer of hardened cast steel rolls and of wire machinery, has recently introduced a new design of its wire flattening mill, which is illustrated in the accompanying engravings, Fig. 1 showing the mill and back of it the coiler, and Fig. 2 the coiler itself from a different point of view.

The rolls are of glass hardened steel, ground true to size and highly polished. They are arranged for internal water cooling, the necks having a large bearing surface and running in bronze bearings, lined with antifriction metal. The roll housings are made of cast steel, so as to absorb vibration. Springs are provided between the rolls for raising the upper roll. The necks are protected from dust and dirt by detachable covers, fitted with venting the waste oil overflowing and soiling the floor.

The mill shown in Fig. 1 is supplied with a wrench adjustment. As usually designed by the company, the rolls are handled by means of a central adjustment, which is recommended for rolling small strips when both pressure spindles are worked simultaneously with a band wheel. For equalizing the slightest irregularities, either of the spindles may be adjusted independently by throwing it in or out of gear.

A straightening device, new in design, is shown affixed to the front of the machine. The round wire first passes through a tubular guide. It is then drawn through the different straightening pulleys, which may be placed in the proper position by means of the levers. It will be observed that provision is made for lateral adjustment of the whole straightening device, and it may be used in a horizontal as well as a vertical position. Between the straightener and the rolls is attached the adjustable

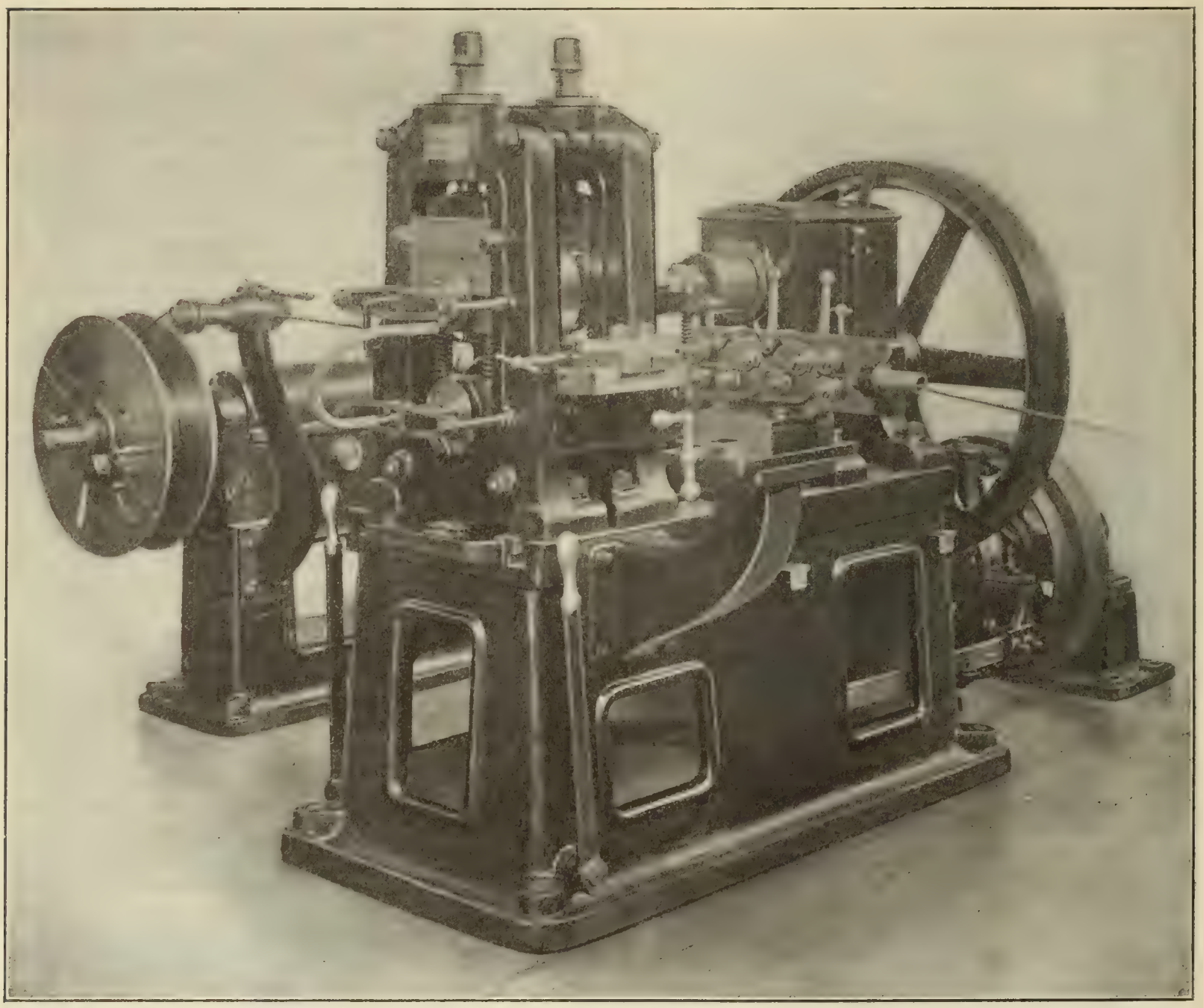


Fig. 1.—The Wire Flattening Mill Made by the Walzmaschinenfabrik August Schmitz, Duesseldorf, Germany.

a special oiling attachment. Brackets on the outside of the housing secure the upper roll bearing in its position. Changing the rolls can be done in a comparatively short time by loosening the two bolts and releasing the bracket, whereupon the bearing and rolls can easily be slipped out. The housings are held in place by keys in order to obviate vibration and prevent their shifting sideways.

The rolls are driven by pinions and breaking pins. In order to avoid so-called cog marks on the rolled material, the former have staggered teeth and the latter are supported. The pinion housings are so shaped that they form a box around them, which is filled with oil.

The driving mechanism comprises a fast and loose pulley and single spur wheel gearing. If required, the machine may be fitted with a friction coil clutch, instead of a loose pulley, as shown in the illustration. The base of the machine is turned up at the floor, thus forming a narrow drip pan or groove around, and pre-

feeding guide, which is also provided with a brake for the purpose of putting the necessary tension on the wire or the strip to be rolled.

The coiler Fig. 2, which is a most important feature in wire rolling mills, forms a self-contained machine, and, being driven by a belt from the rolling mill, can be thrown in and out of gear. It is provided with a belt pulley and single spur wheel gearing of large dimension, so that it will easily coil the thickest wire. The winding drum can be contracted when the coiled wire is to be taken off, this being indispensable for the reliable working of wire flattening mills. The coiler is provided with a mechanism automatically reciprocal to the winding drum. A special device worked by a lever permits of throwing the reciprocating movement in and out of gear, which operation can take place even should the machine be running. The width of the winding drum is likewise adjustable, so that the coiler will easily meet the most varied requirements. The powerful arm extending in

front of the coiler serves to guide the wire. The small guide pulley which distributes the rolled material on the drum can be adjusted sideways.

If required, the Schmitz mill can be provided with attachments for finishing material rolled thereon, namely, a combined straightening device and edger. Both attachments are mounted on a small table in front of the machine and turn on their axes turretwise, so that either of them can instantly be placed in working position by a simple turn of the lever, thus dispensing with troublesome and tedious fastening and unfastening of the adjustments.

The mill is made in two sizes, "A" having an approximate width of rolls of 5 in. and of diameter of rolls of 8 in. Its speed is about 45 revolutions, the speed of the drive pulley being 270 rev. per min. It weighs net 3.1 tons, and packed for export 3.6 tons. It will handle wire up to ½ in. diameter. Size "A¹" has 10-in. rolls, with 6-in. face, the speed of the rolls being 50 revolutions. The Schmitz mill may also be arranged by turning special grooves into the rolls for rolled wire shapes of every kind, such as sectional wire, cable wire, &c.

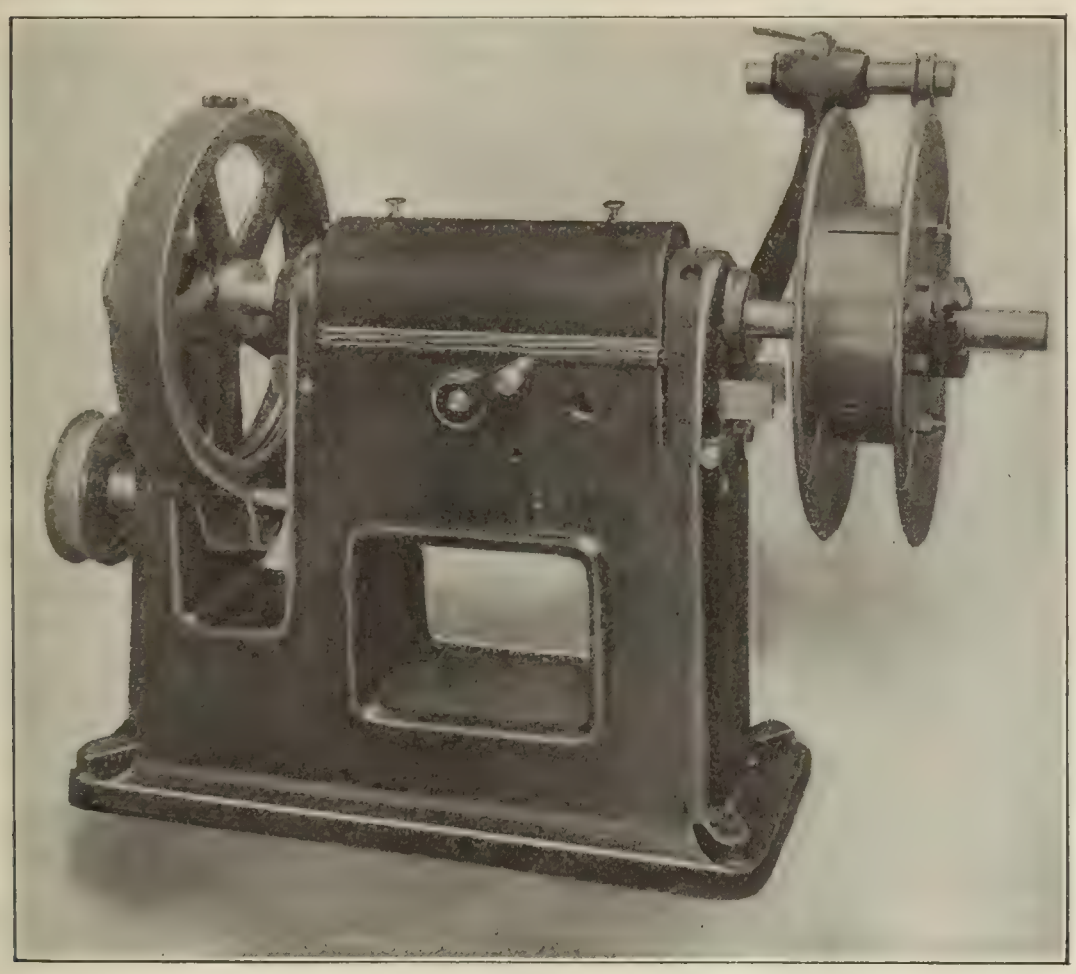


Fig. 2.—The Coiler of the Schmitz Wire Flattening Mill.

A high temperature flame for brazing, welding and a variety of uses where the local application of heat is necessary is being obtained by a new burner using a common air blast and a small quantity of city gas. This burner, which is the invention of A. K. Schaap, Fulton and Cumberland streets, Brooklyn, N. Y., is now being used for a variety of automobile work coming into a jobbing shop. City gas only is under normal city pressure, and the air blast varies from 30 to 50 lb. With this it is possible to melt cast iron on open hearth and braze inaccessible places quickly and readily. One of the features of the apparatus is the small amount of space taken by the brazing tools, some of them being smaller than an ordinary soldering iron.

The receivership of Milliken Brothers, Inc., New York, has again been extended for a month, the receivers representing for the third time that another month was required to perfect their plans for a reorganization. Their report shows that the cash receipts from June 11, 1907, to August 26, 1908, were $3,749,773, and that the balance on hand on the latter date was $555,106. The report of a probable alliance with a steel company outside of the United States Steel Corporation has been allowed to become public, but is not officially confirmed.

# The Relative Corrosion of Steel and Wrought Iron Tubing.*

BY HENRY M. HOWE AND BRADLEY STOUGHTON.

Is steel, tube steel, materially more corrodible, intrinsically and incurably, than wrought iron, as unprotected steel and iron are surely far more corrodible than well painted steel and iron? Or is it merely that ill made steel and steel of unsuitable composition are more corrodible than well made wrought iron? If the former, then in each and every test which is sufficiently wide to make reasonable allowance for the usual caprices of corrosion, tube steel must necessarily corrode and pit materially more than wrought iron. If the later, then, though in certain tests tube steel may corrode and pit more than wrought iron, either because that steel is ill made or of unsuitable composition, or because of the caprices of corrosion, yet in other tests tube steel should resist corrosion as well or better than wrought iron.

If the latter proves true, then has such a degree of skill in manufacture and inspection been reached that in each lot of 100 or 1000 or 10,000 steel tubes delivered there need be no single tube which shall corrode or pit materially more than the worst tube in a like lot of wrought iron tubes. Is steel as trustworthy as iron?

To these questions this paper seeks an answer from the evidence at hand, in view of the existing distrust of steel, indeed, the general belief that steel is intrinsically and incurably far more corrodible than wrought iron. Where we touch on other questions we do it to throw light on these.

The day has gone by when this society can hear with patience that, because some steel of unknown source has misbehaved, therefore steel cannot be so made as to behave well. The serious study and great efforts made in the last decade to fit steel tubing to resist corrosion are not to be ignored. To ridicule them would be ridiculous. Have they or have they not yielded regularly a steel which resists corrosion substantially as well as wrought iron?

What we have to say is based in part on investigations which we have made on behalf of the National Tube Company, and in part on our independent inquiries along lines which suggested themselves to us while we were making those investigations. As we understand, that company is interested in overcoming what it believes to be the existing prejudice against steel tubes. Our inquiry relates only to uncoated tubes. It does not concern itself with the relative merits of steel and iron for conduits, the life of which depends upon the integrity of their coating.

### Prima Facie Considerations.

There is no reason why steel ought to corrode worse than wrought iron, at least no reason strong enough to call for unusually convincing evidence. The most marked constant difference between them, the presence of cinder in iron and its absence from steel, creates no such reason. In that the particles of cinder themselves resist corrosion they protect the metal beneath. But their distribution is such that this protective effect may be equaled or even outweighed by their opposite effect of hastening corrosion by difference of potential. To increase this

* Advance extracts from a report to be published in full in Vol. VIII of the *Proceedings* of the American Society for Testing Materials. An abstract of a paper preliminary to the report, read at the eleventh annual meeting of the society, was published in *The Iron Age* of July 2, 1908, page 29.

mechanical protection by increasing the quantity of cinder should hardly be practicable, at least in case of tubes which need strength, because this would weaken the metal tangentially—*i. e.*, transversely. In cases in which strength may profitably be sacrificed to gain incorrodibility, it may perhaps be practicable to make use of this principle. This might perhaps apply to the metal for certain tanks. The evidence, which is presented and discussed in detail in an appendix, may be summarized as follows:

**Tests Favorable and Unfavorable to Steel.**

Steel corrodes and pits less than wrought iron in our own tests: A, lasting seven months, on 12 pieces of steel skelp in competition with 10 pieces of wrought iron skelp from the best makers, in hot aerated salt water, a medium previously found extremely unfavorable to steel; D, in Principal T. N. Thomson's tests on three steel and three iron tubes for about a year in hot water under service conditions; E and H, on simultaneous exposure of many steel and iron pipes to sulphuric acid coal mine water; J, in the actual use of 11 steel and 8 iron tubes in railroad interlocking and signal service; K, in certain locomotive boiler service, and N, in tests in which 16 pieces of wrought iron and steel tubing were buried in dampened ashes for 16 months. In cases E, H, J and K the tests were carried to destruction.

Cases K and L, trials in locomotive and in stationary boiler tubing, tended to show that there was no material difference between steel and iron. Case O, a 26-month test in the Gayley blast drying coil at the Isabella Furnaces, showed no difference between steel and iron, both of which had scaled uniformly.

Five cases—C, F, G, I and Q—are more or less unfavorable to steel. Of these, C and Q relate not to modern steel, but to that of 1897 or earlier, and Q, indeed, reports a condition of affairs wholly exceptional; while the evidence under I is obscure if not self-contradictory, and is not shown to apply to modern steel tubing. In case F, the only one of those unfavorable to steel which is known to apply to modern steel tubing on simultaneous exposure pushed to destruction, to sulphuric acid mine water, the average life of three steel tubes was 11 per cent. less than that of three iron ones in series with them, and the life of the shortest lived steel tube was 14 per cent. less than that of the shortest lived iron tube.

This is all the evidence we have found and received permission to cite, though we have asked manufacturers prominently and financially interested in showing that steel is worse than iron to give the addresses of those who could give us evidence. None of that which we have found but have not yet received permission to cite is unfavorable to steel.

To sum this up, tube steel has corroded less than wrought iron in seven distinct sets of tests by seven different sets of observers in seven different places. In three other sets steel and iron behaved substantially alike. Eight of these ten sets were under conditions of service, and in six of them corrosion was pushed to destruction. In five cases steel corroded worse than wrought iron, but in the only one of these in which the steel tube is known to be modern the difference was moderate. Further in our own tests, B, steel tubing of 1906 pits very much less than that of 1897 from the same makers. The fact that steel has behaved as well and often better than wrought iron in so large a number of tests seems to us cogent evidence that steel is not intrinsically materially more corrodible than wrought iron. The fact that in one set, F, modern tube steel has corroded a little worse than wrought iron does not conflict with this inference in the least.

**The Popular Opinion of Steel.**

Opposed to this evidence there is a very widespread and deep distrust of steel tubing; indeed, a belief that it habitually pits deeply, and that wrought iron corrodes uniformly, a belief contradicted by the evidence presented in the accompanying exhibits. This distrust, so far as we know, is not based on any direct competitive tests between materials known to be good modern steel and wrought iron, respectively. Note that we restrict ourselves to known good modern tube steel, made specially to resist corrosion. Instead, this distrust seems to rest on the results of practical experience. Most of this experience cannot have been with good modern steel tubing, but must have been with the older tubing which preceded it. Now the present survival of this distrust in spite of the apparent great improvements in making tube steel resistant, and in spite of the evidence that it does resist as well as iron, need not surprise us in the least. Such a survival is always easy. It is especially easy under the unusual conditions of this case—namely, that the user has not been able to tell steel from iron by his own observation, and that in a large proportion of cases tubing sold as wrought iron has actually been steel, as shown under J and T in the appendix.

We believe we are right in saying that of the three great classes of users—architects, civil engineers and plumbers—the last only have in general attempted to learn by direct personal observation whether a given tube is steel or iron. This the plumber has thought that he could do with certainty by the threading test. But the evidence under S shows that this test, at least in most hands, is useless. It is beside the mark to say that he could have distinguished steel from iron by the etching test, because, as we understand, this test has not in fact been used to any important extent. With the best intentions steel and iron carried in stock are likely to get mixed up, unless special precautions are taken to keep them separate. The fact that neither dealer nor user could tell them apart has removed one usual motive for preventing errors.

**The Popular Prejudice Unjust.**

This actual ignorance of users as to whether any given lot of pipe is steel or iron seems to us of value, not, of course, in showing whether steel or iron is the better, but in interpreting the existing distrust of tube steel in the face of direct cogent evidence tending strongly to show that this distrust is unjust.

No matter how strong we may think the presumption created against tube steel by the very existence of the present distrust, no matter how heavy the burden of proof that we may demand of the defenders of steel, we have no right to shut our eyes to the evidence. Nobody has a right to say either that defects which may in the past have lessened tube steel's resistance cannot be cured by skill and care, or, except on valid evidence, that they have not been cured.

The theory that steel is intrinsically and incurably more corrodible than wrought iron is contradicted flatly by the evidence above. It therefore must be abandoned, unless resuscitated by correspondingly direct, convincing and abundant counter evidence, clearly relating to well made modern tube steel. Nobody doubts that ill made steel may misbehave. The distrust of steel may be nothing but a survival from a day when it was justified, or it may be only an unjustified inference that because some steel corrodes badly all must. The distrust can be explained away; the evidence cannot. Therefore the evidence and its implications must stand until refuted.

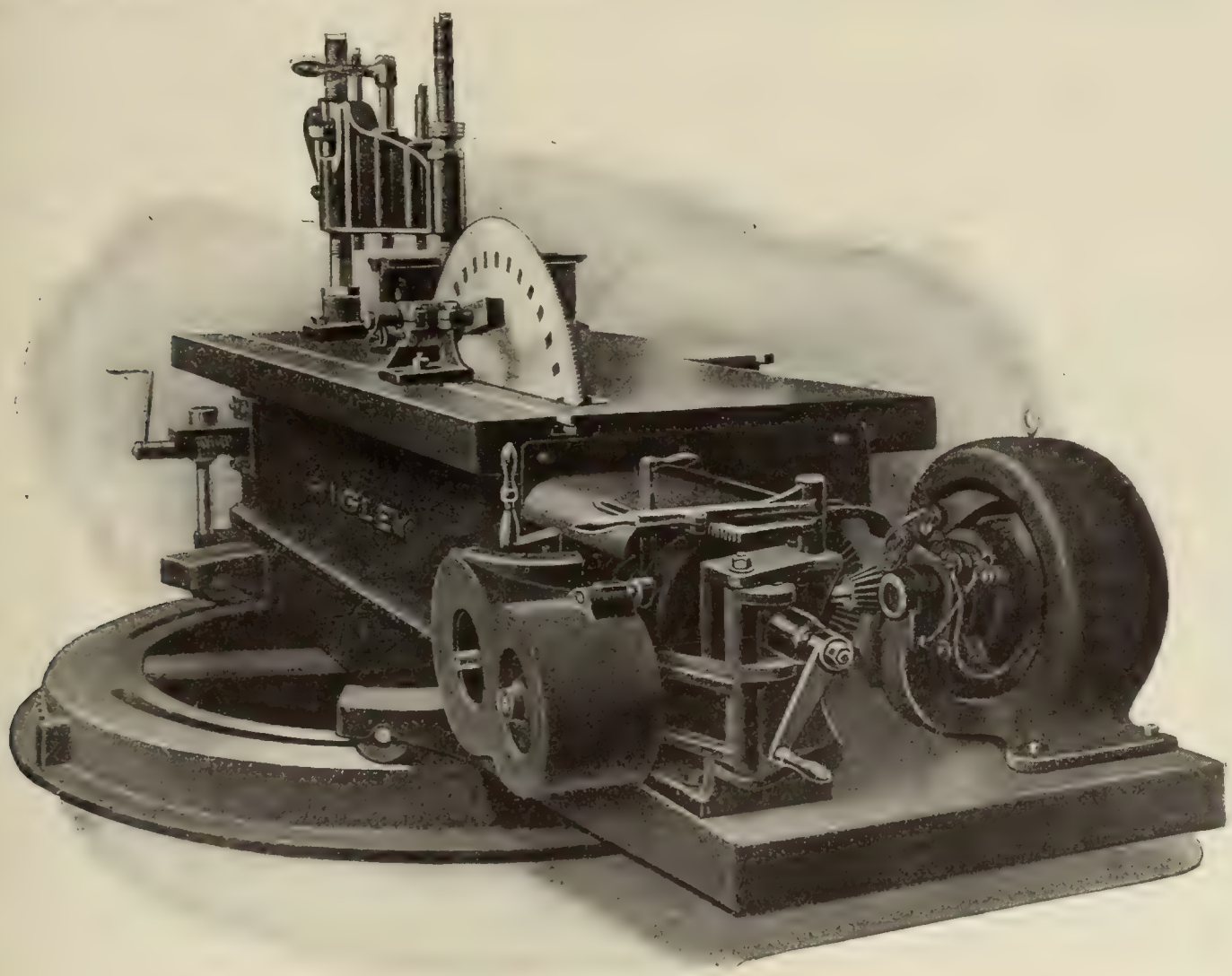
**Present-Day Steel Tubing More Reliable.**

Our second question now arises: "Have manufacture and inspection been so perfected that, reproducing continuously the conditions which have made so much of the steel of our present evidence as incorrodible as wrought iron, they may deliver only steel of like incorrodibility?" That they will be so perfected some day we can hardly doubt; but have they been already? To prove this so that the community can rely confidently on it needs more evidence, especially of cases in which corrosion is pushed to destruction. We understand that such evidence is accumulating rapidly. But though not proved, it is made easily credible, indeed, to our minds, on the whole probable, (1) by the very fair degree of harmony among the large number of tests of modern steel reported, and (2) by the fact that out of the 22 pieces of modern steel tubing represented in cases A, D and E, not a single one shows any abnormal pitting nor behaves materially worse than the worst of its iron competitors, of which those in test A, at least, were from the best makers. This probability is somewhat strengthened by the many cases summarized under P.

## A New Higley Cold Saw.

A new feed mechanism for the table type saw, built by the Higley Machine Company, 91 Liberty street, New York city, has recently been developed, the general arrangement of which is shown in the accompanying engraving. The principle is the same as the friction feed used in the machines originally built for the Cambria Steel Company, and consists of two friction disks having ample bearing surfaces and which are held together by a powerful spring, the tension of which can be regulated to suit the rate of feed desired.

The action of this feed is entirely automatic, and is controlled by the resistance of the cut. When properly adjusted the saw will relieve itself, instead of being forced ahead at a speed injurious to the blade. In connection with these friction feed disks a set of slip gears is used, by which the maximum feed can be set at ½, 1, or 1½ in. per min. The gear box is self-contained, and the changes are made by the handle, shown on top of the graduated scale. This combination of the friction disks and change gears gives a range of automatic feeds from 0 to 1½ per min.



A Revolving Table Type Cold Saw Built by the Higley Machine Company, New York.

The illustration shows the table type saw when mounted on a turn table. The machine is revolved by hand, and may be clamped in any position in an arc of 90 deg.

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At the close of the International Congress for the Protection of Industrial Property at Stockholm last week Edward B. Moore, United States Patent Commissioner, said that several changes in patent laws will be presented to the official Congress in Washington next year, when the delegates will have full power. He added: "It is probable that several nations will endeavor to make conventions with China, Japan and the countries of South America, under the terms of which they will receive the same consideration as is now extended them in America by the treaties recently ratified which attracted so much attention at the congress. The American laws, especially those relative to patents on inventions, seem more satisfactory and far-reaching than those of any other country, and doubtless the other countries will modify their laws so as to conform to the American regulations."

## Coal Briquetting in 1907.

The coal briquetting industry should make rapid progress in this country during the next few years, according to E. W. Parker of the United States Geological Survey. Although the production in the United States in 1907—63,153 net tons, having a value at the plants of $244,942—seems insignificant when compared with the output of briquetting plants in Germany in 1906—about 16,000,000 net tons—it is of great importance as indicating that a beginning has been made and that consumers are being gradually educated in the advantages of briquets for efficiency, ease of handling and cleanliness.

Ten plants were in operation in 1907, although one of these, at Pittsburg Landing, Cal., was burned in July and up to the close of the year had not been rebuilt. The location of the plants and the character of the fuel and binder used in the operations are reported by Mr. Parker in a paper just published by the Survey as an advance chapter from "Mineral Resources of the United States, Calendar Year 1907."

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The following bids were opened at Washington September 1 for 10 torpedo boat destroyers and three colliers, the bids on the former being for the hull and machinery only: Bath Iron Works, two vessels, at $644,000 each; the New York Shipbuilding Company of Camden, N. J., two vessels at $665,000 each; William Cramp & Sons of Philadelphia, two vessels, at $669,000 each; the Maryland Steel Company, two vessels at $708,300 each, and three vessels at $703,600 each; and the Newport News Shipbuilding & Dry Dock Company, two vessels, at $620,000 each. The specifications call for 29½ knots speed. Several firms submitted special bids for boats of higher speed. For the colliers, William Cramp & Sons offer three vessels of 7,620 tons for $525,000 each; the New York Shipbuilding Company, three vessels of 7,200 tons at $570,000 each; the Newport News Company, three vessels of 7,200 tons, at $524,000 each; the Maryland Steel Company, three vessels of 7,200 tons, at $479,600 each, under Class 1, and at $498,600 each under Class 2.

# Furnaces for the Enameling Industry.

BY JOSEPH VOLLKOMMER,*

Enamel consists of a mixture of silica and alkalies so proportioned that the various substances will, at a certain temperature, fuse into an opaque glaze. Without this process of smelting there can be no enamel; therefore, furnaces are the vital feature of every enameling plant. Aside from experiments carried on with electric glass and enamel furnaces, there are two types of smelting furnaces in use, and each kind is serviceable in its way.

### Crucibles for Watch Dial Enamels.

Where small quantities of high grade enamels are wanted, such as are used for watch dials, jewelry, &c., the crucible or pot furnace has its advantages, also for experimental work. It takes less time and fuel to smelt a heat in a properly constructed crucible furnace; on the other hand, only a comparatively small quantity of enamel is obtained per heat. Crucible furnaces can be operated either singly or arranged in groups of nine pots or more. They are charged from above and the smelted enamel is poured off underneath by removing the clay prop covering the small hole in the bottom of the pot.

Formerly crucible furnaces were much used for the manufacture of colored enamels. At present enamel colors are mostly added to the mill and ground with the enamel or glaze; therefore this type of furnace is not so much seen any more in enameling plants.

### Tank Furnaces for Large Quantities of Enamels.

Tank furnaces are needed wherever large quantities of enamels of the same kind are required. Their construction resembles that of the glass tanks. The receptacle for the enamel is a large square or rectangular basin formed of tiles and slabs of refractories, with a bottom sloped so that the liquid contents of the tank will drain to the lowest point where the enamel runs through a spout to the outside into suitable receptacles. To obtain uniform and satisfactory results it is necessary to have a well constructed furnace, well adapted to the kind of fuel that is supposed to be used.

Furnaces with direct coal fire should have fireboxes with a large grate area requiring only low draft pressure, so as not to tear ashes along. They should be so built that the flame will fully develop before passing over the smelting tank. To prevent contamination of the enamel by cinder and other impurities, the tank should be rather short with a sufficiently high roof, so as not to force the flame into the tank. The flame should be clear and have a fairly straight current, strong enough to carry, without reverberating, any impurities over the tank into the stack. The openings leading to the stack can be rather large to prevent choking of the draft. Coal containing a high percentage of sulphur is unfit for use, as sulphur is very detrimental to enamels, causing blisters and other defects.

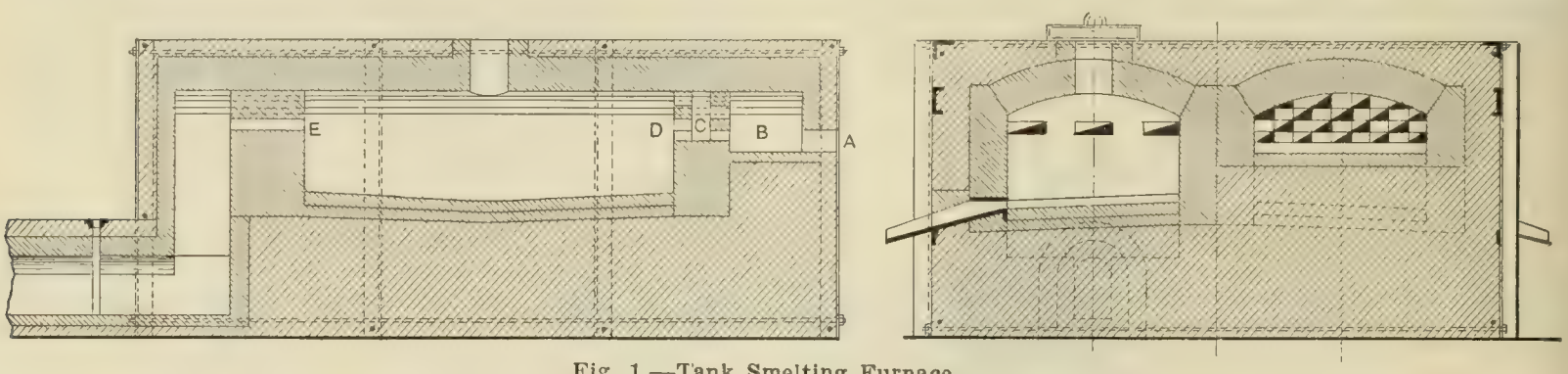



Fig. 1.—Tank Smelting Furnace.

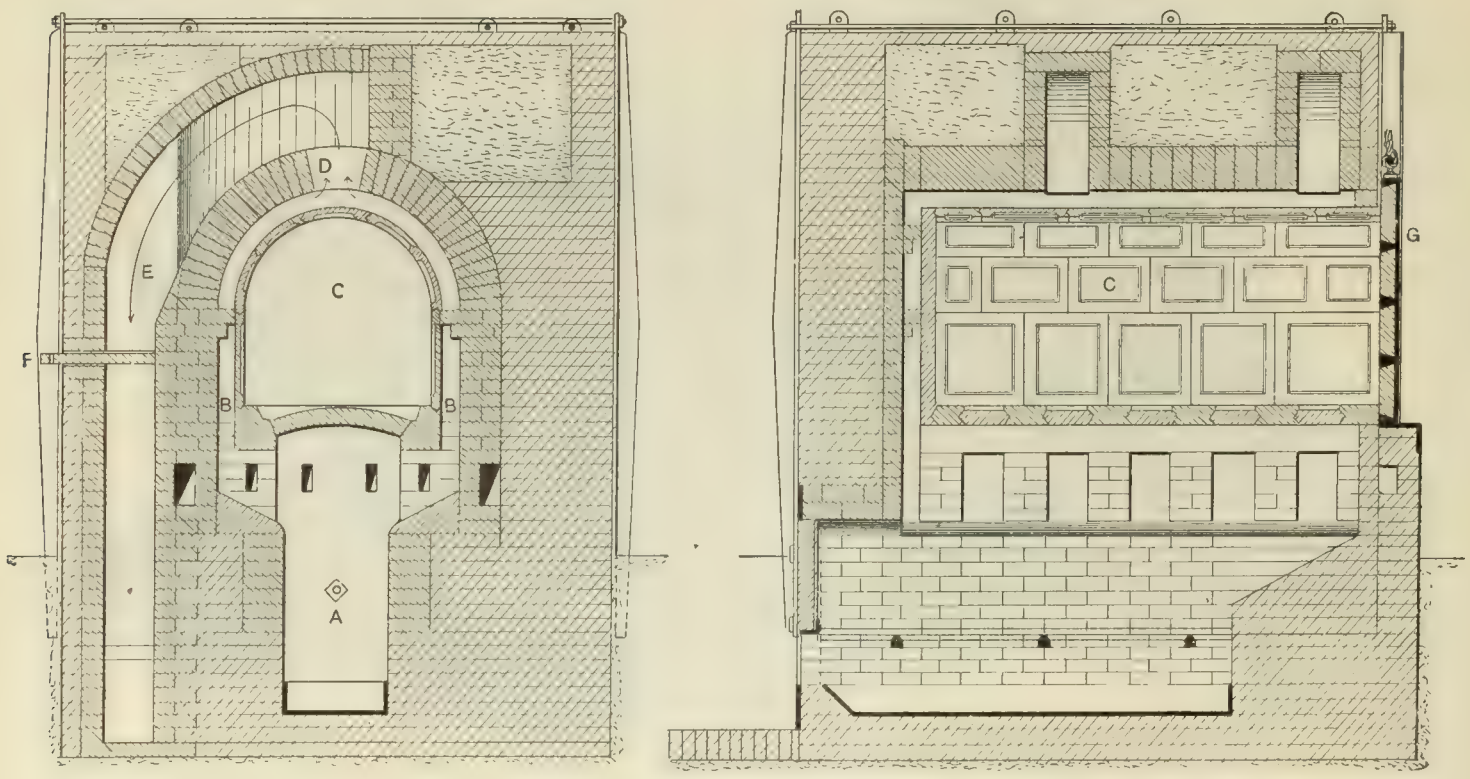



Fig. 2.—Sections Through Muffle Furnace.

FURNACES USED IN THE ENAMELING INDUSTRY.

### Fuels for the Smelting.

Smelters heated by producer gas have the advantage of a greater and more uniform heat, developing a clear flame that carries less impurities. As a consequence, it takes less time to make a smelt and a better grade of enamel is obtained. Natural gas is an ideal fuel for enameling purposes, but, of course, limited to certain localities.

Furnaces with crude oil as fuel require either a special combustion chamber or a very high bridge wall, so as to prevent the burners from spraying particles of oil or carbon into the tank, and thereby affecting the color of the enamel.

### Construction of the Tank Furnaces.

To economize in space, cost of construction and fuel, tank furnaces are frequently built in pairs, with tanks side by side as illustrated in Fig. 1. This double smelter was designed for natural gas. Gas and air enter at point A, both unite and ignite in the combustion chamber B, pass through baffle bricks or checker work C, at which

* Vollkommer & Co., Pittsburgh.

point the fully developed flame enters tank D, spreading over it and smelting its contents. The flame leaves the tank through outlets E to the flue connections.

An arrangement of double smelters so constructed that the off gases of the first tank will smelt the contents of the second, may appear to be at first glance a great saving in fuel, yet it is not advisable, as the flame will always carry some of the contents of the first tank into the second, and thus contaminate the contents of the latter. Another disadvantage is that in cases of repairs both tanks have to remain idle.

Should a continuous demand for enamel warrant it, smelters can be built either with regenerative or recuperative devices, which while somewhat expensive will permit a better utilization of waste heat.

### Muffle Furnaces.

The enamel is burnt or fused to the metal in muffle furnaces, so called from the retort or muffle which serves as a receptacle for the ware to be enameled. The muffle is supposed to protect the ware from direct contact with the flames and impurities carried by them, such as ashes and cinders. It must be so constructed that it will absorb the furnace heat and radiate it toward the inside uniformly at an even temperature, sufficient to fuse the enamel on the steel ware and to give the glossy porcelain-like appearance we are familiar with. This object is easily obtained by small muffles of retort shape made in one piece.

With large furnaces, however, the proper design and construction of muffles is a very serious problem, since they have to be built in sections out of special tiles. Owing to the action of heat, these muffle tiles will expand and contract, abrase at the joints and finally crack and chip, and thus permit an entrance of the flames.

The general arrangement of muffle furnaces is shown in Fig. 2. The fuel (in this particular case oil or natural gas) enters the combustion chamber at point A. The ignited gases travel through the opening B around both sides and back of the muffle C, uniting at the top. The two openings D connect with the flue E. The current of the flame is regulated by a damper F.

This muffle is closed by means of a door G, which is lined with fire brick and slides on guides. To overcome the weight of this door balance weights, either on levers or operated by means of sheaves with wire ropes, are used. For large muffles air hoists are preferable, provided compressed air is obtainable. The charging apparatus in such cases is also operated by means of compressed air.

Fig. 3 shows twin muffle furnaces, as frequently built in Germany. The gas producer is arranged behind the muffle and does not present any unusual features. A valve V regulates the quantity of gas admitted into each side of the furnace; two other valves—V 1—located in front at the side of the furnace admit the air which passes through one regenerative chamber G, while the off gases pass through the other chamber; thus the two muffles are heated and used alternately.

As soon as one muffle has the proper temperature for burning the ware by means of the absorbed heat the valves are reversed and the second muffle gets the benefit of the flame, while the burnt ware from the first one is removed and the muffle charged again.

### Operation of Muffle Furnaces.

Muffle and smelting furnaces suffer through irregular production. Their construction suits them best for continuous operation. It results in a great waste of fuel to operate them intermittently or at long intervals. It takes nearly a day to bring either of these furnaces from the low temperature to a working heat, besides the sudden changes of temperature resulting from intermittent operation ruins the brick work, especially such parts as the muffle or tanks of the smelters, which will soon crack and become defective.

It is erroneous to suppose that the nature of the flame in a smelting or muffle furnace is immaterial, providing sufficient heat is obtained. Defective muffles will admit fire gases, which will frequently affect the ware to be burned, in various ways. Blisters or pin holes may occur, or the ware may lack in gloss or be discolored. Such phenomena are in many cases not caused by the enamel or impurities carried by the flame, but are the result of imperfect combustion owing to lack of oxygen.

If in such cases the combustion gases had contained a slight excess of oxygen, such defects might not have occurred. Reducing flames or flames lacking oxygen will absorb oxygen from the chemicals, especially the metallic oxides, of which the enamel consists. White enamel, for instance, exposed to reducing flames, provided same contains oxide of lead, will discolor and even turn dark gray or black. Enamels containing oxide of iron will have a greenish tint in place of being brown; such containing oxide of copper in place of green may turn reddish or brown in a reducing flame. Therefore, especially in muffle furnaces, the fire gases should be neutral or even contain a slight excess of oxygen.

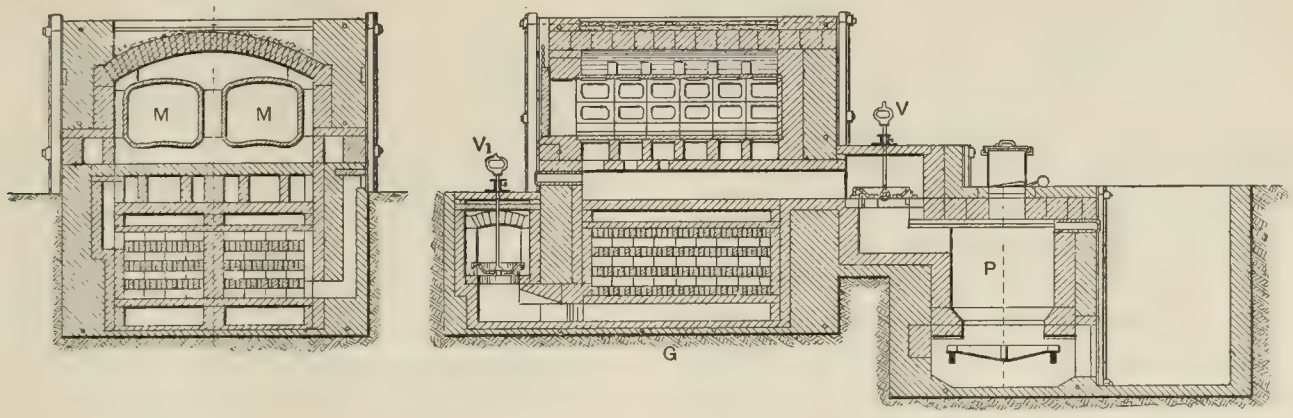



Fig. 3.—Twin Muffle Furnace with Gas Producer.

**The Alabama Coal Strike Ended.**—An order calling off the strike of coal miners in the Birmingham, Ala., district was issued by President Lewis of the United Mine Workers of America at the beginning of this week. The strike began July 6 and has been marked by much violence, including the firing by strikers upon a train carrying nonunion men and representatives of mining companies. Several men were killed in this and other encounters. For four years the leading iron and steel producers in the Birmingham District having their own coal mines have operated them independently of the union. The defeat of the union in the late strike means that practically all the coal mines in the district will be nonunion.

The International Harvester Company, Chicago, has formed an employees' benefit association. The plan provides that every employee who contributes 2 per cent. of his wages to the fund will receive benefit. The family of a man killed in an accident, either on or off duty, is to receive two years' wages. For the loss of both eyes or loss of both hands or feet the victim receives two years' wages. Retirement is optional at 65 years of age and compulsory at 70. The service dates from the employment in any of the corporations whose business has been purchased by the International Harvester Company. As an inducement to employees to join the association the Harvester company will contribute $25,000 to the fund if 50 per cent. of the employees join, and $50,000 if 75 per cent. become members. Membership is voluntary, and in joining employees do not waive any legal rights against the company in case of accident.

# THE IRON AGE

Established in 1855.

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## The American Answer to the British Patent Act.

The past week is made noteworthy by the expiration on August 28 of the year of grace granted foreign patentees by the British act for the revocation of patents if within a reasonable time manufacture under them is not carried on in Great Britain. This does not mean that revocations necessarily become effective at once. Applications for such revocation may now be made and the order may be carried out forthwith; but again, its enforcement may be delayed for a "reasonable interval," and later, on the giving of "satisfactory reasons" for nonmanufacture in Great Britain, there may be a further extension for not more than 12 months. The avowed purpose of the act being to prevent the importation of patented articles manufactured in other countries, and to compel their manufacture in Great Britain, no hopes need be built on a friendly attitude of the British patent courts. Enough has been disclosed in the preliminary sounding of sentiment in England on behalf of American interests to show that the language and procedure of diplomacy will not be heavily drawn upon in carrying out the new statute. Judging from some published comments in Great Britain, the case was simply that the time had come to levy some sort of tribute on the too successful German and American competitors of the British manufacturer. The fact need not be veiled, moreover, that modern international competition is commercial war.

Little remains for discussion after the able analysis of the situation presented by John D. Morgan, of the New York Patent Bar, in our issue of August 20. It is important, however, that manufacturers express themselves on the question as it comes before Congress at its next session. While German holders of patents in Great Britain are equally affected, American manufacturers find a degree of summariness in the new law, since this is now the only country out of the three in which a foreign patentee may enjoy protection without "working" his patent. As Mr. Morgan says:

> The German law lays the requirement of "working" a patent upon both native and foreign inventors alike. The new English statute puts it upon foreign inventors only. The United States has left immune from such a requirement both native and foreign inventors

The new British act changes materially the conditions that have been maintained for years under the well understood patent policies of the leading industrial nations. The arrangements already made for the building of works in England by German and American interests give some indication of the possible disturbance of international trade. Now comes the question, which American manufacturers will mainly decide, what action shall be taken at Washington in the amendment of our patent laws. A general law, like that of Germany, requiring the working of all patents, is one alternative. As pointed out in an editorial in *The Iron Age* of March 5, 1908, such a law would be opposed by a good many interests which have taken out or purchased patents and locked them up, making no use of them, while they prevent their use by others. Another possible course is to leave undisturbed the situation at home, and require the working of patents taken out by foreigners. This would be following substantially the policy which according to British estimates will add tens of millions of outside capital to manufacturing investments in that country. Manufacturers would do well, either individually or through their various associations, to give their Senators and Representatives their views on these proposals.

British patentees, to be sure, have far less at stake in the United States than have American patentees in Great Britain, but the continuance of the present policy in this country may now more appropriately be classified as benevolence than enlightened regard for home interests.

## Traffic Contracts with Industries Under the Hepburn Law.

The traffic officials of many important railroads have taken the position, on the advice of their counsel, that the Hepburn law does not permit them to enter into contracts with industries for the purpose of fixing freight rates for any definite period of time. This interpretation of the law has proved embarrassing to many prospective industries and investments of capital. In one typical case a group of business men have been considering plans for establishing an industry that would ship a very large amount of freight and give employment to a large force of men, but owing to the uncertainty regarding rates there are grave doubts whether the enterprise will be established. Until recently the railroads have been free to fix by contract for a term of years the rate that would be charged, and such a contract would safeguard the investment, but recent decisions of the United States Courts have thrown doubt on the legality of traffic contracts.

The carriers are even unwilling to make freight contracts for a short period, to cover shipments of materials for bridges, irrigation works and other enterprises on which deliveries extend over a few months or a year. Steel and other materials are usually contracted at a delivered price for important construction work, even the railroads themselves making a practice of buying their materials delivered at some point on their own rails. The margin of profit is usually small on these contracts, and in many cases that could be cited an advance in freight charges has caused a loss to the shipper. Enterprises and construction work that would employ scores of thousands of men are held in abeyance on account of uncertainties regarding rates, at a time when the policy of the government should promote employment and the general progress of the country.

It may be that counsel for the railroads have taken too critical a view of their rights under the law. There is nothing in the Hepburn law or any of the interstate commerce acts that expressly forbids a contract relation between the carrier and the shipper. The United States Supreme Court has said with considerable emphasis that the law was intended to promote trade, not to restrain it, and where a contract will create new traffic and employment for the people by safeguarding an investment

of capital, with no possible injury to the public, it would seem as though nothing short of an emphatic prohibition by Congress could make such a contract illegal.

The leading rate case that has been decided by the Supreme Court was the packing house case, already reviewed in *The Iron Age*. In that case the packers at Kansas City made a contract with the Burlington Railroad for a few months, and it was stipulated that the rate from the Mississippi River to New York should be 23 cents. The Eastern lines raised the rate to 35 cents, but the Burlington protected the contract, and this road and the packing houses interested were fined because the contract was a "device" within the meaning of the Elkins act to transport the property at less than the legal, published rate. The majority opinion of the Supreme Court was apparently based on the assumption that a railroad has the right at any time, regardless of contracts, to advance a rate by complying with the provisions of the law which regulate the filing of tariffs with the Interstate Commerce Commission. According to this decision, it is not a crime to break a contract, but it is a criminal act for both the carrier and the shipper, if property is carried at less than the regular tariff rate.

This case, however, might have taken an entirely different course if the shippers, instead of relying upon a private settlement with the railroad, had publicly applied to a Federal court for an injunction to restrain the carriers interested from breaking a contract by filing a higher rate. Unfortunately, there has been no action of this kind since the Hepburn law went into effect. In several cases the Federal courts have issued injunctions, on the petitions of shippers, to hold new tariffs in abeyance until the Interstate Commerce Commission could determine whether they were "reasonable," but no contract rights were involved in these cases. The State courts have been very strict in enforcing traffic contracts with industries, in local or State traffic which is under their jurisdiction, and they have not expended any judicial energy in determining whether the rate was "reasonable" if the contract was regular from a legal and business standpoint.

The proposition that a railroad cannot make a contract with a shipper to fix its charges for a definite period of time will lead to grave consequences if it is recognized by the courts. The shock to the fundamental principles of commerce would scarcely be greater if the railroad could order locomotives or rails for future delivery, and then, when the time for payment arrived, decide that it would pay a different or less price than that which the manufacturer had before him at the time he accepted the order. The railroad, in its relations with the shipper, would become an irresponsible corporation, subject only to the feeble and overworked powers of a commission to determine whether rates were "reasonable." Men who contemplate investing their capital in any enterprise want their cost of doing business to be determined by something more definite than the imperial grace of the government. After having invested their capital in an industrial corporation they do not want to be at the mercy of another corporation which may take whatever share it elects of their profits, with no recourse for the owners of the industry excepting to abandon their plant and move within the sphere of influence of some other corporation, where the same experience might be repeated.

A freight tariff is the voluntary act of a corporation, filed with the Interstate Commerce Commission by an agent who holds a power of attorney of the corporation. The law does not limit the powers of the carrier in the act of initiating a rate, any more than it limits the owner of a blast furnace in making a price on his product, excepting that if the shipper who has to pay the charges files a complaint the Interstate Commerce Commission then has the power to fix a reasonable rate. The making of the tariff is left entirely to the carrier, and scarcely one tariff in a thousand is afterward challenged by proceedings before the commission. To prevent manipulation of rates by "midnight" tariffs, the Hepburn law requires that an existing rate must not be changed until the public has been given 30 days' notice, but it does not limit the life of a rate after it has become effective. If the rate which the carrier has voluntarily made is reasonable no existing tribunal can change it. All business corporations are free to regulate their voluntary acts by contracts, for long periods of years, and it would infringe upon his fundamental rights if the shipper is forbidden by law to protect himself in the cost of transportation. It may be that the only means of enforcing a traffic contract would be through a court of equity, but this is the only practicable remedy to defend many other property rights.

## Weakness in the French Accident Insurance Law.

The French experiment in insurance of workmen against accident has developed unforeseen conditions. The percentage of accidents serious enough to keep men away from their work has increased materially and steadily since the establishment of the law in 1899. The progression in the number of minor accidents is intensified by the constant increase in the average duration of temporary unfitness for work following an accident, and consequently in the average compensation due the workmen. The employer bears the burden of this insurance, and insurance rates must necessarily increase with the degree of risk. Moreover, the burden of surgeons and physicians' bills falls directly upon the work's owners. The result is a formidable one, figuring actively in cost of production.

Exact data are available as to the working of the law. The Building and Public Works Department states that the number of cases of temporary unfitness for work per 1,000,000 francs of wages insured has risen from 74.6 in 1899 to 145.4 in 1906. The Iron & Steel Works Guarantee Syndicate shows that the number increased 21.53 per cent. between 1905 and 1906, while the increase from 1900 to 1906 has been 51.93 per cent., indicating that the evil is a rapidly growing one. As to the duration of disability one guarantee syndicate points out that the average period of unfitness entailed by accident was 17.02 days in 1899 and 23 days in 1907, an increase equal to over 35 per cent. Since the enforcement of the law of March, 1905, providing for the payment of half wages during a certain period following an accident, the number of accidents resulting in incapacity for work during 5 to less than 11 days has gradually decreased, the tendency on the part of the men being to increase unduly their absence from work, to cover the necessary period to bring them under the half-pay clause.

Contributing largely to this condition is the right given the men to elect their own doctors in case of accident—a privilege proper enough in theory, but which under its growing abuse places employers at the mercy of a certain class of medical practitioners usually lacking both conscience and skill. These men, who are the French types of a class of American physician who works with the "ambulance chasing" lawyers, conduct a regular system

of enlistment of workmen. Professional calls on the injured are multiplied, as are also the dressing of wounds, massages, treatment with X-rays, &c., in order to pad their fees to the extreme limit. The employers, who must pay the bills, are practically helpless, for litigation under the French laws is expensive, and in these cases the establishment of the employer's contention is difficult. Medical expense attending the insurance system has increased in seven years by 283 per cent. It is stated that several such physicians residing in Paris, men who were obscure and without hope of more than ordinary success in the legitimate practice of their profession, are now earning $10,000 a year in this manner. In the iron and steel trades cases of partial but permanent disability have increased by 87.89 per cent. from 1900 to 1906, and in the same period in the building trades and public works they have increased 252 per cent.

Strongly inherent in a certain large class of men is a willingness and even eagerness to take advantage of invested capital. They consider it no wrong to obtain more than their due from those who employ them. This element in human nature should be taken into account in the framing of laws. In the French case the weakness is now well demonstrated, and is worth remembering by those in this country who are urging measures along generally similar lines. In reality, the employers do not bear all the additional burden resulting from fraudulent practices under the accident insurance laws of France. Either the public pays more in consequence, or other items of cost are reduced, and the natural saving would be in wages. What may be termed the employes' involuntary contribution to the maintenance of the insurance may in some cases be increased to an extent corresponding to the amount of fraud.

## A Blow to Usurious Loans to Workmen.

The hardest blow that has been dealt to the practice of loaning money with assignment of wages as security is that embodied in a recently enacted Massachusetts law which provides that no assignment of wages shall be valid unless approved by the borrower's employer, and, if the borrower is married, by his wife as well. It is believed that this act will practically put a stop to an evil which has been serious. Workmen have placed themselves in the hands of usurers, rates of interest being so high that it has often been impossible to make any impression on the principal, which may increase indefinitely. Employers have been seriously annoyed by the practice, for in spite of posted announcements that an assignment shall be considered as satisfactory cause for dismissal, employes have persisted in taking the chance, expecting to meet the obligation before it becomes necessary for the lender to present the assignment to the employer. In Massachusetts this practice was given almost a quietus by compelling the recording of assignments in order to make them binding; but other States have not gone that far. The greatest protection of all lies in the necessary co-operation of the employer in order to make an assignment valid. If he sees that the loan is necessary he may permit it, with the consent of the wife of the borrower. But it is safe to say that such cases will be rare. Probably an advance in wages would be fully as likely an outcome of the employe's application at the office. The protection to the workman's family is also a very good thing, in that it may curb extravagance and extreme improvidence. Money lenders of the stamp who advertise extensively that they loan money without security will be seriously handicapped in their operations under the law. It is already strongly apparent that Massachusetts has been rid of the greater number of the class, and that the cities of adjacent States have increased their quota of usurers proportionately.

# CORRESPONDENCE.

### The Ballentine Method for Determining Hardness.

*To the Editor:* I have just read the account on the first page *et seq.* of your current issue of "Shore's Scleroscope," and think it would be interesting to your readers if you should describe the Ballentine method and apparatus for determining hardness of materials, if you have not already done so. This apparatus has been in use for a year or more. It consists of a guiding tube incasing a drop hammer, which is held at the top of the tube by a spring latch. The lower end of the hammer is provided with a small anvil, to which is clamped a standard soft metal recording disk by means of a spring clamp. At the lower end of the tube a test pin holder is held in a guide, in which are inserted the test pins for testing the various materials. The upper end of the test pin holder is provided with an anvil the same diameter as the one on the lower end of the hammer. The thickness of the recording disks is measured with a micrometer before placing on the drop hammer. After a test has been made the thickness of the disk as left between the two recording anvils is again measured and the difference between the two dimensions represents the penetration of the recording disk, and may be used as the hardness record. For example, if a recording disk measures 0.3 in. before test and 0.156 in. after test, the penetration would be the difference, or 0.144 in., and would be known as hardness No. 144.

The foregoing description is taken mainly from a circular stating that the instrument is made by Tinius Olsen & Co., Philadelphia. ALEX. E. OUTERBRIDGE, JR.

PHILADELPHIA, PA., August 27, 1908.

### The Small Bessemer Converter.

*To the Editor:* In your editorial of July 30, under the title "The Position of the Baby Bessemer," you criticize the conclusions of the report of the American Iron and Steel Association for 1907. As the quotation from said report is not correct, inadvertently we suppose, you using the words "the growth of our steel industry," which should have been correctly "the growth of our Bessemer steel industry," your criticism is based, unfortunately, upon the erroneous quotation. Your statement that the "little pots, or baby converters," are losing ground, or that the "baby" converter is destined to remain an infant forever, is, we fear, also based upon erroneous information.

The comparison you make concerning the growth of the open hearth production is undoubtedly well founded upon facts, the increase of production being very large; but the statement of the American Iron and Steel Association being based upon the production of Bessemer steel remains correct. Yet if the "baby" converter is supposed to have made such a pitiable showing, how can it be explained that open hearth foundries have put up baby converters? The reason is simple: The open hearth occupies a field for heavy castings which it will continue to hold. When small and medium castings are needed, however, the open hearth people have felt that it would be a good idea to call on the baby converter. The use of small and medium steel castings is comparatively recent, and, like all new things, it takes time to create confidence. This, we believe, will account for the seemingly slow growth of small converters. However, at no time since their introduction in 1898 has the number of small converters retrograded; on the contrary, it has increased, and is increasing every year. Like an infant to which you liken the small converter, it takes time to grow, but infants oftentimes become great men. The small converter is in the field for a certain sphere, and, like the baby, it grows.

Believing that you are not willing to let an error pass

in your publication, which we have been reading for over twelve years, and whose value we appreciate, we are prompted to lay the above facts before you.

COLNÉ & Co.

NEW YORK, August 27, 1908.

[The omission of the word "Bessemer" in our quotation from the report of the American Iron and Steel Association does not affect the facts as presented, because the data all deal with the Bessemer steel industry except when specifically stated. We not only adhere to the opinion that the statistics of production show that the progress of the "baby" Bessemer has been very slow, but we may add that before many years we expect to see it completely overshadowed by the electric furnace in the steel foundry.—EDITOR *The Iron Age.*]

## The Protection of Steel and Iron Surfaces.

The Paint Manufacturers' Association of the United States, 3500 Grays Ferry Road, Philadelphia,, Pa., maintains a Scientific Section, of which Robert S. Perry is director and H. A. Gardner is chemist. The Consulting Board consists of Dr. Charles B. Dudley, chemist of the Pennsylvania Railroad, Altoona, Pa.; Dr. Allerton S. Cushman of the Department of Agriculture, Washington, D. C., and S. S. Voorhees, engineer of tests, office of the Supervising Architect of the Treasury Department, Washington, D. C. Mr. Gardner furnishes the following interesting statement of tests of preservative compounds now being made by the Scientific Section of the Association:

The extensive work of Dr. Allerton S. Cushman upon the causes underlying the corrosion of iron and steel surfaces gave to the scientific world a clear understanding of this subject and proved the electrolytic theory. This theory attributes the solution and subsequent oxidation of iron to a transfer of electricity between the free hydrogen ions of water and the iron ions of the steel. This electrical action is very evident in those samples of steel that contain impurities having a difference in potential to that of the iron, and is most marked in those samples of steel having an uneven distribution of such impurities.

Dr. Cushman's work upon this subject led him to investigate the possibilities of securing protection for steel surfaces by the use of certain pigments and compounds. Bichromates of the alkaline earth metals when in solution were found to give to iron surfaces perfect protection from corrosion. Even when present in extremely small quantities these salts cause the iron to assume a passivity that persists for a considerable length of time after the metal has been washed free from the salt. For obvious reasons these chemical products are unfit for use in paints, but they suggested the preparation of pigments from the chromates and their trial for this purpose. Many chrome pigments were prepared, and although some gave protection to the steel they were placed in contact with others gave a negative result and could be classed as rust stimulators.

The Scientific Section of the Paint Manufacturers' Association, following out and confirming Dr. Cushman's work, decided to give it a practical application, and secure more definite knowledge as to which pigments are safe and which are unsafe for use in the preservation of iron. For this purpose the Scientific Section proposed the erection of a fence having several hundred large steel plates upon which to try out the value of the different pigments when contained within an oil medium. The American Society for Testing Materials was notified of this project, and at a meeting of committees E and U of this association it was decided that these committees would co-operate in supervising and inspecting the work. satisfactory specifications to be prepared and adopted by these committees. Such a practical method of determining the best preservative compound for steel and iron surfaces at once appeals to the engineer, the architect, the mechanic, the painter and to every technical man who recognizes the necessity of information such as will be derived in this way.

The place selected for the test is Atlantic City, N. J., where a fence 300 ft. long will be erected within a short distance from the shore. The fence will have ample accommodation for 300 steel plates which will rest upon girders 24 in. from the ground. The plates are to be rolled from three classes of metal—Bessemer low carbon steel, open hearth structural steel and pure ingot iron. The plates are to be 24 in. wide and 36 in. high, rolled to No. 11 gauge, approximately ⅛ in. in thickness.

Four plates of each metal are to be used for each formula. Two of these plates are to be painted in the condition as received after previously scratch-brushing the surface, thus following out the ordinary methods of painting structural iron. The balance of the plates are to be pickled in sulphuric acid in order to completely remove the scale, subsequently neutralizing the sulphuric acid with lime.

The plates are to be painted under cover so as to secure equal conditions throughout the test and to prevent the weather from interfering with the work. A uniform spreading rate is to be used for the formulas, and the work will be conducted in a thoroughly systematical and practical manner by the inspectors and painters chosen for the work by the committees. A series of unpainted plates will be placed upon the fence with the painted plates, so that the rapidity of corrosion of the various metals may be watched.

Preliminary laboratory tests have been conducted by the various members of the committees and by the Scientific Section to ascertain the rust inhibitive values of the various pigments when placed in contact with steel surfaces enveloped by water. These tests and others carried along similar lines give the requisite data upon which to base the formula for the field test. Pigments of different types will be selected, those having rust stimulating properties and those having rust inhibitive values will be tried out in the same manner, ground in the same vehicle and applied to the same kind of metal. At proper times the various committees will make inspection of the fence to note the wearing qualities of the different formulas, and reports will be issued when it is deemed advisable, giving the results of the test.

**National Founders' Association.**—The annual convention of the National Founders' Association will be held at the Hotel Astor, New York City, Wednesday and Thursday, November 18 and 19. The Administrative Council will hold a meeting at the same place on Monday and Tuesday preceding.

The Union Foundry & Machine Company, Mansfield, Ohio, which has been conducting a general foundry business since 1872, the year of its inception, is about to reorganize and incorporate. The plant consists of several buildings, one being a large three-story brick, of modern construction, containing machine, cabinet and pattern shops, at the rear of which stands a brick constructed power house and blacksmith shop, with the foundry in a separate building, covering about 4000 sq. ft. of floor space. Two floor brick pattern vaults, two frame warehouses and some smaller buildings are also on the property. It is well situated in the manufacturing district of the city and fronts on one of the principal streets, and has excellent shipping facilities. N. O. Fleming, 204 East North avenue, Pittsburgh, who is in charge of the reorganization, states that the new company will, in addition to carrying on a jobbing business, manufacture a full line of iron pressure castings, grate bars, boiler castings, engines, &c. For this purpose additional equipment will be required for the foundry, and some enlargements are to be made to the plant within a short time.

The Treasury Department reports a deficit for August of $3,908,628 and for the two months of the fiscal year of $28,778,065, as against $7,455,598 to the corresponding date last year. Internal revenue receipts were $41,600,000 for the past two months, as against $45,000,000 last year, but customs receipts are unsatisfactory, showing only $43,139,000 for July and August, as against $58,552,859 last year in the same period.

## The American Well Works Turbine Pump.

A new type of pump that is attracting much attention among hydraulic engineers on account of its high efficiency under conditions favorable to its use is the turbine centrifugal. The American Well Works, Aurora, Ill., has recently brought out a two-stage type of this style of pump. The company states that an experience of 40 years in the manufacture of all kinds of pumping machinery has enabled it to form a very accurate estimate of the relative efficiencies of the different styles of pumps, and the efficiency of the turbine is not so high as the centrifugal in conditions favorable to the use of the centrifugal and therefore not so well adapted for fire protection service. The highest average efficiency yet attained in a turbine pump is about 50 per cent., while a two-stage centrifugal of the company's manufacture, operating under a 100-lb. fire protection pressure, will maintain an efficiency of 60 to 80 per cent., depending upon the size of the pump. Where water is obtained from deep wells of sufficient size to admit a turbine, and there is a high lift to the surface, however, the turbine may be installed to raise the water to the top of the ground and deliver it to a two-stage centrifugal to raise it to 100 lb. pressure, and thus obtain the most efficient pumping plant for fire protection.

To determine conditions favorable to the installation of turbine pumps the manufacturers make a comparison of the relative efficiencies of deep well pumps. The single acting cylinder which delivers the capacity of the cylinder intermittently on the up-stroke of the piston is least expensive to install, but delivers the smallest quantity of water. The double acting cylinder which delivers the full capacity of the cylinder on both the down-stroke and the up-stroke will deliver double the quantity of water raised by the single acting cylinder. This does not appear correct when one considers the greater displacement of the piston in the cylinder on the down-stroke, but the manufacturers assert that since the flow is constant, there is no water hammer in the casing and the double acting cylinder can be operated at a higher speed, and thus readily delivers double the quantity of water.

The turbine will deliver practically the capacity of the casing less the displacement of the shaft, but turbines have not been made of a diameter less than 10 in., and are therefore only adapted for wells of large diameter. Turbines now in use have a diameter of from 10 to 15 in., and deliver from 18,000 to 72,000 gallons of water per hour. A turbine will deliver more water from a deep well than any kind of a pump except the air lift, but a turbine will maintain an efficiency of 50 per cent., while the efficiency of the air lift is only from 15 to 20 per cent. The air lift, however, can be operated in a smaller borehole, and if desired several wells can be pumped with a single air compression plant, whereas a separate turbine is required for each well.

In explaining the greater efficiency of the centrifugal over the turbine in conditions in which there is not a greater lift to the intake from the surface than would be overcome by the force of gravity, and therefore adapted for the use of the centrifugal, the claim is made that in a centrifugal pump the thrust of the shaft and friction is less, resulting in higher efficiency.

In the turbine pump brought out by the American Well Works, the intake of water is around the water step or balancing chamber placed at the bottom of the lower cylinder. The diffusion vanes in both water cylinders are placed at an angle of 45 degrees, and rotate at about 1700 rev. per min. In the superstructure of the pump at the surface the main shaft passes through two sets of ball bearings, which reduce the friction to the minimum and hold the shaft in perfect alignment. Leading from the bottom of the discharge pipe, immediately above the upper runner, to the water step at the bottom is a water port, through which the pressure of the head in the discharge pipe is transmitted to the balancing chamber at the bottom, and tends to overcome the downward thrust.

By this force it is possible to lift the shaft, but in practice this perfect adjustment is not usually obtained, although the thrust is largely overcome. This, together with the perfect bearings, explains why so high efficiencies are obtained in the turbine as a deep well pump, but the greater number of bearings with the resulting greater friction show why the centrifugal has higher efficiency in pumping where the pump can be placed close to the water supply. This turbine pump may be belt driven from any convenient power, but where electric power is obtainable an electric motor can be mounted vertically on the pump head, and thus secure the most compact and economical power.

## Canada's Swelling Bounties on Iron and Steel.

TORONTO, August 31, 1908.—Last session the House of Commons ordered a return to be brought down showing the sums paid out on bounty account in the fiscal year 1907-1908, ending March 31. This week it was completed and made public. It shows that the total amount disbursed in bounties during the year was $2,787,358, divided as follows: On pig iron, $863,816; steel, $1,092,000; wire rods, $347,134; lead, $51,001; petroleum, $391,217; manila fiber entering into binder twine made in Cannda, $42,000. Iron and steel, as will be seen, came in for $2,303,140 altogether. The output of steel entitled to bounty was 661,940 tons. It is expected that the payments for the current year will aggregate a still larger sum than for last year. For one thing, the demand for iron and steel promises to be much greater.

### A Larger Total for 1908.

In the present calendar year the bounty on pig iron made from Canadian ore is $2.10 per ton, and from imported ore $1.10 per ton; on steel it is $1.65 per ton. These rates were paid throughout the whole of the last year, both calendar and fiscal, and will hold for nine months of the current fiscal year. On January 1 they decline to $1.70 on pig iron of all Canadian ore, 70 cents on pig iron of imported ore, and $1.05 on steel. Pig iron made in electric smelters will continue for the next two calendar years to draw $2.10, and for the same period steel manufactured by the electric process will earn a bounty of $1.65 a ton under the new act. Lead will be entitled to a higher bounty than it has heretofore drawn. Manila used in the manufacture of cordage generally is now eligible for bounty, whereas formerly no bounty was paid on it except when it was made up into binder twine. It appears safe to say that the total bounty payments of the current fiscal year will exceed the total of $2,787,358 for last year.

### Growing Opposition.

In the Montreal *Witness* of recent date a writer examines the bounty system in its relation to the Dominion Iron & Steel Company and strongly condemns it. The agitation against the system is continued by the organ of the Grangers' Association. Every increase in the payments adds to the unpopularity of the bounties. Since the country's prosperity has received a sharp check, voters who were heedless before are now becoming interested in what the antibounty agitators have to say. As the Dominion general elections are likely to take place in about two months the feeling against the bounties will have an early chance to express itself at the polls. The reaction in trade touches not only the private citizen, but also the Government. In the portion of the current fiscal year already gone by the imports of the country have steadily declined, and with them of course the revenue from the customs has declined. In a time of growing expenditure the questions of making both ends meet is thus made a harder one for the Government, and makes its largess on bounty account look less defensible.

In discussion of the bounty system one important effect always escapes notice—namely, its tendency to restrict competition. If the bounty rates, like the tariff rates, had been established without reference to duration, there is hardly a doubt that the country would now have more iron and steel plants than it has. But limiting them to a five-year term deterred capital from venturing into new iron and steel plants here, inasmuch as a great part of a five-year period would be taken up in building of works.

Both political parties in Canada have adopted the bounty system for the fostering of the iron and steel industry. There are indications, however, of a change of attitude on the part of the Conservatives, who are now the Opposition. In fact, when the last bounty act was past both the leader of the party and its chief financial critic in the House took the ground that the work for which the bounties were originally devised is done, and that protective duties will now serve for all industries. Only a few days ago the Toronto *Mail and Empire*, the chief organ of the Conservative party, said that to have fostered the production of pig iron and steel solely by high customs duties would have been to oppress industries using iron and steel, and of course blast furnaces and steel plants could not prosper if the industries to which they were to supply raw material were not able to do business. Now that the country has efficient blast furnaces and steel plants, the Conservative organ would favor the substitution of additional customs duty for the bounty. As the Liberal party is in principle opposed to such aids, though in practice committed to them, a strong public sentiment adverse to the bounties could make the present period their last. C. A. C. J.

## OBITUARY.

WILLIAM WEIHE, who was president of the Amalgamated Association of Iron, Steel and Tin Workers at the time of the Homestead strike in 1892, died at Pittsburgh August 24. In recent years he had been a member of the Board of Inquiry of the Bureau of Immigration at Ellis Island, N. Y.

EAGLETON HANSON, secretary of the Trenton Iron Company, Trenton, N. J., died August 27, 1908, aged 66 years. He was born in Bradford, Yorkshire, England, and in 1863 came to the United States, working for several years in the Eagleton Wire Works, New York, owned by his uncle. He served in the Union Navy as paymaster's clerk in the Civil War, and in 1865 went back to the wire works. In 1870 he entered the employ of the Trenton Iron Company and later became its secretary.

JOHN JAMES GREENOUGH, Brookline, Mass., for many years well known as an inventor, died August 25, aged 96 years. Born in Boston in 1812, he studied medicine and afterwards law, but his bent was mechanics. For several years, before 1841, he was superintendent of the Patent Office at Washington. He was one of the first to take up the problem of the sewing machine, and made several inventions ante-dating those of Elias Howe. He was a partner of Professor C. G. Page in the development of the electro-magnetic engine, which first gave to the world the practical application of electric power for traction purposes. In 1853 Mr. Greenough associated himself with the publication of the *American Polytechnic Journal*, in which the claims for United States patents were printed with illustrations, the magazine constituting the foundation of the illustrated patent office reports of to-day.

## PERSONAL.

H. F. Martin, general manager of sales of the Pennsylvania Steel Company, Steelton, Pa., has returned from Europe.

E. G. Ladd, who for 15 years has been connected with the contracting department of the Chicago Bridge & Iron Works, has engaged with the Morava Construction Company, 1242 Marquette Building, Chicago, in a similar capacity. In addition to looking after railroad business, he will give his attention to the sale of water towers and tanks.

Noah H. Swayne, 2d, resident manager of Rogers, Brown & Co., Philadelphia, Pa., has returned from a seven weeks' trip abroad.

H. S. Lewis, formerly sales agent for the Marine Coal Company, has become associated with the Iron City Coal & Coke Company, Pittsburgh, Pa., as sales agent for the company's coal department.

Fred A. Gardner, chief engineer of the Union Iron Works, San Francisco, Cal., for several years, has resigned to engage in business of his own. George A. Armes, who has been his assistant for three years, has been appointed to succeed him.

R. W. Martindale, San Francisco, Cal., Pacific Coast sales manager for the United States Cast Iron Pipe & Foundry Company, has returned from a Mexican trip.

B. B. Quillen of the Cincinnati Planer Company, Cincinnati, Ohio, who with a party of friends has been traveling in the New England States, is expected to return about September 6.

C. E. Pease, president of the Buckeye Iron & Brass Works, Dayton, Ohio, a few days ago celebrated his seventy-second birthday anniversary. He is still active in the management of the business.

President W. P. Robertson of the Robertson Iron & Steel Company, Cincinnati, is expected home from Europe early in September.

Alexander S. Mitchell, 45 Broadway, New York, has been appointed to represent the Champion Rivet Company, Cleveland, Ohio, in New York city and surrounding territory, for the sale of the Victor boiler, ship and structural rivets.

## Accidents in Pennsylvania Industries.

HARRISBURG, PA., September 1, 1908.—In a statement calling attention to the fact that last year there were 1422 fatal and 6140 nonfatal accidents in the industrial establishments of Pennsylvania, Chief John L. Rockey, of the State Bureau of Industrial Statistics, says that "while the industrial life of the State shows improvement in the matter of the better sanitary conditions of the mills, mines and workshops, and while the general physical condition of nearly every class of employees is now much better than it was a dozen years ago, it is painful to record the fact that there is an appalling number of fatal accidents yearly." The table of accidents shows the following:

| | Fatal. | Nonfatal. |
|---|---|---|
| Anthracite mines | 607 | 1,746 |
| Bituminous mines | 437 | 1,678 |
| Iron and steel mills | 176 | 1,179 |
| Pig iron industry | 72 | 623 |
| Textile industry | 12 | 82 |
| Tin plate works | .. | 2 |
| Other industries | 118 | 830 |

It thus appears that almost three-fourths of the fatal and over half of the nonfatal accidents have occurred in mines and that over one-sixth of the fatal and 30 per cent. of the nonfatal accidents can be charged to the iron and steel industry in one form or another.

## The Clay-Working Industries in 1907.

The value of the marketed clay products of the United States in 1907 was $158,942,369, according to Jefferson Middleton, of the United States Geological Survey, who has prepared the following table:

| | 1906. | 1907. |
|---|---|---|
| Common brick | $61,300,696 | $58,785,461 |
| Vitrified paving brick or block | 7,857,768 | 9,654,282 |
| Front brick | 7,895,323 | 7,329,360 |
| Fancy or ornamental brick | 207,119 | 361,243 |
| Enameled brick | 773,104 | 918,173 |
| Drain tile | 6,543,289 | 6,864,162 |
| Sewer pipe | 11,114,967 | 11,482,845 |
| Architectural terra cotta | 5,739,460 | 6,026,977 |
| Fireproofing and terra cotta lumber | 3,652,181 | 3,162,458 |
| Hollow building tile or blocks | 934,357 | 1,088,165 |
| Tile (not drain) | 4,634,898 | 4,551,881 |
| Stove lining | 743,414 | 627,647 |
| Firebrick | 14,296,868 | 14,946,045 |
| Miscellaneous | 3,988,394 | 3,000,201 |
| Total brick and tile | $129,591,838 | $128,798,895 |
| Total pottery | 31,440,884 | 30,143,474 |
| Grand total | $161,032,722 | $158,942,369 |

The only important product showing a large gain was vitrified paving brick, which increased in value $1,796,514, or 22.86 per cent. Firebrick made the next largest gain—$739,177, or 5.20 per cent. Next to common brick this is the clay product of greatest value.

# Trade Publications.

**Engines.**—Robert Wetherill & Co., Inc., Chester, Pa. Two catalogues, each 6 x 9 in., 19 pages. One is devoted to the Williams vertical compound medium speed engine, and is illustrated with a general view of the engine and front and end sectional elevations. Particular stress is laid on the low steam consumption. The standard engines of this type are made in sizes up to 27 and 60 x 38 in. The other catalogue treats of the Williams Monogram vertical duplex compound engine and is similarly illustrated.

**Automobiles.**—Stevens-Duryea Company, Chicopee Falls, Mass. Catalogue, 6 x 9 in., 31 pages. Concerns the Model X four-cylinder touring car, illustrating the assembled machine and parts, and containing a graphic description.

**Engines and Machinery.**—Central Foundry & Machine Company, successor to the High Point Machine Company, High Point, N. C. Circulars. Shows a counterbalanced center-crank engine particularly adapted for small electric light plants, planing mill, woodworking plants, cotton gins, &c., which is made in standard sizes up to 65 hp., with a 12 x 16 in. cylinder; woodworking machinery, including sawmills, box makers' cut-off saws, a miter saw, wood frame rip saw, emery grinders, bobbin lathes, &c. The company makes a general line of special equipment and is in a position to manufacture centrifugal pumps and similar equipment. Castings, such as boiler fronts and grate bars, truck wheels, &c., are also shown.

**Cupolas and Molding Machines.**—J. De Clercy, 62 Ontario street, West Montreal, Canada. Catalogue and booklet. The first treats of the Baillot cupola and gas recuperators for foundries, which are illustrated and briefly described, and the booklet is largely given to a description of molding machines made by the A. Baillot Company, Paris, France, for which J. De Clercy is the American agent.

**Expanded Metal.**—Northwestern Expanded Metal Company, 350 Old Colony Building, Chicago, Ill. Booklet—"Expanded Metal Information." Contains suggestions as aids to the compiling of specifications for reinforced concrete structures and refers to the advantages of Northwestern expanded metal reinforcing.

**Enameling Furnaces.**—Rockwell Furnace Company, New York. Folder. Illustrates the company's standard enameling furnace, built without a muffler and using oil or gas as fuel. The furnace is fired intermittently, the temperature being raised by firing while the work is being placed on the charger and turned off while the material is being enameled, the heat being under the easy control of the operator. Sectional views are shown, together with a chart recording the heat obtained in a standard furnace.

**Positive Pressure Blowers.**—P. H. & F. M. Roots Company, Connersville, Ind. Catalogue, 7½ x 10 in., 41 pages. The Roots smelting and high pressure blower is illustrated by a cross sectional view and views of the head plate and bearings. A flexible coupling driving a 300-cu. ft. smelting blower is illustrated, as well as engine driven blowers and parts. Several views of large blower illustrations are shown, including two views of the largest rotary blower in the world, which has a capacity of 400 cu. ft. per rev., and is installed at the plant of the United Verde Copper Company at Jerome, Ariz. Descriptive matter explaining the construction of the company's blowers is included, together with charts showing the air velocity, air distribution, friction losses, &c., of standard blowers.

**Fan Blowers.**—American Blower Company, Detroit, Mich. Catalogue, 7 x 9 in., 50 pages. Devoted to blowers for railroad use. Equipment adaptable for heating and ventilating roundhouses and ventilating car shops and barns, power stations, depots and office buildings, tunnels and subways are shown in operation in various railroad plants throughout the country. Interesting views of equipment installed in the East Boston tunnel and in the Manhattan Subway are shown. The book is well illustrated and the text describing the various installations interesting.

**Portable Cranes and Hoists.**—Dale Engine & Supply Company, Franklin, Pa. Folder. Gives price-lists and brief descriptions of the Dale portable crane and hoist, which is made in standard sizes up to 2½ tons capacity.

**Friction Clutches.**—Dodge Mfg. Company, Mishawaka, Ind. Bulletin No. 116. Shows the Dodge split clutch assembled and a sectional view of it; also the clutch in combination with an iron split pulley, a wood split pulley and a spur gear. Unassembled parts of the clutch are shown and views are given of plants where the clutch is in use.

**Steel Shafting.**—Bliss & Laughlin, Harvey, Ill. Price-list in booklet form, giving prices and terms for the company's line of steel castings, roller bearing rods, cold drawn steel, &c.

**Coal Handling Machinery, Conveyors, Industrial Railroads, &c.**—C. H. Hunt Company, West New Brighton, N. Y. Pamphlet No. 081, 48 pages. Contains numerous miniature views of steeple towers, overhead bridges for coal storage plants, freight handling cranes, coal elevators, cable railroads, automatic railroads, steam hoisting engines, electric hoists, steam shovels and like equipment, among which is an interesting view of the arrangement of coal handling machinery for the Baltimore Boiler Works. Some space is devoted to industrial railraads, illustrating the Hunt patent flexible running gear so arranged that the axle takes a radial position and the cars esily run around a curve of 12 ft. rdius. A narrow gauge electric locomotive equipped with a storage battery is also illustrated, and a number of views of power stations and gas works, coal handling and railroad installations.

**Gauges.**—American Steam Gauge & Mfg. Company, Boston, Mass. Catalogue, 6 x 9¼ in., 125 pages. Illustrates the company's complete line of gauges for all purposes where gauges are required, with ample text matter explaining their construction and price-lists. Space is given to pump and test gauges, dead weight test gauges, portable test pumps, gas proving pumps and gauges, hydro gas test pumps, steam boiler inspectors' outfits, speed indicators, chime whistles, combination gauge cocks, &c.

**Turret Tool Holder.**—Baush Machine Tool Company, Springfield, Mass. Folder. Shows the Bocorselski's turret tool holder, which is made in three sizes and two styles, one style adaptable for the vertical and one for the horizontal position of the turret.

**Switchboard Panels.**—The General Electric Company, Schenectady, N. Y. Bulletin No. 4610. Describes a new line of small plant continuous current switchboard panels. These boards are manufactured for 125 and 250 volt circuits only, and each panel forms a separate and complete switchboard not intended for combination with other panels.

**Crushing Machinery.**—Sturtevant Mill Company, Boston, Mass. An eight-page leaflet 3¾ x 8½ in. Illustrates various types of rock breakers and balanced crushing rolls, also the Newaygo separator, dry screen and wet screen.

**Electrical Wire.**—Duplex Metals Company, 208 Fifth avenue, New York. Pamphlet, 6 x 8 in. Describes Monnot copper clad wire, with tables of gauges, weights, breaking weights and resistances.

**Spiral Riveted Pipe.**—American Spiral Pipe Works, P. O. Box 485, Chicago, Ill. Pamphlet No. 22. Shows several installations of the company's spiral pipe, including a line of a specially heavy pipe under 220 lb. working pressure running the water wheel of a hydro-electric power plant. Installations of pipe for use as water mains and for dredging, filling and delivering sand and gravel, as well as exhaust pipes for power plants are illustrated. Sectional views of the pipe are shown, together with illustrations of steel flanges and elbows.

**Engines, Traction and Agricultural.**—M. Rumely Company, La Porte, Ind. "Rumely Annual, 1908," devoted to the Rumely engines and threshing machinery, now in their 56th year. Special features of the threshing and plowing engines illustrated fully, also the Rumely threshing machinery.

**The Girod Electrical Steel Process.**—C. W. Leavitt & Co., 220 Broadway, New York. Illustrated pamphlet descriptive of the Paul Girod process for the manufacture of steel, which is in operation at Ugine, in the Department of Savoy, France. Drawings and estimates of cost of operation and of cost of installation are presented, and a strong indorsement is presented by Prof. W. Borchers, the well-known metallurgist of the Technical High School at Aix-la-Chapelle.

**Carborundun.**—Carborundum Company, Niagara Falls, N. Y. Catalogue No. 5, 126 pages, 6½ x 9 in. Fully illustrates and describes methods of manufacturing carborundum grinding wheels and gives sections and sizes of wheels for roll grinding, knife grinding and tool grinding; for universal plain cylindrical grinding machines; for surface, face and ring grinders; for twist drill grinding machines; car wheel, car box and locomotive guide bar grinding machines, &c. Tables are given of grits and grades of wheels for different kinds of grinding; also data as to characteristics of grinding wheels, safety of wheels, &c. Carborundum refractories for metallurgical use are referred to, also the use of carbide of silicon in open hearth practice. The latter is supplied in the form of powder containing 62 per cent. available silicon and is added directly to the ladle during the process of tapping.

**Industrial Railroads.**—Ernst Wiener Company, 66-68 Broad street, New York. Folder illustrating flat platform car, portable track and all-steel double-side dump car. Catalogue 117, referred to in the folder, will be sent on request.

**Water Purifiers.**—Purification & Engineering Company, 50 Church street, New York, successor to Hans Reisert Company, Ltd. Thirty-two-page pamphlet, with 23 illustrations, entitled "$H_2O$." Describes various types of automatic water purifiers. Type B, the one most used in the United States, consists mainly of a distributing tank with lime slacking division and soda regulator, lime separator, settling tank with mixing pipe and gravel filter. Of the Reisert-Dervaux pattern more than 3500 plants with an aggregate capacity of 11,925,000 gal. per hour are in operation. Last year 312 plants were installed, with a capacity of 1,590,000 gal. per hour.

**Gas and Gasoline Engines.**—Olney & Warren, 66-68 Centre street, New York. Leaflet describing the company's gas and gasoline engines, which are built in sizes from 3 to 100 hp. and fitted for the use of gas or gasoline interchangeably. The 3-hp. engine weighs 700 lb. and the 50-hp. engine 14,000 lb.

# NEWS OF THE WORKS.

### Iron and Steel.

Florence Furnace of the Sloss-Sheffield Steel & Iron Company, Florence, Ala., was put in operation this week.

The United Engineering & Foundry Company, Pittsburgh, has shipped and practically completed the installation of the new rail mill in the Indiana Steel Company's plant at Gary, Ind. The billet mill equipment is now going forward and being erected.

Furnace A of the Buffalo Union Furnace Company, Buffalo, N. Y., was blown out August 23.

The Brown-Bonnell plant of the Republic Iron & Steel Company, at Youngstown, Ohio, started up last week to nearly full capacity.

### General Machinery.

The Pioneer Iron Works, Antigo, Wis., hitherto owned and operated by W. S. Morgan, has been incorporated with a capital stock of $20,000 under the title of the Pioneer Iron Works Company. The business, which has heretofore been largely of a local nature, will be extended to include the manufacture of gasoline engines, log loaders, sawmill machinery and the Morgan auxiliary mixers for automobiles. The officers of the company are W. S. Morgan, president; E. Horn, vice-president; M. L. Meyer, secretary and manager; O. P. Walch, treasurer.

The Parkersburg Machine Company has bought at public auction the plant of the United States Engine Works at Parkersburg, W. Va., the price being $20,000.

H. S. Palmer, representing mill and mine machinery and supplies, has opened an office in the Federal Title & Trust Company Building, Beaver Falls, Pa.

The Pittsburgh Conveying Machine Company, Pittsburgh, is building for export shipment a large rotary dryer for drying wet materials. The contract was placed through a New York engineering firm.

The Atchison, Topeka & Santa Fe Railroad has decided to complete its new shops at Chanute, Kan., work on which was stopped last fall owing to the depression in business.

### Power Plant Equipment.

J. E. Whittelsey, Fulton Building, Pittsburgh, resident agent for the Heine Safety Boiler Company, reports sales of Heine safety water tube boilers as follows: 1000-hp. for the Fort Pitt Hotel, Pittsburgh; one 360-hp. for the Victor Rubber Company, Springfield, Ohio; two 150-hp. for the Williamson Building, Cleveland; three 300-hp. for the Post Office Building, Cleveland, Ohio; three 300-hp. for the Kelly Axe & Tool Company, Charleston, W. Va.; 290 hp. for a sand lime brick concern at Michigan City, Ind.; a large boiler for the Wilberforce University, at Wilberforce, Ohio; 300 hp. for the Ward-Mackey Company, Pittsburgh, and two 400-hp. for the Citizens' Railway & Light Company at Fort Worth, Texas. Mr. Whittelsey has made other smaller sales and reports the outlook for boiler installation as very good.

The Board of Directors of the Pennsylvania Power Company, Ellwood City, Pa., has decided to purchase a 500 kw. steam turbo generator in connection with the rebuilding of the company's plant, recently destroyed by fire.

During August, the Westinghouse Machine Company, East Pittsburgh, received orders for steam turbines of large sized units from the Capital Traction Company, Washington, D. C., for a turbine of 4500 hp., to be added to two recently ordered turbines of 2500 hp. each. The Black Hill Traction Company, Deadwood, S. D., has ordered a 750 hp. turbine, with an outfit complete; Goodrich Rubber Company, Akron, Ohio, a fourth turbine of 1800 hp.; Jacksonville Oil & Mill Company, Jacksonville, Ala., 450 hp. turbine, with a Leblanc condenser, and the Brown Gas & Electric Company, Westchester, N. Y., 1000 hp. turbine.

Van Houten Brothers, Fishkill Landing, N. Y., have purchased property on the south side of Academy street and will soon start construction of a plant for supplying commercial power to a number of plants, the principal of which will be the Dutchess Tool Company, who will change over its entire plant and equip it with motor drive. The company is at present using some motors, but is also operating a steam plant which will eventually be done away with. It is expected that several other manufacturing plants in the vicinity will also change their plants over to motor drive in the near future.

The Delaware & Hudson Company, Albany, N. Y., is planning to install an electric generating station in connection with its general office building. The plant will probably be installed in duplicate and consist of either high speed engines direct connected to generators, or steam turbine units. The present boiler capacity is not sufficient to care for the above, so the installation will include boilers, pumps and other accessories in addition to the generating units. Details as to equipment have not yet been fully determined.

The Rosedale Foundry & Machine Company, engineer and founder, N. S., Pittsburgh, has received an order for three Playford chain grate stokers for the Massillon State Hospital, Massillon, Ohio, and for two sets for the Black Hills Traction Company, Deadwood, S. D. This company furnished the stokers in the Auditorium Hotel, Chicago, which are being electrically operated.

The town of North Birmingham, Ala., will build a water and light plant to furnish the city of Greater Birmingham, Ala., of which North Birmingham becomes a part in 1909, with water and electric lights, construction of which will in all probability be begun in January of next year. The water plant will supply 30,000,000 gal. of water per day and the light plant 20,000 kw. Both plants will be operated by water power, and the site upon which they are to be erected is about 30 miles from Birmingham. W. C. Harkins is clerk and treasurer of North Birmingham.

### Bridges and Buildings.

Bids will be opened by the commissioners of Washington County, Pa., on September 10, in the office of the controller of Allegheny County, in Pittsburgh, for the erection of a steel bridge across the Monongahela River at Monongahela, Pa. There will be three spans of 455 ft. each, supported by two concrete abutments and two stone river piers. The superstructure will require 1850 tons of steel.

The Chester B. Albree Iron Works Company, N. S., Pittsburgh, manufacturer of ornamental iron work, riveting machines, &c., recently received a contract from the American Bridge Company for about 4000 ft. of double angle lattice railing for two bridges at Nashville, Tenn. The company is also completing a contract for the city of Pittsburgh for about 2000 ft. of its four-legged type of iron benches and for 300 swings made of angle iron, for use in the city parks.

N. D. Yant & Co., N. S., Pittsburgh, Pa., fabricators of structural steel and manufacturers of welded annealing boxes for sheet and tin plate, have received a contract for furnishing the steel required in the new seven-story steel and brick building, 30 x 100 ft., being erected by J. W. Houston & Co. at Fourteenth street and Liberty avenue, Pittsburgh, for warehouse purposes. This firm is also supplying the steel for a small two-story addition to the tool room of the McKinney Mfg. Company, N. S., Pittsburgh.

### Fires.

A loss reported to amount to $300,000 was suffered August 23 by the Wheeling & Lake Erie Railroad at Norwalk, Ohio, by the destruction of the big general repair shops and the boiler shops. B. A. Worthington, receiver for the Wheeling & Lake Erie, has been planning a new system of shops for the road, to cost $1,800,000 and to be located at Brewster, Ohio. Efforts are now being made by the Chamber of Commerce of Norwalk to have these shops located at Norwalk to replace those just destroyed.

The main factory of Mason & Parlser, Winchendon, Mass., manufacturers of woodenware and hardware, and a branch of the Hardware & Woodenware Company, was burned August 23, with a loss of $25,000.

The plant of the Canadian Packing Company at Pottersburg, a suburb of London, Ont., was burned August 30, the loss being about $100,000.

### Miscellaneous.

The Ruud Mfg. Company, Twenty-ninth and Liberty street, Pittsburgh, manufacturer of the Ruud instantaneous water heaters, has recently opened a branch office at 812 Equitable Building, Baltimore, Md., in charge of M. W. Mullin.

The Pittsburgh Water Heater Company, River avenue, N. S., Pittsburgh, Pa., manufacturer of Lion and Pittsburgh water heaters, announces that it will shortly place on the market Lion heaters with triple copper coils for use with tanks, having 40 to 60 gal. capacity This is the first concern to manufacture this type, for which it claims a larger heating surface and greater efficiency. It recently made a carload shipment of heaters to San Francisco, Cal.

The White Boiler Feed Regulator Company has been incorporated with a capital stock of $25,000 to manufacture an apparatus, the invention of O. O. White, to be attached to boilers for the purpose of maintaining the gauge of water uniformly at any point desired, and a gas cut off and regulator, the latter a safety device to prevent the shutting off or loss of pressure. An office will be established at Warren, Pa. The incorporators are Martin L. Amann and George B. Munn, of Warren, and George H. Boten, Jamestown, N. Y.

Operations will be resumed this week at the car works of the Alabama Great Southern Railway at Gadsden, Ala.

D. J. Sinclair, Steubenville, Ohio, advises us he is not interested in a proposed plant to be located in Follansbee, W. Va., to manufacture steel tanks.

The American Shipbuilding Company will build a dry dock at its Buffalo plant, to be 630 ft. long, 100 ft. wide at the top and 75 ft. at the bottom. It will be built on the site of the present docks Nos. 2 and 3 and will cost $300,000. Plans for the work were prepared by A. V. Powell, engineer, Chicago. The company will also lengthen its small dock at Superior 100 ft., making it 610 ft. long by 65 ft. wide, at a cost of $100,000. The contract has been let to the Barnett & Record Company, Duluth.

W. W. Dutton Company, marble works, Schenectady, N. Y., will soon erect a new building to be used as a cutting and polishing room and also as a blacksmith shop.

# The Iron and Metal Trades

The collapse of the strike of the coal miners in the Birmingham District will make it probable that some of the furnace companies will blow in stacks which have been ready. In the next 10 days two companies will start three furnaces. While the strike did not interfere with current production, it did have the effect of preventing an increase.

In the East the number of Pig Iron manufacturers who were willing to make concessions has narrowed down so much that the market has stiffened and higher prices are being realized. This is notably the case in Forge Iron, and is true also of Foundry. In Basic Pig Iron, in the East, makers have advanced their asking prices, but as yet buyers have not met them.

Foreign Ferromanganese is weaker, and some larger transactions lately have established a lower level of values. Foreign Ferro is now being offered at seaboard for $43.

In the semifinished and finished lines the position of one of the leading producers is interesting, as reflecting underlying conditions. A comparatively large part of the output is of lines whose ultimate outlet is for the agricultural requirements. On September 1 the commitments of this company were slightly over 300,000 tons, while on September 1, 1907, they were slightly under that figure. In other words, there was an actual although a slight gain this year over last year. The result is that the management has decided to go no further in booking season contracts and other back log business, and to sell conservatively in the expectation of securing a better range of prices. The general consumption of Iron and Steel is better than is usually figured, since the low requirements of the railroads drag the general average down.

The works are slowly gaining in employment. So far as the Steel Corporation is concerned, this is best measured by the blast furnace capacity in operation, which has now reached 59 per cent. Some of the other large interests are in a better position, while others who have been lagging behind have been getting into more comfortable shape and are expected to be less urgent sellers.

Some orders have come to the car builders and others are in sight, among them about 1500 cars for the Steel Corporation. Figuring is going on for some boats for outside Lake shipping companies.

There has been a fair run of moderate sized orders for Structural Material, among them 2400 tons for the Oakdale, Pa., bridge, 1600 tons for the First National Bank at Pittsburgh, and 1300 tons for a wharf at San Francisco. A lot of 450 tons of structural work has been placed for track elevation at Buffalo, with 3500 more ready for bids. It is expected that out of the 30,000 tons to be placed for the Northwestern station at Chicago, about 12,000 tons will be let at an early date. At Pittsburgh bids will be soon opened for the Monongahela bridge, requiring about 2700 tons.

Specifications are being received in satisfactory volume by the Steel Bar mills, and the Wire trade continues to send good reports. A Pittsburgh mill has just secured the contract for 35 miles of 18-in. Line Pipe.

In the East and in the West there has been an advance in Old Material, under moderate transactions.

The Brass industry is getting into considerably better shape, and business in Sheet Copper is now nearly normal. It is the slackness in the Wire trade and the danger of an increase in the production which is clouding the future of Copper.

A fact worthy of keeping in mind is that the visible supply of Pig Tin is the largest since November, 1902.

## A Comparison of Prices.

**Advances Over the Previous Month in Heavy Type, Declines in Italics.**

At date, one week, one month and one year previous.

| | Sept. 2, 1908. | Aug. 26, 1908. | Aug. 5, 1908. | Sept. 4, 1907. |
|---|---|---|---|---|
| **PIG IRON,** Per Gross Ton: | | | | |
| Foundry No. 2, Standard, Philadelphia | $16.50 | $16.50 | $16.50 | $21.00 |
| Foundry No. 2, Southern, Cincinnati | **15.50** | 15.50 | 15.00 | 21.75 |
| Foundry No. 2, Local, Chicago | 17.00 | 17.00 | 17.00 | 24.50 |
| Basic, delivered Eastern Pa | **15.25** | 15.00 | 15.00 | 19.50 |
| Basic, Valley Furnace | *14.50* | 14.50 | 15.00 | 21.00 |
| Bessemer, Pittsburgh | *15.90* | 15.90 | 16.40 | 22.90 |
| Gray Forge, Pittsburgh | *14.65* | 14.65 | 14.90 | 21.40 |
| Lake Superior Charcoal, Chicago | 19.50 | 19.50 | 19.50 | 27.00 |
| **BILLETS, &c.,** Per Gross Ton | | | | |
| Bessemer Billets, Pittsburgh | 25.00 | 25.00 | 25.00 | 29.00 |
| Forging Billets, Pittsburgh | 27.00 | 27.00 | 27.00 | 33.00 |
| Open Hearth Billets, Phila | 26.20 | 26.20 | 26.20 | 31.50 |
| Wire Rods, Pittsburgh | 33.00 | 33.00 | 33.00 | 36.00 |
| Steel Rails, Heavy, Eastern Mill | 28.00 | 28.00 | 28.00 | 28.00 |
| **OLD MATERIAL,** Per Gross Ton: | | | | |
| Steel Rails, Melting, Chicago | **15.00** | 14.25 | 13.50 | 17.00 |
| Steel Rails, Melting, Phila | **15.25** | 14.50 | 14.50 | 16.75 |
| Iron Rails, Chicago | **16.75** | 16.75 | 16.50 | 20.25 |
| Iron Rails, Philadelphia | **20.00** | 20.00 | 19.00 | 20.50 |
| Car Wheels, Chicago | **16.00** | 16.00 | 15.00 | 24.50 |
| Car Wheels, Philadelphia | **15.00** | 15.00 | 14.50 | 23.00 |
| Heavy Steel Scrap, Pittsburgh | *14.25* | 14.50 | 14.75 | 17.75 |
| Heavy Steel Scrap, Chicago | **13.00** | 13.00 | 12.50 | 14.75 |
| Heavy Steel Scrap, Phila | **15.25** | 14.50 | 14.50 | 16.50 |
| **FINISHED IRON AND STEEL,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Refined Iron Bars, Philadelphia | **1.45** | 1.40 | 1.40 | 1.85 |
| Common Iron Bars, Chicago | 1.50 | 1.50 | 1.50 | 1.78 |
| Common Iron Bars, Pittsburgh | 1.40 | 1.40 | 1.40 | 1.70 |
| Steel Bars, Tidewater, New York | 1.56 | 1.56 | 1.56 | 1.86 |
| Steel Bars, Pittsburgh | 1.40 | 1.40 | 1.40 | 1.60 |
| Tank Plates, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Tank Plates, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Beams, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Beams, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Angles, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Angles, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Skelp, Grooved Steel, Pittsburgh | 1.45 | 1.45 | 1.45 | 1.85 |
| Skelp, Sheared Steel, Pittsburgh | 1.50 | 1.50 | 1.50 | 1.95 |
| **SHEETS, NAILS AND WIRE,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Sheets, No. 27, Pittsburgh | 2.40 | 2.40 | 2.40 | 2.50 |
| Wire Nails, Pittsburgh | 1.95 | 1.95 | 1.95 | 2.05 |
| Cut Nails, Pittsburgh | **1.80** | 1.80 | 1.75 | 2.10 |
| Barb Wire, Galv., Pittsburgh | 2.40 | 2.40 | 2.40 | 2.50 |
| **METALS,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Lake Copper, New York | **13.87½** | 13.62½ | 13.60 | 18.12½ |
| Electrolytic Copper, New York | **13.75** | 13.50 | 13.50 | 17.50 |
| Spelter, New York | *4.75* | 4.65 | 4.80 | 5.50 |
| Spelter, St. Louis | *4.60* | 4.50 | 4.70 | 5.37½ |
| Lead, New York | *4.57½* | 4.57½ | 4.60 | 5.12½ |
| Lead, St. Louis | 4.45 | 4.40 | 4.45 | 4.95 |
| Tin, New York | *29.00* | 29.25 | 30.70 | 37.12½ |
| Antimony, Hallett, New York | 8.00 | 8.00 | 8.00 | 9.00 |
| Nickel, New York | 45.00 | 45.00 | 45.00 | 45.00 |
| Tin Plate, 100 lb., New York | $3.89 | $3.89 | $3.89 | $4.09 |

## Chicago.

FISHER BUILDING, September 2, 1908.—(*By Telegraph.*)

The strongest feature of encouragement to be found in commercial and industrial developments as represented in the Iron and Steel market is that the general tendency continues forward rather than backward. Improvement in some degree is reported in nearly all mill products, but is especially pronounced in Wire and Wire Nails, which are considerably in advance of all other lines. The agricultural demand for such products has been strengthened by a successful issue of matured and the promising prospects of maturing crops. The same influence is prompting the implement makers to specify more freely against their Steel Bar contracts, the tonnage of which is quite satisfactory. While most of the Bar mills are in operation, there is room for a considerable increase in capacity, which would be fully supplied if shipments against contracts were asked for in normal volume. That the railroads are not yet ready to come into the market in an aggressive manner is evident from the absence of new Rail orders or large purchases of other material. It is a fact, however, that they are being compelled to increase their purchases of general supplies, as is indicated by the improvement noted in orders for Bolts, Spikes and Track Supplies. Business in Light Rails is better and prices are somewhat firmer. A feature in Structural Material is the large number of miscellaneous contracts being closed. While these do not run into large tonnage they are significant of the improvements that are going throughout the country. The largest project involving the use of Structural Material now nearing the contract

stage is that of the Chicago & Northwestern Depot, which, together with approaches and sheds, will require about 42,000 tons. It is expected that bids on a considerable portion of this will be asked for within a few days. Some headway is being made in Plates and Sheets as the result of a slow increase in the general demand. The Scrap Iron market continues strong and more material is being taken by the consuming interests. Anticipating fuller operation of their plants in the fall and winter months, some of the local mills have been accumulating stocks of Scrap, and both Steel and Iron foundries have been buying more liberally. The Pig Iron market has developed nothing of special interest either in prices or volume. With present wants of consumers well supplied and both buyers and sellers reluctant to negotiate for deliveries extending into next year, what little business there is moving relates to small routine and emergency orders.

**Pig Iron.**—The market for the past week has been without a semblance of activity, transactions being confined almost wholly to small business for nearby requirements. The foundry melt seems to be increasing slightly, but the gain is not sufficient to take care of Iron coming in on contract shipments. At the present rate of consumption it is estimated that the requirements of the trade generally are pretty well provided for through the remainder of the year, but the purchases of melters, both large and small, have been made on a conservative basis, and in the event of a marked increase in consumption would doubtless fall short of covering last quarter needs. What effect the reported ending of the coal miners' strike will have upon the Southern situation is not yet apparent, but it at least removes an element of uncertainty in the figuring of future contracts. Quite a number of inquiries for deliveries extending through the first quarter and half of the next year are coming into the market, but very few are of a character that indicates a firm purpose to buy at this time. No large amounts of Iron of any grade are up for consideration, and with possibly one or two exceptions the heavy consumers in this district are believed to be pretty well covered up to the first of the year. While the leading Southern producers are now asking $13, Birmingham, for No. 2 Foundry, there are still sellers in that territory at $12.50 for this year's delivery, and one furnace interest is quoting $13 for first quarter. The advance in Southern Iron has brought it near to a parity with Northern Iron, which continues to be held at about $17 at furnace, though this price cannot be realized on competitive business, since Mahoning and Shenango Valley Irons are available at $16.90, Chicago. No sales of importance are reported, but one lot of 100 tons of Southern Iron was taken at $13, Birmingham. Until buyers and sellers get together on first quarter business and buying for that period begins tonnage it is the general opinion that the market will develop no features of special interest. The following quotations are for September delivery, f.o.b. Chicago:

| | |
|---|---|
| Lake Superior Charcoal | $19.50 to $20.00 |
| Northern Coke Foundry, No. 1 | 17.50 to 18.00 |
| Northern Coke Foundry, No. 2 | 17.00 to 17.50 |
| Northern Coke Foundry, No. 3 | 16.50 to 17.00 |
| Northern Scotch, No. 1 | 18.00 to 18.50 |
| Southern Coke, No. 1 | 17.35 to 17.85 |
| Southern Coke, No. 2 | 16.85 to 17.35 |
| Southern Coke, No. 3 | 16.35 to 16.85 |
| Southern Coke, No. 4 | 15.85 to 16.35 |
| Southern Coke, No. 1 Soft | 17.35 to 17.85 |
| Southern Coke, No. 2 Soft | 16.85 to 17.35 |
| Southern Gray Forge | 15.35 to 15.85 |
| Southern Mottled | 15.10 to 15.60 |
| Malleable Bessemer | 17.50 to 18.00 |
| Standard Bessemer | 18.40 to 18.90 |
| Jackson Co. and Kentucky Silvery, 6 % | 20.40 to 20.90 |
| Jackson Co. and Kentucky Silvery, 8 % | 21.40 to 21.90 |
| Jackson Co. and Kentucky Silvery, 10 % | 23.40 to 23.90 |

*(By Mail.)*

**Billets and Rods.**—The demand for Forging Billets continues scant and is confined to scattering orders of small tonnage. Specifications against existing contracts are only fair. The regular price of $28.50, base, Chicago, is reported to be maintained with reasonable firmness. The improved demand for wire products is reflected in a better movement of Wire Rods, on which we quote as follows: Bessemer, $33; Basic, $34; Chain, $33, all at Pittsburgh.

**Rails and Track Supplies.**—Business in Standard Section Rails is chiefly miscellaneous orders placed by the smaller roads for prompt shipment. Orders of this kind aggregating 2000 tons were taken by the leading interest the past week. None of the contemplated purchases of heavy tonnage recently talked of for 1909 delivery has been made. The showing made in Light Rails in August is better than for any previous month of the year, and, all things considered, is quite encouraging. Regular prices of Light Rails are herewith revised on a basis of $2 a ton lower than former quotations. Competition from rerolling mills makes it difficult to maintain the revised schedule, and even these prices are being shaded at least $1 a ton. Definite improvement is noted in Track Bolts, Spikes and Track Supplies, orders for which are gradually increasing in size and number. Bookings for the past week include several orders for Track Bolts, ranging from 500 to 1000 kegs, the total exceeding the mill capacity of the leading producer for the corresponding period. Track Bolt prices have declined 10c. per 100 lb. and are revised accordingly. An order for 220 tons of open hearth high T Girder Rails placed by a street railroad system was secured by the Pennsylvania Steel Company. We quote as follows: Angle Bars, accompanying Rail orders, 1908 delivery, 1.50c.; car lots, 1.60c.; Spikes, 1.80c. to 1.90c., according to delivery; Track Bolts, 2.10c. to 2.15c., base, Square Nuts, and 2.25c. to 2.30c., base, Hexagon Nuts. The store prices on Track Supplies range from 0.15c. to 0.20c. above mill prices. Light Rails, 25 to 45 lb., $26; 20-lb., $27; 16-lb., $28; 12-lb., $29. Standard Sections, $28, f.o.b. mill, full freight to destination.

**Structural Material.**—In point of tonnage placed, the past week has developed nothing of particular significance, though quite a number of small orders for miscellaneous requirements have been secured by the fabricators. Specifications on existing contracts are being furnished a little more freely, and mill conditions are correspondingly improved. Among the projects involving considerable tonnage promising early development is that of the new Northwestern Depot, which will require about 12,000 tons. It is expected that plans of this structure will be submitted this week to fabricators for bids. For the approaches, train sheds, and other outside work necessary for the completion of this structure, 30,000 tons additional will be used, and contracts for at least a portion of this tonnage will also be let in the near future. The contracts for a three-span bridge, to be erected by the Midland Valley Railroad Company, near Muscogee, Indian Territory, amounting to 900 tons, was secured by the Pennsylvania Steel Company. The bookings of the American Bridge Company have been considerably augmented by fabricated material for structural work under way at the Steel Corporation plants at Gary, Ind., and elsewhere. Included therein is a lot of 8000 tons for Steel Ore dock construction at Duluth. While improvement is reported in the general volume of business, prices ruling on fabricated material continue at a level which would in many instances seem to preclude the possibility of profit based upon regular mill prices for Structural Shapes. The South Works structural mill of the Illinois Steel Company is in operation this week. Prices from store are 1.95c. to 2c. Mill prices at Chicago are as follows: Beams and Channels, 3 to 15 in., inclusive, 1.78c.; Angles, 3 to 6 in., ¼-in. and heavier, 1.78c.; larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 15 in., 1.88c.; Zees, 3 in. and over, 1.78c.; Tees, 3 in. and over, 1.83c.

**Plates.**—The volume of business in Plates is slowly increasing, and orders are being received from sources which have not figured in the market for some time. The warehouse interests find a better demand for shipments from stock which are particularly available for prompt requirements. Concessions of $1 to $1.50 from regular prices continue to be made by some mills, and are not as closely confined to narrow sizes as has been the case for some time. We quote mill shipments as follows: Tank Plates, ¼-in. and heavier, wider than 6¼ and up to 100 in. wide, inclusive, car lots, Chicago, 1.78c.; 3-16 in., 1.88c.; Nos. 7 and 8 gauge, 1.93c.; No. 9, 2.03c.; Flange quality, in widths up to 100 in., 1.88c., base, for ¼-in. and heavier, with the same advance for lighter weights; Sketch Plates, Tank quality, 1.88c.; Flange quality, 1.98c. Store prices on Plates are as follows: Tank Plates, ¼-in. and heavier, up to 72 in. wide, 2c. to 2.10c.; from 72 to 96 in. wide, 2.10c. to 2.20c.; 3-16 in. up to 60 in. wide, 2.10c. to 2.25c.; 72 in. wide, 2.30c. to 2.40c.; No. 8, up to 60 in. wide, 2.10c. to 2.15c.; Flange and Head quality, 0.25c. extra.

**Sheets.**—Business in Black and Galvanized Sheets, both in light and heavy gauges, is gradually increasing. Jobbers are ordering more liberally for the replenishment of stocks, and manufacturers seem less disposed to restrict their purchases as closely to actual present needs as they have been doing. The principal local jobbers note a gratifying increase in shipments from stock, and the demand for prompt shipment from both store and mill is significant of the meager supply of material in the hands of manufacturers and dealers. We quote mill shipments as follows, Chicago: Blue Annealed, No. 10, 1.98c.; No. 12, 2.05c.; No. 14, 2.08c.; No. 16, 2.18c.; Box Annealed, Nos. 17 to 21, 2.43c.; Nos. 22 to 24, 2.48c.; Nos. 25 and 26, 2.53c.; No. 27, 2.58c.; No. 28, 2.68c.; No. 29, 2.78c.; No. 30, 2.88c.; Galvanized Sheets, Nos. 10 to 14, 2.63c.; Nos. 15 and 16, 2.83c.; Nos. 17 to 21, 2.98c.; Nos. 22 to 24, 3.13c.; Nos. 25 and 26, 3.33c.; No. 27, 3.53c.; No. 28, 3.73c.; No. 30, 4.23c.; Black Sheets from store: Blue Annealed, No 10, 2.15c.; No. 12, 2.20c.; No. 14, 2.25c.; No. 16, 2.35c.; Box Annealed, Nos. 18 to 21, 2.60c.; Nos. 22 to 24, 2.65c.; No. 26, 2.70c.; No. 27, 2.75c.; No. 28, 2.85c.; No. 30, 3.25c.; Galvanized from store: Nos. 10 to 16, 3c.; Nos. 18 to 20, 3.15c.; Nos. 22 to 24, 3.30c.; No. 26, 3.50c.; No. 27, 3.70c.; No. 28, 3.90c.; No. 30, 4.40c. to 4.45c.

**Bars.**—In no department of mill material is improvement more marked than in Steel Bars, specifications for which are coming out well. An encouraging feature of the movement is that not only the implement makers, but other interests more or less closely related to the railroads are

beginning to ask for shipments against their contracts. All of the Western mills of the Republic Iron & Steel Company are going this week, though none is operating at full capacity. The remaining Bar mills in this district are likewise active, with good prospects of an increased output in the near future. The growing activity in car repair work is reflected in a better demand for Iron Bars, which also finds support in larger orders from jobbers and manufacturing interests. Prices on Steel Bars are reported to be rigidly maintained, and no complaint of irregularity in Iron Bars is heard. Quotations, Chicago, are as follows: Steel Bars, 1.58c., with half extras; Iron Bars, 1.50c.; Hoops, No. 13 and lighter, 1.98c., full extra Hoop card; Bands, No. 12 gauge and heavier, 1.58c., half extra Steel Bar card; Soft Steel Angles and Shapes, 1.68c., half extras. Store prices are as follows: Bar Iron, 2c. to 2.15c.; Steel Bars, 1.90c. to 2c.; Steel Bands, 1.90c., as per Bar card, half extras; Soft Steel Hoops, 2.25c. to 2.35c., full extras.

**Merchant Pipe.**—August showed a continuance of the progressive gain in business, though the extent of improvement is short of what was hoped for. Trade in this market, comprising almost wholly ordinary Merchant Pipe requirements, reflects the general demand of smaller interests, and that this is gradually expanding is significant of sound underlying conditions. Frequent orders and demand for prompt shipments are features which continue to represent the conservatism of jobbers in maintaining moderate stocks. The following mill discounts are quoted: Black Pipe, ¾ to 6 in., 73.2; 7 to 12 in., 70.2; Galvanized, ¾ to 6 in., 63.2. These discounts are subject to one point on the base. From store, in small lots, Chicago jobbers quote 73 per cent. on Black Steel Pipe, ¾ to 6 in. About three points above these prices is asked for Iron Pipe.

**Boiler Tubes.**—Necessary repairs on motive power equipment is compelling the railroads to increase their purchases of Locomotive Tubes, but only for imperative needs. The boiler shops are making slow progress toward normal activity and there is no notable growth in the mill demand for Merchant Tubes, although there is a slight increase in store shipments. Mill quotations for future delivery, on the base sizes, are as follows: 2¾ to 4½ in., inclusive, Steel Tubes, 63.2; Iron, 50.2; Seamless, 50.2; 2½ in. and smaller, and lengths over 18 ft., and 2½ in. and larger, and lengths over 22 ft., 10 per cent. extra. Store prices are as follows:

| | Steel. | Iron. | Seamless. |
|---|---|---|---|
| 1 to 1½ in. | 35 | 35 | 35 |
| 1¾ to 2¼ in. | 50 | 35 | 35 |
| 2½ in. | 52½ | 35 | 35 |
| 2¾ to 5 in. | 60 | 47½ | 47½ |
| 6 in. and larger | 50 | 35 | .. |

**Merchant Steel.**—Business has fluctuated somewhat through the month of August, but, as with other Bar products, there is on the whole a net gain in volume. Some new business is still being placed, but interest is now centered mainly on specifications, which are being furnished with less reluctance, and in larger orders, as the fall work of implement and vehicle makers progresses. Shafting is dull and only small routine orders are heard of. We quote as follows: Planished or Smooth Finished Tire Steel, 1.78c.; Iron Finish, up to 1½ x ½ in., 1.73c., base, Steel card; Iron Finish, 1½ x ½ in. and larger, 1.58c., base, Tire card; Channels for solid Rubber Tires, ¾ to 1 in., 2.08c., and 1⅛ in. and larger, 1.98c.; Smooth Finished Machinery Steel, 2.08c.; Flat Sleigh Shoe, 1.63c.; Concave and Convex Sleigh Shoe, 1.83c.; Cutter Shoe, 2.05c.; Toe Calk Steel, 2.13c.; Railroad Spring, 1.98c.; Crucible Tool Steel, 7¼c. to 8c., and still higher prices are asked on special grades. Cold Rolled Shafting on contracts for 100 tons and over, 57 per cent. off; 56 per cent. off in car lots; 52 per cent. in less than car lots, on which carload freight is allowed within base territory.

**Cast Iron Pipe.**—Large requirements are conspicuous by their absence, and the market is supported principally by the lettings of small municipalities, whose purchases rarely exceed a few hundred tons. Several such transactions were concluded in the past week, the aggregate of which was around 3500 tons. One of the largest was 800 tons, on which bids were taken by Brainered, Minn., the United States Cast Iron Pipe & Foundry Company being the lowest bidder. Competitive conditions are not materially changed, except that there is, perhaps, a disposition on the part of founders to hold a little more firmly on general requirements. No important lots are reported as scheduled for letting in the near future. Prices are unchanged, which we quote nominally per net ton, Chicago, as follows: Water Pipe, 4 in., $27; 6 to 12 in., $26; 16 in. and up, $25, with $1 extra for Gas Pipe.

**Old Material.**—Encouraged by freer buying by the consuming interests of both mill and melting stock, dealers maintain a confident attitude respecting prices. Sentiment, however, does not favor forcing prices to materially higher levels, though it is firm enough to maintain the market, with fractional advances on some grades. Steel Rails are in demand, as is also Railroad Wrought. Not much railroad material is being offered in the market, though several lists of good tonnage are expected within the next week or two. Stove Plate is scarce, and is strong, at an advance of 50c. a ton. Inquiries from both Iron and Steel melters are more plentiful, and these grades are moving better than for some time. Dealers report a decided improvement in the consuming demand, which is enabling them to move a fair amount of material at reasonable margins of profit. The only railroad list offered this week is one of 1500 tons from the Wisconsin Central. We quote, per gross ton, f.o.b. Chicago, as follows:

| | |
|---|---|
| Old Iron Rails | $16.75 to $17.25 |
| Old Steel Rails, rerolling | 16.00 to 16.50 |
| Old Steel Rails, less than 3 ft. | 15.00 to 15.50 |
| Relaying Rails, standard sections, subject to inspection | 20.00 to 21.00 |
| Old Car Wheels | 16.00 to 16.50 |
| Heavy Melting Steel Scrap | 13.00 to 13.50 |
| Frogs, Switches and Guards, cut apart | 14.00 to 14.50 |
| Mixed Steel | 10.25 to 10.75 |

The following quotations are per net ton:

| | |
|---|---|
| Iron Fish Plates | $16.00 to $16.50 |
| Iron Car Axles | 18.50 to 19.00 |
| Steel Car Axles | 17.50 to 18.00 |
| No. 1 Railroad Wrought | 13.25 to 13.75 |
| No. 2 Railroad Wrought | 12.25 to 12.75 |
| Railway Springs | 13.50 to 14.00 |
| Locomotive Tires, smooth | 13.25 to 13.75 |
| No. 1 Dealers' Forge | 10.25 to 10.75 |
| Mixed Busheling | 8.00 to 8.50 |
| Iron Axle Turnings | 6.75 to 7.25 |
| Soft Steel Axle Turnings | 6.75 to 7.25 |
| Machine Shop Turnings | 6.75 to 7.25 |
| Cast Borings | 5.75 to 6.25 |
| Mixed Borings, &c. | 5.75 to 6.25 |
| No. 1 Mill | 8.00 to 8.50 |
| No. 2 Mill | 7.00 to 7.50 |
| No. 1 Boilers, cut to Sheets and Rings | 9.50 to 10.00 |
| No. 1 Cast Scrap | 12.75 to 13.25 |
| Stove Plate and Light Cast Scrap | 12.00 to 12.50 |
| Railroad Malleable | 12.50 to 13.00 |
| Agricultural Malleable | 11.50 to 12.00 |
| Pipes and Flues | 9.75 to 10.25 |

**Metals.**—Following the buying spurt of two weeks ago trade suffered a reaction last week which halted the forward movement. Notwithstanding this, August as a whole produced a greater volume than any previous month this year. Inquiries are plentiful and are of a character that inspire hopes of renewed buying in the near future. Prices are holding with reasonable firmness at present levels. Quotations are as follows: Casting Copper, 13¾c.; Lake, 14c. to 14¼c., in car lots for prompt shipment; small lots, ¼c. to ⅜c. higher; Pig Tin, car lots, 32½c.; small lots, 34½c.; Lead, Desilverized, 4.65c. to 4.75c., for 50-ton lots; Corroding, 4.90c. to 5c., for 50-ton lots; in car lots, 2¼c. per 100 lb. higher; Spelter, 4.80c.; Cookson's Antimony, 10½c., and other grades, 9¾c. to 10¼c.; Sheet Zinc is $7, f.o.b. La Salle, in car lots of 600-lb. casks. On Old Metals we quote: Copper Wire, 13¼c.; Heavy Copper, 13c.; Copper Bottoms, 10⅝c.; Copper Clips, 11c.; Red Brass, 11½c.; Yellow Brass, 9c.; Light Brass, 6½c.; Lead Pipe, 4c.; Zinc, 3¾c.; Pewter, No. 1, 21c.; Tin Foil, 23c.; Block Tin Pipe, 25c.

## Philadelphia.

PHILADELPHIA, PA., September 1, 1908.

Notwithstanding that trade in Iron and Steel in this territory has been quieter, the situation continues strong. There is undoubtedly a gradual forward movement in many directions. Consumption on the part of the Iron foundries shows a betterment, and while the Steel melters have made no important increase in production, they have maintained former gains. There is a good volume of business pending in both Pig Iron and finished materials, and a more active buying movement is looked for about the middle of the month. The continued reduction in the number of idle freight cars, with some few orders placed by the railroads for new equipment and repair work, lends considerable encouragement to the trade. Crop reports continue favorable, and the aspect of trade in general is such as to bring forth quite a hopeful view of the future, although it is fully understood that a heavy increase in buying will be necessary before anything like normal conditions can be obtained.

**Pig Iron.**—The market continues strong, even though business during the week has been rather quiet. Statistically the situation is good. Orders in some few cases have been larger than current production, and stocks on hand show further decrease. Foundries are somewhat more actively engaged, and where the improvement heretofore has been spotty, it now appears, while small, to be more general. Producers in eastern Pennsylvania maintain, as far as deliveries for the balance of the year are concerned, a firm stand at to-day's level. For 1909 delivery, however, for which there has been considerable inquiry in both small and large lots, there is an element of uncertainty as to the best policy to pursue. In a number of instances sellers still refuse to quote for any delivery beyond the current year; in others, however, there is a willingness to do business at figures lower than were talked of some weeks ago, and moderate tonnages of 2 X Foundry Iron could, no doubt, be done for the first quarter at from $17.50 to $17.75, delivered. Buyers are in the same quandary as sellers in this respect, and in a good many instances hesitate to place orders, preferring to take chances on some further recession. Sales of Northern Foundry Iron for delivery in this territory have been

small, moderate orders ranging from carloads to those of a few hundred tons having made up the bulk of the business. The greater portion has been for delivery during September and October, at prices ranging from $16.50 to $16.75 for No. 2 X Foundry. Some little business has been done for fourth quarter delivery, but only in moderate amounts, at $16.75 to $17, delivered, for the same grade. Virginia Foundry Irons come in for a fair share of business. One interest reports sales of 1500 tons in the week, made up of small lots for local, New England and Western delivery, practically all prompt delivery, at full prices. One lot of 600 tons of No. 2 X for spot, New England shipment, was done at $18, delivered. A round tonnage of off grade Foundry was also sold by another Virginia interest to a Pipe foundry in that territory. There is quite a fair inquiry for forward Virginia Iron, but sellers as a rule still refuse to quote for next year's delivery. The only important sale of Southern Foundry Iron was of 1000 tons of Coke Car Wheel Iron for an Eastern concern on the basis of $12.50, Birmingham, for No. 2 Foundry. Many of the Southern furnaces, being pretty well covered as far as their production in the next four months is concerned, are naming $13, Birmingham, for fourth quarter delivery, which practically puts them out of the market in this territory. The Pipe foundries in this vicinity continue in the market for off grade Irons, but little is to be had. One concern has inquiries out for 1500 tons, but has not yet placed the business. There is still some quiet inquiry for Forge Iron, but sellers have orders for about all they can take care of, and although there has been no business placed, prices are easily 25c. higher, and some producers will not take business at current figures. Basic has been rather quiet; no sales have been made, although there has been some inquiry for moderate tonnages for prompt delivery. The market is firm and some sellers talk higher prices. Low Phosphorus is dull. Few inquiries are before the trade, but furnaces as a rule are pretty well sold up. In general, there is less tendency to make concessions and in some cases higher figures are asked, but not obtained. For delivery in buyers' yards, eastern Pennsylvania and nearby territory, the following range is quoted for September and October:

| | |
|---|---|
| Eastern Pennsylvania, No. 2 X Foundry | $16.50 to $17.00 |
| Eastern Pennsylvania, No. 2 Plain | 16.00 to 16.50 |
| Virginia, No. 2 X Foundry | 17.00 |
| Virginia, No. 2 Plain | 16.50 to 16.75 |
| Gray Forge | 15.25 to 15.50 |
| Basic | 15.25 to 15.50 |
| Low Phosphorus | 20.50 to 21.00 |

**Ferromanganese.**—A little more inquiry is made for Ferro, both for delivery during the balance of this year as well as for shipment during the first half of 1909. Sales, however, have been light, but one lot, covering 250 tons for Western shipment at $43.50, Baltimore, being reported. Prices are hardly as strong as they were, prompt Ferro being quoted at $43.25 to $43.75, seaboard. For delivery during the first half of next year $43.50 to $44 is quoted, although some sellers still hold their former higher quotations.

**Steel Billets.**—The market is very dull; transactions have been very light, and for prompt shipment. Makers have no heavy orders on hand, and are not very favorably impressed with the outlook. Ordinary Rolling Steel, for delivery in this territory, is quoted at $26.20, with Forging Steel at $28.20, subject to the usual extras for high carbons and special sizes.

**Plates.**—Orders have not been so numerous as they were during the past few weeks, but still aggregate a fair tonnage. The demand covers a wide range, largely for prompt delivery. It is believed in the trade that more active buying will develop by the middle of the month. Quotations for delivery in this territory range as follows:

| | Carloads. Cents. | Parts carload. Cents. |
|---|---|---|
| Tank, Bridge and Boat Steel | 1.75 | 1.80 |
| Flange or Boiler Steel | 1.85 | 1.95 |
| Commercial Firebox | 1.95 | 2.00 |
| Marine | 2.15 | 2.20 |
| Locomotive Firebox Steel | 2.25 | 2.30 |

| The above are base prices for ¼-in. and heavier. The following extras apply: | Extra per 100 lb. |
|---|---|
| 3-16-in. thick | $0.10 |
| Nos. 7 and 8, B. W. G | .15 |
| No. 9, B. W. G | .25 |
| Plates over 100 to 110 in | .05 |
| Plates over 110 to 115 in | .10 |
| Plates over 115 to 120 in | .15 |
| Plates over 120 to 125 in | .25 |
| Plates over 125 to 130 in | .50 |
| Plates over 130 in | 1.00 |

**Structural Material.**—The demand is not very heavy. Some fairly good sized propositions are under consideration, but current business is largely of a miscellaneous character. One Structural mill booked an order for 600 tons for a nearby building. Quotations continue unchanged, 1.75c. to 1.90c. being named, according to specification, for deliveries in this territory.

**Sheets.**—A falling off in business is to be noted, and some of the mills have not been as fully engaged as they were. For mill shipments the following range of prices is quoted, a tenth extra being added for small lots: Nos. 18 to 20, 2.50c.; Nos. 22 to 24, 2.60c.; Nos. 25 to 26, 2.70c.; No. 27, 2.80c.; No. 28, 2.90c.

**Bars.**—While the immediate demand is not large, the market shows increased strength and prices for Refined Iron Bars have in a number of instances been advanced. Mills report fair specifications with a moderate amount of new business, the greater part for prompt shipment. Mills still continue to operate intermittently. Refined Iron Bars, for delivery in this territory are quoted at 1.45c. to 1.50c., with some few sellers holding at 1.55c. Steel Bars are quiet and are quoted at 1.55c., with Rerolled Bars at 1.50c., delivered in this territory.

**Coke.**—The demand for Coke shows but little change. Some small contracts for Foundry Coke continue to be made at ruling prices, for delivery during the balance of the year. Furnace Coke has not been active. Quotations are as follows, according to grade and analysis, Foundry Coke, $2.15 to $2.35, at ovens; Furnace Coke, $1.50 to $1.75, at ovens. For delivery in this territory the following range of prices is named:

| | |
|---|---|
| Connellsville Furnace Coke | $3.65 to $3.90 |
| Foundry Coke | 4.30 to 4.50 |
| Mountain Furnace Coke | 3.25 to 3.50 |
| Foundry Coke | 3.90 to 4.10 |

**Old Material.**—The first movement of any consequence in the Scrap market for several weeks came last week, when a nearby Steel mill took 4000 tons of Heavy Melting Steel for delivery during the next three months at an average price of $15.25 delivered. Several other Steel mills are in the market, but still refuse to pay the prices dealers ask. Sales of other grades of Scrap have been rather more active and prices show a further advance. Choice No. 1 Railroad Wrought appears to be scarce, while a decidedly better demand is reported for Borings, Turnings and Machinery Cast. Nominal prices for deilvery in buyers' yards, Eastern Pennsylvania and adjoining territory, range about as follows:

| | |
|---|---|
| No. 1 Steel Scrap and Crops | $15.25 to $15.75 |
| Low Phosphorus | 18.50 to 19.00 |
| Old Steel Axles | 21.00 to 21.50 |
| Old Iron Axles | 22.50 to 23.00 |
| Old Iron Rails | 20.00 to 20.50 |
| Old Car Wheels | 15.00 to 15.50 |
| Choice No 1 R. R. Wrought | 18.25 to 18.75 |
| Machinery Cast | 15.25 to 15.75 |
| Railroad Malleable | 13.50 to 14.00 |
| Wrought Iron Pipe | 14.00 to 14.50 |
| New Bundled Sheets | 12.50 to 13.00 |
| No. 1 Forge Fire Scrap | 12.00 to 12.50 |
| No. 2 Light Iron | 8.75 to 9.25 |
| Wrought Turnings | 11.50 to 12.00 |
| Stove Plate | 13.00 to 13.50 |
| Cast Borings | 10.75 to 11.25 |
| Grate Bars | 13.00 to 13.50 |

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Pilling & Crane, formerly located in the Girard Trust Building, have completed the removal of their offices to the Real Estate Trust Building, southeast corner, Broad and Chestnut streets, Philadelphia, Pa.

## Birmingham.

BIRMINGHAM, ALA., August 31, 1908.

**Pig Iron.**—The schedule of prices recently adopted for prompt deliveries has been advanced to $13, Birmingham, for No. 2 Foundry, and reports indicate the maintenance of such a basis, although the demand has been of rather a desultory nature. Among the sales reported, one of 1000 tons of analysis Forge Iron, shipment to commence immediately, is the largest consideration. This brought $12.50, Birmingham. Silicon was 1 per cent. and better, with correspondingly high manganese specified. A lot of 200 tons, silicon 3 to 4 per cent., recently sold at $13.50, and smaller quantities of Clifton high manganese Iron, with silicon above 3 per cent., brought $14 per ton. An effort to secure 300 tons of No. 2 for prompt shipment at $12.50 is known to have been unsuccessful, while 750 tons for delivery covering the remainder of the year, at $13 per ton, was refused by one large producer, who is considered practically out of the market for the remainder of the year by reason of the condition of its order books. Two other large interests are also considered out of the market, without indications of a change in the intended policy of limiting production to actual commitments. Some interest is shown by melters in 1909 requirements, but so far their inquiries have assumed definite form in but few cases. On a bona fide inquiry for 750 tons for the first quarter a quotation on basis of $14, Birmingham, for No. 2 Foundry was elicited, subject to immediate acceptance.

**Cast Iron Pipe.**—This market is practically without a feature. Minor orders for maintenance work and extensions by small municipalities continue to make up the business transacted, and while the outlook for larger contracts is good, a more active market is hardly expected within 60 days or longer. With the price of raw material apparently on a firm basis and the output of all plants being moved, it is generally conceded that bottom prices on this material have been reached, although a definite statement as to the present level of prices is not warranted. There has been a slight advance in quotations on Cast Iron Soil Pipe, resulting

from an improvement in the demand, but there is still some accumulation of stock that may be a factor later. On Water Pipe we quote as follows, per net ton, f.o.b. cars here: 4 in. to 6 in., $23; 8 in. to 12 in., $22; over 12 in., average, $21, with $1 per ton extra for Gas Pipe.

**Old Material.**—A fairly satisfactory tonnage is being moved and prices have not suffered. Among the transactions reported, one of approximately 900 tons of old car wheels is the most significant. A quantity of furnace Scrap has also been involved in recent transactions, at prices apparently satisfactory to all parties concerned. Dealers' asking prices are as follows, per gross ton, f.o.b. cars here:

| | |
|---|---|
| Old Iron Rails | $14.50 to $15.00 |
| Old Iron Axles | 15.50 to 16.00 |
| Old Steel Axles | 13.00 to 13.50 |
| No. 1 Railroad Wrought | 13.00 to 13.50 |
| No. 2 Railroad Wrought | 10.50 to 11.00 |
| No. 1 Country Wrought | 11.00 to 11.50 |
| No. 2 Country Wrought | 9.50 to 10.00 |
| No. 1 Machinery | 10.50 to 11.00 |
| No. 1 Steel | 9.50 to 10.00 |
| Wrought Pipe and Flues | 8.50 to 9.00 |
| Stove Plate and Light Cast | 8.50 to 9.00 |
| Cast Borings | 5.00 to 5.50 |

## Pittsburgh.

PARK BUILDING, September 2, 1908.—(*By Telegraph.*)

**Pig Iron.**—There is a fair amount of inquiry for Pig Iron, but sales are mostly in small lots, consumers not showing much desire to contract ahead, while, on the other hand, most furnaces are unwilling to sell Iron for future delivery at present low prices. A local concern that is going into the manufacturing of ingot molds is in the market for 1000 tons of Bessemer and 500 tons of No. 2 Foundry for September delivery. The Standard Sanitary Mfg. Company, which bought about 8000 tons of Northern and Southern Foundry Iron some time ago, has now bought 3500 tons of Northern No. 2 for November and December shipment—2000 tons for its Allegheny works from a furnace with an 80c. freight rate, at $14.50 at furnace, or $15.30 delivered, and 1500 tons from a Valley furnace for its New Brighton, Pa., works, at $14.50, at furnace, or $15.40, delivered. The Erie Malleable Company, Erie, Pa., has bought 5000 tons of Malleable Bessemer from the Perry Iron Company, at Erie, at $15, delivered at buyer's works. Several small lots of Bessemer have been sold at $15.10 to $15.25, Valley furnace. It is the belief that the prices of Pig Iron have about touched bottom and that any further marked declines are not likely. We quote Standard Bessemer at $15 to $15.25, Malleable Bessemer, Basic and No. 2 Foundry at $14.50 to $14.75, and Northern Forge at nominally $13.75, all at Valley furnace. A 90c. freight rate should be added for Pittsburgh delivery.

**Steel.**—The Carnegie Steel Company reports a sale of 3000 tons of Plate Slabs to an Eastern consumer at full prices, and we also note a sale by another interest of 6000 tons of Forging Blooms, for delivery over the next year, prices to be adjusted quarterly. It is said that full prices are being obtained in all cases on the small amount of new tonnage placed in Billets and Sheet and Tin Bars. We quote Bessemer and Open Hearth Billets, 3⅞ in. and larger, up to and including 0.25 carbon, $25; 0.26 to 0.60 carbon, $1 extra; over 0.60 carbon, $2 extra, all f.o.b. Pittsburgh. For Wheeling, Martins Ferry, Follansbee, Newcastle, Sharon, Steubenville and Washington (Pa.) delivery, half the freight, or 50c. additional, is charged. Sheet and Tin Bars in random lengths are $27, f.o.b. Pittsburgh. Forging Billets take $2 advance over Rolling Billets.

(*By Mail.*)

Press reports as to orders being placed for Steel cars by the railroads are somewhat exaggerated. The actual facts are that the Chicago & Alton has placed 1000 Steel cars with the Standard Steel Car Company, which will likely be built at its new shops at East Hammond, Ind.; the Wisconsin Central has placed 2500 wooden cars with Haskell & Barker; the Delaware, Lackawanna & Western, 100 refrigerator cars, and the Standard Oil Company some tank cars. Inquiries for cars are in the market from other roads, including about 7000 for the Harriman interests, but these have not gone beyond the inquiry stage. General conditions in the Steel trade show no change, but it is to be noted that the large machinery concerns, such as United Engineering & Foundry, Mesta Machine and Pittsburgh Valve, Foundry & Construction, report that new work has fallen off as compared with two months ago. Business in Structural Materials is increasing, also in Pipe and Sheets, but the other lines are quiet. There is no improvement in Coke and demand for Scrap has fallen off, prices showing a decline.

**Ferromanganese.**—A sale is reported of 1000 tons of Ferro to a large Steel interest for balance of the year delivery, at $42.50, seaboard. The sale is not confirmed, and the price given is reported as to be slightly under the market. We quote 80 per cent. foreign Ferro for prompt delivery at $43 to $43.25, Baltimore, the freight rate to Pittsburgh being $1.95 a ton.

**Ferrosilicon.**—A sale of 50 tons for September and October delivery is reported on the basis of about $67, Pittsburgh. We quote 50 per cent. Ferrosilicon at $67.50 to $70, depending on deliveries and tonnage.

**Muck Bar.**—One or two small inquiries are in the market, but no actual sales have recently been made. We quote best grades of Muck Bar, made from all Pig Iron, at about $25, Pittsburgh.

**Rods.**—There is more inquiry, and more Rods are being actually sold than at any time for some months. Several good sized contracts for Chain Rods have recently been placed at $33, Pittsburgh. The market is firm, and we quote Bessemer Rods at $33, Basic, $34, and Chain Rods, $33, Pittsburgh.

**Skelp.**—A sale of 500 tons of Sheared Iron Skelp, wide sizes, is reported at about 1.75c., Pittsburgh. The market is quiet, and there is not much inquiry. We quote: Grooved Steel Skelp, 1.45c. to 1.50c.; Sheared Steel Skelp, 1.50c. to 1.60c.; Grooved Iron Skelp, 1.60c. to 1.70c., and Sheared Iron Skelp, 1.70c. to 1.75c., f.o.b. Pittsburgh.

**Steel Rails.**—No important contracts from the railroads are expected now for this year delivery. It is thought that some of the leading roads will be in the market, probably as early as October, with contracts for 1909 delivery. The Carnegie Steel Company received an order last week for 1000 tons of 70-lb. Rails for the Peruvian Railways, in Peru, S. A., and also sold about 2000 tons of Light Rails for domestic consumption. The three Rail mills of the Carnegie Steel Company at Edgar Thomson are in operation to about 35 per cent. of capacity. Prices on new Light Rails, which, however, continue to be shaded about $2 a ton by rerolling Rail mills, are as follows: $25 for 25 to 45 lb. sections, with $1 advance for 20 lb., $2 advance for 16 lb., and $3 advance for 12 lb. Standard Sections are $28, at mill, and Angle Splice Bars, 1.65c., at mill.

**Plates.**—The contract recently placed by the Pittsburgh Steamship Company, the Ore carrying interest of the Steel Corporation, with the American Shipbuilding Company for two Ore boats, will take about 7000 tons of Plates and small Shapes. If these are built at the Lorain yard of the American Shipbuilding Company the Plates will be furnished by the Carnegie Steel Company, but if they are built at the Western yards the Steel will be furnished by the Illinois Steel Company. Eight or ten other Ore vessels are being figured on, and it is believed some of them will be placed very soon. It is likely the 1000 Steel cars for the Chicago & Alton taken by the Standard Steel Car Company will be built at East Hammond, in which event the Plates and small Shapes, about 11,000 tons, will be furnished from South Chicago. If the cars are built at Butler, Pa., the Plates will be furnished by a Pittsburgh mill. The Standard Oil Company has placed a small order for tank cars, and it is reported that several of the railroads will soon be in the market with large inquiries for Steel cars. Demand for Plates from the general trade is fair, and the Homestead Steel Works of the Carnegie Steel Company has the best rolling schedule this week that it has had in some time. Some shading in prices in Plates is being done by two or three of the outside mills and on the narrower sizes, but this does not as a rule exceed $1.50 a ton. Regular prices are as follows: Tank Plates, ¾ in. thick, 6¼ in. up to 100 in. wide, 1.60c., base, at mills, Pittsburgh. Extras over this price are as follows:

Tank, Ship and Bridge quality, ¼ in. thick on edges, 100 in. wide, down to but not including 6 in. wide, is taken as base.

Steel Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per square foot, shall be considered ¼-in. Plate. Steel Plates over 72 in. wide must be ordered ¼-in. thick on edge, or not less than 11 lb. per square foot, to take base price. Steel Plates over 72 in. wide ordered less than 11 in. per square foot down to the weight of 3-16-in. shall take the place of 3-16-in.

Percentages as to overweight on Plates, whether ordered to gauge or weight, to be governed by the Association of American Steel Manufacturers' Standard Specifications.

| | |
|---|---|
| Gauges under ¼-in. to and including 3-16-in. Plates on thin edges | $0.10 |
| Gauges under 3-16-in. to and including No. 8 | .15 |
| Gauges under No. 8 to and including No. 9 | .25 |
| All sketches (excepting straight taper Plates varying not more than 4 in. in width at ends, narrowest end being not less than 30 in.) | .10 |
| Complete Circles | .20 |
| Boiler and Flange Steel Plates | .10 |
| "A. B. M. A." and ordinary Firebox Steel Plates | .20 |
| Still Bottom Steel | .30 |
| Marine Steel | .40 |
| Locomotive Firebox Steel | .50 |
| Shell grade of Steel is abandoned. | |
| For widths over 100 in. up to 110 in | .05 |
| For widths over 110 in. up to 115 in | .10 |
| For widths over 115 in. up to 120 in | .15 |
| For widths over 120 in. up to 125 in | .25 |
| For widths over 125 in. up to 130 in | .50 |
| For widths over 130 in | 1.00 |

TERMS.—Net cash 30 days. Pacific Coast base, 1.50c., f.o.b. Pittsburgh.

**Structural Material.**—Some good business has been placed in the past week and more is pending that is likely to be given out within a short time. In addition to the Harriman specification to the American Bridge Company for 4000 tons, the American Bridge Company has taken 4500 tons of bridge work for the Glendale cut off of the Long Island Railroad and 2400 tons for a county bridge at Oakmont, Pa. The bid on this latter bridge was $269,371.86.

The McClintic-Marshall Construction Company has taken 1300 tons of Steel for a San Francisco wharf shed, and the Pittsburgh Steel Construction Company has taken 1600 tons for the five-story bank building to be erected by the First National Bank, Fifth avenue and Wood street, this city. The foundation and walls of this structure will be strong enough to support 20 additional stories, should it be decided later on to add this number. The Pittsburgh Steel Construction Company will also erect the 25-story Oliver office building on Smithfield street, the Steel to be rolled by the Carnegie Steel Company and fabricated by the American Bridge Company. There is still much complaint over the low prices being made in fabricated and erected work, which in some cases seem to be below actual cost, if regular prices are paid for plain material, which seems doubtful. On Thursday, September 10, at 2 p.m., bids will be opened in the City Controller's office, Pittsburgh, for the erection of a Steel bridge across the Monongahela River, at Monongahela City, Pa., which will require 2700 tons. We quote, f.o.b. mill, Pittsburgh: I-Beams, H-Beams and Channels, 3 to 15 in., inclusive, 1.60c., net; Beams over 15 in., 1.70c., net; Angles, 3 to 6 in., inclusive, ¼ in. and up, 1.60c., net; Angles, over 6 in., 1.70c., net; Angles, 3 x 3 in. and up, less than ¼ in., 1.50c., base, half extras, Steel Bar card; Tees, 3 in. and up, 1.65c., net; Zees, 3 in. and up, 1.60c., net; Angles, Channels and Tees under 3 in., 1.50c., base, half extras, Steel Bar card; Deck Beams and Bulb Angles, 1.90c., net; Hand Rail Tees and Z-19, 3c., net; Checkered and Corrugated Plates, 3c., net.

**Sheets.**—The improved demand for Corrugated Sheets is the noticeable feature of the market, and we note an inquiry for about 400 tons from one of the bridge companies. The American Sheet & Tin Plate Company is operating about 65 per cent. of its Sheet mill capacity, but some of the independent Sheet mills are running to nearly full capacity and others to about one-half. Prices in the main are being observed, but there is some cutting on both Black and Galvanized Sheets for prompt shipment by a few mills, though not to exceed $2 a ton. For shipments from mill regular prices are as follows: Blue Annealed Sheets, No. 10 and heavier, 1.80c.; Nos. 11 and 12, 1.85c.; Nos. 13 and 14, 1.90c.; Nos. 15 and 16, 2c.; Box Annealed, Nos. 17 to 21, 2.25c.; Nos. 22 to 24, 2.30c.; Nos. 25 and 26, 2.35c.; No. 27, 2.40c.; No. 28, 2.50c.; No. 29, 2.60c.; No. 30, 2.70c. Galvanized Sheets: Nos. 10 and 11, 2.45c.; Nos. 12 and 14, 2.55c.; Nos. 15 and 16, 2.65c.; Nos. 17 to 21, 2.80c.; Nos. 22 and 24, 2.95c.; Nos. 25 and 26, 3.15c.; No. 27, 3.35c.; No. 28, 3.55c.; No. 29, 3.70c.; No. 30, 3.95c.; No. 28, Painted Roofing Sheets, $1.75 per square, and Galvanized Roofing Sheets, No. 28, $3.10 per square, for 2½-in. corrugations. These prices are subject to a rebate of 5c. per 100 lb. to the large trade under the usual conditions, jobbers charging the usual advances for small lots from store.

**Tin Plate.**—Very little new business is being placed, shipments from the mills representing specifications against contracts placed in the early part of the year. The American Sheet & Tin Plate Company is decreasing its operations, having shut down the Sharon works last week, and is now operating to about 45 per cent. of capacity. Some cutting is being done in prices of Tin Plate, but as yet this is small and has not affected the market. We quote $3.70 for 100-lb. Cokes, 14 x 20, f.o.b. Pittsburgh, terms 30 days, less 2 per cent. off for cash in 10 days, this price being subject to the usual rebate of 5c. per base box in large lots.

**Hoops and Bands.**—There is practically no new buying and specifications against contracts are only fair, shipments by the mills being rather light. It is said regular prices are being maintained as follows: Steel Hoops, 1.80c., base, full Hoop card prices; Steel Bands, 1.40c., base, half Steel card extra, all f.o.b. cars, Pittsburgh, in carload lots, for delivery during 1908.

**Iron and Steel Bars.**—Not much new business is being placed in either Iron or Steel Bars, but specifications against contracts for Steel Bars are improving, and shipments by the mills are getting heavier. The railroads as yet are not buyers of Bars to any extent and are not expected to place any heavy tonnage for some time yet. There is some little improvement in demand for Iron Bars, and the mills of Republic Iron & Steel Company and other makers of Iron Bars are operating to larger capacity than for some time. It is said that prices are being maintained. We quote Iron Bars at 1.40c., base, for Pittsburgh delivery, and 1.35c., base, for Western points, to which freight is added, except Chicago, the price for which is 1.50c., delivered. We quote Steel Bars at 1.40c., Pittsburgh, for base sizes.

**Merchant Steel.**—The makers of Merchant Steel have agreed to allow implement makers and other consumers to contract for their requirements in Merchant Steel, aside from Steel Bars, up to January 1, 1909, instead of to October 1 only, as decided upon some time ago. In the case of Steel Bars, contracts were made in June for tonnages needed up to July 1, 1909. Specifications on contracts are improving, but current new tonnage is light. Prices on Shafting are still being shaded to some extent on the small amount of tonnage that is being placed. We quote: Cold Rolled Shafting, on contracts for 100 tons and over, 57 per cent. off; carloads, 56 per cent. off, and less than carloads, 52 per cent. off, on which carload freight is allowed within base territory. Smooth Finished Machinery Steel, 1.80c. to 1.90c.; Flat Sleigh Shoe, 1.75c. to 1.85c.; Cutter Shoe Steel, 2.15c. to 2.25c.; Toe Calk, 1.90c. to 1.95c.; Railroad Spring Steel, 1.60c. to 1.75c., the higher price being for Pennsylvania Railroad analysis. Carriage Spring Steel is 1.80c.; Tire Steel, Iron finish, 1½ x ½ in. and heavier, 1.40c.; under 1½ in., 1.55c. Planished Tire Steel is 1.60c., all f.o.b., at mill.

**Merchant Pipe.**—Spang, Chalfant & Co., Inc., have taken a contract for 35 miles of 18-in. Line Pipe for a gas line, one of the largest orders placed for some time. New tonnage in Merchant Pipe is steadily increasing and August showed a slight gain over July. The Standard Oil Company has placed some heavy business in both gas and oil lines, which has gone to the leading interest. Prices on Steel Pipe are, on the whole, being maintained, but on Iron Pipe are being shaded to some extent. Discounts on Steel Pipe, ¾ to 6 in., to the large trade are now 76 and 5 per cent. off list. Regular discounts are as follows:

*Merchant Pipe.*

| | Jobbers, carloads, Steel. | |
|---|---|---|
| | Black. | Galv. |
| | % | % |
| ⅛ to ¼ in | 67 | 51 |
| ⅜ in | 69 | 55 |
| ½ in | 71 | 59 |
| ¾ to 6 in | 75 | 65 |
| 7 to 12 in | 72 | 57 |
| Extra strong, plain ends: | | |
| ⅛ to ⅜ in | 60 | 48 |
| ½ to 4 in | 67 | 55 |
| 4½ to 8 in | 63 | 51 |
| Double extra streng, plain ends: | | |
| ½ to 8 in | 56 | 45 |

Discounts on Genuine Iron Pipe are as follows:

| | Black. | Galv. |
|---|---|---|
| | % | % |
| ⅛ to ¼ in | 65 | .. |
| ⅜ in | 67 | 53 |
| ½ in | 69 | 57 |
| ¾ to 6 in | 73 | 63 |
| 7 to 12 in | 70 | 55 |
| Extra strong, plain ends: | | |
| ⅛ to ⅜ in | 58 | 46 |
| ½ to 4 in | 65 | 53 |
| 4½ to 8 in | 61 | 49 |
| Double extra strong, plain ends: | | |
| ½ to 8 in | 54 | 43 |

**Railroad Spikes.**—Railroads are doing little new buying, but demand for the smaller sizes is fairly active. All the mills making Spikes are badly in need of work. We quote: Standard sizes, 4½ x 9-16 in., at $1.70, and the smaller sizes at $1.80 per 100 lb. in carload and larger lots, with an advance of 5c. per 100 lb. for less than carload, f.o.b. Pittsburgh.

**Spelter.**—Prices are higher than last week, and there is more demand. We note a sale of 75 tons of prime Western Spelter for September and October shipment, at 4.57½c., East St. Louis, equal to 4.70c., Pittsburgh. We quote the market at 4.57½c. to 4.60c., East St. Louis, equal to 4.70c. and 4.72½c., Pittsburgh.

**Boiler Tubes.**—New demand is light, and is only for small orders for current needs. The railroads are placing only small orders for repair work. Regular discounts on Merchant Tubes in small lots, on which an extra 5 per cent. is allowed in carloads, but which discounts are being shaded, are as follows:

*Boiler Tubes.*

| | Iron. | Steel. |
|---|---|---|
| 1 to 1½ in. | 42 | 47 |
| 1¾ to 2¼ in | 42 | 59 |
| 2½ in | 47 | 61 |
| 2¾ to 5 in | 52 | 65 |
| 6 to 13 in | 42 | 59 |

2½ in. and smaller, over 18 ft. long, 10 per cent. net extra.
2¾ in. and larger, over 22 ft. long, 10 per cent. net extra.

**Iron and Steel Scrap.**—Demand is very dull, and in the past week prices have eased off to some extent. The large consumers of Scrap, such as Sharon Steel Hoop Company, La Belle Iron Works, Pittsburgh Steel Company, Allegheny Steel Company and Page Woven Wire Fence Company are pretty well filled up, and are not taking in any Scrap at present. We quote Heavy Steel Scrap, for Pittsburgh, Sharon, Steubenville, Follansbee and Monessen delivery, at $14.25 to $14.50, while Heavy Steel Scrap, for hand charged Open Hearth furnaces, and for pieces weighing 10 lb. minimum and 300 lb. maximum, is $1 a ton higher. Dealers quote on other grades of Scrap as follows: Cast Iron Borings, $8.75 to $9; Bundled Sheet Scrap, $12.25 to $12.50; No. 1 Cast Scrap, $14.25 to $14.50; No. 1 Railroad Wrought, $15 to $15.25; No. 1 Busheling Scrap, $13.50 to $14; No. 2, $10 to $10.25; Sheet Bar Crop Ends, $17.50 to $18. There is a heavy demand for Iron Axles, and this is the only product on the whole list that has advanced in price. We quote these at $22 to $22.50, and they are firm. Steel Axles are $19; Low Phosphorus Melting Stock, $18.50 to $19; Rerolling Rails, $16 to $16.25; Machine Shop Turnings, $9.50 to $9.75; Railroad Malleable, $14; Grate Bars, $12.25 to $12.50; Old Car Wheels, $14.50 to $14.75, all in gross tons. We note sales as follows: 1000 tons of Sheet

Bar Crop Ends on the basis of about $18, Pittsburgh; 1000 tons of Heavy Steel Scrap at $14.25 to $14.50; 800 tons of Cast Iron Borings at about $9, and 750 tons of Machine Shop Turnings at about $9.75, Pittsburgh.

**Coke.**—There is no improvement in the Coke trade, either as regards demand or prices. Strictly Connellsville Furnace Coke for spot shipment can still be had as low as $1.50, at oven, while on contracts running through first half of next year about $1.75 is quoted. The Independent Coke Producers' Association reports that out of 36,330 ovens only 50 per cent. are in operation, and running about 5½ days per week. The Frick Coke Company is running about 53 per cent.; Rainey 31 per cent.; Brown & Cochran about 76 per cent., and Oliver & Snyder about 81 per cent. The output of Coke last week was 196,144 tons, a gain over the previous week of less than 3000 tons.

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Daft, Heyward & Co., Frick Building Annex, Pittsburgh, dealers in Pig Iron, Alloys, Coal and Coke, have dissolved partnership and have been succeeded by Thomas R. Heyward & Co. Mr. Heyward will conduct the business as in the past, A. C. Daft, who was associated with him, having retired to devote his attention to the handling of Alloys.

## San Francisco.

SAN FRANCISCO, August 26, 1908.

While there has been no decided improvement in the various branches of the Iron trade in the past two weeks, there is no occasion for discouragement. A number of enterprises are being considered by capitalists and electrical engineers, and within a few months some of these will probably be under way. The mining industry has not sent as much business to local engineering concerns as was expected, but conditions in the oil regions are good and oil prices still tend upwards. Some of the largest dealers in Pipe, Casings and Oil Well Supplies say that their business has not increased as yet, but larger orders seem only a matter of a little time. The demand for Light Rails for mining and logging roads is still very small. Standard gauge railroad construction is limited, principally to two or three large railroads on the Coast, and local jobbers cannot touch this business. The State of California has showed an increase of $109,000,000 in assessed valuation over last year. Most of this is due to improvements made in San Francisco. Total property values in the State now approximate $2,000,000,000.

**Structural Material.**—The construction of many new buildings is being pushed vigorously, and the downtown business section now looks well built up. Mechanics will be busy all winter in finishing large buildings now under way, but there will probably be no further increase in the monthly total valuations of new building work initiated in the balance of the year. Few Steel erection jobs of any size are now in progress in this city and vicinity. Fabricated Steel for reinforced concrete structures is not in great demand. There is a moderate demand for Cast Iron Columns for brick buildings and also for ornamental Iron work for class A buildings. It is now estimated that the construction of office buildings in the burned district downtown is well ahead of the immediate demands of business men who are gradually moving from temporary to permanent locations. About 125 office buildings, containing 13,200 offices, have been constructed or commenced since the fire. Of these, 63 first-class office buildings are already open, with an aggregate of 8900 offices. A number of the retail stores will probably delay coming downtown until well into next year, as will also many office tenants. The strictness of the new building ordinances has delayed the reconstruction of the old hotel and apartment house district west of Powell street. Property owners are planning to petition the Board of Supervisors for an amendment to the building law providing for a slow burning type of structure suitable for apartments and flats and not prohibitive in cost. The plan contemplates the erection of wooden frame covered both inside and outside with Steel Lath and cement plaster. All exterior woodwork is to be sheathed with Sheet Iron and fireproof roofs and metal cornices will be required. A new set of bids was opened August 25 for the construction in San Francisco of a sea wall, crib wall, transport wharves and sheds for the new Army Supply Depot at Fort Mason. The Penn Bridge Company, Beaver Falls, Pa., was the only outside bidder this time, its figure being $1,440,000. The San Francisco Bridge Company's figures were the lowest. It put in two bids, one of $1,143,000 and the other of $1,040,000. The Pacific Construction Company bid $1,147,000. Concrete and Steel are the principal materials to be used.

**Pig Iron.**—The local foundries are finding little business to do, and there have been two or three small failures. Under such circumstances demand is small and the market is weak. Advices have reached the custom house that the steamer Hazel Dollar left Shanghai, China, July 12 with 500 tons of Chinese Pig Iron for delivery at San Pedro, Cal., for the Los Angeles Iron foundries. The Iron was shipped by the Hang Yang Iron Works. Stocks of Pig Iron in this city are ample for all probable requirements for some time. The price of No. 1 English, No. 1 Scotch and Chinese Pig Iron is about $27 per ton, ex yard.

**Merchant Pipe.**—There is now less than the usual local demand for Merchant Pipe, with prices based on the usual differential. The movement of goods from manufacturer to jobber has not materially improved. Discounts on Steel Pipe are about as follows on jobbers' carloads:

| | Steel. Black. | Steel. Galv. |
|---|---|---|
| | % | % |
| ⅛ to ¼ in | 56.5 | 40.5 |
| ⅜ in | 58.5 | 44.5 |
| ½ in | 60.5 | 48.5 |
| ¾ to 6 in | 64.5 | 54.5 |
| 7 to 12 in | 61.5 | 46.5 |
| Extra strong, plain ends: | | |
| ⅛ to ¾ in | 49.5 | 37.5 |
| ½ to 4 in | 56.5 | 44.5 |
| 4½ to 8 in | 52.5 | 40.5 |
| Double extra strong, plain ends: | | |
| ½ to 8 in | 45.5 | 34.5 |

**Cast Iron Pipe.**—Business is improving. Several contracts have been made for moderate sized lots of Cast Iron Pipe and inquiries are numerous. There are prospects of a heavy tonnage being placed within the next few months. There is a possibility of securing a market for Cast Iron Pipe in Mexico, although years sometimes elapse before bids are taken on plans for proposed enterprises in that country. Lower freight rates by sea give European countries the advantage. The bid of the United States Cast Iron Pipe & Foundry Company for 356 tons of 4 in. to 16 in. Cast Iron Pipe, amounting to $12,726, has been accepted by the Board of Water Commissioners of Santa Barbara, Cal. City Engineer F. H. Miller of Grass Valley, Cal., has prepared estimates for an extension of the city's 6-in. water main 1150 ft. The citizens of Sausalito, Cal., propose to bond the city in $100,000 to install a municipal water system. The Board of Public Works of Los Angeles has rejected all of the bids, ranging between $2,000,000 and $3,000,000, for the construction of the "Jawbone" section of the 240-mile aqueduct which is to carry water from the Owens River to that city. The city will do the work itself. San Bernardino is rapidly replacing with Cast Iron Pipe the Kalamein Pipe laid in 1891 for water distribution, corrosion having practically destroyed the present system. Bids have just been taken for an additional lot of 4, 8 and 12 in. Cast Iron Pipe. San Diego expects shortly to replace with Cast Iron Pipe the Steel and Kalamein Pipe laid several years ago. The town of Lodi, Cal., which has voted a bond issue, will soon be in the market for Water Pipe.

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The union boilermakers and Structural Iron workers of San Francisco have just adopted a joint working agreement, whereby members of both organizations may work on all Iron and Steel Tank construction on buildings. The agreement fixes a minimum wage scale of $5 per day of 8 hr. The compact has been approved by the Building Trades Council and the San Francisco Labor Council. This ends the long standing difference between the unions in the matter of tank work. The number of structural workers employed in this city has fallen off greatly of late.

Active operations will be started at once at Riverside, Cal., by the Pacific Malleable Castings Company in the construction of a foundry. William Kerr is manager. The foundry will cost $25,000. Electric power will be used for operating the foundry and oil for annealing and melting operations.

## St. Louis.

ST. LOUIS, August 29, 1908.

The demand for Structural Steel that was expected to develop this month for some large buildings in St. Louis is still delayed. One notable exception is the new Public Library, which has been given out this week. The demand from railroads is steadily increasing and mention is made of the urgent need for supplies since orders are followed up by telegrams. Material is mainly wanted for track and car repair work. There are few idle mills or shops in St. Louis territory in any line, and all those identified with the Iron trade have either increased their output or are preparing to do so, though few if any expect to work to full capacity in the near future.

**Coke.**—There is a steady and fairly satisfactory demand, some orders reaching 700 tons, but for the most part running smaller. Standard Connellsville is quoted at $2.25 to $2.75 for 72-hr. f.o.b. ovens, spot and contract.

**Pig Iron.**—While inquiry among the sellers of Pig Iron indicates that $13 is asked for No. 2 Foundry f.o.b. Birmingham, yet an offer of $12.50 on 1000 tons was accepted. Some Tennessee furnaces which have favorable freight rates into St. Louis territory are thought to have sold for less than $13, Birmingham basis. A leading house reports an inquiry for 2000 tons over the balance of the year; 500 tons first half; 2000 tons of Southern and 2000 tons Northern, delivery over the first half of 1909, and inquiries for small lots aggregating 2500 tons for delivery over the remainder of the year.

**Finished Iron and Steel.**—In Structural Steel numerous small orders are being placed, with the probability of a considerable increase in demand in September. There is more doing with railroads, and their wants cover the entire range of rolled products with the exception of Standard Rails, which continue dull. But little new equipment is being ordered.

**Lead and Spelter.**—The demand for Lead is improving and the market is firm at 4.45c. to 4.45½c. Spelter is also in fairly good demand and prices are strong at 4.57½c. to 4.60c. Producers of Lead and Spelter are not inclined to name prices for forward delivery. The Joplin ore market is ruling at $36 to $37 per ton.

**Old Materials.**—Transactions are mainly confined to dealers, though there is some demand from the mills. A pronounced scarcity of Relaying Rails is reported, and the demand from lumber interests in this territory is met with difficulty. We quote per gross ton, f.o.b. St. Louis, as follows:

| | |
|---|---|
| Old Iron Rails | $15.50 to $16.00 |
| Old Steel Rails, rerolling | 14.50 to 15.00 |
| Old Steel Rails, less than 3 ft | 13.75 to 14.00 |
| Relaying Rails, standard sections, subject to inspection | 21.50 to 22.50 |
| Old Car Wheels | 14.50 to 15.00 |
| Heavy Melting Steel Scrap | 13.00 to 13.50 |
| Frogs, Switches and Guards, cut apart | 13.00 to 13.50 |
| Mixed Steel | 10.25 to 10.75 |

The following quotations are per net ton:

| | |
|---|---|
| Iron Fish Plates | $14.50 to $15.00 |
| Iron Car Axles | 17.50 to 18.00 |
| No. 1 Railroad Wrought | 12.50 to 13.00 |
| No. 2 Railroad Wrought | 11.50 to 12.00 |
| Railway Springs | 12.00 to 12.50 |
| Locomotive Tires, smooth | 13.00 to 13.25 |
| No. 1 Dealers' Forge | 10.50 to 11.50 |
| Mixed Borings, &c | 5.50 to 6.00 |
| Machine Shop Turnings | 8.00 to 8.50 |
| No. 1 Boilers, cut to Sheets and Rings | 9.50 to 10.00 |
| No. 1 Cast Scrap | 12.00 to 12.50 |
| Stove Plate and Light Cast Scrap | 10.50 to 11.00 |
| Railroad Malleable | 11.00 to 11.50 |
| Agricultural Malleable | 10.00 to 10.50 |
| Pipes and Flues | 8.75 to 9.50 |

An independent manufacturer reports that the demand for Wrought Pipe is better. Prices are firm and jobbers are disposed to carry more Pipe in stock.

The Ludlow-Saylor Wire Company is just closing a fairly satisfactory season. The plant is now engaged on Screens and some Wire Cloth for another season.

The Koken Iron Works report a number of contracts for Structural Steel for country points, including Steptoe Valley Smelting & Mining Company, McGill, Nev.; a Salt Lake City warehouse; buildings in Kansas and Texas, besides some small local business.

The Hall & Brown Woodworking Machinery Company finds that in the past two months the demand for its special machinery has improved.

A local screw company states that while the demand shows some gain, competition is keener than usual and prices are not satisfactory.

The Standard Railroad Equipment Company reports the demand for car roofs and other railroad repair work is growing, and that there are a few orders for new cars.

The St. Louis Rail & Equipment Company has had a good demand for all kinds of rebuilt equipment, while for track materials, including second-hand Rails, Bolts, Spikes, Angle Bars, &c., the past month was the best since January.

The four leading Iron jobbers note a good demand from country buyers for immediate wants and in the aggregate considerable business is being done. St. Louis and other large city trade, however, is quiet. The W. G. Hager Iron Company is moving its stock to its new warehouse, which covers nearly two acres and is one of the largest in the West.

A. Leschen & Sons Rope Company finds a good general demand for Wire Rope, both for transmission and other purposes. The use of Wire Rope for overhead transportation of material is increasing.

## Cincinnati.

CINCINNATI, OHIO, September 2.—(*By Telegraph.*)

September is usually one of the busiest months of the year in Pig Iron, but the feeling is rather general in this market that there is nothing to bring it about this time. The sudden ending of the Coal strike in the Alabama districts will have a tendency to lessen the gathering strength of the Southern product. The usual sluggishness of the finished material and machinery markets in Presidential election time is not any less pronounced this year; if anything, accentuated. There is a feeling of hopefulness among machinery men, however, and with the most of them August closed better than July, while the encouraging increase in inquiries and sales in the last days of the month augur well for September. Building improvements projected last year are most of them well along now, and the Structural Iron and Steel men are increasing their stocks to cover specifications and replenish depleted ones.

**Pig Iron.**—In the strictly local market the week has been very quiet, with fewer inquiries than for some time; but some very good sales have been negotiated in St. Louis and Detroit and Northwestern territory through Cincinnati sales agencies. A closely contested sale in Indiana which has just been concluded, involving shipments of about 5500 tons, really has little bearing on the current markets because of its terms. About 3000 tons of Malleable Iron is purchased by a central Indiana melter, who is quoted a specially low price, conditioned upon acceptance of the balance of shipments of about 2500 tons due on an old contract made at $20.50 a ton. The compromise price, it is understood, strikes a fair balance between the two extremes in price. Columbus, Wellston and Ironton furnaces share in this business. The quoted price of $12.50, Birmingham furnace, for Southern No. 2 Foundry is probably less stiffly maintained to-day than last week at this time because of the light demand, and the reports from the Alabama field of an ending of the strike. For the last quarter $13 is asked by leading interests, who report well filled order books, for early delivery. An offer of $12, immediate delivery, on 650 tons of Southern Iron by one of the leading selling agents here was turned down. Most furnaces in Southern territory still refuse to quote on next year's delivery. Northern Iron continues on the basis of $15, at furnace, for No. 2, with stocks undoubtedly accumulating. It is undeniably quiet at all selling agencies, but representatives of the largest concerns are absent in Michigan and northern Ohio, where some good sized deals are approaching completion. A Detroit concern is expected to buy to-morrow about 800 tons of Northern Iron for delivery over the last three and the first three months. Another Michigan concern, which is expected to buy Wednesday, is figuring on 1500 tons of Malleable. Another Michigan deal hanging fire is for 700 or 800 tons of No. 3 Foundry, which usually goes to the South, but which, because of the existing price and freight from that territory, will undoubtedly be taken by Ohio furnaces. A deal involving some 5000 tons—2000 each of Northern and Southern No. 2 Foundry and 1000 tons of 4 to 5 per cent. silicon Iron—for delivery to another Michigan concern, has been hanging fire for some time and is due to close within a day or so. A northern Ohio concern is inquiring for 2000 tons of Bessemer for early delivery. For early delivery and balance of the year we quote, f.o.b. Cincinnati, the freight rate being $3.25 from Birmingham and $1.20 from the Hanging Rock District, as follows:

| | |
|---|---|
| Southern Coke, No. 1 | $16.00 to $16.50 |
| Southern Coke, No. 2 | 15.50 to 16.00 |
| Southern Coke, No. 3 | 15.00 to 15.50 |
| Southern Coke, No. 4 | 14.75 to 15.25 |
| Southern Coke, No. 1 Soft | 16.00 to 16.50 |
| Southern Coke, No. 2 Soft | 15.50 to 16.00 |
| Southern Coke, Gray Forge | 14.25 to 14.75 |
| Ohio Silvery, 8 per cent. Silicon | 19.70 |
| Lake Superior Coke, No. 1 | 16.70 to 17.20 |
| Lake Superior Coke, No. 2 | 16.20 to 16.70 |
| Lake Superior Coke, No. 3 | 15.70 to 16.20 |
| Standard Southern Car Wheel | 22.25 to 22.75 |
| Lake Superior Car Wheel | 21.75 to 22.25 |

(*By Mail.*)

**Coke.**—Local selling agencies are in receipt of information that the strike is ended in the Birmingham district. Some difficulty is reported in securing prompt shipment of Coke from the Virginia fields, and the price of $1.90 to $2 is firm. Shipments on contract are being taken with no hold-ups and ovens are taxed to get it out on time and in quantities desired. Local dealers calculate that it will be about two weeks ere ovens in the Alabama district will be burning in normal volume, and no weakening in price is expected during the month of September. Pocahontas Coke is selling here at about $1.60 at ovens. The demand for Foundry grades is about the same as last week and the price for spot Foundry ranges from $2 to $2.50 on favorite brands.

**Finished Iron and Steel.**—August closes a little better in volume of sales from stores than July. There is a little increased demand for Twisted Steel Bars for concrete work, and Plain Steel Bars are a little more active. Some carload orders are being shipped in Structural Steel, and Iron Bars are showing a little more strength. No change is to be noted in prices, and dealers are quoting to the trade as follows, f.o.b. Cincinnati: Iron Bars, carload lots, 1.65c., base, with half extras; small lots from store, 1.85c., base, half extras; Steel Plates, carload lots, 1.75c., base, with half extras; small lots from store, 1.85c., base, half extras; Base Angles, carload lots, 1.85c., base; small lots from store, 2.10c.; Beams, Channels and Structural Angles, 1.85c., base; small lots from store, 2.10c.; Plates, ¼-in. and heavier, carload lots, 1.85c.; small lots from store, 2c.; Blue Annealed Sheets, heavy, No. 16, carload lots, 2.15c.; small lots from store, 2.50c.; No. 14, carload lots, 2.05c.; small lots from store, 2.40c.; No. 10 and heavier, carload lots, 1.95c.; small lots from store, 2.20c.; No. 12, carload lots, 2c.; small lots from store, 2.30c.; Sheets (Light), Black, No. 28, carload lots, 2.65c.; Galvanized Sheets, No. 28, carload lots, 3.70c.; Steel Tire, 4-in. and heavier, carload lots, 1.95c.; Plates, 3-16 and No. 8, carload lots, 2c.; small lots from store, 2.20c.

**Old Material.**—The dealers are still in control of the market, and are urging higher prices on most all lines of Melting Steel and Steel Rails and Iron Axles. Mills in

this section are pretty well covered. Foundries are buying a little more freely, although protesting against dealers' stiffening of prices. There have been some very good sales of Old Steel Rails, which have advanced from 50 cents to $1 a ton. We quote dealers' prices to the trade as follows, f.o.b. Cincinnati:

| | |
|---|---|
| No. 1 R. R Wrought, net ton | $11.75 to $12.75 |
| Cast Borings, ne. ton | 5.00 to 5.50 |
| Heavy Melting Steel Scrap, gross ton | 12.50 to 13.00 |
| Steel Turnings, net ton | 6.00 to 7.00 |
| No. 1 Cast Scrap, net ton | 12.00 to 13.00 |
| Burnt Cast, net ton | 8.00 to 9.00 |
| Old Iron Axles, net ton | 15.50 to 16.50 |
| Old Iron Rails, gross ton | 14.00 to 15.00 |
| Old Steel Rails, short, gross ton | 12.50 to 13.50 |
| Old Steel Rails, long, gross ton | 12.00 to 13.00 |
| Relaying Rails, 56 lb. and up, gross ton | 20.00 to 21.00 |
| Old Car Wheels, gross ton | 12.50 to 13.00 |
| Low Phosphorus Scrap, gross ton | 13.00 to 14.00 |

## Cleveland.

CLEVELAND, OHIO, September 1, 1908.

**Iron Ore.**—A number of small lot sales were made in the week and sellers are looking for some improvement in the demand this month. A number of consumers have not yet bought any Ore this season. Representatives of the Merchant Ore firms who have called on these interests in the past few days report that most of them will be in the market for some Ore soon. Furnacemen in some districts note an improvement in Pig Iron, and this has had a slightly stimulating effect on the Ore market. Ore shipments are increasing slowly and the movement during September is expected to be slightly better than in August. There was some demand for wild vessel tonnage for Ore during the week, but chartering was light as compared with this time in previous years. The Pittsburgh Steamship Company placed two more boats of its fleet in commission this week. Eleven of the small vessels of the company's fleet are still idle, and it is not probable that they will be sent out this season. The docks at the Lake Erie ports are now so crowded with Ore that during the balance of the season it will be necessary to ship nearly all the Ore direct from the boats to the furnaces. Ore prices at Lake Erie docks, per gross ton, are as follows: Old Range Bessemer, $4.50; Mesaba Bessemer, $4.25; Old Range Non-Bessemer, $3.70; Mesaba Non-Bessemer, $3.50.

**Pig Iron.**—The Foundry Iron market in this territory is quiet, being somewhat less active than during the previous few weeks, but some improvement is noted in the demand for Malleable Iron. Among the Malleable sales reported is a 1000-ton lot at $15.50, northern Ohio furnace, for the last quarter of this year, and first quarter of 1909 delivery, and a few small lots by a local interest at $14.75, Valley furnace. Another inquiry for 1000 to 2000 tons of Malleable from a Muncie, Ind., consumer is understood to have resulted in an order. In Foundry Iron one local interest reports the sale of 500 tons of No. 2 at $14.75, Valley furnace, and another sold about 900 tons in the week. The price of Foundry Iron seems to have settled down to $14.50 in the Valley, although some sales, mostly in small lots, are being made at $14.75. Local furnaces are still quoting No. 2 Foundry at $15, at furnace, but it is understood that this price has been shaded for shipments outside of this territory to meet Valley competition. We quote No. 2 Foundry Iron at $15.25, at furnace, for local delivery. The demand for Foundry Iron for Eastern shipment continues fairly good, a number of sales being made in small lots. The Bessemer and Basic Iron market continues very quiet. There is no prospect that any of the idle blast furnaces in this territory will start up for some time, and it is probable that one Valley furnace will go out of blast. For prompt shipment, and for the balance of the year we quote, delivered, Cleveland, as follows:

| | |
|---|---|
| Bessemer | $15.90 to $16.40 |
| Northern Foundry, No. 1 | 15.50 to 15.90 |
| Northern Foundry, No. 2 | 15.25 to 15.50 |
| Northern Foundry, No. 3 | 14.90 to 15.25 |
| Southern Foundry, No. 2 | 16.35 to 16.85 |
| Gray Forge | 14.40 to 14.65 |

**Coke.** The demand for Foundry Coke shows a slight improvement, but prices are no firmer. The Furnace Coke market remains very quiet, with prices weak. Some sales of 72-hr. Connellsville Foundry Coke in small lots are reported at $2, at oven, for the balance of the year delivery, at $2.25 for the first quarter of 1909. We quote Standard Connellsville Furnace Coke for the balance of the year delivery at $1.60 to $1.75, at oven.

**Finished Iron and Steel.**—New business continues rather light, but specifications on contracts continue to come in in a very satisfactory manner, particularly from the implement makers, many of whom are giving orders for good sized tonnages of Steel Bars. There is a good demand for Structural Material from fabricating shops. While no work requiring a large tonnage of Structural Material is being figured on in this territory at present, there is considerable small work. Fabricators are still quoting very low prices. New business is largely in Steel Bars and Structural Material. The demand for Plates is light, showing little, if any, improvement. The American Shipbuilding Company is expected to place an order within the next two weeks for the two lake boats ordered last week by the Pittsburgh Steamship Company. They will require about 8000 tons of Plates and Structural Shapes. Because of the low prices at which the city of Cleveland recently purchased Cast Iron Pipe for Water Pipe extensions, the city has under consideration the expenditure of about $100,000 for additional Pipe, to be purchased soon in anticipation of future needs. The demand for Iron Bars is rather quiet. The two local Bar Iron mills were able, however, to produce 60 per cent. of their full output during August, and it is expected that a further improvement will be shown during the present month. The mills have some fairly good orders for shipment to railroads and other consumers in the Northwest. These orders are to be filled in time for shipment before the close of navigation. A report published in Eastern papers to the effect that an Iron and Steel company in this territory had placed an order for 3000 tons of Billets appears to be without foundation. In Structural Material an order was placed in the week for 300 tons for a railroad bridge, and an inquiry developed for 400 tons for a new Sheet mill to be built by Canton capitalists in Massillon, Ohio. There is also a new inquiry for Standard Rails, 2000 tons being wanted to complete a traction line running into Indianapolis. It does not appear certain, however, that the work will go ahead at the present time. Jobbers report that both their warehouse and stock orders continue to improve slowly and that the volume of their August orders were considerably larger than during any month since last November. We quote: Iron Bars, 1.45c., Cleveland, for car lots; Steel Bars, 1.50c., Cleveland, for car lots, half extras; Beams and Channels, 1.70c., base, Cleveland, and Plates, ¼-in. and heavier, 1.70c., Cleveland. We quote Sheets, mill shipments, car lots, Cleveland, as follows: Blue Annealed, No. 10, 1.90c.; Box Annealed, No. 28, 2.60c.; Galvanized, No. 28, 3.65c. Jobbers quote Iron and Steel Bars out of stock at 1.65c. to 1.70c. Beams and Channels from warehouse are 2c., and Plates, ¼-in. and heavier, 1.90c. Warehouse prices on Sheets are as follows: Blue Annealed, No. 10, 2.10c.; Box Annealed, No. 28, 2.70c.; Galvanized, No. 28, 3.80c. Warehouse prices on Boiler Tubes, 2¾ to 5 in., are 64 per cent. discount, and on Black Merchant Iron Pipe, base sizes, 71 per cent. discount.

**Old Material.**—The market is extremely quiet and prices are slightly easier. Dealers have filled orders recently taken for Steel Scrap and the present demand is very light. The Bar Iron mills have stocks on hand and are buying only in very small amounts. The majority of the dealers are holding fairly firmly to the prices that they have quoted during the past few weeks, but consumers are unwilling to pay these prices and the sales that are being made are mostly slightly under the market quotations. Dealers who have Scrap that they must sell and those having Scrap on cars are making price concessions to dispose of their Material. The Pennsylvania Railroad has a list out of between 2000 and 2500 tons to be sold this week. Dealers' prices to the trade per gross ton, f.o.b. Cleveland, are as follows:

| | |
|---|---|
| Old Steel Rails | $14.50 to $15.00 |
| Old Iron Rails | 17.00 to 17.50 |
| Steel Car Axles | 18.00 to 18.50 |
| Old Car Wheels | 15.00 to 15.50 |
| Heavy Melting Steel | 14.25 to 14.75 |
| Relaying Rails, 50 lb. and over | 22.00 to 23.00 |
| Railroad Malleable | 13.25 to 13.75 |
| Agricultural Malleable | 12.00 to 12.50 |
| Light Bundled Sheet Scrap | 9.50 to 10.00 |

The following quotations are per net ton, f.o.b. Cleveland:

| | |
|---|---|
| Iron Car Axles | $17.00 to $18.00 |
| Cast Borings | 7.00 to 7.50 |
| Iron and Steel Turnings and Drillings | 8.00 to 8.50 |
| Steel Axle Turnings | 8.50 to 9.00 |
| No. 1 Busheling | 12.00 to 12.50 |
| No. 1 Railroad Wrought | 13.50 to 14.00 |
| No. 1 Cast | 12.50 to 13.00 |
| Stove Plate | 10.00 to 10.50 |
| Bundled Tin Scrap | 8.00 to 9.00 |

## Buffalo.

BUFFALO, N. Y., September 1, 1908.

**Pig Iron.**—Conditions are improving slightly and stocks at the furnace banks are being reduced. Calls are now being received from consumers who have not been taking Iron for a considerable period, and some consumers are requesting that specified shipments on contracts be anticipated. The larger proportion of all orders is for early delivery. There is some inquiry for the first quarter of 1909, but most furnacemen are of the opinion that offers now obtainable for next quarter's deliveries are not as favorable as can probably be secured later, and prices are not being quoted that are an inducement to consumers to place business. The market may be said to be a little stronger but not sufficiently so to cause any variation from last week's quotations. The following is the range of prices, f.o.b. Buffalo:

| | |
|---|---|
| No. 1 X Foundry | $16.00 to $16.50 |
| No. 2 X Foundry | 15.50 to 16.00 |
| No. 2 Plain | 15.00 to 15.50 |
| No. 3 Foundry | 14.75 to 15.25 |
| Malleable Bessemer | 16.00 to 17.00 |
| Gray Forge | 14.75 to 15.00 |
| Charcoal | 20.00 to 20.50 |

**Finished Iron and Steel.**—Business continues rather

quiet, with only a moderate inquiry and no very large amount of new business placed. The New York Central Railroad has awarded a contract for Steel for the Kensington avenue viaduct to be built over its belt line tracks, this city—about 450 tons—to the McClintic-Marshall Construction Company, Pittsburgh, and the contract for its erection to the Terry & Tench Company, New York. Contracts for the remainder of the Structural Steel for viaducts, &c., in connection with the grade crossing work on the New York Central belt line here, 11 structures, aggregating about 3500 tons, will probably be placed September 3 in New York City.

**Old Material.**—The market remains firm, with consumers taking larger tonnages of some special grades of material. We quote as follows, per gross ton, f.o.b. Buffalo:

| | |
|---|---|
| Heavy Melting Steel Scrap | $14.00 to $14.25 |
| No. 1 Railroad Wrought | 16.00 to 16.50 |
| No. 1 Railroad and Machinery Cast Scrap | 14.75 to 15.25 |
| Old Steel Axles | 17.00 to 17.50 |
| Old Iron Axles | 19.50 to 20.00 |
| Old Car Wheels | 15.50 to 16.00 |
| Railroad Malleable | 13.50 to 14.00 |
| Boiler Plate | 12.00 to 12.50 |
| Stove Plate | 12.50 to 13.00 |
| Locomotive Grate Bars | 11.50 to 12.00 |
| Pipe | 11.50 to 12.00 |
| Wrought Iron and Soft Steel Turnings | 8.00 to 8.50 |
| Clean Cast Iron Borings | 6.75 to 7.25 |
| No. 1 Busheling Scrap | 12.50 to 13.00 |

## Metal Market.

NEW YORK, September 2, 1908.

**Pig Tin.**—The statistics of the Tin trade as compiled by C. Mayer, secretary of the New York Metal Exchange, show that the total visible supply at the end of August was 17,257 tons. This is an increase of nearly 1300 tons compared with the end of July and is the largest visible supply since November, 1902. Then the price of Tin was below 26c. That this heavy increase should occur in a month when there is no Banca sale is all the more astonishing. A year ago the visible supply was 5400 tons less. Deliveries into consumption in the United States for August were 2600 tons. The total deliveries for the eight months showed a decrease of 4700 tons compared with last year. In London and Holland, however, the deliveries for the first eight months of the year are 400 tons greater than last year. Stock in the United States, exclusive of Pacific ports, amounted to 2092 tons, compared with 1390 tons at the end of August. Business during the week has been dull, although on the sharp drop of August 28 about 75 tons of metal was sold. A portion of this, however, was forced sale. Price changes during the week have been as follows:

| | Cents. |
|---|---|
| August 26 | 29.20 to 29.25 |
| August 27 | 29.30 |
| August 28 | 29.00 to 29.12½ |
| August 31 | 28.95 |
| September 1 | 28.65 |
| September 2 | 29.00 |

The London market closed to-day at £132 10s., for spot, and £133 7s. 6d. for future.

**Copper.**—Consumers of Copper continue to purchase metal in small quantities. The ingot market is dull, as compared with the first of last month, but is vastly better than the first of the year. Prices are somewhat firmer, Electrolytic being quoted at 13.75c., and although there is a possibility of a lower price being accepted for desirable orders, no such sales have come to light. Producers of Lake are holding prices firm, at 14c., but a small quantity in the hands of second-hand dealers can probably be obtained at 13.87½c. The greatest factor in the Copper trade is the improvement in consumption. Large Brass manufacturers are running nearly 70 per cent. of normal, and Sheet Copper manufacturers are running practically normal. The demand for Copper Sheets is unusual. The Wire trade likewise shows an improvement, particularly for the smaller sizes. The export movement continues light, but nevertheless 25,905 tons was exported in August, and the total exports so far this year amounted to 207,617 tons, an increase of 96,871 tons over last year. The foreign market is about 5s. higher than last week, at £60 15s. for spot and £61 10s. for futures.

**Pig Lead.**—Business is dull, and while a little spot metal can be had at 4.57½c., most of the sellers are holding out for 4.60c., which is the price of the leading interests. The market in St. Louis is likewise firmer, at 4.45c. to 4.50c.

**Spelter.**—A considerably better feeling exists in the Spelter trade, and prime Western brands are held at 4.75c., New York. In St. Louis the metal is quoted at 4.57½c. One reason for the strength is the better feeling among the sellers of Ore.

**Antimony.**—This metal is exceedingly dull, Cookson's and Hallett's being obtainable at 8c. to 8.25c. Outside brands are held at 7.75c. to 8c.

**Tin Plate.**—The trade is dull, but prices continue unchanged, at $3.89, New York, and $3.70, Pittsburgh, for 100 lb. IC Coke Plates.

**Old Metals.**—Business in this trade has lagged, and, in fact, there have been so few transactions that quotations are more or less nominal. Dealers' buying prices, based on most recent sales, are about as follows:

| | Cents. |
|---|---|
| Copper, Heavy and Crucible | 12.75 to 13.00 |
| Copper, Heavy and Wire | 12.50 to 12.75 |
| Copper, Light and Bottoms | 11.50 to 11.75 |
| Brass, Heavy | 9.25 to 9.50 |
| Brass, Light | 7.25 to 7.50 |
| Heavy Machine Composition | 12.00 to 12.25 |
| Clean Brass Turnings | 8.25 to 8.50 |
| Composition Turnings | 9.50 to 9.75 |
| Lead, Heavy | 4.35 |
| Lead, Tea | 4.00 |
| Zinc Scrap | 3.25 to 3.50 |

## New York.

NEW YORK, September 2, 1908.

**Pig Iron.**—The market is firmer, and the number of those who are willing to continue to sell at the recent level is narrowed down to a very few, who appear to be filling up. One buyer who inquired for 1500 tons ended up in purchasing 3000 tons. In New England sales have been made on the basis of $17.40, delivered, for No. 2 Foundry. We quote, at tidewater, Northern No. 1 Foundry, $17.25 to $17.75; No. 2 Foundry, $16.75 to $17, and No. 2 Plain, $15.75 to $16.25. Alabama Irons are quoted $17.50 to $17.75 for No. 1 Foundry and $16.75 to $17.25 for No. 2.

**Steel Rails.**—The New Haven Road has bought 800 tons of Rails for quick shipment from an Eastern mill and is expected to buy 4000 to 5000 tons more for shipment this year, but this latter business waits. The Baltimore & Ohio has bought 1500 tons in the past week from the Pittsburgh mill, and the Chicago, Lake Shore & Eastern has placed 1400 tons at Chicago, while scattering orders coming to the leading interest amount to 2500 tons.

**Structural Material.**—The New York Central has taken bids on 3500 to 4000 tons of Steel for bridges on the Belt Line at Buffalo and will open them this week. The Long Island Railroad contract for 4600 tons has finally been let to the American Bridge Company. Keen rivalry has developed on the Steel for several buildings recently let, particularly the Educational Building at Albany, the deliveries for which will extend over a considerable period. It is understood that Bethlehem Shapes will be used on this contract, the first important structure for which they have been ordered. In all, the August awards of Structural Steel throughout the country, on business large enough to be generally figured on, amounted to about 50,000 tons. The American Bridge Company took about 40 per cent. of the total. Last year, when this company closed about 50 per cent. of the fabricating work, there were months with totals running from 100,000 to 125,000 tons for the country. The Pennsylvania Steel Company has been awarded the Steel for rebuilding a portion of the Pan Handle Railroad bridge at Steubenville, Ohio—2000 tons—also 800 tons of bridge work for the Lehigh Valley. The demand for plain material has been only moderate recently. We quote, mill shipments, tidewater delivery, as follows: Beams, Channels, Angles and Zees, 1.76c.; Tees, 1.81c. On Beams, 18 to 24 in., and Angles, over 6 in., the extra is 0.10c. From store Structural Material, cut to length, is sold at about 2½c.

**Bars.**—Some business has come to the mills from jobbers, the manufacturers having just begun to book Steel Bar orders from the jobbing trade for the last quarter of the year, whereas October 1 was the limit in the summer months. Operations of Iron rolling mills are still quite restricted. We quote 1.41c. to 1.46c., tidewater, for Bar Iron, and 1.56c. for Steel.

**Old Material.** The market seems even less active than a week ago. Some interest was then shown by New England foundries in the purchase of Scrap, but it was shortlived, the present basis for Pig Iron making founders, as a rule, unwilling to pay the prices asked for Old Material. Rolling mills are buying on the meagerest scale, and only as orders come to them. The accumulation of Old Material by dealers who are confident of being able to secure higher prices in the next two or three months has kept up. We quote as follows, per gross ton, New York and vicinity:

| | |
|---|---|
| Old Girder and T Rails for melting | $11.25 to $11.50 |
| Heavy Melting Steel Scrap | 11.25 to 11.50 |
| Old Steel Rails, rerolling lengths | 13.50 to 13.75 |
| Relaying Rails | 2.50 to 2.75 |
| Old Iron Rails | 13.50 to 14.00 |
| Standard Hammered Iron Car Axles | 14.00 to 14.50 |
| Old Steel Car Axles | 13.50 to 14.00 |
| No. 1 Railroad Wrought | 14.00 to 14.50 |
| Iron Track Scrap | 10.50 to 11.00 |
| No. 1 Yard Wrought, long | 13.00 to 13.50 |
| No. 1 Yard Wrought, short | 11.50 to 12.00 |
| Light Iron | 6.00 to 6.50 |
| Cast Borings | 6.50 to 7.00 |
| Wrought Turnings | 7.50 to 8.00 |
| Wrought Pipe | 10.50 to 11.00 |
| Old Car Wheels | 14.50 to 15.00 |
| No. 1 Heavy Cast, broken up | 13.00 to 14.00 |
| Stove Plate | 11.00 to 12.00 |
| Locomotive Grate Bars | 11.00 to 11.50 |
| Malleable Cast | 12.50 to 13.00 |

**Plates.**—The mills continue to operate on about a 50 per cent. basis, and the business offered is only in small lots.

Apart from the incident which developed in connection with the placing of a locomotive works' contract recently, there has been a general maintenance of prices on the following basis for Standard Sized Plates, at tidewater: Sheared Plates, 1.76c. to 1.86c.; Flange Plates, 1.86c. to 1.96c.; Marine Plates, 2.16c. to 2.26c.; Firebox Plates, 2.65c. to 3.50c., according to specifications.

**Ferroalloys.**—Buying of small lots continues at unchanged prices. Ferromanganese is held at $44 to $44.50, seaboard. For 50 per cent. Ferrosilicon the price is unchanged, at $70, makers' works, but some shading of this price is reported.

## Iron and Industrial Stocks

NEW YORK, September 2, 1908.

The check given to manipulation on the New York Stock Exchange by the disclosures of last week relative to matched orders and "washed" sales was only temporary. In the latter part of the week the control of the strong financial forces which have dominated operations for the past two months was again asserted, and prices were advanced. On Tuesday of this week there were slight general declines, attributable in part to the fact that the Government estimate on the cotton crop's condition at the close of August was somewhat disappointing. Below is given the range of prices on the active iron and steel stocks in the five days ending with Tuesday, September 1: United States Steel common 45½ to 47¾, preferred 108¾ to 112½; Car & Foundry common 40¼ to 41½, preferred 103½ to 103⅝; Locomotive common 56 to 58, preferred 106 to 107; Bethlehem Steel common 21½ to 23⅜, preferred 50 to 51½; Cambria Steel 35 to 38⅝; Colorado Fuel 33¾ to 38⅛; Crucible Steel common 7 to 7¼, preferred 49 to 50¼; Pressed Steel common 34¼ to 35¾, preferred 95 to 96; Railway Spring common 42¾ to 45, preferred 100; Republic common 23⅛ to 24½, preferred 78¾ to 81½; Sloss-Sheffield common 61 to 65¼, preferred 101 to 102½; Cast Iron Pipe common 26 to 27⅛, preferred 73 to 73½; Can common 6, preferred 60½ to 62. Last transactions up to 1.30 p.m. to-day are reported at the following prices: United States Steel common 46⅞, preferred 111¼; Car & Foundry common 41, preferred 103⅝; Locomotive common 56½, preferred 107; Colorado Fuel 37¼; Pressed Steel common 35⅛, preferred 96; Railway Spring common 43½; Republic common 24, preferred 80½; Sloss-Sheffield common 65; Cast Iron Pipe common 26½, preferred 72¾; Can common 6, preferred 62.

The payment of a dividend of $218,750 on the preferred stock of the United States Cast Iron Pipe & Foundry Company was to have been made September 1, a New Jersey court having dismissed the temporary injunction granted some time ago. However, an appeal was taken, which acts as a stay until argument can be had in November.

Because of the existing business conditions, earnings of the Pressed Steel Car Company in the fiscal year ending December 31, 1908, will be among the smallest in its history. In 1904, gross earnings were only $4,498,268, while a net loss was shown of $707,111. The years 1906 and 1907 were highly profitable, the two showing gross earnings of $72,601,890, while net earnings for the $12,500,000 common stock were $3,824,804, or equal to 30.58 per cent., a yearly average of 15.29 per cent. Because of the accumulation of surplus funds, the company a few weeks ago anticipated the payment of $500,000 of its 5 per cent. notes, due February 1 next.

**Dividends.**—The Cambria Steel Company, Johnstown, Pa., has declared a quarterly dividend of 2 per cent., payable September 15.

The American Car & Foundry Company has declared a quarterly dividend of ½ per cent. on the common stock and 1¾ per cent. on the preferred stock, both payable October 1.

The Railway Steel Spring Company has declared a quarterly dividend of 1¾ per cent. on the preferred stock, payable September 21.

The American Can Company has declared a quarterly dividend of 1¼ per cent. on the preferred stock, payable October 1.

**Large Order for Cranes.**—The largest order placed for electric traveling cranes within the year in the United States was received August 29, by the Alliance Machine Company, Alliance, Ohio, for the Gary plant of the United States Steel Corporation, for the new billet mill, &c. This order consists of 17 cranes, as follows: One 40 ton, three 20 ton, three 50 ton, three 10 ton, two 5 ton, three 15 ton cranes, and two 75 ton patented ladle cranes of 75 ton capacity each. Among other orders for cranes received recently by this company are: One 5 ton, for the Pittsburgh Plate Glass Company, Pittsburgh, Pa.; one 10 ton, Whitaker-Glessner Company, Wheeling, W. Va.; one 50 ton, United Engineering & Foundry Company, Pittsburgh, Pa.; one 10 ton, Camden Iron Works, Camden, N. J.; one 10 ton and one 25 ton, National Transit Company, Oil City, Pa.; three 5 ton, Cleveland Frog & Crossing Company, Cleveland, Ohio; one 15 ton, one 10 ton, one 5 ton and one 10 ton, Pittsburgh Steel Company, Pittsburgh, Pa.; one 10 ton, Chicago Railways Company, Chicago, Ill.; one 10 ton, Worth Brothers Company, Coatesville, Pa.; one 25 ton, Carnegie Steel Company, Homestead Works; one 10 ton, Inland Steel Company, Indiana Harbor, Ind.; one 40 ton and one 5 ton crane, Newport Rolling Mill, Newport, Ky. These contracts, in connection with the gun carriage contract recently secured by the company, insure full time and full pay for all of its employees for the balance of the year, as it has been running full time with entire force throughout the present period of depression.

## The Production of Petroleum in 1907.

A total output far in excess of that of any previous year, an unparalleled accumulation of stocks, and high prices for oil of all grades characterized the petroleum industry of the United States in 1907, according to Dr. David T. Day, of the United States Geological Survey, whose statistical report is now in course of publication. The total production of petroleum in this country in 1907 amounted to 166,095,335 barrels, or 22,149,862 metric tons, an increase of 39,601,399 barrels over the production of 1906, which was 126,493,936 barrels, or 16,868,599 metric tons, the increase being greater than the total product of petroleum in any year up to 1889. The total value increased from $92,444,735 in 1906 to $120,106,749 in 1907. The average price decreased slightly, from $0.731 per barrel in 1906 to $0.723 in 1907.

Kansas and Oklahoma, with a production of 45,933,649 barrels in 1907, as against 21,718,648 barrels in 1906, hold first place, and California drops to second place, its production being 39,748,375 barrels in 1907, as compared with 33,098,598 barrels in 1906. In Illinois, the increased production—from 4,397,050 barrels in 1906 to 24,281,973 barrels—brought the State from ninth to third place, with an output more than fivefold that of 1906 and practically double that of Texas, which stood fourth in both years. Ohio, which stood third in 1906, with a production of 14,787,763 barrels, dropped to fifth place, its production amounting to 12,207,448 barrels. Pennsylvania's output in 1907—9,999,306 barrels—put it in the sixth place instead of the fifth. West Virginia, Indiana and Louisiana follow in the order named.

During 1907 a total of 18,855,691 barrels of oil was consumed as fuel by the railroads of the United States, as against 15,577,677 barrels in 1906. The estimated length of line operated by the use of fuel oil in 1907 was 13,593 miles, and the total length of the line covered by oil-burning engines is estimated at 74,197,144 miles, an average of 3.935 miles per barrel of oil consumed.

This country is the greatest oil producer in the world, its output in 1907 being more than 100,000,000 barrels in excess of that of its closest rival, Russia.

The special train to carry the members of the Pittsburgh Foundrymen's Association to the coal and coke plants of the Jamison Coal and Coke Company in the Connellsville region, will leave Union Station, Pittsburgh, at 7:55 a. m. on Monday, September 7. It will stop at East Liberty, East Pittsburgh and Wilmerding. There promises to be a very large attendance of members. Luncheon will be served and a ball game has been arranged.

Architects for the new Grand Central Station, New York City, have completed their plans and estimates. The total cost will reach $20,000,000. The new station will set back 40 ft. from Forty-second street and 70 ft. from Vanderbilt avenue.

It is reported from the Connellsville region that several thousand foreign coke workers who returned to Europe last fall will be recalled, as any important increase in coke consumption would find the producers short of workmen.

# Tariff and Customs Amendments.

WASHINGTON, D. C., September 1, 1908.—Substantial progress has been made by the subcommittee appointed by Chairman Aldrich of the Senate Finance Committee to gather data to be used in the amendment of the classification of the Dingley tariff act and in the comprehensive revision of the customs administrative law of 1890. The subcommittee has given hearings to officials of the Treasury Department, members of the Board of General Appraisers, and to other customs experts.

### Changes in Customs Administrative Laws.

The recommendations for changes in the tariff and administrative laws have been compiled by the subcommittee in such form as to make it practicable to state accurately the principal amendments desired. The most important suggestions made by the Treasury Department for changes in the customs administrative law of 1890 may be summarized as follows:

1. The codification of all the customs laws and the incorporation thereof with the text of the revised customs administrative law.
2. An amendment permitting importers to deduct from, as well as add to, invoice valuations to make foreign market value on date of shipment.
3. An amendment permitting importers of consigned goods to enjoy the privilegs of adding to or deducting from invoice valuations to make foreign market value on the same footing as importers of purchased goods.
4. The authorization of a 5 per cent. margin for undervaluation within which no penalties beyond the required duties shall accrue.
5. The lodging of all remedial power with the Secretary of the Treasury to remit penalties, make refunds, &c., where good faith on the part of the applicant can be shown.
6. The extension of all customs laws and regulations to importations made by mail which are now exempt from many of the most important requirements.
7. Authorization of a protest fee of $5 for each and every protest, to be refunded in case of decision in favor of the protestant.
8. The abolition of the fee system throughout the customs service.
9. The increase of the duty exemption for personal effects brought into the United States by returning travelers from the present maximum of $100 to $200.
10. Authorization to the Secretary of the Treasury to license custom house brokers.

### To Obtain Accurate Market Values.

There has been much discussion in recent years of the proposition to permit importers of merchandise to deduct from, as well as add to, their invoice valuations to make foreign market value on date of shipment. The Treasury Department originally was opposed to the plan, but has modified its views in consequence of the experiences of a number of prominent importing houses which have suffered heavy losses as the result of being obliged to pay duties on the basis of invoice values predicated on purchase prices which proved to be materially higher than the market at the time of shipment. The Treasury officials take the ground that if an importer is required to add to his invoice to make market value he is entitled to deduct therefrom if the market declines after the purchase is made and before shipment.

There has been much diversity of opinion as to the propriety of the proposed concession to importers of consigned goods, giving them the same privilege as importers of purchased goods in the matter of adding to or deducting from invoice valuations. The fact that undervaluation frauds usually occur with respect to consigned goods and rarely involve purchased goods has been the principal argument against placing the two classes of importers on an equal footing. The Secretary of the Treasury, however, takes the position that the Government may protect itself without discriminating against honest importers of consigned goods, and therefore desires the law amended so as to put all classes on an equal basis.

### Remedial Power Urged.

Treasury officials have urged the lodging of remedial power with the Secretary of the Treasury to remit penalties, make refunds, &c., where good faith on the part of the applicant can be shown, because of the thousands of instances of hardship to importers which have been brought to the Department's attention since the act of 1890 became a law. The small importer especially, not having the knowledge of customs procedure that is possessed by his big rivals, often finds himself the victim of an injustice through some purely technical error, such as failure to file a protest within the narrow limit provided by law, &c. Such an error cuts off his appeal to the Board of General Appraisers, and the Secretary of the Treasury is powerless to grant relief, no matter how conclusively good faith may be shown.

The imposition of a protest fee of $5 is urged, with a view to reducing the large number of frivolous protests which now cumber the files of the Board of General Appraisers. Inasmuch as no charge is now made for the filing of protests, nearly every case decided against the contentions of an importer is made the basis of an appeal, and in a single year the board has been called upon to deal with nearly 100,000 such protests.

### Changes in Tariff Classification.

The recommendations for amendments to the Dingley tariff act thus far presented by the Treasury Department are limited to changes in classification. During the eleven years the Dingley act has been in force, customs litigation has developed the fact that a large number of articles of importation were omitted from the Dingley schedules, either inadvertently, or because it was assumed that they would be subject to a satisfactory general classification. In some instances the courts have classified these goods in such a manner either as to prohibit their importation or as to deprive the government of a large amount of revenue and domestic manufacturers of the protection which Congress intended to bestow. The Treasury officials have made a careful examination of the customs cases tried in the past eleven years, and have presented to the sub-committee a list of all the articles the proper classification of which has been the subject of serious contention. The officials have contented themselves with bringing the facts to the attention of the subcommittee, and have not recommended specific rates for the articles in question.

The principal recommendations of the Board of General Appraisers, as laid before the subcommittee by the Secretary of the Treasury, include the following:

1. Statutory authorization of the Secretary of the Treasury to appoint the president of the Board of General Appraisers, leaving the board free to complete its own organization, select its secretary, &c., the president of the board to divide the membership into subordinate boards of three members each, &c.
2. A statutory definition of the term "commercial designation," as used by the board and the courts in determining classification. The term now has no specific statutory meaning and has been variously construed by the Federal courts in different jurisdictions.
3. The creation of a court of customs appeals, with a view to harmonizing the diverse rulings of the lower courts in different jurisdictions with respect to classification, &c.
4. The extension from 15 to 30 days of the period within which importers may appeal from decisions of collectors.

The project for the appointment of a court of customs appeals has been worked out by the board in detail. It is proposed that the court shall consist of a chief justice and two associate justices, appointed by the President and confirmed by the Senate, not more than two of whom shall be appointed from the same political party, each of whom shall receive a salary of $10,000 a year, and each of whom shall have been admitted to practice in the United States Supreme Court, and be "experienced in the customs laws of the United States." The judgments or decrees of the court of customs appeals are to be final in all cases except that it may at any time certify to the United States Supreme Court any questions or propositions of law concerning which it desires the construction of that court for its proper decision.

The subcommittee in the course of a week will complete the work now in hand, and beyond digesting the data secured will probably take no further action in the matter of revising the tariff and administrative laws until after the elections. W. L. C.

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The strike at the plant of the Driggs-Seabury Ordnance Corporation at Sharon, Pa., is about over, practically all of the old men having returned to work. The company reports a large amount of work on hand.

# The Machinery Trade.

NEW YORK, September 2, 1908.

The demand for machinery the past week was very light, there being only a small volume of scattered business, with no large orders and but few of the medium sized reported. Inquiries for fair sized lots of tools were also scarce, though houses report some for single tools that give promise of early purchase. It is this latter business that has been the mainstay of the trade the entire summer, but either the railroads and large industrial companies will have to come into the market more freely or the volume of small orders will have to greatly expand before a normal business shall be reached. The retrenchment policy of the railroads is being keenly felt; while they have been doing some buying from time to time, with few exceptions, they have been an unimportant factor in the trade. In other lines affiliated with the machinery trade business is reported to be dull, showing that there has been but little headway made toward a recovery from the depression, and that the demand is light in most of the mechanical products of iron and steel.

While the month just closed was unusually dull in comparison with the same periods of the past two years, the sales with many houses showed an increase of about 10 per cent. over those of July, which month also showed a slight increase over June. Thus while the improvement has been almost unnoticeable, it has been sufficient to warrant the belief that there will be a continued betterment, which seems the more probable in view of the fact that the close of the summer is near and that some of the best months are at hand. Those in a position to gauge the demand state that they see many signs of an improvement in conditions that usually affect the market, among which are the sizes of the orders placed and the intention to proceed with work that a few months ago was held up. Within the past few weeks several orders, amounting to from $5000 to $10,000 each, have been placed, and some projects that will necessitate the purchase of like amounts of mechanical equipment are understood to be ready for consummation.

The recent reduction in price of 10 per cent. made by a leading manufacturer of power presses and similar machinery, whose prices have always been regarded as standard, has caused considerable discussion in the trade, many of which are more convinced that the reduction will be followed by other manufacturers. Closely following this announcement of reduced prices, comes the report that an important manufacturer has reduced prices 10 per cent. on small motors, especially alternating current motors up to 200 hp. It is of interest to state in this connection that while no further reductions in prices have been reported in machine tools, several manufacturers have offered concessions in prices for orders. It is argued that in view of the cost of labor prices of machine tools are not too high at the present time. Nevertheless, it will not be surprising to hear of concessions being made for orders for fair sized lots of tools.

The temporary shops to be established at Broadway and Ninety-seventh street, New York, by the Rapid Transit Construction Company, has aroused considerable speculation in the trade as to the amount and character of machinery that will be required for equipping these buildings. The shops are to be used in connection with the enlargement of the subway from Ninety-sixth to One Hundred and Second streets, and will comprise six buildings, in which there will be a blacksmith shop and air compressor room, and which will cost about $63,000. The entire work will cost about $800,000, including the construction plant. While the company has a great deal of the necessary machinery on hand which has been used for constructing the extension of the subway to Van Cortlandt Park, it is probable that some purchases will have to be made to replace that worn out. Those in the trade manufacturing such equipment as is used in tunnel and subway work expect to receive inquiries for equipment at an early date.

The construction of the large plant in India by the Tata Iron & Steel Company, Ltd., of Bombay, India, which has been held up by the depressed business conditions, is expected to proceed in the early spring, and we understand that purchases of machinery will not be made before next March or April. Plans have been completed for the plant which will necessitate the expenditure of about $7,000,000, the equipment to include blast furnaces, open hearth steel furnaces, rolling mills, &c. The contracts for the equipment will be placed from the office of Julian Kennedy, Pittsburgh, Pa., who is affiliated with the Julian Kennedy-Sahlin Company, Ltd., of London, England.

The American District Steam Company, North Tonawanda, N. Y., has asked bids for the rebuilding of its plant recently destroyed by fire. The following new buildings will be erected: Foundry building, 100 x 120 ft., one story high with wings, 40 x 50 ft. and 36 x 118 ft.; casing mill, 50 x 175 ft., one story, with section, 50 x 62 ft., two stories; machine shop, 50 x 261 ft., two stories; dry kiln building, 36 x 150 ft., one story; the boiler and engine room, 30 x 40 ft., will be remodeled. Considerable new machinery will be required.

The Standard Oil Company has purchased a considerable amount of machinery from time to time for its new plant at Bayway, N. J., and is now arranging for the equipment to complete its new power plant at that point. It is understood that the company has bought most of the power equipment required, but there is considerable yet to be purchased, and as the plant is of such magnitude it is likely that the company will come into the market for various machines for some time to come.

The Central Carolina Power Company, Columbia, S. C., is planning the development of a hydro-electric plant at Turkett Shoals on Broad River, just above Columbia, to produce about 15,000 hp. of electricity to be transmitted to Columbia, Newberry and Winnsboro. The plant will include six units, each consisting of four turbine wheels direct connected to 2000-kw. generators, none of which has as yet been purchased. Viele, Blackwell & Buck, 49 Wall street, New York, who are engineers in charge of the work, have not yet prepared specifications for the required equipment which will probably be purchased through the engineering firm.

The Board of Supervisors, White Plains, N. Y., will receive bids until September 10 for all the material required for the installation of the electrical equipment, including boilers, engines, dynamos, &c.

The Philadelphia & Reading Railroad is asking bids on several contracts for work in connection with the abolishment of grade crossings in Philadelphia. These include Contract No. 1, locomotive coaling station; Contract No. 31, coal pocket yard, and Contracts Nos. 32 and 35, covering masonry, drainage systems, &c. Bids for this work will be opened September 16.

The Superintendent of Public Works, Albany, N. Y., will receive bids until September 9 for additional work on the Erie Canal, including Contract No. 20, sections 2, 3 and 4, for dredging a channel in the Mohawk River and other work between Rexford Flats and Little Falls, length 58 miles, and Contract No. 66, section 10, for work from the west end of Contract No. 64 to about 600 ft. east of Lockport Locks, length 35 miles.

Superintendent F. C. Stevens, of the State Department of Public Works, Albany, N. Y., will soon advertise for bids for three new Barge Canal contracts, involving an expenditure of nearly $4,000,000. The contracts, which were approved September 1 by the State Canal Board, provide for excavating the new canal from Fox Ridge to Galen, 9½ miles, at an estimated cost of $1,360,000; excavating from Galen to Lyons, 14½ miles, at a cost of $1,430,000; construction of locks at Mechanicsville, Stillwater and Northumberland and excavation at a cost of about $1,175,000.

## Cincinnati Machinery Market.

CINCINNATI, OHIO, September 1, 1908.

August sales sheets with a considerable number of manufacturers in this section will show a preponderance of business in the last ten days or two weeks. Thereby these manufacturers are able to report a better month than July, and the best of the year so far, though it did not open propitiously with many of the larger concerns. The week has developed a little more of the conservative inquiry commenced recently by the railroads, which are rushing repairs on freight cars and are rapidly getting back into form again. There is evidence in this market of the Big Four's activity in this regard, and it is expected that the Vanderbilt roads will soon place some good business for all their shops. Politics begins to enter into the calculations of machinery manufacturers. Some have sent inquiries to their dealers in various parts of the country, and the replies are interesting, as showing the tendencies of the employing side. One manufacturer says he has a list calling for $5000 worth of new tools which he will order the minute he is assured of the election of his candidate for President, but not otherwise.

Among dealers and supply houses little or no improvement is noted, and the little buying going on is largely of second-hand machinery, with an occasional new tool.

The stock of the Machinery Sales Company, which is in the hands of a receiver, will be offered at auction on October 6. In the meantime, sales are being made from stock by the receiver, E. L. Wyler, who is acting under direction of the Cincinnati Superior Court. The liabilities were estimated at something like $30,000.

One large supply house, W. T. Johnston Company, has reports from Government representatives of the successful operation of the steam steering gears it furnished for two new Government snag boats built for the Mississippi River trade. The same company recently rebuilt the large Holly engine in the Newport, Ky., water-works plant which was destroyed by fire in July.

Manufacturers of machinery for ice making plants report

good business, including several important orders. One such concern in this territory recently received seven carloads of 1-in. to 1½-in. pipe for steel coils. Manufacturers of electric power units also report encouragingly.

An order from the Government for a large motor driven lathe, 48 in. swing, for use in the Portsmouth Navy Yard, with some other orders for large machines recently received, has enabled a local manufacturer of lathes to keep his force pretty well employed. Another large lathe is on the Government list for use in the Mare Island Navy Yard.

One of the quarterly report periods of the Cincinnati Metal Trades Association has just closed. It is understood that the report will show fewer employes on the payroll than at the close of the preceding quarter in May.

The woodworking machinery trade continues to show gains. The J. A. Fay & Egan Company recently purchased $25,000 worth of new machinery, including a set of radial drills. A few more machines are on the list for early purchase. Drills have been quite active the past week, and local establishments making a specialty of standard types have made some good sales. Manufacturers of milling machines have also made some important sales, shipments being to practically all sections.

The Nugent Tool Company, manufacturer of a friction clutch, has moved its plant to 2128 Colerain avenue, the site formerly occupied by the Hercules Bell Foundry & Bronze Company. Several new tools were purchased, including an engine lathe, a new gas engine and some smaller tools. Neale S. Riley is president, James S. Stephenson vice-president and Dwight S. Marfield secretary and treasurer.

Weidig & Co., Putnam, Ohio, have contracted with the Ohio Electric Company for 60 hp. of electric motors of the Westinghouse type, which will be installed and ready for use by September 15.

A change which is regarded by the employes as an improvement has been made at the Middletown, Ohio, plant of the American Rolling Mill Company. The new schedule provides for the three turns as follows: From midnight to 8 a.m., from 8 a.m. to 4 p.m., and from 4 p.m. to midnight.

It is reported from Findlay, Ohio, that the Adams Bros. foundry is working full force and has recently added men. Contracts for several iron fire escapes for public buildings in that section aided materially in keeping forces at work.

The Kenton Foundry Company is a new organization for Cincinnati. The capital stock is $10,000, and the incorporators are Fred Breiner, Frank Eltrup, Ferdinand Bosken, Joseph Bosken and Sebastian Abe.

The City Council of Lima, Ohio, recently declined the overtures of W. Kelsey Schoepf, president of the Cincinnati Traction Company and numerous suburban roads, for furnishing light and power for that municipality. The Council passed the ordinance for the erection of a $100,000 plant, and will provide its own light and power.

The capital of the Enos Machine Company, Gallipolis, Ohio, has been increased from $5000 to $30,000, and it is said new machinery will be installed and the capacity increased.

## Chicago Machinery Market.

CHICAGO, ILL., September 1, 1908.

The Albany Iron Works, Albany, Ore., maker of steam engines, mining and mill machinery, whose plant, with the exception of a two-story brick warehouse containing patterns and manufactured stock, was destroyed by fire on July 31, will be rebuilt on the original foundations. The buildings destroyed were the foundry, 36 x 55 ft.; machine shop, 30 x 60 ft.; blacksmith shop, 28 x 36 ft.; woodworking department, 30 x 54 ft., and office, 16 x 30 ft., all of which were of wooden construction. The lower story of the warehouse has been temporarily equipped with new and old machinery for the continuance of work during reconstruction of the plant, active operation on which will be begun at once.

The woodworking machinery plant of Wright Brothers, Marinette, Wis., which was recently destroyed by fire, will probably be rebuilt some time this fall. The firm has two other mills which are not now in operation, and the new plant will be partially equipped with machinery taken from the idle plants, so that only a small amount of new machinery will be purchased.

Plans and estimates are being prepared for an electric light plant which the Retail Merchants' Association of Belleville, Ill., expects to construct to supply lights for the mercantile houses on two of the principal streets. It is figured that something more than $20,000 will be required to carry out these plans, which are in the hands of a committee of the association, of which F. S. Burns is secretary.

Plans for the contemplated improvements to the municipal electric light plant at Seneca, Kan., contemplate a change to a three-phase 200-volt system, the installation of a new switch board with oil switches, and the installation of a 50-hp. high speed engine and other necessary improvements. G. D. Myers is superintendent of the plant.

The city of McMinnville, Ore., is asking for bids on a 200-kw. three-phase 6600-volt alternating current generator and a 400-hp. water wheel for installation in the municipal electric light plant to be located on Baker Creek, 6½ miles from the city. It is the intention to have the construction and installation of the plant made directly by the Water and Light Commission of the city. An auxiliary steam power plant of 300-hp. capacity will probably be installed at the same time for emergency use during extreme low water. Claude Walker is chief engineer.

The Las Cruces Electric Light & Ice Company, Las Cruces, N. M., is contemplating early improvements to its plant, which will include the installation of a 125-kw. three-phase alternator, together with extensions of the water works system which will involve the laying of new mains, building of concrete reservoir and installation of new pumps.

## Cleveland Machinery Market.

CLEVELAND, OHIO, September 1, 1908.

The machine tool market is beginning to show some improvement after a quiet period of several months' duration, during which there was very little change in conditions from week to week. Not only is the volume of orders somewhat better, but dealers and builders have taken on a more hopeful feeling regarding the outlook for the balance of the year. So far the greater part of the increase in the volume of business has been in sales to the automobile makers. A number of automobile makers in this territory are planning to either enlarge their plants or to replace some of their present machine tool equipment with new and more modern tools, and as a result some good orders have been placed with both the local dealers and tool builders. The orders placed with the builders are mostly for special tools, and those given the dealers are for standard machine tools. Outside of the sales to the automobile makers some improvement is noted in the demand for standard machine tools. With the improvement in general business conditions some orders have been placed for machine tools that have been pending for some time, and the volume of inquiries is somewhat better, although there are none in the market for large lists of tools. Builders also report some improvement in their foreign orders. While dealers still have fairly good sized stocks of tools on hand, some lines of tools are getting rather low as the result of the policy to reduce stocks considerably during the period of depression, and if conditions continue to grow better it will not be long before some liberal orders will be given to manufacturers to replenish stocks.

There is a fairly good demand for second-hand tools, and as the supply of good used tools is not large dealers are not having much trouble in moving their purchases rather quickly.

The general manufacturing situation continues to improve slowly, and the majority of plants are being run at fuller capacity than a month ago. This applies also to tool builders who have been able to add to their working forces. With the improvement of general conditions some manufacturing plants are preparing to carry out plans for improvements and additions, projects that have been held up until the outlook was more favorable. These projects have resulted in considerable improvement in inquiries for shop cranes. While a few good orders have been placed by railroads for handling machinery, railroads are as yet buying very little machinery for repair shop equipment, only such purchases being made as are absolutely necessary.

Foote, Burt & Co., Cleveland, machine tool builders, report a decided improvement in the volume of orders, and the company's plant is now being operated at 75 per cent. of its full capacity. The company has recently received some good sized orders for special tools for automobile plants, the largest volume of its new orders being in these lines. The company, however, reports an increase in orders for standard tools, particularly bolt cutters, and an improvement in its foreign business. Among the orders recently taken by this company are a few from railroads.

The Commercial Dairy Machinery Company, Cleveland, has been incorporated with a capitalization of $25,000 to manufacture dairy machinery by William C. Trapp, R. M. Calfee, A. C. Riddle, E. R. Poulson and J. H. Farnsworth. The company will not build a plant.

The plant of the Niles Mine & Mill Supply Company, Niles, Ohio, has been consolidated with that of the Mineral Ridge Mfg. Company, Mineral Ridge, Ohio, and moved to the latter company's plant. The Youngstown Furnace & Supply Company has established a plant in the building in Niles formerly occupied by the Niles Mine & Mill Supply Company.

The Canton Board of Trade has decided to accept the proposal of a company that agreed to locate a new rolling mill in that city provided a five-acre site was furnished. The Board of Trade is now engaged in raising the necessary funds to purchase the site.

The Star Drilling Company, Akron, Ohio, maker of oil and water well drilling machinery, is building a new plant

in Portland, Ore., to supply its Western trade. The company has placed an order for some new machinery equipment.

The Thew Automatic Shovel Company, Lorain, Ohio, reports an improvement in orders for steam shovels. The company has been able to reduce the stock that it accumulated during the depression and is now running its plant on full time.

The Ohio Nut & Bolt Company, Berea, Ohio, reports a very satisfactory improvement in the volume of its orders. July showed an improvement over June, and its August sales showed a good increase over July.

The Ohio Boiler Company, Girard, Ohio, has just completed some improvements at the plant of the Girard Iron Company, including pipe work, new stacks, the installation of a Mullen gas washer, dust catcher, &c.

The Heath Foundry & Mfg. Company, Plymouth, Ohio, has been incorporated with a capitalization of $10,000, by Charles E. Heath, C. F. Root, John A. Root, Percy H. Root and H. F. Root.

The American Iron Roofing Company, Elyria, Ohio, has been incorporated with a capitalization of $25,000, by G. H. Lewis, Louis Schmuerer, Frank R. Fauver, and Charles L. and Julia Schmuerer.

The trustees of the Ohio Soldiers' and Sailors' Orphans' Home, Xenia, Ohio, will receive bids on September 19 for a new power plant and for remodeling the present light and water systems. Plans and specifications are on file at the office of J. L. Smith, superintendent, and at the office of the architect, Frank L. Packard, Columbus, Ohio. At the same time bids will be received for the old mechanical equipment, consisting of engines, generators, switchboards, pumps and piping.

## Philadelphia Machinery Market.

PHILADELPHIA, PA., September 1, 1908.

Indications are that reports of dealers and manufacturers concerning August business will show some variation. In some cases there have been substantial increases over the business transacted during June and July, while other reports are to the contrary. The trade on the whole expresses encouraging views regarding future business, and while inquiries during the latter part of the month were not as heavy as they were during the opening weeks, this condition is believed to be largely due to the vacation season. Considerable encouragement is also taken by the trade from the fact that general business continues to show small but steady gains. The placing of orders for rolling stock, more liberal purchases of materials and supplies for repair work on the part of some of the railroads would indicate that they are preparing to put their rolling stock and motive power in shape for service, although it is fully understood that it will require some time before they get to the point of purchasing machinery or tools on any scale.

Industrial plants are still marking time to a large extent, and until business reaches more normal conditions generally not a great deal can be expected by the trade from that direction.

The past week's business in the local market was largely in the way of small tools. In special tools somewhat more activity has developed.

The export trade has been quiet. Those having an established trade abroad in power transmission equipment report a dull month, stocks on hand by agents being kept at a low point.

Business in the second-hand machinery market has been on the whole pretty satisfactory. Orders have been mostly for equipment of the smaller class. A good day to day inquiry continues, and the trade anticipates a further buying movement during the fall months.

Some scattered business has developed in power equipment, but generally for small and medium powers. Some extension to plants is to be noted, with more pending, but the trade on the whole is quiet and the demand unsatisfactory.

A little betterment is to be noted in the foundry trade. Steel casting plants have been taking on some little business for prompt delivery. Gray iron casting plants, catering to the machinery trade, note a slight improvement in the demand, although it is still spotty. The trade, however, looks for a better volume of business in the fall months.

The Philadelphia & Reading Railway Company will take bids until September 16 for further work in connection with the abolishment of grade crossings on the Philadelphia, Germantown & Norristown Railroad along Ninth street in this city. The bids include the following: Contract No. 21, locomotive coaling station, Green street yard; Contract No. 31, coal pocket yard at northeast corner of Tenth and Norris streets; Contract No. 32, masonry, embankment, paving, water and drainage systems and new freight office building in yard between Berks and Norris streets, west side, and Contract No. 35, drainage for yards between York street and Cumberland street. Plans and specifications may be obtained from the office of the chief engineer, room 520, Reading Terminal.

The Atlantic County Board of Chosen Freeholders, at the County Asylum, Smith's Landing, N. J., opened bids on September 2, 1908, for a road traction engine. Also for 12 drop bottom wagons, with capacity of 2½ cu. ft. each, completely equipped with train attachment. Edwin Robinson, Smiths Landing, N. J., is chairman of the Road Committee.

The Fairbanks Company reports that the August business of its branch house in this city will show an improvement over that of the previous month. The machine tool department shows the greatest gain, but the business has been confined to small shop equipment. The steam and valve departments also show material gains, the former having taken orders for considerable extension work. Inquiries continue fair, and some very satisfactory business is pending.

The Hess Machine Works advises us that there has been a somewhat better demand from abroad for file-making machinery. Orders have been booked for several sets of machines for export to both Germany and Japan, which will be shipped during the week. The domestic trade is also a shade better, orders have been received for several machines particularly adapted to small work, while an increased business in special tools of a more general nature is reported.

The Royersford Foundry & Machine Company, Royersford, Pa., notes an increase in the volume of business during the past month. Orders for double punch and shearing machines are reported from the following concerns: Dilks Machine Company, Fulton, N. Y.; William Hauptman, New York City; the Youngstown Iron & Wire Company, Youngstown, Ohio, and the Ornamental Wire & Iron Works, Portsmouth, Va. Inquiries are reported better and the outlook for future business is more hopeful. This company is now building two larger sizes, along the same lines as its No. 3 double punch and shear. One will have a 25-in. and the other a 30-in. throat. Business in the power transmission department is somewhat better and there seems to be a steady, gradual improvement in the demand for all its various lines.

## New England Machinery Market.

WORCESTER, MASS., September 1, 1908.

The market in New England has been uneventful during the week past, with a volume of business slightly greater, if anything. No orders of any size are reported, neither are large contracts being figured beyond those already reported. The machine tool builders report a better general outlook, based on renewal inquiries rather than on actual orders. General manufacturing business continues to develop a consistent improvement which, however, in most cases is very gradual. A few exceptional industries are practically back to normal, but the average is an increase in production only just large enough to be encouraging and influential in affecting business sentiment, which is decidedly hopeful. The automobile business continues to act as a wholesome tonic, for the builders are preparing for a great production. A striking illustration of the fact lies in the announcement that the combined Wayne and Northern companies will produce 10,000 cars for the 1909 market. W. E. Flanders, formerly representing the Walter H. Foster Company, in New England, is the head of this newly allied interest. This great manufacturing undertaking alone will affect New England in an important way, because of the large numbers of feeders of the automobile industry—concerns which manufacture parts and accessories—which manufacture in this territory. The aggregate of this kind of business will foot into very large totals.

The Laconia Car Works Company, Laconia, N. H., is about to carry out a plan of improvement of its plant which will involve the expenditure of $150,000. A group of new buildings will be erected, details of which as to dimensions are not yet completed. They will, however, provide a large area of increased manufacturing space, which will be used largely for the company's new department for the building of steel railroad cars. The improvements will include new equipment on rather a large scale, including cranes and machine tools, a considerable portion though not all of which has been purchased. The Laconia Car Works Company is an old established concern located on the Boston & Maine Railroad.

J. T. Thornton, Providence, R. I., has established a machinery business in the store at 64 South Water street, which will be conducted under the name of the Thornton Machinery Company. He will deal in new and second hand machine tools and woodworking machinery, engines and boilers and textile machinery. The lines of the Erie City Engine Works, Erie, Pa., and of Orr & Semborer, Reading, Pa., builders of engines and boilers, will be represented in the Providence territory under special arrangement, and other agencies will

be established later. An important specialty, however, will be second hand machinery. It is not probable that small supplies will be carried in stock. The store has been renovated and converted into an attractive showroom. Mr. Thornton, who will perpetuate the name of the Thornton Machinery Company, of which he was the founder and for years the head, has had a long experience in the machinery trade.

The business of the American Mfg. Company, West Cheshire, Conn., has been incorporated under the laws of Connecticut, with J. H. Beaulieu as president, George Hauser, treasurer, and R. E. Modrow, secretary. The company makes brass goods in sheet metal and castings. The business was established four years ago for the manufacture of brass goods from sheet metal, and last year a brass foundry was added to the factory. The company has recently begun to make a line of plumbing supplies, which is being added to as rapidly as possible. The company is not in the market for equipment at this time, excepting for oil burners that can be installed in the coal-burning furnaces for melting brass.

Massachusetts continues to maintain a position as one of the leading States industrially, as is proved in the report of the State Bureau of Labor and Statistics, making the comparison between 1900 and 1905. The report puts Massachusetts fourth in the list of States with a total manufactured product of about $1,125,000,000, a gain of $216,500,000 in the five years. New England folk like to see these indications of gains, to offset the statements of their neighbors of territory further west.

The Consolidated Electric Lamp Company, Danvers, Mass., states that all supplies in connection with the rebuilding of its factory, recently seriously damaged by fire, will be bought locally.

The development has begun of the reserve water power at Livermore Falls, Me., which will give 5000 additional horsepower to be distributed electrically. An addition of 60 ft. to the power station will be built, together with a penstock 1000 ft. long and 13 ft. diameter.

The Central Tool Company, Providence, R. I., has established a factory for the manufacture of dental tools at 110 West Exchange street. It is a Rhode Island corporation with $10,000 capital stock. The incorporators are Arthur P. Mowry, Louis S. Moulthrop and Fernando O. Jacques, Jr. The company is now engaged in the manufacture of special tools for the production of its goods.

The Steele & Johnson Mfg. Company, Waterbury, Conn., manufacturer of brass goods, has awarded the contract for a brick addition to its works, four stories, 42 x 150 ft. The company states that it proposes to replace some of its wooden buildings by more substantial structures, which will permit the rearrangement of departments and at the same time provide additional space for any purpose that may be required.

The Fales & Jenks Machine Company, Pawtucket, R. I., manufacturer of textile machinery, fire pumps, &c., is making extensive improvements to its plant, including the replacing of old machinery by new. About five years ago the policy of modernizing the plant was begun and has been continued, a large aggregate of purchases of machine tools having been made annually. Some tools have recently been purchased, and others will be bought later, though no list is prepared, orders being placed as the desirability of new machinery makes itself evident from time to time.

## Government Purchases.

WASHINGTON, D. C., September 1, 1908.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until September 15 for a quantity of supplies, including two pattern makers' lathes, two motors, one pump and until September 22, for two drilling machines.

The Isthmian Canal Commission will receive bids until September 24, Circular No. 464, for marine boilers and other supplies.

The Isthmian Canal Commission will soon ask bids for one 20-kw. generator, 30 hp. single vertical engine, 36 in. x 24 ft. engine lathe, 14 in. x 6 ft. engine lathe, 2500-lb. steam hammer, universal grinding machine and two upright drills.

The following bids were opened August 24, Circular No. 459, for supplies for the Isthmian Canal Commission:

Class 13.—Thirty-four hydraulic jacks—Bidder 15, Bethlehem Steel Company, South Bethlehem, Pa., $2225.90; 22, Brooklyn Forge & Supply Company, New York, $2313.80; 29, William Wirt Clark & Son, Baltimore, Md., $3667.50; 45, Fox Bros. & Co., New York, $1819; 67, Joyce-Cridland Company, Dayton, Ohio, $1625.80, $1774.30, $2034.40 and $2325.40; 69, J. B. Kendall Company, Washington, D. C., $1906; 80, Manning, Maxwell & Moore, New York, $1820; 86, Motley, Green & Co., New York, $2307.02; 109, H. A. Rogers Company, New York, $2270.76.

Class 14.—Six locomotive jacks—Bidder 44, George S. Fowler, Washington, D. C., $318; 45, Fox Bros. & Co., New York, $296.94; 80, Manning, Maxwell & Moore, New York, $321; 86, Motley, Green & Co., New York, $330; 126, B. B. Terrill, Boston, Mass., $360.

Class 24.—Six rock drills and extra parts—Bidder 28, Chicago Pneumatic Tool Company, New York, $1015.66; 63, Ingersoll-Rand Company, New York, $1014.21; 64, International Electric & Engineering Company, New York, $1192.35; 125, Sullivan Machinery Company, Chicago, Ill., $1179.32; 139, Wood Drill Works, Paterson, N. J., $1058.74.

The following bids were opened August 25 for machinery for the navy yards:

Class 11.—One back geared crank shaper—Bidder 47, Compressed Air Machinery Company, San Francisco, Cal., $660; 69, Eccles & Smith Company, San Francisco, Cal., $597; 73, Frevert Machinery Company, New York, $584; 98, Henshaw, Bulkley & Co., San Francisco, Cal., $515 and $695; 102, Harron, Ricard & McCone, San Francisco, Cal., $693 and $478.50; 132, Manning, Maxwell & Moore, New York, $612; 171, Pacific Hardware & Tool Company, San Francisco, Cal., $550 and $575; 199, Springfield Machine Tool Company, Springfield, Ohio, $600.

Class 12.—One standard drill press—Bidder 47, Compressed Air Machinery Company, San Francisco, Cal., $278; 73, Frevert Machinery Company, New York, $233; 98, Henshaw, Bulkley & Co., San Francisco, Cal., $250; 102, Harron, Ricard & McCone, San Francisco, Cal., $280.50, $231.50 and $204; 104, Handlan-Buck Mfg. Company, St. Louis, Mo., $218; 132, Manning, Maxwell & Moore, $295; 171, Pacific Hardware & Tool Company, San Francisco, Cal., $260 and $210; 182, Charles E. Robideoux, St. Louis, Mo., $220.

Class 13.—One engine lathe—Bidder 47, Compressed Air Machinery Company, San Francisco, Cal., $975; 69, Eccles & Smith Company, San Francisco, Cal., $1028 and $1089; 73, Frevert Machinery Company, New York, $1094 and $992; 98, Henshaw, Bulkley & Co., San Francisco, Cal., $920; 102, Harron, Ricard & McCone, San Francisco, Cal., $1138, $1312, $925 and $1000; 117, I. H. Johnson, Jr., Company, Philadelphia, Pa., $1082; 157, Niles-Bement-Pond Company, New York, $1242 and $1345.

Class 101.—One double end saddle tank locomotive engine—Bidder 2, American Locomotive Company, New York, $5800 and $5700; 8, Burnham, Williams & Co., Philadelphia, Pa., $5720; 126, Lima Locomotive & Machine Company, Lima, Ohio, $6200; 176, H. K Porter Company, Pittsburgh, Pa., $5970; 226, Vulcan Iron Works, Wilkes-Barre, Pa., $5150.

Class 111.—One vertical turret lathe—Bidder 26, Bullard Machine Tool Company, Bridgeport, Conn., $2250, $2160.50 and $2075; 77, W. H. Foster Company, New York, $1720 and $1645; 175, Prentiss Tool & Supply Company, New York, $1398.

Class 112.—One toolmakers' engine lathe—Bidder 100, Hendey Machine Tool Company, Torrington, Conn., $955 and $1030; 173, Pratt & Whitney Company, Hartford, Conn., $843.

Class 113.—One tooth spindle profiling machine—Bidder 89, Garvin Machine Company, New York, $1024; 173, Pratt & Whitney Company, Hartford, Conn., $1150.

Class 114.—One gang drill—Bidder 173, Pratt & Whitney Company, Hartford, Conn., $652; 175, Prentiss Tool & Supply Company, New York, $369.

Class 115.—One universal slotting machine—Bidder 40, Chandler & Farquhar Company, Boston, Mass., $80.75; 73, Frevert Machinery Company, New York, $80.75; 215, Tucker Tool & Machine Company, New York, $80.75; 231, Waltham Watch Tool Company, Springfield, Mass., $80.75.

Class 116.—One slip roll former—Bidder 18, Burtsch & Co., Cambridge City, Ind., $88; 120, Knox Bros., New York, $69.15; 175, Prentiss Tool & Supply Company, New York, $68.50; 215, Tucker Tool & Machine Company, New York, $80.73.

Class 117.—One portable electric internal binder—Bidder 40, Chandler & Farquhar Company, Boston, Mass., $104; 84, R. W. Geldart, New York, $93.43; 103, Hisey-Wolf Machine Company, Cincinnati, Ohio, $104; 120, Knox Bros., New York, $104; 160, National Electrical Supply Company, Washington, D. C., $96; 222, United States Electrical Tool Company, Cincinnati, Ohio, $86.40.

Class 118.—One Pratt & Whitney engine lathe—Bidder 80, Fairbanks Company, New York, $500; 100, Hendey Machine Company, Torrington, Conn., $649; 132, Manning, Maxwell & Moore, New York, $525; 173, Pratt & Whitney Company, Hartford, Conn., $560.

Class 119.—One boring and drilling machine—Bidder 157, Niles-Bement-Pond Company, New York, $2090; 175, Prentiss Tool & Supply Company, New York, $1719.

Class 120.—Two spiral geared planers—Bidder 80, Fairbanks Company, New York, $2444 and $3334; 89, Garvin Machine Company, New York, $2800, $3280 and $3760; 90, E. A. Gray Company, Cincinnati, Ohio, $4004; 132, Manning, Maxwell & Moore, New York, $2450; 157, Niles-Bement-Pond Company, New York, $3384.

Class 121.—One spiral geared planer—Bidder 80, Fairbanks Company, New York, $1919 and $2475; 89, Garvin Machine Company, New York, $2500; 90, E. A. Gray Company, Cincinnati, Ohio, $2641; 132, Manning, Maxwell & Moore, New York, $3540 and $4630; 157, Niles-Bement-Pond Company, New York, $1959 and $2448.

Class 122.—One spiral geared planer—Bidder 80, Fairbanks Company, New York, $2070 and $2630; 89, Garvin Machine Company, New York, $2650; 90, E. A. Gray Company, Cincinnati, Ohio, $2795; 132, Manning, Maxwell & Moore, New York, $1910 and $3485; 157, Niles-Bement-Pond Company, New York, $2045 and $2556.

Class 123.—One No. 24 milling machine—Bidder 22, Brown & Sharpe Mfg. Company, Providence, R. I., $1430; 80, Fairbanks Company, New York, $1658.

Class 131.—One rod machine—Bidder 68, Drew Machinery Agency, Manchester, N. H., $287.50.

Class 132.—One plug machine—Bidder 229, S. O. Wood Machinery Company, South Boston, Mass., $995.

Class 141.—Four screw cutting engine lathes—Bidder 82, Fairbanks Company, New York, $770; 89, Garvin Machine Company, New York, $748; 100, Hendey Machine Company, Torrington, Conn., $840; 117, I. H. Johnson, Jr., Company, Philadelphia, Pa., $815; 132, Manning, Maxwell & Moore, New York, $830; 157, Niles-Bement-Pond Company, New York, $749; 175, Prentiss Tool & Supply Company, New York, $784.50; 225, Vandyck-Churchill Company, New York, $791.

Class 143.—One 40-ton and one 100-ton hydraulic jacks—Bidder 49, William Wirt Clark & Son, Baltimore, Md., $315.54; 83, Fairbanks Company, New York, $318; 120, Knox Bros., New York, $297.50; 132, Manning, Maxwell & Moore, New York, $181; 142, Montgomery & Co., New York, $289.

Class 144.—One hand punch and shear—Bidder 19, Berry & Aiken, Philadelphia, Pa., $105; 83, Fairbanks Company, New York, $163; 148, New Doty Mfg. Company, Janesville, Wis., $85 and $115; 178, Henry Pells & Co., New York, $74; 224, Vermilye & Power, New York, $78.90.

Class 187.—Three motors—Bidder 86, General Electric Company, Schenectady, N. Y., $328.50; 198, B. F. Sturtevant Company, Hyde Park, Mass., $286.50.

# HARDWARE

OPPORTUNITY is afforded by the publication of details of imports and exports for the fiscal year ended June 30, 1908, to compile some statistics of our foreign commerce in various commodities in which the Hardware trade is more or less interested. The list of such commodities imported, as set forth in the reports of the Bureau of Statistics of the Department of Commerce and Labor, is much shorter than the list of related exports. A comparison of values of these imports for the fiscal years ending June 30, 1908, and 1907, is as follows:

*Imports Into the United States of Various Commodities.*

| | 1908. | 1907. |
|---|---|---|
| Clocks and parts of | $471,133 | $610,060 |
| Copper, manufactures of | 100,761 | 82,542 |
| Cables and other Cordage | 369,971 | 407,997 |
| Binding Twine | 1,116,588 | 227,490 |
| Wire and Wire products | 1,332,973 | 1,330,852 |
| Cutlery | 2,018,143 | 2,263,107 |
| Firearms | 287,679 | 306,085 |
| Shotgun Barrels | 169,445 | 193,190 |
| Cylinder and Window Glass | 824,616 | 1,037,770 |
| Metal compositions, manufactures of | 6,768,637 | 10,325,446 |
| Totals | $13,459,946 | $16,784,539 |

Aside from the falling off in importations of metal compositions, Glass and Cutlery, which was undoubtedly due to the general curtailment of business caused by the panic in the fall of 1907, the most important change shown in the above table is in Binding Twine, of which our purchases abroad have increased heavily. In the fiscal year 1907 we imported only 2,486,570 lb. of such Twine, while in the past fiscal year the quantity imported jumped to 12,692,166 lb., or over five times as much. Binding Twine pays no duty.

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The list of exports as presented below includes quite a number of commodities which are not handled by the Hardware trade to a great extent, but the figures will be found interesting and perhaps instructive:

*Exports from the United States of Various Commodities.*

| | 1908. | 1907. |
|---|---|---|
| Brass, manufactures of | $3,701,871 | $4,580,455 |
| Bicycles | 796,277 | 1,182,914 |
| Wheelbarrows and Hand Trucks | 480,986 | 497,986 |
| Clocks and parts of | 1,461,989 | 1,445,290 |
| Copper, manufactures of | 3,506,183 | 5,970,885 |
| Furniture of metal | 361,519 | 527,043 |
| Locks and other Builders' Hardware | 6,174,954 | 6,421,471 |
| Saws | 969,977 | 817,681 |
| Tools, not elsewhere classified | 8,135,397 | 7,775,551 |
| Table Cutlery | 68,814 | 74,999 |
| Other Cutlery | 744,433 | 574,743 |
| Firearms | 2,669,489 | 2,769,917 |
| Cylinder and Window Glass | 107,596 | 95,388 |
| Cash Registers | 2,341,719 | 2,488,324 |
| Typewriting Machines | 6,495,756 | 6,274,439 |
| Cut Nails | 335,271 | 371,675 |
| Wire Nails | 1,983,465 | 2,098,923 |
| Other Nails and Tacks | 522,204 | 611,991 |
| Safes | 317,399 | 353,502 |
| Scales and Balances | 984,695 | 976,383 |
| Stoves and Ranges | 1,258,598 | 1,342,617 |
| Lamps and Chandeliers | 1,827,216 | 1,875,869 |
| Plated Ware | 726,983 | 837,451 |
| Tin, manufactures of | 1,011,733 | 1,181,534 |
| Wooden Ware | 490,582 | 528,720 |
| Zinc, manufactures of | 129,670 | 212,344 |
| Cordage | 885,229 | 934,630 |
| Twine | 4,982,324 | 5,584,772 |
| Totals | $53,472,329 | $58,407,497 |

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The showing made in the export table is much more impressive than that of the import table. It is of course likely that some of the commodities enumerated only in the list of exports are also imported, but their omission from the import table is because the quantity is too small for separate classification. On examining the details of exports, it will be seen that the item of "Tools, not elsewhere classified," heads the list in point of value. Machine Tools are not included, as they are separately classified. It is gratifying to observe that despite the general falling off in trade in 1908, the exports of Tools markedly increased over the preceding year. Locks and other Builders' Hardware ranked second in 1907, but their sale abroad in 1908 declined, so that Typewriting Machines passed them. It is noteworthy that the value of the exports of Typewriting Machines has doubled since 1902, while in that interval exports of Locks and other Builders' Hardware have only gained about 10 per cent. A heavy decline is observed in Copper and Brass manufactures, which may safely be imputed to the great fall in Copper from the high prices ruling in the fiscal year 1907. It is interesting to note that the increase in the importation of Binder Twine was practically all from Canada, and that it was accompanied by a diminution in the export of Twine in general, including Binder and other Twines, the falling off being largely in the sales to British North America, with, however, increased sales to the United Kingdom. The export trade in Bicycles suffered quite a serious decline, while Cutlery made a notable gain. Exports of Wire Nails held their own remarkably well, but Cut Nails have altogether lost their ancient prominence, now being surpassed by "other Nails and Tacks."

## Condition of Trade.

Reports from the country at large continue to indicate an improving tendency in general business in which the Hardware trade shares. The note of encouragement, tempered naturally enough by conservatism, is discernable in the letters of our jobbing correspondents printed herewith. As has previously been pointed out, the tendency toward improvement is much more marked in some sections than in others, and seems to be associated with the prospect of good crops, which are daily becoming so well assured that the possibility of anything in the way of a serious failure is no longer taken into account in a broad view of the situation. Local shortages owing to exceptional conditions must, of course, be reckoned with in the territory affected. There does not, however, appear to be enough disappointment along these lines to influence materially the general business situation, especially as on the whole the yield promises to be large and remunerative. Notwithstanding the unquestioned improvement in the general feeling with which the crops have so much to do, there are many, especially in Eastern centers, who state that business is still at a low ebb and declare that even those who take the most hopeful view of the market are slow to back their position with liberal orders. There is no doubt that buying is still measured by immediate, or, at best, by early requirements. At the same time the number of orders is appreciably larger and their character indicates not only a depletion of stock but an increased demand, which necessitates replenishment. Prices are firm on many lines. Advances, it is true, are not yet in order, but the extra discounts which have for some time been obtainable on purchases of any consequence are now harder to obtain. With this perceptible improvement in the tone of the market there are, however, some lines in which prices are not strong and concessions are obtainable by careful buyers. Not a few complaints are heard re-

garding the slowness of collections, and it would appear that some merchants are asking rather unusual accommodations of the houses from whom they buy.

### Cleveland.

W. BINGHAM COMPANY.—Prosperous and better times are quite in evidence all over our country, and daily we see and hear of more signs of confidence and faith in the future than we have enjoyed for quite awhile. Reports from many sections go to prove this. So confident is the United States Steel Corporation as to expansion in their business in the near future, that it has ordered the American Shipbuilding Company to commence at once at the Lorain shipyards to build two freight steamers, 600 ft. long and 58 ft. beam, each carrying a capacity of 13,000 tons of iron ore. Surely this would seem to be the beginning of days of larger things. If we all had a little more faith in ourselves and in the capacity and resources of our country, there is no reason why we should not all of us be traveling on Easy Street very soon. As the good old colporteur used to say, "Faith is the substance of things hoped for and the evidence of things not seen." Now, if all of us had this same feeling in our breasts, wouldn't we be more hopeful of the future? Instead of listening to so much pessimistic talk, let us all try to be optimistic, for daily everything points to better times.

Surely, the farming community never was so prosperous. We were amused at a story a traveling salesman brought home a few days ago. It ran like this. A farmer went to a country store and told the dealer he wanted to buy a buggy. The dealer showed him one, and the farmer asked the price, and the dealer said $65. "Huh!" said the farmer, "I won't pay that for the buggy, for I bought one quite similar and fully as good a few years ago of you for $45." The dealer replied, "Well, now, I do remember that is so, and I remember you paid me for it in corn; that is, you delivered to me 500 bushels of corn at 9 cents a bushel, and took the buggy home." The dealer continued: "Now, my farmer friend, I will tell you what I will do with you to-day. If you will agree to deliver to me the same number of bushels of corn, say next week, I will give you not only the $65 buggy, but a farm wagon, a set of harness, a plow, a cream separator and $10 in money." The farmer replied: "Well, Jones, times are different, ain't they, for us farmers?" What does all this prove? that the most prosperous, happy and contented people in our great and beloved country are the farmers. The farmer is king.

In this "neck of the woods" everything looks hopeful and encouraging. Trade through salesmen and mail is growing larger as the fall season approaches, and the manufacturers here and all around us are starting up. A more hopeful and pleasant feeling is coming to us all.

We want to repeat our warning to the trade, that they should be placing their orders for fall, holiday and winter goods, because there will certainly be sale for them, and if orders are not placed considerably in advance of the consumers' wants, there will be a probable scarcity, also delay in their receiving goods. Therefore, our advice is to buy at once the fall supply of Stove Pipe Elbows, Stove Boards, Coal Hods, Axes, Ice Skates, Fire Shovels, Dampers, Oil and Gas Heating Stoves, Hand Sleds, Furnace and Stove Pipe Iron.

Trade in wrought merchant Pipe, Brass, Cast and Malleable Fittings is coming to us in a large volume. Medium and high priced inside and front door Lock Sets are in good demand. A great deal of building is going on all over the country, locally, a large amount.

Collections are fairly good, but with the sale of crops near at hand, there is no reason why every good merchant should not be able in the next 60 or 90 days, to take advantage of the 2 per cent. cash discount for prompt settlement of his bills.

### Louisville.

BELKNAP HARDWARE & MFG. COMPANY.—The market is steady, quiet, and uninteresting. Even the scrap piles around the junk shops and in the corners of the "Pathological Farriery," which finds place in one of our nearby streets, refuse to shrink. There is no chance to absorb the profit under the head of fabrication in the ordinary blacksmith's shed; it takes the magic of a big combine to do that. And then, too, fabrications are not all confined to forge and rolling mill. Many of them see light only in a newspaper office. A big scare head gives out that the Harriman roads (not so very specific that) have ordered 6000 steel cars, or is it 7000? No matter; one is as easy to contradict as the other, when the order fails to materialize.

Meanwhile the grind goes on, the advertiser, the man whose province is to suggest wants, is busy. Papers don't seem to shrink in volume, and everybody must get ready for Christmas, once they are back from the mountains or the sea shore. The movement has begun, that is not to be denied, but no speed mania can be charged to its account. The cool nights of late August and early September call for more bed clothing, and take the sweetness out of the muskmelons.

This induces new trains of thought. What can one do to bring about the good times again? Money? People seem to have it for what they need. Some of the recipes are about as cheerful as how to make a luxurious hammock out of barrel staves. For example: If your roof will need painting within the next three years or so, do it now. If the chicken coop is not all that it should be, put on two slabs where one would do, and use larger sized Nails than you expected to. Both of these devices will help—one the lumber trade and the other the Great Northern Sugar Coated Nail Company. If you have a comfortable pair of shoes, throw them away at once. The mere fact that they are comfortable shows that you have worn them too long. Get a new pair, dash the expense! Don't you see it will help the shoe trade? Suppose everybody quit buying shoes, hats and clothes, where would the factories and tradesmen be? In short, conjure up artificial wants and carefully avoid much work, else there may not be work enough to go around.

The above is the argument of the gentleman or woman, like as not, who detests political economy, and has an idea that its principles were inspired by the evil one, and that he still keeps on writing supplementary chapters or volumes even in addition to those now unfortunately extant.

Suppose we try another plan and see what a change will come over the heavens and the face of the earth—Attention, please! Tackle your daily job with courage and vigor, determined to make the hours count for something. Quit for lunch at 12 o'clock—not ten or fifteen minutes before. If your work isn't finished at closing hour, stay a few minutes over and finish it, and leave your papers or your tools in good order. If your job is not sufficient to occupy your time or your most worthy efforts, say so; make a complaint and take on what you feel is commensurate with your strength and prowess. If you can effect a saving anywhere and save waste, do it; there will then be money left over to expand with, and to expend, and your own salary or dividend will expand too. See if it won't. Not so fast, maybe, as we should like, or as we may think just. But the result will come in a little while, if not just now. This doesn't mean only Hardware clerks—it means everybody able to do a lick of work. We shall then be producing wealth, the railroads will bestir themselves, for the new wealth will absorb their securities, since people will have confidence in their earning powers.

Work is the great remedy—a panacea for panics. Let everyone try it on. Yes, "keep smiling," as that New Year's card admonishes you but work, even if you have to look serious once in a while, just for a change, but withal, do not let the defeat of your favorite baseball club depress you unduly. Labor Omnia Vincit. That grand old Latin motto still stands, and stands good: or what it says.

### St. Louis.

NORVELL-SHAPLEIGH HARDWARE COMPANY.—The improvement in business continues. In the past two weeks this market has been favored with visits from an unusual number of merchants. Almost without exception these merchants look forward to a good business for the rest of the year.

Stocks of goods are commencing to feel the strain of the fall demand. We have found a number of manufac-

turers slow in filling orders. This makes it very difficult to keep up stock.

We predicted there would be a shortage of goods this fall. Present conditions are carrying out our predictions. Merchants are complaining of long shortage lists. This is a natural condition following the conservative buying on the part of jobbers the past six months. We believe this condition will be accentuated as the volume of business increases in September and October.

Business this year will be later than usual. Retail stocks are very low. Merchants are waiting for the fall demand of consumers before buying. This will bring a large business upon jobbers all at once.

The jobber just now who has a full and complete stock and who is in position to fill his orders without shorts is to be congratulated. Retail merchants who buy from such jobbers should appreciate the risk these jobbers have taken in preparing their stocks for fall business. If there are occasional substitutions retail dealers should not be too exacting.

As the days progress it seems the corn crop in our territory will fully equal last year, while the cotton crop promises to be a bumper one. There is talk of a 4,000,000 bale cotton crop in Texas—probably the largest cotton crop ever raised in the State.

All the signs look like good business to us.

### Philadelphia.

SUPPLEE HARDWARE COMPANY.—With the month of August practically at a close, we think the results have been more satisfactory in the way of orders, although the general result has not been such that we could fly any banners on account of it. We think, however, that there is a much better tone in general business than earlier in the year.

Whether the Presidential campaign will make a difference or not, remains to be seen. Whenever there has been a question of policy as affecting general business conditions of the country and an uncertainty as to what would happen should there be a change in the administration it has generally had the effect of causing buyers to hold off awaiting results, and consequently a lull in business. We trust this fall may prove the exception to the rule.

We note from the trade journals that a great many of the mills are getting back to normal conditions, and from Pittsburgh that about 2500 men will resume their old positions this week. Also notice that bids have been asked for on the construction of 200 steel passenger coaches. These facts, together with the gradual calling into service of the idle freight equipment of the various roads, would indicate a more favorable condition of commerce. We think the pace is slow, although confidence is being more firmly established. Pig Iron shows some increased strength, stocks not being excessive in some quarters.

On the whole, we believe that the cloud is gradually lifting, and if nothing happens between now and January 1 to weaken the confidence which is slowly but surely gaining ground, we think that the remaining four months of 1908 will be much more satisfactory for every one. We pray such may be the case.

### New Orleans.

WOODWARD, WIGHT & CO.—Conditions in this section during July and August have shown very much improvement over April, May and June. Weather conditions for the crops have been ideal for months, there being plenty of rain and plenty of hot weather.

Rice from the river districts has come in earlier than usual and very heavy receipts have obtained for several weeks. The more western sections of the rice belt are also earlier than usual and the receipts and shipments from this crop have also been very satisfactory at good prices. Conditions in the sugar territory are exceptionally good and the yield promises to be larger than last year.

Cotton conditions in Louisiana, Mississippi and Texas have been first class. While the price has gone down materially, it is still remunerative and with the prospect, concerning the size of the crop this vicinity will turn out, unless the market goes down further, which is not probable, the out-turn will be satisfactory to all concerned.

Many of the large lumbering plants which have been closed down for months have been started up, and some of the largest are preparing to operate by September 15. This has created a considerable demand for mill supplies, belting, shafting, etc., and business in this line has been good. Prices have also advanced $2 or $3 a thousand, and the immediate future in the lumber business looks very satisfactory.

Collections have been keeping up very well and banking conditions are very satisfactory. Money is sufficiently plentiful for all crops and business purposes, and whereas August conditions were not any improvement over July, September and October are two of the best months in all years, and while we do not look for anything like last September's business, the prospects for a good, satisfactory volume during the next two months is very encouraging.

### Nashville.

GRAY & DUDLEY HARDWARE COMPANY.—As the fall season approaches we notice an increase in the volume of business. Salesmen on the road are sending in their orders a little bit oftener, and the orders contain more items, and are in better quantities than they have been for some time. While of course we do not expect trade to be as heavy as it was last fall, still there is no question but it is improving somewhat every week. We believe that September and October will be especially good months.

Collections still continue rather unsatisfactory. A good many merchants are asking for more time when it comes to paying their bills.

The crop prospects from all over the South still continue good, and it now looks as if a big crop is assured.

### Portland, Oregon.

FAILING-MCCALMAN COMPANY.—The writer is really unable to give a review of general conditions in the Portland territory, for we have been so busy these last two weeks ourselves that we have had very little time to find out how matters were going with other houses in this territory. If our experience is a fair sample, however, and we believe it is, business is to-day fully as large in cash values, and owing to the decline in goods, quite a bit larger in actual amounts of goods shipped, than it has been at any time since the drop off in business last fall. This statement, of course, refers to the immediate Portland territory.

In some of the territory traveled by Portland jobbers, business, we understand, is not nearly so good as last year, but is at present looking up. That this territory lags behind the rest of Portland territory is due entirely to the demoralization which still continues in the lumber market, but well informed lumbermen tell us that they look for a steady and rapid revival of business in this line. When this revival comes, business in the Portland territory will be quite a bit ahead of anything we have ever seen here before.

We certainly hope that our local conditions are but an indication of the approach of good times all over the country.

### St. Paul.

FARWELL, OZMUN, KIRK & CO.—August business has been of a satisfactory nature. The weather has been generally favorable for harvesting and threshing. Grain is yielding fully up to expectations; the quality is good and it is beginning to move considerably. Collections already show this perceptibly. Conditions for fall trade are good and the prospects are quite satisfactory.

## NOTES ON PRICES

**Wire Nails.**—The receipt of orders by mills is continuous, and gratifying, particularly in the western portion of the country. While the larger proportion of orders are for immediate shipment, some contracts are being placed. The market is steady and has a fairly confident tone. Quotations for the base sizes are as follows,

f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days.

| | |
|---|---|
| Carloads, to jobbers | $1.95 |
| Carload lots to retail merchants | 2.00 |
| Less than carloads to jobbers | 2.00 |
| Less than carloads to retail merchants | 2.10 |

Galvanized Nails are quoted at $1 over the price of the regular Nails.

*New York.*—Local demand continues in about the same volume as for some time past. Sales of some distributors of Nails for August compared favorably in volume with those of the preceding month. Nails are held on the basis of $2.30 per keg in small lots at store.

*Chicago.*—The demand for Wire Nails continues to show improvement and it is estimated that the business for August will exceed that of the same month a year ago. At the rate orders are now coming in, mill activities will soon have to be increased in order to keep pace with the demand, which in the West is particularly strong. The situation as reflected by the improvement shown in Wire Products, is highly significant of the prosperity of the agricultural interests. Prices are reported to be rigidly maintained without deviation. Quotations are as follows: $2.13 in car lots to jobbers, and $2.18 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

*Pittsburgh.*—A fairly heavy demand is reported from the West, but only a fair amount of new tonnage is being placed from the South and Southwest. Jobbers to some extent are taking in Nails for future requirements, and shipments by the mills are fairly heavy. We are advised that prices, on the whole, are being maintained. Quotations for base sizes are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

| | |
|---|---|
| Carloads, to jobbers | $1.95 |
| Carload lots to retail merchants | 2.00 |

Galvanized Nails are quoted at $1 over the price of the regular Nails.

**Cut Nails.**—No meeting of the Eastern Cut Nail Association is scheduled before the last of September. From this the inference might be drawn that formal change in price is not contemplated in the near future. This is probably so, unless unforeseen conditions arise which change the present situation. There is improvement in the demand for Steel Cut Nails, and a stronger feeling is manifested by some manufacturers, who do not care to accept orders at lower than regular quotations, on account of the prices at which Steel Billets and Slabs are held. The general market is represented by the quotation of $1.80, base, per keg, f.o.b. Pittsburgh, but $1.75 is the extreme market, on carloads and over, to the large trade. In the Western market Iron Cut Nails are held at an advance of 10 cents per keg over Steel Cut Nails, but this differential is not observed in the East.

*New York.*—Requirements for Steel Cut Nails at this point continue light. They are held on the basis of $2.15 per keg for small lots at store.

*Chicago.*—The Cut Nail market has undoubtedly been sympathetically strengthened by the improved demand and firmness of Wire Nails and has received additional support of a more positive nature from other sources. Jobbers have found it necessary to increase their orders for replenishment of stocks, and the demand growing out of more extended work in car repairs has likewise been responsible for some additional buying. Prices are unchanged except that there is less tendency to recede from current quotations than has been the case for some months past. We quote Chicago prices as follows: In car lots to jobbers, Iron Cut Nails, $2.08; Steel Cut Nails, $1.98. In small lots from store: Iron Cut Nails, $2.25; Steel Cut Nails, $2.15.

*Pittsburgh.*—There is some improvement in demand for Cut Nails, the large trade placing more orders and for larger quantities than for some time. We are also advised that the tone of the market is firmer, due to the fact that prices on Steel Billets and Slabs are being rigidly adhered to by the mills.

**Barb Wire.**—It is between seasons for the use of Barb Wire, but quite a large amount is being shipped from the mills. The most marked activity appears to be in the Southwest, in anticipation of fall business. Regular prices are reported as being maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, 2 per cent. discount for cash in 10 days:

| | Painted. | Gal. |
|---|---|---|
| Jobbers, carload lots | $2.10 | $2.40 |
| Retailers, carload lots | 2.15 | 2.45 |
| Retailers, less than carload lots | 2.25 | 2.55 |

*Chicago.*—Buying for fall trade has begun in Texas and the Southwest, and bids fair to develop favorably as the season advances. Shipments are at present light, as is usually the case at this season of the year. In view of the promising crop conditions throughout the West the prospect for a reasonably good demand when the season is fully open is regarded as quite flattering. Quotations are as follows: Jobbers, Chicago, car lots, Painted, $2.28; Galvanized, $2.58; to retailers, car lots, Painted, $2.33; Galvanized, $2.63; retailers, less than car lots, Painted, $2.45; Galvanized, $2.75; Staples, bright, in car lots, $2.25; Galvanized, $2.55; car lots, to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

*Pittsburgh.*—When it is considered that this product is out of season, the amount of tonnage being shipped out by the mills and also distributed by jobbers to the smaller trade, is considered quite satisfactory. The tone of the market is firm. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

| | Painted. | Gal. |
|---|---|---|
| Jobbers, carload lots | $2.10 | $2.40 |
| Retailers, carload lots | 2.15 | 2.45 |
| Retailers, less than carload lots | 2.25 | 2.55 |

**Plain Wire.**—The most activity in Wire products is shown in the demand for Plain Wire, which comes from manufacturers of Wire Fencing, and also from other sources. Mills are making liberal shipments on new business and also on contract orders. Regular prices are reported as being maintained. Quotations per 100 lb. to jobbers in carload lots are as follows, on a basis of $1.80 for Plain and $2.10 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the price to retailers being 5 cents additional:

| Nos. | 6 to 9 | 10 | 11 | 12&12½ | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|
| Annealed | $1.80 | 1.85 | 1.90 | 1.95 | 2.05 | 2.15 | 2.25 | 2.35 |
| Galvanized | 2.10 | 2.15 | 2.20 | 2.25 | 2.35 | 2.45 | 2.85 | 2.95 |

*Chicago.*—The outlook for the fall Fence trade is encouraging manufacturers to extend their purchases somewhat, and they are less inclined to restrict specifications within as narrow limits as they have been doing for some time. This is true, not only of Fence manufacturers, but the miscellaneous users of Plain Wire as well. The increasing demand is, moreover, making it less certain that the prompt deliveries which the mills have for some months been able to make will be continued indefinitely, and more liberal provision in the way of stocks is deemed desirable. It is emphatically affirmed that regular prices are being uniformly maintained. We quote as follows: Car lots to jobbers, $1.98, f.o.b. Chicago, and to retailers, $2.05.

*Pittsburgh.*—Manufacturers of Wire Fencing report trade active, and are placing liberal specifications against contracts with the mills. Other consumers of Plain Wire are buying liberally, and this product is moving quite freely, shipments by the mills being heavy, both on specifications and on new orders. It is stated that regular prices are being maintained. Quotations per 100 lb. to jobbers in carload lots are as follows, on a basis of $1.80 for Plain and $2.10 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the price to retailers being 5 cents additional:

| Nos. | 6 to 9 | 10 | 11 | 12&12½ | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|
| Annealed | $1.80 | 1.85 | 1.90 | 1.95 | 2.05 | 2.15 | 2.25 | 2.35 |
| Galvanized | 2.10 | 2.15 | 2.20 | 2.25 | 2.35 | 2.45 | 2.85 | 2.95 |

**Scythes.**—Particulars regarding the Scythe prices for next season are not yet announced. It is expected that they will be known next week.

**Bolts, Stove and Tire.**—Quotations on Stove and Tire Bolts have been notably firm for a long period, during which many allied lines have been decidedly weak. A fair demand for these goods is reported, buyers apparently considering that the market has been well tested.

Prevailing prices may be represented by a discount of 85 to 85 and 5 per cent.

**Wrenches.**—No further concessions on Agricultural Wrenches have been reported for some time, and it would appear that the cutting on this line has about run its course. The market may be represented in a general way by a discount of 80, 10 and 5 to 80, 10 and 10 per cent.

**Window Glass.**—The plan upon which the organization of the Window Glass manufacturing interests shall be effected has not been settled, but meetings are being held at various Glass manufacturing centers for the purpose of perfecting an organization which will put the manufacture of Glass upon a more profitable basis. Business continues moderate and no changes in price have been announced. Manufacturers' discounts, from manufacturers' list of January 1, 1901, are as follows: For A single and double strength Glass, 90 and 15 per cent.; for B single and double strength Glass, 90 and 20 per cent. Jobbers' quotations from jobbers' list, October 1, 1903, for all sizes of single and double strength Glass for the entire country is 90 and 20 per cent. discount.

**Rope.**—Conditions in the Rope market remain practically unchanged, demand showing no increase, but continuing in about the same volume. The fiber market is quiet, with prices firm, but Rope manufacturers are not disposed to purchase while business continues dull. Quotations for Rope 7-16 in. in diameter and larger are as follows: Pure Manila, 9½ cents; Pure Sisal, 7 cents; No. 1 Jute, ¾ in. and up, 5¾ cents; No. 2 Jute ¼ in. and up, 5¼ cents.

**Linseed Oil.**—The market continues quiet and demand is confined almost entirely to small lots. Oil in crushers' hands is regarded as representing a fair amount owing to the quiet movement, and probably regular quotations could be slightly shaded for carload lots. Quotations are as follows: Western Raw, car lots, 43 to 44 cents; State and Western Raw, barrel lots, 44 to 45 cents per gallon. Boiled Oil is 1 cent per gallon advance on Raw.

**Spirits Turpentine.**—The price in this market has fallen off 1 cent per gallon, reflecting conditions in the South, where receipts have exceeded sales. At this point demand continues light, being confined to small lots. The New York market is represented by the following quotations: Oil Barrels, 38½ to 39 cents; machine made barrels, 39 to 39½ cents per gallon.

**Pipe Cutters.**—A good deal of demoralization continues in the market for Pipe Cutters, Barnes and Saunders patterns. Statements of manufacturers are to the effect that these goods are being sold close to cost—in some cases even below.

## Central Stamping Company.

THE CENTRAL STAMPING COMPANY, whose executive offices and sample rooms have for some years been located at 24 Cliff street, New York City, is now settled in its new headquarters at 172 and 174 Fulton street. The company occupies the second and third floors of a fine modern building, and has spacious, light and airy accommodations for all departments. The show room is exceedingly attractive, and will contain samples of every article made by the company. The feature of the new location to which attention is especially called, is its accessibility. It is only half a block from the Hudson Terminal Building or from the Fulton street Subway express station on Broadway, and but a short distance from Brooklyn Bridge and East and West Side elevated roads. The downtown North River ferries are also within easy walking distance.

H. VAN NEWKIRK has connected himself with the Peck, Stow & Wilcox Company in a responsible position, with headquarters at the New York branch. Mr. Van Newkirk was for 18 years in the employ of the Russell & Erwin Mfg. Company, 14 years of which were spent with the Philadelphia house, a large portion of the time as manager there, and the last four years in New York, as treasurer and manager of the New York corporation of Russell & Erwin Mfg. Company.

## CONFERENCE OF RETAIL HARDWARE ASSOCIATION SECRETARIES.

A CONFERENCE of the secretaries of State retail Hardware associations, in what is termed the Central West, was held at the office of the Iowa Retail Hardware Association in Mason City, Iowa, on the 28th and 29th ult. The following officials representing the associations in the States named were present: L. D. Nish, Illinois; C. A. Peck, Wisconsin; M. S. Mathews, Minnesota; C. N. Barnes, North Dakota; H. E. Johnson, South Dakota; J. F. Barr, Nebraska; F. D. Kansteiner, Missouri, and A. R. Sale, Iowa. P. C. De Vol, president of the Iowa Association, and S. R. Miles, president of the Iowa Hardware Dealers' Mutual Insurance Association, were present as invited guests.

The first session was given over to the discussion of mutual fire insurance matters, with a view to bringing about uniformity of plans and methods. Four of the State Association secretaries present are also secretaries of mutual insurance companies, and reported insurance in force amounting to $12,000,000, with a rapidly increasing demand for policies.

The dates of the annual meetings of the associations covered by the conference, which were announced in connection with the annual meeting of the National Retail Hardware Association last March in St. Louis, were rearranged. The new dates as agreed upon are as follows:

| | |
|---|---|
| No. Dakota..January 26 to 29 | Illinois...February 17 to 19 |
| Missouri....February 2 to 5 | Minnesota.February 23 to 25 |
| Wisconsin...February 3 to 5 | Ohio.....February 23 to 25 |
| Iowa.....February 9 to 12 | So. Dakota.....March 2 to 5 |
| Nebraska..February 16 to 18 | |

Plans were adopted for introducing features in the convention programmes which will enable all the States represented at the conference to participate in them.

The plans and methods of conducting the Hardware exhibitions held in conjunction with most of these conventions were also given much consideration. Other matters of common interest were discussed and the conference will doubtless prove of much benefit to the various associations represented at the gathering.

The conference will be made an annual feature, being called at some date previous to the fall campaign for convention work. To this end it was determined to elect officers, and A. R. Sale, Mason City, Iowa, was chosen president and J. F. Barr, Lincoln, Neb., secretary. The 1909 meeting will probably be held in Minneapolis late in August or early in September.

As a relaxation from the work of the conference those present enjoyed a trolley trip to Clear Lake, with a boat ride on the lake and an elaborate supper, and also visited the great cement plant at Mason City.

## 80-Rod Spools of Barb Wire.

IN order to meet the demand for Barb Wire spooled in strands of definite length, the American Steel & Wire Company is now furnishing its various brands of standard gauge Barb Wire in 80 rod spools. These are sold by the spool instead of by the pound, and in order to facilitate the figuring of delivered prices, the company has issued a differential rate book which shows the cost per spool at any given freight rate. The convenience of strands of fixed length is appreciated by many users, and a strong demand for the 80-rod spools has developed in various sections of the country.

E. C. Atkins & Co., Indianapolis, Ind., have leased the entire building, 115 Union avenue, Memphis, Tenn., which will be occupied hereafter as a storeroom instead of the former location, which was destroyed by fire. These premises are much more favorably situated than the former quarters, and the new storeroom is in every way a marked advancement.

The Gardiner Hardware Company, Inc., Canton, Ill., is building an extension 30 ft. long of brick construction with cement floor to its store, which will provide 3000 sq. ft. additional wareroom capacity.

## Novel Shelving for Show Windows.

BY F. B. M.

A FLUTED front shelf for show windows can be quickly constructed out of a number of small Tin Pails, by first laying two parallel strips of wood on the floor of the window just far enough apart to take in the bails of the Pails. Each Pail is then covered separately with cloth, sticking the ends of the cloth inside the Pails. They are then placed in an inverted position, in a row, upon the strips. On plain white tissue paper outline with a Lead Pencil the letters contained in the word Hardware, and stick these in proper order fast to the cloth of the eight central Pails in the row with flour paste, being careful to apply the paste to the cloth and not to the more delicate letters. Little dabs of paste here and there on the cloth will be sufficient.

Another plan for making a cylindrical base is to cover a large sized Pail with cloth, invert it, and cut out part of the cloth covering from the side facing the window. The space cut out of the cloth is then filled with some lettered sign previously prepared, which may be secured around the Pail with Twine, underneath the cloth.

A pointed or angular front can be formed by using boxes in lieu of Pails, placed with their corners to the front. Lettering placed upon this angular front can be read by those approaching the window from either direction, which is also true to a certain extent of the cylindrical or semicircular fluted fronts.

### A Diamond Shaped Box.

A pleasing change can be made occasionally by removing all of the shelving from the window and covering the floor, for instance, with red cloth. On this place a black cloth covered diamond shaped box, which should be about 2 ft. long and 1 ft. wide and 3 or 4 in. high. On the center of the top of the box any article to which it is desired to call especial attention may be placed. This article might be a File, and in front of the box can be placed a small card, with the following inscription on it:

This Illustrates Our Filedelity
In Business, in Trying to
Please Customers, Whom We
Value More than Diamonds.

### Easel Shapes.

Lock cornered wooden boxes when they are not glued can easily be knocked apart, and the pieces used for making easel shapes, against which Hardware can be stood in an attractive manner. The wood can be stained green, which will not fade out like cloth.

### Cone Shaped Center Piece.

A cheap ground work for a high cone shaped center piece may be constructed of coarse mesh heavy Wire Netting, covered with "turkey red" or green cloth, thin enough to punch Wire Hooks through, so as to hang articles on them. As Wire Netting is not only flexible, but possessed of the requisite strength, many novel and picturesque designs can be worked out with articles of Hardware or small House Furnishing Goods, utilizing the Netting as a base to hold the articles suspended by the Wire Hooks.

## Requests for Catalogues, Etc.

*The trade is given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.*

**REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate:**

FROM O. H. MINTON & BRO., Gotebo, Okla., whose Hardware store was destroyed by fire, but who have again opened up in new quarters.

FROM D. F. KNIGHT, who has recently opened a Hardware store at Cashion, Okla.

FROM BALL BROS., Holbrook, Neb., Shelf and Heavy Hardware, Stoves, Implements, Paints and Sporting Goods, who are opening a branch store at Bartley, Neb.

FROM HARRISON HARDWARE STORE, Paris, Ill., A. D. Harrison and Ed. Green, proprietors, who have bought the business formerly owned by Connely & Heustis, known as the Cash Hardware Store.

## A Stove Selling Window Display.

BY LONGBEACH.

AN appropriate turning for the top of a stove window is made by hanging lanterns on wire. Stovepipe wire is very good, and does not show. If the window has one large pane of glass extending to the top or ceiling, a wire should hang from center of ceiling to within 5 or 6 ft. of bottom of window. From this another wire should slant to right and left, facing window, to within 3 ft. of window floor. Then starting in the center, suspend the lanterns by short lengths of wire about 12 in. apart (the wire will not slip if twisted several times around). Fill the bottom of window with Stove Boards arranged in a semicircle; set up a huge Heating Stove in the center far enough back so that when two lengths of pipe are run up and an elbow attached, the collar on the elbow will make it look as though there was a flue in the window. If you have one of the large pasteboard figures of a farmer in his shirt sleeves sitting on a lantern box, place him directly behind the Stove with the pipe attached. Having his coat off suggests in a realistic way the heat of the Stove. Fasten to his outstretched hand a small Oil Heater. Then place the smaller Heating Stoves around the semicircle. In the spaces formed by the circle, place a small Oven for a base, and on this a large Oil Stove. Fill in the space in front of Stoves with Flue Stops, Collars, Dampers, and Elbows. Place joints of different sized Pipe at each side. If you carry Sheet Zinc and Asbestos Board, place pieces of these in the window; then with price cards on each Stove, you have a window that will sell Stoves.

## AMONG THE HARDWARE TRADE.

Loring & Titsworth have succeeded W. F. Long, Las Animas, Colo., in the retail Shelf Hardware, Stove, Tinware, Paint and Sporting Goods business.

The Arey Hardware Company has been incorporated in Salisbury, N. C., with a capital stock of $50,000. The company will handle Shelf Hardware, Stoves, Tinware, Paints, Sporting Goods, &c.

Haux Hardware Company, Grand Island, Neb., has been incorporated with a capital stock of $15,000, $7000 of which is paid up. The incorporators are Charles L. Haux, Rudolph Pistorius, and D. O. Beckmann.

The Watt-Sapp Hardware Company has bought the stock of Hardware, Tin Ware, Stoves, Implements, Plumbers' supplies, &c., of W. S. Bell & Son, Albany, Ga., and will carry on the business at the old stand.

Bragg & Dildine have succeeded to the Hardware, Stove, Implement, Paint and Vehicle business of Henry Bragg, Humboldt, Kan.

The Hardware stock of the Interstate Hardware & Furniture Company, Herrick, S. D., has been destroyed by fire.

E. A. Franz has opened a Hardware, Stove, Paint and Sporting Goods store in Hood River, Ore., succeeding Wm. Haynes.

A fire recently occurred in the warehouse of W. M. Tatum Hardware Company, Corsicana, Texas, causing about $300 damage.

ENTERPRISE MFG. COMPANY, Philadelphia, has issued a catalogue of Hardware specialties, including Sad Irons, Meat and Food Choppers, Coffee Mills, suction and force Measuring Faucets, Beef Shavers, Cheese Cutters, Tobacco Cutters, Tincture Presses, Fruit, Wine and Jelly Presses, Cherry Stoners, Raisin Seeders, Ice Shredders, Cobblers' Kits, &c.

## DEATH OF E. B. PIKE.

EDWIN BURBANK PIKE, president of the Pike Mfg. Company, Pike, N. H., passed away at his home on the 24th ult., after an illness of one week, following an operation for appendicitis. Mr. Pike was born in Haverhill, N. H., April 7, 1845, the youngest of six children born to Isaac and Sarah Pike, and the last to survive. His father died when he was but 14 years old, and from that time on he was thrown upon his own resources. Ambitious and energetic even as a young boy, he worked hard to educate himself, studying for a while at Haverhill Academy and also at Newbury Seminary (Newbury, Vt.), working as he studied. When only about 17 years old he made his first trip selling Whetstones. Feeling, however, that there was not enough opportunity for him in the Whetstone line at that time, he took up other business. In 1861 he enlisted with the Union Army; his mother prevented his going away then, but two years later, when he was 18, he went South, and was connected with the supply and railroad department of the army for two years.

In the early 70's he accepted a position with the Enterprise Mfg. Company, Philadelphia, then in its infancy, having been established a few years previously by T. Henry Asbury. He was sole salesman for this firm for awhile, and afterwards their head traveling salesman.



EDWIN BURBANK PIKE.

His energy and genial personality were important factors in the rapid growth of this company which has since become one of the largest manufacturers in its line, and the personal friendship formed at that time with the founders of the company and with the merchants with whom he came in contact, were among the most cherished of his life. Many of the senior members of Hardware firms now among the largest in the country, well remember his enthusiastic demonstration of the company's specialties which were then radically novel.

In 1878 a severe attack of rheumatic fever obliged him to give up traveling for a time, and he again took hold with his brother, A. F. Pike, in the Scythestone business. His ever constant ambition to increase and extend any enterprise with which he was associated led to the organization in 1884 of the A. F. Pike Mfg. Company, at which time was added to the manufacture of Scythestones a general line of Oilstones and other abrasives for sharpening tools. He was vice-president of this company. In 1889 the business of the company had increased to such an extent as to necessitate further expansion, and the Pike Mfg. Company was incorporated, with his brother, A. F. Pike, as president, and himself filling the office of vice-president and general manager of the sales end of the business. In 1891 the death of his brother placed the full responsibility of the business upon his shoulders, and from that time until his decease he was president of the company. It is due to his tireless energy, aggressiveness and marked ability that the small business of 1823 is to-day the largest of its kind in the world.

Mr. Pike was married in Salem, Mass., April 14, 1865, to Miss Addie A. Miner, who died in the last week of August just 21 years ago. There were three children by this marriage, of whom two are now living, E. Bertram Pike, treasurer of the Pike Mfg. Company, and Winifred, now Mrs. Walter L. Emory of Honolulu. He was married again, September 10, 1890, to Miss Harriet Tromblee, who with one daughter, Katherine, survives him.

Mr. Pike was president of the Pike Family Association from the time of its organization. For a number of years he was actively interested in the work of the National Association of Manufacturers, the American Hardware Manufacturers' Association and various other organizations, but two years ago was obliged to withdraw for a time from active participation in this work on account of poor health.

During the latter part of his life Mr. Pike took an active part in religious work, being a member of the Congregational Church at Haverhill until two years ago, when he became one of the charter members of the Bethany Church at Pike, which was organized after years of effort on his part. He gave much time and thought to this work, seeking especially to awaken in the hearts of the children a love for the church and its worship and for everything good. He earnestly desired to see the erection of a beautiful church building, and chiefly through his efforts a fund is now well started for this purpose. The funeral services were held at his late home Wednesday morning, August 26, conducted by his lifelong friend, the Rev. John Barstow, and the Rev. Maurice J. Duncklee, until recently the pastor of the Bethany Church at Pike.

Mr. Pike was a man of very strong personality and of a most genial, generous disposition. He was a genuinely public spirited man, interested in everything that affected in any way the life of the town and always working for its material and moral betterment. His heart and his purse were always wide open, and many are the individuals who have been cheered and comforted and lifted over hard places by his ever ready thoughtfulness.

Mr. Pike took great pride in his business, often saying that he felt that his company were producers in the best sense of the word, for they went into the earth and took from it that which did not impoverish it and which added in many ways to the benefit and comfort of his fellowmen.

As an indication of the purpose which actuated him in his personal and business life, we quote from an address delivered by him at the annual conference of salesmen and department heads, held in the summer of 1907: "It has been my intention and effort for years that whatever I touched should be benefited by my connection with it, whether it was a piece of land, or a horse, or whether it was some one who entered our employ, or some one who bought something from us. It has been my aim that in every case the party or thing should be benefited because we had come in contact. And that is a principle that I want to carry out in my life, and in the life of the Pike Mfg. Company. Whatever we do let it be a benefit to all those with whom we come in contact. I want to put honesty and kindliness, as well as push and perseverance, into our business."

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The Cash Hardware Company, Neillsville, Wis., has recently been incorporated with a capital stock of $10,000, the incorporators being A. G. Foss, Orin Lord and Edwin Holliday.

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The Mitchell-Powers Hardware Company, Bristol, Va.-Tenn., has transferred its charter to Virginia, being incorporated in that State with a capital of $75,000 to $100,000.

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A. E. Crisp has taken over the Hardware business of Glascock & Crisp, Harrington, Wash., and is continuing under the old firm name.

## AN UP-TO-DATE DUTCH HARDWARE HOUSE.

CLOSELY allied to the United States by ties which reach back practically to the days of Columbus, Holland is a country full of interest to the American visitor, not only on account of its historical associations, but also on account of its important commercial relations with this country. Although possessing undoubted wealth, rich colonies, agriculture of high degree, an extensive shipping trade and many varied industries, Holland has neither coal nor iron, and is therefore compelled to look to the United States and her immediate neighbors to supply her with all the Hardware she needs. In proportion to her size and population, Holland takes a leading place among the customers of the United States, and, as there is no protective tariff (manufactured goods being either admitted free or subject to only a nominal duty—usually not more than 5 per cent.), it is not to be wondered at that keen competition exists for the orders of well established Dutch houses, and nowhere in Holland is this competition keener than in Rotterdam. As a result of the great sums which have been and are still being expended in the deepening of the waterway and the construction of extensive docks, Rotterdam, the second city in Holland, with a population of some 500,000, has succeeded in drawing to itself more than one-half of the foreign trade of the country and practically the whole of the vast transit trade that flows along the Rhine to and from Western Germany.

Rotterdam is the seat of many Hardware firms, one of the most important of whom is R. S. Stokvis & Zonen, Ltd. This house is already familiar to many American manufacturers of Hardware and Tools. The firm dates back to 1844, when the father of the present senior partner started a small business as a metal merchant in a side street in Rotterdam. In 1847 his son, S. R. Stokvis, entered the business after having served his time as an apprentice in the Hardware trade in Brussels. After one or two removals, rendered necessary by the continued growth of the business, premises were finally secured on the Leuhaven, a busy waterside thoroughfare in the heart of the shipping quarter of the town. One after another the adjoining premises have been either purchased or leased, until at the present time the establishment comprises a great block of buildings some five or six stories high, which are utilized for the offices, showrooms and warehouses.

The superficial area of the floor space at the headquarters on the Leuhaven is 776,000 square ft. (about 18 acres), while the stock carried represents a value of something like $1,200,000.

### The Growth of the Firm

has been coincident with that of the city, warehouses having been erected in several of the outlying districts. A large warehouse for construction material and rails has been erected at Fynewoord, a suburb of Rotterdam, situated on the other side of the River Maas, in close proximity to the docks of the Holland-America Line, and the largest shipyard and engineering works in the country. A second warehouse for Tubes and Fittings is situated close to the central railroad station. Some idea of the magnitude of this branch of the firm's business may be gathered from the fact that in 1906 no less than 20,000 tons of Cast Iron Water Pipes were sold. A third warehouse specially constructed for the storage of heavy machine tools has been erected in another part of the city.

In 1904, its sixtieth anniversary, the business was converted into a private limited company, with a capital of 2,500,000 guilders (about $1,000,000), the entire capital being held by the Stokvis family. The company has six directors, the senior of whom, S. R. Stokvis, son of the original founder, is also president. The other directors are his two sons, Felix and Hugo, and his three nephews, Charles, Louis and Theodore. The head of the concern, although 80 years of age, is hale and hearty and still takes an active share in the management of the business. A recent visitor describes him as a "youthful grey beard, who, during the greater part of the year, may be seen in the office at any time from 9 a.m. to 6 p.m., conversing in four languages with the innumerable callers with a brightness and fluency as may cause many a man in the prime of life a qualm of envy, and whose success is solely to be ascribed to his unfailing courtesy, quickness in business matters, and steady work on well thought out lines."

### Departments.

In a business of so complex a character as that of R. S. Stokvis & Zonen, Ltd., the department system must of course be strictly observed. Each of the directors has a specific branch under his own personal supervision, the whole being under the general administration of the Board of Directors. The sections are grouped into departments, four of which are devoted to the work of the clerical staff, bookkeeping, invoices, forwarding (home trade), and shipping (export). In the warehousing departments there are eight sections, namely: Iron and Steel; Oil and Greases; Ironmongery and Tools; Machine Tools; Sanitary Water Pipes and accessories, and gaslighting plant; technical department, parts of machines of every description, and Cycles, Automobiles, &c.

### A Great Variety of Stock.

The business embraces the whole range of Hardware from Incandescent Mantles to Internal Combustion Engines. It should be cleary understood that the house manufactures none of the goods thus handled. Their business relations extend all over the world, every country being tapped for its produce, though it goes without saying that the United States contributes the lion's share to the annual turnover, Great Britain, Germany, Belgium, France, Holland, and Denmark contributing in a lesser degree.

A visitor to headquarters is at once struck by the order, cleanliness and quiet which prevail. System everywhere is enforced. In the ironmongery department is to be found an enormous stock of light and heavy Hardware, including Pumps, Dairy Utensils, Agricultural Implements, Iron, Zinc, Lead and Tin, in Sheet, Pipes, Tubes and Chains of every description. The sanitary and gaslighting department, in addititon to large stores, has two elaborately laid out showrooms, where all the latest American, Colonial and British sanitary water and gas appliances are displayed, and there is an almost bewildering assortment of Baths, Sinks, Washstands, Water Piping, ventilating appliances, Lamps, Chandeliers, &c. In the Tool section the latest inventions in Machine Tools are to be found, while the machinery department contains the very latest in steam, hydraulic and internal combustion Engines, with all their accessories and parts. The Cycle department annually handles no fewer than 20,000 complete machines. The firm possesses extensive workshops, where machine parts can be assembled, as well as repair shops for machinery and Cycles. In the technical department plans and specifications for the construction of ships, factories and workshops are prepared, as also for telegraphic and telephonic installations.

### Well Appointed Offices.

In the offices, the card system has been carefully developed, so that every one of the countless inquiries which are annually received are filed and can be referred to in an instant. Automatic reckoners, rapid printing devices, automatic binders, and the most modern system of accountancy all tend to make the counting part of the business as perfect as human integrity and foresight can make it. The offices are large, airy, and supplied with most modern and up-to-date systems of heat and ventilation. Each department has its own waiting rooms, and a thoroughly modern telephonic system connects the different buildings.

In Holland alone 24 travelers representing the house are on the road. In the Dutch Indies at Soerbaya, the principal business town of Java, an important branch house has been established which carries on not only a general Hardware business, but also does a very large trade in the various machines required on the plantations and in the petroleum works. The firm is a large government contractor, and supplies an immense quantity of goods every year to the admiralty and war departments. In addition it acts as agent for Holland for Schneider & Co., of Le Creusot, the well-known French armor plate and ordnance manufacturers.

**Pension Fund and Profit Sharing System.**

Owing to the rapid growth and extension of their business, they have recently been obliged to open a large branch establishment in Amsterdam, the capital of the Netherlands, while, in order to further extend the scope of the business, a branch house has also been opened in the Belgian capital. A staff of over 400 persons, about equally divided between the offices and the warehouses, is employed. A fixed proportion of the firm's annual profit it set aside voluntarily to provide a pension fund for the aged or infirm employees (the latter not being called upon to contribute to this fund). The profit-sharing system has also been introduced, under which everyone employed by the company, in addition to his salary or wages, has a certain direct interest in the prosperity of the concern.

The business has lately been converted into a British limited liability company, with a capital of £375,000, or $1,875,000, of which the managing directors hold £175,000, or $875,000. An issue of £125,000, or $625,000 6 per cent, first preference shares of £9 each was subscribed for many times over.

## Luthe Hardware Company's New Catalogue.

A NOTABLE addition to the number of modern Hardware jobbing catalogues has just been issued by the Luthe Hardware Company, Des Moines, Iowa. This is the first general catalogue which the house has published, a fact which makes its completeness and general excellence all the more remarkable. The book contains close to 1700 pages, with profuse illustrations and complete, detailed descriptions of all goods. A number of illustrations are in colors. A high grade of catalogue paper is used throughout the book, thus bringing out to advantage the engravings which are exceptionally large and clear. There is a complete and well arranged alphabetical index, and the book is also subdivided and indexed by departments under the following heads: Mechanics, and Edge Tools, Implements and miscellaneous Farm and Garden Goods, Builders' Hardware, Shelf Hardware, &c.; miscellaneous Hardware; Harness and Saddlery Hardware; Lamps, Lanterns, &c.; Stoves and Stove Sundries; Housekeeping Goods, &c.; Tin, Enameled and Galvanized Ware; Tinners' and Roofers' Supplies, Cutlery, Clocks, Fancy Goods, &c.; Guns, Ammunition and Sporting Goods; Lawn Furniture, Juvenile Wagons and Sleds and Skates, and Bicycle Sundries; Fishing Tackle; Store Fixtures and Appliances and Paints, Brushes and Painters' and Paper Hangers' Tools and Supplies. On the announcement page just following the title page, in the front of the book, the company sets forth the general platform on which its business is founded, which is certainly such as should commend itself to the trade. Simultaneously with the distribution of the catalogue, the company states that it is adding new lines and increasing the variety of its stock which it now holds to compare favorably with stocks carried in the largest Hardware markets in the country. The business of the Luthe Hardware Company was established in 1892. At the present time it employs a force of 12 traveling representatives, and has two large warehouses, both with railroad track facilities. New stories are being added to the main warehouse.

THE GEORGE W. DOVER COMPANY, Providence, R. I., has leased new and larger quarters for its offices and warerooms in the new Herrick Building, 56 Garnet street, Providence, to which the company removed September 1. Besides an extensive line of jewelers' supplies and jewelry specialties, the company makes a specialty of screw machine products and brass and silver turnings.

THE ROOT BROTHERS COMPANY, Plymouth, Ohio, has sold the manufacturing end of its business to the Heath Foundry & Mfg. Company, Inc., which will continue the manufacture of the Root specialties. The Root Brothers Company will confine itself in the future strictly to the wholesale Hardware business.

THE JONES HARDWARE COMPANY, Dalhart, Texas, has amended its charter, changing its name to Rowe Hardware Company.

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# GETTING READY FOR ANOTHER PARCEL POST CAMPAIGN.

FROM OUR SPECIAL CORRESPONDENT.

WASHINGTON, D. C., September 1, 1908.

AN emphatic reiteration of his former recommendations for a domestic parcel post, and especially a parcel post for rural routes, and a post check currency will be the leading feature of the forthcoming annual report of the Postmaster-General, which is now nearing completion. The partial success achieved at the last session of Congress in the movement to secure the passage of a postal savings bank bill, which was favorably reported from the Senate Post Office Committee and made a special order for consideration early next December, encourages the Post Office Department officials to believe that Congress at its coming session can be induced to take up the domestic parcel post project and at least authorize a series of experiments which the officials count up as the only necessary entering wedge to the establishment of a full fledged system.

### The Plans of the Postmaster-General

are comprehensive and appear to be based on his belief that if he leaves the Department next March, either to accept another portfolio or to retire from the public service, he will be succeeded by some one in thorough sympathy with his projects. Inasmuch as Frank H. Hitchcock, until recently First Assistant Postmaster-General and now managing the Taft campaign, is generally regarded as Mr. Meyer's successor if the Republican party is continued in power, there is good reason to believe that the crusade undertaken in the interest of a domestic parcel post and kindred postal "reforms" will be urged throughout the next four years' administration. It is not a particularly pleasant outlook for the retail merchant, but it would be folly to ignore the facts or to fail to meet the situation promptly and energetically.

### Two Propositions Ready.

It is understood here that two propositions which will be epecially urged upon Congress next winter will be the authorization of a series of experiments on rural routes to determine the practicability of the Postmaster-General's rural parcel post scheme, and the extension of the merchandise limit of the general postal service from 4 to 11 lb. and the reduction of the rate from 16 to 12 cents per pound. The principal argument heretofore used in favor of the reduction in the postage rates to 12 cents and the increase in the weight to 11 lb. has been the fact that packages can be sent from the United States to many foreign countries under more favorable conditions than govern the domestic postal service. Until quite recently this proposition was met with the contention that the weight limit of 11 lb. prevailed only in the case of agreements with minor foreign countries, and that important countries, like Germany and Great Britain, refused to consider parcel post agreements having a weight limit in excess of 2 kg., or 4.4 lb.

### Recent Agreements with Great Britain and Germany Increasing Merchandise Wei t Limit.

Since Congress adjourned the Post Office officials have made a systematic and successful effort to secure agreements with Germany and Great Britain that would appear to strengthen the argument for a domestic parcel post along the lines suggested by the Postmaster-General.

The original parcel post agreement with Germany contained an 11-lb. weight limit, but in June, 1903, this limit was reduced to 2 kg., and in October, 1904, a further restriction was added limiting the value of a parcel to $50. The Post Office Department recently, however, secured the rescinding of both restrictions, and packages may now be sent to and from Germany in the mails up to 11 lb. in weight and without regard to the value of the contents.

The postal authorities did not find it so easy a task to bring Great Britain into line, but a few days ago an agreement was reached under the terms of which packages are now admitted to the parcel post mails exchanged between the United States and Great Britain not exceeding 11 lb. in weight and without regard to value. The postage rate on such parcels sent from the United States to Great Britain is 12 cents per pound, but this rate is not reciprocal, the following schedule applying to parcels forwarded from Great Britain to the United States:

For a parcel weighing not more than 3 lb.—1 shilling 6 pence.
For a parcel weighing between 3 and 7 lb.—2 shillings 6 pence.
For a parcel weighing between 7 and 9 lb.—3 shillings 6 pence.
For a parcel weighing between 9 and 11 lb.—4 shillings 6 pence.

### The "Concessions" and the Reasons Why.

While the advocates of a domestic parcel post are already making much of the agreement secured with Germany and Great Britain for an 11-lb. weight limit, one does not have to look far for the reasons which have actuated the German and British governments in making this so-called "concession" to the United States. As a matter of fact, the experience of the past three years, taken in connection with available statistics, has demonstrated to the postal authorities of both countries that their outgoing business through the international parcel post is much larger than the incoming, and for this reason it is obviously to the advantage of both Germany and Great Britain to increase the weight limit. There are several sound commercial reasons why both Germany and Great Britain have secured greater profit in the international parcel post than any of the countries which are parties to their agreements. Both countries produce enormous quantities of fine wares of small bulk and great value, for the exportation of which the international parcel post is specially suited. The great bulk of the products of the United States intended for export consists of heavy raw materials, which can only be forwarded through the usual commercial channels.

While parcel post statistics are notoriously difficult to secure either in Germany or in England because they are carefully amalgamated with the general postal accounts to prevent the disclosure of deficits, yet some recent figures compiled by the British Board of Trade from official sources shed light on the matter in a very suggestive way. In a statement of imports and exports for the first six months of the calendar year 1908 as compared with 1907, the item of "miscellaneous and unclassified exports (parcel post)" appeared together with figures showing exports valued at $13,362,524, and imports of only $5,293,054. Such being the tendency of the international parcel post between Great Britain and the leading countries of the world, it is not surprising that the British postal authorities should consent to an agreement with the United States having a maximum weight limit. So far as American producers and merchants are concerned, however, it would appear that the Postmaster-General has merely opened the door for foreign competitors, just as he proposes to open the mails to the giant catalogue houses in their effort to secure the business of local retailers.

### The Postal Deficit.

The fact that a deficiency of $27,000,000 in the federal revenues has accrued in the first two months of the current fiscal year is causing much anxiety among the financial experts in Congress, a number of whom have spent the past week in Washington in connection with the preliminary work of revising the Dingley tariff act, and the exact figures of the postal deficit for the year just closed will be scanned with close attention. It is estimated that the shortage will exceed $10,000,000, although when the Secretary of the Treasury forwarded his annual report to Congress last December he made an estimate, presumably upon data supplied by the Post Office Department, showing the probable expenditure of $201,025,581.10 for the postal service for the year ending June 30, 1908, and a postal revenue of exactly the same amount without omitting even the 10 cents. These figures are especially significant in view of the additional estimate for the current fiscal year which ends June 30 next, the expenditures in which were set down by the Secretary at $230,441,016, while the revenues were estimated at $220,123,011.30, or a deficit of more than $10,000,000. If the experts have erred on the same side and to the same extent with respect to the figures for the current fiscal year as they did in making their calculations for the past year, it would appear that the country is threatened with a shortage of at least $20,000,000 in the postal revenues for the present fiscal year.

### Actual Deficit of the Postal Service Much Larger Than Figures Given Out.

A good deal has been heard recently about the "apparent deficit" of the postal service, as though calculations based on strict business principles would place the postal service on a self-sustaining basis. It is true that if postage were charged on the official mail a comparatively small sum would be added to the revenues, but the analysis of the appropriation bills passed at the last session of Congress discloses some exceedingly interesting facts which show that the actual deficit of the postal service is far greater than the promulgated figures. It is a well-known fact that in the postal accounts no charge is made for rent, repairs, insurance, &c., for the Departmental and other buildings and equipment utilized in the service. It is known to very few persons, however, that the expense of lighting, heating and janitor service is charged to the Treasury Department and does not come out of the postal revenues, and, further, that all the salaries of the Postmaster-General, his four chief assistants and more than 1000 clerks in the Post Office Department, which are provided for in the legislative, executive and judicial appropriation bill, are also charged to the Treasury and are wholly eliminated from the cost of maintaining the postal service. Of course these vast sums, which by the peculiar bookkeeping methods of the Government are charged against the accounting department instead of the department in which and by which they are expended, are paid by the taxpayers at large who cannot distinguish between legitimate expenditures of the Treasury Department and postal deficits, but they are certainly to be taken into account in connection with new projects urged by the postal officials, who are so ready with the glib assertion that "postal deficits are not to be feared by a prosperous country."

## DAILY REPORTS OF A GEORGIA HARDWARE FIRM.

FOLSOM & TILLMAN, McRae, Ga., who deal in general Hardware, Implements, and Builders' Supplies, have an interesting system of making up daily reports, which enables the firm to grasp at a glance all the details of each day's business. A specimen report is reproduced in the accompanying illustration, which indicates at once the convenience and value of the results compiled. The report shows the total cash and credit retail sales made by each employee, together with the profit on each, also the wholesale shipments with profits, the regular and special expenses, collections and cash expenditures or deposits. The entry "office sales," to which $37 is credited on the report illustrated, covers mail orders secured by correspondence. Total gross sales, expenses and net profits for the day are collected and entered as illustrated. At the foot of the blank considerable space is reserved for remarks bearing on the day's business, such as the weather, which of course has a bearing on sales, and other information useful to the management.

The report is used in conjunction with the ticket system, a ticket being written for every sale, giving both cost and selling price. Every salesman has a number, and their tickets are assorted at the end of the day.

DAILY REPORT

FOLSOM & TILLMAN

| | Credit Sales | Profit | CASH SALES | Profit | EXPENSE Reg. | EXPENSE Extra | WHOLESALE Shipped | WHOLESALE Profit | CASH Collections | CASH Expended |
|---|---|---|---|---|---|---|---|---|---|---|
| Office | 37.00 | 10.80 | ✓ | ✓ | 23.80 | | 189.64 | 23.40 | 127.65 | Deposit |
| Sikes | 42.00 | 14.15 | 4.60 | 1.32 | | | | | 21.00 | 217.40 |
| Seals | 8.40 | 1.95 | 17.10 | 5.15 | | | | | | |
| Yawn | 5.80 | 1.10 | 8.00 | 1.85 | | | 110.50 | 19.60 | | |
| McRae | Sick | ✓ | ✓ | ✓ | ✓ | ✓ | | | | |
| Brown | 18.75 | 5.85 | 114.45 | 2.80 | | .25 | | | 2.10 | |
| Pullen | 31.45 | 11.10 | 127.00 | 17.00 | | 1.50 | | | | |
| Ross | Vacation | ✓ | ✓ | ✓ | ✓ | ✓ | | | | |
| Total Sales | 143.10 | | 168.15 | | 23.80 | 1.75 | 300.14 | | 50.75 | 217.40 |
| Total Profit | | 44.95 | | 28.12 | | | | 43.00 | | |

Gross Sales 611.45

25.55 Expense

Net Profits $90.52

REMARKS WEATHER: Rain forenoon.

PULLEN sells Binder for cash, hence reduced percentage on volume of cash sales.

MCRAE ill with measles- ROSS ordered back from vacation.

EXTRA EXPENSE: Cash out for extra help on binder $1.50

" " " messenger .25

Beginning today store will close at 6 o'clock for Summer.

DATE MAY 1ST 1908

*Specimen Daily Report of Folsom & Tillman, McRae, Ga.*

Then, by the use of the adding machine, the report can be completed in a few minutes.

The system familiarizes the salesmen with the cost of every article in the store. Friendly competition among the salesmen is promoted, since a bulletin is issued every month showing their comparative standing, both in profits and in sales. Salaries can thus be regulated fairly, and a standard percentage of profit can be established. Profit making clerks are suitably rewarded at the end of the year.

All salesmen are required to make note of any particular future requirement of a customer. Should the latter drop a remark that he will shortly need a Stove, Plough, Washing Machine, or what not, the salesman takes down the name and article. The matter is closely followed up by the office, and if the sale is landed the notifying salesman is given credit for it.

The firm considers its system a very valuable one, and would not now try to run the business without it. It entails but little trouble, and the expense is nominal, being represented merely in the cost of printing the blanks. It pays both in keeping the management in close touch with the profits and with the work of the clerks, as well as in arousing the interest of the clerks.

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A CARD in the interest of Meriden, Conn., "The Silver City," is being sent out in which the statement appears that the statistics of average weekly earnings of all classes of factory industries show that Connecticut leads the country, and that Meriden heads the list with the highest average earnings per capita of any city in the Union. The city has seven important silverware factories and 26 other skilled industries. One side of the card presents a reproduction of the handsome municipal banner adopted by the city in 1907, in which the city is characterized as "A Merry Den of Industries," with its 95 factories. The banner also enumerates some of the leading products of the city.

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THE J. STEVENS ARMS & TOOL COMPANY, Chicopee Falls, Mass., has issued an attractive illustrated booklet giving a brief history of the development of the concern and its product.

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The Lewis Sanders Company, Quanah, Texas, has been burned out, the loss approximating $35,000, which was largely covered by insurance.

# THE TREATMENT OF TRAVELING SALESMEN.

BY SUBURBAN.

THE requisites of a good buyer are affability, command over himself, acquaintance with the goods he handles and a knowledge of the market. He should be able to talk on almost any topic. Necessarily an educated man is the best fitted for the position, which brings him into contact with keen business men. He must be a man of broad scope, able to handle propositions quickly, avoiding the delay often caused by having to seek counsel with some one over him, and he should be punctilious about keeping appointments. He must know what he can afford to pay, and through his knowledge of the market, demand and consumption, should be able to make an offer, which, while sometimes much lower than the offered price, may be accepted by the salesman, if closed at once.

**Requisites in a Buyer.**

An old Hardwareman, over half a century ago, said, "Buying properly insures sales." Thus is it necessary to employ a quick-witted, competent man, rather than a lad, and give the purchasing department the importance which it deserves.

### Buyer Must Be in Touch with the Whole Business.

The buyer should be in close touch will all business details, being able to take advantage of special lots at special prices. He can perhaps win agencies through handling the salesman tactfully, and secure maximum profits by getting the lowest figures. Being affable he will never antagonize the salesman, but will listen to his story, and the description of his goods. He may draw from him whom he sells to, thereby ascertaining whether there will be a glut of his goods in his locality, and can at once decide whether his caller has desirable wares. The buyer's genial reception will leave a good impression when the salesman retires, and it is astonishing how a friendly buyer will be courted, and will obtain the best prices—if he knows the market.

**Affability to Salesmen.**

### Friendliness Does Not Indicate Weakness.

With a certain class of salesmen friendliness betokens weakness, but that idea is soon got rid of and the opponent disarmed when the seller finds he has to deal with a man who knows the goods and the prices. What is more disagreeable than to call upon a purchasing agent and have him look at you as if you were one of his lowest serfs? He may, perhaps, be engaged in a task not more onerous than reading a newspaper, while on the other hand, he may be at work on a contract, or on some duty demanding his attention. It will pay him, however, to lay aside what he is doing and give the salesman a pleasant greeting, for it is often through such a tactful method a buyer obtains valuable information—that such and such a commodity is "off" or there is to be a "stiffening" in the market. Then, again, the buyer may hear of contracts to be placed, and other information which while not affecting his particular department may be of value to his firm. It is astonishing how the most diffident or reserved salesman will thaw when treated with affability, and how much information one can acquire in the way of competitors' prices, how much they buy, and a general knowledge of affairs in general.

**Good Nature Pays.**

Suppose your caller is a young man, you may perhaps draw him out by asking if he is married, and get him to tell you about his wife and baby. If a man along in years, he may relate with pardonable pride what progress his son is making at college, or tell you about his daughter's accomplishments. Congeniality between buyer and seller will engender a regard particularly on the part of the latter, and he may be willing to go out of his way to do the former a good turn.

**Drawing Out Salesmen.**

### The Value of Politeness.

In many establishments the buyer is a youth perhaps serving also as a stock clerk, and feels him importance, while many salesmen are keen, thoroughly posted and experienced in visiting buyers. Naturally it antagonizes them to be met with a curt "How are you?" or "Now what's on the carpet?" from a youthful buyer. The combination of affability, tactfulness and knowledge of goods if possessed by the buyer is a valuable combination. In some, politeness is inbred; in others, acquired, but he who possesses a genial disposition will never be without employment, for his every action will carry a value to any firm with whom he is associated.

A purchasing agent of one of our large railroads, after years of experience, stated that he considered the right treatment of salesmen as of great value. He regarded reports by word of mouth from traveling men, who were circulating in many different channels, as of more value oftentimes than those of the trade journals or daily newspapers. He never neglected to make a note of his informant's remarks, which on several occasions enabled him to place orders for a commodity and get ahead of the combination. He cited one case where he wished to be strongly posted on a line of material, and asked his caller if he could tell him where it was to be obtained. The traveler replied that he did not know, but supplemented it by adding that he would ascertain and advise the buyer at an early date, if it were possible to locate the manufacturer. After the salesman left the buyer's office, the latter discharged the matter from his mind, as one of those promises made in good faith, but afterwards forgotten. What was his astonishment, a few days later, to receive a tabulated report giving addresses, and the cost of different grades of material, gained evidently after considerable trouble and research. The narrator continued by saying that he had never given the salesman an order, although he called during a period of several years; but while he made no purchases, he showed the traveler that he was glad to see him, and generally obtained much information. The buyer, however, gave him letters of introduction, and assisted him in interesting a number of good customers.

**Courtesy Rewarded.**

If a salesman is treated cavalierly he is likely to go away with the feeling of animosity, resolving that he will not offer his best prices in view of the curt treatment on the part of the buyer.

### A Case in Point.

One day a traveling man called upon the largest Hardware merchant in a New England town to interest him in a new line of tools. The method of the company the salesman represented was to have each solicitor go around to the big machine shops, book orders at retail prices and in consideration of a given sized requisition turn them over to the merchant, this missionary work assisting in advertising the goods and giving the buyer a profit on the orders received. Following out this plan the salesman sought the merchant, who listened to his proposition and in an abrupt manner instructed him to open his samples on a counter in the rear of the store, adding that he would attend to him at once and give him an order. Placing the trays in the brightest light, so as to show the goods to advantage, the traveler seated himself on a nail keg and proceeded to look around at the miscellaneous stock of Bolts, Screws, Hasps and kindred goods, noting mentally the helter-skelter appearance of the whole.

After waiting half an hour without seeing the merchant the salesman sought the office, where he found an elderly man engaged on his books. Inquiring where the merchant had gone he added that he had a business appointment later in the day.

"Oh," replied the bookkeeper, "he's gone to dinner and won't be back until 3 o'clock."

"I am sorry to hear that, for I have to reach Waterbury this afternoon to keep an appointment," said the salesman. "Suppose you have," ejaculated the office man, "the boss don't care nothing for drummers, for he says they needn't wait if they don't want to," which statement replete with double negatives, left the salesman to wonder if he meant exactly what he said. The traveler's experience told him that the merchant, realizing that he had the representative store, felt that he could be a dictator to those who sought his trade. Taking

ing his business card he wrote this note, which he left with the bookkeeper:

DEAR SIR:
I did not come by appointment,
But I opened my samples by appointment,
And I leave without appointment.
Yours respectfully, B———

When the salesman's train arrived at F——, a lad entered the coach and called out: "Any one by the name of B——?" Acknowledging his name, the subject of this writing was handed a telegram from the Hardwareman asking him to return for the promised order. In those days the New England road was single track, and an eastern bound train was waiting on a siding, which B—— took, and soon was back in ——. He booked an order for the desired quantity, and again took the train for ——.

**The Moral.**

So far the moral is hidden, but comes to light when it is stated that although the merchant was entitled to 25 and 10 per cent. discount, he was billed at 25 per cent., and while he continued to buy large quantities of the manufacturer's goods, the discount named was all he ever received, notwithstanding the knowledge obtained through business conventions and comparison with Hardware merchants of other cities that they received 10 per cent. better. He wrote numerous letters, threatened not to pay, &c., but the manufacturer was firm. He could either pay 25 per cent. or discontinue his orders.

It will be seen from the above that the salesman sometimes "gets back" at the churlish buyer. It has often been quoted: "He is the best buyer who has been a salesman, for he knows both sides of the fence."

To sum up: Be affable; give the traveler time to tell his story; offer him a cigar, if your house is not too cautious in the expense account, but be assured that a box of cigars is a good asset, for it being so unusual for a buyer to give, you will make an agreeable impression, which will be repaid in good prices and a grateful remembrance.

**The buyer who has a reputation for being square, unbiased, and who refuses to receive boxes of cigars, umbrellas and other presents, will soon have the name of working for the company which employs him. He may be called coldblooded, but even between the lines the seller knows that his price will take the order. Such a man will have at heart the interests of his employer. He will do his utmost to win a good name for the house he represents and his whole business conduct will show clean methods.**

## Steel Measuring Tapes.

The Keuffel & Esser Company, 127 Fulton street, New York, has just added several new articles to its line, which are moderate in price. The goods are well made and accurate and intended for an intermediate class of trade that does not require the finest or more expensive kinds. There are several steel measuring tapes, one of which is the Midget, in 25 and 50 ft. lengths, ¼ in. tape, stout bent leather case, large center, long folding handle, nickeled mountings and graduations that begin at outside end of ring. The outer case dimensions are 2⅜ x ¾ and 2⅞ x ¾ in., each weighing complete 4¼ and 6½ oz., respectively. The Dwarf, likewise a pocket tape, has a steel case with tape ¼ in. wide, similar center and handle, the case and mountings being nickeled. The dimensions and weights of the Dwarf are less than the Midget, and both styles are graduated in tenths and twelfths of feet, inches in sixteenths, according to requirement. The K. & E. mechanics' steel tapes are still lower priced, reference being made to them as very accurate, finely subdivided and made to withstand rough usage or the knocking about received in a tool chest. This style has ⅜ in. tape, metal case nickeled, large center with long, folding handle, and graduations that begin on the line. Those graduated in feet and inches by sixteenths are made in 8, 12, 15 and 20 ft. lengths. Another style has metric graduations on one side only in both 2 and 5 meter lengths. An addition in Iron Clad band chains in both 100 and 200 ft. lengths is also to be noted. The line is of heavy black steel ribbon ¼ in. wide, with etched graduations at every foot; end feet to tenths and hundredths. The reel consists of two strong steel plates 1½ in. wide, carrying a large center for quick and easy winding, with extra long heavy folding brass handle. The width of the side plates is designed to prevent tangling of the line in reeling or unreeling. All metal parts of the reel are heavily nickeled, and the line when reeled up is exposed to the air so that it may dry readily. Two large nickel plated handles for the line are furnished with each chain. There is also a line of Iron Clad band chains in 100 and 200 ft. lengths, plated with white metal, to resist rust, and graduated and numbered at every foot on Babbitt metal. The lines, without reels, of both groups can be supplied at less cost.

## The Bristow Distributer.

Frederick Bristow, East Orange, N. J., is putting on the market the device shown in the accompanying illustrations. It is designed to facilitate the filing or arranging of papers, invoices or other documents, and its practical operation and convenience are fully suggested in Fig. 1. The flat base of the device and the oval drum in which the leaves are mounted are made of wood nicely finished and varnished. The leaves are inserted in slots and are readily removable. They are made of heavy gray cardboard, and

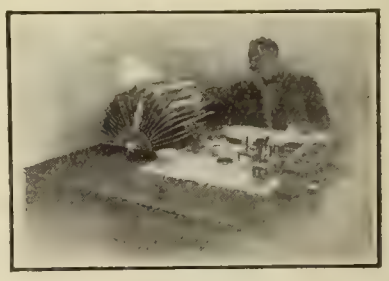


*Fig. 1.—Bristow Distributer in Use.*

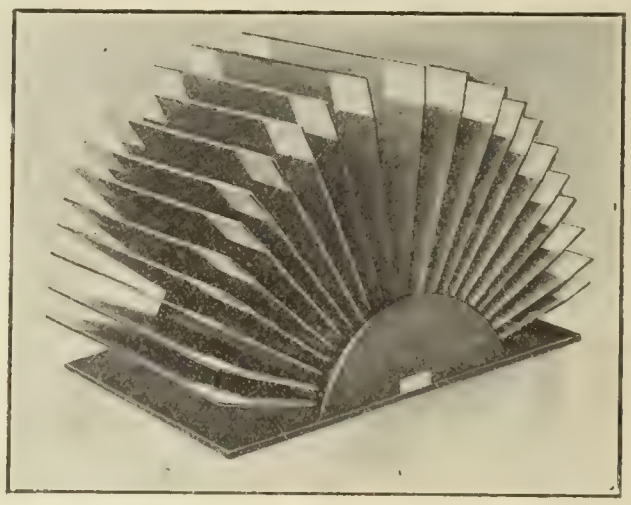
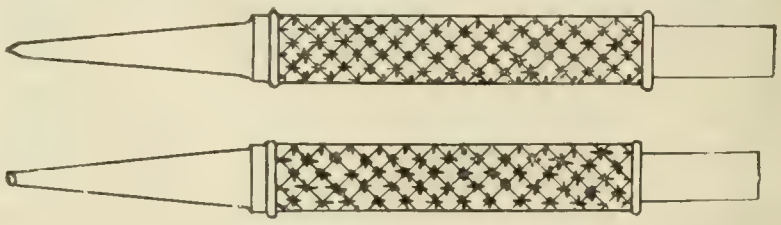


*Fig. 2.—The Bristow Distributer.*

on the corners have white tabs, as indicated, for letters, numbers or other marking.

## Nonjarring Attachment for Tools.

A nonjarring attachment for tools which are struck with a hammer or a mallet is offered by the Nonjarring Automatic Tool Company, Ltd., 53 Conti street, Mobile, Ala. It can be applied to a variety of mechanical tools, and the nail punch and prick punch shown herewith give an idea of the appearance of the tools having this desirable attachment. The attachment consists of a sleeve which fits over a handle having a reduced diameter, around which a coil spring is placed; this spring is stiff enough to hold the tool firmly for use, so that the point



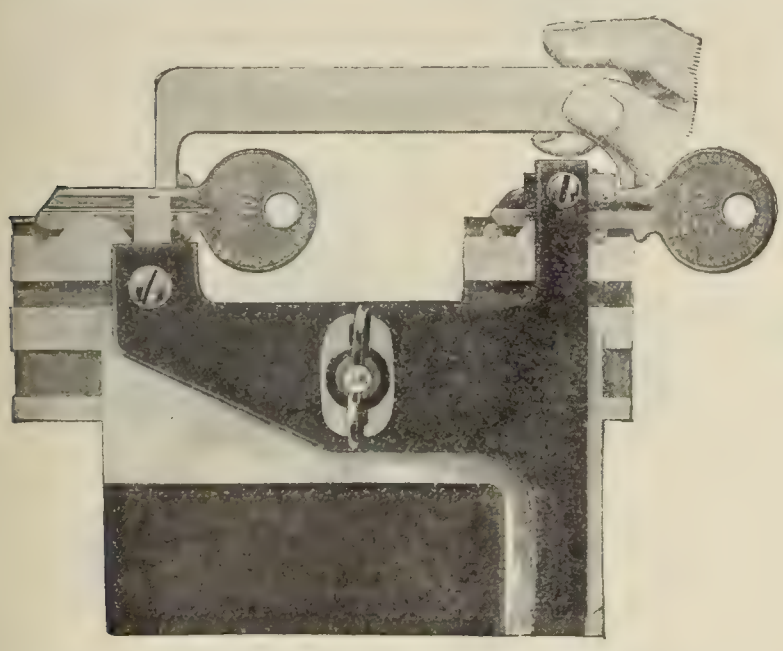
*Tools with Nonjarring Attachment.*

may be placed exactly on the desired spot and securely held there, but is sufficiently elastic to relieve the hand of any shock when the blow required in its use is administered to the tool head. The coil spring also enables the tool to be pressed firmly against the material so that the workman may be sure that it is held in the right place,

and yet when the shock of the blow is delivered it is taken up by the spring and not felt by the hand or the arm holding the tool. With the attachment no shock is received in the fingers of the workman holding the tool when it is struck with the hammer, affording a grateful relief to the nerves—which is an important consideration in a day's work. In the variety of nonjarring tools made by the company are nail sets, center punches with changeable points, also handles for framing and mortising chisels, cold chisels, shell punches, rivet sets, caulking tools, drift bolts, stone chisels and rock drills, &c.

## Harrison Improved Key Jig.

Harrison & Co., 81 New street, New York, have greatly improved their Key Filing Jig, as here illustrated. It is designed for reproducing all kinds of cylinder pin lock keys, regardless of whether they are long, short, narrow, wide, thick or thin, or whether there is one pin, ten pins, or any intermediate number of pins. It is likewise immaterial whether the blanks are corrugated, slotted or bent pin lock keys for such standard makes as Yale, Russell & Erwin, Reading, Corbin, Sargent, Lockwood, Norwalk, &c., any of which may be filed without altering in the slightest the pattern key, and yet reproduce the pattern indefinitely as it exists at the time of duplication. The Jig may be held securely in a vise or similar gripping



*Harrison Improved Key Filing Jig, About Half Size.*

device and a round file is preferable—not too small—for filing all keys, except the smaller ones for lockers, in which case a triangular or flat file is best. The contours of the sides of the notches are immaterial, provided they are not too straight, which might cause the key to bind in the lock, but the depth of the notches must be accurate. Some keys are inserted from one side of the Jig and some from the other. The illustration shows a front view of the Jig with a Yale paracentric pattern key and blank in position for filing the first notch. In the circular matter accompanying each Jig, giving full directions, are detail illustrations showing plainly some of the leading styles of pin, tumbler cylinder keys in correct position for filing, especially serviceable to janitors, hotel people, and others who are constantly being called upon to furnish duplicate keys. A steel gauge, seen at the top of the illustration, accompanies each Jig and is used for adjusting the key and blank as keys are introduced to the lock cylinder by the upper shoulders; the position of the lower shoulders making no difference. The Jigs are 4⅝ x 3⅝ in. outer dimensions and are guaranteed by the manufacturers.

## The Carborundum Knife Stone.

The stone shown in the accompanying illustrations is designed for sharpening all kinds of machine knives while the knife is in position on the machine, such as paper knives, planer knives, leather and cloth cutting knives, &c. The stone is 4 in. in diameter, 1½ in. in thickness, made with one side coarse grit for rough work, to cut away metal, to take out nicks, &c., and one side fine grit for putting a keen, sharp edge on the knife. The groove around the periphery of the stone permits the fingers of the hand to grasp the stone firmly, as in Fig. 2; the fingers are also protected from the edge of the knife. It is remarked by the company that the stone is

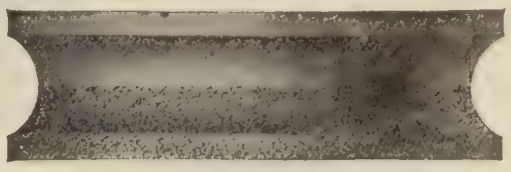


*Fig. 1.—The Carborundum Knife Stone.*

of convenient size, not too large or too heavy, yet having surface enough for efficient work in sharpening knives. The frequent use of the stone, it is pointed out, will keep the machine knife in good condition without the neces-

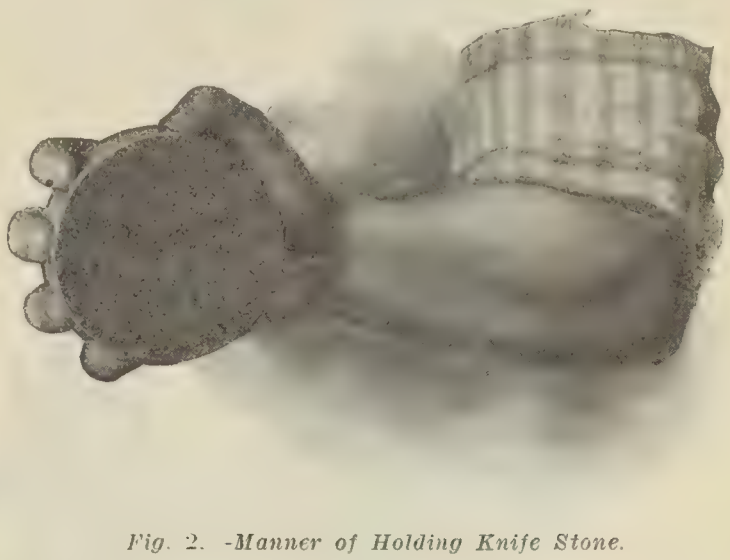


*Fig. 2. -Manner of Holding Knife Stone.*

sity of removing the knife from the machine for grinding. The stone is offered by the Carborundum Company, Niagara Falls, N. Y.

## Jackson Solid Center Stem Bits.

The Jackson Mfg. Company, Jackson, Ohio, represented in New York City by Duncan K. Major, 261 Broadway, is manufacturing the Jackson solid center steam augers, auger bits and "ship auger car" bits, one of which is here illustrated. The bits are warranted to bore in any wood, and mention is made by the company of the fine quality of material and care with which the various styles are made. The auger bits are made in regular sizes, from 3-16 to 24-16, inclusive, rising by sixteenths, the ship auger car bits starting at four-sixteenths and running through the same sizes, the car bit differing somewhat in the construction of the head and cutting edges. The various styles of bits are put up in solid sizes, as well as in sets, both in wood boxes and cloth rolls.



*Jackson Solid Center Stem Auger Bit.*

In order better to facilitate the execution of his orders throughout eastern New England, A. Mugford, the well-known engraver and designer, with main plant and headquarters at Hartford, Conn., has consolidated his Boston and Worcester departments at 19 Church street, Worcester, Mass. Arrangements have been made in Boston for the receipt and transmission of wire and telephone messages and a depository for packages at 564 Washington street, with W. W. Corson & Co. By thus concentrating his selling and manufacturing departments Mr. Mugford will be enabled to give more prompt service and closer personal attention in the execution of orders. At the new address the old staff of artists under the same management which prevailed at Boston will be retained.

## Pyro Incandescent Alcohol Lamp Burner.

Edward Miller & Co., Meriden, Conn., and 78-80 Warren street, New York, have put on the market the Pyro Incandescent Alcohol Lamp Burner, here shown, either lamp complete or as a burner for use with any D, No. 3 (1¾-in.) collar lamp. When fitted to lamps already bought or in use, a small vent hole should be made in the fount filler cap for escape of any possible vapors,

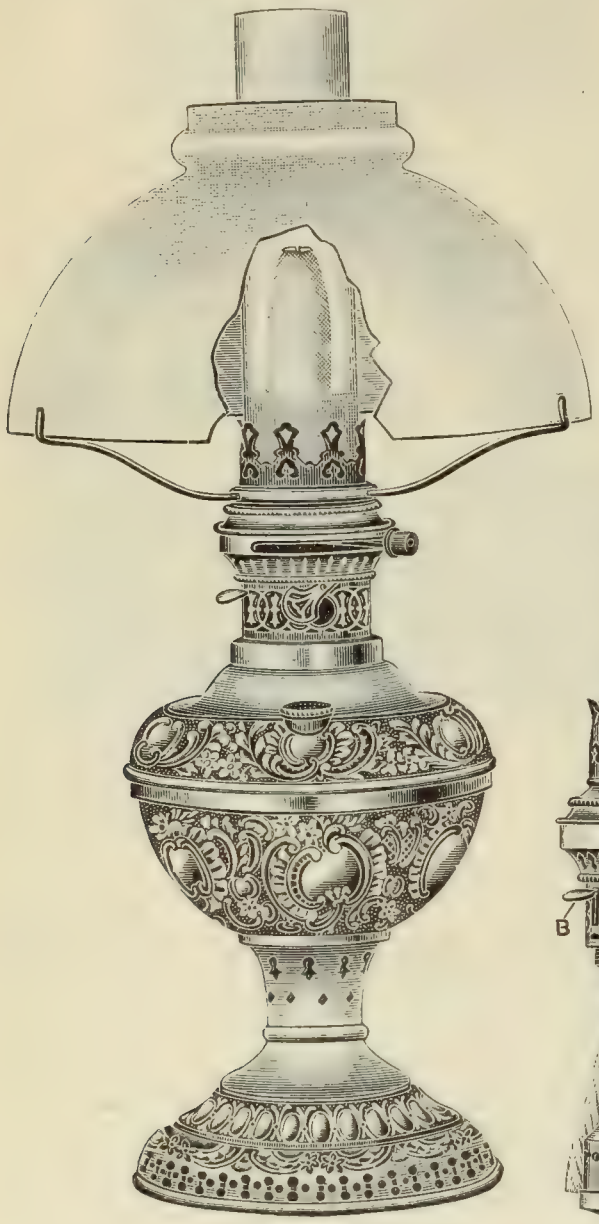


*Fig. 1.—Parlor Table Lamp, Complete.*

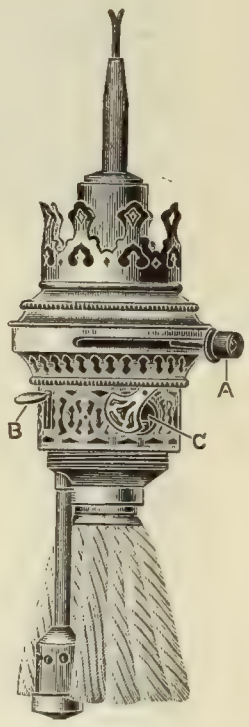



*Fig. 2.—Pyro Alcohol Lamp Burner.*

which is unnecessary in oil burning lamps. This burner is radically different from lampburners designed for burning kerosene, the denatured alcohol being gassified by first igniting a small quantity of the fluid drawn up into the vaporizing ring around the burner, from the fount supply, by pressing twice on the pump thumb piece, B, which is a part of the 3½-in. brass tube extending below the threaded lamp collar. The wick, of soft, fluffy cotton fibre, is 6 in. long, the upper portion being compressed into a round solid, 2 x ⅞ in., inclosed in woven asbestos with a perforated brass top cap, the construction of which makes easy the installation of a new wick, if necessary, after months of use. The alcohol follows the wick into this chamber, where, coming in contact with the previously heated metal, changes it from liquid to gaseous form, insuring practically perfect combustion in the Bunsen tube above. The combination with oxygen in the atmosphere causes the mantle suspended from the forked centre rod to glow with incandescence or brilliant white light of about 45 c. p. or four to five times the illuminating power of a good ordinary gas burner. To light the lamp, the alcohol pumped into the vaporizing ring referred to, is ignited by introducing a lighted match or taper into opening C, which automatically closes by means of the valve lever A. The lamp may be extinguished instantly by moving the lever A sideways. Some of the advantages of using denatured alcohol (on which the usual revenue tax of $2.08 per gallon is remitted), are low cost, in comparison with the volume of illumination, a brilliant, safe, steady white light, cleanliness, greatly decreased heat, &c. These burners are sold regularly fitted to various kinds of lamps, including bracket, parlor, study, harp and marine lamps, or with detachable founts, or as burners simply to be used with other founts or lamps.

## Two New Massey Vises.

The two vises shown in the accompanying illustrations are recent additions to the line made by the Massey Vise Company, 176-178 South Clinton street, Chicago. Fig. 1 is designated as the No. 18 lightning grip vise. The distinguishing features of the tool are embodied in

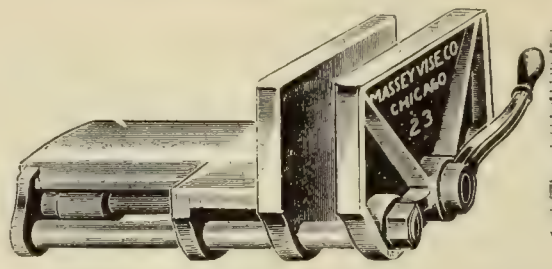



*Fig. 1.—Lightning Grip Vise No. 18.*

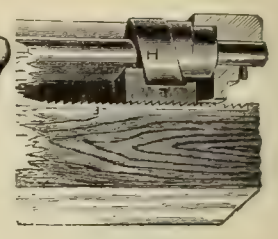



*Fig. 2.—Details of Lightning Grip.*

the provisions made for a firm and positive grip and ease and rapidity of manipulation. It is represented as different from other types in that the parallel bars of the sliding jaw passing through widely spaced bearings on the stationary jaw are connected at their rear end by a carrier which engages on the outside guide of the stationary jaw on which the cam shaft is set. The vise is

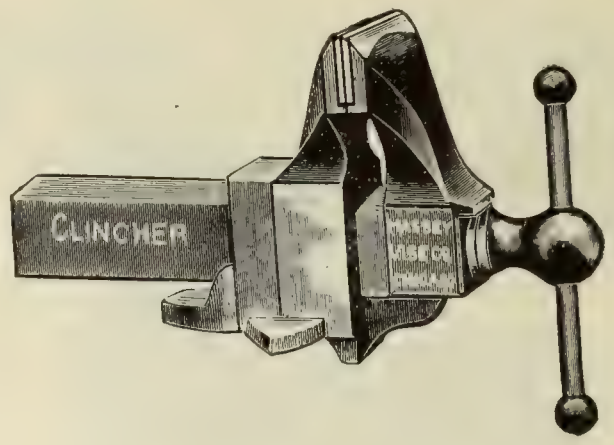



*Fig. 3.—Clincher Pattern of Coachmen's Vise.*

strengthened materially by the rear bearings provided for the sliding bars. It is also provided with a positive lightning grip, the details of which are shown in Fig. 2, by means of which the work is quickly and firmly fastened between the jaws. Simplicity and durability are important features in this design. Fig. 3 illustrates the clincher pattern of coachmen's vise, recently added to the line which is also described as a strongly built and serviceable tool.

## Wing Screw Calks.

The North & Pfeiffer Mfg. Company, New Britain, Conn., has added to its line of screw calks size G. This being the smallest size and having a short screw, is suitable for ladies' or light sporting shoes. The wings do not extend quite to the spike, which can be worn down to the disc before the calk loses its effectiveness. The shape of the wings is such that they aid materially to prevent slipping. The method of attaching this size of calk is the same as with the other sizes—the slotted wrench engaging the wings to attach and remove the calks. These calks will screw into hard leather, but will hold in a soft or wet sole. The broad disc prevents bending over or working through into the foot, and if a shoe runs over or the calks wear off faster in some places than others, they may be taken out and changed around to keep them even and prolong the wear of the whole set. They are put up in boxes containing 50 calks and a wrench, and also in golf sets consisting of 24 calks and a wrench.

## Stevens Demi-Bloc Double Barrel Shot Guns.

The J. Stevens Arms & Tool Company, Chicopee Falls, Mass., is beginning to put on the market its new line of double barrel shot guns. They are manufactured by a new method which the company styles the Demi-Bloc system and refers to as a radical departure in the manufacture of double barrel guns. By this method the barrel and lug are compressed and forged in one piece, while at the same time the breech mechanism is given exceptional strength. A glance at Figs. 2 and 3 will enable the reader to understand the features of the system, Fig. 2 showing the compressed forged steel barrels and Fig. 3 the barrels ready to braze, the sides of the lugs being milled perfectly true. It is declared that the barrels when brazed together are of necessity absolutely straight. At the same time a wall of metal of equal diameter all around is left around the chamber so that the guns can be made with a strong breech, and are calculated to shoot a heavy load. The brazing of the barrels, loop and extension rib is all in one process. The solid top snap, Fig. 4, is referred to as another point of merit, operating as it does with the rotary cross bolt to make the strongest possible fastening and prevent the guns from shaking loose. Other features of the guns include a rotary compensating bolt and check hook slot, Fig. 5, with positive check hook, Fig. 6, and a new style fore-end, Fig. 7, which is easily removed and is so shaped as to prevent its coming off in the brush. The Demi-Bloc guns are, of course, made in several grades and varieties and with the usual options. They are adapted to any standard make of shell loaded with either black or smokeless powder. The gun illustrated in Fig. 1, No. 385, is of exceptionally fine grade and finish throughout, and lists at $60.




*Fig. 1.—Stevens Double Barrel Hammerless Gun No. 385.*

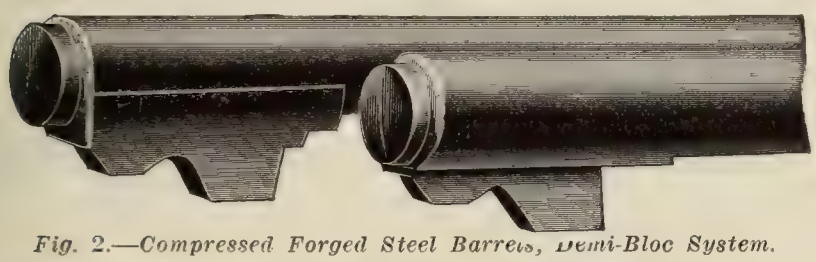


*Fig. 2.—Compressed Forged Steel Barrels, Demi-Bloc System.*

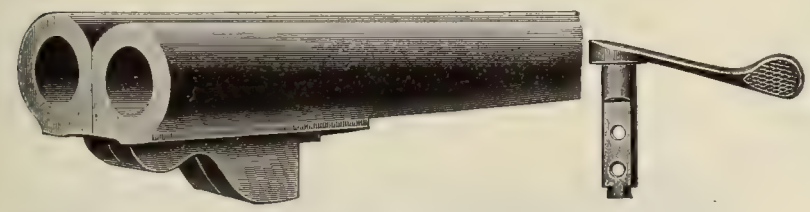


*Fig. 3.—Barrels Ready to Braze.*



*Fig. 4.—Solid Top Snap.*

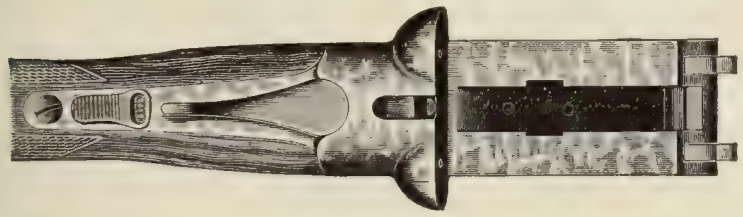


*Fig. 5.—Rotary Compensating Bolt and Check Hook Slot.*

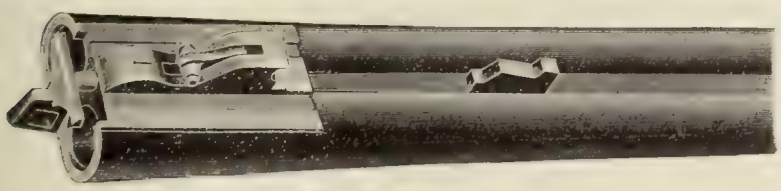


*Fig. 6.—Check Hook.*

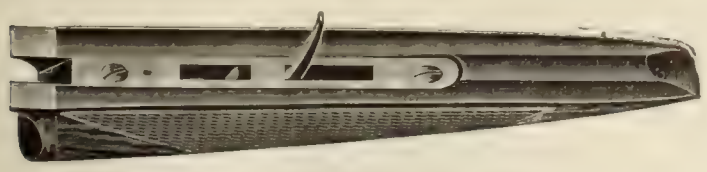


*Fig. 7.—New Style Fore-End.*

## The Keen Kutter Grindstone.

The Simmons Hardware Company, St. Louis, Mo., is offering the grindstone shown herewith. The stone is made of selected Berea grit, mounted on an extra braced and bolted tubular frame. The rods and bolts are threaded and accurately fitted, while the bearings are furnished with steel balls. The frame is finished in black and red paint. The rigidity and firmness of the frame is emphasized.

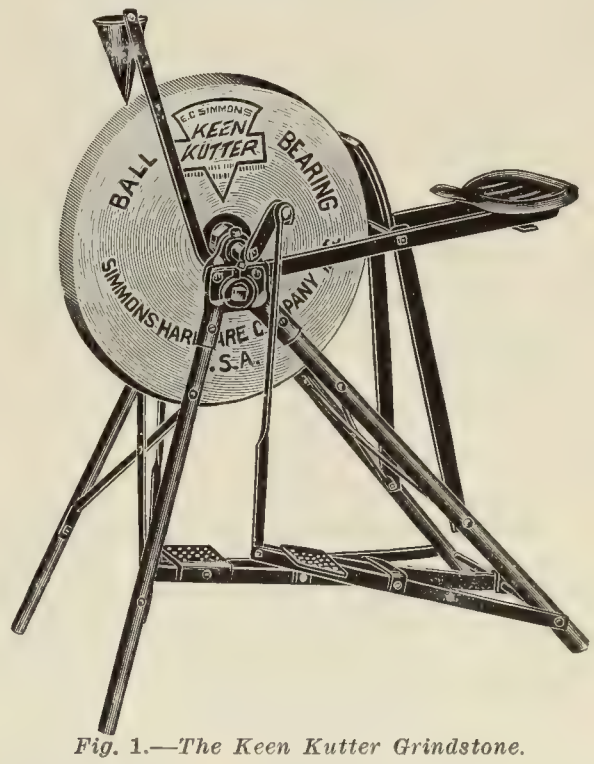



*Fig. 1.—The Keen Kutter Grindstone.*

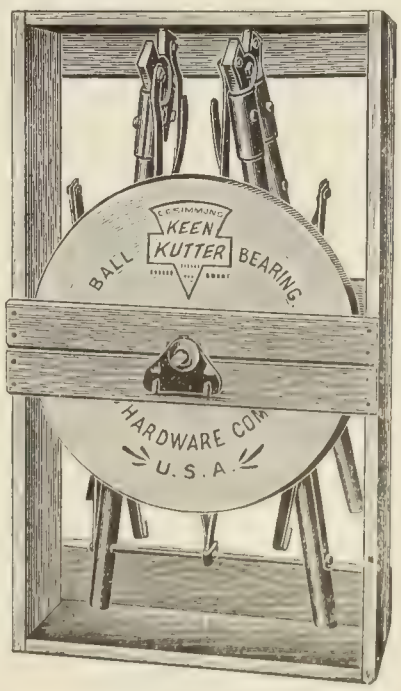



*Fig. 2.—Keen Kutter Stone Crated for Shipment.*

## Colt's Police Positive Special Revolver.

The revolver shown in the accompanying illustration is a recent addition to the line of the Colt's Patent Fire Arms Mfg. Company, Hartford, Conn. It is called the Police Positive Special, and is described as a powerful and compact but exceptionally convenient arm adapted for the .32-20 rifle cartridge or the .38 Long Colt and S. & W. special cartridges. Although carrying this powerful ammunition, the gun weighs but 22 ounces, making it unusually light and handy for the pocket. It is made of the finest selected material, carefully tested and assembled, and is fully guaranteed by the company for use with standard factory loaded ammunition, either black or



*Colt's Police Positive Special Revolver.*

smokeless powder. It is equipped with all the latest improvements, including the Colt positive lock, which prevents accidental discharge, simple and strong limb work and cylinder revolving to the right with reverse action of hand and cylinder bolt, insuring perfect alignment of cylinder and barrel. The cylinder notches are placed in the strongest part of the cylinder, thus avoiding weakening the chambers. The revolver also has the swivel nose firing pin, double leaf mainspring and other features which tend to smooth, sure action and durability without adding complications to the mechanism. A thumb latch of new design adds to the comfort of the full Colt grip, which is said to be particularly valuable in a small pocket arm as an aid to accurate shooting.

## Newform Garment Hangers.

The Hardware Supply Company, Grand Rapids, Mich., is manufacturing the Newform line of garment hangers, three varieties of which are shown in the accompanying illustrations. The goods are made for first class trade and are well finished in polished nickel. Fig. 1 illustrates hanger No. 2, intended for a coat and two pairs of trous-

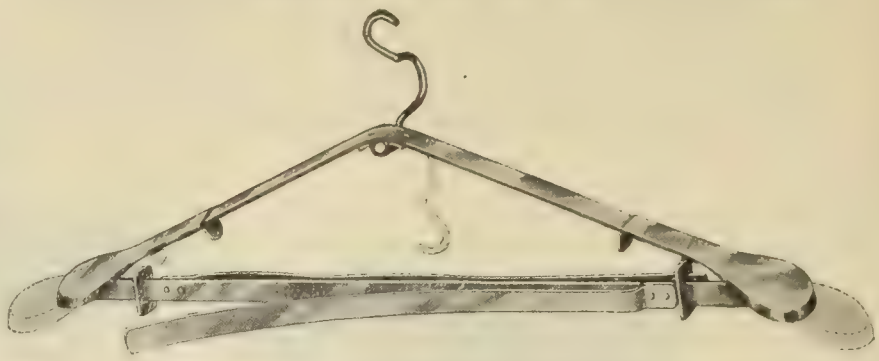


*Fig. 1.—Newform Hanger No. 2, for Coat and Two Pairs of Trousers.*

ers. The lower ends of the trousers legs are slipped under the flat springs and then fastened by sliding loops.



*Fig. 2.—Newform Hanger No. 3, for Men's or Women's Clothing.*

The shoulder pads are adjustable so as to fit coats of any size. Fig. 2 shows hanger No. 3, which is suitable either for men's or women's garments, the springs on the lower

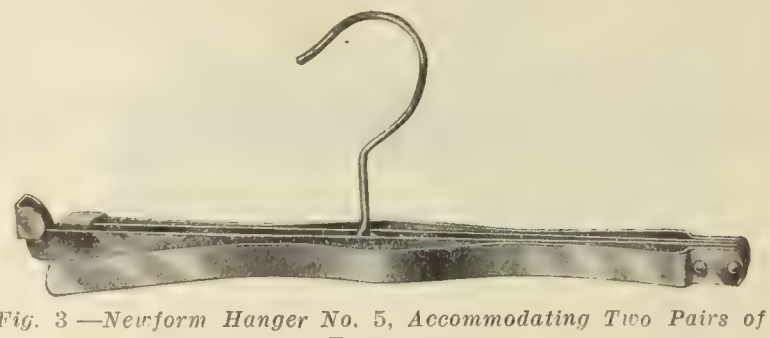


*Fig. 3.—Newform Hanger No. 5, Accommodating Two Pairs of Trousers.*

bar being adapted for either trousers or skirts. Fig. 3 shows hanger No. 5, which is for trousers, and is made double to hold two pairs.

# PAINTS, OILS AND COLORS

### Animal, Fish and Vegetable Oils—

| | ₱ gal. |
|---|---|
| Linseed, State and Western, raw | 43 @45 |
| City, Boiled | 45 @46 |
| City, Raw | 44 @45 |
| Raw, Calcutta, in bbls. | 70 @71 |
| Lard, Prime Winter | 68 @70 |
| Extra No. 1 | @52 |
| No. 1 | 46 @48 |
| Cotton-seed Crude, f.o.b. mill | @.. |
| Summer Yellow, prime | @37½ |
| Summer White | 39½@40 |
| Yellow Winter | 41 @41½ |
| Tallow, Acidless | 56 @58 |
| Menhaden, Brown, Strained | 35 @36 |
| Southern | 25 @.. |
| Light Strained | 35 @36 |
| Bleached Winter | 37 @39 |
| Ex. Bleached Winter | 39 @41 |
| Cocoanut, Ceylon | ₱ lb 6¼@6½ |
| Cochin | ₱ lb 6⅞@7⅛ |
| Cod, Domestic, Prime | 38 @40 |
| Newfoundland | 40 @42 |
| Red, Elaine | 39 @40 |
| Saponified | ₱ lb 5¾@5⅞ |
| Olive, Yellow | 80 @90 |
| Neatsfoot, Prime | 55 @58 |
| Palm, Lagos | ₱ lb 5¾@6 |

### Mineral Oils—

| | ₱ gal. |
|---|---|
| Black, 29 gravity, 25@30 cold test | 13 @13½ |
| 29 gravity, 15 cold test | 13½@14 |
| Summer | 12½@13 |
| Cylinder, light, bbl | 20½@21 |
| Dark, steam refined | 18 @19 |
| Paraffine, 903/907 sp. gravity | 14½@15 |
| 903 sp. gravity | 13½@14 |
| 885 sp. gravity | 11 @11½ |
| Red | 13½@14 |

### Miscellaneous—

| | |
|---|---|
| Barytes: | |
| White, Foreign | ₱ ton $18.50@20.50 |
| Amer. floated | ₱ ton 18.00@20.00 |
| Off color | ₱ ton 13.00@16.50 |
| Chalk, in bulk | ₱ ton 3.00@3.45 |
| China Clay, Imported | ₱ ton 11.50@18.00 |

| | ₱ gal. |
|---|---|
| Cobalt, Oxide | ₱ 100 lb 1.15@2.60 |
| Whiting, Commercial | ₱ 100 lb 42 @52 |
| Gilders | ₱ 100 lb .55@.60 |
| Ex. Gilders | ₱ 100 lb .60@.65 |

### Putty, Commercial—₱ 100 lb

| | |
|---|---|
| In bladders | $1.70 @1.80 |
| In bbls. or tubs | 1.20 @1.45 |
| In 1 lb to 5 lb cans | 2.65 @2.95 |
| In 12½ to 50 lb cans | 1.50 @1.90 |

### Spirits Turpentine—₱ gal.

| | |
|---|---|
| In Oil bbls. | 39 @39½ |
| In machine bbls. | 39½@40 |

### Glue—

| | ₱ lb |
|---|---|
| Cabinet | 12 @15 |
| Common Bone | 7½@9 |
| Extra White | 18 @24 |
| Fish, liquid, 50 gal. bbls., per gallon | 60 @1.20 |
| Foot Stock, White | 12 @14 |
| Foot Stock, Brown | 9 @11 |
| German Common Hide | 10 @12 |
| German Hide | 12 @18 |
| French | 10 @10 |
| Irish | 13 @16 |
| Low Grade | 10 @12 |
| Medium White | 14 @17 |

### Gum Shellac—

| | ₱ lb |
|---|---|
| Bleached, Commercial | 24 @28 |
| Bone Dry | 30 @35 |
| Button | 30 @40 |
| Diamond I | 46 @47 |
| Fine, Orange | 34 @35 |
| A. C. Garnet | 27 @28 |
| G. A. L. | 20 @21 |
| Kala Button | 18 @19 |
| D. C. | 17 @18 |
| Octagon B. | 39 @40 |
| T. N. | 25 @26 |
| V. S. O. | 46 @47 |

### Colors in Oil—

| | ₱ lb |
|---|---|
| Black, Lampblack | 12 @14 |
| Blue, Chinese | 36 @46 |
| Blue, Prussian | 32 @36 |
| Blue, Ultramarine | 13 @16 |
| Brown, Vandyke | 11 @14 |
| Green, Chrome | 12 @16 |
| Green, Paris | @24 |
| Sienna, Raw | 12 @15 |
| Sienna, Burnt | 12 @15 |
| Umber, Raw | 11 @14 |
| Umber, Burnt | 11 @14 |

### White and Red, Lead &c.—

| | ₱ lb |
|---|---|
| Lead, English white, in Oil | 10⅛@10⅜ |
| Lead, American White: | |
| Dry and in Oil, 100, 250 and 500 lb kegs | 7 |
| Dry and in Oil, 25 and 50 lb kegs | 7¼ |
| Dry and in Oil, 12½ lb kegs | 7½ |
| In Oil, 25 lb tin pails | 7½ |
| In Oil, 12½ lb tin pails | 8 |
| In Oil, 1, 2, 3 and 5 lb tin cans, ass't | 9 |
| Red Lead and Litharge: | |
| In 100 lb kegs | 7 |
| In 25 and 50 lb kegs | 7¼ |
| In 12½ lb kegs | 7½ |
| In lots of less than 500 lbs, ½¢ ₱ lb advance over above prices of White and Red Lead and Litharge. | |
| Lead, American. Terms: On lots of 500 lbs and over, 60 days, or 2 for cash if paid in 15 days from date of invoice. | |

### Zinc, Dry—

| | ₱ lb |
|---|---|
| American, dry | 5¼@5⅝ |
| Red Seal (French process) | 6¾@7 |
| Green Seal | 7¼@7½ |
| German Red Seal (French process) | 6⅝@7 |
| Green Seal | 7¼@7⅝ |
| White Seal | 7¾@8¼ |
| French, Red Seal | 8¾@9⅛ |
| Green Seal | 10⅝@10⅞ |

### Dry Colors—

| | ₱ lb |
|---|---|
| Black, Carbon | 6½@10 |
| Black Drop, American | 3½@8 |
| Black Drop, English | 5 @15 |
| Black, Ivory | 16 @20 |
| Lamp, commercial | 4 @6 |
| Blue, Celestial | 4 @6 |
| Blue, Chinese | 31 @33 |
| Blue, Prussian | 29 @31 |
| Blue, Ultramarine | 3½@15 |
| Brown, Spanish | ½@1 |
| Carmine, No. 40 | $3.10@3.25 |
| Green, Chrome, ordinary | 3½@5 |
| Green, Chrome, pure | 17 @25 |
| Ocher, American | ₱ ton $8.50@16.00 |
| American Golden | 2½@3¼ |
| French | 1¼@2 |
| Foreign Golden | 3 @4 |
| Orange Mineral, English | 10 @12 |
| French | 12¾@13 |
| German | 12 @13 |
| American | 9 @10 |
| Red, Indian, English | 1½@6 |
| American | 3 @3¼ |
| Red, Turkey, English | 4 @10 |
| Red, Tuscan, English | 7 @10 |
| Red, Venetian, Amer. | ₱ 100 lb $0.50@1.25 |
| English | ₱ 100 lb $1.15@1.60 |
| Sienna, Italian, Burnt and Powdered | 3 @9 |
| Italian, Raw, Powdered | 3 @7 |
| American, Raw | 1½@2 |
| American Burnt and Powd. | 1½@2 |
| Talc, French | ₱ ton $18.00@25.00 |
| American | ₱ ton 15.00@25.00 |
| Terra Alba, French | ₱ 100 lb .90@1.00 |
| English | ₱ 100 lb .80@1.00 |
| American ... | ₱ 100 lb, No. 1 .75@.80 |
| American ... | ₱ 100 lb, No. 2 .60@.65 |
| Umber, T'key, Bnt, & Pow. | 2¾@3 |
| Turkey, Raw and Powdered | 2¾@3 |
| Burnt, American | 1½@2 |
| Raw, American | 1½@2 |
| Yellow, Chrome, Pure | 13¾@15 |
| Vermilion, American Lead | 7 @25 |
| Quicksilver, bulk | 65 @.. |
| Quicksilver, less | @66 |
| English, Imported | 65 @70 |
| Chinese | $0.90@1.00 |

# Current Hardware Prices.

**General Goods.**—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

**Special Goods.**—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

**Range of Prices.**—A range of prices is indicated by means of the symbol @. Thus 33⅓ @ 33⅓ & 10 signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

**Names of Manufacturers.**—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1907, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

**Standard Lists.**—"The Iron Age Standard Hardware Lists" contains the list prices of many leading goods.

**Additions and Corrections.**—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

### Adjusters, Blind—
Columbian and Domestic....33⅓%
Nettle's ....10%
Zimmerman's—See Fasteners, Blind.

### Window Stop—
Ives' Patent....35%
Taplin's Perfection....35

### Ammunition—See *Caps, Cartridges, Shells, &c.*

### Anti-Rattlers—
Fernald Mfg. Co. Burton Anti-Rattlers, ₱ doz. pairs, Nos. 1, $0.75; 2, $0.60; 4, $1.00; 5, $0.50.
Fernald Quick Shifter, ₱ doz. pairs ....$2.00@$3.00

### Anvils—American—
Eagle Anvils....₱ lb @8 ¢
Hay-Budden, Wrought....9½@9¾ ¢
Trenton ....₱ lb 9½@9¾ ¢

### Imported—
Swedish Solid Steel Sisco, Superior, ₱ lb....10@10½ ¢
Peter Wright & Sons, ₱ lb. 84 to 349 lb, 11¢; 350 to 600 lb, 11½ c.

### Anvil, Vice and Drill—
Millers Falls Co., $18.00....15&10%

### Apple Parers—See *Parers, Apple, &c.*

### Aprons, Blacksmiths'—
Livingston Nail Co....10%

### Augers and Bits—
*Com. Double Spur....75&10@80%*
*Jennings' Patn., Bright.65&10@70%*
*Black Lip or Blued...65@65&5%*
*Boring Mach. Augers....70%*
*Car Bits, 12 in. twist....40&10%*
Ford's Auger and Car Bits....10&5
Ft. Washington Auger Co., Conard's ....35
Firstner Pat. Auger Bits....25
C. E. Jennings & Co.:
No. 10 ext. lip. R. Jennings' list. 25&7½
No. 30, R. Jennings' list....50
Russell Jennings'....25&10&2½%
L'Hommedieu Car Bits....15%
Mayhew's Countersink Bits....45
Peck's Black....20%
Peck's Jennings' Pattern....35
Snell's Auger Bits....60
Snell's Bell Hangers' Bits....60
Snell's Car Bits, 12-in. twist....60
Snell's King Auger Bits....50
Swan's ....65&10@70
Swan's, Jennings' Pattern....50
Wright's Jennings' Bits....50

### Bit Stock Drills—
See *Drills, Twist.*

### Expansive Bits—
Clark's Pattern, No. 1, ₱ doz., $26; No. 2, $18....60&5
Ford's, Clark's Pattern...60&5@60&10
C. E. Jennings & Co., Steer's Pat...25
Lavigne Pat., small size, $18.00; large size, $26.00 ....60&10
Swan's ....60

### Gimlet Bits—
*Per gro.*
*Common Dbl. Cut....$3.00@3.25*
*German Pattern, Nos. 1 to 10, $4.75; 11 to 13, $5.75*

### Hollow Augers—
*Bonney Pat., per doz..$5.50@6.00*
Mayo ....20&10
Universal ....20

### Ship Augers and Bits—
*Ship Augers....40&10@—%*
Ford's ....33⅓&5
C. E. Jennings & Co.:
L'Hommedieu's ....6
Wright's ....23⅓&7½
Swan's ....48

### Awl Hafts—See *Handles, Mechanics' Tool.*

### Awls—
*Brad Awls:*
*Handled ....gro. $2.75@3.00*
*Unhdld. Shldered...gro.63@66c*
*Unhandled, Patent..gro.66@70c*
*Peg Awls:*
*Unhandled, Patent..gro. 31@34c*
*Unhdld, Shldered..gro. 65@70c*
*Scratch Awls:*
*Handled, Com...gro. $3.50@4.00*
*Handled, Socket..gro.$11.50@12.00*

### Awl and Tool Sets—See *Sets, Awl and Tool.*

### Axes—
*Single Bit, base weights: Per doz.*
*First Quality....$4.75@5.00*
*Second Quality....$4.25@4.50*
*Double Bit, base weights:*
*First Quality....$7.00@7.50*
*Second Quality....$6.50@6.75*

### Axle Grease—
See *Grease, Axle.*

### Axles—Iron or Steel.
*Concord, Loose Collar...4¼@4½¢*
*Concord, Solid Collar....4½@5 ¢*
*No. 1 Common, Loose...3½@4 ¢*
*No. 1½ Com., New Style.4¼@4¾¢*
*No. 2 Solid Collar....4¼@4½¢*
*Half Patent*
*Nos. 7, 8, 11 and 12....70%*
*Nos. 13 to 17....70%*
*Nos. 15 to 18...70&10@70&10@5%*
*Nos. 19 to 22...70&10@70&10@5%*

### Boxes, Axles—
*Common and Concord, not turned ....lb., 5@6¢*
*Common and Concord, turned, lb., 6@7¢*
*Half Patent....lb., 9½@10¢*

### Bait—Fishing—
Hendryx:
A Bait....20%
B Bait....25%
Competitor Bait....20&5

### Balances—Sash—
Caldwell new list....50&10%
Pullman ....50&10

### Spring—
*Light Spring Balances.60@70&5%*
Chatillon's:
Light Spg. Balances....50@50&10
Straight Balances....40@40&10
Circular Balances....50&4
Large Dial....30

### Barb Wire—See *Wire, Barb.*

### Bars—Crow—
*Steel Crowbars, 10 to 40 lb.... per lb., 2¼@2½¢*

### Towel—
No. 10 Ideal, Nickel Plate..₱ gro. $8.50

### Beam, Scale—
*Scale Beams....40%*
Chattillon's No. 1....30%
Chatillon's No. 2....40%

### Beaters, Carpet—
Holt-Lyon Co.:
No. 12 Wire Coppered ₱ doz. $0.80; Tinned ....$0.85
No. 11 Wire Coppered ₱ doz. $1.15; Tinned ....$1.20
No. 10 Wire Tinned....₱ doz. $1.50

### Beaters Egg—
Dover Stamping & Mfg. Co.:
Genuine Dover, per gro., No. 1, Tumbler Size, $7.50; No. 2, Family Size, $7.50; No. 3 Extra Family Size, $21.00; No. 4, Hotel Size, $30.00.
Holt Lyon Co.:
Holt, per doz., No. 5, Jap'd $0.80; No. A, Jap'd, $1.15; No. B, Jap'd, $1.85; No. 6, Jap'd, $1.05.
Lyon, Jap'd, per doz., No. 2, $1.35
Taplin Mfg. Co.:
Improved Dover, per gro., No. 60 $6.00; No. 75, $6.50; No. 100, $7.00; No. 102, Tin'd, $8.50; No. 150, Hotel, $25.00; No. 152, Hotel Tin'd, $17.00; No. 200 Tumbler, $8.50; No. 202, Tumbler Tin'd, $9.50; No. 300, Mammoth, per doz. $25.00.

### Bellows—
*Blacksmith, Standard List:*
*Split Leather....60@70@—%*
*Grain Leather....50@50&10%*

Hand—

| | | | | | |
|---|---|---|---|---|---|
| *Inch..* | 6 | 7 | 8 | 9 | 10 |
| *Doz..* | $5.00 | 7.50 | 6.00 | 6.50 | 7.50 |

Molders—

| | | | | | |
|---|---|---|---|---|---|
| *Inch..* | 10 | 12 | 14 | 16 | |
| *Doz..* | $7.50 | 9.00 | 12.00 | 15.00 | |

### Bells—Cow—
*Wrought Cow Bells....75%*
Jersey ....50
Texas Star....50

### Door—
Home R & E Mfg. Co's ....55&10

### Hand—
*Polished, Brass....60@60&10%*
*White Metal....60@60&10%*
*Nickel Plated....50&10%*
*Swiss ....50&10%*
Cone's Globe Hand Bells....30%@35

### Miscellaneous—
*Farm Bells....lb., 2¼@2½¢*
*Church and School....60@60&10%*

### Belting—Leather—
*First Quality, Ex. Hy., Strictly Short Lap....60&10%*
*Standard ....70&10@70&10@5%*
*Light Double....75&10%*
*Cut Leather Lacing..50&10@60%*
*Leather Lacing Sides, per sq. ft. 22@23¢*

### Rubber—
*Competition (Low Grade). 70&10@75%*
*Standard ....60&10@70%*
*Best Grades....40@50%*

### Bench Stops—
See *Stops, Bench*

### Benders and Upsetters, Tire—
Green River Tire Benders and Upsetters ....20%

### Bicycle Goods—
John S. Leng's Son & Co.'s 1908 list:
Handle Bars, Stems ....
Tubes ....60

### Bits—
Auger, Gimlet, Bit Stock Drills, &c. See *Augers and Bits.*

### Blocks—Tackle—
*Common Wooden....75@75&5%*
B. & L. B. Co.:
Boston Wood Snatch, 50%; Eclipse Steel, 75%; Hollow Steel, 50&10; Star Wire Rope, 50; Tarbox Metal Snatch, 50%; Tarbox New Style Steel, 50&10%; Wire Rope Snatch, 50%.
Lane's Patent Automatic Lock and Junior ....30%
See also Machines, Hoisting.

### Boards, Stove—
*Paper and Wood Lined....55%*
*Embossed ....55%*

### Boards, Wash—
See *Washboards.*

### Bobs, Plumb—
Keuffel & Esser Co....33⅓&10%

### Bolts Carriage, Machine, &c,—
*Common Carriage (cut thread):*
*⅜ x 6 and smaller..75&5@—%*
*Larger and longer....70@*
*Phila. Eagle, $3.00 list...80@*
*Bolt Ends....70@*
*Machine (Cut Thread):*
*⅜ x 4 and smaller..75&10@—%*
*Larger and longer....70@—%*

### Door and Shutter—
*Cast Iron Barrel, Japanned, Round Brass Knobs:*

| | | | | | |
|---|---|---|---|---|---|
| *Inch ...* | 3 | 4 | 5 | 6 | 8 |
| *Per doz..* | $0.30 | .35 | .45 | .60 | .80 |

*Cast Iron Spring Foot, Jap'd:*

| | | | |
|---|---|---|---|
| *Inch ....* | 6 | 8 | 10 |
| *Per doz....* | $1.20 | 1.50 | 2.25 |

*Cast Iron Chain, Flat, Japanned:*

| | | | |
|---|---|---|---|
| *Inch ....* | 6 | 8 | 10 |
| *Per doz....* | $1.00 | 1.40 | 1.65 |

*Cast Iron Flat Shutter, Jap'd, Brass Knobs:*

| | | | |
|---|---|---|---|
| *Inch ....* | 6 | 8 | 10 |
| *Per doz....* | $0.75 | .95 | 1.25 |

*Wrought Barrel Japanned.* 80@70@80@70@—%
*Barrel Bronzed ....60@70*
*Spring ....70@70@70@70*
*Shutter ....50@50@50@50*
*Square Neck ....75@75@—%*
*Square ....70@70@70@80%*
Iron Planished Door ....
Iron Wrought Metal ....45

### Expansion—
E. H. Evans' Crescent ....40@60
Richards Mfg. Co. ....55&10
Star Expansion Bolt Co.:
Star Lag Screw Type ....60&10&5&2%
Star, Wood Screw Type ....40
Star, Machine, Stove Works ....60
Star, Machine, Double Wedge....60%
Steward & Roman Mfg. Co.:
Style No. 13, Double....60%
Style No. 1, Single....60
Style No. 100, Dbl. Jaw, Single..55
Lag Screw....66⅔%

### Plow and Stove—
*Plow ....65@50@70%*
*Stove ....85@85@5%*

### Tire—
*Common Iron....80@80@5%*
*Norway Iron....80@80@5%*
American Screw Co.:
Norway Phila., list Oct. 16, '84...80
Eagle Phila., list Oct. 16, '84...82½%
Bay State, list Dec. 28, '99....80
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84...82½
Eclipse, list Dec. 28 '99....80
Russell, Burdsall & Ward Bolt & Nut Co.:
Empire, list Dec. 28, '99....80%
Norway Phila., list Oct. '84....80%
Eagle ....82½%
Shelton Co.:
Tiger Brand, list Dec. 28, '99...80%
Phila., Eagle, list Oct. 16, 1884..82½%
Upson Nut Co.:
Tire Bolts....72½

### Borers, Bung—
*Borers Bung, Ring, with Handle:*

| | | | | |
|---|---|---|---|---|
| *Inch....* | 1¼ | 1½ | 1¾ | 2 |
| *Per doz...* | $4.80 | 5.60 | 6.40 | 8.00 |
| *Inch....* | 2¼ | 2½ | | |
| *Per doz....* | $8.65 | 11.50 | | |

Enterprise Mfg. Co. No. 1, $1.25; No. 2, $1.75; No. 3, $2.50 each. ....25

### Boxes, Mitre—
C. E. Jennings & Co. ....25%
Langdon, New Langdon, and Langdon Improved, 20&10; Langdon Acme ....15&10
Perfection ....40
Seavey ....45

### Braces—
*Common Ball, American....$1.50*
Barber's ....50&10&10@—%
Fray's Genuine Spofford's ....60
Fray's No. 61, 166, 206, 614....50%
C. E. Jennings & Co. ....50&5
Mayhew's Ratchet. ....60
Mayhew's Quick Action Hay Pat..50%
Millers Falls Drill Braces....25&10
P., S. & W. Co., Peck's Pat....60&10%

### Brackets—
*Wrought Steel..75&10@75&10&10%*
Bradley Metal Clasp...80&10@80&10&5
Griffin's Pressed Steel....75@75&10
Griffin's Folding Brackets....70&10
Taplin Victor Handy Egg Beater Bracket ....₱ doz. $1.50

### Bright Wire Goods—
See *Wire and Wire Goods*

### Broilers—
Kilbourne Mfg. Co ....75&20%
Wire Goods Co. ....75

### Buckets, Galvanized—
*M'fr's list, price per gross.*

| | Quart.. | 10 | 12 | 14 | |
|---|---|---|---|---|---|
| *Water, Reg...* | 26.85 | 29.50 | $3.50 | | Extra, 10@—% |
| *Water, Hvy...* | 45.35 | 48.00 | 52.00 | | |
| *Fire, Rd. Btm...* | 32.00 | 34.65 | 38.65 | | |
| *Well ....* | 37.35 | 41.35 | 45.35 | | |

### Bull Rings—See *Rings, Bull*

### Butts—Brass—
*Wrought, High List, Cast Brass, Table*

### Cast Iron—
*Fast Joint, Broad....*
*Fast Joint, Narrow....*
*Loose Joint....*
*Loose Pin....*
*Mauer's Hinges....*
*Parliament Butts...*

### Wrought Steel
*Bronzed*
*Light Narrow, Light Plain....*
*Reversible and Board..70@*
*Loose Joint Narrow, Light Brads Blind &c....*
*Back Flaps, Table Chest..65%*
*Japanned*
*Light Narrow, Loose Pin 40@5%*
*Light Narrow, Ball Tip, 60%*
*Broad ....40@5%*
*Steeple Tipped ....70%*
*Ball Tipped....70%*

## Cages, Bird—

Hendryx Brass: Series 3000, 5000, 1100, net list; 1200, 15%; 200, 300, 900 ..... 30%
Hendryx Bronze: Series 700, 800..... 30%
Hendryx Enameled..... 35%

## Calipers—See *Compasses.*

## Calks, Toe and Heel—

*Blunt, 1 prong, per lb.....4@4½¢*
*Sharp, 1 prong, per lb...4½@5¢*
Burke's, 1 pg. Blunt Toe, 3¾¢; 2 pg. Blunt Toe, 4¼¢; 1 pg. Sharp Toe, 4¼¢; 2 pg. Sharp, 4¾¢; Blunt Heel, 4¼¢; Sharp Heel.....4¾¢
Lautier, Blunt, 4@4¼¢; Sharp, 4½@4¾¢
Perkins', Blunt, ₱ lb, 3.65¢; Sharp, 4.15¢

## Can Openers—

See *Openers, Can.*

## Caps, Percussion—

*Eley's E. B.....52@55¢*
*G. D.....per M 34@35¢*
*F. L.....per M 40@42¢*
*G. E.....per M 48@50¢*
*Musket .....per M 62@63¢*

### Primers—

*Berdan Primers, $2 per M..20&5%*
*Primer Shells and Bullets..15&10%*
*All other primers per M.$1.52@1.60*

## Carpet Stretchers—

See *Stretchers, Carpet.*

## Cartridges—

*Blank Cartridges:*
*32 C. F., $5.50.....10&5%*
*38 C. F., $7.00.....10&5%*
*22 cal. Rim, $1.50.....10&5%*
*32 cal. Rim, $2.75.....10&5%*
*B. B. Caps, Con. Ball, Swgd.$1.90*
*B. B. Caps, Round Ball.....$1.40*
*Central Fire.....25%*
*Target and Sporting Rifle.15&5%*
*Primed Shells and Bullets.15&10%*
*Rim Fire, Sporting.....50%*
*Rim Fire, Military.....15&5%*

## Casters—

*Bed .....65&10@70%*
*Plate .....60&5@60&10%*
*Philadelphia .....70&10@75%*
Acme, Ball Bearing.....35%
Gem (Roller Bearing).....70&10&10&5%
Steel Gem (Roller Bearing).....70%
Standard Ball Bearing.....45%
Yale (Double Wheel) low list...40&10%

## Cattle Leaders—

See *Leaders, Cattle.*

## Chain, Proof Coil—

*American Coil, Straight Link:*

| 3-16 | ¼ | 5-16 | ⅜ | 7-16 | ½ | ⅝ |
|---|---|---|---|---|---|---|
| $8.15 | 5.55 | 4.60 | 3.95 | 3.75 | 3.65 | 3.55 |

¾-⅞-1 1⅛ to 1¼ inch.
$3.45 3.55
*In cask lots, deduct 25¢.*
*German Coil.....60@60&5%*
*German Pattern Coil:*
*6-0 to 1.....70&5@70&10%*
*2 and 3..60¢'0&10@60&10&10&5%*
*4, 5 and 6.....50&10@50&10&5%*

### Halter—

*Halter Chains.....60&5@60&10%*
*German Pattern Halter Chain, list July 24, '97....60&10&5@70%*
Covert Mfg. Co.:
Halter .....35&5%

### Cow Ties—

See *Halters and Ties.*

## Trace, Wagon, &c.-

*Traces, Western Standard: 100 pr.*
*6½—6-3, Straight, with ring.$28.00*
*6½—6-2, Straight, with ring.$29.00*
*6½—8-2, Straight, with ring.$32.00*
*6½—10-2, Str'ght, with ring.$37.00*
*NOTE.—Add 2c per pair for Hooks Twist Traces: add per pair for Nos. 2 and 3, 2c: No. 1, 3c; No. 0, 4c to price of Straight Link.*
*Eastern Standard Traces, Wagon Chain, &c...60&10@60&10&5%*

### Miscellaneous—

*Jack Chain, list July 10, '93:*
*Iron .....60&10&7½%*
*Brass .....65%*
*Safety and Plumbers' Chain.75%*
*Gal. Pump Chain....lb., 4½@5%*
Bridgeport Chain Co.:
Triumph Halter and Coil.35&2½@40%
Triumph Dog.....50&10@60%
Brown Halter and Coil....45@50&5%
Covert Mfg. Co.:
Breast, Halter, Heel, Rein, Stallion .....40%
Oneida Community:
American Halter, Dog and Kennel Chains .....35&2½@40%
Niagara Dog Leads and Kennel Chains .....45@50&5%
Wire Goods Co.:
Dog Chain.....70%
Universal Dbl.-Jointed Chain....70%

## Chain and Ribbon, Sash—

Oneida Community:
Steel Chain.....60%
Pullman:
Bronze Chain, 60; Steel Chain, Coppered .....60&10%
Sash Chain Attachments, per set, 8¢
Aluminoy Sash Ribbon, per 100 ft. .....$2.00@$5.00
Sash Ribbon Attachments, per set..8¢

## Chalk—

*Carpenters' Blue.....gro., 50¢*
*Carpenters' Red.....gro., 50¢*
*Carpenters' White.....gro., 40¢*

## Checks, Door—

Bardsley's .....45%
Pullman, per grp.....$51.00
Russwin .....33⅓%

## Chests, Tool—

American Tool Chest Co.:
Boys' Chests, with Tools.....55%
Youths' Chests, with Tools.....40%
Gentlemen's Chests, with Tools..30%
Farmers', Carpenters, etc., Chests, with Tools .....20%
Machinists' and Pipe Fitters' Chests, Empty.....45%
Tool Cabinets.....45%
C. E. Jennings & Co.'s Machinists' Tool Chests.....7½%

## Chisels—

### Socket Framing and Firmer

*Standard List.....80&10@—%*
Buck Bros.....30%
C. E. Jennings & Co.:
Socket Firmer No. 10.....25&7½%
Socket Framing No. 15.....25&7½%
Swan's .....66⅔@70%
L. & I. J. White & Co.....30@30&5%

### Tanged—

*Tanged Firmers.....30&5@35%*
Buck Bros.....30%
C. E. Jennings & Co. Nos. 191, 181..25%
L. & I. J. White Co.....25&5%

### Cold—

*lb.*
*Cold Chisels, good quality.13@15¢*
*Cold Chisels, fair quality.11@12¢*
*Cold Chisels, ordinary....9@10¢*

## Chucks—

Almond Drill Chucks.....35%
Almond Turret Six-Tool Chuck.....40%
Beach Pat, each $8.00.....35&5%
Empire .....25%
Blacksmiths' .....25%
Jacobs' Drill Chucks.....35%
Pratt's Positive Drive.....25%
Skinner Lathe Chucks:
Independent .....35%
Universal, Reversible Jaws.....35%
Universal, Com. Style Jaws.....40%
Combination, Reversible Jaws....35%
Combination, Com. Style Jaws...40%
Round Body or Box Body, 2 Chuck Jaws .....25%
Geared Scroll Chucks.....25%
Drill Chucks, New Model, 25%; Geared Pattern, 25%; Skinner Patent, 25%; Positive Drive.....40%
Planer Chucks.....20
Standard .....45
Drill Press Vises.....30
Face Plate Jaws.....35%
Standard Tool Co.:
Improved Drill Chuck.....45%
Union Mfg. Co.:
Combination, Nos. 1, 2, 3, 4, 5, 6, 7, 8 and 17, 40%; No. 21.....35%
Scroll Combinations, Nos. 83 and 84 .....30%
Geared Scroll, Nos. 33, 34 and 35..25%
Independent Iron, Nos. 18 and 318.35%
Independent Steel, No. 61.....25%
Union Drill, Nos. 000, 00, 100, 101, 102, 103, 104.....35%
Union Czar Drill.....25%
Universal, 11, 12, 16, 17, 13, 14, 15..40%
Universal No. 42.....35%
Iron Face Plate Jaws, Nos. 28, 30, 48 and 50.....35%
Steel Face Plate Jaws, Nos. 70 and 72 .....30%
Westcott Patent Chucks:
Lathe Chucks.....50%
Little Giant Auxiliary Drill.....50%
Little Giant Double Grip Drill...50%
Little Giant Drill, Improved.....50%
Oneida Drill.....50%
Scroll Combination Lathe.....50%
Whitaker Mfg. Co.:
National Drill.....25%

## Clamps—

Adjustable Hammers.....20@20&5%
Carriage Makers', Star, P., S. & W. Co. .....50%
Besly, Parallel.....33⅓&10%
Myers' Hay Rack.....50%
Lineman's Swedish Neverturn.....65%
Wood Workers' Hammers.....40&10%
Saw Clamps, see Vises, Saw Filers'

## Cleaners, Drain,

Iwan's Champion, Adjustable..... 50%
Iwan's Champion, Stationary.....40%

## Sidewalk—

Star Socket, All Steel..₱ doz. $4.05 net
Star Shank, All Steel..₱ doz. $3.24 net
W. & C. Shank, All Steel, ₱ doz., 7½ in., $3.00; 8 in., $3.25.

## Cleavers, Butchers'—

Foster Bros.....30%
Fayette R. Plumb.....30
L. & I. J. White Co.....30

## Clippers, Horse and Sheep—

Chicago Flexible Shaft Co.:
1902 Chicago Horse, each..$10.75
20th Century Horse, each...$5.00
Lightning Belt Horse, each.$15.00
Chicago Belt Horse, each..$20.00
Stewart's Enclosed Gear Roll Bearing Horse, each.....$6.75
Stewart's New Model Sheep Shearing Machine, each.$12.75
Stewart Enclosed Gear Shearing Machine, No. 8, each..$9.75
} 20%

## Clips, Axle—

*Regular Styles, list July 1, '05, 80&80&10%*

## Cloth and Netting, wire

—See *Wire, &c.*

## Cocks, Brass—

*Hardware list:*
*Plain Bibbs, Globe, Kerosene, Racking, Liquor, Bottling, &c .....75%*
*Compression Bibbs.....70%*

## Coffee Mills—

See *Mills, Coffee.*

## Collars, Dog—

Nickel Chain, Walter B. Stevens & Son's list.....40%
Leather, Walter B. Stevens & Son's list .....10%

## Compasses, Dividers, &c.

*Ordinary Goods.....70&10@75%*

## Conductor Pipe,—

*L. C. L. to Dealers:*

| | Gal. Steel. | Charcoal. |
|---|---|---|
| *Northeastern* | *70&10%* | *50&10&7½%* |
| *Eastern* | *75%* | *50&10&7½%* |
| *Pittsburgh* | *75&10&5%* | *60%* |
| *Central* | *75&10%* | *60%* |
| *Northwestern* | *75&7½%* | *60%* |
| *Western* | *70&12½%* | *50&12½%* |
| *Tennessee* | *70&10%* | *50&12½%* |
| *Southern* | *70%* | *50&12½%* |
| *Southwestern* | *70%* | *50&5%* |

*Terms, 60 days; 2% cash 10 days. Factory shipments generally delivered.*
See also Eave Troughs.

## Coolers, Water—

L. & G. Mfg. Co.:

| Gal. | 2 | 3 | 4 | 6 | 8 |
|---|---|---|---|---|---|
| Galvanized, ea. | $1.85 | $2.00 | $2.25 | $2.90 | $3.90 |
| Galvanized, Lined, side handles, Gal. | 2 | 3 | 4 | 6 | 8 |
| Each | $1.95 | $2.15 | $2.40 | $3.30 | $4.15 |

White Enameled.....10%
Agate Lined.....10%

## Coppers' Tools—

See *Tools, Coopers'.*

## Coppers, Soldering—

*Soldering Coppers, 3 lb. to pair and heavier, 20¢; lighter than 3 lb. to pair.....22¢*

## Cord— Sash—

*Braided, Drab.....lb. 35¢*
*Braided, White, Com., Nos. 8 to 12, 20¢; No. 7, 20½¢; No. 6, 21½¢. In lots of 12 doz. or over, 1 cent less per pound.*
*Cable Laid Italian, lb., No. 18..37¢*
*Italian, lb., A, No. 18, 25¢; B, 22¢*
*Common India.....lb., 11@11½¢*
*Cotton Sash Cord, Tw'ted..18@20¢*
*Patent Russia.....lb....20¢*
*Cable Laid Russia.....lb...21¢*
*India Hemp, Br'd'd.....lb...21¢*
*India Hemp, Twisted...lb.13@14¢*
*Patent India, Twisted..lb...17¢*
Pearl Braided, cotton, No. 6, ₱ lb. 20½¢; No. 7, 19½¢; Nos. 8 to 12, 19½¢, in 12 doz. to 100 doz. lots.
Eddystone Braided, Nos. 8 to 12, 26¢; 7, 26½; 6, 27½¢.
Harmony Cable Laid Italian, Nos. 7 to10.....₱ lb 23¢
Pullman:
Wire Sash Cord.....10%
Sash Cord Attachments, per 100..$2.00
Samson, Nos. 8 to 12:
Braided, ₱ lb., Drab Cotton, 55¢; Italian Hemp, 40¢@50¢; Linen, 65¢; White Cotton, 50¢; Spot Cord.....50¢
Massachusetts, White...₱ lb 40¢
Massachusetts, Drab...₱ lb 45¢
} 15%
Phoenix, White, Nos 8 to 12....27¢
Silver Lake, per lb.:
A, Drab, 45¢; A, White, 40¢; B, Drab, 40¢; B, White, 35¢; Italian Hemp, 40¢; Linen....57½¢
See also Chain and Ribbon.

## Wire, Picture—

*Full Length.....90@—%*
*Short Length.....90&20@—%*
Hendryx Standard Wire Picture Cord, old list, 85&10%
Turner & Stanton Co. Wire Picture Cord .....90%

## Cradles—

*Grain .....50%*

## Crayons—

*White Round Crayons, Cases, 100 gro., $8.00, $8.50, $9.00 and $10.00 according to grade.*
Zehnicker's Lumber: ₱ gro.
White and Purple, Indelible....$7.50
Blue, Red, Green, Yellow and Terra Cotta, $6.50; Black.....$4.50
Giant Lumber, 5¼ in. x 15-16 in. round, all colors, $12.00; Indelibles, $14.00; Blacks.....$10.00
Genuine Soapstone, Metal Workers', 5 in. x ¼ in. Round, $2.50; 5 in. x ¼ in. Square, $1.75; 5 x ½ x 3 16, $2.50; 5 x 1¼ x 3-16.....$3.00
Suremark, Black, $2.25; Blue, Red and Yellow.....$2.50

## Crooks, Shepperds'—

Fort Madison, per doz., Heavy, $5.50; Light .....$5.00

## Crow Bars—See *Bars, Crow.*

## Cultivators—

Victor Garden.....50%

## Cutlery, Table—

International Silver Company:
No. 12 M'd'm Knives, 1847, ₱ doz. $3.50
Star, Eagle, Rogers & Hamilton and Anchor.....₱ doz. $3.00
Wm. Rogers & Son.....₱ doz. $2.50

## Cutters— Glass—

H. H. Mayhew Co.....40%
Red Devil.....60
B. Mfg. Co.....40%
Woodward .....50%

## Meat and Food—

American .....30%

| Nos. | 401 | 402 | 403 | 404 | 405 | 406 | 407 |
|---|---|---|---|---|---|---|---|
| Each | $5 | $7 | $10 | $12 | $25 | $50 | $60 |

Enterprise:

| Nos. | 5 | 10 | 12 | 22 | 32 | |
|---|---|---|---|---|---|---|
| Each | $2 | $3 | $2.75 | $4.50 | $6 | 25@25&7½% |

No. 202, $1.50.....40&7½%
P., S. & W. Co.:
Ideal .....40@40&5%
Hales .....60&5%
Little Giant.....₱ doz. 40@50
Nos.. 305 310 312 320 322
$35.00 $48.00 $44.00 $72.00 $68.00
New Triumph No. 605, ₱ doz. $24.00. 40%
Russwin Food, No. 1, $24.00; No. 2, $27.00; 3, $42.00.....15&10&10%
$15.00 $18.00
Enterprise Beef Shavers.....25@30%

## Saw and Kraut—

Henry Disston & Sons:
Saw and Kraut Cutters.....35%
Corn Graters.....30%
J. M. Mast Mfg. Co.:
Saw Cutters, 1 Knife....₱ doz. $3.00
Combined Saw Cutter and Corn Grater .....₱ doz. $4.00

## Tobacco—

*All Iron, Cheap...doz, $4.25@4.50*
Enterprise .....25@30%
National, ₱ doz., No. 1, $21; No. 2, $18 .....40%

## Diggers, Post Hole, &c—

Disston's:
Rapid, ₱ doz., $24.00.....25%
Samson, ₱ doz., $34.00.....25%
Iwan's Pat. Post Hole and Well Auger .....40%
Vaughan Pattern Post Hole Augers, ₱ doz., $7.00
Perfection Post Hole Diggers, ₱ doz. .....$8.50
Split Handle Post Hole Diggers, ₱ doz., $7.50
Hercules Pattern, ₱ doz.....$9.50
Kohler's, ₱ doz., Universal, $14.00; Little Giant, $12.00; Hercules, $10.00; Invincible, $9.00; Rival, $8.50; Pioneer.....$7.50
Never-Break Crucible Steel Post Hole Diggers .....60%

## Dividers—See *Compasses.*

## Drawing Knives—

See *Knives, Drawing.*

## Dressers Emery Wheel—

Sterling Emery Wheel Dressers.....35%
Sterling Wheel Dresser Cutters.....35%

## Drills and Drill Stocks—

*Blacksmith's Common Drilling Machines .....$1.50@1.75*
Breast, Millers Falls.....15&10%
Breast, P., S. & W.....33⅓%
C. & C. Ratchet.....25%
Reversible Ratchet Die Stocks....25%
Goodell Automatic Drills.50&10@60&10%
Millers Falls Automatic Drills, Graves', per doz., Nos. 1, $4.86; 2, $8.16.
Millers Falls Automatic Drills.33⅓&10%
Ratchet, Curtis & Curtis.....25%
Ratchet, Parker's.....10%
Ratchet, Weston's.....40%
Ratchet, Weston's, Style H Improved .....40@40&5%
Ratchet, No. 012.....40@40&5%
Ratchet, Celebrated.....40@40&5%
Ratchet, Whitney's, P., S. & W., 40&10@50%
Whitney's Adjustable, No. 10, $12.00 33⅓%

### Twist Drills—

*Bit Stock.....70@70&5%*
*Taper and Straight Shank, 60&10@70%*

## Drivers, Screw—

*Screw D'ver Bits, per doz.45@50¢*
Balsey's Screw Holder and Driver, ₱ doz., 2½-in., $6; 4-in., $7.50; 6-in., $9 .....50%
Buck Bros.' Screw Driver Bits.....30%
Champion .....50%
Disston's .....70%
Fray's Hol. H'dle Sets, No. 3, $12..50%
Ford's Brace Screw Drivers....40&10%
Gay's Double Action Ratchet.....35%
Goodell's Auto.....65@65&10%
Mayhew's Black Handle.....40%
Mayhew's Monarch.....40%
Millers Falls, ₱ doz., Nos. 11, $9.95; 12, $13.73; 20, $8.17; 21, $8.46; 41, $13.43; 42, $17.21.
Smith & Hemenway Co., Neverturn, 66⅔%; Elmora, 60%; Star, 30&10%
Swan's:
Nos. 7565 to 7568, 60%; No. 7540 40&10%

## Eave Trough, Galvanized—

| Territory... | Gal. Steel. | Charcoal. Iron. |
|---|---|---|
| *Northeastern* | *75&10&5%* | *60&20%* |
| *Eastern* | *80&2½%* | *60&20%* |
| *Pittsburgh* | *80&20%* | *65&10%* |
| *Central* | *80&10&10&2½%* | *65&10%* |
| *Northwestern* | *80&10&10%* | *65&10%* |
| *Western* | *80&10%* | *60&10&5%* |
| *Tennessee* | *80&5%* | *60&10&5%* |
| *Southern* | *80%* | *60&10&5%* |
| *Southwestern* | *75&10&2½%* | *60&5%* |

*Terms.—2% for cash. Factory shipments generally delivered.*
*Note.—Lower prices are made in some sections.*
See also Conductor Pipe and Elbows.

## Elbows and Shoes—

*Factory shipments, all territories:*
*Galv. Steel and Galv. C. I. Standard Gauge.....85@85&10%*
*No. 26.....50%*
*No. 24.....25%*
*No. 22.....10%*

## Elbows, Stove Pipe—

Edwards, Standard Blue....40&10&10%
Edwards, Royal Blue.....40&10&10%
Reeves, Dover, Flat Crimp..40&10&5%

## Emery, Turkish—

| | 4 to 46: | 54 to 220: | Flour. |
|---|---|---|---|
| *Kegs.....lb.* | *5 ¢* | *5½¢* | *3½¢* |
| *½ Kegs.....lb.* | *5¼¢* | *5¾¢* | *3¾¢* |
| *¼ Kegs.....lb.* | *5½¢* | *6 ¢* | *4 ¢* |
| *10-lb. cans, 10 in case....* | *6½¢* | *7 ¢* | *6 ¢* |
| *10-lb. cans, less than 10.....* | *10 ¢* | *10 ¢* | *8 ¢* |
| *Less quantity..* | *10 ¢* | *10 ¢* | *8 ¢* |

*NOTE.—In lots 1 to 3 tons a discount of 10% is given.*

## Extensions, Bit—

Ford's Auger Bit Extensions....40&5%

## Extractors, Lemon Juice—

—See *Squeezers, Lemon.*

## Fasteners, Blind—
Zimmerman's Jap'd and Galv., 50 & 5%; Bronze and Plated.....50%
Walling's .....50%
Upson's Patent.....40%

### Cord and Weight—
Ives and Titan.....33⅓%

### Corrugated—
Acme Corrugated Fasteners.....70%

### Faucets—
*Cork Lined.....50&10@60%*
*Metallic Key, Leather Lined, .. 60&10@70%*
*Red Cedar.....40&5@40&10&5%*
*Petroleum .....70&10@75%*
B. & L. B. Co.:
Metal Key.....60&10%
Star .....60%
West Lock.....50&10%
John Sommer's Peerless Tin Key....40%
John Sommer's Boss Tin Key.....50%
John Sommer's Victor Mtl. Key.50&10%
John Sommer's Duplex Metal Key..60%
John Sommer's Diamond Lock.....40%
John Sommer's I.X.L. Cork Lined..50%
John Sommer's Reliable Cork Lined.. 50&10%
John Sommer's Chicago Cork Lined.60%
John Sommer's O. K. Cork Lined...50%
John Sommer's No Brand, Cedar....50%
John Sommer's Perfection, Cedar....40%
Self Measuring:
Enterprise, Self Measuring and Pump, ℔ doz., $36.00.....40&10%
Lane's, ℔ doz., $36.00.....40&10%
National Measuring, ℔ doz. $36.40&10%

### Felloe Plates—
See *Plates, Felloe.*

### Files— Domestic—
*List Nov. 1, 1899.*
*Best Brands.....70&10@75&10%*
*Standard Brands.....75&10@80&10%*
*Lower Grade....75&10&10@80&10%*
Gold Medal.....70%

### Imported—
*Stubs' Tapers, Stubs' list, July 24, '97.....33⅓@40%*

### Fixtures, Fire Door—
Richards Mfg. Co.:
Universal, No. 103; Special, No. 104 .....$3.75
Fusible Links, No. 96.....50%
Expansion Bolts, No. 107.....60&10%

### Grindstone—
*Net Prices:*

| *Inch* | *15* | *17* | *19* | *21* |
|---|---|---|---|---|
| *Per doz.* | *$3.60* | *3.85* | *4.15* | *4.65* |
| | $4.00 | 4.40 | 4.75 | 5.50 | 6.50..30% |
| In..... | 15 | 17 | 19 | 21 | 24 |

P., S. & W. Co.....25%
Reading Hardware Co.....60%

### Fodder Squeezers—
See *Compressors.*

### Forks—
*NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.*
Iowa Dig-Ezy Potato.....60&10%
Victor, Hay.....60&15&2½%
Victor, Manure.....66⅔%
Victor, Header.....65%
Champion, Hay.....66⅔%
Champion, Header.....65%
Champion, Manure.....60&15&2½%
Columbia, Hay.....60&20%
Columbia, Manure.....70%
Columbia, Spading.....70&12½%
Hawkeye Wood Barley.....40%
W. & C. Potato Digger.....60&10%
Acme Hay.....60&20%
Acme Manure, 4 tine.....60&10&5%
Dakota Header.....60&20%
Jackson Steel Barley.....60&20%
Kansas Header.....65%
W. & C. Favorite Wood Barley....40%
Plated. See Spoons.

### Frames— Wood Saw—
*White, S'g't Bar, per doz.75@80¢*
*Red, S'g't Bar, per doz.$1.00@1.25*
*Red, Dbl. Brace, per doz.$1.40@1.50*

### Freezers, Ice Cream—

| *Qt.....* | *1* | *2* | *3* | *4* | *6* |
|---|---|---|---|---|---|
| *Each....* | *$1.25* | *$1.60* | *$1.90* | *$2.20* | *$2.80* |

### Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

### Fry Pans—See *Pans, Fry.*

### Fuse— *Per 1000 Feet.*
*Hemp .....$2.75*
*Cotton .....3.20*
*Waterproof Sgl. Taped..3.65*
*Waterproof Dbl. Taped..4.40*
*Waterproof Tpl. Taped..5.15*
10&2½%

## Gates, Molasses and Oil—
*Stebbins' Pattern.....80@80&5%*

### Gauges—
*Marking, Mortise, &c..50@50&10%*
Chapin-Stephens Co.:
Marking, Mortise, &c.....50&50&10%
Disston's Marking, Mortise, &c. 67½%
Wire, Brown & Sharpe's.....33⅓%
Wire, Morse's .....25%
Wire, P. S. & W. Co.....33⅓%

### Gimlets— Single Cut—
*Numbered assortments, per gro.*
*Nail, Metal, No. 1, $2.00; 2, $2.30*
*Spike, Metal, No. 1, $4.00; 2, $4.30*
*Nail, Wood Handled, No. 1, $2.30; 2, $2.60*
*Spike, Wood Handled, No. 1. $4.30; 2, $4.60*

### Glass, American Window
See *Trade Report.*

### Glasses, Level—
Chapin-Stephens Co.....65@65&10%

### Glue, Liquid Fish—
*Bottles or Cans, with Brush, 25&10@50%*
Elwell's .....40%

### Grease, Axle—
*Common Grade...gro.$6.00@$6.50*
Dixon's Everlasting, 10-lb. pails, ea. 85¢; in boxes, ℔ doz., 1 lb. $1.20; 2 lb.....$2.00
Helmet Hard Oil.....25%

### Griddles, Soapstone—
Pike Mfg. Co.....33⅓@33⅓&10%

### Grinders—
Pike Mfg. Co.:
Hand and Foot Power, Pyko Nos. 1, 2, 3; Pyko Primo; Pyko Peerless; Pyko Spiral (foot power).33⅓
Mower Knife and Tool, $5.00..40&10%
Royal Mfg. Co.:
Alundum Grinding Machines, each, Nos. 01, $1.75; 1A, $2.50; 10, $5.00 .....30%
Alundum Sickle Grinders, each, Nos. 20, $5.00; 20A, $6.00; 20A Combined, $6.50.....30%
Alundum Disc Grinders, each, $2.50 .....30%

### Grindstones—
Pike Mfg. Co.:
Improved Family Grindstones, ℔ inch, ℔ doz., $2.00.....33⅓%
Richards Mfg. Co., Eli and Cycle, Ball Bearing, mounted.....40%

### Grips, Nipple—
Perfect Nipple Grips.....40&10&2%

## Halters and Ties—
*Cow Ties.....65@65&10%*
Bridgeport Chain Co.:
Triumph Coil and Halters.35&2½@40%
Brown Coil and Halters...45@50&5%
Brown Cow Ties.....50&5@50&10&5%
Brown Tie Outs.....70&10@75&5%
Covert Mfg. Co.:
Web .....30&2%
Jute Rope.....35%
Sisal Rope.....20%
Cotton Rope.....45%
Hemp Rope.....45%
Oneida Community:
Am. Coil and Halters.....40@40&5%
Am. Cow Ties.....45@50%
Niagara Coil and Halters...45@50&5%
Niagara Cow Ties.....45&5@50&10&5%

### Hammers—
### Handled Hammers—
Heller's Machinists'....55&10@55&10&5%
Heller's Farriers.....40&5@40&10&5%
Peck, Stow & Wilcox Co.:
Crucible Steel.....40&10@50%
Farriers' .....40&10@50%
Riveting .....40&10@50%
Machinists' .....66⅔@5%
Blacksmiths' .....50%
Fayatte R. Plumb:
A. E. Nail.....40&2½@40&12½%
Eng. and B. S. Hand.50&10&5@60&5%
Machinists' Hammers.....60&10&5%
Rivet and Tinners'.40&7½@40&12½&5%
Victor Magnetic Tack, ℔ gro....$7.75

### Heavy Hammers and Sledges—
*Under 3 lb., per lb., 50¢...80&10%*
*3 to 5 lb., per lb., 40¢...80&10&10%*
*Over 5 lb., per lb., 30¢.....*
*Over 5 lb., per lb., 30¢.80&10&10%*

### Handles—
### Agricultural Tool Handles
*Axe, Pick, &c....60&10@60&10&5%*
*Hoe, Rake, &c.....40%*
*Fork, Shovel, Spade, &c.:*
*Long Handles.....40%*
*D Handles.....40%*

### Cross-Cut Saw Handles—
Atkins' .....40%
Champion .....50%
Disston's .....50%

### Mechanics' Tool Handles—
*Auger, assorted...gro.$3.00@$3.50*
*Brad Awl.....gro.$1.65@$1.75*
*Chisel Handles, Ass'd, per gro.:*
*Tanged Firmer, Apple, $2.40@ $2.65; Hickory.....$2.15@2.40*
*Socket Firming, Apple, $1.75@ $1.95; Hickory.....1.60@1.75*
*Socket Framing, Hickory, $1.60@$1.75*
*File, assorted.....gro.$1.30@$1.40*
*Hammer, Hatchet, &c.. 60&10@60&10&5%*
*Hand Saw, Varnished, doz., 80¢ 85¢; Not Varnished.....65@75¢*
*Plane Handles:*
*Jack, doz., 30¢; Fore, doz...45¢*
Chapin-Stephens Co.:
Carving Tool.....30@30&10%
Chisel .....60@60&10%
File and Awl.....60@60&10%
Saw and Plane.....30@30&10%
Screw Driver.....30@30&10%
Millers Falls Adj. and Ratchet Auger Handles .....15&10%
Nicholson Simplicity File Handle.... ℔ gro. $0.85@$1.50
J. L. Osgood:
Indestructible File and Tool, ℔ gro., No 1, $8.00; No. 2, $8.50; No. 3, $9.00; No. 4, $9.50; No. 5, $10.00.....gro. lots 10%
W. A. Zelnicker Supply Co.:
Hammer, ℔ doz., 12 in. $2.00; 14 in., $2.00; 16 in., $2.30; 18 12., $2.50; 20 in., $2.70; 22 in., $3.00; 24 in., $3.30; 26 in., $3.50; 30 in., $3.80.
Sledge, ℔ doz., oval, 30 in., $3.80; octagon, 30 in., $3.80; oval, 36 in., $4.00; octagon, 36 in., $4.00.
Axe, ℔ doz., 28 to 34 in., $5.60; 36 in., $5.80.
Adze, ℔ doz., 36 in., $5.80; 36 in., $7.80.
Pick, ℔ doz., R. R., 36 in., $8.00; coal, 34 in., $5.80.
Hatchet, ℔ doz., 12 to 14 in., $2.00.

### Hangers—
*NOTE.—Barn Door Hangers are generally quoted per pair, without track and Parlor Door Hangers per double set with track, &c.*
Chicago Spring Butt Co.:
Friction .....25%
Oscillating .....25%
Big Twin.....25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door.....50%
Elevator .....30%
Railroad .....50%
Cronk & Carrier Mfg. Co.:
Loose Axle.....60&10%
Roller Bearing.....70%
Griffin Mfg. Co.:
Solid Axle, No. 10, $12.00..60&10%
Roller Bearing, No. 11, $15.00, 60&10%
Roller Bearing, Ex. Hy., No. 22, $18.00.....60&10%
Bull Dog, $24.00.....70%
Lane Bros. Co.:
Parlor, Ball Bearing, $4.00: Standard, $3.15; No. 105, $2.85; New Model, $2.80; New Champion per set of 4 Hangers, complete with track.....$2.25
Barn Door, Standard.....60&10
Hinged .....net $6.08
Covered .....60&5%
Special .....70&5
Trolley Hangers and track ..50%
Lawrence Bros.:
Advance .....55&10%
Cleveland .....70&7½%
Clipper, No. 75.....60%
Crown .....55&10%
Cyclone, No. 40.....net $6.50
Tandem, No. 50.....net $7.50
New York.....55&10%
McKinney Mfg. Co.:
Roller Bearing, Nos. 1 and 2..70%
Anti-Friction .....60%
Hinged Hangers, King Charm.60
Richards Mfg. Co.:
Hangers, Nos. 47, 48, 147, 247, 60&5%
Pioneer Wood Track, No. 3..$2.25
Roller B'r'g St'l Track No. 12.$2.20
Roller B'r'g St'l Track No. 13.$2.50
Roller B'r'g, Nos. 39, 41, 43, 70&7½%
Hero, Adj. Track No. 19..50&10%
Adjustable Track Tandem Trolley Track No. 16.....50&10%
Seal, Steel Track No. 8.....$2.25
Auto Adj. Track No. 22..50&5%
Trolley B. D. No. 17, $1.25; F. D. No. 120, $2.25; No. 121, $2.45; No. 150.....$2.50
Safety Underwriters F. D. No. 101 .....50%
Tandem No. 44..2½ and 3 60&10%
Palace, Adjustable Track No. 132 .....50&5%
Royal, Adjustable Track No. 122 .....50&10%
Ives' Wood Track No. 1.....$2.25
Trolley B. D. No. 20.....50&10%
Trolley B. D. No. 24, $1.30; No. 27, $1.40; No. 28..... $1.60
Roller Bearings, Nos. 37, 38, 39, 41, 43, 44, Sizes 1 and 2.70&7½%
Anti-friction, No. 42; No. 44, sizes 2½ and 3.....60%
Hinged Tandem No. 48....60&5%
Folding Door B. B. Swivel No. 135 .....40%
Taylor & Boggis F'y Co.'s Kidder's Roller Bearing.50&15&10&5%
Myers' Stayon Hangers.....60%

### Hangers— Garment—
Pullman Trouser, ℔ gro., No. 1 $9.00; No. 4, $24.00; No. 5, $16.50; No. 8, Black Enamel, $7.50; No. 10, $21.00; No. 12, $8.00; No. 15, Rods, $9.00; No. 18, Loops.....$10.00
Victor Folding.....℔ gro. $9.60

### Gate—
Myers' Patent Gate Hangers, ℔ doz. net .....50%

### Joist and Timber—
Lane Bros. Co.....35%

### Hasps—
Griffin's Security Hasp .....50&10
McKinney's Perfect Hasp, ℔ doz..60

### Hatchets—
*Regular list, first qual.40&12½@—*
*Second quality.....50&10&5@—*

### Heaters, Carriage—
Clark, No. 5, $1.25; No. 5B, $1.50; No. 3, $1.75; No. 3D, $2.00; No. 7D, $2.25; No. 3E, $2.50; No. 1, $3.00.....25
Clark Coal, ℔ doz., $0.75.....20

### Hinges—
### Blind and Shutter Hinges
*Surface Gravity Locking Blind: (Victor; National; 1868 O. P.; Niagara; Clark's O. P.; Clark's Tip; Buffalo.)*

| *No.* | *1* | *3* | *5* |
|---|---|---|---|
| *Doz. pair.....* | *$0.75* | *1.35* | *2.70* |

*Mortise Shutter: (L. & P., O. S., Acme, &c.)*

| *No.* | *1* | *1½* | *2* | *2½* |
|---|---|---|---|---|
| *Doz. pair....* | *$0.70* | *.65* | *.60* | *.55* |

*Mortise Reversible Shutter (Buffalo, &c.):*

| *No.* | *1* | *1½* | *2* |
|---|---|---|---|
| *Doz. pair.....* | *$0.70* | *.65* | *.60* |

North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10
Charles Parker Co.....70&75
Parker Wire Goods Co.
Hale & Benjamin Automatic Blind Hinges .....20
Hale's Blind Awning Hinges, No 110, for wood, $9.00; No. 111, for brick, $9.00.....20
Reading's Gravity.....60
Stanley's Steel Gravity Blind Hinges, No. 1647½, ℔ doz. sets, without screws, $0.95; with screws, $1.25.
Wrightsville Hardware Co.:
O. S., Lull & Porter.....75&5
Acme, Lull & Porter.....75
Queen City Reversible.....75

Extra 5@10% often given.

Shepard's Noiseless, Nos. 60, 65, 55 .....75&5%
Niagara, Gravity Locking, Nos. 1, 3 & 5.....75&5%
Clark's O. P., No. 1.....75&10%
Clark's O. P., Nos. 3 and 5....75&5%
Tip Pat'n, No. 1.....75&10%
Clark's No. 3.....75&5%
Buffalo Gravity Locking, Nos. 1, 3 & 5.....70&10&5%
Shepard's Double Locking.....75%
Champion Gravity Locking.....75&5%
Pioneer .....75&10%
Empire .....65%
W. H. Co.'s Mortise Gravity Locking, No. 2.....60&10%

### Gate Hinges—
*Clark's or Shepard's—Doz. sets:*

| *No.* | *1* | *2* | *3* |
|---|---|---|---|
| *Hinges with L't'chs.* | *$2.00* | *2.70* | *5.00* |
| *Hinges only.....* | *1.25* | *1.90* | *3.50* |
| *Latches only.....* | *.70* | *.75* | *.35* |

*New England:*
*With Latch.....doz..@$2.00*
*Without Latch.....doz..@$1.60*
*Reversible Self-Closing:*
*With Latch.....doz..@$1.75*
*Without Latch...doz....@$1.35*
*Western:*
*With Latch.....doz. $1.75*
*Without Latch.....doz..$1.15*
Wrightsville Hardware Co.:
Shepard's or Clark's Hinges and Latches, Hinges only or Latches only, Nos. 1, 2 or 3.....70%

### Miscellaneous—
Griffin Mfg. Co., Fleur de Lis Surface Hinges, ℔ doz. prs.....$1.00

### Pivot Hinges—
Bommer Bros. Pivot, Ball Bearing .....40%
Lawson Mfg. Co. Matchless.....30

### Spring Hinges—
*Holdback, Cast Iron...$6.75@$7.00*
*Non-Holdback, C'st Iron$6.50@$6.75*
J. Bardsley:
Bardsley's Non-Checking Mortise Floor Hinges.....40%
Bardsley's Patent Checking.33⅓%
Bommer Bros.:
Spring Butt Hinges.....40%
Surface Floor, Ball Bearing .....40%
Mortise Floor, Ball Bearing.40%
Lavatory Hinges.....40%
Non-Holdback Screen Door, Nos. 2000 and 900.....40%
Holdback Screen Door, No. 999.....℔ gro. $9.00
Chicago Spring Butt Co.:
Chicago Spring Hinges.....25%
Triple End Spring Hinges....50%
Chicago (Ball Bearing) Floor.50%
Garden City Engine House...25%
Keene's Saloon Door.....25%
Columbian Hardware Co.:
Acme, Wrought Steel.....30%
Acme, Brass.....25%
American .....30%
Columbia, ℔ gr., No. 14, $9.00; No. 18.....$25.00
Columbia, Adj., No. 7, ℔ gr $12.00
Gem, new list.....30
Clover Leaf and Acorn, per gro. .....$12.00
Oxford, new list.....30
Floor Spring Hinges.....65&10%
Columbian Steel.....65&10%
Lawson Mfg. Co., Matchless...30%
Richards Mfg. Co.:
Superior Double Acting Floor Hinges .....40%
Shelby Spring Hinge Co.:
Buckeye All Steel Holdback Screen Door.....℔ gr. $9.00
Chief Ball Bearings Floor Hinge .....50%
Ball Bearing Door.....25%
No. 777, Sheet Steel Holdb'k, ℔ gr. pr.....$9.00
Standard Mfg. Co.:
Champion Double Acting Door Hinge .....25&10&10
Standard Double Acting Floor Hinge .....25&10&10
Superior Spring Hinge Co.:
Superior Floor Hinges.....33⅓%
Spring Hinges.....33⅓

Extra 10% often given on most of these Hinges.

### Wrought Iron Hinges—
*Strap and T Hinges, &c., list February 10, 1908:*
*Light Strap Hinges..50&10%*
*Heavy Strap Hinges..60&5%*
*Light T Hinges.....50%*
*Heavy T Hinges.....40%*
*Extra Hvy. T Hinges 50&10%*
*Hinge Hasps.....33⅓%*
*Cor. Heavy Strap....60&5%*
*Cor. Ex. Heavy T...50&10%*
*Screw Hook and Strap.* { 6 to 12 in.. *lb* 3½¢ / 14 to 20 in.. *lb* 3½¢ / 22 to 36 in.. *lb* 3½¢ }
*Screw Hook and Eye:*
*To 6 inch .....lb 8½¢*
*6½ inch .....lb 7½¢*
*7½ inch .....lb 8½¢*
Extra 10&7½%.

### Hitchers, Stall—
Covert Mfg. Co., Stall Hitchers 30&2%

### Hods— Coal—
*M'f'gr's list, price per gross:*

| *Inch* | *15* | *16* | *17* | *18* |
|---|---|---|---|---|
| *Galv. Open* | *$35* | *$39* | *$42* | *$46* |
| *Jap. Open* | *26* | *28* | *31* | *35* |
| *Galv. Funnel* | *43* | *48* | *52* | *56* |
| *Jap. Funnel* | *33* | *36* | *39* | *43* |

100&7½&5%

### Masons' Etc.
Cleveland Wire Spring Co.:
Steel Brick, No. 162.....each $1.05
Steel Mortar, No. 158.....each $1.35

### Hoes— Eye—
*Scovil and Oval Pattern. 60&10@60&10&10%*
*Grub, List Feb. 23, 1899. 70&10@70&10&10%*
D. & H. Scovil.....27½%
Am. Fork & Hoe Co. (Scovil Pattern) .....60%

### Handled—

*NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.*

Cronk's Weeding No. 1, $2.00; No. 2, $2.50
Star Double Bit.....$2.50
Madison Cotton Hoe.....40&5&10%
Ft. Madison Crescent Cultivator Hoe, ₱ doz.....70&10
Ft. Madison Mattock Hoes:
Regular Weight.....₱ doz. 40&5%
Junior Size.....₱ doz. $4.00
Ft. Madison Sprouting Hoe, ₱ doz., 60&10%
Ft. Madison Dixie Tobacco Hoe.....75&10&7½%
Kretsinger's Cut Easy.....70&10%
Warren Hoe.....45&10
W. & C. Ivanhoe.....75&2
B. B. 6 in., Cultivator Hoe.....$3.10
B. B., 6½ in.....$3.50
Acme Wedding.....₱ doz., net, $4.35
W. & C. L'Ouine Shuffle Hoe, ₱ doz. $5.25

### Hoisting Apparatus—

See *Machines, Hoisting.*

### Holders— Bit—

Angular, ₱ doz. $21.00.....15&10%

### Door—

Bardsley's, Iron, 40%; Brass and Bronze.....25
Empire.....50%
Pullman.....25%
Richards Mfg. Co.: No. 117, Ever-ready, 40%; Nos. 118, 119, Sure Grip.....50%
Superior.....33⅓%

### File and Tool—

Nicholson File Holders and File Handles.....33⅓@40

### Fruit Jar—

Triumph Fruit Jar Holder, ₱ gross, $18.00, ₱ doz.....$2.00

### Trace and Rein—

Fernald Double Trace Holder, ₱ doz. pairs.....$1.25
Dash Rein Holder, ₱ doz.....$1.25

### Hones—Razor—

Pike Mfg. Co., Belgian and Swaty, 0%; German.....33⅓%

### Hooks—Cast Iron—

Bird Cage, Reading.....40%
Clothes Line, Reading List.....40
Coat and Hat, Reading.....45&20
Coat and Hat, Wrightsville.....60&5
Harness, Reading List.....40

### Wire—

*Belt, Nos. 1 to 15....75&10@80%*
*Wire C. & H. Hooks..80@80&10%*
Bradley Metal Clasp Wire, Coat and Hat 75&10@80; Ceiling..75&10@80
Columbian Hdw. Co., Gem.....75&10%
Parker Wire Goods Co., King..70&10
Wire Goods Co.:
Acme, 60&10%; Chief, 70&10%; Crown, 75%; Czar, 65&10%; V Brace, 75%; Czar Harness, 50%; Ceiling, 75%.

### Wrought Iron—

*Box, 6 in., per doz., $0.90; 8 in., $1.15.*
*Cotton.....doz. $1.25@$1.50*
Wrought Staples, Hooks, &c.
See Wrought Goods.

### Miscellaneous—

*Hooks, Bench, see Stops, Bench.*
*Bush, Light, doz., $6.20; Medium, $6.75; Heavy, $7.65*
*Grass, best, all sizes, per doz., $2.75@$3.00*
*Grass, common grades, all sizes, per doz.....$1.25@$1.50*
*Whiffletree.....lb. 5½@6c*
*Hooks and Eyes:*
*Brass.....60@60&10%*
*Malleable Iron.....70@70&10%*
Covert Mfg. Co. Gate and Scuttle Hooks.....40%
Ft. Madison Cut-Easy Corn Hooks, ₱ doz. $3.25 net
Turner & Stanton Co. Cup and Shoulder.....85&10%
Bench Hooks—See Bench Stops.
Corn Hooks—See Knives, Corn.

### Horse Nails—

See *Nails, Horse.*

### Horseshoes—

See *Shoes, Horses.*

### Hose, Rubber—

*Garden Hose, ¾-inch:*
*Competition.....ft. 6@6½¢*
*3-ply Guaranteed.....ft. 8½@9¢*
*4-ply Guaranteed.....ft. 9½@12¢*
*Cotton Garden, ¾-in., coupled:*
*Low Grade.....ft. 8@9c*
*Fair Quality.....ft. 10@11¢*

### Irons— Sad—

*From ¼ to 10.....lb. 2½@2¾¢*
*B. B. Sad Irons.....lb. 3¼@3½¢*
*Mrs. Potts', cents per set:*

| | Nos. 50 | 55 | 60 | 65 |
|---|---|---|---|---|
| Jap'd Tops | 83 | 80 | 93 | 91 |
| Tin'd Tops | 88 | 85 | 98 | 95 |

*New England Pressing..lb. 3¼@4¼¢*

### Bar and Corner—

Richards Mfg. Co., Bar, 60&10%; Corner.....60

### Pinking—

*Pinking Irons.....doz. 60@85¢*

### Irons, Soldering

See *Coppers.*

### Jacks, Wagons—

Covert Mfg. Co.:
Auto Screw.....20&5%; Steel 15
Lockport.....50
Lane's Steel.....30&5
Richards' Tiger Steel No. 130..50&10
Smith & Hemenway Co.'s.....25%

### Ladder—

Richard Mfg. Co. Ladder Jacks .50.

### Jointers—

Pike Mfg. Co., Saw Jointers, $7.00..40%

### Kettles—

*Brass, Spun, Plain.....20@25%*
Enameled and Cast Iron See Ware, Hollow.

### Knives—

#### Butcher, Kitchen, &c.—

Foster Bros.' Butcher, &c.....30%
Wilkinson Shear & Cutlery Co....60%

#### Corn—

Columbian Cutlery Co., Wilcut Brand Knives and Hooks.....60%
Withington Acme, ₱ doz., $2.65; Dent, $2.75; Adj. Serrated, $2.20; Serrated, $2.10; Yankee No. 1, $1.50; Yankee No. 2, $1.15.

#### Drawing—

*Standard List.....80&10@—%*
C. E. Jennings & Co., Nos. 45, 46, 25&7½%
Jennings & Griffin, Nos. 41, 42, 66⅔&7½%
Swan's.....66⅔@70
Watrous.....16⅔%
L. & I. J. White.....20&5@25%

### Hay and Straw—

*Serrated Edge, per doz. $5.00@5.50*
Ivan's Sickle Edge.....₱ doz. $9.50
Ivan's Serrated.....₱ doz. $10.00

### Miscellaneous—

*Farriers'.....doz. $2.60@3.55*
Westenholm's.....₱ doz. $3.00@3.25

### Knobs—

*Base, 2½ inch, Birch or Maple, Rubber Tip.....gro. $1.25@1.40*
*Carriage, Jap., Drive, all sizes, gro. .35@.70¢*
*Door, Mineral.....doz. .65@.70¢*
*Door, Por. Jap'd.....doz. .70@.75¢*
*Door, Por. Nickel..doz. $2.05@2.15*
Barnsley's Wood Door, Shutters, &c. 15%

### Lacing, Leather—

See *Belting, Leather*

### Ladders, Store, &c.—

Lane's Store.....25%
Myers' Noiseless Store Ladders....50%
Richards Mfg. Co.:
Improved Noiseless, No. 112.....50%
Climax Shelf, No. 113.....50%
Trolley, No. 109.....50%

### Ladles, Melting—

L. & G. Mfg. Co., Melting and Plumbers'.....25
P., S. & W.....40&10%
Reading.....60%

### Lanterns—Tubular—

*Regular, No. 0.....doz. $4.35@4.50*
*Side Lift, No. 0.....doz. $4.60@4.75*
*Hinge Globe, No. 0. doz. $4.60@4.75*
*Other Styles.....40@40&10%*

### Bull's Eye Police—

*3 inch.....$3.75@4.00*

### Latches— Thumb—

*Roggin's Latches, Jap'd, with Screws.....doz. .35@.40¢*

### Door—

Cronk & Carrier Mfg. Co., No. 101, ₱ doz. $2.00
Richards' Bull Dog, Heavy, No. 125.....50&5
Richards' Trump, No. 127.....$1.50

### Leaders, Cattle—

*Small.....doz. .50c; large, 60¢*
Covert Mfg. Co.:
Cotton, 45%; Hemp, 45%; Jute, 35%; Sisal, 20%.

### Leathers, Pump—

See *Pumps—*

### Lifters, Transom—

R. & E.....10

### Lines—

| *Wire Clothes, Nos.* | *18* | *19* | *20* |
|---|---|---|---|
| *100 feet* | *$2.30* | *1.95* | *1.75* |
| *75 feet* | *$1.95* | *1.65* | *1.50* |

Samson Cordage Works:
Solid Braided Chalk, Nos. 0 to 3..40%
Solid Braided Masons'.....30
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50.....₱ gr. 20%
Masons' Lines, Shade Cord, &c.:
White Cotton, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50; Colors, No. 3½, $1.75; No. 4, $2.25; No. 4½, $2.75; Linen, No. 3½, $2.50; No. 4, $3.50; No. 4½, $4.50.....20%
Tent and Awning Lines: No. 5, White Cotton, $7.50; Drab Cotton, $8.50.....20%
Clothes Lines, White Cotton: 50 ft., $2.75; 60 ft., $3.25; 70 ft., $3.75; 75 ft., $4.00; 80 ft., $4.25; 90 ft., $4.75; 100 ft., $5.25.....20%
Turner & Stanton Co.:
Solid Braided Chalk, Masons' and Awning Lines.....40%
Clothes Lines, White Cotton....20%
Shade Cord, Cotton or Linen....20%

### Locks— Cabinet—

*Cabinet Locks....33⅓@33⅓@5%*

### Door Locks, Latches, &c

*NOTE.—Net Prices are very often made on these goods*
Reading Hardware Co.....40%
R. & E. Mfg. Co.....10

### Padlocks—

R. & E. Mfg. Co. Wrought Steel and Brass.....75&10%

### Sash, &c.—

Ives' Patent:
Bronze and Brass, 55&5%; Crescent, 60%; Iron, 60%; Window Ventilator, 40&20%; Robinson Pat. Ventilating Sash Lock, 33⅓%.
Pelham Patent Ventilating Lock..25%
Reading Sash Locks.....40%
Taylor Mfg. Co., Perfect Ventilating, ₱ doz.....$0.75@$1.00

### Machines—Boring—

*Com. Upr't, without Augers $2.00@2.25*
*Com. Angl'r, without Augers, $2.25@2.50*
Ford Auger Bit Co.....$22.00
Jennings, Nos. 1 and 4.....25&7½%
Millers' Falls.....5.75
Snell's, Upright, $2.65; Angular, $2.90
Swan's Improved.....40&10%

### Corking—

Reisinger Invincible Hand Power.... ₱ doz. $18.00

### Fence—

Williams' Fence Machines....each, $5.50

### Hoisting—

Moore's Anti Friction Chain Hoist.50
Moore's Hand Hoist, with Lock Brake.....20
Moore's Cyclone High Speed Chain Hoist.....25

### Ice Cutting—

Chandler's.....12½

### Washing

Boss Washing Machine Co.: Per doz.
Boss No. 1.....$57.00
Boss Rotary.....
Champion Rotary Banner No. 1.$57.00
Standard Compound No. 1.....$50.00
Standard Perfection.....$27.00
Cincinnati Square Western.....$33.00
Uneeda American, Round.....$33.60

### Mallets—

*Hickory.....45@50@50%*
*Lignumvitæ.....45@50@50%*
*Tinners' Hickory and Applewood.....doz. .45@50%*

### Mangers, Stable—

Swett Iron Works.....50

### Mats, Door—

Acme Flexible Steel.....50
Elastic Steel (W. G. Co.), new list.50

### Mattocks—

See *Picks and Mattocks.*

### Milk Cans—See *Cans, Milk.*

### Mills, Coffee, &c.—

Enterprise Mfg. Co.....20@25
National list Jan. 1, 1902.....30
Parker's Columbia and Victoria.....33⅓
Parker's Box and Side.....50&10%
Swift, Lane Bros. Co.....30

### Motors, Water—

Divine's Red Devil.....30
$2.50 3.50 10.00 15.00.....33⅓
No. 1. 2 3 4
Lippincott's.....30
Pike Mfg. Co., Tool and Knife Grinding.....33⅓

### Mowers, Lawn—

*NOTE.—Net prices are generally quoted*
*Cheapest, 10-in., $2.00; advance 10¢ for each size.*
*Cheap, 10 in., $2.25; advance 15@20¢ for each size.*
*Better Grade, 10-in., $3.00; advance 25¢ for each size.*

| | *12* | *14* | *16* | *18-in.* |
|---|---|---|---|---|
| *High Grade* | *$4.50* | *4.75* | *5.00* | *5.25* |
| Continental | | | | .60 |
| Great American | | | | .70 |
| Great American Ball B'r'g, new list | | | | 70 |
| Quaker City | | | | .70 |
| Pennsylvania | | | | .60 |
| Pennsylvania, Jr., Ball Bearing | | | | 50&10&5% |
| Pennsylvania Golf | | | | .50 |
| Pennsylvania Horse | | | | .33⅓&5 |
| Pennsylvania Pony | | | | .40&5 |

Granite State:
Style A, Low Wheel.....70%
Style B, Low Wheel.....70%
Style C, High Wheel, spcl. list, 70&10%
Style D, High Wheel, spcl. list..70%
Philadelphia:
Styles M., S., C., K., T....70&10&5
Style A, all Steel.....60&10&5%
Style E, High Wheel.....70&10&5%
Drexel and Gold Coin, special list.40%
Horse.....40&5%
Pony.....40&5%
36-in. Horse.....30&10
Eagle Horse.....30&5%
I. X. L. Horse.....50%

### Nails—

*Wire Nails and Brads, Miscellaneous.....85&5@85&10%*
*Cut and Wire, See Trade Report.*
*Hungarian, Finishing, Upholsterers', &c. See Tacks.*

#### Horse—

| Nos | 6 | 7 | 8 | 9 | 10 | |
|---|---|---|---|---|---|---|
| Anchor | 25 | 21 | 20 | 19 | 18 | ₱ lb. net, 12¢ |
| Colemar | 13 | 12 | 12 | 11 | 11 | net ₱ lb |
| New Haven | 23 | 21 | 20 | 19 | 18 | ₱ lb. net, 12¢ |
| Livingston | 19 | 18 | 17 | 16 | 16 | 10% |
| Western | | | | | | ₱ lb 8½¢ |

*Jobbers' Special Brands, per lb. 9c*

#### Picture—

| | *1½* | *2* | *2½* | *3 in.* |
|---|---|---|---|---|
| *Brass Hd, gro.* | *.45* | *.55* | *.60* | *.70* |
| *Por. Head, gro.* | *1.10* | *1.10* | *1.10* | |

#### Upholsters—

*Brass.....30%*
*Plated.....30&10%*

### Nippers—

See *Pliers and Nippers.*

### Nipples—

Standard Nipple Co.:
Wrought Pipe Nipples.....80

### Nuts— *Blank or Tapped.*

*Cold Punched: Off list*
*Square.....5.40@5.50¢*
*Hexagon.....6.00@6.10¢*
*Square, C., T. & R...5.80@5.90¢*
*Hexagon, C., T. & R..6.60@6.70¢*
*Hot Pressed:*
*Square.....5.80¢*
*Hexagon.....6.80¢*

### Oakum—

*Best.....lb. 6½¢*
*U. S. Navy.....lb. 6¢*
*Navy.....lb. 5¢*
*Plumbers' Spun Oakum..2¼@3¢*

### Oil—

Pike Mfg. Co., Stoneham.....40%

### Oil Tanks—See *Tanks, Oil.*

### Oilers—

*Steel, Copper Plated.....75%*
*Chase or Paragon:*
*Brass and Copper.....50&10%*
*Zinc.....65&10%*
*Railroad.....60&10&10%*
Muncable, Hammers Improved, Nos. 11, 12 and 13, 20%; Old Pattern, Nos. 1, 2, 3, 50%.
American Tube & Stamping Co.:
Spring Bottom Cans.....70@70&10
Railroad Oilers, &c.....60@60&10
Maple City Mfg. Co.:
Spring Bottom Cans.....70@70&10
Railroad Oilers, &c.....60@60&10

### Openers—Packing Box—

Herculever, ₱ doz., $24.....

### Can Openers—

*Per doz.*
*Sprague, Iron Handle....30@45¢*
*Sprague, Wood Handle.....40¢*
*Sardine Scissors.....$1.75@3.00*
Can and Bottle Openers, ₱ doz., net; Yankee, $0.75@$0.85; Little Gem, $0.57@$0.65; Nifty.....$0.75

### Egg—

Hartigan Nickel Plate, ₱ doz., $2.00; Silver Plate, $4.00.

### Packing—

*Asbestos Packing, Wick and Rope, any quantity.....18@20¢*

#### Rubber—

*(Fair quality goods.)*
*Sheet, C. I.....11@12¢*
*Sheet, C. O. S.....11@12¢*
*Sheet, C. B. S.....12@13¢*
*Sheet, Pure Gum.....40@45¢*
*Sheet, Red.....40@50¢*
Jenkins' '96, ₱ lb. 80¢.....25%

#### Miscellaneous—

*American Packing....lb. 7@10¢*
*Cotton Packing.....lb. 16@25¢*
*Italian Packing.....lb. 9@10¢*
*Jute.....lb. 4@4¼¢*
*Russia Packing.....lb. 9@10¢*

### Pails, Water, Well, &c.—

See *Buckets.*

### Paint—

Dixon's Silica-Graphite, in 1 gal. pails and 5 gal. kegs, 25%; packages of larger size.....20

### Pans— Dripping—

*Standard List...70&10@70&10&5%*
Edwards, Royal Blue.....75

### Fry—

*Common Lipped:*

| *Nos.* | *1* | *2* | *3* | *4* | *5* |
|---|---|---|---|---|---|
| *Per doz.* | *$0.75* | *0.85* | *0.95* | *1.15* | *1.30* |

### Refrigerator, Galva.—

| *Inch* | *12* | *14* | *16* | *18* |
|---|---|---|---|---|
| *Per doz.* | *$1.75* | *2.25* | *2.80* | *3.15* |

### Paper—Building Paper

*Asbestos: lb.*
*Roll Board or Building Felt, 6 to 30 lb., per 100 sq. ft..2½¢*
*Roll Board or Building Felt, 3-32 and ⅛ in., 45 to 60 lb., per 100 sq. ft.....3½c*
*Mill Board, Sheet, 40 x 40 in., 1-32 to ½ in.....3c*

*Per roll.*
*Rosin Sized Sheathing: 500 sq. ft. Light weight, 25 lbs. to roll, @58¢*
*Medium weight, 30 lbs. to roll. 56@70¢*
*Heavy weight, 40 lbs. to roll. 75@78¢*
*Black Water Proof Sheathing, 500 sq. ft., 1 ply, 65c; 2 ply, 85c; 3 ply, $1.10; 4 ply, $1.25.*
*Deafening Felt, 9, 6 and 4½ sq. ft. to lb., ton.....$54.50*
*Red Rope Roofing, 250 sq. ft. per roll.....$1.75*

#### Tarred Paper—

*1 ply (roll 400 sq. ft.), ton, $34.00@$38.00*
*2 ply, roll 108 sq. ft.....65c*
*3 ply, roll 108 sq. ft.....88c*
*Slater's Felt (roll 500 sq. ft.).80c*

### Sand Paper and Cloth—

*Flint and Emery.....50&10%*
*Garnet Paper and Cloth.....25%*

### Parers—Apple—

Goodell Co.:
Family Bay State.....₱ doz. $15.00
Improved Bay State.....₱ doz. $36.00
New Lightning.....₱ doz. $7.00
Turn Table '98.....₱ doz. $6.00
White Mountain.....₱ doz. $5.00
Bonanza Improved.....each $7.50
Dandy.....each $10.00
Eureka Improved.....each $20.00
New Century.....each $20.00
Ranger.....each $30.00
Livingston Nail Co.:
Daisy.....₱ doz. $4.00
Little Star.....₱ doz. $5.00
Rocking Table.....₱ doz. $6.20
Reading Hardware Co.:
Advance.....₱ doz. $4.00
Baldwin.....₱ doz. $4.00
Reading 72.....₱ doz. $3.25
Reading 78.....₱ doz. $6.25

### Orange—

Goodell Co., Success.....each $20.00

### Potato—

Saratoga.....₱ doz. $7.00
White Mountain.....₱ doz. $6.90

### Picks and Mattocks—
*(List Jan., 1908.)*
*List* ..... 70&10@70&10&10%
Cronk's Handled Garden Mattock, ₱ doz., $3.00 ..... 33⅓%

### Pinking Irons—
See *Irons, Pinking.*

### Pins, Escutcheon—
*Brass* ..... 50@50&10%
*Iron, list Nov. 11, '85* ..60@60&10%

### Pipe, Cast Iron Soil—
*Standard, 2-6 in.* .....70@—%
*Extra Heavy, 2-6 in.* ..75&10@—%
*Fittings, Standard and Heavy,* 80&10@80&10&10%

### Pipe, Merchant—

| *Consumers, Carloads,* | *Steel.* | | *Iron.* | |
|---|---|---|---|---|
| | *Blk.* % | *Galv.* % | *Blk.* % | *Galv.* % |
| *⅛ and ¼ in.* | 66 | 50 | 64 | .. |
| *⅜ in.* | 68 | 54 | 66 | 52 |
| *½ in.* | 70 | 58 | 68 | 56 |
| *¾ to 6 in.* | 74 | 64 | 72 | 62 |
| *7 to 12 in.* | 71 | 56 | 69 | 54 |

### Pipe, Vitrified Sewer—
*Carload lots.*
*Standard Pipe and Fittings, 3 to 24 in., f.o.b. factory:*
*First-class* ..... 87%
*Second-class* ..... 90%

### Pipe, Stove—

| | Per 100 joints. C. L. | L. C. L. |
|---|---|---|
| Edwards' Nested: | | |
| 5 in., Standard Blue | $6.25 | $7.25 |
| 6 in., Standard Blue | 6.75 | 7.75 |
| 7 in., Standard Blue | 7.75 | 8.75 |
| 5 in., Royal Blue | 7.00 | 8.00 |
| 6 in., Royal Blue | 7.50 | 8.50 |
| 7 in., Royal Blue | 8.50 | 9.50 |
| Wheeling Corrugating Co.'s Nested: | | |
| 5 in., Uniform Color | $6.15 | $7.15 |
| 6 in., Uniform Color | 6.65 | 7.65 |
| 7 in., Uniform Color | 7.65 | 8.65 |

### Planes and Plane Irons—
### Wood Planes—
*Bench, first qual.* ....30@30&10%
*Bench, second qual.* ...40@40&10%
*Molding* ..... 25@25&10%
Chapin-Stephens Co.:
Bench, First Quality ..... 30%
Bench, Second Quality ..... 40%
Molding and Miscellaneous ..... 25%
Tov and German ..... 30%
Union ..... 60%

### Iron Planes -
Chaplin's Iron Planes ..... 60%
Union ..... 60%

### Plane Irons—
*Wood Bench Plane Irons, list Dec. 12, '06* ..... 25%
Buck Bros. ..... 30%
Chapin-Stephens Co. ..... 25%
Union ..... 50%
L. & I. J. White ..... 20&5@25%

### Planters, Corn, Hand—
Kohler's Eclipse ..... ₱ doz. $7.50

### Plates—
*Felloe* ..... lb. 3¾@4¢
Avery Stamping Co.:
Standard Wrot Steel Felloe Plates in 100 lb kegs, per 100 lb, ¾-in. to 1¼-in., $4.00 net; 1¼-in. to 2-in., inclusive, $3.75 net.

### Steel Pipe Hook—
Never-Break ..... 75&10%

### Pliers and Nippers -
*Button Pliers* ....75&5@75&10&5%
*Gas Burners, per doz., 5 in., $1.25 @$1.30; 6 in., $1.45 $1.50.*

| *Gas Pipe..* | *7* | *8* | *10* | *12-in.* |
|---|---|---|---|---|
| | *$2.00* | *$2.25* | *$2.75* | *$3.50* |

Acme Nippers ..... 50&5%
Crook & Carrier Mfg. Co.:
American Button ..... 80%
Improved Button ..... 75&10%
Cronk's ..... 60%
No. 89 Linemen's ..... 50%
Stub's Pattern ..... 45%
Combination and others ..... 33⅓%
Heller's Farriers' Nippers, Pincers and Tools ..... 10&5@10&10&5%
P. S. & W. Tinners' Cutting Nippers ..... 40%
Swedish Side, End and Diagonal Cutting Pliers ..... 50%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds ....40%

### Plumbs and Levels—
Chapin-Stephens Co.:
Plumbs and Levels ..... 30@30&10%
Chapin's Imp. Brass Cor..40@40&10%
Pocket Levels ..... 30@30&10%
Extension Sight ..... 30@30&10%
Machinists' Levels ..... 40@40&10%
Disston's Plumbs and Levels....60&10%
Disston's Pocket Levels ..... 60&10%
Stanley's Dulex ..... 35%
Woods' Extension ..... 33⅓%

### Points, Glaziers'—
*Bulk and 1-lb. papers* .... lb. 9¢
*½ lb. papers* ..... lb. 9½¢
*¼-lb. papers* ..... lb. 10¢

### Police Goods—
*Manufacturers' Lists* ..25@25&5%
Tower's ..... 25%

### Polish—Metal, Etc—
Ladd Co.:
Putzade Liquid ₱ gro., ½ pts., $12.00; 1 pts., $20.00; 1 qts., $40.00; ₱ doz., ½ gals., $6.35; 1 gals., $12.00.
Prestoline Liquid, No. 1 (½ pt.), ₱ doz., $3.00; No. 2 (1 qu.), $9.00....40%
Prestoline Paste ..... 40%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, ₱ doz. 50¢; ₱ gro. $4.50; ½ lb boxes, ₱ doz. $1.25; 1 lb boxes, ₱ doz. $2.25.
U. S. Liquid, 8 oz. cans, ₱ doz., $1.25.
Barkeepers' Friend Metal Polish, ₱ doz., $1.75.

### Stove—
Black Eagle Benzine Paste, 5 lb cans, ₱ lb 10¢
Black Eagle, Liquid, ½ pt. cans.. ₱ doz. 75¢
Black Jack Paste, ¾ lb cans, ₱ gr. $9.00
Black Kid Paste, 5 lb can...each, $0.65
Ladd's Black Beauty Liquid, per 100 tins ..... $6.75
Joseph Dixon, ₱ gr. $5.75 ..... 10%
Dixon's Plumbago ..... ₱ lb 8¢
Fireside ..... ₱ gr. $2.50
Gem, ₱ gr. $4.50 ..... 10%
Japanese ..... ₱ gr. $3.50
Jet Black ..... ₱ gr. $3.50
Peerless Iron Enamel, 10 oz. cans.. ₱ doz. $1.50

### Window Polish—
Benj. P. Forbes:
Glasbright, No. 2, gal pails, ₱ doz., $24.00; each, $2.50; 1 lb cans, each ..... 75¢
Glasbright Powder, bbls., ₱ lb..20¢

### Poppers, Corn—
*1 qt. Square..doz.$0.80; gro.$8.75*
*1 qt. Round..doz.$0.90; gro.$10.00*
*1½ qt. Square.doz.$1.20; gro..$12.00*
*2 qt. Square..doz.$1.50; gro..$15.00*

### Post Hole and Tree Augers and Diggers—
See also *Diggers, Post Hole, &c.*

### Posts, Steel—
Steel Fence Posts, each, 5 ft., 42¢; 6 ft., 46¢; 6½ ft., 48¢.
Steel Hitching Posts ..... each $1.30

### Potato Parers—
See *Parers, Potato.*

### Pots, Glue—
*Enameled* ..... 40%
*Tinned* ..... 50&10%

### Powder—
*In Canisters:*
*Duck, 1 lb* ..... *each 45¢*
*Fine Sporting, 1 lb* .... *each 75¢*
*Rifle, ½-lb* ..... *each 15¢*
*Rifle, 1 lb* ..... *each 25¢*
*In Kegs:*
*12½-lb. kegs* ..... *$3.50*
*25-lb. kegs* ..... *$4.50*
King's Semi-Smokeless:
Keg (25 lb bulk) ..... $6.50
Half Keg (12½ lb bulk) ..... $3.50
Quarter Keg (6¼ lb bulk) ..... $1.90
Case 24 (1 lb cans bulk) ..... $8.50
Half case (1 lb cans bulk) ..... $4.50

| King's Smokeless: | Shot Gun. | Rifle. |
|---|---|---|
| Keg (25 lb bulk) | $12.00 | $15.00 |
| Half Keg (12½ lb bulk) | 6.25 | 7.75 |
| Quarter Keg (6¼ lb bulk) | 3.25 | 4.00 |
| Case 24 (1 lb cans bulk) | 14.00 | 17.00 |
| Half case 12 (1 lb c. bk) | 7.25 | 8.75 |

### Presses—
### Fruit, Wine and Jelly—
Enterprise Mfg. Co. ..... 20@25%

### Seal Presses—
Morrill's No. 1, ₱ doz., $20.00 ..... 50%

### Pruning Hooks and Shears
See *Shears.*

### Pullers, Nail, Etc.—
Cyclops ..... 50%
Miller's Falls, No. 3, ₱ doz., $12.00.. 33⅓&10%
Morrill's No. 1, Nail Puller, ₱ doz. $20.00 ..... 50%
Pearson No. 1, Cyclone Spike Puller, each $30.00 ..... 50%
The Scranton Co. Case Lots:
No. 2B (large) ..... $5.50
No. 3B (small) ..... $5.00
Smith & Hemenway Co.:
Diamond B ..... 70%
Giant ..... 50%
Staple Pullers, Utica and Davison ..... 60%
Taylor Mfg. Co., Sampson Tack, ₱ doz. ..... $0.40

### Pulleys, Single Wheel—

| *Inch* | *1½* | *1¾* | *2* | *3* |
|---|---|---|---|---|
| *Awning or Tackle, doz* | *$0.30* | *.45* | *.60* | *1.05* |
| *Hay Fork, Swivel or Solid Eye, doz., 4 in., $1.25; 5 in., $1.75* | | | | |
| *Inch* | *2* | *2¼* | *2½* | |
| *Hot House, doz.* | *$0.65* | *.85* | *1.20* | |
| *Inch* | *1¼* | *1½* | *1¾* | *2* |
| *Screw, doz.* | *$0.16* | *.19* | *.23* | *.30* |
| *Inch* | *1¾* | *2* | *2¼* | *2½* |
| *Side, doz.* | *$0.25* | *.30* | *.55* | *.60* |
| *Inch* | *1½* | *1¾* | *2* | *2½* |

### Sash Pulleys—
*Common Frame; Square or Round End, per doz., 1¾ and 2 in.* ..... *17@20¢*
*Auger Mortise, no Face Plate, per doz., 1¾ and 2 in.* .... *20@21¢*
Acme, No. 35..1¾ in., 19¢; 2 in., 20½¢
American Pulley Co.:
Wrought Steel American Plain Axle ..... 50&10%
Wrought Steel, Eagle ..... 17@20¢
Top Notch, Electrically Welded, Nos. 3 and 4 ..... 19¢
Common Sense ..... ₱ doz. 20¢
Fox-All-Steel, Nos. 3 and 7, 2 in.... ₱ doz. 50%
Grand Rapids All Steel Noiseless..50
Niagara, No. 25, 1¾ in., 19¢; 2 in. ..... 20½¢
No. 26 Troy..1¾ in., 14½¢; 2 in., 16½¢
Star, No. 26....1¾ in., 19¢; 2 in., 20½¢
Pickle Blocks—See Blocks

### Pumps—
*Cistern* ..... 60%
*Pitcher Spout* .....75&5@75&10%
*Wood Pumps, Tubing, &c* .... 50%
Barnes Dbl. Acting (low list) ..... 45%
Barnes Pitcher Spout ..... 80
Contractors' Rubber Diaphragm, No. 2, B. & L. Block Co. ..... $16.00
Daisy Spray Pump ..... ₱ doz. $6.50
Flint & Walling's Fast Mail Hand (low list) ..... 50&5%
Flint & Walling's Fast Mail (low list) ..... 50&5%
Flint & Walling's Tight Top Pitcher ..... 80
National Specialty Mfg. Co., Measuring, Nos. 2, $6.00; 3, $5.50 ..... 30
Myers' Pumps (low list) ..... 50%
Myers' Power Pumps ..... 50%
Myers' Spray Pumps ..... 50%

### Pump Leathers—
*Plunger and Valve Leathers—Per gro.:*

| *No.* | *1* | *2* | *3* | *4* |
|---|---|---|---|---|
| | *$5.00* | *6.00* | *7.00* | *8.00* |

*Cup Leathers—Per 100:*

| *Inch* | *2½* | *3* | *3½* | *4* |
|---|---|---|---|---|
| | *$5.00* | *7.00* | *9.00* | *12.00* |

40%

### Punches—
*Saddlers' or Drive, good, doz.* ..... *50@75¢*
*Spring, single tube, good quality* ..... *$1.75*
*Revolving (4 tubes)* .... *doz. $3.50*
Bemis & Call Co.'s Cast St'l Drive..50%
Morrill's Nos. 1AA, 1A, 1B, 1C, 1D, $15.00 ..... 50%
Hercules, 1 die, each $5.00 ..... 50%
Niagara Hollow Punches ..... 40%
Niagara Solid Punches ..... 55&10%
Tinners' Hollow, P., S. & W. Co..40%
Tinners' Solid, P., S. & W. Co., ₱ doz., $1.44 ..... 40&10%

## Rail—Barn Door, &c.—
*Sliding Door, Painted Iron,* ..... *2½@2¾¢*
*Sliding Door, Wrought Brass, 1⅛ in., lb., 36¢* ..... 30%
Cronk's:
Double Braced Steel Rail..₱ ft. 2¾¢
O. N. T. Rail ..... 2¾¢
Griffin's:
XXX, ₱ 100 ft., 1 x 3 16 in., $3.25; 1¼ x 3-16 in., $3.75.
Hinged Hanger, ₱ 100 ft., 1 x 3 16 in., $3.50; 1¼ x 3-16 in., $4.00.
Lane's:
Hinged Track, ₱ 100 ft. ..... $3.45
O. N. T., ₱ 100 ft., 1 in., $3.12½; 1¼ in., $3.45; 1½ in., $4.00.
Standard, 1¼ in. ..... ₱ 100 ft. $4.00
Lawrence Bros.:
1 x 3-16 in., ₱ 100 ft., $7.50; 1¼ x 3-16 in., $8.75 ..... 55&7½%
McKinney's:
Hinged Hanger Track, ₱ ft., 11c 60&5%
1 x 3-16 Track ..... 55&7½%
Myers' Stayon Track ..... 60&5%
Richards Mfg. Co.:
Common, 1 x 3 16 in., $3.00; 1⅛ x 3-16, $3.25; 1¼ x 3-16, $3.50.
Special Hinged Hanger Rail..60&10%
Lag Screw Rail, No. 65 ..... 50%
Gauge Trolley Track, ₱ ft., No. 31, 9¢; No. 32, 14¢; No. 33, 21¢.
No. 50 ..... 60&10%
Nos. 61, $3.00; 62, $3.25; 63, $3.50; 64, $4.00; 45, $3.25; 46, $3.50; 49, No. 1, $3.25; 49, No. 2, $3.50.

### Rakes—
*NOTE.—Many goods are sold at net prices.*
Fort Madison Red Head Lawn....$3.25
Fort Madison Blue Head Lawn....$2.70
Cronk's:
Steel Garden; Champion, ₱ doz., 12-tooth, $3.75; 14-tooth, $4.00; 16-tooth, $4.25; Ideal ₱ doz., 12-tooth, $3.00; 14-tooth, $3.30; 16-tooth, $3.60.
Victor, 12-tooth, $2.25; 14-tooth, $2.50; 16-tooth, $2.75.
Queen City Lawn, ₱ doz., 20 teeth, $2.85; 24, $3.00 ..... net
Anticlog Lawn ₱ do ..... $4.00
Malleable Garden ..... 70&10%
Ideal Steel Garden, ₱ doz., 12 teeth, $15.00; 14, $16.00; 16, $18.00 ..... 80
Kohler's:
Jumbo Lawn, 36-tooth....₱ doz. $5.00
Lawn Queen, 20-tooth....₱ doz. $2.85
Lawn Queen, 24 tooth....₱ doz. $3.00
Paragon, 20 tooth ..... ₱ doz. $2.65
Paragon, 24 tooth ..... ₱ doz. $2.75
Steel Garden, 14 tooth.. ₱ doz. $2.00
Malleable Garden, 14 tooth, ₱ doz. $1.75@2.00

### Rasps, Horse—
Disston's ..... 75
Heller Bros.' ..... 70&5@70&10&5
Liveright Bros.' Gold Medal.70&10@75
McCaffrey's American Standard ..... 60&10&5
New Nicholson ..... 70&10@75
See also Files.

### Razors—
John Engstrom Swedish ..... 65
Sharp Shaver ..... 60
Fox Razors, ₱ doz. No. 12, $24.00; No. 11, $27.00; No. 82, Platina, $36.00. } 25%

### Reels, Fishing—
Hendryx:
M 6, Q 6, A 6, B 6, M 9½, M 16, Q 16, A 16, B 16, 1068, Rubber Pomilo Nickeled Pomilo ..... 20
Aluminum German Silv., Bronze..25
1240 N, 124 N ..... 20
5994 N, 96 N, 6 RM, G 9 ..... 25
4 N, 6 PN, 24 N, 26 PN ..... 20%
2901 P, 2901 PN, 33⅓
0924 N, 02984 N, 33⅓
002904 PN, 33⅓; 892 N, 33⅓
986 PN, 2904 N, 974 PN ..... 25
5009 PN, 5009 N ..... 20
Competitor, 102 P, 102 PN, 202 P, 202 PN, 102 PR, 202 PR ..... 20%
304 P, 304 PN, 00304 P, 00304 PN 33⅓

### Registers—*List July 1, 1903.*
*Japanned, Electroplated and Bronzed* ..... 70%
*White Porcelain Enamel..*50&10%
*Solid Brass or Bronze Metal..*40%

### Revolvers—
*Single Action* ..... $3@$1.00
*Double Action, except 44 cal.$2.00*
*Double Action, 44 caliber...$2.00*
*Automatic* ..... $4.00
*Hammerless* ..... $4.50

### Riddles, Hardware Grade
*16 in.* ..... *per doz.$2.50@$2.75*
*17 in.* ..... *per doz.$2.75@$3.00*
*18 in.* ..... *per doz.$3.00@$3.25*

### Rings and Ringers—
### Bull Rings—

| | *2* | *2½* | *3 inch.* |
|---|---|---|---|
| *Steel* | *$0.70* | *0.75* | *0.80 doz.* |
| *Copper* | *$1.10* | *1.25* | *1.65 doz.* |

### Hog Rings and Ringers—
*Hill's Rings, gro. boxes.$4.50@$4.50*
*Hill's Ringers, Gray Iron, doz., 60@75¢*
*Hill's Ringers, Malleable Iron, doz.80@95¢*
*Blair's Rings..per gro.$5.00@$5.50*
*Blair's Ringers...per doz.75@90¢*

### Rivets and Burrs—
*Copper* ..... 50@50&10%
*Carriage, Coopers', Tinners', &c.:*
*Black* ..... 70&10%
*Metallic Tinned* ..... 70%

### Bifurcated and Tubular—
*Assorted in Boxes.*
*Bifurcated, per doz. boxes, pasteboard boxes, 50 count, 23@25¢; Tin boxes, 100 count, 29@32¢.*
*Tubular, per doz. boxes, 50 count, 29@32¢; 100 count, 51@58¢.*

### Rollers—
Cronk's Stay, No. 50 ..... $1.00
Cronk's Brinkerhoff No. 55, $0.60; No. 56, $0.75; No. 60 ..... $0.75
Lane's Stay ..... 40%
Richards' Stay:
Handy Adj. and Reversible No. 53.75¢
O. K. Adj. and Reversible No. 58.50¢
Lag Screw, Nos. 55 and 57 ..... 50
Underwriters', Nos. 59, 60 ..... 50%
Favorite, No. 54 ..... 60%

### Rope—
*Manila, 7-16 in. diam. and larger:*
*Pure* ..... *lb. 9½¢*
*Sisal, 7-16 in. diam. and larger:*
*Pure* ..... *lb. 7¢*
*Sisal, Hay, Hide and Bale Ropes, Medium and Coarse:*
*Pure* ..... *lb. 7½@7¾¢*
*Sisal, Tarred, Medium Lath Yarn:*
*Pure* ..... *lb. 6½@6¾¢*
*Cotton Rope:*
*Best, ¼ in. and larger...18@20¢*
*Medium, ¼-in. and larger.16@17¢*
*Common, ¼-in. and larger..10¢*
*In coils, ½¢ advance.*
*Jute Rope:*
*Thread, No. 1, ¼-in. and up, lb.* ..... *6¼¢*
*Thread, No. 2, ¼-in. and up, lb.* ..... *5¾¢*

### Wire Rope -
*Galvanized* ..... 37½@2½%
*Plain* ..... 45@2½%

### Ropes, Hammock—
Covert Mfg. Co.:
Jute, 35; Sisal ..... 20

### Rules
*Boxwood* ..... 60@60&10%
*Ivory* ..... 35&10@35&10&5%
Chapin Stephens Co.:
Boxwood ..... 60%
Flexifold ..... 40%
Ivory ..... 25@25&10%
Miscellaneous ..... 50@50&10%
Stephens' Combination ..... 55%
Stationers' ..... 50&5&10%
Keuffel & Esser Co.:
Folding, Wood ..... 55&10%
Folding, Steel ..... 55&10%
Lufkin's Steel ..... 55&10%
Lufkin's Lumber ..... 55&10%
Upson Nut Co.:
Boxwood ..... 60&10&10%
Ivory ..... 35&10&5&10&10%

## Sash Balances—
See *Balance, Sash.*

### Sash Locks—See *Locks, Sash.*

### Sash Weights—
See *Weights, Sash.*

### Sausage Stuffers or Fillers
See *Stuffers or Fillers, Sausage.*

### Saw Frames—
See *Frames, Saw.*

### Saw Sets—See *Sets, Saw.*

### Saw Tools—See *Tools, Saw.*

### Saws—

Atkins':
Circular ..... 45%
Band ..... 50@50&10%
Butcher Saws ..... 50%
Cross Cuts ..... 35
One-Man Cross Cut ..... 40%
Narrow Cross Cut ..... 50%
Hand, Rip and Panel ..... 35&5
Miter Box and Compass ..... 40%
Mulay, Mill and Drag ..... 45%
Wood Saws ..... 40&10%
Chapin-Stephens Co.:
Turning Saws and Frames. 30@30&10%
Diamond Saw & Stamping Works:
Sterling Kitchen Saws ..... 30&10&10%
Disston's:
Circular, Solid and Ins'ted Tooth. 50%
Band, 2 to 18 in. wide ..... 60%
Band, ¼ to 1¾ ..... 60%
Crosscuts ..... 45%
Narrow Crosscuts ..... 50%
Mulay, Mill and Drag ..... 50%
Framed Woodsaws ..... 25%
Woodsaw Blades ..... 25%
Woodsaw Rods, Tinned ..... 15%
Hand Saws, Nos. 12, 99, 9, 16, d100. D8, 120, 76, 77, 8 ..... 25%
Hand Saws, Nos. 7, 107, 107½, 3, 1, 0, 00, Combination ..... 30%
Compass, Key Hole, &c ..... 25%
Butcher Saws and Blades ..... 30%
C. E. Jennings & Co.'s:
Back Saws ..... 16⅔%
Butcher Saws ..... 25&7½%
Compass and Key Hole Saws, 33⅓&7½%
Framed Wood Saws ..... 25&7½%
Hand Saws ..... 12½%
Wood Saw Blades ..... 33⅓&7½%
Millers Falls:
Butcher Saws ..... 15&10%
Star Saw Blades ..... 15&10%
Massachusetts Saw Works:
Victor Kitchen Saws ..... 40&10&50%
Butcher Saws Blades ..... 35@40%
Peace & Richardson's Hand Saws. 30%
Simonds':
Circular Saws ..... 45%
Crescent Ground Cross Cut Saws. 30%
One-Man Cross Cuts ..... 40&10%
Gang Mill, Mulay and Drag Saws. 45%
Band Saws ..... 50%
Back Saws ..... 25@25&7½%
Butcher Saws ..... 35@35&7½%
Hand Saws ..... 25@25&7½%
Hand Saws, Bay State Brand ..... 45%
Compass, Key Hole, &c. .25@25&7½%
Wood Saws ..... 40&7½%
Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws ..... 50%

### Hack Saw Blades and Frames—

Atkins' Hack Saw Blades A A A. .25%
Disston's:
Concave Blades ..... 25%
Keystone Blades ..... 35%
Hack Saw Frames ..... 30%
Simonds, 25%; The Best, 35%; Culley ..... 35%
C. E. Jennings & Co.'s:
Hack Saw Frames, Nos. 175, 180 .... 40&7½%
Hack Saws, Nos. 175, 180, complete, 40&7½%
Goodell's Hack Saw Blades .... 40&10%
Griffin's Hack Saw Frames. .35&5&10%
Griffin's Hack Saw Blades .... 35&5&10%
Star Hack Saws and Blades .... 15&10%
Sterling Hack Saw Blades. .30&10&5%
Sterling Hack Saw Frames. .30&10&10%
Sterling Power Hack Saw Machines, each, No. 1, $25.00; No. 2, $30.00. .10%
Victor Hack Saw Blades ..... 20%
Victor Hack Saw Frames ..... 40%
Whitaker Mfg. Co.:
National Hand Blades ..... 40%
National Hand Frames ..... 30&5%
National Power Blades ..... 30&10%

### Scroll—

Barnes, No. 7, $15 ..... 25%
Barnes' Scroll Saw Blades ..... 40%
Barnes' Velocipede Power Scroll Saw, with [illegible] attachment, $18; with boring attachment, $20 ..... 20%
Lester, complete, $10.00 ..... 15&10%
Rogers, complete, $3.50 and $4.00 .. 15&10%

### Scales—

*Union Platform, Plain. $2.10@2.20*
*Union Platform, Stpd. $2.20@2.30*
Chatillon's:
Eureka ..... 25%
Favorite ..... 40%
Grocers' Trip Scales ..... 50%
The Standard Portables ..... 40%
The Standard R. R. and Wagon ..... 50&10%

### Scrapers—

*Box, 1 Handle ..... doz. $1.85@2.10*
*Box, 2 Handle ..... doz. $2.35@2.50*
*Ship ... Light, $2.00; Heavy, $4.50*
Chapin-Stephens Co., Box. .30@30&10%
Richards Mfg. Co., Foot ..... 60%

### Screws—Bench and Hand

*Bench, Iron, doz., 1 in., $2.50@* [illegible]
*Bench, Wood ..... 20@20&10%*
*Hand, Wood .... 70&10@70&10&10%*
Chapin-Stephens Co., Hand ..... 70@70&10&2½%

### Coach, Lag and Hand Rail—

*Lag, Cone Point ... 80&5@80&10%*
*Coach, Gimlet Point .. 80@80&5%*
*Hand Rail ..... 70&10@75%*

### Jack Screws—

*Standard List ..... 70&10@75%*
Millers Falls ..... 50&10&10
Swett Iron Works ..... 70@75

### Machine—

***Cut Tread, Iron, Brass or Bronze:***
***Flat Head or Round Head, 50@50&10%***
***Fillister Head ..... 40@40&10%***

Jointers, $7.00 ...

*Rolled Thread, F. H. or R. H., Iron ..... 75&10%*
*F. H. or R. H., Brass, Nos. 8 to 14 ..... 65&10%*

### Set and Cap—

*Set (Iron) ..... 75&10&7½%*
*Set (Steel), net advance over Iron ..... 25%*
*Sq. Hd. Cap ..... 70&10&7½%*
*Hex. Hd. Cap ..... 70&10&7½%*
*Rd. Hd. Cap ..... 50&7½%*
*Fillister Hd. Cap ..... 60&7½%*

### Wood—

*List July 23, 1903.*
*Flat Head, Iron ..... 87½&5@..%*
*Round Head, Iron ..... 85&5@..%*
*Flat Head, Brass ..... 80&5@..%*
*Round Head, Brass .. 77½&5@..%*
*Flat Head, Bronze .... 75&5@..%*
*Round Head, Bronze. 72½&5@..%*
*Drive Screws ..... 87½&5@..%*

### Scroll Saws—

See *Saws, Scroll.*

### Scythes— *Per doz.*

*Grass, No. 1, Plain ..... $7.00*
*Clipper, Bronzed Webb ..... $7.25*
*No. 3 Clipper, Pol'd Webb ... $7.50*
*No. 6 Clipper and Solid Steel. $7.75*
*Bush, Weed and Bramble, Nos. 11, 12 and 13 ..... $7.25*
*Grain, No. 1 ..... $9.00@9.50*
*Bronzed Webb. No. 1 ... $9.25@9.75*
*Nos. 3 and 4 Clipper, Grain, $9.50@10.00*
*Solid Steel, No. 6 .... $10.00@10.50*

### Seeders, Raisin—

Enterprise ..... 25@30%

### Sets— Awl and Tool—

Fray's Tool Handles, Nos. 1, $12; 2, $16; 3, $12 ..... 50%
Millers Falls Adj. Tool Handles, No. 1, $12; No. 4, $12; No. 5, $18. .20&10%

### Garden Tool Sets—

Ft. Madison Three Plows, Hoe, Rake and Shovel ..... ℔ doz. sets $9.00

### Sets, Nail—

*Octagon ..... gro. $3.50@3.75*
Buck Bros. ..... 27½%
Mayhew's ..... ℔ gro. $9.00
Snell's Corrugated, Cup Pt. .... 40&10%
Snell's Knurled, Cup Pt. ..... 40&10%
Victor Knurled, Cup Pt. ... ℔ gro. $7.50

### Rivet—

*Regular list ..... 75@75&10%*

### Saw—

Atkin's:
Criterion ..... 40%
Adjustable ..... 40%
Disston's Star, Monarch and Triumph ..... 30%
Morrill's No. 1 ..... $15.00
Nos. 3 and 4, Cross Cut .... $20.60
No. 5, Mill ..... $30.00
Nos. 10, 11, 95 ..... $15.60
No. 1 Old Style ..... $10.00
Special ..... $16.25
} 50%
Giant Royal Cross Cut ..... ℔ doz. $7.50
Royal, Hand ..... ℔ doz. $4.50
Taintor Positive ..... ℔ doz. $6.75

### Shaving—

Fox Shaving Sets, No. 30 ..... ℔ doz., net, $24.00
Smith & Hemenway Co.'s ..... 75%

### Sharpeners, Knife—

Pike Mfg. Co.:
Fast Cut Pocket Knife Hones, ℔ doz. ..... $1.50
Mounted Kitchen Sand Stone, ℔ doz. ..... $1.50
Natural Grit Carving Knife Hones, ℔ doz. ..... $3.00
Quick Cut Emery Carving Knife Hones, ℔ doz. ..... $1.50
Quick Edge Pocket Knife Hones, ℔ doz. ..... $2.50
} 50%

### Skate—

Smith & Hemenway Co., Eureka. .50%

### Shaves, Spoke—

*Iron ..... doz. $1.25*
*Wood ..... doz. $2.00*
Bailey's (Stanley R. & L. Co.) ..... 45%
Chapin-Stephens Co. ..... 30@30&10%
Goodell's, ℔ doz. $9.00 ..... 15&10%

### Shears—

| | 7 | 8 | 9 in. |
|---|---|---|---|
| *Cast Iron..* | | | |
| *Best* | $16.00 | 18.00 | 20.00 gro. |
| *Good* | $13.00 | 15.00 | 17.00 gro. |
| *Cheap* | $5.00 | 6.00 | 7.00 gro. |

*Straight Trimmers, &c.:*
*Best quality Jap .... 70@70&10%*
*Best quality Nickel. .60@60&10%*
*Tailors' Shears ..... 40@40&10%*
Acme Cast Shears ..... 40@40&5%
Heinisch's Tailor's Shears ..... 10%
National Cutlery Co.'s Nickel Plated, 60&10%; Japan Handles ..... 70&10%
Wilkinson Shear & Cutlery Co.:
Sheep, 1900 list ..... 30&10&5%
Grass ..... 50&10%
Horse or Mule ..... 50&10%
J. Wiss & Sons Co.:
Best Quality Jap'd ..... 60&10%
Best Quality Nickeled ..... 50&10%
Tailors' ..... 25%

### Tinners' Snips—

*Steel Blades ..... 20&5@20&10%*
*Steel Laid Blades ..... 40&10@50%*

Acme Cast Snips ..... 40@45&5%
Forged Handles, Steel Blades, Berlin ..... 50%
Heinisch's Snips ..... 40%
Jennings & Griffin Mfg. Co.'s 6½ to 10 in. ..... 33⅓&7½%
National Cutlery Co.'s Forged Steel. 50%
Niagara Snips ..... 40%
P., S. & W. Forged Handles, 25%; W. R. W. ..... 50%
J. Wiss & Sons Co.:
Wiss Forged Steel ..... 25%

### Pruning Shears—

Cronk's Hand Shears ..... 33⅓%
Cronk's Wood Handle Shears .... 33⅓%
Disston's Combined Pruning Hook and Saw, ℔ doz. $18.00 ..... 25%
Disston's Pruning Hook only, ℔ doz., $12.00 ..... 25%
J. T. Henry Mfg. Co.:
Pruning Shears, all grades ..... 40%
P., S. & W. Co. ..... 40&10%
Columbian Cutlery Co.:
Hedge, Wilcut Brand ..... 60&10%
Lawn and Border, Wilcut Brand, 60&10%

### Sheaves— Sliding Door—

Reading ..... 40%
R. & E. list ..... 15%

### Sliding Shutter—

Reading list ..... 40%
R. & E. list ..... 15%

### Shells—Shells, Empty—

Brass Shells, Empty:
Climax, 10 and 12 gauge ..... 60&5%
Club, Rival, 65&5%; First Quality, 60&5%
Paper Shells, Empty:
New Rapid, 10, 12, 16 and 20 gauge, 25&10%
Climax, 10 and 12 gauge; Acme and Magic, 10, 12, 16 and 20 gauge; Ideal, 10, 12, 16 and 20 gauge; Leader grade ..... 25&5%
Union, League, 10 and 12 gauge, Rival Grade ..... 25%
New Climax, Defiance, 10, 12, 14, 16 and 20 gauge; Climax, 14, 16 and 20 gauge ..... 20%
Challenge, Monarch, 10, 12, 16 and 20 gauge; League, Union, 14, 16 and 20 gauge; Repeater Grade. .20%

### Shells, Loaded—

*Loaded with Black Powder. .40%*
*Loaded with Smokeless Powder, medium grade ..... 40&5%*
*Loaded with Smokeless Powder, high grade ..... 40&10&10%*
Union Metallic Cartridge Co.:
New Club, Black Powders ..... 40%
Nitro Club, Smokeless Powders. 40&5%
Arrow, Smokeless Powders. 40&10&10%
Winchester:
Smokeless Repeater Grade ..... 40&5%
Smokeless Leader Grade ... 40&10&10%
Black Powder ..... 40%

### Shingles, Metal— Per Sq.

Edwards Mfg. Co.:

| | Painted. | Galv. |
|---|---|---|
| 14 x 20 | $4.25 | $6.00 |
| 10 x 14 | 4.50 | 6.25 |
| 7 x 10 | 4.75 | 6.50 |

Wheeling Corrugating Co.:

| | | |
|---|---|---|
| Dixie, 14 x 20 in. | $4.25 | $5.50 |
| Dixie, 10 x 14 in. | 4.50 | 6.00 |
| Dixie, 7 x 10 in. | 5.00 | 6.75 |

### Shoes, Horse, Mule, &c.—

*F.o.b. Pittsburgh:*
*Iron ..... per keg. $4.10*
*Steel ..... per keg. $3.85*
Burden's, all sizes ..... ℔ keg $3.90

### Shot—

*25-lb. bag.*
*Drop, up to B ..... $1.75*
*Drop, B and larger ..... 2.00*
*Buck ..... 2.10*
*Chilled ..... 2.10*
*Dust ..... 2.30*

### Shovels and Spades—

*Association List, Nov. 15, 1902. 40%*
Avery Stamping Co. ..... 40%

### Snow Shovels—

*Long Handle ..... $3.25@$3.50*
*Wood and Mall, D Handle, $3.75@$4.00*

### Sieves and Sifters—

*Hunter's Imitation, gro. .... $9.50*
*Hunter's Genuine, per gro. . $12.00*

### Sifters, Ash—

Acme Ball Bearing Sales Co., Acme Automatic Ash Sifter, each, $3.25; ℔ doz. ..... $39.00

### Sieves, Seamless Metallic

| | *Per dozen.* | | | |
|---|---|---|---|---|
| *Mesh* | *1¼* | *16* | *18* | *20* |
| *Iron Wire* | *$1.05* | *1.05* | *1.10* | *1.20* |
| *Tinned Wire* | *$1.15* | *1.15* | *1.20* | *1.30* |

### Sieves, Wooden Rim—

*Nested, 10, 11 and 12 Inch.*
*Mesh 18, Nested .... doz. $0.90@0.95*
*Mesh 20, Nested .... doz. $1.00@1.05*
*Mesh 24, Nested .... doz. $1.30@1.40*

### Sinks, Cast Iron—

*Painted, Standard list:*
*12 x 12 to 22 x 36 in ..... 60%*
*20 x 24 to 24 x 50 in ..... 50%*
*24 x 60 to 24 x 120 in ..... 30%*
Barnes' low list ..... 60%
***NOTE.—There is not entire uniformity in lists used by jobbers.***

### Skeins, Wagon—

*Cast Iron ..... 70@75&10%*
*Steel ..... 40@45%*

### Slates, School—

*Factory Shipments.*
*"D" Slates ..... 50@50&10%*

*Eureka, Unexcelled Noiseless .. 60&7 tens.*
*Victor A, Noiseless. 60&4 tens &5%*

### Slaw Cutters— See *Cutters.*

### Snaps, Harness—

*German ..... 40@40&10%*
Covert Mfg. Co.:
Derby, 25%; Yankee, 30&2%; Yankee Roller, 30&2%.
High Grade, 40%; Trojan ..... 40%
Jockey ..... 25%

### Snaths—

*Scythe ..... 60%*

### Snips, Tinners— See *Shears.*

### Spoons and Forks—

### Silver Plated—

*Good Quality ..... 50&10@60&5%*
*Cheap ..... 60@60&10%*
International Silver Co:
1847 Rogers Bros. ..... 40&10
Rogers & Bro., William Rogers Eagle Brand ..... 50&10%
Anchor, Rogers Brand ..... 60%
Wm. Rogers & Son ..... 60&10%

### Miscellaneous

*German Silver ..... 60@60&5%*

### Tinned Iron—

*Teas ..... per gro. 50@55¢*
*Tables ..... per gro. $0.90@$1.00*

### Springs— Door—

Bardsley's Spring and Check ..... 40%
Chicago (Coil) ..... 40&10%
Gem (Coil) ..... 20%
Pullman Door and Gate ..... 10%
Reliance (Coil) ..... 40&10%
Star (Coil) ..... 35%
Torrey's Rod, 39 in. ..... ℔ doz. $1.00

### Carriage, Wagon, &c.—

*1¼ in. and Wider: Per 100 lb.*
*Black ..... $4.75@$5.00*
*Half Bright ..... $4.75@$5.00*
*Bright ..... $5.25@$5.50*
*Painted Seat Springs:*
*1½ x 2 x 26 .... per pair. 45@47¢*
*1½ x 3 x 28 .... per pair. 68@71¢*

### Sprinklers, Lawn—

American Foundry & Mfg. Co.:
Cactus, 65%; Japanese, 70%; National, ℔ doz. ..... $12.00
Enterprise ..... 25@30%
Philadelphia No. 1, ℔ doz. $12; No. 2, $15; No. 3, $20 ..... 30%

### Squares—

*Nickel plated .. } List Jan. 5, 1900.*
*Steel and Iron. } 80@80&5%*
*Rosewood Hdl. Try Square and T-Bevels ..... 60&10&10@70%*
*Iron Hdl. Try Squares and T-Bevels ..... 40&10@40&10&10%*
Disston's Try Squares and Bevels, Rosewood Handle, 60 & 10%; Iron Stock and Bevel ..... 15%

### Squeezers, Lemon

*Wood, Porcelain Lined:*
*Cheap ..... doz. $1.00*
*Good Grade ..... doz. $1.25*
*Tinned Iron ..... doz. $0.75@1.00*
*Iron, Porcelain Lined ... doz. $1.75*
Victor, ℔ gro. ..... $9.00

### Staples—

*Barbed Blind ..... 85&5@85&10%*
*Electricians' ..... 80&10&10@85%*
*Fence Staples, Polished, $2.05; Galvanized ..... $2.35*
*Poultry Netting Staples ..... per lb. 3¼@3½¢*

### Steels, Butchers'—

Dick's ..... 30%
Foster Bros.' ..... 30%

### Steelyards— .... 30@30&10%

### Stocks and Dies—

*Blacksmiths' ..... 50@50&10%*
Curtis Rev'ble Ratchet Die Stock. .25%
Derby Screw Plates ..... 25%
Green River ..... 25%
Lightning Screw Plate ..... 25%
Little Giant ..... 25%
Reece's New Screw Plate ..... 25%

### Stoners, Cherry—

Enterprise ..... 25@30%

### Stones, Axe—

Pike Mfg. Co., Axe Stones (all kinds) ..... 33⅓%

### Glass Cutters' Stones—

Pike Mfg. Co., Glass Cutters' Stones and Supplies ..... 40%

### Stones, Oil, &c.—

Pike Mfg. Co., 1907 list: ℔ lb.
Arkansas St. No. 1, 3 to 5½ in. $2.80
Arkansas St. No. 1, 5½ to 8 in. $3.50
Arkansas Slips No. 1 ..... $4.00
Lily White Washita, 4 to 8 in. 60¢
Rosy Red Washita, 4 to 8 in. 60¢
Washita St., Extra, 4 to 8 in. 50¢
Washita St., No. 1, 4 to 8 in. 40¢
Washita St., No. 2, 4 to 8 in. 25¢
Lily White Slips ..... 90¢
Rosy Red Slips ..... 90¢
Washita Slips, Extra ..... 80¢
Washita Slips, No. 1 ..... 70¢
Washita Slips, No. 2 ..... 40¢
} 33⅓%
India Oil Stones (entire list). .33⅓%
Quickcut Emery and Corundum Oil Stone, Double Grit ..... 40%
Quickcut Emery and Corundum Axe Stone, Double Grit ..... 33⅓%
Quickcut Emery Rubbing Bricks. .40%
Hindostan No. 1, R'g'lar. ℔ lb 8¢
Hindostan No. 1 Small. ℔ lb 10¢
Turkey Oil Stones, Extra, 5 to 8 in. ..... ℔ lb 80¢
Queer Creek Stones, 4 to 8 in. 20¢
Queer Creek Slips ..... 10¢
Sand Stone ..... 6¢
} 33⅓%

### Scythe Stones—

Pike Mfg. Co., 1907 list:
Black Diamond S. S. ₱ gro. $12.00
Lamoille S. S. ₱ gro. $11.00
White Mountain S. S. ₱ gro. $9.50
Green Mountain S. S. ₱ gro. $7.00
Extra Indian Pond S. S. ₱ gro. $8.00
No. 1 Indian Pond S. S. ₱ gro. $7.50
No. 2 Indian Pond S. S. ₱ gro. $5.00
Leader Red End S. S. ₱ gro. $5.00
Quick Cut Emery ₱ gro. $10 00
Pure Corundum ₱ gro. $18.00
Crescent $7.00
Emery Scythe Rifles, 2 Coat. $8.80
Emery Scythe Rifles, 3 Coat. $11.00
Emery Scythe Rifles, 4 Coat. $13.20
Balance of 1904 list 33⅓%
Electro (Artificial), ₱ gro., $12.00 33⅓%
Lightning (Artificial), ₱ gro., $8.00 33⅓%

### Stoppers, Bottle—

Victor Bottle Stoppers ₱ gro. $9.00

### Stops—Bench—

Millers Falls 15&10%
Morrill's, ₱ doz., No. 1, $10.00 50%
Morrill's, No. 2, $12.50 50%

### Door—

Chapin-Stephens Co. 50@50&10%

### Plane—

Chapin-Stevens Co. 20%

### Straps—Box—

Acme Embossed, case lots. 20&10&10%
Carr's Universal, case lots. 20&10&10%

### Stretchers, Carpet—

*Cast Iron, Steel Points . . doz. 55¢*
*All Steel Socket . . . doz. $2.00@2.25*
Excelsior Stretcher and Tack Hammer Combined, ₱ doz., $6.00 20%

### Stuffers, Sausage—

Enterprise Mfg. Co., Stuffers and Lard Presses 25@25&7½%
National Specialty Co., list Jan. 1, 1907 30&5%
P. S. & W. Co. 40&10&5%

### Sweepers, Carpet—

Per doz.—

Bissell Carpet Sweeper Co.: Ball Bearing Superba, $36.00; Triumph, $33.00; Parlor Queen, $30.00; Elite, $29.00; Boudoir, $27.00; American Queen, $27.00; Ideal, $25.00; Gold Medal, $24.00; Primier, $24.00; Prize, $24.00; Welcome, $24.00; Grand Rapids, Nickel, $24.00; Japan, $22.00; Crystal, $36.00; Grand, $36.00; Parlor Grand, $48.00; Club, $54.00; Hall, $60.00; Standard Nickel, $22.00; Standard Japan, $20.00; Crown Jewel, Nickel, $21.00; Crown Jewel, Japan, $19.00; Junior Nickel, $22.00; Junior, Japan, $20.00.

*NOTE.—Rebates: 50c per dozen on three dozen lots; $1 per dozen on five-dozen lots; $2 per dozen on ten-dozen lots*

### Tacks, Finishing Nails, &c.

*American Carpet Tacks . . . 90&40%*
*American Cut Tacks . . . . . 90&40%*
*Saddles' Cut Tacks . . . . . 90&40%*
*Saddles' Upholsterers' . . . . 90&50%*
*Gimp Tacks . . . . . 90&50%*
*Lace Tacks . . . . . 90&50%*
*Trimmers' Tacks . . . . . 90&40%*
*Lasting Glass Tacks . . . . . 65%*
*Bill Posters' and Railroad Tacks, 90&50&10%*
*Hungarian Nails . . . . . 80&20%*
*Finishing Nails . . . . . 70%*
*Trunk and Cigar Nails . . . 80&10%*

*NOTE.—The above prices are for Straight Weights.*

### Miscellaneous—

*Double Pointed Tacks, 90&6 tens@—%*
See also Nails, Wire.

### Tanks, Oil and Gasoline—

Wilson & Friend Co.:

| | Gasoline | Oil |
|---|---|---|
| [illegible] | $2.75 | $3.00 |
| [illegible] | $3.50 | $4.00 |
| [illegible] | $5.00 | $5.75 |

### Tapes, Measuring—

*American Asses' Skin . . . . 50@—%*
*Patent Leather . . . . . 25@30&5%*
*Steel . . . . . 33⅓&5%*
*Chesterman's . . . . . 25@25&5%*
Kraft & Esser Co.:
Favorite, Ass Skin . . . . . 40&10@50%
Favorite, Duck and Leather . . . . . 25&5@25&10%
Metallic and Steel, lower list, 35@5&5. Pocket, 35@35&5%.
Lufkin:
Ass Skin . . . . . 40&10@50%
[illegible] . . . . . 30@30&5%
Pocket Bend, Leather . . . 25&5@25&10%
Pocket . . . . . 40@40&5%
Steel . . . . . 33⅓@35%
Warren & Hilger:
Chesterman's Metallic, No. 34L, . . . . . 25%
Chesterman's Steel, No. 1038L, etc. . . . . 35%

### Teeth, Harrow—

*Steel Harrow Teeth, plain or headed, ¾ inch and larger, per 100 lb. . . . . $2.55@$2.80*

### Thermometers—

*Tin Case, Cabinet, Flange, Dairy, &c. . . . . 30@35%*

### Ties, Bale—Steel Wire—

*Single Loop . . . . . 82½&10%*
*Monitor, Cross Head, &c. 70&2½%*

### Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

### Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

### Tire Benders, Upsetters, &c.

See *Benders and Upsetters, Tire.*

### Tools—Coopers'—

L. & I. J. White . . . . . 20@20&5%

### Haying—

Myers' Hay Tools . . . . . 50%

### Ice Tools—

Gifford-Wood Co. . . . . 15%

### Miniature—

Smith & Hemenway Co.'s, Davidson, ₱ doz., Nickel Plated, $1.50; Gold Plated . . . . . $2.00

### Saw—

Atkins' Cross Cut Saw Tools . . . . 35&5%
Simond's Improved . . . . . 33⅓%
Simonds' Crescent . . . . . 30%

### Ship—

L. & I. J. White . . . . . 25%

### Transom Lifters—

See *Lifters, Transom.*

### Traps—Fly—

*Balloon, Globe or Acme, doz., $1.15@$1.25; gro. . . . . $11.50@12.00*
*Harper, Champion or Paragon, doz., $1.25@1.40; gro. $13.00@13.50*

### Game—

*Imitation Oneida . . . . . 75@10%*
Newhouse . . . . . 50&5%
Hawley & Norton . . . . . 65&10%
Victor . . . . . 75@75&10%
Oneida Community Jump . . . . . 70&5%
Stop Thief . . . . . 60%
Tree Trap . . . . . 60%
Hector . . . . . 75@75&10%

### Mouse and Rat—

*Mouse, Wood, Choker, doz. holes, 12¢*
*Mouse, Round or Square Wire, doz. 85@90¢*
Marty French Rat and Mouse Traps (Genuine), ₱ doz.:

| | Crate lots. | Small lots. |
|---|---|---|
| No. 1, Rat | $11.50 | $14.50 |
| No. 3, Rat | $5.75 | $6.50 |
| No. 3½, Rat | $4.70 | $5.25 |
| No. 5, Mouse | $2.25 | $3.00 |

Animal Trap Co.:
Out o' Sight, Mouse, ₱ doz. . . . . $0.66
Out o' Sight, Rat, ₱ doz. . . . . 1.20
Easy Set, Mouse, ₱ doz. . . . . .33
Easy Set, Rat, ₱ doz. . . . . .85
Out o' Sight Chockers, ₱ doz. holes . . . . . .12
Out o' Sight, Tin, 5-hole, ₱ doz. traps . . . . . .75

### Trowels—

Disston Brick and Pointing . . . . . 25%
Disston Plastering . . . . . 20%
Disston "Standard Brand" and Garden Trowels . . . . . 30%
Kohler's Steel Garden Trowels, ₱ gro., 5 in., $4.80; 6 in., $6.00.
Never-Break, Forged Steel Garden Trowels, in bulk, net ₱ gro. $5.50
In 1 doz. boxes . . . . . ₱ gro. $6.00
Woodrough & McParlin, Plastering 25%

### Trucks, Warehouse, &c.—

B. & L. Block Co.:
New York Pattern . . . . . 50&10%
Western Pattern . . . . . 60&10%
Handy Trucks . . . . . ₱ doz. $16.00
Grocery . . . . . ₱ doz $15.00
McKinney Trucks . . . . . each, net $10.00
Model Stove Trucks . . . . . ₱ doz $18.50

### Tubs, Wash—

*M'f'gr's list, price per gross.*

| No. | 0 | 1 | 2 | 3 |
|---|---|---|---|---|
| *Galvanized* | $67 | $79 | $89 | $99 |

*10&7½&5&5%*

### Twine, Miscellaneous—

*Flax Twine:*
*No. 9, ¼ and ½-lb. Balls . 21@23¢*
*No. 12, ¼ and ½-lb. Balls . 19@21¢*
*No. 18, ¼ and ½-lb. Balls . 16@18¢*
*No. 24, ¼ and ½-lb. Balls . 15½@17½¢*
*No. 36, ¼ and ½-lb. Balls . 15@17¢*
*Chalk Line, Cotton ½-lb. Balls . . . . . 24@29¢*
*Cotton Mops, 6, 9, 12 and 15 lb to doz. . . . . 8½@19¢*
*Cotton Wrapping, 5 Balls to lb according to quality . . 13½@19¢*
*American 2-Ply Hemp, ¼ and ½-lb. Balls . . . . . 12½@15¢*
*American 3-Ply Hemp, ¼-lb. Balls . . . . . 13½@16¢*
*India 2-Ply Hemp, ¼ and ½-lb. Balls (Spring Twine) . . . 7½@9¢*
*India 3-Ply Hemp, 1-lb. Balls . . . . . 7¼@9¢*
*India 2-Ply Hemp, 1½-lb. Balls . . . . . 7@8½¢*
*2, 3, 4 and 5-Ply Jute, 1¼-lb. Balls . . . . . 9@11¢*
*Mason Line, Linen, ¼-lb. Bls. 17¢*
*No. 264 Mattress, ¼ and ½ lb. Balls, according to quality, 30@60¢*
*Wool, 3 to 6 ply . . . . B 6¢; A 7½¢*

### Vises—

*Solid Box . . . . . 50&5@50&10&5%*

### Parallel—

Athol Machine Co.:
Simpson's Adjustable . . . . . 40%
Standard . . . . . 40%
Amateur . . . . . 25%
Columbian Hdw. Co., Slide . . . . . 40&5%; 65%
Fisher & Norris Double Screw, net, each, Nos. 2, $10.50; 3, $16.00; 4, $20.50; 5, $27.00; 6, $32.00.
Fulton Mach. & Vise Co.:
F. & R. Double Swivel Machinists' . . . . . 40%
Star, Solid Jaw, Machinists' . . . . 40%
Hollands':
Machinists' . . . . . 40@40&5%
Keystone . . . . . 65&5@70%
Lewis Tool Co.:
Adjustable Jaw . . . . . 30%
Monarch, 50%; Solid Jaw . . . . . 50%
Massey Vise Co.:
Clincher . . . . . 40%
Parallel Bar . . . . . 15%
Perfect, 15%; Lightning Grip . . . . . 15%
Merrill's . . . . . 25%
Millers Falls Oval Slide Pattern . 60&10%
Parker's:
Victor, 20@25%; Regulars . . . . 20@25%
Vulcan's . . . . . 40@45%
Combination Pipe . . . . . 55@60%
Prentiss . . . . . 20@25%
Rock Island . . . . . 25%
Snediker's X. L. . . . . 33⅓%
Stephens' . . . . . 33⅓%

### Saw Filers

Disston's D 3 Clamp and Guide, ₱ doz., $24.00, 30%; Clamps . . . . . 30%
Perfection Saw Clamps, ₱ doz. . . . $4.50
Reading . . . . . 60%

### Wood Workers—

Fulton Mach. & Vise Co.:
F. & R. Double Swivel Coachman's . . . . . 40%
Star Solid Jaw Woodworkers' . . . . 60%
Massey Vise Co.:
Lightning Grip, 15%; Perfect . . . . 15%
Wyman & Gordon's Quick Action, 6 in., $6.00; 9 in., $7.00; 14 in., $8.00.

### Miscellaneous—

Fulton Machine & Vise Co., Combination Pipe . . . . . 70%
Holland's Combination Pipe . . 60@60&5%
Massey's Quick Action Pipe . . . . . 40%
Parker's Combination Pipe:
87 Series, 60%; 187 Series, 60&5%; No. 870, 40%.
Rock Island Pipe . . . . . 25%

### Wads—*Price per M.*

*B. E., 11 up . . . . . 60¢*
*B. E., 9 and 10 . . . . . 70¢*
*B. E., 8 . . . . . 80¢*
*B. E., 7 . . . . . 80¢*
*P. E., 11 up . . . . . $1.00*
*P. E., 9 and 10 . . . . . 1.25*
*P. E., 8 . . . . . 1.50*
*P. E., 7 . . . . . 1.50*
*Dis. 15%*
*Ely's B. E., 11 and larger . $1.70@1.75*
*Ely's P. E., 12 to 20 . . . . $3.00@3.25*

### Ware, Hollow—

### Cast Iron, Hollow—

*Stove Hollow Ware:*
*Enameled . . . . . 45&10%*
*Ground . . . . . 50&5%*
*Plain or Unground . . . . . 60%*
*Country Hollow Ware, per 100 lbs . . . . . $2.75@$3.00*
*White Enameled Ware:*
*Maslin Kettles . . . . . 65&10%*
*Covered Wares:*
*Tinned and Turned . . . . . 35&10%*
*Enameled . . . . . 45&10%*
See also *Pots, Glue.*

### Enameled—

Agate Nickel Steel Ware . . . . . 33⅓%
El-an-ge . . . . . 60&10%
Iron Clad Ware . . . . . 70&10%
Lava and Volcanic, Enameled . . 40&10%

### Tea Kettles—

*Galvanized Tea Kettles:*

| *Inch* | 6 | 7 | 8 | 9 |
|---|---|---|---|---|
| *Each* | 45¢ | 50¢ | 55¢ | 65¢ |

### Steel Hollow Ware—

Avery Stamping Co.:
Never-Break Spiders and Griddles . . . . . 65&10%
Steel Kettles, Maslins Scotch Bowls, Tin'd . . . . . 60%
Steel Stew Pans, Stew Pots, etc., Porcelained . . . . . 50%
Cleveland Stamping & Tool Co.:
Solid Steel Spiders and Griddles . . . . . 65&5%
Solid Steel Kettles . . . . . 60&5%

### Warmers, Foot—

Pike Mfg. Co., Soapstone . . . . 40@40&10%

### Washboards—

Solid Zinc: ₱ doz.
Crescent, family size, bent frame . $4.05
Red Star, family size, stationary protector . . . . . $4.05
Double Zinc Surface:
Saginaw Globe, family size, stationary protector . . . . . $3.55
Cable Cross, family size, stationary protector . . . . . $3.60
Single Zinc Surface:
Naiad, family size, open back, perforated . . . . . $3 00
Single Saginaw Globe . . . . . $2.85
Brass Surface:
Brass King, Single Surface, open back . . . . . $4.05
Nickel Plate Surface:
No. 1001 Nickel Plate, Single Surface . . . . . $3.60
Glass Surface:
Glass King, Single Surface, open back . . . . . $3.95
Enamel Surface:
Enamel King, Single Surface, ventilated back . . . . . $3.95

### Washers—Leather, Axle—

*Solid . . . . . 90@90@10%*
*Patent . . . . . 90@90&5%*
*Coil: ⅞ 1 1¼ 1¼ inch.*
*9¢ 10¢ 11¢ 14¢ per box.*

### Iron or Steel—

*Size bolt . . . 5/16 ⅜ ½ ⅝ ¾*
*Washers . . . $4.65 3.75 2.45 2.25 2.05*
*The above prices are based on $6.75 off list.*
*In lots less than one keg add 1c per lb.; 5 lb. boxes add 1½c to list.*

Avery Stamping Co.:
Standard, in 200 lb kegs, $6.00 ₱ 100 lb. discl.; in 100 lb kegs, add 10c net ₱ 100 lb; in 5 or 10 lb boxes, add 50¢ net ₱ 100 lb; in 1 lb boxes, add $1.00 net ₱ 100 lb.

### Cast Washers—

*Over ½-inch, barrel lots, per lb. 1½@1¾¢*

### Wedges—

*Oil Finish . . . . . lb., 2¼@2¾¢*

### Weights—Hitching—

Covert Mfg. Co. . . . . 30&2%

### Sash—

*Per net ton, f.o.b. factory:*
*Eastern District . . . . $21.00@—*
*Western and Central Districts . . . . . $20.00@$22.00*

### Wheels, Corundum and Emery—

Pike Mfg. Co., Corundum, 65%; Emery . . . . . 75%

### Well—

*8-in., $2.00; 10-in., $2.30; 12-in., $3.00; 14-in., $4.45.*

### Wire and Wire Goods—

*Bright and Annealed:*
*6 to 9 . . . . . 72&10&7½%*
*10 to 18 . . . . . 72½&10&10%*
*19 to 26 . . . . . 75&10&10&2½%*
*27 to 36 . . . . . 77½&7½%*
*Galvanized:*
*6 to 9 . . . . . 72½&10%*
*10 to 14 . . . . . 72½&10&5%*
*15 to 16 . . . . . 72½&10&5%*
*17 to 18 . . . . . 72½%*
*19 to 26 . . . . . 70&5&2½%*
*27 to 36 . . . . . 65&10&10%*
*Coppered:*
*6 to 9 . . . . . 65&10&10%*
*10 to 14 . . . . . 70&10&5%*
*15 to 18 . . . . . 65&10&10%*
*19 to 26 . . . . . 70&5&2½%*
*27 to 36 . . . . . 72½&10&2½%*
*Tinned:*
*6 to 18 . . . . . 67&10&10%*
*Brass . . . . . 15½¢ lb., base*
*Copper . . . . . 15¼¢ lb., base*
*Cast Steel Wire . . . . . 50%*

### Spooled Wire—

*Annealed and Tinned . . . . . 75%*
*Brass and Copper . . . . . 70%*
*Retailers' Assortments, per box, $2.00@$2.25*
Wire Clothes Line, See Lines.
Wire Picture Cord, see Cord.

### Bright Wire Goods—

*Steel Wire Goods . . . . . 90&40%*
*Brass Wire Goods . . . . . 90&40%*
*Brass Cup and Shoulder Hooks, 85&10%*

### Wire Cloth and Netting—

*Galvanized Poultry Netting, 80&2½@80&7½%*
*Painted Screen Cloth, 100 ft., $1.35*
*Standard Galv. Hardware Grade: 100 ft. rolls, 24 to 48 in. wide, Per 100 sq. ft.*
*Nos. 2, 2½ and 3 Mesh . . . . $2.75*
*Nos. 4 and 5 Mesh . . . . . $3.00*
*No. 6 Mesh . . . . . $3.25*
*Nos. 7 and 8 Mesh . . . . . $3.75*

### Wire, Barb—See *Trade Report*

### Wrenches—

*Agricultural . . . . . 80&10&10%*
*Alligator or Crocodile . . 70&10@75%*
*Baxter Pattern S Wrenches, 70&5@70&10%*
*Drop Forged S . . . . . 45@45&5%*
Acme . . . . . 60&10
Alligator Pattern, 70%; Bull Dog . . 70%
Bemis & Call's:
Adjustable S, 40&5%; Adjustable S Pipe, 40&5%; Briggs Pattern, 40%; Combination Bright, 50%.
Steel Handle Nut . . . . . 50&5%
Combination Black . . . . . 50&5%
Merrick Pattern . . . . . 50&5%
Boardman's . . . . . 40%
Coes' Genuine Knife Hdl. . 40&10&5&5
Coes' Genuine Steel Hdl. . 40&10&5&5%
Coes' Genuine Key Model . 40&10&5&5%
Coes' Genuine Hammer Handle . . . . . 40&10&5&5%
Coes' "Mechanics'" . . . 40&10&10&5&5
Donohue's Engineer . . . . . 40&10
Eagle . . . . . 70
Gem Pocket . . . . . 50
Hercules . . . . . 70%
W. & B. Machinist:
Case lots . . . . . 50&10
Less than case lots . . . . . 50%
W. & B. Railroad Special:
Case lots . . . . . 5
Less than case lots . . . . . 10&5
Solid Handles, P. S. & W. [illegible] 10
full cases . . . . . 5&5
Standard Nipple Mfg. Co.:
Duplex Chain . . . . . 5
Uwanta Wrench Co.:
Uwanta Special, Iron Handle . . . . . 10&5
Other Wrenches . . . . . 5
Vulcan and Agricultural Co. . . . . 5
Whitaker Machinist:
Case Lots . . . . . 10&5
Less than case lots . . . . . 50%

### Fruit Jar—

Beni. P. Forbes, Triumph, ₱ gro. $7.50; per doz. . . . . $1.00

### Wrought Goods—

*Staples, Hooks, &c., list March 15, '02 . . . . . 90@—%*

### Zinc—(*Cask lots at mill.*)

*Sheet . . . . . per 100 lb., $7.00*

# CURRENT METAL PRICES.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

## IRON AND STEEL—

### Bar Iron from store—

Refined Iron:

1 to 1⅞ in. round and square } ₱ ℔ 1.80¢
1½ to 4 in. x ⅜ to 1 in. }
1½ to 4 in. x ¼ to 5-16 ₱ ℔ 2.00¢
Rods—⅜ and 11-16 round and square ₱ ℔ 2.00¢

| Angles: | Cts ₱ ℔ |
|---|---|
| 3 in. x ¼ in and larger | 2.25¢ |
| 3 in. x 3 16 in. and ⅛ in | 2.30¢ |
| 1½ to 2½ in. x ⅛ in | 2.10¢ |
| 1½ to 2¾ in. x 3-16 in. and thicker | 2.05¢ |
| 1 to 1¼ in. x 3-16 in | 2.10¢ |
| 1 to 1¼ x ⅛ in | 2.15¢ |
| ⅞ x ⅛ in | 2.30¢ |
| ¾ x ⅛ in | 2.40¢ |
| ⅝ x ⅛ in | 3.45¢ |
| ½ x ⅛-32 in | 3.95¢ |
| Tees: | |
| 1 in | 2.40¢ |
| 1¼ in | 2.20¢ |
| 1½ to 2½ in | 2.10¢ |
| 3 in. and larger | 2.35¢ |
| Beams | 2.25¢ |
| Channels, 3 in. and larger | 2.25¢ |
| Bands—1½ to 6 x 3-16 to No. 8 | 2.25¢ |
| "Burden's Best" Iron, base price | 3.15¢ |
| Burden's "H. B. & S." Iron, base price | 2.95¢ |
| "Ulster" | 3.20¢ |
| Norway Bars | 3.30¢ |

### Merchant Steel from Store—

| | per ℔ |
|---|---|
| Bessemer Machinery | 1.90¢ |
| Toe Calk, Tire and Sleigh Shoe | 2.50@3.00¢ |
| Best Cast Steel, base price in small lots | 7¢ |

### Sheets from Store—

Black

| | One Pass, C.R. Soft Steel. | R. G. Cleaned. |
|---|---|---|
| No. 14 | ₱ ℔ 2.50 | 2.90¢ |
| Nos. 18 to 2 | ₱ ℔ 2.95 | 3.40¢ |
| No. 27 | ₱ ℔ 3.15 | 3.40¢ |
| No. 28 | ₱ ℔ 3.20 | 3.50¢ |

### Russia, Planished, &c.

Genuine Russia, according to assortment, W. Dewees wood ₱ ℔ 11¾@14½¢
Patent Planished ₱ ℔ A, 10¢; B, 9¢, net.

### Galvanized.

Nos. 14 to 16 ₱ ℔, 3.15¢
Nos. 22 to 24 ₱ ℔, 3.55¢
No. 27 ₱ ℔, 4.00¢
No. 28 ₱ ℔, 4.25¢
No. 20 and lighter 36 inches wide, 25¢ higher.

### Genuine Iron Sheets—Galvanized.

Nos. 22 and 24 ₱ ℔ 5.50¢
No. 26 ₱ ℔ 6.00¢
No. 28 ₱ ℔ 7.25¢

### Tin Plates—American Charcoal Plates (per box.)

"A.A.A." Charcoal:
IC, 14 x 20 $6.40
IX, 14 x 20 7.65
A. Charcoal:
IC, 14 x 20 $5.45
IX, 14 x 20 6.55

### American Coke Plates—Bessemer-

IC, 14 x 20 107 ℔ $4.45
IX, 14 x 20 5.45

### American Terne Plates—

IC, 20 x 28 with an 8 lb. coating $8 60
IX, 20 x 28 with an 8 lb. coating 10.60

### Seamless Brass Tubes—

List December 4, 1905. Base price 18¢

### Brass Tubes, Iron Pipe Sizes—

List December 4, 1905. Base price 18¢

### Copper Tubes—

List December 4, 1905. Base price 21¢

### Brazed Brass Tubes—

List August 1, 1908. 21¾¢ ₱ ℔

### High Brass Rods—

List August 1, 1908. 15½¢ ₱ ℔

### Roll and Sheet Brass—

List August 1, 1908. 15½¢ ₱ ℔

## METALS—

### Tin—

Straits Pig ₱ ℔ 32 @32½¢

### Copper—

Lake Ingot ₱ ℔ 14 @14¼¢
Electrolytic ₱ ℔ 14 @14¼¢
Casting ₱ ℔ 13½@13¾¢
Sheet Copper Hot Rolled, 16 oz ₱ ℔ 18 ¢
" " 14 " " " 19 ¢
Sheet Copper Cold Rolled, 1¢ ₱ ℔ advance over Hot Rolled.
Sheet Copper Polished 20 in. wide and under, 1¢ advance over Cold Rolled
Sheet Copper Polished over 20 in. wide, 2¢ advance over Cold Rolled.
Bottoms, Pits and Flats ₱ ℔ 21¢ basis
Planished Copper, 1¢ ₱ ℔ more than Polished.

### Spelter—

Western ₱ ℔ 5¾@5¾¢

### Zinc.

No 9, base, casks, ₱ ℔ 7.50¢ | Open ₱ ℔ 8 00¢

### Lead.

American Pig ₱ ℔ 5¼@5¼¢
Bar ₱ ℔ 6¼@6¼¢

### Solder.

½ & ½, guaranteed ₱ ℔ 20½@20¾¢
No. 1 ₱ ℔ 17¾@18 ¢
Refined ₱ ℔ 15¾@16 ¢
Prices of Solder indicated by private brand vary according to composition.

### Antimony—

Cookson ₱ ℔ @11¢
Hallett's @10½¢
Other Brands @9½¢

### Bismuth—

Per ℔ $1.90@$2.00

### Aluminum—

No 1 Aluminum (guaranteed over 99% pure), in ingot for remelting:
Small lots 38¢
100-℔ lots 36¢
Rods & Wire Base Price 38¢
Sheets Base Price 40¢

### Old Metals.

*Dealers' Purchasing Prices Paid in New York*

| | ₱ ℔ | Cents |
|---|---|---|
| Copper, Heavy and Wire | ₱ ℔ | 11.25@11.50¢ |
| Copper, Light and Bottoms | ₱ ℔ | 10.25@10.75¢ |
| Brass, Heavy | ₱ ℔ | 8.25@8.50¢ |
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# THE IRON AGE

*The oldest paper in the world devoted to the interests of the Hardware, Iron, Machinery and Metal Trades, and a standard authority on all matters relating to those branches of industry.*

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# THE IRON AGE

New York, Thursday, September 10, 1908.

## A Power House Coal Handling Equipment.

### Installed for the Philadelphia Rapid Transit Company by the Webster Mfg. Company.

The coal handling equipment described herein is interesting, particularly for its size and the difficulties overcome in handling coal at the Delaware avenue power station of the Philadelphia Rapid Transit Company, Philadelphia, Pa. The conveyors and elevators were installed to carry 100 tons per hour, but since put into service have been operated on a basis of about 200 tons per hour, and have not yet reached the limit of their capacity. Two practically

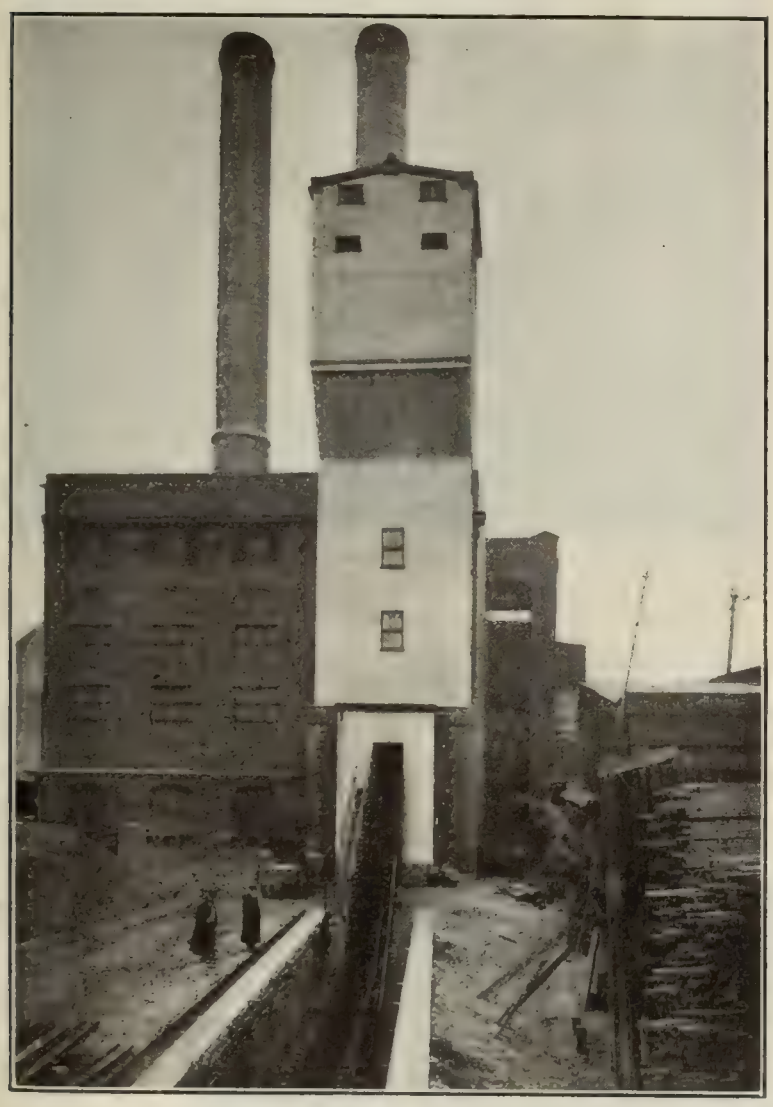


Fig. 1.—View of the Power House, Showing Elevator A at the Right in the Background and Elevator B in the Foreground.

independent equipments were installed, one for handling anthracite and the other for bituminous coal; although both can be used for handling either class of fuel. They elevate and carry the fuel to two concrete bins, 42 x 100 x 16 ft. each, which are located in the boiler house of the plant, just under the roof, and 60 ft. above the street level. Each of these bins has a capacity of 1000 tons of coal, which is fed by means of chutes, to the boilers on the ground floor of the building, and is fired both by hand and by mechanical stokers.

What is known as elevator A was the first constructed and is located close to the power house. This elevator is shown in the background of Fig. 1, and was installed primarily for handling anthracite coal, although it is equally adaptable for bituminous coal. In this case the coal is discharged from cars into concrete hoppers located on either side of the elevator, which discharge directly to the elevator boot. This elevator lifts the coal in 24 x 18 x 12 in. buckets, made of 3-16-in. steel, to a hight of 100 ft., delivering it through a steel chute, shown in Fig. 2, to a conveyor, known as conveyor No. 2, which is 116 ft. between centers and extends directly over one of the storage bins. Discharge gates placed in the trough at intervals of 10 ft. permit of the necessary distribution of coal along the length of the bin. Elevator A is driven through gears by a 40 hp. Westinghouse motor, shown in Fig. 3, running at a speed of 600 rev. per min., which is reduced through the gears to a speed of 8 rev. per min. of the main gear and sprocket. All the gears are cast steel; the main gear is 60 in. diameter, while the sprocket is 52½ in. diameter. The speed at which the elevator is driven is 100 ft. per minute.

Elevator B, the second member of this system, is located on a pier, extending into the Delaware River, from the opposite side of the street on which the power house is located, and was designed particularly for handling bituminous coal, but is so arranged that it can be equally well used for handling anthracite. The coal is delivered on this pier either by railroad cars, a siding

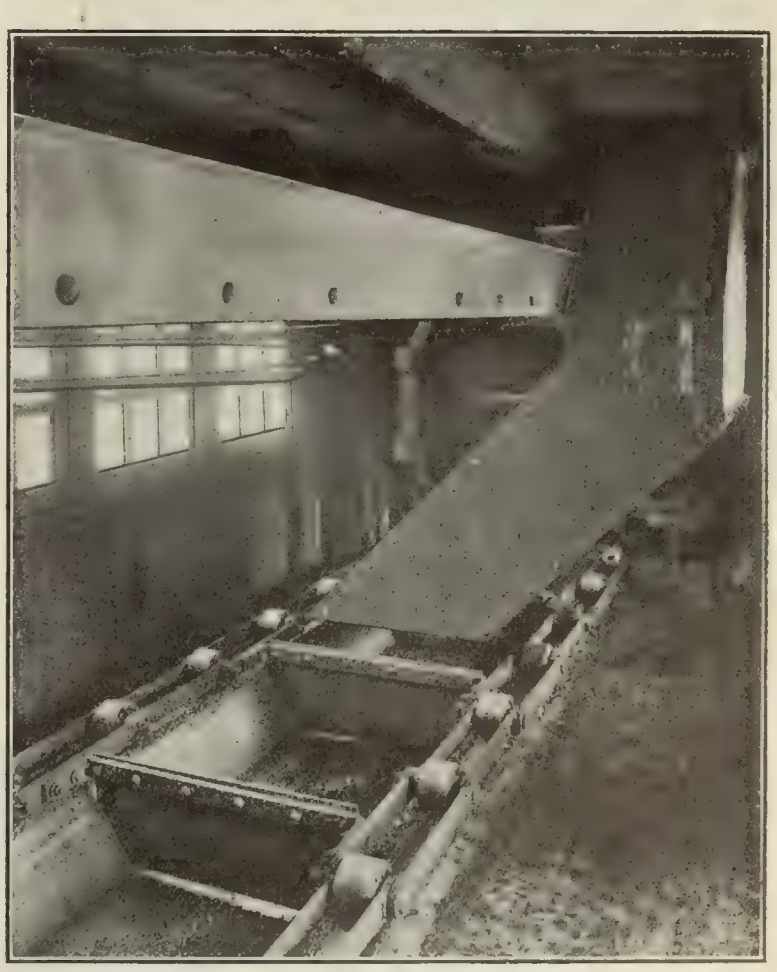


Fig. 2.—Where the Chute from Elevator A Discharges Into the Conveyor Over the Bins.

extending directly over the hoppers, or by barges. In the latter case the fuel is transferred from the barges by a locomotive crane to small transfer cars, which are then pushed over the hoppers and dumped. The hoppers are of concrete and discharge the coal to a short conveyor located beneath them.

The difficulty in maintaining the flow of coal, particularly when bituminous coal is being handled, is overcome by the use of the Webster improved pusher, which operates on a short length of track beneath the hoppers. This device consists of three cast iron pushers, operating in a metal trough, each pusher supported on rollers and driven by an eccentric. The three eccentrics are on one shaft, and may be individually engaged or disengaged through jaw clutches. The pushers are driven by belt from an independent 10-hp. motor. Under each of the pushers is a small screw conveyor for carrying dust from the pushers, which would otherwise have a tendency to clog. These small conveyors deliver the dust into the

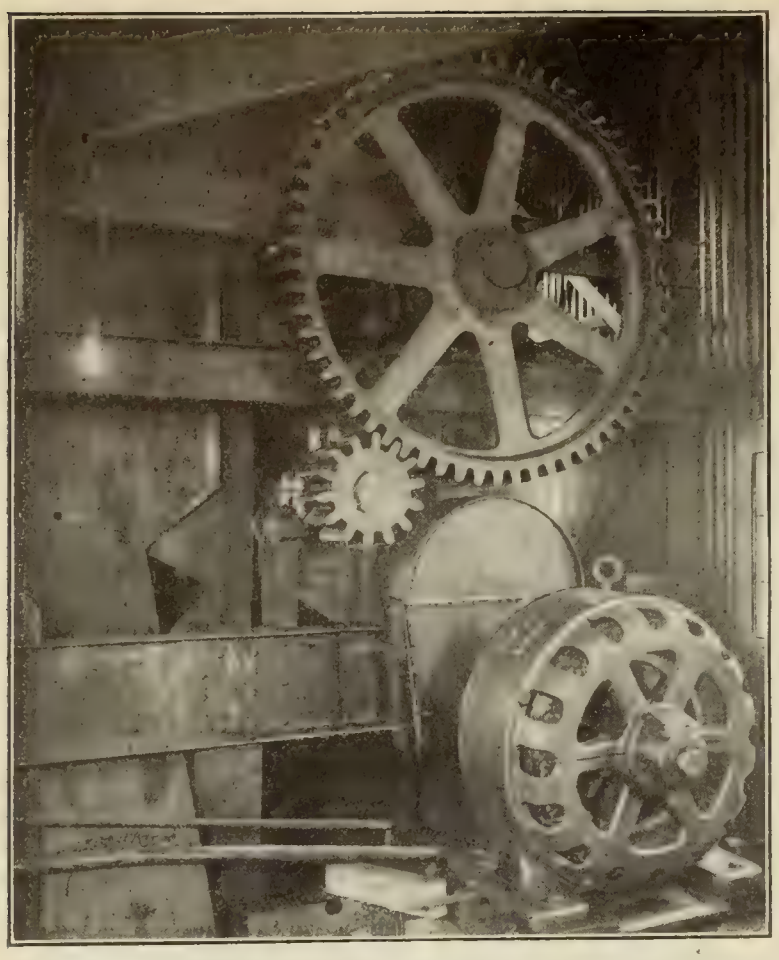


Fig. 3.—The Motor and Driving Gears of Elevator A.

conveyor, under the hoppers, which in turn delivers the coal to a conveyor running at right angles. The latter is 215 ft. between centers, and carries the coal up an inclined trough and delivers it at a hight of 30 ft. to a crusher at the base of the conveyor. A 40-hp. direct connected motor supplies the power for this conveyor.

The crusher is of the ordinary two-roll type, with 30 x 30 in. cast steel rolls. A 20-hp. direct connected motor supplies the power for the crusher. The coal in passing through the rolls is crushed to a maximum size of 1 in. To avoid passing the fine coal through the crusher a screen is placed in the trough of the conveyor at the discharge end. The fine material passing through the screen is carried by a chute direct to the elevator boot. A gate is also placed in the trough near the screen, so that when it is desired to elevate anthracite coal, it can be delivered through the same chute to the boot of the elevator without passing through the crusher.

The buckets used on elevator B differ from those on elevator A in that they are of the V type. They are made of 3-16-in. steel, with reinforced edges and are 28 x 20 x 9 in. in size. They are hung at the sides, and are located 36 in. apart from center to center. A 40-hp. motor, operating the same as that described in connection with elevator A, supplies the motive power for elevator B. This elevator raises the coal to a hight of 100 ft., and its speed is 100 ft. per minute. Through a chute it delivers the coal into a conveyor, which is 169 ft. long between centers, and is carried over Delaware avenue on a bridge, as shown in Fig. 4. This conveyor extends



Fig. 4.—The Conveyor on the Bridge Over Delaware Avenue.

along one side of the power house and is so arranged that through chutes, the coal can be delivered to conveyors running over either of the two storage bins. This conveyor is driven by a 25-hp. electric motor, with silent chain drive, and the same manner of gearing is used as in the other conveyors and elevators.



Fig. 5.—The Conveyor Delivering Coal to the Bins.—The Motor Drive Is to Be Seen at the Rear.

The distributing conveyor over the second storage bin, shown in Fig. 5, is 89 ft. between centers, and is driven by a 20-hp. direct connected motor. It has distributing gates in the trough, located at intervals of 10 ft.

All the conveyors are fitted with 30 x 12 in. flights made of ¼-in. steel. Each flight is connected to the chain by a ⅝ x 2 in. flat steel bar, running entirely across the flight. The troughs are all of 3-16-in. steel, V-shaped, with flat bottoms, and are held in position by screws into 4 x 8 in. carrying timbers bolted to channel bars. On top of the channels are laid ⅝ x 3½ in. steel bars, which serve as the runway for the chain rollers. The chains for all the elevators and conveyors are of the same size, and consist of ⅜ x 2½ x 18 in. drop forged links, the ends of which are ¾ in. thick at the pin holes. The pins are 1½ in. diameter and 7½ in. long. The rollers are 5 x 3 in., are self-oiling, and have chilled faces. Each conveyor is fitted with two strands of chain.

The various conveyors in the power house are carried in steel frames, supported from the roof trusses, while for the conveyor from elevator B, a bridge extending across Delaware avenue was erected. While five lines of conveyors are now installed, provision has been made in the design to extend the system at a future date, using four more conveyors.

The Webster Mfg. Company, Chicago, Ill., designed and furnished all the equipment in connection with this plant, as well as the supporting steelwork for its installation. The Philadelphia Rapid Transit Company furnished the skeleton frames of elevators A and B, and the supporting bridge for the conveyor across Delaware avenue.

## Customs Decisions.

### An Iron Ore Case.

After the taking of much testimony, the Board of United States General Appraisers has handed down a decision favorable to the claims of George S. Collins & Co. and Francklyn & Ferguson, regarding the rate of duty to accrue on importations of iron ore. The customs authorities assessed the merchandise for duty at the rate of 30 per cent. under the provision in the tariff for crude hematite ore. The importers, on the other hand, alleged that the rate should be 40 cents a ton under the provision for "iron ore." It is stated in the board's decision that the Federal courts have found in favor of the importers' contention, while the Treasury Department has acquiesced in the finding. Under these circumstances, the claim for the imposition of the lower duty is upheld, and the collector directed to reliquidate the entries in harmony with the decision of the board.

### Imported Samples.

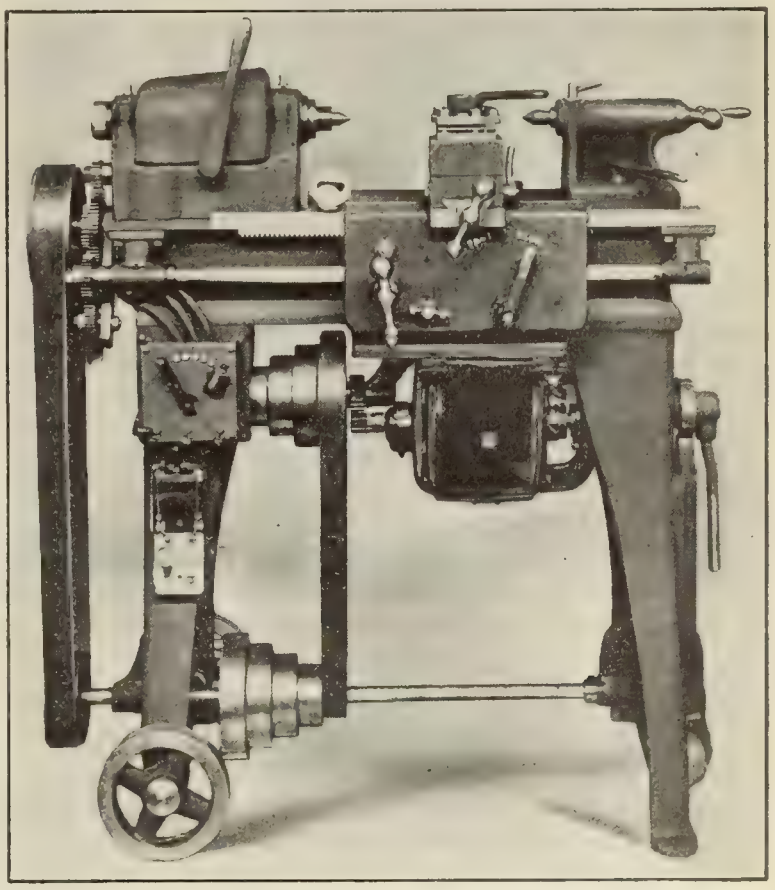
It has been decided by the Board of United States General Appraisers that collectors of customs and other officers of the Treasury Department are not authorized to collect a fee for the delivery of imported samples. Under the customs regulations there is no duty on importations of this kind, but for many years the customs officials have been in the habit of exacting a delivery fee. A test case has been brought by the Snow's United States Sample Express Company, Ltd., with a view to breaking up the practice. The board finds that there is no warrant for the imposition of the tax, and a decision was handed down last week in favor of the importers.

**Women in French Machine Shops.**—Special Agent Godfrey L. Carden, reporting to the Bureau of Manufactures, Department of Commerce and Labor, includes the following statement in his remarks regarding a visit to the automobile factory of De Dion-Boutin & Cie., Paris, France, where he observed many makes of American machine tools in use: "Brown & Sharpe have supplied about 11 millers, and I find that Dion & Cie. are employing women operatives with these machines. One woman was caring for four millers, and was receiving, I was informed, about 70 centimes per hour. I also found women operatives running Gleason gear cutters, one of whom I was told had worked at these machines for four years steadily, with the exception of four months' absence as the result of injury. The women operatives are receiving 70 centimes per hour. Seven women were found at work running millers and gear cutters. It is the first time I have found women intrusted with the high-grade machines."

## A Rockford Fitting Lathe.

The lathe illustrated was designed and built by the Rockford Drilling Machine Company, Rockford, Ill., for use on the assembling floors of its own shop.

The speed is regulated by the cones underneath the bed. Four-step cones offer sufficient variety of speed for the ordinary fitting operations. The lever in front of the head stock throws in a positive clutch by moving to the right hand, giving the proper cutting speeds. Throwing the same lever to the left hand engages a friction clutch



A Portable Fitting Lathe Built by the Rockford Drilling Machine Company, Rockford, Ill.

which revolves the spindle much more rapidly, giving the proper filing speeds.

The chuck shown on the bed acts as a driver for arbors, and in every case the arbors being standard for the work used in the shop, flat at one end, and are held in the lathe between centers, the oblong opening in the chuck acting as a driver, avoiding the necessity of the use of dogs, making it possible for operator to quickly remove arbor from the machine.

The lathe is equipped with a four-tool turret tool post, and also has a very convenient locking handle for the cross slide. The cross feed screw is graduated in thousandths, and the lever shown to the right of the apron engages the clutch for either a slow or a fast speed.

The tail stock end of the machine is equipped with an eccentric which enables operator to raise the legs on the tail stock end from the floor, causing the weight of that end of the machine to be sustained on a swivel ball bearing caster, making it very easy to move the lathe around the assembling floor. One man can move the machine easily with one hand.

This machine was designed for use on assembling floors, giving the operator an electrically driven machine which when required for use would be always at hand and ready, and could be readily moved around among the batch of machines on the setting-up floor to the point where operator would decide to use it.

# "Burning" a Propeller Wheel Blade.*

BY THOS. D. WEST, SHARPSVILLE, PA.

The ability to unite broken bodies of cast iron so as to make the whole as good as when new or stronger will not only often save the cost of a new casting, but in many cases may save much machining. To these advantages should be added that of being able to replace the piece quickly, thus saving the heavy losses resulting from the partial or complete stopping of a plant. Of late years



Fig. 1.—Propeller Wheel with Broken Blade Restored.

several new methods have been established whereby broken castings are united by brazing or by high heat generated by electricity or gases, but beyond what may be done with thermit these methods do not accomplish what "burning" in the foundry can do with difficult jobs.

Few operations in a foundry require for a successful outcome greater ingenuity combined with right conditions. At intervals accounts of burning jobs appear, that are eagerly studied by the trade, and the following details of the burning of a broken propeller wheel blade will no doubt be studied with interest. Few operations in the foundry require for their successful carrying out greater ingenuity and the constant maintenance of right conditions.

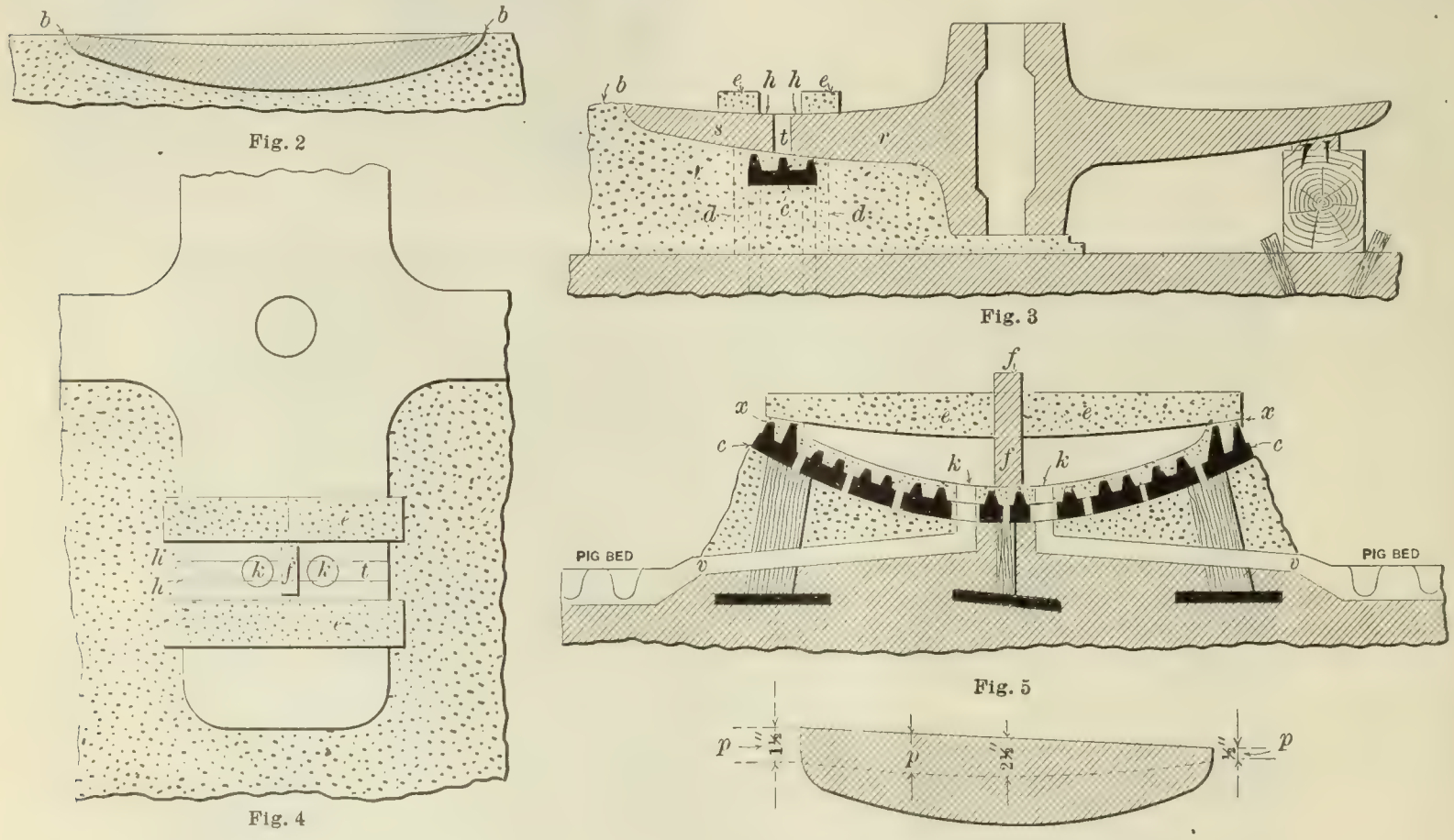
Fig. 1 shows the propeller wheel after being burnt and chipped. The line of union of the new to the old, seen at A A, is 42 in. long. The job was done at the Mobile Pulley & Machine Works, Mobile, Ala., and the foundry foreman, George Boys, designed the rigging and supervised the work.

The first step was to make a light loam plate, *c*, Figs. 3 and 5, about 5 in. wide, and a few inches longer than the width of the blade, as shown. This plate was made with a curve to agree nearly with that of the under side of the blade at the section to be burnt. The plate was daubed up with loam for about ½ in. above the top of its surface, and then pressed up against the oiled surface of a perfect or unbroken blade, at a point to agree with the broken section. When removed it was finished, blacked and placed in an oven to be thoroughly dried and await its replacing as will be described later.

A hole was then dug in the shop floor under the sweep of a crane and the wheel placed in it so as to have a good blade with the tips corresponding with the sections to be burned, to be nearly level, as shown at *b b*, Fig. 2. This good section was to serve as a pattern. The wheel is placed so as to bring the section to be mended about 18 in. above the general level of the floor. When placed in the hole the four blades were blocked up and staked so that the broken blade section could be turned to accurately replace the good one. This done, damp tempered molding sand was rammed up under a good blade and a joint formed at the level *b b*, Figs. 2 and 3, after which a cope was rammed up and lifted off to permit hoisting up and turning the wheel so that the broken blade might lie in the mold formed by the good blade, as at *r*, Fig. 3. An iron plate not shown was placed under the hub to form a solid bearing to help support the wheel.

Flat cores ½ in. in thickness were then placed against the face of the broken fracture, which had been chipped fairly even before setting it in position. The ½-in. cores in place and the mold finished, the cope was closed and the mold poured to give the outer end section *s*, Fig. 3, of the broken blade that had been lost. The next day, after casting this end piece, the top body was all cleaned off and the ½ in. thickness dividing cores removed. A narrow channel under this section, about 8 in. wide, as at the lines *d d*, Fig. 3, was also dug out. A wood fire was then started underneath and on top of the section to be united. When both parts were thus heated to a good red heat, the wood and ashes were all withdrawn. The loamed plate *c* being at hand was placed tightly up under the two sections of the blade and the channel *d d* then rammed up around the blocking to hold the plate in place. This is shown in Fig. 5.

Cores at *e e*, Figs. 3 and 5, were placed so as to be back from the ½-in. opening, *t*, Figs. 3 and 4, about 1½ in.




Sections Illustrating the Method of Preparing the Mold and Introducing Hot Metal.

* A paper read at the meeting of the Philadelphia Foundrymen's Association, September 2, 1908.

on each side. Another core was then placed to form a division as at *f*, Figs. 4 and 5, and all these cores were weighted down so that they could not be moved by the washing or lifting force of the metal.

All this work was done with the utmost dispatch, and when completed about 1200 lb. of good hot metal was poured at such a hight as to form a good cutting stream along each edge, *h h*, Figs. 3 and 4. The metal as it was poured in was allowed to flow out through a 1½-in. hole in the bottom, as shown at *k*, Figs. 4 and 5, into a pig bed placed at a convenient distance from the wheel, as in Fig. 5. After this 1200 lb. of iron had been allowed to flow through the holes *k*, it was "botted" or closed up at the ends *v*, Fig. 5, and about 500 lb. of the metal from the ladle was allowed to drop with a cutting force along the upper edges of *h h*, but instead of allowing this to flow away through the bottom holes *k* it was permitted to flow over the top edge *x*, Fig. 5, of the body being burned.

This total of 1700 lb. of hot metal cut the ½-in. opening to make it about 2 in. wide. To know of the cutting action and to be able to control it a bent rod or scraper was used to work in the opening between the two bodies to be mended.

The first section on the right hand of the dividing core *f*, Figs. 4 and 5, having been burned and completed as just described, a fresh ladle of hot metal was brought up and left hand side treated in the same manner.

Mr. Boys has not stated how he removed the dividing core *f* before proceeding with the left hand burning. This could be readily removed at the proper time by having it well rodded and a hook in it. It is to be understood that in the second operation of burning the metal was allowed to cut into the division formed by the core *f*, as well as along the edge *h h*, and before starting to burn the right hand side, the left was covered with a plate to prevent metal splashing into its mold space.

It might be well to state that the reason for using the dried loam prickered plate *c*, Figs. 3 and 5, is to prevent the dropping stream of metal from scabbing or cutting up the bottom of the mold, as would very quickly occur in the case of green sand. Instead of using a cast iron prickered plate, as shown at *c*, a piece of bent boiler plate, 5 in. wide and a little longer than the width of the blade was that actually used by Mr. Boys. Its concave side was clay washed and plastered with a good thickness of soft loam, after which the work was proceeded with the same as described for the prickered plate.

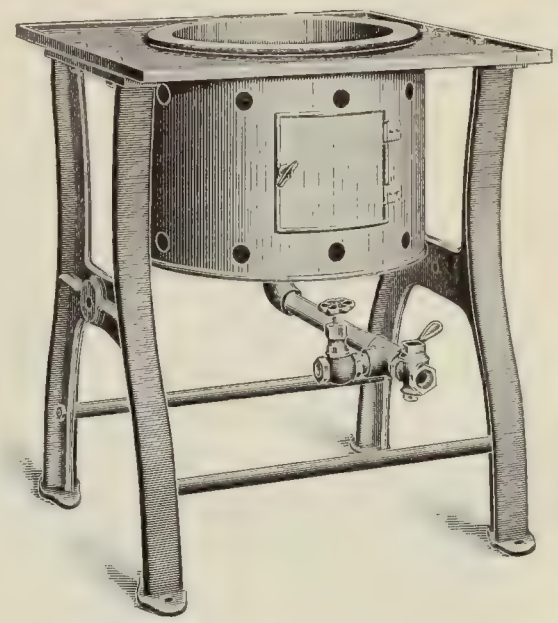
The reason for putting in the dividing core *f*, Figs. 4 and 5, and only burning one-half at a time was the possibility of not making a successful union the whole width of the blade were this attempted. By taking only half the width at one time the cutting stream did not have so far to travel, thereby reducing the chance for one section or some points to cool off beyond the semimolten condition that was necessary in order to insure a perfect weld.

In a later explanation of the processes employed, Mr. Boys states that after the metal had set in each section, he covered it with a little sand and forming a bed, poured about 200 lb. of metal right over the burned portions for about 18 in. wide, and extending well over the ends of the blade. This helped to make the parts adjacent to the burned portions very hot and allowed them to cool off about equal to the new metal, which would naturally pull away from the cold body. After thus covering the top with a hot body of liquid metal, a hole was dug out underneath the burned part to ascertain if this were still red hot, and it was found as was desired. Had it not been red hot a channel would have been made clear in under the blade and a body of metal poured in the channel to come up close to the under side of the blade, thereby keeping the latter red hot in harmony with what was to be expected in a high temperature at the top. The hot scrap metal and the wheel were not disturbed until the morning following the burning operation. After the wheel was removed from its bed to be chipped and cleaned, it had a surface projection somewhat like that seen at *p*, Fig. 6. This had to be all "flogged" and chipped off to make the wheel have a finished face as is seen on the line A A, Fig. 1.

Mr. Boys says: "There was not the slightest sign of a crack, although we used a sledge hammer and a blacksmith's set to cut it off. This is the second one I have mended. The first is now running on one of Lowen & Rowfe's steamers between Manchester and Dublin."

## A Melting Furnace for Soft Metals.

The United States Gas Furnace Company, Providence, R. I., has brought out a new melting furnace, shown in the accompanying illustration, for melting lead, tin, zinc, babbitt, aluminum, type metal, &c. The burner is so designed that gas flame strikes the entire surface of the pot, giving great efficiency. The furnace has no lining to be renewed, and nothing need be done in the way of replacement except an occasional new pot. The furnace is manufactured in four sizes: No. 1 has a pot 6½ by 8 in., will melt 100 lb., and burns 25 cu. ft. of gas per hour; No. 2 has a 7 by 10 in. pot, will melt 150 lb., and consumes 30 cu. ft. of gas per hour; No. 3 has a pot 8 by 12 in., melts 250 lb. of metal, and uses 40 cu. ft. of gas per hour; No. 4 has a pot 16 by 12 in., melts 500 lb., and consumes 70 cu. ft. of gas per hour. Smaller and larger sizes are manufactured to order.



A New Metal Melting Furnace Made by the United States Gas Furnace Company, Providence, R. I.

## Aluminum as a Feature in a Notching Press.

The Standard Machinery Company, Providence, R. I., has brought out a new type of armature notching press, in the design of which aluminum is made an important factor of construction. The machine is known as the back geared style B press. Its connections and plunger are of aluminum, that they may be as light as possible for a given strength. The effect is increased speed of slide and decreased momentum, making it possible to operate at 600 strokes a minute, a speed which permits of the manufacture of notched disks at a rapid rate. 10 a minute being an average production.

A Horton clutch is used, mounted on the back shaft and actuated by a lever through a toggle joint, the action of which is very quick upon a clutch that takes hold and releases practically instantaneously. The machine is equipped with automatic dial feed. The stroke is 1 in. The fly wheel is 20 in. in diameter, with 3½ in. face. The press referred to is geared three to one. Another type of the machine is geared four to 1, giving a speed of 800 strokes a minute to the slide. The weight is 950 lb., hight over all 56 in., and floor space required 25 x 28 in.

The composition of an acid resisting cement for tanks, floors, &c., is given by the *Brass World:* Silicate of soda, 6 parts (water glass); glycerine, 1 part; red lead, 3½ parts; fine cinders, 10 parts. The silicate of soda and glycerine are mixed and then the red lead and cinders added to make a mass resembling putty. This is used for the cement. It soon sets or hardens, and when heated to the temperature of boiling water, unites with brick or Portland cement to form a strong joint.

# The Collection of Data for Tariff Revision.

WASHINGTON, D. C., September 8, 1908.—It is rapidly becoming apparent that domestic manufacturers who intend to resist the movement to reduce existing rates of duty in connection with the coming revision of the Dingley tariff act, must be prepared to devote considerable time in the very near future to gathering reliable data concerning conditions in the competing industries in the principal countries of the world. This information will be found to be absolutely necessary to meet the facts and figures that will soon be in the possession of the Ways and Means and Finance committees, and which doubtless will be quoted to all parties appearing before the committees in support of the retention of existing rates of duty.

### The Foreign Cost of Production.

Never before in the history of the country have the Congressional committees adopted such comprehensive plans for securing reliable data before undertaking the revision of a tariff act. Conditions in competing industries abroad are being studied, not only by the experts of the Bureau of Manufactures of the Department of Commerce and Labor, but by confidential agents, whose connection with the work is unknown to any one outside the membership of the Congressional committees. Special attention is being given to cost of production in its manifold details, but no item of importance from an industrial standpoint is being overlooked. Side by side with these figures will be tabulated the cost of living in the leading industrial centers of the principal manufacturing countries of the world.

Notwithstanding the care taken by the Congressional committees and the Department officials supervising the work of their agents abroad, it goes without saying that the information gathered will occasionally be found to be unreliable, and manufacturers who do not secure statistics of their own will find themselves at a serious disadvantage when called upon to explain why reductions of more or less importance in the measure of protection accorded them by existing tariff law should not be made. Inasmuch as the Ways and Means Committee is now planning to begin hearings soon after the November election, it is apparent that manufacturers should lose no time in equipping themselves to make a creditable showing before the Congressional tariff experts.

### Treasury Recommendations Opposed.

The suggestion recently made by the Secretary of the Treasury to Senator Burrows' subcommittee of the Senate Finance Committee that the customs administrative act of 1890 be so amended as to permit importers to deduct from, as well as add to, their invoice values to make foreign market value on date of shipment has already aroused the opposition of certain high tariff interests, whose representatives are now in Washington collecting data with a view to opposing the department's recommendations. It is probable that representations against the change will be filed at an early date with Senator Burrows' subcommittee, which is now in New York City. It will be asserted in this connection that the change proposed would not only materially reduce the revenue from the customs, but would be a constant incentive to undervaluation. It will also be urged that if foreign exporters are permitted to quote market prices on date of shipment, when such prices are less than the actual amounts paid for the goods in question, there will be a constant tendency to delay shipments in the hope of taking advantage of a falling market.

As heretofore stated in this correspondence, Treasury officials originally were opposed to this change, but have modified their views after observing the hardships that have resulted in many cases where the market has declined materially after the purchase of goods which the importers have been obliged to invoice at actual cost, thereby sustaining a loss in the excessive duty paid, as well as in the shrinkage in the value of the goods. In view of past experiences, the Treasury officials now take the ground that if an importer is required to add to his invoice to make market value if the market rises after the purchase is made and before shipment, he should not be bound by the purchase price if the market declines.

### Importations by Mail.

The recommendation of the Treasury Department that all the customs laws and regulations be extended to importations made by mail is warmly indorsed in communications from domestic manufacturers received here the past week. The necessity for this change has been greatly emphasized by the negotiation of many parcel post treaties between the United States and foreign countries in recent years. Packages weighing up to 11 lb. may now be transmitted through the mails, and articles of great value can thus be imported on a commercial scale without the risk of a penalty for undervaluation or the seizure of the goods. Department officials desire especially that the same customs declaration shall be required in the case of a mailed package as if the goods were sent through the regular channels, and that the declaration and formal entry be made under oath. This change in the law is urged particularly in the interest of reputable importers, who are obliged to compete with rivals who use the mails to evade the scrutiny of custom house experts.

Hearty commendation is also accorded to the recommendation of the Secretary of the Treasury for the abolition of the fee system throughout the customs service. This reform has been repeatedly urged upon Congress as absolutely necessary to put the service on a self-respecting basis. A large number of customs officials now receive their compensation in the form of fees, and the temptation to make exactions, especially from those having little knowledge of customs procedure, is ever present. The Secretary of the Treasury particularly desires that the practice of customs officials based on section 2648, revised statutes, of charging fees for various blanks and for their preparation and execution be done away with, and that such blanks be either supplied by the Department free of cost or printed by private parties in accordance with official models. The experience of the Government in abolishing the system of consular fees and placing consular officials on a salaried basis has proved exceedingly salutary, and a similar innovation is proposed as to customs officials.

In explanation of the recommendation laid before Senator Burrows' sub-committee by the Secretary of the Treasury that customs house brokers be licensed, it is said at the Department that the plan is the same as that put forward in the Fifty-ninth Congress and made the basis of a bill which was favorably regarded by both Ways and Means and Finance committees, but not finally acted upon. The plan is urged both for the protection of the Department and of reputable brokers. The duties performed by brokers are similar to those usually performed by attorneys-at-law, but at present they are not subject to any requirements or supervision. It is proposed that licenses shall be granted only by the Treasury Department, and revocable at any time for cause by the Secretary. The licensing of brokers would in no way limit the right of importers to transact business in the customs house pertaining to their own importations.

### Return of the Reynolds Customs Commission.

Much information of value in connection with the revision of the Dingley act and the customs administrative act of 1890 will be brought by the Reynolds Customs Commission, now on its way home after spending a month in negotiation with the French authorities with a view to removing certain obstacles to the free commercial intercourse of France and the United States. The return of the commission imparts an added interest to statistics just made public here showing the total commerce of the United States with Germany in the seven months ended July 31, 1908, as compared with the corresponding period for the years 1904-1907. These figures have been compiled in answer to the charge made by the critics of the existing reciprocity arrangement with Germany that it has greatly stimulated imports of German merchandise as the result of permitting invoice values to be based on so-called export prices. The concessions made to Germany in this agreement, which became effective July 1,

1907, have since been extended to France, and it is expected that Chairman Reynolds, of the commission, will soon submit a report in which will be embraced the results of his investigation of the operation of the export price system of fixing invoice values of shipments of French merchandise.

The statistics just compiled by the Department of Commerce and Labor completely discredit the charge that under the operation of the export price concession, the United States has been made a dumping ground for surplus German products. The imports from Germany in the seven months ending July 31 for the past five years have been as follows: 1904, $60,216,000; 1905, $66,723,000; 1906, $79,257,000; 1907, $92,897,000; 1908, $71,906,000. It thus appears that the imports for the seven months of 1908 were smaller than for any like period since 1905, and were $21,000,000 less than in 1907. According to this statement, the exports for the same periods increased from $93,776,000 in 1904 to $138,819,000 in 1907, but in 1908 declined to $136,649,000. The relatively small decline is attributed to the business depression in the United States and, as compared with other movements due to the same cause, has been comparatively insignificant. It is expected that an effort will be made at the coming session of Congress to secure the abrogation of the present reciprocity agreement with Germany, which would carry with it the withdrawal of the export price concession from all foreign countries. The effort is not likely to prove successful, however, and there is every reason to believe that the existing convention will remain in force at least until July 1, 1909, and probably until superseded by a more comprehensive reciprocity treaty to be based upon the provisions of the new tariff law which Congress is expected to pass at an extra session of Congress early next spring. W. L. C.

## The Standard Gauge Mfg. Company's New Plant.

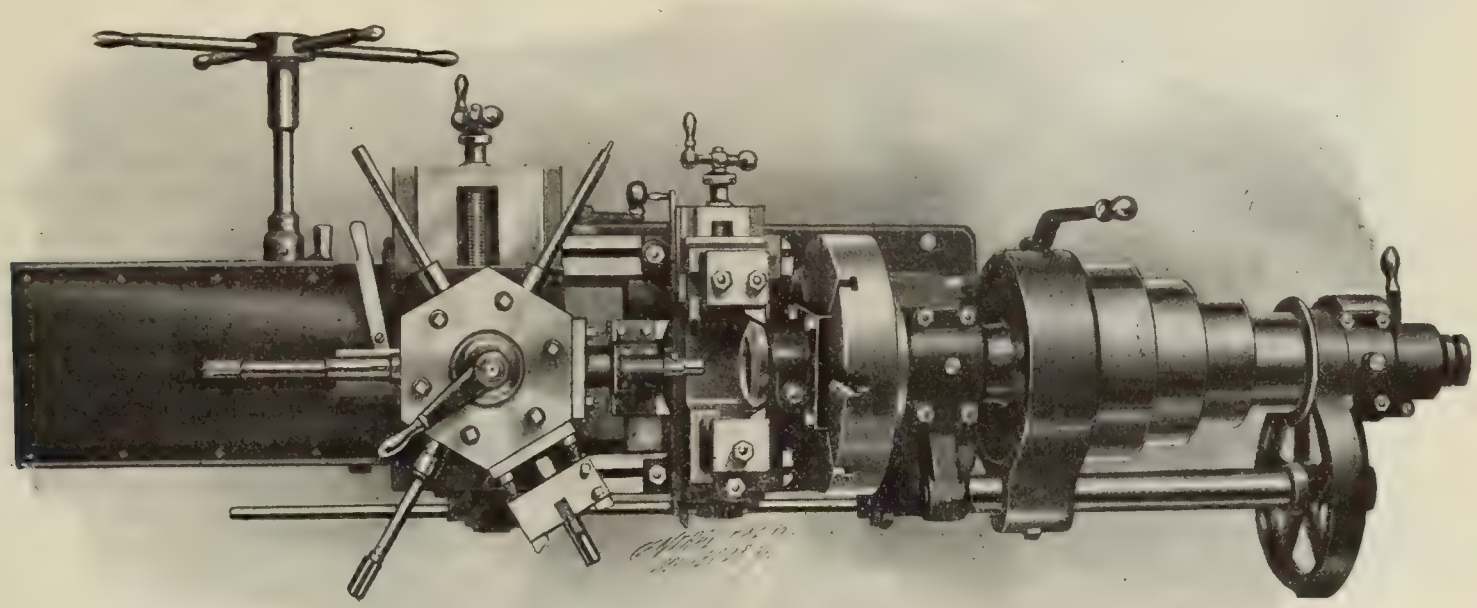
The Schaeffer & Budenberg Mfg. Company, as recently noted in these columns, has sold its plant at Foxboro, Mass., for the purpose of concentrating its operations in Brooklyn, N. Y. The plant was sold to the Industrial Instrument Company, which was lately organized with Bennett B. Bristol, formerly of the Bristol Company, Waterbury, Conn., manufacturer of recording instruments, at its head. The Standard Gauge Mfg. Company will operate the plant for the manufacture of gauges, recording instruments, &c., and the property will be deeded to this company by the Industrial Instrument Company, as the same interests control both concerns. Watson E. Goodyear, Naugatuck, Conn., will be president of the Standard Gauge Mfg. Company; Bennett B. Bristol, treasurer, and Arthur F. Mundy, Syracuse, N. Y., secretary. The plant is modern and well equipped, having two main buildings of brick, 60 x 210 ft. each, and a foundry, 60 x 150 ft., which was added a few years ago at a cost of $20,000. No extensive orders for equipment will be placed at once, but different machine tools will be ordered as required.

## A Davis Turret Boring and Forming Lathe.

The illustration shows the top view of a 24-in. turret boring and forming lathe built by the W. P. Davis Machine Company, Rochester, N. Y. It also shows the tools used for boring, turning, facing, and forming a bevel gear. The tools used for this purpose are shown on the cross slide and on the turret. These tools completely turn and form the outside, both angles of the face and front of the gear, as well as boring and reaming the hole.

The entire machine work from the rough casting for a bevel gear of the usual size used on a 20-in. drill, can be finished complete in from 15 to 18 minutes each. This completes the blank ready for the gear cutter.

It has become necessary within the past few years, to bring out special tools for doing the various parts of machines quickly, in order to meet competition. This company furnishes various sizes of machines suitable for rapid and accurate work on cast iron parts of various sizes. Lathes for this purpose are furnished of 18, 24, and 26-in. swing.



Top View of a 24-In. Turret Boring and Forming Lathe Built by the W. P. Davis Machine Company, Rochester, N. Y.

**Manitoba Rolling Mills.**—The successful operation of the Manitoba Rolling Mills at Winnipeg, Man., is referred to by the *Canadian Manufacturer*, this being the first rolling mill property in Canada west of Toronto and Hamilton. The raw material is chiefly scrap from the Canadian Pacific and Canadian Northern, the mill being located near the new shops of the former. Formerly this scrap was shipped to Montreal, Hamilton and Toronto at heavy freight cost. There are one 9-in. and one 16-in. train and two heating furnaces. The plant is daily turning out about 25 tons of finished material, sizes ranging from ⅜ to 1½ in. in rounds and squares, and ½ to 1 in. thickness by ¾ to 5 in. wide in flats, and has been running to its limit with day and night shifts. The president of the company is L. A. McElroy, of Erie, Pa. who is also president of the United States Horse Shoe Company of Erie. Other Erie residents are associated with him in the Winnipeg mill.

The price of gas in the city of Birmingham, England, under the recommendations of the Gas Committee of the City Council, is to be fixed at about 53¾ cents per 1000 cu. ft., cash, for consumers using less than 50,000 cu. ft. per quarter, and at about 36½ cents for those using it for power purposes.

# The New Boland Blower and Sandblast.

Improved forms of a positive pressure blower and a self-feeding sandblast are two new products of H. J. Astle & Co. of Providence, R. I., and are the inventions of Frank P. Boland of the firm. The blower, illustrated in Fig. 1, is the No. 5, having a 12-in. bore and 6½-in.

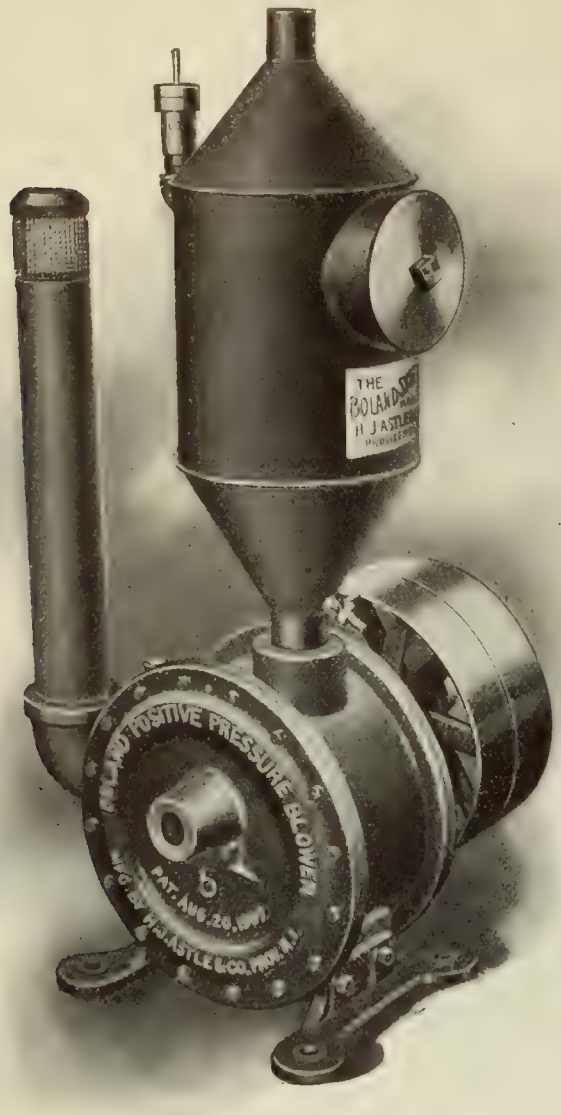



Fig. 1.—The New Boland Low Pressure Blower.

breadth of blades, and is designed for the many classes of work which do not require higher pressures. It delivers at 10 lb. pressure, 725 cu. in. of air per revolution when running at 200 rev. per min. The single machines

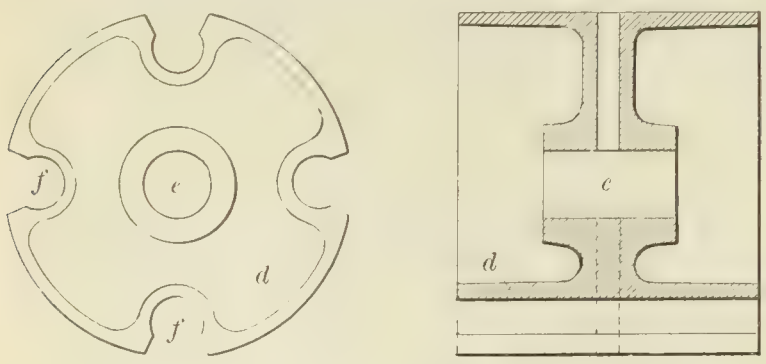



Fig. 2.—Unassembled Details of the Boland Low Pressure Blower.

have four blades; the double machines, in which type the larger sizes are built, have eight.

The details shown in Fig. 2 give an idea of the construction of the machine. The piston, which may be better termed a hub, contains four hinge pockets for the blades. The shaft is eccentric in the cylinder, this

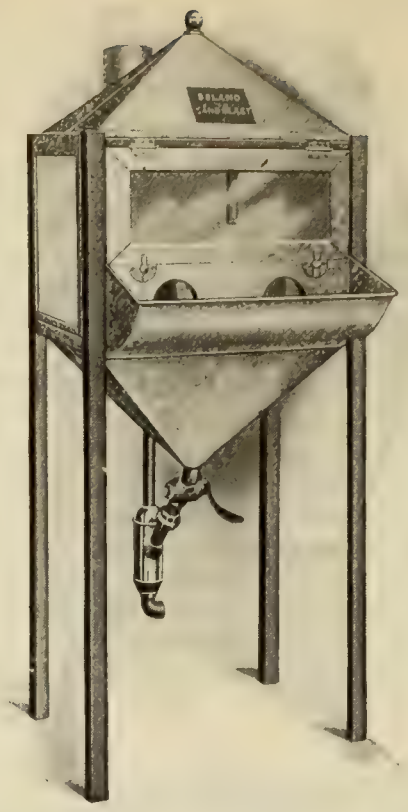



Fig. 3.—The Improved Boland Sandblast.

arrangement constituting an essential feature of the design in securing compression. The blades being hinged and provided with guides working in a slot in the inner side of each head, swing to conform with the eccentricity. The blades form what may be termed four pockets within the cylinder. A pocket takes air from the intake until its forward blade reaches the point of greatest width between the hub and cylinder wall. Cut off from the intake, the air begins to compress as the pocket ap-

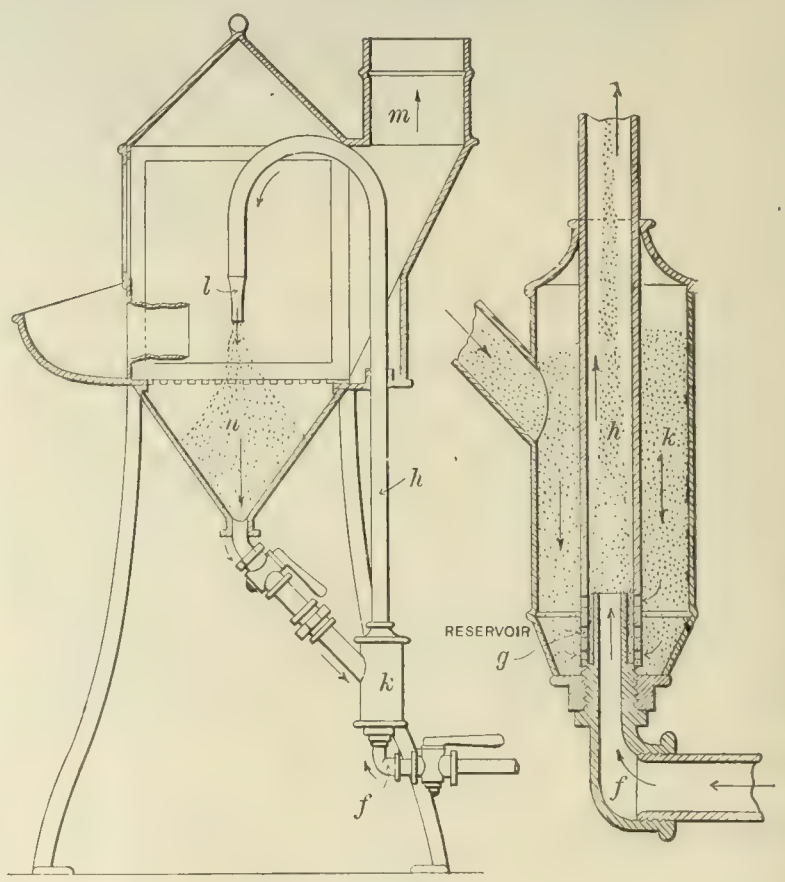



Fig. 4.—Details of the Boland Sandblast.

proaches the narrower space, until when the discharge port is reached, the desired pressure has been attained. The operation is repeated, one blade after the other. The blades have the same curvature as the cylinder, and at the upper position, at the narrow section of the travel, the blade and cylinder are concentric. In the outer edge of each blade is a slot into which fits a bronze safety strip, which provides compensation for wear.

Fig. 2 shows the general idea of the system. The blade *a* has its hinge at *b*, with the slot for the safety strip at *c*. The hinge pockets in the piston *d* on shaft *e*, are shown at *f*, and the pins which hold the guide at *g*. In the head of the machine is a bronze bushing fitted with oil rings, making it self-lubricating. The plunger of the

blower is recessed, permitting the placing of a portion of the hub proper within the chamber, a feature which serves to make the machine more compact than is usual in the type. The air tank which acts as an oil separator is located directly over the blower, and has a self-feeding tube which lubricates the blower at all times, and at the same time prevents oil from passing into the air. One oiling permits of running without renewing oil for a considerable period.

The self-feeding sandblast is shown in Figs. 3 and 4, the engravings giving details of the machine as a whole, and a section through the sand reservoir from which sand is fed automatically to the blast. The air from the blower enters at *f*, this intake pipe being perforated at *g* to the sand reservoir *k*. As the air passes to the pipe *h* its suction draws the sand into the blast, which delivers it to the work at the nozzle *l*. The used sand drops i to the hopper *n*, and returns by gravity to the reservoir, to be used over again. Such particles as are in suspension in the air pass away through the discharge *m*. This new model of the Boland sandblast is very much simpler in construction than previous ones of the same make.

## Business Reviving in Canada.

TORONTO, September 5, 1908.—Trade revival is in progress on this side of the border, but the movement is by no means brisk. In hardware circles an appreciably better demand for builders' articles is reported, and the sale of stoves and furnaces is improving. Statements to this effect agree with the account generally given of business in real estate, which is comparatively active and which at no time fell away as much as dealers in properties anticipated. Lumbermen's experience is not quite of the same tenor, the demand for their products being still very dull and prices accordingly depressed. But the market on which the Ontario lumbermen depend is only partially made by the requirements for home consumption, a considerable percentage of their output being exported. Consequently the conditions reflected by the quiet in their trade are in part those of other countries. Of the indications that trade is mending, one of the most reliable is the gain in customs receipts. These may be more significant in that sense than the rising value of the imports themselves, for it is very possible for imports to turn from a state of progressive decline to one of upward movement without any real expansion of demand. The depression may be continuing in the face of increasing imports, these flowing in to take the place of a shrunken home output. But when customs receipts increase they may be taken as a broadening of demand, an extending out into the class of articles known as luxuries, which are the main support of Canada's customs revenue. In August the customs receipts totaled $4,376,046. It is true this sum is $1,250,000 short of that paid in August, 1907, but it is $500,000 in excess of the receipts for July. Further, the Customs Department notes that the improvement became decided and progressive in the last 10 days of the month, favoring the expectation that it would go on accelerating throughout the present month. This means that the influence of the Canadian harvest is beginning to tell upon the import trade of the country.

### Influence of the Crops.

That the new wealth yielded to the country by the present harvest will surpass that returned by any former Canadian crop, whether measured in bushels or dollars, is now beyound question, for the grain is practically all housed. That a larger amount of the money proceeds will be required to pay debts than was ever due before on like account in Canada is probably true, though competent and dispassionate students of the situation say that the indebtedness has been magnified. After liquidation has been provided for, a large part of the crop money will still be at the farmers' disposal as buying power. That much of it will be used as buying power and not hoarded may reasonably be inferred from the fact that buying on the part of the farmers in the last crop year was enforcedly suspended, because their scant crop and their pressing creditors put it out of their power to spend as freely as they did in former years. Last year's wants have been carried over, and to them have been added those developed in the last twelvemonth. There will be rather free buying, wherever the goods come from. Canadian merchants and manufacturers, however, continue to be stinted by the banks notwithstanding that the reserves of the latter go on swelling. These financial institutions are collecting their energies for the grain movement, which will certainly call for a lot of money. But unless the cash thus supplied by the banks and distributed among farmers by grain buyers is to be mostly swallowed up in debt payment, merchandise will be purchased with a part of the money, and the banks are not enabling Canadian manufacturers to get all the merchandise ready for the market. Not improbably, therefore, the increase in the import trade will continue.

The portion of the crop money available as buying power, however small or great that portion may be, is by no means all the Canadian people will have to spend. There is a great volume of borrowed money to be put to use in the next twelvemonth and for some time further. This is being raised on the public credit—on Dominion inscribed stock, on provincial bonds and on municipal debentures. It is estimated that upward of $100,000,000 of Canadian municipal credit issues will have been floated in the British market before the close of the present year. The Canadian Pacific Railway Company has decided to increase its capital by an issue of $50,000,000 of new common stock, which, however, is not to be called for at once. The Canadian Government's large borrowings will be put to immediate use. Contracts for the construction of the stretch of the National Transcontinental Railway running from a point in Quebec and far into Ontario are now being awarded by the commission. The Dominion, provincial, municipal and railroad loans and capital issues will be expended upon construction and will conduce to activity in the iron and steel trade.

### Good Times in the Maritime Provinces.

Interviews given this week by the Lieutenant-Governor of Nova Scotia, by Premier Murray, by the general manager of the Dominion Steel Company and by the president of the Nova Scotia Steel & Coal Company are optimistic regarding the trade of that province and of the maritime provinces as a whole. The manager of the Royal Bank at Sydney says that the wages fund of the chief Cape Breton industries aggregates $1,000,000 a month at the present time. The main need of the maritime provinces, he considers, is capital for the development of such secondary industries as rolling mills, nail works, car works, &c. He expects that this capital will be forthcoming when the trouble between the Steel Company and the Coal Company is settled. The Dominion Steel Company's steel output in August amounted to 26,500 tons. Of this 5000 tons was made into wire rods. Not a pound of the month's production, it is stated, remains in stock. This business exceeds all past records. Bookings in July, according to General Manager Jones, were 50 per cent. in excess of the output.

D. D. Lewis, superintendent of the Algoma Steel Company, Sault Ste. Marie, announces that the company's blast furnaces will be blown in again September 15, and that the steel works, including the rail mill, will start up on October 1. Orders have been obtained that will suffice to keep the plant running. Government orders standing on the company's books for some time will now be attended to. One dated November 25, 1907, is for the National Transcontinental Railway. It calls for 21,371 tons of 80-lb. rails, of which half is to be delivered by November 1, and the remaining half by April 1. It is reported that the Canadian Pacific Railway Company has placed an order with the Algoma Steel Company for 35,000 tons.

C. A. C. J.

San Francisco structural steel fabricators are endeavoring to induce the transcontinental lines to grant a lower rate of freight on plain rolled material than on fabricated work. No differential is now allowed on plain material, and consequently the Pacific Coast shops are badly pressed by their Eastern competitors. Appeals are being made to architects, contractors and possible investors, urging them to favor the local fabricators in placing orders for work of this kind.

# Effects of Titanium on Cast Iron.

In view of the experiments made in this country in the use of titanium in iron castings, and the report on the subject presented at the Toronto convention of the American Foundrymen's Association by the Secretary, Dr. Richard Moldenke, the following, condensed from *Stahl und Eisen* of May 13, 1908, will be of interest. The original article was prepared by Bernhard Feise, Dresden, Germany:

By the alumino-thermic process of Kuhne almost pure titanium has been obtained recently. A test analysis showed the following impurities: Aluminum, 0.0035 per cent; iron, 0.0335 per cent; silicon, 0.0278 per cent; and carbon, 0.0078 per cent. Attempts have been made to introduce titanium into cast iron by adding the mineral rutile directly to the molten iron in the crucible. The experiments detailed here were conducted at the Royal Saxony Mechanical and Technical Institute at Dresden. They confirm the views generally held as to the favorable effect of titanium upon cast iron. The experiments embraced the determination of the tensile strength and the modulus of elasticity.

For a test material, normal cast iron of about 17,000 lb. per sq. in. was chosen, to which the pulverized titanium was to be added in amounts ranging from one-quarter of 1 per cent. to 1 per cent. The test bar was about 2 sq. in. in cross section, and nearly 2 ft. long, and was cast vertically. From this bar the normal test bar was turned down to a diameter of 25-32 in. All of the hardening skin formed in the casting was removed, so that there was a core of uniform texture. Since the tensile strength of one and the same bar fluctuates, even where the naked eye can perceive no flaw, four bars of each sort were cast so that from those of an estimated strength below the mean of four tests, only two were ruptured. These tests did not include the standard unalloyed bar.

The elongation measurements for the determination of the modulus of elasticity were taken up from the beginning on a bar in a Martin's testing machine. The load was increased gradually from the start, until the elongation ceased. At each step the amount was measured by a magnifying reflector. With each bar the load amounted to 6600 lb., corresponding to a tension of about 13,500 lb. per sq. in. In Table No. 1, the elongations are given for 1 cm. of measured lengths for the given tensions.

*Table I.*

| Stress. Pounds per sq. inch. | Stress. Kg. per sq. cm. | Elastic limit in cm. × 10⁻⁴. Bar 0, without Titanium. | Bar ¼. 0.25 % Ti. | Bar ½. 0.5 % Ti. | Bar 1. 1 % Ti. |
|---|---|---|---|---|---|
| 1,132 | 79.6 | 1 | 0.9 | 0.95 | 0.96 |
| 2,264 | 159.2 | 2.2 | 1.8 | 2.00 | 2.1 |
| 3,395 | 238.7 | 3.4 | 2.9 | 3.1 | 3.3 |
| 4,528 | 318.3 | 4.8 | 3.9 | 4.2 | 4.7 |
| 5,559 | 397.9 | 6.2 | 5.1 | 5.6 | 6.1 |
| 6,792 | 477.5 | 7.9 | 6.3 | 6.8 | 7.6 |
| 7,914 | 557.1 | 9.7 | 7.6 | 8.2 | 9.5 |
| 9,054 | 636.6 | 11.6 | 9.0 | 9.7 | 11.4 |
| 10,186 | 716.2 | 13.9 | 10.4 | 11.4 | 13.7 |
| 11,318 | 795.8 | 16.1 | 11.9 | 13.1 | 15.5 |
| 12,451 | 875.4 | 18.7 | 13.5 | 14.9 | 18.0 |
| 13.583 | 955 | 21.2 | 15.2 | 16.8 | 20.5 |

The influence of the alloy in reduced elongation is in part clearly recognizable. If the specific elongation is carried out as an abscissa and the tension as an ordinate, then a curve is obtained for the four different bars, as represented in Fig. 1. The curve drawn with even a smaller load is distinctly shown. At the same time, it must be recognized that the elongation does not increase proportionately with the tension, but, on the contrary, the augmentation is accelerated. Analytically, the course of the curve may be given by the equation of the power law, $e = a \times d^m$, in which $a$ takes the sign of the coefficient of the modulus of elasticity for tension and $m > 1$.

According to Table II it appears that the ratio of elasticity in the same cast iron is not altered by the amount of its tensile strength, while with the same amount of load the four different bars show different values.

*Table II.*

| Stress Lb. per sq. inch. | Stress. Kg. per sq. cm. | Modulus of elasticity = 1 ÷ a. Bar 0. | Bar ¼. | Bar ½. | Bar 1. |
|---|---|---|---|---|---|
| 2,264 | 159.2 | 703,500 | 790,000 | 698,000 | 682.000 |
| 4,528 | 318.3 | 574,000 | 707,000 | 664,000 | 586.500 |
| 6,792 | 477 5 | 504,000 | 653,500 | 653,000 | 472.500 |
| 9,054 | 636.6 | 414,000 | 561,000 | 530,000 | 411.000 |
| 11,318 | 795.8 | 346,500 | 535,000 | 469,500 | 403.000 |
| 13,583 | 955 | 300,000 | 465,000 | 397,500 | 311.500 |

Cast iron without titanium has the greatest coefficient of tension for elongation, and in the series of bars in which titanium was used, the lowest coefficient applies

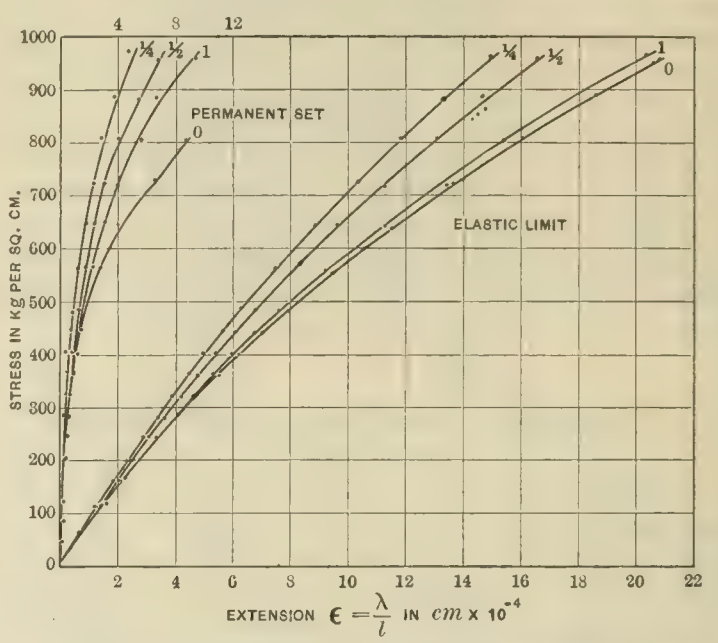



Fig. 1.—Curves Representing Tension and Elongation for Varying Percentages of Titanium.

to the bar with one-quarter of 1 per cent of titanium. It was supposed that in reducing the elongation of titanium alloy its tensile strength would be increased, which proved to be true, and, indeed, the tensile strength increased in proportion as the elongation was reduced. One quarter of 1 per cent. addition gave the greatest tensile strength; an improvement up to 35 per cent. is noticeable, from 17,494 lb. per sq. in. up to 23,610 lb. per sq. in.

*Table III.*

| Cast iron. | Titanium added in percentage. | Tensile strength Kg. per sq. cm. | Percentage of increase. | Work. Kilogram-meters per cu. cm. | Percentage increase. |
|---|---|---|---|---|---|
| 0 | 0 | 1,230 | .. | 0.046 | ... |
| ¼ | 0.25 | 1,660 | 35 | 0.050 | 8.7 |
| ½ | 0.5 | 1,410 | 15 | 0.053 | 15.2 |
| 1 | 1 | 1,340 | 9 | 0.066 | 43.5 |

From the delicate elongation measurements, a further insight is given as to the working power of each bar, and

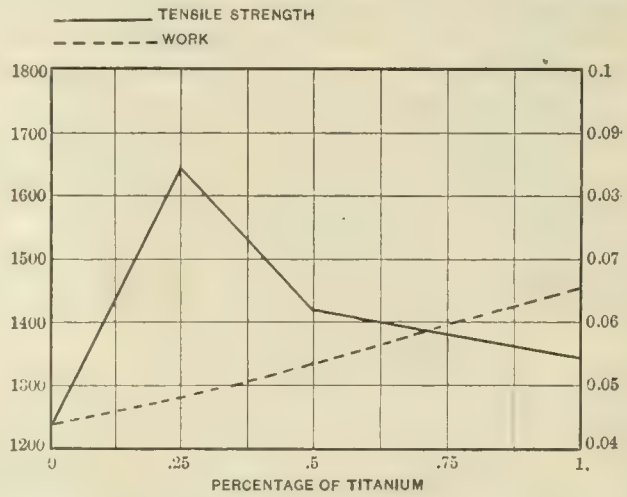



Fig. 2.—Diagram Showing the Relation of Tensile Strength and Work with Varying Percentages of Titanium.

this discovery leads to a valuation other than that of the tensile stresses. It is recognized that if a material possesses the greatest security against rupture, especially against dynamic stress, it will have a greater power of resistance to distortion on account of its greater tenacity. Dynamically, cast iron for parts of geometric shape or proportions will not be strained beyond its resiliency, for it has been found adaptable for such purposes as steam cylinders, rolls and steam pipe, subject to high and in-

creasing tensions, which are caused by high temperature differences, and by which, at times, the creation of stresses within the ingots, are known to be associated with the production of the material, requiring it to be of a high grade.

For this, however, the working power gives the best standard, and a knowledge of the latter is of the greatest value. That is to say, it is the mechanical work that is required to rupture the bar—the product of the strain and that which is brought about from time to time by this total elongation. According to the figures, an alloy of 1 per cent. of titanium does not increase the tenacity of the iron. The greatest increase of the working capacity amounts to 43.5 per cent. In Fig. 2 the tensile strength and working strength of the single bar due to the amount of titanium, are once more shown. These experiments confirm the long recognized fact that titanium, for its action upon the physical properties of cast iron, is of value, and exerts an undoubted good effect. In the year 1890 it was first observed by the Thomas Car Wheel Company that titanium greatly increased the wearing surface of their car wheels. Other observers have confirmed this result.

## The Tremendous Loss in Railroad Earnings.

The *Financial Chronicle* presents in its issue of September 5 a detailed statement of gross and net earnings of railroad companies, operating 168,839 miles of road, and of gross earnings alone of roads representing 33,333 miles additional. The roads reporting both expenses and gross earnings show a loss of $172,868,595, or 16.58 per cent., in gross, attended by a reduction in expenses of $109,383,693, or 14.74 per cent., leaving, therefore, a loss in net of $63,484,902. This last is equal to almost 25 per cent. The 33,333 miles of road for which only gross earnings are reported show a loss of $24,217,196. The figures for the roads giving both gross and net are as follows:

| Jan. 1 to June 30. (141 roads.) | 1908. | 1907. | Increase or decrease. Amount. | % |
|---|---|---|---|---|
| Miles of road.... | 168,839 | 167,447 + | 1,392 | 0.83 |
| | $ | $ | $ | |
| Gross earnings... | 863,860,965 | 1,036,729,560 | —172,868,595 | 16.58 |
| Operat. expenses. | 632,606,894 | 741,990,587 | —109,383,693 | 14.74 |
| Net earnings.. | 231,254,071 | 294,738,973 | — 63,484,902 | 24.97 |

The earliest months of the year made the best comparison as far as the gross was concerned, but the poorest comparison as to net, the reason being that the roads had not yet been able to get control of their expense accounts. In the later months, when the losses in earnings became extraordinarily heavy both in ratio and amount, a rigid policy of reduction in expenses enabled the roads to make a relatively good showing in the net. For the first six months of this year the roads reporting figures monthly showed the following percentages of decrease by months: January, 103 roads, 29.93 per cent.; February, 103 roads, 25.10 per cent.; March, 103 roads, 14.40 per cent.; April, 101 roads, 21.05 per cent.; May, 101 roads, 25.22 per cent.; June, 89 roads, 9.39 per cent. From 20 to 25 per cent. of the mileage of the country is unrepresented in these figures. The *Chronicle* says:

> We estimate that if we could have had returns for the missing mileage the result for January would have been a loss of, say, $29,000,000 in gross and of $18,000,000 in net; for February a loss of $26,000,000 in gross and of $13,000,000 in net; for March a loss of $34,000,000 in gross and of $10,000,000 in net; for April a loss of $45,000,000 in gross and of $16,000,000 in net; for May, $55,000,000 loss in gross and $18,000,000 in net; and for June, $46,000,000 loss in gross and $10,000,000 in net—giving for the six months combined a shrinkage of $235,000,000 in gross and of $85,000,000 in net.
>
> This prodigious falling off in 1908 contrasts very strikingly with the showing made in preceding periods, when for a decade there had been an almost uninterrupted expansion in earnings, year by year. For the first half of 1907, for instance, we found there had been a gain over the first six months of 1906 in the large sum of $145,000,000. In 1906 we computed that there had been an increase of $135,000,000 over 1905, and in 1905 that there had been an increase of $70,000,000 over 1904. In 1904 we made a decrease for the six months of between $18,000,000 and $20,000,000. Previously we estimated that in the six months of 1903 there had been an improvement of $115,000,000 over the six months of 1902; that similarly in 1902 there had been an increase of $50,000,000 over the year preceding; in 1901 an increase of $70,000,000; in 1900 an increase of $90,000,000; in 1899 an increase of $42,000,000, and in 1898 an increase of $68,000,000. Thus, altogether for the ten years prior to 1908 the improvement reached the prodigious sum of $765,000,000 Now, unfortunately, all this has been changed, and we are on the down grade—at a very fast pace, too.

## Manganese Steel Rails Rolled at the Passaic Works.

Important work has been done in the past two months at the plant of the Passaic Steel Company, Paterson, N. J., by the Manganese Steel Rail Company. After the plant had been shut down and a receiver appointed the last named company arranged for the use of a portion of it to carry on the rolling of manganese steel rails on a scale sufficient to make a satisfactory demonstration of the success of its process, on which Winfield S. Potter, chemist and metallurgist, has been at work for a number of years. As a result of the recent operations at Paterson the Manganese Steel Rail Company now has on hand about 125 tons of 85-lb. manganese steel rails. Some rails have also been rolled in which various percentages of other commercial metals were used as alloys.

In view of the experimental work covering a number of years carried on at various steel plants looking to the production of a manganese steel rail and the well-known difficulties attending the rolling of such steel, special interest attaches to this recent achievement. In the ordinary manganese steel rails rolled at Paterson the percentage of manganese has ranged from 9 to 16, with an average of about 11.75 per cent. Counting in the special alloy steel rails, the average manganese content is somewhat higher than the above percentage. The carbon content has ranged from 0.90 to 1.25 per cent. Extensive tests have been made showing tensile strength in the manganese steel rails of from 140,000 to 145,000 lb. elongation of 35 to 45 per cent., and elastic limit of 60,000 to 65,000 lb. The ingots have been cast of a size sufficient to produce four 33-ft. rails. As is well known, the problem of securing manganese steel of the requisite plasticity for rolling is one upon which a vast amount of practically fruitless work has been expended, the usual manganese steel product being castings or forgings.

The Manganese Steel Rail Company, which is a New Jersey corporation, expects soon to be in the market with its product. The directors are the following: Winfield S. Potter, Mahwah, N. J.; Bayard L. Peck, Brooklyn, N. Y.; Fred W. Snow and Robert J. Davidson, Hillburn, N. Y.; Otis H. Cutler, Suffern, N. Y., and J. D. Gallagher, Glen Ridge, N. J. Winfield S. Potter, who has developed the process employed at Paterson, is a son of the late Mark L. Potter, who was a pioneer in the Birmingham, Ala., iron ore field, the last of his holdings of red ore lands having been taken over in 1906 jointly by the Tennessee Coal, Iron & Railroad Company and the Republic Iron & Steel Company.

## The Monongahela River Consolidated Coal & Coke Company.

At the regular monthly meeting of directors of the Monongahela River Consolidated Coal & Coke Company, held last week in Pittsburgh, George W. Theiss, president, submitted the following report of output and earnings of the company for nine months of the fiscal year ended July 31, 1908, as compared with the corresponding period for 1907:

*Tonnage.*

| | River.—Tons. | Rail.—Tons. | Total.—Tons. |
|---|---|---|---|
| 1908 | 3,979,679 | 1,018,450 | 4,998,129 |
| 1907 | 3,744,182 | 1,442,478 | 5,186,660 |
| Increase | 235,497 | ..... | .... |
| Decrease | ..... | 424,028 | 188,531 |

*Earnings.*

| | Nine months ending July 31, '08. | July 31, '07. | Decrease. |
|---|---|---|---|
| Gross earnings | $1,692,344.70 | $1,751,213.36 | $58,868.66 |
| Less: | | | |
| Allowance for royalty | 349,626.42 | 346,053.42 | *3,572.99 |
| Allowance for depreciation | 274,107.43 | 248,540.67 | *25,566.76 |
| Accrued taxes, estimated. | 90,000.00 | 90,000.00 | ..... |
| Accrued interest on bonds | 377,835.00 | 387,485.00 | 9,650.00 |
| Net earnings | $600,775.85 | $679,134.26 | $78,358.41 |

* Increase.

# Applications of Oil Burning Apparatus.

BY CHAS. M. RIPLEY, NEW YORK.

A unique application of the oil burning furnace is in the heating of coaches on electric divisions of steam railroads. The New York Central and the New York, New Haven & Hartford railroads have both installed vertical steam boilers in electric locomotives, and equipped them with oil burners, pressure tanks for oil and water, and utilized the compressed air system of the train in atomizing the oil. When the steam locomotive is detached from the train and the electric locomotive coupled on, the existing piping system of the train is still utilized to heat the cars. The expense of installing electric heaters in each car, the expense of power for these heaters, or the danger that would have resulted from coal stoves are thus avoided. The author described this adaptation more at length in *The Iron Age* of March, 1908.

### Oil Burners in Bridge Works.

At the plant of the Pennsylvania Bridge Company, Beaver Falls, Pa., advantage has been taken of the economy of oil burning furnaces for rivet heating, &c. This equipment consists of a 10,000-gal. supply tank, buried in the ground outside the building and near the railroad switch to facilitate the unloading of the oil cars. A No. 0 Kirkwood oil pumping, heating and pressure regulating system, located in the shop, draws the oil from the supply tank, strains it, and, after raising the temperature to the proper point for complete combustion, pumps it to the burners under 20 lb. pressure. Compressed air for atomizing the oil is taken from the regular shop air line, and reduced by a regulating valve to 15 lb. before being piped to the burners. As only 150 cu. ft. of free air compressed to 15 lb. is required under this system for each gallon of oil burned the air taken for atomizing is hardly felt.

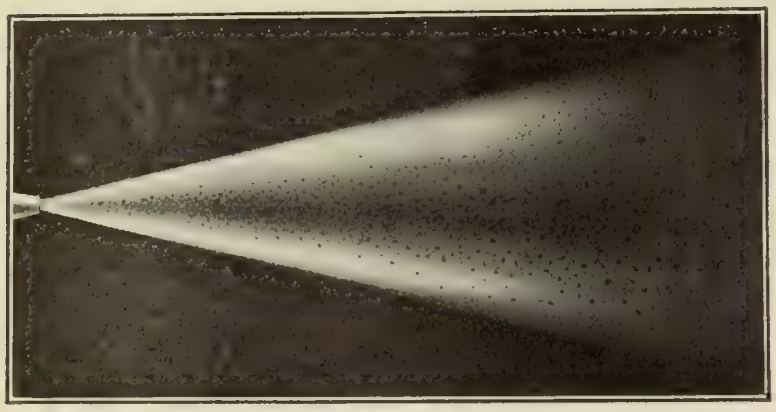


Fig. 1.—Appearance of the Flame from a Burner When the Oil Is Imperfectly Atomized.

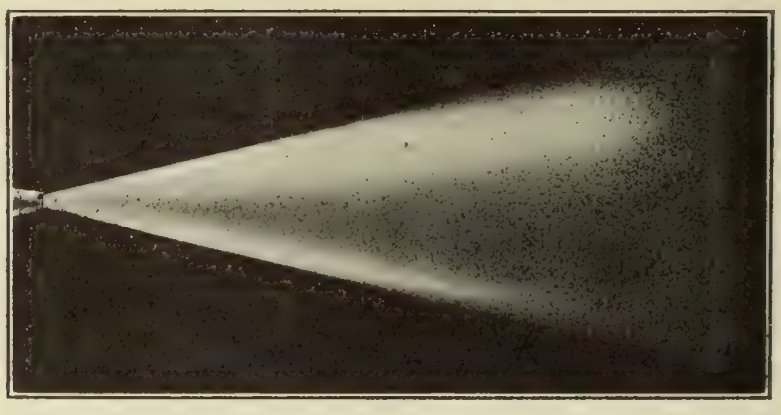


Fig. 2.—Complete Combustion in a Flame Where the Oil Is Perfectly Atomized.

There are five double door stationary rivet forges, with hearts 16 x 24 in.; four furnaces of similar design, but with doors and hearths 12 x 18 in., mounted upon a tank containing the oil supply and connected by flexible hose to the compressed air supply. The latter are designed to allow of being moved from place to place in the shop. Each of these furnaces is equipped with a burner so designed that the supply of the oil and compressed air are regulated by one lever. This adjustment maintains a fixed ratio between the oil and compressed air, so that there will always be perfect atomization. In this manner a careless or inexperienced operator cannot help having an efficient fire, and it is almost impossible to burn the rivets.

### Blacksmith Shop of a Car Manufacturing Company.

The relative merits of oil, coal and coke as fuel for the forge shop are continually a matter for experiment and discussion. The writer recently had the privilege of visiting the factory of a well-known concern, and was much interested in the operation of the oil burning furnaces in the blacksmith shop. There were seven furnaces, ranging in size from 36 x 48 in. up to practically twice this size. These were used for heating king pins, bar iron, &c., some to a bending temperature, and others to white or welding heat. All of the seven were of the Kirkwood type, manufactured by Tate, Jones & Co., Inc., Pittsburgh, Pa. These were designed so that only enough compressed air was supplied to the burner to thoroughly atomize the oil, while the air for combustion was supplied by forced draft by a separate piping system. Thus the air for combustion is not drawn in from the surrounding air, which always makes a noisy burner, but is forced in under a few ounces pressure, at the rate of approximately 1440 cu. ft. of free air per gallon of oil burned. The king pins were made from 2-in. billets about 20 in. long, and were heated for a distance of 12 in. from the end, at the rate of 21 pins in 7 min., at the end of which time each was white hot and a ¾ x 2 in. slot was punched through in one operation.

Where hard coal or coke is used in the forge the time of tending fires and cleaning out the slag and cinders is frequently more of an item than is generally believed. From the speed with which the bars, plates and billets of various sizes were heated up it is fair to conclude that, for the same floor space, the oil furnace can approximately double the output, where high heats are required in work of about 2-in. diameter. Where simply bending or swaging heats are required, there ought to be easily a 50 per cent. increase in output for the same floor space.

Another advantage of the oil furnace is the ability to confine the heat to the part to be worked. The high blast required by the coke fire when high temperatures are desired causes considerable discomfort and hence delay in two ways. Not only are cinders scattered, but the flame comes out along the lower side of the piece and heats a greater distance than is desired. The oil flame, as applied, is concentrated more than any other, and so obviates this annoying feature of blacksmithing.

### Steam Generation by Oil Fuel.

Since the oil must be atomized the initial starting of the fire requires either a supply of compressed air to turn into the atomizing nozzle until steam pressure has been attained (when it is switched off to steam by a three-way cock) or else a small boiler must be kept as an auxiliary. This disadvantage is offset in the fact that by starting the oil and throwing some oil soaked waste into the firebox the fire is instantly in full blast, which means a great saving of time for plants that close down entirely.

The change in the furnace from coal to oil fuel requires that the bridge wall be converted into a grill work of fire brick. In order that the flame will not be cooled by the inrush of cold air, the level of the grate bars should be lowered about a foot and two or three rows of fire brick laid on top.

Oil with a fire test of 180 or 200 degrees F. is considered as safe as coal. If oil with a test of 250 or 300 degrees is stirred with a red hot poker it will not ignite, and even a shovel full of hot coals thrown on its surface will immediately sink and be extinguished. Crude petroleum or fuel oil is the commercial name. Considering both convenience and safety, it is best to store the oil in an underground tank between the railroad track and the boiler room. The most successful result is obtained when the oil is fed to the burners under constant pressure and is previously strained and heated. The piping into the breeching of the boilers is frequently so arranged that a considerable rise of temperature is obtained by the time

the oil reaches the nozzle—some times as high as 200 degrees F.

**The Importance of Atomization.**

As is the case with any fuel, oil must be thoroughly mixed with air to secure complete combustion and no smoke from the stack. If the spray of oil contains some small and some large particles of oil, as in Fig. 1, the larger particles being supplied no more air than the small ones, will not be completely burned, and the result will be a coating on the boiler tubes, which is more difficult to remove than the soot deposited from a coal fire. This difficulty, however, has been overcome by the latest designs of nozzles, which give a steady fire and no smoke and are very efficient and satisfactory. Fig. 2 shows the appearance of a flame when the oil is perfectly atomized.

**Triple Use of Oil Burners in Steel Mill.**

Oil burners are being employed in some of the steel mills in three capacities: To heat open hearth furnaces, to serve as auxiliary where gas is used and to heat the ladles and prevent explosions and losses in them.

In open hearth work oil burners effect a saving for the following reasons: A lower grade of scrap or a greater per cent. of scrap can be used since oil is comparatively free from phosphorous and sulphur. Since the highest temperature of the oil flame is at the bottom, it is directly applied to the bath and not to the walls, arches and doors of the furnace. Owing to accurate control, the furnace can be banked for two or three days and then heated full blast in 12 to 16 hr. Small first cost. Large saving in labor. Oil burning furnaces have been operated with as low a consumption as 38 gal. of oil per net ton of charge.

When oil burners are installed as auxiliary equipment the oil burner is made hinged, so that it can be swung out of action until such time as the regular fuel supply might happen to fail. Thus it is ready at a moment's notice, and the heat of the bath and walls instantly brings the flame to an efficient state.

The swinging stand idea is used where oil burners are employed to heat metal ladles as in the open hearth auxiliary arrangement. Thus the burner can be lowered into the ladle, the long nozzle reaching clear to the bottom and thoroughly drying and heating the entire ladle.

**Oil Burners in the Brass Foundry.**

One of the large electrical manufacturing companies states that crucibles which lasted only 17 or 18 heats when coke was used as a fuel, now last from 30 to 32 heats since oil burners were installed in the foundry, that the cost of fuel has been cut in half, and that the annoyance, dirt and expense of handling ashes have been entirely eliminated. Although a brass foundry be originally built for coke, it can be easily piped for oil burners.

## South American Notes.

SAN JUAN, C. A., August 3, 1908.

A mining district which deserves the attention of American capitalists is that of Tipuani, in Central South America. Most of this gold region is on the Eastern Andes, between 12 and 16 degrees south latitude, embracing portions of Peru and Bolivia. A number of foreigners are now washing gold on the banks of the Tipuani, the Beni and the Kaka, for a length of 100 miles. Mining machinery of all sorts and a number of dredgers are being imported into this district, especially by the Incahuari Dredging Company, which owns the new road over the mountains. The lack of transportation facilities has been the great drawback to this immense district, but several of the largest interests are getting together to build a railroad to the effluents of the Amazon. The Speyer interests, New York, sent out an expedition some time ago to survey the country for a railroad. The report was favorable, the gold region proving to produce from $1 to $3 per cubic yard by panning. As to exports, the rubber and precious woods were also considered important. In fact, one of those interested in the new railroad schemes is the Imambari Rubber Company. The line may eventually run from La Paz to navigable water on the Amazon. The Tipuani seems to be especially rich as far as Puerto Pando on the Beni, although the Kaka is still regarded as the richest of all. On the upper portions of these rivers the current is very rapid and the beds are covered with immense boulders, but in the lower portions the quartz gold and sand are easily reached.

Much has been said in the German press and other European periodicals about the robberies in the custom houses of Antofagasta and Valparaiso, Chile. The truth is that after due investigation by the Chilean Government, several robberies were proved at Antofagasta, but none in Valparaiso, and all that has been said of pirate ships on the coast of Chile is a mere invention of the German correspondents.

Chile's exports for the month of April were some $21,415,000, or $1,152,000 over the exports of March.

Conditions in Chile and Argentine are calm, due to the arrangements made by these two countries regarding the frontier or Andean question.

Operations on the Lima-Cuzo Railroad will begin in September, according to Peruvian Government announcement.

The Timbo Railroad on the Brazilian frontier will begin this month its extension lines into the Matto Grosso country.

The Brazilian Government has signed a contract with a French company for the new steel piers at Paranagua, the Atlantic seaport, which has a large trade in maté-yerba and cereals.

The German Emperor has invited the War Minister of Brazil to the military manoeuvers in Alsace-Lorraine, and to live at the Imperial palace—one of the indications that Germany never forgets to increase her commercial and other influences in Brazil.

By law the French Port Company of Rio Grande do Sul has been recognized for general business purposes.

A branch of the Bank of Brazil has been established at Santos. It is backed mostly by French capital.

Señor Estienne has received the contract to build a railroad in Matto Grosso, Brazil, to Porto Martinho, on the Paraguay River, and to the Parana. This concession is to last 99 years.

The new Brazilian railroad line from Santa Catherina to Rio Novo and Theresopolis is to have a 6 per cent. grade. It must be finished in three years.

Uruguay has enacted a law by which all machinery and machinery parts for linen manufacture are to be exempt from duties for three years.

The Bolivian Camaras (Legislature) is studying a project for a railroad from Minas Geraes to Northern Bolivia.

Argentina proposes to build lines of railroad from Villa Mercedes to Buena Esperanza. Also another line from San Luis to Quines, San Juan, Andino and the Chilean frontier, to become eventually a branch line of the Continental-Transandino.

Several large cargoes of rails and railroad material have arrived from the United States at the ports of Buenos Aires, Campana and Rosario di Santa Fé. C.

**The Mining Engineers.**—The programme of the forthcoming meeting at Chattanooga of the American Institute of Mining Engineers promises to be one of special interest. On Friday, October 2, there will be papers relating to iron and steel, especially new records of practice with the Gayley dry blast process, by Edward Bailey Cook of the Warwick Iron & Steel Company, Pottstown, Pa.; by Theodore W. Robinson, vice-president of the Illinois Steel Company, Chicago, and by Dr. R. W. Raymond. R. H. Sweetser, Columbus, Ohio, has a paper entitled "Blast Pressure at the Tuyeres and Inside the Furnace," and John B. Miles, Philadelphia, will present one on "The Relation of Slow Driving to Fuel Economy in Iron Blast Furnace Practice." There will also be submitted the report of the Institute Committee on Steel.

The next annual meeting of the Society of Naval Architects and Marine Engineers will be held at the Engineering Building, New York, November 19 and 20.

## A Special Milling Job.

Economy in the use of all machine tools depends above all else on keeping them actually at work as much of the time as possible, *i.e.*, on reducing the time lost between cutting operations. Much thought is spent on designs of parts so as to accomplish this, and in many cases tools are built specially to accommodate difficult forms, and thus minimize the operations of setting work during which the tool is idle. A piece which requires a number of settings to plane all the surfaces is shown by the drawing, Fig. 1,

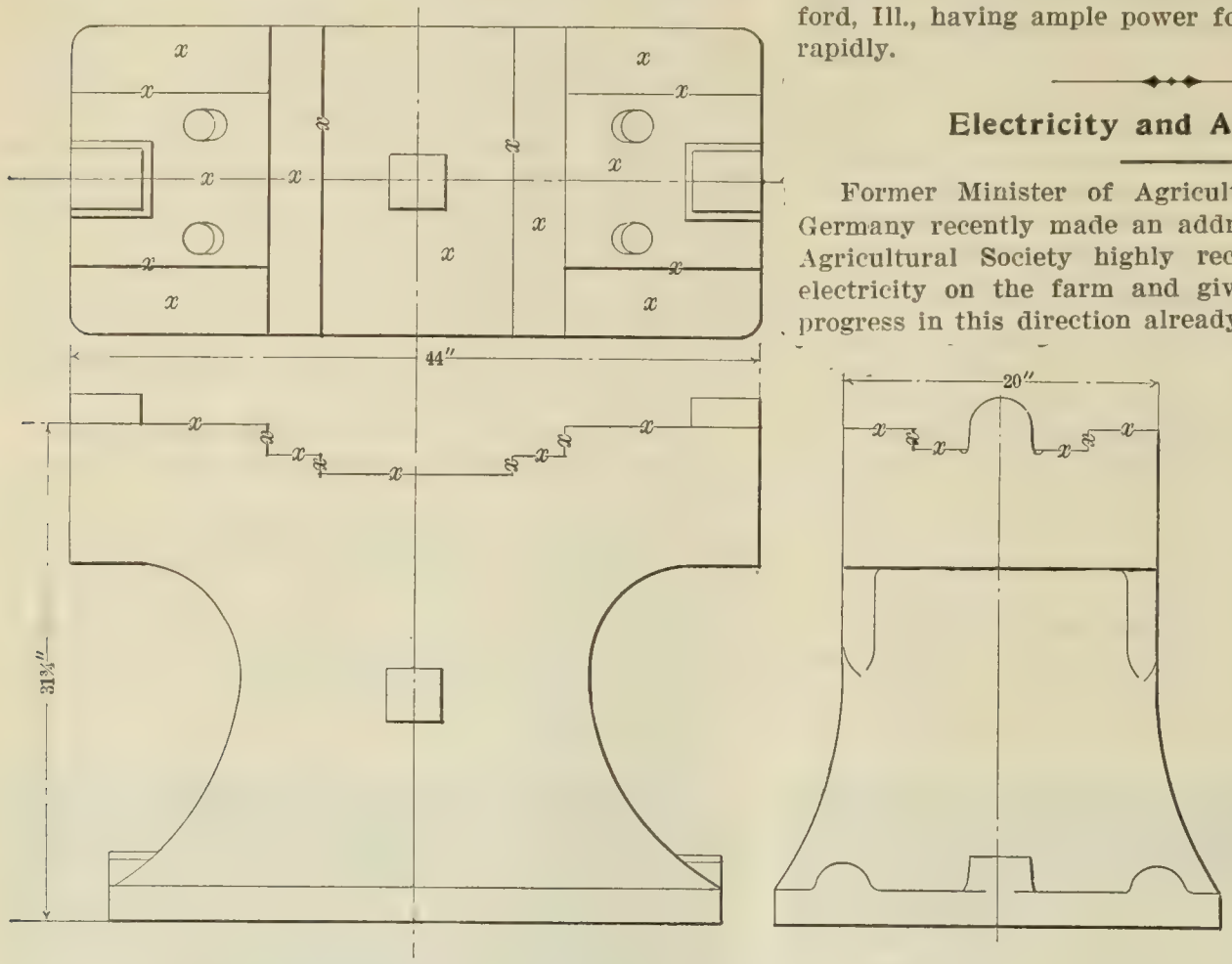



Fig. 1.—Top, Side and End Views of the Piece of Work.

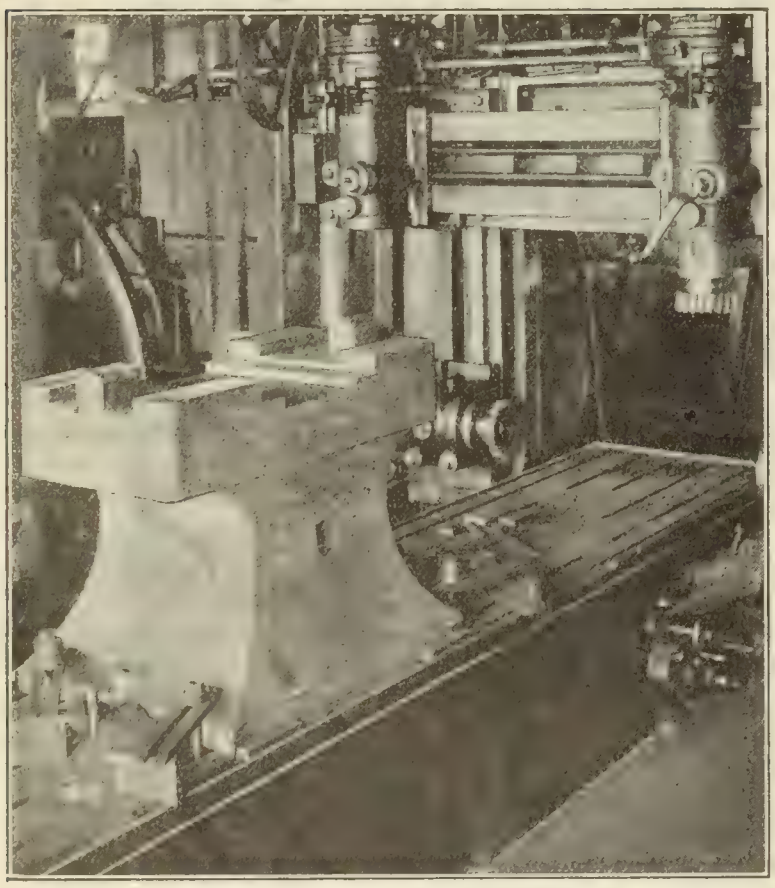


Fig. 2.—The Machine on Which It Is Finished at One Setting.

where the surfaces marked *x* are those requiring finishing. Fig. 2 shows the work as it has been milled at one setting on an Ingersoll milling machine.

The operations commence with roughing out the base, commencing with the bottom surface, and taking each face as it comes. The finishing is in the same sequence. Two spindles with power cross feed are used, and no time is lost in changing cutters. There is a saving in time of about 60 per cent. over that required to do the work on a planer, largely because there is less interruption of the cutting operations.

The machine shown is a stock four-head machine, made by the Ingersoll Milling Machine Company, Rockford, Ill., having ample power for finishing the surfaces rapidly.

## Electricity and Agriculture.

Former Minister of Agriculture Von Podbielski of Germany recently made an address before the Prussian Agricultural Society highly recommending the use of electricity on the farm and giving illustrations of the progress in this direction already made by German agriculturists. United States Consul R. J. Thompson, at Hanover, addressed some inquiries to Mr. Von Podbielski, receiving in reply the following interesting statement:

"If even a very small profit is to be derived from agricultural work, the farmer is bound to use machinery instead of day labor, because the wages for the latter are steadily increasing. Electricity is the power wanted and is the best adapted to the work. Electricity is always at hand when the proper conductors are provided. Until very lately it could not be used extensively on account of the great price for the kilowatt-hour, charges of from 40 to 60 pfennigs ($0.0952 to $0.1428) for the kilowatt-hour excluding its use for agricultural purposes. According to my calculations the price for the kilowatt-hour in Germany, in order to leave a reasonable profit, should be no more than 20 pfennigs ($0.0476); and if installations, already in existence, of turbines are employed it is possible to furnish electricity at such a price. At our coal centers the kilowatt-hour is already furnished at from 6 to 7 pfennigs ($0.014 to $0.0166).

"The use of electricity in agricultural work may be classified as follows: (1) About the barnyard as working the fodder cutter, corn cleaner, crushing mill, hauling and unloading of hay, and, on large farms, smithy and wheelwright work, and, further, for lighting the stables and the houses, and (2) in the fields, pulling the plow, running the machines, reapers, &c., and threshing.

"There is no difficulty in installing the machines referred to in the farmyard, but the expense for the use of electricity in the fields is much too high as yet. The strong conductors and cables are too expensive, and the plow run by electricity does not as yet work satisfactorily. I feel sure that electrical centers will soon be installed in the country, and that the electrical force thus provided will be employed first of all for agricultural work."

The production of gold and silver in California in 1907, as reported from the mines to the United States Geological Survey, was 809,213 fine ounces of gold, valued at $16,727,928, and 1,138,858 fine ounces of silver, valued at $751,646—a total value of $17,479,574. From 1906 these figures show a decrease of $2,004,524 in value of gold, and of $66,182 in value of silver, a total falling off of $2,070,708. The average commercial value of silver in New York, per fine ounce, in 1906 was 67 cents; in 1907 it was 66 cents. The standard value of gold is $20.671834625323 per fine ounce.

# Coke Oven Gas for Power Generation.

In the discussion of the paper read by W. H. Blauvelt on "The By-Product Coke Oven," before the Detroit meeting of the American Society of Mechanical Engineers, J. B. Bibbins presents some data regarding the first coke oven gas installation of large size in this country:

This development has taken place at Lebanon, Pa., where two large by-product coke plants are in operation, one of the Semet-Solvay and the other of the United Otto type. Until about a year ago there was no opportunity to dispose of the by-product gas from either of these plants, and all the surplus was allowed to go to waste. In 1907 two power projects were developed—one to operate the works of the American Iron & Steel Mfg. Company, and the other to establish a large gas engine plant near the ovens to furnish power for the ovens and mines supplying them, and to transmit a large amount of surplus power to the city of Lebanon for public utilities. The first of these plants was installed in 1907 and has been in continuous operation since, from gas piped several miles under moderate pressure from the Semet-Solvay coke plant. The second project will be actively pushed forward within the next few months. Both employ horizontal double acting engines of the twin tandem type of 500 and 1200 hp. capacity, respectively.

At the time of this first Lebanon installation very little was definitely known concerning the possible success or failure of this kind of gas, as the only precedents in this country were a small vertical single acting engine at Syracuse and a larger engine at Camden, N. J., which was in commission for several years, operating on poor gas from the last half of the coking run.

### Sulphur Troubles Overcome.

The results of a year's operation at Lebanon have been extremely satisfactory. Trouble anticipated from excessive hydrogen content has not developed, and after some experimenting for sulphur removal, no serious trouble has resulted from the somewhat high sulphur content. At the outset the builders stipulated a maximum content in the gas of 50 per cent. hydrogen by volume and 0.02 gr. of sulphur per cubic foot. Both these limits have been exceeded without resulting trouble. Although pooled gas (*i. e.*, run of oven) is supplied, the hydrogen content at times runs as high as 66 per cent. by volume, and the sulphur 1½ gr. per cubic foot.

This sulphur exists in the form of $H_2S$ and $CS_2$ in varying proportions. The gas is purified in rectangular oxide purifiers containing iron oxide sponge prepared on the ground. By giving proper attention to this apparatus and renewing one layer of oxide each week the sulphur may easily be reduced to 80 or 85 per cent. of the original content, which runs from 2½ to 4 gr. per cubic foot in the crude gas. This leaves about 0.6 gr. sulphur in the gas supply to the engine, much more than was originally considered safe.

As to the effect of sulphur upon the engine, it apparently passes through the combustion cycle without difficulty, provided three simple remedies are employed:

*a.* To insure absolute separation of the water and gas around the cylinder valves or packing;

*b.* To flush the rods thoroughly with continuous streams of engine oil;

*c.* To maintain the piston cooling water circuits at a fairly high temperature, sufficient to prevent condensation and the consequent formation of acid.

In all modern designs a continuous return lubricating system is employed. It is a simple matter to provide a small stream of oil in front of each packing cage, which returns to the filter and is again pumped through the system without loss.

A fairly high piston water temperature is advantageous, not only from the sulphur standpoint, but to facilitate lubrication as well. In fact, most of the packing trouble experienced in the early days of the horizontal design was found to be due to running the rods too cold, as a matter of precaution.

During the early experience of the Lebanon plant the sulphur reduction decreased for some time to a point as low as 50 per cent., or 2.0 gr. per cubic foot at the end of the week. Recently a measurement of the rod diameters showed that the reduction during the year had been extremely small, and at one packing could hardly be detected. This seems to indicate that in a proper design and with necessary precautions the sulphur problem is not so serious as anticipated. Recently this engine was operated 6 hr. on crude unpurified gas containing over 3 gr. of sulphur, and has been so operated at intervals during the past year. With normal lubrication the rods tended to run dry in places, which might cause considerable trouble at the packing, but by flushing the rods with a small stream of oil this trouble was immediately corrected.

### The Relative Value of Principal and Other Products.

One important phase of the Lebanon situation is the relative value to the coke oven operator of principal and by-products, and herein lies the crux of the application of coke oven gas for power purposes. The power user of course desires a guarantee of uniformity of quality and continuous supply; and this necessitates the operation of the ovens for the purpose of delivering the by-product, even in periods of decreased demand for coke, tying up the capital of the operator in stored coke, to his serious embarrassment.

At Lebanon the gas is supplied by contract that fixes the rate, but not the supply, which is dependent on the operation of the coke oven plant. This provides cheap power and heat for the consumer, and relieves the coke oven operator of the above objection. On the other hand, this arrangement would be entirely unsatisfactory to a consumer contracting for a definite service, unless he took the precaution of installing a relay producer equipment. Such a plant has already been installed at Lebanon to provide for a contingency of this nature, and at the prevailing low price of producer apparatus would certainly be cheaper in the long run than to employ steam power, providing the coke oven gas could be obtained at a reasonably low figure in comparison with coal. This whole question therefore resolves itself into an economic one, which both producer and consumer must solve.

Another point of interest in regard to the Lebanon installation is that it is an alternating current system with generators solid coupled, and operating at a frequency of 40 cycles per second. The unit operates regularly in parallel with an adjoining steam plant containing both tandem and cross compound steam engines. At this intermediate frequency no trouble whatever has appeared in parallel operation.

**The Dodge Field Day.**—The factory force of the Dodge Mfg. Co., Mishawaka, Ind., held its second annual field day under the auspices of the Dodge Club, on August 15. Employees of all departments of the great Dodge Works, with relatives and friends to make up a total of more than 1000, were taken in two special trains direct from Mishawaka to Lake Maxinkuckee, about 40 miles to the southward. In addition to the general pastimes of boating, bathing, fishing and other diversions of a big family picnic, there was a programme of field events, consisting of races, contests, games, &c., in which many were entered, and from which much amusement was derived. The Dodge Company met all expenses of transportation, bands, orchestras, and other general features of the undertaking.

Records of the steerage passenger movement kept by the steamship companies show that the emigration from the port of New York in August was 63,642, or 12,592 more than in August, 1907. For the year, to September 1, emigration was 505,774, against 258,268 in the first eight months of 1907. Immigration was 252,238 in the first eight months, against 980,289 to September 1, 1907, a decrease of 728,051. The excess of emigration over immigration in the first eight months of this year was 253,536.

# Trade Publications.

**Manual for Engineers.**—University of Tennessee, Knoxville, Tenn. Eleventh edition. Pocket size. Flexible leather cover. Gives tables and other data for engineers and business men. Price, 50 cents per copy.

**Crucible Steel Products.**—Bethlehem Steel Company, South Bethlehem, Pa. Catalogue. Size, 4 x 7 in.; 36 pages. Gives a description of the principal high speed tool steels made by this company and classification of the temper numbers and carbon contents. Considerable data is also given on carbon steels, giving the temper numbers corresponding to the carbon contents and the uses for which these are best adapted. Also shows the shapes in which rock and drill steels are made and catalogues other special steels.

**Safety Valves.**—Consolidated Safety Valve Company, 85 to 89 Liberty street, New York. Pamphlet, 8 pages. Illustrates and describes the Consolidated pop safety valve, Board of Trade marine type. This valve combines new features developed by the high duty demands of modern boiler practice with the highly approved principles of construction which have long been used by the company. The features of the valve are fully described. It is furnished in either single or duplex patterns.

**Leather Belting.**—Charles A. Schieren Company, New York. This is a neat little card on which are mounted a barometer and a thermometer. The barometer is a piece of fabric cut in the shape of a duck, illustrating the well-known Duxbak belting trademark of the Schieren Company. The fabric is chemically treated so that it changes color to forecast weather changes. The printed matter consists of appropriate arguments regarding the durability of Duxbak belting under any weather conditions.

**Recording Instruments.**—Bristol Company, Waterbury, Conn. Four bulletins for insertion in binder. Bulletin No. 85 is devoted to the Wm. H. Bristol indicating electric pyrometer, and gives full size specimen scales for the indicating form, and practical lists of charts for the recording form. No. 89 contains a brief description, a price-list, and a list of users of Bristol's electric time recorder. No. 91 deals with the class I recording thermometers for atmospheric temperatures and ranges to 250 degrees F. These thermometers are adapted for recording temperatures of air, gas or liquids in tanks, pipes, mains, closed spaces, cold storage and drying rooms. No. 93 pertains to the class III Bristol's high range recording thermometers for working ranges from 40 to 800 degrees F., for kilns, ovens, flue gases, superheated steam, core ovens, &c.

**Oil Filters, Pumps and Engine Jacks.**—Vandyck-Churchill Company, 91 Liberty street, New York. Three pamphlets. One deals with the White Star oil filter, which purifies used oil from machinery bearings so that it may be fed again to the rubbing surfaces. The operation and construction of the filter is explained. The other two pamphlets pertain respectively to the Richardson model M automatic sight feed oil pump and the Chicago engine jack.

**Automatic Mailing Machine.**—Nielsen Mailing Machinery Company, Erie, Pa. Catalogue. Size, 6¾ x 9½ in.; pages, 32. Contains an illustrated description of the Auto-Mailer, a machine for folding, wrapping, sealing, addressing and assorting newspapers, magazines or pamphlets, discharging them into mail bags at the rate of 4000 an hour.

**Boring Mills.**—Niles-Bement-Pond Company, 111 Broadway, New York. Catalogue. Size, 9 x 12¼ in.; pages, 46. Gives illustrations and descriptions of Niles boring and turning mills, made in sizes of from 30, 100 in. to 20 ft. Also shows 10-16 ft. extension mills, 10-16 and 14-20 ft. extension mills with boring reach and 16-25 ft. heavy pattern extension mills. Attachments for Niles mills, such as motor drive, speed box, chasing, slotting and taper turning attachments, &c., are shown. A 66-in. tire mill with fixed cross rail and one of the same size with movable cross rail, and others in 90, 96 and 100 in. sizes are included.

**Spiral Riveted Pipe.**—American Spiral Pipe Works, Chicago, Ill. Pamphlet. This endeavors to call attention to the many different uses for which Taylor's spiral riveted pipe is especially adapted. Illustrations show its construction and also various installations. Testimonial letters are included.

**Motors and Blowers.**—Emerson Electric Mfg. Company, St. Louis. Mo. Bulletins. No. 3134, superseding No. 3111, refers to single phase induction motors of 1-40 and 1-20 hp. of the light load start type for intermittent service. No. 3306 deals with electric blowers for furnaces for alternating and direct currents for use in residences.

**Air Compressors.**—Chicago Pneumatic Tool Company, Chicago, Ill. Advance sheets of catalogue No. 26. Size, 6 x 9 in.; pages, 27. These sheets give illustrations and details of duplex, compound and single steam driven Franklin air compressors, and single, duplex and compound air compressors. Specifications of air receivers are included.

**Furnaces and Heaters.**—Rockwell Furnace Company, 26 Cortlandt street, New York. Catalogues and circular. One of these catalogues is devoted to melting furnaces for melting all metals, tinning, galvanizing, tool hardening and all operations requiring molten metal or other heated baths. Illustrations and brief descriptions of the numerous types of furnaces are given, together with tables of specifications. Special tiles, oil storage tanks, ladle heaters, oil burners, fuel oil pumping system, pressure blowers, &c., are also included. The other catalogue deals similarly with portable heaters for heating work which is too bulky or inconvenient to remove to a furnace and where it is desirable to take the heater to the work, such as annealing, hardening, expanding, bending, brazing, skin drying, lead melting, rivet heating, &c. The circular treats of enameling furnaces using oil or gas as fuel.

**Boring Mill.**—Gisholt Machine Company, Madison, Wis. Pages 9a and 10a for insertion in binder. These contain an illustrated description of the Gisholt 42-in. boring mill and point out some distinctive features.

**Steel and Iron.**—Brown Bros., Inc., Wayne Iron & Steel Works, Pittsburgh, Pa. Pamphlet, 3½ x 6 in., 22 pages. Catalogues the various brands of iron and steel made by this company, giving the base price and extras for different shapes and sizes of rolled iron and steel.

**Crucible Steel.**—Heller Brothers Company, Newark, N. J. Catalogue No. 7. Takes up the subject of crucible steels. Gives price-list of annealed disks, drills, die blocks, file and rasp steels, as well as several pages of information regarding computations of weight of steels.

**Tool and High Grade Steels.**—Halcomb Steel Company, Syracuse, N. Y. Catalogue, 4 x 6 in., 88 pages. Gives interesting information regarding the early manufacture of high speed steel in this country. The catalogue is devoted to crucible steels and gives facsimiles of the labels used on the different grades of steel. Special steels made by this company are likewise catalogued and prices of special shapes are given.

**Tool Steels.**—The John Illingworth Steel Company, Frankford, Philadelphia, Pa. Catalogue, 3½ x 6 in., 28 pages. Facsimiles of the brand labels used on the tool steels of this company are shown in the catalogue, which also describes the uses to which the different varieties of steel are adapted and gives information regarding classification, the sizes regularly made and price-lists.

**Disk Grinders.**—Gardner Machine Company, Beloit, Wis. Loose leaf catalogue. Illustrates, describes and gives lists of regular toolroom equipments and specifications of the company's Nos. 2 and 4 improved disk grinders, Nos. 12 and 14 plain disk grinders, Nos. 12 and 14 combination type and No. 14 standard improved disk grinder. The plain, universal swinging, universal lever feed, and semiuniversal lever feed tables are shown and explained, and also 18-in. and No. 4 14-in. wheel presses. The back of the catalogue contains accounts of actual tests made on the Gardner improved disk grinders. A list of disk grinder supplies is appended.

**Blowers.**—P. H. & F. M. Roots Company, Connersville, Ind. Catalogue. Size, 7½ x 10 in.; pages, 41. Shows various installations of Roots' smelting and high pressure blowers, and describes their operation and construction. Valuable information concerning blowers and useful tables and data are included.

**Westinghouse Nernst Lamp.**—Nernst Lamp Company, Pittsburgh, Pa. Pamphlet. Deals with the Westinghouse Nernst screw burner lamp and single glower lamp and points out their adaptability to artistic fixture design. These lamps are made for use on either 110 or 220 volt circuits, and the same lamp operates equally well on either alternating or direct current.

**Motors and Buffing Lathes.**—Emerson Electric Mfg. Company, St. Louis, Mo. Bulletins. No. 3135, superseding No. 3116, pertains to single phase induction motors of the light load start type for intermittent service in 1-10, ⅛ and 1-6 hp. sizes. No. 3706, superseding No. 3702, refers to electric buffing lathes for alternating and direct currents, and No. 3958, superseding No. 3956, to motors for family washing machines.

**Tumbling Barrels and Fanning Mills.**—Baird Machine Company, Oakville, Conn. Bulletins. No. 300, which supersedes all previous editions of tumbling barrel bulletins, deals with the Baird oblique tilting tumbling barrels, the important feature of which is that the contents of the tumblers are visible at all times while work is in progress. Some testimonials and a list of users are included. No. 399 treats of the Baird fanning mill, for separating sawdust from small metal parts after tumbling and also for separating chips from screws and similar work.

**Rod and Yoke Ends.**—Billings & Spencer Company, Hartford, Conn. Pamphlet. Gives illustrations, price-lists and dimensions of A. L. A. M. standard yoke and rod ends, and B. & S. drop forged yoke and rod ends.

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The report of Receiver O. L. Layne of the Robert Field Company, Cincinnati, which failed several months ago, shows receipts of $50,483.95 and expenditures of $41,576.99, leaving a balance on hand of $8906.96. The assets are scheduled at $49,055.20, most of which is in claims, but many of these are disputed. The liabilities are returned as $21,631.50.

## Wood's 1908 Hydraulic Riveter.

An improved outside packed hydraulic riveter, known as the 1908 model and built by William H. Wood, Media, Pa., is shown in Fig. 1. Fig. 2 is a detail of the operating mechanism showing the quadruple plungers which are of equal areas and diameters so that they are interchangeable. The riveter is made so that the plungers can be detached from the main part of the head, hence the alignment is maintained. The cylinders are fitted with a distributing valve attached to the balanced main valve for operating them.

This riveter can be worked at 25, 50, 75 or 100 tons pressure. Three pipe connections work the four plungers. When working with 50 tons pressure the valve is set to the central pipe which connects with the two opposite cylinders: when working with 25 tons pressure it is set for the top pipe; when working with 75 tons pressure it is set to work through the central and top pipe connections, and when working with 100 tons pressure the valve is set to work through all three pipe connections. The push back cylinder is arranged in the same form as in the older designs of the builder and practically balances the driving head. The four plungers are each 6¾ in. in diameter, and when supplied with fluid at a pressure of 1500 lb. per square inch will give a total pressure of 100 tons. The stroke of the riveter is adjustable to any amount up to a maximum of 6 in.

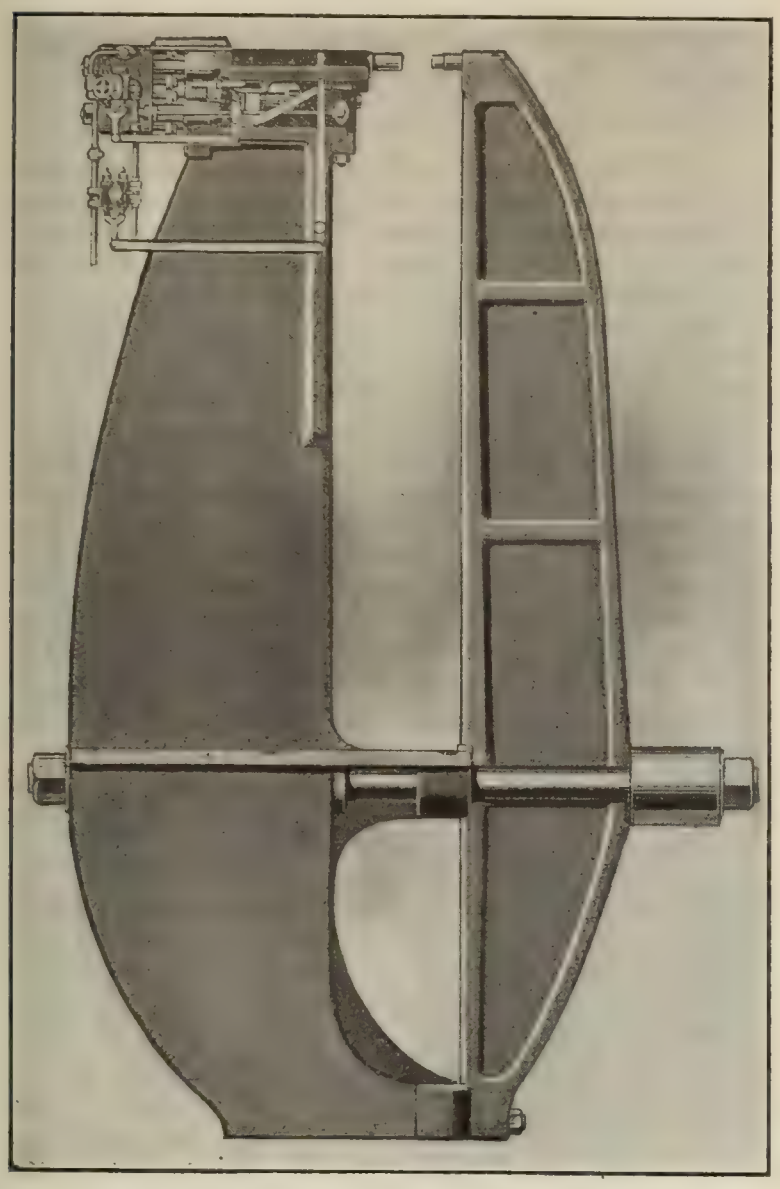


Fig. 1.—The 1908 Outside Packed Hydraulic Riveter Built by Wm. H. Wood, Media, Pa.

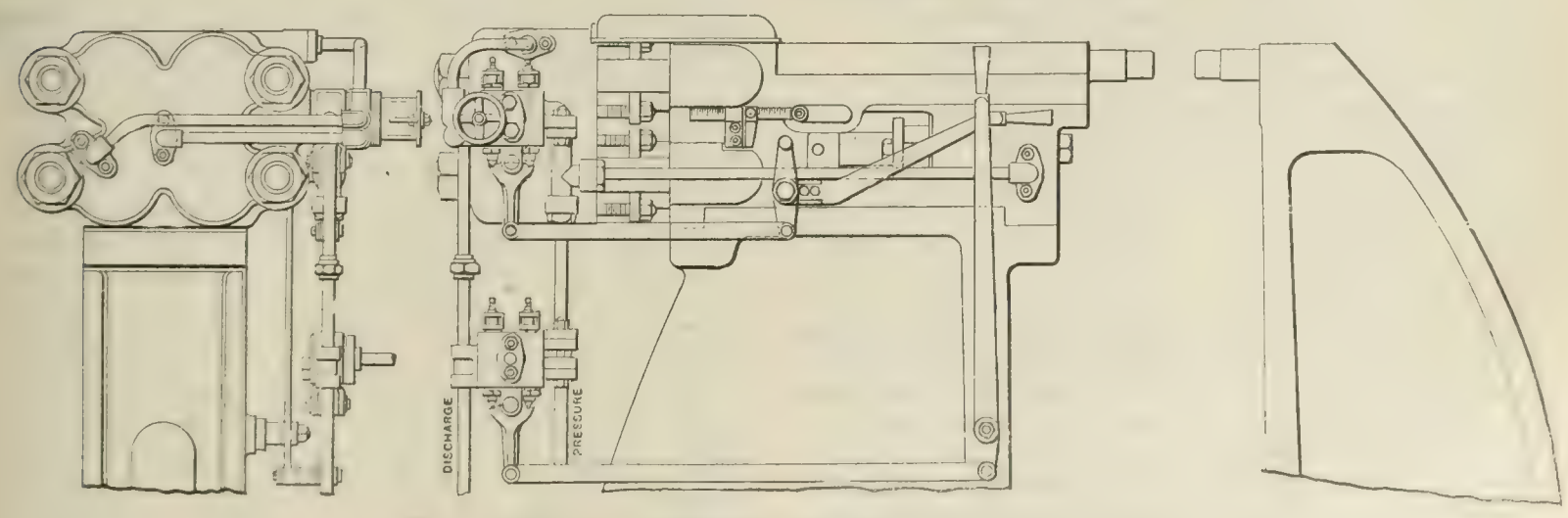



Fig. 2.—Detail of the Operating Mechanism of the 1908 Riveter.

## The Philadelphia Foundrymen's Association.

The 179th regular meeting of the Philadelphia Foundrymen's Association was held in that city Wednesday evening, September 2. It was the first after the summer recess, and also marked the removal of the association's headquarters from the old Manufacturers' Club House to the club's new quarters at the corner of Broad and Walnut streets. President Thomas Devlin and Secretary Howard Evans held an informal reception previous to the meeting in the old Clover room, where the future meetings of the association will be held. On calling to order, President Devlin expressed his appreciation of the large attendance, and hoped that the meetings during the year would all be well attended, and that the attending foundrymen would gather useful information from the various papers and discussions.

Application for membership was received from J. C. Moyer & Co., iron, steel, coal and coke merchants, Pennsylvania Building, Philadelphia, on which favorable action was taken. The treasurer reported a very substantial balance on hand, with all bills paid.

Thomas D. West, Sharpsville, Pa., president of the American Anti-Accident Association, was introduced and read a paper on "Foundry Accidents and Safety Devices." Mr. West is making a campaign to interest the foundry trade in the prevention of accidents. He has had prepared a plan, which will shortly be presented to all foundrymen, to secure statistics of the underlying causes of accidents in their plants. When completed, the data will be used to combat legislation unjust to industrial interests, and therefore the writer asked the hearty co-operation of all engaged in the trade. Mr. West also read a paper on "The Burning of a Broken Propeller Blade," which is given practically in full elsewhere in this issue. A discussion followed the reading of the paper, and cases were cited in which this class of work was done under slightly varying circumstances.

Following the meeting a luncheon was served in the dining room of the club, and brief addresses were made by H. L. Haldeman, G. C. Davies, Thomas Devlin, and J. S. Hibbs.

A very troublesome factor in the struggle to get the German pig iron producers to renew the old Duesseldorf syndicate, or to extend it to cover the whole of Germany, is Prince Donnersmarck, the owner of great collieries and metallurgical works in Upper Silesia. Some years since he built a blast furnace plant, at tidewater, the Kraftwerk, near Stettin-on-the-Baltic. It remained independent, and its commercial management was aggressive. Later, he purchased the Niederrheinische furnaces at Duisburg-on-the-Rhine, and now refuses to renew his contract with the syndicate unless his allotment is increased from 80,000 to 240,000 tons annually.

# The Le Creusot Works.

Special Agent Capt. Godfrey L. Carden makes the following report to the Bureau of Manufactures, Department of Commerce and Labor, of a visit to the largest steel plant in France:

The name Le Creusot is to France what Essen is to Germany. In the latter place Krupp holds sway. At Le Creusot it is Schneider & Cie. The total number of men carried on the payrolls of Schneider & Cie. approximates 20,000. Of this number 12,000 are in the Le Creusot shops. The remaining 8000 are scattered among the subsidiary plants at Chalon-sur-Saone, Havre, Champagne-sur-Seine, Decize, Mazenay, Creot et Change, Montchanin et Longpendu, and Perreuil.

The shops at Le Creusot cover 2400 acres. Fancy a small pocket in a low range of hills, jammed with furnaces and machine shops, with a canal winding through in and out to the plains beyond, with houses and streets stretching up the hillsides and struggling to reach above the line of smoke, and one sees Le Creusot. It recalls the Allegheny country, the landscape, the industries and all the accompaniments of a great steel and iron section being similar to our Pittsburgh territory. It may be said that from Le Creusot to St. Etienne iron and steel are the great products. The industries of this great Le Creusot-St. Etienne District are, next to the steel interests in the east of France, the most important in the iron and steel line in all France.

### Origin and Development of the Works.

An English engineer founded the Creusot works in 1782, and Louis XVI was interested in the plant. It was known then as the Royal Foundry. From 1793 to 1814 Le Creusot was utilized almost wholly for the manufacture of cannon. In 1826 the plant was sold to an English company known as the Société Mandy-Wilson et Cie. In 1828 there was formed a new company known as Société Anonyme des Mines, Forges et Fonderies du Creusot et de Charenton. From these numerous changes it may be gathered that business conditions in France following the Napoleonic era were not the best.

In 1836 J. Eugene Schneider and his brother Adolphe purchased the Creusot Works and two years later they built the first locomotive constructed in France. Eugene Schneider may really be called the founder of the present establishment. From all accounts he was a wonderful man intellectually and in his ability to control men. Later in years he was president of the French Legislature, and lived a most active and eventful life until almost the year of his death, which occurred in 1875. Henri Schneider, son of the founder, became associated with his father in 1867, and later took over the active control of the plant. During his lifetime many of the most important of Le Creusot developments were inaugurated. Like his father, Henri Schneider took an active part in politics and was a member of the Chamber of Deputies. His death occurred in 1898. The present head of the works is Eugene Schneider, son of Henri Schneider and grandson of the founder. He has been actively identified with the administration of Le Creusot affairs since 1896.

Schneider & Cie. own about 14,000 workmen's houses, with gardens attached. Liberal provision is made by the company in the way of annual pensions and endowment funds for services. A staff of eight doctors is maintained and there is a hospital with a fund of 2,000,000 francs ($386,000). Schneider & Cie. pay about 2,500,000 francs annually in the interest of the workmen. The administration of affairs is divided between Paris and the foundry offices.

### Variety of the Output.

Le Creusot first came into existence as a mining locality, and a mine is still worked within the Schneider property, but it only produces now about 50,000 tons of coal per year, whereas the Schneider works require about 550,000 tons yearly. In consequence additional coal is drawn from the company's collieries at Decize and Montchanin. These two colleries supply about 200,000 tons of coal.

Originally started as a foundry, Le Creusot has developed until to-day there is an annual output of 140,000 tons of iron, 155,000 tons of Martin and Bessemer steel and 150,000 tons of finished steel and iron, the various products comprising iron and steel billets, rails and railroad materials, steel construction work, ship plates, locomotives at the rate of five per month, artillery of all calibers, armor plate at the rate of about 5000 tons per year, equipments for ship batteries, electrical materials, steam engines, turbines and gas engines, railroad wheels and axles, castings of all sizes, and at the Chalon-sur-Saone plant torpedo boats are built. It was at this last plant that the material was turned out for the beautiful Alexander III bridge, of Paris, and the bridges over the Rhone and Danube bearing this company's name. Bridges have been sent out from Chalon-sur-Saone to Chile, Tonkin and other far away parts of the world. Le Creusot also builds turbine engines of the Zoelly type.

### Construction of Locomotives—Tools Used.

At Le Creusot it was my good fortune to meet M. Rais, the commercial manager, and M. Panier, the chief of the artillery commercial department, and from these gentlemen every facility to inspect the works was afforded. The locomotive shops were very busy, and it is my understanding that the reason for so many French locomotive orders going abroad during the past year is due to the inability of the home shops to meet the demand. In the locomotive department the American machine tools are comprised of the following: One Niles planer, one Fosdick radial drill, two Brown & Sharpe tools, one Gisholt turret lathe and two Bullard tools.

The foreign makers were represented by the following: Fetu-Defize, Liege, horizontal borers; Ducommun, Mulhouse, drills and turret lathes; Longdoz, Liege, planers and drills; Ateliers Demoor, Brussels, lathe; Bouhey, Paris, lathes and milling machines; Smith & Coventry, Manchester, lathes; Duval-Pichet, Paris, milling machines.

Although there are some milling machines in this department, I observed relatively very little milling work. In the shaft department were found heavy boring tools from J. Whitworth & Co., Manchester, England. All these were motor driven. Thomas Shanks & Co., also an English firm, were represented in this department through horizontal boring mills. I notice that Bouhey of Paris had supplied a very large boring mill. Ducommun was represented here, as were also Elwell & Seyriz of Paris. In the boiler department all plate drilling work was being performed with Bouhey and Ducommun machines. The drilling on all boiler heads was being done with jigs using multiple drills. In the marine department heavy Ducommun and Société Alsacienne tools were being used for planing. Schneider & Cie. have themselves manufactured a number of very heavy tools for use on turbine and ship engine work, among others a boring mill of 10 m. in diameter, weighing 70 tons. In the marine department American machine tools are in service from the Gleason Works, Bullard, Bouch, Brown & Sharpe, Acme, and the National-Acme Mfg. Company. The engines for the new French warship Edgar Quinet are building at Le Creusot, comprising three engines of 12,000 hp. each. One of these was practically complete on June 23, when I visited the works. Some of the casting work in Le Creusot shops is as fine as any I have seen in Europe. This is a branch of business in which Schneider & Cie. can well lay claim to the highest merit.

I was informed that Le Creusot has enough work ahead in some departments to last two years, and I assume that this has largely to do with the artillery and locomotive orders. My views on this subject have been confirmed on further reference to Messrs. Schneider & Cie. In the field gun department American tools come somewhat more into evidence, but I am compelled to say that our American tools are not represented in this great plant to the extent which one would expect to find.

### American and Other Foreign Tools.

The American tools found in service, in addition to those previously mentioned in other departments, comprise the following:

Brown & Sharpe, Providence, R. I., vertical millers; Pratt & Whitney, Hartford, Conn., lathes; Norton Grinding Company, Worcester, Mass., grinders; Fosdick Machine Tool Company,

Cincinnati, Ohio, boring machines; Niles Tool Works, Hamilton, Ohio, planers and drills; W. F. & J. Barnes Company, Rockford, Ill., drills; Hendy Machine Company, Torrington, Conn., shapers; Defiance Machine Works, Defiance, Ohio, planers; Gisholt Machine Company, Madison, Wis., five turret lathes; Potter & Johnson, Pawtucket, R. I., automatic turret turning and chucking machines to the number of about 20; National-Acme Mfg. Company, Cleveland, Ohio, threaders.

The foreign makers in the gun department were represented by the following:

John Lang & Sons, Johnstone, Scotland, borers; Barriquand & Marre, Paris, millers; H. Ernault, Paris, vertical millers; Bouhey, Paris, horizontal borers, vertical drills and slotters; J. E. Rheinecker, Chemnitz, vertical millers; George Richards & Co., Broadheath, England, horizontal borers; Schultz, Mulhouse, shapers; Grafenstaden, lathes; Wanderer Works, Chemnitz, millers.

I am informed that there will soon be installed in this department an Armstrong tool of 220 tons weight, capable of swinging a length of 17.530 m. and a diameter of 2.300 m.

With the exception of a Pratt & Whitney lathe, practically all the lathes in the principal machine tool department are from either Ernault or Grafenstaden. The shops popularly referred to as Grafenstaden are a branch of the works known as Société Alsacienne de Constructions Mecaniques, Mulhouse. This firm was originally French—that is, until 1870. One branch of the establishment is located in Belfort, French territory, and although the parent house is now in Germany, I am inclined to think that many houses still look upon the Mulhouse shops as French.

In the locomotive department I did not observe any oxygen gas cutting appliances or presses for stamping out plates. All plate cutting was done by punching. Only plate frame form of construction on locomotives was in progress. The finish on these French locomotives is of high order.

### A Well Equipped Plant.

In the armor plate department some beautiful tools from Ernst Schiess of Düsseldorf were observed. There were four in all, and they are as fine tools of the type as I have ever seen in any installation.

Le Creusot impresses one as being an extraordinarily fine plant. The steel made there is largely by the Martin process. Ore comes from the company's mines in Eastern France, from Algiers, and from Spain. The richest minerals come from the Pyrenees. While Le Creusot is almost in the east center of France, it is accessible by canal, both from the Mediterranean and from the English Channel. Torpedo boats and destroyers have been built at the Schneider works at Chalon-sur-Soane and conveyed thence to the Mediterranean.

As heretofore remarked, American machine tools are not much in evidence at Le Creusot, and it would seem that the question of price has cut some figure, for my attention has been called to the freight rates, commissions and duties imposed. This is a matter calling for some attention, as foreign made tools can often be undersold to advantage by American makes. The best single installation here is, I think, from Schiess. These are machines for armor plate work and probably constitute the same aggregation which an American firm negotiated for.

It is impossible to exaggerate the importance of Le Creusot, for this is certainly the most important plant of its kind in all France. The highest intelligence marks the direction of the various departments, and taken all in all the establishment is one of which Frenchmen are rightly proud. There is no work here in armor plate or castings of any kind too large for Le Creusot to handle, and from the standpoint of the gigantic the Creusot shops can produce sizes the equal of any other plant known to the writer in Europe.

Le Creusot is working on a 10-hr. schedule, commencing at 6.30 and continuing until 11.30, with a noon shutdown from that hour until 1 p.m., the day terminating at 6 p.m. The cost of wages is tending steadily upward, and living is not deemed cheap. Rentals, however, are cheap.

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Rail mill No. 2, at the Lackawanna Steel Company's plant at West Seneca, N. Y., was started August 31, on double turn.

## July Exports and Imports of Iron and Steel.

An increase in iron and steel exports is shown by the July report of the Bureau of Statistics of the Department of Commerce and Labor. The total value of these exports, not including ore, in July was $12,085,951, against $11,677,944 in June. Taking the commodities for which quantities are given, the total exports for July were 86,806 gross tons, against 69,778 tons in June, 64,020 tons in May, 93,522 tons in April, 96,437 tons in March, 81,755 tons in February and 74,352 tons in January. The following table gives details of the exports of such commodities for July and for the seven months ending with July, as compared with the corresponding periods of 1907:

*Exports of Iron and Steel.*

| | July, | | 7 months ending July. | |
|---|---|---|---|---|
| | 1908. | 1907. | 1908. | 1907. |
| | Gross tons. | Gross tons. | Gross tons. | Gross tons. |
| Pig iron | 2,624 | 6,405 | 23,069 | 48,035 |
| Scrap | 1,269 | 4,001 | 12,825 | 20,728 |
| Bar iron | 533 | 2,212 | 4,141 | 16,499 |
| Wire rods | 252 | 500 | 3,751 | 8,162 |
| Steel bars | 2.661 | 6,598 | 25,823 | 41,066 |
| Billets, blooms, &c | 8,465 | 3,486 | 72,150 | 54,269 |
| Hoop, band, &c | 135 | 1,344 | 2,614 | 3,865 |
| Steel rails | 28,203 | 37,705 | 111,179 | 180,720 |
| Iron sheets and plates | 4,491 | 4,078 | 23,885 | 22,099 |
| Steel sheets and plates | 4,908 | 6,398 | 32,510 | 55,537 |
| Tin and terne plates | 54 | 1,051 | 11,167 | 7,357 |
| Structural iron and steel | 10,657 | 11,941 | 71,501 | 76,928 |
| Wire | 5,870 | 13,825 | 77,510 | 89,727 |
| *Barb wire | 3,792 | .... | 3,792 | .... |
| Cut nails | 796 | 505 | 4,167 | 4,326 |
| Wire nails | 1,648 | 4,274 | 16,477 | 25,750 |
| All other nails, including tacks | 306 | 688 | 2,610 | 4,890 |
| Pipes and fittings | 10,112 | 17,238 | 67,547 | 82,914 |
| Totals | 86,806 | 122,249 | 566,718 | 742,872 |

* Not separately stated prior to July 1, 1908.

It will be observed that the figures for 1908 in the above table are much below those of corresponding periods in 1907.

The July imports of iron and steel show a small increase over those for June. The total value of such imports, not including ore, was $1,781,309, against $1,759,651 in June. Taking the commodities for which quantities are given, the July total was 18,320 gross tons, against 21,109 tons in June, 13,584 tons in May, 12,342 tons in April, 15,885 tons in March, 19,054 tons in February and 28,008 tons in January. The following table shows details of the imports of such commodities for July and for the seven months ending with July, as compared with the corresponding periods of 1907:

*Imports of Iron and Steel.*

| | July, | | 7 months ending July. | |
|---|---|---|---|---|
| | 1908. | 1907. | 1908. | 1907. |
| | Gross tons. | Gross tons. | Gross tons. | Gross tons. |
| Pig iron | 5,293 | 54,023 | 51,741 | 385,854 |
| Scrap | 844 | 4,504 | 3,002 | 16,700 |
| Bar iron | 1,397 | 3,744 | 13,344 | 22,933 |
| Rails | 203 | 893 | 1,010 | 2,613 |
| Hoop, band, &c | 2 | 2 | 290 | 1,315 |
| Billets, bars and steel in forms n.e.s. | 690 | 1,297 | 5,647 | 9,089 |
| Sheets and plates | 236 | 366 | 1,136 | 2,591 |
| Tin and terne plates | 8,242 | 8,845 | 44,171 | 39,716 |
| Wire rods | 869 | 1,547 | 6,406 | 10,590 |
| Structural iron and steel | 544 | 229 | 1,383 | 1,822 |
| Totals | 18,320 | 75,450 | 128,130 | 493,233 |

The imports of iron ore in July were 44,033 gross tons, against 43,429 tons in June. The total iron ore imports for the seven months ending with July 1908, were 377,833 gross tons, against 726,432 tons in the corresponding period of 1907.

The total value of all kinds of exports of iron and steel, not including ore, for the seven months ending with July, 1908, was $93,200,401, against $111,813,066 in the corresponding period of 1907. The total value of similar imports for the seven months ending with July, 1908, was $11,993,195, against $25,402,464 in the corresponding period of 1907.

# THE IRON AGE

Established in 1855.

New York, Thursday, September 10, 1908.

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## The Iron Trade on a 60 Per Cent. Basis.

The evil results of the attempt to force prosperity by claiming it are not confined to the disappointment following failure to realize on the claims. Repeated disappointment might easily produce a state of the public mind in which really favorable developments would be denied full credit, and thus the natural and timely growth of confidence be retarded. Three quarters of the year have well nigh passed, and it is conceded that the sanguine predictions commonly made early in the year have not been fulfilled. Yet the fact that the gradations of improvement from week to week have been so fine that progress toward prosperity has been denied and affirmed simultaneously may on the whole be counted as favorable in itself. Confidence is normally a plant of slow growth.

In the steel trade the conditions in February of this year led to the following prognosis for 1908 by representatives of the leading interest: A gradual increase through the year from an output then representing about 45 per cent. of capacity to one representing about 75 per cent. of capacity, at the beginning of 1909. From the standpoint of September the forecast will perhaps stand some revision as to the time limit, but events have proved its correctness as to the fact of continued betterment, albeit it was made in the face of a political campaign, which early in the year promised features peculiarly disturbing. Seven months have gone by of the period covered by the prediction, and, using current statistics as a gauge, the iron trade may now be regarded as on a 60 per cent. basis. In other words, the half way point has been reached in the advance to the 75 per cent. goal. That the other half of the distance will be traversed at a faster rate is doubtless the popular view. Yet it must be said at the same time that while some of the uncertainties of the early months of the year have been removed—chiefly that relating to the crops—and while the country has refused to surrender itself to frenzied politics, the road to prosperity is far from being a straight and open one.

It was said above that a 60 per cent operation is now being carried on in iron and steel. The statement is based on the pig iron statistics for August, given on another page. In 1907, up to November, the output was practically up to the limit of the fit capacity throughout the country. Some additions have been made since, but the bulk of the new capacity that has been under way for many months is still unfinished, so that for the present purpose full capacity may be regarded as the same as that of one year ago. A noteworthy increase, for a year like 1908, was made in pig iron production last month over that of July—approximately 11 per cent. in coke and anthracite iron. The figures are as follows, comparison being made also with July in each year:

*Coke and Anthracite Pig Iron Production, July and August, 1907 and 1908.—Gross Tons.*

| | 1908. | 1907. | 1908, in percentage of 1907. |
|---|---|---|---|
| July production..... | 1,218,129 | 2,255.660 | 54 |
| August production..... | 1,348,831 | 2,250,410 | 60 |

The steel companies' production of pig iron in August was 897,052 tons, or 62 per cent. of their production of 1,445,685 tons in August, 1907. Thus the merchant furnace production last month was slightly more than 56 per cent. of that for August, 1907. So far as foundry operations are concerned—and these take the bulk of the merchant furnace output—56 per cent. is quite above the rate of consumption generally credited to this branch of the industry in recent months. A little time may be required to demonstrate whether the recent increase in merchant furnace production is in response to a real increase in the consumption of merchant pig iron, or a reasonable expectation of such an increase in the near future.

## Factory Training for Machinery Salesmen.

Throughout the machinery trade it is generally agreed that some knowledge of factory conditions and methods is essential to the broadest usefulness of a salesman. Just how this experience shall be acquired in order to be most profitable is a problem that in many branches of industrial work is in a somewhat unsettled status. It is clear that there should constantly be close relations between the district office engineering salesman and the designing engineer in the factory, but there is room in not a few cases for the introduction of better methods of insuring co-operation. It often happens that a salesman in the field will not visit the factory for months at a time, through the exigencies of trade conditions, and while the general progress of the designers will be outlined in bulletins and equipment letters, the absence of personal contact between the salesman and the designer tends to delay production when a customer needs special apparatus, and to prevent the best applications of the product to rapidly changing conditions of service.

If it is important for the experienced salesman to keep in close touch with the factory, it is a vital necessity for the new man in the selling field to acquire an acquaintance with the particular factory methods of his company in order to appreciate the limitations of production, and to avoid burdening the company with special work when standard products would answer the purpose. Without a detailed knowledge of the conditions at the factory, it is hard to forecast deliveries with any accuracy, and to avoid throwing complex and expensive work upon the staff at the plant when the demands of probable purchasers vary so widely. It might be supposed that a salesman handling a standard product like an engine lathe, for example, would find little need of factory training or frequent later co-operation with the designing engineers, but while thousands of lathes are sold each year to purchasers whose conditions are not made known, there is a constant endeavor on the part of the more progressive consumers to increase the rate of production in their establishments, either through the adoption of high speed tool steels or through the use of direct connected electric motors; or possibly through the demand for tools of multiple cutting facilities as in drills and planers, or by the

adoption of new and special features that call for redesigning in some part or other of the machine. It is in dealing with these special cases—and they arise far oftener than any one outside the selling field appreciates—that a keen appreciation of what is likely to be profitable at the factory end is helpful to the salesmen, and may readily be the means of securing orders that the less carefully trained selling force could not obtain. This is nowhere more true than in the electrical machinery field, where the conditions of the purchasers have developed along highly individual lines, complicated by many rapid advances in the design of apparatus.

In some cases it is impossible for a salesman to secure assignment in a district office unless he has been through a rigorous course in the factory of his company, starting at the bottom of the ladder at a few cents an hour, and working upward through the testing and drafting departments to the designing engineer's office, before going into the field as a commercial man. This policy lacks nothing in thoroughness, but it tends in some cases to keep out the man fitted for the sales office, through the lack of any operating or designing ability that would enable him to pass through the shop with noteworthy credit. Other companies will employ men of technical training in their sales offices, with a comparatively limited shop experience, specializing that experience to the end of successful salesmanship from the very start. Not every machinery salesman who is a first class worker in the commercial field is capable of doing good factory work, and neither is every brilliant factory engineer competent to go into the district office and make a success of the work there. With the increasing tendency to specialize in all branches of industrial work, there is less and less reason for including a long and arduous course in the shop in the preliminary training of the machinery salesman. To go the extreme of slighting the shop before appointment to the office staff is to invite disaster, but there is no doubt that the character of shop training that is now given to many engineering salesmen could be profitably altered in not a few cases, without in the slightest degree cutting down the selling efficiency of the outside staff. A general knowledge of the factory methods and equipment, the resources of the designing and drafting departments, close touch with testing results rather than actual manipulation, and wide personal acquaintance with the organization and with competing apparatus are the essentials of the best training for machinery salesmen.

## American Steel Not Being "Dumped."

Comment has been made in Great Britain on that country's increasing imports of iron and steel, coupled with declining exports, and it is intimated that steel manufacturers in the United States and on the Continent are more actively pressing their product on outside markets, both in finished and semi-finished steel. The statistics of exports from the United States in recent months do not bear out this statement. Our exports of iron and steel in May were 64,020 gross tons against 91,541 tons in May, 1907. In June they were 69,778 tons, as compared with 92,996 tons in June, 1907, and in July of this year, 86,806 tons, against 122,249 tons. In semi-finished steel the export movement has been comparatively light—a total of 17,879 tons in May, June and July, against 14,541 tons in the same months of 1907. A slight gain is shown here, but nothing like what might have been expected, in view of the sale of 100,000 tons of sheet bars made by the Steel Corporation early in the present depression to a leading British manufacturer of sheets. The imports of billets, slabs, and sheet and tin plate bars by Great Britain in the first seven months of the year were 291,693 tons, while in the like period of last year they were 176,774 tons, an increase of 114,919 tons. The exports of semi-finished steel from the United States this year up to July 31 were 72,150 tons, an increase of but 17,881 tons over those of the first seven months of last year. This record accords with what is known of the holding up of shipments on the large contract with American steel works referred to above, and suggests that there may have been a renewal of German dumping in England on a liberal scale.

## The Holding Back of Machine Tool Prices.

Under the workings of the system of exclusive territorial rights in the selling of machine tools through dealers, complaint is sometimes heard that price-lists are withheld from those houses whose early contact with the manufacturers is through the authorized agents. If a dealer has the agency for a certain tool, and another, perhaps located in a subordinate city in the territory, finds a prospective buyer, the latter dealer is unable to quote on the business until after he has communicated with the exclusive agent, telling the name of the customer and his requirements. Under any circumstances the order must be placed with the agent controlling the territory, and if another dealer secures it he must divide the commission, usually on a half and half basis. Prices are withheld largely because the agent wishes to be certain that the other dealer is not seeking business on which the former is working himself. If he is in the field for an order, he holds rightly that there is no reason why he should share the commission on it. As a consequence, the dealers who must depend upon the exclusive agencies of the larger centers, it is claimed, have less knowledge of the price-lists than the rival exclusive dealers between themselves.

While this relation in the trade may be necessary in preserving the integrity of territorial rights, still it occasionally works out unfortunately, and friction follows. The dealer who is outside of the agreement is sometimes compelled to seek prices by means of subterfuge, and once in a while one of them secures quite complete lists in this manner. At his request, friends among the buyers make fictitious inquiries for machinery, getting quotations which they promptly turn over to him. They have no intention of placing orders, and put the regular agents to unnecessary trouble and expense in sending representatives to work up the suggested new business, occupying time which would be better employed on genuine inquiries. The element of deceit is made conspicuous to a greater or less degree, and becomes a source of trouble.

The great harm lies in the lack of genuine co-operation between the exclusive agents and the dealers who must act through them, the latter constituting a class by no means inconspicuous in the trade. Naturally, they must always favor those machines that they can sell direct from the factory, receiving full commission, and they are stimulated to work actively against the tools that they cannot handle without a division of profits. This is the unavoidable business consequence of the system, and has no real remedy. But it may be modified after its operation has become better understood with the lapse of time. Those outside of it resent the arbitrary power of the agents. A few years ago it would have been impossible for any dealer to have demanded the name of a cus-

tomer before furnishing prices to another dealer. The presumption would have been laughed at.

Probably the holding back of lists from the class of dealers who may be called subagents will continue permanently as an essential part of the system, but there seems to be opportunity for concessions, individual circumstances to govern. If the exclusive agent is established in one city, he might with advantage to himself and the manufacturers whom he represents seek the active co-operation of a reliable dealer in another city of his territory, furnishing him with the lists. We believe this has been done already in a limited way. It must always be with the understanding that when the two are after the same business the subagent must step aside, leaving the field free to the agent. The former, learning from a dealer, to whom he applies for prices, that the business is already being followed up, would probably feel free to try for the order himself with machines of other makes, especially where no co-operation existed. But, on the other hand, should the subagent find business of which the agent is in ignorance, there would be some mutual advantage if he were in a position to quote quickly.

It is claimed that the delay incident to communicating with the agent may mean that a third dealer has stepped into an advantageous position from which he cannot be dislodged, and the business is lost. In any case, the commission shall always be divided if the subagent gets the order; if the agent himself books it there shall be no division. He must always receive half of the profit or the whole of it. The question is whether he would not have a larger total of business if the small dealers were to work actively with him, and whether, even if the profits on a part of the business were reduced by division of commissions, there would not be an important advantage in his dealings with the manufacturers whom he represents because of increased volume of orders. To accomplish this, he must furnish the dealer with price-lists, and perhaps sacrifice the knowledge he would otherwise gain of the existence of new business until it has been turned over to him in the form of orders. Perhaps, too, business may be lost because of the dealer's failure to demonstrate the machines with the same degree of skill as the experts. This is an important side of the question—that the exclusive agent has his own highly trained salesmen who may be better equipped to work up an order than the dealer who acts as a free lance in the trade, selling anything that a customer may want, untrammeled by the restrictions that surround those who carry exclusive lines. If the subagent is compelled to ask for prices with each succeeding opportunity to place business, and at the same time to give the name of the prospective customer, then the territorial agent is in a position to use his own judgment as to the best means of landing each individual order. He must give the other man some of the commission, but it may be a more certain source of profit to each of them.

Looking at the matter from still another viewpoint, every dealer successful enough to survive in the trade must have friends who will favor him and means of information through which he obtains a knowledge of intended purchases which gives him an advantage over his competitors. A dealer may specialize in textile machinery or paper machinery or shoe machinery or some other line outside of metal working, and at the same time carry machine tools as an accessory of his regular business. Such a man usually receives information in his trade which is much less likely to get to the ears of the dealer who handles machine tools exclusively. It is a well-known fact that in not a few lines of manufacturing outside of the metal trades the machine shop is a department important enough to be carefully watched for business, especially as the business sometimes comes when regular sources of orders are inactive.

In the second-hand machinery business a knowledge of current prices is occasionally a valuable asset and the lack of it a handicap in the disposal of machinery. The price of a used machine is usually based upon that of a new tool of the same make. If this is not known, it is a difficult matter to judge intelligently of the price to pay for a second-hand machine or the price to ask for it. The knowledge may be so valuable to the exclusive agents as to make it worth while to keep it to themselves, thus driving the smaller dealers to seek it from some roundabout source. Yet this is only one of the elements of the question. As we have stated, the rule, now comparatively new with many lines of machinery, will be modified as time goes on to meet individual cases among the dealers who are feeders for the territorial agencies.

## Guarding Trade Secrets in England.

The British Government is now collecting statistics of its home manufactures for the year 1907, in order to secure a fuller knowledge of the volume and value of home trade. This census is being taken under a special act, which requires the Board of Trade "to have due regard to the circumstances of various trades and industries and in particular to the importance of avoiding the disclosure in any return of any trade secret, or of trading profits, or of any other information the disclosure of which would be likely to tend to the prejudice of the person making the returns." On this point United States Consul Albert Halstead, at Birmingham, reports as follows:

"The British manufacturer is generally averse to furnishing information in regard to his business, being apprehensive lest trade secrets may be discovered. This apprehension was one of the objections raised by manufacturers. The greatest care has been taken, however, to prevent the discovery by the public of trade secrets, and no particulars as to any individual establishment are to be disclosed. The law imposes a penalty of two years' imprisonment, with or without hard labor, or a fine, or both fine and imprisonment, upon any person who improperly discloses the information thus obtained. In order to more surely protect individual firms from the disclosure of their private business the first leaf of the schedule, which is the only one on which the name of the firm will appear, has been perforated, and as soon as the schedule is returned to the Board of Trade this leaf is to be detached by a responsible officer, and the other pages only, which contain no indication as to the source of information, will be dealt with by the clerk engaged in the work of compilation."

Negotiations which have been progressing for the past three or four months between development interests of Richmond, Ind., and the Rahn-Carpenter Company, Cincinnati, Ohio, have been concluded, and the latter company will remove its plant to the former city. The company has been making a series of engine lathes of medium size and up to 32-in. swing; also a line of gap and turret lathes. Arrangements under way contemplate an increase in the capacity of the plant, and the addition of larger sizes of lathes. The company is given 7 acres of land, a cash bonus and two buildings, 100 x 300 ft. and 80 x 300 ft. in size, but one of the principal factors which induced the change is the promise of much business from Indiana manufacturing establishments, of which several of importance are located in Richmond. Wm. H. Carpenter is president and treasurer, and John Rahn, Jr., is vice-president and secretary of the company.

The Verein Deutscher Ingenieure has subscribed 50,000 marks to the fund for Count Zeppelin.

# Electrochemical Cleaning Baths.*

BY CHARLES H. PROCTOR, ARLINGTON, N. J.

In the electrodeposition of metals two conditions are absolutely necessary for successful results. The first is a chemically clean metallic surface; the second, the proper composition of the depositing bath. With these two preliminaries duly in order, the results can never be in doubt. To the methods of arriving at the former condition I desire to call your attention, and primarily to the cleansing of the metallic surface by the aid of the electric current. From the earliest introduction of the art of electroplating it has been the aim of the operator to produce a perfectly clean surface, realizing that to produce a perfect union of the deposited metal upon the baser metal this was an absolute necessity. In the days of the chemical battery, before the dynamo became the prime factor in the electrodeposition of metals on a commercial scale, the manner of cleansing the surface of the baser metal was practically the same in every case. According to the earlier textbooks on electroplating this was a somewhat costly operation. The methods then in vogue, if applied in these days of competition, would often exceed in cost the commercial value of the articles plated.

So much care was exercised in cleaning the metallic surface that such metals as copper, bronze and brass, after being highly polished, were afterward scoured by the aid of various substances, thereby producing a dull surface that was supposed to be a necessity, because the early operators were under the impression that the deposit would not stick to a polished surface. At the present time we know that it is just as easy to produce a successful deposit upon a polished surface as upon a surface that is unfinished. There is always one factor to be taken care of and that is oxidation. As oxygen is always present in the atmosphere, with its well-known affinity for most metals, it will oftentimes in a few moments form an oxide on the surface of the metal which is invisible to the eye and yet sufficient in some baths, like nickel, to prevent a true adhesion of the deposited metal.

This is the reason, no doubt, that the early operators obtained many unsuccessful deposits and deemed it necessary to scour the surface with pulverized bath brick, trent sand, pulverized pumice stone and many other abrasive substances. Within the past few years a number of substances of a chemical nature have appeared upon the market and have met with gratifying success, due to the fact that a chemically clean surface could be procured without oxidization or deterioration of the polished surface.

### The First Use of Electricity.

Several years ago a surprise was introduced among the electrodepositors of metals, in the news that a well-known manufacturer was cleansing his goods made of iron and steel by electricity. It was announced that alkaline substances such as sodium carbonate, potassium carbonate, potassium hydroxide and sodium hydroxide in solution, in varying degrees of concentration and with small proportions of potassium cyanide added, with a sufficiently strong electric current of from four to eight volts and at temperature nearly boiling, would develop sufficient hydrogen to remove entirely all organic substances from the surface of the metal, thereby leaving it chemically clean. In October, 1905, the first article on the subject of electrochemical cleaning was published, and from that time the use of this method has been constantly increasing. To-day very few large concerns, especially among those engaged in the manufacture of hardware, are without electrochemical cleaning baths, which have proved so successful in the cleansing of many articles at a great saving of labor. This method has also brought into the market several new combinations which are sold under the name of electrochemical cleaning salts, and have given very satisfactory results.

The action of an electro-cleanser is similar to the action of an electroplating bath. The only difference as far as the development of gases is concerned, is that no metal being in solution and the anode being insoluble, no metal is deposited. But with a strong current a copious evolution of oxyhydrogen gas is developed from the articles, which attacks the organic matter upon the surface, practically lifting it off and by rapid evolution of the gases carries it to the surface. The small quantity of potassium cyanide contained in solution absorbs the slight oxidation that might be upon the surface, and by the combined action produces a surface clean enough, after washing in clear water, for any deposits.

### Preparation of the Electric Bath.

The arrangement of an electrocleaning bath is very simple. Prepare a wrought iron tank of proportions best adapted to the amount of work to be cleansed. This should be heated with steam coils of iron. Across the top of the tank an insulated frame should be constructed, and upon this three conducting poles placed as on the regular plating bath. To the two outside poles the positive current should be carried direct. This can best be accomplished with at least ½-in. copper wire flexible cables. To the center pole the negative current is connected with cable of the same dimensions. No rheostats are necessary. The stronger the current the greater the evolution of gases and the quicker the cleansing operation is accomplished. Although direct contact can be made with the positive current to the tank itself, in practice better results have been obtained with anodes of sheet iron not more than 6 in. wide and of a length in proportion to the depth of the tank.

The electrocleaning solution should consist, for ordinary purposes, of 3 to 4 oz. caustic potash to each gallon of water, and to every 100 gal. of solution 8 oz. cyanide of potassium. This can be varied according to conditions. It is advisable to add at least ¼ lb. of cyanide each week. Where the articles, such as iron or steel, contain much oil or grease upon the surface, the density of the solution can be increased. For articles of brass, copper or bronze that have been polished, use a solution of carbonate of soda in the proportion of 2 oz. soda and ½ oz. caustic potash to each gallon of water, with the addition of 4 oz. of cyanide to every 100 gal. of solution. If much organic matter is upon the surface of the articles to be cleansed, it is advisable where an air pressure can be obtained from an ordinary blower, to arrange a pipe so that the current of air can be deflected upon the surface of the solution, thus keeping the center of the solution clear of the insoluble substance that arises to the surface. When the cleanser is at rest, as much of this matter should be removed as possible.

It should be the aim of the operator to use the same methods of avoiding all unnecessary contamination as he would in electrodepositing baths. It is obvious even to those who have not practiced this method of cleansing metallic articles that large quantities of work can be treated very rapidly, and this is the case especially where frames or racks are used in the plating operations. On account of the rapidity of operation and the efficiency of the bath, this method of cleansing should be a part of the labor saving devices used in all great commercial establishments engaged in the electroplating of metals.

* A paper read at the Toronto convention of the American Brass Founders' Association, June, 1908.

**The Gates Rock and Ore Breaker.**—Although the style K gyratory breaker described in Allis-Chalmers Company's bulletin No. 1416 is a new machine from the spider to the base, the fundamental principle of gyratory breaking remains. The gyratory breaker has overcome many objections to the jaw crusher. It has a larger capacity, crushes finer, and requires less power to operate. There are no severe shocks, and the cost of breaking and wear due to them is eliminated. From the time of the first application of the gyratory principle to rock breaking, Gates gyratory rock breakers have been built by the Allis-Chalmers Company or the Gates Works, which it absorbed, and the development of machines to meet growing needs has never lagged. There are now more than 6000 Gates crushers in use in all parts of the world. That they are giving satisfaction is evidenced by the constant receipt of new orders from old customers who are increasing the capacity of their plants.

# The Massachusetts Anti-Stock-Watering Law.

From an article by Grosvenor Calkins, in the *Quarterly Journal of Economics*, we take the following statement regarding corporate legislation in Massachusetts:

One of the most important acts of the Massachusetts Legislature of 1908 is an amendment to the law affecting conditions under which certain classes of public service corporations may issue increased shares of stock. The anti-stock-watering laws of Massachusetts have successfully withstood the pressure of commercial expansion and industrial development for 15 years. The test of declining values and hard times has been reserved until now. The Legislature has finally yielded, in part, to the demands for greater elasticity in issue of increased capital.

Before 1871 issues of increased capital were to be made at par value. In 1871 railroads were required to offer all stock worth more than par at auction; and this was soon extended to street railroads. In 1878 the law was re-established as before 1871, and no substantial change was made for 15 years. Under this law of 1878, stockholders' subscriptions were limited to par value of the stock; the only way in which stock could be sold at a premium was by public sale.

### The Act of 1893.

In 1893 a radical change was made. Instead of requiring increased capital, if offered for subscription of stockholders, to be sold at par and no other price, no increased capital could be issued, in excess of 4 per cent. of existing capital, without first being offered to stockholders "at market value thereof at the time of increase," to be determined by the railroad commission. The directors were required to sell at public auction any shares not subscribed for, and in no case could stocks be sold at less than par. At first this act applied only to transportation companies, but in 1904 was extended to include all public service corporations.

The railroad commission early adopted the policy of fixing a subscription price based on market quotations, somewhat lower than current quotations of listed stock, but with only sufficient margin to make sale of a substantial block at ruling quotations reasonably secure. This policy the commission for 15 years steadily maintained.

Since the law of 1893, steam roads have increased capital three times by issues exceeding 4 per cent. of existing capital, as follows: In 1899, by Norwich & Worcester, at 215; in 1901, by Boston & Maine, at 190; and in 1906, by Boston & Maine, at 165. All the above were fully subscribed by stockholders except the 1906 issue of Boston & Maine. Steam roads also increased capital 15 times by issues of less than 4 per cent., increased stock being sold at auction with large premiums. Street railroads applied 207 times for increases, of which 153 were authorized at par and 54 at a premium.

### The Investors' Attitude Changes.

Until recent years few complaints have been made by corporations or stockholders. Handsome premiums have been obtained from stockholders, issues have been fully subscribed, and "rights" have found a ready and profitable market. But of late stockholders have subscribed to new stock only to find a declining market has turned the privilege into an unprofitable investment. The last issues of Massachusetts railroads were only partly subscribed for, and it was realized that some change must be effected before the experiment could successfully be tried again.

The greatest pressure has been brought to bear on this year's Legislature to secure legislation which would shift the responsibility of fixing the terms for increased capital from the railroad commission to the corporation. In its original form the bill introduced for this purpose applied to all public service corporations. It proposed to permit them to offer increased stock to stockholders at such price, not less than par, as might be determined by the directors. The only duty of the railroad commission was to determine whether the amount of the proposed issue was reasonably necessary.

### The New Statute.

As enacted, the act is limited to transportation companies. The price at which stock is to be issued is to be fixed by the stockholders. In addition to determining the size of the issue, the Railroad Commission is given authority to refuse to approve any particular issue if the price fixed by stockholders is so low as to be inconsistent with public interest.

The experience of Massachusetts during the past 38 years in dealing with the perplexing problem of how to regulate issues of increased stock by public service corporations may be summarized by reviewing in chronological order the four plans adopted:

1. No increased stock except at par. This is unfair to the corporations and the public. It often deprives the former of a premium which stock would bring at public sale, and as often effects a partial stock dividend contrary to the public interest.

2. All increased stock shall be sold at auction. This is the generally accepted method of determining intrinsic value under any conditions. It certainly will protect the public, but is not always in the interest of the corporation or stockholders. Traditionally, and usually legally, stockholders are entitled to the first opportunity to secure increased stock on terms at least as favorable as the investing public will offer. Under such circumstances it may be for their interest to accept less favorable terms, although recent experience of Massachusetts corporations does not indicate this is generally appreciated. Finally, sales of large blocks at auction may afford an opportunity to interests hostile to the corporation to secure a substantial voice.

3. Increased stock shall be offered to stockholders only at actual market value. This will safeguard the public interest, but will be an effective method of securing additional capital in substantial amounts only under favorable financial conditions.

4. Increased stock shall be offered for subscription at a price not less than par, to be determined by stockholders subject to approval of the Railroad Commission. This should be satisfactory to stockholders and to the corporation. Unless controlled by their own good sense or by the supervision of the Railroad Commission, however, this plan will offer the temptation to stockholders at periods of corporate prosperity to issue to themselves stock on substantially more favorable terms than conditions existing require. Should this practice become general, the public interest will require all issues of increased stock to be advertised and sold at public auction, and not otherwise.

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The Aluminum Company of America, formerly the Pittsburgh Reduction Company, has filed with the Massachusetts Secretary of State a statement of its financial condition, dated December 31, 1907, as follows:

*Assets.*

| | |
|---|---|
| Real estate | $758,493 |
| Machinery, construction and equipment | 7,015,182 |
| Merchandise | 572,673 |
| Manufacturers' stock in process | 548,118 |
| Cash and debts receivable | 2,574,102 |
| Patent rights | 177,000 |
| Good will investments | 1,545,000 |
| Total | $13,190,568 |

*Liabilities.*

| | |
|---|---|
| Capital stock | $3,800,000 |
| Accounts, bills payable | 2,892,749 |
| Profit and loss | 6,497,819 |
| Total | $13,190,568 |

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The Cherokee Pipe Line Company, Chelsea, Okla., has been incorporated with a capital stock of $30,000, to lay a line from the shallow sand oil field to Chelsea, and to ship crude oil to a refinery which is being built at Texas City, Texas. The company expects to handle about 2000 barrels of crude oil daily, and will lay about 10 miles of 4-in. pipe and about the same length in 2-in. laterals through the field. Wm. Copp is president; W. D. Todd, vice-president; W. H. Hammett, treasurer and general manager, and F. M. Scott, secretary.

# The La Belle Iron Works Report.

The annual meeting of the La Belle Iron Works, Steubenville, Ohio, was held on Tuesday, September 8, at which the following financial statements were submitted for the fiscal year ending June 30, 1908:

INCOME ACCOUNT.

| | | |
|---|---|---|
| Net earnings from operations and sale of oil | | $1,814,771.31 |
| Less provision for exhaustion of minerals, extinguishment of lease values, development, &c. | | 59,132.15 |
| Net profits for the year | | $1,755,639.16 |
| Deduct: | | |
| Interest on bonds | $147,000.00 | |
| Cash dividend at $8 per share | 594,928.00 | |
| | | 741,928.00 |
| Surplus for the year | | $1,013,711.16 |
| Surplus at July 1, 1907 | | 3,150,809.99 |
| Total | | $4,164,521.15 |
| Deduct: | | |
| Stock dividend at 33⅓ per cent., declared but unpaid June 30, 1908 | $2,478,866.67 | |
| Appropriation for depreciation | 250,000.00 | |
| | | 2,728,866.67 |
| Net surplus carried to balance sheet | | $1,435,654.48 |

CONSOLIDATED BALANCE SHEET.

*Assets.*

| | | |
|---|---|---|
| Real estate, plant, &c., at Steubenville and Wheeling | | $9,275,708.19 |
| Mining and gas and oil properties | | 1,754,430.08 |
| Other assets | | 45,000.00 |
| Total capital assets | | $11,075,138.27 |
| Inventories of manufactured product, materials and supplies at cost | $2,990,397.57 | |
| Accounts and bills receivable | 845,951.80 | |
| Cash | 736,867.89 | |
| Total current assets | | 4,573,217.26 |
| Unexpired insurance, &c | | 6,196.89 |
| Total | | $15,654,552.42 |

*Liabilities.*

| | | |
|---|---|---|
| Capital stock issued—74,366 shares | | $7,436,600.00 |
| First mortgage 6 per cent. bonds: | | |
| Total issued | $2,500,000.00 | |
| Less in treasury | 50,000.00 | |
| | | 2,450,000.00 |
| Capital stock dividend of 33⅓ per cent., declared but not paid June 30, 1908 | | 2,478,866.67 |
| Total capital liabilities | | $12,365,466.67 |
| Reserves: | | |
| For general depreciation | $750,000.00 | |
| For exhaustion of minerals | 179,450.07 | |
| For relining furnaces, extraordinary repairs, &c | 228,594.88 | |
| | | 1,158,044.95 |
| Accounts payable | $350,655.93 | |
| Wages, taxes and royalties accrued | 173,113.39 | |
| Bond interest accrued and coupons not presented for payment | 22,885.00 | |
| Cash dividend on capital stock | 148,732.00 | |
| Total current liabilities | | 695,386.32 |
| Surplus at June 30, 1908 | | 1,435,654.48 |
| Total | | $15,654,552.42 |

From the accompanying report of President Isaac M. Scott the following statements are taken:

### Minerals.

Your La Belle and Miller ore properties were operated almost continuously throughout the year with satisfactory results, both as to tonnage and quality of product. The Wacootah mine was put on a producing basis last year for the first, operations being carried on, however, to an extent sufficient to demonstrate the fact that this property can be operated very economically and that the quality of the ore is well suited to the requirements of your blast furnaces. The production of the three properties for the fiscal year was as follows, being an increase in tonnage over last year of 33 1-3 per cent.:

| | Tons. |
|---|---|
| La Belle mine | 52,866 |
| Miller mine | 237,501 |
| Wacootah mine | 156,302 |
| Total | 446,669 |

Your coke property in Fayette County was operated in full up to November 1; but since then, owing to the low price at which coke could be purchased in the open market and the clearly apparent advantages accruing to the company by conserving its natural resources where possible, it was not deemed advisable to operate a greater part of the plant than was necessary to hold the works' organization together. The coke production for the year was 63,433 tons, or a decrease of 29 7-10 per cent., compared with the previous year.

Your Steubenville mine produced during the year 126,251 tons of steam and heating furnace coal, an increase of 17 8-10 per cent. over the year before. The continued and increasing advantages to the company from having an almost inexhaustible supply of coal located so near the point of consumption is emphasized more and more as time goes on.

### Manufacturing Plants.

Your manufacturing plants were operated during the first four months of the fiscal year to their full capacity, producing a greater tonnage than in any similar period in the company's history; but during the succeeding eight months, owing to the business depression, operations were carried on on a basis of from 33 1-3 per cent. to 60 per cent. only, the production for the year and a comparison with the previous year being as follows:

| | Gross tons. | Decrease, per cent. |
|---|---|---|
| Pig iron | 173,324 | 22.2 |
| Slabs and billets | 189,392 | 34.4 |
| Plates and skelp | 146,106 | 35 |
| Sheets | 11,551 | (New product.) |
| Tubular goods | 43,708 | 25 |
| | Kegs. | |
| Nails | 117,555 | 20.8 |

During the year there was paid out in salaries and wages $2,208,063.12, the average number of employees being 2993. This includes ore mines in Minnesota and coke works in Pennsylvania.

The value of the shipments for the year aggregated $8,910,712.32, a decrease of 28 5-10 per cent.

### Plant Additions.

During the fiscal year the sheet and plate mills referred to in last year's statement as being in course of construction have been completed and put in operation. This addition consists of one 72-in. three-high plate mill, two jobbing mills and eight light sheet mills, together with galvanizing and roofing departments.

Owing to lack of business, it has not been possible as yet to fairly demonstrate what the new department will do in the way of tonnage and earnings, but with the return of normal conditions this branch of the business should and doubtless will show satisfactory returns.

### Oil Property.

Since the last annual statement was presented your company acquired title to a tract of land of 175 acres, lying across the river from and a little south of the Steubenville Works. In making tests for gas on this property oil was discovered in paying quantities, and up to the end of the fiscal year there had been put down 12 wells, of which 11 were producers, the total production from December 12 last, the date of the drilling in of the first well, to June 30, being 95,343 barrels. Since June 30 to date there have been drilled in 11 additional wells, all of which are good producers. From present indications the property should show a still further increase in production, insuring to the company a steady income of substantial proportions for some time to come.

### Funds.

Consistent with the board's action of the last two years, an addition of $250,000 has been made to the general depreciation fund, increasing that fund to $750,000. As will be noted by the reading of the report, additions have also been made to the relining, rebuilding, and contingent funds, and it is the opinion of your management that the amounts appropriated to these funds during the year have been liberal and quite sufficient to care for any contingency of an ordinary character that will likely arise.

In addition to the regular 8 per cent. cash dividend paid throughout the year, your Board of Directors, believing that conditions warranted it, authorized a stock dividend of 33 1-3 per cent. (covering which certificates were issued during the month of August), thus increasing the company's outstanding capital liabilities from 74,366 shares of $100 each to 99,155 shares.

**General.**

In common with the other business interests of the country your company suffered severely in the way of decreased earnings during the last fiscal year through the depression brought about by the October panic. In order that the effects of this interference may be in a manner measured, it would be well to divide the fiscal year into three equal periods of four months each and explain that from July to October inclusive your manufacturing plants were operated on a basis of 100 per cent., November to February inclusive approximately 40 per cent., and March to June inclusive 55 per cent., June being on a basis of 60 per cent, as against a little over 50 per cent. in March.

Owing to the stability of prices in general, largely due to the intelligent manner in which the unusual situation growing out of the panic was handled, profits have been more favorable than would have been the case had those interested, when it was discovered that there was not sufficient business to go around, resorted to the old-time "cut throat" policy and undertaken to have secured business from their competitors by the process of underbidding. As an evidence of the correctness of this reasoning, it might be cited that the falling off in the company's profits, as compared with the last fiscal year, is in exactly the same proportion as the falling off in the value of the shipments. Almost invariably in times past, a slackening in business brought lower prices and a decrease in profits not in the same ratio as the loss in business, but by an increasing ratio.

It is gratifying to be able to report that notwithstanding the decrease in the volume of business and the natural tendency on the part of costs to increase under such conditions, our costs for the last few months have been on a very reasonable basis. This condition has been brought about by a general retrenchment all along the line, a more willing disposition on the part of our workmen to render a fair day's work and a decreased cost of certain commodities of which we are buyers, such as coke, scrap and the like.

Another gratifying feature of the year's business was the small amount of losses incurred from bad debts, as notwithstanding the fact that the panic and resultant depression was as severe as any other this generation has experienced, the amount of losses to the company through failure of customers to settle has been infinitesimal. The fact that there were few important failures in the steel and kindred lines throughout the country was undoubtedly due to the good judgment and patience universally exercised by the creditor in making collections during the few months directly following the panic.

While it is impossible to foretell what the future has in store for us, it would appear that with the abundance of money, good crop situation and the absolute necessity on the part of the railroads to purchase extensively in the near future, the coming year should be a prosperous one.

Your company, as the statement clearly shows, is in a sound financial position; your ore and coal properties are in a high state of development, and your manufacturing plants are capable of producing a larger tonnage of a more profitable line of goods than ever before, and it only requires business to again resume normal proportions to enable your company to show larger earnings than at any time in its past history.

## The McWane Pipe Interests.

The September *Monthly Pipe Parley*, issued by the McWane Pipe Works, 220 Broadway, New York, with foundries at Lynchburg and Radford, Va., calls attention to the fact that on September 14 the McWane clan will celebrate the golden wedding of the senior member, who was a foundryman before the war. Four generations will be represented, comprising 63 in all. Every male member of the family over school age is in the pipe business. Following is a sketch of the elder McWane and a brief history of the business which he founded:

Charles P. McWane was born in 1833 at Massie's Mills, Nelson County, Va., of Scotch-Irish parentage. His father was a millwright and skilled mechanic, a close neighbor and personal friend of Cyrus H. McCormick, of reaper fame, and assisted largely in perfecting the first practical harvesting machine. He was married September 14, 1858, to Miss Eliza Dudley. Nine children were the result of this union, five boys and four girls, all of whom are living, and eight of whom are married. Shortly after his marriage he started a small foundry business at Wytheville, Va., the foundations for which were a cupola, or melting furnace, made from an old locomotive boiler, and a hand-made blower, operated by a horsepower, also hand-made.

The eldest son, Henry E., was closely associated with his father from boyhood in the operation and management of this business, working as a molder by day and attending to the bookkeeping at night. In 1887 Henry went to Lynchburg, Va., as manager of the Glamorgan Company. Two years later he began the manufacture of cast iron pipe, changing the name of the company to the Glamorgan Pipe & Foundry Company, of which he became the president and general manager, and which position he held for 13 years. During these years the force of workmen was increased from 16 to more than 700, and the annual volume of business from $50,000 in 1887 to $725,000 in 1901. In the meantime, his father's business, in which he still retained his interest, continued to grow, being reinforced in turn by each of the other sons as they grew up and served their apprenticeship in the shop.

In 1902 Henry sold his interests in the Glamorgan Pipe & Foundry Company, and purchased the entire stock in his father's business not already held by himself and other members of the family, this business having been incorporated several years previously under the name of the Lynchburg Plow Company to continue and manage the plow manufacturing business originally founded at Wytheville. The capital stock was increased to $150,000, a small pipe pit was installed, and the manufacture of pipe begun in April, 1903, with a daily output of about 15 tons. The corporate name was changed to the Lynchburg Foundry Company, but to distinguish the two lines of manufacture, the pipe department is operated under the name of the McWane Pipe Works, and the plow department under that of the Lynchburg Plow Works. During 1903 the daily output of pipe was increased to about 25 tons, and in 1904 the capital stock was increased to $250,000, and another pit was added, bringing the daily output to between 50 and 60 tons.

The continued growth of the plow department and the limited room for further enlargement of the pipe plant at Lynchburg, made the immediate acquisition of another plant necessary to meet the rapid increase in trade. In 1905 the Radford, Va., Pipe Works was purchased, but was not put in operation until July, 1906, it being under lease to another company. This plant cost nearly $500,000 to construct, and has a maximum capacity of 150 tons daily, in sizes from 3 to 30 in. diameter. The purchase of this plant necessitated a further increase in the capital stock to $400,000, which is the present limit, and which is controlled by the McWane family. Of the five sons, three are now actively connected with the business, as follows: Henry E., president and general manager, and principal stockholder; Charles W., superintendent of the plow pattern department at Lynchburg; Robert C., sales manager at the Eastern office, New York city. Of the other two sons, James R. is president and general manager and a large stockholder in the American Cast Iron Pipe Company, Birmingham, Ala.; and the youngest, Arthur T., is now in college. The father retired from active participation in the business some years ago, and is living at Radford, Va. In addition to the sons, there are two grandsons, both sons of Henry E., occupying important positions with the company, the eldest, Lawrence H., being resident manager of the Radford plant, and John R., assistant to his father at Lynchburg.

For the first time in nearly a year all three blast furnaces of the Buffalo Union Furnace Company, Buffalo, N. Y., are in operation, and arrangements are now being made for receiving and storing a great quantity of ore.

# Pig Iron Production.

## August Increase More Marked.

### A Gain of 11 Per Cent. Over July, and More at Steel Works Furnaces.

The August pig iron output showed about the same increase over that for July as was shown in July over the total for June. The total of coke and anthracite iron last month was 1,348,831 tons, as compared with 1,218,129 tons in July, a gain of over 11 per cent. The number of furnaces active on September 1 was 179, a net gain of 18 (of which 11 were at steel works), while in the two months of the second half of the year the gain was 28. The weekly coke and anthracite furnace capacity active September 1 was 313,112 tons, which compares with 284,590 tons on August 1. The daily rate of production, as given in the following table, shows the largest gain in August for any month of the year. For steel works furnaces the daily average was 28,952 tons, a gain of 12.4 per cent. over July. Merchant furnaces produced 14,559 tons a day last month, a gain of 7.7 per cent. over July:

*Daily Rate of Production.—Gross Tons.*

| | Steel works. | Merchant. | Total. |
|---|---|---|---|
| January | 21,432 | 12,286 | 33,718 |
| February | 25,717 | 11,446 | 37,163 |
| March | 27,145 | 12,474 | 39,619 |
| April | 24,185 | 14,104 | 38,289 |
| May | 24,505 | 13,098 | 37,603 |
| June | 23,923 | 12,521 | 36,444 |
| July | 25,762 | 13,525 | 39,287 |
| August | 28,952 | 14,559 | 43,511 |

**Capacity in Blast September 1 and August 1.**

In the following table is given the weekly capacity of coke and anthracite furnaces in blast September 1 and August 1, based largely on their performance in the preceding month in each case:

*Coke and Anthracite Furnaces in Blast.*

| Location of furnaces. | Total number of stacks. | September 1. Number in blast. | September 1. Capacity per week. | August 1. Number in blast. | August 1. Capacity per week. |
|---|---|---|---|---|---|
| New York: | | | | | |
| Buffalo | 14 | 9 | 18,209 | 6 | 13,076 |
| Other New York | 7 | 3 | 3,510 | 2 | 1,942 |
| New Jersey | 8 | 2 | 3,808 | 2 | 3,358 |
| Spiegel | 2 | 0 | 0 | 0 | 0 |
| Pennsylvania: | | | | | |
| Lehigh Valley | 25 | 8 | 8,628 | 6 | 6,328 |
| Spiegel | 3 | 1 | 138 | 1 | 135 |
| Schuylkill Valley | 15 | 4 | 5,551 | 4 | 5,670 |
| Low. Susquehanna | 7 | 2 | 3,278 | 2 | 3,367 |
| Spiegel | 1 | 0 | 0 | 0 | 0 |
| Lebanon Valley | 10 | 3 | 2,058 | 3 | 2,242 |
| Pittsburgh Dist. | 45 | 31 | 81,762 | 28 | 72,860 |
| Spiegel | 3 | 2 | 1,556 | 2 | 2,150 |
| Shenango Valley | 20 | 11 | 21,527 | 9 | 19,588 |
| Western Penn. | 27 | 11 | 16,524 | 10 | 14,371 |
| Maryland | 4 | 2 | 3,617 | 2 | 3,811 |
| Wheeling Dist. | 14 | 3 | 5,502 | 3 | 4,676 |
| Ohio: | | | | | |
| Mahoning Valley | 18 | 9 | 23,261 | 9 | 22,162 |
| Central and North. and Michigan | 22 | 12 | 28,110 | 11 | 25,887 |
| Hocking Val., Hanging Rock and S. W. Ohio | 13 | 7 | 5,232 | 6 | 4,154 |
| Illinois and Indiana | 24 | 15 | 33,215 | 14 | 32,431 |
| Spiegel | 2 | 1 | 1,678 | 1 | 709 |
| Minnesota | 1 | 0 | 0 | 0 | 0 |
| Wisconsin | 6 | 1 | 1,502 | 2 | 2,490 |
| Missouri | 1 | 1 | 812 | 1 | 882 |
| Colorado | 6 | 2 | 3,854 | 2 | 3,802 |
| The South: | | | | | |
| Virginia | 23 | 10 | 6,995 | 9 | 6,347 |
| Kentucky | 5 | 0 | 0 | 0 | 0 |
| Alabama | 46 | 21 | 27,738 | 19 | 27,524 |
| Tennessee | 18 | 8 | 5,047 | 6 | 4,196 |
| Georgia and Texas | 3 | 0 | 0 | 1 | 434 |
| Totals | 393 | 179 | 313,112 | 161 | 284,590 |

Among furnaces blown in in August were Buffalo A and two Lackawanna at Buffalo, Genesee in New York, two Bethlehem in the Lehigh Valley, one Edgar Thomson, one Lucy and one Eliza in the Pittsburgh district, Alice and Hall in the Shenango Valley, Josephine and Emporium in Western Pennsylvania, West End in Virginia, one Central in Northern Ohio, Miami (new) in Southwestern Ohio, one South Chicago, one Clifton and Philadelphia (September 1) in Alabama, Embree and Cumberland in Tennessee and Rome in Georgia (blown out later and out September 1).

The furnaces blown out include Adrian in Western Pennsylvania, one Mayville in Wisconsin and Sam Lanham in Texas.

**August Product by Districts.**

The table below gives the production of coke and anthracite furnaces in August and the four months preceding:

*Monthly Pig Iron Production.—Gross Tons.*

| | April. (30 days) | May. (31 days) | June. (30 days) | July. (31 days) | August. (31 days) |
|---|---|---|---|---|---|
| New York | 62,263 | 64,746 | 61,249 | 66,498 | 83,004 |
| New Jersey | 22,701 | 20,889 | 15,963 | 14,830 | 16,866 |
| Lehigh Valley | 28,919 | 28,712 | 26,357 | 28,028 | 36,701 |
| Schuylkill Val. | 28,654 | 25,566 | 23,814 | 25,115 | 24,586 |
| Lower Susquehanna and Lebanon Val. | 28,315 | 29,943 | 31,058 | 26,204 | 23,632 |
| Pittsburgh Dis. | 276,883 | 284,571 | 259,771 | 303,645 | 362,417 |
| Shenango Val. | 71,970 | 53,720 | 58,244 | 82,978 | 91,534 |
| West. Penn | 54,570 | 54,185 | 59,521 | 63,433 | 73,207 |
| Md., Va. and Kentucky | 48,955 | 49,273 | 46,802 | 46,635 | 47,492 |
| Wheeling Dis. | 17,930 | 18,121 | 16,539 | 19,405 | 24,368 |
| Mahoning Val. | 94,780 | 99,788 | 89,238 | 93,635 | 103,021 |
| Central and North Ohio | 88,047 | 88,995 | 70,283 | 92,737 | 117,016 |
| Hocking Valley, Hanging Rock and S.W.Ohio | 18,772 | 21,259 | 20,342 | 20,187 | 19,909 |
| Mich.,Minn.,Mo., Wis., Colo. | 36,808 | 36,831 | 34,363 | 40,029 | 35,542 |
| Chicago Dis. | 157,633 | 165,291 | 153,162 | 152,981 | 145,537 |
| Alabama | 94,754 | 104,697 | 110,196 | 123,301 | 122,840 |
| Tennessee, Georgia and Texas | 17,648 | 19,101 | 15,229 | 18,488 | 21,159 |
| Totals | 1,149,602 | 1,165,688 | 1,092,131 | 1,218,129 | 1,348,831 |

**Production of Steel Companies.**

Returns from all the plants of the United States Steel Corporation, the Cambria, Pennsylvania, Maryland, Lackawanna, Wheeling, Republic, Youngstown Sheet & Tube Company, Jones & Laughlin, La Belle, Bethlehem, Calumet, Inland, Colorado and Tennessee (Ensley) companies show the following totals of product month by month. We give separately a statement of the output of spiegeleisen and ferromanganese, which is included for each month in the total production:

*Production of Steel Companies.—Gross Tons.*

| | Pig.—Total production. 1906. | 1907. | 1908. | Spiegeleisen and ferromanganese. 1907. | 1908. |
|---|---|---|---|---|---|
| January | 1,358,015 | 1,406,397 | 664,415 | 21,477 | 20,254 |
| February | 1,226,760 | 1,317,923 | 745,802 | 19,444 | 9,402 |
| March | 1,400,395 | 1,424,827 | 841,502 | 31,091 | 13,750 |
| April | 1,333,591 | 1,446,788 | 725,548 | 26,527 | 12,363 |
| May | 1,372,423 | 1,470,080 | 759,674 | 28,822 | 17,823 |
| June | 1,293,437 | 1,457,230 | 717,689 | 30,942 | 15,958 |
| July | 1,323,391 | 1,452,557 | 798,639 | 25,343 | 10,250 |
| August | 1,237,485 | 1,445,685 | 897,052 | 23,696 | 14,932 |
| September | 1,264,380 | 1,417,153 | ..... | 30,270 | ..... |
| October | 1,452,200 | 1,514,521 | ..... | 35,105 | ..... |
| November | 1,411,350 | 1,084,114 | ..... | 21,861 | ..... |
| December | 1,445,528 | 659,459 | ..... | 19,480 | ..... |

**A Record of Active Capacity.**

The active weekly capacity in coke and anthracite iron has shown the following fluctuations since January 1, 1904:

| | Capacity per week. | | Capacity per week. |
|---|---|---|---|
| September 1, 1908 | 313,112 | April 1 | 484,240 |
| August 1 | 284,590 | March 1 | 479,737 |
| July 1 | 264,452 | February 1 | 482,156 |
| June 1 | 259,284 | January 1, 1906 | 463,673 |
| May 1 | 268,674 | December 1, 1905 | 475,814 |
| April 1 | 264,890 | November 1 | 460,449 |
| March 1 | 267,437 | October 1 | 445,468 |
| February 1 | 241,925 | September 1 | 412,563 |
| January 1, 1908 | 232,652 | August 1 | 410,088 |
| December 1, 1907 | 347,372 | July 1 | 408,617 |
| November 1 | 491,436 | June 1 | 448,092 |
| October 1 | 511,397 | May 1 | 452,031 |
| September 1 | 507,768 | April 1 | 439,564 |
| August 1 | 513,471 | March 1 | 403,157 |
| July 1 | 528,170 | February 1 | 405,792 |
| June 1 | 523,220 | January 1, 1905 | 377,879 |
| May 1 | 524,538 | December 1, 1904 | 357,846 |
| April 1 | 496,456 | November 1 | 334,249 |
| March 1 | 511,035 | October 1 | 319,249 |
| February 1 | 492,359 | September 1 | 291,573 |
| January 1, 1907 | 507,397 | August 1 | 246,092 |
| December 1, 1906 | 513,860 | July 1 | 272,391 |
| November 1 | 500,580 | June 1 | 336,107 |
| October 1 | 469,665 | May 1 | [illegible] |
| September 1 | 441,426 | April 1 | [illegible] |
| August 1 | 449,908 | March 1 | [illegible] |
| July 1 | 460,570 | February 1 | [illegible] |
| June 1 | 472,622 | January 1, 1904 | [illegible] |
| May 1 | 484,031 | | |

Samuel W. Hays Sons, Farmers' Bank Building, Pittsburgh, sales agents for the Whiting Foundry Equipment Company, Harvey, Ill., have received an order from the National Tube Company for six large electric jib cranes, to be installed in its new open hearth plant at Lorain, Ohio. The Whiting Company has supplied a very large number of this type of cranes, including 24 for the new plant of the Indiana Steel Company, Gary, Ind.; 18 for the Duquesne Steel Works, of the Carnegie Steel Company, and 12 for the Ohio Works of the same company.

# NEWS OF THE WORKS.

### Iron and Steel.

No. 3 furnace of the Republic Iron & Steel Company, at Thomas, Ala., has been put in blast. No. 1 stack at the same plant is to be blown out for relining.

Rome Furnace, at Rome, Ga., which was blown in on August 3, was operated only part of the month. A new bosh is now being put in and the furnace will start again about September 20.

The Lackawanna Steel Company, Buffalo, N. Y., had four furnaces in blast September 1, No. 2 having been blown in on August 23 and No. 4 on August 17.

Genesee Furnace, at Charlotte, N. Y., was blown in August 5.

The Bethlehem Steel Company had four furnaces in blast September 1, Furnace A having been blown in on August 3 and Furnace C on August 11. One furnace is now under construction, to replace the fifth of the group, which was dismantled some months ago.

The Republic Iron and Steel Company's Hall Furnace, at Sharon, Pa., was blown in on August 17.

The stack of the Adrian Furnace Company, Du Bois, Pa., was blown out on August 28.

All three Central furnaces of the American Steel & Wire Company at Cleveland, Ohio, were in operation September 1, one having been blown in in August.

South Works Furnace No. 2 of the Illinois Steel Company, South Chicago, Ill., was blown in August 21.

The Northwestern Iron Company had one of its Mayville, Wis., furnaces in blast September 1, the other having been blown out in August.

The furnace of the Embree Iron Company, Embreeville, Tenn., was blown in August 6.

Sam Lanham Furnace, Rusk, Texas, was blown out August 4.

The furnace of the Warner Iron Company, at Cumberland Furnace P. O., Tenn., was blown in early in August.

### General Machinery.

A number of well-known business men of Plattsburgh, N. Y., have become interested in the invention of L. J. Aldridge of Plattsburgh and have incorporated the Aldridge Roller Bearing Mfg. Company, with a capital stock of $200,000. The company will build a plant for the manufacture of a special type of roller bearing axle. The axle contains 11 small rollers of hardened steel which revolve as the axle turns. Five of these rollers are constantly bearing on the axle, and are all so arranged that they can be easily removed when necessary and replaced with new rollers. These axles will be used for trucks, wagons, buggies and other vehicles, and will later be adapted to the uses of heavier rolling stock.

The Delaware & Hudson Company, C. S. Sims, general manager, Albany, N. Y., has completed the purchase of 150 acres of land in the town of Colonie, near the Watervliet Arsenal, and is having plans prepared for the erection of an extensive repair shop.

The H. W. Graber Machinery Company, Dallas, Texas, has increased its capital stock from $10,000 to $45,000.

The Department of Parks, New York, will receive bids until September 17 for seven electric motors and electric cables for the American Museum of Natural History.

### Bridges and Buildings.

William W. Beers, formerly connected with the Eastern Construction Company, Brooklyn, N. Y., has opened an office at 719 Nostrand avenue, Brooklyn, and is now in a position to estimate on the erection of structural steel work for buildings, bridges, viaducts, ornamental ironwork, &c.

At a meeting of the stockholders of the Syracuse Bridge Company, Syracuse, N. Y., August 29, it was decided to materially increase the facilities for handling structural steel orders. The present plant at Grape and Taylor streets is to be vacated and a much larger plant is to be erected on a new site, not yet secured. The company also proposes to erect a branch plant at some point in New Jersey, adjacent to New York. Plans will be prepared and construction of the buildings will probably be started in the early spring of 1908. The new plants will be equipped with modern equipment to facilitate easy handling of its product. The following officers for the coming year were also elected: President and treasurer, Arlington H. Mallery; secretary, A. M. Malory.

### Power Plant Equipment.

Bids will be received until September 17, at the office of Williams & Williams, Pittsfield, Ill., for a 57,000-gal. centrifugal pumping plant, to be located on the Illinois River, about 3 miles below Meredosia, Ill.

The Board of Trustees of Shortsville, N. Y., will receive bids until September 22 for a complete water works system, to consist of duplicate pumping plant, with triplex pumps and gasoline or electric power, elevated tank, cast iron pipe, &c.

J. J. O'Leary, electrical engineer, 62 Niagara street, Buffalo, N. Y., has been jointly retained by the Common Council of the city of Buffalo and the Board of Supervisors of Erie County to prepare plans and specifications for installing a private electric generating plant in the City and County Building. It has not definitely been determined as to whether the installation will be gas engine or steam engine driven units. Units will be direct connected and about 75 or 100 kw. each.

William C. Whitner, Richmond, Va., hydraulic engineer of the Virginia Passenger & Power Company and president of the Fredericksburg Power Company, has completed arrangements for the construction of a dam across the Rapahannock River, about 2 miles above Fredericksburg, where it is expected that 8000 hp. can be developed.

To complete the replacement of its single phase generative equipment, the Electric Light Company, Huron, S. D., is planning to purchase an additional 100-kw. three-phase 60-cycle machine. The manager of the plant is E. I. Bowe.

To meet the increased requirements of the municipal electric light plant at Townsend, Mont., it is proposed to install a new single phase 2200-volt 60-cycle generator of 70 to 75 kw. capacity, with excitor. This unit will be required before October 1.

Contracts were awarded August 25 for the municipal plant of Clarksdale, Miss., to the Weber Company, Memphis, Tenn., for concrete steel chimney; Ball Engine Company, Erie, Pa., 540 hp. engine, and to Crocker-Wheeler Company, Ampere, N. J., for 360 kw. direct connected generator. The contracts for covered reservoir, steam piping and repairs to the building have not yet been awarded. Walter G. Kirkpatrick, Jackson, Miss., is engineer.

A committee, of which the Mayor is chairman, has been appointed by the city of Warsaw, Ill., to consider the construction of a water works system to cost about $10,000. The committee has appointed Geo. C. Morgan, 169 Jackson boulevard, Chicago, as engineer in charge. A. H. Worthen is city clerk.

The Dakota Engineering Company, Mitchell, S. D., is preparing plans for a water works system for the city of Murdo, S. D., the approximate cost of which is $10,000. The project is not as yet far enough advanced to receive bids for construction and equipment.

Although it is probable the Glencoe Electric Light Company, Glencoe, Minn., will make no change in its system this season, such a course is contemplated in the future which will include the installation of steam turbines with a rating of 150 kw. A. H. Lane is superintendent.

### Foundries.

Jno. A. Selinger, Exchange Building, Pottstown, Pa., is erecting a foundry at Bramcote, a suburb of Pottstown, which will be equipped with modern machinery. Mr. Selinger has one cupola and will add another immediately. He is in the market at the present time for a portable crane.

The Link-Belt Company, chain manufacturer, has bought 20 acres of ground about a mile south of the present plant at Indianapolis, Ind., upon which it will erect a new malleable iron plant to cost $200,000. There will be two buildings, each 800 ft. long.

Operations have been resumed at the plant of the Avondale Stove & Foundry Company, Birmingham, Ala.

The plant of the Southern Pipe & Foundry Company, North Birmingham, Ala., has been put in operation.

The Watkins Machine & Foundry Company of Hattiesburg, Miss., has secured a contract for the repair work on 900 cars of the New Orleans & Northeastern Railway.

### Fires.

The plant of the Cambridge Architectural Iron Company, Cambridge, Mass., was damaged $8000 by fire September 1.

The stove and heating apparatus manufacturing plant of the A. J. Lindemann & Hoverson Company, Milwaukee, Wis., was recently burned, the loss being about $40,000.

The machine shop of Edward Moore & Son, Kittanning, Pa., was recently burned, the loss being about $5000.

The plant of the Indiana Shovel Company at New Castle, Ind., was recently damaged $20,000 by fire.

The plant of the Pennsylvania Forge Company, Bridesburg, Philadelphia, was badly damaged by fire on September 3. The damage is estimated at $10,000. Plans are being made to continue the business uninterruptedly.

### Hardware.

The Ward Nail Company, Youngstown, Ohio, has been incorporated, with a capital of $10,000, and will develop a new process in the manufacture of wire nails invented by Mr. Ward.

At a meeting of the directors of the Scully Detachable Horseshoe Company, Rome, N. Y., on August 28, Dr. T. P. Scully was elected president and William H. Lewis secretary. As soon as the company is financed it will build a factory in that city for the manufacture of horseshoes.

The D. J. Blasier Handle Company, Rome, N. Y., has leased a factory building at Mohawk, N. Y., and will install machinery for a branch plant to be operated in charge of D. J. Blasier,

Jr., for the manufacture of handles for axes, hammers, garden implements, &c., also for the manufacture of wagon and automobile spokes.

The Wayne Mfg. Company, Dayton, Ohio, manufacturer of the Fountain power motor washing machines, has opened an office at 504 Penn avenue, Pittsburgh, in charge of T. E. Barnes.

**Miscellaneous.**

The Baltimore Retort & Fire Brick Company, Baltimore, Md., has completed plans for rebuilding its plant which was recently destroyed by fire. The new buildings will be of brick and steel construction, and will be made as near fireproof as is possible. Temporary quarters for molding have been secured, and as the finished stock and kilns were uninjured the delivery of regular goods has gone on uninterruptedly.

Casey & Murray, Powers Building, Rochester, N. Y., who received the contract for Barge Canal work at Little Falls, N. Y., are now ready for figures on the following material entering into construction of the work: 155,200 lb. structural steel, 110,300 lb. of corrugated reinforcing bars, 26,800 lb. iron castings, 138,000 lb. of metal for upper lock gate, 430,000 lb. of metal for lower lock gate, 80,000 lb. of metal for buffer dams, 60,000 lb. of metal for lock valves, 680,000 lb. of metal for guard gates, 1080 ft. of wrought iron pipe railing.

Bids were opened on September 4 by the Grade Crossing Commissioners, C. B. Guthrie, chief engineer, Ellicott Square Building, Buffalo, N. Y., for subway under the International Bridge approach. The Eastern Concrete Steel Company, Morgan Building, Buffalo, was low bidder at $62,036.70. Contract includes 50 tons of corrugated steel bars for reinforcing.

The Standard Force Feed Lubricator Company, Rochester, N. Y., has been incorporated, with a capital stock of $20,000, to manufacture lubricators of all kinds, machinery, hardware and supplies. The directors are John Sherry, 36 Avenue C; John F. Dake, 95 Melville street, and Thomas F. Andrews.

The Niagara Lead Company, Niagara Falls, N. Y., has been incorporated, with $100,000 capital stock, by Edward G. Morris and Pedro Salome of Philadelphia, and F. L. Lovelace, 120 Main street, Niagara Falls. The company was formed to take over the works of the Lead Reduction Company, and will remodel the building and add a large amount of new machinery.

The Board of Water Commissioners, Cohoes, N. Y., has prepared general specifications for filtering companies, and contractors who may desire to submit detailed plans and proposals for the construction of a mechanical filtration plant for the city.

The Ladd Fire Brick Company, Fort Payne, Ala., has purchased the old Kolin Company's firebrick plant at that place, and has added new machinery. In addition to ordinary firebrick it is the intention to manufacture brick for metallurgical furnaces, also brick for architectural work. The clay in the vicinity of Fort Payne is reported to be of exceptionally high quality.

J. J. Jones and F. H. Locke have formed the J. & L. Sign Company, 1200 Westinghouse Building, Pittsburgh, and are arranging to incorporate under a Pennsylvania charter with a capitalization of $25,000, for the purpose of manufacturing a line of improved electric signs for store and outdoor purposes.

The sale of the Pope Motor Car Company's plant at Indianapolis, Ind., for $200,000, was ordered by the court at Newark, N. J., September 8. The receivers for the company have an offer for that amount for the plant.

**A New Slide Rule.**—M. J. Eichhorn, an electrical engineer, 5759 Aberdeen street, Chicago, Ill., has designed a trigometric slide rule for solving all problems in plane trigonometry. It is not intended to take the place of the various forms of the Manheim rules, which it resembles in all respects except the graduations, but because of the latter it is the simplest and quickest means of obtaining the solutions of triangles where greater accuracy than three or four places is not necessary.

The blast furnaces of the Carnegie Steel Company in the Pittsburgh District are gradually resuming operations. On September 1, seven Carrie stacks were in blast, four Duquesne, eight Edgar Thomson, two Lucy, and three Clairton. The idle stacks are three Edgar Thomson, three Isabella, and two Union, at Donora, Pa. Furnace A at Edgar Thomson blew in August 5, and Lucy No. 1 August 27. Aside from the above, seven stacks in the Pittsburgh District were idle on September 1, these being Soho of the Jones & Laughlin Steel Company, No. 3 of the National Tube Company, at McKeesport, the stack of the Midland Furnace Company, at Midland, Pa., and the four stacks of the American Steel & Wire Company, comprising Edith, Neville Island No. 1 and the two Schoenberger.

## Pittsburgh Foundrymen Inspect Coal and Coke Plants.

The Jamison Coal & Coke Company, Pittsburgh, on September 7 tendered to the Pittsburgh Foundrymen's Association a trip of inspection to its different plants located on the Alexandria and Crabtree branches of the Pennsylvania Railroad, in Westmoreland County, Pa. The original party numbered about 150, and left Pittsburgh on a special train. A short meeting of the Nominating Committee was held on the outgoing trip, and the following were nominated: G. W. Gale, Pennsylvania Malleable Company, McKees Rocks, Pa., for president; J. T. Speer, Pittsburgh Valve Foundry & Construction Company, Pittsburgh, for vice-president; J. S. Seaman, Seaman-Sleeth Company, Pittsburgh, for treasurer; F. H. Zimmers, Union Foundry & Machine Company, Pittsburgh, for secretary. The Executive Committee is to consist of H. E. Field, Benjamin Fuller, Edward Frohman, John A. Logan and W. A. Johnson.

Arrangements had been made to stop at different stations for out of town guests, and on the arrival of the party at Luxor, Pa., where plant No. 1 is located, it numbered nearly 200, which included members of the association and friends of the Jamison Coal & Coke Company. The company operates 344 coke ovens at this plant, which, with the new crusher and washer lately installed, were of special interest to the visitors, many of whom had never seen the actual process of making coke. The party was then taken to plant No. 2, at Hannastown, Pa., where the company has 516 ovens in operation. Many entered the 215-ft. shaft to get an idea of the underground operations. Plant No. 3, at Forbes Road, where the company operates only a coal mine, was visited, and the party was then conducted to a near-by grove where dinner was served, afterward being taken to plant No. 4, at Crabtree. Here the company operates 305 ovens. While some of the party looked over the plant the others witnessed or engaged in a ball game. The party returned to Pittsburgh in the evening. A vote of thanks was given to the Jamison Coal & Coke Company for the courtesies extended.

## Lake Ore Moving at an Increasing Rate.

The August shipments of Lake Superior iron ore down the lakes were 4,749,655 gross tons, an increase of 385,372 tons over the preceding month, but a falling off of 2,057,156 tons from the total for August, 1907. The season movement this year, to September 1, was 11,984,936 tons, against 24,341,552 tons to September 1, 1907, a falling off of 12,356,616 tons. The figures, by ports, for the two seasons are as follows:

| | To September 1, 1908. | To September 1, 1907. |
|---|---|---|
| Escanaba | 1,351,513 | 3,731,165 |
| Marquette | 625,399 | 1,924,464 |
| Ashland | 1,037,185 | 2,314,760 |
| Superior | 1,723,208 | 4,416,454 |
| Duluth | 4,583,987 | 7,202,645 |
| Two Harbors | 2,663,644 | 4,752,064 |
| Totals | 11,984,936 | 24,341,552 |

If shipments should continue in September, October and November at the rate of August, the season total would exceed 26,000,000 tons. This is several million tons above the estimate commonly made early in the season. Developments in the iron trade in the coming month may help blast furnacemen to decide as to their ore requirements, this being still in a good many cases an open question.

The Jones & Laughlin Steel Company is now occupying its magnificent new eight story office building, at the corner of Third avenue and Ross street, Pittsburgh. The building is finished throughout in hardwood, contains all modern equipment devised for office purposes, and is attractive and convenient in every way. The company has issued invitations to the press for an inspection of the building on Friday evening, September 11, and for a public inspection of the building on September 12, from 2 to 5 p. m.

# The Iron and Metal Trades

## PIG IRON PRODUCTION INCREASING

### CANADA'S LARGE REQUIREMENTS.

### A Banner Month in Wire.

The production of Pig Iron is gaining steadily, thus reflecting the gradual recovery of the industry. It is fair to say, however, that so far as the merchant furnaces are concerned the expansion is regarded by many as a little premature. There were 18 more furnaces active on September 1 than were in operation on August 1, while in the two months of the second half of the year the gain was 28 furnaces. It is known that additional stacks are preparing to go in, and, as a matter of fact, some have already started since the opening of the month. We estimate the capacity of the active plants on September 1 at 313,112 tons weekly, as compared with 284,590 tons on August 1, and the minimum of 232,652 tons on January 1, this year, and the maximum of 525,538 tons on May 1, 1907.

The production of the Coke and Anthracite furnaces reached 1,348,831 tons in August, as compared with 1,218,129 tons in July.

There has been rather more activity in Pig Iron in certain sections, and on the whole the East and the South are gaining in strength. In eastern Pennsylvania there was a sale of 20,000 tons of Basic Pig for the last quarter's delivery at a close price. In the Central West some makers continue to make concessions. Thus Mahoning and Shenango Valley producers are offering No. 2 Foundry in the Chicago District at $16.50, equivalent to $14.10 at furnace. A furnace interest on Lake Erie has sold 13,000 tons of Foundry and Malleable Iron for delivery at different points in the Central West.

Much interest is attached to the recent large requirements of the Canadian market. Including the 10,000 tons of Shapes and Plates recently sold, there have been placed during the last few weeks a total of 52,000 tons of Shapes and Plates on the Canadian market. The activity in railroad building is responsible for a large share of the Iron and Steel requirements. The Transcontinental Commission has recently awarded the construction of about 575 miles of track, which will call for 44,000 tons of Rails, of which the Steel mills on this side of the border expect to get a share. The Canadian Pacific recently ordered a total of about 60,000 tons from the Algoma mill.

Generally speaking, a better feeling is developing in the export trade, and business is picking up in all quarters, with the exception of Great Britain, where the main reliance of the steel trade, the shipbuilding industry, is practically prostrate. There are some large rail requirements in the international market. Since the financing has been done, it is expected that the negotiations will soon come to an issue.

Of the Harriman order for cars of different types, about 4500 have been placed, leaving from 2000 to 2500 still under negotiation.

Comparatively few Structural contracts have been awarded during the past week, among the larger being 3500 to 4000 tons for a building in Los Angeles.

The Wire trade is making some records, considering prevailing conditions. During the month of August the American Steel & Wire Company booked orders aggregating 164,000 tons, which shows how close to the normal consumption are the requirements of the agricultural community and the trade at large. For a considerable period the old policy of anticipating future business by sales for distant delivery has not been followed, and in the Wire trade the orders are closer to the actual demand.

In Old Material evidence is cropping up that the upward movement has somewhat overreached itself. Many consumers seem to feel that the psychological moment for an advance which will hold has not yet arrived.

Resale lots of Electrolytic Copper have been marketed this week at 13½c., the quantities involved being larger than is generally believed.

## A Comparison of Prices.

**Advances Over the Previous Month in Heavy Type, Declines in Italics.**

At date, one week, one month and one year previous.

| | Sept.9, 1908. | Sept.2, 1908. | Aug.12, 1908. | Sept.11, 1907. |
|---|---|---|---|---|
| **PIG IRON,** Per Gross Ton: | | | | |
| Foundry No. 2, Standard, Philadelphia | $16.50 | $16.50 | $16.50 | $20.75 |
| Foundry No. 2, Southern, Cincinnati | **15.50** | 15.50 | 15.25 | 21.25 |
| Foundry No. 2, Local, Chicago | 17.00 | 17.00 | 17.00 | 24.50 |
| Basic, delivered in Eastern Pa. | **15.25** | 15.25 | 15.00 | 19.25 |
| Basic, Valley Furnace | *14.50* | 14.50 | 14.75 | 20.50 |
| Bessemer, Pittsburgh | *15.90* | 15.90 | 16.30 | 22.90 |
| Gray Forge, Pittsburgh | *14.40* | 14.65 | 14.65 | 21.40 |
| Lake Superior Charcoal, Chicago | 19.50 | 19.50 | 19.50 | 27.00 |
| **BILLETS, &c.,** Per Gross Ton: | | | | |
| Bessemer Billets, Pittsburgh | 25.00 | 25.00 | 25.00 | 29.50 |
| Forging Billets, Pittsburgh | 27.00 | 27.00 | 27.00 | 33.00 |
| Open Hearth Billets, Phila | 26.20 | 26.20 | 26.20 | 31.00 |
| Wire Rods, Pittsburgh | 33.00 | 33.00 | 33.00 | 36.00 |
| Steel Rails, Heavy, Eastern Mill | 28.00 | 28.00 | 28.00 | 28.00 |
| **OLD MATERIAL,** Per Gross Ton: | | | | |
| Steel Rails, Melting, Chicago | **15.00** | 15.00 | 14.25 | 17.00 |
| Steel Rails, Melting, Phila | **15.25** | 15.25 | 14.50 | 16.75 |
| Iron Rails, Chicago | **16.75** | 16.75 | 16.50 | 20.25 |
| Iron Rails, Philadelphia | **20.00** | 20.00 | 19.00 | 20.50 |
| Car Wheels, Chicago | 15.50 | 16.00 | 15.50 | 24.50 |
| Car Wheels, Philadelphia | **15.00** | 15.00 | 14.50 | 23.00 |
| Heavy Steel Scrap, Pittsburgh | *14.25* | 14.25 | 15.00 | 17.75 |
| Heavy Steel Scrap, Chicago | 13.00 | 13.00 | 13.00 | 14.75 |
| Heavy Steel Scrap, Philadelphia | **15.25** | 15.25 | 14.50 | 16.50 |
| **FINISHED IRON AND STEEL,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Refined Iron Bars, Philadelphia | **1.45** | 1.45 | 1.40 | 1.85 |
| Common Iron Bars, Chicago | 1.50 | 1.50 | 1.50 | 1.78 |
| Common Iron Bars, Pittsburgh | 1.40 | 1.40 | 1.40 | 1.70 |
| Steel Bars, Tidewater, New York | 1.56 | 1.56 | 1.56 | 1.86 |
| Steel Bars, Pittsburgh | 1.40 | 1.40 | 1.40 | 1.60 |
| Tank Plates, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Tank Plates, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Beams, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Beams, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Angles, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Angles, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Skelp, Grooved Steel, Pittsburgh | 1.45 | 1.45 | 1.45 | 1.85 |
| Skelp, Sheared Steel, Pittsburgh | 1.50 | 1.50 | 1.50 | 1.95 |
| **SHEETS, NAILS AND WIRE,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Sheets, No. 27, Pittsburgh | 2.40 | 2.40 | 2.40 | 2.50 |
| Wire Nails, Pittsburgh | 1.95 | 1.95 | 1.95 | 2.05 |
| Cut Nails, Pittsburgh | **1.80** | 1.80 | 1.75 | 2.10 |
| Barb Wire, Galv., Pittsburgh | 2.40 | 2.40 | 2.40 | 2.50 |
| **METALS,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Lake Copper, New York | *13.87½* | 13.87½ | 14.00 | 17.00 |
| Electrolytic Copper, New York | *13.50* | 13.75 | 13.85 | 16.50 |
| Spelter, New York | 4.75 | 4.75 | 4.75 | 5.35 |
| Spelter, St. Louis | *4.60* | 4.60 | 4.62½ | 5.20 |
| Lead, New York | 4.60 | 4.57½ | 4.60 | 4.75 |
| Lead, St. Louis | 4.45 | 4.45 | 4.45 | 4.67½ |
| Tin, New York | *28.60* | 29.00 | 30.50 | 37.00 |
| Antimony, Hallett, New York | 8.00 | 8.00 | 8.00 | 10.00 |
| Nickel, New York | 45.00 | 45.00 | 45.00 | 45.00 |
| Tin Plate, 100 lb., New York | $3.89 | $3.89 | $3.89 | $4.09 |

## Chicago.

FISHER BUILDING, September 9, 1908.—(*By Telegraph.*)

A summary of the week's activities indicates that mill operations on the whole are fairly well sustained. Continued improvement in Steel Bar specifications gives evidence of increased consumption, but there is still a good deal of hesitancy exhibited in the anticipation of forward requirements. Practically all orders, not only in this but in other lines of mill products, are accompanied by instructions for immediate shipment, and the urgency of these demands seem to demonstrate the meagerness of stocks in the hands of manufacturers. A result of this practice is seen in the frequent roll changes required to promptly supply small miscellaneous orders, which, while advantageous to buyers under existing circumstances, adds to the expense of production. The most important contract for Structural Material now in the hands of fabricators for bids is that for the 12,000 tons required for the new Northwestern Railway depot. A good many small Structural jobs are coming into the market from various sources, but no bridge work of importance is included in recent transactions. In prospect, however, are several bridge structures which when developed will take about 17,000 tons. Whether material for these bridges will be placed in the near future or deferred until next year is a question now under consideration, which it is believed will be determined within a short time. The demand for Car Axles growing out of recent contracts placed for new cars has led to the placing of an order with the leading producer of 4000 tons. Light Rails are relatively more active than other lines of railroad material, and the

improved conditions of trade developed in the month of August have thus far shown no signs of abatement in the present month. A few small orders for Standard Section Rails are coming into the market from Western roads, one of 2500 tons from an Idaho line having been entered during the week. The movement in Pig Iron continues light, and with Southern furnaces holding at prices above the normal market level, most of the tonnage offered is being taken by the Northern producers. The chief feature of the situation at the present time is the low prices ruling in the Mahoning and Shenango valleys, from which Iron has been offered on a basis of $14.10, at furnace, for No. 2 Foundry. Old Material is distinctly weaker and dealers are growing more conservative in their attitude. The wavering tendency in values now apparent is not calculated to inspire confidence in the wisdom of present purchases, either speculatively or for actual consumption.

**Pig Iron.**—The past week has developed very little new business. What buying there is is mainly in small lots for prompt shipment, and though quite a number of inquiries are coming in for first half requirements few of them seem to be of a positive character. The only sale reported for next year's delivery was 2000 tons of Northern Foundry Iron taken by a Michigan stove concern, which was also negotiating for 2000 tons of Southern and 1000 tons of Silicon Iron, but it is understood that only the Northern Iron has been purchased. Another sale of Northern Foundry Iron was of 500 tons taken by a large local manufacturing interest, which will be supplied by a Valley furnace at $16.50, Chicago, which is equivalent to $14.10, Valley. A fair amount of small orders is coming in, but owing to the fact that the principal Southern producers continue to hold at $13, Birmingham, most of the tonnage is being diverted to Northern furnaces. A few sellers of Southern Iron offer moderate lots for last half shipment at $12.50, Birmingham basis, which is equivalent to $16.85, Chicago, but in view of the weakness of Valley prices this figure is not attractive to buyers. While the local Northern furnaces still maintain a nominal minimum of $17, at furnace, they are likewise affected by Valley competition, which necessitates more or less recession from regular schedules. The most promising feature in the situation so far as the consumption of Iron is concerned is that within the past few weeks quite an amount of material on old contracts has been taken and few holdups are being asked, save by a few of the jobbing melters. While, on the whole, the situation has not materially improved, neither can it be said to exhibit tendencies of a markedly discouraging nature. The following quotations are for September delivery, f.o.b. Chicago:

| | |
|---|---|
| Lake Superior Charcoal | $19.50 to $20.00 |
| Northern Coke Foundry, No. 1 | 17.50 to 18.00 |
| Northern Coke Foundry, No. 2 | 17.00 to 17.50 |
| Northern Coke Foundry, No. 3 | 16.50 to 17.00 |
| Northern Scotch, No. 1 | 18.00 to 18.50 |
| Southern Coke, No. 1 | 17.35 to 17.85 |
| Southern Coke, No. 2 | 16.85 to 17.35 |
| Southern Coke, No. 3 | 16.35 to 16.85 |
| Southern Coke, No. 4 | 15.85 to 16.35 |
| Southern Coke, No. 1 Soft | 17.35 to 17.85 |
| Southern Coke, No. 2 Soft | 16.85 to 17.35 |
| Southern Gray Forge | 15.35 to 15.85 |
| Southern Mottled | 15.10 to 15.60 |
| Malleable Bessemer | 17.56 to 18.00 |
| Standard Bessemer | 18.40 to 18.90 |
| Jackson Co. and Kentucky Silvery, 6 % | 20.40 to 20.90 |
| Jackson Co. and Kentucky Silvery, 8 % | 21.40 to 21.90 |
| Jackson Co. and Kentucky Silvery, 10 % | 23.40 to 23.90 |

(*By Mail.*)

**Billets and Rods.**—An order for Axle Billets amounting to 4000 tons was placed last week with the leading producer by a local forge shop which will supply the axles for the 1000 Steel cars recently purchased by the Chicago & Alton Railway. Outside of this transaction the demand for Forging Billets is limited to current requirements, which continues light. Some shading of prices which is reported indicates that regular schedules are not being uniformly observed. The regular price of Forging Billets is unchanged at $28.50, base, Chicago. Specifications for Wire Rods are coming in lots of fairly good tonnage, and prices are reported to be unyieldingly maintained at the following quotations: Bessemer, $33; Basic, $34; Chain, $33, all at Pittsburgh.

**Rails and Track Supplies.**—No large orders were included in this week's transactions on Standard Rails, though there continues to be a considerable number of inquiries for small lots for early delivery. These range in amounts from 500 to 3000 tons and represent the miscellaneous requirements of small roads. One order of this character secured by the leading interest during the week, amounting to 2500 tons, came from a small road in Idaho. An inquiry for 22,000 tons of Standard Rails for the construction of a prospective road in Iowa is reported, but it is apparently of a more or less tentative nature, and is not regarded as promising immediate results. Encouraging progress is being made in Light Rails, and the improvement noted for the month of August is sustained in the tonnage entered thus far in the present month. A few small lots of Traction Rails have been recently placed, and orders amounting to about 1000 tons are now in negotiation. We quote as follows: Angle Bars, accompanying Rail orders, 1908 delivery, 1.50c.; car lots, 1.60c.; Spikes, 1.80c. to 1.90c., according to delivery; Track Bolts, 2.10c. to 2.15c., base, Square Nuts, and 2.25c. to 2.30c., base, Hexagon Nuts. The store prices on Track Supplies range from 0.15c. to 0.20c. above mill prices. Light Rails, 25 to 45 lb., $26; 20-lb., $27; 16-lb., $28; 12-lb., $29. Standard Sections, $28, f.o.b. mill, full freight to destination.

**Structural Material.**—The principal feature of interest last week was the opening of bids for the new drainage canal bridge, on which two sets of figures were asked, one on the basis of furnishing the bridge outright, without reference to the old structure, which it will replace; the other being conditioned upon the contractors taking the old bridge. It is highly probable that the figures based upon the latter proposition will be the one finally accepted; of the bids submitted under the latter conditions that of the Chicago Bridge & Iron Works was the lowest and figures out about $413,646 at the pound price at which the bids were tendered. The spread between the first five bids offered amounted to a little more than $15,000, which is regarded as indicating a disposition among fabricators to figure a little stronger. Drawings for the Chicago & Northwestern depot building, referred to in last week's report, are now in the market, and bids on this material are to be submitted by October 1. The general run of business for the week has been in small orders, the only one taken by the leading interest amounting to over 100 tons was a lot of 150 tons for an addition to the State Reformatory, Green Bay, Wis. Several railroad bridges involving about 17,000 tons of material are under consideration, and it is expected that a decision will be reached in a few days as to whether purchases will be made now or deferred until next year. Mills are a little better supplied with work by reason of more liberal specifications. Prices from store are 1.95c. to 2c. Mill prices at Chicago are as follows: Beams and Channels, 3 to 15 in., inclusive, 1.78c.; Angles, 3 to 6 in., ¼-in. and heavier, 1.78c.; larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 6 in. or one or both legs, 1.88c.; Beams, larger than 15 in., 1.88c; Zees, 3 in. and over, 1.78c.; Tees, 3in. and over, 1.83c.

**Plates.**—Small orders from various sources continue to furnish about all the new business being entered by the mills. No heavy work has developed requiring tonnages of notable size, and specifications are not being offered freely enough to warrant increased activity in mill operation. The demand for warehouse shipments has slackened up somewhat in the last week or two. Considerable irregularity in prices has developed and prices are now being shaded in some cases as much as $2 a ton. We quote mill shipments as follows: Tank Plates, ¼-in. and heavier, wider than 6¼ and up to 100 in. wide, inclusive, car lots, Chicago, 1.78c.; 3-16 in., 1.88c.; Nos. 7 and 8 gauge, 1.93c.; No. 9, 2.03c.; Flange quality, in widths up to 100 in., 1.88c., base, for ¼-in. and heavier, with the same advance for lighter weights; Sketch Plates, Tank quality, 1.88c.; Flange quality, 1.98c. Store prices on Plates are as follows: Tank Plates, ¼-in. and heavier, up to 72 in. wide, 2c. to 2.10c.; from 72 to 96 in. wide, 2.10c. to 2.20c.; 3-16 in. up to 60 in. wide, 2.10c. to 2.25c.; 72 in. wide, 2.30c. to 2.40c.; No. 8, up to 60 in. wide, 2.10c. to 2.15c.; Flange and Head quality, 0.25c. extra.

**Sheets.**—The movement in Sheets continues fairly even and has developed no important features of interest so far as the demand is concerned. Some slowing up is apparent in store shipments. Mill prices are subject to a shade of at least $2 a ton where desirable specifications are involved. The scantiness of stocks in the hands of dealers and manufacturers is apparent from the insistent demand for prompt shipment. We quote mill shipments as follows, Chicago: Blue Annealed, No. 10, 1.98c.; No. 12, 2.05c.; No. 14, 2.08c.; No. 16, 2.18c.; Box Annealed, Nos. 17 to 21, 2.43c.; Nos. 22 to 24, 2.48c.; Nos. 25 and 26, 2.53c.; No. 27, 2.58c.; No. 28, 2.68c.; No. 29, 2.78c.; No. 30, 2.88c.; Galvanized Sheets, Nos. 10 to 14, 2.63c.; Nos. 15 and 16, 2.83c.; Nos. 17 to 21, 2.98c.; Nos. 22 to 24, 3.13c.; Nos. 25 and 26, 3.33c.; No. 27, 3.53c.; No. 28, 3.73c.; No. 30, 4.23c.; Black Sheets from store: Blue Annealed, No. 10, 2.15c.; No. 12, 2.20c.; No. 14, 2.25c.; No. 16, 2.35c.; Box Annealed, Nos. 18 to 21, 2.60c.; Nos. 22 to 24, 2.65c.; No. 26, 2.70c.; No. 27, 2.75c.; No. 28, 2.85c.; No. 30, 3.25c.; Galvanized from store: Nos. 10 to 16, 3c.; Nos. 18 to 20, 3.15c.; Nos. 22 to 24, 3.30c.; No. 26, 3.50c.; No. 27, 3.70c.; No. 28, 3.90c.; No. 30, 4.40c. to 4.45c.

**Bars.**—No dissatisfaction is expressed at the way specifications are coming out, and it is stated that continued improvement at the present rate will soon establish nearly normal conditions in Steel Bar mills. Some new orders are being entered for Iron Bars, and mills are operating at slightly increased capacity. While the requirements of the implement interests are the chief factor in the increase of Bar tonnage, yet the demand from other sources is improving. Prices on both Steel and Iron Bars, we are advised, are being regularly maintained. Quotations, Chicago, are as follows: Steel Bars, 1.58c., with half extras; Iron Bars, 1.50c.; Hoops, No. 13 and lighter, 1.98c., full extra Hoop card; Bands, No. 12 gauge and heavier, 1.58c., half extra Steel Bar card; Soft Steel Angles and Shapes, 1.68c., half extras. Store prices are as follows: Bar Iron, 2c. to 2.15c.;

Steel Bars, 1.90c. to 2c.; Steel Bands, 1.90c., as per Bar card, half extras; Soft Steel Hoops, 2.25c. to 2.35c., full extras.

**Merchant Pipe.**—Save that the demand not only holds its own but continues to make small gains, there is nothing of special interest observed in the movement of Merchant Pipe. Jobbers in placing their orders are not anticipating their requirements beyond 60 or 90 days at the most, since the prompt shipments now available enable them to replenish their stocks at short notice. The following mill discounts are quoted: Black Pipe, ¾ to 6 in., 73.2; 7 to 12 in., 70.2; Galvanized, ¾ to 6 in., 63.2. These discounts are subject to one point on the base. From store, in small lots, Chicago jobbers quote 73 per cent. on Black Steel Pipe, ¾ to 6 in. About three points above these prices is asked for Iron Pipe.

**Boiler Tubes.**—A slightly improved demand is experienced for Merchant Tubes, but it is not pronounced enough to be regarded as significant of increased activity in boiler shops. The railroads are ordering Locomotive Tubes in small lots for actual needs. Mill quotations for future delivery, on the base sizes, are as follows: 2¾ to 4½ in., inclusive, Steel Tubes, 63.2; Iron, 50.2; Seamless, 50.2; 2½ in. and smaller, and lengths over 18 ft., and 2½ in. and larger, and lengths over 22 ft., 10 per cent. extra. Store prices are as follows:

| | Steel. | Iron. | Seamless. |
|---|---|---|---|
| 1 to 1½ in | 35 | 35 | 35 |
| 1¾ to 2¼ in | 50 | 35 | 35 |
| 2½ in | 52½ | 35 | 35 |
| 2¾ to 5 in | 60 | 47½ | 47½ |
| 6 in. and larger | 50 | 35 | .. |

**Merchant Steel.**—No new business to speak of is being placed, but specifications against contracts are being offered in fairly satisfactory volume. Since the implement makers are the largest factors in this division of the market, continued improvement is expected as the season advances. We quote as follows: Planished or Smooth Finished Tire Steel, 1.78c.; Iron Finish, up to 1½ x ½ in., 1.73c., base, Steel card; Iron Finish, 1½ x ½ in. and larger, 1.58c., base, Tire card; Channels for solid Rubber Tires, ¾ to 1 in., 2.08c., and 1⅛ in. and larger, 1.98c.; Smooth Finished Machinery Steel, 2.08c.; Flat Sleigh Shoe, 1.63c.; Concave and Convex Sleigh Shoe, 1.83c.; Cutter Shoe, 2.05c.; Toe Calk Steel, 2.13c.; Railroad Spring, 1.98c.; Crucible Tool Steel, 7¼c. to 8c., and still higher prices are asked on special grades. Cold Rolled Shafting on contracts for 100 tons and over, 57 per cent. off; 56 per cent. off in car lots; 52 per cent. in less than car lots, on which carload freight is allowed within base territory.

**Cast Iron Pipe.**—The requirements of small municipalities for the extension and maintenance of water mains continue to supply a fair amount of tonnage. A number of such lettings, aggregating about 4000 tons, were awarded last week to the leading producer. Several lettings involving quantities ranging from 200 to 500 tons are advertised for early closure; but no lots of special importance are in sight, and owing to the lateness of the season there is small prospect of any large contracts being placed for delivery this year. Prices are unchanged, which we quote nominally per net ton, Chicago, as follows: Water Pipe, 4 in., $27; 6 to 12 in., $26; 16 in. and up, $25, with $1 extra for Gas Pipe.

**Old Material.**—The market is beginning to develop evidences of weakening, though no pronounced recession has yet taken place. It is evident, however, that the upward movement has overreached the limits of strength afforded by the present measures of consumption, and the outlook is not regarded as especially favorable to purely speculative trading. Some of the largest users of Melting Steel accumulated extensive stocks at the low prices ruling a few weeks ago, and are consequently under no compulsion to come into the market at the present time. It is estimated that a local Steel melter purchased around 20,000 tons of Frogs, Switches and Guard Rails prior to the recent advance, and other large consumers are said to be similarly provided. There is less inquiry also for Rerolling Steel Rails, but owing to the scant offerings prices have not receded. Local rolling mills are not aggressively in the market as buyers, since they interpret the present tendency as promising a more favorable level of prices in the near future. The meager tonnage of railroad material offered last week is reported to have brought fair prices, but the few sales that have been made to consumers included no lots of important size. Track dealers are bidding more conservatively because of the increasing difficulty of moving material promptly on the basis of present values. Railroad material up for disposal this week includes a list from the Baltimore & Ohio of 4000 tons and one from the Sante Fe of 1200 tons. We quote per gross ton, f.o.b. Chicago, as follows:

| | |
|---|---|
| Old Iron Rails | $16.75 to $17.25 |
| Old Steel Rails, rerolling | 16.00 to 16.50 |
| Old Steel Rails, less than 3 ft | 15.00 to 15.50 |
| Relaying Rails, standard sections, subject to inspection | 20.00 to 21.00 |
| Old Car Wheels | 15.50 to 16.00 |
| Heavy Melting Steel Scrap | 13.00 to 13.50 |
| Frogs, Switches and Guards, cut apart | 13.50 to 14.00 |
| Mixed Steel | 10.25 to 10.75 |

The following quotations are per net ton:

| | |
|---|---|
| Iron Fish Plates | $16.00 to $16.50 |
| Iron Car Axles | 18.50 to 19.00 |
| Steel Car Axles | 17.50 to 18.00 |
| No. 1 Railroad Wrought | 13.25 to 13.75 |
| No. 2 Railroad Wrought | 12.25 to 12.75 |
| Railway Springs | 13.25 to 13.75 |
| Locomotive Tires, smooth | 13.25 to 13.75 |
| No. 1 Dealers' Forge | 10.25 to 10.75 |
| Mixed Busheling | 8.00 to 8.50 |
| Iron Axle Turnings | 6.75 to 7.25 |
| Soft Steel Axle Turnings | 6.75 to 7.25 |
| Machine Shop Turnings | 6.75 to 7.25 |
| Cast Borings | 5.75 to 6.25 |
| Mixed Borings, &c | 5.75 to 6.25 |
| No. 1 Mill | 8.00 to 8.50 |
| No. 2 Mill | 7.00 to 7.50 |
| No. 1 Boilers, cut to Sheets and Rings | 9.50 to 10.00 |
| No. 1 Cast Scrap | 12.75 to 13.25 |
| Stove Plate and Light Cast Scrap | 12.00 to 12.50 |
| Railroad Malleable | 12.50 to 13.00 |
| Agricultural Malleable | 11.50 to 12.00 |
| Pipes and Flues | 9.75 to 10.25 |

**Metals.**—There is a fair amount of buying of Copper in small lots and some inquiry for car lots, but few of these have, however, resulted in orders. More activity is observed in Lead and Spelter, but purchases of these metals are likewise restricted to nearby requirements. Prices continue at practically the same level, with Copper firm at current quotations and Lead silghtly weaker. Quotations are as follows: Casting Copper, 13¾c.; Lake, 14c. to 14¼c., in car lots for prompt shipment; small lots, ¼c. to ⅜c. higher; Pig Tin, car lots, 32½c.; small lots, 34½c.; Lead, Desilverized, 4.60c. to 4.65c., for 50-ton lots; Corroding, 4.85c. to 4.95c., for 50-ton lots; in car lots, 2¼c. per 100 lb. higher; Spelter, 4.80c.; Cookson's Antimony, 10½c., and other grades, 9¾c. to 10¼c.; Sheet Zinc is $7, f.o.b. La Salle, in car lots of 600-lb. casks. On Old Metals we quote: Copper Wire, 13¼c.; Heavy Copper, 13c.; Copper Bottoms, 10⅝c.; Copper Clips, 11c.; Red Brass, 11½c.; Yellow Brass, 9c.; Light Brass, 6½c.; Lead Pipe, 4c.; Zinc, 3¾c.; Pewter, No. 1 21c.; Tin Foil, 23c.; Block Tin Pipe, 25c.

## Philadelphia.

PHILADELPHIA, PA., September 8, 1908.

The market presents a strong appearance. Sellers of Pig Iron have in a number of instances marked up their asking price from 25c. to 50c. a ton for deliveries during the balance of the year. Orders are reported by producers of Pig Iron to have increased largely in August, and some pretty fair tonnages have already been booked so far this month. Several Eastern producers are contemplating the blowing in of increased capacity, and if the demand continues as active in September as it was in the previous month an increase in the output seems certain. In Finished Materials the demand seems to be gaining steadily, but that which develops from week to week is sometimes difficult to measure. There appears to be a little more railroad work coming out, and the placing of orders for material by the Pennsylvania Railroad for 15 freight locomotives, to be built in its own shops, is viewed with encouragement by the trade.

**Pig Iron.**—The leading feature in the Iron market during the week was a sale of 20,000 tons of Basic Iron to one of the Eastern Steel mills, for delivery in the last quarter of the year. The sale was at private terms and will enable the seller to put in an idle furnace, probably about October 1. The majority of sellers have their present capacity for Basic Iron pretty well taken and talk materially higher prices for delivery the balance of the year. Some smaller tonnages for fairly prompt shipment have been reported sold at $15.50, delivered, but some producers refuse to accept business for delivery the balance of the year at less than $15.75. A number of the melters are now displaying some interest in the market for Basic for next year's delivery. Sellers, however, still refuse to quote for shipment beyond the end of the year. In the Foundry grades sales have been rather light. Inquiries, however, have been numerous, and melters are giving considerable attention to their requirements for the balance of the year. Some small tonnages of eastern Pennsylvania No. 2 Foundry and No. 2 Plain Iron have been sold for shipment in the balance of the year at $16.75 to $17, delivered, for the former, and $16.25 to $16.75 for the latter, while a few scattered sales of No. 2 X Foundry in quantities ranging from 100 to 300 tons, for delivery over the first quarter of 1909, have been made at $17.50, delivered. A number of sellers still refuse to quote for next year's delivery, believing that a higher range of prices will prevail later in the year. Several sellers have announced flat advances of 25c. to 50c. a ton on No. 2 X Foundry, for delivery the balance of this year, but they have practically taken themselves out of the market, as Iron can still be had at old quotations. A sale of 1700 tons of Coke Malleable Iron to an eastern Pennsylvania foundry, for delivery the balance of the year, is reported at $17, delivered, while a lot of 300 tons Eastern No. 2 Plain Iron, for delivery in the next six months, was made by a local seller at $16.75, delivered. The Cast Iron Pipe makers are still in the market for low grade Irons, one nearby foundry having just come out with an inquiry for 2000 tons, while others would buy

if their idea of price would be met; but these grades appear to be scarce and sellers are maintaining a firm stand. Virginia Foundry Irons have been rather quiet. Some few sales, covering small tonnages of No. 2 X and No. 2 Plain, have been made at ruling quotations, although some sellers are asking an advance of 25c. a ton for early deliveries. Southern Iron has been inactive. Sales covering small tonnages for prompt shipment have been made on the basis of $12.50, Birmingham, for No. 2 Foundry, but the majority of sellers now hold to the $13 basis. There has been some further inquiry for Forge Iron, one for 2000 tons for delivery in the next three months being reported, but this grade is scarce and prices are strong, with little resulting business. Low Phosphorus Iron continues dull and inactive, but few inquiries coming out. Prices have an advancing tendency on nearly all grades of Pig Iron, but while a number of producers are asking higher prices they are not taking business, as it is still possible to get tonnage at the ruling quotations. There is, however, very little Iron offered at a concession, unless it be for the temporary purpose of booking enough tonnage to extend active blast furnace capacity. The following range of prices is quoted for delivery in buyers' yards, eastern Pennsylvania and adjoining territory, in the next 60 or 90 days:

| | |
|---|---|
| Eastern Pennsylvania, No. 2 X Foundry | $16.50 to $17.00 |
| Eastern Pennsylvania, No. 2 Plain | 16.00 to 16.50 |
| Virginia, No. 2 X Foundry | 17.00 |
| Virginia, No. 2 Plain | 16.50 to 16.75 |
| Gray Forge | 15.25 to 15.50 |
| Basic | 15.25 to 15.50 |
| Low Phosphorus | 20.50 to 21.00 |

**Ferromanganese.**—The demand has been irregular and prices still show a wide range. Some business has been done for delivery in the first half of 1909, a sale of a lot of 600 tons for such delivery, at close to $43.50, seaboard, being reported. Quotations are unchanged, $43.50 to $44.50 being named for forward shipment, with prompt Ferro probably a shade less.

**Steel Billets.**—Business during the week has been dull and irregular. Some few small orders have been placed, but no heavy tonnages have come out. Prices are unchanged, Ordinary Rolling Steel, for delivery in this territory, being quoted at $26.20, with Forging Steel at $28.20, subject to the usual extras for high carbons and special sizes.

**Plates.**—A slightly better demand has developed. Local fabricators have placed orders for moderate quantities for minor bridge work, some of which run up to 300 and 400 tons. Orders for some little locomotive Steel have been placed, as have also a fair amount of orders for boiler Steel. Some of the local plants have made slight gains on production, and the outlook is more cheerful. Prices for delivery in this territory range as follows:

| | Carloads. Cents. | Parts carload. Cents. |
|---|---|---|
| Tank, Bridge and Boat Steel | 1.75 | 1.80 |
| Flange or Boiler Steel | 1.85 | 1.95 |
| Commercial Firebox | 1.95 | 2.00 |
| Marine | 2.15 | 2.20 |
| Locomotive Firebox Steel | 2.25 | 2.30 |

The above are base prices for ¼-in. and heavier. The following extras apply:

| | Extra per 100 lb. |
|---|---|
| 3-16-in. thick | $0.10 |
| Nos. 7 and 8, B. W. G. | .15 |
| No. 9, B. W. G. | .25 |
| Plates over 100 to 110 in. | .05 |
| Plates over 110 to 115 in. | .10 |
| Plates over 115 to 120 in. | .15 |
| Plates over 120 to 125 in. | .25 |
| Plates over 125 to 130 in. | .50 |
| Plates over 130 in. | 1.00 |

**Structural Material.**—A somewhat better demand is to be noted. Business, however, is still rather irregular and largely of a miscellaneous character. A few minor orders for bridge and building material have been placed, while some fairly large propositions are being estimated on. Current orders are mostly for fairly prompt shipment. For delivery in this territory prices are quotably unchanged, 1.75c. to 1.90c. being named, according to specification.

**Sheets.**—Business has again brightened up, and local mills are now running at about 75 per cent. of their capacity. The outlook is considered better, as orders, while small individually, are coming out more freely. The following range of prices is quoted for mill shipment, a tenth extra being added for small lots: Nos. 18 to 20, 2.50c.; Nos. 22 to 24, 2.60c.; Nos. 25 to 26, 2.70c.; No. 27, 2.80c.; No. 28, 2.90c.

**Bars.**—The demand for Iron Bars seems somewhat more active, and mills are running a little more regularly. Prices are stronger, due both to the slightly better demand, as well as the scarcity and higher price of some grades of Scrap. For delivery in this territory Refined Iron Bars are quoted at 1.45c. to 1.50c., with some sellers holding at 1.55c. Steel Bars are dull at 1.55c., with Rerolled Bars at 1.50c., delivered in this territory.

**Coke.**—No improvement is to be noted in the demand for Coke. Foundry Coke continues to be taken in small lots for shipment in the balance of the year. Furnace Coke is quiet, with a prospect of more activity, as the number of blast furnaces in active operation increases. Foundry Coke is quoted at $2 to $2.25, at oven, with Furnace Coke at $1.50 to $1.75, at oven. For delivery in this territory the following range of prices is quoted:

| | |
|---|---|
| Connellsville Furnace Coke | $3.65 to $3.90 |
| Foundry Coke | 4.15 to 4.40 |
| Mountain Furnace Coke | 3.25 to 3.50 |
| Foundry Coke | 3.75 to 4.00 |

**Old Material.**—The market has taken on a more quiet appearance, the usual dullness pending the closing of the railroad lists being apparent. The tonnages offered by the railroads this month are said to be smaller, particularly as regards Heavy Melting Steel and No. 1 Choice Railroad Wrought. Sales have usually been small, and a waiting market characterizes the situation. Prices are practically unchanged, and are nominally quoted as follows for prompt deliveries in buyers' yards, eastern Pennsylvania and adjoining territory:

| | |
|---|---|
| No. 1 Steel Scrap and Crops | $15.25 to $15.75 |
| Low Phosphorus | 18.50 to 19.00 |
| Old Steel Axles | 21.00 to 21.50 |
| Old Iron Axles | 22.50 to 23.00 |
| Old Iron Rails | 20.00 to 20.50 |
| Old Car Wheels | 15.00 to 15.50 |
| Choice No. 1 R. R. Wrought | 18.25 to 18.75 |
| Machinery Cast | 15.25 to 15.75 |
| Railroad Malleable | 13.50 to 14.00 |
| Wrought Iron Pipe | 14.00 to 14.50 |
| New Bundled Sheets | 12.50 to 13.00 |
| No. 1 Forge Fire Scrap | 12.00 to 12.50 |
| No. 2 Light Iron | 8.75 to 9.25 |
| Wrought Turnings | 11.50 to 12.00 |
| Stove Plate | 13.00 to 13.50 |
| Cast Borings | 10.75 to 11.25 |
| Grate Bars | 13.00 to 13.50 |

In order to concentrate its business and for closer supervision over its foundry under its new manufacturing process, the Tacony Iron Company has moved its executive offices to McGee street and State road, Tacony, Philadelphia, Pa.

## St. Louis.

ST. LOUIS, September 7, 1908.

The steady increase in the volume of general business is shown in the clearing house reports of banking transactions. There is also considerable activity in real estate, and this includes land for several new structures, principally for warehouse or factory purposes. At present orders for Structural Steel are for buildings of moderate size and cost, and are more numerous from St. Louis tributary territory than from within the city proper. The Southwest is taking more finished stock than other sections. Favorable weather conditions and the passing of the vacation season are factors which are bringing about more activity in general business.

**Coke.**—The Coke market is ruling strong in price, doubtless in sympathy with the situation in Pig Iron, though the demand is moderate. For prompt shipment sales are being made at $2.25, at oven, and for later shipment up to the end of the year the best brands command $2.50. The supply of Coke appears to be ample. A leading house has inquiries aggregating 350 tons, shipment first half of 1909, and other houses also find a moderate inquiry ruling at present. It is thought the settlement of the strike at Birmingham will tend to ease in the market.

**Pig Iron.**—It develops that a leading producer is now asking $13.50, Birmingham, for No. 2 Foundry, shipment over the balance of the year. Other Pig Iron interests are offering at $13, Birmingham, and this figure now is reported as bottom for standard quality. One house gives out the sale of 100 tons of No. 1 Southern Soft at $13.65. The sale of 600 tons of No. 2 Foundry at $13 is reported by another concern, which also has an inquiry for the same quantity for shipment over the balance of the year. We hear that some producers decline to quote for 1909 and also that others will sell only for delivery prior to November. The house from which this information is obtained reports an inquiry out for two lots of No. 2—200 tons and 500 tons, respectively. The scarcity of Scrap is imparting firmness to low grade Pig Iron. The inquiry for 2000 tons, shipment over balance of the year, reported last week, is still pending, and we learn of an inquiry out for 5000 tons, shipment over first half of 1909.

**Finished Iron and Steel.**—Business in Structural Steel is moderate in volume, being still confined to comparatively small buildings. For railroad track and equipment purposes the demand is gaining ground. Plates and Angles are in better request than Bars, which are not so active. For highway spans there is a fair demand. Forgings also are in better call.

**Lead and Spelter.**—The market for Lead is ruling steadily, 4.50c. being asked and special brands held higher. Spelter is quiet at 4.65c. to 4.67½c. Ore is steady at $37, Joplin basis. The general tone is better and the outlook is regarded as gaining in strength and warranting the expectation of a steady demand for both Lead and Spelter for the balance of the year.

**Old Material.**—While but little increase is seen in the demand from mills, there is a very confident belief that it will develop in the course of a few days, as weather conditions

are more favorable and more inquiry from railroads and other large consumers of the finished products is in evidence. There continues to be a pronounced shortage in the supply of relayers, particularly heavy sections. The only list out is one of about 300 tons from the Vandalia Railroad. We quote, per gross ton, f.o.b. St. Louis, as follows:

| | |
|---|---|
| Old Iron Rails | $15.50 to $16.00 |
| Old Steel Rails, rerolling | 14.50 to 15.00 |
| Old Steel Rails, less than 3 ft | 13.75 to 14.00 |
| Relaying Rails, standard sections, subject to inspection | 22.50 to 23.50 |
| Old Car Wheels | 14.50 to 15.00 |
| Heavy Melting Steel Scrap | 13.00 to 13.50 |
| Frogs, Switches and Guards, cut apart | 13.00 to 13.50 |
| Mixed Steel | 11.00 to 11.50 |

The following quotations are per net ton:

| | |
|---|---|
| Iron Fish Plates | $14.50 to $15.00 |
| Iron Car Axles | 17.50 to 18.00 |
| No. 1 Railroad Wrought | 12.50 to 13.00 |
| No. 2 Railroad Wrought | 11.50 to 12.00 |
| Railway Springs | 12.00 to 12.50 |
| Locomotive Tires, smooth | 13.00 to 13.25 |
| No. 1 Dealers' Forge | 10.50 to 11.50 |
| Mixed Borings, &c | 5.50 to 6.00 |
| Machine Shop Turnings | 8.00 to 8.50 |
| No. 1 Boilers, cut to Sheets and Rings | 9.50 to 10.00 |
| No. 1 Cast Scrap | 12.00 to 12.50 |
| Stove Plate and Light Cast Scrap | 10.50 to 11.00 |
| Railroad Malleable | 11.00 to 11.50 |
| Agricultural Malleable | 10.00 to 10.50 |
| Pipes and Flues | 8.75 to 9.50 |

The Republic Iron & Steel Company is running full time at its plant at East St. Louis.

Adreon & Co. report an improved demand from railroads, especially for Brake Shoes and Car Forgings for repair orders.

The Banner Iron Works states that the demand for Structural Steel is quiet at present, but there is likely to be more activity in the near future.

The Otis Elevator Company experienced a dull spell in midsummer, but finds business showing improvement, both in the city and country, particularly in the Southwest.

The Heine Safety Boiler Company states that of late business has been good; in fact, the month of August showed normal conditions as to volume, though in value there was some shrinkage. In addition the company is in receipt of numerous inquiries. Work is in progress on the new shop, the contracts for Steel, brick and other material having been let.

The St. Louis Frog & Switch Company reports a more urgent inquiry from railroads for Crossings and some call for Frogs and Switches.

The Missouri Bridge & Iron Company is finding a good demand from public boards for highway spans. Orders for the past week aggregated 10 carloads for highway and river crossings.

The Ingersoll-Rand Drill Company found in August an improved demand, the inquiry from railroads being much better.

Fairbanks, Morse & Co. report that the demand, particularly from the Southwest section, for gas producers and producer gas engines, continues to be quite satisfactory.

The Crucible Steel Company of America finds Tool Steel in better request from railroad shops and some improvement in the inquiry from other sources.

The Curtis & Co. Mfg. Company reports receiving of late a larger number of inquiries for finished Steel products than for the previous four or five months.

The St. Louis Steam Forge & Iron Works regards the outlook as warranting the expectation of a change from the quite moderate demand that prevailed during the summer.

The Missouri Malleable Iron Company finds the prospect for more active conditions growing steadily more encouraging.

## Birmingham.

BIRMINGHAM, ALA., September 7, 1908.

**Pig Iron.**—Recent developments relative to the supply of fuel for Southern furnace operation have resulted in a more cheerful tone to the Pig Iron market, but producers' asking prices are apparently unaffected. The sales that have been made at lower figures than a schedule of $13, Birmingham, for No. 2 can be traced directly to merchants, and the tonnage available from such sources at the price named is reported limited. An order for 1500 tons, delivered over the remainder of the year, was placed the past week with one of the leading furnace interests at $13 per ton, Birmingham. A lot of 800 tons for the fourth quarter was also placed at $13, Birmingham, for No. 2, and numerous carload lots for immediate shipment have brought from $13 to $13.50 per ton. Clifton High Manganese Iron, with silicon 3 per cent. and better, which is graded No. 1, recently sold for $14.50 per ton. For this brand a differential of $1 per ton between the grades is asked. Of the inquiries pending, one for 10,000 tons of Foundry grades for delivery this year is the chief attraction. The prospective purchaser of this tonnage is a Pipe manufacturer, and 6000 tons for the last quarter is to be placed by an interest in a similar line of manufacture. The quotations reported made on the tonnage mentioned are on a basis of $13, Birmingham. A large producer quotes $14, Birmingham, for the first half of 1909, but has entered no orders for that delivery. The demand for Charcoal Iron to be delivered promptly is strong, and an aggregate of 3500 tons is reported sold the past week at $20 per ton, f.o.b. furnace. The fact that manufacturers of Car Wheels are beginning to enter the market is an encouraging feature, as well as the material increase noted in local foundry melt.

**Cast Iron Pipe.**—The largest consideration in this market for some weeks was the contract to cover 3000 tons of Water Pipe for the city of Jackson, Miss., which was awarded September 5. This tonnage was secured by the United States Cast Iron Pipe & Foundry Company, but the price received is not made public. It is understood, however, that the transaction was a satisfactory one when compared with previous records. The list of prospective lettings for the near future is still without additional items. Cast Iron Soil Pipe has been more in demand, and quotations have been further advanced. There has also been a decided reduction in stocks, and preparations are being made for the resumption of operations at a number of plants now idle. Quotations on Water Pipe are unchanged, being as follows, per net ton, f.o.b. cars here: 4 to 6 in., $23; 8 to 12 in., $22; over 12-in., average 21, with $1 per ton extra for Gas Pipe.

**Old Material.**—The demand for Wrought Scrap and Light Cast continues to improve, and an advance in quotations has resulted. There is little demand for Steel Scrap, but no inducement is offered purchasers in the shape of concessions in price. Transactions involving Old Car Wheels, Iron Rails and Iron and Steel Axles have been among dealers principally without changing authorized quotations. Dealers' asking prices are revised as follows, per gross ton, f.o.b. cars here:

| | |
|---|---|
| Old Iron Rails | $14.50 to $15.00 |
| Old Iron Axles | 15.50 to 16.00 |
| Old Steel Axles | 13.00 to 13.50 |
| No. 1 Railroad Wrought | 13.00 to 13.50 |
| No. 2 Railroad Wrought | 10.50 to 11.00 |
| No. 1 Country Wrought | 11.00 to 11.50 |
| No. 2 Country Wrought | 9.50 to 10.00 |
| No. 1 Machinery | 11.00 to 11.50 |
| No. 1 Steel | 9.50 to 10.00 |
| Wrought Pipe and Flues | 8.50 to 9.00 |
| Stove Pipe and Light Cast | 9.00 to 9.50 |
| Cast Borings | 5.00 to 5.50 |

## Pittsburgh.

PARK BUILDING, September 9, 1908.—(*By Telegraph.*)

**Pig Iron.**—The market is practically stagnant as far as sales go, only a few small lots ranging from carloads up to about 100 tons changing hands. Consumers seem to be pretty well covered, and on some of the large purchases of Bessemer and Basic Iron made two or three months ago, for balance of the year delivery, they are not taking out their Iron very promptly. We quote Standard Bessemer at $15 to $15.25; Basic, No. 2 Foundry and Malleable Bessemer at $14.50 to $14.75, all at Valley furnace. There is no demand for Forge Iron, which is weak. We quote Northern Forge at $13.50, Valley furnace, or $14.40, Pittsburgh.

**Steel.**—Not much new business is coming up in Billets, Sheet Bars or Tin Bars, nearly all consumers of Steel being covered by contracts based on selling prices of Bessemer Pig Iron. We are advised that regular prices on Steel are being absolutely maintained by the mills. We quote Bessemer and Open Hearth Billets, 3⅞ in. and larger, up to and including 0.25 carbon, $25; 0.26 to 0.60 carbon, $1 extra; over 0.60 carbon, $2 extra, all f.o.b. Pittsburgh. For Wheeling, Martins Ferry, Follansbee, Newcastle, Sharon, Steubenville and Washington (Pa.) delivery, half the freight, or 50c. additional, is charged. Sheet and Tin Bars in random lengths are $27, f.o.b. Pittsburgh. Forging Billets take $2 advance over Rolling Billets.

(*By Mail.*)

Latest reliable advices relating to the Harriman car order are that the Harriman systems have placed about 4000 box cars with Steel under frames with the Barney & Smith Mfg. Company, Dayton, Ohio, and 500 all Steel cars with the Cambria Steel Company, Johnstown, Pa. The latter company has a capacity of 35 to 40 Steel cars per day when running full. The balance of the Harriman order, 2000 to 2500 cars, has not yet been placed, but may be given out in a short time. The orders for cars from the Chicago & Alton, the Delaware, Lackawanna & Western and the Harriman systems have given rise to the hope that

other roads will soon be in the market with contracts for cars, engines, Rails and other equipment. It is hardly likely, however, that much tonnage in Rails will be placed by the railroads for delivery this year, as it is getting too late, but it is stated that leading systems like the Pennsylvania, Baltimore & Ohio, Lake Shore and others are figuring on their requirements for next year, and that some heavy Rail tonnage for 1909 delivery may be expected to be placed shortly. General conditions in the Steel trade remain fairly satisfactory, considering that the railroads have been buying so little. Not much is doing in Pig Iron, but a fair amount of inquiry is out for small lots for delivery over the balance of the year. Prices have evidently reached bottom, being to some furnaces absolutely below the cost of making Iron. A few sales of small lots of Bessemer Iron have been made on the basis of $15 to $15.25, at Valley furnace, and any large tonnage wanted could readily be had at the lower price. Basic Iron is fairly strong at about $14.50, Malleable at $14.50 and Northern No. 2 Foundry at $14.50 to $14.75, Valley furnace, some sellers refusing to shade the higher price. Not much inquiry is reported for Billets or Bars, as nearly all consumers are covered by contracts, under which the average price of actual sales of Bessemer Iron are computed monthly, and then a charge of so much a ton is made for conversion. The low price ruling for Bessemer Iron, $15.90, Pittsburgh, means that most consumers are now getting their Billets at somewhat under $25 per ton, which is the official price. This is also true of buyers of Sheet and Tin Bars, the regular price of which is $27, Pittsburgh. In finished Iron and Steel, present conditions show a slight gain over the corresponding period in August, but the increase in demand is very slow, and probably will be for the balance of the year. Prices are being well maintained, with the exception of one or two lines. The Coke and Scrap markets continue quiet with no improvement in prices.

**Ferromanganese.**—Many consumers of Ferro who bought rather heavily some time ago have not been taking it out, and as a result a good deal is being offiered for prompt shipment and at relatively low prices. We quote foreign 80 per cent. Ferro at $43 to $43.50, seaboard, the rate to Pittsburgh being $1.95 a ton.

**Ferrosilicon.**—The market is very firm, and it is believed that higher prices will rule in the near future. A large consumer has recently closed for 50 tons on the basis of about $67.50 to $68, Pittsburgh. We quote 50 per cent. at $67.50 to $70.

**Muck Bar.**—The continued decline in price of Forge Iron, which has sold as low as $15.40, Pittsburgh, has further weakened prices of Muck Bar, and we quote best grades, made of all Pig Iron, at $24.50 to $25, Pittsburgh.

**Rods.**—The market has been quite active for the last two or three weeks, and sales have run up to a good tonnage, particularly in Bessemer and Chain Rods. Prices are firm and we continue to quote Bessemer Rods at $33, Basic $34 and Chain Rods $33, Pittsburgh.

**Skelp.**—Some low prices on Sheared Plates for making into Pipe have recently been made, and this was taken up a short time ago by some of the Plate mills, the statement being made that prices on Plates under ¾-in. were open. We quote: Grooved Steel Skelp, 1.45c. to 1.50c.; Sheared Steel Skelp, 1.50c. to 1.60c.; Grooved Iron Skelp, 1.60c. to 1.70c., and Sheared Iron Skelp, 1.70c. to 1.75c., f.o.b. Pittsburgh.

**Steel Rails.**—The market on Standard Sections is extremely quiet, and no large order is in sight. The Carnegie Steel Company is receiving some fair specifications against contracts, and is also selling a good deal of Light Rails, having received orders last week for about 1500 tons. The three Rail mills at the Edgar Thomson plant continue in operation to about 35 per cent. of capacity. Prices on new Light Rails, which continue to be shaded about $2 a ton by rerolling Rail mills, are as follows: $25 for 25 to 45 lb. sections, with $1 advance for 20 lb., $2 advance for 16 lb., and $3 advance for 12 lb. Standard Sections are $28, at mill, and Angle Splice Bars, 1.65c., at mill.

**Structural Material.**—Inquiry is undoubtedly much better, and if only a part of the tonnage comes out it will not be long until the Structural shops will be much busier than they are now. The Jones & Laughlin Steel Company has taken a contract for 3500 to 4000 tons of Plain Material for a building in Los Angeles, Cal., to be fabricated and erected by the Llewellyn Iron Works, Los Angeles. This week the contract will likely be placed for a Steel bridge across the Monongahela River at Monongahela City, Pa., about 2700 tons. Practically all of the local Structural concerns are bidding on this work. Complaints are still being made about the low prices quoted on Fabricated work, which it is claimed in many cases leave little or no profit. We quote, f.o.b. mill, Pittsburgh: I-Beams, H-Beams and Channels, 3 to 15 in., inclusive, 1.60c., net; Beams over 15 in., 1.70c., net; Angles, 3 to 6 in., inclusive, ¼ in. and up, 1.60c., net; Angles, over 6 in., 1.70c., net; Angles, 3 x 3 in. and up, less than ¼ in., 1.50c., base, half extras, Steel Bar card; Tees, 3 in. and up, 1.65c., net; Zees, 3 in. and up, 1.60c., net; Angles, Channels and Tees under 3 in., 1.50c., base, half extras, Steel Bar card; Deck Beams and Bulb Angles, 1.90c., net; Hand Rail Tees and Z-19, 3c., net; Checkered and Corrugated Plates, 3c., net.

**Plates.**—The Carnegie Steel Company has received specifications for the Plates and Shapes, about 9000 tons, for the two Ore boats to be built by the American Shipbuilding Company for the Pittsburgh Steamship Company. The boats are to be built at the Lorain yards, and the Plates are to be rolled at the Homestead Works. The demand from the general trade for Plates is quiet, but is slowly improving. There is still some shading, but this is mostly on the narrow sizes and does not exceed $1 to $1.50 a ton. Regular prices are as follows: Tank Plates, ¾ in. thick, 6¼ in. up to 100 in. wide, 1.60c., base, at mills, Pittsburgh. Extras over this price are as follows:

Tank, Ship and Bridge quality, ¼ in. thick on edges, 100 in. wide, down to but not including 6 in. wide, is taken as base.

Steel Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per square foot, shall be considered ¼-in. Plate. Steel Plates over 72 in. wide must be ordered ¼-in. thick on edge, or not less than 11 lb. per square foot, to take base price. Steel Plates over 72 in. wide ordered less than 11 in. per square foot down to the weight of 3-16-in. shall take the place of 3-16-in.

Percentages as to overweight on Plates, whether ordered to gauge or weight, to be governed by the Association of American Steel Manufacturers' Standard Specifications.

| | |
|---|---|
| Gauges under ¼-in. to and including 3-16-in. Plates on thin edges | $0.10 |
| Gauges under 3-16-in. to and including No. 8 | .15 |
| Gauges under No. 8 to and including No. 9 | .25 |
| All sketches (excepting straight taper Plates varying not more than 4 in. in width at ends, narrowest end being not less than 30 in.) | .10 |
| Complete Circles | .20 |
| Boiler and Flange Steel Plates | .10 |
| "A. B. M. A." and ordinary Firebox Steel Plates | .20 |
| Still Bottom Steel | .30 |
| Marine Steel | .40 |
| Locomotive Firebox Steel | .50 |
| Shell grade of Steel is abandoned. | |
| For widths over 100 in. up to 110 in | .05 |
| For widths over 110 in. up to 115 in | .10 |
| For widths over 115 in. up to 120 in | .15 |
| For widths over 120 in. up to 125 in | .25 |
| For widths over 125 in. up to 130 in | .50 |
| For widths over 130 in | 1.00 |

TERMS.—Net cash 30 days. Pacific Coast base, 1.50c., f.o.b. Pittsburgh.

**Sheets.**—The demand is keeping up fairly well, and the leading Sheet mills are turning out more tonnage and making heavier shipments on new orders and specifications against contracts than for some time. The demand is specially good for Corrugated Sheets, and there are some nice inquiries in the market. Prices are being fairly well maintained, but are sometimes shaded, not over $2 a ton, for prompt shipment. For shipments from mill regular prices are as follows: Blue Annealed Sheets, No. 10 and heavier, 1.80c.; Nos. 11 and 12, 1.85c.; Nos. 13 and 14, 1.90c.; Nos. 15 and 16, 2c.; Box Annealed, Nos. 17 to 21, 2.25c.; Nos. 22 to 24, 2.30c.; Nos. 25 and 26, 2.35c.; No. 27, 2.40c.; No. 28, 2.50c.; No. 29, 2.60c.; No. 30, 2.70c. Galvanized Sheets: Nos. 10 and 11, 2.45c.; Nos. 12 and 14, 2.55c.; Nos. 15 and 16, 2.65c.; Nos. 17 to 21, 2.80c.; Nos. 22 and 24, 2.95c.; Nos. 25 and 26, 3.15c.; No. 27, 3.35c.; No. 28, 3.55c.; No. 29, 3.70c.; No. 30, 3.95c.; No. 28, Painted Roofing Sheets, $1.75 per square, and Galvanized Roofing Sheets, No. 28, $3.10 per square, for 2½-in. corrugations. These prices are subject to a rebate of 5c. per 100 lb. to the large trade under the usual conditions, jobbers charging the usual advances for small lots from store.

**Tin Plate.**—New demand for Tin Plate is about over for this year, but a fair amount of tonnage is still going out from the mills on specifications against contracts. The leading interest is operating to about 40 per cent., and some of the independent mills are running to only about one-half capacity or less. Prices are only fairly steady, some of the Tin Plate mills that are anxious for business cutting prices slightly. We quote $3.70 for 100-lb. Cokes, 14 x 20, f.o.b. Pittsburgh, terms 30 days, less 2 per cent. off for cash in 10 days, this price being subject to the usual rebate of 5c. per base box in large lots.

**Hoops and Bands.**—Not much new business is being placed. A fair amount of tonnage is going out from the mills on specifications against contracts. It is said regular prices are being maintained, as follows: Steel Hoops, 1.80c., base, full Hoop card prices; Steel Bands, 1.40c., base, half Steel card extra, all f.o.b. cars, Pittsburgh, in carload lots, for delivery during 1908.

**Iron and Steel Bars.**—Fresh orders and specifications against contracts have shown some betterment in the past week or two, a feature of the market being that implement makers and other interests closely affiliated to the railroads are now sending in liberal specifications for prompt shipments. We are advised that prices on both Iron and Steel Bars are being well maintained, and also that the demand for Iron Bars is a little better. We quote Iron Bars at 1.40c., base, for Pittsburgh delivery, and 1.35c., base, for Western points, to which freight is added, except Chicago, the price for which is 1.50c., delivered. We quote Steel Bars at 1.40c., Pittsburgh, for base sizes.

**Merchant Steel.**—The makers of Shafting adopted new discounts last week, which are as follows: 57 per cent. off

in carloads, 52 per cent. in less than carloads, delivered in base territory. Some of the agricultural interests have recently placed large contracts for Shafting on the agricultural basis. Fall work for implement and wagon builders is now opening up, and this is expected to bring about more new business and better specifications on Tire and other Steels used by these interests. We quote: Smooth Finished Machinery Steel, 1.80c. to 1.90c.; Flat Sleigh Shoe, 1.75c. to 1.85c.; Cutter Shoe Steel, 2.15c. to 2.25c.; Toe Calk, 1.90c. to 1.95c.; Railroad Spring Steel, 1.60c. to 1.75c., the higher price being for Pennsylvania Railroad analysis. Carriage Spring Steel is 1.80c.; Tire Steel, Iron finish, 1½ x ½ in. and heavier, 1.40c.; under 1½ in., 1.55c. Planished Tire Steel is 1.60c., all f.o.b., at mill.

**Merchant Pipe.**—New business, especially on the larger sizes of Pipe, is showing a slow but steady gain, and on the lap weld sizes, say above 3 in., the Pipe mills are fairly well filled up, but on the but weld sizes have only a fair amount of tonnage on their books. No large oil or gas line contracts have been placed in the past week. Prices on Steel Pipe are, on the whole, being maintained, but on Iron Pipe are being shaded to some extent. Discounts on Steel Pipe, ¾ to 6 in., to the large trade are now 76 and 5 per cent. off list. Regular discounts are as follows:

*Merchant Pipe.*

| | Jobbers, carloads, Steel. | |
|---|---|---|
| | Black. | Galv. |
| | % | % |
| ⅛ to ¼ in | 67 | 51 |
| ⅜ in | 69 | 55 |
| ½ in | 71 | 59 |
| ¾ to 6 in | 75 | 65 |
| 7 to 12 in | 72 | 57 |
| Extra strong, plain ends: | | |
| ⅛ to ⅜ in | 60 | 48 |
| ½ to 4 in | 67 | 55 |
| 4½ to 8 in | 63 | 51 |
| Double extra strong, plain ends: | | |
| ½ to 8 in | 56 | 45 |

Discounts on Genuine Iron Pipe are as follows:

| | Black. | Galv. |
|---|---|---|
| | % | % |
| ⅛ to ¼ in | 65 | .. |
| ⅜ in | 67 | 53 |
| ½ in | 69 | 57 |
| ¾ to 6 in | 73 | 63 |
| 7 to 12 in | 70 | 55 |
| Extra strong, plain ends: | | |
| ⅛ to ⅜ in | 58 | 46 |
| ½ to 4 in | 65 | 53 |
| 4½ to 8 in | 61 | 49 |
| Double extra strong, plain ends: | | |
| ½ to 8 in | 54 | 43 |

**Boiler Tubes.**—Signs of some buying of Locomotive Tubes by the railroads are seen, but as yet their orders are for actual needs and mostly for repair work on motive power equipment. The demand for Merchant Tubes is quiet and mostly in small lots for actual needs. Regular discounts on Merchant Tubes in small lots, on which an extra 5 per cent. is allowed in carloads, but which discounts are being shaded, are as follows:

*Boiler Tubes.*

| | Iron. | Steel. |
|---|---|---|
| 1 to 1½ in | 42 | 47 |
| 1¾ to 2¼ in | 42 | 59 |
| 2½ in | 47 | 61 |
| 2¾ to 5 in | 52 | 65 |
| 6 to 13 in | 42 | 59 |

2½ in. and smaller, over 18 ft. long, 10 per cent. net extra.
2¾ in. and larger, over 22 ft. long, 10 per cent. net extra.

**Railroad Spikes.**—On the smaller sizes of Spikes some of the mills are well filled up and have two to three weeks' work ahead, but for Railroad Spikes the demand is quiet. The Great Northern Railroad is in the market for a fairly large quantity of Railroad Spikes, a local concern having its inquiry for 2000 kegs. We quote: Standard sizes, 4½ x 9-16 in., at $1.70, and the smaller sizes at $1.80 per 100 lb. in carload and larger lots, with an advance of 5c. per 100 lb. for less than carload, f.o.b. Pittsburgh.

**Spelter.**—The Spelter trade is showing betterment, both in inquiry and prices. We quote prime grades of Western at $4.60, East St. Louis, equal to $4.72, Pittsburgh.

**Iron and Steel Scrap.**—The market does not show any betterment in demand and prices continue weak. Large consumers are pretty well covered for some time ahead and are not in the market, except at prices lower than the dealers are willing to name at this time. We quote Heavy Steel Scrap, for Pittsburgh, Sharon, Steubenville, Follansbee and Monessen delivery, at $14.25 to $14.50, while Heavy Steel Scrap, for hand charged Open Hearth furnaces, and for pieces weighing 10 lb. minimum and 300 lb. maximum, is $1 a ton higher. Dealers quote on other grades of Scrap as follows: Cast Iron Borings, $8.75 to $9; Bundled Sheet Scrap, $12.25 to $12.50; No. 1 Cast Scrap, $14.25 to $14.50; No. 1 Railroad Wrought, $15 to $15.25; No. 1 Busheling Scrap, $13.50 to $14; No. 2, $10 to $10.25; Sheet Bar Crop Ends, $17.50 to $18. There is a heavy demand for Iron Axles, and this is the only product on the whole list that has advanced in price. We quote these at $22 to $22.50, and they are firm. Steel Axles are $19; Low Phosphorus Melting Stock, $18.50 to $19; Rerolling Rails, $16 to $16.25; Machine Shop Turnings, $9.50 to $9.75; Railroad Malleable, $14; Grate Bars, $12.25 to $12.50; Old Car Wheels, $14.50 to $14.75, all in gross tons.

**Coke.**—Recently printed figures show that last week out of 37,340 ovens in the Upper and Lower Connellsville regions 18,428 were active and 19,042 idle, the estimated output being 200,823 tons. This is an increase of nearly 5000 tons over the previous week and nearly 70,000 tons over the first week of April last, when the output of both regions was only 132,000 tons. Prices continue very low, strictly Connellsville Furnace Coke for spot shipment being offered down to $1.50 a ton at oven, about $1.65 for balance of this year, and $1.75 for delivery through the first half of next year. Strictly Connellsville 72-hr. Foundry Coke for spot shipment is held at about $1.90 to $2, at oven, while other makes of Foundry Coke are offered as low as $1.75, at oven.

## Cleveland.

CLEVELAND, OHIO, September 8, 1908.

**Iron Ore.**—Shipments from the upper lake ports for the season up to September 1 show a falling off of 12,356,616 tons, as compared with the same period last year. The movement in August was 4,749,655 tons. The shipments last year from September 1 to the close of navigation were 16,947,200 tons. It is not expected that the September shipments will be much larger than the August movement, and it is possible that they may show some falling off unless there is an improvement in the demand for Ore in the next week or two. Ore firms have been rushing shipments forward as soon as sales were made, and when orders are filled there will be a let-up in shipments from some of the properties unless more Ore is sold. Some stock piles at the mines were cleaned up last month, and all the Ore from some others will be shipped early this month. Owing to the improvement in general conditions which has resulted in a little more activity in the movement of Ore, the estimates of the tonnage to be brought down during the season, that were made earlier in the year, have been revised, and it is now believed that the total shipments may reach 23,000,000 tons. Many of the Ore men did not look for a movement of over 20,000,000 tons. The market has been very quiet the past week. While not much activity is expected, a number of consumers must buy some Ore before the close of the season. Prices at Lake Erie docks, per gross ton, are as follows: Old Range Bessemer, $4.50; Mesaba Bessemer, $4.25; Old Range non-Bessemer, $3.70; Mesaba non-Bessemer, $3.50.

**Pig Iron.**—Sales aggregating 13,000 tons of Foundry and Malleable Iron were made by a local interest during the week. The purchasers were consumers in the Central West. Some of the sales were for deliveries the balance of the year and others were for deliveries extending through the first quarter of next year. The price ranged from $15.25 to $15.50, at furnace, for both No. 2 Foundry and Malleable. The three largest lots sold were 5000 tons of Foundry, 3000 tons of Foundry and 2000 tons of Malleable. Outside of these sales the market is quiet. A local interest reports the sale of one 500-ton lot of No. 2 Foundry and a few smaller sales, but the demand at present is light, no inquiries of any size pending. Similar reports are made by Valley interests. Prices remain stationary. No. 2 Foundry is being generally quoted at $14.50, Valley furnace. Local furnaces quote No. 2 Foundry at $15 to $15.25, the latter price being for local delivery. The former price would probably be shaded for outside shipment. There is an occasional inquiry for Foundry Iron for next year's delivery, but some of the furnace interests are not willing to sell that far ahead at prevailing prices. Shipping orders for Foundry Iron on contract are fairly good, showing some improvement, but the melt in this territory is improving but slowly. The Bessemer and Basic Iron market is still quiet. The stack of the Cleveland Furnace Company, which has been idle since April, was blown in on Foundry Iron September 4. The new furnace that this company is building will be ready to blow in about the first of the year. For prompt shipment and for the balance of the year we quote, delivered, Cleveland, as follows:

| | |
|---|---|
| Bessemer | $15.90 to $16.40 |
| Northern Foundry, No. 1 | 15.50 to 15.90 |
| Northern Foundry, No. 2 | 15.25 to 15.50 |
| Northern Foundry, No. 3 | 14.90 to 15 25 |
| Southern Foundry, No. 2 | 16.35 to 16.85 |
| Gray Forge | 14.40 to 14.65 |

**Coke.**—Some demand is noted for Foundry Coke, but the Furnace Coke market is dull. We quote Standard Connellsville Furnace Coke on contract for the balance of the year at $1.60 to $1.75, at oven, and 72-hr. Foundry Coke at $2 to $2.25, at oven, the sale of a small tonnage being reported at the latter figure for deliveries extending over the first quarter of 1909.

**Finished Iron and Steel.**—No important change has developed in the general situation, which continues fairly satisfactory. Not much is turning up in the way of new business, but specifications on contracts are still coming in

in satisfactory volume from a large percentage of consumers that are under contract, the demand being the heaviest from the implement makers. The demand is larger for Steel Bars than for other lines, but there is a fair volume of orders for Structural Material and some improvement in the demand for Plates. A large share of the orders on contracts are for car lots. Some new Steel Bar and Structural contracts have been closed, and fairly good specifications are coming in from Structural shops and bridge builders. There is an improvement in the demand for Shafting, and mills have received some good specifications for Chain Rods. Mill agents have received authority to make contracts for Plates and Structural Shapes for deliveries extending until July 1, 1909, at the present prices. Contracts for these materials had been limited to January 1, and many consumers have urged that the deliveries be extended until the middle of next year. The extension is expected to result in a little more activity in Plate and Structural contracts. At a meeting of the leading Bolt and Nut makers held in Niagara Falls last week an agreement was reached establishing the price of Bolts and Nuts. The market had been wide open for several months, and as a result of the strong competition some very low prices had been made. The new prices agreed upon are a fair average of the recent quotations, being somewhat higher than the lowest quotations that have been made. As the price cutting was done by the larger manufacturers who have taken part in the agreement, it is believed that the new scale of prices will be maintained and a stop put to ruinous competition. The demand for Bolts and Nuts shows some improvement. The American Shipbuilding Company has given the Carnegie Steel Company specifications for 500 tons of Plates and Structural Shapes for the two new lake boats to be built for the Pittsburgh Steamship Company. Other specifications for these boats are expected soon. The secretary of the Board of Public Service, Cleveland, will receive bids September 21 for 3000 tons of Cast Iron Pipe and 220 tons of special and miscellaneous Castings for the Water Department. Because of the low prices at which the city recently secured Cast Iron Pipe, it was decided to make an additional purchase for future needs. The Alliance Gas & Power Company, Alliance, Ohio, has placed an order for 80,000 ft. of 6, 8 and 10 in. Gas Pipe, a large part of which will be used in connecting the city with an outside Pipe line. The contract amounted to about $40,000. The contract for the erection of a concrete bridge over Rocky River has been awarded by the Cuyahoga County Commissioners, Cleveland, to Schillinger Brothers, Columbus. The work will require probably 500 tons of Structural Material and reinforcing Bars. Jobbers report a fair volume of orders and an increase in the demand from consumers outside the city for quick shipment from warehouse. We quote: Iron Bars, 1.45c., Cleveland, for car lots; Steel Bars, 1.50c., Cleveland, for car lots, half extras; Beams and Channels, 1.70c., base, Cleveland, and Plates, ¼-in. and heavier, 1.70c., Cleveland. We quote Sheets, mill shipments, car lots, Cleveland, as follows: Blue Annealed, No. 10, 1.90c.; Box Annealed, No. 28, 2.60c.; Galvanized, No. 28, 3.65c. Jobbers quote Iron and Steel Bars out of stock at 1.65c. to 1.70c. Beams and Channels from warehouse are 2c., and Plates, ¼-in. and heavier 1.90c. Warehouse prices on Sheets are as follows: Blue Annealed, No. 10, 2.10c.; Box Annealed, No. 28, 2.70c.; Galvanized, No. 28, 3.80c. Warehouse prices on Boiler Tubes, 2¾ to 5 in., are 64 per cent. discount, and on Black Merchant Iron Pipe, base sizes, 71 per cent. discount.

**Old Material.**—The demand for all kinds of Scrap is dull and prices are easier. The weakness is more apparent in Heavy Melting Steel than in other grades owing to the falling off in the demand, and the quotation is from 50c. to 75c. a ton lower than last week. The majority of dealers who have been holding up prices for several weeks appear willing to make concessions when they have an opportunity to make sales. Consumers are buying only in small lots for immediate needs, there being no inquiries for large quantities for extended deliveries. The railroad offerings this week include 1000 to 1500 tons by the Lake Shore and 5000 tons by the Baltimore & Ohio. In the list of the latter road is 2500 tons of Old Rails. Dealers' prices to the trade, per gross ton, f.o.b. Cleveland, are as follows:

| | |
|---|---|
| Old Steel Rails | $14.50 to $15.00 |
| Old Iron Rails | 17.00 to 17.50 |
| Steel Car Axles | 18.00 to 18.50 |
| Old Car Wheels | 15.00 to 15.50 |
| Heavy Melting Steel | 13.75 to 14.00 |
| Relaying Rails, 50 lb. and over | 22.00 to 23.00 |
| Railroad Malleable | 13.25 to 13.75 |
| Agricultural Malleable | 12.00 to 12.50 |
| Light Bundled Sheet Scrap | 9.50 to 10.00 |

The following quotations are per net tons, f.o.b. Cleveland:

| | |
|---|---|
| Iron Car Axles | $17.50 to $18.50 |
| Cast Borings | 7.00 to 7.50 |
| Iron and Steel Turnings and Drillings | 8.00 to 8.50 |
| Steel Axle Turnings | 8.50 to 9.00 |
| No. 1 Busheling | 12.00 to 12.50 |
| No. 1 Railroad Wrought | 13.50 to 14.00 |
| No. 1 Cast | 12.00 to 12.50 |
| Stove Plate | 10.00 to 10.50 |
| Bundled Tin Scrap | 8.00 to 9.00 |

## Cincinnati.

CINCINNATI, OHIO, September 9, 1908.—(*By Telegraph.*)

While the prices of Finished products are quite well maintained and Pig Iron has shown no recession, it is felt that the month will bring some cuts all along the line, not only because of the political situation, but because of circumstances which affect production and demand. The settlement of the Coal strike in Alabama is quite certain to produce an effect on prices. A number of new furnaces are to be blown in in the South, but consumption does not improve as fast as expected, there being practically no sale to the jobbing foundry trade. Aside from the Pipe companies, stove foundries and agricultural implement manufacturers, who have all bought for their last quarter needs, little else in the way of demand is in sight. Scrap dealers are still in control of the market, but there is little demand in this section from mills. Plenty of money is available for improvements, and some buildings in which Steel and concrete will be used in considerable quantities are in various stages of preparation.

**Pig Iron.**—The market is about stationary in price, with, if anything, a trifle less demand than last week. The Southern producers maintain their independent attitude, and some of the largest producers are content to be considered out of the market for the balance of the year. Some idle Tennessee stacks are apparently satisfied that this is a good market to blow in on, and one Citico and one Rockwood are down for early activity. Coke shipments are on the way for the latter furnace. There is still a demand for Forge and other low grade Irons, which has a tendency to stiffen the price on those grades. The furnace of the Jackson Iron & Steel Company, which was scheduled to go into blast some time ago, is now definitely announced to blow in on October 1. Some purchases of Coke have been made, and other inquiries are out for the balance of the year. There is some demand for Bessemer, and but little for Basic. Bessemer is quotable in this market at about $15.25, at furnace. Eight per cent. Silicon is still selling at $18.50, at furnace. The largest Pipe interest bought last week for its Chattanooga plant about 3500 tons, 500 of which is said to have come from this market, at $12.50, Birmingham, the balance from one of the Tennessee furnaces, at a price said to have been shaded considerably. There is an inquiry here from Chicago territory for 2000 tons of Forge. The quoted price is about $11.25, Birmingham. There is also an inquiry from a Southern consumer for 2000 tons of Mill Iron for delivery over balance of the year. There are two or three inquiries of fair size for Malleable. One of 1300 tons, October to March delivery, was declined at $14.75. Another offer on 600 tons of Malleable at $15, at furnace, is expected to go through to-day. Another of 500 tons at the same figure was declined. This was to go into Indiana territory. A Chicago melter is feeling this market for about 600 tons of 10 per cent. Silicon for September and October delivery. An inquiry here is for about 2000 tons each of 4 to 5 per cent. Silicon, and No. 2 Foundry for delivery over the last quarter and the first half into Michigan territory. The new furnace of the Hamilton Iron & Steel Company at Hamilton, Ohio, is shipping Iron on contract, and correspondence at the Cincinnati office of the company indicates that it is of approved Northern quality. For early delivery and balance of the year, we quote, f.o.b. Cincinnati, the freight rate being $3.25 from Birmingham and $1.20 from the Hanging Rock District, as follows:

| | |
|---|---|
| Southern Coke, No. 1 | $16.00 to $16.50 |
| Southern Coke, No. 2 | 15.50 to 16.00 |
| Southern Coke, No. 3 | 15.00 to 15.50 |
| Southern Coke, No. 4 | 14.75 to 15.25 |
| Southern Coke, No. 1 Soft | 16.00 to 16.50 |
| Southern Coke, No. 2 Soft | 15.50 to 16.00 |
| Southern Coke, Gray Forge | 14.25 to 14.75 |
| Ohio Silvery, 8 per cent. Silicon | 19.70 |
| Lake Superior Coke, No. 1 | 16.70 to 17.20 |
| Lake Superior Coke, No. 2 | 16.20 to 16.70 |
| Lake Superior Coke, No. 3 | 15.70 to 16.20 |
| Standard Southern Car Wheel | 22.25 to 22.75 |
| Lake Superior Car Wheel | 21.75 to 22.25 |

(*By Mail.*)

**Coke.**—It is a trifle early to note any change in the market occasioned by the settlement of the strike difficulties in Alabama, but sellers are convinced that the termination of the trouble will bring about a halt in the recent rapid rise in price. Of course this relates particularly to the Furnace product. Ovens are nearly all under contract for deliveries the balance of the month into the Alabama field, and some until the close of the year. A reduction in the price, therefore, is not anticipated before next month. Virginia Furnace Coke is quotable in this market at $1.85 to $2, at oven; Foundry, $2.10 to $2.25. There is practically no change in the Connellsville product. Furnace Coke for spot shipment is still obtainable at $1.55 to $1.85, according to period of delivery specified. Foundry (72 hr.) is selling at $2 to $2.25.

**Finished Material.**—Those products which enter into railroad work are a little more active, but there is no change in price. Specifications are considerably better in Nuts, Bolts, Turnbuckles and the like. Stores are selling in a little

larger quantities, and there is a little better demand for both Iron and Steel Bars. Dealers' prices to the trade, f.o.b. Cincinnati, are as follows: Iron Bars, carload lots, 1.65c., base, with half extras; small lots from store, 1.85c., base, half extras; Steel Plates, carload lots, 1.75c., base, with half extras; small lots from store, 1.85c., base, half extras; Base Angles, carload lots, 1.85c., base; small lots from store, 2.10c.; Beams, Channels and Structural Angles, 1.85c., base; small lots from store, 2.10c.; Plates, ¼-in. and heavier, carload lots, 1.85c.; small lots from store, 2c.; Blue Annealed Sheets, heavy, No. 16, carload lots, 2.15c.; small lots from store, 2.50c.; No. 14, carload lots, 2.05c.; small lots from store, 2.40c.; No. 10 and heavier, carload lots, 1.95c.; small lots from store, 2.20c.; No. 12, carload lots, 2c.; small lots from store, 2.30c.; Sheets (Light), Black, No. 28, carload lots, 2.65c.; Galvanized Sheets, No. 28, carload lots, 3.70c.; Steel Tire, 4-in. and heavier, carload lots, 1.95c.; Plates, 3-16 and No. 8, carload lots, 2c.; small lots from store, 2.20c.

**Old Material.**—Dealers are firm on prices and in some lines are urging an advance. Their business is principally with outside points, and it is still largely a dealers' market. Mills in this section are taking Scrap on contract, but not making any new deals. We quote dealers' prices to the trade as follows, f.o.b. Cincinnati:

| | |
|---|---|
| No. 1 R. R. Wrought, net ton | $11.75 to $12.75 |
| Cast Borings, net ton | 5.00 to 5.50 |
| Heavy Melting Steel Scrap, gross ton | 12.50 to 13.00 |
| Steel Turnings, net ton | 6.00 to 7.00 |
| No. 1 Cast Scrap, net ton | 12.00 to 13.00 |
| Burnt Cast, net ton | 8.00 to 9.00 |
| Old Iron Axles, net ton | 16.00 to 17.00 |
| Old Iron Rails, gross ton | 14.00 to 15.00 |
| Old Steel Rails, short, gross ton | 12.50 to 13.50 |
| Old Steel Rails, long, gross ton | 12.00 to 13.00 |
| Relaying Rails, 56 lb. and up, gross ton | 20.00 to 21.00 |
| Old Car Wheels, gross ton | 12.50 to 13.00 |
| Low Phosphorus Scrap, gross ton | 13.00 to 14.00 |

## Buffalo.

BUFFALO, N. Y., September 8, 1908.

**Pig Iron.**—The market has been exceedingly quiet, almost stagnant. The lack of active business has not affected prices, however, which continue firm as follows, f.o.b. Buffalo:

| | |
|---|---|
| No. 1 X Foundry | $16.00 to $16.50 |
| No. 2 X Foundry | 15.50 to 16.00 |
| No. 2 Plain | 15.00 to 15.50 |
| No. 3 Foundry | 14.75 to 15.25 |
| Malleable Bessemer | 16.00 to 17.00 |
| Gray Forge | 14.75 to 15.00 |
| Charcoal | 20.00 to 20.50 |

**Finished Iron and Steel.**—A noticeable lull in the placement of orders has occurred, no business of any considerable tonnage coming out. Inquiries are being received in fairly good volume, however, indicating that the lapse in new business will be only temporary.

**Old Material.**—The Scrap market remains practically in the same condition as last week, quiet but firm, with only small tonnages being taken by consumers. We quote dealers' prices to the trade as follows, f.o.b. Buffalo:

| | |
|---|---|
| Heavy Melting Steel Scrap | $14.25 to $14.75 |
| No. 1 Railroad Wrought | 16.00 to 16.50 |
| No. 1 Railroad and Machinery Cast Scrap | 14.75 to 15.25 |
| Old Steel Axles | 17.00 to 17.50 |
| Old Iron Axles | 19.50 to 20.00 |
| Old Car Wheels | 15.50 to 16.00 |
| Railroad Malleable | 13.50 to 14.00 |
| Boiler Plate | 12.00 to 12.50 |
| Stove Plate | 12.50 to 13.00 |
| Locomotive Grate Bars | 11.50 to 12.00 |
| Pipe | 11.50 to 12.00 |
| Wrought Iron and Soft Steel Turnings | 8.00 to 8.50 |
| Clean Cast Iron Borings | 6.75 to 7.25 |
| No. 1 Busheling Scrap | 12.50 to 13.00 |

**Cast Iron Pipe.**—Knight & Hopkins, consulting engineers, 101 West Dominick street, Rome, N. Y., are preparing plans and specifications for about 6 miles of 30-in. Cast Iron Pipe, to be laid between Stokes, N. Y., and Rome, N. Y., by the Board of Water and Sewer Commissioners. Bids will be called for by this board at Rome, N. Y., in about three months.

A. M. Byers & Co., Inc., Pittsburgh, will start work this week on the erection of their new puddling and muck bar mills at Girard, Ohio. For use in this plant, a contract has been awarded to the George A. Hogg Iron & Steel Foundry Company, Pittsburgh, for two 24,000 lb. alligator shears, one 38-in. roll lathe, and one 9 x 15-in. ore crusher. Each of these machines will be operated by individual motors, to be supplied by the George A. Hogg Company. The puddling mill will have 42 furnaces, and there will be two skelp mills. The finished product is to be used in making iron pipe at the company's Pittsburgh mills.

The plant of the New Castle Stamping Company, New Castle, Pa., will resume to partial capacity this week. It will be operated by George W. Johnston, receiver.

## New York.

NEW YORK, September 9, 1908.

**Pig Iron.**—Locally, there has been a moderate volume of business, the market remaining steady. Production of Pig Iron, as shown in our monthly report, is increasing. We quote, at tidewater, Northern No. 1 Foundry, $17.25 to $17.75; No. 2 Foundry, $16.75 to $17, and No. 2 Plain, $15.75 to $16.25. Alabama Irons are quoted $17.50 to $17.75 for No. 1 Foundry, and $16.75 to $17.25 for No. 2 Foundry.

**Steel Rails.**—Scattering lots have been sold in the week by Pittsburgh and South Chicago mills, but the only pending business entitled to mention is 4000 tons for the New Haven Railroad. Open Hearth Rails are specified, and it is expected that the business will be divided between the Bethlehem and Steelton mills.

**Structural Material.**—The amount of work pending preserves the encouraging aspect of the Structural situation, but it is to be said that from the standpoint of the prices secured there is no particular improvement. Sales of plain material to merchant interests cover only early future wants, and the time of liberal contracting and the carrying of large stocks in that department of the business is a good many months ahead. Locally a contract of immediate interest is that for 3500 tons of Steel and Cast Iron columns for the Lorillard warehouse at Marion, Jersey City. A local foundry company is reported to have the business, but there is also some discussion of reinforced concrete for this structure. The Kentucky River bridge over the Cincinnati, New Orleans & Texas Pacific, on which bids were asked a good many months ago, is up again. About 10,000 tons will be required, according to the design now under consideration. A 600-ton viaduct has been let at Spokane, Wash., and in Washington County, Pennsylvania, a 1500-ton highway bridge is about to be placed. The board of freeholders of Hudson County, New Jersey, is again asking bids on a bridge over the Hackensack, which will require 5000 to 6000 tons. We quote, as heretofore, on mill shipments, tidewater deliveries: Beams, Channels, Angles, and Zees, 1.76c.; Tees, 1.81c. On Beams, 18 to 24 in., and Angles, over 6 in., the extra is 0.10c. From store Structural Material cut to length, is sold at about 2¼c.

**Bars.**—Greater strength is shown in Bar Iron, which is due partly to a somewhat improved demand and partly to the higher range of prices on Old Material. Best Refined Bars, to meet specifications of manufacturing consumers, are now quoted at 1.56c., tidewater, while Bars of ordinary quality are held at 1.46c. to 1.51c., tidewater. Steel Bars are maintained at 1.56c., tidewater.

**Plates.**—The local demand shows practically no improvement, as the boiler and tank shops are still running on slack time with only a slight demand for new work. Prices are firmly held as follows, at tidewater, for Standard Sized Plates: Sheared Plates, 1.76c. to 1.86c.; Flange Plates, 1.86c. to 1.96c.; Marine Plates, 2.16c. to 2.26c.; Firebox Plates, 2.65c. to 3.50c., according to specifications.

**Cast Iron Pipe.**—New business is light, few orders now being received for small lots. As it is so late in the season, the manufacturers are not anticipating the closure of much further business for fall delivery. Carload lots of 6 in. are quoted at $23.50 to $24.50, tidewater.

**Old Material.**—The market generally has been somewhat more active, a better demand coming from a varied line of consumers who are buying what they can get at current prices, but are strenuously resisting the advances asked for by many dealers. The demand has covered No. 1 Railroad Wrought, Heavy Melting Steel Scrap, Wrought Pipe, Heavy Cast Scrap and Stove Plate. Wrought Pipe is especially scarce, which is due to the fact that most of the yards are shearing it, to be shipped as Steel Scrap. Railroad Wrought is also in limited supply. While the demand for Cast Scrap is somewhat light from the foundries making heavy castings, a good trade is enjoyed among those making a general range of Light Castings. The demand for Old Steel Rails, which was quite brisk for a couple of weeks, has fallen off to some extent. We quote as follows, per gross ton, New York and vicinity:

| | |
|---|---|
| Old Girder and T Rails for melting | $11.50 to $12.00 |
| Heavy Melting Steel Scrap | 11.50 to 12.00 |
| Old Steel Rails, rerolling lengths | 14.00 to 14.50 |
| Relaying Rails | 22.50 to 23.00 |
| Old Iron Rails | 16.50 to 17.00 |
| Standard Hammered Iron Car Axles | 18.50 to 19.00 |
| Old Steel Car Axles | 15.50 to 16.00 |
| No. 1 Railroad Wrought | 15.00 to 16.00 |
| Iron Track Scrap | 12.00 to 13.00 |
| No. 1 Yard Wrought, long | 14.00 to 14.50 |
| No. 1 Yard Wrought, short | 12.50 to 13.50 |
| Light Iron | 7.00 to 7.50 |
| Cast Borings | 7.50 to 8.00 |
| Wrought Turnings | 8.50 to 9.00 |
| Wrought Pipe | 11.00 to 11.50 |
| Old Car Wheels | 14.50 to 15.00 |
| No. 1 Heavy Cast, broken up | 13.50 to 14.00 |
| Stove Plate | 11.50 to 12.00 |
| Locomotive Grate Bars | 11.50 to 12.00 |
| Malleable Cast | 12.50 to 13.00 |

**Ferroalloys.**—While $43, seaboard, can be done for

large lots of Ferromanganese, the general price for small lots is $44. The price of 50 per cent. Ferrosilicon is unchanged at $70, makers' works. These prices only apply for delivery the remainder of the year, a few orders for 1909 delivery having been taken at higher figures.

## Metal Market.

NEW YORK, September 9, 1908.

**Pig Tin.**—It is possible by careful study to note the improvement in the Tin trade over last week, but it has been so slight as to be almost negligible were it not for the fact that it continues after the better demand noted a week ago. Contrasting the demand, especially from the interior, now with that of a fortnight ago shows clearly that trade has improved, but still much is to be desired. Prices are irregular, and futures are much higher than spot, showing the abundance of metal here. One reason for the over supply at this time is that the cargo of the Verona was discharged last week, much earlier than expected. Apparently, the leading consuming interest in this country is now a seller of Pig Tin. Prices during the week have been as follows:

| | Cents. |
|---|---|
| September 2 | 28.85 to 29.00 |
| September 3 | 28.90 |
| September 4 | 28.70 to 28.80 |
| September 5 | 28.75 |
| September 8 | 28.75 |
| September 9 | 28.60 |

Friday was the best day of the week, and probably 75 to 100 tons were disposed of. The arrivals so far this month have been large, amounting to 630 tons, and the afloats are likewise large, amounting to 1615 tons. London market closes to-day at £130 15s. for spot, and £132 for futures.

**Copper.**—Conditions in the Copper trade show some improvement. Melting by domestic consumers is greater, but the buying has fallen off to a large degree. Prices are correspondingly lower, and resale lots of Electrolytic can be had for September and October delivery at 13.50c. cash, New York. Later deliveries are held much firmer, and it is impossible to do anything better than 13.75c. for November and December shipment or delivery. These resale lots have been aggressively pushed on the market, and sellers were anxious to dispose of September and October metal. Whether this refers simply to a little metal left over from sales by selling companies, or is in the nature of resales from consumers is difficult to determine. Lake Copper is closely held at 14c. by producers, but resale lots have been sold this week at 13.87½c. It is possible, too, that even slightly lower figures might be made for good lots. The domestic buying is not what it should be or what it was last month. It is possible that much more metal has been sold under cover than is generally believed. The market, however, appears to be in a better technical position because some, at least, of the metal hanging over the market has been disposed of. Exports have fallen off, being but 3338 tons up to September 8. The London market is higher than last week at £61 for spot and £61 15s. for futures.

**Pig Lead.**—The market is firm, and without change. In New York spot Lead can be had at 4.60c., but trade is dull. The leading producer is selling shipment Lead in 50-ton lots at the old price of 4.60c. The St. Louis price is unchanged, at 4.45c. to 4.50c.

**Spelter.**—The surplus stock of metal which was bearing so heavily on the market a few weeks ago has been partially absorbed, and this has given the market a firmer tone. Although buying is still conspicuous by its absence, prices are higher, at 4.75c. to 4.80c., New York, and 4.60c. to 4.70c., St. Louis.

**Antimony.**—The market continues to lag, there being no animation. Prices are unchanged. Cookson's and Hallett's can be had at 8c. to 8.25c. Outside brands are held at 7.75c. to 8c.

**Tin Plate.**—Some improvement in the Terne Plate trade is noted, but in general the Tin Plate trade is dull. Prices are unchanged, at $3.89, New York, and $3.70, Pittsburgh, for 100 lb. IC Coke Plates.

**Old Metals.**—Buyers are accumulating some Scrap, and this perhaps accounts for the stationary prices of Old Metals in the face of declining quotations for Ingot Copper, this, of course, referring to Copper bearing Scrap. Dealers' selling prices are as follows:

| | Cents. |
|---|---|
| Copper, Heavy and Crucible | 12.75 to 13.00 |
| Copper, Heavy and Wire | 12.50 to 12.75 |
| Copper, Light and Bottoms | 11.50 to 11.75 |
| Brass, Heavy | 9.25 to 9.50 |
| Brass, Light | 7.25 to 7.50 |
| Heavy Machine Composition | 12.00 to 12.25 |
| Clean Brass Turnings | 8.25 to 8.50 |
| Composition Turnings | 9.50 to 9.75 |
| Lead, Heavy | 4.20 to 4.25 |
| Lead, Tea | 3.85 to 3.90 |
| Zinc, Scrap | 3.25 to 3.50 |

## Tests of Open Hearth Steel Rails.

In a paper on "Steel Rails—Manufacture and Failures," read before the Western Society of Engineers, and just published in the journal of that society, P. H. Dudley, of the New York Central Railroad, refers as follows to basic open hearth rails:

"We shall avoid, by the basic open hearth process, as much phosphorus as we now have in our present rails, and probably the brittleness will be less, but so far as wear is concerned that is something which will have to be determined by service tests. The brittleness seems to be less in the basic open hearth steel, unless it runs too high in the carbon or other hardening elements. The metal must be higher in the carbon to get a serviceable rail by the basic open hearth process than is necessary in the Bessemer process, with the use of 0.06 per cent. of phosphorus. I have seen a number of rails rolled of basic open hearth steel in which the carbon ran from 0.65 per cent. to 0.75 per cent., and those rails were tough. However, with a slight increase in carbon running from 0.68 per cent. to 0.78 per cent., in an ordinary section, a great deal of brittleness developed and the rails were not as tough as those with a less amount of carbon. I made for the New York Central Railroad a few thousand tons of basic open hearth rails, rolled from three length ingots and branded A, B and C, commencing with the top of the ingot. All the different letters will be observed for wear. We are putting them in a place where we require great toughness. We will have more reliability, so far as brittleness is concerned, than in the ordinary Bessemer rail with 0.10 per cent. phosphorus."

Other portions of the paper traversed ground generally familiar, but we make some extracts below embodying the results of Mr. Dudley's special investigations:

"The base failures I have described are those of my observation under high speed trains where the temperatures were 20 to 30 degrees below zero F. for several consecutive days. The winter of 1906 and 1907 had the longest protracted periods of low temperatures in many localities that the Weather Bureau has yet recorded, and I did not see more than one or two direct tension breaks, all of the fractures being developments of injuries, strains or defects in manufacture coincident with the combined cold and heavy service. These are technical problems for the rolling mills and the railroads to investigate and solve. The low temperature has two effects upon the ordinary Bessemer steel rails. First, to raise the elastic limit and increase its fragility under shocks. Second, to set up thermal stresses, due to contraction before the ends of the rails slip in the splice bars.

"Each fall in temperature of 1 degree F. sets up a stress of 200 lb. per square inch of the area of the section where the ends of the rails are held firm. The friction of the splice bars per lineal inch of the 80-lb. rail of my sections is 4300 to 4400 lb., and for the 100-lb. splice bars it is 4800 to 5000 lb. One-half of a 36-in. 80-lb. splice bar would hold a tension of 77,000 lb., and the 100-lb. splice bar 86,000 lb. before the ends might slip in the splice bars. The most frequent base breakages are in the periods of low temperatures, and consequently affect the rails laid in cold more than in warm climates.

"The numerous split heads in rails of recent years, called by the trackmen 'piped rails,' and which are found in all brands, occur more in some than in others. When the steel is cast in long ingots, the upper part is not deoxidized as much as the average, and with a well defined exterior envelope not securely connected to the spongy central core. The passing wheel loads cause the metal in the bearing surface to spread laterally and it becomes loosened from the central core underneath. The widening layer of metal eventually checks and splits that of the central core underneath. The surfaces of the vertical split discolor in a short time and are often reported by the trackmen as a flaw or pipe. There are often one or more minute layers of ladle slag—(silicates of manganese)—from the chemical reaction of the recarburizer, one-eighth to one-quarter of an inch under the bearing surface, which permits the metal to spread easily and split the metal underneath, particularly when there are

small seams formed by the closing and elongating of small gas bubbles surrounded by segregated metal. The split may develop at the end, but more often occurs in one or two places in the quarters or centers of the rails. It sometimes starts and breaks from one side of the head and develops toward the center and then across to the opposite side.

"The spattering of the mold in pouring or when a heat must be pricked seems responsible for some split heads; but the teeming of the ingots too quickly after recarbonizing the steel, so that they contain minute globules of silicate of manganese associated with insufficient deoxidized metal, seems to be a greater factor.

"The central core of the upper part of the ingot is often a motley collection of segregates in the insufficiently deoxidized metal which were rejected by the setting steel of the lower portions of the ingot and entrained before rising to the top. Some of the segregates, as ovoid bodies in the ingots, are drawn out in rolling into long cylinders and form the dark streaks in longitudinal etchings of the rails, while the white streaks are generally carbonless iron. The silicates of manganese as globules are drawn out into threads in the section of the rails, resulting in a reduction of the solid volume in the heads, particularly when associated with insufficiently deoxidized metal. The rapid wear, flow of metal and crushing of the rail ends are to be expected from such conditions.

"Pipes in ingots from shrinkage cavities or inclusions of ladle slag or vessel slag, ganister and split heads, would be 'pipes' to the trackmen, but each requires a different metallurgical treatment for correction.

"The consumer is expected to tell the manufacturer when the rails fail, which is but a small part of his privilege and duty; he must investigate and tell the manufacturer the reasons why they fail to meet the conditions of service. Transportation has made such rapid strides during the past two decades on the stiff rails as engineering structures and the demands of the commercial interests for more facilities have been so pressing and insistent, that some things have been done to meet emergencies by both the consumer and manufacturer, obliging both to work nearer the upper margin of capacity than would otherwise have been done. Some manufacturers have shortened by one or two minutes the essential time after recarburizing the heats before teeming the ingots, while the consumer has been obliged to increase the wheel loads, expended tractive effort of the locomotives and speed of his trains to a degree only recently considered possible.

"Two years ago to suggest to the manufacturer that slag was disseminated through the steel in the rail head was met by what he considered just indignation as to the correctness of this statement, but when shown to him he no longer doubts, but takes measures for its elimination. The steel manufacturer has to contend with the storms quite as much as the rail user. The atmospheric moisture will not wash out or submerge the manufacturer's plant, but the amount of moisture which in humid weather will go into the blast furnace will change the character of the product.

"The Bessemer converter uses for the conversion of each ton of metal five-tenths to six-tenths of a ton of air, and whether each cubic foot of air contains 1 or 6 to 8 grains of moisture is felt at once in the Bessemer department and the rail mill by increased difficulties of manufacture not easily surmounted. The 'dry blast' was recently applied to the Bessemer converter at the South Works of the Illinois Steel Company with beneficial results.

"It is gratifying for me to find that from independent investigation the consumer and manufacturer are arriving at the same facts and conclusions, from which mutual benefits will result."

**The September Crop Report.**—The government's September crop report, issued September 8, indicated a loss in corn, oats, and spring wheat from the estimates made on August 1. It gives the condition of corn on September 1 as 79.4, the lowest for that month in five years, and a reduction of 3.1 per cent. from the August estimate. This represents a loss of 125,000,000 bushels, and points to a crop of 2,595,000,000 bushels. The estimate on September 1 last year was 2,540,000,000 bushels, and the actual corn crop for 1907 was 2,780,000,000 bushels. The condition of spring wheat is 77.6 per cent, against 80.7 last month, and 77.1 on September 1 last year. The indicated crop of 240,856,000 bushels compares with 222,264,000 bushels indicated in September, 1907. The indicated oat crop is 825,908,000 bushels, against 787,275,000 bushels indicated one year ago.

## Iron and Industrial Stocks.

NEW YORK, September 9, 1908.

The Stock Exchange having been closed on Saturday and Monday, the transactions of the past week were consequently rather limited and the course of values was not specially significant. Some weakness developed on Thursday of last week, but a change of sentiment manifested itself on Friday and prices advanced, continuing to retain their strength on Tuesday, except in the case of Locomotive common. The range of prices on active iron and industrial stocks from Thursday of last week to Tuesday of this week was as follows: United States Steel common 45⅞ to 48⅛, preferred 109¾ to 112⅛; Bethlehem Steel common 23 to 23½, preferred 50 to 52; Car & Foundry common 40¼ to 40⅞, preferred 104 to 105; Locomotive common 51⅝ to 55½, preferred 105 to 105½; Steel Foundries, new, 31 to 32; Cambria Steel 37¼ to 38¾; Colorado Fuel 35 to 37; Crucible Steel common 7, preferred 49 to 49¾; Pressed Steel common 33¾ to 35, preferred 95½ to 98; Railway Spring common 42½; Republic common 23 to 24, preferred 79 to 82; Sloss-Sheffield common 63 to 64½; Cast Iron Pipe common 25⅜ to 26½, preferred 71; Can common 5⅞ to 6, preferred 62 to 62¼. Last transactions up to 1.30 p.m. to-day are reported at the following prices: United States Steel common 47⅝, ex-dividend, preferred 111½, bonds 101¾; Car & Foundry common 40⅞, preferred 105; Locomotive common 50½, preferred 104½; Colorado Fuel 36¾; Pressed Steel common 34⅞, preferred 94¼; Railway Spring common 42½; Republic common 24, preferred 81½; Sloss-Sheffield common 64; Cast Iron Pipe common 26¾, preferred 71; Can common 5⅞, preferred 62½.

The Longmead Iron Works, Conshohocken, Pa., has made an issue of $175,000 first mortgage 6 per cent. gold bonds, dated July 1, 1908, and maturing in 20 years. The capital stock consists of $400,000 common and $100,000 8 per cent. cumulative preferred.

**Dividends.**—The Canadian General Electric Company, Ltd., has declared the regular quarterly dividend of 1¾ per cent. on the common stock and a semiannual dividend of 3½ per cent. on the preferred stock, both payable October 1.

The International Silver Company has declared a quarterly dividend of 1 per cent. on the preferred stock, payable October 1.

The American Smelting & Refining Company has declared a quarterly dividend of 1 per cent. on the common stock, payable October 15.

## Machinery Requirements of Tamaqua Mfg. Company.

The Tamaqua Mfg. Company, Tamaqua, Pa., will receive bids until September 19 for the following machinery for its new plant: One 26 in. turret head boring, forming and turning lathe, approximate size between chuck and face of turret 47 in., turret, 14 in. diameter, six 2½ in. holes, heavy four jaw independent chuck, to be arranged for direct motor drive; one full universal radial drill, working surface 3 x 4 ft. 3 in., capacity vertical range of arm 2 ft. 10 in., capacity horizontal range of head 2 ft. 5 in., spindle diameter at point of power 2 3-16 in., spindle bored to fit No. 4 Morse taper, to be arranged for direct motor drive; one pipe threading and cutting-off machine, capacity ¼ to 3 in. gas pipe, with dies for threading bolts, to be arranged for direct motor drive; one 30 x 33 in. planer, arranged for direct motor drive; one engine lathe, 36 in., moving over shears 37 in., 18 ft. between centers, arranged for direct motor drive; one engine lathe, 18 in., moving over carriage 10⅜, between centers 6 ft., arranged for direct motor drive; one cold saw cutting-off machine, diameter of saw 26 in., capacity for round stack 7 in., to be arranged for direct motor drive; one pipe threading and cutting-off machine, capacity 2½ to 8 in.; one horizontal floor boring machine, diameter of spindle, 4 in., spindle traverse, 32 in., vertical feed, 46 in., horizontal feed, 72 in., to be arranged for direct motor drive.

The annual meeting of the American Society of Mechanical Engineers will be held in New York December 1 to 4, inclusive. The important feature of the meeting is to be a symposium on machine shop practice.

# The Machinery Trade.

NEW YORK, September 9, 1908.

Machinery houses report a slight increase in business the past week; in fact, since the opening of the month an improvement in general conditions has been more noticeable. This upward trend is attributed in some quarters to the close of the summer season and many expect from now on that the demand will slowly increase. Although transactions continue to cover almost wholly small lots or single tools and inquiries of any size are scarce, indications of renewed activity on the part of some of the larger Eastern railroad systems are encouraging. In the trade much is again heard of the railroads coming into the market for mechanical equipment at an early date, the foremost among which are the New York Central and Pennsylvania railroads. The former road will require a great deal of equipment for its West Albany shops, and now has under consideration the purchase of about $45,000 worth of traveling cranes. Bids for these were sent in a week or 10 days ago and contracts are expected to be closed shortly. From one in the trade who keeps posted on the requirements of the Pennsylvania Railroad and who has lately visited that company's shops, we learn that inquiries for machinery from that source in the near future are likely. The Delaware, Lackawanna & Western Railroad has inquiries out for about four machine tools, and it is reported that the Termiskaming & Northern Ontario Railroad, whose purchasing agent is V. T. Bartram, North Bay, Ont., is in the market for a small list of tools.

The large additions being made to the West Albany shops of the New York Central & Hudson River Railroad will necessitate the purchase of considerable machinery in addition to that bought during the last six months. The officials of the road now have under consideration the purchase of a number of traveling cranes, aggregating about $45,000 in value, which we understand are intended for the new erecting shop, 100 x 442 ft., which is now being built. Specifications for these cranes were sent out about three weeks ago, and as all the bids are now in it is expected that they will be tabulated and contracts for the cranes placed within a short time. These inquiries have caused considerable interest among machinery houses, in that it is expected that they will be followed by inquiries for machine tools. In addition to the erecting shops, the new buildings at that point include a large boiler shop.

A complete mechanical equipment will soon be purchased for a sand lime brick plant to be erected at Port Jefferson, L. I., at a cost of about $50,000. The plant, which is to be constructed under the supervision of Frederick L. Smith, industrial engineer, 5 Beekman street, New York, will be built by the Dyett Sand Lime Brick Company, 103 Park avenue, New York, which has recently been incorporated with a capital stock of $300,000, of which $100,000 is 7 per cent. accumulative preferred stock and $200,000 common stock. The main building will be 60 x 220 ft., and the equipment, which will be purchased through the engineering office of Frederick L. Smith, will consist of three 150-hp. horizontal tubular boilers, 150 lb. pressure, one 300-hp. simple engine, 80 lb. pressure; one direct current lighting outfit of 10 hp., feed water heaters, pumps and other power plant accessories, sand dryers, ball and tube mills, mixers, industrial railway equipment, piping, &c. There will also be required the structural steel for the buildings and a 200-ft. wharf will be erected. For the manufacture of brick a new press will be used which is the invention of James H. Dyett. This press, which it is claimed will revolutionize the brick industry, works automatically and turns out 10,000 complete bricks an hour, in comparison with the ordinary presses used, whose output is said to be about 2000 bricks an hour. The plant will have a capacity of 100,000 white bricks in 24 hr. and is to be so constructed that the capacity can be doubled without disturbing the arrangement, the power plant to be installed being of sufficient capacity to take care of an output twice the size of the first installation. The company has secured at Port Jefferson a large acreage of fine white sand and the brick produced is of fine texture, white and smooth. Aside from these presses which the company will have built, all other mechanical equipment used in a modern brick plant will be purchased. The officers and directors are James R. Bateman, president; Frank L. Howson, vice-president; Edward H. Mangels, secretary; George E. Darling, treasurer; Louis Lauer, assistant treasurer; James H. Dyett, general manager; Frederick L. Smith, consulting engineer; Thomas Conyington, counsel; George F. Jones and C. C. Kimball.

The Otis Elevator Company, New York, is having plans prepared for a foundry building 90 x 200 ft., 50 ft. high, of brick and steel construction, to be erected at Locust and Atherton streets, Yonkers, N. Y., in connection with the present plant. Formerly a large part of the castings used at the Yonkers plant were made at its Chicago and other plants, but with the completion of the proposed building the present foundry capacity will be more than doubled and will be sufficient to supply all castings required.

Sayre Brothers, iron and brass founders, Phœbus, Va., have decided to rebuild their plant, which was recently destroyed by fire, and are now working on a temporary structure which they expect to have in operation in a couple of weeks. Plans for the new foundry building have not been entirely completed, but they will call for the erection of a concrete structure, with a main foundry room about 45 x 190 ft. and side floor 19 x 24 ft. on one side only, making the complete building 49 x 190 ft. The new machine and pattern shops will be in separate structures, plans for which have not yet been prepared. For the foundry, aside from small tools, the requirements will be confined to a hand power traveling crane of about 6 tons capacity and 45-ft. span. Later most of the machine shop and pattern shop tools will be replaced. The roofing material to be used on the new foundry building has not yet been fully decided upon, corrugated iron being under consideration.

The W. D. Forbes Company, Hoboken, N. J., is buying the additional equipment it will require for its new shops at New London, Conn., where it intends to move its business in a plant the main building of which is 50 x 200 ft. The marine end of its property at New London, on which are marine railways and buildings for the building and storing of yachts and small boats, has been leased to the New London Marine Iron Works Company, which will operate it in connection with its large plant for taking care of surplus work.

A. Cleaver, president and manager of the Texas Power Company, Stewart Building, Houston, Texas, has inspected a number of large installations of gas engines and producer plants with the view of the installation of 10 1000-hp. producer gas units in the company's new power plant, 30 x 350 ft., with producer room 30 x 150 ft. The company will be in the market for the equipment in about 60 days.

**Catalogues Wanted.**—The F. L. Calhoun Company, 3019 Boulevard, Jersey City, N. J., contracting machinist, desires catalogues from manufacturers of machinery.

# Chicago Machinery Market.

CHICAGO, ILL., September 8, 1908.

Reports from the leading tool dealers indicate that while no notable gains were made in business for August over the previous month, the balances, though slight, were generally on the right side of the account. No important deals are engaging the attention of the trade and the market is dependent, as it has been for a number of months, upon scattered orders from widely diversified sources. Comparatively few orders are being contributed by the larger interests which in ordinary times are conspicuous buyers. Inquiries as to prevalent source of demand disclose the fact that the small and moderate sized shops are furnishing the bulk of the business. Not only are many of these small industries fairly well occupied with work, but quite a number of new industries, of unimportant size individually but in the aggregate not insignificant, are being started. Most of these are located in the West, and a large proportion of them have to do with the manufacture of agricultural machinery and hardware specialties; but each installation requires the purchase of a few tools, which at this time has greater significance than would ordinarily be the case. The demand for second-hand tools is relatively good, but dealers are finding it difficult to maintains stocks for the reason that very few desirable lots are up for disposal. In this respect a marked contrast is shown between the conditions observed in the depression of 1893 and 1894 and those of the present time. Because of numerous failures in manufacturing lines, occasioned by the extreme dullness of that period, considerable quantities of second-hand machinery were thrown upon the market by bankrupt sales, which resulted in a large surplus of good second-hand tools being secured by dealers at bargain prices. No such results have followed the present industrial reaction, since there have been but few commercial wrecks involving the forced sale of any important lots of machinery equipment. This fact in itself is a strong commentary upon the fundamental soundness in the industrial situation, for it may be reasonably assumed that concerns which have withstood the stress of financial stringency and the long period of inactivity and depression may be able with the turn of the tide, which has already set in, to float clear of dangerous shoals.

Yielding to the demands of necessity, the railroads are increasing their purchases of general supplies, and a few small machinery lists have also recently appeared in the market. Dealers are figuring on one including a few tools for the Temiskaming & Northern Ontario Railway, V. T. Bartram, purchasing agent, North Bay, Ont. The Sonora Railway, one of the Harriman lines in Mexico, has recently

purchased a small lot of tools. As a rule, however, the majority of business now finding its way into the market from the railroad shops is comprised of orders for individual tools which are too infrequent to figure conspicuously in the general aggregate.

The Chicago Board of Education has practically completed its purchases for this year of tools and machinery required for the equipment of the high school manual training departments, and it is not likely that its subsequent requirements for this period will include any more than auxiliary supplies and attachments. A list of this kind, including some minor equipment, is now in the hands of the trade for bids which will be closed early next week. The amount of money expended by the board for machinery was this year largely increased by the notable installation in the Lane Manual Training High School, which is now practically completed and will be ready for operation at the beginning of the school term. Unless present plans are modified it will be some time before orders of like importance will again come from this source.

Orders for the machinery required to equip the extension to the plant of the Western Steel Car & Foundry Company, Burnham, Ill., have been placed. Reference was recently made in these columns to the improvement, noting the contemplated machinery requirements. The plate work equipment will be supplied by Jos. T. Ryerson & Son, and includes, besides horizontal punches, vertical punches, shears and other tools, two large multiple punches weighing 115,000 lb. each.

The plant of the Dodgeville Electric Light & Power Company, Dodgeville, Wis., having been taken over by the city of Dodgeville, Wis., the company has decided to erect a new plant and continue operation. The project of establishing an ice and heating plant, to be operated in conjunction with the light and power plant, is under consideration.

The Union Power Company, St. Cloud, Minn., has under construction a new power house for hydro-electric equipment designed to develop 1600 hp. The plant will be located on the dam of the St. Cloud Water Power Company.

For the generation of electrical energy for the operation of its furnace plants at the Nye mines and to supply current for the city of Mayville, the Northwestern Iron Company, Mayville, Wis., is installing alternating current equipment and otherwise remodeling its power plant. Steam will be generated by waste gases from the furnace, thereby reducing the power generative cost to a minimum. The consulting engineer in charge of this work is A. G. McKee.

Quite a number of requisitions for supplies by the United States Reclamation Service for use in the development of its irrigation projects are coming through, and though they include no individual requirements of notable size, they sum up a considerable monthly total. No new undertakings are in immediate prospect, but the enterprises now being installed are of such magnitude that they will necessarily continue to use a large amount of material and supplies.

## Philadelphia Machinery Market.

PHILADELPHIA, PA., September 8, 1908.

The market has been interrupted to a considerable extent by the holiday, and the business transacted during the week has been extremely light. Orders have been much scattered and are confined almost exclusively to single tool propositions, and particularly those of the medium and smaller classes. It is expected, however, now that the vacation season has passed that more attention will be given by the trade to the large volume of business which has been held in abeyance for the past month or two, and it is from business of this character that the trade expects an early development of orders.

The railroads, while they have not been heavy buyers, have been placing some business; orders for rolling stock have been somewhat more pronounced and some of the local roads have been making moderate purchases in other directions. The Pennsylvania has given orders for the building of a number of freight locomotives in its own shops at Altoona, while the Philadelphia & Reading has increased the number of working hours at its Reading shops, it being understood that the car shops will go on 53 hr. a week, while the locomotive shops will work five days a week instead of four, as has been recently the case. This increased activity on the part of the railroad shops is considered encouraging by the trade, and while it does not mean immediate business, as far as the machine tool trade is concerned, it is taken as a move in the right direction. The shipyards are also showing some little activity, and although no large work has been taken recently, considerable estimating is being done for various classes of work. The Government has recently opened bids for 10 new torpedo boat destroyers, as well as several colliers, on which the shipyards in this territory have all made bids. Proposals are also being advertised by the Government for a large battleship in which the local shipbuilders are interested and which are to be opened early in November.

Generally speaking, therefore, conditions surrounding the trade are quite favorable for increased activity in the early future. While the immediate improvement exerts to some extent only an indirect influence on the trade, there are several propositions affecting the machine tool interests directly which will no doubt develop either late in the current month or early in October.

Manufacturers report practically unchanged conditions. Special tool builders have taken on some little business, but those making the usual line of standard tools report but little increase in the demand. Foreign trade has been very dull, nothing in the way of requirements covering standard machine tools having come out, although some business has been placed in special equipment of various classes. The trade abroad which a number of manufacturers of power transmission specialties have established is still reported as inactive.

Second-hand machine tool merchants report a rather quiet week. Business has been irregular, due no doubt to the same conditions which have been noticeable in the general machine tool trade. A fair amount of estimating is being done on moderate sized boilers and engines, but the orders develop slowly.

The foundry trade continues to show a slight improvement. Some of the steel casting plants which have been running from 30 to 40 per cent. of their capacities have taken on a little more work, and one plant has booked enough new business to enable it to operate at 50 per cent. for the balance of the year. The absence of railroad and heavy machinery work has held down the output of the steel casting plants to a large extent. Some of the gray iron plants are now working on a better tonnage. A fair amount of municipal work has come out, but the demand for machinery castings is still rather quiet.

The Borough Council of Haddonfield, N. J., has decided to issue $100,000 in bonds for the erection of a municipal water plant. The Water Committee, of which Charles O. Brown is chairman, was authorized to advertise for bids for the construction of the new plant. Proposals will, it is understood, be received by Mayor J. Morris Roberts until October 1.

J. G. Doak & Co., engineers and contractors, have obtained the contract to build a city hall for Trenton, N. J. A four-story building, 80 x 300 ft., with all modern appurtenances, is to be erected costing about $450,000. Work is to be started at an early date.

The Pennsylvania Railroad Company, which recently placed orders for 10,500 tons of pig iron for its Altoona shops, has contracted for materials to be used in the construction of 15 freight locomotives, which will be built in its own shops at Juniata, Pa.

The Montgomery County Commissioners have decided to build a new steel and concrete bridge over Stony Creek at Markley street, Norristown, Pa. Plans and specifications are to be obtained at the commissioners' office in that city, proposals being received until September 26.

The Tropenas Steel Company, New Castle, Del., has completed the work of erecting its main foundry and office buildings and the headquarters of the company has been removed there from this city. The company has decided to go ahead with the additional work planned, and now has specifications out for a pattern and machine shop, 90 x 180 ft., to be built of structural steel and brick. The purchase of the machinery equipment for the plant, we are advised, will be made early in October. It is expected that the plant will be put in operation late in October or early in December.

Proposals will be received until September 29 by the Lighthouse Engineer, Baltimore, for furnishing materials and labor of all kinds necessary for the erection of a light house at Ragged Point, Potomac River, Md.

The Link Belt Company reports a continuation of a fair volume of business. Orders have been more numerous recently and include among others the following: Three orders for sugar conveyors and elevators for export to Cuba; elevating and conveying machinery for parties in Delaware and in Florida; conveyors and elevators for a fuel testing plant and apron conveyor for a coke plant in Pennsylvania; coal crushing machinery for a coal and coke company; special car haul for a coal mine, and a retail coal pocket equipment. Several retail coal pockets, conveyor outfits and locomotive coaling stations have been ordered by New York parties, while coal pocket machinery, car hauls and coal chutes will be furnished parties in the Middle West.

## New England Machinery Market.

WORCESTER, MASS., September 8, 1908.

The Labor Day break is more conspicuous than usual, the holiday with many business men extending from Friday until later than Tuesday. The consequence is a marked cessation of business, the inactivity promising to extend through the week. In the machinery trade the majority of

dealers report no appreciable change; improvement if it exists is slight. In one or two cases last week showed a better business than had prevailed, but this is regarded as probably being another instance of spasmodic improvement.

The machine tool builders, however, are noting some genuine improvement, notably on the lighter machinery. Perhaps it might better be put the demand for heavy tools is not so great as for those of medium and lighter sizes. For instance, one company manufacturing lathes and planers is doing better with the former. The shops are starting up after shutdowns, and in a number of instances working forces and hours are being increased. This is more strongly the case with general manufacturing, the increase in volume of orders and of production continuing. Optimism is very general. Those manufacturers whose opinions are usually accepted as most substantial and well considered maintain that improvement should be constant but gradual, reaching a very fair volume by the end of the year. It is the almost universal wish that the return to prosperous conditions will be gradual and wholesome, rather than rapid.

The foundries are busier than they were, but in common with most other branches of manufacturing the betterment is one by comparison only. The foundrymen "talk better;" their observations point to improvement. The pig iron and coke business is dull, practically every foundry being stocked up for the remainder of the year.

The Universal Boring Machine Company, Hudson, Mass., has completed the development of its new boring machine and is receiving orders. The company has been established in its new shop for some time, but is only now beginning to place its machine on the market, desiring to perfect its details to the point of certain manufacturing efficiency. It will be built in one size only for the present, to be known as the No. 1, with a medium capacity. The shop is 50 x 150 ft., one story, the site containing ample space for enlargement when additional space is desired. A spur track from the Boston & Maine Railroad gives ample transportation facilities. J. N. Lapointe, head of the Lapointe Machine Tool Company, is president and general manager of the new company.

The Wood Turret Machine Company, Terra Haute, Ind., of which Hill, Clarke & Co., Inc., are the New England agents, is to add a ¾-in. machine to its line of Tilted Turret lathes, supplementing the 1 and 1¼ in. sizes. The new machine will have the same mechanical features as the others, including semiautomatic turret operation and automatic continuous bar feed, a new element of design in tools of the type of so small capacity.

The Clarence G. Garrigus Machine Company, Bristol, Conn., is completing its new shop building and will soon occupy it for the manufacture of special machinery. About 25 men will be put to work to begin with, and the force will be increased as the demand shall require it.

The repair shops of the New England railroads are putting on new men, increased activity being strongly marked in some cases. The Boston & Albany division of the New York Central is conspicuous in this change for the better. In common with the railroads all over the country the New England systems have been living a hand to mouth existence in the way of repairs, avoiding everything that could possibly be put off, until the accumulation of work has become rather a serious matter, especially in face of the period when even a shortage of rolling stock is prophesied. The electric railroads have been able to maintain better working forces, yet there are not a few instances where the companies have curtailed in these items of costs. Their supplies, too, have been permitted to fall to the lowest possible point, and they frankly state that they must either enter the market at no distant date or be crippled. The electric roads have come to be very important buyers in the market.

Among recent announcements of proposed enlargements of textile plants are these: Richard Borden Mfg. Company, Fall River, Mass., addition to cotton mill, 80 x 100 ft., and four stories; Brainard & Armstrong Company, New London, Conn., addition to silk mill, 35 x 100 ft., two stories; A. D. Ellis & Co., Monson, Mass., factory, 65 x 120 ft., three stories; dye house, 30 x 75 ft., one story, and office building, 40 x 50 ft., two stories.

The New Haven Foundry Company, New Haven, Conn., has been incorporated in Connecticut, and has established a foundry at 205-209 River street. It will manufacture gray iron castings, making a specialty of sash and elevator weights. Jacob Jordan is president and treasurer, H. M. Wood, secretary, and Samuel Land, manager.

The Weld Mfg. & Supply Company, 79 Milk street, Boston, which has been established several years, has incorporated under Connecticut laws, with capital stock of $25,000. It has a factory at Bridgeport, Conn., where it manufactures automatic wire machines, sheet metal and wire goods, dies and tools for special work and a line of specialties. The incorporators are: George A. Weld, Winchester, Mass.; William G. Walker, Brookline, Mass., and William M. Morgan, Boston.

The Hampshire Paper Company, South Hadley Falls, Mass., will build a new machine room, 60 x 100 ft., and three stories.

## Cincinnati Machinery Market.

CINCINNATI, OHIO, September 8, 1908.

Some of the larger machinery manufacturing establishments have had encouraging results from late August inquiries, and this is particularly true of those which are in correspondence with automobile manufacturing concerns. Because of this much appreciated business, local milling machine, planer, drill and drill press and lathe manufacturers are enabled to keep their skilled employees engaged on half or two-thirds time right through the dull period, and expect confidently to add men and hours soon after the 15th of the month. In sympathy with the prevailing vacation taking time, early September has been light; but correspondence is of a very encouraging nature and much better conditions are expected along about the middle of the month.

There is little or no foreign business, the customary ante-election feeling in this country seeming to have found lodgment in the trade marts abroad and to have produced a similar "hold off until after election" sentiment. The local tool manufacturing trade will be especially well qualified to take care of new business in this line, for the large establishments which before the depression planned extensive improvements—a new manufacturing center at Oakley, just outside Cincinnati proper—have about completed their new structures and are fitting them up with the necessary appliances for work. These appliances are all strictly modern and up to date. The Modern Foundry Company is rapidly getting the various departments systematized and is adding men daily. This establishment is under the direct patronage and management of the Cincinnati Milling Machine Company, which is responsible for its being. Among the items of new machinery purchased and recently installed is a heavy planer, one of the largest built in this country. Another member of the Oakley colony also ready for business is the Cincinnati Planer Company, which has fitted up the new plant with a view to turning out heavy work. For a time at least the lighter work will continue to be built at the Buck street establishment. Work is progressing satisfactorily on the plans for the buildings of the Triumph Electric and Ice Machine companies to be located in the same place, and President Hobart hopes to be permanently installed in the new home within a year.

As a means toward familiarizing manufacturers and others in different lines with the extent and importance of the Cincinnati machinery and tool manufacturing industry, the work of the Cincinnati Industrial Bureau is commended. The fourth industrial excursion is scheduled for September 10, and this year will be run over the Cincinnati, Hamilton & Dayton and the Big Four railroads.

About 300 will make the trip, which will consume the entire day. The special train will leave Grand Central Station at 9 o'clock, and the first stop will be made at the Government dam No. 37 at Fernbank. The next is scheduled for 10 o'clock at the works of the Cincinnati Horseshoe & Iron Company, Cleves, Ohio. Luncheon will be served at the plant of the Philip Carey Company in Lockland, and other plants to be visited are the Richardson Paper Company, Stacey Mfg. Company and Globe Soap Company. A number of tool manufacturers will make the trip, and many of the excursionists will take the opportunity to make side trips to the large tool manufacturing establishments on the lines of the two roads.

Trade with boiler manufacturers is still light, save those having contracts for municipal installations, and through the South and Southwest in tobacco manufacturing plants and for generating power for ginning machinery. An important concern here having a large share of this class of trade reports business very good and improving steadily. In medium and small sized power units manufacturers of electric generating machinery are also busy and quite satisfied with conditions. Manufacturers of special machinery report a steady increase in inquiries and demand. The Wm. T. Johnston Company, manufacturer and dealer in sawmill, factory and mill supplies, has perfected a cigar box lumber graining machine which is having a good sale. The same company has sold for installation in the Ohio River steamer J. T. Hatfield one of its lever brake steam steering gears, and reports business in this line improving steadily.

In second-hand machinery little business is reported, the bulk of this business seeming to have been transacted earlier in the year, when the necessity for economy was apparently more pressing.

With the jobbing foundries the melt has not improved materially, but those making miscellaneous castings have steadily increased their heats in size and number. A number of outside establishments have agents in this field seeking contracts at what appears to be a considerable concession in price.

The roofing department of the American Sheet & Tin Plate Company at Piqua, Ohio, has been in operation several days late in August and early September, orders justifying resumption of activities for a week or so. Shipments of

stock during August aggregated double the shipments of July.

Reports from Fort Wayne, Ind., state that the American Car & Foundry Company is employing 2000 more men than it did six weeks ago, and that the following orders have been received in the meantime: 400 steel coal cars for the Lackawanna, 700 freight cars for the Chicago & Northwestern, 300 30-ton and 250 40-ton gondola cars for buyers not stated, 500 all wood 30-ton box cars for the International & Great Northern.

## Cleveland Machinery Market.

CLEVELAND, OHIO, September 8, 1908.

The local machine tool market continues rather quiet, but each week shows a slight improvement over the preceding one. While the general outlook is slowly growing better, the increased demand is largely due to purchases by the automobile plants. Many of the automobile concerns that are preparing to overhaul and enlarge their plants with the view of increasing their next season's output have about completed their purchases of new machine tools, and the demand from this source is expected to fall off considerably during the present month. The automobile industry in this city, as well as throughout the Central West, is in a very satisfactory condition and builders are preparing for a large output of 1909 machines. Their activity is extending to the makers of automobile parts, the plants of the latter now being fairly busy with orders.

Outside of the activity among the automobile people machine tool sales are mostly limited to single tools, and there are very few inquiries for more than two or three tools. During the summer the sales were mostly of small tools, but now medium sized tools are moving somewhat more freely. The demand for second-hand tools continues fairly good and the supply that is being offered to dealers is only moderate.

The general manufacturing situation in metal working lines continues to improve slowly, as is shown by the fact that in a majority of plants the working force is being increased slightly from week to week. Machine tool builders are running their plants at an increased capacity, except possibly those that make heavy machinery exclusively and depend largely upon the railroads for their orders. Buying on the part of the railroads shows little if any improvement. As a result of the improvement in building activities, makers of concrete machinery report considerable improvement in orders and inquiries.

The foundry trade is picking up a little, but the demand for castings is still very light. This is particularly true of heavy castings.

New shops will probably be erected by the Wheeling & Lake Erie Railroad in Norwalk to replace those in that city that were recently destroyed by fire. The Norwalk Chamber of Commerce took up the matter immediately after the fire, when there was talk that the shops would be moved elsewhere, and has pledged $60,000 toward the erection of concrete fireproof buildings. A temporary repair shop is now being erected, for which the company has placed orders during the past week for a few machine tools.

The Ohio Ceramic Engineering Company, Cleveland, reports considerable increase in the number of orders for concrete machinery, industrial cars and its other products. The company is making an addition to its products by placing on the market a line of buckets. One, known as the Eclipse, is designed for handling stone, lime, ore, coal, &c., and the other, called the Ideal, is intended particularly for handling concrete in the erection of buildings. The company has received some good inquiries from the Pacific Coast for cement machinery, and its president, F. H. Robinson, left this week on a two months' trip to the coast, during which he expects to secure some good orders.

The Peerless Motor Car Company, Cleveland, has authorized the McGeorge Engineering Company to prepare plans for the first of a group of buildings that will amount to a duplication of the company's present plant. The structure that will be erected soon will be a repair shop, 53 x 130 ft. It will be three stories high, with steel frame and reinforced concrete floors. Other buildings will be erected later.

An automobile plant is being fitted up in Bowling Green, Ohio, by the Gramm-Logan Motor Car Company, a new concern that will build motor trucks and pleasure cars. The company has bought some of its machine tool equipment.

The XXth Century Heating & Ventilating Company, Akron, Ohio, furnace builder, reports that its business has returned to normal and that its plant is now being run full time with a full force of workmen.

The Standard Welding Company, Cleveland, reports a very satisfactory improvement in business conditions. The company at present has a large amount of work on hand and is operating its plant at full time with its full force of workmen.

The contract for a large addition to be erected by the Cleveland Foundry Company has been awarded to the National Concrete Fireproofing Company. The building will be 80 x 300 ft. five stories, of steel and concrete construction.

Having outgrown its present quarters, the Meilink Mfg. Company, Toledo, Ohio, maker of small safes, is looking for a new site for a larger plant. The company has had plans prepared for a new factory building 180 x 240 ft., on which work will probably be started as soon as a site is selected.

The secretary of the Board of Public Service, Cleveland, will receive bids September 15 for one 75-kw. direct connected alternating current generator unit, complete with exciter, switchboard and other appurtenances, for installation in one of the new municipal buildings at Warrensville.

## Government Purchases.

WASHINGTON, D. C., September 8, 1900.

The Bureau of Yards and Docks, Navy Department, Washington, will soon ask bids for ten turbo generators for the various navy yards and for two new boilers for the Boston Navy Yard.

C. W. Goodman, Superintendent of the Indian School, Phœnix, Ariz., will receive bids until September 30 for boilers, pumps, motor, &c.

The Isthmian Canal Commission will receive bids until September 28, Circular No. 465, for an electric industrial railway, consisting of 15,600 ft. of trackage with 12 electric locomotives and 24 flat cars.

The Isthmian Canal Commission will receive bids until October 5, Circular No. 466, for pumps and other supplies.

The Isthmian Canal Commission will soon ask bids for a quantity of pneumatic tools and the necessary machinery and accessories for a complete rock crushing plant.

The following bids were opened September 1 for machinery for the navy yards:

Class 11.—One Hendey lathe—Bidder 50, Frevert Machinery Company, New York, $1692; 53, Garvin Machine Company, New York, $1545; 61, Hendey Machine Company, Torrington, Conn., $1745; 88, Manning, Maxwell & Moore, New York, $1745; 102, Niles-Bement-Pond Company, New York, $1492; 162, Vandyck-Churchill Company, New York, $1420 and $1635.

Class 12.—One Hendey lathe—Bidder 48, Fairbanks Company, New York, $828; 53, Garvin Machine Company, New York, $800; 61, Hendey Machine Company, Torrington, Conn., $900; 88, Manning, Maxwell & Moore, New York, $900; 102, Niles-Bement-Pond Company, New York, $898; 162, Vandyck-Churchill Company, New York, $815 and $940.

Class 13.—Three triple geared engine lathes—Bidder 48, Fairbanks Company, New York, $7392; 50, Frevert Machinery Company, New York, $7176; 53, Garvin Machine Company, New York, $7635; 70, I. H. Johnson, Jr., Company, Philadelphia, Pa., $8565; 88, Manning, Maxwell & Moore, New York, $3400; 102, Niles-Bement-Pond Company, New York, $7695 and $10,194; 162, Vandyck-Churchill Company, New York, $8100.

Class 14.—One back geared engine lathe—Bidder 48, Fairbanks Company, New York, $2220; 50, Frevert Machinery Company, New York, $1194; 53, Garvin Machine Company, New York, $1394; 61, Hendey Machine Company, Torrington, Conn., $1820; 70, I. H. Johnson, Jr., Company, Philadelphia, Pa., $1342; 88, Manning, Maxwell & Moore, New York, $1438; 102, Niles-Bement-Pond Company, New York, $1335; 162, Vandyck-Churchill Company, New York, $3885.

Class 15.—One single shaping machine—Bidder 88, Manning, Maxwell & Moore, New York, $2050 and $2375; 102, Niles-Bement-Pond Company, New York, $2240.

Class 16.—One universal shaping machine—Bidder 49, W. H. Foster Company, New York, $644; 53, Garvin Machine Company, New York, $702; 63, Hill, Clarke & Co., Boston, Mass., $600; 88, Manning, Maxwell & Moore, New York, $645 and $688; 102, Niles-Bement-Pond Company, New York, $658; 117, Potter & Johnson Machine Company, Pawtucket, R. I., $644.

Class 17.—Three traveling head shaping machines—Bidder 88, Manning, Maxwell & Moore, New York, $3972 and $4750; 102, Niles-Bement-Pond Company, New York, $4480.

Class 18.—One horizontal boring and drilling machine—Bidder 102, Niles-Bement-Pond Company, New York, $2088; 114, Prentiss Tool & Supply Company, New York, $1719.

Class 19.—One planing machine—Bidder 48, Fairbanks Company, New York, $1800; 50, Frevert Machinery Company, New York, $2420; 53, Garvin Machine Company, New York, $1960; 88, Manning, Maxwell & Moore, New York, $1640 and $1850; 102, Niles-Bement-Pond Company, New York, $1840; 145, William Sellers Company, Philadelphia, Pa., $2270; 162, Vandyck-Churchill Company, New York, $1850.

Class 21.—One patternmaker's lathe—Bidder 4, American Wood Working Machinery Company, Rochester, N. Y., $150; 6, Atlantic Works, Philadelphia, Pa., $200; 44, Fox Machine Company, Grand Rapids, Mich., $123.50; 45, J. A. Fay & Egan Company, Cincinnati, Ohio, $214; 47, Fairbanks Company, New York, $141; 62, Hill, Clarke & Co., Boston, Mass., $203; 114, Prentiss Tool & Supply Company, New York, $123; 128, Charles E. Robideoux, St. Louis, Mo., $134.50.

Class 22.—One saw bench machine—Bidder 4, American Wood Working Machinery Company, Rochester, N. Y., $325; 6, Atlantic Works, Philadelphia, Pa., $285; 39, Drew Machinery Agency, Manchester, N. H., $235.26; 44, Fox Machine Company, Grand Rapids, Mich., $378; 45, J. A. Fay & Egan Company, Cincinnati, Ohio, $410; 50, Frevert Machinery Company, New York, $204; 62, Handlan-Buck Mfg. Company, St. Louis, Mo., $404; 111, Oliver Machinery Company, New York, $394 and $359; 114, Prentiss Tool & Supply Company, New York, $348; 129, B. M. Root Company, York, Pa., $175; 142, H. B. Smith Machine Company, Smithville, N. J., $203.

Class 23.—One semi-inclosed motor—Bidder 31, Central Electric Company, Chicago, Ill., $418.80; 34, D'Olier Engineering Company, Philadelphia, Pa., $330; 47, Fairbanks Company, New York, $190; 56, General Electric Company, Schenectady, N. Y., $289.50; 66, Holtzer-Cabot Electric Company, Brookline, Mass., $280; 103, Northern Electric Mfg. Company, Madison, Wis., $236.60; 136, Sprague Electric Company, New York, $257.85; 143, B. F. Sturtevant Company, Hyde Park, Mass., $255; 166, Western Electric Company, New York, $288; 167,

Westinghouse Electric & Mfg. Company, Pittsburgh, Pa., $273.07; 172, Burk Electric Company, Erie, Pa., $334.

Class 34.—One dust collector—Bidder 47, Fairbanks Company, New York, $139.90; 108, Ole K. Oleson, New Orleans, La., $79; 109, S. Obermayer Company, Cincinnati, Ohio, $150; 171, Buffalo Forge Company, Buffalo, N. Y., $145.

Class 25.—One steel plate planing mill exhauster—Bidder 34, D'Olier Engineering Company, Philadelphia, Pa., $625; 104, National Blower Works, Milwaukee, Wis., $650; 143, B. F. Sturtevant Company, Hyde Park, Mass., $450; 171, Buffalo Forge Company, Buffalo, N. Y., $520.

Class 26.—One metal band saw—Bidder 4, American Wood Working Machinery Company, Rochester, N. Y., $110; 6, Atlantic Works, Philadelphia, Pa., $200; 45, J. A. Fay & Egan Company, Cincinnati, Ohio, $132; 47, Fairbanks Company, New York, $139; 88, Manning, Maxwell & Moore, New York, $115; 108, Ole K. Oleson, New Orleans, La., $136; 109, S. Obermayer Company, Cincinnati, Ohio, $175; 118, J. W. Paxson Company, Philadelphia, Pa., $132.50; 129, B. M. Root Company, York, Pa., $137; 161, Vermilye & Power, New York, $98.

Class 27.—One electro magnetic separator—Bidder 34, D'Olier Engineering Company, Philadelphia, Pa., $245; 47, Fairbanks Company, New York, $207; 50, Frevert Machinery Company, New York, $250; 88, Manning, Maxwell & Moore, New York, $330; 109, S. Obermayer Company, Cincinnati, Ohio, $250; 118, J. W. Paxson Company, Philadelphia, Pa., $300.

Class 41.—One universal drilling and boring machine—Bidder 38, Detrick & Harvey Machine Company, Baltimore, Md., $6335; 102, Niles-Bement-Pond Company, New York, $6100 and $9650.

Under bids opened July 30 for supplies for the Isthmian Canal Commission, the General Electric Company, Schenectady, N. Y., has been awarded contract for one engine and dynamo at $750.

The following awards have been made for machinery for the navy yards, bids for which were opened July 14:

Niles-Bement-Pond Company, New York, class 43, one cold saw cutting off machine, $1397.

Newton Machine Tool Works, Philadelphia, Pa., class 44, one automatic saw sharpening machine, $140.

Under opening of July 28 for supplies for the navy yards, the Yale & Towne Mfg. Company, New York, has been awarded class 242, one 4-ton electric hoist, $388.

The following awards have been made for supplies for the navy yards, bids for which were opened August 4:

C. F. Graff, Seattle, Wash., class 1, constructing water supply system at the Naval Magazine, $19,995.

Niles-Bement-Pond Company, New York, class 2, one auxiliary hoist, $2080.

Under bids opened August 11 for machinery for the navy yards, Manning, Maxwell & Moore, New York, have been awarded class 51, one gang drill, $625.

## OBITUARY.

GEORGE G. BLACKWELL, founder and senior member of George G. Blackwell, Sons & Co., Ltd., Liverpool England, died August 26. He was well known in this country, having made frequent visits here for the purpose of pushing the sale of the special alloys manufactured by his firm.

MAX AMS, president of the Max Ams Machine Company of New York, and for 14 years president of the Mauser Mfg. Company, died September 5 at his home in Mount Vernon, N. Y., after an illness of six months. He was sixty-four years old. He was born in Waldkerch, in Baden, Germany, and came to this country in 1866. He leaves three sons and a daughter.

THOMAS M. RICHARDS, first vice-president of the Philadelphia & Reading Coal & Iron Company, died in Philadelphia September 5, after an illness of five months. He was one of the best known men connected with the anthracite coal trade, having been identified with its development for 50 years. He was born in Reading, Pa., 72 years ago, and entered the service of the Reading Railroad as a clerk in the office of the division superintendent at Reading, and filled various positions, becoming first vice-president of the Coal & Iron Company three years ago.

JACOB SHAABER, a retired foundryman, died August 23 at Reading, Pa., aged 75 years. He was a native of Reading, served his apprenticeship as a molder there, and ultimately became one of the principals in the Johnson Foundry Company, retiring two years ago. He leaves a widow, two sons and two daughters.

Forest fires have swept over portions of the Mesaba iron range in Minnesota in the past week and have been very destructive. Chisholm, which had a population of about 7000, built up entirely on iron mining industry, has been utterly destroyed, and the State militia are now in charge of the town site. Hibbing, the most important town on the Western Mesaba, having a population of 12,000, is reported by late dispatches to be in imminent danger. Buhl, near Hibbing, was entirely surrounded by fire on Tuesday of this week, and it was believed that nothing but rain or a change of wind could save the village.

## PERSONAL.

Walter O. Amsler, formerly a member of the Amsler Engineering Company, engineer and contractor for blast furnaces, open hearth furnaces and gas producers, which concern is now out of existence, has established himself at 627 Wabash Building, Pittsburgh, where he will continue to carry on this business.

W. G. Clyde, assistant general manager of sales of the Carnegie Steel Company, Pittsburgh, is combining business with pleasure in a month's trip to Mexico.

J. G. Carothers, formerly assistant sales agent of the Cambria Steel Company, Cincinnati, has been appointed assistant manager of sales with the Carnegie Steel Company, Cincinnati office, succeeding R. A. Bruce, who has been transferred. William F. Vosmer has been appointed assistant sales agent in the Cincinnati office of the Cambria Steel Company, succeeding Mr. Carothers.

The Wm. J. Smith Company, New Haven, Conn., has just appointed as superintendent in the manufacture of its One-Lock adjustable reamers, W. B. Gardiner, who has for the past 10 years been actively at work in the model department of the Winchester Repeating Arms Company, New Haven, Conn.

R. D. Day, formerly connected with the home office of the Mesta Machine Company, Pittsburgh, Pa., has been appointed to succeed J. A. Schroeder as manager of the New York office, Hudson Terminals Building.

Philip T. Dodge, president of the Engineers' Club of New York, has returned from a voyage to Europe. His itinerary included Austria, Hungary, Italy, Russia and Germany.

The Cleveland Crane & Car Company, Wickliffe, Ohio, has opened a Chicago office at 1203 Marquette Building, with W. A. Rider in charge.

D. W. Anderson, recently of Pittsburgh, has been appointed local manager of the Oswego, N. Y., plant of the Railway Steel Spring Company. W. J. Golden, former manager, will be transferred to one of the company's other plants.

D. Vickers, managing director of Vickers, Sons & Maxim, Ltd., has been elected Master Cutler of Sheffield, England.

W. C. Runyon, New York, president of the Struthers Furnace Company, Struthers, Ohio, returns this week from a summer trip in Europe.

August Marx, general manager of the Philadelphia Roll & Machine Company, Philadelphia, Pa., returned September 2, after a two months' trip abroad.

Anson W. Allen, who has been connected with the Pencoyd Iron Works (American Bridge Company) Pencoyd, Pa., for the past 20 years, and who has been superintendent of the open hearth department for some seven years, resigned his position September 1 to accept that of superintendent of the open hearth department of the Tennessee Coal, Iron & Railroad Company, at Ensley, Ala. His associates at Pencoyd met in an informal way August 29 and presented him with a gold watch and chain.

H. T. Wigham, representative of the Carnegie Steel Company in London, England, who arrived in this country August 28, will sail for his post September 15. He has been combining business with pleasure.

H. M. Lucas of the Lucas Machine Tool Company, Cleveland, Ohio, sailed for Europe September 5 for a business trip in the interests of the company.

Edward Anglin, general superintendent of the Sharon Steel Hoop Company, Sharon, Pa., has resigned. His successor is George W. Short, who for several years was superintendent of the steel mill.

Ambrose Swasey, of the Warner & Swasey Company, Cleveland, Ohio, has returned from Europe.

# HARDWARE

AS a natural result of the importance and complexity of the transportation questions engaging the public attention the laws in regard to freight matters are constantly subjected to the closest scrutiny. This scrutiny is the more painstaking and persistent in view of the direct pecuniary interest of merchants and shippers in securing for themselves any advantages which a thorough knowledge of the law will give them, as well as in view of the necessity of a strict compliance with the laws. Under the provisions of the statutes it is necessary for the party receiving shipments to see to it that he does not pay less than the legal rates, which would subject him to very severe penalties. It is therefore necessary for him to have full and accurate information in regard to the rates legally in force. In seeking this information, however, the merchant may discover a curious defect in the interstate commerce law. The railroad is required to post two copies of its tariffs at every point where freight is *received* for shipment, but the law does not require tariffs to be posted or even kept on file where shipments are *delivered*. The law seems to be based upon the idea that the shipper pays the freight, and should have at the shipping point legal information as to the charges. In general practice, however, the consignee pays the freight, and the law does not require the railroad to give him any information as to the legal rates, although he is the man who pays the charges. He commits a misdemeanor if he pays less than the legal rate, and is liable to a fine of $20,000 for each offense, and two years' imprisonment; and his only information is what the railroad gives him as a matter of business courtesy.

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Something is to be learned from the method adopted in an Eastern town with a view to securing the trade of the farmers of the surrounding territory. A number of the merchants of this town representing different lines of business unite in an arrangement with a man who makes regular trips through the country, distributing their circulars and printed matter and in other ways promoting their interests. He makes two or three trips monthly, covering on their behalf a radius of about 10 miles. In this way the dodgers or pamphlets furnished by manufacturers find a natural outlet as well as such circulars or circular letters as may be specially prepared by the merchants. It is not unlikely that something along this line might advantageously be done in other places. There may be in work of this character an opportunity for some who are not more profitably employed to get busy and useful. An energetic and tactful man might make such service justify itself by its results, and at the same time become a stepping stone to more permanent and more remunerative work. The getting together of the merchants of the town for such united action is certainly commendable, and might lead to other forms of co-operation. The effort to make use to the best advantage of this itinerant service would naturally have a stimulating effect on the merchants represented, as they endeavor to provide suitable printed matter for general distribution and perhaps make special appeals adapted to the varying circumstances of the prospective customers thus canvassed, as something like personal relations are gradually established. The making of the effort would in itself be a good thing as emphasizing the too generally neglected duty of going out for business instead of simply waiting for it to come.

## Condition of Trade.

Reports quite generally indicate a perceptible improvement in the volume of Hardware business with both manufacturers and jobbers. This department of trade thus keeps pace with other lines of business, in most of which there is undoubtedly not only a hopeful feeling, but also an actual increase in the volume of transactions. The successful overcoming of financial difficulties and the abundance of money, accompanied by a growing confidence in regard to its investment in commercial and industrial enterprises, is rapidly removing obstacles to normal activity in trade. Large if not record breaking crops which will command good and in some cases high prices furnish a basis for prosperous conditions in the agricultural sections, whose money will sooner or later find its way into diversified trade channels. The consumption of goods all over the country has during the dull months been going on steadily if not as rapidly as usual, and stocks are calling for replenishment. The people, too, are making up their minds that the time has come to take hold of business with renewed energy, though still conservatively, and of course without the dash and recklessness which generally characterized the trade before the recent slump. Orders are as a result being placed more freely with the traveling salesmen who visit the retail merchants, while jobbers and the larger retail houses are purchasing with considerable more liberality than a short time ago. The political canvass does not appear to militate seriously against business interests. Prices for Hardware and related lines are better maintained than for some time. While very little in the way of advances is reported or to be expected, it is gratifying to note that reductions in price are few. Lines in which the raw material is the principal element of cost have quite generally settled in price, and other lines in which the principal expense of making is the labor do not call with much urgency for lower quotations because wages have not been greatly, if at all, reduced. Competition is of course active and perhaps a little quickened, as with the improvements in the general situation manufacturers are desirous of having their share in whatever business is within reach. But a certain conservatism and regard for the upholding of the market as a whole still characterizes their policy to a considerably greater degree than was the case in former periods of somewhat reluctant trade.

### Chicago.

While the progress toward a restoration of normal activity is slow, and at times halting in its movement confidence in its ultimate achievement at no very remote date is unshaken; but while this is true there is nevertheless more or less disappointment and chafing over the tedious, tardy, onward movement. There is nothing in the August summary of business in Hardware lines to inspire enthusiastic comment, yet withal, it is only disappointing in so far as overreaching expectations may have made it so; for the totals show a small increase over July, though a comparison of results with the corresponding month of last year yields a less favorable showing. There has, however, been some shrinkage of values in the meantime and the volume of goods represented by sales accounts is at present larger in proportion than it was a year ago. To the extent therefore of the shrinkage in values actual consumption is now greater than is apparent from a comparative showing of sales totals. Trade in all Hardware lines is drifting along in unevent-

ful fashion with no conspicuous change in the attitude of any of the several market interests. Buyers are generally inclined to estimate their future requirements with a large degree of conservatism, though in some directions they are compelled by increased demand to order more liberally. This is particularly true with respect to Wire Nails and Fencing, which are in good demand with prospects for a fairly good fall trade. The movement in Bale Ties, too, has exceeded expectation, and as a result it is stated that manufacturers are from two to three weeks behind in shipments. No radical price changes are reported, though in many lines the effect of close competition is seen in a lack of firmness in the maintenance of recognized schedules. But altogether the situation in this respect is far more satisfactory than is usual in such periods of depression. Some fair sized Bolt orders have been taken by distributers within the past two or three weeks, several for car lots having been placed by manufacturing interests and railroad repair shops. Some fluctuations have occurred in Copper Sheets and Bottoms due to changes in prices of the metal. Expressions concerning the outlook are generally of a conservatively optimistic nature, reflecting a disposition to avoid false enthusiasm and a determination to face the issue squarely with confidence in the outcome.

## NOTES ON PRICES

**Wire Nails.**—Business shows no falling off with the new month, demand keeping fully up if not a little ahead of that for the same period in August. Orders for the most part call for immediate shipment, though some are for later delivery. Quotations, which are regularly maintained, are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

| | |
|---|---|
| Carloads, to jobbers | $1.95 |
| Carload lots to retail merchants | 2.00 |
| Less than carloads to jobbers | 2.00 |
| Less than carloads to retail merchants | 2.10 |

*New York.*—The demand at this point continues in about the same volume as for the past two or three weeks, which is moderate. Nails are held on the basis of $2.30 per keg in small lots at store.

*Chicago.*—The opening week of September has produced a fair amount of new business, the tonnage rate established in the latter part of August being well sustained. Shipments are moving in fairly satisfactory volume, and jobbers are beginning to anticipate their requirements a little farther ahead. We are advised that regular prices are being maintained. Quotations are as follows: $2.13 in car lots to jobbers, and $2.18 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

*Pittsburgh.*—The demand for Wire Nails is steadily getting larger, and, strange as it may seem, it is a fact that the amount of new business entered by the mills in August, and shipments in that month, compared very favorably with the same month last year. Some contracts are being placed for delivery within 60 days from date of order, but most of the new business is still confined to running orders for actual needs. The increase in demand for Wire Nails is regarded as a natural reflection of the prosperity of the agricultural interests. Prices are said to be absolutely maintained. Quotations for base sizes are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

| | |
|---|---|
| Carloads, to jobbers | $1.95 |
| Carload lots to retail merchants | 2.00 |

Galvanized Nails are quoted at $1 over the price of the regular Nails.

**Cut Nails.**—The situation in the Cut Nail market shows some improvement in that demand is noticeably greater, which, however, continues moderate in volume. Concerns having contract orders are also sending in specifications for shipment. The general market is represented by the quotation of $1.80, base, per keg, f.o.b. Pittsburgh, but $1.75 is the extreme market, on carloads and over, to the large trade. In the Western market Iron Cut Nails are held at an advance of 10 cents per keg over Steel Cut Nails, but this differential is not observed in the East.

*New York.*—There is nothing of particular interest in the local market. Demand continues moderate and confined to immediate requirements. They are held on the basis of $2.15 per keg for small lots at store.

*Chicago.*—Moderate improvement is observed in the demand for Cut Nails, though orders are mainly for small lots. Prices are unchanged, but the tone of the market is sensibly improved. We quote Chicago prices as follows: In car lots to jobbers, Iron Cut Nails, $2.08; Steel Cut Nails, $1.98. In small lots from store: Iron Cut Nails, $2.25; Steel Cut Nails, $2.15.

*Pittsburgh.*—The better conditions in Wire Nails are reflected in Cut Nails to some extent, demand for which is showing betterment, new orders and specifications against contracts now coming into the mills being better than for some time. The tone of the market is fairly strong and no immediate change in prices is expected, as the Cut Nail Association will not have a meeting until the latter part of this month. The general market is represented by the quotation of $1.80, base, per keg, f.o.b. Pittsburgh, but $1.75 is the extreme market, on carloads and over, to the large trade. In the Western market Iron Cut Nails are held at an advance of 10 cents per keg over Steel Cut Nails, but this differential is not observed in the East.

**Barb Wire.**—New business from mill continues moderate as is expected at this season when trade is usually dull. Regular quotations are reported as being maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, 2 per cent. discount for cash in 10 days:

| | Painted. | Gal. |
|---|---|---|
| Jobbers, carload lots | $2.10 | $2.40 |
| Retailers, carload lots | 2.15 | 2.45 |
| Retailers, less than carload lots | 2.25 | 2.55 |

*Chicago.*—The demand is seasonably active, though nothing more than desultory requirements are expected until the fall trade is fully under way. Shipments are of satisfactory volume for the between season period. Regular prices are reported as being firmly held. Quotations are as follows: Jobbers, Chicago, car lots, Painted, $2.28; Galvanized, $2.58; to retailers, car lots, Painted, $2.33; Galvanized, $2.63; retailers, less than car lots, Painted, $2.45; Galvanized, $2.75; Staples, bright, in car lots, $2.25; Galvanized, $2.55; car lots, to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

*Pittsburgh.*—Some buying for fall trade has started, notably from the South and Southwest, but general demand and shipments by the mills are light, as this is the dull season of the year in this trade. Reports are that prices are being maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days.

| | Painted. | Gal. |
|---|---|---|
| Jobbers, carload lots | $2.10 | $2.40 |
| Retailers, carload lots | 2.15 | 2.45 |
| Retailers, less than carload lots | 2.25 | 2.55 |

**Plain Wire.**—Increased demand is shown by a larger number of orders, as well as by their size. Fence manufacturers, as well as other consumers of Wire, are ordering more liberally. Regular prices are reported as being maintained. Quotations per 100 lb. to jobbers in carload lots are as follows, on a basis of $1.80 for Plain and $2.10 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the price to retailers being 5 cents additional:

| Nos. | 6 to 9 | 10 | 11 | 12 & 12½ | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|
| Annealed | $1.80 | 1.85 | 1.90 | 1.95 | 2.05 | 2.15 | 2.25 | 2.35 |
| Galvanized | 2.10 | 2.15 | 2.20 | 2.25 | 2.35 | 2.45 | 2.85 | 2.95 |

*Chicago.*—New orders are not only more numerous, but they are of larger tonnage than they were a while back. Fence makers are ordering farther ahead, in view of the increasing demand for their product. Other Wire users are likewise purchasing more liberally, and shipments are correspondingly increased. Prices are represented as being firmly maintained. We quote as follows: Car lots to jobbers, $1.98, f.o.b. Chicago, and to retailers, $2.05.

*Pittsburgh.*—The outlook for fall trade is very encouraging, the mills receiving large orders from Wire Fencing and other consumers. Shipments on new business and on contract orders by the mills are heavier now than for some time. Quotations per 100 lb. to jobbers in carload lots are as follows, on a basis of $1.80 for Plain and $2.10 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent discount for cash in 10 days, the price to retailers being 5 cents additional:

| Nos. | 6 to 9 | 10 | 11 | 12&12½ | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|
| Annealed | $1.80 | 1.85 | 1.90 | 1.95 | 2.05 | 2.15 | 2.25 | 2.35 |
| Galvanized | 2.10 | 2.15 | 2.20 | 2.25 | 2.35 | 2.45 | 2.85 | 2.95 |

**Scythes.**—It is authoritatively stated that the new prices on Scythes announced this week represent a decline of about 50 cents per dozen.

**Tacks.**—The market on Tacks shows a slight tendency to stiffen. It is reported that leading manufacturers have been taking steps with a view to securing greater regularity in prices, with the result that concessions are perhaps a trifle less liberal than during the spring and summer.

**Bolts and Nuts.**—Attention has already been called to an improvement in the market for Bolts and Nuts. This has been emphasized this week by the appearance of notices from most of the leading manufacturers withdrawing quotations and stating that prices will be named on application. As a result of this movement it is understood that manufacturers who have been meeting the extreme prices will make appreciable advances. In the case of others who have been more conservative changes will be less important.

**Window Glass.**—According to reports but a few of the hand operated Glass factories commenced operations the first of the present month, and it may be later than the middle of the month before a general resumption takes place. The organization of the Window Glass manufacturing interests contemplates, it is understood, the leasing of the factories by strong financial interests, which plan, it is thought, will obviate the difficulties of keeping manufacturers in line which have attended former attempts to sustain prices upon a paying basis. The fact that the wage scale has not been entirely settled upon for the coming fire introduces some uncertainty as to the future price of Glass, but the impression prevails that it will be higher than at present. The demand is showing a steady increase, especially in the Western portion of the country. Manufacturers' discounts, from manufacturers' list of January 1, 1901, are as follows: For A single and double strength Glass, 90 and 15 per cent.; for B single and double strength Glass, 90 and 20 per cent. Jobbers' quotations from jobbers' list, October 1, 1903, for all sizes of single and double strength Glass for the entire country is 90 and 20 per cent. discount.

**Linseed Oil.**—Nothing of interest has developed during the week, the demand being confined to small lots. The market is not regarded as strong at present quotations, as it is probable that these prices could be slightly shaded. Quotations are as follows: Western Raw, car lots, 43 to 44 cents; State and Western Raw, barrel lots, 44 to 45 cents per gallon. Boiled Oil is 1 cent per gallon advance on Raw.

**Rope.**—There is comparatively little activity in the Rope market, the demand failing to assume large proportions. Considerable Manila fiber that is somewhat red in color is in the market, and consequently does not grade up very high. Some Rope jobbers are quoting pure Manila Rope at figures ranging from 8¾ to 9 cents per pound basis, which is possibly made from some such fiber. General quotations for Rope 7-16 in. in diameter and larger are as follows: Pure Manila, 9½ cents; Pure Sisal, 7 cents; No. 1 Jute, ¾ in. and up, 5¾ cents; No. 2 Jute ¼ in. and up, 5¼ cents.

**Spirits Turpentine.**—Only a moderate amount of business has been transacted in this market during the week, and prices remain about as before. At Southern points receipts have been abundant and sales light. The New York market is represented by the following quotations: Oil Barrels, 38½ to 39 cents; machine made barrels, 39 to 39½ cents per gallon.

# THE VALUE OF PRACTICAL WINDOW DISPLAYS.

*Articles Shown in Actual Operation do More than Merely Attract Attention; They Sell Themselves.*

BY CLARFIELD.

THE management of a great industrial show enterprise is using the catch phrase, "An ounce of sight is worth a ton of print." The sentence is not particularly well constructed, technically speaking, but the meaning is clear, even forceful. Articles shown in actual operation, right before the eyes of the prospective users, will tell more for themselves at a glance than could be told in a page of print or a half-hour of argument.

Add to this silent demonstration the skilful argument of an experienced salesman who understands his subject and can quickly judge his prospect, and a selling combination is formed that must certainly prove effective. Even when actual sales are not made, the prospect who goes away from such a demonstration taking with him descriptive circulars and catalogues is sure to read this literature with far greater understanding than he will that of a competitor whose goods he has not seen in operation.

It has been well said that the mission of advertising is "attraction, persuasion, *conviction*, BUSINESS." How better can this be accomplished than by a combination of good printing, actual demonstration and skilled salesmanship?

### A Notable Incubator Display.

In one of the busiest streets of downtown New York there is a firm of Incubator manufacturers which makes constant use of this form of window attraction. A glance at the group of interested onlookers which is always in front of this window is enough to prove its effectiveness. Sometimes the eggs may be seen in the actual process of hatching. At other times a brood of chicks or ducklings is at play in the sunny window, scratching in the sand or swimming in the small pool, entirely oblivious of the curious onlookers, and apparently never missing the guardian care of the motherly old hen—probably because they never knew such care. One passerby remarked that the unrestraint of such an orphan existence might develop the young chicks into old jail birds, but, according to the most authentic reports, there is no such instance on record.

This concern sells more than Incubators. They offer live animals and birds and fowl and eggs and feed. It is known that this practical demonstration sells many Incubators, but, further than that, it is a proven fact that the Incubator display frequently sells a puppy dog, or some other animate or inanimate thing, for not all the customers drawn into the store in this way are interested in hatching eggs.

### As Applied to the Hardware Store.

There are many Hardware merchants who handle Incubators, and these should find in this suggestion a valuable means of stimulating local interest and increasing their business in this line.

There are many lines in the Hardware store which can be demonstrated with equal effectiveness. If there is a chimney convenient to the window, a Range or Heating Stove can be shown in operation. In demonstrating a Range it will pay to set aside two or three days or a week, and advertise widely that practical demonstrations in cooking on the Range will be given on these days. The forenoon of one day can be devoted to bread baking, the afternoon to roasting, another day to the preparation of a breakfast, which will demonstrate the work upon the top of the Stove.

### A Fine Cook Engaged.

For such an event as this the best local cook should be retained, and the articles of food prepared should be held on display in the store during the day where they can be sampled by those customers interested. If the window is a large one the entire work may be carried on in the window, which should be fitted up as a model kitchen, and the effort will then be an effective advertisement for all sorts of household utensils, for the Porcelain Sink, and even for sets of Stationary Washtubs, which

could be used for a table if the Hardware merchant does not sell the ordinary Kitchen Tables. The plan, of course, is elaborate, and if the window is not spacious enough to accommodate it, then it will prove almost as effective if conducted within the store, provided the event is well advertised.

**A "Cold" Display with Live Steam.**

In stores which are heated by steam, or where access may be had to a steam boiler or exhaust pipe, the Stove may be set up "cold," and by connecting the steam through the bottoms of Teakettle and Boilers on the top of the Stove the effect of actual cooking can be obtained. This, however, should not be attempted in very cold weather, for the steam will condense and freeze upon the window glass, thus obscuring the display.

**Demonstration at Home.**

One Hardware merchant who lives near his store makes a practice of setting up in his home each winter the latest model of the Heating Stove which he handles, for the double purpose of keeping himself perfectly familiar with the operation of all the new improvements and for demonstrating the great power and economy of the Stove to interested customers. Each year he sets up a new Stove of a different type for the same purpose. He finds that no more effective argument can be produced than to show the actual area heated, and to know the exact amount of coal consumed in any given period. To strengthen his position, he keeps a record of weather conditions in a diary, with the amount of coal used under the varying conditions.

**To Demonstrate Refrigerators.**

Manufacturers of Refrigerators are usually willing to supply one with glass doors for demonstration purposes. Such an one will always attract attention, if placed in a window with ice and other contents in place. To prove that one article will not contaminate another is one of the most effective arguments for a Refrigerator, and as milk is probably the most sensitive to such contamination, a pan of fresh milk placed with the other contents, and which customers may be at liberty to taste, is sure to be a convincing test. One firm created a sensation by placing a box of matches in the food chamber to prove that the air was dry. Customers were invited to strike these matches when they came into the store.

There are plans almost innumerable by which the Hardware merchant can utilize his windows to the great advantage of his business. These suggestions, if not applicable in detail to all localities, should at least point the way to more effective effort in this direction.

## AUSTRALIAN NOTES.

MELBOURNE, August 3, 1908.

FROM A SPECIAL CORRESPONDENT.

THERE has been a fair amount of general Hardware trade during the past month, although July is perhaps the dullest month of the year. Melbourne and Sydney are both busy preparing for the visit of the American fleet. The annual agricultural show in Melbourne is timed to take place during the week of the fleet's visit, and retailers in every class of trade are looking forward to reaping a big harvest. There can be no doubt that the influx of visitors from the country districts will be far greater than usual, and prices for everything are going up in anticipation of this carnival week. The government has declared three days' holiday, although the holidays are not compulsory, and retailers will not take advantage of the full three days. Reports from the other States of the commonwealth all indicate a steady trade without any adverse circumstances. Stock-taking generally is finished and the year's business seems to have been universally satisfactory.

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The building trade is good right through Australia and New Zealand. Indeed, it almost seems as if some of the cities are being entirely rebuilt, and argues a vast amount of wealth in the country and a great deal of enterprise and faith in its future. Warehouses and factories are increasing in number, and our protective tariff is adding every month to our list of manufactures.

The commonwealth revenue for the year ended June 30 has totalled over £15,000,000 sterling, being £2,000,000 in excess of the previous year. Of this amount, the customs and excise contributed, roughly, £11,500,000, and the Post Office £3,250,000.

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Wool exports from Victoria and New South Wales for the year ended June 30 are less than during the year ending June 30, 1907, although there was an increase in the exports from the other States and New Zealand. The figures are: Victoria 462,815 bales during 1907-8, as against 506,650 during 1906-7; New South Wales, 777,748 bales, against 837,869.

Other States show an increase, Queensland having exported 149,000, as against 117,550 the previous year; South Australia, 163,892 bales, against 146,430; West Australia, 50,745 bales, against 40,789; Tasmania, 21,050 bales, against 13,840; New Zealand, 436,940 bales, against 427,058.

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The total imports into New Zealand during the year 1907 were valued at £16,533,000, showing an increase of considerably over £2,000,000 for the previous year. Hardware imports are 25 per cent. higher than 1906. In 1906 the hardware imports represented a total of £253,000 from Great Britain, and £37,000 from the United States. In 1907 the figures were: Great Britain, £320,000; United States, £52,000.

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Plumbing Specialties are likely to continue in increasing demand, with the spread of sewerage systems throughout Australasia. The Melbourne and suburbs sewerage scheme is still incomplete. Hobart is going in for further development. Other States and towns throughout Australasia will call for Plumbers' Hardware for many years to come.

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The export of coal from Newcastle during the first half of the current year shows an increase of half a million tons over the corresponding half year in 1907. During January to June, inclusive, 1908, the amount exported was 2,573,000 tons, valued at £1,231,500. The total number of vessels which entered the port was 2535.

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The government of the State of Victoria has recently accepted several contracts for the supply of rabbit proof Wire Netting. This line they are supplying to land owners throughout the various shire councils. Rylands, Ltd., a British concern, through their Melbourne agents, secured a contract for 1500 miles, 17 gauge by 1½ in. at £20 16s. 6d. per mile. A Belgian firm secured a contract for 500 miles 1¼ in Netting at £25 per mile. An Australian firm, Lysaght Brothers & Co., tendered for this contract, and the government agreed to give them a preference up to £1 per mile for the local article. Their tender, however, was £1 per mile more than the accepted contracts. The Government is taking from Messrs. Lysaght Brothers 250 miles of 1½ in. Netting at £21 16s. 6d. per mile, and 250 miles of 1¼ in. at £26.

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Railway and Tramway construction is being pushed on energetically throughout the various States, and the demand for rails, fishplates, rolling stock, &c., is likely to get more healthy as time goes by.

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The Lithgow Iron Works still remain closed down, pending the passage of an Iron Bonus bill. The new proprietors of these works claim that the industry cannot be carried on under existing circumstances, save at a loss.

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W. S. Friend & Co., the well-known Sydney wholesale ironmongers, are just completing extension of premises in York street. This firm is one of the oldest houses in New South Wales, and one of the best known throughout Australia.

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Briscoe & Co., Ltd., of Sydney, have just moved into large premises in Kent street. Their new building is five stories in hight, exclusive of the basement, with a frontage of 72 ft. and a depth of 140 ft.

## SUGGESTIONS ON THE CARE OF SAWS.

A VALUABLE BOOKLET on the care of Saws has just been issued by the Taintor Mfg. Company, for whom John H. Graham & Co. are sole agents, 113 Chambers street, New York. The useful hints thus presented are from C. C. Taintor, inventor of the Taintor Positive Saw Set, which is described in the closing pages of the booklet. The pamphlet is fully illustrated and is of value to all who have to file and set Saws, whatever style of Saw Set is used. As indicating its interest and character and at the same time laying before our readers many practical suggestions on the subject, we give the following extracts from the booklet:

The setting of a Saw is more important than is generally believed. A Saw properly set will run more smoothly through the wood, thus saving the strength of the user and will permit him to work closer. The teeth should be bent with perfect uniformity and in a manner to squeeze the metal so that the teeth will be "set," *i. e.*, fixed in their new position. Teeth that are only bent and not "set" will spring back unevenly. The first so-called Saw Sets only bent the teeth, but a blow from a hammer displaced the metal; therefore some of the older men still insist that a hammer-set is best.

A Saw should be set as little as may be and still have it "clear." It is a common fault of workmen to set their Saws too much, and it is often the case that they are set so wide that the chip or sawdust gets between the end of the tooth and the wood which is being cut, thus causing binding. Medium size teeth should be set about one-half way down from the points to their roots, and coarse ones about one-third of the way, but never as low as the roots.

### Defects in Tools for Setting.

A great many tools are on the market for setting Saws, some of them only bend the teeth and do not "set" them—that is, force the metal to the support of the tooth in its new position.

Others are liable to slip on the tooth after the pressure is applied, so there is no certainty in the distance from the point that the tooth will be bent, and consequently the teeth will not stand in line.

Others have gauges that are liable to slip; still others set the thick end of the Saw (where there is a difference in thickness) more than the thin end, thus increasing the amount of set by double the difference of thickness.

Probably the greatest fault of most of these tools is that they injure the side of the tooth by cutting a fine groove or crease where it is bent. As a result, the tooth is weakened and may break at the next setting, or, what is more likely to occur, when the tooth is filed the point comes off and many a workman blames his Saw manufacturer for what is really due to the fault of a Saw Set which is improperly constructed.

Another fault of Saw Sets is that the blow or pressure, as the case may be, is applied first at the point of the tooth. This being the weakest part, it first curls it, then straightens it, and sometimes breaks it. A tool producing any of these results should not be used.

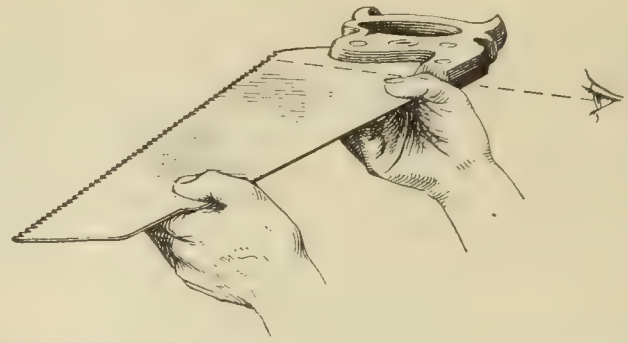
The Taintor Positive Saw Set was especially designed to obviate all of these defects. The teeth when set by this tool conform to the side and face of the anvil on which the setting has been done. The faces of the anvil are numbered so that any setting may be returned to, but these numbers have no reference to the number of the Saw or number of teeth to the inch.

A Saw should be set according to the work to be done and not according to the number of points to the inch; in fact, the same Saw might need to be set differently for different purposes.

Face No. 4 of the Taintor Positive Saw Set may be used as a trial face for a Saw for ordinary work in dry wood. Set a few teeth, then look across the face of the Saw to see if the teeth have been moved the right amount. If they have not, find the anvil face that will give the desired amount of set, then complete the setting.

After filing, the teeth should be in line on both sides of the Saw and the groove should be perfectly straight when looking down the length of the Saw from heel to point. These two ways of examining the setting are better than either way alone.

The Taintor Positive Saw Set may be used with the Saw held in the hand or in the hand with one end resting on the bench, or in the clamp. In either case the tool will easily adjust itself to the work to be done, as all parts work in unison. If the setting is done in the clamp the teeth of the Saw should be placed high enough



above the edge of the clamp so that the Saw Set will not touch.

Work from heel to point on both sides of the Saw and raise the Saw Set as it passes from tooth to tooth. By setting from heel to point the tool is not so likely to catch on the teeth.

### Filing.

In filing great care is necessary. In case one's eyes are not strong enough to see the points of the teeth clearly, glasses should be used while filing.

Carefully choose your files. They should be straight and evenly cut and straight in the handle. If too large they obstruct the view of the points of the teeth.

When filing keep the teeth of the Saw regular in size. The tendency is to make the ones on the farther side on the first filing too large, the bevel misleading the eye.

After the Saw has been jointed and set, adjust it in the clamp for filing. Place it as low in the clamp as the position chosen for the file will permit. The point of the Saw should be to the left. This position gives to most persons the best view of the teeth while finishing after the Saw has been turned. If, however, experience teaches that the teeth to be finished can be seen better from the other side, file to the right of the clamp first.

The clamp should then be placed in the best light obtainable and at the hight that will give the operator the best view of the teeth. This will vary with different persons. A little below the armpits is found to be right by a good many filers.

Hold the file firmly with the point somewhat elevated at the pitch and bevel decided on.

The filing should be done with the point of the file traveling in the direction of the point of the Saw, cutting the edges of both teeth. This gives the correct form to the teeth and steadies the file, which should be lifted slightly on the return stroke.

The reason for filing toward the point of the Saw is that the file moves in the direction of the setting and of the cutting edge of the teeth, and there will thus be less vibration. If on the contrary the filing is done toward the heel of the Saw the file is cutting against the setting and against the cutting edge of the tool, and the vibration will be sufficient to take the points off the teeth and the cutting edge will be rounded as well as full of fine notches made by the teeth of the file.

If those who advocate filing in the opposite direction (that is, toward the heel of the Saw) will use a magnifying glass in comparing teeth so filed with those filed toward the point, the reason for filing as above recommended will be obvious.

In filing toward the point of the Saw there will be a slight feather edge on the tooth, which may be taken off by running a straight oilstone lightly over the sides of the Saw. If this is not done, however, the feather edge will soon disappear. The feather edge, by the way, is the only argument for filing toward the heel.



File every other tooth. File back on the widest teeth as shown by the size of their points. Make the points on each side of the file the same size, taking care to leave enough of the flat produced by the jointer to be seen. See that the cutting edge of each tooth is sharp before leaving it.

It is well during the progress of the work to occa-

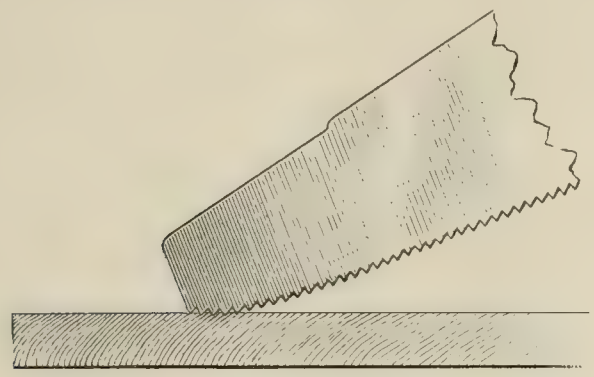
sionally put the file back to the first tooth filed to make sure that the pitch and bevel originally assumed have been maintained. This certainly should be done when it has been necessary to shift the Saw in the clamp or after laying the file down for any cause.

After filing one side of the Saw in the way described turn the Saw "end for end" and file the other side in the same manner, but the point of the teeth must be watched very carefully, for even a small fraction of a stroke of the file, after the tooth has been brought to a point, will reduce its length.

The glint on the point of the tooth, *i. e.*, the reflection on the flattened end produced by the jointing, is the only guide for its length, and after that has been lost further filing will be simply guesswork. If after taking the Saw from the clamp the work is not satisfactory, run the jointer very lightly over the ends of the teeth, and after returning the Saw to the clamp touch them up with the file.

**Suggestions.**

A cut-off Saw with its point rounding is not so likely to "catch" when starting the kerf, thus preventing the



bending of the Saw and splintering the wood. A kerf can also be more easily started in the center of a plank without boring for it.

Omitting to set one or more teeth opposite to each other at some point along the Saw, or bending them a little inward will clear the kerf when the regular teeth or those fully set do not clear it fast enough.

The teeth of a Rip Saw are usually made finer at its point than further back, so that the Saw will not be "held up" at its start.

Filing the teeth fleaming at the point and for a short distance back like those of a Cut-off Saw will reduce the danger of a "hold up," and this part of the Saw can be used to cut through knots if encountered on the way.

Saws for coarse work, especially those that may be used to cut diagonally across the grain, as for framing rafters, stair carriages, &c., should be filed with considerable fleam with the cutting edge about at right angles to the line of the teeth.

A Compass or Keyhole Saw should have less hook and more fleam than a Rip or Slitting Saw, but more set than a Cut-off Saw.

## Requests for Catalogues, Etc.

*The trade is given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.*

**REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate:**

FROM THEODORE HARMS & SON, Detroit, Mich., whose store was struck by lightning last month, starting a fire which destroyed the upper part of the building and caused considerable water damage to stock.

FROM A. WESTMAN, London, Ont., whose catalogue files were entirely destroyed in a recent fire.

FROM THE WARREN-SMITH HARDWARE COMPANY, Shawnee, Okla., which has been incorporated by K. H. Warren and others with a capital of $20,000 to conduct a Shelf and Heavy Hardware, Stove, Implement, Paint, Sporting Goods, Plumbing and Electrical Supply business.

FROM BALDWIN HARDWARE COMPANY which has engaged in business in Bay Minetta, Ala., carrying Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints, Oils, Sporting Goods and Furniture. The company has just completed a store building.

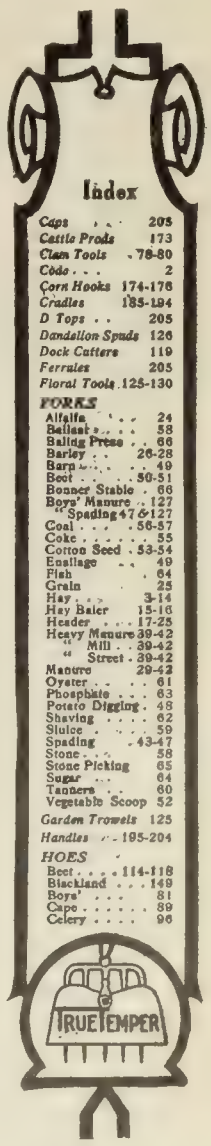
FROM FRANK R. KENDALL & Co., Morgan Park, Ill., who desire catalogues from manufacturers of Builders' Hardware, Tools, House Furnishing Goods, Stoves, Furnaces, Paints, Oil and Glass, Plumbing and Sheet Metal Work.

FROM H. A. LOTSPEICH, who has engaged in the Hardware, Stove, Implement, Paint and Saddlery business at Minatare, Neb.

FROM HAUX HARDWARE COMPANY, Grand Island, Neb., which has been incorporated with an authorized capital of $15,000, to conduct the Shelf Hardware, Stove and Tinware business.

## American Fork & Hoe Company's Catalogue.

A HANDSOME and elaborate new catalogue has been issued by the American Fork & Hoe Company, Cleveland, Ohio. The book is remarkable, not only for its size and scope, but especially for its typographical excellence and the richness of its get-up. It is effectively and tastefully bound, printed in large, clear type on a high grade of calendar paper, and the profuse engravings are of the highest order. Admiration is especially commanded by a number of full page tint plates illustrating the use of the company's different lines of tools. These views partake of the character of nature studies, and are most artistically drawn and colored. There are also excellent views of the factories of the company, with portraits of its officers and managers. All tools are described and listed in full detail, special attention being directed to the "True Temper" trademark, with explanation of the quality for which it stands. A feature of unusual interest and novelty in the arrangement of the catalogue is the incorporation in the page border designs of a marginal index, calculated to facilitate considerably the use of the book in the hands of the trade. As the catalogue lies open one-half of the index appears on the left-hand page, as reproduced in the accompanying illustration, while the balance is similarly printed on the opposite page, so that wherever the book is open a complete index is before the eye. Thus it is possible to turn very quickly from one part of the book to another without referring to a general index. The company is to be congratulated on its catalogue *de luxe*, which will certainly be regarded as one of the most beautiful and artistic in the hands of the trade.




The Goulds Mfg. Company, Seneca Falls, N. Y., has issued a large and striking advertising hanger, on which appear nearly 100 cuts illustrating a part of the company's line of Pumps and Hydraulic Machinery.

Arnold, Hayden & McKee have acquired the business of J. A. Conner in Windsor, Mo., and will handle Shelf and Heavy Hardware.

S. M. Bullington, Sibley, Iowa, has succeeded to the business of Bullington-Ashmore Hardware Company.

## OUR ASSOCIATION.

A PAPER READ BEFORE THE TENNESSEE RETAIL HARDWARE ASSOCIATION BY M. A. WALKER, COVINGTON, TENN.

LAST summer, pursuant to call, a number of retail Hardware merchants of the State met in Nashville and, assisted by the able secretary of the National Retail Hardware Association, perfected this organization. What we lacked in numbers we made up in enthusiastic determination to go to work for the Tennessee branch. I am sure all went home feeling benefited and broadened by the association of two days.

When our forefathers came to this country, they formed themselves into associations for protection of the individual. It was in the big or general association that the Declaration of Independence was promulgated, that established the great Association of the United States of America, and it was in those times that we coined such expressions as "In union there is strength" and "United we stand, divided we fall." It was only through association work that they builded so well, and left to us the splendid heritage which we call "the land of the free and the home of the brave." We are building to better the condition of ourselves and the loved ones at home; so let us go about this in the best and most intelligent manner, and that is through our association.

**Forefathers' Associations.**

The declaration of principles, as outlined in the printed programme, explains fully and open-heartedly the objects of our association and what we stand for. In this day of organization, we buy from organized sellers, pay the freight to organized transportation companies, and we sell the goods to organized farmers. Unless we organize for our protection in the right, we may be run over and flattened out by the steam roller of organized opposition. Join and support our association.

**Look Out for the Steam Roller.**

I believe that one of the greatest and most direct benefits to be obtained in our association will be the better understanding between competitors in the same town, which will prevent their cut-throat competition against each other, and I think if this meeting has done no more than to bring about such a condition, it has been indeed a success. The party who gets the benefit of this class of price cutting is often not your good customer or your competitor's good customer, who deserves best consideration, but some "shopper," who makes it a business to come to town early, and go from store to store, pricing goods, often conveying the wrong impression as to price your competitor quoted him. I had rather sell goods at less profit all along the line, and have an established price understanding, as far as possible, with my competitor, than be annoyed and harassed by some of these shoppers all day. We could then operate on less clerk hire, or the force could be working in stock.

**Better Understanding Between Competitors.**

Often a man's business may seem dull and uninteresting to him because of the narrow and contracted view he takes of it. Come to the association meeting; join in what is said and done. Give us your views. Keep the association spirit up after you go home, and this is the way to perpetuate the organization and make it result in good.

It is said of Old Hickory, that, at the battle of New Orleans, when a native came up and reported that the soldiers had appropriated one of his pigs, the old general replied by asking him if he had a gun. The man answered that he had not, whereupon the general called out, "Guard, give this man a gun and put him in the ranks."

**Join the Ranks and Get to Work.**

His measures were drastic, but we know how well he won the battle. If you are losing interest in your business, trade not what it used to be, catalogue houses bother you, and you haven't that joy you once experienced in business—not making money; if you come to us with your troubles, we tell you to join the association, get in the ranks and go to work.

If you are not informed, you will be surprised to know what good has been accomplished recently through association work. The fight against the iniquitous Parcel Post bill was led by the National Retail Hardware Association, of which our association is an affiliated part; discontinuance of the practice of allowing shippers to paste large advertising signs on the outside of freight cars, and a number of other needed reforms, have been accomplished through association efforts. Last, but by no means least, it helps to raise a man's own business in his own estimation.

Once an humble hod carrier was seen gazing intently on a magnificent cathedral that had cost millions of money and many years to complete, when a tourist remarked on its beauty. The humble hod carrier said, "Yes, and I am proud of it, too." "Why, what interest have you in such a structure?" "Ah," replied the humble hod carrier, "I carried the mortar that holds together one of the corners in the tower"; and so, when we see good results from the efforts of the association, we can each, very proudly, say, "I helped to do that." To the Hardware men of Tennessee, from Carter to Shelby, I say to you, that if you would be healthy, wealthy and wise, join and give your hearty support to our association.

**Each Can Do His Part.**

## Price-Lists, Circulars, Etc.

*Manufacturers in Hardware and related lines are requested to send us copies of Catalogues, price-lists, &c., for our Catalogue Department in New York; and at the same time to call attention to any new goods or additions to their lines, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.*

CONSOLIDATED MFG. COMPANY, Toledo, Ohio: Illustrated catalogue covering an extensive variety of drop forgings, which are produced for machine tool builders, and cutlery, gun, bicycle, automobile and electrical appliance manufacturers. The illustrations show a number of stock dies and finished forgings indicating the class of work done.

IMPERIAL BRASS MFG. COMPANY, Chicago: Illustrated catalogue of Imperial Hand, Air or Oil Pumps, Compression Couplings, Tanks, Cocks and other Automobile and Motor Boat Brass Specialties.

HARDWARE SUPPLY COMPANY, Grand Rapids, Mich.: Illustrated booklet descriptive of the Newform line of Garment Hangers.

BARNEY & BERRY, INC., Springfield, Mass.: 1908-1909 catalogue illustrating, with prices, Ice Skates, Ankle Supports, Straps, Keys and Plates, and Leather Cloth Lined Skate Bags. Additions to the line include a Half Hockey Skate, with ribbed blade; a low priced all-clamp key Skate and an Ankle Support for ladies' Skates, with broad heel strap.

GEO. KRAUSE HARDWARE COMPANY, Lebanon, Pa: Booklet illustrating and listing a variety of fall and winter goods and specialties.

COLT'S PATENT FIREARMS MFG. COMPANY, Hartford, Conn.: Handy illustrated catalogue of Revolvers and Automatic Pistols, giving full detailed information regarding each arm, together with general information of value and a complete illustrated price-list of parts.

ERIEZ STOVE & MFG. COMPANY, Erie Pa.: Illustrated folder of the Eriez Sectional Gas Burners for Ranges and Cook Stoves. The three-way Burner heats the oven and two front lids, and the four-way Burner heats oven, water front and two front lids.

Heaston Bros. have purchased the business of L. D. Gray in Holmesville, Neb., and will handle Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Sporting Goods, Lumber, Coal and Cement.

Else & Hoover, Downs, Kan., have sold their Hardware, Stove, Implement, Paint and Sporting Goods business to John A. Dick, who has moved it to Luray, Kan.

# POINTERS ON HARDWARE FREIGHTS.

THE merchant who pays freight bills without checking them to see that they are correct will lose a considerable sum of money in the course of a year. This is particularly true in the Hardware trade. Hardware is shipped at four or five classes of rates in carload and in less than carload lots, and one shipment may include all of these classes. The entire shipment may be billed at the highest rate, when, in many cases, each class of goods should be billed at the rate provided for it. When articles of two or more classes are packed in one box or case, the rules of the railroads provide that the rate charged shall be that of the article taking the highest class, but where they are packed in separate boxes each box or package should pay the rate of the article which it contains, provided the shipment amounts to 100 lb. or more.

**Checking Freight Bills a Profitable Precaution.**

---

A few illustrations will show the wide variation in rates on articles handled by Hardware merchants. Bird Cages and light bulky articles pay three times the first-class rate in the Official Classification, which covers the Northern States east of the Mississippi. Stove Pipe in bundles is rated "D1," or double the first-class rate, but when crated pays one and one-half first class. Milk and Garbage Cans, Furnace Pipe and other articles of the same bulky character pay one and one-half first class. On the other hand, Bolts, Nails, Wire in coils and other heavy articles are rated at fourth class. The first class rate is usually double the fourth class rate.

**Wide Variation in Rates on Hardware Articles.**

---

Any merchant who has not looked into the question of rates on small shipments could well spend an hour or two on a rainy day in looking over a copy of the railroad classification, which can usually be obtained from the local agent. Many economies may be found in placing orders so as to take advantage of the best rates. The railroads, for example, make a minimum charge of the first class rate on 100 lb., provided this is not less than 25 cents, so that it costs no more to ship 100 lb. than 25 or 50 lb. Where an order is for more than 100 lb. there is economy in a mixed order in having enough of each class to make a separate box or package, so that each class will be charged at the proper rate, instead of all being billed at the highest rate, and there is no point that should be checked more carefully in freight bills than to see that the rules have been followed. The billing clerks of the railroads receive small salaries, and it is easier for them to make one item of a shipment than to separate it into classes.

**Bearing Freight Rates in Mind When Placing Orders.**

---

Many mistakes are made by the railroad billing clerks in classifying freight by charging a higher class than the one that should be applied. There are more than 10,000 articles of merchandise listed in the railroad classifications in the different forms in which they are packed and shipped, and more than 1000 of them are handled by Hardware merchants. The billing clerks rely too much upon memory, instead of taking time to check each item by the classification, and it is a little too much for any one to carry in his head at $40 or $50 a month salary.

**Railroad Billing Clerks Rely Too Much on Memory.**

---

The theory of railroad classifications is an interesting subject for rainy day consideration. If there were only two railroad stations in the world it would be a simple matter for a railroad to make a separate rate in cents per 100 lb. for every article it handles. There are, however, nearly 100,000 stations in the United States, Canada and Mexico, and the railroads which ship to and from these stations carry some 10,000 different articles of freight. The classification, which is arranged in alphabetical form and carefully indexed, divides all these articles into a few classes. In the Official Classification, which covers the Northern States east of the Mississippi, there are five regular classes, the first being the highest and the fifth the lowest, these covering both carload and less than carload rates. In the Western Classification there are ten classes, five for less than carload shipments, and five for carload freight. The Southern Classification covers the territory south of the Ohio River. These documents are published by the railroads in the form of paper bound books, and are revised and reprinted twice a year. The interstate commerce law makes it unlawful for a railroad to carry any article not mentioned in these classifications, unless a separate "commodity" tariff has been published to provide for it. The law does not require the railroads to furnish shippers copies of these classifications or their tariffs, but they always do it on request as an act of courtesy. The Interstate Commerce Commission has not as yet made any rule requiring the roads to charge shippers for copies of tariffs, but this is one of the possibilities of the future, as the Commission has already discovered for the railroads many sources of revenue which they had overlooked.

**The Different Classifications.**

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The classification has simplified for the railroads the work of publishing rates. Their "book" tariffs of class rates do not mention any commodities, but merely print in parallel columns the class rates that apply to or from any town or group of towns. Every merchant should have a copy of the classification which applies in his territory, but it is scarcely necessary to keep a file of the tariffs. A simpler plan is to spend a few moments with the local agent in copying on a card the class rates which apply to his station from the principal points where the merchant obtains his goods.

**Copying Class Rates a Simple Plan.**

---

The law has made a considerable increase in the average rates paid on Hardware by requiring that every word in a classification or tariff shall be enforced to the letter. In former years a box of mixed Hardware could be shipped at the rate of the principal article in it, and the railroads were liberal and accommodating to jobbers in the interpretation of their rules. Now, a few pounds of Plated Cutlery in a box or case raises the rate of the entire contents of the box to first class in eastern territory and one and one-half first class in the Western classification. Both the shipper and the railroad would be liable to prosecution for "false billing" if the letter of the tariff were not observed; and the railroads employ inspectors who open boxes and packages to see that the contents are accurately described.

**Letter of Freight Tariff Must Be Observed.**

---

Many controversies arise where the inspector places a different interpretation on a word or clause in the classification. As an instance: A manufacturer of Automobile Lamps had always shipped his goods as Lamps, but a lynx eyed inspector of one of the Transcontinental roads discovered that they complied literally to the description of Navy Searchlights, and the rate was raised to about four times the figure that the shipper had always paid.

**An Example of Expensive Interpretation.**

---

It is useless, in these modern days of Government regulation, to ask a railroad for any allowance or exception from the printed classifications and tariffs. The law must be enforced to the letter, regardless of the loss, from a business point of view, which a shipper may sustain. If the charge made is so excessive as to be beyond reason, the Interstate Commerce Commission can correct it, and order a refund on ship-

**The Matter of Excessive Charges.**

ments made within two years, but the charge must be paid at the time if the tariff requires it.

No one should hesitate, however, to appeal to the Commission. While the eminent commissioners have made many mistakes, and they and their law have caused an enormous amount of trouble in the shipping world, the smallest shipper can get their attention without employing a lawyer, by simply stating the facts and asking reparation. Nearly all of these cases of injustice to an individual shipper are handled as "informal complaints," and if a shipper who makes a complaint does not furnish enough evidence the Commission, through its secretary or one of its staff of auditors, will inform him what is necessary in the way of evidence.

**Appeals to the Commission Received with Attention.**

Wherever a railroad on a local L. C. L. shipment has charged more than its tariff rate, the consignee should refuse to pay the overcharge. Nearly all railroads authorize their agents to "correct the billing" on local shipments, when there is an overcharge. The agent does not like to do it. He would rather dodge the responsibility by collecting the amount billed and making the merchant work for six months or a year to get the money back from the claim department. Local agents are often mere boys, who have had no business experience, and they cannot afford to take chances with any shipper who might take advantage of them. Most of the railroads have adopted a villainous rule of requiring the agent to pay out of his $40 salary for any mistake that he makes in not charging enough, and it is important to have the boy feel sure that you will protect him if it should afterward prove that you are wrong. These overcharges are usually small in amount, but they are well saved if taken care of at the time, without having to spend $10 to recover 50 cents from the claim department.

**Merchant's Duty as to Overcharges.**

## An Advertising Pay Envelope.

THE accompanying illustration shows the front of a Manila envelope used as an advertising feature by Schroeter Bros. Hardware Company, St. Louis, Mo. It is made of tough paper, being intended primarily as a pay envelope, and a blank will be observed at the top for filling in the employee's name and the numbers of hours worked. The company furnishes the envelopes to factories who employ mechanics, and undoubtedly benefits materially by keeping its name prominently in mind among wage earners of this class. It also uses them in its own establishment for inclosing small articles sold. On the back of the envelope and also on the flap space is found for additional advertising matter which on the copy in hand relates to the Keen Kutter Safety Razor. Other lines are doubtless featured, as the envelopes are printed from time to time.




*Pay Envelope, Issued for Advertising Purposes by Schroeter Bros. Hardware Company.*

Goddyne & Schindler, Bay City, Mich., Shelf and Heavy Hardware, Stoves, Implements, &c., will occupy a new two-story and basement building 45 x 100 ft. of brick and stone now being erected at 1711-1715 Third street.

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# CATALOGUE SYSTEM OF O. C. ALDERMAN.

REFERENCE has previously been made in these columns to the attractive modern Hardware store of O. C. Alderman, Springfield, Mass. Not only is his establishment an example of good arrangement but his business methods are efficient and systematic. The system employed for filing and indexing, catalogues and other printed matter is especially interesting because of its simplicity and practical adaptability to the needs of the average Hardware merchant.

### The Furniture Required

is illustrated in Fig. 1, the arrangement, however, for convenience in reproduction being altered somewhat from



*Fig. 1.—Catalogue Files of O. C. Alderman, Springfield, Mass.*

that actually employed by the firm. It consists of a cabinet of large drawers perhaps 3 ft. wide by 4 ft. high, and several smaller filing drawers, which will be seen on top of the cabinet. Above is shown a section of shelf space, a few feet being required for the accommodation of large bound catalogues. There are also a couple of index drawers, one under "manufacturers" and the other under "goods."

The shelf space referred to is divided into lettered compartments containing three or four books each, which

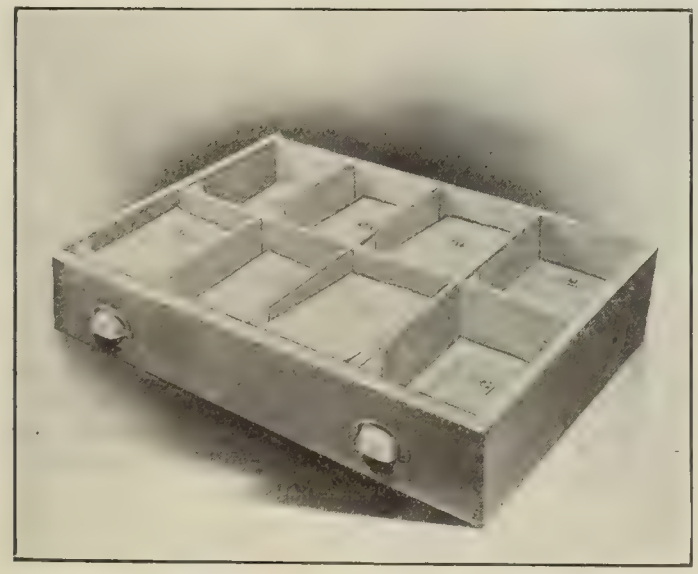


*Fig 2.—Compartment Drawer in Cabinet.*

are marked with a paster bearing the letter of the compartment in which they belong. This letter is all that need be used in indexing, as in the case of the Disston catalogue on the card reproduced in Fig. 3.

One of the large drawers in the main cabinet is reproduced in Fig. 2. These are numbered consecutively, and are divided into compartments, also numbered, about the size of the average catalogue. As the drawers are perhaps 6 in. deep the compartments will accommodate several books. Each is marked with a paster indicating its place, and similar pasters are used in numbering the compartments, as indicated in the illustration.

### A Feature of the System

is that catalogues of manufacturers of the same lines are kept as nearly as possible in the same compartment, thus greatly facilitating comparison, which is frequently necessary. For instance, from the index card giving manufacturers of Screw Drivers (Fig. 3) it will be seen

SUBJECT Drivers Screw

| NAME | ADDRESS | DR. NO. | CAT. NO. | PAGE |
|---|---|---|---|---|
| Brownsdorf-Mudler Co | Elizabeth N.J. | | | 110 |
| H. Disston & Sons | Philadelphia | | H | |
| Duncharme & Co | Shelburne Falls Mass | 1 | 3 | |
| Goodell-Pratt Co | Greenfield Mass | 1 | 3 | |
| Hunwood Mfg Co | Bridgeport Conn | 1 | 3 | |
| H. H. Mayhew Co | Shelburne Falls Mass | 1 | 3 | |

*Fig. 3.—Index Card Referring to Goods.*

that the catalogues of four of the six concerns listed are in drawer No. 1, compartment 3. Of the other two, one is the Disston catalogue, which is on the shelf in compartment H, the other is a small booklet, which may be filed in the small drawers appearing on top of the cabinet (Fig. 1), one of which is reproduced separately in Fig. 4.

### Small Drawers for Booklets, Circulars, Etc.

These drawers are on the order of vertical files, divided by numbered tab sheets, as indicated. They are

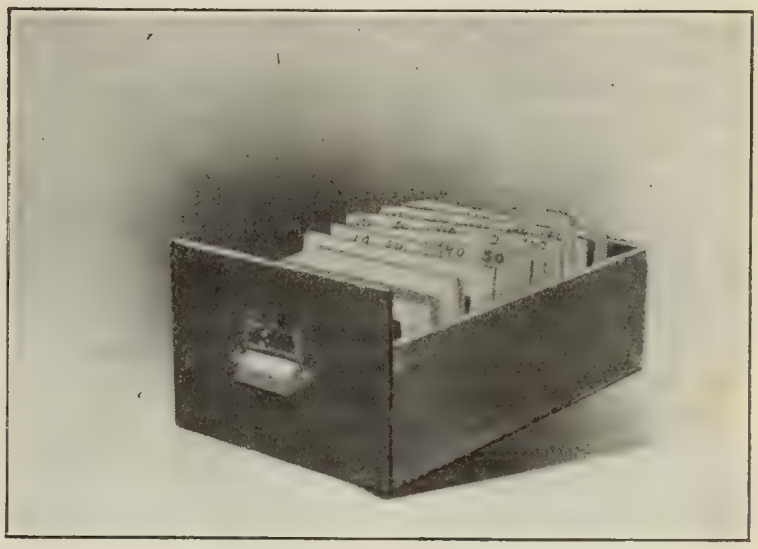


*Fig. 4.—File Drawer for Circulars, Booklets, &c.*

intended for the accommodation of small booklets, pamphlets, circulars, price-lists, &c. In practice it is found convenient to number the tab sheets by tens, and the drawers are marked on the front to show the range of the numbers which they include.

The description may be concluded with a reference to the card from the manufacturers' index, reproduced

NAME Goodell-Pratt Co | DR. NO 1 | CAT NO. 3

ADDRESS Greenfield Mass

ARTICLES

Automatic & Hand Drills
Bench Drills
Automatic Screw Drivers

*Fig. 5.—Manufacturers' Index Card.*

in Fig. 5. These give the address of the concern, the location of their printed matter on file and a more or less complete list indicating the lines they manufacture, which are handled by the firm.

# THE TRAVELING SALESMAN AND HIS DUTY TO HIS CUSTOMER.

A PAPER BY CHARLES F. WEILAND, DALLAS, TEXAS.

THERE are several essentials necessary for success in the relations between the traveling salesman and his customer. There should be a friendly feeling between them. The salesman should be absolutely honest with the customer, and honesty on his part requires honesty on the part of the customer. When this condition prevails there is a tie that binds them together in bonds of friendship and confidence.

Some customers complain that they have been deceived by the salesman, and the very same salesman proclaims in strenuous tones that the customer has been false with him. The question then is, "Who offends the most?" That is, who first practiced to deceive, for there would have been no deceit on either side had not one violated the confidence of the other; so that when discovered the one proceeds to throw the "hooks" into the offending one, and each ever afterward mistrusts the other.

**What Is the Remedy**

for this condition of affairs, for no salesman or manufacturer permitting deception on the part of the salesman can be successful who practices and becomes accomplished in the arts of lying, for deception is nothing else but a false representation which is made either by spoken words or by remaining silent when one ought to speak, and a false representation made with the intention of being acted upon, no matter how made, is nothing else but a lie. The remedy lies solely in the customer. If the salesman has lied to you and deceived you, it is your duty to cease having anything to do with such a man in any way, either by purchasing goods or in a social relation. The customer holds the key. Stop your patronage with the liar and he will lose his employment.

**As a General Rule**

a traveling man is honest. If he be false to you he will lie to his employer, and if he lies to his employer he loses his position. As I have already stated, the customer holds the key to the situation. Be honest with the salesman, and if he be false to you have no further dealings with him. This will raise the standard, and if the standard is raised no one benefits so much therefrom as the customer.

Another view of the question is that honesty and fair dealing on the part of both customer and salesman makes the customer's credit better. The head of the factory represented by the salesman cannot make your personal acquaintance, consequently he must, to a great extent, depend upon one of his traveling salesmen, and if his salesman reports on you favorably his report shares equal rank, if not somewhat greater than that of Bradstreet and Dun, and upon it, to a great extent, is the customer's credit based. It is not the duty of the salesman in order to land an order to "knock" his competitor's goods. "Knocking" and malicious lying may secure an order, but in the end retribution will surely follow. If the salesman's goods will not sell upon their merits, pointing out alleged defects in a competitor's goods does not increase the merits of his. They are as good as they are made and no statements make them of greater value, and because the Bamboozle Buggy Company makes a bad buggy does not make your buggy a good one. That firm may produce 1000 bad buggies; this fact does not make your firm produce a good one. It is the duty of the salesman to sell his goods on their merits alone. Sell them as if you expected to sell the same person forever after; don't proceed upon the theory that you will be satisfied if you can only "do" the customer once.

Thus you can see that the duties of the traveling salesman are so closely entwined with that of the customer that a proper discussion of one suggests the other.

**Among Many Complaints of the Salesman**

is the fact that the customer does not give him a square deal, he is looked upon as a convenient evil, instead of a business man whose time is as valuable and who has appointments to meet as any you have. Give him a square deal, treat him as a business man whose time is valuable. You will save money thereby and make a better bargain. If one of your clerks should treat a customer as some dealers do the salesman (although I am pleased to say that cases of extreme flagrant indifference are rare) you would be put into bankruptcy within 60 days after embarking into business.

**Reciprocating Favors.**

Another thing. It is proper for the salesman to promise a customer to protect him in a certain territory and sell no one else within those limits. That faithful compliance with this duty on the part of the manufacturer involves an equal duty on the part of the customer. If favorable terms are granted by the manufacturer through these salesmen, the customer should favor the one who favored him. If you have anything to buy, buy it from the ones who favored you, your proved friends. The customer who violates this rule is known among traveling salesmen as a "piker," and his credit is bad, and in the financial stress like the present he is the first to be "called."

A traveling salesman is false to you and his employer if he unloads a big order on you and then crosses the street and sells to your competitors to fight you. If he does this he is not true and fair with you. When he finds that you are not selling enough of his goods, instead of telling you so and protecting you in your unsold stock, goes across the street and sells to a man to fight you, he is false. If he intends not to furnish you any more of his goods he should tell you so in time and let you dispose of your goods, and then sell to the other fellow.

## Sporting Goods Window Trim.

IN keeping with the tendency on the part of manufacturers to assist retailers in the sale of their goods, the M. Hartley Company, 313-315 Broadway, New York, sole representative of the Union Metallic Cartridge Company and Remington Arms Company, has just prepared for gratuitous distribution among Hardware merchants and all houses handling Fire Arms, Ammunition and Sportsmen's Supplies, a unique and attractive window trim for use in conjunction with Sporting Goods displays, a reproduction of which is here given. It is lithographed in six colors on strong paper, and is designed




*Sporting Goods Window Trim.*

for use on the inner side of a store show window, preferably near the center, laterally if the conditions favor it, or at top if necessary. The extreme dimensions are: Width 6 ft., sides each 4 ft. top to bottom and center 2½ ft. The idea is to provide ready for use a sporting scene with suggestive and helpful advertising matter as an accompaniment to a window appropriately dressed with Shot Guns, Rifles, Revolvers, Ammunition and a general line of Hunters' Goods. The artistic and fetching presentation of the subject is relied on to catch the eye of passers-by, so that attention may then be drawn to the seasonable display of the goods shown in the window. While the pictorial trim primarily refers to the goods manufactured by the above companies, it likewise serves as a selling force for anything in the sportsmen's line. The window trim is in two sheets, divided perpendicularly for ease in handling, showing an English setter dog and quail covey on the left, with a moose running through the woods on the right. "Sportsmen's Headquarters" occupies a panel 36 x 6 in. The sheets are fastened on inside of window by the use of pasters sent with the trim, the whole being securely packed in a strong pasteboard tube 37 x 2¾ in.

## Campaign Specialties.

The Norvell-Shapleigh Hardware Company, St. Louis, Mo., has brought out some specialties for sale during the Presidential campaign season, three of which are

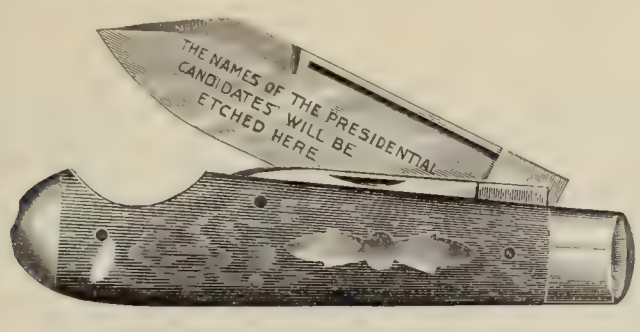



*Fig. 1.—Campaign Pocket Knife to Have Names of Nominees Etched on the Blade.*

illustrated herewith. Fig. 1 shows a Pocket Knife which is to have the name of the Presidential candidate of either party etched on the blade. The Knives will be furnished with cocobolo, ebony, stag or tortoise shell handles. The whips are enameled in red, white and

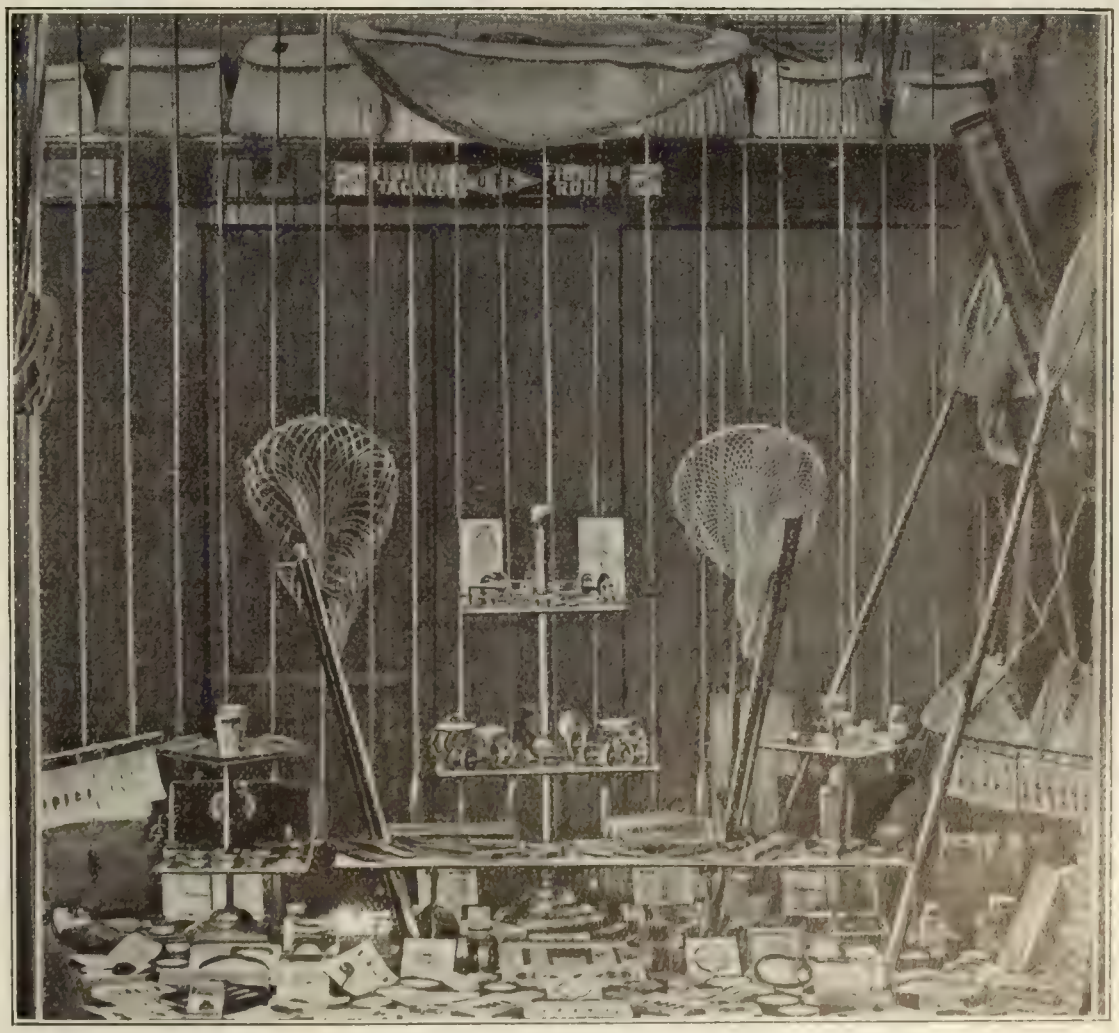



*Fig. 2.—Party Whips for Either Side.*

blue, and bear the pictures of either group of nominees preferred. A merchant would doubtless require a stock of each kind.

## Fishing Tackle Window Exhibit.

THE accompanying illustration is reproduced from a photograph showing an effective display installed in one of the windows of its retail sporting goods store by the Clark-Horrocks Company, Utica. N. Y. The window is 12 ft. high, from 6 to 8 ft. wide, and 6 ft. deep. Tne background is glass, with sliding doors at the bottom, but closed in at the top, the Fish Baskets shown in the illustration being supported by a sort of shelf above the slides. The goods in the window comprise an attractive layout of articles usually included in a display of this kind, such as Rods, Reels, Lines, Leaders, landing Bows, Spoons, Artificial Bait, &c.

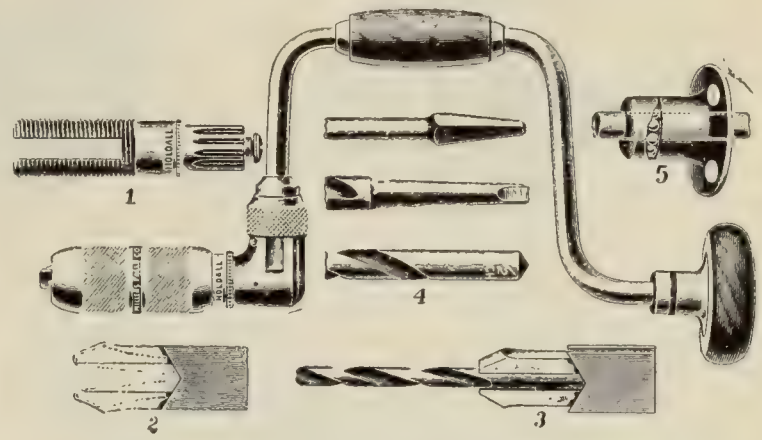



*Fishing Tackle Window of Clark-Horrocks Company.*

WILLIAM A. CRANSTON, Providence, R. I., secretary of the American Screw Company, died suddenly, September 2, aged about 60 years. He was a native of Providence, and his entire business life was passed with the American Screw Company, in the commercial department, where he was employed for 40 years. From the position of office boy he was promoted through successive stages to secretary, which office he had held for a number of years. He was interested in public affairs, and for several years served as a member of the Providence School Committee. A week before his death he was elected president of the Pawtucket Old Home and Improvement Association, made up of residents of a suburb in which he made his home. He was an Odd Fellow, and was actively interested in the work of the Pawtucket Baptist Church.

## Holdall Bit Brace.

The Millers Falls Company, Millers Falls, Mass., has added to its line the bit brace here illustrated, embodying the Holdall chuck, which, it is said, will hold with equal accuracy and tenacity a great variety of shanks, straight or taper, round or square, from 7-64 to ½ in. in diameter. The tool is constructed on carefully studied scientific lines. A feature is the covered ratchet ring. The jaws and ratchet dogs are made from drop steel forgings. The

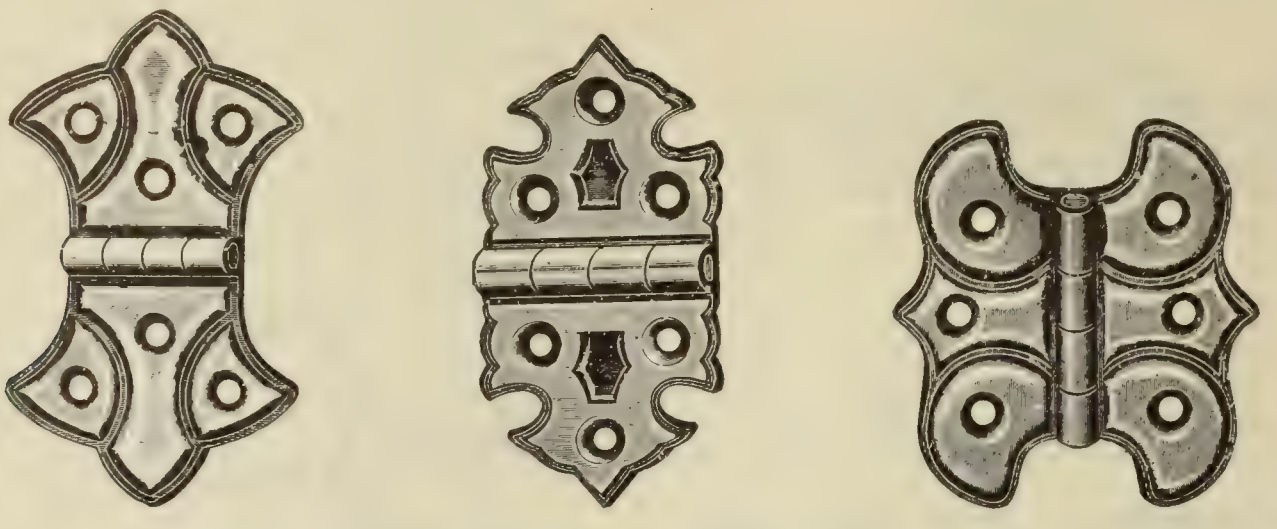



*Holdall Brace, Parts and Shanks Accommodated.*

shape of the nut is new in design and its construction is strong and calculated to fit the hand. The illustration shows the various parts of the tool, which are indicated by number. One is the socket, made of solid bar steel and said to be unbreakable; 2 shows the jaws, which open exactly parallel unless a tapering shank is to be held, when they adjust themselves to its shape, as shown by the dotted lines, while 3 shows the jaws grasping a ⅜-in. shank twist drill. A few of the styles of shanks which the chuck will hold are shown above No. 4, while 5 illustrates the quill with bearing. Four sizes are made—8, 10, 12 and 14 in. sweep. They are put up one-sixth dozen in a pasteboard box.

## Embossed Hinges.

In the accompanying illustrations are shown three new designs of embossed wrought hinges made by the Brainerd Mfg. Company, East Rochester. N. Y. The illustrations are two-thirds size. The hinges are furnished in polished brass, dull brass and old copper, as well as in corresponding finishes of steel. They are described by the company as attractive in design, ornamental, and affording a much better finish for a surface hinge than the flat hinges, which they are intended to supplant. They are packed with or without screws, one and three dozen in a box.



*Three Designs of Brainerd Mfg. Company's Embossed Hinges.*

## Additions to the Barney & Berry's Line.

The skates and ankle support shown herewith are recent additions to the line made by Barney & Berry, [illegible], Springfield, Mass. In Fig. 1 is illustrated a half hockey skate with ribbed blade, made only in the manufacturer's highest grade, 3. This is recommended to all classes of skaters who appreciate a light skate, the right form for figure work or graceful skating. The low priced skate F, shown in Fig. 2, has the regular rock blade and key clamp fastening at toe and heel. It is remarked that because this fastening proved so popular in connection with the hockey skates, in order to meet the demand it has been furnished on skate F. The line of ankle supports has been extended to include one suitable to attach to ladies' skates having the broad heel strap, as shown in Fig. 3. To attach the support it is necessary to drill two holes and fasten with the rivets furnished. The point is made that the operating joint of the support is in proper relation to the ankle of the wearer.



*Fig. 1.—Half Hockey with Ribbed Blade.*

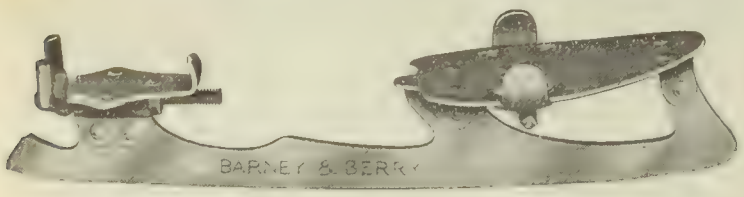



*Fig. 2.—Low Priced Rock Blade Skate F.*

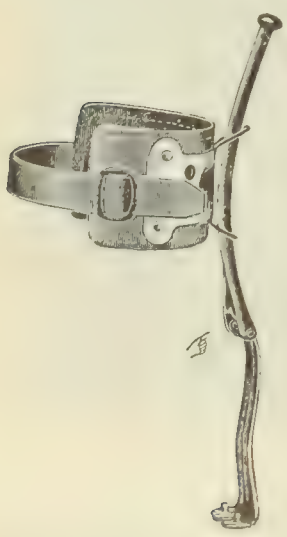


*Fig. 3.—Model B. Ankle Support for Ladies' Ordinary Skates.*

## The Two-in-One Safety Razor.

A feature of the safety razor here shown is that it uses both the thin wafer blade and the heavier hollow ground blade on the same frame, while the razor is adjustable to a light or close shave by a turn of the handle. No 1, Fig. 1, represents the frame holding a nonflexible wafer blade, and No. 2 shows a hollow ground blade in the same frame. In Fig. 2 the separate parts of the razor are illustrated. A is the hollow ground blade, B the frame, C the handle, D the wafer blade partly inserted in the blade holder, and E the stropper. The device is referred to by the manufacturer as strictly high grade in quality of material, workmanship and finish. The frame is of solid metal, triple silver plated, and is put up in a triple nickel plated metal case, velvet lined. Each set consists of the razor frame, stropper, six wafer blades and one hollow ground blade. The blades are described as being made from the highest grade of imported razor steel, and in manufacturing each blade is handled singly, great care being taken in tempering, hardening, finishing and sharpening each one. The razor is put on the market by the Two-in-One Safety Razor Company, Home Life Building, Washington, D. C.



No. 1. No. 2.

*Fig. 1.—The Two-in-One Safety Razor.*

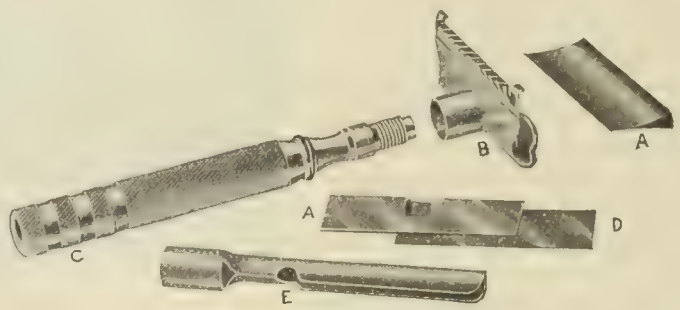



*Fig. 2.—Two-in-One Safety Razor Taken Apart.*

## Combination Cabinets and Benches.

The combination cabinet and combined bench and lathe illustrated herewith have recently been designed for home and manual training purposes and are

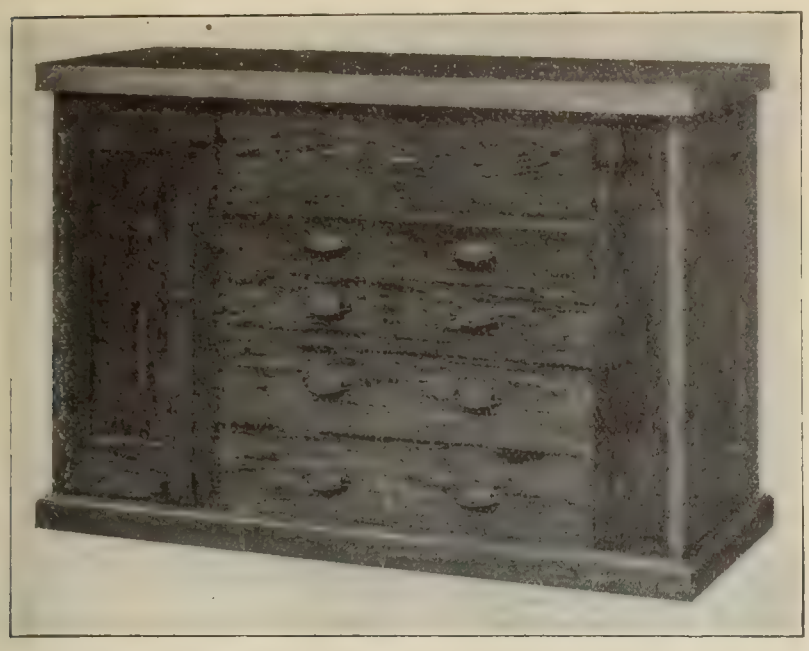


*Fig. 1.—Orlock Combination Cabinet, No. 50.*

put on the market by the Orr & Lockett Hardware Company, 71-73 Randolph street, Chicago, Ill. The cabinet illustrated in Figs. 1 and 2 is designed especially for those who live in apartment houses, where they have no

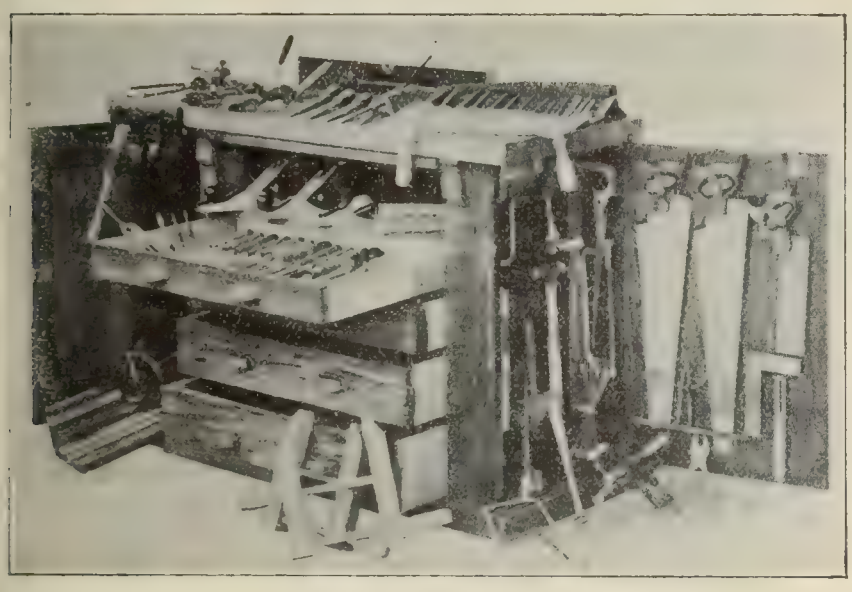


*Fig. 2.—Orlock Cabinet with Tools Exposed.*

work shop or place to set a bench, and can also be employed as a kitchen table or sideboard. The top of the bench is made of maple strips glued together to prevent

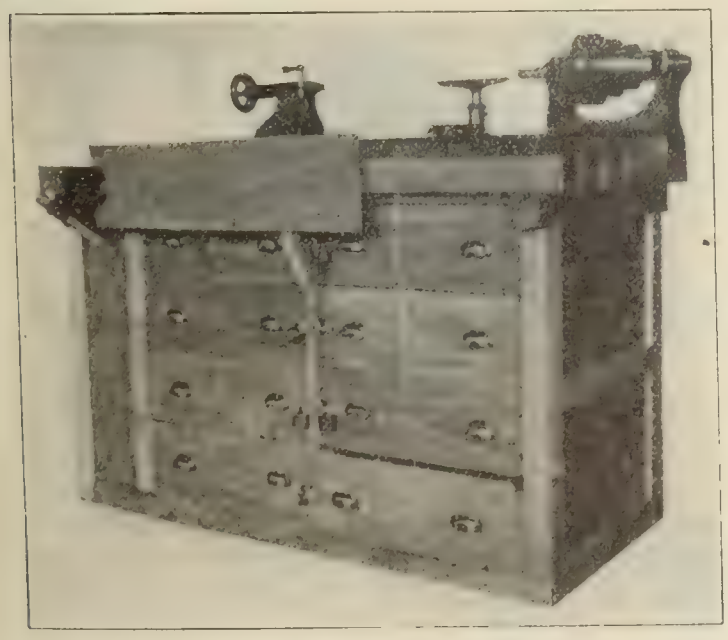


*Fig. 3. Selden's Combined Bench and Lathe.*

warping. The cabinet is made of oak, nicely finished in golden oak. The cabinet is 48 in. long, 20 in. wide and 33 in. high. It is made to contain nearly 70 tools, and the shipping weight with tools is 300 lb.; without tools, 200 lb. The combination bench and lathe, Fig. 3, enables one instructor to teach both woodwork and woodturning in the same room, thus economizing time and expense. There are no partitions between the drawers. The locking device insures safety, as no scholar can take his drawer out of the bench and pilfer from below, but the teacher can remove any drawer desired in case a drawer should stick or a pupil forget to bring his key. The drawers are large and commodious. There is a large space under the lathe for turned legs and long pieces, and a cupboard on the wall can be dispensed with and scholars kept at the bench, avoiding confusion.

## The Thor Electric Washer and Wringer.

The Hurley Machine Company, 153-159 S. Jefferson street, Chicago, Ill., is offering the electrically operated washing and wringing machine herewith illustrated. The machine, with the aid of the current from an ordinary incandescent lamp socket, does all the work of washing and wringing. It will, the company states, do an ordinary family washing in an hour at a cost for power of 2 cents or less. A 1-16 power motor is employed for running the machine. It is of the inclosed type, which keeps water out and protects it from mechanical injury. The revolving cylinder, Fig. 2, is belt driven, while the wringer is positive drive. All gears are inclosed. The wringer and cylinder operate independently, with control of either at the option of the user. The cylinder is made



*Fig. 1.—Thor Electric Washer and Wringer.*

of selected wood and contains not a screw or nail head that might stain or rust clothes. Inside are five wooden carriers running the full length of the cylinder. The



*Fig. 2.—Cylinder of the Thor Electric Washer.*

carriers, with each revolution, are designed to take some of the clothes to the top and then drop them back into the hot suds, spreading them out in a new position each time, so that all parts of the garments may be exposed to the circulating water that pours through the perforations in the surface of the cylinder. It is declared that it is not even necessary to rub the wrist or collar bands when using the machine. A small heater underneath the

machine keeps the water at the right temperature, thus effecting a saving in time, labor and soap. The wringer is heavy, ball bearing, and is started and stopped by simply touching a small knob. The rolls are guaranteed for five years and are designed to wring anything, from dainty laces to heavy woolens or blankets. The simplicity of the machine throughout is especially emphasized by the company.

## Lane's Trolley Parlor Door Hangers and Track.

The accompanying illustrations represent new styles of trolley parlor door hangers to be used on special trolley track, put on the market by Lane Brothers Company, Poughkeepsie, N. Y. The line of hangers embraces four

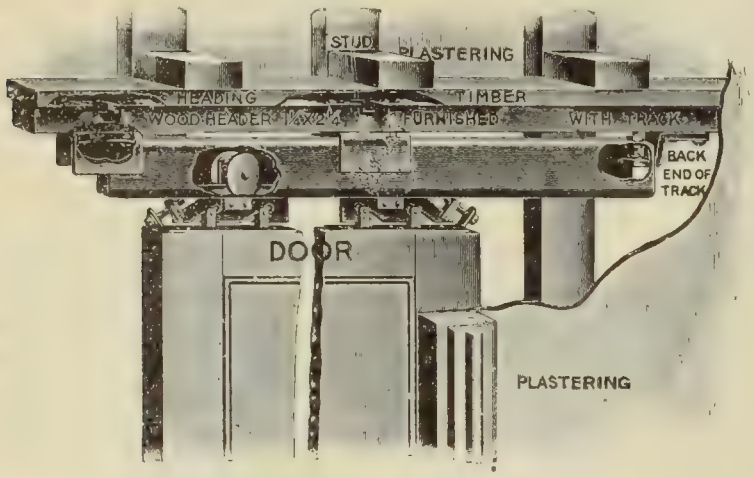



*Fig. 1.—Lane's Trolley Parlor Door Hangers and Track.*

distinct styles, two of which are shown in Figs. 2 and 3, embracing the rigid and adjustable pendant types. Each one of these hangers is made with either single or double trucks, No. 106 single truck, corresponding in style to No. 107 double truck, and No. 108 single truck corresponding to No. 109 double truck. All wheels are fibre,

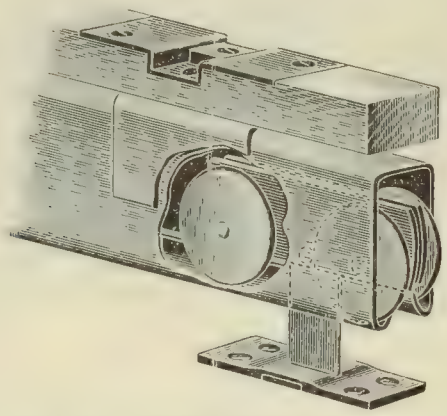


*Fig. 2.—Lane's Hanger No. 107.*

2 in. in diameter, and are fitted with machined and hardened ball bearings. The distinguishing features of the company's trolley door hanger equipment are the excellence of the bearings and the lateral as well as the

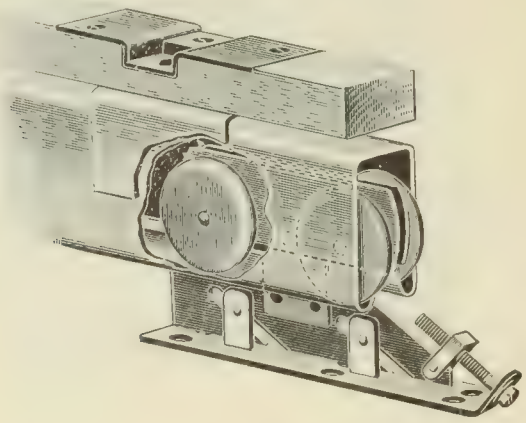


*Fig. 3.—Lane's Hanger No. 109.*

vertical adjustment of the track. The track is adjustable sidewise on the header, either before or after the door is hung. This feature is referred to as being quite as important as its vertical adjustment, and may be availed of at any time to relieve side binding, so frequent from warping, as well as to compensate for slight error in originally locating the header. The adjustment is accomplished by manipulating the clevis holding screws, accessible from the doorway without removing or changing the adjustment of any other parts. The side adjustment, it is explained, is peculiar to this track.

## Dixie Ironing Board.

The John A. Keck Company, Decatur, Ill., is putting on the market the folding ironing board here shown. The woodwork is described as of good material, smoothly

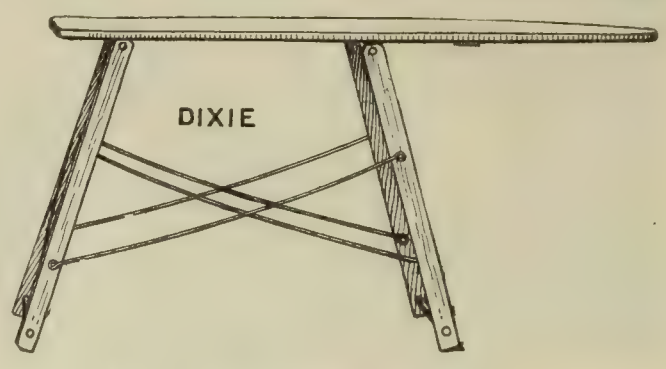



*Fig. 1.—Dixie Ironing Board, Set Up.*

finished and left in its natural state. The top is of basswood and is 15 x 60 in. in size. The frame stands 32 in. high. The braces, which are shown in the illustrations, are made of coppered wire, which looks well and gives lightness combined with strength. They are said to make the board stand firm however the iron is used. Underneath the board proper are two wooden cleats, on which will be found catches for the dowel. These tend to keep the board from warping and form a brace between the two front legs, so that they cannot slide from

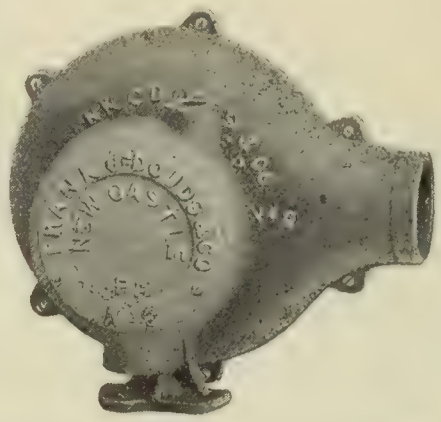


*Fig. 2.—Dixie Ironing Board, Folded.*

one side of the board to the other. They also make the board adustable, varying its hight from 2 to 3 in. The dowel adjusted to the second cleat makes a long extension, which may be used without lifting the top. When not in use the board can be folded flat and hung by its top dowel to the wall.

## Combined Water Motor and Fan Blower.

Frank C. Douds & Co., New Castle, Pa., is manufacturing the turbine water motor and fan blower shown in the accompanying illustration. It combines the company's standard water motor direct connected with its centrifugal fan blower, and is intended for blowing individual



*Turbine Water Motor and Fan Blower.*

forges and blacksmith fires. For this work it requires only the ordinary city water pressure, and it will perform any similar service requiring equal blast. The pressure is regulated by a valve on the motor inlet. The machine will save a workman the monotonous labor of working a geared fan or bellows, the only expense being the nominal cost of water to run it. Each machine is crated separately and shipped complete ready for attaching to pipes.

## The O. K. Gopher Trap.

A late addition made to the line of traps manufactured by the Abingdon Trap Company, Abingdon, Ill., is




*The O. K. Gopher Trap.*

here illustrated. It is designed for the destruction of the pocket gopher, a pest whose burrowings are particularly annoying to gardeners and farmers. The trap is exceedingly simple in its construction, and is said to be quite effective in disposing of these elusive rodents. The manner of its operation is shown in the accompanying illustration. The dotted lines represent the position of the wire loop when the trap is set. It is held in place by a trigger which is connected with a wire extending downward into the body of the trap and is released when the gopher comes in contact with this wire. The trap is built with box sides, as shown in the illustration, or is furnished uninclosed, without sides, in either of which forms it is said to be equally effective. It is recommended that the trap should be placed in a fresh opening where the gopher has recently come to the surface, which is indicated by the freshness of the dirt thrown out.

WIEDENBECK, DOBELIN & Co., Madison, Wis., jobbers of iron and steel, wagon makers' and blacksmiths' supplies, have recently incorporated with a fully paid up capital stock of $100,000, the officers being T. E. Wiedenbeck, president; Charles W. Dobelin, vice-president; E. Boehmer, secretary; H. J. Brinkhoff, treasurer.

# PAINTS, OILS AND COLORS

### Animal, Fish and Vegetable Oils—

| | ℔ gal. |
|---|---|
| Linseed, State and Western, raw | 43 @45 |
| City, Boiled | 45 @46 |
| City, Raw | 44 @45 |
| Raw, Calcutta, in bbls | 70 @71 |
| Lard, Prime, Winter | 68 @70 |
| Extra No. 1 | 49 @52 |
| No. 1 | 46 @48 |
| Cotton-seed Crude, f.o.b. mill | @.. |
| Summer Yellow, prime | @37½ |
| Summer White | 39½@40 |
| Yellow Winter | 41 @41½ |
| Tallow, Acidless | 56 @58 |
| Menhaden, Brown, Strained | 35 @36 |
| Southern | 25 @.. |
| Light Strained | 35 @36 |
| Bleached Winter | 37 @39 |
| Ex. Bleached Winter | 39 @41 |
| Cocoanut, Ceylon | ℔ lb 6¼@ 6½ |
| Cochin | ℔ lb 6⅞@ 7⅛ |
| Cod, Domestic, Prime | 38 @40 |
| Newfoundland | 40 @42 |
| Red, Elaine | 39 @40 |
| Saponified | ℔ lb 5¾@ 5⅞ |
| Olive, Yellow | 80 @90 |
| Neatsfoot, Prime | 55 @58 |
| Palm, Lagos | ℔ lb 5½@ 6 |

### Mineral Oils—

| | ℔ gal. |
|---|---|
| Black, 29 gravity, 25@30 cold test | 13 @13½ |
| 29 gravity, 15 cold test | 13½@14 |
| Summer | 12½@13 |
| Cylinder, light filtered | 20½@21 |
| Dark, filtered | 18 @19 |
| Paraffine, 903-907 sp. gravity | 14½@15 |
| 903 sp. gravity | 13½@14 |
| 883 sp. gravity | 11 @11½ |
| Red | 13½@14 |

### Miscellaneous—

| | |
|---|---|
| Barytes: | |
| White, Foreign | ℔ ton $18.50@20 50 |
| Amer., floated | ℔ ton 18.00@20 00 |
| Off color | ℔ ton 13.00@16.50 |
| Chalk, in bulk | ℔ ton 3.00@ 3 40 |
| China Clay, Imported | ℔ ton 11.50@18.00 |

| | ℔ gal. |
|---|---|
| Cobalt, Oxide | ℔ 100 lb 1.45@ 2.60 |
| Whiting, Commercial | ℔ 100 lb 42 @52 |
| Gilders | ℔ 100 lb .55@ .60 |
| Ex. Gilders | ℔ 100 lb .60@ .65 |

### Putty, Commercial—

| | ℔ 100 lb |
|---|---|
| In bladders | $1.70 @1.80 |
| In bbls. or tubs | 1.20 @1.45 |
| In 1 lb to 5 lb cans | 2.65 @2.95 |
| In 12½ to 50 lb cans | 1.50 @1.90 |

### Spirits Turpentine—

| | ℔ gal. |
|---|---|
| In Oil bbls | 39 @39½ |
| In machine bbls | 39½@40 |

### Glue—

| | ℔ lb |
|---|---|
| Cabinet | 12 @15 |
| Common Bone | 7½@ 9 |
| Extra White | 18 @24 |
| Fish, liquid, 50 gal. bbls., per gallon | 60 @1.20 |
| Foot Stock, White | 12 @14 |
| Foot Stock, Brown | 9 @11 |
| German Common Hide | 10 @12 |
| German Hide | 12 @18 |
| French | 10 @40 |
| Irish | 13 @16 |
| Low Grade | 10 @12 |
| Medium White | 14 @17 |

### Gum Shellac—

| | ℔ lb |
|---|---|
| Bleached, Commercial | 24 @28 |
| Bone Dry | 30 @35 |
| Button | 30 @40 |
| Diamond I | 46 @47 |
| Fine, Orange | 34 @35 |
| A. C. Garnet | 27 @28 |
| G. A. L. | 20 @21 |
| Kala Button | 18 @19 |
| D. C. | 47 @48 |
| Octagon B | 39 @40 |
| T. N. | 25 @26 |
| V. S. O. | 46 @47 |

### Colors in Oil—

| | ℔ lb |
|---|---|
| Black, Lampblack | 12 @14 |
| Blue, Chinese | 36 @46 |
| Blue, Prussian | 32 @36 |
| Blue, Ultramarine | 13 @16 |
| Brown, Vandyke | 11 @14 |
| Green, Chrome | 12 @16 |
| Green, Paris | @24 |
| Sienna, Raw | 12 @15 |
| Sienna, Burnt | 12 @15 |
| Umber, Raw | 11 @14 |
| Umber, Burnt | 11 @14 |

### White and Red, Lead &c.—

| | ℔ lb |
|---|---|
| Lead, English white, in Oil | 10⅛@10⅜ |
| Lead, American White: | |
| Dry and in Oil, 100, 250 and 500 lb kegs | 7 |
| Dry and in Oil, 25 and 50 lb kegs | 7¼ |
| Dry and in Oil, 12½ lb kegs | 7½ |
| In Oil, 25 lb tin pails | 7½ |
| In Oil, 12½ lb tin pails | 8 |
| In Oil, 1, 2, 3 and 5 lb tin cans, ass't | 9 |
| Red Lead and Litharge: | |
| In 100 lb kegs | 7 |
| In 25 and 50 lb kegs | 7¼ |
| In 12½ lb kegs | 7½ |
| In lots of less than 500 lbs, ½¢ ℔ lb advance over above prices of White and Red Lead and Litharge. | |

Lead, American. Terms: On lots of 500 lbs and over, 60 days, or 2% for cash if paid in 15 days from date of invoice.

### Zinc, Dry—

| | ℔ lb |
|---|---|
| American, dry | 5⅛@ 5⅝ |
| Red Seal (French process) | 6¾@ 7 |
| Green Seal | 7¼@ 7½ |
| German Red Seal (French process) | 6⅝@ 7 |
| Green Seal | 7⅛@ 7⅝ |
| White Seal | 7⅞@ 8¼ |
| French, Red Seal | 8¾@ 8⅞ |
| Green Seal | 10⅜@10⅝ |

### Dry Colors—

| | ℔ lb |
|---|---|
| Black, Carbon | 6½@10 |
| Black Drop, American | 3½@ 8 |
| Black Drop, English | 5 @15 |
| Black, Ivory | 16 @20 |
| Lamp, commercial | 4 @ 6 |
| Blue, Celestial | 4 @ 6 |
| Blue, Chinese | 31 @33 |
| Blue, Prussian | 29 @31 |
| Blue, Ultramarine | 3½@15 |
| Brown, Spanish | ½@ 1 |
| Carmine, No. 40 | $3.10@3 25 |
| Green, Chrome, ordinary | 3½@ 5 |
| Green, Chrome, pure | 17 @25 |
| Ocher, American | ℔ ton $8.50@16.00 |
| American Golden | 2½@ 3¼ |
| French | 1¼@ 2 |
| Foreign Golden | 3 @ 4 |
| Orange Mineral, English | 10 @12 |
| French | 12¾@13 |
| German | 12 @13 |
| American | 9 @10 |
| Red, Indian, English | 4½@ 6 |
| American | 3 @ 3¼ |
| Red, Turkey, English | 4 @10 |
| Red, Tuscan, English | 7 @10 |
| Red, Venetian, Amer. | ℔ 100 lb $0.50@1.25 |
| English | ℔ 100 lb $1.15@1.60 |
| Sienna, Italian, Burnt and Powdered | 3 @ 9 |
| Italian, Raw, Powdered | 3 @ 7 |
| American, Raw | 1½@ 2 |
| American Burnt and Pow'd. | 1½@ 2 |
| Talc, French | ℔ ton $18.00@25.00 |
| American | ℔ ton 15.00@25.00 |
| Terra Alba, French | ℔ 100 lb .90@ 1.00 |
| English | ℔ 100 lb .80@ 1.00 |
| American | ℔ 100 lb, No. 1. .75@ .80 |
| American | ℔ 100 lb, No. 2. .60@ .65 |
| Umber, T'key, Bnt, & Pow. | 2¾@ 3 |
| Turkey, Raw and Powdered | 2¾@ 3 |
| Burnt, American | 1½@ 2 |
| Raw, American | 1½@ 2 |
| Yellow, Chrome, Pure | 13¾@15 |
| Vermilion, American Lead | 7 @25 |
| Quicksilver, bulk | 65 @.. |
| Quicksilver bags | @66 |
| English, Imported | 65 @70 |
| Chinese | $0.90@1.00 |


# THE IRON AGE

*The oldest paper in the world devoted to the interests of the Hardware, Iron, Machinery and Metal Trades, and a standard authority on all matters relating to those branches of industry.*

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# Current Hardware Prices.

**General Goods.**—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

**Special Goods.**—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

**Range of Prices.**—A range of prices is indicated by means of the symbol @. Thus 33⅓ @ 33⅓ & 10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

**Names of Manufacturers.**—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1907, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

**Standard Lists.**—"The Iron Age Standard Hardware Lists" contains the list prices of many leading goods.

**Additions and Corrections.**—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

### Adjusters, Blind—
Columbian and Domestic.....33⅓%
North's .....10%
Upson's Patent, ₱ gro., $29.90.....10%
Zimmerman's—See Fasteners, Blind.

### Window Stop—
Ives' Patent.....35%
Ives' Stop Bead Screws and Washers .....10%
Taplin's Perfection.....35%

### Ammunition—See *Caps, Cartridges, Shells, &c.*

### Anti—Rattlers—
Fernald Mfg. Co. Burton Anti-Rattlers, ₱ doz. pairs, Nos. 1, $0.75; 2, $0.60; 4, $1.00; 5, $0.50.
Fernald Quick Shifter, ₱ doz. pairs .....$2.00@$3.00

### Anvils—American—
Eagle Anvils.....₱ lb @8 ¢
Hay-Budden, Wrought.....9½@9¾ ¢
Trenton .....₱ lb 9½@9¾ ¢

### Imported—
Swedish Solid Steel Sisco, Superior, ₱ lb.....10@10½ ¢
Peter Wright & Sons, ₱ lb, 81 to 349 lb, 11¢; 350 to 600 lb, 11½¢.

### Anvil, Vice and Drill—
Millers Falls Co., $18.00.....15&10%

### Apple Parers—See *Parers, Apple, &c.*

### Aprons, Blacksmiths'—
Livingston Nail Co.....10%

### Augers and Bits—
*Com. Double Spur....75&10@80%*
*Jennings' Patn., Bright.65&10@70%*
*Black Lip or Blued...65@65&5%*
*Boring Mach. Augers.....70%*
*Car Bits, 12-in. twist.....40&10%*
Ford's Auger and Car Bits.....40&5
Ft. Washington Auger Co., Conard's .....35%
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip. R. Jennings' list, 25&7½
No. 30, R. Jennings' list.....50%
Russell Jennings'.....25&10&2½
L'Hommedieu Car Bits.....15%
Mayhew's Countersink Bits.....45
Pugh's Black.....20%
Pugh's Jennings' Pattern.....35%
Snell's Auger Bits.....60
Snell's Bell Hangers' Bits.....60%
Snell's Car Bits, 12-in. twist.....60%
Snell's King Auger Bits.....50%
Swan's .....65&10@70
Swan's, Jennings' Pattern.....50%
Wright's Jennings' Bits.....50%

### Bit Stock Drills—
See *Drills, Twist.*

### Expansive Bits—
Clark's Pattern, No. 1, ₱ doz., $26; No. 2, $18.....60&10%
Ford's, Clark's Pattern...60&5@60&10%
C. E. Jennings & Co., Steer's Pat..25%
Lavigne Pat., small size, $18.00; large size, $26.00.....60&10%
Swan's .....60%

### Gimlet Bits—
| | | Per gro. |
|---|---|---|
| Co | Dbl. Cut.....$3.00@3.25 | |
| G | Pattern, Nos. 1 to 10. | $4.75; 11 to 13, $5.75 |

### Hollow Augers—
*Bonney Pat., per doz..$5.50@6.00*
Ames .....20&10
Universal .....20

### Ship Augers and Bits—
*Ship Augers.....40&10@—%*
Ford's .....33⅓&5
C. E. Jennings & Co.:
L'Hommedieu's .....6
Watrous' .....33⅓&7½
Snell's .....48%

### Awl Hafts—See *Handles, Mechanics' Tool.*

### Awls—
*Brad Awls:*
*Handled .....gro. $2.75@3.00*
*Unhdld., Shldered...gro.63@66¢*
*Unhandled, Patent..gro.66@70¢*
*Peg Awls:*
*Unhandled, Patent...gro.$1@1.25*
*Unhdld., Shldered...gro.65@70¢*
*Scratch Awls:*
*Handled, Com...gro. $3.50@4.00*
*Handled, Socket..gro.$11.50@12.00*

### Awl and Tool Sets—See *Sets, Awl and Tool.*

### Axes—
*Single Bit, base weights: Per doz.*
*First Quality.....$4.75@5.00*
*Second Quality.....$4.25@4.50*
*Double Bit, base weights:*
*First Quality.....$7.00@7.50*
*Second Quality.....$6.50@6.75*

### Axle Grease—
See *Grease, Axle.*

### Axles—Iron or Steel.
*Concord, Loose Collar...4¼@4½¢*
*Concord, Solid Collar....4½@5 ¢*
*No. 1 Common, Loose...3½@4 c*
*No. 1½ Com., New Style.4¼@4¾¢*
*No. 2 Solid Collar.....4¼@4¾¢*
*Half Patent:*
*Nos. 7, 8, 11 and 12.....70%*
*Nos. 13 to 14.....70%*
*Nos. 15 to 18...70&10@70&10&5%*
*Nos. 19 to 22...70&10@70&10&5%*

### Boxes, Axles—
*Common and Concord, not turned .....lb., 5@6¢*
*Common and Concord, turned, lb., 6@7¢*
*Half Patent.....lb. 9½@10¢*

### Bait—Fishing—
Hendryx:
A Bait.....20
B Bait.....25
Competitor Bait.....20&5

### Balances—Sash—
Caldwell new list.....50&10%
Pullman .....50&10%

### Spring—
*Light Spring Balances.60@60&5%*
Chatillon's:
Light Spg. Balances.....50@50&10
Straight Balances.....40@40&10
Circular Balances.....50&10%
Large Dial.....30%

### Barb Wire—See *Wire, Barb.*

### Bars—Crow—
*Steel Crowbars, 10 to 40 lb.... per lb., 2¼@2½¢*

### Towel—
No. 10 Ideal, Nickel Plate..₱ gro. $8.50

### Beam, Scale—
*Scale Beams.....40%*
Chatillon's No. 1.....30
Chatillon's No. 2.....40%

### Beaters, Carpet—
Holt-Lyon Co.:
No. 12 Wire Coppered ₱ doz. $0.80; Tinned .....$0.85
No. 11 Wire Coppered ₱ doz. $1.15; Tinned .....$1.20
No. 10 Wire Tinned.....₱ doz. $1.50

### Beaters Egg—
Dover Stamping & Mfg. Co.:
Genuine Dover, per gro., No. 1, Tumbler Size, $7.50; No. 2, Family Size, $7.50; No. 3, Extra Family Size, $24.00; No. 4, Hotel Size, $30.00.
Holt-Lyon Co.:
Holt, per doz., No. 5, Jap'd, $0.80; No. A, Jap'd, $1.15; No. B, Jap'd, $1.85; No. 6, Jap'd, $1.65.
Lyon, Jap'd, per doz., No. 2, $1.35.
Taplin Mfg. Co.:
Improved Dover, per gro., No. 60, $6.00; No. 75, $6.50; No. 100, $7.00; No. 102, Tin'd, $8.50; No. 150, Hotel, $15.00; No. 152, Hotel Tin'd, $17.00; No. 200, Tumbler, $8.50; No. 202, Tumbler Tin'd, $9.50; No. 300, Mammoth, per doz., $25.00.

### Bellows—
*Blacksmith, Standard List:*
*Split Leather.....60&10@65%*
*Grain Leather.....50@50&10%*

### Hand—
| *Inch* | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|
| *Doz.* | $5.00 | 5.50 | 6.00 | 6.50 | 7.50 |

### Molders—
| *Inch* | 10 | 12 | 14 | 16 |
|---|---|---|---|---|
| *Doz.* | $7.50 | 9.00 | 12.00 | 15.00 |

Net Prices.

### Bells—Cow—
*Wrought Cow Bells.....75%*
Texas Star .....50

### Door—
Home, R. & E. Mfg. Co.'s .....55&10%

### Hand—
*Polished, Brass.....60@60&10%*
*White Metal.....60@60&10%*
*Nickel Plated.....50&10%*
*Swiss .....50&10%*
Cone's Globe Hand Bells.....33⅓@35%

### Miscellaneous—
*Farm Bells.....lb.. 2¼@2½¢*
*Church and School....60@60&10%*

### Belting—Leather—
*First Quality, Ex. Hy., Strictly Short Lap.....60&10%*
*Standard .....70&10@70&10&5%*
*Light Double.....75&10%*
*Cut Leather Lacing..50&10@60%*
*Leather Lacing Sides, per sq. ft. 22@23¢*

### Rubber—
*Competition (Low Grade). 70&10@75%*
*Standard .....60&10@70%*
*Best Grades.....40@50%*

### Bench Stops—
See *Stops, Bench*

### Benders and Upsetters, Tire—
Green River Tire Benders and Upsetters .....20%

### Bicycle Goods—
John S. Leng's Son & Co.'s 1908 list:
Chain, Parts, Spokes.....30%
Tubes .....60%

### Bits—
Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

### Blocks—Tackle—
*Common Wooden.....75@75&5%*
B. & L. B. Co.:
Boston Wood Snatch, 50%; Eclipse Steel, 75%; Hollow Steel, 50&10%; Star Wire Rope, 50%; Tarbox Metal Snatch, 50%; Tarbox New Style Steel, 50&10%; Wire Rope Snatch, 50%.
Lane's Patent Automatic Lock and Junior .....30%.
See also Machines, Hoisting.

### Boards, Stove—
*Paper and Wood Lined.....55%*
*Embossed .....55%*

### Boards, Wash—
See *Washboards.*

### Bobs, Plumb—
Keuffel & Esser Co.....33⅓&10%

### Bolts Carriage, Machine, &c,—
*Common Carriage (cut thread):*
*⅜ x 6 and smaller..75&5@—%*
*Larger and longer.....70@—%*
*Phila. Eagle, $3.00 list...80@—%*
*Bolt Ends.....70@—%*
*Machine (Cut Thread):*
*⅜ x 4 and smaller..75&10@—%*
*Larger and longer.....70@—%*

### Door and Shutter—
*Cast Iron Barrel, Japanned, Round Brass Knobs:*
| *Inch* | 3 | 4 | 5 | 6 | 8 |
|---|---|---|---|---|---|
| *Per doz.* | $0.30 | .35 | .45 | .60 | .80 |

*Cast Iron Spring Foot, Jap'd:*
| *Inch* | 6 | 8 | 10 |
|---|---|---|---|
| *Per doz.* | $1.20 | 1.50 | 2.25 |

*Cast Iron Chain, Flat, Japanned:*
| *Inch* | 6 | 8 | 10 |
|---|---|---|---|
| *Per doz.* | $1.00 | 1.40 | 1.65 |

*Cast Iron Flat Shutter, Jap'd, Brass Knobs:*
| *Inch* | 6 | 8 | 10 |
|---|---|---|---|
| *Per doz.* | $0.75 | .95 | 1.25 |

*Wrought Barrel Japanned, 80&10@80&10&5%*
*Barrel Bronzed.....60&10%*
*Spring .....70&10@70&10&10%*
*Shutter .....50&5@50&10&5%*
*Square Neck.....75@75&10%*
*Square .....70&10&10@80%*
Ives' Mortise.....10
Ives' Wrought Metal.....10

### Expansion—
E. H. Evans' Crescent.....40@60%
Richards Mfg. Co .....55&10
Star Expansion Bolt Co.:
Star Lag Screw Type, 60&10&5&2½
Star, Wood Screw Type.....40
Star, Machine, Single Wedge....60%
Star, Machine, Double Wedge....60%
Steward & Romain Mfg. Co.:
Style No. 13, Double.....60
Style No. 1, Single.....60
Style No. 100, Dbl. Jaw, Single..55%
Lag Screw.....66⅔%

### Plow and Stove—
*Plow .....65&5@70%*
*Stove .....85@85&5%*

### Tire—
*Common Iron.....85@85&5%*
*Norway Iron.....85@85&5%*
American Screw Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84...82½
Bay State, list Dec. 28, '99.....80%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84...82½%
Eclipse, list Dec. 28, '99.....80%
Russell, Burdsall & Ward Bolt & Nut Co.:
Empire, list Dec. 28, '99.....80%
Norway Phila., list Oct. '84.....80%
Eagle .....82½%
Shelton Co.:
Tiger Brand, list Dec. 28, '99....80%
Phila., Eagle, list Oct. 16, 1881..82½%
Upson Nut Co.:
Tire Bolts.....72½%

### Borers, Bung—
*Borers Bung, Ring, with Handle:*
| *Inch* | 1¼ | 1½ | 1¾ | 2 |
|---|---|---|---|---|
| *Per doz.* | $4.80 | 5.60 | 6.40 | 8.00 |
| *Inch* | 2¼ | 2½ | | |
| *Per doz.* | $8.65 | 11.50 | | |

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.75; No. 3, $2.50 each.....25%

### Boxes, Mitre—
C. E. Jennings & Co.....25%
Langdon, New Langdon and Langdon Improved, 20&10%; Langdon Acme .....15&10
Perfection .....40%
Seavey .....45%

### Braces—
*Comman Ball, American....$1.50*
Barber's .....50&10&10@60&10
Fray's Genuine Spofford's.....60%
Fray's No. 61, 166, 206, 614.....50%
C. E. Jennings & Co.....50&5
Mayhew's Ratchet.....60%
Mayhew's Quick Action Hay Pat..50%
Millers Falls Drill Braces.....25&10
P., S. & W. Co., Peck's Pat....60&10%

### Brackets—
*Wrought Steel..75&10@75&10&10%*
Bradley Metal Clasp...80&10@80&10&5%
Griffin's Pressed Steel.....75@75&10
Griffin's Folding Brackets.....70&10%
Taplin Victor Handy Egg Beater Bracket .....₱ doz. $1.50

### Bright Wire Goods—
See *Wire and Wire Goods.*

### Broilers—
Kilbourne Mfg. Co.....75&20%
Wire Goods Co.....75%

### Buckets, Galvanized—
*M'fr's list, price per gross.*
| | *Quart.* | 10 | 12 | 14 | |
|---|---|---|---|---|---|
| *Water, Reg...* | | *26.85* | *29.50* | *33.50* | 10&7½&5% |
| *Water, Hvy...* | | *45.35* | *48.00* | *52.00* | |
| *Fire, Rd. Btm.* | | *32.00* | *34.65* | *38.65* | |
| *Well .....* | | *37.35* | *41.35* | *45.35* | |

### Bull Rings—See *Rings, Bull*

### Butts—Brass—
*Wrought, High List, Oct. 26, '06.55%*
Cast Brass, Tiebolt's.....40%

### Cast Iron—
*Fast Joint, Broad....40&10@50%*
*Fast Joint, Narrow...40&10@50%*
*Loose Joint.....70&10@75%*
*Loose Pin.....70&10@75%*
*Mayer's Hinges.....70@70&5*
*Parliament Butts.....70@70&5*

### Wrought Steel—Bright.
*Light Narrow, Light Reversible .....70&5%*
*Reversible and Broad..70&5%*
*Loose Joint, Narrow, Light Inside Blind, &c.....70%*
*Back Flaps, Table Chest..65%*
Japanned.
*Light Narrow, Loose Pin, 40&5%*
*Light Narrow, Ball Tip..60%*
*Broad .....40&5%*
*Steeple Tipped.....70%*
*Ball Tipped.....70%*

Extra, 10@—

## Cages, Bird—

Hendryx Brass: Series 3000, 5000, 1100, net list; 1200, 15%; 200, 300, 900 ..... 30%
Hendryx Bronze: Series 700, 800.... 30
Hendryx Enameled..... 35%

## Calipers—See *Compasses.*

## Calks, Toe and Heel—

*Blunt, 1 prong, per lb. ....4@4½¢*
*Sharp, 1 prong, per lb. ..4½@5¢*
Burke's, 1 pg. Blunt Toe, 3¾¢; 2 pg. Blunt Toe, 4¼¢; 1 pg. Sharp Toe, 4¼¢; 2 pg. Sharp, 4¾¢; Blunt Heel, 4¼¢; Sharp Heel..... 4¾¢
Lautier Blunt, 3@4¼¢; Sharp, 4½@4¾¢
Perkins', Blunt, ℔ lb, 3.65¢; Sharp, 4.15¢

## Can Openers—

See *Openers, Can.*

## Caps, Percussion—

*Eley's E. B.....52@55¢*
*G. D.....per M 34@35¢*
*F. L.....per M 40@42¢*
*G. E.....per M 48@50¢*
*Musket .....per M 62@63¢*

## Primers—

*Berdan Primers, $2 per M..20&5%*
*Primer Shells and Bullets..15&10%*
*All other primers per M..$1.52@1.60*

## Carpet Stretchers—

See *Stretchers, Carpet.*

## Cartridges—

*Blank Cartridges:*
*32 C. F., $5.50.....10&5%*
*38 C. F., $7.00.....10&5%*
*22 cal. Rim, $1.50.....10&5%*
*32 cal. Rim, $2.75.....10&5%*
*B. B. Caps, Con. Ball, Swgd..$1.90*
*B. B. Caps, Round Ball.....$1.40*
*Central Fire.....25%*
*Target and Sporting Rifle..15&5%*
*Primed Shells and Bullets..15&10%*
*Rim Fire, Sporting.....50%*
*Rim Fire, Military.....15&5%*

## Casters—

*Bed .....65&10@70%*
*Plate .....60&5@60&10%*
*Philadelphia .....70&1 @75%*
Acme, Ball Bearing..... 35%
Gem (Roller Bearing).....70&10&10&5%
Steel Gem (Roller Bearing)..... 70%
Standard Ball Bearing..... 45%
Yale (Double Wheel) low list...40&10%

## Cattle Leaders—

See *Leaders, Cattle.*

## Chain, Proof Coil—

*American Coil, Straight Link:*

| 3/16 | 1/4 | 5-16 | 3/8 | 7-16 | 1/2 | 5/8 |
|---|---|---|---|---|---|---|
| $8.15 | 5.55 | 4.60 | 3.95 | 3.75 | 3.65 | 3.55 |

*⅝-7-8-1 1⅛ to 1¼ inch.*
*$3.45 3.55*
*In cask lots, deduct 25¢.*
*German Coil.....60@60&5%*
*German Pattern Coil:*
*6-0 to 1.....70&5@70&10%*
*2 and 3..60&10&10@60&10&10&5%*
*4, 5 and 6.....50&10@50&10&5%*

## Halter—

*Halter Chains.....60&5@60&10%*
*German Pattern Halter Chains, list July 24, '97....60&10&5@70%*
Covert Mfg. Co.:
Halter ..... 25&5%

## Cow Ties—

See *Halters and Ties.*

## Trace, Wagon, &c.—

*Traces, Western Standard: 100 pr. 6½—6-3, Straight, with ring..$28.00*
*6½—6-2, Straight, with ring..$29.00*
*6½—8-2, Straight, with ring..$32.00*
*6½—10-2, Str'ght, with ring..$37.00*
*NOTE.—Add 2c per pair for Hooks Twist Traces: add per pair for Nos. 2 and 3, 2c: No. 1, 3c; No. 0, 4c to price of Straight Link.*
*Eastern Standard Traces, Wagon Chain, &c...60&10@60&10&5%*

## Miscellaneous—

*Jack Chain, list July 10, '93:*
*Iron .....60&10&7½%*
*Brass .....65%*
*Safety and Plumbers' Chain..75%*
*Gal. Pump Chain....lb., 4½@5%*
Bridgeport Chain Co.:
Triumph Halter and Coil..35&2½@40
Triumph Dog.....50&10@60
Brown Halter and Coil....45@50&5
Covert Mfg. Co.:
Breast, Halter, Heel, Rein, Stallion ..... 40%
Oneida Community:
American Halter, Dog and Kennel Chains ..... 35&2½@40%
Niagara Dog Leads and Kennel Chains ..... 45@50&5%
Wire Goods Co.:
Dog Chain..... 70%
Universal Dbl.-Jointed Chain....70%

## Chain and Ribbon, Sash—

Oneida Community:
Steel Chain..... 60%
Pullman:
Bronze Chain, 60%; Steel Chain, Coppered .....60&10%
Sash Chain Attachments, per set. 8¢
Aluminoy Sash Ribbon, per 100 ft .....$2.00@$5.00
Sash Ribbon Attachments, per set..8¢

## Chalk—

*Carpenters' Blue.....gro., 50¢*
*Carpenters' Red.....gro., 50¢*
*Carpenters' White.....gro., 40¢*

## Checks, Door—

Bardsley's ..... 45%
Pullman, per gro..... $54.00
Russwin ..... 33⅓%

## Chests, Tool—

American Tool Chest Co.:
Boys' Chests, with Tools.....55%
Youths' Chests, with Tools.....40%
Gentlemen's Chests, with Tools..30%
Farmers', Carpenters, etc., Chests, with Tools ..... 20%
Machinists' and Pipe Fitters' Chests, Empty..... 45%
Tool Cabinets..... 45%
C. E. Jennings & Co.'s Machinists' Tool Chests..... 7½%

## Chisels—Socket Framing and Firmer

*Standard List.....80&10@—%*
Buck Bros..... 30%
C. E. Jennings & Co.:
Socket Firmer No. 10.....25&7½%
Socket Framing No. 15.....25&7½%
Swan's .....66⅔@70%
L. & I. J. White & Co.....30@30&5%

## Tanged—

*Tanged Firmers.....30&5@35%*
Buck Bros..... 30%
C. E. Jennings & Co. Nos. 191, 181..25%
L. & I. J. White Co.....25&5%

## Cold—

| | lb. |
|---|---|
| *Cold Chisels, good quality* | *13@15¢* |
| *Cold Chisels, fair quality* | *11@12¢* |
| *Cold Chisels, ordinary* | *9@10¢* |

## Chucks—

Almond Drill Chucks..... 35%
Almond Turret Six-Tool Chuck.....40%
Beach Pat, each $8.00.....35&5%
Empire ..... 25%
Blacksmiths' ..... 25%
Jacobs' Drill Chucks..... 35%
Pratt's Positive Drive..... 25%
Skinner Lathe Chucks:
Independent ..... 35%
Universal, Reversible Jaws..... 35%
Universal, Com. Style Jaws..... 40%
Combination, Reversible Jaws....35%
Combination, Com. Style Jaws...40%
Round Body or Box Body, 2 Chuck Jaws ..... 25%
Geared Scroll Chucks..... 25
Drill Chucks:
New Model, 25%; Geared Pattern, 25%; Skinner Patent, ...25%
Positive Drive..... 40
Planer Chucks..... 20
Standard ..... 45%
Drill Press Vises..... 30%
Face Plate Jaws..... 35%
Standard Tool Co.:
Improved Drill Chuck..... 45%
Union Mfg. Co.:
Combination, Nos. 1, 2, 3, 4, 5, 6, 7, 8 and 17, 40%; No. 21.....35%
Scroll Combinations, Nos. 83 and 84 ..... 30%
Geared Scroll, Nos. 33, 34 and 35..25%
Independent Iron, Nos. 18 and 318.35%
Independent Steel, No. 64.....25%
Union Drill, Nos. 000, 00, 100, 101, 102, 103, 104.....35%
Union Czar Drill..... 25%
Universal, 11, 12, 16, 17, 13, 14, 15..40%
Universal No. 42..... 35%
Iron Face Plate Jaws, Nos. 28, 30, 48 and 50..... 35%
Steel Face Plate Jaws, Nos. 70 and 72 ..... 30%
Westcott Patent Chucks:
Lathe Chucks..... 50%
Little Giant Auxiliary Drill..... 50%
Little Giant Double Grip Drill...50%
Little Giant Drill, Improved..... 50%
Oneida Drill..... 50%
Scroll Combination Lathe..... 50%
Whitaker Mfg. Co.:
National Drill..... 25%

## Clamps—

Adjustable Hammers.....20@20&5%
Carriage Makers', Star, P., S. & W. Co. ..... 50%
Besly, Parallel..... 33⅓&10%
Myers' Hay Rack..... 50%
Lineman's Swedish Neverturn..... 65%
Wood Workers' Hammers.....40&10%
Saw Clamps, see Vises, Saw Filers'

## Cleaners, Drain,

Iwan's Champion, Adjustable..... 50%
Iwan's Champion, Stationary..... 40%

## Sidewalk—

Star Socket. All Steel..℔ doz. $4.05 net
Star Shank. All Steel..℔ doz. $3.24 net
W. & C. Shank, All Steel, ℔ doz., 7½ in., $3.00; 8 in., $3.25.

## Cleavers, Butchers'—

Foster Bros..... 30%
Fayette R. Plumb..... 30
L. & I. J. White Co..... 30%

## Clippers, Horse and Sheep—

Chicago Flexible Shaft Co.: (20%)
1902 Chicago Horse, each..$10.75
20th Century Horse, each...$5.00
Lightning Belt Horse, each.$15.00
Chicago Belt Horse, each..$20.00
Stewart's Enclosed Gear Roll Bearing Horse, each.....$6.75
Stewart's New Model Sheep Shearing Machine, each.$12.75
Stewart Enclosed Gear Shearing Machine, No. 8, each..$9.75

## Clips, Axle—

*Regular Styles, list July 1, '05, 80&80&10%*

## Cloth and Netting, wire—See *Wire, &c.*

## Cocks, Brass—

*Hardware list:*
*Plain Bibbs, Globe, Kerosene, Racking, Liquor, Bottling, &c .....75%*
*Compression Bibbs.....70%*

## Coffee Mills—

See *Mills, Coffee.*

## Collars, Dog—

Nickel Cham, Walter B. Stevens & Son's list ..... 40%
Leather, Walter B. Stevens & Son's list ..... 40%

## Compasses, Dividers, &c.

*Ordinary Goods.....70&10@75%*

## Conductor Pipe,—

*L. C. L. to Dealers:*

| | Gal. Steel. | Charcoal. |
|---|---|---|
| *Northeastern* | *70&10%* | *50&10&7½%* |
| *Eastern* | *75%* | *50&10&7½%* |
| *Pittsburgh* | *75&10&5%* | *60%* |
| *Central* | *75&10%* | *60%* |
| *Northwestern* | *75&7½%* | *60%* |
| *Western* | *70&12½%* | *50&12½%* |
| *Tennessee* | *70&10%* | *50&12½%* |
| *Southern* | *70%* | *50&12½%* |
| *Southwestern* | *70%* | *50&5%* |

*Terms, 60 days: 2% cash 10 days. Factory shipments generally delivered.*
See also Eave Troughs.

## Coolers, Water—

L. & G. Mfg. Co.:

| Gal. | 2 | 3 | 4 | 6 | 8 |
|---|---|---|---|---|---|
| Galvanized, ea. | $1.85 | $2.00 | $2.25 | $2.90 | $3.90 |

Galvanized, Lined, side handles,

| Gal. | 2 | 3 | 4 | 6 | 8 |
|---|---|---|---|---|---|
| Each | $1.95 | $2.15 | $2.40 | $3.30 | $4.15 |

White Enameled..... 10%
Agate Lined..... 10%

## Coppers' Tools—

See *Tools, Coopers'.*

## Coppers, Soldering—

*Soldering Coppers, 3 lb. to pair and heavier, 20¢; lighter than 3 lb. to pair.....22¢*

## Cord—Sash—

*Braided, Drab.....lb. 35¢*
*Braided, White, Com., Nos. 8 to 12, 20¢; No. 7, 20½¢; No. 6, 21½¢. In lots of 12 doz. or over, 1 cent less per pound.*
*Cable Laid Italian, lb., No. 18..37¢*
*Italian, lb., A, No. 18, 25¢; B, 22¢*
*Common India.....lb., 11@11½¢*
*Cotton Sash Cord, Tw'ted..18@20¢*
*Patent Russia.....lb....20¢*
*Cable Laid Russia.....lb...21¢*
*India Hemp, Br'd'd.....lb...21¢*
*India Hemp, Twisted...lb.13@14¢*
*Patent India, Twisted..lb...17¢*
Pearl Braided, cotton, No. 6, ℔ lb, 20½¢; No. 7, 19½¢; Nos. 8 to 12, 19½¢, in 12 doz. to 100 doz. lots.
Eddystone Braided, Nos. 8 to 12, 26¢; 7, 26½; 6, 27½¢.
Harmony Cable Laid Italian, Nos. 7 to10.....℔ lb 23¢
Pullman:
Wire Sash Cord..... 10%
Sash Cord Attachments, per 100..$2.00
Samson, Nos. 8 to 12: (15%)
Braided, ℔ lb., Drab Cotton, 55¢; Italian Hemp, 40¢@50¢; Linen, 65¢; White Cotton, 50¢; Spot Cord.....50¢
Massachusetts, White...℔ lb 40¢
Massachusetts, Drab...℔ lb 45¢
Phoenix, White, Nos 8 to 12....27¢
Silver Lake, per lb.:
A, Drab, 45¢; A, White, 40¢; B, Drab, 40¢; B, White, 35¢; Italian Hemp, 40¢; Linen....57½¢
See also Chain and Ribbon.

## Wire, Picture—

*Full Length.....90@—%*
*Short Length.....90&20@—%*
Hendryx Standard Wire Picture Cord, old list, 85&10%.
Turner & Stanton Co. Wire Picture Cord ..... 90%

## Cradles—

*Grain .....50%*

## Crayons—

*White Round Crayons. Cases, 100 gro., $8.00, $8.50, $9.00 and $10.00 according to grade.*
Zelnicker's Lumber: ℔ gro.
White and Purple, Indelible....$7.50
Blue, Red, Green, Yellow and Terra Cotta, $6.50; Black.....$4.50
Giant Lumber, 5¼ in. x 15-16 in. round, all colors, $12.00; Indelibles, $14.00; Blacks.....$10.00
Genuine Soapstone, Metal Workers', 5 in. x ¼ in. Round, $2.50; 5 in. x ¼ in. Square, $1.75; 5 x ½ x 3-16, $2.50; 5 x 1¼ x 3-16.....$3.00
Suremark, Black, $2.25; Blue, Red and Yellow.....$2.50

## Crooks, Shepperds'—

Fort Madison, per doz., Heavy, $5.50; Light .....$5.00

## Crow Bars—See *Bars, Crow.*

## Cultivators—

Victor Garden..... 50%

## Cutlery, Table—

International Silver Company:
No. 12 M'd'm Knives, 1847 ℔ doz. $3.50
Star, Eagle, Rogers & Hamilton and Anchor.....℔ doz. $3.00
Wm. Rogers & Son.....℔ doz. $2.50

## Cutters—Glass—

H. H. Mayhew Co..... 40%
Red Devil ..... 60
B. Mfg. Co..... 10
Woodward ..... 50

## Meat and Food—

American ..... 30
Nos. ....401 402 403 404 405 406 407
Each ... $5 $7 $10 $12 $25 $50 $65
Enterprise:
Nos..... 5 10 12 22 32
Each $2 $3 $2.75 $4.50 $6 25@25&5%
No. 202, $1.50 .....10&5%
P., S. & W. Co.:
Ideal ..... 40@40&5
Hales ..... 60&5
Little Giant ..... 70 doz. 40@5
Nos. 305 310 312 320
$25.00 $48.00 $41.00 $72.00 $68.00
New Triumph No. 605, ℔ doz. $24.00
10
Russwin Food No. 1, $24.00; No. 2 $27.00; 3 $12.00..... 45&10&10
$15.00 $18.00
Enterprise Beef Shavers.....25@30%

## Slaw and Kraut—

Henry Disston & Sons:
Slaw and Kraut Cutters..... 35%
Corn Graters..... 30%
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife....℔ doz. $3.00
Combined Slaw Cutter and Corn Grater .....℔ doz. $4.00

## Tobacco—

*All Iron, Cheap...doz, $4.25@4.50*
Enterprise ..... 25@30%
National, ℔ doz., No. 1, $21; No. 2, $18 ..... 40%

## Diggers, Post Hole, &c—

Disston's:
Rapid, ℔ doz., $24.00..... 25%
Samson, ℔ doz., $34.00..... 25%
Iwan's Pat. Post Hole and Well Auger ..... 40%
Vaughan Pattern Post Hole Augers, ℔ doz., $7.00
Perfection Post Hole Diggers, ℔ doz. .....$8.50
Split Handle Post Hole Diggers, ℔ doz., $7.50
Hercules Pattern, ℔ doz.....$9.50
Kohler's, ℔ doz., Universal, $14.00; Little Giant, $12.00; Hercules, $10.00; Invincible, $9.00; Rival, $8.50; Pioneer.....$7.50
Never-Break Crucible Steel Post Hole Diggers ..... 60%

## Dividers—See *Compasses.*

## Drawing Knives—

See *Knives, Drawing.*

## Dressers Emery Wheel—

Sterling Emery Wheel Dressers..... 35%
Sterling Wheel Dresser Cutters..... 35%

## Drills and Drill Stocks—

*Blacksmith's Common Drilling Machines .....$1.50@1.75*
Breast, Millers Falls.....15&10%
Breast, P., S. & W..... 33⅓%
C. & C. Ratchet..... 25%
Reversible Ratchet Die Stocks....25%
Goodell Automatic Drills.50&10@60&10%
Millers Falls Automatic Drills, Graves', per doz., Nos. 1, $4.86; 2, $8.16.
Millers Falls Automatic Drills.33⅓&10%
Ratchet, Curtis & Curtis..... 25%
Ratchet, Parker's..... 40%
Ratchet, Weston's..... 40%
Ratchet, Weston's, Style H Improved .....40@40&5%
Ratchet, No. 012.....40@40&5%
Ratchet, Celebrated.....40@40&5%
Ratchet, Whitney's, P., S. & W., 40&10@50%
Whitney's Adjustable, No. 10, $12.00, 33⅓%

## Twist Drills—

*Bit Stock.....70@70&5%*
*Taper and Straight Shank, 60&10@70%*

## Drivers, Screw—

*Screw D'ver Bits, per doz..45@50¢*
Balsey's Screw Holder and Driver, ℔ doz., 2½-in., $6; 4-in., $7.50; 6-in., $9 ..... 50%
Buck Bros.' Screw Driver Bits..... 30%
Champion ..... 50%
Disston's ..... 70%
Fray's Hol. H'dle Sets, No. 3, $12..50%
Ford's Brace Screw Drivers....40&10%
Gay's Double Action Ratchet..... 35%
Goodell's Auto.....65@65&10%
Mayhew's Black Handle..... 40%
Mayhew's Monarch..... 40%
Millers Falls, ℔ doz., Nos. 11, $9.95; 12, $13.73; 20, $8.17; 21, $8.46; 41, $13.43; 42, $17.21.
Smith & Hemenway Co., Neverturn, 66⅔%; Elmora, 60%; Star, 30&10%
Swan's:
Nos. 7565 to 7568, 60%; No. 7540, 40&10%

## Eave Trough, Galvanized—

| Territory... | Gal. Steel. | Charcoal. Iron. |
|---|---|---|
| *Northeastern* | *75&10&5%* | *60&20%* |
| *Eastern* | *80&2½%* | *60&20%* |
| *Pittsburgh* | *80&20%* | *65&10%* |
| *Central* | *80&10&10&2½%* | *65&10%* |
| *Northwestern* | *80&10&10%* | *65&10%* |
| *Western* | *80&10%* | *60&10&5%* |
| *Tennessee* | *80&5%* | *60&10&5%* |
| *Southern* | *80%* | *60&10&5%* |
| *Southwestern* | *75&10&2½%* | *60&5%* |

*Terms.—2% for cash. Factory shipments generally delivered.*
*Note.—Lower prices are made in some sections.*
See also Conductor Pipe and Elbows.

## Elbows and Shoes—

*Factory shipments, all territories:*
*Galv. Steel and Galv. C. I. Standard Gauge.....85@85&10%*
*No. 26.....50*
*No. 24.....25%*
*No. 22.....10%*

## Elbows, Stove Pipe—

Edwards, Standard Blue.....
Edwards, Royal Blue.....
Reeves, Dexter, Flat Crimp 10&5%

## Emery, Turkish—

| | ½ to ⅝ in. 16's | ⅝ to ¾ in. 12's | Flour |
|---|---|---|---|
| *Kegs* ....lb | 5 ¢ | 5½¢ | 3½¢ |
| *½ Kegs*....lb | 5½¢ | 5¾¢ | 3¾¢ |
| *¼ Kegs*....lb | 5¾¢ | 6 ¢ | ¼ ¢ |
| *10 lb. cans, 10 in case*.... | 6½¢ | 7 ¢ | 6 ¢ |
| *10 lb cans, less than 10*..... | 10 ¢ | 10 ¢ | 8 ¢ |
| *Less quantity* | 10 ¢ | 10 ¢ | 8 ¢ |

*NOTE.—In lots 1 to 3 tons a discount of 10% is given.*

## Extensions, Bit—

Ford's Auger Bit Extensions .. 10&5%

## Extractors, Lemon Juice—See *Squeezers, Lemon.*

## Fasteners, Blind—
Zimmerman's Jap'd and Galv., 50 & 5 ; Bronze and Plated.....50
Walling's .....50
Upson's Patent.....10

### Cord and Weight—
Ives, ₱ gro., $1.08.....10
Titan, ₱ gro., $0.66.....10%

### Corrugated—
Acme Corrugated Fasteners.....70%

### Faucets—
*Cork Lined.....50&10@60%*
*Metallic Key, Leather Lined, .. 60&10@70%*
*Red Cedar.....40&5@40&10&5%*
*Petroleum .....70&10@75%*
B. & L. B. Co.:
Metal Key.....60&10%
Star .....60
West Lock.....50&10
John Sommer's Peerless Tin Key....40
John Sommer's Boss Tin Key.....50
John Sommer's Victor Mtl. Key.50&10%
John Sommer's Duplex Metal Key..60%
John Sommer's Diamond Lock.....40%
John Sommer's I.X.L. Cork Lined..50%
John Sommer's Reliable Cork Lined.. 50&10%
John Sommer's Chicago Cork Lined.60%
John Sommer's O. K. Cork Lined...50%
John Sommer's No Brand, Cedar....50%
John Sommer's Perfection, Cedar....40%
Self Measuring:
Enterprise, Self Measuring and Pump, ₱ doz., $36.00.....40&10
Lane's, ₱ doz., $36.00.....40&10
National Measuring, ₱ doz. $36.40&10

### Felloe Plates—
See *Plates, Felloe.*

### Files— Domestic—
*List Nov. 1, 1899.*
*Best Brands.....70&10@75&10%*
*Standard Brands.....75&10@80&10%*
*Lower Grade....75&10&10@80&10%*
Gold Medal.....70%

### Imported—
*Stubs' Tapers, Stubs' list, July 24, '97.....33⅓@40%*

### Fixtures, Fire Door—
Richards Mfg. Co.:
Universal, No. 103; Special, No. 104 .....$3.75
Fusible Links, No. 96.....50
Expansion Bolts, No. 107.....60&10%

### Grindstone—
*Net Prices:*

| *Inch* | *15* | *17* | *19* | *21* |
|---|---|---|---|---|
| *Per doz.* | *$3.60* | *3.85* | *4.15* | *4.65* |

P., S., W. Co.:

| In. | 15 | 17 | 19 | 21 | 24 |
|---|---|---|---|---|---|
| | $4.00 | 4.40 | 4.75 | 5.50 | 6.50 |

....30%
Reading Hardware Co.....60%

### Fodder Squeezers—
See *Compressors.*

### Forks—
*NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.*
Iowa Dig-Ezy Potato.....60&10%
Victor, Hay.....60&15&2½
Victor, Manure.....66⅔%
Victor, Header.....65%
Champion, Hay.....66⅔%
Champion, Header.....65%
Champion, Manure.....60&15&2½%
Columbia, Hay.....60&20%
Columbia, Manure.....70%
Columbia, Spading.....70&12½
Hawkeye Wood Barley.....40%
W. & C. Potato Digger.....60&10%
Acme Hay.....60&20
Acme Manure, 4 tine.....60&10&5%
Dakota Header.....60&20
Jackson Steel Barley.....60&20%
Kansas Header.....65%
W. & C. Favorite Wood Barley....40%
Plated.—See Spoons.

### Frames— Wood Saw—
*White, S'g't Bar, per doz.75@80¢*
*Red, S'g't Bar, per doz.$1.00@1.25*
*Red, Dbl. Brace, per doz.$1.40@1.50*

### Freezers, Ice Cream—

| *Qt.....* | *1* | *2* | *3* | *4* | *6* |
|---|---|---|---|---|---|
| *Each....* | *$1.25* | *$1.60* | *$1.90* | *$2.20* | *$2.80* |

### Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

### Fry Pans—See *Pans, Fry.*

### Fuse— *Per 1000 Feet.*
*Hemp .....$2.75*
*Cotton .....3.20*
*Waterproof Sgl. Taped..3.65*
*Waterproof Dbl. Taped..4.40*
*Waterproof Tpl. Taped..5.15*
10&2½%

## Gates, Molasses and Oil—
*Stebbins' Pattern.....80@80&5%*

### Gauges—
*Marking, Mortise, &c..50@50&10%*
Chapin-Stephens Co.:
Marking, Mortise, &c.....50&50&10
Disston's Marking, Mortise, &c 67½
Wire, Brown & Sharpe's.....33⅓%
Wire, Morse's.....25
Wire, P. S. & W. Co.....33⅓

### Gimlets— Single Cut—
*Numbered assortments, per gro.*
*Nail, Metal, No. 1, $2.00; 2, $2.30*
*Spike, Metal, No. 1, $4.00; 2, $4.30*
*Nail, Wood Handled, No. 1, $2.30; 2, $2.60*
*Spike, Wood Handled, No. 1, $4.30; 2, $4.60*

### Glass, American Window
See *Trade Report.*

### Glasses, Level—
Chapin-Stephens Co.....65@65&10

### Glue, Liquid Fish—
*Bottles or Cans, with Brush, 25&10@50%*
Elwell's .....40%

### Grease, Axle—
*Common Grade...gro.$6.00@$6.50*
Dixon's Everlasting, 10-lb. pails, ea. 85¢; in boxes, ₱ doz., 1 lb, $1.20; 2 lb.....$2.00
Helmet Hard Oil.....25%

### Griddles, Soapstone—
Pike Mfg. Co.....33⅓@33⅓&10%

### Grinders—
Pike Mfg. Co.:
Hand and Foot Power, Pyko Nos. 1, 2, 3; Pyko Primo; Pyko Peerless; Pyko Spiral (foot power).33⅓%
Mower Knife and Tool, $5.00..40&10%
Royal Mfg. Co.:
Alundum Grinding Machines, each, Nos. 01, $1.75; 1A, $2.50; 10, $5.00 .....30%
Alundum Sickle Grinders, each, Nos. 20, $5.00; 20A, $6.00; 20A Combined, $6.50.....30%
Alundum Disc Grinders, each, $2.50 .....30%

### Grindstones—
Pike Mfg. Co.:
Improved Family Grindstones, ₱ inch, ₱ doz., $2.00.....33⅓%
Richards Mfg. Co., Eli and Cycle, Ball Bearing, mounted.....40%

### Grips, Nipple—
Perfect Nipple Grips.....40&10&2

## Halters and Ties—
*Cow Ties.....65@65&10%*
Bridgeport Chain Co.:
Triumph Coil and Halters.35&2½@40%
Brown Coil and Halters...15@50&5%
Brown Cow Ties.....50&5@50&10&5%
Brown Tie Outs.....70&10@75&5
Covert Mfg. Co.:
Web .....30&2%
Jute Rope.....35
Sisal Rope.....20
Cotton Rope.....45%
Hemp Rope.....45%
Oneida Community:
Am. Coil and Halters.....40@40&5%
Am. Cow Ties.....45@50%
Niagara Coil and Halters...45@50&5%
Niagara Cow Ties....45&5@50&10&5%

### Hammers—
### Handled Hammers—
Heller's Machinists'....55&10@55&10&5%
Heller's Farriers.....40&5@40&10&5
Peck, Stow & Wilcox Co.:
Crucible Steel.....40&10@50%
Farriers' .....40&10@50
Riveting .....40&10@50
Machinists' .....66⅔@5
Blacksmiths' .....50%
Fayatte R. Plumb:
A. E. Nail.....40&2½@40&12½%
Eng. and B. S. Hand.50&10&5@60&5%
Machinists' Hammers.....60&10&5
Rivet and Tinners'.10&7½@40&12½&5
Victor Magnetic Tack, ₱ gro....$7.75

### Heavy Hammers and Sledges—
*Under 3 lb., per lb., 50¢.. 80&10%*
*3 to 5 lb., per lb., 40¢...80&10&10%*
*Over 5 lb., per lb., 30¢.....*
*Over 5 lb., per lb., 30¢.80&10&10%*

### Handles—
### Agricultural Tool Handles
*Axe, Pick, &c....60&10@60&10&5%*
*Hoe, Rake, &c.....40%*
*Fork, Shovel, Spade, &c.:*
*Long Handles.....40%*
*D Handles.....40%*

### Cross-Cut Saw Handles—
Atkins' .....40%
Champion .....50
Disston's .....50%

### Mechanics' Tool Handles—
*Auger, assorted...gro.$3.00@$3.50*
*Brad Awl.....gro.$1.65@$1.75*
*Chisel Handles, Ass'd, per gro.:*
*Tanged Firmer, Apple, $2.40@ $2.65; Hickory.....$2.15@2.40*
*Socket Firming, Apple, $1.75@ $1.95; Hickory.....1.60@1.75*
*Socket Framing, Hickory, $1.60@$1.75*
*File assorted.....gro.$1.30@$1.40*
*Hammer, Hatchet, &c., 60&10@60&10&5%*
*Hand Saw, Varnished, doz., 80¢ 85¢; Not Varnished.....65@75¢*
*Plane Handles:*
*Jack, doz., 30¢; Fore, doz...45¢*
Chapin-Stephens Co.:
Carving Tool.....30@30&10%
Chisel .....60@60&10
File and Awl.....60@60&10%
Saw and Plane.....30@30&10
Screw Driver.....30@30&10
Millers Falls Adj. and Ratchet Auger Handles .....15&10%
Nicholson Simplicity File Handle.... ₱ gro. $0.85@$1.50
J. L. Osgood:
Indestructible File and Tool, ₱ gro., No. 1, $8.00; No. 2, $8.50; No. 3 $9.00; No. 4, $9.50; No. 5, $10.00.....gro. lots 10%
W. A. Zelnicker Supply Co.:
Hammer, ₱ doz., 12 in., $2.00; 14 in., $2.00, 16 in., $2.20; 18 12., $2.50; 20 in., $2.70; 22 in., $3.00; 24 in., $3.30; 26 in., $3.50; 30 in., $3.80.
Sledge, ₱ doz., oval, 30 in., $3.80; octagon, 30 in., $3.80; oval 36 in., $4.00; octagon, 36 in., $4.00.
Axe ₱ doz. 28 to 34 in., $5.60; 36 in., $5.80.
Adze, ₱ doz., 36 in., $5.80; 36 in., $7.80.
Pick ₱ doz., R. R. 36 in. $8.00; coal, 31 in., $5.80.
Hatchet, ₱ doz., 12 to 14 in., $2.00.

### Hangers—
*NOTE.—Barn Door Hangers are generally quoted per pair, without track and Parlor Door Hangers per double set with track, &c.*
Chicago Spring Butt Co.:
Friction .....25%
Oscillating .....25
Big Twin.....25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door.....50%
Elevator .....30
Railroad .....50%
Cronk & Carrier Mfg. Co.:
Loose Axle.....60&10%
Roller Bearing.....70%
Griffin Mfg. Co.:
Solid Axle, No. 10, $12.00..60&10%
Roller Bearing, No. 11, $15.00, 60&10%
Roller Bearing, Ex. Hy., No. 22, $18.00.....60&10%
Bull Dog, $24.00.....70%
Lane Bros. Co.:
Parlor, Ball Bearing, $4.00; Standard, $3.15; No. 105, $2.85; New Model, $2.80; New Champion per set of 4 Hangers, complete with track.....$2.25
Barn Door, Standard.....60&10
Hinged .....net $6.08
Covered .....60&5%
Special .....70&5
Trolley Hangers and track..50%
Lawrence Bros.:
Advance .....55&10%
Cleveland .....70&7½%
Clipper, No. 75.....60%
Crown .....55&10%
Cyclone, No. 40.....net $6.50
Tandem, No. 50.....net $7.50
New York.....55&10%
McKinney Mfg. Co.:
Roller Bearing, Nos. 1 and 2..70%
Anti-Friction .....60
Hinged Hangers, King Charm.60%
Richards Mfg. Co.:
Hangers, Nos. 47, 48, 147, 247, 60&5%
Pioneer Wood Track, No. 3..$2.25
Roller B'r'g St'l Track No. 12.$2.20
Roller B'r'g St'l Track No. 13.$2.50
Roller B'r'g, Nos. 39, 41, 43, 70&7½%
Hero, Adj. Track No. 19..50&10%
Adjustable Track Tandem Trolley Track No. 16.....50&10%
Seal, Steel Track No. 8.....$2.25
Auto Adj. Track No. 22..50&5%
Trolley B. D. No. 17, $1.25; F. D. No. 120, $2.25; No. 121, $2.45; No. 150.....$2.50
Safety Underwriters F. D. No. 101 .....50%
Tandem No. 41..2½ and 3 60&10%
Palace, Adjustable Track No. 132 .....50&5%
Royal, Adjustable Track No. 122 .....50&10%
Ives' Wood Track No. 1.....$2.25
Trolley B. D. No. 20.....50&10%
Trolley B. D. No. 24, $1.30; No. 27, $1.40; No. 28.....$1.60
Roller Bearings, Nos. 37, 38, 39, 41, 43, 44, Sizes 1 and 2.70&7½%
Anti friction, No. 42; No. 44, sizes 2½ and 3.....60%
Hinged Tandem No. 48....60&5%
Folding Door B. B. Swivel No. 135 .....40%
Taylor & Boggis F'y Co.'s Kidder's Roller Bearing, ₱ doz., 4 in., $12.00; 5 in., $14.00..40&10%
Myers' Stayon Hangers.....60%

### Hangers— Garment—
Pullman Trouser, ₱ gro., No. 1 $9.00; No. 4, $24.00; No. 5, $16.50; No. 8, Black Enamel, $7.50; No. 10, $21.00; No. 12, $8.00; No. 15, Rods, $9.00; No. 18, Loops.....$10.00
Victor Folding.....₱ gro. $9.60

### Gate—
Myers' Patent Gate Hangers, ₱ doz. net .....50%

### Joist and Timber—
Lane Bros. Co.....35%

### Hasps—
Griffin's Security Hasp.....50&10%
McKinney's Perfect Hasp, ₱ doz..60%

### Hatchets—
*Regular list, first qual.40&12½@—*
*Second quality.....50&10&5@—*

### Heaters, Carriage—
Clark, No 5, $1.25; No. 5B, $1.50; No. 3, $1.75; No. 3D, $2.00; No. 7D, $2.25; No. 3E, $2.50; No. 1, $3.00.....25%
Clark Coal, ₱ doz., $0.75.....20%

### Hinges—
### Blind and Shutter Hinges
*Surface Gravity Locking Blind: (Victor; National; 1868 O. P.; Niagara; Clark's O. P.; Clark's Tip; Buffalo.)*

| *No.* | *1* | *3* | *5* |
|---|---|---|---|
| *Doz. pair.....* | *$0.75* | *1.35* | *2.70* |

*Mortise Shutter: (L. & P., O. S., Acme, &c.)*

| *No.* | *1* | *1½* | *2* | *2½* |
|---|---|---|---|---|
| *Doz. pair....* | *$0.70* | *.65* | *.60* | *.55* |

*Mortise Reversible Shutter (Buffalo, &c.):*

| *No.* | *1* | *1½* | *2* |
|---|---|---|---|
| *Doz. pair.....* | *$0.70* | *.65* | *.60* |

North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%
Charles Parker Co.....70@75
Parker Wire Goods Co.
Hale & Benjamin Automatic Blind Hinges .....20
Hale's Blind Awning Hinges No. 110, for wood, $9.00; No. 111, for brick, $9.00.....20
Reading's Gravity.....60
Stanley's Steel Gravity Blind Hinges, No. 1617½, ₱ doz. sets, without screws, $0.95; with screws, $1.25.
Wrightsville Hardware Co.:
O. S., Lull & Porter.....75&5
Acme, Lull & Porter.....75
Queen City Reversible.....75%

Extra 5@10% often given.

Shepard's Noiseless, Nos. 60, 65, 55 .....75&5%
Niagara, Gravity Locking, Nos. 1, 3 & 5.....75&5%
Clark's O. P., No. 1.....75&10%
Clark's O. P., Nos. 3 and 5....75&5%
Tip Pat'n, No. 1.....75&10%
Clark's No. 3.....75&5
Buffalo Gravity Locking, Nos. 1, 3 & 5.....70&10&5%
Shepard's Double Locking.....75%
Champion Gravity Locking.....75&5%
Pioneer .....75&10%
Empire .....65%
W. H. Co.'s Mortise Gravity Locking, No. 2.....60&10%

### Gate Hinges—
*Clark's or Shepard's—Doz. sets:*

| *No.* | *1* | *2* | *3* |
|---|---|---|---|
| *Hinges with L'f'chs.* | *$2.00* | *2.70* | *5.00* |
| *Hinges only.....* | *1.25* | *1.90* | *3.50* |
| *Latches only.....* | *.70* | *.75* | *.85* |

*New England:*
*With Latch.....doz..@$2.00*
*Without Latch.....doz..@$1.60*
*Reversible Self-Closing:*
*With Latch.....doz..@$1.75*
*Without Latch...doz. ...@$1.35*
*Western:*
*With Latch..... doz. $1.75*
*Without Latch.....doz..$1.15*
Wrightsville Hardware Co.:
Shepard's or Clark's Hinges and Latches, Hinges only or Latches only, Nos. 1, 2 or 3.....70%

### Miscellaneous—
Griffin Mfg. Co., Fleur de Lis Surface Hinges, ₱ doz. prs.....$1.00

### Pivot Hinges—
Bommer Bros. Pivot, Ball Bearing .....40%
Lawson Mfg. Co. Matchless.....30

### Spring Hinges—
*Holdback, Cast Iron...$6.75@$7.00*
*Non-Holdback, C'st Iron$6.50@$6.75*
J. Bardsley:
Bardsley's Non-Checking Mortise Floor Hinges.....40%
Bardsley's Patent Checking.33⅓%
Bommer Bros.:
Spring Butt Hinges.....40%
Surface Floor, Ball Bearing .....40%
Mortise Floor, Ball Bearing.40%
Lavatory Hinges.....40%
Non-Holdback Screen Door, Nos. 2000 and 900.....40%
Holdback Screen Door, No. 999.....₱ gro. $9.00
Chicago Spring Butt Co.:
Chicago Spring Hinges.....25%
Triple End Spring Hinges....50%
Chicago (Ball Bearing) Floor.50%
Garden City Engine House...25%
Keene's Saloon Door.....25%
Columbian Hardware Co.:
Acme, Wrought Steel.....30%
Acme, Brass.....25%
American .....30%
Columbia, ₱ gr., No. 14, $9.00; No. 18.....$25.00
Columbia, Adj., No. 7, ₱ gr.$12.00
Gem, new list.....30%
Clover Leaf and Acorn, per gro. .....$12.00
Oxford, new list.....30
Floor Spring Hinges..... 65&10
Columbian Steel.....65&10%
Lawson Mfg. Co.:
Matchless Spring Hinges.....30%
Matchless Jamb Hinges.....30%
Richards Mfg. Co.:
Superior Double Acting Floor Hinges .....40%
Shelby Spring Hinge Co.:
Buckeye All Steel Holdback Screen Door.....₱ gr. $9.00
Chief Ball Bearings Floor Hinge .....50%
Ball Bearing Door.....25%
No. 777, Sheet Steel Holdb'k, ₱ gr. pr.....$9.00
Standard Mfg. Co.:
Champion Double Acting Door Hinge .....25&10&10%
Standard Double Acting Floor Hinge .....25&10&10%
Superior Spring Hinge Co.:
Superior Floor Hinges.....33⅓%
Spring Hinges.....33⅓%

Extra 10% often given on most of these Hinges.

### Wrought Iron Hinges—
*Strap and T Hinges, &c., list February 10, 1903:*
*Light Strap Hinges..50&10%*
*Heavy Strap Hinges..60&5%*
*Light T Hinges.....50%*
*Heavy T Hinges.....40%*
*Extra Hvy. T Hinges.50&10%*
*Hinge Hasps.....33⅓%*
*Cor. Heavy Strap....60&5%*
*Cor. Ex. Heavy T....50&10%*
Extra 10&7½%.

*Screw Hook and Strap.*
*6 to 12 in..lb. 3½¢*
*1½ to 20 in..lb. 3½¢*
*22 to 36 in..lb. 3 ¢*

*Screw Hook and Eye:*
*to 1 inch.....lb. 6½¢*
*⅝-inch .....lb. 7½¢*
*½-inch .....lb. 8½¢*
10&7½&5%

### Hitchers, Stall—
Covert Mfg. Co., Stall Hitchers..30&2%

### Hods— Coal—
*M'f'gr's list; price per gross:*

| *Inch* | *15* | *16* | *17* | *18* |
|---|---|---|---|---|
| *Galv. Open...* | *$35* | *$39* | *$42* | *$46* |
| *Jap. Open...* | *26* | *28* | *31* | *35* |
| *Galv. Funnel...* | *43* | *48* | *52* | *56* |
| *Jap. Funnel....* | *33* | *36* | *39* | *43* |

10&7½&5%

### Masons' Etc.
Cleveland Wire Spring Co.:
Steel Brick, No. 162 .....each $1.05
Steel Mortar, No. 158.....each $1.35

### Hoes— Eye—
*Scoril and Oval Pattern, 60&10@60&10&10%*
*Grub, list Feb. 23, 1899, 70&10@70&10&10%*
D. & H. Scovil.....27½%
Am. Fork & Hoe Co. (Scovil Pattern) .....60%

### Handled—

*NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.*

Cronk's Weeding, No. 1, $2.00; No. 2, $2.50
Star Double Bit.....$2.50
Marsden Cotton Hoe....70&10&10%
Ft. Madison Crescent Cultivator Hoe, ₱ doz.....70&10%
Ft. Madison Mattock Hoes: Regular Weight.....₱ doz. 40&5%; Junior Size.....₱ doz. $4.00
Ft. Madison Sprouting Hoe, ₱ doz., 60&10%
Ft. Madison Dixie Tobacco Hoe..... 75&10&7½%
Kretsinger's Cut Easy.....70&10%
Warren Hoe.....45&10%
W. & C. Ivanhoe.....75&2%
B. B. 6 in., Cultivator Hoe.....$3.40
B. B. 6½ in.....$3.50
Acme Wedding.....₱ doz., net, $4.35
W. & C. Tuning Shuffle Hoe, ₱ doz. $5.25

### Hoisting Apparatus—

See *Machines, Hoisting.*

### Holders— Bit—

Angular, ₱ doz. $24.00.....45&10%

### Door—

Bardsley's, Iron, 40%; Brass and Bronze.....25%
Empire.....50%
Pullman.....25%
Richards Mfg. Co.: No. 117, Ever-ready, 40%; Nos. 118, 119, Sure Grip.....50%
Superior.....33⅓%

### File and Tool—

Nicholson File Holders and File Handles.....33⅓&40%

### Fruit Jar—

Triumph Fruit Jar Holder, ₱ gross, $18.00; ₱ doz.....$2.00

### Trace and Rein—

Fernald Double Trace Holder, ₱ doz. pairs.....$1.25
Dash Rein Holder, ₱ doz.....$1.25

### Hones—Razor—

Pike Mfg. Co., Belgian and Swaty, 50%; German.....53⅓%

### Hooks—Cast Iron—

Bird Cage, Reading.....40%
Clothes Line, Reading List.....40%
Coat and Hat, Reading.....45&20%
Coat and Hat, Wrightsville.....60&5%
Harness, Reading List.....40%

### Wire—

*Belt, Nos. 1 to 15....75&10@80%*
*Wire C. & H. Hooks..80@80&10%*
Bradley Metal Clasp Wire, Coat and Hat, 75&10@80%; Ceiling..75&10@80%
Columbian Hdw. Co., Gem.....75&10%
Parker Wire Goods Co., King..70&10%
Wire Goods Co.: Acme, 60&10%; Chief, 70&10%; Crown, 75%; Czar, 65&10%; V Brace, 75%; Czar Harness, 50%; Ceiling, 75%.

### Wrought Iron—

*Box, 6 in., per doz., $0.90; 8 in., $1.15.*
*Cotton.....doz. $1.25@$1.50*
Wrought Staples, Hooks, &c. See Wrought Goods.

### Miscellaneous—

*Hooks, Bench, see Stops, Bench.*
*Bush, Light, doz., $6.20; Medium, $6.75; Heavy, $7.65*
*Grass, best, all sizes, per doz., $2.75@$3.00*
*Grass, common grades, all sizes, per doz.....$1.25@$1.50*
*Whiffletree.....lb. 5¼@6¢*
*Hooks and Eyes:*
*Brass.....60@60&10%*
*Malleable Iron.....70@70&10%*
Covert Mfg. Co. Gate and Scuttle Hooks.....40%
Ft. Madison Cut-Easy Corn Hooks, ₱ doz. $3 25 net
Turner & Stanton Co. Cup and Shoulder.....85&10%
Bench Hooks See Bench Stops.
Corn Hooks See Knives, Corn.

### Horse Nails—

See *Nails, Horse.*

### Horseshoes—

See *Shoes, Horses.*

### Hose, Rubber—

*Garden Hose, ¾-inch:*
*Competition.....ft. 6@6½¢*
*3 ply Guaranteed....ft. 8½@9¢*
*4 ply Guaranteed....ft. 9½@12¢*
*Cotton Garden, ¾-in., coupled:*
*Low Grade.....ft. 8@ 9c*
*Fair Quality.....ft. 10@11¢*

### Irons— Sad—

*From ¼ to 10.....lb. 2½@2¾¢*
*B. B. Sad Irons.....lb. 3¼@3½c*
*Mrs. Potts', cents per set:*

| | Nos. 50 | 55 | 60 | 65 |
|---|---|---|---|---|
| *Jap'd Tops* | 83 | 80 | 93 | 91 |
| *Tin'd Tops* | 88 | 85 | 98 | 95 |

*New England Pressing..lb. 3¾@4¼¢*

### Bar and Corner—

Richards Mfg. Co., Bar, 60&10%; Corner.....60%

### Pinking—

*Pinking Irons.....doz. 60@65¢*

### Irons, Soldering

See *Coppers.*

### Jacks, Wagons—

Covert Mfg. Co.: Auto Screw.....30&2%; Steel, 45%
Lockport.....50%
Love's Steel.....30&5%
Richards' Tiger Steel, No. 130, 50&10%
Smith & Hemenway Co.'s.....25%

### Ladder—

Richards Mfg. Co., Ladder Jacks..50%

### Jointers—

Case Mfg. Co., Saw Jointers, $7.00..40%

### Kettles—

*Brass, Spun, Plain.....20@25%*
Enameled and Cast Iron—See Ware, Hollow.

### Knives—

#### Butcher, Kitchen, &c.—

Foster Bros.' Butcher, &c.....30%
Wilkinson Shear & Cutlery Co....60%

#### Corn—

Columbian Cutlery Co., Wilcut Brand Knives and Hooks.....60%
Withington Acme, ₱ doz., $2.65; Dent, $2.75; Adj. Serrated, $2.20; Serrated, $2.10; Yankee No. 1, $1.50; Yankee No. 2, $1.15.

#### Drawing—

*Standard List.....80&10@—%*
C. E. Jennings & Co., Nos. 45, 46, 25&7½%
Jennings & Griffin, Nos. 41, 42, 66⅔&7½%
Swan's.....66⅔@70%
Watrous.....16⅔%
L. & I. J. White.....20&5@25%

### Hay and Straw—

*Serrated Edge, per doz. $5.00@5.50*
Iwan's Sickle Edge.....₱ doz. $9.50
Iwan's Serrated.....₱ doz. $10 00

### Miscellaneous—

*Farriers'.....doz. $2.60@3.55*
Wostenholm's.....₱ doz. $3.00@3.25

### Knobs—

*Base, 2½-inch, Birch or Maple, Rubber Tip.....gro. $1.25@1.40*
*Carriage, Jap., Drive, all sizes, gro. .35@40¢*
*Door, Mineral.....doz. .65@70¢*
*Door, Por. Jap'd.....doz. 70@75¢*
*Door, Por. Nickel..doz. $2.05@2.15*
Brusley's Wood Door, Shutters, &c. 15%

### Lacing, Leather—

See *Belting, Leather*

### Ladders, Store, &c.—

Lane's Store.....25%
Myers' Noiseless Store Ladders....50%
Richards Mfg. Co.: Improved Noiseless, No. 112.....50%; Climax Shelf, No. 113.....50%; Trolley, No. 109.....50%

### Ladles, Melting—

L. & G. Mfg. Co., Melting and Plumbers'.....25
P., S. & W.....40&10%
Reading.....60%

### Lanterns—Tubular—

*Regular, No. 0.....doz. $4.35@4.50*
*Side Lift, No. 0.....doz. $4.60@4.75*
*Hinge Globe, No. 0. doz. $4.60@4.75*
*Other Styles.....40@40&10%*

### Bull's Eye Police—

*3-inch.....$3.75@4.00*

### Latches— Thumb—

*Roggin's Latches, Jap'd, with Screws.....doz. .35@40¢*

### Door—

Cronk & Carrier Mfg. Co., No. 101, ₱ doz. $2.00
Richards' Bull Dog Heavy, No. 125.....50&5
Richards' Trump, No. 127.....$1.00

### Leaders, Cattle—

*Small.....doz. 50¢; large, 60¢*
Covert Mfg. Co.: Cotton, 45%; Hemp, 45%; Jute, 35%; Sisal, 20%.

### Leathers, Pump—

See *Pumps—*

### Lifters, Transom—

R. & E.....10%

### Lines—

| *Wire Clothes, Nos.* | *18* | *19* | *20* |
|---|---|---|---|
| *100 feet* | *$2.30* | *1.95* | *1.75* |
| *75 feet* | *$1.95* | *1.65* | *1.50* |

Samson Cordage Works: Solid Braided Chalk, Nos. 0 to 3..40%; Solid Braided Masons'.....30
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50.....₱ gr. 20%
Mason's Lines, Shade Cord, &c.; White Cotton, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50; Colors, No. 3½, $1.75; No. 4, $2.25; No. 4½, $2.75; Linen, No. 3½, $2.50; No. 4 $3.50; No. 4½, $4.50.....20%
Tent and Awning Lines: No 5, White Cotton, $7 50; Drab Cotton $8.50.....20%
Clothes Lines, White Cotton: 50 ft., $2.75; 60 ft., $3 25; 70 ft., $3.75; 75 ft., $4.00; 80 ft., $4.25; 90 ft., $4.75; 100 ft. $5 25.....20
Turner & Stanton Co.: Solid Braided Chalk, Masons' and Awning Lines.....40%; Clothes Lines, White Cotton....20%; Shade Cord, Cotton or Linen....20%

### Locks— Cabinet—

*Cabinet Locks....33⅓@33⅓&5%*

### Door Locks, Latches, &c

*NOTE.—Net Prices are very often made on these goods.*
Reading Hardware Co.....40%
R. & E. Mfg. Co.....10%

### Padlocks—

R. & E. Mfg. Co. Wrought Steel and Brass.....75&10

### Sash, &c.—

Ives' Patent: Crescent.....₱ doz. $9; Automatic Gravity Metal Sash, ₱ gro., $149.58.....10; Window Ventilating.....10
Pullman Patent Ventilating Lock.....25
Reading Sash Locks.....40
Taylor Mfg. Co., Perfect Ventilating ₱ doz.....$0.75@$1.00

### Machines—Boring—

*Com. Upr't, without Augers $2.00@2.25*
*Com. Angl'r, without Augers, $2.25@2.50*
Ford Auger Bit Co.....$22 00
Jennings', Nos. 1 and 4.....25&7½%
Millers' Falls.....5.75
Snell's, Upright, $2.65; Angular, $2.90
Swan's Improved.....40&10%

### Corking—

Reisinger Invincible Hand Power... ₱ doz. $18.00

### Fence—

Williams' Fence Machines....each. $5.50

### Hoisting—

Moore's Anti-Friction Chain Hoist.30%
Moore's Hand Hoist, with Lock Brake.....20%
Moore's Cyclone High Speed Chain Hoist.....25%

### Ice Cutting—

Chandler's.....12½%

### Washing

Boss Washing Machine Co.: Per doz.
Boss No. 1.....$57.00
Boss Rotary.....$57.00
Champion Rotary Banner No. 1.$57.00
Standard Champion No. 1.....$50.00
Standard Perfection.....$27.00
Cincinnati Square Western.....$33.00
Uneeda American, Round.....$33.60

### Mallets—

*Hickory.....45&5@50%*
*Lignumvitæ.....45&5@50%*
*Tinners' Hickory and Applewood.....doz. 45&5@50%*

### Mangers, Stable—

Swett Iron Works.....50%

### Mats, Door—

Acme Flexible Steel.....50%
Elastic Steel (W. G. Co.), new list.50%

### Mattocks—

See *Picks and Mattocks.*

### Milk Cans—See *Cans, Milk.*

### Mills, Coffee, &c.—

Enterprise Mfg. Co.: Coffee.....20@25%; Shell and Corn.....25&10%
National list Jan. 1, 1902.....30%
Parker's Columbia and Victoria..33⅓%
Parker's Box and Side.....50&10%
Swift, Lane Bros. Co.....30%

### Motors, Water—

Divine's Red Devil.....30%

| $2.50 | 3.50 | 10.00 | 15.00..... | 33⅓% |
|---|---|---|---|---|
| No. 1. | 2 | 3 | 4 | |

Lippincott's:

| No..... | 1 | 2 | 3 | 4 | |
|---|---|---|---|---|---|
| | $2.50 | 3.50 | 10.00 | 15.00.. | 33⅓% |

Pike Mfg. Co., Tool and Knife Grinding.....33⅓%

### Mowers, Lawn—

*NOTE—Net prices are generally quoted*
*Cheapest, 10-in., $2.00; advance 10c for each size.*
*Cheap, 10-in., $2.25; advance 15@20¢ for each size.*
*Better Grade, 10-in., $3.00; advance 25¢ for each size.*

| | 12 | 14 | 16 | 18 in. |
|---|---|---|---|---|
| *High Grade...* | *$4.50* | *4.75* | *5.00* | *5.25* |

Continental.....60%
Great American.....70%
Great American Ball B'r'g, new list.70%
Quaker City.....70
Pennsylvania.....60%
Pennsylvania, Jr., Ball Bearing 50&10&5%
Pennsylvania Golf.....50
Pennsylvania Horse.....33⅓&5%
Pennsylvania Pony.....40&5%
Granite State: Style A, Low Wheel.....70%; Style B, Low Wheel.....70%; Style C, High Wheel, spcl. list, 70&10%; Style D, High Wheel, spcl. list..70%
Philadelphia: Styles M., S., C., K., T....70&10&5%; Style A, all Steel.....60&10&5%; Style E, High Wheel.....70&10&5%
Drexel and Gold Coin, special list.40%
Horse.....40&5%
Pony.....40&5%
36-in. Horse.....30&10
Eagle Horse.....30&5
I. X. L. Horse.....50

### Nails—

*Wire Nails and Brads, Miscellaneous.....85&5@85&10%*
*Cut and Wire, See Trade Report*
*Hungarian, Finishing, Upholsterers', &c. See Tacks.*

#### Horse—

| Nos. | 6 | 7 | 8 | 9 | 10 | |
|---|---|---|---|---|---|---|
| Anchor | 23 | 21 | 20 | 19 | 18 | .. ₱ lb net, 12¢ |
| Coleman | 13 | 12 | 12 | 11 | 11 | net ₱ lb |
| New Haven.. | 23 | 21 | 20 | 19 | 18 | .. ₱ lb net 12¢ |
| Livingston | 19 | 18 | 17 | 16 | 16 | .... 10% |
| Western | | | | | | ₱ lb 8½¢ |

*Jobbers' Special Brands, per lb. 9¢*

#### Picture—

| | 1½ | 2 | 2½ | 3 in |
|---|---|---|---|---|
| *Brass Hd. gro.* | *.55* | *.55* | *.60* | *.70* |
| *Por. Head, gro.* | *1.10* | *1.10* | *1.10* | |

#### Upholsters—

*Brass.....20%*
*Plated.....30&10%*

### Nippers—

*See Pliers and Nippers*

### Nipples—

Standard Nipple Co.....
Wrought Pipe Nipple.....

### Nuts—

*Blank or Tapped*

| *Cold Punched:* | *Off list* |
|---|---|
| *Square* | *5.40@5.50¢* |
| *Hexagon* | *6.00@6.10¢* |
| *Square, C. T. & R.* | *5.80@5.90¢* |
| *Hexagon, C. T. & R.* | *6.60@6.70¢* |
| *Hot Pressed:* | |
| *Square* | *5.80¢* |
| *Hexagon* | *6.80¢* |

### Oakum—

*Best.....lb. 6½¢*
*U. S. Navy.....lb. 6¢*
*Navy.....lb. 5¢*
*Plumbers' Spun Oakum..2¼@3¢*

### Oil—

Pike Mfg. Co., Stonoil.....40%

### Oil Tanks—See *Tanks, Oil.*

### Oilers—

*Steel, Copper Plated.....75%*
*Chase or Paragon:*
*Brass and Copper.....50&10%*
*Zinc.....65&10%*
*Railroad.....60&10%*
Malleable, Hammers' Improved, Nos. 11, 12 and 13, 20%; Old Pattern, Nos. 1, 2, 3, 50%
American Tube & Stamping Co.: Spring Bottom Cans.....70@70&10; Railroad Oilers, &c.....60@60&10
Maple City Mfg. Co.: Spring Bottom Cans.....70@70&10; Railroad Oilers, &c.....60@60&10

### Openers—Packing Box—

Herculever, ₱ doz., $24.....50%

### Can Openers—

*Per doz.*
*Sprague, Iron Handle....30@35¢*
*Sprague, Wood Handle.....40¢*
*Sardine Scissors.....$1.75@3.00*
Can and Bottle Openers, ₱ doz., net: Yankee, $0.75@$0.85; Little Gem, $0.50@$0.65; Nifty.....$0.75

### Egg—

Hartigan Nickel Plate, ₱ doz., $2.00; Silver Plate, $4.00.

### Packing—

*Asbestos Packing, Wick and Rope, any quantity.....18@20¢*

#### Rubber—

*(Fair quality goods.)*
*Sheet, C. I.....11@12¢*
*Sheet, C. O. S.....11@12¢*
*Sheet, C. B. S.....12@13¢*
*Sheet, Pure Gum.....40@45¢*
*Sheet, Red.....40@50¢*
Jenkins' '96, ₱ lb. 80¢.....25%

### Miscellaneous—

*American Packing....lb. 7@10¢*
*Cotton Packing.....lb. 16@25¢*
*Italian Packing.....lb. 9@10¢*
*Jute.....lb. 4@4¼¢*
*Russia Packing.....lb. 9@10¢*

### Pails, Water, Well, &c.—

See *Buckets.*

### Paint—

Dixon's Silica-Graphite, in 1 gal. pails and 5 gal. kegs, 25%; packages of larger size.....20%

### Pans— Dripping—

*Standard List...70&10@70&10&5%*
Edwards, Royal Blue.....75%

### Fry—

*Common Lipped:*

| *Nos.....* | *1* | *2* | *3* | *4* | *5* |
|---|---|---|---|---|---|
| *Per doz....* | *$0.75* | *0.85* | *0.95* | *1.15* | *1.36* |

### Refrigerator, Galva.—

| *Inch.....* | *12* | *14* | *16* | *18* |
|---|---|---|---|---|
| *Per doz....* | *$1.75* | *2.25* | *2.80* | *3.15* |

### Paper—Building Paper

*Asbestos: lb.*
*Roll Board or Building Felt, 6 to 30 lb., per 100 sq. ft..2½¢*
*Roll Board or Building Felt, 3-32 and ⅛ in., 45 to 60 lb., per 100 sq. ft.....3½¢*
*Mill Board, Sheet, 40 x 40 in., 1-32 to ½ in.....3¢*
*Per roll.*
*Rosin Sized Sheathing: 500 sq. ft. Light weight, 25 lbs. to roll, 48@58¢*
*Medium weight, 30 lbs. to roll, 56@70¢*
*Heavy weight, 40 lbs. to roll, 75@78¢*
*Black Water Proof Sheathing, 500 sq. ft., 1 ply, 65¢; 2 ply, 85¢; 3 ply, $1.10; 4 ply, $1.25.*
*Deafening Felt, 9, 6 and 4½ sq. ft. to lb., ton.....$54.50*
*Red Rope Roofing, 250 sq. ft. per roll.....$1.75*

#### Tarred Paper—

*1 ply Coll 400 sq. ft., ton, $34.00@$38.00*
*2 ply, roll 108 sq. ft.....*
*3 ply, roll 108 sq. ft.....*
*Slater's Felt Coll 500 sq. ft.....*

### Sand Paper and Cloth—

*Flint and Emery.....*
*Garnet Paper and Cloth.....*

### Parers—Apple—

Goodell Co.:
Family B., Steel.....$
Improved Bee Steel.....
No. 1.....
Two Tube.....
White Mountain.....
Boston Improved.....
Deady.....
Eureka Improved.....
New Century.....
Russet.....
Lancaster Nail Co.:
Daisy.....₱ doz. $4.00
Little Star.....₱ doz. $5.00
Rochester Table.....₱ doz $6.20
Reading Hardware Co.:
Advance.....₱ doz. $4.00
Baldwin.....₱ doz $4.00
Reading 72.....₱ doz $3.25
Reading 78.....₱ doz $6.25

### Orange—

Goodell Co. Success.....each $20.00

### Potato—

Saratoga.....₱ doz $7.50
White Mountain.....₱ doz. $6.00

### Picks and Mattocks—
(*List Jan., 1908.*)

*List* .....70&10@70&10&10%
Cronk's Handled Garden Mattock, ₱ doz., $3.00.....33⅓%

### Pinking Irons—
See *Irons, Pinking.*

### Pins, Escutcheon—
*Brass* .....50@50&10%
*Iron, list Nov. 11, '85*..60@60&10%

### Pipe, Cast Iron Soil—
*Standard, 2-6 in*.....70@—%
*Extra Heavy, 2-6 in*..75&10@—%
*Fittings, Standard and Heavy,* 80&10@80&10&10%

### Pipe, Merchant—

| | Consumers, Carloads, Steel. | | Iron. | |
|---|---|---|---|---|
| | Blk. | Galv. | Blk. | Galv. |
| | % | % | % | % |
| ⅛ and ¼ in. | 66 | 50 | 64 | .. |
| ⅜ in. | 68 | 54 | 66 | 52 |
| ½ in. | 70 | 58 | 68 | 56 |
| ¾ to 6 in. | 74 | 64 | 72 | 62 |
| 7 to 12 in. | 71 | 56 | 69 | 54 |

### Pipe, Vitrified Sewer—
*Carload lots.*
*Standard Pipe and Fittings, 3 to 24 in., f.o.b. factory:*
*First-class* .....87%
*Second-class* .....90%

### Pipe, Stove—

| | Per 100 joints. C. L. | L. C. L. |
|---|---|---|
| Edwards' Nested: | | |
| 5 in., Standard Blue | $6.25 | $7.25 |
| 6 in., Standard Blue | 6.75 | 7.75 |
| 7 in., Standard Blue | 7.75 | 8.75 |
| 5 in., Royal Blue | 7.00 | 8.00 |
| 6 in., Royal Blue | 7.50 | 8.50 |
| 7 in., Royal Blue | 8.50 | 9.50 |
| Wheeling Corrugating Co.'s Nested: | | |
| 5 in., Uniform Color | $5.90 | $6.90 |
| 6 in., Uniform Color | 6.40 | 7.40 |
| 7 in., Uniform Color | 7.40 | 8.40 |

### Planes and Plane Irons—
### Wood Planes—
*Bench, first qual*.....30@30&10%
*Bench, second qual*...40@40&10%
*Molding* .....25@25&10%
Chapin-Stephens Co.:
Bench, First Quality.....30%
Bench, Second Quality.....40%
Molding and Miscellaneous.....25%
Toy and German.....30%
Union .....60%

### Iron Planes—
Chaplin's Iron Planes.....60%
Union .....60%

### Plane Irons—
*Wood Bench Plane Irons, list Dec. 12, '06*.....25%
Buck Bros.....30%
Chapin-Stephens Co.....25%
Union .....50%
L. & I. J. White.....20&5@25%

### Planters, Corn, Hand—
Kohler's Eclipse..... ₱ doz. $7.50

### Plates—
*Felloe* .....*lb*. 3¾@4¢
Avery Stamping Co.:
Standard Wrot. Steel Felloe Plates in 100 lb kegs, per 100 lb, ¾-in. to 1¼-in., $4.00 net; 1¼-in. to 2-in., inclusive, $3.75 net.

### Steel Pipe Hook—
Never-Break .....75&10%

### Pliers and Nippers—
*Button Pliers*....75&5@75&10&5%
*Gas Burners, per doz., 5 in., $1.25 @$1.30; 6 in., $1.45 $1.50.*
*Gas Pipe*.. 7 $2.00 | 8 $2.25 | 10 $2.75 | 12-in. $3.50
Acme Nippers.....50&5%
Cronk & Carrier Mfg. Co.:
American Button.....80%
Improved Button.....75&10%
Cronk's .....60%
No. 80 Linemen's.....50%
Stub's Pattern.....45%
Combination and others.....33⅓
Heller's Farriers' Nippers, Pincers and Tools.....40&5@40&10&5
P. S. & W. Tinners' Cutting Nippers .....40%
Swedish Side, End and Diagonal Cutting Pliers.....50%
Utica Drop Forge & Tool Co.: Pliers and Nippers, all kinds....40%

### Plumbs and Levels—
Chapin-Stephens Co.:
Plumbs and Levels.....30@30&10%
Chapin's Imp. Brass Cor..40@40&10%
Pocket Levels.....30@30&10%
Extension Sights.....30@30&10
Machinists' Levels.....40@40&10
Disston's Plumbs and Levels....60&10%
Disston's Pocket Levels .....60&10%
Stanley's Dulex.....35%
Woods' Extension.....35%

### Points, Glaziers'—
*Bulk and 1-lb. papers*....*lb*. 9 ¢
*½ lb. papers*.....*lb*. 9½¢
*¼-lb. papers*.....*lb*. 10 ¢

### Police Goods—
*Manufacturers' Lists*..25@25&5%
Tower .....25%

### Polish—Metal, Etc—
Ladd Co.:
Putzade Liquid ₱ gro., ½ pts., $12.00; 1 pts., $20.00; 1 qts., $40.00; ₱ doz ½ gals, $6.35; 1 gals., $12.00.
Prestoline Liquid, No. 1 (½ pt.), ₱ doz. $3.00; No. 2 (1 qu.), $9.00..40%
Prestoline Paste.....40%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, ₱ doz. 50¢; ₱ gro. $4.50; ½ lb boxes, ₱ doz. $1.25; 1 lb boxes, ₱ doz. $2.25.
U. S. Liquid, 8 oz. cans, ₱ doz., $1.25.
Barkeepers' Friend Metal Polish, ₱ doz., $1.75.

### Stove—
Black Eagle Benzine Paste, 5 lb cans, ₱ lb 10¢
Black Eagle, Liquid, ½ pt. cans.. ₱ doz. 75¢
Black Jack Paste, ¾ lb cans, ₱ gr. $9.00
Black Kid Paste, 5 lb can...each, $0.65
Ladd's Black Beauty Liquid, per 100 tins.....$6.75
Joseph Dixon, ₱ gr. $5.75.....10%
Dixon's Plumbago.....₱ lb 8¢
Fireside .....₱ gr. $2.50
Gem, ₱ gr. $4.50.....10%
Japanese .....₱ gr. $3.50
Jet Black.....₱ gr. $3.50
Peerless Iron Enamel, 10 oz. cans.. ₱ doz. $1.50

### Window Polish—
Benj. P. Forbes:
Glasbright, No. 2, gal pails, ₱ doz., $24.00; each, $2.50; 1 lb cans, each .....75¢
Glasbright Powder, bbls., ₱ lb..20¢

### Poppers, Corn—
*1 qt. Square..doz.$0.80; gro.$8.75*
*1 qt. Round..doz.$0.90; gro.$10.00*
*1½ qt. Square.doz.$1.20; gro.$12.00*
*2 qt. Square..doz.$1.50; gro.$15.00*

### Post Hole and Tree Augers and Diggers—
See also *Diggers, Post Hole, &c.*

### Posts, Steel—
Steel Fence Posts, each, 5 ft., 42¢; 6 ft., 46¢; 6½ ft., 48¢.
Steel Hitching Posts.....each $1.30

### Potato Parers—
See *Parers, Potato.*

### Pots, Glue—
*Enameled* .....40%
*Tinned* .....50&10%

### Powder—
*In Canisters:*
*Duck, 1 lb*.....*each* 4½¢
*Fine Sporting, 1 lb*....*each* 75¢
*Rifle, ½-lb*.....*each* 15¢
*Rifle, 1 lb*.....*each* 25¢
*In Kegs:*
*12½-lb. kegs*.....$3.50
*25 lb kegs*.....$4.50
King's Semi-Smokeless:
Keg (25 lb bulk).....$6.50
Half Keg (12½ lb bulk).....$3.50
Quarter Keg (6¼ lb bulk).....$1.90
Case 24 (1 lb cans bulk).....$8.50
Half case (1 lb cans bulk).....$4.50

| King's Smokeless: | Shot Gun. | Rifle. |
|---|---|---|
| Keg (25 lb bulk) | $12.00 | $15.00 |
| Half Keg (12½ lb bulk) | 6.25 | 7.75 |
| Quarter Keg (6¼ lb bulk) | 3.25 | 4.00 |
| Case 24 (1 lb cans bulk) | 14.00 | 17.00 |
| Half case 12 (1 lb c. bk) | 7.25 | 8.75 |

### Presses—
### Fruit, Wine and Jelly—
Enterprise Mfg. Co.....20@25%

### Seal Presses—
Morrill's No. 1, ₱ doz., $20.00.....50%

### Pruning Hooks and Shears
See *Shears.*

### Pullers, Nail, Etc.—
Cyclops .....50%
Miller's Falls, No. 3, ₱ doz., $12.00...33⅓&10%
Morrill's No. 1, Nail Puller, ₱ doz. $20.00 .....50%
Pearson No. 1, Cyclone Spike Puller, each $30.00.....50%
The Scranton Co. Case Lots:
No. 2B (large).....$5.50
No. 3B (small).....$5.00
Smith & Hemenway Co.:
Diamond B.....70%
Giant .....50%
Staple Pullers, Utica and Davison .....60%
Taylor Mfg. Co., Sampson Tack, ₱ doz.....$0.40

### Pulleys, Single Wheel—

| | | | | |
|---|---|---|---|---|
| *Inch* | 1½ | 1¾ | 2 | 3 |
| *Awning or Tackle, doz* | $0.30 | .45 | .60 | 1.05 |

*Hay Fork, Swivel or Solid Eye, doz., ¼ in., $1.25; 5 in., $1.55*

| | | | | |
|---|---|---|---|---|
| *Inch* | 2 | 2¼ | 2½ | |
| *Hot House, doz* | $0.65 | .85 | 1.20 | |
| *Inch* | 1¼ | 1½ | 1¾ | 2 |
| *Screw, doz*.... | $0.16 | .19 | .23 | .30 |
| *Inch* | 1¾ | 2 | 2¼ | 2½ |
| *Side, doz*..... | $0.25 | .40 | .55 | .60 |
| *Inch* | 1½ | 1¾ | 2 | 2½ |

### Sash Pulleys—
*Common Frame; Square or Round End, per doz., 1¾ and 2 in*.....17@20¢
*Auger Mortise, no Face Plate, per doz., 1¾ and 2 in*....20@21¢
Acme, No. 35..1¾ in. 19¢; 2 in., 20½¢
American Pulley Co.:
Wrought Steel American Plain Axle .....50&10%
Wrought Steel, Eagle.....17@20¢
Top Notch, Electrically Welded, Nos. 3 and 4.....19¢
Common Sense.....₱ doz. 20¢
Fox All-Steel, Nos. 3 and 7, 2 in.... ₱ doz. 50%
Grand Rapids All Steel Noiseless..50%
Niagara, No. 25, 1¾ in., 19¢; 2 in. .....20½¢
No. 26 Troy..1¾ in., 14½¢; 2 in., 16½¢
Star, No. 26....1¾ in., 19¢; 2 in., 20½¢
Tackle Blocks See Blocks

### Pumps—
*Cistern* .....60%
*Pitcher Spout*.....75&5@75&10%
*Wood Pumps, Tubing, &c*....50%
Barnes Dbl. Acting (low list).....45%
Barnes Pitcher Spout.....80
Contractors' Rubber Diaphragm, No. 2, B. & L. Block Co.....$16.00
Daisy Spray Pump.....₱ doz. $6.50
Flint & Walling's Fast Mail Hand (low list).....50&5%
Flint & Walling's Fast Mail (low list) .....50&5%
Flint & Walling's Tight Top Pitcher .....80%
National Specialty Mfg. Co., Measuring, Nos. 2, $6.00; 3, $5.50.....30%
Myers' Pumps (low list).....
Myers' Power Pumps.....
Myers' Spray Pumps.....

### Pump Leathers—
*Plunger and Valve Leathers—Per gro.:*

| *No*..... | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| | $5.00 | 6.00 | 7.00 | 8.00 |

*Cup Leathers—Per 100:*

| *Inch*.... | 2½ | 3 | 3½ | 4 |
|---|---|---|---|---|
| | $5.00 | 7.00 | 9.00 | 12.00 |

### Punches—
*Saddlers' or Drive, good, doz*.50@75¢
*Spring, single tube, good quality* .....$1.75
*Revolving (4 tubes)*....*doz*.$3.50
Bemis & Call Co.'s Cast St'l Drive.50%
Morrill's Nos. 1AA, 1A, 1B, 1C, 1D, $15.00.....50%
Hercules, 1 die, each $5.00.....50%
Niagara Hollow Punches.....40%
Niagara Solid Punches.....55&10%
Tinners' Hollow, P., S. & W. Co..40%
Tinners' Solid, P., S. & W. Co., ₱ doz., $1.44.....40&10%

## Rail—Barn Door, &c.—
*Sliding Door, Painted Iron, 2½@2¾¢*
*Sliding Door, Wrought Brass, 1⅛ in., lb., 36¢*.....30%
Cronk's:
Double Braced Steel Rail..₱ ft. 2¾¢
O. N. T. Rail.....2¾¢
Griffin's:
xxx, ₱ 100 ft., 1 x 3-16 in., $3.25; 1¼ x 3-16 in., $3.75.
Hinged Hanger, ₱ 100 ft., 1 x 3-16 in., $3.50; 1¼ x 3-16 in., $4.00.
Lane's:
Hinged Track, ₱ 100 ft.....$3.45
O. N. T., ₱ 100 ft., 1 in., $3.12½; 1¼ in., $3.45; 1½ in., $4.00.
Standard, 1¼ in.....₱ 100 ft. $4.00
Lawrence Bros.:
1 x 3 16 in., ₱ 100 ft., $7.50; 1¼ x 3-16 in., $8.75.....55&7½%
McKinney's:
Hinged Hanger Track, ₱ ft., 11¢. 60&5%
1 x 3-16 Track.....55&7½%
Myers' Stayon Track.....60&5%
Richards Mfg. Co.:
Common, 1 x 3-16 in., $3.00; 1¼ x 3-16, $3.25; 1¼ x 3-16, $3.50.
Special Hinged Hanger Rail..60&10%
Lag Screw Rail, No. 65.....50%
Gauge Trolley Track, ₱ ft., No. 31, 9¢; No. 32, 14¢; No. 33, 20¢.
No. 50.....60&10%
Nos. 61, $3.00; 62, $3.25; 63, $3.50; 64, $4.00; 45, $3.25; 46, $3.50; 49, No. 1, $3.25; 49, No. 2, $3.50.

### Rakes—
*NOTE.—Many goods are sold at net prices.*
Fort Madison Red Head Lawn....$3.25
Fort Madison Blue Head Lawn....$2.75
Cronk's:
Steel Garden: Champion, ₱ doz., 12-tooth, $3.75; 14-tooth, $4.00; 16-tooth, $4.25; Ideal, ₱ doz., 12-tooth, $3.00; 14-tooth, $3.30; 16-tooth, $3.60.
Victor, 12-tooth, $2.25; 14-tooth, $2.50; 16-tooth, $2.75.
Queen City Lawn, ₱ doz., 20 teeth, $2.85; 24, $3.00.....net
Anticlog Lawn, ₱ doz.....$4.00
Malleable Garden..... ....70&10%
Ideal Steel Garden, ₱ doz., 12 teeth, $15.00; 14, $16.00; 16, $18.00.....80%
Kohler's:
Jumbo Lawn, 36-tooth....₱ doz. $5.00
Lawn Queen, 20-tooth....₱ doz. $2.85
Lawn Queen, 24-tooth....₱ doz. $3.00
Paragon, 20-tooth.....₱ doz. $2.65
Paragon, 24-tooth.....₱ doz. $2.75
Steel Garden, 14-tooth....₱ doz. $2.40
Malleable Garden, 14-tooth, ₱ doz. $1.75@2.00

### Rasps, Horse—
Disston's .....75%
Heller Bros.'.....70&5@70&10&5
Liveright Bros.' Gold Medal.70&10@75%
McCaffrey's American Standard..... 60&10&5%
New Nicholson.....70&10@75%
See also Files.

### Razors—
John Engstrom Swedish.....65%
Sharp Shaver.....60
Fox Razors, ₱ doz., No. 12, $24.00; No. 14, $20.00; No. 82, Platina, $36.00. } 10&5 50%

### Reels, Fishing—
Hendryx:
M 6, Q 6, A 6, B 6, M 9¼, M 16, Q 16, A 16, B 16, 4008, Rubber, Populo Nickeled Populo.....20%
Aluminum German Silv., Bronze.25%
1210 N, 124 N.....20%
2004 N, 06 N, 6 RM, G 9.....25%
4 N, 6 PN, 24 N, 26 PN .....20%
2004 P., 33⅓%; 2004 PN., 33⅓%; 0924 N., 33⅓%; 02084 N., 33⅓%; 002904 PN., 33⅓%; 802 N., 33⅓%; 986 PN, 2004 N, 974 PN.....25%
5009 PN, 5009 N.....20%
Competitor, 102 P, 102 PN, 202 P, 202 PN 102 PR, 202 PR.....20%
304 P, 304 PN, 00304 P, 00304 PN.33⅓%

### Registers—*List July 1, 1903.*
*Japanned, Electroplated and Bronzed* .....70%
*White Porcelain Enamel*..50&10%
*Solid Brass or Bronze Metal*.40%

### Revolvers—
*Single Action*.....$5¢@$1.00
*Double Action, except 44 cal*.$2.00
*Double Action, 44 caliber*...$2.00
*Automatic* .....$4.00
*Hammerless* .....$4.50

### Riddles, Hardware Grade
*16 in*.....*per doz*.$2.50@$2.75
*17 in*.....*per doz*.$2.75@$3.00
*18 in*.....*per doz*.$3.00@$3.25

### Rings and Ringers—
### Bull Rings—

| | 2 | 2½ | 3 inch. |
|---|---|---|---|
| *Steel* | $0.70 | 0.75 | 0.80 doz. |
| *Copper* | $1.10 | 1.25 | 1.65 doz. |

### Hog Rings and Ringers—
*Hill's Rings, gro. boxes $4.50@$4.50*
*Hill's Ringers, Gray Iron, doz., 60@75¢*
*Hill's Ringers, Malleable Iron, doz.80@95¢*
*Blair's Rings..per gro.$5.00@$5.50*
*Blair's Ringers...per doz.75@90¢*

### Rivets and Burrs—
*Copper* .....50@50&10%
*Carriage, Coopers', Tinners', &c.:*
*Black* .....70&10%
*Metallic Tinned*.....70%

### Bifurcated and Tubular—
*Assorted in Boxes.*
*Bifurcated, per doz. boxes, pasteboard boxes, 50 count, 23@25¢; Tin boxes, 100 count, 29@32¢.*
*Tubular, per doz. boxes, 50 count, 29@32¢; 100 count, 51@58¢.*

### Rollers—
Cronk's Stay, No. 50.....$1.00
Cronk's Brinkerhoff No. 55, $0.60; No. 56, $0.75; No. 60.....$0.75
Lane's Stay.....40%
Richards' Stay:
Handy Adj. and Reversible No. 53.75¢
O. K. Adj. and Reversible No. 58.50¢
Lag Screw, Nos. 55 and 57.....50%
Underwriters', Nos. 59, 60.....50%
Favorite, No. 54.....60%

### Rope—
*Manila, 7-16 in. diam. and larger: Pure* .....*lb*.9 ¢
*Sisal, 7-16 in. diam. and larger: Pure* .....*lb*.7¢
*Sisal, Hay, Hide and Bale Ropes, Medium and Coarse: Pure* .....*lb*.7½@7¾¢
*Sisal, Tarred, Medium Lath Yarn: Pure* .....*lb*.6½@6¾¢
*Cotton Rope:*
*Best, ¼-in. and larger*...18@20¢
*Medium, ¼-in. and larger*.16@17¢
*Common, ¼-in. and larger*..10¢
*In coils, ½¢ advance.*
*Jute Rope:*
*Thread, No. 1, ¼-in. and up, lb.* .....6¼¢
*Thread, No. 2, ¼-in. and up, lb.* .....5¾¢

### Wire Rope—
*Galvanized* .....37½&2½%
*Plain* .....45&2½%

### Ropes, Hammock—
Covert Mfg. Co.:
Jute, 35%; Sisal.....20%

### Rules
*Boxwood* .....60@60&10%
*Ivory* .....35&10@35&10&5%
Chapin-Stephens Co.:
Boxwood .....60%
Flexifold .....40%
Ivory .....25@25&10%
Miscellaneous .....50@50&10%
Stephens' Combination.....55%
Stationers' .....50@50&10
Keuffel & Esser Co.:
Folding, Wood.....35&10%
Folding, Steel.....33⅓&10%
Lufkin's Steel.....50&10%
Lufkin's Lumber.....50&10
Upson Nut Co.:
Boxwood .....60@60&10%
Ivory .....35&10@35&10&10

## Sash Balances—
See *Balance, Sash.*

### Sash Locks—See *Locks, Sash.*

### Sash Weights—
See *Weights, Sash.*

### Sausage Stuffers or Fillers
See *Stuffers or Fillers, Sausage.*

### Saw Frames—
See *Frames, Saw.*

### Saw Sets—See *Sets, Saw.*

### Saw Tools—See *Tools, Saw.*

### Saws—

Atkins':
Circular ..... 45%
Band ..... 50@50&10%
Butcher Saws ..... 50%
Cross Cuts ..... 35%
One-Man Cross Cut ..... 40%
Narrow Cross Cut ..... 50%
Hand, Rip and Panel ..... 35&5%
Miter Box and Compass ..... 40%
Mulay, Mill and Drag ..... 45%
Wood Saws ..... 40&10%
Chapin-Stephens Co.:
Turning Saws and Frames. 30@30&10%
Diamond Saw & Stamping Works:
Sterling Kitchen Saws ... 30&10&10%
Disston's:
Circular, Solid and Ins'ted Tooth. 50%
Band, 2 to 18 in. wide ..... 60%
Band, ¼ to 1¾ ..... 60%
Crosscuts ..... 45%
Narrow Crosscuts ..... 50%
Mulay, Mill and Drag ..... 50%
Framed Woodsaws ..... 25%
Woodsaw Blades ..... 25%
Woodsaw Rods, Tinned ..... 15%
Hand Saws, Nos. 12, 99, 9, 16, d100, D8, 120, 76, 77, 8 ..... 25%
Hand Saws, Nos. 7, 107, 107½, 3, 1, 0, 00, Combination ..... 30%
Compass, Key Hole, &c. ..... 25%
Butcher Saws and Blades ..... 30%
C. E. Jennings & Co.'s:
Back Saws ..... 16⅔%
Butcher Saws ..... 25&7½%
Compass and Key Hole Saws, 33⅓&7½%
Framed Wood Saws ..... 25&7½%
Hand Saws ..... 12½%
Wood Saw Blades ..... 33⅓&7½%
Millers Falls:
Butcher Saws ..... 15&10%
Star Saw Blades ..... 15&10%
Massachusetts Saw Works:
Victor Kitchen Saws ..... 40&10&50%
Butcher Saws Blades ..... 35@40%
Peace & Richardson's Hand Saws. 30%
Simonds':
Circular Saws ..... 45%
Crescent Ground Cross Cut Saws. 30%
One-Man Cross Cuts ..... 40&10%
Gang Mill, Mulay and Drag Saws. 45%
Band Saws ..... 50%
Back Saws ..... 25@25&7½%
Butcher Saws ..... 35@35&7½%
Hand Saws ..... 25@25&7½%
Hand Saws, Bay State Brand .... 45%
Compass, Key Hole, &c. .25@25&7½%
Wood Saws ..... 40&7½%
Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws ..... 50%

### Hack Saw Blades and Frames—

Atkins' Hack Saw Blades A A A. .25%
Disston's:
Concave Blades ..... 25%
Keystone Blades ..... 35%
Hack Saw Frames ..... 30%
Simonds, 25%; The Best, 35%; Culley ..... 35%
C. E. Jennings & Co.'s:
Hack Saw Frames, Nos. 175, 180 .... 40&7½%
Hack Saws, Nos. 175, 180, complete, 40&7½%
Goodell's Hack Saw Blades .... 40&10%
Griffin's Hack Saw Frames .. 35&5&10%
Griffin's Hack Saw Blades .... 35&5&10%
Star Hack Saws and Blades .... 15&10%
Sterling Hack Saw Blades .. 30&10&5%
Sterling Hack Saw Frames .. 30&10&10%
Sterling Power Hack Saw Machines, each, No. 1, $25.00; No. 2, $30.00 .. 10%
Victor Hack Saw Blades ..... 20%
Victor Hack Saw Frames ..... 40%
Whitaker Mfg. Co.:
National Hand Blades, Hand Frames, Power Blades ..... 40%

### Scroll—

Barnes, No. 7, $15 ..... 25%
Barnes' Scroll Saw Blades ..... 40%
Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20 ..... 20%
Lester, complete, $10.00 ..... 15&10%
Rogers, complete, $3.50 and $4.00 .. 15&10%

### Scales—

*Union Platform, Plain. $2.10@2.20*
*Union Platform, Stpd. $2.20@2.30*
Chatillon's:
Eureka ..... 25%
Favorite ..... 40%
Grocers' Trip Scales ..... 50%
The Standard Portables ..... 40%
The Standard R. R. and Wagon ..... 50&10%

### Scrapers—

*Box, 1 Handle ..... doz. $1.85@2.10*
*Box, 2 Handle ..... doz. $2.35@2.50*
*Ship ... Light, $2.00; Heavy, $4.50*
Chapin-Stephens Co., Box. .30@30&10%
Richards Mfg. Co., Foot ..... 60%

### Screws—Bench and Hand

*Bench, Iron, doz., 1 in., $2.50@ 2.75; 1¼, $3.00@3.25; 1½, $3.50@3.75*
*Bench, Wood ..... 20@20&10%*
*Hand, Wood ... 70&10@70&10&10%*
Chapin-Stephens Co., Hand ..... 70@70&10&2½%

### Coach, Lag and Hand Rail—

*Lag, Cone Point ... 80&5@80&10%*
*Coach, Gimlet Point .. 80@80&5%*
*Hand Rail ..... 70&10@75%*

### Jack Screws—

*Standard IAst ..... 70&10@75%*
Millers Falls ..... 50&10&10%
Swett Iron Works ..... 70@75%

### Machine—

*Out Tread, Iron, Brass or Bronze:*
*Flat Head or Round Head, 50@50&10%*
*Fillister Head ..... 40@40&10%*
*Rolled Thread, F. H. or R. H., Iron ..... 75&10%*
*F. H. or R. H., Brass, Nos. 8 to 14 ..... 65&10%*

### Set and Cap—

*Set (Iron) ..... 75&10&7½%*
*Set (Steel), net advance over Iron ..... 25%*
*Sq. Hd. Cap ..... 70&10&7½%*
*Hex. Hd. Cap ..... 70&10&7½%*
*Rd. Hd. Cap ..... 50&7½%*
*Fillister Hd. Cap ..... 60&7½%*

### Wood—

*List July 23, 1903.*
*Flat Head, Iron ..... 87½&5@ .. %*
*Round Head, Iron .... 85&5@ .. %*
*Flat Head, Brass ..... 80&5@ .. %*
*Round Head, Brass .. 77½&5@ .. %*
*Flat Head, Bronze .... 75&5@ .. %*
*Round Head, Bronze . 72½&5@ .. %*
*Drive Screws ..... 87½&5@ .. %*

### Scroll Saws—

See *Saws, Scroll.*

### Scythes—

*Per doz.*
*Grass, No. 1, Plain ..... $7.00*
*Clipper, Bronzed Webb ..... $7.25*
*No. 3 Clipper, Pol'd Webb ... $7.50*
*No. 6 Clipper and Solid Steel. $7.75*
*Bush, Weed and Bramble, Nos. 11, 12 and 13 ..... $7.25*
*Grain, No. 1 ..... $9.00@9.50*
*Bronzed Webb, No. 1 .. $9.25@9.75*
*Nos. 3 and 4 Clipper, Grain, $9.50@10.00*
*Solid Steel, No. 6 .... $10.00@10.50*

### Seeders, Raisin—

Enterprise ..... 25@30%

### Sets— Awl and Tool—

Fray's Tool Handles, Nos. 1, $12; 2, $16; 3, $12 ..... 50%
Millers Falls Adj. Tool Handles, No. 1, $12; No. 4, $12; No. 5, $18 .. 20&10%

### Garden Tool Sets—

Ft. Madison Three Plows, Hoe, Rake and Shovel ..... ℔ doz. sets $9.00

### Sets, Nail—

*Octagon ..... gro. $3.50@3.75*
Buck Bros. ..... 27½%
Mayhew's ..... ℔ gro. $9.00
Snell's Corrugated, Cup Pt .... 40&10%
Snell's Knurled, Cup Pt ..... 40&10%
Victor Knurled, Cup Pt .... ℔ gro. $7.50

### Rivet—

*Regular list ..... 75@75&10%*

### Saw—

Atkin's:
Criterion ..... 40%
Adjustable ..... 40%
Disston's Star, Monarch and Triumph ..... 30%
Morrill's No. 1 ..... $15.00
Nos. 3 and 4, Cross Cut .... $20.60
No. 5, Mill ..... $30.00
Nos. 10, 11, 95 ..... $15.60
No. 1 Old Style ..... $10.00
Special ..... $16.25
(50%)
Giant Royal Cross Cut ..... ℔ doz. $7.50
Royal, Hand ..... ℔ doz. $4.50
Taintor Positive ..... ℔ doz. $6.75

### Shaving—

Fox Shaving Sets, No. 30 ..... ℔ doz., net, $24.00
Smith & Hemenway Co.'s ..... 75%

### Sharpeners, Knife—

Pike Mfg. Co.:
Fast Cut Pocket Knife Hones, ℔ doz. ..... $1.50
Mounted Kitchen Sand Stone, ℔ doz. ..... $1.50
Natural Grit Carving Knife Hones, ℔ doz. ..... $3.00
Quick Cut Emery Carving Knife Hones, ℔ doz. ..... $1.50
Quick Edge Pocket Knife Hones, ℔ doz. ..... $2.50
(50%)

### Skate—

Smith & Hemenway Co., Eureka .. 50%

### Shaves, Spoke—

*Iron ..... doz. $1.25*
*Wood ..... doz. $2.00*
Bailey's (Stanley R. & L. Co.) ..... 45%
Chapin-Stephens Co. ..... 30@30&10%
Goodell's, ℔ doz. $9.00 ..... 15&10%

### Shears—

| *Cast Iron..* | *7* | *8* | *9 in.* |
|---|---|---|---|
| *Best* | *$16.00* | *18.00* | *20.00 gro.* |
| *Good* | *$13.00* | *15.00* | *17.00 gro.* |
| *Cheap* | *$5.00* | *6.00* | *7.00 gro.* |

*Straight Trimmers, &c.:*
*Best quality Jap .... 70@70&10%*
*Best quality Nickel .. 60@60&10%*
*Tailors' Shears ..... 40@40&10%*
Acme Cast Shears ..... 40@40&5%
Heinisch's Tailor's Shears ..... 10%
National Cutlery Co.'s Nickel Plated, 60&10%; Japan Handles ..... 70&10%
Wilkinson Shear & Cutlery Co.:
Sheep, 1900 list ..... 30&10&5%
Grass ..... 50&10%
Horse or Mule ..... 50&10%
J. Wiss & Sons Co.:
Best Quality Jap'd ..... 60&10%
Best Quality Nickeled ..... 50&10%
Tailors' ..... 25%

### Tinners' Snips—

*Steel Blades ..... 20&5@20&10%*
*Steel Laid Blades ..... 40&10@50%*
Acme Cast Snips ..... 40@45&5%
Forged Handles, Steel Blades, Berlin ..... 50%
Heinisch's Snips ..... 40%
Jennings & Griffin Mfg. Co.'s 6½ to 10 in. ..... 33⅓&7½%
National Cutlery Co.'s Forged Steel. 50%
Niagara Snips ..... 40%
P., S. & W. Forged Handles, 25%; W. R. W. ..... 50%
J. Wiss & Sons Co.:
Wiss Forged Steel ..... 25%

### Pruning Shears—

Cronk's Hand Shears ..... 33⅓%
Cronk's Wood Handle Shears .... 33⅓%
Disston's Combined Pruning Hook and Saw, ℔ doz. $18.00 ..... 25%
Disston's Pruning Hook only, ℔ doz., $12.00 ..... 25%
J. T. Henry Mfg. Co.:
Pruning Shears, all grades ..... 40%
P., S. & W. Co. ..... 40&10%
Columbian Cutlery Co.:
Hedge, Wilcut Brand ..... 60&10%
Lawn and Border, Wilcut Brand, 60&10%

### Sheaves— Sliding Door—

Reading ..... 40%
R. & E. list ..... 15%

### Sliding Shutter—

Reading list ..... 40%
R. & E. list ..... 15%

### Shells—Shells, Empty—

Brass Shells, Empty:
Climax, 10 and 12 gauge ..... 60&5%
Club, Rival, 65&5%; First Quality, 60&5%
Paper Shells, Empty:
New Rapid, 10, 12, 16 and 20 gauge, 25&10%
Climax, 10 and 12 gauge; Acme and Magic, 10, 12, 16 and 20 gauge; Ideal, 10, 12, 16 and 20 gauge; Leader grade ..... 25&5%
Union, League, 10 and 12 gauge, Rival Grade ..... 25%
New Climax, Defiance, 10, 12, 14, 16 and 20 gauge; Climax, 14, 16 and 20 gauge ..... 20%
Challenge, Monarch, 10, 12, 16 and 20 gauge; League, Union, 14, 16 and 20 gauge; Repeater Grade .. 20%

### Shells, Loaded—

*Loaded with Black Powder .. 40%*
*Loaded with Smokeless Powder, medium grade ..... 40&5%*
*Loaded with Smokeless Powder, high grade ..... 40&10&10%*
Union Metallic Cartridge Co.:
New Club, Black Powders ..... 40%
Nitro Club, Smokeless Powders. 40&5%
Arrow, Smokeless Powders. 40&10&10%
Winchester:
Smokeless Repeater Grade ..... 40&5%
Smokeless Leader Grade ... 40&10&10%
Black Powder ..... 40%

### Shingles, Metal— Per Sq.

| Edwards Mfg. Co.: | Painted. | Galv. |
|---|---|---|
| 14 x 20 | $4.25 | $6.00 |
| 10 x 14 | 4.50 | 6.25 |
| 7 x 10 | 4.75 | 6.50 |

Wheeling Corrugating Co.:

| | | |
|---|---|---|
| Dixie, 14 x 20 in. | $4.05 | $5.05 |
| Dixie, 10 x 14 in. | 4.25 | 5.45 |
| Dixie, 7 x 10 in. | 5.25 | 6.70 |

### Shoes, Horse, Mule, &c.—

*F.o.b. Pittsburgh:*
*Iron ..... per keg. $4.10*
*Steel ..... per keg. $3.85*
Burden's, all sizes ..... ℔ keg $3.90

### Shot—

*25-lb. bag.*
*Drop, up to B ..... $1.75*
*Drop, B and larger ..... 2.00*
*Buck ..... 2.00*
*Chilled ..... 2.00*
*Dust ..... 2.30*

### Shovels and Spades—

*Association List, Nov. 15, 1902. 40%*
Avery Stamping Co. ..... 40%

### Snow Shovels—

*Long Handle ..... $3.25@$3.50*
*Wood and Mall, D Handle, $3.75@$4.00*

### Sieves and Sifters—

*Hunter's Imitation, gro .... $9.50*
*Hunter's Genuine, per gro .. $12.00*

### Sifters, Ash—

Acme Ball Bearing Sales Co., Acme Automatic Ash Sifter, each, $3.25; ℔ doz. ..... $39.00

### Sieves, Seamless Metallic

*Per dozen.*

| *Mesh* | *14* | *16* | *18* | *20* |
|---|---|---|---|---|
| *Iron Wire* | *$1.05* | *1.05* | *1.10* | *1.20* |
| *Tinned Wire* | *$1.15* | *1.15* | *1.20* | *1.30* |

### Sieves, Wooden Rim—

*Nested, 10, 11 and 12 Inch.*
*Mesh 18, Nested .... doz. $0.90@0.95*
*Mesh 20, Nested .... doz. $1.00@1.05*
*Mesh 24, Nested .... doz. $1.30@1.40*

### Sinks, Cast Iron—

*Painted, Standard list:*
*12 x 12 to 22 x 36 in ..... 60%*
*20 x 24 to 24 x 50 in ..... 50%*
*24 x 60 to 24 x 120 in ..... 30%*
Barnes' low list ..... 60%

*NOTE.—There is not entire uniformity in lists used by jobbers.*

### Skeins, Wagon—

*Cast Iron ..... 70@75&10%*
*Steel ..... 40@45%*

### Slates, School—

*Factory Shipments.*
*"D" Slates ..... 50@50&10%*
*Eureka, Unexcelled Noisless .. 60&7 tens.*
*Victor A, Noiseless. 60&4 tens &5%.*

### Slaw Cutters—See *Cutters.*

### Snaps, Harness—

*German ..... 40@40&10%*
Covert Mfg. Co.:
Derby, 25%; Yankee, 30&2%; Yankee Roller, 30&2%.
High Grade, 40%; Trojan ..... 40%
Jockey ..... 25%.

### Snaths—

*Scythe ..... 60%*

### Snips, Tinners—See *Shears.*

### Spoons and Forks—

### Silver Plated—

*Good Quality ..... 50&10@60&5%*
*Cheap ..... 60@60&10%*
International Silver Co:
1847 Rogers Bros. ..... 40&10%
Rogers & Bro., William Rogers' Eagle Brand ..... 50&10%
Anchor, Rogers Brand ..... 60%
Wm. Rogers & Son ..... 60&10%

### Miscellaneous

*German Silver ..... 60@60&5%*

### Tinned Iron—

*Teas ..... per gro. 50@55¢*
*Tables ..... per gro. $0.90@$1.00*
Atlas Mfg. Co.:
Tea Spoons, ℔ gro. ..... 50¢@55¢
Table Spoons, ℔ gro. ..... $0.90@$1.00

### Springs— Door—

Bardsley's Spring and Check ..... 40%
Chicago (Coil) ..... 40&10%
Gem (Coil) ..... 20%
Pullman Door and Gate ..... 10%
Reliance (Coil) ..... 40&10%
Star (Coil) ..... 35%
Torrey's Rod, 39 in. ..... ℔ doz. $1.00

### Carriage, Wagon, &c.—

| *1¼ in. and Wider:* | *Per 100 lb.* |
|---|---|
| *Black* | *$4.75@$5.00* |
| *Half Bright* | *$4.75@$5.00* |
| *Bright* | *$5.25@$5.50* |

*Painted Seat Springs:*
*1½ x 2 x 26 .... per pair. 45@47¢*
*1½ x 3 x 28 .... per pair. 68@71¢*

### Sprinklers, Lawn—

American Foundry & Mfg. Co.:
Cactus, 65%; Japanese, 70%; National, ℔ doz. ..... $12.00
Enterprise ..... 25@30%
Philadelphia No. 1, ℔ doz. $12; No. 2, $15; No. 3, $20 ..... 30%

### Squares—

*Nickel plated .. } List Jan. 5, 1900.*
*Steel and Iron . } 80@80&5%*
*Rosewood Hdl. Try Square and T-Bevels ..... 60&10&10@70%*
*Iron Hdl. Try Squares and T-Bevels ..... 40&10@40&10&10%*
Disston's Try Squares and Bevels, Rosewood Handle, 60 & 10%; Iron Stock and Bevel ..... 15%

### Squeezers, Lemon

*Wood, Porcelain Lined:*
*Cheap ..... doz. $1.00*
*Good Grade ..... doz. $1.25*
*Tinned Iron ..... doz. $0.75@1.00*
*Iron, Porcelain Lined ... doz. $1.75*
Victor, ℔ gro. ..... $9.00

### Staples—

*Barbed Blind ..... 85&5@85&10%*
*Electricians' ..... 80&10&10@85%*
*Fence Staples, Polished, $2.05; Galvanized ..... $2.35*
*Poultry Netting Staples ..... per lb. 3¼@3½¢*

### Steels, Butchers'—

Dick's ..... 30%
Foster Bros.' ..... 30%

### Steelyards— .... 30@30&10%

### Stocks and Dies—

*Blacksmiths' ..... 50@50&10%*
Curtis Rev'ble Ratchet Die Stock .. 25%
Derby Screw Plates ..... 25%
Green River ..... 25%
Lightning Screw Plate ..... 25%
Little Giant ..... 25%
Reece's New Screw Plate ..... 25%

### Stoners, Cherry—

Enterprise ..... 25@30%

### Stones, Axe—

Pike Mfg. Co., Axe Stones (all kinds) ..... 33⅓%

### Glass Cutters' Stones—

Pike Mfg. Co., Glass Cutters' Stones and Supplies ..... 40%

### Stones, Oil, &c.—

Pike Mfg. Co., 1907 list: ℔ lb
Arkansas St. No. 1, 3 to 5½ in. $2.80
Arkansas St. No. 1, 5½ to 8 in. $3.50
Arkansas Slips No. 1 ..... $1.70
Lily White Washita, 4 to 8 in. 60¢
Rosy Red Washita, 4 to 8 in. 60¢
Washita St., Extra, 4 to 8 in. 50¢
Washita St., No. 1, 4 to 8 in. 40¢
Washita St., No. 2, 4 to 8 in. 25¢
Lily White Slips ..... 90¢
Rosy Red Slips ..... 90¢
Washita Slips Extra ..... 80¢
Washita Slips, No. 1 ..... 70¢
Washita Slips, No. 2 ..... 40¢
(30⅓%)
India Oil Stones (entire list) 33⅓%
Quickcut Emery and Corundum Oil Stone, Double Grit ..... 40%
Quickcut Emery and Corundum Axe Stone, Double Grit ..... 33⅓%
Quickcut Emery Rubbing Bricks 40%
Hindostan No. 1, Regular ℔ lb. 80¢
Hindostan No. 1 Small ℔ lb. 100¢
Turkey Oil Stones, Extra 5 to 8 in. ..... ℔ lb. 80¢
(33⅓%)
Queer Creek Stones, 4 to 8 in. 20¢
Queer Creek Slips ..... 10¢
Sand Stone ..... 6¢

### Scythe Stones—

Pike Mfg. Co., 1907 list:
Black Diamond S. S. ℔ gro. $12.00
Lamoille S. S. ℔ gro. $11.00
White Mountain S. S. ℔ gro. $9.50
Green Mountain S. S. ℔ gro. $7.00
Extra Indian Pond S. S. ℔ gro. $8.00
No. 1 Indian Pond S. S. ℔ gro. $7.50
No. 2 Indian Pond S. S. ℔ gro. $5.00
Leader Red End S. S. ℔ gro. $5.00
Quick Cut Emery.... ℔ gro. $10.00
Pure Corundum..... ℔ gro. $18.00
Crescent ..... $7.00
Emery Scythe Rifles, 2 Coat. $8.80
Emery Scythe Rifles, 3 Coat. $11.00
Emery Scythe Rifles, 4 Coat. $13.20
} 33⅓%
Balance of 1907 list 33⅓%.
Lectro (Artificial), ℔ gro., $12.00. 33⅓%
$12.00 ..... 33⅓%
Lightning (Artificial), ℔ gro., $18.00 ..... 33⅓%

### Stoppers, Bottle—

Victor Bottle Stoppers..... ℔ gro. $9.00

### Stops— Bench—

Millers Falls..... 15&10%
Morrill's, ℔ doz., No. 1, $10.00.... 50%
Morrill's, No. 2, $12.50..... 50%

### Door—

Chapin-Stephens Co..... 50@50&10%

### Plane—

Chapin-Stevens Co..... 20%

### Straps— Box—

Acme Embossed, case lots.. 20&10&10%
Cary's Universal, case lots... 20&10&10%

### Stretchers, Carpet—

*Cast Iron, Steel Points.. doz. 55¢*
*All Steel Socket... doz. $2.00@2.25*
Excelsior Stretcher and Tack Hammer Combined, ℔ doz., $6.00.... 20%

### Stuffers, Sausage—

Enterprise Mfg. Co., Stuffers and Lard Presses..... 25@25&7½%
National Specialty Co., list Jan. 1, 1902 ..... 30&5%
P., S. & W. Co..... 40&10&5%

### Sweepers, Carpet— Per doz.—

Bissell Carpet Sweeper Co.:
Cyco Bearing Superba, $36.00; Triumph, $33.00; Parlor Queen, $30.00; Elite, $29.00; Boudoir, $27.00; American Queen, $27.00; Ideal, $25.00; Gold Medal, $24.00; Primier, $24.00; Prize, $24.00; Welcome, $24.00; Grand Rapids, Nickel, $24.00; Japan, $22.00; Crystal, $36.00; Grand, $36.00; Parlor Grand, $48.00; Club, $54.00; Hall, $60.00; Standard Nickel, $22.00; Standard Japan, $20.00; Crown Jewel, Nickel, $21.00; Crown Jewel, Japan, $19.00; Junior, Nickel, $22.00; Junior, Japan, $20.00.

*NOTE.—Rebates: 50c per dozen on three dozen lots; $1 per dozen on five-dozen lots; $2 per dozen on ten-dozen lots.*

## Tacks, Finishing Nails, &c.

*American Carpet Tacks... 90&40%*
*American Cut Tacks..... 90&40%*
*Swedes' Cut Tacks..... 90&40%*
*Swedes' Upholsterers'.... 90&50%*
*Gimp Tacks..... 90&50%*
*Lace Tacks..... 90&50%*
*Trimmers' Tacks..... 90&40%*
*Looking Glass Tacks..... 65%*
*Bill Posters' and Railroad Tacks, 90&50&10%*
*Hungarian Nails..... 80&20%*
*Finishing Nails..... 70%*
*Trunk and Clout Nails... 80&10%*

*NOTE.—The above prices are for Straight Weights.*

### Miscellaneous—

*Double Pointed Tacks, 90&6 tens@—%*

Se also Nails, Wire.

### Tanks, Oil and Gasoline—

Wilson & Friend Co.:

| Gal. | Gasoline | Oil |
|---|---|---|
| 30 | $2.75 | $3.00 |
| 60 | $3.50 | $4.00 |
| 110 | $5.00 | $5.75 |

### Tapes, Measuring—

*American Asses' Skin.... 50@—%*
*Patent Leather..... 25@30&5%*
*Steel ..... 33⅓&5%*
*Chesterman's ..... 25@25&5%*
Keuffel & Esser Co.:
Favorite, Ass Skin..... 40&10@50%
Favorite, Duck and Leather..... 25&5@25&10
Metallic and Steel, lower list, 35@35&5%; Pocket, 35@35&5%.
Lufkins:
Asses' Skin..... 40&10@50%
Metallic ..... 30@30&5%
Patent Bend, Leather... 25&5@25&10%
Pocket ..... 40@40&5%
Steel ..... 33⅓@35%
Wiebusch & Hilger:
Chesterman's Metallic, No. 34L, etc. ..... 25%
Chesterman's Steel, No. 1038L, etc. ..... 35%

### Teeth, Harrow—

*Steel Harrow Teeth, plain or headed, ⅝-inch and larger, per 100 lb..... $2.55@$2.80*

### Thermometers—

*Tin Case, Cabinet, Flange, Dairy, &c..... 30@35%*

### Ties, Bale—Steel Wire—

*Single Loop..... 82½&10%*
*Monitor, Cross Head, &c. 70&2½%*

### Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

### Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

### Tire Benders, Upsetters, &c.

See *Benders and Upsetters, Tire.*

### Tools—Coopers'—

L. & I. J. White..... 20@20&5%

### Haying—

Myers' Hay Tools..... 50%

### Ice Tools—

Gifford-Wood Co..... 15%

### Miniature—

Smith & Hemenway Co.'s, Davidson, ℔ doz., Nickel Plated, $1.50; Gold Plated..... $2.00

### Saw—

Atkins' Cross Cut Saw Tools.... 35&5%
Simond's Improved..... 33⅓%
Simonds' Crescent..... 30%

### Ship—

L. & I. J. White..... 25%

### Transom Lifters—

See *Lifters, Transom.*

### Traps—Fly—

*Balloon, Globe or Acme, doz., $1.15@$1.25; gro.... $11.50@12.00*
*Harper, Champion or Paragon, doz., $1.25@1.40; gro. $13.00@13.50*

### Game—

*Imitation Oneida..... 75@10%*
Newhouse ..... 50&5%
Hawley & Norton..... 65&10%
Victor ..... 75@75&10%
Oneida Community Jump..... 70&5%
Stop Thief..... 60%
Tree Trap..... 60%
Hector ..... 75@75&10%

### Mouse and Rat—

*Mouse, Wood, Choker, doz. holes, 12¢*
*Mouse, Round or Square Wire, doz. 85@90¢*
Marty French Rat and Mouse Traps (Genuine), ℔ doz.:

| | Crate lots. | Small lots. |
|---|---|---|
| No. 1, Rat..... | $11.50 | $14.50 |
| No. 3, Rat..... | $5.75 | $6.50 |
| No. 3½, Rat..... | $4.70 | $5.25 |
| No. 5, Mouse..... | $2.25 | $3.00 |

Animal Trap Co.:
Out o' Sight, Mouse, ℔ doz..... $0.60
Out o' Sight, Rat, ℔ doz..... 1.20
Easy Set, Mouse, ℔ doz..... .35
Easy Set, Rat, ℔ doz..... .85
Out o' Sight Ghockers, ℔ doz. holes ..... .12
Out o' Sight, Tin, 5-hole, ℔ doz. traps ..... .75

### Trowels—

Disston Brick and Pointing..... 25%
Disston Plastering..... 20%
Disston "Standard Brand" and Garden Trowels..... 30%
Kohler's Steel Garden Trowels, ℔ gro., 5 in., $4.80; 6 in., $6.00.
Never-Break, Forged Steel Garden Trowels, in bulk, net ℔ gro. $5.50
In 1 doz. boxes..... ℔ gro. $6.00
Woodrough & McParlin, Plasterng. 25%

### Trucks, Warehouse, &c.—

B. & L. Block Co.:
New York Pattern..... 50&10%
Western Pattern..... 60&10%
Handy Trucks..... ℔ doz. $16.00
Grocery ..... ℔ doz $15.00
McKinney Trucks..... each, net $10.00
Model Stove Trucks..... ℔ doz $18.50

### Tubs, Wash—

*M'f'gr's list, price per gross.*

| | No. 0 | 1 | 2 | 3 | |
|---|---|---|---|---|---|
| *Galvanized.* | $67 | $79 | $89 | $99 | 10&7½&5% |

### Twine, Miscellaneous—

*Flax Twine:*
*No. 9, ¼ and ½-lb. Balls. 21@23¢*
*No. 12, ¼ and ½-lb. Balls. 19@21¢*
*No. 18, ¼ and ½-lb. Balls. 16@18¢*
*No. 24, ¼ and ½ -lb. Balls. 15½@17½¢*
*No. 36, ¼ and ½-lb. Balls. 15@17¢*
*Chalk Line, Cotton ½-lb. Balls ..... 24@29¢*
*Cotton Mops, 6, 9, 12 and 15 lb to doz..... 8½@19¢*
*Cotton Wrapping, 5 Balls to lb.. according to quality.. 13½@19¢*
*American 2-Ply Hemp, ¼ and ½-lb. Balls..... 12½@15¢*
*American 3-Ply Hemp, 1 lb Balls ..... 13½@16¢*
*India 2-Ply Hemp, ¼ and ½-lb Balls (Spring Twine)... 7½@9¢*
*India 3-Ply Hemp, 1-lb. Balls 7½@9¢*
*India 3-Ply Hemp, 1¼-lb. Balls. 7@8½¢*
*2, 3, 4 and 5-Ply Jute, 1½-lb. Balls ..... 9@1 0¢*
*Mason Line, Linen, ½-lb. Bls. 17¢*
*No. 264 Mattress, ¼ and ½ lb. Balls, according to quality. 30@60¢*
*Wool, 3 to 6 ply.... B 6¢; A 7½¢*

## Vises—

*Solid Box..... 50&5@50&10&5%*

### Parallel—

Athol Machine Co.:
Simpson's Adjustable ..... 40%
Standard ..... 40%
Amateur ..... 25%
Columbian Hdw. Co., Slide ..... 40&5%; 65%

Fisher & Norris Double Screw, net, each, Nos. 2, $10.50; 3, $16.00; 4, $20.50; 5, $27.00; 6, $32.00.
Fulton Mach. & Vise Co.:
F. & R. Double Swivel Machinists' ..... 40%
Star, Solid Jaw, Machinists'..... 40%
Hollands':
Machinists' ..... 40@40&5%
Keystone ..... 65&5@70%
Lewis Tool Co.:
Adjustable Jaw..... 30%
Monarch, 50%; Solid Jaw..... 50%
Massey Vise Co.:
Clincher ..... 40%
Parallel Bar..... 15%
Perfect, 15%; Lightning Grip..... 15%
Merrill's ..... 25%
Millers Falls Oval Slide Pattern. 60&10%
Parker's:
Victor, 20@25%; Regulars.... 20@25%
Vulcan's ..... 40@45%
Combination Pipe..... 55@60%
Prentiss ..... 20@25%
Rock Island..... 25%
Snediker's X. L..... 33⅓%
Stephens' ..... 33⅓%

### Saw Filers

Disston's D 3 Clamp and Guide, ℔ doz., $24.00, 30%; Clamps..... 30%
Perfection Saw Clamps, ℔ doz.... $4.50
Reading ..... 60%

### Wood Workers—

Fulton Mach. & Vise Co.:
F. & R. Double Swivel Coachman's ..... 40%
Star Solid Jaw Woodworkers'.... 60%
Massey Vise Co.:
Lightning Grip, 15%; Perfect.... 15%
Wyman & Gordon's Quick Action, 6 in., $6.00; 9 in., $7.00; 14 in., $8.00.

### Miscellaneous—

Fulton Machine & Vise Co., Combination Pipe..... 70%
Holland's Combination Pipe.. 60@60&5%
Massey's Quick Action Pipe..... 40%
Parker's Combination Pipe:
87 Series, 60%; 187 Series, 60&5%; No. 870, 40%.
Rock Island Pipe..... 25%

## Wads— *Price per M.*

*B. E., 11 up..... 60¢*
*B. E., 9 and 10..... 70¢*
*B. E., 8..... 80¢*
*B. E., 7..... 80¢*
*P. E., 11 up..... $1.00*
*P. E., 9 and 10..... 1.25*
*P. E., 8..... 1.50*
*P. E., 7..... 1.50*
} *Dis. 15%*
*Ely's B. E., 11 and larger. $1.70@1.75*
*Ely's P. E., 12 to 20.... $3.00@3.25*

### Ware, Hollow—

### Cast Iron, Hollow—

*Stove Hollow Ware:*
*Enameled ..... 45&10%*
*Ground ..... 50&5%*
*Plain or Unground..... 60%*
*Country Hollow Ware, per 100 lbs ..... $2.75@$3.00*
*White Enameled Ware:*
*Maslin Kettles..... 65&10%*
*Covered Wares:*
*Tinned and Turned..... 35&10%*
*Enameled ..... 45&10%*
See also *Pots, Glue.*

### Enameled—

Agate Nickel Steel Ware..... 33⅓%
El-an-ge ..... 60&10%
Iron Clad Ware..... 70&10%
Lava and Volcanic, Enameled.. 40&10%

### Tea Kettles—

*Galvanized Tea Kettles:*

| *Inch* | 6 | 7 | 8 | 9 |
|---|---|---|---|---|
| *Each* | 45¢ | 50¢ | 55¢ | 65¢ |

### Steel Hollow Ware—

Avery Stamping Co.:
Never-Break Spiders and Griddles ..... 65&10%
Steel Kettles, Maslins Scotch Bowls, Tin'd..... 60%
Steel Stew Pans, Stew Pots, etc., Porcelained ..... 50%
Cleveland Stamping & Tool Co.:
Solid Steel Spiders and Griddles ..... 65&5%
Solid Steel Kettles..... 60&5%

### Warmers, Foot—

Pike Mfg. Co., Soapstone.... 40@40&10%

### Washboards—

| No. | ℔ doz. |
|---|---|
| 800—Brass King, Single Surface, Open Back..... | $2.80 |
| 862—White Hen, Spiral Grimp Glass ..... | $3.35 |
| 964—Royal Blue Enamel, Single Surface, Ventilated Back..... | $3.35 |
| 172—Our Best, Single Zinc, Soap Drainer ..... | $3.35 |
| 722—Soap Saver, Single Zinc, Iron Top ..... | $3.35 |
| 100—Northern Queen, Single Zinc, Perforated, Open Back..... | $3.00 |
| 134—Universal, Sing'e Zinc, Extra Family Size, Ventilated Back.... | $2.80 |
| 760—Banner Globe, Single Zinc, Ventilated Back..... | $2.25 |
| 57—Peerless, Double Zinc, Spring Protector ..... | $3.70 |
| 56—Red Cross, Double Zinc, Swing Protector ..... | $3.60 |
| 17—North Star, Solid Zinc, Swing Protector ..... | $3.60 |
| 797—Jewel, Single Zinc, Pail Size. | $1.25 |

### Washers—Leather, Axle—

*Solid ..... 90@90&10%*
*Patent ..... 90@90&5%*
*Coil: ⅞ 9¢ 1 10¢ 1¼ 11¢ 1¼ inch. 14¢ per box.*

### Iron or Steel—

*Size bolt... ⅜ ½ ⅝ ¾*
*Washers.... $4.65 3.75 2.45 2.25 2.05*
*The above prices are based on $6.75 off list.*
*In lots less than one keg add 1¢ per lb.; 5 lb. boxes add ½¢ to list.*

Avery Stamping Co.:
Standard, in 200 lb kegs, $6.00 ℔ 100 lb. discl.; in 100 lb kegs add 10¢ net ℔ 100 lb; in 5 or 10 lb boxes, add 50¢ net ℔ 100 lb; in 1 lb boxes, add $1.00 net ℔ 100 lb.

### Cast Washers—

*Over ½-inch, barrel lots, per lb. 1½@1¾¢*

### Wedges—

*Oil Finish..... lb., 2¼@2¾¢*

### Weights—Hitching—

Covert Mfg. Co..... 30&2%

### Sash—

*Per net ton, f.o.b. factory:*
*Eastern District.... $21.00@—*
*Western and Central Districts ..... $20.00@$22.00*

### Wheels, Corundum and Emery—

Pike Mfg. Co., Corundum, 65%; Emery ..... 75%

### Well—

*8-in., $2.00; 10-in., $2.30; 12-in., $3.00; 14-in., $4.45.*

### Wire and Wire Goods—

*Bright and Annealed:*
*6 to 9..... 72&10&7½%*
*10 to 18..... 72½&10&10%*
*19 to 26..... 75&10&10&2½%*
*27 to 36..... 77½&7½%*
*Galvanized:*
*6 to 9..... 72½&10%*
*10 to 14..... 72½&10&5%*
*15 to 16..... 72½&10&5%*
*17 to 18..... 72½%*
*19 to 26..... 70&5&2½%*
*27 to 36..... 65&10&10%*
*Coppered:*
*6 to 9..... 65&10&10%*
*10 to 14..... 70&10&5%*
*15 to 18..... 65&10&10&10%*
*19 to 26..... 70&5&2½%*
*27 to 36..... 72½&10&2½%*
*Tinned:*
*6 to 18..... 67&10&10%*
*Brass ..... 15½¢ lb., base*
*Copper ..... 15¼¢ lb., base*
*Cast Steel Wire..... 50%*

### Spooled Wire—

*Annealed and Tinned..... 75%*
*Brass and Copper..... 70%*
*Retailers' Assortments, per box, $2.00@$2.25*

Wire Clothes Line, See Lines.
Wire Picture Cord, see Cord.

### Bright Wire Coods—

*Steel Wire Goods..... 90&40%*
*Brass Wire Goods..... 90&40%*
*Brass Cup and Shoulder Hooks, 85&10%*

### Wire Cloth and Netting—

*Galvanized Poultry Netting, 80&2½@80&7½%*
*Painted Screen Cloth, 100 ft., $1.35*
*Standard Galv. Hardware Grade: 100 ft. rolls, 2 to 48 in. wide, Per 100 sq. ft.*
*Nos. 2, 2½ and 3 Mesh.... $2.75*
*Nos. 4 and 5 Mesh..... $3.00*
*No. 6 Mesh..... $3.25*
*Nos. 7 and 8 Mesh..... $3.75*

### Wire, Barb—

See *Trade Report*

### Wrenches—

*Agricultural, 80&10&5@80&10&10%*
*Alligator or Crocodile.. 70&10@75%*
*Baxter Pattern S Wrenches, 70&5@70&10%*
*Drop Forged S..... 45@45&5%*
Acme ..... 60&10%
Alligator Pattern, 70%; Bull Dog.. 70%
Bemis & Call's:
Adjustable S, 40&5%; Adjustable S Pipe, 40&5%; Briggs Pattern, 40%; Combination Bright, 50%.
Steel Handle Nut..... 50&5%
Combination Black..... 50&5%
Merrick Pattern..... 50&5%
Boardman's ..... 40%
Coes' Genuine Knife Hdl... 40&10&5&5%
Coes' Genuine Steel Hdl... 40&10&5&5%
Coes' Genuine Key Model.. 40&10&5&5%
Coes' Genuine Hammer Handle..... 40&10&5&5%
Coes' "Mechanics'"... 40&10&10&5&5%
Donohue's Engineer..... 40&10%
Eagle ..... 70%
Gem Pocket..... 30%
Hercules ..... 70%
W. & B. Machinist:
Case lots..... 50&10%
Less than case lots..... 50%
W. & B. Railroad Special:
Case lots..... 50%
Less than case lots..... 40&10&5%
Solid Handles, P., S. & W.. 50&10%; full cases..... 50&10&5%
Standard Nipple Mfg. Co.:
Duplex Chain..... 50%
Uwanta Wrench Co.:
Uwanta Special, Iron Handle.... 40&10&5%
Other Wrenches..... 50%
Vulcan and Agrippa Chain..... 50%
Whitaker Machinists'..... 50&10%

### Fruit Jar—

Beni, P. Forbes, Triumph, ℔ gro., $7.50; per doz..... $0.90

### Wrought Goods—

*Staples, Hooks, &c., list March 17, '92..... 90@—%*

## Zinc— *(Cask lots at mill.)*

*Sheet..... per 100 lb., $7.00*

# THE IRON AGE

New York, Thursday, September 17, 1908.

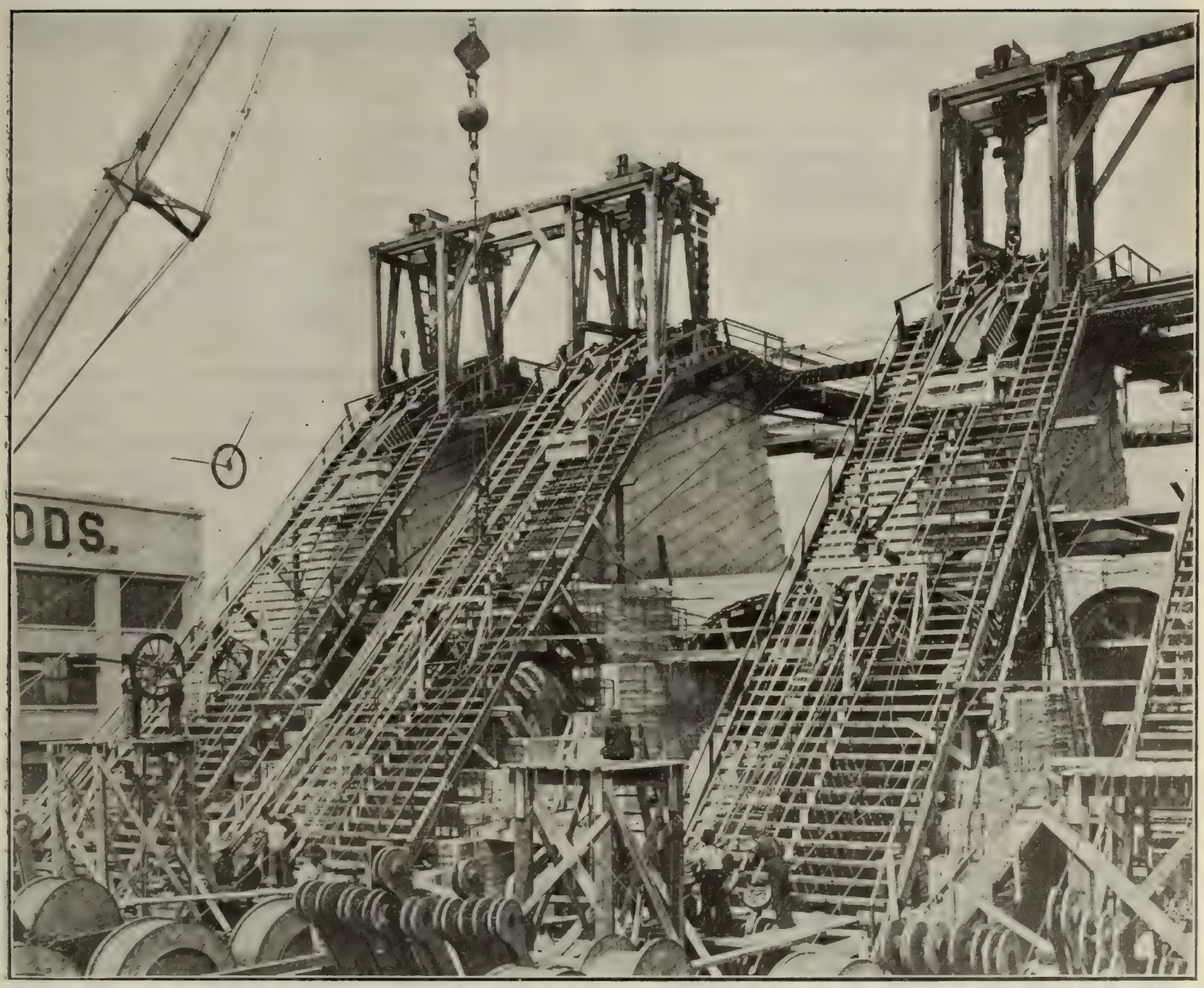
## The Cables for the New Manhattan Bridge.

BY H. R. COBLEIGH.

Work on the Manhattan bridge across the East River connecting the boroughs of Manhattan and Brooklyn, New York City, has reached the point where the four permanent supporting cables are being assembled. Each cable will contain 9472 wires, which will be put in place as 37 strands of 256 wires each, and finally compacted into a circular cross section of a diameter of about 21½ in. Each wire is 0.195 in. in diameter (a little over 3-16 in.), and has a tensile strength of about 6000 lb., making the strength of each cable over 28,000 tons. The weight of the four cables will be over 6000 tons. Four strands of each of the four cables are now complete, and it is estimated that in a little over four months the cables will be finished and in position ready for the hanging of the suspenders and the beginning of the structural work.

The manner of hauling the cables and the machinery involved holds a particular interest because of the speed with which it is being done and the improvements which have been made in the method of doing the work since the cables for the Williamsburg bridge were strung. The wires were of the same size in that case, but the plant was operated by steam engines and only two double wires were laid at a time. In the Manhattan bridge plant the stringing of eight wires can be in progress at once and the motive power is electricity. For stringing the wires of each of the four cables there is an independent equipment so that a delay from any cause on the work on any one does not affect the others.

The operation of stringing the wires of one cable as described in the following is identical for each of the other three. The stringing is accomplished by two traveling sheaves 3 ft. in diameter, suspended by wrought iron brackets from an endless ¾-in. steel rope. This rope extends from anchorage to anchorage and back again, and at the Brooklyn end makes two passes around a tension wheel. The grooved traveling sheaves are attached in diametrically opposite relation on the hauling rope, so that they move across the bridge in opposite directions. The brackets supporting the wheels are offset where they are attached to the rope, being provided at those points with what are termed goosenecks. This is for the purpose of clearing the idler wheels that support the hauling rope at the required hight above the position of the cable and at 11 practically equidistant points in each run of the rope. The idlers are carried by wooden gantrys on




View at the Brooklyn Anchorage.—The Traveling Sheave Working on the Left-Hand Cable Has Just Started. The Sheave Over the Scaffold Has Finished a Trip and Is Being Made Ready to Return, While the Bight of the Wire Is Being Passed Around One of the Shoes.



One of the Traveling Sheaves.

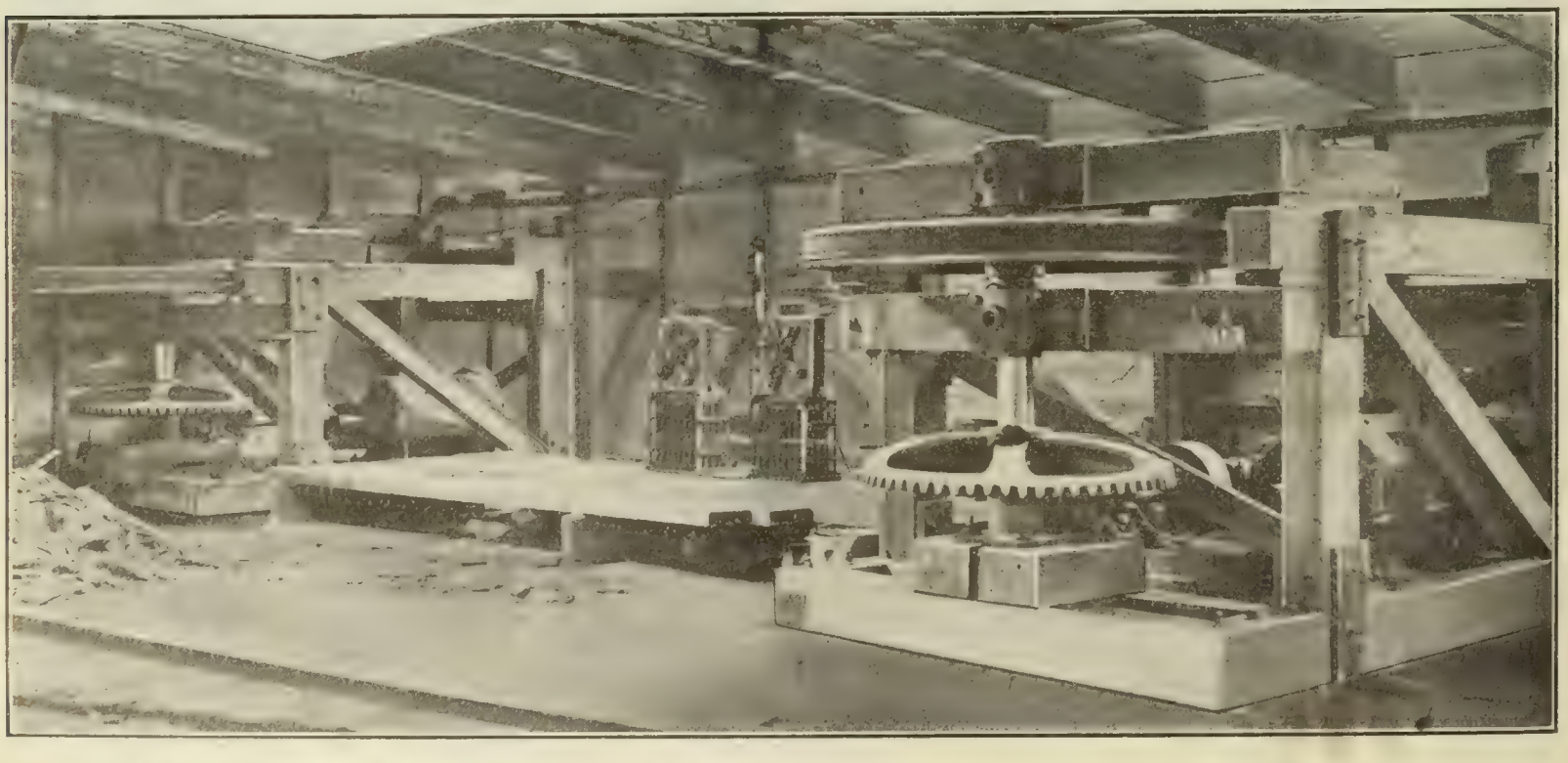


View on the Brooklyn Shore Span.

the temporary foot bridges, two on each end span, five on the middle span and one on each bridge tower. At each supporting gantry there are two idlers below the rope and one above it to keep it from whipping loose from the guiding wheels.

The wire is delivered to the bridge on enormous reels, weighing nearly 4 tons each and containing about 80,000 ft. of wire. An equal number of these reels is placed at each end of the bridge. In beginning the laying of each strand a guide wire is stretched from anchorage to anchorage, and adjusted by turnbuckles to hang with the proper deflection for that strand. With this as a guide each of the wires for the strand is adjusted after it is strung. At the start a wire from a reel at each end of the bridge is passed over the traveling sheave at that end, then around a shoe and is made fast at some convenient point near the anchorage. This being accomplished at each end the hauling rope is started, and each traveling sheave moves toward the opposite anchorage, laying one run of the wire as a dead wire and drawing the other after it from the reel at a speed that is twice that of the sheave. To avoid friction and scraping of the running wire it is successively caught by small idlers. When the sheaves have reached the other extremes of their travel the hauling rope is stopped, the bight of the wire is passed around another shoe in the anchorage and the hauling rope is started again, but in the opposite direction, and another two wires are laid in each of the two strands that are simultaneously strung by the two traveling sheaves. This operation is repeated, and the bights of the wires at each reversal of the sheaves are passed alternately around two of the four shoes at each end of the cable until the required number of wires are laid—256 in each strand, which means 64 round trips for each of the sheaves. Corresponding to the four shoes at each anchorage there are four grooved pulleys at each anchorage and four at the top of each bridge tower over which they are laid. Finally the end of the last wire from each of the two reels is coupled to the free ends which were originally made fast to the anchorage. During the laying the wires have been adjusted with reference to the guide wire, so that each has the proper length, and in the finished cable will hang in accordance with the catenary which the cables are to follow.

As each strand is completed it is bound at intervals of 5 or 6 ft., with three or four turns of wire. If it is found at this time that any of the wires of the strand draw out of the bundle or fall below it because they were not correctly adjusted before, these discrepancies in length are repaired by cutting out or inserting pieces, using couplings like those which join the initial and final ends of each wire. The wire as it comes on the reels is in lengths of from 3000 to 4000 ft., which are received already joined by couplings. The couplings are long sleeves, secured to one end of each piece of wire and into which the end of the next piece is threaded. Because of the lengths of the pieces and the distance between anchorages—3223 ft.—it is seldom that more than one



Two of the Four Independent Hauling Plants.—These Are Housed on One Side of the Brooklyn Anchorage. The Other Two Are on the Opposite Side of the Same Anchorage.

coupling occurs in any one of the individual wires of a cable.

After a strand has been bound it is lifted from the grooved pulleys upon which it has rested up to this time, and by means of chain hoists is laid in its place in the permanent saddles. When all of the strands are finished the binding wires of the central strand will be removed and six more strands will be bound around it to form the core of the cable, and their individual binding wires will be removed. Then 12 strands will be bound around this core, their individual binding wires removed and the last layer of 18 strands bound in place. Finally, with all of the strand binding wires removed, the whole cable will be compressed into circular section by the bored clamps which will carry the suspenders and the cable will be wound with its protective covering. At the anchorages the cables will be flattened, the strands separating and extending to the numerous eyebars that will secure them to the masonry.

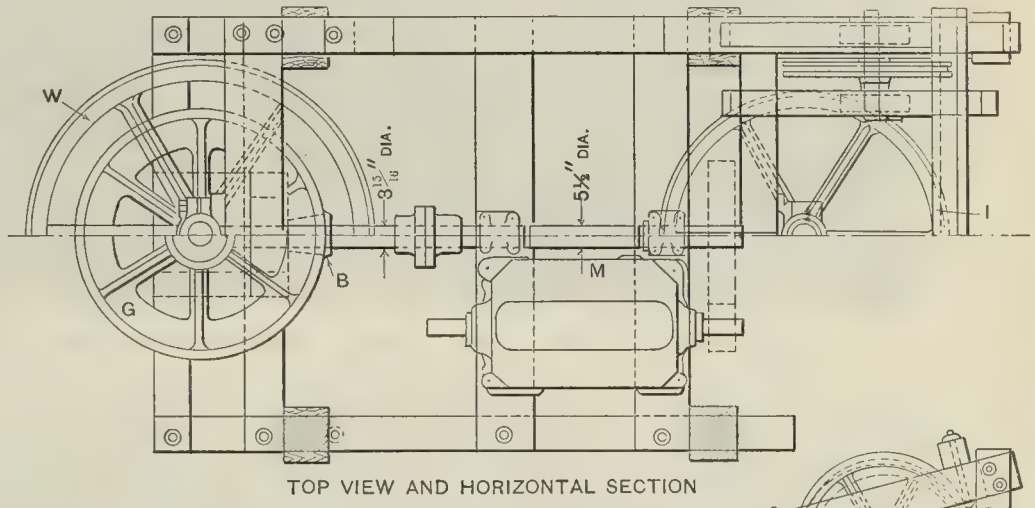
As has been said, there is a separate equipment for each cable, and this includes an independent hauling mechanism. One of the accompanying illustrations is a view showing two of these hauling drives, and the line drawing is a detail of one of them. All four of the hauling drives are housed on the Brooklyn anchorage. Each hauling rope is driven by a form W, 50 hp., 220 volt, fully-inclosed, electric motor built by the Crocker-Wheeler Company, Ampere, N. J., and designed especially for rolling mill duty. It is therefore well adapted for work of this kind where sudden overloads and frequent starting and stopping are likely. An instance of the need of instant control of the drive was afforded a short time ago when one of the traveling sheaves fouled one of the hauling rope supporting gantrys. This rope travels with a speed of 480 ft. a minute, and with a 50-hp. motor driving it, capable of considerable overload has a power not to be despised. As soon as the accident was discovered the current was cut off from the motor, and the rope stopped, but not until the supporting gantry was wrecked and had all but toppled over into the street.

Each driving motor is geared to a countershaft with a ratio of 5 to 1, and the countershaft through bevel gears drives the shaft of the traction wheel with another speed reduction of 5 to 1. The traction wheel is 6 ft. in diameter, and has wood lined grooves around which the hauling rope passes twice to produce the necessary grip. From the traction wheel the hauling rope passes over a 3-ft. idler wheel, thence across the bridge, over an idler at the other end and back to the traction wheel. One trip of the sheaves is made when no stop is required in about 7 or 8 min., but allowing for the interruptions for adjusting the wires, reversing the traveling sheaves, &c., it is considered that good speed is made if three trips are accomplished in an hour. In one of the best day's runs recently 600 wires were laid in the four cables.

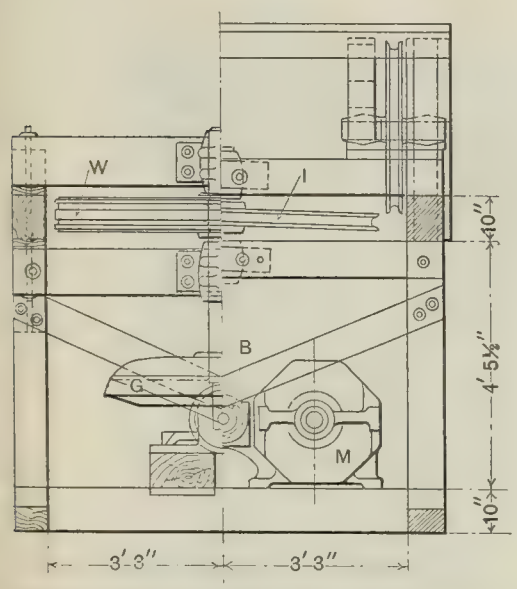
The wire for the cables is being furnished by the John A. Roebling's Sons Company, the same company that supplied the wire for the cables of the old Brooklyn bridge over 30 years ago. The work of building the cables is being carried on by the Glyndon Contracting Company, New York City, under the supervision of the engineers of the Bridge Department of the city. Of the bridge as a whole, its character, dimensions, &c., much will be found in an article, "Specifications for the Manhattan Bridge," printed in *The Iron Age*, July 27, 1905. These specifications were later modified as explained in the issue of April 12, 1906.

**The Iron and Steel Institute.**—Among papers scheduled for the autumn meeting of the Iron and Steel Institute at Middlesbrough, England, September 28, 29 and 30 and October 1, are the following: "Scientific Control of Fuel Supply," by H. E. Armstrong; "Metallurgy at the Franco-British Exhibition," by H. Bauerman; "Gas Producer Practice," by W. A. Bone; "Constitution of Carbon Steels," by E. D. Campbell; "Freezing Point of Iron," by H. C. H. Carpenter; "Production of Finished Iron Sheets and Tubes in One Operation," by S. O. Cowper-Coles; "Chemical Control of the Basic Open Hearth Process," by A. Harrison and R. V. Wheeler; "Mechanical Cleaning of Iron Ores," by T. C. Hutchinson; "Bell Brothers' Blast Furnaces from 1844 to 1908," by Grenville Jones; "Influence of Silicon on the Physical and Chemical Properties of Pig Iron," by A. Jouve; "Some Results of Experience with Electrically Driven Rolling Mills," by C. Koettgen and C. A. Ablett; "Electric Power Supply," by C. H. Merz; "Future Development of the Metal Mixer," by A. E. Pratt; "A Test for Ascertaining the Relative Wearing Properties of Steel Rails," by E. H. Saniter; "A Workshop Microscope," by J. E. Stead; "Analysis and Synthesis in the Foundry," by J. E. Stead and T. Westgarth.

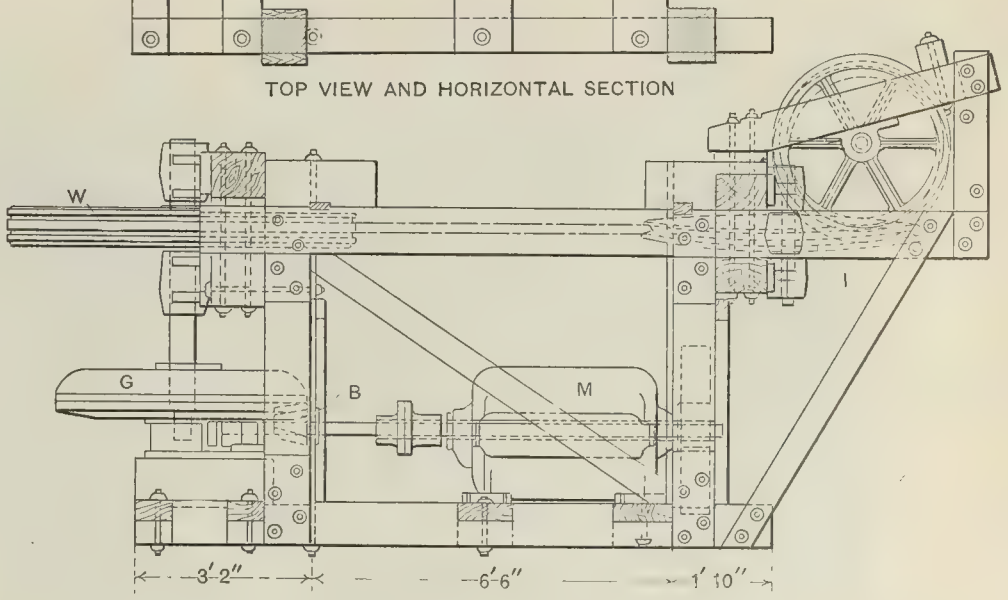
M=50 HP. C.W. MOTOR.
B=BEVEL PINION; 12 TEETH; 2¾-IN. PITCH; 7-IN. FACE; 10.626 IN. PITCH DIAMETER.
G=BEVEL GEAR; 60 TEETH; 2¾-IN. PITCH; 7-IN. FACE; 52.547 IN. PITCH DIAMETER.
W=6-FT. DIAMETER WOOD-LINED TRACTION WHEEL; 2 SCORES FOR ¾-IN. ROPE.
I=5-FT. IDLER WHEEL.
D=3-FT. DIAMETER HEAVY DEFLECTING WHEEL.




TOP VIEW AND HORIZONTAL SECTION




END ELEVATION AND VERTICAL SECTION




SIDE ELEVATION

Details of One of the Hauling Plants.—The Reference Letters and Key Designate the Parts.

# A Boiler Test Showing Efficient Mechanical Stoking.

BY R. T. COE.

Much has already been printed concerning the immense new power plant and water works pumping station at Lardner's Point, Tacony, Pa. All the pure filtered water for supplying 1,100,000 inhabitants of the city of Philadelphia is handled at this plant. Between $3,000,000 and $4,000,000 has already been expended for buildings and equipment, this being but a small part of the large amount of money the city started out to invest about six years ago to provide pure water for the people, then drinking the contaminated water from the Schuylkill and Delaware rivers without purification. It is stated that within 10 gal. a head per day Philadelphia uses twice as much water as New York City, where 120 gal. a head per day is said to be required. The engineering of this stupendous undertaking involved the overcoming of complicated conditions, the distribution of intakes and outlets, and the locating and building of pumping stations. Over $25,000,000 has already been expended, and much more will likely be required before the work will be completed.

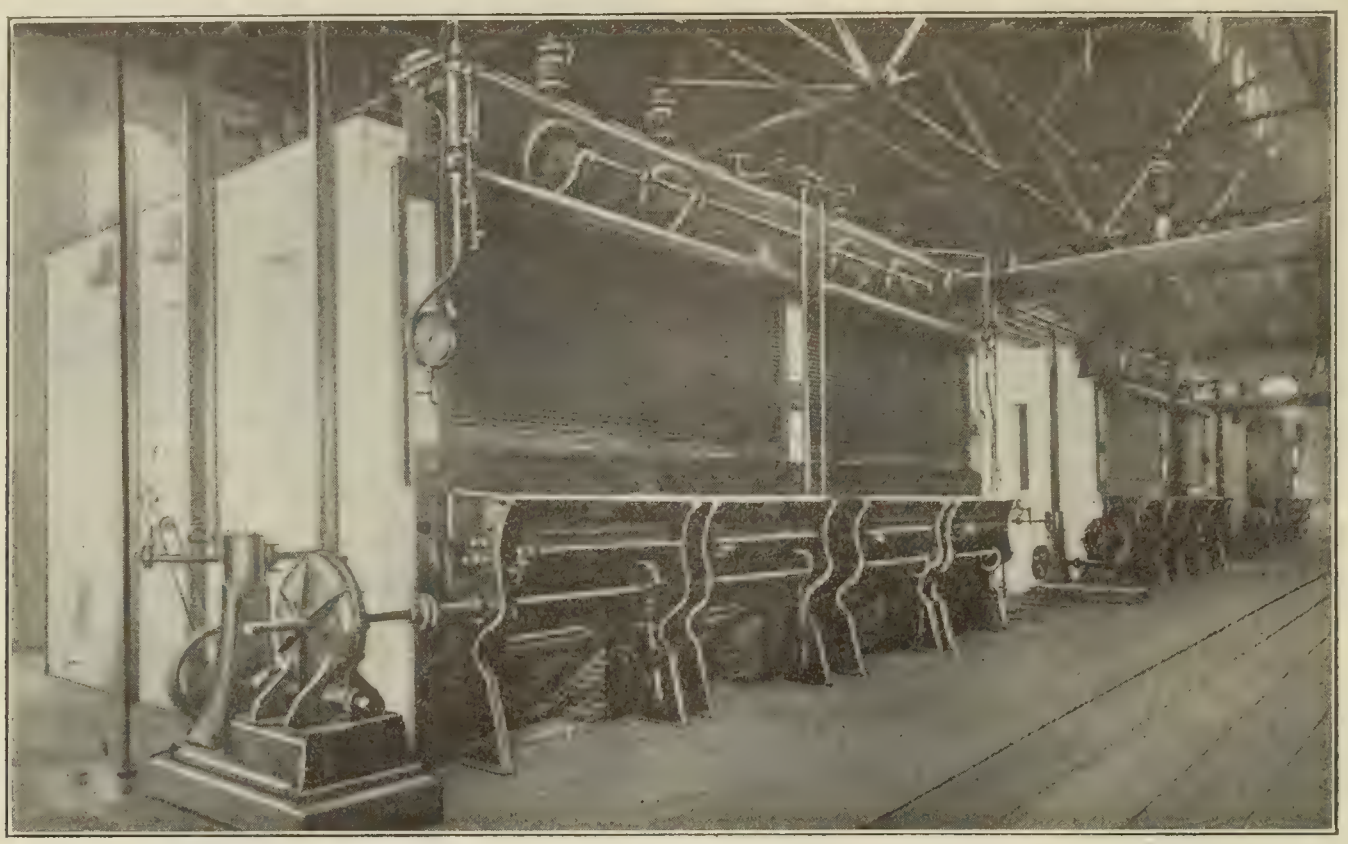


Fig. 1.—Boiler Plant in the Lardner's Point Pumping Station, Showing Stokers and Drive.

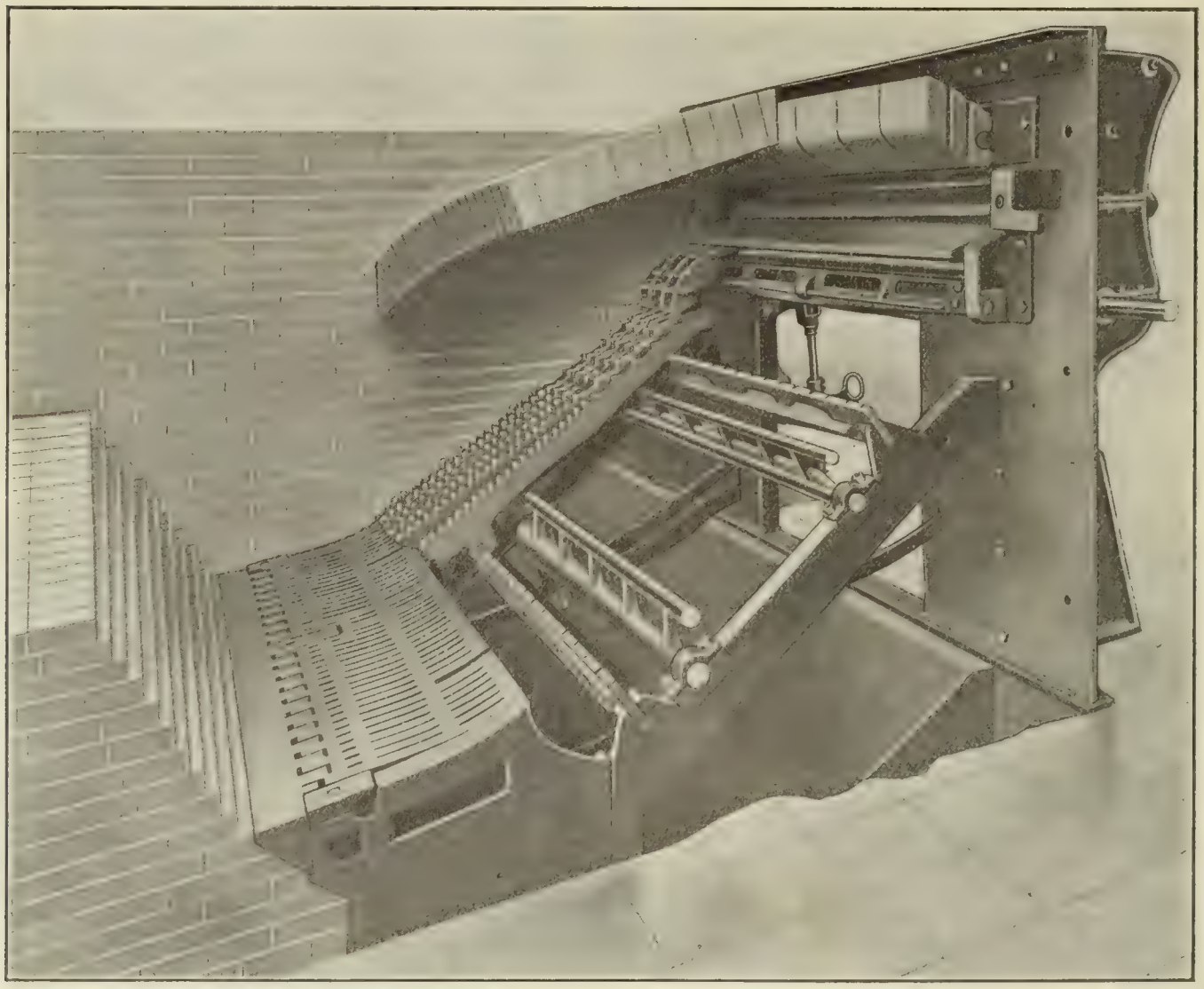


Fig. 2.—The Wetzel Mechanical Stoker, with Part of the Grate Bars Removed.

As only brief mention has previously been made of the boiler plant at the Lardner's Point pumping station, it is the object of this article to call attention to some of the details of that part, to give the record of an interest-

ing test made and to describe briefly the mechanical stoking equipment which had so important a bearing upon the production of the good results obtained. Fig. 1 is a view in the boiler plant, showing the stokers and the manner of driving them.

A test was conducted early this year to determine what evaporation and efficiency the boilers and stokers would show with coal of certain quality, and when operating at a capacity 25 per cent. in excess of the builder's rating. The A. S. M. E. standard code for boiler tests was followed. Coal and ashes were weighed and water measured in carefully calibrated tanks. Separate feed connections were made and independent feed pumps provided. All unused branches and connections, including blow offs, were blanked or disconnected. A running start and stop were made, the fires being thoroughly cleaned a certain time before starting and a like time before ending the test. Care was taken to have the fires in the same condition as nearly as possible at the end of the test as in the beginning. The fires were also cleaned at about the middle of the test. The usual pressure, draft and temperature readings were taken at intervals of 15 min., and the results given in the test records are averages. A double check was kept on all coal and water weights and measures. Gas samples were collected and analyzed at intervals throughout the test, the average results of which indicated an air consumption of 17.22 lb. per pound of dry coal and a loss of only 0.29 per cent. through incomplete combustion of carbon.

The boiler which was tested is one of the six 500-hp. Edgemoor sectional water tube boilers. The boilers are set two in a battery and are connected by underground flues, with two Custodis chimneys, 7 ft. in diameter by 150 ft. high above the boiler room floor. Each boiler comprises two horizontal steam and water drums, 34½ in. in diameter by 18 ft. long, which connect at either end into large rectangular stayed water legs (10 in. wide inside), between which are expanded 254 straight tubes 4 in. in diameter by 18 ft. long, set on an incline of 1 in. to the foot. The bottoms of the front headers of the boilers are set 7 ft. above the floor line. Three transverse plates are provided for directing the gases in an upward and downward path across the tubes from front to rear, the gases escaping from the last pass downwardly into an underground flue in the rear of the boilers.

The test was very exhaustive and all the details will not be gone into, but the following extracts are cited, bearing as they do upon the final results:

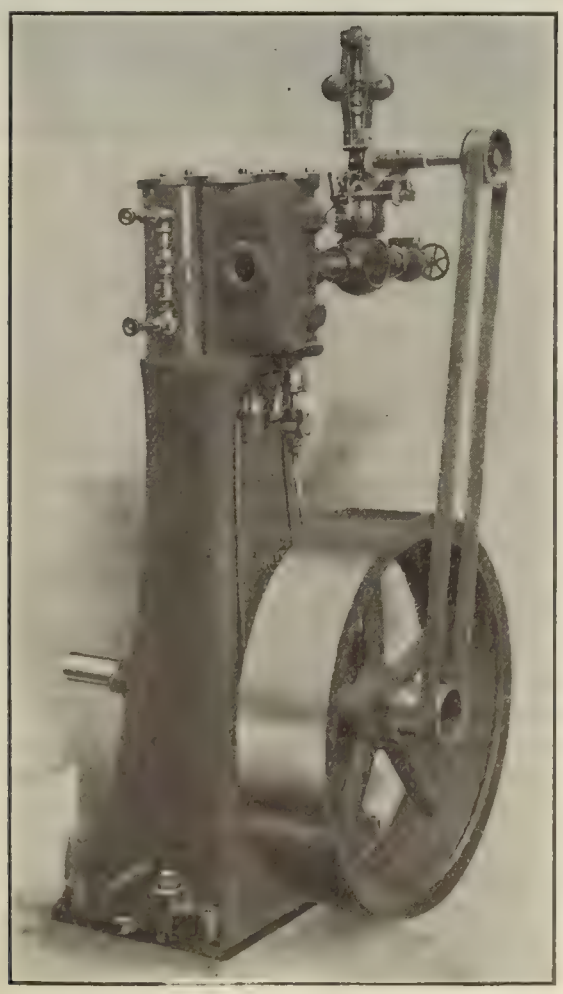


Fig. 3.—American Blower Company's Type A Engine Used to Drive Wetzel Stokers.

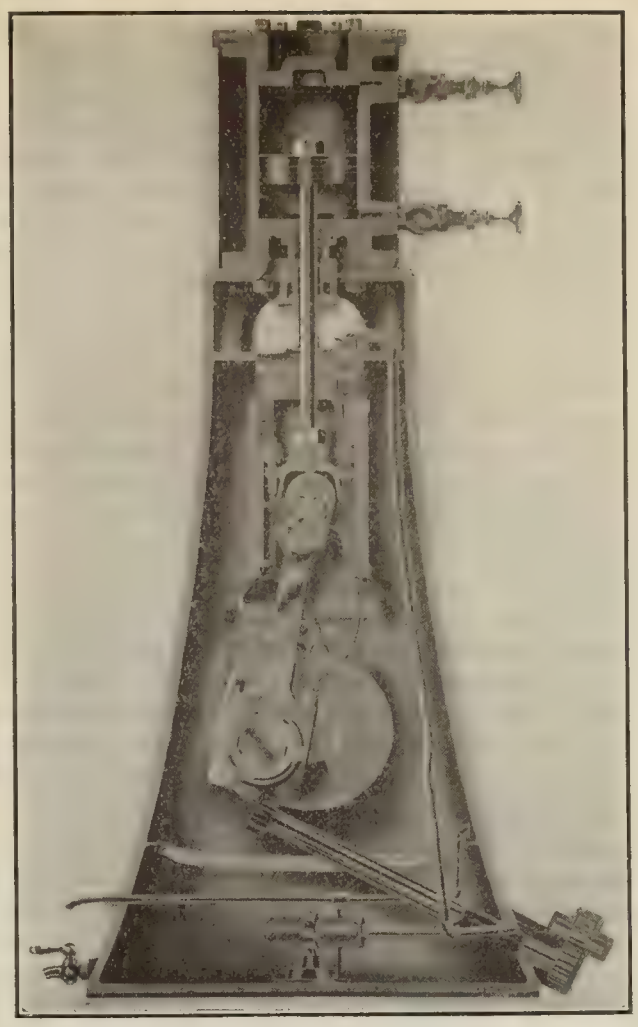


Fig. 4.—Section of the A. B. C. Engine Showing Interior Lubricating Arrangement.

| | |
|---|---|
| Duration of test | 24 hr. |
| Water heating surface of boiler | 5,052 sq. ft. |
| Width of grate | 2 x 6 ft. |
| Length of grate | 8½ ft. |
| Area of grate | 102 sq. ft. |
| Ratio of water heating to grate surface | 49½ to 1 |
| Kind of grate | Wetzel mechanical stoker. |
| Hight of stack above the dead plate | 147½ ft. |
| Area at top of stack | 38½ sq. ft. |
| Boiler pressure gauge | 128.9 lb. |
| Draft in the flue behind boiler | 0.628 in. |
| Draft in the furnace | 0.335 in. |
| Average temperatures: | |
| External air | 31.35 degrees F. |
| Water entering boiler | 39.2 degrees F. |
| Escaping gases | 475.9 degrees F. |
| Coal used | "Henrietta," a semi-bituminous fuel from Columbia County, Pa |
| Coal analysis: | |
| Moisture | 3.56 |
| Volatile combustible | 18.75 |
| Fixed carbon | 74.82 |
| Ash | 6.43 |
| B.t.u. per pound dry coal | 14,710 |
| The coal made a gray ash and a small amount of nonfluxing clinker which gave no trouble in the operation of the stoker. | |
| Total coal consumed | 46,750 lb. |
| Total dry coal | 45,086 lb. |
| Total refuse in coal | 3,168 lb. |
| Total combustible | 41,918 lb. |
| Total heat per pound of dry coal | 11,346 B.t.u. |
| Total water supplied | 425,547 lb. |
| Total water evaporated (corrected for quality of steam) | 432,455 lb. |
| Equivalent water evaporated into dry steam from and at 212 degrees F. | 529,714 lb. |
| Same per hour | 22,071 lb. |
| Water evaporated per pound of dry coal under actual conditions | 9.592 lb. |
| Equivalent from and at 212 degrees F. | 11.749 lb. |
| Equivalent per pound of combustible from and at 212 degrees F. | 12.637 lb. |
| Water evaporated per hour from and at 212 degrees F per square foot of heating surface | 4.368 lb. |
| Same per square foot of grate surface | 2,164 lb. |
| Dry coal burned per square foot of grate surface per hour | 18.41 lb. |

Considering the above hourly rates of evaporation and combustion reveals the most interesting results. On the basis of 34.5 lb. evaporation per hour, from and at 212 degrees, the horsepower developed was 639.74. The maker's rating being 500 hp., the result was nearly 28 per cent. above the normal rating with a heating surface of

7.89 sq. ft. per horsepower developed. The combined efficiency of the boiler and furnace was 76.82 per cent., which is rather exceptional considering the fact that natural draft was relied upon for moving the gases.

Each boiler is equipped with two Wetzel mechanical stokers 6 ft. wide. A brick wall 13 in. thick separates the two furnace compartments and serves to divide the stoker arch into two spans. The stokers are of the inclined grate pattern. The inclined or active portion of the grate is 7½ ft. long, while the dump plate at the bottom is 2 ft. long. (In figuring the active grate arch, half the dump plate was taken into account.) Each battery of boilers is provided with an independent direct connected American Blower Company's fully inclosed self-oiling stoker engine, which drives through a worm geared speed reducing mechanism the main operating shaft of the stokers. The feeding and bar moving mechanisms are operated by separate eccentrics, the extent of movement in each case being regulated by nuts on the eccentric rods. Every bearing, even for slow moving shafts, is removable and adjustable; the parts are very heavy (claimed 35 per cent. heavier than any other gravity grate stoker), and the repair cost is small. Fig. 2 is a view of the stoker from the inside, with some of the grate removed to expose the mechanism.

Too little attention is sometimes paid to the details of construction of the driving mechanism for automatic stokers. Boiler rooms, being of necessity dirty, are trying places for reciprocating machinery. The engines driving the Wetzel stokers are fully inclosed, are self-oiling from a pump in the base, and require no oiling, except to fill the cylinder lubricator about once in three months or more, and no more frequent adjustment. Fig. 3 shows the exterior of one of these engines and Fig. 4 a sectional view showing the interior lubricating arrangement.

After the operation of the above described equipment about three months, the stokers and engines meeting with the approval of the city engineers of Philadelphia, contracts were awarded for an additional 4000 hp., making 7000 hp. in all.

**Pig Iron in France.**—The production of pig iron in France in the first half of 1908 slightly declined, having been 1,746,634 metric tons, against 1,797,843 tons in the first six months of 1907. Over one-half, or 982,098 tons, was basic Bessemer. Forge iron followed with 314,163 tons; foundry iron with 294,603 tons, exclusive of 56,334 tons of direct castings, and Bessemer iron with 66,746 tons. The Meurthe-et-Moselle District led with 1,173,872 tons, the Nord District adding 254,436 tons. The Loire and Midi produced 101,737 tons and the Centre and West 99,516 tons. The consumption of material was 3,862,252 tons of domestic ore, 854,837 tons of foreign ore (chiefly from Luxemburg and Lorraine), 128,427 tons of manganese ore and 329,055 tons of scrap, cinder and blue billy.

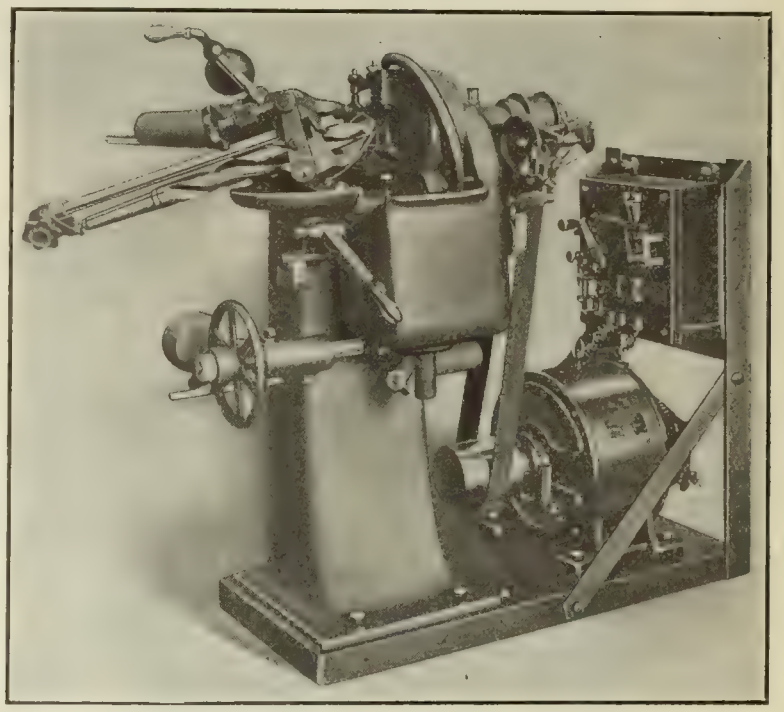
The Heppenstall Forge & Knife Company is making important improvements in its plant at Forty-seventh and Hatfield streets, Pittsburgh. The old building, formerly used for storing billets, has been removed, and a new one of steel construction, 55 x 90 ft., has just been erected by W. N. Kratzer & Co., Pittsburgh, which contains a 10-ton Shaw electric traveling crane, with a 25-ft. runway. The Heppenstall Company is now placing concrete foundations for a new steel structure, 77 x 147 ft., which is to be erected by the John Eichleay, Jr., Company, Pittsburgh. This is an extension to the forge shop, and will contain two new heating furnaces, a 150-hp. Cahall waste heat boiler and a coal handling equipment, consisting of a Sprague electric grab bucket for carrying coal from the storage bins to the various furnaces. This latter building will be completed about October 15. The Heppenstall Forge & Knife Company makes a specialty of shear knives and forgings of every description, and reports an increase in this line of business.

The Bettendorf Axle Company, Davenport, Iowa, secured a new factory site several years ago, which enabled the company to extend its operations to the manufacture of all classes of railroad equipment, including the building of complete cars. Its large plant at Bettendorf, a suburb of Davenport, is being constantly extended and further equipped with improved machinery to enable it to take care of its rapidly increasing business. This company has now over 500,000 bolsters in service, and the Bettendorf ideal car truck with the one piece frame is rapidly being adopted by the railroad systems of the country. An order for 2500 steel under frames for the Chicago, Milwaukee & St. Paul Railroad is now being filled at the rate of about 25 a day.

## A Sellers Motor Driven Drill Grinder.

There is a theoretically correct way to grind a drill to obtain the maximum amount of work from it. Hand grinding cannot accomplish this, hence hand ground drills generally require more power than is necessary, and, moreover, an incorrectly ground drill will not bore a hole to uniform size. Drills correctly ground and pointed will not only drill to size with minimum power, but when straight will produce less wear on the drill press than if incorrectly ground or out of true. In the latter case the force required to hold the drill steady brings a strain on the drill press which causes the bearings of the spindle to wear.

The drill grinding machine illustrated is manufactured by William Sellers & Co., Inc., Philadelphia, Pa., and is equipped with a standard Westinghouse 2-hp. motor. The



A Drill Grinder Built by William Sellers & Co., Inc., Philadelphia, Pa., Equipped with Motor Drive.

entire outfit is self-contained, with starting switch and motor complete. The grinder is suitable for any type of double tip drills, varying from 5-16 to 3 in. in diameter. The grinding of the tips is done on the face of the stone, or grinding wheel, which insures a correct surface, as the drill is moved over the entire face of the wheel. By a special device the correct pointing of the drill is secured.

An interesting feature is the means employed to provide an ample supply of water at the grinding surface. The wheel proper is protected by a cover at all points except where the drill comes in contact with it. On the cover there is an adjustable nozzle through which water is delivered in an abundant flow to both the drill and the wheel without splash or waste. The water is circulated by a small centrifugal pump driven from the main motor.

The entire equipment is very simple, so that a skilled workman is not required; any man of ordinary care can operate the machine with perfect satisfaction. The application of the motor to this grinder permits the machine to be located in the shop at any point desired, without reference to shafting or belts. It secures the maximum economy of driving power, inasmuch as the entire outfit may be stopped when not in use.

## The Bridgeford Heavy Gap Lathe.

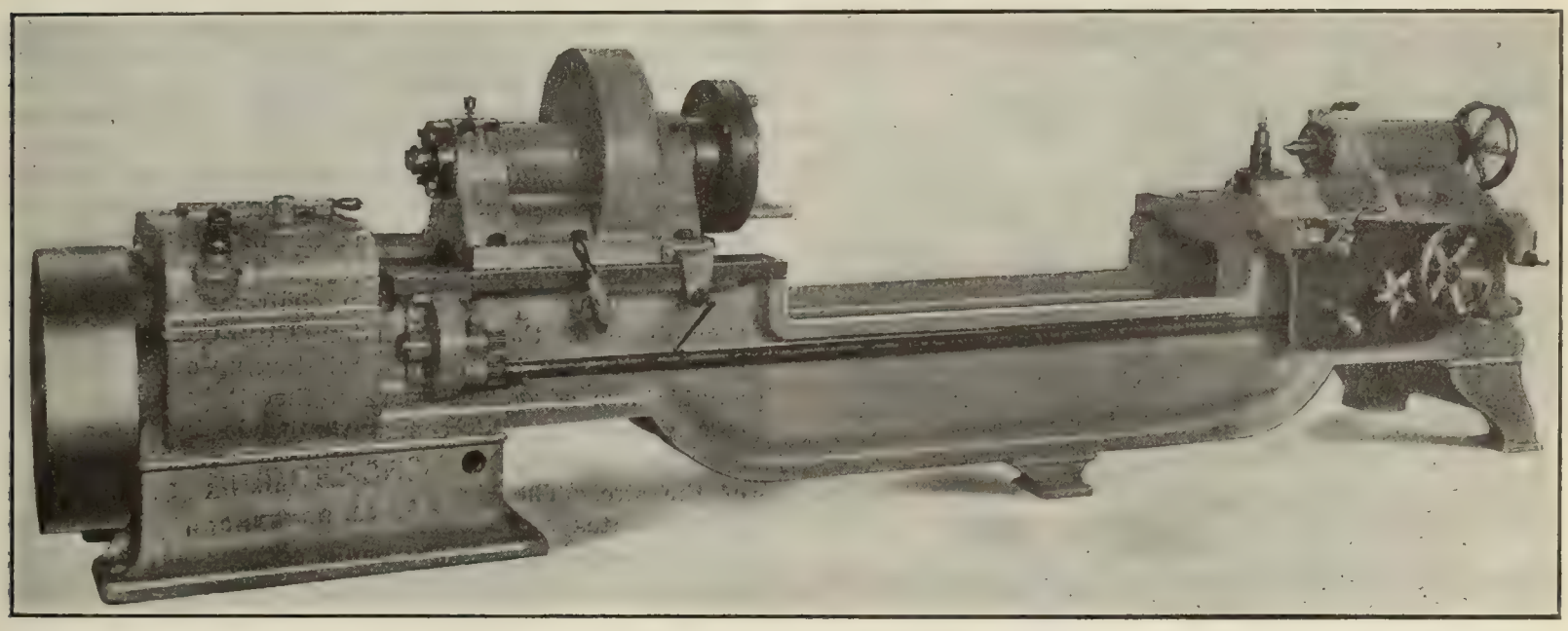
A new heavy gap lathe, manufactured by the Bridgeford Machine Tool Works, Rochester, N. Y., especially for refinishing car axle journals without removing the wheels, is shown in the accompanying illustration. It can also be used as a single end axle lathe, the headstock being moved along the bed by a rack and pinion so as to bring the wheel fit within range of the carriage. For refinishing engine truck axle journals, the lathe is built with an extra carriage arranged between the wheels, leaving a short gap on each side.

There are three variations in the cutting speed, obtained by a speed variator through heavy cut steel gearing running in oil, and the bearings are so constructed as to receive ample lubrication. The changing of the speed is accomplished by shifting levers conveniently located on the case. The power is applied to a constant speed pulley and is transmitted from the speed variator to the driving head by a shaft placed within the frame. The driving head is of very heavy and powerful construction, and the spindle and all driving shafts are of high carbon steel, and run in brass boxes scraped to fit. The end thrust is taken by an adjustable step bearing. The driving gear is entirely encased and the head is furnished with a double self-centering steel driver.

Four instantaneous changes of feed ranging from 1-16 to 3-16 in. to one turn of the axle are obtained through a feed box. The gears, which are of steel, run in oil and are operated by a lever placed in front of the headstock. The direction of the feed is changed at the apron, and the carriages are independent of each other. The carriages are driven by a splined feed shaft through a rack and pinion, and each has a bearing on the V's of 30 in., which is scraped to fit. Each also has a bearing on the back of the bed which takes the forward thrust, thus overcoming the tendency to raise from the V's when the burnisher is used.

The tailstock has a bearing on the bed of 24 in. It is moved by a rack and pinion and is secured in position by four heavy bolts and binders, and may be set over for taper turning if desired. It is adjustable by means of a screw and handwheel and is clamped by a split binder.

Some of the important dimensions of the lathe are as follows: The rack is steel and of 6 pitch and 1⅝ in. wide; diameter of feed shaft, 1 15-16 in.; distance between centers, 8 ft. 4 in.; swing over the ways, 27 in.; swing over the carriage, 14 in.; swing in the gap, 45 in.; diameter of the centers, 2 7-16 in.; diameter of driving pulley for 8-in. belt, 30 in., and net weight of the machine 15,500 lb. The bed is very rigid, being strongly reinforced by crossties of box pattern. The countershaft carries a pulley corresponding to the driving pulley on the lathe, and also tight and loose pulleys 24 in. in diameter for a 10-in. belt.



A Lathe for Turning Car Axle Journals Without Removing the Wheels, Built by the Bridgeford Machine Tool Works, Rochester, N. Y.

The Herman Pneumatic Machine Company, Zelienople, Pa., has recently erected a building, 100 x 400 ft., in which six pneumatic molding machines have been installed. It is at work on one of the largest molding machines ever built, being 5 x 14 ft. in size. Commencing this week the company will operate its machine shop double turn, this being made necessary on account of the heavy orders received for the larger sizes of molding machines.

## The Production of Chromite in 1907.

The production of chromite, or chromic iron ore, in the United States in 1907 amounted to 209 gross tons, valued at $5640, according to the forthcoming annual report of the United States Geological Survey. The domestic production, which was confined to California in 1907, is very small, when compared with the consumption of chrome ore in this country. The demand is supplied from foreign sources, chiefly Asiatic Turkey and New Caledonia. The maximum production of the United States for any one year was in 1894, when the quantity mined was 3680 gross tons, valued at $53,231, but this value was slightly exceeded in 1890 when the output amounted to 3599 gross tons, valued at $53,985.

Chromite is widely distributed both in the Southeastern and the Western parts of the United States, where it is usually associated with certain basic igneous rocks, but it occurs at few localities in sufficient quantity to constitute an ore of chromium. In the States along the Atlantic slope no deposits of chrome ore are worked on a commercial scale, though it is probable that with the extension of railroad transportation some of the deposits will be exploited. The only active chromite mines in the United States are in California, where there has been a small production for many years.

Chrome ore is used principally in making ferrochrome alloys and for hardening steel, usually in combination with nickel in the manufacture of armor plates. It is also used extensively in the manufacture of chromium salts for pigments. All the product of the California mines for several years has been used in the crude state for linings of copper furnaces.

The imports of chrome ore during the past seven years have fluctuated throughout a wide range, and are shown in the following table:

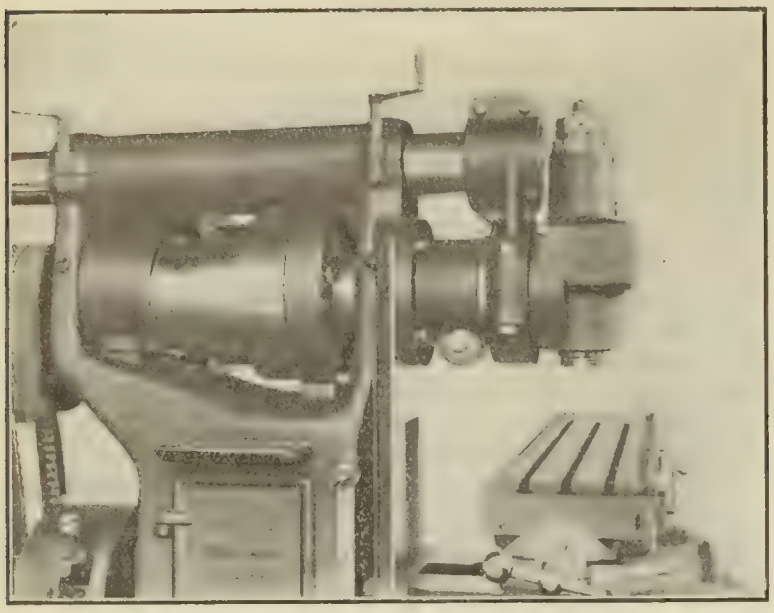
*Imports of Chrome Ore,* 1901-1907.

| Year. | Gross tons. | Value. | Year. | Gross tons. | Value. |
|---|---|---|---|---|---|
| 1901 | 20,112 | $363,108 | 1905 | 54,434 | $725,304 |
| 1902 | 39,570 | 582,597 | 1906 | 43,441 | 597,496 |
| 1903 | 22,932 | 302,025 | 1907 | 41,989 | 491,925 |
| 1904 | 24,227 | 348,527 | | | |

In the last few years the mining of chromite in the Dominion of Canada has developed into an industry of some importance, though the production in 1907 was less than in either of the preceding two years. In 1902 the Canadian output was 900 tons, valued at $13,000, but thereafter it rose rapidly until 1906, when the production was 8750 tons, valued at $92,100. In 1907 it declined to 7196 tons, valued at $72,901.

## The Oesterlein Vertical Milling Attachment.

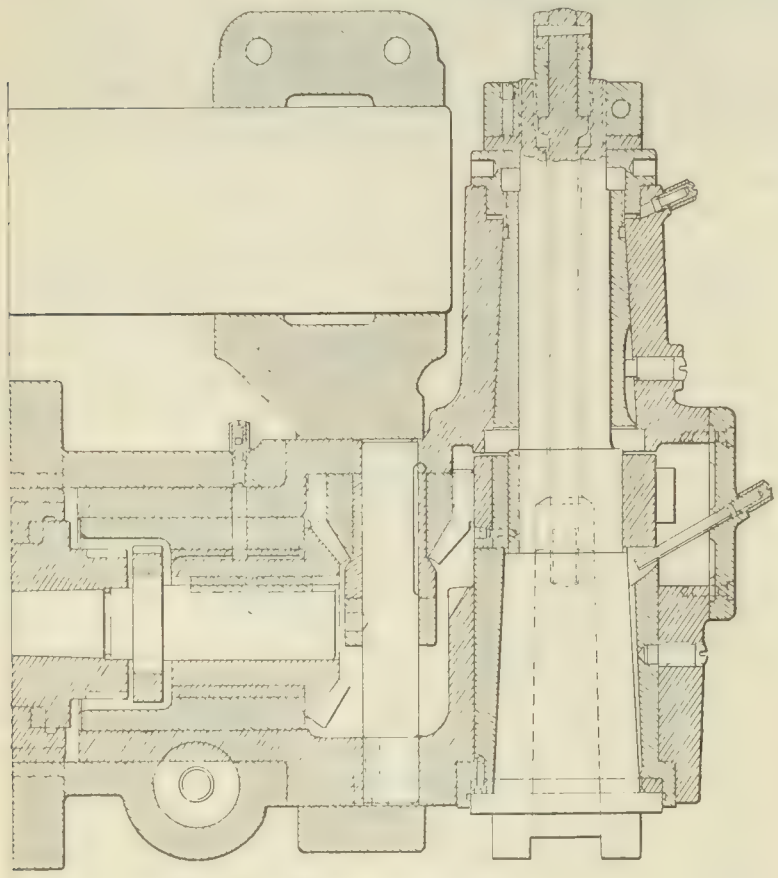
A new attachment just brought out by the Oesterlein Machine Company, Cincinnati, Ohio, for quickly converting a horizontal miller into an efficient vertical milling machine is shown in the engravings herewith. It was designed for the company's No. 30 universal and No. 34



The New Vertical Milling Attachment Made by the Oesterlein Machine Company, Cincinnati, Ohio.

plain milling machines, and will take as heavy a cut without chattering, as can be taken on the main spindle of the machine directly. Although no claim is made for originality, the designer had in mind the most approved application of the principles involved consistent with the present demands on machines of this type. The accompanying half-tone illustration shows the appearance of the attachment when applied and ready for use, and the line drawing gives a section that makes clear the mechanism.

The driving spur gears on the vertical spindle, having been placed above the horizontal spindle, the cutter may



Sectional View of the Oesterlein Vertical Milling Attachment.

be brought as close as possible to the horizontal spindle which gives the maximum distance below the cutter and the least distorting leverage on the attachment. The head is graduated and can be swiveled 360 degrees. The spindle is readily adjusted to compensate for wear. It has a ¾-in. hole through its entire length and the front end is bored with a No. 11 Brown & Sharpe taper. The nose of the spindle has a 3¼-in. diameter, 3½-in. pitch, right hand thread to hold cutters, which is the same as the thread on the spindle of the machine, so that the same tools may be used on both. The lower journal of the spindle is tapered and is 3¼ in. in diameter at the largest point and 5¼ in. long. The top journal is 2 in. in diameter and 5¼ in. long. A ⅝-in. draw-in bolt is provided to hold cutters with shanks. The distance from the center of the spindle to the face of the column is 12 in. The distance from the lower end of the spindle to the table when the latter is in its lowest position is 13½ in. The net weight of the attachment is about 260 lb.

## The Port Arthur and Soo Plants.

TORONTO, September 12, 1908.—The granting of an order, September 7, by a high court judge in this city for the winding up of the Atikokan Iron Company is not expected to have an adverse effect upon the industry itself. The company's blast furnace at Port Arthur closed down last fall and has not been operated since. Various reasons were given for the stoppage. Financial depression, acting upon the consumers of pig iron, was put forward as one of them. Another was that the pig iron made was not of a class for which the demand was large. From time to time there appeared in Port Arthur newspapers expressions of hope, promises even, that the works would start up in the spring. But spring and summer both passed away without any renewal of operations there. The application for the winding up order was made by Mackenzie & Mann of this city, who have the controlling interest in the company. Some weeks ago Mr. Mackenzie was reported by a Port Arthur paper to have said in an interview of about the same date that the furnace would be started up as soon as internal differences were settled. This was the first intimation that the closing down was caused by friction between parties in the company. R. A. Ruttan, chairman of the Finance Committee of the Port Arthur City Council, has expressed the opinion that the winding up of the company would have a good effect upon the city's interest. The city guaranteed the company's bonds in the sum of $200,000, and stands for an additional $25,000 on account of the site. The chairman of the city's Finance Committee states to the Port Arthur *Daily News* that the application was probably made as a means of putting an end to contentions within the company, adding that he understood these were the chief cause of the suspension of operations at the plant. He thought it likely that the course taken would mean "the freezing out of at least one of the interests which has been clashing with the others and will thus pave the way for a resumption of operations." The company was incorporated in 1905 with a paid up capital of $1,000,000. Standing at the head of the lakes, on the edge of the iron field of Thunder Bay and Rainy River, and on the threshold of the consuming West, it appeared to have a bright outlook.

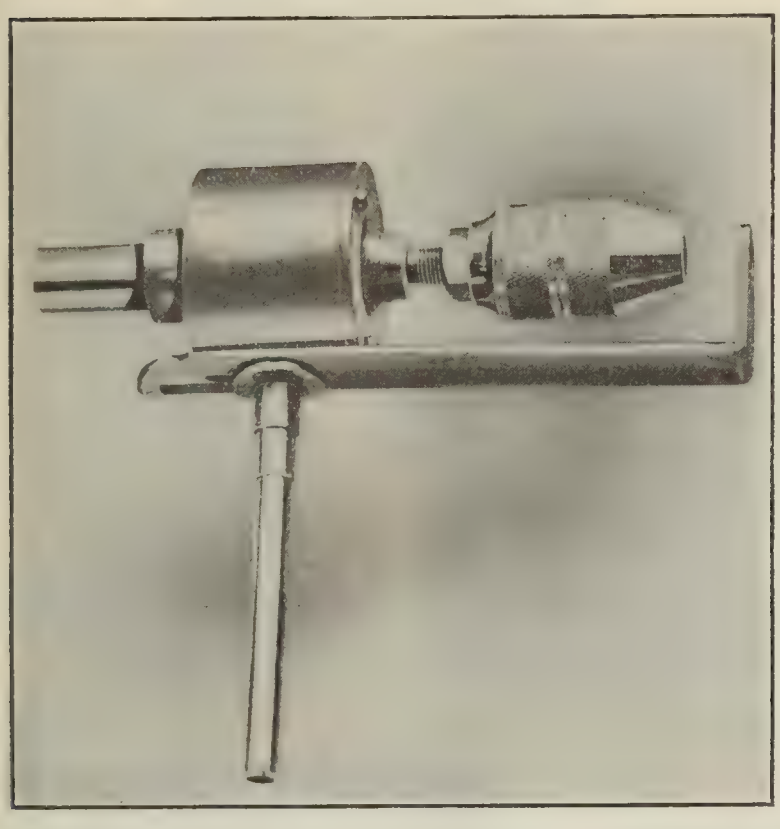
The reopening of the Algoma Steel Company's steel plant and rail mills is not to be deferred to October 1, as was announced a fortnight ago, but will take place September 15, the day the blast furnaces are to be relighted. The reason given for beginning so much earlier than was intended is that rush orders have been received, one for 15,000 tons for the Grand Trunk Pacific being said to be among these. These orders come to the Sault mill at a time when American competitors are reported to be quite active on this side of the line.

The Wilbur Iron Ore Company, much of whose output was taken by the Algoma Steel Company, has gone into liquidation. Pending settlement possession has been granted to William Caldwell of this city, who formerly owned the mine. It is on the line of the Kingston and Pembroke Railway. C. A. C. J.

W. M. Corse, secretary of the American Brass Founders' Association, 54 Lothrop avenue, Detroit, Mich., has issued a directory of the membership, which now numbers 175 individuals and firms, including many of the most progressive brass and aluminum founders in the country.

## The Bonney Automatic Reversible Tapper.

For tapping small holes—that is, up to 5-16 or ⅜ in. in certain cases—C. S. Bonney, Irvington, N. J., has designed and is manufacturing an automatic tapping machine herewith illustrated. This is a light running tapper, with which it is possible to use very small taps with less likelihood of breaking them than when using the heavier tappers now generally in use. In fact, the machine may be regarded as a mean between the friction tapper and the heavier geared tapper. Like the latter, however, it is positive in its drive, there being no chance for slip in the driving mechanism, and the tap itself is ingeniously prevented from turning in the chuck. Attached to the device is a stop gauge adjustable in its setting, so that holes can be tapped to uniform depth. Important to this end is the fact that the taps are held against endwise movement in the chuck. The jaws of the chuck are notched on the interior so that by drilling a small hole in the tap shank and inserting a pin, this pin will engage



The Bonney Automatic Reversible Gear-Driven Tapping Attachment for Use in Lathes and Drill Presses.

in one or another of the notches of the chuck and prevent the tap from being displaced longitudinally.

To obviate turning of the tap in the chuck it is recommended that the shank be ground flat with three equiangular faces corresponding to the three jaws of the chuck, so that a firm grip may be obtained. A simple method has been devised for grinding the taps in this way rapidly and more accurately than would be possible with the eye. A triangular prism is furnished in the center of the end of which the tap is screwed leaving the shank end projecting. The center line of the tap is then coincident with the center line of the prism, which affords a holder, and by successively resting the prism on its three flat faces and presenting the shank of the tap to the grinding wheel the three flat surfaces are ground at angles of 60 degrees with each other. For operating the gripping mechanism of the chuck a spanner is furnished enabling the chuck to be more firmly tightened than is possible with the hand. This also conduces to preventing the tap from slipping in the chuck.

In use the spindle of the device is secured in the chuck of a lathe or drill press, and the lateral rod attached to the body of the tapper is allowed to come against some fixed part of the lathe or drill to prevent the attachment from turning as a whole. The main spindle runs continuously in the same direction, and carries a pin which engages a pin on the chuck shank. The latter is the condition when the tap is being driven in the work. The shank of this chuck has a fixed amount of axial movement, so that when the tap has been entered into the work the required depth a movement to withdraw the work disengages the pins which form the positive clutch between the chuck spindle and driving spindle, and causes the pin on the former to come in cantact with a similar pin on a bevel gear in the forward side of the body. This gear being driven through a bevel pinion from a bevel gear on the driving spindle runs in the opposite direction to that of the driving spindle, and causes the tap to reverse and back out of the work. The stopping and reversing of the tap is automatically effected when the stop gauge is used, when the work is allowed to come up against the stop; further forward driving of the chuck has the effect of pulling the chuck spindle out of engagement with the driving clutch, and momentum carries it forward so it engages with the reversing gear and automatically backs out. The Bonney tapper is sold at a moderate price, and is claimed to be strong and durable.

## The Proposed Iron Combination in Russia.

The formation of a large combination or syndicate of South Russian iron companies is still in the preliminary stages. Financial questions have been important considerations and the attitude of the Russian Government is a matter of doubt. Its position as a buyer would presumably not be improved by the formation of the proposed organization, and it is understood the Government will make larger purchases of rails and other material in the next year or two than for some years. Formerly it bought over 300,000 tons of rails a year, but in 1906 and 1907 this amount was cut down about one-half. London *Engineering* says of the possible effect of a Russian consolidation upon the iron industry of Russian Poland:

In spite of circumstances which at one time were stated to have proved fatal to the formation of the contemplated union, the latter is now understood to be approaching its realization, even if the question of who are to be at the head seems to give some considerable trouble. The relations between the projected union and the metallurgical industry of Russian Poland are attracting special attention in Germany, because the metal industry of Silesia is much interested in the Polish industries in question. The blast furnaces of Russian Poland have to draw their supplies of iron ore from the Donetz District, and the price of this iron ore is understood to be 8 kopecks per pood (10s. 6d. per ton) at the mines, while it costs the Polish blast furnaces 20 kopecks per pood, owing to freight and other expenses. Coke is subject to similar conditions, the figures being respectively 13 and 27 kopecks. The production of a pood of pig iron in Russin Poland in consequence entails a cost of 60 kopecks (80s. per ton), and in the Donetz District 41 kopecks. The difference in price is of course greatly affected by the freight, for the transport of a pood of iron from the Dombrowa District to Warsaw costs 11 kopecks, and from the Donetz District 24 kopecks. The South Russian Iron Works, however, still have a notable advantage in price, which would be increased by the formation of a trust. So far matters have been regulated by the two syndicates—Prodanieta (plate and rails) and Gwozdz (wire)—and it is a question of the utmost importance for the metallurgical industry of Russian Poland whether or not these syndicates will remain in junction after the formation of the union. Should this not be the case the Polish works will have to blow out their blast furnaces (the number has already been reduced from ten in 1906 to eight in 1907) and buy their pig iron from the trust.

The Youngstown Car Mfg. Company, Youngstown, Ohio, has received an order from the United States Government for eight 15-ton steel cars, to be shipped to the Panama Canal. This company recently shipped a specially designed steel freight car of 160,000 lb. capacity to be used in the San Francisco navy yard. The plant is running to nearly full capacity, with a fair amount of work ahead.

# The Wright Separable Metal Barrels.

As to what is the most economical container for products such as cement, lime and plaster has been a problem with the manufacturers for some time. A package of barrel form is ideal, but wooden barrels are constantly increasing in cost and are good for only one shipment, as the cost of returning empty wooden barrels to the shipping point is prohibitive, and there is little salvage on second-hand barrels. The expensiveness of barrels as a carrier has therefore been responsible to a large extent for the use of paper, cotton and jute bags, which generally hold about a quarter of a barrel. Cotton and jute bags are usually returned, but the greater number of them for a given quantity of material handled and the annoyance of counting, recounting, packing and reshipping and repairing them, to say nothing of the disputes arising from claims and counterclaims between the shipper and receiver, are serious disadvantages.



Fig. 1.—One Form of the Wright Metal Barrel Assembled.

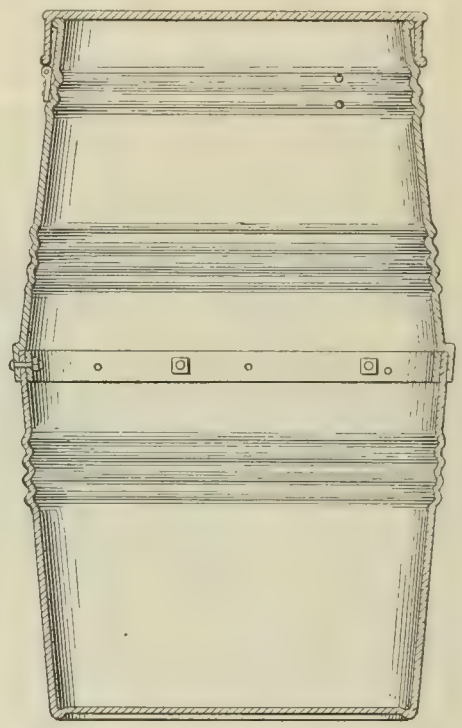


Fig. 2.—A Section of the Barrel Shown in Fig. 1.

As one concerned in finding a better solution of the matter, Steve M. Wright of the Wright Lime & Cement Company, Memphis, Tenn., has been working for more than a year in perfecting a metal barrel, the halves of which are separable so that they may be nested for returning in compact form when empty. While their cost, which will be about $1, is a little more than that of two wooden barrels or four jute bags, the fact that they are good for at least 15 round trips makes them more economical. The filling and assembling of them takes less time, as does also the repacking of them for return shipment, so that from this standpoint also they have an economical advantage. The barrels are made of japanned sheet iron and present an attractive appearance, and are claimed to present much greater resistance to breaking and crushing than wooden barrels. They are suitable for all classes of goods where wood barrels are or have been employed, including bottled goods wrapped in straw or excelsior.

The joining of the barrel is such that the two parts may be firmly secured together without offering obstruction to the rolling of the barrel, and they can be readily nested when taken apart for shipment. The barrels are also provided with a removable lid and means for securely fastening it in position without obstructing the outer surface of the barrel, and in particular strengthening means are provided for the body of the barrel. In the accompanying illustrations, Fig. 1 is a view of one form of the barrel assembled; Fig. 2, a vertical section of this barrel; Fig. 3, a view of one barrel taken apart and also two halves nested for shipping; Fig. 4, a different manner of securing the lid, and Fig. 5, assembled and unassembled views of a barrel of modified form in which different means are employed for securing the two halves together and the lid in place.

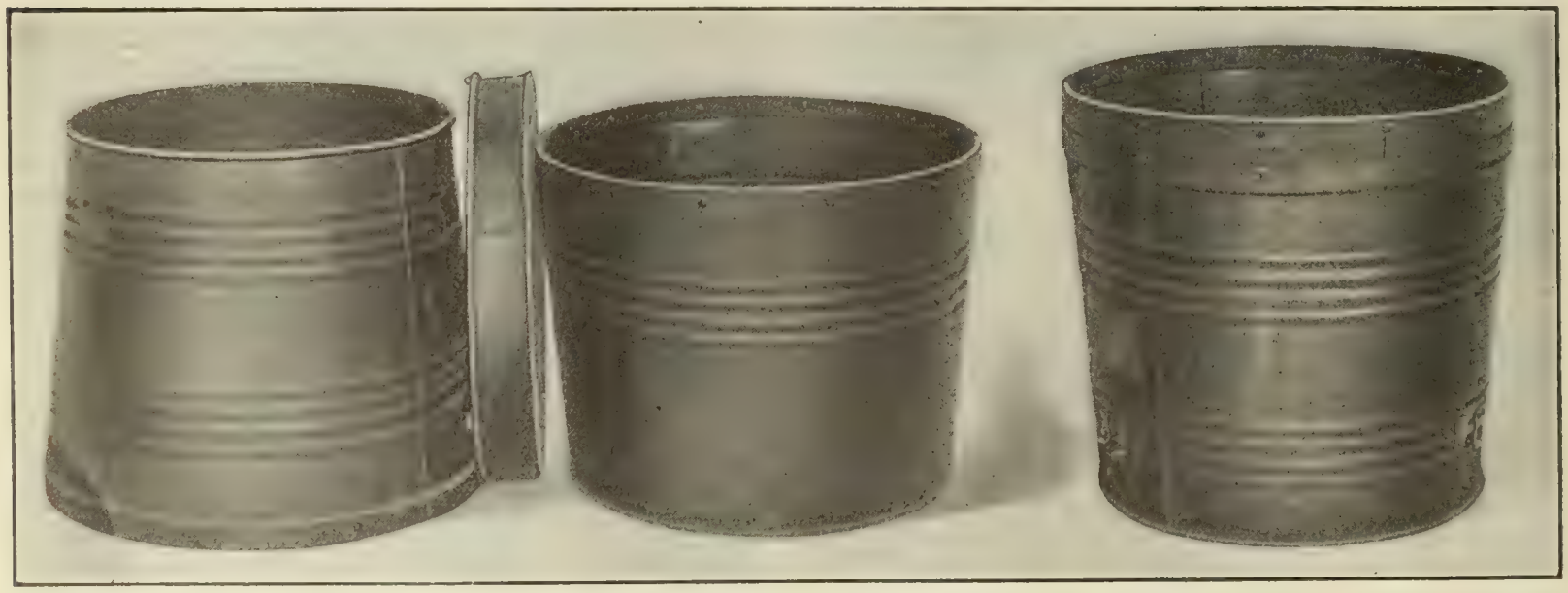


Fig. 3.—The Parts of the Same Barrel Unassembled and Nested.

As may be seen from the illustrations, the upper and lower halves of the barrel are in the shape of frustums of cones, and their larger ends meet at the middle of the barrel. Each section has a series of beads which increase the rigidity of the barrel, and in these spring hoops may be inserted if desired for greater strength.

The bottom of the lower section is countersunk to raise it from contact with the ground and protect it. At its upper circumferential edge the lower section is provided with an interior band of iron rigidly secured to the barrel so as to provide a strengthened and stiffened rim at the junction with the upper section. This band also provides a sufficiently rigid structure to form a substantial support for the section fastening means. The lower section fits within the upper section, the lower rim portion of the upper section being offset or flared, forming a vertical flange and a horizontal shoulder. Vertical braces extend from top to bottom of both sections, strengthening them, and particularly the overlapping rim portion.

When the two sections are assembled to form a complete barrel, the flared, overhanging rim of the upper section fits over the upper band-protected rim of the lower section, and the shoulder within the rim fits upon the upper edge of the lower section. Bolts are then passed through apertures in the overlapping rim portions of the two sections and through the rigid band, which forms a firm support for the bolts and nuts on the inside of the barrel and holds the bolts in place. The rigid band not only provides a strong edge protected rim at the junction of the parts, but also a central rigid flat bearing surface on which the barrel may be rolled without bending or weakening it, and at the same time a sufficiently strong construction is provided to enable merely the substantially nonprojecting bolts to be employed as fastening means.

On the upper section is detachably secured a cover having a depending flange, which goes over the upper edge of the upper section. The flange is provided with strengthening beads at the top and bottom. On the interior of the flange of the cover are three vertical lugs extending downwardly beyond the lower bead and terminating in loops or eyes. Each eye fits between two similar eyes, carried by lugs on the upper section of the barrel. When the cover is in place a pin is passed through the three adjoining eyes and thus the cover and upper section are secured together. These eyes, when the cover is in place, are protected during the rolling or other handling of the barrel. The cover can be readily detached at any time and yet offers no undue exterior obstruction, such as would interfere with the nesting of the upper section with the cover attached within the lower section.

In Fig. 4 there is shown a modified form of attaching the cover, consisting of screw threaded lugs, secured to the inner edge of the upper section, which project through holes in the cover and have nuts on their outer ends. The cover fits loosely over the screws and the nuts clamp it in place.

In Fig. 5 a modification of the barrel is shown, in which an upper section provided with a lower beaded edge fits over the upper part of a lower barrel section. This lower section is provided with a collar, having a horizontal flange and vertical strengthening portions. The horizontal flange has bolt holes through which long vertical bolts pass, extending at their upper ends through lugs on the cover. The cover fits over the upper edge of the upper section of the barrel. Nuts are secured to the upper and lower ends of the bolts, which are usually four in number. In this form of barrel the horizontal flange on the collar at the upper edge of the lower section provides a sufficiently rigid bearing for the barrel when being rolled.

The barrel just described is particularly adapted to hold paste, paints, putty, &c. All of the barrels have the advantages that they protect their contents against dampness or moisture, are of relatively light weight, about 20 lb.; are stronger than wood barrels, seldom require repairs, and are easily repaired, because all parts are interchangeable, and are salable as scrap when their usefulness as barrels is over. The barrels can be made in any sizes and for a given capacity occupy assembled about 15 per cent. less space than wood barrels. Knocked down and nested for return they occupy very much less space than empty wood barrels. A very important advantage is that goods are much safer in transit when packed in these metal barrels and the railroads are more willing to take them. Less care is necessary in the handling and storing, any kind of a car can be used, and lower insurance rates can be obtained.



Fig. 4.—A Different Cover Fastening.



Fig. 5.—A Modified Form of the Wright Barrel Assembled and Unassembled.

The New England Foundrymen's Association held the first meeting after the outing season at the Exchange Club, Boston, September 9, with President Henry F. Arnold in the chair. Thomas D. West, Sharpsville, Pa., read a paper on "Criminal Waste of American Strength and Intelligence," and after dinner talked on "Special Features in Cupola Construction and Manipulation," both subjects being treated in a very interesting manner. The Whitin Foundry & Machine Company, Whitinsville, Mass., was elected to membership.

A recent report of the Associated Iron Molders of Scotland shows how seriously the depression in the shipbuilding and engineering trades in Great Britain is affecting foundry operations. Only 4576 members were at work, according to the report, while 2165 unemployed were on benefit, 191 were idle and not on benefit, and 530 were on superannuation benefit.

The American Sheet & Tin Plate Company has closed down its Sabraton tin plate plant, at Morgantown, W. Va., on account of the long drought. The plant contains 10 hot mills and has a weekly capacity of 10,000 boxes of tin plate.

## The New Open Hearth Plant at Ohio Works, Carnegie Steel Company.

In the course of the first six months of 1909 the Carnegie Steel Company, at its Ohio Works, Youngstown, Ohio, will complete its new open hearth plant of 12 open hearth furnaces, with stock yards, gas producers and mixer. The plant will be situated between the present steel works and the Mahoning River. The stock yard, producer house, open hearth building and mold yard will lie parallel to each other and be of practically the same length. The mixer plant will be placed in line with the open hearth, but in a separate building. The stock yard will be 912 ft. in length, 60 ft. in width, roofed complete, and will be served by two 5-ton stocking cranes.

Between the stock house and the open hearth building will be the producer house, containing 53 producers, arranged in groups of four. Five of the producers installed in this building will furnish the gas for the new slabbing mill. Each group of four will be connected directly to an open hearth furnace by means of an underground flue. The producer building will be 820 ft. long, with a width of 41 ft. The side furthest from the open hearth furnaces is occupied by coal bins served by an elevated coal track; from these bins the coal is delivered to the various producers by means of a traveling hopper elevator, each producer being equipped with an overhead receiving hopper.

The mixer plant will be situated in line with the charging floor of the open hearth building. Its 250-ton hot metal reservoir will be carried on a roller cradle and tipped by means of a hydraulic cylinder. The building will have a frontage of 59 ft. and a depth of 51 ft. The 25-ton hot metal ladles coming from the blast furnaces on an elevated track will be received on a hydraulic elevator, and by this delivered at the level of the receiving spout of the mixer. The metal required for the open hearth will be poured into 42-ton charging ladles on another elevated track for delivery to the open hearth furnaces. The track arrangement is such that these ladles are delivered on the charging floor back of the charging machine and opposite any desired furnace, or, if it should be required, the 25-ton ladles may be run on through the mixer building directly on the track in front of the furnaces usually used for the charging buggies.

The open hearth plant proper consists of 12 60-ton furnaces, covered by a single building, 900 ft. in length and 139 ft. 6 in. in width. This width is divided into two parts, one 84 ft. 6 in., covering the charging floor and furnaces, and one 55 ft., covering the pouring floor. On the charging floor side will be placed two charging cranes of 75 tons capacity each, for handling the hot metal ladles, while the pouring side will be equipped with three 125-ton ladle cranes. Immediately over the pouring cranes, and running on an independent track carried by the roof trusses, will be placed a 20-ton trolley, to be used in making repairs on the pouring cranes. The charging floor, which is elevated 15 ft. above the level of the pouring floor, will be equipped with three low type electric charging machines, for handling boxes delivered on a track immediately in front of the furnaces. Just behind the charging machines, and under the craneway, is the track on which the 42-ton hot metal ladles will be delivered.

The furnaces will be of the stationary type and will have the usual gas and air regenerating chambers. The gas chambers will be 8 x 22 ft. and 14 ft. 9 in. in hight; the air chambers, which are situated inside, will be 12 x 22 ft. and 14 ft. 9 in. in hight. The furnace proper will have a width inside the walls of 14 ft. 11 in. and a length from port face to port face of 29 ft. The pouring spouts will be handled by electric jib cranes, these being also available for any work to be done in the cinder pits.

Immediately adjoining the pouring floor, and running the entire length of the open hearth building, is a yard for the handling of molds. This yard is served by a 10-ton electric overhead traveling crane of 60 ft. span.

## Customs Decisions.

### Beet Shredding Machines.

The Board of United States General Appraisers in overruling a protest filed by Downing, Judas & Co., Chicago, has laid down the rule that completed and finished steel parts apparently fitted for use as parts of beet shredding machines must stand duty under the terms of the tariff act at 45 per cent. ad valorem under the provision in the law for "manufactures of metal." The importers had set up the claim that the parts should be admitted to entry as articles manufactured from steel, with a tax of 4 7-10 cents per pound, as "steel in all forms and shapes." General Appraiser Fischer, in his decision for the board, says that the articles are so far completed that they are dutiable as assessed, and for this reason the decision of the collecter in levying the higher duty is allowed to stand.

### Railroad Switches.

In overruling a claim made by L. H. Abenheimer against the collector of customs at San Francisco, the board has decided that railroad switches manufactured in part of steel rails and other metal must pay duty at the rate of 45 per cent. under the metal provision of the tariff act. It was the contention of the importer that the switches should be granted entry at 7-20 of 1 cent per pound as being rails or railroad iron. The board reaches the conclusion that the switches are dutiable at 45 per cent. as assessed, owing to the circumstance that the switches are made only in part of rails.

### Bowie Knives.

A decision has been handed down by the lower customs tribunal unfavorable to the contention of Downing, Judas & Co., Chicago, regarding the classification for dutiable purposes of bowie knives. They were assessed for duty at 45 per cent. under the tariff provision for hunting knives, and were alleged to be entitled to duty at 35 per cent. as "sidearms." In overruling the claim, General Appraiser Fischer says that an inspection of the samples shows that the articles in question are in fact bowie knives with deerfoot handles. Notwithstanding the fact that they were invoiced as "daggers," they do not answer that description according to the board. They are therefore held dutiable as assessed.

### Cast Steel Sheets and Steel Strips.

The Board of Appraisers has taken favorable action on protests filed by Wetherell Bros., Boston. It is held that certain cast steel sheets are not subject to an additional duty. The imposition of the extra duty is declared to be illegal. The board also found that no additional duty accrues on cold rolled strip steel imported by the same firm.

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The North-Eastern Steel Company, Middlesbrough, England, has secured the order for 15,000 tons of 45-lb. steel rails for the Western Australian Railways, about which there has been some controversy with the International Rail Association. The business had been allotted to Belgium, it is reported, but the directors of the railroad refused to have Belgian rails, and ultimately the contract was given to the Middlesbrough Company at a higher price. The Belgian bid was £5 16s. a ton c.i.f., while the price paid is said to be £6 6s. c.i.f., or £5 11s. at mill, making a difference of over $37,000.

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The International Harvester Company's exports for the quarter ended August 31 are stated to have about equaled those for the company's record season for the same quarter last year. In May and June of this year the carload shipments for export fell slightly below the same months in 1907, but for July and August the figures are far in advance of last year. At the present ratio of increase the company will soon be running ahead of its export showing last year.

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The H. K. Porter Company, Pittsburgh, has been awarded a contract by the Isthmian Canal Commission for furnishing 10 locomotives at $5945 each. They are to be used at the rock crushing plant at Porto Bello.

## The Insley Controllable Center Dump Buckets.

The Insley Iron Works, Indianapolis, Ind., is manufacturing two new types of center dump and controllable buckets, illustrations of which appear herewith. These have been developed to meet the demand for a drop bottom concrete bucket that will discharge its contents in a positive straight line from the center, placing it exactly where required; that will empty itself instantaneously; that is self-locking and self-closing upon the release of the operating handle, and at the same time one in which



Fig. 1.—The Pier Type of Bucket for Depositing Concrete in a Mass.

the discharge is partially or entirely under the control of the operator. And it has been necessary that this end be reached without a cumbersome and expensive mechanism, so that the bucket, while strongly built, will be light in weight, simple in construction and can be placed on the market, therefore, at a price fairly competitive



Fig. 2.—The Form Type of Bucket for Depositing Concrete Into Forms or Restricted Spaces.

with that asked for the ordinary types of drop bottom buckets. By the latter are meant those which are hinged on one side and latched on the other, and which cannot be operated without slopping and side splashing, and without extra strength in the forms to stand the impact of the entire discharge, because this is beyond control as soon as the latch is thrown.

The new buckets are built of steel throughout, and all parts subject to severe wear are bronze bushed. They are designed in two general types, the pier bucket, Fig. 1, and the form bucket, Fig. 2. Both are made in sizes of from ½ to 3 yards, the ratings being liberal, so that concrete in place will govern. On both types the bottom is pivoted to the sides in two jaws or bi-valves, opened simultaneously by a system of links and levers, this action depositing the contents in a positive straight line from the middle of the bucket. The system of levers operating this bi-valve bottom is so designed and the points of pivoting have been so chosen that the bottom is self-sustaining in any or all positions between no opening and full opening. The size of the opening can be varied and maintained at the will of the operator, and the bucket can be partially or entirely closed with ease from full flow at any stage of the deposit.

The pier bucket is intended for work where a strong center dump bucket is required which will drop the concrete exactly in place, will empty itself instantaneously, and is self-closing and self-locking, but on work in which the item of control is a minor requirement. The stream from this bucket can be regulated and can be entirely cut off with some materials. Where positive control is required the form bucket is recommended and is guaranteed to meet every requirement for the most exacting work on walls, floor slabs, columns, or other restricted spaces. The contents of this bucket can be deposited within any narrow wall form. The form bucket fitted with hinged lids is especially serviceable for submarine construction, the movement of the jaws being such that the bucket can be placed practically in contact with the forms before the bucket is opened, allowing the concrete to be deposited with a minimum amount of washing.

The self-locking device on these buckets and all other distinctive features are covered by patents and patents pending. The buckets are sold by George M. Chandler, general sales agent, 9 North Illinois street, Indianapolis, Ind.

**An American Exhibition in London.**—Announcement is made of an exhibition of American products which is to be held at Earl's Court, London, from May to October, 1909, to be known as the Golden West and American Industries Exhibition. For this purpose a committee has been organized which is headed by the Lord Mayor of London. Representatives have been appointed to visit the leading cities and manufacturing districts of this country, the commissioner in charge of this work being John W. Ryckman, who has established temporary headquarters at the Ansonia, Broadway and Seventy-third street, New York City. The mayors of 50 cities have been invited to appoint local committees to take the matter up in their respective communities. The Governors of all the Western States have been asked to lay the subject of the exhibition before their chambers of commerce and other commercial bodies with favorable recommendation. Manufacturers' associations have also been requested to participate in the exhibition through their members. The exhibition will typify the great development of the States of the Golden West since the discovery of gold in California in 1849, and will also commemorate the semicentennial of the completion of the first Atlantic cable. The Earl's Court exhibition buildings and grounds cover an area of more than 22 acres and furnish all that is essential for the holding of important exhibitions. The buildings have been specially constructed for exhibition purposes, and the American exhibition will be the twentieth of the series of great annual exhibitions held there.

Two huge battleships were launched in British shipyards September 10. One was the St. Vincent, the largest and heaviest of British warships, launched from the Government yards. Its dimensions are as follows: Length, 500 ft.; beam, 84 ft.; draft, 27 ft.; displacement, 19,250 tons. The engines will be of 24,500 hp., and it is expected to have a speed of 21 knots. It will be armed with 10 12-in. guns and a secondary battery of 4-in. guns. The other vessel was the Brazilian battleship Minas Geraes, launched from the yards of Sir W. G. Armstrong & Whitworth, at Elswick, on the Tyne, a bigger and more powerful ship than the St. Vincent. It has a tonnage of 21,000 and is 530 ft. in length, though it draws 25 ft. instead of 27. In armament it is superior to the St. Vincent, as it has 12 instead of 10 12-in. guns, and can bring all of them to bear in either broadside. The St. Vincent can bring only eight to bear. The secondary armament consists of 22 4.7-in. guns.

# The Roechling-Rodenhauser Electric Furnace.

Dr. B. Neuman of Dramstadt, Germany, has published in *Stahl und Eisen*, Nos. 33 and 34, 1908, the results of a study of the new Roechling-Rodenhauser electric furnace at the Roechling Works at Voelklingen, which was designed in order to use the three-phase alternating current with its cheaper electric plant, and with the possibility of its use by taking the current from the usual central station.

The new furnace is shown in the accompanying engravings, Figs. 1 and 2, which represent a 1½-ton furnace for 50 cycles. The working hearth A seems narrow, but in reality is 1.65 ft. wide and over 4.5 ft. long. It is accessible through three working doors, located between adjoining legs of the transformer. The latter are connected by a horseshoe yoke, and each is encircled by the channels R, which are shorter than they are in the ordinary induction furnace and permit of an enlargement of the hearth proper. At the point where two such channels enter the working hearth, there are imbedded in the wall the characteristic Roechling-Rodenhauser pole plates, between which and the bath there is a refractory material which is a good conductor at high temperatures and transmits the current to the metal bath. The bath is heated both by induction in the channels and by direct resistance heating of these pole plates. Each of the three legs, as is seen in the drawings is surrounded by the primary coil, above which there is also a secondary coil. While one terminal of the latter is connected to N, the other terminal is connected through broad copper bars with the pole plates. The coils are completely incased so that they are inaccessible during the operation. They are cooled by a moderate current of blast. Scrap or liquid metal is charged or slag withdrawn by either of the two rear doors, while lime and other additions may be made by any of the three doors. The furnace is tapped by tilting. The furnace lining is put in rapidly with the aid of pneumatic stampers. The bottom wears slowly and is used for a number of campaigns. The stamping up of the side walls takes about 8 hr.

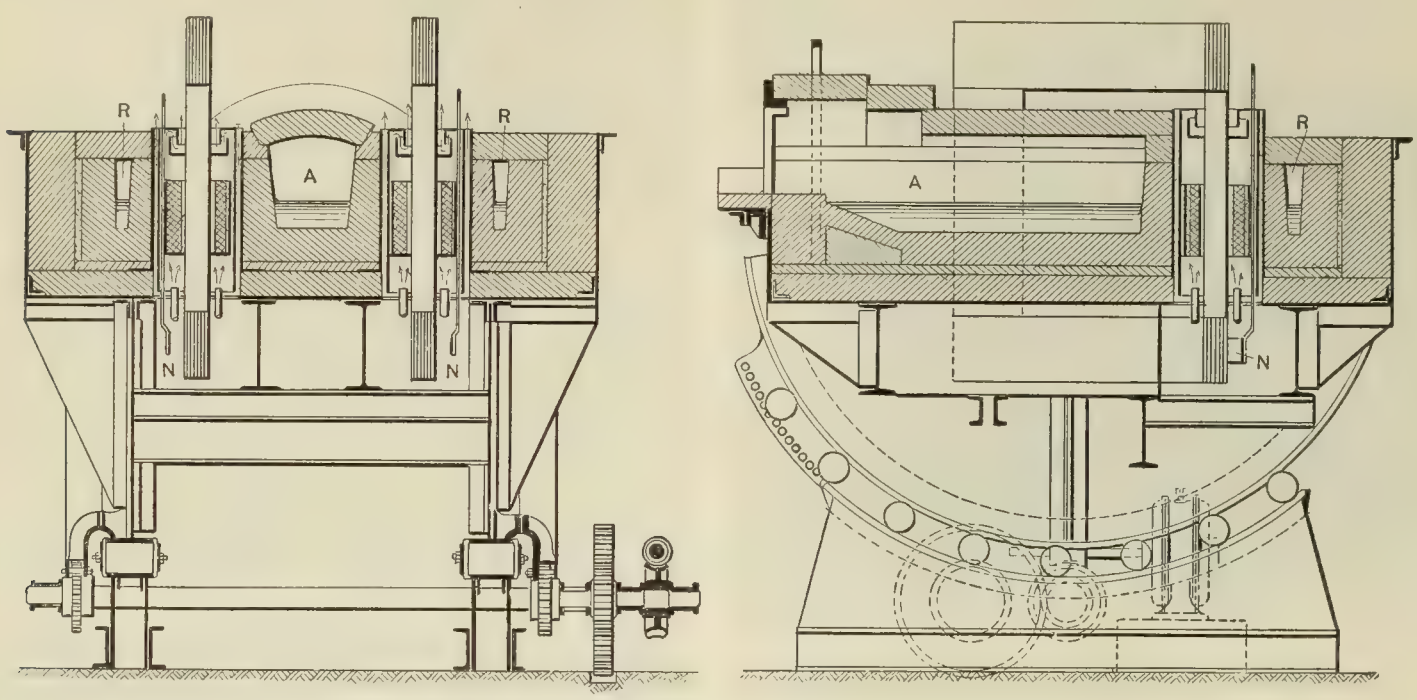



Fig. 1.—Transverse and Longitudinal Sections of the Roechling-Rodenhauser Electric Furnace.

### The Operation.

The heating up with rings requires only 4 hr., after which liquid charges may be made. At Voelklingen pig iron is used for the first charge in order to bring up the furnace to full heat, which is accomplished in 4 hr. From the time that the current is turned on until the furnace is ready for working, therefore, requires 8 hr. This heating period requires a consumption of current of 2000 kilowatt-hours for the 3½-ton furnace and 1500 kilowatt-hours for the 1½-ton furnace. After the furnace has been heated it is charged with basic Bessemer steel which has been blown in the converter. Calcined lime and roll cinder, or ore, are charged upon the bath, and this dephosphorizing cinder is drawn off in about an hour. When carbon steel is to be made, the proper addition of carbon is made in accordance with the specification called for for the product. By additions of lime a second slag is formed, whose object is to desulphurize, and under which the charge is allowed to rest until flaming stops; in other words, until gas has been entirely expelled from the bath. The second slag is completely white—*i. e.*, free from iron, and it disintegrates to a fine white powder in the air. The bath is deoxidized by the addition of ferrosilicon when the second slag is charged. When carbon steel is being made the charge is tapped and cast. When alloy steel is being made the proper additions are first made. In consequence of the active circulation in the bath the alloy is so uniform within a few minutes that the heat may be tapped.

A curious phenomenon in the alternating current furnace is the rapid rotation of its contents. This circulation is not accidental, but is the result of the horseshoe form of the yoke, and it is possible to reverse the circular motion in the bath. It is characteristic of the Roechling-Rodenhauser furnace. In the Stassano furnace the mixing is accomplished by mechanical means, while in the other carbon electrode furnaces it takes place only slowly, because the hottest and, therefore, lightest metal is on top. Much importance is attached to this feature as promoting the metallurgical processes.

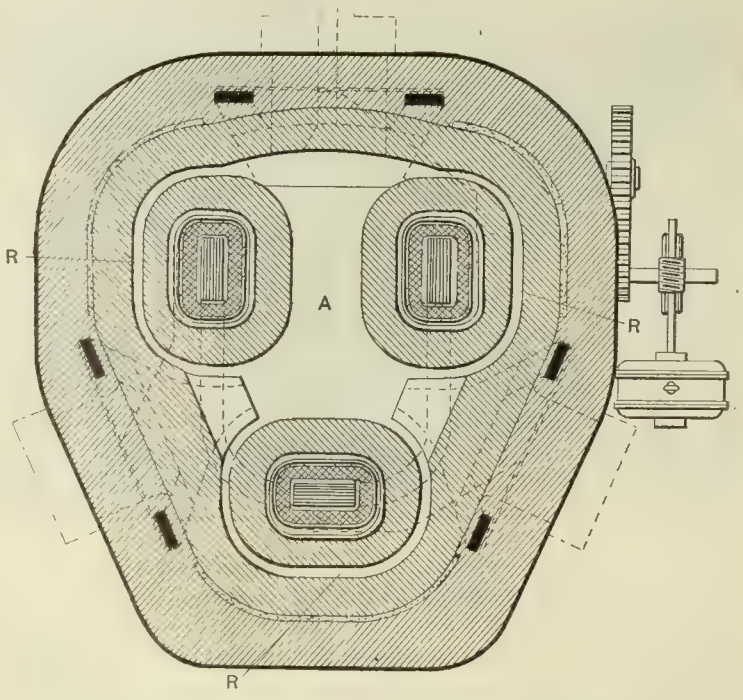



Fig. 2.—Horizontal Section of the Roechling-Rodenhauser Electric Furnace.

The reproach has been made to induction furnaces that the slag does not become hot enough because it receives its heat from the bath of iron. Practice at

Voelklingen shows that both the first highly basic dephosphorizing slag and the second deoxidizing and desulphurizing slag are very liquid and hot. This is shown by the fact that in tapping the charge a considerable quantity of the slag flows into the ladle, and that this slag after casting the whole heat flows out of the ladle freely. The explanation of the fact that the slag in the furnace does not seem as hot as that in the arc furnace is probably that slag is only heated from below in the induction furnace. Since the metallurgical processes proceed normally and rapidly when the slag is thus heated this is no disadvantage; on the contrary, the roof is thus protected against excessive heat in this manner.

### Uniformity of Metal.

A series of tests was carried out at Voelklingen by the Poldi Huette of Kladno, Bohemia, on alloy steels, with the object of testing the uniformity of the metal. At 2 p.m. a heat was charged. From 5.17 to 5.19, 20 kg. of 65 per cent. ferrochrome was added in pieces, well distributed. At 5.24 the bath was well stirred. From 5.29 to 5.35 samples 1 to 7 were taken at the points in the furnaces indicated in the accompanying sketch, Fig. 3, the analysis yielding the following results:

| | Carbon. | Mang. | Sil. | Phos. | Sulp. | Chrome. |
|---|---|---|---|---|---|---|
| 1 | 0.81 | 0.27 | 0.335 | 0.031 | 0.007 | 1.00, 1.01 |
| 2 | 0.77 | 0.25 | 0.340 | 0.030 | 0.008 | 1.00, 1.01 |
| 3 | 0.85 | 0.28 | 0.345 | 0.029 | 0.007 | 0.99, 1.01 |
| 4 | 0.82 | 0.27 | 0.335 | 0.030 | 0.009 | 0.98, 0.99 |
| 5 | 0.83 | 0.25 | 0.335 | 0.030 | 0.009 | 0.99, 0.96 |
| 6 | 0.78 | 0.27 | 0.419 | 0.031 | 0.010 | 0.99, 0.99 |
| 7 | 0.79 | 0.28 | 0.326 | 0.030 | 0.009 | 0.98, 0.98 |
| 8 | 0.77 | 0.29 | 0.396 | 0.031 | 0.009 | 0.99, 1.00 |

Analysis No. 8 is from a sample taken from the ladle after the furnace had been emptied at 6.12 p.m., 35 min. after the steel had been allowed to stand in the furnace. It will be observed that the metal was very uniform in the furnace.

### Steel Castings.

It is claimed that the induction furnace is superior to the carbon electrode furnace for melting and working scrap, because there are no shocks or violent fluctuations in the current. This was shown when the Aciéries Liégeoises of Brassoux-lez-Liége, Belgium, who have since acquired a license and have built a furnace, carried out charges at Voelklingen by their own engineers. Old material was used in the charge, and the steel was cast into thin castings for automobile construction with eminent success.

### Rail Steel.

The Roechling Works have been the pioneers in refining basic Bessemer steel for the manufacture of steel rails. They have delivered 1000 tons to the Prussian State railroads, and have orders for other German and foreign roads. The steel blown in the basic Bessemer is subjected in the electric furnace to a brief refining operation and has time to discharge its gas, producing a more homogeneous and denser material. The author

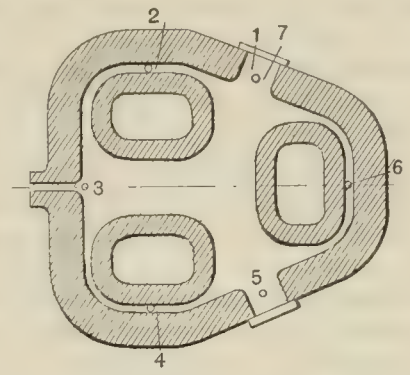



Fig. 3.—Points in the Electric Furnace from Which Samples Were Taken for Analysis.

quotes the following drop test of an electric steel rail: The distance between bearings was 1 m. (39.37 in.). The weight of the drop was 800 kg. (1764 lb.) and the hight 1.875 m. (73.71 in.). The first blow led to a set of 16 mm. (0.63 in.), the second to 30 mm. (1.18 in.), the third to 51 mm. (2 in.), the fourth to 61 mm. (2.4 in.), the fifth to 71 mm. (2.8 in.) and the sixth to 80 mm. (3.15 in.). Then followed a blow with 6000-m.-kg. (43,410 ft.-lb.), which caused a set of 136 mm. (5.35 in.). A second blow broke the rail.

### Chemical Results and Physical Tests.

Dr. Neuman quotes the following series of analyses and physical tests to show that there is little difficulty in producing a high quality of metal, equivalent to the better grades of open hearth and crucible steel:

| No. | Phos. Per cent. Material | Sul. Per cent. charged. | Car. | Mang. | Sili. | Phos. | Sul. | Chrome. | Nickel. | Tensile strength. Kg. | Elongation. Per ct. | Construction. Per ct. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Steel, charging liquid metal. | | | | | | |
| 1 | 0.050 | 0.081 | 0.080 | 0.305 | 0.068 | tr. | 0.016 | ... | ... | 32.8 | 38.25 | 74.4 |
| 2 | 0.127 | 0.069 | 0.068 | 0.275 | 0.032 | tr. | 0.024 | ... | ... | 33.3 | 36.0 | 76.2 |
| 3 | 0.058 | 0.073 | 0.074 | 0.334 | 0.030 | tr. | 0.040 | ... | ... | 34.4 | 40.0 | 73.6 |
| 4 | 0.085 | 0.085 | 0.084 | 0.317 | 0.027 | 0.006 | 0.040 | ... | ... | 35.8 | 40.0 | 73.2 |
| 5 | 0.069 | 0.057 | 0.099 | 0.542 | 0.31 | tr. | 0.032 | ... | ... | 43.8 | 34.0 | 55.7 |
| 6 | 0.075 | 0.073 | 0.154 | 0.346 | 0.26 | 0.015 | 0.032 | ... | ... | 46.1 | 31.5 | 63.2 |
| 7 | 0.051 | .... | 0.194 | 0.420 | 0.55 | 0.020 | 0.024 | ... | ... | 51.1 | 27.5 | 45.6 |
| 8 | 0.086 | 0.121 | 0.590 | 0.375 | 0.10 | 0.028 | 0.016 | ... | ... | 65.0 | 24.0 | 39.6 |
| 9 | 0.072 | 0.073 | 0.440 | 0.738 | 0.30 | 0.024 | 0.024 | ... | ... | 70.0 | 23.0 | 43.8 |
| 10 | 0.066 | 0.105 | 0.458 | 0.702 | 0.151 | 0.005 | 0.032 | ... | ... | 72.4 | 20.25 | 50.4 |
| 11 | 0.025 | 0.097 | 0.718 | 0.376 | 0.29 | 0.018 | 0.020 | ... | ... | 89.8 | 13.5 | 15.5 |
| 12 | 0.066 | 0.113 | 0.762 | 0.672 | 0.17 | 0.021 | 0.024 | ... | ... | 92.6 | 15.0 | 19.7 |
| 13 | 0.045 | 0.065 | 0.835 | 0.321 | 0.29 | 0.015 | 0.028 | ... | ... | 96.8 | 12.5 | 17.8 |
| 14 | 0.050 | 0.089 | 0.876 | 0.318 | 0.41 | 0.018 | 0.016 | ... | ... | 102.7 | 6.0 | 10.3 |
| 15 | 0.069 | 0.121 | 0.919 | 0.261 | 0.25 | 0.011 | 0.028 | ... | ... | ... | ... | ... |
| 16 | 0.073 | 0.105 | 0.990 | 0.435 | 0.029 | 0.023 | 0.032 | ... | ... | ... | ... | ... |
| 17 | 0.055 | 0.113 | 1.170 | 0.261 | 0.34 | 0.024 | tr. | ... | ... | ... | ... | ... |
| 18 | 0.026 | 0.105 | 1.260 | 0.350 | 0.19 | 0 015 | 0.030 | ... | ... | ... | ... | ... |
| 19 | 0.064 | 0.081 | 1.420 | 0.377 | 0.19 | 0.022 | tr. | ... | ... | ... | ... | ... |
| | | | | | | Steel, charging scrap. | | | | | | |
| 20 | 0.045 | 0.089 | 0.244 | 0.493 | 0.20 | 0.024 | 0.032 | .. | ... | ... | ... | .. |
| 21 | .... | .... | 0.715 | 0.607 | 0.33 | 0.011 | 0.024 | ... | ... | ... | .. | . |
| | | | | | | Alloy charges | | | | | | |
| 22 | 0.060 | 0.081 | 0.212 | 0.505 | 0.26 | 0.016 | 0.028 | 0.74 | 2.98 | 95.6 | 12.5 | 23.5 |
| 23 | 0.074 | .... | 1.170 | 0.320 | 0.30 | 0.022 | 0.016 | 1.60 | ... | ... | .. | . |
| 24 | 0.069 | 0.078 | 0.080 | 0.253 | 0.14 | 0.015 | 0.032 | 0.81 | 4.03 | 62.5 | 17.5 | 19.4 |
| 25 | 0.081 | .... | 0.750 | 0.283 | 0.41 | 0.022 | 0.016 | 1.05 | .. | ... | .. | .. |
| | | | | | | Steel castings charges. | | | | | | |
| 26 | 0.043 | 0.121 | 0.356 | 0.841 | 0.25 | 0.046 | 0.028 | ... | ... | .. | ... | ... |
| 27 | 0.056 | 0.097 | 0.337 | 0.405 | 0.10 | 0.019 | 0.019 | ... | ... | .. | . | . |
| | | | | | | Silicon charges. | | | | | | |
| 28 | 0.021 | 0.081 | 0.076 | 0.467 | 4.05 | 0.014 | tr. | ... | ... | ... | ... | ... |

Wedding has dealt with the consumption of power with liquid charges. In making the metal equal to open hearth and crucible steel, referred to in the table of analyses, requires from 200 to 300 kilowatt-hours for heats of 2 to 3 hr.

### Making Steel Castings.

The following data are submitted for the manufacture of steel castings in the Roechling-Rodenhauser Furnace at Voelklingen: The furnace has a capacity of 1.5 tons, and during the heat requires 200 to 230 kw. The melting of the scrap proceeds rapidly, charging being done through the three doors, so that with the current supply indicated the furnace takes care of 0.4 to 0.5 ton per hour. When about 0.7 ton scrap has been melted the charge is refined, and this calls for about 200 to 300 kilowatt-hours. In this manner 0.7 ton of steel is made in 3 to 3½ hr. In tapping about 0.4 ton is left in the furnace in order to start the next heat.

An exact view of the course of the scrap heats is given in the accompanying diagrams, Fig. 4, which cover three consecutive heats. The diagram shows plainly that even in working with solid additions no shocks occur. The first and third heats are almost ideal. The steel was used for castings. It was so hot that the thin, long and complicated castings could be readily made. The consumption of power in melting scrap was about 900 kilowatt-hours.

The author goes into somewhat elaborate estimates of cost in making steel castings, which are based on conditions in Germany. The following data are of more general interest. Working day and night, and making repairs on Sundays, the 1½-ton furnace at Voelklingen has a capacity of 1421 metric tons per annum. Stopping the furnace for 3 hr. every night the make would be 1218 tons. Two men per shift serve the furnace. The lining of the furnace requires 3 tons of magnesite mixed with 12 per cent. of tar and one-half of the material is used over again. Four men work 6 hr. to renew a lining. The motor for operating the blower for cooling takes about 1.85 kw. The author figures out that the cost per metric ton of steel in the ladle running day and night is 123.14 marks ($29.31), and running with a stoppage of 3 hr. every night, 127.02 marks ($30.23).

### Quality in Electric Refining.

The metallurgical methods made possible by electric heating permit of a refining of the steel which was hitherto only known in the crucible furnace. It permits of much higher temperatures, which in turn aid the elimination of impurities and the removal of gases. It is a fact that electric steel, even under otherwise identical conditions, shows a superiority over open hearth and crucible steel, which is particularly noticeable under drop tests. This superiority is undoubtedly due to its extraordinary homogeneity. Since almost exactly the same results have been attained in different furnace systems, it cannot be attributed to any single one, but must be regarded as the result of a special refining process, which can only be carried out in the electric furnace.

In all the processes the dephosphorizing is effected in the same manner by a lime cinder. It is an accepted fact that by a prolonged reaction and by repeated removal of the cinder larger percentages of phosphorus may be removed down to any required limit.

The extraordinary completeness of the removal of oxygen from the bath of steel is one of the most important advantages of the electric refining process. It is true that for complete deoxidation a cinder completely free from iron is necessary. In the different processes the deoxidation is accomplished in a somewhat different manner. In the Héroult process there is charged, after drawing off the phosphorus slag, a certain quantity of carbon and of fresh lime. Under the influence of the electric arc calcium carbide is formed, so that carbon is the deoxidizer. In the Roechling-Rodenhauser process, after withdrawing the ferruginous slag, fresh lime is charged, and the deoxidizing is done with ferrosilicon.

It has been proved that electric refining permits of desulphurizing easily and accurately to a point unknown in other metallurgical methods.

In making high carbon steel with the Roechling-Rodenhauser method the carbonizing is done immediately after removal of the phosphorus slag and before desulphurizing. In the Héroult process the finished steel is carbonized.

### The Position of the Electric Furnace.

Dr. Neumann takes the ground that the electric furnace cannot be directly compared with the open hearth and the crucible. It does not imitate any metallurgical method, but, on account of its higher temperatures, introduces a special and far more effective process of refining. The fact that the Roechling plant is making rail steel does not justify the conclusion that merchant steel is being made of the same quality and at the same cost as in the open hearth furnace, but there is being made in the electric furnace merchant steel of a higher quality, but, of course, at somewhat increased cost. But when the point has been reached that a higher quality can be made at a moderate increase in cost, then higher quality will be specified, for it is clear that if rails, tires, axles, &c., offering greater safety against breakage and wear can be made, even at a higher price, then there is still a considerable advantage to the consumer.

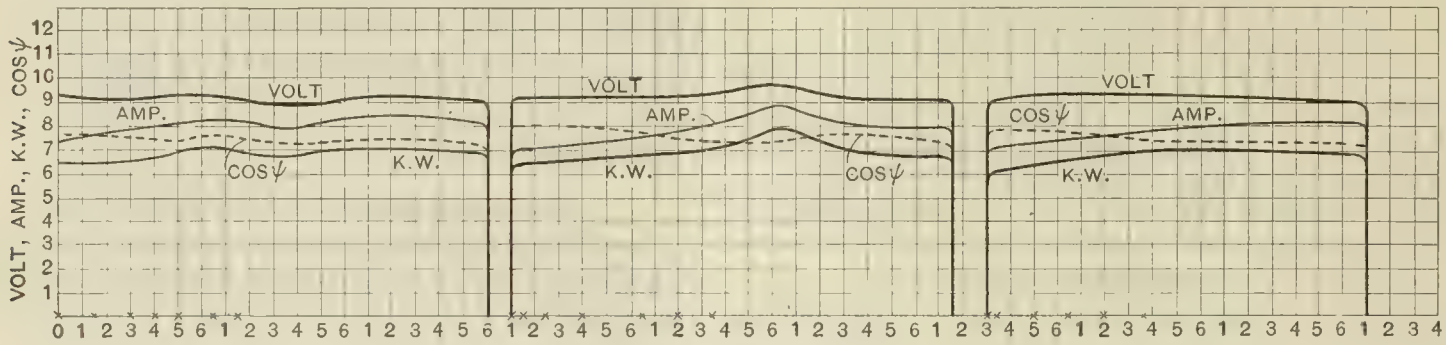



Fig. 4.—Diagrams Showing the Course of the Scrap Heats in Three Successive Heats.

The conclusion is justified that the number of electrical furnaces which refine ordinary steel will multiply considerably.

The plans for the utilization of electrical furnaces at steel works go even beyond that. The Dommeldingen Works propose to make steel castings and high quality steel by using pig iron direct from the furnace. Generally speaking, the opinion prevails that the usual degree of refining may be more cheaply carried out in the converter or in the open hearth furnace than in the electric furnace. It seems that in this specific case the quantity of steel to be made does not justify the construction of a basic Bessemer plant. After studying the Roechling-Rodenhauser process it has been decided to build several furnaces and to refine the basic pig direct from the blast furnace in two electric furnaces in series.

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Plans are under way for the construction of a steel casting plant at Cumberland, Md., a site for which has been donated by Frederick Merton. Prominently connected with the enterprise is Daniel Williams of South Cumberland, who has had 15 years' experience in making all grades of open hearth steel by both the acid and basic processes, and who for the past two years has been in charge of the open hearth plant of the N. & G. Taylor Company, Philadelphia, Pa. If the plant is erected it will be operated under the management of Mr. Williams.

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The Northern Electrical Mfg. Company, Madison, Wis., states that Northern motors are used for driving the electrically operated valves referred to in the article on "The Water Supply of the City of Pittsburgh," in *The Iron Age* of September 3.

# The New Federal Trademark Law.

WASHINGTON, D. C., September 15, 1908.—The rapid development of the Federal trademark system under the Bonynge act, which went into force April 1, 1905, is graphically shown by statistics compiled for the forthcoming annual report of the Commissioner of Patents. Such efficiency has the system shown under the new law that in the three years and a quarter since its enactment one-half as many applications for registration have been made as were filed in the preceding 35 years, which embrace the entire period covered by Federal trademark statutes. The unparalleled prosperity of the country since the Bonynge act was passed is also reflected in these remarkable figures.

### Record Under the Bonynge Act.

This act became effective April 1, 1905, and in the remaining three months of the fiscal year, which ended June 30, 1905, no less than 9710 applications for registration were made thereunder. In the following fiscal year ending June 30, 1906, 10,888 applications were filed. In 1907 the filings amounted to 7918, while in the fiscal year just closed the number was 7400, making a grand total under the Bonynge act of 35,916 applications.

The high percentage of registrations under the new law is significant of the care shown by manufacturers in selecting appropriate registrable marks for the protection of their products. No registrations under the new act were made in the first three months in which it was in force because of the requirement of public notice prior to allowance. In the fiscal year 1906, 10,408 marks were registered and in 1907, 8838. In the year just closed the number was 6141, making a total of 25,387 registrations under the Bonynge act. There remained, therefore, on July 1, 1908, 10,529 applications either rejected or pending, the majority being of the latter class. Comparison with the operations of the Trademark Division under former laws emphasizes the surprising record made under the Bonynge act. In the 24 years from 1881 to 1906 only 60,000 applications were received, or approximately 2500 per annum, of which 36,166 were allowed registration, or approximately 60 per cent. From the passage of the original Trademark Act of 1870 to its repeal by the act of 1881, approximately, 12,000 applications were filed, of which about 8000 were allowed registration, or an average of a little more than 1000 applications and 700 registrations per annum.

From this comparison it appears that since the Bonynge act took effect the applications have averaged nearly 11,000 per annum and the registrations nearly 8000, while during the life of prior trademark statutes the applications averaged but 2000 and the registrations only about 1250 per annum.

### Many Marks Reregistered.

The decline in the annual total of applications since 1906 was fully anticipated and is due to the fact that soon after the law went into force it was construed to require the re-registration of old marks previously registered for foreign commerce in order to protect their use in interstate commerce under Federal jurisdiction, for it will be remembered that the act of 1881 repealed by the Bonynge law was held by the courts to apply only to marks used in foreign commerce and in commerce with the Indian tribes. The direct result of the ruling regarding the re-registration of old marks is seen in the phenomenal total of 20,598 applications filed in the first 15 months in which the law was in force, as compared with 7918 in the second year under the Bonynge act. It is probable that the annual applications for registration have now reached a minimum, and that hereafter there will be a slower but steady increase both in applications and registrations.

The supplemental law known as the Currier act, which took effect July 1, 1906, and which was intended to perfect the Bonynge act, has operated to reduce the total number of applications and registrations, as it provided for a detailed classification of trademarks and for the protection of an entire class by a single registration. Before the Currier law was enacted there were thousands of manufacturers making a variety of goods who were prevented from registering their trademarks under the Federal law because of the prohibitory cost.

### Minor Amendments Needed.

A strong effort will be made at the coming session of Congress to secure the enactment of a bill introduced at the last session by Senator Smoot of Utah, passed by the Senate and favorably reported by the House Committee on Patents. This bill modifies the existing law in two particulars: First, it obviates the necessity on the part of the applicant for registration either to ascertain or to allege that no one has the right to use the proposed mark in a foreign country, and second, it permits an applicant to present a written description of his trademark, as well as a facsimile thereof, if it is thought to be advisable.

Concerning the first amendment, inasmuch as use in this country is controlling in determining who was the first to adopt and use a trademark, it does not appear to be necessary for an applicant for registration to allege in the declaration that no other person has the right to use the mark, inasmuch as the foreign use of a mark does not inhibit registration in this country. It appears to be sufficient for the applicant merely to allege that no other person, firm, corporation, or association has the right to use the trademark in the United States.

As to the second point, it should be understood that under the present act there can be no description of the mark unless color forms a material feature thereof. It is found in many cases that the drawing does not convey an adequate understanding of the mark itself, and it is therefore desirable that some brief description be permitted. Applicants often desire to present a description, inasmuch as their drawings are always restricted to the showing of the mark as it appears on the goods themselves or the packages containing the goods. They are of the opinion that the description of the mark will give them a broader protection than a mere showing of the mark. This may be particularly true in cases where the mark sought to be registered is a word-mark. In such cases there is a possibility of the mark being restricted to the particular form shown, whereas the applicant seeks protection for the word in any form in which it may be used, and if he be permitted to describe the mark as consisting of this word broadly this restriction could not possibly occur. It is believed that if a description of the mark is permitted in certain cases the public will be given greater information as to the mark registered and possibly applicants may acquire broader protection.

W. L. C.

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With the final dividend of 25 per cent. and interest at 6 per cent. being paid to creditors of the National Bank of North America, and 90 per cent. dividends already distributed among depositors of the New Amsterdam National, all of the 15 New York banking institutions that suspended during the financial troubles of last year have been put on their feet again or have been successfully liquidated through other corporations. The Oriental Bank and the International Trust Company are in process of liquidation. These and the National Bank of North America and the New Amsterdam are the only ones that have not resumed business.

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The Bondholders' Protective Committee of the Sheffield Coal & Iron Company announces that since certain large shareholders have not subscribed to the reorganization plan, the committee has decided to foreclose the mortgage on the property. The original plan proposed raising $500,000 to avoid foreclosures of the mortgage, in addition to a large sum for founding arrangements. The committee is considering a modified plan which will be submitted to the bondholders.

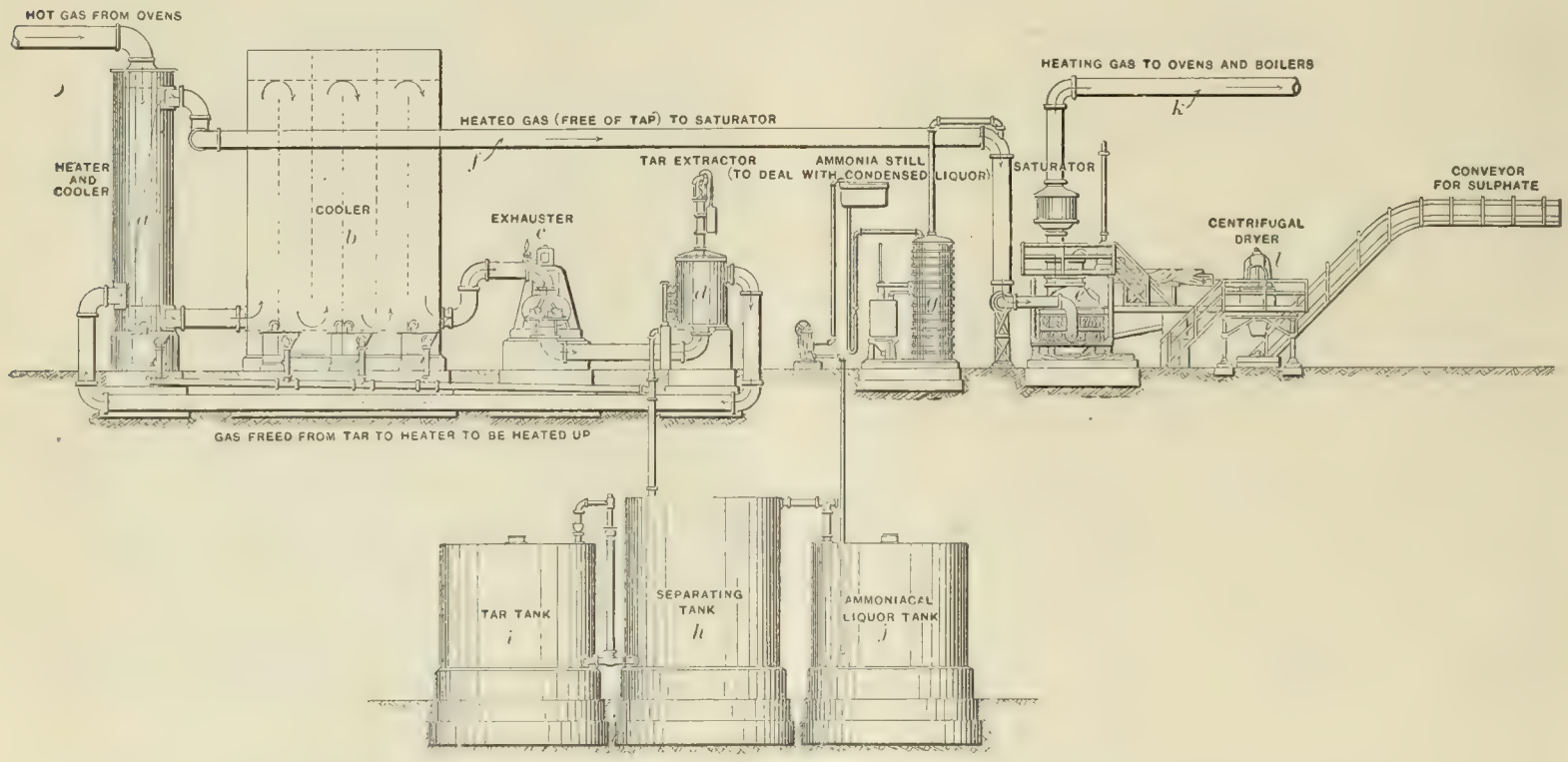
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In 1907 the iron ore mines of Luxemburg produced 7,492,870 metric tons of ore, against 7,229,385 tons in 1906. The production of pig iron in 1907 was 1,484,872 tons, of which 107,065 tons was forge, 1,276,373 tons was basic Bessemer, and 101,434 tons was foundry iron. In 1906 the production was 1,460,105 tons. The three steel plants in Luxemburg consumed 613,482 tons of pig iron in 1907, against 581,192 tons in 1906.

# The Koppers Improved Ammonia Recovery Plant.

The Koppers system of by-product coke ovens, which was fully described in *The Iron Age* of December 12, 1907, pages 1671-1675, has been improved in several particulars in the past year. One departure the inventor has made is the erection of inclined ovens, the only difference between these and the usual Koppers oven being that the former are built at an inclination and provide better facilities for inspection and regulation. A battery of the inclined ovens is now under construction at the Bochum Gas Works in Germany, and another battery at the gas works in Vienna, Austria. The inclined retorts permit of a considerable saving in connection with charging the coal and pushing out the coke.

Another improvement, which is shown in the accompanying illustration, is in the ammonia recovery plant. The gases are passed through an acid bath, and the use of water for scrubbing purposes is dispensed with. The new method is described as follows, in a paper by A. Peters, Cologne, Germany, read before the Rhineland and Westphalian Gas Association. It has not been installed as yet at the Joliet, Ill., plant of Koppers ovens, erected for the Illinois Steel Company, but little change will be object of which was to bring the gas into direct contact with sulphuric acid, in order to extract the ammonia without the scrubbing operation being necessary. This system only required a small collecting tank for the tar extracted in the hydraulic main, which was constructed of iron. Dispensing with the necessity for the employment of water for scrubbing (the provision of which at collieries in sufficient quantity, and at a sufficiently low temperature, frequently was a matter of difficulty), appeared to be a great advantage. The system consisted in conveying the hot gases, having a temperature from 130 to 160 degrees C., in pipes carefully coated with non-conducting material and forcing the gas by means of an exhauster direct into a sulphuric acid bath. The tar separated out and floated on the surface of the acid, from whence it was skimmed or drawn off. The gas not having been subjected to a cooling operation, there were no products of condensation. As a consequence, the sulphate produced was contaminated with tarry matters which spoiled its appearance and deteriorated its quality. The tar itself was detrimentally affected, and was of an acid nature, it being necessary, in order to render it marketable, to purify it with hot water and to neutralize the acid with alkalies. It was also found that the saving in labor which was expected to be derived by the system was not realized owing to great cost involved in produc-




The Koppers By-Product Plant for the Recovery of Ammonia Direct from Coke Oven Gases.

necessary in order to substitute the new process if the observed results at European plants using the acid process commend it to the company's engineers:

The usual process for purification of the gases consists of subjecting them, first of all, to a cooling operation, and then passing them through washers for the extraction of ammonia. The gas upon leaving the ovens passes through air and water coolers, in which the larger portion of the tar and a portion of the gas liquor condense. It is then drawn by an exhauster, by which it is forced through tar extractors and ammonia washers. The ammonia washers are designed on several systems, some being of a revolving description, while others are stationary and are not mechanically operated. The principle upon which they all work, however, is the same—viz., that the washing liquor passes through the washers in the direction opposite to the gas, so that the enriched liquor comes into contact with the gas rich in ammonia, and the weak liquor acts upon the gas when freed of most of its ammonia. It is necessary in order to obtain efficient washing for the washing liquor to be of a soft nature and quite cool.

### Previous Efforts to Dispense with Scrubbing.

The difficulty of constructing water tight tanks and keeping them tight, and also the difficulty experienced in disposing of the effluent from sulphate works have led to efforts to dispense with the washing of the gases with water, and a system was brought out some years ago, the ing and treating the sulphate. In order to extract the tar from the hot gas, to overcome the difficulties referred to the gases were passed through centrifugal extractors. These machines, almost without exception, possess the drawback that they extract only the constituents boiling at a high temperature, and as a result a product of a pitchy nature is produced instead of tar.

### The Koppers System.

The new system of Koppers is designed on the same principle, but the gases are freed from tar before they are passed into the sulphuric acid bath. The gas is first of all cooled in order that the tar and gas liquor may condense. It is then passed through the tar extractor to take out the last traces of tar. After passing through the tar extractors the gas is led back to the preliminary gas cooler, which is arranged as a heat exchanger, and which heats up the gas to about 80 degrees C. by the hot gases coming from the ovens. The gas heated up in this way and freed of tar is then conducted to the saturator, where the ammonia is extracted from the gas and recovered direct in the form of sulphate.

In the illustration a diagrammatical representation of the system will be seen. The hot gases of distillation pass first of all into what is called a heat exchanger *a*, and thence are conducted into water coolers, *b*, by which the temperature is reduced to the degree which is necessary for the extraction of tar. As in the ordinary system, the gas, after cooling, is drawn by exhausters, *c*,

and forced through the tar extractors, *d*. After leaving the extractors the gas is conducted to the heat exchanger *a*, where it becomes heated up and at the same time cools down the hot gas as it comes from the ovens. The heated gas is then taken direct to a saturator, *e*, where it comes in direct contact with sulphuric acid. Here the ammonia is extracted and is recovered in the form of ammonium sulphate. The gas after being freed from ammonia passes out of the saturator by the main *k*, by which it is conducted back to the ovens without necessitating any further cooling process, as is necessary where the ordinary system is employed. In the preliminary cooling process a large portion of the tar and of the gas liquor is condensed out of the gas. These products of condensation are conducted to the separating tank *h*, from which the tar overflows into the tar storage tank *i*, and the ammoniacal liquor passes into the storage tank *j*. The ammoniacal liquor is delivered to a distilling apparatus, *g*, where the ammonia is driven off by means of steam and lime in the usual way. The vapor from the still containing the ammonia is conducted to the gas main, whence it passes with the gas into the saturator *e*. The sulphate formed in the saturator is collected in a well at the bottom, whence it is automatically removed by means of an injector, and it is then delivered into a centrifugal dryer, *f*. The mother liquor extracted by the centrifugal flows into an intermediate vessel, whence it passes into the saturator. The acid is fed continuously into the saturator, and the liquor therefore is always maintained at a uniform strength. The top portion of the acid in the saturator is thus kept at a slightly acid state, which insures the ammonia being thoroughly extracted from the gas.

It is only necessary for the gas to be heated before entry into the saturator to such a degree as will prevent condensation of the water vapor taking place in the saturator, so that the acid bath will not become diluted. The dew point of gas produced in gas retorts is about 70 degrees C., while in coke oven gas the dew point is about 80 degrees C. This is due to the coal used in gas works, being practically free from moisture. The coal used in coke works contains, on the other hand, a comparatively large percentage of water. It has been ascertained by actual experience that it is not necessary for the gas to be heated to a higher temperature than 80 degrees C. before it is passed into the saturator. At this temperature it has been found that the sulphate is easily and efficiently formed. The ordinary method of producing sulphate requires the temperature of the acid bath to be maintained above 100 degrees C., in order to prevent the steam from the still condensing in the saturator. The reduction of the temperature in the bath insures the complete combination of the ammonia with the acid, as the lower the temperature the greater is the affinity between the acid and the ammonia. At 140 degrees C. the sulphate melts, and even at a much lower temperature than this it becomes decomposed.

### Advantages of the New Method.

A considerable saving in steam is effected, owing to the great reduction in the quantity of liquor which has to be distilled. A well designed ammonia still requires 300 kg. of steam to treat 1 ton of gas liquor. No water being required for scrubbing purposes, a saving is effected in this direction. Further, the quantity of liquor required to be distilled being greatly reduced, the effluent from the still is reduced correspondingly, which is an advantage where difficulty is experienced in disposing of this liquid.

The gas in passing through the acid bath becomes freed of all the alkaline matter it may contain. As a consequence of this the destructive elements which are the cause of the corrosion of gas meters, &c., are eliminated, as sulphuretted hydrogen and cyanogen combine with ammonia only in the presence of traces of alkalies. The ammonia washers being dispensed with, no pumps are required for dealing with the scrubbing liquor. Steam is hereby saved and also labor. Naphthaline deposition, it is claimed, is done away with.

The heavy hydro-carbons contained in the gas are not affected by the acid, so that no loss will be occasioned in this direction, while the calorific value of the gas remains unchanged.

The saving which it is claimed would be derived by the new system is put at about 8 cents per ton of coke produced.

## Canada's Grangers Oppose Bounties and Duties.

TORONTO, September 12, 1908.—In this correspondence reference was made a short time ago to the working of opinion in regard to the iron and steel bounties and to the susceptibility of the party organizations to sharp changes in the public temper on that point. This morning a circular dealing with the Federal expenditures and fiscal policy was given out by the Dominion Grange, and in that manifesto the bounty question is condemned. The Dominion Grange, as its name indicates, is an association which aims to express the agricultural sense of all Canada on questions of public economy. It is constituted by representatives of local granges. While it does not include a very large percentage of the farmers of the country, its expressed views on political questions of the day undoubtedly command the respect of the farming class. Its influence is extended far beyond its membership by its organ, the *Weekly Sun*, which has a considerable circulation in the rural districts. That newspaper, it is of interest to add, was established by Goldwin Smith, who continues to contribute to it regularly over his well-known signature, "Bystander." As an adherent of the *laissez-faire* school, the venerable publicist is sharply opposed to the Canadian tariff and to the Canadian bounty system, and in his paper these are freely condemned. He was visited a short time ago by Sir Richard Cartwright, the Canadian Minister of Trade and Commerce.

Rumor has been busy of late with Sir Richard's views on the fiscal policy and expenditure of the Government to which he belongs. Whether or not he thinks his colleagues are going too far from the principles he and they held to when in opposition, only those who have inside information can say. Before he came into office he was a severe critic of extravagance, a strong opponent of protection, an enthusiastic advocate of reciprocity with the United States, and a particularly unsparing denouncer of the bounty system. It is recalled, too, that he made advances to the Patrons of Industry, an organization whose place has been taken by the grange. It was reported that his visit to Goldwin Smith was for the purpose of rallying a new party by the old cries, but Goldwin Smith gave out a denial of the story that he himself had any thought of political activity. However, it is commented upon as noteworthy that the grange's manifesto—appearing soon after the visit of Sir Richard to the publicist most in touch with the grange, and on the eve of a general election—contains so many of the formerly characteristic views of the Minister. On the bounties and railroad subsidies the grange's circular is in part as follows:

"According to the Canadian year book, issued by the Dominion Department of Agriculture, there was paid out in bounties to iron and steel manufacturers by the Dominion Government in 13 years, from 1895 to 1907, inclusive, over $9,500,000. This money was not paid for goods bought by and delivered to the Government. It was an absolutely free gift by the Government to this favored interest. Nor is the iron and steel industry the only beneficiary of this bounty system. . . . Farmers, on whom the chief burden of meeting these exactions falls, should unite in demanding a discontinuance of the whole system.

"Between the beginning of the fiscal year 1884 and the end of the short fiscal year 1907, a period subsequent to the $25,000,000 donation to the Canadian Pacific, almost the even $35,500,000 was paid out of the Federal treasury in railroad subsidies. . . . Many of these subsidies were granted for lines in parts of Ontario settled for 100 years. . . . Surely the time has come for farmers to insist that, no matter which party may succeed in the coming election, this particular form of misappropriating the people's funds shall absolutely cease and determine." C. A. C. J.

## A New Blast Furnace Igniter.

At the starting of the Carrie Furnace No. 2 of the Homestead Steel Works on July 6, 1908, a new device for igniting the wood in the bottom of the furnace was used, which proved to be very successful as well as practical. This device, which was designed by C. S. Proudfoot, chief electrician of the Carrie Furnaces, makes use of the great heat and duration of the electric arc to ignite the combustible materials placed in the blow pipes and furnace bosh. The simplicity and certainty of this igniter makes the old method of ignition by hot iron rods seem very cumbersome and inefficient.

As shown in Fig. 1, this useful instrument may be made in any electrical shop. It consists mainly of two pieces of conduit, fitted together, with an iron cone in one end and a switch and plug arrangement at the other. For the ignition end 1 in. conduit is used, having half of the pipe cut away in the middle for about 4 in. Two

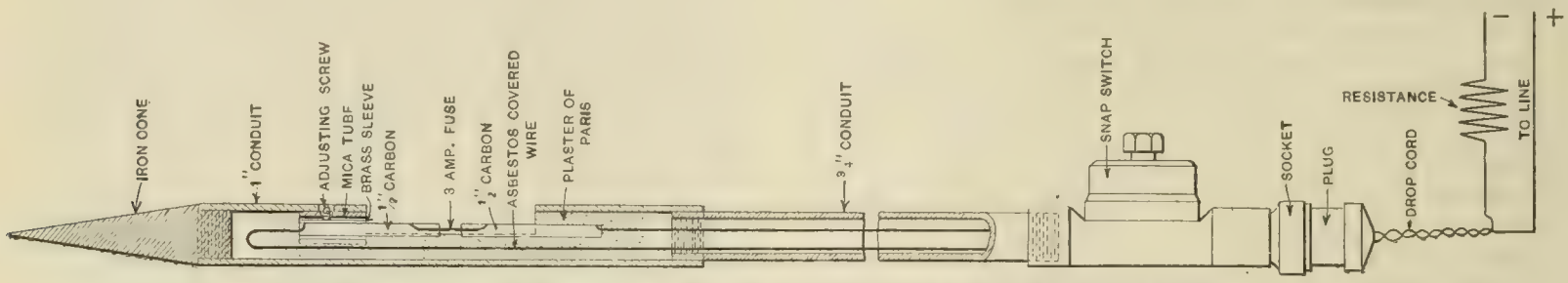



Fig. 1.—Sectional Detail of a Device for Electrically Igniting Blast Furnaces.

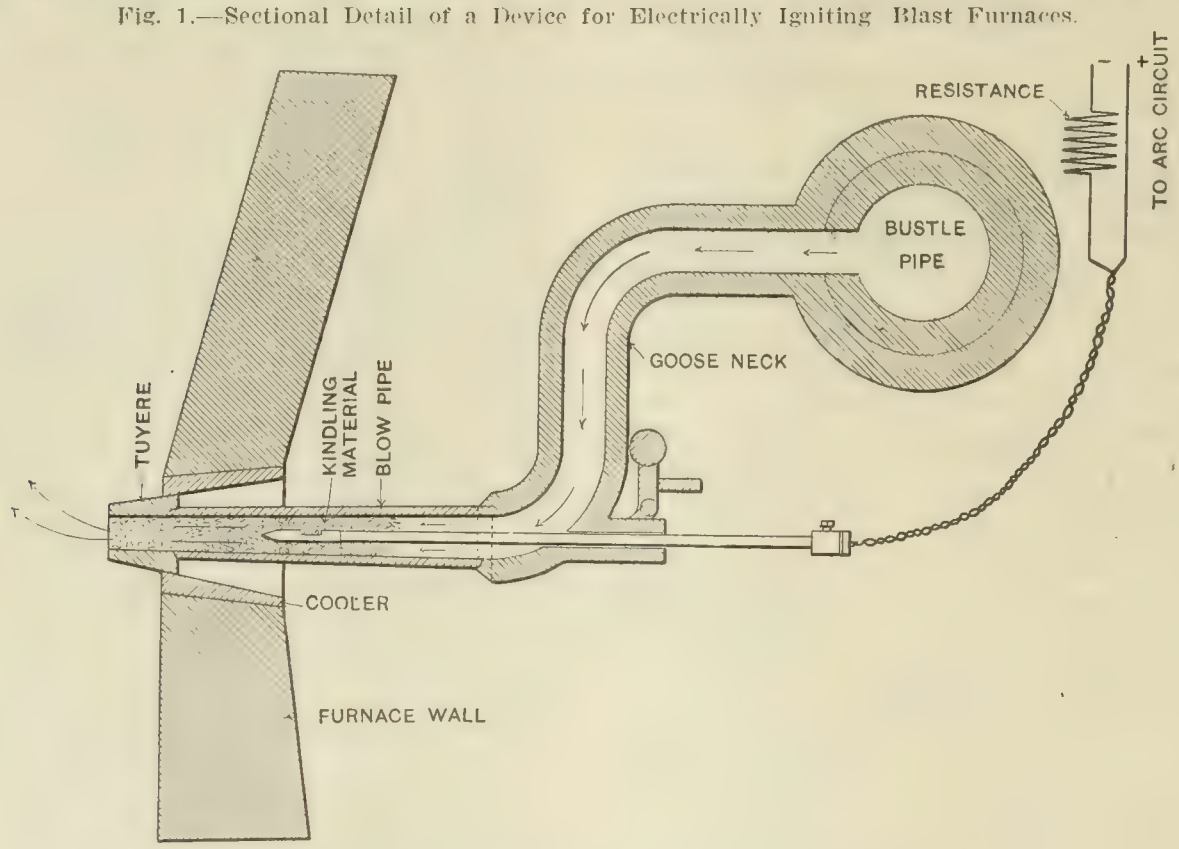



Fig. 2.—The Manner of Inserting the Igniter in the Blow Pipe of the Furnace.

½-in. carbons are placed in this end, so that they lack about ¼ in. of meeting in the space where the pipe is cut away. These carbons are thoroughly insulated from one another, as well as from the conduit, by means of plaster of Paris. A piece of drop cord is dropped down from the 250-volt arc light circuit and brought into the conduit by means of a plug, socket and snap switch. From the snap switch the drop cord is run through the pipe to the carbons, except where the wire has to pass under the arc space, where pipe insulated with asbestos is used. The carbon next to the cone is fixed tight in a brass sleeve, which may be moved in a mica tube, thereby making it possible to adjust the air gap between the carbons by means of a screw in the mica tube. Above this screw a hole is drilled in the conduit for inserting a screw driver and also to avoid a ground. The carbons each have a small hole drilled in the end and coming out at the top side to allow a 3-amp. fuse to be pulled through for starting the arc. A resistance box is put in series with the line to cut down the voltage. By experiment it was found that the igniter took about 6 amp. with a voltage of from 60 to 80 across the arc, and would burn from 30 min. to 1 hr.

On the occasion referred to above, four such igniters were used. The arcing space was wrapped lightly with excelsior soaked with alcohol and held on by tape. The blow pipes were filled with excelsior and shavings, which extended through the tuyeres to the wood in the furnace. The igniters were then inserted in the blow pipes, as is plainly indicated by Fig. 2. The sharp cone allowed the instrument to go through the shavings without pushing them ahead of it.

When all was ready the snap switch was turned, the fuse blew and started the arc which ignited the shavings. The air blast coming down the goose necks fanned the flame into the furnace, and soon the wood was well started. Every igniter worked perfectly. One thing in particular was lacking, *i. e.*, the confusion and uncertainty generally attending the old method of ignition by means of hot bars. The lighting took place in the presence of A. R. Hunt, general superintendent of the Homestead Steel Works, and the officials of the Carrie Furnaces, Mr. Proudfoot personally attending to the igniters.

The test was so successful that this method will be used on starting up all future furnaces of this plant. The simplicity of construction and the dispatch of operation will do much toward bringing this method into more general use.

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Between August 19 and September 10 the number of idle cars on the railroads of the United States and Canada was reduced by 30,371, this being the greatest improvement since the middle of July. The number reported idle September 10 was 222,632, as against the maximum of 413,605 on April 29. Of the last reported reduction of 30,371 cars, 21,723 were box cars and 7662 coal and gondola cars, these figures indicating how largely the reduction was due to the crop movement. In addition, there was a decrease of 7662 in the number of bad order cars.

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The Youngstown Sheet & Tube Company, Youngstown, Ohio, has re-elected former officials, as follows: J. A. Campbell, president; H. G. Dalton, first vice-president; C. S. Robinson, second vice-president; Richard Garlick, treasurer; Geo. E. Day, secretary and general manager of sales, and W. B. Jones, auditor.

# The American Locomotive Company.

The seventh annual report of the American Locomotive Company, covering the operations of the fiscal year ending June 30, 1908, presents the following comparative statement:

INCOME ACCOUNT.

| | 1907-8. | 1906-7. | Increases. |
|---|---|---|---|
| Gross earnings | $37,484,417.39 | $49,515,486.33 | *$12,031,068.94 |
| Manufacturing, maintenance and administrative expenses | 32,497,627.32 | 42,744,381.30 | *10,246,753.98 |
| Net earnings | $4,986,790.07 | $6,771,105.03 | *$1,784,314.96 |
| Interest on bonds of constituent companies, notes, &c. | 460,042.02 | 412,898.10 | 47,143.92 |
| Profit | $4,526,748.05 | $6,358,206.93 | *$1,831,458.88 |
| Dividend, preferred stock, 7 per cent. | 1,750,000.00 | 1,750,000.00 | ..... |
| Dividend, common stock, 5 per cent. | 1,250,000.00 | 1,250,000.00 | ..... |
| Surplus | $1,526,748.05 | $3,358,206.93 | *$1,831,458.88 |
| Extraordinary additions and betterment fund | ..... | 2,000,000.00 | *2,000,000.00 |
| Reserve for replacements and maintenance | 500,000.00 | ..... | 500,000.00 |
| Net credit to profit and loss | $1,026,748.05 | $1,358,206.93 | $331,458.88 |

* Decreases.

CONDENSED GENERAL BALANCE SHEET, JUNE 30, 1908.

*Assets.*

| | | |
|---|---|---|
| Cost of property | | $49,583,388.10 |
| Securities owned: | | |
| Richmond Locomotive & Machine Works bonds | 118,000.00 | |
| Sundry securities | 1,098,420.20 | |
| | | 1,216,420.20 |
| Convertible assets: | | |
| Cash | $4,744,927.98 | |
| Accounts collectable | 5,979,888.52 | |
| Bills receivable | 2,948,611.63 | |
| Accrued interest | 25,520.28 | |
| Material and supplies | 3,017,055.94 | |
| Contract work in course of construction | 2,204,085.12 | |
| Steam shovels, contractors' locomotives and automobiles manufactured for stock | 369,505.73 | |
| | | 19,289,595.20 |
| Notes discounted (per contra) | | 1,392,615.33 |
| Total | | $71,482,018.83 |

*Liabilities.*

| | | |
|---|---|---|
| Preferred stock | $25,000,000.00 | |
| Common stock | 25,000,000.00 | |
| | | $50,000,000.00 |
| Bonded debt of constituent companies | | 2,967,500.00 |
| Current liabilities: | | |
| Gold coupon notes | $4,000,000.00 | |
| Accounts payable | 1,318,111.14 | |
| Accrued interest | 85,895.83 | |
| Unclaimed interest | 9,600.00 | |
| Dividend, preferred stock, payable July 21 | 437,500.00 | |
| Dividend, common stock, payable August 26 | 312,500.00 | |
| | | 6,163,606.97 |
| Extraordinary additions and betterment fund | | 1,989,084.67 |
| Reserve for replacements and maintenance | | 500,000.00 |
| Indorsements (per contra) | | 1,392,615.33 |
| Profit and loss balance June 30, 1907 | $7,963,579.80 | |
| Less sundry adjustments of balances in consolidating of five subsidiary companies | 521,115.99 | |
| | $7,442,463.81 | |
| Add surplus | 1,026,748.05 | |
| | | 8,469,211.86 |
| Total | | $71,482,018.83 |

The company itself has no bonded debt. The bonded indebtedness of constituents is as follows: Richmond Works, 6 per cent., $550,000; Dickson Works, 5 per cent., $562,500; Rogers Works, 5 per cent., $355,000; Montreal, Works, $1,500,000.

From the accompanying report, presented by President W. H. Marshall, the following comments on the company's operations are taken:

The last eight months of the fiscal year were months of acute financial and business depression. The company was fortunate, however, in having on its books orders for a large number of locomotives which kept its plants in operation at nearly their full capacity until about March 1. Since that date the output of the company has been largely reduced, and the return of a normal demand for its products does not now seem probable in time to avoid a material decrease in the financial results for the ensuing year.

During the year the foreign business of the company has increased, a large number of locomotives having been exported to Japan, Corea, China, Europe and South America. The development of business in Canada has also been satisfactory.

At the close of the year the materials and supplies were inventoried and the difference between the purchase price and the market value was charged to general expenses. In the last annual report mention was made of the issue of $5,000,000 of short term gold coupon notes. The first installment of these coupon notes was paid October 1, 1907, and the second installment of $1,000,000 will be paid October 1, 1908. The cash for that purpose has been set aside.

Since the last annual report the 9000 shares of preferred stock in the company's treasury have been sold, yielding $899,332.50 net.

For simplification five of the subsidiary companies have been consolidated with the controlling company during the year. These are the Richmond Locomotive Works, Manchester Locomotive Works, Rogers Locomotive Works, American Locomotive Company of New Jersey (Cooke Works) and American Locomotive Automobile Company. In the absorption of their accounts certain adjustments of balances were desirable, involving a total charge of $521,115.99 to profit and loss.

The Locomotive & Machine Company, Montreal, Ltd., will continue to operate the plant in Canada, but its name has been changed to the Montreal Locomotive Works, Ltd. During the past three years the American Locomotive Company has made advances to the Montreal Company, with which the latter has extended and completed its plant. In payment for these advances the Montreal Company has issued to the American Locomotive Company additional capital stock, at par, to the amount of $2,485,500, making $3,000,000 capital stock outstanding, all of which is owned by the American Locomotive Company.

The balance sheet includes a charge of $1,392,615.33, representing equipment trust notes discounted by this company in advance of maturity, and, as there is a possible obligation, in the event of any default in payment, a like amount is also shown as a contingent liability. These notes represent the balance of the purchase price of locomotives sold by the company, upon which substantial cash payments were made at the time of purchase. The notes are secured by a lien upon the locomotives and the security is ample. Since the formation of the company it has lost nothing upon equipment notes.

It has seemed wise to the management to close permanently the locomotive works at Providence, a more than corresponding increase in the capacity of the modern plants having been made. The automobile plant is still maintained and operated at Providence.

During the past seven years the company's property has been increased by purchases of land, erection of new buildings and the installation of modern shop equipment, at a cost of $9,488,633. The working capital of the company at the end of the fiscal year was $13,125,988, which is more than twice the amount at its formation in 1901.

In view of the damage to cars from dumping machines at Lake Erie ports and at blast furnace yards the builders of cars and the makers of car dumping machines have been co-operating to reduce it to a minimum. Recently the dumping of 172 cars was specially noticed. It is reported that 93 per cent. of the cars were more or less damaged in unloading. Already some changes have been made in the car dumpers as well as in the cars, and further modifications may result from a continuance of the investigations.

# THE IRON AGE

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## German and American Iron Trades Under Depression.

German steel works, blast furnace and coal syndicates find that the depression has heavily increased the entanglements of the diverse interests they attempt to serve. To take in hand a great industry and fix prices and production, so conducting the operation that the regime of syndicate control shall not become intolerable, is an undertaking for which failure would naturally be predicted. The marvel has been that the various agreements in the German iron trade have stood repeated strains so well. When it comes to foreign business, which is so considerable a factor with many German works, the complications increase. As pointed out in a summation of the export bonus system of the German iron trade given on another page, the uncertainty connected with the bonus—not only the changes in rate which are made at the pleasure of the contributing syndicate, but the entire abolition of the bonus at times—makes the operations of exporting manufacturers of iron and steel, who depend on one or more syndicates for their raw materials, a constant problem.

It can be readily appreciated, moreover, that in a time of falling prices and slack demand, the "mixed" works—those which have their own raw materials and manufacture a diversity of finished products—will enlarge their export operations at the expense of the small, dependent finishing mills. The effect of this does not stop with the latter. They have been good customers of the Coal Syndicate, for example, and the curtailment of their operations—as in the case of the sheet mills cited by the British consular report quoted elsewhere—means that activity at the coal mines of the "mixed" companies is in part at the expense of the Coal Syndicate. Similarly, the Pig Iron Syndicate must suffer from the transfer of business in dull times from works buying pig iron in the market to mills of the large interests, which manufacture their own pig iron. This latter condition in the German market finds its nearest parallel in the United States at the present time in the absence of demand for the steel making pig iron produced by merchant furnaces.

The marked conflict of interests emphasized in Germany since reaction set in in the iron trade stands out by contrast with what has occurred in the United States. Some of the questions now troubling the German syndicates, and which are handled by the adoption of temporizing expedients dictated by the best judgment of syndicate managers, arose in a modified form in the early days of iron trade combinations on this side, 9 or 10 years ago. But after the adoption of the large integrated corporation as a finality, the constant evolution of the American iron trade toward that form has gradually eliminated issues like that of the spread between the market price of semifinished steel and finished material. In the past 11 months the differences between the status of the small independent producers of bars, sheets, tin plates, tubes and wire products and that of the large producers, owning coal and iron mines, have not been specially accentuated. The fact that the ground was so suddenly cut from under the whole industry that there was not business enough to fight over accounts largely for the avoidance of demoralization in the early months of depression. That period having been passed, the trade settled itself to a comparatively peaceable partition of half-loaf rations as preferable to an indiscriminate scramble. Whatever the exceptions taken to some developments of this policy, the fact is noteworthy that the accumulating opposition to certain features of the present regime in the German iron trade has not been paralleled by any equal demonstration of unrest in the iron trade of the United States.

The history of periods of recuperation in this country has been that they brought perils to the stability of iron and steel prices which were not experienced in the midst of the depression. The offering of attractive tonnages after a time of semistarvation involves temptations that have in other years proved too strong. Such a test will come again in due time. What remains to be demonstrated is whether the new era has fortified the trade against their recurrence.

## Incorrect Industrial News.

It has long been the custom of *The Iron Age* to verify industrial items appearing in the daily newspapers. This was found necessary from the fact that errors or misstatements were so frequently found in connection with such matters that the only way to guard against repeating them was to apply to the company or firm interested for the purpose of ascertaining the truth of any such statements. A characteristic instance of this kind has come to our attention within the past week, which appears to be worthy of special comment. In a daily paper, which it might be assumed would be well informed relative to local conditions, the following statement appeared:

> The works of the Altoona Iron Company, in Millville, will resume operations in several of its departments Monday morning, and a large number of men, who have been out of employment since last December, will be put to work.
>
> Owing to a lack of orders, the plant has been closed down since last December, and since that time not a wheel has turned, except about two weeks ago, when a half dozen men were put to work in one department. Recently orders for work have been coming in, and yesterday it was announced that some of the departments would resume operations, sufficient orders having been received to warrant it.
>
> The bar mill, guide mill and eight or ten puddling furnaces will be started Monday morning. About 50 men are employed in these departments, and after Monday the men who have been idle for some time will be put to work.

This article was clipped and sent to the Altoona Iron Company, Altoona, Pa., for verification. The following reply was received:

> The information contained in the clipping is entirely incorrect. In the first place, we have not been idle since last December, but were fairly busy up to February 1, since which time we have been running from five to eight days per month. At the present time we have simply started up to fill a few orders requiring about eight days. While we have a considerable quantity of muck bar on hand, we concluded to operate about half of our puddle furnaces during these eight days, so as to furnish some of these men some employment, but do not see any prospect of resumption in the near future.

This case not only shows the necessity of verifying statements in the daily papers relative to industrial hap-

penings, but also emphasizes the unreliability of many of the reports which have been coming out with regard to the resumption of operations by manufacturing establishments.

## An Error to Be Avoided in Machine Design.

Some designers of machinery are given to embodying in their plans original mechanical devices the purpose of which would be better served by accepting or adapting standard parts that may be bought. The automobile people have been conspicuous in this respect, though the practice is by no means confined to them. The weakness is met with occasionally in machine tool establishments. It may be a clutch or other part of the transmission, or a bearing or lubricating device or other element of construction. The designer, instead of accepting a fully developed and established article, prefers to work out something of his own. If, as frequently happens, the purpose requires a departure from standard lines; if, for instance, greater strength is needed, or circumstances compel an odd size, the designer, instead of going to a specialist, takes the task upon himself. The part may be made in the home shop, or it may be ordered from a specializing manufacturer to whom the drawings are furnished. In the first case the cost, in addition to the probability of necessary test and resultant alterations in construction or proportions, would probably be greater than in works equipped for the specific purpose. In the latter case the specialist may not feel like suggesting changes which his own experience, usually obtained at much cost and study, has taught him would be better than the design submitted.

Some designers resent suggestion as a criticism; the offspring of their intellects is above reproach. Such absence of broadness is costly to the employer, for the man who in the details of his work seeks to accomplish results equal to those which highly trained specialists can give to him is almost certain to find more or less serious faults in his design, which mean changes, and may result in the dissatisfaction of customers and, perhaps, even in a lowered reputation for his employer's products. The designer should be trained to gather in all available ideas which might prove useful in his work and to adapt them when to do so would mean decreased cost or increased efficiency. Taking the case of a clutch, he should seek the best for his purpose; if there exists in the market one that would do the work well, and which his judgment tells him would be cheaper, everything considered, than one of his own design, he should specify it in his plans. In some works the scope of design is so broad that specialists in many details exist. But in the ordinary manufacturing establishment the drafting room is usually most effective within somewhat narrow limits. If the designer follows out the plan of using the best available results of other men's efforts, he will be more efficient in his own particular field of effort.

In this connection a valuable adjunct of the drafting room is a classified collection of articles and advertisements from technical and mechanical publications, and catalogues, together with such reference works as *The Iron Age Directory*. In such a collection the designer has always available a most important source of information from which he can obtain an intimate acquaintance with products that may prove useful in the design and development of the machinery upon which he is working. The egotism or conceit which leads to the refusal to accept advantages offered in the market is a weakness which employers do well to discourage.

## The Uniform Bill of Lading.

When the amended uniform bill of lading was issued recently by the Interstate Commerce Commission, with a recommendation to the railroads to adopt it, *The Iron Age* pointed out a flaw in the document, in the provision that a claim for loss or damage must be filed within four months or the carrier will not be liable. Important shipping interests throughout the country have been protesting vigorously against this and other provisions that are unsatisfactory, and in deference to these objections the adoption of the new document by the carriers has been postponed. The Eastern roads contemplate putting it into effect November 1, without modifying the four months' clause, but the Western roads are undecided whether to use the new form. The order of the commission is not mandatory, and it might be well if the Eastern lines would delay action until the document can receive further consideration.

Congress has placed no limit on the time within which damage claims should be filed against carriers. This has left the matter subject to State laws of limitation, which allow several years before a claim is barred or outlawed. No authority excepting Congress possesses the legislative power necessary to limit, in a national regulation, the rights of shippers as accorded by State laws on a question so vital to their interests. If a four months' clause becomes effective in a national bill of lading, it will undoubtedly be attacked in the courts by shipping interests, unless the carriers waive the rights which it gives them and allow the clause to lie dormant. Or, it may be enforced by railroad claim agents against the multitude of small shippers, and waived in favor of the few who know their legal rights. In any event it will be unfortunate to have in a national bill of lading, adopted by order of the Interstate Commerce Commission, a clause which conflicts with statutory law.

In many branches of the iron trade and related industries there is a busy season, extending over several months of the year, when shippers and their office employees do not have time for the tedious work of preparing the necessary proofs and filing damage claims. This work is left until the rush is over, when it can be done more carefully, and the claims are investigated and disposed of in the railroad office with less trouble and expense than if they were hurriedly filed in incomplete form. The railroad claim department deals with a large number of industries, whose rush seasons come at different times in the year, so that no congestion results if the claims of one industry are delayed a few months. An arbitrary four months' rule would result in the loss to many shippers of just claims which they cannot present within that limit of time.

The grain interests also object vigorously to certain provisions that are apparently unnecessary, regarding weights and elevator deliveries. These provisions are not as favorable to the shipper as the laws of some of the States. The railroads were built under State charters, and have always been subject to State legislation in the liability of the carrier to the shipper, even on interstate shipments, and unnecessary confusion might arise in the conflict between State regulation and the powers of the Interstate Commerce Commission. These objectionable provisions could be eliminated, along with the four months' clause, without injustice to the carriers. Unless this can be done the more liberal railroads may follow the policy of the Rock Island Lines, the largest system in the West, by adopting a "clean" bill of lading, in which the carrier accepts its liability

for loss or damage as fixed by the common and statutory law.

A national bill of lading would be the most important document used in modern commerce. The railroads pay each year in damage claims about $25,000,000, and the chief purpose of the conditions in a bill of lading is to define clearly the liability to the shipper under which this enormous volume of claims accrues. Bankers advance against "order" bills of lading $2,500,000,000 in the course of a year's business, and the value of the property carried on nonnegotiable bills of lading is many times greater. In an ordinary contract, where the parties understand each other, it is important to use precise language, and in a bill of lading, which carries so many millions of transactions in a year, there should be no word or phrase in conflict with the legal rights of the parties.

## CORRESPONDENCE.

### The Corrosion of Steel and Iron Tubing.

*To the Editor:* I note in *The Iron Age* of September 3 an abstract of a paper on "The Relative Corrosion of Steel and Wrought Iron Tubing," by Professors Howe and Stoughton, which, I understand, is a revised edition of the paper read by Professor Stoughton at the Atlantic City meeting of the American Society for Testing Materials on "The Relative Corrosion of Steel and Wrought Iron Water Pipes."

The writer took part in the discussion of the original paper, which will appear in due time in the society's publication, but since the revised edition contains some new arguments, probably suggested by the discussion, I take the liberty of calling attention to the untenability of some of the new points raised. This new paper states, "Nobody has a right to say either that defects which may in the past have lessened tube steel's resistance cannot be cured by skill and care, or, except on valid evidence, that they have not been cured." It is an admitted fact that it is generally a very difficult matter to prove a negative. A person may claim to have invented a process by which a metal can be produced that has certain qualities, and improvised tests made with a few samples may make it appear that the metal has such qualities, and yet this is no proof of what it will do under actual working conditions. He will not make the argument any more convincing by challenging others to prove that he has not produced such metal.

LABORATORY TESTS OF RESISTANCE TO CORROSION ARE UNRELIABLE.

As pointed out in my discussion, it takes a long time to prove increased resistance against corrosion under average working conditions. Laboratory tests with concentrated solutions are entirely unreliable. I will admit for argument's sake that in the experiments made by Professors Howe and Stoughton some samples of this modern steel have shown greater resistance to corrosion than some other samples of wrought iron, but they were only laboratory tests after all; and I know of several laboratory tests in which some samples of the old steel (not Spellerized) have also outlasted wrought iron, and yet it is admitted that this old steel was subject to defects which may in the past have lessened tube steel's resistance.

We can sometimes make reasonable deductions as to what may be expected from certain treatment of metals, provided we have a clear description of the treatment, together with a statement giving reasons why this treatment should have the results expected.

We claim that the greater resistance against corrosion of puddled wrought iron over steel under average working conditions is due to the protection given the iron fibers by the interlaced fibers of silicious slag or cinder. Professor Howe, while admitting the protective effect of this cinder, fears that it is outweighed by the opposite effect of hastening corrosion by difference of potential. If such be the case, what about cast iron, which has a very much larger percentage of impurities, and, consequently, according to Professor Howe's theory, ought to have a still greater difference of electrical potential, and yet resists corrosion much better than even wrought iron? This increased resistance of cast iron has been attributed principally to the outer skin of a silicate of iron formed when cast (See Volume VI, Proceedings of A. S. T. M., page 164), and our contention that a similar silicate of iron which permeates wrought iron increases the resistance of the latter is therefore a perfectly reasonable one.

WHAT IS SPELLERIZED STEEL?

No plausible explanation has as yet been given as to the reasons why this so-called Spellerized steel should resist corrosion better than the ordinary steel, nor has any description been published as to what this process really consists of. In reference thereto the following questions may be asked:

1. Is it elimination of manganese?
2. Is it due to mechanical treatment, and, if so, what does the treatment consist of?
3. Has the segregation of the impurities in the steel during the cooling of the ingot been eliminated?
4. If the segregation still exists, how can it be claimed that 100 or 1000 or 10,000 tubes made out of such segregated steel will all resist corrosion alike?
5. Has a substitute been found to impregnate steel with the life preserving slag fibers such as exist in wrought iron?

As long as these questions are not satisfactorily answered, the consumer can be pardoned for continuing to distrust steel and for being skeptical as to the claims made that steel can be produced in large quantity and of such a uniform quality as to make it equally well resistant against corrosion as puddled wrought iron. I venture to say that this distrust will continue until the test of actual experience, and not laboratory experiments, has proved that a proper remedy has been found.

When this question was before the society two years ago, and after a number of practical engineers present had related their experiences in reference to the more rapid corrosion of steel, Professor Howe (who was the presiding officer) remarked, "It seems as if the steel makers had still to convince the community that steel can be made that is not particularly susceptible to rusting, . . . the burden of proof is on them to convince the users. . . ." This was true two years ago, and it is just as true to-day—the burden of proof is not on the users, but on the makers or their champions.

GEO. SCHUHMANN,
General Manager Reading Iron Company.
READING, PA., September 10, 1908.

## New Publications.

**Moody's Manual of Railroads and Corporation Securities.** Edition for 1908. Ninth year. Pages, 2852. Publisher, the Moody Manual Company, 33 Broadway, New York. Price, $10.

This publication, which is of great value to investors, represents an enormous amount of work in the intelligent and painstaking compilation of information. It gives a most complete description of all railroad, traction, electric, industrial, mining and other corporations in which the investor can have any possible interest. Especial emphasis is given to the steam railroads, public utility companies and the industrial corporations. Each report gives the capitalization, location and character of business, names of officers and directors, particulars regarding all bond issues and a complete record of earnings and dividends. Moreover, in the case of the important railroad and industrial companies these earnings are for the fiscal year ending in 1908—that is, either March 31 or June 30. This, the management claims, makes Moody's Manual the first manual published this year which contains any reports for the year ending June 30, 1908. Owing to the increased sales of Moody's Manual among investors, the management this year has been able to go a step further and has combined the yearly publication—that is, the manual, with a monthly service. This enables

banks or investors to now keep "monthly tabs" on their holdings instead of simply "yearly tabs," as has heretofore been possible. Moreover, this monthly service has been added without either reducing the size of the yearly manual or raising its price. In other words, the combined service is only $10 per year, the price previously charged for the manual alone.

## Export Iron Bounties in Germany.

### They Vary With Trade Conditions and There is Much Secrecy.

The annual report of Sir Francis Oppenheimer, British Consul-General at Frankfort, Germany, gives an interesting account of the method of apportioning bounties on German iron and steel exports. From it we take the following:

**Syndicate Obligations to Small Finishin Works.**

There is a curious discrepancy in the policy pursued in connection with the payment of export bounties in the iron industry in Germany. It is openly admitted that the payment of these export bounties fulfils only what is termed a moral claim brought forward by those finishing trades which own no establishments for the manufacture of their raw material. On the one hand the high home prices of raw material render the finishing works' competition impossible in the export market against foreign manufacturers, while their home competition is rendered impossible owing to their own cheap raw material being worked by "mixed" concerns. The amount of the export bounty, it is claimed, never amounts to the full margin between the home price and the foreign price, so that foreign manufacturers could have no cause of complaint. Yet the whole payment, its mode and amount, are surrounded by secrecy which naturally engenders a great amount of suspicion, and that not only abroad. At home the facts are withheld from the iron industry as a whole; in fact this policy of secrecy, in which the payment of export bounties is only one item, is one of the reasons of a steadily growing discontent with the larger syndicates, and more especially the Stahlwerks-Verband from within.

There are two fundamental considerations, due regard to which will make the system of export bounties more easily intelligible to the layman:

1. The bounty is paid, if at all, by the producers of a commodity to its consumers. The Stahlwerks-Verband, *e. g.*, pays the bounty not to its members, but to those of its customers who work off syndicate products (half-finished goods). For the same reasons, on the other hand, those members of the Stahlwerks-Verband who produce no raw material become entitled to export bounties from the Pig Iron Syndicate, of which they in turn are customers; the members of the Pig Iron Syndicate who own no coal mines in turn become entitled to an export bounty from the Coal Syndicate whose customers they are. The Stahlwerks-Verband members who have no coal mines are also customers of the Coal Syndicate; likewise the customers of the Stahlwerks-Verband are customers of the Coal Syndicate, &c.

**Bounty Complications.**

2. When production and consumption of any product takes place within the same works no export bounty is paid, because what is termed "own consumption" is not subjected to the prices fixed for the time being by the respective syndicate. The members of the Stahlwerks-Verband who produce also their own pig iron do not become entitled to any export bounty upon produce "A" or "B" paid by the Pig Iron Syndicate to pure "A" or "B" works, because the pig iron which they consume is not dependent upon the price fixed by the Pig Iron Syndicate. The works thus benefiting from export bounties are the works which have to purchase the raw material of at least the last preceding stage of manufacture from a syndicate. If they are dependent upon several syndicates for various stages it is in the interest of these various syndicates to assist them in the manufacture for export by bounties, and they all contribute toward the payment of the amount fixed as a bounty for the time being. Under these circumstances it is clear that the payment of the export bounties is a complicated matter, and it necessitates an office of its own which exists in Düsseldorf.

The maximum bounties so far paid amounted to:

| Consumption of | M. | Pf. |
|---|---|---|
| Coal | 1 | 50 |
| Pig iron (exclusive of bounty on coal) | 2 | 50 |
| Pig iron (inclusive of bounty on coal; rate second quarter 1905) | 4 | 86 |
| Half-finished goods (inclusive of bounty on coal and pig iron) | 15 | 0 |
| Girders of any kind (inclusive of bounty on coal and pig iron) | 20 | 0 |

**Adjustments to Conditions.**

During the last boom the bounties were very considerably reduced. About the middle of 1906 the Coal Syndicate discontinued the payment altogether, and its example was subsequently followed by the Pig Iron Syndicate. The Stahlwerks-Verband (old Verband) continued the payment at the rate of the approximate margin between home price and foreign price. During the first quarter, 1907, it paid upon the export of half-finished goods 2 marks 50 pf. (in the year preceding 7 marks) and upon the export of girders 12 marks 50 pf. per ton. When the Stahlwerks-Verband was renewed it discontinued the payment altogether. In October, 1907, the Stahlwerks-Verband again granted an export bounty of 10 marks per ton consumed of half-finished goods—of course, to the finishing industries (pure rolling mills). Early in 1908 the rate was increased to 15 marks. The joist rolling mills are said again to receive an export bounty of 20 marks.

When the question of export bounties first appeared again on the *tapis* in August, 1907, deliberations were carried on to devise some new form, different from the one that had been adopted during the previous slump, because the grant of an export bounty had led to certain difficulties in the import of bounty-fed iron into the United States. But no new form to encourage the export was found. The Stahlwerks-Verband reserved merely the right to a week's notice in case the export bounty was to be withdrawn, a contingency which might occur not only owing to a change of the market, but owing to pressure from abroad. The export bounty can thus in any case be more easily suited to the export market price. This innovation the producers strongly resented, because their foreign orders, calculated on the basis of an export bounty, might in many cases be spread over a prolonged period and remain uncompleted within a week, when a withdrawal of the export bounty would upset the whole basis of calculation. It has not transpired to what extent the Pig Iron Syndicate and the Coal Syndicate contribute toward these 15 marks, but the Stahlwerks-Verband, newly founded, would be loath to bear the whole financial burden alone. Nor has it transpired that the Coal Syndicate or the Pig Iron Syndicate pay to their own customers export bounties as far as these customers represent the succeeding stages of manufacture without reaching the last stage (finishing industries); but there is no reason to presume that these two syndicates have not been compelled to do again what they had been compelled formerly to do under similar circumstances.

As far as international syndicates exist for finished products (rails, tubes, &c.), the payment of bounties, if any, does not directly affect foreign exporters of finished products in the markets for which the respective commodities have been syndicated internationally.

**A Complaint of the Sheet Mills.**

Instead of making any concession in price when the bad times commenced, the Coal Syndicate preferred to grant export bounties, which benefit, of course, only a very limited number of its consumers. A petition presented in the last months of 1907 by the sheet iron rolling mills of the district of Hagen to the Coal Syndicate clearly states the position in which these works found themselves; it is sufficiently interesting to warrant an extract. The case is, in fact, particularly instructive on the whole system, because the sheet iron rolling mills constitute a finishing trade which, as a natural result, is dependent on the Coal Syndicate, the Pig Iron Syndicate and the Stahlwerks-Verband. *Mutatis mutandis*, their complaints apply to any industry and any stage of manufacture beyond the stage of the Coal Syndicate—coal

being in fact the first raw material for the iron and other industries. After complaining that the Coal Syndicate had not yet reverted to the system of export bounties, it runs:

"At present the German sheet iron industry works under the most unfavorable conditions at home, nor can it meditate any export. If this state of affairs is allowed to continue, a number of concerns will have to be closed down. This would mean a considerable loss to the Coal Syndicate, from which the Hagen Union alone purchases 140,000 tons per annum. At home the base price for sheet iron has been reduced by the large 'mixed' concerns to 140 marks per ton and less, a price at which the rolling mills find themselves considerably out of pocket, but which the 'mixed' concerns, with their own coal and their own half-finished goods, are well able to stand, so that the whole production of sheet iron must in the near future fall to the large steel concerns, unless an early remedy be devised. The export, upon which the German sheet iron industry at all times relies for the sale of one-third of its produce, is at a standstill, due to the price of 123 marks f.o.b. Rotterdam, leaving the German works a clear price of 125 marks. This export price constitutes, as against the highest export price in the winter, 1906-07, a reduction of about 30 marks per 1000 kilos, a fact which in itself sufficiently illustrates the situation."

**The Coal Syndicate's Contribution.**

Since January 1 the Coal Syndicate has conceded an export bounty to the Union of Wire Rollers; also to the manufacturers of bar iron, sheet iron and hoop iron (the consumers of half-finished goods). The bounty is no longer as rigorously paid to any syndicates in the finishing trade, but is paid through the counting house for the payment of export bounties at Düsseldorf to those works which in the manufacture of their produce utilize Syndicate coal. Within a short period three different modes of paying the bounty have been tried; for the first time an attempt has been made to grant a greater share in the export bounties to those concerns the products of which represent more highly finished articles. The attempt to pay the export bounties more directly was undoubtedly devised owing to the fact that some of the finishing syndicates have broken up, *e. g.*, Grobblech Verband, Feinblech Verband, &c., since the payment of the bonus had been last discontinued. The rate of this export bounty has not transpired, but it is probably contained (as during the last preceding depression) in the amount ostensibly paid by the Stahlwerks-Verband (see above), for the Stahlwerks-Verband, which was the last among the three leading syndicates (Coal, Pig Iron, Stahlwerks-Verband) to pay the export bounty was the first also again to concede it (October, 1907), and its grant was on January 1 increased by 33 per cent., *i. e.*, by 5 marks. It is not, however, believed that these 5 marks are, as a whole, contributed by the Coal Syndicate, as the directorate has not recently insisted upon an increased levy (Umlage) from its members, which a contribution to that amount would have necessitated.

## The New Jones & Laughlin Office Building.

Last Friday and Saturday a large number of persons, many of them from other cities, inspected the new headquarters of the Jones & Laughlin Steel Company, at Second avenue and Ross street, Pittsburgh. The large building here erected will be exclusively used by this company. The contrast between the new structure and the old offices, just in the rear, was almost bewildering to the friends of the company's attaches who had visited them in the old, cramped quarters, says the Pittsburgh *Dispatch*. The former offices were occupied by the firm for nearly 35 years. The company moved into them from Water street in June, 1872. At that time these offices were considered among the finest in the Pittsburgh District.

But as the "headquarters staff" of the company grew from perhaps 40 men to some 300 workers the floor space had to be calculated almost by inches. For 10 years the officials of the company have considered that they had outgrown the old quarters, and for nearly all that time the splendid new structure has been in process of planning. The result is a system of model offices. Everybody in the structure has air and light. Except on very dark days there will be no necessity for a single artificial light during business hours.

The structure is eight stories, fronting on Third avenue, Ross street and Second avenue, with an alley in the rear. It is built to allow for four additional stories when they are necessary. At present, however, the firm is using only the first seven stories, the eighth not being needed now. The contract for the new building was let on August 30 of last year. Delays were experienced by the A. & S. Wilson Company, the contractor, when, in sinking the foundation, it found the boggy remains of the old canal reservoir beneath the site. Nevertheless the work was completed on August 1 of this year, and the building was occupied by the office force August 22.

The design of the exterior is Elizabethan, with rough red bricks and Craig sandstone trimmings. It is absolutely flood and fire proof. Story after story, the treatment of the offices is the same—fine fumed, quarter sawed oak for all furniture, with paneled walls in brown, with the exception of the directors' room, which is in San Domingo mahogany. Corridors and toilet rooms are in white Italian marble. Showers and baths are provided for the employees, with a library and a rest room for the women clerks; the building even has its own barber shop.

One of the unique features is the acres of storage vaults for records to be found in the basement—all fire and flood proof. The mechanical equipment far beneath the first floor is remarkably complete, including a sterilizing plant for drinking water and steam heat, with mechanical ventilation.

Nearly all the furniture within the building was built on special specifications. There are scores of specially made filing and card index cases; fireproof blueprint cabinets—every timesaver the force could devise. One of the features of the arrangement of the offices is that in light, in floor space, even in the furnishings, the humble accountant on the upper floor fares as well as the high officials down nearer the street level. On the first floor is the sales department; on the second the executive officers' and the directors' rooms; the intermediate departments occupy the intervening stories, while on the seventh is found the headquarters of the Monongahela Connecting Railroad.

Among others the guests met B. F. Jones, Jr., president; W. L. Jones, James B. Laughlin, T. K. Laughlin, W. W. Willock, Robert Geddis, and W. C. Moreland, secretary. Willis King, vice-president, expected to be present, but was out of the city. The following heads of departments assisted in showing the visitors through the building: W. H. Lewis, superintendent at Aliquippa; R. B. Kernahan, general manager of the steel mill; E. L. Messler, superintendent of the Eliza Furnace department; H. Bainbridge of the Keystone works; G. M. Laughlin, Jr., superintendent of the Soho department; J. E. McClosky, assistant superintendent of the Soho department; J. L. Haines, F. A. Ogden, C. A. Fisher and F. L. Garlinghouse of the city office.

There were also present the following sales agents of the company from other cities, who had come especially to participate in the reception and to inspect the new building: F. M. Campbell, in charge of the Philadelphia office; H. F. Holloway, New York; A. B. Marble, Boston; D. N. Barker, Chicago; R. M. Kilgore, Cleveland; F. A. Goodrich, St. Louis; F. H. Holt, Detroit; C. S. Bradley, Buffalo; Boyden Kinsey, Cincinnati; C. N. Dannals, Atlanta.

The Jones & Laughlin Steel Company is rebuilding two of the four open hearth furnaces in its Soho plant, Pittsburgh. It is also building four more Talbot open hearth furnaces at its American Iron & Steel Works, Pittsburgh, but these will not be ready for operation until early next year. The company has done little for some time at its Aliquippa plant, where work on four blast furnaces, a Talbot open hearth plant and other improvements was started early last year.

## PERSONAL.

W. Edgar Reed has been elected chairman of the Pittsburgh section of the American Institute of Electrical Engineers.

James Parker has been made auditor of the Brier Hill Iron & Coal Company, Youngstown, Ohio.

Murray Shipley, vice-president and secretary of the Lodge & Shipley Company, Cincinnati, has returned from a six weeks' vacation. President William Lodge, who is in Europe seeking relaxation from business cares, is expected to return about October 10.

B. F. Bourne, president of the Bourne-Fuller Company, Cleveland, Ohio, is making a trip through England, Switzerland and Holland.

D. Z. Norton of Oglebay, Norton & Co., and C. C. Bolton, formerly of M. A. Hanna & Co., Cleveland, who have been traveling in Europe for some time, will return in October.

H. Koppers, inventor of the by-product coke ovens bearing his name, arrived at Joliet, Ill., September 9, from his home in England, to inspect the new coke plant of the Illinois Steel Company which has just been completed. It is his intention to remain in this country about three weeks.

Paul Schreiber, sales manager of the Arthur Koppel Company, Pittsburgh, manufacturer of industrial and portable railroads, has sailed for Germany on pleasure and business combined, and will be absent three months.

G. A. Frantz of the Landis Tool Company, Waynesboro, Pa., sailed for Europe September 8 to be absent about six weeks. He expects to combine business with pleasure, and will spend most of his time on the continent.

Elbert H. Gary, chairman of the United States Steel Corporation, was given a dinner at the Reform Club, London, England, September 11, by Sir Hugh Bell, president of the Iron and Steel Institute, and the members of the Council of that society. The dinner was a tribute to Mr. Gary's efforts to bring together the steel operators of the world. Thirty persons were present, among them being Lord Airedale, Lord Glantowe, Sir Weetman Pearson and Sir Robert Hadfield; Baron von Bodenhausen of the Krupp Company and President Schaltenbrand of the German Steel Syndicate, representing Germany, and M. Schneider of Le Creusot and M. de la Briolle of the Comptoir d'Exportation, representing France. Among the Americans present were Consul-General Wynne, G. G. McMurtry of the United States Steel Corporation, and Vivian H. Smith of J. P. Morgan & Co.

F. W. Jaeger, New York manager for Alfred H. Schutte, has returned from Europe, after an absence of six weeks.

Bryon E. Eldred has resigned as secretary of the Duplex Metals Company, 208 Fifth avenue, New York, to devote his time to scientific research and to develop some of his late inventions. In the interest of the latter, Mr. Eldred has recently made two trips to Europe, and expects to make another the latter part of the year. He has opened offices at 208 Fifth avenue.

W. S. Pilling of Pilling & Crane, Philadelphia, returned from abroad September 12, after a trip of several months' duration.

President W. F. Robertson of the Robertson Iron & Steel Company, Cincinnati, has returned from a trip abroad. Much of his time was spent in and about London and Dublin.

Benjamin Nicoll of B. Nicoll & Co., iron merchants of New York, has just returned from Europe in the yacht Varuna, crossing in eight days.

Dr. James Douglas of New York, associated with the Phelps-Dodge copper mining and allied interests, arrived from Europe recently.

The Oklahoma Geological Commission, consisting of the Governor of the State, the Superintendent of Public Instruction and the president of the State University, met for organization July 25, 1908. Governor C. N. Haskell was elected president of the commission, State Superintendent E. D. Cameron was elected secretary, and the president of the State University, A. Grant Evans, was elected executive officer. Dr. Chas. N. Gould, professor of geology at the State University, was elected director of the survey and instructed to begin at once the preparation of reports dealing with the geologic structure and mineral resources of the State.

## OBITUARY.

JOHN J. REILLY, president of the J. J. Reilly Mfg. Company, maker of Ideal steam pumps, Louisville, Ky., died September 2, aged 54 years. He was born in Manchester, England, and for some years had been a resident of St. Louis. He was widely known as an inventor. He leaves a widow and a son.

GARDNER DEXTER HISCOX, a well-known writer on scientific subjects, died September 12, at his residence in East Orange, N. J., after a short illness, aged 86 years. He was born in Elizabethtown, N. Y., and, although without college training, devoted his life to scientific work. He was best known as the author of "Compressed Air and Its Application," "Modern Steam Engineering," and "Hydraulic Engineering." He was an authority on heating and ventilating. He leaves a widow, three sons and a daughter. He was a member of the American Astronomical Society.

WILLIAM A. CRANSTON, secretary of the American Screw Company, Providence, R. I., died suddenly of heart disease September 3, aged 60 years. He had been connected with the company practically all his business life, and had worked up to the position of secretary and part owner through all the grades in the company's service, from that of office boy. He took an active interest in public affairs, and had served as a member of the General Assembly of Rhode Island. He leaves a widow and two sons.

## A Retort Coke Oven Association Proposed.

The organization of a technical association devoted to retort coke ovens and by-products is being agitated in Great Britain, in view of the importance that industry has assumed. The London *Iron and Coal Trades Review* says:

The manufacture of coke in by-product ovens is a comparatively new industry, dating back no farther than 1881; but since its inception it has made giant strides, and to-day from 60 to 70 plants are in operation. The latest returns issued in October last year show that out of a total of 29,728 ovens in operation, 23,454 were of the beehive type, but it is worthy of note that the number of other types increased from 5546 in 1905 to 6274 in 1906, although the total of all descriptions showed a decline. The patent ovens contributed a very substantial proportion of the 19,296,526 tons of coke produced in 1906, while it cannot be doubted that the make in the newer type will expand at a rapid rate in the near future. There can be no doubt that such an association as that proposed, directing its energies mainly to the solution of problems connected with the by-product oven, could do useful work. The economical production of blast furnace and foundry coke in its best form, for example, is a question which does not affect owners and managers of ovens alone, but has a very real interest for the iron trade. The suggested title is the "Coke Oven and By-products Association."

The first biennial convention of the International Union of Steam Engineers is being held at the Continental Hotel, Philadelphia. Delegates are present from Europe, Canada and Australia, as well as all parts of this country. In addition to daily business sessions, an extensive social programme has been arranged, and a large exhibit of equipment and specialties is being held in connection with the convention.

## Cincinnati Industrial Excursion.

Cincinnati manufacturers and men of affairs to the number of about 250 spent a day visiting large plants in the suburbs on Thursday, September 10, the fourth annual event of the Industrial Bureau of that city. Machinery and tool manufacturers constituted the greater part of the excursionists. The affair proved more than ordinarily enjoyable this year, because of the existing conditions in trade and the excellent opportunity offered participants for comparison of notes, and this they did to the fullest. Various projects that have been simmering in machinery and machine tool circles for the past year were discussed, and to some of them an impetus given.

The subject of a central tool and machinery building, modeled somewhat on the lines of the Philadelphia Bourse, but with some radical changes, received considerable encouragement. J. E. Q. Maddux, of J. E. Q. Maddux & Co., who has the matter in hand, was with the party and exhibited lists signed by a large proportion of machinery manufacturers for space, and these lists carried at the top of the sheet an outline of the general plan. It is hoped now to interest enough capital to start the great building which the plans provide for in the block bounded by Third, Baker, Vine and Walnut streets, directly south of the new Sinton Hotel. In the tentative plans there are 800,000 sq. ft., of which 200,000 would be aisle room and elevator space, leaving about 600,000 to be taken by the tool and machinery manufacturers. The estimated cost is $3,000,000. It is hoped to get this enterprise started in a tangible building way soon after the election.

Another important enterprise that had considerable encouragement from the men of affairs in the party was the project of a new radiator manufacturing company to be organized for manufacturing a radiator the patents for which are owned by Dr. Freericks, a prominent local inventor. The capitalization for this company will be on a large scale and it will have plenty of local backing, as it is understood that the largest radiator interest has set its seal of approval on the ideas.

The plant of the Cincinnati Horse Shoe & Iron Company at Cleves, a Cincinnati suburb, was first visited by the excursionists. Here the process of rolling billets and bars was witnessed. The company recently purchased a large quantity of No. 1 railroad wrought scrap, and the greater part of this scrap is bridge material brought from the line of the Cincinnati Southern, which, being a strictly Cincinnati property, suggested a bit of sentiment in the minds of the manufacturing excursionists. The output of the company is 100,000 kegs a year, and at present the plant is running full capacity, with about 125 men, and in a few days will run a night shift to catch up on orders.

The Philip Carey Mfg. Company was another of the large plants visited, and here the excursionists were treated to a luncheon. Some interesting short talks were made by President S. P. Egan of the Industrial Bureau, ex-President A. J. Conroy, President George B. Crabbs of the Carey Company, and others, with James J. Heekin, chairman of the Excursion Committee, as toastmaster. The Philip Carey plant now covers about 70 acres, has 20 buildings, a floor space of over 400,000 sq. ft., and employs 500 people. The products turned out are cement roofing, steam pipe and boiler coverings, asbestos paper and board, asbestos packing, building paper, asphalt paints, asbestos and asphalt materials. It handles 6000 cars of freight per annum, a total of 125,000 tons. The company has 40 branch offices and warehouses in the United States and Canada. The company also handles the entire output of the American Magnesia & Covering Company, Plymouth Meeting, Pa.

Another important plant visited was that of the Stacey Mfg. Company, engineer and builder of gas works and all kinds of apparatus connected therewith. Its annual business now amounts to about $1,000,000. Other plants inspected were those of the Richardson Paper Company at Lockland and the Globe Soap Company at St. Bernard. The excursionists also spent a profitable half hour viewing the Government work in progress at Fernbank, costing $1,250,000.

## Two Millions for Ensley Improvements.

The United States Steel Corporation has authorized G. G. Crawford, general manager of the Tennessee Coal, Iron & Railroad Company, to make improvements at the Ensley, Ala., furnaces and steel plant, which will cost about $2,000,000.

It has been decided to remodel and rebuild furnaces Nos. 1, 2 and 3 at Ensley. These now have a capacity each of 235 tons per day, which is to be increased to 385 tons per day. Some additional blowing engines will be required.

At the steel plant a 600 ton mixer is to be installed and there will be some additional electrical machinery. An electrical repair shop is to be built also, and a water purifying plant is to be installed. There are to be ordered 150 steel hopper cars and a considerable number of employees' houses are to be built at the ore mines.

The Lackawanna Steel Company has decided to put in blast one of its furnaces in the Lebanon Valley, operating it as a merchant furnace for the production of foundry pig iron. There are five Lebanon Valley stacks which are operated by the subsidiary company, the Lackawanna Iron & Steel Company; two Bird Coleman furnaces and North Coleman furnace at Cornwall, Pa., and two Colebrook furnaces at Lebanon. Together they have a capacity of about 200,000 tons of pig iron a year. They were last active in October, 1907, all having been blown out in that month.

The directory census of the city of Niagara Falls shows a gain in resident population the past year of 8455, making a present total of 38,042, the greatest percentage of gain shown by any corporate district in the State of New York for the year 1907-08. The cause of this large increase is the expansion of power generation and the constant accession of new industries and enlargement of existing industrial plants using Niagara Falls power, which brings a continual influx of operatives and trades people.

Joseph E. Thropp's Earlston Furnace, near Everett, Pa., was blown in September 14, after having been out of blast since January 13, 1908. His Saxton Furnace has been in operation all this year, excepting from early in January to April 10, during which time the furnace was banked. He is now running all his available furnaces, as the No. 1 stack at Saxton has not yet been remodeled and re-equipped ready for operation.

The production of pig iron in Russia in 1907 is put at 171,900,000 poods, or about 2,750,000 gross tons, of which the southern district produced about 1,775,000 tons, the Ural about 610,000 tons, the central about 75,000 tons, the northern and Baltic 3000 tons and Russian Poland 285,000 tons. The total of heavy forms of manufactured iron and steel reported for 1907 is 2,350,000 tons, of which the southern district produced 1,170,000 tons.

Plans have been prepared for a new office building to be erected at the plant of the Wickwire Steel Company, Buffalo, N. Y. This is one of the finishing touches to the large plant now nearing completion, and will not be completed until some time after operations at the plant have started.

The contract for constructing the three new naval colliers for the United States Government has been awarded to the Maryland Steel Company. The contract price is $479,000 for each. Work on the colliers will be started immediately, and they will be completed within a year.

# NEWS OF THE WORKS.

### Iron and Steel.

The furnace of the Woodstock Iron & Steel Corporation at Anniston, Ala., has been put in blast after having been rebuilt.

The Westerman Rolling Mills Company, Lockport, N. Y., has resumed operations. A few repairs to the plant have been made necessary owing to the long shutdown, and within a few days these will be completed and the mill will be operated on full time.

The Cohoes Rolling Mill Company, Cohoes, N. Y., has started up with a full complement of men in all departments.

It is expected that the No. 2 Ensley furnace of the Tennessee Coal, Iron & Railroad Company will be put in blast about October 1, and five furnaces of this group will then be active.

### General Machinery.

The N. C. Davison Company, Keenan Building, Pittsburgh, Pa., has issued a catalogue illustrating the gas engines, pumps and electrical appliances it handles. The company is agent in the Pittsburgh District for the Riverside Engine Company, Oil City, Pa., maker of heavy duty double acting tandem gas engines, built in sizes from 80 to 2000 hp.

Sealed bids for the installation of ash and coal handling machinery to be installed in the north boiler house at the pumping station, Bureau of Water, Buffalo, N. Y., will be received by Colonel Francis G. Ward, Commissioner, City and County Building, until September 24.

The Modern Machinery Company, Wilmington, Del., has completed an addition to the machine shop to be used as an erecting floor, the space in the machine shop being crowded by the installation of new machinery.

The Precision Tool & Instrument Company, New York, has incorporated its business with a capital stock of $100,000.

### Power Plant Equipment.

The Logansport, Ind., Board of Public Works has asked the County Council for an appropriation of $38,000 for the re-equipment of the municipal electric light plant, after the board had approved the plans submitted by an electrical expert. The plans provide for the installation of a 500-kw. 60-cycle turbine generator and a 150-kw. generator, belted to a Buckeye engine. The council met in special session and made the appropriation asked for.

The joint Board of Supervisors of Louisa County and Des Moines County, Iowa, acting for the Louisa-Des Moines Drainage District No. 4, will receive bids until October 6 at the office of the auditor of Des Moines County, Burlington, Iowa, for a pumping plant for the drainage system, to include one 300-hp. water tube boiler, one 500-hp. horizontal compound condensing steam engine, two 48-in. centrifugal pumps, foundations, buildings, pipe, &c.

The Madison County Gas & Electric Company, E. J. Kenney, manager and superintendent, Oneida, N. Y., will change its entire system from 60 cycle to 40 cycle and install another generator, switchboard and other accessories.

The Auburn Light, Heat & Power Company, E. G. Preston, chief engineer, Auburn, N. Y., is arranging to double the capacity of its power plant. The present boilers are to be removed and a triple set of boilers of larger capacity installed.

### Foundries.

The Coatesville Foundry & Machine Company, Coatesville, Pa., has placed its new plant in operation, employing at the start 40 hands. The plant has a daily capacity of 20 tons, and a sufficient quantity of orders for boiler fronts and gray iron castings is on hand to keep it running for some time. It is situated on the Pennsylvania Railroad, and the equipment was installed under the supervision of Rex C. Wilson. Penrose N. Davis is president; H. M. Garrett, vice-president; Frederick E. Moore, treasurer and secretary. The directors include the officers and Nelson H. Jennings, Charles Edgerton, George Livermore, C. W. Ash, H. B. Spackman and Edwin T. Moore.

The Campbell Mfg. Company, Gadsden, Ala., has commenced operations. This plant has just been completed and is fully equipped for the manufacture of cast iron soil pipe and fittings.

Announcement is made that the plant of the Sheffield Cast Iron Pipe & Foundry Company, at Sheffield, Ala., will be put in operation September 15.

The Sibley Machine Tool Company, South Bend, Ind., is building a new foundry, 88 x 154 ft., to replace a frame building.

### Fires.

The soap factory of Enoch Morgan's Sons, New York, was destroyed by fire September 13, the loss being about $100,000.

The plant of the Kosmosdale Cement Company, Kosmosdale, near Louisville, Ky., was destroyed by fire September 12, the loss being stated at $1,000,000. The company, which is controlled by Philadelphia capitalists, is said to have a large contract on hand for cement for the Panama Canal.

The H. B. Johnson Company's tannery at Toronto, Ont., was burned September 11, with an estimated loss of $100,000.

The stove plant of the McClary Mfg. Company, Montreal, Quebec, was damaged $20,000 by fire September 12.

The Empire Cork Company's factory in Brooklyn, N. Y., was burned September 8, the loss being about $50,000.

The machine shop of the Standard Foundry & Mfg. Company, Cleveland, was badly damaged by fire September 11, a portion of the machinery being ruined. The company will take immediate steps to repair the loss, and announces that the fire will not seriously interfere with the operation of the plant.

The automobile factory building of the Tiley-Pratt Company's plant, Essex, Conn., was burned September 11, together with its equipment, the loss being about $10,000.

The plant of the Locke Insulator Works, Lima, N. Y., was burned September 12, the loss being about $50,000.

The shops and roundhouse of the International & Great Northern Railroad at Taylor, Texas, were burned September 10. The loss is estimated at $10,000.

### Miscellaneous.

The Republic Rubber Company, Youngstown, Ohio, is making some additions to its plant, consisting of two reinforced concrete buildings, one 65 x 240 ft., and the other 30 x 60 ft. The company will be in the market for some machinery to equip these buildings.

The Mt. Hope Coke Company, Greensburg, Pa., has increased its capital stock from $1000 to $400,000.

The Marengo Portland Cement Company, E. J. Davis, superintendent, Caledonia, N. Y., announces that it will soon start construction on a stone crushing plant along the Erie Railroad in the vicinity of Lime Rock. The Hunt Engineering Company, Iola, Kan., has been awarded the contract for enlarging the cement plant and increasing capacity to 2500 bbls. daily.

The Niagara, Lockport & Ontario Power Company, Fidelity Building, Buffalo, N. Y., has been awarded contract for supplying electrical power to the new limestone quarry to be opened near Sanborn, N. Y., by the Casparis Stone Company, Columbus, Ohio, and the Empire Limestone Company, Buffalo. In supplying electrical power to the above location, it is necessary for the Niagara, Lockport & Ontario Power Company to build a new transmission line from its main line to the quarry, a distance of 9 miles. The new crushing plant is to have a capacity of 3000 tons daily and is to be operated in connection with an extensive contract held by the company for supplying material to the Lackawanna Steel Company. An exceptional feature regarding this plant is the fact that it will be operated without the use of a steam power plant, all energy being supplied through electric power. Current will be delivered to the quarry at 11,000 volts. A transformer plant consisting of three 200-kw. oil cooled transformers for transforming from 11,000 volts alternating to 480 volts, 25 cycle, and three 190-kw. oil cooled transformers for transforming from 11,000 volts to 360 volts, 25 cycle, will be installed; also one 500-kw. rotary converter, together with switchboard apparatus, &c. Other equipment to be installed will consist of one 90-ton steam shovel, to be electric driven and operated by four 75-hp. motors. This is said to be the first case in which an electrically driven shovel has ever been utilized in quarry work. Two motor driven air compressors, 20 in. by 12 ft. by 36 in.; motor driven crusher with 250 hp. motor, and belt conveyor with 40-hp, motor will also be installed. Construction on the plant will be started at once. It is understood that contract will be given to the Allis-Chalmers Company for the complete equipping of the plant.

It is announced at Muncie, Ind., that the first new factory to be secured with the aid of the $125,000 factory fund recently raised by the city will be an automobile plant, to be financed by Thomas F. Hart and Madison Maring, two local capitalists.

The Progressive Metal & Refining Company, Milwaukee, Wis., of which Jacon Sadek is president and M. L. Goldman secretary, has filed an amendment to its articles of incorporation increasing its capital stock from $10,000 to $25,000.

The American Iron & Wire Works Company, Chicago, Ill., is extending its plant by the erection of a two-story addition, 75 x 94 ft. The company, whose product consists of structural ornamental wire, brass and bronze work, has been compelled by the expansion of its business to provide additional room, and the new building will not only facilitate manufacturing operations but will enable the company to increase its output materially.

The Decatur Cornice & Roofing Company, New Decatur, Ala., will more than double its present facilities for the manufacture of roofing, cornices, architectural sheet metal building materials, &c., by the erection of a three-story building, 135 ft. square, of reinforced concrete and brick construction. The building will be equipped with modern machinery which will be driven by independent motors, and heating plant, automatic sprinkling system for fire protection, electric elevators, &c., will be installed. It is expected to have the building completed by January 1.

The Kennedy Valve Company, Elmira, N. Y., contemplates enlarging its plant, and has plans drawn for an extension to the valve department.

The Dundee Brass Mfg. Company, Dundee, N. Y., is having plans prepared for a one-story foundry and factory building, 40 x 200 ft., of concrete construction.

The Central Belting Company, New York, organized with a capital stock of $20,000, has taken over the business and assets of the Fay Belting Company, and will continue the manufacture of leather belting at 3 Jacob street.

# The Iron and Metal Trades

## Chicago Furnaces Meet Valley Competition.

### Steel Pipe Chosen for the Springfield Line.

### Some Large Structural Work in Sight.

In some quarters some hesitation on the part of buyers is noted, because of the impending elections, and this may become more pronounced. On the other hand, Pittsburgh reports that jobbers from the South, Southwest and Pacific Coast are showing some disposition to anticipate requirements, notably in Sheets, Pipe and Wire products.

Some inquiries for Pig Iron have come into the market for 1909 requirements, but comparatively little has been done, because sellers generally are disposed to ask prices which buyers are not prepared to meet. So far as current business is concerned, the situation is somewhat mixed. Alabama and Virginia makers, being well supplied with orders for the near future, maintain a firm attitude. Eastern producers have stiffened on Foundry and Forge Irons, and are doing a fair amount of selling. In the Central West the position is not so well defined. The furnaces in the Chicago District have met the competition, in their territory, of the Valley makers and have reduced their price from $17 to $16.50 for No. 2 Foundry at furnace. Pipe makers, East and West, have bought fair quantities of Iron and are in the market for more.

There are some negotiations pending in eastern Pennsylvania on some large blocks of Basic Iron, both for delivery this year and for the first half of 1909. On the other hand, Cincinnati reports efforts to market Basic Pig which was contracted for some time ago at lower prices.

The decision of the Lackawanna Steel Company to employ a part of its Lebanon plants as merchant furnaces is interesting, but for the present the make of only one stack will be marketed.

Cleveland reports the buying of moderate amounts of non-Bessemer Ores by furnaces which have not hitherto purchased.

There has been no change in the Rail trade, only small orders coming out.

In the Plate trade the item of interest this week is that the Springfield Pipe contract, on which bids for both Steel and Cast Iron Pipe were put in, has gone to the makers of the former. The line is to be made of 42-in. Lock Bar Pipe, and will call for about 6000 tons, which will go to Pittsburgh. Eastern Plate makers are figuring on the material for the three Government colliers, the contract for which was secured by the Maryland Steel Company. Plate makers are to meet Thursday to discuss the reports of irregularities in prices.

In structural material the chief event is that work has begun on the Wanamaker Building in Philadelphia, which will require 14,000 tons. The material is to be supplied by the American Bridge Company. The Monongahela Bridge, calling for about 2700 tons, has been virtually placed. Some large structures are coming up. These include 6000 tons for the Keithsburg Bridge over the Mississippi, 8000 tons for a 20-story building of the People's Gas Company at Chicago, 10,000 tons for the new Chicago City Hall, 2000 tons for a stone crusher building at Gary, 2000 to 3000 tons for the ore handling machinery for the Pittsburgh and Conneaut Dock Company and 2000 tons for the county bridge across the Hackensack. Bids have gone in for 2000 tons for the Pennsylvania bridge across the Hackensack, and 1800 tons for elevated work for the Interborough Transit Company.

From the Pacific Coast comes the report that quite a tonnage of Belgian Beams has been sold to fabricators in that section.

The St. Paul road is in the market for 5000 Steel underframe cars.

Southern Cast Iron Pipe makers have advanced their quotations $1 per ton, because of the advance in Pig Iron. It is believed that the 3000-ton contract for Cleveland will test this attitude. Eastern Pipe makers take the ground that they should be supported by the Pig Iron interests through lower prices of raw material so as to allow them to work for stock during the dull winter months.

In the metal trade, resales of Copper taken by speculative interests some time since continue a feature of some importance. It is hinted, too, that selling agencies are encouraging exports by prices which they are not willing to concede to domestic buyers.

## A Comparison of Prices.

**Advances Over the Previous Month in Heavy Type, Declines in Italics.**

At date, one week, one month and one year previous.

| | Sept.16, 1908. | Sept.9, 1908. | Aug.19, 1908. | Sept.18, 1907. |
|---|---|---|---|---|
| **PIG IRON,** Per Gross Ton: | | | | |
| Foundry No. 2, Standard, Philadelphia | **$16.75** | $16.50 | $16.50 | $20.50 |
| Foundry No. 2, Southern, Cincinnati | **15.75** | 15.50 | 15.25 | 21.25 |
| Foundry No. 2, Local, Chicago | *16.50* | 17.00 | 17.00 | 23.50 |
| Basic, delivered Eastern Pa. | **15.25** | 15.25 | 15.00 | 18.85 |
| Basic, Valley Furnace | 14.50 | 14.50 | 14.50 | 20.00 |
| Bessemer, Pittsburgh | *15.90* | 15.90 | 16.30 | 22.90 |
| Gray Forge, Pittsburgh | *14.40* | 14.40 | 14.65 | 20.90 |
| Lake Superior Charcoal, Chicago | 19.50 | 19.50 | 19.50 | 27.00 |
| **BILLETS, &c.,** Per Gross Ton: | | | | |
| Bessemer Billets, Pittsburgh | 25.00 | 25.00 | 25.00 | 29.50 |
| Forging Billets, Pittsburgh | 27.00 | 27.00 | 27.00 | 32.00 |
| Open Hearth Billets, Phila. | 26.20 | 26.20 | 26.20 | 31.00 |
| Wire Rods, Pittsburgh | 33.00 | 33.00 | 33.00 | 36.00 |
| Steel Rails, Heavy, Eastern Mill | 28.00 | 28.00 | 28.00 | 28.00 |
| **OLD MATERIAL,** Per Gross Ton: | | | | |
| Steel Rails, Melting, Chicago | **15.00** | 15.00 | 14.25 | 17.00 |
| Steel Rails, Melting, Phila. | **15.25** | 15.25 | 14.50 | 16.75 |
| Iron Rails, Chicago | **18.00** | 16.75 | 16.50 | 20.25 |
| Iron Rails, Philadelphia | **20.50** | 20.00 | 20.00 | 20.50 |
| Car Wheels, Chicago | *15.25* | 15.50 | 15.50 | 24.50 |
| Car Wheels, Philadelphia | 15.00 | 15.00 | 15.00 | 23.00 |
| Heavy Steel Scrap, Pittsburgh | *14.25* | 14.25 | 15.00 | 17.00 |
| Heavy Steel Scrap, Chicago | 13.00 | 13.00 | 13.00 | 14.75 |
| Heavy Steel Scrap, Philadelphia | **15.25** | 15.25 | 14.50 | 16.50 |
| **FINISHED IRON AND STEEL,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Refined Iron Bars, Philadelphia. | **1.45** | 1.45 | 1.40 | 1.80 |
| Common Iron Bars, Chicago | 1.50 | 1.50 | 1.50 | 1.78 |
| Common Iron Bars, Pittsburgh. | 1.40 | 1.40 | 1.40 | 1.70 |
| Steel Bars, Tidewater, New York | 1.56 | 1.56 | 1.56 | 1.86 |
| Steel Bars, Pittsburgh | 1.40 | 1.40 | 1.40 | 1.60 |
| Tank Plates, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Tank Plates, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Beams, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Beams, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Angles, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Angles, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Skelp, Grooved Steel, Pittsburgh | 1.45 | 1.45 | 1.45 | 1.85 |
| Skelp, Sheared Steel, Pittsburgh. | 1.50 | 1.50 | 1.50 | 1.95 |
| **SHEETS, NAILS AND WIRE,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Sheets, No. 27, Pittsburgh | 2.40 | 2.40 | 2.40 | 2.50 |
| Wire Nails, Pittsburgh | 1.95 | 1.95 | 1.95 | 2.05 |
| Cut Nails, Pittsburgh | **1.80** | 1.80 | 1.75 | 2.15 |
| Barb Wire, Galv., Pittsburgh | 2.40 | 2.40 | 2.40 | 2.50 |
| **METALS,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Lake Copper, New York | **13.75** | 13.87½ | 13.62½ | 15.50 |
| Electrolytic Copper, New York. | 13.50 | 13.50 | 13.50 | 15.12½ |
| Spelter, New York | **4.75** | 4.75 | 4.65 | 5.50 |
| Spelter, St. Louis | **4.60** | 4.60 | 4.50 | 4.85 |
| Lead, New York | *4.52½* | 4.60 | 4.60 | 4.75 |
| Lead, St. Louis | *4.40* | 4.45 | 4.45 | 4.67½ |
| Tin, New York | *28.55* | 28.60 | 29.50 | 37.62½ |
| Antimony, Hallett, New York | *7.75* | 8.00 | 8.00 | 10.00 |
| Nickel, New York | 45.00 | 45.00 | 45.00 | 45.00 |
| Tin Plate, 100 lb., New York | $3.89 | $3.89 | $3.89 | $4.09 |

## Chicago.

FISHER BUILDING, September 16, 1908.—(*By Telegraph.*)

The gradations of improvement in finished lines of Iron and Steel are, with the exception of Wire products and Steel Bars, very finely drawn; so fine, in fact, are the divisions of the scale, that progress is scarcely discernible in week to week observations. Yet there is, on the whole, general improvement, which is manifest in the slight increases reported in active producing capacities, and wherever these appear it can safely be taken as representing a corresponding increase in consumption, owing to the restrictions still held against purchases for other than immediate requirements. The contrast of conditions in the two great fundamental sources of industrial activity, agriculture and the railroads, is sharply defined in the growing tonnage of Wire products and Steel Bars, which is being supplied chiefly by the demands of the former. Those lines, on the other hand, which are dependent upon the prosperity of the latter interests are making but feeble progress. No new Rail tonnage of consequence is coming out and the demand for Track Supplies has declined somewhat in the past week or two. Contracts for fabricated material closed within the week aggregated something over 23,000 tons, 15,000 tons of which represents the final requirements for the Wanamaker Building, Philadelphia. The remainder of the tonnage goes into Western structures, the most important of which is a bridge over the Mississippi River at Keithsburg, Ill., for the construction of which about 6000 tons will be used. While there is still wide room for improvement in fabricat-

ing prices, the outlook for a greater volume of tonnage is promising. There is little doing in Pig Iron, and notwithstanding the fact that more favorable prices are now obtainable on Northern Iron, but few buyers are in the market and few producers are making special efforts to secure contracts beyond the last quarter of this year. Buyers are equally indifferent respecting next year's requirements, and as a result the market is practically at a standstill. Among this week's transactions of interest is the purchase of 500 tons of Ferromanganese by a local Steel producer at $46.15, Chicago.

**Pig Iron.**—The market has not in a long while relapsed into a state of as nearly complete inactivity and absolute halt as was shown in the meager tonnage changing hands last week, nor are consumers showing much prospective interest in inquiries. It is understood that the principal Southern producers are not yet ready to fix price schedules for next year's deliveries except at prices which consumers now regard as wholly out of the question. Developments of the past two or three weeks, moreover, have not been of a character to excite apprehension in the minds of buyers as to an upward trend of values for that period. While the Southern interests seem to be still holding firmly at $12.50 to $13, Birmingham, little Iron is being moved at these prices, and they are not likely to attract much business as long as the Northern furnaces are willing to book orders at lower figures. The fact, too, that the make is increasing rather than diminishing is not conducive to a bullish sentiment respecting prices for the first half and quarter of next year. A significant feature in this market is the break in Northern prices, which have yielded 50 cents a ton and are now squarely on a basis of $16.50 to $17, Chicago. One prominent seller of Northern Irons has expressed a willingness to contract for deliveries extending through the first quarter at $17, at furnace. The principal sales for last week included two lots of 1000 tons each of Northern Iron for shipment through the remaining months of this year and the first quarter of next year, and 700 tons of Silvery Iron, 10 per cent. silicon, purchased by a car wheel company for prompt shipment at $21.35, Chicago. This price can be duplicated, and therefore indicates a decided reaction in Silveries which have been held about $1 above this price. Southern 4 per cent. Silveries are quoted at $17.85; 5 per cent., $18.35; 6 per cent., $18.85, all Chicago delivery. One sale of 100 tons of Southern No. 2 Foundry at $13, Birmingham, is reported. Weakness in the Southern Ohio and Valley fields seems to be the dominant factor in fixing the price of Foundry Irons. The following quotations are for September delivery, f.o.b. Chicago:

| | |
|---|---|
| Lake Superior Charcoal | $19.50 to $20.00 |
| Northern Coke Foundry, No. 1 | 17.00 to 17.50 |
| Northern Coke Foundry, No. 2 | 16.50 to 17.00 |
| Northern Coke Foundry, No. 3 | 16.00 to 16.50 |
| Northern Scotch, No. 1 | 17.50 to 18.00 |
| Southern Coke, No. 1 | 17.35 to 17.85 |
| Southern Coke, No. 2 | 16.85 to 17.35 |
| Southern Coke, No. 3 | 16.35 to 16.85 |
| Southern Coke, No. 4 | 15.85 to 16.35 |
| Southern Coke, No. 1 Soft | 17.35 to 17.85 |
| Southern Coke, No. 2 Soft | 16.85 to 17.35 |
| Southern Gray Forge | 15.35 to 15.85 |
| Southern Mottled | 15.10 to 15.60 |
| Malleable Bessemer | 17.00 to 17.50 |
| Standard Bessemer | 17.65 to 18.10 |
| Jackson Co. and Kentucky Silvery, 6 % | 19.40 to 19.90 |
| Jackson Co. and Kentucky Silvery, 8 % | 20.40 to 20.90 |
| Jackson Co. and Kentucky Silvery, 10 % | 22.40 to 22.90 |

(*By Mail.*)

**Billets and Rods.**—The largest business in prospect is that which will result from the placing of Billets required to supply axles for cars recently ordered for the Harriman lines, but as yet no sales for this account have been reported in this market. Forging Billets for other requirements are in scant demand, orders being largely of an incidental nature and for small lots. Notwithstanding some slight deviation from the regular price that has been reported, the recognized standard of $28.50, base, Chicago, is being fairly well maintained. The demand for Wire Rods is of fair volume, and a good tonnage of specifications is being offered without pressure. Prices continue unchanged, and are firm at the following quotations: Bessemer, $33; Basic, $34; Chain, $33; all at Pittsburgh.

**Rails and Track Supplies.**—Light Rails continue to hold a conspicuous place in the developments of railroad material. Orders have been coming in the past two weeks at a rate that bids fair to surpass the August aggregate, which was of fairly satisfactory proportions. Interest in Standard Sections is confined principally to orders for immediate delivery, which, though quite numerous, are for small lots. This demand is significant, in that it indicates the revival of activities in some of the small projects which were arrested by the recent financial panic. Some falling off in orders for Track Supplies is noted, but enough business has been accumulated in recent weeks to keep the Joliet Spike and Bolt mills running at moderate capacity. We quote as follows: Angle Bars, accompanying Rail orders, 1908 delivery, 1.50c.; car lots, 1.60c.; Spikes, 1.80c. to 1.90c., according to delivery; Track Bolts, 2.10c. to 2.15c., base, Square Nuts, and 2.25c. to 2.30c., base, Hexagon Nuts. The store prices on Track Supplies range from 0.15c. to 0.20c. above mill prices. Light Rails, 25 to 45 lb., $26; 20-lb., $27; 16-lb., $28; 12-lb., $29. Standard Sections, $28, f.o.b. mill, full freight to destination.

**Structural Material.**—The fabricated material amounting to 15,000 tons for the third section of the Wanamaker Building, Philadelphia, for which D. H. Burnham & Co., Chicago, are architects, has been placed with the American Bridge Company, which also closed with the Barnett & Record Company, Minneapolis, for 1000 tons, which will go into an elevator building. Other orders entered by this interest, which were almost exclusively for buildings, amounted to 2000 tons. Included in the plans now in the hands of the fabricators for figures are 2000 tons for a stone crusher plant, consisting of four buildings to be erected at Gary, Ill., by Dolese & Sheppard, and 6000 tons for a railroad bridge over the Mississippi River, at Keithsburg, Ill., for the Iowa Central and Minneapolis & St. Louis railroads. Of the structures in prospect that will require tonnage of notable size are the 20-story office building planned by the People's Gas Light & Coke Company, Chicago, which it is estimated will take 8000 tons, and the new Chicago City Hall requiring 10,000 tons, plans for both of which it is expected will soon be submitted for figures; also the Chicago Musical College, a building of eight stories, with offices and studios to be located on Michigan avenue, for which about 2000 tons will be needed. Besides these enterprises there are quite a number of buildings now on architects' boards, which promise to develop a large amount of tonnage before long. Prices from store are 1.95c. to 2c. Mill prices at Chicago are as follows: Beams and Channels, 3 to 15 in., inclusive, 1.78c.; Angles, 3 to 6 in., ¼-in. and heavier, 1.78c.; larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 6 in. or one or both legs, 1.88c.; Beams, larger than 15 in., 1.88c.; Zees, 3 in. and over, 1.78c.; Tees, 3 in. and over, 1.83c.

**Plates.**—Not only is there a moderate increase in the general run of orders and specifications, but the situation is prospectively improved by the anticipated tonnage that will be required for the construction of cars for which orders have been placed. The Sheared Plate mill at the South Works of the Illinois Steel Company is in operation this week, but the Universal mill is idle. Prices continue to be shaded by some mills to the extent of $2 a ton. We quote mill shipments as follows: Tank Plates, ¼-in. and heavier, wider than 6¼ and up to 100 in. wide, inclusive, car lots, Chicago, 1.78c.; 3-16 in., 1.88c.; Nos. 7 and 8 gauge, 1.93c.; No. 9, 2.03c.; Flange quality, in widths up to 100 in., 1.88c., base, for ¼-in. and heavier, with the same advance for lighter weights; Sketch Plates, Tank quality, 1.88c.; Flange quality, 1.98c. Store prices on Plates are as follows: Tank Plates, ¼-in. and heavier, up to 72 in. wide, 2c. to 2.10c.; from 72 to 96 in. wide, 2.10c. to 2.20c.; 3-16 in. up to 60 in. wide, 2.10c. to 2.25c.; 72 in. wide, 2.30c. to 2.40c.; No. 8, up to 60 in. wide, 2.10c. to 2.15c.; Flange and Head quality, 0.25c. extra.

**Sheets.**—Sheets are moving in better volume as the result of an increased demand. It is noted that buyers are almost uniformly insisting upon prompt deliveries, which is taken as an evidence of scanty stocks and an indisposition to anticipate requirements beyond actual present needs. While betterment is observed all along the line, it is noted that Galvanized Sheets has felt the improvement to a larger extent than Black Sheets. Prices are still susceptible to concessions of from $1 to $2 a ton, but owing to the gradual filling up of the order books of the smaller mills a firmer tendency is developing. We quote mill shipments as follows, Chicago: Blue Annealed, No. 10, 1.98c.; No. 12, 2.05c.; No. 14, 2.08c.; No. 16, 2.18c.; Box Annealed, Nos. 17 to 21, 2.43c.; Nos. 22 to 24, 2.48c.; Nos. 25 and 26, 2.53c.; No. 27, 2.58c.; No. 28, 2.68c.; No. 29, 2.78c.; No. 30, 2.88c.; Galvanized Sheets, Nos. 10 to 14, 2.63c.; Nos. 15 and 16, 2.83c.; Nos. 17 to 21, 2.98c.; Nos. 22 to 24, 3.13c.; Nos. 25 and 26, 3.33c.; No. 27, 3.53c.; No. 28, 3.73c.; No. 30, 4.23c.; Black Sheets from store: Blue Annealed, No. 10, 2.15c.; No. 12, 2.20c.; No. 14, 2.25c.; No. 16, 2.35c.; Box Annealed, Nos. 18 to 21, 2.60c.; Nos. 22 to 24, 2.65c.; No. 26, 2.70c.; No. 27, 2.75c.; No. 28, 2.85c.; No. 30, 3.25c.; Galvanized from store: Nos. 10 to 16, 3c.; Nos. 18 to 20, 3.15c.; Nos. 22 to 24, 3.30c.; No. 26, 3.50c.; No. 27, 3.70c.; No. 28, 3.90c.; No. 30, 4.40c. to 4.45c.

**Bars.**—Nowhere in the market is evidence of improvement more pronounced than in Steel Bars. Mill capacities are steadily filling up owing to the increased liberality with which specifications are being offered. All of the Bar mills of the Bay View Works of the Illinois Steel Company are active this week, and all of the Western mills of the Republic Iron & Steel Company are likewise running at fuller capacities. The demand for Iron Bars has not improved correspondingly, though a fair run of orders from jobbers and manufacturers is being entered. The relatively high prices of Scrap material have strengthened the Bar market in that it has a tendency to hold prices firm. Quotations, Chicago, are as follows: Steel Bars, 1.58c., with half extras; Iron Bars, 1.50c.; Hoops, No. 13 and lighter, 1.98c., full extra Hoop card; Bands, No. 12 gauge and heavier, 1.58c., half extra Steel Bar card; Soft Steel Angles and Shapes, 1.68c., half extras. Store prices are as follows: Bar Iron,

2c. to 2.15c.; Steel Bars, 1.90c. to 2c.; Steel Bands, 1.90c., as per Bar card, half extras; Soft Steel Hoops, 2.25c. to 2.35c., full extras.

**Merchant Pipe.**—Week by week small gains are noted in the general volume of business, but they are not great enough to make a notable increase in the tonnage placed. Buyers continue to gauge their orders by the extent of nearby requirements, which seem to increase very slowly. The following mill discounts are quoted: Black Pipe, ¾ to 6 in., 73.2; 7 to 12 in., 70.2; Galvanized, ¾ to 6 in., 63.2. These discounts are subject to one point on the base. From store, in small lots, Chicago jobbers quote 73 per cent. on Black Steel Pipe, ¾ to 6 in. About three points above these prices is asked for Iron Pipe.

**Boiler Tubes.**—Railroad Locomotive Tubes are in slightly better demand because of the imperative needs of the railroads in repair work. The movement of Merchant Tubes is naturally controlled by the state of activity in Boiler shops, in which there is but little improvement observed. Mill quotations for future delivery, on the base sizes, are as follows: 2¾ to 4½ in., inclusive, Steel Tubes, 63.2; Iron, 50.2; Seamless, 50.2; 2½ in. and smaller, and lengths over 18 ft., and 2½ in. and larger, and lengths over 22 ft., 10 per cent. extra. Store prices are as follows:

| | Steel. | Iron. | Seamless. |
|---|---|---|---|
| 1 to 1½ in | 35 | 35 | 35 |
| 1¾ to 2¼ in | 50 | 35 | 35 |
| 2½ in | 52½ | 35 | 35 |
| 2¾ to 5 in | 60 | 47½ | 47½ |
| 6 in. and larger | 50 | 35 | .. |

**Merchant Steel.**—The same influences that favorably affect the demand for Steel Bars are effective in bringing out specifications for Merchant Steel in a slightly increased volume. In other respects conditions are unchanged, and the market is without developments of special interest. We quote as follows: Planished or Smooth Finished Tire Steel, 1.78c.; Iron Finish, up to 1½ x ½ in., 1.73c., base, Steel card; Iron Finish, 1½ x ½ in. and larger, 1.58c., base, Tire card; Channels for solid Rubber Tires, ¾ to 1 in., 2.08c., and 1⅛ in. and larger, 1.98c.; Smooth Finished Machinery Steel, 2.08c.; Flat Sleigh Shoe, 1.63c.; Concave and Convex Sleigh Shoe, 1.83c.; Cutter Shoe, 2.05c.; Toe Calk Steel, 2.13c.; Railroad Spring, 1.98c.; Crucible Tool Steel, 7¼c. to 8c., and still higher prices are asked on special grades. Cold Rolled Shafting on contracts for 100 tons and over, 57 per cent. off; 56 per cent. off in car lots; 52 per cent. in less than car lots, on which carload freight is allowed within base territory.

**Cast Iron Pipe.**—Of the several small municipal lettings awarded last week, that of 800 tons for Hamilton, Ohio, was the most important; this was secured by the United States Cast Iron Pipe & Foundry Company, which also entered four or five others of smaller tonnage. Practically all of the business now in sight is of like character, and includes no large lots. Business in Gas Pipe is extremely quiet with but little inquiry. Prices are unchanged, which we quote nominally, per net ton, Chicago, as follows: Water Pipe, 4 in., $27; 6 to 12 in., $26; 16 in. and up, $25, with $1 extra for Gas Pipe.

**Metals.**—Since the spurt of buying in August, when some orders for round lots were placed, the demand for Copper has settled back to hand to mouth purchases. As a result orders are small, but fairly numerous, and, though the tonnage of new business for September is comparatively light, yet the shipments against contracts indicate that consumption is gradually increasing. Prices on all Metals are unchanged, but fairly firm. Slight improvement is noted on a few grades of Old Material, the demand for which is relatively the same as for new Metals. Quotations are as follows: Casting Copper, 13¾c.; Lake, 14c. to 14¼c., in car lots for prompt shipment; small lots, ¼c. to ⅜c. higher; Pig Tin, car lots, 32½c.; small lots, 34½c.; Lead, Desilverized, 4.60c. to 4.65c., for 50-ton lots; Corroding, 4.85c. to 4.95c., for 50-ton lots; in car lots, 2¼c. per 100 lb. higher; Spelter, 4.80c.; Cookson's Antimony, 10½c., and other grades, 9¾c. to 10¼c.; Sheet Zinc is $7, f.o.b. La Salle, in car lots of 600-lb. casks. On Old Metals we quote: Copper Wire, 13½c.; Heavy Copper, 13¼c.; Copper Bottoms, 12c.; Copper Clips, 13¼c.; Red Brass, 12c.; Yellow Brass, 9½c.; Light Brass, 7c.; Lead Pipe, 4.30c.; Zinc, 3¾c.; Pewter, No. 1, 21c.; Tin Foil, 23c.; Block Tin Pipe, 25c.

**Old Material.**—The small tonnage of railroad material offered in this market last week brought better prices than it was expected would be secured. Some grades, in fact, realized top prices. One lot of 400 tons of No. 1 Wrought was taken at $14, delivered, equivalent to about $13.75, connecting line. Old Iron Rails are decidedly stronger and, from the tone of the market on these and Iron Fish Plates, it is believed that some of the prominent users of these materials are about to enter the market for a considerable tonnage. No. 1 Cast Scrap is firmer, while Stove Plate and Light Cast Scrap have sagged off about 25c. a ton. At least one of the local rolling mills is adding as opportunity offers to its stock piles, but the majority of these interests seem to be pretty well covered for present needs. The Iron foundries are buying a little more freely, but the consumptive demand is in no direction strong enough to warrant bullish sentiment in Old Material. Prices have in some instances been firmed up by the competition of dealers for material to cover short sales. Two lists of railroad material are out; one of 900 tons from the Chicago, Milwaukee & St. Paul and one of 3100 tons from the Northern Pacific. In the latter are 500 tons of Railroad Wrought and 500 tons of Rerolling Steel Rails. We quote per gross ton, f.o.b. Chicago, as follows:

| | |
|---|---|
| Old Iron Rails | $18.00 to $18.50 |
| Old Steel Rails, rerolling | 16.00 to 16.50 |
| Old Steel Rails, less than 3 ft | 15.00 to 15.50 |
| Relaying Rails, standard sections, subject to inspection | 20.00 to 21.00 |
| Old Car Wheels | 15.25 to 15.75 |
| Heavy Melting Steel Scrap | 13.00 to 13.50 |
| Frogs, Switches and Guards, cut apart | 13.50 to 14.00 |
| Mixed Steel | 10.25 to 10.75 |

The following quotations are per net ton:

| | |
|---|---|
| Iron Fish Plates | $17.00 to $17.50 |
| Iron Car Axles | 19.00 to 19.50 |
| Steel Car Axles | 17.50 to 18.00 |
| No. 1 Railroad Wrought | 13.25 to 13.75 |
| No. 2 Railroad Wrought | 12.25 to 12.75 |
| Railway Springs | 13.00 to 13.50 |
| Locomotive Tires, smooth | 13.25 to 13.75 |
| No. 1 Dealers' Forge | 10.25 to 10.75 |
| Mixed Busheling | 8.25 to 8.75 |
| Iron Axle Turnings | 6.75 to 7.25 |
| Soft Steel Axle Turnings | 6.75 to 7.25 |
| Machine Shop Turnings | 6.75 to 7.25 |
| Cast Borings | 6.00 to 6.50 |
| Mixed Borings, &c | 5.75 to 6.25 |
| No. 1 Mill | 8.00 to 8.50 |
| No. 2 Mill | 7.00 to 7.50 |
| No. 1 Boilers, cut to Sheets and Rings | 9.00 to 9.50 |
| No. 1 Cast Scrap | 13.00 to 13.50 |
| Stove Plate and Light Cast Scrap | 11.75 to 12.25 |
| Railroad Malleable | 12.25 to 12.75 |
| Agricultural Malleable | 11.25 to 11.75 |
| Pipes and Flues | 9.75 to 10.25 |

## St. Louis.

ST. LOUIS, September 12, 1908.

That important enlargements are under way, increasing the capacity of certain manufacturing plants, indicates confidence in the ability of the market to provide a demand for additional supplies in some lines. It is given out that the C. L. Gray Construction Company, which has the contract for erecting the La Salle Building, will soon place contracts for materials. It is to be a 14-story office building, to be erected at the corner of Broadway and Olive street, and to cost upward of $400,000. There is evidence of a greater degree of activity in the direction of preparing for the construction of the new St. Louis Bridge over the Mississippi River, and plans have been sent to the War Department for approval. The delay with respect to the erection of the bridge is unfortunate, but the city authorities are now seeking to obtain the views of the Government regarding the matter of location. It is reported that the American Steel Foundries will soon start up its Granite City Works. A large order for freight cars (part of which will be of steel) has been placed with the leading car builders here.

**Coke.**—While there are numerous inquiries for Coke, actual sales are of moderate volume. There is, however, an optimistic feeling, and leading sellers are believers in a more active demand. Orders on specifications are liberal. The market is firm and 1909 Coke is held at 25 cents per ton over the figures asked for 1908. We quote for Connellsville 72-hr. Foundry Coke, $2.25 to $2.50, at oven. The first half of 1909 commands a premium above delivery over the entire year.

**Pig Iron.**—Leading sellers state that they find their customers are ordering out freely; in fact, in some cases anticipating dates named in the specifications. Owing to the attitude of some of the principal producers, either having withdrawn from the market or asking a price which is out of line with current quotations, there is a firm feeling. Producers are also aware that sales have been considerably below the normal and a more urgent demand is liable to be witnessed in the near future. Inquiries for 1909 Iron are reported to be quite numerous, but business is restricted through lack of offerings and the disposition to hold for an advance. One house gives out the sale of a moderate quantity of 1909 Iron at $13.50. We quote for No. 2 Foundry $13 per ton f.o.b. Birmingham, shipment over the balance of 1908. It is believed that a good deal of Iron will be wanted in St. Louis territory, as it is reported that only about one-half the normal quantity has been placed.

**Finished Iron and Steel.**—The call for Structural Iron continues fairly good, both from local and country territory, but the sales are in small lots. There is a fair inquiry for Bars from jobbers and manufacturers. In railroad track material, Bolts, Spikes, Tees, Angles and Channels, &c., there is quite liberal inquiry. Standard Rails are dull, but coal and mining interests are buying Light Rails in moderate quantities. Machine castings are in slow demand.

**Lead, Spelter, &c.**—Lead is quiet but steady at 4.60c. The demand for corroding purposes continues good. It is thought there is no immediate prospect of material change in price. The Spelter market is firm. A leading producer

is asking 4.70c., and some smaller sales have been made at better figures. The demand is improving and the outlook is good. Ore at Joplin is quoted at $37 to $38. Tin is off in price, and, being weak statistically, tends to ease in tone. Antimony is ruling dull. Copper is being regarded optimistically, with gradual improvement expected as the fall season progresses. The demand for manufactures of Brass is fair.

**Old Materials.**—In the absence of any considerable demand from melters, the market at present is principally confined to transactions on the part of dealers. Prices show firmness, without any advance. The Missouri Pacific Railroad sold this week 1000 tons of material, which was taken by local dealers. The Vandalia Railroad closed out 700 tons of miscellaneous material. Relaying Rails continue scarce and are wanted. We quote as follows, per gross ton, f.o.b. St. Louis:

| | |
|---|---|
| Old Iron Rails | $15.50 to $16.00 |
| Old Steel Rails, rerolling | 14.50 to 15.00 |
| Old Steel Rails, less than 3 ft | 13.75 to 14.25 |
| Relaying Rails, standard sections, subject to inspection | 22.50 to 23.50 |
| Old Car Wheels | 14.50 to 15.00 |
| Heavy Melting Steel Scrap | 13.00 to 13.50 |
| Frogs, Switches and Guards, cut apart | 13.00 to 13.50 |
| Mixed Steel | 11.00 to 11.50 |

The following quotations are per net ton:

| | |
|---|---|
| Iron Fish Plates | $14.50 to $15.00 |
| Iron Car Axles | 17.50 to 18.00 |
| No. 1 Railroad Wrought | 12.50 to 13.00 |
| No. 2 Railroad Wrought | 11.50 to 12.00 |
| Railway Springs | 12.00 to 12.50 |
| Locomotive Tires, smooth | 13.00 to 13.25 |
| No. 1 Dealers' Forge | 10.50 to 11.50 |
| Mixed Borings, &c | 5.50 to 6.00 |
| Machine Shop Turnings | 8.00 to 8.50 |
| No. 1 Boilers, cut to Sheets and Rings | 9.50 to 10.00 |
| No. 1 Cast Scrap | 12.00 to 12.50 |
| Stove Plate and Light Cast Scrap | 10.50 to 11.00 |
| Railroad Malleable | 11.00 to 11.50 |
| Agricultural Malleable | 10.00 to 10.50 |
| Pipes and Flues | 8.75 to 9.50 |

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The O'Brien Boiler Works Company states that while business was not so active in August as was the case in July, there is now more inquiry from both city and country sections for boilers.

The Westinghouse Air Brake Company finds the lumber business improving at the South, necessitating better railroad facilities, which is bringing about more demand for air brakes.

The L. M. Rumsey Mfg. Company reports the demand for lead pipe, sheet lead and plumbers' materials generally to be increasing, but the trade has been buying in small lots. As the repeat orders come often, the volume of business is of good proportions.

The Commonwealth Steel Company, being mainly dependent on railroads, is not able to run full and its line of orders is principally for repair work.

The Scullin-Gallagher Iron & Steel Company increased its working force September 1 and is likely soon to be running more nearly normal.

The Siebel-Suessdorff Copper & Iron Company finds a marked improvement over summer conditions; the demand is for Iron mainly and coming principally from Coal mines.

The Williams Patent Crusher & Pulverizer Company finds a good demand for its special machines, particularly for grinding alfalfa.

The Jos. F. Wrangler Boiler & Sheet Iron Works states that the local demand for boilers is somewhat better.

The Standard Stamping Company finds a disposition among its customers to buy in smaller lots than they usually order, but as they buy oftener, business aggregates quite a good volume.

The Ewald Iron Company states that the demand for its specialties—staybolts and engine bolts—is improving, and now that the railroad shops are open a still further enlargement of business from that source is looked for.

The American Air Brake Company reports being fairly busy on repair work, which is expected to lead up to new equipment business from railroads.

The Nixdorff-Krein Mfg. Company states that the demand for saddlery hardware is likely to be good this fall after the cotton crop begins to move. It is busy manufacturing its line of products in anticipation of the demand.

The Whitman Agricultural Company is entering upon the new season for agricultural implements with good prospects for keeping the plant busy.

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It is stated that the infringement suit of Percy Donner against the American Sheet & Tin Plate Company will be tried in a short time at Washington, D. C. Mr. Donner makes the claim that the Bray continuous process of rolling sheets at the South Sharon plant of the American Sheet & Tin Plate Company is an infringement on his own patent, which the defendant company absolutely denies.

## Pittsburgh.

PARK BUILDING, September 16, 1908.—(*By Telegraph.*)

**Pig Iron.**—There has been a little more inquiry for Pig Iron in the last few days, some sales of small lots having been made with larger tonnages pending. The Massillon Iron & Steel Company, Massillon, Ohio, has bought about 4500 tons of Nos. 1, 2 and 3 Foundry on the basis of about $14.75 to $15, $14.50 and $14, respectively. The Bucyrus Steel Casting Company has bought about 4000 tons of Basic for delivery over the next three or four months at about $14.50, Valley furnace, and the Westinghouse Machine Company has bought 500 to 600 tons of Nos. 1 and 2 Foundry. The Shenango Furnace Company, Sharpsville, has started its third stack, and Neville Island No. 1 stack of the American Steel & Wire Company has also been started. We quote Standard Bessemer Iron at $15, Basic and Malleable Bessemer $14.50, No. 2 Foundry $14.40 to $14.50 and Forge about $13.50, all at Valley furnace, the freight rate to Pittsburgh being 90c. a ton.

**Steel.**—A little greater movement is observed in Billets, several of the forges taking out more Steel on contracts, while some other Billet consumers are specifying more freely. Specifications against contracts for Sheet and Tin Bars have fallen off, especially on Tin Bars. Prices of Steel are firm, and we can report a sale of 1000 tons of Billets to a consumer in the Pittsburgh District at the full official price. We quote Bessemer and Open Hearth Billets, 3⅞ in. and larger, up to and including 0.25 carbon, $25; 0.26 to 0.60 carbon, $1 extra; over 0.60 carbon, $2 extra, all f.o.b. Pittsburgh. For Wheeling, Martins Ferry, Follansbee, Newcastle, Sharon, Steubenville and Washington (Pa.) delivery, half the freight, or 50c. additional, is charged. Sheet and Tin Bars in random lengths are $27, f.o.b. Pittsburgh. Forging Billets take $2 advance over Rolling Billets.

(*By Mail.*)

An inclination on the part of some jobbers, mostly in the West and Southwest, and at Pacific Coast points, to anticipate requirements on some lines of product, notably Sheets, Pipe and Wire products, is the most encouraging feature of an otherwise quiet week. On most lines, consumers are still buying from hand to mouth for current needs. So far this week there has been a perceptible gain in actual tonnage entered over the first two days of last week. There is a fair amount of buying in Pig Iron, but at low prices, which to some furnaces that are not strictly modern, and do not have their own supply of Ore and Coke, are below cost. The output of Pig Iron in the two valleys is a little better, the active stacks being Shenango Furnace Company three, Stewart Iron Company one, Pickands, Mather & Co., one, M. A. Hanna & Co., one, Ohio Iron & Steel Company one, and Struthers' Furnace Company one. The production is now running close to 14,000 tons a week and stocks on hand at the furnaces are a little less than 60,000 tons. Bessemer Iron is selling at about $15, Basic, and Malleable Bessemer at $14.50, and Northern No. 2 Foundry at about $14.50, all at Valley furnace, but on some No. 2 Foundry for Western shipment, the price has been shaded. There is a little freer movement in Billets, some of the Forges taking out more Steel, but in Sheet and Tin Bars the tonnage is falling off. In finished Iron and Steel, there is a fair volume of business, but it is getting so late in the year, with the Presidential election only about six weeks away, that the belief is pretty general that business will run along about as it is now until the result of the election is known. Some shading is being done in prices on a few lines, but the finished markets as a whole are fairly strong. A report of an official reduction of $2 a ton in Black and Galvanized Sheets was investigated and found to be untrue. Coke continues dull, and is selling at the lowest prices reached in some years. Scrap is neglected, and the tone of the market is weak.

**Ferromanganese.**—The market seems to be a shade easier, and we quote 80 per cent. foreign Ferro at $43 to $43.25, seaboard, the freight rate to Pittsburgh being $1.95 a ton. We note a sale of 50 tons at $43, and another sale of about 50 tons at the reported price of $43.25, seaboard.

**Ferrosilicon.**—While makers are firm, there is not much inquiry, and we quote 50 per cent. at $67.50 to $70, Pittsburgh.

**Muck Bar.**—Prices are merely nominal in the absence of any new business. We quote best grades, made from all Pig Iron, at about $25, Pittsburgh.

**Wire Rods.**—Active conditions in the Wire trade are reflected in Rods, which have been in fairly strong demand for some time. This applies both to Chain Rods and to Rods for drawing into Wire. We quote Bessemer Rods at $33; Basic, $34, and Chain Rods, $33, Pittsburgh.

**Skelp.**—There is not much inquiry, but a fair movement from the mills is noted on specifications against contracts. We quote: Grooved Steel Skelp, 1.45c. to 1.50c.; Sheared Steel Skelp, 1.50c. to 1.60c.; Grooved Iron Skelp, 1.60c. to 1.70c., and Sheared Iron Skelp, 1.70c. to 1.75c., f.o.b. Pittsburgh.

**Steel Rails.**—No large contract has been placed and none is in sight. The Carnegie Steel Company has taken an order for about 2700 tons of 60-lb. Rails for Idaho, but these will be rolled by the Illinois Steel Company. Some specifications have also come in against bookings. The Carnegie Steel Company took in the past week about 1000 tons of Light Rails. No. 3 Rail mill at the Edgar Thomson plant is down this week, while Nos. 1 and 2 are running to about 35 per cent. of capacity. Prices on Light Rails seem to be firmer, and one or two mills are refusing to accept orders that at the prices offered they would probably have taken a month or two ago. Prices on new Light Rails, which continue to be shaded about $2 a ton by Rerolling Rail mills, are as follows: $25 for 25 to 45 lb. Sections, with $1 advance for 20 lb., $2 advance for 16-lb. and $3 advance for 12-lb. Standard Sections are $28, at mill, and Angle Splice Bars, 1.65c., at mill.

**Structural Material.**—The Fort Pitt Bridge Works was the lowest bidder on the Steel bridge to cross the Monongahela River at Monongahela City, Pa., its bid having been $163,900. The bridge will take about 2700 tons, and while the contract has not been actually placed, it will likely go to this interest. The Pittsburgh Bridge & Iron Company has taken a Steel building for Spang, Chalfant & Co., 285 tons, and the McClintic-Marshall Construction Company has taken about 500 tons for the Standard Oil Company. Some large inquiries are in the market from railroads for bridges, one for Hackensack, N. J., about 2000 tons, and another for a Western road, about 4000 tons. Bids on these two structures will go in in about a week. We quote, f.o.b. mill, Pittsburgh: I-Beams, H-Beams and Channels, 3 to 15 in., inclusive, 1.60c., net; Beams over 15 in., 1.70c., net; Angles, 3 to 6 in., inclusive, ¼ in. and up, 1.60c., net; Angles, over 6 in., 1.70c., net; Angles, 3 x 3 in. and up, less than ¼ in., 1.50c., base, half extras, Steel Bar card; Tees, 3 in. and up, 1.65c., net; Zees, 3 in. and up, 1.60c., net; Angles, Channels and Tees under 3 in., 1.50c., base, half extras, Steel Bar card; Deck Beams and Bulb Angles, 1.90c., net; Hand Rail Tees, 3c., net; Checkered and Corrugated Plates, 3c., net.

**Plates.**—The Carnegie Steel Company has taken about 6000 tons of Plates for lock bar Pipe for an extension to the water works system at Springfield, Mass. No other large work has come up. All the Plate mills are short of orders, and able to run to only about 50 per cent. of capacity. There is some irregularity in prices, which are being shaded in some cases from $1 to $2 a ton. This is being done mostly by mills that roll only the narrow sizes. Regular prices are as follows: Tank Plates, ¾ in. thick, 6¼ in. up to 100 in. wide, 1.60c., base, at mills, Pittsburgh. Extras over this price are as follows:

Tank, Ship and Bridge quality, ¼ in. thick on edges, 100 in. wide, down to but not including 6 in. wide, is taken as base.

Steel Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per square foot, shall be considered ¼-in. Plate. Steel Plates over 72 in. wide must be ordered ¼-in. thick on edge, or not less than 11 lb. per square foot, to take base price. Steel Plates over 72 in. wide ordered less than 11 in. per square foot down to the weight of 3-16-in. shall take the place of 3-16-in.

Percentages as to overweight on Plates, whether ordered to gauge or weight, to be governed by the Association of American Steel Manufacturers' Standard Specifications.

| | |
|---|---|
| Gauges under ¼-in. to and including 3-16-in. Plates on thin edges | $0.10 |
| Gauges under 3-16-in. to and including No. 8 | .15 |
| Gauges under No. 8 to and including No. 9 | .25 |
| All sketches (excepting straight taper Plates varying not more than 4 in. in width at ends, narrowest end being not less than 30 in.) | .10 |
| Complete Circles | .20 |
| Boiler and Flange Steel Plates | .10 |
| "A. B. M. A." and ordinary Firebox Steel Plates | .20 |
| Still Bottom Steel | .30 |
| Marine Steel | .40 |
| Locomotive Firebox Steel | .50 |
| Shell grade of Steel is abandoned. | |
| For widths over 100 in. up to 110 in | .05 |
| For widths over 110 in. up to 115 in | .10 |
| For widths over 115 in. up to 120 in | .15 |
| For widths over 120 in. up to 125 in | .25 |
| For widths over 125 in. up to 130 in | .50 |
| For widths over 130 in | 1.00 |

TERMS.—Net cash 30 days. Pacific Coast base, 1.50c., f.o.b. Pittsburgh.

**Sheets.**—The American Sheet & Tin Plate Company has received an order for 430 tons of 26 gauge Galvanized Sheets, 27 x 110, for shipment to Canada, for box car roofs. This company has developed a considerable trade in Galvanized Sheets for this purpose and is also doing quite an export business in Black and Galvanized Sheets, making regular shipments to Africa, Australia, Russia and South America. It is running about 60 per cent. of its Sheet mill capacity and reports an increasing demand. There is some cutting in prices, but as a rule this does not exceed $2 a ton. For shipment from mill regular prices are as follows: Blue Annealed Sheets, No. 10 and heavier, 1.80c.; Nos. 11 and 12, 1.85c.; Nos. 13 and 14, 1.90c.; Nos. 15 and 16, 2c.; Box Annealed, Nos. 17 to 21, 2.25c.; Nos. 22 to 24, 2.30c.; Nos. 25 and 26, 2.35c.; No. 27, 2.40c.; No. 28, 2.50c.; No. 29, 2.60c.; No. 30, 2.70c. Galvanized Sheets: Nos. 10 and 11, 2.45c.; Nos. 12 and 14, 2.55c.; Nos. 15 and 16, 2.65c.; Nos. 17 to 21, 2.80c.; Nos. 22 and 24, 2.95c.; Nos. 25 and 26, 3.15c.; No. 27, 3.35c.; No. 28, 3.55c.; No. 29, 3.70c.; No. 30, 3.95c.; No. 28, Painted Roofing Sheets, $1.75 per square, and Galvanized Roofing Sheets, No. 28, $3.10 per square, for 2½-in. corrugations. These prices are subject to rebate of 5c. per 100 lb. to the large trade under the usual conditions, jobbers charging the usual advances for small lots from store.

**Tin Plate.**—Very little new business is coming in, and shipments by the mills now represent specifications against contracts taken early in the year. The American Sheet & Tin Plate Company is operating about 45 per cent. of its Tin Plate capacity, having started up last week in full its Laughlin Works at Martins Ferry, Ohio, which contains 23 hot mills; but the Sabraton Works, at Morgantown, W. Va., was shut down on account of lack of water. As a rule the independent Tin Plate mills are running to about 50 per cent. capacity. One leading mill was shut down all of last week, but is operating six mills this week. Some shading is being done in prices of Tin Plate, but so far this is not serious. We quote $3.70 for 100-lb. Cokes, 14 x 20, f.o.b. Pittsburgh, terms 30 days, less 2 per cent. off for cash in 10 days, this price being subject to the usual rebate of 5c. per base box in large lots.

**Hoops and Bands.**—A fair amount of new business is coming in, but the mills are running mostly on specifications against contracts. It is said that work will be pushed actively on the new Steel Hoop mill to be erected by Frank L. Clark and his associates at Punxsutawney, Pa. We are advised that regular prices are being maintained at follows: Steel Hoops, 1.80c., base, full Hoop card prices; Steel Bands, 1.40c., base, half Steel card extra, all f.o.b. cars Pittsburgh, in carload lots, for delivery during 1908.

**Bars.**—A slightly larger tonnage of Iron Bars is being entered by the mills, and they are being operated to fuller capacity. Specifications against contracts for Steel Bars are coming in at a fairly satisfactory rate, but new business is light, as most consumers covered some time ago. The leading makers of Steel Bars are said to be operating to about 60 per cent. of capacity, and are shipping out their products as fast as made. We are advised that regular prices on both Iron and Steel Bars are being maintained. We quote Iron Bars at 1.40c., base, for Pittsburgh delivery, and 1.35c., base, for Western points, to which freight is added, except Chicago, the price for which is 1.50c., delivered. We quote Steel Bars at 1.40c., Pittsburgh, for base sizes.

**Merchant Steel.**—While little new business is being placed with the mills, a fairly satisfactory volume is coming in in specifications against contracts. The implement makers will soon be busier than they are now, and as they are the largest consumers a heavier demand for Tire and other Steels is looked for as the season advances. The demand for Shafting continues quite active, and two or three of the leading makers have more tonnage on their books than for some months. We quote Cold Rolled Shafting at 57 per cent. off in carloads and 52 per cent. in less than carloads, delivered in base territory. Prices are as follows: Smooth Finished Machinery Steel, 1.80c. to 1.90c.; Flat Sleigh Shoe, 1.75c. to 1.85c.; Cutter Shoe Steel, 2.15c. to 2.25c.; Toe Calk, 1.90c. to 1.95c.; Railroad Spring Steel, 1.60c. to 1.75c., the higher price being for Pennsylvania Railroad analysis. Carriage Spring Steel is 1.80c.; Tire Steel, Iron finish, 1½ x ½ in. and heavier, 1.40c.; under 1½ in., 1.55c. Planished Tire Steel is 1.60c., all f.o.b. at mill.

**Railroad Spikes.**—The mills are short of work on the standard sizes. The Great Northern inquiry for a round tonnage of Railroad Spikes referred to last week has not yet been placed. The demand for the smaller sizes of Spikes is active, and on these the mills have some work ahead. We quote: Standard sizes, 4½ x 9-16 in., at $1.70, and the smaller sizes at $1.80 per 100 lb. in carload and larger lots, with an advance of 5c. per 100 lb. for less than carload, f.o.b. Pittsburgh.

**Spelter.**—The tone of the market is slightly firmer, and prime grades of Western Spelter are now held at about 4.60c., East St. Louis, equal to 4.72½c., Pittsburgh.

**Merchant Pipe.**—A slow but steady increase is noted in new business in Merchant Pipe, and the leading mills are able to operate to about 60 per cent. of capacity. On the larger sizes they are pretty well filled up, some large gas and oil lines requiring a heavy tonnage having recently been placed. We are advised that prices on Steel Pipe are being fairly well maintained, but on Iron Pipe some cutting is being done. Discounts on Steel Pipe, ¾ to 6 in., to the large trade are now 76 and 5 per cent. off list. Regular discounts are as follows:

*Merchant Pipe.*

| | Jobbers, carloads, Steel. Black. % | Galv. % |
|---|---|---|
| ⅛ to ¼ in | 67 | 51 |
| ⅜ in | 69 | 55 |
| ½ in | 71 | 59 |
| ¾ to 6 in | 75 | 65 |
| 7 to 12 in | 72 | 57 |
| Extra strong, plain ends: | | |
| ⅛ to ⅜ in | 60 | 48 |
| ½ to 4 in | 67 | 55 |
| 4½ to 8 in | 63 | 51 |
| Double extra strong, plain ends: | | |
| ½ to 8 in | 56 | 45 |

Discounts on Genuine Iron Pipe are as follows:

| | Black. % | Galv. % |
|---|---|---|
| ⅛ to ¼ in | 65 | .. |
| ⅜ in | 67 | 53 |
| ½ in | 69 | 57 |
| ¾ to 6 in | 73 | 63 |
| 7 to 12 in | 70 | 55 |
| Extra strong, plain ends: | | |
| ⅛ to ⅜ in | 58 | 46 |
| ½ to 4 in | 65 | 53 |
| 4½ to 8 in | 61 | 49 |
| Double extra strong, plain ends: | | |
| ½ to 8 in | 54 | 43 |

**Boiler Tubes.**—A slightly heavier demand for Merchant Tubes is taken to indicate that the boiler shops are probably getting a little busier. The railroads are not placing much business in Railroad Tubes, only a few orders coming out for small lots for actual needs. Regular discounts on Merchant Tubes in small lots, on which an extra 5 per cent. is allowed in carloads, but which discounts are being shaded, are as follows:

*Boiler Tubes.*

| | Iron. | Steel. |
|---|---|---|
| 1 to 1½ in | 42 | 47 |
| 1¾ to 2¼ in | 42 | 59 |
| 2½ in | 47 | 61 |
| 2¾ to 5 in | 52 | 65 |
| 6 to 13 in | 42 | 59 |

2½ in. and smaller, over 18 ft. long, 10 per cent. net extra.
2¾ in. and larger, over 22 ft. long, 10 per cent. net extra.

**Iron and Steel Scrap.**—The market is exceedingly quiet, large consumers being pretty well covered. Prices are showing an easier tone, and it is probable that on a firm offer, and for any large tonnage, our prices could be shaded. We quote Heavy Steel Scrap, for Pittsburgh, Sharon, Steubenville, Follansbee and Monessen delivery, at $14.25 to $14.50, while Heavy Steel Scrap, for hand charged Open Hearth furnaces, and for pieces weighing 10 lb. minimum and 300 lb. maximum, is $1 a ton higher. Dealers quote on other grades of Scrap as follows: Cast Iron Borings, $8.75 to $9; Bundled Sheet Scrap, $12.25 to $12.50; No. 1 Cast Scrap, $14.25 to $14.50; No. 1 Railroad Wrought, $15 to $15.25; No. 1 Busheling Scrap, $13.50 to $14; No. 2, $10 to $10.25; Sheet Bar Crop Ends, $17.50 to $18. There is a heavy demand for Iron Axles, and this is the only product on the whole list that has advanced in price. We quote these at $22 to $22.50, and they are firm. Steel Axles are $19; Low Phosphorus Melting Stock, $18.50 to $19; Rerolling Rails, $16 to $16.25; Machine Shop Turnings, $9.50 to $9.75; Railroad Malleable, $14; Grate Bars, $12.25 to $12.50; Old Car Wheels, $14.50 to $14.75, all in gross tons.

**Coke.**—We do not find any improvement either in demand or prices. The secretary of the Independent Coke Producers' Association reports that out of a total of 36,645 ovens owned by independent operators, 19,084 were in blast last week and 17,561 were idle. Coke plants are suffering severely from the long dry spell, and many works are unable to get water enough to operate. The Frick Coke Company operated last week 10,753 ovens out of a total of 19,675, or a percentage of 54.7 in operation. Prices of Coke continue low and do not afford much profit to the operator. Strictly Connellsville Furnace Coke for prompt shipment can still be had at about $1.50 a ton at oven, while for balance of this year shipment $1.65 is asked. For delivery over first half of next year quotations on Furnace Coke range from $1.75 up to $1.90, at oven. The output of Coke in the Upper and Lower Connellsville regions is running about 200,000 tons a week.

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H. A. Ross, N. A. Ross and C. C. Morrison, all of Pittsburgh, have applied for a charter of incorporation as the Henry A. Ross Company, with a capital of $25,000, to buy and sell Iron and Steel, Coke and Railroad Supplies. The offices will probably be located in the German National Bank Building, Pittsburgh.

## Birmingham.

BIRMINGHAM, ALA., September 14, 1908.

**Pig Iron.**—The volume of business transacted in this market in the past fortnight is comparatively small. A very limited proportion of recent inquiries has resulted in sales. Especially is this true in cases where Northern competition has featured, and the outlook is not indicative of a material improvement in the demand for some weeks. The established schedule of prices has been adhered to, and, as evinced by the result of negotiations in quarters where other Irons were available, practically no departures from the basis have been effected. Among the sales reported is a lot of 800 tons of Foundry grades for delivery covering the first quarter of next year. This is the only transaction of its kind yet recorded, and the price consideration was $14, Birmingham, on a No. 2 Foundry basis. So far as can be ascertained, all quotations elicited for deliveries early in 1909 have been on a basis of $14, but producers are not solicitous of such engagements, and prospective purchasers fail to manifest the interest that has been expected. In view of the number of requests that shipment against recent contracts be deferred, there is some question as to what extent melters' requirements warrant additional purchases, although the actual melt has increased, and some old contracts have been reinstated within the past week. Preparations for an increase in the rate of production are very much in evidence, and five additional stacks will no doubt be available at an early date. Of this number, if blown in promptly, probably three furnaces would represent a surplus output, but it is hardly probable that the increase will exceed the requirement for actual commitments. There seems to prevail with all parties concerned in the trade a disposition to await developments, and it is very likely that the status of the market will be unchanged until general conditions are more determined.

**Cast Iron Pipe.**—Following the advance in price of raw material and of finished articles, Southern producers of Cast Iron Pipe have advanced quotations $1 per ton on all sizes. The majority of orders recently placed were at figures around those established by the advance, but in the absence of round tonnage considerations, values have hardly been indexed. A contract for the city of Cleveland, Ohio, to involve some 3000 tons of Water Pipe, will be awarded September 21, and will no doubt determine the strength of quotations now in existence. There have been a number of inquiries from leading Southern cities, and the outlook is considered good for considerable activity early next year. The resumption of operations at the only idle Southern plant, which is announced for September 15, will increase the output to normal. We quote Water Pipe as follows per net ton, f.o.b. cars here: 4 in. to 6 in., $24; 8 in. to 12 in., $23; over 12-in., average, $22, with $1 per ton extra for Gas Pipe. On large contracts these prices are probably shaded.

**Old Material.**—The asking price of dealers has been further advanced on No. 1 Railroad Wrought and Light Cast as the result of scarcity of these grades. Quotations on other grades are being adhered to firmly, but the aggregate of sales reported indicates a less active market. Recent addition to stocks is small and accumulations are apparently without effect in the adjustment of values asked. We quote dealers' asking price as follows, per gross ton, f.o.b. cars here:

| | |
|---|---|
| Old Iron Rails | $14.50 to $15.00 |
| Old Iron Axles | 15.50 to 16.00 |
| Old Steel Axles | 13.00 to 13.50 |
| No. 1 Railroad Wrought | 13.50 to 14.00 |
| No. 2 Railroad Wrought | 10.50 to 11.00 |
| No. 1 Country Wrought | 11.00 to 11.50 |
| No. 2 Country Wrought | 9.50 to 10.00 |
| No. 1 Machinery | 11.00 to 11.50 |
| No. 1 Steel | 9.50 to 10.00 |
| Stove Plate and Light Cast | 9.50 to 10.00 |
| Cast Borings | 5.00 to 5.50 |

## San Francisco.

SAN FRANCISCO, CAL., September 8, 1908.

The market on the various lines of Iron and Steel manufactures has taken a slight change for the better, and the outlook shows more promise than for several months. While there is still little movement in some lines, a stronger tendency is observed to anticipate future needs, and finished Iron and Steel are in fair demand. After a quiet month the local building situation has developed a favorable turn, and a few of the larger mines are coming into the market for Drill Steel, of which the Alaska Treadwell mine ordered a carload last week. The majority of the mines, however, still have large stocks of Drill Steel, bought some time ago, and are purchasing only in a sorting up way for immediate needs. The demand for mining machinery has not increased materially. Railroad supply business is also limited, and while a number of plans for new construction are being made, none of much importance are being carried out. There is an increasing demand for pumping machinery, as a number of municipalities are installing new water plants and fire protection systems.

**Structural Material.**—The amount of new building started in San Francisco in August, as shown by the building permits, makes rather a poor exhibit as compared with the July record. While the number of permits showed only a small decrease, the valuation was $2,140,420, in comparison with $3,139,027 for July, indicating a considerable falling off in large buildings. Comparatively few contracts were let during the month for fabricated Steel for Structural work, and some of the local dealers saw little encouragement in the outlook. Since August 28, however, quite a lot of contracts have been let for Steel to be used in building, and the prospect is for a considerable improvement this month. Contracts for Structural Steel have been let in the last two weeks for the Crocker Estate Building on Post street, and the Liebes Building adjoining; the Bankers' Investment Company's Building, the Hillsburg Estate Building and the Hobart Estate Building, all large class A structures, in addition to a large amount of smaller work. Work is to be commenced soon on a 14-story Steel frame structure on a lot belonging to D. Hughes at the southwest corner of Sixth and Market streets, the contract for which will be let shortly. The demand for ornamental Cast Iron shows some improvement, several large buildings having elaborate fronts of this material. The Merle Ornamental Iron & Bronze Company has

taken a $50,000 contract for the ornamental Ironwork for the Emma Rose Building.

**Wire Rope.**—Locally the Wire Rope market is quiet, though there is more immediate demand in the northern and southern parts of the State. About the only business of any consequence here at the present time is for elevator construction, and this, in view of the increased activity in building, is expected to improve shortly.

**Pig Iron.**—Little, if any, increase in activity has developed among the foundries, and with large stocks on hand little spot buying is done. As few of the foundries will need any additional supplies for several months they can be interested only by the most tempting offers. Prices are not well established, as several holders have shown a disposition to cut. A few foundries, however, are beginning to place orders in anticipation of next spring's requirements. No. 1 Scotch Pig Iron is being offered for spring delivery at about $23.50 per ton, with about the same figure for No. 1 English and No. 1 Chinese. A shipment of 634 tons of Chinese Pig Iron arrived here last week.

**Coke.**—This market is overloaded with Coke and the demand is light. Foreign Coke, small lots of which arrive from time to time, is quoted at from $12 to $14 per ton.

**Merchant Pipe.**—The local market for Merchant Pipe remains comparatively inactive. The hot weather of the past month has interfered somewhat with activity in the California oil fields, but a better demand for oil well supplies is looked for this month. Discounts on jobbers' carloads show no change, being quoted as follows:

| | Steel. Black. % | Steel. Galv. % |
|---|---|---|
| ⅛ to ¼ in. | 56.5 | 40.5 |
| ⅜ in. | 58.5 | 44.5 |
| ½ in. | 60.5 | 48.5 |
| ¾ to 6 in. | 64.5 | 54.5 |
| 7 to 12 in. | 61.5 | 46.5 |
| Extra strong, plain ends: | | |
| ⅛ to ⅜ in. | 49.5 | 37.5 |
| ½ to 4 in. | 56.5 | 44.5 |
| 4½ to 8 in. | 52.5 | 40.5 |
| Double extra strong, plain ends: | | |
| ½ to 8 in. | 45.5 | 34.5 |

**Cast Iron Pipe.**—There is now a fair movement of Cast Iron Pipe in the State, though the demand is larger in the South and the interior than locally. There is a general movement among the smaller towns in preparation for the installation or enlargement of water systems, while several towns intend to put in additional systems for the use of their fire departments. Some contracts have already been let for these purposes and a large number are in prospect. Several contracts are also announced for the Los Angeles aqueduct. The Lacy Mfg. Company recently received a contract for $20,000 worth of Pipe, and later for a lot of 18-in. Pipe worth $2270. The Baker Iron Works took a contract for a lot of 12-in. Pipe for $4020. The San Francisco Supervisors have returned from a visit to the proposed reservoir sites at Hetch Hetchy and Lake Eleanor, and are now negotiating for the purchase of adjacent lands. The investigation of the proposed Sierra water supply for San Francisco is progressing slowly, however, and the outcome is still uncertain.

**Old Material.**—The Scrap business is about at a standstill, with practically no demand for any description. There is still considerable old Structural Steel in the city, but there is no movement worth mentioning. Old Wrought Iron brings about $10 per ton; Pipe, $5; Cut Pipe, $8, and Cast Iron $15.

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The railroads have issued the new Western classification, which becomes effective November 1, showing a number of increases in minimum carloads. The change covers the following: Iron and Steel articles, Castings, Pig Iron, Sash Weights, Sheet Iron, Shingle Bands, Nails, Oil Well Supplies and Rails. On most of these articles the minimum is raised from 30,000 to 36,000 lb., but Pig Iron is raised to 50,000 lb., Sash Weights and Rails to 40,000 lb. and Oil Well Supplies from 24,000 to 30,000 lb.

The San Pedro Foundry & Machine Company has been incorporated in Los Angeles, with a capital stock of $50,000, by T. P. Faulconer, S. Faulconer and J. H. Brakeman.

A meeting of the stockholders of the San Francisco Bridge Company has been called for November 5, for the purpose of increasing the capital stock from $250,000 to $500,000. It is also proposed to reduce the number of directors from five to three and to increase the scope of the business.

The Pacific Tank Company has purchased an 8-acre tract on the tidal canal in Alameda, Cal., where it will erect a rolling mill, to be operated in connection with the oil tank department.

The Price Pump Mfg. Company, San Francisco, is planning to remove its plant to Sacramento, Cal., where an offer has been made of 14½ acres of land with a river frontage. The negotiations have not been concluded, however, as there has been some difficulty in securing the land.

A large shipment of stock Pipe purchased in Europe for the plant of the Great Western Power Company at Big Bend has commenced to arrive.

The California Metal Trades Association is mailing letters to architects and owners of lots in San Francisco, asking them to favor the local dealers in Structural Steel and Iron where possible, on the ground that the local men are not given a square deal by the railroads. It is claimed that if a proper differential were given in favor of plain material the local manufacturers would be able to meet Eastern prices for materials delivered in this city without difficulty. The dealers intend to take up the matter at the next railroad conference and expect to secure the differential desired.

## Cincinnati.

CINCINNATI, OHIO, September 16, 1908.—(*By Telegraph.*)

A general view of the Iron and Steel markets in this territory reveals a situation that may best be termed sluggish, although prices of Pig Iron are quite firm and sellers throughout the Central West are convinced that the last quarter will show up as good as if not better than any of its predecessors in the current year. The first half of the month in machinery lines finishes with less new business booked than in the last half of August. The melt of Iron, however, seems to be progressing favorably from the record of shipments, and that furnacemen believe in an early improvement is seen in the announcements of furnaces going in blast and the maintenance of prices, especially by the Southern makers. Indications point to an increasing activity in machinery lines, in St. Louis territory especially, and some recent heavy buying on the part of the Pipe concerns indicate that that branch of the trade is in good condition. The Scrap dealers are still forcing prices upward. All are carrying heavy stocks in their yards and are confidently expecting an expansion in business after the election.

**Pig Iron.**—The sale in this market of a tonnage of Southern Iron, with deliveries extending through the first half of next year, at $13, Birmingham, for No. 2, gives the first intimation of what consumers will be able to do for 1909 needs. In Northern Irons a number of sales have been made of No. 2, extending into next year, at the present ruling price of $15, Ironton. A number of leading interests continue to refuse to quote on first quarter or half requirements, and practically all are holding for $13, Birmingham, for last quarter delivery, and some announce that they are booked up to the close of the year. At the present stage of the market Northern Irons are getting more attention, and the inquiries out to-day will unquestionably result in a preponderance of business for Northern furnaces. Indicating that some one of the three important interests in this territory overestimated its needs for Basic in the speculative buying earlier in the year, it is reported that considerable resale Basic is on the market at about $12, Birmingham. High Silicons are still quotable at $18.50 for 8 per cent. The largest Pipe interest is credited with a recent purchase of Southern Iron, Nos. 3 and 4, and Forge, at $12, $11.50 and $11, respectively, 1000 tons of each, for prompt delivery. Another important Ohio Pipe interest is in the market today for 4500 tons of Nos. 2, 3 and 4 for next 30 days' delivery. Northern furnaces are expected to take this business, as very favorable freight rates prevail, and at present prices of Southern Iron the purchaser can save something like 95c. a ton. A large car manufacturing concern wants prices on a small shipment of special Iron for its Michigan plant. A Kentucky jobbing foundry is in the market for 500 tons of Virginia and Ohio Iron for delivery in the next five or six months. A local Steel maker wants 300 tons of Low Phosphorus Iron for prompt shipment. A central Ohio melter asks for a price on 200 tons of Foundry Iron for the first half. For early delivery and balance of the year, we quote, f.o.b. Cincinnati, the freight rate being $3.25 from Birmingham and $1.20 from the Hanging Rock District, as follows:

| | |
|---|---|
| Southern Coke, No. 1 | $16.25 to $16.75 |
| Southern Coke, No. 2 | 15.75 to 16.25 |
| Southern Coke, No. 3 | 15.25 to 15.75 |
| Southern Coke, No. 4 | 15.00 to 15.50 |
| Southern Coke, No. 1 Soft | 16.25 to 16.75 |
| Southern Coke, No. 2 Soft | 15.75 to 16.25 |
| Southern Coke, Gray Forge | 14.25 to 14.75 |
| Ohio Silvery, 8 per cent. Silicon | 19.70 |
| Lake Superior Coke, No. 1 | 16.70 to 17.20 |
| Lake Superior Coke, No. 2 | 16.20 to 16.70 |
| Lake Superior Coke, No. 3 | 15.70 to 16.20 |
| Standard Southern Car Wheel | 22.25 to 22.75 |
| Lake Superior Car Wheel | 21.75 to 22.25 |

(*By Mail.*)

**Coke.**—As predicted, the settlement of the Alabama strike difficulties has produced an effect on the price of the Virginia product, and while last week some sales were made of Furnace Coke at $1.85, at oven, this week some shipments have been made at $1.75, and the range is $1.75 to $1.85 for the balance of the year. Sellers are asking $2 for the first half. Virginia Foundry is quotable at $2.10 to $2.25. Pocahontas Furnace Coke for this year's delivery is easy at $1.55 to $1.60; for deliveries in 1909 no prices are obtainable. Pocahontas Foundry is selling at $2. Connellsville Furnace Coke is being quoted for the first half of next year at $2.25, a prohibitive price, as 72-hr. Foundry is rang-

ing at $2 to $2.25. There is very little inquiry for any kind of Coke at this time, although shipments on contracts are going forward promptly and hold-ups are few.

**Finished Material.**—Reports from the dealers indicate very little going on in finished lines, and the rather sudden slump in specifications and large orders leads dealers to feel that the political situation is responsible. There is a little better demand for Hoops because of the timeliness of the barrel making season and the improved prospects for distillers. In sympathy somewhat with the rising markets in Old Material there seems a little more strength in Bar Iron. Dealers' prices to the trade f.o.b. Cincinnati are as follows: Iron Bars, carload lots, 1.65c., base, with half extras; small lots from store, 1.85c., base, half extras; Steel Plates, carload lots, 1.75c., base, with half extras; small lots from store, 1.85c., base, half extras; Base Angles, carload lots, 1.85c., base; small lots from store, 2.10c.; Beams, Channels and Structural Angles, 1.85c., base; small lots from store, 2.10c.; Plates, ¼-in. and heavier, carload lots, 1.85c.; small lots from store, 2c.; Blue Annealed Sheets, heavy, No. 16, carload lots, 2.15c.; small lots from store, 2.50c.; No. 14, carload lots, 2.05c.; small lots from store, 2.40c.; No. 10 and heavier, carload lots, 1.95c.; small lots from store, 2.20c.; No. 12, carload lots, 2c.; small lots from store, 2.30c.; Sheets (Light), Black, No. 28, carload lots, 2.65c.; Galvanized Sheets, No. 28, carload lots, 3.70c.; Steel Tire, 4-in. and heavier, carload lots, 1.95c.; Plates, 3-16 and No. 8, carload lots, 2c.; small lots from store, 2.20c.

**Old Material.**—It is purely a dealers' market and the large houses are driving for higher prices. There is some shrewd trafficking going on between dealers, with but little participation on the part of the consumers. The dealers are confidently expecting a big movement after election. We quote dealers' prices to the trade as follows, f.o.b. Cincinnati:

| | |
|---|---|
| No. 1 R. R. Wrought, net ton | $12.50 to $13.50 |
| Cast Borings, net ton | 5.00 to 5.50 |
| Heavy Melting Steel Scrap, gross ton | 14.00 to 15.00 |
| Steel Turnings, net ton | 6.00 to 7.00 |
| No. 1 Cast Scrap, net ton | 12.00 to 13.00 |
| Burnt Cast, net ton | 9.00 to 10.00 |
| Old Iron Axles, net ton | 16.50 to 17.50 |
| Old Iron Rails, gross ton | 15.00 to 16.00 |
| Old Steel Rails, short, gross ton | 13.00 to 14.00 |
| Old Steel Rails, long, gross ton | 12.50 to 13.50 |
| Relaying Rails, 56 lb. and up, gross ton | 20.50 to 21.50 |
| Old Car Wheels, gross ton | 13.00 to 14.00 |
| Low Phosphorus Scrap, gross ton | 14.00 to 15.00 |

## Philadelphia.

PHILADELPHIA, PA., September 15, 1908.

Buying in the local market has been a shade less active. The tone continues strong, and the higher prices asked last week by sellers of Pig Iron were realized in a number of cases. Orders aggregate a fair tonnage for delivery during the remainder of the year, and while no strong buying movement is anticipated prior to the coming national election, it is believed that more active conditions will prevail somewhat later in the year. That there will be an increased production of Pig Iron in this territory in the near future is unquestioned. The Warwick Iron & Steel Company will blow in its No. 2 furnace, with a capacity of 15,000 tons a month, about October 1. It has been out for the past nine months. Several other producers in the Lehigh and Schuylkill valleys are seriously considering the blowing in of increased capacity. The Everett Furnace was blown in during the week. The finished material market is somewhat dull. The demand for Steel Plates is probably not so strong, while Structural Material shows little improvement. Billets have been quiet, but the demand for Sheets about holds its own. The same strength as has developed in the Pig Iron market has not been experienced in that for Finished Iron and Steel.

**Pig Iron.**—Sales have usually been in small and moderate lots, both for prompt shipment and for delivery over the balance of the year, with an occasional sale for delivery running over into the first quarter of next year. Somewhat better prices have been realized for the Foundry grades, and it is now practically impossible to get standard grades of No. 2 X under $16.75, delivered, while some few sellers hold as high as $17.25 for delivery the balance of the year. The recent higher asking prices appear to be pretty firmly maintained, and it is extremely difficult to get concessions, except on off grade Irons. Sellers in the majority of cases still withhold quotations for deliveries in the first quarter and half of 1909. In some cases business has been done, sales of lots of a few hundred tons for first quarter shipment being reported at $17.25, delivered. Pipe foundries are still in the market for low grade Irons. Several inquiries for round lots which have been before the trade recently are still unclosed, while one lot of 3000 tons for delivery the balance of the year was sold, the reported price being $15.50, delivered. Virginia Foundry Irons have been sold in moderate lots for prompt shipment, at $17, delivered, in this territory. Several producers, however, have practically withdrawn quotations for deliveries extending beyond the next 30 days. Little business has been done in Southern Iron, for which sellers maintain prices firmly and at the present level of $13, Birmingham, for No. 2 Foundry, are practically out of the market. Forge Iron has been somewhat more active. A number of inquiries for moderate tonnages are before the trade, and some sellers who are pretty well sold up on this grade have rather high ideas regarding price. The most important sale during the week was a lot of 2000 tons for delivery over the balance of the year, at $15, furnace, equivalent to $15.50, delivered, in this territory. Steel making Irons have been rather quiet. Melters are making inquiries for Basic for delivery in the first half of next year, but few sellers have made up their minds as to what would be a fair price. One producer is reported as being willing to take a moderate tonnage at $16, delivered, but others are known to have higher ideas regarding prices. Some considerable business is known to be under consideration, but has not developed far enough as yet to be tangible. Low Phosphorus Iron has not been in urgent demand. Some sellers who have Iron of this grade on hand would do business at somewhat lower figures than recently quoted, the ruling quotations of such sellers being from $20 to $20.50. Generally speaking, prices are stronger, and consumption appears to be gradually increasing. A number of sellers report increased shipping instructions, and stocks on furnace banks in this territory continue to be reported as decreasing. Orders during the month are reported larger in the aggregate—how much is not known at the time—but information showing what the increase has been and how much stocks have declined in this territory will probably be available after the coming meeting of the Eastern Pig Iron Association, which will be held in this city the current week. Under the circumstances sellers feel warranted in making an advance in price, without which a number of concerns contend they will not increase their output. A considerable variance is to be noted as to what the different producers consider a fair price, and there is consequently a greater range in quotations on some grades. For delivery in buyers' yards, eastern Pennsylvania and nearby territory, during the next 60 or 90 days, the following range of prices is quoted:

| | |
|---|---|
| Eastern Pennsylvania, No. 2 X Foundry | $16.75 to $17.00 |
| Eastern Pennsylvania, No. 2 Plain | 16.25 to 16.50 |
| Virginia, No. 2 X Foundry | 17.00 |
| Virginia, No. 2 Plain | 16.50 to 16.75 |
| Gray Forge | 15.50 |
| Basic | 15.25 to 15.75 |
| Low Phosphorus | 20.00 to 20.50 |

**Ferromanganese.**—Business has been quiet. Some fair lots are being inquired for, but current orders have been confined to scattered carload lots. No further forward business has been transacted. For prompt shipment prices are a shade easier, at $42.50 to $43, Baltimore, with forward Ferro at $43 to $43.50.

**Steel Billets.**—A slight improvement is to be noted in the demand for Billets. Orders continue small and largely for prompt shipment, but the aggregate tonnage coming out is somewhat heavier. Quotations for delivery in this territory are unchanged, with ordinary Rolling Steel at $26.20 and Forging Steel at $28.20, subject to the usual extras for high carbons and special sizes.

**Plates.**—The demand for Steel Plates has not been quite so urgent. The bulk of the business placed has been for small tonnages for prompt shipment, and is of a miscellaneous character. The situation is somewhat unsatisfactory. Secret price cutting has been hinted at, and one producer has expressed his intention of meeting any reduction made. A meeting of the leading Steel Plate makers will be held during the week, when it is expected that this matter will be taken up. Meanwhile prices for delivery in this territory are quoted as follows:

| | Carloads. Cents. | Parts carload. Cents. |
|---|---|---|
| Tank, Bridge and Boat Steel | 1.75 | 1.80 |
| Flange or Boiler Steel | 1.85 | 1.95 |
| Commercial Firebox | 1.95 | 2.00 |
| Marine | 2.15 | 2.20 |
| Locomotive Firebox Steel | 2.25 | 2.30 |

The above are base prices for ¼-in. and heavier. The following extras apply:

| | Extra per 100 lb. |
|---|---|
| 3-16-in. thick | $0.10 |
| Nos. 7 and 8, B. W. G. | .15 |
| No. 9, B. W. G. | .25 |
| Plates over 100 to 110 in. | .05 |
| Plates over 110 to 115 in. | .10 |
| Plates over 115 to 120 in. | .15 |
| Plates over 120 to 125 in. | .25 |
| Plates over 125 to 130 in. | .50 |
| Plates over 130 in. | 1.00 |

**Structural Material.**—The demand does not improve rapidly. Local business is confined to small lots for building and general purposes. Some fair sized bridge and building work is being figured on, but develops slowly. The Pennsylvania Steel Company has, it is understood, taken some bridge work for the Middle West, requiring some 2400 tons, and orders are expected to be placed shortly for Structural Material entering into the construction of three colliers for the Government, for which orders were recently placed with the Maryland Steel Company. Prices are unchanged, 1.75c. to 1.90c. being quoted, according to specification for delivery in this territory.

**Sheets.**—An improved demand continues to be noted by Sheet mills. The individual orders are not large, but in the aggregate amount to a somewhat better tonnage, and some of the mills are now fairly well occupied, but are dependent on current business to maintain the present rate of production. For mill shipment the following range of prices is quoted, a tenth extra being added for small lots: Nos. 18 to 20, 2.50c.; Nos. 22 to 24, 2.60c.; Nos. 25 to 26, 2.70c.; No. 27, 2.80c.; No. 28, 2.90c.

**Bars.**—The market is hardly as active as it was some weeks ago. Buyers' requirements are becoming pretty well taken care of and hesitancy is still shown regarding business for future needs. Mills continue on about an even basis, and prices are being fairly well maintained. For delivery in this territory 1.45c. to 1.50c. can be done for Refined Iron Bars, although some sellers still hold at 1.55c. The demand for Steel Bars is quiet and prices are unchanged at 1.55c., delivered, with Rerolled Bars at 1.50c., delivered in this territory.

**Coke.**—The demand is not active. Some little business has been done, but no disposition is shown by buyers to come into the market heavily. Foundry Coke is quiet, but more business is stirring in Furnace Coke, due to the increased blowing in of blast furnaces. Prices are practically unchanged, Foundry Coke being quoted at $2 to $2.25 at oven, with Furnace Coke at $1.50 to $1.75, at oven. For delivery in this territory quotations range as follows:

| | |
|---|---|
| Connellsville Furnace Coke | $3.65 to $3.90 |
| Foundry Coke | 4.15 to 4.40 |
| Mountain Furnace Coke | 3.25 to 3.50 |
| Foundry Coke | 3.75 to 4.00 |

**Old Material.**—Consumers of Heavy Melting Steel have expressed their willingness to pay $15, delivered, for this grade of Material, but sellers are as a rule holding for higher prices. One round lot for fairly prompt shipment is reported to have been sold at $15.50. Some grades of Rolling Mill Scrap show an advance, particularly Borings, while other grades are stiffer on small sales. Prices for prompt delivery in buyers' yards, eastern Pennsylvania and adjoining territory, are nominally quoted as follows:

| | |
|---|---|
| No. 1 Steel Scrap and Crops | $15.25 to $15.75 |
| Low Phosphorus | 18.50 to 19.00 |
| Old Steel Axles | 21.50 to 22.00 |
| Old Iron Axles | 22.50 to 23.00 |
| Old Iron Rails | 20.50 to 21.00 |
| Old Car Wheels | 15.00 to 15.50 |
| Choice No. 1 R. R. Wrought | 18.25 to 18.75 |
| Machinery Cast | 15.25 to 15.75 |
| Railroad Malleable | 13.50 to 14.00 |
| Wrought Iron Pipe | 14.25 to 14.75 |
| New Bundled Sheets | 13.50 to 14.00 |
| No. 1 Forge Fire Scrap | 12.00 to 12.50 |
| No. 2 Light Iron | 8.75 to 9.25 |
| Wrought Turnings | 11.50 to 12.00 |
| Stove Plate | 13.00 to 13.50 |
| Cast Borings | 11.25 to 11.75 |
| Grate Bars | 13.50 to 14.00 |

## Cleveland.

CLEVELAND, OHIO, September 15, 1908.

**Iron Ore.**—The market shows a little more activity, sales aggregating about 100,000 tons being reported by merchant Ore firms. Practically all was non-Bessemer, bought by furnace interests that had not previously purchased this season. A number of inquiries are pending from consumers that have, up to this time, kept out of the market. While none of these inquiries is for a large tonnage, it is expected that a fair volume will be sold within the next two weeks. Consumers realize that they cannot delay much longer if they want any Ore for this season's delivery and whatever further buying is done will be about all done before October 1. Further purchases are expected by some of the furnace interests that did not buy for their entire year's requirements earlier in the year, and the fact the demand for Pig Iron is showing an improvement and the production is being increased is expected to have a stimulating effect on the Ore market during the wind-up of the buying season. Ore is moving down the lakes in fairly good volume, and from present indications the shipments in September will be as large, if not a little larger, than during August. Shippers, however, will soon have deliveries completed on contracts made the earlier part of the season, and it is believed that the movement will show a considerable falling off early in October. Prices at Lake Erie docks, per gross ton, are as follows: Old Range Bessemer, $4.50; Mesaba Bessemer, $4.25; Old Range non-Bessemer, $3.70; Mesaba non-Bessemer, $3.50.

**Pig Iron.**—The demand for Foundry Iron shows an improvement throughout the greater part of the Central West, although there is little buying at present in Cleveland territory. No large sales are reported, but we note two 500-ton lots and several smaller ones. Sales were mostly for the balance of the year delivery, but in some cases to run through the first quarter. Inquiries are more plentiful and some consumers are asking for prices for Foundry Iron for the first quarter and first half. The Massillon Iron & Steel Company is in the market for 4500 tons of Foundry Iron, 1500 tons each of Nos. 2, 3 and 4, for delivery within 30 days, and among other inquiries pending is one for 1000 tons of Northern Foundry for the balance of the year. All furnacemen report an improvement in shipments, and as a result of the better demand the market has taken on a slightly firmer tone, and fewer furnaces are willing to quote the low prices that have been prevailing. One local furnace interest reports that it has its output sold up to February, and this interest, that has been selling No. 2 Foundry at $14.50 for shipment outside of this territory, is now quoting the same Iron at $15 for outside shipments and $15.25 at furnace for local delivery, and is asking about 50c. a ton more for the first half of next year. Sales of No. 2 Foundry are still being made at $14.50 to $14.75, Valley furnace. Two or three furnaces in the Central West that have been idle for several months have their stock piles nearly cleaned up and are expected to go into blast soon. On the other hand, some of the furnaces that have stayed in blast have large stock piles. Outside of Foundry Iron the market continues very quiet, the only inquiry of importance that has come in during the week being one for 3000 tons of Malleable Bessemer. For prompt shipment and for the balance of the year we quote, f.o.b. Cleveland, as follows:

| | |
|---|---|
| Bessemer | $15.90 to $16.40 |
| Northern Foundry, No. 1 | 15.50 to 15.90 |
| Northern Foundry, No. 2 | 15.25 to 15.65 |
| Northern Foundry, No. 3 | 14.90 to 15.25 |
| Southern Foundry, No. 2 | 16.85 to 17.35 |
| Gray Forge | 14.40 to 14.65 |

**Coke.**—The market continues quiet, with prices stationary and weak. There is some demand for Foundry Coke for the balance of the year in small lots, but few inquiries for first half delivery. We quote Standard Connellsville Furnace Coke at $1.65 to $1.75, at oven, for the balance of the year, and Connellsville 72-hr. Foundry Coke at $2 to $2.25, at oven, for spot shipment and balance of year.

**Finished Iron and Steel.**—The aggregate tonnage ordered on contracts was larger the past week than in any week since the demand began to show an improvement. The largest specifications are for Steel Bars, but orders are better in other lines. Nearly all manufacturers are busier, and orders are coming from all classes of consumers, nearly all of whom have very low stocks. A leading interest reports that its orders during the week were as large in number as in the busy part of last year, and although the aggregate tonnage placed was much less than in normal times, it showed a large increase over any of the few previous weeks. New business is light, consumers being nearly all under contract, but some inquiries are coming in the market for material for work that is being figured on. Good sized Steel Bar specifications have come during the week from the Rivet makers. The demand for Structural Material continues fairly good. Fabricators are ordering freely for stock, and there is a good volume of specifications from bridge builders for material for municipal and county work. The demand for Plates shows some improvement in car lot orders. A concern in this territory is figuring on a contract for a stand pipe and connecting pipes that will require 400 tons of Plates. Among the new orders is one for 200 tons of Plates and Shapes for a passenger boat to be built by a Toledo shipbuilder. The American Shipbuilding Company has given specifications for 800 tons more Plates for the two boats that are being built for the Pittsburgh Steamship Company. The new Ore handling machinery that will be erected for the Pittsburgh & Conneaut Dock Company, at Ashtabula, will require from 2000 to 3000 tons of Plates and Structural Shapes. The Wheeling & Lake Erie Railroad has specified for 650 tons of Standard Rails and Splices on a last year's contract. The demand for Iron Bars shows some improvement, but local mills are not yet securing enough orders to keep them in continuous operation. Among the new Bar Iron orders is one for 500 tons from a car building company, being the first order placed here by a car builder for some months. There is some demand for Light Rails in car lots. The competition of the Rerolling mills is not so strong, as it was in the early summer. A little improvement is noted in the demand for Blue Annealed Sheets. Smaller mills are still making concessions of $1 a ton on Sheets. Jobbers report that warehouse business is holding up well, the September volume being about the same as in August. We quote: Iron Bars, 1.45c.; Cleveland, for car lots; Steel Bars, 1.50c., Cleveland, for car lots, half extras; Beams and Channels, 1.70c., base, Cleveland, and Plates, ¼-in. and heavier, 1.70c., Cleveland. We quote Sheets, mill shipments, car lots, Cleveland, as follows: Blue Annealed, No. 10, 1.90c.; Box Annealed, No. 28, 2.60c.; Galvanized, No. 28, 3.65c. Jobbers quote Iron and Steel Bars out of stock at 1.65c. to 1.70c., Beams and Channels from warehouse are 2c. and Plates, ¼-in. and heavier, 1.90c. Warehouse prices on Sheets are as follows: Blue Annealed, No. 10, 2.10c.; Box Annealed, No. 28, 2.70c.; Galvanized, No. 28, 3.80c. Warehouse prices on Boiler Tubes, 2¾ to 5 in., are 64 per cent. discount, and on Black Merchant Iron Pipe, base sizes, 71 per cent. discount.

**Old Material.**—The market is lifeless. Market quotations on nearly all grades remain about stationary, but dealers are showing less disposition to hold up prices to their present level, especially those who are not in shape to hold their Scrap for some time. There have been few inquiries

the past week. Local Steel mills have good sized stocks on hand and the Iron mills are buying very little and only for immediate needs. Consumers seem to be looking for lower prices. Dealers do not regard the outlook as very satisfactory and some of them do not expect any material improvement in the demand before about the end of the year. The railroad offerings this week include about 1000 tons by the Lehigh Valley Railroad. Dealers' prices to the trade, per gross ton, f.o.b. Cleveland, are as follows:

| | |
|---|---|
| Old Steel Rails | $14.00 to $14.50 |
| Old Iron Rails | 17.00 to 17.50 |
| Steel Car Axles | 18.00 to 18.50 |
| Old Car Wheels | 15.00 to 15.50 |
| Heavy Melting Steel | 13.50 to 14.00 |
| Relaying Rails, 50 lb. and over | 22.00 to 23.00 |
| Railroad Malleable | 13.25 to 13.75 |
| Agricultural Malleable | 12.00 to 12.50 |
| Light Bundled Sheet Scrap | 9.50 to 10.00 |

The following quotations are per net ton, f.o.b. Cleveland:

| | |
|---|---|
| Iron Car Axles | $17.50 to $18.50 |
| Cast Borings | 7.00 to 7.50 |
| Iron and Steel Turnings and Drillings | 8.00 to 8.50 |
| Steel Axle Turnings | 8.50 to 9.00 |
| No. 1 Busheling | 12.00 to 12.50 |
| No. 1 Railroad Wrought | 13.50 to 14.00 |
| No. 1 Cast | 12.00 to 13.00 |
| Stove Plate | 10.00 to 10.50 |
| Bundled Tin Scrap | 8.00 to 9.00 |

## New York.

NEW YORK, September 16, 1908.

**Pig Iron.**—The market is steady and shows a tendency toward higher prices. There is an inquiry in the market for 3000 tons of Basic Pig monthly for the first six months of next year. We quote, at tidewater, Northern No. 1 Foundry, $17.25 to $17.75; No. 2 Foundry, $16.75 to $17, and No. 2 Plain, $15.75 to $16.25. Alabama Irons are quoted $17.50 to $17.75 for No. 1 Foundry and $16.75 to $17.25 for No. 2 Foundry.

**Steel Rails.**—The Wabash system has specified recently on 2000 tons of Rails ordered last year from the Buffalo mill and carried over. In view of the amount of indefinitely quiescent business on the books of the Rail mills, this may be considered as practically new business. The South Chicago mill will roll 2500 tons of 60-lb. Rails for the Twin Falls North Side Land & Water Company, which is to build 26 miles of road in Idaho.

**Structural Material.**—The financing of the new Wanamaker store construction at Philadelphia brings to the American Bridge Company's books 15,000 tons of Steel. The work has been done in sections and there has now been a long interval in which operations were suspended. The Pennsylvania Railroad has taken bids on 2000 tons of Steel for a bridge over the Hackensack River, in New Jersey, and there is also pending the award of a county bridge over the same stream, calling for a similar tonnage. The Interborough Rapid Transit Company has opened bids for 1800 tons of Steel for elevated work on the Second avenue line in connection with the Williamsburg Bridge terminal. At San Francisco several thousand tons of Steel will be required for the Fort Mason wharf and for pier 40, which the State is about to build. Much of the Steel building work pending in New York City makes little progress toward the contract stage. The Emigrant Savings Bank, on Chambers street, is being withheld for possible revision of some features. For the Ritz-Carleton hotel building at Forty-sixth street and Fifth avenue the general contract has been let, but the Steel, 600 to 700 tons, is not yet placed. A recent San Francisco contract calling for 250 tons for the Pacific Realty Building was taken by the Milliken Brothers' receivers. The prices at which business is still taken give no indication that fabricating works are getting a satisfactory supply of winter work. We continue to quote on mill shipments of plain material, tidewater delivery, as follows: Beams, Channels, Angles and Zees, 1.76c.; Tees, 1.81c. On Beams, 18 to 24 in., and Angles, over 6 in., the extra is 0.10c. From store Structural Material, cut to length, is sold at about 2¼c.

**Bars.**—Although the Eastern Bar Iron mills are still running considerably under their capacity, some delay is reported in shipments on specifications, indicating that the immediate demand is close to the present productive capacity. This is an encouraging sign, as it is expected to lead to some extension of operations. The leading mills quote Best Refined Bars at 1.56c., tidewater, and are getting some business at this rate, while Bars of ordinary quality are quoted at 1.46c. to 1.51c., tidewater. No change is noted in Steel Bars, which are held at 1.56c., tidewater.

**Ferroalloys.**—The Ferromanganese market is irregular, and while $42.50 has been done within the month, more recently everything below $43 was refused for a round lot. At the same time some sellers appear willing to buy at $42. A strike in Russia is hinted at. The deliveries of 50 per cent. Ferrosilicon are behind, but some offers have been made as low as $68, delivered.

**Plates.**—The most important recent event affecting the local Plate trade is the award by the city of Springfield, Mass., of a contract for 42-in. lock-bar Steel Pipe to the T. A. Gillespie Company, which will require about 6000 tons of Steel Plates for its manufacture. It is probable that the Plates may be furnished by a Pittsburgh interest. Some Plates for boat building will be required for some new work now coming up, but, in general, the trade continues quiet. Prices are quoted as follows, at tidewater, for Standard Sized Plates: Sheared Plates, 1.76c. to 1.86c.; Flange Plates, 1.86c. to 1.96c.; Marine Plates, 2.16c. to 2.26c.; Firebox Plates, 2.65c. to 3.50c., according to specifications.

**Cast Iron Pipe.**—The current demand appears to be confined to small orders, of which Flange Pipe possibly constitutes the greater part. Few lettings are now coming out, and manufacturers are inclined to believe that trade will be light for the remainder of the season. The city of Springfield, Mass., having decided in favor of Steel Pipe, an important expected order for Cast Pipe has thus been lost. Some of the foundries would like to arrange for the manufacture of a considerable stock of Pipe for trade next spring, but will not do so unless some concession can be secured in the price of Pig Iron, thus reducing the hazard of manufacturing. Carload lots of 6-in. Pipe are quoted at $23.50 to $24.50, tidewater.

**Old Material.**—Buying has been spasmodic for some time, periods of fair demand and almost complete stagnation alternating. The present is one of the dull periods. It is possible, however, that the quiet condition of trade with the dealers may be, to a considerable extent, due to the railroad lists which have recently come out and on which consumers and dealers have both been bidding. Until the consumers find precisely what they have secured from the railroads, they are likely to withhold orders from the dealers. In quite a number of instances dealers and brokers have bid somewhat higher than consumers. Borings and Turnings and No. 1 Railroad Wrought have been in conspicuous demand in view of the general dullness. Stove Plate appears to be in better supply. We quote as follows, per gross ton, New York and vicinity:

| | |
|---|---|
| Old Girder and T Rails for melting | $11.50 to $12.00 |
| Heavy Melting Steel Scrap | 11.50 to 12.00 |
| Old Steel Rails, rerolling lengths | 14.00 to 14.50 |
| Relaying Rails | 22.50 to 23.00 |
| Old Iron Rails | 16.50 to 17.00 |
| Standard Hammered Iron Car Axles | 18.50 to 19.00 |
| Old Steel Car Axles | 15.50 to 16.00 |
| No. 1 Railroad Wrought | 15.00 to 16.00 |
| Iron Track Scrap | 12.00 to 13.00 |
| No. 1 Yard Wrought, long | 14.00 to 14.50 |
| No. 1 Yard Wrought, short | 12.50 to 13.50 |
| Light Iron | 7.00 to 7.50 |
| Cast Borings | 7.50 to 8.00 |
| Wrought Turnings | 8.50 to 9.00 |
| Wrought Pipe | 11.00 to 11.50 |
| Old Car Wheels | 14.50 to 15.00 |
| No. 1 Heavy Cast, broken up | 13.50 to 14.00 |
| Stove Plate | 11.50 to 12.00 |
| Locomotive Grate Bars | 11.50 to 12.00 |
| Malleable Cast | 12.50 to 13.00 |

The Lackawanna Steel Company has decided to operate as merchant furnaces several of its stacks located in the Lebanon Valley for the production of Foundry, Forge, Bessemer and Low Phosphorus Pig Iron, and has associated with it Crocker Brothers, 99 John street, New York, as exclusive sales agents, for the distribution of the product in the various markets both East and West.

## Metal Market.

NEW YORK, September 16, 1908.

**Pig Tin.**—The improvement in trade which was commented on last week has not continued, and sales are less frequent than for a long time. The selling by the leading consumer continues, but so quietly that it does not break the market. A factor which may still further curtail the small requirements of Tin Plate makers is the low water in the Pittsburgh District, which may necessitate the closing down of some mills. A sharp advance in London on Tuesday, almost entirely speculative, advanced the price on that day. This is also felt, but in a much smaller degree, to-day. Price changes during the week have been as follows:

| | Cents. |
|---|---|
| September 9 | 28.55 to 28.60 |
| September 10 | 28.50 |
| September 11 | 28.[illegible] |
| September 14 | 28.[illegible] |
| September 15 | 28.[illegible] |
| September 16 | 28.[illegible] |

Stocks of Tin in this country are abundant. The arrivals so far this month are 1177 tons, and there are afloat for American ports 1415 tons. The London market closes to-day at £130 15s. for spot and £132 for futures.

**Copper.**—Continued reselling by domestic consumers has further weakened the market. These are not being aggressively pushed, but are made whenever possible. Producers are not attempting to sell anything for domestic use, and have been compelled to shade the price of 13.50c., in order to attract foreign buyers. Lake can be had for domestic use at 13.75c. to 13.87½c., Electrolytic at 13.50c. to 13.62½c. and Casting at 13.25c. While the Brass trade is not as good as a fortnight ago, it is fair. The Sheet Copper busi-

ness is good, largely due to low prices brought about by keen competition, and the Wire trade is more hopeful. Numerous projects are planned for next year, which will take quantities of Copper Wire if they go through. The situation at this time is not at all encouraging, however, as the mines of this country are producing more metal than ever before. Much Copper is being transferred to Europe, but this is only a shifting of accounts. It is as much surplus there as if it were piled up at Perth Amboy. Exports for the first 15 days of September aggregated 9678 tons. The London market closes lower to-day at £60 7s. 6d. for spot, and £61 2s. 6d. for futures.

**Waterbury Average.**—The Waterbury average for August was 13.75c.

**Lead.**—Some weakness is observed in this market, and at least one important seller is offering Lead at 4.55c., New York, which is 5 points under the American Smelting & Refining Company's price. Probably 4.52½c. could be done on a desirable order. In St. Louis Lead is obtainable at 4.40c.

**Antimony.**—Prices are again lower. Hallett's can be had at 7.75c. to 8c., Cookson's at 8c. to 8.25c. and outside brands at 7.50c. to 7.75c.

**Spelter.**—The market is very dull, and prices are largely nominal. Prime Western Brands are quoted at 4.75c., New York, and 4.60c., St. Louis.

**Tin Plate.**—The trade is quiet, although some business has been taken for the leading consumer. Prices are without change at $3.89, New York, and $3.70, Pittsburgh, for 100-lb. IC Coke Plates.

**Old Metals.**—Prices are less firm, and in some cases lower. Dealers' selling prices are quoted as follows:

| | Cents. |
|---|---|
| Copper, Heavy and Crucible | 12.50 to 12.75 |
| Copper, Heavy and Wire | 12.25 to 12.50 |
| Copper, Light and Bottoms | 11.50 to 11.75 |
| Brass, Heavy | 9.25 to 9.50 |
| Brass, Light | 7.25 to 7.50 |
| Heavy Machine Composition | 11.75 to 12.00 |
| Clean Brass Turnings | 8.25 to 8.50 |
| Composition Turnings | 9.50 to 9.75 |
| Lead, Heavy | 4.20 to 4.25 |
| Lead, Tea | 3.85 to 3.90 |
| Zinc Scrap | 3.25 to 3.50 |

## Iron and Industrial Stocks.

NEW YORK, September 16, 1908.

Opposing influences have been felt on the Stock Exchange, railroad stocks being strengthened by the United States Circuit Court decision declaring unconstitutional the commodity clause of the Hepburn law, while certain industrial stocks were unfavorably affected by the passing of the dividend on Locomotive common. The dividend on the latter was passed on Thursday, and the stock thereupon dropped from 53 to 48, fluctuating on following days, until on Monday of this week it touched 45½. Railway Spring common, concerning which some fear was expressed relative to its dividend, declined from 42⅜ on Thursday to 34¼ on Friday, recovering subsequently to 36⅝ on Monday. Other industrials were fairly steady until Tuesday, when a general decline occurred in sympathy with railroad stocks. The range of prices on active iron and steel stocks from Thursday of last week to Tuesday of this week was as follows: United States Steel common 46⅛ to 47⅜, preferred 109¾ to 111½; Bethlehem Steel common 22 to 23⅝, preferred 49½ to 51; Car & Foundry common 38⅛ to 41, preferred 102¾ to 105; Locomotive common 45⅜ to 53, preferred 102⅝ to 104; Steel Foundries, new, 31; Cambria Steel common 37 to 38½; Colorado Fuel 34 to 36⅞; Crucible Steel common 7, preferred 47⅛ to 49¼; Pressed Steel common 32½ to 35, preferred 93½ to 95; Railway Spring common 34¼ to 42⅜; Republic common 22⅛ to 23¾, preferred 79⅝ to 81¾; Sloss-Sheffield common 62 to 64, preferred 101 to 104½; Cast Iron Pipe common 25⅛ to 26¼, preferred 72 to 73; Can common 5¾ to 6, preferred 61⅛ to 62½. Last transactions up to 1.30 p.m. to-day are reported at the following prices: United States Steel common 46, preferred 109⅝; Car & Foundry common 38¾; Locomotive common 44¼; Colorado Fuel 33¾; Pressed Steel common 32, preferred 94; Republic common 22, preferred 79½; Cast Iron Pipe common 25⅞, preferred 71⅞; Can preferred 60¾, ex-dividend.

The annual meeting of the stockholders of the Colonial Steel Company will be held in Pittsburgh September 28, at which meeting will be considered an increase in the capital stock of the company from $1,250,000 to $2,000,000, and also an increase in the Board of Directors from five to seven.

Directors of the Crucible Steel Company of America met in Pittsburgh this week, but took no action on the preferred dividend which was passed some time ago. No statement of earnings has been made, as the figures for the present quarter will be included in the annual report to be issued early in October. The annual meeting will be held in Jersey City, N. J., October 21.

An opinion by Vice-Chancellor Howell was filed in the Court of Chancery, Trenton, N. J., September 14, refusing to enjoin the United States Cast Iron Pipe & Foundry Company from paying a quarterly dividend of 1¾ per cent. on its preferred stock. The suit was brought by Frank Bassett, a holder of common stock, who charged that the company had voted the dividend, which amounted to $218,000, when there was only about $13,000 credit in the profit and loss account, and that the dividend was voted from the reserve fund. The vice-chancellor held that this was not illegal.

The preliminary report of the Sloss-Sheffield Steel & Iron Company for the three months ended August 31, 1908, estimates the net profits after deducting interest on bonds and taxes at $353,933, a decrease of $90,433, as compared with the corresponding period a year ago. The surplus after dividends is given at $139,933, a decrease of $66,433.

**Dividends.**—The Sloss-Sheffield Steel & Iron Company has declared a quarterly dividend of 1¾ per cent. on the preferred stock, payable October 1.

The American Locomotive Company has declared a quarterly dividend of 1¾ per cent. on the preferred stock, payable October 21.

The United Shoe Machinery Company has declared a quarterly dividend of 1½ per cent. on the preferred stock and 2 per cent. on the common stock, both payable October 5.

The Otis Elevator Company has declared a quarterly dividend of 1½ per cent. on the preferred stock, payable October 15.

The International Nickel Company has declared a quarterly dividend of 1½ per cent. on the preferred stock, payable November 2.

## Trade Publications.

**Steam Shovels.**—Browning Mfg. Company, Mansfield, Ohio. Bulletin No. 33. Contains principally illustrations of the Browning standard revolving steam shovels in use. These shovels are self-propelling and self-rotating and have variable boom radius. The dipper is detachable, so that the boom can be used for locomotive crane service. The machines are shown in use in brick yards, railroad excavations, ditching and building construction work.

**Engine Indicators.**—American Steam Gauge & Valve Mfg. Company, Boston, Mass. Catalogue 6 x 9 in., 70 pages. A large part of this volume is given to illustrating and describing numerous types of the Thompson indicators. Indicator cocks and indicator scales of a number of types are also shown, and the advantage of using a steam engine indicator are illustrated by numerous diagrams made by such apparatus. Testimonial letters are included in the volume, together with useful tables.

The working committee, which is to attempt the herculean task of bringing about a uniform railroad freight classification to take place of the present three classifications, met in Chicago September 15 to effect an organization. The committee, which is composed of three representatives of each classification territory, will devote its entire time to this work for at least several months. Some preliminary work was done last winter.

The main delegation from the United States to the International Congress of the Refrigerating Industries at Paris, October 5-10, will sail from New York September 22 on the New Amsterdam of the Holland-American Line. About 50 members from this country will attend. The American membership numbers more than 400.

The Pressed Steel Car Company, Pittsburgh, has recently delivered some large steel ore cars to the Carnegie Steel Company. The cars were designed by engineers of the latter company, and their carrying capacity is about 300,000 lb., the cars being 40 ft. long and 3 ft. deep.

The Fairbanks-Morse Company, Chicago, builder of gas producers and gas engine plants, has opened offices in rooms 1113-14 Union Bank Building, Pittsburgh, in charge of H. J. Young.

The Fawcus Machine Company, Pittsburgh, has received an order for the operating machinery for a large bascule bridge to be erected at Westminster avenue, Vancouver, B. C.

The general managers of sales of the subsidiary companies of the United States Steel Corporation are holding a meeting in New York this week.

# The Machinery Trade.

NEW YORK, September 16, 1908.

The slight increase in the demand for machine tools which was noticeable the first part of the month was not maintained the past week with many houses, which report fewer sales and inquiries, and none covering substantial amounts of tools. While the actual transactions are limited to the average of business for the past month or two, increased activity in building operations which will necessitate the purchase of mechanical equipment has become more apparent. Foremost among those which are providing for increased shop facilities are the railroads. Last week we referred to this important factor in the market, and since then plans for additional shops have been reported, principally from the smaller roads. In addition to shop construction, reports concerning the requirements covering rolling stock are better. The intention of the railroads to erect new shops is encouraging, in that it shows that they are not adhering to the policy of retrenchment so closely as they did. While no important machine tool propositions are reported, large inquiries for other classes of machinery are being sent out by the leading smelting and refining interest.

A machinery man closely connected with the export trade, who recently returned from a trip to Europe and who had an excellent opportunity to investigate the demands for machine tools and special machinery there, declares that in his opinion trade from that quarter will soon pick up. The falling off in the demand for automobiles has had a noticeable effect on the machine tool business in Italy and France, but in other European countries where the automobile industry is not so important it is stated trade has not fallen off to such an extent. The machinery man in question said that there are indications of a healthy increase in the demand from the latter countries before long, and manufacturers along general lines in France and Italy will also be heard from. The situation among users of machine tools in Europe, it is said, has been one fraught with more uncertainty than lack of business, and although they have to some extent felt a depreciation in the demand for their product, on the whole they have been by no means as idle as manufacturers in this country, and the lack of demand from Europe for American machine tools which has prevailed of late is largely due to caution on the part of the usual customers. There seems to be a stronger sentiment now and, the visitor said, there are inquiries for a varied line of machine tool equipment, which indicates that the demand will shortly pick up. The fact that prices of American machine tools have been maintained during the depression had some effect on would-be purchasers, as many of them, feeling that there would shortly be a reduction, have put off buying from time to time with a view to getting a better price. Many manufacturers, it was stated, have now reached a point where they will be obliged to buy, and having become convinced that prices will be maintained, it is thought that they will be in the market shortly. All things considered, the visitor reached the conclusion that while there may not be a rush of business from Europe, there certainly will be an increase in the demand within the next few weeks and a healthy buying movement will result.

The New York Central Railroad continues to enlarge its shop facilities by both the erection of new buildings and the installation of additional machinery. This company has apparently abandoned its former policy of sending out long lists of machine tools for bids, and is sending out inquiries and making purchases of a few tools at a time. We understand that inquiries are out for a few machines and that the company has lately placed a number of orders, individually small but aggregating a fair amount. As stated last week, the company has under consideration the bids sent in for about $45,000 worth of cranes for the West Albany shops, where it is building important additions. It is likely that the road will require considerable machinery for the new shop to be erected at Rensselaer, N. Y. This building will be devoted to machine work by the Boston & Albany Railroad and will be 40 x 150 ft., 20 ft. high.

It is reported that the Tampa Northern Railroad, Tampa, Fla., has plans prepared for new shops to be erected at Palmetto Beach, the main building to be 90 x 200 ft.

The Georgia & Florida Railroad contemplates the construction of shops at Valdosta, Ga. The report that the company would build shops at that point to cost from $150,000 to $200,000 is denied, the company stating that it does not contemplate erecting shops to cost anywhere near that amount.

The Seaboard Air Line has let contract to Burwell & Hillyer, Jacksonville, Fla., for the erection of a terminal at Grassy Island, Tampa, Fla., including three wharves and a warehouse, for the equipment of which it is probable that considerable hoisting machinery will be installed.

The Virginia Railway Company, Norfolk, Va., is making expenditures just now for steel cars, and it is said that the company will do some other active buying shortly. The system of shops, which has been under consideration for several months, it is said, will soon be erected about half way between the terminals of the company's system, and their construction will necessitate the purchase of a large amount of shop equipment. It is probable that before long the trade will hear of a demand from this source.

### Large Inquiries for Smelting and Refining Machinery.

The American Smelting & Refining Company, 165 Broadway, New York, has inquiries out for over $50,000 worth of equipment to be installed in a number of its Western plants. The requirements include a general line of reduction machinery, as well as coal and ore conveying and ore handling machinery. On some of this equipment, and especially the conveying apparatus, bids are now being taken, and it is expected that orders will be closed out shortly. From all accounts this machinery is not required for any improvement in a particular plant, but for several of the larger plants controlled by the company.

The New Jersey Zinc Company, 71 Broadway, New York, is making extensive improvements to its mines and plant at Franklin Furnace, N. J. It is understood that within the next year the company will double its concentrating plant there, and at present some outdoor mining equipment to be installed in a new shaft now in preparation is being purchased. The present requirements include some concentrating machinery, but the principal purchases now under way are for the needed mining equipment.

Charles C. Force & Son, Madison, N. J., who, as mentioned in these columns recently, have completed plans for a new plant 78 x 132 ft., to take the place of the one recently destroyed by fire, have purchased considerable of the equipment, but are still in the market for three down draft forges, one pressure and one exhaust blower, one 150-lb. belt driven power hammer and a 16-in. shaper.

A general contract has been awarded by Jenkins Brothers, 71 John street, New York, to the J. W. Bishop Company, 345 Fifth avenue, New York, for the construction of a large two-story factory building at Elizabeth, N. J., to replace the plant of the Jenkins Rubber Company, which was practically destroyed by fire several weeks ago. The new plant will cost about $30,000 and it will be two stories in hight. It will be considerably larger than the old plant, in which nearly all of the machinery was destroyed, with the exception of the power plant, the structure containing that equipment, together with the office building, being the only parts of the plant not burned to the ground. The Jenkins Rubber Company is controlled by Jenkins Brothers, manufacturers of valves, valve fittings, &c., and the former company made all the rubber attachments and specialties used by Jenkins Brothers. The details concerning the machinery requirements are now being arranged, and it is expected that before long the trade will hear of a good sized list of equipment for the new plant.

The fact that the Isthmian Canal Commission has inquiries out for a large amount of conveying and cement handling machinery, which was forecasted in these columns several months ago, is of particular interest to manufacturers of cement making machinery, such as mixers, &c., as there is no doubt that the present requirements will be followed by a list of this class of apparatus. The specifications covering cement handling and conveying machinery now in the hands of the trade call for apparatus which will cost in the neighborhood of $600,000, it is estimated, and this is probably the largest demand from a single source in that line that has come before the trade this year. The recent placing of a large cement order, together with the appearance of the list now before the trade, is taken as an indication that the engineers on the canal intend to put the cement work through as rapidly as possible, so it is expected it will not be long before the requirements for that branch of the canal enterprise are completely listed and sent out.

The Superintendent of Public Works, Albany, N. Y., has awarded Barge Canal contract No. 66 to the Empire Engineering Company, New York, for $750,685. The contract calls for work on the Erie Canal near the locks at Lockport, N. Y., a distance of about 6 miles.

The Vandyck-Churchill Company, 91-93 Liberty street, New York, is now the exclusive Eastern representative for the Sight Feed Oil Pump Company, manufacturer of the Richardson sight feed oil pump and other lubricating specialties. William Martin, formerly local representative of the oil pump company, has joined the engineering department of the Vandyck-Churchill Company. The latter company makes a specialty of installing oil systems, among those recently installed being that of the Hudson Terminal Building, the Marbridge Building and the Singer Building in New York, and the plant of the American Steel & Wire Company at Allentown, Pa.

Philip G. Roeder, for 18 years resident agent in the City of Mexico of American manufacturers, has withdrawn from the Mexican Steel Products & Machine Company, with the object of establishing himself in the same business. He will take charge, in Mexico, of the interests of the American Woodworking Machinery Company.

## Chicago Machinery Market.

CHICAGO, ILL., September 15, 1908.

In seeking for information from manufacturers and dealers regarding the trend of trade movements in the machinery market, one encounters a variety of opinions which quite naturally reflect to a large extent the results of individual experiences. When the volume of business moving is as small as it is at the present time, the winning or losing of orders of comparatively unimportant size materially affects trade balances. It is therefore to be expected that there will be less uniformity in reports under present conditions than is usual when business is more nearly normal in volume. At the same time the situation is marked by certain aspects which serve as a more or less accurate index of general results. It is noticed, for instance, that in the past few weeks there has been some gain in the active productive capacities of the steel foundries, a fact that is of encouraging significance in that it points to an expansion of work in machinery lines. It is true that this sign of improvement is not yet pronounced enough to deserve special emphasis, but nevertheless the gains made in this industry are substantial enough to be taken into account in a prospective way, at least. Reports from some of the Western machine tool builders are likewise tinged with a stronger color of optimism than has been the case for some time. While actual buying of shop equipment is to a large extent restricted to industries of minor importance, both the character and number of inquiries coming out afford a reasonable hope of larger purchases in the near future, that will embrace the requirements of more extensive plants.

In reviewing the present state of industry throughout the West and noting the proportion of manufacturing capacity yet unoccupied, a prominent dealer raises the question as to whether the present limited number of machine tools now being purchased by users are actually required for present service, or whether they represent deferred needs that are being supplied because of favorable market conditions. There are, no doubt, many buyers, who, remembering the difficulties encountered in the attempt to secure new tools during the period of congestion in 1906 and 1907, are taking advantage of opportunities afforded by the dullness of trade to provide equipment which they expect will be needed later on. When it is considered that at the beginning of 1907 machine tool manufacturers had orders on their books sufficient to keep them busy anywhere from 6 to 12 months or more, and at the beginning of the depression a large portion of this business was wiped out by cancellation, it is quite probable that when factories are again restored to a basis of normal operations much of this business will reappear in the form of new orders. How soon this condition of affairs will be realized cannot, of course, be accurately determined, but among experienced observers there are those who believe a permanent upward movement, slow and gradual though it may be, is already under way.

The Vilter Mfg. Company, Milwaukee, Wis., has for the last three weeks been running practically every tool in its shop with both day and night shifts, and has within that time added to its operative force about 120 men. Improvement in the demand for ice making and refrigerating machinery, which, together with Corliss engines, constitutes the company's principal product, is more marked than in other machinery lines. The extension of the dry blast system as applied to blast furnace and Bessemer steel plants, has materially widened the field for refrigerating machines. Following the installation in the plant of the Illinois Steel Company at South Chicago of a large refrigerating equipment for use in connection with the Gayley dry blast system, the company is now turning out two 300-ton refrigerating machines for the Northwestern Iron Company, Mayville, Wis. These machines are to be operated with shell type brine coolers and atmospheric condensers for the dry blast plant, which is designed to furnish dry air for the blowing engines of the two blast furnaces at Mayville. Other recent orders entered include two 60-ton plants for making can ice, for the Kansas Ice Company, Newton, Kan., one of the plants to be installed at Waynoka, Okla., and the other at Clovis, N. M., to furnish ice for fruit cars coming over the Santa Fé System and for other purposes; one 100-plate ice plant with duplex compressors and cross compound condensing Corliss engine, National Capital Brewing Company, Washington, D. C.; one 100-ton refrigerating plant, Arbogast & Bastian Company, Allentown, Pa.; one 60-ton direct expansion system refrigerating plant, Elliott & Co., Duluth, Minn.; two 100-ton refrigerating compressors, American Ice Company, Brooklyn, N. Y. Export orders from Corozal, British Honduras, and Vera Cruz, Mexico, have also been received.

Decided improvement in the demand for milling machines is apparent in the increasing number of orders entered in the past three weeks by the Kempsmith Mfg. Company, Milwaukee, Wis. While the business of Western manufacturers of milling machines has not suffered as severely from the effects of the depression as some other lines of machine tools, it has, nevertheless, passed through an extremely quiet period. As evidencing the extent of improvement the company states that new orders have been coming in during the last two weeks of August and the beginning of the present month at a rate closely approximating factory capacity, and quite a number of inquiries of very promising character are developing. It is noted in this connection that the demand continues to be largely from the smaller manufacturing interests, with only occasional orders from the railroads and other large shops.

The steel casting industry is a pretty accurate index to the state of activity in the manufacture of machinery, since its product is principally consumed by machinery builders. It is therefore gratifying to note that the George H. Smith Steel Casting Company, Milwaukee, Wis., has recently begun to make some additions to its working force. The improvement observed is slow and gradual, but even slight gains in this department of foundry work is of especial significance, since the revival of other lines is likely to precede any notable expansion in the requirements for steel castings.

The Northwestern Mail Box Company, St. Louis, Mo., is preparing to move from its present location to 5029-5035 McKissock avenue, where a manufacturing building affording greater space and improved facilities has been secured. Not only has the increased production of its present line made it desirable in the interest of economy for the company to seek new quarters, but the extension of its operations in other directions has made such a move imperative. As many as 720 mail boxes a day have been turned out in the old shop, but the new plant will have a capacity of 1000 a day. Besides the manufacture of mail boxes, the company expects to engage in jobbing sheet metal work and other specialties. Some new equipment in the way of punch presses and sheet metal tools will be required to bring the new plant up to a standard of efficiency required for the work to be undertaken.

The shipments of gas and gasoline engines made by the Anderson Engine Company, Shelbyville, Ill., during the month of August were fair in number and widely distributed. Part of these engines were of marine type, the remainder being for automobile work. Included in the engines furnished was one for shipment to Vancouver, B. C.

A charter has been granted to the People's Light Company, Thomas E. Craig, manager, Corpus Christi, Texas, for the installation of an electric light and power plant to cost $30,000. A part of the machinery and equipment required for this installation has been purchased, but the company is yet in the market for a steam driven set of 75 or 100 kw. capacity to be installed in an ice factory as a reserve unit supporting a producer gas set operating the plant. The reserve unit will not be run except occasionally to take care of extra load and in case of other emergencies.

Extensive improvements planned by the Rockford Electric Company, Rockford, Ill., contemplate the remodeling of its water power equipment. This will involve the substitution of a concrete structure for the present wheel house, the installation of new head gates and new direct connected generators. Work on this improvement will be begun in about two weeks.

McDowell, Stocker & Co., Chicago, dealers in machine tools, have increased their capital stock from $60,000 to $150,000.

## Cincinnati Machinery Market.

CINCINNATI, OHIO, September 15, 1908.

With nearly half of September gone, and expectations of machinery and tool manufacturers concerning improvement in business unsatisfied, the local trade is practically certain that the ante-election lull is on in earnest and are settling themselves for a period of quiet and inactivity that will last until after election at least. Such inquiries as are coming in now contemplate purchases, many of them, dependent upon election results, and the greater number of them do not indicate desire for early deliveries. Inquiries are fewer than last month during the same period of time, although there are some special machines and tools selling. Foreign trade is very quiet. A local manufacturer, speaking of this division of trade, says: "The foreigner is very wary and clever; he is evidently ready to buy, but is watching for bargain prices, and price cutting among American manufacturers, rumors of which have reached him already." The larger manufacturers of tools in this territory deny unequivocally the charge of price cutting. As a matter of fact the greater number of them are in excellent shape to weather a long depression in trade, and few, if any, have overstocked during the past months of depression. The dealers have allowed their stocks to run quite low and manufacturers are already in receipt of overtures from some

prominent sellers, and these are expected to materalize very soon after election, if not before.

That the tool builders are alive to the possibilities of improvement in exhibiting their products is seen in the preponderance of machine tool builders' names on the list of the promoting company which is pushing the 10-story exhibition building project in this city. The project will undoubtedly have the encouragement and support of both the National Metal Trades Association—in so far as such a central building devoted entirely to the display of machinery would add eclat to the trade in general—and the Cincinnati Metal Trades Association, which is one of the largest and most influential in the United States. Another matter which is just now interesting local manufacturers is the announcement that Cincinnati may become the headquarters for the Middle West in the new plan of the Government for distribution of immigrants. The visit to Cincinnati Saturday of Secretary of Commerce and Labor Oscar S. Straus and Terence V. Powderly, chief of the Division of Information and Distribution of Labor, gave the first intimation of something along that line, and their words in interviews strengthen the belief that Cincinnati's ideal location geographically will have great weight in the final decision. With a strong machinery market and shops taxed to capacity these immigrants, such as were machinists, would be welcomed here, for it has been difficult in the past to secure enough such help.

Second-hand tools are very quiet and dealers generally are having little inquiry for any kind of tools aside from some special types which have had the call for several weeks. Medium and small sized units in electric power generating machinery are still enjoying a good sale, and manufacturers of metal working machinery are also having a good and steady demand.

Reports from Newcastle, Ind., indicate that the Indiana Rolling Mill Company is gradually getting all departments in operation. The shovel plant was started just two weeks after the fire which caused a loss of $50,000.

Reports from Columbus, Ohio, indicate that sufficient orders are accumulating and prospects sufficiently encouraging to warrant the starting up of the freight car department of the Ralston Steel Car Company. An order has been received from the Lackawanna Railroad which is to be filled within the next 30 days. This company has been operating the underframe and mine and plantation car departments on some good orders for mine cars and a large one of plantation cars for shipment to sugar planters in Cuba.

The American Valve & Meter Company, Cincinnati, has made a division of its power system and will utilize steam for the lower floors and electric units on the upper ones. President Fenner reports business as increasing gradually, the first half of September showing the best half month so far of the year. The company is now working full time, 55 hours.

C. L. French and A. B. Bowen, experts in the demonstration and sale of the products of the Norwalk, Ohio, Vault Company, represented that company in a comprehensive exhibit at Columbus during the State Fair. At the West Virginia State Fair, at Wheeling, W. Va., last week, the company was represented by Don Powers.

**Catalogues Wanted.**—The University of Cincinnati, Cincinnati, Ohio, which is introducing courses in metallurgical engineering, desires catalogues from manufacturers of metallurgical machinery and appliances for its files and for the use of the students and officers of the department.

## Cleveland Machinery Market.

CLEVELAND, OHIO, September 15, 1908.

Less activity is displayed in the local machine tool market than in the latter part of August. This is attributed to the fact that the majority of the automobile builders in this territory, who have been buying quite freely to add to their present equipment with the view of increasing their next season's output, have completed their purchases. Some small inquiries are still coming from the automobile people, however. The demand for standard machine tool equipment from other industrial concerns continues rather light. No large inquiries are pending and sales are limited mostly to one or two tools.

The demand for small electrical equipment shows a marked improvement. The local selling agent of one large manufacturer reports more small orders than at this time a year ago. The demand comes largely from industrial plants that are replacing present worn out equipment with new or are making plant alterations and small additions. During the period of depression these companies held off in placing orders for needed equipment, but now that conditions have improved they are coming into the market for their requirements. The demand for large machinery is still light, the market not having improved materially in this respect. A number of projects that will require the installation of considerable heavy machinery when carried out are still being held up. Some machine tool builders report an improvement in orders, particularly for special machinery. Little business is coming from the railroads. Local dealers have an inquiry from the Rock Island Railroad for about a dozen ironworking and woodworking machine tools.

There is a fairly good demand for small cranes for industrial plants. There is an improvement in the demand for industrial cars from mines, particularly from copper mining companies, but the unusually strong competition for the business has resulted in the quoting of very low prices.

In second-hand machinery the demand continues fairly good and dealers are able to move second-hand tools without keeping them in stock long. The supply is only moderate.

The Lannert Steam Company, Cleveland, has been organized, with a capitalization of $100,000, to build gins and other cotton machinery. The company will do its manufacturing at present at the plant of the Lannert Company, machinist, Sixtieth street and Standard avenue. The new company has placed orders for a few machine tools, but expects to be in the market for more from time to time. It is probable that a new plant will be erected in a year. J. A. Lannert is president.

The Cleveland office of the Allis-Chalmers Company reports considerable improvement in the demand for small electrical equipment for manufacturing plants, the number of orders of this nature being greater than at this time a year ago. This company recently secured from the Diamond Match Company, Akron, Ohio, an order for a complete steam and electrical equipment of about 1000 hp., for a new power house that will operate the Diamond Company's present plant and a large addition that is being built. The order includes engines, generators, switchboards, transformers and motors. Among other large orders recently secured by the Allis-Chalmers Company in this territory is one for a stone crushing plant for the Wagner Stone Company, Sandusky, Ohio, and a new turbine unit of 1000 kw., with condenser, substation transformers, switchboard and high tension apparatus, for the Cleveland & Southwestern Railroad.

Finding more room necessary for its growing business, the W. S. Tyler Company, Cleveland, maker of ornamental ironwork and other products, has let contract for the erection of a four-story factory building, 53 x 100 ft., of brick and steel. The contract for the steel work has been let to the Forest City Steel & Iron Company.

The Seneca Chain Company reports a satisfactory improvement in orders for all kinds of chain. This company is now running its Mansfield plant at full capacity, and this week started up its Kent plant at over one-half of its full capacity.

The Ramey Mfg. Company will remove from Butler to Newark, Ohio, and will be located for the present at 42 Franklin street, in the latter city. The company expects to erect a new plant in the spring, including a foundry, factory, machine shop, &c. The company manufactures hot air furnaces, sawmills and factory blowers. E. J. Ramey is manager.

The Lake Shore Portland Cement Company, Sandusky, Ohio, has closed a contract for the erection of a plant with a capacity of 5000 bbl. a day. A cement plant at Manchester, Mich., will be taken down and re-erected on the Sandusky site. A 5-acre site has been secured for the plant.

The new plant of the National Sanitary Mfg. Company, Salem, Ohio, is nearing completion, and it is expected that it will be placed in operation in October. The plant consists of two main buildings, the foundry and the enameling building, each 60 x 200 ft. Attached to the latter is a wing 40 x 200 ft. This will be used for a shipping room, engine and boiler room, &c. The output of the plant will be 75 bathtubs and from 250 to 275 smaller pieces, including lavatories, sinks and footbaths, per day.

It is reported from Canton, Ohio, that the Wright Wrench Company, Philadelphia, has decided to locate in the old Aultman works in that city and will move to Canton at once. Allen C. Mason is president.

## New England Machinery Market.

WORCESTER, MASS., September 15, 1908.

New England is in that stage of the transitory period between stagnation and prosperous business where [illegible] slight changes receive careful and perhaps exaggerated attention. The consensus of opinion is that the turning point has been reached. Up to the present, however, the difference is not great in the average of cases. A few manufacturers in metal lines are mightily encouraged by the volume of new orders. In others there are indications of an acceleration, but a gradual one, and from a small beginning. In a few cases business is hardly as good as it has been during the summer. In some lines connected only remotely with the metal trades the increase in volume is more apparent. Generally speaking, the nearer the industry is to the actual consumer, the better the volume of business. It is worthy of special notice that those houses that have been most con-

servatively reluctant to accept the promise of an early resumption of normal business are now saying that "things feel better," to quote one of them. Among the machinery and supply houses the improvement thus far has been trifling. Orders have been about as usual. The only immediately favorable change is the oft-repeated one that inquiries look more as if they mean immediate orders.

The week has seen important developments in new business, already mentioned. The Watertown Arsenal list of machine tools, which was submitted under requisition to the Boston dealers, has been decided in so far as the recommendations of the commandant are concerned, and the results have been sent to Washington. The Laconia Car Works Company, Laconia, N. H., and the Bath Iron Works, Bath, Maine, have awarded their contracts for considerable lots of tools; the former a miscellaneous list, the latter for boilermakers' machinery, which will go into the new boiler shop made necessary by the destruction of the old.

The city of Boston, in addition to small lists recently figured by dealers, will soon be in the market for an important lot of machine tools, which will constitute the equipment of the new addition to the Mechanics' Art School, now in process of building and approaching completion. It is understood that the management of the school is waiting to end the cares attending details of building construction before finally deciding upon the machinery list.

Some improvement is noted among the Worcester machine tool builders, though in most cases it is slight. The tone of inquiries is changing to one of more pronounced purpose to buy. One of the occasional instances of actual increase in orders booked is that of the Stockbridge Machine Company, builder of shapers. The management states that during the past fortnight an entirely satisfactory amount of new business has been received, and that the shop has taken on a full force of men and increased its running time from 40 to 45 hr. a week.

Railroad construction in New England has been insignificant this season, constituting a very small mileage, and the dealers in construction equipment and supplies have suffered accordingly. The outlook for another season is much brighter, however. The most important project in sight is the Boston & Providence electric railroad, which is said to be strongly backed financially. The only obstacle in its way is difficulty in securing the necessary locations in some of the towns which the line would traverse, and sufficient progress has been made in this direction to indicate a successful fulfillment of the plan, probably next summer. The New York, New Haven & Hartford Railroad has various electric street railroad plans under consideration, which, when the work begins, will have an important influence on the market.

Prices have been cut on certain classes of iron working machinery, which are not represented in the membership of the National Machine Tool Builders' Association. In more than one recent contract the claim that this has been done has been advanced by unsuccessful competitors, and there seems to be no reason to doubt the statement. Heavy stocks of machines have led manufacturers to unload at prices less than those quoted when business was good. Considering that no obligation exists, by "gentlemen's agreement," or otherwise, to maintain price-lists, the temptation to get business at some sacrifice may be strong. But on the other hand, the machine tool people who have held to their prices keenly realize that while they may seem to have made some sacrifice in declining to grant concessions to customers, they have placed themselves in a very advantageous position for the return of good business. They maintain, basing their argument upon past experience, that price-cutting is injurious to their interests in more than one way. Not only are lists cut to levels too low for profit, but competition may be reduced to a basis of actual strife, which makes it difficult to return to a proper margin of gain. Once in a while a dealer or a manufacturer who has resisted all advances toward lower prices, speaks pessimistically concerning the results, especially as they may come from business in the immediate future. But these are rare cases. The feeling is very strong that a principle adhered to through a year of depression should not be broken on the eve of what appears to be a return to prosperous conditions. The statements of buyers who have tried to change this attitude of the machine tool people prove that there has been strict adherence to the lists. On the other hand, purchasing agents make no pretense of denying that they have "shopped" in those branches of the trade that have not adopted the principle of price maintenance in dull times, and that they have profited largely by inciting manufacturers and dealers to bid one against the other.

The Boston office of the Ingersoll-Rand Company, compressors and pneumatic tools, reports that the season has been a good deal better in this territory than in some other sections of the country. The quarries, which are the principle customers, have been accelerating their buying, the company's totals for each month from June to September showing a gain on the month preceding it, and there is every indication that September's figures will top them all, although the season is now waning with the approach of cold weather.

The spurt noted in the boiler trade in August is less in evidence than it was, a condition which the manufacturers do not attempt to explain. The amount of new business is small. In this trade as in the steam engine industry business aggregating large figures will result from the carrying out of plans for power improvements when owners shall decide to go ahead with them as contemplated.

The Labor Bureau conducted at Springfield, Mass., by the Springfield Branch National Metal Trades Association and the Connecticut Valley Metal Trades Association has been removed to the ground floor of the Court Square Theatre Building on Court House place.

The Barnett Drop Forging Company, Inc., Easthampton, Mass., has made A. Stassewski, 116 Nassau street, its New York representative. The company states that its business is looking much better, with a prospect that the works will be busy the coming winter.

A permit has been granted the Scoville Mfg. Company, Waterbury, Conn., for the erection of a one-story brick extension to its rolling mill on Hamilton avenue. It will be 38 x 54 ft., with a steel trussed roof and corrugated steel covering. The company has also been granted a permit for an additional story to each of five factory buildings on Hayden street. The sizes are 54 x 249 ft., 50 x 249 ft., 32 x 70 ft., 44 x 84 ft. and 22 x 32 ft., and all will be of brick and mill construction, with tar and slag roof covering. Hugh L. Thompson is the consulting engineer.

The Chicago Machine Tool Company, Chicago, Ill., has brought out a new type of horizontal plain milling machine known as the solid saddle miller, one of which is shown on the floor of Hill, Clarke & Co.'s Boston store. The saddle is cast as a part of the bed, adjustment being obtained by the movement of the cutter arbor over the work, a feature tending toward great rigidity of construction. This horizontal adjustment is 6 in., while the economical longitudinal feeds of the two sizes are, respectively, 24 and 36 in. The machine has single pulley drive, changes of speed being obtained by means of change gears, a feature of advantage in manufacturing large numbers of pieces of the same sort, the operator being unable to change his speeds unless decided upon for him. Changes of feed are from a feed quick change gear box.

The Chandler & Farquhar Company, Boston, has taken the exclusive agency of the new file sharpener of the American File Sharpener Company, New York, for the New England territory.

In connection with the formal announcement of the permanent abandonment of the Providence plant of the American Locomotive Company, it is stated that the American Locomotive Automobile Company will continue to manufacture in Providence, in the new buildings erected for the purpose quite recently. The old machine shop of the Locomotive Works has been torn down. The automobile department is busy.

## Philadelphia Machinery Market.

PHILADELPHIA, PA., September 15, 1908.

The volume of business actually placed during the week has been small, particularly as regards that done in the usual line of standard machine tools. Some merchants have taken on a trifle more business recently, but the market continues irregular and from present indications will probably so continue until after the November elections.

With considerable business pending, however, the trade feels encouraged with the prospects for future trade, although at the time it is found difficult to close anything except urgent business. The fact that business outside the trade shows a continued slight improvement is considered favorable. The increased activity of the railroad repair shops, which was further augmented by the employment of an increased number of men and longer working hours at the Pennsylvania Railroad shops the past week, lends further encouragement to the trade, and it is believed that this increased activity will lead to purchases of machine tools in the not distant future. The large industrial plants in this territory, while showing slight gains in production, have not yet approached the point where they will consider purchases of equipment. The Baldwin Locomotive Works is still operating at a low rate of production, and will probably show but little improvement until railroad buying becomes more active. Some business has been placed with the shipbuilders in this territory, and further contracts are pending, so that the outlook in this direction is considered more favorable.

Business has been confined almost entirely to single tool propositions. Sales are largely of the smaller tools, with an occasional sale of one of the heavier types. Week to week gains are hard to measure, owing to the irregularity of the demand, but on the basis of comparative months a slight improvement is to be noted in some directions. Prices are being pretty firmly held. It appears that there is little trouble regarding the price when a buyer is interested, the principal difficulty being to get him to place the order, the tendency being to hold off buying as long as possible.

Manufacturers of the standard lines of machine tools report little new business. Orders come in intermittently and few of the larger plants are operating at any materially increased capacity. Some of the smaller plants, which do not require a large amount of business to keep them running, are somewhat more actively engaged. Special tool builders have taken on a somewhat better volume of business, although none have yet increased their capacity very extensively, and are still operating considerably below the normal. Generally speaking, the manufacturing trade does not expect any material increase in business until after the approaching general election. It is anticipated that buyers will hold back until then, and under the circumstances it is believed that normal conditions will not be attained until some time early next year.

The foreign demand, both for standard and special tools, continues rather quiet. New business comes out but slowly, and the outlook for any marked improvement is not encouraging.

A considerable amount of business which under ordinary conditions would largely come to the builders of new machine tools is being deflected to the second-hand machinery market, where the advantage of prices, owing to the economies practiced by purchasers, is a factor. Even this branch of the trade is not so active as the trade would like, but, on the whole, a fair volume of business, considering the circumstances, continues to be placed. Power equipment, both new and second-hand, appears to be a trifle more active. Inquiries are largely confined to equipment of the smaller and medium classes, the larger pending propositions being still held in abeyance.

A slight improvement continues to be noted in the foundry trades. The increase cannot be traced to any heavy gain in the demand from machine tool builders, but comes largely from the general users of castings. Steel casting plants have not taken on any increased business and continue to operate at from 40 to 50 per cent. of their capacity.

Sealed proposals will be received until September 24 by H. C. Gwin, borough engineer, room 14, Altoona Trust Company Building, Altoona, Pa., for furnishig the necessary materials and labor for the construction of a reservoir. The approximate quantities are 3000 yd. excavation, 850 yd. concrete, 535 sq. yd. cobble, 2520 ft. of 16-in. cast iron pipe, and 650 ft. of 8-in. cast iron pipe, with valve fixtures. A lump bid for the completion of the work will be received.

Proposals will be received by the commission for the Institution for Feeble Minded and Epileptics, near Spring City, Pa., to erect Building E, and furnish boiler, laundry machinery, &c., in connection with it. Bids will be received in care of John M. Scott, 625 Walnut street, this city, until October 2. Plans and specifications may be obtained at the office of the architect, Philip H. Johnson, 1825 Land Title Building, Philadelphia.

The Philadelphia Roll & Machine Company finds the demand for rolling mill machinery rather quiet. A fair run of business continues in both sand and chilled charcoal iron rolls, principally in the small and medium sizes, and enables the plant to be maintained in operation on a basis of four to five days per week. The outlook for business is not considered encouraging, and it is believed that business will remain practically unchanged for the remainder of the year. Inquiries are not extensive, although one for a complete mill equipment is being figured on, and will, it is expected, be closed during the current month.

The American Pulley Company notes a slight increase in the demand. It is unable as yet, however, to operate its plant at much over 50 per cent. of its capacity. Orders are not numerous, and the tendency has been to order in sufficient quantities to meet the immediate demand only. The foreign trade is quiet, orders are frequent but small, and consequent shipments are light. The week to week improvement has, on the whole, been small, but is more clearly shown when taken for the month, each succeeding month recently having been somewhat better than its predecessor.

## Government Purchases.

WASHINGTON, D. C., September 15, 1908.

The Isthmian Canal Commission will soon ask bids for 30 duplex horizontal oil pumps, with 3½-in. steam cylinder, 2½-in. oil cylinder and 4-in. stroke; 10 duplex horizontal oil pumps, 4½-in. steam cylinder, 3½-in. oil cylinder and 6-in. stroke; six duplex horizontal plunger pumps, 3½-in. steam cylinder, 4-in. water cylinder and 6-in. stroke; two duplex horizontal plunger pumps, 6-in. steam cylinder; 8-in. water cylinder and 10-in. stroke; six duplex horizontal plunger pumps, 5½-in. steam cylinder, 6-in. water cylinder and 8-in. stroke; two duplex vertical feed pumps, 9-in. steam cylinder, 6-in. water cylinder and 10-in. stroke; six duplex horizontal feed pumps, 6-in. steam cylinder, 4-in. water cylinder and 6-in. stroke; six vertical feed pumps, 6-in. steam cylinder, 4-in. water cylinder and 6-in. stroke.

The Secretary of Agriculture, Washington, D. C., will receive bids until September 20 for boilers, mains, pipe, &c., for the central heating and power station of the Weather Bureau.

The Isthmian Canal Commission will receive bids until October 7, Circular No. 467, for four berm and four chamber cranes.

The following bids were opened September 8 for machinery for the navy yards:

Class 1.—One No. 4 high power universal milling machine—Bidder 96, Harron, Ricard & McCone, San Francisco, Cal., $2522, $2542, $2558 and $2578; 133, R. K. Le Blond Machine Tool Company, Cincinnati, Ohio, $2355; 181, Pacific Tool & Supply Company, San Francisco, Cal., $2258, $2831, $2411 and $2771.

Class 2.—One vertical boring and turning mill—Bidder 118, King Machine Tool Company, Cincinnati, Ohio, $4620 and $4820; 160, Niles-Bement-Pond Company, New York, $3993 and $4350; 181, Pacific Tool & Supply Company, San Francisco, Cal., $3890.

Class 3.—One flat turret lathe—Bidder 179, Pratt & Whitney Company, Hartford, Conn., $2739; 181, Pacific Tool & Supply Company, San Francisco, Cal., $1350.

Class 4.—One upright drill—Bidder 51, Compressed Air Machinery Company, San Francisco, Cal., $375; 67, Frevert Machinery Company, New York, $321; 96, Harron, Ricard & McCone, San Francisco, Cal., $367.50, $432.50, $319 and $364; 181, Pacific Tool & Supply Company, San Francisco, Cal., $374.

Class 5.—One 14-in. lathe—Bidder 51, Compressed Air Machinery Company, San Francisco, Cal., $916; 96, Harron, Ricard & McCone, San Francisco, Cal., $956.36 and $670.28; 179, Pratt & Whitney Company, Hartford, Conn., $1215; 181, Pacific Tool & Supply Company, San Francisco, Cal., $1141.

Class 6.—Two lathe holders—Bidder 96, Harron, Ricard & McCone, San Francisco, Cal., $1172.82; 133, R. K. Le Blond Machine Tool Company, Cincinnati, Ohio, $980.60; 181, Pacific Tool & Supply Company, San Francisco, Cal., $1290.

Class 151.—One universal milling machine—Bidder 30, Brown & Sharpe Mfg. Company, Providence, R. I., $1149.50 and $1300; 70, Fairbanks Company, New York, $1161.75; 93, Hendey Machine Company, Torrington, Conn., $1130; 160, Niles-Bement-Pond Company, New York, $1248 and $1109.

Class 161.—One plate joggling machine—Bidder 16, Alliance Machine Company, Alliance, Ohio, $3895; 99, Hilles & Jones Company, Wilmington, Del., $4480; 139, Morgan Engineering Company, Alliance, Ohio, $4425.

Class 171.—One tapering machine—Bidder 68, Falls Rivet & Machine Company, Boston, Mass., $473.30; 178, Thomas W. Pangborn Company, New York, $544.50.

Class 172.—One rotary slotting machine—Bidder 160, Niles-Bement-Pond Company, New York, $5500 and $4389; 161, Newton Machine Tool Works, Philadelphia, Pa., $4960, $5110 and $5180; 228, Tindel-Morris Company, Eddystone, Pa., $5893.42.

Class 173.—One pipe expanding and flanging machine—Bidder 129, Larkin Pipe Expanding & Flanging Machine Company, Philadelphia, Pa., $10,000.

Class 174.—One Welding Machine—Bidder 95, Handlan-Buck Mfg. Company, St. Louis, Mo., $263; 98, Hooper Sons Mfg. Company, Philadelphia, Pa., $250; 140, Manning, Maxwell & Moore, New York; $263; 235, Vermilye & Power, New York, $270.

Bids were opened at the office of the Isthmian Canal Commission September 8 for a number of oil furnaces, delivery New York, as follows:

Item 1. One crucible melting furnace for a No. 80 crucible.

Item 2. One forge furnace with two charging doors.

Item 3. One bolt and rivet making furnace, with two charging openings on sides.

Item 4. One bolt heading furnace, with two opposite charging openings.

Item 5. One forge furnace, with two opposite and charging openings.

Item 6. One brazing furnace.

Item 7. One flue welding furnace, with three charging openings arranged.

Item 8. One portable furnace for locomotive repair work.

Item 9. One rivet heating furnace, with one charging opening.

Item 10. One rivet heating furnace, with two charging openings.

Item 11. One portable rivet heating furnace, to be used with pneumatic riveter.

Kenworthy Engineering Company, Waterbury, Conn., item 1, $234.50; 2, $340; 3, $325; 4, $290; 5, $600; 6, $210; 7, $340; 8, $150; 9, $160; 10, $250; 11, $100; time, 30 days.

Manning, Maxwell & Moore, New York, item 1, $150; 2, $245; 3, $350; 4, $150; 5, $750, $790 and $600; 6, $150; 7, $130 and $155; 8, $140; 9, $100 and $85; 10, $180; 11, $150; shipment, eight weeks.

Mires Fuel Oil Equipment Company, Norfolk, Va., item 1, $375; 2, $425; 3, $375; 4, $350; 5, $500; 6, $285; 7, $475; 8, $160; 9, $250; 10, $375; 11, $550.

Bids for one 25-hp. electric motor for the Atlanta Penetentiary, Georgia, were opened September 9, as follows:

Burke Electric Company, Erie, Pa., $458; Lincoln Electric Company, Cleveland, Ohio, $375; Philadelphia Electric Construction Company, Philadelphia, Pa., $584.50; Northern Electric Company, Madison, Wis., $400; Electric Dynamo Company, Bayonne, N. J., $595; Fred W. Walter, Norfolk, Va., $501; Kaestner & Co., Chicago, Ill., $508 for Western Electric motor, $487 for own motor; Diehl Mfg. Company, Elizabethport, N. J., $489 for No. 2 weatherproof wire, $610 for No. 000 weatherproof wire; Holtzer-Cabot Electric Company, Brookline, Mass., $728; General Electric Company, Baltimore, Md., $490 and $396; Crocker-Wheeler Company, Ampere, N. J., $525; D'Olier Engineering Company, Philadelphia, Pa., $625; Westinghouse Electric & Mfg. Company, Atlanta, Ga., $493; B. F. Sturtevant Company, Hyde Park, Mass., $671.

Under opening of September 1, for two steam pile driving hammers for the Isthmian Canal Commission, the bid of Vermilye & Power, New York, $810, has been accepted.

Under bids opened August 24, Circular No. 459, for supplies for the Isthmian Canal Commission, class 13, 34 hydraulic jacks, has been divided, the Joyce-Cridland Company, Dayton, Ohio, having been awarded contract for all of the 10-ton jacks at $402.60, and Fox Brothers & Co., New York, the remainder of the jacks at $1381.

# HARDWARE

PRIOR to 1907 the great commercial panics were strikingly alike in their effect upon business conditions, however much else they may have differed in other results. Immediately following the falling off in demand came an equally drastic shutting off of supply. Mills were closed down, furnaces blown out and the wheels of manufacturing stopped. In all branches of business there was wholesale discharge of employees, and those who were fortunate enough to hold their jobs felt the sharp pruning knife of trenchant reductions in salaries. The ruthless logic of the apparent necessity of self-preservation was the only guide. The desire to produce cheaply and to sell cheaply dominated business, and the attempt to force articles upon a market already bare of demand accentuated the downward movement in prices. Distress as a result was widespread and severe, and no relief was had until an abnormally low level of prices was reached and depleted stocks called for replenishment until demand finally exceeded supply and the upward movement began.

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When the panic of 1907 came so suddenly last fall, a similar repetition of the past was naturally predicted by observers and students of the past. These, however, reckoned without their host, as is the fate of most prophets, for since the last great panic of 1893 two hitherto little known factors had come upon the scene—a humanitarianism manifested in a regard for the general welfare, and the controlling force of aggregation of interests in the steel and iron trade. As the leading interest in this line had prevented a runaway market during boom times, it now set itself to the gigantic task of upholding prices and of preventing that disastrous slump that had marked all similar previous periods. Speculation is pardonable as to the motives which prompted this stand, and as to how much shall be ascribed to long-headed and advanced wisdom, and how much to political influences. A Presidential campaign was in sight, and whether from politics or humanitarianism or both, it was not possible to contemplate calmly extensive cuts in wages and the tumbling down of the commercial edifice, the result of so many years of prosperity.

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The influence of this pronounced example was at once widespread and beneficial. Discharges of unnecessary men were plentiful enough, but those who retained their places suffered but comparatively few cuts in wages and salaries. It was felt that employers must make some sacrifices rather than couple the paradoxes of decreased wages with increased cost of living to their employees, because the necessities of life still maintained a higher level than ever before. There was also a long-headed determination to preserve working organizations intact at any cost. There was little attempt to force goods upon an unwilling market, and those who endeavored to get business by cutting prices found but small response from their trade. Goods were only bought as they were needed and prices were a minor consideration. The Atlas-like task of upholding the world of prices had been successfully accomplished by the most tremendous exertions, and the enormous power of aggregated industries had successfully stayed what had hitherto been regarded as the inevitable result of hard times. Such liquidation as ensued was orderly and in sequence.

Now that we have definitely passed the barriers of hard times, and when better things are looming up, the question naturally occurs, Has there been sufficient liquidation before we can mount healthily to a higher basis? Would it have been better to have let nature take its course, or must we sooner or later get down to a lower level before we can start up again to a more permanent foundation? As against these natural queries it has to be suggested that possibly we have learned to control events to some degree instead of abandoning ourselves helplessly to them, and that because of many factors, among which is the continued output of gold, the commodities of life and trade are on a permanently higher level of prices, and may be naturally expected to appreciate still more, and that we are now unconsciously going through a period of general and extensive readjustments. The future alone can answer these questions, and the wise man is content to observe and watch events for the final reply.

## Condition of Trade.

The present month is marked by a good degree of quiet activity on the part of merchants throughout the country in taking care of current business and in getting things into shape for the fall and winter trade. A good many assorted orders are thus going to the manufacturers and wholesale houses. The demand upon the manufacturers from the large trade is somewhat uneven and intermittent, September being indeed in some respects not quite so active as some weeks in August, when many of the jobbing houses placed orders covering their requirements for a while. On the whole the market seems to be getting into better condition with a gradual movement in the direction of a fair volume of business. Prices continue fairly steady, but with slight changes here and there. The prices of a good many goods in the line of specialties and articles of minor importance when the market as a whole is considered are being revised by the manufacturers, and in some cases moderate reductions are being made. The market has, however, a decidedly firmer tone than a month or two ago. Goods in many cases cost nearly as much as they did a year ago, as wages are not materially lower. Many manufacturers, however, are anxious for orders, and concessions are obtainable in many lines, staple and otherwise, by those who are willing to buy even fair lots. There are, on the other hand, several leading lines in which prices are firmer, partly as a natural reaction from very low figures, which crowded if they did not pass below the cost mark, and partly as the result of a very commendable determined effort by the manufacturers to preserve the market from demoralization. The quickened demand also, which has set in during the past few weeks, has undoubtedly had a good effect on values. It is a feature of the market that out of regard for the stability of prices and the general support of the market some large manufacturers are showing remarkable self-control in holding prices when competitors are securing business by making slight concessions from the general, and in some instances, the regular or agreed prices.

### Chicago.

While the past week has developed no market movements of striking importance it has nevertheless empha-

sized the fact that continued progress toward normal activities is being made, which if not as rapid as might be desired is none the less encouraging. There is now undeniable evidence of an increased demand, not only in lines that have all along been comparatively strong, but in others which have been inactive and even stagnant. Some of the latter have benefited directly from the more liberal purchases of supplies by the railroads and a more cheerful spirit pervades this section of the market. But whatever gains are noted in the general distribution of goods, whether from manufacturers' or jobbers' stocks, may be taken as an index of the measure of increase in consumption; for buyers, both large and small, are still sailing close to the wind in the matter of anticipating requirements. In commenting on this phase of the situation a prominent manufacturer of Builders' Hardware cited the unusually large proportion of orders offered for shipment by express. These are far in excess of any like period in the history of the concern, and a very liberal share of them is contributed by the large jobbers. Moreever, the character of these express orders plainly indicate the extremity of stock reductions, since they frequently include items which are commonly carried in quantities ample to supply any ordinary demand. Like conditions in heavy goods are evidenced by the instructions for prompt execution and shipment which generally accompany orders to be shipped by freight. However, the conservatism which such policies reflect is by no means a sign of weakness, but, on the contrary, may be regarded as one of the important elements of strength underlying current conditions. Fortunately, there is nothing in the situation at the present time to incite or foster a speculative spirit in buying, and the burdens of overstocks arising from purchases made in anticipation of rising values do not figure among the commercial and industrial problems now confronting merchant and manufacturer. There are now very few Hardware lines but what are reported to be at least a little more active than they were a month ago, and the representatives of manufacturers are more generally beginning to note improvement in their sales. Following the recent withdrawal of prices by the manufacturers of Machine and Carriage Bolts new discount sheets are being sent out, in which a revision of prices is made resulting in an advance from 5 to 10 per cent. Western dealers anticipate a good trade in Field Sporting Goods as soon as the shooting season is fully open. Shipments of Loaded Shells, Ammunition, Guns, &c., have been going forward in liberal volume for several weeks, and orders for these goods are still fairly numerous. Forward orders for fall goods placed some time ago were very light, and as a result some reorders for Stove Boards and other goods are already beginning to make their appearance. The market is undisturbed by any radical changes or fluctuations in values, and considering the difficulties of the situation prices are fairly well maintained all along the line.

## Baltimore.

CARLIN & FULTON.—We are assured by nearly every factory representative who calls upon us, after having made his trip or perhaps just starting upon it, that "there is a better feeling in business," and while they do not state that this improvement on the part of the convalescent patient is manifested in the number or size of orders taken, yet as they all have the same stereotyped statement there must be some basis for the diagnosis of the case.

We do believe that a comparison of the business done by most houses since July 1 with that done during the corresponding time in the years 1905 and 1906 will show that trade is now moving along in a satisfactory manner, even though the abnormal business of 1907 may not be equaled.

It is a matter of general information that the crops of the present year have been immense, and represent in value several billions of dollars, and it is also a fact that nearly every stock of merchandise, whether in the hands of retailers or wholesalers, is depleted and needs replenishing. This means undoubtedly business for the great transportation lines of the country, and it rests largely with the railroads to start the wheels of business at a rapid rate, one great cause of the depression having been their shutting down upon all expenditures and improvements. The railroads still report several hundred thousands of idle cars, but undoubtedly there are included in these numbers thousands which perhaps should be in the scrap pile or in the repair shops, and the expenditure of money for needed betterments would undoubtedly facilitate and help the resumption of business, the lack of which they complain of, and for which condition they are partly responsible.

We are yet to have a few weeks more of political agitation and oratory preceding the Presidential election, but it has been noticeable that during the entire campaign the arguments have been generally free from personal abuse, and the topics discussed are mostly those which one would hear in almost any lecture hall or from the chairs of political economy in any of the universities of our land. It is hardly possible that in the event of either candidate being successful, the policies to be continued or those to be introduced will be of a nature to overturn our Government, and while it has long been the fashion to expect always during a Presidential year a diminished activity in business, there is really but little necessity for it, as business goes along every day, and the mechanic must work, the laboring man must live, and the wealthy man will spend, no matter who may be the fortunate one in the contest.

## Nashville.

GRAY & DUDLEY HARDWARE COMPANY.—Reports of the condition of trade in this section have naturally become a little monotonous because of the fact that nothing of an exciting nature has occurred for quite a while. As the season advances each month shows quite an increase in the volume of business. Crops in this section being now well assured we can reasonably expect a continuance of this increased volume. In fact, the volume of business we are now receiving is not quite as good as it should be in view of the fact that we have made excellent crops in almost every section of the South. The settlement of the strike in the Birmingham District has had a splendid effect on trade in that section. The opening up of the mines and manufacturing plants have given employment to thousands of people who were only occupied in conducting or fighting a strike. They are now engaged in producing wealth, which is better for the prosperity of the country. Pig Iron is pretty firm, and there are no marked declines in prices of Hardware. Collections are not quite as good as they should be at this season of the year, but the small number of failures throughout the territory indicates that there is nothing alarming about the slow collections.

## Philadelphia.

SUPPLEE HARDWARE COMPANY.—Trade conditions since our last letter do not evidence any marked improvement, although, we are happy to say, they disclose no retrograde tendency. In other words, orders appear to be of about the same volume as when we last wrote. Prices remain without any special change. The fluctuating share market of the past week, we think, reflects most business conditions. All are hopeful. No one is certain.

We are apprehensive that the disastrous floods which have recently occurred in the South will have a tendency to retard trade in a measure, but we trust not for long, and we feel that the Southern merchants will not be long in recovering from the destructive visitation of the elements.

The Vermont election, which is always looked upon as an index of the sentiment of the people in the Presidential year, has had the effect of steadying business conditions considerably. The question of changing the policies of government is indeed a most serious matter, and we think that most people feel that, "It is better to bear the ills we have than to fly to those we know not of." We can look back, not so very many years ago, when a Presidential campaign had the effect of demoralizing all sorts of trade, and business would not assume its normal conditions until after it was made certain at the polls of the choice of the people. We feel that such conditions do not now obtain, and, while we should

personally deplore a change in the present government, yet we are not one of those who think that should such a change occur the country would go to the "demnition bowwows." We have too much faith in the judgment and sound common sense of the American people. We are very glad indeed that the present campaign is evidently one of education, and in which literature will play a more prominent part than ever. The vilifying of candidates has always been a feature much to be deplored, and the present conditions as they now exist show beyond question that the conscience of the people is becoming better from all viewpoints, and that we, as a great people, are growing better instead of blacker, as some seem to think.

### Louisville.

BELKNAP HARDWARE & MFG. COMPANY.—The market is unquestionably gaining strength. Like some giant who has been bound and fettered by mistrust and fear and who now is shaking himself and stretching out for a period of wakefulness and action, so the market has got a move on, to speak in the vernacular. The adjustment of prices has been for the most part made and the long-headed, short-haired buyers are getting in their orders, while cobwebs are being swept from warehouse windows in preparation for the oncoming stock. This means a shifting tonnage, and that means earnings for the railroads. C. O. D. What a juicy business this railroad business would be were it not for the claims and the legislatures! Fortunately enough, prices were held down during the fat years by the controlling interests, so when the panic came, while one might be pestered with his bank account, he was assured of the value of his Nail and Wire piles. There was no crumbling to ashes such as used to mark eras like this in the olden time, when Nails had been premitted to run up to $5 per keg for 10d and Bar Iron to nearly 4 cents per pound. We had to prepare for great shocks in those days, the free competition, the uncontrolled market made such contrasts in our inventories that it was hard to recognize on their pages the same articles one year after another.

Collections are fairly good, the local country banks are well supplied with funds, but in the larger centers rates are now perceptibly hardening, a most healthy sign in itself. The very cheap money offering a little while since has been absorbed, apparently, and that means it will be doing its work where needed and that dividends may be earned on the difference between these latter rates and those we had to pay last fall, for example.

The drought hereabouts is an unhappy feature in the immediate foreground. We have had a dry summer, and the gardens and meadow lands are parched. Corn in the lowlands, still drawing on the moisture of last spring when the Ohio River overflowed its banks five distinct times, is doing well, and this hot September weather is just the thing. State fairs are on in full force, and the automobile is pushing our famous Kentucky horses over the edge of the road. We haven't got these gentlemen with the speed mania properly regulated yet. We hope to in time as we value our lives.

### Portland, Oregon.

FAILING-MCCALMAN COMPANY.—We have nothing new to report, and the old saying is again borne out that "No news is good news," for the only thing we can say about conditions in the Pacific Northwest is that they are good and are steadily growing better. Everybody out here is doing more business than at any time before, excepting in the flush times of a year ago, and some of us are even beating that high-water mark quite a way. We certainly hope that the rest of the country is in as good shape as Oregon and Washington.

### Omaha.

LEE-GLASS-ANDREESEN HARDWARE COMPANY.—Trade conditions throughout the corn belt, and east and west of the Missouri River, continue very satisfactory. Business in all lines is flourishing and the volume of goods daily going into consumption continues with a steady regularity.

The prospects for a very large yield of corn are practically assured. The business basis of this part of the country is the crops, which have been excellent for a series of years, bringing substantial values. To this can be added the largely increased productions of live stock, also commanding profitable prices, so that the conditions generally are in admirable shape, and with the required amount of the circulating medium to move Eastward the immense business offering, no obstacles appear in sight to disturb the present satisfactory outlook.

### Cleveland.

THE W. BINGHAM COMPANY.—Trade conditions are certainly improving every day. It is quite noticeable in our business by the size of orders we are receiving from salesmen and by mail—that is, orders are longer and for larger quantities. The manufacturers also in this section are putting on an increased force and getting into the old prosperous groove in which they have formerly traveled.

Money matters in this section are quite easy. Savings banks report larger deposits than ever before, and we believe people all over the country have saved more of their funds since the money trouble started last October than ever before. One of our savings banks here reports $36,000,000 deposit, which is the highest mark in the history of their institution, and they say of this amount $30,000,000 consists of ordinary savings accounts. They say also that there has been a net increase of $2,000,000 deposit since the panic started.

All kinds of crops are being gathered, showing very bountiful supplies are coming to us. Fruits such as grapes, peaches, plums, pears, apples and melons never were so abundant in this section, and never were sold at such high prices; in fact, every one all over our country who deals in products that come from the ground have been wonderfully blessed.

Trade and traffic in the General Hardware line is very good, and we are encouraged with the feeling that we are prospering in an even steady volume (no flash in the pan), and we hope it will steadily increase and remain with us; everything portends to rounding up the year's business in a larger volume than we really anticipated. There seems to be a disposition on the part of some to pay more attention to future goods. If the dealers put off ordering they will get left when they want the goods. The manufacturers and jobbers cannot anticipate fully their customers' wants, and they will have to be lenient with the jobbers if they cannot supply them as promptly as they desire. Prices for goods for fall and spring shipment on many articles are permanent, and there is no reason why customers should not anticipate their wants. We have reference now to Meat Cutters, Food Choppers, Axes, Galvanized Ware, Skates and Holiday Cutlery, and many other goods. Orders should be placed now for Shovels, Spades, Lawn Mowers, Rubber Lawn Hose, Scythes, Snaths, &c., for next spring shipment. They will certainly have good trade for these goods, and they had better be prepared for it.

The right kind of encouragement to our railroads, the arteries of our country, will go a long way to keep the wheels of industry humming.

### St. Louis.

NORVELL-SHAPLEIGH HARDWARE COMPANY.—Business continues to be good, improving steadily, but very slowly. The prophets who prognosticated we would be overburdened with business about this time have not quite hit the mark, although they were on the right track. Business is improving steadily. We want to impress this.

One of the most encouraging signs is the revival of new stock orders, of which we have sold a large number lately. When men feel conditions are encouraging enough to start in a new business they certainly have faith in the future of the country in which they embark in business, and there has been a lamentable lack of new stocks up to within a short time. We take it as one of the most hopeful signs of the times for a thorough revival of business.

From many sections we hear reports of a decline in the average amounts of the crops. They are not quite

as good as they had been thought to be a short time back. However, even with this they are excellent, and the farmer will get a lot of money this fall. It will take some little time for it to percolate from the farmer to the dealer and from him to his bankers and his wholesalers. So let us be a little patient and everything will come out all right in a short while. Drought, boll weevil and a few other insidious insects are being talked about in some sections, but the average condition of the crops is mighty fine, and we expect a big business from now on.

Prices are firm, collections are good, and the atmosphere seems to be very cheerful.

### St. Paul.

FARWELL, OZMUN, KIRK & Co.—Fall business has set in and promises to be satisfactory. The weather has continued favorable for threshing and getting the crops ready for market, and the movement has already started at a gratifying rate. It has begun earlier than usual, and, as threshing is now well along and the grain is ready for market, it is expected that the railways and elevators will soon be very busy, and, as a result, that collections will show up well.

It now appears that our Northwestern merchants will generally be able to pay up closer than usual.

We always find that some sections are not so well situated, and there will be some territory this year having short crops. But this area is not very large, and in it the crops are not an entire failure, so that on the whole the situation is favorable, and we may reasonably expect a fairly satisfactory closing of accounts by January 1, as well as a good fall trade.

Just now the Northwest is having a spell of very dry, hot weather, the mercury running into the nineties and rain is greatly needed. Forest fires have done large damage in northeastern Minnesota and northern Wisconsin and Michigan, and at this writing the situation is critical, and the feeling of danger to a large section of country is intense. Just now there is some prospect of early rain.

If it comes it will bring great relief. The loss of property is already large, but the danger to still further and greater loss, both of life and property, renders the situation very acute, and a general soaking rain will be thankfully welcomed. It is very fortunate, indeed, that these weather conditions did not come a few weeks earlier, when the crops would have been greatly damaged.

## NOTES ON PRICES

**Wire Nails.**—Conditions in the Wire Nail market appear to be very satisfactory, although business the past week is not quite up to August standard. Demand is about equal to the capacity employed at present by the most prominent manufacturers, and prices are well if not inflexibly maintained by all. Some contract orders are being placed for delivery within 60 days, but the majority of orders cover immediate requirements only. From the requests for prompt shipments it is inferred that jobbers are not materially increasing their stocks. Quotations are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

| | |
|---|---|
| Carloads, to jobbers | $1.95 |
| Carload lots to retail merchants | 2.00 |
| Less than carloads to jobbers | 2.00 |
| Less than carloads to retail merchants | 2.10 |

*New York.*—Distribution of Wire Nails in the local market continues moderate, but shows a slight improvement. Some merchants who have recently been buying in small lots have ordered by the carload, which indicates that they see an improved demand ahead. Nails are held on the basis of $2.30 per keg in small lots at store.

*Chicago.*—Orders have reached a volume about equal in amount to the present active capacity of the leading interest, which is now between 75 and 80 per cent. of the whole; shipments are correspondingly heavy. At the same time buyers are not extending their purchases to cover far ahead requirements, and as a result are quite urgent in their demands for prompt shipment. The mills have only moderate stocks on hand and are not increasing them, so that the situation from start to finish is one of safe conservatism. Prices are unaltered and firm. Quotations are as follows: $2.13 in car lots to jobbers, and $2.18 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

*Pittsburgh.*—New business being placed with the mills in Wire Nails is holding up remarkably well and promises to be fully as large, and perhaps a little heavier, in September as it was in August. While orders from jobbers are mostly for small lots for current needs, some contracts are being placed for Wire Nails for delivery within 60 days from date. The American Steel & Wire Company and the Pittsburgh Steel Company, the two leading interests in the Wire trade, are operating to about normal capacity, and have a good deal of tonnage on their books. We are advised that regular prices are being maintained. Quotations for base sizes are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

| | |
|---|---|
| Carloads, to jobbers | $1.95 |
| Carload lots to retail merchants | 2.00 |

Galvanized Nails are quoted at $1 over the price of the regular Nails.

**Cut Nails.**—An improvement in demand, though slight, is noticed. The bulk of the business received by the mills is still for small lots for immediate shipment. The general market is represented by the quotation of $1.80, base, per keg, f.o.b. Pittsburgh, but $1.75 is the extreme market, on carloads and over, to the large trade. In the Western market Iron Cut Nails are held at an advance of 10 cents per keg over Steel Cut Nails, but this differential is not observed in the East.

*New York.*—The movement of Steel Cut Nails is moderate and is confined to immediate requirements. They are held on the basis of $2.15 per keg for small lots at store.

*Chicago.*—While there is a little better demand for Cut Nails, stocks are being diminished slowly, and orders for replenishment are neither large or frequent. But on the whole conditions are improved and the trade is hopeful that a more active market will develop. We quote Chicago prices as follows: In car lots to jobbers, Iron Cut Nails, $2.08; Steel Cut Nails, $1.98. In small lots from store: Iron Cut Nails, $2.25; Steel Cut Nails, $2.15.

*Pittsburgh.*—There is some improvement in demand for Cut Nails, new orders and specifications against contracts received by the mills being larger than for some time. Buyers are still confining their purchases to small lots for current needs, and there is not much disposition as yet to contract ahead. The general market is represented by the quotation of $1.80, base, per keg, f.o.b. Pittsburgh, but $1.75 is the extreme market, on carloads and over, to the large trade. In the Western market Iron Cut Nails are held at an advance of 10 cents per keg over Steel Cut Nails, but this differential is not observed in the East.

**Barb Wire.**—Some evidences of the commencement of the Fall demand are seen, but as yet business received by the mills is not large. Regular quotations are reported as being maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, 2 per cent. discount for cash in 10 days:

| | Painted. | Gal. |
|---|---|---|
| Jobbers, carload lots | $2.10 | $2.40 |
| Retailers, carload lots | 2.15 | 2.45 |
| Retailers, less than carload lots | 2.25 | 2.55 |

*Chicago.*—The fall trade is opening with a fairly satisfactory demand, which it is expected will develop more activity when the season is more advanced. Reports from Western territory indicates a good Fence business, and the bountiful crops harvested and in prospect justify hopes in this direction. Prices, we are advised, are held without deviation. Quotations are as follows: Jobbers, Chicago, car lots, Painted, $2.28; Galvanized, $2.58; to retailers, car lots, Painted, $2.33; Galvanized, $2.63; retailers, less than car lots, Painted, $2.45; Galvanized, $2.75; Staples, bright, in car lots, $2.25; Galvanized, $2.55; car lots, to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

*Pittsburgh.*—A few stray orders are coming in, but the Barb Wire trade is dull, as it always is at this season of the year. The Pittsburgh Steel Company is making large additions to its Barb Wire capacity at its mills at Monessen, Pa. Regular prices are reported as being maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

| | Painted. | Gal. |
|---|---|---|
| Jobbers, carload lots | $2.10 | $2.40 |
| Retailers, carload lots | 2.15 | 2.45 |
| Retailers, less than carload lots | 2.25 | 2.55 |

**Plain Wire.**—There is an increase in demand for Plain Wire, mills receiving a large number of orders. Specifications on contracts are also being shipped in good volume. Regular prices are reported as being maintained. Quotations per 100 lb. to jobbers in carload lots are as follows, on a basis of $1.80 for Plain and $2.10 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the price to retailers being 5 cents additional:

| Nos. | 6 to 9 | 10 | 11 | 12&12½ | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|
| Annealed | $1.80 | 1.85 | 1.90 | 1.95 | 2.05 | 2.15 | 2.25 | 2.35 |
| Galvanized | 2.10 | 2.15 | 2.20 | 2.25 | 2.35 | 2.45 | 2.85 | 2.95 |

*Chicago.*—The demand for Plain Wire is quite satisfactory, and buyers are ordering in larger quantities than for some time past. Specifications against contracts are coming out freely, and there is a general demand for hurried shipments, which are increasing in volume. Fence manufacturers especially are anticipating a good fall trade. Prices continue firm and unchanged. We quote as follows: Car lots to jobbers, $1.98, f.o.b. Chicago, and to retailers, $2.05.

*Pittsburgh.*—Fence manufacturers and other consumers are placing a larger number of orders than for some time and Plain Wire trade is quite active. Contracts are being placed for delivery ahead, and specifications are coming in quite freely. Shipments by the mills are heavier than for some time, and we are advised that regular prices are being maintained. Quotations per 100 lb. to jobbers in carload lots are as follows, on a basis of $1.80 for Plain and $2.10 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the price to retailers being 5 cents additional:

| Nos. | 6 to 9 | 10 | 11 | 12&12½ | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|
| Annealed | $1.80 | 1.85 | 1.90 | 1.95 | 2.05 | 2.15 | 2.25 | 2.35 |
| Galvanized | 2.10 | 2.15 | 2.20 | 2.25 | 2.35 | 2.45 | 2.85 | 2.95 |

**Shot.**—An advance of 5 cents per 25 lb. bag of Drop Shot was put in effect by the manufacturers the 14th inst., the new prices being as follows, subject to usual abatement of 10 cents on ton lots:

| | 25-lb. bag. |
|---|---|
| Drop, up to B | $1.80 |
| Drop, B and larger | 2.05 |
| Buck and Chilled | 2.05 |
| Dust | 2.30 |

**Galvanized Ware.**—The market for Galvanized Ware is not quite satisfactory to the manufacturers, and conferences within the past few weeks have been held with a view to reaching some understanding by which better prices may be obtained than the low ones which have been current. It is not, however, announced that anything definite has been accomplished along this line.

**Tacks.**—While the Tack market is not characterized by entire regularity, it has a better tone and the manufacturers are hoping that in the near future the advances which have been made by some of the manufacturers may be put into effect by others. This is, however, a difficult line in which to secure uniformity, and the trade is wondering whether these efforts will be attended by entire success.

**Conductor Pipe, &c.**—The manufacturers of this line have recently been in conference with a view to getting the market in a somewhat more satisfactory condition and correcting irregularities which have existed. As a result the price on this line of goods is firmer and prices in some cases at least are about 5 per cent. higher. An advance has also been made in Elbows and Shoes, a line in which low prices have prevailed.

**Bolts, Carriage and Machine.**—An advance in Carriage and Machine Bolts, &c., amounting to about 2½ per cent., has been decided on by a number of manufacturers. This change follows the readjustment and general toning up of this market reported in our columns a week ago. It is hoped that the situation is sufficiently improved to admit of prices being maintained.

**Brass Butts.**—Owing to new competition in the manufacture of Brass Butts in Western territory, the base price of 55 per cent. discount has been changed to 65 per cent., with the usual extras for quantity and 2 per cent. for cash.

**Hinges and Wrought Butts.**—The manufacturers of this line of goods have been conferring in regard to the market, and as a result Heavy Strap and T Hinges and leading sizes of Steel Butts were yesterday advanced 10 per cent.

**Leather Belting.**—An advance of 5 per cent. has taken place in Leather Belting affecting practically all grades of this product. The movement seems to result from concerted action on the part of a number of leading manufacturers, but is based on the high price of Hides and Butts, which have advanced rapidly because of a falling off in the supply. The amount of business is still small and is earnestly solicited by all manufacturers, but there is said to be an appreciable improvement in trade as compared with that of the spring and summer.

**Lace Leather.**—Reference was made in our columns a few weeks ago to the stiffening of the Leather market, as represented by advances in Leather Belt Lacing. This tendency is emphasized by the fact that leading manufacturers are to-day making a further advance in their extreme prices. The market on Cut Lace may be represented in a general way by a discount of 50 per cent. and on Lacing Sides by a quotation of 23 to 24 cents per square foot.

**Window Glass.**—Jobbers' stocks are generally light and the demand incident to the approach of cooler weather has necessitated replenishing them to some extent. The wage scale has not yet been settled nor have the arrangements looking to the organization of the hand operated factories been consummated. Uncertainty as to the outcome of these two trade factors is holding back the starting of a large number of the factories. At a meeting of the Eastern Window Glass Jobbers' Association held in Pittsburgh on September 11, it was considered that business did not justify an advance in price, and present quotations were reaffirmed. Manufacturers' discounts, from manufacturers' list of January 1, 1901, are as follows: For A single and double strength Glass, 90 and 15 per cent.; for B single and double strength Glass, 90 and 20 per cent. Eastern jobbers' quotations from jobbers' list, October 1, 1903, for all sizes of single and double strength Glass, covering the territory east of Chicago, is 90 and 20 per cent. discount.

**Rope.**—Activity shows a moderate degree of increase as some larger orders for Rope are being received by manufacturers. The majority of requirements are, however, for small quantities. Some grades of pure Manila Rope are slightly lower in price. General quotations for Rope 7-16 in. in diameter and larger are as follows: Pure Manila, 9¼ to 9½ cents; Pure Sisal, 7 cents; No. 1 Jute, ¾ in. and up, 5¾ cents; No. 2 Jute, ¼ in. and up, 5¼ cents.

**Linseed Oil.**—Business is of moderate proportions, covering nearby requirements. The amount and condition of the new Flax Seed crop is still uncertain, although indications point to a yield at least as large as last year. There is an absence of contract buyers, while crushers are not inclined to accept orders for future delivery. Quotations are as follows: Western Raw, car lots, 43 to 44 cents; State and Western Raw, barrel lots, 44 to 45 cents per gallon. Boiled Oil is 1 cent per gallon advance on Raw.

**Spirits Turpentine.**—The accumulations of stocks of Turpentine at Southern points are considerably larger than in 1907 or the year before, owing to the lack of demand. Low prices have not stimulated buying, which has been confined to immediate requirements. The local market is quiet and prices have fallen off about ½ cent during the week. The New York market is represented by the following quotations: Oil Barrels, 38 to 38½ cents; Machine Made Barrels, 38½ to 39 cents per gallon.

## A Patriotic Paint Float

THE float represented in the accompanying illustrations was arranged and used in a parade by Granby Hardware & Implement Company, Granby, Mo. The exhibit of goods was confined to Paint. In Fig. 2 is shown a plan of the float, of which a blue print was made to work by when constructing it. The float was 19 ft. long and 5½ ft. wide at the center. It was built upon a wagon box with five 2 x 4 in. sills across the box, notched down over the edges of the box to prevent slipping; 1 x 4 in. lumber was bent around the outside and nailed to the ends of the sills, which were cut the proper lengths to give the desired shape. From the top of the sides, down 30 in., was hung sign painters' white cloth, and from that to within a short distance of the ground was hung light green cheese cloth, to represent water. Flooring was put on the sills about 18 in. wide on both sides for a distance of 10½ ft., on which to stand the Paint cans. First 15 1-gal. cans of Paint were set on each side of the float, and a frame was built to prevent the cans moving, a partition being put between every five cans. A ½-gal. can was put on the top of each gallon can, and a quart can on the top of each half gallon can. These were crated in the same way. Turrets were made for each end of the ship by cutting a barrel in half and sawing three holes in each half. Six inch stove pipe was projected through the holes to represent guns. These were made by putting a T-joint in each half barrel, to which was attached one joint of pipe at each end and two joints at the center opening, making three guns. Masts were made by using wagon tongues, stood upon the bottom of the wagon box. The fighting tops were made of a Nail keg cut in half and fastened near the top of the tongues. The smoke-

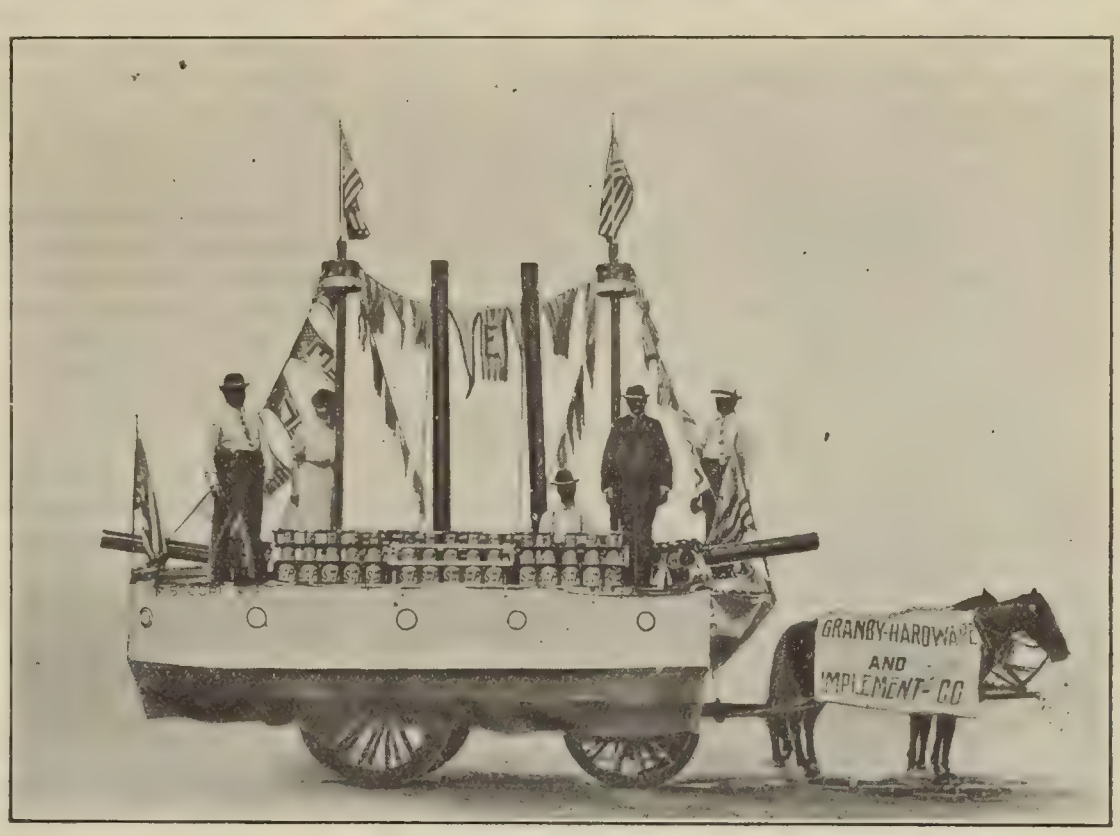



*Fig. 1.—A Patriotic Paint Float.*

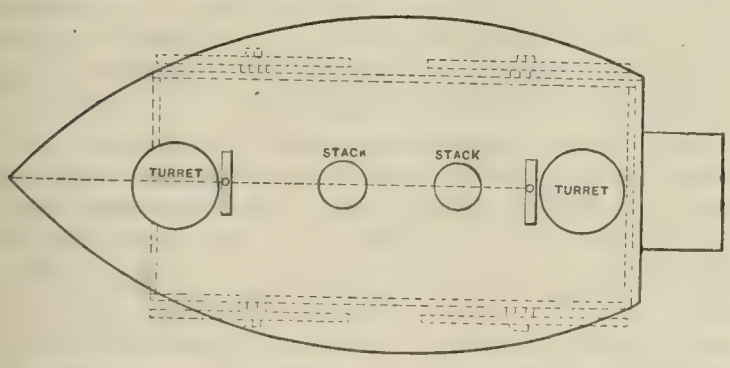



*Fig. 2.—Plan of Patriotic Float.*

stacks were made of 6-in. Stove Pipe. The top banner was arranged with an American flag in the center, with the words, "These Colors," at one side and "Never Run," at the other, which referred to the stars and stripes, also to the Paint. The float was decorated with flags and bunting, covering all exposed parts, while the crate strips that held the cans were wrapped alternately with red, white and blue. All the work on the float was done by the members and employees of the company without the aid of a carpenter.

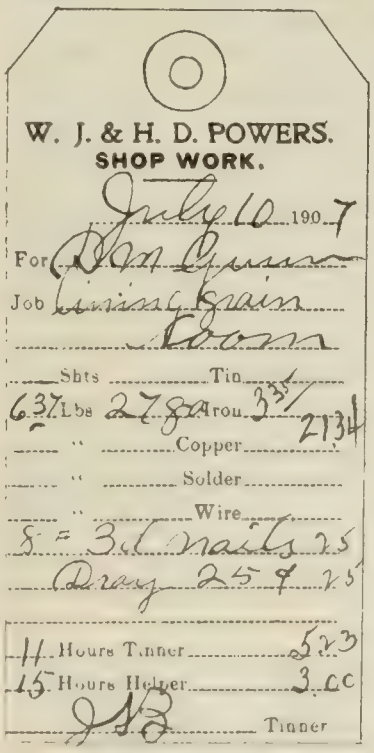
THE LAMB WIRE FENCE COMPANY, Adrian, Mich., has purchased the manufacturing business of the Bell Wire Company, Jackson, Mich., including machines and stock of Elastic Barb Wire. The purchaser will continue the manufacture of Elastic Barb Wire, which it will put out under its own trade name of Peerless.

## Window Display Outfit.

TO encourage merchants in putting in a stock of Keen Kutter Safety Razors the Simmons Hardware Company, St. Louis, Mo., is offering to furnish gratis to merchants purchasing two dozen assortments an elaborate window display outfit. It consists of 18 large empty boxes, wired and pasted together with cardboard, so that they will form an arch, a large number of small empty boxes and a liberal supply of posters, display cards, advertising signs, &c. A quantity of light blue paper is also furnished for background, and the effect of the entire display when installed according to the company's design is very striking.

## Tin Shop Work Tag.

W. J. & H. D. POWERS, Grand Rapids, Minn., dealing in Hardware, Iron and Steel, Stoves, Paints, Implements, Lumbermen's Supplies, &c., are using the tag here illustrated, reduced in size, in connection with their tin shop work. The tags are in the possession of the tinner, who fills one out for each job, as shown herewith. They are attached to the work done when feasible, or turned into the office, where they are priced. The cost of the work and material is shown on the face of the tag, and the price to be charged the customer is put on the reverse side. The job is then either tagged with the cost and selling price written on another tag, or it is charged to the proper account and the shop tag filed.


W. J. & H. D. POWERS.
SHOP WORK.
July 10 1907
For Don Gunn
Job Living Grain
Iron
Shts Tin
637 Lbs 278 Roo 3.35 21.34
" Copper
" Solder
" Wire
5 = 3.0 nails 25
Draw 25 7.25
11 Hours Tinner 5.73
15 Hours Helper 3.00
J.S.B. Tinner

*Tin Shop Work Tag.*

N. E. DICKINSON, formerly manager of Estate of John Dickinson, manufacturer of Carbon Tools, is now located at 47 Maiden lane, New York. He will make a specialty of Carbon Points for hard rubber, paper rolls, &c., as well as a full line of Emery Wheel Dressers in every shape, and will shortly issue a new catalogue to the trade.

## New England Iron and Hardware Association.

THE annual fall outing of the New England Iron and Hardware Association was held Wednesday, September 9, at Cliff House, North Scituate Beach, Mass. Sixty members and guests left Boston in a special car attached to the 12.45 p.m. train and spent the afternoon in various forms of outdoor amusements. Dinner was served at 6 o'clock, and the return journey to Boston was by the same route, leaving early in the evening. A feature of the afternoon was a golf tournament on the links of the Hatherly Golf Club near the hotel, which were secured through the courtesy of H. A. Whittemore. The tennis courts, baseball grounds and all the privileges of the club were available, and there was no lack of entertainment for all. President A. B. Marble presided at the table, and after dinner some informal speeches were made. H. B. Lupton of the Oliver Iron & Steel Company, Pittsburgh, Pa., made some interesting remarks on the present business situation and outlook. Afterward prizes were distributed to the winners in the golf tournament. H. L. Doten was first with the lowest net score, and will therefore have his name inscribed upon the association cup. This solid silver cup was donated by President Marble and Vice-President Hopkins and will be played for each season. Any member winning it three times will be entitled to keep it. There were four other handsome prizes; one awarded to Mr. Doten, the second to A. H. Decatur, the third to F. L. Butts and the fourth to A. J. Chase. The outing was in every way successful, and great credit is due the officers and committees having it in charge. The chairmen of the several committees for the day were: Arrangements, W. A. Hopkins; Golf, W. S. Locke; Transportation, H. A. Whittemore.

## Manufacturers and the Jobbers' Catalogues.

WHILE jobbers much less now than formerly are asking manufacturers to pay for the insertion of their goods in the distributers' catalogues, there is still too much of this done. Some wholesale houses, however, take an independent and dignified stand in the matter and refuse to solicit this aid. In this connection the following letter from Waterhouse & Lester Company, San Francisco, will be of interest. This company is preparing to issue a catalogue and have decided to do so without asking the manufacturers to contribute to the expense. The letter is as follows:

> After giving the matter revised consideration, we have decided to withdraw our request for the co-operation of manufacturers in the publication of our catalogue.
>
> Though we have received such a number of favorable replies as in the aggregate to greatly lighten the burden of catalogue publication which must be sustained by us, we have decided to revise our ideas, because we find that the majority of manufacturers look upon "catalogue contributions" in the same light as the public has begun to regard rebates, subsidies, &c., and we therefore believe we will be more up to date, more nearly right, and certainly more independent, by making our catalogue "stand on its own bottom."

## Price-Lists, Circulars, Etc.

*Manufacturers in Hardware and related lines are requested to send us copies of catalogues, price-lists, &c., for our Catalogue Department in New York; and at the same time to call attention to any new goods or additions to their lines, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.*

JUBILEE MFG. COMPANY, Omaha, Neb.: Illustrated descriptive booklet relating to the Jubilee Self-Heating Iron. This is a sad iron carrying a gasoline tank.

MARLIN FIREARMS COMPANY, New Haven, Conn.: 1908 catalogue illustrating and describing the complete line of Marlin Rifles and Shotguns. Repeating Rifles are illustrated in popular calibers, from 0.22 to 0.45 in many different models. Repeating Shotguns are shown in 12 and 16 gauges and in many models, weights and grades. The catalogue also includes all the Cartridges used in Marlin Rifles, and gives much information relative to Powders, Bullets, Sights, care of Guns, &c.

## Requests for Catalogues, Etc.

*The trade is given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.*

**REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate:**

FROM BUXTON & SMITH, who have succeeded Williams & Buxton, Newport, Ore., handling Shelf and Heavy Hardware, Stoves, Tinware, Sporting and Athletic Goods.

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FROM AYRES & GALLOWAY, Middletown, N. Y., who have purchased a three-story building, 40 x 118 ft. in size, and will enlarge their business. The store will be equipped with electric elevator, cash system and rolling ladders. The firm carry Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints, Oils, Sporting and Athletic Goods, and also do plumbing, heating and tin work.

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FROM V. A. HEMSTREET & BRO., Augusta, Ga., who lost all their catalogues relating to Sporting Goods and kindred lines in the recent freshet.

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FROM CHARLES SHLOSBERG, 210 Third street, Elizabeth, N. J., handling Shelf and Heavy Hardware, Plumbers', Tinners' and Roofers' Supplies.

## Trade Items.

THE ROCHESTER CASTER & TOOL COMPANY, Rochester, N. Y., B. C. Mathes, president, has been incorporated for the manufacture of Casters of all kinds for metal beds and wood furniture. The company is now located in its own factory and has installed modern machinery for the manufacture of its line, which will include a new ball bearing Caster on which a patent has recently been issued.

THE sales department of the American Steel & Wire Company, Chicago, has issued a paper referring to Horse Shoes, entitled "Juniata News," which will form one of its regular series of publications. While devoted particularly to Juniata Horse Shoes, the publication is designed to contain general information of value to horseshoers and blacksmiths. There is, for instance, in the present issue, an illustrated article pointing out the opportunities for the blacksmith in repairing automobiles. Other illustrated articles, written by men of practical experience, are on the subjects, "Should Horseshoers Be Licensed?" "Welding Steel," and "Wearing One Side of the Shoe More Than the Other."

THE name of the Hurwood Mfg. Company, Bridgeport, Conn., manufacturer of Tubular Lanterns and Food Choppers, has been changed to John A. Hurley, Inc. The officers are the same as before. A new corporation simply takes the place of the old, the only change being in name.

THE AMERICAN SALES COMPANY, Commercial National Bank Building, Chicago, Ill., which is the distributing agency for a number of Wire Cloth factories, at its annual meeting held last week, elected the following officers: Frank Low, president; C. L. Hoff, vice-president; H. W. Seaman, treasurer; C. K. Anderson, secretary and general manager.

THE MASSACHUSETTS SAW FILE WORKS, Chicopee, Mass, manufacturer of Victor Hack Saw Blades, &c., has removed its London office to 31 Bartholomew Close, London, E. C.

ROBT. H. INGERSOLL & BRO., whose main office is at 45-49 John street, New York, has opened a branch office at 200 Magill street, Montreal, through which all business in the Dominion will be conducted hereafter.

WILLIAM WILKENING has succeeded to the Hardware business of Albert Rothermel, 432-434 East 149th street, New York. Lines handled include Builders', Contractors', Cabinet and Factory Hardware, Cutlery, &c. Attention will also be given to locksmithing and electrical contracting.

# HARDWARE FREIGHTS.

## Collection of Claims Against Railroads.

THERE is scarcely any business subject that requires so much care in correspondence as the collection of claims against railroads. There are some claim departments that honestly seek to get at the facts and pay what is due within a reasonable time, but they are exceptions. The Pennsylvania claim department has actually been known to advise a shipper that he had made an error in figuring what was due him, and should have made his claim for a larger amount, but the great majority of claim agents wait until the shipper has presented overwhelming proof of his loss, and then seek a compromise. It is necessary that the shipper should be very exact in stating the facts, but, having stated them, he should be emphatic in standing on his rights. It is useless to claim more than what is fair and right, as this merely delays settlement and often affords good grounds for refusing to recognize the claim.

**Exact in Facts, Emphatic in Rights.**

It will be found very inconvenient to keep correspondence regarding claims in an ordinary alphabetical file. One should have the entire record of a claim before him in writing to a claim agent, so the letter can be framed directly to the point, and it is therefore very important to have all letters from the road, and, if possible, carbon copies of all letters addressed to the local agent or the claim agent, filed together on each claim. Hardware merchants who have a vertical filing cabinet can do this very easily. Instead of filing the correspondence alphabetically, a separate folder can be marked for each claim, and these folders can be kept together.

**Systematic Filing of Claim Details.**

Where folders are not used a large manila envelope can be marked for each claim, putting enough information on the outside of the envelope regarding its contents to save time in checking up. A plan that answers the purpose just as well is to attach all letters and papers regarding a claim to a heavy sheet of paper, cut letter size. The collection can then be filed flat in a drawer or box file, or folded with the cover sheet outside, to be filed in pigeon holes. The greatest advantage in filing claims by either of the methods suggested is that it only takes a few moments to look over an entire file of claims and see whether the claim agent is taking too much time to reply to the last letter addressed to him.

**Another Method of Filing.**

Somewhere in a book or on the cover sheet of the papers referring to each claim, a careful record should be made of all the documents or papers that have been sent to the railroad. It is important, also, to keep a record of the railroad's file number of the claim, and this number should always be used in writing letters. The claim agent keeps all correspondence regarding a claim in one cover or envelope, which is given a number, and his clerks are not likely to give attention to an inquiry unless it shows this number. The clerk who replies may merely write a general "jolly," stating that they are giving the matter careful attention, but need further time for investigation and so forth, but if the claim number is given they will look it up.

**R. R.'s File Number of Claim Important.**

The railroad usually has a tedious routine to go through in the investigation of a claim, and it actually takes two or three months on many roads to go through this routine. When a merchant finds that they do get through within a reasonable time, it is useless to inquire oftener than once in 30 days, as too frequent inquiries will only bring evasive replies. When, however, a reasonable time has elapsed, it is just as well to let the claim agent know from time to time, in language that will grow in emphasis as time passes, that a settlement is expected. A great deal of the delay is due to the fact that many of the roads want to locate the responsibility for the trouble, so they can call some employee to account for it.

**A Tedious Routine.**

The St. Paul road and several other Western lines have adopted the commendable plan of settling the claim first, as soon as the actual merits are determined, and looking up the matter of personal responsibility afterward, but the majority of the roads cling to the old plan of making complete investigation before payment. They justify a delay of two or three months by the argument that the merchant whose goods are lost or damaged usually buys on 60 or 90 days' credit, and they see no reason for settling in less time.

**Some Roads Settle Promptly.**

The most troublesome feature of the claim question is that a large proportion of the claims presented to railroads are "declined." The merchant may be firmly convinced that the railroad is liable, but the claim agent is equally positive in asserting that he cannot recognize the claim. In perhaps the majority of cases the claim agent is right. There are many cases of loss for which the railroad is not legally liable, even though it may seem to the layman that it should be responsible. In some of the States the carrier is not liable for a fire loss, after the goods have been unloaded and stored in a depot, or after a car has arrived and notice has been given to the consignee. Other States make the railroad responsible for fire losses for a definite time, usually two days, after arrival, but when this time has expired the owner must bear the loss by fire, unless the railroad has been careless or negligent. The claim agent is not likely to misrepresent the facts in such cases.

**Railroads Not Liable in Many Cases.**

Where the damage was due to carelessness in packing, the railroad can usually evade responsibility by showing that there would have been no damage if the goods had been properly packed. In such a case the merchant should charge the loss back to the shipper whose negligence caused the damage. The same rule would apply where the damage was due to some inherent "vice" or defect in the goods. For example, a casting or some wooden article may break in a flaw, and there is reason to believe that if the article had been sound it would not have been damaged in handling.

**Careless Packing and Defects in Goods.**

A great deal depends upon the report which the local agent makes regarding the condition of the goods at the time of delivery. If he has any grudge against the merchant who brings in a claim he has every opportunity to prevent settlement or to cut down the amount, by the report which he makes when he forwards the papers to the claim department. If the agent does not give proper attention to claims and make fair reports, there should be an association of merchants in the town to collect the necessary evidence and have the company employ an agent who will deal fairly with the patrons of the road.

**Local Agent's Influence.**

Some railroads try to follow a rule that they will not "voucher" claims for less than a dollar. They do not follow this rule in all cases. The catalogue houses get their claims paid for amounts less than a dollar, and a railroad should not discriminate against its home merchants. A local or State association of Hardware merchants can make itself very useful when any railroad enforces an arbitrary rule of this character against its members. These associations can bring great influence to bear with a railroad, as the experience which railroad officials have had in legislative matters in recent years has made them careful not to take unfair advantage in their dealings with organizations of business men.

**Hardware Association Exert Influence.**

The best plan of all, however, for the Hardware merchant is to have the jobber or manufacturer from whom he buys the goods settle the claims against the railroads. They usually have a traffic manager or claim clerk who understands the ins and outs of the work, and there is a growing tendency among jobbers and manufacturers to protect their customers and give them credit when the merchant sends in proofs of the loss. This, in fact, is the prevailing custom of the country. The Hepburn law makes it possible for the

**Recourse to Jobbers or Manufacturers.**

shipper to recover from the initial line, no matter how many roads a shipment may have passed over on a long haul.

## National Mfg. Company's Catalogue.

THE NATIONAL MFG. COMPANY, Worcester, Mass., has issued a new catalogue which will interest the trade, not only because of the lines described and listed with copious illustrations, but because of its convenience and scope. Many additions to the company's lines are shown. Since the issue of the previous catalogue new ideas have been introduced into the product, and the lines have been reclassified and rearranged. Alphabetical arrangement has been followed in the catalogue with the use of single and sequential numbers so far as possible, the letters indicating different series of the same item. The illustrations are in panels, each page containing a photographic reproduction of the goods shown upon it, extending the vertical length of the page and filling a broad space on the inner margin. Against each panel is the list of the goods which it illustrates with order number, size and price. The line is an extensive one, including Wire Baskets for many purposes, Strainers and the many other articles now fashioned from Wire. Attention is called to the company's sample room, a corner of which is shown in an illustration, with wall and counter displays of goods. Another page shows the display of the company at the House Furnishing Exhibition at Madison Square Garden, New York, in 1906. The frontispiece is a full page engraving of the company's factory, with the large extension recently occupied, and on another page are views within the works.

## Wyeth Hardware & Mfg. Company.

THE WYETH HARDWARE & MFG. COMPANY, St. Joseph, Mo., is planning to erect in the near future a building to occupy half a block, which will cost in the neighborhood of $200,000. When completed the building is to be used exclusively for the wholesale Hardware business and for the main offices of the company. According to intentions the building will have a frontage of 240 ft. and a depth of 130 ft. It will have six stories and basement, with a total floor space of about 360,000 sq. ft. Construction will be the most substantial, and all facilities and equipment will be modern and efficient in every respect. All negotiations regarding real estate, trackage, &c., have not yet been completed, but it is hoped that they can be arranged satisfactorily so as not to interfere with the company's plans.

## Gifford-Wood Company's Catalogue.

GIFFORD-WOOD COMPANY, Hudson, N. Y., and Arlington, Mass., has issued a catalogue illustrating and describing its elevating and conveying machines and ice tools. The machines include those necessary for handling ice at ice houses, while the tools are those used in harvesting ice. The company is making the designing and manufacturing of Elevators and Conveyors for handling coal a special feature, these being included in its coal machinery catalogue.

S. P. BJORKLUND, Milwaukee, Wis., is making a specialty of compiling and editing Hardware catalogues referring to general Hardware, Heavy Hardware, Machinery, Saddlery and the various lines of fancy goods usually carried by the trade. He also handles catalogues for manufacturers. Mr. Bjorklund, who has spent years in the Hardware business, and has also a knowledge of printing, employs a force of experienced compilers and is prepared to get out a catalogue of a firm's entire stock or product, with little or no attention to the details of the work on their part. He refers to the fact that he is prepared to handle work from all parts of the country to equally good advantage.

O. H. WITTE, president of the Witte Hardware Company, St. Louis, Mo., who for the past three months has been traveling in Europe, will sail for home on September 15.

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## STORE OF STEINER & VOEGTLY HARDWARE COMPANY.

AN admirably arranged retail establishment is that of the Steiner & Voegtly Hardware Company, 230-234 Diamond street, Pittsburgh, Pa., to which the accompanying illustrations relate. The building, entirely occupied by the company, is 40 ft. wide, three stories and basement.

As shown in the floor plan, Fig. 1, the store has two entrances, one at each side. The depth of the left hand half of the salesroom is 125 ft. At the back, and in the rear on this side is the bookkeepers' office. The other side of the salesroom extends back 85 ft., at the end of which is the private office.

### The Show Window.

The show window, Fig. 2, is 27½ ft. long at the back and 6 ft. deep. The two front lights of plate glass, which are divided by an iron column, are each 10 x 10 ft. in size, and the two side lights are each 10 ft. by 6 ft. 8 in. The two lower lights of plate glass at the back of window are each 5 ft. 6 in. high by 12 ft. 8 in. long, and each sash weighs 400 lb. These are hung on pulleys and counterbalanced by using a 200-lb. weight in each of the boxes at the outside ends and a 400-lb. compound pulley weight in the center box. Either of the heavy sash can be raised with one hand quite easily. Four-in. extra heavy Morton's sash pulleys and Morton's cable chain are used to operate the windows. Fig. 2 also shows the two side, or wall, cases, which are each 6 x 5½ ft. in size.

The display in the large show window is changed every week, and the company refers to its window as attracting more attention and advertising the house more effectively than any other means. The side wall cases, in which fine mechanical tools are sampled in one and Saws in the other, are arranged with track on the floor and large display boards having ball bearing sheaves attached to bottom. Openings on the inside permit the boards to be drawn into the store. The window frames of the cases are hinged to the door jambs and open outward. They are opened for cleaning purposes only, and are securly locked when closed. All windows and doors are equipped with an electric protective system to guard against thieves.

The stock includes Builders' Hardware, Cutlery, Silver Ware, Mechanics' and Machinists' Tools, &c. The floor plan, Fig. 1, shows the arrangement of shelving, counters, showcases, &c., also the location of the different lines of goods. On entering the store at the left side is a continuous line of shelving, Fig. 3, 12 ft. high and 90 ft. long and 16 in. deep. This side of the store is principally devoted to Builders' Hardware, Silver Ware, Cutlery, &c. All shelving throughout the store is 3 ft. between uprights and arranged to suit the stock.

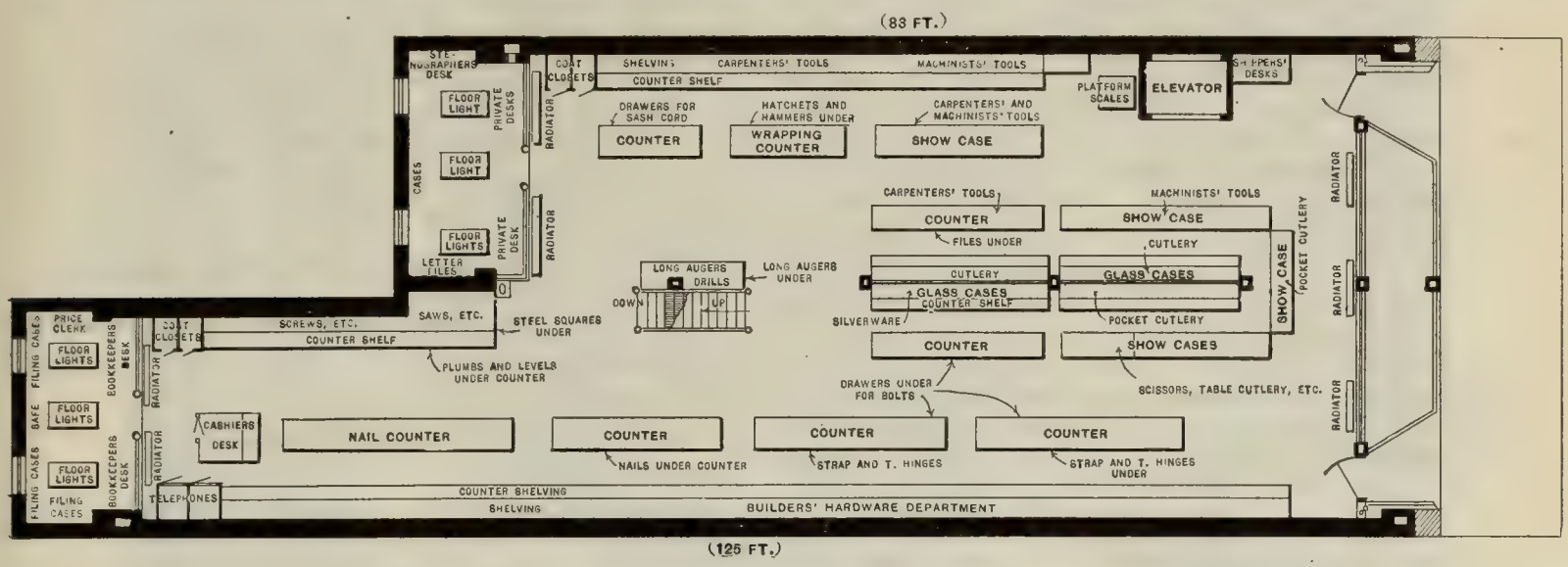



*Fig. 1.—Floor Plan of the Steiner & Voegtly Store.*

### Shelving and Showcases.

A feature of the shelving is that it is built in sections, 3 ft. high and 9 ft. long, so that it can be easily moved to another building if desired. To accomplish this every third pilaster, which is beaded, can be taken off by removing the screws which hold it in place, the bolts holding the sections together at the ends being then taken out and the screws which hold the cornice in place removed. The sections of shelving can thus be taken down like a pile of boxes.

The depth below all ledges is 30 in., and this space is arranged with paneled drop doors which can be slid back at the top out of the way, like drop fronts on sectional glass bookcases. This has been found an excellent arrangement for keeping dust and dirt from the goods when sweeping. All shelving, showcases and counters on this floor are of hardwood antique, finely finished. The center front of the store has lower shelving similar to that just described, with top cases on both sides backing up against each other, Fig. 3. These cases are 4 ft. high

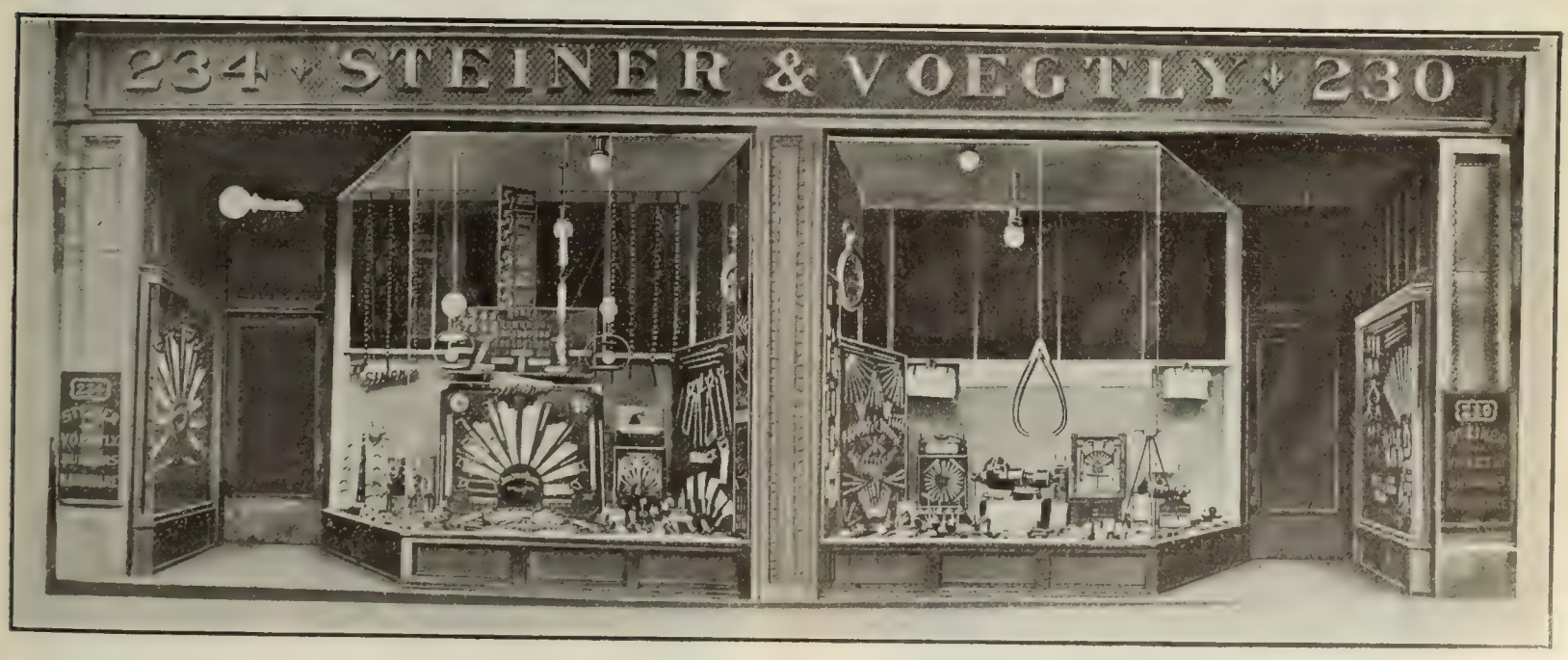



*Fig. 2.—The Two Large Show Windows.*

and 15 ft. long. Large plate glass showcases are located on both sides and in front of these cases, with plenty of space to get around comfortably.

All counters are 12 ft. long, with 30-in. tops, and all space underneath is utilized, bins being provided for Nails, Strap Hinges, Hatchets, Hammers, Files, &c.



*Fig. 3.—View of Left-Hand Side of Store.*

Entering the door at the right-hand side is the desk of the shipping clerk. Next is the elevator, and beyond that a platform scale. Then come shelving and counters devoted to mechanics' and machinists' tools.

### Swinging Sample Boards.

In Fig. 4 is a view of two sample doors, attached to the shelving, upon which tools are sampled. Doors of this kind extend from the third section to the rear of the shelving. The doors are of finely veneered hardwood,

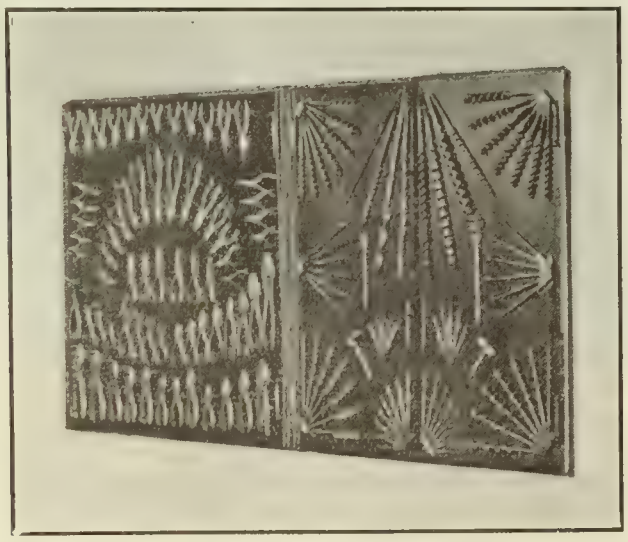


*Fig. 4. Swinging Sample Doors.*

each ⅞ in. thick, 18 in. wide, and 3 ft. high. The same system is used for sampling Builders' Hardware. Goods are kept in the shelves back of the doors, and each door is kept tightly closed by a spiral spring. One end of the spring is hooked over a screw hook, and can be easily unhooked to permit the door to remain wide open when taking goods from the shelving behind the door.



*Fig. 5.—Saws, Plumbs and Levels and Squares.*

### Saws, Plumbs and Levels, and Squares.

The section of shelving shown in Fig. 5 is located near the bookkeepers' office. Above the ledge the shelving is deep enough to take the longest Rip Saw boxes endwise. The space below the counter ledge is used for Plumbs and Levels, which are also accommodated endwise. In the cupboard at the front of the shelving is a space devoted to Steel Squares. The boxes from which to retail are kept on the two upper shelves, the shelf next to the top one not being as deep as the one above by 3 in., to provide space for the hanging tongues from the top shelf. The third and fourth shelves are the same depth as the second, and on them surplus stock is laid flat. This arrangement is so economical that the four shelves accommodate 12 dozen Squares.



*Fig. 6.—One of the Top Sample Cases.*

### Sample Rooms.

In the front part of the second floor of the building are two sample rooms, the furniture and fixtures of one being all solid mahogany, the other being fitted up in natural oak. The two are divided by a frosted glass partition with connecting door. The lower sample cases are all arranged with drawers, while the upper cases have sliding drawers with open sides, the bottoms being hinged at the rear to hanging stiles, as shown in Fig. 6. When a drawer is pulled out, it drops down, displaying the largest pieces of Builders' Hardware. The rooms are separated from the balance of the floor by a plate glass partition.

## The Norleigh Diamond Sewing Machine.

The latest addition to the sewing machine line of Norvell-Shapleigh Hardware Company, St. Louis, Mo., is a lock stitch machine. It has a positive cam take up which is said to be only used on machines of the highest grade. The machine is furnished with a needle guard, which forces the needle into the proper position; also automatic lever, ball bearing stand and full high arm, which is nickel plated and finished in several colors of enamel. The woodwork is fine quarter sawed oak and the machine is fully guaranteed in every way.

## Fine Steel Wool.

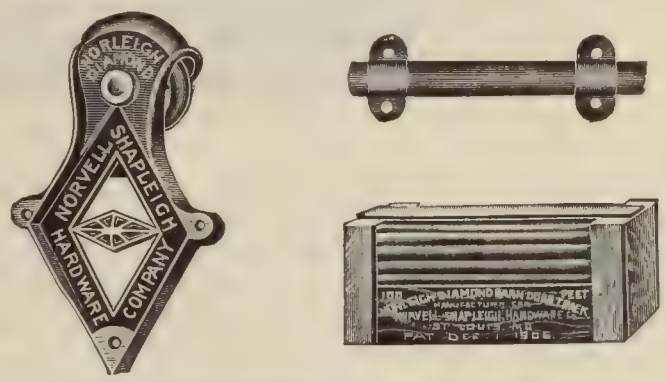
The American Steel Wool Mfg. Company, 451-453 Greenwich street, New York, has added to its line of steel wool in small packages, now on the market, No. 00, which is finer than anything previously offered and is recommended for the very finest rubbing. The threads of which this product consists are said to be as fine as hair, but very uniform and producing the highest grade of work. An advantage of this product to which attention is called is that it can be used on moldings and irregular surfaces, as well as on plain finishes. Steel wool is said to be taking the position of a staple article in hardware stores, its features of excellence as an arbrasive being more and more recognized.

## Robin Egg Blue Enameled Ware.

Lalance & Grosjean Mfg. Company, 299 Broadway, New York, has just put on the market the Robin Egg Blue enameled ware, which has been brought out in a complete line of the shapes manufactured by the company in housefurnishing and kitchen utensils. It is a two-coated ware, consisting of first a mass coat and followed by the robin egg coating, with a white lining inside. The tint is an excellent reproduction in color of the shell of a robin's egg, from which it derives its name.

## The Norleigh Diamond Barn Door Hanger and Track.

The accompanying illustrations of barn door hanger and track represent new goods put on the market by Norvell-Shapleigh Hardware Company, St. Louis, Mo. The particular feature of the device is the construction of the track, which is round, and is put up in 2-ft. lengths, which, it is remarked, obviates the necessity of a merchant carrying more than one lot of track. The joints fit together, it is said, so that there is no bumping or jarring when the wheels pass over them, and the rail is guaranteed to be as strong at the splice as at any other point. The hanger and hood are made of one piece of malleable iron. The wheels have very wide grooves and run on hardened steel roller bearings to reduce the friction to a minimum. There is a projecting lip below the wheels to prevent the hanger from jumping the track.



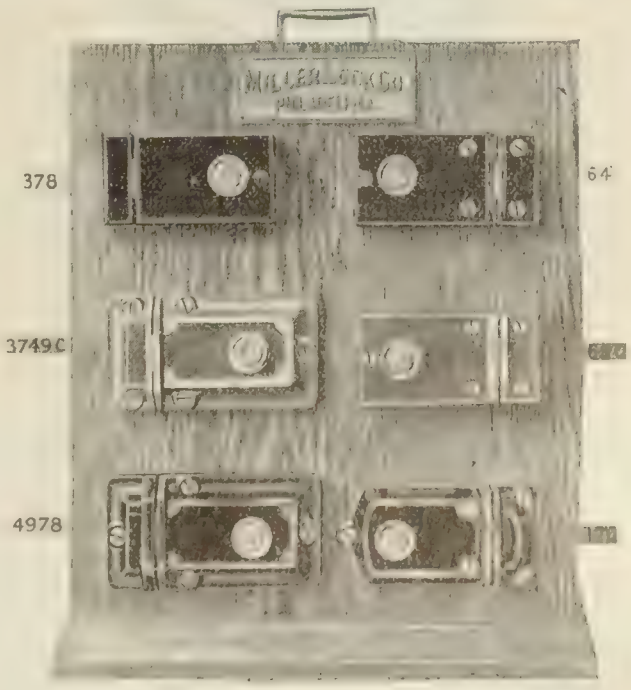

*Norleigh Diamond Barn Door Hanger and Track.*

## The Corbin Universal Liquid Door Check.

P. & F. Corbin, New Britain, Conn., are putting on the market a liquid door check and spring that embodies all of the strong qualities of their former check and the convenience of being both right and left hand. This feature obviates the necessity of the merchant or user designating whether a right or left hand check is required for a door. The difficulty of applying a check where the style of door or the construction of the casing will not admit of check and spring being attached in the regular manner has been overcome by the use of special brackets made for the purpose.

## Miller Night Latch Display Board.

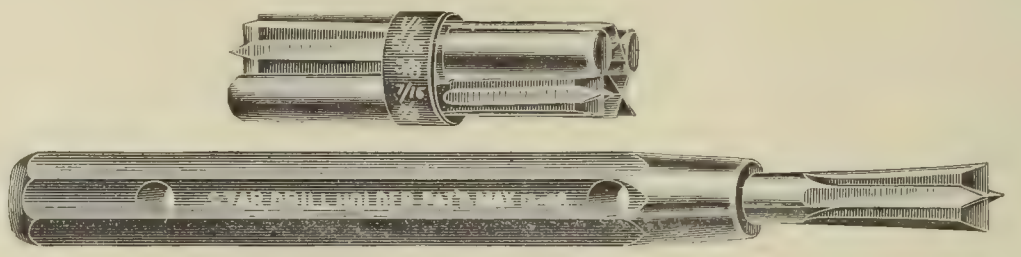
The Miller Lock Company, Frankford, Philadelphia, Pa., has put out an attractive display board for showing night latches, reproduced in the accompanying illustration. As shown, the board carries one each of the company's Nos. 64, 65C, 4978, 3749C, 378 and 170 latches. If this assortment does not represent a merchant's stock other numbers can be mounted, as desired. The boards are packed in wooden cases and crated 1 doz. to the crate.




*Miller Night Latch Display Board.*

## Star Drill Holder.

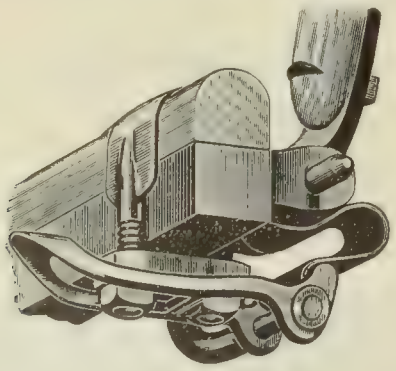
The accompanying illustrations show a drill holder with drill points which has been put on the market by the Star Expansion Bolt Company, Bayonne, N. J., and 147 Cedar street, New York. The holder is made of steel, and while comparatively light and easy to carry around is solid and substantial enough to admit of taking a firm hold and striking a heavy blow without danger, it is stated, of breaking the smallest drill point. Bits of ¼, 5-16, ⅜ and 7-16 in. in diameter may be had, all sizes fitting the holder equally well. A hole will be observed in the tool near the socketed end. After a drill has been used it, of course, becomes firmly set in the socket, but it may be readily started by driving through this hole a taper key which is furnished with the tool. In recommending the holder the manufacturer states that it prevents breaking and wearing down drill heads, which are necessarily light, especially in the case of fine drills. The company also states that besides being economical in this respect, it also permits of considerable saving in the first cost of drills, since points for this tool are much less expensive than ordinary drills. It is pointed out that the tool will prove a great convenience to men who have had to carry around a number of drills of different diameters, all in full 12-in. lengths, since the entire set of Star special drills, with the holder itself, may be carried in the pocket without annoyance from their weight or bulk.



*Star Drill Holder and Drills.*

## The Spitzli Shaft or Pole Coupling.

The improved device for attaching the shafts or pole to a carriage, shown herewith, also acts as an effective antirattler. The lever turning to the rear is said to obviate any possibility of weeds or brush catching in the lever when driving over rough country. The device is manufactured by Fernald Mfg. Company, North East, Pa.



*The Spitzli Shaft or Pole Coupling.*

## Linduro Enamel.

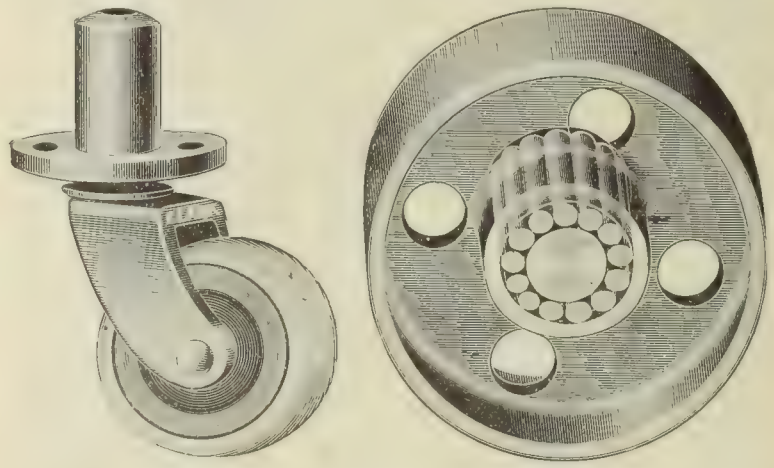
The Lowe Brothers Company, Dayton, Ohio, is now prepared to supply its Linduro enamel in any quantities that may be desired. The product is designed for use on wood, plaster, brick, stone, cement, metals, porcelain, concrete, glass and paper, and on buildings, furniture, bathtubs, cars, boats, &c., in short, wherever a hard, durable surface is desired. It is referred to as having a high gloss that is hard and clear, and as showing no laps or brush marks. It may also be rubbed to a dull finish. The company claims that the enamel will not crack, peel, check, chalk or fail in other ways. It is made in white, cream and ivory, ready for use on the finest work, and may be tinted as required to carry out any scheme of decoration.

## Campaign Solidhed Thumb Tacks.

The Hawkes-Jackson Company, 38 Murray street, New York, originator and maker of Solidhed thumb tacks, has put on the market a line of campaign thumb tacks. They resemble the regular styles made in solid colors in celluloid for decorative hanging, but have portraits of the two leading Presidential candidates. Samples will be promptly sent gratuitously. The company states that this particular departure is not designed so much for the trade in campaign material as to emphasize the adaptability of any decorative figure, letter or symbol to the ⅝-in. surface tack head, as, for instance, educational or society figures. The regular line, the sale of which is said to be continually increasing in the hardware trade, is obtainable in brass, German silver, &c., both with tapered and sharply beveled edges, and in various diameters. They are put up in attractive counter display assortments, having 12 and 24 tacks on a wood block, and are applicable not only to drafting and drawing uses, but to the fastening of desk blotter sheets, the hanging of signs, pictures, draperies, &c. The tapered steel pins may be easily pushed into wood, plaster, cardboard or kindred substances and instantly withdrawn without appreciably marring the surface. These tacks are also manufactured entirely of brass, with figures for identifying the correct position of window and door screens.

## Truck Wheels Fitted with Roller Bearings.

The accompanying illustrations represent the internal and external appearance of truck wheels fitted with roller bearings, as manufactured by the George P. Clark Company, Windsor Locks, Conn. It is explained that a truck fitted with these bearings is much more responsive thus enabling the user to draw a heavier load; also that they insure a longer life for the axle, as the natural tendency of the pins is to roll around the axle and not rub, as is the case with a wheel fitted to an axle without this arrangement. The company fits any truck with the roller bearings at a small additional cost. The pins are made of hardened steel to give long service, and can be easily replaced by any one, even though inexperienced in machine work. The company uses the roller bearing on all of its trucks put out with its paper board drying system, and states that they are giving perfect satisfaction.



*Truck Caster Complete and Separate Wheel Showing Roller Bearings.*

Harter & Vorhis have succeeded C. A. & J. C. Harter in the Hardware business at Bloomfield, Iowa.

## The Cutler-Hammer Push Button Switch Mechanism.

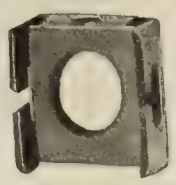
The Cutler-Hammer Mfg. Company, Milwaukee, Wis., manufacturer of electric controlling devices, is introducing a line of push button switch specialties, some forms of which are shown in the accompanying illustrations. As shown in Fig. 1, the mechanism consists of three moving parts—a push bar extending clear through the switch, a coiled steel spring and a moving contact piece. These, with the fixed contacts, constitute the entire mechanism. The push bar is largest in the center and tapers toward either end. The coiled spring fits inside the contact piece, and in assembling the push bar is slipped through the spring and contact piece, the ends of the bar projecting from circular holes in the porcelain pieces, forming push buttons for operating the switch. If, when the circuit is open, the white centered end of the button is pushed, the spring expands as the wide central portion of the push bar passes through it, and then suddenly contracting on the tapering portion of the push bar, it snaps the moving contact piece over on to the fixed contacts, closing the circuit. Pushing the opposite end of the push bar reverses this operation and opens the circuit with a quick snap. The lava push bar moves back and forth through the switch in a straight line, without possibility of strain and with a minimum of friction. The action is positive and snappy in either direction, the mechanism giving a quick "make," as well as a quick "break," the movement of the contact piece being the same, whether either end of the push bar is moved fast or slow. It is pointed out that the snappy action of the device reduces arcing to a minimum, and that such slight arcing as does occur is confined to a separate porcelain chamber away from the circuit wires and terminals. Fig. 2 shows a brass cap porcelain pendent switch, actual size, in which the mechanism is inclosed. The interior of the switch, showing how the mechanism is assembled in the pendent, is illustrated in Fig. 3. Liberal space is provided for knotting the flexible cord, and the removal of one screw gives access to the interior of the switch, making wiring an easy matter. Each pendent switch and lamp socket is supplied with a movable fiber bushing, reducing the size of the outlet to the diameter of standard cord. When reinforced cord is used the bushing is removed. A porcelain surface switch, for concealed work, is shown, actual size, in Fig. 4. This is also made for molding work and can be furnished in either style with label holder, as shown in the illustration, or without, as desired. Fig. 5 shows a vest pocket model, actual size, of the mechanism only and is called by the company its silent salesman.



Push Bar Extending Clear Through the Switch.



Coiled Steel Spring.



Moving Contact Piece.

*Fig. 1.—Push Button Mechanism.*

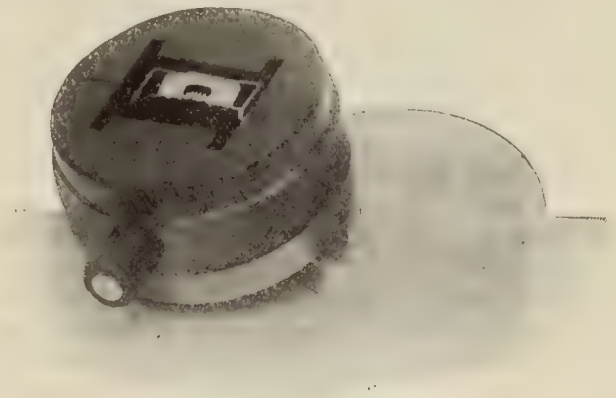


*Fig. 5.—Vest Pocket Model of the Mechanism.*



*Fig. 2.—Brass Cap Porcelain Pendent Switch.*

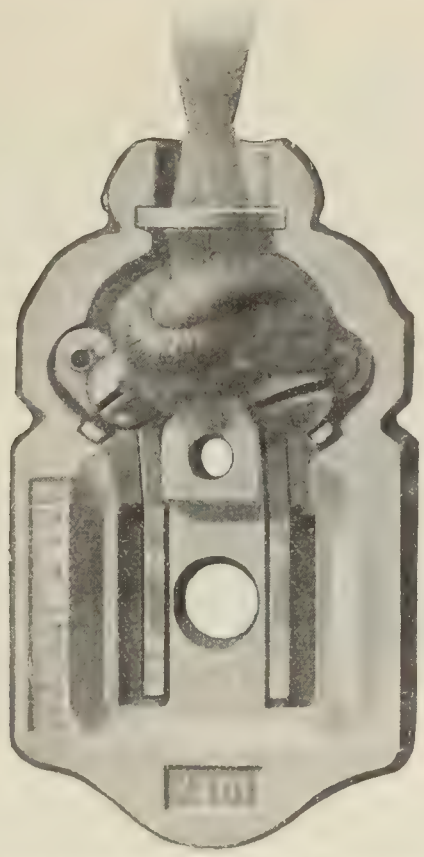


*Fig. 3.—Interior of Switch, Showing How Mechanism Is Assembled in the Pendent.*

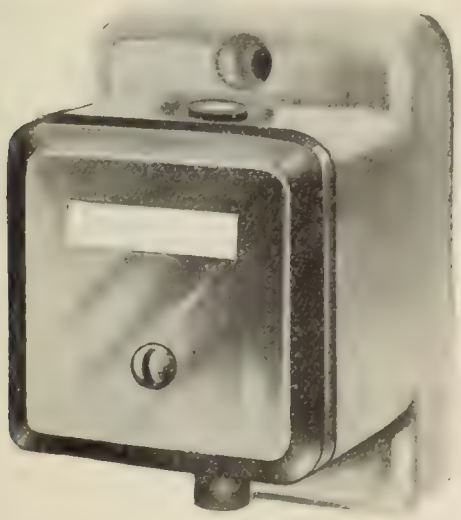
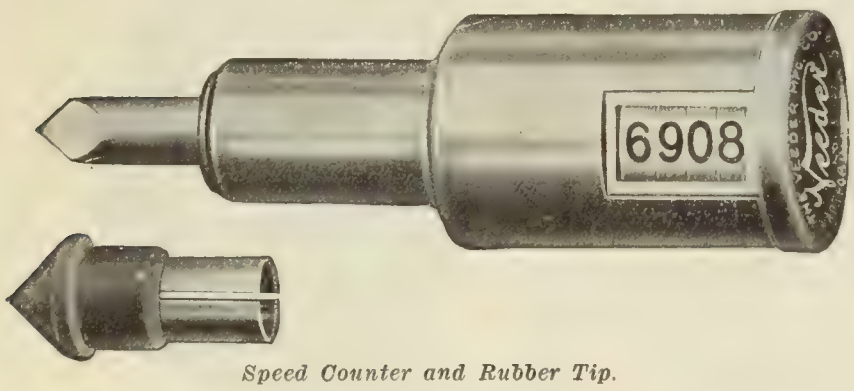


*Fig. 4.—Porcelain Surface Switch for Concealed Work.*

The model was gotten up for the purpose of making clear to inquirers the degree of simplicity attained in the switch mechanism. The company will send one of the models free to any one interested in this line of apparatus. The push button specialties made by the company are of porcelain, which is a noncorrosive and nonconductive material. Therefore they will not tarnish, and it is explained that the user cannot possibly receive a shock while handling them, because all metal parts are incased in porcelain. The fire glaze used on the porcelain is practically indestructible, while a choice of colors is offered, so that a shade can be selected that will harmonize with almost any surroundings. The standard glazes are plain white, ivory tint, wood brown and neutral gray. Special glazes can be furnished to order. In addition to the use of these devices in residences, stores and other buildings, they are recommended by the maker for use by proprietors of seaside and mountain resorts, ship owners, superintendents of mines, steel mills, foundries, chemical works and for all places where electrical fittings are exposed to moist atmosphere or acid fumes. It is stated that the devices have the approval of underwriters.

## Speed Counter.

The Veeder Mfg. Company, Hartford, Conn., has just put on the market a new speed indicator, unique in design and different from others on the market. It uses for the registering apparatus one of the revolution counters made by this company, as shown herewith, and requires a complete revolution of its shaft to register one unit. The instrument is capable of being run up to 10,000, which gives it capacity enough for all ordinary cases. It works equally well at high or low speed, although the limit of speed for which the instrument is

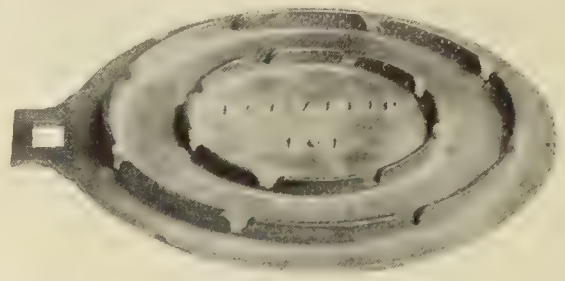



*Speed Counter and Rubber Tip.*

recommended is about 5000 rev. per min. It can be used at even higher speeds, but the wear is much greater at these excessively high speeds. When it is desired to use the counter its point is placed against the center of the shaft whose speed it is desired to measure. A watch is held in one hand, the counter in the other. The operator after having placed the point of the counter against the end of the shaft need only look at the watch. When the second hand of the watch gets to the beginning of a minute a slight pressure on the end of the counter forces the main body of the counter ahead, making the two parts of a clutch engage. The counter instantly begins to register and will continue to do so until the pressure is relieved. This may be done either at the end of a minute or any fraction thereof. If a count is wanted for a longer period it can be taken equally well. The operator merely releases the pressure at end of the desired time and the counter stops registering. To determine the actual number of revolutions the reading of the counter must be taken before starting the count, as no set-back arrangement is provided for bringing the register back to zero, since it is believed that this would make the instrument unreliable. It is not much trouble to jot down the reading of the register at the beginning and at the end of the period for which the count is taken. The difference between the two readings gives the count for the period desired. The counter works equally well in either direction. When run one way it subtracts; when run the other it adds. In either case the difference of the readings gives the actual count. The manufacturers claim that with this counter an absolutely accurate count can be obtained because the count does not begin until the operator desires, but does begin at that instant. The instrument is extremely compact, weighs but a few ounces, and is comfortable to hold in the hand. Its readings are said to be reliable because of the direct reading index. It is not rendered inaccurate by a strong magnetic field. Where it is desirable to use the counter in connection with electrical machinery a rubber tip, as shown in the illustration, is provided, which effectually insulates the counter from any current there may be in the machinery.

## The Newsam Cooker.

The utensil shown in the accompanying illustration is a new device to facilitate cooking, which has just been put on the market by William Newsam, 302 Mayer Building, Peoria, Ill. It consists of a thin cast plate with concentric notched rings on one side upon which the cooking vessel rests. The purpose of this arrangement is to provide a circulation of air beneath the cooking vessel which will temper excessive heat and prevent burning. It is claimed that by its use cereals, vegetables and meat can be cooked without the danger of burning, which is always present when the cooking vessel sets upon a flat, hot surface. It is also recommended for heating irons, for which purpose the cooker is placed over the flame with the flat side up. For all cooking operations, however, the flat side is placed downward. It is designed for service in connection with both gas and gasoline stoves, and can be conveniently used on coal or wood stoves; when used on the latter it is not necessary to remove the stove lids. A circular wire toaster is being offered in connection with the cooker, which is used with cooker flat side up, in which position it is said to give good results. Both the cooker and the toaster are offered in lots of one gross or less.



*The Newsam Cooker.*

## Enameled Churn.

The Enterprise Enamel Company, Bellaire, Ohio, manufacturer of a line of enameled ware sets and specialties, is making the enameled churn here illustrated. It is made of heavy steel and porcelain lined. In describing its advantages the company states that it will not leak or break, is not affected by heat or dampness, freezing or boiling, does not get musty, and is as easily cleaned as a crock. It has the regular wooden cover and old-fashioned dasher, but also has an enameled cover, so that it can be used between times as a tight vessel for holding provisions which must be kept dry and out of the way of flies and mice.



*Enameled Churn.*

## Zimmerman's Anti-Sag Strap Hinge.

Harry Zimmerman & Co., Fremont, Ohio, is manufacturing the fire shutter hinge shown in the accompanying illustrations. It is a strap and pintle hinge, strongly made of malleable iron, and is said to have the most metal where it needs the greatest strength. The makers state that it cannot sag or twist and explain that the upper flange, Fig. 1, constitutes a key which holds the pintle in rigid alignment. Fig. 2 shows the manner in which a wall is cut away to admit the hinge, the hole through the pintle being large enough to admit a standard bolt or lag screw. It can be attached to wood, brick, stone or cement. Hinges are listed under stock numbers and the list shows the length, width and thickness of the strap and the size of bolt used with it, as well as the pintle number and the size of the bolt used with the pintle.

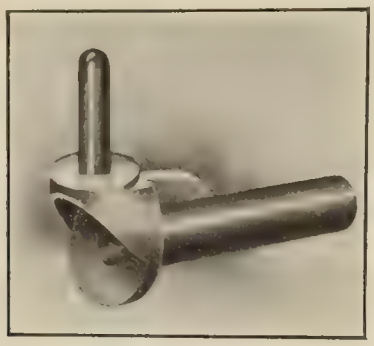


*Fig. 1.—Zimmerman Anti-Sag Strap Hinge, Pintle with Flange.*



*Fig. 2.—Zimmerman Hinge, Set in Wall.*

W. F. Smith, Hale, Mo., has sold out his Hardware and Lumber business to W. E. Thomas.

## PAINTS, OILS AND COLORS

### Animal, Fish and Vegetable Oils—

| | ℔ gal. |
|---|---|
| Linseed, State and Western, raw | 43 @45 |
| City, Boiled | 45 @46 |
| City, Raw | 44 @45 |
| Raw, Calcutta, in bbls | 70 @71 |
| Lard, Prime, Winter | 68 @70 |
| Extra No. 1 | 50 @52 |
| No. 1 | 48 @49 |
| Cotton-seed, Crude, f.o.b. mill | 29 @29½ |
| Summer Yellow, prime | 39½@40 |
| Summer White | 43 @44 |
| Yellow Winter | 45 @46 |
| Tallow, Acidless | 56 @58 |
| Menhaden, Brown, Strained | 35 @36 |
| Northern Crude | 25 @.. |
| Southern | 25 @.. |
| Light Strained | 35 @36 |
| Bleached Winter | 37 @39 |
| Ex. Bleached Winter | 39 @41 |
| Cocoanut, Ceylon | ℔ lb 6¼@ 6½ |
| Cochin | ℔ lb 7 @ 7¼ |
| Cod, Domestic, Prime | 38 @40 |
| Newfoundland | 40 @42 |
| Red, Elaine | 39 @40 |
| Saponified | ℔ lb 5¾@ 5⅞ |
| Olive, Yellow | 85 @95 |
| Neatsfoot, Prime | 55 @58 |
| Palm, Lagos | ℔ lb 5¾@ 6 |

### Mineral Oils—

| | ℔ gal. |
|---|---|
| Black, 29 gravity, 25@30 cold test | 13 @13½ |
| 29 gravity, 15 cold test | 13½@14 |
| Summer | 12½@13 |
| Cylinder, light filtered | 20½@21 |
| Dark, filtered | 18 @19 |
| Paraffine, 903-907 sp. gravity | 14½@15 |
| 903 sp. gravity | 13½@14 |
| 883 sp. gravity | 11 @11½ |
| Red | 13½@14 |

### Miscellaneous—

| | |
|---|---|
| Barytes: | |
| White, Foreign | ℔ ton $18.50@20 50 |
| Amer., floated | ℔ ton 17.00@18.00 |
| Off color | ℔ ton 12.50@15.00 |
| Chalk, in bulk | ℔ ton 3.00@ 3.40 |
| China Clay, Imported | ℔ ton 11.50@18.00 |

| | ℔ gal. |
|---|---|
| Cobalt, Oxide | ℔ 100 lb 1.45@ 2.60 |
| Whiting, Commercial | ℔ 100 lb 42@52 |
| Gilders | ℔ 100 lb .55@ .60 |
| Ex. Gilders | ℔ 100 lb .60@ .65 |

### Putty, Commercial—℔ 100 lb

| | |
|---|---|
| In bladders | $1.70 @1.80 |
| In bbls. or tubs | 1.20 @1.45 |
| In 1 lb to 5 lb cans | 2.65 @2.95 |
| In 12½ to 50 lb cans | 1.50 @1.90 |

### Spirits Turpentine—℔ gal.

| | |
|---|---|
| In Oil bbls | 39•@39½ |
| In machine bbls | 39½@40 |

### Glue—

| | ℔ lb |
|---|---|
| Cabinet | 12 @15 |
| Common Bone | 7½@ 9 |
| Extra White | 18 @24 |
| Fish, liquid, 50 gal. bbls., per gallon | 60 @1.20 |
| Foot Stock, White | 12 @14 |
| Foot Stock, Brown | 9 @11 |
| German Common Hide | 10 @12 |
| German Hide | 12 @18 |
| French | 10 @40 |
| Irish | 13 @16 |
| Low Grade | 10 @12 |
| Medium White | 14 @17 |

### Gum Shellac—

| | ℔ lb |
|---|---|
| Bleached, Commercial | 23 @24 |
| Bone Dry | 27 @28 |
| Button | 30 @40 |
| Diamond I | 40 @42 |
| Fine, Orange | 34 @35 |
| A. C. Garnet | 27 @28 |
| G. A. L. | 20 @21 |
| Kala Button | 18 @19 |
| D. C. | 42 @43 |
| Octagon B | 39 @40 |
| T. N. | 25 @26 |
| V. S. O. | 40 @42 |

### Colors in Oil—

| | ℔ lb |
|---|---|
| Black, Lampblack | 12 @14 |
| Blue, Chinese | 36 @46 |
| Blue, Prussian | 32 @36 |
| Blue, Ultramarine | 13 @16 |
| Brown, Vandyke | 11 @14 |
| Green, Chrome | 12 @16 |
| Green, Paris | @24 |
| Sienna, Raw | 12 @15 |
| Sienna, Burnt | 12 @15 |
| Umber, Raw | 11 @14 |
| Umber, Burnt | 11 @14 |

### White and Red, Lead &c.—

| | ℔ lb |
|---|---|
| Lead, English white, in Oil | 10⅛@10⅜ |
| Lead, American White: | |
| Dry and in Oil, 100, 250 and 500 lb kegs | 7 |
| Dry and in Oil, 25 and 50 lb kegs | 7¼ |
| Dry and in Oil, 12½ lb kegs | 7½ |
| In Oil, 25 lb tin pails | 7½ |
| In Oil, 12½ lb tin pails | 8 |
| In Oil, 1, 2, 3 and 5 lb tin cans, ass't | 9 |
| Red Lead and Litharge: | |
| In 100 lb kegs | 7 |
| In 25 and 50 lb kegs | 7¼ |
| In 12½ lb kegs | 7½ |
| In lots of less than 500 lbs, ½¢ ℔ advance over above prices of White and Red Lead and Litharge. | |

Lead, American. Terms: On lots of 500 lbs and over, 60 days, or 2% for cash if paid in 15 days from date of invoice.

### Zinc, Dry—

| | ℔ lb |
|---|---|
| American, dry | 5⅛@ 5⅝ |
| Red Seal (French process) | 6¾@ 7 |
| Green Seal | 7¼@ 7½ |
| German Red Seal (French process) | 6⅝@ 7 |
| Green Seal | 7¼@ 7⅝ |
| White Seal | 7⅞@ 8¼ |
| French, Red Seal | 8⅜@ 8⅞ |
| Green Seal | 10⅜@10⅝ |

### Dry Colors—

| | ℔ lb |
|---|---|
| Black, Carbon | 6½@10 |
| Black Drop, American | 3½@ 8 |
| Black Drop, English | 5 @15 |
| Black, Ivory | 16 @20 |
| Lamp, commercial | 4 @ 6 |
| Blue, Celestial | 4 @ 6 |
| Blue, Chinese | 31 @33 |
| Blue, Prussian | 29 @31 |
| Blue, Ultramarine | 3½@15 |
| Brown, Spanish | ½@ 1 |
| Carmine, No. 40 | $3.10@3.25 |
| Green, Chrome, ordinary | 3½@ 5 |
| Green, Chrome, pure | 17 @25 |
| Ocher, American | ℔ ton $8.50@16.00 |
| American Golden | 2½@ 3¼ |
| French | 1¼@ 2 |
| Foreign Golden | 3 @ 4 |
| Orange Mineral, English | 10 @12 |
| French | 12¾@13 |
| German | 12 @13 |
| American | 9 @10 |
| Red, Indian, English | 4½@ 6 |
| American | 3 @ 3¼ |
| Red, Turkey, English | 4 @10 |
| Red, Tuscan, English | 7 @10 |
| Red, Venetian, Amer. | ℔ 100 lb $0.50@1.25 |
| English | ℔ 100 lb $1.15@1.60 |
| Sienna, Italian, Burnt and Powdered | 3 @ 9 |
| Italian, Raw, Powdered | 3 @ 7 |
| American, Raw | 1½@ 2 |
| American Burnt and Pow'd | 1½@ 2 |
| Talc, French | ℔ ton $18.00@25.00 |
| American | ℔ ton 15.00@25.00 |
| Terra Alba, French | ℔ 100 lb .90@ 1.00 |
| English | ℔ 100 lb .80@ 1.00 |
| American | ℔ 100 lb, No. 1. .75@ .80 |
| American | ℔ 100 lb, No. 2. .60@ .65 |
| Umber, T'key, Bnt. & Pow. | 2⅜@ 3 |
| Turkey, Raw and Powdered | 2¾@ 3 |
| Burnt, American | 1½@ 2 |
| Raw, American | 1½@ 2 |
| Yellow, Chrome, Pure | 13¾@15 |
| Vermilion, American Lead | 7 @25 |
| Quicksilver, bulk | 65 @.. |
| Quicksilver, bags | @66 |
| English, Imported | 65 @70 |
| Chinese | $0.90@1.00 |


# THE IRON AGE

*The oldest paper in the world devoted to the interests of the Hardware, Iron, Machinery and Metal Trades, and a standard authority on all matters relating to those branches of industry.*

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# Current Hardware Prices.

**General Goods.**—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

**Special Goods.**—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

**Range of Prices.**—A range of prices is indicated by means of the symbol @. Thus 33⅓ @ 33⅓ & 10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

**Names of Manufacturers.**—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1907, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

**Standard Lists.**—"The Iron Age Standard Hardware Lists" contains the list prices of many leading goods.

**Additions and Corrections.**—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

### Adjusters, Blind—
Columbian and Domestic....33⅓%
North's....10%
Upson's Patent, ℔ gro., $29.90....10%
Zimmerman's—See Fasteners, Blind.

### Window Stop—
Ives' Patent....35%
Ives' Stop Bead Screws and Washers....10%
Taplin's Perfection....35%

### Ammunition—See *Caps, Cartridges, Shells, &c.*

### Anti—Rattlers—
Fernald Mfg. Co. Burton Anti-Rattlers, ℔ doz. pairs, Nos. 1, $0.75; 2, $0.60; 4, $1.00; 5, $0.50.
Fernald Quick Shifter, ℔ doz. pairs....$2.00@$3.00

### Anvils—American—
Eagle Anvils....℔ lb @8 ¢
Hay-Budden, Wrought....9½@9¾¢
Trenton....℔ lb 9½@9¾¢

### Imported—
Swedish Solid Steel Sisco, Superior, ℔ lb....10@10½¢
Peter Wright & Sons, ℔ lb, 81 to 349 lb, 11¢; 350 to 600 lb, 11½¢.

### Anvil, Vice and Drill—
Millers Falls Co., $18.00....15&10%

### Apple Parers—See *Parers, Apple, &c.*

### Aprons, Blacksmiths'—
Livingston Nail Co....10%

### Augers and Bits—
*Com. Double Spur....75&10@80%*
*Jennings' Patn., Bright.65&10@70%*
*Black Lip or Blued...65@65&5%*
*Boring Mach. Augers....70%*
*Car Bits, 12-in. twist....40&10%*
Ford's Auger and Car Bits....10&5%
Ft. Washington Auger Co., Conard's....35%
Forstner Pat. Auger Bits....25%
C. E. Jennings & Co.:
No. 10 ext. lip. R. Jennings' list, 25&7½%
No. 30, R. Jennings' list....50%
Russell Jennings'....25&10&2½%
L'Hommedieu Car Bits....15%
Mayhew's Countersink Bits....45%
Pugh's Black....20%
Pugh's Jennings' Pattern....35%
Snell's Auger Bits....60%
Snell's Bell Hangers' Bits....60%
Snell's Car Bits, 12-in. twist....60%
Snell's King Auger Bits....50%
Swan's....65&10@70
Swan's, Jennings' Pattern....50%
Wright's Jennings' Bits....50%

### Bit Stock Drills—See *Drills, Twist.*

### Expansive Bits—
Clark's Pattern, No. 1, ℔ doz., $26; No. 2, $18....60&10%
Ford's, Clark's Pattern...60&5@60&10%
C. E. Jennings & Co., Steer's Pat..25%
Lavigne Pat., small size, $18.00; large size, $26.00....60&10%
Swan's....60%

### Gimlet Bits—
*Per gro.*
*Common Dbl. Cut....$3.00@3.25*
*German Pattern, Nos. 1 to 10, $4.75; 11 to 13, $5.75*

### Hollow Augers—
*Bonney Pat., per doz..$5.50@6.00*
Ames....20&10%
Universal....20%

### Ship Augers and Bits—
*Ship Augers....40&10@—%*
Ford's....33⅓&5%
C. E. Jennings & Co.'s:
L'Hommedieu's....6%
Watrous'....33⅓&7½%
Snell's....48%

### Awl Hafts—See *Handles, Mechanics' Tool.*

### Awls—
*Brad Awls:*
*Handled....gro. $2.75@3.00*
*Unhdled, Shldered...gro.63@66¢*
*Unhandled, Patent..gro.66@70¢*
*Peg Awls:*
*Unhandled, Patent..gro. 31@34¢*
*Unhdled, Shldered..gro. 65@70¢*
*Scratch Awls:*
*Handled, Com...gro. $3.50@4.00*
*Handled, Socket..gro.$11.50@12.00*

### Awl and Tool Sets—See *Sets, Awl and Tool.*

### Axes—
*Single Bit, base weights: Per doz.*
*First Quality....$4.75@5.00*
*Second Quality....$4.25@4.50*
*Double Bit, base weights:*
*First Quality....$7.00@7.50*
*Second Quality....$6.50@6.75*

### Axle Grease—See *Grease, Axle.*

### Axles—*Iron or Steel.*
*Concord, Loose Collar...4¼@4½¢*
*Concord, Solid Collar....4½&5 ¢*
*No. 1 Common, Loose...3½@4 ¢*
*No. 1½ Com., New Style.4¼@4¾¢*
*No. 2 Solid Collar....4¼@4¾¢*
*Half Patent:*
*Nos. 7, 8, 11 and 12....70%*
*Nos. 13 to 14....70%*
*Nos. 15 to 18...70&10@70&10&5%*
*Nos. 19 to 22...70&10@70&10&5%*

### Boxes, Axles—
*Common and Concord, not turned....lb., 5@6¢*
*Common and Concord, turned, lb., 6@7¢*
*Half Patent....lb., 9½@10¢*

### Bait—Fishing—
Hendryx:
A Bait....20%
B Bait....25%
Competitor Bait....20&5%

### Balances—Sash—
Caldwell new list....50&10%
Pullman....50&10%

### Spring—
*Light Spring Balances.60@60&5%*
Chatillon's:
Light Spg. Balances....50@50&10
Straight Balances....40@40&10
Circular Balances....50&10
Large Dial....30%

### Barb Wire—See *Wire, Barb.*

### Bars—Crow—
*Steel Crowbars, 10 to 40 lb.... per lb., 2¼@2½¢*

### Towel—
No. 10 Ideal, Nickel Plate..℔ gro. $8.50

### Beam, Scale—
*Scale Beams....40%*
Chattillon's No. 1....30%
Chatillon's No. 2....40%

### Beaters, Carpet—
Holt-Lyon Co.:
No. 12 Wire Coppered ℔ doz. $0.80; Tinned....$0.85
No. 11 Wire Coppered ℔ doz. $1.15; Tinned....$1.20
No. 10 Wire Tinned....℔ doz. $1.50

### Beaters Egg—
Dover Stamping & Mfg. Co.:
Genuine Dover, per gro., No. 1, Tumbler Size, $7.50; No. 2, Family Size, $7.50; No. 3, Extra Family Size, $24.00; No. 4, Hotel Size, $30.00.
Holt-Lyon Co.:
Holt, per doz., No. 5, Jap'd, $0.80; No. A, Jap'd, $1.15; No. B, Jap'd, $1.85; No. 6, Jap'd, $1.65.
Lyon, Jap'd, per doz., No. 2, $1.35.
Taplin Mfg. Co.:
Improved Dover, per gro., No. 60, $6.00; No. 75, $6.50; No. 100, $7.00; No. 102, Tin'd, $8.50; No. 150, Hotel, $15.00; No. 152, Hotel Tin'd, $17.00; No. 200, Tumbler, $8.50; No. 202, Tumbler Tin'd, $9.50; No. 300, Mammoth, per doz., $25.00.

### Bellows—
*Blacksmith, Standard List:*
*Split Leather....60&10@65%*
*Grain Leather....50@50&10%*

### Hand—
| *Inch..* | *6* | *7* | *8* | *9* | *10* |
|---|---|---|---|---|---|
| *Doz..* | *$5.00* | *5.50* | *6.00* | *6.50* | *7.50* |

### Molders—
| *Inch..* | *10* | *12* | *14* | *16* |
|---|---|---|---|---|
| *Doz..* | *$7.50* | *9.00* | *12.00* | *15.00* |

*Net Prices.*

### Bells—Cow—
*Wrought Cow Bells....75%*
Jersey....75&10%
Texas Star....50%

### Door—
Home, R. & E. Mfg. Co.'s....55&10%

### Hand—
*Polished, Brass....60@60&10%*
*White Metal....60@60&10%*
*Nickel Plated....50&10%*
*Swiss....50&10%*
Cone's Globe Hand Bells....33⅓@35%

### Miscellaneous—
*Farm Bells....lb., 2¼@2½¢*
*Church and School....60@60&10%*

### Belting—Leather—
*First Quality, Ex. Hy., Strictly Short Lap....60&10%*
*Standard....70&10@70&10&5%*
*Light Double....75&10%*
*Cut Leather Lacing..50&10@60%*
*Leather Lacing Sides, per sq. ft. 22@23¢*

### Rubber—
*Competition (Low Grade), 70&10@75%*
*Standard....60&10@70%*
*Best Grades....40@50%*

### Bench Stops—See *Stops, Bench*

### Benders and Upsetters, Tire—
Green River Tire Benders and Upsetters....20%

### Bicycle Goods—
John S. Leng's Son & Co.'s 1908 list:
Chain, Parts, Spokes....50%
Tubes....60%

### Bits—
Auger, Gimlet, Bit Stock Drills, &c. See *Augers and Bits.*

### Blocks Tackle—
*Common Wooden....75@75&5%*
B. & L. B. Co.:
Boston Wood Snatch, 50%; Eclipse Steel, 75%; Hollow Steel, 50&10%; Star Wire Rope, 50%; Tarbox Metal Snatch, 50%; Tarbox New Style Steel, 50&10%; Wire Rope Snatch, 50%.
Lane's Patent Automatic Lock and Junior....30%
See also Machines, Hoisting.

### Boards, Stove—
*Paper and Wood Lined....55%*
*Embossed....55%*

### Boards, Wash—
See *Washboards.*

### Bobs, Plumb—
Keuffel & Esser Co....33⅓&10%

### Bolts
### Carriage, Machine, &c,—
*Common Carriage (cut thread):*
*⅜ x 6 and smaller..75&5@—%*
*Larger and longer....70@—%*
*Phila. Eagle, $3.00 list...80@—%*
*Bolt Ends....70@—%*
*Machine (Cut Thread):*
*⅜ x 4 and smaller..75&10@—%*
*Larger and longer....70@—%*

### Door and Shutter—
*Cast Iron Barrel, Japanned, Round Brass Knobs:*
| *Inch...* | *3* | *4* | *5* | *6* | *8* |
|---|---|---|---|---|---|
| *Per doz..* | *$0.30* | *.35* | *.45* | *.60* | *.80* |

*Cast Iron Spring Foot, Jap'd:*
| *Inch....* | *6* | *8* | *10* |
|---|---|---|---|
| *Per doz....* | *$1.20* | *1.50* | *2.25* |

*Cast Iron Chain, Flat, Japanned:*
| *Inch....* | *6* | *8* | *10* |
|---|---|---|---|
| *Per doz....* | *$1.00* | *1.40* | *1.65* |

*Cast Iron Flat Shutter, Jap'd, Brass Knobs:*
| *Inch....* | *6* | *8* | *10* |
|---|---|---|---|
| *Per doz....* | *$0.75* | *.95* | *1.25* |

*Wrought Barrel Japanned, 80&10@80&10&5%*
*Barrel Bronzed....60&10%*
*Spring....70&10@70&10&10%*
*Shutter....50&5@50&10&5%*
*Square Neck....75@75&10%*
*Square....70&10&10@80%*
Ives' Mortise....10%
Ives' Wrought Metal....10%

### Expansion—
F. H. Evans' Crescent....40@60%
Richards Mfg. Co....55&10%
Star Expansion Bolt Co.:
Star, Lag Screw Type..60&10&5&2½%
Star, Wood Screw Type....40%
Star, Machine, Single Wedge....60%
Star, Machine, Double Wedge....60%
Steward & Romain Mfg. Co.:
Style No. 13, Double....60%
Style No. 1, Single....60%
Style No. 100, Dbl. Jaw, Single..55%
Lag Screw....66⅔%

### Plow and Stove—
*Plow....65&5@70%*
*Stove....85@85&5%*

### Tire—
*Common Iron....80%*
*Norway Iron....80%*
American Screw Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84...82½%
Bay State, list Dec. 28, '99....80%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84...82½%
Eclipse, list Dec. 28, '99....80%
Russell, Burdsall & Ward Bolt & Nut Co.:
Empire, list Dec. 28, '99....80%
Norway Phila., list Oct. '84....80%
Eagle....82½%
Shelton Co.:
Tiger Brand, list Dec. 28, '99....80%
Phila., Eagle, list Oct. 16, 1881..82½%
Upson Nut Co.:
Tire Bolts....72½%

### Borers, Bung—
*Borers Bung, Ring, with Handle:*
| *Inch....* | *1¼* | *1½* | *1¾* | *2* |
|---|---|---|---|---|
| *Per doz...* | *$4.80* | *5.60* | *6.40* | *8.00* |
| *Inch....* | | *2¼* | *2½* | |
| *Per doz....* | | *$8.65* | *11.50* | |

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.75; No. 3, $2.50 each....25%

### Boxes, Mitre—
C. E. Jennings & Co....25%
Langdon, New Langdon and Langdon Improved, 20&10%; Langdon Acme....15&10%
Perfection....40%
Seavey....45%

### Braces—
*Comman Ball, American....$1.50*
Barber's....50&10&10@60&10%
Fray's Genuine Spofford's....60%
Fray's No. 61, 166, 206, 614....50%
C. E. Jennings & Co....50&5%
Mayhew's Ratchet....60%
Mayhew's Quick Action Hay Pat...50%
Millers Falls Drill Braces....25&10%
P., S. & W. Co., Peck's Pat....60&10%

### Brackets—
*Wrought Steel..75&10@75&10&10%*
Bradley Metal Clasp...80&10@80&10&5%
Griffin's Pressed Steel....75@75&10%
Griffin's Folding Brackets....70&10%
Taplin Victor Handy Egg Beater Bracket....℔ doz. $1.50

### Bright Wire Goods—See *Wire and Wire Goods.*

### Broilers—
Kilbourne Mfg. Co....75&20%
Wire Goods Co....75%

### Buckets, Galvanized—
*M'fr's list, price per gross.*
| *Quart..* | *10* | *12* | *14* |
|---|---|---|---|
| *Water, Reg...* | *26.85* | *29.50* | *33.50* |
| *Water, Hvy...* | *45.35* | *48.00* | *52.00* |
| *Fire, Rd. Btm.* | *32.00* | *34.65* | *38.65* |
| *Well....* | *37.35* | *41.35* | *45.35* |

*10&7½&5&5%*

### Bull Rings—See *Rings, Bull.*

### Butts—Brass—
*Wrought, High List, Oct. 26,'06.55%*
Cast Brass, Tiebout's....40%

### Cast Iron—
*Fast Joint, Broad....40&10@50%*
*Fast Joint, Narrow...40&10@50%*
*Loose Joint....70&10@75%*
*Loose Pin....70&10@75%*
*Mayer's Hinges....70@70&5*
*Parliament Butts....70@70&5*

### Wrought Steel—
*Bright.*
*Light Narrow, Light Reversible....70&5%*
*Reversible and Broad..70&5%*
*Loose Joint, Narrow, Light Inside Blind, &c....70%*
*Back Flaps, Table Chest.65%*
*Japanned.*
*Light Narrow, Loose Pin, 40&5%*
*Light Narrow, Ball Tip..60%*
*Broad....40&5%*
*Steeple Tipped....70%*
*Ball Tipped....70%*

*Extra, 10@—*

## Cages, Bird—

Hendryx Brass: Series 3000, 5000, 1100, net list; 1200, 15%; 200, 300, 900 ..... 30%
Hendryx Bronze: Series 700, 800....30
Hendryx Enameled..... 35%

## Calipers—See *Compasses.*

## Calks, Toe and Heel—

*Blunt, 1 prong, per 100 lb.,* $3.50@$3.85
*Sharp, 1 prong, per 100 lb.,* $4.00@$4.35
Burke's, 1 pg. Blunt Toe, 3¾¢; 2 pg. Blunt Toe, 4¼¢; 1 pg. Sharp Toe, 4¼¢; 2 pg. Sharp, 4¾¢; Blunt Heel, 4¼¢; Sharp Heel.....4¾¢
Lautier Blunt, 4@4½¢; Sharp, 4½@4¾¢
Perkins', Blunt, ℔ lb, 3.65¢; Sharp, 4.15¢

## Can Openers—

See *Openers, Can.*

## Caps, Percussion—

*Eley's E. B.....52@55¢*
*G. D.....per M 34@35¢*
*F. L.....per M 40@42¢*
*G. E.....per M 48@50¢*
*Musket .....per M 62@63¢*

### Primers—

*Berdan Primers, $2 per M..20&5%*
*Primer Shells and Bullets..15&10%*
*All other primers per M.$1.52@1.60*

## Carpet Stretchers—

See *Stretchers, Carpet.*

## Cartridges—

*Blank Cartridges:*
*32 C. F., $5.50.....10&5%*
*38 C. F., $7.00.....10&5%*
*22 cal. Rim, $1.50.....10&5%*
*32 cal. Rim, $2.75.....10&5%*
*B. B. Caps, Con. Ball, Swgd.$1.90*
*B. B. Caps, Round Ball.....$1.49*
*Central Fire.....25%*
*Target and Sporting Rifle.15&5%*
*Primed Shells and Bullets.15&10%*
*Rim Fire, Sporting.....50*
*Rim Fire, Military.....15&5%*

## Casters—

*Bed .....65&10@70%*
*Plate .....60@60&5*
*Philadelphia .....70&10@75%*
Acme, Ball Bearing.....35
Gem (Roller Bearing).....70&10&10&5
Steel Gem (Roller Bearing).....70
Standard Ball Bearing.....45%
Yale (Double Wheel) low list...40&10%

## Cattle Leaders—

See *Leaders, Cattle.*

## Chain, Proof Coil—

*American Coil, Straight Link:*

| 3-16 | ¼ | 5-16 | ⅜ | 7-16 | ½ | ⅝ |
|---|---|---|---|---|---|---|
| $8.15 | 5.55 | 4.60 | 3.95 | 3.75 | 3.65 | 3.55 |

¾-⅞-1 1⅛ to 1¼ inch.
$3.45 3.55
*In cask lots, deduct 25¢.*
*German Coil.....60@60&5%*
*German Pattern Coil:*
*6-0 to 1.....70&5@70&10%*
*2 and 3..60&10&10@60&10&10&5%*
*4, 5 and 6.....50&10@50&10&5%*

### Halter—

*Halter Chains.....60&5@60&10%*
*German Pattern Halter Chains list July 24, '97....60&10&5@70%*
Covert Mfg. Co.:
Halter .....35&5%

## Cow Ties—

See *Halters and Ties.*

## Trace, Wagon, &c.-

*Traces, Western Standard: 100 pr.*
*6½—6-3, Straight, with ring.$28.00*
*6½—6-2, Straight, with ring.$29.00*
*6½—8-2, Straight, with ring.$32.00*
*6½—10-2, Str'ght, with ring.$37.00*
*NOTE.—Add 2c per pair for Hooks Twist Traces: add per pair for Nos. 2 and 3, 2c; No. 1, 3c; No. 0, 4c to price of Straight Link.*
*Eastern Standard Traces, Wagon Chain, &c...60&10@60&10&5%*

### Miscellaneous—

*Jack Chain, list July 10, '93:*
*Iron .....60&10&7½%*
*Brass .....65%*
*Safety and Plumbers' Chain.75%*
*Gal. Pump Chain....lb., 4½@5%*
Bridgeport Chain Co.:
Triumph Halter and Coil.35&2½@40
Triumph Dog.....50&10@60
Brown Halter and Coil....45@50&5
Covert Mfg. Co.:
Breast, Halter, Heel, Rein, Stallion .....40%
Oneida Community:
American Halter, Dog and Kennel Chains .....35&2½@40
Niagara Dog Leads and Kennel Chains .....45@5 &
Wire Goods Co.:
Dog Chain.....
Universal Dbl.-Jointed Chain..70

## Chain and Ribbon, Sash—

Oneida Community:
Steel Chain..... 60%
Pullman:
Bronze Chain, 60%; Steel Chain Coppered .....60&1
Sash Chain Attachments, per set 8¢
Aluminoy Sash Ribbon, per 100 ft. .....$2.00@$5.00
Sash Ribbon Attachments, per set 8¢

## Chalk—

*Carpenters' Blue.....gro., 70¢*
*Carpenters' Red.....gro., 70¢*
*Carpenters' White.....gro., 70¢*

## Checks, Door—

Bradley's .....45%
Pelham, per gro .....$54.00
Russwin .....33⅓%

## Chests, Tool—

American Tool Chest Co.:
Boys' Chests, with Tools.....55%
Youths' Chests, with Tools.....40
Gentlemen's Chests, with Tools..30%
Farmers', Carpenters, etc., Chests, with Tools .....20
Machinists' and Pipe Fitters' Chests, Empty.....15
Tool Cabinets.....45
C. E. Jennings & Co.'s Machinists' Tool Chests.....7½%

## Chisels—

### Socket Framing and Firmer

*Standard List.....80&10@—%*
Buck Bros.....30
C. E. Jennings & Co.:
Socket Firmer No. 10.....25&7½
Socket Framing No. 15.....25&7½
Swan's .....66⅔@70
L. & I. J. White & Co.....30@30&5

### Tanged—

*Tanged Firmers.....30&5@35%*
Buck Bros.....30
C. E. Jennings & Co. Nos. 191, 181..25%
L. & I. J. White Co.....25&5%

### Cold—

*lb.*
*Cold Chisels, good quality.13@15¢*
*Cold Chisels, fair quality.11@12¢*
*Cold Chisels, ordinary.... 9@10¢*

## Chucks—

Almond Drill Chucks.....35%
Almond Turret Six-Tool Chuck.....40
Beach Pat, each $8.00.....35&5%
Empire .....25%
Blacksmiths' .....25%
Jacobs' Drill Chucks.....35%
Pratt's Positive Drive.....25%
Skinner Lathe Chucks:
Independent .....35%
Universal, Reversible Jaws.....35%
Universal, Com. Style Jaws.....40%
Combination, Reversible Jaws....35%
Combination, Com. Style Jaws...40%
Round Body or Box Body, 2 Chuck Jaws .....25%
Geared Scroll Chucks.....25%
Drill Chucks:
New Model, 25%; Geared Pattern, 25%; Skinner Patent, ...25%
Positive Drive.....40%
Planer Chucks.....20
Standard .....45%
Drill Press Vises.....30%
Face Plate Jaws.....35%
Standard Tool Co.:
Improved Drill Chuck.....45%
Union Mfg. Co.:
Combination, Nos. 1, 2, 3, 4, 5, 6, 7, 8 and 17, 40%; No. 21.....35%
Scroll Combinations, Nos. 83 and 84 .....30%
Geared Scroll, Nos. 33, 34 and 35..25%
Independent Iron, Nos. 18 and 318.35%
Independent Steel, No. 64.....25%
Union Drill, Nos. 000, 00, 100, 101, 102, 103, 104.....35%
Union Czar Drill.....25%
Universal, 11, 12, 16, 17, 13, 14, 15..40%
Universal No. 42.....35%
Iron Face Plate Jaws, Nos. 28, 30, 48 and 50.....35%
Steel Face Plate Jaws, Nos. 70 and 72 .....30%
Westcott Patent Chucks:
Lathe Chucks.....50%
Little Giant Auxiliary Drill.....50%
Little Giant Double Grip Drill...50%
Little Giant Drill, Improved.....50%
Oneida Drill.....50%
Scroll Combination Lathe.....50%
Whitaker Mfg. Co.:
National Drill.....25%

## Clamps—

Adjustable Hammers.....20@20&5%
Carriage Makers', Star, P., S. & W. Co. .....50%
Besly, Parallel.....33⅓&10
Myers' Hay Rack.....50%
Lineman's Swedish Neverturn.....65%
Wood Workers' Hammers.....40&10%
Saw Clamps, see Vises, Saw Filers'

## Cleaners, Drain,

Iwan's Champion, Adjustable.....50%
Iwan's Champion, Stationary.....40%

## Sidewalk—

Star Socket, All Steel..℔ doz. $4.05 net
Star Shank, All Steel..℔ doz. $3.24 net
W. & C. Shank, All Steel, ℔ doz., 7½ in., $3.00; 8 in., $3.25.

## Cleavers, Butchers'—

Foster Bros.....30%
Fayette R. Plumb.....30%
L. & I. J. White Co.....30

## Clippers, Horse and Sheep—

Chicago Flexible Shaft Co.:
1902 Chicago Horse, each..$10.75
20th Century Horse, each...$5.00
Lightning Belt Horse, each..$15.00
Chicago Belt Horse, each..$20.00
Stewart's Enclosed Gear Roll Bearing Horse, each.....$6.75
Stewart's New Model Sheep Shearing Machine each $12.75
Stewart Enclosed Gear Shearing Machine, No. 8, each..$9.75
} 20%

## Clips, Axle—

*Regular Styles, list July 1, '05,* 80&80&10%

## Cloth and Netting, wire

See *Wire, &c.*

## Cocks, Brass—

*Hardware list:*
*Plain Bibbs, Globe, Kerosene, Racking, Liquor, Bottling, &c .....75%*
*Compression Bibbs.....70%*

## Coffee Mills—

See *Mills, Coffee.*

## Collars, Dog—

Nickel Chain, Walter B. Stevens & Son's list .....40%
Leather, Walter B. Stevens & Son's list .....40%

## Compasses, Dividers, &c.

*Ordinary Goods.....70&10@75%*

## Conductor Pipe,—

*L. C. L. to Dealers:*

| | Gal. Steel. | Charcoal. |
|---|---|---|
| *Northeastern* | *70&10%* | *50&10&7½%* |
| *Eastern* | *75%* | *50&10&7½%* |
| *Pittsburgh* | *75&10&5%* | *60%* |
| *Central* | *75&10%* | *60%* |
| *Northwestern,* | *75&7½%* | *60%* |
| *Western* | *70&12½%* | *50&12½%* |
| *Tennessee* | *70&10%* | *50&12½%* |
| *Southern* | *70%* | *50&12½%* |
| *Southwestern.* | *70%* | *50&5%* |

*Terms, 60 days: 2% cash 10 days. Factory shipments generally delivered.*
See also Eave Troughs.

## Coolers, Water—

L. & G. Mfg. Co.:

| Gal. | 2 | 3 | 4 | 6 | 8 |
|---|---|---|---|---|---|
| Galvanized, ea. | $1.85 | $2.00 | $2 25 | $2.90 | $3,90 |
| Galvanized, Lined, side handles, | | | | | |
| Gal. | 2 | 3 | 4 | 6 | 8 |
| Each | $1.95 | $2.15 | $2.40 | $3.30 | $4.15 |

White Enameled.....10%
Agate Lined.....10%

## Coppers' Tools—

See *Tools, Coopers'.*

## Coppers, Soldering—

*Soldering Coppers, 3 lb. to pair and heavier, 20¢; lighter than 3 lb. to pair.....22¢*

## Cord— Sash—

*Braided, Drab.....lb. 35¢*
*Braided, White, Com., Nos. 8 to 12, 20¢; No. 7, 20½¢; No. 6, 21½¢. In lots of 12 doz. or over, 1 cent less per pound.*
*Cable Laid Italian, lb., No. 18.37¢*
*Italian, lb., A, No. 18, 25¢; B, 22¢*
*Common India.....lb., 11@11½¢*
*Cotton Sash Cord, Tw'ted.18@20¢*
*Patent Russia.....lb....20¢*
*Cable Laid Russia.....lb...21¢*
*India Hemp, Br'd'd.....lb...21¢*
*India Hemp, Twisted...lb.13@14¢*
*Patent India, Twisted..lb...17¢*
Pearl Braided, cotton, No. 6, ℔ lb. 20½¢; No. 7, 19½¢; Nos. 8 to 12, 19½¢, in 12 doz. to 100 doz. lots.
Eddystone, Braided, Nos. 8 to 12, 26¢; 7, 26½; 6, 27½¢.
Harmony Cable Laid Italian, Nos. 7 to 10.....℔ lb 23¢
Pullman:
Wire Sash Cord.....10%
Sash Cord Attachments, per 100..$2.00
Samson, Nos. 8 to 12:
Braided, ℔ lb., Drab Cotton, 55¢; Italian Hemp, 40¢@50¢; Linen, 65¢; White Cotton, 50¢; Spot Cord.....50¢
Massachusetts, White...℔ lb 40¢
Massachusetts, Drab....℔ lb 45¢
Phoenix, White, Nos 8 to 12....27¢
} 15%
Silver Lake, per lb.:
A, Drab, 45¢; A, White, 40¢; B, Drab, 40¢; B, White, 35¢; Italian Hemp, 40¢; Linen....57½¢
See also Chain and Ribbon.

## Wire, Picture—

*Full Length.....90@—%*
*Short Length.....90&20@—%*
Hendryx Standard Wire Picture Cord, old list, 85&10%
Turner & Stanton Co. Wire Picture Cord .....90%

## Cradles—

*Grain .....50%*

## Crayons—

*White Round Crayons, Cases, 100 gro., $8.00, $8.50, $9.00 and $10.00 according to grade.*
Zelnicker's Lumber: ℔ gro.
White and Purple, Indelible....$7.50
Blue, Red, Green, Yellow and Terra Cotta, $6.50; Black.....$4.50
Giant Lumber, 5¼ in. x 15-16 in. round, all colors, $12.00; Indelibles, $14.00; Blacks.....$10.00
Genuine Soapstone, Metal Workers', 5 in. x ¼ in. Round, $2.50; 5 in. x ¼ in. Square, $1.75; 5 x ½ x 3-16, $2.50; 5 x 1¼ x 3-16.....$3.00
Suremark, Black, $2.25; Blue, Red and Yellow.....$2.50

## Crooks, Shepperds'—

Fort Madison, per doz., Heavy, $5.50; Light .....$5.00

## Crow Bars—See *Bars, Crow.*

## Cultivators—

Victor Garden.....50%

## Cutlery, Table—

International Silver Company:
No. 12 M'd'm Knives, 1847.℔ doz. $3.50
Star, Eagle, Rogers & Hamilton and Anchor.....℔ doz. $3.00
Wm. Rogers & Son.....℔ doz. $2.50

## Cutters— Glass—

H. H. Mayhew Co.....40
Red Devil.....60%
B Mfg. Co.....40
Woodward .....50

### Meat and Food—

American .....30%

| Nos. | 101 | 102 | 103 | 104 | 105 | 106 | 107 |
|---|---|---|---|---|---|---|---|
| Each | $5 | $7 | $9 | $12 | $25 | $50 | $ |

Enterprise:

| Nos. | 5 | 10 | 12 | 22 | 32 | |
|---|---|---|---|---|---|---|
| Each | $2.85 | $2.75 | $1. | $6 | 25@ | 7& |
| No. | 202, $1.50 | | | | | 10& |

P. S. & W. Co.:
Lard .....40@40&5
Hog .....60&5
Little Giant .....℔ doz. $1.25
Nos. 205 210 215 220 225

| | $25.00 | $18.00 | $11.00 | $7.00 | $6.00 |
|---|---|---|---|---|---|

New Triumph No. 605 ℔ doz. $24.00
.....40
Russwin Food No. 1, $21.00; No. 2, $27.00; 3 $12.00 .....15&10&10

| | $15.00 | $12.00 |
|---|---|---|

Enterprise Beef Shavers..25@

## Slaw and Kraut—

Henry Disston & Sons:
Slaw and Kraut Cutters.....35%
Corn Graters.....30%
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife....℔ doz. $3.00
Combined Slaw Cutter and Corn Grater .....℔ doz. $4.00

## Tobacco—

*All Iron, Cheap...doz., $4.25@4.50*
Enterprise .....25@30
National, ℔ doz., No. 1, $21; No. 2, $18 .....40%

## Diggers, Post Hole, &c—

Disston's:
Rapid, ℔ doz., $24.00.....25
Samson, ℔ doz., $34.00.....25%
Iwan's Pat. Post Hole and Well Auger .....40%
Vaughan Pattern Post Hole Augers, ℔ doz., $7.00
Perfection Post Hole Diggers, ℔ doz. .....$8.50
Split Handle Post Hole Diggers, ℔ doz., $7.50
Hercules Pattern, ℔ doz.....$9.50
Kohler's, ℔ doz., Universal, $14.00; Little Giant, $12.00; Hercules, $10.00; Invincible, $9.00; Rival, $8.50; Pioneer.....$7.50
Never-Break Crucible Steel Post Hole Diggers .....60%

## Dividers—See *Compasses.*

## Drawing Knives—

See *Knives, Drawing.*

## Dressers Emery Wheel—

Sterling Emery Wheel Dressers.....35%
Sterling Wheel Dresser Cutters.....35%

## Drills and Drill Stocks—

*Blacksmith's Common Drilling Machines .....$1.50@1.75*
Breast, Millers Falls.....15&10%
Breast, P., S. & W.....33⅓%
C. & C. Ratchet.....25%
Reversible Ratchet Die Stocks....25%
Goodell Automatic Drills.50&10@60&10%
Millers Falls Automatic Drills, Graves', per doz., Nos. 1, $4.86; 2, $8.16.
Millers Falls Automatic Drills.33⅓&10%
Ratchet, Curtis & Curtis.....25%
Ratchet, Parker's.....40%
Ratchet, Weston's.....40%
Ratchet, Weston's, Style H Improved .....40@40&5%
Ratchet, No. 012.....40@40&5%
Ratchet, Celebrated.....40@40&5%
Ratchet, Whitney's, P., S. & W., 40&10@50%
Whitney's Adjustable, No. 10, $12.00, 33⅓%

### Twist Drills—

*Bit Stock.....70@70&5%*
*Taper and Straight Shank, 60&10@70%*

## Drivers, Screw—

*Screw D'ver Bits, per doz.45@50¢*
Balsey's Screw Holder and Driver, ℔ doz., 2½-in., $6; 4-in., $7.50; 6-in., $9 .....50%
Buck Bros.' Screw Driver Bits.....30%
Champion .....50%
Disston's .....70%
Fray's Hol. H'dle Sets, No. 3, $12..50%
Ford's Brace Screw Drivers....40&10%
Gay's Double Action Ratchet.....35%
Goodell's Auto.....65@65&10%
Mayhew's Black Handle.....40%
Mayhew's Monarch.....40%
Millers Falls, ℔ doz., Nos. 11, $9.95; 12, $13.73; 20, $8.17; 21, $8.46; 41, $13.43; 42, $17.21.
Smith & Hemenway Co., Neverturn, 66⅔%; Elmora, 60%; Star, 30&10%
Swan's:
Nos. 7565 to 7568, 60%; No. 7540, 40&10%

## Eave Trough, Galvanized—

| Territory... | Gal. Steel. | Charcoal. Iron. |
|---|---|---|
| *Northeastern* | *75&10&5%* | *60&20%* |
| *Eastern* | *80&2½%* | *60&20%* |
| *Pittsburgh* | *80&20%* | *65&10%* |
| *Central* | *80&10&10&2½%* | *65&10%* |
| *Northwestern* | *80&10&10%* | *65&10%* |
| *Western* | *80&10%* | *60&10&5%* |
| *Tennessee* | *80&5%* | *60&10&5%* |
| *Southern* | *80%* | *60&10&5%* |
| *Southwestern* | *75&10&2½%* | *60&5%* |

*Terms.—2% for cash. Factory shipments generally delivered.*
*Note.—Lower prices are made in some sections.*
See also Conductor Pipe and Elbows.

## Elbows and Shoes—

*Factory shipments, all territories:*
*Galv. Steel and Galv. C. I.*
*Standard Gauge.....85@85&10%*
*No. 26.....5*
*No. 24.....25*
*No. 22.....10*

## Elbows, Stove Pipe—

Edwards, Standard Blue.....&10&5
Edwards, Royal Blue.....&10&5
Reeves, Dover, Flat Crimp, 10&10&5

## Emery, Turkish—

| | ½ to 6" | ¾ to 2" | Flour. |
|---|---|---|---|
| *Kegs.....lb* | *5¢* | *5½¢* | *8½¢* |
| *½ Kegs.....lb.* | *5½¢* | *5¾¢* | *8¾¢* |
| *¼ Kegs.....lb.* | *5½¢* | *6¢* | *9¢* |
| *10 lb. cans, 10 in case....* | *6½¢* | *7¢* | *6¢* |
| *10 lb. cans, less than 10.....* | *10¢* | *10¢* | *8¢* |
| *Less quantity..* | *10¢* | *10¢* | *8¢* |

*NOTE.—In lots 1 to 3 tons a discount of 10% is given.*

## Extensions, Bit—

Ford's Auger Bit Extensions....40&5%

## Extractors, Lemon Juice—

—See *Squeezers, Lemon.*

## Fasteners, Blind—
Zimmerman's Jap'd and Galv., 50 & 5%; Bronze and Plated.....50%
Walling's .....50%
Upson's Patent.....40%

### Cord and Weight—
Ives, ₱ gro., $1.08.....10%
Titan, ₱ gro., $0.66.....10%

### Corrugated—
Acme Corrugated Fasteners.....70%

### Faucets—
*Cork Lined.....50&10@60%*
*Metallic Key, Leather Lined, .. 60&10@70%*
*Red Cedar.....40&5@40&10&5%*
*Petroleum .....70&10@75%*
B. & L. B. Co.:
Metal Key.....60&10%
Star .....60%
West Lock.....50&10%
John Sommer's Peerless Tin Key....40%
John Sommer's Boss Tin Key.....50%
John Sommer's Victor Mtl. Key.50&10%
John Sommer's Duplex Metal Key..60%
John Sommer's Diamond Lock.....40%
John Sommer's I.X.L. Cork Lined..50%
John Sommer's Reliable Cork Lined.. 50&10%
John Sommer's Chicago Cork Lined.60%
John Sommer's O. K. Cork Lined...50%
John Sommer's No Brand, Cedar....50%
John Sommer's Perfection, Cedar....40%
Self Measuring:
Enterprise, Self Measuring and Pump, ₱ doz., $36.00.....40&10%
Lane's, ₱ doz., $36.00.....40&10%
National Measuring, ₱ doz. $36.40&10%

### Felloe Plates—
See *Plates, Felloe.*

### Files— Domestic—
*List Nov. 1, 1899.*
*Best Brands.....70&10@75&10%*
*Standard Brands.....75&10@80%*
*Lower Grade....75&10&10@80&10%*
Gold Medal.....70%

### Imported—
*Stubs' Tapers, Stubs' list, July 24, '97.....33⅓@40%*

### Fixtures, Fire Door—
Richards Mfg. Co.:
Universal, No. 103; Special, No. 104 .....$3.75
Fusible Links, No. 96.....50%
Expansion Bolts, No. 107.....60&10%

### Grindstone—
*Net Prices:*

| *Inch* | *15* | *17* | *19* | *21* |
|---|---|---|---|---|
| *Per doz.* | *$3.60* | *3.85* | *4.15* | *4.65* |

Peck, Stow & Wilcox Co.:

| In. | 15 | 17 | 19 | 21 | 24 |
|---|---|---|---|---|---|
| | $4.00 | 4.40 | 4 75 | 5.50 | 6.50 |

....30%
Reading Hardware Co.....60%

### Fodder Squeezers—
See *Compressors.*

### Forks—
*NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.*
Iowa Dig-Ez Potato.....60&10%
Victor, Hay.....60&15&2½%
Victor, Manure.....66⅔%
Victor, Header.....65%
Champion, Hay.....66⅔%
Champion, Header.....65%
Champion, Manure.....60&15&2½%
Columbia, Hay.....60&20%
Columbia, Manure.....70%
Columbia, Spading.....70&12½%
Hawkeye Wood Barley.....40%
W. & C. Potato Digger.....60&10%
Acme Hay.....60&20%
Acme Manure, 4 tine.....60&10&5%
Dakota Header.....60&20%
Jackson Steel Barley.....60&20%
Kansas Header.....65%
W. & C. Favorite Wood Barley....40%
Plated.—See Spoons.

### Frames— Wood Saw—
*White, S'g't Bar, per doz.75@80¢*
*Red, S'g't Bar, per doz.$1.00@1.25*
*Red, Dbl. Brace, per doz.$1.40@1.50*

### Freezers, Ice Cream—

| *Qt.* | *1* | *2* | *3* | *4* | *6* |
|---|---|---|---|---|---|
| *Each* | *$1.25* | *$1.60* | *$1.90* | *$2.20* | *$2 80* |

### Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

### Fry Pans—See *Pans, Fry.*

### Fuse— *Per 1000 Feet.*
*Hemp* .....$2.75
*Cotton* ..... 3.20
*Waterproof Sgl. Taped..* 3.65
*Waterproof Dbl. Taped..* 4 40
*Waterproof Tpl. Taped..* 5.15
*10&12½%*

## Gates, Molasses and Oil—
*Stebbins' Pattern.....80@80&5%*

### Gauges—
*Marking, Mortise, &c..50@50&10%*
Chapin-Stephens Co.:
Marking, Mortise, &c.....50&50&10%
Disston's Marking, Mortise, &c..67½%
Wire, Brown & Sharpe's.....33⅓%
Wire, Morse's .....25%
Wire, P. S. & W. Co.....33⅓%

### Gimlets— Single Cut—
*Numbered assortments, per gro.*
*Nail, Metal, No. 1, $2.00; 2, $2.30*
*Spike, Metal, No. 1, $1.00; 2, $1.30*
*Nail, Wood Handled, No. 1, $1.30; 2, $2.60*
*Spike, Wood Handled, No. 1. $1.30; 2, $1.60*

### Glass, American Window
See *Trade Report.*

### Glasses, Level—
Chapin Stephens Co.....65@65&10%

### Glue, Liquid Fish—
*Bottles or Cans, with Brush, 25&10@50%*
Elwell's .....40%

### Grease, Axle—
*Common Grade...gro.$6.00@$6.50*
Dixon's Everlasting, 10-lb. pails, ea. 85¢; in boxes, ₱ doz., 1 lb, $1.20; 2 lb.....$2.00
Helmet Hard Oil.....25%

### Griddles, Soapstone—
Pike Mfg. Co.....33⅓@33⅓&10%

### Grinders—
Pike Mfg. Co.:
Hand and Foot Power, Pyko Nos. 1, 2, 3; Pyko Primo; Pyko Peerless; Pyko Spiral (foot power)..33⅓%
Mower Knife and Tool, $5.00..40&10%
Royal Mfg. Co.:
Alundum Grinding Machines, each, Nos. 01, $1.75; 1A, $2.50; 10, $5.00 .....30%
Alundum Sickle Grinders, each, Nos. 20, $5.00; 20A, $6.00; 20A Combined, $6.50.....30%
Alundum Disc Grinders, each, $2.50 .....30%

### Grindstones—
Pike Mfg. Co.:
Improved Family Grindstones, ₱ inch, ₱ doz., $2.00.....33⅓%
Richards Mfg. Co., Eli and Cycle, Ball Bearing, mounted.....40%

### Grips, Nipple—
Perfect Nipple Grips.....40&10&2%

## Halters and Ties—
*Cow Ties.....65@65&10%*
Bridgeport Chain Co.:
Triumph Coil and Halters.35&2½@40%
Brown Coil and Halters...45@50&5%
Brown Cow Ties.....50&5@50&10&5%
Brown Tie Outs.....70&10@75&5%
Covert Mfg. Co.:
Web .....30&2%
Jute Rope.....35%
Sisal Rope.....20%
Cotton Rope.....45%
Hemp Rope.....45%
Oneida Community:
Am. Coil and Halters.....40@40&5%
Am. Cow Ties.....45@50%
Niagara Coil and Halters...45@50&5%
Niagara Cow Ties....45&5@50&10&5%

### Hammers—
### Handled Hammers—
Heller's Machinists'....55&10@55&10&5%
Heller's Farriers.....40&5@40&10&5%
Peck, Stow & Wilcox Co.:
Crucible Steel.....40&10@50%
Farriers' .....40&10@50%
Riveting .....40&10@50%
Machinists' .....66⅔@50%
Blacksmiths' .....50%
Fayatte R. Plumb:
A. E. Nail.....40&2½@40&12½%
Eng. and B. S. Hand.50&10&5@60&5%
Machinists' Hammers.....60&10&5%
Rivet and Tinners'.40&7½@40&12½&5%
Victor Magnetic Tack, ₱ gro....$7.75

### Heavy Hammers and Sledges—
*Under 3 lb., per lb., 50¢...80&10%*
*3 to 5 lb., per lb., 40¢...80&10&10%*
*Over 5 lb., per lb., 30¢.....*
*Over 5 lb., per lb., 30¢.80&10&10%*

### Handles—
### Agricultural Tool Handles
*Axe, Pick, &c....60&10@60&10&5%*
*Hoe, Rake, &c.....40%*
*Fork, Shovel, Spade, &c.:*
*Long Handles.....40%*
*D Handles.....40%*

### Cross-Cut Saw Handles—
Atkins' .....40%
Champion .....50%
Disston's .....50%

### Mechanics' Tool Handles—
*Auger, assorted...gro.$3.00@$3.50*
*Brad Awl.....gro.$1.65@$1.75*
*Chisel Handles, Ass'd, per gro.:*
*Tanged Firmer, Apple, $2.40@ $2.65; Hickory.....$2.15@2.40*
*Socket Firming, Apple, $1.75@ $1.95; Hickory.....1.60@1.75*
*Socket Framing, Hickory, $1.60@$1.75*
*File assorted.....gro.$1.30@$1.40*
*Hammer, Hatchet, &c., 60&10@60&10&5%*
*Hand Saw, Varnished, doz., 80¢ 85¢; Not Varnished.....65@75¢*
*Plane Handles:*
*Jack, doz., 30¢; Fore, doz...45¢*
Chapin-Stephens Co.:
Carving Tool.....30@30&10%
Chisel .....60@60&10%
File and Awl.....60@60&10%
Saw and Plane.....30@30&10%
Screw Driver.....30@30&10%
Millers Falls Adj. and Ratchet Auger Handles .....15&10%
Nicholson Simplicity File Handle.... ₱ gro. $0.85@$1.50
J. L. Osgood:
Indestructible File and Tool, ₱ gro., No. 1, $8.00; No. 2, $8.50: No. 3 $9.00; No. 4, $9.50; No. 5, $10.00.....gro. lots 10%
W. A. Zelnicker Supply Co.:
Hammer, ₱ doz., 12 in. $2.00; 14 in., $2.00; 16 in. $2.30; 18 12, $2.50; 20 in., $2.70; 22 in., $3.00; 24 in., $3.30; 26 in., $3.50; 30 in., $3.80.
Sledge, ₱ doz., oval, 30 in., $2.80; octagon, 30 in., $3.80; oval, 36 in., $4.00; octagon, 36 in., $4.00.
Axe, ₱ doz., 28 to 34 in., $5.60; 36 in., $5.80.
Adze, ₱ doz., 36 in., $5.80; 36 in., $7.80
Pick ₱ doz., R. R., 36 in., $8.00; coal, 34 in., $5.80.
Hatchet, ₱ doz., 12 to 14 in., $2.00.
*10&7½&5%*

### Hangers—
*NOTE.—Barn Door Hangers are generally quoted per pair, without track and Parlor Door Hangers per double set with track, &c.*
Chicago Spring Butt Co.:
Friction .....25%
Oscillating .....25%
Big Twin.....25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door.....50%
Elevator .....30%
Railroad .....50%
Cronk & Carrier Mfg. Co.:
Loose Axle.....60&10%
Roller Bearing.....70%
Griffin Mfg. Co.:
Solid Axle, No. 10, $12.00..60&10%
Roller Bearing, No. 11, $15.00, 60&10%
Roller Bearing, Ex. Hy., No. 22, $18.00.....60&10%
Bull Dog, $24.00.....70%
Lane Bros. Co.:
Parlor, Ball Bearing, $1.00; Standard, $3.15; No. 105, $2.85; New Model, $2 80; New Champion per set of 4 Hangers, complete with track.....$2.25
Barn Door, Standard.....60&10%
Hinged .....net $6.08
Covered .....60&5%
Special .....70&5%
Trolley Hangers and track...50%
Lawrence Bros.:
Advance .....55&10%
Cleveland .....70&7½%
Clipper, No. 75.....60%
Crown .....55&10%
Cyclone, No. 40.....net $6.50
Tandem, No. 50.....net $7.50
New York.....55&10%
McKinney Mfg. Co.:
Roller Bearing, Nos. 1 and 2..70%
Anti-Friction .....60%
Hinged Hangers, King Charm.60%
Richards Mfg. Co.:
Hangers, Nos. 47, 48, 147, 247, 60&5%
Pioneer Wood Track, No. 3..$2.25
Roller B'r'g St'l Track No. 12.$2.20
Roller B'r'g St'l Track No. 13.$2.50
Roller B'r'g, Nos. 39, 41, 43, 70&7½%
Hero, Adj. Track No. 19..50&10%
Adjustable Track Tandem Trolley Track No. 16.....50&10%
Seal, Steel Track No. 8.....$2.25
Auto Adj. Track No. 22..50&5%
Trolley B. D. No. 17, $1.25; F. D. No. 120, $2.25; No. 121, $2.45; No. 150.....$2.50
Safety Underwriters F. D. No. 101 .....50%
Tandem No. 44..2½ and 3 60&10%
Palace, Adjustable Track No. 132 .....50&5%
Royal, Adjustable Track No. 122 .....50&10%
Ives' Wood Track No. 1.....$2.25
Trolley B. D. No. 20.....50&10%
Trolley B. D. No. 24, $1.30; No. 27, $1 40; No. 28.....$1.60
Roller Bearings, Nos. 37, 38, 39, 41, 43, 44, Sizes 1 and 2.70&7½%
Anti-friction, No. 42; No. 44, sizes 2½ and 3.....60%
Hinged Tandem No. 48....60&5%
Folding Door B. B. Swivel No. 135 .....40%
Taylor & Boggis F'y Co.'s Kidder's Roller Bearing, ₱ doz., 4 in., $12.00; 5 in., $14.00..40&10%
Myers' Stayon Hangers.....60%

### Hangers— Garment—
Pullman Trouser, ₱ gro., No. 1 $9.00; No. 4, $21.00; No. 5, $16.50; No. 8, Black Enamel, $7.50; No. 10, $21.00; No. 12, $8.00; No. 15, Rods, $9.00; No. 18, Loops.....$10.00
Victor Folding.....₱ gro. $9.60

### Gate—
Myers' Patent Gate Hangers, ₱ doz. net .....50%

### Joist and Timber—
Lane Bros. Co.....35%

### Hasps—
Griffin's Security Hasp.....50&10%
McKinney's Perfect Hasp, ₱ doz..60%

### Hatchets—
*Regular list, first qual.40&12½@—*
*Second quality.....50&10&5@—*

### Heaters, Carriage—
Clark, No. 5, $1.25; No. 5B, $1.50; No. 3, $1.75; No. 3D, $2.00; No. 7D, $2.25; No. 3E, $2.50; No. 1, $3.00.....25%
Clark Coal, ₱ doz., $0.75.....20%

## Hinges—
### Blind and Shutter Hinges
*Surface Gravity Locking Blind: (Victor; National; 1868 O. P.; Niagara; Clark's O. P.; Clark's Tip; Buffalo.)*

| *No.* | *1* | *3* | *5* |
|---|---|---|---|
| *Doz. pair* | *$0.75* | *1.35* | *2.70* |

*Mortise Shutter: (L. & P., O. S., Acme, &c.)*

| *No.* | *1* | *1½* | *2* | *2½* |
|---|---|---|---|---|
| *Doz. pair* | *$0.70* | *.65* | *.60* | *.55* |

*Mortise Reversible Shutter (Buffalo, &c.):*

| *No.* | *1* | *1½* | *2* |
|---|---|---|---|
| *Doz. pair* | *$0.70* | *.65* | *.60* |

North's Automatic Blind Fixtures. No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%
Charles Parker Co.....70&75
Parker Wire Goods Co.
Hale & Benjamin Automatic Blind Hinges .....20%
Hale's Blind Awning Hinges, No. 110, for wood, $9.00; No. 111, for brick, $9.00.....20%
Reading's Gravity.....60%
Stanley's Steel Gravity Blind Hinges, No. 1617½, ₱ doz. sets, without screws, $0.95; with screws, $1.25.
Wrightsville Hardware Co.:
O. S., Lull & Porter.....75&5%
Acme, Lull & Porter.....75%
Queen City Reversible.....75
Shepard's Noiseless, Nos. 60, 65, 55 .....75&5%
Niagara, Gravity Locking, Nos. 1, 3 & 5.....75&5%
Clark's O. P., No. 1.....75&10%
Clark's O. P., Nos. 3 and 5....75&5%
Tip Pat'n, No. 1.....75&10%
Clark's No. 3.....75&5%
Buffalo Gravity Locking, Nos. 1, 3 & 5.....70&10&5%
Shepard's Double Locking.....75%
Champion Gravity Locking.....75&5%
Pioneer .....75&10%
Empire .....65%
W. H. Co.'s Mortise Gravity Locking, No. 2.....60&10%

### Gate Hinges—
*Clark's or Shepard's—Doz. sets:*

| *No.* | *1* | *2* | *3* |
|---|---|---|---|
| *Hinges with L't'chs* | *$2.00* | *2.70* | *5.00* |
| *Hinges only* | *1.25* | *1.90* | *3.50* |
| *Latches only* | *.70* | *.85* | *.35* |

*New England:*
*With Latch.....doz..@$2.00*
*Without Latch.....doz..@$1.60*
*Reversible Self-Closing:*
*With Latch.....doz..@$1.75*
*Without Latch...doz. ...@$1.55*
*Western:*
*With Latch.....doz. $1.75*
*Without Latch.....doz..$1.15*
Wrightsville Hardware Co.:
Shepard's or Clark's Hinges and Latches, Hinges only or Latches only, Nos. 1, 2 or 3.....70%

### Miscellaneous—
Griffin Mfg. Co., Fleur de Lis Surface Hinges, ₱ doz. prs.....$1.00

### Pivot Hinges—
Bommer Bros. Pivot, Ball Bearing .....40%
Lawson Mfg. Co. Matchless.....30%

### Spring Hinges—
*Holdback, Cast Iron...$6.75@$7.00*
*Non-Holdback, C'st Iron$6.50@$6.75*
J. Bardsley:
Bardsley's Non-Checking Mortise Floor Hinges.....40%
Bardsley's Patent Checking.33⅓%
Bommer Bros.:
Spring Butt Hinges.....40%
Surface Floor, Ball Bearing .....40%
Mortise Floor, Ball Bearing.40%
Lavatory Hinges.....40%
Non-Holdback Screen Door, Nos. 2000 and 900.....40%
Holdback Screen Door, No. 999.....₱ gro. $9.00
Chicago Spring Butt Co.:
Chicago Spring Hinges.....25%
Triple End Spring Hinges....50%
Chicago (Ball Bearing) Floor.50%
Garden City Engine House...25%
Keene's Saloon Door.....25%
Columbian Hardware Co.:
Acme, Wrought Steel.....30%
Acme, Brass.....25%
American .....30%
Columbia, ₱ gr., No. 14, $9.00; No. 18.....$25.00
Columbia, Adj., No. 7, ₱ gr.$12.00
Gem, new list.....30
Clover Leaf and Acorn, per gro. .....$12.00
Oxford, new list.....30
Floor Spring Hinges.....65&10
Columbian Steel.....65&10%
Lawson Mfg. Co.:
Matchless Spring Hinges.....30%
Matchless Jamb Hinges.....30%
Richards Mfg. Co.:
Superior Double Acting Floor Hinges .....40%
Shelby Spring Hinge Co.:
Buckeye All Steel Holdback Screen Door.....₱ gr. $9.00
Chief Ball Bearings Floor Hinge .....50%
Ball Bearing Door.....25%
No. 777, Sheet Steel Holdb'k, ₱ gr. pr.....$9.00
Standard Mfg. Co.:
Champion Double Acting Door Hinge .....25&10&10%
Standard Double Acting Floor Hinge .....25&10&10%
Superior Spring Hinge Co.:
Superior Floor Hinges.....33⅓%
Spring Hinges.....33⅓%
*Extra 5@10% often given.*
*Extra 10% often given on most of these Hinges.*

### Wrought Iron Hinges—
*Strap and T Hinges, &c., list February 10, 1908:*
*Light Strap Hinges..50&10%*
*Heavy Strap Hinges..60&5%*
*Light T Hinges.....50%*
*Heavy T Hinges.....40%*
*Extra Hvy. T Hinges.50&10%*
*Hinge Hasps.....33⅓%*
*Cor. Heavy Strap....60&5%*
*Cor. Ex. Heavy T...50&10%*
*Extra 10&7½%.*

*Screw Hook and Strap.*
*6 to 12 in..lb. 3½¢*
*1¼ to 20 in..lb. 3½¢*
*22 to 36 in..lb. 3 ¢*

*Screw Hook and Eye:*
*¼ inch.....lb. 6¼¢*
*⅝-inch .....lb. 7½¢*
*½-inch .....lb. 8½¢*

### Hitchers, Stall—
Covert Mfg. Co., Stall Hitchers..30&2%

### Hods— Coal—
*M'f'gr's list, price per gross:*

| *Inch* | *15* | *16* | *17* | *18* |
|---|---|---|---|---|
| *Galv. Open* | *$35* | *$39* | *$42* | *$46* |
| *Jap. Open* | *26* | *28* | *31* | *35* |
| *Galv. Funnel* | *43* | *48* | *52* | *56* |
| *Jap. Funnel* | *33* | *36* | *39* | *43* |

*10&7½&5%*

### Masons' Etc.
Cleveland Wire Spring Co.:
Steel Brick, No. 162.....each $1.05
Steel Mortar, No. 158.....each $1.35

### Hoes— Eye—
*Scovil and Oval Pattern, 60&10@60&10&10%*
*Grub, list Feb. 23, 1899, 70&10@70&10&10%*
D. & H. Scovil.....27½%
Am. Fork & Hoe Co. (Scovil Pattern) .....60%

### Handled—

*NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.*

Cronk's Weeding, No. 1, $2.00; No. 2, $2.50
Star Double Bit.....$2.50
Ft. Madison Cotton Hoe....70&10&10%
Ft. Madison Crescent Cultivator Hoe, ₱ doz.....70&10%
Ft. Madison Mattock Hoes:
Regular Weight.....₱ doz. 40&5%
Junior Size.....₱ doz. $4.00
Ft. Madison Sprouting Hoe, ₱ doz., 60&10%
Ft. Madison Dixie Tobacco Hoe.....75&10&7½%
Kretsinger's Cut Easy.....70&10%
Warren Hoe.....45&10%
W. & C. Ivanhoe.....75&2%
B. B. 6 in., Cultivator Hoe.....$3.10
B. B., 6½ in.....$3.50
Acme Wedding.....₱ doz., net, $1.35
W. & C. L'tning Shuffle Hoe, ₱ doz. $5.25

### Hoisting Apparatus—

See *Machines, Hoisting.*

### Holders— Bit—

Angular, ₱ doz. $24.00.....45&10%

### Door—

Bardsley's, Iron, 40%; Brass and Bronze.....25%
Empire.....50%
Pullman.....25%
Richards Mfg. Co.: No. 117, Ever-ready, 40%; Nos. 118, 119, Sure Grip.....50%
Superior.....33⅓%

### File and Tool—

Nicholson File Holders and File Handles.....33⅓@40%

### Fruit Jar—

Fernald Double Trace Holder, ₱ doz. pairs.....$1.25
Dash Rein Holder, ₱ doz.....$1.25

### Hones—Razor—

Pike Mfg. Co., Belgian and Swaty, 50%; German.....33⅓%

### Hooks—Cast Iron—

Bird Cage, Reading.....40%
Clothes Line, Reading List.....40%
Coat and Hat, Reading.....45&20%
Coat and Hat, Wrightsville.....60&5%
Harness, Reading List.....40%

### Wire—

*Belt, Nos. 1 to 15....75&10@80%*
*Wire C. & H. Hooks..80@80&10%*
Bradley Metal Clasp Wire, Coat and Hat, 75&10@80%; Ceiling..75&10@80
Columbian Hdw. Co., Gem.....75&10%
Parker Wire Goods Co., King..75&10%
Wire Goods Co.:
Acme, 60&10%; Chief, 70&10%; Crown, 75%; Czar, 65&10%; V Brace, 75%; Czar Harness, 50%; Ceiling, 75%.

### Wrought Iron—

*Box, 6 in., per doz., $0.90; 8 in., $1.15.*
*Cotton.....doz. $1.25@$1.50*
Wrought Staples, Hooks, &c.—See Wrought Goods.

### Miscellaneous—

*Hooks, Bench,* see *Stops, Bench.*
*Rush, Light, doz., $6.20; Medium, $6.75; Heavy, $7.65*
*Grass, best, all sizes, per doz., $2.75@$3.00*
*Grass, common grades, all sizes, per doz.....$1.25@$1.50*
*Whiffletree.....lb. 5½@6¢*
*Hooks and Eyes:*
*Brass.....60@60&10%*
*Malleable Iron.....70@70&10%*
Covert Mfg. Co. Gate and Scuttle Hooks.....40%
Ft. Madison Cut-Easy Corn Hooks, ₱ doz. $3.25 net
Turner & Stanton Co. Cup and Shoulder.....85&10%
Bench Hooks—See Bench Stops.
Corn Hooks—See Knives, Corn.

### Horse Nails—

See *Nails, Horse.*

### Horseshoes—

See *Shoes, Horses.*

### Hose, Rubber—

*Garden Hose, ¾-inch:*
*Competition.....ft. 6@6¼¢*
*3 ply Guaranteed.....ft. 8½@9¢*
*4-ply Guaranteed....ft. 9½@12¢*
*Cotton Garden, ¾-in., coupled:*
*Low Grade.....ft. 8@ 9c*
*Fair Quality.....ft. 10@11¢*

### Irons— Sad—

*From ¼ to 10.....lb. 2½@2¾¢*
*B. B. Sad Irons.....lb. 3¼@3½¢*
*Mrs. Potts', cents per set:*

| | Nos. 59 | 55 | 60 | 65 |
|---|---|---|---|---|
| *Jap'd Caps* | 86 | 93 | 96 | 93 |
| *Tin'd Caps* | 91 | 88 | 1.01 | 98 |

*New England Pressing..lb. 3½@4¢*

### Bar and Corner—

Richards Mfg. Co., Bar, 60&10
Corner.....60

### Pinking—

*Pinking Irons.....doz. 60@65¢*

### Irons, Soldering

See *Coppers.*

### Jacks, Wagons—

Covert Mfg. Co.:
Auto Screw.....30&2%; Steel, 45%
Lockport.....50%
Lane's Steel.....30&5%
Richards' Tiger Steel, No. 130...50&10%
Smith & Hemenway Co.'s.....25%

### Ladder—

Richards Mfg. Co., Ladder Jacks..50%

### Jointers—

Pike Mfg. Co., Saw Jointers, $7.00.....40%

### Kettles—

*Brass, Spun, Plain.....20@25%*
Enameled and Cast Iron—See Ware, Hollow.

### Knives—

### Butcher, Kitchen, &c.—

Foster Bros.' Butcher, &c.....30%
Wilkinson Shear & Cutlery Co....60%

### Corn—

Columbian Cutlery Co., Wilcut Brand Knives and Hooks.....60%
Withington Acme, ₱ doz., $2.65; Dent, $2.75; Adj. Serrated, $2.20; Serrated, $2.10; Yankee No. 1, $1.50; Yankee No. 2, $1.15.

### Drawing—

*Standard List.....80&10@—%*
C. E. Jennings & Co., Nos. 45, 46, 25&7½%
Jennings & Griffin, Nos. 41, 42, 66⅔&7½%
Swan's.....66⅔@70%
Watrous.....16⅔%
L. & I. J. White.....20&5@25%

### Hay and Straw—

*Serrated Edge, per doz. $5.00@5.50*
Iwan's Sickle Edge.....₱ doz. $9.50
Iwan's Serrated.....₱ doz. $10.00

### Miscellaneous—

*Farriers'.....doz. $2.60@3.55*
Wostenholm's.....₱ doz. $3.00@3.25

### Knobs—

*Base, 2½-inch, Birch or Maple, Rubber Tip.....gro. $1.25@1.40*
*Carriage, Jap., Drive, all sizes, gro. .35@40¢*
*Door, Mineral.....doz. 65@70¢*
*Door, Por. Jap'd.....doz. 70@75¢*
*Door, Por. Nickel..doz. $2.05@2.15*
Bardsley's Wood Door, Shutters, &c. 15%

### Lacing, Leather—

See *Belting, Leather*

### Ladders, Store, &c.—

Lane's Store.....%
Myers' Noiseless Store Ladders....50%
Richards Mfg. Co.:
Improved Noiseless, No. 112.....50%
Climax Shelf, No. 113.....50%
Trolley, No. 109.....50%

### Ladles, Melting—

L. & G. Mfg. Co., Melting and Plumbers'.....25%
P., S. & W.....40&10%
Reading.....60%

### Lanterns—Tubular—

*Regular, No. 0.....doz. $4.35@4.50*
*Side Lift, No. 0....doz. $4.60@4.75*
*Hinge Globe, No. 0. doz. $4.60@4.75*
*Other Styles.....40@40&10%*

### Bull's Eye Police—

*3-inch.....$3.75@4.00*

### Latches— Thumb—

*Roggin's Latches, Jap'd, with Screws.....doz. 35@40¢*

### Door—

Cronk & Carrier Mfg. Co., No. 101, ₱ doz. $2.00
Richards' Bull Dog, Heavy, No. 125.....50&5%
Richards' Trump, No. 127.....$1.50

### Leaders, Cattle—

*Small.....doz. 50¢; large, 60¢*
Covert Mfg. Co.:
Cotton, 45%; Hemp, 45%; Jute, 35%; Sisal, 20%.

### Leathers, Pump—

See *Pumps—*

### Lifters, Transom—

R. & E.....10%

### Lines—

| *Wire Clothes, Nos.* | *18* | *19* | *20* |
|---|---|---|---|
| *100 feet* | *$2.30* | *1.95* | *1.75* |
| *75 feet* | *$1.95* | *1.65* | *1.50* |

Samson Cordage Works:
Solid Braided Chalk, Nos. 0 to 3..40%
Solid Braided Masons'.....30%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50.....₱ gr. 20%
Masons' Lines, Shade Cord, &c.; White Cotton, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50; Colors, No. 3½, $1.75; No. 4, $2.25; No. 4½, $2.75; Linen, No. 3½, $2.50; No. 4, $3.50; No. 4½, $4.50.....20%
Tent and Awning Lines: No. 5, White Cotton, $7.50; Drab Cotton, $8.50.....20%
Clothes Lines, White Cotton: 50 ft., $2.75; 60 ft., $3.25; 70 ft., $3.75; 75 ft., $4.00; 80 ft., $4.25; 90 ft., $4.75; 100 ft. $5.25.....20%
Turner & Stanton Co.:
Solid Braided Chalk, Masons' and Awning Lines.....40%
Clothes Lines, White Cotton....20%
Shade Cord, Cotton or Linen....20%

### Locks— Cabinet—

*Cabinet Locks....33⅓@33⅓@5%*

### Door Locks, Latches, &c

*NOTE.—Net Prices are very often made on these goods.*
Reading Hardware Co.....40%
R. & E. Mfg. Co.....10%

### Padlocks—

R. & E. Mfg. Co. Wrought Steel and Brass.....75&10%

### Sash, &c.—

Ives' Patent:
Crescent.....10%
Automatic Gravity Metal Sash, ₱ gro. $149.58.....10%
Window Ventilating.....10%
Pullman Patent Ventilating Lock..25%
Reading Sash Locks.....40%
Taylor Mfg. Co., Perfect Ventilating ₱ doz.....$0.75@$1.00

### Machines—Boring—

*Com. Upr't, without Augers, $2.00@2.25*
*Com. Angl'r, without Augers, $2.25@2.50*
Ford Auger Bit Co.....$22.00
Jennings', Nos. 1 and 4.....25&7½%
Millers' Falls.....5.75
Snell's, Upright, $2.65; Angular, $2.90
Swan's Improved.....40&10%

### Corking—

Reisinger Invincible Hand Power... ₱ doz. $48.00

### Fence—

Williams' Fence Machines....each, $5.50

### Hoisting—

Moore's Anti-Friction Chain Hoist.30%
Moore's Hand Hoist, with Lock Brake.....20%
Moore's Cyclone High Speed Chain Hoist.....25%

### Ice Cutting—

Chandler's.....12½%

### Washing

| Boss Washing Machine Co.: | Per doz. |
|---|---|
| Boss No. 1 | $57.00 |
| Boss Rotary | $57.00 |
| Champion Rotary Banner No. 1 | $57.00 |
| Standard Champion No. 1 | $50.00 |
| Standard Perfection | $27.00 |
| Cincinnati Square Western | $33.00 |
| Uneeda American, Round | $33.60 |

### Mallets—

*Hickory.....45&5@50%*
*Lignumvitæ.....45&5@50%*
*Tinners' Hickory and Applewood.....doz. 45&5@50%*

### Mangers, Stable—

Swett Iron Works.....50%

### Mats, Door—

Acme Flexible Steel.....50%
Elastic Steel (W. G. Co.), new list.50%

### Mattocks—

See *Picks and Mattocks.*

### Milk Cans—See *Cans, Milk.*

### Mills, Coffee, &c.—

Enterprise Mfg. Co.:
Coffee.....20@25%
Shell and Corn.....25&10%
National list Jan. 1, 1902.....30%
Parker's Columbia and Victoria..33⅓%
Parker's Box and Side.....50&10%
Swift, Lane Bros. Co.....30%

### Motors, Water—

Divine's Red Devil.....30%

| $2.50 | 3.50 | 10.00 | 15.00 | |
|---|---|---|---|---|
| No. 1. | 2 | 3 | 4 | |
| Lippincott's: | | | | |
| No..... | 1 | 2 | 3 | 4 |
| | $2.50 | 3.50 | 10.00 | 15.00..33⅓% |

Pike Mfg. Co., Tool and Knife Grinding.....33⅓%

### Mowers, Lawn—

*NOTE.—Net prices are generally quoted*
*Cheapest, 10-in., $2.00; advance 10¢ for each size.*
*Cheap, 10-in., $2.25; advance 15@20¢ for each size.*
*Better Grade, 10-in., $3.00; advance 25¢ for each size.*

| | 12 | 14 | 16 | 18 in. |
|---|---|---|---|---|
| *High Grade...* | *$4.50* | *4.75* | *5.00* | *5.25* |

Continental.....60
Great American.....70
Great American Ball B'r'g, new list.70%
Quaker City.....70%
Pennsylvania.....60%
Pennsylvania, Jr., Ball Bearing 50&10&5%
Pennsylvania Golf.....50
Pennsylvania Horse.....33⅓&5
Pennsylvania Pony.....40&5
Granite State:
Style A, Low Wheel.....70
Style B, Low Wheel.....70
Style C, High Wheel, spcl. list, 70&10%
Style D, High Wheel, spcl. list..70%
Philadelphia:
Styles M., S., C., K., T....70&10&5
Style A, all Steel.....60&10&5
Style E, High Wheel.....70&10&5
Drexel and Gold Coin, special list.40%
Horse.....10&5
Pony.....40&5
36-in. Horse.....30&10
Eagle Horse.....33⅓&5
I. X. L. Horse.....50

### Nails—

*Wire Nails and Brads, Miscellaneous.....85&5@85&10%*
*Cut and Wire,* See *Trade Report.*
*Hungarian, Finishing, Upholsterers', &c.* See *Tacks.*

### Horse—

| Nos. | 6 | 7 | 8 | 9 | 10 | |
|---|---|---|---|---|---|---|
| Anchor | 23 | 21 | 20 | 19 | 18 | .. ₱ lb. net, 12¢ |
| Coleman | 13 | 12 | 12 | 11 | 11 | net ₱ lb |
| New Haven | 23 | 21 | 20 | 19 | 18 | .. ₱ lb. net, 12¢ |
| Livingston | 19 | 18 | 17 | 16 | 16 | .....10% |
| Western | | | | | | ₱ lb 8½¢ |

*Jobbers' Special Brands.*
*per lb. 9¢*

### Picture—

| | 1½ | 2 | 2¼ | 3 in. |
|---|---|---|---|---|
| *Brass Hd, gro.* | *.45* | *.55* | *.60* | *.70* |
| *Por. Head, gro.* | *1.10* | *1.10* | *1.10* | *1.10* |

### Upholsters—

*Brass.....30%*
*Plated.....30&10%*

### Nippers—

See *Pliers and Nippers.*

### Nipples—

Standard Nipple Co.:
Wrought Pipe Nipples.....80

### Nuts— *Blank or Tapped.*

| *Cold Punched:* | *Off list.* |
|---|---|
| *Square* | *5.50@5.50¢* |
| *Hexagon* | *6.00@6.10¢* |
| *Square, C., T. & R.* | *5.80@5.90¢* |
| *Hexagon, C., T. & R.* | *6.60@6.70¢* |
| *Hot Pressed:* | |
| *Square* | *5.80¢* |
| *Hexagon* | *6.80¢* |

### Oakum—

*Best.....lb. 6½¢*
*U. S. Navy.....lb. 6 ¢*
*Navy.....lb. 5 ¢*
*Plumbers' Spun Oakum..2¾@3 ¢*

### Oil—

Pike Mfg. Co., Stonoil.....40%

### Oil Tanks—See *Tanks, Oil.*

### Oilers—

*Steel, Copper Plated.....75%*
*Chase or Paragon:*
*Brass and Copper.....50&10%*
*Zinc.....65&10%*
*Railroad.....60&10&10%*
Malleable, Hammers' Improved, Nos. 11, 12 and 13, 20%; Old Pattern, Nos. 1, 2, 3, 50%.
American Tube & Stamping Co.:
Spring Bottom Cans.....70@70&10
Railroad Oilers, &c.....60@60&10%
Maple City Mfg. Co.:
Spring Bottom Cans.....70@70&10%
Railroad Oilers, &c.....60@60&10%

### Openers—Packing Box—

Herculever, ₱ doz., $24.....30%

### Can Openers—

*Per doz.*
*Sprague, Iron Handle....30@35¢*
*Sprague, Wood Handle.....40¢*
*Sardine Scissors.....$1.75@3.00*
Can and Bottle Openers, ₱ doz., net: Yankee, $0.75@$0.85; Little Gem, $0.50@$0.65; Nifty.....$0.75

### Egg—

Hartigan Nickel Plate, ₱ doz., $2.00; Silver Plate, $4.00.

### Packing—

*Asbestos Packing. Wick and Rope, any quantity.....18@20¢*

### Rubber—

*(Fair quality goods.)*
*Sheet, C. I.....11@12¢*
*Sheet, C. O. S.....11@12¢*
*Sheet, C. B. S.....12@13¢*
*Sheet, Pure Gum.....40@45¢*
*Sheet, Red.....40@50¢*
Jenkins' '96, ₱ lb, 80¢.....25%

### Miscellaneous—

*American Packing....lb. 7@10 ¢*
*Cotton Packing.....lb. 16@25 ¢*
*Italian Packing.....lb. 9@10¢*
*Jute.....lb. 4@4¼¢*
*Russia Packing.....lb. 9@10¢*

### Pails, Water, Well, &c.—

See *Buckets.*

### Paint—

Dixon's Silica-Graphite, in 1 gal. pails and 5 gal. kegs, 25%; packages of larger size.....20

### Pans— Dripping—

*Standard List...70&10@70&10&5%*
Edwards, Royal Blue.....75

### Fry—

*Common Lipped:*

| *Nos.* | *1* | *2* | *3* | *4* | *5* |
|---|---|---|---|---|---|
| *Per doz....* | *$0.75* | *0.85* | *0.95* | *1.15* | *1.30* |

### Refrigerator, Galva.—

| *Inch* | *12* | *14* | *16* | *18* |
|---|---|---|---|---|
| *Per doz....* | *$1.75* | *2.25* | *2.80* | *3.15* |

### Paper—Building Paper

| *Asbestos:* | *lb.* |
|---|---|
| *Roll Board or Building Felt, 6 to 30 lb., per 100 sq. ft...* | *2½¢* |
| *Roll Board or Building Felt, 3-32 and ⅛ in., 45 to 60 lb., per 100 sq. ft.....* | *3½¢* |
| *Mill Board, Sheet, 40 x 40 in., 1-32 to ⅛ in.....* | *3¢* |

*Per roll.*
*Rosin Sized Sheathing: 500 sq. ft. Light weight, 25 lbs. to roll, 48@58¢*
*Medium weight, 30 lbs. to roll, 56@70¢*
*Heavy weight, 40 lbs. to roll, 75@78¢*
*Black Water Proof Sheathing, 500 sq. ft., 1 ply, 65¢; 2 ply, 85¢; 3 ply, $1.10; 4 ply, $1.25.*
*Deafening Felt, 9, 6 and 4½ sq. ft. to lb., ton.....$54.50*
*Red Rope Roofing, 250 sq. ft. per roll.....$1.75*

### Tarred Paper—

*1 ply (roll 400 sq. ft.), ton, $34.00@$38.00*
*2 ply, roll 108 sq. ft.....65¢*
*3 ply, roll 108 sq. ft.....88¢*
*Slater's Felt (roll 500 sq. ft.).80¢*

### Sand Paper and Cloth—

*Flint and Emery.....50&10%*
*Garnet Paper and Cloth.....25*

### Parers—Apple—

Goodell Co.:

| | | |
|---|---|---|
| Family Bay State | ₱ doz. | $15.00 |
| Improved Bay State | ₱ doz. | $36.00 |
| New Lightning | ₱ doz. | $7.00 |
| Turn Table '98 | ₱ doz. | $6.00 |
| White Mountain | ₱ doz. | $5.00 |
| Boston Improved | each | $7.50 |
| Dandy | each | $10.00 |
| Eureka Improved | each | $20.00 |
| New Century | each | $20.00 |
| Ranger | each | $30.00 |
| Livingston Nail Co.: | | |
| Daisy | ₱ doz. | $4.00 |
| Little Star | ₱ doz. | $5.00 |
| Rocking Table | ₱ doz. | $6.20 |
| Reading Hardware Co.: | | |
| Advance | ₱ doz. | $4.00 |
| Baldwin | ₱ doz. | $4.00 |
| Reading 72 | ₱ doz. | $3.25 |
| Reading 78 | ₱ doz. | $6.25 |

### Orange—

Goodell Co. Success.....each $20.00

### Potato—

Saratoga.....₱ doz. $7.20
White Mountain.....₱ doz. $6.00

### Picks and Mattocks—
*(List Jan., 1908.)*
*List* .....70&10@70&10&10%
Cronk's Handled Garden Mattock, ₱ doz., $3.00.....33⅓%

### Pinking Irons—
See *Irons, Pinking.*

### Pins, Escutcheon—
*Brass* .....50@50&10%
*Iron, list Nov. 11, '85*..60@60&10%

### Pipe, Cast Iron Soil—
*Standard, 2-6 in*.....70@—%
*Extra Heavy, 2-6 in*..75&10@—%
*Fittings, Standard and Heavy,* 80&10@80&10&10%

### Pipe, Merchant—

| | Consumers, Steel. Blk. | Carloads, Iron. Galv. | Blk. | Galv. |
|---|---|---|---|---|
| | % | % | % | % |
| ⅛ and ¼ in. | 66 | 50 | 64 | .. |
| ⅜ in. | 68 | 54 | 66 | 52 |
| ½ in. | 70 | 58 | 68 | 56 |
| ¾ to 6 in. | 74 | 64 | 72 | 62 |
| 7 to 12 in. | 71 | 56 | 69 | 54 |

### Pipe, Vitrified Sewer—
*Carload lots.*
*Standard Pipe and Fittings, 3 to 24 in., f.o.b. factory:*
*First-class* .....87%
*Second-class* .....90%

### Pipe, Stove—

| | Per 100 joints. C. L. | L. C. L. |
|---|---|---|
| Edwards' Nested: | | |
| 5 in., Standard Blue | $6.25 | $7.25 |
| 6 in., Standard Blue | 6.75 | 7.75 |
| 7 in., Standard Blue | 7.75 | 8.75 |
| 5 in., Royal Blue | 7.00 | 8.00 |
| 6 in., Royal Blue | 7.50 | 8.50 |
| 7 in., Royal Blue | 8.50 | 9.50 |
| Wheeling Corrugating Co.'s Nested: | | |
| 5 in., Uniform Color | $5.90 | $6.90 |
| 6 in., Uniform Color | 6.40 | 7.40 |
| 7 in., Uniform Color | 7.40 | 8.40 |

### Planes and Plane Irons—
#### Wood Planes—
*Bench, first qual*.....30@30&10%
*Bench, second qual*...40@40&10%
*Molding* .....25@25&10%
Chapin-Stephens Co.:
Bench, First Quality.....30%
Bench, Second Quality.....40%
Molding and Miscellaneous.....25%
Toy and German.....30%
Union .....60%

#### Iron Planes—
Chaplin's Iron Planes.....60%
Union .....60%

#### Plane Irons—
*Wood Bench Plane Irons, list Dec. 12, '06*.....25%
Buck Bros.....30%
Chapin-Stephens Co.....25%
Union .....50%
L. & I. J. White.....20&5@25%

### Planters, Corn, Hand—
Kohler's Eclipse.....₱ doz. $7.50

### Plates—
*Felloe* .....*lb*. 3¾@4¢
Avery Stamping Co.:
Standard Wrct. Steel Felloe Plates in 100 lb kegs, per 100 lb, ¾-in. to 1⅛-in. $4.00 net; 1¼-in. to 2-in., inclusive, $3.75 net.

### Steel Pipe Hook—
Never-Break .....75&10%

### Pliers and Nippers—
*Button Pliers*....75&5@75&10&5%
*Gas Burners, per doz., 5 in., $1.25 @$1.30; 6 in., $1.45 $1.50.*

| *Gas Pipe* | 7 | 8 | 10 | 12-in. |
|---|---|---|---|---|
| | $2.00 | $2.25 | $2.75 | $3.50 |

Acme Nippers.....50&5%
Cronk & Carrier Mfg. Co.:
American Button.....80%
Improved Button.....75&10%
Cronk's .....60%
No. 80 Linemen's.....50%
Stub's Pattern.....45%
Combination and others.....33⅓%
Heller's Farriers' Nippers, Pincers and Tools.....40&10&10&5
P., S. & W. Tinners' Cutting Nippers .....40%
Swedish Side, End and Diagonal Cutting Pliers.....50%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds....40%

### Plumbs and Levels—
Chapin-Stephens Co.:
Plumbs and Levels.....30@30&10%
Chapin's Imp. Brass Cor..40@40&10%
Pocket Levels.....30@30&10%
Extension Sights.....30@30&10%
Machinists' Levels.....40@40&10%
Disston's Plumbs and Levels...60&10%
Disston's Pocket Levels.....60&10%
Stanley's Dulex.....35%
Woods' Extension.....33⅓%

### Points, Glaziers'—
*Bulk and 1-lb. papers*....*lb*. 9¢
*½ lb. papers*.....*lb*. 9½¢
*¼ lb papers*.....*lb*. 10¢

### Police Goods—
*Manufacturers' Lists*...25@25&5%
Tower .....25%

### Polish—Metal, Etc—
Ladd Co.:
Putzade Liquid, ₱ gro., ½ pts., $12.00; 1 pts., $20.00; 1 qts., $40.00; ₱ doz. ½ gals., $6.25; 1 gals., $12.00
Prestoline Liquid, No. 1 (¼ pt.), ₱ doz., $3.00; No. 2 (1 qt.), $9.00..40%
Prestoline Paste.....40%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, ₱ doz. 50¢; ₱ gro. $4.50; ½ lb boxes, ₱ doz. $1.25; 1 lb boxes, ₱ doz. $2.25.
U. S. Liquid, 8 oz. cans, ₱ doz., $1.25.
Barkeepers' Friend Metal Polish, ₱ doz., $1.75.

#### Stove—
Black Eagle Benzine Paste, 5 lb cans, ₱ lb 10¢
Black Eagle, Liquid, ½ pt. cans.. ₱ doz. 75¢
Black Jack Paste, ¾ lb cans, ₱ gr. $9.00
Black Kid Paste, 5 lb can...each, $0.65
Ladd's Black Beauty Liquid, per 100 tins.....$6.75
Joseph Dixon, ₱ gr. $5.75.....10%
Dixon's Plumbago.....₱ lb 8¢
Fireside .....₱ gr. $2.50
Gem, ₱ gr. $4.50.....10%
Japanese .....₱ gr. $3.50
Jet Black.....₱ gr. $3.50
Peerless Iron Enamel, 10 oz. cans.. ₱ doz. $1.50

#### Window Polish—
Benj. P. Forbes:
Glasbright, No. 2, gal pails, ₱ doz., $24.00; each, $2.50; 1 lb cans, each .....75¢
Glasbright Powder, bbls., ₱ lb..20¢

### Poppers, Corn—
*1 qt. Square..doz.$0.80; gro.$8.75*
*1 qt. Round..doz.$0.90; gro.$10.00*
*1½ qt. Square.doz.$1.20; gro.$12.00*
*2 qt. Square..doz.$1.50; gro.$15.00*

### Post Hole and Tree Augers and Diggers—
See also *Diggers, Post Hole, &c.*

### Posts, Steel—
Steel Fence Posts, each, 6 ft., 46¢; 6½ ft., 48¢; 7 ft., 50¢.
Steel Hitching Posts.....each $1.30

### Potato Parers—
See *Parers, Potato.*

### Pots, Glue—
*Enameled* .....40%
*Tinned* .....50&10%

### Powder—
*In Canisters:*
*Duck, 1 lb*.....*each 45¢*
*Fine Sporting, 1 lb*....*each 75¢*
*Rifle, ½ lb*.....*each 45¢*
*Rifle, 1 lb*.....*each 25¢*
*In Kegs:*
*12½-lb. kegs*.....*$3.50*
*25-lb. kegs*.....*$4.50*
King's Semi-Smokeless:
Keg (25 lb bulk).....$6.50
Half Keg (12½ lb bulk).....$3.50
Quarter Keg (6¼ lb bulk).....$1.90
Case 24 (1 lb cans bulk).....$8.50
Half case (1 lb cans bulk).....$4.50

| King's Smokeless: | Shot Gun. | Rifle. |
|---|---|---|
| Keg (25 lb bulk) | $12.00 | $15.00 |
| Half Keg (12½ lb bulk) | 6.25 | 7.75 |
| Quarter Keg (6¼ lb bulk) | 3.25 | 4.00 |
| Case 24 (1 lb cans bulk) | 14.00 | 17.00 |
| Half case 12 (1 lb c. bk) | 7.25 | 8.75 |

### Presses—
#### Fruit, Wine and Jelly—
Enterprise Mfg. Co.....20@25%

#### Seal Presses—
Morrill's No. 1, ₱ doz., $20.00.....50%

### Pruning Hooks and Shears
See *Shears.*

### Pullers, Nail, Etc.—
Cyclops .....50%
Miller's Falls, No. 3, ₱ doz., $12.00.. 33⅓&10
Morrill's No. 1, Nail Puller, ₱ doz. $20.00 .....50%
Pearson No. 1, Cyclone Spike Puller, each $30.00.....50%
The Scranton Co. Case Lots:
No. 2B (large).....$5.50
No. 3B (small).....$5.00
Smith & Hemenway Co.:
Diamond B.....70%
Giant .....50%
Staple Pullers, Utica and Davison .....60%
Taylor Mfg. Co., Sampson Tack, ₱ doz.....$0.40

### Pulleys, Single Wheel—

| *Inch* | 1½ | 1¾ | 2 | 3 |
|---|---|---|---|---|
| *Awning or Tackle, doz* | $0.30 | .45 | .60 | 1.05 |

*Hay Fork, Swivel or Solid Eye, doz., 4 in., $1.25; 5 in., $1.55*

| *Inch* | 2 | 2¼ | 2½ |
|---|---|---|---|
| *Hot House, doz* | $0.65 | .85 | 1.20 |
| *Inch* | 1¼ | 1½ | 1¾ | 2 |
| *Screw, doz* | $0.16 | .19 | .23 | .30 |
| *Inch* | 1¾ | 2 | 2¼ | 2½ |
| *Side, doz* | $0.25 | .40 | .55 | .60 |
| *Inch* | 1½ | 1¾ | 2 | 2½ |

#### Sash Pulleys—
*Common Frame; Square or Round End, per doz., 1¾ and 2 in*.....17@20¢
*Auger Mortise, no Face Plate, per doz., 1¾ and 2 in*....20@21¢
Acme, No. 55, 1¾ in., 19¢; 2 in., 21½¢
American Pulley Co.:
Wrought Steel American Plain Axle .....15&10%
Wrought Steel Eagle.....17@20¢
Top Notch Electrically Welded, Nos. 3 and 4.....19¢
Common Sense.....₱ doz. 20¢
Fox-All-Steel Nos. 3 and 7, 2 in.... ₱ doz. 50¢
Grand Rapids All Steel Noiseless..50%
Niagara, No. 25, 1¾ in., 19¢; 2 in.....20½¢
No. 26, Troy, 1¾ in., 14½¢; 2 in., 16½¢
Star, No. 26, 1¾ in., 19¢; 2 in., 20½¢
Tackle Blocks—See Blocks.

### Pumps—
*Cistern* .....60%
*Pitcher Spout*.....75&5@75&10%
*Wood Pumps, Tubing, &c*....50%
Barnes Dbl. Acting (low list).....45%
Barnes Pitcher Spout.....80%
Contractors' Rubber Diaphragm, No. 2. B. & L. Block Co.....$16.00
Daisy Spray Pump.....₱ doz. $6.50
Flint & Walling's Fast Mail Hand (low list).....50&5%
Flint & Walling's Fast Mail (low list) .....50&5%
Flint & Walling's Tight Top Pitcher .....80%
National Specialty Mfg. Co., Measuring, Nos. 2, $6.00; 3, $5.50.....30%
Myers' Pumps (low list).....
Myers' Power Pumps.....
Myers' Spray Pumps..... } 50%

#### Pump Leathers—
*Plunger and Valve Leathers—Per gro.:*

| *No.* | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| | $5.00 | 6.00 | 7.00 | 8.00 |

*Cup Leathers—Per 100:*

| *Inch* | 2½ | 3 | 3½ | 4 |
|---|---|---|---|---|
| | $5.00 | 7.00 | 9.00 | 12.00 |

} 30%

### Punches—
*Saddlers' or Drive, good, doz.50@75¢*
*Spring, single tube, good quality* .....$1.75
*Revolving (4 tubes)*....*doz.$3.50*
Bemis & Call Co.'s Cast St'l Drive.50%
Morrill's Nos. 1AA, 1A, 1B, 1C, 1D, $15.00.....50%
Hercules, 1 die, each $5.00.....50%
Niagara Hollow Punches.....40%
Niagara Solid Punches.....55&10%
Tinners' Hollow, P., S. & W. Co..40%
Tinners' Solid, P., S. & W. Co., ₱ doz., $1.44.....40&10%

## Rail—Barn Door, &c.—
*Sliding Door, Painted Iron, 2½@2¾¢*
*Sliding Door, Wrought Brass, 1⅛ in., lb., 36¢*.....30%
Cronk's:
Double Braced Steel Rail..₱ ft. 2¾¢
O. N. T. Rail.....2¾¢
Griffin's:
xxx, ₱ 100 ft., 1 x 3-16 in., $3.25; 1¼ x 3-16 in., $3.75.
Hinged Hanger, ₱ 100 ft., 1 x 3-16 in., $3.50; 1¼ x 3-16 in., $4.00.
Lane's:
Hinged Track, ₱ 100 ft.....$3.45
O. N. T., ₱ 100 ft., 1 in., $3.12½; 1¼ in., $3.45; 1½ in., $4.00.
Standard, 1¼ in.....₱ 100 ft. $4.00
Lawrence Bros.:
1 x 3-16 in., ₱ 100 ft., $7.50; 1¼ x 3-16 in., $8.75.....55&7½%
McKinney's:
Hinged Hanger Track, ₱ ft., 11¢. 60&5%
1 x 3-16 Track.....55&7½%
Myers' Stayon Track.....60&5%
Richards Mfg. Co.:
Common, 1 x 3-16 in., $3.00; 1¼ x 3-16, $3.25; 1¼ x 3-16, $3.50.
Special Hinged Hanger Rail..60&10%
Lag Screw Rail, No. 65.....50%
Gauge Trolley Track, ₱ ft., No. 31, 9¢; No. 32, 14¢; No. 33, 20¢.
No. 50.....60&10%
Nos. 61, $3.00; 62, $3.25; 63, $3.50; 64, $4.00; 45, $3.25; 46, $3.50; 49, No. 1, $3.25; 49, No. 2, $3.50.

### Rakes—
*NOTE.—Many goods are sold at net prices.*
Fort Madison Red Head Lawn....$3.25
Fort Madison Blue Head Lawn....$2.70
Cronk's:
Steel Garden: Champion, ₱ doz., 12-tooth, $3.75; 14-tooth, $4.00; 16-tooth, $4.25; Ideal, ₱ doz., 12-tooth, $3.00; 14-tooth, $3.30; 16-tooth, $3.60.
Victor, 12-tooth, $2.25; 14-tooth, $2.50; 16-tooth, $2.75.
Queen City Lawn, ₱ doz., 20 teeth, $2.85; 24, $3.00.....net
Anticlog Lawn, ₱ doz.....$4.00
Malleable Garden.....70&10%
Ideal Steel Garden, ₱ doz., 12 teeth, $15.00; 14, $16.00; 16, $18.00.....80%
Kohler's:
Jumbo Lawn, 36-tooth....₱ doz. $5.00
Lawn Queen, 20-tooth....₱ doz. $2.85
Lawn Queen, 24-tooth....₱ doz. $3.00
Paragon, 20-tooth.....₱ doz. $2.65
Paragon, 24-tooth.....₱ doz. $2.75
Steel Garden, 14-tooth....₱ doz. $2.40
Malleable Garden, 14-tooth, ₱ doz. $1.75@2.00

### Rasps, Horse—
Disston's .....75%
Heller Bros.'.....70&5@70&10&5%
Liveright Bros.' Gold Medal.70&10@75
McCaffrey's American Standard..... 60&10&5%
New Nicholson.....70&10@75%
See also Files.

### Razors—
John Engstrom Swedish.....65%
Sharp Shaver.....60
Fox Razors, ₱ doz. No. 42, $24.00; No. 44, $20.00; No. 82, Platina, $36.00. } Dis. 50%

### Reels, Fishing—
Hendryx:
M 6, Q 6, A 6, B 6, M 9½, M 16, Q 16, A 16, B 16, 4068, Rubber, Populo, Nickeled Populo .....20%
Aluminum, German Silv., Bronze.25%
1240 N, 124 N.....20%
3004 N, 06 N, 6 RM, G 9.....25%
4 N, 6 PN, 24 N, 26 PN.....20%
2904 P., 33⅓%; 2904 PN., 33⅓%; 0924 N., 33⅓%; 02084 N., 33⅓%; 002904 PN., 33⅓%; 802 N., 33⅓%
986 PN, 2904 N, 974 PN.....25%
5009 PN, 5009 N.....20%
Competitor, 102 P, 102 PN, 202 P, 202 PN, 102 PR, 202 PR.....20%
304 P, 304 PN, 00304 P, 00304 PN.33⅓%

### Registers—*List July 1, 1903.*
*Japanned, Electroplated and Bronzed* .....70%
*White Porcelain Enamel..50&10%*
*Solid Brass or Bronze Metal.40%*

### Revolvers—
*Single Action*.....$5¢@$1.00
*Double Action, except 44 cal.$2.00*
*Double Action, 44 caliber*...$2.00
*Automatic* .....$4.00
*Hammerless* .....$4.50

### Riddles, Hardware Grade
*16 in*.....*per doz.$2.50@$2.75*
*17 in*.....*per doz.$2.75@$3.00*
*18 in*.....*per doz.$3.00@$3.25*

### Rings and Ringers—
#### Bull Rings—

| | 2 | 2½ | 3 inch. |
|---|---|---|---|
| *Steel* | $0.70 | 0.75 | 0.80 doz. |
| *Copper* | $1.10 | 1.25 | 1.65 doz. |

#### Hog Rings and Ringers—
*Hill's Rings, gro. boxes.$4.50@$4.50*
*Hill's Ringers, Gray Iron, doz., 60@75¢*
*Hill's Ringers, Malleable Iron, doz.80@95¢*
*Blair's Rings..per gro.$5.00@$5.50*
*Blair's Ringers...per doz.75@90¢*

### Rivets and Burrs—
*Copper* .....50@50&10%
*Carriage, Coopers', Tinners', &c.:*
*Black* .....70&10%
*Metallic Tinned*.....70%

### Bifurcated and Tubular—
*Assorted in Boxes.*
*Bifurcated, per doz. boxes, pasteboard boxes, 50 count, 23@25¢; Tin boxes, 100 count, 29@32¢.*
*Tubular, per doz. boxes, 50 count, 29@32¢; 100 count, 51@58¢.*

### Rollers—
Cronk's Stay, No. 50.....$1.00
Cronk's Brinkerhoff No. 55, $0.60; No. 56, $0.75; No. 60.....$0.75
Lane's Stay.....40%
Richards' Stay:
Handy Adj. and Reversible No. 53.75¢
O. K. Adj. and Reversible No. 58.50¢
Lag Screw, Nos. 55 and 57.....50%
Underwriters', Nos. 59, 60.....50%
Favorite, No. 54.....60%

### Rope—
*Manila, 7-16 in. diam. and larger:*
*Pure* .....*lb*. 9½¢
*Sisal, 7-16 in. diam. and larger:*
*Pure* .....*lb*. 7¢
*Sisal, Hay, Hide and Bale Ropes, Medium and Coarse:*
*Pure* .....*lb*. 7½@7¾¢
*Sisal, Tarred, Medium Lath Yarn:*
*Pure* .....*lb*. 6½@6¾¢
*Cotton Rope:*
*Best, ¼-in. and larger*...18@20¢
*Medium, ¼-in. and larger.16@17¢*
*Common, ¼-in. and larger..10¢*
*In coils, ½¢ advance.*
*Jute Rope:*
*Thread, No. 1, ¼-in. and up, lb.* .....6¼¢
*Thread, No. 2, ¼-in. and up, lb.* .....5¾¢

#### Wire Rope—
*Galvanized* .....37½&2½%
*Plain* .....45&2½%

### Ropes, Hammock—
Covert Mfg. Co.:
Jute, 35%; Sisal.....20%

### Rules
*Boxwood* .....60@60&10%
*Ivory* .....35&10@35&10&5%
Chapin-Stephens Co.:
Boxwood .....60%
Flexifold .....40%
Ivory .....25@25&10%
Miscellaneous .....50@50&10%
Stephens' Combination.....55%
Stationers' .....50@50&10%
Keuffel & Esser Co.:
Folding, Wood.....35&10%
Folding, Steel.....33⅓&10%
Lufkin's Steel.....50&10%
Lufkin's Lumber.....50&10%
Upson Nut Co.:
Boxwood .....60@60&10%
Ivory .....35&10@35&10&10%

## Sash Balances—
See *Balance, Sash.*

### Sash Locks—See *Locks, Sash.*

### Sash Weights—
See *Weights, Sash.*

### Sausage Stuffers or Fillers
See *Stuffers or Fillers, Sausage.*

### Saw Frames—
See *Frames, Saw.*

### Saw Sets—See *Sets, Saw.*

### Saw Tools—See *Tools, Saw.*

### Saws—

Atkins':
Circular ..... 45%
Band ..... 50@50&10%
Butcher Saws ..... 50%
Cross Cuts ..... 35%
One-Man Cross Cut ..... 40%
Narrow Cross Cut ..... 50%
Hand, Rip and Panel ..... 35&5%
Miter Box and Compass ..... 40%
Mulay, Mill and Drag ..... 45%
Wood Saws ..... 40&10%
Chapin-Stephens Co.:
Turning Saws and Frames. 30@30&10%
Diamond Saw & Stamping Works:
Sterling Kitchen Saws ..... 30&10&10%
Disston's:
Circular, Solid and Ins'ted Tooth. 50%
Band, 2 to 18 in. wide ..... 60%
Band, ¼ to 1¾ ..... 60%
Crosscuts ..... 45%
Narrow Crosscuts ..... 50%
Mulay, Mill and Drag ..... 50%
Framed Woodsaws ..... 25%
Woodsaw Blades ..... 25%
Woodsaw Rods, Tinned ..... 15
Hand Saws, Nos. 12, 99, 9, 16, d100, D8, 120, 76, 77, 8 ..... 25%
Hand Saws, Nos. 7, 107, 107½, 3, 1, 0, 00, Combination ..... 30
Compass, Key Hole, &c. ..... 25%
Butcher Saws and Blades ..... 30
C. E. Jennings & Co.'s:
Back Saws ..... 16⅔%
Butcher Saws ..... 25&7½%
Compass and Key Hole Saws, 33⅓&7½%
Framed Wood Saws ..... 25&7½%
Hand Saws ..... 12½%
Wood Saw Blades ..... 33⅓&7½%
Millers Falls:
Butcher Saws ..... 15&10%
Star Saw Blades ..... 15&10%
Massachusetts Saw Works:
Victor Kitchen Saws ..... 40&10&50%
Butcher Saws Blades ..... 35@40%
Peace & Richardson's Hand Saws. 30%
Simonds':
Circular Saws ..... 45%
Crescent Ground Cross Cut Saws. 30%
One-Man Cross Cuts ..... 40&10%
Gang Mill, Mulay and Drag Saws. 45%
Band Saws ..... 50%
Back Saws ..... 25@25&7½%
Butcher Saws ..... 35@35&7½%
Hand Saws ..... 25@25&7½%
Hand Saws, Bay State Brand ..... 45%
Compass, Key Hole, &c. .25@25&7½%
Wood Saws ..... 40&7½%
Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws ..... 50%

### Hack Saw Blades and Frames—

Atkins' Hack Saw Blades A A A. .25%
Disston's:
Concave Blades ..... 25%
Keystone Blades ..... 35%
Hack Saw Frames ..... 30%
Simonds, 25%; The Best, 35%; Culley ..... 35%
C. E. Jennings & Co.'s:
Hack Saw Frames, Nos. 175, 180 .... 40&7½%
Hack Saws, Nos. 175, 180, complete, 40&7½%
Goodell's Hack Saw Blades .... 40&10%
Griffin's Hack Saw Frames .. 35&5&10%
Griffin's Hack Saw Blades .... 35&5&10%
Star Hack Saws and Blades .... 15&10%
Sterling Hack Saw Blades .. 30&10&5%
Sterling Hack Saw Frames .. 30&10&10%
Sterling Power Hack Saw Machines, each, No. 1, $25.00; No. 2, $30.00 .. 10%
Victor Hack Saw Blades ..... 20%
Victor Hack Saw Frames ..... 40%
Whitaker Mfg. Co.:
National Hand Blades, Hand Frames, Power Blades ..... 40%

### Scroll—

Barnes, No. 7, $15 ..... 25%
Barnes' Scroll Saw Blades ..... 40%
Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20 ..... 20%
Lester, complete, $10.00 ..... 15&10%
Rogers, complete, $3.50 and $4.00 .. 15&10%

### Scales—

*Union Platform, Plain. $2.10@2.20*
*Union Platform, Stpd. $2.20@2.30*
Chatillon's:
Eureka ..... 25%
Favorite ..... 40%
Grocers' Trip Scales ..... 50%
The Standard Portables ..... 40%
The Standard R. R. and Wagon ..... 50&10%

### Scrapers—

*Box, 1 Handle ..... doz. $1.85@2.10*
*Box, 2 Handle ..... doz. $2.35@2.50*
*Ship ... Light, $2.00; Heavy, $4.50*
Chapin-Stephens Co., Box .. 30@30&10%
Richards Mfg. Co., Foot ..... 60%

### Screws—Bench and Hand

*Bench, Iron, doz., 1 in., $2.50@*
*2.75; 1¼, $3.00@3.25; 1¼, $3.50@3.75*
*Bench, Wood ..... 20@20&10%*
*Hand, Wood ... 70&10@70&10&10%*
Chapin-Stephens Co., Hand ..... 70@70&10&2½%

### Coach, Lag and Hand Rail—

*Lag, Cone Point ... 80&5@80&10%*
*Coach, Gimlet Point .. 80@80&5%*
*Hand Rail ..... 70&10@75%*

### Jack Screws—

*Standard List ..... 70&10@75%*
Millers Falls ..... 70&10&1
Sweet Iron Works ..... 70@75

### Machine—

*Cut Thread, Iron, Brass or Bronze:*
*Flat Head or Round Head, 50@50&10%*
*Fillister Head ..... 40@40&10%*
*Rolled Thread, F. H. or R. H., Iron ..... 75&10%*
*F. H. or R. H., Brass, Nos. 8 to 14 ..... 65&10%*

### Set and Cap—

*Set (Iron) ..... 75&10&7½%*
*Set (Steel), net advance over Iron ..... 25%*
*Sq. Hd. Cap ..... 70&10&7½%*
*Hex. Hd. Cap ..... 70&10&7½%*
*Rd. Hd. Cap ..... 50&7½%*
*Fillister Hd. Cap ..... 60&7½%*

### Wood—

*List July 23, 1903.*
*Flat Head, Iron ..... 87½&5@ .. %*
*Round Head, Iron .... 85&5@ .. %*
*Flat Head, Brass ..... 80&5@ .. %*
*Round Head, Brass .. 77½&5@ .. %*
*Flat Head, Bronze .... 75&5@ .. %*
*Round Head, Bronze . 72½&5@ .. %*
*Drive Screws ..... 87½&5@ .. %*

### Scroll Saws—

See *Saws, Scroll.*

### Scythes—

*Per doz.*
*Grass, No. 1, Plain ..... $7.00*
*Clipper, Bronzed Webb ..... $7.25*
*No. 3 Clipper, Pol'd Webb ... $7.50*
*No. 6 Clipper and Solid Steel. $7.75*
*Bush, Weed and Bramble, Nos. 11, 12 and 13 ..... $7.25*
*Grain, No. 1 ..... $9.00@9.50*
*Bronzed Webb, No. 1 ... $9.25@9.75*
*Nos. 3 and 4 Clipper, Grain, $9.50@10.00*
*Solid Steel, No. 6 .... $10.00@10.50*

### Seeders, Raisin—

Enterprise ..... 25@30%

### Sets— Awl and Tool—

Fray's Tool Handles, Nos. 1, $12; 2, $16; 3, $12 ..... 50%
Millers Falls Adj. Tool Handles, No. 1, $12; No. 4, $12; No. 5, $18 .. 20&10%

### Garden Tool Sets—

Ft. Madison Three Plows, Hoe, Rake and Shovel ..... ℔ doz. sets $9.00

### Sets, Nail—

*Octagon ..... gro. $3.50@3.75*
Buck Bros ..... 27½%
Mayhew's ..... ℔ gro. $9.00
Snell's Corrugated, Cup Pt. .... 40&10%
Snell's Knurled, Cup Pt. ..... 40&10%
Victor Knurled, Cup Pt. .... ℔ gro. $7.50

### Rivet—

*Regular list ..... 75@75&10%*

### Saw—

Atkin's:
Criterion ..... 40%
Adjustable ..... 40%
Disston's Star, Monarch and Triumph ..... 30%
Morrill's No. 1 ..... $15.00
Nos. 3 and 4, Cross Cut .... $20.60
No. 5, Mill ..... $30.00
Nos. 10, 11, 95 ..... $15.60
No. 1 Old Style ..... $10.00
Special ..... $16.25
(50%)
Giant Royal Cross Cut ..... ℔ doz. $7.50
Royal, Hand ..... ℔ doz. $4.50
Taintor Positive ..... ℔ doz. $6.75

### Shaving—

Fox Shaving Sets, No. 30 ..... ℔ doz., net, $24.00
Smith & Hemenway Co.'s ..... 75%

### Sharpeners, Knife—

Pike Mfg. Co.:
Fast Cut Pocket Knife Hones, ℔ doz. ..... $1 50
Mounted Kitchen Sand Stone, ℔ doz. ..... $1.50
Natural Grit Carving Knife Hones, ℔ doz. ..... $3.00
Quick Cut Emery Carving Knife Hones, ℔ doz. ..... $1.50
Quick Edge Pocket Knife Hones, ℔ doz. ..... $2.50
(50%)

### Skate—

Smith & Hemenway Co., Eureka .. 50%

### Shaves, Spoke—

*Iron ..... doz. $1.2*
*Wood ..... doz. $2.00*
Bailey's (Stanley R. & L. Co.) ..... 45
Chapin-Stephens Co. ..... 30@30&10
Goodell's, ℔ doz. $9.00 ..... 15&10

### Shears—

| | 7 | 8 | 9 in. |
|---|---|---|---|
| *Cast Iron* | | | |
| *Best* | $16.00 | 18.00 | 20.00 gro. |
| *Good* | $13.00 | 15.00 | 17.00 gro. |
| *Cheap* | $5.00 | 6.00 | 7.00 gro. |

*Straight Trimmers, &c.:*
*Best quality Jap .... 70@70&10%*
*Best quality Nickel .. 60@60&10*
*Tailors' Shears ..... 40@40&10*
Acme Cast Shears ..... 40@45&5%
Heinisch's Tailor's Shears ..... 40
National Cutlery Co.'s Nickel Plated, 60&10%; Japan Handles ..... 7&10
Wilkinson Shear & Cutlery Co.:
Sheep, 1900 list ..... 50&10&5
Grass ..... 50&10
Horse or Mule ..... 50&10
J. Wiss & Sons Co.:
Best Quality, Japed ..... 60&10
Best Quality Nickeled ..... 50&10
Tailors' ..... 25

### Tinners' Snips—

*Steel Blades ..... 20&5@20&10%*
*Steel Laid Blades ..... 40&10@50%*
Acme Cast Snips ..... 40@45&5%
Forged Handles, Steel Blades, Berlin ..... 50%
Heinisch's Snips ..... 40%
Jennings & Griffin Mfg. Co.'s 6½ to 10 in. ..... 33⅓&7½%
National Cutlery Co.'s Forged Steel. 50%
Niagara Snips ..... 40%
P., S. & W. Forged Handles, 25%; W. R. W. ..... 50%
J. Wiss & Sons Co.:
Wiss Forged Steel ..... 25%

### Pruning Shears—

Cronk's Hand Shears ..... 33⅓%
Cronk's Wood Handle Shears .... 33⅓%
Disston's Combined Pruning Hook and Saw, ℔ doz. $18.00 ..... 25%
Disston's Pruning Hook only, ℔ doz., $12.00 ..... 25%
J. T. Henry Mfg. Co.: Pruning Shears, all grades ..... 40%
P., S. & W. Co. ..... 40&10%
Columbian Cutlery Co.:
Hedge, Wilcut Brand ..... 60&10%
Lawn and Border, Wilcut Brand, 60&10%

### Sheaves—Sliding Door—

Reading ..... 40%
R. & E. list ..... 15%

### Sliding Shutter—

Reading list ..... 40%
R. & E. list ..... 15%

### Shells—Shells, Empty—

Brass Shells, Empty:
Climax, 10 and 12 gauge ..... 60&5%
Club, Rival, 65&5%; First Quality, 60&5%

Paper Shells, Empty:
New Rapid, 10, 12, 16 and 20 gauge, 25&10%
Climax, 10 and 12 gauge; Acme and Magic, 10, 12, 16 and 20 gauge; Ideal, 10, 12, 16 and 20 gauge; Leader grade ..... 25&5%
Union, League, 10 and 12 gauge, Rival Grade ..... 25%
New Climax, Defiance, 10, 12, 14, 16 and 20 gauge; Climax, 14, 16 and 20 gauge ..... 20%
Challenge, Monarch, 10, 12, 16 and 20 gauge; League, Union, 14, 16 and 20 gauge; Repeater Grade .. 20%

### Shells, Loaded—

*Loaded with Black Powder .. 40%*
*Loaded with Smokeless Powder, medium grade ..... 40&5%*
*Loaded with Smokeless Powder, high grade ..... 40&10&10%*
Union Metallic Cartridge Co.:
New Club, Black Powders ..... 40%
Nitro Club, Smokeless Powders. 40&5%
Arrow, Smokeless Powders. 40&10&10%
Winchester:
Smokeless Repeater Grade ..... 40&5%
Smokeless Leader Grade ... 40&10&10%
Black Powder ..... 40%

### Shingles, Metal— Per Sq.

Edwards Mfg. Co.:

| | Painted. | Galv. |
|---|---|---|
| 14 x 20 | $4.25 | $6.00 |
| 10 x 14 | 4.50 | 6.25 |
| 7 x 10 | 4.75 | 6.50 |

Wheeling Corrugating Co.:

| | | |
|---|---|---|
| Dixie, 14 x 20 in. | $4.05 | $5.05 |
| Dixie, 10 x 14 in. | 4.25 | 5.45 |
| Dixie, 7 x 10 in. | 5.25 | 6.70 |

### Shoes, Horse, Mule, &c.—

*F.o.b. Pittsburgh:*
*Iron ..... per keg. $4.10*
*Steel ..... per keg. $5.85*
Burden's, all sizes ..... ℔ keg $3.90

### Shot—

*25-lb. bag.*
*Drop, up to B ..... $1.75*
*Drop, B and larger ..... 2.00*
*Buck ..... 2.00*
*Chilled ..... 2.10*
*Dust ..... 2.30*

### Shovels and Spades—

*Association List, Nov. 15, 1902. 40%*
Avery Stamping Co ..... 40%

### Snow Shovels—

*Long Handle ..... $3.25@$3.50*
*Wood and Mall, D Handle, $3.75@$4.00*

### Sieves and Sifters—

*Hunter's Imitation, gro .... $9.50*
*Hunter's Genuine, per gro .. $12.00*

### Sifters, Ash—

Acme Ball Bearing Sales Co., Acme Automatic Ash Sifter each, $3.25; ℔ doz. ..... $39.00

### Sieves, Seamless Metallic

| Mesh | 14 | 16 | 18 | 20 |
|---|---|---|---|---|
| | Per dozen. | | | |
| *Iron Wire* | $1.05 | 1.05 | 1.10 | 1.20 |
| *Tinned Wire* | $1.15 | 1.15 | 1.20 | 1.30 |

### Sieves, Wooden Rim—

*Nested, 10, 11 and 12 Inch.*
*Mesh 18, Nested ... doz. $0.90@0.95*
*Mesh 20, Nested .... doz. $1.00@1.05*
*Mesh 24, Nested .... doz. $1.30@1.40*

### Sinks, Cast Iron—

*Painted, Standard list:*
*12 x 12 to 22 x 36 in ..... 60%*
*20 x 24 to 24 x 50 in ..... 50%*
*24 x 60 to 24 x 120 in ..... 30%*
Buffalo low list ..... 60%

*NOTE.—There is not entire uniformity in lists used by jobbers.*

### Skeins, Wagon—

*Cast Iron ..... 70@75&10%*
*Steel ..... 40@45%*

### Slates, School—

*Factory Shipments.*
*"D" Slates ..... 50@50&10%*
*Eureka, Unexcelled Noiseless .. 60&7 tens.*
*Victor A, Noiseless. 60&4 tens &5%*

### Slaw Cutters—See *Cutters*

### Snaps, Harness—

*German ..... 40@40&10%*
Covert Mfg. Co.:
Derby, 25%; Yankee, 30&2%; Yankee Roller, 30&2%.
High Grade, 40%; Trojan ..... 40
Jockey ..... 25

### Snaths—

*Scythe ..... 60%*

### Snips, Tinners—See *Shears.*

### Spoons and Forks—

### Silver Plated—

*Good Quality ..... 50&10@60&5%*
*Cheap ..... 60@60&10%*
International Silver Co:
1847 Rogers Bros. ..... 40&10
Rogers & Bro., William Rogers' Eagle Brand ..... 50&10%
Anchor, Rogers Brand ..... 60%
Wm. Rogers & Son ..... 60&10%

### Miscellaneous

*German Silver ..... 60@60&5%*

### Tinned Iron—

*Teas ..... per gro. 50@55¢*
*Tables ..... per gro. $0.90@$1.00*
Atlas Mfg. Co.:
Tea Spoons, ℔ gro. ..... 50¢@55¢
Table Spoons, ℔ gro. ..... $0.90@$1.00

### Springs— Door—

Bardsley's Spring and Check ..... 40%
Chicago (Coil) ..... 40&10%
Gem (Coil) ..... 20%
Pullman Door and Gate ..... 10%
Reliance (Coil) ..... 40&10%
Star (Coil) ..... 35%
Torrey's Rod, 39 in. ..... ℔ doz. $1.00

### Carriage, Wagon, &c.—

*1¼ in. and Wider: Per 100 lb.*
*Black ..... $4.75@$5.00*
*Half Bright ..... $4.75@$5.00*
*Bright ..... $5.25@$5.50*
*Painted Seat Springs:*
*1½ x 2 x 26 .... per pair. 45@47¢*
*1½ x 3 x 28 .... per pair. 68@71¢*

### Sprinklers, Lawn—

American Foundry & Mfg. Co.:
Cactus, 65%; Japanese, 70%; National, ℔ doz. ..... $12.00
Enterprise ..... 25@30%
Philadelphia No. 1, ℔ doz. $12; No. 2, $15; No. 3, $20 ..... 30%

### Squares—

*Nickel plated .. } List Jan. 5, 1900.*
*Steel and Iron . } 80@80&5%*
*Rosewood Hdl. Try Square and T-Bevels ..... 60&10&10@70%*
*Iron Hdl. Try Squares and T-Bevels ..... 40&10@40&10&10%*
Disston's Try Squares and Bevels, Rosewood Handle, 60 & 10%; Iron Stock and Bevel ..... 15%

### Squeezers, Lemon

*Wood, Porcelain Lined:*
*Cheap ..... doz. $1.00*
*Good Grade ..... doz. $1.25*
*Tinned Iron ..... doz. $0.75@1.00*
*Iron, Porcelain Lined ... doz. $1.75*
Victor, ℔ gro. ..... $9.00

### Staples—

*Barbed Blind ..... 85&5@85&10%*
*Electricians' ..... 80&10&10@85%*
*Fence Staples, Polished, $2.05; Galvanized ..... $2.35*
*Poultry Netting Staples ..... per lb. 3¼@3½¢*

### Steels, Butchers'—

Dick's ..... 30%
Foster Bros.' ..... 30%

### Steelyards— .... *30@30&10%*

### Stocks and Dies—

*Blacksmiths' ..... 50@50&10%*
Curtis Rev'ble Ratchet Die Stock .. 25%
Derby Screw Plates ..... 25%
Green River ..... 25%
Lightning Screw Plate ..... 25%
Little Giant ..... 25%
Reece's New Screw Plate ..... 25%

### Stoners, Cherry—

Enterprise ..... 25@30%

### Stones, Axe—

Pike Mfg. Co., Axe Stones, all kinds ..... 33⅓%

### Glass Cutters' Stones—

Pike Mfg. Co., Glass Cutters' Stones and Supplies ..... 40%

### Stones, Oil, &c.—

Pike Mfg. Co., 1907 list: ℔ lb
Arkansas St. No. 1, 3 to 5½ in. $2.80
Arkansas St. No. 1, 5½ to 8 in. $3.50
Arkansas Slips No. 1 ..... $1.00
Lily White Washita, 4 to 8 in. 60¢
Rosy Red Washita, 4 to 8 in. 60¢
Washita St., Extra, 4 to 8 in. 50¢
Washita St., No. 1, 4 to 8 in. 40¢
Washita St., No. 2, 4 to 8 in. 25¢
Lily White Slips ..... 30¢
Rosy Red Slips ..... 30¢
Washita Slips, Extra ..... 80¢
Washita Slips, No. 1 ..... 70¢
Washita Slips, No. 2 ..... 40¢
(33⅓%)
India Oil Stones (entire list) ..... 33⅓%
Quickcut Emery and Corundum Oil Stone, Double Grit ..... 40%
Quickcut Emery and Corundum Axe Stone, Double Grit ..... 33⅓%
Quickcut Emery Rubbing Bricks .. 40%
Hindostan No. 1, R'g'lar ℔ lb 8¢
Hindostan No. 1 Small, ℔ lb 10¢
Turkey Oil Stones, Extra 5 to 8 in. ..... ℔ lb 80¢
Queer Creek Stones, 4 to 8 in. 20¢
Queer Creek Slips ..... 15¢
Sand Stone ..... 6¢
(33⅓%)

### Scythe Stones—

Pike Mfg. Co., 1907 list:
Black Diamond S. S. ℔ gro. $12.00
Lamoille S. S. ℔ gro. $11.00
White Mountain S. S. ℔ gro. $9.50
Green Mountain S. S. ℔ gro. $7.00
Extra Indian Pond S. S. ℔ gro. $8.00
No. 1 Indian Pond S. S. ℔ gro. $7.50
No. 2 Indian Pond S. S. ℔ gro. $5.00
Leader Red End S. S. ℔ gro. $5.00
Quick Cut Emery.... ℔ gro. $10.00
Pure Corundum..... ℔ gro. $18.00
Crescent ..... $7.00
Emery Scythe Rifles, 2 Coat. $8.80
Emery Scythe Rifles, 3 Coat. $11.00
Emery Scythe Rifles, 4 Coat. $13.20
} 33⅓%
Balance of 1907 list 33⅓%.
Lectro (Artificial), ℔ gro., $12.00. 33⅓ & $12.00 ..... 33⅓
Lightning (Artificial), ℔ gro., $18.00 ..... 33⅓%

### Stoppers, Bottle—

Victor Bottle Stoppers..... ℔ gro. $9.00

### Stops— Bench—

Millers Falls..... 15&10%
Morrill's, ℔ doz., No. 1, $10.00.... 50%
Morrill's, No. 2, $12.50..... 50%

### Door—

Chapin-Stephens Co..... 50@50&10%

### Plane—

Chapin-Stevens Co..... 20%

### Straps— Box—

Acme Embossed, case lots.. 20&10&10%
Cary's Universal, case lots... 20&10&10%

### Stretchers, Carpet—

*Cast Iron, Steel Points.. doz. 55¢*
*All Steel Socket... doz. $2.00@2.25*
Excelsior Stretcher and Tack Hammer Combined, ℔ doz., $6.00.... 20%

### Stuffers, Sausage—

Enterprise Mfg. Co., Stuffers and Lard Presses..... 25@25&7½%
National Specialty Co., list Jan. 1, 1902 ..... 30&5%
P., S. & W. Co..... 40&10&5%

### Sweepers, Carpet—

Per doz.—
Bissell Carpet Sweeper Co.:
Cyco Bearing Superba, $36.00; Triumph, $33.00; Parlor Queen, $30.00; Elite, $29.00; Boudoir, $27.00; American Queen, $27.00; Ideal, $25.00; Gold Medal, $24.00; Primier, $24.00; Prize, $24.00; Welcome, $24.00; Grand Rapids, Nickel, $24.00; Japan, $22.00; Crystal, $36.00; Grand, $36.00; Parlor Grand, $48.00; Club, $54.00; Hall, $60.00; Standard Nickel, $22.00; Standard Japan, $20.00; Crown Jewel, Nickel, $21.00; Crown Jewel, Japan, $19.00; Junior, Nickel, $22.00; Junior, Japan, $20.00.

*NOTE.—Rebates: 50c per dozen on three dozen lots; $1 per dozen on five-dozen lots; $2 per dozen on ten dozen lots*

### Tacks, Finishing Nails, &c.

*American Carpet Tacks... 90&40%*
*American Cut Tacks..... 90&40%*
*Swedes' Cut Tacks..... 90&40%*
*Swedes' Upholsterers'.... 90&50%*
*Gimp Tacks..... 90&50%*
*Lace Tacks..... 90&50%*
*Trimmers' Tacks..... 90&40%*
*Looking Glass Tacks..... 65%*
*Bill Posters' and Railroad Tacks, 90&50&10%*
*Hungarian Nails..... 80&20%*
*Finishing Nails..... 70%*
*Trunk and Clout Nails... 80&10%*

*NOTE.—The above prices are for Straight Weights.*

### Miscellaneous—

*Double Pointed Tacks, 90&6 tens@—%*
Se also Nails, Wire.

### Tanks, Oil and Gasoline—

Wilson & Friend Co.:

| Gal. | Gasoline | Oil |
|---|---|---|
| 30 | $2.75 | $3.00 |
| 60 | $3.50 | $4.00 |
| 110 | $5.00 | $5.75 |

### Tapes, Measuring—

*American Asses' Skin....50@—%*
*Patent Leather..... 25@30&5%*
*Steel ..... 33⅓&5%*
*Chesterman's ..... 25@25&5%*
Keuffel & Esser Co.:
Favorite, Ass Skin..... 40&10@50%
Favorite, Duck and Leather..... 25&5@25&10%
Metallic and Steel, lower list, 35@35&5%; Pocket, 35@35&5%.
Lufkins:
Asses' Skin..... 40&10@50%
Metallic ..... 30@30&5%
Patent Bend, Leather... 25&5@25&10%
Pocket ..... 40@40&5%
Steel ..... 33⅓@35%
Wiebusch & Hilger:
Chesterman's Metallic, No. 34L, etc. ..... 25%
Chesterman's Steel, No. 1038L, etc. ..... 35%

### Teeth, Harrow—

*Steel Harrow Teeth, plain or headed, ⅝-inch and larger, per 100 lb..... $2.55@$2.80*

### Thermometers—

*Tin Case, Cabinet, Flange, Dairy, &c..... 30@35%*

### Ties, Bale—Steel Wire—

*Single Loop..... 82½&10%*
*Monitor, Cross Head, &c. 70&2½%*

### Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

### Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

### Tire Benders, Upsetters, &c.

See *Benders and Upsetters, Tire.*

### Tools—Coopers'—

L. & I. J. White..... 20@20&5%

### Haying—

Myers' Hay Tools..... 50%

### Ice Tools—

Gifford-Wood Co..... 15%

### Miniature—

Smith & Hemenway Co.'s, Davidson, ℔ doz., Nickel Plated, $1.50; Gold Plated..... $2.00

### Saw—

Atkins' Cross Cut Saw Tools.... 35&5%
Simond's Improved..... 33⅓%
Simonds' Crescent..... 30%

### Ship—

L. & I. J. White..... 25%

### Transom Lifters—

See *Lifters, Transom.*

### Traps—Fly—

*Balloon, Globe or Acme, doz., $1.15@$1.25; gro.... $11.50@12.00*
*Harper, Champion or Paragon, doz., $1.25@1.40; gro. $13.00@13.50*

### Game—

*Imitation Oneida..... 75@10%*
Newhouse ..... 50&5%
Hawley & Norton..... 65&10%
Victor ..... 75@75&10%
Oneida Community Jump..... 70&5
Stop Thief..... 60%
Tree Trap..... 60%
Hector ..... 75@75&10%

### Mouse and Rat—

*Mouse, Wood, Choker, doz. holes, 12¢*
*Mouse, Round or Square Wire, doz. 85@90¢*
Marty French Rat and Mouse Traps (Genuine), ℔ doz.:

| | Crate lots. | Small lots. |
|---|---|---|
| No. 1, Rat..... | $11.50 | $14.50 |
| No. 3, Rat..... | $5.75 | $6.50 |
| No. 3½, Rat..... | $4.70 | $5.25 |
| No. 5, Mouse..... | $2.25 | $3.00 |

Animal Trap Co.:
Out o' Sight, Mouse, ℔ doz..... $0.60
Out o' Sight, Rat, ℔ doz..... 1.20
Easy Set, Mouse, ℔ doz..... .35
Easy Set, Rat, ℔ doz..... .85
Out o' Sight Chockers, ℔ doz. holes ..... .12
Out o' Sight, Tin, 5-hole, ℔ doz. traps ..... .75

### Trowels—

Disston Brick and Pointing..... 25%
Disston Plastering..... 20%
Disston "Standard Brand" and Garden Trowels..... 30%
Kohler's Steel Garden Trowels, ℔ gro., 5 in., $4.80; 6 in., $6.00
Never-Break, Forged Steel Garden Trowels, in bulk, net ℔ gro. $5.50
In 1 doz. boxes..... ℔ gro. $6.00
Woodrough & McParlin, Plastering..... 25%

### Trucks, Warehouse, &c.—

B. & L. Block Co.:
New York Pattern..... 50&10%
Western Pattern..... 60&10%
Handy Trucks..... ℔ doz. $16.00
Grocery ..... ℔ doz $15.00
McKinney Trucks..... each, net $10.00
Model Stove Trucks..... ℔ doz $18.50

### Tubs, Wash—

*M'f'gr's list, price per gross.*

| No. | 0 | 1 | 2 | 3 |
|---|---|---|---|---|
| Galvanized. | $67 | $79 | $89 | $99 |

10&7½ &5&5%

### Twine, Miscellaneous—

*Flax Twine:*
*No. 9, ¼ and ½-lb. Balls. 21@23¢*
*No. 12, ¼ and ½-lb. Balls. 19@21¢*
*No. 18, ¼ and ½-lb. Balls. 16@18¢*
*No. 24, ¼ and ½-lb. Balls. 15½@17½¢*
*No. 36, ¼ and ½-lb. Balls. 15@17¢*
*Chalk Line, Cotton ½-lb Balls ..... 24@29¢*
*Cotton Mops, 6, 9, 12 and 15 lb to doz..... 81½@19¢*
*Cotton Wrapping, 5 Balls to lb., according to quality. 13½@19¢*
*American 2-Ply Hemp, ¼ and ½-lb. Balls..... 12½@15¢*
*American 3-Ply Hemp, 1-lb Balls ..... 13½@16¢*
*India 2-Ply Hemp, ¼ and ½-lb Balls (Spring Twine)... 7½@9¢*
*India 3-Ply Hemp, 1-lb. Balls 7½@9¢*
*India 2-Ply Hemp, 1½-lb. Balls, 7@8½¢*
*2, 3, 4 and 5-Ply Jute, 1½-lb. Balls ..... 9@11¢*
*Mason Line, Linen, ½-lb. Bls. 17¢*
*No. 264 Mattress, ¼ and ½ lb. Balls, according to quality, 30@60¢*
*Wool, 3 to 6 ply.... B 6¢; A 7½¢*

### Vises—

*Solid Box..... 50&5@50&10&5%*

### Parallel—

Athol Machine Co.:
Simpson's Adjustable..... 40%
Standard ..... 40%
Amateur ..... 25%
Columbian Hdw. Co., Slide ..... 40&5%; 65%
Fisher & Norris Double Screw, net, each, Nos. 2, $10.50; 3, $16.00; 4, $20.50; 5, $27.00; 6, $32.00.
Fulton Mach. & Vise Co.:
F. & R. Double Swivel Machinists' ..... 40%
Star, Solid Jaw, Machinists'..... 40%
Hollands':
Machinists' ..... 40@40&5%
Keystone ..... 65&5@70%
Lewis Tool Co.:
Adjustable Jaw..... 30%
Monarch, 50%; Solid Jaw..... 50%
Massey Vise Co.:
Clincher ..... 40%
Parallel Bar..... 15%
Perfect, 15%; Lightning Grip..... 15%
Merrill's ..... 25%
Millers Falls Oval Slide Pattern. 60&10%
Parker's:
Victor, 20@25%; Regulars.... 20@25%
Vulcan's ..... 40@45%
Combination Pipe..... 55@60%
Prentiss ..... 20@25%
Rock Island..... 25%
Snediker's X. L..... 33⅓%
Stephens' ..... 33⅓%

### Saw Filers

Disston's D 3 Clamp and Guide, ℔ doz., $24.00, 30%; Clamps..... 30%
Perfection Saw Clamps, ℔ doz.... $4.50
Reading ..... 60%

### Wood Workers—

Fulton Mach. & Vise Co.:
F. & R. Double Swivel Coachman's ..... 40%
Star Solid Jaw Woodworkers'.... 60%
Massey Vise Co.:
Lightning Grip, 15%; Perfect.... 15%
Wyman & Gordon's Quick Action, 6 in., $6.00; 9 in., $7.00; 14 in., $8.00.

### Miscellaneous—

Fulton Machine & Vise Co., Combination Pipe..... 70%
Holland's Combination Pipe.. 60@60&5%
Massey's Quick Action Pipe..... 40%
Parker's Combination Pipe:
87 Series, 60%; 187 Series, 60&5%; No. 870, 40%.
Rock Island Pipe..... 25%

### Wads—*Price per M.*

*B. E., 11 up..... 60¢*
*B. E., 9 and 10..... 70¢*
*B. E., 8..... 80¢*
*B. E., 7..... 80¢*
*P. E., 11 up..... $1.00*
*P. E., 9 and 10..... 1.25*
*P. E., 8..... 1.50*
*P. E., 7..... 1.50*
*Ely's B. E., 11 and larger. $1.70@1.75*
*Ely's P. E., 12 to 20.... $3.00@3.25*

Dis. 15%

### Ware, Hollow—

### Cast Iron, Hollow—

*Stove Hollow Ware:*
*Enameled ..... 45&10%*
*Ground ..... 50&5%*
*Plain or Unground..... 60%*
*Country Hollow Ware, per 100 lbs ..... $2.75@$3.00*
*White Enameled Ware:*
*Muslin Kettles..... 65&10%*
*Covered Wares:*
*Tinned and Turned..... 35&10%*
*Enameled ..... 45&10%*
See also *Pots, Glue.*

### Enameled—

Agate Nickel Steel Ware..... 33⅓%
El-an-ge ..... 60&10%
Iron Clad Ware..... 70&10%
Lava and Volcanic, Enameled.. 40&10%

### Tea Kettles—

*Galvanized Tea Kettles:*

| Inch | 6 | 7 | 8 | 9 |
|---|---|---|---|---|
| Each | 45¢ | 50¢ | 55¢ | 65¢ |

### Steel Hollow Ware—

Avery Stamping Co.:
Never-Break Spiders and Griddles ..... 65&10%
Steel Kettles, Maslins Scotch Bowls, Tin'd..... 60%
Steel Stew Pans, Stew Pots, etc., Porcelained ..... 50%
Cleveland Stamping & Tool Co.:
Solid Steel Spiders and Griddles ..... 65&5%
Solid Steel Kettles..... 60&5%

### Warmers, Foot—

Pike Mfg. Co., Soapstone.... 40@40&10%

### Washboards—

| No. | ℔ doz. |
|---|---|
| 800—Brass King, Single Surface, Open Back..... | $2.80 |
| 862 White Hen, Spiral Grimp Glass ..... | $3.35 |
| 964—Royal Blue Enamel, Single Surface, Ventilated Back..... | $3.35 |
| 172—Our Best, Single Zinc, Soap Drainer ..... | $3.35 |
| 722—Soap Saver, Single Zinc, Iron Top ..... | $3.35 |
| 100—Northern Queen, Single Zinc, Perforated, Open Back..... | $3.00 |
| 134—Universal, Single Zinc, Extra Family Size, Ventilated Back... | $2.80 |
| 760—Banner Globe, Single Zinc, Ventilated Back..... | $2.25 |
| 57—Peerless, Double Zinc, Spring Protector ..... | $3.70 |
| 56—Red Cross, Double Zinc, Swing Protector ..... | $3.60 |
| 17—North Star, Solid Zinc, Swing Protector ..... | $3.60 |
| 797—Jewel, Single Zinc, Pail Size. | $1.25 |

### Washers—Leather, Axle—

*Solid ..... 90@90&10%*
*Patent ..... 90@90&5%*
*Coil: ⅞ 1 1⅛ 1¼ inch. 9¢ 10¢ 11¢ 14¢ per box.*

### Iron or Steel—

*Size bolt.... 5/16 ⅜ ½ ⅝ ¾*
*Washers.... $4.65 3.75 2.45 2.25 2.05*
*The above prices are based on $6.75 off list.*
*In lots less than one keg add ½¢ per lb.; 5-lb. boxes add ½¢ to list.*

Avery Stamping Co.:
Standard, in 200 lb kegs, $6.00 ℔ 100 lb. disct.; in 100 lb kegs, add 10¢ net ℔ 100 lb; in 5 or 10 lb boxes, add 50¢ net ℔ 100 lb; in 1 lb boxes, add $1.00 net ℔ 100 lb.

### Cast Washers—

*Over ½-inch, barrel lots, per lb. 1½@1¾¢*

### Wedges—

*Oil Finish..... lb., 2¼@2¾¢*

### Weights—Hitching—

Covert Mfg. Co..... 30&2%

### Sash—

*Per net ton, f.o.b. factory:*
*Eastern District.... $21.00@—*
*Western and Central Districts ..... $20.00@$22.00*

### Wheels, Corundum and Emery—

Pike Mfg. Co., Corundum, 65%; Emery ..... 75%

### Well—

*8-in., $2.00; 10-in., $2.30; 12-in., $3.00; 14-in., $4.45.*

### Wire and Wire Goods—

*Bright and Annealed:*
*6 to 9..... 72&10&7½%*
*10 to 18..... 72½&10&10%*
*19 to 26..... 75&10&10&2½%*
*27 to 36..... 77½&7½%*
*Galvanized:*
*6 to 9..... 72½&10%*
*10 to 14..... 72½&10&5%*
*15 to 16..... 72½&10&5%*
*17 to 18..... 72½%*
*19 to 26..... 70&5&2½%*
*27 to 36..... 65&10&10%*
*Coppered:*
*6 to 9..... 65&10&10%*
*10 to 14..... 70&10&5%*
*15 to 18..... 65&10&10&10%*
*19 to 26..... 70&5&2½%*
*27 to 36..... 72½&10&2½%*
*Tinned:*
*6 to 18..... 67&10&10%*
*Brass ..... 15½¢ lb., base*
*Copper ..... 15¼¢ lb., base*
*Cast Steel Wire..... 50%*

### Spooled Wire—

*Annealed and Tinned. 75@75&10%*
*Brass and Copper.... 70@70&10%*
*Retailers' Assortments, per box, $1.90@$2.10*
Wire Clothes Line, See Lines.
Wire Picture Cord, see Cord.

### Bright Wire Goods—

*Steel Wire Goods..... 90&40%*
*Brass Wire Goods..... 90&40%*
*Brass Cup and Shoulder Hooks, 85&10%*

### Wire Cloth and Netting—

*Galvanized Poultry Netting, 80&2½@80&7½%*
*Painted Screen Cloth, 100 ft., $1.35*
*Standard Galv. Hardware Grade: 100 ft. rolls, 2 to 48 in. wide, Per 100 sq. ft.*
*Nos. 2, 2½ and 3 Mesh.... $2.75*
*Nos. 4 and 5 Mesh..... $3.00*
*No. 6 Mesh..... $3.25*
*Nos. 7 and 8 Mesh..... $3.75*

### Wire, Barb—See *Trade Report*

### Wrenches—

*Agricultural, 80&10&5@80&10&10%*
*Alligator or Crocodile.. 70&10@75%*
*Baxter Pattern S Wrenches, 70&5@70&10%*
*Drop Forged S..... 45@45&5%*
Acme ..... 60&10%
Alligator Pattern, 70%; Bull Dog.. 70%
Bemis & Call's:
Adjustable S, 40&5%; Adjustable S Pipe, 40&5%; Briggs Pattern, 40%; Combination Bright, 50%.
Steel Handle Nut..... 50&5%
Combination Black..... 50&5%
Merrick Pattern..... 50&5%
Boardman's ..... 40%
Coes' Genuine Knife Hdl.. 40&10&5&5%
Coes' Genuine Steel Hdl... 40&10&5&5%
Coes' Genuine Key Model.. 40&10&5&5%
Coes' Genuine Hammer Handle..... 40&10&5&5%
Coes' "Mechanics'"... 40&10&10&5&5%
Donohue's Engineer..... 40&10%
Eagle ..... 70%
Gem Pocket..... 30%
Hercules ..... 70%
W. & B. Machinist:
Case lots..... 50&10%
Less than case lots..... 50%
W. & B. Railroad Special:
Case lots..... 50%
Less than case lots..... 40&10&5%
Solid Handles, P., S. & W.. 50&10%; full cases..... 50&10&5%
Standard Nipple Mfg. Co.:
Duplex Chain..... 50%
Uwanta Wrench Co.:
Uwanta Special, Iron Handle.... 40&10&5%
Other Wrenches..... 50%
Vulcan and Agrippa Chain..... 50%
Whitaker Machinists'..... 50&10%
Wizard Adjustable Ratchet..... 50%

### Fruit Jar—

Benj. P. Forbes, Triumph, ℔ gro., $7.50; per doz..... $0.90

### Wrought Goods—

*Staples, Hooks, &c., list March 17, '92..... 90@—%*

### Zinc— (*Cask lots at mill.*)

*Sheet..... per 100 lb., $7.00*

# THE IRON AGE

New York, Thursday, September 24, 1908.


## A Powerful Russian Hydraulic Dredge.

BY H. PRIME KIEFFER, BERLIN, GERMANY.

The most powerful dredge ever constructed is shown in the accompanying illustrations. It is one of the hydraulic type, and was built in Belgium at the Liege works of the Société John Cockerill for the Russian Government from the plans of Lindon W. Bates of New York City. The performance of this compound dredge is marvellous, and in the tests it developed an almost incredible capacity.

The Russian dredge is built in two parts, as is shown in the half-tone engravings. It is constructed in this manner as its breadth was limited to the width of the canal system Marie, through which it passed on its way from the Baltic Sea to the Volga River. This double dredge can be operated as a whole, making a bottom cut 62 ft. wide, or each half can be operated separately, as is usually the case. Each half measures 216 ft. long by 31½ ft. wide and 9 ft. deep. At light draught the hull draws 4 ft., and the working draught is 8 in. greater.

The Volga dredge is electrically self-propelled and



The Compound Dredge Designed by Lindon W. Bates, New York, and Constructed by the Société John Cockerill, Belgium, for the Russian Government.

controllable, the electric installation of each half consisting of a 600-kw. generator directly connected to a quadruple-expansion engine. The generators supply two stern motors and two bow motors, each of 125 hp., mounted in the distributing pontoon, and arranged to control the position of the pontoon line as required by operations. Lighting is done from a separate installation. Control of all motors is centralized in the pilot-house.

The dredge is propelled by screws driven by electric motors; all other movements are effected by the direct use of steam. The fundamental idea in installing the electrical equipment and all the machinery was that the directing mind in the operating room might have close at hand and always ready for instant use the means to stop, start, or modify all the movements of the great machine. To this end the control of the entire electrical apparatus is placed to the right and left of the operator in the pilot house in the form of switches, rheostats, controllers, and compensators. Three-phase, alternating current is used, which permits cheaper and lighter machinery, and promises less trouble in maintenance, than direct current, although bringing with it difficulties peculiar to itself. The entire equipment was furnished by the General Electric Company, Schenectady, N. Y., and so far as possible the apparatus is standard.

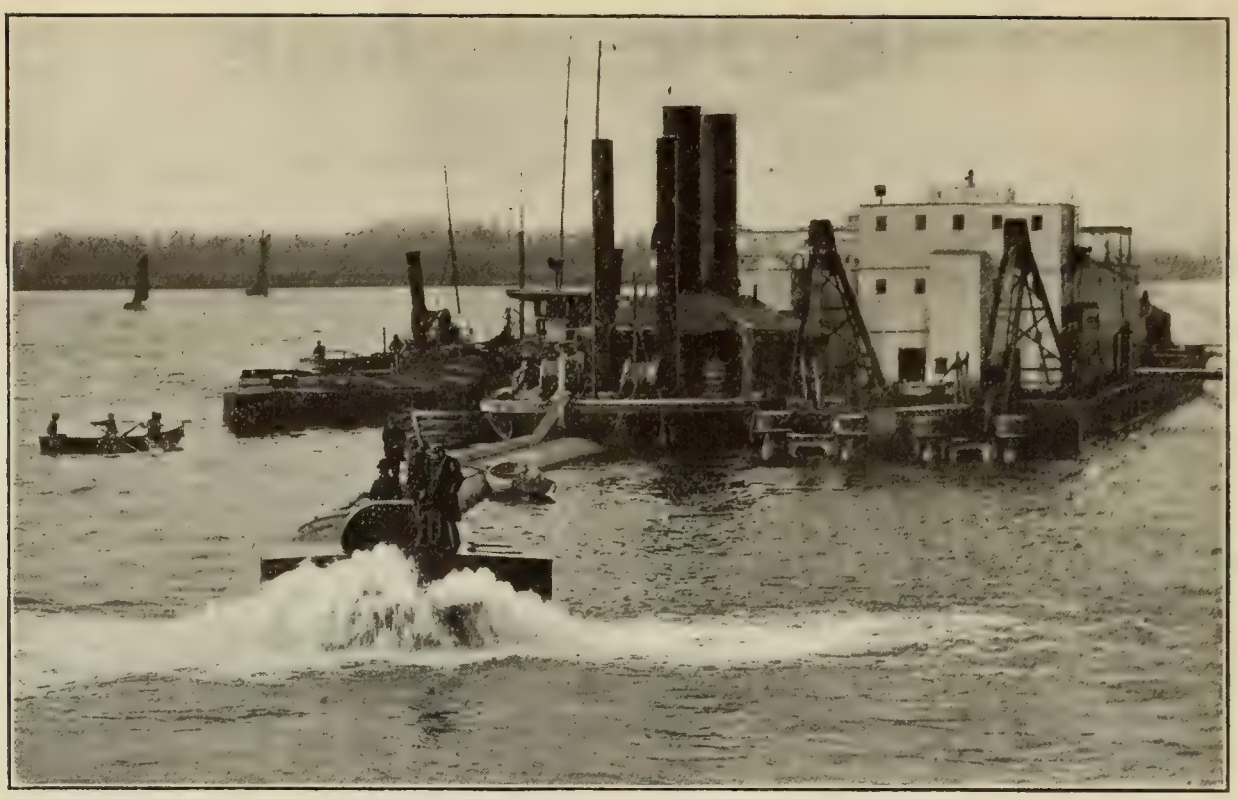
Each dredge is propelled by two 4-ft. diameter screws. In front are also arranged two screws for maneuvering the vessel. Each of the four screws is operated by a direct connected 550-volt, 135 hp. motor. Maneuvering may also be accomplished by means of cables turning around the drums of windlasses installed on the bridge in front. The same windlasses serve also for lifting the suction tubes and cutters by means of cranes arranged in front on the bridge. A vertical lath indicates automatically the depth of the dredging. The cutters are operated by a double compound engine, installed in front under the bridge.

Each one of the two hulls is provided with a double bottom over two-thirds of its length, made of Cockerill steel. In front is the dredging apparatus proper. It consists of four large drums or drills, the peripheries of which have sharp steel knives or cutters, which by rotating loosen the material to be dredged. The drills are hollow, and through them a powerful centrifugal pump sucks the material loosened by the cutters and forces it to a long line of pontoons arranged behind the dredge. About amidships is located the centrifugal suction and force pump, which is operated by a vertical triple-compound engine.

The suction pipes from the drills unite in two lines which are again united at the suction end of the pump. The discharge from the pump is a single central pipe, through which the material is forced. This pipe connects at the stern of the vessel with the distributing pontoons mentioned above. Behind the engine room is the boiler room, containing four Babcock & Wilcox water tube boilers, fired exclusively with naphtha.

The pipe pontoons are elliptical air jackets, reversible and not easily affected by winds, waves, or currents. Metal joints are used, as these do not obstruct the discharge stream so much as rubber connections. Each pair of compound cutter engines actuates four cutters. Each main pump engine can develop 1500 indicated horsepower.

Mr. Bates in designing the Volga dredge did not set himself so much the task of exceeding former capacity trials (output must always have a ratio to the size and power of engines), but rather the task of supplementing the first achievement by the additions of self-actuating features, which would eliminate loss of time in maneu-

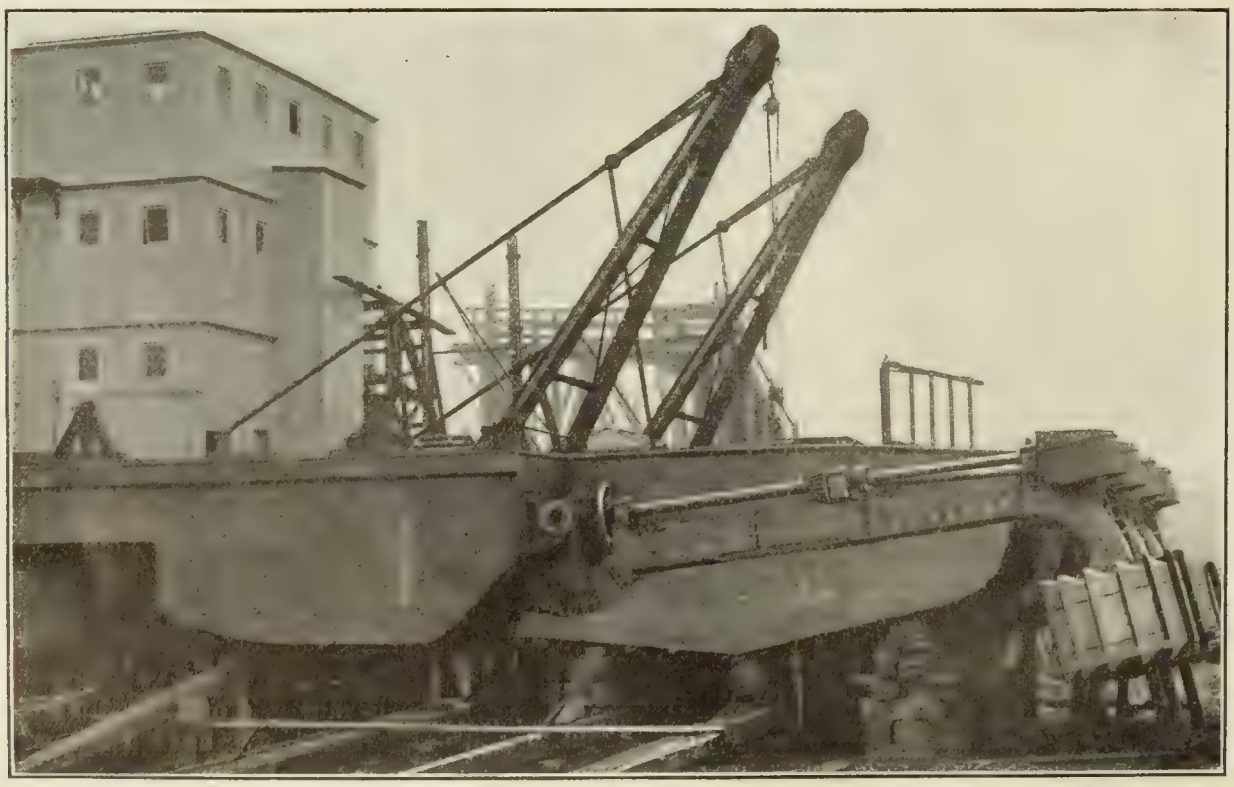


A View of the Dredge at Work During the Trials on the Scheldt River.

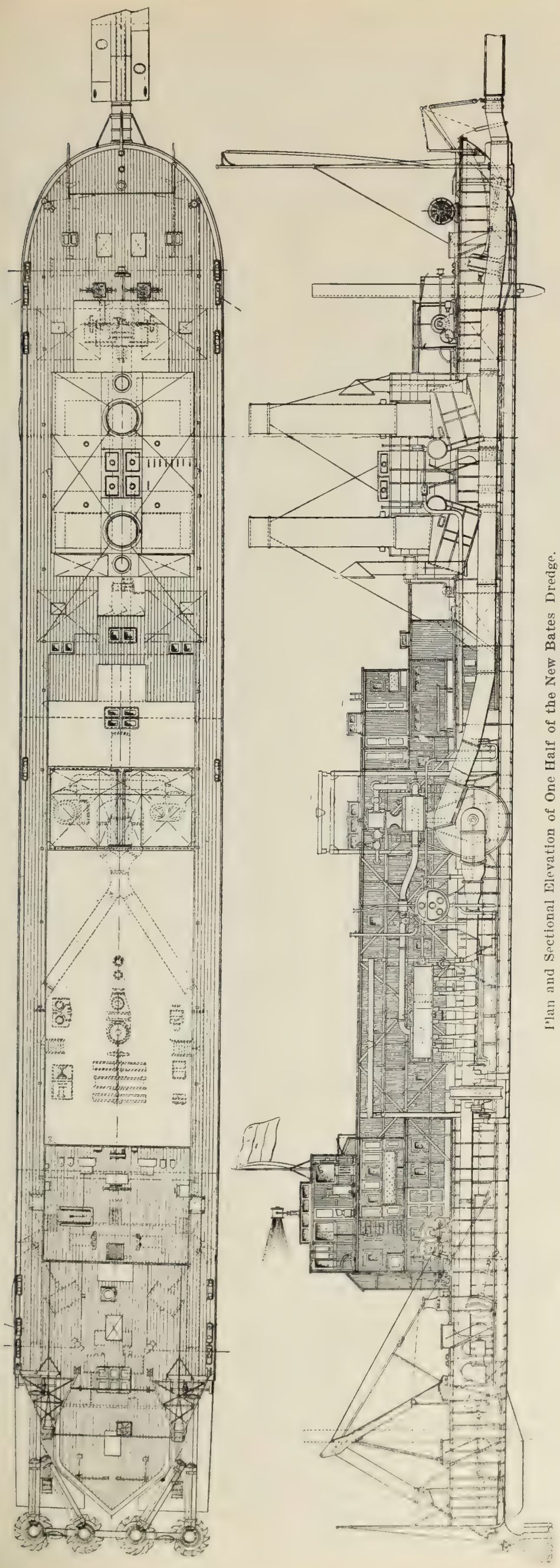
vering and in adjusting lines. To insure that the mixture of solid matter and water shall be of the right proportion for the most efficient dredging, four Bates cutters are mounted on each of the two hulls forming the dredger. In order that work may be done at different depths, these cutters, through proper mechanism described later, can be raised and lowered on a fixed horizontal axis on the dredge. The cutters can work to a depth of 16 ft. The cutter engine, in the forward part of the hull, drives a shaft, which coincides with the horizontal axis of the cutter carriage, and through bevel gears and secondary shafts the power is transmitted to the cutter shafts.

When the cutters are down in normal working condition they may work backward as well as forward, taking a face the full depth of the cutter. The greater part of the weight of the cutters and the suction pipes is carried by two hoisting cables through sheave-blocks and sheave-legs to the hoisting drums, and by these the depth of the cutters is regulated. The bearings which are under water are protected chiefly by a constant stream of water fed to the center of each journal, at a pressure of about 60 lb. from a special pump on the dredge. Removable sheet iron covers with handholes are placed over all gears which are under water. The pipe throughout is of cast steel, and is supported at the hull by two trunnions, which are carried by strong cast steel bracket bearings. The trunnions are bored out around the center of rotation to permit the countershaft to pass through the inner one. The shaft has an outward bearing midway between the trunnion bearings.

The design of the pontoon carrying the discharge differs somewhat from any heretofore employed. The displacement is such that when the contained pipe is fully loaded the draught of the pontoons is not quite 2 ft. With the exception of the two forming the ends of their respective lines of discharge pipe, all are of uniform construction. Each is 50 ft. long from center to center of couplings. The cross-section is elliptical, the horizontal axis measuring 9 ft. 3 in. and the vertical axis 3 ft. 3 in. Through the center of the pontoon is placed the discharge pipe, which is 33 in. in diameter. Thus the pontoon proper forms an elliptical jacket for the pipe whose axis coincides with its own. The greatest wear being on the lower half of the pipe, there is an advantage in being able to invert it, which the symmetrical form of the pontoon makes a simple matter. This section also has an advantage over the circular in having less draught, and a stable equilibrium enabling the men to walk freely along the line. There is also an advantage over the rectangular form, as there are no edges, and hence no longitudinal angles with corresponding increase in the amount of riveting. The form is one least influenced by wind, waves, or current. The total length of the pontoon and the angle of deflection to be allowed at the coupling are determined by the curvature required of the line of



View Showing the Cutting Mechanism of One of the Halves of the Compound Dredge Out of Water.



Plan and Sectional Elevation of One Half of the New Bates Dredge.

pontoons as a whole. In this case, the length of pontoon adopted being 50 ft., 10 degrees was fixed as the angle to which the coupling must permit deflection. This gives the line of pontoons a maximum possible curvature which corresponds to a railroad curve of about 20 degrees, or the whole line of 1000 ft. can be brought to a little more than a semicircle.

The distribution of the material is always of interest. It is usually not enough that material excavated by the dredge shall be discharged a certain distance. The place of deposit must in most cases be regulated. The control of the end of the pontoon line may be accomplished in various ways. As a first requisite, it is necessary that unbalancing produced in the interior of the discharge pipe by the free discharge shall be compensated, in order that the pontoon line may hold the position given it without tendency to writhe or kink. That being accomplished, motion may be given to the discharging pontoon by altering the direction of the outflow, by independent means, or by both. The latter plan has been adopted here. The simplest and the usual expedient for balancing the reaction is by a baffle plate, held by fixed or adjustable stays, just back from the end of the pipe, and nearly perpendicular to the discharging stream whose impact it receives. In the present case, the ordinary baffle plate is supplemented by two curved plates in front and bearing on it. These plates form a vertical wedge which is normally in the middle of the discharge stream, dividing it in equal parts and deflecting both equally to right and left. On the back of the wedge is a horizontal rack, moved by a pinion, which receives its rotation from the pontoon through a hand-wheel and a worm gear. By moving this wedge to one side or the other the horizontal balance of the deflected stream is destroyed, and transverse motion to the pontoon is thus imparted.

Before the dredge departed for the Volga River it was subjected to trials by the Russian Government. One set of tests for one-half of the dredge was conducted in a basin of about 40 acres at Drygoten, Belgium, and the other at Steendorf, on a bar in the river Scheldt, about 10 miles above Antwerp. After a number of unofficial trials had taken place the official trials began with a crew which had become familiar with the mechanism of the dredge. In this trial at Drygoten the result was as follows:

| | |
|---|---|
| Distance run | 1,000 ft. |
| Time | 37½ min. |
| Advance per minute | 28.8 ft. |
| Average cut | 2.44 ft. |
| Rate per hour | 4,524 cu. yd. |

The material in this cut was favorable, half of it being a loose sand, the other half a compacted sand mixed with clay.

The other half of the dredge was tested at Steendorf, on a bar composed of very fine sand; some cuts were along hard packed material, others in material relatively loose. None of the material in the Scheldt is so favorable as the coarse, loose sand met with on the cross-over bars of the Mississippi or the Volga. This test at Steendorf resulted as follows:

| | |
|---|---|
| Distance run | 2,129 ft. |
| Time | 180 min. |
| Advance per minute | 11.83 ft. |
| Average cut | 3.52 ft. |
| Rate per hour | 2 860 cu. yd. |

The material here was fine compact sand. All tests were conducted with 700 ft. of discharge pipe. All measurements were in excavation, and to determine the capacity upward of 500 soundings were taken. At the termination of the trials it was officially considered that the dredge could be rated without exaggeration as having a capacity of about 7000 cu. yd. hourly. This means, then, that this dredge working in material which is at all favorable can take out about 2,000,000 cu. yd. of material in a month, working 10 hours daily.

# Foundry Cupola Construction.*

## Varied Requirements of a Wide Range of Practice.

BY THOMAS D. WEST.

In years back, when one foundry was supposed to make almost everything from stove plate to an anvil block, the one arrangement of a cupola was made to answer all purposes. In other words, it was a jobbing cupola that was not pressed severely by competition. Our great diversity of specialties to-day has brought about such a demand for corresponding differences in cupolas that the wise founder will learn what features he should have in a cupola that it may best meet special conditions.

### Specialty Cupolas.

We have now in our different classes of foundries conditions that call for:

1. A cupola that can run steadily and continuously for 12 to 144 hr., or all the week, day and night.

2. A cupola that can run at intervals of 1 to 2 hr., but without dropping its bottom for from 4 to 8 hr.

3. A cupola that can melt fair sized heats of very fine or dirty scrap alone or mixed with pig iron.

4. A cupola to melt steel scrap, tin scrap or sheet iron mixed with grades of cast iron scrap or pig iron.

5. A cupola that will burn out the lining the least.

6. A cupola capable of melting large heats in proportion to capacity most speedily.

7. A cupola that can melt a large heat in the shortest time, or as fast as the metal can be taken away from it.

8. A cupola most economical in its use of fuel.

9. A cupola requiring the least labor in cleaning out and the droppings from which are freest of shot iron.

### Cupolas for General Purposes.

10. A cupola that can hold from 2 to 10 tons before being tapped.

11. A cupola from which metal can be taken continuously.

12. A cupola that will give the best "hot" and clean iron.

13. A cupola that can best melt very large scrap.

14. A cupola best adapted to the use of coke or coal or the two mixed.

15. A cupola that can melt a large or medium heat slowly so that its metal can be taken steadily by occasional taps in the lapse of 5 to 9 hr.

All of the above different features involve more or less blending of variations that make a very interesting study in the flexibility of cupola practice. In treating of the special points raised, the writer can only cite the main conditions involved, but these should be sufficient to place any one at all conversant with founding in the way of attaining the desired ends.

### Points of Construction.

In taking up a brief description of the chief features and combinations required in the construction of cupolas, we will refer in order to the foregoing numbers:

1. Those that must have the main tuyeres from 3 to 4 ft. above the bottom plate; a slag hole 12 to 18 in. below the bottom of the tuyeres, and two to three rows of tuyeres. The cupola should have a hight of 16 to 20 ft. from its bottom plate to the bottom of the charging door, and not less than 60 in. inside diameter; the walls to be generally of a straight character.

2. This calls for a cupola so arranged that all openings below the charging door can be closed to prevent the admission of air at any point. It should have a large breast that can be removed at the end of every period in melting, to take out all iron droppings and slag before banking. This latter holds the incandescent fuel from further burning until all is again ready to charge more fuel and iron and put on the blast. If a warm blast is used the better the success in continuing such intervals of melting. The principle adopted by the Baillot patent cupola shown at the American Foundrymen's Association convention at Toronto in June, 1908, is excellent for intermittent melting.

3. A cupola for this will also serve for No. 4. It should have two rows of tuyeres, the bottom row being from 24 to 36 in. above the bottom plate and having a slag hole 10 to 14 in. below the bottom of the tuyeres. The cupola should be from 36 to 50 in. inside diameter, but if larger than 60 in. a center blast would be found very advantageous. In hight such cupolas should range from 10 to 16 ft.

5. The best of all features for this is center blast alone or in combination with outside tuyeres, when used in cupolas over 60 in. inside diameter. Without center blast the lining would need to be brought in at the lower tuyeres, and the latter should have large openings. Upper tuyeres are not used in this cupola for reasons stated later. This cupola should also be sufficiently large in diameter to permit of medium sized heats and a mild blast.

6. This cupola invariably calls for high tuyeres and a slag hole 8 to 12 in. or more below the bottom of the tuyeres. It is best to have upper tuyeres, and flux should be charged with the fuel and iron to help form a fluid slag that can be run off between taps after the cupola has been melting about 30 min. Blast should range from 8 to 12 oz. pressure and pass through large area tuyeres. Cupolas under 50 in. inside diameter are best with a straight lining; over 60 in. the lining could be brought in or boshed or a center blast could be used.

7. This must be of a large size for its capacity, have low tuyeres and no slag hole. The tuyeres should be of large area and it is all the better if there is an upper row. With cupolas over 40 in. inside diameter, the tuyeres may well be brought inward or boshed, or if the diameter is over 60 in. a center blast should be used, the blast pressure to range from 10 to 15 oz. This is a cupola most desired by shops having a large force of men who pour off as soon as possible. Such cupolas cannot be expected to be the most economical in fuel, but if they can cut down the time of a large force, 15 min. saved on every heat pays for considerable fuel.

FOR FUEL ECONOMY.

8. In this case we have first to consider that whatever size is used, the cupola will be run to near the limit of its capacity. We have then to figure on a high cupola having tuyeres of large area brought in to work in connection with upper ones, and if over 60 in. inside diameter, to use a center blast in combination with the outside tuyeres. There must also be a slag hole 6 in. below the tuyeres and this is to be used after a cupola has run about one-third of its heat. The bottom row of tuyeres should be of fair area and range from 18 to 24 in. in hight from the bottom plate. Blast pressure is 8 to 10 oz. If this cupola cannot be run to its capacity, then lower the tuyeres 6 to 8 in. and dispense with the slag hole. The manipulation of such cupolas has also very much to do with the question, as a founder well versed in his own cupola and having progressive ideas will use much less fuel than one following the opposite policy.

9. Two plans may be adopted for this work. The first is to utilize a cupola after the features embodied in No. 7. The second is to use a center blast, or fairly high tuyeres of large area, and in all cases where cupolas are to be run over one-half of their capacity to utilize a slag hole to its best efficiency. In no case should any cupola be run over the limit of working in good order if a saving in cleaning out and in shot iron is an object for consideration above the other points.

10. An ordinary cupola having a slag hole and the

* Read at a meeting of the New England Foundrymen's Association, Boston, Mass., September 9, 1908.

hight of tuyeres gauged to the greatest amount of metal desired to be held before tapping.

FOR CONTINUOUS POURING.

11. This as a rule calls for a cupola larger than necessary for melting the size of the heat required, as with a continuous flow the metal should come down in a stream sufficient to prevent dull iron. As a rule such cupolas can be worked with low tuyeres, which means greater economy in fuel than having high ones for short heats, and do not require a slag hole. Upper tuyeres could be used here to increase the speed of melting; otherwise they can be omitted.

12. This demands large tuyere areas and in large cupolas bringing the tuyeres in all that is practical, or the use of a center blast in connection with the outside tuyeres. The bottom of the tuyeres should be from 12 to 16 in. above the bottom plate, and the fuel should be carried up to support the iron as high above the top of the tuyeres as a blast pressure of 10 to 12 oz. will carry it to best locate the melting point. If a cupola requires to hold large bodies of metal before being tapped or to run long heats for its capacity, then it will be necessary to carry the tuyeres higher and use a slag hole. Upper tuyeres would also be found serviceable here as an aid to the running of long heats.

13. The ends are best served here for medium heats by having the lower tuyeres from 14 to 18 in. above the bottom plate. The tuyeres should be of medium areas, and the blast pressure range from 12 to 16 oz. A good pressure is needed for such work, because it is wise to carry a high bed to keep the heavy iron from settling down in dangerous proximity to the lower tuyeres. If the cupola is to run long heats for its rated capacity, the tuyeres should range from 8 to 12 in. higher and there should be upper tuyeres and a slag hole. The hight of the cupola from its bottom plate to the charging door should be of medium range. These cupolas are also best provided with a crane or other appliance by which very heavy bodies of iron can be lowered slowly to the bed, The largest single piece of iron the writer knows of being melted in a cupola was a solid block weighing three tons. This was melted by the Pratt & Whitney Company, Hartford, Conn., in a cupola 40 x 50 in. inside measurement, using all hard coal for fuel.

14. In using coal, lower and smaller tuyeres are utilized than with coke, and if the two are mixed an average should be struck in placing the tuyeres. The rule for slag hole is the same with one as the other, only there is not as much slag coming from hard coal as from coke. Cupolas for coal can be of less hight than for coke. Much slower melting may be expected with the former than with the latter.

15. The conditions for this cupola are largely the opposite of those required for No. 7. Here we require a cupola small in proportion to output, with high and large tuyere areas, and a slag hole well below the tuyeres. If the cupola is over 50 in. inside diameter, it is best to bring the tuyeres inward, or if over 60 in. to use a center blast. The blast pressure, ranging from 4 to 8 oz., is regulated largely by the fluidity of the metal required. The hotter it is wanted, the higher the bed of fuel needed and hence higher pressure of blast. Upper tuyeres work well in this cupola.

### Manipulation of Cupolas.

By large tuyere areas we mean having the openings for the admission of blast to the interior of the cupola equal to about 25 per cent. of the area at the melting point. The minimum area for tuyere openings should not be less than 6 per cent. of the area at the melting point. Small tuyeres may in some cases do for melting with all hard coal, but for coke large tuyeres are best.

In reference to the use of upper tuyeres it is to be understood that these create another melting zone. That means the additional burning out of a lining. It is chiefly in the case of running long heats and where a slag hole is necessary that upper tuyeres are most efficient. The disadvantage of the extra burning out of the lining is often so serious, that whatever advantages may be gained have but little weight.

The function of upper tuyeres is to deliver needed oxygen to the escaping carbon monoxide, thereby preventing a loss of heat. As far as this is concerned, the principle is correct and any who take advantage of it without being too seriously handicapped by the extra burning out of a lining, will find that upper tuyeres save fuel and permit a cupola to run long heats with less "bunging up" than otherwise. It is generally best to have upper tuyeres built in a cupola, and when not found of advantage they may be easily stopped up with valves and clay.

Where reference is made to a slag hole, it is to be kept in mind that the greater the distance between the slag hole and the under side of the bottom of the tuyeres within limits, the better for running long heats or melting down fine or dirty stock. Having a slag hole implies the use of limestone or other flux to create a fluid slag.

The blast pressure given with the forms for construction is to be understood as applying to coke. Where hard coal is used, the pressure will need to be from 4 to 8 oz. higher.

### Center Blast.

Although the writer has used center blast most successfully for over six years and strongly recommends it for general use in large cupolas, he does not expect many to adopt it on account of a fear most foundrymen seem to have that it will cause them trouble.

Those who are too timid to try center blast may have recourse to the design exhibited by John C. Knoeppel at the convention in Toronto. This form of a cupola has ample tuyere area and can be brought inward or boshed for large cupolas and made to meet other conditions referred to above. Wherever a center blast is used in connection with outside tuyeres the lining of the cupola is to be kept straight, as the center blast makes it unnecessary to bring the outside tuyeres inward beyond the face of the lining to form a bosh.

One notable advantage of a center blast lies in permitting the use of a mild blast. The oxygen of the air and not pressure is what the fuel demands to cause combustion. We use pressure merely to force the oxygen in the air to the exterior and central portions of the fuel body. The greater this pressure the more cooling and "bunging-up" effect it has on the body of stock facing the tuyeres when using cold blast. We can continue this cooling effect until a cupola is completely "bunged up." Could we but have a hot blast as convenient as a cold blast, many of the difficulties encountered by founders in having bunged tuyeres and bad melting would be avoided. This point was well demonstrated by the Baillot cupola at the last convention of the American Foundrymen's Association by the manner in which it could be banked and restarted to melt down iron at intervals.

Something besides the mere cupola is to be considered in securing its best efficiency for different conditions. Any one contemplating the purchase of a cupola should know what is to be required of it, and then see that it has a combination of the features that are best for the special conditions. After erecting a cupola, of course, a great deal depends upon its manipulation, but the best operator cannot make up for the lack of a construction meeting the special purpose for which the cupola is to be used.

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In the German Empire, according to a report of United States Consul Norton of Chemnitz, Germany, there are 58 cities of a population of 50,000 or more. Of these 44 own and operate gas works, 38 operate electric light plants, 10 street railroads and 43 water works. From the electric lighting plants it is stated that $4,200,000 a year has been cleared, but the allowance for depreciation is not given. It is estimated that German municipalities now have nearly $1,000,000,000 invested in plants for public utilities. The consul says there is little evidence that municipalities will invade indiscriminately the field of general industrial competition. "Municipal control is established when there is simply the choice between a public and a private monopoly, as in the case of gas, water, electricity, &c., or else when the desirability of a utility is unquestioned, but the uncertainty as to profitable returns fails to attract private capital."

# The National Tube Company's Exhibit.

## Shown in Mechanical Hall, Sesqui-Centennial Exposition, Pittsburgh, Pa.

The Pittsburgh sesqui-centennial is to be commemorated with appropriate observances from September 27 to October 3, and with this in view the local manufacturers are making more elaborate displays of their products than usual at the Pittsburgh Exposition, which opened September 2 and is to close October 24. In the accompanying illustrations Fig. 1 shows a general view of the exhibit of the National Tube Company. The exhibit is especially interesting, as it not only shows the variety of the company's products, but also the high quality of the steel used. The fence around the side and front of the booth is made from Shelby seamless steel tubing, bent in to represent grill work. The columns in front are entirely covered by square, seamless steel tubing capped by sections of round tubing going around and entirely concealing the columns. Following is a description of the exhibits:

(*a*) Table made from Shelby seamless steel tubing. The sides are made from tubing cut lengthwise, the bottom from large pieces of tubing bent, and the top from hundreds of pieces of tubing of various shapes and sizes. As will be noted in Fig. 1, this table is made according to a symmetrical design—that is, all the parts are grouped around the center, and if the finger is placed on any one piece its counterpart will be found at a similar position on each of the four sides of the center. Eight men are necessary to move this table.

(*b*) An exhibit of a large rack made of square, round end and rectangular seamless tubing in different sizes, to hold a number of pieces enumerated below, descriptive of the method of making Shelby seamless steel boiler tubes:

(1) Low carbon bloom. The raw material from which Shelby seamless steel tubing is made. This bloom weighs about 1100 lb. The size of a section of this bloom is 7 x 7 in.

(2) A solid rolled round billet of low carbon steel—the first stage in the manufacture of this tubing.

(3) Pierced billet. (This is No. 2, but a piercing joint has rendered the billet hollow.) No. 3 is about five times the length of No. 2.

(4) Next operation in making hot drawn boiler tubes. This is No. 3 elongated, and it has acquired a smoother finish.

(5) Product of last operation in making hot drawn boiler tubes. The surface is smooth, the tube is round and true to gauge.

(6) This is similar to No. 3, but in this case the tube is to be made by cold drawing on a draw bench.

(7) A pierced, rolled and reeled billet. (No. 6 with one more operation.) The surface is smoother, and it is about twice as long, with a consequent reduction in the walls.

(8) The finished product—a Shelby cold drawn seamless boiler tube. The ends are cut off square, the hydraulic test has been applied and the tube is ready for the market.

(*c*) Some Shelby seamless boiler tube test pieces:



Fig. 1.—General View of the National Tube Company's Exhibit at the Pittsburgh Exposition, Comprising Shelby Seamless Steel Tubing, National Welded Tubular Material and Kewanee Fittings and Valves.

(1) A piece of 4-in. 10 gauge hot finish tube, tested to 4200 lb. hydrostatic pressure. The tube did not burst, but is appreciably enlarged in diameter in places.

(2) A piece of 4-in. 10 gauge hot finish tube, burst at hydrostatic pressure of 4400 lb. after a considerable enlargement of diameter.

(3) A piece of 4-in. 10 gauge cold drawn tube. This was subjected to 4200 lb. hydrostatic pressure without bursting but is materially enlarged in places.

(4) A piece of 4-in. 10 gauge cold finish tube. This burst under a hydrostatic pressure of 4200 lb. after a considerable enlargement of diameter.

(5) A piece of 4-in. 10 gauge Shelby cold finish tube. This burst under 4300 lb. hydrostatic pressure after a very appreciable enlargement of diameter.

(6) One piece Shelby seamless boiler tubing, 4-in. 10 gauge, flanged cold to 5½ in. diameter. There is no sign of a break or a crack.

(7) One piece of Shelby seamless boiler tube, 4-in. 10 gauge, expanded cold to 4¾ in. diameter. There is no sign of a break or crack.

A number of Shelby seamless tubing exhibits, some of which are illustrated in Figs. 2 and 3, were as follows:

(8) One piece of seamless tubing, $1^{7}/_{16}$ x $^{9}/_{32}$ in. wall, upset to 2⅜ x ¾ in. wall, by 1¼ in. long.

(9) One piece seamless tubing, ⅝ x ⅛ in. gauge, expanded to 2½ in x $^{3}/_{32}$ gauge for a length of 5¼ in. Note the enormous



Fig. 2.—Shelby Seamless Steel Tubing, Partially Described in Paragraphs Nos. 8, 9, 12 and 15 of the Accompanying Article.

expansion. This piece deserves the attention of every visitor to the booth.

(10) One piece seamless tubing, 4 in., 10 gauge, by 3 in. long, hammered flat, cold, with no break or crack at the fold.

(11) One piece of seamless tubing, $2^{5}/_{16}$ x ⅛ in. gauge, expanded to 4 in. by $^{3}/_{32}$ gauge, for a length of about 1¾ in.

(12) One piece of seamless tubing, 4 in., 10 gauge, showing one end spun down and closed.

(13) Four pieces of seamless tubing showing different finishes which have been applied to steel tubing—namely, nickel plate, copper plate, brass finish and oxidized finish.

(14) Various tensile test pieces cut from tube in various processes of manufacture, from billet to finished tube.

(15) Several short lengths showing heavy gauge seamless tubing varying from ½ to 1¼ in. and from 3 to 9 in. diameter. Particular attention is called to these pieces, inasmuch as many are of the opinion that Shelby seamless tubing is made only in small diameters and light gauges. As a matter of fact, it is made up to 30 in. outside diameter and with thickness of wall up to 1½ in. in the larger sizes.

(16) A dinner set made from Shelby seamless steel tubing.

(17) A chime of bells made from Shelby formed steel bells. Each bell represents a distinct note, and these are connected with a piano keyboard. This chime is about 10 ft. in hight.

(18) Some special pieces. The illustration, Fig. 3 clearly shows these shapes. They are made by inserting small pieces inside of larger pieces in varied designs. These are cold drawn in long lengths, and then cut off in the small sections shown. The various pieces are not held in place by any brazing or welding process, but simply by the cohesion resulting from the cold drawing of the entire section, and the reduction in diameter thereby obtained on the outer section, forcing the inner sections so close together as to resist the strain of cutting off in thin sections. None but the best grade of material uniformly used in Shelby seamless steel tubing would withstand such treatment.

(19) Four tables made entirely of seamless tubing. The tops are made from square tubing and the legs are gracefully bent into a shape to support the tops.

(*d*) Fittings and valves:

(1) A special case containing various patterns of gate valves, both iron body and brass; also sectional view of the iron body.

(2) Some specialties manufactured by the National Tube Company, including Kewanee ells and tees, Kewanee union swing check valves and Kewanee boiler couplings, also sample of Y valve in both brass and iron body.

(3) A full line of Kewanee unions in sizes from ⅛ to 4 in., both black and galvanized, and showing various patterns, including the round end, octagon and male and female.

(4) A line of cast and malleable iron fittings. This embraces ells, tees, crosses, &c., for standard, medium pressure, extra heavy and hydraulic service.

(5) A line of valves and cocks, embracing globe, angle, gate and check valves for standard, medium pressure, extra heavy and hydraulic service. This includes an 18-in. standard iron body outside screw and yoke gate valve with flanged end, also a 12-in. extra heavy outside screw and yoke gate valve with by-pass.

(6) Miscellaneous fittings, including well points and well supplies, malleable pipe clamps, double wrought strap pipe saddle, flanged end fittings, &c.

(*e*) Welded pipe. A number of pyramids showing different sizes of pipe from ⅛ to 30 in. This includes samples of merchant, extra strong, line pipe, Matheson joint pipe, drive pipe, tubing, double extra strong pipe, casing and boiler tubes. Each type of tubular materiai is stenciled, together with its size.

A limited liability company, the Oesterreichisch-Amerikanischr Magnesit-Gesellschaft, with headquarters at Vienna, has been formed by Hugo Willisch of Koenigswinter, Otto Briede of Benrath and Hessenbruch of Duesseldorf, to develop a magnesite mine at Millstatt, Carinthia, Austria.

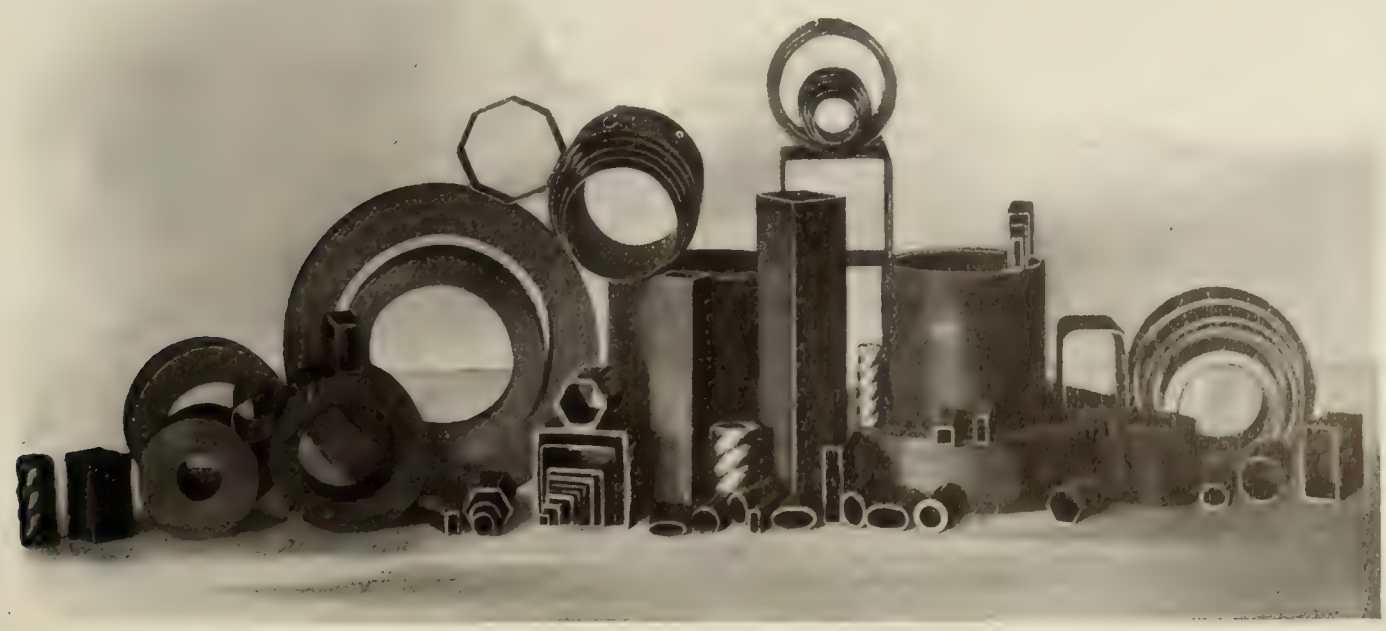


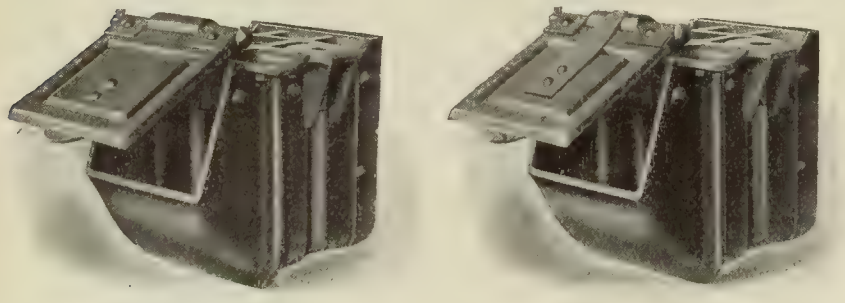
Fig. 3.—Various Pieces of Shelby Seamless Steel Tubing, Described in Paragraph No. 18.

## The Kensington All Steel Journal Box.

An all-steel car journal box, known by the trade name Kensington, has been placed on the market by the Union Spring & Mfg. Company, Pittsburgh, Pa., manufacturer of coil and elliptic springs of all kinds, pressed steel spring plates, &c. The illustrations show two of these boxes, which differ only in that one has an outside spring on the cover and the other an inside spring.

The box consists of three pieces—the top, which is made of cast steel; the body, which is pressed from ¼-in. plate, and the dust guard pocket, which is pressed from 3-16-in. plate, making it a strictly all-steel box. All rivets are ⅝ in. diameter, and are driven by hydraulic pressure. The box is oil tight, as the back of the body is pressed solid to the full depth required by the Master Car Builders' Association, and no rivets are located below the oil line. The box is of M. C. B. dimensions throughout and will therefore take the M. C. B. lid, wedge, bearing and dust guard.

To make it a very rigid box, one that will not get out of square, even if the tie bar pull should become excessive, the cast steel top is provided with inside flanges, and the body has continuous corrugations running around its three sides. Additional precaution has been taken to relieve the rivets of excessive strain by



Two Patterns of the Kensington All Steel Journal Box Made by the Union Spring & Mfg. Company, Pittsburgh, Pa.

providing slots in the lower edge of the inside brackets, into which the pressed body is solidly driven. Along the top the sides are held in a similar way by lugs projecting from the top casting. These lugs, being located on each side of the corrugation, tie the latter firmly to the cast steel top at its extremities and impart its full stiffness to the box.

Shearing strain on the rivets is avoided by fitting the top of the box neatly against the top flange of the casting. The top casting contains all the bearing surfaces, and, since it can easily be gauged and ground before assembling, the frequent trouble of the wedge and bearing not going into place has been successfully overcome. This top casting also takes all the vertical, lateral and longitudinal strains which can come upon the axles, and being made of cast steel it is stronger to resist these strains than either a gray iron or malleable iron box.

Another former trouble, the breaking of the back of the box by side blows from the axle, has been eliminated, as the blow that would break a gray or malleable iron box would only dent the back of this box. If from a derailment the body of the box should become so distorted that it could not be straightened out, a new body can be refitted to the casting by cutting out 10 rivets, thus giving a salvage in the casting of about $1.25 per box, whereas, an entire cast or malleable box would have to be scrapped.

The weight of the 5½ x 10 in. box is 80 lb., with the lid in place, which is considerably less than that of the regular M. C. B. box, which weighs 132 lb., or the malleable iron box which weighs from 105 to 110 lb. The Kensington all-steel box therefore saves considerably in the dead weight per car.

The Fillmore Avenue Foundry & Iron Works, Inc., 153 Fillmore avenue, Buffalo, N. Y., has secured the contract to build the melting furnaces and annealing ovens for the new plant of the Torrance Malleable Iron Company, Voorheesville, N. Y. This plant is to be equipped entirely with the improved Truesdell system for annealing and melting iron, and is expected to be ready to take off a heat about November 1. H. Truesdell, mechanical engineer, has entirely severed his connection with the Cyclone Grate Bar Company, Buffalo, which now has no rights to use the Truesdell system. He is associated with the Fillmore Avenue Foundry & Iron Works, Inc., of which Lyman P. Hubbell is president and Chas. T. Wallace secretary and treasurer.

## Ten Torpedo Boat Destroyers Contracted For.

Secretary of the Navy Metcalf, on September 20, awarded contracts for the construction of 10 torpedo boat destroyers as follows: Two boats each to the Fore River Shipbuilding Company, New York Shipbuilding Company, Newport News Shipbuilding Company, Bath Iron Works and Wm. Cramp & Sons Ship & Engine Building Company. The contracts to the Fore River and the Cramp plants are for the construction of vessels on their own plans for hull and machinery; the contracts to the other firms are for the construction of the vessels on the Department plans.

The amounts of the several contracts are as follows: Fore River Shipbuilding Company, company's plans for machinery, $610,000 each; Newport News Shipbuilding Company, Department's plans, $620,000 each; Bath Iron Works, Department's plans, $644,000 each; William Cramp & Sons Company, company's plans, $664,000 each, and New York Shipbuilding Company, Department's plans, $665,000 each.

The Department's plans and specifications were for vessels of about 742 tons displacement, the hull and machinery being designed for a guaranteed speed of 29½ knots, giving bidders at the same time the option to submit plans of their own machinery. Cramp & Sons will construct 30-knot boats and the Fore River Company 29½ knots with their own plans for machinery.

## Customs Decisions.

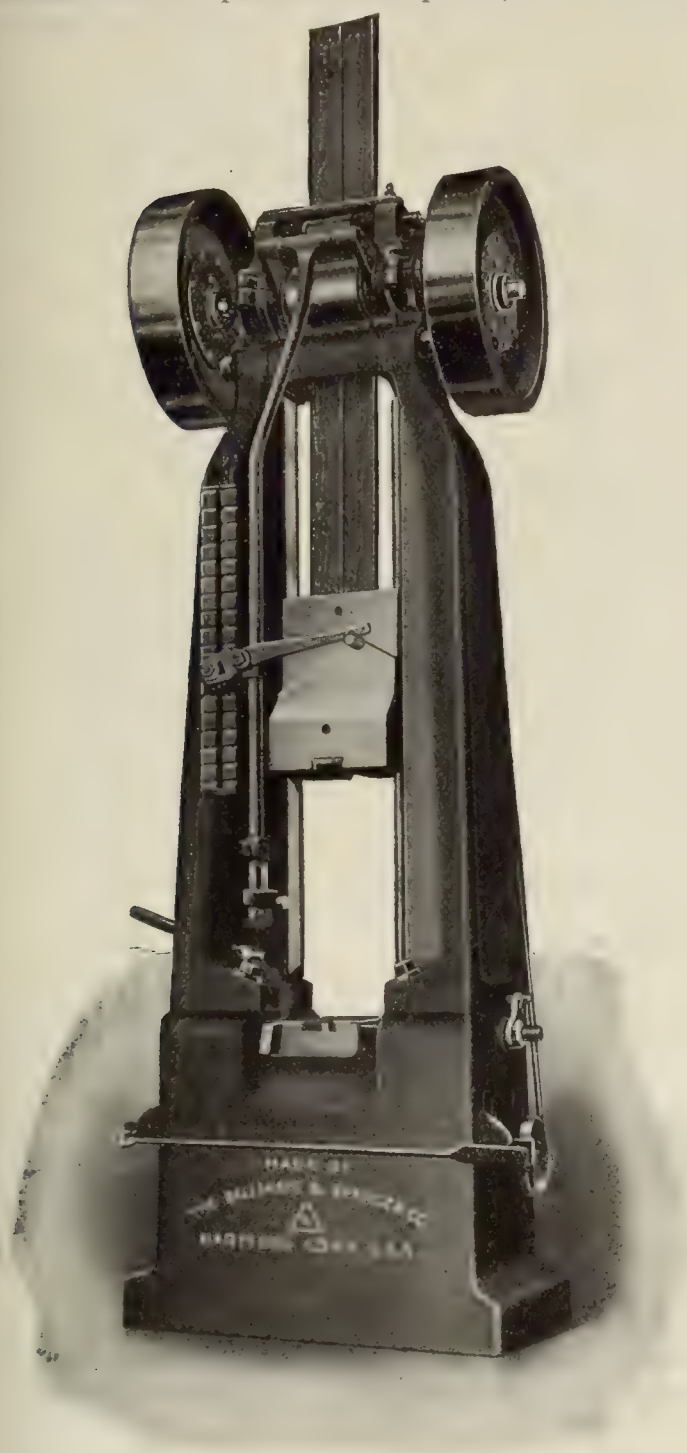
### Machinery Imported for Vessel Repairing.

The Board of United States General Appraisers, in denying the contention of Moral & Co., of Porto Rico, laid down the rule last week that machinery brought to the United States from a foreign country to repair a vessel lying disabled in an American port must be regarded as "imported merchandise" within the meaning of the tariff act and as such subject to duty. The test case was brought because of the action of the Government in assessing duty on certain parts of machinery used in repairing the steamship Buenos Ayres, a Spanish vessel, lying in the harbor of Mayagues, Porto Rico. It appears from the testimony placed before the board that the steamer had become disabled at sea and was towed into the harbor for necessary repairs. The parts necessary for repairing the machinery of the Buenos Ayres were brought into the harbor of Mayagues by the Pathfinder, a vessel owned and operated by a line other than the company owning the Bneuos Ayres.

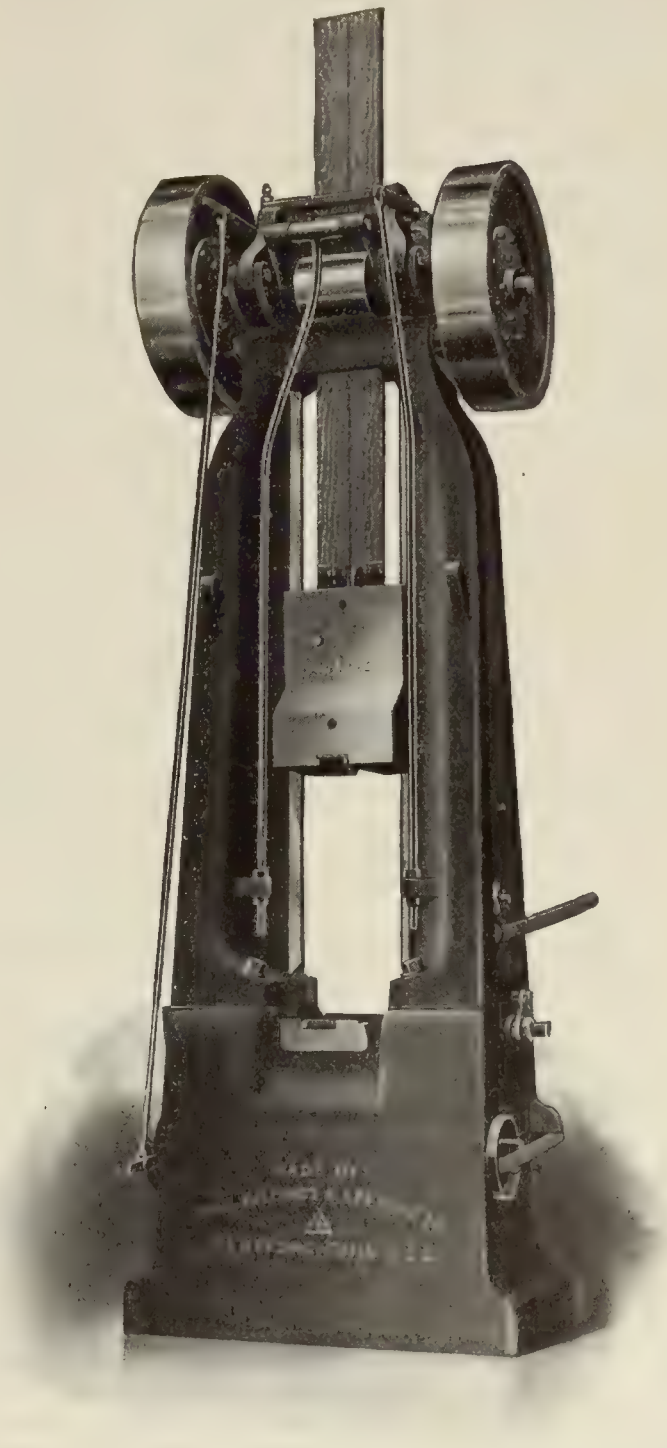
In denying the importer's contention, General Appraiser Hay, who writes the decision for the Board, says that machinery brought to the United States from a foreign country to repair a vessel lying disabled in one of the American ports must be regarded for the purposes of duty as "imported merchandise." According to Moral & Co., free entry should have been granted because the machinery was not actually imported. Mr. Hay, on the other hand, takes the position that every commodity having a value brought within the limits of the United States is "imported merchandise" within the meaning of the customs law. The general appraiser makes the further point that machinery transferred without the supervision of customs officers from a foreign vessel of one line to a vessel of a different line is not entitled to exemption from duty under section 17 of the act of March 3, 1897. Mr. Hay quotes a number of authorities in support of his ruling.

# The Billings & Spencer Model C Drop Hammer.

Drop forging has been a specialty of the Billings & Spencer Company, Hartford, Conn., for about 40 years, and during half of that time the company has been manufacturing its own drop hammers. The first hammer was known as the model A. Later further improvements were made and new features adopted which resulted in the model B drop hammer. Recently the demand for much heavier work, and a correspondingly greater efficiency in the forging plant, prompted the company to consider further possible development, and for the past few months a new model has been undergoing a severe test in the company's drop shop.



Front View.



Rear View.

The New Model C Drop Hammer Made by the Billings & Spencer Company, Hartford, Conn.

The new machine, known as model C, is not only much stronger than the old, weight for weight, but it incorporates several distinctive features. An improved board clamp catch up is employed which does away with the latch and connections at the side for holding the ram aloft. This board clamp is of an entirely new design and is located at the extreme top of the machine above the friction rolls, or lifting device. In this position it is impossible for oil to get between the clamps and board, which has heretofore been the cause of much inconvenience where board clamps have been used. Positive action is assured in the new clamps by the operation of cams or eccentrics controlled by a foot lever attached to the base of the machine. Another very important feature lies in the novel adjustment of the rear friction roll by means of an eccentric, a duplicate of that used in engaging the front friction roll. The two rolls with their eccentrics are, therefore, interchangeable. By this means of adjustment a true alignment between the lifting board and rolls is always preserved. A new form of bronze bushing is introduced on the eccentric bearings, which is easily and quickly removed and replaced. The same manner of adjustment, namely, an eccentric, is also employed on the rear board clamp. These adjustments of the rear friction roll and rear board clamp are made by means of bars attached to the eccentrics and running down parallel to the uprights to within easy reach of the operator on the floor, as may be seen in the rear view of the hammer herewith. An improved method is also employed in attaching the head to the uprights.

The uprights used on the new model are of special design and will greatly reduce the possibility of breakage. The distribution of metal is such as to afford the maximum of strength. The cross section of the uprights is that of a letter V, the apex forming the guide for the ram. A longitudinal rib running its entire length adds strength to the upright. An important feature in the construction of this machine lies in the fact that the uprights remain solid throughout their lengths, no weakening perforations being necessary in the placing of attachments. A new lateral adjustment for the uprights is employed at the junction of the base and uprights, which is considered a marked improvement on anything heretofore used.

The releasing lever attached to the outside of the left hand upright, as shown in the front view, has an improved adjustment. This adjustment is in the form of a modified rack, which allows the ram to be released at any desired hight within intervals of 1½ in.

## The Wikstrom Hydraulic Tube Tester.

The strength of tubes and pipes to resist bursting is determined by applying an internal hydraulic pressure. Many machines are built for such testing, but they are generally so arranged that part of the tube or pipe to be tested is hidden by the tension bars and water receiving trough of the machine itself, which hampers a close inspection of the tube. The necessary tightening end pressure on the tube when applied by hand through a wheel and screw, as it generally is in the smaller machines, is laborious. In the larger machines hydraulic pressure is sometimes employed, but since the end pressure required for a small tube is less than that required for a big one, *e. g.*, the end pressure for a 6-in. tube would buckle a 2-in. tube, some makers have introduced a hydraulic pressure regulating valve to adjust the end pressure. Even this, however, has not proved altogether satisfactory, since it is sometimes necessary to adjust the end pressure somewhat for each tube and for old and new packings, and so much manipulation of a regulating valve is slow, uncertain and bothersome.

The above objections appear to have been overcome in the machine shown in the accompanying drawing, and designed by Malcolm Wikstrom, Storfors, Sweden. All parts of the tube are visible and accessible during the test, the tension bars *a* and *c* being placed above and below the tube, instead of on the sides. The end pressure is applied by hydraulic pressure through the cylinder *b*, and to vary this pressure, in place of a reducing valve there is arranged an adjustable spring cushion, *d*, by which the end pressure almost immediately can be varied from nothing to any pressure required. This is accomplished in the following manner:

The tube *e* is rolled into the machine and rests on supports (not shown), which hold it in the position shown in Fig. 1. The water under testing pressure is then turned into the cylinder *b*, moving the piston *f* forward. The length of the stroke of this piston is fixed, and in Fig. 2 the position of the different parts is that when the piston *f* has completed its stroke. The tube ends are then closed up by packing disks *g* and *k*. The distance, *x*, can be adjusted by the hand wheel *h* and screw *j*. If this distance is made equal to the length of the stroke of the piston *f*, then turning on the water in the cylinder *b*, Fig. 1, would cause the piston *f* to travel the full length of its stroke without hardly touching the tube, and consequently there would be no end pressure at all on the tube. If the distance *x* is made equal to half the stroke of piston *f*, again turning on the pressure in cylinder *b* will cause the piston to move forward until it struck the end of the tube, then it would squeeze the tube between the packing disks *g* and *k* and compress the spring cushion *d*. The amount of this compression determines the end pressure on the tube, and as this amount depends on the distance *x*, which is adjusted by the hand wheel *h*, it is clear that end pressures from nothing up to the full capacity of the springs can be obtained. The springs are designed for a capacity equal to the total hydraulic pressure on piston *f*.

The spring cushion *d* rides on a carriage, *m*, which can run the whole length of the water receiving trough *n*, so as to accommodate tubes of different lengths. Small differences in length can be taken care of by the screw *j*. A bolt, *o*, which fits in holes in the tension bars *a* and *c* locks the carriage in any position required. The spring *p* pulls back the piston *f* when pressure is released in the cylinder *b*. The testing pressure for the tube is admitted at *q*, through valves not shown, and the air in the tube escapes at *r*, through a valve not shown.

The number of tubes that can be tested in a given time on this machine is claimed to be greater than on other machines with the same number of attendants, thereby reducing the cost of testing. This will be particularly an advantage in mills making a variety of sizes and lengths of tubes, and where on this account resetting of the testing machine often takes place.

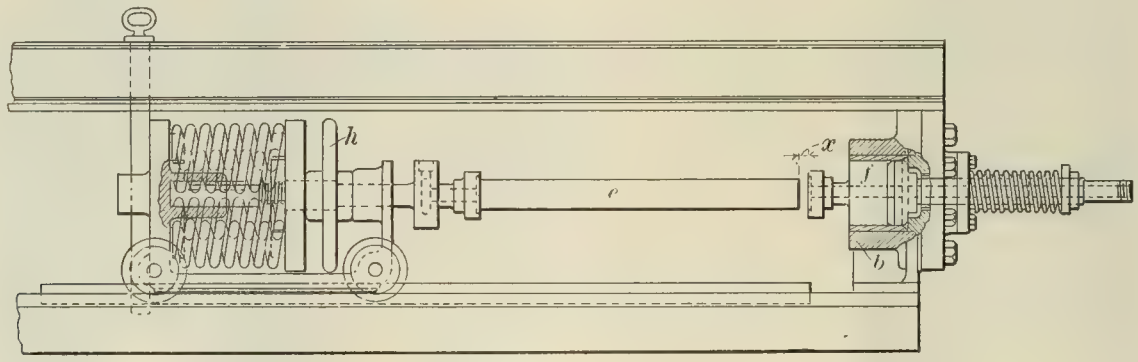



FIGURE 1

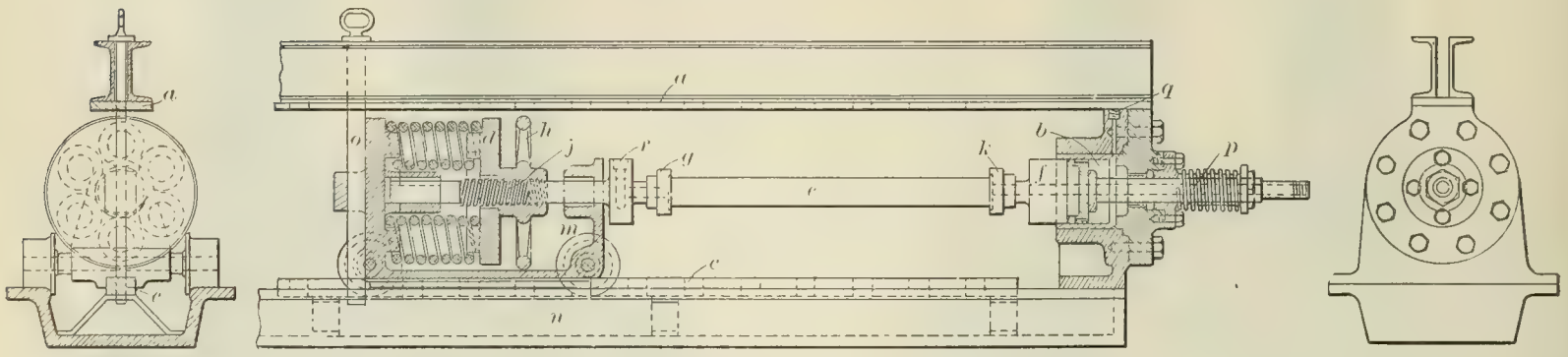



FIGURE 2

Details of the Hydraulic Tube Testing Machine Designed by Malcolm Wikstrom, Storfors, Sweden.

**New Chilian Naval Contract.**—In the latter part of July the President of Chile signed a decree appointing Morrison & Co., Valparaiso, Chile, a well-known firm of importers and engineers, sole suppliers to the Chilian Navy for a period of five years, the contract covering practically every item of supplies of all kinds that may be called for. Morrison & Co. have expressed their intention of giving American manufacturers every opportunity to figure upon all their requirements in this connection. William E. Peck & Co., 116 Broad street, New York, are agents for Morrison & Co. in this country. It would be well for manufacturers and dealers in supplies likely to be of interest in connection with this contract to put themselves in communication with Peck & Co.

**Mexico and Alien Mine Owners.**—A press telegram from the City of Mexico, dated September 18, states that Vice-President Ramon Corral has written a letter to an officer of a New York mining company operating in Mexico replying to questions in regard to the proposed mining law. Mr. Corral says in his letter that the anti-foreign provision of the bill which has aroused such a storm of protests on the part of foreign mine investors in Mexico will be eliminated, and that the law when passed finally by the Mexican Congress will contain nothing inimical to foreign capital already invested or that may be seeking investment in that country.

# The Clark All-Steel Box Car.

A design of all-steel box car is being offered by the Clark Car Company, Frick Building Annex, Pittsburgh, Pa. In this car it was the purpose to combine as many functions as possible in each piece, so as to minimize the number of pieces and connections. The side and end walls are in effect plate girders, so that no separate framework is required. Vertical stiffeners are supplied at intervals, as they would be in large plate girders. The web instead of being continuous is divided horizontally about midway, the lower plate being heavier than the upper plate to provide extra strength in the part most likely to receive injury from shifting loads or careless handling. In the upper section such heavy plate is not required, and the use of a lighter plate allows the car as a whole to be that much lighter.

An important feature of the car, which can be appreciated from the accompanying illustrations, is that all members are so riveted and lapped as to exclude water, making the interior entirely waterproof, without depending on tightness in the joints and around the rivets. In the roof, for example, there are no holes which project into the car, the plates forming the roof being riveted together by upturned flanges and surmounted by a U section through which the rivets pass horizontally; these joints also form the carlines of the roof. In the floor the riveting is done in such a manner that no rivet heads project anywhere through the surface where they would interfere with shoveling, and the doorway is made entirely clear.

A feature that is very desirable in the maintenance of these cars is that all parts are so assembled that any piece may be removed by cutting the rivets of that piece only, and no other parts of the car will be involved in the repair. In general this is accomplished by forming the sides of horizontal sheets extending from the end to the center, and stiffening these on the cords by an eave strut at the top, and by attaching the lower edge of the sheets to the side sills and floor plates. The stiffeners, which are placed vertically at intervals throughout the length of the car, are framed through the floor sheets at the bottom to the side sills and floor beams. The sheets below the seam that runs laterally of the car about 4 ft. above the floor are 3-16 in. thick, and the upper sheets ⅛ in. thick. The same general construction is employed on the ends, except that the lower sheet is ¼ in. thick to withstand the effect of shifting loads.

The roof is made up of sheets running crosswise of the car and flanged upward at their intersection to form outside carlines, leaving clear head room inside of the car. The upturned edges of the roof sheets are higher at the center than at the sides, which makes the carlines stronger for the support of the roof load. The ends of the roof sheets are flanged downward from the eave strut, and are fastened by the rivets which connect the strut to the side sheet. The running plank is connected directly to the carlines, as are also the guard rods on the roof near the sides of the car, running from end to end, and no holes are made through the roof which might give rise to leakage.

The doors are made of corrugated iron laid crosswise, and bound across the top and on the sides by a light pressed channel section. The bottom section of the door is a pressed Z-shape, so as to shed water. This door can be made up to weigh about 150 lb., which is lighter than the wooden doors now in use.

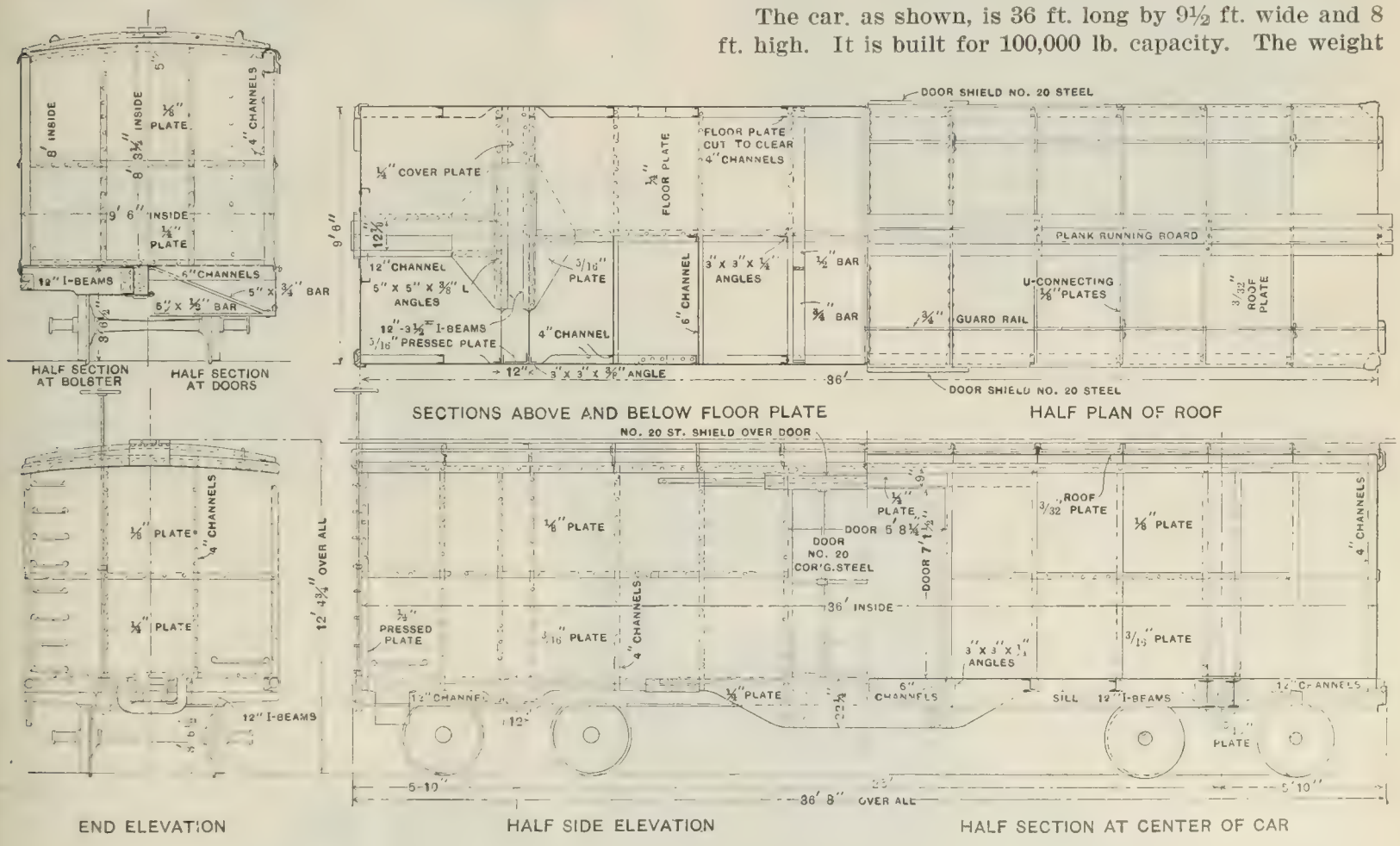
The under frame of this car is made of a single beam through the center between the bolsters, and 6-in. channels running from this central beam to the side sills. The floor sheets are ¼ in. thick.

The car, as shown, is 36 ft. long by 9½ ft. wide and 8 ft. high. It is built for 100,000 lb. capacity. The weight of the car is 38,000 lb., of which the weight of the trucks is 16,400 lb.

The Union Pacific Railroad has been carrying on experiments with all-steel box cars manufactured in its own shops. The published statements concerning these cars indicate that they have been used in various classes of service and that there have been no objections to their use by shippers whose freight has been handled in them. These two cars have been in service on the Union Pacific Railroad and also on the Southern Pacific Railroad over the desert country where the temperature is sometimes as high as 130 degrees.

Comparison of the cost of all-steel box cars and composite steel and wooden box cars of the same capacity indicate that the steel box car can compete in cost with the composite car. The amount of shop work on the Clark car compares favorably with the average gondola or hopper car, and it will be seen that the weight of the car is about 4000 lb. less than for 100,000-lb. gondola cars, and about the same weight as 100,000 lb. hopper cars. The Clark Car Company is prepared to offer this car in competition with composite box cars.

A comparison of the repairs required on wooden gondola cars and steel gondola cars has frequently been made to the great advantage of the latter. If a comparison of the repair cost of all-steel box cars with




The All-Steel Box Car Patented by the Clark Car Company, Pittsburgh, Pa.

wooden box cars were made it would undoubtedly show an even greater advantage in the saving of repairs, for the reason that shippers misuse box cars in loading and unloading freight more than they do gondola cars, owing to the greater variety of freight for which they are used and its character. For instance, a load of lumber if poorly stored in a box car will break out the ends by shifting. In fact, a great many classes of box car freight act in this way. The difficulties now encountered with leaky roofs for box cars have been taken into consideration in the design of the roof of the Clark car, it being so constructed that there are no seams or joints which can open up.

## The Brown Electric Pyrometer.

An electric pyrometer claimed to be more durable, cheaper and equally as accurate as the Le Chatelier instrument is now offered by Edward Brown & Son, 311 Walnut street, Philadelphia, Pa. Since the general form of electric pyrometers is more or less established, this new instrument is not radically different from others on the market, but it has a number of improvements in its details. It is made in both stationary and portable forms, as shown in Figs. 1 and 3.

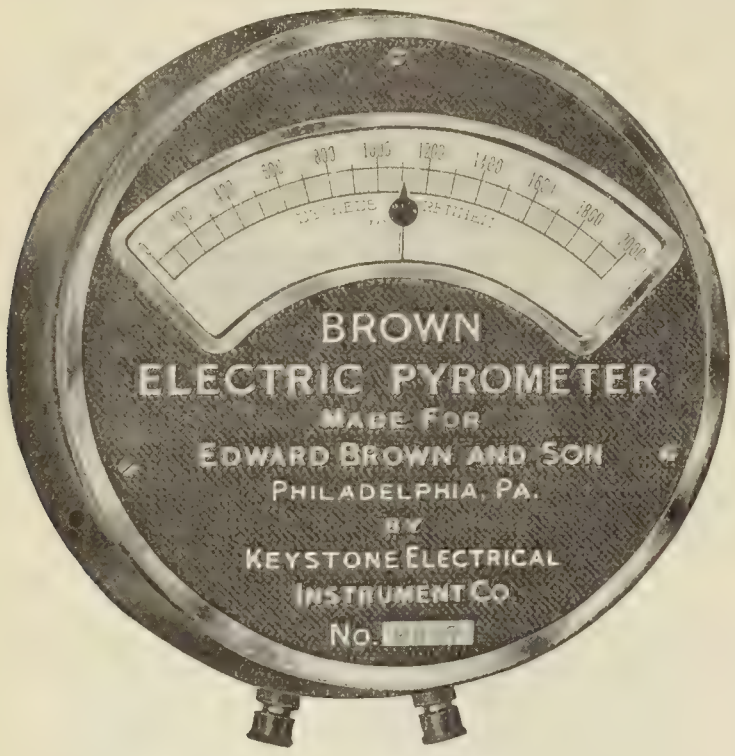



Fig. 1.—Stationary Form of Pyrometer Indicator.

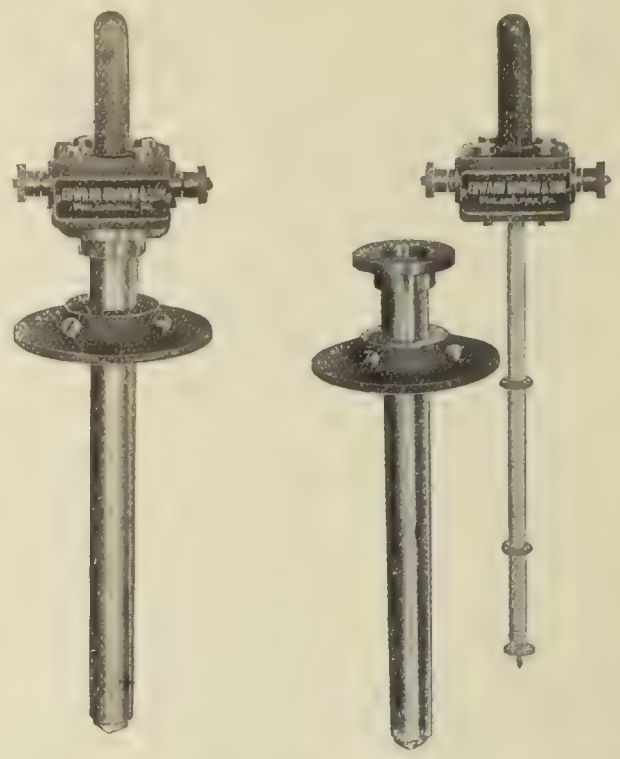


Fig. 2. Complete Thermo Couple and Couple Removed from Protecting Tube.

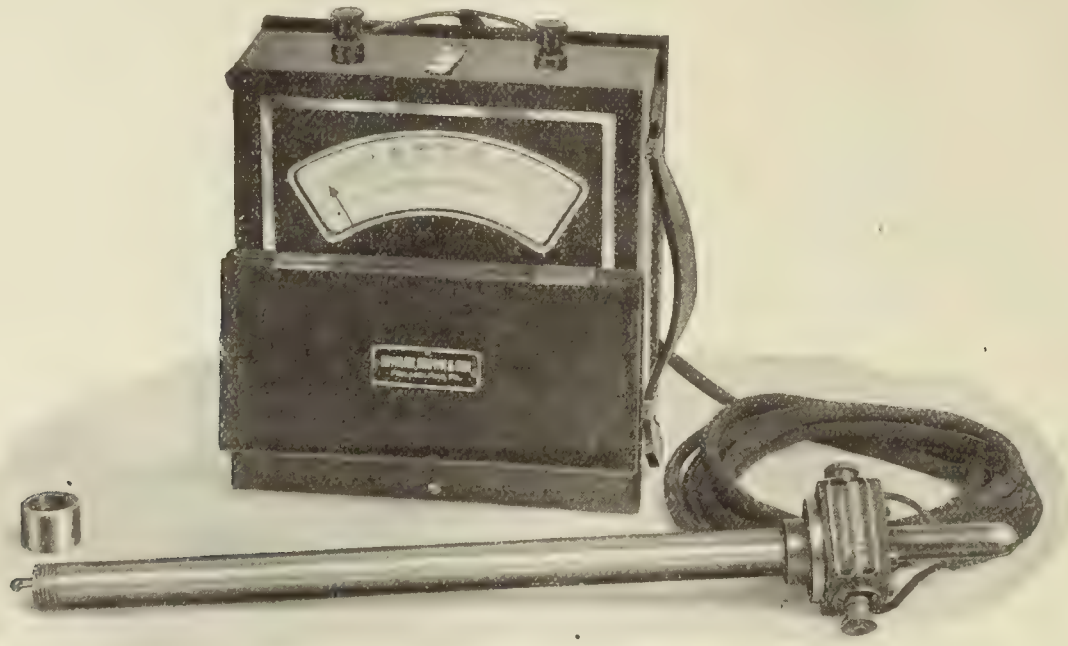


Fig. 3.—Portable Pyrometer Ready for Use.

Poetter & Co., Ltd., a Dortmund, Germany, engineering company, issues from its London office, 39 Victoria street, Westminster, a catalogue, in English, devoted to a recapitulation of the various contracts the firm has undertaken in the construction of metallurgical works. There are 77 pages, 5½ x 8½ in., including 36 full page illustrations of plants erected or equipment installed by Poetter & Co. These include blast furnaces, steel works, annealing and heating furnaces, wire mills, gas producers, gas power and by-product recovery plants. The impression given by these views is of the advanced character of the equipment in many German iron and steel works, and the incorporation of features paralleling the best practice in the United States, while in gas and by-product recovery plants, it need not be said, these German works set the pace.

In the stationary form, the Brown electric pyrometer consists of a large switchboard-type millivoltmeter, calibrated to read directly in degrees of temperature (either Fahrenheit or Centigrade), a thermo-couple which is inserted in the heat to be measured, and the leads or wiring for connecting the thermo-couple to the indicator, which can be practically any length desired. The large size of the millivoltmeter admits of an exceptionally long scale with large figures, which can be easily read at a distance. Where an instrument is required that can be readily carried about, the portable indicator, Fig. 3, is supplied.

The thermo-couple is the part of the pyrometer, which is inserted in the heat, and consists of two wires of different metals, welded together at one end, insulated from each other, and protected. When the junction of the two alloy wires is heated, a small current of electricity is produced, the intensity of which is proportional to the difference in temperature between the cold and hot ends

of the couple, and therefore gives a direct reading on the millivoltmeter. For measuring excessively high temperatures, the thermo-couple can be constructed of heavy nickel and tungsten alloy wires, having a fusing point of 2700 degrees F. This form of couple, however, is not recommended for such high heats, the platinum-rhodium thermo-couple being much more durable and constant in its indication at very high temperatures. The wires of the thermo-couple are insulated by small fire clay tubes and mica washers, serving to hold the wires in the center of the protecting tube. The great advantage of this insulation is that it will stand 3000 degrees F. or 1600 degrees C. without damage, and is quite inexpensive. For protecting the thermo-couple, steel tubes are generally used up to 1600 degrees F., while for temperatures above this, tubes of porcelain, quartz, firebrick and graphite are preferable, and each kind of tube has its advantage for certain uses. Where instantaneous temperature measurements are required, as of molten metals, an unprotected thermo-couple is supplied, heavy in construction and especially designed for quick readings.

The Brown thermo-couple has been constructed on new lines, using a hardwood lignum vitæ head with brass binding posts for connecting the wires or leads from the indicator. The hardwood head has four screws passing through it, as shown in Fig. 2, which hold the protecting tube. These protecting tubes are all furnished with

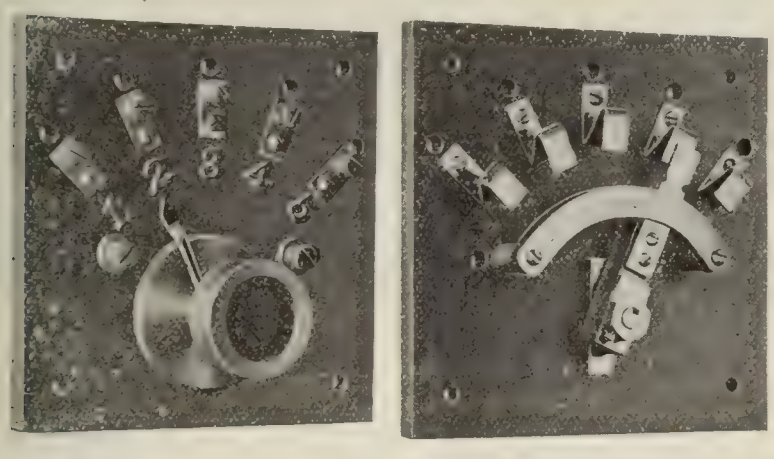


Fig. 4.—Front and Back of the Switch Furnished with Brown Pyrometers.

flanges with holes drilled and tapped exactly uniform, so that a new protecting tube can be ordered at any time, and by removing the four screws the old tube can be replaced. Where iron protecting tubes are used, an adjustable flange is supplied on the tube, so that the thermo-couple can be inserted readily any desired length into the furnace, and this flange prevents the couple falling all the way into the furnace or oven. The insulation of the thermo-couple will withstand practically any temperature, and is an advantage under severe conditions. The thermo-couples are made long enough to keep the cold junction at about room temperature, and the indicator is calibrated with the pointer at 77 degrees F., room temperature.

An advantage of an electric pyrometer is that a number of thermo-couples may be connected to one indicator through a multi-point switch by turning the handle of which the temperature of any of the furnaces or metal baths can be independently and successively read on the one indicator. A switch is supplied with the Brown electric pyrometer working on the knife switch principle, which is absolutely positive in its action, and with which poor contacts cannot occur. As shown in the rear view of the switch in Fig. 4, the switch blade has two leaves which straddle each contact point. It has the advantage over the ordinary knife switch, in that only one handle has to be turned to any of the numbered points, and it is impossible for more than one thermo-couple to be connected to the indicator at a time, which might happen where a number of knife switches are used. Switchboards at present in use with electrical pyrometers give more or less trouble as the switch becomes worn. With some switches it is possible to get readings on the pyrometer, varying as much as 200 degrees and due entirely to the character of the contact made by the switch.

For blast furnace work, a specially designed thermo-couple is inserted in the bustle pipe, and one in the top of the dustcatcher for gas temperatures. These can be connected either to individual indicators, or to one indicator through a switch, and a recorder can also be connected to the same couples to record the temperature in the superintendent's office. This pyrometer has proved desirable at blast furnaces, also in connection with iron stoves, one couple being used for each stove, one on the bustle pipe and one on the dustcatcher, and all connected to an indicator through a switchboard.

For measuring the temperatures in annealing, hardening, tempering and other furnaces and ovens, the pyrometer is particularly suitable, regardless of the fuel used, whether it be coal, oil or gas. Similarly it may read the temperatures of metal baths using lead, barium chloride or other salts.

Accurate temperature measuring instruments are very desirable, also in connection with tinning and galvanizing. With this pyrometer 20 tinning pots can be connected through a switchboard to an indicator in the office, where the temperature of every pot in the tin house can be noted in a few minutes, and the cost of the necessary apparatus is moderate.

Probably the highest sustained temperatures are those found in glass works. Brown electric pyrometers are at present in use on glass melting tank furnaces where the temperature is 2750 degrees F., and when checked up with a portable Le Chatelier pyrometer, have shown no error in their readings. A pyrometer which will stand such severe conditions is certainly capable of measuring the ordinary temperatures usually found in industrial works, and a practical pyrometer inexpensive in first cost and maintenance is greatly to be desired.

## The Increase in Mexican Iron and Steel Duties.

The Department of Commerce and Labor, in a recent bulletin, gives the change in the Mexican tariff last promulgated and in most cases made effective August 16, 1908. Those affecting the iron and steel trade were referred to in these columns in advance of the issuing of the President's decree. The exact classifications of the articles on which changes are made are shown in the following:

| | Rate of duty. New. Pesos. | Old. Pesos. |
|---|---|---|
| Steel in bars, round, square, flat, channel, in an octagonal or hexagonal section, or cruciform; 100 kilos, gross | 6.00 | 5.50 |
| Steel in bars, of all forms and sections, with designs, channels, indentations, or wrought in symmetrical designs on its entire surface, or only part thereof; 100 kilos, gross | 7.00 | 5.50 |
| Iron in bars, of all forms and sections, with designs, channels, indentations, or wrought in symmetrical designs on its entire surface, or only part thereof; 100 kilos, gross | 7.00 | 6.00 |
| Rails of iron and steel for railroads,* and switches,† disks,† sleepers† and frogs;† 100 kilos, gross | 2.50 | 2.00 |
| Screws, bedplates, attachments and bolts, of iron or steel for attaching rails; kilo, gross | 0.03 | 0.01 |
| Beams and joists of iron or steel, when not specially perforated or slotted; 100 kilos, gross | 3.50 | 3.00 |
| Beams, joists and columns of iron or steel, when specially perforated or slotted; frames, brackets, base plates for columns, butt or connecting plates, braces or tie beams with or without nuts, and other parts, not specially mentioned, of iron or steel, for construction purposes; kilo, gross | 0.05 | 0.04 |

* The old duty was 1 peso per 100 kilos on rails weighing not more than 10 kilos per lineal meter and 2 pesos on those weighing more than 10 kilos.

† The old duty was 1 peso per 100 kilos.

The duty on cement and Spanish white was increased from 0.55 peso to 0.70 peso per 100 kilos, and benzol, which had paid 0.09 peso per kilo, was put on the free list.

Owing to the Attorney-General's decision that their action was unlawful, the 56 national banks in Oklahoma (out of a total of 309) which accepted the provisions of the State law for guaranteeing deposits are now required to withdraw from the agreement. A bank's refusal to do this will be regarded as just cause for the forfeiture of its charter.

# The Carnegie Steel Sheet Piling.

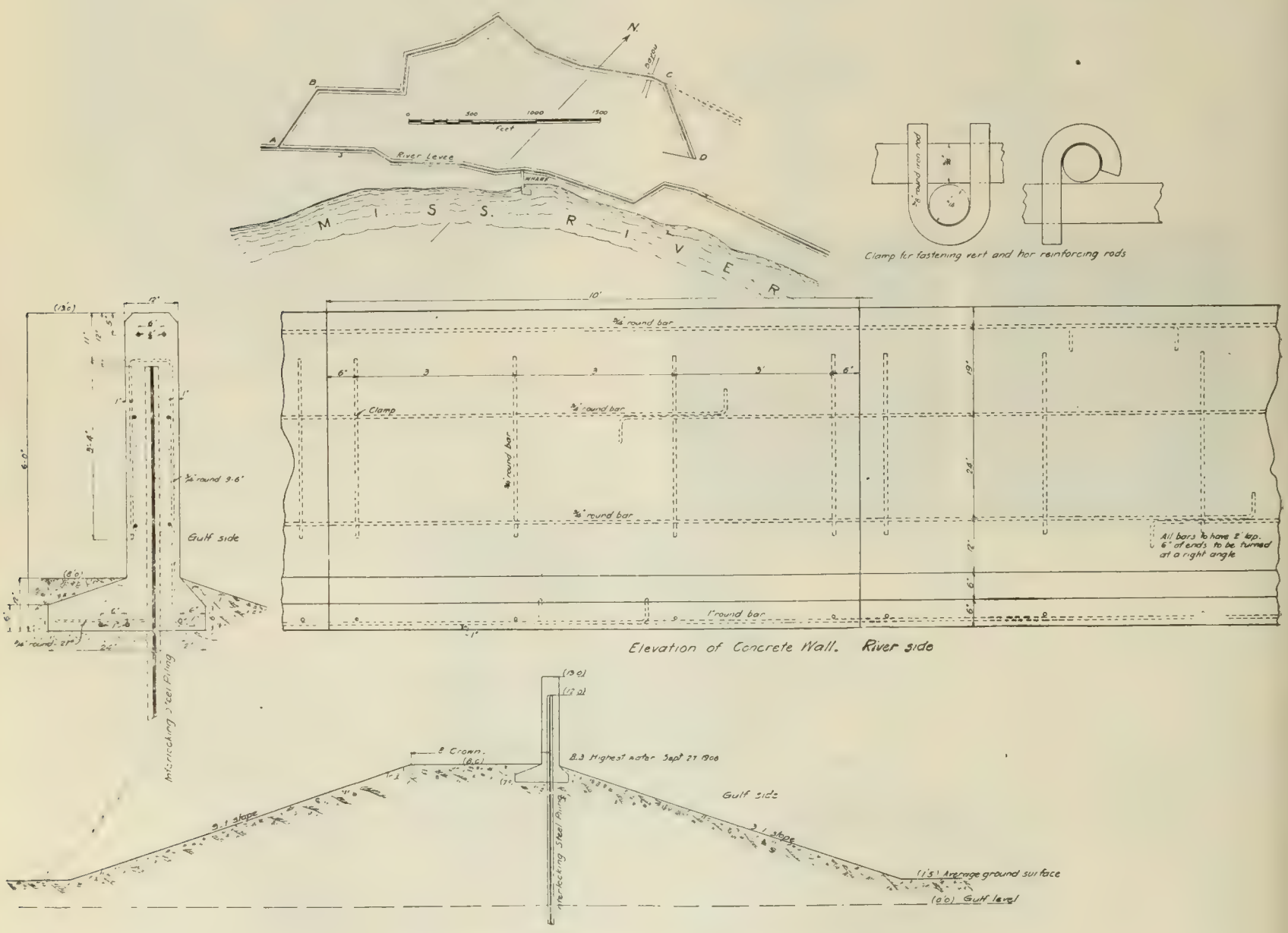
## Used in the Fort St. Philip Sea Wall.

Fort St. Philip is on the left bank of the Mississippi River, about 74 miles below New Orleans, 34 miles from the Head of Passes and about 47 miles from the jetties at the mouth of the river. With Fort Jackson on the right bank of the river, it constitutes the outer defense of the city of New Orleans, and is famous for its resistance to the fleet of Captain Farragut and its final capture in 1862 by the Federal forces. Fortifications were first erected in 1793, and were rebuilt in 1895, 1896 and 1897, the present equipment consisting of a battery each of 6, 8 and 10 in. guns.

While quite a distance from the mouth of the river, it is only about 1 mile from Breton Sound, which is an arm of the Gulf of Mexico. The surrounding country is marsh land, frequently flooded by the backwater of the gulf. The river levee gives the fort ample protection at all times from high water in front, but to protect the fort on the back, or gulf side, from the seepage or backwater, which is especially dangerous at high tide and particularly so at storm tides, it was found desirable to conuct a more stable and permanent sea wall than is forded by the earth levee. It was accordingly decided by the War Department to convert the levee on the gulf side into a sea wall by extending it and raising it to a net elevation of 8 ft. above the gulf levee; and to prevent the seepage of the sea water, the plans of the engineers called for a reinforcement of the levee with a row of interlocking steel sheet piling with its top capped by concrete.

The length of the sea wall is 4400 ft., and the contract involved the enlargement of 3670 ft. of old levee, the building of 730 ft. of new levee, the driving of 4400 lineal feet of steel sheet piling and the placing of the reinforced concrete. The steel piles were 19 ft. long, driven 14 ft. into the levee, and extending 5 ft. above its top. The piling was specified not to be less than ⅜ in. thick, to be driven vertically and in straight lines from angle to angle of levee. Twelve-inch 35-lb. United States steel sheet piling was chosen as being peculiarly fitted for the work in hand and 4476 pieces were driven, weighing in all 1508 net tons.

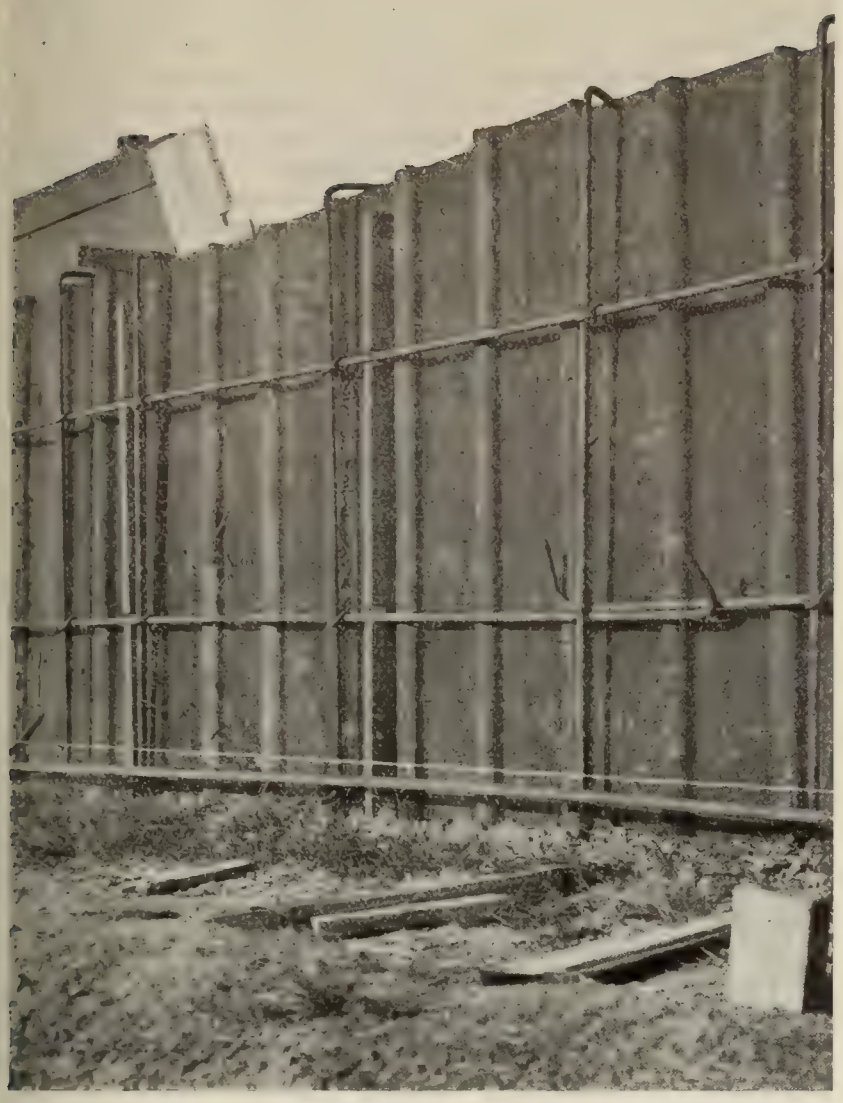
Work was begun December 1, 1907, and after the enlarged and newly built levee had settled sufficiently, the driving of piling was commenced. The piling was shipped by barge on the river, the first lot arriving in March and the second in May. The piles were driven by a drop hammer weighing 2800 lb., with which was used a cushion hood, which wholly prevented any battering of the ends. The drop of the hammer was 10 ft., and the average number of blows was eight. While the soil was practically all silt, several obstructions were encountered and found to be live oak stumps buried underground, through which the piling was driven without much difficulty. But one pile driver was used, and new high records in the driving of steel sheet piling were made; the minimum number of piles driven per eight-hour day was 113, and the maximum 281—a record for driving unprecedented in the history of the steel sheet piling industry.



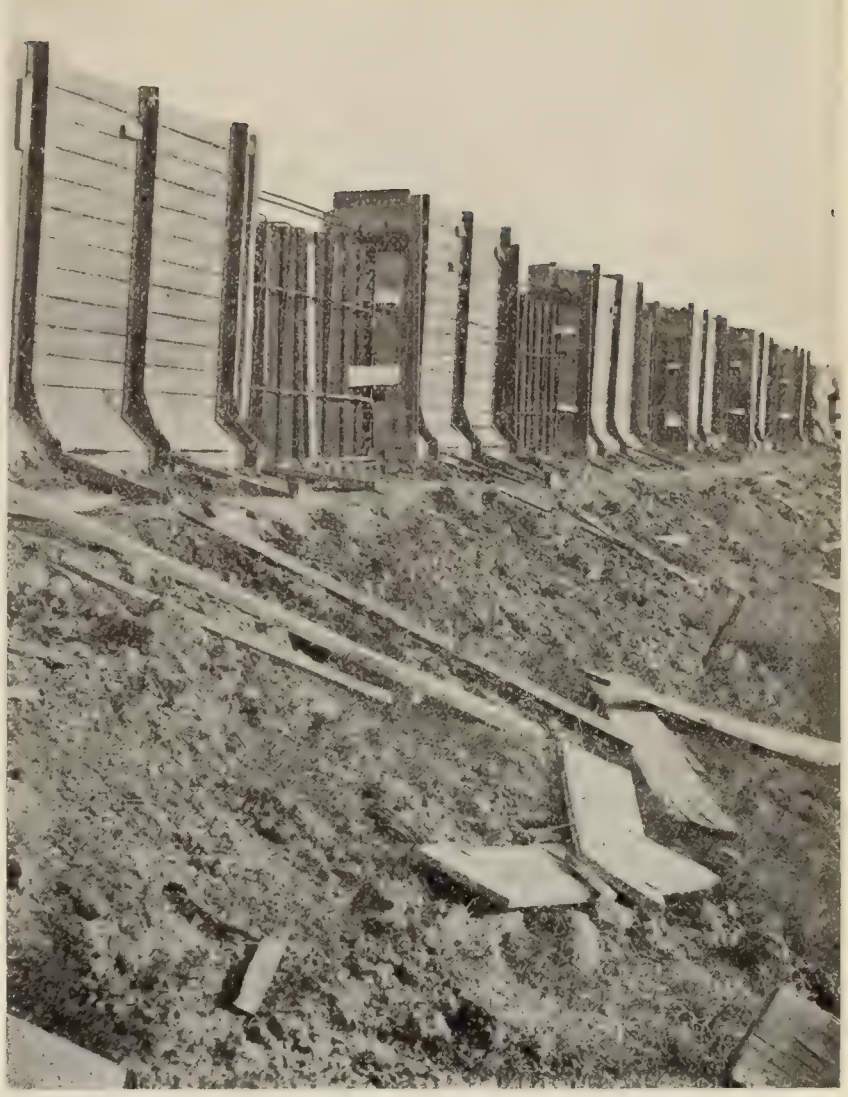

The Engineer's Plan of the Fort St. Philip Sea Wall.

As above mentioned, the object of the steel piling curtain wall was to prevent seepage into the reservation from the gulf side, and it was, therefore, necessary that this wall be made water tight. Under ordinary conditions, United States steel sheet piling can be made practically water tight by wooden packing strips driven with the piling; but in order to avoid the possibility of leakage, the specifications required all piles to be heavily coated with asphaltum pitch and this coating to be thoroughly dry before the piles were driven. After the piles were driven, the voids in the interlock were filled with grout composed of 3 parts of sand and 1 part of cement, the result of which was to make an absolutely impervious structure.

The 5 ft. of piling projecting above ground was

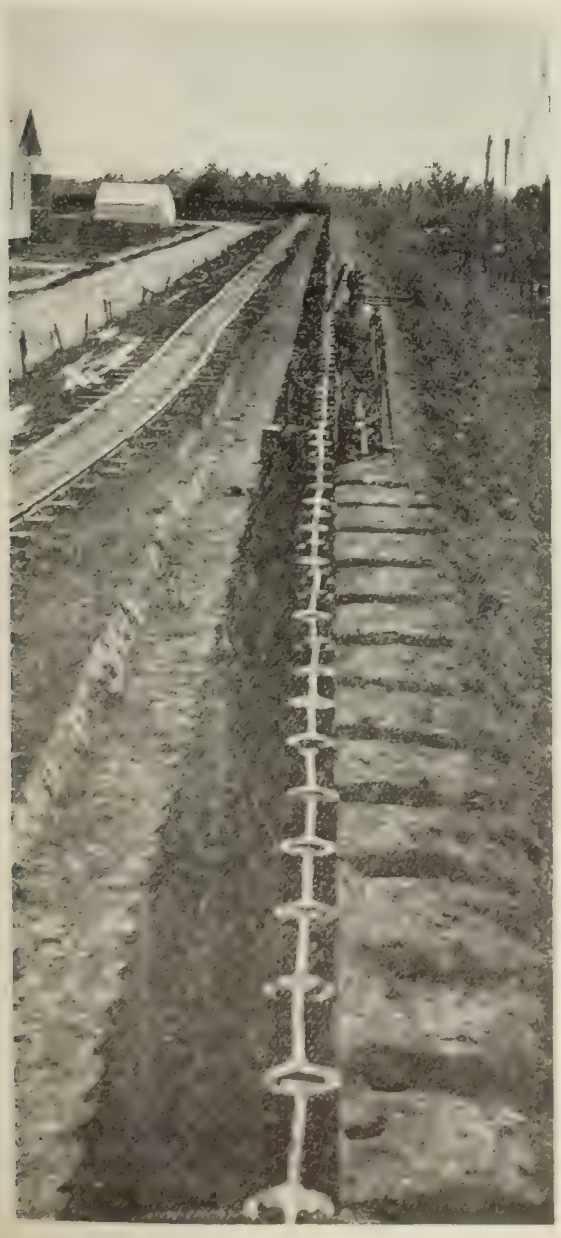


The Steel Reinforcement.



Concrete Forms in Position.

capped with concrete made in blocks 10 ft. long. Reinforcement was of plain round steel bars, showing an ultimate strength of 60,000 lb. per square inch and an elastic limit of not less than one-half the ultimate strength. Vertical and horizontal reinforcing rods were securely fastened with clamps. The cement used was



The Piling Core.



Detail of Reinforcement.

furnished by the Universal Portland Cement Company, and the concrete was composed of 1 part cement, 3 parts sand and 5 parts of gravel or broken stone. The concrete forms were so constructed as to give a perfectly smooth surface, and no plaster or outside covering was allowed to be applied to the concrete surface after removal of forms.

The contract for the entire sea wall was awarded by Col. E. H. Ruffner, Corps of Engineers, to Richard M. Murphy of New Orleans, and the work was executed under the direct supervision of Richard Quinn, assistant engineer, and after his transfer to Cavite, under the supervision of John L. Dickey, assistant engineer. The steel piling was furnished by the Carnegie Steel Company, Pittsburgh, Pa., and the work, as a whole, was finally accepted by the Government on August 1. The photographs herewith reproduced show various stages in the construction of the wall, and are good evidence as to the simplicity of the construction, the perfection with which the work was executed and the satisfactory character of the installation. The Carnegie Steel Company manufactures and sells not only the United States steel sheet piling, but also the Friestedt interlocking channel bar piling in a range of weights adapted to all conditions of service.

## Tariff Revision Plans.

WASHINGTON, D. C., September 22, 1908.—The Senate Finance Committee has decided that no consideration will be given at this time to the revision of the rate schedules of the Dingley Tariff act, and it is authoritatively announced that the subcommittee on tariff rates, of which Senator Hopkins of Illinois is chairman, will hold no executive sessions, and will grant no hearings until after the elections, and that in all probability this subcommittee will limit its work to the gathering of data, and will not attempt to draft tariff schedules until the bill to be framed by the Ways and Means Committee has been completed. Senator Hopkins evidently takes the position that, inasmuch as the new tariff bill for the revision of the Dingley act is required by the Constitution to originate in the House of Representatives, it would not be profitable for the Senate committee to make a bill of its own, as such a course would render exceedingly difficult the harmonizing of the House and Senate bills.

### Framing of Tariff Bill.

The procedure in the framing of all recently enacted tariff laws has been for the House to pass a bill and send it to the Senate, by which it has been referred to the Finance Committee. That committee has usually adopted the House classification and a large part of the rates, and has reported to the Senate the desired modifications in the form of amendments. It is understood that this procedure will be followed in connection with the forthcoming bill, although from present indications the Senate will make an unusually large number of amendments to the House measure. An important reason why the Finance Committee is disposed to defer the actual framing of a bill until the Ways and Means Committee has completed its work is the fact that the adoption of a maximum and minimum tariff scheme, which has practically been decided upon, will require the complete recasting of the present law, thus rendering it desirable that the new classifications as agreed upon by the House committee should be carefully examined before the Senate undertakes to fix new rates. Another consideration that will deter Senator Hopkins' subcommittee from holding early sessions will be the desire to avoid public hearings, for which a strong demand is anticipated as soon as the subject of rates is taken up.

The tentative announcement is made here that the Ways and Means Committee will meet in Washington on or about November 9, and after a few executive sessions will begin a series of hearings, at which domestic manufacturers and importers in all lines will be afforded opportunities to present oral and written statements in behalf of desired changes. The information embodied in the recommendations that have been presented to the Senate Finance Committee by the Treasury Department and the Board of General Appraisers, a summary of which has heretofore appeared in *The Iron Age*, will also be transmitted to the Ways and Means Committee, and this will be supplemented by a large amount of data now being gathered by special agents of the Bureau of Manufactures and other confidential representatives of the House committee. As heretofore intimated in this correspondence, domestic manufacturers who propose to resist the general movement for tariff reduction will find it to their interest to inform themselves thoroughly regarding conditions in their industries abroad with a view to meeting arguments based upon the data gathered by the committee's agents.

### Pressure For Higher Duties.

It is already apparent that much pressure will be brought to bear upon Congress to raise some rates of duty, and efforts are already being made by certain domestic producers to create sentiment in favor of higher duties, and especially for the transfer of products from the free to the dutiable list. One of the most active interests in this connection is that engaged in the mining of zinc ore, which is already bringing pressure to bear upon Senators and Congressmen. This work is understood to be in the hands of the so-called Zinc Ore Tariff Club, an organization of zinc miners in Missouri, Kansas, Oklahoma and Arkansas, who are demanding that the new tariff law shall contain a specific provision imposing a duty on Mexican zinc ores, which under recent decisions of the Board of General Appraisers and the lower courts are held to be free of duty. It is an interesting fact in this connection that the Federal Government has aided the domestic producers of zinc to the extent of carrying the pending case to the United States Supreme Court, and it is believed that the Treasury officials will co-operate further by recommending the adoption of a reasonable tariff rate on all forms of zinc ore.

The Ways and Means Committee is in receipt of a memorandum prepared by Col. Albert Clarke, secretary of the Home Market Club, Boston, giving some details of a canvass recently made by the club of 1000 typical manufacturers, who were asked to state what tariff changes their experience suggests. A few of these manufacturers, Colonel Clarke states, have recommended reductions "all along the line, giving no specific reasons and not confining themselves to their own business." Many, however, particularize, and "in most cases contend that the present duties should be increased or the classification or basis of computation changed," so that domestic products should receive the protection presumably granted by the Dingley act, but curtailed by reason of court decisions based on technicalities. "This information," says Colonel Clarke, "will doubtless be a great surprise to most of those who have called for reduction, and no honest protectionist can ignore or lightly consider it because it is the result of experience." In support of this statement figures are submitted showing the imports of the past seven years and recording heavy increases in many lines of manufacture.

It is a foregone conclusion that an exceedingly interesting feature of the coming hearings before the Ways and Means Committee will be the contest between various groups of domestic manufacturers who favor or oppose the general reduction of tariff rates. Rapidly accumulating indications point to a very conservative handling of the pruning knife by the Congressional experts.

W. L. C.

Nearly $9,000,000 has been collected by the State of New York in taxes from corporations for the fiscal year which will end this month. State Comptroller Martin H. Glynn says this is an increase of more than $1,000,000 over the collections reported in any one year in the history of the State, which is remarkable in view of the disturbed financial conditions during the year. It is credited to careful work in the Comptroller's office, which unearthed a large number of corporations that had paid no taxes for periods ranging from 2 to 13 years. The delinquent corporations were all made to settle within the strict letter of the law, and the payment of their back taxes went a long way toward swelling the increase.

## The Latcher Non-Loosening Car Wheel.

As a means of securing car wheels more rigidly to their axles, J. W. Latcher, Edinburg, N. Y., proposes casting the wheel with a fluted bore and forcing it upon a rough turned axle of slightly larger diameter than the free bore of the wheel. The axle is preferably turned with a coarse V-thread, so that the diameter at the top of the thread is about one-sixteenth in. larger and the diameter at the bottom of the thread the same size as the hole

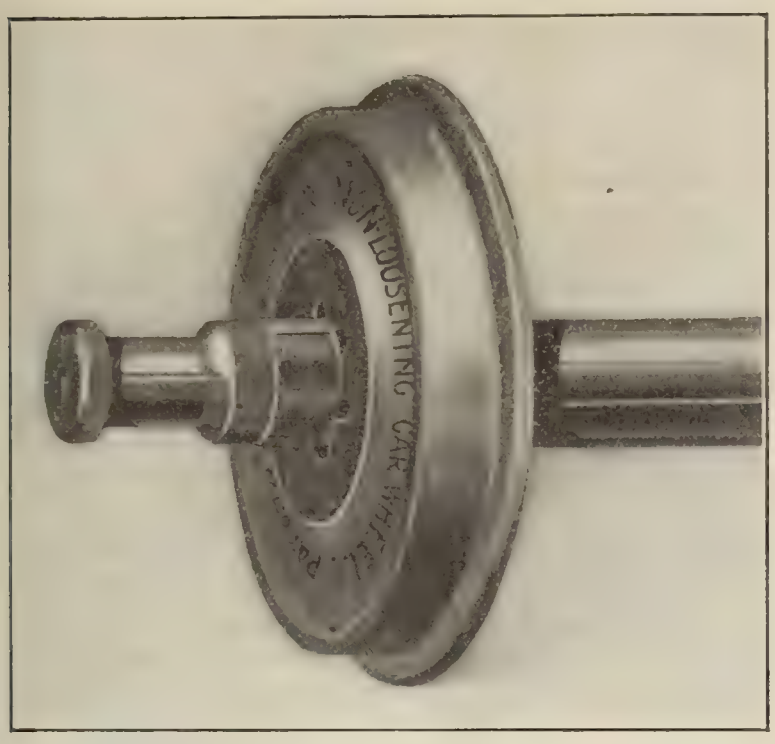



Fig. 1.—The Latcher Wheel, Showing the Fluted Bore and Furrowed Axle.

in the wheel. When the wheel is forced on the axle the lands of the bore between the flutes plow furrows through the threads, shearing them from the axle in parallel grooves, so that the threads remaining in the flutes of the wheel bore become in effect keys, which impose a high resistance to the twisting of the wheel on the axle. It is the inventor's contention that when ordinary car wheels become loose it is invariably due to the torsional strain occasioned by rounding curves or the uneven application of the brakes upon the wheels.

The patented construction of the Latcher wheel and axle is shown in Fig. 1, which shows the plowed surfaces in the threaded part of the axle and the flutes in the bore which have cleared the threads on the corresponding parts of the axle and left them intact. It may be urged that this wheel has but half of the bearing surface on the axle, as compared with the present form of construction, which is true, and that it consequently has but half the resistance to torsion or twisting on the axle. A test proves the latter to be a fallacy, for the decreased surface appears to present as great a pressure on the axle as the ordinary smooth bored wheel, and, in fact, surface enough so that the wheel would be split by exerting too much pressure in the forcing on of the wheel. It might also be supposed that the decreased bearing surface on the axle would in time result in the reaming out of the hole in the wheel by thrusts or blows on the tread and flange from the rails. This would seem to be substantially refuted when it is considered that there is less than ½ sq. in. of rail contact upon the wheel rim, as compared with some 20 sq. in. on the wheel seat, the latter being only about one-third of the bored area for the reception of the axle.

By means of the makeshift testing apparatus illustrated in Fig. 2 the inventor proved that the new manner of securing the wheels does offer greater resistance to twisting than the ordinary one. The disks on the axle in the illustration represent car wheels. The one at the right has a plain round wheel bore, 2 15-16 in. in diameter, and the axle is smooth and about 4-1000 in. larger in diameter than the hole in the wheel. The wheel on the left side is made with a fluted hole and is bored 2 14-16 in. in diameter, while the axle portion which enters the wheel is turned with a V-thread 15 to the inch and about 1-16 in. larger in diameter on the periphery of the thread than the hole in the wheel. Both wheels were forced on the axle with a pressure of 28 tons. To the wheels were secured levers, as shown, which were fixed at their outer ends, and beneath the axle was placed a jack screw, so that forcing the axle up had the effect of twisting the wheels on the axle, or tending to. In this test the wheel with a plain round hole turned on the axle when a force of not exceeding 1800 lb. had been applied by means of a jack screw. This corresponded to a

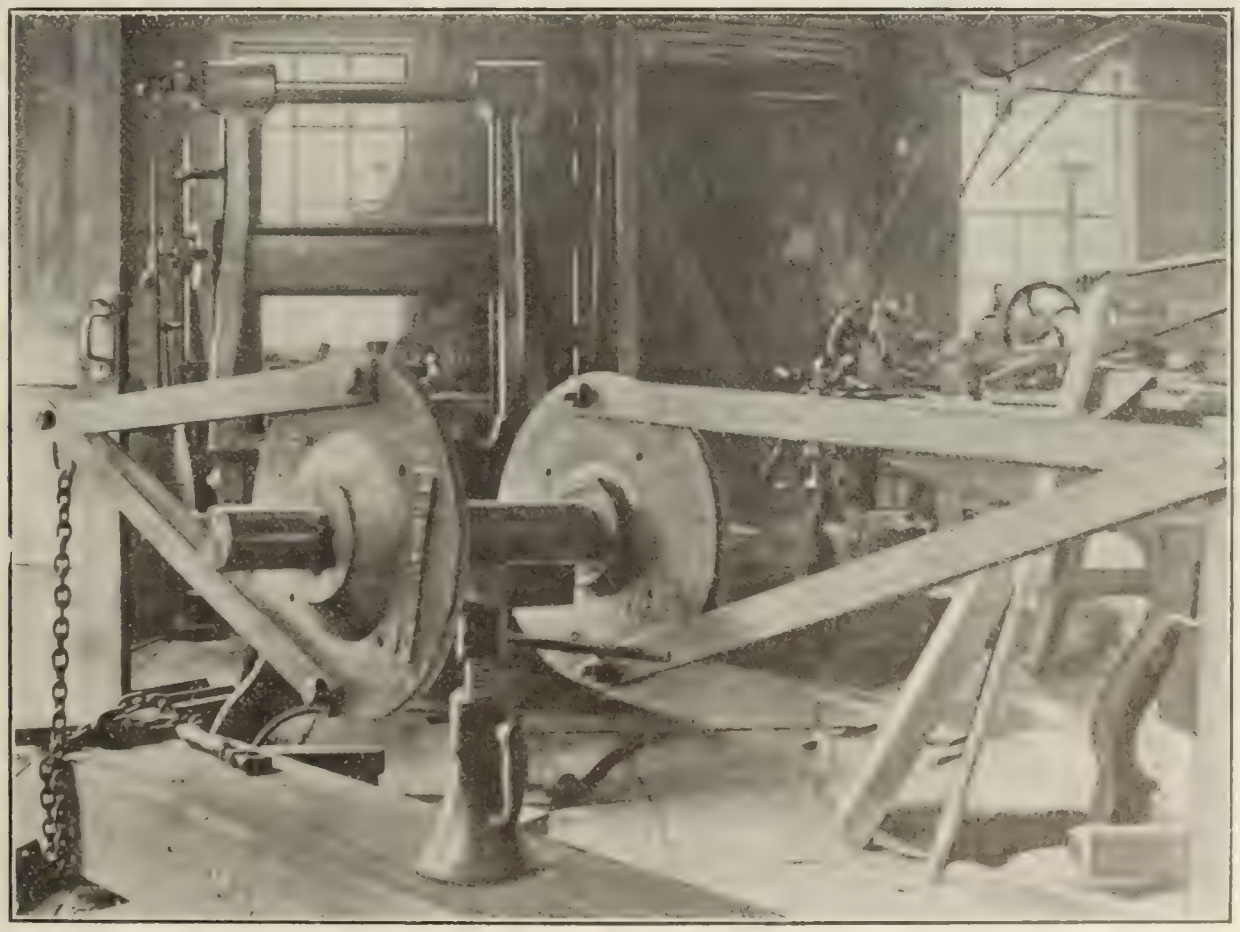


Fig. 2.—Apparatus for a Comparative Test of the Ordinary and the Latcher Methods of Securing Car Wheels on an Axle.

pressure of about 900 lb. on the end of each lever. The fluted wheel remained fixed to the axle.

Another test was made on a pair of car wheels and an axle made to scale one-sixth of standard size and with fluted holes and threaded axle. The wheels were fitted with clamp levers and power was applied to the

lever ends while the axle was held fixed. The axle was twisted through 180 degrees, but the wheels did not lose their grip on the axle.

The inventor claims that wheels can be made in this design with no more cost in the molding and casting operations than ordinary car wheels, and that the wheels will be much more safe and reliable. When the wheel is cast the flutes are cast in it, and the only machine work is the boring of the axle hole, as in the ordinary form of construction. The fluted hole may be cast with compressed sand cores made in fluted or corrugated form and set centrally to the tread or periphery chill of the flask, but cores without exterior protection used in this form would be likely to be broken or to move from their true positions. It is therefore proposed as a better practice to incase the core material in a corrugated or fluted band or chaplet of thin metal made to confine the core and prevent it from being dislodged or broken during the pouring. The use of this band or chaplet results in a clean opening, free from sand, so that in the boring of the wheel hub to the proper diameter for the axle the boring tool will not be so readily dulled as it would be if the ordinary method of coring were employed.

## The Rearwin Emery Wheel Dresser.

A new emery wheel dresser invented by W. D. Rearwin, Grand Rapids, Mich., and marketed by the H. A. Stocker Machinery Company, Chicago, sole agents, is shown in the accompanying illustrations. The feature

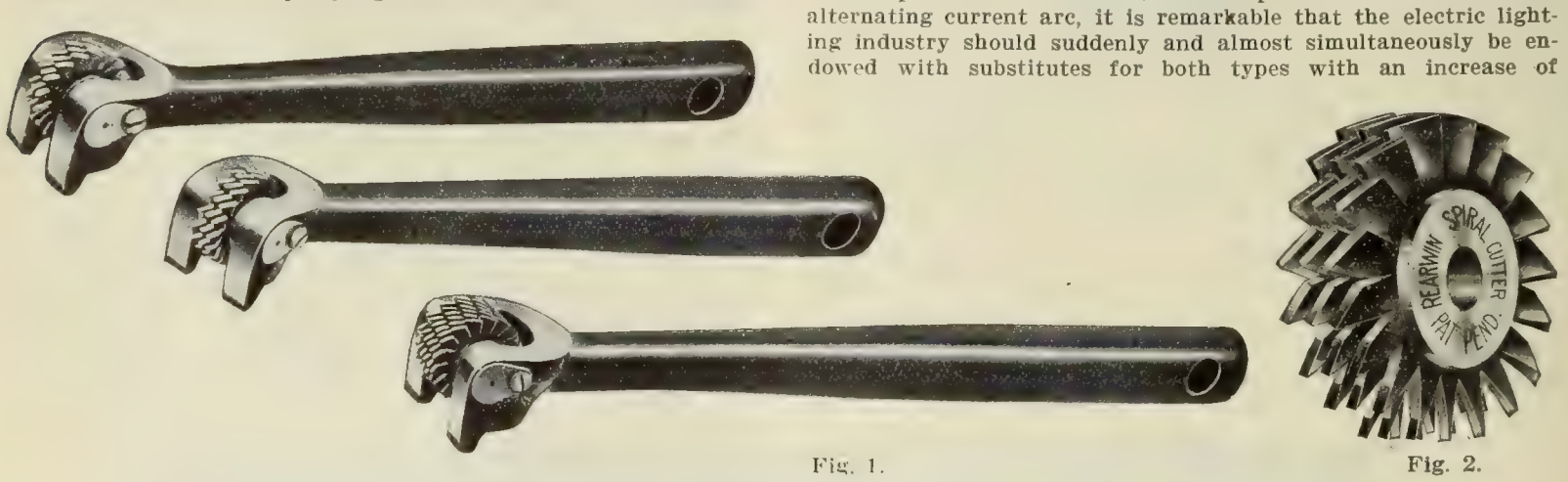



Fig. 1. Fig. 2.

The Rearwin Emery Wheel Dresser Sold by the H. A. Stocker Machinery Company, Chicago, Ill.

of particular interest is the design of the cutter wheels, the cutting points of which are arranged in spiral form in such a manner that they lap each other and track the cut. The object of this construction is to procure a shearing cut on the face of the wheel that will leave a clean, sharp, straight surface. The teeth, which are broader at the cutting point than at the hub, are described as self-sharpening, and it is stated that they do not lose the sharp cutting edge at the first dressing of the wheel, but keep their shape and edge until the cutter is worn out.

The cutter, which is shown in Fig. 2, is made from spring steel tempered and oil drawn, and is furnished in two sizes, No. 1 and No. 2; the former may be used in the ordinary Huntington handle, while the latter can be used only in the Rearwin hollow handle, shown in Fig. 1. The cutters are 1⅜ in. in diameter, No. 2 being double the thickness of No. 1, and used for dressing wide faced wheels.

The Rearwin hollow handles are made in the three styles, shown in Fig. 1. The upper one, style No. 1, uses No. 1 cutters, and is 12 in. long; style No. 2 uses the No. 1 cutter also, and is the same as No. 1 in all respects except that it has an offset head. Style No. 3 is 14 in. long and takes the No. 2 cutter, which is of double thickness. These handles being hollow are light and strong and are of neat design.

The total United States immigration for the month of August, 1908, was 27,782, as compared with 93,825 for the same month of last year, showing a decrease of 71,043.

## A Double Revolution in Electric Lighting.

That, the electric lighting companies of the country are responding quickly to the revolutionary situation resulting from the coming in of the tungsten lamp is brought out by the *Electrical World's* inquiries. The change was expected to come slowly, owing to the limited output of the lamps, but it is now estimated that 50,000 a day are being turned out, in addition to which are the importations, and as the new lamp has a life twice that of the carbon lamp, it is believed the urgent demand for the tungsten lamp will soon be met. The supplanting of the 16 candle power lamp by the 40 candle power lamp is an important feature of the recent evolution of electric lighting following the general use of the Welsbach mantle in gas lighting. The *Electrical World* says:

The return by gas users to the open jet basis of illumination would be just as probable as would, we believe, be the return from the 40 candle power to the 16 candle power candle basis by electric light users who have had some months' experience with the former. Still another consideration should be kept in mind in planning means for the introduction of the tungsten lamp, which is that the present cost of the lamp should not be given too great weight in formulating a policy. As in Europe, the price of the tungsten lamp was halved within a year and almost monthly notices of further reductions in price are being made, there is no reason to think that the present order of prices will be maintained in this country.

After some 20 years of an incandescent filament lamp that underwent little improvement in efficiency during that period, and with arc lamps that retrograded from the 1 watt per candle of the open arc to the almost 3 watts per candle of the inclosed alternating current arc, it is remarkable that the electric lighting industry should suddenly and almost simultaneously be endowed with substitutes for both types with an increase of inefficiency in each case far beyond the fondest expectations of the most sanguine believer in the possible improvement of electric light sources. The tungsten lamp must divide some of the honors of present-day lighting advance with the flaming arc lamp, for with its economy of 0.5 watt per candle the new arc promises to play the same part to the plain carbon arcs that the new incandescent does to the carbon incandescent filament. The new arc is, however, at present handicapped through attention being engrossed on the new filament lamp, and by the relatively high cost of the imported composite electrodes used in the arc lamp, though notwithstanding the latter consideration the lamp is more economical for certain uses than the old arc with its cheap electrodes.

**The Carrier Air Conditioning Company.**—The Carrier Air Conditioning Company, recently organized, has purchased the Buffalo Forge Company's rights to sell the air washers, humidifiers and humidity controlling apparatus manufactured under the Carrier patents. The general offices of the new company are at 39 Cortlandt street, New York. J. I. Lyle, for nine years manager of the New York branch of the Buffalo Forge Company, is now general manager of the Carrier Company. W. H. Carrier, the inventor of the systems of humidifying and humidity control bearing his name, is consulting engineer for the Carrier Air Conditioning Company.

The Ward-Dickey Steel Company's plant at Indiana Harbor, Ind., which has been idle most of the past month, will start up again this week, running full force, under improved conditions. During the shutdown orders have been accumulating, and the company now has a fair booking of specifications for its patent planished steel sheets, made from special analysis basic open hearth steel and finished under powerful planishing hammers.

## The Virginia Iron, Coal & Coke Company.

The sixth annual report of the Virginia Iron, Coal & Coke Company, covering operations for the fiscal year ending June 30, 1908, presents the following income account:

| | Gross earnings. | Operat. expenses. | Profit. |
|---|---|---|---|
| Furnaces | $2,275,715.80 | $1,979,435.79 | $296,280.01 |
| Foundries | 76,535.02 | 73,893.06 | 2,641.96 |
| Coal mines | 837,296.64 | 670,549.98 | 166,746.66 |
| Coke ovens | 420,030.40 | 414,667.93 | 5,362.47 |
| Sawmills | 869.10 | 869.10 | ..... |
| Crescent Works | 117,481.37 | 117,294.60 | 186.77 |
| Grist mills | 200,693.15 | 192,343.63 | 8,349.52 |
| Totals | $3,928,621.48 | $3,449,054.09 | $479,567.39 |
| Miscellaneous earnings | | | 40,748.85 |
| Interest and discount | | | 47,630.46 |
| Farms and farm rentals | | | 8,760.94 |
| Total income | | | $576,707.64 |
| Less taxes, insurance, bond interest, development, &c. | | | 458,762.62 |
| Net profit for the year | | | $117,945.02 |

Following is the general balance sheet for the year ended June 30, 1908:

*Debits.*

| | | |
|---|---|---|
| Real estate and plant | | $13,306,049.63 |
| Equipment | | 270,023.31 |
| Securities owned | | 196,863.20 |
| Sales ledger balances | | 120,600.41 |
| Sundry bills, ledger balances | | 24,844.85 |
| Open accounts | | 39,478.75 |
| Bills receivable | | 834,293.41 |
| Advances to cashiers and superintendents | | 5,375.00 |
| Cash balances at commissaries | | 1,716.08 |
| Cash on hand | | 51,645.14 |
| Sinking fund | | 268.89 |
| Stock of general material: | | |
| Pig iron | | 815,648.00 |
| Other products | | 93,459.94 |
| Raw material | | 372,677.43 |
| Supplies | | 254,045.10 |
| Merchandise | | 141,688.49 |
| Farm products | | 23,802.45 |
| Total | | $16,552,480.08 |

*Credits.*

| | | |
|---|---|---|
| Capital stock | | $10,000,000.00 |
| In the hands of the public | $9,073,680 | |
| In the treasury of the company | 926,320 | |
| First mortgage bonds | | 4,887,000.00 |
| Prior liens outstanding: Carter C. & I. Company bonds | | 490,000.00 |
| Unpaid vouchers | | 129,161.89 |
| Unpaid pay rolls | | 51,775.15 |
| Accounts payable | | 25,099.90 |
| Bills payable | | 493,747.00 |
| Taxes accrued | | 15,043.52 |
| Fund for depreciation of coal lands | | 48,217.94 |
| Fund for depreciation of ore lands | | 17,491.54 |
| Fund for depreciation improvements to owned properties | | 145,345.71 |
| Fund for depreciation improvements to leased properties | | 47,079.31 |
| Fund for furnace repairs | | 12,052.11 |
| Bond interest accrued—Carter bonds | | 6,125.01 |
| Bond interest accrued—V. I. C. & C. Company bonds | | 81,450.00 |
| Profit and loss | | 102,891.00 |
| Total | | $16,552,480.08 |

From President Henry K. McHarg's accompanying statement we take the following:

On December 15, 1907, we shut down practically all our ore mines and continued in operation only two furnaces, one at Bristol and the other at Roanoke, running these two furnaces through the first six months of this year. As labor was very plenty, we resumed operations in our ore mines at a reduced wage scale on February 1, 1908, and have continued mining ore from that date. As the two furnaces have not used up the ore as fast as we mined it, we have accumulated over 100,000 tons of iron ore at our various furnaces as of July 1, 1908.

The hard times of last fall and winter affected our coal business just as disastrously as our iron, and we were obliged to shut down entirely two of our coal operations and reduce our production at the others very much, and also reduce the amount of coke produced. Your company made during the year ended June 30, 1908, a total of 134,271 tons of iron. The coal mined during the year was 968,141 tons, and the coke produced was 261,759 tons.

In line with the policy pursued by your board the last year or two, we have acquired by purchase about 1000 acres of iron ore lands near Cartersville, Ga., at a cost of about $108,000, paying for the same in cash.

We have continued to spend liberal amounts in improving the furnaces, coal mines and ore properties during the past year.

Since the close of the fiscal year the Southern Railway Company has paid the balance due us, with interest, for the purchase of the Virginia & Southwestern stock, so that all our demand bills payable, as shown by the balance sheet, have been paid, and your company has a cash balance at this writing in bank of about $250,000.

Very low prices have been made for Virginia and Alabama irons within the last four months, and your management has not continued making sales, believing that sooner or later a demand must take place for iron which would enable us to secure better prices. With this end in view at the writing of this report your company has on hand at its various furnaces approximately 70,000 tons of iron. This is all paid for and no money has been borrowed on it.

It seems to me there is one thing which is most gratifying, from the position of a holder of its securities, in regard to the affairs of the company. It is five and a half years since the company was reorganized, and on January 1, 1903, the quick assets, eliminating real estate, plant, securities owned and equipment, amounted to $1,850,000. The outstanding accounts, including bonds, bond interest, accrued profits, unpaid payrolls, vouchers and accounts payable for depreciation of the ore and coal lands and improvements of furnaces, repairs, &c., amounted to $9,594,000, which after deducting quick assets, $1,850,000, leaves $7,744,000 ahead of the capital stock of the company.

Adopting the same course and comparing it with the general balance sheet of June 30, 1908, the quick assets of the company amounted to $2,775,000, and the indebtedness made up in the same manner as in the balance sheet of January 1, 1903, amounted to $6,522,000; deducting the $2,775,000, it leaves $3,777,000 ahead of the capital stock of the company.

Subtracting this amount from $7,744,000, as it stood on January 1, 1903, it leaves a decrease of $3,967,000 in the liabilities ahead of the stock for the five and a half years of the company's existence, or approximately $721,000 a year, or a sum in excess of 8 per cent. on the stock yearly since the organization of the company. This, of course, takes into account no part of the money which has been spent for the acquisition of new properties or the improvements of old ones, which amounts to an approximate sum of $1,500,000. Of course, we have sold some properties, but at the same time we have purchased other new ones. Our coal lands have, without question, enhanced very much in value during the time mentioned, and my personal opinion is, that, taken as a whole, and estimating our property from a most conservative standpoint, what we have now is worth from 25 to 33 1-3 per cent. more than when the company was reorganized, on January 1, 1903.

Reference is made by the *Engineering Record* to three oil tanks which have been used since 1900 by a Portland cement manufacturing company to store cylinder, crank case and block oil, respectively. The three chambers are placed side by side, forming a tank 13 ft. 4 in. wide and 16 ft. 9 in. long, and approximately 12 ft. high. This is sunk in the ground and has a light frame house over it. Each tank holds 2000 gal. The concrete was made 1:2:4, using stone crushed to pass through a 1-in. ring. The inside of the tanks was plastered with a rich Portland cement mortar, well troweled in order to give a dense finish. No leakage has ever been detected, although it is often asserted that oil will destroy concrete.

What is said to have been one of the largest purchases of old arms negotiated by an individual concern has been effected by the Cal Hirsch & Sons Iron & Rail Company, St. Louis, Mo. It recently bought from the United States Government 250,000 Springfield rifles and carbines. It is said that the original approximate cost to the Government of these arms was about $4,000,000.

# THE IRON AGE

Established in 1855.

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## Railroad and Iron Trade Policies Concerning New Capacity.

The extent to which new construction work has been carried on by iron and steel companies since the panic of last October is in contrast with the embargo put on railroad expenditure. Some of the large interests in the iron trade have given practical proof of their confidence that after this famine year will come a period of increasing consumption, eventuating in a new record of production of all forms of iron and steel. Steel companies can be named, it is true, which have no extensions on hand at present, and in a few cases new construction work has been curtailed. But there are evidences that the experience of 1904 has been of value. Instances can be recalled in which steel companies which in that year allowed the policy of the railroads to govern them found out in 1905 that they had been shortsighted. In one case a strong steel company, with the money in bank for what was considered much needed new capacity when it was undertaken, stopped all work short when the slump came in the latter part of 1903. The new capacity could have been earning good profits had it been ready early in 1905, instead of the work dragging on through all that year and well into 1906. Machinery ordered after it became plain late in 1904 that a change for the better had come had to take its turn in the procession of orders that poured in about the same time, for then everybody saw that greater things were ahead.

As has been the case in every year since the United States Steel Corporation was formed, but more markedly now than in 1904, the new work of that interest has been one of the props of the iron trade since the panic of 1907. Indeed, the expenditures of the corporation this year have been princely in comparison with those of the railroads. Last year the outlays by subsidiary companies for additional property and construction were $66,981,000, including $19,343,000 for the Gary plant in Indiana. The annual report for 1907, prepared in the latter part of March, 1908, when the depression tinged every calculation of the iron trade, gave no intimation of a halt in the improvement programme. With scarcely an exception the various improvements and new enterprises of the Steel Corporation have been pushed ahead this year. At the beginning of the year the unexpended balances of appropriations for Gary were $35,517,000, and it was estimated that $18,000,000 of this amount could be spent there in 1908—that is, that the work which it was possible to put through in 12 months would require that amount of money. Similarly the amount unexpended on January 1, 1908, on extensions for other subsidiaries of the corporation was $40,000,000, and it was estimated that plans calling for 85 per cent. of this could be put through this year. Thus the new capacity which it was estimated in March it would be possible to provide in 1908 represents a total outlay of $52,000,000. It may be said that up to this time the rate of expenditure has been substantially as anticipated, including, of course, money for new mineral properties and new mining operations in coal and iron, as well as for vessels and railroads. Wherever work planned for 1908 has not been carried out, it is estimated that construction not contemplated at the opening of the year has fully made up for it.

Though publicity is not given to the new construction of the entire iron industry, as in the case of the Steel Corporation, it is known that important blast furnace and steel works construction work has been carried on by a variety of interests this year. Some of the independent steel companies rounded out extensive programmes of new work in 1906 and 1907, and naturally have found no occasion to enter upon new undertakings since. An important Mahoning Valley company has pushed blast furnace construction throughout the lean months of 1908. In the Pittsburgh District one of the largest independent steel companies curtailed operations at a new group of blast furnaces, but the work is even now making good headway, and important steel works extensions at the present site are being carried forward. Another company has completed an open hearth plant in the Pittsburgh District. Moreover, merchant blast furnace construction has gone on in the Chicago, Buffalo and Cleveland districts and in southern Ohio.

If it be said that the railroads had no need of additional equipment in the past year, when so much of what they had was out of use, it may also be said that the iron trade has not been calling for new blast furnaces and steel works. The steel companies are building for the future, not for to-day, and have faith that their look ahead will be justified by the outcome.

It must be admitted, however, that railroad finances are on a different basis from those of the Steel Corporation. The latter spent last year $66,981,000 on new construction, besides $20,324,000 for extraordinary replacements by its subsidiary companies, and paid for practically all of it out of earnings previously set aside, only $2,348,000 being financed by the issue of securities or purchase obligations. The railroad habit, on the other hand, is to build and equip largely on the earnings of the future. Vice-President W. R. Taylor of the Reading Railroad Company contends that the extraordinary earnings of the railroads in the five years ending with 1907 have been due largely to the traffic created by their own enormous expenditures, for which to a considerable extent they have mortgaged the future. Such a view implies that it may be some time before the steel trade will hear from the railroads in the way in which it began to regard as normal last year and the year before. Admittedly an industry cannot lift itself by its own bootstraps, but it is a mistake to assume that the railroads can long have any option in the matter of patronizing the iron industry, and if such patronage adds materially to the prosperity of the railroad companies, so much the better prospect is afforded the buyers of their securities.

## The Steel Corporation Not a Trust.

Is the United States Steel Corporation a trust, when the entire home consumption of steel products in the year 1908 might have been supplied by independent companies? And yet that is a fact. In 1907, a year of practically full employment, there were produced in all 19,-

52.5 per cent. was made by independent companies. The excess of exports over imports reduces the apparent consumption by 639,623 tons to roughly 19,200,000 tons. Last year the independent companies produced 10,423,786 tons, and as their share in the exports is comparatively light, they would be in a position to satisfy practically all requirements of 1908, estimated at roughly 50 per cent. of those of 1907 if the plants of the United States Steel Corporation did not turn a wheel. Control of 50 per cent. of the production certainly does not constitute a monopoly, and even though an organization is a unit in handling one-half of the total output, as against a scattered ownership of the other half, its powers of dictatorship must be too much tempered with diplomacy to justify the claim to or merit the odium of being a trust. It is neither good enough nor bad enough.

## The Co-operation of Manufacturer and Dealer.

A vast difference is observed in the degree of attention that builders of machinery give to keeping agents and salesmen in touch with the more intimate development of their lines. It is a frequent topic of complaint by dealers that most of the manufacturers whom they represent confine their advices regarding new products and improvements to such details as are contained in the ordinary catalogue. Contrast is made between this procedure and the methods of those few manufacturers whose careful study of this branch of the selling end of their business has demonstrated that catalogue generalities should be supplemented with carefully prepared letters setting forth the more comprehensive details of specialized topics. Each adaptation of a machine is the subject of a communication to dealers and salesmen, telling the story as completely as possible and illustrating the facts by photographs, showing the machine in operation under the new conditions and the parts machined. An improvement on a tool is handled in the same manner. A new machine provides material for a series of communications as new points arise from time to time. In the case of the use of a machine for special work, the facts set forth include such items as the form and kind of material worked, how it is set up, the cutting tool employed, the speed and feed, and, perhaps, the amount of metal removed in cubic inches. A turret lathe may be applied to a new class of work, or it may be that a grinding machine, milling machine or drill is found adapted to something special. In any case the dealers are given new ammunition for their campaign for business.

Manufacturers of all classes of machine tools are constantly learning of new fields of usefulness for their products, and are of course frequently making improvements in design. Naturally, the salesman, especially if he is away from personal contact with the home plant, would like to be informed fully as to these things and how they happened to be developed, for sooner or later he may find a customer to whom the information may prove the suggestion for attaining decreased costs or improved product. The result would then be machinery orders for himself which would not have been booked had not the manufacturer kept him in close touch with new knowledge of the line.

The home sales department of an industry should be the clearing house of information bearing upon the product. Factory knowledge of improvements and changes and special uses should be combined with the news obtained from agents and salesmen, who should be encouraged to co-operate in the system. The sum total of the information should then be worked into confidential bulletins in the form of letters, made as comprehensive as possible, containing all details, and whenever practicable illustrated by photographs and drawings. Such a bulletin would undoubtedly prove of value to show to a customer in demonstrating the fitness of a machine for his work. The system wherever tried has been found strongly stimulating to business. "Talking points" are constantly renewed. The salesman is placed at an important advantage over those of his competitors whose factories attempt no more than catalogue details in sending out advices of the developments of their lines. Occasionally it is of value to inform the agent, and through him his salesmen, of points in which a machine is at a disadvantage. The competitor is likely to find out these weaknesses and will use the knowledge in his business, and the salesman should be in a position to meet the criticism. There are few machine tools that are wholly without fault, especially where they lap over into the field of some other tool, departing to an extent from the particular functions for which their class was designed.

The machinery dealer is more apt to keep his manufacturers in touch with live conditions than is the factory to reciprocate in information of the right sort. Not only do orders booked by the agent and inquiries received from him contain information of vital interest to the alert machine builder, but in the selling field there is a wide opportunity to pick up valuable tips as to probable wants of customers; of opportunities to apply existing machines to new purposes in meeting special cases or even a new condition in some complete branch of manufacturing, which would extend the market in an important way. The salesman is often the first to find out what competing houses are doing in the way of improvements. All this part of the agent's routine is important work, and has its influence on earnings, if he does not neglect to inform the interested manufacturers. It would be difficult to dispute the statement that a practice of mutual exchange of news between dealers and machine builders should be a genuine money maker, bringing results so direct as to be easily recognizable as having their inception in the system.

Probably the system would be considered by some manufacturers as too elaborate in its details, entailing trouble and expense. A better way to look at it is whether the outlay of time and money would prove a profitable investment. The dealers who have had the opportunity to try it on individual lines are so impressed with its value that they are urging the other houses that they represent to adopt it. The manufacturers who are using it have the same high regard for the system. They feel that it has paid them well in sales that they trace directly to it, and which might not otherwise have been made, as well as in its less direct influence on other business. The dealer never gets stale for lack of new vitality of thought in working his trade. Most important of all, he is given good practical ideas which he can hand along to customers who would profit by them, and thus pave the way to orders. As an instance of this, a dealer is now interesting several manufacturers of his territory in the adaptation of a semiautomatic principle to a standard machine tool. He has the entire data, with photographs, of an installation which is successfully doing work similar to that required by these customers, and hopes to be able to interest them to the point of purchases of high priced machinery. The opportunity for such salesmanship methods should appeal to those manufacturers who have not yet taken up the question of information to agents, for it should suggest the possibilities of a better system than they are now employing.

## A Blast Furnace "Revolution."

The "revolutionary" processes in iron and steel manufacture move in almost continuous procession through the pages of the daily press. It is common to read that electricity is about to do away with the cumbersome blast furnace as a means of extracting iron from its ores, and now and again a direct process for the manufacture of steel from ore is brought forward. A lately exploited process, of which something has appeared in press dispatches at intervals, is that of John T. Jones of Iron Mountain, Mich. It is now announced that "a new furnace that resembles the old style blast furnace [some are even now being built after that same pattern] about as much as a sewer pipe resembles a coffee grinder" is to be blown in shortly at Iron Mountain, representing the fruit of Mr. Jones' experiments in the past five years. These interesting details are given in addition:

The new Jones Furnace at Iron Mountain is mainly an immense tube 9 ft. in diameter and 120 ft. long, elevated at one end and rotated by spur gearing. It has corrugations and is lined with firebrick, giving a gradual feed from the upper end to the lower. The raw ore, crushed, is fed in at the upper end, where there is a temperature of 400 degrees F., and in a few hours reaches the lower end, where the heat is 1400 degrees F., just short of the melting temperature of iron. The fuel is hydrocarbon in gaseous form—presumably producer gas. The phosphorus contents are volatilized to the extent of 90 to 95 per cent of the original contents. The product is a spongy pig iron of superior Bessemer grade, made from low-grade silicious hematite, assaying about 37 per cent. iron ore [*sic*], as compared with iron contents of 54 to 68 per cent. in the standard Lake Superior Bessemer hematite ores. Mr. Jones has millions of tons of this low-grade silicious iron ore, heretofore used mainly as a "sweetener" for fine-grained Mesaba ores unduly high in phosphorus!

The cost of the new Jones furnace was $54,000, and its rated capacity is 500 tons of pig iron daily. A furnace of equal capacity would cost about $1,000,000 if built along the regular lines. Furthermore, the Jones furnace can be loaded on three flat cars by cutting the rivets, removed to any desired location and set up for work in a few days.

The Jones process of iron smelting, if successful, as it promises to be, will work the greatest revolution in the iron and steel trade of the world that has been made since the steel making process invented some 50 years ago by Sir Henry Bessemer. The standing of Mr. Jones is such that the blowing in of the new furnace is awaited with the keenest interest by all concerned in the iron and steel trade.

Without alluding further to the various lapses from technical exactness in the above, it is fair to say that the description is not that of the inventor, who has had many years' experience in iron mining on the Menominee range. The experiments at Iron Mountain recall the fact that some years ago another "Jones direct process," the inventor of which was not the Lake Superior iron miner, was tried at a New Jersey blast furnace—the old Hackettstown stack—but the results have caused no disturbance of the familiar lines of blast furnace practice in the United States.

In view of the declaration of dividend No. 1 on the Great Northern ore certificates on September 16, 1907, and of dividend No. 2 on March 16, 1908, each for $1, there has been some comment on the passing of September 16, this year, without a similar dividend or any call for a trustees' meeting to consider the matter. It is assumed that no distribution will be made this fall, and the smallness of ore shipments this year is given as the probable reason. All the Hill ore leases have minimum tonnage stipulations, however, and royalties on these are payable regardless of the amount of ore mined.

Industrial conditions in the Youngstown District are better this week than last. The entire plant of the Youngstown Sheet & Tube Company, including the Bessemer steel department, is on in full. On Sunday night, September 20, the Bessemer plant of the Republic Iron & Steel Company started, and now nearly all the Republic finishing mills in the district are running. The Youngstown Iron & Steel Roofing Company is also in full operation. The Ohio Works of the Carnegie Steel Company is operating to about 70 per cent. of its capacity.

# CORRESPONDENCE.

### The Distribution of Burden Cost.

*To the Editor:* In your issue of August 20, I was much interested in an editorial in regard to the "Productive Hour System of Burden Costs." Rather as one searching for light than in any critical attitude, I feel prompted to state some examples in contra to those given in your editorial, to raise the query as to what your opinion would be as to the proper application of the burden cost.

I think it will be generally accepted that no hard and fast rule can be laid down. In our business alone we manufacture a wide variety of lines, from tacks to bar iron, embracing among other products bolts and nuts. To apply the burden on a productive hour basis to certain operations, we may take, for instance, the manufacture of a nut. A man can burr as a general rule considerably more than another man can forge. Both of these operations would take the same burden, whereas there is no comparison in supervision, power, repairs, space required, tools, insurance, expense and other items which enter into the burden. Similar cases contrasting different lines could be cited.

In re. example of bench work vs. machine work, in the application of power cost, it seems to me that distribution of power, in the same manner as other burden charges, is open to very many more qualifications and should, properly speaking, be handled as a separate burden, inasmuch as productive hours may be charged up in connection with which no power is used.

In the case of labor at 40 cents an hour, as compared with labor at 15 cents an hour, being placed upon the same basis, does it not appeal to you that the 40-cent labor is likely to be engaged upon very much more important work than the other, and consequently will require more attention in so far as supervision is concerned? It is probable that the higher priced man will manipulate more expensive machinery if he is engaged in such work, and the cost of his tools will be greater. If he is working at piece work rates, his product is likely to be very much greater than that of the man earning a lower rate, consequently greater repairs, more nonproductive labor required to handle the output, more power consumed, if power is included in the burden.

The productive hour basis reduces to a common level (if we may bring in an extreme example) a man working on gold to a man working on iron; one working on silk to one working on cotton. These are extremes in which, for instance, the value of spoiled work and many other items entering into the burden are reduced to a common factor, where it hardly seems right that they should be. However, the question is one which may perhaps be taken up by others better qualified to express an opinion on the subject, and I shall be interested in hearing further in this connection. With you, I attach a great deal of importance to the subject, believing it the crucial point in the application of any cost system, and the nearer that manufacturers can come to a consensus of opinion as regards the proper handling of burden, as applied to their respective business, the better it will be for all concerned. MANAGER.

SEPTEMBER 18, 1908.

An unusual suit for strike damages was brought recently in Paris by three music hall singers against the Electrical Workers' Union. The plaintiffs asked damages on account of losing their turns when the theaters of Paris were closed by the strike of the electricians. The court decided that the secretary of the union, who was the chief defendant, was guilty of abuse of the right to strike and was responsible for damages resulting from such malicious interference with the life of the city and the rights of those who wished to work. Damages of $1.60 and costs were imposed in each case.

As a part of its plan for its future crosstie supply the Pennsylvania Railroad has set out this year 625,000 young trees, making a total of 2,425,000 trees set out in its campaign of reforestation.

## The Shop High School System at Fitchburg.

Fitchburg, Mass., has adopted a co-operative shop and high school course, based on the plan that has been operative in Cincinnati for several years through the co-operation of the University of Cincinnati and various machine tool manufacturers in that city. The Cincinnati plan, however, begins with graduates from the High School, while the Fitchburg plan applies to the last three years of the High School course, so far as shop work is concerned. The initiative in the matter seems to have been taken by the Fitchburg Iron Workers' Association, an employers' organization in the local metal trades, which at a dinner to city officers and members of the Board of Education laid before them the plans for an industrial school, suggesting their incorporation in the Fitchburg school system. The idea was adopted by the School Board and is now in operation. On its face it has decided advantages over the manual training courses now provided by the high schools of the important cities of the country.

The plan provides for an apprenticeship system whereby boys having passed the first year in High School follow for the next three years a mechanical course, studying one week in the school and the following week working in the shops. A special instructor has been employed, and special text books provided. The boys are taken in pairs by the manufacturing companies, and the one who has studied in school a week goes on Saturday morning at 11 o'clock to the shop and learns on what particular job the other boy has been working, and how it is handled, so that he can come in the following Monday morning and begin work where his mate left off, thus following the shop course without necessitating instruction on the part of the shop foreman. The instructor in charge of this work at Fitchburg has had more applications than could be taken care of the first year, and all the boys worked in the shops for several weeks before the present school term opened. The school course is as follows:

FITCHBURG HIGH SCHOOL.—CO-OPERATIVE INDUSTRIAL COURSE.

*First Year.—All School Work.*

| | Periods per week. |
|---|---|
| English | 4 |
| Shop mathematics | 5 |
| Mechanics | 5 |
| Freehand and mechanical drawing | 5 |
| Current events | 2 |

*Second Year.—School and Shop Work.*

| | |
|---|---|
| English | 4 |
| Shop mathematics | 5 |
| Chemistry | 4 |
| Electricity and heat | 4 |
| Freehand and mechanical drawing | 8 |

*Third Year.—School and Shop Work.*

| | |
|---|---|
| English | 4 |
| Shop mathematics | 4 |
| Commercial geography, business methods and conditions | 4 |
| Advanced chemistry or industrial history | 5 |
| Freehand and mechanical drawing | 8 |

*Fourth Year.—School and Shop Work.*

| | |
|---|---|
| English | 4 |
| Civics and American history | 5 |
| Applied mathematics | 5 |
| Mechanical and freehand drawing | 8 |
| Discussion of Current mechanical appliances | 2 |

Shop work consists of instruction in the operation of lathes, planers, drilling machines, bench and floor work, and such other machine work, according to the ability of the apprentice, as pertains to the particular branch of manufacture carried on in the shop where he is employed.

### Shop Regulations.

A copy of the shop rules and regulations of the system is given below:

RULES AND CONDITIONS

Under which special apprentices taking the four-year co-operative industrial course at the High School of Fitchburg are received for instruction at the works of .....

1. The applicant for apprenticeship under this agreement must have satisfactorily met requirements for entrance to this course at the High School.

2. The apprentice is to work for us continually, well and faithfully, under such rules and regulations as may prevail at the works of the above company, for the term of approximately 4950 hr., commencing with the acceptance of this agreement, in such capacity and on such work as is specified below: Lathe work, planer work, drilling, bench and floor work, and such other machine work, according to the capacity of the apprentice, as pertains to our branch of manufacturing. This arrangement of work to be binding unless changed by agreement of all parties to this contract.

3. The apprentice shall report to his employer for work every alternate week when the High School is in session, and on all working days when the High School is not in session, except during vacation periods provided below, and he shall be paid only for actual time at such work.

4. The apprentice is to have a vacation, without pay, of two weeks each year, during school vacation.

5. The employer reserves the right to suspend regular work wholly or in part at any time it may be deemed necessary, and agrees to provide under ordinary conditions other work at the regular rate of pay for the apprentice during such period.

6. Should the conduct or work of the apprentice not be satisfactory to employer, he may be dismissed at any time without previous notice. The first two months of the apprentice's shop work are considered a trial time.

7. Lost time shall be made up before the expiration of each year, at the rate of wages paid during said year, and no year of service shall commence till after all lost time by the apprentice in the preceding year shall have been fully made up.

8. The apprentice must purchase from time to time such tools as may be required for doing rapid and accurate work.

9. The said term of approximately 4950 hr. (three-year shop term) shall be divided into three periods as stated below, and the compensation shall be as follows, payable on regular pay days to each apprentice: For the first period of approximately 1650 hr., 10 cents per hour; for the second period of approximately 1650 hr., 11 cents per hour; for the third period of approximately 1650 hr., 12½ cents per hour.

10. The above wage scale shall begin the first day of July preceding the apprentice's entrance upon the first year of shop work of the High School Industrial Course.

The satisfactory fulfillment of the conditions of this contract leads to a diploma, to be conferred upon the apprentice by the School Board of Fitchburg upon his graduation, which diploma shall bear the signature of an officer of the company with which he served his apprenticeship.

## The Baltimore Retort & Fire Brick Company.

The business of the Baltimore Retort & Fire Brick Company was started at Hull & Nicholson streets, Baltimore, Md., in 1868, by August Lambla, who molded the first clay gas retort made in America. This business had a gradual but steady growth, and its products are well and favorably known, not only in the South, but also in other sections of the country, notably in the New England States, where Waldo Bros., Boston, Mass., have an agency. The plant has grown to be one of the three largest in the country, making clay retorts, fire brick, fire tile, terra cotta chimney tops and vitrified clay specialties, the equipment permitting the manufacture and economical handling of shapes varying from one-sixth of an ounce to more than a ton in one piece. Exceptional shipping facilities are enjoyed, such facilities as can be had only in a city with the natural advantages of a location like Baltimore's. Located on the river front, with a railroad running into the plant, the company is enabled to obtain materials and ship its product most economically. These receiving facilities are most important, as there are no clays in any one section that are suitable for all purposes, and the best results are obtained by mixing those from different localities in such proportions as only many years' experience can teach to be the most suitable for each.

The fire that destroyed the main building, containing the machinery, manufacturing departments and general offices of this company, on August 17, again demonstrated the energy and enterprise of the business men of Baltimore—proved that the spirit that created a bigger and better Baltimore from the ruins of the disastrous fire of February, 1904, has lost none of its fore. Within 24 hr. offices were installed in a building opposite the ruins of the plant, and customers had received notice that orders for regular shapes would be filled from the stock which was uninjured; also that kilns were in good condition, and arrangements would be made immediately to make and burn special shapes. Customers responded splendidly, incidentally reducing the stock materially. That there was an unusually large stock on hand at that time was due to the company's policy of not laying employees off because sales were below normal, thereby retaining their loyalty by assuring them of a regular income, and in this case showing a tangible profit by en-

abling the company to satisfy its customers so well that not one of them has placed an order elsewhere.

In two weeks plans had been made and ground broken for the erection of a building comprising the most approved methods and equipment. This new building will be built in front of the kilns, being separated from them by a fire wall. The retort department will be a brick building with clear space from ground to roof to give plenty of head room and free circulation of air to facilitate drying. A railroad track will be laid the length of this building, with a cross track at each end for switching purposes. Several other improvements in this department will increase the efficiency materially.

Parallel to this will be a two-story brick building, on the ground floor of which will be the grinding and mixing machinery, brick presses and dryers, so arranged that materials or goods in process of manufacture will always pass in the same direction—namely, toward the kilns. A system of elevators and conveyors will carry the prepared materials to the molding rooms on the second floor, which will be arranged so that each operation will carry the goods toward the kilns. The variety of shapes molded in these rooms is unlimited, including plain and flanged rectangular tile, irregular shaped tile, arches and jambs for fire doors, tube tile and baffle plates for water tube boilers, patent baker blocks and muffle and other parts for furnaces of every description using electricity, gas, oil or coal fuel.

A section of this department will be devoted to the molding of the company's patent tongue and groove arch lintels, for which there is a steadily increasing demand. They are tapered blocks of a size to form an arch 4½ in. thick and of a width proved by long experience most economical to set when ability to withstand expansion and contraction are considered. Various lengths from 8 to 20 in. are carried in stock. A tongue extends the full length along one side and a corresponding groove along the opposite side. These both strengthen the arch and break joints. The striking peculiarities of this construction are that no clay is required, and the arch is entirely independent of the piers or jambs, which can be renewed or repaired without disturbing the arch.

A steel structure will be erected to cover the kilns, also supplying a large space for storage of stock goods. A two-story brick building, with fireproof vault from ground to roof, will be erected at the southwest angle of the main building. General offices will occupy the first floor, where there will be an entrance to the lower deck of the vault, in which will be closets, shelves, &c., convenient for books, papers and other data pertaining to the accounting and sales departments. The second floor will be for the exclusive use of the engineering and drafting departments. From this floor will be the entrance to the upper deck of the vault, in which will be fixtures for the systematic filing of blue prints, sketches, descriptions, &c., of all shapes made.

This company designs and erects coal gas benches, muffles, kilns and other appliances for confining or conducting extreme temperatures. The proposed methods of safeguarding the designs, many of which contain original features, will preclude the possibility of their loss in case of another fiery visitation. Of most of those lost in the late fire there were duplicates, and sufficient data to replace the others will soon be compiled. L. N. Rancke, vice-president and general manager, expects the buildings to be completed and business adjusted to the new conditions by the end of this year.

Work has been commenced this week on an addition to the generating station of the Ontario Power Company on the Canadian side of the river at Niagara Falls. The extension will be of concrete construction 100 ft. long, of the same width as the present power house, to which it will conform in all architectural details. The addition is being erected to house two 12,500-hp. units. These generators, orders for which have already been placed with the Westinghouse Electric Mfg. Company, are of the largest type ever constructed, and are to be delivered in eight months. The contract for the power station extension specifies that it must be under roof by December 1.

# Savings from the Retort Coke Process.

## A Computation for 1907—Coal Tar Products Imported.

A summary of the report of Edward W. Parker on the "Manufacture of Coke in 1907," as issued by the United States Geological Survey, appeared in *The Iron Age* of August 20, page 511. The complete report has now been published and we take from it the discussion of the present status of the by-product coke industry in the United States and the argument for its more rapid extension:

When the economies which may be effected by the use of the retort ovens have been so clearly demonstrated, not only by the plants which have been constructed in the United States, but more emphatically through the much more extensive development of by-product coke manufacture in Europe, the condition in the United States, as shown by the statistics for the last four years, is somewhat difficult to understand. The economy shown by the higher yield of coal in coke has already been referred to, and, as previously stated, the production of coke in the by-product ovens of the United States in 1907 amounted to 5,607,899 net tons, valued at $21,665,157. The total value of by-products obtained in the manufacture of this coke was $7,548,071, this value and the quantity being distributed as follows:

*Value of By-Products Obtained in Manufacture of Coke in Retort Ovens in* 1907.

| | Quantity. | Value. |
|---|---|---|
| Gas, M cubic feet | 20,516,731 | $3,130,839 |
| Tar, gallons | 53,995,795 | 1,242,530 |
| Ammonia, sulphate or reduced to equivalent in sulphate, pounds | 125,372,360 | 3,174,702 |
| Totals | | $7,548,071 |

The gas included in the foregoing statement is the "surplus" not consumed in the coking process, and which is either sold or used at manufacturing establishments operated in connection with the coke oven plant. In a few instances where the surplus gas is consumed by the producing companies the quantity is not measured, nor was any value placed upon it in the reports made to the survey. In such cases careful estimates have been made, based upon the average surplus gas obtained from similar coals used at ovens of the same type. The value, similarly estimated, has been placed at from 10 to 15 cents per thousand cubic feet.

### The Waste of Beehive Ovens Calculated.

The coal consumed in retort ovens in 1907 amounted to 7,460,587 short tons. The quantity of coal used in beehive ovens was 54,485,522 short tons, from all of which the possible by-products are apparently wasted. Assuming that the coal consumed in beehive ovens was of the same average quality as that charged into the retort ovens and that the prices would be not less than 80 per cent. of those ruling in 1907, the value of recoverable products which were thus apparently wasted last year amounted to $44,000,000, a sum equal to nearly 80 per cent. of the total value of all the coal used in beehive ovens during the year. At the prices which prevailed in 1907 the value of the by-products wasted in beehive coke ovens was a little over $55,000,000.

The value of the by-products from the retort ovens in 1907 was a little more than one-third the value of the coke produced in them. It should be remembered, however, that beehive ovens are located in the coal mining regions and that the cost of the coal charged into them represents only a little more than that represented by the expense of mining the coal, whereas in locating by-product recovery plants provision must be made for utilizing or marketing the by-products. It is for this reason that in the much larger number of cases the recovery plants are established near the larger cities and at considerable distances from the mining regions, and the expense of transportation is added to the mining cost of the coal. Hence it is that the value of the 7,506,174 tons of coal charged into by-product ovens in 1907 was $15,874,430, or over $2 per ton, while the 54,485,522 tons of coal used in beehive ovens was $56,956,008, or $1.05 per ton. It must also be remembered that the original cost of installation for a by-product recovery plant is from

four to five times that of a beehive plant of equal capacity. These disadvantages are in turn partly offset by the higher percentage yield of coke in the retort ovens and a lower delivery charge on the coke produced. In the case of beehive coke, railroad transportation expense is borne by the coke, while in retort oven practice all, or nearly all, of the freight charge is borne by the coal.

The total value of the 5,607,899 tons of by-product coke produced in 1907 was $21,665,157, an average of $3.86 per ton. The value of the 35,171,665 tons of beehive coke made in 1907 was $89,873,969, or $2.56 per ton. If we consider that the difference in the value of the by-product coke and beehive coke was due only to the difference in freight charges, then the total value of the entire product of beehive coke made in 1907 would, if made in retort ovens close to the market, have been worth $135,750,000. Add to this the value of the by-products that should have been recovered of $44,000,000, at 80 per cent. of the market price in 1907, the total value of the coke and by-products would have amounted to nearly $180,000,000 instead of the value of $89,873,969 for the beehive coke alone. The value of the coal charged into these ovens would have been $108,879,870 instead of $56,956,008. Carrying the hypothesis further, the difference between the value of the coke and by-products if the coal had been coked in retort ovens and the value of the coke alone from the beehive ovens was, say, $90,000,000. From this should be deducted the difference between what the value of the coal would have been at retort ovens and what it was at beehive ovens, *i. e.*, $52,000,000. The remainder, $38,000,000, less the difference in operating expenses, wear and tear, interest on capital, &c., may be considered as approximately the actual net loss in value as the result of beehive coke production compared with by-product coke practice in 1907.

### The Lack of Market for Tar Products.

One of the reasons that has been given for the apparent lack of progress in retort oven building in the last four years is the lack of profitable markets for the by-products of coal tar, and this has contributed to the backwardness of the United States in the development of the chemical industries depending upon coal tar as a raw material, and yet this country is importing coal tar products to the value of several million dollars annually. It is also well known that the development of the coal-briquetting industry has been retarded because of the lack of assurance of a satisfactory supply of suitable coal tar pitch for binding material, and there is also an increasing demand for creosoting oils for the preservation of timber. The accompanying table shows the value of the coal tar products imported into the United States and the duty paid thereon in each year since 1896, inclusive.

There does not appear to be any trouble in disposing of the ammonia, for which a good demand exists, and the practicability of long distance transmission of the gas has been successfully demonstrated, thus insuring markets for the surplus of this retort oven product. The United Otto oven plant at Camden, N. J., is distributing gas to Plainfield, New Brunswick and other cities and towns, the maximum distance being 83 miles. At the present time, when the conservation of the natural resources of the United States is being so earnestly discussed, this matter of waste in coke manufacture is one which might well be given serious consideration.

In the following table is shown the record of by-product coke making since 1893, when the first plant was established at Syracuse, N. Y.:

*Record of By-Product Coke Making,* 1893-1907.

| Year. | Ovens. Built. | Ovens. Building. | Production, net tons. | Year. | Ovens. Built. | Ovens. Building. | Production, net tons. |
|---|---|---|---|---|---|---|---|
| 1893.... | 12 | 0 | 12,850 | 1901.... | 1,165 | 1,533 | 1,179,900 |
| 1894.... | 12 | 60 | 16,500 | 1902.... | 1,663 | 1,346 | 1,403,588 |
| 1895.... | 72 | 60 | 18,521 | 1903.... | 1,956 | 1,335 | 1,882,394 |
| 1896.... | 160 | 120 | 83,038 | 1904.... | 2,910 | 832 | 2,608,229 |
| 1897.... | 280 | 240 | 261,912 | 1905.... | 3,159 | 417 | 3,462,348 |
| 1898.... | 520 | 500 | 294,445 | 1906.... | 3,603 | 112 | 4,558,127 |
| 1899.... | 1,020 | 65 | 906,534 | 1907... | *3,892 | †330 | 5,607,899 |
| 1900.... | 1,085 | 1,096 | 1,075,727 | | | | |

* Includes 1295 Semet-Solvay, 2002 United Otto, 387 Rothberg and 208 Newton-Chambers ovens.
† Includes 50 United Otto and 280 Koppers ovens.

At the close of 1907 there were 1270 Semet-Solvay ovens in operation, with 25 idle; of the United Otto type there were 2002 completed and 50 building. In addition to these there were 387 Rothberg ovens in operation during the year, but no new ones of this type were under construction. There were also 152 Newton-Chambers ovens in operation at Vintondale, Pa., during 1907, but no by-products, except of an experimental character, were obtained. The plant of 56 Newton-Chambers ovens constructed at Pocahontas, Va., has not been in operation for several years.

*Coal Tar Products Imported Into the United States,* 1896-1907.

| Year. | Salicylic acid. Value. | Salicylic acid. Duty. | Alizarine and colors or dyes, natural and artificial No duty. Value. | Aniline salts. No duty. Value. | Coal tar colors or dyes, not specially provided for Value. | Coal tar colors or dyes, not specially provided for Duty. | Coal tar, all preparations, not colors or dyes. Value. | Coal tar, all preparations, not colors or dyes. Duty. | Coal tar products, not medicinal, not dyes, known as benzol, toluol, &c. No duty. Value. | Total. Value. | Total. Duty. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1896*..... | $138,013 | Free. | $994,395 | $662,459 | $2,918,333 | $729,583 | ..... | ..... | ..... | $4,713,200 | $729,583 |
| 1897*..... | 201,980 | Free. | 1,023,425 | 812,884 | 3,163,182 | 790,796 | ..... | ..... | ..... | 5,201,471 | 790,796 |
| 1898*..... | 28,688 | $6,794 | 886,349 | 1,087,704 | 3,723,288 | 1,098,532 | $134,416 | $26,883 | $228,037 | 6,088,482 | 1,132,209 |
| 1899*..... | 57,192 | 18,536 | 700,786 | 743,130 | 3,900,099 | 1,170,030 | 221,101 | 44,220 | 393,602 | 6,015,910 | 1,232,786 |
| 1900*..... | 89,175 | 24,069 | 771,336 | 537,812 | 4,792,103 | 1,437,631 | 274,946 | 54,989 | 397,780 | 6,863,152 | 1,516,689 |
| 1901..... | 76,786 | 22,227 | 713,392 | 589,535 | 4,034,171 | 1,210,251 | 342,116 | 68,423 | 383,559 | 6,139,559 | 1,300,901 |
| 1902..... | 57,852 | 21,913 | 1,028,327 | 631,467 | 4,911,668 | 1,473,500 | 496,928 | 99,386 | 368,098 | 7,494,340 | 1,594,799 |
| 1903..... | 19,012 | 7,827 | 660,464 | 789,553 | 5,252,611 | 1,575,783 | 544,176 | 108,835 | 425,069 | 7,690,885 | 1,692,445 |
| 1904..... | 7,305 | 3,276 | 636,418 | 686,184 | 4,903,077 | 1,470,923 | 522,242 | 104,448 | 391,645 | 7,146,871 | 1,578,647 |
| 1905..... | 2,214 | 923 | 625,491 | 789,052 | 5,673,242 | 1,701,973 | 768,556 | 153,711 | 486,439 | 8,344,994 | 1,856,607 |
| 1906..... | 2,772 | 991 | 661,155 | 806,901 | 5,717,932 | 1,715,380 | 864,067 | 172,814 | 483,416 | 8,536,243 | 1,889,185 |
| 1907..... | 1,240 | 489 | 782,368 | 667,758 | 5,830,651 | 1,749,196 | 911,096 | 182,219 | 653,288 | 8,846,401 | 1,931,904 |

* Fiscal years.

**A Canal Boat Dumping Machine.**—The McMyler Mfg. Company, Cleveland, Ohio, has closed a contract with the Lehigh Coal & Navigation Company for a large coal handling plant, to be located in Philadelphia. Following in some ways the general plan of the car dumpers built by the McMyler Company, the plant will contain a novel device—a machine that will take a boat out of the water, elevate it about 60 ft., turn it upside down and discharge the cargo. The unloader will have a capacity of 85 tons, the capacity being sufficient to raise and unload a canal boat. The coal, after being discharged, may be delivered into other vessels or conveyed into storage. Means is also provided for taking coal out of storage and delivering it into vessels, buckets and electric cars being provided for that purpose. Provision is also made for screening the coal while it is being unloaded, and for handling it with minimum breakage. The plant will be ready for operation in less than a year.

For some months the shops of the Pennsylvania Railroad Company, at Altoona, Pa., have been working about 36 hr. per week, but recently the time was increased to 50 hr., affecting about 4500 men, working on locomotive repairs. The company recently increased its force of freight car repair men, with the object of getting its freight cars in shape for such increased business as may develop.

# American Naval Ordnance.

BY SIDNEY G. KOON.

Much has been written lately on the subject of the erosion of heavy guns, and so important has the matter been considered that, in the interest of limiting this destructive propensity of modern high explosives, the United States Navy Department has within a year or so put into effect a new schedule of muzzle velocities calling for something like 100 ft. per second less than was the intention when the present guns were designed. This seems to have been a step in the right direction, for one of the most prolific causes of great erosion is generally conceded to be the high velocity with which the heated powder gases traverse the bore of the gun; but it does not wholly solve the problem of getting out of the guns as much in the way of destructive energy as possible.

**The Era of High Velocities and Heavy Projectiles.**

It is now some 18 years since the famous Canet Works put out three 12.6-in. guns for the Japanese Navy, one being mounted on each of three cruisers—Itsukushima, Hashidate and Matsushima—the last-named of which was recently blown up with great loss of life. These guns were tested to the then unheard-of velocity of 3300 ft. per second, and, with their 1000-lb. shells, were justly considered the most formidable afloat. These guns were long rated at 3000 foot-seconds, and even now are credited with 2306, and a muzzle energy of 35,225 foot-tons. This was the beginning of the era of high velocities, and much was heard after this of the supreme qualities of flat trajectories, which necessarily accompanied the great muzzle velocities provided. And the first real setback which this idea has received may be said to be the action above noted—of reducing the service velocities on American guns.

During a period when flat trajectories were the vogue the Krupp establishment, while not disdaining that method of obtaining high energies, yet paid more attention to getting the same muzzle results from the use of a much heavier shell than other builders were using, and accompanied by a more moderate velocity. The trajectory was not so flat, nor was the ultimate danger space so great, but the remaining energy at battle ranges was much improved by the heavy shells, and the striking power actually enhanced over that of the swifter but lighter projectiles of other makes. The latest heavy guns turned out for the German Navy are in line with this development, and, indeed, have carried it much further along than before, the 11-in. gun now using a 760-lb. shell in place of one of 595 lb., while the muzzle velocity is still at the relatively high figure of 2854 ft. per second. The new guns of the French Navy are based on the same ideas, for the weights of projectiles have been increased from 750 to 970 lb. for the 12-in. guns and from 317 to 485 lb. for the 9.45-in. weapon, both being discharged at 2675 ft. per second.

**A New Departure Proposed.**

With the double idea of raising the ultimate remaining energy at battle ranges and of decreasing erosion in the bore of the gun by reducing the muzzle velocity, while still retaining about the same muzzle energy, and with the further object of making all the naval shells of different calibers geometrically similar, the writer proposes a new departure along this line. This is by giving each projectile a weight in pounds equal to five-ninths of the cube of its diameter in inches, and at the same time reducing by an additional 100 ft. per second the muzzle velocities. We will then find that, with the sole exception of the 4-in. gun, which has relatively the heaviest shell in our service, our muzzle energies will be slightly increased, while at an assumed battle range of 7000 meters (just over 3 miles) the advantage in this respect is very marked, amounting to 5½ per cent. for the 12-in. gun, and similarly for the others. For the 7, 6, 5 and 3 in. guns this advantage actually exceeds 20 per cent.

The accompanying table, arranged for the purpose of presenting the data compactly, is in three parts. The first part deals with American naval ordnance as at present used; the second part gives for comparison figures of the latest English, French and German guns, in which it is seen that the English still cling to the light shell and high velocity, and the third part embodies the proposed change as outlined above, and includes also provisional figures for guns of 9, 11 and 13 in. caliber. The "remaining velocities" have been calculated by means of Ingersoll's "Ballistic Tables" (Navy Department, 1893).

*Present and Proposed Ordnance Practice.*

| | | Muzzle. | | At 5000 m. | | | | |
|---|---|---|---|---|---|---|---|---|
| | Shell. | Velocity. | Energy. | Velocity. | Energy. | Shell | Ch'ge. | Muzzle energy |
| Gun. | Lb. | Ft.sec. | Ft.tons. | Ft.sec. | Ft.tons. | (Diam.)³ | Lb. | Charge. |
| 12-in. | 870 | 2,700 | 44,025 | 1,923 | 22,340 | 0.503 | 335 | 131.5 |
| 10-in. | 510 | 2,700 | 25,805 | 1,804 | 11,535 | 0.51 | 205 | 125.9 |
| 8-in. | 260 | 2,750 | 13,647 | 1,657 | 4,960 | 0.508 | 100 | 136.5 |
| 7-in. | 165 | 2,700 | 8,349 | 1,459 | 2,420 | 0.481 | 59 | 141.4 |
| 6-in. | 105 | 2,800 | 5,714 | 1,377 | 1,382 | 0.486 | 38 | 150.2 |
| 5-in. | 60 | 2,700 | 3,036 | 1,152 | 553 | 0.48 | 20 | 151.8 |
| 4-in. | 33 | 2,800 | 1,796 | 1,075 | 265 | 0.516 | 12 | 149.7 |
| 3-in. | 13 | 2,700 | 658 | 861 | 67 | 0.481 | 4 | 164.5 |
| 12-in. | 850 | 2,960 | 51,664 | 2,100 | 25,832 | 0.492 | Brit., 50 cal. | |
| 12-in. | 970 | 2,675 | 48,115 | 2,018 | 27,414 | 0.561 | Fr., 45 cal. | |
| 9.45-in. | 485 | 2,675 | 24,058 | 1,798 | 10,870 | 0.575 | Fr., 1906. | |
| 11-in. | 760 | 2,854 | 42,979 | 2,025 | 21,396 | 0.571 | Ger., 1907. | |
| 13-in. | 1,220 | 2,600 | 57,242 | 1,928 | 31,554 | 0.555 | 420 | 136.2 |
| 12-in. | 960 | 2,600 | 45,045 | 1,881 | 23,580 | 0.556 | 340 | 132.5 |
| 11-in. | 740 | 2,600 | 34,720 | 1,827 | 17,187 | 0.556 | 255 | 136.1 |
| 10-in. | 555 | 2,600 | 26,040 | 1,762 | 11,960 | 0.555 | 200 | 130.2 |
| 9-in. | 405 | 2,650 | 19,789 | 1,721 | 8,346 | 0.556 | 145 | 136.4 |
| 8-in. | 285 | 2,650 | 13,890 | 1,632 | 5,270 | 0.557 | 102 | 136.1 |
| 7-in. | 190 | 2,600 | 8,915 | 1,490 | 2,930 | 0.554 | 65 | 137 |
| 6-in. | 120 | 2,700 | 6,072 | 1,413 | 1,664 | 0.556 | 45 | 134.8 |
| 5-in. | 70 | 2,600 | 3,284 | 1,213 | 715 | 0.56 | 24 | 136.8 |
| 4-in. | 35 | 2,700 | 1,771 | 1,069 | 278 | 0.547 | 13 | 136.3 |
| 3-in. | 15 | 2,600 | 704 | 909 | 86 | 0.556 | 5 | 140.8 |

The first six columns of this table are self-explanatory. The seventh gives the results obtained by dividing the weight of the shell in pounds by the cube of its diameter in inches, and illustrates very forcibly the present lack of uniformity, from a geometrical standpoint. The third part of the table shows in this column a very different sort of thing; and it may be noted as a curious fact that in every case the product obtained by multiplying the diameter cubed by five-ninths, gave a figure which is a factor of five (of course, some fractions were encountered, but the results as shown in the table are all within five-ninths of 1 lb. of the actual geometrical result). The last column is the quotient of the muzzle energy divided by the powder charge, and represents the number of foot-tons per pound of propellant. In the case of the last list these charges were of course assumed, the assumption giving in each case a result in foot-tons per pound about equal to the average for the heavy guns in the first list.

It will be noted that it is not proposed to change the guns (except possibly by the addition of a 13-in. gun of 45 calibers), but that the same guns are to be used, with heavier shells, and, except for the 10-in., very slightly heavier charges. The chamber pressures should remain about as at present—somewhat under 17 tons per square inch. The reduction in erosion should be quite marked, resulting in a longer lease of life to the gun, but, of course, the weight of ammunition to be carried would be considerably increased if the same number of rounds is to be carried. This, however, would be offset by the greatly increased power of the weapons at the point where power is needed—the point of impact—and penetration should result in many cases where now the shell would fall back into the water or smash itself into fragments on the face of the armor plate.

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Dr. Charles E. Lucke, professor of mechanical engineering in Columbia University, is of the opinion that the upholders of the gas engine are too forward in their claims. He says: "There is no doubt that the combination of gas producer and engine will drive vessels more economically than steam, and that labor conditions in the ships will be improved by the adoption of this kind of power. But we have not the producer or the engine as yet. You cannot go in the market to-day and buy a gas engine that will drive a large ship. There are plenty of designers that will promise to build one, but engineering experience has proved that it is a long trip from designer to successful installation."

## Trade Publications.

**Electric Mining Machinery.**—Goodman Mfg. Company, Chicago, Ill. Two bulletins and binder, forming a sectional catalogue illustrating the company's line of electric mining machinery and power plant equipment. Bulletin No. 301 describes and illustrates the Goodman rack rail haulage system, which, it is claimed, is especially adapted for hilly mines. Numerous views are shown of electric locomotives operating on live rack rails both in mines and in the open. Several standard types of rack rail locomotives are shown and sectional diagrams and illustrations are given. Bulletin 501 is devoted to gathering locomotives, which are adapted for switch work, picking up loads, distributing empties, &c. These locomotives are especially adapted for operating in close quarters and on sharp curves, and a feature of their operation is the quickness of the control. These machines are operated by a trolley, and machines designed to meet special conditions are shown in operation.

**Ore Handling Machinery.**—Andreson-Evans Company, Chicago, Ill. Catalogue, 8¾ x 11¾ in., 16 pages. Principally given to describing self-filling and dumping buckets. The book contains numerous drawings illustrating the operation of the Andreson-Evans type B grab buckets, which it is claimed have an advantage over the ordinary type of clam shell and orange peel buckets because they have a greater length of opening and more powerful digging action, making them especially adapted for digging ore. The Andreson-Evans conveying bridge or crane is shown, equipped with a 14-ton ore digging grab bucket, and an unloading and storage plant designed by the company is also illustrated by a line drawing.

**Feed Water Heaters.**—Harrison Safety Boiler Works, Philadelphia, Pa. Booklet entitled "Steam, Its Profitable Utilization." This is an article reprinted from the *Bookkeeper and Business Men's Magazine* discussing the steam requirements of prime movers, such as pumps, reciprocating engines, steam turbines, &c., under different conditions, such as when exhausting freely to the atmosphere, running condensing, &c. The article demonstrates how much of the heat contained in the steam is utilized to produce power and what proportion is available for heating or other use.

**Oilers, Flexible Shafting, Dies, Special Stampings, &c.**—Gem Mfg. Company, Pittsburgh, Pa. Catalogue No. 5, 6 x 9 in., 42 pages. Treats of a line of devices made by the company such as those mentioned above, boiler tube cleaning devices, loose pulley lubricators, portable drills, grinders, tapping and reaming machines, torches and mill supplies made by the company. A good portion of the book is given to oilers, which are made by the company in about every known style. Illustrations of flexible shafting are also given and portable drills, grinders, tapping and reaming machines are shown in several standard styles. Some space is given to useful tables, such as speed of drills and directions for calculating the amount of horsepower a belt will transmit, &c.

**Miscellaneous Machinery and Supplies.**—Central Machinery & Supply Company, Inc., Chicago, Ill. General catalogue No. 43, 6 x 9 in., 257 pages. Deals with miscellaneous machinery and supplies, including steam, gas and gasoline engines, machine tools, pumps, belting and other goods. Particular attention is given to pneumatic water supply systems and steam, hot water and hot air house heating equipment and apparatus.

**Mining Machinery.**—Galena Iron Works Company, Galena, Ill. Catalogue No. 1. Paper covers, 126 pages. Opens with a description of the treatment of zinc ores in plants designed and equipped with special machinery built by the company. Besides the outline given of the process through which the ores pass in crushing, roasting and concentrating, a number of engravings are shown illustrating the various steps of progress through the plant. It is stated that in the treatment of zinc ore in the Wisconsin, Illinois and Joplin districts the only successful operation is that of magnetic separation after roasting. The catalogue also shows an assortment of power and mining machinery, which the company handles, including air drills, boilers, engines, compressors, electrical equipment and general supplies.

**Crucible and Open Hearth Steels.**—The Vulcan High Speed Steel Company, Pittsburgh, Pa. Catalogue No. 4; 3¼ x 6 in. Describes in particular the various grades of tool steel made by this company, including Vulcan and Hecla. Gives classification and price-list of flat and other shapes of tool steel as well as die blocks and disc classification, also catalogues open hearth machinery steel, file steel and gives tables for computing the weight of cast steel, flat bar steel and other miscellaneous information.

**Drills and Cutters.**—Baldwin Steel Company, 133 Reade street, New York City. Catalogue; 6 x 9 in. 80 pages. Describes the drills made by this company both straight and taper and special drills for oil tubes. It also describes and catalogues reamers and the Hudson patented reinforced stay bolt tap. In the line of cutters are such tools as plain milling cutters with inserted or nickeled teeth, concave and convex cutters, as well as special forms for cutting gears, slots and angles.

## The German Iron and Steel Syndicates.

It is reported that the committee representing the four district pig iron syndicates in Germany, which has been working on a scheme for a general pig iron syndicate, has ceased its conferences in view of the refusal of the Kraft Iron Works to join in the movement. It is now stated that the prolongation of the pig iron syndicates beyond the end of 1908 is not likely.

The Rolled Rod Syndicate has continued the price of $31.50 a ton for the inland market for the last quarter of the year. In view of the decline in export prices the bounty of $4 a ton will be continued on exports for the final quarter. The negotiations for the formation of a syndicate in the wire and wire nail trades appear to be at a standstill. The Association of Hoop Iron Mills will continue the price of $31.50 a ton for the last quarter of the year.

The Steel Syndicate has increased the bounty on structural shapes from $1.25 to $5 a ton with a view to promoting the export trade. It has been intimated that the Steel Syndicate has been able for some time to dispose of only 60 to 65 per cent. of the total allotment. Merchants associated with the syndicated steel works have been selling shapes at prices below those charged by the syndicate.

## A Large Iron Ore Concentrating Plant.

The Oliver Iron Mining Company, a subsidiary of the United States Steel Corporation, will build at once a very large iron ore concentrating plant on the western Mesaba to concentrate ores from the Canisteo, Walker and Holman mines. A part of the output of these and other mines of the western Mesaba is mixed with sand which must be washed out. The plans for the new plant have been worked out. It will have a capacity of 1,250,000 tons of washed ore per annum, and will cost in the neighborhood of $1,500,000. It is in the western Mesaba district that the principal deposits are located which are embraced in the Hill lease.

**The Mechanical Engineers.**—The season of professional meetings of the American Society of Mechanical Engineers will be opened on the evening of October 13 by a meeting of the Gas Power Section in the Engineering Societies Building, 29 West Thirty-ninth street, New York. H. L. Doherty, chairman of the Meetings Committee of the section, will present a report for discussion outlining plans for future work, and there will also be a discussion of standards to be used in gas power work. Two papers will be read, one by E. A. Harvey on gas producer plants, with data upon costs, performance, &c., and one by N. T. Harrington giving the results of tests to determine the loss of fuel weight in a freshly charged producer, due to increase of ash contents in the fuel bed.

The Associated Foundry Foremen of Philadelphia and vicinity held their first meeting following the summer recess on the evening of September 15. The association has changed the date of its regular meetings from the second Monday to the third Tuesday of each month, and the meetings are now being held at 1034 Arch street, Philadelphia, in place of Thirteenth and Arch streets, as heretofore. The meeting was well attended, the subject for discussion being "The Annealing of Steel Castings," on which C. G. Baumgartner was the principal speaker.

The Maxim Silent Firearms Company has been incorporated with a capital stock of $250,000 to manufacture silent attachments for large guns, the invention of Sir Hiram Maxim. Robert W. Lesley, a director of several large cement companies and president of the United Building Material Company, Pennsylvania Building, Philadelphia, Pa., is one of the incorporators.

# NEWS OF THE WORKS.

### Iron and Steel.

Henry H. Hossman, Portsmouth, Ohio, contracting engineer for steel construction, blast furnaces, &c., has received contract for building three new hot blast stoves and one stack for the Wellston Steel & Iron Company, Wellston, Ohio. This order makes nine stoves built by Mr. Hossman in that district in the last 18 months. In addition he built one complete furnace for the Jackson Iron & Steel Company at Jackson, Ohio.

The Richard Heckscher & Sons Company, Swedeland, Montgomery County, Pa., expects to blow in its No. 2 blast furnace about October 1. It has been greatly improved and enlarged and will add from 250 to 300 tons of iron per day to the output of the company. With both furnaces in operation the output at Swedeland after October 1 will be 600 to 700 tons a day.

Geo. Greer, former district manager of the American Sheet & Tin Plate Company, New Castle, Pa., advises us that there is no truth whatever in the report that he with some associates will build a new tin plate mill at New Castle. Mr. Greer states that the matter was never even considered.

The National Refined Iron & Horse Shoe Company, Pittsburgh, Pa., contemplates locating its plant in Rochester, Pa. The matter is in the hands of the Business Men's Association, and prospects for the location of the plant at Rochester are said to be good.

### Power Plant Equipment.

The Board of Public Service of East Liverpool, Ohio, will receive bids until September 30 for two 80-hp. horizontal standard Scotch boilers with the necessary fittings, also two 80-hp. boilers of the horizontal tubular type, 40 in. diameter and 16 ft. long.

The Water Department of Houston, Texas, will receive bids until October 19 for a 15,000,000-gal. pumping engine for the water works.

The Board of Trustees of Alleghany, N. Y., will receive bids until September 29 for furnishing the materials and constructing a system of water works, the requirements including four miles of 10, 8, 6 and 4 in. cast iron pipe, two gas engines, triplex power pumps, pumping station, hydrants, valves, etc.

Elbert B. Hamlin has been appointed receiver for the Munoz Boiler Company, 2 Rector street, New York. The liabilities are said to be over $70,000.

The Heine Safety Boiler Company, St. Louis, Mo., has awarded contract for the construction of its new plant, the dimensions of the buildings of which have been previously stated in these columns.

The New Mexico Power Company, El Paso, Texas, in which E. Krause is interested, intends to develop a 2000-hp. hydroelectric plant on the Penasco River, for the equipment of which five Pelton wheels with electric equipment, wire, steel towers, &c., will probably be required.

Bids opened on September 17 by the Village Board of Chandlerville, Ill., for electric light plant equipment, including a 75-hp. gas producer and engine, or 50-hp. steam engine, were all rejected.

The A. W. Wycoff Company, Farmers' Bank Building, Pittsburgh, is installing two 300-kw. generators in the Boggs and Buhl Building, Northside, and a 600-kw. generator in the Oliver power building, Pittsburgh.

Vollkommer & Hagan, consulting engineers, Empire Building, Pittsburgh, have contracts for the installation of batteries of Rust boilers at Detroit, Mich., for the M. A. Hanna Company, and for the foundations and boilers for another large plant at that place.

The establishment of a municipal electric plant at Danbury, Iowa, to cost about $7000, has been voted on favorably by the city of Danbury, Iowa.

### Foundries.

Plans have been completed for the organization of the Sayre Iron Works, Inc., Phœbus, Va., and the plant which was destroyed by fire July 8 has been replaced by a temporary structure to be operated during the building of the new shops. The dimensions of the new foundry were given in these columns a few weeks ago. The temporary shops are now in full operation and the company is in a position to take care of all work that can be handled without cranes.

### Bridges and Buildings.

J. Henry Crane has been appointed receiver for the New Jersey Structural Company, Plainfield, N. J.

The Baltimore Bridge Company, Baltimore, Md., has purchased the ground adjoining its works on Bush street from the Iron Clad Company of Maine, the plot having a frontage of 276 ft. and a depth of 200 ft., on which there is a building 100 ft. long. The company bought this property to get the vacant strip of ground in the rear of the building which it will use for additional storage of material. Having no immediate use for the building, the company has leased it to the J. C. Eichmann Mfg. Company, manufacturer of plumbers' supplies. This property gives the company a continuous frontage on Bush street of about 1100 ft. from the Baltimore & Ohio Railroad to Sassafras street and about 10½ acres of ground on which it has two other buildings, one leased to the Baltimore Foundry Company and the other to the Thomas C. Basshor Company. The Baltimore Bridge Company's own works are in the rear of the Bush street buildings and are served by spurs from the Baltimore & Ohio Railroad.

The Standard Pattern Company, Pittsburgh, has completed making several large patterns for castings, to be used in the erection of a large swinging bridge in Vancouver, B. C. The Fawcus Machine Company, Pittsburgh, has the contract for finishing the castings, one of which is the trunion casting, measuring 5 x 4 x 9 ft. high.

### Fires.

The horse shoe department of the Old Dominion Iron & Nail Works Company, Richmond, Va., was burned September 17, the loss being about $10,000.

The plant of the Monarch Brass Mfg. Company, Port Colborne, Ont., was burned September 18, the loss being placed at $50,000.

The plant of the Victor Mfg. Company, Leavenworth, Kan., was damaged $12,000 by fire September 12.

The wire plant of the Jacob Haish Company, De Kalb, Ill., was burned September 13. The loss is estimated at $100,000.

A second large fire occurred in Chelsea, Mass., September 21, when it is estimated that $400,000 damage was done. The buildings burned included the box factory of Atwood & McManus, the plant of the Union Metal Company and Lee Brothers' shoe manufactory.

### Miscellaneous.

The receivership under which the National Battery Company, Buffalo, N. Y., has been operating since last February terminated August 19. All claims against the company have been settled and the entire property has been restored to the stockholders. Control of the reorganized company has been secured by the Cutler-Hammer Mfg. Company, Milwaukee, Wis., well-known manufacturer of battery charging rheostats and other electric controlling devices. The plant of the National Battery Company will remain at Buffalo, but the business will be conducted under new management and with ample capital.

The Lima Insulator Company, Lima, N. Y., has not yet ascertained what machinery it will have to replace in its plant which was recently burned.

The Doehler Die Casting Company, recently incorporated with a capital stock of $20,000, in which William J. Leddell, 18 Broadway, New York, is interested, is a reorganization of the Doehler Brake Beam Mfg. Company.

The Kosmos Portland Cement Company, Louisville, Ky., whose plant at Kosmosdale was recently damaged by fire, will not require any new machinery and will buy the repair parts for the damaged machinery from the makers of the different machines.

Bids will be received until September 28 by the City of Decatur, Ill., on the construction of two reinforced concrete intakes and the furnishing of 225 tons of cast iron pipe and special castings; also 15 valves ranging in size from 6 to 30 in.

The Pittsburgh Gage & Supply Company, Pittsburgh, has received a contract for the building of a high-pressure steam line for the Provident Coal Company, St. Clairs, Ohio, and a similar outfit for the W. B. Skelly Coal Company, Export, Pa. The company has also received contracts for the installation of high-pressure steam lines and other equipment for the Allegheny General Hospital, and for the Monongahela Incline Company. The brass casting department of the company's plant is being operated double turn, and castings for engine and machine bearings are being made in large numbers. Other departments of the plant are being operated single turn.

W. J. Alford, 3521 Twenty-seventh street, North Birmingham, Ala., is in the market for a second-hand boring and turning mill, about 14 or 16 ft. swing.

The Century Brass Company, Cattaraugas, N. Y., has started an addition to its plant which will mean trebling the capacity. The improvements will include installation of new boilers, new engines and a complete line of the latest machinery. The present plant will be operated to its full capacity while the improvements are being made.

The John A. Roebling's Sons Company, Trenton, N. J., through United States Senator Frank O. Briggs of New Jersey, has purchased the plant of the Sherwood Metal Working Company, at Teall avenue and Canal street, Syracuse, N. Y. The company manufactures a patent metal frame window screen. The purchase price was not given out, but is understood to be considerably in excess of $100,000. The Sherwood Metal Working Company was organized three years ago with a capital of $300,000, with E. P. Chapman, president, and Albert A. Day of New York, secretary. E. P. Chapman will now assume the position of manager. Improvements will soon be taken up and the present capacity of the plant doubled.

The open hearth steel plant, bar mill and sheet mills of the American Rolling Mill Company, Middletown, Ohio, are running full, but its sheet mill plant at Zanesville, Ohio, is closed for lack of orders.

# The Iron and Metal Trades

## The Export Trade Reaching a Flourishing Condition.

### A Large Sale of Sheet Bars Abroad.

### A Banner Transaction in Pipe.

The export trade in Iron and Steel from this country has now reached normal proportions, and the outlook is for a development to a flourishing condition. The purchasing power of different foreign countries has been growing, notably in South Africa, where the Rand is doing better than ever before, and in the Argentine which has enjoyed ample crops.

During the past week there has been sold for export to Great Britain one block of 56,000 tons of Sheet Bars, for delivery during the next four months, at a satisfactory price.

In addition to former sales of Structural and other Rolled Material, there has been closed a contract for 30,000 tons of Shapes, &c., with a large Canadian manufacturing interest.

A 4000-ton lot of Structural Material has been placed in the Argentine, and South Africa has taken one block of 500 tons of Sheets, all of one size.

The Pig Iron markets are quiet in all sections except in eastern Pennsylvania. We note sales of Basic Pig aggregating probably not less than 35,000 to 40,000 tons, of which one interest took 16,000 tons for delivery during the first quarter of next year, at $16, and another purchased one block of 10,000 tons for this year's delivery. Other lots were sold, including one for shipment during the first half of next year. There has also been some selling of both Southern and Northern Pipe Irons, aggregating 6000 tons, at $15.50 and $16, delivered.

Southern makers, being pretty well booked up for the balance of the year, are holding their position as to next year's deliveries, which buyers are not yet willing to meet.

In manufactured Iron and Steel the banner order of the week has been that calling for 20,000 tons of Steel Pipe for the Columbia Gas & Electrical Company, a line which is to convey natural gas from the West Virginia fields to Cincinnati.

The Steel Rail trade continues very quiet, but there is an inquiry in the market for 28,000 tons. The large business pending in Canada is still in abeyance, with some danger that it will not come out for some time to come.

The St. Paul order is for 5000 cars, which have not yet been awarded. The Carolina, Clinchfield & Ohio Railroad is inquiring for 2000 cars. It is reported that some further Harriman cars have been given out.

While the outlook for Structural Material is promising—Chicago reports 80,000 tons of live projects for bridges and buildings—the actual business closed is not large. It includes 2000 tons for the Pennsylvania Hackensack bridge. The Hoyt apartment building in this city calls for 7000 tons.

Pittsburgh and Philadelphia report a slightly weaker market in Old Material. The situation is somewhat peculiar. In the East the stocks are comparatively small. In Chicago they are large, but they are held by strong parties.

The selling agencies are doing little in the way of selling Copper. They are, in fact, not meeting the market, made by second hands. Both the supply and the demand at 13¼c. to 13⅜c., which may be called the market for electrolytic, are limited. The frequent reports of increased production from nearly all the leading districts are making consumers cautious. The conviction is growing that the output is increasing even more rapidly than the admitted moderate development of consumption.

## A Comparison of Prices.

**Advances Over the Previous Month in Heavy Type, Declines in Italics.**

At date, one week, one month and one year previous.

| | Sept.23, 1908. | Sept.16, 1908. | Aug.26, 1908. | Sept.25, 1907. |
|---|---|---|---|---|
| **PIG IRON,** Per Gross Ton: | | | | |
| Foundry No. 2, Standard, Philadelphia | **$16.75** | $16.75 | $16.50 | $20.25 |
| Foundry No. 2, Southern, Cincinnati | **15.75** | 15.75 | 15.50 | 21.75 |
| Foundry No. 2, Local, Chicago | *16.50* | 16.50 | 17.00 | 22.50 |
| Basic, delivered Eastern Pa | **16.00** | 15.25 | 15.00 | 18.75 |
| Basic, Valley Furnace | *14.25* | 14.50 | 14.50 | 20.50 |
| Bessemer, Pittsburgh | 15.90 | 15.90 | 15.90 | 22.90 |
| Gray Forge, Pittsburgh | *14.40* | 14.40 | 14.65 | 20.90 |
| Lake Superior Charcoal, Chicago | 19.50 | 19.50 | 19.50 | 26.50 |
| **BILLETS, &c.,** Per Gross Ton: | | | | |
| Bessemer Billets, Pittsburgh | 25.00 | 25.00 | 25.00 | 29.50 |
| Forging Billets, Pittsburgh | 27.00 | 27.00 | 27.00 | 33.00 |
| Open Hearth Billets, Phila | 26.20 | 26.20 | 26.20 | 31.00 |
| Wire Rods, Pittsburgh | 33.00 | 33.00 | 33.00 | 36.00 |
| Steel Rails, Heavy, Eastern Mill | 28.00 | 28.00 | 28.00 | 28.00 |
| **OLD MATERIAL,** Per Gross Ton: | | | | |
| Steel Rails, Melting, Chicago | **14.75** | 15.00 | 14.25 | 17.00 |
| Steel Rails, Melting, Phila | **15.00** | 15.25 | 14.50 | 16.75 |
| Iron Rails, Chicago | **18.00** | 18.00 | 16.75 | 20.25 |
| Iron Rails, Philadelphia | **20.50** | 20.50 | 20.00 | 20.50 |
| Car Wheels, Chicago | *15.25* | 15.25 | 16.00 | 24.50 |
| Car Wheels, Philadelphia | 15.00 | 15.00 | 15.00 | 23.00 |
| Heavy Steel Scrap, Pittsburgh | *14.25* | 14.25 | 14.50 | 17.00 |
| Heavy Steel Scrap, Chicago | 13.00 | 13.00 | 13.00 | 14.75 |
| Heavy Steel Scrap, Philadelphia | **15.00** | 15.25 | 14.50 | 16.50 |
| **FINISHED IRON AND STEEL,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Refined Iron Bars, Philadelphia | **1.45** | 1.45 | 1.40 | 1.75 |
| Common Iron Bars, Chicago | 1.50 | 1.50 | 1.50 | 1.78 |
| Common Iron Bars, Pittsburgh | 1.40 | 1.40 | 1.40 | 1.70 |
| Steel Bars, Tidewater, New York | 1.56 | 1.56 | 1.56 | 1.81 |
| Steel Bars, Pittsburgh | 1.40 | 1.40 | 1.40 | 1.60 |
| Tank Plates, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Tank Plates, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Beams, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Beams, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Angles, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Angles, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Skelp, Grooved Steel, Pittsburgh | 1.45 | 1.45 | 1.45 | 1.85 |
| Skelp, Sheared Steel, Pittsburgh | 1.50 | 1.50 | 1.50 | 1.95 |
| **SHEETS, NAILS AND WIRE,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Sheets, No. 27, Pittsburgh | 2.40 | 2.40 | 2.40 | 2.50 |
| Wire Nails, Pittsburgh | 1.95 | 1.95 | 1.95 | 2.05 |
| Cut Nails, Pittsburgh | 1.80 | 1.80 | 1.80 | 2.10 |
| Barb Wire, Galv., Pittsburgh | 2.40 | 2.40 | 2.40 | 2.50 |
| **METALS,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Lake Copper, New York | **13.75** | 13.75 | 13.62½ | 15.00 |
| Electrolytic Copper, New York | *13.37½* | 13.50 | 13.50 | 14.75 |
| Spelter, New York | **4.75** | 4.75 | 4.65 | 5.25 |
| Spelter, St. Louis | **4.60** | 4.60 | 4.50 | 5.15 |
| Lead, New York | *4.50* | 4.52½ | 4.57½ | 4.75 |
| Lead, St. Louis | *4.35* | 4.40 | 4.40 | 4.55 |
| Tin, New York | *28.75* | 28.55 | 29.25 | 37.15 |
| Antimony, Hallett, New York | 7.75 | 7.75 | 8.00 | 11.00 |
| Nickel, New York | 45.00 | 45.00 | 45.00 | 45.00 |
| Tin Plate, 100 lb., New York | $3.89 | $3.89 | $3.89 | $4.09 |

## Chicago.

FISHER BUILDING, September 23, 1908.—(*By Telegraph.*)

A marked degree of interest naturally attaches at the present time to railroad operations necessitating the purchase of new materials, and for this reason the decision reached by the Chicago, Milwaukee & St. Paul Railroad to begin at once the construction of 5000 standard Steel underframe freight cars commands especial attention. It is officially stated that efforts will be made to have these cars ready for service within six months. Aside from the Steel underframes, contracts for which will be let outside, the cars will be built by the company at its Milwaukee shops. Specifications, it is stated, will call for Iron Axles. Generally speaking, last week was somewhat quieter than those immediately preceding, which is, perhaps, but an evidence of the extreme sensibility of commercial and industrial movements to influences largely sentimental in their nature. While the tonnage of fabricated material coming out is not large, there is enough business in sight to warrant the expectation of a turn for the better not far hence. Besides a total of 15,000 tons of bridge material which promises development before the end of the year, there is not less than 65,000 tons involved in live building projects in Chicago. A large part of this is nearly ready for figures, but in many cases there is an evident tendency to hold off when it comes to placing contracts. Fabricated work continues to be taken at extremely low prices. Bars, Sheets, Merchant Pipe and Wire Products represent the most active divisions of the market. While there is little doing in Billets, Plates and Boiler Tubes, a few orders for street railroad and traction

Rails and a moderate demand for Track Bolts and Spikes represent the measure of activity in these lines. In Light Rails a more satisfactory tonnage is being entered, the September orders of the Illinois Steel Company up to this time having reached 2700 tons. Iron Axles and Wrought Scrap are the strongest grades in Old Materials, the remainder of the list holding about stationary, with no special movement.

**Pig Iron.**—Practically no buying of Pig Iron, either for present needs or for future delivery, is going on, nor do the inquiries give much assurance of a determination among buyers to consider seriously purchases covering other than present requirements. No evidence is at hand pointing to immediate betterment in the condition of Northern Iron, but a radical recession from present prices seems unlikely in the face of present costs of production. At the same time, it is not wholly certain that on round lots of Northern Iron for last quarter delivery a slight shading from $16.50, Chicago, could not be obtained. This price has at least been offered for No. 2 Foundry by Northern makers, although some carload business and slightly larger lots are being moved at $17. Among sales of this character made during the week of a standard Northern brand are 600 tons and 300 tons, at $17, for this year's delivery, and one lot of 200 tons for first quarter at $17.50. The leading Southern furnaces have practically withdrawn from the market on 1908 tonnage, though their estimated output for this period is not entirely sold up. Under present conditions, however, it is impossible to realize $13, Birmingham, which is generally held by these interests except on small lots required for mixture. The deadlock existing between producers and consumers on tonnage beyond the first of the year will have to be broken by concessions on one side or the other before there can be any contracting for future requirements. Shipments against contracts are said to be going forward according to schedule, with practically no hold-up orders, which would indicate a fair degree of activity in the foundries. A feature of favorable significance respecting the position of furnaces in this district is that there are said to be no unplaced overhanging stocks to retard recovery when it matures. The following quotations are for early delivery, f.o.b. Chicago:

| | |
|---|---|
| Lake Superior Charcoal | $19.50 to $20.00 |
| Northern Coke Foundry, No. 1 | 17.00 to 17.50 |
| Northern Coke Foundry, No. 2 | 16.50 to 17.00 |
| Northern Coke Foundry, No. 3 | 16.00 to 16.50 |
| Northern Scotch, No. 1 | 17.50 to 18.00 |
| Southern Coke, No. 1 | 17.35 to 17.85 |
| Southern Coke, No. 2 | 16.85 to 17.35 |
| Southern Coke, No. 3 | 16.35 to 16.85 |
| Southern Coke, No. 4 | 15.85 to 16.35 |
| Southern Coke, No. 1 Soft | 17.35 to 17.85 |
| Southern Coke, No. 2 Soft | 16.85 to 17.35 |
| Southern Gray Forge | 15.35 to 15.85 |
| Southern Mottled | 15.10 to 15.60 |
| Malleable Bessemer | 17.00 to 17.50 |
| Standard Bessemer | 17.65 to 18.10 |
| Jackson Co. and Kentucky Silvery, 6 % | 19.40 to 19.90 |
| Jackson Co. and Kentucky Silvery, 8 % | 20.40 to 20.90 |
| Jackson Co. and Kentucky Silvery, 10 % | 22.40 to 22.90 |

*(By Mail.)*

**Billets and Rods.**—Not much is doing in the way of new business in the Steel market. The general run of orders continues to represent incidental requirements, which call for small lots, carloads predominating. Moderate specifications from the leading forge shops are coming out, but the movement is restricted by lack of orders from heavy consumers, such as the railroads. The regular price of Forging Billets is $28.50, base, Chicago. Specifications for Wire Rods are being offered in fairly satisfactory volume. Prices are unchanged, and we quote as follows: Bessemer, $33; Basic, $34; Chain, $33, all at Pittsburgh.

**Rails and Track Supplies.**—Nothing of market interest has developed in Standard Rails, and no orders of any magnitude, either present or immediately prospective, have appeared; and there is scant likelihood of anything considerable being placed for early delivery. The Cambria Steel Company secured an order of 500 tons of street Rails from the Chicago Railways Company, and 800 tons of specifications from another traction interest. Quite a number of inquiries for Rails are being received from interurban and other traction lines, some of which concern new enterprises, but the greater number have to do with extension plans of existing lines. While very few of these have developed into orders, they indicate a revival of interest in plans, which in many cases have lain dormant since last year. The demand for Light Rails continues fairly satisfactory; the leading interest having, so far this month, booked 2700 tons. Last week's business in Track Supplies showed a slight quickening in movement, orders for 3000 kegs of Track Bolts and 1000 kegs of Spikes, having been included in the orders going to the Joliet Works. We quote as follows: Angle Bars, accompanying Rail orders, 1908 delivery, 1.50c.; car lots, 1.60c.; Spikes, 1.80c. to 1.90c., according to delivery; Track Bolts, 2.10c. to 2.15c., base, Square Nuts, and 2.25c. to 2.30c., base, Hexagon Nuts. The store prices on Track Supplies range from 0.15c. to 0.20c. above mill prices. Light Rails, 25 to 45 lb., $26; 20-lb., $27; 16-lb., $28; 12-lb., $29. Standard Sections, $28, f.o.b. mill, full freight to destination.

**Structural Material.**—There is no lack of prospective business in the market, but much of the tonnage in sight is slow in coming out. In Chicago alone 16 buildings, the majority of which have plans either in the hands of estimators or nearly ready to submit, will require an aggregate of at least 65,000 tons. It is expected that in the absence of any untoward developments a good part of this will reach the contract stage before the first of the year; but nearly all of the projects are of a character promising early consummation. The contracts closed by the American Bridge Company last week included 14,000 tons of material for railroad work and 700 tons for miscellaneous structures. It is stated that bids on the Keithsburg bridge, 6000 tons, will probably be submitted by the end of the month, and it is expected that about 9000 tons required for the construction of the McKinley bridge over the Mississippi River at St. Louis will be let about the middle of October. Plans for the Cook County Hospital, comprising several buildings in which 3000 tons of material will be used, are now in the hands of fabricators for figures. Other prospective buildings are the Northwestern University new gymnasium, and 500 tons for the Maurice L. Rothchild store building. A contract for about 1200 tons for the Scully Steel & Iron Company's new warehouse is reported to have been taken by the South Halstead Street Iron Works. Prices from store are 1.95c. to 2c. Mill prices at Chicago are as follows: Beams and Channels, 3 to 15 in., inclusive, 1.78c.; Angles, 3 to 6 in., ¼-in. and heavier, 1.78c.; larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 15 in., 1.88c.; Zees, 3 in. and over, 1.78c.; Tees, 3 in. and over, 1.83c.

**Plates.**—New business in Plates is light, and there are no definite indications of an increasing movement in this line. The principal users of Plates, such as car shops, shipyards and tank builders, are not yet in position to order or specify large tonnage, and outside of the small orders for miscellaneous requirements, which are not more numerous than they have been for some time, there is nothing of moment to record. A few mills seem willing to shade prices $1.50 to $2 a ton, aside from which the market is fairly firm at regular quotations. We quote mill shipments as follows: Tank Plates, ¼-in. and heavier, wider than 6¼ and up to 100 in. wide, inclusive, car lots, Chicago, 1.78c.; 3-16 in., 1.88c.; Nos. 7 and 8 gauge, 1.93c.; No. 9, 2.03c.; Flange quality, in widths up to 100 in., 1.88c., base, for ¼-in. and heavier, with the same advance for lighter weights; Sketch Plates, Tank quality, 1.88c.; Flange quality, 1.98c. Store prices on Plates are as follows: Tank Plates, ¼-in. and heavier, up to 72 in. wide, 2c. to 2.10c.; from 72 to 96 in. wide, 2.10c. to 2.20c.; 3-16 in. up to 60 in. wide, 2.10c. to 2.25c.; 72 in. wide, 2.30c. to 2.40c.; No. 8, up to 60 in. wide, 2.10c. to 2.15c.; Flange and Head quality, 0.25c. extra.

**Sheets.**—The demand for fall requirements is responsible for a slight increase in the volume of new business. This is especially true of Galvanized Sheets, several fair sized orders for which have been recently placed for corrugated roofing. The Sheet department of the Inland Steel Company is now being operated at between 50 and 60 per cent. of its capacity. Some irregularity exists in prices, which are being cut $1 to $2 a ton by a few mills. We quote mill shipments as follows, Chicago: Blue Annealed, No. 10, 1.98c.; No. 12, 2.05c.; No. 14, 2.08c.; No. 16, 2.18c.; Box Annealed, Nos. 17 to 21, 2.43c.; Nos. 22 to 24, 2.48c.; Nos. 25 and 26, 2.53c.; No. 27, 2.58c.; No. 28, 2.68c.; No. 29, 2.78c.; No. 30, 2.88c.; Galvanized Sheets, Nos. 10 to 14, 2.63c.; Nos. 15 and 16, 2.83c.; Nos. 17 to 21, 2.98c.; Nos. 22 to 24, 3.13c.; Nos. 25 and 26, 3.33c.; No. 27, 3.53c.; No. 28, 3.73c.; No. 30, 4.23c.; Black Sheets from store: Blue Annealed, No. 10, 2.15c.; No. 12, 2.20c.; No. 14, 2.25c.; No. 16, 2.35c.; Box Annealed, Nos. 18 to 21, 2.60c.; Nos. 22 to 24, 2.65c.; No. 26, 2.70c.; No. 27, 2.75c.; No. 28, 2.85c.; No. 30, 3.25c.; Galvanized from store: Nos. 10 to 16, 3c.; Nos. 18 to 20, 3.15c.; Nos. 22 to 24, 3.30c.; No. 26, 3.50c.; No. 27, 3.70c.; No. 28, 3.90c.; No. 30, 4.40c. to 4.45c.

**Bars.**—The majority of the tonnage now offered in Steel Bars is comprised of specifications against contracts placed early in the season. These continue to be offered with reasonable liberality, and the prospects are that the present month's output will run pretty close to that of August, which was the best of the present year. A few contracts are still being placed by the minor interests, but the aggregate tonnage of new business is very small. Nothing of importance has developed in the demand for Iron Bars, which is only moderate. Buyers generally insist upon prompt deliveries, and are keeping close to shore in the matter of anticipating requirements. Quotations, Chicago, are as follows: Steel Bars, 1.58c., with half extras; Iron Bars, 1.50c.; Hoops, No. 13, and lighter, 1.98c., full extra Hoop card; Bands, No. 12 gauge, and heavier, 1.58c., half extra Steel Bar card; Soft Steel Angles and Shapes, 1.68c., half extras. Store prices are as follows: Bar Iron, 2c. to 2.15c.; Steel Bars, 1.90c. to 2c.; Steel Bands, 1.90c., as per Bar card, half extras; Soft Steel Hoops, 2.25c. to 2.35c., full extras.

**Merchant Pipe.**—Less fluctuation is seen in the demand for Pipe than in almost any other of the heavier mill products. Jobbers are apparently ordering, not with a view to

increasing stocks, but rather to provide for the actual necessities of present demand. Owing to the prompt shipments now available from mill, it is possible for them to rely upon quick execution of their orders, and hence there is no incentive to order very large stocks. The following mill discounts are quoted: Black Pipe, ¾ to 6 in., 73.2; 7 to 12 in., 70.2; Galvanized, ¾ to 6 in., 63.2. These discounts are subject to one point on the base. From store, in small lots, Chicago jobbers quote 73 per cent. on Black Steel Pipe, ¾ to 6 in. About three points above these prices is asked for Iron Pipe.

**Boiler Tubes.**—Merchant Tubes are extremely quiet. Many of the boiler shops, which ordinarily buy in carload or larger lots, are ordering from jobbers' stocks in small lots as occasion requires. More activity in railroad repair work is responsible for a moderate increase in orders for Seamless Tubes. Mill quotations for future delivery, on the base sizes, are as follows: 2¾ to 4½ in., inclusive, Steel Tubes, 63.2; Iron, 50.2; Seamless, 50.2; 2½ in. and smaller, and lengths over 18 ft., and 2½ in. and larger, and lengths over 22 ft., 10 per cent. extra. Store prices are as follows:

| | Steel. | Iron. | Seamless. |
|---|---|---|---|
| 1 to 1½ in | 35 | 35 | 35 |
| 1¾ to 2¼ in | 50 | 35 | 35 |
| 2½ in | 52½ | 35 | 35 |
| 2¾ to 5 in | 60 | 47½ | 47½ |
| 6 in. and larger | 50 | 35 | .. |

**Merchant Steel.**—Implement makers, while specifying in slowly increasing volume, are ordering material only as it is needed for work in hand, and are not piling up stocks far in advance of requirements. New orders comprise but a small proportion of the business movement. Prospectively, conditions promise a material increase in business for the mills as soon as work on implements for spring delivery is well under way. We quote as follows: Planished or Smooth Finished Tire Steel, 1.78c.; Iron Finish, up to 1½ x ½ in., 1.73c., base, Steel card; Iron Finish, 1½ x ½ in. and larger, 1.58c., base, Tire card; Channels for solid Rubber Tires, ¾ to 1 in., 2.08c., and 1⅛ in. and larger, 1.98c.; Smooth Finished Machinery Steel, 2.08c.; Flat Sleigh Shoe, 1.63c,; Concave and Convex Sleigh Shoe, 1.83c.; Cutter Shoe, 2.05c.; Toe Calk Steel, 2.13c.; Railroad Spring, 1.98c.; Crucible Tool Steel, 7¼c. to 8c., and still higher prices are asked on special grades. Cold Rolled Shafting on contracts for 100 tons and over, 57 per cent. off; 56 per cent. off in car lots; 52 per cent. in less than car lots, on which carload freight is allowed within base territory.

**Cast Iron Pipe.**—The United States Cast Iron Pipe & Foundry Company was the low bidder on about 3500 tons of Pipe up last week for letting by the city of Cleveland, Ohio. Formal award of the contract has, however, not yet been made. Aside from this no individual transactions, including more than a few hundred tons, were included in the week's business. Orders of this character are fairly numerous, and in the aggregate furnish enough tonnage to keep the foundries reasonably active. Shortage of orders for a few sizes serves to sharpen competition, so that prices have not firmed up appreciably. Two small lots scheduled for early letting are 200 tons each for Hammond, Ind., and Holly, Colo. Prices are unchanged, which we quote nominally, per net ton, Chicago, as follows: Water Pipe, 4 in., $27; 6 to 12 in., $26; 16 in. and up, $25, with $1 extra for Gas Pipe.

**Metals.**—A decline of about ¼c. in Copper is said to be due to the unloading of stocks by some of the outside mining interests. As a result of the break, buying has been slightly stimulated though no large lots were taken in this market, there being no disposition to stock ahead on the concession offered. Lead, Zinc and Spelter is in a little better demand, with prices unchanged and reasonably firm at present levels. Quotations are as follows: Casting Copper, 13½c.; Lake, 13¾c. to 14c., in car lots for prompt shipment; small lots, ¼c. to ⅜c. higher; Pig Tin, car lots, 32½c.; small lots, 34½c.; Lead, Desilverized, 4.60c. to 4.65c., for 50-ton lots; Corroding, 4.85c. to 4.95c., for 50-ton lots; in car lots, 2¼c. per 100 lb. higher; Spelter, 4.80c.; Cookson's Antimony, 10½c., and other grades, 9¾c. to 10¼c.; Sheet Zinc is $7, f.o.b. La Salle, in car lots of 600-lb. casks. On Old Metals we quote: Copper Wire, 13½c.; Heavy Copper, 13¼c.; Copper Bottoms, 12c.; Copper Clips, 13¼c.; Red Brass, 12c.; Yellow Brass, 9½c.; Light Brass, 7c.; Lead Pipe, 4.30c.; Zinc, 3¾c.; Pewter, No. 1, 21c.; Tin Foil, 23c.; Block Tin Pipe, 25c.

**Old Material.**—So far as values are concerned the Scrap market, with the exception of two or three grades, is practically stationary. Consumers are buying as their needs demand, which, judging from the tonnage moved, are neither insistent nor for lots of considerable tonnage. Old Iron Axles have developed unexpected strength, which is likely due to anticipated requirements in connection with prospective car orders in which the specification of Iron Car Axles are expected. Wrought Scrap continues firm; a lot of 500 tons offered on a railroad list closed last week brought $14, or better. The real strength of the market lies, not so much in vigorous demand, as in the comparatively small tonnage being offered by the railroads. Dealers are of the opinion that, because of the small amount of replacements in cars and track made by the roads, no large increase in the present rate of supply from this source can be reasonably expected through the remainder of the year. None of the local mills seem to be actively in the market for Rerolling Steel Rails, and this is apparently confirmed by the lack of buoyance in prices of this material. The Chicago, Burlington & Quincy is offering a list of 3400 tons this week, in which there are 1100 tons of Nos. 1 and 2 Wrought. We quote the following prices, f.o.b. Chicago, per gross ton:

| | |
|---|---|
| Old Iron Rails | $18.00 to $18.50 |
| Old Steel Rails, rerolling | 16.00 to 16.50 |
| Old Steel Rails, less than 3 ft. | 14.75 to 15.25 |
| Relaying Rails, standard sections, subject to inspection | 20.00 to 21.00 |
| Old Car Wheels | 15.25 to 15.75 |
| Heavy Melting Steel Scrap | 13.00 to 13.50 |
| Frogs, Switches and Guards, cut apart | 13.50 to 14.00 |
| Mixed Steel | 10.25 to 10.75 |

The following quotations are per net ton:

| | |
|---|---|
| Iron Fish Plates | $17.00 to $17.50 |
| Iron Car Axles | 20.00 to 20.50 |
| Steel Car Axles | 17.50 to 18.00 |
| No. 1 Railroad Wrought | 14.00 to 14.50 |
| No. 2 Railroad Wrought | 13.00 to 13.50 |
| Railway Springs | 13.00 to 13.50 |
| Locomotive Tires, smooth | 13.25 to 13.75 |
| No. 1 Dealers' Forge | 10.25 to 10.75 |
| Mixed Busheling | 8.00 to 8.50 |
| Iron Axle Turnings | 6.75 to 7.25 |
| Soft Steel Axle Turnings | 6.75 to 7.25 |
| Machine Shop Turnings | 6.75 to 7.25 |
| Cast Borings | 5.50 to 6.00 |
| Mixed Borings, &c | 5.75 to 6.25 |
| No. 1 Mill | 8.00 to 8.50 |
| No. 2 Mill | 7.00 to 7.50 |
| No. 1 Boilers, cut to Sheets and Rings | 8.50 to 9.00 |
| No. 1 Cast Scrap | 13.00 to 13.50 |
| Stove Plate and Light Cast Scrap | 11.50 to 12.00 |
| Railroad Malleable | 12.25 to 12.75 |
| Agricultural Malleable | 11.00 to 11.50 |
| Pipes and Flues | 9.75 to 10.25 |

## St. Louis.

ST. LOUIS, September 21, 1908.

Both the leading manufacturers and the distributers of Steel, Iron and Metals report, with but few exceptions, a steady gain in the volume of transactions. The change for the better is the more marked if comparison is made with conditions which prevailed a few months ago. To this more favorable situation and outlook the railroads are contributing a goodly share. There are some large St. Louis structures, for the erection of which Eastern parties secured the contracts. This will result in the placing of orders for fabricating material for these buildings with Eastern interests direct.

**Coke.**—A fair demand is noted for Coke and prices are strong, but quotably unchanged. It is reported that Connellsville interests are fighting shy of contracts for the first half of 1909, based on current prices, and offers of $2.50, f.o.b. oven, are not always accepted. It is said that one of the largest companies in that section will not consider contracts for shipment over a period of one year pending the result of the national election. We quote $2.25 to $2.50, f.o.b. Connellsville, for 72-hr. Foundry Coke. The lower price is for prompt and the higher price for deferred shipment. The weakness in the East tends to make buyers cautious.

**Pig Iron.**—So far as large sales are concerned, at the close of the week there is not much actual business doing. One of the leading agents reports sale of 2000 tons of No. 2 Foundry to one of the largest St. Louis foundries, shipment over balance of this year. Another house also sold early in the week 1000 tons for shipment over first quarter of 1909, and a small order (150 tons) was placed at $14, for shipment over first quarter of 1909. A third concern reports a sale of 1000 tons of No. 2 Foundry for the first quarter of 1909. It is rumored there has been some resale Iron (a few hundred tons) offered at $12.75. There is still a pronounced disposition on the part of Southern furnaces not to make firm offerings for 1909. Inquiries both for fourth quarter of 1908 and first quarter of 1909 are fairly numerous with all the leading sellers. We quote, f.o.b. Birmingham, for No. 2 Foundry, $13 for balance of this year and $13.50 for first quarter of 1909.

**Finished Iron and Steel.**—The buying of Structural Steel must necessarily be confined to small buildings in the near future, since the contracts for some important structures were secured by Eastern parties, who will place their orders direct. The demand from railroads continues to improve and covers all kinds of material which enter into track and equipment repair work.

**Lead, Spelter, &c.**—Lead is ruling quiet, at 4.40c. to 4.42½c. Some brands are held higher. Lead Ore is easier. Zinc Ore is strong, at $38.50, Joplin basis, which points to a stronger Spelter market as soon as consumers realize this figure is beyond a parity. There is a good business being done, and stocks in the hands of producers are rapidly decreasing. We quote 4.65c. to 4.70c., St. Louis, according to deliveries. While the Brass trade is beginning to come into the market, the best demand is for galvanizing purposes.

**Old Material.**—The market for Old Material is doing better both in price and in demand, a large mill having increased its purchases. There are no offerings from the railroads to report this week. While some kinds of Scrap Iron have advanced, and prices of other kinds remain unchanged, but firm. We quote as follows per gross ton, f.o.b. St. Louis:

| | |
|---|---|
| Old Iron Rails | $16.50 to $17.00 |
| Old Steel Rails, rerolling | 15.50 to 16.00 |
| Old Steel Rails, less than 3 ft | 14.25 to 14.75 |
| Relaying Rails, standard sections, subject to inspection | 22.50 to 23.50 |
| Old Car Wheels | 15.00 to 15.50 |
| Heavy Melting Steel Scrap | 13.50 to 14.00 |
| Frogs, Switches and Guards, cut apart | 13.50 to 14.00 |
| Mixed Steel | 11.00 to 11.50 |

The following quotations are per net ton:

| | |
|---|---|
| Iron Fish Plates | $15.50 to $16.00 |
| Iron Car Axles | 18.50 to 19.00 |
| No. 1 Railroad Wrought | 13.50 to 14.00 |
| No. 2 Railroad Wrought | 12.50 to 13.00 |
| Railway Springs | 13.00 to 13.50 |
| Locomotive Tires, smooth | 13.00 to 13.50 |
| No. 1 Dealers' Forge | 11.50 to 12.00 |
| Mixed Borings, &c | 5.50 to 6.00 |
| Machine Shop Turnings | 8.00 to 8.50 |
| No. 1 Boilers, cut to Sheets and Rings | 9.50 to 10.00 |
| No. 1 Cast Scrap | 12.00 to 12.50 |
| Stove Plate and Light Cast Scrap | 10.50 to 11.00 |
| Railroad Malleable | 11.00 to 11.50 |
| Agricultural Malleable | 10.00 to 10.50 |
| Pipes and Flues | 8.75 to 9.50 |

The leading manufacturers of Brass state that August was their best month this year, and a better demand is coming from railroads than during the first half of 1908. Last month their sales of Solder and Babbitt Metal were larger than for the same month last year. The inquiry for Nonferrous Metal is not up to last year, though the demand is better than it was.

The H. A. Fuller Iron & Steel Company, a newly organized company, has taken offices in the Third National Bank Building. It represents the J. C. Pearson Company, Boston, cement nails; Pittsburgh Screw & Bolt Company; Fort Pitt Forge Company, rivets, upsets, &c., and Keystone Nail Company.

The Adreon Mfg. Company announces the formation of the company by E. L. Adreon, Jr., D. H. Niedlander and Wm. Miller, for the purpose of manufacturing and selling railroad supplies. The home office of the company will be in the Security Building, St. Louis, and Mr. Miller, vice-president, will have charge of the Chicago office in room 300, Western Union Building.

## Philadelphia.

PHILADELPHIA, PA., September 22, 1908.

The market continues rather quiet, and transactions in the majority of cases have been on a conservative basis. Buyers in many instances are marking time pending something more definite in the Presidential campaign, and, business it is believed, will be conducted along somewhat narrow lines until after the election. Purchases of Foundry Pig Iron of the higher grades have not been quite so heavy, but a comparatively good sale of Basic Iron for 1909 delivery has been made at an advanced price, with more business pending. Finished materials have not been quite so active, although there is a better tone to the market. The orders placed with local shipbuilders for four torpedo boat destroyers by the Government, at an aggregate cost of $2,658,000, will lead to some fair business in Plates and Shapes, while some other good business is under consideration. Haddonfield, N. J., is asking for bids on 11 miles of Water Pipe, it being undecided whether Cast Iron or Steel will be adopted for use in connection with a new municipal water plant. Structural Material, Billets, Sheets and Bars are just about holding their own, while the Old Material market, in the continued absence of business, is a trifle weaker. The drought is being felt to some extent in this section, but has not as yet seriously affected the trade.

**Pig Iron.**—Current business in the leading Foundry grades has been rather light. A good volume of inquiries for deliveries during the last quarter and first quarter of the year are before the trade, but actual orders for any material tonnage do not come out freely. Taken over an average period of a month, however, the volume of business in Pig Iron shows a very material increase. At the recent monthly meeting of the Eastern Pig Iron Association it developed that some furnaces had increased their tonnage of unfilled orders very largely, while others reported a steady and gradual gain in the business taken in the various grades and makers are encouraged with the prospects. On some grades, notably Forge and Basic Iron, a number of producers have booked all the tonnage they can take care of during the remainder of the year, with the present capacity in blast; and while there has been and is still a disposition shown on the part of some sellers to refuse to quote for next year, others have taken some fair lots during the week, particularly for Basic. Stocks on furnace banks are reported decidedly less, and some producers can just about hold their own with their present production, and in one or two cases admit that they are falling slightly behind in their deliveries. There seems to be no disposition to put in blast any further capacity beyond that recently announced, it being contended that prices have not yet reached a level where such action would yield a profit to the producer. There has been a decided stiffening in the prices of all the Foundry grades, as well as on Basic and Forge Irons, and sales have been pretty freely made at advanced prices. Sales of standard Foundry Irons during the week have been for the most part in small lots for prompt delivery. Full prices, however, are being received and sales of lots of 25 to 100 tons for shipment in the next 30 or 60 days are freely reported at $16.75 to $17, delivered, for No. 2 X Foundry, and these prices will apply in the majority of cases for delivery over the balance of the year, and while some sellers are asking 25c. above the top range for that grade, they as a rule fail to get the business. Several fairly good sales of No. 2 Plain Foundry Iron, for delivery in the last quarter, have also been reported at prices ranging from $16.50 to $16.75, delivered. Low grade Irons for delivery during the remainder of the year have been more actively taken during the week, and sales aggregating 3500 tons of Northern Iron at prices ranging from $15.50 to $15.65, and one lot of 2500 tons of No. 3 Southern Iron, on a basis of $12.50, Birmingham, for No. 2 were taken by a local Pipe foundry; while other inquiries aggregating several thousand tons of Pipe Iron are still before the trade. Southern Iron has not been very active, as outside the above noted sale transactions have been in rather small lots, for prompt shipment on the $13 Birmingham basis for No. 2 Foundry. Virginia Foundry Irons have been rather quiet. Recent sales have been in small lots for spot shipment at recently quoted prices. More activity has developed in Forge Iron, and sales of several small lots, with one of 500 tons and another of 1000 tons, are reported at prices ranging from $15.50 to $15.75, delivered. Basic Iron for delivery over the balance of the year is scarce and commands higher prices. Makers are pretty well covered as far as their capacities for the third quarter are concerned and are holding their Iron at $16 for such delivery. The policy of withholding quotations for this grade for the first quarter of next year has been abandoned, and sellers are now freely quoting $16. Buyers have been awaiting this move for some time, and have been frequent inquirers heretofore without result. That they were willing to come into the market as soon as a reasonable price was quoted is evidenced by a sale of 16,000 tons at the price named to an Eastern Steel mill a few days ago, while other business is pending. Low Phosphorus Iron is dull, the demand is light and prices can hardly be termed strong at the quoted figures. The situation on the whole continues strong. Sellers are not forcing business, while buyers, though making numerous inquiries, are not covering themselves for any great period ahead. Prices are being firmly maintained, and there appears to be a gradual upward tendency due to slightly better consumption. For delivery in buyers' yards the following range of prices is quoted for shipment over the balance of the year, except for the Virginia grades, which are for prompt shipment:

| | |
|---|---|
| Eastern Pennsylvania, No. 2 X Foundry | $16.75 to $17.00 |
| Eastern Pennsylvania, No. 2 Plain | 16.25 to 16.50 |
| Virginia, No. 2 X Foundry | 17.00 |
| Virginia, No. 2 Plain | 16.75 |
| Gray Forge | 15.50 to 15.75 |
| Basic | 16.00 |
| Low Phosphorus | 20.00 to 20.50 |

**Ferromanganese.**—The demand continues rather light. Some small tonnage has been sold, and prices show a somewhat smaller range. Quotations for deliveries covering the first half of next year range from $43 to $44, Baltimore, with spot lots probably a shade less.

**Plates.**—The business coming out shows no material improvement, and mills have been just about able to maintain their current rate of production. The outlook is more encouraging. A considerable tonnage of Plates will develop from the shipyards, to cover recent contracts for torpedo boat destroyers, while several Steel water Pipe propositions, which will require a considerable tonnage of Plates, are pending. Prices are being strongly maintained, and are quoted as follows, for delivery in this territory:

| | Carloads. Cents. | Parts carload. Cents. |
|---|---|---|
| Tank, Bridge and Boat Steel | 1.75 | 1.80 |
| Flange or Boiler Steel | 1.85 | 1.95 |
| Commercial Firebox | 1.95 | 2.00 |
| Marine | 2.15 | 2.20 |
| Locomotive Firebox Steel | 2.25 | 2.30 |

The above are base prices for ¼-in. and heavier. The following extras apply:

| | Extra per 100 lb. |
|---|---|
| 3-16-in. thick | $0.10 |
| Nos. 7 and 8, B. W. G. | .15 |
| No. 9, B. W. G. | .25 |
| Plates over 100 to 110 in. | .05 |
| Plates over 110 to 115 in. | .10 |
| Plates over 115 to 120 in. | .15 |
| Plates over 120 to 125 in. | .25 |
| Plates over 125 to 130 in. | .50 |
| Plates over 130 in. | 1.00 |

**Steel Billets.**—No particular change is to be noted in the demand. Business continues of a day to day character, but is sufficient to maintain about an even production. For

delivery in this territory Ordinary Rolling Steel is quoted at $26.20, and Forging Steel, $28.20, subject to the usual extras for high carbons and special sizes.

**Structural Material.**—The tonnage recently placed has not been large, and the local demand has been confined largely to miscellaneous lots. The McClintick-Marshall Company has taken a contract for a small bridge near Pottstown, Pa., but the larger propositions recently figured on are being held in abeyance. Prices are unchanged, 1.75c. to 1.90c. being quoted, according to specifications, for deliveries in this territory.

**Sheets.**—Business has been somewhat irregular, but, in the aggregate, averages up fairly well. Buying still continues on a small scale, and orders are mostly for prompt shipment. Prices are unchanged, and range as follows, for mill shipment, a tenth extra being added for small lots: Nos. 18 to 20, 2.50c.; Nos. 22 to 24, 2.60c.; Nos. 25 to 26, 2.70c.; No. 27, 2.80c.; No. 28, 2.90c.

**Bars.**—The demand is hardly as good, buyers' requirements for immediate delivery being pretty well covered. Prices continue to be pretty firmly maintained, and 1.40c., at Eastern mill, is a fairly well established price for Refined Iron Bars, equal to 1.45c. to 1.50c., delivered. Production, while irregular, continues on a fairly even basis. Steel Bars are dull, at 1.55c., delivered, with Rerolled Bars at 1.50c., delivered in this territory.

**Coke.**—Sales have been small, and the market shows little activity. Spot Coke is not being as freely offered as it was, and such business as has been reported in contract Coke has been done at unchanged price. Foundry Coke is quoted $2 to $2.25, at oven, with Furnace Coke ranging from $1.50 to $1.75. For delivery in this territory, the following range of prices is named:

| | |
|---|---|
| Connellsville Furnace Coke | $3.65 to $3.90 |
| Foundry Coke | 4.15 to 4.40 |
| Mountain Furnace Coke | 3.25 to 3.50 |
| Foundry Coke | 3.75 to 4.00 |

**Old Material.**—The market appears to be a shade weaker. Melters still hold at former offers of $15 for Heavy Melting Steel, but while sellers continue to ask an advance, their ideas are hardly as high as they were, and they would in some cases accept $15.50 for prompt shipment of this grade. Mills offer from 25c. to 50c. less than sellers' prices for nearly all the leading grades, but no sales have been made at the lower price levels. Nominal quotations for prompt deliveries in buyers' yards, eastern Pennsylvania and nearby territory range about as follows:

| | |
|---|---|
| No. 1 Steel Scrap and Crops | $15.00 to $15.50 |
| Low Phosphorus | 18.50 to 19.00 |
| Old Steel Axles | 21.50 to 22.00 |
| Old Iron Axles | 22.50 to 23.00 |
| Old Iron Rails | 20.50 to 21.00 |
| Old Car Wheels | 15.00 to 15.50 |
| Choice No. 1 R. R. Wrought | 18.25 to 18.75 |
| Machinery Cast | 15.25 to 15.75 |
| Railroad Malleable | 13.50 to 14.00 |
| Wrought Iron Pipe | 14.25 to 14.75 |
| New Bundled Sheets | 13.50 to 14.00 |
| No. 1 Forge Fire Scrap | 12.00 to 12.50 |
| No. 2 Light Iron | 8.75 to 9.25 |
| Wrought Turnings | 11.50 to 12.00 |
| Stove Plate | 13.00 to 13.50 |
| Cast Borings | 11.25 to 11.75 |
| Grate Bars | 13.50 to 14.00 |

The Charles Dreifus Company, Iron and Steel merchant, will remove from its present offices, 1008-1009 North American Building, on October 1, having taken offices in the Pennsylvania Building, Fifteenth and Chestnut streets, rooms 501-2-3.

## Pittsburgh.

PARK BUILDING, September 23, 1908.—(*By Telegraph.*)

**Pig Iron.**—The Pig Iron market has been exceedingly quiet in the past week. Work among the foundries and other consumers of Iron seems to be falling off instead of increasing, and this is naturally curtailing the consumption of Pig Iron, which has been light for many months. We also note that some large Western consumers of Pig Iron, who bought quite freely two or three months ago, are not taking the Iron out promptly, but have asked the furnaces to defer shipments. The Brier Hill Iron & Coal Company has about completed the rebuilding of its Grace Furnace, at Youngstown, and it will probably go in blast at an early date. The furnace will be able to make about 400 tons of Pig Iron per day. Two or three fairly large sales of Basic Iron were made about a week ago, but at concessions over former prices. We quote Standard Bessemer Iron at $15, Malleable Bessemer $14.50, Basic $14.25 and No. 2 Foundry $14.35 to $14.50, all at Valley furnace, plus a freight rate of 90c. to Pittsburgh. Forge Iron is absolutely stagnant, and is nominally $13.50, at Valley furnace.

**Steel.**—It is said that Billets are moving out a little more freely on specifications against contracts, but this is offset by the falling off in the demand for both Sheet and Tin Bars, especially in the latter, due to the fact that the Tin Plate trade for this year is about over, and the Tin Plate mills are running to about only 40 per cent. of their capacity. The Bessemer plant of the Republic Iron & Steel Company, which was down last week, started up on Sunday night, September 20, and has a fair run of orders ahead. While regular prices on Billets and Sheet and Tin Bars are being maintained, most consumers have sliding scale contracts, by which they get their Steel at less than regular prices. We quote Bessemer and Open Hearth Billets, 3⅞ in. and larger, up to and including 0.25 carbon, $25; 0.26 to 0.60 carbon, $1 extra; over 0.60 carbon, $2 extra, all f.o.b. Pittsburgh. For Wheeling, Martins Ferry, Follansbee, Newcastle, Sharon, Steubenville and Washington (Pa.) delivery, half the freight, or 50c. additional, is charged. Sheet and Tin Bars in random lengths are $27, f.o.b. Pittsburgh. Forging Billets take $2 advance over Rolling Billets.

(*By Mail.*)

So far as new business and specifications against contracts are concerned, the Steel trade so far in September has not been as good as in the first half of August, and it is not believed that when this month is closed it will make a favorable comparison with last month. This condition is largely ascribed to the fact that the election is only six weeks away, and there is a decided tendency on the part of the trade to hold off buying until after the result is known. Numerous reports are in circulation of cutting on practically all lines of Finished Iron and Steel, but when these are sifted down it is usually found that concessions are being made by some of the small mills on orders for spot shipment, but with the larger Steel interests the market is being pretty well held. Pig Iron has been exceedingly dull, and prices are weak, with hardly enough new business being offered to test the market thoroughly. There are no changes in the situation in the Valley furnaces, the output running from 12,000 to 13,000 tons per week, the merchant furnaces reporting stocks of about 60,000 tons. These do not include Iron held in the yards of the Youngstown Sheet & Tube Company and the Republic Iron & Steel Company, both having a good deal of metal on hand. Bessemer Pig Iron continues to rule at $15, at Valley furnace, but Basic is lower, and in the past week several round lots have sold at $14.25. Northern No. 2 Foundry Iron is held by most sellers at $14.50, at Valley furnace, but on some orders recently closed $14.35 to $14.40 was done. Consumers of Billets are taking out a little more Steel on contracts, but not much new business is offering. A leading consumer of Tin Bars has recently practically covered his requirements for some time ahead. There is a good deal of inquiry for Structural Material, and a fair amount is being placed, but it is now so late in the year that it is probable that some large jobs that were expected to come out will go over until next year. The demand for Sheets is reported to be slightly better, but some shading is being done in prices, and this is also true of Tin Plate. The Coke trade continues very dull, with no betterment in prices, and only a small amount of Old Material is changing hands, with prices about the same as last week.

**Ferromanganese.**—Most consumers are pretty well covered and the inquiry is light. A few who bought pretty freely of Ferro early in the year are offering some of it for resale. We quote 80 per cent. foreign Ferro at $43, seaboard, equal to $43.95, Pittsburgh.

**Ferrosilicon.**—No sales have been reported in this district for some time. We quote 50 per cent. at $57.50, Pittsburgh.

**Muck Bar.**—The dull condition of the Bar Iron trade is reflected in Muck Bar, and no sales are reported. We quote best grades, made from all Pig Iron, at nominally $25, Pittsburgh.

**Wire Rods.**—A fair amount of inquiry is reported, but a number of consumers bought pretty freely some time ago, and now have their requirements pretty well covered for the rest of this year. We quote Bessemer Rods at $33, Basic, $34, and Chain Rods, $33, Pittsburgh.

**Skelp.**—Not much new tonnage in Skelp is being bought in the general market, most of the leading Pipe mills making their own supply. A local mill that rolls Skelp for the general market has done very little for some months. We quote: Grooved Steel Skelp, 1.45c. to 1.50c.; Sheared Steel Skelp, 1.50c. to 1.60c.; Grooved Iron Skelp, 1.60c. to 1.70c., and Sheared Iron Skelp, 1.70c. to 1.75c., f.o.b. Pittsburgh.

**Steel Rails.**—The market on standard sections is very dull, but a few scattering specifications are coming in for small lots. The demand for Light Rails is fairly active, the Carnegie Steel Company having taken orders for about 2000 tons in the past week. Prices on Light Rails seem to be firmer, and rerolling Rail mills are adhering more closely to the prices named on new Rails than for some time. The Carnegie Steel Company is operating Nos. 1 and 2 Edgar Thomson mills to about 35 per cent. of capacity, the heavier Sections from 70 lb. to 100 lb. being rolled on No. 1, and medium Sections, from 40 lb. to 60 lb., on No. 2. On No. 3 mill Light Rails are rolled, and this mill has been closed for several weeks, but may possibly start next Sunday night. Prices on new Light Rails, which are sometimes shaded from $1 to $2 a ton for rerolled Rails, are as

follows: $25 for 25 to 45 lb. Sections, with $1 advance for 20 lb., $2 advance for 16-lb., and $3 advance for 12-lb. Standard Sections are $28, at mill, and Angle Splice Bars, 1.65c., at mill.

**Structural Material.**—Some tonnage has been placed, and a fair amount of work is in sight. The bridge over the Monongahela River, at Monongahela City, Pa., on which the Fort Pitt Bridge Works was the lowest bidder, has not yet been placed, as Washington County, which was to pay about half the cost of the bridge, has had some trouble in placing its bonds. The Pittsburgh Steel Construction Company has taken about 200 tons for a new Masonic temple at Youngstown, 500 tons for a blast furnace and boiler house in the South, 1600 tons for the First National Bank building, this city, and 1500 to 2000 tons for a 12-story office building in Houston, Texas. The Pennsylvania Steel Company has taken 2000 tons for a Pennsylvania Railroad bridge at Hackensack, N. J. On September 30 the Iowa Central Railroad is expecting to award the contract for a bridge over the Mississippi River, 4000 tons, bids for which went in some time ago. The Jones & Laughlin Steel Company is now delivering to the McClintic-Marshall Construction Company some of the Steel for the Pittsburgh & Lake Erie bridge, at Beaver, Pa. It is intimated that prices of plain material are not being strictly held in all cases, some very low figures having recently been made for fabricated and erected work, which the price of 1.60c. on Beams and Channels would hardly allow. We quote, f.o.b. mill, Pittsburgh: I-Beams, H-Beams and Channels, 3 to 15 in., inclusive, 1.60c., net; Beams over 15 in., 1.70c., net; Angles, 3 to 6 in., inclusive, ¼ in. and up, 1.60c., net; Angles, over 6 in., 1.70c., net; Angles, 3 x 3 in. and up, less than ¼ in., 1.50c., base, half extras, Steel Bar card; Tees, 3 in. and up, 1.65c., net; Zees, 3 in. and up, 1.60c., net; Angles, Channels and Tees under 3 in., 1.50c., base, half extras, Steel Bar card; Deck Beams and Bulb Angles, 1.90c., net; Hand Rail Tees, 3c., net; Checkered and Corrugated Plates, 3c., net.

**Plates.**—The general run of orders for Plates is light and is only for small lots for actual needs. The Steel car companies have not yet begun to specify for the Plates for the cars recently placed by the Harriman interests, but the Carnegie Steel Company is now rolling at its Homestead Works the Plates and Sheets for the two Ore boats recently ordered for the American Shipbuilding Company, and which are being shipped to Lorain. The 20,000 tons for the Brooklyn water works are still being held up by injunction, and the dispute may not be settled for some time. There is some unevenness in prices of Plates, some of the mills shading to the extent of $2 a ton. Regular prices are as follows: Tank Plates, ¾ in. thick, 6¼ in. up to 100 in. wide, 1.60c., base, at mills, Pittsburgh. Extras over this price are as follows:

Tank, Ship and Bridge quality, ¼ in. thick on edges, 100 in. wide, down to but not including 6 in. wide, is taken as base.

Steel Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per square foot, shall be considered ¼-in. Plate. Steel Plates over 72 in. wide must be ordered ¼-in. thick on edge, or not less than 11 lb. per square foot, to take base price. Steel Plates over 72 in. wide ordered less than 11 in. per square foot down to the weight of 3-16-in. shall take the place of 3-16-in.

Percentages as to overwheight on Plates, whether ordered to gauge or weight, to be governed by the Association of American Steel Manufacturers' Standard Specifications.

| | |
|---|---|
| Gauges under ¼-in. to and including 3-16-in. Plates on thin edges | $0.10 |
| Gauges under 3-16-in. to and including No. 8 | .15 |
| Gauges under No. 8 to and including No. 9 | .25 |
| All sketches (excepting straight taper Plates varying not more than 4 in. in width at ends, narrowest end being not less than 30 in.) | .10 |
| Complete Circles | .20 |
| Boiler and Flange Steel Plates | .10 |
| "A. B. M. A." and ordinary Firebox Steel Plates | .20 |
| Still Bottom Steel | .30 |
| Marine Steel | .40 |
| Locomotive Firebox Steel | .50 |
| Shell grade of Steel is abandoned. | |
| For widths over 100 in. up to 110 in | .05 |
| For widths over 110 in. up to 115 in | .10 |
| For widths over 115 in. up to 120 in | .15 |
| For widths over 120 in. up to 125 in | .25 |
| For widths over 125 in. up to 130 in | .50 |
| For widths over 130 in | 1.00 |

TERMS.—Net cash 30 days. Pacific Coast base, 1.50c., f.o.b. Pittsburgh.

**Sheets.**—The American Sheet & Tin Plate Company and most of the independent Sheet mills are able to operate to between 50 and 60 per cent. of capacity. The demand for Sheets is showing some betterment. While prices are fairly well maintained, they are sometimes shaded by a few mills, but mostly for prompt shipment. The American Sheet & Tin Plate Company has taken a contract for about 500 tons of Galvanized Sheets to be furnished the Pressed Steel Car Company. For shipment from mill, regular prices, which are shaded by some mills from $1 to 2 a ton, are as follows: Blue Annealed Sheets, No. 10 and heavier, 1.80c.; Nos. 11 and 12, 1.85c.; Nos. 13 and 14, 1.90c.; Nos. 15 and 16, 2c.; Box Annealed, Nos. 17 to 21, 2.25c.; Nos. 22 to 24, 2.30c.; Nos. 25 and 26, 2.35c.; No. 27, 2.40c.; No. 28, 2.50c.; No. 29, 2.60c.; No. 30, 2.70c. Galvanized Sheets: Nos. 10 and 11, 2.45c.; Nos. 12 and 14, 2.55c.; Nos. 15 and 16, 2.65c.; Nos. 17 to 21, 2.80c.; Nos. 22 and 24, 2.95c.; Nos. 25 and 26, 3.15c.; No. 27, 3.35c.; No. 28, 3.55c.; No. 29, 3.70c.; No. 30, 3.95c.; No. 28, Painted Roofing Sheets, $1.75 per square, and Galvanized Roofing Sheets, No. 28, $3.10 per square, for 2½-in. corrugations. These prices are subject to a rebate of 5c. per 100 lb. to the large trade under the usual conditions, jobbers charging the usual advances for small lots from store.

**Tin Plate.**—The Tin Plate trade for this year is practically over, and only a few scattering orders are being placed. The American Sheet & Tin Plate Company is operating to between 40 and 45 per cent. of capacity, and most of the independent mills are running at about the same rate. Competition for what little new business is coming up is keen, and prices are being shaded to some extent, but as yet this has not seriously disturbed the market. The regular price of Tin Plate, which is being shaded more or less, is $3.70 for 100 lb. Cokes, 14 x 20, f.o.b. Pittsburgh, terms 30 days, less 2 per cent. off for cash in 10 days, this price being subject to the usual rebate of 5c. per base box in large lots.

**Hoops and Bands.**—A moderate amount of new tonnage is being placed, and specifications against contracts are fair. It is stated that regular prices on Hoops and Bands are being fairly well maintained, as follows: Steel Hoops, 1.80c., base, full Hoop card prices; Steel Bands, 1.40c., base, half Steel card extra, all f.o.b. cars, Pittsburgh, in carload lots, for delivery during 1908.

**Bars.**—A fairly active movement is reported in Steel Bars, some new orders being placed, and specifications against contracts are coming in quite freely. The leading makers—Carnegie, Jones & Laughlin, and Republic—are operating their Bar mills to fuller capacity than for some time, and shipments are correspondingly heavy. The demand for Iron Bars is only fair, and is confined mostly to small lots for urgent needs, specifications against contracts coming in rather slowly. We quote Iron Bars at 1.40c., base, for Pittsburgh delivery, and 1.35c., base, for Western points, to which freight is added, except Chicago, the price for which is 1.50c., delivered. We quote Steel Bars at 1.40c., Pittsburgh, for base sizes.

**Merchant Steel.**—A fairly active demand is noted for Hot and Cold Rolled Shafting, and some good sized contracts have lately been placed for delivery over the balance of this year and into next year. Prices are fairly strong, but on desirable tonnage the official price of 57 per cent. off in carloads has been shaded two or three points. Specifications against contracts for Merchant Steel are fairly active, but very little new business is being placed. We quote Cold Rolled Shafting at 57 per cent. off in carloads and 52 per cent. in less than carloads, delivered in base territory, but the lower price is being shaded on desirable orders. Prices on Merchant Steel are also being shaded, regular quotations being as follows: Smooth Finished Machinery Steel, 1.80c. to 1.90c.; Flat Sleigh Shoe, 1.75c. to 1.85c.; Cutter Shoe Steel, 2.15c. to 2.25c.; Toe Calk, 1.90c. to 1.95c.; Railroad Spring Steel, 1.60c. to 1.75c., the higher prices being for Pennsylvania Railroad analysis. Carriage Spring Steel is 1.80c.; Tire Steel, Iron finish, 1½ x ½ in. and heavier, 1.40c.; under 1½ in., 1.55c. Planished Tire Steel is 1.60c., all f.o.b. at mill.

**Merchant Pipe.**—An inquiry is in the market for 4 miles of 2-in. Pipe for delivery to Chicora, Pa., and a similar inquiry for 4 miles of 2-in. for delivery to West Virginia. There is a good general run of orders for Merchant Pipe, and new business seems to be slowly increasing. Prices on Steel Pipe are being maintained by the leading mills, but are sometimes slightly shaded by several of the smaller mills for prompt shipment. Discounts on Iron Pipes are also being shaded, and the market is not as strong as on Steel. Discounts on Steel Pipe, ¾ to 6 in., to the large trade are 76 and 5 per cent. off list. Regular discounts are as follows:

*Merchant Pipe.*

| | Jobbers, carloads, Steel. Black. % | Galv. % |
|---|---|---|
| ⅛ to ¼ in | 67 | 51 |
| ⅜ in | 69 | 55 |
| ½ in | 71 | 59 |
| ¾ to 6 in | 75 | 65 |
| 7 to 12 in | 72 | 57 |
| Extra strong, plain ends: | | |
| ⅛ to ¾ in | 60 | 48 |
| ½ to 4 in | 67 | 55 |
| 4½ to 8 in | 63 | 51 |
| Double extra strong, plain ends: | | |
| ½ to 8 in | 56 | 45 |

Discounts on Genuine Iron Pipe are as follows:

| | Black. % | Galv. % |
|---|---|---|
| ⅛ to ¼ in | 65 | .. |
| ⅜ in | 67 | 53 |
| ½ in | 69 | 57 |
| ¾ to 6 in | 73 | 63 |
| 7 to 12 in | 70 | 55 |
| Extra strong, plain ends: | | |
| ⅛ to ⅜ in | 58 | 46 |
| ½ to 4 in | 65 | 53 |
| 4½ to 8 in | 61 | 49 |
| Double extra strong, plain ends: | | |
| ½ to 8 in | 54 | 43 |

**Railroad Spikes.**—The Great Northern Railroad has bought a fairly large quantity of Spikes in standard sizes, from 2000 to 2500 kegs having been placed with two of the local mills. There is an active demand for the smaller sizes, and one local mill has work ahead for six to eight weeks. We quote: Standard sizes, 4½ x 9-16 in., at $1.70, and the smaller sizes at $1.80 per 100 lb. in carload and larger lots, with an advance of 5c. per 100 lb. for less than carload, f.o.b. Pittsburgh.

**Spelter.**—The market continues dull, and prices are weak. We quote prime grades at about 4.55c., East St. Louis, equal to 4.67½c., Pittsburgh. On a firm offer this price would likely be shaded.

**Boiler Tubes.**—The railroads are doing more repair work, and are buying Boiler Tubes a little more freely, but their orders are still in small lots for actual needs. Regular discounts on Merchant Tubes in small lots, on which an extra 5 per cent. is allowed in carloads, but which discounts are being shaded, are as follows:

*Boiler Tubes.*

| | Iron. | Steel. |
|---|---|---|
| 1 to 1½ in. | 42 | 47 |
| 1¾ to 2¼ in. | 42 | 59 |
| 2½ in. | 47 | 61 |
| 2¾ to 5 in. | 52 | 65 |
| 6 to 13 in. | 42 | 59 |

2½ in. and smaller, over 18 ft. long, 10 per cent. net extra.
2¾ in. and larger, over 22 ft. long, 10 per cent. net extra.

**Iron and Steel Scrap.**—The market is very quiet, large consumers being pretty well covered. In spite of the absence of buying, prices on most lines of Scrap are fairly strong, and as yet there is no disposition on the part of dealers to sacrifice values to effect sales. Dealers quote about as follows: Heavy Steel Scrap, for Pittsburgh, Sharon, Steubenville, Follansbee and Monessen delivery, $14.25 to $14.50, while Heavy Steel Scrap, for hand charged Open Hearth furnaces, and for pieces weighing 10 lb. minimum and 300 lb. maximum, is $1 a ton higher; Cast Iron Borings, $8.75 to $9; Bundled Sheet Scrap, $12.25 to $12.50; No. 1 Cast Scrap, $14.25 to $14.50; No. 1 Railroad Wrought, $15 to $15.25; No. 1 Busheling Scrap, $13.50 to $14; No. 2, $10 to $10.25; Sheet Bar Crop Ends, $17.50 to $18; Iron Axles, $22 to $22.50; Steel Axles, $19; Low Phosphorus Melting Stock, $18.50 to $19; Rerolling Rails, $16 to $16.25; Machine Shop Turnings, $9.50 to $9.75; Railroad Malleable, $14; Grate Bars, $12.25 to $12.50; Old Car Wheels, $14.50 to $14.75, all in gross tons.

**Coke.**—This trade does not show any betterment, either in demand or prices, and until general conditions in the Iron trade improve it is unreasonable to expect better things in the Coke business. From 50 to 55 per cent. of the ovens in the Upper and Lower Connellsville regions are active, and the output is running about 190,000 tons per week. Best grades of Connellsville Furnace Coke, for prompt shipment, can still be had as low as $1.50 a ton, at oven, while other grades of Furnace Coke have sold at $1.40 a ton or less. For delivery through the balance of this year, Connellsville Furnace Coke is held at about $1.65, and for first half of next year from $1.75 to $1.85 a ton, at oven. The long continued drought is affecting operations at the ovens to some extent, but this is not being as seriously felt as would be the case if the demand for Coke were heavier.

## Cincinnati.

CINCINNATI, OHIO, September 23, 1908.—(*By Telegraph.*)

The excessive heat of the past few days and the exciting political agitation seem to have seriously disturbed the Iron and Steel trade. Sellers of all kinds unite in the opinion that it is very dull. In finished lines there are some late specifications for architectural Steel, but otherwise they are very quiet. The Scrap markets are dead. There is a diversity of opinion as to conditions in the machinery trade. While with lathe and drill manufacturers it is abnormally quiet, and inquiries have fallen off, shapers, milling machines and planers are doing well. Large concerns here manufacturing the last named tools all report a very satisfactory business for the week.

**Pig Iron.**—Interest in Pig Iron the past week has centered in the doings of the Pipe, stove and agricultural implement manufacturers. The large Michigan interest, which was in the market for a heavy tonnage, has, it is understood, bought very recently 1000 tons of 3 to 4 per cent. Silvery from a Southern furnace at a price near $17, delivered. A tonnage of Northern Iron purchased by the same consumer a few weeks ago is credited to a Toledo furnace, and it is understood it is still in the market for some straight Southern Foundry. The Ohio Pipe interest, which was last week in the market for a month's requirements, has instead bought something like 12,000 tons for delivery over the last quarter, and at a price said to average near $15, delivered. A Cleveland furnace interest is credited with this sale, which included Nos. 2, 3 and 4 Foundry. A northern Ohio implement manufacturer has purchased 4000 tons of Basic for delivery into next year at a price of about $14.50 from a Central Ohio furnace interest, which had, it is understood, some close business relations with the manufacturer. A sale of Forge and Mottled in this market marks a new price on low grades. Two thousand tons, of which 1500 was Forge and 500 Mottled, went, it is understood, at a price of about $11.50, Birmingham, for delivery over the balance of the year. The cutting by Eastern and Valley furnaces seems to have had an effect on Ohio Irons, for a disposition appears manifest to contract at from 25c. to 50c. less per ton than early September prices. A number of transactions, involving both small and large, nearby shipment, have been booked, it is understood, at $14.50 and $14.75 for No. 2, although many furnaces are holding for $15 and even $15.50. A Central Ohio manufacturer is asking for prices on 2000 tons of Malleable for the first half. This business is expected to be taken by Columbus. An Indiana agricultural implement manufacturer wants prices on 400 tons of Foundry Iron for the first half. It is understood that a Kentucky foundry, which was in the market for 500 tons of Virginia and Ohio and Southern Iron, has purchased a part, but is still feeling for better prices on the Southern product. For early delivery and balance of the year, we quote, f.o.b. Cincinnati, the freight rate being $3.25 from Birmingham and $1.20 from the Hanging Rock District, as follows:

| | |
|---|---|
| Southern Coke, No. 1 | $16.25 to $16.75 |
| Southern Coke, No. 2 | 15.75 to 16.25 |
| Southern Coke, No. 3 | 15.25 to 15.75 |
| Southern Coke, No. 4 | 15.00 to 15.50 |
| Southern Coke, No. 1 Soft | 16.25 to 16.75 |
| Southern Coke, No. 2 Soft | 15.75 to 16.25 |
| Southern Coke, Gray Forge | 14.25 to 14.75 |
| Ohio Silvery, 8 per cent. Silicon | 19.70 |
| Lake Superior Coke, No. 1 | 16.45 to 16.95 |
| Lake Superior Coke, No. 2 | 15.95 to 16.45 |
| Lake Superior Coke, No. 3 | 15.45 to 15.95 |
| Standard Southern Car Wheel | 22.25 to 22.75 |
| Lake Superior Car Wheel | 21.75 to 22.25 |

(*By Mail.*)

**Coke.**—Consumers are taking Coke on contract, but very little new business is coming out and the price is a little weaker on all Furnace products, with a very small volume reported on Foundry grades from any field. The continued drought has affected the smaller producer seriously, and ovens are being put out daily. Producers in the Virginia field are complaining that they cannot make Furnace Coke at a less price than $1.85 net, and threaten to put out ovens if the market sags any below that figure. Some of the large producers announce that they are sold up to the first of the year and do not care for more business for the last quarter. It is possible to-day to get some grades of Wise County Furnace Coke at $1.75 for spot delivery. Pocahontas is quotable at about $1.50, at oven, and for the last quarter about $1.65; Connellsville Furnace, prompt delivery, $1.60, and for last quarter $1.85, and for the first half $2.25; Connellsville Foundry, spot, $2.10, and on contract $2.25, at oven.

**Finished Iron and Steel.**—Dealers announce prices unchanged, with business dull. Mills are making very prompt deliveries. There are a few specifications in for building material of various kinds, Beams and Twisted Bars for concrete work being most active. Collections are slow. Most dealers attribute the present stagnation to the election excitement and do not expect any marked improvement until after November. Dealers' prices to the trade f.o.b. Cincinnati, are as follows: Iron Bars, carload lots, 1.65c., base, with half extras; small lots from store, 1.85c., base, half extras; Steel Plates, carload lots, 1.75c., base, with half extras; small lots from store, 1.85c., base, half extras; Base Angles, carload lots, 1.85c., base; small lots from store, 2.10c.; Beams, Channels and Structural Angles, 1.85c., base; small lots from store, 2.10c.; Plates, ¼-in. and heavier, carload lots, 1.85c.; small lots from store, 2c.; Blue Annealed Sheets, heavy, No. 16, carload lots, 2.15c.; small lots from store, 2.50c.; No. 14, carload lots, 2.05c.; small lots from store, 2.40c.; No. 10 and heavier, carload lots, 1.95c.; small lots from store, 2.20c.; No. 12, carload lots, 2c.; small lots from store, 2.30c.; Sheets (Light), Black, No. 28, carload lots, 2.65c.; Galvanized Sheets, No. 28, carload lots, 3.70c.; Steel Tire, 4-in. and heavier, carload lots, 1.95c.; Plates, 3-16 and No. 8, carload lots, 2c.; small lots from store, 2.20c.

**Old Material.**—There is no consumption, and dealers are turning their attention to each other, with prevailing prices a little weaker all through the list. The mills are apparently all stocked up, as nothing is being done in this direction. Some Old Car Wheels have been bought in this territory from Western dealers, at a considerable shading of the early September market, it is understood. Dealers' prices to the trade are about as follows, f.o.b. Cincinnati:

| | |
|---|---|
| No. 1 R. R. Wrought, net ton | $12.50 to $13.50 |
| Cast Borings, net ton | 5.00 to 5.50 |
| Heavy Melting Steel Scrap, gross ton | 14.00 to 15.00 |
| Steel Turnings, net ton | 6.00 to 7.00 |
| No. 1 Cast Scrap, net ton | 12.00 to 13.00 |
| Burnt Cast, net ton | 9.00 to 10.00 |
| Old Iron Axles, net ton | 16.50 to 17.50 |
| Old Iron Rails, gross ton | 15.00 to 16.00 |
| Old Steel Rails, short, gross ton | 13.00 to 14.00 |
| Old Steel Rails, long, gross ton | 12.50 to 13.50 |
| Relaying Rails, 56 lb. and up, gross ton | 20.50 to 21.50 |
| Old Car Wheels, gross ton | 13.00 to 14.00 |
| Low Phosphorus Scrap, gross ton | 14.00 to 15.00 |

## Cleveland.

CLEVELAND, OHIO, September 22, 1908.

**Iron Ore.**—While a few sales of small lots were made during the week, there was less activity in the market than in the previous two weeks. Some small inquiries are pending, but the merchant firms do not look for the sale of any large tonnages, as nearly all the consumers that will need more Ore have covered for their requirements. Ore is moving down the lakes at about the same rate as in August, and the shipments this month are expected to be between 4,500,000 and 5,000,000 tons, but a falling off in the movement is expected next month, and it is believed that the shipments will be very light after October. Prices at Lake Erie docks, per gross ton, are as follows: Old Range Bessemer, $4.50; Mesaba Bessemer, $4.25; Old Range Non-Bessemer, $3.70; Mesaba Non-Bessemer, $3.50.

**Pig Iron.**—The market has been fairly active, being stimulated to some extent by the low prices that are prevailing. Sales have been mostly small lots of Foundry Iron, ranging from 100 to 500 tons for delivery over the balance of the year. The greater part of the buying has been by consumers outside of this territory. There is more inquiry for Foundry Iron for first quarter and first half delivery. While a large share of the inquiries are regarded simply as feelers, a little tonnage is being bought for next year's delivery. Some furnace interests do not care to sell for delivery so far ahead, but others are glad to take on such business. Furnaces are asking $15 for No. 2 Foundry, for first half delivery, but this price is being shaded. The largest sale reported was made to a local foundry, the purchaser taking 1800 tons of Foundry Iron for the first half at a price under $15, at furnace, for No. 2. Foundries are disposed to cover for a portion of their first half requirements, provided that they can buy at about present prices. The nominal Valley price for No. 2 Foundry for the balance of the year is $14.50, but this is being shaded, and other Ohio furnaces seeking business have been forced to quote prices slightly lower than they have been holding to meet the competition. Valley furnaces are active in Indiana and Michigan, and are taking orders in competition with the nearby furnaces by quoting prices under $14.50, at furnace. A number of inquiries are pending for the balance of the year delivery, including one for 1000 tons. We note the sale of 1000 tons of Malleable Bessemer for balance of the year. No sales of Basic Iron are reported, but inquiries have come out for 2000 tons of Basic for delivery in the Buffalo territory and 5000 in the St. Louis territory. For prompt shipment and for the balance of the year we quote, delivered, Cleveland, as follows:

| | |
|---|---|
| Bessemer | $15.90 to $16.40 |
| Northern Foundry, No. 1 | 15.50 to 15.90 |
| Northern Foundry, No. 2 | 15.25 to 15.50 |
| Northern Foundry, No. 3 | 14.90 to 15.25 |
| Southern Foundry, No. 2 | 16.85 to 17.35 |
| Gray Forge | 14.40 to 14.65 |

**Coke.**—The market is still quiet and prices are about stationary. The Struthers Coal & Coke Company will start up about 125 of its ovens in a day or two. We quote Standard Connellsville Furnace Coke at $1.50 to $1.55, at oven, for spot shipment, and $1.65 to $1.75 for the balance of the year. The only sales of Foundry Coke reported are small lots for spot shipment. We quote Connellsville 72-hr. Foundry Coke at $2 to $2.25, at oven, for spot shipment and on contract.

**Finished Iron and Steel.**—Specifications on contracts have kept up fairly well, but the total placed was not so large as in the preceding week. Not much is developing in new business. The demand for Steel Bars continues very good, being far ahead of other lines in the volume of specifications, although the demand for Structural Material continues fair. Good Bar orders have come from the Rivet, Bolt, and Nut makers. A local Rivet maker has received orders for some Government work in Eastern shipyards, and this has helped out the Steel Bar specifications. The same concern is now figuring on some Government work in Panama. Specifications for Structural Material have come largely from small bridge companies that do county and municipal work. These plants are fairly busy, but bridge plants that devote their attention mostly to railroad work have little on hand. There is some demand for Structural Material for small buildings, but no building operation is being developed in this territory that will require a large tonnage of Structural Material. The demand for Iron Bars is still light, but it shows, possibly, a slight improvement. Railroads are doing some buying for repair work, but only in small lots. The demand for Plates continues light, orders being mostly for car lots and less. Additional specifications for 1500 tons of Plates for the new boats being built for the Pittsburgh Steamship Company have come from the American Shipbuilding Company. The price of Plates is being shaded from $1 to $2 a ton by some of the smaller mills. Eastern Bar Iron mills that have come in competition in this territory during the past few weeks are said to be quoting slightly higher prices, so that they are no longer a factor in the local field, although they are still quoting prices lower than the regular price. The demand for Sheets is light, and small mills are shading prices $1 to $2 per ton. There is some demand for Light Rails in one and two car lots. Warehouse business holds up well, and jobbers report an improvement in mill orders. Mills received some good sized stock orders from jobbers during the week. We quote: Iron Bars, 1.45c., Cleveland, for car lots; Steel Bars, 1.50c., Cleveland, for car lots, half extras; Beams and Channels, 1.70c., base, Cleveland, and Plates ¼ in. and heavier, 1.70c., Cleveland. We quote Sheets, mill shipments, car lots, Cleveland, as follows: Blue Annealed, No. 10, 1.90c.; Box Annealed, No. 28, 2.60c.; Galvanized, No. 28, 3.65c. Jobbers quote Iron and Steel Bars out of stock at 1.65c. to 1.70c. Beams and Channels from warehouse are 2c., and Plates, ¼ in. and heavier, 1.90c. Warehouse prices on Sheets are as follows: Blue Annealed. No. 10, 2.10c.; Box Annealed, No. 28, 2.70c.; Galvanized, No. 28, 3.80c. Warehouse prices on Boiler Tubes, 2¾ to 5 in., are 64 per cent. discount, and on Black Merchant Iron Pipe, base sizes, 71 per cent. discount.

**Cast Iron Pipe.**—The Board of Public Service of Cleveland received bids September 21 for 3000 tons of Cast Iron Pipe for the water works department and 220 tons of special and miscellaneous castings. The United States Cast Iron Pipe & Foundry Company named the lowest price, that company's bid for the Pipe, 3 to 36 in., inclusive, being $69,300, or $23.10 per ton, delivered on the streets. The estimated cost of hauling is 60 cents per ton, making the price, f.o.b. Cleveland, $22.50 per ton. The city bought 3400 tons of Cast Iron Pipe of the same company on bids received June 29 at $22.75 per ton, delivered on the streets, or 35 cents per ton lower than the present price. The low bid of the same company for special castings was $35.70 per ton for 3 to 12 in., inclusive, and $66.15 per ton for 16 to 30 in., inclusive.

**Old Material**—The market shows no improvement. In fact, it has been quieter the past week than in the few preceding weeks. No good inquiries appeared, and the only sales to consumers have been a few small lots for immediate needs. Some buying in limited quantities was done by dealers. A sharp advance is noted in Iron and Steel Car Axles. The higher price is attributed to the scarcity due to the fact that few have been sold recently by the railroads. In other respects prices remain stationary, with little evidence of further weakness in spite of the dullness. Dealers' prices to the trade, per gross ton, f.o.b. Cleveland, are as follows:

| | |
|---|---|
| Old Steel Rails | $14.00 to $14.50 |
| Old Iron Rails | 17.00 to 17.50 |
| Steel Car Axles | 19.00 to 19.50 |
| Old Car Wheels | 15.00 to 15.50 |
| Heavy Melting Steel | 13.50 to 14.00 |
| Relaying Rails, 50 lb. and over | 22.00 to 23.00 |
| Railroad Malleable | 13.25 to 13.75 |
| Agricultural Malleable | 12.00 to 12.50 |
| Light Bundled Sheet Scrap | 9.50 to 10.00 |

The following quotations are per net ton, f.o.b. Cleveland:

| | |
|---|---|
| Iron Car Axles | $20.00 to $20.50 |
| Cast Borings | 7.00 to 7.50 |
| Iron and Steel Turnings and Drillings | 8.00 to 8.50 |
| Steel Axle Turnings | 8.50 to 9.00 |
| No. 1 Busheling | 12.00 to 12.50 |
| No. 1 Railroad Wrought | 13.50 to 14.00 |
| No. 1 Cast | 12.00 to 13.00 |
| Stove Plate | 10.00 to 10.50 |
| Bundled Tin Scrap | 8.00 to 9.00 |

## Birmingham.

BIRMINGHAM, ALA., September 21, 1908.

**Pig Iron.**—The most significant transaction recorded in the market the past week involved 1000 tons of Foundry grades for delivery covering the first quarter of 1909. With this exception, comparatively small quantities for prompt shipment and for delivery over the last quarter of this year composed the business transacted, although an aggregate of some 10,000 tons is reported having been engaged. The lowest price reached by recent negotiations is believed to be $12.75, Birmingham, for No. 2 Foundry. Such a figure was the consideration on an aggregate of 4000 tons for the last quarter. For strictly first quarter delivery, $13, Birmingham, for No. 2 is no doubt the lowest price that has been named. The prohibitive quotations on 1909 deliveries formerly adhered to by leading interests have been withdrawn in practically all cases, but sellers are disposed to be conservative as to commitments, and the $13 schedule would apply probably to the first quarter only. There has been no appreciable improvement in the demand for any delivery. But few inquiries are reported pending and, judging by recent engagements, only a small proportion of the tonnage submitted will be purchased. As a matter of fact, the attitude of awaiting developments is more pronounced with melters, and there is considerable speculation as to the level at which the price will have been established at the beginning of the new year. The fact that a significant tonnage for delivery, commencing with the first quarter, was secured by merchant interests at much lower figures than are now being asked should not be overlooked. So far as can be ascer-

tained, there has been no resale of Iron by founders in this territory. A number of cases are known to exist where requirements for an unusually long period in advance were provided for at low figures reached some months ago, but in few instances have requests that shipments be deferred come from such sources.

**Cast Iron Pipe.**—For the tonnage offered the past week the recent advance in quotations has been maintained. The aggregate of engagements is attractive, but comparatively small lots have been the only considerations. The outlook for the winter months and early spring is considered good, both as to prices and volume of business. There is practically no accumulation of staple sizes, and the output of plants in operation is about normal. It is understood that resumption of operations at the only plant now idle, which was to have occurred September 15, has been postponed until a later date. In the absence of evidence to the contrary, prices are firm, and we quote as follows, for Water Pipe, per net ton, f.o.b. cars here: 4 to 6 in., $24; 8 to 12 in., $23; over 12 in., average $22, with $1 per ton extra for Gas Pipe. On large contracts these prices are probably shaded.

**Old Material.**—There is a fairly good demand for Wrought and Steel Scrap, and quotations have been maintained. But very little Steel has been involved in recent transactions, although the number of inquiries received is indicative of a material increase in activity at the mills. Car Wheels have been but slightly in demand, with similar reports as to Iron Rails and Iron and Steel Axles. We quote dealers' asking prices as follows, per gross ton, f.o.b. cars here:

| | |
|---|---|
| Old Iron Rails | $14.50 to $15.00 |
| Old Iron Axles | 15.50 to 16.00 |
| Old Steel Axles | 13.00 to 13.50 |
| No. 1 Railroad Wrought | 13.50 to 14.00 |
| No. 2 Railroad Wrought | 10.50 to 11.00 |
| No. 1 Country Wrought | 11.00 to 11.50 |
| No. 2 Country Wrought | 9.50 to 10.00 |
| No. 1 Machinery | 11.00 to 11.50 |
| No. 1 Steel | 9.50 to 10.00 |
| Stove Plate and Light Cast | 9.50 to 10.00 |
| Cast Borings | 5.00 to 5.50 |

## Buffalo.

BUFFALO, N. Y., September 22, 1908.

**Pig Iron.**—An atmosphere of quiet continues to envelop the market, with only a fair amount of inquiry. Some new business is being closed in quantities ranging from carloads to 1000 ton lots. A number of the furnace companies are increasing their outputs to some extent, the natural result being somewhat keener competition for orders. The following prices f.o.b. Buffalo, fairly approximate the current market:

| | |
|---|---|
| No. 1 X Foundry | $15.50 to $16.00 |
| No. 2 X Foundry | 15.00 to 15.50 |
| No. 2 Plain | 14.75 to 15.25 |
| No. 3 Foundry and Gray Forge | 14.50 to 14.75 |
| Malleable Bessemer | 16.00 to 17.00 |
| Charcoal | 20.00 to 20.50 |

**Finished Iron and Steel.**—Considerable tonnage in Structural Material is being figured on in small lots, but only a limited number of new orders, principally small quantities, are now coming in. One of the estimates recently furnished covers the Structural Steel for a large addition to the plant of the International Acheson Graphite Company at Niagara Falls, upon which construction will soon be commenced. Another is for a large storehouse for the Niagara Electro-Chemical Company, Niagara Falls. The American Bridge Company has closed for the 1050-ft. viaduct to be erected over Chautauqua Creek at Westfield, N. Y., by the Buffalo & Lake Erie Traction Company, requiring about 1100 tons. Orders for Bars, Plates and railroad material keep up to a pretty fair volume in the aggregate, but continue to be in small lots principally, and for immediate shipment. New contracts are closed more freely than during the past two or three months, but only present needs are being specified against them.

**Old Material.**—The market remains quiet, with but little buying. Dealers are endeavoring to keep prices up, but consumers are not willing to purchase in any considerable quantity unless some concession is made. We quote as follows, per gross ton, f.o.b. Buffalo:

| | |
|---|---|
| Heavy Melting Steel Scrap | $14.00 to $14.50 |
| No. 1 Railroad Wrought | 15.00 to 15.50 |
| No. 1 Railroad and Machinery Cast Scrap | 14.25 to 14.75 |
| Old Steel Axles | 17.00 to 17.50 |
| Old Iron Axles | 20.00 to 20.50 |
| Old Car Wheels | 15.00 to 15.50 |
| Railroad Malleable | 13.00 to 13.50 |
| Boiler Plate | 12.00 to 12.50 |
| Stove Plate | 12.50 to 13.00 |
| Locomotive Grate Bars | 11.50 to 12.00 |
| Pipe | 11.50 to 12.00 |
| Wrought Iron and Soft Steel Turnings | 8.00 to 8.50 |
| Clean Cast Iron Borings | 6.75 to 7.25 |
| No. 1 Busheling Scrap | 12.50 to 13.00 |

## New York.

NEW YORK, September 23, 1908.

**Pig Iron.**—Reports from New England indicate a rather quiet state of affairs. In the territory west of the Hudson River there has been quite general buying, and a considerable quantity of Iron has been placed. There is now under negotiation one lot of 4500 tons. In Basic there has been a sale of 10,000 tons to one interest. We quote, at tidewater, Northern No. 1 Foundry, $17.25 to $17.75; No. 2 Foundry, $16.75 to $17.25, and No. 2 Plain, $15.75 to $16.25. Alabama Irons are quoted $17.50 to $17.75 for No. 1 Foundry and $16.75 to $17.25 for No. 2 Foundry.

**Steel Rails.**—The business actually reported closed in the week is between 5000 and 6000 tons, including one order for 2500 tons and one for 2000 tons. Inquiries for 28,000 tons for Western roads are pending. The Long Island Railroad is in the market for 900 tons. The Pennsylvania Railroad, which has placed no Rail order for 1908, still has a fair sized surplus of new Rails on hand—an example of its forehanded policy in the ordering of equipment and of material for maintenance of way.

**Structural Material.**—But for the remarkable pace set last year the current business in Steel buildings and bridges would be thought to represent a fair degree of prosperity. Prospective contracts still figure largely in the resume of the Structural situation, but while the slowness with which some projects mature is trying, it is noticed that few are spoken of as definitely laid aside. The Hackensack River bridge, to be built by the Pennsylvania Railroad, goes to the Pennsylvania Steel Company. For the highway bridge over the Hackensack which Hudson County is to build the general contract has been given to the F. M. Stillman Company, a Jersey City contractor, and the Steel will probably be furnished by the American Bridge Company. A local contract just let is for 1600 tons of Steel for the Martinique Hotel extension, at Broadway and Thirty-second street. The Emigrant Savings Bank, 5000 tons, and the Hoyt apartment building, at Broadway and Eighty-sixth street, will probably be let soon, C. T. Wills having the general contract for the former and the George A. Fuller Company that for the latter. Bids have just been asked for on the Steel for the Hoyt Building. The New York Central is in the market for a number of highway bridges, but its large work at the Grand Central Station is making little call on the Steel mills. The Pennsylvania Railroad is asking bids on a three-span bridge over the Susquehanna River—about 800 tons. At San Francisco the Mangin and Pacific Realty buildings have been placed—about 1000 tons together—the former going to Dyer Brothers, local contractors, and the latter to the Milliken Brothers' receivers. Bethlehem shapes will be used for both. The extensive building programme which Samuel Newhouse has on foot for Salt Lake City was halted last fall. About 4000 tons of Steel was delivered. If all the buildings are erected as planned, about 30,000 tons of Steel will be needed. The Structural mills are running about 55 per cent. of capacity, generally single turn. For tidewater delivery, mill shipments, we quote as follows: Beams, Channels, Angles and Zees, 1.76c.; Tees, 1.81c. On Beams, 18 to 24 in., and Angles, over 6 in., the extra is 0.10c. From store Structural Material, cut to lengths, is sold at about 2¼c.

**Ferroalloys.**—Considerable manipulation is evident in the Ferromanganese market. Large lots are quoted at higher prices than small quantities. Consumers can obtain 80 per cent. Ferromanganese at about $44, Pittsburgh. Ferrosolicon is dull, and the demand is light; for 50 per cent. $68 to $70 can be done, delivered.

**Bars.**—Orders for Bar Iron have diminished both in number and size, although reports from the leading mills indicate that they are able to continue running up to their recent moderate degree of activity. Quotations on Bar Iron range from 1.45c. to 1.50c., tidewater, while Steel Bars continue to be held at 1.56c., tidewater.

**Plates.**—An eastern Pennsylvania mill has received an order for 400 tons of Steel Plates for a new Hudson River steamboat, to be built at Newburgh. While some improvement is noted in the general inquiry, the daily volume of business is of small proportions. Prices are held as follows, at tidewater, for standard sized Plates: Sheared Plates, 1.76c. to 1.86c.; Flange Plates, 1.86c. to 1.96c.; Marine Plates, 2.16c. to 2.26c.; Firebox Plates, 2.65c. to 3.50c., according to specifications.

**Cast Iron Pipe.**—The city of Reading, Pa., opened bids on Tuesday for about 500 tons. The Board of Trustees of the village of Alleghany, Cattaraugus County, N. Y., is advertising for bids to be opened September 29, for about 4 miles of 4 to 10 in. Pipe, 55 hydrants, 40 gate valves, &c. The city of Passaic, N. J., is advertising for proposals to be opened October 30 for distributing and laying about 37 miles of 6 to 20 in. Pipes, with hydrants, gate valves, &c. Some inquiry is noted for prices on deliveries next spring, but manufacturers hesitate to name figures so far in the future, in view of the uncertainties at present existing. The demand

for small lots has dwindled to almost nothing. Carload lots of 6 in. Pipe are quoted at $24 to $24.50, tidewater.

**Old Material.**—The current demand is reasonably fair, and prices are well maintained. Cast Scrap is strong, as the supply is quite small. Wrought Pipe is in good demand, and quite scarce. The accumulation of rolling mill stock is small, and with a slight improvement in consumption higher prices could be expected. We quote as follows, per gross ton, New York and vicinity:

| | |
|---|---|
| Old Girder and T Rails for melting | $11.50 to $12.00 |
| Heavy Melting Steel Scrap | 11.50 to 12.00 |
| Old Steel Rails, rerolling lengths | 14.00 to 14.50 |
| Relaying Rails | 22.50 to 23.00 |
| Old Iron Rails | 16.50 to 17.00 |
| Standard Hammered Iron Car Axles | 18.50 to 19.00 |
| Old Steel Car Axles | 15.50 to 16.00 |
| No. 1 Railroad Wrought | 15.00 to 16.00 |
| Iron Track Scrap | 12.00 to 13.00 |
| No. 1 Yard Wrought, long | 14.00 to 14.50 |
| No. 1 Yard Wrought, short | 12.50 to 13.50 |
| Light Iron | 7.00 to 7.50 |
| Cast Borings | 7.50 to 8.00 |
| Wrought Turnings | 8.50 to 9.00 |
| Wrought Pipe | 11.00 to 11.50 |
| Old Car Wheels | 14.50 to 15.00 |
| No. 1 Heavy Cast, broken up | 13.50 to 14.00 |
| Stove Plate | 11.50 to 12.00 |
| Locomotive Grate Bars | 11.50 to 12.00 |
| Malleable Cast | 12.50 to 13.00 |

## Metal Market.

NEW YORK, September 23, 1908.

**Pig Tin.**—Prices are slightly higher than last week, but the volume of business transacted has been small, with the exception of Monday, when sales were about 200 tons. The leading consuming interest in this country, which has been steadily selling for some weeks, has apparently marketed its line. This, with the elimination of Tin held here in a semi-speculative way by dealers, will give London operators a chance to sell again in this market. The price in New York may shortly be expected to go above London parity. Stocks of metal held here for London account are large and the end of the month will probably see further additions. It is felt that deliveries into consumption this month will not exceed 2500 tons, and as the arrivals have been 1967 tons and there are afloat for American ports 1320 tons, this seems reasonable. The auction sale of Banca Tin in Holland to-morrow (Thursday) will consist of 1800 tons, and this will increase the world's visible supply, which is already at a high figure. Price changes during the week have been as follows:

| | Cents. |
|---|---|
| September 16 | 28.55 to 28.65 |
| September 17 | 28.60 |
| September 18 | 28.50 |
| September 21 | 28.60 to 28.65 |
| September 22 | 28.75 |
| September 23 | 28.70 |

On September 21—the big day of the week—the bulk of the metal was sold at the inside price. The London market closes to-day at £130 10s. for spot and £132 for futures.

**Copper.**—Prices are lower, especially so for Electrolytic. Business is at a standstill, as buyers—and there are many who would buy if they considered prices right—are waiting for some large sale to clear the situation. Sellers are unwilling to force the market, which is in such a state of nervous tension that a small lot might break the price. Under such circumstances it is almost impossible to quote prices; Electrolytic, however, can be easily had at 13.37½c. for domestic consumption, while exporters will not pay 13.12½c. Lake is much out of line, as there are no stocks in second hands, and producers will not cut their price. It is probable that a buyer desirous of having high grade Lake promptly would have to pay 13.75c., but in comparison with Electrolytic 13.50c. would not be unreasonable. While the whole situation looks very gloomy, it can be affirmed on good ground that the market will only have to recede a little more until Europe will buy in good volume. That the lowest prices of the present decline have been reached is the opinion of more than one observer. The domestic consumption is far from what could be desired, but it is better than at any time during the first half of this year. To-day the London market shows signs of getting over its fright, and after heavy trading closed firm at £59 11s. 6d. for spot and £60 8s. 9d. for futures.

**Lead.**—While the market in some quarters is easier and certain brands are obtained at 4.50c., New York, the leading interest's price is unchanged, at 4.60c. Trade is exceedingly dull, especially so since Monday. In St. Louis the market is weak and Lead can be had at 4.35c.

**Spelter.**—While the market continues dull, with practically no business or inquiry, prices are steady. In New York prime Western brands are quoted at 4.75c., and in St. Louis the market is firm at 4.60c. to 4.65c. Production is falling off and now is probably less than the consumption.

**Antimony.**—Business is unusually quiet, but prices are steady. Hallett's can be had at 7.75c. to 8c., Cookson's at 8c. to 8.25c. and outside brands at 7.50c. to 7.75c.

**Tin Plate.**—Business is quiet, so the enforced curtailment of operations at the mills through low water is not very serious. Prices are without change, at $3.89, New York, and $3.70, Pittsburgh, for 100-lb. I. C. Coke Plates.

**Old Metals.**—Prices are without change from a week ago, but it is so exceedingly dull that possibly some business might be done under the following dealers' selling prices:

| | Cents. |
|---|---|
| Copper, Heavy and Crucible | 12.50 to 12.75 |
| Copper, Heavy and Wire | 12.25 to 12.50 |
| Copper, Light and Bottoms | 11.50 to 11.75 |
| Brass, Heavy | 9.25 to 9.50 |
| Brass, Light | 7.25 to 7.50 |
| Heavy Machine Compositions | 11.75 to 12.00 |
| Clean Brass Turnings | 8.25 to 8.50 |
| Composition Turnings | 9.50 to 9.75 |
| Lead, Heavy | 4.20 to 4.25 |
| Lead, Tea | 3.85 to 3.90 |
| Zinc, Scrap | 3.25 to 3.50 |

## Iron and Industrial Stocks.

NEW YORK, September 23, 1908.

The stock market has been under the influence of the first election scare. Anxiety as to the outcome of the approaching Presidential election has increased, and apprehension appeared to have reached an acute stage on Tuesday, when almost a demoralized state of affairs was experienced on the New York Stock Exchange. The following is the range of prices on active iron and steel stocks from Thursday of last week to Tuesday of this week, the low prices having been usually touched on Tuesday: United States Steel common 41⅛ to 46⅛, preferred 105⅛ to 109⅜; Bethlehem Steel common 18 to 21½, preferred 46½ to 49⅜; Can common 5¼ to 5¾, preferred 58 to 60; Car & Foundry common 36 to 39, preferred 102⅛ to 102¾; Locomotive common 44 to 45⅞, preferred 100½, ex-dividend to 104; Steel Foundries, new, 28 to 30; Cambria Steel 34½ to 37½; Colorado Fuel 30⅜ to 34⅜; Crucible Steel common 5⅞ to 6¾, preferred 42⅞ to 47½; Pressed Steel common 28½ to 31¾, preferred 93 to 94; Railway Spring common 34¼ to 35⅛; Republic common 20⅛ to 22, preferred 75 to 79⅞; Sloss-Sheffield common 59 to 63; Cast Iron Pipe common 24⅛ to 24⅝, preferred 71 to 72⅝. Last transactions up to 1.30 p.m. to-day are reported at the following prices: United States Steel common 42⅞, preferred 107¼, bonds 101; Car & Foundry common 37¾, preferred 102¾; Locomotive common 45¼, preferred 101¼; Colorado Fuel 32¼; Pressed Steel common 30, preferred 94; Railway Spring common 34; Republic common 21¼, preferred 77; Sloss-Sheffield common 59¼; Cast Iron Pipe common 27⅞, preferred 71; Can common 5¼, preferred 58.

The balance sheet of the Reading Iron Company, Reading, Pa., as of June 30, 1908, showed assets of $14,542,876.06. The capital stock remained at $1,000,000 and the outstanding mortgage bonds, after deducting the sinking fund securities deposited with the trustee, amounted to $303,811.94. The current liabilities, with accrued interest and dividends, amounted to $154,529.31.

**Dividends.**—The American Iron & Steel Mfg. Company has declared quarterly dividends of 1¼ per cent. on the common and preferred stocks, payable October 1.

The American Shipbuilding Company has declared a quarterly dividend of 1¾ per cent. on the preferred stock, payable October 16.

The Westinghouse Air Brake Company, Wilmerding, Pa., has declared a quarterly dividend of 2½ per cent., payable October 10.

The Union Switch & Signal Company, Pittsburgh, has declared a quarterly dividend of 2½ per cent. on the common and preferred stocks, payable October 10.

Manning, Maxwell & Moore, Inc., have declared a quarterly dividend of 1½ per cent., payable September 30.

The bi-monthly examination of sales sheets of the Republic Iron & Steel Company and the Union Rolling Mill Company for the 60-day period ending August 31, 1908, showed that the average price of iron bars shipped out in July and August necessitates a reduction in wages of puddlers and heaters for September and October to the basis of 1.30 cents on iron bars. Puddlers will be reduced to $5.25 a ton and finishers about 2 per cent. The examination of the certified statements of the American Sheet & Tin Plate Company for the same 60-day period showed that the average price of 26, 27 and 28 gauges was 2.34 cents, hence the wages of sheet mill workers will remain the base rate of scale. The average price for 100-lb. coke plates was $3.54; hence the wages of tin plate workers for September and October will be the base rates of scale.

## The Basic Bessemer Process.

A splendid piece of research work on the basic Bessemer process has been completed by F. Wuest, of the technical school at Aix-la-Chapelle, and L. Lavel, the results having been published in *Metallurgie* Nos. 15 and 16. The object of the work was to bring up to date the earlier researches of Ehrenwerth, Mueller, Kupelwieser, Stead and Hilgenstock, which cover the period from 1879 to 1886; to study the different phases of the process for the first time from the point of metallography; to determine the heat balance and follow the course of the different substances.

The experimental work was done at the Dudelingen Works, where two heats were blown. All the materials were carefully weighed and analyzed, samples of the metal and cinder were taken at frequent intervals, and an effort was made to secure analyses of the gases from the converter. The moisture in the blast was carefully determined, and the temperature of the converter gases was followed. The heat balance thus worked out is interesting, tentative though it be. Thus, in one blow, 43 per cent. of the heat was furnished by the molten iron and 57 per cent. by the oxidation of the elements in the bath. Of the heat thus generated 24 per cent. was carried off by the gases and by the decomposition of moisture in the blast, 20 per cent. was used for heating the lime additions and was carried off by the cinder, 48 per cent. was carried off by the steel and 8 per cent. was lost by radiation.

An interesting computation from the data is that relating to the saving of phosphorus, when dry air is used for blowing. In the one blow it would amount to 12 per cent. and in the second to 15 per cent. Dr. Wuest has also done some figuring on the effect of enriching the blast with oxygen and on heating the blast.

### The Waste of Iron in the Basic Bessemer Process.

The following points are made in the final summary of the detailed record of the experiments: The quantity of foreign substances in basic Bessemer pig varies between 6.7 to 7.8 per cent., but the waste in carrying through the process is considerably higher, because a good deal of iron is burnt. In the two trial heats the loss of metallic iron was 8.2 and 10.7 per cent., respectively. The greater part of the waste of iron occurs toward the end of the afterblow, because large quantities of iron must be sacrificed in order to eliminate phosphorus adequately from the bath. The quantity of iron required to eliminate the last 0.1 per cent. of phosphorus amounted in the two blows to 2.7 and 4.7 per cent. The quantities increase the hotter the blow is toward the close, since with increasing temperature the affinity of iron for oxygen increases more rapidly than that of phosphorus.

The study of the heat balance of the basic Bessemer process shows the fact, disadvantageous from the point of the waste of iron, that the largest increases of heat are brought about by the elimination of phosphorus. At this period of the process only phosphorus is present besides iron, and the result is that the considerable increase in the temperature of the bath is the cause of the burning of larger quantities of iron. This heat development is necessary to carry through the process and occurs at a time unfavorable to the economic side. It would be better, if this excess of heat took place, as it does in the acid Bessemer process, in the beginning of the blow, but this can never be attained by reason of the thermal and metallurgical action of the foreign substances participating in the reactions. Some help may be given by cooling the bath by additions of scrap, by the Flohr method of adding lime briquettes or by charging crude limestone, but these methods can never overcome this fundamental drawback of the basic Bessemer process.

### The Field of the Basic Bessemer Process Will Be Narrowed.

Assuming that on an average 3 per cent. of the charge of iron is required to eliminate the last particles of phophorus, it appears that 30,000 tons of iron go to waste in the slag in making 1,000,000 tons of basic Bessemer steel. It is obvious, therefore, that the field of the basic Bessemer process will be narrowed as soon as more rational and economical methods of refining are available. The open hearth methods now being developed even today permit of a more economical conversion of pig iron into steel because in the ore process the foreign substances in the pig are consumed at the cast of the oxygen in the ore and corresponding quantities of iron are carried into the bath. The utilization of the high phosphorus contents in certain iron ores is as readily possible in the open hearth as in the converter as soon as progressive refining is adopted. In the first cinder 90 per cent. of the phosphorus may be concentrated and a product as valuable as the basic Bessemer slag may be obtained. The later finishing slag which takes the last impurities from the bath must be high in iron in order to effect the purification. This may be utilized in the blast furnace so that the waste of iron is not as large as it is in the basic Bessemer.

The use of dry, oxygenized or hot blast does not so modify the disadvantageous features of the basic Bessemer process as to assure a future under all circumstances. The use of dry blast has no great advantage from the standpoint of the heat balance, because there is no serious saving in heat, but the blowing of the charge with dry blast would undoubtedly exert an excellent influence upon the quality of the steel because then no opportunity is afforded to the liquid bath to absorb considerable quantities of hydrogen. Steel produced with the air of dry blast will certainly be notable for greater density and toughness.

## Car Wheel Conferences.

The Wheel Committee of the Master Car Builders' Association is taking steps looking to the manufacture of better chilled cast iron car wheels. A letter has been addressed by the chairman of the committee to the car wheel manufacturers asking them to agree on a specification. Expressions for railroad representatives who have previously met the car wheel manufacturers in conferences indicate a disposition to specify a charcoal iron mixture. On behalf of the manufacturers it is continually urged that the first requisite to the improvement of the chilled car wheel is the payment by the railroads of a price which will permit the use of charcoal iron exclusively or charcoal iron and old wheels made from such iron. It is expected that the Master Car Builders' committee and the wheel manufacturers will hold a series of conferences in the near future in the hope of reaching a better understanding. The allusions in some of the recent newspaper articles to a "car wheel fight," similar to the "rail fight" of last year are not warranted by the amicable spirit in which the subject is being taken up by the railroads and the manufacturers.

The Committee on Standard Rail and Wheel Sections of the American Railway Association will meet next week to consider the wheel situation and determine what report it will make to the forthcoming semi-annual meeting of the association.

The Pittsburgh White Metal Company, Pittsburgh, with works in that city and also in New York, is manufacturing a grade of white metal for general purposes that has been successfully used for about 15 years, having won favor as an anti-friction metal. The metal is known as Armature, and is suitable for bearings for armatures, dynamos, engines and rolling mill, planing mill and flour mill machinery, or wherever high speed and heavy work are required.

Bolckow, Vaughan & Co., Middlesbrough, England, have secured an order for 26,000 tons of rails from the Indian State Railways. This follows closely on an order for 15,000 tons for Western Australia taken by the Northeastern Steel Company, Ltd., at a higher price than was named by Belgian mills.

The exports of iron ore from Spain in the first half of 1908 were but 3,917,076 tons, against 4,659,450 tons in the corresponding six months of last year.

# OBITUARY.

JOHN LEONARD.

John Leonard, who for nearly 50 years was actively engaged in the iron trade in New York City, was accidentally shot and killed September 16, in his home at Montclair, N. J. The accident occurred in handling a pistol which had been shown him by Walter C. Phillips, his secretary.

Mr. Leonard was born in County Tyrone, Ireland, September 30, 1829. He came to this country in 1848, landing in Boston. His first position in New York City was as shipping clerk in a glass factory. He then entered the employment of Patrick Cassidy, a scrap iron merchant, who afterward was a member of the well-known firm of Cassidy & Adler, iron founders. Mr. Leonard was employed by Mr. Cassidy until 1856, when he embarked in business as a scrap iron merchant at 450 West street. Shortly afterward he became connected with the Powerville Iron Works, Boonton, N. J., operating a rolling mill. In 1881 he started the Manhattan Rolling Mill, at the corner of Bank and West streets, New York City. He was sole proprietor of this mill until 1899 when a corporation was formed to take it over, his associates being Michael Blake and Frank D. Cadmus. Mr. Leonard was elected president, Mr. Blake vice-president and Mr. Cadmus treasurer and general manager. In 1892 the mill was removed to Twenty-third street and Avenue A. Three years ago Mr. Leonard's interest in this corporation was purchased by Messrs. Blake and Cadmus, and since then Mr. Leonard has not been associated with it. The present officers are Michael Blake, president, and F. D. Cadmus, vice-president and treasurer.

In February, 1899, Mr. Leonard associated with Mr. Blake in forming the firm of John Leonard & Co., to conduct a scrap iron business, each owning a half interest. On February 1, 1903, Mr. Leonard retired from this firm. In fact, he had never taken an active part, the management from its inception being in the hands of Mr. Blake. The firm of John Leonard & Co. is now located in the Singer Building, 149 Broadway, and Michael Blake is the executive and financial head. Mr. Leonard was not in the scrap business at Twenty-third street and Avenue A as reported in the daily papers. After the Manhattan Rolling Mill was incorporated in 1899, Mr. Leonard retained a number of accounts outstanding among his local customers, and for the purpose of collecting these he employed Mr. Phillips, who has always been held in high regard by both Mr. Leonard and Mr. Blake. Mr. Phillips subsequently attended to all the personal matters of Mr. Leonard, acting in the capacity of private secretary. The deceased leaves a widow, two sons and two daughters. One son, Harry V., resides at Glen Ridge, N. J., and the other, Louis H., is employed by the Chesapeake Metal & Iron Company, Baltimore, a corporation principally owned by Michael Blake.

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SAMUEL J. RITCHIE of Akron, Ohio, who pioneered in the development of the copper and nickel deposits of the Sudbury, Ont., district, died suddenly at Charleston, W. Va., September 19, aged about 75 years. He secured the building of the Central Ontario Railroad, leading to the Sudbury mines, and organized the Anglo-American Iron Company and the Canadian Copper Company. The two latter companies were involved in protracted litigation between Mr. Ritchie and Judge Stevenson Burke and the Estate of United States Senator Henry B. Payne, claims amounting to millions of dollars being at stake. Mr. Ritchie was an ardent advocate of reciprocity with Canada, and 25 years ago was a prominent figure at the Canadian capital.

DR. THEODOR PETERS, the director of the Verein deutscher Ingenieure, died September 2. Born November 15, 1841, at Menden, near Siegburg, Germany, where his father owned a forge, he became an engineer, and for a while was a partner of the firm of A. H. Oechelhaueser at Siegen. In 1882 he became manager of the society above named, and in 1891 succeeded Dr. Grashof as director. As editor he developed the *Zeitschrift des Vereines deutscher Ingenieure*, until it is now the foremost technical journal in Germany.

JOHN K. COOKE died at Paterson, N. J., September 16, aged 51 years. He was born at Scranton, Pa., and was for years superintendent of the Passaic Rolling Mill Company, founded by his father, the late Watts Cooke. He leaves a widow and three children.

HARRY O. EMORY, for many years secretary and general manager of the Tioga Steel & Iron Company, Philadelphia, Pa., died September 8 at his home in Merion, Pa., after a prolonged illness.

WALTER E. DEVLIN, president of the Philadelphia Hardware & Malleable Iron Company and of the Brohard Company, Philadelphia, Pa., died September 19 from complications resulting from an operation for appendicitis, aged 38 years. He was the second eldest son of Thomas Devlin, well known in the malleable iron and hardware trade, and has been associated with him in a number of enterprises. He leaves a widow.

WILLIAM GAMBLE, Miamisburg, Ohio, died September 15, aged 75 years. He was a native of Geneseo, N. Y., removing to Ohio when a young man. After an active experience in the dry goods business at Dayton, and in the wholesale book and stationery trade at Cincinnati, he removed to Miamisburg in 1871, becoming a partner in Hoover & Co., manufacturers of reapers and mowers. In 1892 the Hoover & Gamble Company was formed to manufacture twine making machines, of which he was made president. He was also president of the Bookwalter Wheel Company, and was a director of a number of financial institutions. He leaves a widow, one son, and one daughter.

# PERSONAL.

Howard C. Noble, vice-president of the North & Judd Mfg. Company, New Britain, Conn., has returned from a European trip.

H. P. Gilbert, formerly general manager of the Sharon Steel Hoop Company, Sharon, Pa., on October 1 will take charge of the company's Chicago offices.

William J. Ogden has been elected secretary of the Tioga Steel & Iron Company, Philadelphia, Pa., succeeding H. O. Emory, deceased.

Elbert H. Gary, chairman of the United States Steel Corporation, returned from his European trip on Tuesday. He says he sees no reason to revise his belief in improving business conditions as expressed prior to his departure in July.

John W. Gates arrived in New York on Saturday from a brief sojourn abroad.

H. C. Karlson has opened an office at 39 Cortlandt street, New York, as solicitor of patents and constructor of special and automatic machinery.

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C. G. Hussey & Co., operating the Pittsburgh Copper & Brass Rolling Mill, at 2850 Second avenue, Pittsburgh, manufacturing sheet copper and copper specialties, such as copper gaskets, nails, tacks, special shapes, both sheared and stamped, &c., has awarded a contract to the A. Garrison Foundry Company, Pittsburgh, for a 24 x 72 in. mill for rolling sheet copper. The firm also has in contemplation the erection of a two-story brick addition to its present plant, which will give it an increased capacity in its nail and stamping departments. Work on this building will be commenced shortly, and contracts have already been let for the required machinery.

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The American Steel & Iron Company, Norwalk, Ohio, operating the works of the former Norwalk Steel & Iron Company, is accomplishing good results under the management of H. E. Frazier, who recently went to Norwalk from the offices of Rogers, Brown & Co., Cincinnati. The Western business of the company has been placed in the hands of W. E. Stockton, Chicago.

# The Machinery Trade.

NEW YORK, September 23, 1908.

The improvement in business conditions has been so gradual as to have not yet noticeably affected the demand for machinery, which continues light and irregular. In lines closely connected with the machine tool interests confidence has apparently not been fully restored, for the large interests which are usually prominent factors in the market are displaying very little activity. Now and then a fair sized proposition comes up, but they are so scarce as to only cause a little encouragement. The past week was one of varied experiences with the different houses, some reporting sales equal to those of the previous week, while others report a falling off. Taken together, it is doubtful if the aggregate of business transacted excels that of the previous week. The railroads continue to give evidences of activity, but mostly in the way of new construction, work that will not materially benefit the machinery trade for some time to come. Some little buying, however, is being done, and in the West the Chicago, Milwaukee & St. Paul Railroad has issued a list covering 36 heavy machine tools.

Power equipment, especially the larger units, is little in demand, while the smaller apparatus is selling better. This is particularly true with manufacturers of electrical machinery, and is no doubt due to some extent to the number of municipal lighting plants being established by small towns. The present demand for electrical machinery clearly shows the falling off in the development of industrial enterprises. From a prominent interest we learn that the demand for electric lamps and such small apparatus as is not used for the generation of power is about normal, but it grows less for the machines as the size and cost increase until that for the large units is very light. For some of the small machines prices have been reduced, but as the cost of manufacture varies but little from that of the past year it is not likely that a reduction in prices on the entire line will be made. As in the machine tool trade, an occasional large order is placed. The General Electric Company has secured an order from the Commonwealth Electric Company, Chicago, Ill., for turbo-generators of large horsepower, aggregating about $1,000,000 in value.

The demand for sugar making equipment has fallen off to some extent of late, as it usually does at this time of the year; but representatives of export houses that cater to that line state that they have had a fairly busy season, and in comparison to the average machinery line the sugar machinery equipment trade has been fairly brisk. There are still some straggling inquiries out for power equipment for plants in Cuba and Porto Rico, but the trade is devoting most of its energies to making deliveries on machinery ordered during the summer.

Foundries catering to the machinery trade report a better demand for steel castings, which is taken as an indication in some quarters that machinery manufacturers in general are taking faith in the future and are preparing to get equipment in order to have machinery on hand for any demand that might arise. Some machinery manufacturers who have not placed orders for castings in several weeks because of the fact that they had enough machinery on hand to meet the demand have been asking for prices, and from some quarters inquiries have come as to terms for long time contracts. This is encouraging to the founders because they have not succeeded in persuading many manufacturers into a yearly contract, as was the custom for the last three or four years, and the founders declare that they now see more work ahead than they did at any time during the last three months. A large number of inquiries at present before the steel foundry trade, however, call for special castings, rather than for castings to be used in the manufacture of standard machines.

During the past two weeks a noticeable increase in construction work has been reported by the railroads, especially in the way of new shops and terminal facilities. While most of these operations are individually small, they will necessitate the purchase of quite a large amount of new machinery. The Missouri, Kansas & Texas Railroad, whose chief engineer is located at St. Louis, Mo., is building a division terminal for freight trains at Wagoner, Okla., where shops and a roundhouse will be erected. While plans for these latter structures have not yet been completed, it is understood that the shops will be extensive. In this connection it is of interest to state that the Lake Shore & Michigan Southern Railroad is to build a large terminal yard at Miller, Ind., involving an expenditure of several hundred thousand dollars.

Some machinery has been purchased by the contractors on the construction work of the cut-off on the Delaware, Lackawanna & Western Railroad line between Lake Hopatcong and the Delaware Water Gap, and there are inquiries now in the market for outdoor equipment for that work. As has been told in these columns, about 28½ miles of railroad is being built through a territory in which there is some rather difficult engineering, as the work entails in some places considerable excavation and at other points a great amount of filling. This necessitates the use of numerous steam shovels and a large quantity of conveying equipment. Although the contractors on the work have large plants, they have found it necessary in some cases to make additions to their machinery outfit, with the result that they have inquiries in the market for immediate delivery as work on the sections is already under way. The contracting companies building the line are: Section 1, Timothy Burke, Scranton, Pa.; section 2, Waltz & Reece, Billings, Mont.; section 3, D. W. Flickwire, Terry Building, Roanoke, Va.; section 4, W. H. Gahagan, 189 Montague street, Brooklyn, N. Y.; section 5, Hyde-Macfarlane Company, 7 East Forty-second street, New York; section 6, Reiter, Curtiss & Hill, Arcade Building, Philadelphia, Pa.; section 7, Smith & McCormack, Easton, Pa.

Plans for the new terminal of the Public Service Corporation of New Jersey to be built at Hoboken have been completed, and it is expected that before long the trade will hear of considerable in the way of machinery requirements for the building. The structure will be built of steel and concrete and will have a width varying from 60 to 160 ft. and a length of 400 ft., and it will be two stories in hight. Arrangements will be made to accommodate trolley tracks on both floors, and connection will be made with the Hoboken end of the McAdoo tunnel. The Public Service Corporation has offices in the Prudential Building on Broad street, Newark, N. J., and the buying of the machinery equipment will be done from there.

We understand that orders for some of the equipment for the new terminal of the Pennsylvania Railroad in New York have recently been placed by Westinghouse, Church, Kerr & Co., New York, under whose supervision the work is being done. This terminal will require the installation of a large amount of equipment, and it is likely that considerable more will be purchased as building operations progress.

Purchases of mechanical equipment have recently been made by the Rapid Transit Construction Company for the temporary shops it is establishing at Broadway and Ninety-seventh street, New York. These shops are to be used in connection with the enlargement of the Subways from Ninety-sixth street to 102d street and comprise six buildings, costing about $60,000. The entire work will cost about $800,000, including the construction plant.

The Erie Foundry Company, Erie, Pa., whose machine shop was recently destroyed by fire, has completed plans for its new machine and blacksmith shops and will shortly award contract for construction of buildings, bids for which were opened Monday. The machine shop proper will be 100 x 100 ft., of saw tooth construction on one side and monitor construction on the other, and will be served by a 15-ton crane with 47½-ft. span. The blacksmith shop will be about 25 x 62 ft., of lean-to construction, and will be built of steel and brick. The building has only a temporary end, as it is the intention to double its size in the near future. Very little new equipment will be required for this latter building, and most of that which will be needed has been purchased.

The LaMay Machine Works, Arthur C. LaMay, general manager, 48 North Water street, Rochester, N. Y., has purchased a site of 15 acres, extending 2000 ft. on Emerson street and 325 ft. on McNaughton street, on which will be erected an extensive plant for the manufacture of special machinery. The first group of buildings to be erected will consist of a main manufacturing building, one story, 180 x 200 ft.; brass foundry, one story, 30 x 50 ft., and a power house, 40 x 60 ft. As soon as the buildings can be finished construction will be started on a malleable iron foundry building. The plant will be of the most modern equipment throughout and a steam electric generating plant will be installed. The larger machines will be operated by individual motors, while some of the smaller machines will be grouped and operated from motor driven line shafts. The various machine tools, cranes, hoists, &c., will be electrically operated. Mr. LaMay states that when his plant is in full operation it will give employment to at least 1000 men.

The American Cement Engineering Company, a holding organization for the Knickerbocker Portland Cement Company, 315 Fifth avenue, New York, has purchased three pieces of property, with a total of over 500 acres, near Alsen, N. Y., and will soon start construction on a cement plant to have a capacity of 3000 bbl. daily and cost about $1,000,000.

**Catalogues Wanted.**—The Morigrieve Engineering Company, Perth Amboy, N. J., desires catalogues and price-lists of power plant equipment, specialties and supplies. R. Henderson is vice-president and consulting engineer.

H. S. Palmer, Beaver Falls, Pa., machinery dealer, desires catalogues of machinery and general mill, mine and factory supplies.

## Chicago Machinery Market.

CHICAGO, ILL., September 22, 1908.

While there have been few if any individual transactions in machine tools of noteworthy interest in the past week, trade has, on the whole, been gaining rather than losing ground. The majority of the dealers report an increased volume of business, but in a few instances a contrary experience is noted. It is expected, however, that in the general distribution of the moderate volume of business represented in current orders there should be more or less inequality of division, but withal so long as accretions indicate improvement at large there is small room for discouragement. There have been rumors afloat during the past week or two of the revival of some of the large projects involving the construction of new plants and extensive equipment purchases which were prominently before the trade early last year and because of the depression following the late panic were held up. In one case, at least, it is known that such action is under advisement, and should a favorable decision be reached in the matter it would mean the reinstatement of a large list of tools to be figured on by the trade. There is nothing in recent developments, however, indicating that the railroads are ready to go ahead with improvements of like character which were under way and suspended for lack of money. The extensive list of tools required for the equipment of the new shops of the Frisco System at Springfield, Mo., is one of those that since its withdrawal last fall has been held in abeyance. Sooner or later this machinery will doubtless be purchased and an intimation of early action in this direction would be hailed as a most encouraging sign, but there is no talk of such action at present. Aside from scattered inquiries from the railroads for occasional tools, the principal requirements in this line being figured on is comprised in a new list just issued by the Chicago, Milwaukee & St. Paul for the equipment of its Deer Lodge shops on the new coast extension in Idaho. The list includes 36 large tools and constitutes an important addition to former purchases made this year on account of the new line.

Large undertakings in new plant construction are comparatively rare at present, but here and there announcement of such work of more than usual importance gives evidence of confidence in the outcome of the future. A project of this kind is embraced in the construction of a new stone crushing plant to be erected by the Dolese & Shepard Company at Gary, Ill., which is located on the Drainage Canal and the Santa Fé Railroad, about midway between Chicago and Joliet. Owing to the confusion arising from the similarity of names since the organization of the town of Gary, Ind., the site of the steel works of the United States Steel Corporation, it is likely that the name of the Illinois town will be changed before long. The new stone crushers in question will take the place of the company's former plant at this location, which was destroyed by fire some time ago, but will far exceed the old works in magnitude. It is, in fact, designed for a capacity three times as great as the plant which it will replace, and it is said will be the largest installation for crushing, handling and storing stone ever made in this country. Something of the extent of the work contemplated can be gathered from the fact that 2200 tons of structural material will be used in the various buildings, trestles and hoisting towers provided for in the plans. These include a screen house, 28 storage bins, rolling house, crusher houses, conveyor trestles, machine repair shop, &c., which will cover an area of about 100 x 700 ft. Plans for these structures are now practically finished and preparations are being made for the placing of contracts. It is expected that they will all be under roof by the first of the year; some of the heavier machinery will be installed during the process of construction. The machinery will be electrically driven by current furnished from the Lockport generating station of the Drainage Canal. A large amount of equipment will be required to complete this installation.

The Industrial Power Company of Milwaukee, Wis., manufacturer of Atkinson automatic gas producers, has been sold to a recently organized Wisconsin corporation called the Industrial Gas Power Company, with offices at 621-622 Caswell Block. The officers of the new company are W. O. Jones, president and treasurer; C. J. Atkinson, vice-president; H. K. Cowen, assistant treasurer and secretary. Mr. Jones was for a number of years vice-president and purchasing agent of the Planor Mfg. Company. Both Messrs. Atkinson and Cowen have been connected with the Industrial Power Company since its organization. The Industrial Gas Power Company will continue to manufacture the Atkinson gas producers, of which there are a large number in successful operation at the present time.

The Galena Iron Works Company, Galena, Ill., which has completed the erection of a new concentrating plant for the Kennedy Mining Company with a mill of 100 tons capacity, has just secured a contract from the United States Zinc Corporation for the installation of a roaster and separating plant of 60 tons daily capacity, for the treatment of zinc ores on property adjoining the Kennedy mine.

Plans are being made by the Seguin Electric Light & Power Company, Seguin, Texas, to rebuild its water plant, and in the course of this improvement the company will probably install new water wheels.

The Pleasant Shades Power Company, Crawfordsville, Ind., has been organized and incorporated, with a capital stock of $100,000, for the combined purpose of developing a hydro-electric plant and the establishment in connection therewith of a pleasure and health resort. The building of a dam 20 ft. in hight across Sugar Creek and the erection and equipment of a power house supplied with turbines and generators are included in the plans, which also contemplate the construction of other buildings.

The United States Indian Industrial School, Phoenix, Ariz., C. W. Goodman, superintendent, is advertising for bids, which will be received until September 30, on power equipment, which will include two 125-hp. boilers, on which alternative bids for standard water tubular and Scotch marine boilers with corrugated flue furnaces will be considered; boilers to be set up complete in place, with an extra set of flues and grates. The boilers are to be fully equipped for burning oil. There will also be required two oil pumps, one feed water heater of 400 hp. capacity; one duplex steam pump; one steam separator; and a 15 hp., 208 volt 60-cycle single phase alternating current motor.

## Cleveland Machinery Market.

CLEVELAND, OHIO, September 22, 1908.

The most encouraging new feature of the local machine tool market is the fact that some of the dealers and builders report an improvement in the demand from large manufacturing establishments, the majority of which have bought practically no tools during the greater part of the year. Taken altogether, however, sales are fewer than a month ago, owing to the fact that the automobile people are about through buying new equipment for the coming season and sufficient business has not developed from other sources to keep up the August volume of sales. The political campaign is beginning to be felt considerably, and the managers of some plants who have the installation of new machinery under consideration have decided to purchase no new equipment until the result of the election is known.

No good sized inquiries are pending, and sales continue to be limited to single tools and lots of two or three. While more activity is being shown in the erection of additions to existing industrial plants, very few of these projects are in lines that use machine tools. This work, however, has caused an increase in the demand for small electrical equipment and some classes of special machinery. There are scarcely any new companies being formed in this territory for the manufacture of metal products and consequently the demand from new concerns for machine tools is very light.

Some of the tool builders report a slight improvement in orders, as a result of which their plants are being operated at a larger capacity than a month ago, but with others conditions remain about the same. Railroad inquiries are about as scarce as ever, both for machine tools and for locomotive cranes and other handling machinery, and the demand for locomotive cranes is still very light. The foreign demand for machine tools shows no improvement. In special machinery there is a fair demand for dryers, and the demand for cement making machinery, which has been very light for several months, shows some improvement.

The demand for second-hand machinery, which has been fairly good for some time, is somewhat lighter.

Some improvement is noticed in the demand for steel castings, but a great deal of price cutting is going on. A slight improvement continues to be noticed in the demand for iron castings.

The Wellman-Seaver-Morgan Company has secured the contract from the Navy Department for building a 100-ton floating crane for the Bremerton Navy Yard, the contract price being $230,000. This with another large contract recently received by the company to build an ore handling plant for the Pittsburgh & Conneaut Dock Company at Ashtabula, together with other smaller work on hand, will keep the company's plant busy for several months.

The National Acme Mfg. Company reports a slow but steady improvement in orders for its line of machine tools, and the working force in its plant is being increased from week to week. The company has recently received some fairly good orders from large concerns that had been out of the market for some months.

The Empire Iron & Steel Company and the Sheet Metal Mfg. Company, Niles, Ohio, report an improvement in the demand for sheets and their mills are running on full time.

The rubber industry in Akron is in a prosperous condition and some of the large manufacturers of rubber products are planning to make extensive additions to their plants. The Osborn Engineering Company, Cleveland, has prepared

plans for a large factory building to be erected by the Goodrich Tire & Rubber Company. It will be 60 x 200 ft. and five stories high. The building will be of steel, with mill floors. Bids will be received soon. The same engineering firm is preparing plans for a large fireproof building to be erected by the B. F. Goodrich Company. The company expects to erect other buildings after this one is completed.

The C. O. Bartlett & Snow Company has secured a contract for a slag crushing plant to be installed at the new Cuyahoga plant of the American Steel & Wire Company. The company reports an improvement in the demand for dryers and cement machinery, and is now running its plant 12 hr. a day in nearly all departments.

C. E. F. Ahlm, engineer, Caxton Building, Cleveland, has the contract for erecting a power station for a municipal lighting plant at Lima, Ohio, and is preparing the plans.

The Mansfield Railway Light & Power Company, Mansfield, Ohio, will purchase a 1000-kw. turbine and 500-hp. boilers, to double the capacity of its plant.

The Akron Iron & Wire Company, Akron, Ohio, has been incorporated, with a capitalization of $15,000, by S. D. Kenfield, W. F. Koerschner, J. W. Mueller, J. M. Davidson and F. R. Moore.

The Colonial Fan & Motor Company, Warren, Ohio, has been incorporated, with a capitalization of $10,000, by J. B. Estabrook, E. E. Nash, Robert W. Bean, F. E. Watts and D. R. Estabrook.

## Cincinnati Machinery Market.

CINCINNATI, OHIO, September 22, 1908.

In practically all machinery lines save the heavy specialty and tool building there is to be noted a little improvement over a week ago, and a few of the tool builders may with justice come under this classification; but, speaking collectively, the machine tool trade has not cause to feel that permanent improvement has set in.

The inquiries are a little heavier and the impression seems to obtain that the railroads have begun to take a little interest, buying here and there some needed tools, but still avoiding the customary list of specifications with which tool builders have been provided in times past. For some time foreign inquiry has been very light, and even those concerns which have for years catered to this trade and understand its requirements and its eccentricities are complaining of the indifference and apparent inertia of the European manufacturer. During the week some machinery has been sold from this market for shipment to Paris, Rotterdam and some South American ports. The Government is also buying some needed tools and machines for battleships. The Steptoe Shaper Company sold during the week a 16-in. motor drive shaper for installation in the toolroom of the battleship Delaware. The Lodge & Shipley Company is at work on a big lathe for the Portsmouth Navy Yard, 48-in. swing with a 56-ft. bed. There are some fairly good inquiries from builders of automobiles and from some of the New England shipbuilding concerns.

There is to be noted no improvement in the second-hand machinery lines, and some very good bargains are offered, according to the dealers, who realize that this is the season and practically their last opportunity to dispose of worn machines where installations of new tools would be the rule in busy times. In the line of new machinery dealers are selling some special types and standard machines, and as a rule maintaining prices, so far as can be learned.

Manufacturers of ice refrigerating machinery are enjoying a splendid run of business; indeed, according to reports, this branch of manufacturing sees no ill effects of the depression. Makers of electrical power machinery in units of from 1 to 60 hp. are also having a good run of work, with an increasing tendency.

Jobbing foundries as a rule are still plodding along with two and three heats per week, and while their owners are not pessimistic, do not look for permanent improvement earlier than next year.

The Cincinnati Chuck Company is now working full time, 55 hr., with a full force, and with the best prospects in its history. Some important improvements have recently been made in its product and some others are contemplated in the near future.

The Lunkenheimer Company, manufacturer of engineering and brass specialties, is now working 80 per cent. of its maximum force, the record of boom times, and on its regular schedule of 55 hr. Officials are quite pleased with recent orders, which are of themselves sufficient in volume to warrant the constant employment of the shop forces for two months without additional business. The company has kept its skilled forces intact during the months of depression, and has built up by degrees during the summer various architectural features of its plans for the big Lunkenheimer colony in North Fairmount. The brass foundry building, in which will be housed all the latest scientific features known to brass molding, modeling and shaping, is rapidly nearing completion. It will, when completed, be the largest concrete and steel building in the world dedicated solely to the handling of brass foundry work.

The J. M. Robinson Mfg. Company, Cincinnati, builder of metal working machinery, reports good inquiry and the distribution of some business in special dies. This company has enjoyed a very good run of business since the first of the year.

The Cincinnati Punch & Shear Company has put in a new boiler and engine and reorganized and straightened up all departments of its plant. It has built a special boring and milling machine adapted to its special purposes, which is claimed to be a very economical and much appreciated improvement. Among some late shipments of punches and shears by this company are a double 30-in. punch to the Isthmian Canal Commission; a double 36-in. punch, Williamette Iron Works, Portland, Ore.; single punch, Gross-Cooper Safe Company, Hillsboro, Ohio; single punch, John Blue, North Carolina; single punch, Fayetteville Plow Works, Fayetteville, Tenn.; gate shear, Rochester Electric Motor Company, Rochester, N. Y.; single punch, Bridgewater Plow Corporation, Bridgewater, Va. Part of this business was in stock and a part built to order.

The Steptoe Shaper Company enjoyed a week of excellent business as compared with that of the week previous. Sales of shapers included one 24-in. triple gear for shipment to Paris, France; one 16-in. single gear to Rotterdam, Holland; one 16-in. to Montreal, Canada; one 25-in. back gear shaper for shipment to San Francisco, and one 16-in. back gear to go to the Gordon Motor Company, Richmond, Va.

The Scott Stove & Furnace Company, Cambridge City, Ind., has recently closed an order for a considerable tonnage of castings for delivery to the Krell-French Company of Newcastle, Ind., manufacturer of pianos and players, and reports from the Indiana city indicate that the first named concern has grown perceptibly ever since organization and that an enlarged factory is one of the future possibilities.

The following officers were elected at the annual meeting of the directors of the Toledo Machine & Tool Company, held recently: President, E. P. Breckenridge; vice-president and manager of the works, H. J. Hinde; secretary-treasurer and general manager, Graff M. Acklin; directors, the foregoing and S. D. Carr and L. J. Hinde. H. J. Hinde was formerly superintendent of the plant and L. J. Hinde was a traveling salesman for the company.

The Standard Bronze & Brass Company has opened an office and foundry at 87 West Broad street, Columbus, Ohio. The company will deal in brass, bronze, aluminum and copper castings and make a specialty of standard manganese bronze.

The report from Columbus, Ohio, referred to in our last issue, that the Ralston Steel Car Company had received an order from the Lackawanna Railroad Company for 30 cars was incorrect. The mistake arose from the fact that an order for some cars was placed with the Ralston Steel Car Company by the South Buffalo Railway Company, which is a constituent company of the Lackawanna Steel Company.

## New England Machinery Market.

WORCESTER, MASS., September 22, 1908.

The machine builders are probably selling more tools than they were, taking the trade as a whole, but the difference is slight, and does not include all of the important manufacturers. One of the large lathe builders reports that while there was a constant acceleration in orders during July and August as compared with June, September has fallen off. But this is the extreme case; in few others has there been a decrease. The usual experience is a slight betterment, either in a steady access of new business or in spasmodic periods when orders are received in quite satisfactory volume. The more special lines appear to be faring best of all, especially where they hit the wants of the automobile builders. The indications multiply that this industry will continue to exert a most beneficial influence on the machinery market as well as on various other lines of manufacturing. One such case is that of the Norton Grinding Company, Worcester. The company, besides building cylindrical grinding machines, makes a specialty of grinding crank shafts for automobiles. Never has it had so many orders in this department. Some 50 hands are employed on the work, and a part of the roughing work is done on an overtime basis. It is interesting to note that the automobile builders are specifying even narrower limits on this work, requiring a very high degree of precision. The Norton Grinding Company also finds an increasing demand for its grinding machines, although business is still far from normal.

The machinery dealers report no great change in either direction in the volume of their business. The supply trade is feeling a little better, some orders indicating an inclination to buy in somewhat larger lots. The general feeling is that the national election is exerting an influence on the

market in the way of inducing buyers to hold off a little while longer.

The American Metal Stamping Company, Worcester, Mass., has been organized to manufacture stamped metal specialties. The business will be located at Worcester, but no site has been selected. The company will require presses and other equipment. Isaac Grodberg is president; Adolph Hirsch, treasurer, and Harry E. Dann, clerk. The present office is 43 Pleasant street.

The Rocky Hill Hardware Company, Rocky Hill, Conn., has been organized to manufacture garment hangers and other novelties. Frank E. Holmes is president; John A. Ellis, treasurer, and Henry G. Miller, secretary.

The pressed steel manufacturers are experiencing a constant increase in business and most, if not all, of them are quite busy, though they cannot be said to be rushed with orders. As a matter of fact, this line of industry has not suffered to the same extent as most other branches of metal manufacturing, a fact which is not easy of explanation. Pressed steel enters into a very wide field of production which is close to the retail buyer, an element that may in part account for a condition regarded as enigmatical. The trade has been rather an important buyer in the market, everything considered, and promises to become a much more conspicuous figure in the near future.

The great forest fires of northern New England have destroyed a large amount of lumber mill property, including some plants of considerable magnitude. Coupled with this have been other fires destructive of wood working plants. Most of these losses will have to be made good by the purchase of new machine and power equipment, totalling comparatively large figures.

The Flexible Tire Company, 310 Main street, Springfield, Mass., has acquired a factory property, and states that it will require machine tools, including lathes and screw machines. The list is not ready, but probably will be within a month.

The second annual Industrial Show will be held at Foot Guard Hall, Hartford, Conn., November 14 to 19, inclusive, under the management of R. B. Jacobs, of the Jacobs Church Company, who conducted last year's exhibition. The former pronounced success insures an even greater representation of New England and other industries. Metal working machinery occupied a very important place in 1907. Not only did the machine builders of Hartford and vicinity enter into the enterprise with elaboration of display, but their colleagues from other places were present with their products, so that an unusual assemblage of modern tools resulted, in combination with other manufactured articles.

The American Mfg. Company, West Cheshire, Conn., manufacturer of novelties from sheet brass and steel and brass castings, which has incorporated its business under Connecticut laws with $8000 cash capital, has organized with Joseph H. Beaulieu, Waterbury, Conn., as president; Richard E. Modrow, West Cheshire, secretary, and George Hauser, Waterbury, treasurer. The business was established four years ago. The company states that it is not at present in the market for equipment, with the exception of some finishing tools for plumbing supplies.

The Nashawaug Electric Power Company is to establish a large electric power plant, at Killingly, Conn., where a water privilege has been purchased. The water will be auxiliary to steam, it is understood, and will develop about 300 hp. Another privilege on the same stream has been secured, and will be held for reserve purposes. Power has already been contracted for by large cotton mills, and it is also proposed to sell power for general purposes in the towns of Killingly, Plainfield, Canterbury and Griswold. Grosvenor Ely, Norwich, Conn., is president of the company, and Frank B. Perry, Boston, secretary.

The William J. Smith Company, New Haven, Conn., has appointed as its Pacific Coast agent for the sale of Smith One-Lock adjustable reamers Fred. Ward & Son, Inc., First and Howard streets, San Francisco, Cal.

## Philadelphia Machinery Market.

PHILADELPHIA, PA., September 22, 1908.

Business continues to drag along from week to week without any appreciable change. Sellers report it difficult to get buyers to the point of placing orders. However, persistent a seller may be, it is hard to get a final decision, even after a prospective buyer comes into the market, unless he is actually in urgent need of the equipment. Sales recently, therefore, have been on a comparatively small scale, and it is difficult to measure the condition of the trade by week to week observations, as the margin is in many cases very finely drawn. The outlook is more encouraging, not that it is likely that any heavy buying movement will start in the immediate future, but in that there have been placed during the week some few orders which should help business in certain directions. The shipyards in this section have recently been favored with several orders from the Government, for both colliers and torpedo boat destroyers. Three of the former will be built by the Maryland Steel Company, while two torpedo, boat destroyers will be built by each the Wm. Cramp & Sons Ship & Engine Building Company and the New York Shipbuilding Company, which will insure more active conditions in the local shipbuilding industry. This is viewed with satisfaction by the trade, as it can hardly expect a revival in buying of machine tools until the industrial plants show greater forward movement than has recently been the case. The lack of buying on the part of the railroads holds back to a large extent more activity on the part of many industrial plants, and also holds the usual direct purchases of the railroads at a low ebb. Better conditions have recently developed at the railroad shops, and while there has been no immediate improvement in the machine tool trade generally the outlook is considered much brighter, although it is believed that little actual business of importance will be done until after the Presidential election.

Machine tool builders generally show no increase in productive capacity, and in some cases have difficulty in maintaining their present rate of output. They are encouraged somewhat by recent inquiries, quite a few having developed from the Government and from some of the large steel plants. Special tool makers, particularly those turning out the heavier class of equipment, also report better inquiries, but actual orders in most cases are rather difficult to close.

A fair run of business continues to develop in second-hand machinery. Trade cannot be called active, but there is a comparatively good demand, particularly when the condition of the general trade is taken into consideration. Sales have covered a wide range of tools and equipment, and are largely single tool propositions. There have been more inquiries about recently for boilers and engines, both new and second-hand, but it is largely in the medium powers. Some inquiries for additional power equipment for plant betterment are also to be noted, but orders are still pretty scarce, although the trade is encouraged by the outlook.

The iron and steel casting plants continue to book a trifle more business, but feel greatly the absence of railroad, locomotive and machine tool builders' orders. Jobbing foundries have taken on a shade more work, but the demand from the machine tool end of the trade is pretty light.

In connection with the biennial convention of the International Union of Steam Engineers, which was held in this city the past week, an exhibition of steam supplies and equipment was held in the Dobson Building, 809-811 Chestnut street, which was very creditable. The exhibition was the first that has been held in connection with the meetings of the organization, and displays were made by a number of local and out of town manufacturers and representatives of engineering specialties. Among these were H. B. Underwood & Co., exhibiting portable boring and crank pin turning machines; Crane Company, showing the Crane tilt multiple system for returning condensation to boilers; Harrison Safety Boiler Works, the Cochrane feed water heater and separator; Cyrus Borgner Company, firebrick shapes and special reciprocating rear combustion arches of a new type for boilers; Schutte & Koerting Company, valves, &c.; A. W. Findlay & Co., special hose connections; Philadelphia Flexible Metallic Tubing Company, flexible tubing; A. B. Botfield & Co., patent grate bars; Jno. R. Livezy, cold storage and boiler coverings; Watson & McDaniel, C. J. Ramier & Co., and J. E. Lonegan, steam specialties; Anderson & Gaylord, valves; T. T. Burchfield & Co., engines and boilers; Manning, Maxwell & Moore, valves, machinery and specialties. While the foregoing represent the principal local exhibitors, others who made displays include the Berry Engineering Company, Chester, Pa.; L. J. Wing Mfg. Company, New York; Hewes & Philips Iron Works, Newark, N. J.; Chapman Valve Company, Indian Orchard, Mass.; Warren Webster & Co., Camden, N. J.; H. W. Johns-Manville Company, New York; Charles A. Shieren Company, New York; American Flue Cleaner Company, Trenton, N. J. Many of the various oil manufacturers, as well as the manufacturers of packing, were also numbered among the exhibitors. The exhibition was largely attended by the delegates and those interested in the trade.

The Borough of Haddonfield, N. J., will receive proposals, addressed to J. Morris Roberts, Mayor, for material and labor in connection with the installation of a municipal water works system. Bids will be received until October 6. The work includes the following items: About 11 miles of cast iron or other approved pipe, also special castings, valves and fire hydrants; power house and foundations; stand pipe, 25 ft. diameter by 110 ft. high; laying all pipe lines; two 1,000,000-gal. pumping units, steam, gas producer or gasoline, and two or more artesian wells. Specifications may be obtained from Allen Clymer, Borough Clerk, Haddonfield, N. J.

Proposals will be received by the Trustees of the State Hospital for the Insane, Danville, Pa., until September 30, for the construction of a sewage disposal plant for that institution. Plans and specifications may be obtained from the office of the superintendent, or Charles F. Mebus, 908 Land Title Building, this city.

Papers have been signed, we are informed, transferring the plant of the Johnson Railroad Frog & Switch Company,

Chester, Pa., to the Williams Fuel Saving Power Company, of this city, which will use the plant for the manufacture of its appliances.

Horace Trumbauer, architect, will ask for bids in the near future for estimates on a seven-story brick and stone addition to the Union League Club in this city. Among the equipment required will be steam, electric light, refrigeration and laundry plants, which are to be located in the basement of the building.

The Wm. Steele & Sons' Company, engineer and contractor, has been awarded the contract for the six-story concrete warehouse, 100 x 180 ft., which is to be erected for the C. C. Knight Company, iron and steel merchant, at Sixteenth and Callowhill streets, Philadelphia.

The Monarch Emery & Corundum Wheel Company, Camden, N. J., reports business of materially greater volume than earlier in the year. The increase has been gradual and now every department of the plant is on full time. The export trade is improving steadily, and the company is now shipping grinding wheels of all shapes and sizes to all parts of the United States as well as to many foreign countries. In order to expedite the handling of its business in the West, the company has recently established agencies with the McDowell & Stocker Company, Chicago, Ill.; R. W. Green Railway Company, St. Louis, Mo., and R. A. Williams Company, Cleveland, Ohio.

The County Commissioners at Norristown, Pa., have awarded the contract for the superstructure of the new bridge over the Manatawny Creek, near Pottstown, Pa., to the McClintic-Marshall Company, Pottstown, Pa., while the substructure will be built by J. H. Smith, Perkiomenville, Pa.

## Government Purchases.

WASHINGTON, D. C., September 22, 1908.

The Isthmian Canal Commission will receive bids until October 19, Circular No. 470, for a rock crushing plant.

The Isthmian Canal Commission will receive bids until October 16, Circular No. 469, for two clam shell dredge machines, with boilers.

The Isthmian Canal Commission will receive bids until October 12, Circular No. 468, for guide derricks and hoisting engines, steam hammer, shop machines, pneumatic tools, generator and engine, electrical supplies, jacks, track drills, rail benders and other supplies.

The Bureau of Yards and Docks, Navy Department, Washington, will receive bids until October 10 for two boilers, with stokers and superheaters, for the Boston navy yard.

The Isthmian Canal Commission will receive bids until September 28, Circular No. 469A, for three locomotive coaling cranes.

The constructing quartermaster, Tacoma substation, Washington, D. C., will receive bids until September 30 for an air compressor for Fort Washington, Md.

The Isthmian Canal Commission will soon ask bids for a 14 in. by 10 ft. engine lathe and a pneumatic center grinder for the Porto Bello machine shop.

The following bids were opened September 15 for machinery for the navy yards:

Class 11.—One steam locomotive crane—Bidder 3, American Hoist & Derrick Company, St. Paul, Minn., $8025; 17, Browning Engineering Company, Cleveland, Ohio, $7695; 111, Harron, Ricard & McCone, San Francisco, Cal., $7940; 117, Interstate Engineering Company, Bedford, Ohio, $6400; 119, Industrial Works, Bay City, Mich., $8675.

Class 21.—One compressed air locomotive—Bidder 99, Henshaw, Bulkley & Co., San Francisco, Cal., $2695; 244, Vulcan Iron Works, Wilkes-Barre, Pa., $3000.

Class 31.—One engine lathe—Bidder 99, Henshaw, Bulkley & Co., San Francisco, Cal., $5385, $5370 and $5430; 149, Manning, Maxwell & Moore, New York, $7850; 173, Niles-Bement-Pond Company, New York, $5480 and $4772.

Class 32.—One steam hammer—Bidder 99, Henshaw, Bulkley & Co., San Francisco, Cal., $565; 145, Morgan Engineering Company, Alliance, Ohio, $785; 149, Manning, Maxwell & Moore, New York, $667; 173, Niles-Bement-Pond Company, New York, $558; 184, Pacific Tool & Supply Company, San Francisco, Cal., $625.

Class 51.—One electric traveling crane—Bidder 1, Alliance Machine Company, Alliance, Ohio, $2816; 25, Alfred Box & Co., Philadelphia, Pa., $3150; 44, Case Mfg. Company, Columbus, Ohio, $2900; 48, Cleveland Crane & Car Company, Wickliffe, Ohio, $2445; 83, Fairbanks Company, New York, $2454; 97, Hoisting Machinery Company, New York, $2980; 145, Morgan Engineering Company, Alliance, Ohio, $3425; 149, Manning, Maxwell & Moore, New York, $3197; 169, Northern Engineering Works, Detroit, Mich., $3340; 173, Niles-Bement-Pond Company, New York, $3225, $2970 and $2850; 179, Ole K. Oleson, New Orleans, La., $3000; 230, William Sellers Company, Philadelphia, Pa., $3200; 251, Whiting Foundry Equipment Company, Harvey, Ill., $3430.

Class 121.—Two patternmakers' lathes—Bidder 76, Fox Machine Company, Grand Rapids, Mich., $295; 77, J. A. Fay & Egan Company, Cincinnati, Ohio, $410; 79, Frevert Machinery Company, New York, $296; 85, Fairbanks Company, New York, $285; 112, Hill, Clarke & Co., Boston, Mass., $265.50; 114, Handlan-Buck Mfg. Company, St. Louis, Mo., $430; 153, Motley, Green & Co., New York, $250; 178, Oliver Machinery Company, New York, $329 and $379; 196, Prentiss Tool & Supply Company, New York, $292.50.

Class 131.—One vertical centrifugal pump—Bidder 83, Fairbanks Company, New York, $1070; 137, Lake City Engineering Company, Erie, Pa., $627.61 and $641.14; 165, National Electrical Supply Company, Washington, D. C., $762.

Class 182.—Two hydraulic Jacks—Bidder 24, Bethlehem Steel Company, South Bethlehem, Pa., $300 and $320; 80, George S. Fowler, Washington, D. C., $25; 202, J. B. Roache, Brooklyn, N. Y., $278.

Class 195.—Two electric motors—Bidder 92, General Electric Company, Schenectady, N. Y., $475; 252, Western Electric Company, New York, $607.02; 254, Wagner Electrical Mfg. Company, St. Louis, Mo., $849.54.

The following bids were opened September 14 for supplies for the Isthmian Canal Commission, Circular No. 462:

Class 34.—Six pneumatic air drills—Bidder 19, Chicago Pneumatic Tool Company, New York, $315; 23, Cleveland Pneumatic Tool Company, Cleveland, Ohio, $330; 47, Independent Pneumatic Tool Company, Chicago, Ill., $287.40; 48, Ingersoll-Rand Company, New York, $378 and $405; 93, Standard Railway Equipment Company, St. Louis, Mo., $450.

Class 38.—Four marine motors—Bidder 8, William C. Barker Company, New York, $667.75; 31, Fairbanks Company, New York, $983.50; 32, Fairbanks, Morse & Co., Chicago, Ill., $970; 37, Gas Engine & Power Company, New York, $1495; 58, Manning, Maxwell & Moore, New York, $719; 97, Tasker & Strawbridge, Philadelphia, Pa., $1335; 115, O. A. Danzenbaker, Washington, D. C., $1660; 122, August Mietz, New York, $1993.

Class 40.—Two wet emery grinders—Bidder 31, Fairbanks Company, New York, $140; 35, Fox Bros. & Co., New York, $157.08; 42, Handlan-Buck Mfg. Company, St. Louis, Mo., $214 and $192; 63, Motley, Green & Co., New York, $132; 102, Tucker Tool & Machine Company, New York, $102.90, $93 and $66.75; 106, Fred Ward & Son, San Francisco, Cal., $191.80.

The following bids were opened by the Commissioners of the District of Columbia, Washington, D. C., September 14, for two vertical engines for the electric generating plant, Washington:

Ball Engine Company, Philadelphia, Pa., $8944 for both; Sheppard Engineering Company, Williamsport, Pa., $2563 each; B. F. Sturtevant Company, Hyde Park, Mass., $5090 for both.

Bids for furnishng two 4-hp. oil engines for the Plymouth, Mass., light station were opened August 28 by the lighthouse engineer, Boston, as follows:

Frank E. Davis, Boston, Mass., $704, accepted; De La Vergne Machine Company, New York, $774.

The Oil City Boiler Works, New York, has been awarded contract for two watertube boilers for the power plant of the new National Museum Building, Washington, D. C.

The Wellman-Seaver-Morgan Company, Cleveland, Ohio, has been awarded contract for the construction of a derrick at the Bremerton navy yard for $230,000.

Under bids opened August 11 for machinery for the navy yards, Manning, Maxwell & Moore, New York, has been awarded class 4, one Dow vertical triple plunger pump, $442.45.

Under opening of August 25 for machinery for the navy yards, the S. O. Wood Machinery Company, South Boston, Mass., has been awarded class 132, one plug machine, $995.

The following awards have been made for machinery for the navy yards, bids for which were opened September 1:

Prentiss Tool & Supply Company, New York, class 21, one patternmakers' lathe, $123.

H. B. Smith Machine Company, Smithville, N. J., class 22, one saw bench machine, $203.

Fairbanks Company, New York, class 23, one semi-inclosed motor, $190; class 27, one electro magnetic separator, $207.

Ole K. Oleson, New Orleans, La., class 24, one dust collector, $79.

Vermilye & Power, New York, class 26, one metal band saw, $98.

The following awards have been made for a number of oil furnaces for the Isthmian Canal Commission, bids for which were opened September 8:

Manning, Maxwell & Moore, New York, item 1, one crucible melting furnace for a No. 80 crucible, $150; item 2, one forge furnace with two charging floors, $245; item 4, one bolt heading furnace with two opposite charging openings, $150; item 6, one brazing furnace, $150; item 8, one portable furnace for locomotive repair work, $140.

Kenworthy Engineering Company, Waterbury, Conn., item 3, one bolt and rivet making furnace with two charging openings on sides, $325; item 5, one forge furnace with two opposite charging openings, $600.

Items 9, 10 and 11 have been canceled and purchase made in open market from the Rockwell Furnace Company, New York, as follows: Item 9, one rivet heating furnace with one charging opening, $100; item 10, one rivet heating furnace with two charging openings, $115; item 11, one portable rivet heating furnace to be used with pneumatic riveter, $95.

**Large Reversing Engine to Be Inspected.**—Mackintosh, Hemphill & Co., Pittsburgh, have sent out an invitation for an inspection of their works at Twelfth and Etna streets, Saturday, September 26, from 9 a.m. to 5 p.m. There will be on view a twin tandem compound condensing, direct connected reversing engine, built for the Duquesne Works of the Carnegie Steel Company. The firm has furnished a similar engine for the new Aliquippa plant of the Jones & Laughlin Steel Company. The engine is said to be the largest and heaviest of its type ever built and has some special features. It is designed to operate under a steam pressure of 150 lb. per sq. in., and to develop efficiently 20,000 hp., while running at 100 rev. per min. It is equipped with piston valves placed underneath the cylinders, which is a radical departure in the construction of this type of engine. The firm expects to ship the engine to the Duquesne Works during the coming week.

# HARDWARE

MUTUAL fire insurance in the Hardware trade has been phenomenally successful. The amount of insurance in force with the National Company and the various State companies is large and rapidly increasing. The cost of the insurance when the rebates are taken into account is greatly less than that in the stock companies. No suspicion has been cast on this form of insurance by the failure or embarrassment of any company and no legitimate fire loss has been repudiated or defaulted. The management of the companies, too, has been wise and conservative, so that the whole movement is commended to the trade. In addition to this success, when the matter is viewed simply as a business proposition, the various Hardware insurance companies have been most potent factors in the building up of associations. Membership in a State association being presupposed, merchants have found in the cheapness and merit of Hardware insurance a reason for joining a movement identification with which costs something, but which, while it may be enjoyable as appealing to the spirit of fraternity and comradeship, and useful in its educating influence and its power to correct trade abuses, does not afford anything in the way of immediate financial return. The opportunity to secure insurance, sometimes at half the cost of regular insurance, is a definite financial reason for association membership.

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In view of the comparative inexpensiveness of conducting these companies and the further fact that Hardware stores are a peculiarly desirable risk, it is possible for this insurance to be furnished safely at a cost materially less than that of the stock companies which take all kinds of risks and whose methods of carrying on their business are necessarily very expensive. The Hardware insurance companies are therefore enabled to furnish insurance at a price ranging from 33 1-3 to 50 per cent. less than the stock companies. In this condition of things it is safe to anticipate a further growth in this Hardware insurance, provided only wise counsels prevail and the movement is not discredited by recklessness in management.

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There is, however, in the very attractiveness of the proposition a danger which should not be lost sight of. Rebates of 50 per cent. are being paid by some of the companies. This furnishes insurance at one-half of the cost of insurance in the regular companies. While not all the Hardware insurance companies are giving so large a rebate, this is apparently getting to be the ideal rebate. Companies who have not yet reached quite so low a cost are hoping to do so in the near future. A 50 per cent. rebate seems to be coming to be regarded as the proper thing. There have even been intimations that a greater rebate, even up to 75 per cent., is not out of the question.

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In this condition of things there is danger. The payment of too large rebates will be at the expense of the establishment of a substantial surplus, which in the long run will probably be essential to the stability of the company. It may be all right while everything goes well, but the future is full of vicissitudes, and in time of stress, difficulty, if not disaster, may overtake those who have little to fall back upon. There will be years of excessive loss when a surplus will be needed to keep up rebates. Strength and financial stability, together with liberality and reasonable price, is what the companies should aim at. This, too, is what the policy holders should call for, rather than low cash insurance. In these days when things are going prosperously, though not quite so prosperously even in insurance matters as heretofore, and the trade have fullest confidence in the companies, and are justified in having such confidence, it is important that this principle should be recognized and that a conservative policy should be pursued.

## Condition of Trade.

The country is apparently not digesting goods quite as rapidly as in periods of entire healthfulness in commercial conditions. While there is a fair trade doing between the jobbers and their customers the former are not finding it necessary to send in to the manufacturers very voluminous orders, and in general the pace which characterized trade for a week or two in August seems to have relaxed a little. Everything, however, depends upon location and special circumstances and conditions. While the agricultural sections with the prospect of marketing good crops at good prices suffer only a moderate depression, which leaves a fairly satisfactory business to be taken care of, manufacturing towns and cities generally report a good many men idle or only partially employed, and few factories running on full schedule. Politics may be credited with diverting some attention from business, and there is a possibility that as the canvass warms up the election may have something of its traditional influence in interfering with the regular movement of trade. So far as Hardware is concerned, it is safe to say that it is keeping up well, as compared with other lines of trade, and that it is having its full share of the gradual recovery which is to be noted throughout the country, a recovery which is not to be gauged entirely by the somewhat fluctuating volume of current business. There is to be noted in the Hardware field a pretty satisfactory condition, so far as prices are concerned Reaction from extreme low prices is observed in several lines, with a general desire on the part of manufacturers to avoid unnecessary slaughtering of prices, and a determination to pursue a conservative course and be content with a portion of the business going. There are at this time, as usual, lines in which somewhat demoralized conditions prevail, and viewed as a whole the market is one which calls for rare judgment in determining on purchases and skill in placing orders to the best advantage. There is abundant evidence that many retail merchants are pursuing a wise course in the existing state of things and are reaching out with enterprise and energy, endeavoring to make up in this way for any tendency toward sluggishness in trade along the regular lines. Winter goods are naturally moving quite freely, and preparations for the holiday trade are in evidence.

### Chicago.

Reports from the leading Hardware distributers in this market covering results of the past week are decidedly more uniform and positive in indicating an increased volume of business. Orders, it is said, are not only more numerous, but are averaging somewhat better in size. And that a stronger sentiment of confidence per-

vades the market is evident from the more favorable views expressed respecting the trend of trade in quarters where, for months past, extreme conservatism has verged close upon pessimistic doubt. The movement of fall goods is growing and is even now fairly active, though the proportions of shipments on contract specifications is lighter than usual at this season; this is obviously due to the conservatism of buyers in estimating forward requirements. The effects of expansion in building operations are seen in an improved demand for Builders' Tools. Building permits in Chicago issued during July and August surpassed both in number and cost those of the same months last year; and a significant fact in this connection is that this result was not achieved by inclusion in the totals of any buildings of extraordinary size, but is due rather to a marked increase in the construction of dwellings, apartments and other moderate medium sized buildings. Following close upon an advance in the price of Machine and Carriage Bolts, reference to which was made in last week's report, the trade is again in receipt of revised discounts which make effective another raise of 2½ per cent. on Bolts and 5 per cent. on Lag Screws. This action, it is claimed, was dictated by the necessity of restoring prices to a level that would yield manufacturers a reasonable margin of profit, which it seems has been well nigh eliminated by recent competition. Preparations for the fall Stove trade has stimulated the movement in Black Sheets of Stove Pipe sizes, No. 26 and No. 27 gauges, which are now in more general demand, though orders are usually for lots of moderate size. While but little talk of politics is heard, there is no doubt but that some market hesitancy is inspired by the uncertainty which always attends, to a greater or less degree, the outcome of Presidential elections. About the only instance of favorable influence being exerted upon the Hardware trade by the political controversies now being waged, is in the creation of a demand for campaign Cutlery. Knives bearing the names of prominent candidates seem to have filled the gap created by the disappearance of tin torches formerly used in torch light processions. So far at least as the Central West and the territory embraced in the Mississippi and Missouri River valleys are concerned, conditions are nearer normal than they have been since the panic of last year; and to the eastward signs of returning activity are not wholly lacking. Surrounded by such concrete proofs of material wealth as is manifested in the abundant products of field and farm, it is indeed something of a mystery to a greater part of the rural population in this wide region why the wheels of industry have seemed to drag and creak complainingly as if weighted and restrained by powerful unseen, retarding forces. But whatever the flaws in our economic system that were responsible for all this it is at least certain that the mainstay of the whole industrial structure has been and still is the stable wealth of agriculture.

## NOTES ON PRICES

**Wire Nails.**—Demand continues in about the same volume as for the past few weeks, showing a free movement of Nails on new business and contract orders. In new orders small quantities predominate, and prompt deliveries are requested, indicating conservatism on the part of buyers and an intention to keep stocks down to moderate proportions. Prices are well if not inflexibly maintained by all. Quotations are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

| | |
|---|---|
| Carloads, to jobbers | $1.95 |
| Carload lots to retail merchants | 2.00 |
| Less than carloads to jobbers | 2.00 |
| Less than carloads to retail merchants | 2.10 |

*New York.*—Local demand is reported as having been very good last week, but not so active at the present time. The quantity purchased by retail merchants would possibly sort up stocks for a week or more. Nails are held on the basis of $2.30 per keg in small lots at store.

*Chicago.*—New business in Wire Nails is being well sustained and shows no declining tendency. Thus far the tonnage for September is about even with August for the corresponding period. Buyers recognize the wisdom of conservatism in estimating future requirements, and, being under no necessity of ordering far ahead to maintain stocks, are buying in small lots for present needs. Prices, we are advised, are being steadily maintained. Quotations are as follows: $2.13 in car lots to jobbers, and $2.18 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

*Pittsburgh.*—A fair amount of new business is being placed, but orders so far this month have not been as plentiful as in the same period in August. The American Steel & Wire Company and the Pittsburgh Steel Company, the two largest makers of Wire Nails, are operating their plants to nearly full capacity, and Nails are moving out freely on new orders and on specifications against contracts. Most new orders being placed are in small lots for actual needs, the jobbers asking for early deliveries, indicating that stocks are light and that they have not much intention of increasing stocks for the present at least. We are advised that the leading makers of Wire Nails are absolutely maintaining regular prices. Quotations for base sizes are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

| | |
|---|---|
| Carloads, to jobbers | $1.95 |
| Carload lots to retail merchants | 2.00 |

Galvanized Nails are quoted at $1 over the price of the regular Nails.

**Cut Nails.**—Nothing was done in regard to changing prices at the meeting of the Eastern Cut Nail Association held last week, former quotations being reaffirmed. In the West an improvement in demand is apparent, but in the East requirements do not seem to be on the increase. All orders are for small lots, which shows that buyers are not accumulating stocks. The general market is represented by the quotation of $1.80, base, per keg, f.o.b. Pittsburgh, but $1.75 is the extreme market, on carloads and over, to the large trade. In the Western market Iron Cut Nails are held at an advance of 10 cents per keg over Steel Cut Nails, but this differential is not observed in the East.

*New York.*—Conditions remain unchanged in the local market and demand is restricted to actual requirements. Nails are held on the basis of $2.15 per keg for small lots at store.

*Chicago.*—Though the demand is by no means on a parity with that for Wire Nails, there is a marked improvement over conditions of a few weeks ago. Orders are chiefly for small lots, and buyers are not extending their purchases beyond present requirements. Except for a possible shade of 5 cents a keg on especially desirable specifications prices are fairly represented by the following quotations. We quote Chicago prices as follows: In car lots to jobbers, Iron Cut Nails, $2.08; Steel Cut Nails, $1.98. In small lots from store: Iron Cut Nails, $2.25; Steel Cut Nails, $2.15.

*Pittsburgh.*—Business seems to have fallen off this month, as compared with the first half of August, but some small orders for current needs are being received by the mills right along. These are mostly for prompt shipment, and show that stocks held by jobbers are light. The general market is represented by the quotation of $1.80, base, per keg, f.o.b. Pittsburgh, but $1.75 is the extreme market, on carloads and over, to the large trade. In the Western market Iron Cut Nails are held at an advance of 10 cents per keg over Steel Cut Nails, but this differential is not observed in the East.

**Barb Wire.**—The improvement in demand anticipated by manufacturers lags, and orders from jobbers are, in most cases, for small lots. Regular quotations are reported as being maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

| | Painted. | Gal. |
|---|---|---|
| Jobbers, carload lots | $2.10 | $2.40 |
| Retailers, carload lots | 2.15 | 2.45 |
| Retailers, less than carload lots | 2.25 | 2.55 |

*Chicago.*—The demand is slowly increasing, and, thought not yet in full swing, a fairly satisfactory trade is looked for when fall buying is fully under way

throughout the West. Prices, it is stated, are being firmly maintained. Quotations are as follows: Jobbers, Chicago, car lots, Painted, $2.28; Galvanized, $2.58; to retailers, car lots, Painted, $2.33; Galvanized, $2.63; retailers, less than car lots, Painted, $2.45; Galvanized, $2.75; Staples, bright, in car lots, $2.25; Galvanized, $2.55; car lots, to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

*Pittsburgh.*—Fall demand is opening up, but so far is not as heavy as anticipated by the mills, but it is hoped will improve later. Jobbers are placing orders mostly in small lots for actual needs, and are not showing a desire to carry heavy stocks. It is said regular prices are being maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

| | Painted. | Gal. |
|---|---|---|
| Jobbers, carload lots | $2.10 | $2.40 |
| Retailers, carload lots | 2.15 | 2.45 |
| Retailers, less than carload lots | 2.25 | 2.55 |

**Plain Wire.**—The demand continues in fair volume, while specifications on contract orders are quite liberal. Regular prices are reported as being maintained. Quotations per 100 lb. to jobbers in carload lots are as follows, on a basis of $1.80 for Plain and $2.10 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the price to retailers being 5 cents additional:

| Nos. | 6 to 9 | 10 | 11 | 12&12½ | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|
| Annealed | $1.80 | 1.85 | 1.90 | 1.95 | 2.05 | 2.15 | 2.25 | 2.35 |
| Galvanized | 2.10 | 2.15 | 2.20 | 2.25 | 2.35 | 2.45 | 2.85 | 2.95 |

*Chicago.*—Not only is the demand for Plain Wire quite active and gradually increasing, but there is a disposition among manufacturers to order in more liberal quantities. This is true of both Fence makers and manufacturers of miscellaneous Wire goods. The volume of shipments from the mills is larger than for some time. Prices are firm and unchanged. We quote as follows: Car lots to jobbers, $1.98, f.o.b. Chicago, and to retailers, $2.05.

*Pittsburgh.*—Specifications against contracts are coming in quite freely, and there is a fair run of new orders, but mostly in small lots. Buyers are insisting on prompt shipments, indicating that stocks being carried are much lighter than usual at this season of the year. It is stated that regular prices are being absolutely maintained by the mills. Quotations per 100 lb. to jobbers in carload lots are as follows, on a basis of $1.80 for Plain and $2.10 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the price to retailers being 5 cents additional:

| Nos. | 6 to 9 | 10 | 11 | 12&12½ | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|
| Annealed | $1.80 | 1.85 | 1.90 | 1.95 | 2.05 | 2.15 | 2.25 | 2.35 |
| Galvanized | 2.10 | 2.15 | 2.20 | 2.25 | 2.35 | 2.45 | 2.85 | 2.95 |

**Rivets.**—A movement has lately been made by the manufacturers to get somewhat better prices for Boiler and Structural Rivets. The market may now be represented by a quotation on Structural Rivets of 2 cents per pound and on Boiler Rivets of 2.10 cents per pound, both f.o.b. Pittsburgh.

**Freezers.**—Most manufacturers of Ice Cream Freezers are now in the market, and business for next season is being booked. The prices of the important makers are practically the same as last year.

**Steel Goods.**—While next season's prices on Steel Goods have not yet been generally announced, quotations have been made to the larger trade and contracts are being solicited. On some second grade goods it is said that list prices have been a little advanced. Small declines, however, are reported on a number of lines, notably Southern Hoes.

**Bright Wire Goods.**—The low prices which have been prevailing on Bright Wire Goods are still current. Competition on this line is, as usual, exceedingly keen. The market may be represented by a quotation ranging from 90 and 40 to 90 and 40 and 10 per cent.

**Conductor Pipe, Elbows, Etc.**—Referring to the advance in Conductor Pipe, Eaves Trough, Conductor Elbows, &c., announced in our last issue, we give below the new jobbing prices recommended for the different territories, which, in some cases, show a considerable advance. The discounts are as follows:

| Article. | Northeastern territory. | Eastern territory. | Central territory. | Northwestern territory. | Western territory. | Tennessee territory. | Southern territory. | Southwestern territory. |
|---|---|---|---|---|---|---|---|---|
| Conductor Pipe: | | | | | | | | |
| Galvanized Steel, standard sizes and gauges | 70-10% | 70-10-5% | 75-5% | 75-2½% | 70-7½% | 70-10% | 70% | 70% |
| Galvanized Steel, irregular sizes and gauges | 70-10% | 70-10% | 75% | 70-15% | 70-5% | 70-7½% | 70% | 70% |
| Galvanized C. C. Iron, standard sizes and gauges | 50-10-7½% | 50-10-7½% | 60% | 60% | 50-12½% | 50-12½% | 50-12½% | 50-5% |
| Galvanized C. C. Iron, irregular sizes and gauges | 70% | 70% | 70-5% | 70-5% | 70% | 70-5% | 70% | 65-10% |
| Copper, 14, 16 and 20 oz | 50-10% | 50-10% | 50-10% | 50-10% | 50-5% | 50-10% | 50-5% | 50-5% |
| Eaves Trough: | | | | | | | | |
| Galvanized Steel, standard sizes and gauges | 75-10-5% | 80% | 80-10-5% | 80-10-5% | 80-5% | 80-5% | 75-10% | 75-10-2½% |
| Galvanized Steel, irregular sizes and gauges | 70-10% | 70-10% | 75% | 70-15% | 70-5% | 70-7½% | 70% | 70% |
| Galvanized C. C. Iron, standard sizes and gauges | 60-20% | 60-20% | 65-10% | 65-10% | 60-10-5% | 60-10-5% | 60-10-5% | 60-5% |
| Galvanized C. C. Iron, irregular sizes and gauges | 70-5% | 70-5% | 70-5% | 70-5% | 70% | 70-5% | 70% | 65-10% |
| Copper, 14, 16 and 20 oz | 50-10% | 50-10% | 50-10% | 50-10% | 50-5% | 50-10% | 50-5% | 50-5% |
| Ogee Box and Roof Gutter: | | | | | | | | |
| Galvanized Steel, standard sizes and gauges | 75-10-5% | 80% | 80-10-5% | 80-10-5% | 80-5% | 80-5% | 75-10% | 75-10-2½% |
| Galvanized C. C. Iron, standard sizes and gauges | 60-20% | 60-20% | 65-10% | 65-10% | 60-10-5% | 60-10-5% | 60-10-5% | 60-5% |
| Plain Ridge Roll and V. Ridge Cap: | | | | | | | | |
| Galvanized Steel, crated | ..... | ..... | 80-10-10% | 80-10-7½% | 80-7½% | 80-5% | 80% | 75-10-7½% |
| Galvanized Steel, wired in bundles | ..... | ..... | 80-10-10-2½% | 80-10-10% | 80-10% | 80-5-5% | 80% | 75-10-7½% |
| Galvanized C. C. Iron, crated | ..... | ..... | 65-10% | 65-10% | 60-10-5% | 60-10-5% | 60-10-5% | 60-5% |
| Formed Valley: | | | | | | | | |
| Galvanized Steel | ..... | ..... | 75% | 70-15% | 70-5% | 70-2½% | 60-20-5% | 60-10-7½% |
| Galvanized C. C. Iron | ..... | ..... | 50-5% | 50-5% | 40-10% | 40-10% | 40-10% | 40-2½% |

Terms are as usual, 60 days, net; 2 per cent., 10 days. No freight is allowed on shipments of less than 250 lineal feet. One shipment of 250 ft. or more, full freight, is allowed to the nearest railroad station with a few exceptions. It will be noted that special prices are no longer named for Pittsburgh territory, which has been included in central territory.

Much satisfaction is felt by the manufacturers of Conductor Elbows and Shoes at the readjustment of prices on these lines after a long period of demoralization. That a material advance has been effected will be clear from the following quotations, which, however, do not represent the extreme concessions obtainable by jobbers and other large trade:

*Galvanized Steel and Charcoal Iron Elbows.*

| | |
|---|---|
| Sizes 2, 3, 4 | 80% discount |
| Sizes 1½, 2½, 3½, 5, 6 | 60—10% discount |
| 26 Gauge | 50% discount |
| 24 Gauge | 25% discount |
| Copper Elbows | 50% discount |

**Rope.**—The market price on the best brands of Manila Rope has dropped to a basis of 9 cents per pound, and inferior qualities and Mixed Rope grade down to 7 cents and sometimes lower. The demand for the lower grades, for ordinary use, is on the increase from inland points, while for mechanical and marine purposes the better grades are required. Jute fiber has advanced, but manufacturers have not put up the price of Jute Rope in proportion to the advance in raw material. Demand for Rope is showing some improvement, but the volume is still below normal. General quotations for Rope 7-16 in. in

diameter and larger are as follows: Pure Manila, 9 cents; Pure Sisal, 7 cents; No. 1 Jute, ¼ in. and up, 5½ cents; No. 2 Jute, ¼ in. and up, 5 cents.

**Bolts and Nuts.**—The market for Bolts and Nuts continues to reflect improved conditions, the new prices of the manufacturers being well maintained. At the same time, prices are still low and business is in moderate volume. The following discounts may be quoted as representing the manufacturers' prices to the general trade:

Common Carriage Bolts, cut thread, ⅜ x 6 and smaller and shorter .....75 and 10%
Common Carriage Bolts, rolled thread, ⅜ x 6 and smaller and shorter .....75, 10 and 7½%
Common Carriage Bolts, cut thread, larger and longer than ⅜ x 6.....70 and 10%
Machine Bolts, cut thread, ⅜ x 4, or smaller and shorter, 75, 10 and 5%
Machine Bolts, rolled thread, ⅜ x 4 or smaller and shorter, 75, 10, 5 and 7½%
Machine Bolts, larger and longer than ⅜ x 4.....70, 10 and 5%
Bolt Ends .....70, 10 and 5%
Coach Screws, Gimlet point.....80 and 10%
Lag Screws, Cone Point.....80, 10 and 5%

It may be stated that somewhat lower quotations are being made by jobbers who have stocks bought and contracts placed at the extremely low prices which have been obtainable during the spring and summer. One Western jobbing house is naming a discount on smaller Carriage Bolts of 80 per cent. and on larger 75 per cent. A slight advance in Hot Pressed Nuts was made last week. The market on both varieties of Nuts may now be represented by the following quotations:

Hot Pressed Square Nuts, blank or tapped.....5.90 off list
Hot Pressed Hexagon Nuts, blank or tapped.....6.40 off list
Cold Punched, Plain Square Nuts.....5.40 off list
Cold Punched Square Nuts, C. T. & R.....5.80 off list
Cold Punched Plain Hexagon Nuts.....6.00 off list
Cold Punched Hexagon Nuts, C. T. & R.....6.60 off list

**Window Glass.**—The week has been practically devoid of developments in Glass circles. The general condition of the market remains substantially the same, about twenty hand plants being in operation, with a total capacity of a little more than 600 pots. No reports of any advancement in perfecting the organization of manufacturers have been made public. Workmen in the different branches of the Window Glass industry are working more in harmony than usual to get better wages than ruled during the last five years. Manufacturers' discounts, from manufacturers' list of January 1, 1901, are as follows: For A single and double strength Glass, 90 and 15 per cent.; for B single and double strength Glass, 90 and 20 per cent. Eastern jobbers' quotation from jobbers' list, October 1, 1903, for all sizes of single and double strength Glass, covering the territory east of Chicago, is 90 and 20 per cent. discount.

**Linseed Oil.**—The tendency is still to restrict purchases to immediate requirements, and these are largely confined to small lots. Quotations are as follows: State and Western Raw in small lots, 42 cents per gallon; City Raw, 44 to 45 cents, in small lots, per gallon. Boiled Oil is 1 cent advance on Raw. Carloads of Raw could probably be bought at from 1 to 2 cents less than the price for small lots.

**Spirits Turpentine.**—The market has advanced about ½-cent per gallon during the week, reflecting slightly improved conditions in the South. Demand at this point continues restricted to small lots. The New York market is represented by the following quotations: Oil Barrels, 38 to 38½ cents; Machine Made Barrels, 38½ to 39 cents per gallon. In view of unsatisfactory conditions which effect Turpentine producers in the State of Florida, there is a movement on foot to organize a corporation to be known as the Naval Stores Marketing Company. The chief object of the company, according to the present plan, will be to eliminate from the industry purely speculative manipulation and the establishment of the business upon a sound basis, where it will respond to the law of supply and demand.

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L. P. & J. S. Farley have bought the business of Wood Bros., in Corona, S. D., and will handle Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints, Oils and Sporting Goods.

## THE MEMPHIS CONVENTIONS.

AS heretofore announced, the annual conventions of the American Hardware Manufacturers' Association and the National Hardware Association will be held simultaneously at Memphis, Tenn., November 18 to 20. Arrangements are under way which promise to make these meetings especially interesting and enjoyable. An attractive programme of entertainment is being prepared to fill in the time not devoted to business sessions, which will thus not be interfered with in any way. The committee in charge has decided that on Thursday forenoon, November 19, a card party and luncheon for ladies exclusively will be given at the Memphis Country Club, the prizes for this function being donated by manufacturers who are members of the American Hardware Manufacturers' Association. Manufacturers who are desirous of contributing prizes for the occasion are invited to do so, and it is suggested that they address George T. Bailey of the Oliver Iron & Steel Company, who is chairman of the Reception Committee, care of Columbia Club, Indianapolis, Ind., in regard to the matter. Any packages containing prizes which manufacturers may care to donate for the card party should be sent to Mr. Bailey, care of the Peabody Hotel, Memphis, Tenn., not later than November 17.

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W. H. Bennett, room 403, 40 Dearborn street, Chicago, who, at a meeting of representatives of both associations at Atlantic City last year, was appointed a committee of one on transportation to complete arrangements for the Memphis meeting, has issued a circular in which he announces his intention to give the members the best possible service. If feasible he will run a special train from New York through to Memphis via Chicago. It is planned to have this train leave New York City via the New York Central lines on Saturday morning, November 14, arriving at Chicago on Monday morning, November 16. Leaving there on Monday evening, it is due to arrive in Memphis on the following day. The interval of time between the arrival and departure in Chicago will be filled in by viewing the sights of the Windy City with a delegation of Chicago Hardware merchants as hosts. Arrangements will be made to have this special train stop at cities between New York and Chicago for parties who desire to join the company en route. Those coming from the West and Northwest will join the party at Chicago. The question of rates is now being considered by the different railroad passenger associations and definite information as to the cost of the trip and the exact schedule of the train will be given later. Those who desire reservations made on this train should communicate with Mr. Bennett as early as possible.

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The first session of the meeting of the National Hardware Association will be held on Wednesday forenoon, November 18, and, as usual, will be open not only to the members, but to all visitors to the conventions. Executive sessions will be held on Wednesday afternoon and on Thursday and Friday, both morning and afternoon, during which many important subjects relative to the work of the organization will be discussed. The annual banquet will be held on Thursday evening, November 19. We are advised that there is a strong probability that Judge Taft will be present during one of the days of the convention. Already a sufficiently large number of the members of the association have engaged rooms at the Hotel Gayoso to indicate that the gathering will be largely attended.

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HARRY CLINTON GOODRICH, 140 Winchester avenue, New Haven, Conn., has begun the manufacture of the Goodrich Patent Instant Water Heater, the work being done for him by the Pfleghar Hardware Specialty Company of that city.

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Pain Bros. and G. W. Woolsey have purchased the business of Munch & Co., Hennessey, Okla. Pain Bros. will occupy the store Munch & Co. used, and will also retain the one they formerly occupied, while G. W. Woolsey will move the goods purchased by him to his own store.

# RURAL PARCEL POST "EXPERIMENT" THE GOVERNMENT PROGRAMME.

FROM OUR SPECIAL CORRESPONDENT.

WASHINGTON, D. C., September 22, 1908.

NO gift of prophecy is required to predict with certainty that the coming session of Congress will be marked by one of the hardest fought campaigns in the history of the movement to secure the passage of parcel post legislation. The return to Washington of the Postmaster-General after his summer vacation is signalized by the announcement that he has secured a promise from President Roosevelt to recommend in his next annual message the establishment of an experimental rural parcel post along the lines suggested by the Postmaster-General in his letter to Senator Penrose, chairman of the Senate Post Office Committee, forwarded during the debate upon the last annual post office appropriation bill on the floor of the Senate.

Just a year ago it was announced that the President had agreed to recommend legislation to put into force the Meyer-Bristow rural parcel post project throughout the country, and retail merchants in all lines were greatly disturbed thereby. Many of them wrote to the President, expressing the opinion that not only the small merchants but the country towns and villages would suffer serious injury, and there is reason to believe that these protests were effective, for although the President kept his promise to the Postmaster-General, his recommendation appeared in his message in the following conservative form:

I further commend to the Congress the consideration of the Postmaster-General's recommendation for an extension of the parcel post, especially on the rural routes. There are now 38,215 rural routes, serving nearly 15,000,000 people who do not have the advantages of the inhabitants of cities in obtaining their supplies. These recommendations have been drawn up to benefit the farmer and the country storekeeper; otherwise I should not favor them, for I believe that it is good policy for our Government to do everything possible to aid the small town and the country district. It is desirable that the country merchants should not be crushed out.

### Proposition Offered as a Compromise and Test.

President Roosevelt's declaration that he believed it to be good policy for our Government to do everything possible to aid the small town and that the country merchant should not be injured was decidedly encouraging to those who bore the brunt of last winter's campaign in Congress, but unfortunately there is not likely to be any saving clause in the recommendation which the President will probably make regarding the installation of an experimental parcel post on rural routes. The proposition is put forward by the Post Office officials in the form of a compromise and as a test of the soundness of the contentions of the advocates and opponents of a general rural parcel post. The President has been told, and will doubtless repeat in his message, that in no way can the people of the country get at the real truth regarding the effect of a parcel post except by a test, and that in the event the results are unsatisfactory it can be promptly abandoned.

### Defective Reasoning.

Of course this reasoning is honeycombed with fallacies. In the first place, no one claims that the establishment of a rural parcel post, especially if limited to the scope of an experiment, would result in the immediate wiping out of all the local merchants of the neighborhood. Should it not do so, however, the advocates of the innovation would point to the fact as a complete refutation of the arguments of the opponents of the system. On the other hand, it goes without saying that the beneficiaries of the experiment would see to it that the manifestations of approval were loud and long and so directed as to reach Senators and Congressmen with the greatest possible emphasis. Finally, it must be remembered that the Post Office Department would be the sole judge of the success or failure of the experiment. It would be folly to assume that the department would be satisfied with a single year's test, and it is to be expected that increasing appropriations for "purely experimental purposes" would be sought for a period of years before well based conclusions could be reached.

### Rural Free Delivery Was an "Experiment," Too.

In short, the rural parcel post "experiment" would merely duplicate the experience in the establishment of the rural free delivery, which started out with a fund of $10,000—so small that no attempt was made to spend it until Congress increased it to $40,000—and which now costs nearly $40,000,000 per annum, but one-fifth of which is paid by the beneficiaries of the system. There can be no doubt that the danger which menaces the retailers of the country in the urging of an experimental parcel post is far greater than that involved in any project in the whole category of so-called postal "reforms" brought forward within the past decade.

### Retail Druggists Adopt Strong Resolutions in Opposition.

It is a good sign that the national organizations of retail merchants are already alive to the dangers confronting them. The National Association of Retail Druggists, which in past campaigns has stood shoulder to shoulder with the Hardware retailers, jobbers and manufacturers, at its annual convention held at Atlantic City during the past week adopted strong resolutions denouncing the parcel post project and calling the attention of the trade to the peril confronting it as the result of the Post Office Department's continued activity. This association embraces in its membership nearly 45,000 retail merchants of good standing in their respective communities, and can be relied upon for all possible assistance during the fight to be made next winter.

### Opportunity Offered to Pledge Candidates for Congress.

The fact that the Congressional campaign is now warming up and that efforts are being made by both political parties to send every voter to the polls in November should make it comparatively easy for the retail merchants to pledge candidates for Congress to oppose all parcel post projects. Now is the time to act, and political considerations should not be permitted to stand in the way of the election of a House of Representatives that will steadfastly oppose all these paternalistic schemes.

## Requests for Catalogues, Etc.

*The trade is given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.*

**REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate:**

FROM A. S. ERSKINE, who is opening a general Hardware store in the new town of Three Forks, Mont.

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FROM O'CONNOR & MCKILLIP, who are constructing a new store, 50 x 68 ft., two-story and basement, in Cambridge, Neb. The firm handles Shelf Hardware, Stoves, Tinware, Agricultural Implements, Sporting Goods and Furniture.

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FROM E. A. DALE AND A. MCDANNOLD, who have each purchased half of the Hardware and Implement business of Electra Hardware Company, Electra, Texas.

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FROM CORY & SCHELLENGER HARDWARE COMPANY, Fairmont, Minn., which has been incorporated with a capital stock of $25,000. The company handles Shelf and Heavy Hardware, Stoves, Tinware, Paints, Oils and Sporting Goods.

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FROM WATT-SAPP HARDWARE COMPANY, Albany, Ga., handling Hardware, Wooden Ware, Housefurnishing Goods, Oil and Gasoline Stoves, Guns, Sporting Goods, &c.

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FROM L. H. CONVERSE & Co., who have opened a Hardware, Stove, Tinware, Paint and Sporting Goods store at Heartwell, Neb.

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FROM THE FERGUSON IMPLEMENT COMPANY, Brady Island, Neb., which is erecting a new building for the accommodation of its Hardware, Stove, Implement and Paint business.

# HARDWARE FREIGHTS.

## Damage or Loss and the Bill of Lading

DURING the past twenty years the railroads have been persistent in their efforts to make the shipper assume the risk of loss or damage in transit. These efforts have taken the form of "conditions" which are printed on the back of the bill of lading. The railroad always insists that these conditions are binding on the shipper because the bill of lading is a contract between him and the carrier. The State courts in New York and a number of other States have to some extent adopted this view. The Federal courts have never recognized these conditions as binding on the shipper, but Hardware merchants in many parts of the country buy goods from nearby manufacturers or jobbers located in the same State so that the Federal rule would not apply on their shipments.

**State and Federal Views of "Conditions."**

The roads east of the Mississippi have gone so far in the conditions which they embody in their "uniform bill of lading" that if the railroad smashes a shipment all to pieces but preserves the pieces carefully and delivers them the consignee apparently would have no claim for the damage. This rule has never been enforced against large shippers, who fought it so bitterly when it was first adopted by the carriers four years ago that the roads practically agreed to drop it. In the face of their promises not to enforce it they have gone on printing it in the official and Southern classifications and on the back of every bill of lading that has been issued in this territory in the past four years. They have enforced it in practical effect against the small shipper who does not know his rights, and there is no doubt many Hardware merchants have had trouble because of the conditions printed on this document when they attempted to collect claims. Even where the roads do pay claims, after persistent dunning by the shipper, they have been very slow, and their purpose has been to get people accustomed to the idea that the shipper must assume the risk.

**Smashing a Shipment but Preserving the Pieces.**

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The bill of lading is a document that was used for thousands of years before the advent of the railroad. During all this time it was a real contract between the master of the ship and the merchant. The ocean was a free highway, and there were, presumably, many ships competing for the business of the merchant, and the legal principle was recognized that they had a right to fix by contract the liability of the master of the ship. The English courts and the State courts in this country have conceded to the railroad the same right to fix its liability by contract wherever it grants a reduced rate to the shipper on condition that he will assume the risk of loss or damage.

**Bill of Lading an Ancient Document.**

Carrying out this theory, the "uniform bill of lading" is supposed to be used with a "reduced" rate, and the rules provide that if the shipper wants to hold the railroad responsible he must pay 20 per cent. more than the regular "reduced" rates. The rates, however, are not "reduced." They are regular tariff rates filed with the Interstate Commerce Commission. Local class rates on Hardware and other merchandise between points wholly within one State are seldom published separately. They are included in the regular "book" tariffs along with interstate rates, so that the claim that they are "reduced" is a mere pretense. Large shippers, including the mail order houses, take advantage of this fatal inconsistency, and insist upon the railroad paying their claims. The small shipper has the same right to hold the railroad responsible for the condition of his property wherever he has paid the regular tariff rate.

**"Reduced" Rates a Mere Pretense.**

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The Western railroads for several years published a similar rule in the Western Classification, providing that the shipper must assume the risk unless he paid 20 per cent. more than the regular rate. In *The Iron Age* of March 12, 1908, attention was called to the dangers lurking in these rules, and large shippers immediately brought so much pressure to bear upon the Western roads that a number of them issued "exception" tariffs, in which they canceled the application of the rule on their roads. More recently the Western Classification Committee adopted an amendment, effective July 15, in which the railroad assumes all risks of loss or damage except "from causes beyond its control."

**Western Railroads Amend the Rule.**

This is the "common law" rule which the Federal courts have always followed on interstate shipments. The railroad is liable for any loss or damage, unless caused by an earthquake, a tornado, a bolt of lightning or some other "act of God," or by an act of the Government or a public enemy. These rare occurrences are beyond the control of the railroad. Practically all the cases of loss which a Hardwareman is likely to encounter are caused by the negligence or carelessness of railroad employees. There will be no question in the future regarding the liability of Western railroads for loss or damage on either interstate or local shipments, but the Eastern roads still cling to the rules which apparently throw the risk on the shipper.

**Eastern Roads Evade Responsibility.**

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The whole question of the conditions that should appear in a bill of lading has been pending before the Interstate Commerce Commission for three years. Unfortunately, the commission only has jurisdiction over interstate commerce in matters pertaining to "rates, fares and charges." It has no power to regulate local State shipments, and it has no jurisdiction even when the traffic is interstate over questions of loss or damage. The commission has tried by persuasion to get the roads to adopt a bill of lading in which they would frankly recognize their "common law" liability, but they are very reluctant to come to any agreement. Even when they do yield to the persuasive powers that have been brought to bear they may have an "interstate" bill of lading which will differ from the document they may use on local shipments.

**I. C. Commission Has Used Persuasion.**

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All these rules and conditions are mere "paper barriers," which would not have any force in law if shippers were vigilant in pursuing their rights. The mail order houses brush aside all these barriers and require settlement from the railroad for every case of loss or damage. The Hardware merchant should not falter where the catalogue house is successful in collecting claims. The very fact that claims have been paid to large shippers during the years these rules have been in print is evidence of discrimination when any effort is made by the railroad to deprive the small shipper of his rights.

**Mail Order Houses Insist on Reimbursement.**

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If any railroad persists in refusing to pay damage claims because of the "conditions" printed in its bill of lading, the merchant has a simple remedy to maintain his rights. He should ask the parties from whom he buys to stamp his shipping receipts or bills of lading "Accepted under protest against the conditions limiting the common law liability of the carrier." This protest can be stamped on the receipt or bill of lading in the manufacturer's or jobber's office before it is signed by the agent of the railroad. The agent cannot refuse to sign and the protest has the legal effect of killing the "conditions."

**Bill of Lading Accepted "Under Protest."**

The rules and conditions printed in bills of lading are not the acts of individual roads. They are adopted in conference by competing roads, which act together in publishing them and putting them into effect. The shipper or consignee has no choice in the matter nor any

right of contract. He must use the document which all the railroads have adopted, or they will not give him any receipt at all. Jobbers, manufacturers and other large shippers who use their own receipts bound in books usually have a separate book for each road following the printed form which it requires. The "protest" stamped on the document by the shipper has the effect of raising all the questions of law which lie behind the "restraint of trade" when competing roads join together in an agreement to deprive the shipper or consignee of his legal common law rights.

**Large Shippers Use Their Own Receipts.**

## Weed & Co.'s 90th Anniversary.

WEED & CO., Buffalo, N. Y., one of the oldest and best known hardware houses in the country, celebrated its 90th anniversary on the 23d inst. Not many houses in any line of business can point to an unbroken record of business prosperity and progress extending over nine decades. This firm has watched the forests yield to the sturdy stroke of the woodman. It sold supplies to the men who dug the Erie Canal. Through all the vicissitudes of frontier life, through storm and stress, the firm has steadily progressed from a backwoods ironmongery to a conspicuous position in the commercial life of Buffalo. Interesting indeed is the comparison between a little two-story shack of logs and frame—half blockhouse, half store—in 1818, and the great modern wholesale and retail establishment of Weed & Co. to-day.

It was shortly after Buffalo was burned by the British and her Indian allies that George T. Weed and Thaddeus Weed, on September 23, 1818, opened at the northwesterly corner of Main and Swan streets a hardware store, or ironmongery, as it was then called. The business prospered from the first day, though its customers were limited to Indians and frontiersmen. Thaddeus Weed founded Buffalo's first regular fire company and took an active interest in civic and religious life. Subsequently his son, DeWitt Chapin Weed, succeeded to the business. The demise of DeWitt C. Weed in 1880 left Hobart Weed principal owner, and in 1903 the house was incorporated, with Mr. Weed as president.

In carrying out this policy of conservatism and the furnishing of reliable goods the house adopted its birth year, "1818," as a trade mark, and the articles it sells so branded carry the fullest guarantee as to workmanship and quality. In view of this long and creditable record Weed & Co. will receive the congratulations of the trade with best wishes that they may round out their first hundred years with continued success, and enter on their second century under the most favorable auspices.

## Hendricks Commercial Register.

THE SAMUEL E. HENDRICKS COMPANY, 74 Lafayette street, New York, publishing Hendricks' Commercial Register of the United States, continuing the custom of thorough revision every 12 months, has just issued the seventeenth annual edition, dating from its foundation, in 1891. In general appearance it closely resembles recent editions, and in the stiff clothbound covers contains 1340 pages, three columns to a page. This directory is particularly devoted to the interests of Architectural, Mechanical, Engineering, Contracting, Electrical, Railroad, Iron, Steel, Hardware, Mining, Mill, Quarrying, Exporting and kindred industries, having, it is said, over 350,000 names and addresses and upward of 30,000 business classifications. A helpful feature is the insertion of trade names or brands of goods wherever practicable.

SOME resourceful rascal has lately been exercising his talents in New York City in obtaining goods under false pretenses. The facts in one instance are as follows: It was represented over the telephone that a large house uptown, with whom a certain cutlery house was continually dealing, had arranged a sale for the following day of combination pocket knives to sell at $2.50 and $3 each. Twelve dozen each stag and pearl, to cost not over $21 and $28 to $30 per dozen, respectively, were wanted. An hour later another message came asking that the goods be put in packages for delivery to boy who would call that afternoon, as it was important the goods should be opened and marked for the morrow's sale. The boy came in due course with a written order, having been posted in advance with answers to possible questions. The boy has been arrested, but it is believed that he was merely a tool, and hired for this special errand. The cutlery firm having occasion to communicate with the house mentioned, and finding that no such order had been given, immediately telephoned the circumstances to a number of leading concerns in the trade to warn them, and, if possible, catch the thief. It then developed that another prominent house had been successfully approached a few days previously, but were keeping the facts quiet, thinking they would apprehend the man. By the same methods and doubtless by the same person 3 dozen high priced safety razors were obtained about the same time, and attempts were made unsuccessfully on another safety razor house and a Broadway cutlery establishment.

## Wisconsin Hardware Association.

AT a recent meeting of the Executive Committee of the Wisconsin Retail Hardware Association, C. A. Peck, secretary, Berlin, it was decided to limit the number of papers to be read at the next annual convention in February, 1909, to one paper, not exceeding 10 min. in delivery, at each session. This will enable the convention to give considerably more time to the discussion of topics suggested by the Question Box. It is believed that by giving more attention to Question Box deliberations the interest of the members in the work of the convention will be materially increased, and they will thus be induced to take an active part in the discussions.

It had been hoped to secure the new Auditorium Building in Milwaukee for the next meeting, but the structure is so far from completion that the officers of the association have decided that it will be better not to count on that building, but to make use of the quarters heretofore employed. The Hardware exposition will continue to be a feature of the annual gathering, and every effort will be made to make it as interesting and attractive as possible. The exposition will be managed by the Milwaukee local association, under the direction of the officers of the State organization.

Mr. Peck, who is also secretary of the Hardware Dealers' Mutual Fire Insurance Company of Wisconsin, states that business so far in 1908 has been at the rate of about $10,000 a day. A folder has lately been sent out by the company in which it appears that since January 1 last $1,994,950 worth of insurance has been written. The dividend for 1908 is 50 per cent., and the rebates so far during the year have been $10,703.16. Since January 1 the assets of the company have increased from $28,123.40 to $42,092.30.

AN IMPORTANT CONSOLIDATION of roofing interests has been effected through the organization of the General Roofing Mfg. Company, East St. Louis, Ill. This company has absorbed the Weatherproof Mfg. Company, St. Louis, Mo., of which J. S. Porter, now sales manager of the new company, was president, the Weatherproof Company losing its identity through the merger, except that the Weatherproof brands and trademark, well known to the roofing and building trade in the Central, Western and Southwestern States, will still be continued. The business of J. C. Woodley & Co., Chicago, who enjoyed a trade of similar character in the Northern States and quite extensively introduced the brand of Compo Rubber Roofing, has been taken over by the new company, and will be operated under its name as the J. C. Woodley & Co. Branch, Chicago. It will look after the territory comprised in the northern portions of Illinois, Indiana and Ohio and northwestern Iowa, Michigan and Wisconsin. All of the goods made by the company are, it is stated, manufactured from raw materials controlled by it, which is advantageous both in point of economy and maintenance of quality. The officers of the company are Geo. M. Brown, president, and M. J. Moore, secretary.

# Here and There in the Hardware Store.

BY SAMUEL MASTERS.

## I.—NEW METHODS AND NEW MEN.

ONE of the most significant of the changes in business which have been wrought by the introduction of modern systems is the altered relations of sales managers and salesmen and the difference in the kinds of men themselves.

### Smaller Fields Better Cultivated.

There was a time when a salesman was turned loose in a territory rich enough to support a dozen men and allowed to travel about therein at his own sweet will, so long as his sales exceeded a stated minimum. Now his field is measured not only by counties and States but by the sales possibilities, and he moves about among a number of firms, carefully selected by his house, just as directed by the sales manager. He must produce orders from each firm, show conclusively that they cannot be taken, or permit another salesman to try.

### The Manager Manages.

A salesman can no longer talk confidently of "my towns" or "my customers," and the instances are comparatively rare when a salesman who transfers his services to a competing house is able to divert an embarrassing amount of business from the old channel. It is becoming more and more the firm that does the business through the salesman, and less and less the salesman who commands the business for his house. Formerly the salesman frequently ruled the situation and told the manager what the house must do to command the business. Now the manager knows more of the general situation than the man in the field, and gives him explicit instructions as to what he may or may not do, and is not to be moved from his position by stories of what the "other house" is doing.

### An Evolution, Not a Revolution.

There has not been a sudden revolution. It is probably 15 years since the Simmons Hardware Company pasted a series of maps on boards and traced the movements of its men thereon by means of Tacks of various kinds taken from its stock. It is at least 12 years since a Chicago furniture house began the sale of map and Tack outfits, and about as long since the card systems, used first by libraries and later by savings banks, began to be adopted for registering records of sales and solicitations. It is 17 or 18 years ago that the general scramble to change partnerships into corporations and corporations into trusts excited popular clamor, and that private agreements between competing houses as to prices, terms and territory, put the sales manager into a position to know more about prevailing conditions than the salesman. These same agreements gave him, also, a means for authoritatively denying a salesman's statements as to cutting by competitors, as he could communicate with the house charged with making a cut and learn both sides of the story told him.

### Outside Aids to Knowledge.

Dun and Bradstreet have for a still longer period given the men at home accurate information concerning the name, business, capital and credit of firms in various branches of trade, and card systems have afforded a flexible medium for classifying and reclassifying the information thus gained to suit the varying conditions. Trade journals have aided the sale manager by supplying classified lists of firms in various industries, and professional compilers of mailing lists have helped him to know whom to approach. All of these factors have combined to give the sales manager an intimate knowledge of the buying capacity of any firm, town or territory in any line of goods, and detailed data, against which the glittering generalities of salesmen count as naught.

### How the Salesman Helped.

Even the salesman himself has been pressed into service to complete the records in the office by supplying reports as to visits made, orders taken, kinds and brands of goods handled by the firms called upon, the names of buyers, and any other intimate details which the sales manager may desire. He has not always done this willingly, but he has done it. If he has omitted his reports, his attention has been called to the fact and the reports demanded. If his reports repeatedly showed calls and no sales he has been asked to explain and to show results, and this little practice has led to the breaking up of many a comfortable arrangement with a brother traveler, to "Leave my man alone" and "I'll keep away from yours."

### Systematic Records a Factor.

Monthly records of sales have furnished material for prodding salesmen to fresh efforts when the totals showed a decrease. Records of contracts for seasonable goods have enabled the sales manager to remind salesmen at the time for renewals of the places where business could be expected. In fact there are now few details of the field work which the sales manager has not mastered and which he cannot control.

### Increased Competition.

One of the factors in this change is an increased competition for orders upon an evener level of values and with a generally decreased margin of profit. With a better knowledge of the amount of business to be obtained men have been more intelligently placed and the field fairly drag-netted for orders. Arrangements as to prices have resulted in less cutting, but the final result has been a lessened margin of profit with fewer sales made at unremunerative prices and fewer at exceptionally high ones.

### The Vanishing Type.

The old style salesman has had to go. There has not been enough space for him to move in. To make daily reports of his movements galled him. The constant coaching of the sales manager seemed to him to savor of nagging. His fixed habits were broken up by the demands that he call upon uncongenial people and he found himself bound to undertake to sell goods where he felt that there was a bare fighting chance to succeed. The time had come when it was not deemed sufficient if he followed his accustomed route, called upon his old friends and turned in the usual amount of business from each. It was up to him to fall into line with new methods and new ideas, or if he found himself unwilling or unable to do so to step aside and give place to some one who could and would.

### New Times, New Men.

The old order served its turn in its time. The old style salesman did good work and filled well the demands of his day, but it must be evident that the growth of business which has taken place in the past ten years could not have been made with the loose organizations and lack of methods of the old regime. It is the trend of the times that has developed the methods, and the most successful concerns have been the ones that have most readily recognized the benefits to be gained by their adoption.

### Going—Going—

There are still a few of the salesmen of the former day, with their good stories, impatience of home government and general air of independence, but they are passing out. In the office in which this is written a good many salesmen find their headquarters. Some of them are old line salesmen who have partially fulfilled the new condition, but the greater portion are young men, mainly college graduates, who have been carefully trained for the work they have to do. The older men are good fellows and enjoyable associates, and it is not pleasant to read their names in the bulletins of changes as having been dropped from the force. But they are going, one at a time, and the eager young men who take up their work are doing it better and getting a larger business.

### Higher Type of Sales Manager.

There has been a corresponding change in the sales manager and an increase in his office expense. He has had to pay for his increased power. He has had to add to his staff clerks to lay out routes, and to see that they are covered regularly and completely; data clerks to watch contracts for expirations and renewals; cost clerks to figure profits on sales and results from routes and sections of country. He has become in truth a manager, directing the movements of his men in the field with the same confidence and knowledge of details as he governs the clerks about him.

*(To be continued.)*

## Price-Lists, Circulars, Etc.

*Manufacturers in Hardware and related lines are requested to send us copies of catalogues, price-lists &c., for our Catalogue Department in New York; and at the same time to call attention to any new goods or additions to their lines, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.*

INGRAM-RICHARDSON MFG. COMPANY, Beaver Falls, Pa.: Illustrated folder relating to Porcelain Enameled Iron Street and Traction Signs and Numbers.

WARD-DICKEY STEEL COMPANY, Indiana Harbor, Ind.: Leaflet calling attention to the Dickey Planished Sheet Steel. It is packed in metal cases and made in gauges from 18 to 28 inclusive, the regular sizes being 28 and 30 in. wide by 60, 72 and 84 in. long. Special measurements, however, are made to order.

BERGER MFG. COMPANY, Canton, Ohio: Illustrated circular referring to Berger Steel Filing Devices and Office Equipment, including Vertical Units, Steel Sect Sectional Goods, Cabinets, . Vault Omnibuses, Trucks, Tables, Transfer Boxes, Waste Baskets and special equipment built to order.

WALTER W. WOODRUFF & SONS COMPANY, Mount Carmel, Conn.: Catalogue No. 18 devoted to Carriage and Automobile Goods and Hardware Specialties. This is a complete catalogue of goods manufactured by the company. It contains 246 pages, is fully illustrated, and gives numbers, dimensions and prices of goods.

ADVANCE MFG. COMPANY, Racine, Wis.: Illustrated folder of the Hunter Reform Curry Comb, having curved corrugated bars without teeth.

F. E. KOHLER & Co., Canton, Ohio: Circulars illustrating Lawn Rakes and Post Hole Diggers, the buying season of which is now coming.

REPUBLIC METALWARE COMPANY, Buffalo, N. Y.: Descriptive pamphlet relating to the Economy Fireless Cooker, containing instructions, receipts, suggestions and hints on the subject of fireless cooking.

MASSACHUSETTS SAW WORKS, Chicopee, Mass.: Illustrated price-list of Victor Hack Saw Blades, which are made in medium, regular, fine, very fine and special grades adapted for various classes of work.

TERRELL'S EQUIPMENT COMPANY, Grand Rapids, Mich.: Illustrated catalogue of Metal Lockers, showing varieties made of sheet steel and expanded metal, in from two to six units; also Locks for lockers, steel racks and bins for stores and stockrooms.

THE ENTERPRISE ENAMEL COMPANY, Bellaire, Ohio, has a very complete exhibit at the Pittsburgh Exposition of its enameled ware goods, consisting of the Corona Ware Gift Sets, Hand-Painted Toilet Sets, Enameled Churns and Corona Roasters. These goods are finished in Electric Blue, Edelweiss, Azurelite, Ohio and Limonite.

THE HOCH HARDWARE COMPANY, Taylor, Texas, incorporated with an authorized capital of $50,000, of which $35,000 is paid up, succeeds the F. Hoch Hardware Company, and will continue the business along the same lines, dealing in General Hardware and Implements. The officers of the company are as follows: F. Hoch, president; H. Hoch, vice-president; T. B. Hyde, secretary and treasurer.

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# The Retail Merchants' Association of St. Joseph.

MEASURED by its work and achievements, the Retail merchants' Association of St. Joseph, Mo., is entitled to a high place among the local associations of the country—organizations that are designed to promote the business interests of their members, while also benefitting the community as a whole. This association was organized in April, 1905, and, as the name indicates, covers the retail interests generally of the city of St. Joseph. Since its birth it has been under the direction of Frederick Neudorff, as president, who is well known in Hardware circles, in view of his connection with the State Association of Missouri, of which he acted as secretary for a number of years. At the present time it comprises about 50 houses handling Hardware, groceries, dry goods, harness and saddlery, clothing, house furnishings, furniture, drugs, photographic goods, jewelry, &c.

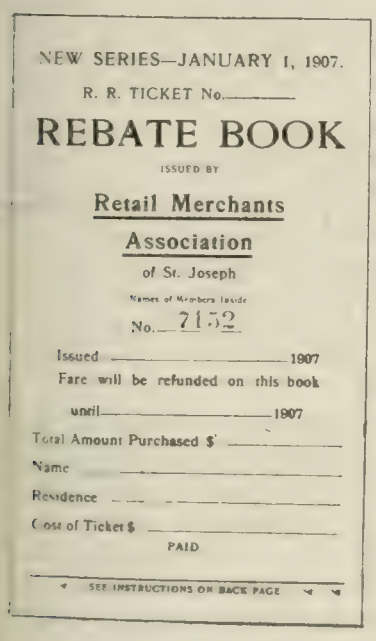
### Its Public Service.

In the way of local betterment, the association has secured the practical abolition of the toll over the Missouri River Bridge at St. Joseph for both team and railroad traffic; it has assisted in building one interurban line, and has secured commutation rates for patrons of another railroad. Relative to the general welfare and development of St. Joseph, the association takes the following stand:

That the Retail Merchants' Association will withhold its moral and material support to any class, paper or other agency which seeks by creating strife between classes to carry out its aims; that it will condemn in the same manner any attempt to badger, annoy or prey upon public service or other corporations; that it is opposed to socialistic or anarchistic tendencies or effort, all of which in effect hinder the effort to develop greater St. Joseph.

### Rebating Railroad Fares to Customers.

A notable feature of the association work is the rebate plan by which parties from other places are induced to visit St. Joseph for the purpose of making purchases in different lines. This takes the form of free railroad fares to and from the city, based on the amount of purchases made by the visitor. In this connection what is known as a rebate book is used, the front cover and


NEW SERIES—JANUARY 1, 1907.

R. R. TICKET No._____

REBATE BOOK

ISSUED BY

Retail Merchants Association of St. Joseph

Names of Members Inside

No. 7152

Issued _____ 1907

Fare will be refunded on this book until _____ 1907

Total Amount Purchased $ _____

Name _____

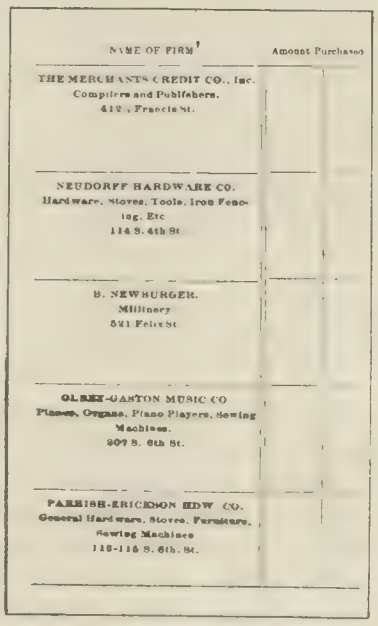
Residence _____

Cost of Ticket $ _____

PAID

SEE INSTRUCTIONS ON BACK PAGE

*Front Cover of Rebate Book.*


NAME OF FIRM — Amount Purchased

THE MERCHANTS CREDIT CO., Inc. Compilers and Publishers. 412 E. Francis St.

NEUDORFF HARDWARE CO. Hardware, Stoves, Tools, Iron Fencing, Etc 114 S. 4th St

B. NEWBURGER. Millinery 521 Felix St

OLSEN-GASTON MUSIC CO Pianos, Organs, Piano Players, Sewing Machines. 207 S. 6th St.

PARRISH-ERICKSON HDW CO. General Hardware, Stoves, Furniture, Sewing Machines 113-115 S. 6th St.

*A Page from the Rebate Book.*

one of the pages of which are reproduced herewith. These rebate books are obtained by intending purchasers at the office of the association. To obtain the concessions purchases must, of course, be made from the members of the association only, a list of these with brief description of their business and their address being given in the book. The rebate books are presented at the association office after the visitor has completed his or her shopping and the rebate is then collected. The amount of rebate paid is as follows:

1. For purchases aggregating $10 to $20 fare is paid within a limit of 25 miles one way.

2. For purchases aggregating $20 up to $40 fare is paid within a limit of 50 miles one way or 25 miles both ways.

3. For purchases of $40 up to $60 fare is paid within a limit of 100 miles one way or 50 miles both ways.

4. For purchases of $60 or more fare is paid within a limit of 150 miles one way or 75 miles both ways.

### Newspaper Advertising.

A great amount of newspaper advertising is done by the association and its individual members. It is estimated that more than $150,000 a year is expended in this way. A 30-in. advertisement is run daily in both of the leading morning and evening papers of the city. Special full page advertisements also appear at intervals in out of town papers. All the advertising done either by the association or the houses comprising it is guaranteed unreservedly by the association. In this connection the following extract from the constitution and by-laws of the organization will be of interest:

Any member of this association who prints or shall have printed any false, misleading or untruthful advertisement shall, upon the findings of the Grievance Committee and concurrence of the Board of Directors, if convicted, pay a fine of $25 into the treasury of the association for first offense, and upon second conviction be expelled from the association.

### St. Joseph Day.

St. Joseph or Robidoux Day (Joseph Robidoux having been the founder of the city), is celebrated on July 28. It is made a notable occasion by the association, and in addition to the usual rebates for railroad fares allowed by the association, visitors are given coupons which provide them with all sorts of entertainment while in the city on that day, including street car rides, admission to the four theatres, admission to all the concessions at the well-known amusement resort, Lake Contrary, baseball games, &c.

### Premiums or Gifts to Customers.

As to giving rebates, discounts, premiums, trading stamps, or gifts of any character whatever to customers, the association has adopted the following rule:

All matters relating to scheme advertising, such as directories, church papers, programmes, cook books, telephone directories, or anything else of similar character, or subscription schemes, books or subscription papers, must be passed upon by the Board of Directors before any member can use them.

### The Association Object.

The association, as described in the constitution and by-laws, has been formed for the purpose of fostering the retail trade of St. Joseph, to protect it from unjust or unlawful exactions, to reform abuses in trade, to give its members correct and reliable information as to the standing of purchasers and other matters, and to form a more enlarged and friendly intercourse between merchants engaged in the retail trade.

### Officers, Directors and Committees.

The officers of the association consist of president, vice-president, secretary, and treasurer.

In addition to the Board of Directors, numbering 11, there are also the following committees: Executive, Transportation, Advertising, Publicity and Public Entertainment, Credits, Grievance and Arbitration, Charity, Legislation, Litigation, Finance, Insurance, Industrial, and Membership. Of all the committees the president is an ex-officio member.

### Duties of Directors.

The duties of the Board of Directors, which meets on the third Friday of each month, are as follows:

The Board of Directors, or such committee as they shall appoint, shall examine and audit all bills rendered and all charges made against the association, and shall, through its officers, certify the same to be correct before they are paid by the treasurer. They shall also cause to be audited annually the books and accounts of the secretary and treasurer.

### Duties of the Various Committees.

The duties of the different committees above named are defined as follows:

MEMBERSHIP.

To investigate all applications for membership and report to the Board of Directors with recommendations for or against the admission of each applicant.

EXCURSIONS.

To induce the railroad companies to run excursions into the city; to use the reduced rates already established by the railroad companies for conventions and the like in such way as will best serve the business interests of the members of the associa-

tion, and to run excursions on its own account and for the association upon such plans as will bring into the city the largest number of people from the territory tributory to St. Joseph.

ADVERTISING.

To investigate special advertising schemes submitted to the members of the association; to investigate the qualities and rates of the various advertising publications in use by members of the association.

PUBLICITY AND PUBLIC ENTERTAINMENT.

To give publicity to the general advantages of the city through the news columns of the press and otherwise, as the committee may deem proper; to take advantage of the running of excursions to the city for the purpose of advertising the business of the city in a general way, and to devise ways and means of keeping the city properly before the eyes of the people outside of St. Joseph and within a reasonable business radius thereof; also to take charge of and arrange for all entertainments given under the direction of the association.

CREDITS.

To collect at regular stated intervals from the members of the association the names of all persons who are not worthy of credit; to make whatever effort the Board of Directors may require for the collection of the desperate accounts of the members of the association, and to make a report at least once in every two months to all the members of the association of all persons not entitled to credit; but this committee shall not be permitted under any circumstances to divulge to other members of the association the name of the member who reported the name of any particular delinquent.

GRIEVANCE AND ARBITRATION.

To make a careful examination of all reports submitted to it by any member of the association of malfeasance of employees, of all contests and controversies between competitors, of all illegitimate and unbusinesslike competition, and all other evils and grievances suffered and endured by members of the association; to devise ways and means for the correction of all these evils, abuses and grievances, and to report their recommendation to the Board of Directors for action. Its further duty shall be to sit as a court for the purpose of investigating contentions of any sort between the members of the association which may be referred to this committee by the Board of Directors, to arbitrate such questions, and to make a report to the Board of Directors, with a full statement of its findings and recommendations of its award for benefits or damages, if there be any.

CHARITIES.

To investigate the regular charitable institutions of the city and report to the Board of Directors, with the recommendation as to which charities are worthy of support; to make special inquiry about particular charities from time to time upon request of any member of the association, and to make report with recommendation to the Board of Directors.

LEGISLATION.

To make a thorough and complete investigation of all laws and ordinances governing the merchants belonging to the association; to propose to the Board of Directors such additional laws and ordinances as are required for the better protection of the members of this association, and to secure a proper enforcement of the laws and ordinances against all those schemes which from time to time interfere and molest the legitimate business of the city.

LITIGATION.

To take full and complete charge of all litigation which may be referred to it by the Board of Directors under the constitution of the association.

EXECUTIVE.

To administer the affairs of the association by and with the advice of the president and subject to the approval of the Board of Directors.

FINANCE.

To prove all bills and accounts against the association for payment; to examine the accounts of the treasurer and make a report to the Board of Directors once each month of all receipts and expenditures of the association; to make recommendations to the Board of Directors of whatever assessments are to be made against members of the association for particular purposes; to have general supervision and control of the finances of the association, and to become responsible for the collection of all assessments and rebates, reporting to the president all delinquents when such exist.

INSURANCE.

To investigate the rates of insurance; to endeavor to secure a reduction of the costs of insurance in cases where it seems exorbitant; to collect and keep information upon insurance matters, and to assist in the adjustment of loss by any member of the association upon the written request of such member to the secretary, together with bond to cover any cost that may be incurred by the committee in such adjustment.

INDUSTRIAL.

To encourage the locating of manufacturing industries in the city of St. Joseph.

**Attendance at Committee Meetings.**

Any member of any committee who fails to respond to a call for a meeting by the chairman of the committee or to furnish a substitute, and does not give a reasonable excuse for such failure, is subject to a fine of $1.

**Membership.**

The membership fee is $25. As to eligibility, representation, expulsion, &c., the following extracts make clear the policy of the association:

Any person, firm or corporation engaged in the retail business and financial institutions in the city of St. Joseph shall be eligible to membership in this association. Such person, firm or corporation shall be proposed in writing by a member of the association, and indorsed by two other members thereof, and such proposal must be accompanied with a check covering the membership fee.

Such application shall be referred to the Membership Committee for investigation and by them referred to the Board of Directors for final action at their first meeting thereafter. And if the majority of the members of the Board of Directors, present at the time action on application is taken, vote in the affirmative, such person, firm or corporation shall be admitted to membership.

Any person, firm or corporation not a member of the association, buying out or in any manner taking over the business of a member of the association, shall not thereby become a member of the association, but must make application for membership after the manner specified above.

Each member of the association shall certify in writing to the Board of Directors the officers, partners or managers desired as its representatives in the association. Only such certified representatives shall be allowed to attend the meetings of the association. No member shall be entitled to more than three registered representatives nor to more than one vote on any question or resolution at any meeting of the association, and no more than one representative of any member shall be elected to the Board of Directors.

Any member or any representative of any member of this association, whose conduct shall be hostile to the objects or injurious to the character of the association, by-laws or established rules, may be suspended or expelled from the association by a two-thirds vote of the Board of Directors. No member or representative shall be suspended or expelled without an opportunity to be heard in answer to specific charges in writing of offense or violation. The Board of Directors shall be the sole judge of what constitutes an offense or violation.

That any member who shall violate the by-laws or fixed rules of this organization, upon proper proof thereof, shall be fined the sum of $25, and upon failure to pay such fine shall be expelled from this organization, and it shall be the duty of the Publicity Committee to print notice of such expulsion in the daily papers in order that these parties may not reap any further benefits from this organization.

Any member of this association who shall dispose of his or their business, by sale or otherwise, shall thereby forfeit his or their membership in the association.

Any member whose dues are not paid within 15 days from the time the same become due may be declared suspended by the Board of Directors from the rights and benefits of the association, and if such dues are not paid within 30 days from the time that they are due, the membership of such member shall be declared forfeited, unless in the judgment of the Board of Directors there is good reason for extending the time of payment.

Whenever three members of the association shall certify to the Board of Directors that they desire to prosecute any matter within scope of the association, and shall further certify that they will prosecute said matter at their own cost and expense, the Board of Directors may authorize a special committee to prosecute such matters in the name of the Retail Merchants' Association of St. Joseph; but such committee shall not be authorized to incur any expense or create any obligation, unless the same shall be specially authorized by the Board of Directors.

**Meetings.**

The annual meeting of the association is held on the second Thursday of April, and five members constitute a quorum. The regular monthly meeting is held on the second Thursday of each month, except during July, August and December. Special meetings of the association can be called at any time by the president, or upon the written application of five members, the object of such meeting being stated in the notice sent out.

A NOTABLE EQUIPMENT of Steel Lockers for the Milwaukee Y. M. C. A. Building has been furnished and installed by the Terrell's Equipment Company, Grand Rapids, Mich. The installation consisted of 2000 Lockers, fitted with the company's special Keyless Combination Locks. These Locks are operated by touch or sight, and besides doing away with annoyances arising from the loss of keys they offer equal security. The company also supplied a large number of Lockers for the shops of the Grank Trunk Railway, at Battle Creek, Mich., and at Stratford, Canada, all of which were fitted with factory locks, and in addition a recent order was secured for the equipment of the new Chicago Police Station.

## J. Wiss & Sons Company.

J. WISS & SONS COMPANY, Newark, N. J., manufacturer of an extensive line of Scissors, Shears, Tinners' Snips, Razors, &c., is pursuing a liberal policy in the way of furnishing advertising matter to merchants handling its line. Special attention is being given to window displays, as has been already mentioned in our columns. A new feature of the company's advertising output is a life size cut-out of a pretty girl, attractively gowned, using a pair of Wiss Shears. The figure is well drawn and effectively colored and will naturally command attention. It is also furnished in a smaller size for use on counters, &c.

## Stowell Mfg. Company's Fire.

THE press reports regarding the fire in the plant of the Stowell Mfg. Company, Jersey City, N. J., on September 8, have much exaggerated the facts. The company states that only one wing of the factory was affected and that its facilities are such as to be able to handle trade without inconvenience. Deliveries on all orders, we are advised, can be made within forty-eight hours after their receipt.

## Fine Cutlery.

GRAEF & SCHMIDT, 107 Chambers street, New York, sole agents in the United States and Canada for J. A. Henckels, Solingen, Germany, have just received large shipments of Henckels' fine Cutlery, some of which is in leather case sets. Attention has been given to several small Manicure Sets for both sexes, which may be carried in vest pocket or purse, moderately priced, but handsome in appearance and of fine grade. The leading set for gentlemen is in a russet calfskin case, with end flap and metal button fastener, with four compartments, containing Nail Scissors, Corn Knife, Nail File and Tweezers. A handy set for ladies contains Nail Buffer, ribbon Nail File, Cuticle Scissors and Tweezers. The case is of russet calf, chamois lined, and is in two parts, one telescoping into the other, like a cigarette case. In the large sets for home use is one in lizard skin case, with solid under portion, and having a double folding cover, hinged at each side. It is fitted with exquisite fancy Bow Scissors, art nouveau style, the balance of the fittings, including Tweezers, Manicure Knife, Cuticle Stick, Corn Knife and Nail File, all handled in selected mother-of-pearl. Another Manicure Set is in French calf, moss finish, the colors being tints of green and blue, finely blended, and lined with silk velvet and satin to correspond. Other notable examples are elaborate Scissor Sets in three and four pieces, both in genuine Morocco and French calf cases.

## Horse Shoe Taps.

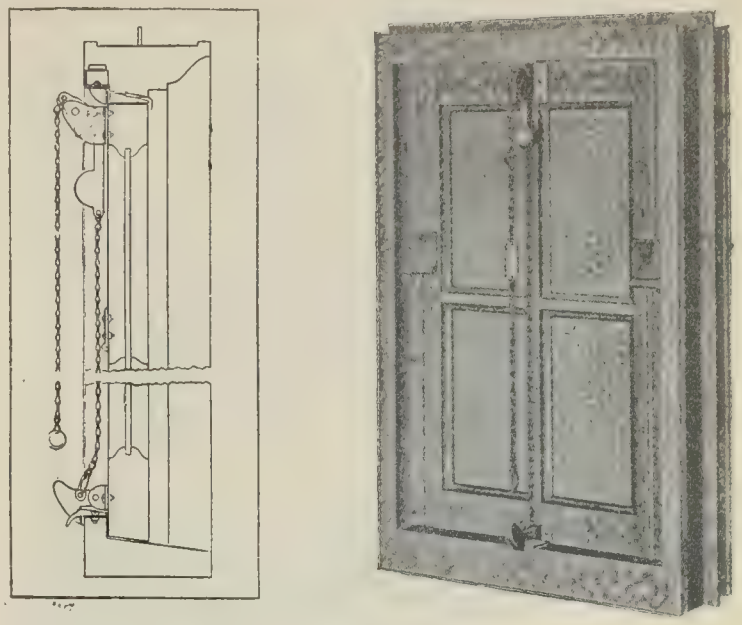
The Wells Brothers Company, Greenfield, Mass., manufactures taps to thread horse shoes so as to take removable calks which screw into the shoe. The taps are made along similar lines to the regular machinist hand tap, except that they have a larger shank. They are intended for use with a tap wrench, and also flattened on one side of the shank for use in drilling machines. Both styles of taps are supplied.

## Evertite Roofing.

The Eastern Granite Roofing Company, 1 Hudson street, New York, is offering Evertite roofing, which presents to the weather a layer of crushed rock, firmly imbedded under great pressure into the composition. The rock is designed to take the brunt of the storm so that the wearing force and friction of rain drops or hail does not reach the waterproofing felt at all. The only actual wear on the top layer of composition is said to be that of slowly trickling water or melting snow, which cannot damage it a particle. It is pointed out that the surface of crushed rock takes the place of all coating or painting, and that the roof requires no further attention of any kind after it is once laid. The company also manufactures the Tisbest and Granite brands of roofing.

## The Ives Automatic Gravity Lock.

The automatic gravity lock shown in the accompanying illustrations, and manufactured by the H. B. Ives Company, New Haven, Conn., is adapted to either single or double horizontal pivoted sash. It is constructed of the best malleable iron so that the bottom of the sash

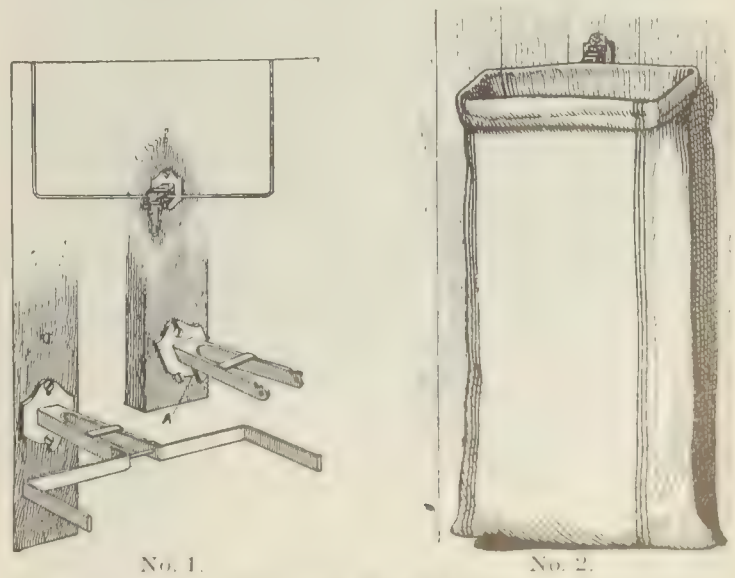


*The Ives Automatic Gravity Lock.*

is drawn tightly against the sill on single and against the impost on double pivoted sash, at the same time the top of the sash is locked. The action is positive, locking securely both top and bottom of the sash automatically. It is said to be simple in construction, containing no springs, and has the approval of fire insurance experts. In opening the window, a pull down on the chain containing the fusible link raises the bottom catch and lifts the ball or weight, disengaging a weight or wedge in the top of the frame and allowing the sash to be opened. Releasing the ring from the hook on the bottom plate or melting the fusible link will automatically close the window from any possible position, at the same time securely locking it at both top and bottom by drawing the sash and frame tightly together. The locks are packed ½ doz. in a box, without screws, rivets, chain or fusible links.

## The Daisy Sack Holder.

A simple and convenient device to hold sacks open for filling or emptying is shown in the accompanying illustrations. It is patented and manufactured by the Wagner Mfg. Company, Cedar Falls, Iowa. The holder consists of spring steel arms attached to a malleable iron bracket, having slotted holes at the top and bottom to fit screws



No. 1. No. 2.

*The Daisy Sack Holder.*

or nails on any convenient wall or post. The slots are so made in the bracket that if the screws are set exactly 2 in. apart the bracket may be put up or taken down at will, its movement being indicated by A in No. 1 of the illustrations. This is accomplished without disturbing the screws which need only be set at various places where it may be convenient to use the bag, making it possible to use the holder instantly when desired. When not in use it may be folded up or laid away. The device is offered as especially convenient for use in barns, corn cribs, on scales, or where anything is to be sacked.

## The Champion Double Acting Floor Hinge.

All working parts of the floor hinge, shown in Fig. 1, and manufactured by the Champion Safety Lock Company, Geneva, Ohio, are made of steel or malleable iron. They are few in number, and all of simple, strong construction. Each unit is referred to as being mechanically balanced to insure minimum wear, maximum strength

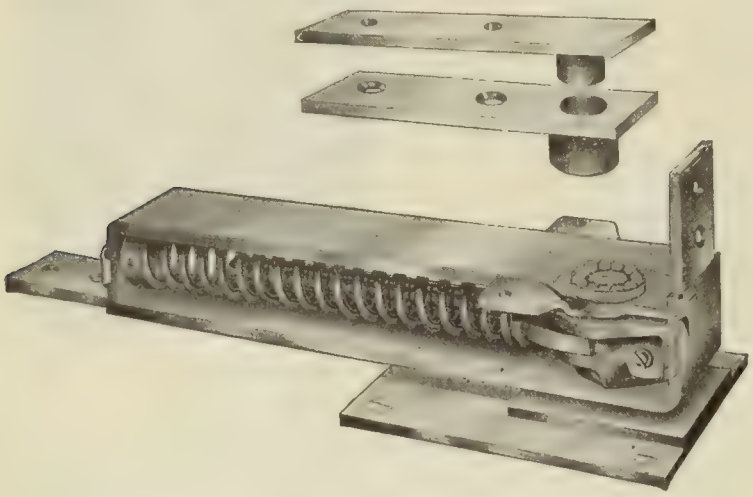


*Fig. 1.—The Champion Double Acting Floor Hinge.*

and reliability. The oil tempered steel compression spring is designed to afford quick, positive, quiet and smooth action, and the spring tension is readily adjusted. The entire weight of the door rests on a ball bearing located at the top of the hinge, away from water and grit, as the hinge rests upon the surface of the floor. The hinge is set by sawing out a rectangular piece at the bottom corner of the door and making a slight mortise for the strap ends of the hinge. The hinge is illustrated in Fig. 2, showing the curved lines of the side plates and

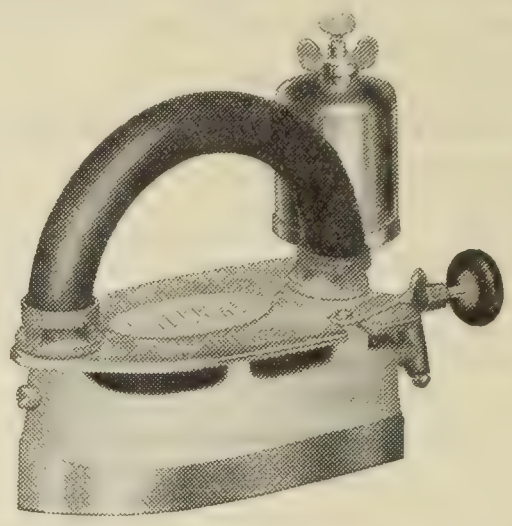


*Fig. 2.—Champion Spring Attached to Door.*

the finished plate at the back of the hinge. Should a door be improperly set through carelessness so as not to come to rest at right angles to the jam, it can be centered by loosening one and tightening the other adjustable screw at the back of the pivot post, without disturbing the floor plate after it has been fastened in position.

## Vapor Gas Self-Heating Iron.

The Imperial Brass Mfg. Company, 245-247 S. Jefferson street, Chicago, Ill., is offering the self-heating iron here shown, for use in homes, laundries, and in pressing and dyeing houses. It is referred to as being very durable. The fuel used, wood alcohol, denatured alcohol, gasoline or benzoin, is stored in a small spun brass tank, holding 1-3 pint, which will run the iron about 2½ hours. After the tank is filled, there is a slight air pressure placed in the tank by means of a small pump supplied for



*Vapor Gas Self-Heating Iron.*

this purpose. The burner is then heated in the bowl of the iron by the same method that a gasoline torch is lighted. After the burner has become hot, the valve is opened, and the gas continues to be made as used, and can be turned on or off at will, thus enabling the user to regulate the heat to suit the work in hand. The fuel passing through the heated burner becomes vaporized, and then passes into a mixing chamber, where it is mixed with oxygen (or air), the proportion being about 80 per cent. air to 20 per cent. vapor gas. The total weight of the irons is 5¼ lb. for the domestic and 18 lb. for the tailors'.

## The Ketch-M-All Roach Trap.

A trap to catch roaches has been placed on the market by the Ketch-M-All Roach Trap Company, 1516 Fulton street, Brooklyn, N. Y. The trap, illustrated herewith, is made almost entirely of heavy pasteboard and durable paper, and is so constructed that a child can take it apart and put it together again. The body of the tube is 9 in. long and 1½ in. in width. At each end is a cone which extends 3 in. inside of the tube, and the roaches enter the trap by either cone. Once inside the trap, it is pointed out, the roach cannot escape. In the center of the trap is a small hole in which is placed a wooden reservoir to which is attached a piece of sponge,




*The Ketch-M-All Roach Trap.*

while a cork stops up the other end of the reservoir. The piece of sponge and about one-half of the reservoir extend inside the trap. In order to make the trap do its work it is necessary before using it the first time to grease the inside of the tube at both ends as far as one's fingers can reach, removing the cones for this purpose. After putting one cone in place, a piece of raw potato or potato peeling is put inside of the tube and the other cone is put in its place. The cork is removed and a little water is poured into the reservoir. After replacing the cork the trap is ready for the roaches. In the morning one cone is removed and the roaches accumulated over night dropped into hot water. The fact that the trap does away with poisons and obnoxious powders and liquids is one of the important points urged in its favor. It is also cheap and cleanly. The trap is intended to retail for 10 cents.

## Improved Adjustable S Pipe Wrench.

The pipe wrench, illustrated herewith, is a new product of the Billings & Spencer Company, Hartford, Conn. In general design it follows the lines of the company's regular adjustable S wrench, but has a serrated jaw for use on pipe. Every part is a drop forging from steel, and the jaws are hardened. The sliding jaw is fitted in a double groove, which greatly adds to the strength



*Improved Adjustable S Pipe Wrench.*

of the tool. The patent thumbscrew on the adjusting knurl securely locks the jaw at any desired opening. The wrench is made in three sizes—6, 8 and 10 in.—is of careful workmanship throughout, and its design is such as to make it very useful in confined places where an ordinary wrench would be inconvenient.

## The Whitney Hand Metal Punch No. 2.

A hand metal punch, manufactured by W. A. Whitney Mfg. Company, Rockford, Ill., is shown in two different positions in the accompanying illustrations. The punch weighs 10 lb., the length of the power lever is 22 in. and the capacity is a ¼-in. hole in a ¼-in. plate, or its equiva-

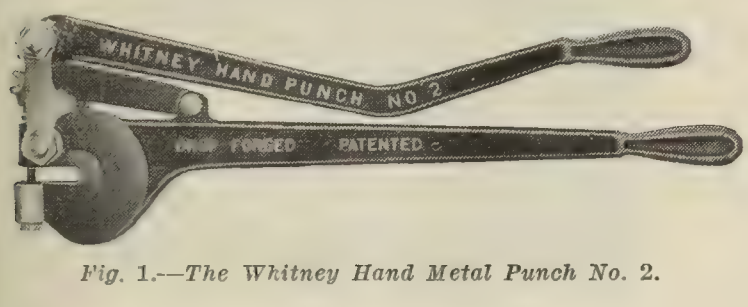



*Fig. 1.—The Whitney Hand Metal Punch No. 2.*

lent. The tool punches up to a ½-in. hole. Throwing over the upper lever, as in Fig. 2, the size of punch can be changed without the use of a tool, as there are no bolts or nuts to be removed. The die is divided, which permits a change of this part to be made quickly and easily. The depth of throat allows punching to the center of a 3¼-in. circle. The parts are drop forged, and the holes cut clean without burrs, the smaller parts, such as studs, punches, dies, &c., being made from best tool steel. The punch is referred to as being extremely simple in construction and strongly proportioned where the strain

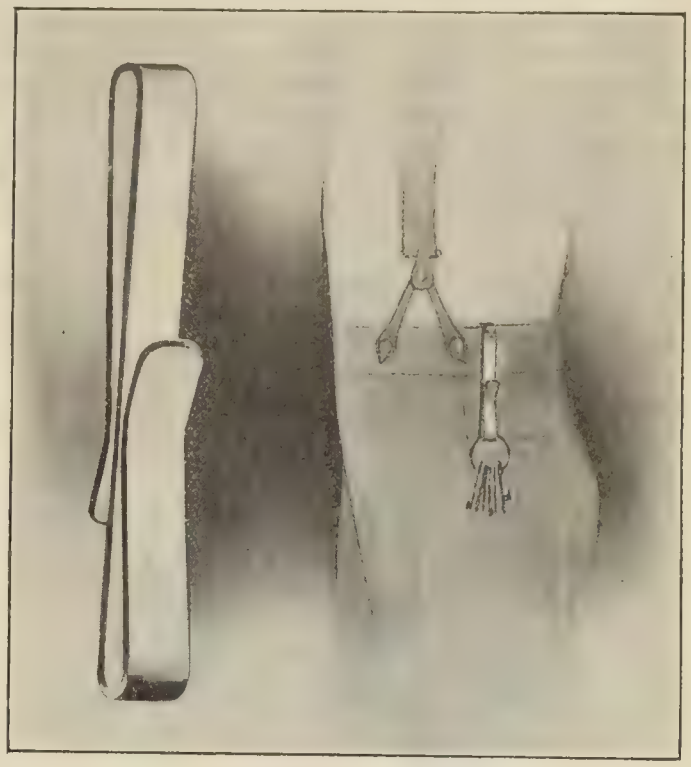


*Fig. 2.—Position in Which Punch Is Changed.*

comes. The punch operating upon two extra hardened inclined roller surface bearings, assisted by teeth or cogs is shown to give a powerful leverage, working with comparatively little exertion. Besides being a one-hand punch, it is light in weight and short in length and covers a wide range of work.

## Centaur Key Hook.

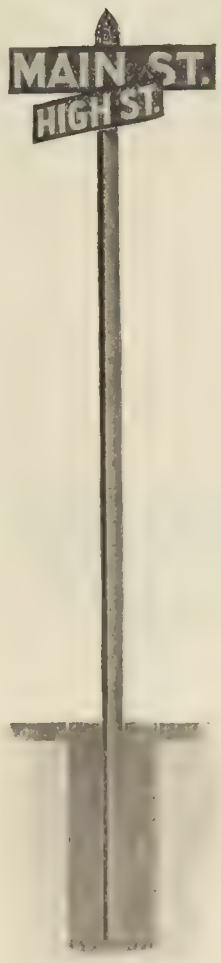
The Sperry & Alexander Company, 21 Warren street, New York, has put out the Centaur key hook here illustrated nearly full size, and in miniature as in use. It is made of brass, polished and nickeled, and in dimensions



*Centaur Key Hook.*

is 2⅞ x 5-16 x 1-16 in. It is offered as a convenience for carrying a bunch of keys, particularly by express employees, freight and railroad people, &c., who are constantly using them. The longer 2-in. hook is slipped on to the waistband of trousers, the strong grip of which keeps it securely in place. The key ring member is 1½ in. long. In warm weather keys thus carried are not subject to rust from perspiration, as frequently occurs when carried in the pocket. The hooks are put up 12 on an illustrated easel display card, for counter or show window.

## All Steel Street Sign Posts.




*All Steel Street Sign Post.*

The all steel street sign post shown in the accompanying illustration is especially made for porcelain enameled signs. The ornamental top is of cast iron and the signs are fastened to the post with brass bolts. The post is made of angle iron and is finished with a high grade of black paint. It is designed not only for use at corners where there are no buildings, but as a proper holder for all signs, as it fastens them securely and adds to the appearance. The total length of the post is 12 ft., and it is intended to be buried in the ground 3 ft., with concrete filling. It is pointed out that the post is as cheap as wood and that it will last indefinitely. It is made by the Ingram Richardson Mfg. Company, Beaver Falls, Pa.

The T. J. Turley Company, Owensboro, Ky., which has been a jobber of Implements, Vehicles, &c., will shortly occupy a new block, which will afford 66,000 ft. floor space. The company will add a full wholesale stock of Hardware, Wooden Ware, Rope, &c.

## Soapurn.

Charles Morrill, 273 Broadway, New York, has placed on the market the Soapurn, here shown. This is a sanitary device for holding and economically delivering liquid soap. It consists of a substantial glass urn supported by a detachable bracket, attachable to either washstand or wall, having a locked cover at top, and at the lower end a discharge valve made of noncorrosive metal. There is also an alternative valve, seen in Fig. 3, that is pushed downward instead of upward to obtain soap. All the metallic parts are brass, polished and nickeled, the metal cover being locked into grooves mold-

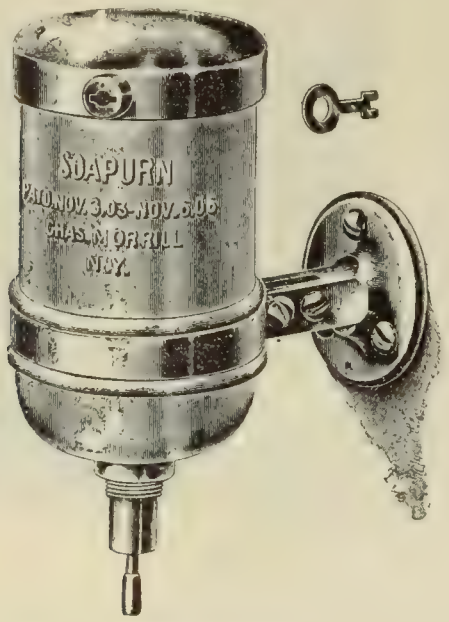



*Fig. 1.—Liquid Soapurn as in Use.*

ed in the glass by means of the key shown, the opening being full size of urn, which permits of easily cleaning the interior. The reservoir or urn has nearly a pint capacity. The valve is simple and positive, with only one moving part, and is not dependent on gravity for its action. The liquid soap enters the upper part of the valve, and when the piston is pushed it runs down and below it, when, as the pressure of the hand ceases and the piston returns to normal, there is forced into the palm of the hand a couple of drops of soap. As from 5 to 10 drops are necessary for an average wash, contingent on the condition of the hands, it is necessary to operate the plunger several times to get a sufficient supply. In this device the valve is purposely designed to prevent wastefulness, as at no position of the plunger will there be a steady flow. The Soapurn should be placed so that its discharge orifice projects over the bowl, about 2 in. from

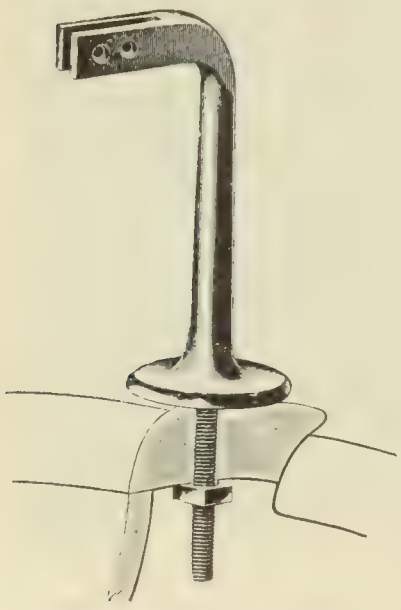


*Fig. 2.—Standard Bracket.*

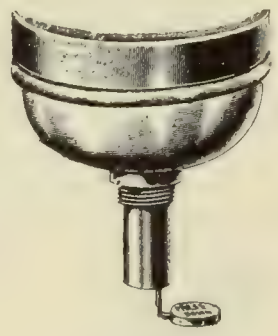
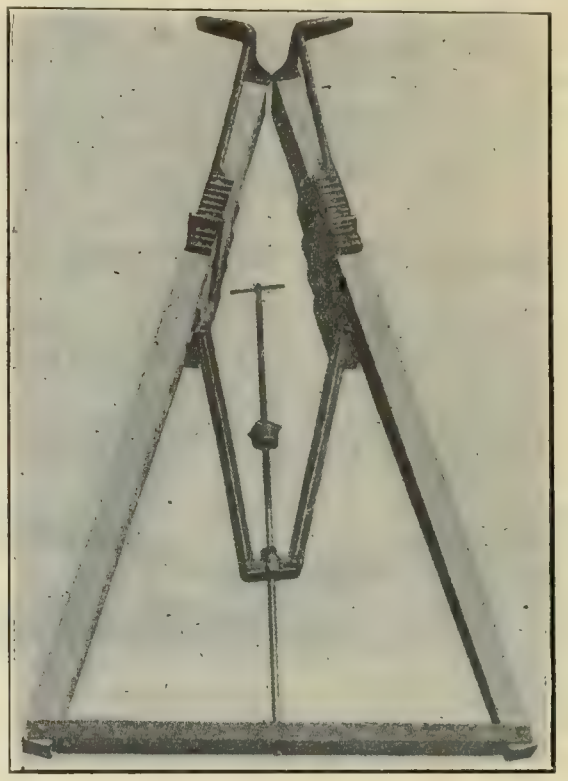


*Fig. 3.—An Alternative Valve to Push Down.*

its edge. All parts are put on and taken off with special spanners or keys, and all bolts are made a little longer than necessary so they may be clinched, if desired, to prevent possible surreptitious removal. The Soapurn is furnished in several styles of cover and bracket. Fig. 1 shows it bracketed to the wall or vertical slab, while Fig. 2 illustrates a standard style of bracket for fastening to the horizontal slab or stand. Each Soapurn is carefully packed in a cellular box for shipment, with directions for installation and use.

## Adjustable Window Staging.

The Neal & Brinker Company, 18 Warren street, New York, is agent for the adjustable window staging shown in the accompanying illustration. It is a portable device for the use of carpenters, painters, sheet metal workers, &c., and is made in two sizes: No. 1, 42 in. long, tested to carry up to 600 lb., and No. 2, 55 in. long, tested to carry up to 1000 lb. The arms of the staging are made of stout timber, to which the malleable iron lugs, braces, &c., are attached with screws. In the illustration the staging is shown with the arms drawn together for convenience in carrying, but when placed in a window frame



*Adjustable Window Staging.*

they are opened out until the lugs engage the inside of the window frame, and then braced by setting up the thumb turn which tightens the metal braces between the arms. The device is further supported by stepped wooden braces under the arms which are adjusted to the window sill by means of a malleable iron loop working on a ratchet, as shown in the illustration. One of these stagings may be used alone, or a couple of them may be employed in conjunction by setting them in adjoining windows and laying boards across them. The staging is referred to as exceedingly convenient, since they can be placed on a wagon, carried where wanted and quickly put in place, enabling men to get to work on a job quickly instead of waiting to build staging as would otherwise be necessary.

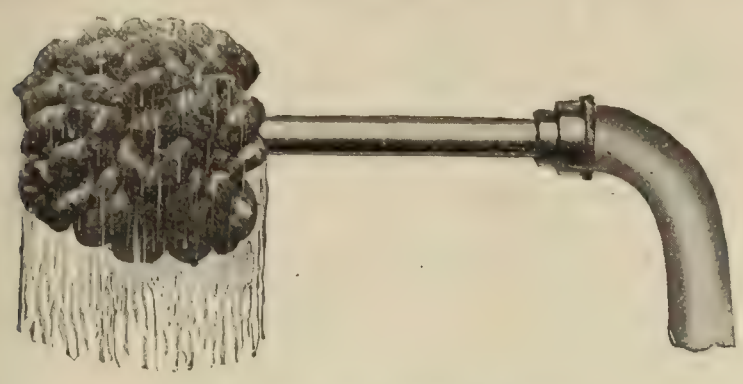
## Irvington Mfg. Company's Trademark.

The Irvington Mfg. Company, Irvington, N. J., John H. Graham & Co., 113 Chambers street, New York, selling agents, has adopted the trademark here reproduced to numerous styles and sizes of as its emblem for use in connection with its high grade lines of American manufactured pliers and linemen's tools, which for some years have been drop forged from fine material at the above address. The company manufactures in addition linemen's pliers and splicing clamps, diagonal, long nose, duck bill, curved needle, Button and other pliers, end cutting nippers, "come alongs," tie and splicing wrenches, lag screw wrenches, plumbers' and painters' shave hooks, spring punches, and tools for piano and organ makers, tuners and regulators in great variety.

*Irvington Mfg. Company's Trademark.*

## L. & M. Perfect Auto and Carriage Washer.

The Long & Mann Company, Rochester, N. Y., manufacturer of automobile tools and accessories, has put on the market the device here illustrated for washing automobiles and carriages. It consists of a metal nozzle to which is attached a washer or top made of cotton mop yarn. This serves the purpose of a sponge, and is said to be cheaper and more durable as well as more effective.



*L. & M. Auto and Carriage Washer.*

Tops may be renewed at minimum expense, while the pipe may be expected to last indefinitely. The latter is a 22 B. & S. gauge round brazed brass tube, with plain white finish that affords a connection for any standard ½ or ¾ in. hose coupler. A special connection is made to fit Pittsburgh hose connections where a special thread is used. A small metal screen is furnished which screws into the washer head of the top, and can be taken out and cleaned by unscrewing with a screwdriver. The screen acts as a water distributer and prevents squirting, so that the portion of water coming through the mechanical sponge or mop yarn is equal in every direction. In recommending the washer the makers state that it is kept free from grit, so that it does not scratch polished surfaces and that it enables the operator to clean between spokes or running gear quickly and thoroughly. In using the device it is not necessary to keep the hands in water, which numbs them and makes vehicle washing an unpleasant job.

C. V. & F. W. Cameron have filed articles of incorporation to engage in the Hardware, Tinware, Paint and Sporting Goods business at Albany, N. Y.

## PAINTS, OILS AND COLORS

| Animal, Fish and Vegetable Oils— | ℔ gal. |
|---|---|
| Linseed, State and Western, raw | .42 @44 |
| City, Boiled | .45 @46 |
| City, Raw | .44 @45 |
| Raw, Calcutta, in bbls | .70 @71 |
| Lard, Prime, Winter | .70 @72 |
| Extra No. 1 | .50 @52 |
| No. 1 | .48 @49 |
| Cotton-seed, Crude, f.o.b. mill | .29 @29½ |
| Summer Yellow, prime | .41 @41¼ |
| Summer White | .44 @46 |
| Yellow Winter | .45 @47 |
| Tallow, Acidless | .56 @58 |
| Menhaden, Brown, Strained | .35 @36 |
| Northern Crude | .24 @.. |
| Southern | .24 @.. |
| Light Strained | .35 @36 |
| Bleached Winter | .37 @39 |
| Ex. Bleached Winter | .39 @41 |
| Cocoanut, Ceylon | ℔ lb 6¼@ 6½ |
| Cochin | ℔ lb 7 @ 7¼ |
| Cod, Domestic, Prime | .38 @40 |
| Newfoundland | .40 @42 |
| Red, Elaine | .39 @40 |
| Saponified | ℔ lb 5⅞@ 6 |
| Olive, Yellow | .90 @95 |
| Neatsfoot, Prime | .55 @58 |
| Palm, Lagos | ℔ lb 5¾@ 6 |

| Mineral Oils— | ℔ gal. |
|---|---|
| Black, 29 gravity, 25@30 cold test | .13 @13½ |
| 29 gravity, 15 cold test | .13½@14 |
| Summer | .12½@13 |
| Cylinder, light filtered | .20½@21 |
| Dark, filtered | .18 @19 |
| Paraffine, 903-907 sp. gravity | .14½@15 |
| 903 sp. gravity | .13½@14 |
| 883 sp. gravity | .11 @11½ |
| Red | .13½@14 |

| Miscellaneous— | | |
|---|---|---|
| Barytes: | | |
| White, Foreign | ℔ ton | $18.50@20.50 |
| Amer., floated | ℔ ton | 17.00@18.00 |
| Off color | ℔ ton | 12.50@15.00 |
| Chalk, in bulk | ℔ ton | 3.00@ 3.40 |
| China Clay, Imported | ℔ ton | 11.50@18.00 |

| | ℔ gal. |
|---|---|
| Cobalt, Oxide | ℔ 100 lb 1.45@ 2.60 |
| Whiting, Commercial | ℔ 100 lb 42@52 |
| Gilders | ℔ 100 lb .55@ .60 |
| Ex. Gilders | ℔ 100 lb .60@ .65 |

| Putty, Commercial— | ℔ 100 lb |
|---|---|
| In bladders | $1.70 @1.80 |
| In bbls. or tubs | 1.20 @1.45 |
| In 1 lb to 5 lb cans | 2.65 @2.95 |
| In 12½ to 50 lb cans | 1.50 @1.90 |

| Spirits Turpentine— | ℔ gal. |
|---|---|
| In Oil bbls | 38½@39 |
| In machine bbls | 39 @39½ |

| Glue— | ℔ lb |
|---|---|
| Cabinet | .12 @15 |
| Common Bone | .7½@ 9 |
| Extra White | .18 @24 |
| Fish, liquid, 50 gal. bbls., per gallon | .60 @1.20 |
| Foot Stock, White | .12 @14 |
| Foot Stock, Brown | .9 @11 |
| German Common Hide | .10 @12 |
| German Hide | .12 @18 |
| French | .10 @40 |
| Irish | .13 @16 |
| Low Grade | .10 @12 |
| Medium White | .14 @17 |

| Gum Shellac— | ℔ lb |
|---|---|
| Bleached, Commercial | .23 @24 |
| Bone Dry | .28 @29 |
| Button | .30 @40 |
| Diamond I | .39 @40 |
| Fine, Orange | .34 @35 |
| A. C. Garnet | .27 @28 |
| G. A. L. | .20 @21 |
| Kala Button | .18 @19 |
| D. C. | .40 @41 |
| Octagon B | .35 @36 |
| T. N. | .25 @26 |
| V. S. O. | .39 @40 |

| Colors in Oil— | ℔ lb |
|---|---|
| Black, Lampblack | .12 @14 |
| Blue, Chinese | .36 @46 |
| Blue, Prussian | .32 @36 |
| Blue, Ultramarine | .13 @16 |
| Brown, Vandyke | .11 @14 |
| Green, Chrome | .12 @16 |
| Green, Paris | @24 |
| Sienna, Raw | .12 @15 |
| Sienna, Burnt | .12 @15 |
| Umber, Raw | .11 @14 |
| Umber, Burnt | .11 @14 |

| White and Red, Lead &c.— | ℔ lb |
|---|---|
| Lead, English white, in Oil | .10⅛@10⅜ |
| Lead, American White: | |
| Dry and in Oil, 100, 250 and 500 lb kegs | 7 |
| Dry and in Oil, 25 and 50 lb kegs | 7¼ |
| Dry and in Oil, 12½ lb kegs | 7½ |
| In Oil, 25 lb tin pails | 7½ |
| In Oil, 12½ lb tin pails | 8 |
| In Oil, 1, 2, 3 and 5 lb tin cans, ass't | 9 |
| Red Lead and Litharge: | |
| In 100 lb kegs | 7 |
| In 25 and 50 lb kegs | 7¼ |
| In 12½ lb kegs | 7½ |
| In lots of less than 500 lbs, ½¢ ℔ lb advance over above prices of White and Red Lead and Litharge. | |
| Lead, American. Terms: On lots of 500 lbs and over, 60 days, or 2% for cash if paid in 15 days from date of invoice. | |

| Zinc, Dry— | ℔ lb |
|---|---|
| American, dry | 5⅛@ 5⅝ |
| Red Seal (French process) | 6¾@ 7 |
| Green Seal | 7¼@ 7½ |
| German Red Seal (French process) | 6⅝@ 7 |
| Green Seal | 7¼@ 7⅝ |
| White Seal | 7⅞@ 8¼ |
| French, Red Seal | 8⅜@ 8⅞ |
| Green Seal | 10⅜@10⅝ |

| Dry Colors— | ℔ lb |
|---|---|
| Black, Carbon | .6½@10 |
| Black Drop, American | .3½@ 8 |
| Black Drop, English | .5 @15 |
| Black, Ivory | .16 @20 |
| Lamp, commercial | .4 @ 6 |
| Blue, Celestial | .4 @ 6 |
| Blue, Chinese | .31 @33 |
| Blue, Prussian | .29 @31 |
| Blue, Ultramarine | .3½@15 |
| Brown, Spanish | ½@ 1 |
| Carmine, No. 40 | $3.10@3.25 |
| Green, Chrome, ordinary | .3½@ 5 |
| Green, Chrome, pure | .17 @25 |
| Ocher, American | ℔ ton $8.50@16.00 |
| American Golden | 2¼@.. |
| French | 1¼@.. |
| Foreign Golden | 3 @.. |
| Orange Mineral, English | .10 @12 |
| French | .12¾@13 |
| German | .12 @13 |
| American | .9 @10 |
| Red, Indian, English | .4½@.. |
| American | .3 @ 3¼ |
| Red, Turkey, English | .4 @10 |
| Red, Tuscan, English | .7 @10 |
| Red, Venetian, Amer. | ℔ 100 lb $0.50@1.25 |
| English | ℔ 100 lb $1.15@1.60 |
| Sienna, Italian, Burnt and Powdered | .3 @ 9 |
| Italian, Raw, Powdered | .3 @ 7 |
| American, Raw | .1½@ 2 |
| American Burnt and Pow'd | .1½@ 2 |
| Talc, French | ℔ ton $18.00@25.00 |
| American | ℔ ton 15.00@25.00 |
| Terra Alba, French | ℔ 100 lb .90@ 1.00 |
| English | ℔ 100 lb .80@ 1.00 |
| American | ℔ 100 lb, No. 1 .75@ .80 |
| American | ℔ 100 lb, No. 2 .60@ .65 |
| Umber, T'key, Bnt. & Pow. | 2⅜@ 3 |
| Turkey, Raw and Powdered | 2⅜@ 3 |
| Burnt, American | 1½@ 2 |
| Raw, American | 1½@ 2 |
| Yellow, Chrome, Pure | .13¾@15 |
| Vermilion, American Lead | .7 @25 |
| Quicksilver, bulk | .65 @.. |
| Quicksilver, bags | @66 |
| English, Imported | .65 @70 |
| Chinese | $0.90@1.00 |


# THE IRON AGE

*The oldest paper in the world devoted to the interests of the Hardware, Iron, Machinery and Metal Trades, and a standard authority on all matters relating to those branches of industry.*

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**General Goods.**—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

**Special Goods.**—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

**Range of Prices.**—A range of prices is indicated by means of the symbol @. Thus 33⅓ @ 33⅓ & 10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

**Names of Manufacturers.**—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1907, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

**Standard Lists.**—"The Iron Age Standard Hardware Lists" contains the list prices of many leading goods.

**Additions and Corrections.**—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

## Adjusters, Blind—

Columbian and Domestic.....33⅓%
North's .....10%
Upson's Patent, ₩ gro., $29.90.....10%
Zimmerman's—See Fasteners, Blind.

## Window Stop—

Ives' Patent.....35%
Ives' Stop Bead Screws and Washers .....10%
Taplin's Perfection.....35%

## Ammunition—See *Caps, Cartridges, Shells, &c.*

## Anti—Rattlers—

Fernald Mfg. Co. Burton Anti-Rattlers, ₩ doz. pairs, Nos. 1, $0.75; 2, $0.60; 4, $1.00; 5, $0.50.
Fernald Quick Shifter, ₩ doz. pairs .....$2.00@$3.00

## Anvils—American—

Eagle Anvils.....₩ lb @8 ¢
Hay-Budden, Wrought.....9½@9¾¢
Trenton .....₩ lb 9½@9¾¢

## Imported—

Swedish Solid Steel Sisco, Superior, ₩ lb.....10@10½¢
Peter Wright & Sons, ₩ lb. 84 to 349 lb, 11¢; 350 to 600 lb, 11½¢.

## Anvil, Vice and Drill—

Millers Falls Co., $18.00.....15&10%

## Apple Parers— See *Parers, Apple, &c.*

## Aprons, Blacksmiths'—

Livingston Nail Co.....10%

## Augers and Bits—

*Com. Double Spur....75&10@80%*
*Jennings' Patn., Bright.65&10@70%*
*Black Lip or Blued...65@65&5%*
*Boring Mach. Augers.....70%*
*Car Bits, 12-in. twist.....40&10%*
Ford's Auger and Car Bits.....40&5%
Ft. Washington Auger Co., Conard's .....35%
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. hp. R. Jennings' list, 25&7½%
No. 30, R. Jennings' list.....50%
Russell Jennings'.....25&10&2½%
L'Hommedieu Car Bits.....15%
Mayhew's Countersink Bits.....45%
Pugh's Black.....20%
Pugh's Jennings' Pattern.....35%
Snell's Auger Bits.....60%
Snell's Bell Hangers' Bits.....60%
Snell's Car Bits, 12 in. twist.....60%
Snell's King Auger Bits.....50%
Swan's .....65&10@70
Swan's, Jennings' Pattern.....50%
Wright's Jennings' Bits.....50%

## Bit Stock Drills—

See *Drills, Twist.*

## Expansive Bits—

Clark's Pattern, No. 1, ₩ doz., $26; No. 2, $18.....60&10%
Ford's, Clark's Pattern...60&5@60&10%
C. E. Jennings & Co., Steer's Pat..25%
Lavigne Pat., small size, $18.00; large size, $26.00.....60&10%
Swan's .....60%

## Gimlet Bits—

*Per gro.*
*Common Dbl. Cut.....$3.00@3.25*
*German Pattern, Nos. 1 to 10, $4.75; 11 to 13, $5.75*

## Hollow Augers—

*Bonney Pat., per doz..$5.50@6.00*
Ames .....20&10%
Universal .....20%

## Ship Augers and Bits—

*Ship Augers.....40&10@—%*
Ford's .....33⅓&5%
C. E. Jennings & Co.:
L'Hommedieu's .....6%
Watrous' .....33⅓&7½%
Snell's .....18%

## Awl Hafts—See *Handles, Mechanics' Tool.*

## Awls—

*Brad Awls:*
*Handled .....gro. $2.75@3.00*
*Unhdled, Shldered...gro.63@66¢*
*Unhandled, Patent..gro.66@70¢*
*Peg Awls:*
*Unhandled, Patent..gro. 31@34¢*
*Unhdled, Shldered..gro. 65@70¢*
*Scratch Awls:*
*Handled, Com...gro. $3.50@4.00*
*Handled, Socket.gro.$11.50@12.00*

## Awl and Tool Sets—See *Sets, Awl and Tool.*

## Axes—

*Single Bit, base weights: Per doz.*
*First Quality.....$4.75@5.00*
*Second Quality.....$4.25@4.50*
*Double Bit, base weights:*
*First Quality.....$7.00@7.50*
*Second Quality.....$6.50@6.75*

## Axle Grease—

See *Grease, Axle.*

## Axles— *Iron or Steel.*

*Concord, Loose Collar...4¼@4½¢*
*Concord, Solid Collar....4½@5 ¢*
*No. 1 Common, Loose...3½@4 ¢*
*No. 1½ Com., New Style..4¼@4¾¢*
*No. 2 Solid Collar.....4¼@4¾¢*
*Half Patent:*
*Nos. 7, 8, 11 and 12.....70%*
*Nos. 13 to 14.....70%*
*Nos. 15 to 18...70&10@70&10&5%*
*Nos. 19 to 22...70&10@70&10&5%*

## Boxes, Axles—

*Common and Concord, not turned .....lb., 5@6¢*
*Common and Concord, turned, lb., 6@7¢*
*Half Patent.....lb., 9½@10¢*

## Bait— Fishing—

Hendryx:
A Bait.....20%
B Bait.....25%
Competitor Bait.....20&5%

## Balances— Sash—

Caldwell new list.....50&10%
Pullman .....50&10%

## Spring—

*Light Spring Balances..60@60&5%*
Chatillon's:
Light Spg. Balances.....50@50&10
Straight Balances.....40@40&10
Circular Balances.....50&10
Large Dial.....30

## Barb Wire—See *Wire, Barb.*

## Bars— Crow—

*Steel Crowbars, 10 to 40 lb.... per lb., 2¼@2½¢*

## Towel—

No. 10 Ideal, Nickel Plate..₩ gro. $8.50

## Beam, Scale—

*Scale Beams.....40%*
Chattillon's No. 1.....30%
Chatillon's No. 2.....40%

## Beaters, Carpet—

Holt-Lyon Co.:
No. 12 Wire Coppered ₩ doz. $0.80; Tinned .....$0.85
No. 11 Wire Coppered ₩ doz. $1.15; Tinned .....$1.20
No. 10 Wire Tinned.....₩ doz. $1.50

## Beaters Egg—

Dover Stamping & Mfg. Co.:
Genuine Dover, per gro., No. 1, Tumbler Size, $7.50; No. 2, Family Size, $7.50; No. 3, Extra Family Size, $24.00; No. 4, Hotel Size, $30.00.
Holt-Lyon Co.:
Holt, per doz., No. 5, Jap'd. $0.80; No. A, Jap'd, $1.15; No. B, Jap'd, $1.85; No. 6, Jap'd, $1.65.
Lyon, Jap'd, per doz., No. 2, $1.35.
Taplin Mfg. Co.:
Improved Dover, per gro., No. 60, $6.00; No. 75, $6.50; No. 100, $7.00; No. 102, Tin'd, $8.50; No. 150, Hotel, $15.00; No. 152, Hotel Tin'd, $17.00; No. 200, Tumbler, $8.50; No. 202, Tumbler Tin'd, $9.50; No. 300, Mammoth, per doz., $25.00.

## Bellows—

*Blacksmith, Standard List:*
*Split Leather.....60&10@65%*
*Grain Leather.....50@50&10%*

## Hand—

| *Inch..* | *6* | *7* | *8* | *9* | *10* |
|---|---|---|---|---|---|
| *Doz..* | *$5.00* | *5.50* | *6.00* | *6.50* | *7.50* |

## Molders—

| *Inch..* | *10* | *12* | *14* | *16* |
|---|---|---|---|---|
| *Doz..* | *$7.50* | *9.00* | *12.00* | *15.00* |

Net Prices.

## Bells— Cow—

*Wrought Cow Bells.....75%*
Jersey .....75&10%
Texas Star.....50%

## Door—

Home, R. & E. Mfg. Co.'s.....55&10%

## Hand—

*Polished, Brass.....60@60&10%*
*White Metal.....60@60&10%*
*Nickel Plated.....50&10%*
*Swiss .....50&10%*
Cone's Globe Hand Bells.....33⅓@35%

## Miscellaneous—

*Farm Bells.....lb.. 2¼@2½¢*
*Church and School....60@60&10%*

## Belting— Leather—

*First Quality, Ex. Hy., Strictly Short Lap.....60&10%*
*Standard .....70&10@70&10&5%*
*Light Double.....75&10%*
*Cut Leather Lacing.....50%*
*Leather Lacing Sides, per sq. ft. 23@24¢*

## Rubber—

*Competition (Low Grade), 70&10@75%*
*Standard .....60&10@70%*
*Best Grades.....40@50%*

## Bench Stops—

See *Stops, Bench*

## Benders and Upsetters, Tire—

Green River Tire Benders and Upsetters .....20%

## Bicycle Goods—

John S. Leng's Son & Co.'s 1908 list:
Chain, Parts, Spokes.....
Tubes .....60%

## Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

## Blocks Tackle—

*Common Wooden.....75@75&5%*
B. & L. B. Co.:
Boston Wood Snatch, 50%; Eclipse Steel, 75%; Hollow Steel, 50&10%; Star Wire Rope, 50%; Tarbox Metal Snatch, 50%; Tarbox New Style Steel, 50&10%; Wire Rope Snatch, 50%.
Lane's Patent Automatic Lock and Junior .....30%
See also Machines, Hoisting.

## Boards, Stove—

*Paper and Wood Lined.....55%*
*Embossed .....55%*

## Boards, Wash—

See *Washboards.*

## Bobs, Plumb—

Keuffel & Esser Co.....33⅓&10%

## Bolts Carriage, Machine, &c,—

*Common Carriage (cut thread):*
*⅜ x 6 and smaller..75&5@—%*
*Larger and longer.....70@—%*
*Phila. Eagle, $3.00 list...80@—%*
*Bolt Ends.....70@—%*
*Machine (Cut Thread):*
*⅜ x 4 and smaller..75&10@—%*
*Larger and longer.....70@—%*

## Door and Shutter—

*Cast Iron Barrel, Japanned, Round Brass Knobs:*

| *Inch* | *3* | *4* | *5* | *6* | *8* |
|---|---|---|---|---|---|
| *Per doz..* | *$0.30* | *.35* | *.45* | *.60* | *.80* |

*Cast Iron Spring Foot, Jap'd:*

| *Inch* | *6* | *8* | *10* |
|---|---|---|---|
| *Per doz.* | *$1.20* | *1.50* | *2.25* |

*Cast Iron Chain, Flat, Japanned:*

| *Inch* | *6* | *8* | *10* |
|---|---|---|---|
| *Per doz.* | *$1.00* | *1.40* | *1.65* |

*Cast Iron Flat Shutter, Jap'd, Brass Knobs:*

| *Inch* | *6* | *8* | *10* |
|---|---|---|---|
| *Per doz.* | *$0.75* | *.95* | *1.25* |

*Wrought Barrel Japanned, 80&10@80&10&5%*
*Barrel Bronzed.....60&10%*
*Spring .....70&10@70&10&10%*
*Shutter .....50&5@50&10&5%*
*Square Neck.....75@75&10%*
*Square .....70&10&10@80%*
Ives' Mortise.....10%
Ives' Wrought Metal.....10%

## Expansion—

F. H. Evans' Crescent.....40@60%
Richards Mfg. Co.....55&10%
Star Expansion Bolt Co.:
Star, Lag Screw Type..60&10&5&2½%
Star, Wood Screw Type.....40%
Star, Machine, Single Wedge....60%
Star, Machine, Double Wedge....60%
Steward & Romain Mfg. Co.:
Style No. 13, Double.....60%
Style No. 1, Single.....60%
Style No. 100, Dbl. Jaw, Single..55%
Lag Screw.....66⅔%

## Plow and Stove—

*Plow .....65&5@70%*
*Stove .....85@85&5%*

## Tire—

*Common Iron.....80%*
*Norway Iron.....80%*
American Screw Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84...82½%
Bay State, list Dec. 28, '99.....80%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84...82½%
Eclipse, list Dec. 28, '99.....80%
Russell, Burdsall & Ward Bolt & Nut Co.:
Empire, list Dec. 28, '99.....80%
Norway Phila., list Oct. '84.....80%
Eagle .....82½%
Shelton Co.:
Tiger Brand, list Dec. 28, '99....80%
Phila., Eagle, list Oct. 16, 1884..82½%
Upson Nut Co.:
Tire Bolts.....72½%

## Borers, Bung—

*Borers Bung, Ring, with Handle:*

| *Inch.....* | *1¼* | *1½* | *1¾* | *2* |
|---|---|---|---|---|
| *Per doz...* | *$4.80* | *5.60* | *6.40* | *8.00* |
| *Inch.....* | | *2¼* | *2½* | |
| *Per doz.....* | | *$8.65* | *11.50* | |

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.75; No. 3, $2.50 each.....25%

## Boxes, Mitre—

C. E. Jennings & Co.....25%
Langdon, New Langdon and Langdon Improved, 20&10%; Langdon Acme .....15&10%
Perfection .....40%
Seavey .....45%

## Braces—

*Comman Ball, American....$1.50*
Barber's .....50&10&10@60&10%
Fray's Genuine Spofford's.....60%
Fray's No. 61, 166, 206, 614.....50%
C. E. Jennings & Co.....50&5%
Mayhew's Ratchet.....60%
Mayhew's Quick Action Hay Pat..50%
Millers Falls Drill Braces.....25&10%
P., S. & W. Co., Peck's Pat....60&10%

## Brackets—

*Wrought Steel.75&10@75&10&10%*
Bradley Metal Clasp...80&10@80&10&5%
Griffin's Pressed Steel.....75@75&10%
Griffin's Folding Brackets.....70&10%
Taplin Victor Handy Egg Beater Bracket .....₩ doz. $1.50

## Bright Wire Goods—

See *Wire and Wire Goods.*

## Broilers—

Kilbourne Mfg. Co.....75&20%
Wire Goods Co.....75%

## Buckets, Galvanized —

*M'fr's list, price per gross.*

| *Quart..* | *10* | *12* | *14* | |
|---|---|---|---|---|
| *Water, Reg...* | *26.85* | *29.50* | *33.50* | 10@7½&5@5% |
| *Water, Hvy...* | *45.35* | *48.00* | *52.00* | |
| *Fire, Rd. Btm..* | *32.00* | *34.65* | *38.65* | |
| *Well .....* | *37.35* | *41.35* | *45.35* | |

## Bull Rings—See *Rings, Bull.*

## Butts— Brass—

*Wrought, High List, Oct.26,'06.65%*
Cast Brass, Tiebout's.....40%

## Cast Iron—

*Fast Joint, Broad....40&10@50%*
*Fast Joint, Narrow...40&10@50%*
*Loose Joint.....70&10@75%*
*Loose Pin.....70&10@75%*
*Mayer's Hinges.....70@70&5*
*Parliament Butts.....70@70&5*

## Wrought Steel—

*Bright.*
*Light Narrow, Light Reversible .....70&5%*
*Reversible and Broad..70&5%*
*Loose Joint, Narrow, Light Inside Blind, &c.....70%*
*Back Flaps, Table Chest.65%*
*Japanned.*
*Light Narrow, Loose Pin, 40&5%*
*Light Narrow, Ball Tip..60%*
*Broad .....40&5%*
*Steeple Tipped.....70%*
*Ball Tipped.....70%*

Extra, 10@—

## Cages, Bird—
Hendryx Brass: Series 3000, 5000, 1100, net list; 1200, 15%; 200, 300, 900 ..... 30%
Hendryx Bronze: Series 700, 800....30%
Hendryx Enameled..... 35%

## Calipers—See *Compasses.*

## Calks, Toe and Heel—
*Blunt, 1 prong, per 100 lb., $3.50@$3.85*
*Sharp, 1 prong, per 100 lb., $4.00@$4.35*
Burke's. 1 pg. Blunt Toe, 3¾¢; 2 pg. Blunt Toe, 4¼¢; 1 pg. Sharp Toe, 4¼¢; 2 pg. Sharp, 4¾¢; Blunt Heel, 4¼¢; Sharp Heel.....4¾¢
Lautier. Blunt, 4@4¼¢; Sharp, 4½@4¾¢
Perkins', Blunt, ₱ lb, 3.65¢; Sharp, 4.15¢

## Can Openers—
See *Openers, Can.*

## Caps, Percussion—
*Eley's E. B.....52@55¢*
*G. D.....per M 34@35¢*
*F. L.....per M 40@42¢*
*G. E.....per M 48@50¢*
*Musket .....per M 62@63¢*

### Primers—
*Berdan Primers, $2 per M..20&5%*
*Primer Shells and Bullets..15&10%*
*All other primers per M..$1.52@1.60*

## Carpet Stretchers—
See *Stretchers, Carpet.*

## Cartridges—
*Blank Cartridges:*
*32 C. F., $5.50.....10&5%*
*38 C. F., $7.00.....10&5%*
*22 cal. Rim, $1.50.....10&5%*
*32 cal. Rim, $2.75.....10&5%*
*B. B. Caps, Con. Ball, Swgd..$1.90*
*B. B. Caps, Round Ball.....$1.40*
*Central Fire.....25%*
*Target and Sporting Rifle..15&5%*
*Primed Shells and Bullets..15&10%*
*Rim Fire, Sporting.....50%*
*Rim Fire, Military.....15&5%*

## Casters—
*Bed .....65&10@70%*
*Plate .....60@60&5%*
*Philadelphia .....70&10@75%*
Acme, Ball Bearing.....35%
Gem (Roller Bearing).....70&10&10&5%
Steel Gem (Roller Bearing).....70%
Standard Ball Bearing.....45%
Yale (Double Wheel) low list...40&10%

## Cattle Leaders—
See *Leaders, Cattle.*

## Chain, Proof Coil—
*American Coil, Straight Link:*

| 3-16 | ¼ | 5-16 | ⅜ | 7-16 | ½ | ⅝ |
|---|---|---|---|---|---|---|
| $8.15 | 5.55 | 4.60 | 3.95 | 3.75 | 3.65 | 3.55 |

¾-7-8-1 1⅛ to 1¼ inch.
$3.45 3.55
*In cask lots, deduct 25¢.*
*German Coil.....60@60&5%*
*German Pattern Coil:*
*6-0 to 1.....70&5@70&10%*
*2 and 3..60&10@60&10@60&10&5%*
*4, 5 and 6.....50&10@50&10&5%*

### Halter—
*Halter Chains.....60&5@60&10%*
*German Pattern Halter Chains, list July 24, '97....60&10&5@70%*
Covert Mfg. Co.:
Halter .....35&5

## Cow Ties—
See *Halters and Ties.*

## Trace, Wagon, &c.—
*Traces, Western Standard: 100 pr.*
*6½—6-3, Straight, with ring..$28.00*
*6½—6-2, Straight, with ring..$29.00*
*6½—8-2, Straight, with ring..$32.00*
*6½—10-2, Str'ght, with ring..$37.00*
*NOTE.—Add 2¢ per pair for Hooks. Taut Traces: add per pair for Nos. 2 and 3, 2¢; No. 1, 3¢; No. 0, 4¢ to price of Straight Link.*
*Eastern Standard Traces, Wagon Chain, &c...60&10@60&10&5%*

### Miscellaneous—
*Jack Chain, list July 10, '93:*
*Iron .....60&10&7½%*
*Brass .....65%*
*Safety and Plumbers' Chain..75%*
*Gal. Pump Chain....lb., ½@5%*
Bridgeport Chain Co.:
Triumph Halter and Coil..35&2½@40
Triumph Dog.....50&10@60
Brass Halter and Coil....45@50&5%
Coe's Mfg. Co.:
Brass', Halter, Heel, Rein, Stallion .....40%
Oneida Community:
American Halter, Dog and Kennel Chains .....35&2½@40
Niagara Dog Leads and Kennel Chains .....45@50&5
Wire Goods Co.:
Dog Chain.....70
Universal Dbl.-Jointed Chain....70

## Chain and Ribbon, Sash—
Oneida Community:
Steel Chain.....60
Pelham:
Bronze Chain, 60%; Steel Chain, Coppered .....60&10
Sash Chain Attachments, per set, 8¢
Aluminoy Sash Ribbon, per 100 ft .....$2.00@$5.00
Sash Ribbon Attachments, per set 8¢

## Chalk—
*Carpenters' Blue.....gro., 50¢*
*Carpenters' Red.....gro., 50¢*
*Carpenters' White.....gro., 40¢*

## Checks, Door—
Bardsley's .....45%
Pullman, per gro.....$54.00
Russwin .....33⅓%

## Chests, Tool—
American Tool Chest Co.:
Boys' Chests, with Tools.....55%
Youths' Chests, with Tools.....40%
Gentlemen's Chests, with Tools..30%
Farmers', Carpenters, etc., Chests, with Tools .....20%
Machinists' and Pipe Fitters' Chests, Empty.....45%
Tool Cabinets.....45%
C. E. Jennings & Co.'s Machinists' Tool Chests.....7½%

## Chisels—
### Socket Framing and Firmer
*Standard List.....80&10@—%*
Buck Bros.....30%
C. E. Jennings & Co.:
Socket Firmer No. 10.....25&7½%
Socket Framing No. 15.....25&7½%
Swan's .....66⅔@70%
L. & I. J. White & Co.....30@30&5%

### Tanged—
*Tanged Firmers.....30&5@35%*
Buck Bros.....30
C. E. Jennings & Co. Nos. 191, 181..25%
L. & I. J. White Co.....25&5%

### Cold—
*lb.*
*Cold Chisels, good quality..13@15¢*
*Cold Chisels, fair quality..11@12¢*
*Cold Chisels, ordinary.... 9@10¢*

## Chucks—
Almond Drill Chucks.....35%
Almond Turret Six-Tool Chuck.....40
Beach Pat, each $8.00.....35&5%
Empire .....25%
Blacksmiths' .....25%
Jacobs' Drill Chucks.....35%
Pratt's Positive Drive.....25%
Skinner Lathe Chucks:
Independent .....35%
Universal, Reversible Jaws.....35%
Universal, Com. Style Jaws.....40
Combination, Reversible Jaws....35
Combination, Com. Style Jaws...40%
Round Body or Box Body, 2 Chuck Jaws .....25%
Geared Scroll Chucks.....25%
Drill Chucks:
New Model, 25%; Geared Pattern, 25; Skinner Patent, ...25%
Positive Drive.....40%
Planer Chucks.....20
Standard .....45
Drill Press Vises.....30%
Face Plate Jaws.....35%
Standard Tool Co.:
Improved Drill Chuck.....45%
Union Mfg. Co.:
Combination, Nos. 1, 2, 3, 4, 5, 6, 7, 8 and 17, 40%; No. 21.....35%
Scroll Combinations, Nos. 83 and 84 .....30%
Geared Scroll, Nos. 33, 34 and 35..25%
Independent Iron, Nos. 18 and 318..35%
Independent Steel, No. 64.....25%
Union Drill, Nos. 000, 00, 100, 101, 102, 103, 104.....35%
Union Czar Drill.....25%
Universal, 11, 12, 16, 17, 13, 14, 15..40%
Universal No. 42.....35%
Iron Face Plate Jaws, Nos. 28, 30, 48 and 50.....35%
Steel Face Plate Jaws, Nos. 70 and 72 .....30%
Westcott Patent Chucks:
Lathe Chucks.....50%
Little Giant Auxiliary Drill.....50%
Little Giant Double Grip Drill...50%
Little Giant Drill, Improved.....50%
Oneida Drill.....50%
Scroll Combination Lathe.....50%
Whitaker Mfg. Co.:
National Drill.....25%

## Clamps—
Adjustable Hammers.....20&5%
Carriage Makers', Star, P., S. & W. Co. .....50%
Besly, Parallel.....33⅓&10
Myers' Hay Rack.....50
Lineman's Swedish Neverturn.....60
Wood Workers' Hammers.....40&5%
Saw Clamps, see Vises, Saw Filers'

## Cleaners, Drain,
Iwan's Champion, Adjustable..... 50%
Iwan's Champion, Stationary.....40%

### Sidewalk—
Star Socket. All Steel..₱ doz. $4.05 net
Star Shank. All Steel..₱ doz. $3.24 net
W. & C. Shank, All Steel, ₱ doz., 7½ in., $3.00; 8 in., $3.25.

## Cleavers, Butchers'—
Foster Bros.....30%
Fayette R. Plumb.....30%
L. & I. J. White Co.....30

## Clippers, Horse and Sheep—
Chicago Flexible Shaft Co.:
1902 Chicago Horse, each..$10.75
20th Century Horse, each...$5.00
Lightning Belt Horse, each..$15.00
Chicago Belt Horse, each, $20.00
Stewart's Enclosed Gear Roll Bearing Horse, each.....$6.75
Stewart's New Model Sheep Shearing Machine each.$12.75
Stewart Enclosed Gear Shearing Machine, No. 8, each..$9.75
} 20%

## Clips, Axle—
*Regular Styles, list July 1, '05. 80@80&10%*

## Cloth and Netting, wire—See *Wire, &c.*

## Cocks, Brass—
*Hardware list:*
*Plain Bibbs, Globe, Kerosene, Racking, Liquor, Bottling, &c .....75%*
*Compression Bibbs.....70%*

## Coffee Mills—
See *Mills, Coffee.*

## Collars, Dog—
Nickel Chain, Walter B. Stevens & Son's list .....40%
Leather, Walter B. Stevens & Son's list .....40%

## Compasses, Dividers, &c.
*Ordinary Goods.....70&10@75%*

## Conductor Pipe,—
*L. C. L. to Dealers:*

| | Gal. Steel. | Charcoal. |
|---|---|---|
| *Northeastern* | *70&10%* | *50&10&7½%* |
| *Eastern* | *75%* | *50&10&7½%* |
| *Pittsburg* | *75&10&5%* | *60%* |
| *Central* | *75&10%* | *60%* |
| *Northwestern* | *75&7½%* | *60%* |
| *Western* | *70&12½%* | *50&12½%* |
| *Tennessee* | *70&10%* | *50&12½%* |
| *Southern* | *70%* | *50&12½%* |
| *Southwestern* | *70%* | *50&5%* |

*Terms, 60 days: 2% cash 10 days. Factory shipments generally delivered.*
See also Eave Troughs.

## Coolers, Water—
L. & G. Mfg. Co.:

| Gal. | 2 | 3 | 4 | 6 | 8 |
|---|---|---|---|---|---|
| Galvanized, ea. | $1.85 | $2.00 | $2.25 | $2.90 | $3.90 |
| Galvanized, Lined, side handles, Gal. | 2 | 3 | 4 | 6 | 8 |
| Each | $1.95 | $2.15 | $2.40 | $3.30 | $4.15 |

White Enameled.....10%
Agate Lined.....10%

## Coppers' Tools—
See *Tools, Coopers'.*

## Coppers, Soldering—
*Soldering Coppers, 3 lb. to pair and heavier, 20¢; lighter than 3 lb. to pair.....22¢*

## Cord— Sash—
*Braided, Drab.....lb. 35¢*
*Braided, White, Com., Nos. 8 to 12, 20¢; No. 7, 20½¢; No. 6, 21½¢. In lots of 12 doz. or over, 1 cent less per pound.*
*Cable Laid Italian, lb., No. 18..37¢*
*Italian, lb., A, No. 18, 25¢; B, 22¢*
*Common India.....lb., 11@11½¢*
*Cotton Sash Cord, Tw'ted..18@20¢*
*Patent Russia.....lb....20¢*
*Cable Laid Russia.....lb...21¢*
*India Hemp, Br'd'd.....lb...21¢*
*India Hemp, Twisted...lb..13@14¢*
*Patent India, Twisted..lb...17¢*
Pearl Braided, cotton, No. 6, ₱ lb 20½¢; No. 7, 19½¢; Nos. 8 to 12, 19½¢, in 12 doz. to 100 doz. lots.
Eddystone Braided, Nos. 8 to 12, 26¢; 7, 26½; 6, 27½¢.
Harmony Cable Laid Italian, Nos. 7 to10.....₱ lb 25¢
Pullman:
Wire Sash Cord.....10%
Sash Cord Attachments, per 100..$2.00
Samson, Nos. 8 to 12:
Braided, ₱ lb., Drab Cotton, 55¢; Italian Hemp, 40¢@50¢; Linen, 65¢; White Cotton, 50¢; Spot Cord.....50¢
Massachusetts, White...₱ lb 40¢
Massachusetts, Drab...₱ lb 45¢
Phoenix, White, Nos 8 to 12....27¢
} 15%
Silver Lake, per lb.:
A, Drab, 45¢; A, White, 40¢; B, Drab, 40¢; B, White, 35¢; Italian Hemp, 40¢; Linen....57½¢
See also Chain and Ribbon.

## Wire, Picture—
*Full Length.....90@—%*
*Short Length.....90&20@—%*
Hendryx Standard Wire Picture Cord, old list, 85&10
Turner & Stanton Co. Wire Picture Cord .....90

## Cradles—
*Grain .....5%*

## Crayons—
*White Round Crayons, Cases, 100 gro., $8.00, $8.50, $9.00 and $10.00 according to grade.*
Zelnicker's Lumber: ₱ gro.
White and Purple, Indelible....$7.50
Blue, Red, Green, Yellow and Terra Cotta, $6.50; Black.....$4.50
Giant Lumber, 5¼ in. x 15-16 in. round, all colors, $12.00; Indelibles, $14.00; Blacks.....$10.00
Genuine Soapstone, Metal Workers', 5 in. x ¼ in. Round, $2.50; 5 in. x ¼ in. Square, $1.75; 5 x ½ x 3 16. $2.50; 5 x 1¼ x 3-16.....$3.00
Suremark, Black, $2.25; Blue, Red and Yellow.....$2.50

## Crooks, Shepperds'—
Fort Madison, per doz., Heavy, $5.50; Light .....$5.00

## Crow Bars—See *Bars, Crow.*

## Cultivators—
Victor Garden.....50

## Cutlery, Table—
International Silver Company:
No. 12 M'd'm Knives, 1847 ₱ doz. $3.50
Star, Eagle Rogers & Hamilton and Anchor.....₱ doz. $8.00
Wm. Rogers & Son.....₱ doz. $2.50

## Cutters— Glass—
H. H. Mayo & Co.....10%
Red Devil .....
B. Mfg. Co.....10
Woodward .....50

## Meat and Food—
American .....30%

| Nos. | 401 | 102 | 103 | 14 | 105 | 106 | 107 |
|---|---|---|---|---|---|---|---|
| Each | $5 | $7 | $10 | $12 | $25 | $30 | $60 |

Enterprise:

| Nos. | 5 | 10 | 12 | 22 | 32 |
|---|---|---|---|---|---|
| Each | $2.50 | $2.75 | $4.50 | $6 | 25@35&7% |

No. 202, $1.50 .....10&7
P. S. & W. Co.:
Head .....40@40&5%
Hubs .....60&5
Little Giant .....₱ doz., $4.50
Nos. 245 249 252 300 309
$25.00 $18.00 $14.00 $7.50 $5.00
New Triumph No. 605, ₱ doz., $24.00
10
Russwin Food No. 1, $21.00; No. 2, $27.00; 3, $12.00.....15&10&10
$15.00 $18.00
Enterprise Beef Shavers.....25@30%

## Siaw and Kraut—
Henry Disston & Sons:
Slaw and Kraut Cutters.....35%
Corn Graters.....30
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife....₱ doz. $3.00
Combined Slaw Cutter and Corn Grater .....₱ doz. $4.00

## Tobacco—
*All Iron, Cheap...doz, $4.25@4.50*
Enterprise .....25@30
National, ₱ doz., No. 1, $21; No. 2, $18 .....40

## Diggers, Post Hole, &c—
Disston's:
Rapid, ₱ doz., $24.00.....25%
Samson, ₱ doz., $34.00.....25
Iwan's Pat. Post Hole and Well Auger .....40
Vaughan Pattern Post Hole Augers, ₱ doz., $7.00
Perfection Post Hole Diggers, ₱ doz. .....$8.50
Split Handle Post Hole Diggers, ₱ doz., $7.50
Hercules Pattern, ₱ doz.....$9.50
Kohler's, ₱ doz., Universal, $14.00; Little Giant, $12.00; Hercules, $10.00; Invincible, $9.00; Rival, $8.50; Pioneer.....$7.50
Never-Break Crucible Steel Post Hole Diggers .....60

## Dividers—See *Compasses.*

## Drawing Knives—
See *Knives, Drawing.*

## Dressers Emery Wheel—
Sterling Emery Wheel Dressers.....35%
Sterling Wheel Dresser Cutters.....35%

## Drills and Drill Stocks—
*Blacksmith's Common Drilling Machines .....$1.50@1.75*
Breast, Millers Falls.....15&10%
Breast, P., S. & W.....33⅓%
C. & C. Ratchet.....25
Reversible Ratchet Die Stocks....25%
Goodell Automatic Drills.50&10@60&10%
Millers Falls Automatic Drills, Graves', per doz., Nos. 1, $4.86; 2, $8.16.
Millers Falls Automatic Drills.33⅓&10%
Ratchet, Curtis & Curtis.....25%
Ratchet, Parker's.....40%
Ratchet, Weston's.....40%
Ratchet, Weston's, Style H Improved .....40@40&5%
Ratchet, No. 012.....40@40&5%
Ratchet, Celebrated.....10@40&5%
Ratchet, Whitney's, P., S. & W., 40&10@50%
Whitney's Adjustable, No. 10, $12.00, 33⅓%

### Twist Drills—
*Bit Stock.....70@70&5%*
*Taper and Straight Shank. 60&10@70%*

## Drivers, Screw—
*Screw D'ver Bits, per doz..45@50¢*
Balsey's Screw Holder and Driver, ₱ doz., 2½-in., $6; 4-in., $7.50; 6-in., $9 .....50%
Buck Bros.' Screw Driver Bits.....30
Champion .....50
Disston's .....70%
Fray's Hol. H'dle Sets, No. 3, $12..50
Ford's Brace Screw Drivers....40&10
Gay's Double Action Ratchet.....35%
Goodell's Auto.....65@65&10
Mayhew's Black Handle.....40%
Mayhew's Monarch.....40%
Millers Falls, ₱ doz., Nos. 11, $9.95; 12, $13.73; 20, $8.17; 21, $8.46; 41, $13.43; 42, $17.21.
Smith & Hemenway Co. Neverturn, 66⅔%; Elmora, 60%; Star, 30&10%
Swan's:
Nos. 7565 to 7568, 60%; No. 7570 40&10

## Eave Trough, Galvanized—

| | Charcoal. Gal. Steel. | Iron |
|---|---|---|
| *Territory* | | |
| *Northeastern* | *75&10&5%* | *60&20%* |
| *Eastern* | *80&2½%* | *60&20%* |
| *Pittsburgh* | *80&2½* | *65&10* |
| *Central* | *80&10&10&2½%* | *65&10* |
| *Northwestern* | *80&10&10* | *65&10* |
| *Western* | *80&10%* | *60&10&5* |
| *Tennessee* | *80&5%* | *60&10&5* |
| *Southern* | *80%* | *60&10&5* |
| *Southwestern* | *75&10&2½%* | *60&5* |

*Terms.—2% for cash. Factory shipments generally delivered.*
*Note.—Lower prices are made in some sections.*
See also Conductor Pipe and Elbows.

## Elbows and Shoes—
*Factory shipments, all territories. Gals. Steel and Galv. C. I.*
*Standard Gauge.....85@85&10%*
*No. 26.....*
*No. 24.....2*
*No. 22.....10%*

## Elbows, Stove Pipe—
Edwards, Standard Elbows..10&5%
Edwards, Royal Elbows.....10&5
Reeves, Dover Flat Crimp..10&10&5

## Emery, Turkish—

| | ½ to 2 ₱ | 2½ to 5 ₱ | Floor |
|---|---|---|---|
| *Kegs* | *lb* | *¢* | *¢* |
| *½ Kegs* | *lb* | *¢* | *¢* |
| *¼ Kegs* | *lb* | *6 ¢* | *¼ ¢* |
| *10 lb. cans,* | | | |
| *10 in case* | *6½¢* | *7 ¢* | *6 ¢* |
| *10 lb cans, less than 10* | *10 ¢* | *10 ¢* | *8 ¢* |
| *Less quantity* | *10 ¢* | *10 ¢* | *8 ¢* |

*NOTE.—In lots 1 to 3 tons a discount of 10% is given.*

## Extensions, Bit—
Ford's Auger Bit Extensions....10&5%

## Extractors, Lemon Juice—See *Squeezers, Lemon.*

## Fasteners, Blind—
Zimmerman's Jap'd and Galv., 50 & 5%; Bronze and Plated.....50%
Walling's .....50
Upson's Patent.....10

### Cord and Weight—
Ives, ₱ gro., $1.08.....10%
Titan, ₱ gro., $0.66.....10%

### Corrugated—
Acme Corrugated Fasteners.....70%

### Faucets—
*Cork Lined.....50&10@60%*
*Metallic Key, Leather Lined, ..60&10@70%*
*Red Cedar.....40&5@40&10&5%*
*Petroleum .....70&10@75%*
B. & L. B. Co.:
Metal Key.....60&10%
Star .....60
West Lock.....50&10%
John Sommer's Peerless Tin Key....40%
John Sommer's Boss Tin Key.....50%
John Sommer's Victor Mtl. Key.50&10%
John Sommer's Duplex Metal Key..60%
John Sommer's Diamond Lock.....40%
John Sommer's I.X.L. Cork Lined..50%
John Sommer's Reliable Cork Lined..50&10%
John Sommer's Chicago Cork Lined.60
John Sommer's O. K. Cork Lined...50%
John Sommer's No Brand, Cedar....50%
John Sommer's Perfection, Cedar....40%
Self Measuring:
Enterprise, Self Measuring and Pump, ₱ doz., $36.00.....40&10%
Lane's, ₱ doz., $36.00.....40&10
National Measuring, ₱ doz. $36.40&10%

### Felloe Plates—
See *Plates, Felloe.*

### Files— Domestic—
*List Nov. 1, 1899.*
*Best Brands.....70&10@75&10%*
*Standard Brands.....75&10@80%*
*Lower Grade....75&10&10@80&10%*
Gold Medal.....70%
McCaffrey's American Standard, 60&10&10%

### Imported—
*Stubs' Tapers, Stubs' list, July 24, '97.....33⅓@40%*

### Fixtures, Fire Door—
Richards Mfg. Co.:
Universal, No. 103; Special, No. 104 .....$3.75
Fusible Links, No. 96.....50
Expansion Bolts, No. 107.....60&10%

### Grindstone—
*Net Prices:*

| Inch | 15 | 17 | 19 | 21 |
|---|---|---|---|---|
| Per doz. | $3.60 | 3.85 | 4.15 | 4.65 |

Peck, Stow & Wilcox Co.:

| In. | 15 | 17 | 19 | 21 | 24 | |
|---|---|---|---|---|---|---|
| | $4.00 | 4.40 | 4.75 | 5.50 | 6.50 | 30% |

Reading Hardware Co.....60%

### Fodder Squeezers—
See *Compressors.*

### Forks—
*NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.*
Iowa Dig-Ezy Potato.....60&10%
Victor, Hay.....60&15&2½%
Victor, Manure.....66⅔%
Victor, Header.....65%
Champion, Hay.....66⅔%
Champion, Header.....65%
Champion, Manure.....60&15&2½%
Columbia, Hay.....60&20%
Columbia, Manure.....70%
Columbia, Spading.....70&12½%
Hawkeye Wood Barley.....40%
W. & C. Potato Digger.....60&10%
Acme Hay.....60&20%
Acme Manure, 4 tine.....60&10&5%
Dakota Header.....60&20%
Jackson Steel Barley.....60&20%
Kansas Header.....65%
W. & C. Favorite Wood Barley....40%
Plated.—See Spoons.

### Frames— Wood Saw—
*White, S'g't Bar, per doz.75@80¢*
*Red, S'g't Bar, per doz.$1.00@1.25*
*Red, Dbl. Brace, per doz.$1.40@1.50*

### Freezers, Ice Cream—

| Qt. | 1 | 2 | 3 | 4 | 6 |
|---|---|---|---|---|---|
| Lach. | $1.25 | $1.60 | $1.90 | $2.20 | $2.80 |

### Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

### Fry Pans—See *Pans, Fry.*

### Fuse— *Per 1000 Feet.*
*Hemp .....$2.75*
*Cotton .....3.20*
*Waterproof Sgl. Taped..3.65*
*Waterproof Dbl. Taped..4.40*
*Waterproof Tpl. Taped..5.15*
All 25%

## Gates, Molasses and Oil—
*Stebbins' Pattern.....80@80&5%*

### Gauges—
*Marking, Mortise, &c..50@50&10%*
Chapin-Stephens Co.:
Marking, Mortise, &c.....50&50&10
Disston's Marking, Mortise, &c 67½
Wire, Brown & Sharpe's.....33⅓%
Wire, Morse's.....25
Wire P. S. & W. Co.....33⅓

### Gimlets— Single Cut—
*Numbered assortments, per gro.*
*Nail, Metal, No. 1, $2.00; 2, $2.30*
*Spike, Metal, No. 1, $1.00; 2, $1.30*
*Nail, Wood Handled, No. 1, $2.30; 2, $2.60*
*Spike, Wood Handled, No. 1, $1.30; 2, $1.60*

### Glass, American Window
See *Trade Report.*

### Glasses, Level—
Chapin-Stephens Co.....65@65&10%

### Glue, Liquid Fish—
*Bottles or Cans, with Brush, 25&10@50%*
Elwell's .....40%

### Grease, Axle—
*Common Grade...gro. $6.00@$6.50*
Dixon's Everlasting, 10-lb. pails, ea. 85¢; in boxes, ₱ doz., 1 lb, $1.20; 2 lb.....$2.00
Helmet Hard Oil.....25%

### Griddles, Soapstone—
Pike Mfg. Co.....33⅓@33⅓&10%

### Grinders—
Pike Mfg. Co.:
Hand and Foot Power, Pyko Nos. 1, 2, 3; Pyko Primo; Pyko Peerless; Pyko Spiral (foot power).33⅓%
Mower Knife and Tool, $5.00..40&10%
Royal Mfg. Co.:
Alundum Grinding Machines, each, Nos. 01, $1.75; 1A, $2.50; 10, $5.00 .....30%
Alundum Sickle Grinders, each, Nos. 20, $5.00; 20A, $6.00; 20A Combined, $6.50.....30%
Alundum Disc Grinders, each, $2.50 .....30%

### Grindstones—
Pike Mfg. Co.:
Improved Family Grindstones, ₱ inch, ₱ doz., $2.00.....33⅓%
Richards Mfg. Co., Eli and Cycle, Ball Bearing, mounted.....40%

### Grips, Nipple—
Perfect Nipple Grips.....40&10&2%

## Halters and Ties—
*Cow Ties.....65@65&10%*
Bridgeport Chain Co.:
Triumph Coil and Halters.35&2½@40%
Brown Coil and Halters...45@50&5
Brown Cow Ties.....50&5@50&10&5%
Brown Tie Outs.....70&10@75&5
Covert Mfg. Co.:
Web .....30&2%
Jute Rope.....35%
Sisal Rope.....20%
Cotton Rope.....45%
Hemp Rope.....45%
Oneida Community:
Am. Coil and Halters.....40@40&5%
Am. Cow Ties.....45@50%
Niagara Coil and Halters...45@50&5
Niagara Cow Ties.....45&5@50&10&5%

### Hammers—
#### Handled Hammers—
Heller's Machinists'....55&10@55&10&5%
Heller's Farriers.....40&5@40&10&5
Peck, Stow & Wilcox Co.:
Crucible Steel.....40&10@50%
Farriers' .....40&10@50
Riveting .....40&10@50
Machinists' .....66⅔@5
Blacksmiths' .....50%
Fayatte R. Plumb:
A. E. Nail.....40&2½@40&12½%
Eng. and B. S. Hand.50&10&5@60&5%
Machinists' Hammers.....60&10&5%
Rivet and Tinners'.40&7½@40&12½&5%
Victor Magnetic Tack, ₱ gro....$7.75

### Heavy Hammers and Sledges—
*Under 3 lb., per lb., 50¢...80&10%*
*3 to 5 lb., per lb., 40¢...80&10&10%*
*Over 5 lb., per lb., 30¢.....*
*Over 5 lb., per lb., 30¢.80&10&10%*

### Handles—
#### Agricultural Tool Handles
*Axe, Pick, &c....60&10@60&10&5%*
*Hoe, Rake, &c.....40*
*Fork, Shovel, Spade, &c.:*
*Long Handles.....40%*
*D Handles.....40%*

#### Cross-Cut Saw Handles—
Atkins' .....40%
Champion .....50%
Disston's .....50%

#### Mechanics' Tool Handles—
*Auger, assorted...gro.$3.00@$3.50*
*Brad Awl.....gro.$1.65@$1.75*
*Chisel Handles, Ass'd, per gro.:*
*Tanged Firmer, Apple, $2.40@$2.65; Hickory.....$2.15@2.40*
*Socket Firming, Apple, $1.75@$1.95; Hickory.....1.60@1.75*
*Socket Framing, Hickory, $1.60@$1.75*
*File, assorted.....gro.$1.30@$1.40*
*Hammer, Hatchet, &c., 60&10@60&10&5%*
*Hand Saw, Varnished, doz., 80&85¢; Not Varnished.....65@75¢*
*Plane Handles:*
*Jack, doz., 30¢; Fore, doz...45¢*
Chapin Stephens Co.:
Carving Tool.....30@30&10%
Chisel .....60@60&10
File and Awl.....60@60&10
Saw and Plane.....30@30&10
Screw Driver.....30@30&10%
Millers Falls Adj. and Ratchet Auger Handles .....15&10%
Nicholson Simplicity File Handle.... ₱ gro $0.85@$1.50
J. L. Osgood:
Indestructible File and Tool, ₱ gro., No. 1 $8.00; No. 2, $8.50; No. 3, $9.00; No. 4, $9.50; No. 5, $10.00. .....gro. lots 10%
W. A. Zelnicker Supply Co.:
Hammer, ₱ doz., 12 in., $2.00; 14 in., $2.00; 16 in., $2.30; 18 12., $2.50; 20 in., $2.70; 22 in., $3.00; 24 in., $3.30; 26 in., $3.50; 30 in., $3.80.
Sledge ₱ doz., oval, 30 in., $3.80; octagon, 30 in., $3.80, oval, 36 in., $4.00; octagon, 36 in., $4.00.
Axe ₱ doz., 28 to 31 in., $5.60; 36 in., $5.80.
Adze ₱ doz., 36 in., $5.80; 36 in., $5.80.
Pick ₱ doz., R. R., 26 in., $8.00; coal, 31 in., $5.80.
Hatchet, ₱ doz., 12 to 14 in., $2.00.

### Hangers—
*NOTE.—Barn Door Hangers are generally quoted per pair, without track and Parlor Door Hangers per double set with track, &c.*
Chicago Spring Butt Co.:
Friction .....25%
Oscillating .....25
Big Twin.....25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door.....50%
Elevator .....30%
Railroad .....50%
Cronk & Carrier Mfg. Co.:
Loose Axle.....60&10%
Roller Bearing.....70%
Griffin Mfg. Co.:
Solid Axle, No. 10, $12.00..60&10%
Roller Bearing, No. 11, $15.00, 60&10%
Roller Bearing, Ex. Hy., No. 22, $18.00.....60&10%
Bull Dog, $24.00.....70%
Lane Bros. Co.:
Parlor, Ball Bearing, $4.00; Standard, $3.15; No. 105, $2.85; New Model, $2.80; New Champion per set of 4 Hangers, complete with track.....$2.25
Barn Door, Standard.....60&10
Hinged .....net $6.08
Covered .....60&5%
Special .....70&5%
Trolley Hangers and track...50%
Lawrence Bros.:
Advance .....55&10%
Cleveland .....70&7½%
Clipper, No. 75.....60%
Crown .....55&10%
Cyclone, No. 10.....net $6.50
Tandem, No. 50.....net $7.50
New York.....55&10%
McKinney Mfg. Co.:
Roller Bearing, Nos. 1 and 2..70%
Anti-Friction .....60%
Hinged Hangers, King Charm.60%
Richards Mfg. Co.:
Hangers, Nos. 47, 48, 147, 247, 60&5%
Pioneer Wood Track, No. 3..$2.25
Roller B'r'g St'l Track No. 12.$2.20
Roller B'r'g St'l Track No. 13.$2.50
Roller B'r'g, Nos. 39, 41, 43, 70&7½%
Hero, Adj. Track No. 19..50&10%
Adjustable Track Tandem Trolley Track No. 16.....50&10%
Seal, Steel Track No. 8.....$2.25
Auto Adj. Track No. 22..50&5%
Trolley B. D. No. 17, $1.25; F. D. No. 120, $2.25; No. 121, $2.45; No. 150.....$2.50
Safety Underwriters F. D. No. 101 .....50%
Tandem No. 41..2½ and 3 60&10%
Palace, Adjustable Track No. 132 .....50&5%
Royal, Adjustable Track No. 122 .....50&10%
Ives' Wood Track No. 1.....$2.25
Trolley B. D. No. 20.....50&10%
Trolley B. D. No. 24, $1.30; No. 27, $1.40; No. 28.....$1.60
Roller Bearings, Nos. 37, 38, 39, 41, 43, 44, Sizes 1 and 2.70&7½%
Anti-friction, No. 42; No. 44, sizes 2½ and 3.....60%
Hinged Tandem No. 48....60&5%
Folding Door B. B. Swivel No. 135 .....40%
Taylor & Boggis Fy Co.'s Kidder's Roller Bearing, ₱ doz., 4 in., $12.00; 5 in., $14.00..40&10%
Myers' Stayon Hangers.....60%

### Hangers— Garment—
Pullman Trouser, ₱ gro., No. 1 $9.00; No. 4, $24.00; No. 5, $16.50; No. 8, Black Enamel, $7.50; No. 10, $21.00; No. 12, $8.00; No. 15, Rods, $9.00; No. 18, Loops.....$10.00
Victor Folding.....₱ gro. $9.60

### Gate—
Myers' Patent Gate Hangers, ₱ doz. net .....50%

### Joist and Timber—
Lane Bros. Co.....35%

### Hasps—
Griffin's Security Hasp.....50&10%
McKinney's Perfect Hasp, ₱ doz...60

### Hatchets—
*Regular list, first qual.40&12½@—*
*Second quality.....50&10&5@—*

### Heaters, Carriage—
Clark, No. 5, $1.25; No. 5B, $1.50; No. 3, $1.75; No. 3D, $2.00; No. 7D, $2.25; No. 3E, $2.50; No. 1, $3.00.....25%
Clark Coal, ₱ doz., $0.75.....20%

### Hinges—
#### Blind and Shutter Hinges
*Surface Gravity Locking Blind: Doz. Sets with Fastenings, Net, No. 1, $0.70; No. 3, $1.25; No. 5, $2.65.*
*Mortise Shutter.....80%*
*Mortise Reversible Shutter...80%*
North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%
Charles Parker Co.....70@75%
Parker Wire Goods Co.
Hale & Benjamin Automatic Blind Hinges .....20%
Hale's Blind Awning Hinges, No. 110, for wood, $9.00; No. 111, for brick, $9.00.....20%
Reading's Gravity.....60%
Stanley's Steel Gravity Blind Hinges, No. 1617½, ₱ doz. sets, without screws, $0.95; with screws, $1.25.
Wrightsville Hardware Co.:
O. S., Lull & Porter.....75&5%
Acme, Lull & Porter.....75%
Queen City Reversible.....75%
Shepard's Noiseless, Nos. 60, 65, 55 .....75&5%
Niagara, Gravity Locking, Nos. 1, 3 & 5.....75&5%
Clark's O. P., No. 1.....75&10%
Clark's O. P., Nos. 3 and 5....75&5%
Tip Pat'n, No. 1.....75&10
Clark's No. 3.....75&5%
Buffalo Gravity Locking, Nos. 1, 3 & 5.....70&10&5%
Shepard's Double Locking.....75%
Champion Gravity Locking.....75&5
Pioneer .....75&10
Empire .....65
W. H. Co.'s Mortise Gravity Locking, No. 2.....60&10%

Extra 5@10% often given.

#### Gate Hinges—
*Clark's or Shepard's—Doz. sets:*

| No. | 1 | 2 | 3 |
|---|---|---|---|
| Hinges with L't'chs. | $2.00 | 2.70 | 5.00 |
| Hinges only | 1.25 | 1.90 | 3.50 |
| Latches only | .70 | .75 | .35 |

*New England:*
*With Latch.....doz..@$2.00*
*Without Latch.....doz..@$1.60*
*Reversible Self-Closing:*
*With Latch.....doz..@$1.75*
*Without Latch...doz. ...@$1.35*
*Western:*
*With Latch.....doz. $1.75*
*Without Latch.....doz..$1.15*
Wrightsville Hardware Co.:
Shepard's or Clark's Hinges and Latches, Hinges only or Latches only, Nos. 1, 2 or 3.....70%

#### Miscellaneous—
Griffin Mfg. Co., Fleur de Lis Surface Hinges, ₱ doz. prs.....$1.00

#### Pivot Hinges—
Bommer Bros. Pivot, Ball Bearing .....40%
Lawson Mfg. Co. Matchless.....30

#### Spring Hinges—
*Holdback, Cast Iron...$6.75@$7.00*
*Non-Holdback, C'st Iron$6.50@$6.75*
J. Bardsley:
Bardsley's Non-Checking Mortise Floor Hinges.....40%
Bardsley's Patent Checking.33⅓%
Bommer Bros.:
Spring Butt Hinges.....40%
Surface Floor, Ball Bearing .....40%
Mortise Floor, Ball Bearing.40%
Lavatory Hinges.....40%
Non-Holdback Screen Door, Nos. 2000 and 900.....40%
Holdback Screen Door, No. 999.....₱ gro. $9.00
Chicago Spring Butt Co.:
Chicago Spring Hinges.....25%
Triple End Spring Hinges....50%
Chicago (Ball Bearing) Floor.50%
Garden City Engine House...25%
Keene's Saloon Door.....25%
Columbian Hardware Co.:
Acme, Wrought Steel.....30%
Acme, Brass.....25%
American .....30%
Columbia, ₱ gr., No. 14, $9.00; No. 18.....$25.00
Columbia, Adj., No. 7, ₱ gr.$12.00
Gem, new list.....30%
Clover Leaf and Acorn, per gro. .....$12.00
Oxford, new list.....30
Floor Spring Hinges.....65&10%
Columbian Steel.....65&10%
Lawson Mfg. Co.:
Matchless Spring Hinges.....30
Matchless Jamb Hinges.....30%
Richards Mfg. Co.:
Superior Double Acting Floor Hinges .....40%
Shelby Spring Hinge Co.:
Buckeye All Steel Holdback Screen Door.....₱ gr. $9.00
Chief Ball Bearings Floor Hinge .....50%
Ball Bearing Door.....25%
No. 777, Sheet Steel Holdb'k, ₱ gr. pr.....$9.00
Standard Mfg. Co.:
Champion Double Acting Door Hinge .....25&10&10%
Standard Double Acting Floor Hinge .....25&10&10%
Superior Spring Hinge Co.:
Superior Floor Hinges.....33⅓%
Spring Hinges.....33⅓

Extra 10% often given on most of these Hinges.

#### Wrought Iron Hinges—
*Strap and T Hinges, &c., list February 10, 1908:*
*Light Strap Hinges..50&10%*
*Heavy Strap Hinges..60&5%*
*Light T Hinges.....50%*
*Heavy T Hinges.....40%*
*Extra Hvy. T Hinges.50&10%*
*Hinge Hasps.....33⅓%*
*Cor. Heavy Strap....60&5%*
*Cor. Ex. Heavy T...50&10%*
*Screw Hook and Strap.* { *6 to 12 in..1b.3½¢* / *1½ to 20 in..1b.3½¢* / *22 to 36 in..1b.3¢*
*Screw Hook and Eye:*
*⅜ to 1 inch.....1b.6½¢*
*⅝-inch .....1b.7½¢*
*½-inch .....1b.8½¢*

Extra 10&7½%. Extra 10&10&7½%.

#### Hitchers, Stall—
Covert Mfg. Co., Stall Hitchers..30&2%

#### Hods— Coal—
*M'f'gr's list, price per gross:*

| Inch | 15 | 16 | 17 | 18 |
|---|---|---|---|---|
| Galv. Open | $3.5 | $3.9 | $4.2 | $4.6 |
| Jap. Open | 26 | 28 | 31 | 35 |
| Galv. Funnel | 43 | 48 | 52 | 56 |
| Jap. Funnel | 33 | 36 | 59 | 43 |

10&7½&5%

#### Masons' Etc.
Cleveland Wire Spring Co.:
Steel Brick, No. 162.....each $1.05
Steel Mortar, No. 158.....each $1.35

#### Hoes— Eye—
*Scovil and Oval Pattern, 60&10@60&10&10%*
*Grub, list Feb. 23, 1899, 70&10@70&10&10%*
D. & H. Scovil.....27½%
Am. Fork & Hoe Co. (Scovil Pattern) .....60%

### Handled—

*NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.*

Cronk's Weeding, No. 1,$2.00; No. 2,$2.50
Star Double Bit.....$2.50
Ft. Madison Cotton Hoe....70&10&10%
Ft. Madison Crescent Cultivator Hoe, ₱ doz.....70&10%
Ft Madison Mattock Hoes:
Regular Weight.....₱ doz. 40&5%
Junior Size.....₱ doz. $4.00
Ft. Madison Sprouting Hoe, ₱ doz., 60&10%
Ft. Madison Dixie Tobacco Hoe..... 75&10&7½%
Kretsinger's Cut Easy.....70&10%
Warren Hoe.....45&10%
W. & C. Ivanhoe.....75&2½%
B. B. 6 in., Cultivator Hoe.....$3.40
B. B., 6½ in.....$3.50
Acme Wedding.....₱ doz., net, $4.35
W. & C. L'tning Shuffle Hoe, ₱doz.$5.25

### Hoisting Apparatus—

See *Machines, Hoisting.*

### Holders— Bit—

Angular, ₱ doz. $21.00.....45&10%

### Door—

Bardsley's, Iron, 40%; Brass and Bronze .....25%
Empire .....50%
Pullman .....25%
Richards Mfg. Co.: No. 117, Ever-ready, 40%; Nos. 118, 119, Sure Grip .....50%
Superior .....33⅓%

### File and Tool—

Nicholson File Holders and File Handles .....33⅓@40%

### Fruit Jar—

Triumph Fruit Jar Holder, ₱ gross, $18.00; ₱ doz.....$2.00

### Trace and Rein—

Fernald Double Trace Holder, ₱ doz. pairs .....$1.25
Dash Rein Holder, ₱ doz.....$1.25

### Hones—Razor—

Pike Mfg. Co., Belgian and Swaty, 50%; German.....33⅓%

### Hooks—Cast Iron—

Bird Cage, Reading.....40%
Clothes Line, Reading List.....40%
Coat and Hat, Reading.....45&20%
Coat and Hat, Wrightsville.....60&5%
Harness, Reading List.....40%

### Wire—

*Belt, Nos. 1 to 15....75&10@80%*
*Wire C. & H. Hooks..80@80&10%*
Bradley Metal Clasp Wire, Coat and Hat, 75&10@80%; Ceiling..75&10@80%
Columbian Hdw. Co., Gem.....75&10%
Parker Wire Goods Co., King..75&10%
Wire Goods Co.:
Acme, 60&10%; Chief, 70&10%; Crown, 75%; Czar, 65&10%; V Brace, 75%; Czar Harness, 50%; Ceiling, 75%.

### Wrought Iron—

*Box, 6 in., per doz., $0.90; 8 in., $1.15.*
*Cotton .....doz.$1.25@$1.50*
Wrought Staples, Hooks, &c. See Wrought Goods.

### Miscellaneous—

*Hooks, Bench, see Stops, Bench.*
*Bush, Light, doz., $6.20; Medium, $6.75; Heavy, $7.65*
*Grass, best, all sizes, per doz., $2.75@$3.00*
*Grass, common grades, all sizes, per doz.....$1.25@$1.50*
*Whiffletree .....lb.5¾@6¢*
*Hooks and Eyes:*
*Brass .....60@60&10%*
*Malleable Iron.....70@70&10%*
Covert Mfg. Co. Gate and Scuttle Hooks .....40%
Ft. Madison Cut-Easy Corn Hooks, ₱ doz. $3.25 net
Turner & Stanton Co. Cup and Shoulder .....85&10%
Bench Hooks See Bench Stops.
Corn Hooks—See Knives, Corn.

### Horse Nails—

See *Nails, Horse.*

### Horseshoes—

See *Shoes, Horses.*

### Hose, Rubber—

*Garden Hose, ¾-inch:*
*Competition .....ft. 6@6½¢*
*3 ply Guaranteed.....ft. 8½@9¢*
*4-ply Guaranteed....ft. 9½@12¢*
*Cotton Garden, ¾-in., coupled:*
*Low Grade.....ft. 8@ 9c*
*Fair Quality.....ft. 10@11¢*

### Irons— Sad—

*From 4 to 10.....lb.2¼@2¾¢*
*B. B. Sad Irons.....lb.3¼@3½¢*
*Mrs. Potts', cents per set:*

| | Nos. 50 | 55 | 60 | 65 |
|---|---|---|---|---|
| *Jap'd Caps* | .86 | 93 | 96 | 93 |
| *Tin'd Caps* | .91 | 88 | 1.01 | 98 |

*New England Pressing..lb.3¾@4¢*

### Bar and Corner—

Richards Mfg. Co., Bar, 60&10%; Corner .....60%

### Pinking—

*Pinking Irons.....doz.60@65¢*

### Irons, Soldering

See *Coppers.*

### Jacks, Wagons—

Covert Mfg. Co.:
Auto Screw.....30&2%; Steel, 15%
Lockport .....50%
Lane's Steel.....30&5%
Richards' Tiger Steel, No. 130...50&10%
Smith & Hemenway Co.'s.....25%

### Ladder—

Richards Mfg. Co., Ladder Jacks..50%

### Jointers—

Pike Mfg. Co., Saw Jointers, $7.00..40%

### Kettles—

*Brass, Spun, Plain.....20@25%*
Enameled and Cast Iron—See Ware, Hollow.

### Knives—

### Butcher, Kitchen, &c.—

Foster Bros.' Butcher, &c.....30%
Wilkinson Shear & Cutlery Co....60%

### Corn—

Columbian Cutlery Co., Wilcut Brand Knives and Hooks.....60%
Withington Acme, ₱ doz., $2.65; Dent, $2.75; Adj. Serrated, $2.20; Serrated, $2.10; Yankee No. 1, $1.50; Yankee No. 2, $1.15.

### Drawing—

*Standard List.....80&10@—%*
C. E. Jennings & Co., Nos. 45, 46. 25&7½%
Jennings & Griffin, Nos. 41, 42, 66⅔&7½%
Swan's .....66⅔@70%
Watrous .....16⅔%
L. & I. J. White.....20&5@25%

### Hay and Straw—

*Serrated Edge, per doz.$5.00@5.50*
Iwan's Sickle Edge.....₱ doz. $9.50
Iwan's Serrated.....₱ doz. $10.00

### Miscellaneous—

*Farriers' .....doz.$2.60@3.55*
Wostenholm's .....₱ doz. $3.00@3.25

### Knobs—

*Base, 2½-inch, Birch or Maple, Rubber Tip.....gro.$1.25@1.40*
*Carriage, Jap., Drive, all sizes, gro.35@40¢*
*Door, Mineral.....doz.65@70¢*
*Door, Por. Jap'd.....doz.70@75¢*
*Door, Por. Nickel..doz.$2.05@2.15*
Bardsley's Wood Door, Shutters, &c.15%

### Lacing, Leather—

See *Belting, Leather*

### Ladders, Store, &c.—

Lane's Store.....25%
Myers' Noiseless Store Ladders....50%
Richards Mfg. Co.:
Improved Noiseless, No. 112.....50%
Climax Shelf, No. 113.....50%
Trolley, No. 109.....50%

### Ladles, Melting—

L. & G. Mfg. Co., Melting and Plumbers' .....25%
P., S. & W.....40&10%
Reading .....60%

### Lamps,—

Hammer's M. I. Hand.....45%

### Lanterns—Tubular—

*Regular, No. 0.....doz.$4.35@4.50*
*Side Lift, No. 0....doz.$4.60@4.75*
*Hinge Globe, No. 0.doz.$4.60@4.75*
*Other Styles.....40@40&10%*

### Bull's Eye Police—

*3-inch .....$3.75@4.00*

### Latches— Thumb—

*Roggin's Latches, Jap'd, with Screws .....doz.35@40¢*

### Door—

Cronk & Carrier Mfg. Co., No. 101, ₱ doz. $2.00
Richards' Bull Dog, Heavy, No. 125 .....50&5%
Richards' Trump, No. 127.....$1.50

### Leaders, Cattle—

*Small.....doz.50¢; large, 60¢*
Covert Mfg. Co.:
Cotton, 45%; Hemp, 45%; Jute, 35%; Sisal, 20%.

### Leathers, Pump—

See *Pumps—*

### Lifters, Transom—

R. & E.....10%

### Lines—

| *Wire Clothes, Nos.* | *18* | *19* | *20* |
|---|---|---|---|
| *100 feet* | *$2.30* | *1.95* | *1.75* |
| *75 feet* | *$1.95* | *1.65* | *1.50* |

Samson Cordage Works:
Solid Braided Chalk, Nos. 0 to 3..40%
Solid Braided Masons'.....30%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50.....₱ gr. 20%
Masons' Lines, Shade Cord, &c.; White Cotton, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50; Colors, No. 3½, $1.75; No. 4, $2.25; No. 4½, $2.75; Linen, No. 3½, $2.50; No. 4, $3.50; No. 4½, $4.50.....20%
Tent and Awning Lines: No. 5, White Cotton, $7.50; Drab Cotton, $8.50 .....20%
Clothes Lines, White Cotton: 50 ft., $2.75; 60 ft., $3.25; 70 ft., $3.75; 75 ft., $4.00; 80 ft., $4.25; 90 ft., $4.75; 100 ft., $5.25.....20%
Turner & Stanton Co.:
Solid Braided Chalk, Masons' and Awning Lines.....40%
Clothes Lines, White Cotton....20%
Shade Cord, Cotton or Linen....20%

### Locks— Cabinet—

*Cabinet Locks....33⅓@33⅓@5%*

### Door Locks, Latches, &c

*NOTE.—Net Prices are very often made on these goods.*
Reading Hardware Co.....40
R. & E. Mfg. Co.....10%

### Padlocks—

R. & E. Mfg. Co. Wrought Steel and Brass .....75&10%

### Sash, &c.—

Ives' Patent:
Crescent .....10%
Automatic Gravity Metal Sash, ₱ gro., $13.58.....10%
Window Ventilating.....10%
Pullman Patent Ventilating Lock..25%
Reading Sash Locks .....40%
Taylor Mfg. Co., Perfect Ventilating, ₱ doz.....$0.75@$1.00

### Machines—Boring—

*Com. Upr't, without Augers, $2.00@2.25*
*Com. Angl'r, without Augers, $2.25@2.50*
Ford Auger Bit Co.....$22.00
Jennings', Nos. 1 and 4.....25&7½%
Millers' Falls.....5.75
Snell's, Upright, $2.65; Angular, $2.90
Swan's Improved.....40&10%

### Corking—

Reisinger Invincible Hand Power... ₱ doz. $48.00

### Fence—

Williams' Fence Machines....each, $5.50

### Hoisting—

Moore's Anti-Friction Chain Hoist.30%
Moore's Hand Hoist, with Lock Brake .....20%
Moore's Cyclone High Speed Chain Hoist .....25%

### Ice Cutting—

Chandler's .....12½%

### Washing

| Boss Washing Machine Co.: | Per doz. |
|---|---|
| Boss No. 1 | $57.00 |
| Boss Rotary | $57.00 |
| Champion Rotary Banner No. 1 | $57.00 |
| Standard Champion No. 1 | $50.00 |
| Standard Perfection | $27.00 |
| Cincinnati Square Western | $33.00 |
| Uneeda American, Round | $33.60 |

### Mailets—

*Hickory .....45&5@50%*
*Lignumvitæ .....45&5@50%*
*Tinners' Hickory and Applewood .....doz.45&5@50%*

### Mangers, Stable—

Swett Iron Works.....50%

### Mats, Door—

Acme Flexible Steel.....50%
Elastic Steel (W. G. Co.), new list.50%

### Mattocks—

See *Picks and Mattocks.*

### Milk Cans—See *Cans, Milk.*

### Mills, Coffee, &c.—

Enterprise Mfg. Co.:
Coffee .....20@25%
Shell and Corn.....25&10%
National list Jan. 1, 1902.....30%
Parker's Columbia and Victoria..33⅓%
Parker's Box and Side.....50&10%
Swift, Lane Bros. Co.....30%

### Motors, Water—

Divine's Red Devil.....30%

| $2.50 | 3.50 | 10.00 | 15.00 | |
|---|---|---|---|---|
| No. 1. | 2 | 3 | 4 | |
| Lippincott's: | | | | |
| No..... | 1 | 2 | 3 | 4 |
| | $2.50 | 3.50 | 10.00 | 15.00..33⅓% |

Pike Mfg. Co., Tool and Knife Grinding .....33⅓%

### Mowers, Lawn—

*NOTE.—Net prices are generally quoted Cheapest, 10-in., $2.00; advance 10¢ for each size.*
*Cheap, 10-in., $2.25; advance 15@20¢ for each size.*
*Better Grade, 10-in., $3.00; advance 25¢ for each size.*

| | *12* | *14* | *16* | *18-in.* |
|---|---|---|---|---|
| *High Grade* | *$4.50* | *4.75* | *5.00* | *5.25* |

Continental .....60%
Great American.....70%
Great American Ball B'r'g, new list.70%
Quaker City.....70%
Pennsylvania .....60%
Pennsylvania, Jr., Ball Bearing, 50&10&5%
Pennsylvania Golf.....50%
Pennsylvania Horse.....33⅓&5%
Pennsylvania Pony.....40&5%
Philadelphia:
Styles M., S., C., K., T....70&10&5%
Style A, all Steel.....60&10&5%
Style E, High Wheel.....70&10&5%
Drexel and Gold Coin, special list.40%
Horse .....40&5%
Pony .....40&5%
36-in. Horse.....30&10%
Eagle Horse.....30&5%
I. X. L. Horse.....50%

### Nails—

*Wire Nails and Brads, Miscellaneous .....85&5@85&10%*
*Cut and Wire.* See *Trade Report.*
*Hungarian, Finishing, Upholsterers', &c.* See *Tacks.*

### Horse—

| Nos. | 6 | 7 | 8 | 9 | 10 | |
|---|---|---|---|---|---|---|
| Anchor | 23 | 21 | 20 | 19 | 18 | .. ₱ lb. net, 12¢ |
| Coleman | 13 | 12 | 12 | 11 | 11 | net ₱ lb |
| New Haven | 23 | 21 | 20 | 19 | 18 | .. ₱ lb. net, 12¢ |
| Livingston | 19 | 18 | 17 | 16 | 16 | .....10% |
| Western | | | | | | ₱ lb 8½¢ |

*Jobbers' Special Brands, per lb .9¢*

### Picture—

| | *1½* | *2* | *2½* | *3 in.* |
|---|---|---|---|---|
| *Brass Hd. gro.* | *.55* | *.55* | *.60* | *.70* |
| *Por. Head, gro.* | *1.10* | *1.10* | *1.10* | |

### Upholsters—

*Brass .....30%*
*Plated .....30&10%*

### Nippers—

See *Pliers and Nippers.*

### Nipples—

Standard Nipple Co.:
Wrought Pipe Nipples.....80%

### Nuts — *Blank or Tapped.*

| *Cold Punched:* | *Off list.* |
|---|---|
| *Square* | *5.40@5.50¢* |
| *Hexagon* | *6.00@6.10¢* |
| *Square, C., T. & R.* | *5.80@5.90¢* |
| *Hexagon, C., T. & R.* | *6.60@6.70¢* |
| *Hot Pressed:* | |
| *Square* | *5.80¢* |
| *Hexagon* | *6.30¢* |

### Oakum—

*Best .....lb.6½¢*
*U. S. Navy.....lb.6 ¢*
*Navy .....lb.5 ¢*
*Plumbers' Spun Oakum..2¾@3 ¢*

### Oil—

Pike Mfg. Co., Stonoil.....40%

### Oil Tanks—See *Tanks, Oil.*

### Oilers—

*Steel, Copper Plated.....75%*
*Chase or Paragon:*
*Brass and Copper.....50&10%*
*Zinc .....65&10%*
*Railroad .....60&10&10%*
Malleable, Hammers' Improved, Nos. 11, 12 and 13, 10%; Old Pattern, Nos. 1, 2, 3, 4, 50%.
American Tube & Stamping Co.:
Spring Bottom Cans.....70@70&10%
Railroad Oilers, &c.....60@60&10%
Maple City Mfg. Co.:
Spring Bottom Cans.....70@70&10%
Railroad Oilers, &c.....60@60&10%

### Openers—Packing Box—

Herculever, ₱ doz., $24.....30%

### Can Openers—

*Per doz.*
*Sprague, Iron Handle....30@35¢*
*Sprague, Wood Handle.....40¢*
*Sardine Scissors.....$1.75@3.00*
Can and Bottle Openers, ₱ doz., net: Yankee, $0.75@$0.85; Little Gem, $0.50@$0.65; Nifty.....$0.75

### Egg—

Hartigan Nickel Plate, ₱ doz., $2.00; Silver Plate, $4.00.

### Packing—

*Asbestos Packing, Wick and Rope, any quantity.....18@20¢*

### Rubber—

*(Fair quality goods.)*
*Sheet, C. I.....11@12¢*
*Sheet, C. O. S.....11@12¢*
*Sheet, C. B. S.....12@13¢*
*Sheet, Pure Gum.....40@45¢*
*Sheet, Red.....40@50¢*
Jenkins' '96, ₱ lb, 80¢.....25%

### Miscellaneous—

*American Packing....lb. 7@10 ¢*
*Cotton Packing.....lb. 16@25 ¢*
*Italian Packing.....lb. 9@10¢*
*Jute .....lb. 4@4¼¢*
*Russia Packing.....lb. 9@10¢*

### Pails, Water, Well, &c.—

See *Buckets.*

### Paint—

Dixon's Silica-Graphite, in 1 gal. pails and 5 gal. kegs, 25%; packages of larger size.....20%

### Pans— Dripping—

*Standard List...70&10@70&10&5%*
Edwards, Royal Blue.....75%

### Fry—

*Common Lipped:*

| *Nos.* | *1* | *2* | *3* | *4* | *5* |
|---|---|---|---|---|---|
| *Per doz.* | *$0.75* | *0.85* | *0.95* | *1.15* | *1.30* |

### Refrigerator, Galva.—

| *Inch* | *12* | *14* | *16* | *18* |
|---|---|---|---|---|
| *Per doz.* | *$1.75* | *2.25* | *2.80* | *3.15* |

### Paper—Building Paper

*Asbestos: lb.*
*Roll Board or Building Felt, 6 to 30 lb., per 100 sq. ft..2½¢*
*Roll Board or Building Felt, 3-32 and ⅛ in., 45 to 60 lb., per 100 sq. ft.....3½¢*
*Mill Board, Sheet, 40 x 40 in., 1-32 to ½ in.....3¢*
*Per roll.*
*Rosin Sized Sheathing: 500 sq. ft. Light weight, 25 lbs. to roll, 48@58¢*
*Medium weight, 30 lbs. to roll, 56@70¢*
*Heavy weight, 40 lbs. to roll, 75@78¢*
*Black Water Proof Sheathing, 500 sq. ft., 1 ply, 65¢; 2 ply, 85¢; 3 ply, $1.10; 4 ply, $1.25.*
*Deafening Felt, 9, 6 and 4½ sq. ft. to lb., ton.....$54.50*
*Red Rope Roofing, 250 sq. ft. per roll.....$1.75*

### Tarred Paper—

*1 ply (roll 400 sq. ft.), ton, $34.00@$38.00*
*2 ply, roll 108 sq. ft.....65¢*
*3 ply, roll 108 sq. ft.....88¢*
*Slater's Felt (roll 500 sq. ft.).80¢*

### Sand Paper and Cloth—

*Flint and Emery.....50&10%*
*Garnet Paper and Cloth.....25*

### Parers—Apple—

Goodell Co.:
Family Bay State .....₱ doz. $15.00
Improved Bay State .....₱ doz. $36.00
New Lightning.....₱ doz. $7.00
Turn Table '98.....₱ doz. $6.00
White Mountain.....₱ doz. $5.00
Bonanza Improved.....each $7.50
Dandy .....each $10.00
Eureka Improved.....each $20.00
New Century .....each $20.00
Ranger .....each $30.00
Livingston Nail Co.:
Daisy .....₱ doz. $4.00
Little Star.....₱ doz. $5.00
Rocking Table .....₱ doz. $6.20
Reading Hardware Co.:
Advance .....₱ doz. $1.00
Baldwin .....₱ doz. $1.00
Reading 72 .....₱ doz. $3.25
Reading 78 .....₱ doz. $6.25

### Orange—

Goodell Co., Success .....each $20.00

### Potato—

Saratoga .....₱ doz. $7.00
White Mountain.....₱ doz. $6.00

### Picks and Mattocks—
*(List Jan., 1908.)*

*List* .....70&10@70&10&10%
Cronk's Handled Garden Mattock, ℔ doz., $3.00.....33⅓%

### Pinking Irons—
See *Irons, Pinking.*

### Pins, Escutcheon—
*Brass* .....50@50&10%
*Iron, list Nov. 11, '85*..60@60&10%

### Pipe, Cast Iron Soil—
*Standard, 2-6 in*.....70@—%
*Extra Heavy, 2-6 in*..75&10@—%
*Fittings, Standard and Heavy,* 80&10@80&10&10%

### Pipe, Merchant—

| | Consumers, Steel. Blk. | Galv. | Carloads, Iron. Blk. | Galv. |
|---|---|---|---|---|
| | % | % | % | % |
| ⅛ and ¼ in. | 66 | 50 | 64 | .. |
| ⅜ in. | 68 | 54 | 66 | 52 |
| ½ in. | 70 | 58 | 68 | 56 |
| ¾ to 6 in. | 74 | 64 | 72 | 62 |
| 7 to 12 in. | 71 | 56 | 69 | 54 |

### Pipe, Vitrified Sewer—
*Carload lots.*
*Standard Pipe and Fittings, 3 to 24 in., f.o.b. factory:*
*First-class* .....87%
*Second-class* .....90%

### Pipe, Stove—

| | Per 100 joints. C. L. | L. C. L. |
|---|---|---|
| Edwards' Nested: | | |
| 5 in., Standard Blue | $6.25 | $7.25 |
| 6 in., Standard Blue | 6.75 | 7.75 |
| 7 in., Standard Blue | 7.75 | 8.75 |
| 5 in., Royal Blue | 7.00 | 8.00 |
| 6 in., Royal Blue | 7.50 | 8.50 |
| 7 in., Royal Blue | 8.50 | 9.50 |
| Wheeling Corrugating Co.'s Nested: | | |
| 5 in., Uniform Color | $5.90 | $6.90 |
| 6 in., Uniform Color | 6.40 | 7.40 |
| 7 in., Uniform Color | 7.40 | 8.40 |

### Planes and Plane Irons—
### Wood Planes—
*Bench, first qual*.....30@30&10%
*Bench, second qual*...40@40&10%
*Molding* .....25@25&10%
Chapin-Stephens Co.:
Bench, First Quality.....30%
Bench, Second Quality.....40%
Molding and Miscellaneous.....25%
Toy and German.....30%
Union .....60%

### Iron Planes -
Chaplin's Iron Planes.....60%
Union .....60%

### Plane Irons—
*Wood Bench Plane Irons, list Dec. 12, '06*.....25%
Buck Bros.....30%
Chapin-Stephens Co.....25%
Union .....50%
L. & I. J. White.....20&5@25%

### Planters, Corn, Hand—
Kohler's Eclipse.....℔ doz. $7.50

### Plates—
*Felloe* .....lb. 3¾@4¢
Avery Stamping Co.:
Standard Wrot. Steel Felloe Plates in 100 lb kegs, per 100 lb, ¾-in. to 1⅛-in., $4.00 net; 1¼-in. to 2-in., inclusive, $3.75 net.

### Steel Pipe Hook—
Never-Break .....75&10%

### Pliers and Nippers -
*Button Pliers*....75&5@75&10&5%
*Gas Burners, per doz., 5 in., $1.25 @$1.30; 6 in., $1.45 $1.50.*

| Gas Pipe.. | 7 | 8 | 10 | 12-in. |
|---|---|---|---|---|
| | $2.00 | $2.25 | $2.75 | $3.50 |

Acme Nippers.....50&5%
Cronk & Carrier Mfg. Co.:
American Button.....80%
Improved Button.....75&10%
Cronk's .....60%
No. 80 Linemen's.....50%
Stub's Pattern.....45%
Combination and others.....33⅓%
Heller's Farriers' Nippers, Pincers and Tools.....40&5@40&10&5%
P., S. & W. Tinners' Cutting Nippers .....40%
Swedish Side, End and Diagonal Cutting Pliers.....50%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds....40%

### Plumbs and Levels—
Chapin-Stephens Co.:
Plumbs and Levels.....30@30&10%
Chapin's Imp. Brass Cor..40@40&10%
Pocket Levels.....30@30&10%
Extension Sights.....30@30&10%
Machinists' Levels.....40@40&10
Disston's Plumbs and Levels....60&10%
Disston's Pocket Levels.....60&10%
Stanley's Dulex.....35%
Woods' Extension.....33⅓%

### Points, Glaziers'—
*Bulk and 1-lb. papers*....lb. 9 ¢
*½ lb. papers*.....lb. 9½¢
*¼ lb. papers*.....lb. 10 ¢

### Police Goods—
*Manufacturers' Lists*...25@25&5%
Tower's .....25%

### Polish—Metal, Etc—
Ladd Co.:
Putzade Liquid, ℔ gro., ½ pts., $12.00; 1 pts., $20.00; 1 qts., $40.00; ℔ doz., ½ gals., $6.35; 1 gals., $12.00.
Prestoline Liquid, No. 1 (½ pt.), ℔ doz., $3.00; No. 2 (1 qu.), $9.00..40%
Prestoline Paste.....40%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, ℔ doz. 50¢; ℔ gro. $4.50; ½ lb boxes, ℔ doz. $1.25; 1 lb boxes, ℔ doz. $2.25.
U. S. Liquid, 8 oz. cans, ℔ doz., $1.25.
Barkeepers' Friend Metal Polish, ℔ doz., $1.75.

### Stove—
Black Eagle Benzine Paste, 5 lb cans, ℔ lb 10¢
Black Eagle, Liquid, ½ pt. cans.. ℔ doz. 75¢
Black Jack Paste, ¾ lb cans. ℔ gr. $9.00
Black Kid Paste, 5 lb can...each, $0.65
Ladd's Black Beauty Liquid, per 100 tins.....$6.75
Joseph Dixon. ℔ gr. $5.75.....10%
Dixon's Plumbago.....℔ lb 8¢
Fireside .....℔ gr. $2.50
Gem, ℔ gr. $4.50.....10%
Japanese .....℔ gr. $3.50
Jet Black.....℔ gr. $3.50
Peerless Iron Enamel, 10 oz. cans.. ℔ doz. $1.50

### Window Polish—
Benj. P. Forbes:
Glasbright, No. 2, gal pails, ℔ doz., $24.00; each, $2.50; 1 lb cans, each .....75¢
Glasbright Powder, bbls., ℔ lb..20¢

### Poppers, Corn—
*1 qt. Square..doz.$0.80; gro.$8.75*
*1 qt. Round..doz.$0.90; gro.$10.00*
*1½ qt. Square.doz.$1.20; gro.$12.00*
*2 qt. Square..doz.$1.50; gro.$15.00*

### Post Hole and Tree Augers and Diggers—
See also *Diggers, Post Hole, &c.*

### Posts, Steel—
Steel Fence Posts, each, 6 ft., 46¢; 6½ ft., 48¢; 7 ft., 50¢.
Steel Hitching Posts.....each $1.50

### Potato Parers—
See *Parers, Potato.*

### Pots, Glue—
*Enameled* .....40%
*Tinned* .....30&10%

### Powder—
*In Canisters:*
*Duck, 1 lb*.....each 45¢
*Fine Sporting, 1 lb*....each 75¢
*Rifle, ¼-lb*.....each 15¢
*Rifle, 1 lb*.....each 25¢
*In Kegs:*
*12½-lb. kegs*.....$3.50
*25-lb. kegs*.....$4.50
King's Semi-Smokeless:
Keg (25 lb bulk).....$6.50
Half Keg (12½ lb bulk).....$3.50
Quarter Keg (6¼ lb bulk).....$1.90
Case 24 (1 lb cans bulk).....$8.50
Half case (1 lb cans bulk).....$4.50

| King's Smokeless: | Shot Gun. | Rifle. |
|---|---|---|
| Keg (25 lb bulk) | $12.00 | $15.00 |
| Half Keg (12½ lb bulk) | 6.25 | 7.75 |
| Quarter Keg (6¼ lb bulk) | 3.25 | 4.00 |
| Case 24 (1 lb cans bulk) | 14.00 | 17.00 |
| Half case 12 (1 lb c, bk) | 7.25 | 8.75 |

### Presses—
### Fruit, Wine and Jelly—
Enterprise Mfg. Co.....20@25%
### Seal Presses—
Morrill's No. 1, ℔ doz., $20.00.....50%

### Pruning Hooks and Shears
See *Shears.*

### Pullers, Nail, Etc.—
Cyclops .....50%
Miller's Falls, No. 3, ℔ doz., $12.00.. 33⅓&10%
Morrill's No. 1, Nail Puller, ℔ doz. $20.00 .....50%
Pearson No. 1, Cyclone Spike Puller, each $30.00.....50%
The Scranton Co. Case Lots:
No. 2B (large).....$5.50
No. 3B (small).....$5.00
Smith & Hemenway Co.:
Diamond B.....70%
Giant .....50%
Staple Pullers, Utica and Davison .....60%
Taylor Mfg. Co., Sampson Tack, ℔ doz.....$0.40

### Pulleys, Single Wheel—

| Inch | 1½ | 1¾ | 2 | 3 |
|---|---|---|---|---|
| *Awning or Tackle, doz* | $0.30 | .45 | .60 | 1.05 |
| *Hay Fork, Swivel or Solid Eye, doz., 4 in., $1.25; 5 in., $1.55* | | | | |
| *Inch* | 2 | 2¼ | 2½ | |
| *Hot House, doz* | $0.65 | .85 | 1.20 | |
| *Inch* | 1¼ | 1½ | 1¾ | 2 |
| *Screw, doz* | $0.16 | .19 | .23 | .30 |
| *Inch* | 1¾ | 2 | 2¼ | 2½ |
| *Side, doz.* | $0.25 | .40 | .55 | .60 |
| *Inch* | 1½ | 1¾ | 2 | 2½ |

### Sash Pulleys—
*Common Frame; Square or Round End, per doz., 1¾ and 2 in*.....17@20¢
*Auger Morise, no Face Plate, per doz., 1¾ and 2 in*....20@21¢
Acme, No. 35..1¾ in. 19¢; 2 in., 20½¢
American Pulley Co.:
Wrought Steel American Plain Axle .....50&10%
Wrought Steel Eagle.....17@20¢
Top Notch, Electrically Welded, Nos. 3 and 4.....19¢
Common Sense.....℔ doz. 20¢
Fox-All-Steel, Nos. 3 and 7, 2 in.... ℔ doz. 50%
Grand Rapids All Steel Noiseless..50%
Niagara, No. 25, 1¾ in., 19¢; 2 in. .....20½¢
No. 26 Troy..1¾ in., 14½¢; 2 in., 16½¢
Star, No. 26... 1¾ in., 19¢; 2 in., 20½¢
Tackle Blocks—See Blocks.

### Pumps—
*Cistern* .....60%
*Pitcher Spout*.....75&5@75&10%
*Wood Pumps, Tubing, &c*....50%
Barnes Dbl. Acting (low list).....45%
Barnes Pitcher Spout.....80%
Contractors' Rubber Diaphragm, No. 2, B. & L. Block Co.....$16.00
Daisy Spray Pump.....℔ doz. $6.50
Flint & Walling's Fast Mail Hand (low list).....50&5%
Flint & Walling's Fast Mail (low list) .....50&5%
Flint & Walling's Tight Top Pitcher .....80%
National Specialty Mfg. Co., Measuring, Nos. 2, $6.00; 3, $5.50.....30%
Myers' Pumps (low list).....
Myers' Power Pumps.....
Myers' Spray Pumps..... } 50%

### Pump Leathers—
*Plunger and Valve Leathers—Per gro.:*

| No. | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| | $5.00 | 6.00 | 7.00 | 8.00 |

*Cup Leathers—Per 100:*

| Inch | 2½ | 3 | 3½ | 4 |
|---|---|---|---|---|
| | $5.00 | 7.00 | 9.00 | 12.00 |

} 30%

### Punches—
*Saddlers' or Drive, good, doz.*.....50@75¢
*Spring, single tube, good quality* .....$1.75
*Revolving (4 tubes)*....*doz.$3.50*
Bemis & Call Co.'s Cast St'l Drive.50%
Morrill's Nos. 1AA, 1A, 1B, 1C, 1D, $15.00.....50%
Hercules, 1 die, each $5.00.....50%
Niagara Hollow Punches.....40%
Niagara Solid Punches.....55&10%
Tinners' Hollow, P., S. & W. Co..40%
Tinners' Solid, P., S. & W. Co., ℔ doz., $1.44.....40&10%

## Rail—Barn Door, &c.—
*Sliding Door, Painted Iron, 2½@2¾¢*
*Sliding Door, Wrought Brass, 1⅛ in., lb., 36¢*.....30%
Cronk's:
Double Braced Steel Rail..℔ ft. 2¾¢
O. N. T. Rail.....2¾¢
Griffin's:
xxx, ℔ 100 ft., 1 x 3-16 in., $3.25; 1¼ x 3-16 in., $3.75.
Hinged Hanger, ℔ 100 ft., 1 x 3-16 in., $3.50; 1¼ x 3-16 in., $4.00.
Lane's:
Hinged Track, ℔ 100 ft.....$3.45
O. N. T., ℔ 100 ft., 1 in., $3.12½; 1¼ in., $3.45; 1½ in., $4.00.
Standard, 1¼ in.....℔ 100 ft. $4.00
Lawrence Bros.:
1 x 3-16 in., ℔ 100 ft., $7.50; 1¼ x 3-16 in., $8.75.....55&7½%
McKinney's:
Hinged Hanger Track, ℔ ft., 11¢. 60&5%
1 x 3-16 Track.....55&7½%
Myers' Stayon Track.....60&5%
Richards Mfg. Co.:
Common, 1 x 3-16 in., $3.00; 1⅛ x 3-16, $3.25; 1¼ x 3-16, $3.50.
Special Hinged Hanger Rail..60&10%
Lag Screw Rail, No. 65.....50%
Gauge Trolley Track, ℔ ft., No. 31, 9¢; No. 32, 14¢; No. 33, 20¢.
No. 50.....60&10%
Nos. 61, $3.00; 62, $3.25; 63, $3.50; 64, $4.00; 45, $3.25; 46, $3.50; 49, No. 1, $3.25; 49, No. 2, $3.50.

### Rakes—
*NOTE.—Many goods are sold at net prices.*
Fort Madison Red Head Lawn....$3.25
Fort Madison Blue Head Lawn....$2.70
Cronk's:
Steel Garden: Champion, ℔ doz., 12-tooth, $3.75; 14-tooth, $4.00; 16-tooth, $4.25; Ideal, ℔ doz., 12-tooth, $3.00; 14-tooth, $3.30; 16-tooth, $3.60.
Victor, 12-tooth, $2.25; 14-tooth, $2.50; 16-tooth, $2.75.
Queen City Lawn, ℔ doz., 20 teeth, $2.85; 24, $3.00.....net
Anticlog Lawn, ℔ doz.....$4.00
Malleable Garden.....70&10%
Ideal Steel Garden, ℔ doz., 12 teeth, $15.00; 14, $16.00; 16, $18.00.....80%
Kohler's:
Jumbo Lawn, 36-tooth....℔ doz. $5.00
Lawn Queen, 20-tooth....℔ doz. $2.85
Lawn Queen, 24-tooth....℔ doz. $3.00
Paragon, 20-tooth.....℔ doz. $2.65
Paragon, 24-tooth.....℔ doz. $2.75
Steel Garden, 14-tooth....℔ doz. $2.40
Malleable Garden, 14-tooth, ℔ doz. $1.75@2.00

### Rasps, Horse—
Disston's .....75%
Heller Bros.'.....70&5@70&10&5%
Liveright Bros.' Gold Medal.70&10@75%
McCaffrey's American Standard..... 60&10&5%
New Nicholson.....70&10@75%
See also Files.

### Razors—
John Engstrom Swedish.....65%
Sharp Shaver.....60
Fox Razors, ℔ doz. No. 42, $24.00; No. 44, $20.00; No. 82, Platina, $36.00. } Dis. 50%

### Reels, Fishing—
Hendryx:
M 6, Q 6, A 6, B 6, M 9¼, M 16, Q 16, A 16, B 16, 4008, Rubber, Populo, Nickeled Populo.....20%
Aluminum, German Silv., Bronze.25%
1240 N, 124 N.....20%
3004 N, 06 N, 6 RM, G 9.....25%
4 N, 6 PN, 24 N, 26 PN .....20%
2904, P., 33⅓%; 2904 PN., 33⅓%; 0924 N., 33⅓%; 02084 N., 33⅓%; 002904 PN., 33⅓%; 802 N., 33⅓%
986 PN, 2904 N, 974 PN.....25%
5009 PN 5009 N.....20%
Competitor, 102 P, 102 PN, 202 P, 202 PN 102 PR, 202 PR.....20%
304 P, 304 PN, 00304 P, 00304 PN.33⅓%

### Registers—*List July 1, 1903.*
*Japanned, Electroplated and Bronzed* .....70%
*White Porcelain Enamel*..50&10%
*Solid Brass or Bronze Metal*.40%

### Revolvers—
*Single Action*.....95¢@$1.00
*Double Action, except 44 cal.*$2.00
*Double Action, 44 caliber*...$2.00
*Automatic* .....$4.00
*Hammerless* .....$4.50

### Riddles, Hardware Grade
*16 in*.....per doz.$2.50@$2.75
*17 in*.....per doz.$2.75@$3.00
*18 in*.....per doz.$3.00@$3.25

### Rings and Ringers—
### Bull Rings—

| | 2 | 2½ | 3 inch. |
|---|---|---|---|
| *Steel* | $0.70 | 0.75 | 0.80 doz. |
| *Copper* | $1.10 | 1.25 | 1.65 doz. |

### Hog Rings and Ringers—
*Hill's Rings, gro. boxes.$4.50@$4.50*
*Hill's Ringers, Gray Iron, doz., 60@75¢*
*Hill's Ringers, Malleable Iron, doz.80@95¢*
*Blair's Rings..per gro.$5.00@$5.50*
*Blair's Ringers...per doz.75@90¢*

### Rivets and Burrs—
*Copper* .....50@50&10%
*Carriage, Coopers', Tinners', &c.:*
*Black* .....70&10%
*Metallic Tinned*.....70%

### Bifurcated and Tubular—
*Assorted in Boxes.*
*Bifurcated, per doz. boxes, pasteboard boxes, 50 count, 23@25¢; Tin boxes, 100 count, 29@32¢.*
*Tubular, per doz. boxes, 50 count, 29@32¢; 100 count, 51@58¢.*

### Rollers—
Cronk's Stay, No. 50.....$1.00
Cronk's Brinkerhoff No. 55, $0.60; No. 56, $0.75; No. 60.....$0.75
Lane's Stay.....40%
Richards' Stay:
Handy Adj. and Reversible No. 53.75¢
O. K. Adj. and Reversible No. 58.50¢
Lag Screw, Nos. 55 and 57.....50%
Underwriters', Nos. 59, 60.....50%
Favorite, No. 54.....60%

### Rope—
*Manila, 7-16 in. diam. and larger: Pure* .....lb. 9½¢
*Sisal, 7-16 in. diam. and larger: Pure* .....lb. 7¢
*Sisal, Hay, Hide and Bale Ropes, Medium and Coarse: Pure* .....lb. 7½@7¾¢
*Sisal, Tarred, Medium Lath Yarn: Pure* .....lb. 6½@6¾¢
*Cotton Rope: Best, ¼-in. and larger*...18@20¢
*Medium, ¼-in. and larger.16@17¢*
*Common, ¼-in. and larger..10¢*
*In coils, ½¢ advance.*
*Jute Rope: Thread, No. 1, ¼-in. and up, lb.* .....6¼¢
*Thread, No. 2, ¼-in. and up, lb.* .....5¾¢

### Wire Rope—
*Galvanized* .....37½&2½%
*Plain* .....45&2½%

### Ropes, Hammock—
Covert Mfg. Co.:
Jute, 35%; Sisal.....20%

### Rules
*Boxwood* .....60@60&10%
*Ivory* .....35&10@35&10&5%
Chapin-Stephens Co.:
Boxwood .....60%
Flexifold .....40%
Ivory .....25@25&10%
Miscellaneous .....50@50&10%
Stephens' Combination.....55%
Stationers' .....50@50&10%
Keuffel & Esser Co.:
Folding, Wood.....35&10%
Folding, Steel.....33⅓&10%
Lufkin's Steel.....50&10%
Lufkin's Lumber.....50&10%
Upson Nut Co.:
Boxwood .....60@60&10%
Ivory .....35&10@35&10&10%

## Sash Balances—
See *Balance, Sash.*

### Sash Locks—See *Locks, Sash.*

### Sash Weights—
See *Weights, Sash.*

### Sausage Stuffers or Fillers
See *Stuffers or Fillers, Sausage*

### Saw Frames—
See *Frames, Saw.*

### Saw Sets—See *Sets, Saw.*

### Saw Tools—See *Tools, Saw.*

### Saws—

Atkins':
Circular ..... 45%
Band ..... 50@50&10%
Butcher Saws ..... 50%
Cross Cuts ..... 35%
One-Man Cross Cut ..... 40%
Narrow Cross Cut ..... 50%
Hand, Rip and Panel ..... 35&5%
Miter Box and Compass ..... 40%
Mulay, Mill and Drag ..... 45%
Wood Saws ..... 40&10%
Chapin-Stephens Co.:
Turning Saws and Frames. 30@30&10%
Diamond Saw & Stamping Works:
Sterling Kitchen Saws ... 30&10&10%
Disston's:
Circular, Solid and Ins'ted Tooth. 50%
Band, 2 to 18 in. wide ..... 60%
Band, ¼ to 1¾ ..... 60%
Crosscuts ..... 45%
Narrow Crosscuts ..... 50%
Mulay, Mill and Drag ..... 50%
Framed Woodsaws ..... 25%
Woodsaw Blades ..... 25%
Woodsaw Rods, Tinned ..... 15%
Hand Saws, Nos. 12, 99, 9, 16, d100, D8, 120, 76, 77, 8 ..... 25%
Hand Saws, Nos. 7, 107, 107½, 3, 1, 0, 00, Combination ..... 30%
Compass, Key Hole, &c. ..... 25%
Butcher Saws and Blades ..... 30%
C. E. Jennings & Co.'s:
Back Saws ..... 16⅔%
Butcher Saws ..... 25&7½%
Compass and Key Hole Saws, 33⅓&7½%
Framed Wood Saws ..... 25&7½%
Hand Saws ..... 12½%
Wood Saw Blades ..... 33⅓&7½%
Millers Falls:
Butcher Saws ..... 15&10%
Star Saw Blades ..... 15&10%
Massachusetts Saw Works:
Victor Kitchen Saws ..... 40&10&50%
Butcher Saws Blades ..... 35@40%
Peace & Richardson's Hand Saws. 30%
Simonds':
Circular Saws ..... 45%
Crescent Ground Cross Cut Saws. 30%
One-Man Cross Cuts ..... 40&10%
Gang Mill, Mulay and Drag Saws. 45%
Band Saws ..... 50%
Back Saws ..... 25@25&7½%
Butcher Saws ..... 35@35&7½%
Hand Saws ..... 25@25&7½%
Hand Saws, Bay State Brand .... 45%
Compass, Key Hole, &c. .25@25&7½%
Wood Saws ..... 40&7½%
Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws ..... 50%

### Hack Saw Blades and Frames—

Atkins' Hack Saw Blades A A A .. 25%
Disston's:
Concave Blades ..... 25%
Keystone Blades ..... 35%
Hack Saw Frames ..... 30%
Simonds, 25%; The Best, 35%; Culley ..... 35%
C. E. Jennings & Co.'s:
Hack Saw Frames, Nos. 175, 180 .... 40&7½%
Hack Saws, Nos. 175, 180, complete, 40&7½%
Goodell's Hack Saw Blades .... 40&10%
Griffin's Hack Saw Frames .. 35&5&10%
Griffin's Hack Saw Blades .... 35&5&10%
Star Hack Saws and Blades .... 15&10%
Sterling Hack Saw Blades .. 30&10&5%
Sterling Hack Saw Frames .. 30&10&10%
Sterling Power Hack Saw Machines, each, No. 1, $25.00; No. 2, $30.00 .. 10%
Victor Hack Saw Blades ..... 20%
Victor Hack Saw Frames ..... 40%
Whitaker Mfg. Co.:
National Hand Blades, Hand Frames, Power Blades ..... 40%

### Scroll—

Barnes, No. 7, $15 ..... 25%
Barnes' Scroll Saw Blades ..... 40%
Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20 ..... 20%
Lister, complete, $10.00 ..... 15&10%
Rogers, complete, $3.50 and $4.00 .. 15&10%

### Scales—

*Union Platform, Plain. $2.10@2.20*
*Union Platform, Stpd. $2.20@2.30*
Chatillon's:
Eureka ..... 25%
Favorite ..... 40%
Grocers' Trip Scales ..... 50%
The Standard Portables ..... 40%
The Standard R. R. and Wagon ..... 50&10%

### Scrapers—

*Bor. 1 Handle ..... doz. $1.85@2.10*
*Bor. 2 Handle ..... doz. $2.35@2.50*
*Ship ... Light, $2.00; Heavy, $4.50*
Chapin-Stephens Co., Box .. 30@30&10
Richards Mfg. Co., Foot ..... 60%

### Screws—Bench and Hand

*Bench, Iron, doz., 1 in., $2.50@3.25; 1¼ $4.00@5.25; 1¼ $3.50@3.75*
*Bench, Wood ..... 20@20&10%*
*Hand, Wood .... 70&10@70&10&10%*
Chapin-Stephens Co., Hand ..... 70@70&10&2½%

### Coach, Lag and Hand Rail—

*Lag, Cone Point ... 80&5@80&10%*
*Coach, Gimlet Point .. 80@80&5%*
*Hand Rail ..... 70&10@75%*

### Jack Screws—

*Standard List ..... 70&10@75%*
Millers Falls ..... 50&10&10%
Swett Iron Works ..... 70@75%

### Machine—

*Cut Tread, Iron, Brass or Bronze:*
*Flat Head or Round Head, 50@50&10%*
*Fillister Head ..... 40@40&10%*
*Rolled Thread, F. H. or R. H., Iron ..... 75&10%*
*F. H. or R. H., Brass, Nos. 8 to 14 ..... 65&10%*

### Set and Cap—

*Set (Iron) ..... 75&10&7½%*
*Set (Steel), net advance over Iron ..... 25%*
*Sq. Hd. Cap ..... 70&10&7½%*
*Hex. Hd. Cap ..... 70&10&7½%*
*Rd. Hd. Cap ..... 50&7½%*
*Fillister Hd. Cap ..... 60&7½%*

### Wood—

*List July 23, 1903.*
*Flat Head, Iron ..... 87½&5@.. %*
*Round Head, Iron .... 85&5@.. %*
*Flat Head, Brass ..... 80&5@.. %*
*Round Head, Brass .. 77½&5@.. %*
*Flat Head, Bronze .... 75&5@.. %*
*Round Head, Bronze . 72½&5@.. %*
*Drive Screws ..... 87½&5@.. %*

### Scroll Saws—

See *Saws, Scroll.*

### Scythes—

*Per doz.*

*Grass, No. 1, Plain ..... $7.00*
*Clipper, Bronzed Webb ..... $7.25*
*No. 3 Clipper, Pol'd Webb ... $7.50*
*No. 6 Clipper and Solid Steel. $7.75*
*Bush, Weed and Bramble, Nos. 11, 12 and 13 ..... $7.25*
*Grain, No. 1 ..... $9.00@9.50*
*Bronzed Webb, No. 1 ... $9.25@9.75*
*Nos. 3 and 4 Clipper, Grain, $9.50@10.00*
*Solid Steel, No. 6 .... $10.00@10.50*

### Seeders, Raisin—

Enterprise ..... 25@30%

### Sets— Awl and Tool—

Fray's Tool Handles, Nos. 1, $12; 2, $16; 3, $12 ..... 50%
Millers Falls Adj. Tool Handles, No. 1, $12; No. 4, $12; No. 5, $18 .. 20&10%

### Garden Tool Sets—

Ft. Madison Three Plows, Hoe, Rake and Shovel ..... ℔ doz. sets $9.00

### Sets, Nail—

*Octagon ..... gro. $3.50@3.75*
Buck Bros. ..... 27½%
Mayhew's ..... ℔ gro. $9.00
Snell's Corrugated, Cup Pt .... 40&10%
Snell's Knurled, Cup Pt ..... 40&10%
Victor Knurled, Cup Pt .... ℔ gro. $7.50

### Rivet—

*Regular list ..... 75@75&10%*

### Saw—

Atkin's:
Criterion ..... 40%
Adjustable ..... 40%
Disston's Star, Monarch and Triumph ..... 30%
Morrill's No. 1 ..... $15.00 } 50%
Nos. 3 and 4, Cross Cut .... $20.60 } 50%
No. 5, Mill ..... $30.00 } 50%
Nos. 10, 11, 95 ..... $15.60 } 50%
No. 1 Old Style ..... $10.00 } 50%
Special ..... $16.25 } 50%
Giant Royal Cross Cut ..... ℔ doz. $7.50
Royal, Hand ..... ℔ doz. $4.50
Taintor Positive ..... ℔ doz. $6.75

### Shaving—

Fox Shaving Sets, No. 30 ..... ℔ doz., net, $24.00
Smith & Hemenway Co.'s ..... 75%

### Sharpeners, Knife—

Pike Mfg. Co.:
Fast Cut Pocket Knife Hones, ℔ doz. ..... $1.50 } 50%
Mounted Kitchen Sand Stone, ℔ doz. ..... $1.50 } 50%
Natural Grit Carving Knife Hones, ℔ doz. ..... $3.00 } 50%
Quick Cut Emery Carving Knife Hones, ℔ doz. ..... $1.50 } 50%
Quick Edge Pocket Knife Hones, ℔ doz. ..... $2.50 } 50%

### Skate—

Smith & Hemenway Co., Eureka .. 50%

### Shaves, Spoke—

*Iron ..... doz. $1.25*
*Wood ..... doz. $2.00*
Bailey's (Stanley R. & L. Co.) ..... 45%
Chapin-Stephens Co. ..... 30@30&10%
Goodell's, ℔ doz. $9.00 ..... 15&10%

### Shears—

| *Cast Iron..* | *7* | *8* | *9 in.* |
|---|---|---|---|
| *Best* | *$16.00* | *18.00* | *20.00 gro.* |
| *Good* | *$13.00* | *15.00* | *17.00 gro.* |
| *Cheap* | *$5.00* | *6.00* | *7.00 gro.* |

*Straight Trimmers, &c.:*
*Best quality Jap .... 70@70&10%*
*Best quality Nickel .. 60@60&10%*
*Tailors' Shears ..... 40@40&10%*
Acme Cast Shears ..... 40@40&5%
Heinisch's Tailor's Shears ..... 10%
National Cutlery Co.'s Nickel Plated, 60&10%; Japan Handles ..... 70&10%
Wilkinson Shear & Cutlery Co.:
Sheep, 1900 list ..... 30&10&5%
Grass ..... 50&10%
Horse or Mule ..... 50&10%
J. Wiss & Sons Co.:
Best Quality Jap'd ..... 60&10%
Best Quality Nickeled ..... 50&10%
Tailors' ..... 25%

### Tinners' Snips—

*Steel Blades ..... 80&5@20&10%*
*Steel Laid Blades ..... 40&10@50%*
Acme Cast Snips ..... 40@45&5%
Forged Handles, Steel Blades, Berlin ..... 50%
Heinisch's Snips ..... 40%
Jennings & Griffin Mfg. Co.'s 6½ to 10 in. ..... 33⅓&7½%
National Cutlery Co.'s Forged Steel. 50%
Niagara Snips ..... 40%
P., S. & W. Forged Handles, 25%; W. R. W. ..... 50%
J. Wiss & Sons Co.:
Wiss Forged Steel ..... 25%

### Pruning Shears—

Cronk's Hand Shears ..... 33⅓%
Cronk's Wood Handle Shears .... 33⅓%
Disston's Combined Pruning Hook and Saw, ℔ doz. $18.00 ..... 25%
Disston's Pruning Hook only, ℔ doz., $12.00 ..... 25%
J. T. Henry Mfg. Co.:
Pruning Shears, all grades ..... 40%
P., S. & W. Co. ..... 40&10%
Columbian Cutlery Co.:
Hedge, Wilcut Brand ..... 60&10%
Lawn and Border, Wilcut Brand, 60&10%

### Sheaves—Sliding Door—

Reading ..... 40%
R. & E. list ..... 15%

### Sliding Shutter—

Reading list ..... 40%
R. & E. list ..... 15%

### Shells—Shells, Empty—

Brass Shells, Empty:
Climax, 10 and 12 gauge ..... 60&5%
Club, Rival, 65&5%; First Quality, 60&5%
Paper Shells, Empty:
New Rapid, 10, 12, 16 and 20 gauge, 25&10%
Climax, 10 and 12 gauge; Acme and Magic, 10, 12, 16 and 20 gauge; Ideal, 10, 12, 16 and 20 gauge; Leader grade ..... 25&5%
Union, League, 10 and 12 gauge, Rival Grade ..... 25%
New Climax, Defiance, 10, 12, 14, 16 and 20 gauge; Climax, 14, 16 and 20 gauge ..... 20%
Challenge, Monarch, 10, 12, 16 and 20 gauge; League, Union, 14, 16 and 20 gauge; Repeater Grade .. 20%

### Shells, Loaded—

*Loaded with Black Powder .. 40%*
*Loaded with Smokeless Powder, medium grade ..... 40&5%*
*Loaded with Smokeless Powder, high grade ..... 40&10&10%*
Union Metallic Cartridge Co.:
New Club, Black Powders ..... 40%
Nitro Club, Smokeless Powders. 40&5%
Arrow, Smokeless Powders. 40&10&10%
Winchester:
Smokeless Repeater Grade ..... 40&5%
Smokeless Leader Grade ... 40&10&10%
Black Powder ..... 40%

### Shingles, Metal— Per Sq.

| Edwards Mfg. Co.: | Painted. | Galv. |
|---|---|---|
| 14 x 20 | $4.25 | $6.00 |
| 10 x 14 | 4.50 | 6.25 |
| 7 x 10 | 4.75 | 6.50 |
| Wheeling Corrugating Co.: | | |
| Dixie, 14 x 20 in. | $4.05 | $5.05 |
| Dixie, 10 x 14 in. | 4.25 | 5.45 |
| Dixie, 7 x 10 in. | 5.25 | 6.70 |

### Shoes, Horse, Mule, &c.—

*F.o.b. Pittsburgh:*
*Iron ..... per keg. $4.10*
*Steel ..... per keg. $3.85*
Burden's, all sizes ..... ℔ keg $3.90

### Shot—

*25-lb. bag.*

*Drop, up to B ..... $1.80*
*Drop, B and larger ..... 2.05*
*Buck ..... 2.05*
*Chilled ..... 2.05*
*Dust ..... 2.30*

### Shovels and Spades—

*Association List, Nov. 15, 1902. 40%*
Avery Stamping Co. ..... 40%

### Snow Shovels—

*Long Handle ..... $3.25@$3.50*
*Wood and Mall, D Handle, $3.75@$4.00*

### Sieves and Sifters—

*Hunter's Imitation, gro .... $9.50*
*Hunter's Genuine, per gro .. $12.00*

### Sifters, Ash—

Acme Ball Bearing Sales Co., Acme Automatic Ash Sifter, each, $3.25; ℔ doz. ..... $39.00

### Sieves, Seamless Metallic

| | *Per dozen.* | | | |
|---|---|---|---|---|
| *Mesh* | *14* | *16* | *18* | *20* |
| *Iron Wire* | *$1.05* | *1.05* | *1.10* | *1.20* |
| *Tinned Wire* | *$1.15* | *1.15* | *1.20* | *1.30* |

### Sieves, Wooden Rim—

*Nested, 10, 11 and 12 Inch.*
*Mesh 18, Nested .... doz. $0.90@1.05*
*Mesh 20, Nested .... doz. $1.00@1.05*
*Mesh 24, Nested .... doz. $1.30@1.40*

### Sinks, Cast Iron—

*Painted, Standard list:*
*12 x 12 to 22 x 36 in ..... 60%*
*20 x 24 to 24 x 50 in ..... 50%*
*24 x 60 to 24 x 120 in ..... 30%*
Barnes' low list ..... 60%

*NOTE.—There is not entire uniformity in lists used by jobbers.*

### Skeins, Wagon—

*Cast Iron ..... 70@75&10%*
*Steel ..... 40@45%*

### Slates, School—

*Factory Shipments.*
*"D" Slates ..... 50@50&10%*
*Eureka, Unexcelled Noiseless .. 60&7 tens.*
*Victor A, Noiseless . 60&4 tens &5%*

### Slaw Cutters—See *Cutters.*

### Snaps, Harness—

*German ..... 40@40&10%*
Covert Mfg. Co.:
Derby, 25%; Yankee, 30&2%; Yankee Roller, 30&2%.
High Grade, 40%; Trojan ..... 40%
Jockey ..... 25%

### Snaths—

*Scythe ..... 60%*

### Snips, Tinners—See *Shears.*

### Spoons and Forks—

### Silver Plated—

*Good Quality ..... 50&10@60&5%*
*Cheap ..... 60@60&10%*
International Silver Co:
1847 Rogers Bros. ..... 40&10%
Rogers & Bro., William Rogers' Eagle Brand ..... 50&10%
Anchor, Rogers Brand ..... 60%
Wm. Rogers & Son ..... 60&10%

### Miscellaneous

*German Silver ..... 60@60&5%*

### Tinned Iron—

*Teas ..... per gro. 50@55¢*
*Tables ..... per gro. $0.90@$1.00*
Atlas Mfg. Co.:
Tea Spoons, ℔ gro. ..... 50¢@55¢
Table Spoons, ℔ gro. ..... $0.90@$1.00

### Springs— Door—

Bardsley's Spring and Check ..... 40%
Chicago (Coil) ..... 40&10%
Gem (Coil) ..... 20%
Pullman Door and Gate ..... 10%
Reliance (Coil) ..... 40&10%
Star (Coil) ..... 35%
Torrey's Rod, 39 in. ..... ℔ doz. $1.00

### Carriage, Wagon, &c.—

| *1¼ in. and Wider:* | *Per 100 lb.* |
|---|---|
| *Black* | *$4.75@$5.00* |
| *Half Bright* | *$4.75@$5.00* |
| *Bright* | *$5.25@$5.50* |

*Painted Seat Springs:*
*1½ x 2 x 26 .... per pair. 45@47¢*
*1½ x 3 x 28 .... per pair. 68@71¢*

### Sprinklers, Lawn—

American Foundry & Mfg. Co.:
Cactus, 65%; Japanese, 70%; National, ℔ doz. ..... $12.00
Enterprise ..... 25@30%
Philadelphia No. 1, ℔ doz. $12; No. 2, $15; No. 3, $20 ..... 30%

### Squares—

*Nickel plated .. } List Jan. 5, 1900.*
*Steel and Iron . } 80@80&5%*
*Rosewood Hdl. Try Square and T-Bevels ..... 60&10&10@70%*
*Iron Hdl. Try Squares and T-Bevels ..... 40&10@40&10&10%*
Disston's Try Squares and Bevels, Rosewood Handle, 60 & 10%; Iron Stock and Bevel ..... 15%

### Squeezers, Lemon

*Wood, Porcelain Lined:*
*Cheap ..... doz. $1.00*
*Good Grade ..... doz. $1.25*
*Tinned Iron ..... doz. $0.75@1.00*
*Iron, Porcelain Lined ... doz. $1.75*
Victor, ℔ gro. ..... $9.00

### Staples—

*Barbed Blind ..... 85&5@85&10%*
*Electricians' ..... 80&10&10@85%*
*Fence Staples, Polished, $2.05; Galvanized ..... $2.35*
*Poultry Netting Staples ..... per lb. 3¼@3½¢*

### Steels, Butchers'—

Dick's ..... 30%
Foster Bros. ..... 30%

### Steelyards— .... 30@30&10%

### Stocks and Dies—

*Blacksmiths' ..... 50@50&10%*
Curtis Rev'ble Ratchet Die Stock .. 25%
Derby Screw Plates ..... 25%
Green River ..... 25%
Lightning Screw Plate ..... 25%
Little Giant ..... 25%
Reece's New Screw Plate ..... 25%

### Stoners, Cherry—

Enterprise ..... 25@30%

### Stones, Axe—

Pike Mfg. Co., Axe Stones (all kinds) ..... 33⅓%

### Glass Cutters' Stones—

Pike Mfg. Co., Glass Cutters Stones and Supplies ..... 40%

### Stones, Oil, &c.—

Pike Mfg. Co., 1907 list: ℔ lb.
Arkansas St., No 1, 3 to 6 in. } 30⅓%
Arkansas St., No 1, 8 to 12 in. } 30⅓%
Arkansas Slips No. 1 } 30⅓%
Lily White Washita, 4 to 8 in. } 30⅓%
Ross Red Washita, 4 to 8 in. } 30⅓%
Washita St., Extra, 4 to 8 in. } 30⅓%
Waconda St., No. 1, 4 to 8 in. } 30⅓%
Washita St., No. 2, 4 to 8 in. } 30⅓%
Lily White Slips } 30⅓%
Ross Red Slips } 30⅓%
Washita Slips, Extra } 30⅓%
Washita Slips No. 1 } 30⅓%
Washita Slips, No. 2 } 30⅓%
Lucba Oil Stones entire list } 33⅓%
Quickcut Emery and Corundum Oil Stone, Double Grit ..... 40%
Quickcut Emery and Corundum Axe Stone, Double Grit ..... 33⅓%
Quickcut Emery Rubbing Bricks .. 40%
Hindostan No. 1, R'g'lar. ℔ lb. 8¢ } 33⅓%
Hindostan No. 1 Small ℔ lb 10¢ } 33⅓%
Turkey Oil Stones, Extra, 5 to 8 in. ..... ℔ lb 80¢ } 33⅓%
Queer Creek Stones, 4 to 8 in. 20¢ } 33⅓%
Queer Creek Slips ..... 40¢ } 33⅓%
Sand Stone ..... 6¢ } 33⅓%

### Scythe Stones—

Pike Mfg. Co., 1907 list:
Black Diamond S. S. ℔ gro. $12.00
Lamoille S. S. ℔ gro. $11.00
White Mountain S. S. ℔ gro. $9.50
Green Mountain S. S. ℔ gro. $7.00
Extra Indian Pond S. S. ℔ gro. $8.00
No. 1 Indian Pond S. S. ℔ gro. $7.50
No. 2 Indian Pond S. S. ℔ gro. $5.00
Leader Red End S. S. ℔ gro. $5.00
Quick Cut Emery.... ℔ gro. $10.00
Pure Corundum..... ℔ gro. $18.00
Crescent ..... $7.00
Emery Scythe Rifles, 2 Coat. $8.80
Emery Scythe Rifles, 3 Coat. $11.00
Emery Scythe Rifles, 4 Coat. $13.20
} 33⅓%
Balance of 1907 list 33⅓%.
Lectro (Artificial), ℔ gro., $12.00 33⅓%
$12.00 ..... 33⅓%
Lightning (Artificial), ℔ gro., $18.00 ..... 33⅓%

### Stoppers, Bottle—

Victor Bottle Stoppers..... ℔ gro. $9.00

### Stops— Bench—

Millers Falls..... 15&10%
Morrill's, ℔ doz., No. 1, $10.00.... 50%
Morrill's, No. 2, $12.50..... 50%

### Door—

Chapin-Stephens Co..... 50@50&10%

### Plane—

Chapin-Stevens Co..... 20%

### Straps— Box—

Acme Embossed, case lots.. 20&10&10%
Cary's Universal, case lots... 20&10&10%

### Stretchers, Carpet—

*Cast Iron, Steel Points.. doz. 55¢*
*All Steel Socket... doz. $2.00@2.25*
Excelsior Stretcher and Tack Hammer Combined, ℔ doz., $6.00.... 20%

### Stuffers, Sausage—

Enterprise Mfg. Co., Stuffers and Lard Presses..... 25@25&7½%
National Specialty Co., list Jan. 1, 1902 ..... 30&5%
P., S. & W. Co..... 40&10&5%

### Sweepers, Carpet—

Per doz.—
Bissell Carpet Sweeper Co.:
Cyco Bearing Superba, $36.00; Triumph, $33.00; Parlor Queen, $30.00; Elite, $29.00; Boudoir, $27.00; American Queen, $27.00; Ideal, $25.00; Gold Medal, $24.00; Primier, $24.00; Prize, $24.00; Welcome, $24.00; Grand Rapids, Nickel, $24.00; Japan, $22.00; Crystal, $36.00; Grand, $36.00; Parlor Grand, $48.00; Club, $54.00; Hall, $60.00; Standard Nickel, $22.00; Standard Japan, $20.00; Crown Jewel, Nickel, $21.00; Crown Jewel, Japan, $19.00; Junior, Nickel, $22.00; Junior, Japan, $20.00.

*NOTE.—Rebates: 50c per dozen on three dozen lots; $1 per dozen on five-dozen lots; $2 per dozen on ten-dozen lots*

### Tacks, Finishing Nails, &c.

*American Carpet Tacks... 90&40%*
*American Cut Tacks..... 90&40%*
*Swedes' Cut Tacks..... 90&40%*
*Swedes' Upholsterers'.... 90&50%*
*Gimp Tacks..... 90&50%*
*Lace Tacks..... 90&50%*
*Trimmers' Tacks..... 90&40%*
*Looking Glass Tacks..... 65%*
*Bill Posters' and Railroad Tacks, 90&50&10%*
*Hungarian Nails..... 80&20%*
*Finishing Nails..... 70%*
*Trunk and Clout Nails... 80&10%*

*NOTE.—The above prices are for Straight Weights.*

### Miscellaneous—

*Double-Pointed Tacks, 90&6 tens@—%*
Se also Nails, Wire.

### Tanks, Oil and Gasoline—

Wilson & Friend Co.:

| Gal. | Gasoline | Oil |
|---|---|---|
| 30 | $2.75 | $3.00 |
| 60 | $3.50 | $4.00 |
| 110 | $5.00 | $5.75 |

### Tapes, Measuring—

*American Asses' Skin.... 50@—%*
*Patent Leather..... 25@30&5%*
*Steel ..... 33⅓&5%*
*Chesterman's ..... 25@25&5%*
Kraftel & Esser Co.:
Favorite, Ass Skin..... 40&10@50%
Favorite, Duck and Leather..... 25&5@25&10%
Metallic and Steel, lower list, 35@35&5%; Pocket, 35@35&5%.
Lufkins:
Asses' Skin..... 40&10@50%
Metallic ..... 30@30&5%
Patent Bend, Leather... 25&5@25&10%
Pocket ..... 40@40&5%
Steel ..... 33⅓@33⅓%
Wichasch & Hilger:
Chesterman's Metallic, No. 34L, etc. ..... 25%
Chesterman's Steel, No. 1038L, etc. ..... 35%

### Teeth, Harrow—

*Steel Harrow Teeth, plain or headed, ⅝-inch and larger, per 100 lb..... $2.55@$2.80*

### Thermometers—

*Tin Case, Cabinet, Flange, Dairy, &c..... 30@35%*

### Ties, Bale—Steel Wire—

*Single Loop..... 82½&10%*
*Monitor, Cross Head, &c. 70&2½%*

### Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

### Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

### Tire Benders, Upsetters, &c.

See *Benders and Upsetters, Tire.*

### Tools—Coopers'—

L. & I. J. White..... 20@20&5%

### Haying—

Myers' Hay Tools..... 50%

### Ice Tools—

Gifford-Wood Co..... 15%

### Miniature—

Smith & Hemenway Co.'s, Davidson, ℔ doz., Nickel Plated, $1.50; Gold Plated..... $2.00

### Saw—

Atkins' Cross Cut Saw Tools.... 35&5%
Simond's Improved..... 33⅓%
Simonds' Crescent..... 30%

### Ship—

L. & I. J. White..... 25%

### Torches—

Hammers, Engine, ℔ doz..... $4.50

### Transom Lifters—

See *Lifters, Transom.*

### Traps—Fly—

*Balloon, Globe or Acme, doz., $1.15@$1.25; gro.... $11.50@12.00*
*Harper, Champion or Paragon, doz., $1.25@1.40; gro. $13.00@13.50*

### Game—

*Imitation Oneida..... 75@10%*
Newhouse ..... 50&5%
Hawley & Norton..... 65&10%
Victor ..... 75@75&10%
Oneida Community Jump..... 70&5%
Stop Thief..... 60%
Tree Trap..... 60%
Hector ..... 75@75&10%

### Mouse and Rat—

*Mouse, Wood, Choker, doz. holes, 12¢*
*Mouse, Round or Square Wire, doz. 85@90¢*
Marty French Rat and Mouse Traps (Genuine), ℔ doz.:

| | Crate lots. | Small lots. |
|---|---|---|
| No. 1, Rat..... | $11.50 | $14.50 |
| No. 3, Rat..... | $5.75 | $6.50 |
| No. 3½, Rat..... | $4.70 | $5.25 |
| No. 5, Mouse..... | $2.25 | $3.00 |

Animal Trap Co.:
Out o' Sight, Mouse, ℔ doz..... $0.60
Out o' Sight, Rat, ℔ doz..... 1.20
Easy Set, Mouse, ℔ doz..... .35
Easy Set, Rat, ℔ doz..... .85
Out o' Sight Chockers, ℔ doz. holes ..... .12
Out o' Sight, Tin, 5-hole, ℔ doz. traps ..... .75

### Trowels—

Disston Brick and Pointing..... 25%
Disston Plastering..... 20%
Disston "Standard Brand" and Garden Trowels..... 30%
Kohler's Steel Garden Trowels, ℔ gro., 5 in., $4.80; 6 in., $6.00.
Never-Break, Forged Steel Garden Trowels, in bulk, net ℔ gro. $5.50
In 1 doz. boxes..... ℔ gro. $6.00
Woodrough & McParlin, Plastering. 25%

### Trucks, Warehouse, &c.—

B. & L. Block Co.:
New York Pattern..... 50&10%
Western Pattern..... 60&10%
Handy Trucks..... ℔ doz. $16.00
Grocery ..... ℔ doz $15.00
McKinney Trucks..... each, net $10.00
Model Stove Trucks..... ℔ doz $18.50

### Tubs, Wash—

*M'f'gr's list, price per gross.*

| No. | 0 | 1 | 2 | 3 | |
|---|---|---|---|---|---|
| *Galvanized.* | *$67* | *$79* | *$89* | *$99* | *10&7½ &5&5%* |

### Twine, Miscellaneous—

*Flax Twine:*
*No. 9, ¼ and ½-lb. Balls. 21@23¢*
*No. 12, ¼ and ½-lb. Balls. 19@21¢*
*No. 18, ¼ and ½-lb. Balls. 16@18¢*
*No. 24, ¼ and ½-lb. Balls. 15½@17½¢*
*No. 36, ¼ and ½-lb. Balls. 15@17¢*
*Chalk Line, Cotton ½-lb. Balls ..... 24@29¢*
*Cotton Mops, 6, 9, 12 and 15 lb to doz..... 8½@19¢*
*Cotton Wrapping, 5 Balls to lb. according to quality.. 13½@19¢*
*American 2-Ply Hemp, ¼ and ½-lb. Balls..... 12½@15¢*
*American 3-Ply Hemp, 1-lb. Balls ..... 13½@16¢*
*India 2-Ply Hemp, ¼ and ½-lb. Balls (Spring Twine)... 7½@9¢*
*India 3-Ply Hemp, 1-lb. Balls 7¼@9¢*
*India 2-Ply Hemp, 1½-lb. Balls, 7@9½¢*
*2, 3, 4 and 5-Ply Jute, 1½-lb. Balls ..... 9@11¢*
*Mason Line, Linen, ½-lb. Bls. 47¢*
*No. 264 Mattress, ¼ and ½ lb. Balls, according to quality. 30@60¢*
*Wool, 3 to 6 ply....B 6¢; A 7½¢*

### Vises—

*Solid Box..... 50&5@50&10&5%*

### Parallel—

Athol Machine Co.:
Simpson's Adjustable..... 40%
Standard ..... 40%
Amateur ..... 25%
Columbian Hdw. Co., Slide ..... 40&5%; 65%
Fisher & Norris Double Screw, net, each, Nos. 2, $10.50; 3, $16.00; 4, $20.50; 5, $27.00; 6, $32.00.
Fulton Mach. & Vise Co.:
F. & R. Double Swivel Machinists' ..... 40%
Star, Solid Jaw, Machinists'..... 40%
Hollands':
Machinists' ..... 40@40&5%
Keystone ..... 65&5@70%
Lewis Tool Co.:
Adjustable Jaw..... 30%
Monarch, 50%; Solid Jaw..... 50%
Massey Vise Co.:
Clincher ..... 40%
Parallel Bar..... 15%
Perfect, 15%; Lightning Grip..... 15%
Merrill's ..... 25%
Millers Falls Oval Slide Pattern. 60&10%
Parker's:
Victor, 20@25%; Regulars.... 20@25%
Vulcan's ..... 40@45%
Combination Pipe..... 55@60%
Prentiss ..... 20@25%
Rock Island..... 25%
Snediker's X. L..... 33⅓%
Stephens' ..... 33⅓%

### Saw Filers

Disston's D 3 Clamp and Guide, ℔ doz., $24.00, 30%; Clamps..... 30%
Perfection Saw Clamps, ℔ doz.... $4.50
Reading ..... 60%

### Wood Workers—

Fulton Mach. & Vise Co.:
F. & R. Double Swivel Coachman's ..... 40%
Star Solid Jaw Woodworkers'.... 60%
Massey Vise Co.:
Lightning Grip, 15%; Perfect.... 15%
Wyman & Gordon's Quick Action, 6 in., $6.00; 9 in., $7.00; 14 in., $8.00.

### Miscellaneous—

Fulton Machine & Vise Co., Combination Pipe..... 70%
Holland's Combination Pipe.. 60@60&5%
Massey's Quick Action Pipe..... 40%
Parker's Combination Pipe:
87 Series, 60%; 187 Series, 60&5%; No. 870, 40%.
Rock Island Pipe..... 25%

### Wads— *Price per M.*

*B. E., 11 up..... 60¢*
*B. E., 9 and 10..... 70¢*
*B. E., 8..... 80¢*
*B. E., 7..... 80¢*
*P. E., 11 up..... $1.00*
*P. E., 9 and 10..... 1.25*
*P. E., 8..... 1.50*
*P. E., 7..... 1.50*
} *Dis. 15%*
*Ely's B. E., 11 and larger. $1.70@1.75*
*Ely's P. E., 12 to 20.... $3.00@3.25*

### Ware, Hollow—

### Cast Iron, Hollow—

*Stove Hollow Ware:*
*Enameled ..... 45&10%*
*Ground ..... 50&5%*
*Plain or Unground..... 60%*
*Country Hollow Ware, per 100 lbs ..... $2.75@$3.00*
*White Enameled Ware:*
*Maslin Kettles..... 65&10%*
*Covered Wares:*
*Tinned and Turned..... 35&10%*
*Enameled ..... 45&10%*

See also *Pots, Glue.*

### Enameled—

Agate Nickel Steel Ware..... 33⅓%
El-an-ge ..... 60&10%
Iron Clad Ware..... 70&10%
Lava and Volcanic, Enameled.. 40&10%

### Tea Kettles—

*Galvanized Tea Kettles:*

| *Inch* | *6* | *7* | *8* | *9* |
|---|---|---|---|---|
| *Each* | *45¢* | *50¢* | *55¢* | *65¢* |

### Steel Hollow Ware—

Avery Stamping Co.:
Never-Break Spiders and Griddles ..... 65&10%
Steel Kettles, Maslins Scotch Bowls, Tin'd..... 60%
Steel Stew Pans, Stew Pots, etc., Porcelained ..... 50%
Cleveland Stamping & Tool Co.:
Solid Steel Spiders and Griddles ..... 65&5%
Solid Steel Kettles..... 60&5%

### Warmers, Foot—

Pike Mfg. Co., Soapstone.... 40@40&10%

### Washboards—

| No. | ℔ doz. |
|---|---|
| 800 Brass King, Single Surface, Open Back..... | $2.80 |
| 862—White Hen, Spiral Grimp Glass ..... | $3.35 |
| 964—Royal Blue Enamel, Single Surface, Ventilated Back..... | $3.35 |
| 172—Our Best, Single Zinc, Soap Drainer ..... | $3.35 |
| 722—Soap Saver, Single Zinc, Iron Top ..... | $3.35 |
| 100—Northern Queen, Single Zinc, Perforated, Open Back..... | $3.00 |
| 134—Universal, Single Zinc, Extra Family Size Ventilated Back.... | $2.80 |
| 760—Banner Globe, Single Zinc, Ventilated Back..... | $2.25 |
| 57—Peerless, Double Zinc, Spring Protector ..... | $3.70 |
| 56—Red Cross, Double Zinc, Swing Protector ..... | $3.60 |
| 17—North Star, Solid Zinc, Swing Protector ..... | $3.60 |
| 797—Jewel, Single Zinc, Pail Size. | $1.25 |

### Washers—Leather, Axle—

*Solid ..... 90@90&10%*
*Patent ..... 90@90&5%*
*Coil: ⅞ 1 1⅛ 1¼ inch. 9¢ 10¢ 11¢ 14¢ per box.*

### Iron or Steel—

| *Size bolt....* | *5-16* | *⅜* | *½* | *⅝* | *¾* |
|---|---|---|---|---|---|
| *Washers....* | *$4.65* | *3.75* | *2.45* | *2.25* | *2.05* |

*The above prices are based on $6.75 off list.*
*In lots less than one keg add ½¢ per lb.; 5-lb. boxes add ½¢ to list.*

Avery Stamping Co.:
Standard, in 200 lb kegs, $6.00 ℔ 100 lb. disct.; in 100 lb kegs, add 10¢ net ℔ 100 lb; in 5 or 10 lb boxes, add 50¢ net ℔ 100 lb; in 1 lb boxes, add $1.00 net ℔ 100 lb.

### Cast Washers—

*Over ½-inch, barrel lots, per lb. 1½@1¾¢*

### Wedges—

*Oil Finish..... lb., 2¼@2¾¢*

### Weights—Hitching—

Covert Mfg. Co..... 30&2%

### Sash—

*Per net ton, f.o.b. factory:*
*Eastern District.... $20.00@—*
*Western and Central Districts ..... $19.00@$21.00*

### Wheels, Corundum and Emery—

Pike Mfg. Co., Corundum, 65%; Emery ..... 75%

### Well—

*8-in., $2.00; 10-in., $2.30; 12-in., $3.00; 14-in., $4.45.*

### Wire and Wire Goods—

*Bright and Annealed:*
*6 to 9..... 72&10&7½%*
*10 to 18..... 72½&10&10%*
*19 to 26..... 75&10&10&2½%*
*27 to 36..... 77½&7½%*
*Galvanized:*
*6 to 9..... 72½&10%*
*10 to 14..... 72½&10&5%*
*15 to 16..... 72½&10&5%*
*17 to 18..... 72½%*
*19 to 26..... 70&5&2½%*
*27 to 36..... 65&10&10%*
*Coppered:*
*6 to 9..... 65&10&10%*
*10 to 14..... 70&10&5%*
*15 to 18..... 65&10&10&10%*
*19 to 26..... 70&5&2½%*
*27 to 36..... 72½&10&2½%*
*Tinned:*
*6 to 18..... 67&10&10%*
*Brass ..... 15½¢ lb., base*
*Copper ..... 15¼¢ lb., base*
*Cast Steel Wire..... 50%*

### Spooled Wire—

*Annealed and Tinned. 75@75&10%*
*Brass and Copper.... 70@70&10%*
*Retailers' Assortments, per box, $1.90@$2.10*

Wire Clothes Line, See Lines.
Wire Picture Cord, see Cord.

### Bright Wire Goods—

*Steel Wire Goods..... 90&40%*
*Brass Wire Goods..... 90&40%*
*Brass Cup and Shoulder Hooks, 85&10%*

### Wire Cloth and Netting—

*Galvanized Poultry Netting, 80&2½@80&7½%*
*Painted Screen Cloth, 100 ft., $1.35*
*Standard Galv. Hardware Grade: 100 ft. rolls, 24 to 48 in. wide, Per 100 sq. ft.*
*Nos. 2, 2½ and 3 Mesh.... $2.75*
*Nos. 4 and 5 Mesh..... $3.00*
*No. 6 Mesh..... $3.25*
*Nos. 7 and 8 Mesh..... $3.75*

### Wire, Barb—See *Trade Report*

### Wrenches—

*Agricultural, 80&10&5@80&10&10%*
*Alligator or Crocodile.. 70&10@75%*
*Baxter Pattern S Wrenches, 70&5@70&10%*
*Drop Forged S..... 45@45&5%*
Acme ..... 60&10%
Alligator Pattern, 70%; Bull Dog.. 70%
Bemis & Call's:
Adjustable S, 40&5%; Adjustable S Pipe, 40&5%; Briggs Pattern, 40%; Combination Bright, 50%.
Steel Handle Nut..... 50&5%
Combination Black..... 50&5%
Merrick Pattern..... 50&5%
Boardman's ..... 40%
Coes' Genuine Knife Hdl... 40&10&5&5%
Coes' Genuine Steel Hdl... 40&10&5&5%
Coes' Genuine Key Model.. 40&10&5&5%
Coes' Genuine Hammer Handle..... 40&10&5&5%
Coes' "Mechanics'"... 40&10&10&5&5%
Donohue's Engineer..... 40&10%
Eagle ..... 70%
Gem Pocket..... 30%
Hercules ..... 70%
W. & B. Machinist:
Case lots..... 50&10%
Less than case lots..... 50%
W. & B. Railroad Special:
Case lots..... 50%
Less than case lots..... 40&10&5%
Solid Handles, P., S. & W.. 50&10%; full cases..... 50&10&5%
Standard Nipple Mfg. Co.:
Duplex Chain..... 50%
Uwanta Wrench Co.:
Uwanta Special, Iron Handle.... 40&10&5%
Other Wrenches..... 50%
Vulcan and Agrippa Chain..... 50%
Whitaker Machinists'..... 50&10%
Wizard Adjustable Ratchet..... 50%

### Fruit Jar—

Benj. P. Forbes, Triumph, ℔ gro., $7.50; per doz..... $0.90

### Wrought Goods—

*Staples, Hooks, &c., list March 17, '92..... 90@—%*

### Zinc— *(Cask lots at mill.)*

*Sheet..... per 100 lb., $7.00*

# THE IRON AGE

New York, Thursday, October 1, 1908.

## The New Universal Boring Machine.

The universal boring, milling and drilling machine illustrated in Fig. 1 is the new type which has just been brought out by the Universal Boring Machine Company, Hudson, Mass. The machine is of the class that has the head at the right end of the bed, the idea being that boring and milling are more conveniently accomplished by this arrangement. It is known as the No. 1 machine, and takes 54 in. (and with the extension bed 94 in.) between the face of the spindle and the outboard bearing support.

The bed of the machine is of box pattern, and upon it the carriage with its table has horizontal movement. The table is 20 x 42 in., but larger work may be held by using the auxiliary table. The head is arranged to move vertically in unison with the outboard bearing which supports the outer end of the boring bar. The total vertical travel of the head is 24¾ in. The spindle has an all-geared drive from a constant speed shaft, with 16 changes of speed in the speed box and head, running from 15 to 200 rev. per min. There are feeds in all directions, comprising longitudinal carriage feed, cross table feed, vertical feed of the head and longitudinal feed of the boring bar. The feeds are independent of the spindle speed, and range from ¾ to 5½ in. per minute. By operating the boring bar feed and the carriage at the same time and in opposite directions, it is possible to get a maximum feed of the tool into the work of 11 in. per minute. The feed box gives nine feeds, which multiplied by the 16 speeds of the spindle gives a total of 144 different feeds per spindle revolution, varying from 0.006 to 0.34 in.

The control of the machine is all shown in Fig. 2. As designated by the reference letters, A is the belt shifter by means of which the machine, as a whole, is started and stopped; B and C the handles, controlling the changes of speed, which changes are doubled by the fast and slow speed lever D; E and F the handles controlling the feed changes; G the lever controlling the power raising and lowering of the head; H the table and

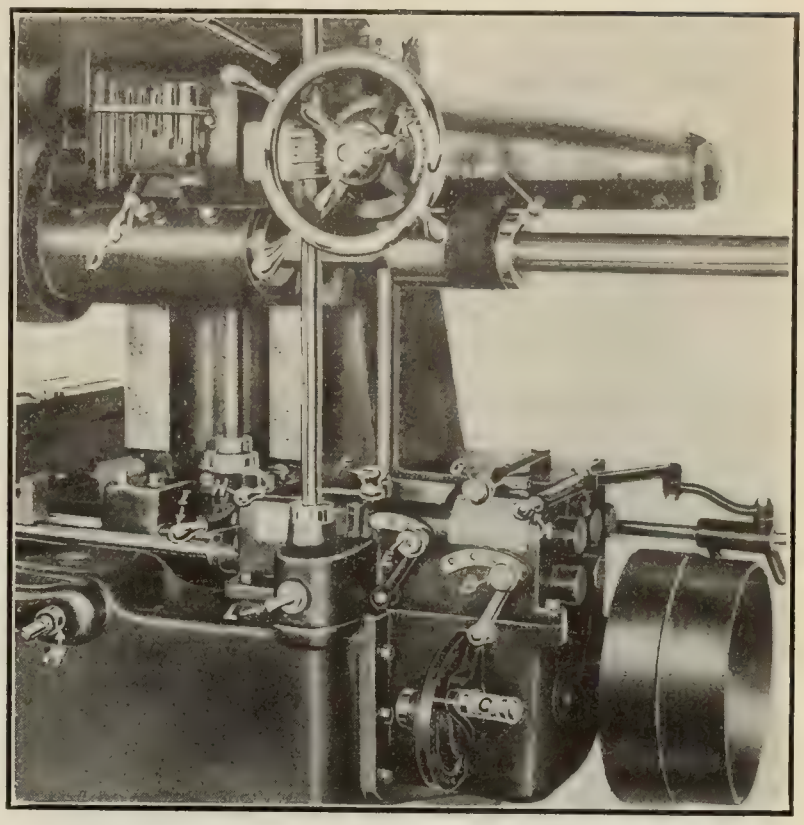


Fig. 2.—Detail at the Head, Showing the Controlling Means.

bar feed lever; I the lever through which all feeds are reversed; J the handwheel for quick hand feed of the boring bar; K the handwheel for engaging and disengaging the power feed of the boring bar; L the crank hold for fine hand feed of the boring bar and hand elevating of the head, and M the crank hold for carriage hand feed.

The speed box shown open in Fig. 3 is an interesting one. It occupies the lower part of the box at the head of the machine, the upper section being used for the change feed mechanism. By the use of nine gears and a segment gear, Fig. 4, having two studs, one above and one below its pivoting point, and a rocker gear operated by

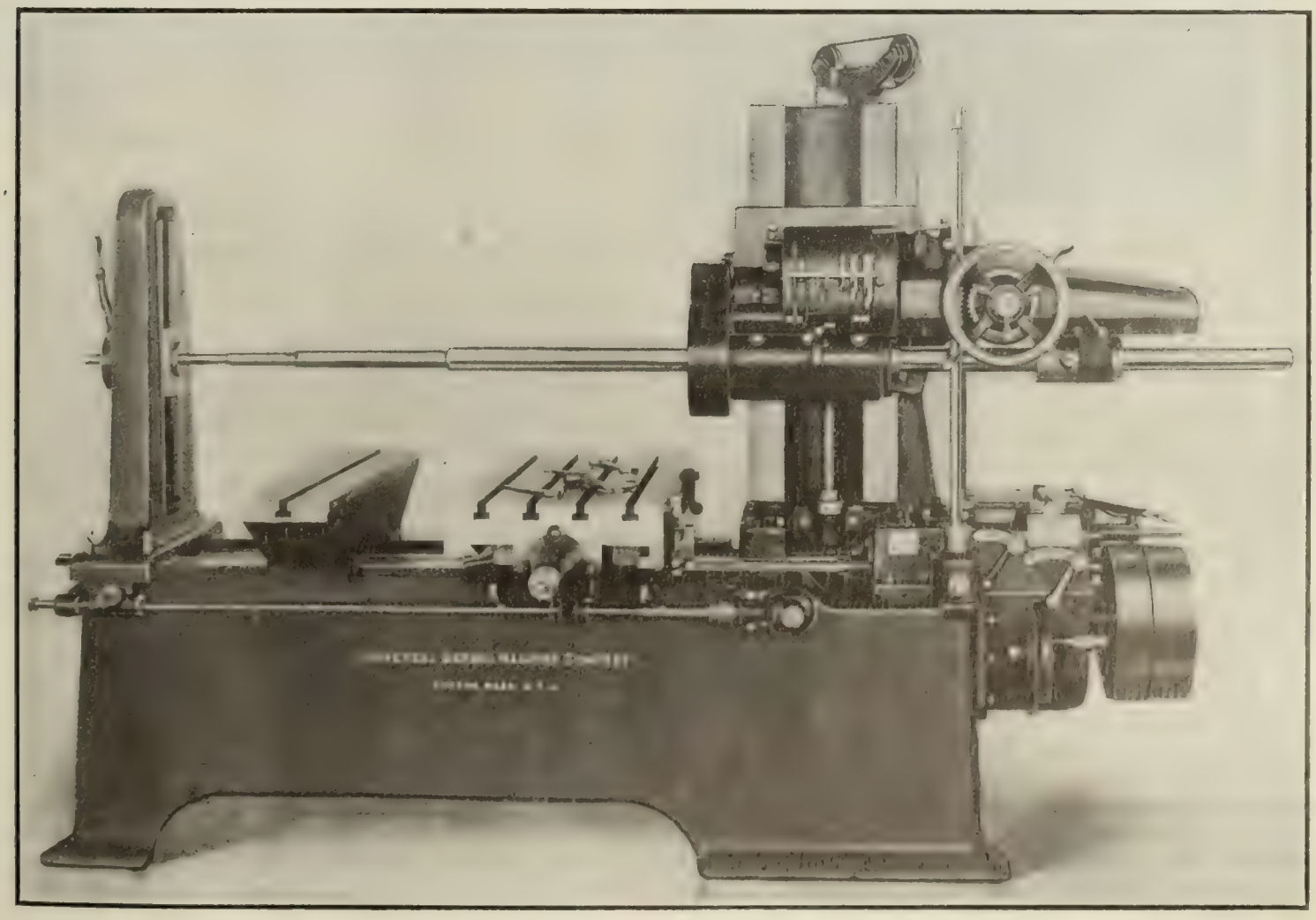


Fig. 1.—The New Universal Boring, Milling and Drilling Machine.

a hand lever, eight speeds are obtained. The cone of four gears keyed together slide on the constant speed shaft. A gear running loose on the upper stud of the segment gear meshes the smaller of two gears that are keyed on the shaft through the center of the segment. Two gears, keyed together, are mounted on the lower stud of the segment, one of these meshing with the larger gear on the shaft through the segment. Rocking the segment in one direction to engage one of the four cone gears gives one speed; rocking it in the other gives another speed. Two speeds are similarly obtained for each of the other gears of the cone, making eight speeds which are doubled at the head, giving a total of 16, ranging from 15 to 200 rev. per min., with the constant speed shaft running at 230 rev. per min.

An important convenience lies in the manner in which the feed and speed boxes are fastened together. To detach them from the machine it is necessary only to re-

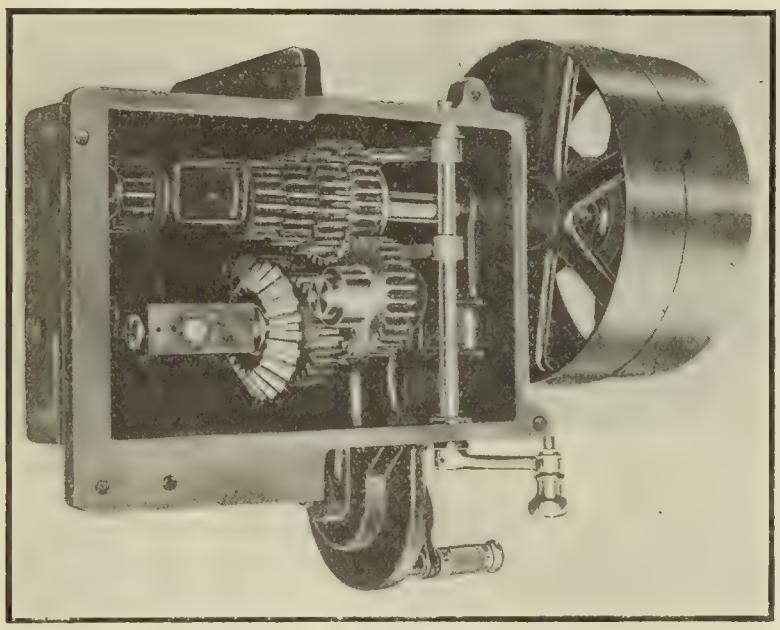


Fig. 3.—The Speed Box Opened.

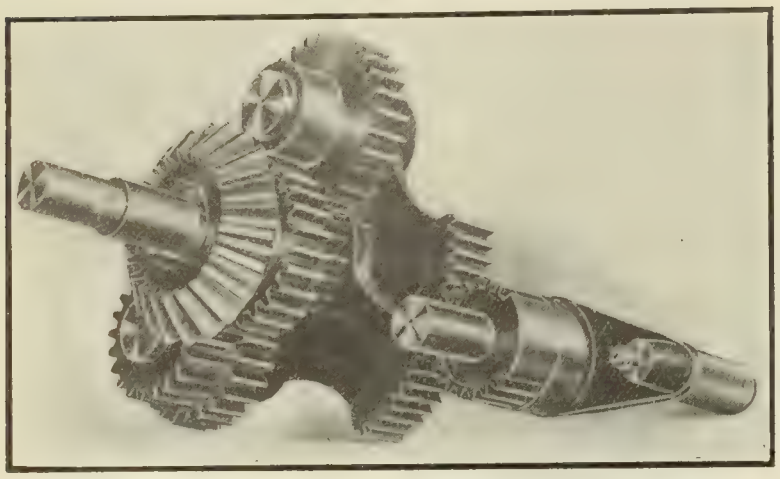


Fig. 4.—The Rocking Gear Part of the Speed Box.

move six screws and pull out the speed and feed shafts, a matter of a few minutes' work.

The details of the feed box are not yet ready for announcement. The directions of the feeds always bear the same relation to one another. All are reversed with the same lever, and to reverse means that the head feeds up, the table feeds away from the operator and the boring bar feeds toward the outer bearing support. In addition to these feeds the head has also one fast up-and-down travel, which permits the boring bar to be brought to a point quickly without the use of the hand crank. The head has a hand adjustment with graduated dial. On one of the bearing surfaces upon which the head moves is a scale graduated in inches; the zero corresponds to the position where the center of the spindle is in line with the top of the table. Using the quick power feed in conjunction with this scale, it is possible to stop the movement of the head within ⅛ in. of the point required, and the adjustment is completed by using the hand feed and graduated dial. The table, carriage and head are each provided with graduated dials reading to thousandths of an inch.

The power feed for the carriage, already mentioned, is an interesting detail of the machine. Beneath the carriage are three gears supported by a bracket. One gear is on the table feed shaft, another on the carriage feed screw, while the third is a pull gear on a stud between them. The removal of this gear provides the means of quickly disconnecting the power feed from the carriage. Any feed of the boring bar may be doubled by the use of this mechanism, which is designed especially for use in drilling. A pin is screwed in the bed below the bracket to take the pull gear when it is not in use. The boring bar is able to feed 27 in., and can be reset by a clamp bearing so that 55 in. of travel can be obtained. The hand wheel is set at a point most convenient for the operating and setting of the boring bar, permitting the operator to be close to his work and within easy reach of the feed friction or hand wheel. The alignment of the outboard bearing for the boring bar with the head is maintained by a connection between the elevating screws of each through spiral gears and a shaft within the bed.

The table has a feed of 30 in. with automatic stops. The vertical power travel of the head is 22¾ in., with the possibility of 24¾ in. when fed by hand. With the extension bed the machine giving 94 in. between the face of the spindle and the outboard bearing support, two bars are used, the regulation bar and one 124 in. long. They are easily exchanged. The driving shaft carries tight and loose pulleys. The loose pulley is slightly smaller in diameter than the tight pulley to relieve strain on the belt and is cast with a receptical in its hub, which is filled with cotton waste and oil from which wicking runs to the bearing, insuring lubrication for indefinite periods.

Care has been taken in gibbing the head, the ratio of length to width of which is 6 to 1. Besides this gibbing, at one edge of the head post a square lock gib is used to take up any wear at a point nearest the work. A gib of 90 degrees is employed to provide for wear at this head side, the form of gib permitting it to fit properly on the angular bearing of the head post.

The head being at the right end of the machine, boring and milling is done without the necessity of reversing the motion of the spindle, and permitting the operator to watch and operate the machine conveniently. The driving of the spindle is at a point nearest the work, a feature of special advantage in securing stiffness in large milling cutters. On the face of the spindle provision is made to bolt or fasten cutters such as are usually used in heavy milling machines.

Particular attention has been given in the alignment of the machine to insure accurate work. All revolving parts, such as shafts and studs, are of crucible steel, ground to size, and where desirable the bearings are suitably bushed. The machine is heavily constructed. Its floor dimensions are 8 x 14 ft., and its weight 7800 lb.

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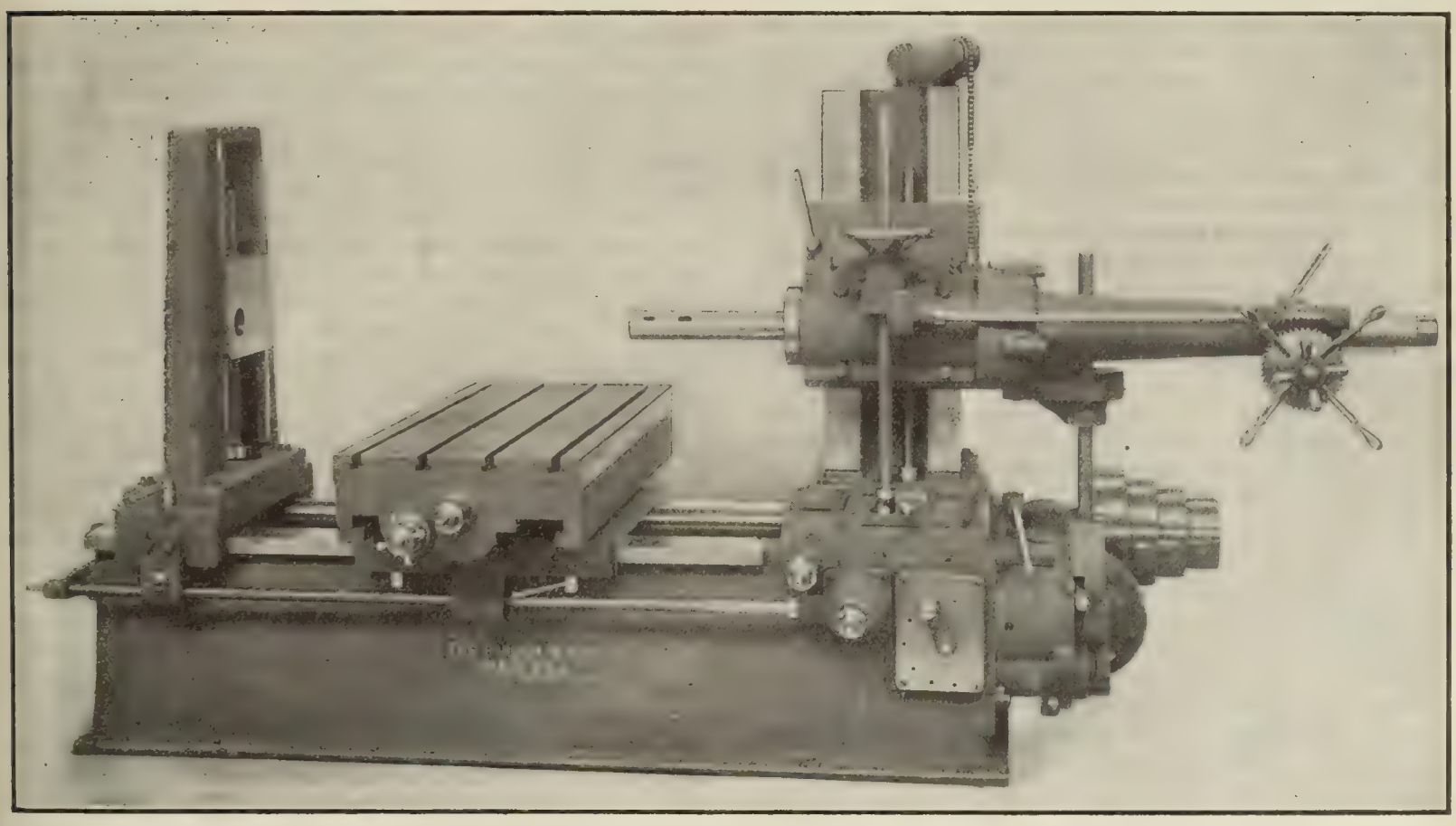
The directors of the Illinois Central Railroad have employed experts to report on the proposal to electrify its Chicago terminal, the agitation against smoke being a prime moving cause. The suburban line is elevated north of Grand Crossing; the lake is convenient for the supply of water for condensing engines and coal is cheap. The *Railroad Gazette* points out that the express train schedule in suburban service would be greatly improved, while in the case of local trains noise and cinders would be eliminated, and there would be a saving over steam locomotives in all suburban business. "Electrification of the through passenger and freight trains and their operation by electric locomotives is a larger problem, but from an engineering standpoint it is easily possible, and there are no great difficulties in the way of designing a power plant which will answer for both services."

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The American Railway Association's figures for September 16 show that in the preceding two weeks the number of surplus freight cars decreased by 50,562, more than half the total, or 27,300, being box cars. The number of idle cars on September 16 was 170,652, as compared with 413,338, the maximum, in April. It is now stated that in addition to the above total 200,000 cars were in shops awaiting repairs in April, or about twice the normal number.

## A New Fosdick Boring, Drilling and Milling Machine.

In the design of its new style O horizontal boring, drilling and milling machine the Fosdick Machine Tool Company, Cincinnati, Ohio, has given particular attention to convenience of operation. As may be seen in the illustration, all operating levers and hand wheels are on one side within easy and convenient reach. Another important feature is that all wearing surfaces and bearings are large and are adjustable for wear. All bearing surfaces are scraped and all bearing journals, shafts and spindles are ground. All gears are of steel, are bronze bushed and are entirely encased, as are all moving parts. The spindle is of crucible steel and has the company's new adjusting device. The table is unusually deep and well ribbed and has the long narrow guide type of bearing. The outboard support is designed to withstand the strain of heavy boring and milling and can be entirely removed if necessary. An adjustment is provided for alignment should the operator change the position of the head when the support is off the machine. The machine is exceptionally rigid, and being self-contained requires no special foundation.



The New Style O Horizontal Boring, Drilling and Milling Machine Built by the Fosdick Machine Tool Company, Cincinnati, Ohio.

The spindle travel is 22 in., the vertical travel of the head 21 in., the lateral travel of the table 36 in., and the cross travel of the table 28 in. The distance from the face of the spindle to the boring bar support is 60 in. The outboard support can be taken down for overhanging work. The spindle travel and table cross travel are by power in either direction, and all are equipped with micrometer adjustments. The working surface of the table is 50½ in. long by 23½ in. wide, and has four 13-16 in. T slots and six stop holes.

The spindle is crucible steel and runs in bronze bearings adjustable for wear and absolute alignment with the outboard support bearing. It is 3 in. in diameter in the driving sleeve and 1½ in. in diameter in the rear sleeve. The driving sleeve is equipped with a device whereby the spindle can be held true after any amount of wear. The end thrust is taken on ball bearings. The end of the spindle contains a No. 5 Morse taper socket with cotter key.

The drive is positive throughout and two mechanical changes of speed are made through positive clutches. Either a cone pulley or a constant speed driving pulley may be furnished, adapted to take a 3-in. double belt. The spindle speeds, which are eight in number, range from 12½ to 155 rev. per min., and all are reversible. The eight changes of feed also are reversible and vary from 0.007 to 0.25 in. per revolution.

The machine occupies a floor space of 13 ft. in line with the spindle by 7 ft. 8 in. wide to permit the extreme limits of the table travel. The net weight is about 7500 lb. The countershaft has friction pulleys for forward and reverse drive, taking a 3½ in. double belt, and is intended to run at about 400 rev. per min. Where an electric motor is preferred any style of motor can be connected to the machine through spur gearing, and one of 5 hp. is recommended. A constant speed motor can be applied in connection with the company's gear box for speed changes or a 3 to 1 variable speed motor can be used, giving sufficient range of speeds electrically.

## Fatalities in Open Shop Structural Work.

Announcement was made last week by the Allied Iron Association of New York City that it had again declined the application of the Housesmiths' and Bridgemen's Union for recognition and had reaffirmed its policy of employing the housesmiths on the open shop plan. The union has recently complained to New York City officials that large numbers of housesmiths were killed in the erection of the Chelsea piers, Blackwell's Island Bridge and other "open shop" work in New York, alleging that there were 15 deaths during the construction of the Chelsea piers and 55 deaths during the construction of the Blackwell's Island Bridge, owing to the employment of inexperienced men. Commissioner Walter Drew of the National Erectors' Association and the Allied Iron Association says that three deaths only occurred in the course of the erection of the Chelsea piers, that only 13 men were killed during the work on the Blackwell's Island Bridge, and that three of the men killed were old union men of long experience, who were working on the open shop plan. He adds that the proportion of men killed during the erection of the Blackwell's Island Bridge was one for every 4000 tons of iron erected, while during the work on the Williamsburg Bridge, a strictly union contract, one man was killed for every 1340 tons erected.

The Open Hearth Committee of the Carnegie Steel Company, made up of superintendents of the open hearth departments at Donora, Clairton, Homestead and Duquesne, visited the company's Ohio works at Youngstown, Ohio, last week, in order to inspect the new open hearth plant, comprising 12 50-ton furnaces, now being erected there.

# The Gayley Dry Blast at the Warwick Furnaces, Pottstown, Pa.*

BY EDWARD B. COOK, POTTSTOWN, PA.

The installation of the Gayley dry air process appealed specially to the management of the Warwick Iron & Steel Company, for the reason that for 15 years records had been kept at the works of the company, showing the amount of water entering the furnace in the form of aqueous vapor, and careful observations had been made of its effect upon the working of the furnace. Some years had proved much worse in their effect than others, on account not only of excessive moisture, but also of great variation in the moisture from day to day, and sometimes within a few hours. It had been found impossible to make a satisfactory percentage of high silicon foundry iron in summer, even on high fuel, and for some years the endeavor had been made so to arrange the sales that during July and August only a small per centage of the iron produced would be required to carry more than 2 per cent. silicon. Our larger furnace, running on basic iron, year after year, produced in February a tonnage 20 per cent. higher than in August, on a much lower fuel consumption, while, at the same time, the summer months were marked by "messes," tuyeres closed by slips, and other irregularities, constituting serious additional business losses.

### Details of the Warwick Installation.

In the spring of 1906 it was decided to install a plant of sufficient capacity to treat 70,000 cu. ft. of air per minute, an amount much larger than that treated at the Isabella plant, and sufficient for the maximum requirements of our No. 1 and No. 2 furnaces. The form in which Mr. Gayley's invention was applied at our works may be outlined as follows: Ammonia, liquefied by pressure, is allowed to expand in pipes inclosing smaller pipes which carry brine; and this brine, thus cooled to a point below 0 degree C., is conducted through a refrigerating chamber in coils of pipe, over which the air of the blast for the furnace passes, and upon which it deposits its moisture before entering the blowing engine.

The refrigerating part of our plant, which was furnished by the York Mfg. Company of York, Pa., comprises five vertical single acting compressors, each employing about 220 hp. and having 175 tons refrigerating capacity.† The object in having so many units is to guard against serious results from breakdowns, and also to have a more adaptable apparatus. Only in the summer months is the total capacity required. In winter one compressor will do the work for one furnace. An atmospheric condenser was installed above each compressor.

The brine coolers are of the double pipe class, with 3-in. outer pipes, in which the ammonia expands, and 2-in. inner pipes, through which the brine passes in the opposite direction. Through these coolers, and thence through the coils in the refrigerating chamber, the brine is forced by one of two flywheel pumps. The cold brine enters the coils at the top.

The refrigerating chamber contains 57 miles of 1¼-in. wrought iron pipe, divided into seven sections by partition walls and doors, so that one section can be washed free from frost without affecting the other sections or increasing the moisture in the treated air. A large Sturtevant fan was installed to furnish air to the refrigerating chamber, and maintain therein a pressure of about 1 oz. per square foot, in order to insure a proper distribution of the air rising through the coils, and also to overcome the friction in the pipes to the blowing engines, so that there shall be no doubt as to the proper filling of the blowing tubs. It also guards against the entry of untreated air through possible leaks in the pipes. We have found, however, that the plant can be run for a short time without this fan.

Upon the assumption that 4.5 tons of air are required to make 1 ton of iron, the production of 720 tons of iron a day calls for the treatment every hour of 135 tons of air, moving at a rapid rate, and varying both in temperature and in contained moisture. We had our share of troubles at the beginning, but for several months past none has been experienced, and the dry air plant is earning the reputation of being the only "sure thing" about the furnace.

### Dry Blast on No. 2 Furnace.

Our first application of the dry blast was made on our No. 2 furnace, which was 100 ft. high by 22 ft. bosh and 15 ft. crucible and stock line. This furnace had been in blast for nearly three years and had made more than 500,000 tons of pig iron. Down to June, 1907, with the exception of the three summer months of each year, the fuel consumption had been kept low and the iron satisfactory. But for almost a year before that date we had had high pressures and irregular settling of stock; and this we had attributed to poor distribution, due to the loss of the stock line, which we had found in very bad shape when we had a chance to see it while changing our bell in October, 1906.

On August 8, 1907, two compressors being ready, the dry blast was applied. That day the moisture per cubic foot of air in the blast was reduced from 7 grains to 5, the next day to 4 and the third day to 3. The first effect was to brighten the tuyeres, so that they shone like stars. The slag increased greatly in temperature, and smoked so that one could not stay in the cast house while it was running. The iron ran so hot that even gray iron "sparked" all the way down the runner. The driving of the furnace increased, and the engines had to be slacked every day in the attempt to keep the rate of driving the same, while the burden was increased daily to keep the silicon in the iron down to 1 per cent. The third day the furnace stuck tight, and it was impossible to get the full volume of air in at a pressure of 25 lb. This trouble yielded to large blanks, but only for a day or two. The moisture was gradually reduced to 2 grains per cubic foot, and held constant at that point. The quality of iron improved, but tonnage and fuel economy did not, on account of the sticking fast several times a week for from 6 to 10 hr. at a time.

It seemed as if the dry blast, requiring an increase in the burden, had aggravated the trouble due to bad distribution and irregular interior lines. In September the moisture was reduced to 1.5 grains per cubic foot of air, in October to 1 grain, and during November and December to about 0.8 grain. The tonnage of daily product remained low on account of frequent stops and our efforts to keep the iron made within "basic" specifications.* As a whole the furnace was worn out. The top gave way twice, and all the gas went out of holes in the platform instead of down the down-comers. The stoves and boilers caused many stops. The fuel consumption was increased by the numerous big coke blanks necessary to lower the pressure, so that the blowing engines could run.

In spite of all these difficulties the furnace was kept running, and her work steadily improved until she was blown out on December 27, on account of our accumulation of basic iron, due to the closing of steel works. There were short periods of good work (when the pressure stayed down and there were no stops), in which 515 tons a day were made on 2000 lb. of fuel per ton for several days in succession.

Figs. 1 and 2 show the condition of No. 2 when blown

* A paper read at the Chattanooga meeting of the American Institute of Mining Engineers, October 1-3, 1908.

† To quote from a refrigerating company's catalogue: "The unit by which capacity is measured is the cooling effect or work done by the melting of 1 ton of ice, and is called the refrigerating capacity. This is stated in tons of ice-melting capacity per 24 hr. continuous operation. The cooling effect of a ton of ice is equal to 284,000 B.t.u."

* These qualifications are: Silicon under 1; sulphur under 0.05; and phosphorus under 1 per cent. But in order to have a good reputation, we try to keep these elements below 0.7, about 0.03, and below 0.8 per cent., respectively.

in and when blown out. In Fig. 2 the stock line, 22 ft. 8 in. in diameter, is shown, with a large shelf below it, where the brick had stopped disintegrating on account of a change in quality. Further down there was another shelf, made up of scaffold material. The scaffold did not fall until a week after the furnace had been cleaned out, and then filled her hearth 5 ft. above the tuyeres, so that she began to yield to gas and had the appearance of being in blast again. We never imagined that the scaffold could be so high up, and consequently did not find it, since we did no drilling higher than 4 ft. above the mantel. Three times during the summer the furnace had been blown down to below the mantel.

The following is the record for the last six months of the blast. The increased percentage of basic iron and

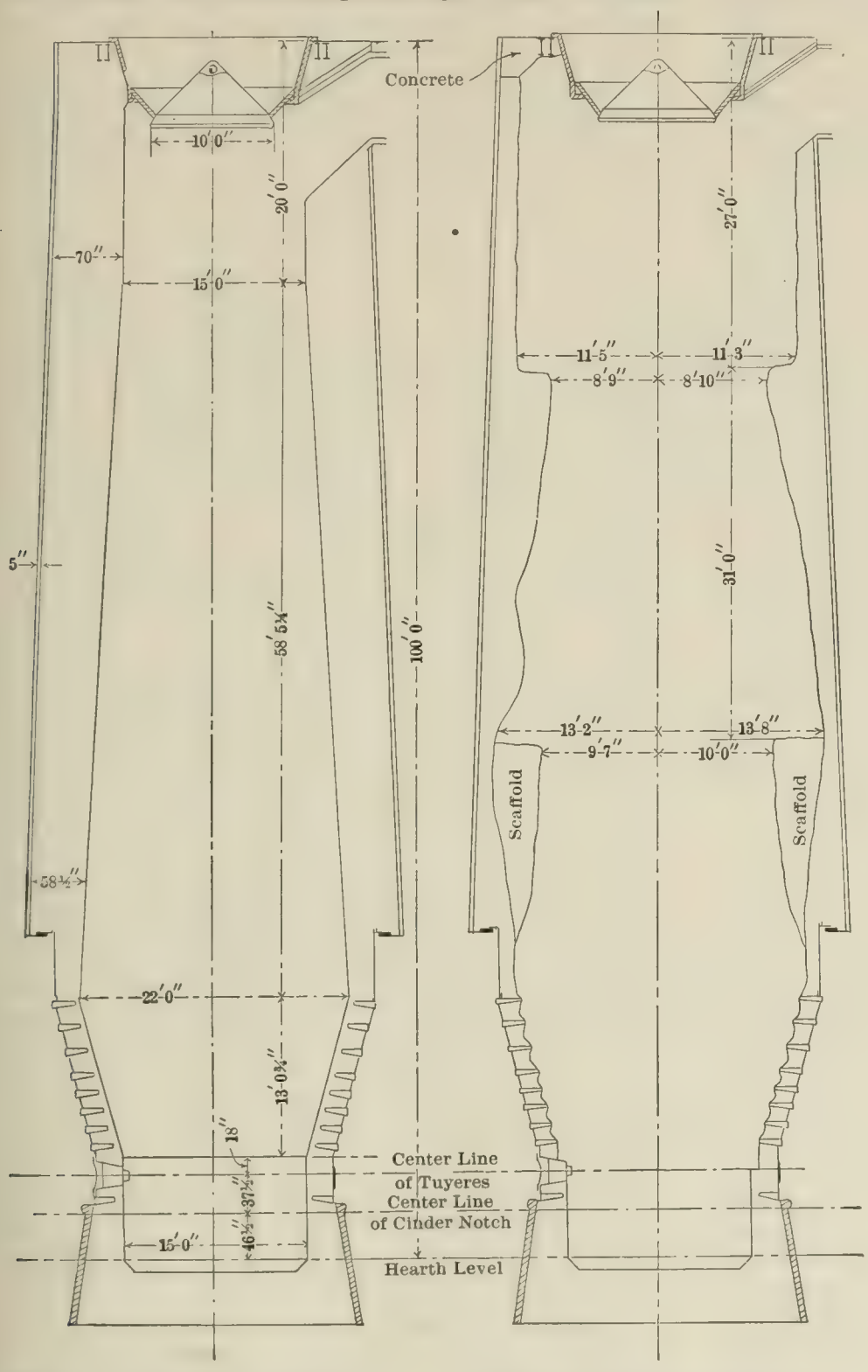



Fig. 1.—Furnace No. 2, Blown In November 1, 1904.




Fig. 2.—Furnace No. 2, Blown Out December 27, 1907.

tue lowering of fuel consumption in a furnace without a stock line and with a large ring scaffold are remarkable:

*Record of Furnace No. 2.*

| 1907. | Fuel per ton of iron.—Pounds. | Tons of iron per week. | Percentage of basic iron. | Aver. stoppages per week in minutes |
|---|---|---|---|---|
| July | 2,534 | 3,025 | 89.2 | 194 |
| August | 2,452 | 2,649 | 69.0 | 528 |
| September | 2,503 | 2,638 | 78.2 | 441 |
| October | 2,501 | 2,927 | 82.2 | 336 |
| November | 2,339 | 2,735 | 80.4 | 336 |
| December | 2,261 | 2,880 | 88.5 | 319 |

No. 2 furnace has since been repaired, but trade conditions have not been such as to render it advisable to blow in. We have not, therefore, had the opportunity to test the dry air blast on the newly lined furnace.

**Dry Blast on No. 1 Furnace.**

On September 25, four of the compressors having been completed, the dry blast was put on No. 1 furnace. In three days the moisture per cubic foot of air was reduced from 6.5 grains to 1.50. There was the same evidence of greatly increased heat, shown by tuyeres, slag and iron, as at No. 2 furnace. No. 1 had been in blast for 2.5 years on high silicon foundry iron. The settling for the first year had been entirely by 4-ft. jumps, and the fuel consumption had been consequently high and the iron irregular in grade. After the first years the three top rows of the five rows of bosh plates were pulled out of the furnace. This resulted in regular settling on foundry iron and lower fuel consumption. In March, 1907, however, an attempt was made to turn this furnace to the production of basic iron. It proved impracticable, because an arch formed on the step left by pulling out the plates. The furnace stuck fast for 24 hr. and would not settle at all, so that she had to be put back on foundry iron. During the summer of 1907 her work became extremely bad and the iron was irregular in grade.

Upon the application of dry blast in September the furnace acted much as she had done in March, when the attempt was made to make basic iron—that is to say, the reduction of fuel (or, what is the same thing, the increase of burden) and the consequent lowering of the zone of fusion brought about a tendency to arch at the offset on the bosh. The daily product increased about 10 per cent., and the quality of the iron improved somewhat. The fuel consumption had to be kept relatively high in order to run the furnace at all. She was blown out on November 11 on account of our accumulation of foundry iron. The dry blast had been used on her for 45 days, hardly long enough to get significant results from an old furnace. If the market had warranted keeping her in operation there is little doubt that she would have improved. Fig. 3 shows her original and Fig. 4 her wear, lines and the step on the bosh.

The effect of the dry blast on these two wornout furnaces was a matter of great interest to the management. The first effect was to make them more troublesome, but this was explained by later experience as due to the too sudden application of the dry blast. The improvement in their work was slow by reason of the necessity of forming gradually somewhat different interior lines. In the light of recent experience we are wondering whether No. 1 would not have done better had we the courage to put on a heavy burden in spite of the shelf on the bosh.

**Dry Blast on No. 1 Furnace Relined.**

No. 1 furnace was relined as shown in Fig. 5, there being practically no change in the lines, except that the crucible was made larger in diameter. The bosh is held by two rows of plates with a bosh jacket above, on which there is 9 in. of brick. The idea is to avoid the cooling on the upper bosh (which seemed to cause the stock to settle irregularly during the previous blast), and still to be able to maintain the lines of the bosh, so that basic iron can be made if desired. The furnace was lighted March 12, 1908. Ten days after the first iron was made the dry blast was applied. The moisture was lowered from 4.5 grains on Monday, March 24, to 1.5 grains on Tuesday. The revolutions of the engine were reduced 10 per cent. at the same time and the burden was increased 5 per cent. The effect was immediate. At 9

a.m., when dry blast was applied, the silicon in the iron was 2 per cent. At 5 p.m. it was 2.75 per cent. Increased heat in the hearth was indicated by the appearance of tuyeres, slag and iron.

The rate of driving decreased but little. That night the furnace stuck fast; the blast had to be thrown off to get her down, and she began to become cold. The moisture was then lowered to less than 1 grain per cubic foot. The next day the sticking continued and the pressure went up to 15 lb., at times stopping the engine. The applying of cold blast did not lower the pressure. It was necessary on these occasions to relieve the pressure entirely by throwing off the wind. The furnace would then settle; but the trouble reoccurred, sometimes at once, sometimes not until after 12 hr. The iron got hard and the cinder black, but both ran very hot. The burden was reduced 7.5 per cent., and the blast was increased, but that made matters worse.

After five days of unsatisfactory work, we came to the conclusion that the furnace was underburdened. The sudden application of dry blast had greatly increased the heat of the hearth. This increased temperature, not being met by increased work in the form of heavier burden, necessarily worked high up in the furnace, causing sticking at the top of the bosh. The CO in the gas increased to 32 per cent. The burden was increased 15 per cent. in one change. When this came to work, the pressure held constant, and the furnace has been settling regularly since.

If there was any one thing that proved the power of dry blast to us it was this experience in putting it on too fast. At Isabella they always take at least ten days, putting on one-quarter, and slowly burdening up, and so on. At Cardiff they followed Isabella practice. We have learned our lesson, and in the future will blow in with dry blast if possible, and, if not, will put it on very slowly.

The next week, the fourth of the blast, the furnace made 1311 tons on 2090 lb. of fuel. She has since, in several different weeks, made nearly 1700 tons a week on less than 1900 lb. of fuel, with heats under 900 degrees, and an ore mixture of 50 per cent. magnetic concentrates, and only 25 per cent. of Lake ore. She has made 1400 tons of iron, averaging 2 per cent. of silicon on less than 2200 lb. of fuel per ton, on the same mixture, but with 1000 degrees F. of blast temperature. The monthly records are as follows:

*Record of No. 1 Furnace.*

| 1908. | Product per week. Tons. | Percentage of foundry iron. | Yield of ore. Per cent. | Blast temperature. Degrees F.. | Fuel per ton of iron. Pounds |
|---|---|---|---|---|---|
| April | 1,392 | 3 | 57.5 | 882 | 2,061 |
| May | 1,532 | 21 | 56.7 | 920 | 2,059 |
| June | 1,451 | 77 | 57.1 | 968 | 2,131 |
| July | 1,501 | 32 | 57.4 | 907 | 2,006 |

April was practically the first month of the blast, and the early troubles occurred in its beginning. In May and June much high silicon foundry iron was made, some of it carrying more than 3 per cent. of silicon. In July there were a number of small stoppages, and one of more than 18 hr. Warwick is a merchant furnace, and the iron made must suit the order book. At the present time the changes of grade are consequently frequent, and the convenience of the furnace is not considered. We have no comparative records on basic iron. The nearest is the record of forge iron, in 1898, when the ores were entirely different and the blast temperatures much higher.

| Product per week.—Tons. | Yield of ore. Per cent. | Heat of blast Degrees F. | Fuel per ton of iron.—Pounds. |
|---|---|---|---|
| 1,246 | 61.21 | 1,234 | 2,378 |

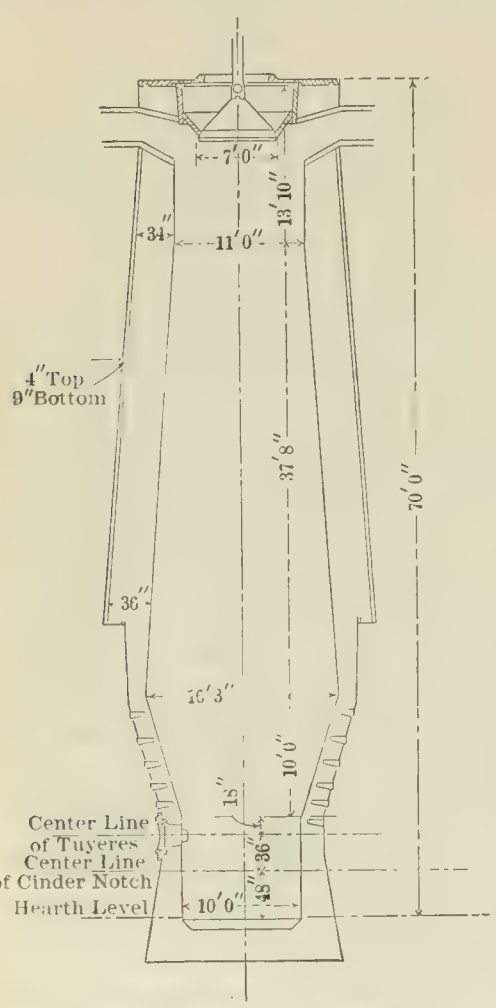



Fig. 3.—Furnace No. 1, Blown In August 3, 1905.

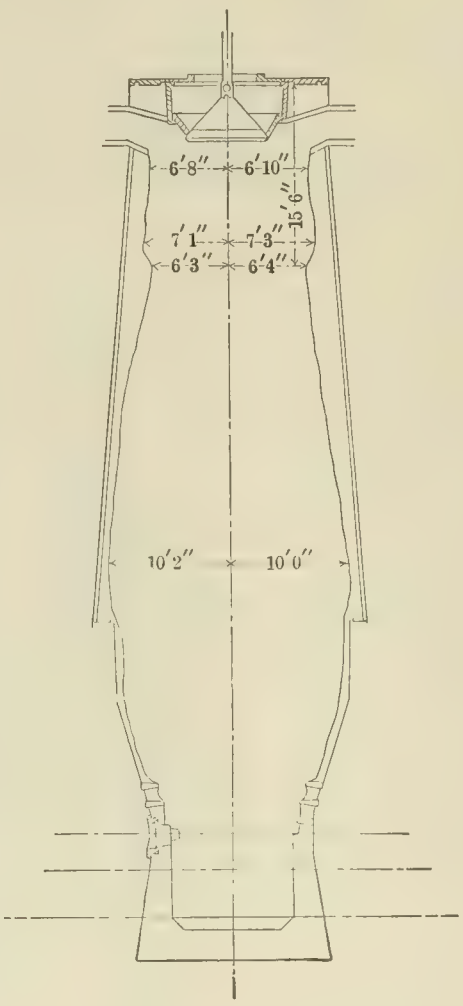



Fig. 4.—Furnace No. 1, Blown Out November 11, 1907.

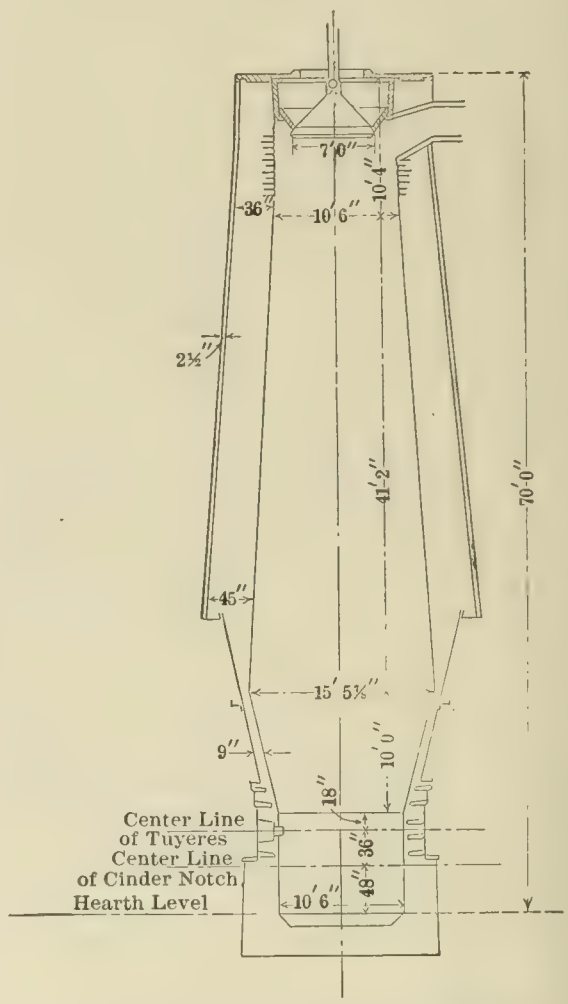



Fig. 5.—Furnace No. 1, Relined, Blown In March 12, 1908.

The best previous record of recent years on foundry iron is that of 1906, as follows:

| Product per week.—Tons. | Yield of ore. Per cent. | Heat of blast Degrees F. | Fuel per ton of iron.—Pounds. |
|---|---|---|---|
| 1,016 | 57.3 | 1,016 | 2,633 |

**Increase in Output and Saving in Fuel.**

We feel that, at a moderate estimate, we are saving 400 lb. of fuel per ton of iron and making 350 tons more iron a week, notwithstanding our lower blast temperature and a much more refractory ore mixture. Although the fuel economy shown is not as great as that exhibited by the Isabella furnace, comparatively it is as good. It is a remarkable fact that all the furnaces using dry blast are showing about the same percentage of saving of coke and increase of product as compared with their previous work. The dry blast is by no means a cure all. Although it greatly increases the regularity of the furnace and enables it to be run closer, this very fact of doing away with the margin of safety, and running on a small slag volume and a siliceous slag, makes the furnace more sensitive to changes of coke and variations in the character of the ore mixture.

**Details of Operation.**

The settling of No. 1 furnace is very uniform, and she keeps level on top. On changing from one kind of iron to

another we have irregularity, and occasionally have to slack her; otherwise she settles regularly. It is most unusual for her to make a jump, even during a cast. The blast pressure varies from 9 to 10 lb. per square inch, according to variation in blast heat, and the use of three different kinds of coke. The dry blast plant is about 150 ft. from the No. 1 blowing engine, and the pipe is not protected from the sun. The temperature of the air arriving at the engine varies about 15 degrees in summer, between day and night. This makes a difference of, roughly, 5 per cent. in the volume of air that the blowing engine delivers. The effect upon the furnace is to make her drive about 5 per cent. faster at night. On one or two occasions this faster driving has lowered the silicon in foundry iron; otherwise it has given no trouble. An attempt was made for a time to run the engine 5 per cent. faster on the day shift if the sun was shining, or 2.5 per cent. faster if the day was cloudy. But this was soon given up, as it was too complicated, like the changing of blast temperature to meet variations in humidity.

On one occasion the dry blast plant was stopped from 8 a.m. to 6 p.m. to make a change in the brine piping. The moisture rose from 0.63 to 4.08 grains per cubic feet of air. The silicon in the iron made dropped from 2.5 down to 2 per cent., and then went back to 2.75 per cent., when the moisture was reduced again below 1 grain per cubic foot.

Sometimes the first flush of cinder after a cast was gray and the next black. This was invariably followed by a cast much higher in phosphorus and somewhat higher in sulphur. There was no slip nor any indication of a slip on top, or in the gas, and we attributed the phenomenon to the occasional running ahead of the high phosphorus magnetic concentrates. This trouble was partly corrected by a rearrangement of the filling and the making of a slightly more basic slag. A steam reducing valve has caused many stops, and trouble with steam at the engine has reduced the tonnage for certain periods.

When the furnace is running on foundry iron, the product is wonderfully uniform in silicon and sulphur as between one cast and another or different portions of the same cast. On basic iron we can safely carry our silicon from 0.2 to 0.5 per cent. without fear, and the sulphur can be held more constant than in a furnace blown with natural air. On two occasions, through a desire to lower fuel consumption, the furnace has been overburdened, and hard iron and buckshot have resulted; but a small amount of extra coke and a reduction of burden to the proper amount has brought the furnace back on good iron immediately.

There are, of course, two ways of running a furnace: First, carefully, to make a regular grade of iron; second, up to the limit, to make large tonnage and reduce fuel consumption, without reference to maintaining a given grade of iron. Running in the first way with the dry blast, it is possible, with ordinary care in keeping the stock regular, to make every cast of the grade desired. Running in the second way, some variation in silicon and sulphur occurs in the product of the dry blast, but not nearly so much as with natural air, irregular in moisture.

The gas stays high in CO (up to 26 per cent.) on account of the use of 50 per cent. of magnetic ore. The temperature of escaping gases on a 70-ft. furnace averages 300 degrees F. on basic and 500 degrees F. on foundry iron.

On account of the regular settling, the flue dust must necessarily be less; but our ore mixture has been so changed that it is difficult to make comparisons. We are inclined to think that it was a mistake to make the stock line so small in diameter, since, with the fine mixture now used, the amount of flue dirt made is considerable. It varies from time to time, even on the same mixture. For several days the amount made is excessive, as if the furnace were channeled; then it decreases again.

### Explanations of Dry Blast Results.

Many furnace managers who have seen the Warwick dry blast plant have asked how we explain the results obtained. The following hypothesis satisfies us and may be of interest to others:

Of all the heat value of coke that goes into a furnace only about one-fourth is available for heating the hearth, about one-half is sensible heat in the gas, about one-quarter reduces the ore, some is required to carburize the iron. Now the hearth is the only limit, the only place where the ordinary furnace requires more heat. It was estimated for years that dry blast would save only 3 per cent. of coke, but the fact was neglected that this 3 per cent. of the total fuel would be saved to the hearth alone, and that this would amount to four times as much, that is, 12 per cent. of the heat of the hearth, and as the hearth is the only weak place, the efficiency of the furnace would be increased 12 per cent. It is like a chain with one weak link. You increase the weight, say, 3 per cent. of the total chain, but put all the increase of metal in the weak link, and increase the strength of the chain 12 per cent. In this case, the dry blast decreases the duty of the hearth 12 per cent. and allows the resultant heat to be utilized upon increased quantities of iron and slag.

Further, this increased burden, together with regularity of heat supplied to hearth, enables the slag volume to be decreased and the slag made more acid. This again saves fuel. The increased product decreases the radiation per ton of iron and makes another saving. This will vary with individual furnaces, and will be particularly great on those that will stand more wind. The writer believes that a very close estimate can be made on the amount of saving dry blast will make on each furnace.

The temperature of a furnace is increased enormously when dry blast is applied, particularly if it be foolishly put on too fast, as on the No. 1 furnace, but the increased temperature is soon equalized with burden and more work, and the temperature kept at the desired point as in any furnace.

### Cost of Refrigeration.

Some estimate of the cost of operating the plant may be of interest. Based on a product of 720 tons a day, and running all the ammonia-compressors, the labor-cost is 2.5 cents a ton. In the fall, winter, and spring months it is 2 cents a ton. The oil, waste, &c., should not exceed a maximum of 1.5 cents a ton. Estimating on an excessive loss of ammonia (one-third of the entire contents of system yearly) the ammonia-cost will be 1 cent per ton. The brine-cost is insignificant. We estimated that 10 cents a ton would cover the cost of operation and maintenance, and we now feel that this will be more than ample.

Judging from the experience of general refrigerating machinery and plants, an annual depreciation charge of 5 per cent. will be sufficient.

No charge is made for steam; for, in our experience, the dry-blast plant has made no additional firing of coal necessary. The reduction in revolutions of the blowing-engines spares enough power to run the refrigerating machinery, brine pump, and fan. Although the gas is leaner and of lower temperature, so that it is not as good fuel, its flow is regular; and there is no sticking after casting, with loss of gas and consequent heavy firing.

### Summary.

The management of Warwick feels fully satisfied with its adoption of the dry blast. No explanation is needed to show its great value during the past summer, of extremely high and irregular humidity, at a time when the iron market has been totally demoralized. We are now installing new Roberts center combustion-chamber stoves at the No. 1 furnace, in order to obtain 1300 deg. to 1400 deg. F. of heat in the blast. It is a matter still open for discussion; but we feel that the dry blast will make possible the use of higher heats, and thereby indirectly lead to an additional saving in fuel.

In conclusion, attention is called to the fact that the efficiency of the dry blast has been demonstrated on a small furnace, and that the results warrant the statement that its application will be of particular value to small furnaces, as it gives them the efficiency, and somewhat of the production of iron, of the larger furnaces. The claims of Mr. Gayley have been more than confirmed by the experience of every plant that has installed the dry blast, whether the furnace was large or small, and whatever the fuel and ore mixture and the grade of iron desired.

# The E. J. Manville Bolt Head Trimmer.

A machine bolt, such as is shown in Fig. 1, may have either a square or hexagon head, and the same character of blank may also be utilized to make lag or coach screws. Fig. 1 also illustrates the mechanical operations by which such a blank is produced automatically on a heading machine comprising the following elements: A feeding device, by which wire is taken from the coil, straightened, and pushed a required distance into the machine; a cutting mechanism which severs the blanks to exact lengths; dies which receive and protect that portion of the blank which is to form the body of the bolt; a first punch which advances to the projecting end of the blank and compresses it into a cone or other suitable preparatory shape, and finally a second or finishing punch, which, by exerting great pressure, forms the head into the required shape, after which the finished piece is ejected and the process repeated.

Such a machine is called a double-stroke header, and, on a medium size machine, such as was described in *The Iron Age* August 23, 1906, ⅜-in. bolt blanks 4½ in. long can be made at the rate of 65 per min. from annealed and cleaned basic wire, or any stock having a tensile strength of about 50,000 lb. per sq. in. and an elongation of about 25 per cent. Such stock is used when the amount of metal required in the head is excessive, but for smaller heads annealed bessemer wire may also be used.

As will be seen by the foregoing, this process requires that a cold heading machine be used to make a blank having a symmetrical round head which is subsequently to be trimmed into a square of hexagon outline. This trimming operation has usually been performed on a vertical power press of ordinary type, each bolt being placed by hand so that its body or shank is pushed up into the hollow punch during its upward movement. As a substitute for this, which would give greater output per machine and great saving of labor, the automatic bolt head trimmer shown in Fig. 2 has been designed by the E. J. Manville Machine Company, Waterbury, Conn.

The horizontal type of machine has been chosen, having the pillar form of frame which carries a well-fitted gate with large wearing surface. To trim ⅜-in. blanks of 4½ in. length a crank stroke of 5 in. is used. The balance wheel is large and makes 60 rev. per min. An important part of the machine is the feeding device, and, owing to the variety and sizes of work which such

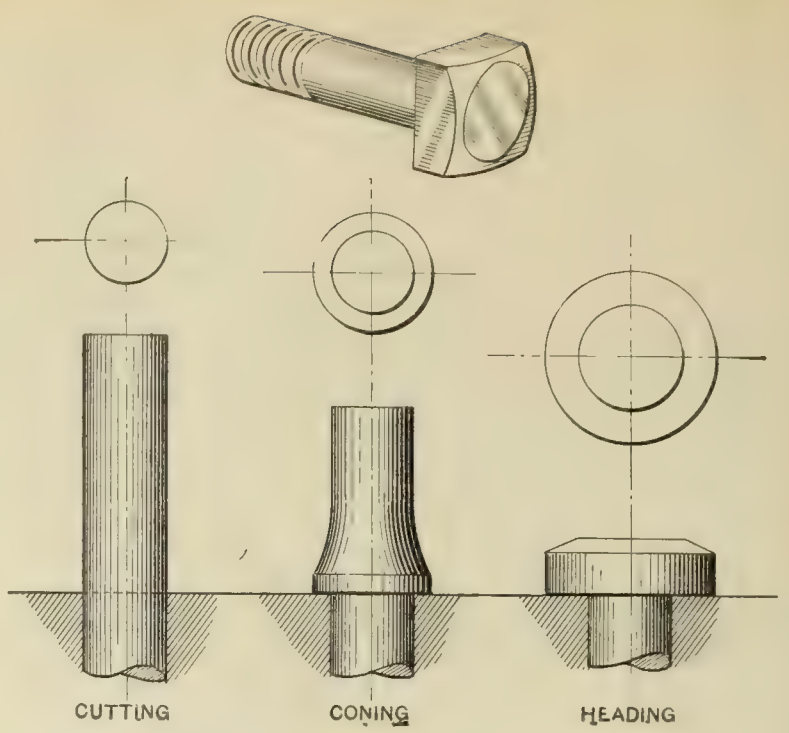



Fig. 1.—A Machine Bolt and Three Stages in Its Heading.

a machine must automatically handle, several novel features are incorporated.

In the feed hopper a slotted blade works upward through the center to raise the blanks by their heads. It is pivoted and swings from a point outside of the hopper, its motion being fanlike. This lifter or blade is made of two plates of steel riveted to a separating piece, the lower edge of which is acted upon by a crank-pin and roller projecting from the face of a plate gear. The latter is rotated by a pinion on the end of a short shaft, having on its opposite end a two-step belt pulley, to which power is transmitted through a belt from a pulley on the main crankshaft.

As this slotted blade or elevator passes upward through a quantity of headed blanks thrown promiscuously into the hopper, several blanks will be lifted by their heads at each stroke, and, owing to the incline of the blade when in its upper position, the tendency of these suspended blanks is to gravitate toward the low end. A continuation of this incline is formed by a raceway constructed of two stationary plates, as may be seen in Fig. 3. This view also shows the heads of a number of blanks which have been automatically placed in proper position by the feeding devices.

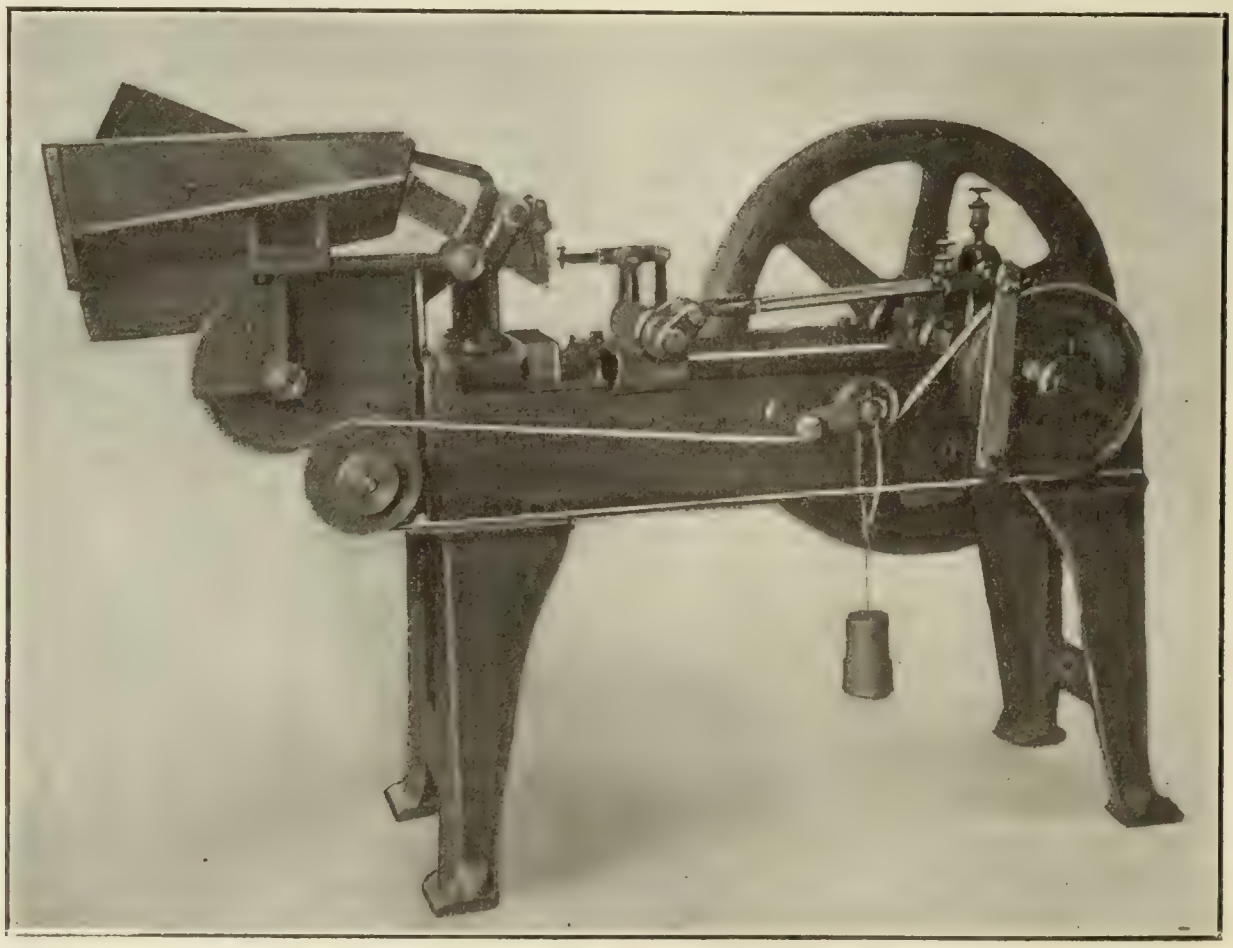


Fig. 2.—The Automatic Bolt Head Trimmer Built by the E. J. Manville Machine Company, Waterbury, Conn.

At the juncture of these tracks with the lifting blade of the hopper a monitor is situated which stops the progress of all blanks not properly delivered to the fixed track and returns them to the hopper, thus insuring a continuous action and automatically guarding against frequent stoppages, which are otherwise inevitable. At the lower end or outlet point for these blanks is a mechanically actuated cut-off device which holds back the descending column of blanks, and at the proper instant separates the lowermost blank from those behind it and forces it outward into the spring jaws of a special carrier or transferring device. In the feeding mechanism all blanks hang naturally, with heads uppermost, up to the instant that they are removed from the tracks by the carrying fingers. This improved arrangement dispenses with guides and other obstructions in proximity to the tools of the machine.

A novel mechanism is used to transfer the blanks from the vertical position at their outlet point at the foot of the tracks to the horizontal position in line with and between the punch and die. This mechanism comprises two rocking shafts, working on the same center, each being moved through an arc of about 90 deg., by two cams on the crankshaft of the machine. Carried on the inner ends of these two rocking shafts are arms, to one of which is pivoted the finger lever, or that carrying the spring fingers which receive the blank from the tracks and deliver it to the dies. A link joins the opposite end of the finger lever to the arm on the second rocking shaft, thus forming a parallelogram link system by which it is possible, with properly shaped cams, to cause the bolt in the fingers to follow a path, giving the bolt the following motion: Assuming that the fingers lie horizontally and have been presented properly to receive a blank from the tracks, the cut-off acts to pass a blank into the fingers, and the finger carrying arm moves the blank away from the tracks a short distance, after which the link-end is caused to rise, thereby depressing the finger-end, as will be seen in Fig. 3, and this motion of the two arms is continued until the blank is carried to its lower horizontal position, where it rests until the hollow end of the square ended punch, carried by the gate, advances a sufficient distance on the end of the blank, and then the fingers move up to clear the punch.

The spring fingers and their holder are readily removed from the carrying lever when another diameter of bolt is to be handled, and provision is made for accurately adjusting the fingers so that they will present the bolt in perfect line with the tools at all times.

To securely retain and carry the hollow punch, a steel holder is provided in the gate, and to take the thrust of this punch a large hollow adjusting screw is used. Running through this punch and screw is a stationary stripping rod, which is held by a post on the frame of the machine.

The die-holding block is bolted to the inner vertical end of the bed, and can be adjusted from side to side. Within this block is clamped the steel die-holder, which may be adjusted in a vertical direction, so that by the two adjustments perfect alignment of the punch and die is easily obtained. The die, being cylindrical, is cheaply made and readily retained or removed for sharpening.

The bolt is presented between the punch and die, as described, and the punch advances on the shank or body of the blank until it reaches the under side of the head, when its further advance pushes the bolt head against the die, and finally into the die, thus shearing it to required shape. The punch then recedes, leaving the bolt projecting out of the die until the gate is on its rearward end of stroke; then the bolt head is pushed out of the die by a knock-out pin actuated from the gate, and the trimmed bolt falls to the floor.

Provision has been made in the matter of quick adjustment to adapt the feed to work of various kinds and sizes, and the relative movement of the punch and carrying fingers is easily changed as required by adjusting the double cam on the end of the crankshaft. The pantograph motion of the linkage carrying the fingers is constant, since both controlling cams are cut on one disk, the outer edge of which is also utilized as the belt pulley for driving the hopper mechanism.

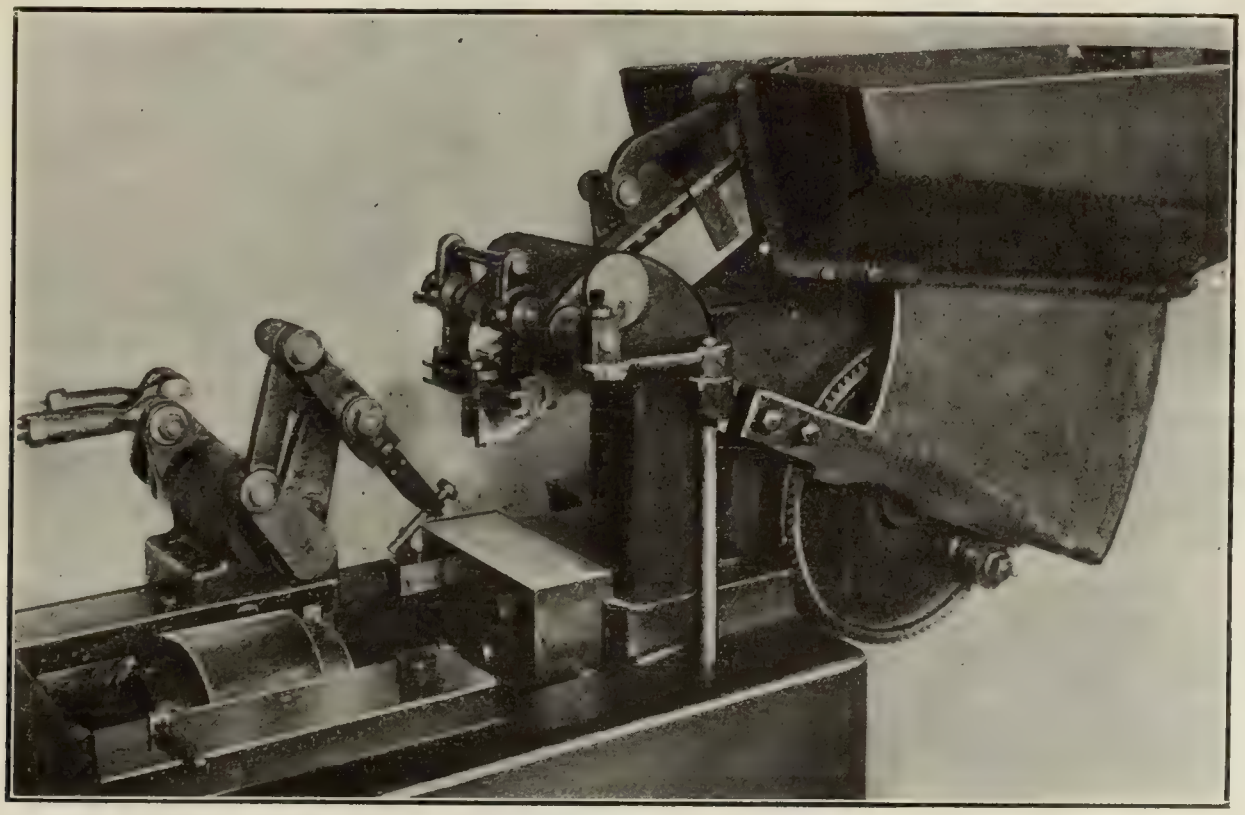


Fig. 3.—An Enlarged Detail of the Feeding Mechanism as Viewed from the Opposite Side.

The Readjustment Committee of the Westinghouse Electric & Mfg. Company closed its two-day session September 24, after practically adopting the plan for the reorganization of the company formulated by the Merchandise Creditors' Committee, which involves the issuance of $10,000,000 of new stock, $6,000,000 to be subscribed for by stockholders, and $4,000,000 to be accepted by the merchandise creditors in payment of their claim. The Readjustment Committee occupied itself for the two days with the reports of the Merchandise Creditors' Committee, which has not yet succeeded in getting either full subscriptions to its plan or the full assents of the merchandise creditors. The Merchandise Creditors' Committee has until October 27 to complete this work.

The Sloss-Sheffield Steel & Iron Company has just blown in a fifth furnace, and the sixth will be put in operation within the next 10 days or so. This will mean a total production of about 38,000 or 40,000 tons of iron a month. It is claimed that increased activity has been made necessary by the fact that the company has entirely sold up the output of four furnaces for the balance of this year, amounting to something like 65,000 tons.

# The Wickwire Steel Company's Plant at Buffalo.

The blast furnace of the Wickwire Steel Company, which has been building during the past year at Wickwire, N. Y., 1½ miles north of the Buffalo city line, is now completed. It was blown in October.

The site on which the plant is located comprises about 80 acres bordering the Niagara River, with 1500 ft. of water frontage. It is intersected by the Erie Canal and connected with the New York Central Railroad Company's lines by an industrial spur. Fig. 1 shows the location of the works, with reference to other blast furnace operations in the vicinity of Buffalo. The first pile for the new plant was driven August 2, 1907, but building operations were not commenced in earnest until the completion of the New York Central's spur line tracks into the property, which was September 25.

The plant has a modern layout consisting of docks, ore unloading machinery, ore handling bridge, bins and skip hoists, controlling a single blast furnace stack, and was designed by Julian Kennedy of Pittsburgh, who also superintended all engineering features in the construction of the plant. Fig. 2 shows the general plan, and Fig. 3 a view of the dock. The ore dock is 500 ft. in length and 200 ft. in width, of reinforced concrete construction, tied back to the ore bin foundations every 10 ft. by 2-in. square steel tie rods. This dock is equipped with a Hulett 10-ton electric ore unloading machine, back of which is located a Brown Hoisting Machinery Company's 7½-ton bridge. These machines are both of the latest design, the Hulett machine being capable of handling 300 tons of ore per hour from a boat.

The plant is equipped with the Brown Hoisting Machinery Company's ore bins, with automatic weighing larry and transer cars. The stack, Fig. 4, is charged by a double skip runway, elevated by a 14 x 14 in. Otis automatic steam hoist engine. The furnace is 80 ft. high and 20 ft. 6 in. bosh, with a Kennedy closed top of latest design. There are 11 cooling plates above the mantle, which gives the furnace more cooling surface than has usually been provided heretofore. The furnace is expected to have a daily output of about 350 tons of basic pig iron. The stack is equipped with a cast house, as shown in Fig. 2, and the slag will be run into a granulating pit. The four stoves for heating the blast are 80 x 20 ft., of the Julian Kennedy central combustion type. The gases from the furnace will be run through a dust catcher and then through a gas washer.

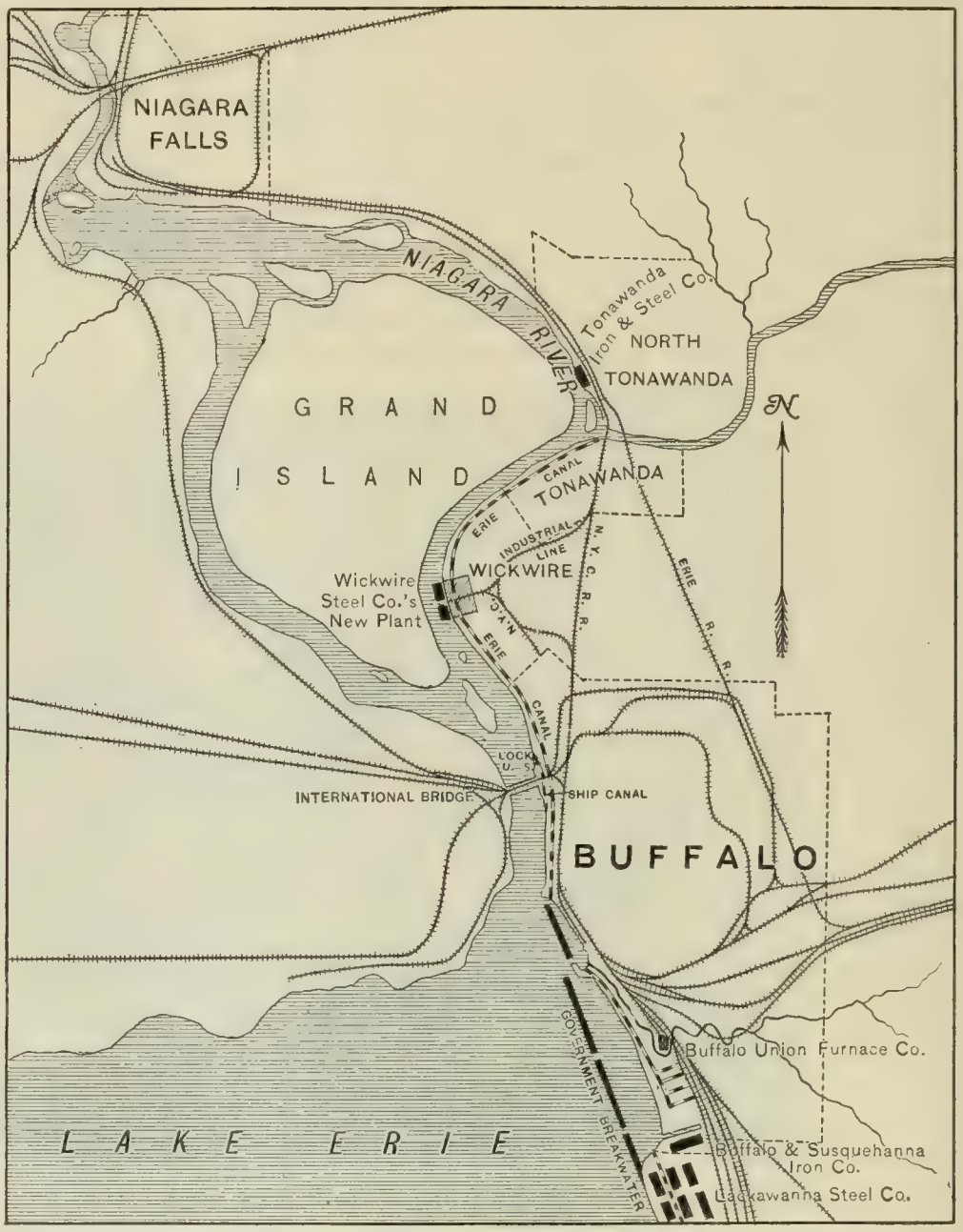



Fig. 1.—Location of the Wickwire Steel Company's Plant with Reference to Other Blast Furnace Operations in the Vicinity of Buffalo.

The boiler equipment of the plant consists of four batteries of two Babcock & Wilcox Stirling boilers each, with a rated capacity of 350-hp. per boiler. The blowing engine equipment consists of three Allis-Chalmers vertical engines, with 96-in. blowing tubs; there being two high pressure and one low pressure engine. The electric generating equipment comprises two Westinghouse 300-kw. generators, operated by a pair of Harrisburg Foundry & Machine Company's Fleming slide valve engines. The interior of the power house is shown in Fig. 5.

The water supply system consists of a 30-in. intake main from the river opening into a well. There are two general service pumps, which are Jeaneville pattern horizontal compound condensing plunger pumps, and the boiler feed pumps are of the same pattern, but noncondensing. Boiler water is purified by a W. B. Scaife & Sons We-Fu-Go water softening and purifying system of 4000 hp. capacity. All steam is condensed in a barometric condenser made by the Alberger Condenser Company. The pressure upon the water supply is obtained by a stand pipe, 20 x 80 ft. The pig casting machine is a Uehling single strand casting machine, built by the Heyl & Patterson Company, Pittsburgh, with a casting house constructed by the American Pig Casting Machine Company. The steel work in the construction of the buildings, both structural and plate, was erected by the Variety Iron & Steel Works, Cleveland, Ohio. The roofs of all the buildings are covered with the Federal Cement Tile Company's reinforced tile. The steam and water piping was installed by the Jno. W. Danforth Company, Buffalo.

The power house is served by a 25-ton electric crane, built by the Cleveland Crane & Car Company, and the plant has a 10-ton Brown Hoisting Machine Company locomotive crane for handling granulated slag and other materials around the yards.

The Wickwire Steel Company is closely connected with Wickwire Brothers, Cortland, N. Y., and about one-third of the output of the new plant will be used in their open hearth plant at Cortland as their raw material in the manufacture of wire rods and wire, and the surplus will be sold in the open market by B. Nicoll & Co., New York. The company is in a position to make all the various grades of foundry iron called for by the trade.

The first cargo of ore was received at the ore dock of the new plant June 27, on which date the steamer Kensington arrived with a cargo of 3800 tons, which was the largest cargo of ore that had come down the Niagara River until that time. The company has since brought down a cargo of 6000 tons on the steamer J. J. Boland. On account of the Niagara River draft being limited to 14½ ft.

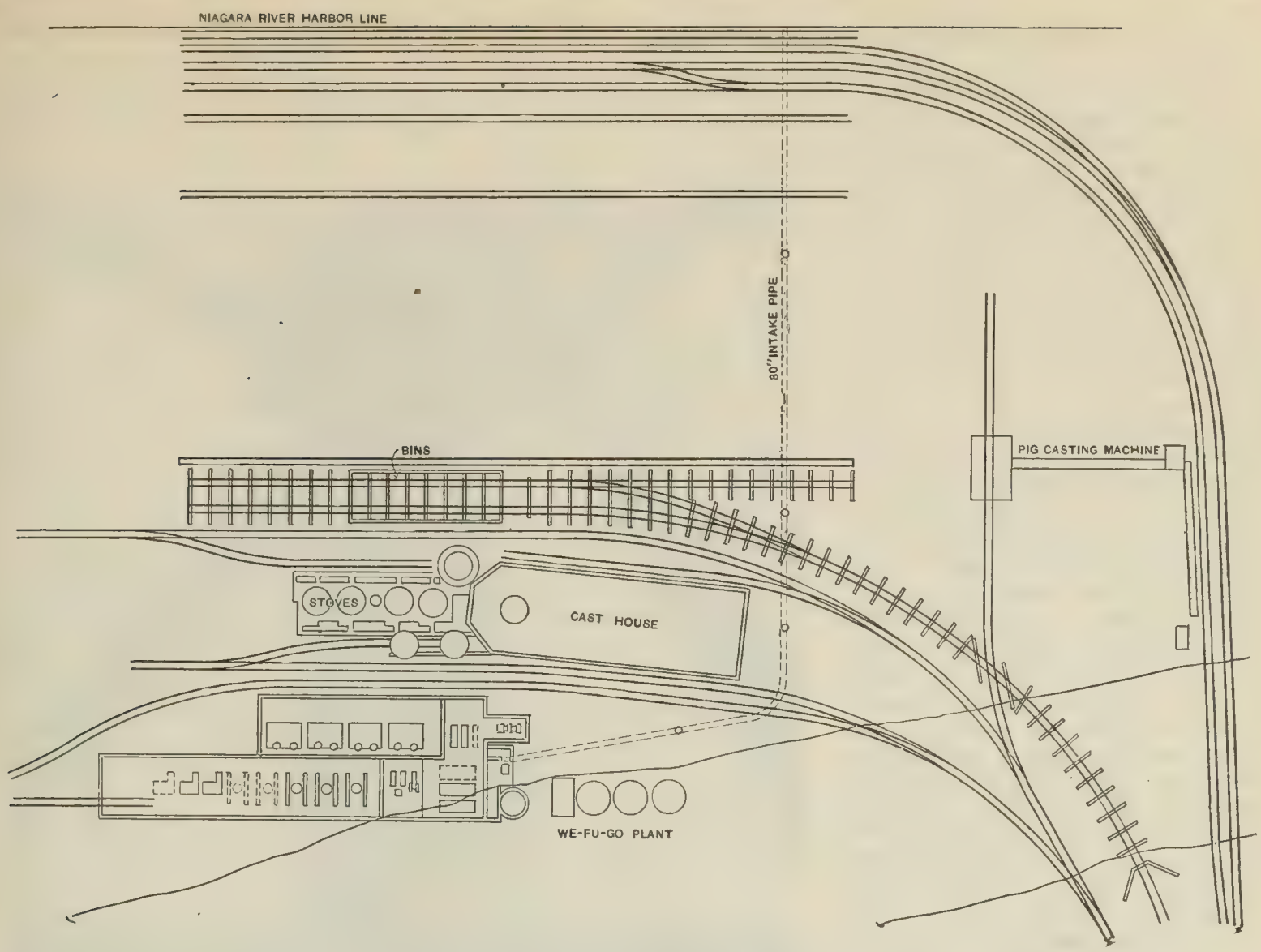



Fig. 2.—General Plan of the Wickwire Steel Company's Plant at Buffalo.

it has been impossible for the larger type of steamers to engage in this trade, and Boland & Cornelius, vessel owners of Buffalo, have commenced the construction of two large steel ore carriers, in which the Wickwire Steel Company is interested and which are especially adapted to the Niagara River trade, permitting large loads on small draft. The boats will have an ore capacity of between 5500 and 6000 tons on a 14½-ft. draft, and when the Niagara Ship Canal, 23 ft. in depth, with lock at Black Rock Harbor, now under construction at Buffalo, is completed, they will be able to carry cargoes to their full capacity.

At the recent meeting of the Western Classification Committee in Manitou, Colo., a rule was adopted, effective January 1, increasing the rate on boots and shoes to one and a half times the regular first-class rate, under which they have been carried heretofore, unless shipped in boxes fastened with cement coated nails. The railroad men assert that the special nails are needed to protect an article which is said to be peculiarly susceptible to theft.

Thomas R. Heyward & Co., Frick Building Annex, Pittsburgh, dealers in alloys, pig iron, steel, coke &c., have been appointed Pittsburgh representative for Frank Samuel, Philadelphia, who handles the Linthorpe-Dinsdale Smelting Company's standard English 80 per cent. ferromanganese and spiegeleisen, and conducts a general importing and exporting business.



Fig. 3.—The Ore Dock of the Wickwire Steel Company.

## The Wire Business Improving at Worcester.

Important improvement is noted in the wire industry at Worcester, Mass., the gain extending through all the works. The great plant of the American Steel & Wire Company has been upon a 50 per cent. basis of production for some time, with certain departments busier than others, as is usually the case at this season. During the last fortnight orders have come in in such increasing volume that production has been so increased as to bring it up to between 60 and 70 per cent. of the capacity of the plant. This improvement is not confined to seasonable departments, but exists throughout the works. A considerable number of men have been added to the payroll.

The same degree of improvement is noted at the works of the Morgan Spring Company, production having increased in about the same measure.

The Spencer Wire Company is running as full as it can without putting on night shifts. This company has not noticed the depression to the same extent as some others, the market for many of the specialties that it manufactures having been better maintained than in most lines. The improvement has been constant for some time, and the last few weeks has seen it even more pronounced.

The Wright Wire Company is fairly busy at both the Worcester and Palmer plants, but it is too early to see improvement, as the products which are now being manufactured do not come into their most active demand normally until later in the autumn. Preparations are being made for a good amount of business.

**Mexican Railroads.**—In a message to the Mexican Congress President Diaz says that 265 miles of new railroad has been built in Mexico in the last six months, and that on September 1 there was a total of 14,665 miles of railroad in the country. Practically all the new mileage is that of the Cananea, Yaqui River & Pacific, which E. H. Harriman and his associates are building down the Pacific slope. The president says regarding the government system of railroads: "The National Railway of Mexico has succeeded in getting the holders of shares and bonds of the National Railroad Company of Mexico and the Mexican Central Railway Company to surrender the securities issued by those companies, which have their domicile in the United States, in exchange for securities of the new company, domiciled in Mexico. Such has been the success of the operation that though the bonds and shares in question were widely scattered over various parts of the world, only a small fraction remains outstanding, ranging from 1 per cent. of some of the securities to a maximum of 5 per cent. in the case of others."



Fig. 4.—The Blast Furnace of the Wickwire Steel Company.



Fig. 5.—The Power House of the Wickwire Steel Company's Plant at Buffalo.

# The Schellenbach 18-In. Cone-Driven Lathe.

The substitution of a cone-driven head for an all-geared head is the only difference between the 18-in. x 8 ft. cone-driven Schellenbach engine lathe illustrated in Fig. 2 and the one described in *The Iron Age* May 28, 1908. Both are built by the John B. Morris Foundry Company, Cincinnati, Ohio, and are otherwise of the same general design.

As may be seen from the sectional view of the headstock, Fig. 1, the drive is direct to the face plate, as in the geared-head machine. The spindle *a* has a flange at its right end and receives the face gear *b*, which is doweled and screwed to it. This gear *b* has internal

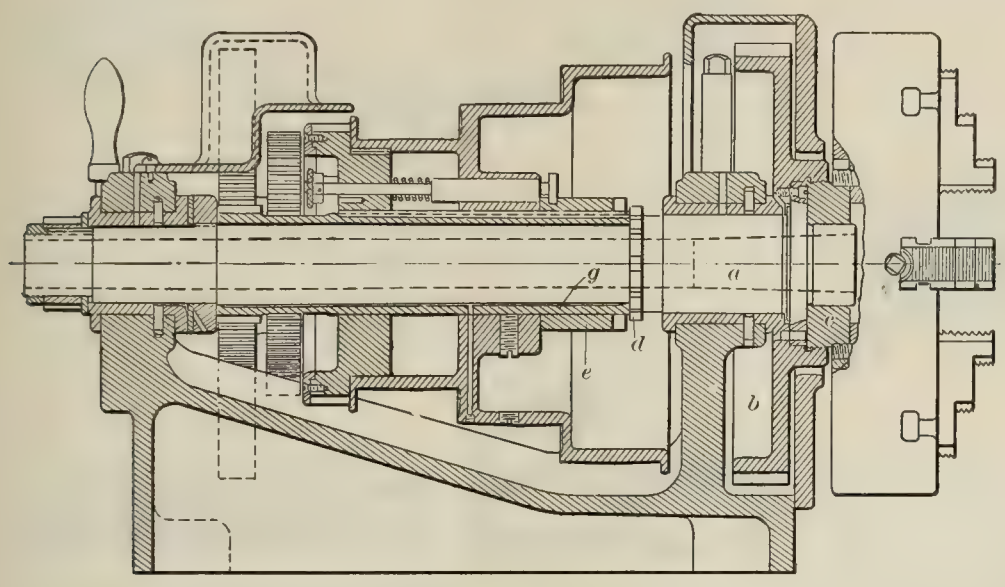



Fig. 1.—Section of the Headstock of the Schellenbach Cone-Head Lathe.

threads and receives the face plates or the chuck. The chuck plate *c* fits the counterbore of the chuck and is bored to fit the end of the spindle and threaded on the outside to screw into the face gear *b*. When pressure is exerted against the chuck it clamps the flange of the spindle tightly between the chuck plate *c* and the face gear *b*. This eliminates all torsional strains within the spindle when the back gear is in use. The clutch teeth *d* are formed upon the spindle and engage the clutch *e*, which is splined to the cone pinion sleeve *g*. This clutch is operated at the left end of the headstock by a spring-seated plunger which passes through the cone pulley. The plunger has a knurled grip with a detent pin in it for holding the plunger out of engagement.

A three-step cone pulley, the largest diameter of which is 12 in., is furnished with this head, and it accommodates a 3-in. double belt. There are two back gear changes, making in all nine changes of speed with a single speed of the countershaft. The countershaft, however, is provided with double friction pulleys, and where a reversing drive is not required it may be driven at two different forward speeds, thus giving the spindle six open-belt speeds and 12 back-gear speeds. The back gear is operated by an eccentric shaft in the ordinary manner. It will be noticed that the overhang of the chuck, from the face of the jaws to the front spindle bearing, is not so great as with the ordinary type of lathe. All of the gearing on the head is enclosed and is of coarse pitch.

This machine is provided with a quick change device, giving a thread cutting range of from 2 to 112 to the inch. The lathe has a double plate apron containing a special arrangement for rough chasing threads by the ordinary rack feed in place of the lead screw, the object being to preserve the accuracy of the screw and to use it only for accurate chasing. A single wrench operates all of the adjusting screws on the machine, including those for clamping the tailstock to the shears. The cabinet legs have hinged doors with latches operated by knobs.

This lathe is also made in 14 and 16 in. sizes and with a plain system of change gears, as well as with the quick change gears shown.

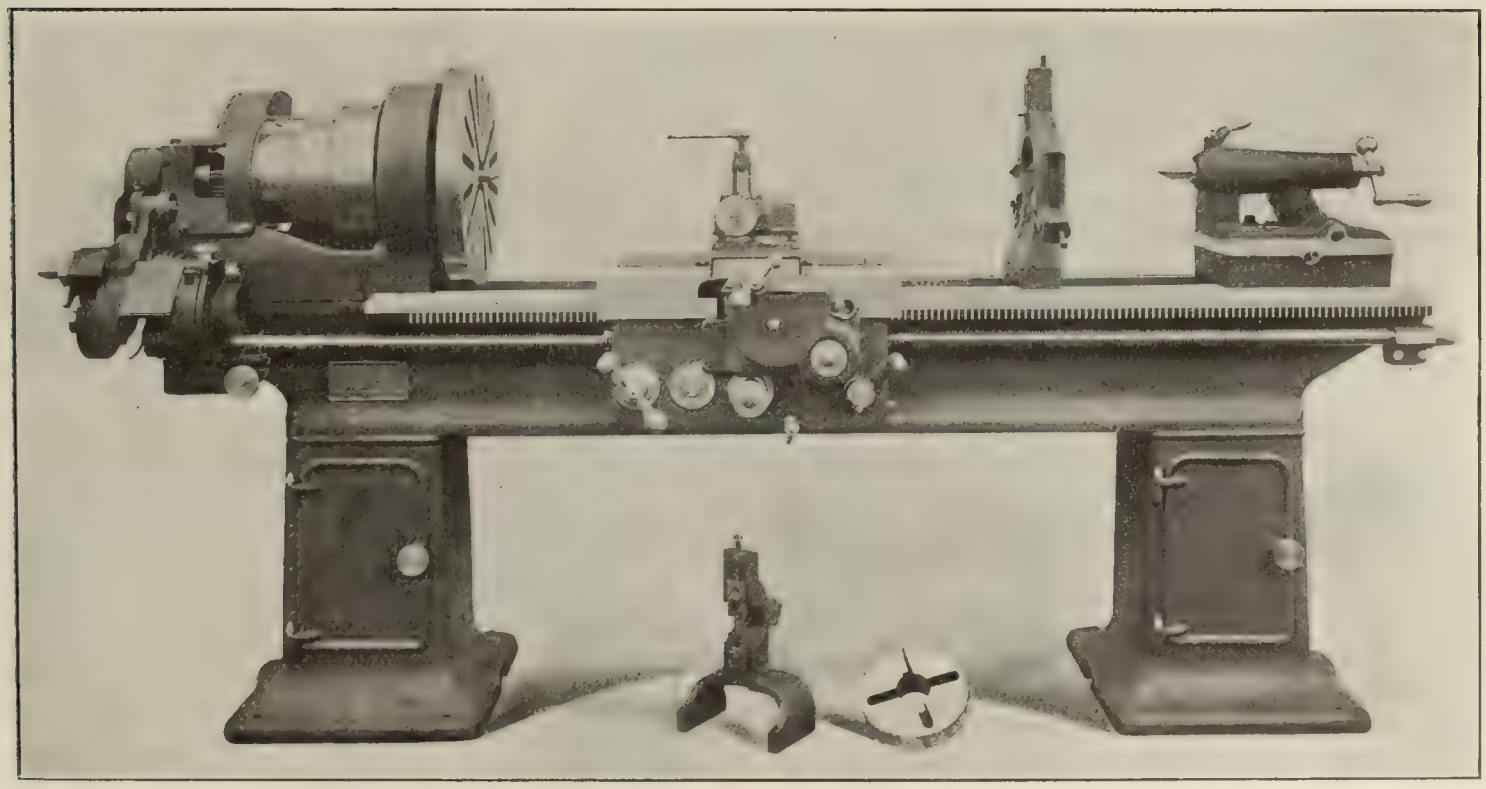


Fig. 2.—The 18-In. by 8-Ft. Cone-Head Schellenbach Lathe Built by the John B. Morris Foundry Company, Cincinnati, Ohio.

Since 1903, when the No. 1 furnace of the Cleveland Furnace Company, Cleveland, Ohio, was completed, ore has been received in cars loaded at a dock farther down the Cuyahoga River, as the channel was not deep enough to permit boats to come up as far as the blast furnace. The furnace company has now completed a 1000-ft. concrete dock and hereafter will unload its ore and limestone from boats, the river having been made navigable to its dock. The American Steel & Wire Company, the Cleveland Furnace Company, Upson Nut Company and Corrigan, McKinney & Co. have joined in asking the city of Cleveland to straighten the Cuyahoga River and further improve navigation facilities.

The Bucyrus Company, manufacturer of steam shovels and dredges, South Milwaukee, Wis., has increased its capital stock from $300,000 to $1,000,000. While the company is doing a very large business in the manufacture of steam shovels and dredging machinery, it is making plans for a still greater output. The additional stock was readily subscribed for by the stockholders.

# CASTINGS VERSUS FORGINGS.

## The Development of the Respective Fields of Cast and Wrought Iron and Steel.

BY JAMES H. BAKER, PITTSBURGH, PA.

Really only one metal is involved in the present consideration; that is iron as a base. By alloying with other elements, by causing chemical changes in these and by varying physical treatment, we get adaptability to the formation of different shapes in castings, forgings and rolled and drawn material. We also get the advantage of certain physical characteristics, such as tensile strength, resistance to crushing, &c. No metallurgical reader need be told that with the iron, as we find it in the condition of ore, we have phosphorus, sulphur, silicon copper, &c., and that in the blast furnace part of the carbon and sulphur in the fuel is taken up by the iron. All of these elements are generally kept as low as possible, though pure iron is of little use. It is necessary to control the proportions of such of the above as may be desired, and others are often added, such as manganese, nickel, chromium, vanadium, &c. Detailed reference to alloyed steels is left out of present consideration except to say that their use will likely still further advance the use of castings, especially steel castings. The changes from the use of one material to that of another are often brought about by advances in the different arts. The useful phase of the matter is to find what decides the choice of materials. The difference between wrought iron and steel is not considered in this paper, nor is it any part of the purpose to describe the differences between casting, rolling, forging, cold drawing, roll forging, pressing, drop forging, &c.



Fig. 1.—Cast Iron Burner.

### Carbon Variations.

Cast iron, having 3 to 4 per cent. generally of carbon, is easily master in resisting compression and in resisting corrosion from many causes. When chilled it has a quality all its own. As to castings, at first we had cast iron, and then we got it with steel turnings and scrap of various kinds intermixed in order to make stronger castings. Also we have had castings which were converted into "steel" after being molded in sand, but this has not advanced much. Next we have malleable castings, which are cast iron with some of the carbon taken out and part of the balance and other elements changed. These are made into many intricate shapes, impossible commercially in wrought material, and yet give a service much nearer to wrought iron as to tensile strength and toughness than simple cast iron.

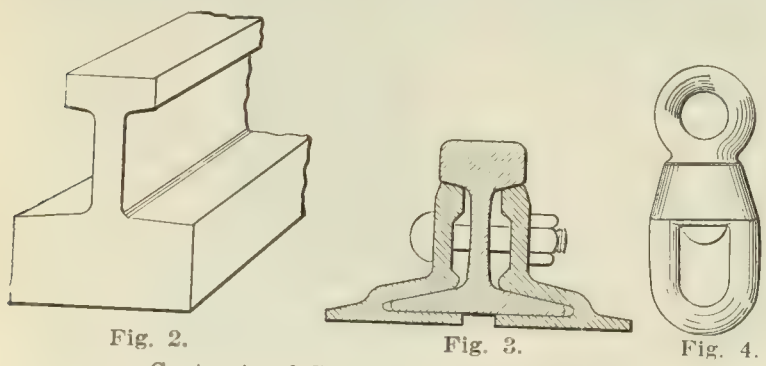


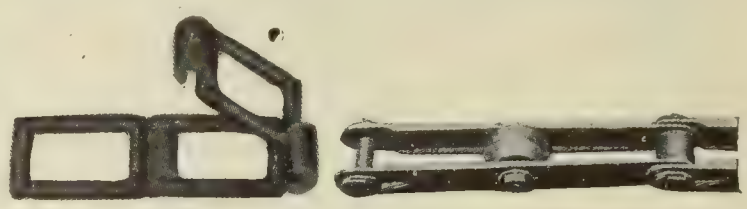
Fig. 2. Fig. 3. Fig. 4.

Contrasts of Cast and Wrought Forms.

Steel castings come in as another link between cast iron and wrought material. Next is wrought iron, with its tensile strength and ductility above malleable castings. Then comes carbon again in combination and we have steel, which in its mild form is some stronger than wrought iron, and with higher carbon very much stronger. Next come the alloyed steels, either in castings or wrought, which surpass all. But carbon steel—in other words, the regular commercial product—when cold worked, such as cold rolled or drawn shafting, and in one of its highest forms, as high carbon drawn wire, has as much as 10 times the tensile strength of cast iron; hence it is easily seen how widely qualifications for different uses may vary.

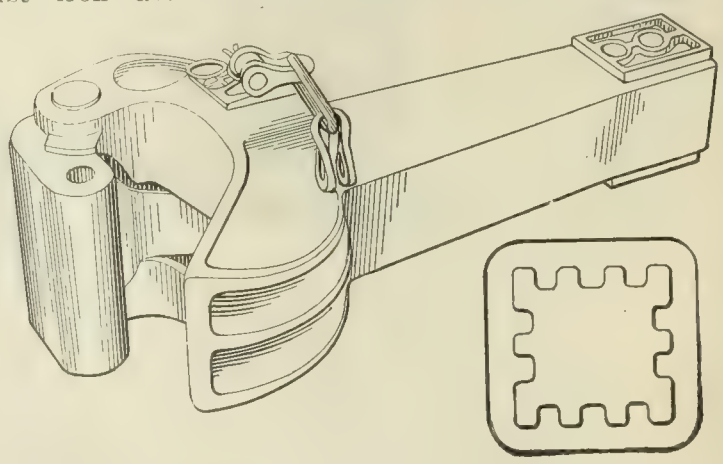
### Where Cast Iron Is Preferred.

Much money and often sore disappointment would be saved if fundamental principles were considered at the start. Cast iron being the basic metal is cheapest per pound, but is not therefore the cheapest, even per pound, when it comes to being put into commercial forms. A straight, clean 60-ft. railroad rail cannot be made of cast iron as cheaply as of wrought steel, leaving quality out of the question. On the other hand, for many articles wrought metal would be gladly accepted in place of castings, but price determines that castings shall be used. In this class are door lock parts, engine beds, flywheels, car couplers, brake wheels, sash weights, and parts for cars, for agricultural implements and for household articles without number. On the other hand, there are many articles in which both prices, on account of form, and quality, on account of granular structure, favor plain cast iron. These include ingot molds, smoothing irons, balls for pipe welding, furnace plates, many forms of forging and pressing dies, finishing rolls for rolling mills, &c. It is true that rolls for heavy roughing work are often preferable in steel, but for finishing, cast iron ones are best and would therefore be used even at a higher cost. They clean themselves, where wrought rolls would let the hot metal stick to them.



Figs. 5 and 6.—Malleable Castings for Light and Medium Weight Sprocket Chains.

A stove burner, Fig. 1, shows a wonderful combination of the economical, useful and ornamental in cast iron articles which will never be reached in wrought material. The art of pressing sheet metal is well advanced, but the sharp effect in surfaces and intricate and delicate forms possible in cast iron cannot be realized in wrought material cheaply enough. A stove, whether for gas or coal, is an impossibility in wrought, and even if so made would not stand the heat like cast iron. Cast iron water pipe costs much more per foot than wrought steel, yet it is used almost exclusively for water mains because of its resistance to corrosion by contact with the earth, water, &c. The highly practical difference between the tensile and crushing strength of cast iron is an important factor



Figs. 7 and 8.—Coupler Draw Bar and Section of Shank.

in maintaining its supremacy in many articles. This principle is well illustrated in the Hodgkinson beam, Fig. 2, where in order to use a minimum amount of metal to support a given load it has about five times more sectional area in the lower flange than in the top. The beam itself has given place to wrought steel, but the principle remains.

**Chilled Castings.**

Chilled cast iron has its hardness produced by chemical change taking place from sudden cooling, which is a different matter altogether from hardening a piece of



Fig. 9.—Car Truck Side Frame with Journal Boxes.

steel, for by heating the steel again the hardness may be taken out; but subsequent heating under ordinary conditions will not take the hardness out of chilled cast iron. Another principle often involved in the choice of materials is that of the wear of one on the other. A wrought or fibrous material wearing on a cast iron or granular one is the best condition so far as these metals are concerned. For instance, the wheel box with wagon skein, Fig. 18, is universally of cast iron, on account of wearing qualities as well as cost. Chilling steel castings in the sense mentioned has not so far been done commercially. A little has been done in uniting chilled cast iron to steel castings, but this is limited to plain forms.

**Wider Field for More Recent Processes.**

The art of casting is so much older than that of rolling, forging and pressing that we may reasonably look for comparatively more development along these

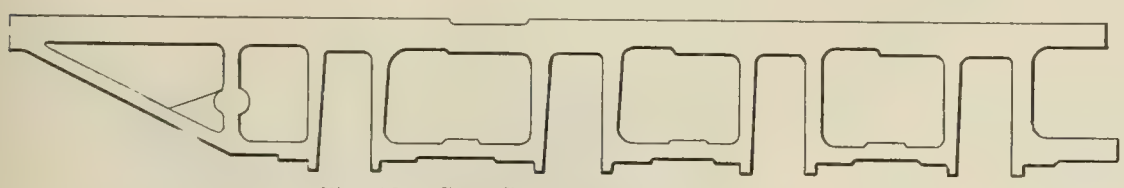


Fig. 10.—Cast Steel Locomotive Frame.

last named lines. As to rolling, slitting rolls for cutting hammered plates into nail rods came first. Sheet rolls are about 175 years old, while grooved rolls have been in use only about 125 years, and three-high rolls came in the last generation. It is only 100 years since formed up sheet metal commenced to displace castings in forms which had been in use for thousands of years. When it

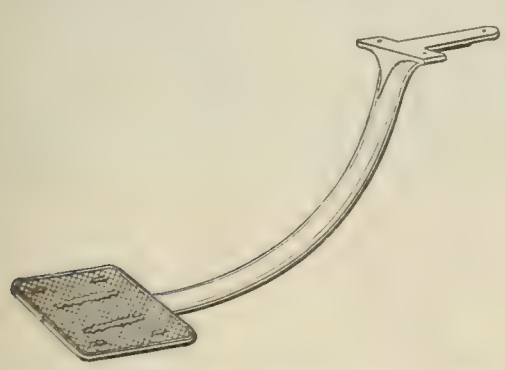


Fig. 13.—Cast Iron Step.

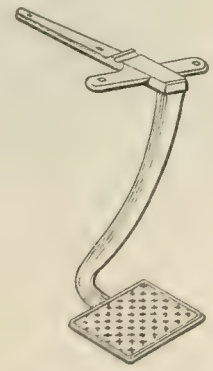


Fig. 14.—Malleable Step.

comes to bars of uniform section, or even those having an alternate limited change of sectional shape and of any considerable length, price alone determines the choice of the wrought, while the quality is also in its favor. In this list are such as railroad rails, wire, concrete reinforcing bars, frames for buildings, bridge members—in fact, an endless number.

The matter of freight for long distance often decides the choice of material, as some articles can be made in wrought so much lighter than castings. This factor is highly important where muleback transportation is involved. In rail joints, forms which can only be made of steel castings will be limited in use because of the uniformly close fit necessary. Many efforts have been made to produce these in castings, but even such forms as Fig 3 are made cheaper in wrought, and there can be no question about their being better. In journal boxes for railroad cars efforts in pressed steel are quite recent, but so far there is nothing to report. In journal box wedges drop forged ones have made considerable advance against castings, but the great body of these are still made in castings, mostly malleable, and it will be interesting to watch the outcome.

**Malleable Castings and Their Adaptations.**

Malleable castings with their large development are limited to a considerable degree by size, or rather by thickness of section, owing to the fact that this material differs physically and chemically from the surface to the center. The best part is on the outside, and the nearer

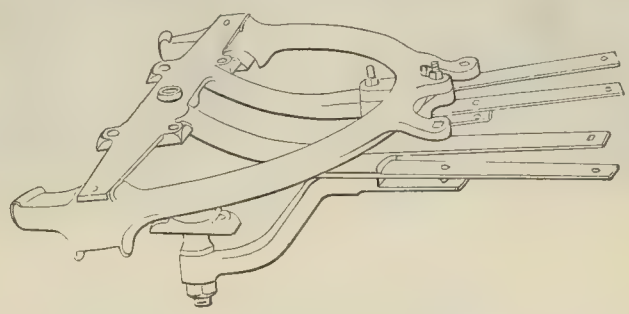


Fig. 15.—Fifth Wheel in Malleable.

that this better condition can be made to reach clear through the better the article. A section containing 1 sq. in. would be much better if of ¼ x 4 in. than of 1 x 1 in. There are, therefore, many articles which are of excellent quality in lighter sizes of castings, but in heavier are better of wrought; hence another condition

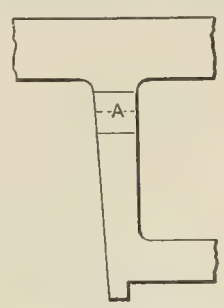



Fig. 11.




Fig. 12.

Parts of Forged Locomotive Frame.

divides the uses of the two materials—namely, where size determines the quality. Chain swivels, Fig. 4, are largely, in fact almost wholly, made of malleables in the lighter sizes, say up to ½ in. But when it comes to a swivel, say, for a 2-in. chain, which must pass through a 9-in. circular opening and uniformly stand a test of 250,000 lb. pull, malleables are not equal to the requirements, owing to the thick section. Harness snaps are almost wholly made in malleables, of course, with a wrought steel spring, and yet some of the heavier ones are demanded, and a comparatively few are made, in wrought.

In sprocket chains, Fig. 5, for light work malleables have maintained their lead. And for medium work they are giving good service where the section can be thinned and the strength increased by making them wider, as in Fig. 6. For heavy work wrought is used because there is little difference in the quality of properly forged material on the outside and that in the center. It was attempted at one time to make the knuckles for car couplers of malleable castings, but they were worthless. At first knuckles were made in wrought, but steel castings are now used altogether or nearly so. Coupler draw bars, Fig. 7, were wholly of malleables until a few years ago, when steel castings began to supplant them and have now taken a large share of the coupler trade. This was partly owing, however, to unwise competition in malleables, which resulted in their falling below their regularly possible efficiency. Steel castings are here to stay, but malleable draw bars are not a thing of the past. This is owing to the principle named, of getting a large sectional area without any exceedingly thick parts in

critical places. Fig. 8 is a section through the shank of Fig. 7, showing how sectional area is much increased without thickening too much at any point. These draw bars are too difficult to make in wrought.

**Increased Use of Steel Castings.**

Steel castings have been greatly developed in the last decade, and especially in the last five years. They cannot be molded into the finer forms possible with cast iron, and therefore in malleable castings, nor can they be produced of as uniform quality as wrought steel, but they have



Fig. 16.—Automobile Forging.

made marked inroads into the fields of wrought metal and gray iron castings. One of their advantages is the elimination of separate parts. Fig. 9 is a side frame with journal boxes for a car truck, in one piece. It shows the tendency and the useful field for advances in this art. Bolsters and side frames of various designs in steel castings are coming to the front commercially, and complete standard gauge car bodies are now made in one piece for furnace charging, &c. Patents have been issued for a truck bolster, side frame and all the journal boxes

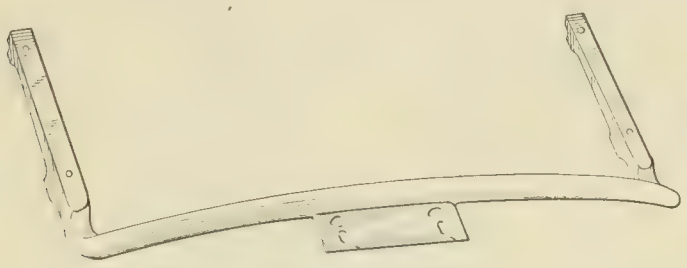


Fig. 17.—Formerly Malleable Casting, Now Largely Wrought.

in one piece. Wrought bolsters and side frames are, as a rule, lighter and cost less, but the reduction in the number of parts by the use of steel castings is working a change. This change may go to greater lengths, or it may find an equilibrium in a combination of wrought and castings.

Many articles formerly of wrought iron or steel are now made, and will continue to be made, in steel castings. Locomotive side frames, Fig. 10, when made of wrought require a weld at nearly every corner, and most of these really mean two welds. Figs. 11 and 12 show a part with one V block, A, placed ready to weld, after it had been heated in one forge and the frame in

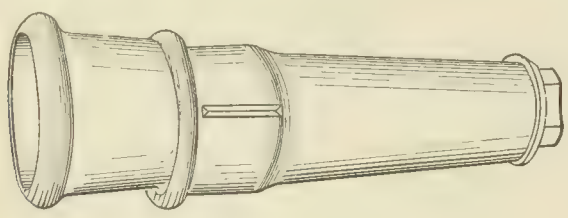


Fig. 18.—Cast Skein.

another. Then the same thing must be gone over again to close the space B, and so on until the frame is completed. This, taken in connection with the expense of forging all these parts before the welding commences, shows how desirable it was to cast this article in one piece. Rudder frames for ships come in the same class and many other parts for ships, while electrical machinery, steam hammer columns, hydraulic press plates and many other machine parts are now made in steel castings. Generally where these displace cast iron it is a question of quality and sometimes of price, because the steel article can be lighter. Where they are used in preference to wrought iron or steel it is a question of price.

There are many articles in which quality determines the choice of wrought material and price has little or nothing to do with it. These include pipe for very high pressure, as well as unions for such pipe, armor plate, shells, springs, boilers, parts of sewing machines, firearms, automobiles—an endless list, to say nothing of edge tools. Cannon, as a matter of course, were made at first of castings. The Confederate Government put wrought bands on cast iron guns. Then some 25 years ago efforts were made to produce them in steel castings, recourse being had at last to fine wrought steel throughout.

**Some Lines in Which Movements Are Conflicting.**

While the trend in many cases is clear as to choice of materials, in others it is not. A generation ago such articles as body loops and steps, Fig. 13, were made in

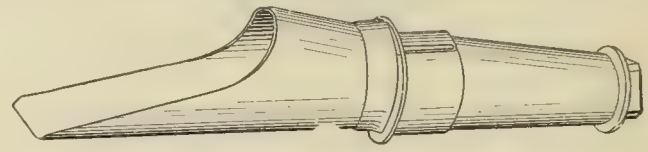


Fig. 19.—Wrought Steel Skein.

wrought. Malleable largely took their place, as shown in Fig. 14. Now many of the same class of articles are again made in wrought. Fifth wheels, like Fig. 15, and numberless other things are hardly approachable by wrought, as the shape is difficult and being light the quality can be good. Automobile parts generally would not be accepted in malleables. Fig. 16 shows one of these in wrought. This illustration shows the high state of the art. Body hangers, Fig. 17, were largely made in malleables, but now are produced in great numbers in wrought. These are rather large, being 2 ft. long, and improved methods in press and roll forging will probably keep the wrought in the lead, both as to price and

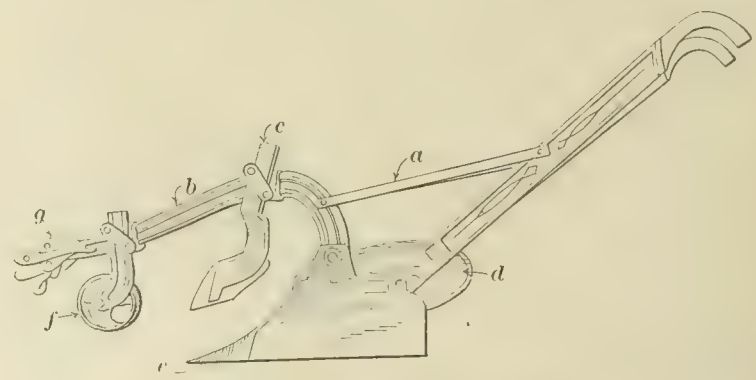



Fig. 20.—A Variety in Plow Parts.

quality. Wagon skeins, Fig. 18, are mostly made of cast iron. Wrought skeins, Fig. 19, have been used for 30 years, but their cost is against them. Skeins were also tried in malleables, but so far these have not advanced much. Bathtubs, which are much larger and generally plainer in form than articles just named, are being ingeniously made in wrought material, but cast iron holds the lead. There has been an advance in the use of wrought steel pulleys, but it will be a long time, if ever, before

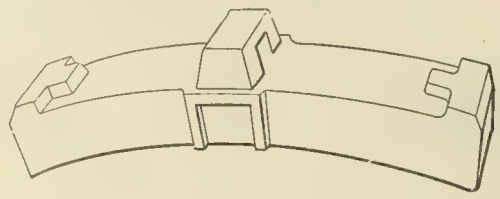


Fig. 21.—Cast and Wrought Material Combined.

cast iron pulleys are entirely displaced in the light and medium sizes, and probably never in flywheel sizes. A question of special interest is whether wheels for freight cars shall be made of wrought material.

**Combinations of Castings and Wrought Material.**

Without noticing generally built up structures, in which castings and wrought are so commonly combined that we are apt to overlook them, a plow, Fig. 20, will illustrate this class. The braces *a*, the beam *b* and the coulter *c* are wrought. The roller *f* is cast iron. The

clevis *g* is a malleable casting, for while of intricate form it needs to be tougher than cast iron and comparative cost forbids it to be wrought. The mold board *d* is of chilled cast iron, as is also the share *e*. In early days the mold boards were all made of cast iron. Next wrought steel was used—a high carbon surface and a soft steel center or back, so as to be capable of being highly hardened and yet endure use. But the art of chilling cast iron kept advancing and now there are large numbers of mold boards made of this, and owing to their hardness and fine granular structure they operate more satisfactorily in certain soils. A matter of enticing interest is that of uniting the two materials homogeneously, as seen in scissors having cast handles and a wrought steel edge, and in a heavy article, as an anvil. In brake shoes for cars, Fig. 21, the wrought toughens the structure and the cast iron gives the wearing quality. While this is a success in these and other cases, it has not been found widely applicable.

Under the enthusiasm of new ideas, possible combinations and variations make an interesting mental picture and tend to cause a pleasant state of feeling in a man who is in love with his work.

## The New Cincinnati Four-Jaw Independent Chuck.

What is known as the 1909 model four-jaw independent chuck with reversible jaws, as made by the Cincinnati Chuck Company, Cincinnati, Ohio, is shown in the accompanying Fig. 1. The principal feature of the chuck is the manner in which the screws are mounted in hardened steel bushings, as shown in the sectional view given in Fig. 2. These bushings provide a full bearing for the trunnions of the screws and receive the end thrust on their hardened full circular faces, minimizing wear and the resultant end play. By contrast the ordinary independent chuck has the screws mounted in semicircular bearings, which receive the thrust on semicircular shoulders formed in the cast iron shell of the

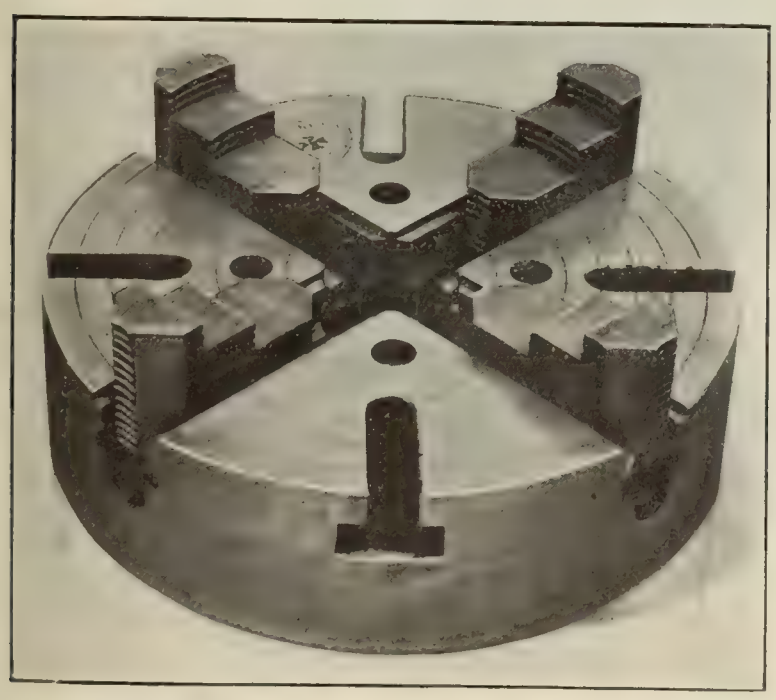


Fig. 1.—The 1909 Model Four-Jaw Independent Chuck with Reversible Jaws Made by the Cincinnati Chuck Company, Cincinnati, Ohio.

chuck. When these become worn in use it is impossible to take out the play. The patented bushings used in the new Cincinnati chuck, providing double the wearing surface on hardened steel surfaces, will wear three times longer, and when end play does develop it can be taken out by any machinist in a short time, making the chuck in this respect as good as new. These bushings also hold the screws in alignment with the jaws, preventing tilting of the screw and consequently cutting of the threads. The screws are made of spindle steel and the bearings are ground. The shell is made of gray iron.

The chuck is made in nine sizes, ranging from 8¼ to 24¼ in. in diameter, each one 2 in. larger in diameter than the next smallest size. The weight of the smallest chuck is 32 lb., the diameter of the hole through its center 1¾ in., the diameter of the recess of the face plate 4½ in., and the capacity of the chuck 8¾ in. The largest size weighs 265 lb., has a 5-in. hole through the center, a recess of the face plate 10 in. in diameter, and a maximum capacity of 25 in. The intermediate sizes have substantially proportional weights and dimensions.

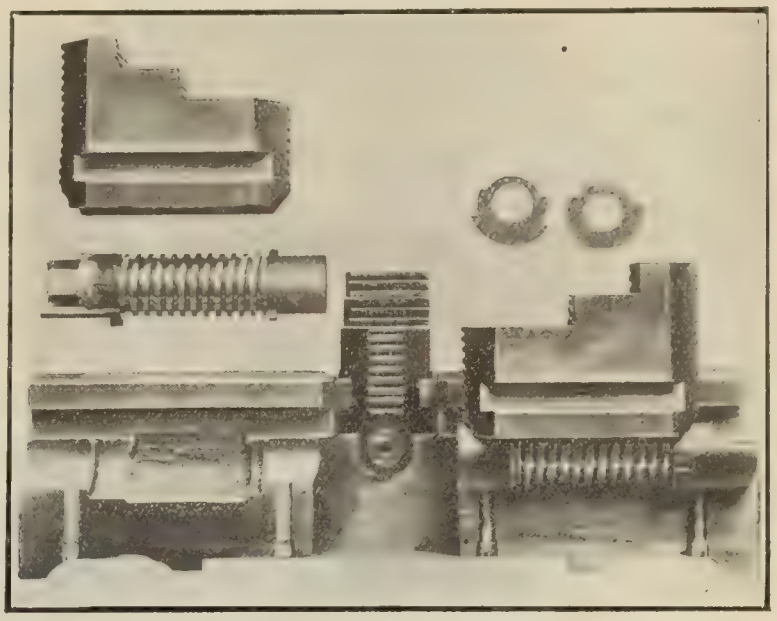


Fig. 2.—Section of the 1909 Model Cincinnati Chuck Showing One of the Screws and Jaws Removed.

## The Vitality of the Steam Engine.

Referring to the frequent prophecies of the relegation of the steam engine to the scrap pile because of the gas engine's horsepower hour per pound of coal and the steam turbine's kilowatt hour on 13 lb. of steam, *Power* says:

> Some years ago there was installed in a mill in Belfast, Ireland, a steam engine of some 400 hp. which discharged only 8½ lb. of water per horsepower-hour at the outlet of the surface condenser at normal load. Recently there has been installed at the Central Lighting Station of Brussels, Belgium, a steam engine of 4000 hp., which between half load and full load consumed an average of 9½ lb. of steam per hour per indicated horsepower. An English engine building corporation advertises its ability to install engines with cylinders of 19 and 41 in. in diameter which shall, under certain specified conditions, develop 600 indicated horsepower with a water consumption of not more than 9¼ lb. per indicated horsepower-hour. . . . It is not impossible that the high degree of economy reached by an occasional steam engine installation may in the near future become ordinary practice, and that a steam consumption of 9 lb. or under per indicated horsepower-hour, instead of being telegraphed around the world as something phenomenal, may become as common as the 16-lb. steam consumption of everyday compound engines.
>
> However this may be, it will doubtless remain true indefinitely that the piston steam engine, the steam turbine and the gas engine all have their legitimate respective fields in which they are each practically invincible.

**The German Pig Iron Syndicate.**—At a meeting of the Rhenish-Westphalian Pig Iron Syndicate, held at Cologne, September 10, the following resolution was unanimously adopted: "This meeting decides, after careful discussion, in agreement with the position taken by the Committee of the Group, that further negotiations with reference to renewing the syndicate be stopped so that the Pig Iron Syndicate is dissolved December 31 of this year." This course, which is due to the adverse attitude of the Eisenwerk Kraft, enables the members of the syndicate to take charge of their own sales for delivery during the next year on October 1. It is believed that district syndicates will be formed, and that arrangements will be concluded between these groups.

The C. & G. Cooper Company, Mt. Vernon, Ohio, is installing two tandem compound steam engines of 3000 hp. each in the Braddock, Pa., plant of the American Steel & Wire Company. These engines will drive the wire and rod mills, which are being considerably enlarged. The Cooper Company is also installing a 4000-hp. tandem compound steam engine in the rail mill of the Edgar Thomson Works of the Carnegie Steel Company.

# The New Brown & Sharpe Constant Speed Drive Screw Machine.

In the No. 2 G 7/8 x 2½ in. automatic screw machine shown in the illustration, the Brown & Sharpe Mfg. Company, Providence, R. I., has embodied the constant speed drive, which has been so successfully applied to its milling machines. The type of drive eliminates complicated overhead works and admits of ready equipment with motor drive; the drive is direct from the main line without the intermediary of countershaft. While the mechanical features of the new type, with the exception of the drive, are essentially the same as in the company's standard screw machines changes have been made in minor details of construction, constituting refinements on the older design. All tools are interchangeable with the No. 2 machine.

The main drive is direct to the machine driving pulley which runs at a constant speed. A powerful friction clutch in the pulley and operated by a lever at the front serves to start and stop the machine. The spindle is directly driven by silent running chains, which combine high speed with efficiency. The variations of spindle speed are obtained through change gears and automatically operated friction clutches which give two changes of speed for each change in gears, one fast and one slow, at an approximate ratio of 2 to 1. This constitutes a feature of special value in threading and work of similar character where it is of advantage to employ one speed for turning and another for threading. The entire driving mechanism is inclosed in a case. All of the bearings are bushed with phosphor bronze and are oiled from pockets on the outside of the case.

Some of the mechanical details are shown in Figs. 2 and 3. The drive of the machine is from the constant speed pulley *a*, mounted upon the main driving shaft upon which is the sliding gear *b*, engaging the driving pulley by means of the friction clutch. This clutch consists of the friction ring *e*, which is split at *e'* to permit of expansion by means of a pair of hardened steel rools, *f*, and at *e* to permit of adjustment. The sleeve is operated by a hand lever, shown in Fig. 1, the forks of which are attached to the ring *g*. The action of the lever is to slide the sleeve, which causes the rolls to engage the friction ring and tighten it, the pressure of the rolls being taken on two hardened shoes. Adjustment for tightness of the ring is accomplished by the screw *d*.

The back gear shaft *i* is driven from the sliding gear *b* through the gear *h*. On the opposite end of the back shaft is one of the two change gears, the other being on the same end of the machine driving pulley shaft, to which it transmits the power. On the driving pulley shaft is keyed the clutch body *j*. On one end of the quill on the back shaft are the sprocket *k* and the gear *l;* on the other end is the gear *m*. On one side of the clutch body, on the pulley shaft, is the loose gear *n;* on the other side are the sprocket *o* and the gear *p*, both loose on the shaft, in connection with the friction clutch member *q*. Both sprockets drive the main spindle through Renold silent chains. The ratio of these gears and sprockets is such that whichever the engagement of the clutch *j* the two drive the main spindle at the same speed, but in opposite directions. When the clutch is engaged at *q* transmission through gears *p* and *m* drives the sprocket *k*, and in turn sprocket *r* in the forward direction, and the sprocket *s* is driven by the sprocket *o* in the backward direction, both being slow speeds. When the clutch is engaged at the friction surface *t* then the drive is through the gears *n*, *l*, *m*, *p* to the sprocket *o*, which drives *s* in the backward direction, while *k* drives sprocket *r* in the forward direction, both at fast speed. The position of the clutch *u* determines the direction of revolution of the spindle. The entire machine is started and stopped by the hand lever controlling the clutch *b*. In addition a hand lever at

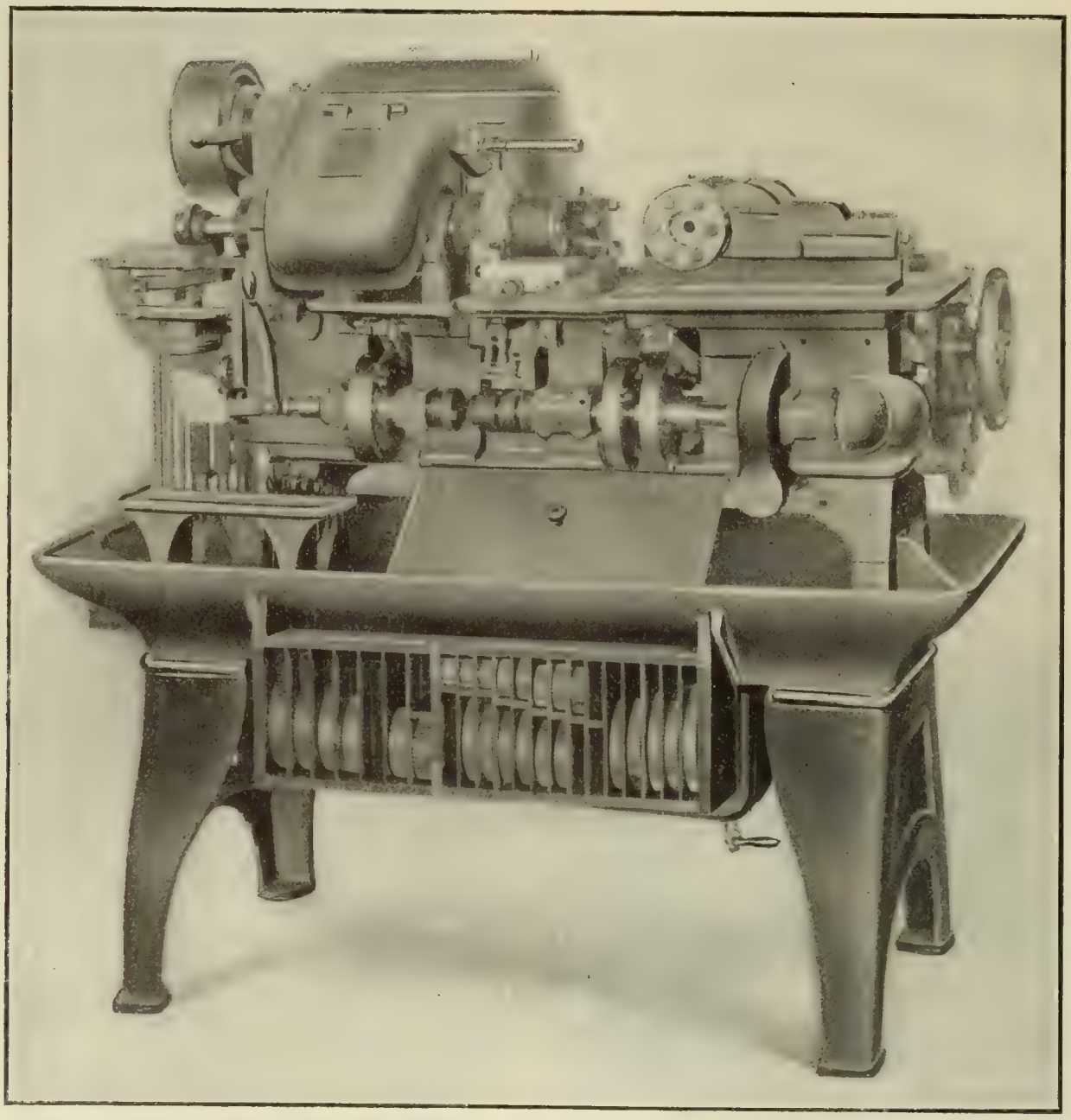


Fig. 1.—The New Constant Speed Drive Screw Machine Built by the Brown & Sharpe Mfg. Company, Providence, R. I.

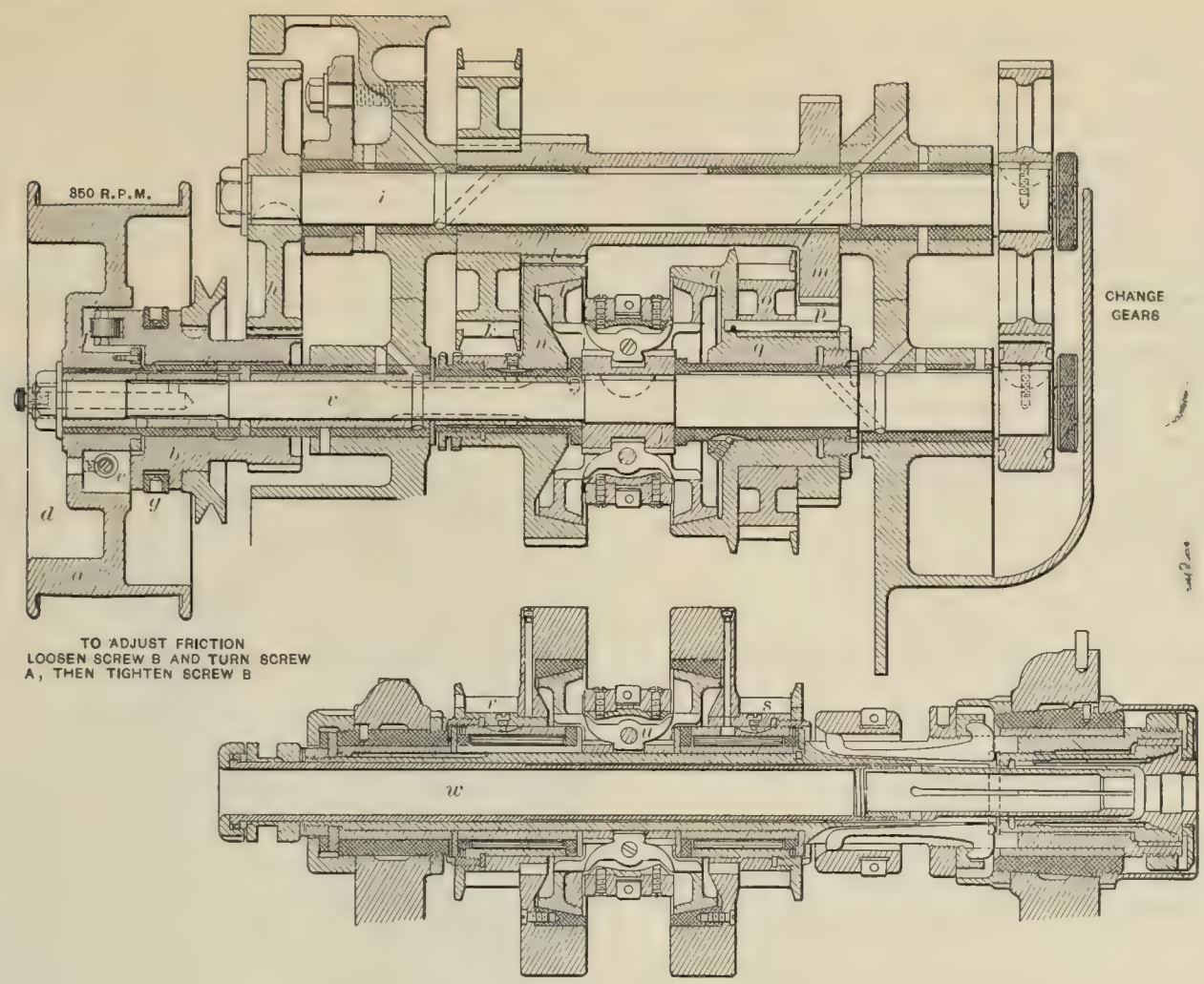



Fig. 2.—Sectional Views Showing the Details of the Drive.

the front immediately under the clutch lever starts and stops the feeds.

All movements of turret and cross slides are operated by one feed shaft located at the back of the machine. This shaft is geared to the spindle driving mechanism, which not only insures high efficiency, but also makes the speeds of both the spindle and the feed shaft positive, eliminating the possibility of accident to the mechanism from either the spindle or the feeds stopping while the other is running, all movements of the machine being dependent upon the spindle driving mechanism.

The turret revolves vertically on the side of its slide. The indexing of the turret, the operation of the chuck, the feeding of stock and the reversal of the spindle are controlled by quick running cams driven by shafts that maintain a constant speed, insuring rapid movements irrespective of the size of work. The operation of the cams is controlled by adjustable dogs, easy of access and of adjustment. The feeding mechanism is accurate, with fine and readily made adjustment, and can be stopped independently of the spindle. A scale on the feed lever, graduated to thirty-seconds of an inch or to millimeters, greatly facilitates the setting of the machine. The cross slide tools are on separate slides, operating together or singly. The tool posts have fine adjustment for the quick setting of tools. An automatic stop is provided for stopping the feeding mechanism independently of the spindle

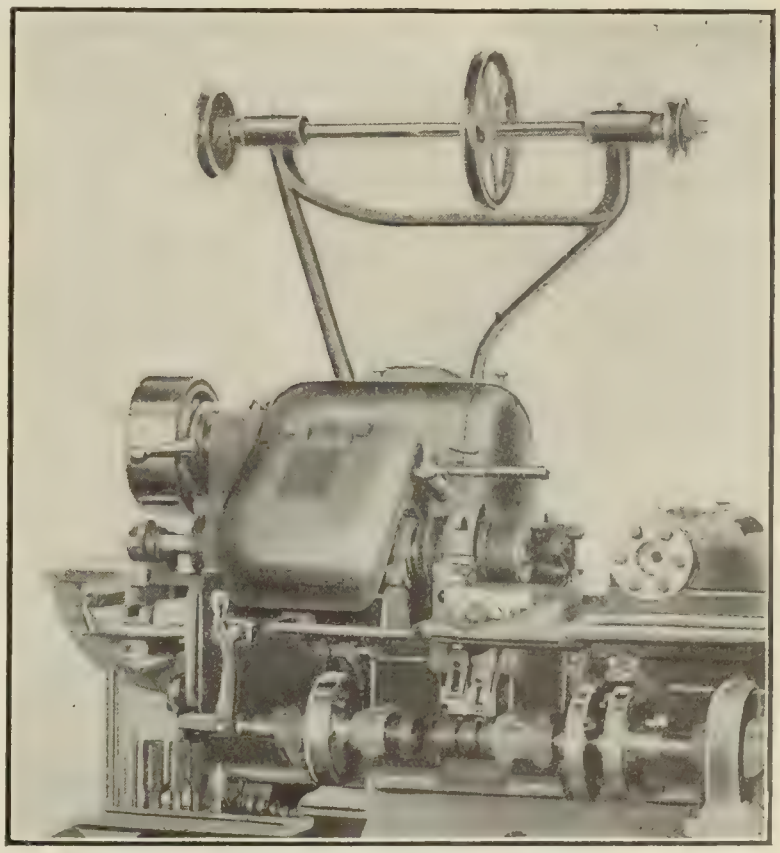


Fig. 4.—Attachment Driving Stand for the Brown & Sharpe Constant Speed Screw Machine.

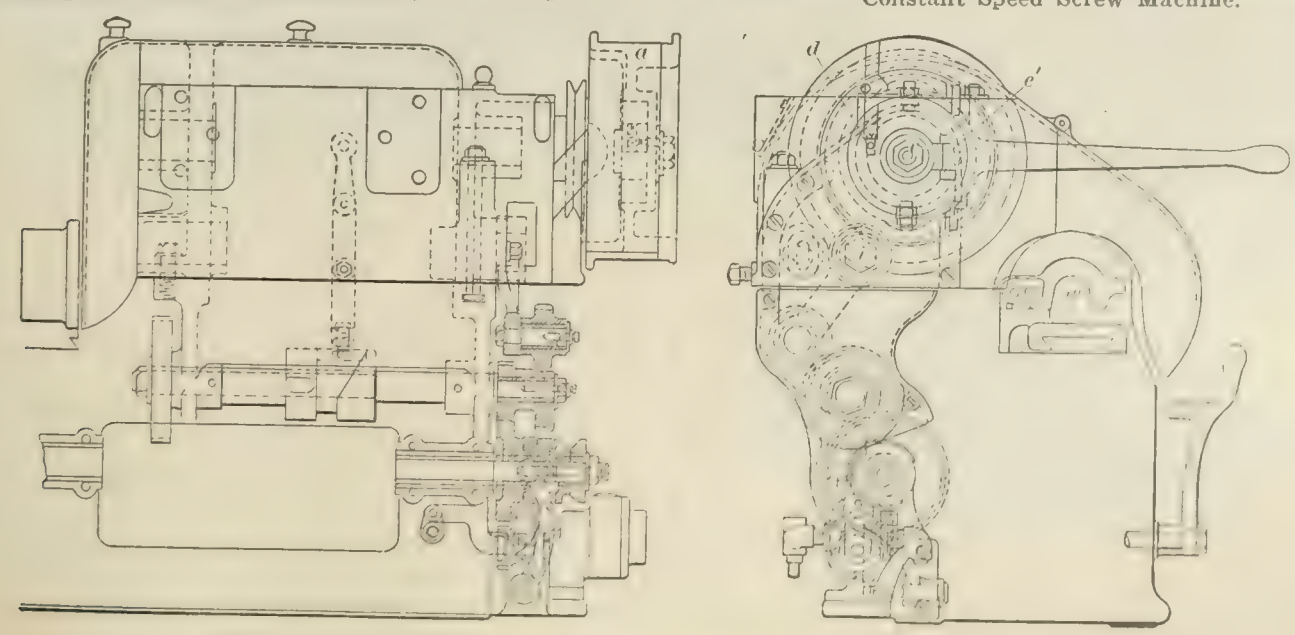



Fig. 3.—Rear and End Elevations of the Headstock, Showing the Driving Mechanism.

when the bar of stock is exhausted, leaving the chuck open for the new bar.

The hole through the largest feeding finger is ⅞ in.; special feeding fingers to take brass or other light work up to 1 in. can be furnished. The machine turns any length up to 2½ in. and feeds any length to 4 in. The change gears provide for making from 7 to 600 pieces per hour. The 9-in. driving pulley runs at a constant speed, 350 rev. per min., giving 12 changes of spindle speed in either direction, from 119 to 1216 rev. per min., in practically geometrical progression. The floor space required for the machine is 26 x 60 in. and its net weight is 2000 lb.

Figs. 4 and 5 show the new machine equipped with an attachment driving stand for driving such attachments as may be placed upon the machine for special operations, including slotting and drilling attachments.

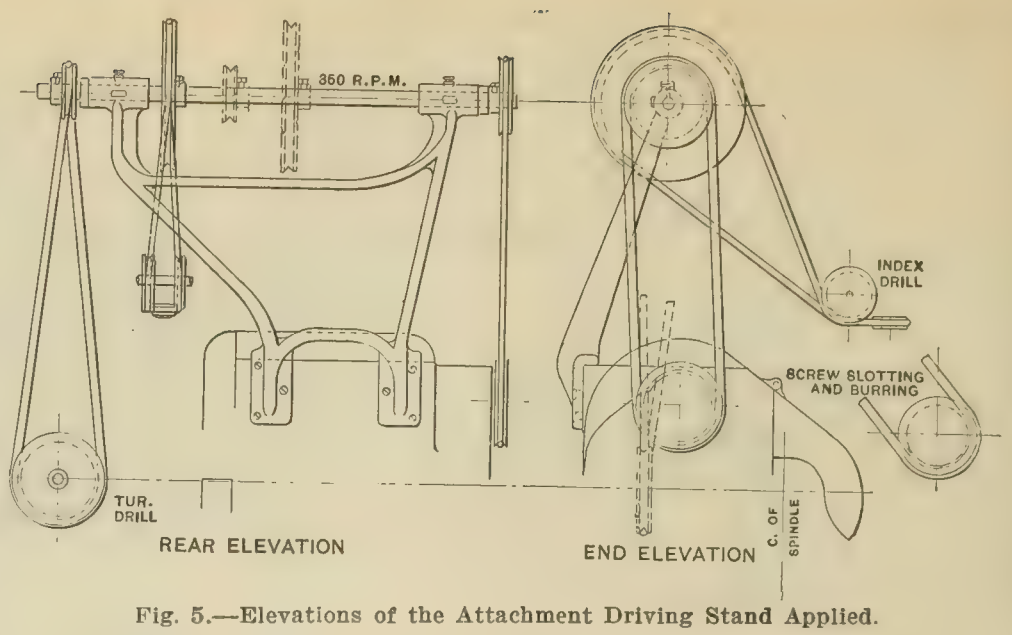



Fig. 5.—Elevations of the Attachment Driving Stand Applied.

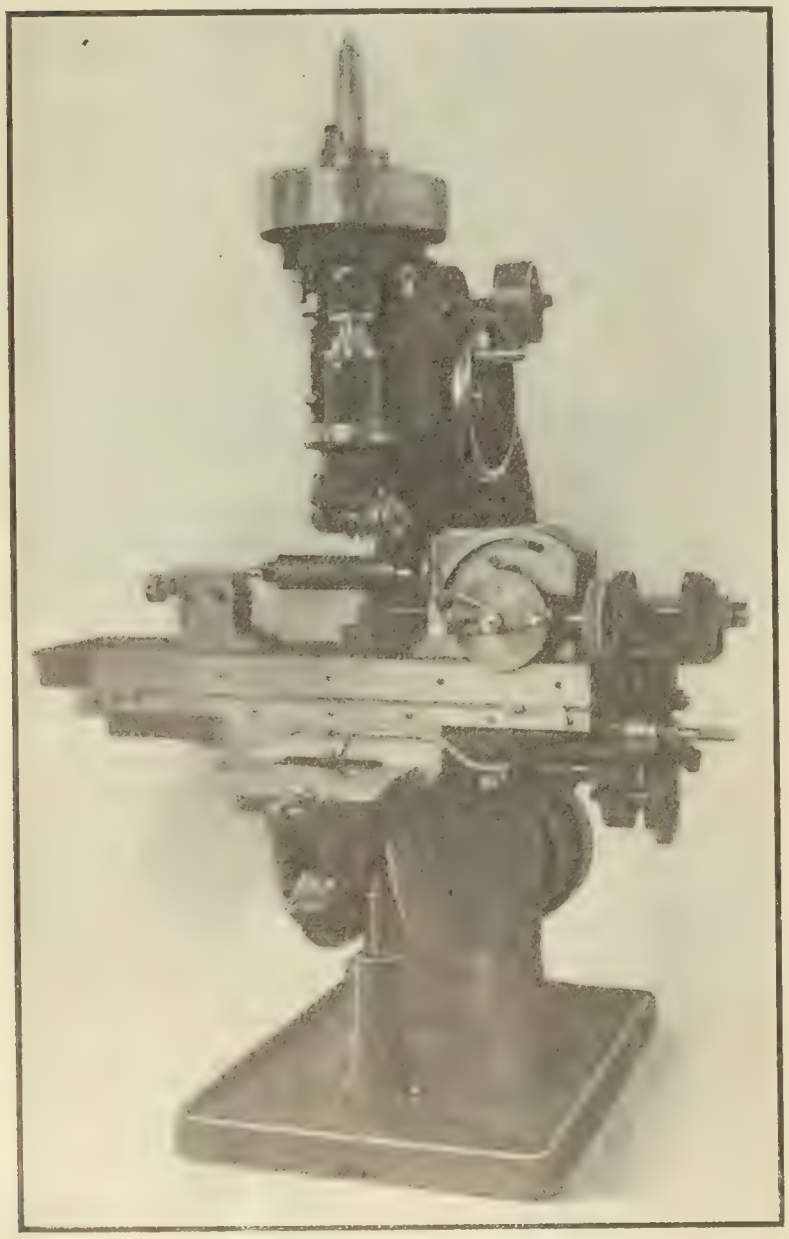
## The Becker Vertical Miller with Horizontal Attachment.

The Becker Milling Machine Company, Hyde Park, Mass., has arranged its No. 4 B vertical miller as a new type in that it is equipped for service as a universal machine, while still retaining the advantages of a vertical miller when it is desired to use it for slabbing or other work for which this class of tool is more specially intended. With the aid of a horizontal spindle attachment and a dividing head mounted on the table, spiral cutting or other similar work of the tool room may be done efficiently and economically.

In general design the machine differs little from the standard Becker vertical miller. The table is lengthened 10 in., and provision is made for a train of gearing to drive the dividing head. The horizontal spindle attachment is the same as that described in *The Iron Age* April 30, 1908. It can be attached or detached with little trouble. For spiral work the cutter is held in the central position of the horizontal spindle, as shown in the illustration, directly in line with the main spindle, which gives rigidity as well as convenience in centering. The horizontal spindle also takes a cutter at the end, secured by a draw-bar, thus making it an extremely versatile adjunct in certain classes of work.

The advantages of the arrangement, apart from the convenience of combining a vertical milling machine with universal features, are that the long saddle is retained, affording a rigid base for the work under all conditions, including the heavy duty of slabbing as a vertical machine; and that greater angles can be cut than with the ordinary universal type, as the head swings through a complete circle. The dividing head swings 10 in. and the distance between centers is 16 in.

While this machine may be useful in many shops, its most important field is in manufacturing establishments where it is an important economy to combine two types of milling machine in one. This is obtained without sacrifice, either in power, strength or solidity of construction.



The No. 4B Vertical Milling Machine Built by the Becker Milling Machine Company, Hyde Park, Mass., as Equipped with a Horizontal Milling Attachment.

**The Future of Aluminum.**—Commenting on a statement of the *Revue Polytechnique* that the situation in regard to aluminum is acute, and that consumption has fallen so low that it may be questioned whether manufacturers have not taken the wrong path by recommending the use of pure aluminum instead of aluminum alloys, London *Engineering* says: "We are not so pessimistic. When, a few years ago, the alloy of aluminum with 6 per cent. of copper for use for various naval purposes did not give the complete satisfaction that was expected of it, the aluminum then available had not the degree of purity which now obtains. Aluminum manufacturers then set to work to improve their methods of manufacture; they now produce aluminum of a high degree of purity, and they are quite as eager in recommending the use of this pure aluminum in alloys as its use alone for different engineering purposes. The saying of a French aluminum manufacturer to the effect that 'the future of aluminum lies upon the water,' is more true now than it ever has been. Seeing also the very great efforts which are being made at the present time in the construction of dirigible balloons and aeroplanes, its future is likely to be further extended still, while in the numerous branches of the electric industry the use of aluminum is steadily developing day by day."

The Upson Nut Company, Cleveland, Ohio, is getting estimates on the cost of building three open hearth furnaces, a 34-in. blooming mill and a bar mill. The company owns and operates a large nut and bolt factory and a blast furnace, near which the steel plant could be built, enabling hot metal to be taken from the furnace to the steel works. A definite decision to build has not yet been made.

## A New Sturtevant Motor.

Particularly for the driving of fans, the B. F. Sturtevant Company, Hyde Park, Mass., has developed a new line of four-pole electric motors. One of them applied to this service is shown in Fig. 1. These motors, designated as type H, are also suitable, however, for general work, such as operating machine tools. Although the motors are claimed to be as efficient as any of the same size and speed, they are conservatively rated so that a sudden increase of load may not injure the motor. They will carry 50 per cent. overload for one hour and 100 per cent. overload for 5 minutes without destructive sparking or heating. By a special design of armature abundant ventilation is secured, the air currents flowing in and out of the motor, as indicated in the sectional view, Fig. 2. The heat rise is always low; tests conducted in clean, dry places show it to be less than 40 degrees C. at normal speed and output. The motors are made in sizes ranging from 1 to 100 hp., the speed varying from 425 to 1600 rev. per min.

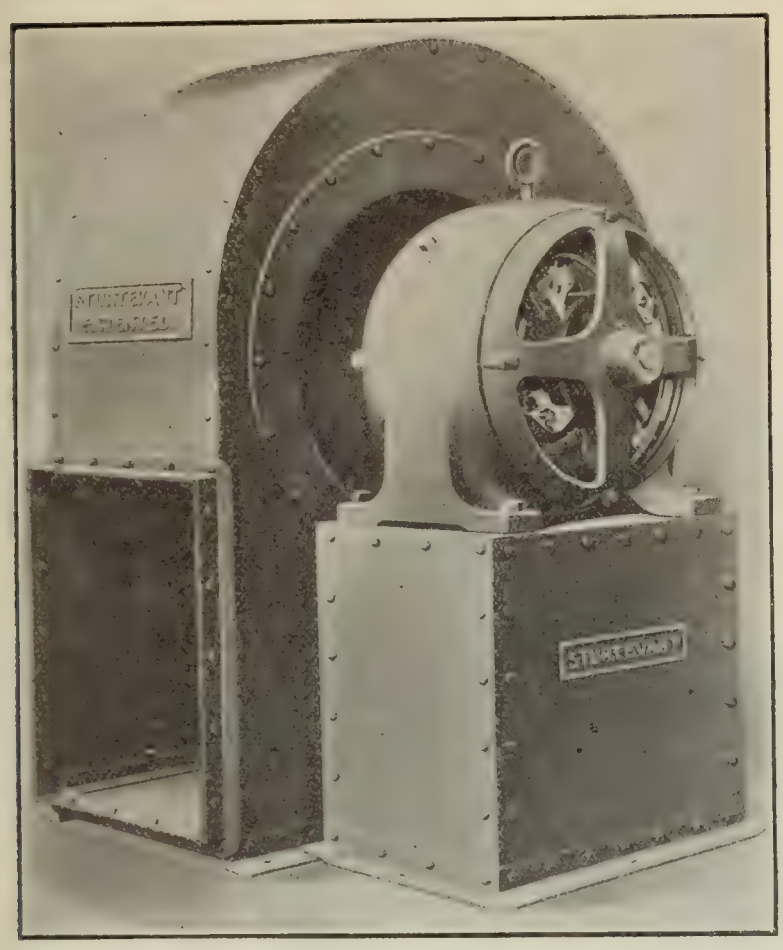


Fig. 1.—A Sturtevant Electric Fan Equipped with a Type H Motor.

The unassembled parts of the motor appear in Fig. 3. The armature is of the iron clad, slotted drum type, built up of soft annealed sheet steel punchings, insulated from each other and assembled on a cast iron sleeve. The sleeve is provided with openings for the circulation of air, and has an extended hub to receive the commutator shell. The commutator with the armature is a self-contained unit. The bars are of hard drawn copper, insulated with mica, and are held in a cast iron shell of spider construction. The bands which insulate the segments from the clamping rings are of mica, and to securely hold all bars in place, the entire commutator is assembled while hot under great pressure.

The carbon brushes are held in brush holders, which are supported by a spider ring, which in turn is supported in a recess machined in the magnet frame. The ring is clamped in position by the bearing bracket, and while it may be shifted easily the brushes cannot be thrown out of position or tilted, as is likely when the brush rigging is clamped by set screws. The brush holder, body and springs carry no current, braided copper cable shunts or pig tails being provided for this purpose.

The magnet frame is a cylindrical yoke of cast iron of high permeability, machined on each end to receive the bearing brackets, and on the inside to provide seats for the pole pieces which are through bolted to the frame. The supporting feet of the motor are cast solid with the frame. The pole pieces are located off center with re-

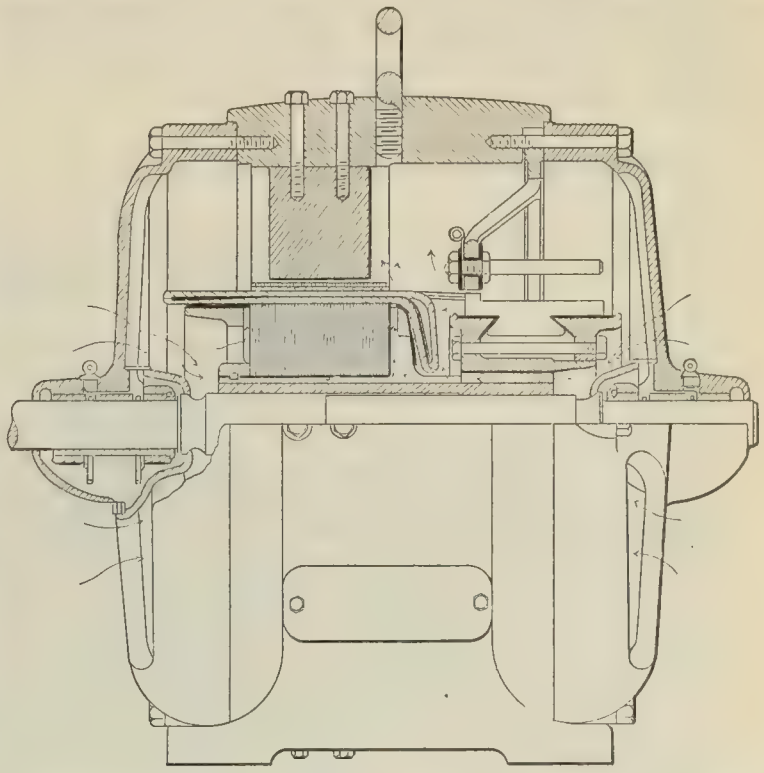


Fig. 2.—Sectional View of the Motor, Showing the Provision for Ventilating Air Currents.

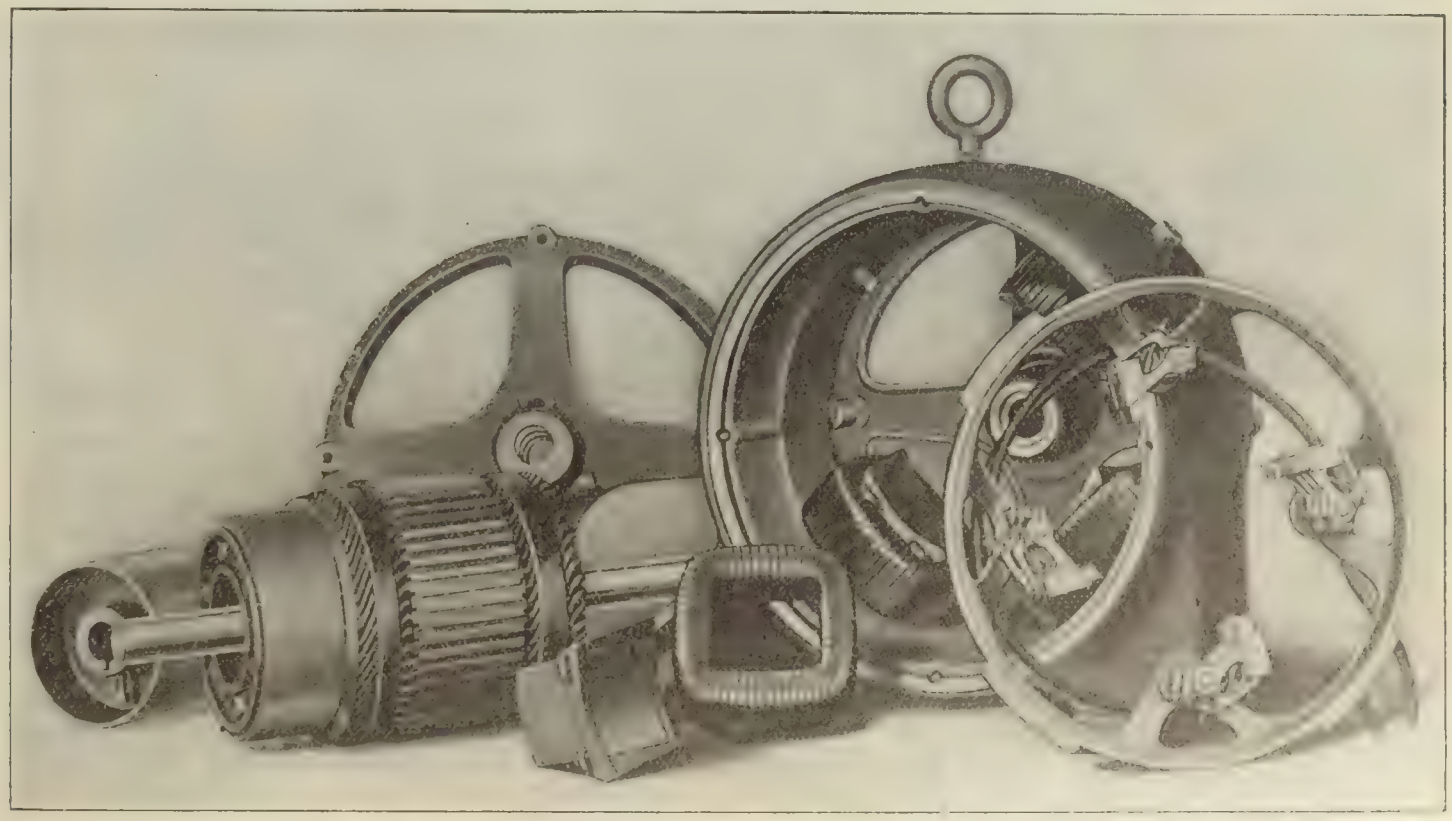


Fig. 3.—The Parts of the Sturtevant Type H Motor Unassembled.

spect to the frame, permitting the use of duplicate bearing brackets on either end. The bearing brackets are of skeleton construction, and are clamped into seats in the magnet frame by four equally spaced bolts, so that the motor may be arranged for floor, wall or ceiling suspension without further machine work.

The pole pieces are assembled of soft steel punchings, riveted together between end plates while under pressure. The punchings are formed to provide a support for the field coil and distribute the magnetic flux so as to produce sparkless commutation under wide variations of load. The pole pieces are bolted to the frame by hexagon head tap bolts, which pass through the frame and are threaded directly into the pole pieces. By removing the bolts a pole piece with its field coil may be removed without removing the armature or dismantling the motor.

The field coils are machine wound of double cotton covered copper wire of high conductivity, and are insulated and held together by two layers of heavy tape. The coils are thoroughly insulated and protected, both against moisture and mechanical injury.

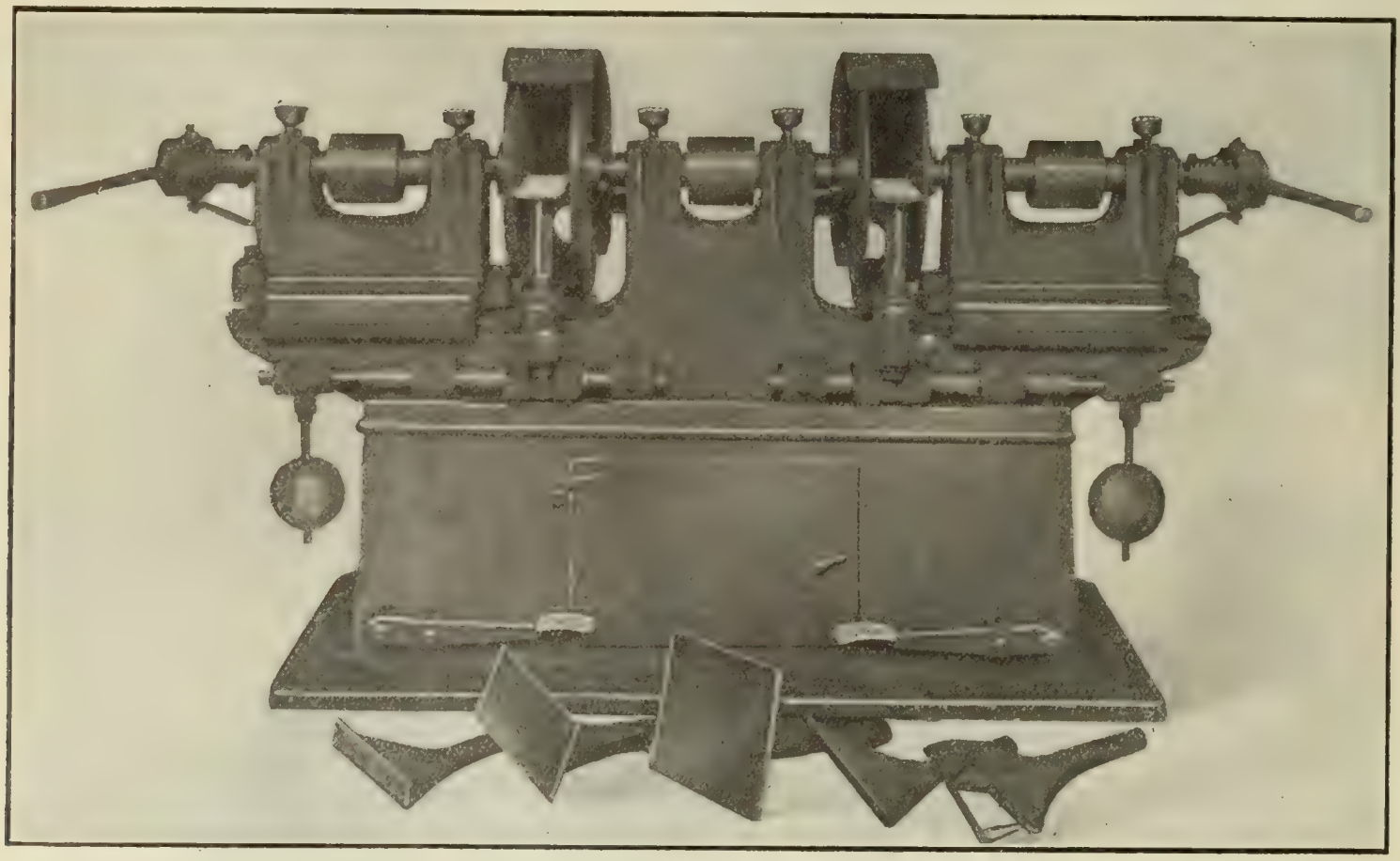
## The No. 6 K 4 Gorton Grinder.

Two double disk grinders are combined in a single machine in the No. 6 K 4 Gorton grinder, built by the Diamond Machine Company, Providence, R. I., and illustrated herewith. The result is a saving in space, belting, countershaft and power, and the elimination of a considerable amount of handling of the work. The machine is especially adapted for grinding in two stages, work having parallel sides or sides at a slight angle. One pair of disks does the roughing and the other pair the finishing. In this case two operators are necessary.

Both sliding tables swivel and can be clamped at any angle up to 10 degrees, which allows slight angles to be ground at one setting. Either head can be slid back to accommodate work of any length up to 12 in., or may be removed entirely to convert one side of the machine into a single end grinder. The disks can be advanced by hand or by foot power, or by both at once. The foot power arrangement can be left off if necessary, but it does not interfere with the regular hand operating device. The tables are counterweighted.

The hight from the floor to the center of the spindle is 40 in. and the size of the base 27 x 69 in. For the feed there is a micrometer adjustment reading to 0.001 in. The regular equipment of the machine includes eight 18-in. steel disks, 24 assorted emery circles, one disk cutter, one cementing press, three steel wrenches, two dust exhaust hoods, eight work tables, and one double drum countershaft intended to run at 540 rev. per min. At this speed the spindles revolve at 1800 rev. per min. The net weight of the machine with the accessories as mentioned is 3200 lb.

While the machine was originally designed and is shown as a regular disk grinder, chucks with emery rings may be used so that heavy grinding may be done, and if it is necessary one set of chucks can be used on one end of the machine for doing roughing work, and the finishing can be done between a pair of disks at the other end of the machine.



The No. 6 K 4 Gorton Grinder with Four Disks and Two Swivel Heads, Built by the Diamond Machine Company, Providence, R. I.

## The National Machine Recorder.

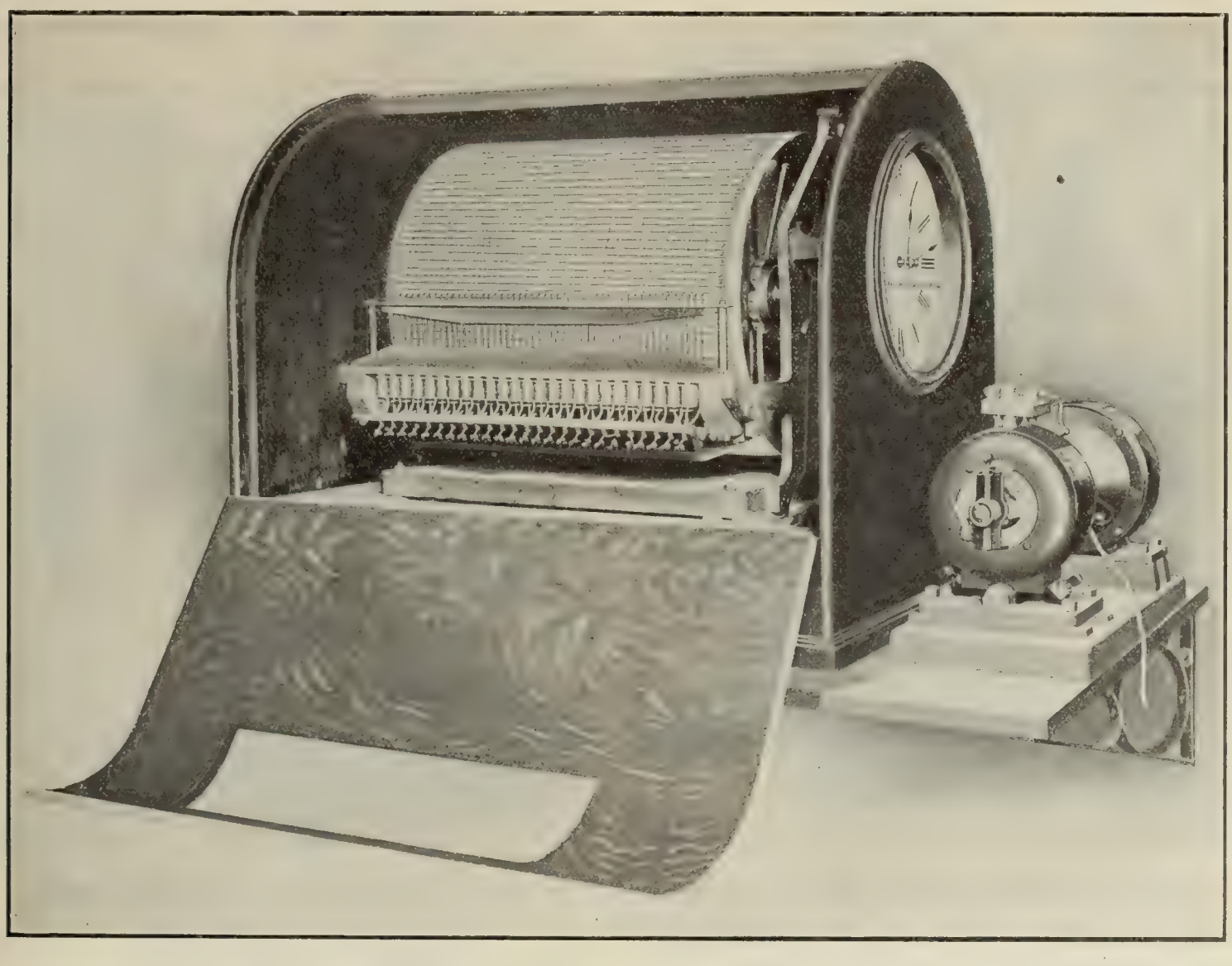
Knowledge of production costs is essential to economy in manufacturing. Under systems in vogue the cost of producing a given piece of machine work is usually reckoned from the elapsed time between the start and finish of the operation as reported by the workman or timekeeper. This does not always take into account time unnecessarily wasted during the process. To mechanically register the time in action of every machine in a shop, the device here illustrated has been brought out by the National Machine Recorder Company, Marquette Building, Chicago. The purpose of the apparatus is to record the actual length of time each machine has been occupied in producing, the duration and time of day of each producing period in hours and minutes, every inoperative moment, and when and how long any given machine remained idle.

The recording mechanism consists of a drum rotating on a shaft in an inclosed case, and is actuated by a large motor spring, the speed of the drum being regulated and controlled by a clock movement. A prepared paper chart passes around the drum, and independent records are imprinted upon it by energizing electro magnets the armatures of which carry brass points. Each point is brought in contact with the paper when the corresponding machine is started, and is retracted by a small spring when the electric circuit is broken by stopping of the machine. A small generator set is commonly used to energize the recording magnets, although if desired the necessary current may be supplied by battery cells. The chart is about 46 in. long by 17 in. wide, and is divided horizontally into minute spaces for a period of 12 hr., 7 a.m. to 7 p.m. A heavier line marks the five-minute intervals and double lines separate the hours. The width

of the paper gives space for the records of 50 machines. The chart is printed on what is known as metallic paper, a prepared paper on the surface of which a line resembling a pencil line is marked with a brass or silver point.

Each machine is connected with the recorder by a wire circuit having a contact attached to the starting and stopping lever controlling the working movement of the machine. Attaching the contact to the belt shifting lever or other starting device would in all cases shown on the chart the frequency and length of stops; but to obtain a reliable record of the performance of work the record must distinguish between the idle and producing movements of the machine. To accomplish this the contact may be attached to the feed control, so that the recorder will register only when the feed is thrown in and work is actually being done. If the contact were connected with a belt shifting lever it might be possible to defeat the accuracy of the record as showing the actual amount of work done by permitting the tool ard forms of circuit closing apparatus which are now on the market can be readily adapted to the purpose.

Since the chart exhibits the exact time consumed in making each cut it can also be seen at a glance whether the operator is making proper use of the variable speeds of his machine. If the speed changes are neglected the record will make it clearly apparent that roughing and finishing cuts have been taken at equal speeds. Neglect in this respect whether the result of carelessness or prompted by a definite purpose to extend the time limits of an operation is equally effective in decreasing the shop output. While such practices would probably be eventually detected by any competent system of supervision, it is especially emphasized as an important feature of this record that information of irregularities of this and other kinds is immediately supplied, making it possible to stop the leak at its inception without waiting for an accumulated loss to demonstrate its existence. In the interest of both employer and operator it is desirable to establish equitable time limits for the performance of each opera-



An Instrument for Recording the Working Time of Machinery, Made by the National Machine Recorder Company, Chicago, Ill.

to run without the feed being thrown in. It is possible to make contact connection with feed controlling levers or devices of nearly all tools, but in actual practice this is not ordinarily done, since the check afforded by the number of pieces produced, together with the accurate time records shown on the chart, make deception practically impossible.

The contact device performs the function of a push button or switch. One of the simplest forms of applying a contact to a countershaft, for example, is to attach two leaf springs to some part of the countershaft frame, so that the rod carrying the shifting forks will be entered between them and make contact with each. The spring leaves are insulated from one another, and the two wires from the recorder are led to these springs. Operating the countershaft in the direction that places the belt on the tight pulley introduces the shifter rod between the springs and closes the electric circuit with the corresponding electro magnet in the recorder. Almost an endless variety of devices for the purpose may be conceived of for connection with either the feed or the driving mechanism of any machine. Many of the standtion, and to this end the detailed registry of each moment of running and idle time of every machine in a plant is obviously advantageous.

The recorder is installed in the superintendent's or manager's office, where the chart may be scrutinized and the progress of work in any part of the shop observed at any time. While only 50 machines can be connected with the recorder at one time, it is possible by means of a switchboard to connect up any number of machines which may be switched on and off alternately as desired. The presence of an authentic record, such as is produced by this machine, is, it is claimed, particularly effective in starting machinery on time in the morning and in keeping it going until the proper closing hour. It is designed for attachment to machines used in various kinds of manufacturing plants where for the perfection of shop systems it is desirable to have exact automatic records of time limits in productive capacity of machinery.

The case containing the recorder is approximately 30 in. long, 18 in. wide and 20 in. high, and is provided with a glass covered opening through which the readings are observed.

# A New American 15-In. Shaper.

In the new 15-in. single geared crank shaper illustrated herewith and built by the American Tool Works Company, Cincinnati, Ohio, the most severe requirements of modern shaper work have been allowed for. The machine is especially claimed to be a rapid and accurate work producer, and one that is durable and maintains its alignments.

The column is unusually deep and wide, tapering slightly toward the top, and projects both front and rear at the top, providing an exceptionally long bearing for the ram. It is strongly braced internally and is reinforced inside, on the line of strain, affording exceptional rigidity. The base is large, deep and strongly ribbed, and is of pan construction to catch oil drippings.

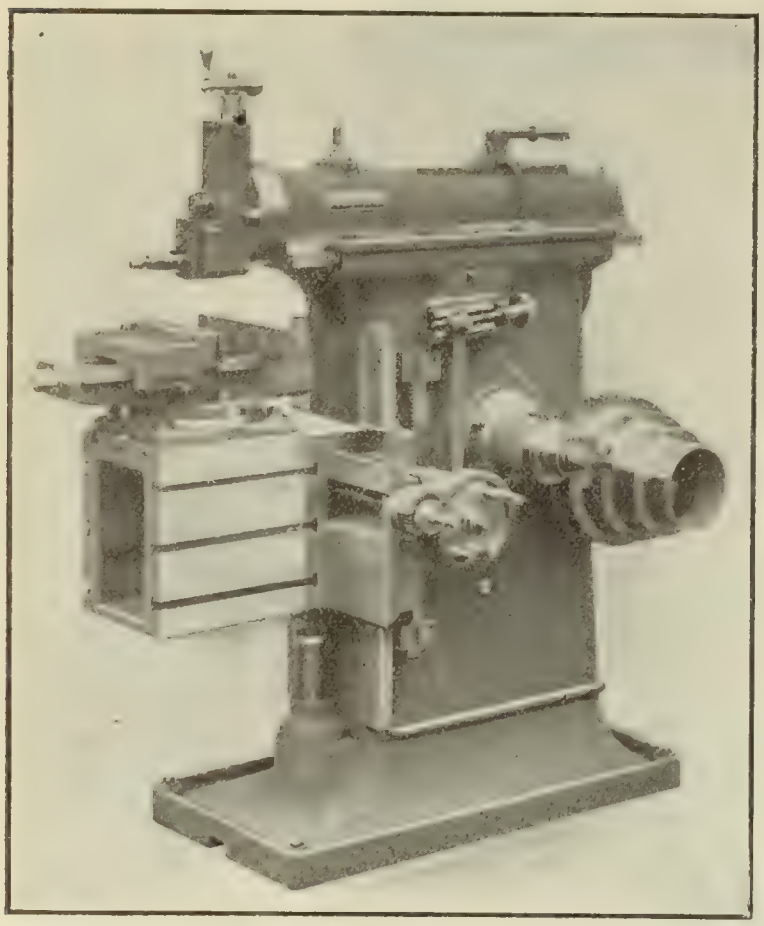
The ram is very heavy and is designed for uniform rigidity throughout its length of stroke. It also is braced by internal ribs, and has long wide bearings on the column with a continuous taper gib having end screw adjustment for taking up the wear. The stroke of the ram is positive and has four rates of speed, ranging from 20 to 65 strokes per minute. The length of stroke may be easily changed without stopping the machine, and is indicated by a pointer on the ram traveling along an index. For positioning the stroke a device is located on the ram near the head, and this also may be operated while the machine is running. The rocker arm is extra heavy and thoroughly braced, and gives to the ram a nearly uniform speed its entire stroke and also provides an exceedingly quick return. The gearing ratio and wide belts are calculated to furnish sufficient power for all work adapted to this type of machine.

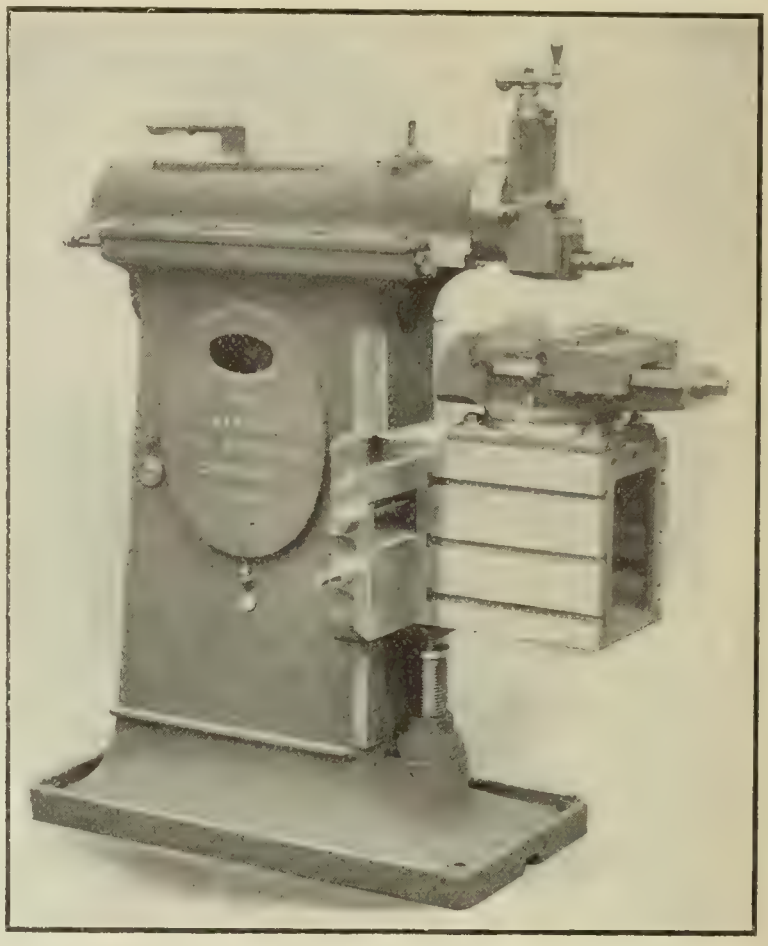
The head is operative at any angle within an arc of 100 degrees, and has a convenient and efficient locking device. For taking up the wear the down slide is fitted with a continuous taper gib having end screw adjustment. An unusually long down feed is afforded through a screw having an adjustable graduated collar reading to 0.001 in. The head has a large tool post for using holders with inserted cutters, and has a tool steel post screw and a tool steel serrated back plate.

The table is of box form, with three T slots on both the top and sides, cut from the solid. It is braced internally and is readily detachable. The apron is fitted to the cross rail against very wide bearings, and is provided with a continuous taper gib having end screw adjustments for taking up wear. It has three T slots on the face for clamping work when the table is removed.

The cross rail also is of box form, heavy and strongly ribbed. Its length gives the table a long horizontal travel. Clamps and bolts of improved design secure it to the column, which prevent it from dropping away when the binder bolts are loosened. A telescopic elevating screw of large diameter is provided having ball bearing thrust. The elevating gears are of steel, planed from the solid.

The cross feed is of the company's new patented design. It is variable and automatic, with a range of 0.008 to 0.2 in., alterable while the machine is running, through the slot head near the top of the column, operated by the knurled knob shown. A scale and pointer show the number of notches (1 to 25) turned at each stroke, each notch representing a feed of 0.008 in. The construction is such as to render unnecessary any adjustment of feeding mechanism due to changing the position of the rail, the feed being constant regardless of the rail position. The feed is thrown in or out or reversed through the knob on the large feed gear. This gear has a square crank hold, used to obtain quick advance or return of the table. The feed gears are protected and the feed rack is cut from bar steel. An automatic stop releases the feed, preventing injury by excessive feed or accidentally feeding the apron to either limit on the rail.





Two Sides of the 15-In. Single Geared Crank Shaper Built by the American Tool Works Company, Cincinnati, Ohio.

The rocker arm is bifurcated at the top and the column has a large opening to permit keyseating a shaft 2½ in. in diameter. Larger shafts may be keyseated by setting the table over to allow the shaft to pass outside of the column and inclining the head to that side.

The vise is of a new and heavier design, with deep jaws faced with steel. It is clamped by two bolts to a large swivel base (graduated in degrees), covering nearly the entire area of the table top to which it is clamped by four bolts. The vise screw has bearing on both ends and is always in tension when holding the work.

All working parts are thoroughly lubricated. The ram slides have felt wipers at both the front and center of column, assisting lubrication and preventing oil from dripping down over the front of the machine. An oil pocket is cast integral with the column at the rear, storing any waste of oil, which may be drawn off at any time through a pipe extending from the rear of the column. A large quantity of oil is stored in a pocket cast integral with the arm, from which it is distributed to the crank pin and the sliding block in the rocker arm.

The countershaft has tight and loose pulleys 12 in. in diameter by 3¼-in. face, and is intended to run at 180 rev. per min.

The bearing for the driving pulley is cast integral with the column and is exceptionally long, extending well into the center of the cone, eliminating the necessity of an outboard bearing for the cone shaft. This bearing is bronze bushed. All shafts are of high carbon crucible steel, ground. All gears are of coarse pitch and wide face, and are cut from the solid.

This shaper is claimed to be remarkably smooth in its action even under the heaviest cuts. In planing work which is afterward to be scraped much unnecessary scraping is avoided because of the accuracy and evenness of the cut. As giving some idea of the power of the machine, it is stated that in tests on cast iron it took cuts 4 in. long, ⅝ in. deep with 0.016-in. feed, ⅛ in. deep with 0.04-in. feed and ⅛ in. deep with 0.048-in. feed, with the belt on the next to largest cone pulley step, and cuts 12 in. long ⅛ in. deep with 0.024-in. feed, with the belt on the largest step. On steel cuts 2½ in. long ⅛ in. deep with 0.016-in. feed were taken with next to slowest speed, and cuts 10 in. long ⅛ in. deep, with 0.016-in. feed at the slowest speed.

The length of stroke of this machine is 15¼ in., the down feed to the head 6 in., the vertical travel of the table 14 in. and the horizontal travel of the table 18 in. The regular equipment includes a vise, countershaft, wrenches and the automatic safety stop. In addition there can be furnished an automatic stop dog for the cross rail to stop the feed at any point, a circular attachment, mold makers' vise, tilting table, four-speed gear box and electric motor drive.

## The Baird Steam Drying Barrel.

For drying small parts of wire or sheet metal with hot sawdust after they have been subjected to a wet tumbling or a plating process, the Baird Machine Company, Oakville, Conn., has brought out a new drying-out barrel, shown in Fig. 1. The operation of the machine is similar to that of the No. 2 Baird oblique tilting tumbler. Work can be put in or dumped or examined while the barrel is in operation, and the barrel may be tilted to any angle while rotating. The purpose is to provide a method of drying that is quicker and cheaper than the hand process, in which a small batch of parts is placed in a steam drying pan, heated from beneath by steam coils. The capacity of the barrel is greater, and the further advantage is claimed that the operation of tumbling not only thoroughly dries the product, but the sawdust as well, thus shortening the time of drying for the next charge. Yet another result is that tumbling in sawdust brings parts to a brighter finish. In this machine the difficulty of getting rid of the water of evaporation has been overcome, the action being entirely automatic.

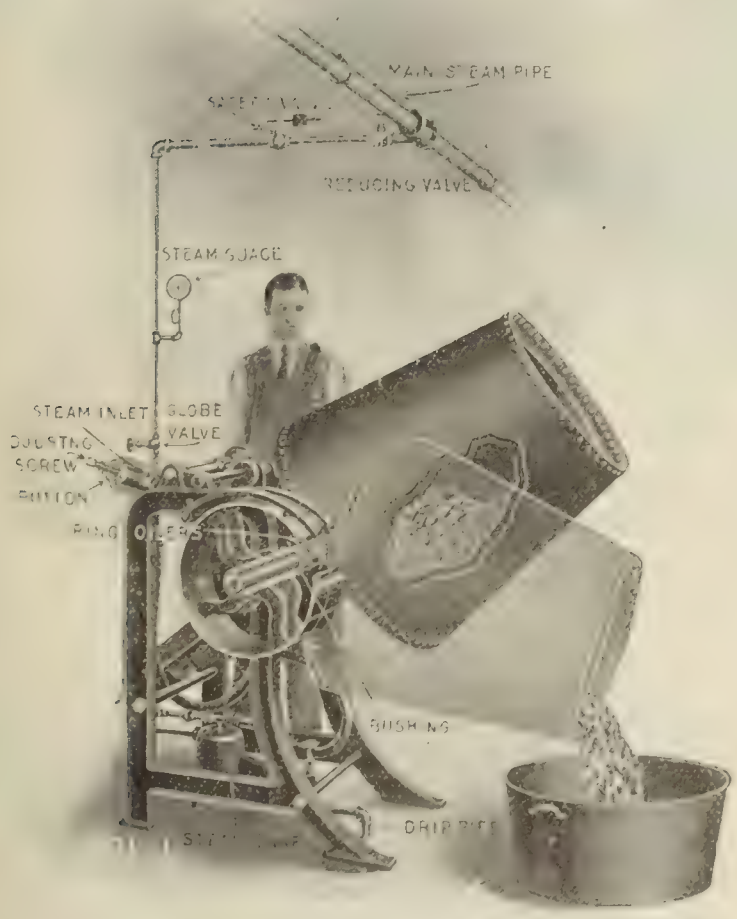



Fig. 1.—The Oblique Tilting Steam Drying-Out Barrel Made by the Baird Machinery Company, Oakville, Conn.

In general design the machine is very similar to the company's standard tilting tumbler described in *The Iron Age* January 18, 1906. The new feature is the arrangement for introducing steam to the space between the inner and outer shells of the barrel, including the cylindrical wall and the head. As shown in Fig. 2, the shaft to which the barrel is attached and which causes it to rotate has two passages running through it lengthwise, one admitting live steam to the barrel casing, the other carrying away the exhaust. Surrounding the shaft are two steam boxes, which are held against rotation. The steam enters the steam box nearer the barrel and passes through one of the shaft-passages to the space between the barrel shells. The barrel head has a port connecting the steam space with a pocket forming a part of an exhaust passage which enters the second opening through the shaft leading to the exhaust steam box. The exhaust steam and water is expelled by the steam pressure behind it and assisted by gravity. When the port is in the lowest position the water of condensation flows through it to the pocket, and when the pocket gets to its upper position the water empties through the passage to the steam box and thence, with the exhaust steam, through a steam trap. It will be seen that this action is entirely automatic and makes it easy to maintain a constant high temperature in the barrel. Where the steam pressure available exceeds 20 lb. a reducing valve is employed.

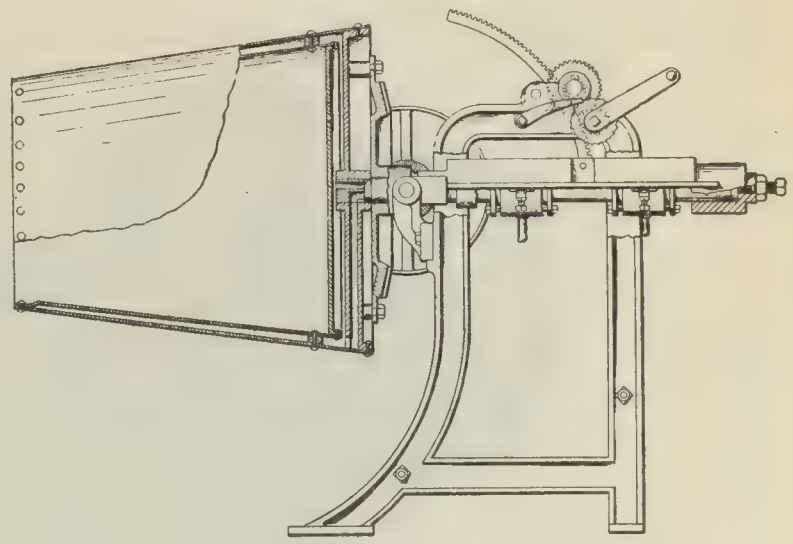


Fig. 2.—Sectional View of the Baird Steam Drying Barrel.

The inside dimensions of the barrel are: bottom, 28 in.; top, 21½ in., and length, 26 in. The speed of the barrel is from 35 to 40 rev. per min., as required. The floor space is 42 x 60 in., and net weight 1200 lb.

**The Roe Mechanical Puddler.**—The mechanical puddler invented by James P. Roe, Pottstown, Pa., is now being operated at the works of the Glasgow Iron Company by the Reading Iron Company, in order to gather further general data, and specifically to develop the use of gas in place of oil as a fuel, all the runs thus far having been made with the latter. While successful metallurgically, oil was too uncertain in supply, and there was the prospect that producer gas may be cheaper. Mr. Roe has introduced some novel features of gas application.

No. 2 furnace of the Warwick Iron & Steel Company, at Pottstown, Pa., was blown in September 24 with dry air. No. 1 furnace is giving better results than have ever before been attained so far as tonnage, control of the grade and fuel consumption are concerned.

# The New Landis All-Steel Die Head.

The bolt cutter illustrated in Fig. 1, and especially its die head shown in Fig. 2, have been designed for producing accurate work rapidly. The flexible rake provided in the die, accommodates it to the cutting of various kinds of material. These machines are built by the Landis Machine Company, Waynesboro, Pa., in single, double or triple head patterns, with either belt or motor drive, and the same type of die is also used in the company's pipe threading machines.

The head is made entirely of steel, the heavier parts being made from cast steel, the spindles from machinery steel, and the smaller parts from tool steel. All the main bearing parts are hardened and ground and are interchangeable. The die head is symmetrical, compact, and all parts are easily accessible. The die locks within the head and the yoke is not relied upon to hold the die closed while cutting or for carrying any of the cutting strain; in fact, the yoke plays freely and is not locked at all. For this reason it may easily be attached to other makes of machines, and requires less attention in the way of adjusting than the average die head.

Fig. 3, a cross section of the head, shows a section on A O B passing through one of the spindles *a*, to which the chaser holder is clamped and which carries the greater part of the cutting strain. These spindles are ground and have very long bearings. The same section shows one of the large cone pins *b* which move longitudinally with the ring *c* and work in hardened bushings in the ring *d* to rotate the latter, which opens and closes the die. The spring *e* engages the chaser holders and gives quick and positive opening to the die and takes up the back lash that might occur from slight wear. This spring is made with one coil, so as to give it a uniform tension in its different positions.

As shown in the detail of the locking device, to open the head, ring *f* moves back raising the locking latches from behind their hardened seats when the springs quickly open the die. When the die is closed it is positively locked and there is no possible strain on the yoke. The tangent adjusting screw engages the head body proper and is located in ring *g*. Graduations on the rear of the head determine setting positions for different diameters. The spindle *h* of the machine is fitted rigidly into the head, avoiding any possibility of the head working loose from the spindle.

The vertical pin in the locking device with the angle head drops in behind a hardened plate, and is held there by a flat spring in ring, *f*. In opening, the ring carrying the horizontal pin starts to move back, raising the vertical pin until it unhooks behind the hardened plate and the die quickly opens. There are two of these locking pins located on opposite sides of the head. The spindle *a* acts only as a support to carry the cutting strain of the die. The die is opened and closed by actuating ring, *d*. This ring is, in turn, operated by the cone pins *b*, one being located on each side of the head. When this ring

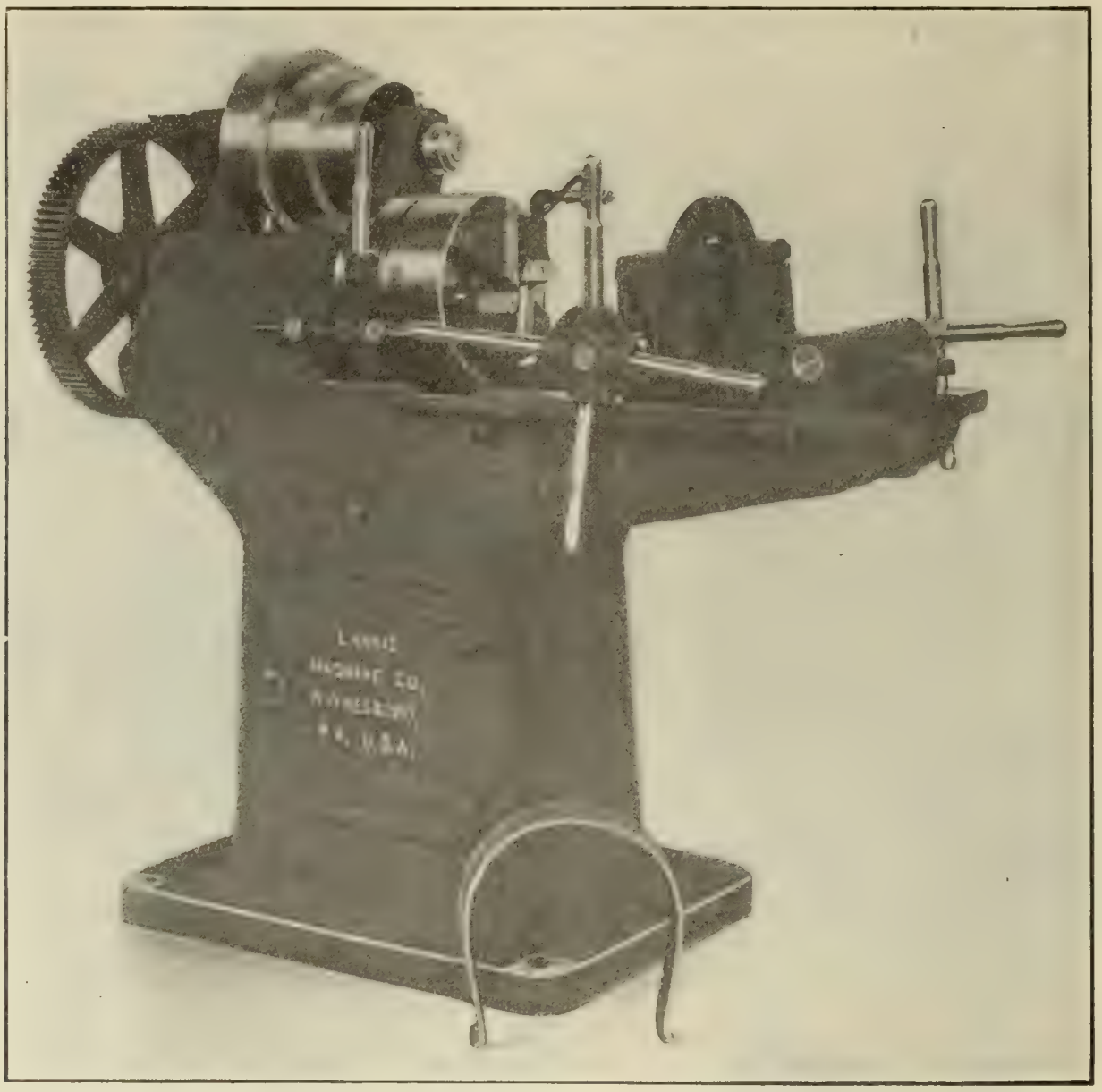


Fig. 1.—A Single Head Bolt Cutter Built by the Landis Machine Company, Waynesboro, Pa., and Equipped with the All-Steel Head.

rotates, the sliding shoe in the chaser holder moves the chaser holder back or forth at its periphery, causing the die to open and close from a central point.

The holders carrying the dies are also made of steel. Fig. 4 shows one of these holders with the chaser in position, and the small hook gauge used for determining the correct cutting position of the chasers after they have been ground. The chaser is supported close to the cutting point, and is backed so as to prevent its canting or becoming bell mouthed. A clamping bar engages the dovetailed slot in the back of the chaser shown in Fig. 5 in such a manner as to draw it down and back at the same time by means of the two screws on the face of the chaser holder. The chaser is also supported on the rear by a screw, which helps hold it in correct cutting position. By means of this screw the chaser can be set forward as fast as worn or ground off.

Any rake can be given the dies in grinding that may be desired to suit the kind of material it is desired to cut, and may readily be made such as to produce a rolling chip after the manner of a lathe tool. This flexible

rake makes it easy to employ the highest possible cutting speeds that can be had from any die, as the cutting clearance in the die is correct, and there is no drag in the die. The bevel on the chaser, as shown in Fig. 5, forms the throat of the die, and no grinding is ever done on this bevel. The depth of the throat can be made to suit special requirements, where it is necessary to cut close to shoulders or heads of bolts, and it will be possible to cut just as close to shoulder when the die is almost worn out as when it is new since the throat is never ground. The chasers are hard their entire length, and to resharpen means simply grinding the ends of the chasers. One set of dies can be ground very many times before they are too short to hold.

As these dies never require annealing, hobbing or retempering, they can be made to advantage from high speed steel, and eliminate much of the annoyance common in the hobbed die. They are claimed to have a life far in excess of any other. Another feature of especial value in this die is that the back teeth of the four chasers cannot shave the thread, but act as a lead nut to draw the work in to the correct pitch of the die. If required special dies are furnished with a fine degree of accuracy guaranteed.

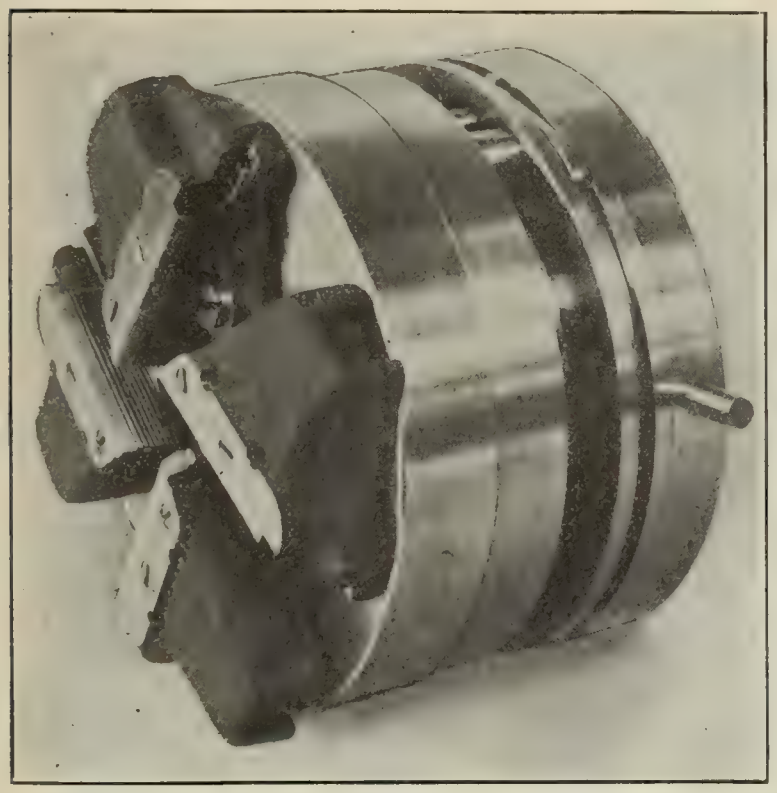


Fig. 2.—The Landis All-Steel Die Head.

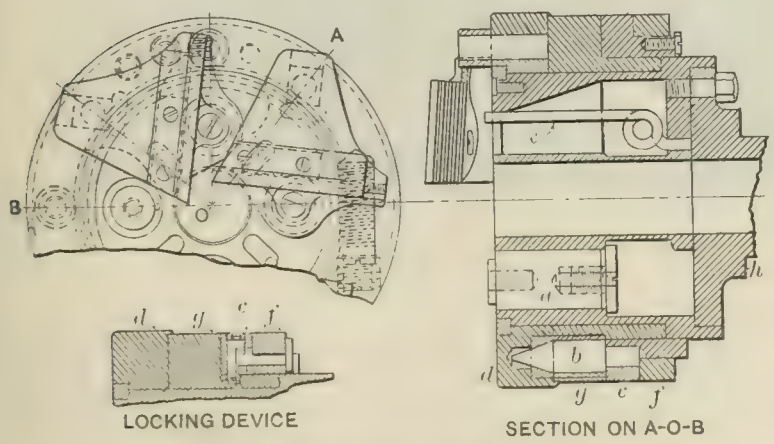



Fig. 3.—Details of the Head.



Fig. 4.—One of the Chaser Holders and the Setting Gauge.

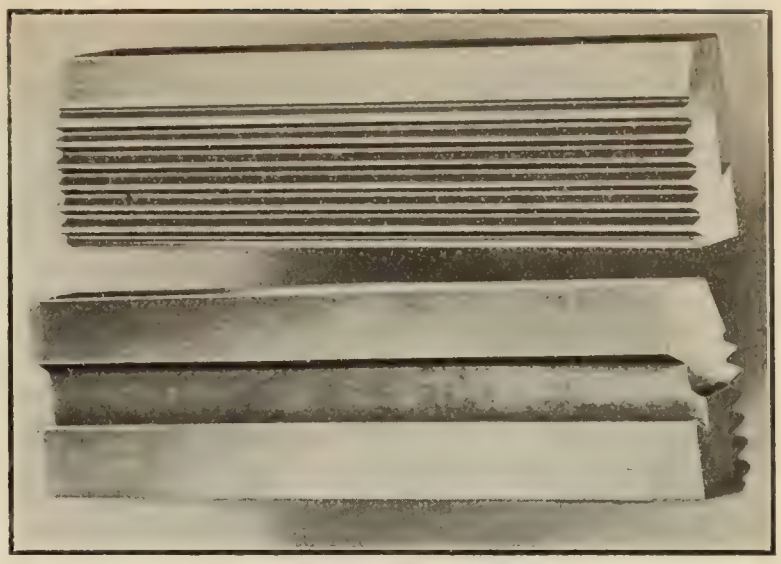


Fig. 5.—Two Chasers, Showing Front and Back.

With this die it is stated that cutting speeds have been attained more than 100 per cent. faster than with the ordinary hobbed die, due to the die having correct cutting clearance, flexible rake and no drag, giving ideal cutting conditions.

The die is opened and closed in much the same manner as in all ordinary bolt cutters, either by hand or by the movement of the carriage. The carriage has the advantages of adjustment either up or down or sidewise. It is gibbed to the bed, so that it can be readily adjusted to compensate for wear. The vise has guides symmetrically placed with relation to the bolt being cut, and clamping screws immediately below, thus eliminating side thrust. The rack is in the center of the machine, beneath and in line with the bolt being threaded, and the grips provided with the machine can be turned four ways for holding different sizes or shapes of stock.

The main spindle of the machine is so arranged that any oil running in through the head cannot run out on the floor in the rear, but will pass back into the oil tank again. All machines are provided with rotary oil pumps, with spring release valves.

When desired tap chucks can be put on the heads in place of dies to form chucks for holding taps, and one set of chucks will cover the entire range of the machine and can be adjusted in the same manner as the head is adjusted, and the dies set to different sizes. It is not necessary to stop the machine to take a nut tap out or put one in again.

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The International Nut Company, Niagara Falls, N. Y., has just been organized and will soon be incorporated. R. A. Ellis, formerly secretary of the Boston Bolt Company, will be president of the new company. N. Chambers, who for the past four years has been superintendent of the Fairbanks-Morse Company's Toronto plant, will be general manager, and E. D. Cleghorn, who has been engaged in the manufacture of automatic screw machines in England, will be vice-president. These three are the prime movers in the new organization. They have already purchased the plant of the American Nut Company and are having plans prepared for an additional manufacturing building 70 x 70 ft. two stories, on which construction will soon be started. The company will engage in the manufacture of nickeled and brass plated nuts, which will be made direct from the bar and cut, drilled and threaded by its own special process. The product will be sold to the automobile manufacturing trade and other manufacturers requiring high grade nuts. Contract for the special machinery has been awarded. Electric power will be used, and the company is now in the market for prices on three 15-hp. motors.

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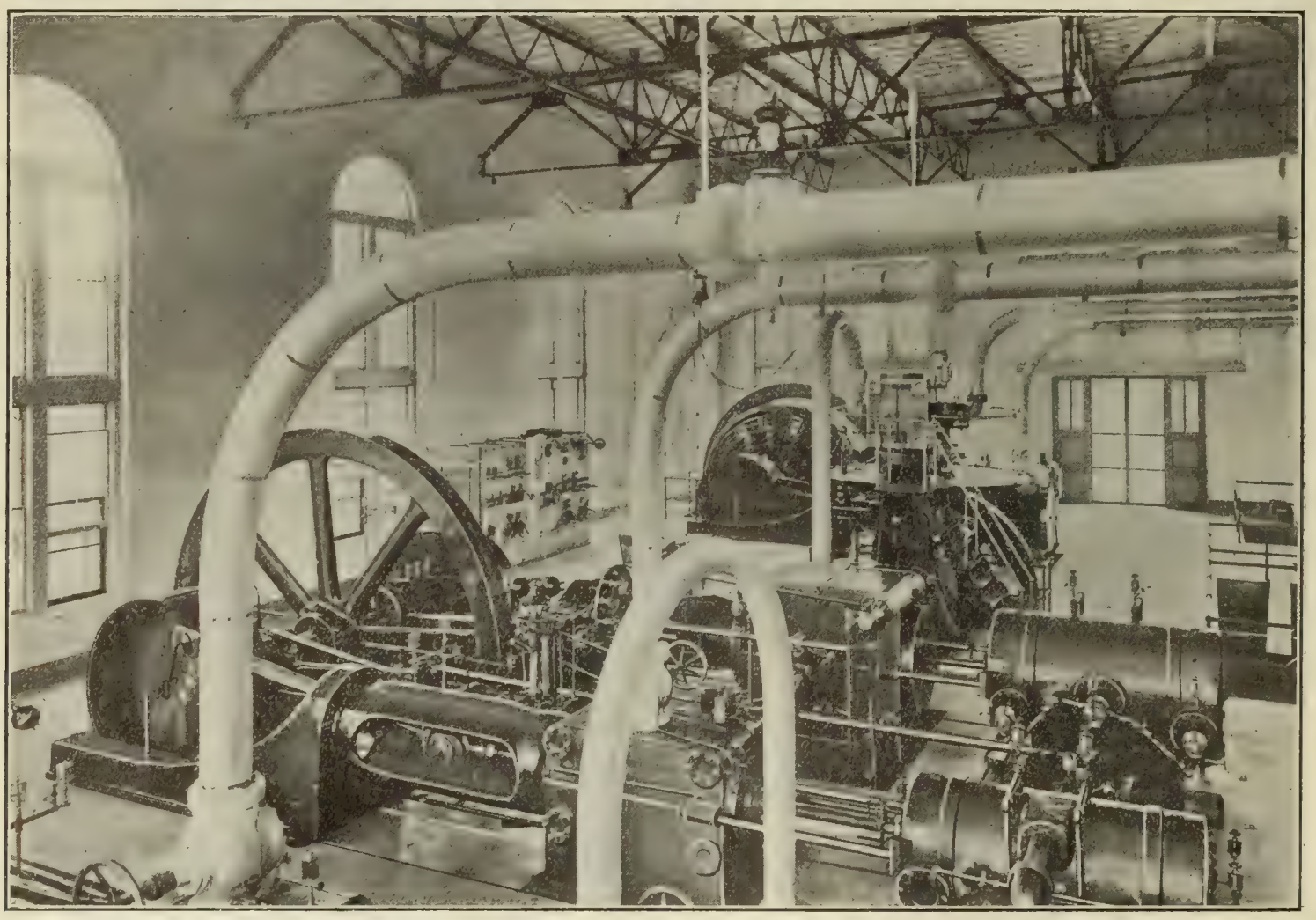
Since the last annual meeting of the American Society for Testing Materials at Atlantic City in June, the membership has increased by 56, making the present total 1069.

# A Modern Steel Foundry and Machine Shop.

## The Falk Company's Plant, Milwaukee, Wis.

BY C. A. TUPPER.

The largest steel foundry in the West, for the making of general castings, that of the Falk Company at Milwaukee, Wis., contains many features of interest. Principal among them is the economical arrangement and operation of the works, which are complete in every essential detail, and are designed to eliminate all unnecessary handling of material. The business was originally the manufacture of street railroad motor gears and track appliances, and this still constitutes an important branch. The present foundry is a brick and steel building, 625 ft. long by 295 ft. wide at its largest part, having a capacity of 1500 tons monthly, where steel castings are turned out, weighing up to 40 tons or more and varying widely in character. The following description begins with the unloading of the raw material and covers the work, step by step, through the various processes by which it progresses to the finished casting.



View in the Power Plant of the Falk Company, Milwaukee, Wis.—Two-Stage Compressor in the Foreground, Generator Units in the Background.

### The Foundry.

Pig iron, brought in over the Chicago, Milwaukee & St. Paul Railroad and left in cars on the tracks which occupy a considerable portion of the ground, is unloaded by a Cutler-Hammer 2-ton lifting magnet, handled by a locomotive crane, and is placed in piles between the tracks. An average analysis of each pile of pig iron or scrap is then taken, and the magnet is again used to load the iron directly into charging buckets carried on small trucks, which, after passing over a scale and having the weight and contents of the buckets recorded, are drawn up an incline to the charging floor of the furnaces and there lined up on tracks. Thence they are picked up by charging machines, as needed, and fed to either one of the two Wellman tilting acid open hearth furnaces of 15 and 20 tons capacity.

The furnace fuel is oil, which, after delivery in tank cars, is stored in three 15,000-gal underground steel tanks in a concrete vault. From these tanks the oil is pumped to the furnaces and a mixture of oil and air fed in together. Four heats a day can be taken when required. Special heats of nickel and chrome steel castings, as well as those requiring very high carbon or particularly high tensile strength, are made when orders are of sufficient tonnage, as is frequently the case. From the tilting furnaces the liquid metal is taken by four 25 to 30 ton oil heated ladles, with bottom taps, two of which are used simultaneously, and is carried by traveling cranes to the various parts of the foundry, where the castings are to be poured.

Opposite the furnaces are the core ovens, coreroom and temporary sand storage bins, with charcoal storage at the right. When an order is received and the patterns are in proper condition to mold the core department receives its instructions and the necessary flasks are made ready, so that there may be no delay on the molding floor. In a custom foundry, where the work varies so much, it requires a good system to keep the flasks in order and properly mated. After coming from the ovens the cores are inspected and defects remedied. The core frames not only support the cores while they are being baked, but also form part of the trucks used to transport them. The loam and dry sand molding is done in a part of the foundry distinct from the green sand floors.

The foundry is served by eight large Pawling & Harnischfeger traveling cranes. Two have 80-ft. span, with a capacity of 50 tons each; five are 50-ft. cranes, designed to carry 30 tons each, and there is one of 25-ft. span rated at 10 tons. All the cranes have large overload capacity. Jib cranes, telephers and tracks running throughout the yard and shops complete the transportation system.

The various floors of the foundry are equipped with molding machines of the power squeezer and hinged types manufactured by the Tabor Mfg. Company, the

Horman Pneumatic Machine Company, the Rowlands Machine Company (adjustable table pattern), and the Killing Molding Machine Company (roll-over, straight drop style); pneumatic hoists built by the Curtis & Co. Mfg. Company, and Pawling & Harnischfegor; cold cut-off saws furnished by the Epsen-Lucas Machine Company and the Newton Machine Tool Works, the former of which are equipped with Disston inserted tooth blades and the latter with Taylor-Newbold blades; sand mills with self-discharging pans, built by the Thomas Carlin's Sons Company; pneumatic shaker screens and riddles of the Hanna Engineering Company's design; machines for straightening core wires or gaggers from the J. B. Smith Foundry Supply Company; hack saws and tumbling barrels of the company's own make, the latter for use in cleaning the smaller castings; crucible outfits, bench tools, &c.

After the castings have cooled they are taken by cranes, if large, or on cars, if small, directly to the cleaning department, which is an 80-ft. extension of the main foundry, 155 ft. wide, and fitted throughout with pneumatic devices, such as hoists, chipping hammers, sand blasts, surface-grinders of the swing frame type, built by the Safety Emery Wheel Company, and saws of various sizes capable of removing heads ranging from the smallest to those weighing two to three tons or more. At one end is a sandblast room with an exhaust fan in the side to draw off the flying dust. Compressed air for this and the other departments is piped from a main duct which runs to the center of the foundry directly from the power plant.

Adjacent to the foundry and served by a 20-ton crane built by the Industrial Works, Bay City, Mich., are two annealing furnaces designed and built by the Falk Company. The tops of the trucks upon which castings are run in to the furnace form the principal part of the floor.

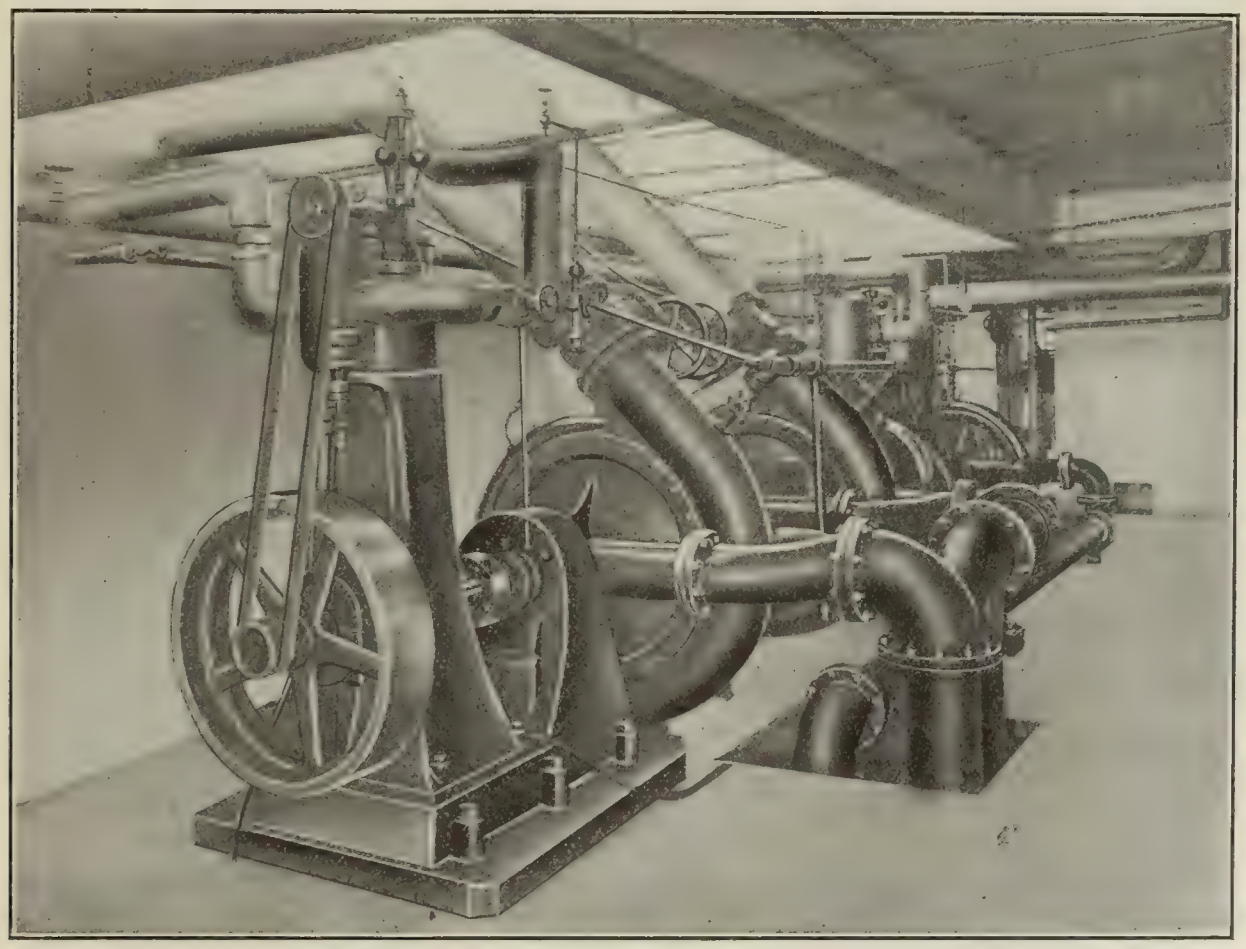
The floor of the foundry receives daylight through side windows and a monitor extending the length of the building, which has ventilator windows on each side. At night, arc lamp illumination is used. The building is high, giving ample space for the gas, smoke and steam to rise and pass off through the ventilators. The shops are heated in winter by a National Blower Company's system, which forces hot air through pipes running along the top of the building.

Sand is kept in sufficient supply to dry naturally before being used, and it is carefully selected and mixed, the grades adapted to each class of work being kept separate. Temporary storage bins are placed at one end of the molding room and the main supply is kept under cover in a frame structure near the railroad tracks, where brick and furnace linings are also kept.

Unusually successful results have been obtained here in electric welding. Bars welded by this process have stood tensile tests up to 58,000 lb. per sq. in.

From one to another of the various operations the work is laid out so that each man does his particular task, for example, molders do not perform such operations as pulling out castings, taking care of the bottom boards, wetting down the sand, cutting over, &c., which can be done by less skilled laborers. The molders also take no part in the pouring, for which there is a special pouring gang.

As a necessary adjunct to the foundry the company maintains its own chemical testing laboratories, which are thoroughly modern in equipment. The testing laboratory has a Riehlé testing machine of 100 tons capacity, a La Chatelier pyrometer, Siemen's water pyrometer and a full set of microscopic-photographic apparatus. This enables the Falk Company to secure a complete and minute record, physical and chemical, of all material used in the furnaces and of the resultant castings. At one side of the works is an emergency hospital, where surgical and medical aid can be rendered in case of accident.



Steam-Driven Centrifugal Pumps Supplying the Condensers.

### Patterns.

Lumber for use in the pattern shop is thoroughly seasoned, and a large quantity kept constantly on hand, as it is particularly important in a steel foundry to use proper pattern material to preclude shrinkage or distortion in the castings. The Falk Company makes a specialty of turning out patterns for customers, particularly for duplicate work, or that of an intricate nature requiring special care in shrinkage measurements. All patterns made in the works or received from outside are numbered and stored in a steel frame concrete building, arranged with shelves and partitions, where a card record of them is kept. The building is fireproof with fire walls dividing it into compartments.

Orders from customers are made out at the office in quadruplicate. Two copies are sent to the shipping department, one being kept on file there and the other returned to the office when the order has been completed and shipped. One copy goes to the pattern storage and the fourth is kept on a card record at the main office. Only papers covering live orders are left in the hands of

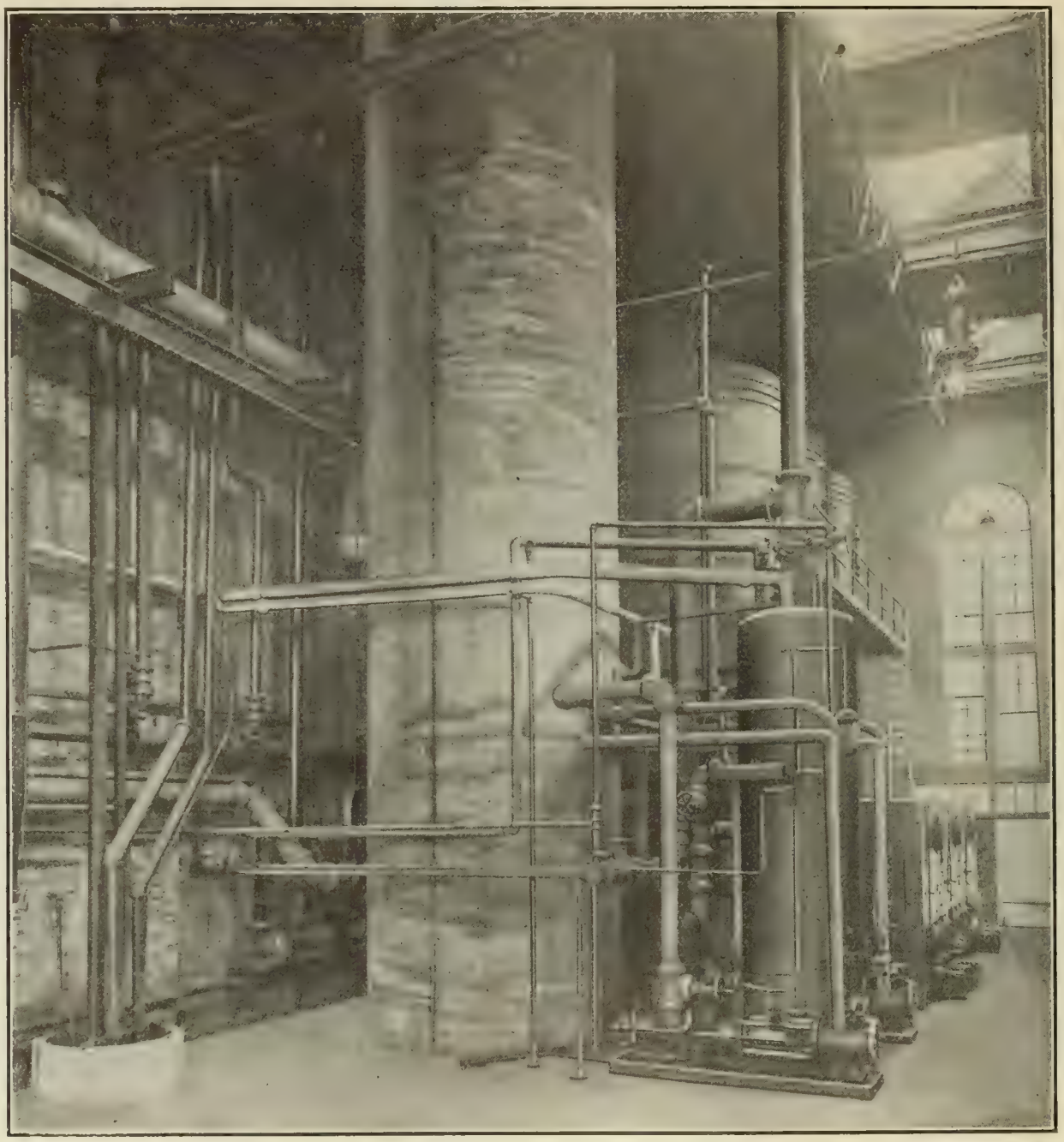
any employee, the rest being filed as soon as filled. From each of the orders received at the pattern storage building a molder's ticket is made out, and this accompanies the pattern to the foundry, rush work being noted on a slip of a special color. The exact amount of work done on a job each day is checked up at night and a record kept in the pattern storage office, which shows at any time just how far the order has progressed. All these records are kept by two men and a boy. Between the core department of the foundry and the pattern shop is a building in which patterns for immediate use are stored temporarily, awaiting disposition in the foundry. As soon as a man or gang of men has completed one operation, the foreman of the department goes to this building and selects the next pattern to be used.

The pattern shop is equipped with woodworking machinery, most of which was furnished by the Oliver Machinery Company, the Fox Machine Company, Baldwin, Tuthill & Bolton, the Security Machine Company and the Rowley-Hermance Company. An interesting tool in this department is one for cutting gear pattern teeth, built by the company itself.

When work on an order has been finished, the pattern is either returned to the main pattern storage building or else sent back to the customer. At this time a simple card record has been completed, which shows when the pattern was received, in what condition, gives a brief description of it, including the core boxes and number of pieces in the pattern, states its exact or approximate valuation, when and how it was returned to storage or to the customer, and also shows the pattern number given it at the works, with section and shelf in which it was kept while there. A paper duplicate of this card is pasted in a book under an alphabetical numerical arrangement, and for patterns returned to the customer is stamped with a large R in the corner, thereby enabling the record clerk, in going through this book, to look only at the numbers of patterns which are actually in the hands of the company.

### Railroad Department.

The railroad department turns out cast steel gears and forged steel pinions, and a great variety of special work. This department has an exceedingly well equipped machine shop, including planers and lathes, furnished by the Niles-Bement-Pond Company, American Tool Works Company and the Lodge & Shipley Machine Tool Company; drilling and boring machines manufactured by Pawling & Harnischfeger; Gould & Eberhardt gear cutters; Prentice drills; Bryant milling saws of Disston manufacture; Mitts & Merrill key seaters; milling machines built by the Kempsmith Mfg. Company, and Kearney & Trecker, the former having special feed changing and tripping mechanism; Colburn boring mills: Morton draw cut shapers; Brown & Sharpe and Safety Emery Wheel Company's grinders; rail saws furnished by the Railroad Supply Company; expansible reamers of a new type, designed and built by the Falk Company; hydraulic presses, with accumulator and pump built by Logemann Bros., the latter direct driven by an Allis-Chalmers type K motor, and some very efficient and accurate pinion cutters of the company's own manufacture.



Steam Generating Plant, Showing Boilers, Feed Heater, Barometric Condensers and Feed Pumps.

In the forge shop are three steam hammers built by the Niles-Bement-Pond Company, two of 1500 lb. and one of 1000 lb. capacity, together with the Buffalo Forge Company's blowers and forges and a full complement of forging tools. The heating furnaces are of standard design. In this shop are produced monthly thousands of forged blanks for street railroad motor pinions. The frogs, switches, &c., manufactured are of the types now standard in street and interurban railroad service, with improvements made by the Falk Company, which largely strengthen their wearing qualities. Of these, the most

popular types made by the company are the hardened center manganese insert and the solid cast steel types. The special feature of the former is the binding of the separate parts together with the plates by a mass of open hearth steel, producing an integral structure. This feature is also carried out in the construction of hardened center railroad crossings. The cast steel work is made up to conform to various types and sizes of rails, designed to give the greatest strength and durability to all vulnerable parts. All wearing points and surfaces, such as frog and mate points, with running surfaces in their proximity and near the points of tongues, are hardened by a special process, and, being integral with the main casting, there are no parts to become loose.

The steel bound integral type of frogs, switches, &c., is also largely turned out by the company. This overcomes the objection to the bolted construction by eliminating all loose parts. The individual pieces are firmly bound together by a steel casting, which, in frogs, is so designed as to give protection to the frog points. The use of steel of high carbon and manganese composition insures a durability not obtainable with gray iron. Regular built up work is also produced for those requiring it. Rapid growth of interurban electric roads has created a demand for special work of the standard steam road type, and to this the company is paying particular attention.

The laying out of work is facilitated by a special revolving crane of 5 tons capacity, which makes a complete circle 150 ft. in diameter. This was built to the company's designs by the American Bridge Company. It is also a means of transferring material from one to another of the buildings immediately surrounding, each of which has tracks radiating toward the center of the circle served by the crane and projecting within this circle, so that the material can be readily loaded into cars and run to any place desired.

One feature of the railroad work is that of cast welded joints for lengthening the life of old rails. This work is done for customers either directly by the company or under lease. The apparatus required consists of an electrically operated compressor and sand blast machine, a portable cupola and motor driven blower, a flexible shaft grinding machine, clamps of various forms, molds to suit various sections of rail, wrenches, &c.

Connected with the foundry and machine shop is a toolroom, which is largely self-supporting, the company having originated here a number of salable specialties.

### Power Plant.

All machinery in the works which does not take compressed air is electrically operated, principally by individual motor drive, although line shafting is used where numbers of light running machines warrant it. Electric current and compressed air are supplied from a central power station, equipped in all of its main details—engines, generator, compressors, circulating pumps, &c.—by the Allis-Chalmers Company. The machinery consists of a cross compound condensing Reynolds-Corliss engine, with cylinders 20 and 42 by 42 in. stroke, operating at 100 rev. per min., and coupled to a generator of 550-kw. capacity, delivering direct current at a terminal pressure of 250 volts; an 18 x 24 in. simple condensing Reynolds-Corliss engine of vertical pattern direct connected to a 125-kw. generator with characteristics similar to the larger machine, and two air compressors, one two-stage and one single stage (used only as an auxiliary), having capacities of 2500 and 1800 cu. ft. of air per minute. The steam end of each unit is an engine of the same type as that driving the main generator. Richardson sight feed oil pumps lubricate the cylinders of the engines and a gravity system supplies all the units; the oil flows, after use, to a filter in the basement and is pumped back to a 200-gal. tank under the ceiling of the engine room by a 4½ x 2¾ x 4 in. pump. The capacity of the system is 450 bbls. daily.

In the steam generating room are three Wickes vertical water tube boilers designed for a working pressure of 150 lb. and rated at 300 hp. each. These boilers are connected to a 12 in. header, which divides into 6 in. feeders serving the several engines. Steam is supplied at 150 lb. pressure through large separators connected with Squires traps. The piping, erected by the Pittsburgh Piping & Equipment Company, is of extra strength. Elbows were dispensed with as much as possible and long turn bends used instead, those on the steam feeds to the engine being bent to a 6-ft. radius. Crane valves, with rising stems, are employed throughout, and there is a complete system of steam, water and air control, which can be operated from either the engine or boiler room floors, insuring prompt shutoff in case of accident.

All boiler feed water is taken from the city mains and first passed through the jackets and intercoolers of the air compressors before flowing to an open Crowley heater. Thence it is lifted to the boilers by one of two Burnham outside packed plunger pumps, each 14 x 8 x 16 in., the second unit being held in reserve. There is also a 7 x 4¾ x 8 in. Prescott pump, used to work the turbine flue cleaner and for boiler washing. Only half the space in the boiler room is at present occupied, and reinforced concrete foundations have been laid for another battery. In the engine room the units can be rearranged to provide for additional capacity.

Each furnace has independent dampers between it and the breeching, which connects with a reinforced concrete stack 180 ft. high, having natural draft through an 8-ft. flue. The main damper is controlled by a Richard Thompson regulator operated from the engine room.

Each of the engines is connected to one of four Tomlinson barometric condensers. The water flows from a near-by river to a deep well, where it is elevated to the condensers by steam driven centrifugal pumps, one pump supplying two condensers. The latter are equipped with equalizer pipes to maintain a uniform vacuum on the different units. The suction pipes to the centrifugal pumps have sliding screens, which can be taken up and cleaned when necessary. A third centrifugal pump is used to remove mud accumulation in the bottom of the well; it may also be used to pump water from the deep well through the jackets and intercoolers of the air compressors and supply the heater for boiler feed in case of failure of the city mains. The exhaust of the auxiliaries goes to the Crowley heater, to which all traps also discharge.

Coal is brought in on an inclined track and dumped over inclosed bunkers having a capacity of 400 tons, the cars being pulled up by means of an electric hoist. As the bottom of each bunker is pitched toward the furnace this arrangement puts the coal from the car to the furnace door practically without shoveling.

The main generator furnishing direct current has a yoke divided horizontally, permitting easy removal if required, and the field cores are of cast steel, with laminated pole faces, so secured by countersunk screw bolts as to enable the individual poles to be separately removed and field coil changed or minor repairs made without affecting the rest of the machine. The armature is of open construction, affording a free passage for the air, which circulates through the body of the core and the radial ventilating ducts; and the coils are of the form-wound interchangeable type.

The switchboard was built by Geo. F. Rohn of Milwaukee, and is equipped with standard apparatus, including Cutler-Hammer switches. The distribution of current to the shops is through insulated underground cables, which feed a network of wires run in iron piping to the various departments where power is needed.

The Falk Company started at its present site in 1899 with a plant extending over less than a quarter of an acre, and the present works have now an area of 50 acres, including a covered floor space of nearly 10 acres. The office building is a two-story pressed brick structure fronting the works. The officers are Herman W. Falk, president; Otto H. Falk, vice-president; Charles L. Jones, second vice-president; E. A. Wurster, secretary and treasurer; Clarence R. Falk, works manager; Harold Falk, general superintendent, and W. Frank Carr, chief engineer.

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The Pittsburgh, Bessemer & Lake Erie Railroad, controlled by the United States Steel Corporation, is in the market for 24 locomotives, and the Union Railroad, controlled by the Carnegie Steel Company, will buy 10 locomotives.

# THE IRON AGE

Established in 1855.

New York, Thursday, October 1, 1908.

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## The Shop-School Combination in Apprenticeship.

No feature of the work of manufacturers' associations in the metal working trades—in particular those whose membership is largely in foundry, machine shop, boiler works and structural lines—is more important than that relating to the training up of a new generation of shop workmen. It is the perennial apprenticeship question, but under a new guise. With the occasional exception of the man who holds that the shop, and the shop only, is the place to teach a trade, manufacturers no longer have the idea that to enter upon apprenticeship means that a boy once for all cuts loose from school. It is true the various night schools, the correspondence schools and the occasional night class in drafting organized under shop auspices have long been available to the boy learning the machinist's trade, but the need of something more than these is recognized in all the more recent proposals for trade education. The average boy starting in the shop has been found so lacking in the rudimental knowledge supplied by the full common school course that employers have been for several years seeking to make up the deficiency. In one prominent machine shop in Cincinnati, as stated in the paper of Fred A. Geier before the National Metal Trades Association at its New York meeting last year, it was found that the average attendance of the 38 boys under contract to the company to learn the trade had been but seven years in the public schools. The average attendance of all boys in the schools of Cincinnati, it was also ascertained, is but five years.

Without discussing the relative value of the various plans for the training of boys directly with a view to their life work, attention is here called to the one recently adopted at Fitchburg, Mass., as described in our last issue. Contrasting favorably with the so-called manual training high schools, about the practical value of which too much is often taken for granted, the Fitchburg plan has much to commend it. In brief, it provides for a four years' high school course, the first year of which is all school work, while in the remaining three years the boy spends alternate weeks of the school term in shop and school. The team plan is adopted, the boys who select the shop-high school course being taken in pairs by the local shops, and thus two boys working in the shop in alternation, week after week, carry on the shop work that would ordinarily be done by one boy in continuous apprenticeship. There may be disadvantages of this plan, which will become plain only as it is worked. There might be a question, in the average shop town, on the score of expense, of providing extra teachers, for the shop course boys, being in school only half the time and taking different work from that of the literary courses, would need to be in classes by themselves, and such classes would doubtless be smaller than those ordinarily maintained. There must also be manufacturers willing to take the number of boys desiring each year to enter upon the combination course. Then, too, the plan contemplates that all who select this course shall have spent nine years in school before entering the shop. The statistics for Cincinnati indicate that this is considerably longer than the average school period of boys who enter shops. Many must become breadwinners earlier.

Apparently there would be an advantage in the Fitchburg plan over that provided at Cincinnati through the co-operation of manufacturers with the University of Cincinnati. The latter applies to graduates from the high school and therefore deals with boys who reach the shop three or four years later than would be the case at Fitchburg. At the beginning of the second year in the high school pupils are 15 to 17 years of age, which is presumably a better time for the influence of the shop régime to impress itself upon the boy than three years later. Further, it may well be questioned if the ordinary high school course, with so much of the time given to purely cultural studies, can profitably be taken by the boy who looks toward a shop career. In the Fitchburg combination course the high school studies pursued in the second, third and fourth years are intended as a preparation for the chosen life work. On its face the plan has much to recommend it. What remains is to know what are its drawbacks in practice.

## Increase in Ore, Fuel and Flux Per Ton of Pig Iron.

Roundly it has been customary to estimate the consumption of iron ore in the United States at twice the tonnage of pig iron produced in a given year. While of all the leaner ores of the South and some other districts considerably more than 2 tons is required for a ton of pig iron, the great preponderance of Lake Superior ores in blast furnace mixtures in the North is an offset. The annual statistical report of the American Iron and Steel Association for 1907 estimates the total consumption of domestic and foreign iron ore in the manufacture of pig iron in that year at 50,100,000 gross tons, against 49,375,000 gross tons in 1906. The amount of mill cinder, scale, scrap, &c., consumed in the manufacture of pig iron is not ascertained by the association, but the Census statistics for 1904 made the total of such materials used in that year 1,865,385 tons. If a proportionate amount is figured in 1907 the total would be 2,891,346 tons, which added to the estimated consumption of iron ore gives a total of 52,991,346 gross tons of iron bearing material charged into the blast furnace last year. This represents 2.06 tons for each of the 25,781,361 tons of pig iron produced. The quotients for other years are not available, but they would doubtless show a gradual increase from a point fractionally below 2 tons, in view of the well-known fact of the decreasing iron content of the Lake ores charged into the blast furnaces of the United States.

Not only is more ore charged per ton of pig iron, but necessarily more coke and more limestone. The coke increment has been quite constant in recent years, but has not been statistically measured. The increased use of flux last year, as compared with 1906, appears in the official statistics, showing that the limestone consumed by the blast furnaces in the production of 25,781,361 tons of pig iron amounted to 14,194,584 tons. The average consumption of limestone per ton of pig iron produced

was 1233.2 lb., against 1178.8 lb. in 1906. For anthracite and bituminous furnaces the consumption in 1907 was 1247.8 lb., against 1192.8 lb. in 1906, and for charcoal furnaces it was 391.2 lb. and 378.6 lb., respectively.

## Idle Patents Not Affected by the New British Law.

It has been brought to the attention of American attorneys while investigating the new British patent law in the interests of clients that no provision for compulsory license exists in the statute, either by clause bearing directly on the subject or by inference. Consequently there seems to be no bar under the act to the maintenance of patent rights by either home or foreign inventor where the patent is permitted to remain idle. The question has arisen in a practical way, and English patent authorities have given it as their opinion that the condition is as stated. A patent worked in another country must also be worked in Great Britain, under penalty of revocation. But if an American patentee, for instance, is satisfied to forego the practical use of his invention, it will remain protected in the United Kingdom for the 14 years of the life of the British patent, as well as during the 17-year period of its protection in the United States. This has not been formally decided by opinion of the courts, but patent experts seem to agree that it is a sound interpretation of the statute, the essential principle of which is that "at any time not less than four years after the date of a patent and not less than one year after the passing of this act any person may apply to the comptroller for the revocation of the patent on the ground that the patented article or process is manufactured or carried on exclusively or mainly outside of the United Kingdom." It is deduced that if the article or process is not "manufactured or carried on" at all the law does not apply.

The Canadian patent law provides for just this contingency by its compulsory license clause, which reads: "Any person at any time while the [unworked] patent continues to be in force may apply to the commissioner by petition for a license to make, construct, use or sell the patented invention, and the commissioner shall hear the person applying and the owner of the patent, and, if he is satisfied that the reasonable requirements of the public in reference to the invention have not been satisfied by reason of the neglect or refusal of the patentee or his legal representatives to make, construct, use or sell the invention, or to grant licenses to others on reasonable terms to make, construct, use or sell the same, may make an order requiring the owner of the patent to grant a license to the person applying therefor, in such forms and upon such terms as to the duration of the license, the amount of the royalties, security for payment, and otherwise, as the commissioner, having regard to the nature of the invention and the circumstances of the case, deems best. . . . The existence of one or more licenses shall not be a bar to an order by the commissioner for or the granting of a license on any application, under this section." The failure to grant a license within three months after the issuance of an order nullifies the patent.

The principle of the Canadian law which is lacking in the British law is more important than may be realized at first thought. Certain industries, notably electrical, textile and shoe machinery, have made it a practice to acquire patents on new inventions and permit them to remain idle indefinitely. An invention may be practical and useful, and were it to come into the possession of a competitor might work to his strong advantage in the market. If a manufacturer of textile machinery has a mechanism which accomplishes certain results, giving to him exclusive advantages in his trade, and an inventor evolves another mechanism to accomplish the same work in a manner patentably different, there would be an obvious benefit to the manufacturer in securing control of the second invention and any other that might follow, in order that he might retain his monopoly. He could afford to pay to keep new ideas from his competitors, permitting them to lie idle even through the lifetime of his original patent. Such an invention may constitute an improvement on the fundamental idea or a development from it, and may be especially valuable in its application when the original patent is expiring, in extending the patented life of the invention. A great many patents remain unworked in this country for a much longer period than the four years given patentees under the British act in which to establish their inventions on a commercial basis in the United Kingdom. The Canadian law makes impossible the idleness of useful ideas, for under its provisions a patent may be worked there under a license even if it be permitted to remain unused in the country where it originated.

It may be possible for the British manufacturer to utilize the provisions of the Canadian law or that of some other country where the principle of compulsory license is carried out, in securing the revocation of an American patent. The invention could, perhaps, be worked under a compulsory license in Canada, bringing it within the provisions for revocation of the British act. But this would be so clumsy and probably so expensive a course that it need not be considered seriously.

When the United States comes to incorporate a compulsory working clause in its patent law, effecting legislation which is considered inevitable in the near future, it is important that the principle of compulsory license be included. It is a safeguard worth considering. While occasions of its practical usefulness may be rare, yet when one does arise it may be of vital importance to an industry.

Without referring at all to instances of improper influence of public servants by corporations, it is not amiss to note one phase of the political excitement now rising higher throughout the country. It is the disposition shown in so many cases to segregate the business interests of the United States as having some inherent taint. After a while, when the frenzy of politics has spent itself, it may be found a good thing from many standpoints to have industry and trade going forward again with some show of life, and the value of even a large operation, giving employment to many men and adding greatly to the wealth of whole communities, may then be admitted. Just at present, though, for reasons scarcely complimentary to the average of American intelligence, proprietary connection with manufacturing, especially manufacturing on a large scale, has been put under the ban. Presumably, when whatever issues there are relate largely to business and property, the so-called business interests might be considered to have some stake in the coming election. But in this contest, exceptional in many other ways, they are apparently expected to take the part of good onlookers. When questions of starting idle plants and providing payrolls at prosperity wages come up for consideration their cooperation will again be welcomed.

The Brooks plant of the American Locomotive Company at Dunkirk, N. Y., has received an order for 30 locomotives, of which delivery is to be made in November. The name of the railroad placing the order is withheld for the time being.

# CORRESPONDENCE.

### The Working Requirement in Patent Law.

*To the Editor:* In reference to the review by the London *Engineer*, in its issue of September 4, of my article on "The Working Requirement in Patent Law" in *The Iron Age* of August 20, permit me to say that I wish to reaffirm the statements made by me in that article. So far as the general argument of the *Engineer* goes, all I ask is a careful reading of both articles by any one interested enough to do so. There are two points, however, concerning which the *Engineer* imputes error on my part, and I wish to amplify my statements on these points, in order that it may be clear to all that my position is correct. The first point is included in the following paragraph of my article:

> Further, while the legal right of a nation to such a change of front in a matter of this kind may not be open to challenge, yet its moral and commercial right to do this may be questioned.

A PATENT IS A CONTRACT.

The moral issue is wrapped up in this proposition: A patent may be considered either as a contract or as of a contractual nature. On this point Lord Eldon in Cartwright *vs.* Arnott, Eastern Term, 1800, said concerning patents:

> They were to be considered as bargains between inventors and the public, to be judged on the principles of keeping good faith, by making a fair disclosure of the invention, and to be construed as other bargains.

Again, in Harmer *vs.* Playne, 14 Vesey, 130, the same great judge said:

> Where the crown, on behalf of the public, grants letters patent, the grantee entering into a contract with the crown, the benefit of which contract the public are to have . . .

This has been affirmed by a long series of English and American decisions, which need not be cited in this article.

In this contractual transaction, the Government requires the applicant for patent to make a complete and bona fide disclosure of the invention for the benefit of the public, and also requires him to pay certain fees. In return for this, and as its part of the contract, the Government guarantees to the patentee for a fixed term of years certain definite rights set forth in the statute. In the very nature of things the patentee must perform his part at once and must complete the principal part of it before the Government begins carrying out its reciprocal part. Now, patentees under the old British statute expected that for 14 years they would be accorded the privileges provided under the old British statute. It was on this assumption that they, respectively, performed and completed their part of the transaction in disclosing their inventions to the public. That prior statute permitted the importation and sale of patented articles. Should the Government under the present law by mere force of authority impose an additional, unforeseen and burdensome requirement, such as compelling foreign patentees to manufacture in England, it is in effect a withdrawal of one of the statutory privileges in being when the patent was granted. It is, therefore, a breach of contractual faith and consequently immoral.

In the sentence, "If Mr. Morgan considers our law unjust now, let us invite him to throw his thoughts forward a few years, when, by his own ingenious argument, he will find our immorality in adopting such a statute has disappeared," the *Engineer* endeavors to carry my argument to the *reductio ad absurdum*. On the contrary, this is an exceedingly clear statement of one feature of the case. I adopt that statement as my own. That future period when the immorality of the statute disappears, except historically, is when every patent affected by the law which was issued prior to the enactment of the law has expired, and there remain no patentees except those who knew of this requirement before applying for patent.

The reason I stated that there was even a question on this point of moral right was in view of the possibility that the English courts, because of the facts above stated, may yet construe section 27 of the law to apply only to patents applied for or issued since the enactment of the law and so purge it from this possible taint.

THE LAW DIRECTED AGAINST FOREIGN PATENTEES.

In connection with my statement that the law was directed against foreign patentees, the *Engineer* comments as follows:

> How a lawyer could have fallen into such an error in the reading of an act we are at a loss to understand. . . . Can Mr. Morgan show us a single word in that sentence [quoting a fragment from paragraph 2 of section 27 of the law] which indicates that the foreign inventor is attacked?

In reply I would state that I quoted section 27, which is all of the statute that applies to this subject, in full and considered it as a unity. This is the manner of construing a statute prescribed by Lord Blackburn, in River Wear Comrs. *vs.* Adamson, 2 App., Cases 764, stating "We are to take the whole statute together, and construe it all together, giving the words their ordinary signification." Paragraph 1 in this section 27 is as follows:

> At any time not less than four years after the date of a patent and not less than one year after the passing of this act, any person may apply to the comptroller for the revocation of the patent on the ground that the patented article or process is manufactured or carried on exclusively or mainly outside the United Kingdom.

The sole ground upon which application for revocation of a patent may be based is "that the patented article or process is manufactured or carried on exclusively or mainly outside the United Kingdom."

It is true that were a British subject to manufacture outside the United Kingdom, and then import his patented things, his patent would fall under this provision of the statute. How many cases of this kind will arise? Probably not one! That foreign inventors comprise almost the entire number affected by this clause is not open to serious question, and I therefore reassert that this provision is directed against foreign inventors, and that it was so intended by the framers of the law. This provision of the law is a departure from the ancient principles of the English patent law, and this departure was made not to improve the law, but to reach foreign patentee importers.

In closing permit me one word upon the following sentence in the review: "It was morally wrong, we presume, of the United States to adopt that tariff, but time has wiped away their offense." In the case of the imposition of a duty upon imports by the United States, no moral question was involved, nor does the time element become a factor. In the first place, this is so because there are no guaranteed statutory rights held out to the importer. In the next place, there is no contractual relation covering a fixed term of years, such as that which arises through the issuance of a patent; and, last, there is no prior executed consideration moving from the importer toward the Government for the benefit of the public, as is the case with the patentee.

JOHN D. MORGAN.

NEW YORK, September 28, 1908.

### Symbols for Physical Quantities.

*To the Editor:* Now that there has been some opportunity for discussing this question, may I be permitted to summarize the arguments that have been raised for and against the creation of new symbols? The most common objection is, "They are like Chinese characters; we could never remember them." But there will be no necessity to remember them. How many of us can remember what symbol Rankine uses for kinetic energy? Is it not sufficient if we see it when we refer to his book? Every considerate writer to-day gives a list of the symbols he uses. If all writers used the same symbols, we should soon become familiar with those with which we are most concerned, and for the rest we could refer to the list just as at present.

Some objectors do not see why the letters we have at present are not sufficient. Let them try to make a list of symbols for the 200 physical quantities for which symbols are wanted. After they have made up such a list (if such a thing is possible) to satisfy themselves, let them try to convince some one else to adopt that list. There are about 20 letters, such as *m* for "mass," *t* for "time," &c., upon which there is almost universal agreement. One or two dozen more stand a fair chance of being agreed upon. Beyond these, there is hopeless confusion simply because all the good letters are exhausted.

As to the difficulty of printing new symbols, it is of interest to know that 25 of the leading technical journals of the world published an article containing five new symbols, given as examples without any difficulty. Several of them have expressed the view that there is no difficulty from the printer's point of view. The types supplied to them—which, by the way, cost 1d (2 cents) for 30—were all of one size, and yet each paper used for the text of the article its usual standard type. The publisher of the *Elektrotechnische Zeitschrift* thinks that there would be no difficulty in arranging with a type founder to make matrixes, from which all printers could be supplied with type. Each printer would keep in stock those types which commonly occurred in his paper, and could get others on short notice. About 30 new symbols would be sufficient for articles on electro technical science.

Two papers have objected that the symbols cannot be set up on a linotype machine. It is, however, usual at the present time to set up mathematical expressions by hand. Several critics have pointed out that the new symbols should be simple and bold in outline, so that they cannot be easily mistaken for one another. This, of course, is an important matter to bear in mind.

I agree with M. Galliot that the name of the symbol should be, where possible, the name of the physical unit represented. Where the name of the unit cannot be employed, a word of one syllable might be chosen, as, for instance, "stroke," for the length of a piston stroke. Some critics say that the number of symbols required would be too great. As to that, we can make just as many as convenient. The symbol $\sim$ became universal almost as soon as it was printed. Let us have a few more as good as that one; we are badly in need of them.

MILES WALKER.

HALE, CHESHIRE, England, September 19, 1908.

## Canadian Manufacturers and Protection.

TORONTO, September 26, 1908.—At the thirty-seventh annual meeting of the Canadian Manufacturers' Association, held in Montreal in the third week of September, the question of fostering home industry by tariff protection received considerable attention, though rather with particular reference to the woolen industry than in advocacy of a general raising of the duties. But though it is this industry that is specially mentioned, the association's tariff resolution is looked upon as an antipreferential trade utterance, inasmuch as it is the woolen manufacturers of Great Britain who are chiefly benefited by the preference. British manufacturers of other lines unquestionably have gained ground in Canada as a result of the tariff discrimination in their favor, but none have made such inroads upon the trade of domestic producers here as have the British makers of woolen goods. Their competition has been destructive for many Canadian mills. The resolution protects against the policy of favoring outside manufacturers as against those of Canada. At the same time, the association passed a resolution in favor of reciprocity with Australia or any other part of the empire not already in such a relation with Canada. The exportation of pulp wood to the United States was disapproved by resolution, and the prohibition of such trade was called for.

The report of the Commercial Intelligence Committee showed that for the first time in 14 years imports of merchandise have fallen off. For the twelvemonth ending with May, 1907, they amounted to $342,674,271, whereas in the twelvemonth ending with last May their value was $333,014,358. Purchases of domestic merchandise by home consumers were also reported to be materially less in the latter twelvemonth. In consequence of the retrenchment indicated by these returns, home manufacturers were obliged to give more attention to the export trade, which has consequently grown, the exports for the former of the above mentioned twelvemonth being of the value of $249,211,351, as against $260,619,002 in the latter. All departments of trade except those under the heads of forest and animal products have shared in this increase. Exports of manufactured goods alone showed an increase of $3,000,000.

### The President's Address.

In his address the retiring president, J. D. Rolland, referred to the trade depression, whose effects he considered to be less severe here than they had been in some other countries, the situation in Canada being relieved by the progressive settlement of the West and by the construction of thousands of miles of railroad. In his view the indications denote that the turning point has been reached. Buyers, he said, are beginning to contract for materials 12 to 18 months in advance. Among the lessons taught to manufacturers by the reaction in trade, he mentioned these: That thorough organization of all departments of a business is necessary; that competition is a specific for certain ills that trouble trade from time to time; that a strong national tariff is desirable. On this latter point he spoke as follows:

> For years we have pointed out that the progress of Canadian manufacturing enterprises was to be attributed to the abnormal prosperity enjoyed by the world at large and the partial protection afforded by the existing tariff, to the growing excellence of "Made in Canada" goods, and especially to the comparative freedom from ruinous competition of those highly specialized and highly capitalized industries of the United States, that were too busily engaged with their home markets to pay much attention to Canada. The moment these aggregations of capital begin to suffer from a contraction of their accustomed markets they sweep over Canada. Our experience has been that during the past year the members of the association have suffered from these causes. That we have survived it as well as we have is to be attributed to the moderate measure of protection afforded us.

The railroads, he said, notwithstanding that they have received $233,000,000 in subsidies, are not working for Canada's advantage as they should. He stated his opinion on that matter thus:

> Our Northwestern provinces are rapidly being covered with railroads leading down to the border. Their idea is not to turn over such business as they are able to pick up to Canadian lines to be hauled to the markets of the world through Canadian channels. On the contrary, they see in our great Western grain fields the rich storehouse that may be tapped to supply grist to the mill of the great American railroads. And unless we bestir ourselves, we may find when it is only too late that the control of the situation has slipped from our grasp. A year ago there were 1173 miles of American-owned and American-connected railroads in Canada, and all engaged in diverting trade to the south of the line.

At the association's banquet on the evening of the 18th, Sir Wilfrid Laurier, the Prime Minister of Canada, spoke somewhat briefly, and his remarks had main reference to the tariff resolution. He thought that the tariff as a whole should be accepted as satisfactory. It was his duty to consider the interests of all classes as well as those of the manufacturers. He took note of a suggestion made by one of the delegates that a Government Commission be sent to Britain and Germany to study the woolen industry conditions and report as to the effect upon Canada. He was entirely in favor of that idea, and a commissioner is, in fact, in Europe now for that very purpose. As to a permanent Tariff Commission, which the chairman advocated, Sir Wilfrid would be willing to have one, provided that its function be the same as that proposed for the United States.

R. Hobson of Hamilton, who is the newly elected president, spoke also at the banquet, pointing out that protection has done much for the country.

### The Tariff and the Elections.

To the manufacturers it is doubtless manifest that in the election campaign which terminates on polling day, October 26, the tariff is not the predominant issue. It has been pushed from its first place in the politics of the country by other questions and new conditions. For years after the general elections of 1896, when the party that upheld the national policy was defeated, the manufacturers urged that the tariff be taken out of politics. To a considerable extent it has been. Conservatives no longer give the protection plank the first place in their party platform. This is not merely for the reason that the manufacturers are nowadays too diplomatic to recognize a single party as their champion, but it is chiefly because the settlement of the West has turned the scale to the side of the agriculturists. Neither party is now desirous of emphasizing the protectionist policy on Western platforms or in Western newspapers. As the latest redistribution and the admission of Saskatchewan and Alberta as provinces increased the number of seats

belonging to the West, Western opinion is respected by the politicians. Another question that has overhauled the tariff issue in its progress in the public interest is that of transportation. The building of railroads and canals is now popular. A railroad to Hudson Bay was promised by the Government in the last session of Parliament. The construction of the Ottawa and Georgian Bay Canal is a project that the Government has looked upon with favor and for which a large part of the country is enthusiastic. As much may be said of the proposal to deepen the Welland Canal to 20 ft. The Minister of Railways has recently given assurance that the Trent Valley Canal will be pushed to completion without delay. Not to mention the appearance of new questions and new conditions to side track the tariff issue, the centering of public interest on the Government's record—especially on what is called the "graft" feature—is keeping the people's thoughts off trade policy in this campaign.

C. A. C. J.

## The French Machine Tool Duty.

### French Makers Urge More Protection.

Special Agent Capt. Godfrey L. Carden, in a report to the Department of Commerce and Labor, advises that the French manufacturers of machine tools are urging an increase in existing rates of duty on machine tools imported into France. From his report the following extracts are taken:

The American machine tool manufacturers need not be surprised if France places a duty on machine tools varying between 13 and 20 per cent. There has always, perhaps, been a strong national feeling in France prejudicial to foreign tools, but I doubt if this feeling is any stronger now than in the past; in fact, I am inclined to think there is less prejudice now than heretofore. However, it is understood that a number of automobile manufacturers are largely responsible for the efforts being made to foster the development of French machine tool houses. One of the leading members of this movement is the Marquis de Dion of the De Dion Automobile Works. It is realized, however, that if these new French machine tool works are to be encouraged the tariff must be increased.

A commission in the interest of French machine tool makers has been canvassing the entire subject of late, and this commission pointedly refers to the development of the machine tool industry in America as the outcome, in part, of the tariff system and the natural conditions of the country. It is pointed out that since the elaboration of the French customs duties of 1892 the manufacture of tool machines has become one of the most important mechanical industries, though, as a matter of fact, owing to the want of any customs protection, this industry in France occupies the lowest rank in customs classification.

#### Reasons for Increasing Duties.

The commission calls attention to the importance of the French automobile industry in the world's trade, and emphasizes the dependence of this business on machine tools. The French workman, it is declared, is not less skillful than foreign workmen, and his ability to turn out fine machines has been amply demonstrated. Such being the case, the failure to produce high grade machine tools in France in large quantities is attributed more especially to the economic conditions of the country, and it is declared axiomatic that the development of any industry pends almost exclusively on the conditions of its environment. The French investigators declare that the American and German machine tool builders have demonstrated the truth of this axiom, that they have found in their respective countries the economical conditions which make profitable the development of tool machines, and that the Americans and Germans have been enabled to overwhelm the French builders to such an extent that the latter are practically dependent on those two countries for the bulk of machine tools.

The economic conditions referred to as existing in America apply to the general demand for machine work over hand work, and to the enormous demand for tools necessary to the construction and exploitation of our enormous railroad, iron and steel, and other manufacturing interests. In Germany the progress of the machine tool industry has been favored by the development of the metallurgic industry of the interior. In France and in England the machine tool development has kept pace with the development of the needs of the country. Germany has developed her machine tool industry without much customs protection, but it would seem as if there will be some modification in this respect before long. The new German duties have quadrupled the customs tax on machines weighing less than 250 kilos. On such machines the duties have been raised from 3 to 12 marks.

#### Present Rates Claimed to Be Insufficient.

It is estimated that during the past year nearly 50,000,000 francs ($9,650,000) worth of foreign made machine tools entered France. The tariff schedule of 1902 divides tool machines into three categories—namely, small and precise, medium and large. The idea seems to have prevailed that the tariff framers think only the small machine tools can be classed as precise. This the French machine tool constructors declare is entirely wrong, inasmuch as all machine tools, regardless of size, must be precise. The commission desires to see a tariff classifying machine tools into two great classes: One to embrace machine tools for general use, capable of performing varied work; the other, machine tools designed for working in series on clearly defined work. It is claimed that the first class is now manufactured in France, and that for the second class French manufacturers are dependent on foreign countries. It is further claimed that, unless the French tool manufacturers are given adequate customs protection, it is impossible to assure success for French firms which may undertake the building of machine tools of the second class. The various laws in France governing shop practice make hand work, it is asserted, dearer by 4 per cent. This refers to the laws which provide better protection to workmen against accident. Then there is the law with relation to apprentices. The eight-hour law will, if put in effect, make production still more costly.

#### Comparison of Rates.

Taking, as an example, a table of specific values of the three categories of foreign machines recently imported by a French builder of tool machines for his own use, it has been found that the average specific value of these machines, comprising turret lathes, &c., when weighing more than 1000 kilos, is over 3 francs (57.9 cents) the kilo. The French makers of tool machines insist on a minimum and a general tariff as follows:

For machines of more than 5000 kilos, a minimum of 30 francs ($5.79) per 100 kilos, and a general tariff of 40 francs ($7.72) per 100 kilos; for machines between 1000 and 5000 kilos, a tariff of 40 francs and 50 francs, respectively; for machines between 250 and 1000 kilos, a tariff of 50 francs ($9.65) and 60 francs ($11.58), respectively; for machines between 100 and 250 kilos, a tariff of 60 francs and 80 francs ($15.44), respectively; and for machines of less than 100 kilos, tariff of 80 and 100 francs ($19.30), respectively, or an equivalent protection of 20 per cent. ad valorem. According to the present tariff, a machine weighing more than 1000 kilos, worth 2000 francs ($386), pays 100 francs duty. This, it is claimed, is a protection of 5 per cent., which is regarded as insufficient. The rate of protection demanded is an average one, and it is pointed out that the specific values of the machines weighing more than 1000 kilos, as actually imported, are in most cases more than 3 francs (57.9 cents). It is contended that these machines should now pay a duty of 13 per cent.

The machine tool makers have drawn up a very elaborate scheme, which they are pressing for adoption, and which aims to prevent the importation of machine tools in parts. The entire subject is gone into very exhaustively, and there is no doubt that if the schedule as asked for is put in force a readjustment will be necessary on the part of foreign manufacturers. The subject is one which is concerning all agencies now in France. French machine tool makers are complaining against what they consider is the avoidance of the present customs laws.

owing to the practice on the part of some importers of taking their machines apart and introducing them in detached pieces.

It is well known that some French manufacturers of small tools, such as milling cutters, twist drills and taps, have been complaining about the introduction of foreign made tools, and I understand that the manufacturers of such tools have been advocating the raising of the duty for that class of articles.

**Doubt Regarding a New Tariff.**

The opinion expressed to the writer by well informed men actively engaged in the machine tool industry here is to the effect that they doubt very much if the French Cabinet will agree, on discussion before the chambers, to a new tariff law, but if this is done it is believed the change, if made, will not be as radical as requested by the commission of experts of French tool manufacturers.

## Judge Gary on Co-operation.

At the dinner given in London by the Iron and Steel Institute on September 11, to Elbert H. Gary, chairman of the United States Steel Corporation, the principal topic of discussion was the maintaining of prices at a remunerative level by international co-operation. Judge Gary's remarks were in part as follows:

"The nations of the earth are being brought nearer together. Steam, electricity and other forces are enabling us to travel and to communicate with each other more speedily and with less difficulty, by land and sea and sky. And soon, it is to be hoped, we shall have a common language. The day is approaching when among the nations there will be less diplomacy and more fraternity. God speed the day! We should be striving with, and for, one another, each nation endeavoring to help itself by helping all others. Weapons of war should be converted into implements of agriculture, and every question of difference determined by intelligent and honest discussion and equitable conclusion. As applied to the present, these ideas may not be wholly practicable. The people are not ready to avail themselves of their opportunities. Feelings of distrust and doubt and envy more or less predominate. In the future, however distant, there is hope and confidence. But, as applied to some of the prominent lines of business, including iron and steel, the doctrine of conciliation and co-operation are practicable, even now. If so, and we are ready to take advantage of the fact, who can estimate the benefit to be derived?

**An American Demonstration of Co-operation.**

"It has been demonstrated in America during the last year that the idea is practicable. In the month of October of 1907 we were visited by a financial cyclone. It was the culmination of many unfavorable and uncontrollable currents, not necessary to detail at present. At the beginning no one could accurately forecast the future. The possibilities of a prolonged and disastrous business depression were in the minds of all. The danger related to the iron and steel trade, perhaps, more than to any other; and that has been considered the barometer of trade conditions. Most of the jobbers throughout the country had purchased large stocks at the prices prevailing when conditions were favorable, which were undisposed of. Pending contracts for construction, which involved large purchases of iron and steel, extended to every locality. Contracts for new furnaces, mills, and equipment, and for raw and semi-finished material, had been made by large numbers of manufacturers. An immediate and radical reduction in prices would have meant bankruptcy to multitudes of concerns that had been successful and were considered substantial. And this would, perhaps, have precipitated trouble in many, if not all, other lines. These conditions were realized by bankers and financiers generally, and certainly by the manufacturers of iron and steel. They recognized their responsibility and rose to the occasion.

"Early in November an invitation was extended to the leading men connected with this industry, including about 60 in number, to meet in conference, and without exception the invitation met with an affirmative and cordial response. Conditions were favorable to the cause. The United States Steel Corporation, one of the largest concerns, has a Finance Committee composed of nine gentlemen, of great experience and intelligence, and connected in various ways with nearly all other prominent lines of industry, who determine the policy of the corporation. Then, the officers of the corporation and all its subsidiary companies are efficient and energetic, and always loyal to the policies determined by the committee. They can be relied upon to promptly carry to a successful conclusion any campaign determined upon. Besides, and better still, the manufacture of iron and steel in the United States as a whole is in the hands of men who cannot be surpassed in excellency. They are intelligent, honest, broadminded and sincere.

"At the first meeting, after each one present expressed his opinion that the conditions and dangers were as I have previously stated, the doctrine of conciliation and co-operation was suggested. In some respects, at least, it was novel. In times gone by, when business prosperity was interrupted by a financial depression, or by doubt and distrust, however provoked, it had been customary for each one to consider and to endeavor to protect his own interests, regardless of all others. Each sold his own products wherever he could and at whatever prices he could obtain. Demoralization, panic and prolonged failure followed. It was customary to urge that the action was inevitable; that the law of supply and demand must control; that natural conditions cannot be changed. Parenthetically, I may say, I have my own definitions of these well worn expressions, but will not stop to name them. And so, last November, at first there were some who were more or less skeptical. They had doubts as to the success of the movement. But a large majority had confidence, and all were willing to make a trial.

**How a Plan Was Worked Out.**

"The suggestions which were made and finally adopted were simple. It was proposed to appoint a General Committee of Seven, with power to appoint subcommittees, connected with special lines. To the subcommittees any one interested in a particular line might apply for information and advice. And to the General Committee the respective chairmen of subcommittees or any individual might apply for information and advice. Without going into detail, it suffices to say these committees kept fully informed in regard to the affairs of all, and freely advised individuals with respect to conditions, generally or in detail. While they were given no power, their advice was usually followed. No agreement to maintain prices, restrict output, or divide territory, or any other agreement was made. It seemed clear, however, that the result would be the same if the movement was to be successful; for how otherwise could any benefit be derived? Why meet together and keep one another fully informed unless each could recognize the rights and interests of all others? Each one was acquainted with the producing capacity of the others, of the territory naturally tributary to their furnaces and mills, of the customers of the others and of the prices charged. If any one proposed to change his prices or increase his output, or sell in a new territory, he would, as a matter of honesty and fairness, inform the committee. Without going further into detail, it is important to say the effort has been successful. It was to be expected there would be some mistakes by subordinates, and that, to some extent, there would be transactions beyond the bounds of propriety and fairness; but the total result has been a great benefit. Of course, from time to time manufacturers were imposed upon by proposed purchasers, who made the usual misrepresentation that other manufacturers were selling at a reduced price. This caused more or less anxiety, and the services of the committees were required to straighten out the trouble. The tricks of the trade are too well known to make it necessary to discuss them at the present time.

"It was not long before the movement secured the approval and hearty co-operation of all concerned. Prices have generally been maintained, demoralization and insolvency prevented, and greater profits realized. The benefit to general business conditions and the influence in aiding restoration of business prosperity are testified to by financiers and by the press generally.

Perhaps the most prominent good which has resulted is found in the feeling of friendship which exists among the members of the industry. This will be of great pleasure and profit to all in the long future. Frequent meetings are held at which each one present expresses with great freedom and frankness his views concerning all questions that are involved, and all have confidence in one another. The business is well in hand. The manufacturers are running their own business for their own gain, and yet at the same time they have injured no others. On the contrary, they have advanced the interests of their customers, their employees and the public generally.

**Manufacturers in All Countries Should Work Together.**

"I wish to emphasize the idea this evening that practical co-operation should be extended in our line of business particularly. The manufacturers of iron and steel in all countries should be working together with and for one another. If we have the intelligence and disposition to take advantage of our opportunities, we can be of great benefit to ourselves and to all others. While success cannot be reached without effort, perseverance and patience, and, above all, confidence in one another, it may be reached if we are determined.

"Human nature is about the same the world over. We are selfish, conceited and suspicious. We are inclined to look through a glass that magnifies our own importance and rights and minimizes those of all others. We wrap around ourselves the coat of self-righteousness; but the good Lord looks down upon us and sees very little difference. When removed from temptation we are saints; but when it comes to business transactions with one another we are apt to be common sinners. We need to occupy a high plane where our vision is clear and unobstructed; where we can see the rights and interests of all others. We need to recognize the fact that by helping others we help ourselves, and that by injuring others we injure ourselves.

"I do not advocate anything that is antagonistic to the laws or to the public welfare. What I propose is the utilization of all our opportunities for the advancement of all our interests. A closer connection, a better understanding, a complete confidence, a full and free interchange of ideas, information conveyed by one to another concerning all the business in question, and an organized committee composed of men whose advice should always be followed; these thoughts amplified and formulated should bring to all of us the largest measure of success."

## The West Virginia Mining Association.

The West Virginia Mining Association will hold a general meeting in the city of Charleston, W. Va., October 7. The association expects to have as its guests at that time George Otis Smith, director of the United States Geological Survey; Edward W. Parker, chief of the Bureau of Mines and Minerals; Dr. J. A. Holmes, chief of the Bureau of Technology; Captain Desborough, Inspector of Explosives for Great Britain; Victor Watteyne, engineer-in-chief for the Administration of Mines, Belgium, and a number of representatives from the mining departments and universities of West Virginia and other States. Following the introductions, the afternoon and evening will be given to the discussion of matters relating to the advancement of the mining industry in West Virginia and special papers will be presented, among which are the following:

"Recent Mine Disasters—Causes and Remedies as far as Ascertained."

"Is Dust, as Such, Explosive, and if so, What Are the Chemical Reactions and the Most Efficient Preventives?"

"The Standardization of Powders and Explosives for Underground Workings."

"The Advisability of Standardizing Electrical Appliances in Mines."

"The Education of Mine Managers in Rescue Work and the Danger Involved by Untrained Men Attempting Such Work."

Through the courtesy of President Wm. N. Page of the Virginia Railroad, and President G. W. Stevens of the Chesapeake & Ohio Railroad, a special train has been placed at the disposal of the association, and will leave Charleston at 8.45 a.m., October 8, for a trip to Princeton, Mercer County, and return. This will prove interesting to every one connected with mining by reason of the opportunity that will be given to study all of the formations belonging to southern West Virginia. Starting from Charleston, which is within 2 miles of mines in the Pittsburgh seam, the excursion will cross in succession the coals belonging to the Kanawha-Allegheny, the New River and the Pocahontas measures. Short stops will be made at the mines of the Loup Creek Collieries Company, at Page; the shaft of the New River Collieries Company, at Eccles; the mines of the Slab Fork Coal Company and possibly one or two additional points.

Wm. N. Page, Washington, D. C., is president of the association, and Neil Robinson, Charleston, W. Va., is secretary.

## Wages of Steel Corporation Employees.

The *Wall Street Journal* calls attention to the fact that the United States Steel Corporation, throughout the depression which has extended over a period of nearly 12 months, has made no general reduction in the wages of its employees. While reduced production has not enabled the corporation to give steady employment to its men, they have received the same wages as in 1907, the most prosperous year in the history of the steel industry. This is the first time in history that a depression in steel has not been accompanied by a wholesale reduction in wages. Some steel prices were reduced several months ago, but there was no corresponding change in the wage schedule.

The following table shows the wages paid, number of employees, and average annual wage per man of the United States Steel Corporation from 1902 to 1907, inclusive:

| Year. | Wages paid. | No. employees. | Wages per man. |
|---|---|---|---|
| 1907 | $160,825,822 | 210,180 | $765 |
| 1906 | 147,765,540 | 202,457 | 725 |
| 1905 | 128,052,955 | 180,158 | 711 |
| 1904 | 99,778,276 | 147,343 | 677 |
| 1903 | 120,763,896 | 167,709 | 720 |
| 1902 | 120,528,343 | 168,127 | 716 |

It is impossible, says the journal quoted, to estimate the extent the increase in the wages of the steel workers has benefited the corporation in the way of higher operating efficiency. However, the tons of steel produced per man in 1907 were 49.4, as compared with 52.2 tons in 1906. Comparisons with 1902, 1903 and 1904 indicate a gain, as the following table giving the number of tons produced by the United States Steel Corporation, number of employees and tons of steel produced per man from 1902 to 1907, inclusive, will show:

| Year. | Tons produced. | No. employees. | Tons steel per man. |
|---|---|---|---|
| 1907 | 10,376,742 | 210,180 | 49.4 |
| 1906 | 10,578,433 | 202,457 | 52.2 |
| 1905 | 9,226,386 | 180,158 | 51.2 |
| 1904 | 6,792,780 | 147,343 | 46.1 |
| 1903 | 7,458,878 | 167,709 | 44.5 |
| 1902 | 8,197,232 | 168,127 | 48.9 |

When the Gary mills are in full operation the United States Steel Corporation will employ close to 240,000 men in normal periods.

The Sharon Steel Hoop Company, Sharon, Pa., has opened an office in Chicago, from which it will market light-formed shapes for fireproofing and concrete purposes. This is a new line for the company, and H. T. Gilbert, who has been manager of sales and not general manager, as recently incorrectly stated, will have charge of its introduction throughout the United States. He will likewise look after the sales of the company's regular products from the Western office.

A new high power milling machine is being placed on the market by the Hendey Machine Company of Torrington, Conn. The machine is of the Lincoln type, which style of miller has been brought to a high state of development by the Hendey Company. The new machine will, however, be much heavier and of much greater capacity than any previous machine of this type. In capacity it will compare with the No. 5 universal milling machine.

# NEWS OF THE WORKS.

### Iron and Steel.

It is understood that considerable stock has already been subscribed for by the citizens of Tarentum, Pa., for the steel plant proposed for that place. The promoters of the project are John McGinley, 544 Second avenue, and C. K. Nichols, 628 Second avenue, Tarentum.

Announcement is made that the Williamson Iron Company's furnace at Birmingham, Ala., will be put in blast within 30 days.

### General Machinery.

The machine shop firm of Lemley & Schultz, 570 Elston avenue, Chicago, composed of Frederick J. Lemley and Albert L. Schultz, has by mutual consent been dissolved. The business will be continued under the firm name of Schultz & Son.

E. D. & A. F. Cronk, machinists, 9 Liberty street, Utica, N. Y., are having plans prepared for a machine shop building, to be erected at 68 Hotel street. The building will be two stories, 40 x 80 ft., brick and mill construction. The first floor will be used for the heavy machinery and the second floor for the lighter tools and storage.

The Collins Machine Shop, Collins, Miss., is arranging to move its business nearer the railroad, and intends to install more and heavier machinery in the new location.

The Savannah Locomotive Works & Supply Company, Savannah, Ga., contemplates the establishment of a branch plant at Jacksonville, Fla. It is understood that the company's business in Florida is growing rapidly and that it would be of considerable advantage to have a plant located where it could conveniently supply that territory.

Gallagher & Greene, proprietors of the Wilna Machine Company, Carthage, N. Y., have purchased property adjoining the Kesler Block, and will erect a large one-story foundry and machine shop. The firm is engaged principally in the manufacture of gas engines, but also does a general machine shop business.

The San Antonio Machine & Supply Company, San Antonio, Texas, has acquired the plant and stock of the Collins-Gunther Company for $25,000. The plant, which employs about 60 men, will be continued in operation at the present location. The company intends to go into the manufacturing business on a more extensive scale.

The Stuart & Peterson Company, Burlington, N. J., has completed the construction of its new machine shop, 30 x 100 ft., two stories, and is now installing the equipment. The building, which was formerly used as a machine shop and from which the machinery has been removed, will be made a part of the foundry.

A new flying shear for cutting tin bars has been installed in the Bessemer plant of the Republic Iron & Steel Company at Youngstown, Ohio.

The George A. Hogg Iron & Steel Foundry Company, Pittsburgh, has sold a No. 2½ belted shear, weighing 5000 lb., to the Gordon Iron Company, Chicago Heights, Ill., to cut 1¾-in. material, and a No. 2 belted shear, weighing 6000 lb., to the Clark Steel Hoop Company, Punxsutawney, Pa., to cut 1½ in. square.

Spang, Chalfant & Co., Inc., Pittsburgh, have ordered two 10-ton electric traveling cranes, with 85 ft. span, to be installed in their new mill being built at Etna, Pa. One crane will serve the puddling mill and the other the 16-in. mill.

### Power Plant Equipment.

The Turbine Equipment Company, 30 Church street, New York, selling agent for the De Laval Steam Turbine Company's products in New York State, northern New Jersey and Connecticut west of the Connecticut River, has incorporated its business. The company also builds power plants and power plant machinery of all kinds. Harry Y. Haden is president and Russell Klemm secretary and treasurer.

The Bruce-Merriam-Abbott Company, Cleveland, Ohio, has recently been awarded contract from the State of Pennsylvania for two 125-hp. vertical four-cylinder natural gas engines, direct connected by means of the company's flexible coupling to two 75-kw. direct current generators, switchboard, &c., for the Pennsylvania Reform School at Morganza, Pa.; R. J. Christy Company, Fremont, Ohio, 55-hp. vertical two-cylinder gas engine, and St. Ann's Church, Buffalo, N. Y., 35-hp. two-cylinder gas engine to replace a 55-hp. four-cylinder gas engine. The company states that its business is increasing.

The city of Buffalo, through the City Council, has instructed the City Commissioner of Public Works, Francis G. Ward, City and County Building, to have specifications prepared for furnishing and installing an engine and generator at the Hamburg Canal pumping station for the purpose of furnishing light and power.

The Syracuse, Lake Shore & Northern Railroad, Syracuse, N. Y., will erect two power substations, one near Phœnix, N. Y., and one near Fulton, N. Y. Each building will be one story, 60 x 80 ft., of brick and steel construction.

The Lake Erie Boiler Works, Buffalo, N. Y., has lately closed a number of orders, among which were the following: United States Government, 12 35-ton Scotch marine boilers, 11½ x 12 ft., working pressure 180 lb.; New York, New Haven & Hartford Railroad, 15-ft. 6½ in. by 11 ft. 6 in. boiler, and for a San Francisco mining firm, 9 x 18 ft. boiler, working pressure 180 lb.

The installation of a 150-hp. vertical gas engine is contemplated by the Weatherford Water, Light & Ice Company, Weatherford, Texas, but no definite date has been reached for making this improvement.

E. W. Bentley, Pittsburgh representative of the Skinner Engine Company, Erie, Pa., has sold two 22 x 22 in. engines, which are being installed in the William F. Mosser Company's tannery, Richwood, W. Va.; also six 72 in. by 18 ft. boilers, made by the Union Iron Works. He also sold two 17 x 32 x 24 in. compound engines to the Standard Sanitary Mfg. Company, to be installed in the New Brighton plant.

The Joseph Horne Company, Pittsburgh, is taking bids for a new power plant in connection with a large addition which is to be erected to its store. Among other equipment a 600-hp. Corliss steam engine is included.

Boyts, Porter & Co., pump manufacturers, Connellsville, Pa., shipped last week to the Merchants Coal Company at Boswell, Somerset County, Pa., a duplex-acting plunger mine pump with a cement lining. It has a 13-in. water cylinder and 18-in. stroke. The pump was especially built for a 6500-ft. perpendicular elevation, and will be driven by a 250-hp. direct current Westinghouse motor. The daily capacity is rated at 1,750,000 gal. It weighs 45 tons. There was also shipped to the Star Junction, Pa., plant of the Washington Coal & Coke Company a 30 x 15-in. double plunger pump, weighing about 20 tons, having a daily capacity of 1,500,000 gal., and to be driven by a 200-hp. Westinghouse motor. The same firm is building a large electrical mine pump for the Henrietta Coal Company, for use in its mine at Dunlo, Pa. This pump is of the wood-lined type, with a 10-in. water cylinder and 12-in. stroke, to be driven by a 100-hp. Westinghouse direct current motor. A vertical deep-well pump is being built for the Orr Coal & Coke Company for its mine at Newburg, W. Va., and one of similar design will shortly be started for the Preston County Coal & Coke Company, also a West Virginia concern. A new line of standard mine and boiler pumps is to be put on the market this fall.

### Foundries.

The E. T. Fraim Lock Company, Lancaster, Pa., operating the Keystone Lock Works, has lately completed additions and improvements to its brass foundry and is now in a position to make brass, bronze and aluminum castings from special patterns.

The Acme Engineering & Contracting Company, Schenectady, N. Y., is receiving bids on about 1500 tons of iron and steel castings and structural steel, to be used in the lock and dam work, sections 1, 2 and 3, contract No. 14, Erie Barge Canal.

The Hewitt Mfg. Company, St. Louis, Mo., manufacturer of brass fixtures, is building an addition to its foundry and making other improvements to cost about $100,000. The company expects to occupy its new building about the middle of December. The machinery, which will be electrically operated, has been purchased.

### Fires.

The plant of the Belleville Iron & Horse Shoe Company, Belleville, Ont., was damaged $15,000 by fire September 22.

The plant of the Virginia-Carolina Chemical Company at Pinners Point, Va., was burned September 27, the loss being about $100,000.

### Hardware.

The Boone Investment Company, Boone, Iowa, has concluded negotiations with the Quinn Wire & Iron Works, Scranton, Iowa, whereby the plant and business of this concern will be removed from its present location to Boone. A new plant will be built at once, which will include a well equipped foundry and machine shop of brick and concrete, one story in hight, 132 x 144 ft. Besides the production of gray iron castings the company manufactures an extended line of hardware specialties.

The Sidway Mercantile Company, which has a plant at Elkhart, Ind., for the manufacture of go-carts, and which has secured large contracts in England, is equipping a plant at Birmingham, England, to meet the provisions of the patent law in that country. It has leased quarters in a large plant that supplies light, heat and power for manufacturing.

The Blairsville Enameled Ware Company, Blairsville, Pa., has increased its capital stock from $5000 to $75,000.

The Victor Mfg. Company, Leavenworth, Kan., manufacturer of washing machines, is preparing plans for rebuilding its plant, which was recently destroyed by fire. The new plant will be larger and more modern than the old.

### Miscellaneous.

The automobile factory which is being built at Muncie, Ind., by T. F. Hart, M. Maring and others, is to be financed by those interested in the project and is entirely independent of the factory fund of $125,000 which was raised by Mr. Hart. This fund is still available for the purpose of locating factories in Muncie. The building of the automobile plant has been under consideration for more than a year.

The Buffalo Smelting Works, located on the Niagara River, the Erie Canal and the Erie Railroad, between Austin and Ham-

ilton streets, Buffalo, N. Y., has completed arrangements for the electrolytic refining of copper with Niagara Falls power and has closed contract with the Crocker-Wheeler Company, Ampere, N. J., for a 500-hp. motor generator set for 2200 volt current, which will be installed in an addition to the plant, 200 x 350 ft., of brick and steel construction, just completed. The capacity will be 20,000,000 lb. of cathodes per annum. The Cataract Power & Conduit Company, Buffalo, has the contract for furnishing the Niagara Falls power.

The Susquehanna Smelting Company, which recently located at Lockport, N. Y., in the factory buildings formerly occupied by the Holly Mfg. Company, has perfected plans for a $10,000 addition to its plant.

The Locke Insulator Works, Lima, N. Y., whose plant was recently destroyed by fire, is considering a proposition to move the plant to Shortsville, N. Y., and occupying the plant recently vacated by the American Seeding Machine Company.

The Maxwell-Briscoe Company, Newcastle, Ind., manufacturer of automobiles, is equipping its plant for a capacity of 10,000 machines in 1909, a large part of which number is already contracted.

The Standard Pattern & Mfg. Company, Richmond, Ind., has increased its capital stock from $5000 to $10,000.

An order has been entered in the Federal Court at Indianapolis, Ind., directing the receiver of the Pope Motor Car Company, Albert L. Pope, to accept the offer made by an Indianapolis company for the Waverly plant at Indianapolis.. The offer was $200,000 for all the property, excepting cash on hand, $101,000. The purchasers are Herbert H. Rice, who has been general manager of the plant since 1904; Wilbur C. Johnson, assistant manager, and the following capitalists, all of Indianapolis: William B. Cooley, Carl von Hake, Hugh Dougherty, Wm. F. Kuhn, William Kothe, Jr., John R. Love, Hugh M. Love, Joseph C. Schaf and Burton E. Parrott. The new company has been named the Waverly Company and has been incorporated, with $225,000 capital stock. Mr. Rice and Mr. Johnson will be continued in their respective positions of general manager and assistant manager. The company will continue to manufacture the Waverly electric carriages and trucks.

## PERSONAL.

G. P. Bassett, Jr., 2001-2002 Commonwealth Building, Pittsburgh, dealer in pig iron and coke, has been elected a director of the Fourth National Bank of that city.

Henry E. Pridmore, Chicago, manufacturer of molding machines, recently started on his annual vacation trip to Europe, from which he will return within five or six weeks.

Hollinshead W. Taylor of the old tin plate house of N. & G. Taylor Company, Philadelphia, has returned from a sojourn with his family at Dinard, on the coast of France.

The Sheffield Reform Club tendered to Sir Robert Hadfield a complimentary dinner September 17 in honor of the knighthood recently bestowed upon him. It was a noteworthy gathering, among the speakers being J. H. Davidson, Lieut.-Col. H. K. Stephenson, Sir William Clegg, W. T. Beardshaw, S. Meggitt Johnson and W. Nuttall.

E. McCormick, assistant treasurer of the Railway Steel Spring Company, has been elected treasurer, this office having been vacant for some time.

James V. V. Colwell, formerly secretary, treasurer and business manager of the Cassier Magazine Company, has sold his one-half interest in the publication to Mr. Supplee, president and editor. Mr. Colwell terminated business relations with the company September 21.

G. D. Conway has resigned as secretary of the Railway Club of Pittsburgh, owing to press of other business. Officers of this association will be elected at the annual meeting in October.

Thomas A. Keighley, general manager of the coal and coke department of the Shenango Furnace Company, at Wilpen, Pa., has resigned to accept a similar position with a West Virginia company.

Capt. Godfrey L. Carden of the United States revenue cutter service, who was temporarily transferred to the Department of Commerce and Labor, and for the past nine months has been acting as special agent for the purpose of investigating conditions in the machine tool trade in Europe, has completed his assignment and has returned to this country. His observations have been published in the consular reports and have attracted wide attention for the useful character and wide extent of the information thus given. The advantage of sending abroad a man of his expert knowledge and trained observation in a special field has been thoroughly demonstrated in the work performed. Quite a number of his reports are still to be published. The machine tool builders of this country, through his industry and peculiar fitness for this task, have been put in possession of a vast fund of information which will undoubtedly prove of great value to them.

H. Gardner of Henry R. Merton & Co., London, is now in this country. He will visit the Bisbee District, Cananea, and later on the Boundary District and Butte.

Charles Veach, formerly order clerk at the Valley department of the Republic Iron & Steel Company, Youngstown, has been appointed assistant superintendent of the Brown-Bonnell department at Youngstown, to succeed Herbert Marsh, resigned.

Paul L. Wolfel, for some years associated with the Pencoyd Iron Works and later with the American Bridge Company, has recently been appointed chief engineer of the McClintic-Marshall Construction Company, with headquarters at Pittsburgh.

Louis M. Henoch, secretary of Joseph T. Ryerson & Son, Chicago, has disposed of his interests in that connection, and will probably go abroad about the first of the year. He has under consideration several propositions covering the field with which he is familiar, and will undoubtedly make some definite announcements upon his return to this country. Mr. Henoch has been with Ryerson & Son since 1888, and during recent years, first as general sales manager, and later as secretary, has had general jurisdiction of sales, purchases and operations of that house.

B. M. W. Hanson, works manager of the Pratt & Whitney Company, Hartford, Conn., sails from Bremen for home October 6. He has been in Europe for three months, traveling extensively and combining recreation with business.

J. A. Hatfield, president of the American Bridge Company, New York, returned this week from Europe.

Charles M. Schwab has been elected a director of the Greenwich Bank, New York City.

## OBITUARY.

GEORGE B. LITTLE, vice-president and director of the Walworth Mfg. Company, Boston, Mass., died September 26 at his home on Cohasset, Mass.

H. J. BOLTON of Bolton Bros., 106-108 Fulton street, New York, died last week. He was at one time employed in the railroad department of Manning, Maxwell & Moore, Inc., and afterward was New York manager of W. L. Brubaker & Bros., Millersburg, Pa., manufacturers of taps and dies. His firm represented also the Parmelee Wrench Company and the Acme Truck & Tool Company.

ALBERT M. BULLARD died September 19, at a sanitarium in Liberty, N. Y. He had been connected as electrical engineer with many important innovations in telephony. He received his technical training at the Massachusetts Institute of Technology. Entering the service of the Thomson-Houston Company, at Lynn, his cleverness in invention brought him into personal relationship with Prof. Elihu Thomson, and to Mr. Bullard was assigned the task of developing the art of electric welding, which he perfected on lines laid out by Professor Thomson. At the time of his death Mr. Bullard was associated with other leading engineers in the solution of one of the most complicated problems of modern telephony. He leaves a widow.

The general offices of the Virginia Iron, Coal & Coke Company, consisting of vice-president and general manager, secretary and treasurer, auditor, general counsel, purchasing agent, general sales agent and claims attorney, which are at present at Bristol, Va.-Tenn., will be moved October 12 to Roanoke, Va., where all communications for those departments should be addressed.

# The Iron and Metal Trades

## The Markets Dull, Awaiting the Election.

### A Large Sale of Cast Iron Pipe to Cuba.

There has been very little doing in any of the markets, since both buyers and sellers of Iron and Steel in different forms are awaiting the outcome of the election, nor is any prominent movement expected.

The most interesting transaction of the week is the sale of about 14,000 tons of Cast Iron Pipe for the Cienfuegos water works in Cuba. Later on about 5000 tons additional will be required. The work was taken against the competition of the Scotch shops.

Apparently none of the requirements of the Transcontinental Railway in Canada will be furnished by mills in this country. The announcement is made that the commission has awarded 16,000 tons to the Algoma Steel Company and 28,000 tons to the Dominion Iron & Steel Company. The latter, it is interesting to note, is credited with having sold 9000 tons to an East Indian railroad, practically its first appearance in the international markets.

Throughout the entire Central Western markets Pig Iron is easy, with occasional reports of further concessions. Alabama makers are firm, the moderate volume of orders which have been closed coming almost entirely from local consumers. New England is dull, but there has been a series of sales aggregating a considerable tonnage, by one interest, in the territory east of Harrisburg. This includes one lot of 10,000 tons of Basic Pig and one of 5500 tons of Foundry Iron. All this business is either for prompt delivery or for shipment during the balance of the year.

The volume of new business in the principal lines of finished Iron and Steel has been relatively light throughout. The underframes, bolsters and trucks for the 5000 cars for the St. Paul road, requiring about 23,000 tons of material, have been awarded to the Bettendorf Company. There has also been given out from 5000 to 6000 tons of Plates and Shapes for two Ore boats. One of these is for the Pitt Iron Mining Company, controlled by the La Belle Iron Works.

Copper is dull, and buyers and sellers are apart. Electrolytic may be bought at 13⅜c. to 13½c., and there is no European demand. While stocks in Europe may be within easily manageable proportions, and stocks in this country at the present time may be small, production in this country and, in fact, throughout the world is going on at a record pace. It looks, therefore, as though Copper must accumulate here in the near future in sellers' hands unless consumers can be induced to stock up. They are admittedly very bare of metal. If they fight shy at present prices, powerful interests may see fit to repeat the experiment of carrying the metal until a more auspicious opportunity.

Lead is off to 4.47½c. in New York. It is this metal which, more than any other, will be affected by the coming tariff agitation.

Spelter is slightly firmer at 4.80c., New York. Production is being curtailed.

## A Comparison of Prices.

**Advances Over the Previous Month in Heavy Type, Declines in Italics.**

At date, one week, one month and one year previous.

| | Sept.30, 1908. | Sept.23, 1908. | Aug.26, 1908. | Sept.25 1907. |
|---|---|---|---|---|
| **PIG IRON,** Per Gross Ton: | | | | |
| Foundry No. 2, Standard, Philadelphia | **$16.75** | $16.75 | $16.50 | $20.25 |
| Foundry No. 2, Southern, Cincinnati | **15.75** | 15.75 | 15.50 | 21.75 |
| Foundry No. 2, Local, Chicago | *16.50* | 16.50 | 17.00 | 22.50 |
| Basic, delivered Eastern Pa. | **16.00** | 16.00 | 15.00 | 18.75 |
| Basic, Valley Furnace | *14.25* | 14.25 | 14.50 | 20.50 |
| Bessemer, Pittsburgh | 15.90 | 15.90 | 15.90 | 22.90 |
| Gray Forge, Pittsburgh | *14.40* | 14.40 | 14.65 | 20.90 |
| Lake Superior Charcoal, Chicago | 19.50 | 19.50 | 19.50 | 26.50 |
| **BILLETS, &c.,** Per Gross Ton: | | | | |
| Steel Billets, Pittsburgh | 25.00 | 25.00 | 25.00 | 29.50 |
| Forging Billets, Pittsburgh | 27.00 | 27.00 | 27.00 | 33.00 |
| Open Hearth Billets, Phila. | 26.20 | 26.20 | 26.20 | 31.00 |
| Wire Rods, Pittsburgh | 33.00 | 33.00 | 33.00 | 36.00 |
| Steel Rails, Heavy, at mill | 28.00 | 28.00 | 28.00 | 28.00 |
| **OLD MATERIAL,** Per Gross Ton: | | | | |
| Steel Rails, Melting, Chicago | **14.75** | 14.75 | 14.25 | 17.00 |
| Steel Rails, Melting, Phila. | **15.00** | 15.00 | 14.50 | 16.75 |
| Iron Rails, Chicago | **18.00** | 18.00 | 16.75 | 20.25 |
| Iron Rails, Philadelphia | **20.50** | 20.50 | 20.00 | 20.50 |
| Car Wheels, Chicago | *15.25* | 15.25 | 16.00 | 24.50 |
| Car Wheels, Philadelphia | 15.00 | 15.00 | 15.00 | 23.00 |
| Heavy Steel Scrap, Pittsburgh | **15.00** | 14.25 | 14.50 | 17.00 |
| Heavy Steel Scrap, Chicago | 13.00 | 13.00 | 13.00 | 14.75 |
| Heavy Steel Scrap, Philadelphia | **15.00** | 15.00 | 14.50 | 16.50 |
| **FINISHED IRON AND STEEL,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Refined Iron Bars, Philadelphia. | **1.45** | 1.45 | 1.40 | 1.75 |
| Common Iron Bars, Chicago | 1.50 | 1.50 | 1.50 | 1.78 |
| Common Iron Bars, Pittsburgh. | 1.40 | 1.40 | 1.40 | 1.70 |
| Steel Bars, Tidewater, New York | 1.56 | 1.56 | 1.56 | 1.81 |
| Steel Bars, Pittsburgh | 1.40 | 1.40 | 1.40 | 1.60 |
| Tank Plates, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Tank Plates, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Beams, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Beams, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Angles, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Angles, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Skelp, Grooved Steel, Pittsburgh | 1.45 | 1.45 | 1.45 | 1.85 |
| Skelp, Sheared Steel, Pittsburgh. | 1.50 | 1.50 | 1.50 | 1.95 |
| **SHEETS, NAILS AND WIRE,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Sheets, Black, No. 28, Pittsburgh | 2.50 | 2.50 | 2.50 | 2.60 |
| Wire Nails, Pittsburgh | 1.95 | 1.95 | 1.95 | 2.05 |
| Cut Nails, Pittsburgh | 1.80 | 1.80 | 1.80 | 2.10 |
| Barb Wire, Galv., Pittsburgh | 2.40 | 2.40 | 2.40 | 2.50 |
| **METALS,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Lake Copper, New York | **13.75** | 13.75 | 13.62½ | 15.00 |
| Electrolytic Copper, New York | *13.37½* | 13.37½ | 13.50 | 14.75 |
| Spelter, New York | **4.80** | 4.75 | 4.65 | 5.25 |
| Spelter, St. Louis | **4.65** | 4.60 | 4.50 | 5.15 |
| Lead, New York | *4.47½* | 4.50 | 4.57½ | 4.75 |
| Lead, St. Louis | *4.32½* | 4.35 | 4.40 | 4.55 |
| Tin, New York | **29.62½** | 28.75 | 29.25 | 37.15 |
| Antimony, Hallett, New York | 7.75 | 7.75 | 8.00 | 11.00 |
| Nickel, New York | 45.00 | 45.00 | 45.00 | 45.00 |
| Tin Plate, 100 lb., New York | $3.89 | $3.89 | $3.89 | $4.09 |

## Chicago.

FISHER BUILDING, September 30, 1908.—(*By Telegraph.*)

The contract for Steel underframes, bolsters and trucks for the 5000 cars to be built by the Chicago, Milwaukee & St. Paul Railroad has been secured by the Bettendorf Company, Davenport, Iowa. Approximately 23,000 tons of Steel will be required for this construction, and since the entire order is to be completed within six months, specifications for Plate and Shape requirements will soon begin to go to the mills. The same company was recently awarded a contract for 750 Steel tram cars by the Illinois Tunnel Company, and 500 tons of Plates for the car bodies are being rolled by the mills of the leading interest. The railroads generally, however, are not furnishing any new business to speak of and are, moreover, specifying very sparingly against existing contracts. Rolling schedules of the Rail mills are not filled far ahead, nor are they being materially extended by additional specifications. It is now too late to expect a marked degree of improvement in this respect during the remainder of the year. Manufacturing activities among the implement makers has not developed to the extent that was expected, and Steel Bar specifications have not shown continued increase in volume proportionate to the large amount of tonnage under contract. The backwardness of this class of consumers is due in some measure at least to a long continued and widely prevalent drought. A slight slowing up noted in the demand for Wire products is likewise attributed to this cause. Not much of the large tonnage of Structural Material being figured on by fabricators was included in the transactions closed last week.

Sheets are fairly active, but in other lines buying is closely restricted to present needs. Merchant Pipe holds about even, while Boiler Tubes are extremely quiet. Dullness in Pig Iron and Scrap is especially pronounced. New business in both lines is extremely light, but prices remain practically unchanged.

**Pig Iron.**—Business is practically at a standstill. What few orders have been placed in the past week—and they are very few—have been for car lots for immediate delivery. The continued absence of inquiries for first quarter tonnage emphasizes the indifference of consumers as to provision for this period, and their expectation that prices will at least not in the near future develop an upward tendency. None of the leading Southern furnaces, with possibly one or two exceptions, has definitely announced price schedules on Iron for next year's delivery, but $13, Birmingham, is generally accepted as the basis upon which those interests actively seeking business in this market are willing to negotiate. No contracts, as far as we are able to learn, have been placed at this figure, and buying of Southern Iron is almost wholly suspended in Northern territory. Northern Iron is now flatly upon a basis of $16.50 for last quarter business. There have been no recent offers of attractive tonnage that would afford a satisfactory test of the general firmness at this level. The only inquiry heard of that promises to produce immediate results is one for 1300 tons from a local consumer. This represents needs which demand delivery within four to six weeks. Aside from this, the few scattering inquiries out are regarded as having been made for the purpose of sounding the market. Except that the prevailing dullness is somewhat intensified, conditions on the whole have undergone no material change since the last report. The following quotations are for early delivery, f.o.b. Chicago:

| | |
|---|---|
| Lake Superior Charcoal | $19.50 to $20.00 |
| Northern Coke Foundry, No. 1 | 17.00 to 17.50 |
| Northern Coke Foundry, No. 2 | 16.50 to 17.00 |
| Northern Coke Foundry, No. 3 | 16.00 to 16.50 |
| Northern Scotch, No. 1 | 17.50 to 18.00 |
| Southern Coke, No. 1 | 17.35 to 17.85 |
| Southern Coke, No. 2 | 16.85 to 17.35 |
| Southern Coke, No. 3 | 16.35 to 16.85 |
| Southern Coke, No. 4 | 15.85 to 16.35 |
| Southern Coke, No. 1 Soft | 17.35 to 17.85 |
| Southern Coke, No. 2 Soft | 16.85 to 17.35 |
| Southern Gray Forge | 15.35 to 15.85 |
| Southern Mottled | 15.10 to 15.60 |
| Malleable Bessemer | 17.00 to 17.50 |
| Standard Bessemer | 17.65 to 18.10 |
| Jackson Co. and Kentucky Silvery, 6 % | 19.40 to 19.90 |
| Jackson Co. and Kentucky Silvery, 8 % | 20.40 to 20.90 |
| Jackson Co. and Kentucky Silvery, 10 % | 22.40 to 22.90 |

*(By Mail.)*

**Billets and Rods.**—The demand for Billets continues to be of a desultory character and includes no orders of notable tonnage. A few buyers of heavy machinery are meeting their immediate requirements with more or less frequent orders for Forging Billets in small lots, but the larger users, such as the car shops, are not much in evidence in the market. On such business as is moving the regular price of $28.50, base, Chicago, for Forging Billets is, we are advised, being generally well maintained. Wire Rods are fairly active, being supported by a reasonably satisfactory demand in Wire products. Prices are reported to be firmly held at the following quotations: Bessemer, $33 Basic, $34; Chain, $33, all at Pittsburgh.

**Rails and Track Supplies.**—Business in Standard Rails is limited to occasional orders of unimportant size, which seem to represent strictly emergency needs. Specifications, moreover, against existing contracts are coming out slowly, and in some cases have been wholly suspended for the present. The No. 1 mill at the South Works of the Illinois Steel Company, rolling Standard Sections, is still in operation, but is gaited down to about 55 per cent. of capacity. Enough additional orders for Light Rails have been entered the past week to insure a total tonnage for September practically equal to that of August, which amounted to something over 4000 tons, taken by the leading interest. The run of orders for Track Supplies fluctuates from week to week, and the past few days have developed but little new business. We quote as follows: Angle Bars, accompanying Rail orders, 1908 delivery, 1.50c.; car lots, 1.60c.; Spikes, 1.80c. to 1.90c., according to delivery; Track Bolts, 2.10c. to 2.15c., base, Square Nuts, and 2.25c. to 2.30c., base, Hexagon Nuts. The store prices on Track Supplies range from 0.15c. to 0.20c. above mill prices. Light Rails, 25 to 45 lb., $26; 20-lb., $27; 16-lb., $28; 12-lb., $29. Standard sections, $28, f.o.b. mill, full freight to destination.

**Structural Material.**—Comparatively few contracts were closed last week, and among them were none of the more important projects now under consideration. The principal transactions reported include 1316 tons for the Chicago Musical College and 550 tons for the Exchange National Bank Building, Colorado Springs, Colo., both of which were taken by the Hansell-Ellcock Company, Chicago. The fabricated work on the Spaulding & Merrick Building, Chicago, which is to be partly of Steel and partly of reinforced concrete construction, has been let by the Thompson-Starrett Company, general contractor, to the Hansell-Ellcock Company and A. Bolter & Sons. The Structural work, 533 tons, for a building to be erected by the Wyeth Hardware Company, St. Joseph, Mo., will be fabricated by the Berry Foundry & Mfg. Company of that city. Specifications of about 1500 tons of railroad bridge material have been received by the American Bridge Company, which also booked a number of new orders of small tonnage. It is expected that bids will be opened this week on the Steel for the new Northwestern Depot. Plans for this building have been revised and the original estimates of Structural Material required are considerably reduced, the present design calling for about 4200 tons, as against 12,000 tons formerly reported. This, of course, does not include the umbrella sheds and approaches, for the construction of which a larger tonnage will be needed later on. Plans are being prepared for a 12-story hotel and office building to replace the Lee Hotel, Oklahoma City, Okla., recently destroyed by fire, in which the Structural requirements are estimated at 800 tons. While the volume of specifications being received by the mills is not large enough to insure uninterrupted operation, the amount of prospective tonnage now being figured on by fabricators promises a larger degree of activity as soon as the backwardness in general construction work is overcome. Prices from store are 1.95c. to 2c. Mill prices at Chicago are as follows: Beams and Channels, 3 to 15 in., inclusive, 1.78c.; Angles, 3 to 6 in., ¼-in. and heavier, 1.78c.; larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 15 in., 1.88c.; Zees, 3 in. and over, 1.78c.; Tees, 3 in. and over, 1.83c.

**Plates.**—While there has been no noticeable improvement in new business, the prospect for some fair sized orders in the near future, as a result of some recently placed car orders, affords hopes of betterment. Steel under frames for the 5000 cars to be built by the Chicago, Milwaukee & St. Paul call for around 23,000 tons of material, a fair portion of which will be supplied by the Plate mills. In other directions, however, there is not much in sight that will produce tonnage of noteworthy size. Prices are reported to be somewhat firmer and more evenly held at regular quotations than has been the case for some time. We quote mill shipments as follows: Tank Plates, ¼-in. and heavier, wider than 6¼ and up to 100 in. wide, inclusive, car lots, Chicago, 1.78c.; 3-16 in., 1.88c.; Nos. 7 and 8 gauge, 1.93c.; No. 9, 2.03c.; Flange quality, in widths up to 100 in., 1.88c., base, for ¼-in. and heavier, with the same advance for lighter weights; Sketch Plates, Tank quality, 1.88c.; Flange, quality, 1.98c. Store prices on Plates are as follows: Tank Plates, ¼-in. and heavier, up to 72 in. wide, 2c. to 2.10c.; from 72 to 96 in. wide, 2.10c. to 2.20c.; 3-16 in. up to 60 in. wide, 2.10c. to 2.25c.; 72 in. wide, 2.30c. to 2.40c.; No. 8, up to 60 in. wide, 2.10c. to 2.15c.; Flange and Head quality, 0.25c. extra.

**Sheets.**—Galvanized Sheets continue to hold the lead in demand over Black Sheets. A fair amount of new business is being placed, but buyers still adhere to the practice of ordering for present needs and insist upon prompt shipments. Jobbers report a moderate demand for the light gauges of both Galvanized and Black Sheets, but the heavier gauges of the latter are moving slowly. Regular prices continue to be cut $1 to $2 a ton by some mills. We quote mill shipments as follows, Chicago: Blue Annealed, No. 10, 1.98c.; No. 12, 2.05c.; No. 14, 2.08c.; No. 16, 2.18c.; Box Annealed, Nos. 17 to 21, 2.43c.; Nos. 22 to 24, 2.48c.; Nos. 25 and 26, 2.53c.; No. 27, 2.58c.; No. 28, 2.68c.; No. 29, 2.78c.; No. 30, 2.88c.; Galvanized Sheets, Nos. 10 to 14, 2.63c.; Nos. 15 and 16, 2.83c.; Nos. 17 to 21, 2.98c.; Nos. 22 to 24, 3.13c.; Nos. 25 and 26, 3.33c.; No. 27, 3.53c.; No. 28, 3.73c.; No. 30, 4.23c.; Black Sheets from store: Blue Annealed, No. 10, 2.15c.; No. 12, 2.20c.; No. 14, 2.25c.; No. 16, 2.35c.; Box Annealed, Nos. 18 to 21, 2.60c.; Nos. 22 to 24, 2.65c.; No. 26, 2.70c.; No. 27, 2.75c.; No. 28, 2.85c.; No. 30, 3.25c.; Galvanized from store: Nos. 10 to 16, 3c.; Nos. 18 to 20, 3.15c.; Nos. 22 to 24, 3.30c.; No. 26, 3.50c.; No. 27, 3.70c.; No. 28, 3.90c.; No. 30, 4.40c. to 4.45c.

**Bars.**—The bulk of specifications are being furnished by the agricultural implement makers or allied interests, but the offerings from these sources have not grown perceptibly in volume in the past week or two. Users are ordering sparingly and are not going far beyond the immediate requirements with specifications. It is quite evident from the urgency of requests for prompt shipment that no stocks of considerable size are being carried by manufacturers. The attitude on all hands seems to be one of waiting for developments. Much the same conditions govern the movement of Iron Bars. Orders are scattered and comprise small lots, which makes it extremely difficult for the mills to anticipate rolling schedules. Most of the mills in this district are running off and on as the accumulation of orders permit, and it is hardly expected that the situation in this respect will be materially improved for several weeks at least. Quotations, Chicago, are as follows: Steel Bars, 1.58c., with half extras; Iron Bars, 1.50c.; Hoops, No. 13, and lighter, 1.98c., full extra Hoop card; Bands, No. 12 gauge, and heavier, 1.58c., half extra Steel Bar card; Soft Steel Angles and Shapes, 1.68c., half extras. Store prices are as follows: Bar

Iron, 2c. to 2.15c.; Steel Bars, 1.90c. to 2c.; Steel Bands, 1.90c., as per Bar card, half extras; Soft Steel Hoops, 2.25c. to 2.35c., full extras.

**Merchant Pipe.**—As compared with August the business for September will be about an even break in point of tonnage of new orders entered. This result is not particularly encouraging since September is usually a more active month. Under ordinary conditions stock shipments are ordered forward in September to secure the advantages of lake rates. This year, however, prospective wants are not being considered and jobbers continue to buy for actual needs. The following mill discounts are quoted: Black Pipe, ¾ to 6 in., 73.2; 7 to 12 in., 70.2; Galvanized, ¾ to 6 in., 63.2. These discounts are subject to one point on the base. From store, in small lots, Chicago jobbers quote 73 per cent. on Black Steel Pipe, ¾ to 6 in. About three points above these prices is asked for Iron Pipe.

**Boiler Tubes.**—A little better demand is noted for Locomotive Tubes. Most of the railroads are buying a little more freely for repair work, and it is understood that the Illinois Central is among the buyers making purchases for this purpose. The extremely quiet demand for Merchant Tubes reflects continued inactivity in the boiler shops and indicates that not much new boiler construction is under way. Mill quotations for future delivery, on the base sizes, are as follows: 2¾ to 4½ in., inclusive, Steel Tubes, 63.2; Iron, 50.2; Seamless, 50.2; 2½ in. and smaller, and lengths over 18 ft., and 2½ in. and larger, and lengths over 22 ft., 10 per cent. extra. Store prices are as follows:

| | Steel. | Iron. | Seamless. |
|---|---|---|---|
| 1 to 1¼ in. | 35 | 35 | 35 |
| 1¾ to 2¼ in. | 50 | 35 | 35 |
| 2½ in. | 52½ | 35 | 35 |
| 2¾ to 5 in. | 60 | 47½ | 47½ |
| 6 in. and larger | 50 | 35 | .. |

**Merchant Steel.**—While not up to the mark of the two preceding weeks in volume, the specifications last week were fairly satisfactory. Besides a moderate demand from the implement makers, the orders for Tire Steel coming from the vehicle makers reflect some activity in these lines. Supplementing the tonnage from other sources, some fair sized orders from jobbers have been received for miscellaneous shapes, such as Sleigh Shoe and Toe Calk Steel. Shafting is quiet, no orders of important size being reported. We quote as follows: Planished or Smooth Finished Tire Steel, 1.78c.; Iron Finish, up to 1½ x ½ in., 1.73c., base, Steel card; Iron Finish, 1½ x ½ in. and larger, 1.58c., base, Tire card; Channels for solid Rubber Tires, ¾ to 1 in., 2.08c., and 1⅛ in. and larger, 1.98c.; Smooth Finished Machinery Steel, 2.08c.; Flat Sleigh Shoe, 1.63c.; Concave and Convex Sleigh Shoe, 1.83c.; Cutter Shoe, 2.05c.; Toe Calk Steel, 2.13c.; Railroad Spring, 1.98c.; Crucible Tool Steel, 7¼c. to 8c., and still higher prices are asked on special grades. Cold Rolled Shafting on contracts for 100 tons and over, 57 per cent. off; 56 per cent. off in car lots; 52 per cent. in less than car lots, on which carload freight is allowed within base territory.

**Cast Iron Pipe.**—Most of the work coming to the foundries is supplied by the demands of small municipalities. Lettings ranging from 100 to 500 tons are fairly numerous, but larger contracts are extremely scarce. Among the awards of last week were 300 tons let by Decatur, Ill., and 200 tons by Hammond, Ind., both of which were taken by the United States Cast Iron Pipe & Foundry Company. A lot of 300 tons representing the requirements of Winfield, Kan., is up for letting this week. Prices are unchanged, and we quote nominally, per net ton, Chicago, as follows: Water Pipe, 4 in., $27; 6 to 12 in., $26; 16 in. and up, $25, with $1 extra for Gas Pipe.

**Metals.**—Last week was one of dullness in all Metals. The aggregate volume of transactions was light, and though prices have not sagged perceptibly, the general trend has been weaker. In view of present conditions consumers are not disposed to buy any more than is actually needed to keep them going. Quotations are as follows: Casting Copper, 13½c.; Lake, 13¾c. to 14c., in car lots, for prompt shipment; small lots, ¼c. to ⅜c. higher; Pig Tin, car lots, 32½c.; small lots, 34½c.; Lead, Desilverized, 4.60c. to 4.65c., for 50-ton lots; Corroding, 4.85c. to 4.95c., for 50-ton lots; in car lots, 2¼c. per 100 lb. higher; Spelter, 4.80c.; Cookson's Antimony, 10½c., and other grades, 9¾c. to 10¼c.; Sheet Zinc is $7, f.o.b. La Salle, in car lots of 600-lb. casks. On Old Metals we quote: Copper Wire, 13½c.; Heavy Copper, 13¼c.; Copper Bottoms, 12c.; Copper Clips, 13¼c.; Red Brass, 12c.; Yellow Brass, 9½c.; Light Brass, 7c.; Lead Pipe, 4.30c.; Zinc, 3¾c.; Pewter, No. 1, 21c.; Tin Foil, 23c.; Block Tin Pipe, 25c.

**Old Material.**—The buoyancy that characterized the market at the beginning of the present month has disappeared, and is succeeded by a condition of apathy that precludes activity in trading. Dealers hesitate to make large commitments at the present market, in face of the uncertain solution of problems which are believed to affect future values and demand. It is understood that $13.85 was offered for No. 1 Wrought Scrap in the Chicago, Burlington & Quincy list last week, but it went to a Western market, presumably on account of more advantageous delivery. A sale of 400 tons of No. 1 Cast, at $13.75, Chicago, is noted. The demand from consumers is not increasing fast enough to afford a substantial prop to the market, but the limited tonnage offered by the railroads in a measure counterbalances the diminished consumption. Mills and melters evidently see nothing in the situation, either present or prospective, to warrant their buying ahead of current needs, and are therefore pursuing this policy. The following prices are per gross ton, f.o.b. Chicago:

| | |
|---|---|
| Old Iron Rails | $18.00 to $18.50 |
| Old Steel Rails, rerolling | 15.50 to 16.00 |
| Old Steel Rails, less than 3 ft | 14.75 to 15.25 |
| Relaying Rails, standard sections, subject to inspection | 20.00 to 21.00 |
| Old Car Wheels | 15.25 to 15.75 |
| Heavy Melting Steel Scrap | 13.00 to 13.50 |
| Frogs, Switches and Guards, cut apart | 13.50 to 14.00 |
| Mixed Steel | 10.25 to 10.75 |

The following quotations are per net ton:

| | |
|---|---|
| Iron Fish Plates | $16.50 to $17.00 |
| Iron Car Axles | 20.00 to 20.50 |
| Steel Car Axles | 17.50 to 18.00 |
| No. 1 Railroad Wrought | 13.50 to 14.00 |
| No. 2 Railroad Wrought | 12.50 to 13.00 |
| Railway Springs | 13.00 to 13.50 |
| Locomotive Tires, smooth | 13.25 to 13.75 |
| No. 1 Dealers' Forge | 10.25 to 10.75 |
| Mixed Busheling | 8.00 to 8.50 |
| Iron Axle Turnings | 6.75 to 7.25 |
| Soft Steel Axle Turnings | 6.75 to 7.25 |
| Machine Shop Turnings | 6.75 to 7.25 |
| Cast Borings | 5.50 to 6.00 |
| Mixed Borings, &c | 5.50 to 6.00 |
| No. 1 Mill | 8.00 to 8.50 |
| No. 2 Mill | 7.00 to 7.50 |
| No. 1 Boilers, cut to Sheets and Rings | 8.50 to 9.00 |
| No. 1 Cast Scrap | 12.75 to 13.25 |
| Stove Plate and Light Cast Scrap | 11.50 to 12.00 |
| Railroad Malleable | 12.25 to 12.75 |
| Agricultural Malleable | 11.00 to 11.50 |
| Pipes and Flues | 9.75 to 10.25 |

## St. Louis.

ST. LOUIS, September 28, 1908.

Nearly all the interests identified with the Iron trade report a moderate but steady improvement in both inquiry and sales. This betterment of the situation was in many lines confidently expected, since there is always with these parties a revival of activity at this season of the year. It is, however, the exception where they find the demand equal to that of 1907. Manufacturers of Metal Beds, Steam Radiators, Saws, Lead Pipe, Wrought Iron Ranges, Dies, Stoves, Wire Rope and Electrical Appliances especially note an increase in the volume of orders, and look for a satisfactory fall trade.

**Coke.**—With some of the local agencies a moderate quantity of Coke is being placed, while others find the market quiet, so far as actual bookings are concerned. The tone of the market is firm, and the price range is $2.15 to $2.75, at oven, the lower price for prompt shipment, and the higher for shipment from the present time and covering first half of 1909. Owing to the attitude of some of the large furnaces in the Connellsville District, in refusing to quote for first quarter 1909, the volume of business is not as large as it otherwise would be. One house reports inquiries for 1200 tons for shipment from October, 1908, to July, 1909.

**Pig Iron.**—Merchants report in some cases a quite satisfactory business in Pig Iron for the week, while with others there is not so much doing as of late, though they find foundrymen ordering out freely on contracts. One house states that two furnaces which it represents are sold up to January 1, and are also behind with specifications. It has inquiries covering 1000 tons, shipment balance of this year, and 2000 tons for shipment over the first quarter, 1909. Another house reports sales mostly spot, with an urgent request for immediate shipment of entire purchases. There are still a number of furnaces which decline to quote for first quarter, 1909, and as fully one half the inquiry is for that delivery, it tends to restrict the volume of business. There is some inquiry for Basic for prompt shipment. We quote for No. 2 Foundry, shipment over balance of 1908, $13, Birmingham, and for shipment first half 1909, $13.50. Reports of lower prices are believed either to cover resale Iron or inferior quality. In some cases, also, the time of delivery and freight rate might lead to the price being shaded.

**Finished Iron and Steel.**—In addition to the demand for Structural Steel from architectural Iron companies and building contractors, a continued demand is coming for bridge construction, principally for public highways in Missouri. The demand for Bars for agricultural implements and wagon building is steady, and there is a good call for Bolts and Spikes. A Southwestern railroad is in the market for Standard Rails, and there is still a fair inquiry for Light Rails.

**Old Material.**—A moderate demand is noted from consumers, mainly for Steel, Wrought and Cast Scrap. The balance of the list is practically a dealers' market. Iron Rails are neglected, and the price is nominal. There is a sufficient demand for most Material to establish quotations as given below. It is believed the railroads in this territory

have marketed their holdings so freely that offerings will rule light in the near future. We quote as follows, per gross ton, f.o.b. St. Louis:

| | |
|---|---|
| Old Iron Rails | $16.50 to $17.00 |
| Old Steel Rails, rerolling | 15.50 to 16.00 |
| Old Steel Rails, less than 3 ft | 14.25 to 14.75 |
| Relaying Rails, standard sections, subject to inspection | 22.50 to 23.50 |
| Old Car Wheels | 15.00 to 15.50 |
| Heavy Melting Steel Scrap | 14.00 to 14.50 |
| Frogs, Switches and Guards, cut apart | 13.50 to 14.00 |
| Mixed Steel | 11.00 to 11.50 |

The following quotations are per net ton:

| | |
|---|---|
| Iron Fish Plates | $15.50 to $16.00 |
| Iron Car Axles | 18.50 to 19.00 |
| No. 1 Railroad Wrought | 13.50 to 14.00 |
| No. 2 Railroad Wrought | 12.50 to 13.00 |
| Railway Springs | 13.00 to 13.50 |
| Locomotive Tires, smooth | 13.00 to 13.50 |
| No. 1 Dealers' Forge | 11.50 to 12.00 |
| Mixed Borings, &c | 5.50 to 6.00 |
| Machine Shop Turnings | 8.00 to 8.50 |
| No. 1 Boilers, cut to Sheets and Rings | 9.50 to 10.00 |
| No. 1 Cast Scrap | 12.00 to 12.50 |
| Stove Plate and Light Cast Scrap | 10.50 to 11.00 |
| Railroad Malleable | 11.00 to 11.50 |
| Agricultural Malleable | 10.00 to 10.50 |
| Pipes and Flues | 8.75 to 9.00 |

**Lead, Spelter, &c.**—Though the demand for Lead is small, the indications are favorable for improvement. The market is ruling at 4.35c. Lead Ore is quoted at $28.50, f.o.b. mine, and the production is taken up every week. Spelter is not active. We quote 4.62½c., with special brands held at 4.70c. There is likely to be some change for the better in the near future, as the demand for the finished products is gaining. Zinc Ore is steady, at $38, Joplin basis.

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The Decatur Bridge Company has recently secured several further contracts for Structural Material for highway bridges, and also for Steel for building purposes. Inquiries are becoming more frequent from interior points.

## San Francisco.

SAN FRANCISCO, September 23, 1908.

Activity in the Pacific Coast Iron and Steel industries has not increased perceptibly in the last two weeks, though there is a little more movement than last month. The inquiry for machinery of some descriptions is more general, and there is also a good jobbing movement of Merchant Pipe and oil well supplies. Individual sales in most lines are small, the general tendency being to limit expenditures, but the whole volume of business is by no means discouraging. There is somewhat more inquiry for mining machinery, though this line is not so active as was expected in the summer. Nothing of any importance has developed in Drill Steel, purchases being few and generally small. Light Rails and railroad supplies for the lumber and mining roads are still very quiet, as few improvements are being made, and about the only work going on is for the necessary repairs. There is practically no movement of Standard Rails in this market at present. The lumber trade is improving considerably, both here and in the North, and some business in the way of new equipment is expected during the fall, though there is little new work at present. More inquiry for pumping, dredging and irrigating machinery is reported than for some time previous, while the engineering concerns in the South find a constant demand for supplies for the oil fields, the greater part of this work going to Los Angeles. The local trade, however, is greatly encouraged over the discovery of oil at Livermore, Cal., which will tend to bring more of the supply trade in this direction. General improvements are now being made in the Kern County oil fields, and an extensive water supply system is being installed, which will enable the wells in that district to operate more constantly than they have during the past summer.

**Structural Material.**—Numerous plans for new buildings in San Francisco have been announced in the last week or two, and a large number of them call for Class A construction. Few structures of notable size have been started recently, however, and there is a quite distinct tendency to erect comparatively low buildings for store purposes. Work will soon begin on some expensive buildings only one to four stories in hight. Many of the structures now being started are to be made extra heavy, with the intention of adding a number of stories later on, when the demand for office space increases. Contracts for Structural Steel since last report have not been numerous, and most of the business is in a rather small way. The prospect for the remainder of the fall is for moderate activity in this line, with few large contracts, but enough small ones to make up a fair total. A contract has been let for the Steel for the Pacific Realty Building, on which work will soon begin, and the Western Iron Works has taken a contract for Steel and Cast Iron for a large building at the corner of Sutter and Kearny streets. A number of structures in prospect are the San Francisco National Bank Building, California and Liedesdorff streets, four stories; an eight-story hotel building at Van Ness and Pacific avenues; a six-story Class A building at Sacramento and Kearny streets, and a five-story building for the Lodge of Elks, to cost about $100,000. On the second set of bids, the United States Government has awarded the contract for the construction of the transport docks at Fort Mason to the San Francisco Bridge Company, for $1,286,000. Baker & Hamilton have taken a contract for Steel Wire Nails for the State Prison at San Quentin, Cal., at $2.85 a keg. The contract for 600 tons of Steel Bars for the new concrete buildings at the prison has not yet been awarded. The prison is to be entirely remodeled, and the first of the new buildings is to contain 600 cells, and will cost about $800,000. The army transport Crook sailed from San Francisco September 15, with a large quantity of Structural Iron work for Government construction at Manila.

**Pig Iron.**—No improvement has taken place in the San Francisco Pig Iron market, and the outlook is not encouraging. The foundries have a little more work on hand than at last report, but they are still very quiet. The slight tendency to buy for spring delivery which was noted before has almost disappeared, and stocks are difficult to move, even at liberal concessions. No notable arrivals of Chinese, English, or Scotch Pig Iron have appeared in this market since last report. Dealers in foundry supplies say that the market is in a worse condition than they have seen for years, most of the foundries still having large stocks that were taken on last fall, and there is no prospect of any extensive demand until present holdings are greatly diminished. No. 1 English, Scotch, and Chinese Pig Iron is quoted at $23 to $25 per ton, with not enough business to establish any very definite prices. Some importers are reported to be offering foreign Pig Iron for spring delivery as low as $21, with very little response. A movement is now on foot among the local dealers to secure a material reduction of freight rates on domestic Pig Iron, and there is some hope of success. There is no movement of domestic Pig Iron in this market at present.

**Coke.**—Coke is in about the same condition as Pig Iron, with large stocks on hand, and very little consumption. No large lots of foreign Coke are coming in, and prices remain at about $12 to $14 per ton, as last quoted.

**Cast Iron Pipe.**—The improvement recently noted in the market on Cast Iron Pipe has not continued, and the movement is now of rather small proportions. The outlook, however, is for a fairly good volume of business within the next few months, as improvements of water systems are being carried on all over the State. There are a few small inquiries from outside towns, but the movement is mostly in single carloads, with no tonnage to speak of. No important contracts have recently been let in the South, and while Seattle is putting in more Cast Iron Pipe all the time, the material is being secured in small allotments. Local dealers are all waiting for further developments in regard to the new salt water fire protection system, but the specifications will probably not be ready for about six months. Since the municipal bond issue of $3,514,520 has been sold to E. H. Rollins & Sons, $1,080,344 is available for the new system and the plans are rapidly being developed. Work will soon begin on the 45 cisterns which are to be a part of it. The Board of Supervisors has passed to print a resolution designating a bond election as the proper means of raising the $750,000 which is declared necessary for the preliminary purchases for the acquisition of the Sierra water supply. The total cost of a city distributing system, with 643 miles of mains and pipes, is estimated at $12,170,820. The Spring Valley Company's loss from pipes damaged in the earthquake is still large, but repairs are being made only where most necessary. The San Francisco Gas & Electric Company estimates its loss last year from a similar cause as 2,045,295 cu. ft. per mile of main, but it is claimed that the company is not in a financial condition to warrant extensive repairs, and very little work is being done. Present quotations on Cast Iron Pipe are, 4 to 6 in. $36; 8 to 12 in., $35; over 12 in., $34; Gas Pipe, $1 extra.

**Merchant Pipe.**—Business in Merchant Pipe has picked up considerably of late, and there is now a good inquiry from several parts of the State, though the greatest activity is in the South. The trade, however, is mostly of a jobbing character, as there are good-sized stocks on hand, and very little is being brought in from the East. Notwithstanding the liberal movement, there is a decided tendency among the jobbers to cut prices. The usual differential is quoted on jobbers' carloads:

| | Steel. Black. % | Steel. Galv. % |
|---|---|---|
| ⅛ to ¼ in | 56.5 | 40.5 |
| ⅜ in | 58.5 | 44.5 |
| ½ in | 60.5 | 48.5 |
| ¾ to 6 in | 64.5 | 54.5 |
| 7 to 12 in | 61.5 | 46.5 |
| Extra strong, plain ends: | | |
| ⅛ to ⅜ in | 49.5 | 37.5 |
| ½ to 4 in | 56.5 | 44.5 |
| 4½ to 8 in | 52.5 | 40.5 |
| Double extra strong, plain ends: | | |
| ½ to 8 in | 45.5 | 34.5 |

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The Pacific Hardware & Steel Company is preparing to build a two-story warehouse on King street, near Seventh.

The Doak Sheet Company is about to erect a large warehouse at its plant at South City, near San Francisco.

J. C. Neale, constructing engineer of the Carnegie Steel Company, and Mr. Trist, are visiting the San Francisco office.

The Byron Jackson Iron Works has opened an office at 351-355 Market street.

The Pacific Iron & Smelting Company has been incorporated in Los Angeles, with a capital stock of $1,000,000, by Benton Flood, F. C. Rockwell, S. P. Savage, Henry Norton, H. L. Boyer, and W. A. Anderson.

The Great Western Power Company has started upon the preliminary work for the erection of a $2,000,000 auxiliary steam plant on its tract at Sessions Basin, in Oakland.

The Union Iron Works has taken the contract for repairs to the German steamer Anubis, which was almost destroyed on San Miguel Island, off the southern California coast, several weeks ago. The bid was $68,900, the work to be completed in 60 days. This is one of the largest jobs of the kind contracted in this city.

The Enterprise Foundry Company, San Francisco, has graded its property at Richmond, Cal., and will soon begin the erection of a new plant there.

The new shops of the mechanical engineering department of Stanford University, including the forge and foundry, machine shop, pattern shop, testing and metallurgical laboratories, have been completed. The shops cover 34,000 sq. ft. of floor space, and are said to be the equal in equipment of any in the country.

The Salt Lake Wire & Iron Works has been incorporated in Salt Lake City, Utah, with a capital of $20,000, by Seth Brown, Walter J. Eldredge, Robert E. Shepherd, William H. Pratt, and William G. Tovey.

## Pittsburgh.

PARK BUILDING, September 30, 1908.—(*By Telegraph.*)

**Pig Iron.**—A local consumer has bought 5000 to 6000 tons of Basic Iron on the basis of $15.15, delivered, or $14.25 at Valley furnace. Part of the Iron was sold by a furnace that has an 80c. freight rate, netting the seller $14.35 at furnace. An Ohio Steel casting concern has bought 500 tons of Basic Iron for last quarter at slightly less than $14.25 at Valley furnace, and 500 tons for first quarter of next year at $14.35 at furnace. There is very little doing in Bessemer or Foundry Iron, but prices are fairly steady. We quote Standard Bessemer Iron at $15; Basic, $14.25; Malleable Bessemer, $14.50; No. 2 Foundry, $14.35 to $14.50, and Forge at $13.50, all at Valley furnace. The freight to Pittsburgh is 90c. a ton.

**Steel.**—We note a sale of 300 tons of small Billets at the usual differential over the price for base sizes. The forges are taking in a fair amount of Steel, but new orders in Sheet and Tin Bars are scarce and the mills are not taking in as much tonnage on old contracts as in recent weeks. We quote Bessemer and Open Hearth Billets, 3⅞ in. and larger, up to and including 0.25 carbon, $25; 0.26 to 0.60 carbon, $1 extra; over 0.60 carbon, $2 extra, all f.o.b. Pittsburgh. For Wheeling, Martins Ferry, Follansbee, Newcastle, Sharon, Steubenville and Washington (Pa.) delivery, half the freight, or 50c. additional, is charged. Sheet and Tin Bars in random lengths are $27, f.o.b. Pittsburgh. Forging Billets take $2 advance over Rolling Billets.

(*By Mail.*)

Pittsburgh this week is celebrating its sesquicentennial. Founded only 150 years ago, it has grown to be the greatest manufacturing center in the world, its products going to every civilized country. Statistics could be given showing the pre-eminence of Pittsburgh in the Steel world, but these have been printed so many times that they would be superfluous. The city was hard hit in the recent financial panic, and its manufacturing plants have been running to only partial capacity for about a year, but it will emerge from these depressing conditions before long, and has already started to do so. Business houses, office buildings, hotels and many private dwelling houses are gaily decorated as part of the celebration, and for the balance of the week business will be largely suspended. Many notable persons are in the city, including some direct descendants of William Pitt, the founder of Pittsburgh. Matters in the Steel trade show no important developments in the week under review. A slow but steady gain is observed in new orders in finished Iron and Steel, and some fairly large tonnage in Plates has been placed, with some more pending. The Pig Iron market is quiet, but some Basic has been taken by a local interest. Prices are only fairly strong, and it is reported that Basic has sold close to $14, Valley furnace. The Scrap trade is quiet as far as new business goes, but the tonnage available is rather light, and the market is firm. The Coke trade shows no improvement.

**Ferromanganese.**—In the past three or four weeks a leading Western consumer of Ferro has bought about 600 tons for forward delivery. The impression is strong that prices may be higher soon. We quote 80 per cent. foreign at $42.50 to $43, seaboard, for prompt shipment, the rate to Pittsburgh being $1.95 a ton. For future delivery from $1 to $2 more is asked.

**Ferrosilicon.**—The market is quite firm, and we quote 50 per cent. at $67 to $67.50, Pittsburgh, and note two sales of 25 tons each to local consumers at the lower price. The quotation of $57.50, Pittsburgh, on Ferrosilicon in this report last week was a typographical error.

**Muck Bar.**—This material continues very dull, and we do not hear of any sales. We continue to quote best grades, made from all Pig Iron, at nominally $25, Pittsburgh.

**Wire Rods.**—Following the recent active demand and fairly heavy sales, the market on Rods has quieted down and there is not much inquiry, consumers being pretty well covered for some time ahead. We are advised that prices are firm, and we quote Bessemer Rods at $33, Basic at $34 and Chain Rods $33, Pittsburgh.

**Skelp.**—Little new business is being placed, and prices are only fairly strong. We quote: Grooved Steel Skelp, 1.45c. to 1.50c.; Sheared Steel Skelp, 1.50c. to 1.60c.; Grooved Iron Skelp, 1.60c. to 1.70c., and Sheared Iron Skelp, 1.70c. to 1.75c., f.o.b. Pittsburgh.

**Steel Rails.**—Last week was the best week the Carnegie Steel Company has had in Light Rails for some time, having sold about 2200 tons. As yet there is nothing of moment doing in Standard Sections, only a few scattering orders ranging from 100 to 300 tons being placed. There is some specifying on contracts, but the tonnage is not heavy. The Carnegie Steel Company is making regular shipments of both Light Rails and Standard Sections abroad, and, in fact, its foreign trade in Rails has been quite heavy for some time. No. 1 Rail mill at Edgar Thomson shut down on Monday night, but will start again Sunday night next if sufficient tonnage accumulates in the meantime. Prices on new Light Rails, which are sometimes shaded from $1 to $2 a ton for rerolled Rails, are as follows: $25 for 25 to 45 lb. Sections, with $1 advance for 20 lb., $2 advance for 16-lb., and $3 advance for 12-lb. Standard Sections are $28, at mill, and Angle Splice Bars, 1.65c., at mill.

**Plates.**—The Carnegie Steel Company has taken a contract for 5000 to 6000 tons of Plates and Shapes for two Ore boats to be built by the American Shipbuilding Company. One of these boats is for the Pitt Iron Mining Company, owned by the La Belle Iron Works, Steubenville, Ohio, and these works will furnish the Plates for it of such sizes as they roll in their own Plate mill, the balance to be furnished by the Carnegie Steel Company. New orders are light, and are mostly in small lots for actual needs. Two or three Plate mills that do not roll a full assortment of sizes are cutting prices from $1 to $2 a ton, and in most cases this competition is being met by the larger mills. Regular prices are as follows: Tank Plates, ¾ in. thick, 6¼ in. up to 100 in. wide, 1.60c., base, at mills, Pittsburgh. Extras over this price are as follows:

Tank, Ship and Bridge quality, ¼ in. thick on edges, 100 in. wide, down to but not including 6 in. wide, is taken as base.

Steel Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per square foot, shall be considered ¼-in. Plate. Steel Plates over 72 in. wide must be ordered ¼-in. thick on edge, or not less than 11 lb. per square foot, to take base price. Steel Plates over 72 in. wide ordered less than 11 in. per square foot down to the weight of 3-16-in. shall take the place of 3-16-in.

Percentages as to overwheight on Plates, whether ordered to gauge or weight, to be governed by the Association of American Steel Manufacturers' Standard Specifications.

| | |
|---|---|
| Gauges under ¼-in. to and including 3-16-in. Plates on thin edges | $0.10 |
| Gauges under 3-16-in. to and including No. 8 | .15 |
| Gauges under No. 8 to and including No. 9 | .25 |
| All sketches (excepting straight taper Plates varying not more than 4 in. in width at ends, narrowest end being not less than 30 in.) | .10 |
| Complete Circles | .20 |
| Boiler and Flange Steel Plates | .10 |
| "A. B. M. A." and ordinary Firebox Steel Plates | .20 |
| Still Bottom Steel | .30 |
| Marine Steel | .40 |
| Locomotive Firebox Steel | .50 |
| Shell grade of Steel is abandoned. | |
| For widths over 100 in. up to 110 in | .05 |
| For widths over 110 in. up to 115 in | .10 |
| For widths over 115 in. up to 120 in | .15 |
| For widths over 120 in. up to 125 in | .25 |
| For widths over 125 in. up to 130 in | .50 |
| For widths over 130 in | 1.00 |

TERMS.—Net cash 30 days. Pacific Coast base, 1.50c., f.o.b. Pittsburgh.

**Structural Material.**—No large contracts have been placed the past week, and there is only a fair amount of new inquiry. The McClintic-Marshall Construction Company has taken a new building and storage bins for the International Acheson Graphite Company, at Niagara Falls, N. Y., 300 tons; also a new mill building for the Wisconsin Steel Company, 115 ft. wide and 600 ft. long, about 400 tons, and a new mill building for the Ohio Seamless Tube Company, at Shelby, Ohio, 400 to 500 tons. We quote,

f.o.b. mill, Pittsburgh: I-Beams, H-Beams and Channels, 3 to 15 in., inclusive, 1.60c., net; Beams over 15 in., 1.70c., net., Angles, 3 to 6 in., inclusive, ¼-in. and up, 1.60c., net; Angles, over 6 in., 1.70c., net; Angles, 3 x 3 in. and up, less than ¼ in., 1.50c., base, half extras, Steel Bar card; Tees, 3 in. and up, 1.65c., net; Zees, 3 in. and up, 1.60c., net; Angles, Channels and Tees under 3 in., 1.50c., base, half extras, Steel Bar card; Deck Beams and Bulb Angles, 1.90c., net; Hand Rail Tees, 3c., net; Checkered and Corrugated Plates, 3c., net.

**Sheets.**—The contract for 450 to 500 tons of Galvanized Sheets for the Pressed Steel Car Company was taken by the American Rolling Mill Company, Middletown, Ohio, and will be Sheets rolled from its American genuine ingot Iron. We are advised that the demand for both Black and Galvanized Sheets, particularly Corrugated, is showing steady betterment, and recently some nice orders for Corrugated Sheets have been placed, and at practically regular prices. The American Sheet & Tin Plate Company is operating to about 65 per cent. of capacity, and the outside mills are running at about the same rate. Prices are fairly steady, being slightly shaded only on desirable tonnage and mostly for prompt shipment. For shipment from mill, regular prices, which are shaded by some mills from $1 to $2 a ton, are as follows: Blue Annealed Sheets, No. 10 and heavier, 1.80c.; Nos. 11 and 12, 1.85c.; Nos. 13 and 14, 1.90c.; Nos. 15 and 16, 2c.; Box Annealed, Nos. 17 to 21, 2.25c.; Nos. 22 to 24, 2.30c.; Nos. 25 and 26, 2.35c.; No. 27, 2.40c.; No. 28, 2.50c.; No. 29, 2.60c.; No. 30, 2.70c. Galvanized Sheets: Nos. 10 and 11, 2.45c.; Nos. 12 and 14, 2.55c.; Nos. 15 and 16, 2.65c.; Nos. 17 to 21, 2.80c.; Nos. 22 and 24, 2.95c.; Nos. 25 and 26, 3.15c.; No. 27, 3.35c.; No. 28, 3.55c.; No. 29, 3.70c.; No. 30, 3.95c.; No. 28, Painted Roofing Sheets, $1.75 per square, and Galvanized Roofing Sheets, No. 28, $3.10 per square, for 2½-in. corrugations. These prices are subject to a rebate of 5c. per 100 lb. to the large trade under the usual conditions, jobbers charging the usual advances for small lots from store.

**Tin Plate.**—Practically no new orders are being placed, but shipments are still being made on contracts placed some time ago, all of which are not yet filled. It is estimated that only about 40 per cent. of the entire Tin Plate capacity is active at present. Prices on Tin Plate are still irregular and are being shaded to some extent on desirable business. The regular price of Tin Plate is $3.70 for 100 lb. Cokes, 14 x 20, f.o.b. Pittsburgh, terms 30 days, less 2 per cent. off for cash in 10 days, this price being subject to the usual rebate of 5c. per base box in large lots.

**Hoops and Bands.**—A fair run of new orders is being placed, and with specifications against contracts coming in steadily, the Hoop mills are fairly busy. We are advised that regular prices are being maintained. The Clark Steel Hoop Company is going ahead with its project of building a Hoop mill at Punxsutawney, Pa., and has placed contracts for considerable machinery with Pittsburgh concerns. We quote: Steel Hoops, 1.80c., base, full Hoop card prices; Steel Bands, 1.40c., base, half Steel card extra, all f.o.b. cars, Pittsburgh, in carload lots, for delivery during 1908.

**Bars.**—New orders are rather light, but specifications against contracts are coming in freely, and shipments by the mills this month compare well with August, and will only be slightly less. Most leading consumers covered their requirements some time ago, and orders now coming in are from the small trade, and mostly for prompt shipment, which the mills are able to make. We note a moderate demand for Iron Bars, but consumers of both Iron and Steel are not disposed to stock ahead, new orders being only for actual needs. We are advised that regular prices are being maintained. We quote Iron Bars at 1.40c., base, for Pittsburgh delivery, and 1.35c., base, for Western points, to which freight is added, except Chicago, the price for which is 1.50c., delivered. We quote Steel Bars at 1.40c., Pittsburgh, for base sizes.

**Merchant Steel.**—Specifications from implement makers and other leading consumers are being received by the mills in fairly large volume, but as a rule consumers are not stocking up, but are taking in material only as needed for actual requirements. Some large orders for Shafting have recently been placed by leading consumers on which specifications are coming in quite freely. Prices on Shafting are fairly well maintained, only the very large orders being allowed an extra discount over regular prices. We quote Cold Rolled Shafting at 57 per cent. off in carloads and 52 per cent. in less than carloads, delivered in base territory. Prices on Merchant Steel are being shaded, regular quotations being as follows: Smooth Finished Machinery Steel, 1.80c. to 1.90c.; Flat Sleigh Shoe, 1.75c. to 1.85c.; Cutter Shoe Steel, 2.15c. to 2.25c.; Toe Calk, 1.90c. to 1.95c.; Railroad Spring Steel, 1.60c. to 1.75c., the higher prices being for Pennsylvania Railroad analysis. Carriage Spring Steel is 1.80c.; Tire Steel, Iron finish, 1½ x ½ in. and heavier, 1.40c.; under 1½ in., 1.55c. Planished Tire Steel is 1.60c., all f.o.b. at mill.

**Merchant Pipe.**—Conditions in the Pipe market show steady betterment, new orders being steadily larger and output and shipments by the mills are heavier. The order for 20,000 tons of Steel Pipe placed by the Columbia Gas & Electrical Company for conveying gas from the West Virginia fields to Cincinnati was really placed early in the year, but the financial plans were arranged only recently. Deliveries on this order have been going forward for some time. We are advised that prices on Steel Pipe are being absolutely maintained, but on Iron Pipe are being shaded to some extent. Discounts on Steel Pipe, ¾ to 6 in., to the large trade are 76 and 5 per cent. off list. Regular discounts are as follows:

*Merchant Pipe.*

| | Jobbers, carloads, Steel. Black. | Galv. |
|---|---|---|
| | % | % |
| ⅛ to ¼ in | 67 | 51 |
| ⅜ in | 69 | 55 |
| ½ in | 71 | 59 |
| ¾ to 6 in | 75 | 65 |
| 7 to 12 in | 72 | 57 |
| Extra strong, plain ends: | | |
| ⅛ to ⅜ in | 60 | 48 |
| ½ to 4 in | 67 | 55 |
| 4½ to 8 in | 63 | 51 |
| Double extra strong, plain ends: | | |
| ½ to 8 in | 56 | 45 |

Discounts on Genuine Iron Pipe are as follows:

| | Black. | Galv. |
|---|---|---|
| | % | % |
| ⅛ to ¼ in | 65 | .. |
| ⅜ in | 67 | 53 |
| ½ in | 69 | 57 |
| ¾ to 6 in | 73 | 63 |
| 7 to 12 in | 70 | 55 |
| Extra strong, plain ends: | | |
| ⅛ to ⅜ in | 58 | 46 |
| ½ to 4 in | 65 | 53 |
| 4½ to 8 in | 61 | 49 |
| Double extra strong, plain ends: | | |
| ½ to 8 in | 54 | 43 |

**Boiler Tubes.**—There is a little more activity in railroad repair work, and some small orders are being placed by the railroads for Tubes, but buying as a whole is light. The demand for Merchant Tubes is also quiet. There is still some unevenness in prices, regular discounts being shaded to some extent. For Merchant Tubes in small lots, on which an extra 5 per cent. is allowed in carloads, discounts are as follows:

*Boiler Tubes.*

| | Iron. | Steel. |
|---|---|---|
| 1 to 1½ in | 42 | 47 |
| 1¾ to 2¼ in | 42 | 59 |
| 2½ in | 47 | 61 |
| 2¾ to 5 in | 52 | 65 |
| 6 to 13 in | 42 | 59 |

2½ in. and smaller, over 18 ft. long, 10 per cent. net extra.
2¾ in. and larger, over 22 ft. long, 10 per cent. net extra.

**Railroad Spikes.**—No large orders have been placed since the Great Northern business was given out, but we are advised that one or two railroads are inquiring for a moderate tonnage in Spikes, but it is not probable there will be any heavy buying for this year, as the season for track laying is nearly at an end. We note a continued active demand for the smaller sizes of Spikes, and two of the local mills have work ahead for about two months. We quote: Standard sizes, 4½ x 9-16 in., at $1.70, and the smaller sizes at $1.80 per 100 lb. in carload and larger lots, with an advance of 5c. per 100 lb. for less than carload, f.o.b. Pittsburgh.

**Spelter.**—The market is quiet as regards demand, but prices are fairly steady. Prime Western makes are quoted at about 4.55c., East St. Louis, but on a firm offer it is probable that 4.50c. could be done, which is equal to 4.62½c., Pittsburgh.

**Iron and Steel Scrap.**—An unusual feature of the Scrap market at present is that Heavy Steel Scrap is now quoted at higher prices than Basic Iron, and is less than $1 a ton lower than Bessemer Iron. The available tonnage in all kinds of Scrap is not large, because the mills have been running lightly for nearly a year and have not been making as much Scrap. The railroads are not offering as much Old Material as they did some time ago. With these conditions, dealers that have Scrap in yards are firm in their ideas as to prices and are not pressing the market to make sales. In fact, some dealers believe that prices will be better before long, and are inclined to keep their Scrap, feeling they will get higher prices for it before long. We have advanced prices on Heavy Steel Scrap, and note that this material is very firm. One leading consumer has recently bought from 4000 to 5000 tons of Heavy Steel Scrap through a local dealer, paying $15 and higher for it. Dealers' quote about as follow per gross ton: Heavy Steel Scrap for Pittsburgh, Sharon, Follansbee, Monessen and Steubenville delivery, $15 to $15.25, while Heavy Steel Scrap for hand charged Open Hearth furnaces, pieces weighing 10 lb. minimum to 300 lb. maximum, is 75c. to $1 a ton higher; Cast Iron Borings, $9 to $9.25; Bundled Sheet Scrap, $12.25 to $12.50; No. 1 Railroad Wrought Scrap, $16.50 to $16.75; No. 1 Busheling Scrap, $13.75 to $14; No. 2, $10.25 to $10.50; No. 1 Cast Scrap, $14.50 to $14.75; Sheet Bar Crop Ends, $17.50 to $18; Iron Axles, $22.50 to $23; Low Phosphorus Melting Stock, 0.035 and under in phosphorus, $19; Rerolling Rails, $16 to $16.25; Steel Axles, $19 to $19.25; Machine Shop Turnings, $9.75 to $10; Grate Bars,

$12.25 to $12.50; Old Car Wheels, $15 to $15.50; Railroad Malleable, $14 to $14.25. We note sales of 4000 tons of Heavy Steel Scrap at $15 to $15.25, delivered in Pittsburgh District, and about 2000 tons for Sharon, Pa., delivery at about the same prices. Also a sale of 200 tons of Cast Iron Borings at about $9 and 250 tons of Sheet Bar Crop Ends at about $17.50, delivered.

**Coke.**—While a water shortage exists at many Coke plants, the output and shipments last week showed a slight gain over the previous week. At present between 45 and 50 per cent. of the total ovens in the Upper and Lower Connellsville regions is in operation, averaging about five days a week, while in outside Coke districts about the same rate of operation prevails. Strictly Connellsville Furnace Coke for prompt shipment is still offered as low as $1.50 a ton, at oven, while other grades of Furnace Coke can be had as low as $1.40 for prompt delivery. For shipment over balance of this year, Connellsville Furnace Coke is held at $1.60 to $1.65, and for first half of 1909 from $1.75 and as high as $1.90 is quoted, but the latter is a prohibitory price. Connellsville 72-hr. Foundry Coke is held at about $2.25, at oven, but outside makes are offered at $2 and lower.

## Cincinnati.

CINCINNATI, OHIO, September 30, 1908.—(*By Telegraph.*)

Notwithstanding trade lassitude generally, because of ante-election excitement and the prevailing policy of waiting for developments, conditions in this market are considerably better as the month closes than had been predicted by manufacturers and dealers. A better feeling is observed among machine tool manufacturers, and some accumulated inquiries indicate a good beginning for October. Pipe makers in this vicinity are running about five-sixths of their capacity. Finished material is dull with dealers, but specifications for Steel Bars, Nuts, Bolts, Turnbuckles, &c., are reported good, and the month closes quite satisfactorily to the sales agencies. In Scrap there is some select Railroad Wrought selling, and in a few cases bringing from $1 to $1.50 above market quotations. In general the outlook in the Iron and Steel trade is quite promising, the sluggishness of the present being attributed solely to political excitement. Correspondence with large establishments indicates that an early revival is imminent if the election results are favorable.

**Pig Iron.**—The week has been barren of new deals, and some negotiations begun earlier in the month are still pending. Southern Iron still shows strength for the balance of the year, and Northern is holding its own, although the minimum quoted price of $15, Ironton, is and has been shaded to $14.75 for prompt delivery. Rumors of a large tonnage of Northern Foundry Iron negotiated for delivery to a central plant of the largest Pipe interest at an attractive price are current, although not confirmed. Considerable resale Iron of various kinds has changed hands during the week, some of it on exchange propositions and some by direct sale. Louisville figures in this connection, the Iron coming from a large Southern interest. A sale to a local Steel maker included 100 tons of Virginia Basic and some Foundry, the whole amounting to 400 tons, which had been tied up in receivership proceedings. A north Central Ohio Steel Castings concern bought to-day 500 tons of Northern Basic for delivery over the balance of the year at about $14.50, at furnace. The Central Ohio concern mentioned last week as wanting 2000 tons of Malleable for second quarter next year is still negotiating. The quoted price is about $15, at furnace. An Indiana manufacturer of agricultural implements is seeking a price on 400 tons of Foundry Iron for the first half. The inquiry for low grades has fallen off, and little is heard about them. High Silicon Ohio Silveries are still quotable at $18.50 for eight per cent. The settlement of labor troubles in Alabama has improved all furnace conditions. While most large interests there are holding for $13 for last quarter and $14 and $15 for the first quarter, in northern Alabama and Tennessee conditions are more favorable for lower prices. Preparations are about concluded for blowing in the old Williamson Furnace at Birmingham. Arrangements were made several months ago, but were held up pending more favorable trade conditions. For prompt delivery and balance of the year, we quote, f.o.b. Cincinnati, the freight rate being $3.25 from Birmingham and $1.20 from the Hanging Rock District, as follows:

| | |
|---|---|
| Southern Coke, No. 1 | $16.25 to $16.75 |
| Southern Coke, No. 2 | 15.75 to 16.25 |
| Southern Coke, No. 3 | 15.25 to 15.75 |
| Southern Coke, No. 4 | 15.00 to 15.50 |
| Southern Coke, No. 1 Soft | 16.25 to 16.75 |
| Southern Coke, No. 2 Soft | 15.75 to 16.25 |
| Southern Coke, Gray Forge | 14.25 to 14.75 |
| Ohio Silvery, 8 per cent. Silicon | 19.70 |
| Lake Superior Coke, No. 1 | 16.45 to 16.95 |
| Lake Superior Coke, No. 2 | 15.95 to 16.45 |
| Lake Superior Coke, No. 3 | 15.45 to 15.95 |
| Standard Southern Car Wheel | 22.25 to 22.75 |
| Lake Superior Car Wheel | 21.75 to 22.25 |

(*By Mail.*)

**Coke.**—The only change to be noted in conditions in the Coke market is perhaps a little better inquiry for next year delivery of Furnace grades. Nothing is heard of Foundry business beyond an occasional sale of a carload or so. Connellsville Furnace Coke for the first half is quotable at $1.85 to $2.50, at oven, there being an unusually broad range between grades. Virginia Furnace Coke is selling at about $1.75, at oven, and the range is about $1.75 to $1.85. Furnace Coke is moving well on contract. The prolonged drought is seriously affecting the smaller producers.

**Finished Iron and Steel.**—Dealers report the market unusually quiet. Steel Bars are just a trifle more active, and the jobbers from medium and small sized towns are buying some needed lines. Business in most other lines is very quiet, and collections are not good. Some fairly good sales are reported of friction clutches and chucks of various kinds for tool manufacturers. Dealers' prices to the trade, f.o.b. Cincinnati, are as follows: Iron Bars, carload lots, 1.65c., base, with half extras; small lots from store, 1.85c., base, half extras; Steel Plates, carload lots, 1.75c., base, with half extras; small lots from store, 1.85c., base, half extras; Base Angles, carload lots, 1.85c., base; small lots from store, 2.10c.; Beams, Channels and Structural Angles, 1.85c., base; small lots from store, 2.10c.; Plates, ¼-in. and heavier, carload lots, 1.85c.; small lots from store, 2c.; Blue Annealed Sheets, heavy, No. 16, carload lots, 2.15c.; small lots from store, 2.50c.; No. 14, carload lots, 2.05c.; small lots from store, 2.40c.; No. 10 and heavier, carload lots, 1.95c.; small lots from store, 2.20c.; No. 12, carload lots, 2c.; small lots from store, 2.30c.; Sheets (Light), Black, No. 28, carload lots, 2.65c.; Galvanized Sheets, No. 28, carload lots, 3.70c.; Steel Tire, 4-in. and heavier, carload lots, 1.95c.; Plates, 3-16 and No. 8, carload lots, 2c.; small lots from store, 2.20c.

**Old Material.**—The Scrap market is featureless. Political conditions seem to have effectually paralyzed this division of trade, although some dealers are still manipulating for higher prices. There is a fairly good inquiry for Relaying Rails from the West and Southwest, and some large dealers are asking $23 for 60-lb. Dealers are quoting to the trade about as follows, f.o.b. Cincinnati:

| | |
|---|---|
| No. 1 R. R. Wrought, net ton | $12.50 to $13.50 |
| Cast Borings, net ton | 5.00 to 5.50 |
| Heavy Melting Steel Scrap, gross ton | 14.00 to 15.00 |
| Steel Turnings, net ton | 6.00 to 7.00 |
| No. 1 Cast Scrap, net ton | 12.00 to 13.00 |
| Burnt Cast, net ton | 9.00 to 10.00 |
| Old Iron Axles, net ton | 16.50 to 17.50 |
| Old Iron Rails, gross ton | 15.00 to 16.00 |
| Old Steel Rails, short, gross ton | 13.00 to 14.00 |
| Old Steel Rails, long, gross ton | 12.50 to 13.50 |
| Relaying Rails, 56 lb. and up, gross ton | 20.50 to 21.50 |
| Old Car Wheels, gross ton | 13.00 to 14.00 |
| Low Phosphorus Scrap, gross ton | 14.00 to 15.00 |

## Birmingham.

BIRMINGHAM, ALA., September 28, 1908.

**Pig Iron.**—The aggregate sold the past week is placed at approximately 10,000 tons, or equivalent to the sales of the week preceding, but the outlook for the immediate future is not so promising as at the time of last report. The established schedule of quotations on such deliveries as have been in demand are being adhered to, and but slight shading, in order to effect recent sales, is indicated, although the available tonnage for delivery during the remainder of the year is practically in the hands of one concern. It is also a fact that but a small proportion of business recently transacted has come from sources out of the local territory. As to what extent such requirements have been met, a definite statement is not warranted. No inquiries of note are pending, and in the case of probably the largest melter, provision is known to have been made for some months' operations. There is no evidence of a disposition among producers to make concessions at competitive points with Northern and Eastern concerns, but announcement is made that an additional furnace will be blown in not later than October 15. Of the latest sales, only two were for 1909 delivery. The transactions mentioned involved 1000 tons each for the first quarter, and the price consideration was a basis of $13, Birmingham, for strictly No. 2 Foundry. An effort within the week to secure 1200 tons of Etowa No. 2 at $12.50, Birmingham, for delivery covering the next six months, is known to have been unsuccessful. Clifton High Manganese Iron of a No. 2 Silicon content, recently sold at $13.50, Birmingham. The same brand with high Silicon sold for $14.50, Birmingham. An inquiry for 1000 tons of Charcoal Iron, shipment to commence immediately, is pending. This grade is quoted at $20, f.o.b. furnace, but concessions could probably be had on a limited quantity of Soft brands.

**Cast Iron Pipe.**—It is learned that the United States Cast Iron Pipe & Foundry Company was the successful bidder on approximately 14,000 tons of Water Pipe for the city of Cienfuegos, Cuba. The price at which this contract was awarded is not given out, but it is understood that provision was made for 10 per cent. additional tonnage to take care of small sized Pipe and special fittings required. The following lettings have been advertised since last report:

10 miles of Water Pipe, for the city of Haddonfield, N. J., bids to be opened October 6; approximately 800 tons of 6 to 42 in. Water Pipe for Kansas City, Mo., to be awarded October 8; a large contract to cover 42-in. Water Pipe for Baltimore, Md., to be placed October 14, and 37 miles of 6 to 20 in. Water Pipe for Passaic, N. J., bids to be opened October 15. The city of Alleghany, N. Y., is also to enter the market for Water Pipe early in October. In view of recent lettings and the improvement in the outlook, prices are firmer, and we quote as follows, per net ton, f.o.b. cars here: 4 to 6 in., $24; 8 to 12 in., $23; over 12 in., average, $22, with $1 per ton extra for Gas Pipe. These quotations are probably shaded on large contracts.

**Old Material.**—The business transacted the past week was principally among dealers. Prices are unchanged, but the demand does not afford additional strength. The conservative course formerly adopted by the trade is apparently being adhered to, and in but few cases has other than a small proportion of inquiries resulted in sales. We quote dealers' asking prices as follows, per gross ton, f.o.b. cars here:

| | |
|---|---|
| Old Iron Rails | $14.50 to $15.00 |
| Old Iron Axles | 15.50 to 16.00 |
| Old Steel Axles | 13.00 to 13.50 |
| No. 1 Railroad Wrought | 13.50 to 14.00 |
| No. 2 Railroad Wrought | 10.50 to 11.00 |
| No. 1 Country Wrought | 11.00 to 11.50 |
| No. 1 Machinery | 11.00 to 11.50 |
| No. 1 Steel | 9.50 to 10.00 |
| Stove Plate and Light Cast | 9.50 to 10.00 |
| Cast Borings | 5.00 to 5.50 |

## Philadelphia.

PHILADELPHIA, PA., September 29, 1908.

The volume of business transacted in the local Iron market has been rather light. The buying movement has quieted down materially. Both buyers and sellers are pursuing a conservative policy, and little business beyond that required by current needs has been done. Both sides are awaiting further developments, and not a great deal of activity is expected until after the Presidential election. The demand for Finished Materials shows no marked improvement but continues on a fairly even basis. The outlook in this direction is more encouraging, particularly for Plates and Shapes, as a large amount of work in which these materials enter extensively is under consideration. Billets and Sheets show no material betterment. Iron Bars are just about holding their own, while Old Material has been less active. The drought, which threatened to interfere seriously with business in this territory, was broken by rains in the past few days.

**Pig Iron.**—Sales have been largely in small lots, for prompt and fourth quarter delivery, and have been pretty generally confined to the Foundry grades. The market on the whole has been quiet, and the tendency of buyers is to cover only their needs for the immediate future, and while inquiries for forward Iron are coming out freely, there is not the same disposition shown in placing orders. This, however, coincides with the policy of the majority of sellers, who are not anxious to take orders for much tonnage for forward shipment at to-day's price level, some, in fact, still refusing to quote for next year's deliveries. While the individual orders placed are usually small, the aggregate is comparatively large, and a number of sellers note a continued gradual gain in the tonnage taken. Shipments are being taken quite freely and stocks on the majority of furnace banks continue to decline. Eastern Pennsylvania producers maintain a very strong front. Prices are being firmly held, and while $17 is being pretty generally done for No. 2 X Foundry, delivered in this vicinity, $16.75 is still being accepted for several good brands for delivery during the last quarter. For next year's delivery quotations range from 25c. to 50c. above present prices, at which figures some moderate sales have been made. There have been some sales of low grade Foundry Irons, one lot of 1000 tons being reported at about $16, delivered. The Pipe foundries are still in the market and would take some fair tonnages of off grade Irons, but their ideas of prices are not being met by sellers, and the business is held in abeyance. Virginia Foundry Irons have been rather quiet. The demand for prompt Iron is not so active, while sellers as a rule are not anxious for orders for next year's delivery, but prices are being maintained and what little business has been done has been at full figures. The demand for Southern Foundry Iron has diminished, the present price level practically putting it out of this market. Forge Iron has been in fair demand and the outlook for an increased consumption appears favorable. For early delivery this grade is rather scarce and some producers have no tonnage to offer. Prices are strong and have an advancing tendency. One seller who disposed of 600 tons a few days ago at $15.50, delivered, is now quoting $15.75 on moderate tonnages, and refuses to quote on large lots. No further sales of Basic Iron have been reported. Sellers are holding firmly at $16, for delivery during either the last quarter of this year or the first quarter of next, and while practically all the consumers have covered for their needs for the balance of the year, several large buyers are in the market for Basic for next year's delivery, but as yet no business has been placed. Low Phosphorus Iron seems to be uncalled for and quoted figures for this grade are by no means strong. Notwithstanding the decreased buying recently, the situation is decidedly strong as far as prices are concerned. The consumption of Foundry Iron appears to be increasing slowly, and while a waiting policy is expected to prevail to a considerable extent during the month of October, pending the outcome of the national election, the trade expects a strong buying movement before the close of the year. Prices are unchanged, and for delivery in buyers' yards, eastern Pennsylvania and nearby territory, during the balance of the year, range about as follows:

| | |
|---|---|
| Eastern Pennsylvania, No. 2 X Foundry | $16.75 to $17.00 |
| Eastern Pennsylvania, No. 2 Plain | 16.25 to 16.50 |
| Virginia, No. 2 X Foundry | 17.00 |
| Virginia, No. 2 Plain | 16.75 |
| Gray Forge | 15.50 to 15.75 |
| Basic | 16.00 |
| Low Phosphorus | 20.00 to 20.50 |

**Ferromanganese.**—The market has been extremely quiet, no sales of any importance being reported. Prices are a trifle stronger, and for delivery over the first half of next year $43.50 to $44.50, Baltimore, is quoted.

**Plates.**—Current business continues rather irregular. About an average volume comes out on the whole, however, and the outlook for the future is more encouraging. The bulk of the business placed recently has been small individually, although some good sized contracts for boats, bridges and water pipe are being figured on. Prices for delivery in this territory are firm and range as follows:

| | Carloads. Cents. | Parts carload. Cents. |
|---|---|---|
| Tank, Bridge and Boat Steel | 1.75 | 1.80 |
| Flange or Boiler Steel | 1.85 | 1.95 |
| Commercial Firebox | 1.95 | 2.00 |
| Marine | 2.15 | 2.20 |
| Locomotive Firebox Steel | 2.25 | 2.30 |

The above are base prices for ¼-in. and heavier. The following extras apply:

| | Extra per 100 lb. |
|---|---|
| 3-16-in. thick | $0.10 |
| Nos. 7 and 8, B. W. G. | .15 |
| No. 9, B. W. G. | .25 |
| Plates over 100 to 110 in. | .05 |
| Plates over 110 to 115 in. | .10 |
| Plates over 115 to 120 in. | .15 |
| Plates over 120 to 125 in. | .25 |
| Plates over 125 to 130 in. | .50 |
| Plates over 130 in. | 1.00 |

**Steel Billets.**—Enough business comes out from day to day to enable mills in this territory to maintain their present curtailed rate of production. Indications for any material improvement are lacking, and the trade is not particularly hopeful regarding the future. For delivery in this territory Ordinary Rolling Steel is quoted at $26.20, with Forging Steel at $28.20, subject to the usual extras for high carbons and special sizes.

**Structural Material.**—There seems to be a shade better demand, but the orders coming out are usually confined to small propositions. Transactions covering 2800 tons of bridge work taken for a mill in this territory are reported. Some small building work has also been given out, among which was a new machine and pattern shop for the Tropenas Steel Company, New Castle, Del., which went to the McClintic-Marshall Company. A number of good propositions are pending, but develop slowly. Quotations are unchanged, 1.75c. to 1.90c. being named, according to specification, for deliveries in this territory.

**Sheets.**—A slightly better demand is reported. Orders, however, are still small, individually, being mainly for prompt shipment. In the aggregate, they are sufficient to keep mills fairly well occupied. Prices for mill shipments range about as follows, a tenth extra being added for small lots: Nos. 18 to 20, 2.50c.; Nos. 22 to 24, 2.60c.; Nos. 25 to 26, 2.70c.; No. 27, 2.80c.; No. 28, 2.90c.

**Bars.**—Business has been on a rather small scale. The demand is somewhat irregular, and mills are not much more than holding their own. Prices are unchanged, and while some makers are anxious to advance prices, which are now quoted at 1.45c. to 1.50c., delivered, in this territory, their views are not met by other producers. Steel Bars are dull, at 1.56c., delivered, with Rerolled Bars at 1.50c., delivered, in this vicinity.

**Coke.**—There has been no tonnage of importance taken, but the market appears to be somewhat firmer. Recent sales have been small at unchanged prices. Foundry Coke is quoted at $2 to $2.25, at oven, with Furnace Coke ranging from $1.50 to $1.75. For delivery in this territory, the following range of prices is named:

| | |
|---|---|
| Connellsville Furnace Coke | $3.65 to $3.90 |
| Foundry Coke | 4.15 to 4.40 |
| Mountain Furnace Coke | 3.25 to 3.50 |
| Foundry Coke | 3.75 to 4.00 |

**Old Material.**—Business has been practically at a standstill. Mills would buy in a number of cases at the inside figures, but dealers hold pretty generally at outside quotations, particularly in Heavy Melting Steel. Sales have been light and both buyers and sellers are awaiting further developments. Nominal quotations for delivery in buyers'

yards, eastern Pennsylvania and adjoining territory, are quoted as follows:

| | |
|---|---|
| No. 1 Steel Scrap and Crops | $15.00 to $15.50 |
| Low Phosphorus | 18.50 to 19.00 |
| Old Steel Axles | 21.50 to 22.00 |
| Old Iron Axles | 22.50 to 23.00 |
| Old Iron Rails | 20.50 to 21.00 |
| Old Car Wheels | 15.00 to 15.50 |
| Choice No. 1 R. R. Wrought | 18.25 to 18.75 |
| Machinery Cast | 15.25 to 15.75 |
| Railroad Malleable | 13.50 to 14.00 |
| Wrought Iron Pipe | 14.25 to 14.75 |
| New Bundled Sheets | 13.50 to 14.00 |
| No. 1 Forge Fire Scrap | 12.00 to 12.50 |
| No. 2 Light Iron | 8.75 to 9.25 |
| Wrought Turnings | 11.50 to 12.00 |
| Stove Plate | 13.00 to 13.50 |
| Cast Borings | 11.25 to 11.75 |
| Grate Bars | 13.50 to 14.00 |

The M. H. Treadwell Company of New York, N. Y., and Lebanon, Pa., has opened a local office in Philadelphia in charge of W. H. Worrilow, general sales agent, 1029 Real Estate Trust Building. Mr. Worrilow, who was formerly representative of the Solid Steel Casting Company, Chester, Pa., will also look after the local business of the Lebanon Steel Casting Company, Lebanon, Pa., and the Stoever Foundry & Mfg. Company, Myerstown, Pa.

## Cleveland.

CLEVELAND, OHIO, September 29, 1908.

**Iron Ore.**—Buying is still going on at a moderate rate. One producer sold 40,000 tons during the week, and smaller sales were made by other producers, practically all non-Bessemer. A few inquiries are pending, but sales that are made from now on are expected to be only for quite small tonnages. Ore firms are getting pretty well cleaned up on their shipments, and the movement will begin to fall off after this week. One or two concerns have scarcely any more to ship, and others expect to be entirely cleaned up about November 1. The Steel Corporation will continue to move considerable Ore in October, and expects that its shipments that month will about equal those of September. Owing to the crowded conditions of the docks, practically all Ore is going forward at present directly to the furnace yards. In spite of the heavy falling off in the movement of Ore this season as compared with a year ago, it is estimated that the total tonnage on the dock piles and in the furnace yards at the close of navigation will be considerably larger than at the same time in any previous year. The Steel Corporation will have more Ore on dock piles and in yards on December 1 than ever before at the close of navigation and the same is said to be true of many other consumers. The record breaking movement of 1907 was followed by the slump, and as a result of the falling off in consumption the dock piles were still well filled at the opening of navigation this year. This accounts for the large tonnage of available Ore at the end of the season of 1908. Prices at Lake Erie docks, per gross ton, are as follows: Old Range Bessemer, $4.50; Mesaba Bessemer, $4.25; Old Range non-Bessemer, $3.70; Mesaba non-Bessemer, $3.50.

**Pig Iron.**—The market is rather quiet, although some fair sized lots of Foundry Iron were sold during the week. Pending inquiries are scarce. Prices remain stationary, with no indication of becoming firmer. Valley furnaces continue to quote No. 2 Foundry at $14.50, at furnace, for the balance of the year, but this price is being shaded. Local furnaces quote No. 2 Foundry at $15, at furnace, but this is being shaded to $14.75 for outside shipments. Some furnace interests are showing more eagerness to take on business for the first half, and at least one producer is quoting $14.50 for No. 2. We note the sale of 1200 tons of No. 2 Foundry to a northern Ohio consumer for the last quarter. Other sales in this territory during the week were mostly small lots. The market in the Toledo territory continues fairly active. We note the sale of two lots of No. 2 Foundry, aggregating 1400 tons, for the last quarter, and one 1000-ton lot for the first quarter, at $15 to $15.25, Toledo furnace. Basic Iron producers report more activity in the market. One important consumer has had an inquiry out for a large tonnage of Basic, but this interest is said to have bought so far only for its immediate requirements. Another inquiry is pending for a round lot of Basic. A central Ohio Malleable foundry has an inquiry out for 2000 tons of Malleable Bessemer for the second quarter, and is expected to make the purchase in a day or two. Dover Furnace of the Penn Iron & Coal Company, Canal Dover, went out of blast September 20. The River Furnace of the Upson Nut Company, Cleveland, will go out of blast September 30 for relining. For prompt shipment and for the balance of the year we quote, delivered, Cleveland, as follows:

| | |
|---|---|
| Bessemer | $15.90 to $16.40 |
| Northern Foundry, No. 1 | 15.50 to 15.90 |
| Northern Foundry, No. 2 | 15.25 to 15.50 |
| Northern Foundry, No. 3 | 14.90 to 15.25 |
| Southern Foundry, No. 2 | 16.85 to 17.35 |
| Gray Forge | 14.25 to 14.50 |

**Coke.**—The market continues lifeless, with no change in prices. The only sale of Furnace Coke reported was to a local furnace interest for a portion of its requirements for the balance of the year. We quote Standard Connellsville Furnace Coke at $1.50 to $1.55, at oven, for spot shipment, and $1.65 to $1.75 for the balance of the year. Connellsville 72-hr. Foundry Coke is quoted at $2 to $2.25, at oven, for spot shipment and on contract.

**Finished Iron and Steel.**—Although a few small contracts were placed during the week new business was light. The effect of the political campaign is being felt considerably, and many consumers are disposed to hold off buying until after election. Specifications on contracts are holding up well. One or two mill representatives report a falling off in the number of orders, but such as they have received have been for larger amounts so that the tonnage has been maintained. Although the contracts placed in this territory in September will run considerably below those of August the actual tonnage ordered on contracts will far exceed that of August. The most important development of the week was the practical closing by the American Shipbuilding Company of a contract for two lake boats to be built for an Ohio Iron and Steel interest. The two boats will require about 8000 tons of Plates and Structural Shapes. A portion of the material will be furnished by the purchaser of the boats. Specifications came during the week from the American Shipbuilding Company for 2900 tons of Plates and Shapes for the two boats that are being built for the Pittsburgh Steamship Company. New contracts are mostly for Steel Bars. The largest volume of specifications on contracts is also for Steel Bars. The demand for Iron Bars is still light, orders being mostly for immediate needs. Railroads are buying only in small quantities. Prices of Bar Iron are slightly firmer, owing to the maintenance of high prices on Scrap. The demand for Plates is very light, orders being for small lots for immediate requirements. Some mills continue to shade prices $2 a ton. The Sheet market is slightly firmer, but prices are still being shaded. The demand for Structural Material is only fair. While there is considerable small Structural work on hand, no projects are being developed in this territory that will require a large tonnage, and it is not expected that any important building projects will be started this season. Very low prices are still being quoted by fabricators on Structural work. The National Iron & Wire Company, Cleveland, has secured the contract for the erection of a new building for the B. F. Goodrich Company, Akron, which will require from 300 to 400 tons. Jobbers report warehouse business holding up fairly well. We quote: Iron Bars, 1.45c., Cleveland, for car lots; Steel Bars, 1.50c., Cleveland, for car lots, half extras; Beams and Channels, 1.70c., base, Cleveland, and Plates ¼ in. and heavier 1.70c., Cleveland. We quote Sheets, mill shipments, car lots, Cleveland, as follows: Blue Annealed, No. 10, 1.90c.; Box Annealed, No. 26, 2.60c.; Galvanized, No. 28, 3.65c. Jobbers quote Iron and Steel Bars, out of stock, at 1.65c. to 1.70c. Beams and Channels from warehouse, are 2c., and Plates, ¼ in. and heavier, 1.90c. Warehouse prices on Sheets are as follows: Blue Annealed, No. 10, 2.10c.; Box Annealed, No. 28, 2.70c.; Galvanized, No. 28, 3.80c. Warehouse prices on Boiler Tubes, 2¾ to 5 in., are 64 per cent. discount, and on Black Merchant Iron Pipe, base sizes, 71 per cent. discount.

**Old Material.**—The market is still very quiet. In spite of the inactivity prices are being firmly held. It is a waiting market on the part of dealers, the majority of whom are unwilling to quote lower prices in order to make sales. The demand shows no improvement, sales being limited to small lots for immediate needs. Dealers do not look for much change in market conditions until after election. The Lake Shore Railroad has a list out this week of about 1000 tons. Dealers' prices to the trade, per gross ton, f.o.b. Cleveland, are as follows:

| | |
|---|---|
| Old Steel Rails | $14.00 to $14.50 |
| Old Iron Rails | 17.00 to 17.50 |
| Steel Car Axles | 19.00 to 19.50 |
| Old Car Wheels | 15.00 to 15.50 |
| Heavy Melting Steel | 13.50 to 14.00 |
| Relaying Rails, 50 lb. and over | 22.00 to 23.00 |
| Railroad Malleable | 13.25 to 13.75 |
| Agricultural Malleable | 12.00 to 12.50 |
| Light Bundled Sheet Scrap | 9.50 to 10.00 |

The following quotations are per net ton, f.o.b. Cleveland:

| | |
|---|---|
| Iron Car Axles | $20.00 to $20.50 |
| Cast Borings | 7.00 to 7.50 |
| Iron and Steel Turnings and Drillings | 8.00 to 8.50 |
| Steel Axle Turnings | 8.50 to 9.00 |
| No. 1 Busheling | 12.00 to 12.50 |
| No. 1 Railroad Wrought | 13.50 to 14.00 |
| No. 1 Cast | 12.00 to 13.00 |
| Stove Plate | 10.75 to 11.25 |
| Bundled Tin Scrap | 8.00 to 9.00 |

## Buffalo.

BUFFALO, N. Y., September 29, 1908.

**Pig Iron.**—A very fair volume of business is now coming in, the bulk of it being for prompt shipment or over the balance of the year. Considerably more Iron is being melted than for the past two or three months. We quote as follows, f.o.b. Buffalo:

| | |
|---|---|
| No. 1 X Foundry | $16.00 to $16.50 |
| No. 2 X Foundry | 15.50 to 16.00 |
| No. 2 Plain | 15.00 to 15.50 |
| No. 3 Foundry | 14.75 to 15.25 |
| Gray Forge | 14.50 to 15.00 |
| Malleable Bessemer | 16.00 to 17.00 |
| Charcoal | 20.00 to 20.50 |

**Finished Iron and Steel.**—Inquiry has fallen off a little as compared with last week. A number of small Structural jobs are in the market and are soon to be closed, but only a moderate amount of new business is being placed. The Smith & Caffrey Company, Syracuse, has closed a contract for the Steel required in the new Unity Building to be erected in that city, amounting to about 500 tons. The material will be fabricated by the Jones & Laughlin Steel Company. Bids were submitted this week for Steel work on the Sinclair-Rooney Building, Washington and Eagle streets, Buffalo, involving only a small tonnage.

**Old Material.**—The market is dull and inactive, very little business being transacted. The following prices, per gross ton, f.o.b. Buffalo, fairly represent the market:

| | |
|---|---|
| Heavy Melting Steel Scrap | $14.00 to $14.25 |
| No. 1 Railroad Wrought | 15.00 to 15.25 |
| No. 1 Railroad and Machinery Cast Scrap | 14.00 to 14.50 |
| Old Steel Axles | 17.00 to 17.50 |
| Old Iron Axles | 20.00 to 20.50 |
| Old Car Wheels | 15.00 to 15.50 |
| Railroad Malleable | 13.00 to 13.50 |
| Boiler Plate | 12.00 to 12.50 |
| Locomotive Grate Bars | 11.50 to 12.00 |
| Pipe | 11.50 to 12.00 |
| Wrought Iron and Soft Steel Turnings | 8.00 to 8.25 |
| Clean Cast Iron Borings | 6.50 to 7.00 |
| No. 1 Busheling Scrap | 12.50 to 13.00 |

## Metal Market.

NEW YORK, September 30, 1908.

**Pig Tin.**—Some improvement in the volume of business and also in price has taken place. It appeared as if buyers were waiting until after the Banca sale to make their purchases. This sale went on an equivalent to 29c., c.i.f. New York, which was considered a fair price. An important announcement relative to the Banca sales next year had some slight influence on the market. That was that each of the six sales would consist of 50 tons more, making a total sale of Banca Tin of about 11,400 tons. Price changes during the week have been as follows:

| | Cents. |
|---|---|
| September 23 | 28.70 to 28.75 |
| September 24 | 29.15 |
| September 25 | 29.40 |
| September 28 | 29.20 |
| September 29 | 29.15 |
| September 30 | 29.62½ |

The deliveries into consumption during September will be 2300 tons, and as arrivals have been 2367 tons, stocks will increase slightly. The world's visible supply, however, will show a marked gain. The afloats are 1145 tons. A sharp advance in the London market to £132 2s. 6d. for spot and £135 10s. for futures this afternoon was reflected here, where prices advanced ½c. The higher prices in London were partially the result of better business from this side, buying by the leading consumer here, and by the announcement that the Straits shipments for September would be 4155 tons, whereas 4700 tons had been expected.

**Copper.**—Sellers think the price for Electrolytic is about 13.37½c. to 13.50c., and buyers believe it should be about 13c. Under such circumstances, it is natural that business is at a standstill. The large consumers of Copper, and they are many, either have enough bought for present needs, or are covered by sliding scale contracts. A sale was made on Friday, at 13.25c., and later that day a lot was freely offered at that price. This lot was subsequently withdrawn. Lake Copper is not pressed for sale, and producers continue to ask 14c. Second-hand lots can be had at 13.75c., but even this is high. Domestic consumption, especially in the lighter lines, is fair. The Sheet Copper trade is good, and some branches of the Brass trade leave little to be desired, as far as tonnage is concerned. Competition, though, is keen in all finished and semifinished lines. The expected buying from Europe has not developed yet, but 19,270 tons have been exported this month. The solution of the problem of prices would be a good deal easier if production would only remain stationary, but it keeps on steadily increasing. We are entering the last quarter of the year, with production at the rate of 430,000 tons in the United States alone. The only encouraging thing about the trade is the low price, for it is hoped this will stimulate renewed activity in heavier lines, as it has in Sheets. The London market closes to-day, at £59 17s. 6d. for spot, and £60 3s. 9d. for futures.

**Pig Lead.**—The market is weaker. Soft Missouri brands can be had at 4.57½c., New York, and 4.32½c., St. Louis. The American Smelting & Refining Company continues to ask 4.60c., New York, and this is also the price of some other producers.

**Spelter.**—The market is firmer, at 4.65c. to 4.70c., St. Louis, and 4.80c. to 4.85c., New York, for prime Western brands. This is due to the lessened supply, there having been a marked curtailment in production, but the demand is small, as the galvanizing works are not running over 60 per cent. capacity and the Brass mills less than 75 per cent.

**Antimony.**—Some speculative buying has been going on and prices are said to be slightly higher, at 7.87½c. to 8c. for Cookson's, 7.75c. for Hallett's and 7.50c. for other brands.

**Tin Plate.**—Business is very dull, and operations at the mills are at a much reduced scale. Prices are steady, and without change, however, at $3.89, New York, and $3.70, Pittsburgh, for 100 lb. IC Coke Plates.

**Old Metals.**—Little or no business has developed; still, Old Metal dealers are not averse to accumulating Metal, providing that it can be obtained at reasonable prices. At the same time, they are not anxious sellers, and these prices continue unchanged from last week, as follows:

| | Cents. |
|---|---|
| Copper, Heavy and Crucible | 12.50 to 12.75 |
| Copper, Heavy and Wire | 12.25 to 12.50 |
| Copper, Light and Bottoms | 11.50 to 11.75 |
| Brass, Heavy | 9.25 to 9.50 |
| Brass, Light | 7.25 to 7.50 |
| Heavy Machine Compositions | 11.75 to 12.00 |
| Clean Brass Turnings | 8.25 to 8.50 |
| Composition Turnings | 9.50 to 9.75 |
| Lead, Heavy | 4.20 to 4.25 |
| Lead, Tea | 3.85 to 3.90 |
| Zinc Scrap | 3.25 to 3.50 |

## New York.

NEW YORK, September 30, 1908.

**Pig Iron.**—One of the large interests reports that a large tonnage has been sold during the past week, including Foundry, Forge and Basic Iron in the territory east of Harrisburg, all for delivery during the current year. Included in these sales are one lot of 10,000 tons of Basic Pig and one lot of 5500 tons. We quote, at tidewater, Northern No. 1 Foundry, $17.25 to $17.75; No. 2 Foundry, $16.75 to $17.25, and No. 2 Plain, $15.75 to $16.25. Alabama Irons are quoted at $17.50 to $17.75 for No. 1 Foundry, and $16.75 to $17.25 for No. 2 Foundry.

**Structural Material.**—The Ritz-Carlton Hotel project on Madison avenue has assumed larger proportions. It is expected that two buildings will be erected by separate companies, but both will be occupied by the hotel. About 5000 tons of Steel for this enterprise is being figured on this week by the fabricating companies. The Milliken Brothers' receivers have taken two local contracts—the Ardell Apartment House and the Martin Building, on the southeast corner of Thirty-second street and Broadway—a total of 2000 tons of Steel being involved. The other Martin project, the addition to the Martinique Hotel, on the northeast corner of Thirty-second street and Broadway, is in abeyance. More than 20,000 tons of Steel will be needed for local buildings, for which the fabricating contracts are about to be awarded. In the case of the Emigrant Savings Bank, on Chambers street, a contract involving new erection without the previous demolition of the old, figures on revised specifications are still being taken. It is still expected that 5500 tons of Steel will be needed. The railroad bridge work pending, amounting to some 30,000 tons, does not come forward as hoped. Financial considerations cut some figure apparently. In the case of the Carolina, Clinchfield & Ohio work, it is now the intention to put through only about 3000 tons, or one-half the contemplated contracts, this being for the south end of the line. The Pennsylvania Railroad placed the 800 tons for its three-span bridge over the Susquehanna River with the Pennsylvania Steel Company, and the Pennsylvania Lines West have contracted for a 600-ton bridge. The Mt. Vernon Bridge Company, Mt. Vernon, Ohio, has taken a Hocking Valley and a Kanawha & Michigan bridge, about 650 tons together. For the Musical College Building at Chicago the contract was given to the Hansell-Ellcock Company, and 1300 tons of Bethlehem Shapes will be used. At St. Joseph, Mo., a 500-ton warehouse contract has been awarded in the past week. Altogether the September business of the American Bridge Company, including the Oliver contract at Pittsburgh, amounts to about 20,000 tons. Low prices are the rule on every piece of Steel erection that comes up, and it is more and more of a question how long the attitude of leading fabricators, whose prices have generally been nearest the ostensible basis of Structural Steel prices, will be maintained. With shipments of fabricated Steel in excess of orders booked, the time will come at length when new business must be depended on entirely. For shipments of plain material from mill the following quotations are made on tidewater delivery: Beams, Channels, Angles and Zees, 1.76c.; Tees, 1.81c. On Beams, 13 to 24 in., and Angles, over 6 in., the extra is 0.10c. Structural Material, cut to lengths, is sold in small lots at about 2¼c.

**Bars.**—The current demand for Bar Iron is less in volume than for the past month, which is probably due to political uncertainty. In some lines the consumption of Bars has increased slightly, but the slackened demand in other directions has probably more than counterbalanced it.

Quotations on Bar Iron continue to range from 1.45c. to 1.50c., tidewater, while Steel Bars are unchanged, at 1.56c., tidewater.

**Plates.**—Although large orders for Sheared Plates have for some time been practically unknown, the daily run of business has recently been increasing in volume, as more orders, ranging from small lots to 50 tons, have been coming in. The demand for Universal Plates is fair. Prices are held as follows at tidewater for standard sized Plates: Sheared Plates, 1.76c. to 1.86c.; Flange Plates, 1.86c. to 1.96c.; Marine Plates, 2.16c. to 2.26c.; Firebox Plates, 2.65c. to 3.50c., according to specifications.

**Ferroalloys.**—The demand is slow, and prices are unchanged, around $43.50, Baltimore, for Ferromanganese, and $68 to $70, delivered, for 50 per cent. Ferrosilicon.

**Cast Iron Pipe.**—No lettings of any importance have been announced in addition to those reported last week. The Long Beach Estates, now making improvements at Long Beach on Long Island, are making inquiries for prices on about 3000 tons, ranging from 4 to 10 in., but no date has been fixed for closing a contract. Carload lots are in quite light demand. Quotations are continued at $24 to $24.50, tidewater, for carload lots of 6 in.

**Old Material.**—The market is dull but firm. Some little demand it noted for Cast Scrap, but seldom for lots running over 100 tons, as foundrymen are buying only from hand to mouth. Borings and Turnings are in somewhat better request than other classes of rolling mill stock. Some buying of No. 1 Railroad Wrought was observed early in the week, but this class of Scrap is now as quiet as other grades. A little Steel Scrap is being sold at ruling prices. Quotations are as follows per gross ton, New York and vicinity:

| | |
|---|---|
| Old Girder and T Rails for melting | $11.50 to $12.00 |
| Heavy Melting Steel Scrap | 11.50 to 12.00 |
| Old Steel Rails, rerolling lengths | 14.00 to 14.50 |
| Relaying Rails | 22.50 to 23.00 |
| Old Iron Rails | 16.50 to 17.00 |
| Standard Hammered Iron Car Axles | 18.50 to 19.00 |
| Old Steel Car Axles | 15.50 to 16.00 |
| No. 1 Railroad Wrought | 15.00 to 16.00 |
| Iron Track Scrap | 12.00 to 13.00 |
| No. 1 Yard Wrought, long | 14.00 to 14.50 |
| No. 1 Yard Wrought, short | 12.50 to 13.50 |
| Light Iron | 7.00 to 7.50 |
| Cast Borings | 7.50 to 8.00 |
| Wrought Turnings | 8.50 to 9.00 |
| Wrought Pipe | 11.00 to 11.50 |
| Old Car Wheels | 14.50 to 15.00 |
| No. 1 Heavy Cast, broken up | 13.50 to 14.00 |
| Stove Plate | 11.50 to 12.00 |
| Locomotive Grate Bars | 11.50 to 12.00 |
| Malleable Cast | 12.50 to 13.00 |

## Iron and Industrial Stocks.

NEW YORK, September 30, 1908.

The course of the stock market has been somewhat irregular, being influenced from day to day by political occurrences. In some instances prices have been adversely affected, but in the main the market has been fairly firm. The range of prices on active iron and steel stocks from Thursday of last week to Tuesday of this week was as follows: United States Steel common 43 to 45⅞, preferred 107⅛ to 109⅝; Bethlehem Steel common 21 to 22; Car & Foundry common 37½ to 40⅛, preferred 102¼; Locomotive common 45¼ to 46⅞, preferred 101 to 101½; Steel Foundries, new, 28 to 29⅞; Cambria Steel 35⅜ to 36¼; Colorado Fuel 32⅛ to 35⅞; Crucible Steel common 6 to 6¼, preferred 43 to 45; Pressed Steel common 30¾ to 31½, preferred 92¾ to 93; Railway Spring common 35 to 38; Republic common 21½ to 22, preferred 77 to 78½; Sloss-Sheffield common 59 to 61; Cast Iron Pipe common 23½ to 25, preferred 71⅜ to 73⅝; Can common 5¼, preferred 57½ to 58. Last transactions up to 1.30 p.m. to-day are reported at the following prices: United States Steel common 45⅛, preferred 108⅜, bonds 102; Car & Foundry common 38¾, preferred 102¼; Locomotive common 45¾, preferred 101½; Colorado Fuel 34½; Pressed Steel common 31⅜, preferred 92¾; Railway Spring common 38; Republic common 21½, preferred 78; Sloss-Sheffield common 60; Cast Iron Pipe common 23⅝, preferred 72½; Can common 5½, preferred 58.

**Dividends.**—The Railway Steel Spring Company has declared a semiannual dividend of 1 per cent. on the common stock, payable October 22.

The American Brake Shoe & Foundry Company has declared the regular quarterly dividend of 1¾ per cent. on the preferred and 1 per cent. on the common stock.

The Nicholson File Company has declared a quarterly dividend of 2½ per cent.

The Tuthill Spring Company, Chicago, Ill., has declared an annual dividend of 12 per cent.

The Falls Hollow Staybolt Company, Cuyahoga Falls, Ohio, recently made large shipments of Falls Hollow staybolt iron to the Great Southern of Spain Railroad Company; the Australian Government Railways, Brisbane, Australia; the Payta-Piura Railway, Payta, Peru, and the Western Railway of Havana, Havana, Cuba. A nice order is in hand for a large tonnage of Falls Hollow iron for shipment to the Ferro Carril de Entre Rios of Argentine, also another for the North Brabant German Railway Company, Gennep, Holland. The 10 locomotives recently ordered by the International & Great Northern Railroad from the American Locomotive Company are to be equipped throughout with Falls Hollow bolts, likewise the six locomotives ordered from the Baldwin Locomotive Works by the Iowa Central Railway and one locomotive ordered by the Mexican Central Railway.

## New Publications.

**The Mineral Industry: Its Statistics, Technology and Trade During 1907.** Volume XVI. Edited by Walter Renton Ingalls, editor *Engineering and Mining Journal.* Hill Publishing Company, New York. Price, $10.

It is a huge undertaking for a private interest to attempt to gather, and to collate, the statistics of production of the minerals of the United States, and of foreign countries, to review commercial developments and trace technical progress. To the extent that it involves duplication of statistical works, for which the Government has better facilities and much larger means, it is a waste of effort, but when it deals with a candid review of commercial conditions and an expert study of technical experiment and achievement, a splendid field is opened. We observe that in that direction the editor of the *Mineral Industry* is decidedly gaining ground. The volumes are growing to be a perfect mine of industrial, technical and commercial information, which is not available from any other source, and it is particularly in copper, lead, zinc and the precious metals that accurate and comprehensive data are available. Iron and steel and coal and coke seem to be less ably handled. The general system pursued is to present a statistical and commercial review, followed by data on local development from recognized authorities in each district, and by papers on metallurgical inventions and practice, with often copious reference to the literature at home and abroad. Elaborate papers are also presented on the industry of some particular well-known district. Thus we notice a highly valuable account of the Mount Lysee copper mining and smelting by Robert C. Sticht, an American engineer, who was in charge for years. Progress in ore dressing and coal washing in 1907, in a general review, the joint authors being Robert H. Richards and Charles E. Locke, while Prof. J. F. Kemp of Columbia reviews the literature on ore deposits in 1907. Altogether the work is one of which the American profession of mining engineering may well be proud.

The Berger Mfg. Company, Canton, Ohio, manufacturer of sheets and sheet metal specialties, will enlarge its plant by the erection of 10 hot mills, increasing the number of such mills to 21. Contracts for the equipment have been closed, and it is expected that the additions will be completed by next March. The company has purchased 14 acres of land adjoining its present site to make room for the additions. Five new buildings will be erected. Three of them—140 x 350 ft., 60 x 80 ft., and 40 x 70 ft.—will be of structural steel, and will be built by the Pittsburgh Bridge & Iron Company. Two additional brick buildings will be erected, one 50 x 210 ft. and the other 80 x 250 ft. The enlargement of the plant will make it the second largest sheet rolling mill in the country.

The M. Rumely Company, La Porte, Ind., builder of threshing machinery and engines, has let a contract for and work has begun on a three-story building, 115 x 240 ft., which will be used for manufacturing and storage purposes. The company is also enlarging its foundry capacity. A new line recently developed is the manufacture of plowing engines, in which the building of a motor sufficiently strong and properly proportioned to stand the strains incident to that kind of work is the chief problem. This, it is believed, has been satisfactorily solved in the engine as now designed.

## Customs Decisions.

### Steel Window Frames.

A decision of considerable importance to the building trade of the United States was handed down last week when it was decided that steel window frames with sashes and gunmetal handles, stays, &c., are dutiable at 45 per cent., as manufactured articles wholly of metal, not specially provided for. E. M. Ackerson, New York, the importer, set up the claim that the merchandise should be admitted as "structural shapes or building forms," and as such dutiable at the rate of five-tenths of one cent per pound. The invoice described the articles as "steel channels of structural shapes and forms punched and fitted together for use."

General Appraiser Fischer, in overruling the importer's protest, does not seem to give much credence to the contention of the importers. After remarking that the invoice describes the articles as steel channels, gunmetal handles, &c., he says that, though invoiced and described in this fashion, the exhibits and the testimony offered show that these articles as imported are complete steel window sashes with steel slides, fitted with gunmetal stays and gunmetal handles or hinges, all fastened together. In conclusion he says: "In fact, it is conceded that these steel window cases have been manufactured, fitted, painted, and advanced to that form to fit their special places in the masonry of the Singer Building. The contention of the importer for a lower rate of duty is overruled."

### Wire Rat Traps.

After several years of litigation, the Board of United States General Appraisers decided September 25 that the exaction of an additional duty of two-tenths cent per pound on rat traps made of steel wire coated with copper is illegal. The case just decided was in the name of the Burditt & Williams Company, Boston. The collector had decided that the articles were dutiable properly under paragraph 137 of the tariff act, which, in conjunction with a proviso of the same section of the law, called for a duty of 2 cents per pound, plus 1¼ cents a pound, plus two-tenths cent a pound. The importers alleged that the traps are not subject to the imposition of the additional duty of two-tenths cent per pound. This contention the Board, in a decision by General Appraiser Fischer, upholds. In sustaining the claim of the importer, the decision says:

With respect to paragraph 137, tariff act of 1897, providing a duty on wire and an additional duty on articles made from wire, with the further provision that coated wire shall pay a duty of two-tenths cent per pound in addition to the rate imposed on the wire from which it is made, it is held that under a usage established in customs practice rat traps made from coated wire are dutiable at 1¼ cents per pound in addition to that imposed on the wire and without the imposition of the additional duty on coated wire as provided for under the concluding clause of the second provision of said paragraph.

The Treasury Department having created a new practice as to the classification of wire coated articles, and by instructions having given timely notice thereof, rat traps made of coated wire would, in view of such modification, be now dutiable at the rates provided by the statute, which includes additional duty for the coating of the wire as well as the additional duty of 1¼ cents per pound imposed on articles made from wire as provided by paragraph 137, and its proviso, tariff act of 1897.

The plant and business of the Worcester Steel Foundry Company, Millbury, Mass., manufacturer of crucible steel castings, have been taken over by the Oakley Steel Foundry Company, of which W. E. Oakley is the general manager. Mr. Oakley was the founder of the business, and several years ago sold out his interests to a new corporation, which discontinued manufacturing some months ago. It was at first proposed to lease the property to another concern, but Mr. Oakley, returning from England where he has passed the last few years, finding the plant shut down decided to buy it and resume his old business. Associated with him in the company is Henry T. Maxwell. Several devices covered by new patents issued to Mr. Oakley will be manufactured at the Millbury Foundry. One is an oil burning furnace for steam boilers, which has been given satisfactory tests in England under both stationary and marine installations. A feature will be made of crucible steel castings for special purposes.

## Railroad Equipment Companies to Organize.

A movement which has been under way for some weeks among the railroad equipment companies of the country, including many machinery manufacturers, is expected to result in the formation of an association at a meeting appointed for the Waldorf-Astoria Hotel, New York, Wednesday afternoon, September 30. The preliminaries were conducted by a committee of four presidents of equipment companies, consisting of Otis H. Cutler of the American Brake Shoe & Foundry Company; Charles A. Moore of Manning, Maxwell & Moore, Inc.; J. S. Coffin of the Franklin Railway Supply Company, and George A. Post of the Standard Coupler Company. This committee addressed a letter in August to the leading equipment interests of the country setting forth the seriousness of the conditions confronting the railroads of the country and the prostration of the industries represented by the equipment companies. The formation of an organization was suggested which should advocate and work for fair play to railroads in matters of Federal and State legislation and arouse all who make their living by serving railroads, including the dependent manufacturing interests, to a sense of active loyalty to their common interests. The above committee, of which George A. Post is chairman, has just given out a list of 106 manufacturers of machinery and railroad equipment who have promised to co-operate in the movement and to be represented at the meeting of September 30. Mr. Post explains that the movement is not at all political, but purely a business one. He adds:

The dealers in railroad equipment and material have no concern with an increase in freight rates further than the hope for the prosperity of the principal purchasers of the goods we manufacture. It must be understood, of course, that as the largest buyers in the world the American railroads must be given first consideration. But as far as the iniquities of high finance are concerned we are sufferers along with the public at large. We are manufacturers, and together with our hundreds of thousands of employees stand on the outside of any political propaganda; we desire to convince the public that the country is basically in good condition and that all that is lacking is confidence. Railroad rates, as such, will not enter into our discussion at all. If there are things radically wrong in the financial management of the American railroads—and undoubtedly legislative and other reforms are needed—the organization to be formed, representing both capital and labor, should have a voice in council.

**The New Reeves Babbitt Metal.**—The Reeves Pulley Company, Columbus, Ind., manufacturer of pulleys, clutches and other power transmission appliances, has brought out a new Babbitt metal, which has been christened the Reeves bearing metal. The product is adapted to general machine and factory use. Exclusiveness will be a feature of the sales campaign to be launched soon, but one jobber in each jobbing center being given the sale of the metal. It will be put up in bars of convenient size, packed in boxes of 50-lb. capacity, and is to be sold at 25 cents per pound.

The Westinghouse Air Brake Company, Wilmerding, Pa., has published its report of operations in the fiscal year ending July 31, 1908. The aggregate sales amounted to $5,308,015.56, as compared with $11,230,409.65 for the previous year. The net earnings, which were reduced in about the same proportion, were $2,014,756,57. Cash dividends were paid amounting to $1,787,110, and a stock dividend of 25 per cent. amounting to $2,750,000 was paid January 31. After an allowance for depreciation, a balance was left from the year's earnings of $183,686.47. The Board of Directors has set aside the sum of $110,000 for the establishment of a pension fund, the interest on which, together with an annual appropriation, will be sufficient to meet the requirements of the plan. The surplus July 31, 1908, was $4,911,673.96. The abundant cash resources of the company have enabled it to take advantage of the low prices now prevailing by heavy purchases made in anticipation of an early renewal of activity. The factory stores have thus been increased from $2,533,473.72 last year to $3,148,617.94 this year. The annual meeting occurs October 6.

# The Machinery Trade.

NEW YORK, September 30, 1908.

Business with machinery houses continues dull and as yet there are no signs of an early arrival of the fall activity expected months ago. A few houses report a fair business the past week or two, but they are exceptions, the large majority reporting a falling off since the first week in September. With many houses July was the best month since February, and since then the demand has been much lighter, though the increase in July led many to believe that the upward trend had started and that the fall would see a resumption of activity, especially among the railroads and large industrial corporations. These interests are still inactive and the general opinion prevails that they will do nothing of importance until after the election. In speaking of the features of the trade a prominent machine tool builder stated that orders and inquiries of importance were few, but there was a great deal of talk of an improvement in business, which has not yet reached his company. The spurt in trade during the early summer was due to a great extent to the large demand for machine tools by the automobile builders throughout the country, and when their wants were filled the demand again fell off. Throughout the depression the purchasing by the automobile manufacturers has been one of the chief mainstays of the trade. While several important motor car builders, especially in Michigan, are preparing to make heavy purchases of machine tools in the near future, the demand from that source for the last few weeks has been very light. The marked falling off in the demand for machine tools since the automobile companies ceased buying shows how little business has been secured from the railroads and industrial plants. It is stated that during the depression in 1895 the machinery trade was held up by the purchases of the bicycle makers. In speaking of these two developments which have so materially aided machine tool builders in off years, several machinery men speculated as to what would be the next that would cause a large demand for mechanical equipment. One thought that a further expansion of the automobile builders in the way of new shops for the building of commercial cars would be the next development that would stimulate trade, while another was of the opinion that the electrification of the railroads for suburban travel would be the next greatest factor in the machinery market. Some of the railroads have already undertaken the latter work, and from current reports others contemplate doing so in the near future. A discussion of this important work was recently taken up and an estimate made that it will take over $2,000,000,000 to accomplish it. Naturally the work would be extended over many years, but increase in travel demands the more modern method and it is bound to come. The expenditure of so large a sum of money would be of great importance to machinery manufacturers.

The increase in the building of automobiles has necessitated the purchase of a large number of machine tools, and especially has the sales by machinery houses to automobile builders been conspicuous in the spring and summer when the demand from other sources was rather light. The automobile manufacturers are preparing for a great output next year, and at least two companies will purchase a good sized equipment of tools by the first of the year. We understand that the Everitt-Metzger-Flanders Company, Detroit, Mich., is preparing to build 12,000 machines next year, to produce which it will practically duplicate its present plant. Within the next few days the company will begin the construction of another factory building, 60 x 450 ft., three stories high. The erection of this building will necessitate the purchase of considerable additional machinery, a list of which has not yet been prepared. The company has already installed about $125,000 worth of machine tools, many of which were specially designed for the economical and rapid production of automobiles in large quantities. In connection with this, it will be of interest to note that another large Detroit automobile builder is to erect a new plant and for its equipment will probably purchase a great deal of new machinery. The builder referred to is the Ford Motor Company, which has purchased a tract of 60 acres, on which it will erect a four-story reinforced concrete building, 75 x 865 ft., the equipment to include machinery for making every part that enters into the construction of an automobile, from screws to upholstery. About the time this building is completed, which will be about January 1, the company will be in a position to decide upon the amount and character of new machinery it will have to buy for its equipment.

There are inquiries in the market from a Russian concern for equipment in the way of presses, machine tools, &c., for a saw factory.

Thornton N. Motley of Thornton N. Motley & Co. has been appointed purchasing agent for the Cienfuegos water works enterprise at Cienfuegos, Cuba, the concession for which was recently acquired by Hugh J. Reilly and for which Donovan & Phillips of Boston are the engineers. The enterprise will entail an expenditure of more than $1,000,000 and will include the purchase of about 20,000 tons of cast iron pipe, of which 14,000 tons has been bought; about 300 tons of steel steam shovels and other general contractors' equipment, and perhaps cement working machinery. The buying will be done from the office of Thornton N. Motley & Co., 30 Church street, New York.

The American Cement Engineering Company, 315 Fifth avenue, New York, has entered into contracts under the terms of which it will construct for the Knickerbocker Portland Cement Company two cement plants on the Hudson River, with a combined daily capacity of 12,000 bbl. and an annual output of not less than 4,000,000 bbl. of Portland cement. Work will start almost immediately on the rebuilding of the 2000-bbl. plant at Hudson, N. Y., its capacity to be raised to 6000 bbl., the engineering company promising to have the plant in condition to reach a production at the rate of 2,000,000 bbl. annually by the latter part of next spring. Work on this plant will be pushed rapidly to completion. The construction of the plant on the other side of the Hudson River, near Catskill, will be started early next year, and the plant will be completed and in operation about a year from the date the foundations are started. Both contracts provide for machinery of the highest efficiency and factory construction generally of the most solid type. From an electrical standpoint these plants will mark the advances made in recent years. The Knickerbocker Portland Cement Company has acquired about 1400 acres of high grade limestone, shale and clay lands on the east bank of the river and more than 500 acres of equally valuable land on the west bank, with ample railway and water shipping facilities on both properties.

The Henry S. Spackman Engineering Company, Philadelphia, Pa., has been retained by the San Antonio Portland Cement Company, San Antonio, Texas, to build a 1000-bbl. cement plant. The plans for the plant are in a preliminary stage, and the amount and character of machinery that will be required has not been determined. The building will be of steel, covered with corrugated iron, and will contain about 40,000 sq. ft. of floor space. It will be erected upon a site of 30 acres, and transportation facilities will be furnished by the International & Great Northern Railroad. C. Baumburger is president of the San Antonio Portland Cement Company and F. W. Cook vice-president.

A contract has been awarded to John R. Lee, Paterson, N. J., for the construction of a trolley line between Suffern, N. Y., and Paterson, N. J., to be built for the North Jersey Traction Railroad. The line will be 15 miles long, and it is intended to be the nucleus of a high speed electric line which it is understood will eventually connect with the Hudson Companies' tunnel at Hoboken. William Barbour of Paterson and Malcolm R. McAdoo of Montclair, N. J., are respectively president and vice-president of the North Jersey Traction railroad, and they, it is understood, are closely associated with the Hudson Companies' interests. The railroad company, however, is an entirely separate venture and it is understood that it has been satisfactorily financed. It is estimated that the line will cost $500,000 and will entail the purchase of a large amount of equipment, both for constructing the line and its operation afterward.

The Bartel Sugar Company, 141 Broadway, New York, which was organized with a Maine charter some time ago, has awarded a contract to the George L. Squires Mfg. Company, Buffalo, N. Y., for equipping a complete sugar plant at Bartel, Cuba, in the Oriente Province, on the Cuba Railway. The structural steel contract for the buildings has been let to the United States Steel Products Company, and all the mechanical equipment will be furnished by the George L. Squires Mfg. Company, which will probably sublet the contract for some of the machinery. The plant will have a capacity of about 5000 tons and will be so arranged that it can be duplicated when necessity arises. It will have a nine-roller mill and crusher, four horizontal return tubular boilers of 250 hp. each, an electric lighting plant, two vacuum pumps, filter presses, crystalizers, centrifugals, sand filters, tanks, pumps, &c. The officers of the company are: C. J. Field, president and general manager; W. P. Bull, vice president; W. G. A. Hemming, secretary and treasurer, and R. J. Hawes, superintendent and engineer.

The Department of Water Supply, Gas and Electricity of the Borough of Brooklyn will open bids on October 7 for furnishing three complete pumping plants at Smith's Pond, Clear Stream and Valley Stream, L. I. The equipment for each plant will include a marine dry back boiler of about 125 hp., one direct acting horizontal triple expansion pumping engine of 4,000,000 gal. capacity, and the necessary fittings.

### Business Changes.

The Spooner Mathewson Company, New York, has been organized by Henry W. Spooner, Ernest T. Mathewson and Peter G. Rimmer and will succeed to the business of McClave, Rimmer & Co., occupying the offices of the latter firm at 90 West street. The company will act as New York agent for the Ridgway Dynamo & Engine Company, Ridgway, Pa., and in addition to the sale of power plant equipment will sell special machinery and act as consulting engineer. Ernest T. Mathewson was formerly sales manager

of the Standard Machinery Company, Providence, R. I., and later New York representative of the Waterbury Farrel Foundry & Machine Company.

## Chicago Machinery Market.

CHICAGO, ILL., September 29, 1908.

Whether the sum total of machinery sales was greater or less in the past week than in the one immediately preceding would on account of the uneven distribution of orders and the moderate fluctuations in volume be difficult to determine. The question of chief importance, however, centers not so closely in the weekly fluctuation of trade volumes as in what may be expected in the way of definite and lasting improvement in the near or more or less distant future. It may be taken for granted that nothing approaching normal activity, or even a promising start to that end, will be realized in machinery lines until after there is well developed betterment in general business conditions. If, therefore, there is in the meantime no backward slippage, and trade continues to maintain its present level, there will be no great disappointment among those who are at all observant of the trend of affairs. Commercial activities are, however, mercurial in their movements, and rarely maintain a stable equilibrium at any given point, so that if not advancing they are likely to be going the other way. Some reassurance is had in the fact that, though the forward momentum is weak and halting, it is, according to all reports, strong enough at present to hold the market from drifting. An analysis of the orders being entered by machine tool dealers shows that there is not so much to complain of in their scarcity as there is in the modest sales footings they represent. In other words, buying is largely restricted to purchases of tools of small value which come singly more often than in groups. The proportion of inquiries for second-hand tools is relatively large, and stocks on warehouse floors are being moved faster than they are being replenished; this, however, should not be interpreted to mean that the actual demand is notably active, since it is due rather to the diminished supply of second-hand tools. Dealers say that very little desirable stock of this kind is being offered. No lots of considerable size have been thrown on the market through forced sales resulting from failures for some time, and the available supply is practically limited to tools displaced by new ones. Much the same conditions as observed in machine tools prevail in motive power equipment. Aside from some large installations of steam and gas engines purchased by rolling mills and other important industrial plants, the demand is principally for small units. The advantage, in point of profit to manufacturers of such equipment, has, unfortunately, not been commensurate with the amount of business secured. Though larger in volume than that of the heavier lines, it was not great enough to go 'round, and was necessarily distributed among a greater number of shops; the consequent sharpness of competition naturally operated to reduce prices to an unsatisfactory level.

Reports from St. Louis indicate that there has been a moderate improvement in the demand for metal working machinery. The demand, however, has been somewhat irregular, but during the past week inquiry has been more general. Manufacturers of special machinery are meeting with a better demand than was the case during the summer.

Expressions from Western manufacturers of tools and machinery, brought out by inquiries as to the present state of the trade, and the future outlook, confirm the general reports of moderate improvement. A hopeful tenor respecting future developments is apparent on all hands, but there is a uniform agreement in the opinion that the way back to normal conditions will be one of slow but gradual rise, as witness the following reports:

The Rockford Drilling Machine Company, Rockford, Ill., says, "Enough business has come in within the last three weeks to warrant putting the shop back on full time, with the present reduced working force, which is equivalent to about 55 per cent. of full capacity. Orders in hand which are principally from the domestic market are sufficient to run at this rate for six weeks. There is, as yet, very little increase in the export demand, but there seems to be a steady upward tendency in domestic buying. Purchases are for immediate shipment, and are evidently made to meet replacements in shop equipment. Inquiries are numerous, and collctions have improved considerably."

The Ransom Mfg. Company, Oshkosh, Wis., maker of grinding and polishing machinery, states that the business of last month was the largest since the slump last fall. While the shop is not running at full capacity, more business has been booked than was really expected. Collections are good, and the inquiries indicate the continuance of a fairly good business, notwithstanding the adverse influences of election time.

Walcott & Wood Machine Tool Company, Jackson, Mich., advises that business has increased very materially during the last few weeks; its shops are working full time, and some more men have been taken on. The prospect is regarded as very encouraging for the rest of the year, as well as for the coming year. Foundations have been completed for a new factory building, 70 x 153 ft., one story, with monitor running the entire length. The center bay will have a traveling crane of 25 ft. span, the side bays being used for machinery.

The Stephens-Adamson Mfg. Company, Aurora, Ill., informs us that inquiries and orders for conveying and transmission machinery show a decided improvement. For the past three months the plant has been running about two-thirds capacity 10 hours per day, and the outlook for a slow, but steady, increase of orders is regarded as favorable. Improved facilities recently provided include the installation of a new air compressor and an equipment for using and storing fuel oil for running the forges and furnaces in the steel shop.

The Nortmann-Duffke Foundry Company, Milwaukee, Wis., has just completed a one-story fireproof pattern storage vault, 30 x 50 ft., with roof and sides of reinforced concrete. It has also under construction a brick office building of the same dimensions, and has let a contract for and will soon install a 200-ton hydraulic press for service in its pressed steel department. The pump required to drive this press has not yet been purchased, and bids are being taken on this part of the equipment. As indicating the condition of trade, it is stated that the pressed steel works are running day and night, with full crew, and the foundry department making crucible steel and gray iron castings is occupied to the extent of about 60 per cent. of the business done a year ago.

Taking advantage of the lull in business, the Sibley Machine Tool Company, South Bend, Ind., maker of the Sibley & Ware power drills, is now erecting a new foundry building about 80 x 120 ft., which will include grinding and mill rooms. The new addition will be equipped with up to date machinery, all of which has been contracted for. This improvement, it is stated, is being undertaken because of the belief that the winter season will be a fairly busy one.

Among recent shipments of grinding tools, made by Charles H. Besly & Co., Chicago, are consignments for export to Italy, Australia, Sweden, and Russia, besides which an increasing domestic business is noted. The company has some new styles of disk grinders now in process of construction which, it is claimed, will combine new features that are expected to largely increase the field of disk grinding.

Sustained activity in automobile business contrasts favorably with that in other machinery lines. Among the concerns whose present quarters have proved inadequate to take care of the increased volume of business is the Davis Mfg. Company, Milwaukee, which is now preparing to build a new and more commodious factory. Having purchased a site at Fifteenth avenue and Park street, it will proceed at once to erect a brick building, 100 x 150 ft., with saw tooth roof and concrete floor. The maximum capacity of the present shop is 200 motors a month, while in the new shop this will be increased to 500 motors. The engines built by this company are of the two cylinder type, and are used principally in light runabouts; but as the demand tends toward engines of greater power, a 4 x 4 in. four-cylinder opposed motor engine has been designed. It will develop more power than the 4 x 5 in. two-cylinder machine, and will occupy practically the same space. It is expected that the new shop will be completed within 90 days.

A new granite and marble manufacturing plant is being erected by the Stotzer Granite and Marble Works, Portage, Wis. The dimensions of the new building are 52 x 162 ft., and when completed there will be installed therein a complete equipment of polishing wheels, surfacing machines and derricks.

Bids have been received, and are now being considered by the Southern Colorado Power & Railway Company, Trinidad, Colo., for power equipment, which includes boilers of 1000 aggregate hp., and 1500 kw. turbo-generators, and the construction of 80 miles of transmission lines.

The Milwaukee Board of Public Works will open bids on October 2 for a new 12,000,000 gallon pump, to be installed at the North Point pumping station. The contract will call for the completion of the pump within 15 months from the date of the contract.

## Cleveland Machinery Market.

CLEVELAND, OHIO, September 29, 1908.

Some improvement has appeared in the local machine tool market, dealers without exception reporting a larger number of sales and more inquiries. The buying is pretty well scattered among various kinds of industrial concerns and the demand is mostly for medium sized tools, probably more lathes being sold than other kinds of tools. During the summer a majority of the sales were small single tools, but at present a large percentage of the inquiries are for from two to four tools, and as a rule larger tools are being bought. While until recently small shops were the principal buyers, the present demand comes from some of the larger manufacturing establishments, that are either adding to their

equipment or improving their plants by substituting new tools for old ones. The placing of the latter on the market has made the supply of second-hand tools somewhat more plentiful.

Although no large inquiries are coming in there is an improvement in the number, and an inquiry is more certain to result in the placing of an order than it was a few weeks ago. During the summer many inquiries came from concerns that had no intention of buying at the time, but were looking around to see what they would want when they got ready to buy. While there are still plenty of that kind of inquiries, the percentage of inquiries from concerns that are ready to buy is on the increase. Taken altogether, dealers regard the outlook as more encouraging, although they do not look for much further improvement until after election.

There is a little more activity in second-hand tools, and those that are being placed on the market are moving freely.

Machine tool builders report that while the change is very slow, conditions continue to improve slightly from week to week. Railroads are doing a little better, some orders for single tools coming from that source. Makers of pneumatic tools report an improvement in the demand for drills from copper mining companies, but very few sales to structural concerns, that branch of their business showing no improvement. Business has improved with makers of twist drills and reamers. Some large orders for these lines have recently been placed by jobbers. Makers of malleable castings report considerable improvement in orders. The general manufacturing situation continues to grow better. While in some industries the improvement is very slow, in others business has picked up to such an extent that plants are being run at about their normal capacity.

The National Malleable Castings Company will enlarge and improve its Cleveland plant by the erection of a new building to be used as an annealing room. The building will be 132 x 556 ft., one story. An old portion of the present plant is now being torn down to make a site for the new building, on which work will be started soon. A section of the building 300 ft. long will be erected at the present time, and after that is occupied the remaining section will be built. The company reports a very satisfactory improvement in orders and the plant is now running at over half its full capacity, as compared with less than one-fourth capacity during the hight of the depression.

William H. Mortimer, a well-known machinery dealer in this territory, has returned from a four months' tour through Europe and has taken as an associate in business John S. Alcorn, who was formerly connected with an Eastern engine concern. They are located at 423 Schofield Building, under the firm name of Mortimer & Alcorn. They will handle a complete line of tools made by the Becker Milling Machine Company, as well as the products of several other machine tool builders.

The Wright Wrench Company, which is moving from Philadelphia to Akron, Ohio, has installed the machinery in its new plant and expects to have the plant in operation by November 1. The plant will have a capacity of 1000 wrenches per day. The officers of the company are Allen C. Mason, president; F. M. Harshberger, secretary and treasurer, and J. F. Wright, vice-president and general manager.

The Erie Forge Company, Erie, Pa., will add to its present equipment and placed an order with a local dealer during the week for two electric cranes and six machine tools.

The Akron Iron & Wire Company, Akron, Ohio, which was incorporated recently, is located at 80 South street, in that city, where a plant has been operated as a partnership for the past six months. The officers of the company will be as follows: President, J. M. Davidson; manager, J. W. Mueller; secretary and treasurer, F. W. Koerschner.

The Warren Construction Company, Warren, Ohio, has been reorganized and new officers have been elected, as follows: R. I. Gillmer, president; C. E. Osborne, treasurer and general manager; E. Osborne, vice-president and secretary.

The Lucas Machine Tool Company, Cleveland, maker of horizontal boring, milling and drilling machines, reports a slow but steady improvement in orders, nearly all of which are for single tools.

The W. H. Mullins Company, sheet metal worker, Salem, Ohio, received an order a few days ago for 70 rowboats to be shipped to India. This company expects to put out some new power boats next season, in addition to its regular line of speed boats.

The Diebold Safe & Lock Company, Canton, Ohio, expects to build an addition to its plant 160 x 300 ft.

The Ferry Cap & Set Screw Company reports that its plant is being operated overtime to keep up on orders. This company has recently received some large orders from implement makers.

The Silver Mfg. Company, Salem, Ohio, maker of power drills, feed cutters, &c., reports that it is busier than at this time a year ago and that its plant is being run at full capacity, with a large number of orders on its books.

The plant of the Canton Drop Forging & Mfg. Company, Canton, Ohio, is now being run at full capacity, and the company reports a large number of orders on hand.

## Cincinnati Machinery Market.

CINCINNATI, OHIO, September 29, 1908.

Those whose business is with or among the tool builders, whose success or failure is in a great measure dependent upon the trade in iron and woodworking tools, are just now preparing for an expected busy season, and this paragraph tells in a nutshell how the business horizon looks hereabouts. The jobbing foundryman keeps in as close or closer touch with the tool manufacturers than almost anybody else. Those foundrymen who make the castings used in the manufacture of machine tools have kept close watch on conditions during the past months of depression and know that all stocks of tools are low, that all surplus stocks have been drawn upon to furnish such castings as were necessary to fill the few orders that have come in, and that if any kind of business revival comes at all the tool builder will have to have castings and have them in double quick time. As it requires from 60 to 90 days to assemble and put together ready for shipment the various parts of a modern tool, such as planers, milling machines, shapers and lathes, one can easily foresee the situation in manufacturing circles if the expected is to happen in the coming election. Some of the larger jobbing foundries in this section are preparing for this period, and have purchased large stocks of iron and have been cleaning up and putting in new tools and paraphernalia. A number of tool manufacturers have of late been quietly assembling parts and making up machines for stock, and these will undoubtedly prove a strong factor in the early stages of the revival which the great majority of manufacturers in this district feel is but a few weeks off. A few of the local establishments are running on full time—55 hr.—and these include makers of engineering specialties, electrical tools, small and medium size electrical power units, drills and drill presses and some miscellaneous tools.

Local toolmakers were practically all bidders on the first list of tools required by the municipality of Cincinnati for installation in the several pumping stations, the filter plant and intake pier of the new water works, and these bids, 22 in number, were opened on September 25. After revision by the board in conjunction with Chief Engineer Benzenberg Tuesday, the awards will be made. The estimates on the list of 18 machines enumerated aggregated $13,000: One 36 in. by 16 ft. engine lathe at main station, one 18 in. by 12 ft. engine lathe at river station, one 16 in. by 12 ft. engine lathe at main station, one 14 in. by 8 ft. engine lathe at Western Hills station, one 30 x 30 in. by 8 ft. metal planer at main station, two 16-in. shapers, one at main station, other at river station; two 48-in. radial drills, one at main station, other at river station; three 20-in. upright drills, main station, Western Hills station and intake pier; one 18-in. upright drill at filtration plant, three 20 x 2½ in. wet tool grinders at main station, river station and Western Hills station; two emery wheel floor stands at main station and intake pier, one emery wheel floor stand at filtration plant. Cincinnati and Hamilton bidders will take all this business, it is thought, not only because of local pride, but from the fact that all tools required are built in shops which make specialties of most of them.

The Cincinnati section of Associated Foundry Foremen held a very interesting meeting on Saturday evening, September 26, at the Palace Hotel. J. B. Orbison, general manager of the Ohio Brass & Mfg. Company of Columbus, Ohio, who was to have delivered an address on "Relation of Labor to Capital," was unable to be present, but his exceedingly clever paper was read by Fred J. Brunner of the Obermayer Company. Foundry foremen could find much of profit and value in Mr. Orbison's words. The adoption of the new constitution and by-laws will probably be a feature of the October meeting. President John A. Logan of the association came down from Dayton, where he is at the head of the foundry of the National Cash Register Company. E. C. Breuning, a member from Springfield, Ohio, E. W. Ross Company, was another visitor to the city.

Boiler and engine manufacturers are feeling somewhat encouraged over recent inquiries, and the letting of a number of municipal lighting and power plants have stimulated local trade conditions in these lines considerably. In this connection the announcement of the Michigan Wagon & Mfg. Company of St. Johns, Mich., is interesting. This company expects to equip its entire boiler room with water tube boilers, according to information received by a large local iron and steel concern.

A verification of newspaper articles speaking of the activity at the plant of the American Steel & Iron Company, Norwalk, Ohio, is received from General Manager H. E. Frazier, who says: "Our business is improving very rapidly and we are making arrangements now to put on three shifts. We have been working double turn for some time past, and with the present prospects are satisfied that we will be able to continue working on the three-shift basis for months to come." The adjustment of the affairs of the Norwalk Iron & Steel Company and the Wm. Kavanaugh Company is now

about completed, and it is announced that within the next 30 days all matters in connection with the two old companies will be closed up and the American Steel & Iron Company will be in full control of the entire property.

Secretary and Treasurer A. W. Monroe of the Galion (Ohio) Metallic Vault Company verifies printed reports of the recent purchase by that company of the old gear works property, a building 50 x 620 ft., two stories, in which will be located new machinery and other working apparatus incidental to its business. He adds that the company has added a new air compressor, a hydraulic press, &c. It is possible his company may engage in the manufacture of some of the materials to be used in the general jobbing business of undertakers' supplies.

The Beeler Mfg. Company, Alexandria, Ind., has just installed in the building formerly occupied as the Madison Hotel two carloads of machinery shipped from Fowler, Ind., and will start up in a short time.

## Philadelphia Machinery Market.

PHILADELPHIA, PA., September 29, 1908.

Business keeps moving slowly in an irregular fashion, and while some dealers report a shade more demand, the increase is not sufficient to have any bearing on the situation. While it is too early to learn what the volume of business transacted in the different branches of the machinery trade during the month of September has been, there is no doubt, judging from the weekly reports of manufacturers and merchants, that both betterments and declines will be shown, and that the average will show just about that for the previous month. In the special tool line an increase will probably be shown, but the business done in some classes of standard machine tools will fall behind.

There has been some disappointment in the trade owing to the lack of developments on the part of the railroads. It was believed, from indications apparent during August, that some railroad buying would come out in September, and while some purchases in the way of rolling stock and increased activity in railroad repair and construction shops developed, very little indeed came out of interest to the machine tool trade. That the outlook for the future is improved by this action of the railraods is without question, as it indicates a movement in the right direction, but it seems as if purchases of machine tools by the railroads, at least in any volume, were still a matter of the future.

Inquiries recently show some slight improvement, not that they have increased materially in volume, but the demand for tools of the heavier and better classes shows some betterment. About an even volume of day to day business in the smaller tools is to be noted, and it is this class which makes up the bulk of the buying. The amount of business pending is quite large, but it is next to impossible to get buyers to place orders for equipment other than that urgently needed. The Presidential campaign is undoubtedly holding back a large volume of business, and many buyers who under ordinary circumstances would not delay their purchases are waiting to see the outcome of the November elections.

Manufacturers, as a rule, show but little increase in production. Some of the smaller plants show a betterment in this direction, but the larger manufacturers show practically no improvement. Special tool makers have taken on a somewhat better volume of orders, but the actual gain in output has been small.

There has been a little improvement in the export business. Some manufacturers have booked orders from the Isthmian Canal Commission, but the business transacted for shipment to Europe and other foreign countries continues extremely light. Manufacturers of specialties for power transmission purposes, in which quite a large volume of business has been done heretofore, report orders small in number and size.

Business in second-hand machinery continues fair. Sales have not been large, but a fairly even day to day business has been transacted. Trade has been closely confined to small tool propositions. The demand for second-hand boilers, engines, pumps, &c., appears to be somewhat more active and a shade more business has been done in equipment of the medium powers.

There is a somewhat improved demand for both steel and gray iron castings, but only a small share of the business comes from machine tool builders. Railroad purchases are also rather meager, although an improvement is to be noted on the part of the users of general castings, as well as work of a municipal character.

The Wm. Steele & Sons Company, contracting engineer, has plans posted for a new furniture manufacturing plant to be erected for the Lincoln Furniture Company, at Lehigh avenue and Margie street. Plans provide for a five and two story structure of brick and concrete, covering an area of 70 x 398 ft. The factory is to be fireproof and modern in every respect.

The Hess Machine Works reports business rather quiet. The demand for file making machinery for export continues fair, but domestic business is inactive. There is a moderate demand for special machinery, but the plant continues to be operated with reduced working forces. Shipments of file making machinery for export recently include four sets of machines for shipment to customers in both Germany and Japan.

The Girard Estate has let the contract for a new central power station, plans for which were made by John T. Windrim, architect and engineer, to be located at Twentieth street and Oregon avenue, mention of which has been previously made. The building, which is 32 x 88 ft., will be erected by H. E. Haven, contractor, while the power equipment was awarded to J. F. Buchanan & Co., of this city.

The Baldwin Locomotive Works notes no material betterment in the demand, although the outlook for business in the near future is decidedly more favorable. Orders are usually small, those for single engines predominating. The recent report that this company had received orders for a considerable number of engines for shipment to Brazil is denied. There has been no change recently in the operating forces of the plant, the employees numbering about 4500, working 5 hr. per day.

The Riverside Engine Company, Oil City, Pa., has extended its sales organization by the opening of a Philadelphia office at 49 North Seventh street in charge of W. T. Dallett.

## New England Machinery Market.

WORCESTER, MASS., September 29, 1908.

Some lines of metal manufacturing are showing decided improvement in the form of increasing orders, notable among them being hardware and wire, the production of which has increased sharply during the past month. The machine tool manufacturers are not sharing to any great extent in these more prosperous conditions. Business is a little better with most of them, especially where tools are used for direct manufacturing as distinguished from machinery building. Foreign orders are more numerous, if anything, though Europe is not doing much buying. In a few exceptional instances improvement is more pronounced. Among such is that of the Pratt & Whitney Company, Hartford, which in August did 25 per cent. more business than in any previous month of the year, and in September is making a total of 50 per cent. increase, doubling the gain of August. Foreign business is better with this company, but these orders are chiefly confined to gun machinery. In fact, a large part of all orders received are for the more special of the Pratt & Whitney tools. The Taylor & Fenn Company, Hartford, has just booked a German order for 17 spindles of sensitive drills. The New England railroads report a very great increase in demand for freight cars, comparatively few being idle, and state that manufactured products constitute a large share of the volume of shipments.

Arrangements for reorganizing the Pope Mfg. Company, Hartford, Conn., are completed, excepting the final action of the courts. The new stock has been underwritten, and everything else is in readiness to establish the business on its new basis. The Hartford and Westfield plants, which alone of the company's properties remain, are both beginning on a busy schedule of operation.

The Billings & Spencer Company, Hartford, Conn., is bringing out an improved trimmer miller for use in making trimmer and blanking dies, and an improved hot and cold saw. The former is an entirely new type of tool, containing important features of usefulness.

The Union Metal Works, Carter and Beach streets, Chelsea, Mass., manufacturer of copper and brass work, the plant of which was destroyed recently, will rebuild immediately, the purpose being to have the new building ready for occupancy by November 15. The foundry and machine shop will have a floor space of 15,000 sq. ft. The company states that it is in the market for brass working machinery and other machine shop equipment.

The Waterbury Clock Company, Waterbury, Conn., is planning to erect still another factory building, to be an addition to that just completed, which has been mentioned in this column. The plans call for a structure 40 x 175 ft. and five stories. No decision has been reached as to when the work of construction will begin, this depending somewhat on the state of the weather and other conditions.

The A. H. Nilson Machine Company, Bridgeport, Conn., manufacturer of automatic machinery, has let the contract for an extension of its plant, which will be 75 x 77 ft. and one story, of terra cotta and steel. The company states that it will not be in the market for equipment at present, the purpose being to provide new space which will be utilized when business resumes its normal proportions.

The Franklin Moore Company, Winsted, Conn., manufacturer of chain hoists, carriage bolts, &c., has decided to discontinue the foundry which it has been operating for the past three years, and has sold this department of its business to the Sessions Foundry Company, Bristol, Conn., manufacturer of iron castings. The equipment has been moved to Bristol. The Franklin Moore Company has been doing

a jobbing business as well as manufacturing its own castings, and some large customers have been turned over to the Sessions Company.

The Connecticut Iron, Steel & Metals Company, Bridgeport, Conn., has been organized under Connecticut laws with a capital stock of $30,000, to specialize in the manufacture of sash weights for the trade in New York and New England. George I. Stanford, Milford, Conn., is the president; Robert H. Gould, Bridgeport, vice-president, and Ernest Towle Van Zandt, New York, secretary and treasurer. The plant will be located at Bridgeport, and will be in operation about December 1, the company states. The plans call for manufacturing on a large scale, with a capacity of 200 tons weekly, the business being concentrated upon sash weights. The New York office is at 35 Nassau street, and that at Bridgeport in the Security Building.

The Ready Tool Company, New Haven, Conn., is a new Connecticut corporation with capital stock of $10,000, or ganized to manufacture tools and machinery. George A. Barnes is the president; John R. Jarvis, secretary, and Harold Fish, treasurer. The company is not ready to make detailed announcement of its plans.

A. S. Ingraham, Attleboro, Mass., electro plater, is building a five-story factory at a cost of $20,000. Power will be supplied from oil engine generator sets and electric motors.

The Peck & Way Mfg. Company, Forestville, Conn., has been incorporated in Connecticut with an authorized capital of $10,000, to manufacture small springs and bent wire specialties, and has established a factory in that suburb of Bristol, a suitable building for the purpose having been leased. Charles W. Peck is president and Alvah B. Way secretary and treasurer. Mr. Way has been for eight years sales manager of the Wallace Barnes Company, Bristol, spring manufacturer, and Mr. Peck has been with the same company for some time. The company has installed some machinery, and will add more from time to time.

The Hart & Cooley Company, New Britain, Conn., manufacturer of steel registers and steel lockers, is to build a three-story addition to its works, 50 x 50 ft., for which no new equipment will be required.

W. H. Batcheller, Bridgeport, Conn., has begun the erection of a manufacturing building on Railroad avenue, for which some general equipment will be required.

## Government Purchases.

WASHINGTON, D. C., September 29, 1908.

The Isthmian Canal Commission will receive bids until October 22, Circular No. 471, for locomotive crane, pumps, flue welder, arbor presses, shop tools and other supplies.

The following bids were opened September 22 for machinery for the navy yards:

Class 1.—One double punch and shear—Bidder 32, Cleveland Punch & Shear Works, Cleveland, Ohio, $5300; 90, Henshaw, Bulkley & Co., San Francisco, Cal., $6150 and $6100; 91, Harron, Ricard & McCone, San Francisco, Cal., $6570; 113, Long & Alstatter Company, Hamilton, Ohio, $4700; 176, Scully Steel & Iron Company, Chicago, Ill., $6180; 196, Toledo Machine & Tool Company, Toledo, Ohio, $5995; 213, Wickes Brothers, Saginaw, Mich., $5818.56 and $5674.41.

Class 91.—One multiple drilling machine—Bidder 33, Chandler & Farquhar Company, Boston, Mass., $715; 153, Prentiss Tool & Supply Company, New York, $687; 197, Tucker Tool & Machine Company, New York, $1600; 209, Vermilye & Power, New York, $1560.

Class 92.—One multiple drilling machine—Bidder 33, Chandler & Farquhar Company, Boston, Mass., $431; 86, Hill, Clarke & Co., Boston, Mass., $475; 153, Prentiss Tool & Supply Company, New York, $393.

The Edgemore Iron Works, Wilmington, Del., has been awarded contract for four boilers, stokers and superheaters for the Philadelphia navy yard, at $46,189.

Under bids opened August 10, Circular No. 456, for supplies for the Isthmian Canal Commission, Manning, Maxwell & Moore, New York, have been awarded class 3, eleven radial drilling and counter-sinking machines, $414.

The B. F. Sturtevant Company, Hyde Park, Mass., has been awarded, class 185, three motors, $286.50, under bids opened August 25 for machinery for the navy yards.

The Detrick & Harvey Machine Company, Baltimore, Md., has been awarded, class 41, one universal drilling and boring machine, $6335, under opening of September 1, for machinery for the navy yards.

The following awards have been made for machinery for the navy yards, bids for which were opened September 8:

Falls Rivet & Machine Company, Boston, Mass., class 171, one tapering machine, $473.30.

Newton Machine Tool Works, Philadelphia, Pa., class 172, one rotary slotting machine, $4960.

Larkin Pipe Expanding & Flanging Machine Company, Philadelphia, Pa., class 173, one pipe expanding and flanging machine, $10,000.

The following awards have been made for machinery for the navy yards, bids for which were opened September 15:

Henshaw, Bulkley & Co., San Francisco, Cal., class 31, one engine lathe, $5385.

Niles-Bement-Pond Company, New York, class 32, one steam hammer, $558.

Lake City Engineering Company, Erie, Pa., class 131, one vertical centrifugal pump, $627.61.

George S. Fowler, Washington, D. C., class 182, two hydraulic jacks, $250.

General Electric Company, Schenectady, N. Y., class 195, two electric motors, $475.

The following awards have been made for machinery for the Isthmian Canal Commission, bids for which were opened September 14, Circular No. 462:

Independent Pneumatic Tool Company, Chicago, Ill., class 34, six pneumatic air drills, $287.40.

Manning, Maxwell & Moore, New York, class 38, four marine motors, $719.

Tucker Tool & Machine Company, New York, class 40, two wet emery grinders, $102.90.

## Trade Publications.

**Crucible and Open Hearth Steels.**—The Vulcan Crucible Steel Company of Pittsburgh, works and general offices at Aliquippa, Pa. Catalogue No. 4; 3¼ x 6 in. Describes in particular the various grades of tool steel made by this company, including Vulcan and Hecla. Gives classification and price-list of flat and other shapes of tool steel as well as die blocks and disk classification, also catalogues open hearth machinery steel, file steel and gives tables for computing the weight of cast steel, flat bar steel, and other miscellaneous information.

**Core Drills.**—Ingersoll-Rand Company, 11 Broadway, New York. Folder. Advocating the Calyx diamondless core drill, which has a steel cutter for soft and medium rocks and chilled shot for harder material. It removes cores from 1⅝ to 15 in. in diameter to all depths to 6000 ft, and is claimed to be particularly useful in undeveloped mines to ascertain at a low expense the value of the ore drifts. Records of performances of the drills are given, together with illustrations showing apparatus in action.

**Railway, Mill and Factory Supplies.**—American Supply Company, Mobile, Ala. Catalogue, 6 x 9 in., 28 pages. Lists a general line of railway, mill and factory supplies carried by the company, together with logging tools, Welderine, a compound for mending castings, and Asco Babbit metal. The company also sells general machinery. A number of engines and boilers on hand are listed in the catalogue.

**Power Pumps.**—Dean Brothers Steam Pump Works, Indianapolis, Ind. Catalogue No. 71, 6 x 7¼ in., 40 pages. Lists a general line of power driven pumping machinery and shows numerous illustrations of the company's standard lines, including air compressors, blowers, condensers and air pumps, hydraulic pumps, piston pumps, vertical pumps, duplex and single vacuum pumps, &c. A sectional view of a standard duplex geared power pump is shown, with the parts of apparatus numbered to facilitate ordering repairs.

**Oiling Devices.**—The Winkley Company, Detroit, Mich. Catalogue, 6 x 8 in., 20 pages. Illustrates and lists oil hole covers in various sizes and designs, constant feed oil cups, grease cups made of steel or brass, dowel pins and other specialties. A view of the company's recently completed concrete, steel and factory building is shown.

**Transformer Steel.**—General Electric Company, Schenectady, N. Y. Publication No. 3687. Describes the manufacture of the steel used in the company's transformers. Illustrations showing views of the company's foundry, where the steel is made, are given, and attention is called to the improved type H transformer.

**Motors and Meters.**—General Electric Company, Schenectady, N. Y. Bulletins. No. 4611 shows a number of sewing machine motors. These are supplied with a jaw clamp foot so that they can be readily attached to the machine. No. 4612 shows the type D K automobile instrument, a combination ammeter and voltmeter inclosed by dust and moisture proof aluminum case. No. 4615 describes the Thompson direct current test meter, type C B-2, which is inclosed in a wooden case and furnished in two ampere ratings: 1, 2, 10, 20, 40 ampere, or 5, 10, 50, 100 ampere, each with a single 110-volt or double 100—220 volt potential windings.

**Refrigerating Fittings and Supplies.**—The Arctic Ice Machine Company, Canton, Ohio. Catalogue, 9 x 9 in., 151 pages. Embraces a full line of fittings for ice making and refrigerating equipment. Five types of ammonia fittings and valves are shown, and tables useful in the manufacture of ice and conduct of refrigeration plants are included in the volume.

**Condensing Apparatus.**—Alberger Condenser Company, 95 Liberty street, New York. Catalogue No. 8, 6 x 9 in., 95 pages. An introduction reviews the use of Alberger condensing apparatus in large plants and power houses and briefly and concisely explains their operation. The Alberger barometric condenser and the Alberger centrifugal condenser are fully illustrated and described.

**Mining and Contractors' Hoists.**—Foos Gas Engine Company, Springfield, Ohio. Catalogue. These hoists are made in several combinations, the engines being in sizes from 15 hp. up and adaptable for operation with gasoline, kerosene or alcohol. The standard machine is illustrated and described, one of the advantages claimed for which is that the clutch is locked on the engine shaft and not inside of the cable drum. The machine is so arranged that the operator faces the engine and shaft and the speed of the engine can be controlled by the aid of the lever from any distance.

# HARDWARE

A MOVEMENT with which the merchants of the country will probably have to reckon is the plan for the welfare of the farmer, in regard to which the recently appointed agricultural commission will be making its report. Just why the farmers should have been selected for this semiphilanthropic work at this time is not announced. The important fact with which the country will be confronted is the paternalistic development that will probably be called for in the attempt to carry out the project. While it is undoubtedly true that something might be done to better the conditions of rural life, provided the farmer is taught to help himself instead of having help obtruded upon him, there is grave danger that this whole movement will be discredited by measures devised exclusively for the farmers' benefit without a balanced consideration of their effect on other interests and the country as a whole. Already individuals and newspapers are mapping out programmes in the interest of the farmer which are calculated to fill the taxpayer with apprehension. In endeavoring to advance the interests of the tillers of the soil there is danger that the interests of other classes will be overlooked or sacrificed, and the country move with an accelerated pace in the direction of socialism.

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It is a little odd that this subject should be taken up at a time when the farmers are as a rule exceedingly well off and enjoying a prosperity which might well make them objects of envy to the commercial and industrial classes, to wage earners and to the great masses of the people. An inquiry in regard to measures for uplifting the lower strata in the towns and villages and especially in the great cities would seem to be more timely. Problems which concern the congestion of population and conditions in some of the industrial and commercial centers are certainly more grave than those relating to the farmers, who are proverbially well to do, owning the land they cultivate, living an independent and comfortable life, and enjoying, with the prospect of continuing to enjoy, a large measure of prosperity.

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It is entertaining and at the same time suggestive to note some of the means by which the lot of the "poor farmer" is to be alleviated.

Parcel Post is, of course, named as one of the remedial agencies which is going to do wonders for the farmer, because it keeps him in close touch with the markets, both as buyer and seller. With a Parcel Post he will be able to deal with catalogue houses in the great cities, no matter how distant they may be, and thus purchase his cutlery, and perhaps his Tin Ware, and certainly many other articles of moderate though considerable size, from the far off cities instead of the nearby town. So in regard to the marketing of his products: One of the newspapers owned by the author of one of the Parcel Post bills in the Fifty-eighth Congress declares that the first work of the farmers' commission should be to provide a Parcel Post so that he may "send his dozen eggs or his pair of chickens direct to the man that wants to eat them, or, at least, to the retail merchant."

The suggestion that country schools should be improved and special and expert instructors in the science and art of agriculture be provided may have some merit and is not novel, but the proposition, as made by a great metropolitan newspaper, that stages or motor busses be used to collect the children and return them to their homes, Congress appropriating funds for this purpose, is calculated to startle conservative taxpayers.

In connection with the carriage of merchandise in the mails it is proposed, too, that the Government provide a cheap telegraph system to keep the farmers in touch with the larger markets, so that the products of the dairy, the poultry yard and the field may be sold to the best advantage to consumers or merchants without having to deal with middle men.

Agricultural machinery of approved type costs a good deal, and many farmers cannot afford to purchase a complete outfit on their own account. The Government is therefore to establish warehouses throughout the country at which farmers can obtain up to date implements and machines at a moderate rental.

Power, too, is very useful on farms conducted on modern principles, and the State or national Government is to furnish the electrical current by which the operations of the farm can be carried on and the rented machinery operated.

Without attempting to complete the catalogue of proposed benefactions, it may be mentioned in passing that the Government is to build warehouses in which the crops can be stored until it is time to sell them to the best advantage, thus enabling them to realize better prices than those at which they are now getting rich.

In addition to all this, a co-operative system is recommended by which the farmers will unite their purchases of supplies and articles required by them, thus making them independent of near-by merchants and presumably enabling them to effect important economies. The commission merchant, the wholesaler, the retailer, the private ownership of railroads, express companies and other enterprises connected with transportation and merchandising, are to be cut out so that the farmer can secure for his products all the price paid by the consumer.

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It is not unlikely that the work of the commission will result in good, for its members are men of recognized ability, who will, it may be presumed, take a broad and sensible view of the matter entrusted to them. They will be called upon to consider a phase of the subject which is not touched upon by any of the theorists whose vagaries are referred to in the preceding paragraphs. It must be remembered that the country villages and towns are essential to the welfare of the farming communities in the midst of which they are located. Blot out the towns and villages and farming life becomes intolerable. A prosperous community which is a social and commercial center, with its railroad and trolley lines, its well stocked stores, its up-to-date schools, its opportunity for culture, its inviting churches, its physicians and lawyers, perhaps its factories, and with its prosperous population, contributes directly and indirectly in many ways to the comfort, contentment and uplifting of the farmer's life. The decay of country towns and villages in many States and the passing of the wholesome type of life they represent is one of the lamentable facts which obtrudes itself upon the attention of those interested in rural conditions. This has not a little to do with the real disadvantages of the farmer's lot. The problem before the commission is broader than it appears at first blush, probably broader than its members realize, or than the President realized when he made the appointment. The work of the commission will include the recommendation of measures for the welfare of the towns and villages as necessary to the best welfare of the farmers who live in their vicinity.

# Condition of Trade.

There is little change in the general situation, but on the whole, notwithstanding the fact that the demand is somewhat disappointing to those who were expecting a more radical revival of business, there still continues to be a better feeling and an increased movement of merchandise from the stores of the distributors, wholesale and retail. Winter goods which are called for by the needs of the people are in very fair demand, although even in this field the volume of business is not up to normal. That a good deal of building is going on is indicated by the fact that some at least of the manufacturers of tools are well occupied, and in Builders' Hardware the factories report an increased demand. The diminished cost of building doubtless contributes to this state of things. Many enterprising Hardware houses are getting ready for the holiday trade, a department to which more attention is given year by year. That it is not overlooked this year is another indication of the substantial prosperity of the people whose economies are not pruning things so closely as to cut off all the refinements and luxuries. The well-being of the agricultural sections has been noted repeatedly, but it is gratifying to observe the improvement in some of the manufacturing States. Centers in which heavy goods are consumed by railroads and in large enterprises are still suffering, with signs, however, of a decidedly more cheerful tone in their reference to the market and the prospect for business. The improvement in New England, whose Hardware products go to every section of the country, is illustrated in the better state of things in New Britain, where the factories, which are so thoroughly representative of the Hardware industry, are feeling the stimulus of a better condition of trade. The common experience is that the impetus comes largely from the Middle West, and particularly from sections that do not depend largely upon manufacturing interests for their prosperity, such as the more important parts of the East. All of the large New Britain houses report an increase in the volume of their orders, a condition which has been especially noticeable during the last two weeks. With one of the largest New Britain companies the September totals a few days ago equaled those for the corresponding period of 1907 when business was good. the slump not having been felt to any marked extent. The near approach of normal conditions is shown in the fact that the New Britain factories are increasing production by larger working forces and longer schedule of hours, as in some cases a 55 hr. a week basis has been resumed and in others a 50-hr. basis. This condition of things probably prevails in many other manufacturing towns and States whose products are not too closely dependent upon a demand for railroad work and heavy construction.

### Chicago.

The changing moods of the market make it plain that the time for steady, uninterrupted improvement in business has not yet been reached. A week of promising development is followed by one of sluggish trade, which in a measure nullifies the results of short lived activity, and so in the see saw movement advances made do not loom large in the final aggregate. The events of last week were marked by counter currents of influence which have had a tendency to check progress in some directions. First in importance among these is the prolonged drought. which in several of the wheat growing States of the Middle West has interfered with fall plowing to such an extent that the wheat acreage will doubtless be considerably curtailed. This, of course, has no immediate bearing upon present conditions, and but for the extreme sensitiveness of the market to every breath of circumstance would not perhaps produce noticeable results. As it is, however, such things are for the moment apt to obscure, or at least overshadow, the power of wealth that lies in the fairly abundant crops already safely harvested. Then, too, the forest fires that for some weeks have been raging with disastrous effect in the northern portions of Michigan and Wisconsin, and in other sections of the country to less extent, have operated adversely to trade in cutting off business of considerable volume. The burden of this loss is more directly felt by the jobbers and manufacturers more nearly in touch with the localities affected, but in the end it reacts upon the general market. Notwithstanding the obstacles to improvement, it now looks as if September would compare favorably with August in sales totals; under ordinary conditions it should show decided gains, since trade at this season usually begins to recover from the summer dullnes. There is but little change observed in the general level of prices, and it is noted that some lines which have shown more or less irregularity have firmed up, with occasionally slight advances. As a result of a recent understanding, Register faces from 10 x 14 and larger have advanced from 75 and 10 to 75 per cent. off. Orders for Builders' Hardware are increasing in number, but are still restricted in size to cover present needs. On the whole no material change in the situation is looked for for another month at least, when it is hoped that some elements of uncertainty and doubt now clouding the horizon will be removed and business interests will again receive the undivided attention of the trade.

### Portland, Oregon.

FAILING-MCCALMAN COMPANY.—Conditions in the Pacific Northwest continue to show a steady improvement. Business continues to grow and new people are continually coming into this territory. The railroad lines have recommenced construction and are now opening up new territory tributary to Portland which it has never been possible to cultivate. Taking it altogether, we should say that unless we have an unexpected setback business will continue to improve, and the year 1908 will come very near to equalling 1907 in the amount of business done in Portland territory and the year 1909 will far surpass anything that we have ever experienced out here. Of course should the result of the election be to demoralize business we would undoubtedly suffer with the rest of the country, but we do not believe that our suffering would be in anything like the same degree as the Eastern sections. But we are not losing any sleep over the result of the election in this part of the world.

We hope the rest of your readers find the business outlook as cheerful as we do in this territory.

### Omaha.

LEE-GLASS-ANDREESEN HARDWARE COMPANY.—This market, including other jobbing centers located on the Missouri River, offers no new or particularly interesting features from those recorded in recent reports.

Business in all lines continues satisfactory and the volume of goods going into consumption daily progresses with a steady regularity. The large crops of all kinds and high prices for everything produced by the agriculturist would indicate that no let-up in the extent of business is at all likely. There is nothing in the situation at the present time, nor any developments in sight, calculated to disturb the satisfactory volume of business now being enjoyed.

A large amount of building is in progress, consequently labor of all kinds will be well employed until the winter season stops outdoor operations. If other sections of the country were enjoying equally fortunate circumstances no complaints would be heard from any source.

### Nashville.

GRAY & DUDLEY HARDWARE COMPANY.—Any stranger visiting this city during the past week would not have thought that such a thing as a panic or hard times had ever been heard of in this part of the country. Last Saturday afternoon the deciding baseball game for the pennant for the Southern League was played and over 12,000 people were in attendance, the largest crowd ever

on a Southern baseball field. For the past six days the annual Tennessee State Fair has been held in this city and the crowds have been enormous, breaking all past records. Evidently the people have time to spare, and money, too, and intend to enjoy themselves.

To come down strictly to business, however, and look the situation square in the face, we will have to admit that it is not very satisfactory. Orders are more plentiful than they were in the early part of the summer, but they are not very large and quantities are small, and there seems to be a hesitancy all over the country to do much trading. While crops are going to be good in the South, they will fall somewhat short of expectations. The decline in the price of cotton has also had some effect on trade in this section. Prices are being very well maintained, Southern pig iron being very firm. Collections just now are rather light, but after October 15 the money from the Southern country will begin to come in.

## St. Louis.

NORVELL-SHAPLEIGH HARDWARE COMPANY.—Notwithstanding the long dry spell we have experienced in a large part of our territory business is good. September will compare more favorably with last year than any month up to this time. In fact, we are hoping, when all the September figures are in, to show a small increase over last year.

We believe October will be a very good month. Merchants have not bought goods early, their stocks are very low, and if we have some sharp, frosty, cold weather in October it will stimulate business on seasonable goods. In both the months of August and September mail order business—that is, orders sent in by mail direct from the trade—shows a substantial increase over last year. This is a very healthy indication. It is the best sign that stocks of the retail trade are low.

Another indication of confidence in the situation is in the number of new stock orders being sold and the large number of inquiries we are receiving from clerks seeking good locations to start into business for themselves. We are also glad to see a considerable improvement in our city business. This must mean that manufacturers are resuming work and that mechanics and laborers are being employed. The railroads are also being compelled to place specifications, and business in our railroad supply department is much better than it has been.

There are prospects for a fine crop of cotton in Texas and the merchants in that section, who have passed through a long, trying ordeal, have been buying goods. They still are conservative, but most of our Texas salesmen report they will have a good business the rest of this year. Collections are quite satisfactory.

Taking the situation all in all, we have every reason to congratulate ourselves that normal times are again with us. Politics, of course, will cut some figure for a few weeks longer. Our political friends, however, seem to have a good deal of difficulty in stirring up much excitement or enthusiasm. In the meantime many of our salesmen are doing a good business on Campaign Whips and Campaign Pocket Knives.

## Philadelphia.

SUPPLEE HARDWARE COMPANY.—There is to be quite an important bankers' meeting at Denver, Colo., during the present week, to which several banks in our city are sending delegates high in authority. It is a well-known fact that the banking deposits of the entire country have increased, and the balances held by the banks are far larger than they were one year ago, if they are not larger than they were when the crisis of October, 1907, began; but the question is being asked by many bankers through the country, What are the present conditions of trade and what is expected during the next 30 or 40 days?

These are difficult questions to answer in any one particular location. In this location manufacturers have increased the number of workmen employed and naturally their trade has increased. The retail trade generally complain of the difficulty they have in making collections, as many persons appear to be holding on to their funds until a later date, consequently it is difficult for them to pay the jobbers they purchase from; and, of course, collections from the trade are important because jobbers are compelled to pay promptly for all the goods they buy from manufacturers.

But in regard to trade there is considerable in our various papers about election and it is thought by many in the trade throughout the country that business will not increase until after the election. We hope, however, that the effect of the election will be that trade will gradually increase during the next four years as it did during the past four to six years up to October, 1907, or, we might practically say, up to January 1, 1908, as trade did not largely fall off until the latter date.

General railroad business has recently increased, and it is estimated that over 50,000 freight cars have been added from September 1 to 17, which shows an increase in trade as well as an increase of employees, and it is estimated that railroad traffic will increase largely between this and December 1. Purchases of raw materials have increased, the agricultural products throughout the entire country show the net result as an increase, and, of course, they bring the cash; agricultural exports as well as cotton exports have increased over the same time one year ago, and the general demand for labor is far greater than it was a few months ago.

The celebration of the two hundred and twenty-fifth anniversary of the city of Philadelphia, designated by the city authorities as Founders' Week, will begin Sunday, October 4, and continue until Saturday, October 10, during which time there will be a wonderful display and parade of manufactured products. How Philadelphia stands and what has been accomplished during the past 225 years is not confined entirely to the city of Philadelphia, but the records of the entire United States are something wonderful and surpass anything in the history of the world. The particulars of what will be going on during Founders' Week are published by the various papers of the city, and it is estimated by the railroad companies that the presence of out of town visitors during the week will be 50 per cent. greater than the large number who attended the Centennial Exposition or World's Fair in 1876, which fair, we think, was the only one held in the United States where the city paid the entire expense account. The general government loaned a sum of money which was duly paid back at time specified.

The Founders' Week celebration begins on Sunday, October 4, largely with special services in churches of various denominations, and an open air service in Fairmount Park. Monday, October 5, will be Civic and Military Day, with a parade of soldiers, sailors and marines at 1 p.m., under command of Gen. Frederick D. Grant, and in the evening a municipal celebration at the Academy of Music. Tuesday, October 6, will be Municipal Day, with a parade in the afternoon of the Police and Fire departments. Wednesday, October 7, will be Industrial Day, with 150 floats, illustrating the evolution of industries. Thursday, October 8, will be Children's and Naval Day, with a review in the afternoon of war ships on the Delaware River. Friday will be Historical Day, with marching men in costume, and Saturday, October 10, will wind up the celebration with athletics and a Knights Templar review and fireworks in the evening. During the entire week more will be going on than can be named at the present time.

## Louisville.

BELKNAP HARDWARE & MFG. COMPANY.—The drought, the heat and politics seriously affect our thoughts and efforts, not to say our pocketbooks, these days, and the only wonder is that the volume of current business has not been even more diminished. As it is, there has been during this month probably larger volume than at any time since the panic, if we except a couple of weeks in August, when a rather unusual movement started a small boom or induced sundry optimists to predict one. There is no nostrum for sale on the street corners yet which can be guaranteed to produce prosperity. The expense account has scarcely yet been brought into proper proportions with all the study, self-denial and compression that has been brought to bear upon it. For months after the debacle salary lists were undisturbed, or practically so, in the hope that recuperation would be prompt,

so the unpleasant necessity of reduction in any shape would not have to be resorted to. But the natural laws are bound to work, and when the balance did not appear on the right side retrenchment became the order of the day. We now observe that the railroads, for instance, have reduced their operating expenses by degrees, so that even a much lower gross earning leaves something on the plus side. So far, however, it is so little that their plea for higher freight rates is not without some reason and must be listened to despite the clamor of demagogues. It is rather a peculiar state of affairs when the public, not to say irresponsible writers for the daily press, and howlers on the stump, undertake to say that there should be no advance in rates on any commodity under any condition; in other words, the railroad rates differ from all other market measures, in that they may be put down but not up, that they may de decreased but not increased. Why is this?

The fact is it is very easy to underrate the necessary operating expenses of steam railroads, traction lines or telephone companies and call upon State commissions or legislative bodies to make such arbitrary and sweeping reductions that the service shall be seriously impaired. It looks, for instance, as though the 3-cent street car fare in Cleveland, which was a very popular measure for the time being, is doomed to failure, since it apparently costs more than that to haul a passenger.

It is easy to say that business telephones in certain communities should not cost over $1, but who is to determine where the dead line is—if $1, why not 50 cents? That process of reasoning, unless it is a matter of arithmetical demonstration, is pretty nearly worthless. The watered stocks, of which we hear so much, may not more than represent the rights of way and terminal facilities. In other words, the regulation of the public utilities by the populace may be productive of great injustice. After all competition will, as a rule, solve the difficulty, if there be ever handed justice all around.

If the steam roads furnish dirty cars and at long intervals, the traction lines will soon parallel them and capture the traffic. To undertake to control legislatures, State or national, and to keep very highly paid attorneys in the employ of the company probably results in the necessity for higher rates to get it back. But these extra expenses would not be incurred in the first place if the grafters were not so active and always disposed to look upon such public undertakings as legitimate prey.

### Cleveland.

THE W. BINGHAM COMPANY.—Trade conditions in this section remain about the same as indicated in our last report. A good deal of agitation and talk is going around in manufacturing and business circles as to the best way to dispose of our surplus manufactured goods. We are such great producers we must have an outlet for our surplus. Why should not an aggressive campaign be inaugurated soon to grasp this trade for ourselves both in Asiatic and South American countries? It would seem we should have a united campaign to get a firm hold on the trade of the Orient at this time, for they seem to be in quite a receptive mood. It looks to us if we had the right consular service, backed up by the right kind of legislation, the problem would be easily solved. Agitation along these lines is quite prominent nowadays.

The general Hardware trade among the country merchants has been very good with us, and we hardly think the present political agitation is having very much effect on them. The large corporations, however, may be holding back a little, in order to know just what the future policy of the Government may be, but the general disposition seems to be to forge ahead in a safe, conservative way.

## NOTES ON PRICES

**Wire Nails.**—Business at the mills is satisfactory in volume, though orders are confined to a large extent to small lots. Specifications on contract orders are also being received. Jobbers generally are not anticipating requirements, but are keeping stocks down to moderate quantities, notwithstanding the fairly liberal movement from their warehouses. Prices are well if not inflexibly maintained. Quotations are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

| | |
|---|---|
| Carloads, to jobbers | $1.95 |
| Carload lots to retail merchants | 2.00 |
| Less than carloads to jobbers | 2.00 |
| Less than carloads to retail merchants | 2.10 |

*New York.*—The last two weeks of September demand has not shown as much activity as during the first half of the month. Merchants continue to purchase, more or less frequently, in small quantities. Nails are held on the basis of $2.30 per keg in small lots at store.

*Chicago.*—New orders are fairly numerous, though the effect of continued drought in the West and forest fires in the North, have in the past week or two had a slightly retarding influence. Shipments are going forward from mills at a satisfactory rate, and, because of the desire of buyers to hold their stocks at a minimum, prompt deliveries are being insisted upon. On the whole, there is no ground for serious complaint with the present state of activity in the demand for Nails. Prices, it is said, are firmly held at the recognized schedule. Quotations are as follows: $2.13 in car lots to jobbers, and $2.18 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

*Pittsburgh.*—New orders in Wire Nails are holding up remarkably well, and a good deal of new business is being booked by the mills, which with specifications against old contracts is giving them almost a normal amount of work. Buying is largely confined to small lots for actual needs, but in most cases orders are accompanied with the request for prompt shipment, showing the stocks in the hands of jobbers are light. So far there is not much inclination on the part of the large trade to take in Nails beyond actual requirements. We are advised that prices are being very well maintained. Quotations for base sizes are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

| | |
|---|---|
| Carloads, to jobbers | $1.95 |
| Carload lots to retail merchants | 2.00 |

Galvanized Nails are quoted at $1 over the price of the regular Nails.

**Cut Nails.**—Buying is confined to small lots, and orders are not frequent enough to aggregate a large tonnage. There is no evidence that the trade is desirous of accumulating stocks, but the disposition is rather to pursue a hand to mouth policy in purchasing. The general price is $1.80, base, per keg, f.o.b. Pittsburgh, but this price continues to be shaded to the large trade. In the Western market Iron Cut Nails are held at an advance of 10 cents per keg over Steel Cut Nails, but this differential is not observed in the East.

*New York.*—The local market remains comparatively quiet, requirements for Steel Cut Nails being moderate. Nails are held on the basis of $2.15 per keg for small lots at store.

*Chicago.*—While a limited amount of business is moving all the time, it is made up of small orders which in the aggregate represent only a moderate tonnage. Jobbers' stocks, though not on any hand extensive, require but infrequent orders for replenishment. Prices are held close to current quotations, except for especially desirable specifications, which may be shaded 5 cents a keg. We quote Chicago prices as follows: In car lots to jobbers, Iron Cut Nails, $2.08; Steel Cut Nails, $1.98. In small lots from store: Iron Cut Nails, $2.25; Steel Cut Nails, $2.15.

*Pittsburgh.*—An improvement in demand for Cut Nails from the Western trade is reported, but new orders from the East do not show any betterment, and are relatively few and for small lots only. Buyers are not accumulating stocks, but are buying from hand to mouth. The general market is $1.80, base, per keg, f.o.b. Pittsburgh, but $1.75 is made, on carloads and over, to the large trade. In the Western market Iron Cut Nails are held at an advance of 10 cents per keg over Steel Cut Nails, but this differential is not observed in the East.

**Barb Wire.**—The demand from mill continues moderate, and is confined to small lots for immediate requirements. An active fall demand has not yet begun. Regu-

lar quotations are reported as being maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

| | Painted. | Gal. |
|---|---|---|
| Jobbers, carload lots | $2.10 | $2.40 |
| Retailers, carload lots | 2.15 | 2.45 |
| Retailers, less than carload lots | 2.25 | 2.55 |

*Chicago.*—The demand for fencing has felt the effects of drought in the West more, perhaps, than other Wire products. The advent of early rains, it is hoped, will relieve the situation and that trade, though possibly retarded somewhat, will open up satisfactorily a little later. As it is, a fair amount of new business is coming out, notwithstanding the drawbacks noted. Prices, it is said, are steadily maintained at regular quotations. Quotations are as follows: Jobbers, Chicago, car lots, Painted, $2.28; Galvanized, $2.58; to retailers, car lots, Painted, $2.33; Galvanized, $2.63; retailers, less than car lots, Painted, $2.45; Galvanized, $2.75; Staples, bright, in car lots, $2.25; Galvanized, $2.55; car lots, to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

*Pittsburgh.*—There is some slight betterment in new orders be ng placed, but as a rule these are for small lots only, for actual needs An improvement in the situation is expected when fall trade starts, which it should in the very near future. The manufacturers advise us they are absolutely maintaining prices. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

| | Painted. | Gal. |
|---|---|---|
| Jobbers, carload lots | $2.10 | $2.40 |
| Retailers, carload lots | 2.15 | 2.45 |
| Retailers, less than carload lots | 2.25 | 2.55 |

**Plain Wire.**—Activity is represented largely by specifications on contract orders, although some new business is being placed by the mills. Regular prices are reported as being maintained. Quotations per 100 lb. to jobbers in carload lots are as follows, on a basis of $1.80 for Plain and $2.10 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the price to retailers being 5 cents additional:

| Nos. | 6 to 9 | 10 | 11 | 12&12½ | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|
| Annealed | $1.80 | 1.85 | 1.90 | 1.95 | 2.05 | 2.15 | 2.25 | 2.35 |
| Galvanized | 2.10 | 2.15 | 2.20 | 2.25 | 2.35 | 2.45 | 2.85 | 2.95 |

*Chicago.*—Fence makers and other Wire users are specifying against contracts in a fairly liberal manner, though not as a rule going far ahead of present requirements. The mills are fairly well engaged, but are able to make prompt shipments, which are generally demanded by buyers. Prices are, it is stated, being rigidly maintained. We quote as follows: Car lots to jobbers, $1.98, f.o.b. Chicago, and to retailers, $2.05.

*Pittsburgh.*—There is a fairly active demand, and recently more disposition has been shown by the large trade to anticipate requirements. Specifications against contracts are coming in quite freely, and shipments by the mills are heavier than for some time. Regular prices are said to be absolutely maintained. Quotations per 100 lb. to jobbers in carload lots are as follows, on a basis of $1.80 for Plain and $2.10 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the price to retailers being 5 cents additional:

| Nos. | 6 to 9 | 10 | 11 | 12&12½ | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|
| Annealed | $1.80 | 1.85 | 1.90 | 1.95 | 2.05 | 2.15 | 2.25 | 2.35 |
| Galvanized | 2.10 | 2.15 | 2.20 | 2.25 | 2.35 | 2.45 | 2.85 | 2.95 |

**Padlocks.**—No action of general interest or importance was taken by the manufacturers of Padlocks who were in session last week in this city. The market presents a continued appearance of uniformity and makers show little disposition to make concessions from established quotations.

**Pocket Cutlery.**—Prices on American Pocket Cutlery have recently shown a little irregularity. Leading manufacturers, however, refer to the matter as representing concessions necessary to secure business on the part of a few smaller makers and state that no changes may be expected on standard brands. Some improvement in volume of business is reported.

**Registers.**—Manufacturers of Registers have made an advance in smaller sizes of Register Faces, 4 x 6 to 14 x 14 in., japanned, bronzed and plated, to 70 per cent. discount. This is effective October 1.

**German Coil Chain.**—Consequent primarily to lower prices from the other side, some declines have been registered in German and German pattern Coil Chain. On German Chain, larger sizes, the market may now be represented by a discount of 70 per cent., and on American made Chain by a discount on 6—0 to 1 of 70, 10 and 5 per cent.

**Shears and Snips.**—A tendency to weakness has been observed in the market for Shears and Tinners' Snips, competition being increasingly keen. Current quotations may be represented by a quotation on Straight Trimmers of 70, 10 and 5 per cent. for japanned and 60, 10 and 5 per cent for nickel. On Tinners' Snips, steel laid blades, a discount of 50 and 10 may be mentioned.

**Bright Wire Goods.**—A conference of Bright Wire Goods manufacturers is being held this week in an effort to tone up the market and correct such irregularities as have recently been referred to in these columns.

**Machinists' Hammers.**—A reduction in prices, which goes into effect to-day, has been made by manufacturers of Handled Hammers affecting the Ball Pein, Straight Pein and Cross Pein Machinists' Hammers. These goods are 7½ per cent. lower, and may now be quoted in a general way at a discount of about 70 per cent.

**Snaths.**—Quotations on Schythe Snaths for next season show practically no change from last year. The market to retail trade may be represented by a discount of 50 and 10 per cent.

**Window Glass.**—The work of getting signatures to the Manufacturers' Organization Agreement is said to be progressing, while workmen are making united efforts to secure better wage agreements. Developments along both of these lines will be looked for with interest. The local demand shows a slight improvement, but purchases are restricted to immediate requirements. It is reported that regular quotations are not always strictly adhered to. Manufacturers' discounts, for hand blown Glass, from manufacturers' list of January 1, 1901, are as follows: For A single and double strength Glass, 90 and 15 per cent.; for B single and double strength Glass, 90 and 20 per cent. Eastern jobbers' quotation from jobbers' list, October 1, 1903, for all sizes of single and double strength Glass, covering the territory east of Chicago, is 90 and 20 per cent. discount.

**Rope.**—A gradual improvement is reported in business, orders being more frequent, and some of them for quite respectable quantities. While the demand is not up to the average of last year at this time, the moderate improvement shown is encouraging, viewed in the light of general market conditions during the past month. General quotations for Rope 7-16 in. in diameter and larger are as follows: Pure Manila, 9 cents; Pure Sisal, 7 cents; No. 1 Jute, ¼ in. and up, 5½ cents; No. 2 Jute, ¼ in. and up, 5 cents.

**White Lead in Oil.**—The market is inactive, the demand being restricted to nearby requirements. The easier position of pig lead has not brought lower prices for the finished product which consumers anticipated. Corroders maintain that much of the pig lead in their hands was purchased at a higher price than rules at present, and that a lower price for the finished product is not necessarily warranted. Quotations for best brands of White Lead are unchanged, as follows: In 100, 250 and 500 lb. kegs, 7 cents per pound, with the regular advances for smaller packages.

**Linseed Oil.**—According to press reports, a sale of 1000 barrels of out of town Oil for October-December delivery, was recently made at 40 cents. Whether this is correct or not it indicates the possible price which might be made for a round lot of this kind. The general tendency of purchases is to confine orders to small quantities. Seed is reported as coming to distributing points more freely than last year, which if continued will probably affect the Oil market. Quotations are as follows: State and Western Raw in small lots, 42 cents per gallon; City Raw, 44 to 45 cents, in small lots per gallon. Boiled Oil is 1 cent advance on Raw.

**Spirits Turpentine.**—The proposed organization of a marketing company to regulate the sale of Turpentine in

the State of Florida is thought to have reduced the receipts to some extent at primary points. Local prices remain unchanged and buying is confined to small lots. The New York market is represented by the following quotations: Oil Barrels, 38 to 38½ cents; Machine Made Barrels, 38½ to 39 cents per gallon.

## Price-Lists, Circulars, Etc.

*Manufacturers in Hardware and related lines are requested to send us copies of catalogues, price-lists, &c., for our Catalogue Department in New York; and at the same time to call attention to any new goods or additions to their lines, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.*

ELMORE TOOL MFG. COMPANY, Hartford, Conn.: Catalogue illustrating the Elmore Indestructible Screw Drivers in large variety; also Ice Picks, Scratch Awls, Nail Sets, Punches, Chisels, Nail Pullers, Gas Pliers, Wire Cutters and Pliers, Shoemakers' Hammers, Combination Hatchets, &c.

ELLER MFG. COMPANY, Canton, Ohio: Illustrated circular devoted to Corrugated Iron with deep corrugations, Continuous Ceiling Sheets, Special Ridge and Hip Roll and Special Valley; Pressed Steel Brick, Rock Faced Brick and Siding, Crimped Roofing, Iron Weather Boarding, Galvanized Standing Seam Steel Roofing, Lock Seam Tin Roofing, &c.

S. KEIGHLEY METAL CEILING & MFG. COMPANY, Pittsburgh, Pa.: Folder containing attractive two color leaflets, illustrating, describing and listing several styles of Phœnix Steel Lockers.

LEFEVER ARMS COMPANY, Syracuse, N. Y.: Illustrated catalogue of High Grade Hammerless Shotguns and Ideal Gun Cleaner. Catalogues will be furnished to merchants on request in such quantities as are required.

E. T. FRAIM LOCK COMPANY, Lancaster, Pa.: Catalogue No. 18 illustrating and describing Pressed Steel, Wrought, Cast and Malleable Iron, Steel, Bronze, Brass, Nickel and Aluminum Padlocks, and Night Latches. A full page engraving shows the company's factories, and the attention of the trade is called to various new lines designed and many improvements of merit in old lines.

REED MFG. COMPANY, Kalamazoo, Mich.: Illustrated booklet relating to Robin Hood Axes, Boys' Handled Axes; Lathing, Claw, Shingling and Half Hatchets, Upholsterers' Hammers, Nail Hammers and Sidewalk Cleaners.

E. W. ROSS COMPANY, Springfield, Ohio: Catalogues devoted to Silo Filling Machinery, Manure Spreaders, Feed Cutters, Fodder Shredders, Ensilage Cutters, Horse Powers, Wood Saws, Silos, &c.

GENERAL ROOFING MFG. COMPANY, East St. Louis, Ill.: Folder devoted to Prepared Roofings, Deadening Felts, Red Rosin Sheathings, Plaster Boards, Tarred Felts; Rubber, Sand Coated and Mica Spar Roofings; Asphalt, Stringed, Slaters' and Saturated Felts, Roof Coating, Asphalt Paint and Asphalt Roofing Cement.

COLUMBIAN ENAMELING & STAMPING COMPANY, Terre Haute, Ind.: Catalogue and price-list illustrating Turquoise, Columbian Gray and Onyx Enameled Ware.

KELLEY-HOW-THOMSON COMPANY, Duluth, Minn.: Fall and winter catalogue No. 51 devoted to Sporting Goods. On a slip attached to the catalogue is the following: "He who spends no time examining catalogues, pays a high price for such saving of time."

AMERICAN ELECTRICAL NOVELTY & MFG. COMPANY, 304-308 Hudson street, New York: Catalogue of Ever Ready Electric Novelties, covering a varied line of small electric devices.

THE J. STEVENS ARMS & TOOL COMPANY, Chicopee Falls, Mass., has prepared a series of six double column mortised newspaper advertising plates featuring hunting scenes, designed for the use of merchants. The plates have sufficient space for the merchant's own announcement, and are calculated to excite interest in the Firearms stock. The plates are furnished gratis to merchants who apply for them.

## Second Annual Electrical Show.

THE second annual electrical exhibition will open on Saturday evening, October 3, at the Madison Square Garden, New York City, and continue until October 14. In scope it will include the commercial, industrial and domestic fields. Meetings of the Empire State Gas and Electric Association and various other organizations will be held during the exhibition period, and on October 8 there will be a meeting to consider subjects relating to tuberculosis. Among the leading exhibitors are the General Electric, Edison, Westinghouse, Marconi Wireless and other electric companies. There will be exhibits of actual wireless telephony, the four instruments being connected with a station in Times Square and the messages being reproduced on electrically driven linotype machines and distributed to the public. A fine exhibit of paintings, loaned by the Metropolitan Museum of Art, will illustrate the fiftieth anniversary of the laying of the Atlantic cable, the Commercial Cable Company loaning other paintings to show subsequent developments. The New York Electrical Society will contribute paintings, &c., to indicate the advancement in science. Electrical history will also be shown by the first apparatus used by Thomas A. Edison in 1879 and his subsequent inventions.

## Requests for Catalogues, Etc.

*The trade is given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.*

**REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate:**

FROM G. L. GRIPTON, Britton, Mich., whose stock of general Hardware, Stoves, Paints, Oil, Glass, &c., was recently destroyed by fire.

FROM J. B. MULLANE COMPANY, Sullivan, Ind., which suffered a slight loss by a recent fire. The company handles Shelf and Heavy Hardware, Stoves, Tinware, Paints, Oils, Sporting Goods, Buggies, Carriages and Furniture. A two-story addition to the store, 40 x 75 ft., has lately been built.

FROM FERRATT HARDWARE COMPANY, Norfolk, Va., incorporated with an authorized capital of $25,000 to carry on a wholesale and retail business in Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints, Oils, Sporting Goods.

FROM GENSEMER & Co., who are about opening a wholesale and retail business in Duncannon, Pa., handling a general line of Hardware, &c.

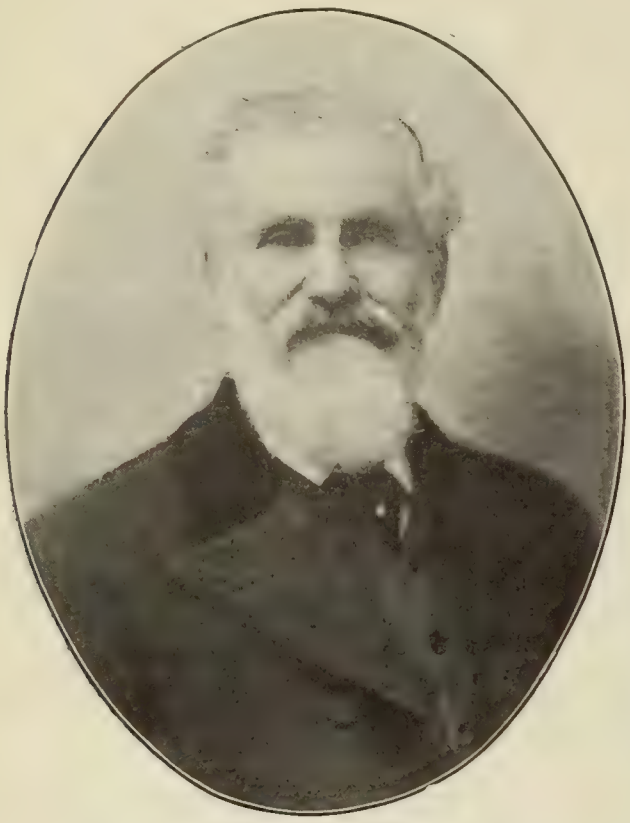
THE INLAND EMPIRE IMPLEMENT & HARDWARE ASSOCIATION, E. W. Evenson, secretary, Spokane, Wash., has been sounding the candidates for Congress and Senate in the section covered by the association as to their attitude on the subject of domestic parcel post as advocated by the post office authorities. The result of the canvass is given in a folder recently issued, in which the position of those approached on the subject is given for or against the proposed legislation, so that the merchants of the Inland Empire may be intelligently advised as to just how the various candidates stand on this important question.

UNDER a reincorporation the name of the Davis Hardware Company, Fort Scott, Kan., has been changed to the Armstrong-Davis Hardware Company, and the capital stock increased from $10,000 to $20,000. The management of the company, which does a General Hardware and Stove business, will continue unchanged, the officers being R. T. Armstrong, president and treasurer; Frank W. Davis, vice-president; Percy Davis, secretary.

THE name of F. P. Pfleghar & Son, New Haven, Conn., manufacturer of Hardware specialties, has been changed to the Pfleghar Hardware Specialty Company.

## Death of James Swan.

JAMES SWAN, treasurer of the James Swan Company, Seymour, Conn., manufacturer of fine edge tools for woodworkers, died at his home in Seymour, September 23, from a complication of ailments. Mr. Swan was born in Dumfries, Scotland, December 18, 1831. He was given a grammar school education, but at a comparatively early age he was apprenticed to learn the art of millwrighting, including work on both iron and wood. In 1853 he came to what is now Derby, Conn., and shortly after accepted a position with the Farrel Machine Shops in Ansonia, of which he was superintendent from 1858 to 1865. In the



JAMES SWAN.

latter year he accepted the superintendency of the auger and bit shops of the Douglas Mfg. Company in Seymour. In 1877 Mr. Swan purchased the entire plant, and from that time there has been marked progress in all directions. The high quality of the Chisels, Gouges, Drawing Knives, Screwdrivers, Augers and Bits, Hollow Augers, Boring Machines and kindred tools carrying the Swan emblem is universally recognized at home and abroad. Mr. Swan was president of the company until four years ago, when, on account of his advancing age, Benjamin A. Hawley of the Russell & Erwin Mfg. Company became president, Mr. Swan remaining as treasurer and in control of the business. He also was president of the H. A. Matthews Mfg. Company, Seymour, and the Seymour Electric Light Company, a director of the Ansonia National Bank, Ansonia, and a director of both the Seymour Public Library and the Seymour Trust Company.

Mr. Swan gave much valuable time to public duties, both for town improvement or in the halls of legislation. To him, as president of the Board of Education, are attributed important advances in local educational matters. He was interested in the Public Library, was a member of the Citizens' Fire Department and influential in the general uplifting of civic and political conditions. He was bred a Scotch Presbyterian, but in the absence of a church of his own denomination he was identified with the Congregational Church, which owes much to his generosity and magnanimity. Mr. Swan married Agnes Bell of Dumfries, Scotland, in 1856. She died January 19, 1907, the surviving children being William B., Miss M. Jessie and John Swan.

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JOHN A. HURLEY, INC., Bridgeport, Conn., has just appointed Wiebusch and Hilger, 106 Lafayette street, New York, sole agents for the United States and all foreign countries. The house manufactures the Aladdin Tubular Lanterns and Quality Food Choppers.

## The Retirement of Stephen Walkley.

STEPHEN WALKLEY, treasurer of the Peck, Stow & Wilcox Company, Southington, Conn., at the annual meeting of the company, in July last, declined a re-election to the responsible position he has held for so long a period, owing to impaired health. He is now seventy-six years old. Mr. Walkley is a native of Southington, where are located the general offices of the company and some of its factories. His father, Jonathan Walkley, was one of the substantial and influential residents of the town for many years. Although not an attorney, Jonathan Walkley was really a counsellor-at-law for the citizens, and no important action was taken without his approval. He was a scholar and a mathematician of remarkable ability. His daughter married Orson W. Stow, one of the founders of the Peck, Stow & Wilcox Company. and known throughout the metal trade as an inventor of many standard and important metal working machines. Mr. Stow served the company for years as director and vice-president until his death.

The youngest son, Stephen, the subject of this sketch, inherited his father's ability and ably filled numerous important positions in the towns where he lived. He enlisted in the army during the Civil War, and was private secretary to Gen. Joseph R. Hawley, who was perhaps best known as Governor, Congressman and United States Senator. Mr. Walkley has been connected with the army organization since that time, and is the author of the "History of the Connecticut Volunteers." He has always been greatly interested in educational work, is



STEPHEN WALKLEY.

a pillar in the Congregational Church, and possesses the confidence of all classes of the community.

At the organization of the Peck, Stow & Wilcox Company November 1, 1870, he was elected secretary, which position he held until 1874, when, owing to ill health, he resigned. He then bought the Southington *Phœnix*, a local weekly newspaper, which he edited for approximately a year. Regaining his health he sold his interest in the *Phœnix* about a year later, having been elected treasurer of the Peck, Stow & Wilcox Company, which trust he ably discharged until his retirement as above noted, at which time highly complimentary resolutions were adopted by the company's officials. His son, Edwin N. Walkley, was unanimously elected treasurer to fill the vacancy.

Mr. Walkley's personal influence has always been for good, and he has been active in the school and educational interests of the community. In the evening of a long life well spent he is collating a history of the Walkley family, tracing it back to the English progenitors.

## AIR SHIP IN WINDOW DISPLAY.

A. M. BELL & CO., 131-133 Granville street, Halifax, N. S., supplemented a window display of House Cleaning Requisites by an air ship, which floated around above the display, traveling about 35 ft. every two minutes. The air ship had a car attached in which there were Dolls, representing men. The balloon and car were decorated with flags, upon which were printed local hits on topics discussed by the City Council and Board of Trade; also flags having on them advertisements of Fishing Tackle, &c.

The balloon and car were suspended by No. 36 Wire, fastened to a truck, running on a single wire track, and propelled by an endless belt of wire, running over wooden pulleys, the pulley at the small end of the frame being connected with a cord belt carried down to a small water wheel below the window. The framework and pulleys were hidden from view by a sky of white paper, painted to represent cloud effects, in which was a slot for the wires to pass in the movement of the air ship. The same result might be obtained by tacking bunting around the outside of the track.

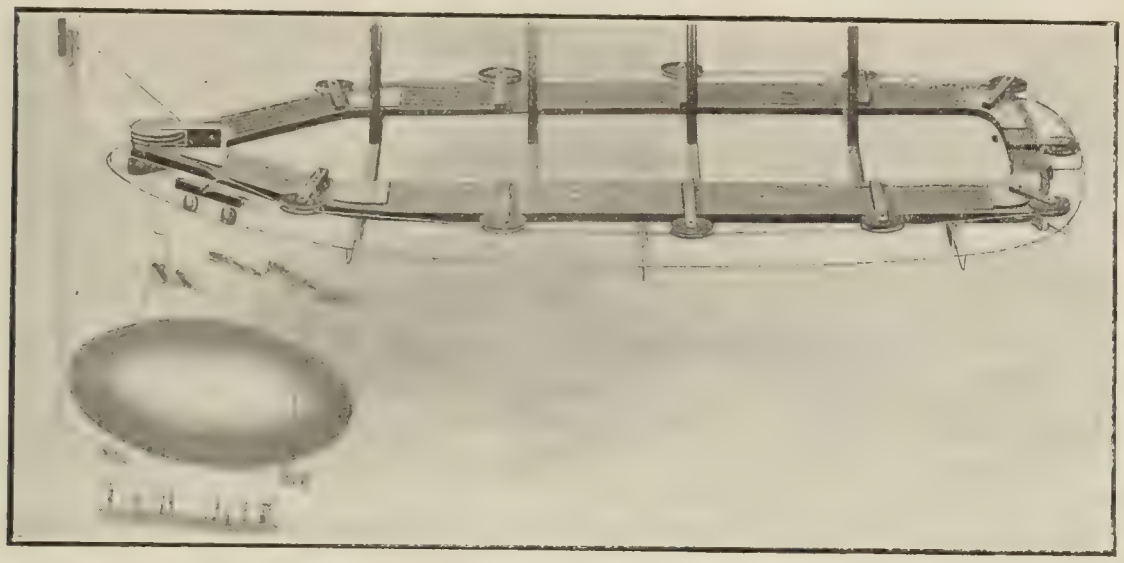


*Fig. 1.—Air Ship in Window Display.*

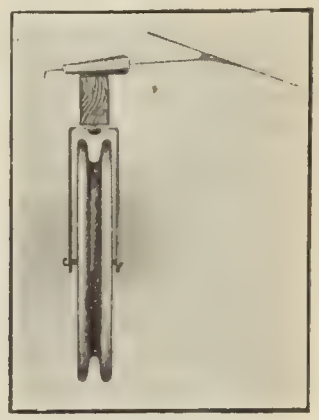


*Fig. 3.—End View of the Arrangement of Propelling Wire and Truck.*

Fig. 1 shows the construction of the frame, the manner in which the airship was suspended and the application of power. The frame was 12 ft. long and 3 ft. 9 in. wide, suspended from the ceiling by four supports made of ½ x 1¼ in. stuff, and the corners were braced by pieces of ½-in. wood. The pulleys revolved in pieces of wood which were screwed to the frame. The pulley

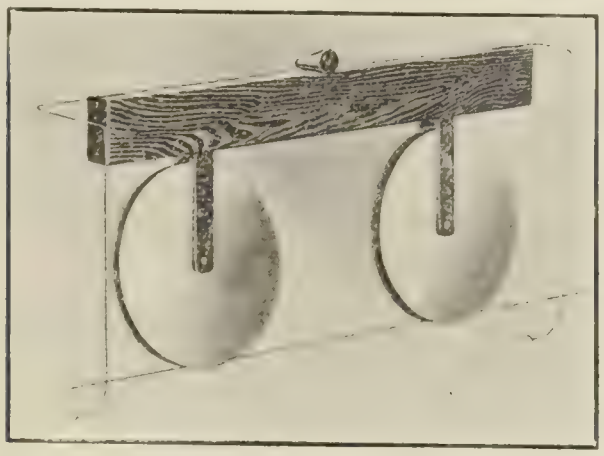


*Fig. 2.—Truck from Which Ship Was Suspended.*

at the pointed end of the frame was 5 in. in diameter, ⅝ in. thick, and had two grooves, one accommodating the track belt and the other one the power belt. The other pulleys were 3½ in. in diameter by ⅝ in. thick. All pulleys were of wood, with brass tube bushing. The track was made of No. 8 iron wire, which was soldered to wire supports, the other ends of which were fastened in the ends of wooden blocks screwed to the frame. The track stood off from the pulleys 1¾ in. and was 3 in. below the pulleys. The truck from which the ship was suspended had two wheels, as in Fig. 2, which were swiveled so as to pass around the corners.

Across the top of the truck frame a funnel shaped tube was fastened, with the small end pointing away from the frame, as shown in Figs. 2 and 3. A piece of wire was soldered, with the aid of a tin bracket, to and at right angles to the propelling wire belt, the free end of this wire passing through the funnel shaped tube, and the end of the wire was bent to prevent it slipping out of the funnel. This arrangement is shown in Fig. 3. When the propelling wire belt was in motion, the wire working in the funnel drew the truck, with the ship attached, around the track. The motor cord belt was carried from the small end of the frame horizontally to a vertical pulley in the corner of the window, thence to the window bottom and through to the water wheel below the window. If more convenient, power may be obtained from an ordinary electric ventilating fan, reducing revolutions to about three and one-half per minute, with connections from a 16 candlepower incandescent light.

The house cleaning requisites display shown in connection with the air ship was tastefully arranged and included Washboards, Carpet Sweepers, Washtubs, Varnish, Kalsomine, Wall Varnish, Scrub, and Stove Brushes, Paint and Varnish Stain, Color Cards, Cans of Mixed Paint, Pastry Boards, Furniture Polish, Tacks, and other articles necessary for up to date house cleaning.

## New Britain Notes.

AT the meeting of the directors of the various constituent companies and also of the American Hardware Corporation, held on Saturday last, Howard S. Hart resigned as president and director of the Russell & Erwin Mfg. Company, as director of the Corbin Screw Corporation, and as second vice-president and director of the American Hardware Corporation. He thus severs connection with the American Hardware Corporation except with the Corbin Motor Vehicle Corporation. B. A. Hawley succeeds Mr. Hart as president of the Russell & Erwin Mfg. Company, and I. D. Russell was made first vice-president. The vacancy on the Board of Directors of the Corbin Screw Corporation was not filled. C. H. Parsons was elected second vice-president of the American Hardware Corporation, and the vacancy on the Board of Directors was not filled. At the same time William J. Surre resigned as secretary and director of the Corbin Screw Corporation, and the vacancies were filled by the election of George P. Spear.

CHARLES H. PARSONS.

Charles H. Parsons started his business career as traveling salesman for Landers, Frary & Clark of New Britain. He entered the employ of P. & F. Corbin, of which company he is at the present time the official head, in 1873, acting as a traveling salesman in New England and Canada. Since that time his duties have been gradually enlarged and his official responsibilities increased by successive promotions to second vice-president, first vice-president and, about a year ago, president of P. & F. Corbin, one of the largest, if not the largest, manufacturers of Builders' Hardware in the world.

Mr. Parsons' duties at the factory have always been arduous and yet he finds time at intervals to visit the

connections of his company, and thus maintains a personal acquaintance with the company's principal customers, and fully understands their needs. In fact, there are few men connected with the Hardware manufacturing interests of the country who are so well known. He has a keen, forceful mind, always quick to decide upon a course of action, and is an untiring worker who generally accomplishes any task to which he has set his hands. Mr. Parsons represents the highest type of New England character and his elevation to the important position of second vice-president of the American Hardware Corporation reflects the confidence of his associates.

BENJAMIN A. HAWLEY.

Benjamin A. Hawley, the newly elected president of the Russell & Erwin Mfg. Company, started in as a boy of 15 years in the New York warehouse. Gradually, by force of character and industry, Mr. Hawley worked himself up until he had charge of the important sales end of this warehouse. Always a hustler on the road, the army of customers of the Russell & Erwin Mfg. Company testify to his marked ability, to his cheerful disposition and to his honest, earnest efforts to build up the Russell & Erwin Mfg. Company. His selection to this important position is an incentive to the younger men in the employ of the Russell & Erwin Mfg. Company to untiring efforts in behalf of the organization of which they are members.

ISAAC D. RUSSELL.

Isaac D. Russell is a son of the former president of the Russell & Erwin Mfg. Company, Henry E. Russell, who was a nephew of the original Henry E. Russell whose name is associated with that of Cornelius B. Erwin in the incorporation of the firm. For several years he has occupied the important office of treasurer of the Russell & Erwin Mfg. Company and has been recognized as a keen, careful, conservative force in the counsel of the company. A graduate of Trinity College, Mr. Russell possesses more than an ordinary mind and his grasp of details is very large. It is said that there is no man in the Builders' Hardware business in America so well posted on costs and the tariff as he, and it is in recognition of his large experience and able judgment that he has been promoted to the vice-presidency of the company.

## Wallingford Mfg. Company's New Catalogue.

THE WALLINGFORD MFG. COMPANY, Wallingford, Vt., John H. Graham & Co., 113 Chambers street, New York, selling agents, has just issued catalogue F, illustrating and describing its extensive line of Hand Farming and Garden Tools, including Forks, Rakes, Hoes, Grass Hooks, Corn Knives and Corn Hooks. The trademark Wallingford represents the company's highest grade, a second quality being labeled Green Mountain, while in a Manure Fork only it has a brand Climax, which is said to represent a good serviceable tool.

LOUIS H. SCHMITT, vice-president, secretary and general manager of the H. D. Smith & Co., Plantsville, Conn., manufacturing Vehicle and Special Drop Forgings and Drop Forged Fine Tools, has been chosen one of the Democratic Presidential electors in the State of Connecticut. Mr. Schmitt, a native of Charleston, S. C., began his business career as a youth in the New York office of the Peck Stow & Wilcox Company, from which some years ago he went to his present duties in Plantsville at the request of Lucius V. Walkley, who is virtually the owner of the H. D. Smith & Co.

THE ELLIS TOOL & SUPPLY COMPANY, 42 Church street, New Haven, Conn., has been organized under a Connecticut charter to carry on a factory and mill supply business, making a specialty of the Ellis Hacksaw and its own line of Screwdrivers. The company will also act as selling agent for the Slysir meat slicing machine. Edward L. Clarke, Jr., is president and secretary and Lloyd E. Jennings, treasurer.

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# Hardware Organizations.

### New York Retail Hardware Association.

It has been decided by the committee in charge as necessary and expedient to change the time for holding the annual convention and Hardware exhibition of the New York State Retail Hardware Association to February 16-19 next. As already announced, the convention will be held at Rochester. The headquarters of the association will be at the Hotel Seneca, and the different sessions of the convention will be held in the ball room of the hotel each afternoon at 2 o'clock. The Hardware exhibition will be given in the Convention Hall.

### Iowa Retail Hardware Association.

The Iowa Retail Hardware Association, A. R. Sale, Mason City, secretary, has issued a prospectus in regard to the official gazette which will be issued shortly after the eleventh annual convention of the association, which will be held at Des Moines, February 9 to 12 next. The prospectus presents a sample page of the 1908 gazette, giving an idea of the makeup and paper to be used in the 1909 publication. The 1908 gazette contained 49 pages devoted to the proceedings of the tenth annual convention, 27 pages of general advertising, 21 pages of illustrations and six pages of association announcements. The desire is to make the gazette an association manual that will be read and kept as a valuable document in the library of the Hardware merchant; 2500 copies of the gazette will be distributed, the mailing list including every Hardware firm in Iowa. A schedule of advertising rates and order blank are also included in the prospectus.

### Alabama Retail Hardware Association.

L. G. Smith, Ensley, secretary of the Alabama Retail Hardware Association, has issued an effective circular to the merchants of the State, under date September 25, from which we give the following extract, which appears under the heading, "Are You a Member?":

Our association, to accomplish the greatest good for the greatest number, must be numerically as well as intellectually strong. Will you not give us a portion of your time and influence so that we may in turn be of greater assistance to you?

Possibly you may think that we can't assist you in making your profits larger; BUT WE CAN.

Possibly you may think that we can't keep the jobber from selling your customer at wholesale prices; BUT WE CAN.

Possibly you may think that we can't be of assistance to you in collecting your accounts; BUT WE CAN.

Possibly you may think that we can't help you conduct your business on more modern principles; BUT WE CAN.

Possibly you may think that we can't save you from 25 to 50 per cent. on your insurance; BUT WE CAN.

Possibly you may think that we can't be of assistance to you in a hundred other ways; BUT WE CAN.

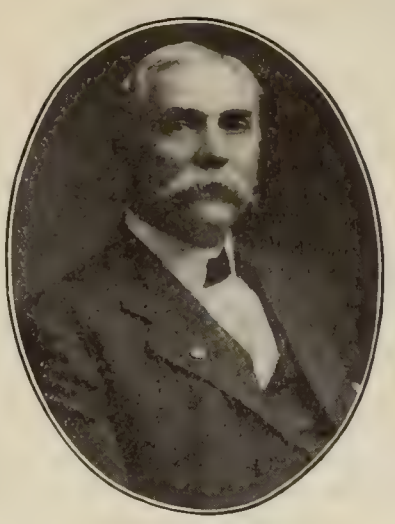
It is stated that the association is growing, which is accepted as indicating that the Hardware merchants of Alabama are not slow to avail themselves of the opportunity to become identified with a progressive organization which has for its object the elevation of their business.

### Connecticut Hardware Association.

Taking the place of the usual summer outing, the members of the Connecticut Hardware Association, Jas. De F. Phelps, Windsor Locks, secretary, will attend the Danbury Fair at Danbury, Conn., on Wednesday next, 7th inst. This is done at the invitation of the Danbury Business Men's Association. The fair lasts from Oct. 5-10 and the 7th has been christened Business Men's Day, and a large attendance of representatives of business organizations in all parts of the State is looked for.

### Tennessee Retail Hardware Association.

During the 10 or 11 months before the next annual meeting of the Tennessee Retail Hardware Association a determined effort will be made to interest the Hardware merchants of the State in the organization and secure the membership of a considerable proportion of them. At the first annual meeting held in August the secretary, M. Richardson, Lawrenceburg, reported a membership of but 19 firms, showing an increase of nine as compared with the number enrolled in the association at its formation 12 months previously. As a result of accessions during the meeting and since, the roll now numbers 30



JOHN D. DOBBINS.



M. A. WALKER.

houses, including many of the most enterprising and progressive retail concerns in the State, as follows:

Mitchell-Ashley Hardware Co., Columbia.
J. P. Street & Co., Columbia.
B. A. Satterfield & Co., Columbia.
W. D. Acuff & Co., Rockwood.
D. C. Taylor & Co., Trenton.
Jarrett & Love, Nashville.
Collins Hardware Co., Winchester.
Sprague Co., Winchester.
Fischesser & Son, Spring City.
E. P. Churchwell & Son, Savannah.
Wm. Tucker & Co., Ripley.
J. H. Johnson & Son, Jackson.
Keith, Simmons & Co., Nashville.
W. A. Hutton & Co., Gallatin.
C. H. Byrn, Murfreesboro.
Ewing Brothers & Co., Gallatin.
M. A. Walker, Covington.
M. Richardson & Co., Lawrenceburg.
Ellett-Harlan-Porter Co., Columbia.
Hager Brothers, Hartsville.
Warner & Shelby, Memphis.
Cowan, Hobbs & Dale Co., Fayetteville.
Mt. Pleasant Hardware & Furniture Co., Mt. Pleasant.
Dobbins & Ewing, Columbia.
Clayton Hardware Co., Lewisburg.
Newbern Hardware Co., Newbern.
Robinson & McGill Co., Shelbyville.
W. T. Marshall Hardware Co., Lebanon.
J. F. Parker & Son, Martin.
Freemon & Co., Lebanon.



M. RICHARDSON.

With the hearty co-operation of officers and members in bringing the association and its aims to the attention of their nonaffiliated brethren throughout the State, it is confidently hoped that by the time of the next annual gathering a very creditable percentage of the Tennessee retailers of Hardware will have allied themselves with the organization.

The officers of the association are: John D. Dobbins, Columbia, president; W. V. Hagar, Hartsville, vice-president; Fred J. Warner, Memphis, second vice-president, and M. Richardson, Lawrenceburg, secretary-treasurer. In accordance with the suggestion of Mr. Richardson in his annual report, read at the last meeting, a Grievance Committee was appointed to act in conjunction with the secretary in adjusting complaints made by members of objectionable practices on the part of jobbers and manufacturers. This committee consists of Messrs. Dobbins and Hager and Major M. A. Walker, Covington.

Besides the regular members, as above given, a number of well-known traveling salesmen are affiliated as honorary members. These include H. M. Owsley, Norvell-Shapleigh Hardware Company, St. Louis, Mo.; Walter Clark, Phillips & Buttorff Mfg. Company, Nashville; W. W. Porter, Peters Cartridge Company, Nashville; W. S. Shacklett, Fulton, Ky.; C. R. Echols, Simmons Hardware Company, Chattanooga; Fred. L. Martin, Gray & Dudley Hardware Company, Nashville; S. D. Briton, Pittsburgh Corrugating Company, McMinnville; J. L. Richardson, Norvell-Shapleigh Hardware Company, Covington, Tenn.

# Here and There in the Hardware Store.

BY SAMUEL MASTERS.

## II.—GETTING OUT OF A RUT.

DID you ever "get sore on your job"? Did you ever occupy a position at one side of the regular routes for promotion and find every avenue for advancement seemingly closed to you because every vacancy was claimed by some one who was next in line—who had had the hope of some day occupying it held out to him as an incentive for well doing? Did you ever work feverishly at the duties assigned you in an effort to prove your ability to do greater things, and by helping everywhere try to break in somewhere, or to create a new position in which you could make yourself valuable? Did you ever succeed in a measure having your salary finally advanced to just a little more than a clerk and a little less than a department manager, so that the medium priced places were beneath you and the few positions of trust unattainable? Did you ever strive unavailingly to get ahead in such an environment until the kindness of your employers seemed meanness, and the friendliness of your fellows offensive patronage? If you have, you have suffered, indeed. I have been there, and know.

### The Light That Failed.

When I went to work for Hartman Bros., it was to establish and manage a new Sporting Goods department. My former employers, located in the Northwest, had had a good business in this line, and I had come down into the Middle States with an idea that I could form in my new connection such a department as I had left. But the territory wouldn't support it, and it finally amounted to little more than a modest display in the corner of the city store, and sample lines in the hands of two travelers on the routes furthest West, whose orders for Fishing Tackle, Ammunition, Loading Tools and a few cheap Guns, were shipped direct from the factories. Every effort to expand proved fruitless, until, finally, I gave up trying and endeavored to add something else to my repertoire of whatever nature possible.

Hartman, Sr., tolerated me as a protege of his brother, but firmly declined to "send good money after bad," and would not even consider arguments in favor of adding Bicycles, Hammocks, Tents, Kennel Goods, or anything else to my line. Hartman, Jr., as I can now see, really liked me, and would have done more to help me than he did if circumstances had permitted. As it was, it became his practice to turn over to me various problems which presented themselves for solution, outside the beaten paths, and I finally became as well known as "Junior's trouble man" as the "Sporting Goods man." Among other incidental duties, it finally fell to my lot to write the semiweekly newspaper advertisements for the retail store—the outgrowth of a series of ads. written to swell the holiday trade in my own line.

### A Personal Sales Policy.

About this time an inquiry was made as to why the firm was not getting a satisfactory trade in its city store, and particularly in the factory supply department. Ironville is noted for the extent and diversity of its manufactures of articles of metal, and is located at such a distance from the cities that make factory supplies and from other trade centers, that the local dealers control the business. There were three of them, with a small Belting manufacture as a poor fourth. Hartman Bros. had at one time handled the bulk of the business, but in the last year or two the sales had dwindled until it was very evident that something was amiss. Charles Martin, the city manager, blamed the credit man—said it was useless to go after orders and have them turned down when taken—that so soon as he went outside the firm's present regular customers the orders were refused. He had two city salesmen, whose time was ostensibly devoted to the pursuit of orders, but Mr. Martin claimed that better prices and a bigger business could be secured by working a friendly game with the factory buyers. The men were accordingly instructed to toll the buyers into the store, where the manager could take them in hand, or supervise the making of prices, so they lunched and played pool (at Hartman Bros.' expense) with such buyers as they could induce to join them, and brought them in to see Mr. Martin when there was business in sight and they could be induced to come. A strictly competitive business was, according to Mr. Martin's instructions, carefully avoided as yielding lessened profits.

### A Chance for Me.

But the receipts dwindled month by month, and it was increasingly evident that City Manager Martin's schemes were not winning ones. Buyers got wary of coming in to pay the top of the market prices. Hartman, Jr., bullied Mr. Martin. but couldn't disprove his theories. He pleaded with the credit man to "loosen up," but that worthy person proved that every order refused was declined for good reasons. Mr. Martin told me of Hartman, Jr.'s, "injustice," and the next time that Junior came into my corner on a visit of inspection, I told him that I knew of the trouble in the city store, and that I should like to try to make matters straight.

"I don't believe you can do anything, Sam," he said, "Martin will insist on dancing in a pint pot, and isn't to be reasoned with. You would have to do as he told you, so long as he is manager, and you couldn't run the store in his stead."

"I shouldn't want to," I replied. "I think if it is managed right, Mr. Martin will ask me to help him, and if I am working under him, I can make suggestions and work out new plans under his direction that will bring in business. I feel sure that Mr. Martin is worried. You know I am now writing his ads., and perhaps that fact could be used as a wedge to get me in there."

### A Basis for Action.

Hartman said "He'd see" and left, but he came back later in the day and told me that he wanted me to go into the city store, ostensibly to work under Mr. Martin, but really to execute his (Junior's) orders; that I'd have to work craftily and without friction, for if Mr. Martin made any complaint Hartman, Sr., would discharge me as a means of ending the trouble. Since the morning visit my brain had been busy formulating a plan for trade getting, and I had written it out for his inspection. A carbon copy lies before me now. It was based upon what business experience I possessed, what I knew of the weaknesses of Mr. Martin's plan of action, and what I judged would please Hartman, Jr. He read it through carefully; reread certain paragraphs and drew his pencil across one of them.

"That is all right, Sam," said he, "that is just about what I want done, but Martin would never consent to it, if put up to him in this way, and my brother would support him in a pinch."

"Suppose," said I, "that only one step at a time be taken up with Mr. Martin, and that if possible he be induced to suggest it to you. If he can be made to father a scheme, he will do all he can to make it a success, and if it makes for more business, as I am sure it will, he will be only too glad to push it hard."

"Well," said he, "the first thing to do is to get you down there. I suppose we can do that best through this advertising."

### Light Ahead.

Then he left me to go down into his office. I could hardly contain my pleasure over the prospect. At last I was to have a chance to really accomplish something that would advance me with the firm. The dead wall had opened. I never doubted for a moment that Hartman, Junior, would not get me into the city store, nor that Mr. Martin would not let me work out my plans for an enlarged business. I do not believe a man released from a prison ever felt more pleasure in the sight of the blue sky and the breathing of the pure air than I experienced in this prospect of freedom from the hampering limitations of my old work, and a definite prospect of securing advancement as a reward of effort.

*(To be continued.)*

# HARDWARE FREIGHTS.

## Railroad Claim Blank.

EFFECTIVE methods of handling damage claims against railroads for freight lost or injured in transit are of great interest to the trade. Both wholesale and retail merchants have many such claims to make in the course of a year, and the latter, since they usually maintain but a small office force, are especially in need of some simple but sure and comprehensive system for filing and following up their claims. Very often a claim is filed and then forgotten and lost sight of and the railroad company is not likely to be the first to take it up. Frequently, too, in making claims by letter, merchants will leave out some important details which will cause unnecessary trouble and delay an adjustment.

Having experienced these difficulties, Granby Hardware & Implement Company, Granby, Mo., has evolved a method which, since its adoption, has enabled the company to handle and collect damage claims with much success. A railroad claim blank is used, as shown in the accompanying illustration. This is about 8 x 10 in. in size and is designed to cover every important detail, and after using it more than a year no reason has been found to change it. The blanks are arranged in duplicate with alternating white and yellow sheets and are bound in book form, so that a correct record of all claims will be kept in one place, where it cannot be lost sight of. The original white blank is perforated so that it can be torn out and sent to the railroad company. In making claims it has also been found important to send the railroad companies a duplicate or certified copy of invoice, bill of lading and expense bill; all other data are shown on the blank form, as illustrated.

### What is the Result?

The consignee, being unable to check up his invoice, deducts the amount of shortage from his remittance. The bookkeeper then writes for an explanation and is informed certain goods are checked short.

The matter is then placed in the hands of the Claim Department, which writes for further particulars and asks for the freight bill covering, upon receipt of which

W. W. SCHOLES, Manager. TELEPHONE 25

Wagons, Buggies, Plows, Cultivators, Paints and Oils

**Granby Hardware & Implement Co.**
LEADERS OF LOW PRICES

Powder, Fuse, Caps, Shovels, Wire, Rope, Drill Cable, Iron and Steel.

GRANBY, MO.,

CLAIM FOR Goods broken in transit
Frisco RAILROAD COMPANY

OUR NUMBER 128
YOUR NUMBER 137467
DATE OF CLAIM Dec 17-1907

**DR.** To **Granby Hardware & Implement Co.**
Granby, Mo.

| | | Amount of Claim | Amount Paid | Date Paid |
|---|---|---|---|---|
| On Shipment Washing Machine | Weight | | | |
| From St Louis Mo | Should Be | | | |
| To Granby Mo | Excess Weight | | | |
| B/L Dated Dec 12-1907 | Rate Charged | | | |
| Consignee Us | Should Be | | | |
| Invoice Dated Dec 12-1907 | Excess Rate | | | |
| Consignor Simmons Hdw Co | Damaged How | | | |
| Way-Bill No. 1273 | Articles | | | |
| Way-Bill Date Dec 12-1907 | Pocket wheel broken | 75 | | |
| Car Number 12348 | Express on repair part | 35 | | |
| Car Initial St L & SF | | 1 10 | 1 10 | Jan 10-1908 |
| Expense Bill No. 274 | | | | |
| E/B Date Dec 16-1907 | | | | |

REMARKS: Copy of invoice, Bill of Lading and Expense bill filed

Yours Truly,
GRANBY HARDWARE & IMPLEMENT CO.
BY W W Scholes Manager.

*Claim Blank Referring to Damaged Freight Shipment.*

## Receipts for Shipments Given too Freely

*To the Editor:* We have read your articles on "Hardware Freights" and note the many good things contained therein. The articles can be made very instructive to the shippers as well as the receivers of freight, as much can be done to make it easier for both.

It occurs to us at this time the matter of giving receipts for shipments should bear some consideration.

We believe receipts are given too freely, especially by authorized draymen. It is the common practice with railroad agents at all stations (large or small) to take receipts for goods at the time the freight bill is taken up in exchange for their receipt for freight charges. The exchange usually takes place at the cashier's or agent's window before the party signing the receipt knows whether the shipment has arrived or not or what condition the packages are in.

### Notation Should Be Made on Freight Bills

The receipt remains in the agent's office, and if a shortage is discovered by the drayman he is invariably told the missing goods will arrive on the next train. The drayman should then insist on a notation being made on his freight bill and a corresponding notation on the receipt he has signed.

It is next to an impossibility to get an agent to make a notation of shortage or damage on a freight bill, and with a promise that the shortage will soon show up, or if a claim is presented for damage it will be paid, as he has a record of the shipment in his file, the matter is dropped. claim is made against the railroad company in behalf of the consignee.

In due time the papers are returned to claimant with letter stating, "Upon investigation we find we hold clear receipt, and claim is respectfully declined." Then follow a long drawn out controversy and a final adjustment, which is usually unsatisfactory to one or the other party.

### Importance of Receipting Only for Goods Received.

Shippers as a rule are ever ready and willing to assist customers in recovering any loss sustained at the hands of the railroad companies, but it should be borne in mind:

1. That a clear receipt from the railroad company to the party making the shipment releases the shipper in full from any responsibility for the delivery of the goods.

2. That if the consignee has given a clear receipt to the railroad company before a full delivery of the goods has been effected, the railroad company is thereby placed in position to claim full delivery and decline to entertain the claim.

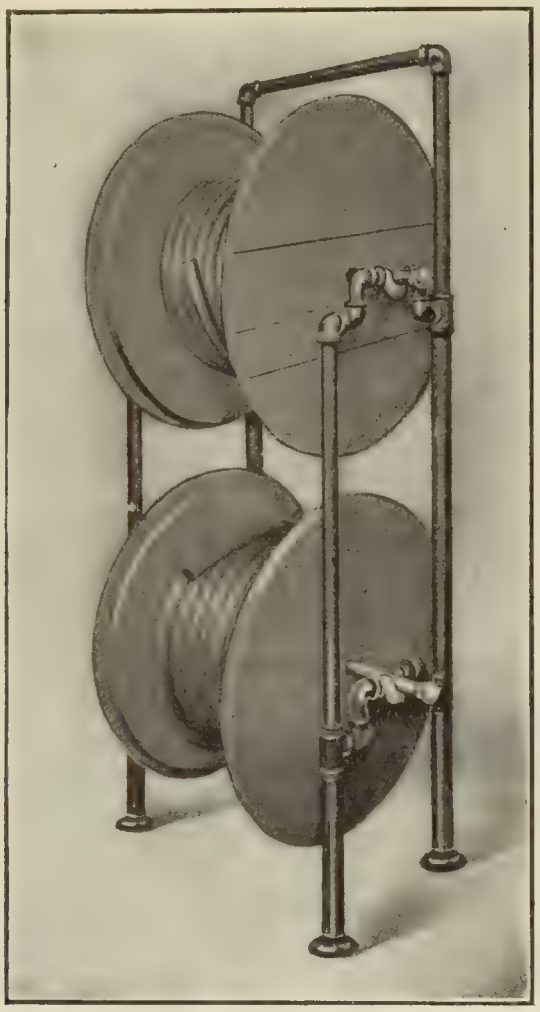
All parties receiving shipments can therefore see the great importance of being sure that only such goods as are received are receipted for. MINNESOTA.

SEPTEMBER 21, 1908.

The Hardware stock of Hill Hardware company, Columbia, Miss., wholesale and retail, has recently been severely damaged by fire.

## A Lead Pipe Reel Rack.

THE accompanying illustration shows a lead pipe reel rack used in the store of the Oswego Hardware Company, Oswego, N. Y., and originated by Frank J. Rowlingson, stock keeper for the company. The length of each of the four 1¼-in. upright pipes to the first malleable tees is 1 ft. 3 in. These are secured at the lower ends by 1¼-in. malleable floor plates. The 1-in. upright pipes extending from the first to the second axle supports are 2 ft. 8 in. long, R. & L. thread. At the top of the front pipe, on each side of the rack, is a 1-in R. & L. elbow and opposite, on each of the back pipes, is a 1¼-in. malleable tee. The axle supports are made (commencing at each upright and extending to the axle) of 1-in. malleable elbows, 1 x ¾ in., bushings ¾ in., close nipples and ¾ in. cross over. The axles are ¾-in. pipe, each 3 ft. long, with lock nuts near the extremities and ¾-in. malleable caps on each end. The 1-in. upright pipes above the upper axle bearing are 1 ft. 8 in. long, on the top of which are 1-in. malleable elbows, connected by 1-in. pipe, 1 ft. 10 in. long, with R. & L. threads.



*A Lead Pipe Reel Rack.*

## Reed Mfg. Company.

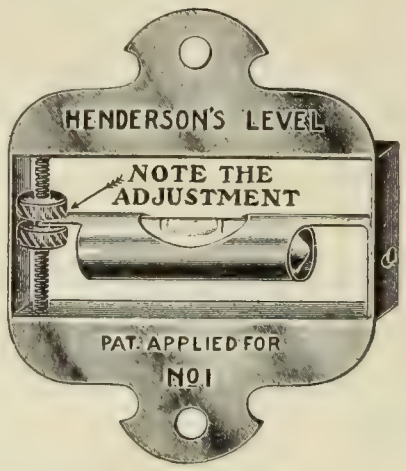
The Reed Mfg. Company, Kalamazoo, Mich., is making castings for automobile and other machinery manufacturers, also for dies and other purposes, requiring an extremely high carbon casting for tempering. This special mixture is also used for a line of hammers, hatchets, &c., the tools being cast in molds, then tempered and finished.

## Elmore Tool Mfg. Company.

The Elmore Tool Mfg. Company, Hartford, Conn., which has lately been reorganized and the plant removed from Southington, is placing on the market a line of small tools of patented construction, especially in the way of screw drivers. The latter are made practically indestructible, the blade being forged from one solid piece of steel extending the entire length of the handle with round countersunk head. The knurling of the shank directly under the head does away with the different styles of lugs and wings generally used. These screw drivers are made in many different styles and sizes, such as electricians', cabinet makers', piano makers', machinists', &c. In addition to a complete line of these tools the company is also manufacturing nail sets, screw driver bits, center and prick punches, cold chisels, nail pullers, pry and pinch bars, ice picks, scratch awls, gas pliers, wire cutters and pliers, shoemakers' hammers, combination hatchets, tack pullers, and many other similar tools. With the present manufacturing facilities the company expects within a short time to add further to its products. Although the Elmore tools have been manufactured for several years, it has been only in a small way, but with the equipment and capacity now possessed by the company it is intended to push their sale with increased enterprise and energy. A catalogue issued by the company contains illustrations of and list prices on many of the tools to which reference is made.

## Henderson's Straight Edge Level.

A level which is designed more especially for carpenters, bricklayers and tile setters, and which is made of brass, nickel plated, has just been placed upon the market by Henderson & Co., 204 North Main street, Memphis, Tenn., and is illustrated herewith, two-thirds actual size. The frame of the level is so constructed that it forms a shield for the bulb to prevent its being broken by carelessly letting it fall. One end of the level is riveted to the frame, while the other is slotted, so as to fit neatly around a threaded rod upon which are two lock nuts. With this adjustment the free end of the bulb can be raised or lowered with great ease and accuracy, while the other end acts as a spring. No tools are necessary to apply the level, as two thumb screws with which to fasten the level to a straightedge accompany each level. It is pointed out that when the level has been applied and adjusted it cannot shift, as the thumb screws are cone shape, thus taking up all play and rendering it perfectly rigid. After the level has once been applied it can be removed and replaced as often as desired without having to adjust it again so long as the same straightedge is used. With one of these levels placed on a plumb rule it may be used for setting door jambs and window frames, plumbing up partitions, laying sleepers in fireproof buildings, grading off cement for tile floors, leveling joists, and doing many other things in a convenient and accurate manner. For leveling foundations it can be easily attached to a straightedge of any desired length, practically making the straightedge a perfect level and eliminating the necessity of having to carry two tools where one will serve the purpose. The level weighs less than 2 oz.




*Henderson's Straightedge Level.*

## Colt .380 Automatic Pistol.

The Colt's Patent Firearms Mfg. Company, Hartford, Conn., has added to its line the automatic, caliber .380, hammerless pistol here illustrated. It is made to supply the demand for a weapon similar to the company's .32 automatic pistol, but of larger caliber, and is of the same weight, length and action as the smaller arm. The barrel is 3¾ in. long, the length over all 6¾ in., weight 23 oz., and .38 rimless smokeless cartridges are carried, the capacity of the magazine being seven shots. The pistol is full blued finish, with rubber stocks. Being flat and compact, it is especially recommended by the

maker for carrying in the pocket, where it may be conveyed without risk of accidental discharge because of the action safety, which prevents discharge until the action is entirely closed. The slide lock, which indicates when the pistol is cocked, when engaged in the slide cut, disconnects the trigger from the operating mechanism, but can be readily drawn down when about to shoot. As a third precaution the arm is equipped with an automatic safety, also acting as an indicator, which locks the action until the handle is firmly grasped when pulling the trigger. Another feature to which attention is called




*Colt .380 Automatic Pistol.*

is the absence of unpleasant kick, the recoil which causes the average shooter to flinch and impairs his aim is utilized in manipulating the action—that is, ejecting the empty shell, inserting a fresh cartridge, and leaving the weapon ready for the next shot. In commenting on the accuracy of the arm, the manufacturer instances that in the regular course of inspection 80 consecutive shots were fired from 10 different pistols at a distance of 45 ft. and the entire group was within a circle 2½ in. in diameter.

## The Chicago Folding Sled.

Something of a novelty in sled construction is furnished by the Chicago Wire Chair Company, 129-131 La Salle avenue, Chicago, Ill., which is marketing the folding sled here illustrated. In providing the folding



*Fig. 1.—The Chicago Folding Sled.*

feature nothing has been sacrificed in the way of simplicity or lightness. The method of construction is clearly shown in Fig. 2, which presents a bottom view of the sled, with the runners folded back on the under side of the seat board. The runners are made of steel rods, which are clamped to the wooden top in a manner that permits them to be easily folded. When in upright position the legs are held by adjustable braces, the form

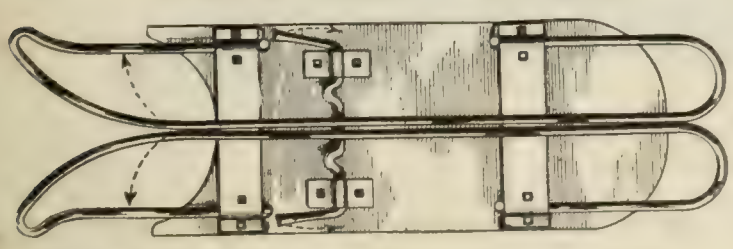


*Fig 2.—Chicago Sled with Runners Folded.*

of which is shown in Fig. 2. A notable feature of the design used in this construction is the clear opening between the runners, which offers no obstruction to the snow. All parts are securely bolted together with nickel plated bolts, and the top is attractively finished in bright colors, while the runners are painted white. When compactly folded the sled can be readily carried under one's arm, and because of its compactness can be shipped at a lower rate of freight than applies to set-up sleds.

## Small Emery Wheel Grinders.

Two patterns of emery wheel grinders here illustrated are the product of the Stover Mfg. Company, Freeport, Ill. Fig. 1 represents a machine designed for light work and of such construction as to be safely operated by any one. It is built without gears and the driving wheel is provided with flange points on the rim to pre-



*Fig. 1.—Emery Wheel Grinder No. 100.*

vent the belt slipping off. A simple provision is also made for the tightening of the belt, and the tool rest is adjustable to the varying requirements of work. It is specially adapted for general use in the small shop, farm, store or home. This tool is designated as No. 100 and carries a wheel ½ x 4 in., with a speed of nine and one-half revolutions for each turn of driving wheel, and weighs 5 lb., net. The iron parts of the wheel are neatly japanned. Fig. 2 illustrates the No. 120 Stover grinder, which is of the geared type. Special care, it is stated, has been taken in the construction of this machine to make the gears mesh perfectly, thus insuring a minimum



*Fig. 2.—Stover Geared Emery Wheel Grinder No. 120*

of noise and friction in its operation. The frame or base is made to be screwed down to the bench and the mounting of the two large wheels on the base just over the bench adds to its stability and steady motion. The power necessary for attaining the wheel speed required for effective work is provided for in the long sweep given to the handle. This machine also has an adjustable tool rest so arranged as to follow the wear of the wheel. All the iron parts of the tools are galvanized and it is built for heavy and constant service. It mounts a wheel 1 x 4 in. with a speed of 30 revolutions for each turn of handle, and weighs 7 lb., net.

## The New Wells Pipe Cutters and Tool Sets.

The F. E. Wells & Son Company, Greenfield, Mass., has brought out an improved type of its pipe cutters, in which, apart from general design, a new feature is the nut through which the handle works, this being removable and replaceable at small expense if it should become

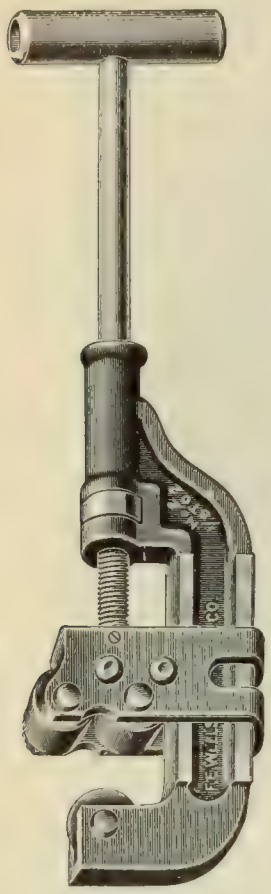


Fig. 1.—Roller Cutter.

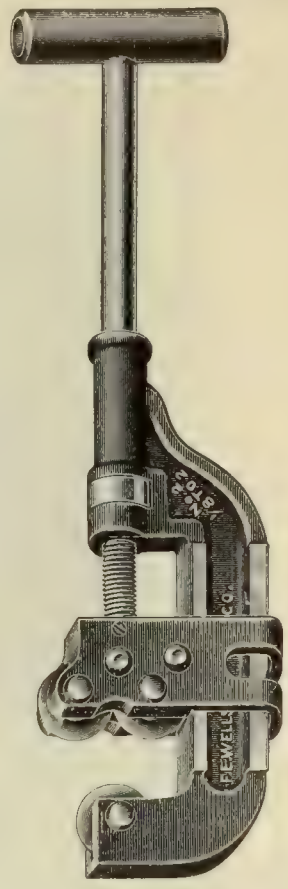


Fig. 2.—Three-Wheel Cutter.

*The New Wells Pipe Cutters.*

worn. The frame is of malleable iron instead of pressed steel. The wheels and rollers are held in place by hardened steel pins, and cotter pins are used to prevent the pins coming out or turning with the wheel, as may happen with the ordinary taper pointed pin. The wheels are of the standard Barnes type, and made from a specially selected steel, hardened and tempered. No. 1 shows the roller cutter, ordinarily used because the burr on the end of the pipe is rolled down, causing the dies to start more easily. The Wells type gives a wide range of work, the No. 1 cutting from ⅛ to 1¼ in. pipe, the No. 2 from

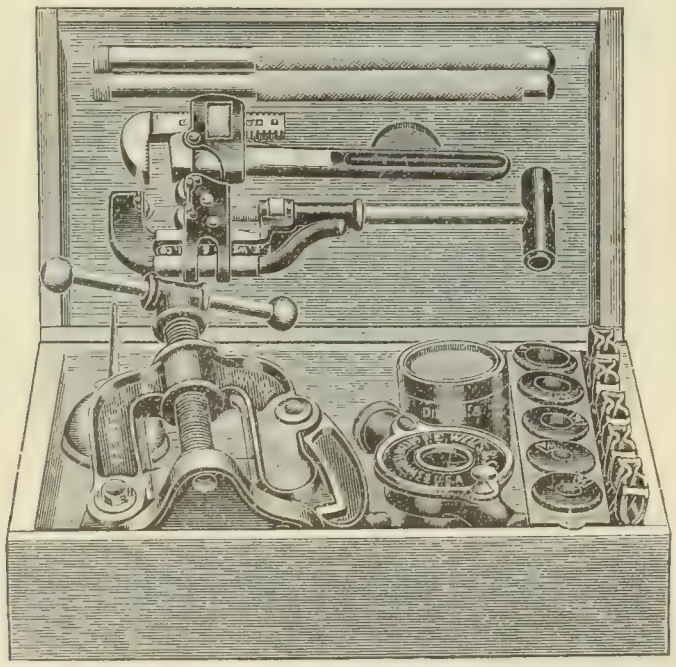
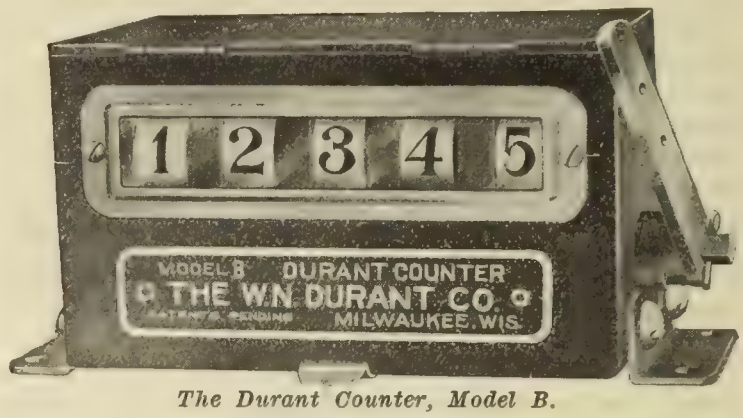


*Fig. 3.—The New Wells Tool Sets.*

⅛ to 2 in. and No. 3 from ½ to 3 in. Three-wheel pipe cutters, No. 2, are necessary where the pipe is next to the wall or in other place where the cutter cannot be revolved entirely around the pipe. With this type one-third of a revolution of the cutter will cut the pipe, leaving a burr as in other tools of the class. The sizes have the same capacity as the roller cutter kind. The company has also brought out new pipe tool sets, one of which is shown in Fig. 2. There are five different assortments for use in installing running water, gas, steam or hot water apparatus. Assortment A has the tools, including stocks and dies, pipe wrench, pipe cutter, vise, &c., to handle pipe from ¼ to 1 in., Assortment B covers pipe from ¼ to 1¼ in., Assortment C from ¼ to 1½ in., Assortment D from ¼ to 2 in. and Assortment E from ¼ to 2 in., with complete tools for plumbers' or steam fitters' kit.

## The Durant Counter, Model B.

The W. N. Durant Company, Milwaukee, Wis., has added to its line the counter shown herewith. Because of its compactness in size and light weight this style of counter is applicable to many uses for which the company's ratchet counters are not. It is constructed entirely of sheet steel, excepting brass bearings and unit gear. It is of the full geared positive type and contains a single strong and durable spring for retaining the lever in position. This may be dispensed with where a positive attachment can be procured. The operating lever can be readily set at any of four different positions at either the right or left end of the counter. The movement is said to be free and the positive action allows of operation at a speed of over 400 strokes per minute without inaccuracy or breakage. Resetting is accomplished without the use of a key. If desired the lid may be fitted with a




*The Durant Counter, Model B.*

lock to prevent resetting. The case is finished in black enamel and is dustproof. The counter may be used on punch presses, printing presses, automatic scales, &c. There are a number of modifications of this same type of counter for special uses, among which is a star wheel counter, for use on conveyors or chutes; a rotary counter, for direct connection to machine shafts, winding lathes, rolls, &c., for counting revolutions, and also a lineal measure counter. The latter consists of a counter of the type of the model B, fitted with a measuring wheel, and an adjustable supporting bracket. The measuring wheel is strongly constructed of cast iron, with milled rim, and is 12 in. in circumference, thus making the counter register one for each foot traveled. The shaft is fitted with extra long bearings and with an adjustable friction brake to keep the wheel from spinning from its own momentum. It is pointed out that this machine is admirably adapted and easily applied to wood working machines, while it can also be used to great advantage for measuring paper, wire, rope, cloth, &c.

## The Massey Vise Company.

The Massey Vise Company, 176-178 South Clinton street, Chicago, has lately added two new vises to its line, illustrated descriptions of which were given in a recent issue. Inadvertently, however, the company's new Lightning grip vise was referred to as No. 18 instead of No. 23, the correct designation. This vise is represented as different from other types, in that the parallel bars of the sliding jaw passing through widely spaced bearings on the stationary jaw are connected at their rear end by a carrier which engages on the outside guide of the stationary jaw on which the cam shaft is set. The vise is strengthened materially by the rear bearings, provided for the sliding bars and also has a positive lightning grip. The company's Clincher Coachmakers' vise was also illustrated, but as a result of a typographical error was alluded to as a coachmen's vise.

## The Feel-Fine Air Heels.

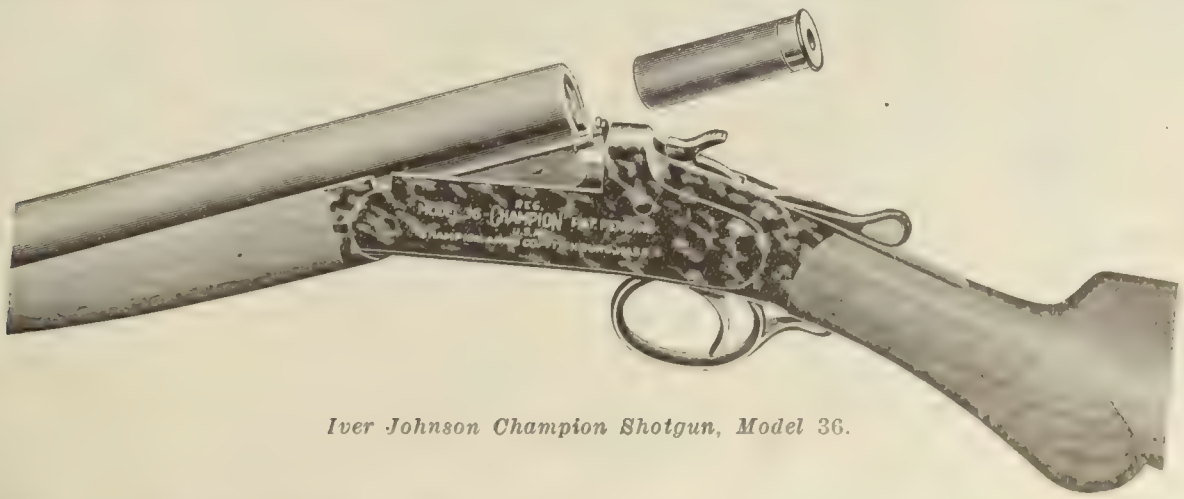
The accompanying illustration represents a patented air heel worn inside the shoe to give comfort to the wearer when standing or walking. The heels are pneumatic cushions of high grade rubber, or rubber channels filled with air. The rubber outside the channels is stitched to thin sole leather, occupying very little space within the shoe, and conforming to the shape of individual heels. The leather part of the heels is to be placed uppermost in the shoe for direct contact with the person's feet. The maker states that the device reduces the tendency toward the running over of shoe heels. The heels are made in sizes to fit any individual by the Consolidated Mfg. Company, Hartford, Conn.




*The Feel-Fine Air Heels.*

## Iver Johnson New Champion Shot Gun, Model 36.

The Iver Johnson Arms & Cycle Works, Fitchburg, Mass., is manufacturing a new model single barrel shotgun, a view of which is presented herewith. It has many improved features, which the company claims make it one of the most superior shotguns on the market, irrespective of price. The most notable departure to which attention is called is the construction of the barrel and lug, which are forged in one, made from one piece of steel, upset and hammer forged, laying the fiber of the metal in all directions ready to receive either the longitudinal or transverse strain, and thus adding greatly to the strength and safety of the gun. It has an adjustable tension bar, which increases the power of the main spring as desired, and a pivoted compensating locking bolt to take up wear. By using a snap fore end the joint is left solid, keeping the frame from spreading and giving a strong support to the joint pin. The manufacturers state that every portion has been reinforced and the metal has been carefully distributed in the frame and other parts in proportion to the strain which must be withstood at all points. The great strength obtained in this way, as well as in the one-piece forged barrel and lug, make the gun suitable for Nitro powder without increasing the weight. The butt plate is of doubled thickness, giving absolute strength at this point, and it has also been corrugated to prevent slipping at the shoulder. The automatic ejector is shown in the illustration. Other details and features of excellence are referred to in the company's printed matter.

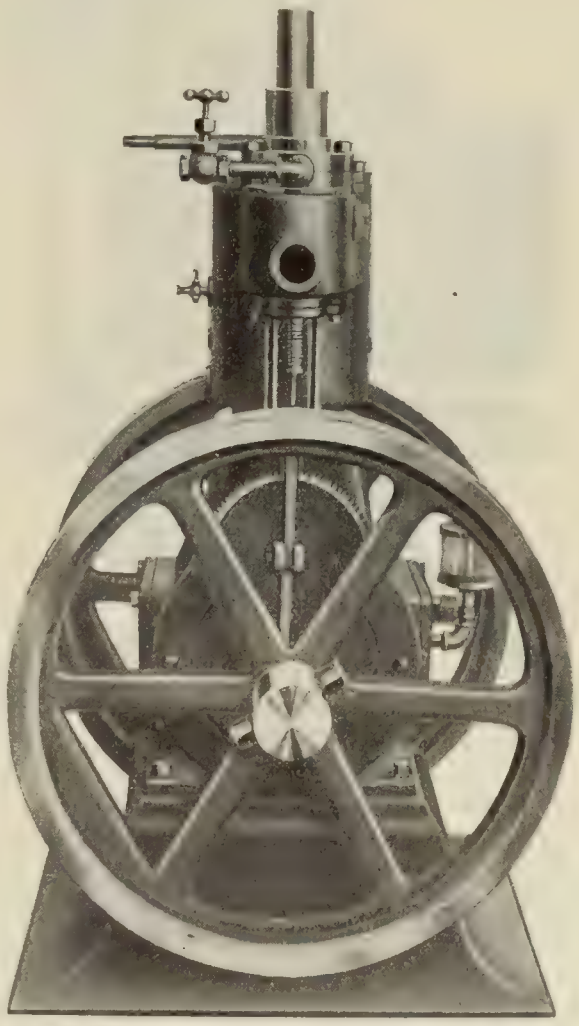



*Iver Johnson Champion Shotgun, Model 36.*

W. M. Tatum Hardware Company, Corsicana, Texas, has suffered a loss of $300 by fire in its warehouse. The company handles Shelf and Heavy Hardware, Stoves, Tinware and Sporting Goods.

## Bovaird Gas and Gasoline Engines.

Bovaird & Co., Bradford, Pa., manufacturers of boilers, steam and gas engines, air and steam heads, pipe, tubing, &c., for oil, gas and artesian wells, have lately added to their line the vertical gas and gasoline engine, illustrated herewith, which is furnished in two sizes, 2 and 4 hp. The makers state that although the engines run at moderate speed, they are abundantly able to develop their rated horsepower under all circumstances. Therefore, there is no danger of their being racked by excessive speed in doing the work, and the foundations do not call for more than ordinary care. The machine is said to be remarkable for its few working parts, and has but two valves—inlet and exhaust. The governor is furnished regularly in the hit and miss type, although the throttling type can also be furnished,

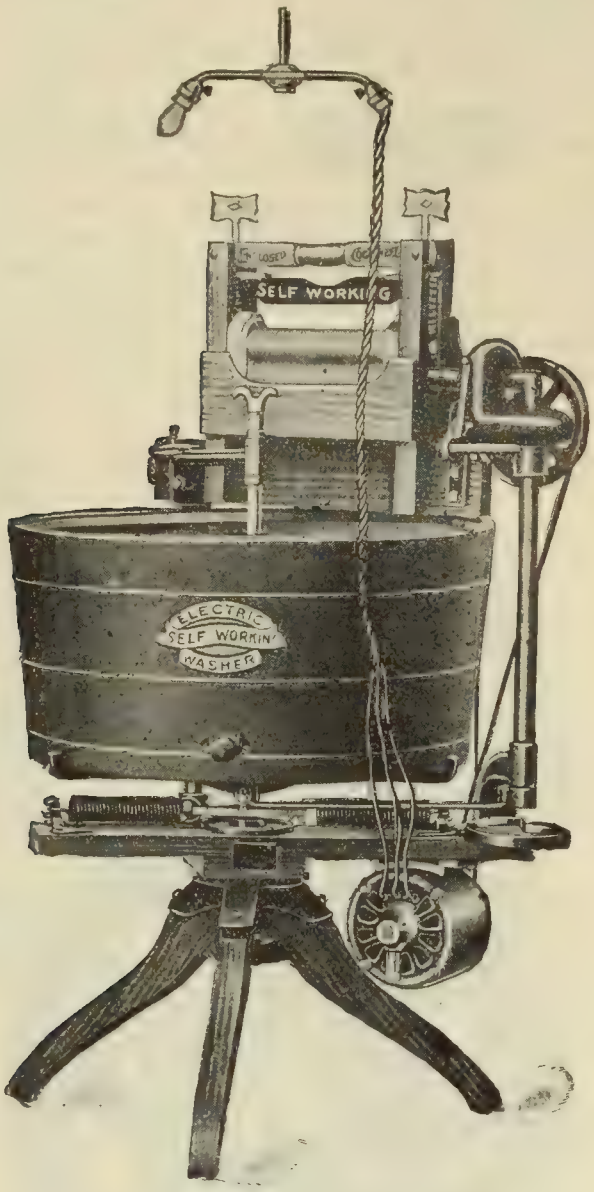


*Bovaird Vertical Gas and Gasoline Engine.*

and has but two moving parts. Poppet type valves are used, which are easy to regrind should carbon or burnt oil accumulate on them. The bearings are of brass or prosphor bronze, and the gears are all machine cut. The engine is thoroughly water jacketed, and the crank is enclosed in a dust proof case, which forms a reservoir for oiling the crank brass and to aid in oiling the piston and cylinder. The cylinder and base are detachable, and every part of the engine is said to be easily accessible. An important feature referred to by the makers is the possibility of replacing parts. The base, frame, cylinder and head are all separate pieces, so that in case of accident it is not necessary to replace practically the entire machine.

## The 1900 Electric Washing Machine.

The Nineteen Hundred Washer Company, Binghamton, N. Y., is manufacturing the washing machine here shown, operated by an electric motor. The supports on which the tub rests are selected timber, bolted to an iron plate, above which and bolted to the same plate are the bottom boards to support the working parts, tub and wringer frames. The motor is placed below the bottom boards. It is said that the motor supplies more than enough power to work both the washer and wringer, and that two to four cents a week will pay for all the electric current needed to do a large washing. The current is obtained by connecting with the electric lighting fixtures in the house. The tub is made from Virginia white cedar, with dovetailed staves, bound with electrically welded wire hoops. To the pivot axis are fastened two heavy oil tempered coil steel springs. The springs are also fastened to plates at the ends of one of the bottom boards. In operation the tub swings part way around and then back. The power can be shifted in an instant from washer to wringer by the movement of a small lever.




*The 1900 Electric Washing Machine.*

## Keck's Folding Table.

The top of the folding table shown herewith is made of basswood and is 22 x 48 in., large enough, it is remarked, for a woman to use in cutting a skirt. The legs are braced with coppered wire bails, which catch between a piece of corrugated metal and a spring on the inner side of the top. The bails are to hold the legs firmly against the cleats placed across either end of the top and make the table stand steadily. When set up the table is 30 in. high. It folds so that it is about the thickness of two boards the size of the top laid flat together. It can easily be set out of the way in a closet behind hanging garments. The table is manufactured by John A. Keck Company, 208 West Wood street, Decatur, Ill.

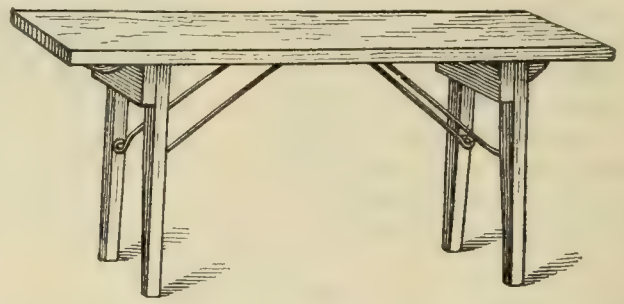


*Fig. 1.—Keck's Folding Table.*

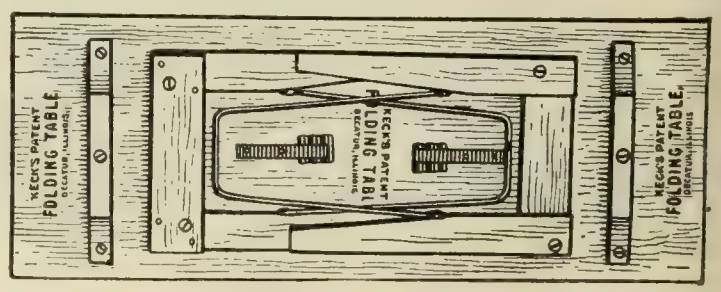



*Fig. 2.—Keck's Table Folded.*

# PAINTS, OILS AND COLORS

### Animal, Fish and Vegetable Oils—

| | ℔ gal. |
|---|---|
| Linseed, State and Western, raw | 42 @44 |
| City, Boiled | 45 @46 |
| City, Raw | 44 @45 |
| Raw, Calcutta, in bbls | 70 @71 |
| Lard, Prime, Winter | 72 @75 |
| Extra No. 1 | 50 @52 |
| No. 1 | 48 @49 |
| Cotton-seed, Crude, f.o.b. mill | 28½@29 |
| Summer Yellow, prime | 38½@39¼ |
| Summer, White | 43 @44 |
| Yellow Winter | 45 @47 |
| Tallow, Acidless | 58 @60 |
| Menhaden, Brown, Strained | 35 @36 |
| Northern Crude | 24 @.. |
| Southern | 24 @.. |
| Light Strained | 35 @36 |
| Bleached Winter | 37 @39 |
| Ex. Bleached Winter | 39 @41 |
| Cocoanut, Ceylon | ℔ lb 6¼@ 6½ |
| Cochin | ℔ lb 7¼@ 7½ |
| Cod, Domestic, Prime | 38 @40 |
| Newfoundland | 40 @42 |
| Red, Elaine | 40 @41 |
| Saponified | ℔ lb 5¾@ 6 |
| Olive, Yellow | $0.90@$1.00 |
| Neatsfoot, Prime | 55 @58 |
| Palm, Lagos | ℔ lb 5¾@ 6 |

### Mineral Oils—

| | ℔ gal. |
|---|---|
| Black, 29 gravity, 25@30 cold test | 13 @13½ |
| 29 gravity, 15 cold test | 13½@14 |
| Summer | 12½@13 |
| Cylinder, light filtered | 20½@21 |
| Dark, filtered | 18 @19 |
| Paraffine, 905 907 sp. gravity | 14½@15 |
| 903 sp. gravity | 13½@14 |
| 883 sp. gravity | 11 @11½ |
| Red | 13½@14 |

### Miscellaneous—

| | |
|---|---|
| Barytes: | |
| White, Foreign | ℔ ton $18.50@20.50 |
| Amer., floated | ℔ ton 17.00@18.00 |
| Off color | ℔ ton 12.50@15.00 |
| Chalk, in bulk | ℔ ton 3.00@ 3.40 |
| Chalk, in bbls | ℔ ton 11.50@18.00 |

| | ℔ gal. |
|---|---|
| Cobalt, Oxide | ℔ 100 lb 1.45@ 2.60 |
| Whiting, Commercial | ℔ 100 lb 42@52 |
| Gilders | ℔ 100 lb .55@ .60 |
| Ex. Gilders | ℔ 100 lb .60@ .65 |

### Putty, Commercial—℔ 100 lb

| | |
|---|---|
| In bladders | $1.70 @1.80 |
| In bbls. or tubs | 1.20 @1.45 |
| In 1 lb to 5 lb cans | 2.65 @2.95 |
| In 12½ to 50 lb cans | 1.50 @1.90 |

### Spirits Turpentine—℔ gal.

| | |
|---|---|
| In Oil bbls | 38½@39 |
| In machine bbls | 39 @39½ |

### Glue—

| | ℔ lb |
|---|---|
| Cabinet | 12 @15 |
| Common Bone | 7½@ 9 |
| Extra White | 18 @24 |
| Fish, liquid, 50 gal. bbls., per gallon | 60 @1.20 |
| Foot Stock, White | 12 @14 |
| Foot Stock, Brown | 9 @11 |
| German Common Hide | 10 @12 |
| German Hide | 12 @18 |
| French | 10 @40 |
| Irish | 13 @16 |
| Low Grade | 10 @12 |
| Medium White | 14 @17 |

### Gum Shellac—

| | ℔ lb |
|---|---|
| Bleached, Commercial | 23 @24 |
| Bone Dry | 28 @29 |
| Button | 30 @40 |
| Diamond I | @37 |
| Fine, Orange | 34 @35 |
| A. C. Garnet | 27 @28 |
| G. A. L. | 20 @21 |
| Kala Button | 18 @19 |
| D. C. | @38 |
| Octagon B | 35 @36 |
| T. N. | 25 @26 |
| V. S. O. | @37 |

### Colors in Oil—

| | ℔ lb |
|---|---|
| Black, Lampblack | 12 @14 |
| Blue, Chinese | 36 @45 |
| Blue, Prussian | 32 @36 |
| Blue, Ultramarine | 13 @16 |
| Brown, Vandyke | 11 @14 |
| Green, Chrome | 12 @16 |
| Green, Paris | @24 |
| Sienna, Raw | 12 @15 |
| Sienna, Burnt | 12 @15 |
| Umber, Raw | 11 @14 |
| Umber, Burnt | 11 @14 |

### White and Red, Lead &c.—

| | ℔ lb |
|---|---|
| Lead, English white, in Oil | 10⅛@10⅜ |
| Lead, American White: | |
| Dry and in Oil, 100, 250 and 500 lb kegs | 7 |
| Dry and in Oil, 25 and 50 lb kegs | 7¼ |
| Dry and in Oil, 12½ lb kegs | 7½ |
| In Oil, 25 lb tin pails | 7½ |
| In Oil, 12½ lb tin pails | 8 |
| In Oil, 1, 2, 3 and 5 lb tin cans, ass't | 9 |
| Red Lead and Litharge: | |
| In 100 lb kegs | 7 |
| In 25 and 50 lb kegs | 7¼ |
| In 12½ lb kegs | 7½ |
| In lots of less than 500 lbs, ½¢ ℔ lb advance over above prices of White and Red Lead and Litharge. | |
| Lead, American. Terms: On lots of 500 lbs and over, 60 days, or 2% for cash if paid in 15 days from date of invoice. | |

### Zinc, Dry—

| | ℔ lb |
|---|---|
| American, dry | 5¼@ 5⅝ |
| Red Seal (French process) | 6¾@ 7 |
| Green Seal | 7¼@ 7½ |
| German Red Seal (French process) | 6⅝@ 7 |
| Green Seal | 7¼@ 7⅝ |
| White Seal | 7¾@ 8¼ |
| French, Red Seal | 8¾@ 8⅞ |
| Green Seal | 10⅜@10⅝ |

### Dry Colors—

| | ℔ lb |
|---|---|
| Black, Carbon | 6½@10 |
| Black Drop, American | 3½@ 8 |
| Black Drop, English | 5 @15 |
| Black, Ivory | 16 @20 |
| Lamp, commercial | 4 @ 6 |
| Blue, Celestial | 4 @ 6 |
| Blue, Chinese | 31 @33 |
| Blue, Prussian | 29 @31 |
| Blue, Ultramarine | 3½@15 |
| Brown, Spanish | ½@ 1 |
| Carmine, No. 40 | $3.10@3.25 |
| Green, Chrome, ordinary | 3½@ 5 |
| Green, Chrome, pure | 17 @25 |
| Ocher, American | ℔ ton $8.50@16.00 |
| American Golden | 2½@ 3¼ |
| French | 1¼@ 2 |
| Foreign Golden | 3 @ 4 |
| Orange Mineral, English | 10 @12 |
| French | 12¾@13 |
| German | 12 @13 |
| American | 9 @10 |
| Red, Indian, English | 4½@ 6 |
| American | 3 @ 3¼ |
| Red, Turkey, English | 4 @10 |
| Red, Tuscan, English | 7 @10 |
| Red, Venetian, Amer. | ℔ 100 lb $0.50@1.25 |
| English | ℔ 100 lb $1.15@1.60 |
| Sienna, Italian, Burnt and Powdered | 3 @ 9 |
| Italian, Raw, Powdered | 3 @ 7 |
| American, Raw | 1½@ 2 |
| American Burnt and Pow'd | 1½@ 2 |
| Talc, French | ℔ ton $18.00@25.00 |
| American | ℔ ton 15.00@25.00 |
| Terra Alba, French | ℔ 100 lb .90@ 1.00 |
| English | ℔ 100 lb .80@ 1.00 |
| American | ℔ 100 lb, No. 1. .75@ .80 |
| American | ℔ 100 lb, No. 2. .60@ .65 |
| Umber, T'key, Bnt, & Pow. | 2⅜@ 3 |
| Turkey, Raw and Powdered | 2⅜@ 3 |
| Burnt, American | 1½@ 2 |
| Raw, American | 1½@ 2 |
| Yellow, Chrome, Pure | 13¾@15 |
| Vermilion, American Lead | 7 @25 |
| Quicksilver, bulk | 65 @.. |
| Quicksilver, bags | @66 |
| English, Imported | 65 @70 |
| Chinese | $0.90@1 |

# Current Hardware Prices.

**General Goods.**—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

**Special Goods.**—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

**Range of Prices.**—A range of prices is indicated by means of the symbol @. Thus 33⅓ @ 33⅓ & 10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

**Names of Manufacturers.**—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1907, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

**Standard Lists.**—"The Iron Age Standard Hardware Lists" contains the list prices of many leading goods.

**Additions and Corrections.**—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

## Adjusters, Blind—

Columbian and Domestic.....33⅓%
North's .....10%
Upson's Patent, ℔ gro., $29.90.....10%
Zimmerman's—See Fasteners, Blind.

### Window Stop—

Ives' Patent.....35%
Ives' Stop Bead Screws and Washers .....10%
Taplin's Perfection.....35%

## Ammunition—See *Caps, Cartridges, Shells, &c.*

## Anti—Rattlers—

Fernald Mfg. Co. Burton Anti-Rattlers, ℔ doz. pairs, Nos. 1, $0.75; 2, $0.60; 4, $1.00; 5, $0.50.
Fernald Quick Shifter, ℔ doz. pairs .....$2.00@$3.00

## Anvils—American—

Eagle Anvils.....℔ lb @8 ¢
Hay-Budden, Wrought.....9½@9¾ ¢
Trenton .....℔ lb 9½@9¾ ¢

### Imported—

Swedish Solid Steel Sisco, Superior, ℔ lb.....10@10½ ¢
Peter Wright & Sons, ℔ lb. 84 to 349 lb. 11¢; 350 to 600 lb. 11½ ¢.

## Anvil, Vice and Drill—

Millers Falls Co., $18.00.....15&10%

## Apple Parers— See *Parers, Apple, &c.*

## Aprons, Blacksmiths'—

Lumaston Nail Co.....10%

## Augers and Bits—

*Com. Double Spur....75&10@80%*
*Jennings' Patn., Bright.65&10@70%*
*Black Lip or Blued...65@65&5%*
*Boring Mach. Augers.....70%*
*Car Bits, 12-in. twist....40&10%*
Ford's Auger and Car Bits.....40&5%
Ft Washington Auger Co., Conard's .....35%
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip. R. Jennings' list, 25&7½%
No. 30, R. Jennings' list.....50%
Russell Jennings'.....25&10&2½%
L. Hammedieu Car Bits.....15%
Mayhew's Countersink Bits.....45%
Pugh's Black.....20%
Pugh's Jennings' Pattern.....35%
Snell's Auger Bits.....60%
Snell's Bell Hangers' Bits.....60%
Snell's Car Bits, 12-in. twist.....60%
Snell's King Auger Bits.....50%
Snell's .....65&10@75%
Snell's, Jennings' Pattern.....50%
Wright's Jennings' Bits.....50%

## Bit Stock Drills—

See *Drills, Twist.*

## Expansive Bits—

Clark's Pattern, No. 1, ℔ doz., $26; No. 2, $18.....60&10%
Ford's, Clark's Pattern...60&5@60&10%
C. E. Jennings & Co., Steer's Pat..25%
Lavigne Pat., small size, $18.00; large size, $26.00.....60&10%
Swan's .....60%

## Gimlet Bits—

*Per gro.*
*Common Dbl. Cut.....$3.00@3.25*
*German Pattern, Nos. 1 to 10, $4.75; 11 to 13, $5.75*

## Hollow Augers—

*Bonney Pat., per doz..$5.50@6.00*
Jones .....20&10%
Universal .....20%

## Ship Augers and Bits—

*Ship Augers.....40&10@—%*
Ford's .....33⅓&5%
C. E. Jennings & Co.:
L. Hammedieu's .....6%
Watrous' .....33⅓&7½%
Snell's .....48%

## Awl Hafts—See *Handles, Mechanics' Tool.*

## Awls—

*Brad Awls:*
*Handled .....gro. $2.75@3.00*
*Unhdld., Shldered...gro.63@66¢*
*Unhandled, Patent..gro.66@70¢*
*Peg Awls:*
*Unhandled, Patent..gro. 31@34¢*
*Unhdld., Shldered..gro. 65@70¢*
*Scratch Awls:*
*Handled, Com...gro. $3.50@4.00*
*Handled, Socket..gro.$11.50@12.00*

## Awl and Tool Sets—See *Sets, Awl and Tool.*

## Axes—

*Single Bit, base weights: Per doz.*
*First Quality.....$4.75@5.00*
*Second Quality.....$4.25@4.50*
*Double Bit, base weights:*
*First Quality.....$7.00@7.50*
*Second Quality.....$6.50@6.75*

## Axle Grease—

See *Grease, Axle.*

## Axles— Iron or Steel.

*Concord, Loose Collar...4¼@4½¢*
*Concord, Solid Collar....4½&5 ¢*
*No. 1 Common, Loose...3½@4 ¢*
*No. 1½ Com., New Style.4¼@4¾¢*
*No. 2 Solid Collar.....4¼@4¾¢*
*Half Patent:*
*Nos. 7, 8, 11 and 12.....70%*
*Nos. 13 to 14.....70%*
*Nos. 15 to 18...70&10@70&10&5%*
*Nos. 19 to 22...70&10@70&10&5%*

### Boxes, Axles—

*Common and Concord, not turned .....lb..5@6¢*
*Common and Concord, turned, lb., 6@7¢*
*Half Patent.....lb., 9½@10¢*

## Bait— Fishing—

Hendryx:
A Bait.....20%
B Bait.....25%
Competitor Bait.....20&5%

## Balances— Sash—

Caldwell new list.....50&10%
Pullman .....50&10%

### Spring—

*Light Spring Balances.60@60&5%*
Chatillon's:
Light Spg. Balances.....50@50&10%
Straight Balances.....40@40&10%
Circular Balances.....50&10%
Large Dial.....30%

## Barb Wire—See *Wire, Barb.*

## Bars— Crow—

*Steel Crowbars, 10 to 40 lb.... per lb., 2¼@2½¢*

### Towel—

No. 10 Ideal, Nickel Plate..℔ gro. $8.50

## Beam, Scale—

*Scale Beams.....40%*
Chattillon's No. 1.....30%
Chatillon's No. 2.....40%

## Beaters, Carpet—

Holt-Lyon Co.:
No. 12 Wire Coppered ℔ doz. $0 80; Tinned .....$0.85
No. 11 Wire Coppered ℔ doz. $1.15; Tinned .....$1.20
No. 10 Wire Tinned.....℔ doz. $1.50

### Beaters Egg—

Dover Stamping & Mfg. Co.:
Genuine Dover, per gro., No. 1, Tumbler Size, $7.50; No. 2, Family Size, $7.50; No. 3, Extra Family Size, $24.00; No. 4, Hotel Size, $30.00.
Holt-Lyon Co.:
Holt, per doz., No. 5, Jap'd $0 80; No. A, Jap'd, $1.15; No. B, Jap'd, $1.85; No. 6, Jap'd, $1.65.
Lyon, Jap'd, per doz., No. 2, $1.35.
Taplin Mfg. Co.:
Improved Dover, per gro., No. 60, $6.00; No. 75, $6.50; No. 100, $7.00; No. 102, Tin'd, $8.50; No. 150, Hotel, $15.00; No. 152, Hotel Tin'd, $17.00; No. 200, Tumbler, $8.50; No. 202, Tumbler Tin'd, $9.50; No. 300, Mammoth, per doz., $25.00.

## Bellows—

*Blacksmith, Standard List:*
*Split Leather.....60&10@65%*
*Grain Leather.....50@50&10%*

### Hand—

| *Inch..* | *6* | *7* | *8* | *9* | *10* |
|---|---|---|---|---|---|
| *Doz..* | *$5.00* | *5.50* | *6.00* | *6.50* | *7.50* |

### Molders—

| *Inch..* | *10* | *12* | *14* | *16* |
|---|---|---|---|---|
| *Doz..* | *$7.50* | *9.00* | *12.00* | *15.00* |

Net Prices.

## Bells— Cow—

*Wrought Cow Bells.....75%*
Jersey .....75&10%
Texas Star.....50

### Door—

Home, R. & E. Mfg. Co.'s.....55&10%

### Hand—

*Polished, Brass.....60@60&10%*
*White Metal.....60@60&10%*
*Nickel Plated.....50&10%*
*Swiss .....50&10%*
Cone's Globe Hand Bells.....33⅓@35%

### Miscellaneous—

*Farm Bells.....lb., 2¼@2½¢*
*Church and School....60@60&10%*

## Belting— Leather—

*First Quality, Ex. Hy., Strictly Short Lap.....60&10%*
*Standard .....70&10@70&10&5%*
*Light Double.....75&10%*
*Cut Leather Lacing.....50%*
*Leather Lacing Sides, per sq. ft. 23@24¢*

### Rubber—

*Competition (Low Grade), 70&10@75%*
*Standard .....60&10@70%*
*Best Grades.....40@50%*

## Bench Stops—

See *Stops, Bench*

## Benders and Upsetters, Tire—

Green River Tire Benders and Upsetters .....20%

## Bicycle Goods—

John S. Leng's Son & Co.'s 1908 list:
Cham, Parts, Spokes.....50%
Tubes .....60%

## Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

## Blocks Tackle—

*Common Wooden.....75@75&5%*
B. & L. B. Co.:
Boston Wood Snatch, 50%; Eclipse Steel, 75%; Hollow Steel, 50&10%; Star Wire Rope, 50%; Tarbox Metal Snatch, 50%; Tarbox New Style Steel, 50&10%; Wire Rope Snatch, 50%.
Lane's Patent Automatic Lock and Junior .....30%
See also Machines, Hoisting.

## Boards, Stove—

*Paper and Wood Lined.....55%*
*Embossed .....55%*

## Boards, Wash—

See *Washboards.*

## Bobs, Plumb—

Keuffel & Esser Co.....33⅓&10%

## Bolts Carriage, Machine, &c.—

*Common Carriage (cut thread):*
*¾ x 6 and smaller..75&5@—%*
*Larger and longer....70&5@—%*
*Phila. Eagle, $3.00 list...80@*
*Bolt Ends.....70&10@—%*
*Machine (Cut Thread):*
*¾ x 4 and smaller..75&10@—%*
*Larger and longer...70&10@—%*

### Door and Shutter—

*Cast Iron Barrel, Japanned, Round Brass Knobs:*

| *Inch ...* | *3* | *4* | *5* | *6* | *8* |
|---|---|---|---|---|---|
| *Per doz..* | *$0.30* | *.35* | *.45* | *.60* | *.80* |

*Cast Iron Spring Foot, Jap'd:*

| *Inch .....* | *6* | *8* | *10* |
|---|---|---|---|
| *Per doz.....* | *$1.20* | *1.50* | *2.25* |

*Cast Iron Chain, Flat, Japanned:*

| *Inch .....* | *6* | *8* | *10* |
|---|---|---|---|
| *Per doz.....* | *$1.00* | *1.40* | *1.65* |

*Cast Iron Flat Shutter, Jap'd. Brass Knobs:*

| *Inch .....* | *6* | *8* | *10* |
|---|---|---|---|
| *Per doz.....* | *$0 75* | *95* | *1.25* |

*Wrought Barrel Japanned, 80&10@80&10&5%*
*Barrel Bronzed.....60&10%*
*Spring .....70&10@70&10&10%*
*Shutter .....50&5@50&10&5%*
*Square Neck.....75@75&10%*
*Square .....70&10&10@80%*
Ives' Mortise .....10
Ives' Wrought Metal .....10

## Expansion—

E. H. Evans' Crescent.....40@60%
Richards Mfg. Co .....75&10
Star Expansion Bolt Co.:
Star Lag Screw Type 60&10&5&2%
Star Wood Screw Type .....10
Star, Machine, Single Wedge....60%
Star, Machine, Double Wedge....60%
Steward & Romain Mfg. Co.:
Style No. 13, Double.....60%
Style No. 1, Single.....60%
Style No. 100, Dbl. Jaw, Single..55%
Lag Screw.....66⅔%

### Plow and Stove—

*Plow .....65&5@70%*
*Stove .....85@85&5%*

### Tire—

*Common Iron.....80%*
*Norway Iron.....80%*
American Screw Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84...82½%
Bay State, list Dec. 28, '99.....80%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84...82½%
Eclipse, list Dec. 28, '99.....80%
Russell, Burdsall & Ward Bolt & Nut Co.:
Empire, list Dec. 28, '99.....80%
Norway Phila., list Oct. '84.....80%
Eagle .....82½%
Shelton Co.:
Tiger Brand, list Dec. 28, '99....80%
Phila., Eagle, list Oct. 16, 1884..82½%
Upson Nut Co.:
Tire Bolts.....72½%

## Borers, Bung—

*Borers Bung, Ring, with Handle:*

| *Inch.....* | *1¼* | *1½* | *1¾* | *2* |
|---|---|---|---|---|
| *Per doz...* | *$4.80* | *5.60* | *6.40* | *8.00* |
| *Inch.....* | | *2¼* | | *2½* |
| *Per doz.....* | | *$8.65* | | *11.50* |

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.75; No. 3, $2.50 each.....25%

## Boxes, Mitre—

C. E. Jennings & Co.....25%
Langdon, New Langdon and Langdon Improved. 20&10%; Langdon Acme .....15&10%
Perfection .....40%
Seavey .....45%

## Braces—

*Comman Ball, American....$1.50*
Barber's .....50&10&10@60&10%
Fray's Genuine Spofford's.....60%
Fray's No. 61, 166, 206, 614.....50%
C. E. Jennings & Co.....50&5%
Mayhew's Ratchet.....60%
Mayhew's Quick Action Hay Pat...50%
Millers Falls Drill Braces.....25&10%
P., S. & W. Co., Peck's Pat....60&10%

## Brackets—

*Wrought Steel.....75&10&5@80%*
Bradley Metal Clasp...80&10@80&10&5
Griffin's Pressed Steel.....75@75&10%
Griffin's Folding Brackets.....70&10%
Taplin Victor Handy Egg Beater Bracket .....℔ doz. $1.50

## Bright Wire Goods—

See *Wire and Wire Goods.*

## Broilers—

Kilbourne Mfg. Co..... 75&20%
Wire Goods Co.....75%

## Buckets, Galvanized—

*M'fr's list, price per gross.*

| *Quart..* | *10* | *12* | *14* |
|---|---|---|---|
| *Water, Reg* | *26.85* | *29.50* | *33.50* |
| *Water, Heavy* | *45.35* | *48.00* | *52.00* |
| *Fire, Rd. Btm.* | *32.00* | *34.65* | *38.65* |
| *Well .....* | *37.35* | *41.35* | *45.35* |

Extra, 10@—65%

## Bull Rings—See *Rings, Bull*

## Butts— Brass—

*Wrought, High List, O. K. 6/06&7*
Cast Brass, Tiebout's.....40&10

### Cast Iron—

*Fast Joint, Broad .....50@50&5*
*Fast Joint, Narrow .....50@50&10*
*Loose Joint.....50&10@50&10&5*
*Loose Pin.....50&10@50&5*
*Mauer's Hinges .....50@50&10*
*Parliament Butts .....50@50&5*

### Wrought Steel—

*Bright*
*Light Narrow, Light Reversible .....70&5*
*Reversible and Broad .....70&5*
*Loose Joint, Narrow, Light Inside Blind, &c .....70%*
*Back Flaps, Table Cheat .65%*
*Japanned.*
*Light Narrow, Loose Pin, .....50&5%*
*Light Narrow, Ball Tip .60%*
*Broad .....50&5%*
*Steeple Tipped.....70%*
*Ball Tipped.....70%*

Extra, 10@—

## Cages, Bird—

Hendryx Brass: Series 3000, 5000, 1100, net list; 1200, 15%; 200, 300, 500 ..... 30%
Hendryx Bronze: Series 700, 800....30%
Hendryx Enameled..... 35%

## Calipers—See *Compasses.*

## Calks, Toe and Heel—

*Blunt, 1 prong, per 100 lb., $3.50@$3.85*
*Sharp, 1 prong, per 100 lb., $4.00@$4.35*
Burke's, 1 pg. Blunt Toe, 3¾¢; 2 pg. Blunt Toe, 4¼¢; 1 pg. Sharp Toe, 4¼¢; 2 pg. Sharp, 4¾¢; Blunt Heel, 4¼¢; Sharp Heel.....4¾¢
Lautier, Blunt, 4@4¼¢; Sharp, 4½@4¾¢
Perkins', Blunt, ℔ lb, 3.65¢; Sharp, 4.15¢

## Can Openers—

See *Openers, Can.*

## Caps, Percussion—

*Eley's E. B.....52@55¢*
*G. D.....per M 34@35¢*
*F. L.....per M 40@42¢*
*G. E.....per M 48@49¢*
*Musket .....per M 62@63¢*

## Primers—

*Berdan Primers, $2 per M..20&5%*
*Primer Shells and Bullets..15&10%*
*All other primers per M..$1.52@1.60*

## Carpet Stretchers—

See *Stretchers, Carpet.*

## Cartridges—

*Blank Cartridges:*
*32 C. F., $5.50.....10&5%*
*38 C. F., $7.00.....10&5%*
*22 cal. Rim, $1.50.....10&5%*
*32 cal. Rim, $2.75.....10&5%*
*B. B. Caps, Con. Ball, Swgd..$1.90*
*B. B. Caps, Round Ball.....$1.49*
*Central Fire.....25%*
*Target and Sporting Rifle..15&5%*
*Primed Shells and Bullets..15&10%*
*Rim Fire, Sporting.....50%*
*Rim Fire, Military.....15&5%*

## Casters—

*Bed .....65&10@70%*
*Plate .....60@60&5%*
*Philadelphia .....70&10@75%*
Acme, Ball Bearing.....35
Gem (Roller Bearing).....70&10&10&5
Steel Gem (Roller Bearing).....70
Standard Ball Bearing.....45
Yale (Double Wheel) low list...40&10%

## Cattle Leaders—

See *Leaders, Cattle.*

## Chain, Proof Coil—

*American Coil, Straight Link:*

| 3/16 | 1/4 | 5-16 | 3/8 | 7-16 | 1/2 | 5/8 |
|---|---|---|---|---|---|---|
| $8.15 | 5.55 | 4.60 | 3.95 | 3.75 | 3.65 | 3.55 |

| 3/4-7/8-1 | 1 1/8 to 1 1/4 inch. |
|---|---|
| $3.45 | 3.55 |

*In cask lots, deduct 25¢.*
*German Coil.....60@60&5%*
*German Pattern Coil:*
*6-0 to 1.....70&5@70&10%*
*2 and 3..60&10@60&10@60&10&5%*
*4, 5 and 6.....50&10@50&10&5%*

## Halter—

*Halter Chains.....60&5@60&10%*
*German Pattern Halter Chains list July 24, '07....60&10&5@70%*
Covert Mfg. Co.:
Halter .....35&5%

## Cow Ties—

See *Halters and Ties.*

## Trace, Wagon, &c.—

*Traces, Western Standard: 100 pr.*
*6½—6-3, Straight, with ring..$28.00*
*6½—6-2, Straight, with ring..$29.00*
*6½—8-2, Straight, with ring..$32.00*
*6½—10-2, Str'ght, with ring..$37.00*
*NOTE.—Add 2c per pair for Hooks Twist Traces: add per pair for Nos. 2 and 3, 2c: No. 1, 3c; No. 0, 4c to price of Straight Link.*
*Eastern Standard Traces, Wagon Chain, &c...60&10@60&10&5%*

## Miscellaneous—

*Jack Chain, list July 10, '93:*
*Iron .....60&10&7½%*
*Brass .....65%*
*Safety and Plumbers' Chain..75%*
*Gal. Pump Chain....lb., 4½@5%*
Bridgeport Chain Co.:
Triumph Halter and Coil..35&2½@40
Triumph Dog.....50&10@60
Brown Halter and Coil....45@50&5
Covert Mfg. Co.:
Breast, Halter, Heel, Rein, Stallion .....40%
Oneida Community:
American Halter, Dog and Kennel Chains .....35&2½@40
Niagara Dog Leads and Kennel Chains .....45@50&5%
Wire Goods Co.:
Dog Chain.....70%
Universal Dbl.-Jointed Chain....70%

## Chain and Ribbon, Sash—

Oneida Community:
Steel Chain.....60%
Pullman:
Brass Chain, 60%; Steel Chain, Copper'd .....60&10%
Sash Chain Attachments, per set..8¢
Ammonia Sash Ribbon, per 100 ft. .....$2.00@$5.00
Sash Ribbon Attachments, per set..8¢

## Chalk—

*Carpenters' Blue.....gro., 70¢*
*Carpenters' Red.....gro., 50¢*
*Carpenters' White.....gro., 40¢*

## Checks, Door—

Bardsley's .....45%
Pullman, per gro.....$54.00
Russwin .....
Union .....3.00@3.
Yale .....11.50@18.00

## Chests, Tool—

American Tool Chest Co.:
Boys' Chests, with Tools.....55%
Youths' Chests, with Tools.....40
Gentlemen's Chests, with Tools..30%
Farmers', Carpenters, etc., Chests, with Tools .....20%
Machinists' and Pipe Fitters' Chests, Empty.....45%
Tool Cabinets.....45%
C. E. Jennings & Co.'s Machinists' Tool Chests.....7½%

## Chisels—

## Socket Framing and Firmer

*Standard List.....80&10@—%*
Buck Bros.....30%
C. E. Jennings & Co.:
Socket Firmer No. 10.....25&7½%
Socket Framing No. 15.....25&7½
Swan's .....66⅔@70
L. & I. J. White & Co.....30@30&5%

## Tanged—

*Tanged Firmers.....30&5@35%*
Buck Bros.....30
C. E. Jennings & Co. Nos. 191, 181..25%
L. & I. J. White Co.....25&5%

## Cold—

*lb.*
*Cold Chisels, good quality..13@15¢*
*Cold Chisels, fair quality..11@12¢*
*Cold Chisels, ordinary.... 9@10¢*

## Chucks—

Almond Drill Chucks.....35%
Almond Turret Six-Tool Chuck..
Beach Pat, each $8.00.....35&5
Empire .....25
Blacksmiths' .....25%
Jacobs' Drill Chucks.....35%
Pratt's Positive Drive.....25%
Skinner Lathe Chucks:
Independent .....35%
Universal, Reversible Jaws.....35%
Universal, Com. Style Jaws.....40
Combination, Reversible Jaws....35%
Combination, Com. Style Jaws...40%
Round Body or Box Body, 2 Chuck Jaws .....25%
Geared Scroll Chucks.....25
Drill Chucks:
New Model, 25%; Geared Pattern, 25%; Skinner Patent, ...25%
Positive Drive.....40%
Planer Chucks.....20
Standard .....15
Drill Press Vises.....30
Face Plate Jaws.....35
Standard Tool Co.:
Improved Drill Chuck.....45%
Union Mfg. Co.:
Combination, Nos. 1, 2, 3, 4, 5, 6, 7, 8 and 17, 40%; No. 21.....35%
Scroll Combinations, Nos. 83 and 84 .....30%
Geared Scroll, Nos. 33, 34 and 35..25%
Independent Iron, Nos. 18 and 318..35%
Independent Steel, No. 64.....25%
Union Drill, Nos. 000, 00, 100, 101, 102, 103, 104.....35%
Union Czar Drill.....25%
Universal, 11, 12, 16, 17, 13, 14, 15..40%
Universal No. 42.....35%
Iron Face Plate Jaws, Nos. 28, 30, 48 and 50.....35%
Steel Face Plate Jaws, Nos. 70 and 72 .....30%
Westcott Patent Chucks:
Lathe Chucks.....50%
Little Giant Auxiliary Drill.....50%
Little Giant Double Grip Drill...50%
Little Giant Drill, Improved.....50%
Oneida Drill.....50%
Scroll Combination Lathe.....50%
Whitaker Mfg. Co.:
National Drill.....25%

## Clamps—

Adjustable Hammers.....20&5%
Carriage Makers', Star, P., S. & W. Co. .....50%
Besly, Parallel.....33⅓&10%
Myers' Hay Rack.....50
Lineman's Swedish Neverturn.....65
Wood Workers' Hammers.....40&5%
Saw Clamps, see Vises, Saw Filers'

## Cleaners, Drain,

Iwan's Champion, Adjustable.....50%
Iwan's Champion, Stationary.....40%

## Sidewalk—

Star Socket. All Steel..℔ doz. $4.05 net
Star Shank. All Steel..℔ doz. $3.24 net
W. & C. Shank, All Steel, ℔ doz., 7½ in., $3.00; 8 in., $3.25.

## Cleavers, Butchers'—

Foster Bros.....30%
Fayette R. Plumb.....30
L. & I. J. White Co.....30%

## Clippers, Horse and Sheep—

Chicago Flexible Shaft Co.:
1902 Chicago Horse, each..$10.75
20th Century Horse, each...$5.00
Lightning Belt Horse, each.$15.00
Chicago Belt Horse, each..$20.00
Stewart's Enclosed Gear Roll Bearing Horse, each.....$6.75
Stewart's New Model Sheep Shearing Machine, each.$12.75
Stewart Enclosed Gear Shearing Machine, No. 8, each..$9.75
} 20%

## Clips, Axle—

*Regular Styles, list July 1, '05, 80&80&10%*

## Cloth and Netting, wire

—See *Wire, &c.*

## Cocks, Brass—

*Hardware list:*
*Plain Bibbs, Globe, Kerosene, Racking, Liquor, Bottling, &c .....75%*
*Compression Bibbs.....70%*

## Coffee Mills—

See *Mills, Coffee.*

## Collars, Dog—

Nickel Chain, Walter B. Stevens & Son's list.....40%
Leather, Walter B. Stevens & Son's list .....40%

## Compasses, Dividers, &c.

*Ordinary Goods.....70&10@75%*

## Conductor Pipe,—

| | *L. C. L. to Dealers:* *Gal. Steel.* | *Charcoal.* | *Copper.* |
|---|---|---|---|
| *Northeastern:* | 70&10% | 50&10&7½% | 50&10% |
| *Eastern:* | 70&10&5% | 50&10&7½% | 50&10% |
| *Central:* | 75&5% | 60% | 50&10% |
| *Northwestern:* | 75&2½% | 60% | 50&10% |
| *Western:* | 70&7½% | 50&12½% | 50&5% |
| *Tennessee:* | 70&10% | 50&12½% | 50&10% |
| *Southern:* | 70% | 50&12½% | 50&5% |
| *Southwestern:* | 70% | 50&5% | 50&5% |

*Terms, 60 days: 2% cash 10 days. Factory shipments generally delivered.*
See also Eave Troughs.

## Coolers, Water—

L. & G. Mfg. Co.:

| Gal. | 2 | 3 | 4 | 6 | 8 |
|---|---|---|---|---|---|
| Galvanized, ea. | $1.85 | $2.00 | $2.25 | $2.90 | $3.90 |

Galvanized, Lined, side handles,

| Gal. | 2 | 3 | 4 | 6 | 8 |
|---|---|---|---|---|---|
| Each | $1.95 | $2.15 | $2.40 | $3.30 | $4.15 |

White Enameled.....10%
Agate Lined.....10%

## Coppers' Tools—

See *Tools, Coopers'.*

## Coppers, Soldering—

*Soldering Coppers, 3 lb. to pair and heavier, 20¢; lighter than 3 lb. to pair.....22¢*

## Cord— Sash—

*Braided, Drab.....lb. 35¢*
*Braided, White, Com., Nos. 8 to 12, 20¢; No. 7, 20½¢; No. 6, 21½¢. In lots of 12 doz. or over, 1 cent less per pound.*
*Cable Laid Italian, lb., No. 18..37¢*
*Italian, lb., A, No. 18, 25¢; B, 22¢*
*Common India.....lb., 11@11½¢*
*Cotton Sash Cord, Tw'ted..18@20¢*
*Patent Russia.....lb....20¢*
*Cable Laid Russia.....lb...21¢*
*India Hemp, Br'd'd.....lb...21¢*
*India Hemp, Twisted...lb..13@14¢*
*Patent India, Twisted..lb...17¢*
Pearl Braided, cotton, No. 6, ℔ lb, 20½¢; No. 7, 19½¢; Nos. 8 to 12, 19½¢, in 12 doz. to 100 doz. lots.
Eddystone, Braided, Nos. 8 to 12, 26¢; 7, 26½; 6, 27½¢.
Harmony Cable Laid Italian, Nos. 7 to10.....℔ lb 23¢
Pullman:
Wire Sash Cord.....10%
Sash Cord Attachments, per 100..$2.00
Samson, Nos. 8 to 12:
Braided, ℔ lb., Drab Cotton, 55¢; Italian Hemp, 40¢@50¢; Linen, 65¢; White Cotton, 50¢; Spot Cord.....50¢
Massachusetts, White...℔ lb 40¢
Massachusetts, Drab....℔ lb 45¢
Phoenix, White, Nos 8 to 12....27¢
} 15%
Silver Lake, per lb.:
A, Drab, 45¢; A, White, 40¢; B, Drab, 40¢; B, White, 35¢; Italian Hemp, 40¢; Linen....57½¢
See also Chain and Ribbon.

## Wire, Picture—

*Full Length.....90@—%*
*Short Length.....90&20@—%*
Hendryx Standard Wire Picture Cord, old list, 85&10%
Turner & Stanton Co. Wire Picture Cord .....90%

## Cradles—

*Grain .....50%*

## Crayons—

*White Round Crayons, Cases, 100 gro., $8.00, $8.50, $9.00 and $10.00 according to grade.*
Zelnicker's Lumber: ℔ gro.
White and Purple, Indelible....$7.50
Blue, Red, Green, Yellow and Terra Cotta, $6.50; Black.....$4.50
Giant Lumber, 5¼ in. x 15-16 in. round, all colors, $12.00; Indelibles, $14.00; Blacks.....$10.00
Genuine Soapstone, Metal Workers', 5 in. x ¼ in. Round, $2.50; 5 in. x ¼ in. Square, $1.75; 5 x ½ x 3-16, $2.50; 5 x 1¼ x 3-16.....$3.00
Suremark, Black, $2.25; Blue, Red and Yellow.....$2.50

## Crooks, Shepperds'—

Fort Madison, per doz., Heavy, $5.50; Light .....$5.00

## Crow Bars—See *Bars, Crow.*

## Cultivators—

Victor Garden.....50%

## Cutlery, Table—

International Silver Company:
No. 12 M'd'm Knives, 1847, ℔ doz. $3.50
Star, Eagle, Rogers & Hamilton and Anchor.....℔ doz. $3.00
Wm. Rogers & Son.....℔ doz. $2.50

## Cutters— Glass—

H. H. Mayhew Co.....40%
Red Devil.....60%
B. Mfg. Co.....40
Woodward .....50%

## Meat and Food—

American .....30%

| Nos. | 401 | 402 | 403 | 404 | 405 | 406 | 407 |
|---|---|---|---|---|---|---|---|
| Each | $5 | $7 | $10 | $12 | $25 | $50 | $60 |

Enterprise:

| Nos. | 5 | 10 | 12 | 22 | 32 |
|---|---|---|---|---|---|
| Each | $2 | $3 | $2.75 | $1.50 | $6 |

25@25&7½%
No. 202, $1.50.....40&7½%
P., S. & W. Co.:
Ideal .....40@40&5%
Hales .....60&5
Little Giant.....℔ doz. 40@50

| Nos. | 305 | 310 | 312 | 320 | 322 |
|---|---|---|---|---|---|
| | $35.00 | $48.00 | $44.00 | $72.00 | $68.00 |

New Triumph No. 605, ℔ doz $24.00. 40
Russwin Food, No. 1, $24.00; No. 2, $27.00; 3, $12.00.....15&10&10
$15.00 $18.00
Enterprise Beef Shavers.....25@30

## Siaw and Kraut—

Henry Disston & Sons:
Slaw and Kraut Cutters.....35%
Corn Graters.....30
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife....℔ doz. $3.00
Combined Slaw Cutter and Corn Grater .....℔ doz. $4.00

## Tobacco—

*All Iron, Cheap...doz, $4.25@4.50*
Enterprise .....25@30
National, ℔ doz., No. 1, $21; No. 2, $18 .....40%

## Diggers, Post Hole, &c—

Disston's:
Rapid, ℔ doz., $24.00.....25
Samson, ℔ doz. $31.00.....25
Iwan's Pat. Post Hole and Well Auger .....40
Vaughan Pattern Post Hole Augers, ℔ doz., $7.00
Perfection Post Hole Diggers, ℔ doz. .....$8.50
Split Handle Post Hole Diggers, ℔ doz., $7.50
Hercules Pattern, ℔ doz.....$9.50
Kohler's, ℔ doz., Universal, $14.00; Little Giant, $12.00; Hercules, $10.00; Invincible, $9.00; Rival, $8.50; Pioneer.....$7.50
Never-Break Crucible Steel Post Hole Diggers .....60%

## Dividers—See *Compasses.*

## Drawing Knives—

See *Knives, Drawing.*

## Dressers Emery Wheel—

Sterling Emery Wheel Dressers.....35%
Sterling Wheel Dresser Cutters.....35%

## Drills and Drill Stocks—

*Blacksmith's Common Drilling Machines .....$1.50@1.75*
Breast, Millers Falls.....15&10%
Breast, P., S. & W.....33⅓%
C. & C. Ratchet.....25%
Reversible Ratchet Die Stocks....25%
Goodell Automatic Drills.50&10@60&
Millers Falls Automatic Drills, Graves', per doz., Nos. 1, $4.86; 2, $8.16.
Millers Falls Automatic Drills.33⅓&10%
Ratchet, Curtis & Curtis.....25%
Ratchet, Parker's.....10%
Ratchet, Weston's.....40%
Ratchet, Weston's, Style H Improved .....40@40&5%
Ratchet, No. 012.....40@40&5%
Ratchet, Celebrated.....40@40&5%
Ratchet, Whitney's, P., S. & W.. 40&10@50%
Whitney's Adjustable, No. 10, $12.00, 33⅓%

## Twist Drills—

*Bit Stock.....70@70&5%*
*Taper and Straight Shank. 60&10@70%*

## Drivers, Screw—

*Screw Driver Bits, per doz..45@50¢*
Balsey's Screw Holder and Driver, ℔ doz., 2½-in., $6; 4-in., $7.50; 6-in., $9 .....50%
Buck Bros.' Screw Driver Bits.....30%
Champion .....50%
Disston's .....70%
Fray's Hol. H'dle Sets, No. 3, $12..50%
Ford's Brace Screw Drivers....40&10%
Gay's Double Action Ratchet.....35%
Goodell's Auto.....65@65&10
Mayhew's Black Handle.....40%
Mayhew's Monarch.....40%
Millers Falls, ℔ doz., Nos. 11, $9.95; 12, $13.73; 20, $8.17; 21, $8.46; 41, $13.43; 42, $17.21.
Smith & Hemenway Co. Neverturn, 66⅔%; Elmora, 60%; Star, 30&10%
Swan's:
Nos. 7565 to 7568, 60%; No. 7540 40&10%

## Eave Trough, Galvanized—

| *Territory.* | *Gal. Steel.* | *Copper.* |
|---|---|---|
| *Northeastern* | *75&10&5%* | *50&10%* |
| *Eastern* | *80%* | *50&10%* |
| *Central* | *80&10&5%* | *50&10%* |
| *Northwestern* | *80&10&5%* | *50&10%* |
| *Western* | *80&5%* | *50&5%* |
| *Tennessee* | *80&5%* | *50&10%* |
| *Southern* | *75&10%* | *50&5%* |
| *Southwestern* | *75&10&2½%* | *50&5%* |

*Terms.—2% for cash. Factory shipments generally delivered.*
*Note.—Lower prices are made in some sections.*
See also Conductor Pipe and Elbows.

## Elbows and Shoes—

*Factory shipments, all territories: Galv. Steel, Galv. C. I. and Copper.*
*Sizes 2, 3, 4.....80%*
*Sizes 1½, 2½, 3½, 5, 6...60&10%*
*No. 26.....50%*
*No. 24.....25%*
*Copper Elbows.....50%*

## Elbows, Stove Pipe—

Edwards, Standard Blue....40&10&10%
Edwards, Royal Blue.....40&10&10%
Reeves, Dover, Flat Crimp..40&10&5%

## Emery, Turkish—

| | *4 to 46:* | *5 to 220:* | *Flour.* |
|---|---|---|---|
| *Kegs .....lb.* | *5 ¢* | *5½¢* | *3½¢* |
| *½ Kegs.....lb.* | *5½¢* | *5¾¢* | *3¾¢* |
| *¼ Kegs.....lb.* | *5½¢* | *6 ¢* | *4 ¢* |

*10-lb. cans, ½ in case....6½¢ 7 ¢ 6 ¢*
*10-lb. cans, less than 10.....10 ¢ 10 ¢ 8 ¢*
*Less quantity..10 ¢ 10 ¢ 8 ¢*

*NOTE.—In lots 1 to 3 tons a discount of 10% is given.*

### Extensions, Bit—
Ford's Auger Bit Extensions....40&5%

### Extractors, Lemon Juice—
—See *Squeezers, Lemon.*

## Fasteners, Blind—
Zimmerman's Jap'd and Galv., 50 & 5 ; Bronze and Plated.....50%
Walling's .....50%
Upson's Patent.....40%

### Cord and Weight—
Ives, ₱ gro., $1.08.....10%
Titan, ₱ gro., $0.66.....10%

### Corrugated—
Acme Corrugated Fasteners.....70%

### Faucets—
*Cork Lined.....50&10@60%*
*Metallic Key, Leather Lined, .. 60&10@70%*
*Red Cedar.....40&5@40&10&5%*
*Petroleum .....70&10@75%*
B. & L. B. Co.:
Metal Key.....60&10%
Star .....60%
West Lock.....50&10%
John Sommer's Peerless Tin Key....40%
John Sommer's Boss Tin Key.....50%
John Sommer's Victor Mtl. Key.50&10%
John Sommer's Duplex Metal Key..60%
John Sommer's Diamond Lock.....40%
John Sommer's I.X.L. Cork Lined..50%
John Sommer's Reliable Cork Lined.. 50&10%
John Sommer's Chicago Cork Lined.60%
John Sommer's O. K. Cork Lined...50%
John Sommer's No Brand, Cedar....50%
John Sommer's Perfection, Cedar....40%
Self Measuring:
Enterprise, Self Measuring and Pump, ₱ doz., $36.00.....40&10%
Lane's, ₱ doz., $36.00.....40&10%
National Measuring, ₱ doz. $36.40&10%

### Felloe Plates—
See *Plates, Felloe.*

### Files— Domestic—
*List Nov. 1, 1899.*
*Best Brands.....70&10@75&10%*
*Standard Brands.....75&10@80%*
*Lower Grade....75&10&10@80&10%*
Gold Medal.....70%
McCaffrey's American Standard, 60&10&10%

### Imported—
*Stubs' Tapers, Stubs' list, July 24, '97.....33⅓@40%*

### Fixtures, Fire Door—
Richards Mfg. Co.:
Universal, No. 103; Special, No. 104 .....$3.75
Fusible Links, No. 96.....50
Expansion Bolts, No. 107.....60&10%

### Grindstone—
*Net Prices:*

| *Inch* | *15* | *17* | *19* | *21* |
|---|---|---|---|---|
| *Per doz* | *$3.60* | *3.85* | *4.15* | *4.65* |

Peck, Stow & Wilcox Co.:

| In | 15 | 17 | 19 | 21 | 24 |
|---|---|---|---|---|---|
| | $4.00 | 4.40 | 4.75 | 5.50 | 6.50 |

....30%
Reading Hardware Co.....60%

### Fodder Squeezers—
See *Compressors.*

### Forks—
*NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.*
Iowa Dig Ezy Potato.....60&10%
Victor, Hay.....60&15&2½%
Victor, Manure.....66⅔%
Victor, Header.....65%
Champion, Hay.....66⅔%
Champion, Header.....65%
Champion, Manure.....60&15&2½%
Columbia, Hay.....60&20%
Columbia, Manure.....70%
Columbia, Spading.....70&12½%
Hawkeye Wood Barley.....40%
W. & C. Potato Digger.....60&10%
Acme Hay.....60&20
Acme Manure, 4 tine.....60&10&5%
Dakota Header.....60&20
Jackson Steel Barley.....60&20%
Kansas Header.....65%
W. & C. Favorite Wood Barley....40%
Plated.—See Spoons.

### Frames— Wood Saw—
*White, S'g't Bar, per doz.75@80¢*
*Red, S'g't Bar, per doz.$1.00@1.25*
*Red, Dbl. Brace, per doz.$1.40@1.50*

### Freezers, Ice Cream—

| *Qt* | *1* | *2* | *3* | *4* | *6* |
|---|---|---|---|---|---|
| *Each* | *$1.25* | *$1.60* | *$1.90* | *$2.20* | *$2.80* |

### Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

### Fry Pans—
See *Pans, Fry.*

### Fuse— *Per 1000 Feet.*
*Hemp .....$2.75*
*Cotton .....3.20*
*Waterproof Sgl. Taped..3.65*
*Waterproof Dbl. Taped..4.40*
*Waterproof Tpl. Taped..5.15*
} 20&2½%

## Gates, Molasses and Oil—
*Stebbins' Pattern.....80@80&5%*

### Gauges—
*Marking, Mortise, &c..50@50&10%*
Chapin-Stephens Co.:
Marking, Mortise, &c.....50&50&10%
Disston's Marking, Mortise, &c. 67½%
Wire, Brown & Sharpe's.....33⅓%
Wire, Morse's .....
Wire, P. S. & W. Co.....33⅓

### Gimlets— Single Cut—
*Numbered assortments, per gro.*
*Nail, Metal, No. 1, $2.00; 2, $2.30*
*Spike, Metal, No. 1, $4.00; 2, $4.80*
*Nail, Wood Handled, No. 1, $2.30; 2, $2.60*
*Spike, Wood Handled, No. 1, $4.30; 2, $4.60*

### Glass, American Window
See *Trade Report.*

### Glasses, Level—
Chapin-Stephens Co.....65@65&10%

### Glue, Liquid Fish—
*Bottles or Cans, with Brush, 25&10@50%*
Elwell's .....40%

### Grease, Axle—
*Common Grade...gro.$6.00@$6.50*
Dixon's Everlasting, 10-lb. pails, ea. 85c ; in boxes, ₱ doz., 1 lb, $1.20; 2 lb.....$2.00
Helmet Hard Oil.....25%

### Griddles, Soapstone—
Pike Mfg. Co.....33⅓@33⅓&10%

### Grinders—
Pike Mfg. Co.:
Hand and Foot Power, Pyko Nos. 1, 2, 3; Pyko Primo; Pyko Peerless; Pyko Spiral (foot power).33⅓%
Mower Knife and Tool, $5.00..40&10%
Royal Mfg. Co.:
Alundum Grinding Machines, each, Nos. 01, $1.75; 1A, $2.50; 10, $5.00 .....30%
Alundum Sickle Grinders, each, Nos. 20, $5.00; 20A, $6.00; 20A Combined, $6.50.....30%
Alundum Disc Grinders, each, $2.50 .....30%

### Grindstones—
Pike Mfg. Co.:
Improved Family Grindstones, ₱ inch, ₱ doz., $2.00.....33⅓%
Richards Mfg. Co., Eli and Cycle. Ball Bearing, mounted.....40%

### Grips, Nipple—
Perfect Nipple Grips.....40&10&2%

## Halters and Ties—
*Cow Ties.....65@65&10%*
Bridgeport Chain Co.:
Triumph Coil and Halters.35&2½@40%
Brown Coil and Halters...45@50&5%
Brown Cow Ties.....50&5@50&10&5%
Brown Tie Outs.....70&10@75&5%
Covert Mfg. Co.:
Web .....30&2%
Jute Rope.....35%
Sisal Rope.....20%
Cotton Rope.....45%
Hemp Rope.....45%
Oneida Community:
Am. Coil and Halters.....40@40&5%
Am, Cow Ties.....45@50%
Niagara Coil and Halters...45@50&5%
Niagara Cow Ties.....45&5@50&10&5%

### Hammers—
#### Handled Hammers—
Heller's Machinists'....55&10@55&10&5%
Heller's Farriers.....40&5@40&10&5%
Peck, Stow & Wilcox Co.:
Crucible Steel.....40&10@50%
Farriers' .....40&10@50%
Riveting .....40&10@50%
Machinists' .....66⅔@50%
Blacksmiths' .....50%
Fayatte R. Plumb:
A. E. Nail.....40&2½@40&12½%
Eng. and B. S. Hand.50&10&5@50&5%
Machinists' Hammers.....60&10&5
Rivet and Tinners'.40&7½@40&12½&5%
Victor Magnetic Tack, ₱ gro....$7.75

#### Heavy Hammers and Sledges—
*Under 3 lb., per lb., 50¢...80&10%*
*3 to 5 lb., per lb., 40¢...80&10&10%*
*Over 5 lb., per lb., 30¢.....*
*Over 5 lb., per lb., 30¢.80&10&10%*

### Handles—
#### Agricultural Tool Handles
*Axe, Pick, &c....60&10@60&10&5%*
*Hoe, Rake, &c.....40%*
*Fork, Shovel, Spade, &c.:*
*Long Handles.....40%*
*D Handles.....40%*

#### Cross-Cut Saw Handles—
Atkins' .....40%
Champion .....50%
Disston's .....50%

#### Mechanics' Tool Handles—
*Auger, assorted...gro.$3.00@$3.50*
*Bead Awl.....gro.$1.65@$1.75*
*Chisel Handles, Ass'd, per gro.:*
*Tanged Firmer, Apple, $2.40@ $2.65; Hickory.....$2.15@2.40*
*Socket Firming, Apple, $1.75@ $1.95; Hickory.....1.60@1.75*
*Socket Framing, Hickory, $1.60@$1.75*
*File, assorted.....gro.$1.30@$1.40*
*Hammer, Hatchet, &c., 60&10@60&10&5%*
*Hand Saw, Varnished, doz., 80¢ 85¢ ; Not Varnished.....65@75¢*
*Plane Handles:*
*Jack, doz., 30¢ ; Fore, doz...45¢*
Chapin-Stephens Co.:
Carving Tool.....30@30&10%
Chisel .....60@60&10
File and Awl.....60@60&10
Saw and Plane.....30@30&10
Screw Driver.....30@30&10
Millers Falls Adj. and Ratchet Auger Handles .....15&10%
Nicholson Simplicity File Handle.... ₱ gro. $0.85@$1.50
J. L. Osgood:
Indestructible File and Tool ₱ gro., No. 1, $8.00; No. 2, $8.50; No. 3 $9.00; No. 4, $9.50; No. 5, $10.00.....gro. lots 10%
W. A. Zelnicker Supply Co.:
Hammer, ₱ doz., 12 in., $2.00; 14 in., $2.00; 16 in., $2.30; 18 12., $2.50; 20 in., $2.70; 22 in., $3.00; 24 in., $3.30; 26 in., $3.50; 30 in., $3.80.
Sledge, ₱ doz., oval, 30 in., $3.80; octagon, 30 in., $3.80; oval, 36 in., $4.00; octagon, 36 in., $4.00.
Axe, ₱ doz., 28 to 34 in., $5.60; 36 in., $5.80.
Adze, ₱ doz., 36 in., $5.80; 36 in., $7.80.
Pick, ₱ doz., R. R., 36 in., $8.00; coal, 34 in., $5.80.
Hatchet, ₱ doz., 12 to 14 in., $2.00.
} Extra 5@10% often given.

### Hangers—
*NOTE—Barn Door Hangers are generally quoted per pair, without track and Parlor Door Hangers per double set with track, &c.*
Chicago Spring Butt Co.:
Friction .....25%
Oscillating .....25%
Big Twin.....25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door.....50%
Elevator .....30%
Railroad .....50%
Cronk & Carrier Mfg. Co.:
Loose Axle.....60&10%
Roller Bearing.....70%
Griffin Mfg. Co.:
Solid Axle, No. 10, $12.00..60&10%
Roller Bearing, No. 11, $15.00, 60&10%
Roller Bearing, Ex. Hy., No. 22, $18.00.....60&10%
Bull Dog, $24.00.....70%
Lane Bros. Co.:
Parlor, Ball Bearing, $1.00; Standard, $3.15; No. 105, $2.85; New Model, $2.80; New Champion per set of 4 Hangers, complete with track.....$2.25
Barn Door, Standard.....60&10%
Hinged .....net $6.08
Covered .....60&5%
Special .....70&5%
Trolley Hangers and track..50%
Lawrence Bros.:
Advance .....55&10%
Cleveland .....70&7½%
Clipper, No. 75.....60%
Crown .....55&10%
Cyclone, No. 40.....net $6.50
Tandem, No. 50.....net $7.50
New York.....55&10%
McKinney Mfg. Co.:
Roller Bearing, Nos. 1 and 2..70%
Anti-Friction .....60%
Hinged Hangers, King Charm.60%
Richards Mfg. Co.:
Hangers, Nos. 47, 48, 147, 247, 60&5%
Pioneer Wood Track, No. 3..$2.25
Roller B'r'g St'l Track No. 12.$2.20
Roller B'r'g St'l Track No. 13.$2.50
Roller B'r'g, Nos. 39, 41, 43, 70&7½%
Hero, Adj. Track No. 19..50&10%
Adjustable Track Tandem Trolley Track No. 16.....50&10%
Seal, Steel Track No. 8.....$2.25
Auto Adj. Track No. 22..50&5%
Trolley B. D. No. 17, $1.25; F. D. No. 120, $2.25; No. 121, $2.45; No. 150.....$2.50
Safety Underwriters F. D. No. 101 .....50%
Tandem No. 41..2½ and 3 60&10%
Palace, Adjustable Track No. 132 .....50&5%
Royal, Adjustable Track No. 122 .....50&10%
Ives' Wood Track No. 1.....$2.25
Trolley B. D. No. 20.....50&10%
Trolley B. D. No. 24, $1.30; No. 27, $1.40; No. 28.....$1.60
Roller Bearings, Nos. 37, 38, 39, 41, 43, 44, Sizes 1 and 2 70&7½%
Anti-friction, No. 42; No. 44, sizes 2½ and 3.....60%
Hinged Tandem No. 48....60&5%
Folding Door B. B. Swivel No. 135 .....40%
Taylor & Boggis F'y Co.'s Kidder's Roller Bearing, ₱ doz., 4 in., $12.00; 5 in., $14.00..40&10%
Myers' Stayon Hangers.....60%

### Hangers— Garment—
Pullman Trouser, ₱ gro., No. 1 $9.00; No. 4, $24.00; No. 5, $16.50; No. 8, Black Enamel, $7.50; No. 10, $21.00; No. 12, $8.00; No. 15, Rods, $9.00; No. 18, Loops.....$10.00
Victor Folding.....₱ gro. $9.60

### Gate—
Myers' Patent Gate Hangers, ₱ doz. net .....50%

### Joist and Timber—
Lane Bros. Co.....35%

### Hasps—
Grieb's Security Hasp.....50&10%
McKinney's Perfect Hasp, ₱ doz..60

### Hatchets—
*Regular list, first qual.40&12½@—*
*Second quality.....50&10&5@—*

### Heaters, Carriage—
Clark, No. 5, $1.25; No. 5B, $1.50; No. 3, $1.75; No. 3D, $2.00; No. 7D, $2.25; No. 3E, $2.50; No. 1 $3.00.....25
Clark Coal, ₱ doz., $0.75.....20

### Hinges—
#### Blind and Shutter Hinges
*Surface Gravity Locking Blind: Doz. Sets with Fastenings, Net. No. 1, $0.70; No. 3, $1.25; No. 5, $2.65.*
*Mortise Shutter.....80*
*Mortise Reversible Shutter...80%*
North's Automatic Blind Fastener, No. 2, for Wood, $0.90; No. 3, for Brick, $1.50.....10
Charles Parker Co.....50&7½
Parker Wire Goods Co.
Hale & Benjamin Automatic Blind Hinges .....20
Hale's Blind Awning Hinges No. 110, for wood, $0.90; No. 111, for brick, $0.90 .....20
Reading's Gravity.....60%
Stanley's Steel Gravity Blind Hinges, No. 1617½, ₱ doz. sets, without screws, $0.95; with screws, $1.25.
Wrightsville Hardware Co.:
O. S., Lull & Porter.....75&5%
Acme, Lull & Porter.....75%
Queen City Reversible.....75%
Shepard's Noiseless, Nos. 60, 65, 55 .....75&5%
Niagara, Gravity Locking, Nos. 1, 3 & 5.....75&5%
Clark's O. P., No. 1.....75&10%
Clark's O. P., Nos. 3 and 5....75&5%
Tip Pat'n, No. 1.....75&10%
Clark's No. 3.....75&5%
Buffalo Gravity Locking, Nos. 1, 3 & 5.....70&10&5%
Shepard's Double Locking.....75%
Champion Gravity Locking.....75&5%
Pioneer .....75&10%
Empire .....65%
W. H. Co.'s Mortise Gravity Locking, No. 2.....60&10%

### Gate Hinges—
*Clark's or Shepard's—Doz. sets:*

| *No.* | *1* | *2* | *3* |
|---|---|---|---|
| *Hinges with L'tch's.* | *$2.00* | *2.70* | *5.00* |
| *Hinges only.....* | *1.25* | *1.90* | *3.50* |
| *Latches only.....* | *.70* | *.75* | *.35* |

*New England:*
*With Latch.....doz..@$2.00*
*Without Latch.....doz..@$1.60*
*Reversible Self-Closing:*
*With Latch.....doz..@$1.75*
*Without Latch...doz. ...@$1.35*
*Western:*
*With Latch.....doz. $1.75*
*Without Latch.....doz..$1.15*
Wrightsville Hardware Co.:
Shepard's or Clark's Hinges and Latches, Hinges only or Latches only, Nos. 1, 2 or 3.....70%

### Miscellaneous—
Griffin Mfg. Co., Fleur de Lis Surface Hinges, ₱ doz. prs.....$1.00

### Pivot Hinges—
Bommer Bros. Pivot, Ball Bearing .....40%
Lawson Mfg. Co. Matchless.....30

### Spring Hinges—
*Holdback, Cast Iron...$6.75@$7.00*
*Non-Holdback, C'st Iron$6.50@$6.75*
J. Bardsley:
Bardsley's Non-Checking Mortise Floor Hinges.....40%
Bardsley's Patent Checking.33⅓%
Bommer Bros.:
Spring Butt Hinges.....40%
Surface Floor, Ball Bearing .....40%
Mortise Floor, Ball Bearing.40%
Lavatory Hinges.....40%
Non-Holdback Screen Door, Nos. 2000 and 900.....40%
Holdback Screen Door, No. 999.....₱ gro. $9.00
Chicago Spring Butt Co.:
Chicago Spring Hinges.....25%
Triple End Spring Hinges....50%
Chicago (Ball Bearing) Floor.50%
Garden City Engine House...25%
Keene's Saloon Door.....25%
Columbian Hardware Co.:
Acme, Wrought Steel.....30%
Acme, Brass.....25%
American .....30%
Columbia, ₱ gr., No. 14, $9.00; No. 18.....$25.00
Columbia, Adj., No. 7, ₱ gr $12.00
Gem, new list.....30%
Clover Leaf and Acorn, per gro. .....$12.00
Oxford, new list.....35%
Floor Spring Hinges.....65&10%
Columbian Steel.....65&10%
Lawson Mfg. Co.:
Matchless Spring Hinges.....30%
Matchless Jamb Hinges.....30
Richards Mfg. Co.:
Superior Double Acting Floor Hinges .....10%
Shelby Spring Hinge Co.:
Buckeye All Steel Holdback Screen Door.....₱ gr. $9.00
Chief Ball Bearings Floor Hinge .....50%
Ball Bearing Door.....25%
No. 777, Sheet Steel Holdb'k, ₱ gr. pr.....$9.00
Standard Mfg. Co.:
Champion Double Acting Door Hinge .....25&10&10
Standard Double Acting Floor Hinge .....25&10&10%
Superior Spring Hinge Co.:
Superior Floor Hinges.....33⅓%
Spring Hinges.....33⅓%
} Extra 10% often given on most of these Hinges.

### Wrought Iron Hinges—
*Strap and T Hinges, &c., list February 10, 1908:*
*Light Strap Hinges..50&10*
*Heavy Strap Hinges..60&5*
*Light T Hinges.....*
*Heavy T Hinges.....40*
*Extra Hvy. T Hinges 50&10*
*Hinge Hasps.....*
*Cor. Heavy Strap.....*
*Cor. Ex. Heavy T...50&*

| *Screw Hook and Strap.* | *6 to 12 in.* | *lb* | *¢* |
|---|---|---|---|
| | *5 to 8 in.* | *lb* | *¢* |
| | *3 to 5 in.* | *lb* | *¢* |

} 60&10&5%

*Screw Hook and Eye:*
*5 to 7 inch .....lb 6¼¢*
*3 inch .....lb 7½¢*
*1½ inch .....lb 8½¢*

### Hitchers, Stall—
Covert Mfg. Co., Stall Hitchers, 20&2

### Hods— Coal—
*M'Cor's list, price per gross:*

| *Inch* | *15* | *16* | *17* | *18* |
|---|---|---|---|---|
| *Galv. Open* | *$35* | *$39* | *$42* | *$46* |
| *Jap. Open* | *26* | *28* | *31* | *35* |
| *Galv. Funnel* | *43* | *48* | *52* | *56* |
| *Jap. Funnel* | *33* | *36* | *39* | *43* |

} 10&5%

### Masons' Etc.
Cleveland Wire Spring Co.:
Steel Brick No. 162 .....each $1.05
Steel Mortar, No. 158.....each $1.35

### Hoes— Eye—
*Scovil and Oval Pattern, 60&10@60&10&10%*
*Grub, list Feb. 23, 1899, 70&10@70&10&10%*
D. & H. Scovil....20%
Am. Fork & Hoe Co. (Scovil Pattern) ....60%

### Handled—
*NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.*
Cronk's Weeding, No. 1,$2.00; No. 2,$2.50
Star Double Bit....$2.50
Ft. Madison Cotton Hoe....70&10&10%
Ft. Madison Crescent Cultivator Hoe, ₱ doz....70&10%
Ft. Madison Mattock Hoes:
Regular Weight....₱ doz. 40&5%
Junior Size....₱ doz. $4.00
Ft. Madison Sprouting Hoe, ₱ doz., 60&10%
Ft. Madison Dixie Tobacco Hoe.... 75&10&7½%
Kretsinger's Cut Easy....70&10%
Warren Hoe....45&10%
W. & C. Ivanhoe....75&2%
B. B. 6 in., Cultivator Hoe....$3.10
B. B., 6½ in....$3.50
Acme Wedding....₱ doz., net, $1.35
W. & C. L'tning Shuffle Hoe, ₱doz.$5.25

### Hoisting Apparatus—
See *Machines, Hoisting.*

### Holders— Bit—
Angular, ₱ doz. $24.00....45&10%

### Door—
Bardsley's, Iron, 40%; Brass and Bronze ....25%
Empire ....50%
Pullman ....25%
Richards Mfg. Co.: No. 117, Ever-ready, 40%; Nos. 118, 119, Sure Grip ....50%
Superior ....33⅓%

### File and Tool—
Nicholson File Holders and File Handles ....33⅓@40%

### Fruit Jar—
Triumph Fruit Jar Holder, ₱ gross, $18.00; ₱ doz....$2.00

### Trace and Rein—
Fernald Double Trace Holder, ₱ doz. pairs ....$1.25
Dash Rein Holder, ₱ doz....$1.25

### Hones—Razor—
Pike Mfg. Co., Belgian and Swaty, 50%; German....33⅓%

### Hooks—Cast Iron—
Bird Cage, Reading....40%
Clothes Line, Reading List....40%
Coat and Hat, Reading....45&20%
Coat and Hat, Wrightsville....60&5%
Harness, Reading List....40%

### Wire—
*Belt, Nos. 1 to 15....75&10@80%*
*Wire C. & H. Hooks..80@80&10%*
Bradley Metal Clasp Wire, Coat and Hat, 75&10@80%; Ceiling..75&10@80%
Columbian Hdw. Co., Gem....75&10%
Parker Wire Goods Co., King..75&10%
Wire Goods Co.:
Acme, 60&10%; Chief, 70&10%; Crown, 75%; Czar, 65&10%; V Brace, 75%; Czar Harness, 50%; Ceiling, 75%.

### Wrought Iron—
*Box, 6 in., per doz., $0.90; 8 in., $1.15.*
*Cotton ....doz.$1.25@$1.50*
Wrought Staples, Hooks, &c. See Wrought Goods.

### Miscellaneous—
*Hooks, Bench,* see *Stops, Bench.*
*Bush, Light, doz., $6.20; Medium, $6.75; Heavy, $7.65*
*Grass, best, all sizes, per doz., $2.75@$3.00*
*Grass, common grades, all sizes, per doz....$1.25@$1.50*
*Whiffletree ....lb.5¼@6¢*
*Hooks and Eyes:*
*Brass ....60@60&10%*
*Malleable Iron....70@70&10%*
Covert Mfg. Co. Gate and Scuttle Hooks ....40%
Ft. Madison Cut-Easy Corn Hooks, ₱ doz. $3.25 net
Turner & Stanton Co. Cup and Shoulder ....85&10%
Bench Hooks—See Bench Stops.
Corn Hooks—See Knives, Corn.

### Horse Nails—
See *Nails, Horse.*

### Horseshoes—
See *Shoes, Horses.*

### Hose, Rubber—
*Garden Hose, ¾-inch:*
*Competition ....ft. 6@6½¢*
*3 ply Guaranteed....ft. 8½@9¢*
*4-ply Guaranteed....ft. 9½@12¢*
*Cotton Garden, ¾-in., coupled:*
*Low Grade....ft. 8@ 9c*
*Fair Quality....ft.10@11¢*

### Irons— Sad—
*From ¼ to 10....lb.2½@2¾¢*
*B. B. Sad Irons....lb.3¼@3½¢*
*Mrs. Potts', cents per set:*

| | Nos. 50 | 55 | 60 | 65 |
|---|---|---|---|---|
| Jap'd Caps | .86 | 93 | 96 | 93 |
| Tin'd Caps | .91 | 88 | 1.01 | 98 |

*New England Pressing..lb.3¾@4¼¢*

### Bar and Corner—
Richards Mfg. Co., Bar, 60&10%; Corner ....60%

### Pinking—
*Pinking Irons....doz.60@85¢*

### Irons, Soldering
See *Coppers.*

### Jacks, Wagons—
Covert Mfg. Co.:
Auto Screw....30&2%; Steel, 15%
Lockport ....50%
Lane's Steel....30&5%
Richards' Tiger Steel, No. 130...50&10%
Smith & Hemenway Co.'s....25%

### Ladder—
Richards Mfg. Co., Ladder Jacks..50%

### Jointers—
Pike Mfg. Co., Saw Jointers, $7.00..40%

## Kettles—
*Brass, Spun, Plain....20@25%*
Enameled and Cast Iron—See Ware, Hollow.

### Knives—
#### Butcher, Kitchen, &c.—
Foster Bros.' Butcher, &c....30%
Wilkinson Shear & Cutlery Co....60%

### Corn—
Columbian Cutlery Co., Wilcut Brand Knives and Hooks....60%
Withington Acme, ₱ doz., $2.65; Dent, $2.75; Adj. Serrated, $2.20; Serrated, $2.10; Yankee No. 1, $1.50; Yankee No. 2, $1.15.

### Drawing—
*Standard List....80&10@—%*
C. E. Jennings & Co., Nos. 45, 46, 25&7½%
Jennings & Griffin, Nos. 41, 42, 66⅔&7½%
Swan's ....66⅔@70%
Watrous ....16⅔%
L. & I. J. White....20&5@25%

### Hay and Straw—
*Serrated Edge, per doz.$5.00@5.50*
Iwan's Sickle Edge....₱ doz. $9.50
Iwan's Serrated....₱ doz. $10.00

### Miscellaneous—
*Farriers' ....doz.$2.60@3.55*
Wostenholm's ....₱ doz. $3.00@3.25

### Knobs—
*Base, 2½-inch, Birch or Maple, Rubber Tip....gro.$1.25@1.40*
*Carriage, Jap., Drive, all sizes, gro.35@40¢*
*Door, Mineral....doz.65@70¢*
*Door, Por. Jap'd....doz.70@75¢*
*Door, Por. Nickel..doz.$2.05@2.15*
Bardsley's Wood Door, Shutters, &c.15%

## Lacing, Leather—
See *Belting, Leather*

### Ladders, Store, &c.—
Lane's Store....25%
Myers' Noiseless Store Ladders....50%
Richards Mfg. Co.:
Improved Noiseless, No. 112....50%
Climax Shelf, No. 113....50%
Trolley, No. 109....50%

### Ladles, Melting—
L. & G. Mfg. Co., Melting and Plumbers' ....25%
P., S. & W....40&10
Reading ....60%

### Lamps,—
Hammer's M. I. Hand....45%

### Lanterns—Tubular—
*Regular, No. 0....doz.$4.35@4.50*
*Side Lift, No. 0....doz.$4.60@4.75*
*Hinge Globe, No. 0.doz.$4.60@4.75*
*Other Styles....40@40&10%*

### Bull's Eye Police—
*3-inch ....$3.75@4.00*

### Latches— Thumb—
*Roggin's Latches, Jap'd, with Screws ....doz.35@40¢*

### Door—
Cronk & Carrier Mfg. Co., No. 101, ₱ doz. $2.00
Richards' Bull Dog, Heavy, No. 125 ....50&5%
Richards' Trump, No. 127....$1.50

### Leaders, Cattle—
*Small....doz.50¢; large, 60¢*
Covert Mfg. Co.:
Cotton, 45%; Hemp, 45%; Jute, 35%; Sisal, 20%.

### Leathers, Pump—
See *Pumps—*

### Lifters, Transom—
R. & E....10%

### Lines—
*Wire Clothes, Nos. 18 19 20*
*100 feet....$2.30 1.95 1.75*
*75 feet....$1.95 1.65 1.50*
Samson Cordage Works:
Solid Braided Chalk, Nos. 0 to 3..40%
Solid Braided Masons'....30%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50....₱ gr. 20%
Masons' Lines, Shade Cord, &c.; White Cotton, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50; Colors, No. 3½, $1.75; No. 4, $2.25; No. 4½, $2.75; Linen, No. 3½, $2.50; No. 4, $3.50; No. 4½, $4.50....20%
Tent and Awning Lines: No. 5, White Cotton, $7.50; Drab Cotton, $8.50 ....20%
Clothes Lines, White Cotton: 50 ft., $2.75; 60 ft., $3.25; 70 ft., $3.75; 75 ft., $4.00; 80 ft., $4.25; 90 ft., $4.75; 100 ft., $5.25....20%
Turner & Stanton Co.:
Solid Braided Chalk, Masons' and Awning Lines....40%
Clothes Lines, White Cotton....20%
Shade Cord, Cotton or Linen....20%

### Locks— Cabinet—
*Cabinet Locks....33⅓@33⅓@5%*

### Door Locks, Latches, &c—
*NOTE.—Net Prices are very often made on these goods.*
Reading Hardware Co....40%
R. & E. Mfg. Co....10%

### Padlocks—
R. & E. Mfg. Co. Wrought Steel and Brass ....75&10%

### Sash, &c.—
Ives' Patent:
Crescent ....10%
Automatic Gravity Metal Sash, ₱ gro., $149.58....10%
Window Ventilating....10
Pullman Patent Ventilating Lock..25%
Reading Sash Locks....40%
Taylor Mfg. Co., Perfect Ventilating, ₱ doz....$0.75@$1.00

## Machines—Boring—
*Com. Upr't, without Augers, $2.00@2.25*
*Com. Angl'r, without Augers, $2.25@2.50*
Ford Auger Bit Co....$22.00
Jennings', Nos. 1 and 4....25&7½%
Millers' Falls....5.75
Snell's, Upright, $2.65; Angular, $2.90
Swan's Improved....40&10%

### Corking—
Reisinger Invincible Hand Power... ₱ doz. $48.00

### Fence—
Williams' Fence Machines....each, $5.50

### Hoisting—
Moore's Anti-Friction Chain Hoist.30%
Moore's Hand Hoist, with Lock Brake ....20%
Moore's Cyclone High Speed Chain Hoist ....25%

### Ice Cutting—
Chandler's ....12½%

### Washing
Boss Washing Machine Co.: Per doz.
Boss No. 1....$57.00
Boss Rotary....$57.00
Champion Rotary Banner No. 1.$57.00
Standard Champion No. 1....$50.00
Standard Perfection....$27.00
Cincinnati Square Western....$33.00
Uneeda American, Round....$33.60

### Mallets—
*Hickory ....45&5@50%*
*Lignumvitæ ....45&5@50%*
*Tinners' Hickory and Applewood ....doz.45&5@50%*

### Mangers, Stable—
Swett Iron Works....50%

### Mats, Door—
Acme Flexible Steel....50%
Elastic Steel (W. G. Co.), new list.50%

### Mattocks—
See *Picks and Mattocks.*

### Milk Cans—See *Cans, Milk.*

### Mills, Coffee, &c.—
Enterprise Mfg. Co.:
Coffee ....20@25%
Shell and Corn....25&10%
National list Jan. 1, 1902....30%
Parker's Columbia and Victoria..33⅓%
Parker's Box and Side....50&10%
Swift, Lane Bros. Co....30%

### Motors, Water—
Divine's Red Devil....30%

| $2.50 | 3.50 | 10.00 | 15.00....33⅓% |
|---|---|---|---|
| No. 1. | 2 | 3 | 4 |

Lippincott's:

| No.... | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| | $2.50 | 3.50 | 10.00 | 15.00..33⅓% |

Pike Mfg. Co., Tool and Knife Grinding ....33⅓%

### Mowers, Lawn—
*NOTE.—Net prices are generally quoted*
*Cheapest, 10-in., $2.00; advance 10¢ for each size.*
*Cheap, 10-in., $2.25; advance 15@20¢ for each size.*
*Better Grade, 10-in., $3.00; advance 25¢ for each size.*

| | 12 | 14 | 16 | 18 in. |
|---|---|---|---|---|
| High Grade | $4.50 | 4.75 | 5.00 | 5.25 |

Continental ....60%
Great American....70%
Great American Ball B'r'g, new list.70%
Quaker City....70%
Pennsylvania ....60%
Pennsylvania, Jr., Ball Bearing, 50&10&5%
Pennsylvania Golf....50%
Pennsylvania Horse....33⅓&5%
Pennsylvania Pony....40&5%
Philadelphia:
Styles M., S., C., K., T....70&10&5%
Style A, all Steel....60&10&5%
Style E, High Wheel....70&10&5%
Drexel and Gold Coin, special list.40%
Horse ....40&5%
Pony ....40&5%
36-in. Horse....30&10%
Eagle Horse....30&5%
I. X. L. Horse....50%

## Nails—
*Wire Nails and Brads, Miscellaneous ....85&5@85&10%*
*Cut and Wire,* See *Trade Report.*
*Hungarian, Finishing, Upholsterers', &c.* See *Tacks.*

### Horse—

| Nos. | 6 | 7 | 8 | 9 | 10 | |
|---|---|---|---|---|---|---|
| Anchor | 23 | 21 | 20 | 19 | 18 | ..₱ lb, net, 12¢ |
| Coleman | 13 | 12 | 12 | 11 | 11 | net ₱ lb |
| New Haven | 23 | 21 | 20 | 19 | 18 | ..₱ lb, net, 12¢ |
| Livingston | 19 | 18 | 17 | 16 | 16 | ....10% |
| Western | | | | | | ....₱ lb 8½¢ |

*Jobbers' Special Brands, per lb.9¢*

### Picture—

| | 1½ | 2 | 2¼ | 3 in. |
|---|---|---|---|---|
| Brass Hd. gro. | .45 | .55 | .60 | .70 |
| Por. Head, gro. | 1.10 | 1.10 | 1.10 | |

### Upholsters—
*Brass ....30%*
*Plated ....30&10%*

### Nippers—
See *Pliers and Nippers.*

### Nipples—
Standard Nipple Co.:
Wrought Pipe Nipples....80%

### Nuts— *Blank or Tapped.*
*Cold Punched: Off list.*
*Square ....5.50@5.60¢*
*Hexagon ....6.00@6.10¢*
*Square, C., T. & R..5.80@5.90¢*
*Hexagon, C., T. & R.6.60@6.70¢*
*Hot Pressed:*
*Square ....5.80¢*
*Hexagon ....6.80¢*

## Oakum—
*Best ....lb.6½¢*
*U. S. Navy....lb.6 ¢*
*Navy ....lb.5 ¢*
*Plumbers' Spun Oakum..2¾@3 ¢*

### Oil—
Pike Mfg. Co., Stonoil....40%

### Oil Tanks—See *Tanks, Oil.*

### Oilers—
*Steel, Copper Plated....75%*
*Chase or Paragon:*
*Brass and Copper....50&10%*
*Zinc ....65&10@70%*
*Railroad ....60&10&10%*
Malleable, Hammers' Improved, Nos. 11, 12 and 13, 10%; Old Pattern, Nos. 1, 2, 3, 4, 50%.
American Tube & Stamping Co.:
Spring Bottom Cans....70@70&10%
Railroad Oilers, &c....60@60&10%
Maple City Mfg. Co.:
Spring Bottom Cans....70@70&10%
Railroad Oilers, &c....60@60&10%

### Openers—Packing Box—
Herculever, ₱ doz., $24....30%

### Can Openers—
*Per doz.*
*Sprague, Iron Handle....30@35¢*
*Sprague, Wood Handle....40¢*
*Sardine Scissors....$1.75@3.00*
Can and Bottle Openers, ₱ doz., net: Yankee, $0.75@$0.85; Little Gem, $0.50@$0.65; Nifty....$0.75

### Egg—
Hartigan Nickel Plate, ₱ doz., $2.00; Silver Plate, $4.00.

## Packing—
*Asbestos Packing, Wick and Rope, any quantity....18@20¢*

### Rubber—
*(Fair quality goods.)*
*Sheet, C. I....11@12¢*
*Sheet, C. O. S....11@12¢*
*Sheet, C. B. S....12@13¢*
*Sheet, Pure Gum....40@45¢*
*Sheet, Red....40@50¢*
Jenkins' '96, ₱ lb. 80¢....25%

### Miscellaneous—
*American Packing....lb. 7@10 ¢*
*Cotton Packing....lb.16@25 ¢*
*Italian Packing....lb. 9@10¢*
*Jute ....lb. 4@4¼¢*
*Russia Packing....lb. 9@10¢*

### Pails, Water, Well, &c.—
See *Buckets.*

### Paint—
Dixon's Silica-Graphite, in 1 gal. pails and 5 gal. kegs, 25; packages of larger size....20

### Pans— Dripping—
*Standard List...70&10@70&10&5%*
Edwards, Royal Blue....75%

### Fry—
*Common Lipped:*

| Nos | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Per doz | $0.75 | 0.85 | 0.95 | 1.15 | 1.30 |

### Refrigerator, Galva.—

| Inch | 12 | 14 | 16 | 18 |
|---|---|---|---|---|
| Per doz | $1.75 | 2.25 | 2.80 | 3.15 |

### Paper—Building Paper
*Asbestos: lb.*
*Roll Board or Building Felt, 6 to 30 lb., per 100 sq. ft...2½¢*
*Roll Board or Building Felt, 3-32 and ⅛ in., 45 to 60 lb., per 100 sq. ft....3½¢*
*Mill Board, Sheet, 40 x 40 in., 1-32 to ½ in....3¢*
*Per roll.*
*Rosin Sized Sheathing: 500 sq. ft.*
*Light weight, 25 lbs. to roll, 48@58¢*
*Medium weight, 30 lbs. to roll, 56@70¢*
*Heavy weight, 40 lbs. to roll, 75@78¢*
*Black Water Proof Sheathing, 500 sq. ft., 1 ply, 65¢; 2 ply, 85¢; 3 ply, $1.10; 4 ply, $1.25.*
*Deafening Felt, 9, 6 and 4½ sq. ft. to lb., ton....$54.50*
*Red Rope Roofing, 250 sq. ft. per roll....$1.75*

### Tarred Paper—
*1 ply (roll 400 sq. ft.), ton, $34.00@$38.00*
*2 ply, roll 108 sq. ft....65¢*
*3 ply, roll 108 sq. ft....88¢*
*Slater's Felt (roll 500 sq. ft.).80¢*

### Sand Paper and Cloth—
*Flint and Emery....50&10%*
*Garnet Paper and Cloth....25%*

### Parers—Apple—
Goodell Co.:
Family Bay State....₱ doz. $15.00
Improved Bay State....₱ doz. $36.00
New Lightning....₱ doz. $7.00
Turn Table '98....₱ doz. $6.00
White Mountain....₱ doz. $5.00
Bonanza Improved....each $7.50
Dandy ....each $10.00
Eureka Improved....each $20.00
New Century....each $20.00
Ranger ....each $30.00

Livingston Nail Co.:
Daisy ..... ℔ doz. $4.00
Little Star ..... ℔ doz. $5.00
Rocking Table ..... ℔ doz. $6.20
Reading Hardware Co.:
Advance ..... ℔ doz. $4.00
Baldwin ..... ℔ doz. $4.00
Reading 72 ..... ℔ doz. $3.25
Reading 78 ..... ℔ doz. $6.25

### Crange—
Goodell Co., Success ..... each $20.00

### Potato—
Saratoga ..... ℔ doz. $7.00
White Mountain ..... ℔ doz. $6.00

### Picks and Mattocks—
*(List Jan., 1908.)*
*List ..... 70&10@70&10&10%*
Cronk's Handled Garden Mattock, ℔ doz., $3.00 ..... 33⅓%

### Pinking Irons—
See *Irons, Pinking.*

### Pins, Escutcheon—
*Brass ..... 50@50&10%*
*Iron, list Nov. 11, '85 ..60@60&10%*

### Pipe, Cast Iron Soil—
*Standard, 2-6 in. ..... 70@—%*
*Extra Heavy, 2-6 in. .75&10@—%*
*Fittings, Standard and Heavy, 80&10@80&10&10%*

### Pipe, Merchant—

| | Consumers, Steel. Blk. | Galv. | Carloads, Iron. Blk. | Galv. |
|---|---|---|---|---|
| | % | % | % | % |
| ⅛ and ¼ in. | 66 | 50 | 64 | .. |
| ⅜ in. | 68 | 54 | 66 | 52 |
| ½ in. | 70 | 58 | 68 | 56 |
| ¾ to 6 in. | 74 | 64 | 72 | 62 |
| 7 to 12 in. | 71 | 56 | 69 | 54 |

### Pipe, Vitrified Sewer—
*Carload lots.*
*Standard Pipe and Fittings, 3 to 24 in., f.o.b. factory:*
*First-class ..... 87%*
*Second-class ..... 90%*

### Pipe, Stove—

| | Per 100 joints. C. L. | L. C. L. |
|---|---|---|
| Edwards' Nested: | | |
| 5 in., Standard Blue | $6.25 | $7.25 |
| 6 in., Standard Blue | 6.75 | 7.75 |
| 7 in., Standard Blue | 7.75 | 8.75 |
| 5 in., Royal Blue | 7.00 | 8.00 |
| 6 in., Royal Blue | 7.50 | 8.50 |
| 7 in., Royal Blue | 8.50 | 9.50 |
| Wheeling Corrugating Co.'s Nested: | | |
| 5 in., Uniform Color | $5.90 | $6.90 |
| 6 in., Uniform Color | 6.40 | 7.40 |
| 7 in., Uniform Color | 7.40 | 8.40 |

### Planes and Plane Irons—
### Wood Planes—
*Bench, first qual. ..... 30@30&10%*
*Bench, second qual. ..40@40&10%*
*Molding ..... 25@25&10%*
Chapin-Stephens Co.:
Bench, First Quality ..... 30%
Bench, Second Quality ..... 40%
Molding and Miscellaneous ..... 25%
Toy and German ..... 30%
Union ..... 60%

### Iron Planes
Chaplin's Iron Planes ..... 60%
Union ..... 60%

### Plane Irons—
*Wood Bench Plane Irons, list Dec. 12, '06 ..... 25%*
Buck Bros. ..... 30%
Chapin-Stephens Co. ..... 25%
Union ..... 50%
L. & I. J. White ..... 20&5@25%

### Planters, Corn, Hand—
Kohler's Eclipse ..... ℔ doz. $7.50

### Plates—
*Felloe ..... lb. 3¾@4¢*
Avery Stamping Co.:
Standard Wrot. Steel Felloe Plates in 100 lb kegs, per 100 lb, ¾-in. to 1⅛-in., $4.00 net; 1¼-in. to 2-in., inclusive, $3.75 net.

### Steel Pipe Hook—
Never-Break ..... 75&10%

### Pliers and Nippers
*Button Pliers. . . . 75&5@75&10&5%*
*Gas Burners, per doz., 5 in., $1.25 @$1.30; 6 in., $1.45 $1.50.*

| Gas Pipe.. | 7 | 8 | 10 | 12-in. |
|---|---|---|---|---|
| | $2.00 | $2.25 | $2.75 | $3.50 |

Acme Nippers ..... 50&5%
Cronk & Carrier Mfg. Co.:
American Button ..... 80%
Improved Button ..... 75&10%
Cronk's ..... 60%
No. 80 Linemen's ..... 50%
Stub's Pattern ..... 45%
Combination and others ..... 33⅓%
Heller's Farriers' Nippers, Pincers and Tools ..... 40&5@40&10&5%
P., S. & W. Tinners' Cutting Nippers ..... 40%
Swedish Side, End and Diagonal Cutting Pliers ..... 50%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds ..... 40%

### Plumbs and Levels—
Chapin-Stephens Co.:
Plumbs and Levels ..... 30@30&10%
Chapin's Imp. Brass Cor. .40@40&10%
Pocket Levels ..... 30@30&10%
Extension Sights ..... 30@30&10%
Machinists' Levels ..... 40@40&10%
Disston's Plumbs and Levels ..... 60&10%
Disston's Pocket Levels ..... 60&10%
Stanley's Dulex ..... 35%
Woods' Extension ..... 33⅓%

### Points, Glaziers'—
*Bulk and 1-lb. papers ..... lb. 9¢*
*½-lb. papers ..... lb. 9½¢*
*¼-lb. papers ..... lb. 10¢*

### Police Goods—
*Manufacturers' Lists. . .25@25&5%*
Towers ..... 25%

### Polish—Metal, Etc—
Ladd Co.:
Putzade Liquid, ℔ gro., ½ pts., $12.00; 1 pts., $20.00; 1 qts., $40.00; ℔ doz., ½ gals., $6.35; 1 gals., $12.00.
Prestoline Liquid, No. 1 (½ pt.), ℔ doz., $3.00; No. 2 (1 qu.), $5.00 .40%
Prestoline Paste ..... 40%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, ℔ doz. 50¢; ℔ gro. $4.50; ½ lb boxes, ℔ doz. $1.25; 1 lb boxes, ℔ doz. $2.25.
U. S. Liquid, 8 oz. cans, ℔ doz., $1.25.
Barkeepers' Friend Metal Polish, ℔ doz., $1.75.

### Stove—
Black Eagle Benzine Paste, 5 lb cans, ℔ lb 10¢
Black Eagle, Liquid, ½ pt. cans.. ℔ doz. 75¢
Black Jack Paste, ¾ lb cans, ℔ gr. $9.00
Black Kid Paste, 5 lb can...each, $0.65
Ladd's Black Beauty Liquid, per 100 tins ..... $6.75
Joseph Dixon, ℔ gr. $5.75 ..... 10%
Dixon's Plumbago ..... ℔ lb 8¢
Fireside ..... ℔ gr. $2.50
Gem, ℔ gr. $4.50 ..... 10%
Japanese ..... ℔ gr. $3.50
Jet Black ..... ℔ gr. $3.50
Peerless Iron Enamel, 10 oz. cans.. ℔ doz. $1.50

### Window Polish—
Benj. P. Forbes:
Glasbright, No. 2, gal pails, ℔ doz., $24.00; each, $2.50; 1 lb cans, each ..... 75¢
Glasbright Powder, bbls., ℔ lb..20¢

### Poppers, Corn—
*1 qt. Square..doz. $0.80; gro. $8.75*
*1 qt. Round..doz. $0.90; gro. $10.00*
*1½ qt. Square. doz. $1.20; gro..$12.00*
*2 qt. Square..doz. $1.50; gro..$15.00*

### Post Hole and Tree Augers and Diggers—
See also *Diggers, Post Hole, &c.*

### Posts, Steel—
Steel Fence Posts, each, 6 ft., 46¢; 6½ ft., 48¢; 7 ft., 50¢.
Steel Hitching Posts ..... each $1.30

### Potato Parers—
See *Parers, Potato.*

### Pots, Glue—
*Enameled ..... 40%*
*Tinned ..... 30&10%*

### Powder—
*In Canisters:*
*Duck, 1 lb ..... each 45¢*
*Fine Sporting, 1 lb. . . . each 75¢*
*Rifle, ½-lb. ..... each 45¢*
*Rifle, 1 lb ..... each 25¢*
*In Kegs:*
*12½-lb. kegs ..... $3.50*
*25 lb. kegs ..... $4.50*
King's Semi-Smokeless:
Keg (25 lb bulk) ..... $6.50
Half Keg (12½ lb bulk) ..... $3.50
Quarter Keg (6¼ lb bulk) ..... $1.90
Case 24 (1 lb cans bulk) ..... $8.50
Half case (1 lb cans bulk) ..... $4.50

| King's Smokeless: | Shot Gun. | Rifle. |
|---|---|---|
| Keg (25 lb bulk) | $12.00 | $15.00 |
| Half Keg (12½ lb bulk) | 6.25 | 7.75 |
| Quarter Keg (6¼ lb bulk) | 3.25 | 4.00 |
| Case 24 (1 lb cans bulk) | 14.00 | 17.00 |
| Half case 12 (1 lb c. bk) | 7.25 | 8.75 |

### Presses—
### Fruit, Wine and Jelly—
Enterprise Mfg. Co. ..... 20@25%

### Seal Presses—
Morrill's No. 1, ℔ doz., $20.00 ..... 50%

### Pruning Hooks and Shears
See *Shears.*

### Pullers, Nail, Etc.—
Cyclops ..... 50%
Miller's Falls, No. 3, ℔ doz., $12.00.. 33⅓&10%
Morrill's No. 1, Nail Puller, ℔ doz. $20.00 ..... 50%
Pearson No. 1, Cyclone Spike Puller, each $30.00 ..... 50%
The Scranton Co. Case Lots:
No. 2B (large) ..... $5.50
No. 3B (small) ..... $5.00
Smith & Hemenway Co.:
Diamond B ..... 70%
Giant ..... 50%
Staple Pullers, Utica and Davison ..... 60%
Taylor Mfg. Co., Sampson Tack, ℔ doz. ..... $0.40

### Pulleys, Single Wheel—

| Inch | 1½ | 1¾ | 2 | 3 |
|---|---|---|---|---|
| Awning or Tackle, doz | $0.30 | .45 | .60 | 1.05 |
| Hay Fork, Swivel or Solid Eye, doz., ½ in., $1.25; 5 in., $1.55 | | | | |
| Inch | 2 | 2¼ | 2½ | |
| Hot House, doz. | $0.65 | .85 | 1.20 | |
| Inch | 1¼ | 1½ | 1¾ | 2 |
| Screw, doz. | $0.16 | .19 | .23 | .30 |
| Inch | 1¾ | 2 | 2¼ | 2½ |
| Side, doz. | $0.25 | .40 | .55 | .60 |
| Inch | 1½ | 1¾ | 2 | 2½ |

### Sash Pulleys—
*Common Frame; Square or Round End, per doz. 1¾ and 2 in. ..... 17@20¢*
*Auger Mortise, no Face Plate, per doz., 1¾ and 2 in. . . . 20@21¢*
Acme, No. 35..1¾ in., 19¢; 2 in., 20½¢
American Pulley Co.:
Wrought Steel American Plain Axle ..... 50&10%
Wrought Steel, Eagle ..... 17@20¢
Top Notch, Electrically Welded, Nos. 3 and 4 ..... 19¢
Common Sense ..... ℔ doz. 20¢
Fox-All-Steel, Nos. 3 and 7, 2 in.... ℔ doz. 50%
Grand Rapids All Steel Noiseless..50%
Niagara, No. 25, 1¾ in., 19¢; 2 in. ..... 20½¢
No. 26 Troy..1¾ in., 14½¢; 2 in., 16½¢
Star, No. 26....1¾ in., 19¢; 2 in., 20½¢
Tackle Blocks—See Blocks.

### Pumps—
*Cistern ..... 60%*
*Pitcher Spout. . . . . 75&5@75&10%*
*Wood Pumps, Tubing, &c. . . . 50%*
Barnes Dbl. Acting (low list) ..... 45%
Barnes Pitcher Spout ..... 80%
Contractors' Rubber Diaphragm, No. 2, B. & L. Block Co. ..... $16.00
Daisy Spray Pump ..... ℔ doz. $6.50
Flint & Walling's Fast Mail Hand (low list) ..... 50&5%
Flint & Walling's Fast Mail (low list) ..... 50&5%
Flint & Walling's Tight Top Pitcher ..... 80%
National Specialty Mfg. Co., Measuring, Nos. 2, $6.00; 3, $5.50 ..... 30%
Myers' Pumps (low list) .....
Myers' Power Pumps ..... } 50%
Myers' Spray Pumps .....

### Pump Leathers—
*Plunger and Valve Leathers—Per gro.:*

| No | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| | $5.00 | 6.00 | 7.00 | 8.00 |

*Cup Leathers—Per 100:*

| Inch | 2½ | 3 | 3½ | 4 |
|---|---|---|---|---|
| | $5.00 | 7.00 | 9.00 | 12.00 |

} 30%

### Punches—
*Saddlers' or Drive, good, doz. 50@75¢*
*Spring, single tube, good quality ..... $1.75*
*Revolving (4 tubes) . . . . doz. $3.50*
Bemis & Call Co.'s Cast St'l Drive..50%
Morrill's Nos. 1AA, 1A, 1B, 1C, 1D, $15.00 ..... 50%
Hercules, 1 die, each $5.00 ..... 50%
Niagara Hollow Punches ..... 40%
Niagara Solid Punches ..... 55&10%
Tinners' Hollow, P., S. & W. Co..40%
Tinners' Solid, P., S. & W. Co., ℔ doz., $1.44 ..... 40&10%

## Rail—Barn Door, &c.—
*Sliding Door, Painted Iron, 2½@2¾¢*
*Sliding Door, Wrought Brass, 1⅛ in., lb., 36¢ ..... 30%*
Cronk's:
Double Braced Steel Rail..℔ ft. 2¾¢
O. N. T. Rail ..... 2¾¢
Griffin's:
xxx, ℔ 100 ft., 1 x 3-16 in., $3.25; 1¼ x 3-16 in., $3.75.
Hinged Hanger, ℔ 100 ft., 1 x 3-16 in., $3.50; 1¼ x 3-16 in., $4.00.
Lane's:
Hinged Track, ℔ 100 ft. ..... $3.45
O. N. T., ℔ 100 ft., 1 in., $3.12½; 1¼ in., $3.45; 1½ in., $4.00.
Standard, 1¼ in. ..... ℔ 100 ft. $4.00
Lawrence Bros.:
1 x 3-16 in., ℔ 100 ft., $7.50; 1¼ x 3-16 in., $8.75 ..... 55&7½%
McKinney's:
Hinged Hanger Track, ℔ ft., 11¢ ..... 60&5%
1 x 3-16 Track ..... 55&7½%
Myers' Stayon Track ..... 60&5%
Richards Mfg. Co.:
Common, 1 x 3-16 in., $3.00; 1¼ x 3-16, $3.25; 1¼ x 3-16, $3.50.
Special Hinged Hanger Rail..60&10%
Lag Screw Rail, No. 65 ..... 50%
Gauge Trolley Track, ℔ ft., No. 31, 9¢; No. 32, 14¢; No. 33, 20¢.
No. 50 ..... 60&10%
Nos. 61, $3.00; 62, $3.25; 63, $3.50; 64, $4.00; 45, $3.25; 46, $3.50; 49, No. 1, $3.25; 49, No. 2, $3.50.

### Rakes—
*NOTE.—Many goods are sold at net prices.*
Fort Madison Red Head Lawn....$3.25
Fort Madison Blue Head Lawn... $2.70
Cronk's:
Steel Garden: Champion, ℔ doz., 12-tooth, $3.75; 14-tooth, $4.00; 16-tooth, $4.25; Ideal ℔ doz., 12-tooth, $3.00; 14-tooth, $3.30; 16-tooth, $3.60.
Victor, 12-tooth, $2.25; 14-tooth, $2.50; 16-tooth, $2.75.
Queen City Lawn, ℔ doz., 20 teeth, $2.85; 24, $3.00 ..... net
Antielog Lawn ℔ doz. ..... $4.00
Malleable Garden ..... 70&10
Ideal Steel Garden, ℔ doz., 12 teeth $15.00; 14, $16.00; 16, $18.00 .. 80
Kohler's:
Jumbo Lawn, 36-tooth....℔ doz. $5.00
Lawn Queen, 20-tooth... ℔ doz. $2.85
Lawn Queen, 24 tooth....℔ doz. $3.00
Paragon, 20-tooth ..... ℔ doz. $2.65
Paragon, 24-tooth ..... ℔ doz. $2.75
Steel Garden, 14-tooth.. ℔ doz. $2.40
Malleable Garden, 14 tooth, ℔ doz. $1.75@2.00

### Rasps, Horse—
Disston's ..... 75
Heller Bros. ..... 70&5@70&10&5
Llyod & Bro. Gold Medal ..... 75&10&5
McCallum's American Standard ..... 60&10&5
New Nicholson ..... 70&10@75
See also Files.

### Razors—
John Engstrom Swedish ..... 65%
Sharp Shaver ..... 60
Fox Razors, ℔ doz. No. 12, $24.00; No. 44, $20.00; No. 82, Platina, $36.00. } Dis. 50%

### Reels, Fishing—
Hendryx:
M 6, Q 6, A 6, B 6, M 9¼, M 16, Q 16, A 16, B 16, 4008, Rubber, Populo, Nickeled Populo ..... 20%
Aluminum, German Silv., Bronze..25%
1240 N, 124 N ..... 20%
3004 N, 06 N, 6 RM, G 9 ..... 25%
4 N, 6 PN, 24 N, 36 PN ..... 20%
2904 P., 33⅓%; 2904 PN., 33⅓%; 0924 N., 33⅓%; 02084 N., 33⅓%; 002904 PN., 33⅓%; 802 N., 33⅓%.
986 PN, 2904 N, 971 PN ..... 25%
5009 PN, 5009 N ..... 20%
Competitor, 102 P, 102 PN, 202 P, 202 PN, 102 PR, 202 PR ..... 20%
304 P, 304 PN, 00304 P, 00304 PN..33⅓%

### Registers—*List July 1, 1903.*
*Japanned, Electroplated and Bronzed ..... 70%*
*White Porcelain Enamel..50&10%*
*Solid Brass or Bronze Metal..40%*

### Revolvers—
*Single Action ..... 95¢@$1.00*
*Double Action, except 44 cal..$2.00*
*Double Action, 44 caliber. . . $2.00*
*Automatic ..... $4.00*
*Hammerless ..... $4.50*

### Riddles, Hardware Grade
*16 in. ..... per doz. $2.50@$2.75*
*17 in. ..... per doz. $2.75@$3.00*
*18 in. ..... per doz. $3.00@$3.25*

### Rings and Ringers—
### Bull Rings—

| | 2 | 2½ | 3 inch. |
|---|---|---|---|
| Steel | $0.70 | 0.75 | 0.80 doz. |
| Copper | $1.10 | 1.25 | 1.65 doz. |

### Hog Rings and Ringers—
*Hill's Rings, gro. boxes.$4.50@$4.50*
*Hill's Ringers, Gray Iron, doz., 60@75c*
*Hill's Ringers, Malleable Iron, doz. 80@95¢*
*Blair's Rings..per gro. $5.00@$5.50*
*Blair's Ringers. . . per doz. 75@90¢*

### Rivets and Burrs—
*Copper ..... 50@50&10%*
*Carriage, Coopers', Tinners', &c.: Black ..... 70&10%*
*Metallic Tinned ..... 70%*

### Bifurcated and Tubular—
*Assorted in Boxes.*
*Bifurcated, per doz. boxes, pasteboard boxes, 50 count, 23@25¢; Tin boxes, 100 count, 29@32c.*
*Tubular, per doz. boxes, 50 count, 29@32c; 100 count, 51@58c.*

### Rollers—
Cronk's Stay, No. 50 ..... $1.00
Cronk's Brinkerhoff No. 55, $0.60; No. 56, $0.75; No. 60 ..... $0.75
Lane's Stay ..... 40%
Richards' Stay:
Handy Adj. and Reversible No. 53.75¢
O. K. Adj. and Reversible No. 58.50¢
Lag Screw, Nos. 55 and 57 ..... 50%
Underwriters', Nos. 59, 60 ..... 50%
Favorite, No. 54 ..... 60%

### Rope—
*Manila, 7-16 in. diam. and larger: Pure ..... lb. 9¢*
*Sisal, 7-16 in. diam. and larger: Pure ..... lb. 7c*
*Sisal, Hay, Hide and Bale Ropes, Medium and Coarse: Pure ..... lb. 7½@7¾¢*
*Sisal, Tarred, Medium Lath Yarn: Pure ..... lb. 6½@6¾¢*
*Cotton Rope: Best, ¼ in. and larger. . . 18@20¢ Medium, ¼-in. and larger.16@17¢ Common, ¼-in. and larger. . 10c In coils, ½c advance.*
*Jute Rope: Thread, No. 1, ¼-in. and up, lb. ..... 5½c Thread, No. 2, ¼-in. and up, lb. ..... 5c*

### Wire Rope—
*Galvanized ..... 37½&2½%*
*Plain ..... 45&2½%*

### Ropes, Hammock—
Covert Mfg. Co.:
Jute, 35 ; Sisal ..... 50

### Rules
*Boxwood ..... 60%@60&10*
*Ivory ..... 35@40&10@50&10&5%*
Chapin-Stephens Co.:
Boxwood ..... 50
Flexrod ..... 90
Ivory ..... 2.00@3.00
Miscellaneous ..... 50@75&10
Stephens' Combination ..... 55
Stubb's ..... 60@75&10
Kraft & Ford Co.:
Boxwood, Wood ..... 35&10
Boxwood, Steel ..... 35&10
Ivory, Steel ..... 50&10
Lufkin's Lumber ..... 50&10
Upson Nut Co.:
Boxwood ..... 60@60&10
Ivory ..... 35&10@35&10&10

## Sash Balances—
See *Balance, Sash.*

**Sash Locks**—See *Locks, Sash.*

### Sash Weights—
See *Weights, Sash.*

## Sausage Stuffers or Fillers

See *Stuffers or Fillers, Sausage.*

## Saw Frames—

See *Frames, Saw.*

## Saw Sets—See *Sets, Saw.*

## Saw Tools—See *Tools, Saw.*

## Saws—

Atkins':
- Circular ..... 45%
- Band ..... 50@50&10%
- Butcher Saws ..... 50%
- Cross Cuts ..... 35%
- One-Man Cross Cut ..... 40%
- Narrow Cross Cut ..... 50%
- Hand, Rip and Panel ..... 35&5%
- Miter Box and Compass ..... 40%
- Mulay, Mill and Drag ..... 45%
- Wood Saws ..... 40&10%

Chapin-Stephens Co.:
- Turning Saws and Frames. 30@30&10%

Diamond Saw & Stamping Works:
- Sterling Kitchen Saws ... 30&10&10%

Disston's:
- Circular, Solid and Ins'ted Tooth. 50%
- Band, 2 to 18 in. wide ..... 60%
- Band, ¼ to 1¾ ..... 60%
- Crosscuts ..... 45%
- Narrow Crosscuts ..... 50%
- Mulay, Mill and Drag ..... 50%
- Framed Woodsaws ..... 25%
- Woodsaw Blades ..... 25%
- Woodsaw Rods, Tinned ..... 15%
- Hand Saws, Nos. 12, 99, 9, 16, d100, D8, 120, 76, 77, 8 ..... 25%
- Hand Saws, Nos. 7, 107, 107½, 3, 1, 0, 00, Combination ..... 30%
- Compass, Key Hole, &c ..... 25%
- Butcher Saws and Blades ..... 30%

C. E. Jennings & Co.'s:
- Back Saws ..... 16⅔%
- Butcher Saws ..... 25&7½%
- Compass and Key Hole Saws, 33⅓&7½%
- Framed Wood Saws ..... 25&7½%
- Hand Saws ..... 12½%
- Wood Saw Blades ..... 33⅓&7½%

Millers Falls:
- Butcher Saws ..... 15&10%
- Star Saw Blades ..... 15&10%

Massachusetts Saw Works:
- Victor Kitchen Saws ..... 40&10&50%
- Butcher Saws Blades ..... 35@40%

Peace & Richardson's Hand Saws. 30%

Simonds':
- Circular Saws ..... 45%
- Crescent Ground Cross Cut Saws. 30%
- One-Man Cross Cuts ..... 40&10%
- Gang Mill, Mulay and Drag Saws. 45%
- Band Saws ..... 50%
- Back Saws ..... 25@25&7½%
- Butcher Saws ..... 35@35&7½%
- Hand Saws ..... 25@25&7½%
- Hand Saws, Bay State Brand .... 45%
- Compass, Key Hole, &c .. 25@25&7½%
- Wood Saws ..... 40&7½%

Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws ..... 50%

## Hack Saw Blades and Frames—

Atkins' Hack Saw Blades A A A .. 25%

Disston's:
- Concave Blades ..... 25%
- Keystone Blades ..... 35%
- Hack Saw Frames ..... 30%

Simonds, 25%; The Best, 35%; Culley ..... 35%

C. E. Jennings & Co.'s:
- Hack Saw Frames, Nos. 175, 180 .... 40&7½%
- Hack Saws, Nos. 175, 180, complete, 40&7½%

Goodell's Hack Saw Blades ... 40&10

Griffin's Hack Saw Frames .. 35&5&10

Griffin's Hack Saw Blades .... 35&5&10%

Star Hack Saws and Blades .... 15&10

Sterling Hack Saw Blades .. 30&10&5%

Sterling Hack Saw Frames .. 30&10&10%

Sterling Power Hack Saw Machines, each, No. 1, $25.00; No. 2, $30.00 .. 10%

Victor Hack Saw Blades ..... 20%

Victor Hack Saw Frames ..... 40%

Whitaker Mfg. Co.:
- National Hand Blades, Hand Frames, Power Blades ..... 40%

## Scroll—

Barnes, No. 7, $15 ..... 25%

Barnes' Scroll Saw Blades ..... 40%

Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20 ..... 20%

Lester, complete, $10.00 ..... 15&10%

Rogers, complete, $3.50 and $4.00 .. 15&10%

## Scales—

*Union Platform, Plain. $2.10@2.20*
*Union Platform, Stpd. $2.20@2.30*

Chatillon's:
- Eureka ..... 25%
- Favorite ..... 40%
- Grocers' Trip Scales ..... 50%

The Standard Portables ..... 40%

The Standard R. R. and Wagon ..... 50&10%

## Scrapers—

*Box, 1 Handle ..... doz. $1.85@2.10*
*Box, 2 Handle ..... doz. $2.35@2.50*
*Ship ... Light, $2.00; Heavy, $4.50*

Chapin-Stephens Co., Box .. 30@30&10%

Richards Mfg. Co., Foot ..... 60%

## Screws—Bench and Hand

*Bench, Iron, doz., 1 in., $2.50@2.75; 1¼, $3.00@3.25; 1¼, $3.50@3.75*
*Bench, Wood ..... 20@20&10%*
*Hand, Wood .... 70&10@70&10&10%*

Chapin-Stephens Co., Hand ..... ℔ 70@70&10&2½%

## Coach, Lag and Hand Rail—

*Lag, Cone Point. 80&10@80&10&5%*
*Coach, Gimlet Point .. 80@80&10%*
*Hand Rail ..... 70&10@75%*

## Jack Screws—

*Standard List ..... 70&10@75%*

Millers Falls ..... 50&10&10

Swett Iron Works ..... 70@75

## Machine—

*Cut Tread, Iron, Brass or Bronze:*
*Flat Head or Round Head, 50@50&10%*
*Fillister Head ..... 40@40&10%*
*Rolled Thread, F. H. or R. H., Iron ..... 75&10%*
*F. H. or R. H., Brass, Nos. 8 to 14 ..... 65&10%*

## Set and Cap—

*Set (Iron) ..... 75&10&7½%*
*Set (Steel), not advance over Iron ..... 25%*
*Sq. Hd. Cap ..... 70&10&7½%*
*Hex. Hd. Cap ..... 70&10&7½%*
*Rd. Hd. Cap ..... 50&7½%*
*Fillister Hd. Cap ..... 60&7½%*

## Wood—

*List July 23, 1903.*

*Flat Head, Iron ..... 87½&5@.. %*
*Round Head, Iron .... 85&5@.. %*
*Flat Head, Brass ..... 80&5@.. %*
*Round Head, Brass .. 77½&5@.. %*
*Flat Head, Bronze .... 75&5@.. %*
*Round Head, Bronze. 72½&5@.. %*
*Drive Screws ..... 87½&5@.. %*

## Scroll Saws—

See *Saws, Scroll.*

## Scythes—

| | Per doz. |
|---|---|
| *Grass, No. 1, Plain* | $7.00 |
| *Clipper, Bronzed Webb* | $7.25 |
| *No. 3 Clipper, Pol'd Webb* | $7.50 |
| *No. 6 Clipper and Solid Steel* | $7.75 |
| *Bush, Weed and Bramble, Nos. 11, 12 and 13* | $7.25 |
| *Grain, No. 1* | $9.00@9.50 |
| *Bronzed Webb, No. 1* | $9.25@9.75 |
| *Nos. 3 and 4 Clipper, Grain* | $9.50@10.00 |
| *Solid Steel, No. 6* | $10.00@10.50 |

## Seeders, Raisin—

Enterprise ..... 25@30%

## Sets— Awl and Tool—

Fray's Tool Handles, Nos. 1, $12; 2, $16; 3, $12 ..... 50%

Millers Falls Adj. Tool Handles, No. 1, $12; No. 4, $12; No. 5, $18 .. 20&10%

## Garden Tool Sets—

Ft. Madison Three Plows, Hoe, Rake and Shovel ..... ℔ doz. sets $9.00

## Sets, Nail—

*Octagon ..... gro. $3.50@3.75*

Buck Bros. ..... 27½%

Mayhew's ..... ℔ gro. $9.00

Snell's Corrugated, Cup Pt. ..... 40&10%

Snell's Knurled, Cup Pt. ..... 40&10%

Victor Knurled, Cup Pt. ... ℔ gro. $7.50

## Rivet—

*Regular list ..... 75@75&10%*

## Saw—

Atkin's:
- Criterion ..... 40%
- Adjustable ..... 40%

Disston's Star, Monarch and Triumph ..... 30%

Morrill's No. 1 ..... $15.00
Nos. 3 and 4, Cross Cut .... $20.60
No. 5, Mill ..... $30.00
Nos. 10, 11, 95 ..... $15.60
No. 1 Old Style ..... $10.00
Special ..... $16.25
} 50%

Giant Royal Cross Cut ..... ℔ doz. $7.50

Royal, Hand ..... ℔ doz. $4.50

Taintor Positive ..... ℔ doz. $6.75

## Shaving—

Fox Shaving Sets, No 30 ..... ℔ doz., net, $24.00

Smith & Hemenway Co.'s ..... 75%

## Sharpeners, Knife—

Pike Mfg. Co.:
- Fast Cut Pocket Knife Hones, ℔ doz ..... $1.50
- Mounted Kitchen Sand Stone, ℔ doz ..... $1.50
- Natural Grit Carving Knife Hones, ℔ doz ..... $3.00
- Quick Cut Emery Carving Knife Hones, ℔ doz ..... $1.50
- Quick Edge Pocket Knife Hones, ℔ doz ..... $2.50

} 50%

## Skate—

Smith & Hemenway Co., Eureka .. 50%

## Shaves, Spoke—

*Iron ..... doz. $1.25*
*Wood ..... doz. $2.00*

Bailey's (Stanley R. & L. Co.) ..... 45%

Chapin-Stephens Co. ..... 30@30&10%

Goodell's, ℔ doz. $9.00 ..... 15&10%

## Shears—

| *Cast Iron* | 7 | 8 | 9 in. |
|---|---|---|---|
| *Best* | $16.00 | 18.00 | 20.00 gro. |
| *Good* | $13.00 | 15.00 | 17.00 gro. |
| *Cheap* | $5.00 | 6.00 | 7.00 gro. |

*Straight Trimmers, &c.:*
*Best quality Jap .... 70@70&10%*
*Best quality Nickel .. 60@60&10%*
*Tailors' Shears ..... 40@40&10%*

Acme Cast Shears ..... 40@40&5%

Heinisch's Tailor's Shears ..... 10%

National Cutlery Co.'s Nickel Plated, 60&10%; Japan Handles ..... 70&10%

Wilkinson Shear & Cutlery Co.:
- Sheep, 1900 list ..... 30&10&5%
- Grass ..... 50&10%
- Horse or Mule ..... 50&10%

J. Wiss & Sons Co.:
- Best Quality Jap'd ..... 60&10%
- Best Quality Nickeled ..... 50&10%
- Tailors' ..... 25%

## Tinners' Snips—

*Steel Blades ..... 20&5@20&10%*
*Steel Laid Blades ..... 40&10@50%*

Acme Cast Snips ..... 40@45&5%

Forged Handles, Steel Blades, Berlin ..... 50%

Heinisch's Snips ..... 40%

Jennings & Griffin Mfg. Co.'s 6½ to 10 in ..... 33⅓&7½%

National Cutlery Co.'s Forged Steel. 50%

Niagara Snips ..... 40%

P., S. & W. Forged Handles, 25%; W. R. W. ..... 50%

J. Wiss & Sons Co.:
- Wiss Forged Steel ..... 25%

## Pruning Shears—

Cronk's Hand Shears ..... 33⅓%

Cronk's Wood Handle Shears .... 33⅓%

Disston's Combined Pruning Hook and Saw, ℔ doz. $18.00 ..... 25%

Disston's Pruning Hook only, ℔ doz., $12.00 ..... 25%

J. T. Henry Mfg. Co.:
- Pruning Shears, all grades ..... 40%

P., S. & W. Co. ..... 40&10%

Columbian Cutlery Co.:
- Hedge, Wilcut Brand ..... 60&10%
- Lawn and Border, Wilcut Brand, 60&10%

## Sheaves— Sliding Door—

Reading ..... 40%

R. & E. list ..... 15%

## Sliding Shutter—

Reading list ..... 40%

R. & E. list ..... 15%

## Shells—Shells, Empty—

Brass Shells, Empty:
- Climax, 10 and 12 gauge ..... 60&5%
- Club, Rival, 65&5%; First Quality, 60&5%

Paper Shells, Empty:
- New Rapid, 10, 12, 16 and 20 gauge, 25&10%
- Climax, 10 and 12 gauge; Acme and Magic, 10, 12, 16 and 20 gauge; Ideal, 10, 12, 16 and 20 gauge; Leader grade ..... 25&5%
- Union, League, 10 and 12 gauge, Rival Grade ..... 25%
- New Climax, Defiance, 10, 12, 14, 16 and 20 gauge; Climax, 14, 16 and 20 gauge ..... 20%
- Challenge, Monarch, 10, 12, 16 and 20 gauge; League, Union, 14, 16 and 20 gauge; Repeater Grade .. 20%

## Shells, Loaded—

*Loaded with Black Powder .. 40%*
*Loaded with Smokeless Powder, medium grade ..... 40&5%*
*Loaded with Smokeless Powder, high grade ..... 40&10&10%*

Union Metallic Cartridge Co.:
- New Club, Black Powders ..... 40%
- Nitro Club, Smokeless Powders. 40&5%
- Arrow, Smokeless Powders. 40&10&10%

Winchester:
- Smokeless Repeater Grade ..... 40&5%
- Smokeless Leader Grade ... 40&10&10%
- Black Powder ..... 40%

## Shingles, Metal— Per Sq.

| Edwards Mfg. Co.: | Painted. | Galv. |
|---|---|---|
| 14 x 20 | $4.25 | $6.00 |
| 10 x 14 | 4.50 | 6.25 |
| 7 x 10 | 4.75 | 6.50 |

Wheeling Corrugating Co.:

| | | |
|---|---|---|
| Dixie, 14 x 20 in. | $4.05 | $5.05 |
| Dixie, 10 x 14 in. | 4.25 | 5.45 |
| Dixie, 7 x 10 in. | 5.25 | 6.70 |

## Shoes, Horse, Mule, &c.—

*F.o.b. Pittsburgh:*
*Iron ..... per keg. $4.10*
*Steel ..... per keg. $3.85*

Burden's, all sizes ..... ℔ keg $3.90

## Shot—

| | 25-lb. bag. |
|---|---|
| *Drop, up to B* | $1.80 |
| *Drop, B and larger* | 2.05 |
| *Buck* | 2.05 |
| *Chilled* | 2.05 |
| *Dust* | 2.30 |

## Shovels and Spades—

*Association List, Nov. 15, 1902. 40%*

Avery Stamping Co ..... 40%

## Snow Shovels—

*Long Handle ..... $3.25@$3.50*
*Wood and Mall, D Handle, $3.75@$4.00*

## Sieves and Sifters—

*Hunter's Imitation, gro ..... $9.50*
*Hunter's Genuine, per gro .. $12.00*

## Sifters, Ash—

Acme Ball Bearing Sales Co., Acme Automatic Ash Sifter, each, $3.25; ℔ doz ..... $39.00

## Sieves, Seamless Metallic

| | Per dozen. | | | |
|---|---|---|---|---|
| *Mesh* | 14 | 16 | 18 | 20 |
| *Iron Wire* | $1.05 | 1.05 | 1.10 | 1.20 |
| *Tinned Wire* | $1.15 | 1.15 | 1.20 | 1.30 |

## Sieves, Wooden Rim—

*Nested, 10, 11 and 12 Inch.*

*Mesh 18, Nested .... doz. $0.90@0.95*
*Mesh 20, Nested .... doz. $1.00@1.05*
*Mesh 24, Nested .... doz. $1.30@1.40*

## Sinks, Cast Iron—

*Painted, Standard list:*
*12 x 12 to 22 x 36 in ..... 60%*
*20 x 24 to 24 x 50 in ..... 50%*
*24 x 60 to 24 x 120 in ..... 30%*

Barnes' low list ..... 60%

*NOTE.—There is not entire uniformity in lists used by jobbers.*

## Skeins, Wagon—

*Cast Iron ..... 70@75&10%*
*Steel ..... 40@45%*

## Slates, School—

*Factory Shipments.*

*"D" Slates ..... 50@50&10%*

*Eureka, Unexcelled Noiseless .. 60&7 tens.*
*Victor A, Noiseless. 60&4 tens &5%*

## Slaw Cutters—See *Cutters.*

## Snaps, Harness—

*German ..... 40@40&10%*

Covert Mfg. Co.:
- Derby, 25%; Yankee, 30&2%; Yankee Roller, 30&2%
- High Grade, 40%; Trojan ..... 40%
- Jockey ..... 25%

## Snaths—

*Scythe ..... 60%*

## Snips, Tinners—See *Shears.*

## Spoons and Forks—

### Silver Plated—

*Good Quality ..... 50&10@60&5%*
*Cheap ..... 60@60&10%*

International Silver Co:
- 1847 Rogers Bros. ..... 40&10%
- Rogers & Bro., William Rogers Eagle Brand ..... 50&10%
- Anchor, Rogers Brand ..... 60%
- Wm. Rogers & Son ..... 60&10%

### Miscellaneous

*German Silver ..... 60@60&5%*

### Tinned Iron—

*Teas ..... per gro. 50@55¢*
*Tables ..... per gro. $0.90@$1.00*

Atlas Mfg. Co.:
- Tea Spoons, ℔ gro ..... 50¢@55¢
- Table Spoons, ℔ gro ..... $0.90@$1.00

## Springs— Door—

Bardsley's Spring and Check ..... 40%

Chicago (Coil) ..... 40&10%

Gem (Coil) ..... 20%

Pullman Door and Gate ..... 10%

Reliance (Coil) ..... 40&10%

Star (Coil) ..... 35%

Torrey's Rod, 39 in ..... ℔ doz. $1.00

## Carriage, Wagon, &c.—

| *1¼ in. and Wider:* | Per 100 lb. |
|---|---|
| *Black* | $4.75@$5.00 |
| *Half Bright* | $4.75@$5.00 |
| *Bright* | $5.25@$5.50 |

*Painted Seat Springs:*
*1½ x 2 x 26 .... per pair. 45@47¢*
*1½ x 3 x 28 .... per pair. 68@71¢*

## Sprinklers, Lawn—

American Foundry & Mfg. Co.:
- Cactus, 65%; Japanese, 70%; National, ℔ doz ..... $12.00

Enterprise ..... 25@30%

Philadelphia No. 1, ℔ doz. $12; No. 2, $15; No. 3, $20 ..... 30%

## Squares—

*Nickel plated .. } List Jan. 5, 1900.*
*Steel and Iron .. } 80@80&5%*
*Rosewood Hdl. Try Square and T-Bevels ..... 60&10&10@70%*
*Iron Hdl. Try Squares and T-Bevels ..... 40&10@40&10&10%*

Disston's Try Squares and Bevels, Rosewood Handle, 60 & 10%; Iron Stock and Bevel ..... 15%

## Squeezers, Lemon

*Wood, Porcelain Lined:*
*Cheap ..... doz. $1.00*
*Good Grade ..... doz. $1.25*
*Tinned Iron ..... doz. $0.75@1.00*
*Iron, Porcelain Lined ... doz. $1.75*

Victor, ℔ gro ..... $9.00

## Staples—

*Barbed Blind ..... 85&5@85&10%*
*Electricians' ..... 80&10&10@85%*
*Fence Staples, Polished, $2.05; Galvanized ..... $2.35*
*Poultry Netting Staples ..... per lb. 3¼@3½¢*

## Steels, Butchers'—

Dick's ..... 30%

Foster Bros.' ..... 30%

## Steelyards— .... 30@30&10%

## Stocks and Dies—

*Blacksmiths' ..... 50@50&10%*

Curtis Rev'ble Ratchet Die Stock .. 25%

Derby Screw Plates ..... 25%

Green River ..... 25%

Lightning Screw Plate ..... 25%

Little Giant ..... 25%

Reece's New Screw Plate ..... 25%

## Stoners, Cherry—

Enterprise ..... 25@30%

## Stones, Axe—

Pike Mfg. Co., Axe Stones (all kinds) ..... 33⅓%

## Glass Cutters' Stones—

Pike Mfg. Co., Glass Cutters' Stones and Supplies ..... 40%

## Stones, Oil, &c.—

| Pike Mfg. Co., 1907 list: | ℔ lb |
|---|---|
| Arkansas St., No. 1, 3 to 5½ in. | $2.80 |
| Arkansas St. No. 1, 5½ to 8 in. | $3.50 |
| Arkansas Slips No. 1 | $4.00 |
| Lily White Washita, 4 to 8 in. | 60¢ |
| Rosy Red Washita, 4 to 8 in. | 60¢ |
| Washita St., Extra, 4 to 8 in. | 50¢ |
| Washita St., No. 1, 4 to 8 in. | 40¢ |
| Washita St., No. 2, 4 to 8 in. | 25¢ |
| Lily White Slips | 90¢ |
| Rosy Red Slips | 90¢ |
| Washita Slips, Extra | 80¢ |
| Washita Slips, No. 1 | 70¢ |
| Washita Slips, No. 2 | 40¢ |

} 33⅓%

India Oil Stones (entire list) .. 33⅓%

Quickcut Emery and Corundum Oil Stone, Double Grit ..... 40%

Quickcut Emery and Corundum Axe Stone, Double Grit ..... 33⅓%

Quickcut Emery Rubbing Bricks .. 40%

| | |
|---|---|
| Hindostan No. 1, R'g'lar. | ℔ 8¢ |
| Hindostan No. 1, Small. | ℔ 10¢ |
| Turkey Oil Stones, Extra, 5 to 8 in. | ℔ 80¢ |
| Queer Creek Stones, 4 to 8 in. | 20¢ |
| Queer Creek Slips | 10¢ |
| Sand Stone | 6¢ |

} 33⅓%

### Scythe Stones—

Pike Mfg. Co., 1907 list:
Black Diamond S. S...℔ gro. $12.00
Lamoille S. S.....℔ gro. $11.00
White Mountain S. S.℔ gro. $9.50
Green Mountain S. S.℔ gro. $7.00
Extra Indian Pond S.S.℔ gro. $8.00
No. 1 Indian Pond S S.℔ gro. $7.50
No. 2 Indian Pond S.S.℔ gro. $5.00
Leader Red End S. S ℔ gro. $5.00
Quick Cut Emery....℔ gro. $10 00
Pure Corundum.....℔ gro. $18.00
Crescent .....$7.00
Emery Scythe Rifles, 2 Coat. $8.80
Emery Scythe Rifles, 3 Coat.$11.00
Emery Scythe Rifles, 4 Coat.$13.20
Balance of 1907 list 33⅓%
Lectro (Artificial), ℔ gro., $12.00.33⅓% $12.00 .....33⅓%
Lightning (Artificial), ℔ gro., $18.00 .....33⅓%

### Stoppers, Bottle—

Victor Bottle Stoppers.....℔ gro. $9 00

### Stops— Bench—

Millers Falls.....15&10%
Morrill's, ℔ doz., No 1, $10.00....50%
Morrill's, No. 2, $12.50.....50%

### Door—

Chapin-Stephens Co.....50@50&10%

### Plane—

Chapin-Stevens Co.....20%

### Straps— Box—

Acme Embossed, case lots..20&10&10%
Cary's Universal, case lots...20&10&10%

### Stretchers, Carpet—

*Cast Iron, Steel Points..doz.55¢*
*All Steel Socket...doz.$2.00@2.25*
Excelsior Stretcher and Tack Hammer Combined, ℔ doz., $6.00....20%

### Stuffers, Sausage—

Enterprise Mfg. Co., Stuffers and Lard Presses.....25@25&7½%
National Specialty Co., list Jan. 1, 1902 .....30&5%
P., S. & W. Co.....40&10&5%

### Sweepers, Carpet—

Per doz.—
Bissell Carpet Sweeper Co.:
Cyco Bearing Superba, $36.00; Triumph, $33.00; Parlor Queen, $30.00; Elite, $29.00; Boudoir, $27.00; American Queen, $27.00; Ideal, $25.00; Gold Medal, $24.00; Primier, $24.00; Prize, $24.00; Welcome, $24.00; Grand Rapids, Nickel, $24.00; Japan, $22.00; Crystal, $36.00; Grand, $36.00; Parlor Grand, $48.00; Club, $54.00; Hall, $60.00; Standard Nickel, $22.00; Standard Japan, $20.00; Crown Jewel, Nickel, $21.00; Crown Jewel, Japan, $19.00; Junior, Nickel, $22.00; Junior, Japan, $20.00.

*NOTE.—Rebates: 50c per dozen on three dozen lots; $1 per dozen on five-dozen lots; $2 per dozen on ten-dozen lots*

### Tacks, Finishing Nails, &c.

*American Carpet Tacks...90&40%*
*American Cut Tacks.....90&40%*
*Swedes' Cut Tacks.....90&40%*
*Swedes' Upholsterers'....90&50%*
*Gimp Tacks.....90&50%*
*Lace Tacks.....90&50%*
*Trimmers' Tacks.....90&40%*
*Looking Glass Tacks.....65%*
*Bill Posters' and Railroad Tacks, 90&50&10%*
*Hungarian Nails.....80&20%*
*Finishing Nails.....70%*
*Trunk and Clout Nails...80&10%*

*NOTE.—The above prices are for Straight Weights.*

### Miscellaneous—

*Double Pointed Tacks, 90&6 tens@—%*
Se also Nails, Wire.

### Tanks, Oil and Gasoline—

Wilson & Friend Co.:

| Gal. | Gasoline | Oil |
|---|---|---|
| 30 | $2.75 | $3 00 |
| 60 | $3.50 | $4.00 |
| 110 | $5.00 | $5.75 |

### Tapes, Measuring—

*American Asses' Skin....50@—%*
*Patent Leather.....25@30&5%*
*Steel .....33⅓&5%*
*Chesterman's .....25@25&5%*
Keuffel & Esser Co.:
Favorite, Ass Skin.....40&10@50%
Favorite, Duck and Leather.....25&5@25&10
Metallic and Green, lower nos., 35@35&5; Pocket, 35@35&5.
Lufkins:
Asses' Skin.....40&10@50%
Metallic .....30@30&5%
Patent Bend, Leather...25&5@25&10%
Pocket .....40@40&5%
Steel .....33⅓@35%
Wichusch & Hilger:
Chesterman's Metallic, No. 34L, etc. .....25%
Chesterman's Steel, No. 1038L, etc. .....35%

### Teeth, Harrow—

*Steel Harrow Teeth, plain or headed, ¾-inch and larger, per 100 lb.....$2.55@$2.80*

### Thermometers—

*Tin Case, Cabinet, Flange, Dairy, &c.....30@35%*

### Ties, Bale—Steel Wire—

*Single Loop.....82½&10%*
*Monitor, Cross Head, &c.70&2½%*

### Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

### Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

### Tire Benders, Upsetters, &c.

See *Benders and Upsetters, Tire.*

### Tools—Coopers'—

L. & I. J. White.....20@20&5%

### Haying—

Myers' Hay Tools.....50%

### Ice Tools—

Gifford-Wood Co.....15%

### Miniature—

Smith & Hemenway Co.'s, Davidson, ℔ doz., Nickel Plated, $1.50; Gold Plated.....$2.00

### Saw—

Atkins' Cross Cut Saw Tools....35&5%
Simond's Improved.....33⅓%
Simonds' Crescent.....50%

### Ship—

L. & I. J. White.....25%

### Torches—

Hammers, Engine, ℔ doz.....$4.50

### Transom Lifters—

See *Lifters, Transom.*

### Traps—Fly—

*Balloon, Globe or Acme, doz., $1.15@$1.25; gro.....$11.50@12.00*
*Harper, Champion or Paragon, doz., $1.25@1.40; gro.$13.00@13.50*

### Game—

*Imitation Oneida.....75@10%*
Newhouse .....50&5%
Hawley & Norton.....65&10%
Victor .....75@75&10%
Oneida Community Jump.....70&5%
Stop Thief.....60%
Tree Trap.....60%
Hector .....75@75&10%

### Mouse and Rat—

*Mouse, Wood, Choker, doz. holes, 12¢*
*Mouse, Round or Square Wire, doz.85@90¢*
Marty French Rat and Mouse Traps (Genuine), ℔ doz.:

| | Crate lots. | Small lots. |
|---|---|---|
| No. 1, Rat..... | $11.50 | $14.50 |
| No. 3, Rat..... | $5.75 | $6.50 |
| No. 3½, Rat..... | $4.70 | $5.25 |
| No. 5, Mouse..... | $2.25 | $3.00 |

Animal Trap Co.:
Out o' Sight, Mouse, ℔ doz.....$0.60
Out o' Sight, Rat, ℔ doz..... 1.20
Easy Set, Mouse, ℔ doz..... .35
Easy Set, Rat, ℔ doz..... .85
Out o' Sight Chockers, ℔ doz. holes ..... .12
Out o' Sight, Tin, 5-hole, ℔ doz. traps ..... .75

### Trowels—

Disston Brick and Pointing.....25%
Disston Plastering.....20%
Disston "Standard Brand" and Garden Trowels.....30%
Kohler's Steel Garden Trowels, ℔ gro., 5 in., $4.80; 6 in., $6.00.
Never-Break, Forged Steel Garden Trowels, in bulk, net ℔ gro. $5.50
In 1 doz. boxes.....℔ gro. $6.00
Woodrough & McParlin, Plastering.35%

### Trucks, Warehouse, &c.—

B. & L. Block Co.:
New York Pattern.....50&10%
Western Pattern.....60&10%
Handy Trucks.....℔ doz. $16.00
Grocery .....℔ doz $15.00
McKinney Trucks.....each, net $10.00
Model Stove Trucks.....℔ doz $18.50

### Tubs, Wash—

*M'f'gr's list, price per gross.*

| No. | 0 | 1 | 2 | 3 | |
|---|---|---|---|---|---|
| *Galvanized.* | $67 | $79 | $89 | $99 | 10&7½ &5&5% |

### Twine, Miscellaneous—

*Flax Twine:*
*No. 9, ¼ and ½-lb. Balls .21@23¢*
*No. 12, ¼ and ½-lb. Balls .19@21¢*
*No. 18, ¼ and ½-lb. Balls .16@18¢*
*No. 24, ¼ and ½-lb. Balls. 15½@17½¢*
*No. 36, ¼ and ½-lb. Balls .15@17¢*
*Chalk Line, Cotton ½-lb Balls .....24@29¢*
*Cotton Mops, 6, 9, 12 and 15 lb to doz.....8½@19¢*
*Cotton Wrapping, 5 Balls to lb according to quality..13½@19¢*
*American 3-Ply Hemp, ¼ and ½-lb. Balls.....12½@15¢*
*American 3-Ply Hemp, 1-lb Balls .....13½@16¢*
*India 3-Ply Hemp, ¼ and ½-lb Balls (Spring Twine)...7½@9¢*
*India 3-Ply Hemp, 1-lb. Balls 7½@9¢*
*India 3-Ply Hemp, 1½-lb. Balls. 7@8½¢*
*2, 3, 4 and 5-Ply Jute, 1½-lb. Balls .....9@11¢*
*Mason Line, Linen, ½-lb. Bls.17¢*
*No. 264 Mattress, ¼ and ½ lb. Balls, according to quality. 30@60¢*
*Wool, 3 to 6 ply....B 6¢; A 7½¢*

### Vises—

*Solid Box.....50&5@50&10&5%*

### Parallel—

Athol Machine Co.:
Simpson's Adjustable.....10%
Standard .....10%
Amateur .....25%
Columbian Hdw. Co., Slide .....40&5%
Fisher & Norris Double Screw, net, each, Nos. 2, $10.50; 3, $16.00; 4, $20.50; 5, $27.00; 6, $32.00.
Fulton Mach. & Vise Co.:
F. & R. Double Swivel Machinists' .....40%
Star, Solid Jaw, Machinists'.....10%
Hollands':
Machinists' .....40@40&5%
Keystone .....65&5@70%
Lewis Tool Co.:
Adjustable Jaw.....30%
Monarch, 50%; Solid Jaw.....50%
Massey Vise Co.:
Clincher .....40%
Parallel Bar.....15%
Perfect, 15%; Lightning Grip.....15%
Merrill's .....25%
Millers Falls Oval Slide Pattern.60&10%
Parker's:
Victor, 20@25%; Regulars....20@25%
Vulcan's .....40@45%
Combination Pipe.....55@60%
Prentiss .....20@25%
Rock Island.....25%
Snediker's X. L.....33⅓%
Stephens' .....33⅓%

### Saw Filers

Disston's D 3 Clamp and Guide, ℔ doz., $24.00, 30%; Clamps.....30%
Perfection Saw Clamps, ℔ doz....$4.50
Reading .....60%

### Wood Workers—

Fulton Mach. & Vise Co.:
F. & R. Double Swivel Coachman's .....40%
Star Solid Jaw Woodworkers'....60%
Massey Vise Co.:
Lightning Grip, 15%; Perfect....15%
Wyman & Gordon's Quick Action, 6 in., $6.00; 9 in., $7.00; 14 in., $8.00.

### Miscellaneous—

Fulton Machine & Vise Co., Combination Pipe.....70%
Holland's Combination Pipe..60@60&5%
Massey's Quick Action Pipe.....40%
Parker's Combination Pipe:
87 Series, 60%; 187 Series, 60&5%; No. 870, 40%.
Rock Island Pipe.....25%

### Wads— *Price per M.*

*B. E., 11 up.....60¢*
*B. E., 9 and 10.....70¢*
*B. E., 8.....80¢*
*B. E., 7.....80¢*
*P. E., 11 up.....$1.00*
*P. E., 9 and 10..... 1.25*
*P. E., 8..... 1.50*
*P. E., 7..... 1.50*
*Dis. 15%*
*Ely's B. E., 11 and larger.$1.70@1.75*
*Ely's P. E., 12 to 20....$3.00@3.25*

### Ware, Hollow—

### Cast Iron, Hollow—

*Stove Hollow Ware:*
*Enameled .....45&10%*
*Ground .....50&5%*
*Plain or Unground.....60%*
*Country Hollow Ware, per 100 lbs .....$2.75@$3.00*
*White Enameled Ware:*
*Maslin Kettles.....65&10%*
*Covered Wares:*
*Tinned and Turned.....35&10%*
*Enameled .....45&10%*
See also *Pots, Glue.*

### Enameled—

Agate Nickel Steel Ware.....33⅓%
El-an-ge .....60&10%
Iron Clad Ware.....70&10%
Lava and Volcanic, Enameled..40&10%

### Tea Kettles—

*Galvanized Tea Kettles:*

| *Inch* | 6 | 7 | 8 | 9 |
|---|---|---|---|---|
| *Each* | 45¢ | 50¢ | 55¢ | 65¢ |

### Steel Hollow Ware—

Avery Stamping Co.:
Never-Break Spiders and Griddles .....65&10%
Steel Kettles, Maslins Scotch Bowls, Tin'd.....60%
Steel Stew Pans, Stew Pots, etc., Porcelained .....50%
Cleveland Stamping & Tool Co.:
Solid Steel Spiders and Griddles .....65&5%
Solid Steel Kettles.....60&5%

### Warmers, Foot—

Pike Mfg. Co., Soapstone....40@40&10%

### Washboards—

| No. | ℔ doz. |
|---|---|
| 800—Brass King, Single Surface, Open Back | $2.80 |
| 862—White Hen, Spiral Grimp Glass | $3.35 |
| 964 Royal Blue Enamel, Single Surface, Ventilated Back | $3.35 |
| 172 Our Best, Single Zinc, Soap Drainer | $3.35 |
| 722 Soap Saver, Single Zinc, Iron Top | $3.35 |
| 100 Northern Queen, Single Zinc, Perforated, Open Back | $3.00 |
| 134 Universal, Single Zinc, Extra Family Size, Ventilated Back | $2.80 |
| 760—Banner Globe, Single Zinc, Ventilated Back | $2.25 |
| 57 Peerless, Double Zinc, Spring Protector | $3.70 |
| 56 Red Cross, Double Zinc, Swing Protector | $3 60 |
| 17—North Star, Solid Zinc, Swing Protector | $3 60 |
| 797—Jewel, Single Zinc, Pail Size | $1.25 |

### Washers—Leather, Axle—

*Solid .....90@90&10%*
*Patent .....90@90&5%*
*Coil: ¾ 1 1¼ 1½ inch.*
*9¢ 10¢ 11¢ 14¢ per box.*

### Iron or Steel—

*Size bolt.... 5-16 ⅜ ½ ⅝ ¾*
*Washers....$4.65 3.75 2.45 2.25 2.05*
*The above prices are based on $6.75 off list.*
*In lots less than one keg add 15¢ per lb.; 5 lb. boxes add 1½¢ to list.*

Avery Stamping Co.:
Standard, in 200 lb kegs, $6.00 ℔ 100 lb. discl.; in 100 lb kegs, add 10¢ net ℔ 100 lb; in 5 or 10 lb boxes, add 50¢ net ℔ 100 lb; in 1 lb boxes, add $1.00 net ℔ 100 lb.

### Cast Washers—

*Over ½-inch, barrel lots, per lb. 1½@1¾¢*

### Wedges—

*Oil Finish.....lb., 2¼@2¾¢*

### Weights—Hitching—

Covert Mfg. Co.....30&2%

### Sash—

*Per net ton, f.o.b. factory:*
*Eastern District.....$20.00@—*
*Western and Central Districts .....$19.00@$21.00*

### Wheels, Corundum and Emery—

Pike Mfg. Co., Corundum, 65%; Emery .....75%

### Well—

*8-in., $2.00; 10-in., $2.30; 12-in., $3.00; 14-in., $4.45.*

### Wire and Wire Goods—

*Bright and Annealed:*
*6 to 9.....72&10&7½%*
*10 to 18.....72½&10&10%*
*19 to 26.....75&10&2½%*
*27 to 36.....77½&7½%*
*Galvanized:*
*6 to 9.....72½&10%*
*10 to 14.....72½&10&5%*
*15 to 16.....72½&10&5%*
*17 to 18.....72½%*
*19 to 26.....70&5&2½%*
*27 to 36.....65&10&10%*
*Coppered:*
*6 to 9.....65&10&10%*
*10 to 14.....70&10&5%*
*15 to 18.....65&10&10&10%*
*19 to 25.....70&5&2½%*
*27 to 36.....72½&10&2½%*
*Tinned:*
*6 to 18.....67&10&10%*
*Brass .....15½¢ lb., base*
*Copper .....15¼¢ lb., base*
*Cast Steel Wire.....50%*

### Spooled Wire—

*Annealed and Tinned.75@75&10%*
*Brass and Copper....70@70&10%*
*Retailers' Assortments, per box, $1.90@$2.10*
Wire Clothes Line, See Lines.
Wire Picture Cord, see Cord.

### Bright Wire Goods—

*Steel Wire Goods.90&40@90&40&10%*
*Brass Wire Goods. 90&40@90&40&10%*
*Brass Cup and Shoulder Hooks, 85&10%*

### Wire Cloth and Netting—

*Galvanized Poultry Netting, 80&2½@80&7½%*
*Painted Screen Cloth, 100 ft., $1.3*
*Standard Galv. Hardware Grade 100 ft. rolls, 24 to 48 in. wide, Per 100 sq. ft.*
*Nos. 2, 2½ and 3 Mesh....$2.7*
*Nos. 4 and 5 Mesh.....$3.0*
*No. 6 Mesh.....$3.2*
*Nos. 7 and 8 Mesh.....$3.7*

### Wire, Barb—See *Trade Repor*

### Wrenches—

*Agricultural, 80&10&5@80&10&10%*
*Alligator or Crocodile..70&10@75%*
*Baxter Pattern S Wrenches, 70&5@70&10%*
*Drop Forged S.....45@45&5%*
Acme .....60&10
Alligator Pattern, 70%; Bull Dog..70
Bemis & Call's:
Adjustable S, 40&5%; Adjustable Pipe, 40&5%; Briggs Pattern, 40%
Combination Bright, 50%.
Steel Handle Nut.....50&5
Combination Black.....50&5
Merrick Pattern.....50&5
Boardman's .....40
Coes' Genuine Knife Hdl...40&10&5&5
Coes' Genuine Steel Hdl ..40&10&5&5
Coes' Genuine Key Model..40&10&5&5
Coes' Genuine Hammer Handle..... 40&10&5&5
Coes' "Mechanics'"...40&10&10&5&5
Donohue's Engineer..... 40&10
Eagle .....70
Gem Pocket..... 30
Hercules .....70
W. & B. Machinist:
Case lots.....50&10
Less than case lots.....50
W. & B. Railroad Special
Case lots.....50
Less than case lots.....10&10&5
Solid Handles, P., S. & W. 50&10%
full cases..... 50&10&5
Standard Nipple Mfg. Co.:
Duplex Chain .....50
Uwanta Wrench Co.:
Uwanta Special, Iron Handle... 40&10&5
Other Wrenches .....50
Vulcan and Agricola Chain.....50
Whitaker Machinists' .....50&10
Wizard Adjustable Ratchet.....50

### Fruit Jar—

Boyd, P. Forbes, Triumph, ℔ gro. $7.50; per doz.....$0

### Wrought Goods—

*Staples, Hooks, &c., List March 17, '92.....90@—*

### Zinc— *(Cask lots at mill.)*

*Sheet.....per 100 lb., $7.*

# CURRENT METAL PRICES.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

## IRON AND STEEL—

### Bar Iron from store—

Refined Iron:

| | |
|---|---|
| 1 to 1⅞ in. round and square.... | ₩ ℔ 1.80¢ |
| 1½ to 4 in. x ⅛ to 1 in.... | |
| 1½ to 4 in. x ¼ to 5-16.... | ₩ ℔ 2.00¢ |
| Rods—⅝ and 11-16 round and square.... | ₩ ℔ 2.00¢ |

| Angles: | Cts ₩ ℔ |
|---|---|
| 3 in. x ¼ in. and larger | 2.25¢ |
| 3 in. x 3 16 in. and ⅛ in | 2.30¢ |
| 1½ to 2½ in. x ⅛ in | 2.10¢ |
| 1½ to 2¾ in. x 3-16 in. and thicker | 2.05¢ |
| 1 to 1¼ in. x 3-16 in | 2.10¢ |
| 1 to 1¼ x ⅛ in | 2.15¢ |
| ⅞ x ⅛ in | 2.30¢ |
| ¾ x ⅛ in | 2.40¢ |
| ⅝ x ⅛ in | 3.45¢ |
| ½ x 3-32 in | 3.95¢ |

| Tees: | |
|---|---|
| 1 in | 2.40¢ |
| 1¼ in | 2.20¢ |
| 1½ to 2½ in | 2.10¢ |
| 3 in. and larger | 2.35¢ |
| Beams | 2.25¢ |
| Channels, 3 in. and larger | 2.35¢ |
| Bands—1½ to 6 x 3-16 to No. 8 | 2.25¢ |
| "Burden's Best" Iron, base price | 3.15¢ |
| Burden's "H. B. & S." Iron, base price | 2.95¢ |
| "Ulster" | 3.10¢ |
| Norway Bars | 3.30¢ |

### Merchant Steel from Store—

| | per ℔ |
|---|---|
| Bessemer Machinery | 1.90¢ |
| Toe Calk, Tire and Sleigh Shoe | 2.50@3.00¢ |
| Best Cast Steel, base price in small lots | 7¢ |

### Sheets from Store—

Black

| | One Pass, C.R. Soft Steel. | R. G. Cleaned. |
|---|---|---|
| No. 14 | ₩ ℔ 2.50 | 2.90¢ |
| Nos. 18 to 21 | ₩ ℔ 2.95 | 3.10¢ |
| No. 27 | ₩ ℔ 3.15 | 3.40¢ |
| No. 28 | ₩ ℔ 3.20 | 3.50¢ |

### Russia, Planished, &c.

| | |
|---|---|
| Genuine Russia, according to assortment, W. Dewees wood | ₩ ℔ 11¾@14½¢ |
| Patent Planished | ₩ ℔ A, 10¢; B, 9¢, net. |

### Galvanized.

| | |
|---|---|
| Nos. 14 to 16 | ₩ ℔, 3.15¢ |
| Nos. 22 to 24 | ₩ ℔, 3.55¢ |
| No. 27 | ₩ ℔, 4.00¢ |
| No. 28 | ₩ ℔, 4.25¢ |

No. 20 and lighter 36 inches wide, 25¢ higher.

### Genuine Iron Sheets—Galvanized.

| | |
|---|---|
| Nos. 22 and 24 | ₩ ℔ ..5.50¢ |
| No. 26 | ₩ ℔ ..6.00¢ |
| No. 28 | ₩ ℔ ..7 25¢ |

### Tin Plates—

American Charcoal Plates (per box.)

| "A.A A." Charcoal: | |
|---|---|
| IC, 14 x 20 | $6.40 |
| IX, 14 x 20 | 7.65 |
| A. Charcoal: | |
| IC, 14 x 20 | $5.45 |
| IX, 14 x 20 | 6.55 |

American Coke Plates—Bessemer-

| | |
|---|---|
| IC, 14 x 20.....107 ℔ | $4.45 |
| IX, 14 x 20 | 5.45 |

American Terne Plates—

| | |
|---|---|
| IC, 20 x 28 with an 8 lb. coating | $8 60 |
| IX, 20 x 28 with an 8 lb. coating | 10.60 |

### Seamless Brass Tubes—

List December 4, 1905. Base price 18¢

### Brass Tubes, Iron Pipe Sizes—

List December 4, 1905. Base price 18¢

### Copper Tubes—

List December 4, 1905. Base price 21¢

### Brazed Brass Tubes—

List August 1, 1908. 21¾¢ ₩ ℔

### High Brass Rods—

List August 1, 1908. 15½¢ ₩ ℔

### Roll and Sheet Brass—

List August 1, 1908. 15½¢ ₩ ℔

## METALS—

### Tin—

Straits Pig ₩ ℔ 32 @32½¢

### Copper—

| | |
|---|---|
| Lake Ingot | ₩ ℔ 14 @14¼¢ |
| Electrolytic | ₩ ℔ 14 @14¼¢ |
| Casting | ₩ ℔ 13½@13¾¢ |

| | |
|---|---|
| Sheet Copper Hot Rolled, 16 oz | ₩ ℔ 18 ..¢ |
| " " 14 " | " " 19 ..¢ |

Sheet Copper Cold Rolled, 1¢ ₩ ℔ advance over Hot Rolled.
Sheet Copper Polished 20 in. wide and under, 1¢ advance over Cold Rolled.
Sheet Copper Polished over 20 in. wide, 2¢ advance over Cold Rolled.

| | |
|---|---|
| Bottoms, Pits and Flats | ₩ ℔ 21¢ basis |
| Planished Copper, 1¢ ₩ ℔ more than Polished. | |

### Spelter—

Western ₩ ℔ 5⅝@5⅞¢

### Zinc.

No 9, base, casks, ₩ ℔ 7.50¢ | Open ₩ ℔ 8.00¢

### Lead.

| | |
|---|---|
| American Pig | ₩ ℔ 5¼@5⅜¢ |
| Bar | ₩ ℔ 6¼@6¾¢ |

### Solder.

| | |
|---|---|
| ½ & ½, guaranteed | ₩ ℔ 20½@20¾¢ |
| No. 1 | ₩ ℔ 17¾@18 ¢ |
| Refined | ₩ ℔ 15¾@16 ¢ |

Prices of Solder indicated by private brand vary according to composition.

### Antimony—

| | |
|---|---|
| Cookson | ₩ ℔ ..@10¢ |
| Hallett's | @9½¢ |
| Other Brands | @8½¢ |

### Bismuth—

Per. ℔ $1.90@$2.00

### Aluminum—

No. 1 Aluminum (guaranteed over 99% pure), in ingot for remelting:

| | |
|---|---|
| Small lots | 38¢ |
| 100-℔ lots | 36¢. |
| Rods & Wire | Base Price 38¢ |
| Sheets | Base Price 40¢ |

### Old Metals.

*Dealers' Purchasing Prices Paid in New York*

| | Cents |
|---|---|
| Copper, Heavy and Wire | ₩ ℔ 11.00@11.25¢ |
| Copper, Light and Bottoms | ₩ ℔ 11.00@11.50¢ |
| Brass, Heavy | ₩ ℔ 8.25@ 8.50¢ |
| Heavy Machine Composition | ₩ ℔ 10 25@10.75¢ |
| Clean Brass Turnings | ₩ ℔ 7.50@ 8.00¢ |
| Composition Turnings | ₩ ℔ 8.50@ 9.00¢ |
| Lead, Heavy | ₩ ℔ ....@ 4. 0¢ |
| Tea Lead | ₩ ℔ ....@ 3.80¢ |
| Zinc Scrap | ₩ ℔ ....@ 3.00¢ |


# THE IRON AGE

*The oldest paper in the world devoted to the interests of the Hardware, Iron, Machinery and Metal Trades, and a standard authority on all matters relating to those branches of industry.*

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# THE IRON AGE

New York, Thursday, October 8, 1908.


## A 1908 IRON ORE HANDLING PLANT.

### The New Hulett Machines at Central Furnaces, Cleveland, Ohio.

BY WALTER G. STEPHAN.

Each succeeding year seems to record at least one new plant for the unloading of iron ore from lake boats, and each new plant seems to surpass all previous installations in one or more important points. The present year is no exception, notwithstanding the lull in the ore carrying trade, as it has already witnessed the starting of two splendid new ore handling plants—one at Gary, Ind., and one at the Central Furnaces of the American Steel & Wire Company, at Cleveland, Ohio. The latter is the subject of this article. These new machines are all the more interesting because they stand beside several of the old type of ore unloaders which have done excellent service in the past, and which are equipped with the old style dump bucket. The contrast is very striking, and makes the mammoth new ore machinery stand out in bold relief. The little mouthful of ore which the dump bucket brings up from the hold seems scarcely worth while when compared with the ten-ton grab made by the Hulett automatic bucket. One cannot watch these huge steel birds, dipping their bills down into the hold of a boat without marveling at the genius and daring of the inventor of such a monster machine. To be sure, it is not a very graceful looking bird, but, as the steel man says, "it delivers the goods," and that is his first and last demand.

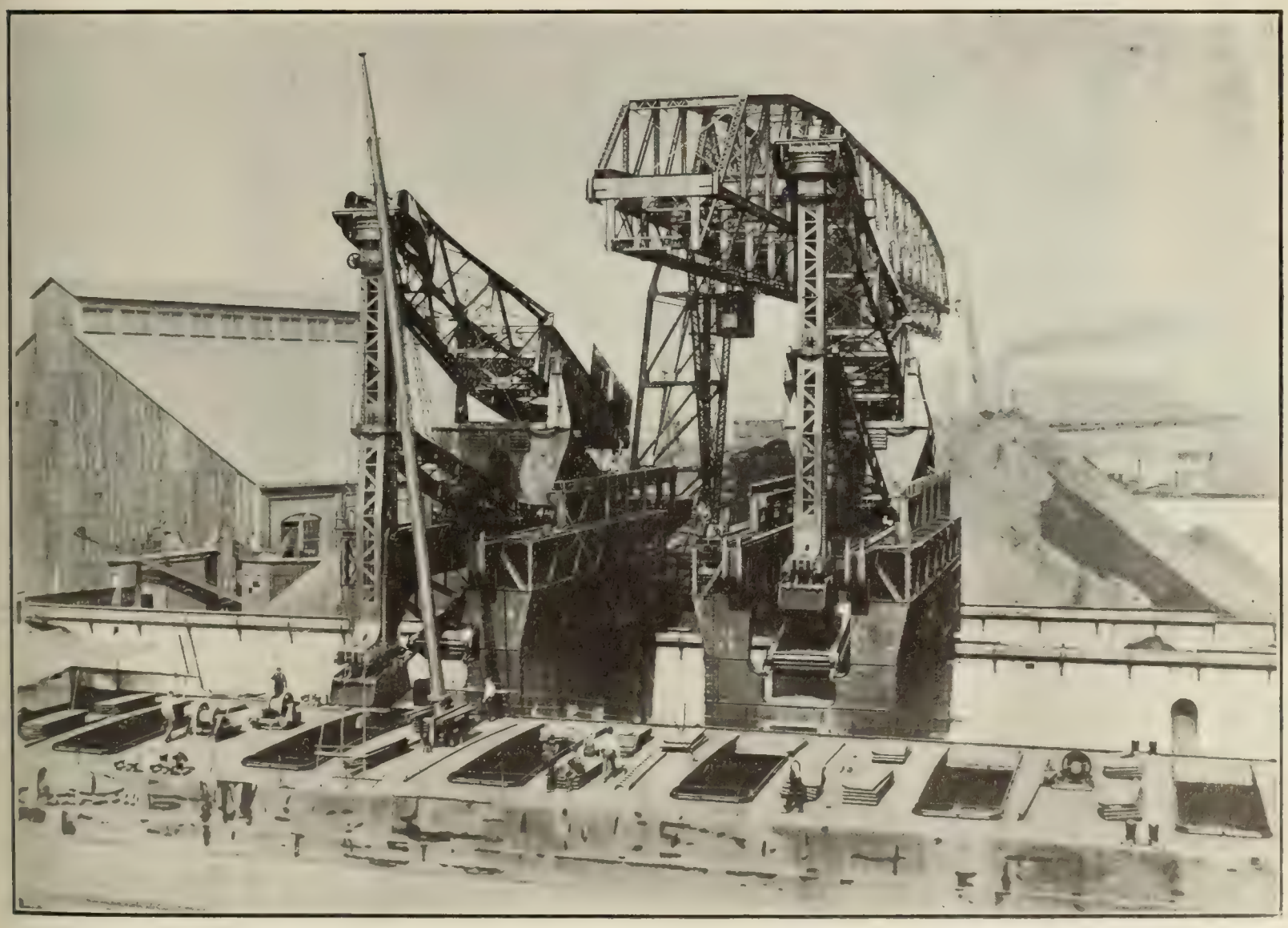


Fig. 1.—Hulett Ore Unloading Machines and Ore Stocking Bridge at Central Furnaces of the American Steel & Wire Company, Cleveland, Ohio.

This new plant of the Central Furnaces, of which an excellent photographic view is given in Fig. 1, and a sectional elevation in Fig. 2, was designed and built by the Wellman-Seaver-Morgan Company, Cleveland, and was first started in operation in August of this year. It consists of two 10-ton Hulett automatic electric ore unloaders and one electrically operated ore handling bridge of 10 tons capacity. It was designed to unload ore from the holds of lake vessels and to discharge it by means of conveyer cars either into cars for direct shipment to the company's Newburg blast furnaces, or into a temporary storage bin located under the cantilevers at the rear of the unloaders. Weighing hoppers are provided for weighing the ore which is delivered to cars for direct shipment.

At the rear of the unloaders and running on two double tracks parallel with the dock face, is located a re handling and stocking bridge, which is used to rehandle the ore from the temporary stock pile and place it in the main storage pile under the central span, or to reclaim the ore from stock and load it on cars standing upon the two rear tracks under the unloaders.

#### The Hulett Automatic Unloaders.

The two unloaders are of the usual Hulett type, consisting of two main plate girders running at right angles to the dock and mounted on a front and rear leg. Each leg is supported on two four-wheel equalized trucks, all of them being driven in the customary manner by bevel gearing and shafting from the machinery house on the rear leg. On top of each main girder are two parallel rails on which the trolley travels back and forth, supporting on top of its posts the huge walking beam with

swiveling bucket leg at the front end. The bucket is of the Hulett type and is of 10 tons capacity. It is operated by a man stationed in the lower end of the bucket leg, who controls all the movements of the bucket, walking beam and trolley. Located, as he is, directly above the bucket shells, he can guide the bucket into the hatches and hold of the boat, with remarkable ease and precision. It is a decidedly novel sensation to be carried out over the water and into the hold of a boat on such a powerful machine, and it is not at all surprising that operators were very reluctatnt about "taking the job" when the first Hulett machine was installed at Conneaut years ago.

The bucket dumps its load into a conveyor car held at the front end of the machine and having a capacity somewhat in excess of ten tons. While the bucket returns to the hold for another bite, the conveyor car is run back on tracks, held underneath the main girders, to the desired dumping position. This car is arranged so that it can be dumped at any desired point along the track, either into cars direct or into the weighing hoppers at the rear leg, or into the temporary storage bin at the rear of the unloader and under the cantilever extension of the bridge.

The front legs of the unloaders travel on double tracks at the extreme front of the dock and on the dock level, while the rear legs travel on tracks laid on top of a long concrete pier, about 12 ft. above the dock level. The face of the dock, which supports the front legs, is made up of a solid mass of concrete set on top of timber piles. The unloaders will span four standard gauge tracks, of which the two front tracks are used for loading direct, while the rear two will be directly underneath the two 15-ton weighing hoppers. These weighing hoppers are of an entirely new design, and consist of the usual tapering rectangular steel plate hopper at the base of which is pivoted an eccentric horizontal rotating disk with a stationary plow, which scrapes off the ore into the car when the disk is rotated by means of a small motor and gearing at the side. The hopper is suspended from levers connected to a standard scale, the beam box being placed in the machinery house, conveniently located at one side.

Two operators are required on the unloader proper, one stationed in the bucket leg, who controls all the bucket, walking beam and trolley motions, and one stationed in the machinery house at the rear leg, who controls the operation of the bucket car and also the longitudinal travel of the machine. In addition to these, a weighman will be required to operate the recording scale and gates, and also an extra man as oiler for both unloaders.

The unloaders are designed to travel longitudinally along the dock at a speed of 100 ft. per minute, and this speed is maintained by a 100 hp. motor. The conveyor car is designed for especially severe usage, and travels back and forth at a maximum speed of 300 ft. per minute. All the movements of the machine are so designed that a complete cycle in continual operation can be made in 50 seconds.

All of the trucks are provided with ball and socket joints, and expansion joints are also provided, so as to give flexibility and to provide for slight unevenness of the tracks. All wheels are double flanged cast steel, and all gearing on the trucks is steel.

**Power for Bucket and Walking Beam Motions.**

For closing and opening the bucket, a 75-hp. motor-driven drum on the walking beam is used, which winds and unwinds two steel cables running to the bucket leg mechanism. The trolley is traveled back and forth by means of cast racks and pinions driven by a 50-hp. geared motor on the trolley. The racks are bolted to the top of the main girders between the double rail tracks. The trolley motor is supplied with automatic cutouts and slowdowns to prevent the trolley from overrunning at either end of its travel. The cutouts are entirely independent of the operator, and make the operation of the trolley as nearly "fool proof" as possible.

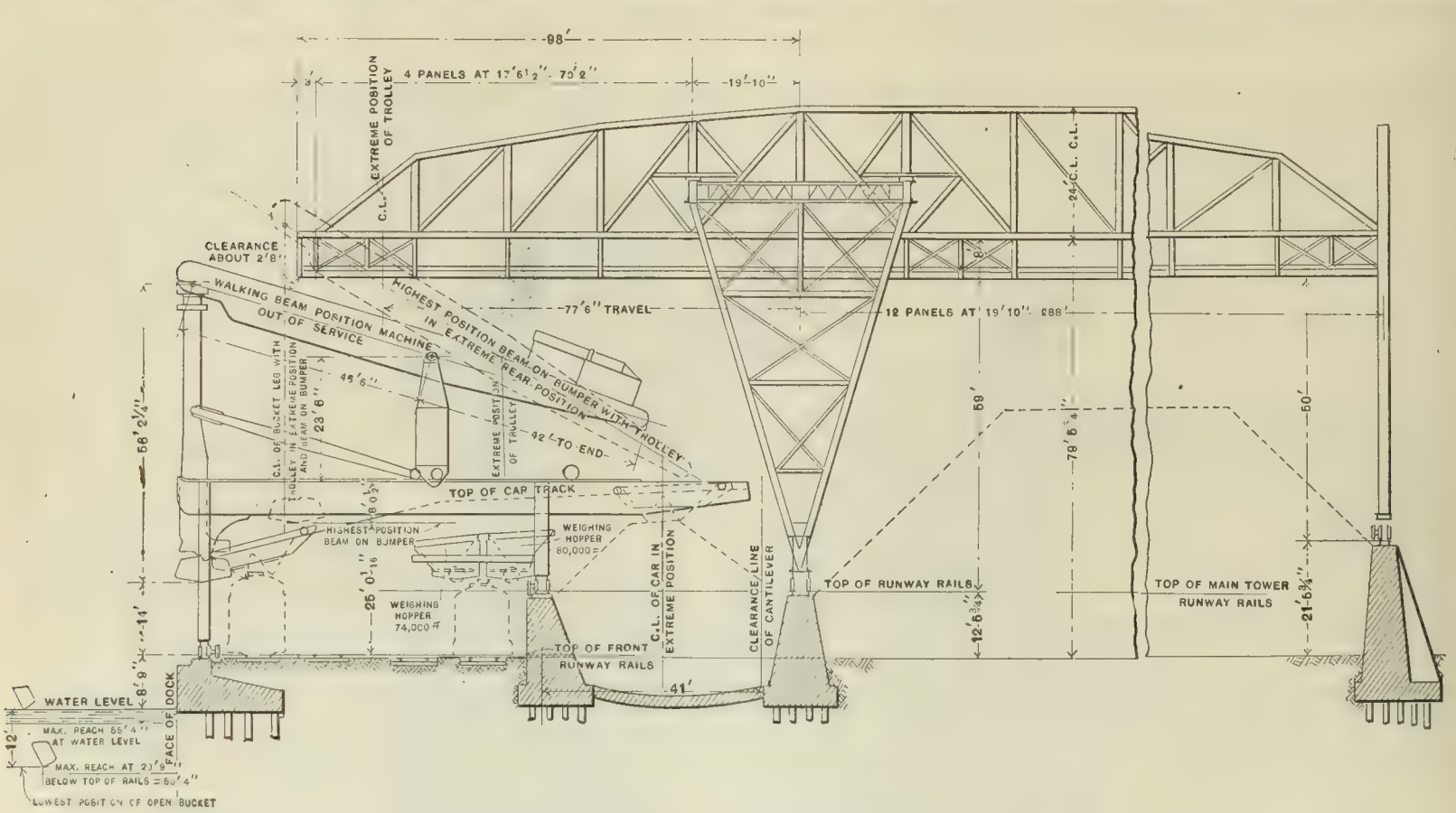



Fig. 2.—Section of Unloaders and Ore Bridge, Showing Extreme Positions of Walking Beam and Leg.

The walking beam is hoisted by means of four 1⅛-in. plow steel cables, which are wound up in pairs on two cast steel drums at the rear of the beam. One 150-hp. motor is used for this purpose. As in the trolley movement, so in the beam hoist mechanism, cutouts and safety latches are provided to prevent accidents from overtravel or breakage of cables. The safety latches are very similar to the ordinary door latch, and only come into operation just before the beam strikes the bumpers.

**High Capacity Conditions.**

Each unloader has a capacity considerably in excess of 250 tons per hour for continuous running, with the help of eight shovelers in the hold of the boat. However, shovelers are not required until 70 per cent of the cargo has been unloaded automatically. The buckets have such a reach (and can be turned to any angle) that they can cover more than half the distance between two hatches, 24 ft. center to center. The conduit rails for supplying current to the machines are mounted on brackets fastened to the face of the pier supporting the rear legs and tracks.

**The Ten-Ton Rehandling Bridge.**

At the rear of the unloaders, and with its cantilever projecting over them is the 10-ton rehandling bridge, which is shown in all its graceful outlines in Fig. 3.

It is very simple, yet appeals to the eye of anyone who appreciates beauty in a structural design. The notable feature is the inverted A-shaped tower, which at first seems a very unstable support, when it is remembered that the shear leg suspension is by tension rods only. This type of tower was adopted because of its greater economy of dock space and its peculiar adaptability to the shape of the unloaders. The bridge proper is made up of two double riveted trusses supported on a tower at the water end, and a shear leg at the other. The tower travels on double tracks laid on top of a concrete pier about 12 ft. above the dock level, while the shear leg travels on top of a concrete pier about 21 ft. above the dock level.

The bridge trusses are horizontal, and the main span is 238 ft. At the water end and overhanging the unloaders is a cantilever extension of 93 ft., which allows the bucket on the bridge to load on the two rear tracks spanned by the unloaders. The other end of the trusses is made such that a cantilever extension can be added whenever this is desirable. As previously stated, the trusses are supported at the shear leg by tension bars, this construction giving flexibility to the structure, allowing the bridge to accommodate itself to unevenness in the runway without straining any members. The trolley track is suspended from the bridge trusses, and consists of I-beam stringers, on top of which are fastened the trolley rails. The trolley contains all of the machinery for operating the bucket and trolley, and is controlled by one operator, who rides upon it. The bucket is a standard Hulett 10-ton excavating bucket, operated by two hoist and two hold cables. The entire bridge mechanism is designed to handle this 10-ton bucket loaded at the following speeds: Hoisting, 175 ft. per minute; trolley travel, 600 ft. per minute; bridge travel, 75 ft. per minute.

The main tower is supported on two eight-wheel equalized trucks of special construction, with ball and socket joints, and also with special provision for taking the longitudinal thrust of the bridge. Four wheels in each truck are driven through bevel gears, shafting and universal couplings, which connect with the usual longitudinal bridge shaft running from tower to shear leg. The shear leg is supported on two four-wheel ball and socket equalized trucks, both of which are driven. The moving motor is located on the bridge just above the tower, and is a 150-hp. mill type machine. A heavy band brake is supplied on the longitudinal bridge shaft, which is controlled by a foot lever on a platform below within easy access of the man on the trolley, who steps from his trolley to the platform when he wishes to move the whole bridge. This brake is so designed that it is sufficiently strong to skid the wheels of the trucks, and is set at all times by a weight, except when the operator has his foot on the releasing lever. The rail clamps (of which there are two, one at each leg,) are very simple, yet interesting. They consist of two steel spuds hinged underneath the truck girders, and each pointing toward one of the trucks. These spuds have sharpened steel points, and they are raised and lowered onto the concrete tracks and ties between the runway rails by means of a hand wheel and chains. Before the bridge could possibly start to run away, with these rail clamps dropped on the runway, either the spuds would have to be broken or else the entire tower would have to be lifted off the track.

**The Trolley.**

The trolley consists of a built up structural frame mounted on eight wheels, whose load is equalized by springs over each bearing. Each set of wheels is driven by a 50-hp. motor, and is provided with powerful friction brakes operated by air cylinders in the cab. The bucket operating mechanism consists of two cast steel drums, each geared to a 200-hp. mill motor. One drum is for the two hoist cables, and one for the two hold cables. The hoist and hold motors are each provided with a solenoid brake, which is a safety brake to prevent dropping the load in case the current should ever be cut out. The hold rope drum is also provided with a friction band brake of sufficient size to hold the bucket in dumping its load. This is operated by air.

However, for the regular handling of the bucket, the above mentioned safety brakes are not used, because the motors are designed for dynamic braking. The shunt windings are such that these motors build up promptly as generators, and lower the bucket under perfect control without the use of any friction surfaces. The bucket can be lowered either closed, one-fourth open, one-half open, or in any position desired by the operator with equal ease. The operator can sit down to his work and operate the bucket by means of two controllers. The electrical equalizations of the loads on the hoist and hold motors is such that it keeps the cables taut at all times. On account of the spring equalization of the trolley tracks, the trolley rides very easily, and the passage of the wheels over the track joints is scarcely felt in the cab.

In the cab is located a small air compressor and tank to supply compressed air for the operation of the air brakes, very similar to the usual street car air braking system.

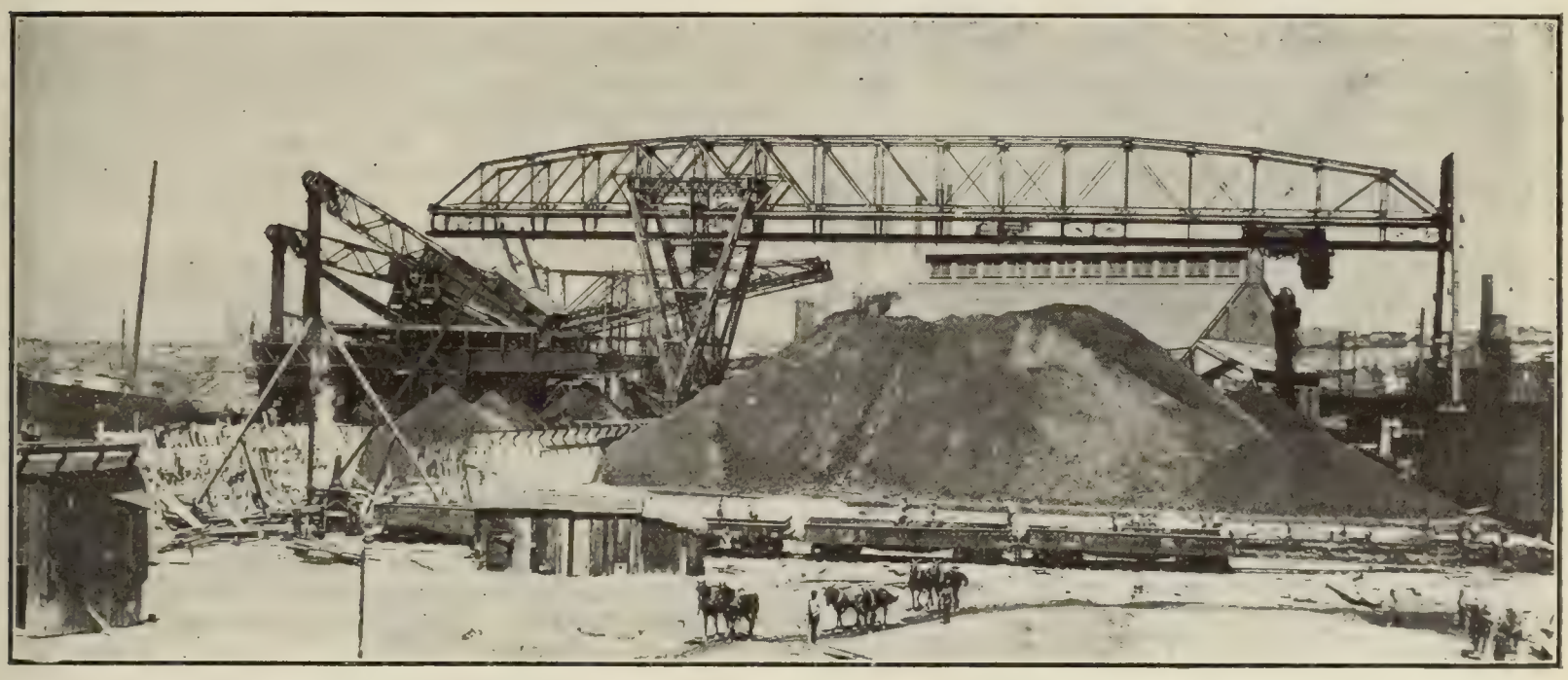


Fig. 3.—A View of the Ore Handling Bridge, Stock Pile and Trough for Temporary Storage of Ore.

The second annual convention of the American Peat Society will be held at the Charles Hotel, Toledo, Ohio, October 22, 23 and 24. Papers will be presented on peat gasifying, peat coking, peat drying, alcohol and ammonia from peat, and the commercial outlook of the present peat industry. Julius Bordollo, Kingsbridge, N. Y., is secretary.

James B. Hardie and James K. Lyons, who recently organized the Gas Power Engineering Company, have established an office at 1113 Empire Building, Pittsburgh, and will contract for and equip open hearth plants with gas producers and power plants for the use of gas.

# The Railway Business Association.

## Supply Manufacturers Organize to Combat Adverse Criticism of Railroads.

Representatives of manufacturers of railroad material and equipment numbering more than 100 met at the Waldorf-Astoria, New York, on the afternoon and evening of September 30, and formed the Railway Business Association, the avowed purpose of which is to combat adverse and unfair public criticism against the railroads of the country. Leaders in the movement frankly admitted that they were prompted to take action because of the fact that railroad business has fallen off to an alarming extent, which is largely due, they declare, to public clamor against the railroads and consequent unfair legislation. As Colonel George A. Post, president of the Standard Coupler Company, who was afterward elected president of the organization, aptly put it, the movement was a declaration of war against "the devastating attacks of predatory wrath upon the railroads."

The companies represented at the meeting comprised a majority of the most important manufacturers in the country catering to railroad needs in the way of supplies and equipment, and since the movement has gained publicity new applications for membership in the organization have been coming in from all parts of the country. Besides electing officers and an executive committee, the meeting subscribed funds to enable the body to open offices and take whatever steps may be necessary to bring about a change in the present railroad situation. This may be done through publicity and in combating the utterances and movements of politicians who, as one speaker said, "in order to obtain public applause advocate unfair legislation against the railroads."

### Why the Organization is Formed.

In opening the meeting, Colonel Post was made chairman by acclamation, and at the outset he stated the situation which prompted the forming of the organization, as follows:

This assemblage represents a vast amount of invested capital, to which a great army of American artisans look for remunerative employment. Whether the capital so invested shall yield profitable returns to the investors who venture their money therein and whether the labor of workingmen shall be in demand in our plants so that full wages may be earned by them depend entirely upon the measure of prosperity enjoyed by our railroads.

We all know too well what the conditions have been for long months past. Locomotives and cars have been idle by the thousands, and railroad earnings have shrunken to an appalling degree. There has ensued a shutting down of shops, throwing out of employment an army of mechanics; laying off of train crews and other employees, and almost an absolute cessation of the purchase of materials. This has had its disastrous reflex, of course, in our operations, and the ramifications of distress have been widespread.

When railroads are prosperous, times are good everywhere; when railroads are not prosperous, jobless hordes are in despair, and the cupboards of workingmen are bare. Largely responsible for this paralysis afflicting our railroads is the attitude of harsh hostility toward them, as manifested in Federal and State administrative and legislative circles. Because of this hostility, confidence of investors in their prospective profitable operations and in the stability of values of their securities has been seriously undermined.

Those who depend upon railroads for subsistence, directly or indirectly, must be loyal to their means of support and quick to resent interference therewith by crafty or turbulent trouble makers.

Railroads must be operated with a fair margin of profit, else they cannot maintain efficiency in equipment, adequately meet increasing demands for terminal facilities and other betterments, nor can they pay good wages to their operatives. In other business enterprises, it is a maxim that prices include a profit. If there are no profits, there is bankruptcy. There is no reason why transportation rates should not be adjusted upon the same basis. In the latter case, it being a matter affecting the whole people, the adjustment must be made with the concurrence of public officials. Of what vital importance it is, therefore, that such officials should be men of fair minds, clear minds, and act in the light of knowledge.

All these things can be accomplished. They must be accomplished. Who are better equipped than bodies of men such as are here assembled, to aid in their accomplishment? Achievement awaits volunteer effort. Shall we enlist?

Colonel H. G. Prout, vice-president and general manager of the Union Switch & Signal Company, spoke along the same line. He said that it would be necessary, in order to restore the purchasing power and the borrowing power of the railroads, to seek the cause of their decline, and added that to talk overcapitalization was not worthy of serious notice. He asserted that the railroads of the United States as they stand to-day in the aggregate, are undercapitalized rather than overcapitalized, and the remedy for the present condition is to create a correct public opinion. Regarding the railroad situation, he added a few words in commendation of railroad officials as he had found them in general, and said in conclusion: "The organization which we now have in mind comes at a critical moment. The railroad companies are chastened—they will be glad to have help; and the workingmen also are chastened, and if I am not much mistaken, before next spring they will be in a mood even more receptive to correct ideas than their present mood. We ourselves have not escaped the chastening rod, and are much more disposed to devote some time and energy to other work than putting up prices than we were 18 months ago."

Charles A. Moore, president of Manning, Maxwell & Moore, Inc., said that while the movement should not be regarded as one having anything to do with politics, it should be borne in mind that the organization must fight wherever it might be found necessary to fight legitimately, and he advocated prompt and immediate action toward making the association effective. T. A. Griffin of the Griffin Wheel Company, A. H. Mulliken of the Pettibone-Mulliken Company, and General Charles Miller of the Galena Oil Company also spoke. A resolution to form the organization was offered by Colonel Prout and adopted.

### The Officers Selected.

The chairman appointed a committee to nominate officers and arrange the plan and scope of the organization, and an adjournment was taken until the evening, when the following officers were elected:

President, George A. Post, president Standard Coupler Company; vice-presidents, H. H. Westinghouse, vice-president Westinghouse Air Brake Company, Pittsburgh; Otis H. Cutler, president American Brake Shoe & Foundry Company, New York; W. H. Marshall, president American Locomotive Company, New York; E. D. Keith, president Keith Car Mfg. Company, Sagamore, Mass.; A. H. Mulliken, president Pettibone-Mulliken Company, Chicago; C. P. Letchworth, president Pratt & Letchworth Company, Buffalo; treasurer, Charles A. Moore, president Manning, Maxwell & Moore, Inc., New York. Executive Committee: W. G. Pearce, vice-president Griffin Wheel Company, Chicago; W. V. Kelly, president American Steel Foundries, New York; N. G. Prout, vice-president Union Switch & Signal Company, Pittsburgh; J. S. Coffin, president Franklin Railway Supply Company, Franklin, Pa.; N. Paul Fenner, Jr., president American Valve & Meter Company, Cincinnati; E. L. Adreon, vice-president American Brake Company, St. Louis; J. H. Schwacke, vice-president William Sellers & Co., Inc., Philadelphia; A. M. Kittredge, Barney & Smith Car Company, Dayton, Ohio, and J. F. Dickson, president Dickson Car Wheel Company, Houston, Texas.

Funds were subscribed at the evening meeting, and the Executive Committee arranged to meet shortly afterward at the Railroad Club to complete the details of the organization. The concerns participating in the conference were as follows:

Adams & Westlake Company, Chicago, Ill.
Ajax Forge Company, Chicago, Ill.
American Balance Valve Company, Jersey Shore, Pa.
American Brake Shoe & Foundry Company, New York.
American Car & Equipment Company, Chicago, Ill.
American Locomotive Company, New York.
American Locomotive Sander Company, Philadelphia, Pa.
American Valve & Meter Company, Cincinnati, Ohio.
Anglo-American Varnish Company, Newark, N. J.
Ashton Valve Company, Boston, Mass.
Atha Steel Casting Company, Newark, N. J.
Baldwin Locomotive Works, Philadelphia, Pa.
Barney & Smith Car Company, Dayton, Ohio.
Bethlehem Steel Company, Bethlehem, Pa.
Bettendorf Axle Company, Davenport, Iowa.
Bliss Electric Car Lighting Company, Chicago, Ill.

S. F. Bowser & Co., Inc., Fort Wayne, Ind.
Buckeye Steel Castings Company, Columbus, Ohio.
Bucyrus Company, Cleveland, Ohio.
Buda Foundry & Mfg. Company, Chicago, Ill.
Buffalo Brake Beam Company, New York.
Butler Drawbar Attachment Company, Cleveland, Ohio.
Cardwell Mfg. Company, Chicago, Ill.
Chicago-Cleveland Car Roofing Company, Chicago, Ill.
Chicago Railway Equipment Company, Chicago, Ill.
Cleveland City Forge & Iron Company, Cleveland, Ohio.
Cleveland Frog & Crossing Company, Cleveland, Ohio.
Commercial Acetylene Company, Chicago, Ill.
Commonwealth Steel Company, St. Louis, Mo.
Consolidated Car Heating Company, Albany, N. Y.
Cook's Standard Tool Company, Kalamazoo, Mich.
Damascus Brake Beam Company, Cleveland, Ohio.
John Davis Company, Chicago, Ill.
Dayton Mfg. Company, Dayton, Ohio.
Dearborn Drug & Chemical Company, Chicago, Ill.
F. W. DeVoe & C. T. Reynolds Company, New York.
Joseph Dixon Crucible Company, Jersey City, N. J.
Dressel Railway Lamp Works, New York.
G. Drouve Company, Bridgeport, Conn.
O. M. Edwards Company, Syracuse, N. Y.
Farlow Draft Gear Company, Baltimore, Md.
Flannery Bolt Company, Pittsburgh, Pa.
Flood & Conklin, Newark, N. J.
Franklin Railway Supply Company, Franklin, Pa.
Fuller Bros. & Co., New York.
Galena Signal Oil Company, Franklin, Pa.
General Railway Signal Company, Rochester, N. Y.
Goodwin Car Company, New York.
Gould Coupler Company, New York.
Gold Car Heating & Lighting Company, New York.
Griffin Wheel Company, Chicago, Ill.
Hunt-Spiller Mfg. Corporation, Boston, Mass.
Ingersoll-Rand Drill Company, New York.
International Seal Company, New York.
Jenkins Bros., New York.
Kay & Ess Company, Dayton, Ohio.
Kennicott Water Softener Company, Chicago, Ill.
Link Belt Company, Philadelphia, Pa.
Charles R. Long, Jr., Company, Louisville, Ky.
McConway & Torley Company, Pittsburgh, Pa.
Manning, Maxwell & Moore, Inc., New York.
Michigan Lubricator Company, Detroit, Mich.
Middletown Car Works, Middletown, Pa.
W. H. Miner Company, Chicago, Ill.
Morden Frog & Crossing Works, Chicago, Ill.
Murphy Varnish Company, Newark, N. J.
Nathan Mfg. Company, New York.
National Dump Car Company, Chicago, Ill.
National Lock Washer Company, Newark, N. J.
National Malleable Castings Company, Cleveland, Ohio.
New York Air Brake Company, New York.
Niles-Bement-Pond Company, New York.
Otto Gas Engine Works, Chicago, Ill.
Pantasote Company, New York.
Pettibone-Mulliken Company, Chicago, Ill.
Pittsburgh Spring & Steel Company, Pittsburgh, Pa.
Pratt & Letchworth Company, Buffalo, N. Y.
Protectus Company, Philadelphia, Pa.
Pyle-National Electric Headlight Company, Chicago, Ill.
Quincy-Manchester-Sargent Company, New York.
Railroad Supply Company, Chicago, Ill.
Railways Materials Company, Chicago, Ill.
Ralston Steel Car Company, Columbus, Ohio.
Ramapo Iron Works, Hillburn, N. Y.
Rodger Ballast Car Company, Chicago, Ill.
Safety Car Heating & Lighting Company, New York.
William Sellers & Co., Inc., Philadelphia, Pa.
Charles A. Sherburne, Boston, Mass.
Sherwin-Williams Company, New York.
James B. Sipe & Co., Pittsburgh, Pa.
Standard Coupler Company, New York.
Standard Steel Car Company, Pittsburgh, Pa.
Storrs Mica Company, Owego, N. Y.
T. H. Symington Company, Baltimore, Md.
Transue & Williams Company, Alliance, Ohio.
Union Switch & Signal Company, Swissvale, Pa.
U. S. Metal & Mfg. Company, New York.
Verona Tool Works, Pittsburgh, Pa.
Vulcan Iron Works Company, Toledo, Ohio.
Ward Equipment Company, New York.
Watson-Stillman Company, New York.
Westinghouse Air Brake Company, Pittsburgh, Pa.
Westinghouse, Church, Kerr & Co., New York.
Westinghouse Electric & Mfg. Company, Pittsburgh, Pa.
Wolfe Brush Company, Pittsburgh, Pa.
Worth Brothers Company, Coatesville, Pa.
Wyckoff Pipe & Creosoting Company, New York.

Since the meeting a number of other companies and firms have applied for membership.

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An enormous quantity of mail matter was dispatched to Great Britain October 1 and succeeding days by business houses which had been permitting it to accumulate, awaiting the reduction in letter postage to 2 cents.

## Customs Decisions.

### Rifle Barrels.

It was decided, October 3, by the Board of United States General Appraisers that forged rifle barrels, rough bored, are dutiable properly under the provision in the tariff act for "rifles and parts thereof" with duty at the rate of 25 per cent. The action of the collector at Boston in assessing importations of the goods made by J. G. Riga, at 45 per cent. under the metal schedule, is not approved. The Government alleged in support of the classification imposed by the collector that the provision in the law for "rifles and parts thereof" should be held to include only such parts as are in a finished condition when imported, complete and ready for adjustment. In sustaining the importer's contention, General Appraiser Fischer, in his decision for the board, says in part:

> We are of the opinion that the provision of the tariff referred to should not be narrowed to the extent indicated by the Government counsel. We believe that when an article as imported affords evidence as to the use to which it is to be applied and has reached a form and stage wherein it is fit for no other useful purpose than as a part of a rifle, that then for tariff purposes it may safely be regarded as within the provision for parts of rifles.

### Statuary.

Another of the many attempts by the Board of United States General Appraisers and the Federal courts to define the technical meaning of the word "statuary" as used in the tariff act has just been made by the General Board. This time the question at issue does not concern marble statuary, but deals with work executed in bronze. The issue, which is brought by B. Altman & Co., New York, alleges that a bronze statue or bust of Louis XVI. should be allowed to enter this country at the rate of 15 per cent. ad valorem under the provisions of Section 3 of the present tariff law, and the reciprocal commercial agreement with France, which convention provides, among other things, for the importation of paintings and statuary at the low rate specified above. The customs authorities, however, declined to consider the claim made by the importers, and the bust was therefore assessed for duty at the rate of 45 per cent. as a "manufacture of metal."

A great deal of testimony was laid before the Board of Appraisers, both by the Government and by the importers. The Government sought to have the decision of the classifying officers upheld, while the Altman firm made a strong effort to convince the lower tribunal that the metal piece is, in fact, "statuary." Judge Waite, who writes the decision for the board, finds, however, that the contention of the Treasury Department is correct, and upholds the claim for the imposition of duty as a "manufacture." In brief, the board holds that a bronze statue which was cast in a foundry by artisans from a model made by an artist in some plastic material, but upon which metal casting the artist has done little or no retouching, is not "statuary wrought by hand from metal," under paragraph 454 of the Dingley act, but is dutiable as a "manufacture of metal," as assessed by the custom house officials.

In interpreting the reciprocal agreement between France and the United States, Judge Waite lays down the rule that the provision for "statuary" in Section 3 of the tariff law, and in the French reciprocal commercial agreement, is qualified by the statement in paragraph 454 of the tariff that "the term 'statuary' as used in this act shall be understood to include only such statuary as is cut, carved or otherwise wrought by hand from a solid block or mass of marble, stone, or alabaster, or from metal, and as is the professional production of a statuary or sculptor only."

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Martin A. Knapp, chairman of the Interstate Commerce Commission, has approved the draft of the new uniform bill of lading which is to go into effect November 1 (as printed in *The Iron Age* of July 23, 1908, page 250) and urges its adoption by shippers in all freight territories. C. C. McCain, commissioner of the Trunk Line Association of Railroads, has prepared circulars describing in detail the uses of the new forms, which will be distributed broadcast among shippers.

# The Stassano Electric Furnace.

M. Stassano, the pioneer in the development of the electric furnace and its application to the metallurgy of iron, has recently submitted his latest results in a memoir in the *Revue de Metallurgie*, whose editors are Henry le Chatelier and Leon Guillet. The results accomplished by Stassano from 1889 to 1906 were presented by him in a paper read in the latter year before the Rome International Congress of Applied Chemistry were the following: There is required a maximum of 4 hp. hours to do in an electric furnace the same thermic work as is produced in the best coal furnace by 1 kilogram of good fossil fuel, and, therefore, with hydro-electric plant capable of furnishing an electric horsepower per annum at 40 francs, electrometallurgy is on an even basis with ordinary metallurgical processes to which coal at 20 francs per ton is available.

In order to accomplish metallurgical results, the apparatus used must meet the following conditions: The locality in which the transformation of electrical energy into heat is carried out must not be subject to the direct action of the atmospheric air, and must be absolutely neutral chemically.

The heat developed by this transformation must produce as high a temperature as possible.

The substances to be treated must not be in direct contact with foreign substances which have a hurtful effect upon their composition.

The apparatus in which these different metallurgical operations are conducted must be so constructed that they always work with full charges, and the processes for obtaining this final result must favor these conditions.

### The Furnace.

Stassano's latest design of furnace, which is of the revolving type, is shown in the accompanying engravings.

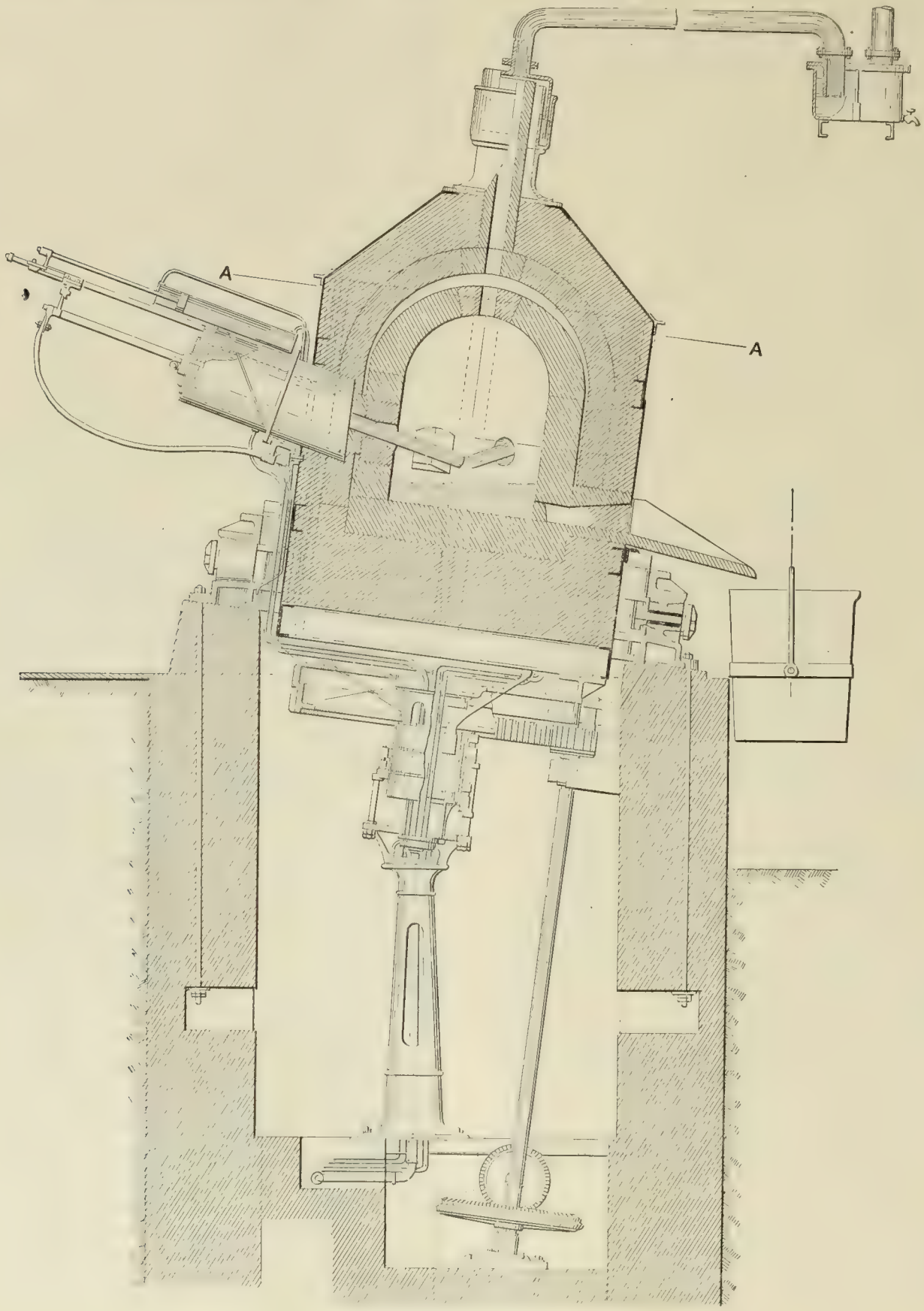



Fig. 1.—The Stassano Electric Furnace.

He also builds stationary furnaces with one or more units. As will be noted from Figs. 1 and 2, the furnace consists of a cylindrical shell lined with refractory material, in which there is a melting chamber. Into this reach the electrodes. Double walled water cooled cylinders provided with guides attached to the furnace shell, contain, support and guide the carbon electrodes. The latter are operated by hydraulic rack and pinion. Flexible cables connect the electrodes with the current collector placed below the furnace shell. The furnace rests, by means of a ring firmly attached to the shell, upon a circular rail placed on an inclined plane, so that the axis of the furnace is at a determined angle from the vertical.

The gearing for revolving the furnace is shown in the drawing. In the center of the gear wheel are copper rings which are insulated from the furnace, and they connect electrically with the cables to the electrodes. The furnace is provided with a tap, as shown in Fig. 1, and with a charging door, indicated in Fig. 2. A flue is provided in the crown of the melting chamber, from which a pipe leads to a vessel filled with water, from which the gases are discharged or are collected if their character makes it desirable to utilize them.

Stassano makes the following points in regard to the design of his furnace:

The atmosphere in the melting chamber is perfectly neutral chemically.

The transformation of the electric energy into heat energy is obtained by means of the arc, by which the highest known temperature attainable in practice may be reached.

The materials to be treated are not in contact with the electrodes, and therefore their composition cannot be modified by the absorption of foreign substances.

By attaining a vigorous mixture of the melting materials, through the rotating of the furnace, the chemical reactions are facilitated, aided, as they are, by the high temperature. The time required for the reactions is therefore reduced to a minimum, so that full charges

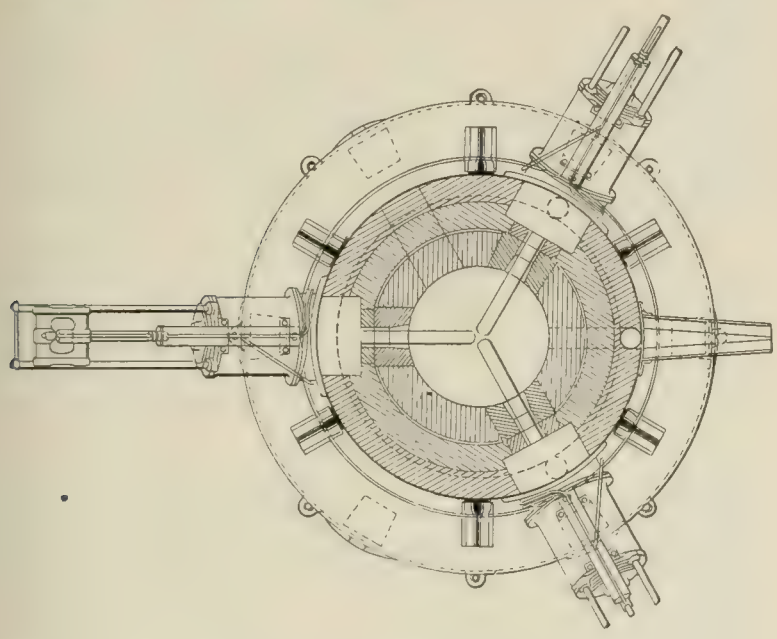


Fig. 2.—Cross Section of the Stassano Electric Furnace at A A on Fig. 1.

can always be worked and the energy is utilized to best advantage.

Stassano goes into a general discussion of the field of the electric furnace, both for localities where the presence of cheap ores and cheap water power render direct manufacture possible, and for localities where it may be an adjunct, as a refining furnace, for Bessemer and open hearth plants. He quotes a series of practical results selected from the operations of 200 horsepower furnace, built in 1903 by the Ministry of War, at the arsenal at Turin, where steel for projectiles is made, and of furneces at the works of the Societe Forni Termolettrici Stassano at Turin, where there are installed two fixed 100 hp. furnaces, one rotating 200 hp. furnace, one tilting 200 hp. furnace, and two 1000 hp. furnaces one fixed and one rotating. All of these furnaces, at both plants, usually run on pig iron and scrap. But at different times at the Stassano works, which are regularly employed in making castings for the automobile industry, for railroad and tramways, practical runs have been made on the direct treatment of ores and in producing special alloys.

**Results Obtained.**

Stassano has tabulated his results in rather an inconvenient manner. We present them below in somewhat different form:

*Direct Ore Reduction.*—The charges consisted of 1000 kms. of ore containing 68.70 per cent. oxide of iron, 3.22 per cent. of oxide of manganese, 17.15 per cent. of silica, 2.0 per cent. of alumina, 1.0 per cent. of lime, 5.67 per cent. of magnesia, 0.15 per cent. of phosphorus, and 0.12 per cent. of sulphur, of 350 kms. of limestone, 240 kms. of charcoal, 80 kms. of an aqueous solution of silicate of soda, and, after the removal of the cinder, 50 kms. of calcium carbide.

The analysis of the products of four heats was as follows:

| | 1. | 2. | 3. | 4. |
|---|---|---|---|---|
| Carbon | 0.25 | 0.26 | 0.30 | 0.80 |
| Manganese | 0.12 | 0.21 | 0.24 | 0.30 |
| Silicon | 0.07 | 0.03 | 0.14 | 0.22 |
| Phosphorus | 0.01 | 0.01 | 0.015 | 0.015 |
| Sulphur | 0.065 | 0.04 | 0.07 | 0.045 |

To the fourth heat there was added some hematite pig iron for the sake of carburizing after the withdrawal of the cinder.

The consumption of power for the four heats was 4.5, 4.3, 4.0 and 4.2 kw. hours per kilogram of product. Mechanical tests of the second and third heat showed a tensile strength of 55 kms. per square centimeter and an elongation of 23 per cent. The fourth heat showed 86.3 kms. and 13 per cent., respectively.

*Special Alloys.*—Three heats from tungsten ore were made in a 100 hp. furnace, with a charge consisting of 1000 kms. of tungsten ore containing 69.9 per cent. of $WO_3$, 2 per cent. of silica, 20.5 per cent. of protoxide of iron, 7.3 per cent of protoxide of manganese, 0.20 per cent. of sulphur and traces of lines magnesia and phosphorus, of 190 kms. of charcoal, 40 kms. of lime, and 80 kms. of a 25 per cent. aqueous solution of silicate of soda. The theoretical composition of the steel was 20.6 per cent. of iron, 71.5 per cent. of tungsten, 7.1 per cent. of manganese, and 1 per cent. of silicon. The actual composition of three heats was as follows:

| | 1. | 2. | 3. |
|---|---|---|---|
| Iron | 35.2 | 28.63 | 22.715 |
| Tungsten | 58.0 | 65.66 | 69.70 |
| Carbon | 2.4 | 2.062 | 2.508 |
| Manganese | 3.192 | 3.5 | 3.6 |
| Silicon | 1.244 | 1.028 | 1.3 |

There were only traces of sulphur and phosphorus. The consumption of power was 6000 kw. hours per kilogram of steel for the first heat, 6800 for the second, and 7500 kw. hours for the third.

A heat was made to produce a silico-manganese with approximately 60 per cent. of manganese and 20 per cent. of silicon. There were used 1000 kms. of manganese ore with 45.65 peroxide of manganese, 16.1 per cent. of sesquioxide of iron, 3.05 per cent. of alumina, 30.16 per cent. of silica, 0.15 per cent. of baryta, 1.2 per cent. of lime, 0.43 per cent. of magnesia, 0.817 per cent. of sulphur, and 0.34 per cent. of phosphoric acid; also 300 kms. of charcoal, 60 kms. of lime, and 80 kms. of a 25 per cent. aqueous solution of silicate of soda.

The steel carried 17.6 per cent of silicon, 62 per cent. of manganese, 1.8 per cent. of carbon, traces of sulphur, and 0.028 per cent. of phosphorus. The consumption of power was 7400 kw. hours per kilogram.

*Melting Projectile Steel.*—The following results of 18 heats produced during the manufacture of projectile steel with a 200 hp. furnace at the Turin Arsenal. The charge consisted of 350 kms. of scrap, 200 kms. of broken projectiles, 100 kms. of turnings, 2.5 kms. of ferro-silicon, 10.5 kms. of ferromanganese, 0.2 km. of aluminum, 6 kms. of lime, and 1 km. of ore.

*Analysis of Projectile Steel, Turin Arsenal.*

| Analyses of product. | | | | | Mechanical tests. Weight of product. | Tensile strength. | Elongation. |
|---|---|---|---|---|---|---|---|
| C. | Mn. | Si. | P. | S. | Kg. | Kg. per sq. mm. | % |
| 0.420 | 1.231 | 0.180 | 0.03 | 0.03 | 650 | 67 | 19 |
| 0.440 | 1.498 | 0.180 | 0.03 | 0.03 | 665 | 74 | 17 |
| 0.425 | 1.440 | 0.180 | 0.03 | 0.03 | 642 | 71 | 20 |
| 0.400 | 1.386 | 0.180 | 0.03 | 0.03 | 630 | 67 | 19 |
| 0.465 | 1.224 | 0.200 | 0.035 | 0.04 | 663 | 72 | 17 |
| 0.495 | 1.404 | 0.200 | 0.035 | 0.04 | 662 | 78 | 15 |
| 0.490 | 1.440 | 0.200 | 0.035 | 0.04 | 656 | 78 | 16 |
| 0.430 | 1.260 | 0.150 | 0.025 | 0.035 | 656 | 69 | 18 |
| 0.525 | 1.296 | 0.150 | 0.025 | 0.035 | 650 | 79 | 15 |
| 0.460 | 1.476 | 0.150 | 0.025 | 0.035 | 640 | 76 | 16 |
| 0.515 | 1.436 | 0.150 | 0.025 | 0.035 | 679 | 81 | 15 |
| 0.505 | 1.540 | 0.150 | 0.025 | 0.035 | 656 | 83 | 14 |
| 0.450 | 1.264 | 0.170 | 0.031 | 0.033 | 650 | 76 | 16 |
| 0.415 | 1.440 | 0.170 | 0.031 | 0.033 | 650 | 71 | 18 |
| 0.445 | 1.332 | 0.170 | 0.031 | 0.033 | 652 | 76 | 16 |
| 0.400 | 1.444 | 0.170 | 0.031 | 0.033 | 652 | 69 | 18 |
| 0.405 | 1.501 | 0.180 | 0.030 | 0.027 | 655 | 71 | 18 |
| 0.465 | 1.303 | 0.180 | 0.030 | 0.027 | 650 | 73 | 17 |
| | | | | | 11.749 | | |

The consumption of power per kilowatt hour per kilogram of steel produced was 1250 kw. The total charge was 11,934 kg., and the yield 11,749 kg., thus showing a waste of 1½ per cent.

*Producing Soft Steel Castings.*—The following series of heats were made in the 200 hp. rotating and tilting furnace at the Stassano plant at Turin, the object being to produce soft steel castings from scrap material.

*Charge and Analyses of Materials.*

| | | C. | Sil. | Sul. | Phos. | Mn. |
|---|---|---|---|---|---|---|
| 1. Scrap, old shovels and tools | 330 K | 0.245 | 0.046 | 0.085 | 0.034 | 0.757 |
| 2. Iron and steel scrap. | 330 K | 0.350 | 0.140 | 0.050 | 0.110 | 0.810 |
| 3. Highly oxidized scrap | 70 K | 0.300 | 0.105 | 0.080 | 0.056 | 0.070 |
| 4. Hematite pig iron. | 18 K | 3.800 | 1.80 | 0.01 | 0.015 | 0.350 |
| 5. Ferrosilicon | 2.2 K* | 0.35 | 51.65 | ... | 0.130 | 0.36 |
| 6. Ferromanganese | 6 K† | 6.409 | 0.233 | ... | 0.295 | 70.732 |
| Lime | 30 K | | | | | |
| Calcium carbine | 4 K | | | | | |

* Iron, 40 per cent. † Iron, 19 per cent.

The steel produced showed the following analyses:

*Analyses of Steel.*

| No. | Car | Sil. | Sul. | Phos. | Man. |
|---|---|---|---|---|---|
| 1 | 0.20 | 0.33 | 0.050 | 0.038 | 1.02 |
| 2 | 0.22 | 0.10 | 0.045 | 0.030 | 0.42 |
| 3 | 0.22 | 0.17 | 0.052 | 0.026 | 0.50 |
| 4 | 0.26 | 0.09 | 0.048 | 0.025 | 0.49 |
| 5 | 0.26 | 0.28 | 0.040 | 0.035 | 0.44 |
| 6 | 0.25 | 0.20 | 0.050 | 0.035 | 0.41 |

A cast and annealed sample of the second heat showed a tensile strength of 42 kilos and an elongation of 19 per cent., while the further heat had 45 kilos and 17.5 per cent., respectively.

A second group of heats was made up of the same materials, except that 250 kms. of cast steel scrap was also used containing 0.23 carbon, 0.15 silicon, 0.042 sulphur, 0.03 phosphorus, and 0.45 manganese. The charge was made up of 250 kms. of this scrap, of 350 kms. of scrap No. 1, 150 kilos of scrap No. 2, 70 kilos of scrap No. 3, 28 kilos of hematite pig, 33 kilos of ferrosilicon, 3.2 kilos of ferromanganese, 30 kilos of lime, and 4 kilos of calcium carbide.

*Analyses of Second Group.*

| No. | Car. | Sil. | Sul. | Phos. | Man. |
|---|---|---|---|---|---|
| 1 | 0.27 | 0.13 | 0.04 | 0.025 | 0.399 |
| 2 | 0.23 | 0.28 | 0.05 | 0.025 | 0.46 |
| 3 | 0.14 | 0.49 | 0.045 | 0.029 | 0.42 |
| 4 | 0.22 | 0.16 | 0.04 | 0.031 | 0.41 |
| 5 | 0.20 | 0.45 | 0.04 | 0.026 | 0.46 |
| 6 | 0.22 | 0.17 | 0.043 | 0.030 | 0.39 |
| 7 | 0.18 | 0.11 | 0.051 | 0.030 | 0.44 |
| 8 | 0.20 | 0.10 | 0.04 | 0.025 | 0.39 |

Charge No. 1 showed a tensile strength of 43 kilos per square inch and an elongation of 20 per cent. No. 2 recorded 40 kilos and 18.5 per cent, No. 5, 42 kilos and 17 per cent., and No. 6, a tensile strength of 42 kms. per square millimeter and an elongation of 20.5 per cent.

A number of other heats are given, but they do not develop any special points. The consumption of power for this class of work averaged for the whole of the year 1907, 1260 kws. per kilogram of metal.

*Special Steels.*—The following heats were made on special steels at the Stassano works in 200-ton rotating and tilting furnaces. The analyses of the raw materials and product are given:

*Nickel Steel.*

| Materials. | Kilos. | Car. | Sil. | Sul. | Phos. | Man. |
|---|---|---|---|---|---|---|
| Plate scrap | 400 | 0.30 | 0.13 | 0.070 | 0.290 | 0.210 |
| Oxidized scrap | 200 | 0.30 | 0.105 | 0.083 | 0.057 | 0.07 |
| Ferrosilicon | 1.5 | 0.35 | 57.65 | .... | 1.30 | 0.36 |
| Ferromanganese | 4 | 6.41 | 0.253 | .... | 0.295 | 70.32 |
| Nickel (99 per ct.) | 24 | ... | .... | .... | .... | ... |
| Lime | 20 | ... | .... | .... | .... | ... |
| Calcium carbide | 5 | ... | .... | .... | .... | ... |
| Product: | | | | | | |
| No. 1 | .. | 0.18 | 0.123 | 0.048 | 0.007 | 0.78 |
| No. 2 | .. | 0.165 | 0.110 | 0.015 | 0.007 | 0.69 |

No. 1 contained 5.6 per cent. of nickel.

No. 2 charge, to which 5 additional pounds of calcium carbide was added, carried 5.56 per cent. of nickel. No. 1 had a tensile strength of 56 kilos per square millimeter and 29 per cent. of elongation, while No. 2 had 54.5 kilos and 30.1 per cent.

For a second heat, a steel to contain 1.5 carbon, 1.0 manganese, 0.127 silicon, 12.725 tungsten and 3.69 per cent. of chrome was aimed at, the analyses of raw materials and product being as follows:

*Tungsten Chrome Steel.*

| Materials. | Kilos. | Car. | Sil. | Sul. | Phos. | Man. |
|---|---|---|---|---|---|---|
| Rusted scrap | 150 | 0.30 | 0.105 | 0.083 | 0.057 | 0.07 |
| Steel scrap | 200 | 0.35 | 0.14 | 0.05 | 0.110 | 0.81 |
| Foundry scrap | 236 | 0.23 | 0.15 | 0.05 | 0.037 | 0.45 |
| White pig | 60 | 3.42 | 0.27 | 0.083 | 0.115 | 2.31 |
| Hematite pig | 45 | 3.80 | 1.80 | 0.01 | 0.015 | 0.35 |
| Ferromanganese | 9 | 6.41 | 0.25 | ... | 0.295 | 70.31 |
| Ferrochrome (70 %) | 36.5 | 5.80 | 1.30 | 0.07 | 0.028 | 0.45 |
| Tungstic acid | 117 | ... | ... | ... | .... | ... |
| Lime | 30 | ... | ... | ... | .... | ... |
| Calcium carbine | 12 | ... | ... | ... | .... | ... |
| Charcoal | 24.5 | ... | ... | ... | .... | ... |
| Aluminum | 1.5 | ... | ... | ... | .... | ... |
| Product | .. | 1.56 | 0.062 | 0.012 | 0.01 | 0.975 |

Tungsten, 12.9 per cent. Chrome, 3.5 per cent.

Another heat dealt with a tungsten steel to contain 1.5 per cent. of tungsten and 0.40 per cent. of manganese.

The charge consisted of 200 kms. of hematite pig, 600 kg. of old shovel and tool scrap, 2 kg. of ferrosilicon, 3 kilos of ferromanganese, 16 kg. of tungstic acid, 1 kg. of aluminum, 5 kg. of calcium carbide, and 25 kg. of lime. The steel carried 0.96 carbon, 0.123 silicon, 0.018 sulphur, 0.015 phosphorus, 0.6 manganese and 1.56 tungsten.

Stassano gives further data obtained in 1000 hp. stationary and rotating furnaces at the Turin works in making steel castings and projectile steel.

He states that according to the experience at the two plants at Turin, the consumption of electrodes does not exceed 10 kg. per ton of steel produced, that the cost of repairs to the lining averages 10 francs per ton, and only in exceptional cases does it rise to 14 or 15 francs. For furnaces up to a capacity of 300 hp. a crew of three men suffice. For a 1000-hp. furnace, five, or at most six, men are needed for melting with cold stock. For liquid metal or for ore only four men are required.

In addition to the two plants at Turin, Italy, there has been started recently a 250 hp. rotary furnace at the works of the Bonner Fraeserfabrik at Bonn on the Rhine.

## Century Single Phase Elevator Motors.

A single phase motor particularly adapted for elevator service, and claimed to give practically as good results as a direct current motor, has recently been developed by the Century Electric Company, Nineteenth and Olive streets, St. Louis, Mo. A very good power factor and efficiency have been secured, and still no auxiliary inductive devices, auto transformers, slip rings, rheostats or other supplementary appliance are made use of beyond a plain reversing noninductive resistence controller installed in series with the motor to limit the starting current. Being a repulsion induction cummutator motor, it is, in principle of operation, substantially equivalent to the company's single phase self-starting constant speed induction motor while in its starting condition. It differs radically from the constant speed motor, however, in that while operating the commutator is in service all the time.

The motor has a centrifugal device which short circuits the armature at synchronism to hold back the load when the elevator is driving the motor. The governor device places the commutator in service again as soon as the motor speed has dropped 10 degrees below synchronism. The motor gives 120 per cent. of full load starting torque with about 130 per cent. of full load current. In normal operation these motors seldom take from the line in excess of 130 per cent. of full load current; all ordinary starts require less than 100 per cent. full load torque.

The motors are made for 60-cycle current in the following standard sizes: 10 hp., 1080 rev. per min.; 7½ hp., 810 rev. per min.; 7½ hp., 1080 rev. per min., and 5 hp., 810 rev. per min. Any of these can be furnished for as low as 104 volts, except the 10 hp. size. The new motor is described and the characteristics diagramed in the company's bulletin No. 11, recently issued.

The Bethlehem Steel Company will move its New York offices November 2 from 100 Broadway to the Trinity Building, 111 Broadway, where it will occupy half of the eleventh floor.

## The Lake Superior Corporation.

The fourth annual report of the Lake Superior Corporation, covering operations for the fiscal year ending June 30, 1908, gives the following income account:

| | | |
|---|---|---|
| *Interest and dividends from subsidiary companies | $491,613.85 | |
| Interest on advances to subsidiary companies, accrued interest on bonds and bank balances | 74,552.96 | |
| Rental | 451.35 | |
| | | $566,618.16 |
| Coupons paid: | | |
| First mortgage bonds | $500,000.00 | |
| Less interest on treasury bonds | 53,658.34 | |
| | $446,341.66 | |
| Interest on loans | 28,884.44 | |
| General expenses | 63,522.49 | |
| | | 538,748.59 |
| Balance to profit and loss account | | $27,869.57 |
| Surplus June 30, 1907 | | 471,313.02 |
| Surplus June 30, 1908 | | $499,182.59 |

* In addition to interest and dividends paid, as stated, the subsidiary companies have reserved $580,386.30 from net earnings for the year for extensions and working capital.

The balance sheet as of June 30, 1908, is as follows:

*Assets.*

| | |
|---|---|
| Investments and securities—subsidiary companies | $51,430,901.23 |
| Cash on hand | 9,485.66 |
| Cash reserve for unpaid coupons | 12,350.00 |
| Accounts secured by bonds | 60,000.00 |
| Treasury bonds and accrued interest thereon | 1,013,204.17 |
| Due from subsidiary companies | 1,396,720.92 |
| Accounts receivable | 5,610.08 |
| Interest in suspense | 1,105.64 |
| Total | $53,929,377.70 |
| In addition there is held for the account of the Algoma Central & Hudson Bay Railway Company, to be used in the extension of its line: | |
| Cash | $62,419.57 |
| First mortgage bonds of the Lake Superior Corporation | 345,000.00 |

*Liabilities.*

| | |
|---|---|
| Capital stock | $40,000,000.00 |
| First mortgage bonds | 10,000,000.00 |
| Income bonds | 3,000,000.00 |
| Bills and accounts payable | 315,750.00 |
| Coupons unpaid | 12,350.00 |
| Accrued interest on bonds and loans | 42,877.49 |
| Suspense account | 59,217.62 |
| Profit and loss balance, July 1, 1908 | 499,182.59 |
| Total | $53,929,377.70 |

From the accompanying statement of President Charles D. Warren, the following extracts are taken regarding the operations of some of the subsidiary companies:

*The Algoma Steel Company, Ltd.*—This reduction in railroad construction produced a curtailment of rail orders, as a result of which it was necessary to close down the steel plant for about one-third of the year. Notwithstanding, the company is able to show an excellent record, showing net earnings of $501,258.50, after deducting all charges, including interest on advances, with an output for the year as follows: Pig iron, 135,852 tons; standard steel rails, 142,958 tons. The large quantity of pig iron which has had to be purchased throughout the year at high prices emphasizes the necessity of the company increasing its blast furnace capacity.

*Lake Superior Iron & Steel Company, Ltd.*—This company has had a very successful year's operation, having produced 31,773 tons of open hearth steel, from which were rolled 25,321 tons of open hearth rails, with earnings for the year of $51,243.42. The very bountiful crop which has just been harvested throughout Canada, coupled with the fact that the railroad companies have done little building during the year, will stimulate railroad construction during the next current year, and it is confidently expected that increased rail orders to the company will result.

*The Lake Superior Power Company.*—This company continues to supply power for the operation of the subsidiary companies of the corporation, and is the owner of and conducts the operations of the Helen Mine. The company shows a surplus this year of $265,943.94 in excess of expenses of operation, after deducting all charges, including interest on advances. This excellent result is due largely to the increased shipments of ore from the Helen Mine. The ore from this mine has increased in quantity and improved in quality in the lower levels which have been worked during the past year. The output was 150,623 tons of ore, being an increase over the previous year of 57,000 tons.

**General Results.**

The year's operations of the various subsidiary companies show a net surplus of $1,072,000.15, an amount in excess of the net earnings of the previous year by $214,879.53.

For the past four years the subsidiary companies have been largely dependent upon loans from banks to enable them to purchae the necessary materials for the transaction of their business. The financial panic of 1907, however, made it clear that it was unsafe for the subsidiary companies to depend upon outside sources for so large a proportion of their necessary working capital, and their directors have, therefore, determined that a substantial part of the year's earnings must be retained for working capital and for making necessary repairs and additions.

While, therefore, the earning of the subsidiary companies have been, under the circumstances, highly satisfactory, yet, by reason of the necessity of these companies retaining so large a part of their earnings for working capital and necessary extensions, the receipts of the corporation from the subsidiary companies have not warranted your directors in paying interest on the income bonds.

## The Prevention of Foundry Accidents.

The Committee on the Prevention of Accidents in Foundries, appointed by the American Foundrymen's Association at its Toronto convention in June last, has entered upon its work of gathering information from the foundries of the United States. A circular signed by Thomas D. West, chairman of the committee, and by Richard Moldenke, secretary of the association, is being sent to all the foundries in the country with a blank which foundrymen are asked to fill out and return to the secretary at Watchung, N. J. The circular says that the foundry industry offers peculiar opportunities for careless workmen to receive injury, and consequently proprietors are under an increasing burden, in view of the tendency to put all responsibility for accidents upon the employer.

In agitating for the lessening of the number of foundry accidents, the committee desires, first of all, to obtain data which will show just how much of the loss of life and property is really chargeable to unsafe shop conditions. The committee's blank provides for a report as to circumstances and consequences of foundry accidents in the United States between July, 1907, and July, 1908. Eleven classes of accidents are specified, as follows: Personal carelessness, careless work, inattention to surrounding shop conditions, intoxicants, smoking, unavoidable accidents, neglect of safety devices provided, disobedience of orders, taking chances, inferior workmanship or materials used, negligence on the part of employees. Under each of these heads are blank spaces calling for number killed outright, number fatally injured, number seriously injured, number slightly injured, cost of attention to cases, cost of repairs made necessary, and loss through fire resulting. The foundrymen are asked further to report the number of persons killed or injured through their own fault and through fault of co-employees, also the number killed or injured by burns or by bruises.

The expense of the inquiry is undertaken by the American Foundrymen's Association, the officers of which desire that foundrymen appreciate the importance of the end sought, and co-operate heartily in furnishing information. All communications are to be considered confidential. No names will be used in the reports of the committee, but only a summary of the figures. The committee believes that if the real causes of foundry accidents could be generally known, much of the drastic legislation continually proposed would appear in a different light.

# Electrical Power for British Industries.

## Its Relation to the Blast Furnaces and Coke Ovens on the Northeast Coast.

At the Middlesbrough, England, meeting of the Iron and Steel Institute, September 28 to October 1, a paper was presented by Charles H. Merz of London, entitled "Power Supply and Its Effect on the Industries of the Northeast Coast." It dealt with the development of electrical power for industrial use by companies specially organized for that purpose operating in the Northeast Coast District. The industries supplied with electricity by these companies are chiefly those of the Tyne District, of which Newcastle-upon-Tyne is the center, and of the Tees District of which Middlesbrough is the center. Midway between the two rivers is the famous Durham Coal Mining District. The region in question is thus about 45 miles from north to south, Blyth being at its northern extremity and Middlesbrough the principal town on the south. The average extent of the district from east to west is 25 miles, the coast forming the eastern boundary.

The companies and municipalities supplying current in different sections of the Northeast Coast are 12 in number, but nine-tenths of the total electricity sold is produced by the Newcastle-upon-Tyne Electric Supply Company, the Durham Electrical Power Distribution Company and the Cleveland & Durham Electric Power Company, so that Mr. Merz deals exclusively with these three companies.

### Important Developments from Electric Stations.

It is noted in the beginning of the paper that electrical power supply has already had a marked effect upon the industries of the Northeast Coast. A great saving of coal and a reduction of smoke have resulted. On the Tyne, apart from the electric power companies, there is now practically no coal burned for power purposes except in chemical factories. The application of electricity to all new uses has been facilitated. Four new rolling mills are about to be driven electrically. New industries are being located solely on account of the cheap power available. A good beginning has been made in the utilization of waste heat and gases, and much more will be done in this direction in view of the large number of blast furnaces and coke ovens in the district.

The Northeast Coast manufacturing districts, with a population of 2,015,000 in 1901, or 4.8 per cent. of the entire population of the United Kingdom, made the following showing in the coal mining, coke making, iron mining, pig iron and shipping industries in 1906:

The results thus far attained by the three power companies above named are thus summarized: The supply of current to 80 miles (single track) of electrified railroad, current to four tramway systems, the lighting in towns with populations aggregating over 700,000, motive power to the extent of 85,000 hp. and electro-chemical operations of over 12,000 hp. The last named are new industries, attracted to the Tyne solely by cheap power supply. The paper then presents the following details:

### Extent of Power Supply System.

The station from which the greater portion of the current is now supplied—Carville (located between Newcastle and the mouth of the Tyne)—was begun in 1903 by the installation of 14,000 electrical horsepower of steam turbine driven generators producing three-phase 40-cycle current at a pressure of 6000 volts. This installation has been increased fourfold during the past four years, so that the generating plant now aggregates 56,000 electric horsepower, and Carville has now a greater output of electricity than any other public supply station in Europe. From Carville the transmission and distribution networks extend westward to and through the city of Newcastle-upon-Tyne, northward 12 miles to Blyth, and eastward along the river Tyne to North Shields, while in a southerly direction the cables at present reach a point some 30 miles south of Carville, and extensions will shortly be completed linking up the northern cable network to the power system which has now been in operation some 18 months in the Middlesbrough District.

The table below gives the number and size of generating stations and a few particulars of the transmission and distribution systems. The capacity of plant installed represents about one-ninth of the total plant installed in public supply stations of the United Kingdom:

*Particulars of Generating Stations.*

| Power station. | Type. | Hp. of plant installed. | Type of current. | Voltage. | Remarks. |
|---|---|---|---|---|---|
| Carville | Coal-fired. | 56,000 | 3-phase. 40 cycles. | 6,000 | In operation. |
| Philadelphia | Coal-fired. | 13,000 | 3-phase. 40 cycles. | 6,000 | In operation. |
| Neptune Bank | Coal-fired. | 6,800 | 3-phase. 40 cycles. | 6,000 | In operation (stand by). |
| Grangetown | Coal-fired. | 8,000 | 3-phase. 40 cycles. | 12,000 | In operation. |
| Hebburn | Coal-fired. | 4,500 | 3-phase. 40 cycles. | 6,000 | In operation (stand by). |
| Weardale | Waste heat. | 6,650 | 3-phase. 40 cycles. | 3,000 | In operation. |
| Newport | Waste heat. | 4,000 | 3-phase. 40 cycles. | 3,000 | In operation. |
| Blaydon | Waste heat. | 3,000 | 3-phase. 40 cycles. | 6,000 | In operation. |
| Capacity of plant installed | | 101,950 | | | |
| Dunston | Coal-fired. | 30,000 | 3-phase. 40 cycles. | 6,000 | Under construction. |
| Bankfoot | Waste heat. | 3,300 | 3-phase. 40 cycles. | 3,000 | Under construction. |
| Tees-bridge | Waste heat. | 1,300 | 3-phase. 40 cycles. | 3,000 | Under construction. |
| Capacity of plant under construction | | 34,600 | | | |
| Total | | 136,550 | | | |

Of the waste heat stations named above, that at Newport (the Samuelson blast furnaces) and Teesbridge are exhaust steam stations; the Weardale station at Spennymoor is driven by coke oven gas, while the Bankfoot station at Crook will run chiefly on waste heat from coke ovens. The Blaydon station also utilized waste heat and gas from coke ovens.

### Conditions Governing Power Supply.

A factor invariably of vital importance in the production of cheap current, whether by a public company or by a private manufacturer, is the capital expenditure per useful horsepower of plant. This decreases as the size of plant grows, while the running efficiency at the same time increases. The local conditions governing power supply in this district are:

*Northeast Coast Industries.*

| | Coal mined, 1906.—Tons. | Make of coke. 1906.—Tons. | Ironstone mined. 1906.—Tons. | Pig iron. 1906.—Tons. | Shipping built. 1906. Net tonnage. |
|---|---|---|---|---|---|
| Northeast Coast industrial area | 52,097,377 | 7,830,000 | 6,126,324 | 3,628,651 | 630,872 |
| United Kingdom | 251,067,628 | 19,296,526 | 15,500,406 | 10,109,453 | 1,156,771 |
| Ratio: Northeast Coast to United Kingdom | 20.7 % | 40.5 % | 39.5 % | 36.0 % | 54.5 % |

1. The low price of coal, enabling manufacturers to produce power themselves at relatively low rates.

2. The fact that the manufacturers' works are mostly of considerable size—*i. e.*, their individual electrical requirements are large.

3. The existence of large quantities of potential energy in the form of waste heat and combustible gas.

The first and second conditions have been met by the power companies, in erecting their main generating stations, by taking full advantage of the best coal and water facilities available, by installing plant of capacity much in excess of that which any individual manufacturer, however large, could adopt, and by catering for all classes of consumers, thereby securing a diversity of load with a resulting constancy of output, and so utilizing the plant installed to the best advantage. These factors, combined with a skilled technical staff and attention to numberless relatively minor details, have resulted in an efficiency of production much greater than that practicable to a manufacturer producing power as an auxiliary to his main business.

**Power Supply to Shipyards, Traction Lines and Mills.**

Power supply in this district began on the north bank of the Tyne. It has naturally, therefore, reached its highest development there, and although even in this section of the area it is only seven years old, there is now not a single firm of shipbuilders or engineers on the north bank of the Tyne inside the Power Company's area of supply which does not take 95 per cent. of its power from the company, the remaining 5 per cent. being produced from small gas engines or from boilers fired with scrap wood. On the south bank of the Tyne progress has been equally rapid, while in the Tees area, although the Power Company only began operations in January of last year, it has already connected over 20,000 hp. of motors.

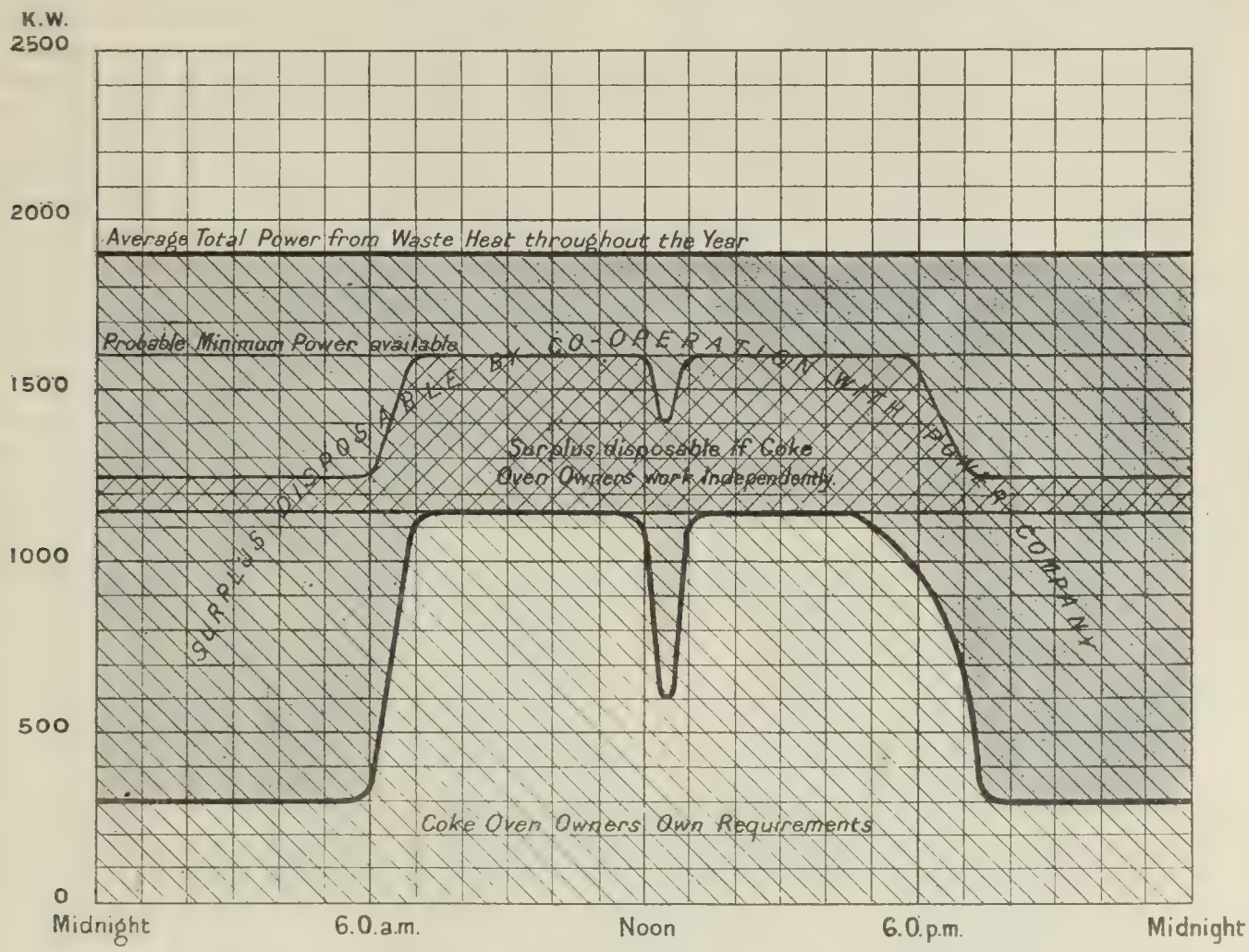
The credit of electrifying the Newcastle suburban railroads is due to the North-Eastern Railway Company, but the fact that it was the first important English railroad to electrify a portion of its system, and that it purchased the necessary electricity from the Power Company, shows that the availability of cheap power is an advantage not only to manufacturers, but to the public, in facilitating the introduction of electric traction. Since the electrification of the Newcastle system the train service has been more than doubled and the schedule speed improved by 20 per cent. A comparison with other cities at home and abroad shows that no other town of similar population, or, indeed, having twice the population, has so extensive an electrified railroad system and so frequent a suburban service, and this has, of course, resulted in a large increase of travel.

The application of electricity to rolling mills of the largest size is one of the most interesting industrial developments of recent years. The advantages offered are economy of running, closer speed regulation, better control of operations, and fewer breakages. There are now four new electrically driven rolling mills being installed in this area—two by Dorman, Long & Co.; one by the Bowesfield Steel Company, and one by a new company. The electricity for these will be purchased from the Power Company.

**Power Supply to Coal Mines.**

The supply of electricity to coal mines, beginning not more than four years ago, has not reached the same stage of development as in the case of other industries, though collieries having an output of some 8,000,000 tons per annum are taking, or are arranging to take, practically their whole supply from the power companies. This supply will include, among other apparatus, winders of 1600 hp. each, and it would appear that the supply of electricity to coal mines is likely to be of even greater magnitude than the supply to shipbuilding and heavy engineering works. In the latter cases the effect has been to conserve over 50 per cent. of the coal previously burnt for power generation.

The output of coal from Northumberland and Durham in 1906 was over 52,000,000 tons, and, according to the report of the Royal Commission on Coal Supplies, between 6 and 8 per cent. of the total coal brought to bank is used by the collieries for the purpose of power generation. About one-fifth of the coal mined on the northeast coast is converted into coke. Making a liberal allowance, therefore, for the power at present used from the surplus heat resulting from the coking process, the collieries of Northumberland and Durham must burn for their own power requirements some 2,500,000 tons of coal per annum. As the almost invariable rule is to work noncondensing, as the steam piping is usually long, and as a large portion of the load is intermittent, it is certain, and is proved by experience in this district, that the same power can be provided electrically in a large central power station by the consumption of less than a quarter of this coal. The application of electricity to coal mines in this district, when as complete as that to the Tyne shipyards, will render available for outside sale over 1,750,000 tons of coal, equivalent to, say, over £500,000 sterling per annum.




Estimated Daily Output and Load Curve of Waste Heat Station at Crook, England.—Electricity utilized by coke oven owners at mines and ovens = 5,500,000 Board of Trade units per annum. Maximum surplus available for outside sale, if coke oven owners work independently = 2,250,000 Board of Trade units per annum. Surplus disposable by co-operating with power company = 10,000,000 Board of Trade units per annum.

**Surplus Energy from Coke Ovens and Blast Furnaces.**

The counties of Northumberland and Durham and the North Riding of Yorkshire last year produced together 7,800,000 tons of coke. The bulk of this was made in the older fashioned beehive oven. Were the whole output produced in retort ovens there would be available waste gas and waste heat capable of developing over 150,000 hp. continuously, if used under boilers, or probably rather less than twice this amount, or, say, 250,000 hp. if the gas were used in gas engines.

The blast furnaces form a less important potential source of power. In evidence given before the Royal Commission on Coal Supplies it was estimated that if

gas engines were used exclusively for power purposes, then, after the requirements of the stoves and blowing engines had been met, there would still be available from the Cleveland furnaces a supply of surplus gas equivalent to 61,000 hp. continuously.

**Methods of Utilizing Surplus Coke Oven Gas.**

Each separate group of coke ovens usually consists of between 40 and 120 ovens, rarely exceeding the latter figure. The batteries are widely scattered throughout the county of Durham, and are for the most part at relatively long distances from the populous centers. The gas might be piped to some central point, as is the practice followed in America with natural gas, which is transmitted in some cases 200 miles; but this natural gas has twice the calorific value of coke oven gas, and it is usually available at a pressure of 50 lb. per square inch or upward, rendering it practicable to transmit a large volume of energy through a relatively small pipe, whereas, to transmit coke oven gas any distance, there would have to be installed an expensive compressing plant. Further, there is, in addition to the gas given off from the coke ovens, a certain quantity of waste heat which can only be utilized locally under boilers; and in no calculations which the author has made has he been able to establish a case for the transmission of gas for power purposes as against the alternative of converting the gas into electricity and transmitting the power in this form.

In all cases investigated by the author it has been found that a greater profit will accrue to the coke oven owner by co-operating with a power company than by proceeding on independent lines. There are three reasons for this: 1. When a private owner erects a generating plant independently he must install some reserve or spare plant, with a consequent heavier outlay of capital than is necessary to a power company, which, possessing a coal fired station, need install no spare plant in any of its waste heat stations, but can meet any variation of load by the coal fired station, which also acts as a standby against any breakdown. 2. This necessity of putting down spare plants results in smaller and therefore more expensive and less efficient plant. 3. The power company, having a market for current many times greater than the output of any individual waste heat station, can run such a station continuously at maximum output, so utilizing completely all the current that can be produced; whereas it is impossible to conceive the power requirements of an individual coke oven and colliery owner coinciding even approximately over 24 hr. with the amount of gas or waste heat available.

The accompanying diagram, which refers to Pease & Partners' installation at Crook, shows the advantage of co-operation very strikingly. It will be seen that the area of the rectangle inclosed between the top line and the base (shown hatched) represents the total amount of power available, that "hatched" (but not shaded) the requirements of the colliery owner, and that "cross-hatched" the amount disposable had the colliery owner put in his own plant independently, and been able to find a purchaser; it also assumes that the outside purchaser had approximately the same load curve as the colliery owner himself, which is a reasonable assumption, unless the power be transmitted long distances, as the only users of power in the vicinity of coke ovens are other colliery owners. The area shaded gray represents the surplus power actually used under the co-operative arrangement.

**Co-operation Between Blast Furnace and Power Companies.**

It is more difficult to get out so typical a curve in the case of blast furnaces, as the conditions vary so widely. Of course, if a company produces pig iron only, and does not convert the iron into steel, co-operation with a power company is at present, practically speaking, the only outlet which it has for its surplus power. If, however, a blast furnace works has a steel mill attached, it may be argued that the correct thing to do is to follow the plan adopted by many large works in Germany, namely, to install gas engine blowers and gas driven dynamos at the blast furnaces, the latter plant producing the necessary power for driving the steel mills.

In the case of the new works which the United States Steel Corporation are putting up at Gary, they are arranging to drive the whole of their steel works electrically, and they reckon to get all the power required for the steel mills from the blast furnace gas utilized in gas engines, of which they are installing 27,000 hp.; but—and this is an important consideration—they are putting down, to act as a spare to the gas engines, steam plant, the boilers supplying which can be coal fired. The resultant capital cost per useful horsepower of plant is therefore great, probably at least twice as much as it would have been had it been possible there to co-operate with a power supply company.

Capital charges are invariably the controlling factor in the total cost of electricity, and the question raised above, namely, whether it is commercially sound for a blast furnace owner to co-operate with a power company can only be decided in each individual case after full consideration of the capital outlay involved, the amount of spare plant that has to be provided, and the degree of coincidence between supply and demand. It is clear that if it be decided to make the works self-contained, then the supply capacity must always be in excess of the possible demand, otherwise a risk is run of a portion of the works having to be stopped, and as the demand varies from time to time there must be a variable amount of gas utilized involving wastage when supply exceeds demand, or the burning of coal at certain periods when demand exceeds supply. Given an equitable arrangement, it is clear that the same general arguments in favor of co-operation which hold in the case of coke ovens are applicable to blast furnaces with steel works attached. Referring to the operations of German blast furnaces a recent writer says:

> In spite of dull trade, the great works continue to make iron at almost the pace they set when the recent wave of prosperity was at its hight. The economies involved in the situation almost compel them to do so. To a considerable extent they have long term contracts for foreign ores for mixing with home ores; their coking ovens must continue in operation for the sake of the by-products, and the coke produced would deteriorate in quality if stored. But more than this, the furnace gases are needed for driving their steel mills, and it is often difficult to blow out a furnace or two without seriously disturbing the power supply.

It would therefore appear that even after a rough approximate balance has been secured between supply and demand it is readily upset by ordinary market fluctuations. The natural variation of trade thus furnishes a further argument in favor of the co-operative principle.

**Co-operation in the Northeast Coast District.**

To summarize briefly the work which has already been done in the utilization of surplus power, the first co-operative arrangement made by any of the power companies was brought about by the initiative of the owners of the Priestman Collieries, and resulted in the erection of the power station at Blaydon in 1905. At the present moment the three power companies named early in the paper have at work or in hand five waste heat stations, three in connection with coke ovens and two in connection with blast furnaces. Additional stations are under consideration.

It will be remembered that as regards the Cleveland blast furnaces the calculations quoted dealt with the surplus available on the basis of the gas being utilized in gas engines, but the adoption of gas engines to the exclusion of all other types of prime mover still lies some distance in the future, and in the majority of cases in Cleveland it is found that steam blowing engines are used, and that after the requirements of the stoves have been met the gas is practically all expended in raising steam to supply these blowing engines.

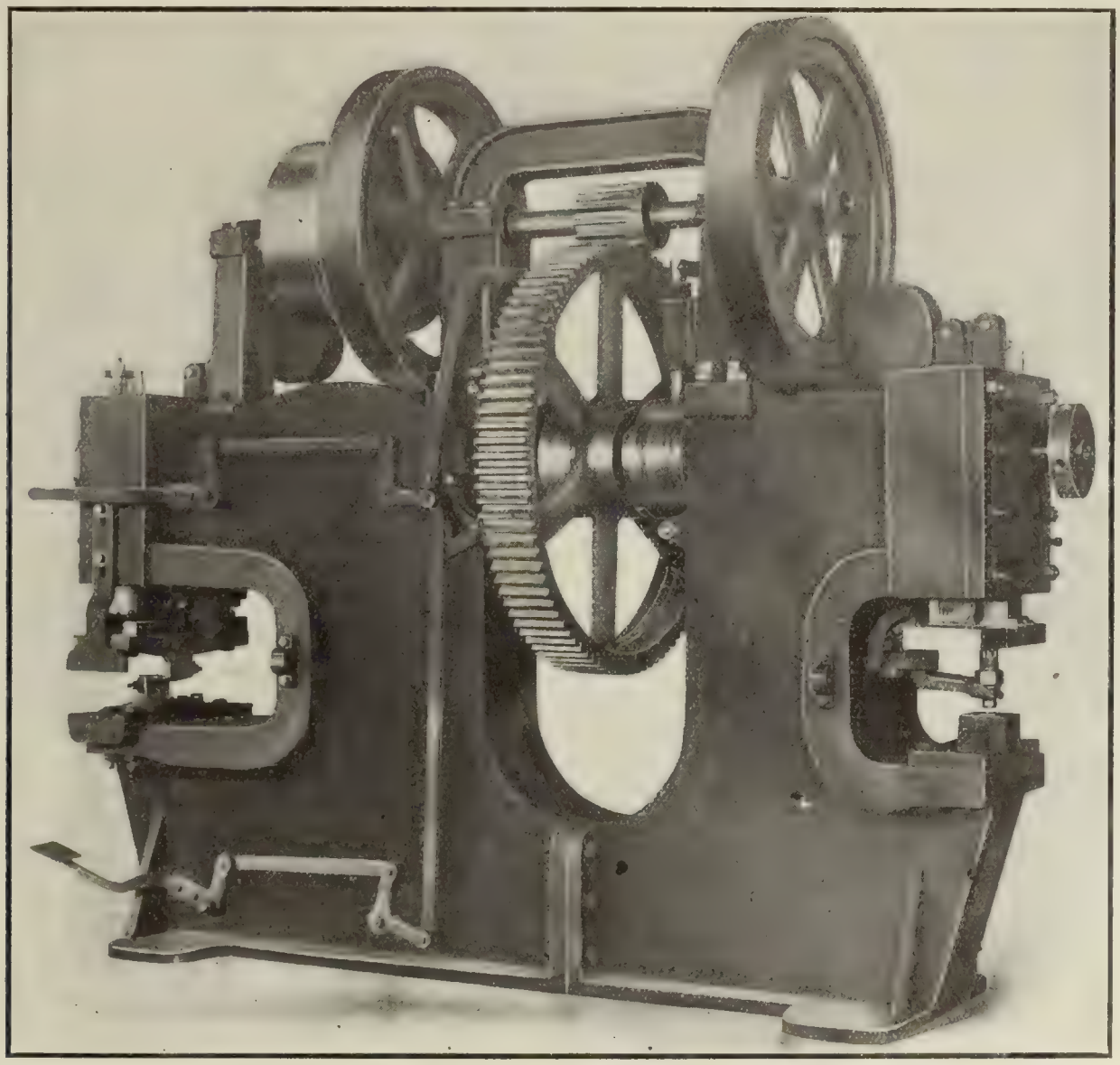
To free any substantial quantity of gas for outside power-users would involve, therefore, the substitution of gas engines for the existing steam blowers. Considerations of capital expenditure usually forbid this course, and had it not been for the genius of Mr. Parsons, whose exhaust steam turbine provides another effective though less ambitious way of dealing with the situation, the Cleveland furnaces could not be regarded by a power company as an immediately available source of energy.

## A Queen City Double Punch and Shear.

A new double end punch and shear, capable of punching a 2-in. hole in 1-in. steel, built by the Queen City Punch & Shear Company, Cincinnati, Ohio, is shown in the accompanying illustration. The machine is fitted with architectural jaws, so that I-beams can be punched, and is also arranged to handle flat bars of various size and to slit sheets or plates 1 in. thick. On one side it will cut to the center of a 48-in. circle and on the other side to a 24-in. circle.

Automatic stop clutches are used on both sides in which no springs are required, and these clutches will engage only at the will of the operator. The automatic clutches are so fitted that the downward stroke is arrested at any desired point and close to the work, insuring accuracy in punching. The gears are cut from solid metal, which insures smooth and noiseless operation, which is a feature of all the machines built by this company. The shafts are made of hammered steel, and are turned true to an absolute fit. The plungers are balanced by weights to give square motion.

The machine illustrated was built for the Claussen Iron Works, Brooklyn, N. Y., and weighs 23,000 lb.



A New Double Punch and Shear Built by the Queen City Punch & Shear Company, Cincinnati, Ohio.

## Danger from Ferrosilicon in Transit.

Allusion was made in *The Iron Age* of September 19, 1907, page 785, to the death by poisoning of four passengers on board a Swedish steamship, whose cabins were above a quantity of ferrosilicon packed in iron drums or casks and carried in the hold of the vessel. The theory was that as the iron ore and quartz used in the manufacture of ferrosilicon in the electric furnace often contain phosphates, these, in the presence of carbon and at the high temperature of the electric furnace, would be converted into phosphides, which would combine with lime to form calcium phosphide. In the same way any arsenic present would yield calcium arsenide. In a recently issued annual report of the Chief Inspector of Factories and Workshops of Great Britain, some space is given to the danger from ferrosilicon in transport. The giving off of poisonous gases is explained as above, but the explosions which have occasionally occurred are more difficult to explain. The following theories have been advanced by chemists: 1. In cooling suddenly from the high temperature of the electric furnace, the crystals of ferrosilicon assume an unstable and strained condition. On any sudden disturbance, these would fly to pieces with great violence. 2. The crystals of ferrosilicon contain water imbedded in them, which, on being exposed to a low temperature (the explosion occurred in winter), would freeze and expand, causing a sudden rupture of the mass. 3. The same electric furnace is often used for the preparation of calcium carbide and ferrosilicon. Some of the carbide might be left in the furnace during the manufacture of the ferrosilicon; the finished product would then contain some carbide, which in contact with water would evolve acetylene. 4. The explosions are due to a phosphoretted hydrogen. 5. It is conceivable that the ferrosilicon itself, under certain conditions, may be attacked by moisture in presence of $CO_2$, being decomposed into ferric carbonate and silico-methane ($SiH_4$). This latter is a gas, which is spontaneously inflammable and might easily cause an explosion in contact with air.

Since it is generally the belief of those who have investigated accidents with ferrosilicon that the presence of moisture is the primary cause, it is recommended that every effort be made to insure the dryness of the material when packed; also that no opportunity be left for the access of moisture to the receptacles containing ferrosilicon in transit.

A meeting of the mechanical section of the Engineers' Society of Western Pennsylvania was held in Pittsburgh on the evening of October 6. Joshua L. Miner, Easton, Pa., read a paper on the "Strength of Concrete Joints," and Chester B. Albree of the Chester B. Albree Iron Works, N. S., Pittsburgh, read a paper entitled "Simplification of Spring Formulæ."

# A Gayley Dry Blast Installation.

## The Refrigerating Plant of the Dry Blast Equipment of the Illinois Steel Company's South Works.

By the Gayley process the air required for combustion in blast furnaces and the Bessemer process is deprived of the greater portion of its moisture by cooling it far below its dew point. Its humidity is thereby rendered normal under any climatic or atmospheric conditions. scribed in the following article, which treats of an installation recently completed at the South Works of the Illinois Steel Company, Chicago. The refrigeration of the circulating fluid is accomplished by machinery and apparatus furnished and erected by the Vilter Mfg. Com-

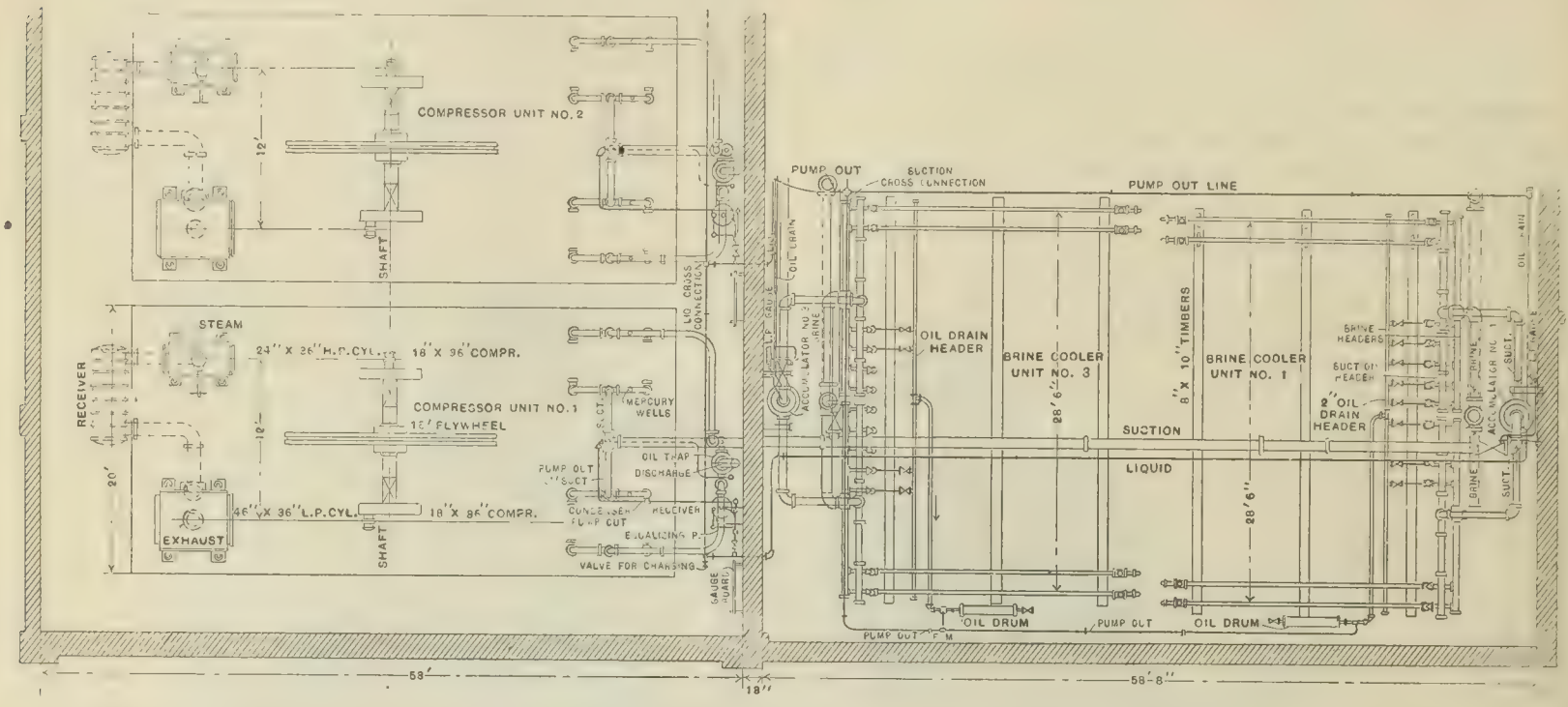



Fig. 1.—Plan of Half of the Refrigerating Plant of the Illinois Steel Company, Used in the Gayley Dry Blast Process.

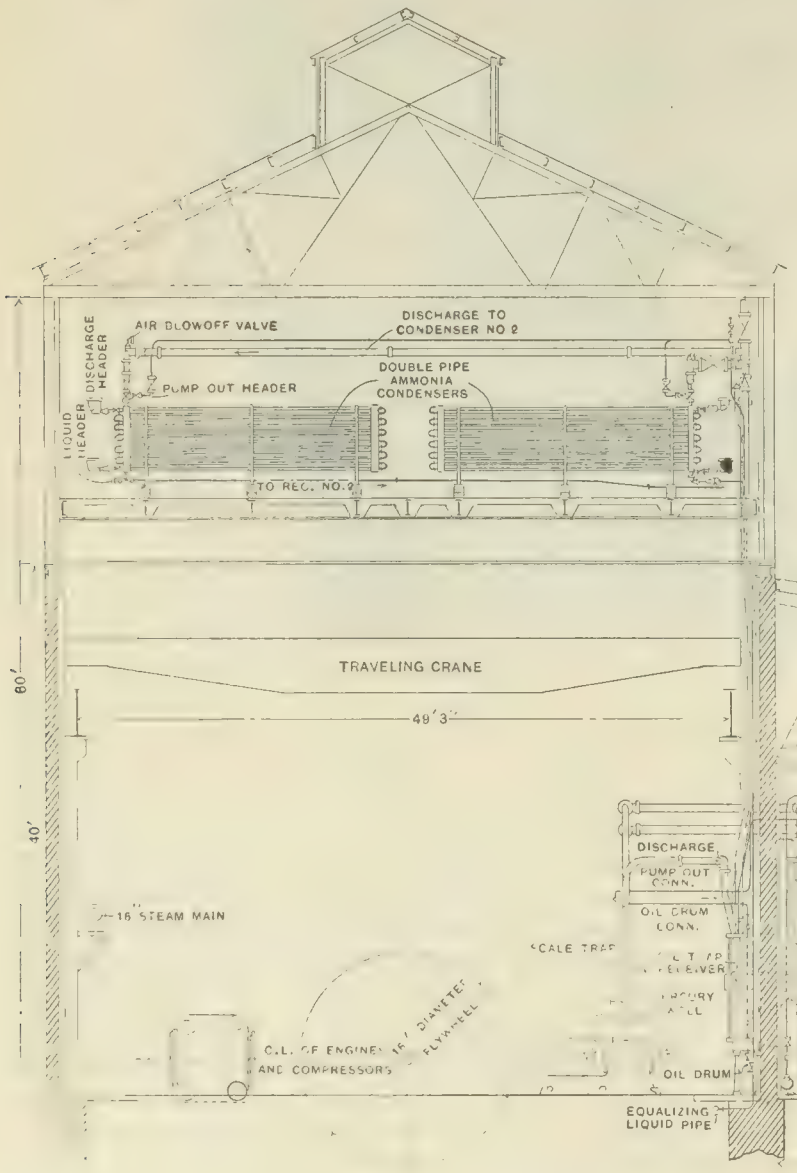



Fig. 2.—Section Through the Refrigerating Plant of the Illinois Steel Company.

pany, Milwaukee, Wis., with pumping engines supplied by the Fred. M. Prescott Mfg. Company, also of Milwaukee. The entire plant is installed in structures especially provided for the purpose, of which a plan and section are shown in Figs. 1 and 2.

The main building, 102 ft. long and 53 ft. wide, accommodates on its first floor, which is 40 ft. in hight, four refrigerating machines of 300 tons refrigerating capacity each. They are of the duplex horizontal type, each machine consisting of a cross compound condensing engine and two ammonia compressors placed opposite the high and low pressure steam cylinders and connected to the crank disks on the ends of the common shaft. The size of the steam cylinders is 24 x 46 in. by 36-in. stroke, while the ammonia compressors are of 18 in diameter and 36-in. stroke. The steam supply is furnished from one of the boiler plants of the works through a 16-in. main, the condensation of the exhaust being accomplished by a barometric condenser of the Weiss design.

The vapors thus eliminated by condensation collect on the surface of closely packed groups of piping along which the air is sweeping, and which are kept at low temperature by circulating through them a refrigerated solution of chloride of calcium. The arrangement of the cooling compartments or chambers and the manner in which the pipe groups are mounted therein are de-

**The Cooling Apparatus.**

The ammonia compressors are provided with a set of two suction and two discharge valves placed in each cylinder head and readily accessible. The gas discharged from the compressors passes through oil traps, of which one is provided for each machine, and enters the condensers which are placed on the second floor of the main building. The ammonia condensers are of the well-known double pipe type, consisting of 2-in. pipes 18 ft. long, with 1¼-in. pipes passing through them for circulation of the cooling of condensing water.

Twenty-five stands of such double pipe condensers, grouped 12 pipes high, as shown in Fig. 3, are provided for each machine. While the division into four separate units is strictly maintained throughout for obvious reasons, yet connections and valves are arranged in such a manner as to permit the operation of either two machines or all of them in combination on part or all of the ammonia condenser system.

The liquefied gas is collected in four receivers located near the oil traps and carried through individual pipes to the cooling apparatus, in which the liquid ammonia is evaporated by means of the heat transmitted to it from the circulating fluid employed for the refrigeration of the vast volume of air supply.

The cooling apparatus is installed in a building 68 ft. 4 in. long, 58 ft. 8 in. wide and 25 ft. in hight, which adjoins the engine room. The floor, walls and ceiling of this room are well insulated with a double lining of cork board 2 in. thick. The coolers are also of the double pipe type and set in four batteries of 20 stands each. Each stand consists of 12 3-in. pipes, connected in circuit, and 2-in. pipes passing through them. A saturated solution of chloride of calcium used as a circulating medium is forced through the inner pipes and transmits its heat to the liquid ammonia contained in the annular spaces formed by the outer 3-in. pipes. By abstracting the heat from the circulating fluid, the liquid ammonia—the boiling point of which at the working pressure employed in the apparatus lies between 5 and 10 degrees F.—is converted into steam or gas, which returns to the ammonia compressors to undergo again the process of liquefaction.

**The Method of Distributing the Ammonia.**

While the installation in its various parts barely presents any features which could not also be found in other modern applications of refrigerating machinery, it is the method in which the liquefied ammonia is handled and uniformly distributed to the great extent of the cooling apparatus which deserves special mention.

In usual refrigerating practice this is accomplished by needle valves or expansion cocks attached to the supply side of each stand of the cooling apparatus, and by which it is attempted to regulate the supply of the liquid refrigerant as it comes from the ammonia condensers so accurately that each stand receives its requisite amount of ammonia; that is to say, no more nor less than such an amount as can be converted into steam or gas by the heat transmitted to it from the entire heating surface of each stand, which is the aggregate area of the outer pipe surface of the 2-in. pipes of each cooler. Unless this condition is fulfilled there will be either a portion of the heating surface left ineffective for lack of liquid ammonia to which the heat can be transmitted, or more or less of the refrigerant will pass through the cooling apparatus in liquid state and return to the compressors, curtailing the capacity or efficiency of the latter.

As the refrigerating process is in principle nothing but a process of evaporation, where a fluid of very low boiling point (liquid anhydrous ammonia boiling at



Fig. 3.—Typical Stands of Double Pipe Condensers in the Refrigerating Plant of the Illinois Steel Company.

29.6 below zero F.) is converted into steam by the heat transmitted to it from a fluid of a temperature higher than this boiling point, practically the same course is adopted in the refrigerating apparatus of the Illinois Steel Company's dry blast plant as that pursued in the universally known evaporating apparatus—namely, steam boiler practice.

**How the Cooling Process Parallels Steam Boiler Practice.**

The heat extracting (cooling) apparatus as built by the Vilter Mfg. Company under its patent, 894,285 of July 28, 1908, may be compared with any of the familiar types of horizontal water tube boilers, in which a group of tubes is connected to front and rear water legs carrying a common steam drum in which the steam separates from the entrained water, as follows: From an elevated receptacle called the accumulator, which is partly filled with liquid ammonia, the latter flows through a large pipe (the rear water leg of the boiler) communicating with the inlet ends of all double pipe coolers into the annular spaces (the tubes of the boiler) formed between the inner wall of the 3-in. pipes and the outer one of the 2-in. pipes passing through them. Here it is subjected to the effect of the heat transmitted through the walls of the 2-in. pipes by the circulating chloride of calcium solution (the fire and combustion gases of the boiler furnace) and converted into gas (steam). The gas and entrained liquid ascend and reach another large pipe header (the front water leg of the boiler) connecting all the outlet ends of the double pipe coolers through which they enter the accumulator (steam drum of the boiler).

In this drum the separation of the gas and entrained liquid takes place, the gas passing out on top through the main suction line to the compressor for reliquefaction, the liquid returning from the lower end of the accumulator to the double pipe coolers for renewed circuit.

It is evident that, through the adoption of this method of introducing the liquid refrigerant into the evaporating apparatus, only one supply valve is needed for each battery of 20 coolers or for all four batteries if it were not for the demanded division into four separate units in this case—in the same manner as a great many boilers may be supplied by one boiler feed pump. It is also evident that through this flow by gravity through a communicating pipe the liquid refrigerant is distributed to all coolers alike in such quantities as will not only suit the varying conditions of temperature of the circulating and heat transmitting fluid, but also insure the full use of the total evaporating surface of each cooler.

**Making the Cooling Process Continuous.**

To make the cooling process continuous, the ammonia gas generated in the coolers is returned to the accumulator after being reliquefied by means of compression and subsequent condensation. In doing so, however, one important feature upon which hinges the success of the entire procedure has to be observed. The process of liquefaction must necessarily be performed at the temperature of the cooling water which is available for the ammonia condensers. The liquefied ammonia returning from the condensers to the accumulator is therefore of much higher temperature and under much greater pressure than are maintained in the evaporating or cooling coils of the apparatus.

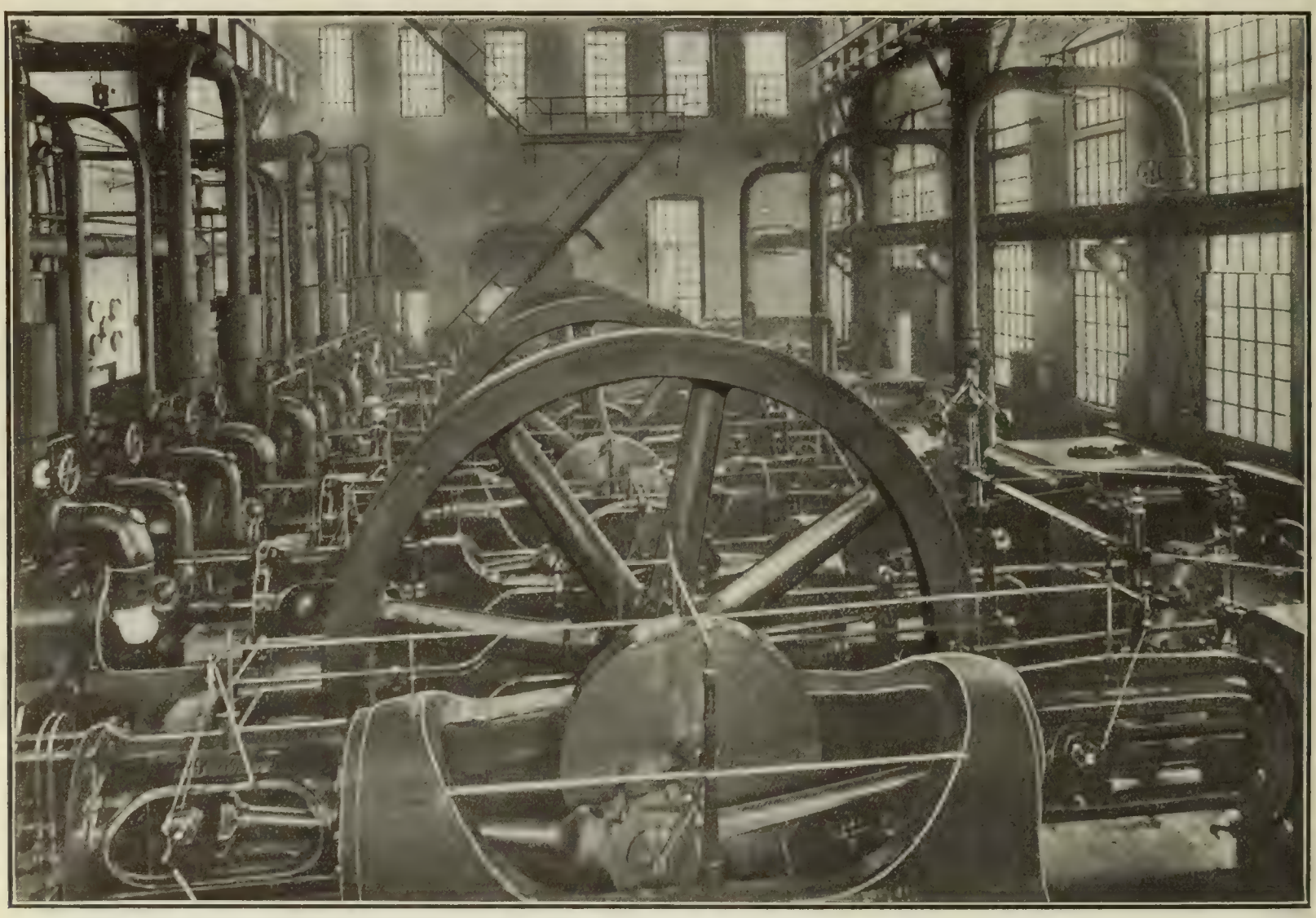


Fig. 4.—Engine Room in the South Works of the Illinois Steel Company, Showing Four 300-Ton Refrigerating Machines Built by the Vilter Mfg. Company, Milwaukee, Wis.

If the liquid refrigerant were liberated in this condition from the high pressure under which it is delivered from the condenser, its sensible heat at the high temperature corresponding to that pressure would be consumed at once in converting a part of such liquid into gas. This partial conversion into gas of every particle of the fluid would be an instantaneous, flashlike one and would not only cause the loss for effective refrigeration in the cooling coils of this portion of the fluid, but also a disintegration of the compact flow of the liquid in the same manner as if water is blown from the test cocks of the water column of a boiler under high steam pressure or as it emanates from the blow-off pipe. This spray of liquid would be carried along with the current of gas flowing from the accumulator to the compressors and, becoming unavailable for evaporation in the coolers, constitute a much greater loss in efficiency than the one alluded to heretofore.

To prevent this loss it is necessary to deprive the liquid refrigerant of its excess of sensible heat before it is relieved of its high pressure and admitted into the accumulator. This is accomplished by the use of a long spiral coil suspended in the upper part of the accumulator and exposed to the current of the cold gas flowing to the compressors through which the liquefied ammonia passes before it reaches the relief valve which supplies each battery of coolers.

**The Pumping Engines Used.**

Fig. 5 illustrates the Prescott Corliss cross compound pumping engine, of which the Fred. M. Prescott Steam Pump Company, Milwaukee, Wis., furnished three for the special service of circulating the brine in the Illinois Steel Company's refrigerating plant at the pressure required by the Gayley dry blast service. Each pump has 12½-in. high pressure and 24-in. low pressure cylinders and 8¼-in. plungers, all of 24-in. stroke. The water ends are fitted with cast bronze plungers and Tobin bronze plunger rods, with all other parts made to withstand the action of brine. Each engine has a pumping capacity of 1200 gal. per minute at 120 lb. steam pressure per square inch. The system of piping used in the dry blast process brings about 25 lb. per square inch pressure on the suction, necessitating heavier suction piping and heavier sections in the suction parts of the pump barrels than in the usual pumping practice. These pumps have in each suction and discharge valve deck seven 4-in. valves, giving a total area of 70 sq. in. and the low velocity of 2.8 ft. per second through the valve seats. It was further necessary, on account of the low temperature of the brine, to take particular care to avoid shrinkage strains in the castings for the water ends. For the same reason considerably more metal was allowed in the sections.

The machinery installation was commenced the middle of March this year and was completed May 5. It proved successful from the beginning and has been operated throughout the summer, exceeding in its performance by far the guarantees to which the builders had submitted in their contract with the Illinois Steel Company.

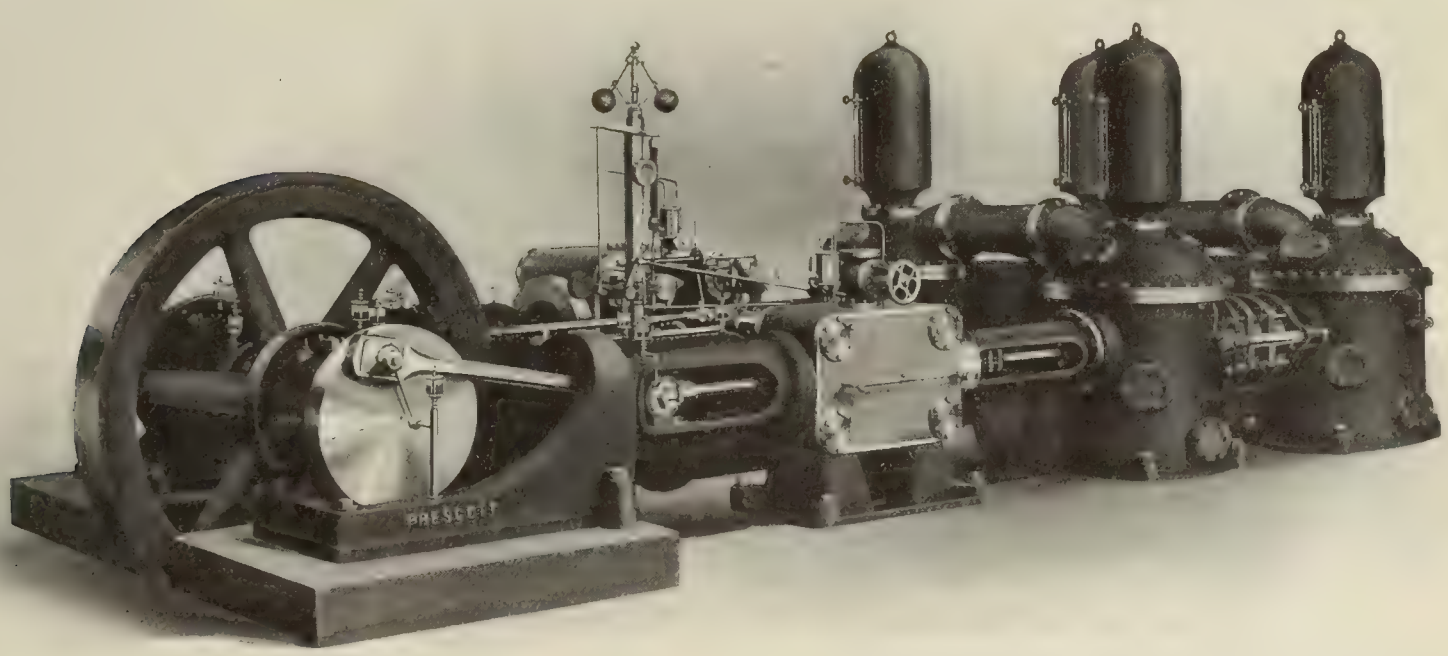


Fig. 5.—The Prescott Corliss Cross Compound High Duty Pumping Engine Used in the Refrigerating Plant of the Illinois Steel Company.

The progress being made in the introduction of gasoline locomotives for service in industrial plants is illustrated in a statement made by the Sierra Nevada Wood & Lumber Company, Hobart Mills, Nevada County, Cal., respecting an engine of this kind furnished by the Milwaukee Locomotive Mfg. Company, North Milwaukee, Wis., for use in its yards. From 150,000 to 160,000 ft. of lumber per day, it is stated, is being handled by this engine in a very satisfactory manner. One of the advantages noted is that the range of speed and power afforded admits of taking a few cars very quickly to their destination, or a heavier load more slowly, as is required. The consumption of gasoline for work extending over 10 hr. per day is between 5 and 6 gal. The ease with which the machine is handled and its freedom from breakdowns are also points upon which favorable comment is made.

## Canadian Industrial Activities.

TORONTO, October 3, 1908.—The works of the Montreal Reduction & Smelting Company at Trout Lake, Ontario, 100 miles south of Cobalt, are now about ready to be put in operation. It is two years since the corner stone was laid by the Ontario Minister of Lands, Forests and Mines. The plant is for the exhaustive treatment of ores and matte containing gold, silver, cobalt, zinc, tin, copper, lead, bismuth, antimony, nickel, &c. Eight smelting furnaces and two large roasters are installed. Twelve different processes are provided for. Of the machinery installed, 175 tons was made in Canadian workshops, and 500 tons was imported. The situation is admirable for receiving and shipping purposes, as the works are on three railroads. G. W. Wallace, Detroit, Mich., is president of the company; George R. Adams, Bar Harbor, Me., vice-president; Colonel T. H. Rogers, Detroit; John Stein and C. L. Towly, Duluth, are directors. With these are associated Montreal men of capital.

The Ontario Power Company at Niagara Falls has let the contract for the extension of its power house. When the new units are in operation the capacity will be 95,000 hp., which is an increase of 25,000 hp. on its present limit. It is with this company the Ontario Hydro-Electric Power Commission has contracted for the supply of power the commission will carry to the municipalities over the transmission system it has just arranged to have constructed. The commission has just opened the tenders for the electrical equipment of the twelve transformer stations and the step-up station on its line. No award has yet been made, but the chairman says the tenders came below the estimate of $1,107,000.

Improvements in the Helen mine plant of the Lake Superior Corporation are being made. Electricity will be largely used. A hydro-electric plant is to be built at the fall on the Michipicoten River by the Algoma Power Company, and from this the motors of the mine will be driven. The contract for the equipment has been given to Allis-Chalmers-Bullock, Ltd. C. A. C. J.

# The Renolds Chain Works.

From a report by Special Agent Capt. Godfrey L. Carden to the Department of Commerce and Labor the following account of a visit to the Renold Works at Manchester, England, is taken:

The guiding spirit of this well-known plant, Hans Renold, is a Swiss by birth and education, who derived his engineering instruction from the University of Zurich. Some 30 years ago, assisted only by one man and a boy, he commenced the manufacture of chain in Manchester for use in textile machines. From this small beginning, in a single rented room, the business grew, until to-day the Renold Works comprise a floor space of more than 7 acres in extent and furnish employment for about 700 people.

### Many American Machine Tools Used.

The reputation of this firm is for work of a high degree of merit, and it was reasonable to assume that only the most accurate and efficient tools would be found, which assumption was fully borne out by observation. The number of Brown & Sharpe tools in use suggested a shop equipped with tools of that American firm. Other fine American made tools were in evidence, but in point of numbers the equipment was mainly from Providence, R. I. In addition to Brown & Sharpe machines I observed tools from the F. E. Reed Company, Worcester, Mass.; National Machine Tool Company, Tiffin, Ohio; Hurlbut & Co., South Sudbury, Mass.; Flather & Co., Nashua, N. H.; Bullard Machine Tool Company, Bridgeport, Conn.; Dietrick & Harvey, Baltimore, Md., and M. F. Mfg. Company, Millers Falls, N. Y. The foreign makers were represented by Alfred Herbert, Coventry; John Lang & Sons, Johnstone; Muir & Co., Manchester; J. E. Reinecker, Chemnitz, and Richards & Co., Broadheath, near Manchester.

I observed a 10-in. Hurlbut cutting off machine in use. Mr. Renold informed me that he would like to have secured a machine of this type for 14-in. work, but so far as he knew Hurlbut made no machine larger than the 10-in. size. Mr. Renold spoke highly of a new Bullard boring mill and declared that he could do about 30 per cent. more work with this new tool than with one of the old types. Mr. Renold is inclined to think that in the present state of development of hobbing machines better results can be obtained with single milling cutters.

### Chain Belt Making.

The chain making work at the Renold plant calls for much automatic service, and, speaking roughly, I should say that there are at least 200 automatic machines of a medium size in service here. This refers more especially to the machines furnished by Brown & Sharpe and Alfred Herbert.

Messrs. Renold, after branching out from work in connection with textile machinery, took up the business of supplying chain for cycles; and latterly this firm is making a specialty of manufacturing chains for driving machine tools. It is the opinion of Messrs. Renold that a chain can economically replace ropes and belts, and in the new Renold plant chain driving is employed to an astonishing extent. Three types of chain are made—namely, block chain, roller chain and silent chain. The block chain may be run at speeds up to 500 ft. per minute and in larger sizes is used more especially for conveyor and elevator works. In the smaller sizes it is applied to feed drives on machine tools and the like. Roller chain has the rivet surrounded by a steel brush on which is a roller which actuates the sprocket teeth. Roller chains may be run up to 900 ft. per minute and are made from ½ in. pitch upward, in many hundreds of sizes. They are used in cycles and motor vehicles and also for machine driving. The silent chain is designed for high speed, and drives even when worn out, it is said, with the swiftness of a belt. In a modern form of this chain segmental hardened bushes are fixed in the hole of each row of links and bear on hardened pins, the hole in the alternate links being recessed on one side to clear them. The silent chains are capable of running up to 1250 ft. per minute, and even faster, it is said, when special oiling provision is made. It is claimed that 500 hp. can be transmitted with silent chain, and larger sizes, I understand, are now being developed. The manufacturing operations in connection with these chains are carried out with minute exactitude.

### Increased Output from Chain Belt.

The new works of Messrs. Renold are driven only by electric power and all the motors in the shop are similar and interchangeable. They claim that by means of chain belt the output is increased by over 20 per cent., and using Brown & Sharpe tools during a trial lasting 138 hr. a chain driven machine yielded 3074 rollers, as against 2485 rollers obtained from a belt driven machine. It is also claimed that the work obtained from the chain driven machine was considerably better. It is hard to account for the difference of the quality of the work, but Messrs. Renold say the belt, when hard driven, slips more or less irregularly on the smooth surface of the cone, accompanied by an alternate elongation and contraction, causing a pulsating turning. It is also claimed that only 25 per cent. of drills are necessary with the chain driven machine, and that one operator can easily attend six chain machines as against two belt driven. Only 25 per cent. of the number of grinding machines was required for keeping the tool sharp, and the wear and tear on spindle and counter shaft bearings was, it is said, considerably reduced.

Messrs. Renold say that during this test it was found on the chain driven machine that by giving the 1-in. bar a circumferential speed of 75 ft. per minute they obtained the best results in drilling and parting, these being the two chief operations of the belt driven machine. No satisfactory work, it is said, could be secured with a circumferential speed of 75 ft. per minute, whatever tension was put on the belt. In addition to the foregoing, the broad claim is made that larger and heavier work than is possible on belt machines can be done satisfactorily on chain driven machines. Messrs. Renold explained that in their catalogue they clearly state that while the spindle has 1-in. bore it is only meant for brass of this size, and if used for steel only ⅞-in. bar should be used. It will be observed, therefore, that the Brown & Sharpe tools were worked under excessive conditions. Evidently Messrs. Renold appreciated the capacity of these tools, and it is interesting to note that in the automatic turning department there are no less than 163 Brown & Sharpe small, medium and large sized machines in service.

In addition to the 200 automatic machines of American and English make on the Hans Renold floor, there are over 200 automatic and semiautomatic machines of special types, which are of Hans Renold design and construction. This latter machine serves as special in the manufacture of driving chains.

### Attractive and Sanitary Shops.

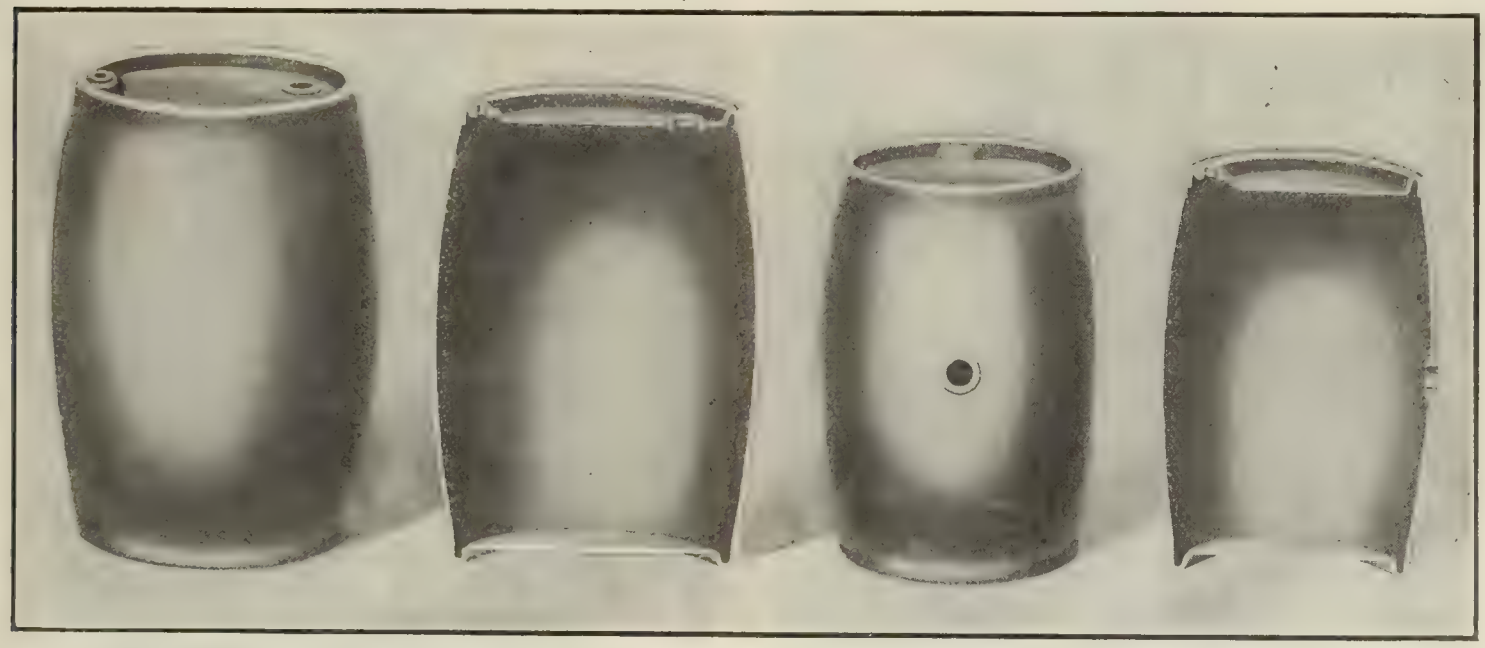
There are few machine tool works in Europe which present so pleasant an aspect to the visitor as the new Hans Renold Works. The location of the recently erected building is in the suburbs of Manchester, with open fields, pleasant driveways and shady trees marking the approach. The main building is artistically designed and lacks those somber features which generally characterize a manufacturing building. The interior of the main shop is well lighted, and great care and attention has been bestowed upon the sanitary arrangements. I should say that it is impossible for water to collect, and there appears to be an excellent drainway from all directions. For the most part the floor is of timber, while the building itself is of steel, brick and concrete construction. There are a large number of women and girls employed in this plant, their work being mainly in connection with stamping machines and work of a special nature.

Messrs. Renold have aimed to make the workshop attractive for their employees, and have gone to greater length than I have so far witnessed in the United Kingdom. English shops are subject to inspection, but the requirements for the protection of workers at tools do not seem to be so rigid in the United Kingdom as in Germany.

## Pressed Steel Barrels.

For several years steel barrels have been used as containing packages for storing and shipping oils and other liquids, but these had seams in the body which it was realized should be eliminated for the sake of security and durability. Many efforts have been made to produce a seamless steel barrel with a bilged body, which demonstrated the mechanical possibility of such a product, but also developed obstacles in the way of its commercial practicability. After prolonged experimenting, during which machinery and processes were perfected, the Pressed Steel Tank Company, Milwaukee, Wis., is now prepared to turn out seamless steel barrels of bilge form in three sizes, as shown in the accompanying illustrations.

This barrel is formed from a single piece of open hearth steel by a series of operations in hydraulic presses of special design, and with the exception of the upper head, which is hard brazed to the inturned edge of the body, it is wholly seamless. The bungs and vent holes are reinforced with ring plugs of rivet steel upset in place under a 200-ton hydraulic riveter, as shown in the sectional views, and are firmly brazed to the shell to avoid loosening and leaking. For the bung and vent openings cast iron shoulder plugs are supplied, 2 in. and 1 in. in diameter respectively, but wooden bungs can be used if desired, in which case the reinforcements are reamed to suit the standard market sizes.



Exterior and Sectional Views of Two Sizes of Steel Barrels Made by the Pressed Steel Tank Company, Milwaukee, Wis.

The packages are made in three standard sizes, as follows: 15¾ gal. capacity, 16¼ in. largest diameter by 23¼ in. high, weighing 45 lb.; 31½ gal. capacity, 20½ in. in diameter by 29¼ in. high, weighing 80 lb., and 52 gal. capacity, 24¾ in. in diameter by 33¼ in. high, weighing 100 lb. They are furnished lined or galvanized inside and out or painted with asphaltum japan. Before leaving the works a hydraulic and air test of 50 lb. per square inch is applied to each package.

The work involved in the production of these barrels is suggestive of the marked advance that has been made in recent years in stamping and drawing sheet steel.

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The bibliographical catalogue of the books, pamphlets and periodicals of the celebrated Latimer-Clark collection presented by Dr. Schuyler Skaats Wheeler to the American Institute of Electrical Engineers, has been completed and is about to go to press. This critical catalogue has been in preparation for the past six years under the direction of W. D. Weaver, with the collaboration of Brother Potamian of Manhattan College and a number of other authorities here and abroad. The expense of this unique work has been defrayed by Andrew Carnegie. As soon as the book comes from the press it will be distributed to the members of the Institute, who, according to the deed of gift of the library, are entitled to the catalogue.

## British Enterprise in Seizing Unworked Patents.

The London *Morning Post* publishes the statement by a member of Leopold Farmer & Sons that a number of well-known English firms, representing a large amount of capital, are understood to be forming a company for the purpose of opening works at once to produce those articles patented in England by foreign manufacturers, the patent rights of which, according to the new law, have lapsed. No pains are to be spared before operations to manufacture are commenced, to ascertain that the foreign patentee has forfeited his right, and that the patent has been automatically canceled by the provisions of the act, and that therefore he could not gain time or redress in the courts.

With regard to the English firms interested in this combine, the informant of the *Post* said he was not prepared to mention the names, but hoped to be able to do so in due course, and the names would no doubt show that those concerned in the matter were well versed in questions relating to patents, and able to decide that their action was a right and proper one in the interest of the general public. He added that the movement among towns and districts to attract manufacturing industries had been given an impetus by the new act, and by the authorization to spend the money of a town in advertising for that and similar purposes. The movement had probably been most prominent in the northeast of England, where it was inaugurated by the commercial agency of the Northeastern Railway Company, who at first induced the principal districts to move in this direction, and whose example had been followed by other towns. A considerable number of manufacturers are extending their premises in order to deal with additional manufactures carried out by arrangement with foreign patentees who do not propose to establish works in Great Britain, and this is notably the case in the northeast of England.

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**Industrial Pittsburgh.**—Under this title the Union Trust Company, 335 to 339 Fourth avenue, Pittsburgh, has issued a most artistic pamphlet of 62 pages, illustrated with views taken among the varied industries of that city. The illustrations are those of typical processes in a rail mill, armor plate plant, bathtub foundry, rod mill, electrical machine shop, plate glass factory, locomotive works, steel car plant, wire fence factory, bridge works, wire nail factory, projectile factory, pipe mill, &c. The engravings are presented on tinted paper. The text of the book treats of the great extent of the industries and commerce of the Iron City. The Union Trust Company is one of the great financial institutions of the country, having a capital and surplus of $26,000,000. Among its directors are the names of such well-known men in the iron and steel trade as H. C. Frick, B. F. Jones, Jr., E. C. Converse, William B. Schiller, Thomas Morrison, Henry Phipps, William G. Park, H. C. Fownes, D. E. Park, James H. Lockhart, J. M. Lockhart and J. M. Schoonmaker.

## The Jorn Sand Blast Apparatus.

After several years of experimenting, A. Jorn, Jr., Waukegan, Ill., has developed and is now manufacturing the sand blast apparatus shown in the accompanying illustrations. It is believed to be one that will appeal to metal and glass workers because of its simple and durable construction and easy operation. Since the machine itself collects, screens and returns the sand for repeated use (except that which is lost as dust through the exhaust pipe) frequent stops for recharging are eliminated. A greater range of work and more accurate work it is claimed can be done with this apparatus than with a hose sand blast. The standard 18-in. size will sand blast an area of from 150 to 180 sq. ft. an hour.

The sand is supplied from a hopper, near the delivery end of which is a grooved roller which rotates while the apparatus is in use and drops charges of sand in the path of an air blast delivered into the nozzle in a direction to carry the sand through the mouth of the nozzle and into contact with the articles to be cleaned. The nozzle provides means whereby the sand blast may be limited to a circumscribed area. After the sand has been projected upon the work, it is conveyed to the hopper to be used over again repeatedly.

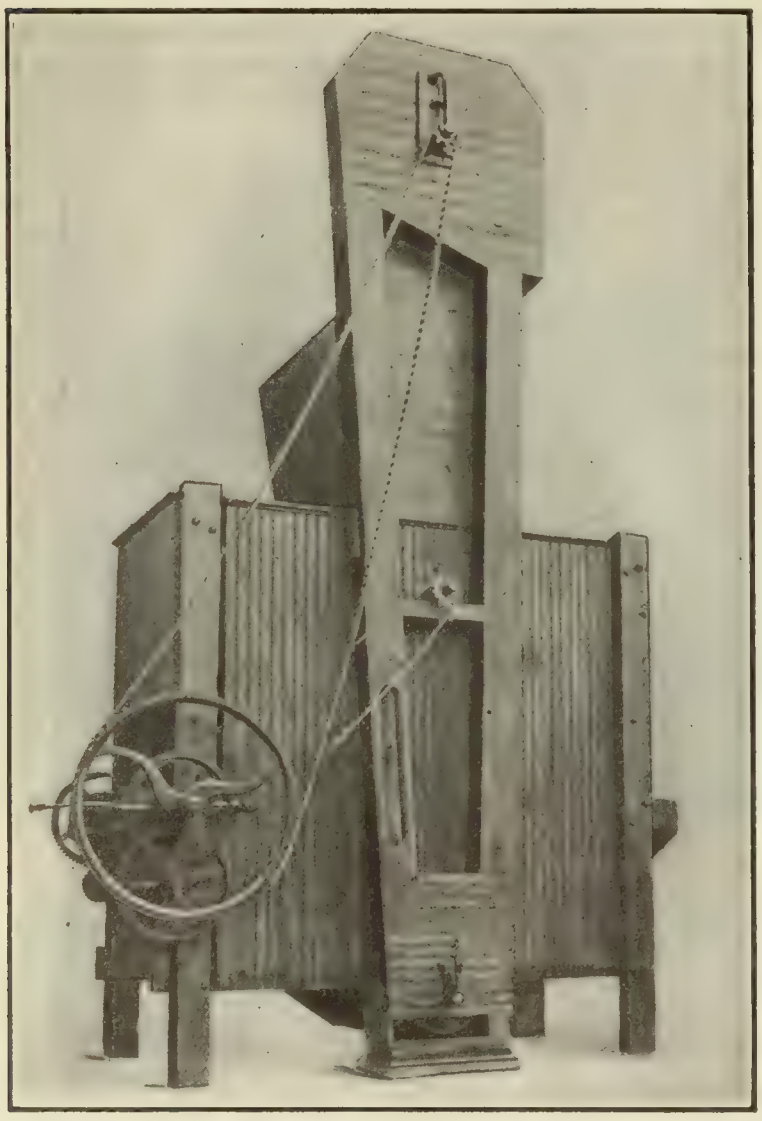


Fig. 1.—The New Sand Blast Apparatus Built by A. Jorn, Jr., Waukegan, Ill.

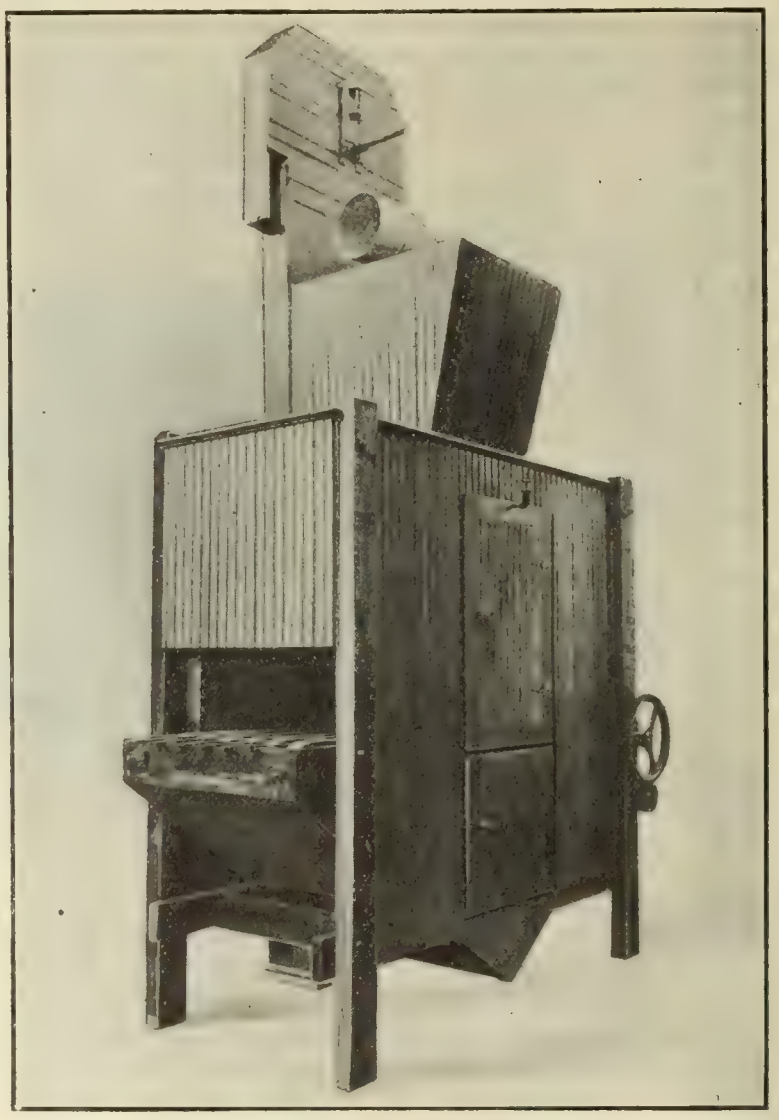


Fig. 2.—Another View of the Jorn Sand Blast Apparatus.

The accompanying Figs. 1 and 2 show exterior views of the apparatus, and Fig. 3 shows it with the inclosing sides removed, and also gives a detail in section of the blast nozzle and sand feeding device. As may be seen from Fig. 3, there is a main frame supporting another frame at the ends of which are journaled transverse shafts carrying rollers. These rollers carry endless belts upon which the articles to be treated are placed. The sides which inclose the frame are protected by a rubber lining, and the belts are also of rubber, as is usual in sand blast apparatus.

Below the belt frame is a receptacle having a bottom inclined toward the center, where it discharges into a trough containing a screw conveyor leading to the bottom of a bucket elevator. The latter delivers the sand through a spout into a hopper fastened on the platform carried by the frame. Below the platform and the hopper is a sheet metal receptacle, with an opening in the top communicating with a chamber inclosed by vertical parallel walls. The lower ends of the walls approach each other to form a contracted throat, and within the chamber above this throat is a drum with a circumferential series of horizontal grooves. The drum is mounted upon a shaft having bearings in the end walls of the casing, and at one end this shaft is driven by a chain from the main driving shaft. A deflector above and a lip bearing against the side of the drum, direct and limit the flow of sand into the throat, except as allowed by the rotation of the drum. Assuming the rotation to be continuous, each groove will carry a charge of sand from one section of the compartment to the other, and a continuous series of charges will gravitate through the throat.

Between the outer walls of the casing are chambers on each side of the sand compartment. The outer walls also approach each other toward their lower ends, thus forming other throats on each side of the sand chamber throat. An opening through the top of each chamber is connected with a bifurcated pipe, which supplies air under pressure. Below the throats is a nozzle, the walls of which approach each other toward the discharge end. One wall is hinged at its upper end, so that the area of the discharge may be regulated.

When the hopper is charged with sand and the conveyor, the elevator and the drum are in properly timed movement and air is fed under pressure through the conduit, the articles to be cleaned are placed upon the belts and are slowly conveyed beneath the open end of the nozzle. The streams of air entering the outer chambers pass forcibly through the throats and into the nozzle, taking up the sand, projecting it against the work as it passes slowly under the lower end of the nozzle while resting upon the belts. After the sand has performed its work it falls through the spaces between the belts, and finally into the trough where it is carried by the conveyor into the lower end of the elevator, to be carried to the top of the latter and delivered again into the hopper through the spout.

The size of the stream passing out through the nozzle

and, in a measure, the speed of the stream of sand laden air may be regulated by adjusting the nozzle opening, and this may be done while the air pressure in the pipe is being maintained practically constant. The same source of power drives the various parts, including the blower by means of which air pressure is maintained, and consequently it is advantageous to regulate the force of projection of the stream of sand laden air by constricting or expanding the nozzle opening rather than changing the air pressure by varying the speed of the blower. By adjusting one side of the nozzle so as to vary the relative inclination of the nozzle sides, there is practically no abrasive action of the sand upon the walls.

While the machine is especially adapted for cleaning castings, it may be used for sand blasting glass either in

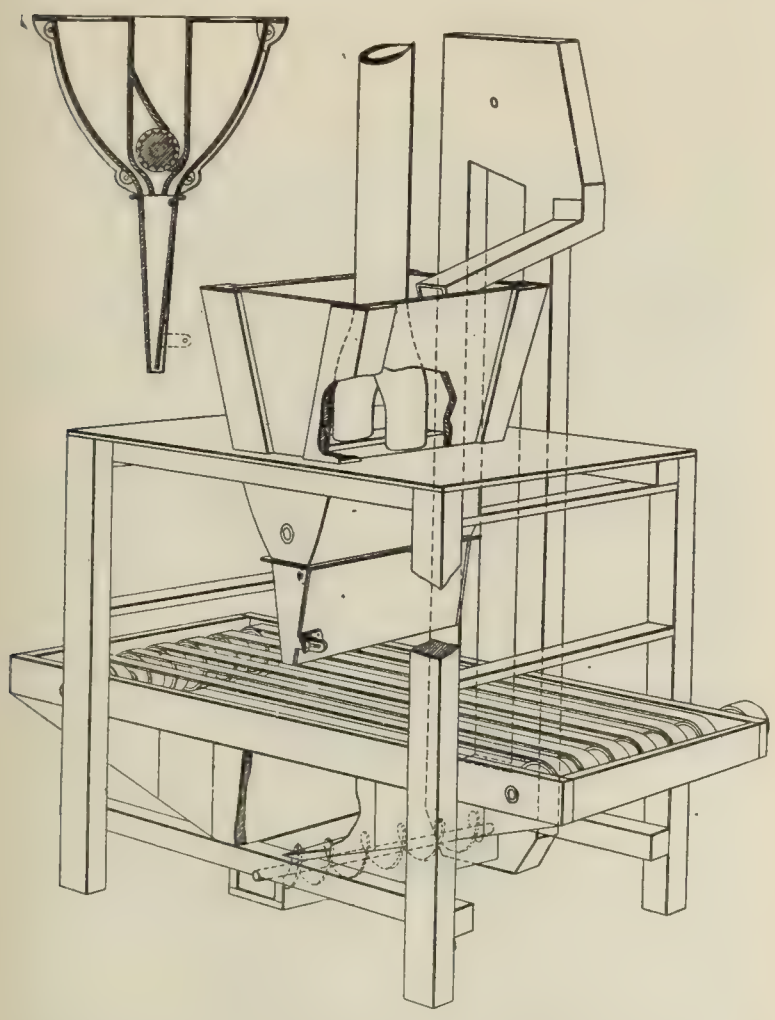


Fig. 3.—Sketch of the Apparatus with the Sides Removed and Detail Section of the Nozzle.

plain or in ornamental designs, or may be used for numerous other purposes for which sand blasting apparatus is adapted.

**The Colonial Steel Company.**—Stockholders of the Colonial Steel Company, Pittsburgh, works at Monaca, Pa., met in Pittsburgh September 28 and increased the capital stock from $1,250,000 to $2,000,000. The new stock will be 7 per cent. preferred and will be largely used for the purpose of developing a new patented product of the company, based on welding copper and brass to steel. The copper and brass may vary in thickness corresponding to the uses desired by the consumer, and this does not affect the quality of the welding process. A combination product can be made for stamping and drawing which has more rigidity and strength than can possibly be given to ordinary brass and copper. It can be adapted to such purposes as rods or tubing made from strips and is especially suitable for making bedsteads. J. B. Findley and A. S. Beamer were elected directors, the number being increased from five to seven. The plant of the company at Monaca is running to nearly full capacity, and some additions are contemplated when normal conditions in business warrant.

The October *Monthly Pipe Parley* of the McWane Pipe Works, 220 Broadway, New York City, presents on its front cover a view of the top section of a cast iron lighthouse, which one of its foundries has just completed for the United States Government. The hight of this section is 42 ft., the diameter at the top is 40 ft. and the weight is 186 tons.

## Conservatism to Govern Tariff Revision.

WASHINGTON, D. C., October 6, 1908.—As the preliminary work of tariff revision by the Ways and Means and Finance committees proceeds it becomes daily more apparent that the changes are to be made along very conservative lines, and especially that the Senate leaders will be disposed to hold in check any movement looking to radical revision or to important changes in the principles underlying the Dingley act. The most significant work thus far accomplished has been that of the sub-committee of the Finance Committee, which has been investigating the necessity of amending the classification of the Dingley law and of modifying numerous provisions of the customs administrative act of June 10, 1890. A member of this sub-committee, in reviewing briefly the inquiries made during the past month, said to the correspondent of *The Iron Age:*

While the inquiries of this sub-committee have been directed chiefly to questions of classification so far as they relate to the Dingley act, yet we have received considerable information regarding the general revision of the tariff, and I think I express the views of the entire sub-committee when I say that we have been surprised to note the great conservatism of those who are seeking changes in rates or modifications of classifications, the effect of which would be either to reduce or increase present duties. The fact seems to be that there is very little demand for specific reductions in the tariff, and that demand seems to be confined to a relatively small number of manufacturers who desire that their raw materials shall be cheapened, but who are unwilling to surrender any part of the protection afforded by the Dingley act to their finished products. These manufacturers place great emphasis upon the necessity of reducing the cost of production, so that they may compete with their foreign rivals in the principal markets of the world, but they entirely lose sight of the fact that the raw materials of their industries are often, and in fact nearly always, the finished products of other domestic industries which are just as much entitled to protection as any producers in the country. I do not look for the development of a general policy of free raw materials among the majority leaders of either House or Senate, for it goes without saying that it is just as necessary to protect the labor that develops our natural resources by digging products out of the earth as it is to assist the labor employed in working up these products in our mills and factories.

The further we go with this investigation the more fully are we convinced of the great ability displayed by the framers of the Dingley act and, in my opinion, there will be no change in the principles underlying that act and only a slight readjustment of rates. In fact, I think the most laborious task that will be encountered in connection with the coming revision will be the rearrangement of the tariff on a maximum and minimum basis if, as now seems probable, that plan is finally adopted. I assume that the Dingley rates, with a few modifications, will be adopted as the minimum tariff and that the maximum will be fixed by adding certain percentages thereto. If the plan followed by the leading European countries maintaining double column tariffs is adopted as a pattern, the additions to the minimum rates will not be uniform, but will be so adjusted as to put the United States in the most advantageous position possible for the negotiation of reciprocity treaties, the purpose of which will be quite as much to protect our commerce against discrimination as to secure larger markets for our surplus products.

Treasury officials are greatly encouraged over recent tendencies in the Federal receipts and expenditures, which, if maintained during the remainder of the fiscal year, will relieve Congress of the necessity of providing new sources of revenue. A statement made on October 1 and covering the first quarter of the new fiscal year shows a deficit of $33,364,000, as compared with a shortage of only $4,415,000 a year ago, but only $4,585,000 of this deficiency is chargeable to the month of September, during which there was an unexpected and highly gratifying increase in both customs and internal revenue receipts. The continuance of this improvement throughout the year would very nearly wipe out the balance on the wrong side of the ledger, and would have an important bearing upon the work of Congress in the revision of the tariff and internal revenue laws.

W. L. C.

# The Patent and Trademark Congress.

## The Recent International Meeting at Stockholm.

WASHINGTON, D. C., October 6, 1908.—That the British Government in the near future will repeal the recently enacted law requiring the working of patents within a limited period to prevent their invalidation, and that the movement in the United States and other countries looking to the adoption of a similar requirement will make no further headway, is the opinion of leading experts in patent law who attended the meeting of the commercial section of the International Congress for the Protection of Industrial Property held at Stockholm, Sweden, August 26 to 29. The American delegate to the Congress was the United States Commissioner of Patents Edward B. Moore, who recently returned to Washington. The functions of the commercial section of the Congress are limited to the framing of recommendations, which will be laid before the official section at its next annual meeting, which will probably be held in this city in the summer of 1909. Referring to the discussion of the new British patent law at the Stockholm meeting, Commissioner Moore said to the correspondent of *The Iron Age:*

### British Working Clause.

No subject was discussed at Stockholm with greater interest than the effect of the recently enacted British law requiring patents to be worked in England within a certain length of time. The general consensus of opinion was that Great Britain had taken a step backward, and I am free to say that I fully concur in this view. The most important result of the English law thus far has been the transplanting from Germany to Great Britain of portions of certain industries, notably those engaged in the manufacture of chemicals, drugs, &c.; but while this would seem to be an advantage secured under the new law, it is the opinion of experts that in the long run the statute will prove injurious, in that it will discourage the work of English inventors. If a patent must actually be worked within three or four years in order to protect it, inventors and patent owners will often be obliged to sacrifice the greater part of the pecuniary value of the patent by forcing its exploitation at an inopportune time. It often happens that discoveries are made, sometimes accidentally, which are far in advance of the practical development of the industry to which they relate. They cannot possibly be developed on a commercial scale within the statutory period, but under the English law the inventor must choose between imperiling his property right in the invention by taking out a patent on it or assuming the risk of having his ideas stolen or the same principles discovered by another inventor by relying on secrecy. In many cases inventors who have been unable to secure capital to exploit their inventions commercially will be obliged at the last moment to sell them for a song to prevent the invalidation of their patents.

In the discussion at Stockholm it was developed that German manufacturers feel that they have been seriously injured by the operation of the new British law, but, of course, the defenders of that statute call attention to the fact that Germany has a similar requirement. In retort, however, the German officials assert that their law is rarely enforced. Again, when the English law is assailed by American experts, the answer is made that the United States, by its high protective tariff, accomplishes practically the same object as that aimed at in England. While this contention is fallacious, it is urged with much vigor in defense of the British working clause.

That Great Britain will find it advisable to repeal the working clause was the opinion very generally expressed at Stockholm, although it is not to be expected that the extent to which inventive genius will be discouraged by the existing statute will at once be appreciated. It will not be long, however, before the government itself will begin to suffer by reason of the obstacles placed in the way of inventors who have given their attention to the development of war materials of all kinds, including ships, guns, projectiles, ammunition, &c. The market for such inventions is narrow, at best, and if the law requires them to be practically worked within a very few years after being patented, inventors will find themselves seriously embarrassed, and will be exceedingly apt to turn their attention to other and more profitable fields of discovery.

### Our Trademark System the Best.

The congress was attended by 400 delegates, representing 24 countries, and including the official members of the congress bearing governmental credentials and the unofficial members, representing the leading industries of the most important commercial countries of the world. The chief topics considered were the harmonizing of the patent and trademark laws and procedure of the countries adhering to the international convention for the protection of industrial property and the extension of the protection of trademarks and patents as industrial property of the highest value.

With regard to trademarks, the work of the congress was especially significant from the American standpoint, as it consisted chiefly in emphasizing the desirability of harmonizing the laws and practice of other countries with the system already adopted in the United States and the necessity for the negotiation by the principal countries of such trademark treaties as those which the United States recently concluded with Japan for the protection of trademarks in China, Korea and other countries in which the signatory powers now exercise or may hereafter acquire extraterritorial jurisdiction. With respect to trademark practice and also in the extension of trademark protection to extraterritorial jurisdictions, the United States is rather ahead of the rest of the civilized world, and it is gratifying to observe that the older countries of Europe, with their long industrial experience, are accepting our laws and regulations as patterns for the amendment of their own statutes and general practice. Other recommendations by the congress have for their object the standardizing of the requirements of the patent offices of the leading industrial countries with respect to applications for trademark registration, general office practice, &c.

The recommendations of the commercial section of the congress relating to patents concern chiefly the administration of the patent laws of the countries which are parties to the international convention. Many diverse requirements are now made under the rules of the patent offices of the leading foreign countries, and it seems highly desirable that these differences should be harmonized and that practically identical requirements should be made in all cases. The exchange and acceptance of certified copies of patents are now governed by rules which vary greatly in different countries, and the Stockholm convention strongly recommended to the official section of the International Congress the framing of a general rule that would govern all countries in this matter. The adoption of a harmonious series of regulations covering applications, registrations, certified copies, &c., would greatly facilitate the protection of inventions and trademarks throughout the world and would decrease the expense which must now be borne by inventors and patent and trademark owners. W. L. C.

**Railroad Rates Reduced by Decree.**—Fifty-six railroads filed a petition at St. Louis, September 30, in the Federal Circuit Court to enjoin the carrying out of the Interstate Commerce Commission's order lowering rates for live stock shipments from Texas points. The order was issued under the Hepburn act. The plaintiffs claim that the order would cause them a loss of $1,000,000 a year, and is confiscatory. They also allege that the order reducing switching charges from $1 to $2 a car on all Chicago lines from terminals to stock yards means $300,000 a year loss. A dispatch from San Francisco on the same day the above suit was filed says that the United States Circuit Court decided against the application of the Southern Pacific Railroad Company for an injunction against the Interstate Commerce Commission to prevent putting into effect a reduced rate on rough lumber shipments from San Francisco. The railroad had advanced its rates 10 per cent., and the Interstate Commerce Commission at once prohibited the increase.

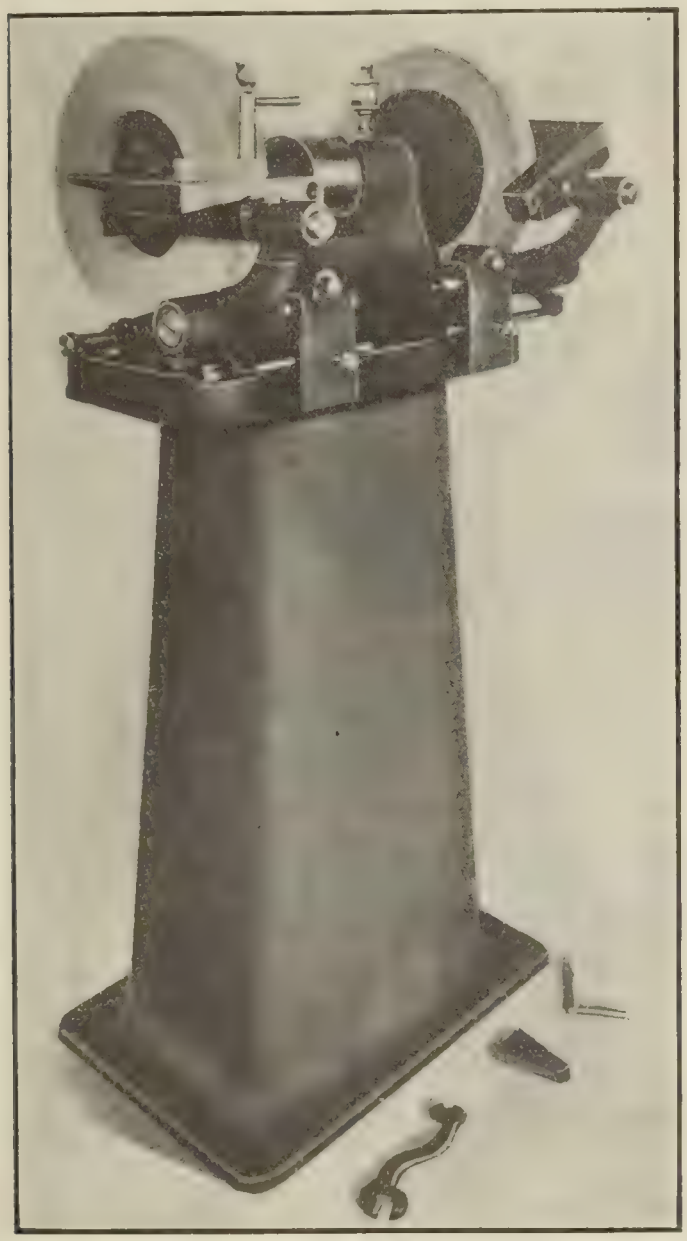
The sale of the foundry department of the Franklin Moore Company, Winsted, Conn., to the Sessions Foundry Company, Bristol, Conn., has caused the circulation of an erroneous report that the company had sold its entire business to the Sessions Foundry Company, and that the plant was to be moved to Bristol. The Franklin Moore Company simply sold its foundry department, which was a very small portion of its business, and this was done to allow the company to give more attention to its bolt and crane departments which it is enlarging.

## The Emmert Face Grinder.

For grinding lathe and planer tools, edge grinding and squaring up ends of work and miscellaneous small grinding jobs the novel face grinding machine illustrated is especially adapted. It is a new product of the Emmert Mfg. Company, Waynesboro, Pa.

A straight edge or surface on tools and a straight face on the edges of work is more easily and accurately obtained by using the face of the wheel, if the face is straight and the wheel of suitable character. It is contended that such a face cannot be obtained nor the diameter of the wheel kept true with an ordinary emery wheel dresser. One of the features of this machine is the provision for using a diamond for truing up both the face and the periphery of the wheel.

A work table is located in front of and extending by the edge of the wheel, so that both the face and edge of



A New Face Grinding Machine Built by the Emmert Mfg. Company, Waynesboro, Pa.

the wheel can be used for grinding. This table is in a guide carried by a transversely swinging arm, and in the end of the arm a longitudinally adjustable diamond holder is located. Normally the table can be either clamped, to prevent any transverse rocking movement, or adjusted to allow a certain amount of such movement, which is often an advantage in grinding wide work. When the surface of a wheel becomes dull or untrue an adjustable stop below the table is moved out of its path and the table swung backward away from the wheel; then swinging the diamond across the face of the wheel gives the latter a good cutting and a straight surface. The diamond holder may be quickly transferred from one end of the machine to the other, and with a little care the diamond will last indefinitely.

The table is also slidable longitudinally of the machine in the guide, and is provided with a threaded hole to receive the diamond holder, which may be transferred to this hole and the edge of the wheel trued off by sliding the table in its guide. The table guide is pivoted in the diamond carrying arm and can be set with reference to graduations and clamped at any angle with the face of the wheel up to 45 degrees. Upon the table is also provided an adjustable squaring device or protractor, which may be set from 90 to 45 degrees with the surface of the wheel.

The wheel spindle of this machine is hardened and runs in adjustable bronze boxes. The wheels used are 12 in. in diameter by 1½ in. thick and are recessed. A water tank of ample capacity and located conveniently to the operator is provided for cooling work.

## The World's Production of Coal.

E. W. Parker, the coal expert and chief statistician of the United States Geological Survey, estimates the world's production of coal for 1907 at 1,209,184,109 net tons, of which the United States furnished 39.7 per cent. The following table, showing the production of the principal coal-producing countries for the year nearest the one under review for which figures could be obtained, gives the details of his estimate:

*The World's Production of Coal.*

| | Net tons. |
|---|---|
| United States (1907) | 480,363,424 |
| Great Britain (1907) | 299,970,677 |
| Germany (1907) | 226,773,605 |
| Austria-Hungary (1907) | 43,955,315 |
| France (1907) | 40,708,215 |
| Belgium (1907) | 26,261,745 |
| Russia and Finland (1906) | 23,857,961 |
| Japan (1906) | 15,362,467 |
| India (1906) | 10,957,240 |
| Canada (1907) | 10,510,961 |
| New South Wales (1906) | 8,541,525 |
| Spain (1906) | 3,620,588 |
| Transvaal (1907) | 3,261,533 |
| New Zealand (1906) | 1,937,080 |
| Natal (1905) | 1,264,995 |
| Mexico (1906) | 846,416 |
| Queensland (1907) | 765,265 |
| Holland (1906) | 587,283 |
| Italy (1906) | 521,711 |
| Sweden (1906) | 327,361 |
| Victoria (1906) | 179,907 |
| Cape Colony (1906) | 142,877 |
| Tasmania (1907) | 65,958 |
| Other countries | 8,400,000 |
| Total | 1,209,184,109 |

It will be observed that in 1907 the United States produced 60 per cent. more coal than Great Britain, and over 100 per cent. more than Germany. Exclusive of Great Britain, the United States produced in 1907 more coal than all the other countries of the world combined. Since 1899 this country has held first place among the coal producers. It has so far outdistanced Great Britain that that country can no longer be considered a rival, although it is only nine years since it was supplanted by the United States as the greatest coal-producing country of the world. It may also be noted that more than 98 per cent. of the total world's production of coal is from countries north of the Equator, the countries south of that line producing less than 20,000,000 tons annually.

**Expansion of Valves at High Temperatures.**—The results of experiments to determine the expansion of valves and fittings in service involving high temperature are given by the *Valve World*. Three flanges were taken, one of cast iron, one of ferro steel, and one of steel. They were exposed to varying degrees of heat for a period of 130 hours, the temperature being less than 500 degrees for 18 hours, 500 to 700 degrees for 97 hours, 710 to 800 degrees for 12 hours, and over 800 degrees for 3 hours. The average for 130 hours was 583 degrees. The view previously put forth by the *Valve World* was that cast iron subjected to continued temperatures of approximately 500 to 600 degrees takes a permanent expansion and does not return to its original volume when cooled. The results of the above mentioned experiments are stated as follows: Cast steel flange—no change. Cast iron flange—outside diameter increased 19-1000 in., inside diameter increased 7-1000 in. Ferro-steel flange—outside diameter increased 33-1000 in., inside diameter increased 17-1000 in.

# The Broderick Automatic Electroplating Machine.

The first serious and successful invasion into the plating field of automatic labor saving machinery is that of David F. Broderick, whose representatives are Thornton N. Motley & Co., of 50 Church street, New York. The apparatus was first installed at the works of the Russell & Erwin Mfg. Company and later at the plant of the Yale & Towne Mfg. Company at Stamford, Conn. The latter installation is shown in the accompanying photographs. The broad principles of the Broderick machine may be explained with reference to the elevations, Fig. 1, and plan, Fig. 2, reproduced from his patent of December 25, 1906.

The different plating, washing and other solutions are in a series of tanks forming a long loop, over which there is suspended a thoroughly braced frame which carries the dipping apparatus. This consists of two endless chain carriers, A B, Fig. 1, arranged horizontally one above the other. Each chain carrier passes around one driven sprocket wheel, C, Fig. 2, at one end of the machine, and an idler sprocket at the other end. They are secured to vertical shafts, E, Fig. 1. The two chain carriers support at regular intervals work holders *d*, Fig. 1, which are free to move up and down while traveling along in and over the series of plating and washing tanks. In a general way, the device for lifting these work carriers from one tank to the succeeding one, in order to clear the sides of the tank, is as follows: A roller, f, f, Fig. 1, attached to the work holder strikes the inclined plane or "cam" *a*, and is forced to rise upon it by the motion of the chain carrier. It then moves horizontally along the bar *b*, and drops back when required, guided by the face *c*, Fig. 1. In the photographs this part of the mechanism is obscured or entirely hidden, and the details may therefore be referred to more specifically in the drawing, Fig. 3, which shows the sprocket wheel *c* at the right. The chain carriers travel in two channeled guides *i* and *j*, shown in section at the lower part of Fig. 3. The endless chain consists of a series of links, whose connecting pins project beyond the edges of the links for the reception of rollers, which run against the inner faces of the guides and prevent undue lateral vibration of the carrier. Any vertical vibration is guarded against by rollers disposed between the opposing edges of the channeled guides of each pair. A number of the links of the endless chain are provided with pintles, which project laterally beyond the channeled guides for the reception of the grooved wheels, *l*, Fig. 3. In the upper part of the engraving a cross section indicates the construction of these links with the guide rollers and the grooved wheels. The latter guide the workholder, *d*, *g*, Fig. 3, which is also the means of conducting the electric current into the bath. The upper part of the workholder is provided with a brush, *m*, which is in contact with the conductor strip *n*, but instead of using the workholder proper as the conductor, a rod, *e*, is employed. The dipping mechanism has been referred to. The detail may be mentioned that the "cam" bars, *a* and *c*, may be adjusted, the cam track having the form shown in section at *h*. Usually the lifting cam *a* is placed at a greater slope than the dropping cam, *c*. The various baths are provided with anode plates, while the work constitutes the cathode. Provision is made for automatically making and breaking the electric contact at any desired point.

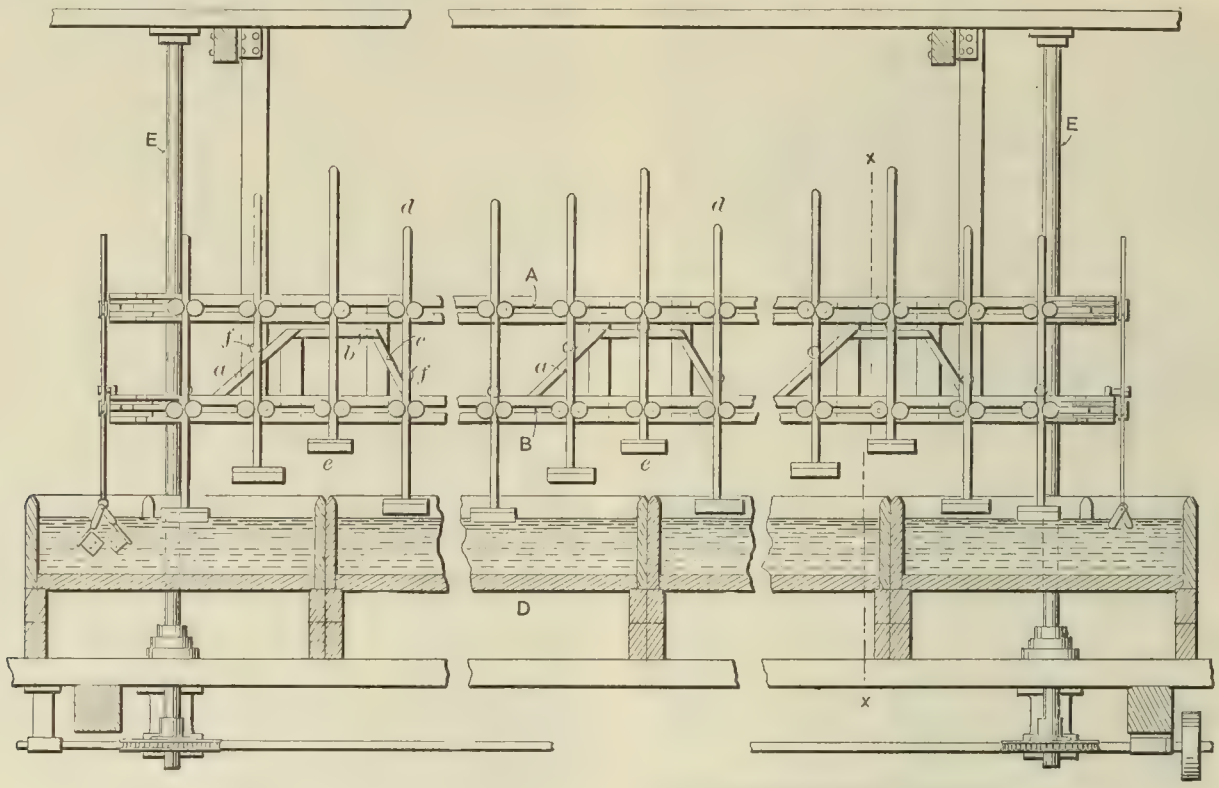



Fig. 1.—Elevation of Broderick Automatic Electroplating Machine.

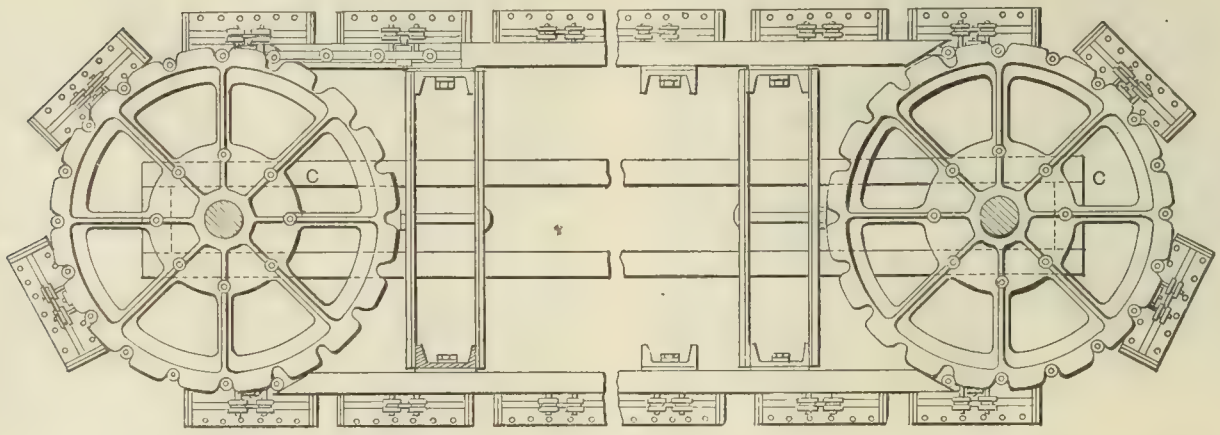



Fig. 2.—Plan of Broderick Automatic Electroplating Machine.

The machine may be adjusted, without stopping, for any desired number of operations within its capacity or for any length of article to be plated from 1 to 20 in. in length. The cams can be adjusted to provide for longer or shorter relative periods in the various baths as the nature of the work may require. Any desired bath may be slipped on a cheaper grade of work. Ball bearings are used to obviate the necessity of too frequent oiling, which might cause trouble by dripping into the solution.

The system is so designed as to incorporate into a single operation the following 10 minor operations, into which electro-plating and cleaning are usually subdivided:

1. Loading.
2. Washing in potash solution.
3. Washing in cold water.
4. Washable in cyanide or acid solution.
5. Washing in cold water.
6. Depositing in plating solution.
7. Washing in cold water.
8. Washing in hot soda.
9. Washing in hot water.
10. Unloading.

Three additional operations necessary in connection with oxidizing can be added if desired.

In executing the above operations in the ordinary manner, it is necessary to depend on the judgment of the operator for the relative length of time, and the condition in which the work should be after each operation. It often happens that he removes the hollow articles from one solution and plunges them into the succeeding bath in the cycle of operations before they are properly drained off, thus polluting the solutions and causing spots or other defects on the surface of the plated articles.

With an automatic apparatus for performing these operations the required ratio of time for each operation in the cycle necessary to complete the articles is not left to an unskilled operator, but is predetermined by the foreman or other competent person, and after the machine is once properly adjusted the work will pass through them automatically and return completed to the starting point under the same conditions, thus insuring uniformity both in quality and quantity of work, which could not be expected with the many chances for variation that exist in passing the work through the various minor operations by hand.

The apparatus requires two unskilled operators, one for loading the racks on the machine, and one for unloading and packing the articles in transporting boxes. A single operator could load and unload the machine if loaded racks were delivered to him within a convenient distance, and the work which he unloaded from the machine was dumped without sorting or packing at a point convenient to the machine. However, it is policy to have two boys operating the machine, and give them some other duties to perform, because if it is necessary for one operator to leave his work, the remaining operator could keep the machine loaded to its full capacity for an hour or two if necessary.

It is estimated that there is a saving from 80 to 90 per cent. in floor space for handling an equal amount of articles, with the usual series of tanks.

The amount of current theoretically should be the same with any system of plating properly installed. However, as a matter of fact with the improved arrangement of tanks, which concentrates and allows a better system of insulation than with a series of tanks scattered over a large department and which permits of getting better contact on the work on account of the agitation caused by moving it rapidly through the solution, it is found that a saving of about 20 per cent. is effected.

The actual labor cost per thousand with the machine running at its full capacity, would be about 5 cents a thousand (this would not include "stringing" small pieces on racks), but assuming that the machine cannot be kept running over 50 per cent. of the time, the maximum labor cost per thousand should not exceed 8 to 10 cents.

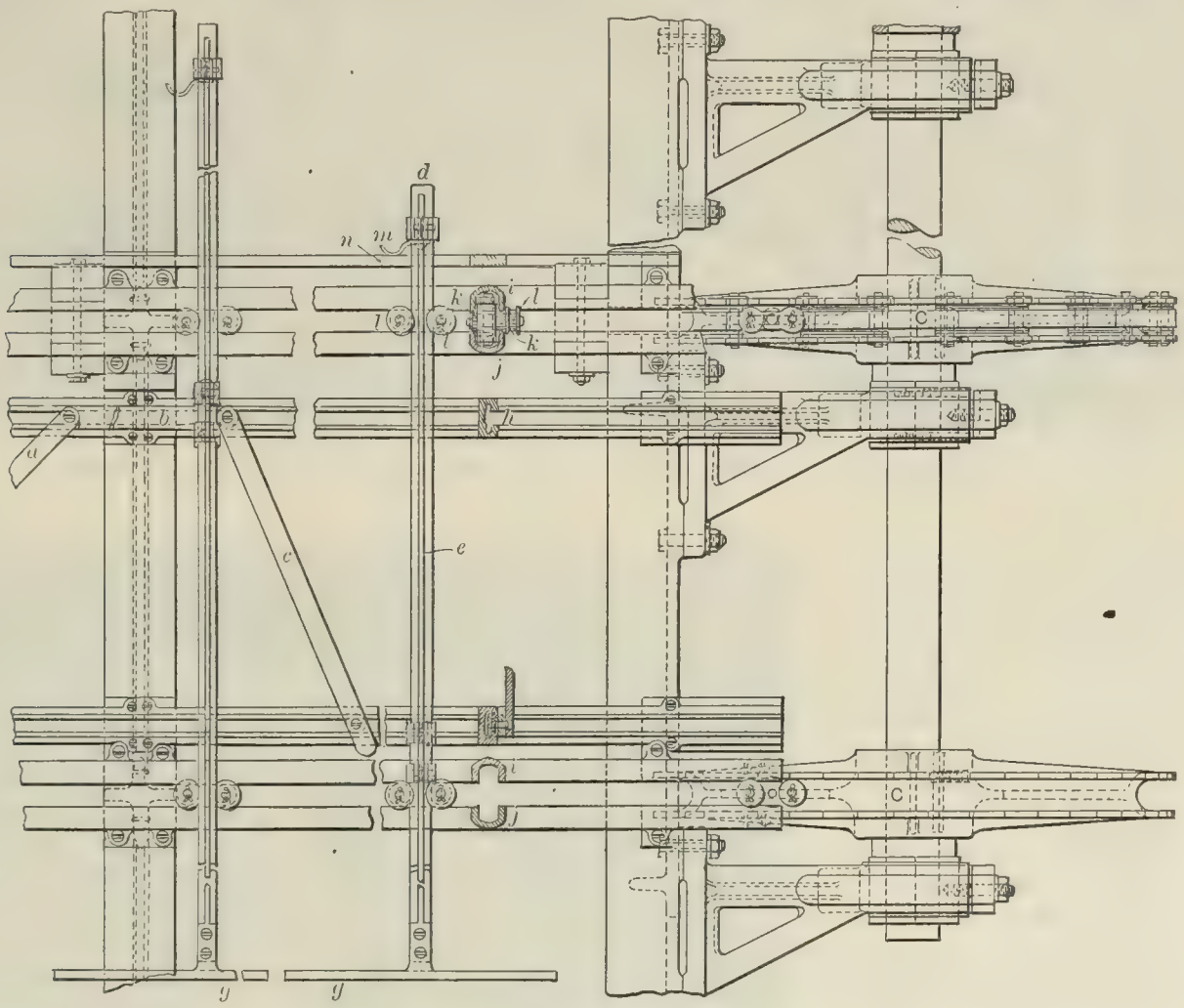



Fig. 3.—Elevation, Showing Workholder and Details of Chain Carrier.

A slight economy in material is effected, because the apparatus is so adjusted that it does not waste or pollute the solutions one with another, as is often the case with the usual method.

The system for plating includes the following groups of apparatus:

The 2000 ampere dynamo and a 2 hp. motor, with the necessary switchboard, instruments, wiring, &c. A variable speed countershaft must be provided, so that the speed of the chain carrier can be adjusted to the particular work in hand. If power is conveniently located for driving the machine and suitable current for plating is accessible, the dynamo and motor need not be purchased; however, it makes a more convenient and selfcontained system if they are used independent of the general system of the works.

As many storage tanks, with a capacity of about 2000 gal. are required, as there are different kinds of plating solution desired to be used on the system. The purpose of these storage tanks is to allow the use of the same system for many different kinds of plating, such as copper, brass, bronze, galvanized, &c. Changing from one

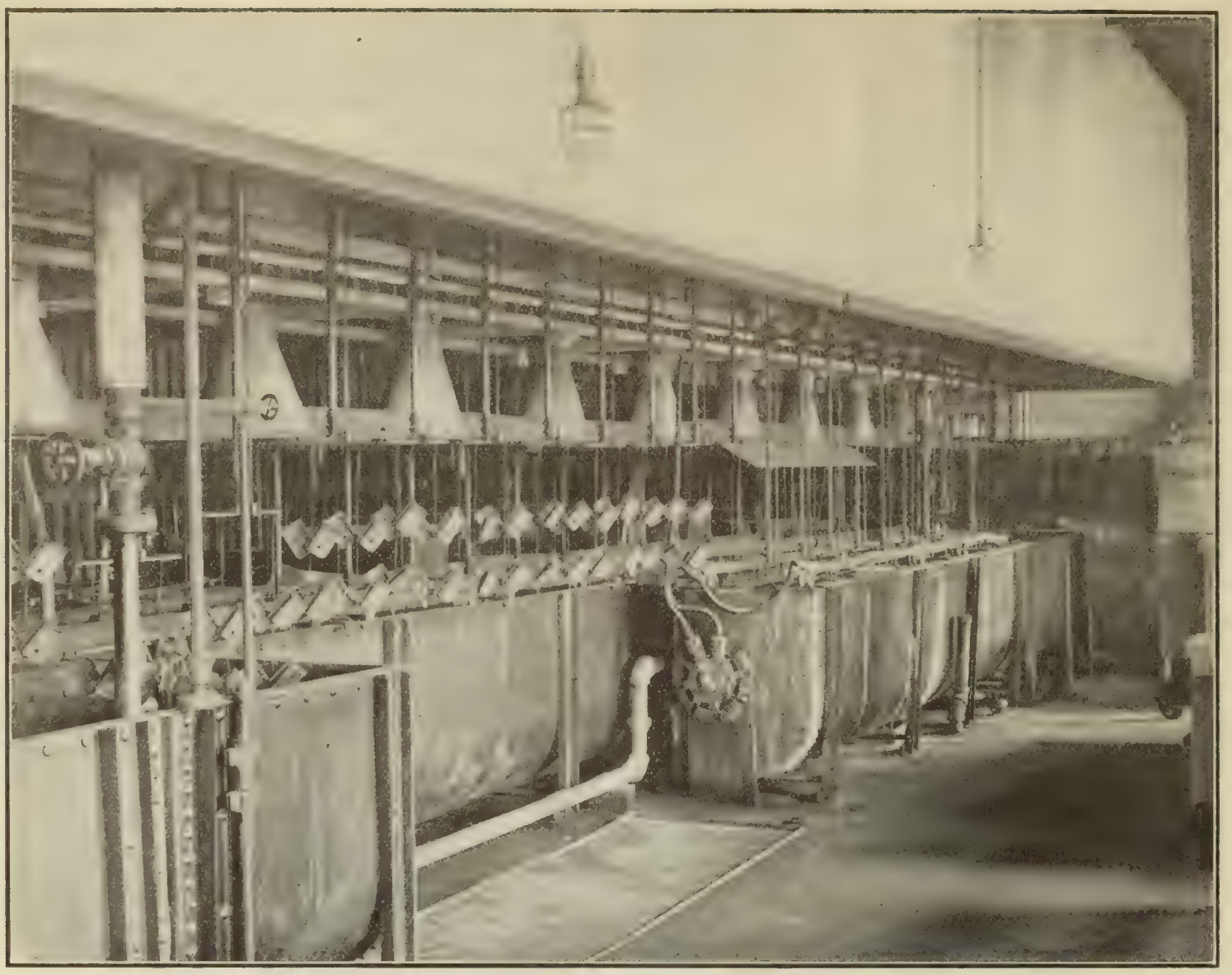


Fig. 4.—Side View of Broderick Electroplating Machine, Showing Loading and Unloading Station.

kind of plating solution to another requires about ½ hr.

The necessary washing and plating tanks are preferably made from sheet or boiler iron about ¼ in. in thickness, of U shaped cross section, unless it is desired to use acid solution, in which case the acid vats are preferably made of slabs of slate. In connection with these tanks there are the anode copper bars, anode hooks, the necessary piping for inlet and outlet of hot and cold water and drain pipes for other solutions, and coils of steam pipes for heating the solution and other desired hot baths.

An exhaust fan connected with the necessary hoods and galvanized iron piping is provided for exhausting the vapor and fumes from the various hot baths.

The capacity of the machine varies with the character of the work and the size of the articles to be plated. Small articles, like the parts of locks and of other articles included in builders' hardware, are plated at a rate as high as 100,000 pieces per day.

At the works of the Yale & Towne Mfg. Company the Broderick machine has been in successful operation for some time, performing the work which the exacting requirements of the high grade art hardware produced by that company call for.

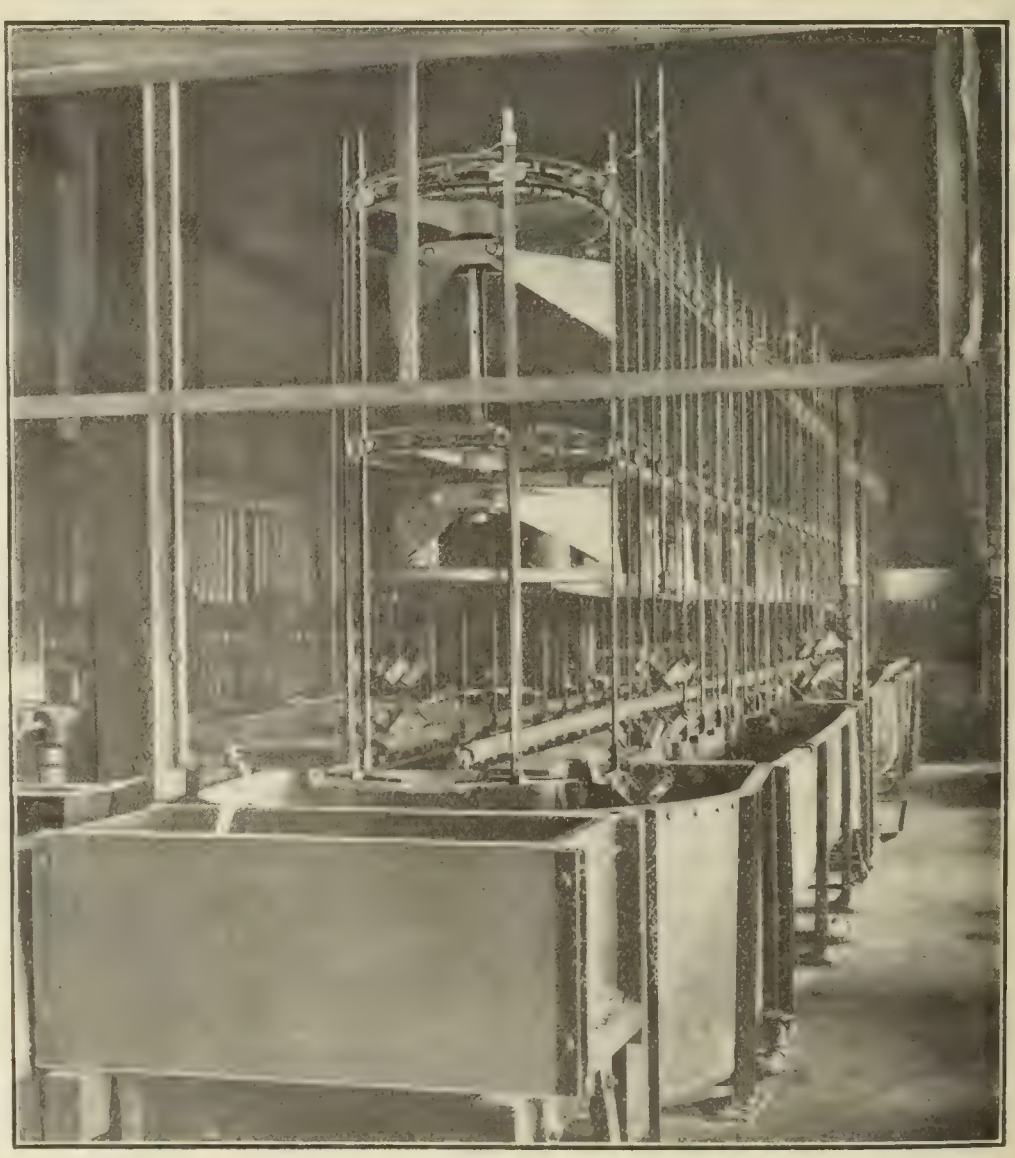


Fig. 5.—End View of Broderick Electroplating Machine.

The nine hundred thousandth patent from the United States Patent Office was issued October 3, and to it was attached the name of Patent Commissioner Moore. The patent was an improvement on traveling stairs, such as are used in hotels and other large buildings. Mr. Moore estimates that the one millionth patent will be reached in the year 1911. The total of patents issued by the United States is not very far below the total for all other countries for all time.

# The Electrical Show.

## Exhibition at Madison Square Garden, New York, from October 3, to October 14.

Aside from the popular features of the Electrical Show, which opened at Madison Square Garden, New York, October 3, there is much to interest manufacturers and mechanicians in the way of electrically driven machinery, electric shop equipment, factory lighting systems and the like. In addition to independent exhibits made by machinery and factory supply houses, the large power service companies' exhibits include demonstrations of electrically controlled machinery made by various manufacturers. Many of these exhibits were not in place the first few days of the show, but by the time this appears in print the show, it was stated, will be complete.

One of the most interesting exhibits to machinery men is that of the Watson-Stillman Company, New York, whose booth is in charge of George L. Gillen and Edward Johnson of the company's sales department. The company is showing a hydraulic press in operation stamping out metals to be used as watch fobs bearing the company's imprint, which are given out as souvenirs. It is a 120-ton machine driven by a belt from electric motors. The company is exhibiting hydraulic jacks, shaft straighteners, a small punch and shear and four small twinvolute turbine pumps. The latter exhibit is in charge of Harry Prindle of the company's pump sales department.

### A New Resistance Wire.

Another interesting feature of the show is the exhibit of the Driver-Harris Wire Company, Harrison, N. J., supervised by Arlington Bensal, sales manager for the company. A new resistance wire, called Nichrome wire, is the principal feature of this company's exhibit. The company claims that it is the most perfect resistance wire ever invented for practical use. It is claimed that it has 60 times the resistance of copper and can stand an intense heat without becoming brittle or oxidized. It can be worked above red heat up to 1500 F. without its being harmfully affected, and a recording pyrometer is used to demonstrate the resistance power of the wire. The company is showing samples of a full line of its wire products from the coarsest resistance wire down to strands finer than silk.

A prominent place in the show is occupied by the engineering department of the National Electric Lamp Association, representing a number of electric lamp companies and showing their various products. The Grant flaming arc light, manufactured by the German-American Electric Company, 110 West Fourteenth street, New York, has an independent booth and is paying special attention to demonstrating the adaptability of the lamp for industrial installations. The industrial division of the Brooklyn Edison Electric Illuminating Company's exhibit contains a 25-hp. gas engine, a 25-hp. steam engine and an electric motor of the same power to demonstrate the comparative space taken up by the machines and to illustrate the difference in cost and advantages the company claims through the use of electric power. An interesting exhibit is that of the Consolidated Telegraph & Electric Subway Company, which includes a sectional reproduction of an underground manhole showing the various conduits and cables. The company is also showing a portable electrically driven air compressor used for rock drilling. Included in the exhibit of the United Electric Light & Power Company is a display of General Electric motors adapted for use in small industrial plants. The Otis Elevator Company is showing electric elevators. The Marvelous water heater, which is operated by electricity, is a feature of the exhibit of the Eastern Sales Company, New York, and the Goulds Mfg. Company, New York, is showing electrically driven pumps.

### Other Exhibitors.

Other exhibitors are: Auto Igniter Company, New York; Campbell Electric Company, Lynn, Mass.; Edward C. Cary Company, New York; Electric Home Supply Company, New York; Electric Motor & Equipment Company, Newark, N. J.; Electrical Testing Laboratories, New York; Enos Company, New York; Excello Arc Lamp Company, New York; F. Alexander Electric Company, New York; Federal Sign System (Electric), New York; Fox Brothers & Co., New York; General Electric Company, New York; Habishaw Wire Company, New York; International Text-Book Company, New York; Manhattan Electrical Supply Company, New York; Marconi Wireless Telegraph Company, New York; Mead Company, New York; Murphy Rectifier Company, Rochester, N. Y.; National Vacuum Company, New York; Numaticon Company, New York; Nugget Polish Company, New York; Roger Williams, New York; Spencer Turbine Cleaner Company, New York; Stanley & Patterson, New York; New York Edison Company, New York; Simes Company, New York.

The show will continue until October 14, and in the hall adjoining the Auditorium a series of lectures devoted to the principles and applications of electricity will be given. Professor Sydney W. Ashe will talk on "Electric Light, Electric Railway and Transportation and Electric Measurements." Max Lowenthal will give a series of lectures on "Hydro Electric Power Generation, Transmission and Utilization" and "Electric Light, Heat and Power in Home and Factory." Frederick A. Collins will speak on "Wireless Telegraphy and Wireless Telephoning." The dates of these lectures will be announced during the show. A number of objects of electrical interest have been loaned by the Metropolitan Museum of Art, including exhibits connected with the first attempts made to lay a telegraph cable across the Atlantic Ocean.

**The Keystone Steel Casting Company.**—The new plant of the Keystone Steel Casting Company, at Avonmore, Pa., on the West Penn Railroad, about 15 miles from Pittsburgh, which has been under construction for about a year is practically completed. The company owns a tract of 6 acres adjoining the plant of the West Penn Foundry Company, on which the new works have been built. The main building is 110 x 210 ft., and is equipped with a 7-ton cupola, a 3-ton Bessemer converter, a 5-ton open hearth furnace, electric cranes and other necessary machinery. Power for the electric plant is supplied by a 100-hp. engine and boiler. The blowers are operated by a 90-hp. gas engine and the converter by electricity. Power for the pattern shop is supplied by a 25-hp. gas engine. The pattern shop is a separate building, 50 x 65 ft., and the office and laboratory are located in a third building. John Sauers is president of the company and Alfred Tompkins is secretary.

**The Institute of Metals.**—The Interim Council of the Institute of Metals has appointed as permanent secretary G. Shaw Scott, who has a large scientific and practical knowledge of metals. The first general meeting of the institute will be held in Birmingham, November 11. A local committee, consisting of Prof. T. Turner, Mr. Boeddicker, and others, is making arrangements. Papers or communications are expected from a number of persons, including Dr. Glazebrooke, Mr. Rosenhain, A. M. M. Philip, Admiralty chemist; Dr. Hodgkinson, and Mr. Robertson. The permanent office of the institute will be in London, probably in the vicinity of the Institution of Mechanical Engineers. A subcommittee has this matter in hand, and it is expected that by the end of November the London office will be opened.

Prominence has been given in the daily press to a report in which it was said that the Wisconsin Steel Company, Chicago, a subsidiary interest of the International Harvester Company, has broken ground at its works on Torrence avenue for a new wire drawing plant to cost $1,000,000. This report is officially declared to be without foundation, and furthermore that the company is not planning to engage in the manufacture of wire. The report probably had its origin in the fact that foundations are now being laid for a building to accommodate a drawn shafting department, which will supply material for consumption in the company's own factories.

# THE IRON AGE

Established in 1855.

New York, Thursday, October 8, 1908.

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## A Twenty-Five Year Record in British and American Iron Centers.

The Iron and Steel Institute revisited the famous Cleveland District in England last week, this year being the twenty-fifth since its last meeting at Middlesbrough. A review of the district's progress in iron and steel in a quarter century was presented in a paper by W. Hawdon. While it shows a real advance, it is like all the statistical exhibits of the British iron trade in the past two decades or more, in having none of the sensational contrasts that make American iron trade statistics really fascinating. As the leader in pig iron and open hearth steel production in Great Britain, the Cleveland District may be compared with the Pittsburgh District in the United States, by way of bringing out the contrast between the pace at which the iron industry has advanced in this country and the rate of development which may be taken as the British standard. As the paper before us goes back to 1883, the comparison with the Pittsburgh District is particularly opportune, since that was the year in which Allegheny County passed the Lehigh Valley and took the lead in pig iron production in the United States. In the statement below we show the production of pig iron and steel in the two districts at the beginning and end of the twenty-five-year period in gross tons:

| | 1883. | | 1907. | |
|---|---|---|---|---|
| | Pig iron. | Steel. | Pig iron. | Steel. |
| Cleveland Dist. (Eng.)... | 2,760,740 | 314,606 | 3,534,068 | 1,749,347 |
| Pittsburgh District..... | 528,995 | 362,080 | 5,438,233 | 6,905,590 |

Expressing the growth of production in the two districts in percentages, the contrast is presented of an increase in pig iron output in the Cleveland District of 28 per cent. in the 25 years, while in the Pittsburgh District the increase in the same period was 928 per cent. The showing in steel is naturally more striking, since it represents not only the growth of an important period in the world's industrial development, but the revolution due to the converter and the regenerative furnace. As against 456 per cent. increase in steel for the Cleveland District there is a gain of 1808 per cent. for the Pittsburgh District.

Leaving these contrasts in growth, which are first suggested by Mr. Hawdon's paper, some of its statements concerning the Cleveland district are worthy of attention. The Cleveland iron ore production of 1883, it is a surprise to note, was the greatest on record—6,756,055 tons. In 1893, when steel had begun to replace manufactured iron, and foreign ores were being imported by the district for the production of acid steel, the demand for Cleveland pig iron for puddling fell off, and the lowest point in Cleveland iron ore production in the past 30 years was touched, at 4,625,530 tons. The development of basic open hearth steel manufacture in the Cleveland district, as shown by a production of 139,784 tons in 1903 and 416,207 tons in 1907, turned the tide in favor of native ores, and last year the ore production was 6,220,000 tons, or still 500,000 tons less than in 1883. Two causes have operated to prevent the Cleveland iron and steel companies from getting a sufficient supply of native ores. One is the gradual thinning of the ore seams and the necessity of carefully extracting shale and sulphur. The other is the action of the miners, who, when trade is good and wages high, cut down their daily output. It is worth while to note what the writer of the paper says on this point, as it is typical of British trade union procedure, and has its bearing on the tameness of the quarter century's statistical showing:

> One is bound to ask, Why not put more men on? The reply in part to this is that the miner, when being taught his trade, cannot "get" so much stone, and therefore of course cannot earn what is known as the average of the district, and when this happens a pretext is apt to be made by the miners' officials for an increase in the price per ton for getting the stone. The manager is thus between the devil and the deep sea; he wants more stone, but he cannot get it without paying a price which he cannot afford to give, and therefore hesitates to put on labor which has yet to be taught to be efficient. This is a curious incident when taken in connection with the unemployed problem, and apparently helps to maintain the army of unemployed, whereas the demand for more miners ought to afford an opening for their employment. Whatever the cause, the fact remains that, with the present demand, we are supplementing our supplies by using more foreign ores, and ores from other districts, for mixture with Cleveland ore, to keep pace with the demand. This of necessity increases the cost of production of Cleveland pig iron.

It is hard to imagine what would have been the state of Lake Superior iron mining to-day, or of the American steel industry at large, had its development been contingent upon the consent of such a type of labor unionism.

In reference to the power economies which are assuming prominence in all iron and steel operations, the paper notes that gas utilization is coming on slowly. In but few cases are blast furnaces and steel works found in conjunction, and fuel is so cheap that the saving in coal would not compensate for the installation of gas engines and gas cleaning plant. It is interesting to find, however, that in the way referred to in a paper printed elsewhere in this issue, a public electric power company is buying the exhaust steam from the Cleveland blast furnace blowing engines, and utilizing it in low pressure turbines to develop electric power of high tension. This method of making use of waste steam, and also of gases from blast furnaces, promises to develop into large proportions in this historic iron making center of Great Britain.

## Engineers' Power Tests of Machine Tools.

A few tool builders are making scientifically accurate measurements of the power consumed in driving their machines. The knowledge thus obtained has proved so valuable in correcting the estimates of designers and in providing data for the future development of their lines that a general adoption of the practice appears highly desirable. When the capacities of machine tools were limited by the use of carbon tool steels the question of power was not of such great importance. The machine was strong enough to stand up under any strain the cutting tool could endure, so that the limits were well defined and understood. But with the introduction of high-speed steels and the resultant redesigning of machinery to utilize their advantage fully, power has become an element of design requiring most careful attention.

The better realization of the matter has led to the

adoption of exact methods of determining this factor as it may exist under any condition of machine practice or experiment. A machine may be overpowered or underpowered; it may be given work to do that will impose excessive strains and consequent undue wear, or it may not be driven to its real capacity. Not only have the builders begun to employ scientific methods of determining these and similar facts, but some of their customers are doing likewise, insisting that their own engineers make the necessary tests on each machine or representative of each group of machines installed in their works. The manufacturers of electric equipment have gone into this more than any other industrial class, but the practice is not confined to them. A typical example is one of the great American steel companies which has found the tests well worth while, and has several times corrected to its own advantage errors in power estimates made by the machinery builders, the motor specified being either too large or too small for its purpose. The idea has also been successfully applied abroad, a notable exponent of the application of engineering science to this work being one of the most progressive of the British machine tool manufacturers, who has established the American system throughout his plant.

It is not always an easy matter to calculate the exact horsepower required to operate a machine tool, especially if heavy duty is to be imposed upon it. The most expert and painstaking designers have found themselves seriously at fault, when an engineer's test of the tool has been made. A specified 20-hp. motor has proved too powerful for economical service. A 10-hp. motor turned out to be wholly insufficent to bring out the real usefulness of a machine. In another case, the test revealed the fact that altogether too much power was consumed in the machine itself between the driving shaft and the point of the cutting tool. Quite frequently the testing apparatus brings to light similar hitherto unsuspected discrepancies between estimate and reality. Of course in many cases, perhaps in the large majority of them, the estimate is near enough, but there can never be any certainty that such is the case, and exact knowledge is of the highest value in machine design.

There is a natural inclination to overpower a machine tool, which is to be used with high speed steels. Every machine has its limit of economical operation; to force it beyond that point may mean much greater production for the time being, but it also means proportionately excessive rapidity of deterioration. This tendency in design may extend to making machines too heavy and more powerful than any cutting steel can stand up to, which former fault may have its compensations in rigidity and durability unless carried to the extreme of excessive cost. In other cases the power required to run the machine itself apart from its work is too great, inviting redesigning when the facts become known.

The machine designer strives to give to the machine the correct relation of strength and power and cost; for heaviest duty the maximum capacity of the high speed steels is the basis upon which the design is founded. It is easy to see where the initial machine of a new model would be a source of enormous practical advantage to the designer if he could equip it for exact measurements of power. There would be revealed to him the power required for each combination of speed and feed, and that for running idle; the effect of excessive strains upon the machine members, perhaps exposing weaknesses which otherwise might not appear until the machine was in operation in the customer's works, and the means of determining economical running points.

Underpowering a machine is more often the error of the customer than of the builder. One is constantly hearing of cases where investigation of the complaint of inefficiency in a tool has demonstrated the utter failure to carry out the manufacturer's specifications as to size of motor, or speed or width of belt. But occasionally the machine builder is himself at fault in this respect, underestimating the power required to do the best work with the tool, an error which the engineer's test would have quickly brought out before the machine was shipped from the shop.

The equipment with which to obtain this knowledge of power is not an expensive one for a large establishment, nor need it be for a small one, if electric power is available, as it is in almost every shop to-day, for the electric motor method of measurement is easily applied for the purpose. The belt method is sufficiently exact in many cases. Various instruments for assisting in the work are available. If the owner of a shop does not care to equip it, engineers may be found almost everywhere who would make tests.

## To Help the Railroads.

The formation last week of an organization by manufacturers of railroad supplies and equipment, with the purpose of combating public criticism and action adverse to the railroads of the United States, is an important movement. Railroad buying has shrunk to an alarming extent. The enlistment of so many important interests in a campaign of education, as shown by the names appearing in another part of this issue, denotes that the situation is a serious one. Those who participated in launching the organization should certainly be in a position to judge the harassing conditions which prevail, and their statement that the carrying interests are suffering more than their share of the business depression because of public clamor against them, is worthy of serious consideration. When railroads are not in a position to make extensions and repairs to their systems the public in general suffers, primarily because of inadequate railroad service, but principally because the lack of orders for material affects nearly every important branch of manufacture.

While the action of those represented at the meeting was not entirely unselfish, the spirit of extending help to interests thought to be unfairly treated by contributing time and money to such a movement should receive consideration from those who are opposing railroad interests and cause them to weigh their actions carefully. The efforts of the organization to secure fair play for the railroads are worthy of help, and as long as legitimate means are adopted to promote favorable public opinion and obtain fair legislation for railroad interests, the industrial world in general would do well to give the movement its assistance.

The business of the Heany Fire Proof Wire Company and that of the Teter-Heany Development Company, York, Pa., have been absorbed by two new companies which are largely controlled by New York interests, and which are capitalized at $3,500,000. The new companies will continue to operate the plants at York, which they are now enlarging. The plant of the Heany Fire Proof Wire Company, manufacturer of asbestos covered wire, is to be operated by the Heany Company, and the other branch of the business, the manufacture of tungsten lamps is to be conducted by the Heany Lamp Company. These companies have opened offices at 25 Broad street, New York. The officers and directors are N. Horheimer, president; Alvin Young, vice-president; R. H. Shindel, second vice-president; Richard Irvin, secretary; Curtis Hathaway, Gordon Brown, W. F. Bay, D. F. Lafean and R. A. Brodbeck.

# The Mining Engineers.

## The Meeting at Chattanooga.

What was in many respects the most successful meeting of the American Institute of Mining Engineers in recent years was held at Chattanooga, Tenn., during the past week, a considerable number of those in attendance leaving for Ducktown, Tenn., on Tuesday, the 6th. The original plan had been to hold the fall meeting at Birmingham, Ala., but the labor troubles in the district last month made it advisable to postpone the visit until a more auspicious occasion, since a settlement of the difficulties might have been delayed. This led to the acceptance of an invitation to Chattanooga, at rather short notice to the members of that city. In spite of what might have been a disadvantage, the members at Chattanooga and their friends arranged for a splendid programme of entertainments and excursions, while the list of professional papers available for presentation and discussion at the sessions was unusually large, varied and valuable.

The opening session, under the presidency of John Hays Hammond, was a brief one, the train bringing the majority of the members coming from the North having been delayed considerably. The Institute was welcomed in this, its third visit to Chattanooga, by Captain H. S. Chamberlain, the chairman of the local committee, and well known throughout the country as one of the pioneers in the development of the Chattanooga district as president of the Roane Iron Company at Rockwood, Tenn., and of the Citico Furnace Company of Chattanooga, Tenn.

The president, John Hays Hammond, then presented his annual address, entitled

### Professional Ethics.

in which he dwelt on the wider responsibilities of the mining engineer, as they relate to the determination of the pecuniary relations of the proposition under consideration. He analyzed the relation of the engineer to his employers, and stated as the experts' golden rule: "Tell unto others now whatsoever you would not have them tell on you (with unjust misunderstanding and scandalous comment) hereafter!"

Mr. Hammond then dealt in the following manner with a subject which is often spoken of but rarely discussed publicly by engineers.

Another question involved in the relations of a mining engineer to his employer concerns the acceptance of commissions from the sellers of machinery, supplies, &c., the purchase of which he has made as agent, or recommended as adviser. In many instances of similar nature affecting other professions, this practice seems to be established and condoned, if not avowedly justified. It is even defended by ingenious sophistry, somewhat as follows: The manufacturers of certain articles are bound by trade agreements not to sell them below a certain price, or, in the absence of such agreements, do not dare to "cut" the price, for fear of thereby invoking savage reprisals from their competitors. But this minimum price includes the salary or commission paid to a regular selling agent. If, therefore, the agent of a customer makes a purchase direct, without the intervention of their sales agent, they are willing to pay him "the regular commission," though they are not willing to reduce by the same amount their bill to his employer. The argument is plausible from the manufacturer's standpoint; and indeed it is hard to judge him justly. For if, in a given case, in order to gain a customer he undersells his competitors, he may be committing the henious modern sin of granting a "rebate"; whereas, if he refuses to do this, he may be guilty of partnership in a wicked "trust" or "combine." The popular sentiment and legislative furore which condemns at the same time free competition in prices and every agreement to prevent such competition, needs, as President Roosevelt has, in substance, frankly declared, to be modified by common sense.

But we are not now concerned with the ethical or legal problems of the manufacturer. From the standpoint of the engineer, acting as a purchasing agent or adviser, the case seems to me as clear in the court of honor as it would be in a court of law. He cannot honorably accept a commission from the seller, while he is the agent of the buyer. If the custom of the trade permits the giving of such a commission, but not its deduction from the face of the bill rendered, he may, of course, honorably accept it and pay it over to his own employer—that being the only way in which he could secure the minimum net price in his employer's interest. But even in that event he should place his honor beyond suspicion—as, for instance, by demanding the commission in a check to his own order, and indorsing the same check to the order of his employer. There may be exceptional cases in which the taking and keeping of a commission is justifiable, but one thing is clear beyond dispute: it is always wrong when it needs to be kept silent.

Mr. Hammond spoke of the position of the engineer as an expert witness in a court of law and of his responsibilities toward the public as the indorser of a proposed undertaking.

Dr. R. W. Raymond, in closing the session referred to the careers of two of the old members of the institute which it has recently lost by death, Capt. John Wilkes of Charlotte, N. C., and James D. Hague of New York.

The session on Friday morning was opened with the reading of a paper by T. H. Aldrich, Jr., of Birmingham, Ala., on the "Treatment of the Gold Ores of Hog Mountain, Ala.," the most interesting feature of which was the account of the studies made chemically and with a microscope of the exact manner in which the gold is carried in the ore and how it is locked up.

Then followed the paper, by Edward Bailey Cook, of Pottstown, on

### The Gayley Dry Blast

which was printed in the last issue of *The Iron Age*. The discussion was opened by Edgar S. Cook, president of the Warwick Iron & Steel Company, who desired to put on record the fact that it is not true, as occasionally intimated, that the company was given the right to use the Gayley process free, in consideration of introducing it into the plant. The Warwick Iron & Steel Company paid license, and is not in any way interested in exploiting the process. One clause in the contract with Mr. Gayley is that access be given to the data gathered. Mr. Cook explained his early interest in the use of dry air. As early as 1889 he began to gather data systematically on the moisture in the atmosphere as one of the factors influencing the changes in furnace working, and by watching the moisture he succeeded in keeping the furnace steadier and in lowering the fuel consumption. Mr. Cook referred to the fact that the elimination of the moisture in the blast was even then an old idea, and he had consulted with John Birkinbine of Philadelphia about means of accomplishing the end in question. The conclusion was reached that the cost would be as much as the possible gain. He did not at that time, nor had others realized what an influence upon uniformity of results the drying of the blast would have. Mr. Cook called attention to the fact that when there are 4 grains of moisture in the air there are being pumped into the furnace 150 lbs. of water per ton of iron produced, as illustrating the magnitude of the evil.

J. E. Johnson of Glen Wilton, Va., noted that Mr. Cook's records show some difference between summer and winter work, while C. A. Meissner, in former discussions, claimed that the effect was alike in both seasons. Mr. Johnson criticised the refrigerating plant on the ground that the work could be very much more economically performed. Thus far, it has been done in the simplest manner which may be justified during the experimental period. The question having been raised as to the effect of moisture in the stock in different seasons of the year, Mr. Johnson explained that that made no difference, since the moisture is removed by the waste heat in the throat. It does, however, cut down the heat in the gases and affects their combustion in the stoves.

John B. Miles of Frank C. Roberts & Co., Philadelphia, agreed with Mr. Johnson in his position that the cost of lowering the moisture in the blast by refrigeration can be considerably reduced by adopting direct refrigeration by ammonia, and not indirectly by brine. He had made an estimate, providing for a liberal charge for interest and depreciation, which showed that such a plant would more than pay for itself in two and a half years.

Mr. Johnson referred to the advantages of refrigeration in stages, and the lower cost thereof.

Dr. R. W. Raymond spoke on Mr. Gayley's invention, and explained the circumstances of Mr. Gayley's application in England for a renewal of his first patent

which has recently expired, for a period of seven years in addition to the original grant of 14 years. Mr. Gayley worked out his invention for a number of years, and then had considerable difficulty in inducing the management of his company to adopt it. It was finally put into operation at the Isabella furnaces at a considerable personal sacrifice by Mr. Gayley, and it is reported in the absence abroad of Charles M. Schwab. It took further time to introduce it into England, these facts being recited to establish Mr. Gayley's failure to benefit from the patent, in spite of diligence.

Particular interest attached to Mr. Gayley's application for an extension of his patent, because it was the first of its character under the new English practice. Formerly such applications came before the Privy Council; now it comes before a single judge, whose first case it was. In the course of the proceedings the judge soon waived aside any additional testimony on the value of the patent, which he was emphatic in stating had been fully established, but he did not appear to be satisfied as to the lack of remuneration to the petitioner, and took the broad ground that it was against public policy to force Englishmen to pay for the use of an invention by granting an extension, when Belgians could use it free of cost.

Dr. Raymond stated that the Gayley invention had gone through four stages, the first, in which the belief was prevalent that it had not been done; the second, that it had been acknowledged that it had been done; the third, the admission that the figures might be correct, although in conflict with theory, and the fourth, that the invention was not new, anyhow. Dr. Raymond called attention to the fact that it was a very difficult proposition to take the moisture out of what might be called a hurricane, the air flowing through the tuyeres at a speed of 25,000 feet per minute. Cooling down to 40 degrees does no good, but does harm. The blast must be cooled to zero, centigrade, and lower, or otherwise the moisture will not be deposited, but merely form a fog which is carried into the furnace.

The session closed with the reading of a very suggestive and valuable paper by John B. Miles of Philadelphia, on the "Relation of Slow Driving to Fuel Economy in Iron Blast Furnace Practice." Unfortunately, the hour was so far advanced that a discussion of this paper, which we print elsewhere, was impossible.

Before noon the members started in automobiles provided by members of the local committee to visit Chickamauga Park, where at Wilder's Monument, Hon. Henry Clay Evans outlined the principal movements of both armies during the battle. After lunch at Camp Oglethorpe a complimentary review and drill was held by the Twelfth United States Cavalry. The party returned to Chattanooga along the crest of Missionary Ridge.

The session of Friday evening was given to economic geology, the papers presented being that of Charles Butts of Washington on the "Geology of the Alabama Coal Measures," and by Ernest F. Burchard of Washington on the "Clinton Iron Ores in the Birmingham District."

"Monazite in the Carolinas" was the title of the first paper read at the Saturday morning session by Joseph Hyde Pratt of Chapel Hill, N. C., and Douglas B. Sterrett of Washington. It was followed by the paper by J. J. Rutledge of Baltimore, Md., on the "Clinton Iron Ore Deposits of Stone Valley, Huntington County, Pa.," in which the genesis of the Clinton ores was discussed. H. Foster Bain, director of the Geological Survey of Illinois, in a few sentences, admirably summarized the problems involved in the utilization of the coals of Illinois. The paper, entitled "Studies of Illinois Coals," is a symposium prepared by Professor Bain, Frank W. De Wolf, J. M. Lindgren, Perry Baker, George S. Rice, J. M. Snodgrass, A. Bement, W. F. Wheeler and C. K. Francis. Covering over 70 pages, it is probably the most illuminating summary of the conditions affecting the occurrence, mining and utilization of the coals of a State, with a clear statement of market factors which has yet been given to the literature of our fuels.

The afternoon was spent in a visit by special train to the lock and dam and power plant now under construction at Hale's Bar, on the Tennessee River. During the morning session Major Harts, United States Engineers, had outlined the plans of this great work, which is to develop 30,000 hp., and at the same time is to improve the navigation of the river.

In the evening there was a banquet tendered to the institute by an organization of public spirited citizens, the Chattanoogans, whose last guest was Ambassador Bryce.

On Monday morning the party were conveyed by special train to Rockwood, Tenn., for a visit to the mines and furnaces of the Roane Iron Company, under the guidance of F. H. Clymer, the general manager, as chairman of the local committee.

On Tuesday evening the party left for Copper Hill, Tenn., to visit the copper mines and works of the Ducktown district, where the Tennessee Copper Company and the Ducktown Sulphur, Copper & Iron Company are operating. Special interest attached to the new sulphuric acid works of the former.

## The Relation of Slow Driving to Fuel Economy in Iron Blast Furnace Practice.*

BY JOHN B. MILES, PHILADELPHIA, PA.

The present period of depression in the iron industry, with the resultant close approximation of the cost of production to the selling price of pig iron, should make the discussion of this subject at this time not only interesting, but profitable. It is possible that it may result in the collection of data, which, when added to those set forth in this paper, will clearly indicate the influence of the rate of driving a blast furnace upon its fuel economy.

The question is not whether an excessive rate of driving (meaning a rate definitely in excess of the average rate in the United States) results in an increase in the fuel consumption, but rather whether a rate considerably less than the average does not result in a marked decrease in the fuel consumption.

The commercial and metallurgical sides of this problem must be kept separate. With a large margin between the cost of production and the selling price of pig iron, and a plant already in operation, it is frequently profitable to sacrifice a couple of hundred pounds of fuel per ton of pig iron in order to secure the greater gross profits resulting from a larger tonnage. When this margin decreases with a plant in operation, or when the determination of the size of a new furnace intended for a certain production confronts the management, a clear understanding of the effect of the rate of driving upon fuel economy becomes necessary.

If it be granted that slow driving leads to low fuel consumption, it should be borne in mind in the design of a new plant for the production of a certain tonnage that the adoption of an economical rate of driving increases only the size of the furnace proper, whereas, due to the decrease in quantity of blast required on account of the decrease in fuel burned, the stoves, the blowing engines, the boilers and the piping may be decreased in capacity. The pressure of blast is decreased, which affects the boilers and blowing engines and increases the surplus power if gas engines are installed with the hope that a source of revenue will be found in the sale of power or its use in a nearby steel plant.

It is hardly necessary to call attention to the commercial value of a decrease in the loss from flue dirt as well as to a decrease in the difficulties due to its presence in the gas, with its adverse effect on stoves and boilers.

The rate of driving may be expressed in various ways, but for ease of calculation I have used, as an index, the consumption of fuel per square foot of hearth area per minute; thus paralleling the rate of driving of a boiler as expressed by the burning of so many pounds of coal per square foot of grate area. This naturally suggests the analogy between the relation of hearth area to cubic capacity of the blast furnace and the relation of grate area to heating surface in a boiler.

* Read at the Chattanooga meeting of the American Institute of Mining Engineers, October, 1908.

It would be still simpler to use as an index the piston displacement of the blowing engines per square foot of hearth area, but this introduces the efficiency of the blowing tub, and the tightness of valves and piping, all of which are outside of the furnace, and renders this method of comparison absolutely unreliable, no matter how convenient it may be for use in directing the furnace operation from day to day. Instead of the pounds of fuel, it would be still more accurate to use the weight of carbon burned per square foot of hearth area, but the analysis of the coke is not always obtainable, and furthermore, this refinement is not thought necessary.

The measure of economy in fuel consumption is best expressed by the total burden of ore plus limestone carried per pound of fuel. In all comparisons, the silicon content of the iron, the character of the ores used, and the quality of the fuel must be considered. No attempt has been made to reduce these total burdens in the accompanying table to a common basis whereby these factors would be introduced mathematically, and the comparative excellence of the furnace practice in the various cases be finally set forth. It will therefore be necessary in comparing a high silicon record with a low silicon one, to make allowance for the difference in burden which ordinarily obtains in making pig iron of different silicon content.

It is not supposed that even the best of the records given in the table indicate the ultimate limit of burden carrying capacity, and it is hoped that others may be given by members which will show even better work. No doubt some records may be produced showing excellent work with rapid driving, and doubt may result that the generalization connecting slow driving with fuel economy has been proved. Nevertheless, it must be admitted that many of these records show remarkably good work of furnaces taking a quantity of air in comparison with the size of the furnace much less than many furnace managers would consider feasible. In order that this effect may be more clearly seen, the quantity of air per minute has been calculated from the coke burned per minute, and has been introduced in the table under item *q*, on a constant nominal basis of 60 cu. ft. of air per pound of fuel.

Records Nos. 1 and 2 are German furnaces using minette ore. The total burdens, given under item *o*, are remarkably high, while rates of driving, indicated by the fuel burned per square foot of hearth per minute, and given under item *p*, are the lowest in this collection of records.

Record No. 3 is of a furnace in the Middlesbrough District, England. The ordinary rate of driving in this district is about 2.5 lb. of fuel per square foot of hearth area per minute, and the fuel economy is excellent.

Record No. 4 is of Union furnace No. 1 of the Illinois Steel Company.* Although the total burden carried is not among the highest, yet remarkably low fuel consumption was obtained on account of the richness of the ore. A comparison with the ores in use to-day is interesting.

Record No. 5 is of the furnace of the Penn Iron & Coal Company, taken from Arnold K. Reese's paper.†

Record No. 6 is of a charcoal furnace.

Records Nos. 7 and 8 are of two furnaces with identical lines using Cornwall ore. These data are interesting because the difference in fuel consumption shown obtained over long periods consistently, the difference in the rate of driving being also constant, due to a difference in the blast equipment.

Records Nos. 9 and 10 are of a furnace in Illinois. These show the effect of an increased rate of driving, the blowing equipment having been enlarged during the month of November.

Record No. 11 is of a furnace, the hearth diameter of which was made large in relation to the desired output when the furnace was designed, with the hope that the resulting slow driving would give a low fuel consumption. The performance of this furnace from the begin-

* *Transactions*, xx, 282 to 285 (1891).
† *Transactions*, xxvii, 477 to 485 (1897).

*Data of Blast Furnace Records.*

| | 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. | 9. | 10. | 11. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *a.* Date | 1904. | 1904. | Oct., 1905. | Aug., 1890. | 1895-1896. | 1898. | March, 1899. | March, 1899. | Oct., 1906. | Dec., 1906. | March, 1908. |
| *b.* Period | Year. | Year. | 28 days. | 14 days. | 181 days. | Year. | 7 days. | 7 days. | Month. | Month. | 7 days. |
| *c.* Hearth diameter | 14 ft. 5 in. | 11 ft. 6 in. | 11 ft. 0 in. | 8 ft. 6 in. | 10 ft. 6 in. | 7 ft. 0 in. | 10 ft. 0 in. | 10 ft. 0 in. | 15 ft. 6 in. | 15 ft. 6 in. | 13 ft. 6 in. |
| *d.* Bosh diameter | 22 ft. 2 in. | 22 ft. 2 in. | 20 ft. 2 in. | 14 ft. 10 in. | 16 ft. 6 in. | 12 ft. 0 in. | 18 ft. 0 in. | 18 ft. 0 in. | 22 ft. 0 in. | 22 ft. 0 in. | 20 ft. 0 in. |
| *e.* Stock line diameter | 14 ft. 9 in. | 16 ft. 2 in. | ..... | 9 ft. 4 in. | 12 ft. 6 in. | 8 ft. 0 in. | 14 ft. 0 in. | 14 ft. 0 in. | 16 ft. 0 in. | 16 ft. 0 in. | 14 ft. 0 in. |
| *f.* Hight | 94 ft. 3 in. | 82 ft. 3 in. | 90 ft. 0 in. | 72 ft. 4 in. | 75 ft. 0 in. | 60 ft. 0 in. | 70 ft. 0 in. | 70 ft. 0 in. | 90 ft. 0 in. | 90 ft. 0 in. | 80 ft. 0 in. |
| *g.* Average daily product, tons | 190 | 140 | 140 | 130 | 207 | 106 | 109 | 121 | 452 | 498 | 242 |
| *h.* Yield of ore, per cent | ..... | ..... | 41.5 | 63.5 | 59.0 | 52.0 | ..... | ..... | 51.0 | 52.6 | 52.2 |
| *i.* Fuel per ton of iron, pounds | 2,350 | 2,380 | 2,680 | 1,660 | 1,664 | 1,690 | 3,261 | 3,377 | 1,936 | 2,217 | 2,320 |
| *j.* Ore per ton of iron, pounds | ..... | ..... | 5,400 | 3,520 | 3,800 | 4,300 | ..... | ..... | 4,400 | 4,250 | 4,280 |
| *k.* Limestone per ton of iron, pounds | ..... | ..... | 1,830 | 606 | 771 | ..... | ..... | ..... | 1,102 | 1,091 | 1,180 |
| *l.* Ore plus limestone per ton of iron, pounds | 7,320 | 7,620 | 7,230 | 4,126 | 4,571 | ..... | ..... | ..... | 5,502 | 5,341 | 5,460 |
| *m.* Ore per pound of fuel, pounds | ..... | ..... | 2.01 | 2.12 | 2.20 | 2.55 | ..... | ..... | 2.27 | 1.92 | 1.84 |
| *n.* Limestone per pound of fuel, pounds | ..... | ..... | 0.68 | 0.36 | 0.46 | ..... | ..... | ..... | 0.57 | 0.49 | 0.51 |
| *o.* Ore plus limestone per pound of fuel, pounds | 3.13 | 3.20 | 2.69 | 2.48 | 2.66 | ..... | ..... | ..... | 2.84 | 2.41 | 2.35 |
| *p.* Fuel per square foot of hearth per minute | 1.96 | 2.29 | 2.75 | 2.66 | 2.86 | 3.33 | 3.25 | 3.75 | 3.42 | 4.23 | 2.86 |
| *q.* Air per minute from (*p*) calculated on basis of 60 cu. ft. per pound of fuel | 19,200 | 14,280 | 15,700 | 9,250 | 14,800 | 7,680 | 15,290 | 17,600 | 38,700 | 48,000 | 24,500 |
| *r.* Average silicon in iron, per cent | Basic. | Basic. | 1.00 | 1.6 | 1.23 | 1.0 | ..... | ..... | 1.27 | 1.10 | 2.50 |
| *s.* Average sulphur in iron, per cent | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 0.044 | 0.049 | ..... |
| *t.* Temperature of blast, degrees F | ..... | ..... | ..... | 1,200 | 1,108 | 1,220 | ..... | ..... | 915 | 885 | 1,200 |

ning of its blast to the present time indicates that no error was made in the adoption of this theory of design.

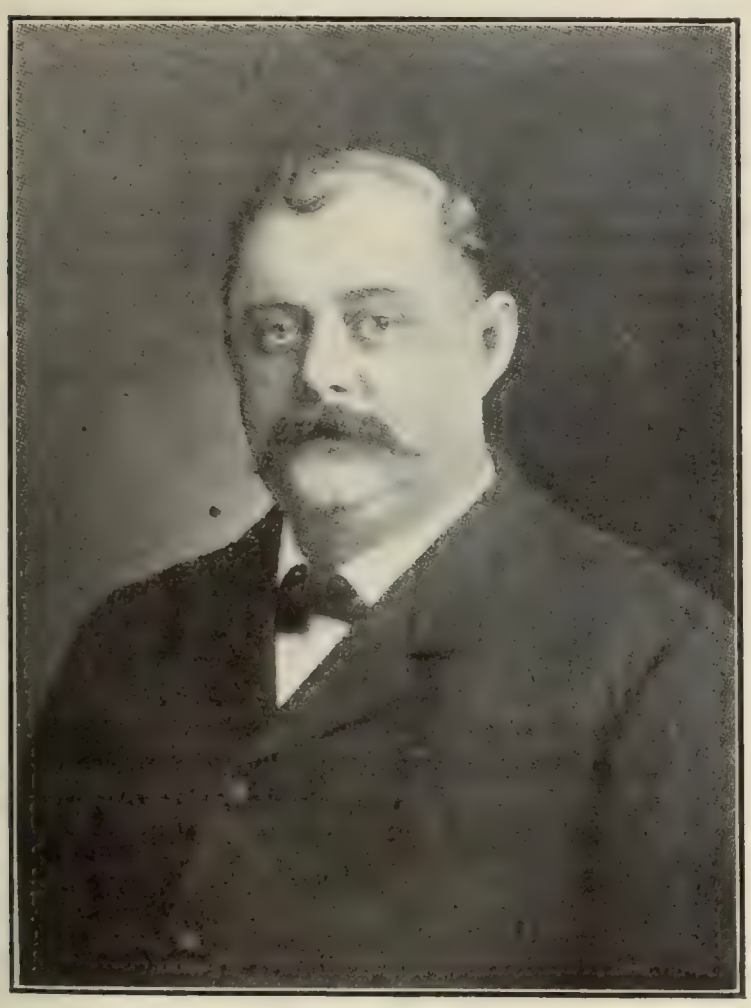
The usual rate of driving in the United States with a modern equipment is approximately 4.25 lb. of fuel per square foot of hearth area per minute. With the data in hand it is not possible to develop a rule for the most economical rate of driving with relation to fuel, for high or low silicon irons, but it appears that for either kind of iron a rate less than 4 lb. is desirable, and it seems probable that a rate as low as 3 lb. may prove still more ecomonical, so far as fuel is concerned.

If the records of the furnaces operated by the United States Steel Corporation were tabulated and published in some such form as that suggested by this paper, no doubt exceedingly valuable deductions could be made as to the influence of the rate of driving upon the fuel economy. The knowledge thus obtained would be of great benefit to the blast furnace industry.

## OBITUARY.

HENRY E. PRIDMORE.

Henry E. Pridmore, Chicago, died of apoplexy September 25, in Glasgow, Scotland. Accompanied by his son, Henry A. Pridmore, he was traveling for the benefit



HENRY E. PRIDMORE.

of his health, which for several years has been impaired. His condition, however, was not considered critical, and the announcement of his death came as a shock to his family and friends. From his long connection with leading implement manufacturing concerns, and his later prominence as an iron founder, Mr. Pridmore was widely and favorably known among a large circle connected with these industries. Born in Brockport, N. Y., September 21, 1854, he began his business career as a machinist's apprentice in his home city. Having served his time, he was successively engaged in mechanical work in Rochester, Palmyra, and Albany, N. Y. In the last named city his first connection with the agricultural implement business began. After engagements embracing service with the Johnston Harvester Company, now of Batavia, N. Y., and the firm of Warder, Bushnell, Glessner & Co., Springfield, Ohio, he went to Chicago in 1879 to accept a position in the works of the McCormick Harvesting Machine Company. Having become interested in the study of methods for the improvement of foundry practice, he embarked in business on his own account in 1892, and gradually developed a large foundry trade, in which the manufacture of molding machines of his own invention became the central product. He leaves four sons.

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WILLIAM HOLLOWAY BAILEY, a pioneer in the brass and copper tube industry in this country, died at his residence in New York city October 5, aged 75 years. He had been connected with the American Tube Works of Boston for 58 years, and was the New York representative of the company for the last 50 years. He was a member of the Union League, Engineers' Club, Downtown Association, American Society of Mechanical Engineers, Society of Naval Architects and Marine Engineers, New York Yacht Club, Geographical Society, Metropolitan Museum of Art, Museum of Natural History, and the Academy of Design.

JOHN J. REARDON, president of the Central Foundry Company, Milwaukee, Wis., died September 28, after a long illness, aged 58 years. He had spent most of his life in the iron business, filling responsible positions as superintendent of departments with the Allis-Chalmers Company, Filer & Stowell and other large manufacturing concerns until two years ago, when he organized the Central Foundry Company, with three sons, James P., John E. and Daniel J., associated with him. Besides the sons, Mr. Reardon leaves a widow and six daughters.

JOHN M. KEMMERER died September 26 at his home in Scranton, Pa., aged 62 years. Born near Stroudsburg, in that State, he went to Scranton in 1863, when 17 years old, and three years later entered the hardware business as a member of the firm of A. Bittenbender & Co., a connection which was maintained until he died. Mr. Kemmerer was influential in the commercial life of the city, serving as chairman of the Finance Committee of the Board of Trade, and later as president of the board for two terms. At various periods he was Common Councilman and School Director, and he was prominent in Masonic orders. He leaves a widow, one son and a daughter.

**Ensley September Records.**—Under the management of Frank H. Crockard, the Ensley plant of the Tennessee Coal, Iron & Railroad Company has made some excellent records in September. The open hearth mill in the steel plant produced 43,366 tons of steel, against 41,469 tons in July, 1908, the best previous record date. The blooming mill turned out 40,968 tons of steel against 39,056 tons in August last, the best previous record to date. The rail mill produced 34,032 tons of rails, against 32,240 tons in August, 1908. Alice Furnace, manufacturing basic iron, produced 7,532 tons of iron, against 7,452 tons in August, while the Bessemer No. 4 furnace produced 6,238 tons of iron, against 6,123 tons in August. The production of hard ore in September went to 124,555 tons, against 124,339 tons in March, 1907, the best previous record to date. In brown ore the figures show a production of 19,440 tons last month, against 19,140 tons in August. The records of daily production show that 1,557 tons of rails were produced on September 25, the highest previous record being 1,508, on the 17th of the same month. The Ensley No. 5 blast furnace produced 438 tons of iron September 30, against a record for one day of 383 tons in April, 1908.

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The Standard Sanitary Mfg. Company, Pittsburgh, has completed plans for a new foundry at New Brighton, Pa. The building will be 140 x 180 ft., and will be constructed of steel and concrete. The new foundry will be supplied with modern cupolas, machine molding equipment and the most improved appliances, which will largely increase the capacity of the plant for manufacturing castings. The improvements will cost about $100,000. The company has also arranged for the erection of a new enameling building, to be erected at the Louisville, Ky., plant, which will be 75 x 210 ft.

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Since the war with Japan the mileage of the Chinese railroads has materially increased. Including the Manchurian railroads there are now 3200 miles of road in operation, an equal amount projected and 1100 miles building. In northern China and in Manchuria Russian influence has decreased.

# Pig Iron Output Grows.

## September Product 1,418,998 Tons.

### Active Capacity October 1 Two-thirds That of a Year Previous.

September, with one day less than August, shows a production of coke and anthracite pig iron about 60,000 tons greater, or 1,418,998 tons, against 1,359,831 tons. The weekly capacity of furnaces in blast on October 1 was 337,925 tons, or 66 per cent. of the capacity active at the beginning of the high record month of October, 1907. The steel works furnaces produced 933,514 tons last month and the merchant furnaces 485,484 tons. The daily rate for the steel works was thus 31,117 tons in September, or 7.5 per cent. greater than in August, while the merchant furnace output was 16,183 tons a day, or 8.6 per cent. greater than in August. The daily output of the coke and anthracite furnaces was 40 per cent. greater in September than in January. The number of furnaces in blast October 1 was 188, or 9 more than on September 1, 27 more than on August 1, and 37 more than on July 1. Of the gain of 9 in September, 8 belong to the merchant furnace list. The daily rate of production by months for this year is as follows:

*Daily Rate of Production.—Gross Tons.*

| | Steel works. | Merchant. | Total. |
|---|---|---|---|
| January | 21,432 | 12,286 | 33,718 |
| February | 25,717 | 11,446 | 37,163 |
| March | 27,145 | 12,474 | 39,619 |
| April | 24,185 | 14,104 | 38,289 |
| May | 24,505 | 13,098 | 37,603 |
| June | 23,923 | 12,521 | 36,444 |
| July | 25,762 | 13,525 | 39,287 |
| August | 28,952 | 14,899 | 43,851 |
| September | 31,117 | 16,183 | 47,300 |

**Capacity in Blast October 1 and September 1.**

In the following table is given the weekly capacity of coke and anthracite furnaces in blast October 1 and September 1, based largely on their performance in the preceding month in each case:

*Coke and Anthracite Furnaces in Blast.*

| Location of furnaces. | Total number of stacks. | October 1. Number in blast. | October 1. Capacity per week. | September 1. Number in blast. | September 1. Capacity per week. |
|---|---|---|---|---|---|
| New York: | | | | | |
| Buffalo | 14 | 10 | 23,303 | 9 | 18,209 |
| Other New York | 7 | 3 | 3,926 | 3 | 3,510 |
| New Jersey | 8 | 2 | 3,855 | 2 | 3,808 |
| Spiegel | 2 | 0 | 0 | 0 | 0 |
| Pennsylvania: | | | | | |
| Lehigh Valley | 25 | 9 | 9,713 | 8 | 8,628 |
| Spiegel | 3 | 1 | 130 | 1 | 138 |
| Schuylkill Valley | 15 | 5 | 6,421 | 4 | 5,551 |
| Low. Susquehanna | 7 | 2 | 3,335 | 2 | 3,278 |
| Spiegel | 1 | 0 | 0 | 0 | 0 |
| Lebanon Valley | 10 | 3 | 2,305 | 3 | 2,058 |
| Pittsburgh Dist. | 45 | 31 | 81,841 | 31 | 81,762 |
| Spiegel | 3 | 2 | 1,956 | 2 | 1,556 |
| Shenango Valley | 20 | 11 | 20,853 | 11 | 21,527 |
| West. Penn | 27 | 13 | 19,047 | 11 | 16,524 |
| Maryland | 4 | 2 | 3,905 | 2 | 3,617 |
| Wheeling Dist | 14 | 3 | 5,462 | 3 | 5,502 |
| Ohio: | | | | | |
| Mahoning Valley | 18 | 11 | 26,507 | 9 | 23,261 |
| Central and North. and Michigan | 22 | 12 | 28,996 | 12 | 28,110 |
| Hocking Val., Hanging Rock and S. W. Ohio | 13 | 4 | 3,603 | 7 | 5,232 |
| Illinois and Indiana | 24 | 15 | 37,208 | 15 | 33,215 |
| Spiegel | 2 | 0 | 0 | 1 | 1,678 |
| Minnesota | 1 | 0 | 0 | 0 | 0 |
| Wisconsin | 6 | 1 | 1,785 | 1 | 1,502 |
| Missouri and Colorado | 7 | 4 | 6,002 | 3 | 4,666 |
| The South: | | | | | |
| Virginia | 23 | 9 | 7,004 | 10 | 6,995 |
| Kentucky | 5 | 1 | 1,050 | 0 | 0 |
| Alabama | 46 | 22 | 31,948 | 20 | 27,738 |
| Tennessee | 18 | 11 | 7,220 | 9 | 5,047 |
| Georgia and Texas | 3 | 1 | 550 | 0 | 0 |
| Totals | 393 | 188 | 337,925 | 179 | 313,112 |

The list of furnaces blown in in September includes one Colorado, one Buffalo & Susquehanna at Buffalo, one Warwick in the Schuylkill Valley, one Thomas in the Lehigh Valley, one Shenango in the Shenango Valley, Earlston and one Cambria in Western Pennsylvania, Norton in Kentucky, Cleveland in Northern Ohio, Brier Hill and Haselton No. 1 in the Mahoning Valley, one Sloss-Sheffield and Woodstock in Alabama, Citico and one Rockwood in Tennessee, and Rome in Georgia.

Furnaces blown out in September were New Castle No. 3 in the Shenango Valley, Dover in Central Ohio, and Bessie in the Hocking Valley, Crozer in Virginia, Globe and Marting in the Hanging Rock Region, one Joliet in Illinois.

**September Product by Districts.**

The table below gives the production of coke and anthracite furnaces in August and the four months preceding:

*Monthly Pig Iron Production.—Gross Tons.*

| | May. (31 days) | June. (30 days) | July. (31 days) | August. (31 days) | Sept. (30 days) |
|---|---|---|---|---|---|
| New York | 64,746 | 61,249 | 66,498 | 83,004 | 108,453 |
| New Jersey | 20,889 | 15,963 | 14,830 | 16,866 | 16,544 |
| Lehigh Valley | 28,712 | 26,357 | 28,028 | 36,701 | 42,184 |
| Schuylkill Val. | 25,566 | 23,814 | 25,115 | 24,586 | 23,918 |
| Lower Susquehanna and Lebanon Val. | 29,943 | 31,058 | 26,204 | 23,632 | 24,170 |
| Pittsburgh Dis. | 284,571 | 259,771 | 303,645 | 362,417 | 359,132 |
| Shenango Val. | 53,720 | 58,244 | 82,978 | 91,534 | 93,372 |
| West. Penn | 54,185 | 59,521 | 63,433 | 73,207 | 72,633 |
| Md., Va. and Kentucky | 49,273 | 46,802 | 46,635 | 47,492 | 50,150 |
| Wheeling Dis. | 18,121 | 16,539 | 19,405 | 24,368 | 23,409 |
| Mahoning Val. | 99,788 | 89,238 | 93,635 | 103,021 | 102,606 |
| Central and North. Ohio | 88,995 | 70,283 | 92,737 | 117,016 | 119,163 |
| Hocking Valley Hanging Rock and S.W.Ohio | 21,259 | 20,342 | 20,187 | 19,909 | 22,376 |
| Mich.,Minn.,Mo., Wis., Colo. | 36,831 | 34,363 | 40,029 | 35,542 | 39,408 |
| Chicago Dis. | 165,291 | 153,162 | 152,981 | 156,537 | 167,896 |
| Alabama | 104,697 | 110,196 | 123,301 | 122,840 | 126,137 |
| Tennessee, Georgia and Texas | 19,101 | 15,229 | 18,488 | 21,159 | 27,447 |
| Totals | 1,165,688 | 1,092,131 | 1,218,129 | 1,359,831 | 1,418,998 |

**Production of Steel Companies.**

Returns from all the plants of the United States Steel Corporation, the Cambria, Pennsylvania, Maryland, Lackawanna, Wheeling, Republic, Youngstown Sheet & Tube Company, Jones & Laughlin, La Belle, Bethlehem, Calumet, Inland, Colorado and Tennessee (Ensley) companies show the following totals of product month by month. We give separately a statement of the output of spiegeleisen and ferromanganese, which is included for each month in the total production:

*Production of Steel Companies.—Gross Tons.*

| | Pig.—Total production. 1906. | 1907. | 1908. | Spiegeleisen and ferromanganese. 1907. | 1908. |
|---|---|---|---|---|---|
| January | 1,358,015 | 1,406,397 | 664,415 | 21,477 | 20,254 |
| February | 1,226,760 | 1,317,923 | 745,802 | 19,444 | 9,402 |
| March | 1,400,395 | 1,424,827 | 841,502 | 31,091 | 13,750 |
| April | 1,333,591 | 1,446,788 | 725,548 | 26,527 | 12,363 |
| May | 1,372,423 | 1,470,080 | 759,674 | 28,822 | 17,823 |
| June | 1,293,437 | 1,457,230 | 717,689 | 30,942 | 15,958 |
| July | 1,323,391 | 1,452,557 | 798,639 | 25,343 | 10,250 |
| August | 1,237,485 | 1,445,685 | 897,052 | 23,696 | 14,932 |
| September | 1,264,380 | 1,417,153 | 933,514 | 30,270 | 8,938 |
| October | 1,452,200 | 1,514,521 | ..... | 35,105 | ..... |
| November | 1,411,350 | 1,084,114 | ..... | 21,861 | ..... |
| December | 1,445,528 | 659,459 | ..... | 19,480 | ..... |

**A Record of Active Capacity.**

The active weekly capacity in coke and anthracite iron has shown the following fluctuations since January 1, 1904:

| | Capacity per week. | | Capacity per week. |
|---|---|---|---|
| October 1, 1908 | 337,925 | May 1 | 484,031 |
| September 1 | 313,112 | April 1 | 484,240 |
| August 1 | 284,590 | March 1 | 479,737 |
| July 1 | 264,452 | February 1 | 482,156 |
| June 1 | 259,284 | January 1, 1906 | 463,673 |
| May 1 | 268,674 | December 1, 1905 | 475,814 |
| April 1 | 264,890 | November 1 | 460,449 |
| March 1 | 267,437 | October 1 | 445,468 |
| February 1 | 241,925 | September 1 | 412,563 |
| January 1, 1908 | 232,652 | August 1 | 410,088 |
| December 1, 1907 | 347,372 | July 1 | 408,617 |
| November 1 | 491,436 | June 1 | 443,092 |
| October 1 | 511,397 | May 1 | 452,031 |
| September 1 | 507,768 | April 1 | 439,564 |
| August 1 | 513,471 | March 1 | 403,157 |
| July 1 | 528,170 | February 1 | 405,792 |
| June 1 | 523,220 | January 1, 1905 | 377,879 |
| May 1 | 524,538 | December 1, 1904 | 357,846 |
| April 1 | 496,456 | November 1 | 334,249 |
| March 1 | 511,035 | October 1 | 319,249 |
| February 1 | 492,359 | September 1 | 291,573 |
| January 1, 1907 | 507,397 | August 1 | 246,092 |
| December 1, 1906 | 513,860 | July 1 | 272,301 |
| November 1 | 500,580 | June 1 | 336,107 |
| October 1 | 469,665 | May 1 | 368,244 |
| September 1 | 441,426 | April 1 | 337,257 |
| August 1 | 449,908 | March 1 | 308,751 |
| July 1 | 460,570 | February 1 | 273,692 |
| June 1 | 472,622 | January 1, 1904 | 185,636 |

To avoid the undue oxidation often attending the melting of small aluminum scrap, the following suggestion is made by the *Foundry*: It is advisable to melt the heavier pieces first in a large crucible and when the metal has reached a red heat the smaller pieces of scrap and borings can be added. The borings should be pushed down into the molten bath as rapidly as possible and the metal should be well stirred.

# NEWS OF THE WORKS.

### Iron and Steel.

The blast furnace of the Midland Steel Company at Midland, Pa., which has been shut down for several months, will probably be started up about October 10. It has a daily capacity of 350 to 400 tons.

The Brier Hill Iron & Coal Company, Youngstown, Ohio, has completed the rebuilding of its Grace Furnace and the stack has been started. It is 21 x 85 ft., with four stoves, each 19½ x 85 ft., and has a daily capacity of 350 to 400 tons. A new blowing engine was installed at the furnace, built by the William Tod Company of Youngstown.

The new blast furnace of the Jackson Iron & Steel Company, Jackson, Ohio, was blown in this week.

The blast furnace of the Warner Iron Company, at Cumberland Furnace P. O., Tenn., will be blown out about November 1 for repairs.

No. 2 furnace of the Alabama Consolidated Coal & Iron Company, at Gadsden, Ala., has been put in blast.

### General Machinery.

The Standard Bridge Tool Company, Curry Building, Pittsburgh, Pa., builder of spacing tables and machinery for structural plants, has been awarded a contract by the Western Steel Car & Foundry Company, Burnham, Ill., for a special angle punch and spacing table.

M. C. Ducrow, Natchez, Miss., inventor of a loading and unloading machine, and others contemplate organizing a company to put the machine on the market.

### Power Plant Equipment.

The important changes and improvements to the plant of the Union Boiler & Mfg. Company, Lebanon, Pa., will considerably increase the capacity and enable the company to take care of the increasing demand for its products, which include steam boilers, tanks, smokestacks and blast furnace work, the latter of which it makes a specialty. The new additions, which are about completed, are of brick and steel and include two new bays adjoining the main shop, 29 x 64 ft., and a new wing, 32 x 40 ft. The shop with the additional room is now 58 x 202 ft. A new wing on the west side of the plant, 46 x 74 ft., will be used for storage purposes and one of the new bays is to be used for the blacksmith and flanging department. In the west of the main building there is installed a 5-ton traveling crane with 25-ft. span, and under the crane will be a 75-ton hydraulic riveter for riveting boiler shells and other work. The main shop has been equipped with a 15-ton traveling crane with a 3-ton auxiliary hoist, 53 ft. span, which travels the full length of the shop. In the new blacksmith shop an 800-lb. steam hammer is being installed to take the place of the small one, which has been discarded. Shipping facilities are furnished by the Philadelphia & Reading Railroad, a siding from which runs through the new shop. The present officers are Robert Mitchell, president; John J. Hursh, vice-president; H. T. Richards, secretary; John Hunsicker, treasurer, and William H. Schools, superintendent.

For the improvement of the electric light and water systems the city of Sherman, Texas, has authorized a $30,000 bond issue. Of this sum $16,000 will be devoted to improvement of the electric light plant and $14,000 for the water works system. Specifications for this work have not yet been prepared.

The trustees of Rye, N. Y., will receive bids until October 28 for the construction of sanitary sewers and a sewage disposal plant, the requirements including 12,600 ft. of 4 to 16 in. iron pipe, two small pumping stations, &c.

The Brooklyn Rapid Transit Company is to erect a new substation on Thirty-eighth street, near Fifth avenue, Brooklyn, N. Y., at a cost of $65,000. The building will be 50 x 100 ft., and at the start will be equipped with a 2000-kw. rotary converter, which we understand has been contracted for. It is probable that other equipment will be added later.

The Montgomery Light & Water Power Company, Montgomery, Ala., intends to spend about $100,000 in making improvements to its plant, the greater part of the amount to be expended on the power plant at Tallasee Falls, about 30 miles from Montgomery. It is estimated that 10,000 additional horsepower will be developed.

The National Valve & Mfg. Company, Pittsburgh, Pa., has received a contract for installing a high pressure steam line in the plant of the American Steel & Wire Company, Cuyahoga Falls, Ohio.

The Auburn Light, Heat & Power Company, Auburn, N. Y., is taking bids on power house building, 60 x 75 ft., to be erected on the site of the present power building. The building will be equipped with a 10-ton traveling crane, one 500-hp. upright boiler, feed pumps, condenser, generators and other equipment. Part of the present equipment will be utilized in the new plant.

Contracts for construction and equipment of the new water works system to be constructed at Shortsville, N. Y., have been awarded as follows: Cast iron pipe and specials to Charles Miller & Son, Utica, N. Y.; pipe at $23.50 per ton and specials at 2½ cents per pound; hydrants and valves, Ludlow Valve Mfg. Company, Troy, N. Y.; pumps and motors, Goulds Mfg. Company, Seneca Falls, N. Y. The contract for steel tank and tower has not yet been awarded.

The United Coke & Gas Company, New York, has the contract for the by-product ovens, the main condenser house and the power plant for the new Citizens' Gas Company, at Indianapolis, Ind.

### Foundries.

The Nash Foundry Supply Company, which has been in business in Birmingham, Ala., for the past eight years, and which has enlarged its plant three times in that period, has incorporated its business, adding $15,000 to its capital and taking in L. A. Christian as secretary and treasurer. The company has a modern foundry facing plant and is prepared to ship goods the day the order is received. D. W. Nash is president.

The Bellevue Pipe & Foundry Company, Bellevue, Ohio, has filed a schedule in the United States District Court at Toledo in which it places its debts at $41,099.74 and assets at $124,483.33. The schedule was filed in response to an involuntary petition in bankruptcy by creditors entered August 30.

### Bridges and Buildings.

W. N. Kratzer & Co., Pittsburgh, Pa., fabricators of structural steel, have received a number of orders recently which necessitated increasing the number employed at the plant by about 40 men. The firm reports that inquiries are improving and future prospects are better than for some time.

### Fires.

The machine shop of the E. L. Jones Steel Ball Company, at Buffalo, N. Y., was burned October 3, the loss being about $25,000. Part of the company's plant was burned about two months ago.

The plant of the Pittsburgh Plate Glass Company, at Tarentum, Pa., was burned October 4, the loss being about $200,000. It is stated that many of the polishing machines were destroyed.

The cutting mill of the Williamsport Nail Works, Williamsport, Pa., was destroyed by fire October 5, the loss being about $50,000.

### Hardware.

The Mulholland Company, Dunkirk, N. Y., manufacturer of Mulholland springs, shaft couplers and rubber tires and builder of vehicles, has just completed an addition to its factory which admits of increased output and enables the company to fill its orders more promptly.

The National Cutlery Company, Philadelphia, Pa., reports business as such that it is necessary to run the plant from 7 a.m. until 9 p.m. Orders on the company's books indicate that this condition of affairs will continue for at least a period of six months

### Miscellaneous.

The Mount Union Silica Brick Company, Mt. Union, Pa., is improving its plant by building three new 85-ft. tunnels of steel and concrete construction, for use in connection with its heating and drying system, and a new airproof brick lime house, 16 x 64 ft. This plant has a daily capacity of 50,000 brick.

The Twin City Boiler & Sheet Iron Works, Bristol, Tenn., has been incorporated with a capital stock of $20,000 by Henry Ehret, president; J. P. Oakes, vice-president, and J. G. Tilley, secretary and treasurer. The company has begun operations in its plant and has purchased all the required machinery with the exception of a second-hand welder, for which it is in the market.

The Pittsburgh Gage & Supply Company, Pittsburgh, Pa., is installing high pressure steam lines for the Brownsville Water Company, Brownsville, Pa., and the Pittsburgh-Belmont Coal Company, Neffs, Ohio. The company also has contracts for installing continuous oiling systems equipped with White Star filters for the following: Wickwire Steel Company, Buffalo, N. Y.; Packard Motor Car Company, Detroit, Mich., and the P. F. Wood Boiler Company, New Bedford, Mass.

The Pittsburgh Emery Wheel Company, Park Building, Pittsburgh, works at Rochester, Pa., has received a number of very satisfactory reports from tests made on trial orders of grinding wheels recently shipped to various sections of the country, and the company received last week quite a number of orders for its emery wheels.

The Waverly Company, recently organized, which bought the Indianapolis, Ind., plant of the Pope Motor Car Company has elected the following officers: President, Wm. B. Cooley; vice-president, H. H. Rice; secretary, Wilbur C. Johnson; treasurer, Carl von Hake.

The Childs Automobile Company, a newly organized concern, has rented the building on Siegrist street, Newark, N. J., formerly occupied by the Reed Mfg. Company, and will engage in the manufacture of automobiles. S. H. Mora of the Mora Motor Car Company is president of the new company.

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Some time ago the Crane Company, Chicago, bought a large tract of land at Verona, Pa., near Pittsburgh, on which to build a plant for the manufacture of its products. The company now states that nothing will be done in the way of building this year.

# The Iron and Metal Trades

## Pig Iron Production Increasing.

### The Whole Trade Is Marking Time Awaiting the Elections.

Pig Iron production has made quite marked progress since the summer's lull. In June the output had declined to 36,500 tons per day. In September it averaged 47,300 tons per day, and we entered October with a daily capacity of over 48,000 tons. This is at the rate of over two-thirds of the production of the banner month, October of last year.

The September production was 1,419,000 tons, of which the Steel works furnaces made 933,500 tons and the merchant furnaces 485,500 tons. Unfortunately no statistics of stocks are available, so that it is impossible to judge whether consumption is taking care of all the current make. It is well known, however, that in some leading districts the accumulations have been considerably reduced, while in others makers being able to carry their Iron are content to wait for a turn for the better. One feature is that consumers' yards are bare all over the country.

The whole line of the crude and finished branches of the Iron trade is simply marking time. It is only under exceptional circumstances that buyers surrender their reserve, preferring to await developments, however confident they may feel that a spell of increased activity will follow the elections.

There are few items of interest to report. The material for the 5000 Steel underframe cars for the St. Paul road has been placed, 12,000 tons of Shapes and Plates going to the Illinois Steel Company and 10,000 tons of 20-inch Beams to the Bethlehem Steel Company.

A very considerable number of contracts for Structural Material are shaping up in different parts of the country, but comparatively little work has been actually given out lately. Complaints continue to be heard of very low prices made by fabricators.

There has been quite a movement in Heavy Melting Scrap in the eastern Pennsylvania District, three or four mills purchasing an aggregate of about 14,000 tons, one-half by one party. The prices paid range from $15 to $15.50, the bulk of the business being placed at the lower figure. On the other hand, Chicago reports that four roads are offering in that market, this week, a total of about 16,000 tons of Old Material, which shows larger lists than for some time past.

The export trade is developing well. September was considerably above the normal. Among recent orders was a lot of 8000 tons of Structural Material for Canada, which practically marks the end of that movement for the present. We note also the sale of a good lot of Oil Pipe for the Burmah fields.

## A Comparison of Prices.

**Advances Over the Previous Month in Heavy Type, Declines in Italics.**

At date, one week, one month and one year previous.

| | Oct. 7, 1908. | Sept. 30, 1908. | Sept. 2, 1908. | Oct. 2, 1907. |
|---|---|---|---|---|
| **PIG IRON,** Per Gross Ton: | | | | |
| Foundry No. 2, Standard, Philadelphia | **$16.75** | $16.75 | $16.50 | $20.00 |
| Foundry No. 2, Southern, Cincinnati | **15.75** | 15.75 | 15.50 | 21.25 |
| Foundry No. 2, Local, Chicago | *16.50* | 16.50 | 17.00 | 22.50 |
| Basic, delivered Eastern Pa. | **15.50** | 16.00 | 15.25 | 18.50 |
| Basic, Valley Furnace | *14.25* | 14.25 | 14.50 | 19.50 |
| Bessemer, Pittsburgh | 15.90 | 15.90 | 15.90 | 22.90 |
| Gray Forge, Pittsburgh | *14.40* | 14.40 | 14.65 | 20.40 |
| Lake Superior Charcoal, Chicago | 19.50 | 19.50 | 19.50 | 26.50 |
| **BILLETS, &c.,** Per Gross Ton: | | | | |
| Steel Billets, Pittsburgh | 25.00 | 25.00 | 25.00 | 28.50 |
| Forging Billets, Pittsburgh | 27.00 | 27.00 | 27.00 | 32.00 |
| Open Hearth Billets, Phila | 26.20 | 26.20 | 26.20 | 31.00 |
| Wire Rods, Pittsburgh | 33.00 | 33.00 | 33.00 | 36.00 |
| Steel Rails, Heavy, at mill | 28.00 | 28.00 | 28.00 | 28.00 |
| **OLD MATERIAL,** Per Gross Ton: | | | | |
| Steel Rails, Melting, Chicago | *14.75* | 14.75 | 15.00 | 17.00 |
| Steel Rails, Melting, Phila | *15.00* | 15.00 | 15.25 | 16.50 |
| Iron Rails, Chicago | **18.00** | 18.00 | 16.75 | 20.25 |
| Iron Rails, Philadelphia | **20.50** | 20.50 | 20.00 | 20.50 |
| Car Wheels, Chicago | *15.25* | 15.25 | 16.00 | 24.00 |
| Car Wheels, Philadelphia | 15.00 | 15.00 | 15.00 | 23.00 |
| Heavy Steel Scrap, Pittsburgh | **15.00** | 15.00 | 14.25 | 17.50 |
| Heavy Steel Scrap, Chicago | 13.00 | 13.00 | 13.00 | 15.00 |
| Heavy Steel Scrap, Phila | *15.00* | 15.00 | 15.25 | 16.25 |
| **FINISHED IRON AND STEEL,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Refined Iron Bars, Philadelphia | 1.45 | 1.45 | 1.45 | 1.75 |
| Common Iron Bars, Chicago | 1.50 | 1.50 | 1.50 | 1.78 |
| Common Iron Bars, Pittsburgh | 1.40 | 1.40 | 1.40 | 1.70 |
| Steel Bars, Tidewater, New York | 1.56 | 1.56 | 1.56 | 1.81 |
| Steel Bars, Pittsburgh | 1.40 | 1.40 | 1.40 | 1.60 |
| Tank Plates, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Tank Plates, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Beams, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Beams, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Angles, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Angles, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Skelp, Grooved Steel, Pittsburgh | 1.45 | 1.45 | 1.45 | 1.85 |
| Skelp, Sheared Steel, Pittsburgh | 1.50 | 1.50 | 1.50 | 1.95 |
| **SHEETS, NAILS AND WIRE,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Sheets, Black, No. 28, Pittsburgh | 2.50 | 2.50 | 2.50 | 2.60 |
| Wire Nails, Pittsburgh | 1.95 | 1.95 | 1.95 | 2.05 |
| Cut Nails, Pittsburgh | 1.80 | 1.80 | 1.80 | 2.10 |
| Barb Wire, Galv., Pittsburgh | 2.40 | 2.40 | 2.40 | 2.50 |
| **METALS,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Lake Copper, New York | *13.75* | 13.75 | 13.87½ | 15.00 |
| Electrolytic Copper, New York | *13.50* | 13.37½ | 13.75 | 14.75 |
| Spelter, New York | **4.85** | 4.80 | 4.75 | 5.40 |
| Spelter, St. Louis | **4.70** | 4.65 | 4.60 | 5.20 |
| Lead, New York | *4.45* | 4.47½ | 4.57½ | 4.68 |
| Lead, St. Louis | *4.30* | 4.32½ | 4.45 | 4.52 |
| Tin, New York | **29.50** | 29.62½ | 29.00 | 34.70 |
| Antimony, Hallett, New York | *7.75* | 7.75 | 8.00 | 11.00 |
| Nickel, New York | 45.00 | 45.00 | 45.00 | 45.00 |
| Tin Plate, 100 lb., New York | $3.89 | $3.89 | $3.89 | $4.09 |

## Chicago.

FISHER BUILDING, October 7, 1908.—(*By Telegraph.*)

Orders placed last week for material required to build the 5000 Steel underframes for the new Chicago, Milwaukee & St. Paul cars added 22,000 tons to the new business entered by rolling mills. This was divided between the Illinois and the Bethlehem Steel companies, the former taking 12,000 tons of Angles, Channels, Zee Bars and Small Beams and Plates and the latter securing 10,000 tons of 20-in. Beams. Another item of pertinent interest as foreshadowing further mill business is the placing of an order by the Chicago & Alton Railroad for 1000 Steel cars. This is a duplicate of the contract let some weeks ago to the Standard Steel Car Company. Orders taken by the principal interest in September foot up considerably in excess of the current weekly estimates for that period. The summary for the month shows a gain of nearly 30 per cent. in tonnage over August. The largest increases were in Structural Shapes and Bar Steel, with a moderate improvement in Track Supplies. Plates, Tubular Goods and Light Steel Rails held about even. A liberal purchase of Billets for forward requirements is noted in an order entered by the Inland Steel Company for 25,000 tons to be converted into Car Springs. While there is not much doing in Standard Rails, railroad activities in other directions are improving. In addition to the new car orders recently placed there is considerably more buying of supplies and material for repair work. None of the more notable structures now under consideration involving large

amounts of fabricated material was included in last week's closures. An early award of the new Northwestern Depot is expected, and the prospects are that before the end of the year much of the business now in sight will have been concluded. Sheets, especialy Galvanized and Corrugated, are in fair demand, and Merchant Pipe continues to hold its own.

**Pig Iron.**—There has been nothing in the market events of the past week that can be construed as evidencing a change of attitude on the part of either buying or selling interests respecting purchases and sales of Pig Iron. As has been the case for two or three weeks, the quantities bought consist principally of small lots for immediate consumption. Even orders of this character are, however, widely scattered, and by no means numerous. The Southern furnaces have for the present ceased to be a factor in this market since the lowest price made by any of these interests is above that at which the Northern furnaces are willing to sell. None of the local makers is carrying burdensome stocks, and but for the threatening competition of southern Ohio and Valley producers it is likely that prices of Lake Superior Iron would firm up at least 50c. a ton above the minimum now ruling. The principal transaction reported for the week was the purchase of 1300 tons of Malleable Bessemer by a prominent implement manufacturer for shipment within 30 days. This Iron will be supplied by a local furnace. A lot of 800 tons of Northern Iron for delivery through the first half was taken by a manufacturer of machinery. The National Malleable Castings Company is credited with the purchase of 12,000 to 15.000 tons of Malleable Iron, and while general credence is given the report it is not definitely confirmed. Few new inquiries are coming in, and negotiations for next year's deliveries are at a standstill. Consumers and producers alike are holding off, both being indisposed to take the initiative on future business at this time. The following quotations are for October, November and December delivery, f.o.b. Chicago:

| | |
|---|---|
| Lake Superior Charcoal | $19.50 to $20.00 |
| Northern Coke Foundry, No. 1 | 17.00 to 17.50 |
| Northern Coke Foundry, No. 2 | 16.50 to 17.00 |
| Northern Coke Foundry, No. 3 | 16.00 to 16.50 |
| Northern Scotch, No. 1 | 17.50 to 18.00 |
| Southern Coke, No. 1 | 17.35 to 17.85 |
| Southern Coke, No. 2 | 16.85 to 17.35 |
| Southern Coke, No. 3 | 16.35 to 16.85 |
| Southern Coke, No. 4 | 15.85 to 16.35 |
| Southern Coke, No. 1 Soft | 17.35 to 17.85 |
| Southern Coke, No. 2 Soft | 16.85 to 17.35 |
| Southern Gray Forge | 15.35 to 15.85 |
| Southern Mottled | 15.10 to 15.60 |
| Malleable Bessemer | 17.00 to 17.50 |
| Standard Bessemer | 17.65 to 18.10 |
| Jackson Co. and Kentucky Silvery, 6 % | 19.90 to 20.40 |
| Jackson Co. and Kentucky Silvery, 8 % | 20.90 to 21.40 |
| Jackson Co. and Kentucky Silvery, 10 % | 22.90 to 23.40 |

(*By Mail.*)

**Billets and Rods.**—The principal transaction in Billets comprises a sale made to the Railway Steel Spring Company, Detroit, by the Inland Steel Company. The entire order includes a round quantity of Steel, the amount of which is not definitely stated by the sellers, but is supposed to be about 25,000 tons. A good proportion of the whole, it is stated, is made up of rolling Billets. Deliveries extend into next year, being scheduled to take advantage of water freights. Other sales are made up in the main of car lots of Forging Billets, the agregate tonnage of which is on the whole slightly increased. Forging Billets continue reasonably firm, at $28.50, base, Chicago. The demand for Wire Rods is, all things considered, quite satisfactory. We quote the following prices, which are reported to be firmly held: Bessemer, $33; Basic, $34; Chain, $33, all at Pittsburgh.

**Rails and Track Supplies.**—Specifications for 5000 tons of Standard Rails have been received by the Illinois Steel Company from the Northern Pacific. Not much new business is being entered, save in small lots, for immediate shipment. Among the orders of this kind taken by the Illinois Steel Company was one of 700 tons, from the Van's Harbor Land & Lumber Company, Manitou Island, Mich. The demand for Track Supplies shows considerable improvement, among the orders entered by the principal interest being one of 1200 tons of joint connections from the Southern Pacific; 2000 kegs of Spikes from the Missouri Pacific, and 2000 from the Illinois Central. Light Rails continue fairly active, the orders booked by the Illinois Steel Company totaling about 1200 tons per week. Prices on Light Rails are somewhat firmer, though concessions of $1 to $2 a ton are occasionally made to meet the competition of rerolling mills. As compared with August, the bookings for railroad material for September make, on the whole, an advantageous showing. Some increase is noted in Standard Rail specifications received by the principal interest, while Track Supplies show considerable improvement. Orders for over 3000 kegs of Bolts and 7000 kegs of Spikes in excess of August sales were taken in September. We quote as follows: Angle Bars, accompanying Rail orders, 1908 delivery, 1.50c.; car lots, 1.60c.; Spikes, 1.80c. to 1.90c., according to delivery: Track Bolts, 2.10c. to 2.15c., base. Square Nuts, and 2.25c. to 2.30c., base, Hexagon Nuts. The store prices on Track Supplies range from 0.15c. to 0.20c. above mill prices. Light Rails, 25 to 45 lb., $26; 20-lb., $27; 16-lb., $28; 12-lb., $29. Standard sections, $28, f.o.b. mill, full freight to destination.

**Structural Material.**—The Brown-Ketcham Iron Works, Indianapolis, is reported to have secured the contract for 1355 tons of Structural Material to be used in building the St. Louis Post Office. The outside contracts taken by the American Bridge Company in the past week were made up of a number of unimportant contracts aggregating about 3000 tons, but a continuation of new construction at Gary by the Steel Corporation is furnishing this interest with a good deal of new work. Plans for the new City Hall, calling for between 11,000 and 12,000 tons, are now in the hands of fabricators for figures. Bids on the Keithsburg Bridge are in, but no award has as yet been made. Figures on the new Northwestern Depot go in today, and it is believed that contracts for this work will be let without undue delay. Though but a modest proportion of the business in sight reached closure during September, the final summing up for the month shows a marked improvement in mill specifications over August. In fact, the largest increase of tonnage in the mills of the Illinois Steel Company is found in this department, which, it is reported, has more than doubled the record for August. Prices from store are 1.95c. to 2c. Mill prices at Chicago are as follows: Beams and Channels, 3 to 15 in., inclusive, 1.78c.; Angles, 3 to 6 in., ¼-in. and heavier, 1.78c.; larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 15 in., 1.88c.; Zees, 3 in. and over, 1.78c.; Tees, 3 in. and over, 1.83c.

**Plates.**—Greater activity in new car construction is to a large degree responsible for the improvement noted in new Plate orders. Of the contract taken last week by the Illinois Steel Company for 26,000 tons of Structural Plates, comprising the requirements for underframes of 5000 cars for the Chicago, Milwaukee & St. Paul, a considerable proportion of the whole will go to the Plate mills. Specifications on this material will be begun at once. Not much new business is coming from the boiler shops, nearly all of which are running very slack. Price conditions show no radical change, but there is still a disposition among some mills, principally those rolling limited sizes, to shade prices from $1 to $2 a ton. We quote mill shipments as follows: Tank Plates, ¼-in. and heavier, wider than 6¼ and up to 100 in. wide, inclusive, car lots, Chicago, 1.78c.; 3-16 in., 1.88c.; Nos. 7 and 8 gauge, 1.93c.; No. 9, 2.03c.; Flange quality, in widths up to 100 in., 1.88c., base, for ¼-in. and heavier, with the same advance for lighter weights; Sketch Plates, Tank quality, 1.88c.; Flange quality, 1.98c. Store prices on Plates are as follows: Tank Plates, ¼-in. and heavier, up to 72 in. wide, 2c. to 2.10c.; from 72 to 96 in. wide, 2.10c. to 2.20c.; 3-16 in. up to 60 in. wide, 2.10c. to 2.25c.; 72 in. wide, 2.30c. to 2.40c.; No. 8, up to 60 in. wide, 2.10c. to 2.15c.; Flange and Head quality, 0.25c. extra.

**Sheets.**—The demand for Sheets holds fairly even. The Inland Steel Company is operating its Sheet department at between 55 and 60 per cent. of capacity. The principal distributers are receiving a good many orders, but they are generally for small lots to supply immediate needs. Galvanized Corrugated Sheets are in fair demand, and the volume of business is reported to be gradually increasing. Prices are reasonably firm, and the sources from which cuts of $1 to $2 a ton can be obtained are not so plentiful as they were some time ago. We quote mill shipments as follows, Chicago: Blue Annealed, No. 10, 1.98c.; No. 12, 2.05c.; No. 14, 2.08c.; No. 16, 2.18c.; Box Annealed, Nos. 17 to 21, 2.43c.; Nos. 22 to 24, 2.48c.; Nos. 25 and 26, 2.53c.; No. 27, 2.58c.; No. 28, 2.68c.; No. 29, 2.78c.; No. 30, 2.88c.; Galvanized Sheets, Nos. 10 to 14, 2.63c.; Nos. 15 and 16, 2.83c.; Nos. 17 to 21, 2.98c.; Nos. 22 to 24, 3.13c.; Nos. 25 and 26, 3.33c.; No. 27, 3.53c.; No. 28, 3.73c.; No. 30, 4.23c.; Black Sheets from store: Blue Annealed, No. 10, 2.15c.; No. 12, 2.20c.; No. 14, 2.25c.; No. 16, 2.35c.; Box Annealed, Nos. 18 to 21, 2.60c.; Nos. 22 to 24, 2.65c.; No. 26, 2.70c.; No. 27, 2.75c.; No. 28, 2.85c.; No. 30, 3.25c.; Galvanized from store: Nos. 10 to 16, 3c.; Nos. 18 to 20, 3.15c.; Nos. 22 to 24, 3.30c.; No. 26, 3.50c.; No. 27, 3.70c.; No. 28, 3.90c.; No. 30, 4.40c. to 4.45c.

**Bars.**—The movement in Bars through the month of September was somewhat fluctuating, so that it was difficult to estimate from weekly reports what was actually being done. A summary of specifications received by the principal interest, however, shows that the bookings for September were practically double those of August. Generally speaking, manufacturers are gauging their orders closely to current consumption, and are not stocking far ahead of present needs. The outside mills in this district are not yet well enough supplied with specifications to run without interruption. Trade in Bar Iron is quiet and shows but little, if any, increase in new business. Prices on Steel Bars are reported to be firmly maintained and on Iron Bars are reasonably steady at current quotations. Quotations, Chicago, are as follows: Steel Bars, 1.58c., with half extras; Iron Bars, 1.50c.; Hoops, No. 13, and lighter, 1.98c., full extra Hoop card; Bands, No. 12 gauge, and heavier, 1.58c., half extra Steel Bar card; Soft Steel Angles and Shapes, 1.68c., half extras. Store prices are as follows: Bar Iron, 2c. to 2.15c.; Steel Bars, 1.90c. to 2c.; Steel Bands, 1.90c., as

per Bar card, half extras; Soft Steel Hoops, 2.25c. to 2.35c., full extras.

**Merchant Pipe.**—No new impetus has developed in the past week that would tend to materially increase the volume of business. A few jobbers have placed stock orders for requirements farther ahead than usual, but in the main purchasers contemplate replenishments for anticipated needs for not more than 30 or 60 days ahead. Actual consumption, however, is great enough to prevent any backward movement. The following mill discounts are quoted: Black Pipe, ¾ to 6 in., 73.2; 7 to 12 in., 70.2; Galvanized, ¾ to 6 in., 63.2. These discounts are subject to one point on the base. From store, in small lots, Chicago jobbers quote 73 per cent. on Black Steel Pipe, ¾ to 6 in. About three points above these prices is asked for Iron Pipe.

**Boiler Tubes.**—Conditions among the manufacturers of Boilers are not sensibly improved, and the demand for Merchant Tubes from this source is extremely quiet. There is, on the other hand, a little more doing in Locomotive Tubes as the work of repairing motive power equipment progresses. Mill quotations, for future delivery, on the base sizes, are as follows: 2¾ to 4¼ in., inclusive, Steel Tubes, 63.2; Iron, 50.2; Seamless, 50.2; 2½ in. and smaller, and lengths over 18 ft., and 2½ in. and larger, and lengths over 22 ft., 10 per cent. extra. Store prices are as follows:

| | Steel. | Iron. | Seamless. |
|---|---|---|---|
| 1 to 1½ in. | 35 | 35 | 35 |
| 1¾ to 2¼ in. | 50 | 35 | 35 |
| 2½ in. | 52½ | 35 | 35 |
| 2¾ to 5 in. | 60 | 47½ | 47½ |
| 6 in. and larger | 50 | 35 | .. |

**Merchant Steel.**—Specifications from the implement makers in September showed a fair margin of increase over those of the preceding month. The continued insistence upon prompt shipment of orders makes it apparent that manufacturers are relying upon the promptness of the mills for their stock supplies. A few are specifying for their season's supply on scheduled shipments, but they are the exception, and not the rule. We quote as follows: Planished or Smooth Finished Tire Steel, 1.78c.; Iron Finish, up to 1½ x ½ in., 1.73c., base, Steel card; Iron Finish, 1½ x ½ in. and larger, 1.58c., base, Tire card; Channels for solid Rubber Tires, ¾ to 1 in., 2.08c., and 1⅛ in. and larger, 1.98c.; Smooth Finished Machinery Steel, 2.08c.; Flat Sleigh Shoe, 1.63c.; Concave and Convex Sleigh Shoe, 1.83c.; Cutter Shoe, 2.05c.; Toe Calk Steel, 2.13c.; Railroad Spring, 1.98c.; Crucible Tool Steel, 7¼c. to 8c., and still higher prices are asked on special grades. Cold Rolled Shafting on contracts for 100 tons and over, 57 per cent. off; 56 per cent. off in car lots; 52 per cent. in less than car lots, on which carload freight is allowed within base territory.

**Cast Iron Pipe.**—The market is barren of any transactions involving large tonnage, and last week developed but few lettings of any kind. A few hundred tons awarded by Winfield, Kan., was secured by a general contractor, and the Pipe has not yet been purchased. A lot of 900 tons for Hope, Ark., is up for letting this week. Prices are reported to be somewhat firmer on miscellaneous orders, but competitive jobs still develop keen competition. There is very little demand for Gas Pipe, and the season is too far advanced to expect much in this line. Prices are unchanged, and we quote nominally, per net ton, Chicago, as follows: Water Pipe, 4 in., $27; 6 to 12 in., $26; 16 in. and up, $25, with $1 extra for Gas Pipe.

**Metals.**—Buying is almost wholly confined to the purchase of small lots for present needs. There is but little inquiry and fewer sales of carloads are being made. Prices, in spite of the sluggish demand, hold fairly even on the entire line of Metals at present levels. Quotations are as follows: Casting Copper, 13½c.; Lake, 13¾c. to 14c., in car lots, for prompt shipment; small lots, ¼c. to ⅜c. higher; Pig Tin, car lots, 32½c.; small lots, 34½c.; Lead, Desilverized, 4.60c. to 4.65c., for 50-ton lots; Corroding, 4.85c. to 4.95c., for 50-ton lots; in car lots, 2¼c. per 100 lb. higher; Spelter, 4.80c.; Cookson's Antimony, 10½c., and other grades, 9¾c. to 10¼c.; Sheet Zinc is $7, f.o.b. La Salle, in car lots of 600-lb. casks. On Old Metals we quote: Copper Wire, 13½c.; Heavy Copper, 13¼c.; Copper Bottoms, 12c.; Copper Clips, 13¼c.; Red Brass, 12c.; Yellow Brass, 9½c.; Light Brass, 7c.; Lead Pipe, 4.30c.; Zinc, 3¾c.; Pewter, No. 1, 21c.; Tin Foil, 23c.; Block Tin Pipe, 25c.

**Old Material.**—The demand from the Iron foundries is somewhat better, though frequent purchases of small lots are the rule. There is no special activity in Steel melting stock, but the moderate offerings that have been coming out are readily absorbed. No. 1 Cast Scrap is in fair demand, and prices have firmed up slightly in the past week. Dealers are buying conservatively, and no large additions are being made to the heavy stocks, which the leading interests are carrying in their yards. More material will be offered by the railroads this week than for some time. Four Western lists, with an aggregate of over 16,000 tons, will be closed, distributed as follows: Northern Pacific, 10,000 tons; Santa Fe, 2100 tons; Chicago & Northwestern, 4000 tons, and the Wisconsin Central, 220 tons. The following prices are per gross ton, f.o.b. Chicago:

| | |
|---|---|
| Old Iron Rails | $18.00 to $18.50 |
| Old Steel Rails, rerolling | 15.50 to 16.00 |
| Old Steel Rails, less than 3 ft | 14.75 to 15.25 |
| Relaying Rails, standard sections, subject to inspection | 19.50 to 20.00 |
| Old Car Wheels | 15.25 to 15.75 |
| Heavy Melting Steel Scrap | 13.00 to 13.50 |
| Frogs, Switches and Guards, cut apart | 13.50 to 14.00 |
| Mixed Steel | 10.25 to 10.75 |

The following quotations are per net ton:

| | |
|---|---|
| Iron Fish Plates | $16.50 to $17.00 |
| Iron Car Axles | 20.00 to 20.50 |
| Steel Car Axles | 17.50 to 18.00 |
| No. 1 Railroad Wrought | 13.50 to 14.00 |
| No. 2 Railroad Wrought | 12.50 to 13.00 |
| Railway Springs | 13.00 to 13.50 |
| Locomotive Tires, smooth | 13.25 to 13.75 |
| No. 1 Dealers' Forge | 10.25 to 10.75 |
| Mixed Busheling | 8.25 to 8.75 |
| Iron Axle Turnings | 7.00 to 7.50 |
| Soft Steel Axle Turnings | 7.00 to 7.50 |
| Machine Shop Turnings | 7.00 to 7.50 |
| Cast Borings | 5.50 to 6.00 |
| Mixed Borings, &c | 5.50 to 6.00 |
| No. 1 Mill | 8.00 to 8.50 |
| No. 2 Mill | 7.00 to 7.50 |
| No. 1 Boilers, cut to Sheets and Rings | 8.50 to 9.00 |
| No. 1 Cast Scrap | 13.00 to 13.50 |
| Stove Plate and Light Cast Scrap | 11.50 to 12.00 |
| Railroad Malleable | 12.50 to 13.00 |
| Agricultural Malleable | 11.00 to 11.50 |
| Pipes and Flues | 10.00 to 10.50 |

## St. Louis.

ST. LOUIS, October 5, 1908.

With some interests the demand for Finished Iron and Steel is steadily increasing, though in most cases the gain in volume is moderate. The larger companies, who depend on railroads for orders for new equipment, are still lacking new business, but even these are busy on repair work. A feature with some houses is the urgency of the demand for all kinds of Track Material, owing to the requirements of the railroads. Inquiry has been made by one of the leading railroads for a considerable tonnage of Standard Rails. The leading interest reports the demand for Merchant Pipe improving. Jobbers state that the demand from consuming trade is steadily increasing. The principal interest reports the demand for Wire is gaining steadily, especially from the manufacturing trade requiring special Wires. Barbed Wire and Steel Fences continue fairly active. A leading Metal company states that the increase in its business for September amounted to $25,000 over the previous month.

**Coke.**—Shipments of Coke are not moving out as fast as required by consumers. While numerous inquiries are out, they are mostly for small lots for prompt shipment, and the market is not active. The tone of the market rules firm. We quote $2.25 to $2.50, f.o.b. oven, for 72-hr. Connellsville Foundry. We hear that Virginia is tightening up and taking no business for 1909.

**Pig Iron.**—The views of the leading handlers of Pig Iron concerning the state of the demand for the present week vary. Some report a fair degree of activity and others state that it is ruling quiet. A feature of the situation is the readiness with which specifications on contracts are furnished; in fact, in some cases shipments are requested that anticipate the delivery. There is, however, considerable September Iron not yet shipped, and it is feared that the Birmingham District will be behind on shipmnets during the present month. Taking up the situation in detail, a leading seller regards the market in a healthy condition and reports the sale of 4000 tons of assorted grades, part of which is for shipment over last quarter of this year and first quarter of 1909, the price being equal to an average of $13.50 for No. 2 Foundry f.o.b. Birmingham. The agency of a large Southern producer reports booking a contract for 2000 tons No. 2 Foundry at $13, shipment over first quarter of 1909. The receipt of inquiries is reported by another house for 1500 tons No. 2 Foundry, shipment over the balance of this year and the first quarter of 1908; also for 2000 tons Malleable Bessemer shipment over fourth quarter of 1908 and first quarter of 1909. The market range in price for 1908 Iron is $12.50 to $13, according to freight rate. For first quarter 1909 we learn of sales at $13 for No. 2 Foundry f.o.b. Birmingham. There is not believed to be much resale Iron on this market. Several producers have practically withdrawn from the market for 1908 delivery.

**Finished Iron and Steel.**—The leading sellers of Structural Material report the receipt of numerous orders for small jobs and also for light stuff, largely from the country. For Bars specifications are coming in freely, notwithstanding the advance of $1. There is a good demand for Track Material, especially for Spikes. The demand for Light Rails is normal and specifications against existing contracts are steadily being furnished.

**Old Material.**—The demand for Scrap Iron and Steel is marked by unevenness so far as consumers are concerned, but the interest of dealers for the offerings of the railroads has been sufficiently keen to maintain prices, in spite of the fact that Scrap Iron is relatively higher than Pig Iron.

Relaying Rails are very scarce and wanted at an advance on last week's price. Cast Scrap is still ruling dull. There are no railroad lists out. We quote as follows per gross ton, f.o.b. St. Louis:

| | |
|---|---|
| Old Iron Rails | $16.50 to $17.00 |
| Old Steel Rails, rerolling | 15.50 to 16.00 |
| Old Steel Rails, less than 3 ft | 14.25 to 14.75 |
| Relaying Rails, standard sections, subject to inspection | 23.00 to 24.00 |
| Old Car Wheels | 15.00 to 15.50 |
| Heavy Melting Steel Scrap | 13.50 to 14.00 |
| Frogs, Switches and Guards, cut apart | 13.50 to 14.00 |
| Mixed Steel | 11.00 to 11.50 |

The following quotations are per net ton:

| | |
|---|---|
| Iron Fish Plates | $15.00 to $15.50 |
| Iron Car Axles | 18.50 to 19.00 |
| No. 1 Railroad Wrought | 13.50 to 14.00 |
| No. 2 Railroad Wrought | 12.50 to 13.00 |
| Railway Springs | 13.00 to 13.50 |
| Locomotive Tires, smooth | 13.00 to 13.50 |
| No. 1 Dealers' Forge | 11.50 to 12.00 |
| Mixed Borings, &c | 5.50 to 6.00 |
| Machine Shop Turnings | 8.00 to 8.50 |
| No. 1 Boilers, cut to Sheets and Rings | 9.50 to 10.00 |
| No. 1 Cast Scrap | 12.00 to 12.50 |
| Railroad Malleable | 11.00 to 11.50 |
| Agricultural Malleable | 10.00 to 10.50 |
| Pipes and Flues | 8.75 to 9.50 |

**Lead, Spelter, &c.**—There is a limited demand for Lead at 4.35c., St. Louis. Lead Ore is lower and offered at $26.25, f.o.b. Joplin, for best grades. The tone of the market for Spelter is firm, as the Brass trade is buying more freely. The price range is 4.70c. to 4.80c., St. Louis. Zinc Ore is in good demand, at $37 to $38, Joplin basis.

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The St. Louis Car Company has been able to keep its plant open, though the run of business is light. The automobile shop is busy building cars on the 1909 model, and finds the demand somewhat improved.

The Stupp Brothers' Bridge & Iron Company has not been obliged to shut down or reduce its working force.

The Union Iron & Foundry Company states that the demand for Iron work for store fronts has improved this fall, and while below the corresponding time last year, the outlook is favorable for a gradual increase. Prices, however, owing to competition, are somewhat unsatisfactory.

The St. Louis Architectural Iron Company finds a moderate but steady demand for store fronts, and is running three heats each week for castings.

The Broderick & Bascomb Rope Company states that the demand for wire rope is now larger, and the outlook has grown brighter since September 1.

Fisher & Davis have been running full time the past month, turning out saw mill machinery. This was the only month the present year which has required it.

The Block-Pollack Company is removing its offices to suite 1317 Missouri Trust Building. Harry Benjamin, local assistant treasurer, is in charge of the St. Louis business.

The St. Louis Blast Furnace Company has sold its output of Basic Iron up to January 1, 1909.

## Pittsburgh.

PARK BUILDING, October 7, 1908.—(*By Telegraph.*)

**Pig Iron.**—The market continues quiet, the only inquiry of note being that of the United States Company, at Canton, Ohio, for 12,000 tons of Basic, at the rate of 2000 tons a month for the first six months of next year. It is hardly likely that the furnaces will quote on this inquiry on the basis of to-day's prices, but as there is a good deal of pressure to sell Basic Iron because the output is heavy, it is possible that the purchase may be made at the present ruling rate. We note a sale of 2500 tons of Basic for last quarter, and the same quantity for first quarter of next year at $14.25, Valley furnace. There is little inquiry for Bessemer or Malleable Bessemer, only an occasional carload lot being sold. Foundry Iron is also very quiet, and there has been nothing done in Forge Iron in this market for some time. We quote Standard Bessemer Iron at $15; Basic, $14.25; Malleable Bessemer, $14.50; No. 2 Foundry, $14.35 to $14.50, and Forge at $13.50, all at Valley furnace. The freight to Pittsburgh is 90c. a ton. The Shenango Furnace Company started up its No. 4 Furnace on September 28, and is now running Nos. 1, 3 and 4 on Basic, making about 900 tons a day.

**Steel.**—New sales are light, but consumers with contracts are taking out a little more Steel in the shape of Soft Billets and Forging Billets. Shipments against contracts on Sheet and Tin Bars have fallen off very much, as these two trades are extremely dull at present. We quote Bessemer and Open Hearth Billets, 3⅞ in. and larger, up to and including 0.25 carbon, $25; 0.26 to 0.60 carbon, $1 extra; over 0.60 carbon, $2 extras, all f.o.b. Pittsburgh. For Wheeling, Martins Ferry, Follansbee, Newcastle, Sharon, Steubenville and Washington (Pa.) delivery, half the freight, or 50c. additional, is charged. Sheet and Tin Bars in random lengths are $27, f.o.b. Pittsburgh. Forging Billets take $2 advance over Rolling Billets.

(*By Mail.*)

As we get closer to the Presidential election the tendency to defer buying until after that event has taken place seems to be getting stronger. The whole trade seems to have settled down to the conviction that business will be very quiet for a month or so at least, while the impression is pretty general that no heavy business in the Steel trade can reasonably be expected before next spring. Were it not that specifications on contracts on some lines are coming in pretty freely, the situation would be about as dull as at any time in the past year. Little is doing in Pig Iron, and while there is some inquiry for next year, it is regarded more as a feeler to find out what the furnaces would quote, as nothing further is usually heard from the prospective buyers. About the only line that is holding up is Pipe, this trade showing a gradual increase each month over the previous one. The Coke and Scrap trades continue quiet, but in spite of a lack of orders from consumers for Old Material that market is firm.

**Ferromanganese.**—While sales are limited, there is a strong belief that prices have touched bottom and that the market may be higher toward the close of the year. We quote 80 per cent. foreign at $42.50 to $43, seaboard, for prompt shipment, the rate to Pittsburgh being $1.95 a ton. For future delivery from $1 to $2 more is asked.

**Ferrosilicon.**—We note a sale of 25 tons to a local consumer at about $67, and quote the market at $67 to $67.50, Pittsburgh, for 50 per cent.

**Muck Bar.**—In the absence of new orders we quote best grades, made from all Pig Iron, at nominally $25, Pittsburgh. Northern Forge Iron can be laid down at $14.40, Pittsburgh, or lower, but it is claimed that even with this low price there is no money to a mill in making Muck Bar at $25 a ton.

**Wire Rods.**—We do not hear of any new orders for Wire Rods, but consumers, notably the Chain manufacturers, are specifying liberally against contracts and shipments by the mills are fairly heavy. A leading producer of Rods, not in the market for some time as a seller, may soon be seeking business from the outside trade. We quote Bessemer Rods at $33, Chain Rods $33 and Basic $34, Pittsburgh.

**Skelp.**—The market is quiet, no new orders for Skelp having been placed here for some time. Prices are nominally as follows: Grooved Steel Skelp, 1.45c. to 1.50c.; Sheared Steel Skelp, 1.50c. to 1.60c.; Grooved Iron Skelp, 1.60c. to 1.70c., and Sheared Iron Skelp, 1.70c. to 1.75c., f.o.b. Pittsburgh.

**Plates.**—It now develops that the report that the Pitt Iron Mining Company, owned by the La Belle Iron Works, Steubenville, Ohio, has placed an order with the American Shipbuilding Company for an Ore boat is premature. This company has been considering for some time the matter of building an Ore boat, but has not come to a final decision. The general demand for Plates is light, being still confined to small lots for actual needs. Hardly enough new orders are coming out to test prices, but there is still some cutting being done, probably not over $2 a ton in extreme cases. Regular prices are as follows: Tank Plates, ¾ in. thick, 6¼ in. up to 100 in. wide, 1.60c., base, at mills, Pittsburgh. Extras over this price as are follows:

Tank, Ship and Bridge quality, ¼ in. thick on edges, 100 in. wide, down to but not including 6 in. wide, is taken as base.

Steel Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per square foot, shall be considered ¼-in. Plate. Steel Plates over 72 in. wide must be ordered ¼-in. thick on edge, or not less than 11 lb. per square foot, to take base price. Steel Plates over 72 in. wide ordered less than 11 lb. per square foot down to the weight of 3-16-in. shall take the place of 3-16-in.

Percentages as to overweight on Plates, whether ordered to gauge or weight, to be governed by the Association of American Steel Manufacturers' Standard Specifications.

| | |
|---|---|
| Gauges under ¼-in. to and including 3-16-in. Plates on thin edges | $0.10 |
| Gauges under 3-16-in. to and including No. 8 | .15 |
| Gauges under No. 8 to and including No. 9 | .25 |
| All sketches (excepting straight taper Plates varying not more than 4 in. in width at ends, narrowest end being not less than 30 in.) | .10 |
| Complete Circles | .20 |
| Boiler and Flange Steel Plates | .10 |
| "A. B. M. A." and ordinary Firebox Steel Plates | .20 |
| Still Bottom Steel | .30 |
| Marine Steel | .40 |
| Locomotive Firebox Steel | .50 |
| Shell grade of Steel is abandoned. | |
| For widths over 100 in. up to 110 in | .05 |
| For widths over 110 in. up to 115 in | .10 |
| For widths over 115 in. up to 120 in | .15 |
| For widths over 120 in. up to 125 in | .25 |
| For widths over 125 in. up to 130 in | .50 |
| For widths over 130 in | 1.00 |

TERMS.—Net cash 30 days. Pacific Coast base, 1.50c., f.o.b. Pittsburgh.

**Steel Rails.**—The railroads are still out of the market, only an occasional small order being placed. The demand for Light Rails is fairly active, the Carnegie Steel Company having taken about 1500 tons in the past week. Nos. 2 and 3 Rail mills at the Edgar Thomson plant are running to about 35 per cent. of capacity, but No. 1 mill is idle. Prices on new Light Rails, which are sometimes shaded from $1 to $2 a ton for rerolled Rails, are as follows: $25 for 25 to 45 lb. Sections, with $1 advance for 20 lb., $2 advance for 16-lb.,

and $3 advance for 12-lb. Standard Sections are $28, at mill, and Angle Splice Bars, 1.65c., at mill.

**Structural Material.**—No large work is in sight. The American Bridge Company booked about 15,000 tons in September, which is only about 25 per cent. of its capacity. The contract for the Steel bridge over the Monongahela River, on which the Fort Pitt Bridge Works was the lowest bidder, has not been placed, and it is intimated that some complications may make necessary the asking of new bids. No inquiries have yet come out for the addition to Joseph Horne & Co.'s store, which under present plans will require about 1500 tons. There is still much complaint of the low prices ruling for fabricated work. We quote for mill shipment, f.o.b. Pittsburgh, as follows: I-Beams, H-Beams, and Channels, 3 to 15 in., inclusive, 1.60c., net; Beams over 15 in., 1.70c., net; Angles, 3 to 6 in., inclusive, ¼-in. and up, 1.60c., net; Angles, over 6 in., 1.70c. net; Angles 3 x 3 in. and up, less than ¼ in., 1.50c., base, half extras, Steel Bar card; Tees, 3 in. and up 1.65c. net; Zees, 3 in. and up, 1.60c., net; Angles, Channels, and Tees under 3 in., 1.50c., base, half extras, Steel Bars card; Deck Beams and Bulb Angles, 1.90c., net; Hand Rail Tees, 3c., net; Checkered and Corrugated Plates, 3c., net.

**Sheets.**—The Sheet trade is in very unsatisfactory condition, both as regards demand and prices. Consumers are buying sparingly, placing only small orders for actual needs, and the amount of new business being booked by the mills is relatively small. Prices are being shaded, but in most cases not over $2 a ton. For shipment from mill, regular prices, which are shaded by some mills from $1 to $2 a ton, are as follows: Blue Annealed Sheets, No. 10 and heavier, 1.80c.; Nos. 11 and 12, 1.85c.; Nos. 13 and 14, 1.90c.; Nos. 15 and 16, 2c.; Box Annealed, Nos. 17 to 21, 2.25c.; Nos. 22 to 24, 2.30c.; Nos. 25 and 26, 2.35c.; No. 27, 2.40c.; No. 28, 2.50c.; No. 29, 2.60c.; No. 30, 2.70c. Galvanized Sheets: Nos. 10 and 11, 2.45c.; Nos. 12 and 14, 2.55c.; Nos. 15 and 16, 2.65c.; Nos. 17 to 21, 2.80c.; Nos. 22 and 24, 2.95c.; Nos. 25 and 26, 3.15c.; No. 27, 3.35c.; No. 28, 3.55c.; No. 29, 3.70c.; No. 30, 3.95c.; No. 28, Painted Roofing Sheets, $1.75 per square, and Galvanized Roofing Sheets, No. 28, $3.10 per square, for 2½-in. corrugations. These prices are subject to a rebate of 5c. per 100 lb. to the large trade under the usual conditions, jobbers charging the usual advances for small lots from store.

**Tin Plate.**—The Tin Plate trade was a little more active last week, specifications coming in for a fairly large tonnage, which, to some extent, was unexpected. The Sabraton plant of the American Sheet & Tin Plate Company, at Morgantown, W. Va., started up October 5, after being shut down about three weeks, but this has been offset by the closing down of other capacity. It is estimated that only 35 to 40 per cent. of Tin Plate capacity is active at present. Prices continue to be shaded on any desirable business coming up. The regular price of Tin Plate is $3.70 for 100 lb. Cokes, 14 x 20, f.o.b. Pittsburgh, terms 30 days, less 2 per cent. off for cash in 10 days, this price being subject to the usual rebate of 5c. per base box in large lots.

**Hoops and Bands.**—Reports that the Carnegie Steel Company would build a number of new Hoop mills in the Youngstown District are officially denied. New orders for Hoops and Bands are light and represent only actual needs, but shipments on contracts placed early in the year are fairly heavy. Regular prices on Hoops and Bands, which, it is stated, are being maintained, are as follows: Steel Hoops, 1.80c., base, full Hoop card prices; Steel Bands, 1.40c., base, half Steel card extra, all f.o.b. cars, Pittsburgh, in carload lots, for delivery during 1908.

**Bars.**—New orders for Steel Bars are light, being only for small lots for actual needs. However, specifications against the heavy contracts placed by the implement makers and other large consumers last June are coming in quite freely, one leading Steel Bar interest advising us that it is operating to about 85 per cent. of capacity. It is stated that stocks being carried by the large trade are very low, and this is borne out by the fact that even on the small orders now being placed requests for prompt shipment are usually made. The mills rolling Steel Bars are operating to larger capacity than they were two or three months ago. In Iron Bars the situation is quiet, only small orders being placed, which makes it difficult for the mills to make up satisfactory rolling schedules. Most of the Bar Iron mills are operating spasmodically, running full one week to clean up orders, and then shutting down until enough business accumulates to warrant starting up again. We quote Iron Bars at 1.40c., base, for Pittsburgh delivery, and 1.35c., base, for Western points, to which freight is added, except Chicago, the price for which is 1.50c., delivered. We quote Steel Bars at 1.40c., Pittsburgh, for base sizes.

**Merchant Steel.**—Specifications against contracts are fairly satisfactory, but new orders for seasonable Steels, such as Sleigh Shoe, Toe Calk, and Tire, are light, and for actual needs of consumers. Specifications against contracts for Shafting are coming in quite freely, and several of the leading makers advise us they have a good deal of tonnage booked for future delivery. Prices on Shafting continue to be slightly shaded on any desirable orders. We quote Cold Rolled Shafting at 57 per cent. off in carloads, and 52 per cent. on less than carloads, delivered in base territory. Prices on Merchant Steel are being shaded, regular quotations being as follows: Smooth Finished Machinery Steel, 1.80c. to 1.90c.; Flat Sleigh Shoe, 1.75c. to 1.85c.; Cutter Shoe Steel, 2.15c. to 2.25c.; Toe Calk, 1.90c. to 1.95c.; Railroad Spring Steel, 1.60c. to 1.75c., the higher prices being for Pennsylvania Railroad analysis. Carriage Spring Steel is 1.80c.; Tire Steel, Iron finish, 1½ x ½ in. and heavier, 1.40c.; under 1½ in., 1.55c. Planished Tire Steel is 1.60c., all f.o.b. at mill.

**Merchant Pipe.**—September showed a very slight increase in orders over August, but the Pipe trade seems to be in more satisfactory condition than any of the other finished lines. The mills are able to operate to about 60 per cent. of capacity, and the general demand is fairly active, but as yet there is not much tendency on the part of the large trade to buy beyond actual needs. The National Tube Company is now making shipments on a large gas line which the Columbia Gas & Electric Company is building from the West Virginia gas fields into Cincinnati. Prices on Iron Pipe continue to be shaded more or less, but we are advised that the Steel Pipe mills are rigidly adhering to regular prices. Discounts on Steel Pipe, ¾ to 6 in., to the large trade, are 76 and 5 per cent. off list. Regular discounts are as follows:

*Merchant Pipe.*

| | Jobbers, carloads, Steel. | |
|---|---|---|
| | Black. | Galv. |
| | % | % |
| ⅛ to ¼ in. | 67 | 51 |
| ⅜ in. | 69 | 55 |
| ½ in. | 71 | 59 |
| ¾ to 6 in. | 75 | 65 |
| 7 to 12 in. | 72 | 57 |
| Extra strong, plain ends: | | |
| ⅛ to ⅜ in. | 60 | 48 |
| ½ to 4 in. | 67 | 55 |
| 4½ to 8 in. | 63 | 51 |
| Double extra strong, plain ends: | | |
| ½ to 8 in. | 56 | 45 |

Discounts on Genuine Iron Pipe are as follows:

| | Black. | Galv. |
|---|---|---|
| | % | % |
| ⅛ to ¼ in. | 65 | .. |
| ⅜ in. | 67 | 53 |
| ½ in. | 69 | 57 |
| ¾ to 6 in. | 73 | 63 |
| 7 to 12 in. | 70 | 55 |
| Extra strong, plain ends: | | |
| ⅛ to ⅜ in. | 58 | 46 |
| ½ to 4 in. | 65 | 53 |
| 4½ to 8 in. | 61 | 49 |
| Double extra strong, plain ends: | | |
| ½ to 8 in. | 54 | 43 |

**Boiler Tubes.**—The railroads are buying a few Tubes for repair work, but are not placing any orders for new work. The demand for Merchant Tubes is also very dull, and there is more or less cutting going on. For Merchant Tubes in small lots, on which an extra 5 per cent. is allowed in carloads, discounts are as follows:

*Boiler Tubes.*

| | Iron. | Steel. |
|---|---|---|
| 1 to 1½ in. | 42 | 47 |
| 1¾ to 2¼ in. | 42 | 59 |
| 2½ in. | 47 | 61 |
| 2¾ to 5 in. | 52 | 65 |
| 6 to 13 in. | 42 | 59 |

2½ in. and smaller, over 18 ft. long, 10 per cent. net extra.
2¾ in. and larger, over 22 ft. long, 10 per cent. net extra.

**Spelter.**—A little more inquiry is reported, and the tone of the market is firmer. There has been a heavy curtailment in the output of Spelter by the smelters, and to this is attributed the firmer market as the demand is small, most of the galvanizing plants not running to 50 per cent. of capacity, if that much. We quote prime grades of Western Spelter at 4.60c. to 4.65c., East St. Louis, to which should be added a freight rate of 12½c. for Pittsburgh delivery.

**Railroad Spikes.**—The railroads are sending in only a few small orders for repair work. The demand for the smaller sizes is active, and several makers advise us they have enough orders booked to keep them busy for the next six to eight weeks. We quote: Standard sizes, 4½ x 9-16 in., at $1.70, and the smaller sizes at $1.80 per 100 lb. in carload and larger lots, with an advance of 5c. per 100 lb. for less than carload, f.o.b. Pittsburgh.

**Iron and Steel Scrap.**—The market is quiet, but prices are firm, and there is a feeling on the part of dealers that Scrap will bring higher figures before long. This may be the case, but at the same time two or three leading consumers of Scrap, in preference to paying $15 a ton for Heavy Steel, are now using Pig Iron, which they can buy at about the same price and which serves their purposes better. It is also true that most consumers of Scrap have pretty heavy stocks on hand, and a waiting game seems to be on between consumers and dealers, with the result that not much is doing in the way of making sales. Prices are firm, dealers quoting about as follows per gross ton: Heavy Steel Scrap for Pittsburgh, Sharon, Follansbee, Monessen and Steubenville delivery, $15 to $15.25, while Heavy Steel Scrap

for hand charged Open Hearth furnaces, pieces weighing 10 lb. minimum to 300 lb. maximum, is 75c. to $1 a ton higher; Cast Iron Borings, $9 to $9.25; Bundled Sheet Scrap, $12.25 to $12.50; No. 1 Railroad Wrought Scrap, $16.50 to $16.75; No. 1 Busheling Scrap, $13.75 to $14; No. 2, $10.25 to $10.50; No. 1 Cast Scrap, $14.50 to $14.75; Sheet Bar Crop Ends, $17.50 to $18; Iron Axles, $22.50 to $23; Low Phosphorus Melting Stock, 0.035 and under in phosphorus, $19; Rerolling Rails, $16 to $16.25; Steel Axles, $19 to $19.25; Machine Shop Turnings, $9.75 to $10; Grate Bars, $12.25 to $12.50; Old Car Wheels, $15 to $15.50; Railroad Malleable, $14 to $14.25.

**Coke.**—There is no improvement in the Coke trade, either as regards demand or prices. This is the season of the year when the furnaces and foundries usually commence to look around for their supply of Coke for the next year, but so far little of this has been done. Strictly Connellsville Furnace Coke for prompt shipment can still be had at $1.50 a ton at oven or less, while on Coke for first half of next year delivery, $1.75 to $1.85 seem to be the ideas of the Coke makers, but these prices do not appear to interest furnace men. Connellsville 72-hr. Foundry Coke is $2 to $2.25, at oven, but there is very little inquiry. Only about 40 per cent. of the ovens in the Upper and Lower Connellsville region are in operation, and a shortage in water supply is still interfering seriously with operations at practically all of the plants.

## Cincinnati.

CINCINNATI, OHIO, October 7, 1908.—(*By Telegraph.*)

It is very quiet in the Iron and machinery and machine tool markets, a disposition seeming manifest to delay orders of all kinds save those absolutely required for current needs. Some tool manufacturers evidence confidence in the future, as shown in renewal of contracts and placing of good-sized orders for Castings. Prices on machinery are being well maintained, although persistent rumors of cutting on some lines of finished material and reductions on a few items of Scrap are to be noted this week. A break of 50c. to 75c. a ton on Heavy Melting Steel is the most noticeable feature in Old Material markets. October opens fairly well with the large tool manufacturing concerns, and some of these contemplate an early increase in working forces and time.

**Pig Iron.**—Few inquiries are to be noted this week, although there is a strong disposition to feel the market for the first quarter and half deliveries. There seems to be some sharp competition on between the Southern Ohio and Valley furnaces on Malleable, Basic and Foundry business. Recent inquiries have been from a territory in which these Irons have a big advantage over the Southern product in the matter of freights. Reports from Ironton indicate that but two furnaces are now in blast in the Hanging Rock region. The best price heard to-day on Southern No. 2 Foundry is $12.50, Birmingham, and most Alabama furnaces are out of the market altogether or are holding for the prohibitive price of $13. For the first quarter $13 is the best price heard, and on Northern Irons $15. Jisco, the New Jackson County furnace, went into blast Monday on High Silicon Iron. Ohio Silveries are still quotable at $18.50, at furnace. Some business has been placed with Southern Ohio furnaces at around $14.75 for prompt shipment on No. 2. The inquiry for Malleable mentioned last week is said to have been satisfied with some Valley or Columbus Iron at a price of something better than $14.50, at furnace. The north central Ohio melter who was asking for 500 tons of Basic is out with another inquiry of the same amount and for prompt shipment. The business is expected to go to Cleveland or Toledo. An inquiry from a northern Illinois melter is for 200 to 300 tons of Foundry Iron. An Ohio stove maker is asking for 300 tons of Foundry Iron for prompt shipment, and this is construed to mean a considerably larger order if the price is attractive. Persistent rumors of a 20,000-ton sale of a new southern Ohio Iron to the largest Pipe maker are denied by the interested parties. For prompt delivery and balance of the year we quote, f.o.b. Cincinnati, the freight rate being $3.25 from Birmingham and $1.20 from the Hanging Rock District, as follows:

| | |
|---|---|
| Southern Coke, No. 1 | $16.25 to $16.75 |
| Southern Coke, No. 2 | 15.75 to 16.25 |
| Southern Coke, No. 3 | 15.25 to 15.75 |
| Southern Coke, No. 4 | 15.00 to 15.50 |
| Southern Coke, No. 1 Soft | 16.25 to 16.75 |
| Southern Coke, No. 2 Soft | 15.75 to 16.25 |
| Southern Coke, Gray Forge | 14.25 to 14.75 |
| Ohio Silvery, 8 per cent. Silicon | 19.70 |
| Lake Superior Coke, No. 1 | 16.45 to 16.95 |
| Lake Superior Coke, No. 2 | 15.95 to 16.45 |
| Lake Superior Coke, No. 3 | 15.45 to 15.95 |
| Standard Southern Car Wheel | 22.25 to 22.75 |
| Lake Superior Car Wheel | 21.75 to 22.25 |

(*By Mail.*)

**Coke.**—Practically no new business is coming out, although consumers are taking shipments promptly and no change is to be noted in prices. Aside from the contracts which carry shipments into next year, as far as the first half, no inquiries are heard for next year's prices. Virginia Furnace brands are quotable at $1.75 to $1.85, at oven; Foundry, $2.10 to $2.25; Connellsville Furnace grades, $1.65 to $1.85 for nearby shipment, some producers asking for the same grades $2.50 for the first half; Foundry, $2.25 to $2.40; Pocahontas, listless, at about $1.65 to $1.75, and Foundry grades about $2 to $2.25. In some districts the prolonged drouth has undoubtedly affected production, but it is reported here that some additional ovens are being lighted in the Connellsville region.

**Finished Material.**—Dealers' prices are well maintained, but there are rumors of cutting on large lots charged to the independents. Bolts are particularly noticeable in this connection. Because of the higher prices of Scrap, there is talk of an advance on Iron Bars from 1.35c., Pittsburgh, to 1.40c., and on some new business these prices are now being asked. Most dealers in this section note a falling off in business, especially marked the past two weeks. Business for the year is expected to average no more than 65 to 70 per cent. of normal. Dealers are quoting to the trade as follows, f.o.b. Cincinnati: Iron Bars, carload lots, 1.55c., base, with half extras; small lots from store, 1.85c., base, half extras; Steel Plates, carload lots, 1.75c., base, with half extras; small lots from store, 1.85c., base, half extras; Base Angles, carload lots, 1.85c., base; small lots from store, 2.10c.; Beams, Channels and Structural Angles, 1.85c., base; small lots from store, 2.10c.; Plates, ¼-in. and heavier, carload lots, 1.85c.; small lots from store, 2c.; Blue Annealed Sheets, heavy, No. 16, carload lots, 2.15c.; small lots from store, 2.50c.; No. 14, carload lots, 2.05c.; small lots from store, 2.40c.; No. 10 and heavier, carload lots, 1.95c.; small lots from store, 2.20c.; No. 12, carload lots, 2c.; small lots from store, 2.30c.; Sheets (Light), Black, No. 28, carload lots, 2.65c.; Galvanized Sheets, No. 28, carload lots, 3.70c.; Steel Tire, 4-in. and heavier, carload lots, 1.95c.; Plates, 3-16 and No. 8, carload lots, 2c.; small lots from store, 2.20c.

**Old Material.**—It is still a dealers' market, but they are weakening a little in their independent attitude, so that on some lines such as Heavy Melting Steel last week's prices could be shaded as much as 50c. to 75c. per ton. Select Railroad Wrought is still firm. Everything is practically at a standstill until after election. Dealers here are quoting as follows, f.o.b. Cincinnati:

| | |
|---|---|
| No. 1 R. R. Wrought, net ton | $12.50 to $13.50 |
| Cast Borings, net ton | 5.00 to 5.50 |
| Heavy Melting Steel Scrap, gross ton | 13.50 to 14.50 |
| Steel Turnings, net ton | 6.00 to 7.00 |
| No. 1 Cast Scrap, net ton | 12.00 to 13.00 |
| Burnt Cast, net ton | 9.00 to 10.00 |
| Old Iron Axles, net ton | 16.50 to 17.50 |
| Old Iron Rails, gross ton | 15.00 to 16.00 |
| Old Steel Rails, short, gross ton | 13.00 to 14.00 |
| Old Steel Rails, long, gross ton | 12.50 to 13.50 |
| Relaying Rails, 56 lb. and up, gross ton | 20.00 to 21.00 |
| Old Car Wheels, gross ton | 13.00 to 14.00 |
| Low Phosphorus Scrap, gross ton | 14.00 to 15.00 |

## Birmingham.

BIRMINGHAM, ALA., October 5, 1908.

**Pig Iron.**—The market is very quiet, with all parties concerned apparently content to await developments believed to be imminent. Melters generally urge the delivery of Iron engaged, and in some lines of foundry trades recent improvement has necessitated additional purchases of raw material, but in the majority of such cases proportions of engagements have been increased only to the extent warranted by actual requirements. The most encouraging reports as to the melt comes from the manufacturers of Cast Iron Pipe, a contract for some 15,000 tons having recently been placed in this district. Producers offer no inducement for more extensive negotiations in the shape of concessions in prices, the $13 Birmingham schedule being firmly adhered to. Especially is this true of first quarter deliveries. A number of requests have been made for quotations on tonnage to cover the first half of 1909, but no quotations applicable to deliveries beyond the first quarter have been elicited. The condition of producers' order books is further evinced by the fact that the rate of production is to be increased by two additional stacks within the coming week instead of only one, as previously stated. This addition is for order-book requirements, although a third stack will go in blast within 10 days, the output of which will probably represent a surplus. The largest consideration among transactions during the past week was 1000 tons for the remainder of the year. This sale is reported on a basis of $13, Birmingham, for No. 2, and a number of smaller lots have brought the same figures. The demand was of a rather desultory nature, however, and the aggregate of engagements resulting is comparatively small. An inquiry from a stove manufacturer is the only prospect for business during the coming week.

**Cast Iron Pipe.**—The transactions recorded the past week have involved comparatively small lots, but to the list of lettings in sight the following are added: 900 tons of Water Pipe for the city of Hope, Ark., upon which bids will be received October 5. The city of Linden, N. J., is to receive bids on 1000 tons of Water Pipe October 7, and approximately 4000 tons of 4 to 24 in. Water Pipe is to be placed at an early date for Long Beach, N. Y. Quotations of Southern producers have been materially strengthened by reason

of the fact that the contract recently placed for Cuba is to be furnished by a Southern plant. By this arrangement the output of one of the largest plants in this district will be practically taken off the market for two or three months. We quote the market as firm at the following prices for Water Pipe per net ton, f.o.b. cars here: 4 to 6 in., $24; 8 to 12 in., $23; over 12 in., average $22, with $1 per ton extra for Gas Pipe.

**Old Material.**—There has been no improvement in this market since last report. Recent inquiries have in but few cases resulted in sales, and reports relative to mills now idle are not indicative of an early increase in the consumption. Dealers adhere firmly to quotations and are gradually increasing their stocks. We quote dealers' asking prices as follows, per gross ton, f.o.b. cars here:

| | |
|---|---|
| Old Iron Rails | $14.50 to $15.00 |
| Old Iron Axles | 15.50 to 16.00 |
| Old Steel Axles | 13.00 to 13.50 |
| No. 1 Railroad Wrought | 13.50 to 14.00 |
| No. 2 Railroad Wrought | 10.50 to 11.00 |
| No. 1 Country Wrought | 11.00 to 11.50 |
| No. 1 Machinery | 11.00 to 11.50 |
| No. 1 Steel | 9.50 to 10.00 |
| Stove Plate and Light Cast | 9.50 to 10.00 |
| Cast Borings | 5.00 to 5.50 |

## Philadelphia.

PHILADELPHIA, PA., October 6, 1908.

Business has been interrupted to a considerable extent by the celebration of the 225th anniversary of the founding of the city of Philadelphia. The exercises will continue throughout the week. There is also a strong tendency to defer action on important matters until after election, and a large volume of business is, therefore, held in abeyance. The Pig Iron markets have been particularly quiet. Finished materials have been in about even demand, with a slightly better feeling shown in some lines. Old Material has been moving somewhat more freely, particularly Heavy Melting Steel; the other specialties are still inactive. The outlook for business in the near future is problematical, and unless something unexpected develops the month, it is believed, will be a quiet one. After the November election a more active buying movement in practically all branches of the trade is anticipated.

**Pig Iron.**—Current business has been comparatively light. The bulk of the sales made during the week have been confined to the Foundry grades. A waiting policy appears to have been pretty generally adopted by consumers, and in the majority of cases orders placed have been for small lots to cover immediate requirements or partial needs during the balance of the year. There has been considerable feeling of the market for Iron for delivery in the first quarter and half of next year, but few sellers are willing to contract for extended forward delivery. Quite a number still withhold quotations for any delivery in 1909. Sellers in eastern Pennsylvania have the situation pretty well in hand. Prices are being strongly maintained. While some interests have sold practically all their output of certain grades for the balance of the year, they are not inclined to increase their present curtailed capacity, the policy being to produce no greater tonnage than the market will absorb, thereby maintaining business as well as prices on a comparatively even basis. A large volume of business is being held up awaiting the outcome of the November election, and both buyers and sellers will, no doubt, conduct their business along conservative lines until then. For the standard grades of eastern Pennsylvania Foundry Iron prices are unchanged, but, if anything, are firmer. No. 2 X Foundry is quoted at $16.75 to $17, delivered in buyers' yards, but more business, particularly in small lots, is being done at the higher rather than at the lower level. Several large producers still express their willingness to sell freely at $16.75 for delivery over the balance of the year. Sales of the higher grades of Foundry Iron have been confined to small lots, but even these orders come out irregularly. Low grade Foundry Irons have been a shade more active, and sales of several lots of 100 and 500 tons for delivery over the balance of the year have been made at $15.50 to $15.65, delivered. The Pipe foundries are still in the market for several round lots of Iron, for which it is understood that a willingness to pay $15.25 has been expressed, but sellers refuse, as a rule, to consider those figures. This grade of Iron is not plentiful, and a number of producers have sold about all they have at the time or are likely to make for shipment this year. Southern Irons have been quiet, but little business having been transacted recently. Virginia Foundry Irons have been sold in small spot lots for prompt shipment at full prices. Few sellers of Virginia Irons are inclined to take business for delivery beyond 30 or 60 days at the ruling price level. There has been a somewhat less demand for Forge Iron, but makers are pretty well sold up on this grade and prices are strong. No large tonnages were sold during the week, some small sales being reported at $15.50 to $15.75, delivered. The Steel making Irons have been rather quiet. Few melters are in the market for Basic for shipment the balance of the year, while others are not yet prepared to enter their orders for next year's delivery. The majority of sellers are holding firmly at $16 for Basic for shipment in the next six months, although it is understood that this price might be shaded 50c. a ton if a desirable tonnage came out for delivery for the balance of the year. Low Phosphorus Iron is dull and uncalled for, and prices on this grade are not particularly strong. The situation on the whole is hardly as bright as it was, but this is believed to be but temporary. Prices, however, are decidedly firm, and it is believed that a good volume of business will come out later in the year. For delivery in buyers' yards, eastern Pennsylvania and nearby territory, the following prices for delivery during the remainder of the year are quoted:

| | |
|---|---|
| Eastern Pennsylvania, No. 2 X Foundry | $16.75 to $17.00 |
| Eastern Pennsylvania, No. 2 Plain | 16.25 to 16.50 |
| Virginia, No. 2 X Foundry | 17.00 |
| Virginia, No. 2 Plain | 16.75 |
| Gray Forge | 15.50 to 15.75 |
| Basic | 15.50 to 16.00 |
| Low Phosphorus | 20.00 to 20.50 |

**Ferromanganese.**—Only a few small inquiries have developed. Quotations still show variation. $44.50 to $45, Baltimore, is named by some sellers for forward Ferro, but it is understood that $43.75 has been shaded for a small lot for early shipment.

**Plates.**—A fairly good day to day demand is reported by manufacturers. Business closed continues about on an even basis, but is usually in small lots, and of a miscellaneous character. Some good propositions are pending, but they develop slowly. For delivery in this territory prices are unchanged, as follows:

| | Carloads. Cents. | Parts carload. Cents. |
|---|---|---|
| Tank, Bridge and Boat Steel | 1.75 | 1.80 |
| Flange or Boiler Steel | 1.85 | 1.95 |
| Commercial Firebox | 1.95 | 2.00 |
| Marine | 2.15 | 2.20 |
| Locomotive Firebox Steel | 2.25 | 2.30 |

The above are base prices for ¼-in. and heavier. The following extras apply:

| | Extra per 100 lb. |
|---|---|
| 3-16-in. thick | $0.10 |
| Nos. 7 and 8, B. W. G. | .15 |
| No. 9, B. W. G. | .25 |
| Plates over 100 to 110 in. | .05 |
| Plates over 110 to 115 in. | .10 |
| Plates over 115 to 120 in. | .15 |
| Plates over 120 to 125 in. | .25 |
| Plates over 125 to 130 in. | .50 |
| Plates over 130 in. | 1.00 |

**Steel Billets.**—The demand for ordinary Rolling Steel continues quiet. A better demand has developed for Forging Steel, and a fairly good volume of business has been done in small lots. Mills are able to maintain their current rate of production, and the outlook is considered somewhat more favorable. For delivery in this territory quotations are firm, and unchanged, $26.20 being named for ordinary Rolling Steel, and $28.20 for Forging Steel, subject to the usual extras for high carbons and special sizes.

**Structural Material.**—Business continues along narrow lines, the bulk of the orders placed having been small. No propositions of any importance were closed during the week. The outlook is somewhat more favorable and more active conditions, particularly in the building trades, are looked forward to. It has about been decided that the new bridge to be erected over the Schuylkill River at Passyunk avenue by the city is to be of the bascule type. Plans for this are now being drawn. Prices are firm and quotations for delivery in this territory range from 1.75c. to 1.90c. ,according to specifications.

**Sheets.**—The demand for Sheets continues comparatively good. Orders are usually small and for prompt shipment, but the number received enables mills to operate at from 75 per cent. to full capacity. Prices for mill shipment range as follows, a tenth extra being added for small lots: Nos. 18 to 20, 2.50c.; Nos. 22 to 24, 2.60c.; Nos. 25 to 26, 2.70c.; No. 27, 2.80c.; No. 28, 2.90c.

**Bars.**—An irregular demand continues and the market shows practically no change. Buying has been spotty and mostly in small lots for prompt shipment. Prices are unchanged, 1.45c. to 1.50c. being quoted for delivery in this territory. Steel Bars are quoted at 1.55c., but are not very active, with Rerolled Bars at 1.50c., delivered.

**Coke.**—Business has been somewhat more active, but the orders taken have not been large. The blowing in of increased blast furnace capacity in this territory will increase the consumption of Furnace Coke, while Foundry Coke is in better demand from the smaller foundries. Prices are unchanged but stronger, Foundry Coke being quoted at $2 to $2.25 at oven, with Furnace Coke at $1.50 to $1.75. For deliveries in this territory the following range of prices is named:

| | |
|---|---|
| Connellsville Furnace Coke | $3.65 to $3.90 |
| Foundry Coke | 4.15 to 4.40 |
| Mountain Furnace Coke | 3.25 to 3.50 |
| Foundry Coke | 3.75 to 4.00 |

**Old Material.**—Considerable activity has developed during the week, particularly in Heavy Melting Steel, sales aggregating about 14,000 tons for delivery over the remainder of the year having been made at prices ranging from $15 to

$15.50, the bulk of the business being at the inside figure. One concern took a number of miscellaneous lots, including No. 1 Heavy Melting stock and Rails, long and short lengths, aggregating nearly 7000 tons, for none of which over $15, delivered, was paid. Rolling mill Scrap has not been very active, but prices have been maintained except in the case of Borings, which are about 25c. under last week's quotations. The market, on the whole, is not very active. Prices are nominally unchanged, and range about as follows for delivery in buyers' yards, eastern Pennsylvania and nearby territory:

| | |
|---|---|
| No. 1 Steel Scrap and Crops | $15.00 to $15.50 |
| Low Phosphorus | 18.50 to 19.00 |
| Old Steel Axles | 21.50 to 22.00 |
| Old Iron Axles | 22.50 to 23.00 |
| Old Iron Rails | 20.50 to 21.00 |
| Old Car Wheels | 15.00 to 15.50 |
| Choice No. 1 R. R. Wrought | 18.25 to 18.75 |
| Machinery Cast | 15.25 to 15.75 |
| Railroad Malleable | 13.50 to 14.00 |
| Wrought Iron Pipe | 14.25 to 14.75 |
| New Bundled Sheets | 13.50 to 14.00 |
| No. 1 Forge Fire Scrap | 12.00 to 12.50 |
| No. 2 Light Iron | 8.75 to 9.25 |
| Wrought Turnings | 11.50 to 12.00 |
| Stove Plate | 13.00 to 13.50 |
| Cast Borings | 11.00 to 11.50 |
| Grate Bars | 13.50 to 14.00 |

## Buffalo.

BUFFALO, N. Y., October 6, 1908.

**Pig Iron.**—The market is quiet, with placements of new business confined principally to immediate requirements. The tendency so far as future deliveries are concerned is to hold back both on inquiries and quotations until after election. A good volume of specifications against existing contracts continues. Some furnaces, being sold up to full capacity for this year's output, stand firmly for maximum prices; others not so fully booked, continue to take orders at the same level of prices as for the past month or six weeks. All look forward to an improvement and more settled conditions after election. Commencing with this week, these reports will include Basic Iron quotations, due to the starting up of the Wickwire Steel Company's furnace, which, in addition to making Basic Iron for the home plant of the Wickwire Brothers at Cortland, N. Y., will produce Basic Iron for the Buffalo market. None of the other furnaces in this district are equipped to make machine cast Iron. We quote as follows, f.o.b. Buffalo:

| | |
|---|---|
| No. 1 X Foundry | $15.75 to $16.50 |
| No. 2 X Foundry | 15.25 to 16.00 |
| No. 2 Plain | 14.75 to 15.50 |
| No. 3 Foundry | 14.75 to 15.25 |
| Gray Forge | 14.50 to 15.00 |
| Basic | 15.00 |
| Malleable Bessemer | 16.00 to 17.00 |
| Charcoal | 20.00 to 20.50 |

**Finished Iron and Steel.**—A fair volume of new business in Bars, Shapes and Structural Material continues to come in small lots. More interest is being shown recently for Rails for electric line projects for New York State lines, from which business may possibly develop this fall. Specifications for the wholesale building to be erected for the Sinclair-Rooney Company, Buffalo, have been revised, and new bids called for this week on requirements of about 300 tons of Structural Material. Orders will also be placed this week for a small tonnage for an addition to the plant of the Jacob Dold Packing Company.

**Old Material.**—The market continues dull and apathetic, dealers not being willing to make concessions and consumers not inclined to purchase to any considerable extent at prices at which material is held. We quote the following prices, per gross ton, f.o.b. Buffalo:

| | |
|---|---|
| Heavy Melting Steel Scrap | $14.00 to $14.25 |
| No. 1 Railroad Wrought | 15.00 to 15.25 |
| No. 1 Railroad and Machinery Cast Scrap | 14.00 to 14.50 |
| Old Steel Axles | 17.00 to 17.50 |
| Old Iron Axles | 20.00 to 20.50 |
| Old Car Wheels | 15.00 to 15.50 |
| Railroad Malleable | 13.00 to 13.50 |
| Boiler Plate | 12.00 to 12.50 |
| Locomotive Grate Bars | 11.50 to 12.00 |
| Pipe | 11.50 to 12.00 |
| Wrought Iron and Soft Steel Turnings | 8.00 to 8.25 |
| Clean Cast Iron Borings | 6.50 to 7.00 |
| No. 1 Busheling Scrap | 12.50 to 13.00 |

In the article, "Castings Versus Forgings," by James H. Baker, which appeared in *The Iron Age* of October 1, the author's meaning was changed by the omission of a qualifying expression. Instead of saying that "a stove is an impossibility in wrought iron," the writer's reference was to a particular type of gas stove, which by reason of its intricate design would not be a commercial possibility in wrought material, "and even if so made would not stand the heat like cast iron."

## Cleveland.

CLEVELAND, OHIO, October 6, 1908.

**Iron Ore.**—Shipments from the upper lake ports in the month of September were 4,646,024 tons, a falling off of 103,631 tons as compared with August. The total movement to October 1 was 16,630,960 tons. This is a loss of 13,928,246 tons, as compared with the movement to October 1 a year ago, when the shipments for the season had reached 30,559,206 tons. September shows a loss of 1,571,629 tons, compared with the corresponding month last year. The Steel Corporation will keep up shipments pretty well for the balance of the season, but the Merchant Ore firms are getting fairly well cleaned up on contracts, and it is expected that October will show considerable falling off as compared with September, and that the November movement will be very light. At the close of navigation last year it was estimated that there were 7,385,728 tons of Ore on the docks. As the docks were crowded at the time the quantity will not be much larger on December 1 this year, although it will probably be a little larger owing to some increase in the dock space. There will be more Ore on the furnace yards, however, than at the close of navigation last year. The market is very quiet. The sale of a few small lots is reported, but inquiries are scarce and Ore firms expect to sell only a small tonnage during the balance of the season. Prices at Lake Erie docks, per gross ton, are as follows: Old Range Bessemer, $4.50; Mesaba Bessemer, $4.25; Old Range Non-Bessemer, $3.70; Mesaba Non-Bessemer, $3.50.

**Pig Iron.**—The local Foundry Iron market is very dull and little, if any, improvement is looked for until after election. Sales for consumption in this territory during the week were limited to a few small lots. Consumers are well covered for the balance of the year. Their purchases have not been greater than their needs in most cases, so that shipments on contracts are not being held up and a few are asking that shipments be anticipated. Only a small tonnage has been sold for next year's delivery, and little buying on that account is expected until the result of the election is known. Prices remain stationary, but the market continues weak. While No. 2 Foundry is still quoted at $14.50, Valley furnace, that price is the top of the market, and it is being shaded to about $14.25. Local furnaces continue to quote No. 2 Foundry at $15, at furnace, shading this price for outside shipments. For first half delivery furnaces are asking $14.50 to $15 for No. 2 Foundry, local furnaces refusing to quote under the latter price. The market is somewhat more active outside of this territory, and a local interest sold during the week 2200 tons, nearly all of which went to Indiana foundry concerns. Included in these sales were one lot of 800 tons of Foundry Iron and an 800-ton lot of half Foundry and half Malleable. A portion of the deliveries will extend over the first quarter. The sales were made at from $15 to $15.25, Toledo, small lots bringing the latter price. The Basic inquiries that were noted last week resulted in the sale by a local interest of a considerable tonnage for the balance of the year delivery at $14.25, Valley furnace. A lot of 2000 tons of Bessemer Iron is being offered for resale at a low price. The only Bessemer inquiry in the market is one for 300 tons. For prompt shipment and for the balance of the year we quote, delivered, Cleveland, as follows:

| | |
|---|---|
| Bessemer | $15.90 to $16.40 |
| Northern Foundry, No. 1 | 15.50 to 15.80 |
| Northern Foundry, No. 2 | 15.25 to 15.50 |
| Northern Foundry, No. 3 | 14.90 to 15.25 |
| Southern Foundry, No. 2 | 16.85 to 17.35 |
| Jackson County Silvery, 8 per cent. Silicon | 20.05 |
| Gray Forge | 14.25 to 14.50 |

**Coke.**—There is practically no demand for either grade and prices remain stationary. For prompt shipment Standard Connellsville Furnace Coke is being offered at $1.50 to $1.60, at oven, and about the latter price for the balance of the year. Consumers of Foundry Coke are covered for the balance of the year, and are not yet ready to buy for next year. We quote 72-hr. Connellsville Foundry Coke at $2 to $2.25, at oven, for balance of the year, and $2.25 for the first half.

**Finished Iron and Steel.**—Very little new business is being placed, and specifications on contracts show a falling off in aggregate tonnage, as compared with September. Some of the mill agents report that the number of their orders are as numerous as they were, but they are for smaller lots of material. Not a great deal of new business is expected until after election. The demand for Steel Bars is holding up better than for other lines. There is a falling off in the demand for Structural Material, although some good orders have come from bridge companies that have considerable county and municipal work on hand. As the end of the building season is near at hand, there is less demand for Structural Material for small work, and fabricators are not as busy as they were a month ago. The falling off in the demand appears more noticeable in Plates than in other lines. The limited number of inquiries for car lots of Plates causes unusually lively competition among the mills for the business. The demand for Iron Bars is light, and local mills are running only at part of their capacity. Fol-

lowing the placing of orders for two lake freight boats with the American Shipbuilding Company, mention of which was made last week, that company has closed a contract for 5000 tons of material, one-half Plates and one-half Structural Shapes and Bars, to be used in their construction. The only new Rail inquiry of any size pending is for 800 tons of Standard Sections, for an Eastern traction line. Some car lot orders for Light Rails are coming from coal mining companies, but they are mostly on contracts. Prices on Steel Bars are being maintained, and there is less shading of the price of Iron Bars than a few weeks ago. The smaller Sheet and Plate mills continue to cut prices from $1 to $2 per ton. The general situation among manufacturers continues to improve slowly, and these consumers of Finished Material are using more material, but many of them have fairly good stocks on hand, and are now ordering in smaller lots for immediate requirements. Jobbers report a slight falling off in orders, as compared with last month, but their September business was far ahead of August, and the latter month showed a good gain over any previous month of the year. We quote: Iron Bars, 1.45c., Cleveland, for car lots; Steel Bars, 1.50c., Cleveland, for car lots, half extras; Beams and Channels, 1.70c., base, Cleveland, and Plates, ¼ in. and heavier, 1.70c., Cleveland. We quote Sheets, mill shipments, car lots, Cleveland, as follows: Blue Annealed, No. 10, 1.90c.; Box Annealed, No. 28, 2.60c.; Galvanized, No. 28, 3.65c. Jobbers quote Iron and Steel Bars out of stock at 1.65c. to 1.70c. Beams and Channels from warehouse are 2c., and Plates, ¼ in. and heavier, 1.90c. Warehouse prices on Sheets are as follows: Blue Annealed, No. 10, 2.10c.; Box Annealed, No. 28, 2.70c.; Galvanized, No. 28, 3.80c. Warehouse prices on Boiler Tubes, 2¾ to 5 in., are 64 per cent. discount, and on Black Merchant Iron Pipe, base sizes, 71 per cent. discount.

**Old Material.**—Some demand is noted for Scrap in small lots for immediate needs, but consumers are not buying ahead and no large inquiries are out. Although the market is quiet prices remain firm, although there are reports of a slight weakening in the East. Little Scrap can be found for sale below the ruling quotations. The railroad offerings this month are light. This week's lists include about 1000 tons to be sold by the Pennsylvania and a small lot offered by the Wheeling & Lake Erie. Dealers' prices to the trade, per gross ton, f.o.b. Cleveland, are as follows:

| | |
|---|---|
| Old Steel Rails | $14.00 to $14.50 |
| Old Iron Rails | 17.00 to 17.50 |
| Steel Car Axles | 19.00 to 19.50 |
| Old Car Wheels | 15.00 to 15.50 |
| Heavy Melting Steel | 13.75 to 14.25 |
| Relaying Rails, 50 lb. and over | 22.00 to 23.00 |
| Railroad Malleable | 13.25 to 13.75 |
| Agricultural Malleable | 12.00 to 12.50 |
| Light Bundled Sheet Scrap | 9.50 to 10.00 |

The following quotations are per net ton, f.o.b. Cleveland:

| | |
|---|---|
| Iron Car Axles | $20.00 to $20.50 |
| Cast Borings | 7.00 to 7.50 |
| Iron and Steel Turnings and Drillings | 8.00 to 8.50 |
| Steel Axle Turnings | 8.50 to 9.00 |
| No. 1 Busheling | 12.00 to 12.50 |
| No. 1 Railroad Wrought | 13.50 to 14.00 |
| No. 1 Cast | 12.00 to 13.00 |
| Stove Plate | 10.75 to 11.25 |
| Bundled Tin Scrap | 8.00 to 9.00 |

## Metal Market.

NEW YORK, October 7, 1908.

**Pig Tin.**—The statistics of Pig Tin, as compiled by C. Mayer, were a disappointment to those who had expected returns favoring lower prices. It would have been more of a shock to the Tin trade in general had it not been known the day before that the shipments from the Straits for September were about 500 tons below the original estimates. The visible supply on September 30 was 18,109 tons. This figure has not been equaled since the end of March, 1903, when the visible supply was 19,497 tons. At that time the price of Tin was approximately the same as to-day. Stocks in the United States at the end of the month were 2159 tons. Business during the week has been dull and featureless. Price fluctuations have been within narrow limits, being quoted as follows for 5-ton lots of spot Tin, New York:

| | Cents. |
|---|---|
| October 1 | 29.50 |
| October 2 | 29.50 |
| October 5 | 29.45 |
| October 6 | 29.40 |
| October 7 | 29.50 |

The arrivals so far this month are 400 tons, and there are afloat for American ports 1805 tons. The London market closes to-day at £134 5s. for spot and £135 15s. for futures.

**Copper.**—The exports of Copper during September were 19,378 tons. The total for the first nine months of the year amounts to 226,995 tons, against 127,775 tons in the same period of last year and 154,626 tons in the same period of 1906. This illustrates very forcibly the immense help Europe has been this year. At the same time imports are not unduly large, those for August, now for the first time reported, being 8000 tons, and the total for the first eight months of this year aggregating 53,700 tons, against 88,600 tons in the corresponding period last year. Domestic business continues apathetic, but prices are undoubtedly firmer as witnessed by the sale this week of a carload of Electrolytic at 13.55c., delivery 30 days. One of the leading sellers of Electrolytic maintains a nominal quotation of 13.75c. While resale lots can be had at 13.50c. cash, this only applies to resale lots and for cash. The Lake market is nominal, producers asking 14c., but it is possible that from second hands it may be obtained at 13.75c. The base price of Bare Copper Wire was reduced ½c. October 5 to 14.75c. The tendency on the part of both buyers and sellers continues to be a waiting one, depending on the political outcome. The European markets are falling slightly, and London closes to-day at £59 13s. 9d. for spot, and £60 10s. for futures. Exports so far this month have been 3413 tons.

**Pig Lead.**—The price of Soft Missouri Lead in New York was misquoted last week and should have been 4.47½c. instead of 4.57½c., as printed in this report. In the "Comparison of Prices," however, Lead in New York was correctly quoted at 4.47½c. Soft Missouri brands can now be had at 4.45c., New York, and 4.30c., St. Louis. The American Smelting & Refining Company, however, continues to quote shipment Lead at 4.60c.

**Spelter.**—Spelter prices are firmer and there is nothing obtainable in New York under 4.85c. In St. Louis the market is firm, at 4.70c.

**Aluminum.**—The price of Aluminum is somewhat unsettled, as the leading producers in this country nominally quote No. 1 Ingots at 33c., but large lots can probably be had at under this figure. Importers also would be willing to make contracts at considerably less prices.

**Antimony.**—The market is dull and unchanged, although slightly higher. Cookson's is now quoted at 8c. to 8½c., Hallett's at 7.75c. to 8c., and outside brands at 7.50c. to 7.75c.

**Nickel.**—The price of Nickel is unchanged, at 45c. for ton lots and 50c. to 60c. for smaller quantities.

**Tin Plates.**—The price is unchanged, at $3.89, New York, and $3.70, Pittsburgh, for 100-lb. I C Coke Plates.

**Old Metals.**—Dealers quote selling prices as follows:

| | Cents. |
|---|---|
| Copper, Heavy and Crucible | 12.50 to 12.75 |
| Copper, Heavy and Wire | 12.25 to 12.50 |
| Copper, Light and Bottoms | 11.50 to 11.75 |
| Brass, Heavy | 9.25 to 9.50 |
| Brass, Light | 7.25 to 7.50 |
| Heavy Machine Composition | 11.75 to 12.00 |
| Clean Brass Turnings | 8.25 to 8.50 |
| Composition Turnings | 9.50 to 9.75 |
| Lead, Heavy | 4.20 to 4.25 |
| Lead, Tea | 3.85 to 3.90 |
| Zinc Scrap | 3.20 to 3.50 |

## New York.

NEW YORK, October 7, 1908.

**Pig Iron.**—The market has been very quiet, the selling movement which characterized the last two weeks of last month having spent its force. With the exception of two or possibly three of the larger Eastern Basic Steel plants, few important melters have purchased any considerable quantities for delivery during the first quarter, and the majority of consumers, large and small, except possibly in New England, have not even covered all of their requirements for this year. We quote, at tidewater, Northern No. 1 Foundry, $17.25 to $17.75; No. 2 Foundry, $16.75 to $17.25, and No. 2 Plain, $15.75 to $16.25. Alabama Irons are quoted $17.50 to $17.75 for No. 1 Foundry, and $16.75 to $17.25 for No. 2 Foundry.

**Structural Material.**—Very low bids, in some cases below the cost of unsuccessful bidders, are still the feature of current Structural business. Fabricators and Steel companies are sharing in these cuts, which have certainly brought Structural work to a basis calculated to be tempting to capital. Railroad work figures as an unimportant second in recent contracts. The Plate girder bridges of the Northern Pacific, 2100 tons, have been awarded to the McClintic-Marshall Construction Company. The bids on the Keithsburg Bridge over the Mississippi are still under consideration by the Iowa Central. At Cincinnati bids are asked for 2000 tons of Steel for the Cincinnati Southern's new viaduct in the city. In New York City bids are being received on the Ritz-Carlton Hotel, which will be erected as two buildings, on Madison avenue, between Forty-sixth and Forty-seventh streets, one taking 3000 tons and the other 2000 tons of Steel. Bidders are asked to base estimates on Eastern Steel Company sections. The New York Central is asking bids on the second section of its Grand Central terminal. The Milliken Brothers' receivers, who are understood to be the low bidders on the Emigrant Savings Bank, 5500 tons, have also taken this week the Great Northern Hotel, on Lexington avenue, above Sixty-fifth street, 1500 tons. On both these contracts the Bethlehem Steel Company's Gray Shapes will be used. The American Bridge Company added to its previously reported September business 2500 tons for two bar mills for the new plant at Gary, Ind. With the reservation that must be made concerning a number of Struc-

tural contracts involving concessions, we quote as follows on tidewater deliveries of plain material shipped from mill: Beams, Channels, Angles and Zees, 1.76c.; Tees, 1.81c. On Beams, 18 to 24 in., and Angles, over 6 in., the extra is 0.10c. Structural Material, cut to lengths, is sold in small lots at about 2¼c.

**Bars.**—The volume of local business in Bar Iron is less than in September, and every order is the subject of sharp competition. Eastern Pennsylvania mills have accumulated quite a little work in the past few weeks, as they are now making much larger shipments. The usual quotations on Eastern Bar Iron are 1.45c. to 1.50c., tidewater, but some Iron has been sold at a lower rate. As a related industry, conditions in the Wrought Iron Pipe trade are much better, the demand being strong, with considerably more doing in the East than for many months. Steel Bars are unchanged, at 1.56c., tidewater.

**Plates.**—Sales agents report a fair run of orders for small lots. Prices are held as follows at tidewater for standard sized Plates: Sheared Plates, 1.76c. to 1.86c.; Flange Plates, 1.86c. to 1.96c.; Marine Plates, 2.16c. to 2.26c.; Firebox Plates, 2.65c. to 3.50c., according to specifications.

**Ferroalloys.**—Business appears to be considerably better in the West than in the East. Prices are unchanged, Ferromanganese being quoted at $43 to $43.50, Baltimore, and 50 per cent. Ferrosilicon at $68 to $70, delivered.

**Old Material.**—Although some of the large Bar manufacturers are not buying, Railroad Wrought Scrap commands outside figures, on account of its comparative scarcity. Borings and Turnings are in good demand, the supply also being rather limited. Standard Steel Car Axles are being sought by some consumers. Very little Old Material of any kind is pressing for immediate shipment, and prices are quite firmly held. It is remarkable how well prices have been maintained, considering the fact that so many large buyers have been out of the market for some time. Ruling quotations are as follows, per gross ton, New York and vicinity:

| | |
|---|---|
| Old Girder and T Rails for melting | $11.50 to $12.00 |
| Heavy Melting Steel Scrap | 11.50 to 12.00 |
| Old Steel Rails, rerolling lengths | 14.00 to 14.50 |
| Relaying Rails | 22.50 to 23.00 |
| Old Iron Rails | 16.50 to 17.00 |
| Standard Hammered Iron Car Axles | 18.50 to 19.00 |
| Old Steel Car Axles | 15.50 to 16.00 |
| No. 1 Railroad Wrought | 15.00 to 16.00 |
| Iron Track Scrap | 12.00 to 13.00 |
| No. 1 Yard Wrought, long | 14.00 to 14.50 |
| No. 1 Yard Wrought, short | 12.50 to 13.50 |
| Light Iron | 7.00 to 7.50 |
| Cast Borings | 7.50 to 8.00 |
| Wrought Turnings | 8.50 to 9.00 |
| Wrought Pipe | 11.00 to 11.50 |
| Old Car Wheels | 14.50 to 15.00 |
| No. 1 Heavy Cast, broken up | 13.50 to 14.00 |
| Stove Plate | 11.50 to 12.00 |
| Locomotive Grate Bars | 11.50 to 12.00 |
| Malleable Cast | 12.50 to 13.00 |

**Cast Iron Pipe.**—Verona, N. J., opened bids September 28 for about 1000 tons of 6 to 12 in. Water Pipe for a new installation. The range of bids was from $22.86 to $24.25, delivered. Some technicality caused the lowest bid to be thrown out, and the contract was awarded to the leading interest at $22.95, delivered. The general condition of the trade is one of extreme quiet, with orders far apart. On small lots the market is firm, as most manufacturers are not inclined to compete sharply for this class of business. Quotations are, therefore, continued at $24 to $24.50, at tidewater, for carload lots of 6 in.

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The foundry of Isaiah Page's Sons, at Albany, N. Y., will permanently close October 15, and the plant will then be sold or dismantled. It was established in 1826 by Isaiah Page, grandfather of the present owner, Charles M. Page, at Chatham, Columbia County. In 1855 it was removed from Chatham to Albany, and has remained in its present quarters for 58 years. When the foundry was built in Albany the growth of the city was not foreseen, and what at that time was the outskirts now lies within a few blocks of the State House. Owing to objections to smoke by adjacent property owners and the increased value of the land, Mr. Page has decided that it is no longer advisable to continue operations in this location. The plant has been engaged largely on special work for railroads, several railroad companies having been customers of the foundry since they first began operations. The present owner will probably rest for a year, and may then form a connection with some malleable iron foundry, but does not contemplate resuming business for himself.

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The Etna Forge & Bolt Company, Pittsburgh, Pa., which heretofore has operated under a partnership, has applied for a charter with a capital of $50,000. A number of improvements will be made to the plant. The company manufactures forgings, bolts, washers and other articles used in the construction of cars, to which will be added rivets, chains and structural material. The company recently purchased a lot, 52 x 80 ft., adjoining its plant in Etna, on which an additional building will be erected, and in which machinery will be installed for the manufacture of the new products. Ground will be broken for the erection of the new building this month, and the company expects to have it in operation by the first of the year.

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## The Pittsburgh Foundrymen's Association.

The Pittsburgh Foundrymen's Association held its regular monthly meeting at the Hotel Henry, Pittsburgh, on the evening of October 5. A dinner preceded the meeting, at which about 50 were present. The formal proceedings were opened at 8 p.m. by President H. E. Field. Secretary Zimmers read a statement covering the association's trip of inspection to the plants of the Jamison Coal & Coke Company in Westmoreland County on Labor Day.

The election of officers was taken up, and C. H. Gale was elected president; Joseph T. Speer, vice-president; John M. McLaren, treasurer, and F. H. Zimmers, secretary. The Executive Committee consists of H. E. Field, John A. Logan, E. D. Frohman, B. D. Fuller and W. A. Johnson. The report of the secretary showed that 30 new members were added during the year, the association having 102 members on October 1. Four new applications for membership were received.

E. D. Frohman, chairman of the Publication Committee, submitted a list of subjects, including "Specifications for Buying Pig Iron," "Steel Castings" (by Bradley Stoughton), "Malleable Iron," "Brass," "Pattern Making," "Costs," "Investigations on Metallurgy," etc., on which papers would be read by practical men during the coming year. A full schedule of the subjects and authors will be mailed the members later. A communication was read from Thomas D. West on "Prevention of Accidents in Foundries," which is receiving considerable attention in the foundry trade.

A. N. Spencer, technical engineer of the Harbison-Walker Refractories Company, Pittsburgh, made an instructive address on "Fire Brick for Cupolas." A discussion followed in which Messrs. Fuller, Bole, Field, Phelps, Dammon and Henderson took part, each reciting some of his experiences with refractory materials.

H. P. Spilker brought up the subject of a permanent exhibit of foundrymen's appliances in Pittsburgh, at the request of J. S. Seaman, who was absent, and on his motion a committee of three was appointed, consisting of H. P. Spilker, E. D. Frohman, and F. H. Zimmers, to gather details for such an exhibit. It was brought out that some of the other cities have such exhibits, which are not only educational, but are necessary these days in order to keep up with the development of equipment in the foundry trade.

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The outlook for labor employed in British manufacturing industries is regarded as peculiarly unfavorable for the coming winter. Trade statistics show more marked declines, the foreign trade for August representing the largest decline for the year. Compared with August, 1907, the imports fell by £6,544,396, the exports by £7,012,368, the re-exports by £547,494. For the eight months of the year the total fall in imports is £42,045,186; in exports, £30,083,048, and in re-exports, £13,877,782.

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The Lebanon Valley Iron Company, Lebanon, Pa., will erect a new 16-in. finishing mill of four sets of housings of the latest improved type, which will be contained in a building, 60 x 260 ft., to be constructed of the same design as the other buildings of the plant. It is expected that the mill will be completed and ready for operation by next spring.

## August Exports and Imports of Iron and Steel.

According to the August report of the Bureau of Statistics of the Department of Commerce and Labor, the exports of iron and steel in that month were practically the same as in July, while the imports decreased. The total value of the August exports, not including ore, was $12,058,561, against $12,085,951 in July. Taking the commodities for which quantities are given, the total exports for August were 87,198 gross tons, against 86,806 tons in July, 69,778 tons in June, 64,020 tons in May, 93,522 tons in April, 96,437 tons in March, 81,755 tons in February and 74,352 tons in January. The following table gives details of the exports of such commodities for August and for the eight months ending with August, as compared with the corresponding periods of 1907:

*Exports of Iron and Steel.*

| | August, | | Eight months, | |
|---|---|---|---|---|
| | 1908. | 1907. | 1908. | 1907. |
| | Gross tons. | Gross tons. | Gross tons. | Gross tons. |
| Pig iron | 3,383 | 5,996 | 26,452 | 54,031 |
| Scrap | 1,612 | 1,260 | 14,437 | 21,988 |
| Bar iron | 659 | 1,244 | 4,801 | 17,743 |
| Wire rods | 153 | 757 | 3,904 | 8,919 |
| Steel Bars | 2,817 | 6,671 | 28,639 | 47,737 |
| Billets, blooms, &c | 7,865 | 4,775 | 80,015 | 59,044 |
| Hoop, band, &c | 534 | 1,166 | 3,148 | 5,031 |
| Steel rails | 27,608 | 37,850 | 138,787 | 218,570 |
| Iron sheets and plates | 5,291 | 3,302 | 29,176 | 25,401 |
| Steel sheets and plates | 5,476 | 4,233 | 37,986 | 59,771 |
| Tin and terne plates | 119 | 848 | 11,331 | 8,209 |
| Structural iron and steel | 10,409 | 13,111 | 81,910 | 90,039 |
| Barb wire* | 4,528 | .... | 8,320 | .... |
| Wire | 4,252 | 14,123 | 81,761 | 103,850 |
| Cut nails | 1,125 | 398 | 5,293 | 4,724 |
| Wire nails | 1,953 | 4,999 | 18,430 | 30,750 |
| All other nails, including tacks | 398 | 298 | 3,008 | 5,187 |
| Pipes and fittings | 9,016 | 17,761 | 76,563 | 100,674 |
| Totals | 87,198 | 118,792 | 653,961 | 861,668 |

* Not separately stated prior to July 1, 1908.

The total value of the August imports of iron and steel not including ore, was $1,414,416, against $1,781,309 in July. Taking the commodities for which quantities are given, the August total was 13,186 gross tons, against 18,320 tons in July, 21,109 tons in June, 13,584 tons in May, 12,342 tons in April, 15,885 tons in March, 19,054 tons in February, and 28,008 tons in January. The following table shows the details of the imports of such commodities for August and for the eight months ending with August, as compared with the corresponding periods of 1907:

*Imports of Iron and Steel.*

| | August, | | Eight months, | |
|---|---|---|---|---|
| | 1908. | 1907. | 1908. | 1907. |
| | Gross tons. | Gross tons. | Gross tons. | Gross tons. |
| Pig iron | 5,200 | 34,263 | 56,941 | 420,117 |
| Scrap | 260 | 5,853 | 3,262 | 22,553 |
| Bar iron | 971 | 4,106 | 14,316 | 27,039 |
| Rails | 41 | 213 | 1,051 | 2,826 |
| Hoop, band, &c | 34 | 31 | 324 | 1,347 |
| Billets, bars and steel in forms n.e.s | 1,006 | 1,285 | 6,653 | 10,374 |
| Sheets and plates | 187 | 210 | 1,524 | 2,802 |
| Tin and terne plates | 4,014 | 3,528 | 48,185 | 43,243 |
| Wire rods | 1,390 | 2,084 | 7,796 | 12,674 |
| Structural iron and steel | 83 | 127 | 1,470 | 1,959 |
| Totals | 13,186 | 51,700 | 141,522 | 544,934 |

The imports of iron ore in August were 47,130 gross tons, against 44,035 tons in July. The total iron ore imports for the eight months ending with August were 424,963 gross tons, against 865,657 tons in the corresponding period of 1907.

The total value of all kinds of exports of iron and steel, not including ore, for the eight months ending with August, 1908, was $105,258,962, against $129,400,247 for the corresponding period of 1907. The total value of similar imports for the eight months ending with August, 1908, was $13,407,611, against $28,795,578 in the corresponding period of 1907.

The Franklin Institute, Philadelphia, held a section meeting on the evening of October 1. At this meeting Prof. A. E. Outerbridge, Jr., president of the Mining and Metallurgical Section, delivered his opening address, in which he gave a résumé of progress in the metallurgical arts in the past two years, and said that the principal advances noted by him within that period have been along the line of perfecting various new processes that had been previously discovered and announced to the world. In the course of this address he alluded to the substitution of so-called alloy steels in place of carbon steels heretofore used for cutting tools; the use of ferrosilicon in the foundry for the purpose of increasing the strength and eliminating the ordinary brittleness and hardness of cast iron; the investigations into the character and composition of molds into which molten iron and steel are poured; the reduction in cost of making molds and cores by machines, and the remarkable progress in reducing low grade metalliferous ores. He congratulated his hearers upon the prospects before them of increased activity in their various occupations, hoping that the improvement will continue steadily increasing in force, so that ere many weeks shall have elapsed we may look back upon the present period of depression as a thing of the past from which valuable lessons may be learned. Robert Job also made an address on "Economy in Purchase of Supplies."

## Iron and Industrial Stocks.

NEW YORK, October 7, 1908.

Although the political outlook appears to be fully as uncertain as it has been, and the European prospect is clouded by the warlike developments in the Balkan Provinces, the market on Iron and Steel stocks holds remarkably firm with some showing an upward tendency. General stock market conditions have been greatly improved by the successful financing of threatening railroad obligations. The range of prices from Thursday to Tuesday on active Iron and Steel stocks was as follows: United States Steel common 45 to 46⅛, preferred 108¼ to 109⅝; Bethlehem Steel common 21 to 22¾; Car & Foundry common 39 to 40⅛, preferred 102⅞ to 103; Locomotive common 45¾ to 47, preferred 104; Steel Foundries, new, 29½ to 30; Cambria Steel 35⅞ to 36¼; Colorado Fuel 34¼ to 35⅞; Crucible Steel common 6⅛, preferred 40⅜ to 42; Pressed Steel common 31¼ to 32¾, preferred 92; Railway Spring common 37 to 39, preferred 97 to 98; Republic common 21½ to 22½, preferred 78½ to 79½; Sloss-Sheffield common 60¼ to 61¼; Cast Iron Pipe common 23¾ to 25, preferred 71¾; Can common 5¾ to 6⅝, preferred 60 to 66½. Last transactions up to 1.30 p.m. to-day are reported at the following prices: United States Steel common 46⅛, preferred 109¾; Car & Foundry common 39¾, preferred 102; Locomotive common 46⅞, preferred 104⅜; Colorado Fuel 35⅝; Pressed Steel common 32½, preferred 92; Railway Spring common 38½; Republic common 22¼, preferred 80; Sloss-Sheffield common 61½; Cast Iron Pipe common 24¾, preferred 71½; Can common 6⅜, preferred 65⅞.

The American Car & Foundry Company reports its net earnings from operation for the quarter ending July 31, 1908, to be $684,041.41. The dividends for that quarter were: No. 38, on the preferred stock, at the rate of 1¾ per cent. per quarter, $525,000, and No. 24, on the common stock, at the rate of ½ per cent. per quarter, $150,000. The amount carried to surplus was $9041.41, making it $22,376,288.76 on July 31.

**Dividends.**—The E. W. Bliss Company has declared a quarterly dividend of 2½ per cent. on the common stock and 2 per cent. on the preferred stock.

The Nova Scotia Steel Company has declared the regular quarterly dividend of 2 per cent. on the preferred stock, payable October 15.

The Vulcan Detinning Company has declared the regular quarterly dividend of 1¼ per cent. on the preferred stock, payable October 20.

The Standard Underground Cable Company, Pittsburgh, Pa., has declared a quarterly dividend of 3 per cent., payable October 10.

The American Rolling Mill Company has declared a quarterly dividend of 1¼ per cent. on the preferred stock, payable October 15.

The report that the Carnegie Steel Company will build five hoop mills and five bar mills at its Ohio Works at Youngstown is officially stated to be untrue. It is possible that at some future time finishing mills will be erected at these works, but at present no new construction is contemplated, other than the two blast furnaces and the 12 open hearth furnaces which have been under way for about a year.

## The New Haven Iron & Steel Company.

The annual meeting of the New Haven Iron & Steel Company was held at Camden, N. J., October 5. From the report of the retiring president, C. C. Kauffman, the following extracts are taken:

"This company, organized in 1899, has just concluded its ninth year of business. This is the first time in its history when dividend checks have not gone out to the stockholders along with the president and treasurer's reports, and the notice of the annual meeting. But the stockholders should not forget that the past year has been one of unusual depression in all lines of business, and especially in the iron trade. Neither should they forget that, during the first five years of this company's business, it paid 13 dividends, and during the next three years (1905, '06, and '07) three annual dividends of 6 per cent. each, all under the same continuous management as now. These 16 dividends amounted to 65 per cent. ($325,000) on the capital stock of $500,000, or an average of over 7 per cent. per annum, for nine years, which is more than any other similar enterprise in the country paid to its stockholders during the same period. In addition to this sum total of dividends, the company earned $57,229.04, making the total earnings $397,229.04, an amount exceeding three-fourths of the capital stock.

"To further emphasize the present unfavorable condition of the iron market, it is only necessary to say that in August, 1907, our average selling price of finished iron was $45.88 per ton; in August, 1908, it was only $37.40, a decrease in the selling price of $8.48 per ton. And because of the increased demand for scrap for consumption in open hearth steel plants, and the unwillingness of the railroads to provide new equipment, the prices for old materials have not fallen in proportion. Unfortunately, trade conditions limited demand and output, and the mill was in operation only 132 days. Its output was not a third of its capacity.

"The annual statement of the treasurer shows a loss of $11,777.96. This loss has not resulted from the operation of the plant, and is not the fault of the board nor of the management; it results from the inventory of the stock on hand at the mill, at general prices now prevailing, which are about 16 per cent. below those of a year ago.

"The total inventory shows a depreciation in values of $13,623.95, or more than the loss indicated by the statement, and proves conclusively that this depreciation, and not errors of management, is responsible for the results of the year's operations. When values become normal again, the appreciation of the inventory will exceed the loss shown in the statement. Our quick assets, together with the cash dividends heretofore paid, would give to every stockholder, in cash, more than par for his stock, and have the plant left unencumbered.

"The total amount of business done since organization was $5,100,000. The total amount of bad debts in nine years was $7,270.29, or 14¼ cents on each thousand dollars' worth of business.

"The annual statement of August 31, 1908, conservatively made, shows quick assets as follows: Book accounts receivable, $36,722.17; bills receivable, $13,916.08; inventory values, $91,030.50; cash in bank, $4,935.74, making a total of $146,604.49, not including the item of $49,326.26, representing the ten thousand shares of our capital stock held by the company. The indebtedness of the company—bills payable—at the same time was only $6,264.58. The same statement shows a surplus of assets over liabilities of $68,999.66."

C. C. Kauffman having declined to serve further as president, Kennedy Crossan was elected to succeed him.

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The Carnegie Steel Company has closed a contract to furnish two Harveyized armor plate vaults for the First National Bank, Pittsburgh, which will be installed in the new bank building now being erected. These vaults will be 14 x 25 ft. The Carnegie Steel Company has also sold a large armor plate vault to the Old Colony Trust Company, Boston.

## The Allis-Chalmers Company's Report.

The seventh annual report of the Allis-Chalmers Company shows that the operating profits for the year ended June 30, 1908, amounted to $2,573,960.93, or more than double those of 1907. The surplus after all charges was $385,997.29, comparing with a deficit last year of $229,817. In his remarks to stockholders President W. H. Whiteside says:

"Noteworthy success has been attained in the sale and operation of our new lines of production, namely, gas engines, steam turbines, hydraulic turbines and electrical apparatus, which are now among the standard products of our company, their development having been completed since the last report. The extended use of these lines of production, often in connection with our older products, not only by purchasers who have long been our regular customers, but by numerous new customers in almost all classes of industry, forms the basis for an increasing and profitable business."

The detailed income account for the year, with comparisons, is as follows:

| | 1908. | 1907. |
|---|---|---|
| Profit on operations | $2,573,961 | $1,226,242 |
| Maintenance, depreciation, interest, &c. | 1,958,147 | 1,613,540 |
| Net profits for year | $615,814 | *$387,298 |
| Previous profit and loss deficit | 229,817 | †157,481 |
| Surplus | $385,997 | *$229,817 |

* Deficit. † Surplus.

The item, profits on operation, as above, is after deducting expenses of manufacturing and selling; dividends on preferred stock of the Bullock Mfg. Company and ordinary provision for doubtful accounts.

During the year advantage was taken of an opportunity to sell the old South Foundry and three vacant lots at the Reliance Works, no longer required for business purposes. Part of the proceeds were used to install a new brass foundry at the West Allis plant to replace the one vacated on the South Foundry property; the balance to acquire some real estate in West Allis and to purchase in the open market 131 of the company's first mortgage bonds, which have been canceled.

The report adds: "Inasmuch as owing to present financial conditions there may possibly be a shrinkage in the collection of certain bills receivable, it has been deemed advisable, out of abundant caution, to set aside out of profits a special reserve of $60,000. Beginning with the second quarter and continuing for half of the company's fiscal year, owing to the severe contraction in general business throughout the country, the volume of the company's sales averaged about one-half of normal. During the last quarter there was a gradual and steady increase in orders booked."

The balance sheet shows reductions in the inventories amounting to $2,518,841; increase in notes and accounts receivable of $272,137; increase in cash of $1,059,300, and decrease in accounts and notes payable, amounting to the substantial sum of $2,304,413.

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The Mesta Machine Company, Pittsburgh, Pa., has just made shipment of two 44 and 84 x 84 in. high pressure and two 84 and 84 x 60 in. low pressure long cross head blowing engines to the Cleveland Furnace Company, Cleveland, Ohio, to furnish air for its new No. 2 furnace, and has also shipped it a Helander barometric condenser of sufficient size to condense the steam for the above mentioned engines and for three additional blowing engines built by the Mesta Machine Company four years ago for this company's No. 1 furnace. The Mesta Machine Company reports considerable improvement in business in all its departments during the past few weeks and the work in hand and recent contracts secured enabled it on October 1 to start operating its plant full time, in place of five days per week for some time past. The improvements on which the company has been engaged during the past summer are being rushed now as fast as possible and it hopes to have them completed in about 60 days, which will greatly increase its capacity.

# The Machinery Trade.

NEW YORK, October 7, 1908.

Merchants generally report a slightly better demand for machinery and feel somewhat encouraged over the increase in inquiries and the renewed interest taken by the large industrial corporations. Up to within the past few weeks the business consisted almost wholly of orders from the small industrial plants, with the exception of the business placed by the automobile companies, which have bought quite extensively, but in the past week or 10 days the more important interests have come into the market for fair sized lots of tools, several amounting to from $8000 to $10,000 each, While the railroads have come into the market in a small way, nevertheless it is the opinion that the renewed activity indicates larger requirements in the near future. Politics are still adversely affecting business, but it is believed that as soon as the situation is satisfactorily cleared a marked improvement will be noticed; in fact, some believe that the encouraging way October has opened indicates that the large interests are satisfied that there will be no developments to retard the improvement that has taken place.

There were quite a number of visiting machinery men in New York last week, many of them having attended the formation and the subsequent Executive Committee meetings of the Railway Business Association, while the Electrical Show at Madison Square Garden was also an attraction to visitors. While all of the visitors were agreed as to the general sentiment expressed at the Railway Association meetings that there is a dearth of railroad business, many of them report live inquiries from other industrial sources, and the gloomy outlook expressed over the railroad situation, it was generally declared, should not be applied to other industries. While there were no records of business transacted among machinery men exhibiting at the Electrical Show, those in charge of the exhibits said that there appears to be a live interest taken in the machinery situation and many of the inquiries made at the various machinery booths were from possible purchasers.

Considerable progress is being made in the preparation of plans for its new plant by the International Car Company, New Orleans, La., which was incorporated about the middle of July with a capital stock of $350,000, and it is expected that within the next three weeks the company will have the details of its plans settled. In addition to the preparation of plans for the new building the company is now selecting the machinery that it will require for the plant, and as it is the intention to install modern equipment electrically operated, the company will purchase a full line of woodworking machinery and the necessary ironworking machinery, together with boiler, engine, dynamo, and motors. Many of the officers and directors of the company are either interested in railroads or in the manufacture of railroad equipment and the company has been assured of all the work it can handle.

The New York Central Railroad has inquiries in the market for a few machines for its New York terminal work. This company has purchased quite a large amount of machinery during the past few months and is likely to be in the market for some time for equipment for its various shops, especially those at West Albany, which it is materially enlarging.

The trade is considerably interested in the large car barn to be constructed on Fifty-fourth street by the Metropolitan Street Railway Company, New York, as it is understood that quite a little mechanical equipment will be installed in the structure. The company has inquiries out for a few machines which are understood to be for the new barn. The building will be of brick and ornamental stone, 135 x 298 ft., five stories in the main part and three stories in the annex. It is intended, however, only to build two stories at the present time.

From a statement made by Thomas J. Freeman, receiver of the International & Great Northern Railroad, it is evident that the shops at Taylor, Texas, which were recently destroyed by fire, will be rebuilt on the old site and on a much larger scale. It is understood that the new shops will be built as soon as the plans can be prepared.

In the early part of the year we stated in these columns that the Transcontinental Railroad, Ottawa, Ont., intended to erect new shops at St. Boniface. The company is now going ahead with the work and has asked bids for grading the site for the shops. As soon as the preliminary work is finished it is probable that announcement will be made of the plans for the new buildings.

Since the first of the month the railroads have come into the market a little more freely, but orders covered only a few machines, some of them, however, of the heavier type. The Chicago Pneumatic Tool Company, New York, which has recently received some good business from the railroads, has sold air compressors to the New York, Ontario & Western and the Lehigh Valley railroads. The company reports quite an improvement in its business.

Inquiries are now in the market for part of the equipment for the new foundry to be erected at Yonkers, N. Y., by the Otis Elevator Company, New York. This building will be 90 x 200 ft., of brick and steel construction, and when completed will more than double the company's foundry capacity at that point and be sufficient to supply all castings required. The Pittsburgh offices of the company now occupy the entire twelfth floor of the Keenan Building, Seventh street and Liberty avenue.

The Ridgway Mfg. Company, general machinist and founder, Ridgway, Pa., has under consideration the purchasing of some machinery for increasing its output. The nature of the buying to be done has not been decided upon, and at any rate the purchases will not be made until about the first of the year.

Purchases of considerable new machinery have lately been made by the Erie Foundry Company, Erie, Pa., which last week awarded contract for rebuilding its machine shop destroyed by fire some months ago. The company has purchased practically all the equipment required for this new building, which will be 100 x 100 ft.

Henry Doherty, silk manufacturer, of Paterson, N. J., has had some inquiries in the market regarding equipment for a new mill, the erection of which he has under consideration. Mr. Doherty states that the project has not been entirely decided upon, and the inquiries now in the market were made with a view to getting information as to costs, &c.

The Metropolitan Electric Company, Reading, Pa., intends to erect a new power plant at a cost of $1,500,000, to supply funds for which first mortgage bonds will be issued.

The Newburgh Light, Heat & Power Company, Newburgh, N. Y., has made application through the Public Service Commission for permission to issue bonds to the amount of $350,000. Of this amount it is intended to use $25,000 for placing its transmission lines and conduits underground, $18,000 for extending its transmission lines, $39,930 for additional equipment and improvements to the power plant at Newburgh, $100,000 for erecting new transmission lines and the balance for paying off the floating debt, &c.

Some important contracts have been let of late for equipment for the Chattanooga-Tennessee Power Company, which is constructing one of the largest hydro-electric power plants in the country. John Bogert, 141 Broadway, New York, is the consulting engineer for the company, and contracts have been let from his office. The construction of the plant, which is already under way, will involve a large expenditure and the plant when completed will be capable of generating 56,000 hp., which will be used to supply manufacturers in and about Chattanooga, Tenn. The work includes the building of a large lock and dam and the power house, besides a transmission line 15 miles long. The S. Morgan Smith Company, York, Pa., will furnish the hydraulic installation, and the General Electric Company will supply the electrical installation. The Lombard Governor Company has the contract for the governors, and Guild & Co., Chattanooga, Tenn., will build the transmission line. The power house will be located at Hales Bar, and the transmission line from there to Chattanooga will include the construction of a number of steel towers and considerable concrete work.

The Gould Storage Battery Company has purchased a special three-machine exciter set from the Ridgway Dynamo & Engine Company, through the Spooner-Matthewson Company, New York, representative, for its Pennsylvania lines west of Pittsburgh. The machinery will be installed in the company's storage battery installation at Ashtabula Harbor, Ohio.

The Hooven-Owens-Rentschler Company has sold through its New York office a 300-hp. engine to the Lehigh & Wilkes-Barre Coal Company, for installation in the company's plant at Wilkes-Barre, Pa.

## Cincinnati Machinery Market.

CINCINNATI, OHIO, October 6, 1908.

Conditions in this market are correctly diagnosed as quiet all along the line, but there is a significance in certain acts of those who are strong factors in the iron and steel trade, and this is accepted by the leaders in the machinery line as indicative of better business directly or soon after election. A number of foundrymen seen during the week note that their melt is improving slowly but surely, and some of these have received good orders for castings for early delivery. The major part of these deliveries will be made to manufacturers of electrical power and ice manufacturing machinery, makers of planers, milling machines, drills and drill presses, shapers and lathes. One local foundryman received an order for over 100 pieces from a manufacturer. From two to three heats per week of 12 to 15 tons a day the melt has increased to an average of four or five per week of 15 tons each, and prospects are that soon after election normal conditions will be resumed.

With tool manufacturers in this section September closed

much better than it began, inquiries were from 40 to 50 per cent. better and some tardy sales have been closed. The first few days of October have not brought such excellent returns as might have been expected, taking the entire field into consideration, but manufacturers attribute this rather to election excitement than a disposition to do without needed tools. Judging from the tone of correspondence that the election over and results to their liking, some excellent lists of tools pigeonholed temporarily will be sent out immediately.

There has been considerable discussion here of the Iron Buyers' Association, which seemed to be an important factor in the iron markets of the Central West last winter and Spring, but so far as could be learned here the contract form designed and authorized for use by the association has not found much or any favor with furnacemen. Local selling agents report that all sales are made as usual on the designated form of the furnace companies. It is possible that some further modifications of the form or additional correspondence with the furnace people may bring about better results. The annual meeting of the association was held at the Phillips House, Dayton, Ohio, September 30, with President G. H. Gorman of the Davis Sewing Machine Company in the chair. Between the morning and afternoon sessions dinner was served in the banquet room of the hotel, and informal talks by members on important points of the iron market made this feature both entertaining and profitable. The following officers were elected: President, G. H. Gorman of the Davis Sewing Machine Company, Dayton, Ohio; vice-presidents, Theodore Bollman of the Bollman-Wilson Foundry Company, Cincinnati; A. F. Sparks of James Leffel & Co., Springfield, Ohio; George M. Verity of the American Rolling Mill Company, Middletown, Ohio; Felix Kahn of the Estate Stove Company, Hamilton, Ohio, and J. W. Jeffrey of the Ohio Malleable Iron Company, Columbus, Ohio; secretary and treasurer, Wm. Gugenheim of the Foos Mfg. Company, Springfield, Ohio.

A number of local tool manufacturers have taken advantage of the period of inactivity and made various improvements to the inside or outside of their plants. Conspicuous among these, the American Tool Works Company devoted its attention to the exterior side to excellent advantage and the large establishment at Sixth street and Eggleston avenue looks like new in a dress of metal. Sundry improvements have also been made on the interior of the plant.

October promises to be an important month to the manufacturers generally in this section. Cincinnati will be the host the 26th of the members of the Administrative Council of the National Metal Trades Association, who will meet with Commissioner Wuest at the committee rooms in the Fourth National Bank Building to go over the records of the past six months. President F. K. Copeland of the Sullivan Machinery Company will preside.

Nearly 200 members of the Business Men's Club went by special train to Richmond, Ind., to participate in the Manufacturers' Day parade of the Richmond Fall Festival, October 7. The greater part of these were tool manufacturers and builders of woodworking and special machinery, all of whom are great believers in the exchange of civilities and industrial ideas between manufacturers of a section or community.

The Norwood and Oakley districts, which have grown so rapidly in a manufacturing way the past two or three years, are getting additional *éclat* through concerns closing and negotiating for sites. The latest to arrange for a new home is the Virginia Can Company of Buchanan, Va., although it is understood that the Buchanan plant will be continued as usual, with C. C. Huffman president and principal stockholder in both. Mr. Huffman has acquired for approximately $8000 a tract of little more than 3 acres in Norwood, a part of the division on which is located already the large establishments of the Dana Mfg. Company and the Weir Frog Company. The property has a frontage of about 800 ft. on the right of way of a branch of the Pennsylvania Railroad. Fireproof buildings of brick, concrete and steel, one for manufacturing, the other for warehouse purposes, will be erected at once, Mr. Huffman, who is now in the city, arranging these details before leaving for Buchanan. The plant will have a capacity of 250,000 cans daily and will employ about 200 hands. Mr. Huffman hopes to have the plant ready for operation before the end of the year. The railroad has completed a survey for a private siding of 500 ft. The company will manufacture packers' cans exclusively and will be the first factory of this kind in or about Cincinnati. The factory will be so arranged that the sheet metal will be taken in at one end of the building and the cans, in various stages of completion, carried through and loaded into cars by machinery at the other end. Only heads of departments will be brought to Cincinnati from the East, the remainder of the employees being secured locally.

Reports from Columbus indicate that the anvil and vise departments of the Columbus Forge & Iron Company are being operated to almost full capacity, with a good outlook for the future.

At the Indianapolis plant of the American Car & Foundry Company conditions are reported promising, and a good sized contract for immediate repairs on cars of a variety of patterns has been secured. The company has made several important improvements on its buildings and is well equipped to handle work expeditiously.

A report from Noblesville, Ind., announces the purchase of 10 acres of ground adjoining the present factory of the Atlanta Tin Plate Company, which will be used for new buildings and an enlargement of the galvanizing department. The report also states that foundations have been placed for two additional hot mills, making six in all.

President H. A. Lanman of the Columbus Bolt Works and the Columbus Machine Company is quoted as saying that September closed quite satisfactorily with his companies, particularly the bolt company, and that the bulk of business for both is coming from the Northwest and the South.

## Cleveland Machinery Market.

CLEVELAND, OHIO, October 6, 1908.

Business continues to improve slowly with the majority of the local machine tool builders. The most encouraging sign of better business conditions, however, is in the volume of inquiries. Manufacturers, with scarcely an exception, report a great deal of improvement in the number of inquiries, a good percentage of them being for fair sized lots of good sized tools. Some of the tool builders feel quite optimistic over the outlook, and they say that should buyers receive a little more encouragement by a further improvement in general business conditions their sales will show a decided increase. While no large inquiries are coming out, there is a larger proportion for several tools, some being for from five to ten. The demand for automatic machinery is picking up as well as for other lines.

Orders and inquiries at present are mostly coming from the larger manufacturing plants of all kinds that are adding to their equipment or replacing old tools. Although the majority of the automobile builders in the Central West are about through buying for the season, the scattered business that has come from this source during the past few days has amounted to considerable in the aggregate. Two of the large rubber plants in Akron which are about to erect extensive factory additions, will also enlarge their machine shops, and have placed orders for a number of machine tools. Railroads are showing a little more activity. The Wheeling & Lake Erie Railroad, which bought several tools a few weeks ago for the temporary shops at Norwalk, which are taking the place of those destroyed by fire, is expected to be in the market in about a month for machinery equipment for the new shops that will be built. Representatives of other railroads in this territory have been looking over dealers' stocks with the view of making some purchases soon. Local dealers have received another inquiry for about a dozen tools for the Rock Island Railroad. Local tool builders also report some improvement in their foreign business.

While the outlook with the dealers has not improved as much as with the builders, the majority of the former report some improvement in the demand for standard tools. The demand for second-hand tools is fairly good, but the supply of good used tools is rather limited. Few have been thrown on the market by forced sale, and the present supply is coming from concerns that are throwing out old tools, and these, as a rule, are very old.

The demand for light gray iron and heavy castings shows very little if any improvement. Two or three local foundries have recently taken some good orders and are running about full, but the majority continue to run at about half their capacity.

The Cleveland Automatic Machine Company has recently received an order from the Maxwell Briscoe Automobile Company, Tarrytown, N. Y., for seven automatic machines and one from the American Steel Wheel Company, Alexander, Ind., for four automatic machines. This company has also secured some good foreign orders. Regarding the present outlook, the Cleveland Automatic Machine Company states: "While orders so far have improved only slightly, inquiries with us are four times as good as they were 60 days ago, and our estimating department at present has all that it can do. Inquiries are coming from all kinds of manufacturers, with the exception of tool builders. If business conditions would show only a slight further improvement so as to encourage the prospective buyers, we believe that orders would become quite plentiful and that we would secure some single orders for as many as from seven to ten machines."

At a recent meeting of the creditors of the Brown-Cochran Company, maker of gas engines and refrigerating machines, Lorain, Ohio, a committee was appointed to straighten out the financial affairs of the company. The committee has decided to adopt one of three courses: reorganize the company, sell the plant outright, a cash offer having been received, or to consolidate it with another concern manufacturing gas engines. In case of reorganization or consolidation the plant will probably be enlarged. The report of accountants showed the book assets to be $515,000 and the liabilities $519,000. These figures do not include the capital stock of $140,000.

The Rickersberg Brass Company has completed its new plant at Perkins avenue and East Thirty-seventh street. The main building is 70 x 250 ft., one story, and the foundry building is 50 x 60 ft. The erection of an addition to the foundry, 50 x 70 ft., has been started. The company will manufacture a staple line of plumbers' brass goods. E. Rickersberg is president, treasurer and manager.

The Hitchcock Motor Company, Warren, Ohio, has been incorporated to manufacture automobiles. It is expected that operations will be started early in the spring. W. H. Creahan is the manager.

The Republic Stove & Mfg. Company will erect an addition to its plant on East Fortieth street, Cleveland. The building will be 60 x 74 ft., of brick, two stories high. The company will be in the market about the first of the year for the necessary equipment.

The Toledo Electric Vehicle Company, Toledo, Ohio, has been incorporated with a capitalization of $50,000 to manufacture electric automobiles. The incorporators are Willard E. Allen, A. F. Clark, Frederick B. Willard, E. J. Hall and J. W. Schaufelberger. The company has secured a building for a manufacturing plant at Collingwood and Delaware avenues.

Mortimer & Alcorn, machinery dealers, 423 Schofield Building, Cleveland, have been given the agency for northern Ohio of the Kern Machine Tool Company, Cincinnati.

The Steel Fabric Tire Company, Cleveland, has been incorporated with a capital stock of $25,000 by J. M. Shallenberger and others.

The Cleveland Crane & Car Company, Wickliffe, Ohio, has changed its name to the Cleveland Crane & Engineering Company, the latter name being regarded as more appropriate in view of the extension of the company's activities.

## Chicago Machinery Market.

CHICAGO, ILL., October 6, 1908.

According to the reports of machine tool dealers the business of last week brought out nothing of exceptional interest either in character or volume. But considering the retarding influences, political and otherwise, under which the industry is laboring, trade exhibits a degree of vitality hardly to be expected under the circumstances. In spite of a considerable proportion of machine tool capacity now inactive in various manufacturing shops, there is a recognized need of improved facilities in many factories which is being met by the purchase of improved machines to replace less efficient equipment. This movement is by no means general, but there is enough of it so that, added to other demands, it helps materially to keep things moving.

Milling machines and grinders appear to have the lead in demand over other machine tools, and in commenting on this feature of the trade a leading machine tool merchant attributed the growing popularity of these tools to an awakened realization among users, of the wide range of work upon which they can be economically employed. Milling machines are finding a place in small shops, as well as in the large manufacturing plants, because of their demonstrated efficiency in accuracy and output for many operations heretofore performed in part by one tool and in part by another. Grinding tools also command more attention because of modern improvements which contribute to speed and accuracy and fit them for work which was not thought of in connection with the cruder machines formerly made.

While business in all machinery lines is comparatively quiet so far as actual transactions are concerned, there are quite a number of inquiries coming out that indicate prospective interest. These are being followed up in more than usual diligence by the trade, but in many cases it is found that immediate purchases are not contemplated. It shows, however, that there is a waiting demand of no mean proportions which will develop into active business as soon as conditions become more settled. The quadrennial bugbear of pre-election hesitancy is undoubtedly a retarding factor of more or less importance; at least, it is popularly supposed to have a strong influence in that direction. At the same time there are no indications that the small industries throughout the West are seriously affected by such considerations, and they at the present time constitute the market's strongest support.

The Independent Die Company, Inc., maker of cutting dies, with factories at Brockton, Mass., and St. Louis, Mo., is planning to build a one-story factory building, 50 x 110 ft. at La Salle street and Jefferson avenue, St. Louis, Mo. Construction will not be begun, however, until some time next spring. The equipment for this shop will consist of such tools and machinery as are required in a modern die shop.

Hill, Clarke & Co., Chicago, have just received the first tool shipped to them by the Universal Boring Machine Company, Hudson, Mass., for which they are distributing agents. This is the universal horizontal boring machine described in *The Iron Age* of October 1. The machine has been set up and is being operated in the demonstrating shop. It is designed for boring, drilling and milling, and is particularly adapted for finishing castings requiring these three operations on the same piece. Aside from the wide range of work this tool is fitted to perform it embodies a number of interesting features in design and construction, which are fully brought out by practical demonstration.

As an indication of the sustained demand for gasoline engines, especially in small units, the Waterloo Gasoline Engine Company, Waterloo, Iowa, reports that for the past three months orders have largely exceeded the output capacity of its factory. To meet the increased demand it is enlarging its works by an addition that will contain about 12,000 sq. ft. of floor space. The company has in preparation a new catalogue which will be ready for distribution in a short time.

In addition to an improved demand for molding machines from agricultural implement foundries noted by Henry E. Pridmore, Chicago, growing interest is manifested in this class of foundry equipment by stove manufacturers from whom quite a number of orders and inquiries are being received. The company will within a short time have ready for distribution a new stripping plate catalogue.

The Hoefer Mfg. Company, Freeport, Ill., taking advantage of the opportunity offered during the dull period, has made a number of improvements in its factory, including the building of several special tools for its own work.

The Waterous Engine Works Company, St. Paul, Minn., is planning new plant improvements to be made in the near future, which will include additions to present buildings. Its equipment has recently been increased by the installation of some new tools, which include six new engine lathes, brass lathe, gear cutter, grinding machines and a 42-in. Colburn boring and turning mill. The most interesting feature of the line of fire fighting equipment made by the company is the Pioneer auto fire engine, a four cylinder 80-hp. machine with a capacity of 600 gal. per minute, built to withstand the severest fire department service.

The Board of Public Works of Milwaukee opened bids October 2 for a new 12,000,000-gal. pump for the North Point Water Works. The lowest bid submitted was that of the Platt Iron Works Company, Chicago, for $61,700. The next lowest was that of the Allis-Chalmers Company, Milwaukee, Wis., for $67,000. Other bidders were the William Tod Company, Youngstown, Ohio; the Wisconsin Engine Company, Corliss, Wis., and the Holly Mfg. Company, Buffalo, N. Y. The contract will not be let until all of the plans have been carefully examined.

## New England Machinery Market.

WORCESTER, MASS., October 6, 1908.

The machinery trade in Boston and other New England centers does not reflect the improved conditions existing in other important lines of metal manufacturing. The same scattering business that has existed for the past month continues with small variation either way. A little spurt here and there is encouraging, but the average run of orders does not show improvement. The machinery builders, with a few exceptions, report a corresponding absence of improvement. Inquiries are numerous enough, but buyers are still holding back. The general opinion is that people prefer to wait until the election is over. This is not the experience of many of the concerns which use machine tools in manufacturing, the increase in demand noted last week being maintained on a basis approaching and in some cases even up to the normal. Orders are received in greatest volume from districts dependent upon agriculture; in fact, these sections seem to be very largely responsible for better industrial conditions.

In the supply trade there is a slight change for the better, but reckoned in percentages the figure of growth is small. However, conditions as denoted by orders seem more healthy, being more nearly of normal size, instead of being confined to dribbling lots. The season for gasoline engines is about over, excepting that a little later the cranberry bogs will be in the market for pumping outfits used in draining, and in a few cases, in filling the marshes. On the whole, the combustion engine business has had a satisfactory year, as compared to many other lines.

The Automatic Machine Company, Bridgeport, Conn., has recently changed hands and the corporation has been reorganized with a capital stock of $400,000, of which one-half is preferred and the other common. The reorganization was necessary because the company has outgrown its former facilities, a condition illustrated by the fact that the business transacted for the first six months of the current year was 35 per cent. greater than for the corresponding six months of 1907, in spite of the falling off in general business. It is the intention of the reorganized company to build a new factory in the near future to take care of the rapidly growing demand upon its manufacturing resources, as the limit of pro-

duction of the present plant has about been reached. F. J. Kingsbury, Jr., is president of the new company; James Coulter, vice-president and superintendent; Stiles E. Goodsell, secretary, and Norman Leeds, treasurer and general manager. The company manufactures two distinct lines of product, machine tools and marine gasoline engines. In the former class a specialty is made of automatic machinery of all kinds to customers' orders, special wire forming machines and also a stock line of automatic threading lathes, Coulter horizontal nut tappers, power presses and wire crimping machines. In the marine gasoline engine line the specialty is heavy duty marine engines of from 12 to 150 hp., as well as lighter engines for pleasure launches. Other products include oystermen's spur and bevel gear cargo hoists, portable hoists operated by steam or gasoline engines and oyster dredges.

The Bevin Bros. Mfg. Company, East Hampton, Conn., manufacturer of bells, has begun the erection of an addition to its factory, comprising an additional story to two buildings about 30 x 60 ft., and a new one-story building, 60 x 80 ft. The new space will be used for pressroom, pattern room and rolling barrels.

The plant of the Portsmouth Forge Company, Portsmouth, N. H., is to be sold by C. H. Morton, the receiver recently appointed by the court. The business, formerly known as the Eastern Forge Company, and located at Nashua, N. H., was taken over by its creditors about a year ago and temporary reorganization was effected, with Mr. Morton as manager. It was finally decided by the directors that the best interests of all would be served by a receivership and the sale of the property.

The Windsor Machine Company, Windsor, Vt., having found it necessary to enlarge its plant to cope with the demand for its Gridley multiple spindle automatic lathes, is building an addition to its erecting department, 50 x 100 ft.

The Blake & Johnson Company, Waterbury, Conn., has let the contract for a new manufacturing plant. Ground has been broken and work will be rushed that the concrete, which will be used for the foundation and first floor, may be in before freezing weather. The building will be 200 x 260 ft., one story, of concrete and brick, with bluestone trimmings. The roof will be of saw tooth construction, providing ample light. The office building and power house will be planned later. The company states that it is considering both steam and gas for power, and electric drive will be employed. No cranes will be required, nor is it likely that the company will be in the market for machine equipment for the present, as the present shops contain all that will immediately be necessary. The company's business has been gradually improving all summer, but September has been the best month for more than a year, the gross business for the month having been about 25 per cent. more than any other month of 1908. The manufacturing department, which produces hardware that goes into the hands of other manufacturers, is running 10 hr. a day, with three-quarters of the number of operatives which were employed two years ago. No stock is carried, the line being a special one. In the past two weeks orders have been received in greater volume than for a year, and the probability is that part of the works will have to run nights within the next few weeks if present demand for the product continues. The other department of the business is the manufacture of machinery, and this naturally is rather quiet. The new plant, to cost $150,000, is being rushed that it may be finished this winter in the belief that the year 1909 will be the largest in the company's history.

The Marshall Electric Company, 301 Congress street, Boston, Mass., is beginning the construction of a new factory at Hyde Park, Mass. The building will be of reinforced concrete, 80 x 182 ft. and one story. The company states that it is in the market for a sprinkler system and an overhead trolley for moving materials about the building and to the freight depot of the New York, New Haven & Hartford Railroad across a narrow alley from the site.

The Terry Steam Turbine Company, Hartford, Conn., manufacturer of turbine engines, will require considerable new machinery for the new shop building, the erection of which has already begun. The building will be 80 x 200 ft., with monitor roof covering a broad bay which will be served by a 10-ton electric traveling crane. The contract for the crane has not been let, but bids have been asked for it. The company's shop on State street contains quite a large machine equipment, including some tools purchased recently. But the requirements of the business demand much enlarged manufacturing facilities, space for which will be provided in the new shop. The purchasing of machinery will not be hurried, however, but will for the most part be done after the new building has been occupied, which will be at no distant date. Among the tools that will be bought eventually are a floor boring machine, universal milling machine, cold saw, power feed drill and planer. A number of engine lathes will also be needed, but it is practically decided to continue with the same type already installed in the shop. The Terry turbine, though put on the market comparatively recently, has already been installed in a considerable number of power plants.

The American & British Mfg. Company is about to make extensive improvements and changes at its works, Bridgeport, Conn., with the special purpose of increasing the capacity of its automobile engine department, which branch of the business has grown to large proportions, with the promise of continued increase. The improvements involve the expenditure of some $35,000 for machinery, contracts for some of which have been let. On land adjacent to the present works will be erected a new building 50 x 150 ft. and one story, constituting two bays of a structure which will be extended from time to time as additional facilities are required. This building will be used for painting, testing and shipping engines. The roof of one of the existing buildings will be raised two stories and the space between two walls will be roofed in, giving altogether an important increase in floor space. The ordnance department of the works will be concentrated, releasing existing space for the engine department. The rearrangement will mean room for a large amount of new machinery.

The new factory of the Flexible Tire Company, Inc., Springfield, Mass., mention of whose machinery requirements has been made, will be located at Easthampton, Mass., where a suitable building has been secured for the purpose.

Recently announced manufacturing building plans include those of the Macfarlane Bros. Mfg. Company, Bridgeport, Conn., silverware manufacturer, new plant; Lawton Mills, Plainfield, Conn., textile manufacturer, addition 200 ft. long and one and two stories; Brockton Heel Company, Brockton, Mass., addition 45 x 55 ft. and four stories; Muller Gloria Silk Company, South Norwalk, Conn., addition 40 x 300 ft. and one story; Russell Mfg. Company, Middletown, Conn., textiles, additional story, 50 x 100 ft.

## Philadelphia Machinery Market.

PHILADELPHIA, PA., October 6, 1908.

Reports received from many manufacturers of machinery and tools since the close of September show that conditions during that month have been somewhat diversified. A number of manufacturers report slight gains over previous months; others note that business showed a decline, while the larger number, perhaps, have found trade to have been on a fairly even basis. The chief drawback to more active conditions is almost universally believed to be due to the approaching election. A large amount of business has been held up awaiting the result, and it is pretty generally believed that little except urgent business will develop in actual orders during the current month. While September did not show any material gain in the volume of business taken, no particularly heavy orders, unless from unexpected sources, are expected to come out in October. The trade, nevertheless, is decidedly optimistic in its views regarding business for the closing months of the year, and with the Presidential election out of the way it is thought that a steady forward movement will be noticeable, probably resulting in a return of conditions approaching the normal early next year.

Trade in the past week was rather irregular. Dealers report but a small volume of business, confined pretty generally to single tool propositions. There has been a somewhat more active demand for special machine tools, and several builders report orders more numerous during the closing days of last month. This is somewhat encouraging, as it means increased shop work in a number of cases, as many of these tools cannot, owing to their special nature, be carried in stock, as is the case with the standard lines of machine tools. In tools of the latter class shipments can be made almost at once, inasmuch as makers have been compelled during the dull summer months, to piece out shop work with stock orders so that their shop organization might not become broken up. During the current week local business will no doubt be considerably interrupted, owing to the celebration of Founders' Week, commemorating the two hundred and twenty-fifth anniversary of the founding of the city. The trade is interested to some extent in this celebration, particularly in that which will demonstrate the industrial growth of the city's manufacturing interests.

Railroad buying of machine tool equipment appears to be a matter of the future. The situation as far as the railroads are concerned appears to be steadily improving. Idle cars continue to show a steady decrease, which will ultimately bring more activity to car shops, which is a step toward buying of machinery equipment for replacement at least.

The foreign demand for tools of the usual standard types shows no betterment. Some little business of a special nature has come out, but inquiries on the whole are comparatively light.

The second-hand machinery trade is hardly as active as it was. There is a moderate run of business for medium and small metal and wood working machinery, but the trade also feels the depressing effect of the approaching election. A somewhat better demand is to be noted for boilers, both new and second-hand. This is largely confined to equipment of

the moderate powers ,of which several fair sales have recently been announced.

Slightly improved conditions are to be noted in the foundry trade. The gain has not been large in any one direction, but foundrymen note an improved but still irregular demand. The bulk of the business taken in both iron and steel castings is largely for prompt shipment, although some scattered orders for tonnages covering several months' business are reported.

Bids will be opened October 19 by Truman West, Mayor of Oakland, Md., for the construction of a sewerage system and municipal water works, from plans by Penniman & Fairley, engineers, 411 Marine Bank Building, Baltimore, Md.

The Interstate Railways, operating some 450 miles of electric railroads in eastern Pennsylvania, contemplates a number of improvements and extensions in the near future. These include a new power plant of 20,000 kw. capacity, at Reading, and a new electric line from Reading to Hamburg.

Proposals for supplies for the Philadelphia navy yard will be received by the Bureau of Supplies and Accounts, Washington, D. C., which include, under schedule 383, flat cars; schedule 389, watchmen's clocks, and schedule 410, rolled and manganese bronze. Bids will be received until October 13.

The House of Refuge for Girls, Darlington, Delaware County, Pa., has had plans prepared for a new power house, 40 x 76 ft. Bids will be received at an early date, but particulars are not available at this time.

The authorization by City Councils of Philadelphia of an appropriation of $1,500,000 for improvements on the river front will enable the Department of Docks and Ferries to carry out its plans relative to the building of modern docks at Dock street and Vine street, on the Delaware River. Appropriations covering bridge building, extension of gas works at Holmesburg and other municipal improvements were also made.

T. P. Conard & Co. report a slight betterment in the demand for boilers and power equipment. They recently booked an order for four 150 hp. Maxim water tube boilers, to be installed at the Hundington Street Station for the Philadelphia & Reading Railroad. Another order was for 600 hp. installation of Maxim water tube boilers for the West End Coal Company, Scranton, Pa., which, together with its underlying interests, now has 17 of these boilers in service.

The Espen-Lucas Machine Works reports an increase in the volume of business taken, particularly during the closing weeks of September. Last month was not especially good as far as shipments were concerned, but with orders taken recently the deliveries during the current month promise to be much heavier. Some pretty fair business is being figured on.

Several municipal departments are asking bids on both general supplies and new work. On October 15, the Department of Supplies, J. H. Klemmer, director, will open bids under class H, for hardware and tools, boat supplies, lanterns, &c.; class N, asbestos and magnesia covering, plumbing supplies, &c.; class Z, tin, sheet, and galvanized iron, hoop iron, zinc, lead bars, &c.; and under class AA, for engineers' and draftsmen's supplies. The Department of Public Works will also open bids October 14 for bridges, branch sewers and inlets, &c. Plans and specifications regarding the latter may be obtained from the office of the Bureau of Surveys, City Hall, while specifications for the former may be seen at the office of the Director of Supplies; room 312, City Hall.

## Government Purchases.

WASHINGTON, D. C., October 6, 1908.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until October 27 for a bolt cutter, floor grinder, 72-in. lathe, and a shaper for the Norfolk Navy Yard.

The Isthmian Canal Commission will receive bids until October 26, Circular No. 472, for a piston pump, plate straightening machine, generators and engines and other supplies.

The date of opening bids for four berm and four chamber cranes for the Isthmian Canal Commission, Circular No. 467, has been postponed from October 7 to October 17.

The Department of Justice will receive bids until October 26 at the office of the superintendent of prisons, Washington, D. C., for brine pumps, tanks, coils and other equipment to be used in extending the refrigerating plant at Leavenworth, Kan.

The Isthmian Canal Commission will soon ask bids for three 3-ton and two 5-ton pneumatic geared hoists, six 1½-ton, six 2-ton, six 3-ton and six ½-ton differential chain hoists, one combined hand power pipe threading and cutting machine for 4 to 12 in. pipe, one geared shaper, one motor driven grinder, 80 electric drills, three band saws and eight ball bearing planer jacks.

The following bids were opened September 24, Circular No. 464, for class 3, four Scotch marine boilers for the Isthmian Canal Commission:

Bidder 30, Casey-Hedges Company, Chattanooga, Tenn., $21,900; 43, P. Delany & Co., Newburgh, N. Y., $17,550; 59, G. & W. Mfg. Company, New York, $14,440; 64, A. D. Granger Company, New York, $13,916; 72, Harlan & Hollingsworth Corporation, Wilmington, Del., $16,250; 84, Lake Erie Boiler Works, Buffalo, N. Y., $16,500; 89, Manning, Maxwell & Moore, New York, $13,590; 90, Marine Boiler Works Company, Toledo, Ohio, $13,960; 92, Maryland Steel Company, Sparrow's Point, Md., $15,960; 101, J. P. Morris Company, Philadelphia, Pa., $18,000; 111, Newport News Shipbuilding & Dry Dock Company, Newport News, Va., $16,624; 114, New York Shipbuilding Company, Camden, N. J., $15,975; 129, Pusey & Jones Co., Wilmington, Del., $15,000; 135, Roberts Safety Water Tube Boiler Company, Red Bank, N. J., $14,000; 144, Samuel Smith & Son Company, Paterson, N. J., $20,400; 149, Springfield Boiler & Mfg. Company, Springfield, Ill., $11,964.

The following bids were opened September 29 for machinery for the navy yards:

Class 1.—One engine, generator and switchboard—Bidder 30, D'Olier Engineering Company, Philadelphia, Pa., $4250; 50, A. D. Granger Company, New York, $3497, $3618, $3622 and $3650; 60, Henshaw, Bulkley & Co., San Francisco, Cal., $3350 and $3500; 75, Charles C. Moore & Co., San Francisco, Cal., $3681 and $3782; 107, Risdon Iron Works, San Francisco, Cal., $3450; 142, Westinghouse Electric & Mfg. Company, Pittsburgh, Pa., $3984.

Class 11.—One shaper—Bidder 28, Compressed Air Machinery Company, San Francisco, Cal., $792; 59, Harron, Ricard & McCone, San Francisco, Cal., $766.70, $963.60, $882.30 and $735.70; 60, Henshaw, Bulkley & Co., San Francisco, Cal., $1030; 80, Manning, Maxwell & Moore, New York, $858; 99, Pacific Tool & Supply Company, San Francisco, Cal., $750 and $762.50.

Class 51.—One power feed drill press—Bidder 20, James Clark, Jr., Company, Louisville, Ky., $378.50; 42, Frevert Machinery Company, New York, $422; 56, Hamilton Machine Tool Company, Hamilton, Ohio, $384; 60, Henshaw, Bulkley & Co., San Francisco, Cal., $527; 80, Manning, Maxwell & Moore, New York, $495; 99, Pacific Tool & Supply Company, San Francisco, Cal., $298.

Bids were opened at the office of the Isthmian Canal Commission September 28, Circular No. 465, for delivery at either Colon or Cristobal and the delivery and erection at Gatun, Isthmus of Panama, of the plant and materials necessary to equip an electric industrial railroad consisting of 15,600 ft. of trackage, with 12 electric locomotives and 24 flat cars:

Item 1, 15,600 ft. trackage, installed complete; 2, 12 electric locomotives; 3, 24 flat cars; 4, total as specified; 5, electric locomotives; 6, flat cars; 7, current rail, straight; 8, do. curve; 9, frogs; 10, switchstands; 11, switch points; 12, straight track, with fittings; 13, insulators; 14, rail bonds; 15, protecting covers.

Items 5 to 15 inclusive are for additional equipment as covered by the specifications. Items marked A are in accordance with clause marked A of paragraph 8 for delivery with original order. Items marked B are for additional material ordered within one year in accordance with clause B of paragraph B.

Burnham, Williams & Co., Philadelphia, Pa., item 3, $1284.

Ducas & Co., New York, item 2, in accordance with own specifications for furnishing 12 gasoline or alcohol locomotives, $59,880.

Westinghouse Electric & Mfg. Company, Pittsburgh, Pa., item 1, $26,328; 2, $24,966; 3, $10,936; 4, $62,330. Own make of locomotives; maker of cars, Atlas Car Mfg. Company. Item 5-A, $2080; B, $2050; 6-A, $456; B, $472.50; 7-A, 34c.; B, 29c.; 8-A, 37c.; B, 37c.; 9-A, $12.65; B, $12; 10-A, $13.33; B, $12.60; 11-A, $14.44; B, $13.65; 12-A, 66c.; B, 60c.; 13-A, $1.46; B, $1.26; 14-A, 60c.; B, 34c.; 15-A, 30c.; B, 23c. As an alternative we offer our 5½-ton locomotives equipped with two No. 31 550-V motors and K-10 controllers. If the locomotives of the above type meet the requirements a deduction of $4024 may be made from the price quoted. As an alternative to the cars mentioned on the face of our bid we offer cars as manufactured by the Gregg Company, Ltd. Should such cars be acceptable a deduction of $525 can be made from the price quoted. If an overrunning type of shoe is permissible and will meet all requirements of the service a deduction of $677 can be made from the price quoted.

Youngstown Car Mfg. Company, Youngstown, Ohio, item 1, $33,512; 2, $24,000; 3, $7,680; 4, $65,192. Own make of flat cars; for third rail, Lackawanna Steel Company; for track rails, Carnegie Steel Company; for frogs, switches, &c., Buda Foundry & Mfg. Company; for electric locomotives, Jeffrey Mfg. Company. Item 5-A, none; B, $2200; 6-A, none; B, $350.

Atlas Car & Mfg. Company, Cleveland, Ohio, bid A, item 1, $18,096.16; 2, $22,710; 3, $10,176; 4, $50,872.16. Own make of cars; electric equipment, Westinghouse Electric & Mfg. Company and Baldwin Locomotive Works for locomotive frames. Item 5-A, $1892.50; B, $2000; 6-A, $424; B, $450. Bid B, item 1, $18,096; 2, $25,881.24; 3, $10,176; 4, $54,153.40. Own make of cars; electric equipment, Westinghouse Electric & Mfg. Company and Baldwin Locomotive Works for locomotive frames. Item 5-A, $2156; B, $2300; 6-A, $424; B, $450. Bid C, item 1, $18,096.16; 2, $20,100; 3, $10,176; 4, $48,372.16. Own make of cars and locomotive frames; electric equipment, General Electric Company. Item 5-A, $1675; B, $1875; 6-A, $424; B, $450.

Wonham-Magor Engineering Works, New York, item 1, $24,562; 2, $24.939; 3, $8256; 4, $57,757. Own make of cars; electric locomotives, General Electric Company; rails, Carnegie Steel Company, Cambria Steel Works and Lackawanna Steel Company. Item 5-A, $2100; B, $2250; 6-A, $352; B, $358.

The following bids were opened at the office of the Isthmian Canal Commission September 28, Circular No. 469, for three 20-ton locomotive coaling cranes:

American Hoist & Derrick Company, St. Paul, Minn., $21,414; Browning Engineering Company, Cleveland, Ohio, $21,900; Brown Hoisting Machine Company, Cleveland, Ohio, $23,373; Interstate Engineering Company, Bedford, Ohio, bid A, $17,400; B, $19,800; C, $20,100; D, $22,500; McMyler Mfg. Company, Cleveland, Ohio, $30,750.

The following bids were opened on September 30 by the

quartermaster, Takoma substation, Washington, D. C., for an air compressor for Fort Washington, Md.:

Sullivan Machinery Company, Chicago, Ill., $1900; F. C. Boax, Philadelphia, Pa., $2290; Jos. L. Sweigerd Company, Philadelphia, Pa., $2915; alternate, $2180.

Bids were opened September 30 by the Superintendent of the United States Capitol Building and Grounds for fans, electric motors and steam heaters, for the ventilation of the United States Senate Office Building, as follows:

McCay Engineering Company, Baltimore, Md., item 1, in accordance with specifications, $19,945; item 2, using 1-in. heater coils and 10-in. pipe, $19,445. B. F. Sturtevant Company, Hyde Park, Mass., $13,985.50; Diehl Mfg. Company, Elizabethport, N. J., $17,980; National Electrical Supply Company, Washington, D. C., $17,705; New York Blower Company, Chicago, Ill., $16,736; Green Fuel Economizer Company, Matteawan, N. Y., $19,975.

Under bids opened September 8 for machinery for the navy yards, the Brown & Sharpe Mfg. Company, Providence, R. I., has been awarded class 151, one universal milling machine, $1149.50.

The following awards have been made for machinery for the navy yards, bids for which were opened September 15:

Cleveland Crane & Car Company, Wickliffe, Ohio, class 51, one electric traveling crane, $2445.
Motley, Green & Co., New York, class 121, two patternmakers' lathes, $250.

## Trade Publications.

**Rolling Mill Machinery.**—United Engineering & Foundry Company, Pittsburgh, Pa. Catalogue. Size, 8½ x 10 in.; pages, 397. Cloth binding. This volume is the general catalogue of what is reputed to be the largest manufacturer of rolls and rolling mill machinery in the world, being the consolidation of the Lloyd Booth Company, Frank-Kneeland Machine Company, Lincoln Foundry Company, McGill & Co., and the Chilled Roll Foundry Company. Beyond a short introduction and brief descriptions of the company's various classes of machinery, the book is mainly an album giving views outside and inside the various plants operated by the company and notable plants in which it has installed machinery, followed by illustrations of products, including rolling mills, roller tables, manipulators, hydraulic shears, intensifiers, plate shears, bloom and slab shears, squaring shears, doubling shears, lever shears, vertical shears and punches, rail straightening machines, horizontal beam straightening machines, hot and cold metal saws, roll turning lathes, roller straightening machines, squeezers, accumulators, grinding pans, galvanizing machine, corrugating machine, hydraulic cranes, special machines, cars, rail cambering machines, tube works machinery, pipe crushing and shearing machines, and steel castings and gears.

**Lathes, Punches and Shears.**—Young Machine & Tool Company, Gardiner and Taintor streets, Worcester, Mass. Pamphlet. Covers a line of iron working machinery, including engine lathes of 10, 12 and 14 in. swings; and a 10-in. foot power machine, a gear cutting attachment for engine lathes, a combined punch and shear furnished in four sizes, ranging from 8½ to 10 in. length of blades with punching capacity from ⅜ to 9-16 in. of plate iron; geared shears built in eight sizes, length of blades ranging from 3 to 10 in., with cutting capacity of from ⅛ to 9-16 in. of plate iron; geared punches in eight sizes from 1 to 2 in. diameter of die, 2½ to 11¼ in. depth of throat, with capacity from ⅛ x ⅛ in. to 9-16 x 9-16 in. in plate iron, and hand shears and hand punches.

**Engines.**—American Engine Company, Bound Brook, N. J. A political atlas, giving the platforms of the principal parties and portraits of the candidates of the Presidential campaign. Attention is called to the American-Ball Angle compound engine, which is shown on the back cover of the atlas, of which a full description may be had in the company's bulletin No. 14.

**Cold Drawn Materials.**—Pittsburgh Tool Steel Wire Company, Monaca, Pa. Booklet. Lists the various sizes of Monaca drill rods (round and square), Champion drill rods, alloy steel wire and rods, crucible steel wire, steel wire, and refers also to Monaca needle wire, cold drawn tool steel, drawn steel rods and dental steel. Tables of useful information are also given.

**Crushing Machinery.**—George V. Cresson Company, Philadelphia and New York (90 West street). Catalogue No. 5, 6 x 9 in., 72 pages. Buchanan rock and ore breakers, crushing rolls and mechanical separators are shown, with concise descriptions. Sectional views of the crushers, rolls and separators are given, and special crushers, such as plaster crushers, and sectional machines adapted for mule-back transportation are illustrated.

**Mechanical Stokers.**—Wetzel Mechanical Stoker Company, Trenton, N. J. Catalogue, 6¼ x 9¼ in., 30 pages. Describes the Wetzel mechanical stoker with the aid of illustrations and line drawings, and contains a general description of the functions of a mechanical stoker and its essential characteristics. This stoker was described in *The Iron Age*, September 17, 1908, in connection with an account of a boiler test in which the efficiency of the stoker was demonstrated.

## PERSONAL.

W. A. Keirn, former purchasing agent of the Mesta Machine Company, Pittsburgh, has been placed in charge of the company's publicity department, succeeding R. D. Day, who has been transferred to its New York office.

J. D. Edmonds, who for a number of years has been engaged with the Western Electric Company, Chicago, both in sales and operating departments, has resigned this connection to accept a position as superintendent of works with the Sterling Electric Company, Lafayette, Ind.

William Lodge, president of the Lodge & Shipley Machine Tool Company, Cincinnati, Ohio, has returned after several weeks' absence in Europe.

C. R. Robinson has resigned as sales agent of the Inland Steel Company of Chicago, to accept the position of Chicago representative of the Lackawanna Steel Company, with the title of district sales agent. His offices are in the Commercial National Bank Building, rooms 1726-1728.

Sir William T. Lewis, the new president of the Iron and Steel Institute, has been for some years a vice-president of the institute. He is a member of the Council of Civil Engineers, vice-president of the Institute of Mechanical Engineers and past president of the Mining Association of Great Britain, and of the South Wales Institute of Engineers. He served his apprenticeship at Merthyr Tydfil, the Welsh home of the iron trade, between 1850 and 1855. He has been prominently connected with blast furnaces, steel works, tin plate works and with important coal mining operations. He was a prime mover in the organization of the Monmouthshire and South Wales Coal Association, and led in devising the sliding scale arrangement for the settlement of wage questions at the South Wales collieries.

Horace S. Wilkinson has been elected president of the Halcomb Steel Company to succeed C. H. Halcomb. Dr. John A. Mathews, for six years metallurgist and assistant manager of the Sanderson Bros. Steel Company, will continue in full charge of the manufacturing departments of the Halcomb Company as operating manager and general superintendent.

J. A. J. Shultz, president of the Shultz Belting Company, has been elected president of the Missouri Manufacturers' Association, having headquarters in St. Louis.

Harry Pennington, Lumbermen's National Bank Building, Houston, Texas, has been appointed Texas agent for the Wheeler Condenser & Engineering Company, Carteret, N. J. He has been engaged in the practice of mechanical engineering in Houston for a number of years, and is at present consulting engineer for the Galveston Water Works, engineer for Houston and Fort Bend counties, president of the Southwestern Engineers' and Architects' clubs, and chief engineer officer of the State of Texas.

Peter Eyermann, metallurgical engineer, of Du Bois, Pa., has just returned from a brief visit to Austria.

Francis W. Hoadley, in former years associated with the office management of the American Society of Mechanical Engineers, has been recently elected secretary and treasurer of the Cassier Magazine Company, New York.

D. B. Meacham of Rogers, Brown & Co., Cincinnati, has returned from a prolonged European trip.

H. A. Brown, who has been connected with the Crucible Steel Company of America, as sales manager at its Philadelphia branch office for a long term of years, has been appointed assistant to the general sales agent of the company, with headquarters in Pittsburgh, Pa. He has been succeeded in the Philadelphia office by F. W. Evleth, who has been connected with that office as salesman for several years.

The Sabraton plant of the American Sheet & Tin Plate Company, at Morgantown, W. Va., which was shut down three weeks ago for lack of water, was put in operation October 5. The plant contains 10 hot mills and 12 cold mills, the product being black plate for tinning, and the capacity is about 2000 tons per month.

# HARDWARE

BUSINESS men who have a direct interest in the matter of freights must not lose sight of the fact that the State and national governments have the right, within somewhat undefined limits, to regulate and control the business of the railroads. Merchants and manufacturers should accordingly be familiar with the manner in which this authority has been exercised, and especially with the laws which have direct and practical bearing on the transportation of merchandise. Such legislative action, whether taken by legislative bodies or indirectly through duly appointed commissions, has in many cases an immediate and definite bearing on the privileges of shippers and consignees, announcing general principles, determining rates, establishing rules and regulations relating to transportation, in accordance with which the business must be conducted. It is obviously important for those prominently identified with enterprises, and especially for managers, to be familiar with what has been done along these lines.

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This is a subject to which business men should give more attention than heretofore, with a view to exerting their influence to discourage unwise measures and to secure the adoption of a policy which will be consistent with the public welfare broadly viewed, and thus to promote commercial interests directly and indirectly. Of the recklessness of legislators and their tendency to enact without due consideration unnecessary and in some cases mischievous laws, there have been many illustrations within the past few years. The story of legislation in regard to the railroads, as briefly told in another column by one who is exceptionally well informed in such matters, furnishes examples of mingled wise and unwise action, though taken generally with an earnest purpose to correct abuses, to maintain the rights of business men and to promote the public welfare. In this endeavor it is only too obvious that many mistakes have been made and many crude and ill considered laws enacted. This is largely the case, because the leading part in these efforts at reform has been left to the politicians, who have only a limited familiarity with practical business affairs and who are subject to constant temptation to curry favor with the masses of their constituents who are usually best pleased with the most extreme and radical measures. The fact is that business men all too generally have held aloof and have refrained from considering in a broad minded way these questions in which they pre-eminently are interested.

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There is no doubt that recent events have impressed on the commercial classes the danger there is in unwise legislation, a lesson too which the law makers are apparently learning, inasmuch as during the present year there has been a halt in legislative interference in business matters. It may be put down as settled that the railroads and other great corporations are hereafter to be under a control or supervision to which they have not until recently been subjected. There is, obviously, pronounced need that such control or supervision be wisely exercised within limits which will permit rather than hinder enterprise on their part and enable them to do a profitable business while better serving the public. How to do this is a problem to which the business men of the country must give most careful consideration, and in regard to which they must be able to make their influence felt in their communities and in the halls of legislation. In these efforts too, the many trade associations should have part. There is an opportunity here for fruitful and suggestive discussion, for organized inquiry and work, and for deliverances that will have influence in forming a correct public opinion and aid in securing the enactment of wise laws.

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## Condition of Trade.

Trade continues to move along pretty steadily at its somewhat moderate pace. There would doubtless be less complaint in regard to the volume of business if it were not compared with the period of exceptional activity which terminated nearly a year ago. Manufacturers who were then under heavy pressure and unable to execute orders as promptly as the trade desired, feel more than the merchants do the changed condition of things and the falling off in the demand, as they are in some cases running with reduced forces, and are able to make prompt shipments and even perhaps to put some goods into their warehouses. Whatever inconvenience this state of things may involve for the manufacturers it is a convenience for the merchants to be able to secure prompt execution of orders and thus be permitted to carry relatively small stocks. Of this privilege they are not, apparently, taking undue advantage, most of the leading houses having placed fair though not heavy stock orders. When the goods thus purchased are exhausted they find it, however, a matter of convenience to be able to sort up in comparatively small lots. As election day approaches the canvass appears to be warming up and politics undoubtedly interfere to a greater or less extent with business. Taken all in all, the business situation is gradually improving with a volume of trade and a general steadiness of prices which should be regarded as very satisfactory in view of all the circumstances. A conservative view of the market is given in the following advices from one of the largest Hardware manufacturers in the country, which probably represent the views of many students of the situation whose opinion is entitled to weight. There are, however, others who are more sanguine in regard to the outlook:

Business is a little better with us, and sufficiently improved so that we feel warranted in attempting to run our works full time. We are not full-handed, and we do not believe that business has been thoroughly reconstructed. We do not know what political moves will be made in the name of business by either of the prominent parties to catch votes, but anything done that is of any importance will necessarily affect business and make people conservative. We believe it is right for buyers at present to be conservative, and our experience leads us to conclude that they are, and this conservatism may, and probably will, lead to normal activity, but when that will arrive no one can foretell. Our experience leads us to the conclusion that after election, in other words, on the 4th of November, whatever is the result, all people will depart to their several occupations and labor earnestly for good results; and we have as a basis of the building up of business the enormous crop estimated at present values as of $8,500,000,000, much of which value will have to be marketed at lower prices if the wage earners of our own country are not fully employed, and if Germany and England continue in their attitude of depression. Most buyers at present think that prices are too high, and this leads to the present conservatism.

### Chicago.

The recent sudden drop in temperature, which in some parts of the West and Northwest was accompanied by snowstorms and freezing weather, has given a decided impetus to the lagging movement of winter goods. Jobbers are being importuned to hurry shipments of Stove Board, Stove Pipe, Coal Hods, &c., on orders placed earlier in the season, and there is a liberal number of new orders coming in, all for rush shipment. In its aggregate volume business in these lines is not notably large, but the bunching of demands gives this section of the market an air of unusual activity. While this is a feature always incident in a greater or less degree to the fall trade, it is emphasized this season by the meagerness of stocks and the general unwillingness to extend purchases beyond the necessities of the hour. Fortunately, the factories are in position to furnish goods, in this and most other lines, with reasonable dispatch, so that in the main dealers will not suffer the inconvenience of unusual delays. Developments in other directions have yielded nothing of marked interest respecting either demand or conditions affecting trade. On every hand are heard allusions to the political campaign as a disturbing factor, and the opinion is freely expressed that its unsettling influence will rest as an incubus upon the market until finally disposed of by the November elections. Meanwhile, it should be remembered that the wants of consumers are not diminished, nor their purchasing power curtailed by the academic discussion of questions of political economy, usually more terrifying in sound than effect. No change of notable importance is observed in the movement of heavy staples of Hardware, except that Corrugated Galvanized Sheets are in better demand, and mill prices on both Galvanized and Black Sheets are firmer. The tendency among mills to shade prices from $1 to $2 a ton is reported to be much less general than was the case a few weeks ago; we are advised, in fact, that even these moderate concessions are now obtainable from but few sources. A feature of demand in Metal Roofing is the increasing proportion of Galvanized Sheets used on buildings. Not many years ago the principal part of such tonnage was composed of painted Black Sheets, while the use of Galvanized was less general, being largely confined to heavy industrial and factory buildings. Now conditions are reversed, and the consumption of Galvanized Sheets in corrugated and other forms of roofing exceeds that of painted Sheets.

## NOTES ON PRICES

**Wire Nails.**—Conservatism as to quantity of Nails ordered is still a feature of the market, as a large majority of orders received by the mills cover immediate needs. Stocks of Nails in the hands of both wholesale and retail merchants are estimated as being ususually small over the entire country. The quantity of Nails shipped by mills during September was a little less than for August, but was considered fairly satisfactory. Prices are well if not inflexibly maintained. Quotations are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

| | |
|---|---|
| Carloads, to jobbers | $1.95 |
| Carload lots to retail merchants | 2.00 |
| Less than carloads to jobbers | 2.00 |
| Less than carloads to retail merchants | 2.10 |

*New York.*—Local demand continues spasmodic, while requirements are usually confined to small quantities. Nails are quoted on the basis of $2.30 per keg in small lots at store.

*Chicago.*—After a brief period of hesitation due to prolonged drought, trade has quickened, and orders are coming in at a fairly satisfactory rate. Business for September, though short in tonnage of that for the corresponding month of last year, is practically even with August. Buyers continue to order goods as needed, and are asking for prompt shipment, more, perhaps, because such service is available than because of doubt of the future demand. Prices are reported to be firm and steady. Quotations are as follows: $2.13 in car lots to jobbers, and $2.18 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

*Pittsburgh.*—New orders for Wire Nails entered by the mills in September showed a falling off as compared with August, but, as a whole, the month was fairly satisfactory. The large trade is still pursuing the policy of placing orders only for such quantities of Nails as are absolutely needed to fill current orders, and are not disposed to carry any larger stocks than are necessary for this purpose. We are advised that stocks of Wire Nails all over the country were probably never as low as they are at present, this being regarded one of the strong features of the situation. It is also true that new orders sent in are nearly always accompanied with the request for prompt shipment, which the mills are able to make. Quotations for base sizes are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

| | |
|---|---|
| Carloads, to jobbers | $1.95 |
| Carload lots to retail merchants | 2.00 |

Galvanized Nails are quoted at $1 over the price of the regular Nails.

**Cut Nails.**—The market continues in about the same position that it has held for some time. The volume of business is comparatively meager, the large trade not being disposed to anticipate wants. Requests for prompt shipment are frequent. The general price is $1.80, base, per keg, f.o.b. Pittsburgh, but this price continues to be shaded to the large trade. In the Western market Iron Cut Nails are held at an advance of 10 cents per keg over Steel Cut Nails, but this differential is not observed in the East.

*New York.*—In the local market demand for Steel Cut Nails continues to be for moderate quantities. Nails are held on the basis of $2.15 per keg for small lots at store.

*Chicago.*—Slight improvement is noted, but the acceleration of trade is slow and lacks the stimulation of vigorous demand. At the same time, while orders are principally for small lots, they are more numerous. The uniformity of rush shipping orders denote low stocks, and these are not being increased beyond the actual requirements of present demand. We quote Chicago prices as follows: In car lots to jobbers, Iron Cut Nails, $2.08; Steel Cut Nails, $1.98. In small lots from store: Iron Cut Nails, $2.25; Steel Cut Nails, $2.15.

*Pittsburgh.*—New orders being placed are almost entirely for small lots, the large trade not being disposed to buy ahead. The character of the orders being sent in on which prompt shipment is usually asked indicates that stocks held by jobbers are very low. The market is fairly strong, and it is claimed that with present costs of Steel, the margin of profit on Cut Nails is relatively small. The general market is $1.80, base, per keg, f.o.b. Pittsburgh, but $1.75 is made, on carloads and over. In the Western market Iron Cut Nails are held at an advance of 10 cents per keg over Steel Cut Nails, but this differential is not observed in the East.

**Barb Wire.**—From sections of the country which have recently been favored with heavy rains, orders are being received by the mills in larger volume. Otherwise small orders for prompt shipment constitute the bulk of the business. Regular quotations are reported as being maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

| | Painted. | Gal. |
|---|---|---|
| Jobbers, carload lots | $2.10 | $2.40 |
| Retailers, carload lots | 2.15 | 2.45 |
| Retailers, less than carload lots | 2.25 | 2.55 |

*Chicago.*—An increasing number of orders which marked the opening days of October, are regarded as the beginning of a fairly satisfactory fall trade. It was feared that dry weather in the West would sensibly affect the fence trade, but recent rains have dispelled this doubt. The prospects for a reasonably satisfactory trade through October are considered encouraging. We are advised that prices are being well maintained. Quotations are as follows: Jobbers, Chicago, car lots, Painted, $2.28; Galvanized, $2.58; to retailers, car lots, Painted, $2.33; Galvanized, $2.63; retailers, less than car lots, Painted, $2.45; Galvanized, $2.75; Staples, bright, in car

lots, $2.25; Galvanized, $2.55; car lots, to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

*Pittsburgh.*—Some small orders are being placed for prompt shipment, but the amount of tonnage moving out from the mills is relatively small. Should the country be favored with some heavy rains, it is expected this would have the effect of causing more liberal buying for fall trade. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

| | Painted. | Gal. |
|---|---|---|
| Jobbers, carload lots | $2.10 | $2.40 |
| Retailers, carload lots | 2.15 | 2.45 |
| Retailers, less than carload lots | 2.25 | 2.55 |

**Plain Wire.**—The larger part of the business received by mills is from fence manufacturers, and is generally for quite large quantities, while the wholesale trade is confining the size of orders to immediate requirements. Regular prices are reported as being well maintained. Quotations per 100 lb. to jobbers in carload lots are as follows, on a basis of $1.80 for Plain and $2.10 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the price to retailers being 5 cents additional:

| Nos. | 6 to 9 | 10 | 11 | 12&12½ | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|
| Annealed | $1.80 | 1.85 | 1.90 | 1.95 | 2.05 | 2.15 | 2.25 | 2.35 |
| Galvanized | 2.10 | 2.15 | 2.20 | 2.25 | 2.35 | 2.45 | 2.85 | 2.95 |

*Chicago.*—Some good sized contracts entered in the past few weeks indicate that fence manufacturers are beginning to anticipate wants which, in view of the prosperous crop conditions, they consider assured. This practice has, however, not extended to the rank and file of consumers, who are generally ordering supplies for immediate consumption and prompt shipment. September tonnage is equal to, but not much in excess of, the August business. Prices are said to be quite regularly maintained. We quote as follows: Car lots to jobbers, $1.98, f.o.b. Chicago, and to retailers, $2.05.

*Pittsburgh.*—Makers of Fence Wire and Fencing are now dating their orders about March 1 of next year, and this has resulted in more liberal buying and some large orders are being placed for delivery within the next two or three months. However, the large trade is not buying ahead to any extent, and is disposed to carry lighter stocks than usual at this season of the year. It is stated regular prices are maintained. Quotations per 100 lb. to jobbers in carload lots are as follows, on a basis of $1.80 for Plain and $2.10 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the price to retailers being 5 cents additional:

| Nos. | 6 to 9 | 10 | 11 | 12&12½ | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|
| Annealed | $1.80 | 1.85 | 1.90 | 1.95 | 2.05 | 2.15 | 2.25 | 2.35 |
| Galvanized | 2.10 | 2.15 | 2.20 | 2.25 | 2.35 | 2.45 | 2.85 | 2.95 |

**Copper.**—Bare Copper Wire, on October 5, was reduced ½ cent per pound base, to 14¾ cents, minimum car loads, f.o.b. works. Round Copper Rods and Rectangular Copper Bars, on October 1, declined ¼ cent per pound base, in lots of 1000 lb., to 16¼ and 17¼ cents per pound respectively. The reason given for the declines is that these lines were out of harmony with Ingot Copper, the Wire having been based on 14 cents Ingot.

**Leather Belting.**—The improvement in the market for Leather Belting, Lace Leather, &c., seems to be well maintained, and there is some increase in activity owing in part to the stimulating effect of recent advances and in part to the somewhat increased demand from mills and factories which are operating on a little more liberal basis.

**Coil Screen Door Springs.**—Prices on Coil Screen Door Springs, generally referred to in the trade as Perfection Springs, have suffered a severe decline. At the opening of the market a few weeks ago quotations were steady at about the level of last season, but weakness soon developed and the market is now upward of 25 per cent. lower.

**Bright Wire Goods.**—It does not appear that the market for Bright Wire Goods has stiffened appreciably. The attempt of the manufacturers to get the situation in hand referred to in our columns a week ago, seems to have been abortive.

**Scythes.**—As has previously been announced in these columns, the manufacturers' list prices on Scythes remain unchanged, but with an increase in the discount which makes a reduction of 50 cents per dozen from the prices which ruled during the past season. Different numbers and names are used by the various manufacturers, but the list prices on leading goods are as follows, subject to discounts as referred to below:

| | Per doz. |
|---|---|
| Plain Grass Scythes, polished on cutting edge only | $8.00 |
| Clipper Scythes, bronzed web | 8.25 |
| Solid Steel, web and backs polished | 8.75 |
| Grain Scythes, painted, cutting edge polished | 10.00 |
| Clipper Grain Scythes, bronzed web | 10.25 |
| Bush, Weed and Bramble Scythes, painted | 8.25 |

The maximum discount from the above list will be allowed to merchants who specify on their contracts not later than December 1, 1908, but on orders specified after that date the discount is 25 cents per dozen less. Terms are 60 days net, or 2 per cent., 10 days, from March 1, 1909, on invoices prior to that date. An additional cash discount of 1 per cent. per month is offered on payments made prior to March 1. In view of the reduction to the larger trade, prices on small lots to retail merchants will naturally be somewhat lower than during the past year.

**Rope.**—The gradual improvement recently reported in the Rope business has not made any advance. Demand is not spirited, and carload orders are the exception. The number of grades of so-called Manila and Sisal Rope on the market is confusing, in so far as determining the real value. Manufacturers who turn out this class of goods claim that they are but meeting requirements of jobbers for low prices, which it is presumed retail merchants in turn demand. This condition is considered none the less unfortunate. General quotations for Rope 7-16 in. in diameter and larger are as follows: Pure Manila, 9 cents; Pure Sisal, 7 cents; No. 1 Jute, ¼ in. and up, 5½ cents; No. 2 Jute, ¼ in. and up, 5 cents.

**Linseed Oil.**—Since our report of last week on the Oil market, card prices have been reduced 1 cent per gallon by crushers. The market is not steady, however, at the reduced quotations, as a quite general price on State and Western Raw Oil, in five-barrel lots, is 41 cents, and 40 cents in carload lots. Demand is light and for small quantities. Quotations are as follows: State and Western Raw in small lots, 41 cents per gallon; City Raw, 43 to 44 cents, in small lots per gallon. Boiled Oil is 1 cent advance on Raw.

**Spirits Turpentine.**—During the early part of this week the Southern market was somewhat stronger, as the result of improved conditions. At present the receipts of Turpentine at Savannah have increased until they are in excess of demand, causing a slight reduction in price. Local demand is light. The New York market is represented by the following quotations: Oil Barrels, 37¾ to 38¼ cents; Machine Made Barrels, 38¼ to 38¾ cents per gallon.

**Window Glass.**—Conditions in Window Glass circles as reported last week have not materially changed. The organization of hand blown Glass manufacturers continues to claim the attention and energy of the committee, while the Glass workers are still engaged on a plan to increase their wages. Quite a number of Glass factories have gone into operation and others are preparing to start soon. It would seem that unless the manufacturers' organization is perfected so that production can be regulated and prices controlled, the future outlook for maintaining the making of Glass on a profitable basis will be discouraging. Demand for Glass has shown but a moderate increase, and unless there is a change in this direction, accumulating stocks at manufacturing points, to a greater or less extent, in the hands of concerns who must have cash to meet payrolls, will be a menace to the stability of the market. According to reports, the parties who have agreed to finance the manufacturers' organization will do so only when about 97 per cent. of the hand operators have signed the agreement. This is a herculean task for the committee working up the matter to accomplish. It is reported that regular quotations are not always strictly adhered to. It is

understood that manufacturers' discounts, for hand blown Glass, from manufacturers' list of January 1, 1901, are as follows: For A single and double strength Glass, 90 and 20 per cent.; for B single and double strength Glass, 90 and 25 per cent. Eastern jobbers' quotation from jobbers' list, October 1, 1903, for all sizes of single and double strength Glass, covering the territory east of Chicago, is 90 and 20 per cent. discount.

## Trade Items.

THE PARTNERSHIP between Alfred Cole, Jr., and George Staiger, handling general Hardware and Mill and Factory Supplies, 32 Warren street, New York, expired October 1 by limitation. Alfred Cole, Jr., will continue the business without change in style.

BUTLER BROTHERS, Chicago and New York, in their catalogue of general merchandise for October, invite special attention to their fall sale of china. Other special offerings of interest to Hardware merchants are Japanese Goods, Tinware and Enameled Ware, Glassware, Woodenware, campaign goods, etc. More than 100 pages are also devoted to holiday lines. This monthly catalogue is referred to as a "book of profits," and helping the merchant to expand his offerings in goods that pay fancy profits over the retail counter.

THE NORVELL-SHAPLEIGH HARDWARE COMPANY, St. Louis, Mo., has issued its usual fall catalogue containing 320 pages, referring especially to lines which sell best at this season of the year. Particular attention is given to fall Sporting Goods and fancy lines, such as Lamps, Clocks, Silver Ware, &c., which are featured for the holiday trade. Space is also devoted to general lines, such as Kitchen Ware, Harness, Tools, Builders' Hardware, &c. On the inside cover of the catalogue is a map showing the location of the company's traveling salesmen in the United States.

As a medium of advertising his business Oscar L. Johnson, Rockville, Md., handling Builders' Hardware, Lumber, Cement, Lime, Roofing, &c., has lately issued a booklet containing a list of the English words, a modified spelling of which has been recommended by the Simplified Spelling Board, together with some interesting data on the subject. The booklet also on a cover page enumerates the Maryland legal holidays. Another pamphlet issued by Mr. Johnson is devoted especially to lumber, prices being given in connection with some lore on the subject.

THE October folder bulletin of the Wisconsin Retail Hardware Association is of the usual breezy character, with paragraphs which will be read with interest and pleasure by the members. Occupying a prominent place on the first page is the suggestion that it pays the merchant to get confidential with his clerks. The "Do It Now" and the "Do It To-morrow" clerks are also the subject of a pointed statement.

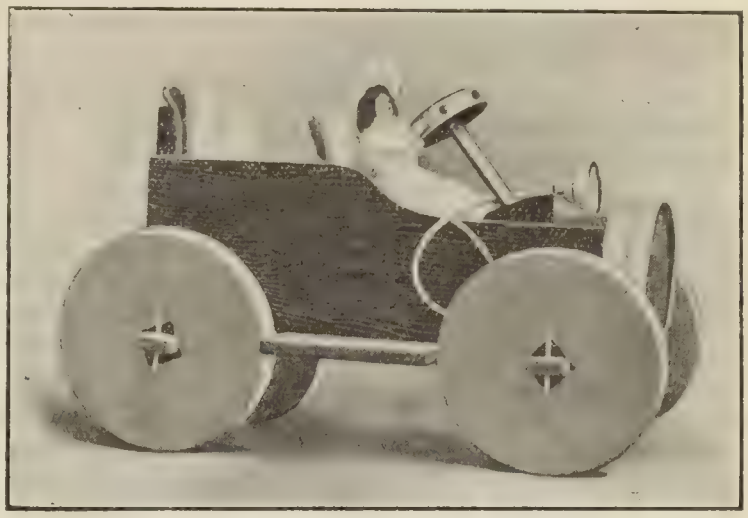
THE ROCKY HILL HARDWARE COMPANY, Rocky Hill, Conn., has been organized with the following officers: Frank E. Holmes, president; Henry G. Miller, secretary, and John A. Ellis, treasurer and assistant secretary. The company's manufactures, as shown in a catalogue of 24 pages, include Can Openers, Glass Cutters, Griddles, Hatchets, Hammers, Ice Awls, Chisels and Picks, Lemon Squeezers, Tack Pullers, Pliers, Towel and Clothes Racks, Suit and Clothes Hangers, Embroidery Specialties, &c.

The Murphy-Newcomb Hardware Company, La Jara, Colo., organized with a capital of $10,000, has purchased the stock, building and real estate of the B. L. Van Vechten Hardware Company. Business will be continued at the same location and in the same manner as heretofore, but the stock of Furniture and Vehicles will be practically doubled. The officers of the company are D. E. Newcomb, president; D. E. Newcomb, Jr., secretary; E. J. Murphy, treasurer.

G. W. Richey has purchased the business of Charles Swaine in Council Bluffs, Iowa, and will handle Shelf Hardware, Stoves, Tinware, Sporting and Athletic Goods.

## A Hardware Automobile.

THE automobile here illustrated was made by J. S. Haigh and displayed in the Hardware store of Chas. Haigh, Fayetteville, N. C. It was put together with considerable ingenuity, being composed of Hardware articles not usually adapted to such a purpose. The wheels are made of Grindstones, and the body of planed boards. The front, corresponding with the radiator, is a Flour Sieve, the steering wheel is a Mouse Trap and the seats, &c., are made of Back Bands. An Oiler



*A Hardware Automobile.*

with the spout stuck in a rubber tube represents the horn, which, it may be assumed, was freely operated by the young woman chauffeur.

## Requests for Catalogues, Etc.

*The trade is given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.*

**REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate:**

FROM VICTORIA HARDWARE COMPANY, Victoria, Texas, which has been incorporated with a capital stock of $20,000 to carry on a wholesale and retail business in Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints, &c. The company has improved its store with new showcases and shelving.

FROM THE CASH HARDWARE COMPANY, Council Bluffs, Neb., which has succeeded to the business of Adam Lockner.

FROM THE CITY HARDWARE & FURNITURE COMPANY, Brooksville, Miss., which has been incorporated with capital of $7500, and will handle Shelf and Heavy Hardware, Stoves, Implements and Sporting Goods.

FROM THE LAFOUNT HARDWARE COMPANY, Logan, Utah, which has been incorporated with a capital of $25,000 to handle general Hardware, House Furnishings and Sporting Goods.

FROM QUAYLE-LARSEN COMPANY, incorporated with a capital stock of $50,000, which has recently started business in Duluth, Minn., making a specialty of Builders' Hardware, Cutlery and Tools.

The Schad Hardware stock in Wymore, Neb., has changed hands, and the business will be conducted under the style of the Wymore Hardware Company. The line handled includes Shelf and Heavy Hardware, Stoves, Tinware, Sporting and Athletic Goods, Agricultural Implements and Buggies.

The Western Hardware Company has purchased the business of Robinson & McCrary, in Concordia, Kan., and will handle Shelf and Heavy Hardware, Stoves, Tinware, Paints, Oils, Sporting Goods, Harness, Saddles, Buggies and Queensware.

# HARDWARE FREIGHTS.

## State Regulation of Railroads.

WITH the unimportant exception of a small mileage of land grant roads built under charters from Congress over public lands, all the existing railroads in the United States have been constructed and operated under charters granted by the States. The right of eminent domain, the right to condemn private property for right of way purposes, and many other privileges and immunities of railroad corporations have been granted by State legislation.

**Corporation Charters of Early Years.**

In the early history of corporations in this country, it was held by the courts that a corporation charter was a contract between the State and the parties to whom it was granted, and that the State could not afterwards alter the terms of the contract; but in recent years there has been a marked tendency on the part of the courts, both Federal and State, to restrict and curtail the privileges of corporations. They are no longer allowed the broad constitutional rights of natural living persons. A natural man can go from New York to any State in the Union and engage in ordinary business as a citizen, without obtaining a license or permit; but nearly all the States have now enacted laws which exclude corporations of other States unless they obtain a license and comply with rigid regulations.

---

The railroads in recent years have felt the heavy hand of State regulation. Three years ago they made a great outcry through publicity bureaus against proposed National legislation that was pending in Congress, but not long after the pressure of State legislation became so severe that leading railroad men appealed to Washington for protection against the States. They found that the little finger of State power was thicker than the thigh of national regulation. Congress can only legislate on subjects pertaining strictly to interstate commerce, and national regulation has had the effect of increasing rather than restricting the revenues of railroads. The State, on the other hand, controls every branch of railroad operation and revenue, except interstate rates; and in the case of passenger revenue interstate fares have had to be reduced wherever the State has ordered reductions effective within its boundaries. The State can dictate the condition of roadbed and equipment that shall be maintained and order large expenditures; the speed at which trains shall run and the places where they shall stop; the rates charged for carrying passengers or freight; the conditions under which stock or bonds shall be issued, and practically every act of the railroad in which it can be shown that the public has an interest.

**State Control of Railroads.**

---

Restrictive legislation by the States began soon after the Civil War. In 1871 Illinois passed one of the first of the "granger" laws, creating a "railroad and warehouse commission," and providing penalties for discrimination in charges or service, or "extortion" in collecting excessive charges. In the same year Massachusetts enacted the first of a series of laws to prevent the issue of watered stocks or bonds. Two years later Illinois gave the State Commission the power to fix "maximum tariffs" for all the roads in the State. Iowa, Texas and other States followed the latter plan at an early date, and the "granger" method of regulation has been more generally followed ever since than the Massachusetts plan of merely regulating the issue of securities.

**Beginning of Restrictive Legislation.**

It is unfortunate that all the States have not followed some form of the Massachusetts plan. Railway capital once issued becomes in an indirect sense a public debt, because there is no legislative or judicial power in this country that can prevent a railway from collecting rates that will pay fair returns on its capitalization. Where the capital is limited to the money actually invested, rates and other questions of manage-

**Plan Adopted by Massachusetts.**

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ment take care of themselves and require no legislation. Practically all the trouble between the public and the railways has grown out of the operations of a few "Napoleons" of finance, and down at the bottom of the question the people themselves are responsible for permitting these men to inject speculative ideas into railway management.

---

The "granger" plan of regulation grew out of the agitation in the West during the '70s against "middlemen." The "Grange," a secret society of farmers, spread over the West in those years and gained a large membership, as well as political influence. One of the doctrines that was widely accepted was the idea that all business men were "middlemen" or parasites who stood between the farmer on the soil and the workingman in the city and robbed both indiscriminately. The first mail order house that gained national prominence started through some connection with the Grange, and still advertises itself as a "grange supply house." The agitation against middlemen spent its force finally in laws to regulate the railways and fix their rates, as represented by the railroad commission laws of Illinois and Iowa. The United States Supreme Court sustained the power of the State to fix classifications and tariffs for the railroads through a commission, and the railroads submitted gracefully. In Illinois they have had no reason to complain, as the local maximum rates fixed by the State are higher than the rates voluntarily established by the railroads in Ohio and Indiana. Iowa, however, was pointed out for many years by railroad men as a State which had injured itself by pursuing an oppressive policy toward the railroads, which prevented them from encouraging the development of industries in that State. In recent years, however, the "Iowa idea" of strict regulation of rates through a commission elected by the people has become relatively conservative.

**Railroad Commission Laws in Illinois and Iowa.**

Texas was the first State to have what is now called a "strong" commission. Rates and classifications have been fixed with a strong hand, which has made the methods of Illinois and Iowa seem merciful by comparison. There have been no fortunes made by watering the stocks of Texas railroads, which have scarcely been permitted to collect revenues that would pay interest on the actual investment. The commission only concedes to the railroad the right to earn 4 per cent. on the actual value of its property, although many of the Texas roads had to pay 6 per cent. on their bonds in order to get money for the original construction, and the State authorized them in their charters to pay this rate. The commission has fixed what it considers a fair valuation of the railroads on which they should earn 4 per cent., but the State through its taxing power has fixed a much higher value per mile as the basis for taxation. Last year the Texas commission brought out a new line of State regulation by issuing an edict which prescribed the number of additional locomotives and cars which each railroad in the State should purchase. This is the most radical step that has been taken by any State, and the courts have not had the last word regarding it. Texas has carried on a strenuous struggle with the spirit of speculation, which has been one of the apparently necessary features of the development of the great Western empire.

**Texas Regulates with a Strong Hand.**

---

The Populist movement which began in the West 20 years ago and culminated in the '90s, did not add as much as might have been expected to the accumulation of railroad legislation. Kansas was at one time ready to enact a radical law reducing railroad rates, but a deadlock in the Legislature prevented action. In Nebraska such a law was passed, but it was declared unconstitutional by the United States Supreme Court on the ground that it would not leave the railroads sufficient revenue to pay returns on their investment.

**Nebraska's Law Was Unconstitutional.**

---

In the Granger period down to 1890, there was a general decline in the values of agricultural products, and widespread political unrest. During that time 22 States passed laws to regulate rates and fares, but with the exception of a few States they were generally of a mild character and aimed chiefly at fixing passenger fares. In the Populist period following 1890, the depression in agriculture became acute, but the railroads suffered to an equal degree, and only a few strong roads in the West escaped receivership. The courts were in no mood to accept radical legislation, and only four States in the period from 1890 to 1902 joined the list of those which regulated the charges of carriers.

**Fixing Passenger Fares the Chief Object.**

---

Since 1902, however, and especially in the years 1905 to 1907, there has been a remarkable development of State regulation. The weak commissions which were established during the grange period have been generally replaced by strong commissions, which have broad powers to fix rates and otherwise regulate railway affairs. In 22 States laws were enacted to reduce passenger fares, and only two of these laws, those of Pennsylvania and North Carolina, have thus far been declared unconstitutional by the United States Supreme Court. In nine States the legislatures have fixed freight rates by law, during this period, and nearly all the new State commissions have been given power to fix rates. The grange commissions were, with a few exceptions, merely ornamental bodies, designed to satisfy public opinion by the publication of statistics or by investigations and reports. The new policy, which extends over the most important States of the Union west of the Alleghanies, bears evidence of a grim determination on the part of the people to take an active part in the future in railway management. Thirty-nine States now have railroad commissions.

**Regulation Has Been Rapid in Recent Years.**

---

In New York the policy of the State has taken the form of a Public Service Commission, which has broader powers than any of the old granger commissions. New York railroads cannot issue bonds or stocks without the approval of the commission, which investigates the purpose for which the money is to be expended; and the commission also has broad powers to fix rates and otherwise regulate the policy and management of the carriers. The new Wisconsin commission has broad powers of the same character, and the new commissions of Oregon and Vermont control the issue of bonds and stocks. The older commissions of Georgia, Virginia and North Carolina have many of the powers of the modern "public utility commission"; and Oklahoma, the "baby" of the Union, has developed a strong policy in the control of all corporations which may wrest the banner of leadership from Texas.

**New York State's Public Service Commission.**

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In the five years which preceded the panic last fall State legislatures had enacted some 800 new laws to regulate railways; and Congress brought forth the Hepburn law as its contribution to the new national policy. It is little wonder that financiers and large investors in railway securities became alarmed and tightened their purse strings, and there is little doubt that this wave of legislation had something to do with bringing on the panic. For nearly 40 years following the Civil War the people of the United States had, on the whole, pursued an indulgent policy toward railroads and other great business enterprises. The majority of the people believed that this policy helped to build up the country and make employment for the people, as well as a broader market for the products of the soil. The campaign of exposure which went on for several years in the magazines, the daily press and the various "investigations" conducted by National and State governments, brought on a reaction and a profound change in national policy under which corporations are to be held strictly to account in the exercise of the rights and privileges they hold.

**Railway Regulation and the Panic.**

# SALES DEPARTMENT RECORDS.

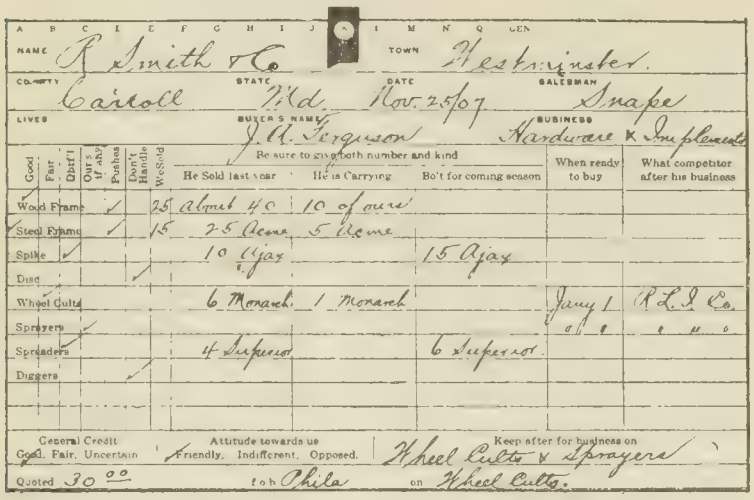
BY SALES MANAGER.

A SELLING organization is not properly systematized if it does not build up an office record of details for the information of sales managers and proprietors, and to support the efforts of the salesmen. The importance of following up the work of the salesman is quite generally recognized, especially by houses whose lines are seasonable. Repeat orders are very much desired, but are frequently obtained by a competitor unless a persistent and properly organized follow up effort is made from the office.

### Detailed Information Needed by the Office.

To make this effort most effective the sales manager must have as much information as can be obtained regarding the attitude of the merchant toward the house, his annual sales of various lines, his present stock, competing lines sold, and his reasons for preferring competitors' lines. Where a report from salesmen is required, experience has shown that the proper information is not regularly given unless a printed form is used. A short cut from

**Printed Card Forms.**


A B C E F G H I J O I M N Q GEN

NAME R Smith & Co TOWN Westminster.

COUNTY Carroll STATE Md. DATE Nov. 25/07 SALESMAN Snape

LIVES BUYER'S NAME J. A. Ferguson BUSINESS Hardware & Implements

| | Good | Fair | Doubtful | Our Line | Pushes | Don't Handle | We Sold | Be sure to give both number and kind: He Sold last year | He is Carrying | Bo't for coming season | When ready to buy | What competitor sold after his business |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Wood Frame | | ✓ | | | | | 25 | Abnut 40 | 10 of ours | | | |
| Steel Frame | | ✓ | | | | | 15 | 25 Acme | 5 Acme | | | |
| Spike | ✓ | | | | | | | 10 Ajax | | 15 Ajax | | |
| Disc | | | | | ✓ | | | | | | | |
| Wheel Cults | | | | | | | | 6 Monarch | 1 Monarch | | Jany 1 | R.L.I. Co. |
| Sprayers | | | | ✓ | | | | | | | " " | " " |
| Spreaders | | | | | | | | 4 Superior | | 6 Superior | | |
| Diggers | | | | | ✓ | | | | | | | |

General Credit: Good. Fair. Uncertain — Attitude towards us: Friendly. Indifferent. Opposed. — Keep after for business on: Wheel Cults & Sprayers

Quoted 30 00 to Phila on Wheel Cults.

*Fig. 1.—Salesman's Report Card as Filed in Office, with Metal Clip Indicating Line to Be Followed Up.*

old methods is to supply salesmen with cards that can be filed in the office card cases without being rewritten.

### Blanks Evolved by Experience.

The card illustrated in Fig. 1 is the result of some years' effort to bring the sales manager in unusually close touch with conditions existing with each merchant, and has been found eminently satisfactory. It prevents the haphazard report that omits information most desired; it compiles systematic data of the greatest value to the office, and it requires very little time or writing by the salesman. A record of the name of the merchant's buyer is important in case of the sales manager or a new traveler visiting the house. The margin at the left lists the important articles in the line, and provides columns to indicate by a check mark whether the merchant is a good, fair or doubtful prospect for the purchase of the lines checked. If the merchant pushes, or does not handle, certain lines, this information is given by check marks in the columns designated. The office is therefore in position to determine the most effective efforts necessary to stimulate the merchant and obtain the proper effort in the entire line. The last column in this margin shows what the merchant purchased the day the card was filled out.

**Buyer's Name.**

**Lines Handled**

**Current Order.**

### Prospects for Future Sales.

The columns for sales the previous year and for stock on hand include competitors' lines, and show the volume of the merchant's business. This information, combined with the report of the merchant's purchases for the ensuing year, indicates in which articles the merchant probably could not be interested. The column, "When ready to buy," is self-explanatory and of great value. It enables the office to bring the matter definitely before the merchant at the most effective time, and is important for planning future visits of the salesman. The record of the competitors seeking the business decides the character of the effort that should be made to secure the order, and is information that is rarely reported by salesmen unless printed forms are used. This also gives information that is frequently used to advantage by the office at later periods. The reference to general credit is a constant reminder to the salesman that he is expected to be on the alert for any changes that may affect the credit of his old trade and make proper inquiries concerning new customers.

**Record of Stock.**

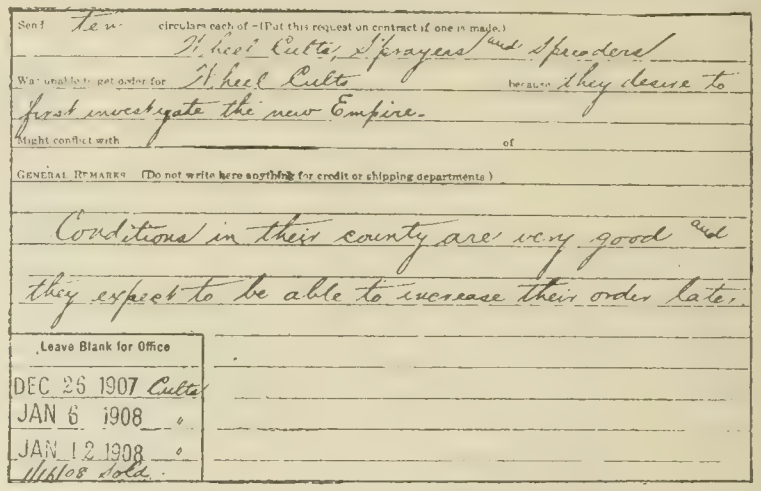
**Time for Effort.**

**Competitors in the Field.**

**General Credit.**

### The Attitude of the Merchant.

A check mark indicating the attitude of the customer or prospect toward the seller is of chief importance when it is desirable to know which merchants would probably


Send Ten circulars each of (Put this request on contract if one is made.)

Wheel Cults, Sprayers and Spreaders

We unable to get order for Wheel Cults because they desire to

first investigate the new Empire.

Might conflict with of

GENERAL REMARKS (Do not write here anything for credit or shipping departments)

Conditions in their county are very good and

they expect to be able to increase their order late.

Leave Blank for Office

DEC 26 1907 Cults

JAN 6 1908 "

JAN 12 1908 "

Wishes Sold.

*Fig. 2.—Reverse of Card, Giving General Remarks, Record of Office Work on Customer, &c.*

give the best attention to the introduction of new lines. If the salesman checks "indifferent" or "opposed," the sales manager realizes that an effort must be made to gradually interest and enthuse the merchant or some other merchant be secured if possible. Often a merchant will manifest an interest in certain articles without placing an order. Notation is made on the card and the office attempts to increase this interest until an order is secured. A record of quotations is necessary where prices vary, because of quantity and other trade reasons.

**Interest Manifested.**

### Clips on Cards to Be Followed Up.

The letters at the top of Fig. 1 are used to designate the various lines the house has for sale. If the salesman's report on the card shows that the merchant can probably be interested later in a certain line, a small metal clip is placed on the card at the letter representing that line, as K in the illustration. The card is then filed in the card case in any order that the requirements of the business make advisable. When the season for certain lines approaches, and it is desired to follow up the salesman's effort by individual or form letters, all cards referring to those lines can be quickly found in the card case by simply noting the location of the metal clip. The clip obviates the necessity of examining each card to learn if it contains reference to the lines desired at that time.

### The Reverse of the Card.

The illustration, Fig. 2, is the reverse side of Fig. 1. A report of why an order could not be obtained is of value, notwithstanding this feature may be criticised as affording a means for salesmen to indulge in the too frequent habit of making excuses for failing to obtain results. The sales manager can usually detect the excuse. Frequently there are good and sufficient reasons for failing to secure an order, and if placed before the sales manager enables him to assist in overcoming the handicap. The notation regarding conflict with some other merchant is used for lines on which exclusive sale is given. The salesman is often in the best position to determine territory lines, and an entry at this part of the card acts as a guide for the office in not overlooking full pro-

**Whys and Wherefores.**

**Local Competition.**

tection to some nearby customer. Under general remarks is noted any special information or suggestion regarding matters pertaining to the sales department only. The blank space for the office is used for dates of mailing form letters, advertising matter, &c.

**General Remarks.**

**System May Be Applied by Retailers.**

As can be appreciated, a card of this character is applicable to the needs of manufacturers, jobbers or even retail merchants. By eliminating some of the detail the card could be used advantageously by all salesmen of the retail merchant, securing more efficient service from the salesman, and obtaining a definite plan for following up future prospects that would surely result in an increased business.

## SOME FEATURES IN THE ESTABLISHMENT OF ROE & CONOVER.

THE city of Newark, N. J., is the natural center of a large and important manufacturing section. It is also the obvious distributing point for the metropolitan suburban district in New Jersey, which of late years has developed rapidly and with the establishment of the

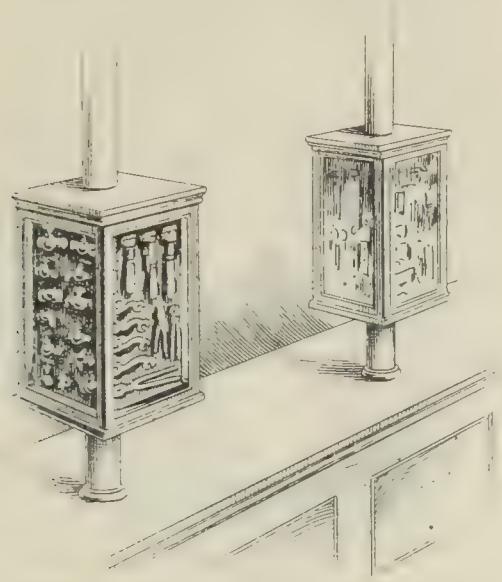


*Fig. 1.—Display Cases for Samples Built Around Posts.*

improved transportation facilities afforded by the North River tubes promises to grow still more rapidly in the near future. With a broadening market, business interests in Newark are expanding and far sighted merchants are making provision not only for present but for prospective requirements.

The jobbing Hardware and supply house of Roe & Conover is one which has recently found it necessary to

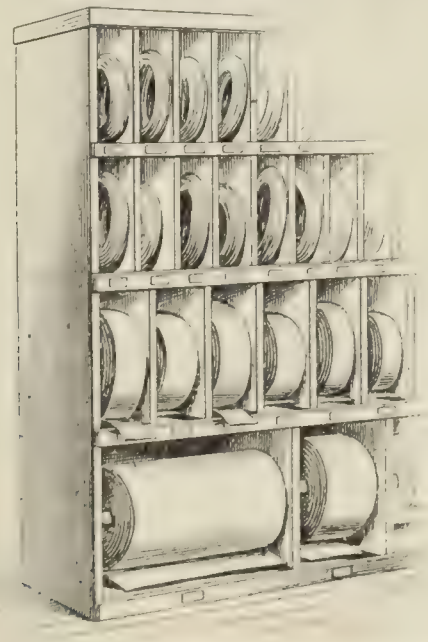


*Fig. 2.—Gallery Accommodating Wire, Leather Belting and Sheet Packing.*

enlarge its facilities, installing better methods of keeping and handling stock and making elaborate improvements in its salesroom. Galvanized steel shelf boxes with oak fronts have been put in in interchangeable sections, together with adjustable shelves and partitions to facilitate any rearrangement which may prove necessary from time to time. The effort is made to use all available space to best advantage, securing the greatest compactness with a minimum of possible confusion and disorder. A considerable economy in help is also effected because, since the stock requires less handling, fewer men are needed to keep it in shape, and it is all so clear-

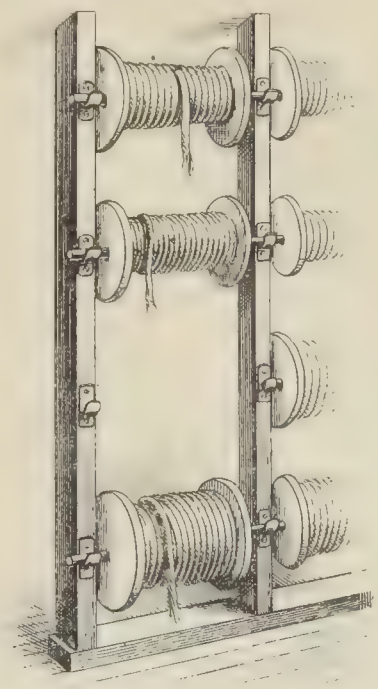


*Fig. 3.—Method of Handling Wire Rope.*

ly marked and simply arranged that even inexperienced clerks can wait on customers when necessary.

**Showcases Around Posts.**

A noteworthy feature is a series of display cases which are built on supporting posts. There is a line of these posts running with a counter the whole length of the salesroom and extending down through the middle of the counter to the floor. The cases are built square round each post as shown in Fig. 1, having glass sides and well finished oak frames to match the shelving and other fixtures. Each side presents a sample board covered with black cloth on which are displayed such lines as Brass Cocks and Bibbs, Wrenches, Machinists' Tools, &c.

**Extensive Racks of Bins**

are provided in a conveniently accessible place for the accommodation of Plumbers' Unions, L's, T's, &c. There are approximately 1200 of these bins, varying in size ac-

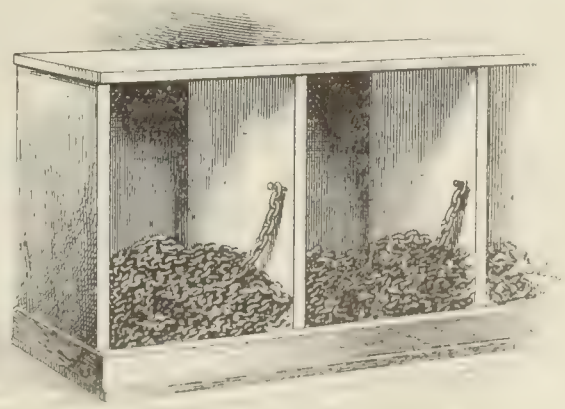


*Fig. 4.—Bins of Chain with Ends Hung on Pegs.*

cording to the quantity of stock which must be carried, the sections being interchangeable to facilitate rearrangement when necessary, and the individual bins provided with a card frame for marking, so that if it is desirable to change certain stock from one bin to another, larger or smaller, this can be done without difficulty. Similar convenient accommodations are provided for Bolts, Nuts, Lag and Machine Screws, &c.

**Catalogue File.**

A section of shelving is given up for a catalogue file, a feature of this deaprtment being that galvanized steel shelf boxes, such as are used to contain goods, are also

employed for the catalogues. This gives them a very substantial inclosure and greatly facilitates keeping the catalogues in good condition and file in order. Card frames on the outside of the boxes hold index labels, showing the contents, while further information may be written if desired on the side of the box, a portion of which is painted with yellow paint for pencil notes. These notes may be readily erased or corrected the same as if the pencil marks were made on paper.

**Accommodation of Wire, Leather Belting and Sheet Packing.**

A sort of gallery is fitted up for the accommodation of Wire, Leather Belting and Sheet Packing. It is found convenient to keep these products together as they are handled in much the same way. Beginning at the floor, partitions are constructed both horizontally and vertically extending to the ceiling, as shown in Fig. 2. In the upper tiers of compartments are kept coils of Wire, including all the varieties, sizes, &c., carried in stock. Labels on each bin indicate the kind and number of the Wire which it contains. When it is desired to fill an order the Wire may easily be unwound.

Below the Wire are similar but, of course, larger compartments containing Leather Belting. This is also

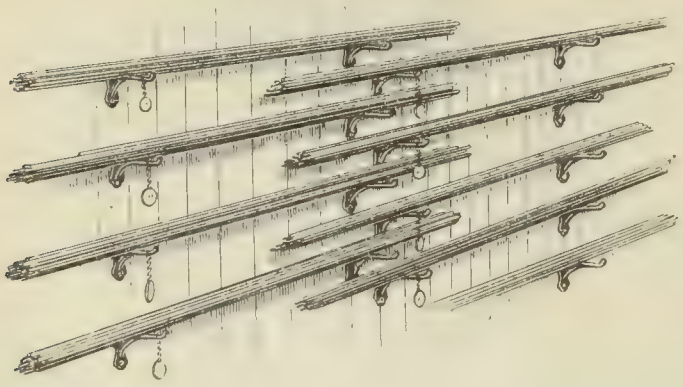


*Fig. 5.—Stock of Bessemer Rods with Tags Giving Size in Decimals and Fractions of an Inch.*

in coils which are unwound as the Belting is cut to order. Compartments are labeled in the manner already described.

At the bottom of this tier of compartments or gallery, as we have termed it, Sheet Packing is kept on reels, as indicated in the illustration.

**Wire Rope.**

A somewhat similar method is employed for keeping and handling Wire Rope, although this is stored in a different part of the building. A rack is constructed to accommodate reels, as shown in Fig. 3. The reels turn on an axis of bar iron, for which bearings are provided by heavy sockets screwed on the posts of the rack. Being double these sockets support a reel on either side.

**A Practical Idea.**

In the firm's method of handling Chain, which is kept on the floor in bins, a simple but practical and useful idea was observed. It often requires some little time to find the end in a lot of Chain, especially if for any reason it has been shoved around or handled much. This inconvenience is avoided by the homely but effective plan of driving a nail into the side of the chain bin (Fig. 4) and always hanging the end on the nail after the Chain has been cut.

**Bessemer Rods.**

A rack which is both convenient and economical of space serves for the accommodation of Bessemer Rods. This rack is constructed by putting up ordinary Harness Hooks, as shown in Fig. 5, two alternate rows of Hooks being formed in the center of the rack, so that they can be set close together. Brass Marking Tags are hung by small Chains from the ends of the Hooks to tell the size of the Rods. One side of the Tag is stamped with the wire gauge number and the other with the decimal equivalent so that it is easy to locate the Rod wanted whichever way it is ordered.

**Steam Fittings.**

The firm's method of accommodating and handling cast iron and malleable fittings recommends itself as decidedly efficient and original. As will be recognized by merchants stocking these goods there is a very large variety of sizes, shapes, &c., to be accommodated, and the

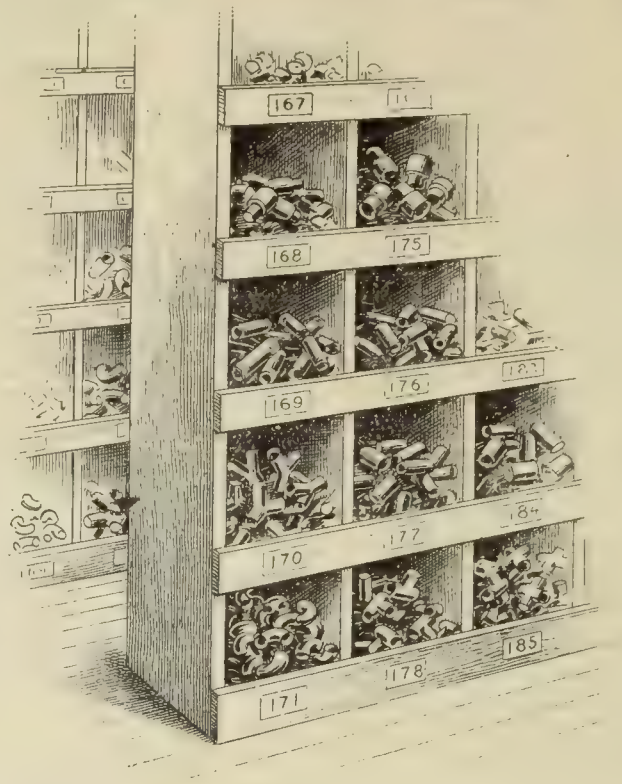



*Fig. 6.—Section of Bins Containing Cast Iron and Malleable Fittings.*

possibility of confusion as well as loss of time in hunting up and picking out exactly the piece wanted is very great. The firm keep all these goods in bins constructed on one of their upper floors—the number of bins required running up to quit a large figure. The bins are numbered consecutively, each bin number being prominently marked in front, where it can be seen in passing through the aisles (Fig. 6). Down on the first floor in the order department is kept an index showing exactly what article each bin contains. Thus, in filling orders, it is only necessary to send for number so-and-so, which even an inexperienced stock clerk can immediately pick out with

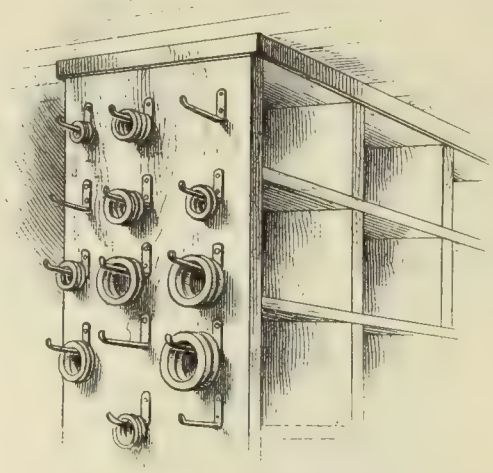


*Fig. 7.—Gaskets Hung on Harness Hooks.*

the aid of the number on the bin and without danger of making any mistake. A further advantage of this system is that by changing the index it is a simple matter to alter the arrangement of the stock if at any time this is found necessary on account of changes in quantities.

In Fig. 7 is shown a convenient method of accommodating Gaskets, which are hung on Harness Hooks affixed to the end of the section of shelving.

**Lockers for Men.**

In such a large establishment, where a good many men are employed, it is, of course, important to provide convenient and adequate accommodation for the hands. This problem the firm has effectively solved by giving up a certain amount of floor space for the construction of individual lockers. These are both commodious and sanitary, being long enough so that clothing will hang at full length and well ventilated so that working togs will dry out and air over night. The firm believe that they themselves benefit materially from this consideration for their employees.

## Death of William Keuffel.

WILLIAM Keuffel, president and founder of the business of the Keuffel & Esser Company, died at his home October 1. Mr. Keuffel had been active in the affairs of the company until about two years ago, since which time, although in touch with what was being done, impaired health had prevented his old-time activities. He had been spending some time at his summer home at Elka Park, in the Catskills, of which association he was honorary president.

Mr. Keuffel was born at Walbeck, Germany, July 19, 1838, and was educated in the public and private schools of his native place. When fifteen years old he left school and was apprenticed in a general merchandise store, where he remained four years, receiving a severe but thorough mercantile and business training, which fitted him for the successful career of later years. He then entered the employ of a large Hardware house in Hanover, Germany, from where, several years later, he went



WILLIAM KEUFFEL.

to Birmingham, England. In 1866 he came to the United States, and in 1867, with his friend Hermann Esser, founded the firm of Keuffel & Esser. Drafting was then in its infancy in America, but Mr. Keuffel foresaw and appreciated its coming importance in connection with the phenomenal development of American manufacturing and engineering enterprise. To supply all the requirements in office and field of the surveyor, engineer, architect and draftsman and make a specialty of this business was the purpose of the new firm. Mr. Keuffel may well be called the pioneer in this important line, because previous to the establishment of his firm, drafting supplies had not been dealt in exclusively by any house in the United States.

The business started in a very small way, was successful from the beginning, and three years later the house published its first catalogue of Drawing and Surveying Instruments, which have become standard. Forty years of indefatigable labor and progress placed William Keuffel at the head of what is said to be the largest house in its field in existence. The factories in Hoboken, N. J., occupy portions of two large city squares, with room in both for future expansion, the brick and stone buildings now containing 5½ acres of floor space. There are unusual facilities for examining and testing critically the innumerable delicate instruments of precision manufactured by the company.

At the parent house, 127 Fulton street, New York, every requisite of the engineer, surveyor and draftsman may be found, and similar stores are maintained in Chicago, St. Louis and San Francisco. The high reputation of Keuffel & Esser products is recognized both at home and abroad. The business of the Keuffel & Esser Company, established by William Keuffel about 40 years ago, when he and his partner constituted the entire force, employs now about 1000 people. Mr. Keuffel's success in building up a business of such magnitude is attributed to his untiring energy, far-seeing comprehension of its necessities and possibilities, an indomitable will to surmount obstacles and a magnetic geniality and enthusiasm, coupled with an attractive personality, which had enabled him to procure the best efforts of the force working with and under him.

Mr. Keuffel was a resident of Hoboken almost from the time he arrived in America, and took great interest in public and social affairs both there and in New York City, belonging to many prominent organizations, although he never entered the political field. For years he was the president of the Hoboken Academy, a well-known German-American school, and later was much interested in the Manual Training School, of which he was a trustee for some years. He was also a member of the Advisory Board of the German Hospital. Mr. Keuffel is survived by a widow, one son, W. G. Keuffel, and three daughters, one of whom is Mrs. Carl M. Bernegau, wife of the company's treasurer.

## Ohio Hardware Association.

THE Executive Committee of the Ohio Hardware Association met in Columbus on the 24th ultimo to make arrangements for the 1909 annual convention. The meeting was well attended, and much interest was manifested. It was decided to hold the next convention on February 23, 24 and 25, at Columbus. The executive sessions will be in the Board of Trade Auditorium. Memorial Hall being reserved for the Hardware exhibition, which has for several years been a notable feature of the annual gathering. During the next convention a special effort will be made to entertain the ladies who accompany the members to the meeting, and it is hoped to induce many to make the trip. The committee has decided to request manufacturers and jobbers exhibiting at the convention not to give out souvenirs, as it has been found in past conventions that the professional souvenir seeker interfered with the man who desired to make a study of the goods on display. Frank A. Bare, Mansfield, secretary of the association, will be pleased to send on request to those considering the desirability of exhibiting, a floor plan of Memorial Hall, together with isometric perspective, showing the universal booth in colors.

## The Miller Bros. Cutlery Company's Catalogue.

THE MILLER BROTHERS CUTLERY CO., Meriden, Conn., has issued a substantially bound catalogue covering its extensive line of Pocket Cutlery. The book is profusely illustrated with the numbers and descriptions of goods directly under the illustrations, making it an easy matter for merchants to order what they want. Besides Pocket Knives, the catalogue refers to office and desk Knives, Ink Erasers, &c., which are manufactured by the company.

A CORPORATION known as the Lambert-Springer Company has been organized in Manila, P. I., to carry on a wholesale Hardware and Plumbing business. Besides a general line of Hardware and Plumbing and Sanitary Fixtures, the company will handle Stoves and Kitchen Furniture, Paints, Oils and Varnishes; Hose, Packings, Lubricating Oils and Engineers' Supplies. The company's quarters are at 83 Calle David. In this company Leon J. Lambert and Milton E. Springer, the latter until a few months since having been manager of the American Hardware & Plumbing Company, are associated.

T. V. MOORE has bought the Hardware business in Canisteo, N. Y., which has been conducted by W. P. Goff as agent for Irving D. Booth. Mr. Moore is an experienced Hardwareman and has been in business in Addison and Perry.

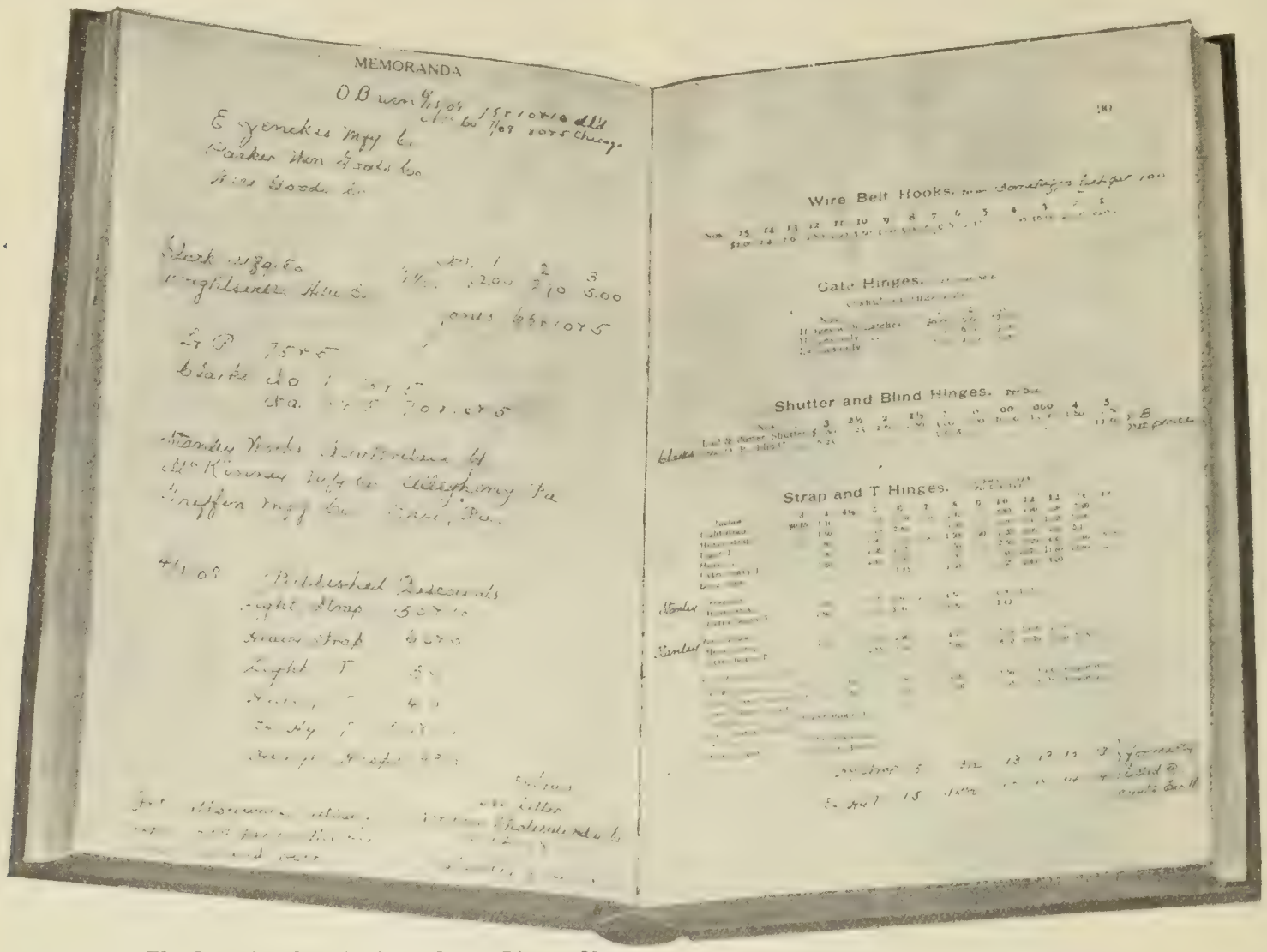
# THE IRON AGE STANDARD HARDWARE LISTS.*

"THE Iron Age Standard Hardware Lists" has recently been issued in a new and improved form, revised to date. Instead of its former flexible cover the book now has a substantial and durable cloth binding.

It contains 218 printed pages of list prices, with an equal number of blank pages for memoranda, and includes upward of 300 standard price lists completely indexed and cross indexed. Some idea of the scope of the book and the care with which the index is compiled and cross headed may be gained from the portion of the index reproduced below:


Advances, Smooth Wire...210
Adze Eye Bell Poll Hatchets ..... 89
Adze Handles..... 84
Adzes ..... 12
Agricultural Wrenches....218
Air Cocks..... 48
Alligator Wrenches.....218
American Seamless Steel Tubing .....198
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Bailing Press Forks.....174
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Bands, Steel.....150
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Bells, Church, School and Farm ..... 15
Bells, Cow..... 14
Bells, Hand..... 15
Belt Hooks, Wire..... 90
Belt Lacing, Cut..... 16
Belt Rivets and Burrs....122
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Belting, Leather..... 16
Belting, Rubber..... 17


* "The Iron Age Standard Hardware Lists," for Pocket, Desk or Price Book Use. Revised to date. Compiled by R. R. Williams, Hardware Editor of *The Iron Age*. Published by David Williams Company, 14-16 Park Place, New York. Price, $2.




*The Iron Age Standard Hardware Lists.—Manner in Which Memoranda Pages May Be Used.*

As far as practicable the lists appear in alphabetical order under the recognized trade names of goods, a fact which will often enable the user to turn directly to what is wanted without reference to the index, especially after he has become somewhat familiar with the book.

The lists are printed in compact form, but the type is clear and the arrangement is studied to facilitate quick and convenient reference. Ample margins are left wherever feasible, affording space for additions, changes or other notations. Another important feature is that the lists are printed on only one side of the paper, appearing on the right hand page as the book is open. This makes it possible to cut out lists if desired for pasting on cards, drawers or shelves, in price books, &c. It also leaves a blank page for memoranda opposite every page of lists.

### Blank Pages for Memoranda.

The principal object of the book is, of course, to afford one convenient place where all standard list prices may be referred to without taking the time and trouble to look up the printed matter of the manufacturers. By the use of the blank memorandum pages, however, it is possible to collect and keep track of much additional information of value, the character of which may be indicated by the following heads:

Alterations in lists due to changes, additions, &c., made by the manufacturers; new lists adopted; items on which net prices are frequently quoted, &c.

Special lists, not standard, in which the merchant may be interested, lists of individual manufacturers, &c.

Names of manufacturers;—with these may be included reference to jobbers and others from whom purchases may be made.

Quotations received, with reference to their date and source, whether manufacturer, jobber, agent, salesman, letter, &c.

Information regarding deliveries, freight, and the like.

Stock on hand at stated dates or regular intervals; maximum or minimum stock carried; character of the demand; quantities sold during the season or year, &c.

Any other notes or memoranda regarding the individual lists which merchant or buyer may desire to keep track of, entries in cipher, selling prices, buying or selling hints, reference to quality, dated reminders, &c.

**Practical Use of the Book.**

By way of suggesting the practical use to which the book may be put, two facing pages are reproduced in the accompanying illustration with various lists, notes, quotations and emendations such as an intelligent merchant or careful buyer might find it convenient to make. This illustration is not intended to indicate the proper use of the book which would of course vary with the individual, but merely to show some ways in which the space may be employed. Opposite the price lists are the names of some of the manufacturers. Two quotations are given on Wire Belt Hooks, one from O'Brien, a salesman, and the other from the A. B. Company. The former is a delivered price and the latter f.o.b. Chicago. Two quotations are noted on Gate Hinges and Latches, one at net prices and the other from Jones quoting discounts. The regular base discounts on Strap and T-Hinges are entered up, with reference to certain letters quoting extras. On the printed page a note has been made that some manufacturers list Wire Belt Hooks by the hundred instead of by the thousand. There is a memorandum in regard to manufacturers of 1868 O. P. Blind Hinges, and that B. quotes net prices on these goods. There are also notes to the effect that Stanley Works are manufacturers of Corrugated and Hart's Pattern Strap and T-Hinges, and that previous to February 10, 1908, some sizes of Heavy Strap and Extra Heavy T-Hinges were listed at cents per pound instead of by the dozen.

These are but a few illustrations of the use to which the blank pages may be put in receiving annotations in regard to the goods named on the opposite pages, or in supplementing the list prices there given.

## Price-Lists, Circulars, Etc.

*Manufacturers in Hardware and related lines are requested to send us copies of catalogues, price-lists, &c., same time to call attention to any new goods or additions to their lines, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.*

GOULDS MFG. COMPANY, Seneca Falls, N. Y.: Illustrated booklet describing and listing Combination and Universe House Force Pumps, Cistern and Pitcher Spout Pumps, &c.

DIAMOND SAW & STAMPING WORKS, Buffalo, N. Y.: Illustrated catalogue No. 14, referring to Sterling Hack Saw Blades and Frames, Power Machines, &c.

CARBURUNDUM COMPANY, Niagara Falls, N. Y.: Catalogue illustrating, describing and listing an extensive line of Sharpening Stones. The catalogue is attractive in appearance and especially well arranged with full descriptions of all goods.

ERIE SPECIALTY COMPANY, Erie, Pa.: Catalogue illustrating and describing a number of new specialties, including Cork Pullers, Lime Squeezers, Ice Picks, Crown Removers, Potato Mashers, Ice Cream Dishes, &c. The catalogue also contains lists of other goods manufactured by the company.

W. H. GIESELER, formerly a Hardware merchant of Brooklyn, N. Y., has moved to Denver, Colo., where he has opened an office at 1648 California street. He announces that he is prepared to handle anything in the Hardware line as manufacturers' agent.

# Correspondence.

**Patent Infringement Suits.**

*To the Editor:* Would it be possible to have a law passed making it compulsory on patentees bringing suit for infringement to bring their action against the manufacturer himself instead of against the manufacturer's customers, and in case the patentee obtains judgment against the manufacturer that he must first try to collect his damages from the manufacturer before he attacks the manufacturer's customers?

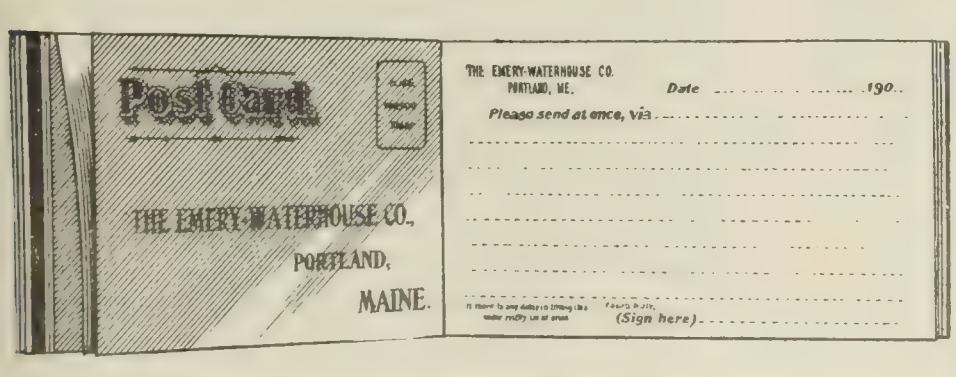
As the law now stands a patentee with a very flimsy patent who has really no claim against another manufacturer can annoy the other manufacturer's customers and injure his trade by threatening his customers and bringing suits against them in various places.

Take for instance, a rich company which wishes to keep any one else from going into the same line of business and some man of moderate means has an article that he wishes to put on the market. The rich concern can go about bringing suits here and there against customers of this new competitor knowing that he will be financially unable to defend the suits. You will readily see how a small concern can be kept out of business in this way by a rich one which does not hesitate to spend thousands of dollars for the sake of keeping some one else out of the market.

OHIO.

## The Emery-Waterhouse Company's Rush Order Book.

THE accompanying illustration shows a rush order book furnished to customers by the Emery-Waterhouse Company, Portland, Maine. It is designed to provide merchants with a convenient and time saving method of sending in small orders requiring prompt attention. At the same time it affords them a copy by which to keep track of such orders at their end. The book consists of a dozen unstamped post cards addressed to the company bound alternately with an equal number of white sheets, both ruled and printed, as shown in the illustration. Orders are written on the white sheet and copied by carbon paper on to the card, which has only to be torn out where perforated, stamped with a 1-cent stamp and mailed. The original on the white sheet remains in the book for future reference. Customers are assured that orders received in this way will be treated as rush, and are requested to send for books as needed. On the cover is the maxim, "Buy often; don't overstock." The idea has been used by the company for some time, and has proved a valuable and practical one. There is seldom a mail which does not bring orders in the writing of which this book has been used.




*Emery-Waterhouse Company's Rush Order Book.*

FOR particulars and sketches in regard to the unique airship illustrated in our last issue as a special feature of the house cleaning requisites window display made by A. M. Bell & Co., Halifax, N. S., we were indebted to S. S. Wetmore, one of the traveling salesmen of the house. Mr. Wetmore has been connected with the firm for many years, and is well known to the trade in his territory, which covers the southern coast of Newfoundland. Having unusual talent for window dressing, Mr. Wetmore has been called upon from time to time when off the road to get up displays for the store windows. In this he has been notably successful, and the displays have not only attracted much attention locally, but have secured for him many prizes in the way of medals and cash in competitions of this sort. At the recent Nova Scotia Provincial Exposition he prepared an elaborate exhibit for the firm which was awarded a gold medal for its originality and excellence of construction. Mr. Wetmore will discontinue his affiliation with A. M. Bell & Co. on January 1, and will then locate in New York city, where he expects to devote a good part of his time to work as a window display specialist.

# Here and There in the Sales Department.

BY SAMUEL MASTERS.

## III.—THE MANAGER MANAGED.

HARTMAN, JUNIOR, was a man of action. When he had decided to put me in the city store to establish certain reforms under the direction of the manager he was anxious to have the work begun. To ask Mr. Martin, the manager, to change his methods would be, as he knew from experience, to invite argument and antagonism. To propose that I be permitted to inaugurate a selling campaign along the line of Hartman, Junior's, ideas would cause a quarrel and an appeal to Hartman, Senior, (who would probably side with Martin), and would end in failure to accomplish anything. To achieve his purpose, the initiative must be taken by Mr. Martin.

### The First Move in the Campaign.

The next morning Hartman, Junior, dropped into the visitor's chair beside Mr. Martin's desk for his usual chat regarding business. Martin showed him, with some elation, an order for a goodly quantity of Twist Drills at an unusually good price.

"That order, Mr. Hartman," said he, "was taken right here, and the other fellows didn't get a smell at it. If it had been taken at the buyers' desk it would have taken an extra 10 per cent. to land it, if we got it at all."

"It's a good order, Charley," said Hartman, Junior, "and I only wish we had more of them. I haven't a word of criticism to find with the business you get, but the time is approaching when the profits on your orders won't cover your expenses. Business everywhere is better this year than last—except right here. What orders you do get show a larger profit, but we must have more of 'em, Charley, and if you won't go after buyers there must be some means found to bring them to you. You might just as well face the music now as later, for Senior is getting uneasy, and it won't take many more months of diminishing sales to get him on your trail—and you know what he is liable to do."

Martin began an angry protest, but Hartman, Junior, cut him short.

### If the Mountain Won't Come to Mahomet—

"Now, see here, Charley," said he, "there is no use in getting angry. I know that my ideas don't suit you and I am not going to urge them upon you. But if your methods are to win they must be enlarged. You want the large orders taken at your desk. Very well! The inquiries must be brought here if you are to do the business. The whole matter is strictly up to you, and Senior looks to you to make good. In his present frame of mind he will listen to anything reasonable in the way of aids to getting trade. Can't we ask him for another out-of-door salesman or two?"

Martin "didn't want any more salesmen to knife profits for him. His two men were in constant touch with the principal buyers now."

"But how about the smaller firms?" asked Hartman, Junior. "Those are the fellows that pay good profits, because there is less competition for their orders. Can't you get after them?"

"No," said Martin, "I can't. The business is too small to make it pay unless it comes in without expense in its getting. Besides, the credit manager won't pass half their names for accounts if I get their orders."

### Mahomet Must Go to the Mountain.

"You don't know that, Charley," said Hartman, Junior. "You haven't tried. Can't you telephone some of them—or write letters about our goods—or send circulars—or advertise—or do something else to make them think of Hartman Brothers in connection with their purchases?"

"I wanted to increase my advertising, and you know it," said Martin, "but both you and Senior complained of the cost, and I had to cut it down to a little insignificant notice twice a week."

"I know, I know," said Hartman, "and I am not sure that anything could be done by newspaper advertising. You can't show up much of your line at a time in that way—just a holler for Hartman Brothers and a mention of one or two specialties. Booklet? What kind? On belting? That's only one line, Charley, and not your most profitable one, either. Make it cover factory supplies in general, then? Sort of a catalogue, eh? Oh, I know you have told me often enough that we haven't a catalogue to give customers, but I didn't think it essential. Besides, you haven't got a man capable of getting it out. Who wrote that Building Supplies advertisement for you for last Sunday's *Globe?* Sam Masters, eh? Do you think he could prepare such a catalogue as you would want? Matters are pretty quiet in his line just now, and if he could do the work there would be no increased expense for salaries."

"I'll tell you what," said Junior finally, as he rose to go. "Think things over and make up your mind as to what you want, and submit something definite to me. It might not be a bad idea to talk the matter over with Sam and see if he can give you the book you want."

### An Invitation Given—

Five minutes later I was sitting in the same chair beside Mr. Martin's desk and he was eagerly relating to me the talk he had had with Hartman Junior. He said that he wanted to strike quickly, while Junior was in a pliant mood; that he was certain that a catalogue for popular circulation would be a trade winner, and that he had confidence in my ability to get it out.

"Come down here and work for me for a while, Sam," said he. "There will never be anything for you in Sporting Goods as we handle them, and I am sure you can be worth more to the house here than where you are. Let the Cutlery man absorb your line, as he is trying to do."

### And Accepted.

I told him truthfully that I should be glad to work for him if it could be arranged to the satisfaction of all. While we were talking Hartman, Junior, appeared, and laid upon Mr. Martin's desk the Blue Book of a famous New York jeweler, which I had taken from the catalogue file and laid upon his desk early in the morning.

"This looks good to me," said he. "Was something of this kind what you wanted, Charley?"

Mr. Martin examined it. The possibilities of a list of factory supplies similarly arranged were thoroughly canvassed, and when Hartman, Junior, turned away it was decided that I should at once begin the preparation of a catalogue to resemble in general style and arrangement the Blue Book mentioned, but to list fully and briefly the Hartman Brothers' line. Mr. Martin did the most of the talking. I ventured to make an occasional suggestion, and Hartman, Junior, assented to the most of what was said.

And so it was arranged that I should go into the city store to help Mr. Martin by compiling a catalogue, and it was at Mr. Martin's urgent request that the work was undertaken.

*(To be continued.)*

## The Cambria Chain Company.

THE CAMBRIA CHAIN COMPANY has recently been organized at Johnstown, Pa., and has leased a new and modern building, 50 x 160 ft., at Woodvale, which will admirably suit its purposes, and which is now being equipped with furnaces, die hammers, forges, blowers, drop forging machines, &c., all of which will be electrically operated, for the manufacture of all kinds of Hand and Machine Made Chain, Drop Forgings, &c. The business will be in charge of competent men who have had considerable practical experience, and it is expected the new plant will be ready for operation in the latter part of October.

J. B. HOWAT, who has been vice-president and general manager of the Dillon-Griswold Company, Sterling, Ill., has resigned to become the head of the Sharon Hardware Mfg. Company, Sharon, Pa., which has lately been organized and is at present erecting a large building for the manufacture of Hardware specialties.

## Central Electric Company's Catalogue.

THE CENTRAL ELECTRIC COMPANY, Chicago, Ill., has issued a general catalogue, No. 26, referring to an exhaustive line of electrical and allied supplies. In compiling the catalogue, the company states that it has endeavored to include all material and appliances that are necessary or useful in the construction and operation of electrical illustrations and apparatus of every character. As far as possible, full and accurate descriptions are given of all goods. The work is a large one, containing over 1000 pages, is substantially bound, and conveniently arranged and indexed. It should prove a valuable and useful addition to the trade library of merchants who stock these lines or handle them even in a casual way.

## Saw Display Case.

E. C. ATKINS & CO., Indianapolis, Ind., have just put out a new display case for Hand Saws. It is designed to set upon the floor or counter, as preferred, and is described as a handsome and convenient fixture which will not only attract favorable attention to the line, but will also permit a salesman to locate and reach any Saw without effort. The case is 25 in. square and 39 in. high, having four glass sides, two of which are fitted with hinges. The case revolves on a circular base,



*E. C. Atkins & Co.'s Saw Display Case.*

and there are a series of slots on two sides into which the stock of Saws is to be placed. Each side has room for 18 Saws, which with the eight display Saws accommodated in pairs on each of the four sides, gives a total capacity of 44 Saws. The case is furnished in solid oak, finished as desired, in golden antique, Flemish, weathered or Mission. It is distributed on terms which may be learned on application to the company.

## Calf Weaning Muzzle.

The Cooley Mfg. Company, 103-105 South Canal street, Chicago, Ill., is putting on the market a device for weaning calves and colts, and for use on cows and horses. It is made of steel wire dipped in hot tin, after being formed, to prevent rust, and is firmly constructed. The Muzzle permits the animal to eat grass, hay or grain on the ground and drink water or milk in the ordinary way without undue interference, while at the same time effectually preventing sucking. The weaner is held over the animal's nose by a halter, which is fastened back of the ears. About an inch of play is left between the nose and the bottom of the weaner, so that in eating the nose will pass through the back opening on the grass, but when the head is raised to suck the weaner automatically drops back over the nose. The device is also recommended as a muzzle for horses when plowing tall corn and for stock turned into ripe corn fields where there is grazing grass. They can eat the grass without hindrance, but the muzzle drops over their nose when they raise their heads to the standing ears. The weaners are made in three sizes.

## Ball Pein Hammers for Automobile Kit.

The David Maydole Hammer Company, Norwich, N. Y., represented by Willis Simpson, 155 Chambers street, New York, has supplemented its extensive and well known line by the addition of a line of ball pein hammers, designed especially for an automobile kit. The three sizes range from 7 to 13 ounces, with an intermediate weight of 10 ounces. The handles, of second growth hickory, are of proper length for such use, regularly 9½, 10¼ and 11¼ in., or they may be obtained in shorter lengths. The hammer proper is forged from crucible cast steel, carefully hardened and tempered by hand. It is oil finished and has polished face and pein.

## Iron Block Plane.

The Central Hardware Company, Philadelphia, Pa., C. E. Peabody & Co., 155 Chambers street, New York, sales agents, has just put on the market a new tool in the way of an iron block plane, with tempered steel plane iron. The plane has a frame or body 5½ in. long, and an actual cutting width of 1 5-16 in. A feature to which attention is called is the low price at which the tool is offered.

## The Wilcox-King Tubular Steel Grind Stone No. 025.

A new design in a tubular steel grindstone frame distinguished as No. 025 Wilcox-King, is being marketed by the Wilcox Mfg. Company, Aurora, Ill. While combining a proper degree of rigidity, this construction, it is claimed, admits of enough flexibility to enable the frame to adjust itself to uneven floors or surfaces. It is entirely self-contained, the back legs carrying a steel supported operator's seat, while bi peddle power is supplied by the attachment of a peddle to each of the front legs.

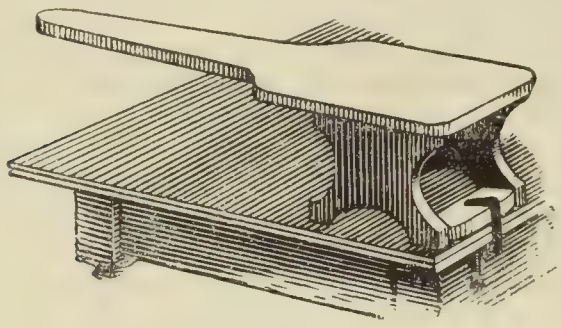



*The Wilcox King Tubular Steel Grindstone No. 025.*

The bearings on which the stone is mounted are adjustable and may be moved forward or backward on the frame as may suit the convenience of the operator. The crank is supplied with ball bearings as are also the journal bearings. The seat is adjustable vertically to the extent of from 4 to 5 in. For shipment the grinder is crated complete with the face of the stone protected.

## The Gem City Laundry Board.

The accompanying illustration represents a new style of laundry board made by the J. W. Quilling Mfg. Company, Quincy, Ill. The base of the board is 9 in. wide by 12 in. long and tapers from the shoulder to a width of 3½ in. at the small end. The board is 2 ft. 6 in. long over all and is made of pine or poplar lumber 1 in. thick. It is mounted on bench legs which stand 6 in. high and

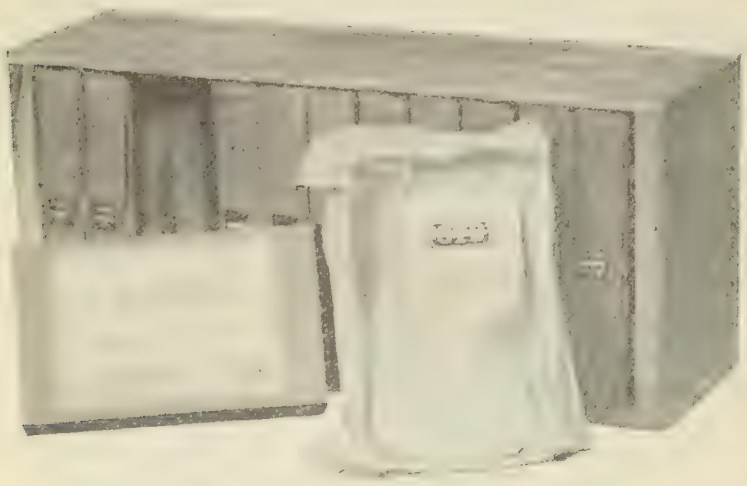


*The Gem City Laundry Board.*

have a width of 7 in. A cross piece fastened between the rear feet serves as a clamp bar by which the board is firmly clamped to the table, as shown in the illustration. The top of the ironing board is covered with a sheet of No. 10 asbestos board to protect the wood from heat and warping. The asbestos should be covered with cotton sheeting tacked to the edge of the board. The shape of the board is designed to meet the requirements of convenience and satisfactory work in ironing shirt waists, sleeves, yokes, collars, cuffs and other garments, which are not easily handled on an ordinary board.

## Hibbard, Spencer, Bartlett & Co.'s Phantom Beveled Axe.

As an addition to their line of bronzed and polished axes under "Our Very Best" brand, a new Phantom



*Hibbard, Spencer, Bartlett & Co.'s Method of Packing Phantom Beveled Axes.*

bevel axe is being distributed by Hibbard, Spencer, Bartlett & Co., Chicago. It is claimed for these axes that they not only embody all of the points of high quality in the regular "O. V. B." axes, but the pattern, grinding and finish are improved to an extent that justifies the new axe being called an "expert chopper's axe." The axe is full polished and made with a high grade crucible laid steel bit. The phantom bevels are ground by hand instead of being drop forged, as on most hollow bevel axes. Consequently, it is explained, there are no sharp corners to the bevels to cause extra friction, and the bevels afford perfect clearance when chopping, preventing the bit from binding in the cut. The handle is securely fitted and wedged and properly hung. Special attention is called to the packing of these axes, which is illustrated herewith, each axe being individually neatly labeled, wrapped in paper and packed in a separate pasteboard carton, with the weight stamped on each. These cartons are packed 12 assorted weights in a case. It is pointed out that this method of packing permits the axes to be attractively displayed on the merchant's shelf, and the weight desired readily selected from the assortment; also, that each axe is kept in the best of condition until it reaches the customer's hands. These axes, in common with other brands sold by the house, are sold either with or without handles, and a large range of choice is given of handles which may be used.

## S. & I. Never-Break Screw Driver.

The screw driver illustrated herewith is made by the S. & I. Company, Springfield, Mass., which remarks that



*Fig. 1.—S. & I. Never-Break Screw Driver.*

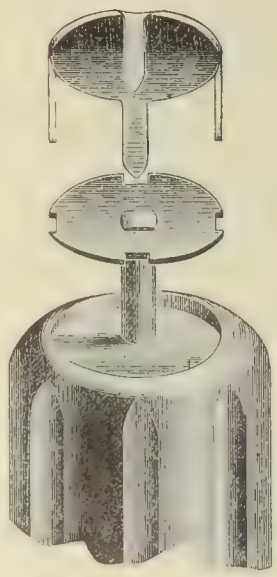
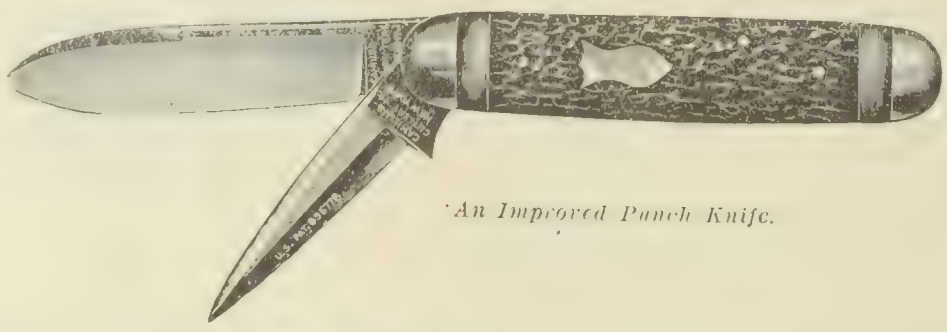


*Fig. 2.—S. & I. Screw Driver — Method of Setting Blade, Washer and Cap.*

the tool is notable for durability of construction, beauty of design and excellence of finish. The blade is forged from best tool steel correctly tempered. The handle is made of hard wood and has a highly polished cocobolo finish. The metal cap and washer are made from cold rolled steel, and the ferrule is nickel plated. By the method of construction which is illustrated in Fig. 2 the blade passes through the handle and is riveted to the recessed washer. The cap, with four inverted prongs, is driven into the top of the handle, engaging with the washer, preventing the blade turning and permitting pounding the driver without injuring the handle. Sizes offered range from 2 to 12 in.

## An Improved Punch Knife.

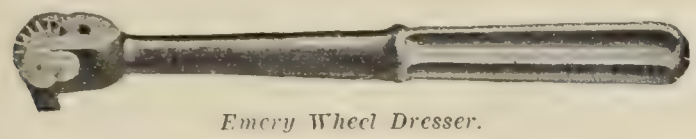
Adolph Kastor & Bros., 109 Duane street, New York, with factory at Camillus, N. Y., have patented and are putting on the market an improved punch, which they make up in combination with a pocket knife, as shown herewith. The advantage of the punch is that it has a sharp cutting knife edge, which can be used for cutting purposes, while also providing a strong, efficient and inexpensive tool for quickly piercing and boring smooth circular holes in leather, wood or in other penetrable materials.



*An Improved Punch Knife.*

## Emery Wheel Dresser.

The feature of particular interest in the emery wheel dresser made by Collmer Brothers, South Bend, Ind., and herewith illustrated, is the substitution of spring bushings for turned bushings, more commonly used in tools of this character. It is claimed that the spring bushings being less likely to loosen in the handle, add both to the durability and running qualities of the dresser. The



*Emery Wheel Dresser.*

handle, which is 12 in. in length, is a solid casting, neatly japanned, with a fluted hand grip. Cutter wheels supplied with the tool are specially tempered with a view to making them stand without breaking and at the same time to avoid a degree of softness that would cause excessive wear. The holder accommodates a set of four wheels 1⅛ in. in diameter, having a combined grinding face of ½ in. The tools are packed separately in an attractively labeled pasteboard box, with an extra set of cutters for each handle.

## The Bascom Adjustable Tap Wrench.

The A. J. Smart Mfg. Company, Greenfield, Mass., has put on the market the Bascom adjustable tap wrench in six sizes, from 7 to 34 in. in length, accommodating hand taps from ¼ in. and smaller to 1½ in., as shown in the accompanying illustration. The wrench has gunlock (mottled) finish, while the handles are made from best



*The Bascom Adjustable Tap Wrench.*

steel tubing, knurled the required length to prevent slipping in greasy hands. The jaws are made of best tool steel, carefully hardened and tempered, and, it is stated, should last indefinitely with proper care. The nut is so arranged that it can be easily turned to afford a good grip.

# PAINTS, OILS AND COLORS

### Animal, Fish and Vegetable Oils—

| | ₱ gal. |
|---|---|
| Linseed, State and Western, raw | 41 @43 |
| City, Raw | 43 @44 |
| Boiled, 1c ₱ gal. advance on Raw. | |
| Raw, Calcutta, in bbls. | 70 @.. |
| Lard, Prime, Winter | 75 @78 |
| Extra No. 1 | 51 @52 |
| No. 1 | 49 @50 |
| Cotton-seed, Crude, f.o.b mill | 30 @31 |
| Summer Yellow, prime | 40 @40¼ |
| Summer, White | 43 @44 |
| Yellow Winter | 45 @47 |
| Tallow, Acidless | 60 @61 |
| Menhaden, Brown, Strained | 35 @36 |
| Northern Crude | 24 @.. |
| Southern | 24 @.. |
| Light Strained | 35 @36 |
| Bleached Winter | 37 @39 |
| Ex. Bleached Winter | 39 @41 |
| Cocoanut, Ceylon | ₱ lb 6¾@ 6⅞ |
| Cochin | ₱ lb 7¼@ 7½ |
| Cod, Domestic, Prime | 38 @40 |
| Newfoundland | 41 @42 |
| Red, Elaine | 40 @41 |
| Sperm, [illegible] | ₱ lb 57½@ 61½ |
| Olive, Yellow | $0.95@$1.00 |
| Neat's-foot, Prime | 55 @58 |
| Palm, Lagos | ₱ lb 6¼@ 6⅜ |

### Mineral Oils—

| | ₱ gal. |
|---|---|
| Black, 29 gravity, 25@30 cold test | 13 @13½ |
| 29 gravity, 15 cold test | 13½@14 |
| Summer | 12½@13 |
| Cylinder, light filtered | 20½@21 |
| Dark, filtered red | 18 @19 |
| Paraffine, 900 907 sp. gravity | 14½@15 |
| 903 sp. gravity | 13½@14 |
| 880 sp. gravity | 11 @11½ |
| Red | 13½@14 |

### Miscellaneous—

| | |
|---|---|
| Barytes: | |
| White, Foreign | ₱ ton $18.50@20.50 |
| American, floated | ₱ ton 17.00@18.00 |
| Off color | ₱ ton 12.50@15.00 |
| Chalk, in bulk | ₱ ton 2.00@ 3.40 |
| China Clay, Imported | ₱ ton 11.50@18.00 |

| | ₱ gal. |
|---|---|
| Cobalt, Oxide | ₱ 100 lb 1.45@ 2.60 |
| Whiting, Commercial | ₱ 100 lb 42@52 |
| Gilders | ₱ 100 lb .55@ .60 |
| Ex. Gilders | ₱ 100 lb .60@ .65 |

### Putty, Commercial—

| | ₱ 100 lb |
|---|---|
| In bladders | $1.70 @1.80 |
| In bbls. or tubs | 1 20 @1.45 |
| In 1 lb to 5 lb cans | 2.65 @2.95 |
| In 12½ to 50 lb cans | 1.50 @1.90 |

### Spirits Turpentine—

| | ₱ gal. |
|---|---|
| In Oil bbls. | 38½@39 |
| In machine bbls. | 39 @39½ |

### Glue—

| | ₱ lb |
|---|---|
| Cabinet | 12 @15 |
| Common Bone | 7½@ 9 |
| Extra White | 18 @24 |
| Fish, liquid, 50 gal. bbls., per gallon | 60 @1.20 |
| Foot Stock, White | 12 @14 |
| Foot Stock, Brown | 9 @11 |
| German Common Hide | 10 @12 |
| German Hide | 12 @18 |
| French | 10 @40 |
| Irish | 13 @16 |
| Low Grade | 10 @12 |
| Medium White | 14 @17 |

### Gum Shellac—

| | ₱ lb |
|---|---|
| Bleached, Commercial | 23 @24 |
| Bone Dry | 28 @29 |
| Button | 30 @40 |
| Diamond I | @37 |
| Fine, Orange | 34 @35 |
| A. C. Garnet | 27 @28 |
| C. A. L. | 20 @21 |
| Kola Button | 18 @19 |
| D. C. | @38 |
| Octagon B. | 35 @36 |
| T. N. | 25 @26 |
| V. S. O. | @37 |

### Colors in Oil—

| | ₱ lb |
|---|---|
| Black, Lampblack | 12 @14 |
| Blue, Chinese | 36 @46 |
| Blue, Prussian | 32 @36 |
| Blue, Ultramarine | 13 @16 |
| Brown, Vandyke | 11 @14 |
| Green, Chrome | 12 @16 |
| Green, Paris | @24 |
| Sienna, Raw | 12 @15 |
| Sienna, Burnt | 12 @15 |
| Umber, Raw | 11 @14 |
| Umber, Burnt | 11 @14 |

### White and Red Lead &c.—

| | ₱ lb |
|---|---|
| Lead, English white, in Oil | 10⅛@10⅝ |
| Lead, American White: | |
| Dry and in Oil, 100, 250 and 500 lb kegs | 7 |
| Dry and in Oil, 25 and 50 lb kegs | 7¼ |
| Dry and in Oil 12½ lb kegs | 7½ |
| In Oil, 25 lb tin pails | 7½ |
| In Oil, 12½ lb tin pails | 8 |
| In Oil, 1, 2, 3 and 5 lb tin cans, ass't | 9 |
| Red Lead and Litharge: | |
| In 100 lb kegs | 7 |
| In 25 and 50 lb kegs | 7¼ |
| In 12½ lb kegs | 7½ |
| In lots of less than 500 lbs, ½c ₱ lb advance over above prices of White and Red Lead and Litharge. | |

Lead, American. Terms: On lots of 500 lbs and over, 60 days or 2% for cash if paid in 15 days from date of invoice.

### Zinc, Dry—

| | ₱ lb |
|---|---|
| American, dry | 5½@ 5⅝ |
| Red Seal (French process) | 6¾@ 7 |
| Green Seal | 7¼@ 7½ |
| German Red Seal (French process) | 6⅝@ 7 |
| Green Seal | 7¼@ 7⅝ |
| White Seal | 7¾@ 8¼ |
| French, Red Seal | 8¾@ 8⅞ |
| Green Seal | 10⅝@10⅝ |

### Dry Colors—

| | ₱ lb |
|---|---|
| Black, Carbon | 6½@10 |
| Black Drop, American | 3½@ 8 |
| Black Drop, English | 5 @15 |
| Black, Ivory | 16 @20 |
| Lamp, commercial | 4 @ 6 |
| Blue, Celestial | 4 @ 6 |
| Blue, Chinese | 31 @35 |
| Blue, Prussian | 29 @31 |
| Blue, Ultramarine | 3½@15 |
| Brown, Spanish | ½@ 1 |
| Carmine, No. 40 | $3.10@3.25 |
| Green, Chrome, ordinary | 3½@ 5 |
| Green, Chrome, pure | 17 @25 |
| Ocher, American | ₱ ton $8.50@16.00 |
| American Golden | 2½@ 3¼ |
| French | 1¼@ 2 |
| Foreign Golden | 3 @ 4 |
| Orange Mineral, English | 10 @12 |
| French | 12¾@13 |
| German | 12 @13 |
| American | 9 @10 |
| Red, Indian, English | 4½@ 6 |
| American | 3 @ 3¼ |
| Red, Turkey, English | 4 @10 |
| Red, Tuscan, English | 7 @.. |
| Red, Venetian, Amer. | ₱ 100 lb $0.50@1.25 |
| English | ₱ 100 lb $1.15@1.60 |
| Sienna, Italian, Burnt and Powdered | 3 @ 9 |
| Italian, Raw, Powdered | 3 @ 7 |
| American, Raw | 1½@ 2 |
| American Burnt and Powd. | 1 @ 2 |
| Talc, French | ₱ ton $18.00@25.00 |
| American | ₱ ton 15.00@25.00 |
| Terra Alba, French | ₱ 100 lb .90@1.00 |
| English | ₱ 100 lb .80@1.00 |
| American | ₱ 100 lb, No. 1. .75@ .80 |
| American | ₱ 100 lb, No. 2. .60@ .65 |
| Umber, Turkey, Bnt. & Pow. | 2½@ 3 |
| Turkey, Raw and Powdered | 2½@ 3 |
| Burnt, American | 1½@ 2 |
| Raw, American | 1½@ 2 |
| Yellow, Chrome, Pure | 13¾@15 |
| Vermilion, American Lead | 7 @25 |
| Quicksilver, Bull | 65 @.. |
| Quicksilver, Best | @66 |
| English, Imported | 65 @70 |
| Chinese | $1.00@.. |


# THE IRON AGE

*The oldest paper in the world devoted to the interests of the Hardware, Iron, Machinery and Metal Trades, and a standard authority on all matters relating to those branches of industry.*

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# Current Hardware Prices.

**General Goods.**—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

**Special Goods.**—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

**Range of Prices.**—A range of prices is indicated by means of the symbol @. Thus 33⅓ @ 33⅓ & 10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

**Names of Manufacturers.**—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1907, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

**Standard Lists.**—"The Iron Age Standard Hardware Lists" contains the list prices of many leading goods.

**Additions and Corrections.**—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants

### Adjusters, Blind—
Columbian and Domestic....33⅓%
North's....10%
Upson's Patent, ℔ gro., $29.90....10%
Zimmerman's See Fasteners, Blind.

### Window Stop—
Ives' Patent....35%
Ives' Stop Bead Screws and Washers....10%
Taplin's Perfection....35%

### Ammunition—See *Caps, Cartridges, Shells, &c.*

### Anti-Rattlers—
Fernald Mfg. Co. Burton Anti-Rattlers, ℔ doz. pairs, Nos. 1, $0.75; 2, $0.60; 4, $1.00; 5, $0.50.
Fernald Quick Shifter, ℔ doz. pairs....$2.00@$3.00

### Anvils—American—
Eagle Anvils....℔ lb @8 ¢
Hay-Budden, Wrought....9½@9¾¢
Trenton....℔ lb 9½@9¾¢

### Imported—
Swedish Solid Steel Sisco, Superior, ℔ lb....10@10½¢
Peter Wright & Sons, ℔ lb. 84 to 345 lb., 11¢, 350 to 600 lb. 11½¢.

### Anvil, Vice and Drill—
Millers Falls Co., $18.00....15&10%

### Apple Parers—See *Parers, Apple, &c.*

### Aprons, Blacksmiths'—
Livingston Nail Co....10%

### Augers and Bits—
*Com. Double Spur....75&10@80%*
*Jennings' Pat., Bright 65&10@70%*
*Black Lip or Blued...65@65&5%*
*Boring Mach. Augers....70%*
*Car Bits, 12-in. twist....40&10%*
Ford's Auger and Car Bits....40&5%
Ft. Washington Auger Co., Conard's....35%
Forstner Pat. Auger Bits....25%
C. E. Jennings & Co.:
No. 10 ext. lip. R. Jennings' list. 25&7½%
No. 30, R. Jennings' list....50%
Russell Jennings'....25&10&2½%
L'Hommedieu Car Bits....15%
Mayhew's Countersink Bits....45
Pugh's Black....20%
Pugh's Jennings' Pattern....35%
Snell's Auger Bits....60%
Snell's Bell Hangers' Bits....60%
Snell's Car Bits, 12-in. twist....60%
Snell's King Auger Bits....50%
Swan's....65&10@70
Swan's, Jennings' Pattern....50%
Wright's Jennings' Bits....50%

### Bit Stock Drills—See *Drills, Twist.*

### Expansive Bits—
Clark's Pattern, No. 1, ℔ doz., $26; No. 2, $18....60&10%
Ford's, Clark's Pattern...60&5@60&10%
C. E. Jennings & Co., Steer's Pat..25%
Lavigne Pat., small size, $18.00; large size, $26.00....60&10%
Swan's....60%

### Gimlet Bits—
*Per gro.*
*Common Dbl. Cut....$3.00@3.25*
*German Pattern, Nos. 1 to 10, $4.75; 11 to 13, $5.75*

### Hollow Augers—
*Bonney Pat., per doz..$5.50@6.00*
Ames....20&10
Universal....20

### Ship Augers and Bits—
*Ship Augers....40&10@—%*
Ford's....33⅓&5%
C. E. Jennings & Co.:
L. Hommedieu's....6
Williams'....33⅓&7½
Snell's....18%

### Awl Hafts—See *Handles, Mechanics' Tool.*

### Awls—
*Brad Awls:*
*Handled....gro. $2.75@3.00*
*Unhdld, Shldered...gro.63@66¢*
*Unhandled, Patent..gro.66@70¢*
*Peg Awls:*
*Unhandled, Patent..gro. 31@31½¢*
*Unhdld, Shldered..gro. 65@70¢*
*Scratch Awls:*
*Handled, Com...gro. $3.50@4.00*
*Handled, Socket.gro.$11.50@12.00*

### Awl and Tool Sets—See *Sets, Awl and Tool.*

### Axes—
*Single Bit, base weights: Per doz.*
*First Quality....$4.75@5.00*
*Second Quality....$4.25@4.50*
*Double Bit, base weights:*
*First Quality....$7.00@7.50*
*Second Quality....$6.50@6.75*

### Axle Grease—See *Grease, Axle.*

### Axles—*Iron or Steel.*
*Concord, Loose Collar...4¼@4½¢*
*Concord, Solid Collar....4½@5 ¢*
*No. 1 Common, Loose...3½@4 ¢*
*No. 1½ Com., New Style..4¼@4¾¢*
*No. 2 Solid Collar....4¼@4¾¢*
*Half Patent:*
*Nos. 7, 8, 11 and 12....70%*
*Nos. 13 to 14....70%*
*Nos. 15 to 18...70&10@70&10&5%*
*Nos. 19 to 22...70&10@70&10&5%*

### Boxes, Axles—
*Common and Concord, not turned....lb..5@6¢*
*Common and Concord, turned, lb., 6@7¢*
*Half Patent....lb..9½@10¢*

### Bait—Fishing—
Hendryx:
A Bait....20%
B Bait....25%
Competitor Bait....20&5%

### Balances—Sash—
Caldwell new list....50&10%
Pullman....50&10%

### Spring—
*Light Spring Balances..60@60&5%*
Chatillon's:
Light Spg. Balances....50@50&10%
Straight Balances....40@40&10%
Circular Balances....50&10%
Large Dial....30%

### Barb Wire—See *Wire, Barb.*

### Bars—Crow—
*Steel Crowbars, 10 to 40 lb.... per lb., 2¼@2½¢*

### Towel—
No. 10 Ideal, Nickel Plate..℔ gro. $8.50

### Beam, Scale—
*Scale Beams....40%*
Chattillon's No. 1....30%
Chatillon's No. 2....40%

### Beaters, Carpet—
Holt-Lyon Co.:
No. 12 Wire Coppered ℔ doz. $0.80; Tinned....$0.85
No. 11 Wire Coppered ℔ doz. $1.15; Tinned....$1.20
No. 10 Wire Tinned....℔ doz. $1.50

### Beaters Egg—
Dover Stamping & Mfg. Co.:
Genuine Dover, per gro., No. 1, Tumbler Size, $7.50; No. 2, Family Size, $7.50; No. 3 Extra Family Size, $24.00; No. 4, Hotel Size, $30.00.
Holt-Lyon Co.:
Holt, per doz., No. 5, Jap'd $0.80; No. A, Jap'd, $1.15; No. B, Jap'd, $1.85; No. 6, Jap'd, $1.65.
Lyon, Jap'd, per doz., No. 2, $1.35.
Taplin Mfg. Co.:
Improved Dover, per gro., No. 60, $6.00; No. 75, $6.50; No. 100, $7.90; No. 102, Tin'd, $8.50; No. 150, Hotel, $15.00; No. 152, Hotel Tin'd, $17.00; No. 200, Tumbler, $8.50; No. 202, Tumbler Tin'd, $9.50; No. 300, Mammoth, per doz., $25.00.

### Bellows—
*Blacksmith, Standard List:*
*Split Leather....60&10@65%*
*Grain Leather....50@50&10%*

### Hand—
| *Inch..* | *6* | *7* | *8* | *9* | *10* |
|---|---|---|---|---|---|
| *Doz..* | *$5.00* | *5.50* | *6.00* | *6.50* | *7.50* |

### Molders—
| *Inch..* | *10* | *12* | *14* | *16* |
|---|---|---|---|---|
| *Doz..* | *$7.50* | *9.00* | *12.00* | *15.00* |

Net Prices.

### Bells—Cow—
*Wrought Cow Bells....75%*
Jersey....75&10
Texas Star....50

### Door—
Home, R. & E. Mfg. Co.'s....55&10%

### Hand—
*Polished, Brass....60@60&10%*
*White Metal....60@60&10%*
*Nickel Plated....50&10%*
*Swiss....50&10%*
Cone's Globe Hand Bells....33⅓@35%

### Miscellaneous—
*Farm Bells....lb., 2¼@2½¢*
*Church and School....60@60&10%*

### Belting—Leather—
*First Quality, Ex. Hy., Strictly Short Lap....60&10%*
*Standard....70&10@70&10&5%*
*Light Double....75&10%*
*Cut Leather Lacing....50%*
*Leather Lacing Sides, per sq. ft. 23@24¢*

### Rubber—
*Competition (Low Grade), 70&10@75%*
*Standard....60&10@70%*
*Best Grades....40@50%*

### Bench Stops—See *Stops, Bench*

### Benders and Upsetters, Tire—
Green River Tire Benders and Upsetters....20%

### Bicycle Goods—
John S. Leng's Son & Co.'s 1908 list:
Chain, Parts, Spokes....40
Tubes....60

### Bits—
Auger, Gimlet, Bit Stock Drills, &c. See *Augers and Bits.*

### Blocks Tackle—
*Common Wooden....75@75&5%*
B. & L. B. Co.:
Boston Wood Snatch, 50%; Eclipse Steel, 75%; Hollow Steel, 50&10%; Star Wire Rope, 50%; Tarbox Metal Snatch, 50%; Tarbox New Style Steel, 50&10%; Wire Rope Snatch, 50%.
Lane's Patent Automatic Lock and Junior....30%
See also Machines, Hoisting.

### Boards, Stove—
*Paper and Wood Lined....55%*
*Embossed....55%*

### Boards, Wash—See *Washboards.*

### Bobs, Plumb—
Keuffel & Esser Co....33⅓&10%

### Bolts Carriage, Machine, &c.—
*Common Carriage (cut thread): ⅜ x 6 and smaller..75&5@—%*
*Larger and longer....70&5@—%*
*Phila. Eagle, $3.00 list...80@—%*
*Bolt Ends....70&10@—%*
*Machine (Cut Thread): ⅜ x 4 and smaller..75&10@—%*
*Larger and longer...70&10@—%*

### Door and Shutter—
*Cast Iron Barrel, Japanned, Round Brass Knobs:*
| *Inch...* | *3* | *4* | *5* | *6* | *8* |
|---|---|---|---|---|---|
| *Per doz..* | *$0.30* | *.35* | *.45* | *.60* | *.80* |

*Cast Iron Spring Foot, Jap'd:*
| *Inch....* | *6* | *8* | *10* |
|---|---|---|---|
| *Per doz....* | *$1.20* | *1.50* | *2.25* |

*Cast Iron Chain, Flat, Japanned:*
| *Inch....* | *6* | *8* | *10* |
|---|---|---|---|
| *Per doz....* | *$1.00* | *1.40* | *1.65* |

*Cast Iron Flat Shutter, Jap'd, Brass Knobs:*
| *Inch....* | *6* | *8* | *10* |
|---|---|---|---|
| *Per doz....* | *$0.75* | *.95* | *1.25* |

*Wrought Barrel Japanned, 80&10@80&10&5%*
*Barrel Bronzed....60&10%*
*Spring....70&10@70&10&10%*
*Shutter....50&5@50&10&5%*
*Square Neck....75@75&10%*
*Square....70&10&10@80%*
Ives' Mortise....10
Ives' Wrought Metal....10

### Expansion—
F. H. Evans' Crescent....10@60%
Richards Mfg. Co....55&10
Star Expansion Bolt Co.:
Star, Lag Screw Type..60&10&5&2½
Star, Wood Screw Type....10
Star, Machine, Single Wedge....60%
Star, Machine, Double Wedge....60%
Steward & Romain Mfg. Co.:
Style No. 13, Double....60%
Style No. 1, Single....60%
Style No. 100, Dbl. Jaw, Single..55%
Lag Screw....66⅔%

### Plow and Stove—
*Plow....65&5@70%*
*Stove....85@85&5%*

### Tire—
*Common Iron....80%*
*Norway Iron....80%*
American Screw Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84...82½%
Bay State, list Dec. 28, '99....80%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84...82½%
Eclipse, list Dec. 28, '99....80%
Russell, Burdsall & Ward Bolt & Nut Co.:
Empire, list Dec. 28, '99....80%
Norway Phila., list Oct. '84....80%
Eagle....82½%
Shelton Co.:
Tiger Brand, list Dec. 28, '99....80%
Phila., Eagle, list Oct. 16, 1884..82½%
Upson Nut Co.:
Tire Bolts....72½%

### Borers, Bung—
*Borers Bung, Ring, with Handle:*
| *Inch....* | *1¼* | *1½* | *1¾* | *2* |
|---|---|---|---|---|
| *Per doz...* | *$4.80* | *5.60* | *6.40* | *8.00* |
| *Inch....* | *2¼* | | *2½* | |
| *Per doz....* | *$8.65* | | *11.50* | |

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.75; No. 3, $2.50 each....25%

### Boxes, Mitre—
C. E. Jennings & Co....25%
Langdon, New Langdon and Langdon Improved, 20&10%; Langdon Acme....15&10%
Perfection....40%
Seavey....45%

### Braces—
*Common Ball, American....$1.50*
Barber's....50&10&10@60&10%
Fray's Genuine Spofford's....60%
Fray's No. 61, 166, 206, 614....50%
C. E. Jennings & Co....50&5
Mayhew's Ratchet....60
Mayhew's Quick Action Hay Pat...50%
Millers Falls Drill Braces....25&10
P., S. & W. Co., Peck's Pat....60&10%

### Brackets—
*Wrought Steel....75&10&5@80%*
Bradley Metal Clasp...80&10@80&10&5%
Griffin's Pressed Steel....75@75&10%
Griffin's Folding Brackets....70&10%
Taplin Victor Handy Egg Beater Bracket....℔ doz. $1.50

### Bright Wire Goods—See *Wire and Wire Goods.*

### Broilers—
Kilbourne Mfg. Co....75&20%
Wire Goods Co....75%

### Buckets, Galvanized—
*M'fr's list, price per gross.*
| *Quart..* | *10* | *12* | *14* | |
|---|---|---|---|---|
| *Water, Reg...* | *26.85* | *29.50* | *33.50* | *10&67½&65%* |
| *Water, Hvy...* | *45.35* | *48.00* | *52.00* | |
| *Fire, Rd. Btm.* | *32.00* | *34.65* | *38.65* | |
| *Well....* | *37.35* | *41.35* | *45.35* | |

### Bull Rings—See *Rings, Bull.*

### Butts—Brass—
*Wrought, High List, Oct. 6, '06..65%*
Cast Brass, Tiebout's....40&10%

### Cast Iron—
*Fast Joint, Broad....40&10@50%*
*Fast Joint, Narrow...40&10@50%*
*Loose Joint....70&10@75%*
*Loose Pin....70&10@75%*
*Mayer's Hinges....70@70&5*
*Parliament Butts....70@70&5*

### Wrought Steel—Bright.
*Light Narrow, Light Reversible....70&5%*
*Reversible and Broad..70&5%*
*Loose Joint, Narrow, Light Inside Blind, &c....70%*
*Back Flaps, Table Chest..65%*
*Japanned.*
*Light Narrow, Loose Pin, 40&5%*
*Light Narrow, Ball Tip..60%*
*Broad....40&5%*
*Steeple Tipped....70%*
*Ball Tipped....70%*

Extra, 10%—

## Cages, Bird—

Hendryx Brass: Series 3000, 5000, 1100, net list; 1200, 15%; 200, 300, 900 ..... 30%
Hendryx Bronze: Series 700, 800.... 30%
Hendryx Enameled..... 35%

## Calipers—See *Compasses.*

## Calks, Toe and Heel—

*Blunt, 1 prong, per 100 lb., $3.50@$3.85*
*Sharp, 1 prong, per 100 lb., $4.00@$4.35*
Burke's, 1 pg. Blunt Toe, 3¾¢; 2 pg. Blunt Toe, 4¼¢; 1 pg. Sharp Toe, 4¼¢; 2 pg. Sharp, 4¾¢; Blunt Heel, 4¼¢; Sharp Heel..... 4¾¢
Lautier Blunt, 4@4¼¢; Sharp, 4½@4¾¢
Perkins', Blunt, ℔ lb, 3.65¢; Sharp, 4.15¢

## Can Openers—See *Openers, Can.*

## Caps, Percussion—

*Eley's E. B..... 52@55¢*
*G. D..... per M 34@35¢*
*F. L..... per M 40@42¢*
*G. E..... per M 48@50¢*
*Musket ..... per M 62@63¢*

### Primers—

*Berdan Primers, $2 per M.. 20&5%*
*Primer Shells and Bullets.. 15&10%*
*All other primers per M. $1.52@1.60*

## Carpet Stretchers—See *Stretchers, Carpet.*

## Cartridges—

*Blank Cartridges:*
*32 C. F., $5.50..... 10&5%*
*38 C. F., $7.00..... 10&5%*
*22 cal. Rim, $1.50..... 10&5%*
*32 cal. Rim, $2.75..... 10&5%*
*B. B. Caps, Con. Ball, Swgd. $1.90*
*B. B. Caps, Round Ball.... $1.49*
*Central Fire..... 25%*
*Target and Sporting Rifle. 15&5%*
*Primed Shells and Bullets. 15&10%*
*Rim Fire, Sporting..... 50%*
*Rim Fire, Military..... 15&5%*

## Casters—

*Bed ..... 65&10@70%*
*Plate ..... 60@60&5%*
*Philadelphia ..... 70&10@75%*
Acme, Ball Bearing..... 35%
Gem (Roller Bearing)..... 70&10&10&5%
Steel Gem (Roller Bearing)..... 70%
Standard Ball Bearing..... 45%
Yale (Double Wheel) low list... 40&10%

## Cattle Leaders—See *Leaders, Cattle.*

## Chain, Proof Coil—

*American Coil, Straight Link:*

| 3-16 | ¼ | 5-16 | ⅜ | 7-16 | ½ | ⅝ |
|---|---|---|---|---|---|---|
| $8.15 | 5.55 | 4.60 | 3.95 | 3.75 | 3.65 | 3.55 |

¾-⅞-1 1⅛ to 1¼ inch.
$3.45 3.55
*In cask lots, deduct 25¢.*
*German Coil..... 70%*
*German Pattern Coil:*
*6-0 to 1..... 70&10&5%*
*2 and 3..... 60&10&10@70%*
*4, 5 and 6..... 50&10@50&10&5%*

### Halter—

*Halter Chains..... 60&5@60&10%*
*German Pattern Halter Chains, list July 24, '97.... 60&10&5@70%*
Covert Mfg. Co.:
Halter ..... 35&5%

### Cow Ties—See *Halters and Ties.*

## Trace, Wagon, &c.—

*Traces, Western Standard: 100 pr.*
*6½—6-3, Straight, with ring. $28.00*
*6½—6-2, Straight, with ring. $29.00*
*6½—8-2, Straight, with ring. $32.00*
*6½—10-2, Str'ght, with ring. $37.00*
*NOTE.—Add 2c per pair for Hooks Twist Traces; add per pair for Nos. 2 and 3, 2c; No. 1, 3c; No. 0, 4c to price of Straight Link.*
*Eastern Standard Traces, Wagon Chain, &c... 60&10@60&10&5%*

### Miscellaneous—

*Jack Chain, list July 19, '93:*
*Iron ..... 60&10&7½%*
*Brass ..... 65%*
*Safety and Plumbers' Chain. 75%*
*Gal. Pump Chain.... lb., 4½@5%*
Bridgeport Chain Co.:
Triumph Halter and Coil. 35&2½@40
Triumph Dog..... 50&10@60
Brown Halter and Coil.... 45@50&5
Covert Mfg. Co.:
Breast, Halter, Heel, Rein, Stallion ..... 40%
Osceola Community:
American Halter, Dog and Kennel Chains ..... 55&2½@60
Niagara Dog Leads and Kennel Chains ..... 45@50&5
Wire Goods Co.:
Dog Chain..... 70%
Universal Dbl.-Jointed Chain... 70%

### Chain and Ribbon, Sash—

Osceola Community:
Steel Chain..... 60%
Peerless:
Bronze Chain, 60%; Steel Chain, Coppered ..... 60&5
Sash Chain Attachments, per set 8c
Aluminoy Sash Ribbon, per 100 ft ..... $2.90@3.40
Sash Ribbon Attachments, per set 8c

### Chalk—

*Carpenters' Blue..... gro., 50¢*
*Carpenters' Red..... gro., 50¢*
*Carpenters' White..... gro., 40¢*

### Checks, Door—

Bradley's ..... 45%
Perkins, per gro..... $54.00
Roswin ..... 33⅓%

### Chests, Tool—

American Tool Chest Co.:
Boys' Chests, with Tools..... 55%
Youths' Chests, with Tools..... 40%
Gentlemen's Chests, with Tools.. 30%
Farmers', Carpenters, etc., Chests, with Tools ..... 20%
Machinists' and Pipe Fitters' Chests, Empty..... 45%
Tool Cabinets..... 45%
C. E. Jennings & Co.'s Machinists' Tool Chests..... 7½%

### Chisels—

### Socket Framing and Firmer

*Standard List..... 80&10@—%*
Buck Bros..... 30%
C. E. Jennings & Co.:
Socket Firmer No. 10..... 25&7½%
Socket Framing No. 15..... 25&7½%
Swan's ..... 66⅔@70%
L. & I. J. White & Co..... 30@30&5%

### Tanged—

*Tanged Firmers..... 30&5@35%*
Buck Bros..... 30%
C. E. Jennings & Co. Nos. 191, 181.. 25%
L. & I. J. White Co..... 25&5%

### Cold—

*lb.*
*Cold Chisels, good quality. 13@15¢*
*Cold Chisels, fair quality. 11@12¢*
*Cold Chisels, ordinary.... 9@10¢*

### Chucks—

Almond Drill Chucks..... 35%
Almond Turret Six-Tool Chuck..... 40%
Beach Pat, each $8.00..... 35&5%
Empire ..... 25%
Blacksmiths' ..... 25%
Jacobs' Drill Chucks..... 35%
Pratt's Positive Drive..... 25%
Skinner Lathe Chucks:
Independent ..... 35%
Universal, Reversible Jaws..... 35%
Universal, Com. Style Jaws..... 40%
Combination, Reversible Jaws.... 35%
Combination, Com. Style Jaws... 40%
Round Body or Box Body, 2 Chuck Jaws ..... 25%
Geared Scroll Chucks..... 25%
Drill Chucks:
New Model, 25%; Geared Pattern, 25%; Skinner Patent, ... 25%
Positive Drive..... 40%
Planer Chucks..... 20%
Standard ..... 45%
Drill Press Vises..... 30%
Face Plate Jaws..... 35%
Standard Tool Co.:
Improved Drill Chuck..... 45%
Union Mfg. Co.:
Combination, Nos. 1, 2, 3, 4, 5, 6, 7, 8 and 17, 40%; No. 21..... 35%
Scroll Combinations, Nos. 83 and 84 ..... 30%
Geared Scroll, Nos. 33, 34 and 35.. 25%
Independent Iron, Nos. 18 and 318. 35%
Independent Steel, No. 64..... 25%
Union Drill, Nos. 000, 00, 100, 101, 102, 103, 104..... 35%
Union Czar Drill..... 25%
Universal, 11, 12, 16, 17, 13, 14, 15.. 40%
Universal No. 42..... 35%
Iron Face Plate Jaws, Nos. 28, 30, 48 and 50..... 35%
Steel Face Plate Jaws, Nos. 70 and 72 ..... 30%
Westcott Patent Chucks:
Lathe Chucks..... 50%
Little Giant Auxiliary Drill..... 50%
Little Giant Double Grip Drill... 50%
Little Giant Drill, Improved..... 50%
Oneida Drill..... 50%
Scroll Combination Lathe..... 50%
Whitaker Mfg. Co.:
National Drill..... 25%

### Clamps—

Adjustable Hammers..... 20&5%
Carriage Makers', Star, P., S. & W. Co. ..... 50%
Besly, Parallel..... 33⅓&10%
Myers' Hay Rack..... 50%
Lineman's Swedish Neverturn..... 65%
Wood Workers' Hammers..... 40&5%
Saw Clamps, see Vises, Saw Filers'

### Cleaners, Drain,

Iwan's Champion, Adjustable..... 50%
Iwan's Champion, Stationary..... 40%

### Sidewalk—

Star Socket. All Steel.. ℔ doz. $4.05 net
Star Shank. All Steel.. ℔ doz. $3.24 net
W. & C. Shank, All Steel, ℔ doz., 7½ in., $3.00; 8 in., $3.25.

### Cleavers, Butchers'—

Foster Bros..... 30%
Fayette R. Plumb..... 30%
L. & I. J. White Co..... 30%

### Clippers, Horse and Sheep—

Chicago Flexible Shaft Co.: 20%
1902 Chicago Horse, each.. $10.75
20th Century Horse, each.. $5.00
Lightning Belt Horse, each. $15.00
Chicago Belt Horse, each.. $20.00
Stewart's Enclosed Gear Roll Bearing Horse, each..... $6.75
Stewart's New Model Sheep Shearing Machine, each. $12.75
Stewart Enclosed Gear Shearing Machine, No. 8, each.. $9.75

### Clips, Axle—

*Regular Styles, list July 1, '05. 80&80&10%*

### Cloth and Netting, wire—See *Wire, &c.*

### Cocks, Brass—

*Hardware list:*
*Plain Bibbs, Globe, Kerosene, Racking, Liquor, Bottling, &c ..... 75%*
*Compression Bibbs..... 70%*

### Coffee Mills—See *Mills, Coffee.*

### Collars, Dog—

Nickel Chain, Walter B. Stevens & Son's list ..... 40%
Leather, Walter B. Stevens & Son's list ..... 40%

### Compasses, Dividers, &c.

*Ordinary Goods..... 70&10@75%*

### Conductor Pipe,—

*L. C. L. to Dealers:*

| | Gal. Steel. | Charcoal. | Copper. |
|---|---|---|---|
| *Northeastern:* | | | |
| | 70&10% | 50&10&7½% | 50&10% |
| *Eastern:* | | | |
| | 70&10&5% | 50&10&7½% | 50&10% |
| *Central:* | | | |
| | 75&5% | 60% | 50&10% |
| *Northwestern:* | | | |
| | 75&2½% | 60% | 50&10% |
| *Western:* | | | |
| | 70&7½% | 50&12½% | 50&5% |
| *Tennessee:* | | | |
| | 70&10% | 50&12½% | 50&10% |
| *Southern:* | | | |
| | 70% | 50&12½% | 50&5% |
| *Southwestern:* | | | |
| | 70% | 50&5% | 50&5% |

*Terms, 60 days: 2% cash 10 days. Factory shipments generally delivered.*
See also Eave Troughs.

### Coolers, Water—

L. & G. Mfg. Co.:

| Gal. | 2 | 3 | 4 | 6 | 8 |
|---|---|---|---|---|---|
| Galvanized, ea. | $1.85 | $2.00 | $2.25 | $2.90 | $3.90 |
| Galvanized, Lined, side handles, Gal. | 2 | 3 | 4 | 6 | 8 |
| Each | $1.95 | $2.15 | $2.40 | $3.30 | $4.15 |

White Enameled..... 10
Agate Lined..... 10%

### Coppers' Tools—See *Tools, Coopers'.*

### Coppers, Soldering—

*Soldering Coppers, 3 lb. to pair and heavier, 20¢; lighter than 3 lb. to pair..... 22¢*

### Cord—

*Braided, Drab..... lb. 35¢*
*Braided, White, Com., Nos. 8 to 12, 20¢; No. 7, 20½¢; No. 6, 21½¢. In lots of 12 doz. or over, 1 cent less per pound.*
*Cable Laid Italian, lb., No. 18. 37¢*
*Italian, lb., A, No. 18, 25¢; B, 22¢*
*Common India..... lb.. 11@11½¢*
*Cotton Sash Cord, Tw'ted. 18@20¢*
*Patent Russia..... lb.... 20¢*
*Cable Laid Russia..... lb... 21¢*
*India Hemp, Br'd'd..... lb... 21¢*
*India Hemp, Twisted.. lb. 13@14¢*
*Patent India, Twisted.. lb... 17¢*
Pearl Braided, cotton, No. 6, ℔ lb, 20½¢; No. 7, 19½¢; Nos. 8 to 12, 19½¢, in 12 doz. to 100 doz. lots.
Eddystone, Braided, Nos. 8 to 12, 26¢; 7, 26½; 6, 27½¢.
Harmony Cable Laid Italian, Nos. 7 to10..... ℔ lb 23¢
Pullman:
Wire Sash Cord..... 10%
Sash Cord Attachments, per 100.. $2.00
Samson, Nos. 8 to 12: 15%
Braided, ℔ lb., Drab Cotton, 55¢; Italian Hemp, 40¢@50¢; Linen, 65¢; White Cotton, 50¢; Spot Cord..... 50¢
Massachusetts, White... ℔ lb 40¢
Massachusetts, Drab... ℔ lb 45¢
Phoenix, White, Nos 8 to 12.... 27¢
Silver Lake, per lb.:
A, Drab, 45¢; A, White, 40¢; B, Drab, 40¢; B, White, 35¢; Italian Hemp, 40¢; Linen.... 57½¢
See also Chain and Ribbon.

### Wire, Picture—

*Full Length..... 90@—%*
*Short Length..... 90&20@—%*
Hendryx Standard Wire Picture Cord, old list, 85&10%
Turner & Stanton Co. Wire Picture Cord ..... 90%

### Cradles—

*Grain ..... 50%*

### Crayons—

*White Round Crayons, Cases, 100 gro., $8.00, $8.50, $9.00 and $10.00 according to grade.*
Zelnicker's Lumber: ℔ gro.
White and Purple, Indelible.... $7.50
Blue, Red, Green Yellow and Terra Cotta, $6.50; Black..... $4.50
Giant Lumber, 5¼ in. x 15-16 in. round, all colors, $12.00; Indelibles, $14.00; Blacks..... $10.00
Genuine Soapstone, Metal Workers', 5 in. x ¼ in. Round, $2.50; 5 in. x ¼ in. Square, $1.75; 5 x ½ x 3-16, $2.50; 5 x 1¼ x 3-16..... $3.00
Suremark, Black, $2.25; Blue, Red and Yellow ..... $2.50

### Crooks, Shepperds'—

Port Madison, per doz., Heavy, $5.50; Light ..... $5.00

### Crow Bars—See *Bars, Crow.*

### Cultivators—

Victor Garden ..... 50

### Cutlery, Table—

International Silver Company:
No. 12 Meriden Knives, 1847 ℔ doz. $2.50
Star, Eagle, Regent & Homer Laughlin A ..... 50
Wm. Rogers & Son ..... 50

### Cutters—Glass—

H. H. Morse Co. ..... 40
Red Devil ..... 50
B. Mfg. Co. ..... 50
Wonderful ..... 50

### Meat and Food—

American ..... 30%

| No. | 40 | 50 | 60 | 44 | 45 | 46 | 47 |
|---|---|---|---|---|---|---|---|
| Each | $5 | $7 | $8 | $ 2 | $25 | $50 | $60 |

Enterprise:

| No. | 5 | 10 | 12 | 22 | 32 |
|---|---|---|---|---|---|
| Each | $2 | $3 | $2.75 | $4.50 | $6 |

25@25&7½
No. 202, $1.50 ..... 10&7½
P. S. & W. Co.:
Ideal ..... 40@40&5
Hales ..... 60&5%
Little Giant..... ℔ doz. 40@50%

| Nos.. | 505 | 310 | 312 | 320 | 322 |
|---|---|---|---|---|---|
| | $35.00 | $48.00 | $44.00 | $72.00 | $68.00 |

New Triumph No. 605, ℔ doz. $24.00. 40%
Russwin Food, No. 1, $24.00; No. 2, $27.00; 3, $42.00..... 45&10&10%

| | $15.00 | $18.00 |
|---|---|---|

Enterprise Beef Shavers..... 25@30%

### Siaw and Kraut—

Henry Disston & Sons:
Slaw and Kraut Cutters..... 35%
Corn Graters..... 30%
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife.... ℔ doz. $3.00
Combined Slaw Cutter and Corn Grater ..... ℔ doz. $4.00

### Tobacco—

*All Iron, Cheap... doz. $1.25@1.50*
Enterprise ..... 25@30%
National, ℔ doz., No. 1, $21; No. 2, $18 ..... 40%

## Diggers, Post Hole, &c—

Disston's:
Rapid, ℔ doz., $24.00..... 25%
Samson, ℔ doz., $34.00..... 25%
Iwan's Pat. Post Hole and Well Auger ..... 40%
Vaughan Pattern Post Hole Augers, ℔ doz., $7.00
Perfection Post Hole Diggers, ℔ doz. ..... $8.50
Split Handle Post Hole Diggers, ℔ doz., $7.50
Hercules Pattern, ℔ doz..... $9.50
Kohler's, ℔ doz., Universal, $14.00; Little Giant, $12.00; Hercules, $10.00; Invincible, $9.00; Rival, $8.50; Pioneer..... $7.50
Never-Break Crucible Steel Post Hole Diggers ..... 60%

### Dividers—See *Compasses.*

### Drawing Knives—See *Knives, Drawing.*

### Dressers Emery Wheel—

Sterling Emery Wheel Dressers..... 35%
Sterling Wheel Dresser Cutters..... 35%

### Drills and Drill Stocks—

*Blacksmith's Common Drilling Machines ..... $1.50@1.75*
Breast, Millers Falls..... 15&10%
Breast, P., S. & W..... 33⅓%
C. & C. Ratchet..... 25%
Reversible Ratchet Die Stocks.... 25%
Goodell Automatic Drills. 50&10@60&10
Millers Falls Automatic Drills, Graves', per doz., Nos. 1, $4.86; 2, $8.16.
Millers Falls Automatic Drills, 33⅓&10%
Ratchet, Curtis & Curtis..... 25%
Ratchet, Parker's..... 40%
Ratchet, Weston's..... 40%
Ratchet, Weston's, Style H Improved ..... 40@40&5%
Ratchet, No. 012..... 40@40&5%
Ratchet, Celebrated..... 40@40&5%
Ratchet, Whitney's, P., S. & W.. 40&10@50%
Whitney's Adjustable, No. 10, $12.00, 33⅓%

### Twist Drills—

*Bit Stock..... 70@70&5%*
*Taper and Straight Shank. 60&10@70%*

### Drivers, Screw—

*Screw Driver Bits, per doz. 45@50¢*
Balsey's Screw Holder and Driver, ℔ doz., 2½-in., $6; 4-in., $7.50; 6-in., $9 ..... 50%
Buck Bros.' Screw Driver Bits..... 30%
Champion ..... 50%
Disston's ..... 70%
Fray's Hol. H'dle Sets, No. 3, $12.. 50%
Ford's Brace Screw Drivers.... 40&10%
Gay's Double Action Ratchet .... 35%
Goodell's Auto..... 65@65&10
Mayhew's Black Handle..... 40%
Mayhew's Monarch..... 40%
Millers Falls, ℔ doz., Nos. 11, $9.95; 12, $13.73; 20, $8.17; 21, $8.46; 41, $13.43; 42, $17.21.
Smith & Hemenway Co. Neverturn, 66⅔; Elmora, 60; Star, 30&10
Swan's:
Nos. 7565 to 7568, 60; No. 7540 40&10

## Eave Trough, Galvanized—

| *Territory.* | *Gal. Steel.* | *Copper.* |
|---|---|---|
| *Northeastern..* | *75&10&5%* | *50&10%* |
| *Eastern.....* | *80%* | *50&10* |
| *Central.....* | *80&10&5* | *50&10* |
| *Northwestern..* | *80&10&5%* | *50&10* |
| *Western.....* | *80&5* | *50&5* |
| *Tennessee.....* | *80&5* | *50&10* |
| *Southern.....* | *75&10* | *50&5* |
| *Southwestern..* | *75&10&2½%* | *50&5%* |

[illegible]

### Elbows and Shoes—

[illegible]

### Elbows, Stove Pipe—

[illegible]

### Emery, Turkish—

| | ¼ to ½: | 5¼ to 220: | Flour. |
|---|---|---|---|
| *Kegs ..... lb.* | *5¢* | *5½¢* | *3½¢* |
| *½ Kegs..... lb.* | *5¾¢* | *5¾¢* | *3¾¢* |
| *¼ Kegs..... lb.* | *5½¢* | *6¢* | *4¢* |

*10-lb. cans, 10 in case*....6½¢ 7¢ 6¢
*10-lb. cans, less than 10*.....10¢ 10¢ 8¢
*Less quantity*..10¢ 10¢ 8¢

*NOTE.—In lots 1 to 3 tons a discount of 10% is given.*

### Extensions, Bit—
Ford's Auger Bit Extensions....40&5%

### Extractors, Lemon Juice—
—See *Squeezers, Lemon.*

## Fasteners, Blind—
Zimmerman's Jap'd and Galv., 50 & 5%; Bronze and Plated.....50
Walling's .....50
Upson's Patent.....40

### Cord and Weight—
Ives, ₱ gro., $1.08.....10%
Titan, ₱ gro., $9.66.....10%

### Corrugated—
Acme Corrugated Fasteners.....70

### Faucets—
*Cork Lined*.....50&10@60%
*Metallic Key, Leather Lined*, ..60&10@70%
*Red Cedar*.....50&5@40&10@5%
*Petroleum*.....70&10@55%
B. & L. B. Co.:
Metal Key.....60&10
Star.....60
West Lock.....50&10
John Sommer's Peerless Tin Key....40
John Sommer's Boss Tin Key.....50
John Sommer's Victor Mtl. Key.50&10
John Sommer's Duplex Metal Key..60
John Sommer's Diamond Lock.....40
John Sommer's I.X.L. Cork Lined..50%
John Sommer's Reliable Cork Lined..50&10%
John Sommer's Chicago Cork Lined.60
John Sommer's O. K. Cork Lined...50%
John Sommer's No Brand, Cedar....50
John Sommer's Perfection, Cedar....40
Self Measuring:
Enterprise, Self Measuring and Pump, ₱ doz., $36.00.....40&10%
Lane's, ₱ doz., $36.00.....40&10
National Measuring, ₱ doz, $36.10&10

### Felloe Plates—
See *Plates, Felloe.*

### Files— Domestic—
*List Nov. 1, 1899.*
*Best Brands*.....70&10@75&10%
*Standard Brands*.....75&10@80
*Lower Grade*....75&10&10@80&10%
Gold Medal.....70%
McCaffrey's American Standard, 60&10&10

### Imported—
*Stubs' Tapers, Stubs' list, July 24, '97*.....33⅓@40%

### Fixtures, Fire Door—
Richards Mfg. Co.:
Universal, No. 133; Special, No. 134.....$3.75
Fusible Links, No. 96.....50
Expansion Bolts, No. 107.....60&10

### Grindstone—
*Net Prices:*

| | | | | |
|---|---|---|---|---|
| *Inch* | *.15* | *17* | *19* | *21* |
| *Per doz.* | *$3.60* | *3.85* | *4.15* | *4.65* |

Peck, Stow & Wilcox Co.:

| | | | | | |
|---|---|---|---|---|---|
| In..... | 15 | 17 | 19 | 21 | 24 |
| | $4.00 | 4.40 | 4.75 | 5.50 | 6.50 |

....30%
Reading Hardware Co.....60%

### Fodder Squeezers—
See *Compressors.*

### Forks—
*NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.*
Iowa Dig Ezy Potato.....60&10
Victor, Hay.....60&15&21½
Victor, Manure.....66⅔
Victor, Header.....65%
Champion, Hay.....66⅔
Champion, Header.....65%
Champion, Manure.....60&15&21½
Columbia, Hay.....60&20%
Columbia, Manure.....70%
Columbia, Spading.....70&12½
Hawkeye Wood Barley.....10
W. & C. Potato Digger.....60&10
Acme Hay.....60&20
Acme Manure, 4 tine.....60&10&5%
Dakota Header.....60&20
Jackson Steel Barley.....60&20
Kansas Header.....65
W. & C. Favorite Wood Barley....40%
Plated. See Spoons.

### Frames— Wood Saw—
*White. S'g't Bar, per doz.75@80¢*
*Red, S'g't Bar, per doz.$1.00@1.25*
*Red, Dbl. Brace, per doz.$1.40@1.50*

### Freezers, Ice Cream—

| | | | | | |
|---|---|---|---|---|---|
| *Qt*..... | *1* | *2* | *3* | *4* | *6* |
| *Each*.... | *$1.25* | *$1.60* | *$1.90* | *$2.20* | *$2.80* |

### Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

### Fry Pans—
See *Pans, Fry.*

### Fuse— *Per 1000 Feet.*
*Hemp*.....$2.75
*Cotton*.....3.20
*Waterproof Spl. Taped*..3.65
*Waterproof Dbl. Taped*..4.40
*Waterproof Tpl. Taped*..5.15
} 20&2½%

## Gates, Molasses and Oil—
*Stebbins' Pattern*.....80&10&5%

### Gauges—
*Marking, Mortise, &c..50@50&10%*
Chapin-Stephens Co.:
Marking, Mortise, &c...50&50&10
Disston's Marking, Mortise, &c. 67½%
Ware, Brown & Sharpe's.....33⅓%
Ware, Mast.....25
Wire, P., S. & W. Co.....33⅓

### Gimlets— Single Cut—
*Numbered assortments, per gro.*
*Nail, Metal, No. 1, $2.00; 2, $2.30*
*Spike, Metal, No. 1, $4.00; 2, $4.30*
*Nail, Wood Handled, No. 1, $2.30; 2, $2.60*
*Spike, Wood Handled, No. 1, $4.30; 2, $4.60*

### Glass, American Window
See *Trade Report.*

### Glasses, Level—
Chapin Stephens Co.....65@65&10%

### Glue, Liquid Fish—
*Bottles or Cans, with Brush, 25&10@50%*
Elwell's .....40%

### Grease, Axle—
*Common Grade...gro.$6.00@$6.50*
Dixon's Everlasting, 10-lb. pails, ea. 85¢; in boxes, ₱ doz., 1 lb, $1.20; 2 lb.....$2.00
Helmet Hard Oil.....25%

### Griddles, Soapstone—
Pike Mfg. Co.....33⅓@33⅓&10%

### Grinders—
Pike Mfg. Co.:
Hand and Foot Power, Pyko Nos. 1, 2, 3; Pyko Primo; Pyko Peerless; Pyko Spiral (foot power)..33⅓
Mower Knife and Tool, $5.00..40&10%
Royal Mfg. Co.:
Alundum Grinding Machines, each, Nos. 01, $1.75; 1A, $2.50; 10, $5.00 .....30%
Alundum Sickle Grinders, each, Nos. 20, $5.00; 20A, $6.00; 20A Combined, $6.50.....30%
Alundum Disc Grinders, each, $2.50 .....30%

### Grindstones—
Pike Mfg. Co.:
Improved Family Grindstones, ₱ inch, ₱ doz., $2.00.....33⅓%
Richards Mfg. Co., Eli and Cyclo. Ball Bearing, mounted.....40%

### Grips, Nipple—
Perfect Nipple Grips.....40&10&2%

## Halters and Ties—
*Cow Ties*.....65@65&10%
Bridgeport Chain Co.:
Triumph Coil and Halters.35&2½@40%
Brown Coil and Halters....45@50&5%
Brown Cow Ties.....50&5@50&10&5
Brown Tie Outs.....70&10@75&5
Covert Mfg. Co.:
Web .....30&2%
Jute Rope.....35%
Sisal Rope.....20%
Cotton Rope.....45
Hemp Rope.....45%
Oneida Community:
Am. Coil and Halters.....40@40&5%
Am. Cow Ties .....45@50%
Niagara Coil and Halters...45@50&5%
Niagara Cow Ties.....45&5@50&10&5%

### Hammers—
### Handled Hammers—
Heller's Machinists'....55&10@55&10&5%
Heller's Farriers.....40&5@40&10&5%
Peck, Stow & Wilcox Co.:
Crucible Steel.....40&10@50%
Farriers' .....40&10@50
Riveting .....40&10@50
Machinists' .....66⅔@75
Blacksmiths' .....50%
Fayette R. Plumb:
A. E. Nail.....40&2½@40&12½&5%
Eng. and B. S. Hand.50&10&5@60&5%
Machinists' Hammers.....60&10&5
Rivet and Tinners'.40&7½@40&12½&5%
Victor Magnetic Tack, ₱ gro....$7.75

### Heavy Hammers and Sledges—
*Under 3 lb., per lb., 50¢...80&10%*
*3 to 5 lb., per lb., 40¢...80&10&10%*
*Over 5 lb., per lb., 30¢.....*
*Over 5 lb., per lb., 30¢..80&10&10%*

### Handles—
### Agricultural Tool Handles
*Axe, Pick, &c....60&10@60&10&5%*
*Hoe, Rake, &c*.....40
*Fork, Shovel, Spade, &c.:*
*Long Handles*.....40%
*D Handles*.....40%

### Cross-Cut Saw Handles—
Atkins' .....40
Champion .....50
Disston's .....50

### Mechanics' Tool Handles—
*Auger, assorted...gro.$3.00@$3.50*
*Brad Awl*.....*gro.$1.65@$1.75*
*Chisel Handles, Ass'd, per gro.:*
*Tanged Firmer, Apple, $2.40@$2.65; Hickory*.....*$2.15@2.40*
*Socket Firming, Apple, $1.75@$1.95; Hickory*.....*1.60@1.75*
*Socket Framing, Hickory, $1.60@$1.75*
*File assorted*.....*gro.$1.30@$1.40*
*Hammer, Hatchet, &c., 60&10@60&10&5%*
*Hand Saw, Varnished, doz., 80¢ 85¢; Not Varnished*.....*65@75¢*
*Plane Handles:*
*Jack, doz., 30¢; Fore, doz...45¢*
Chapin-Stephens Co.:
Carving Tool.....30@30&10%
Chisel .....60@60&10
File and Awl .....60@60&10
Saw and Plane.....30@30&10
Screw Driver .....30@30&10
Millers Falls Adj. and Ratchet Auger Handles .....15&10%
Nicholson Simplicity File Handle ... ₱ gro. $0.85@$1.50
J. L. Osgood:
Indestructible File and Tool ₱ gro., No. 1 $8.00; No. 2 $8.50; No. 3 $9.00; No. 4, $9.50; No. 5, $10.00.....gro. lots 10%

W. A. Zelnicker Supply Co.:
Hammer, ₱ doz., 12 in., $2.00; 14 in., $2.00; 16 in., $2.30; 18 12., $2.50; 20 in., $2.70; 22 in., $3.00; 24 in., $3.30; 26 in., $3.50; 30 in., $3.80.
Sledge, ₱ doz., oval, 30 in., $3.80; octagon, 30 in., $3.80; oval, 36 in., $4.00; octagon, 36 in., $4.00.
Axe, ₱ doz., 28 to 34 in., $5.60; 36 in., $5.80.
Adze, ₱ doz., 36 in., $5.80; 36 in., $7.80.
Pick, ₱ doz., R. R., 36 in., $8.00; coal, 34 in., $5.80.
Hatchet, ₱ doz., 12 to 14 in., $2.00

### Hangers—
*NOTE.—Barn Door Hangers are generally quoted per pair, without track and Parlor Door Hangers per double set with track, &c*
Chicago Spring Butt Co.:
Friction .....25
Oscillating .....25
Big Two.....25
Chisholm & Moore Mfg. Co.:
Baggage Car Door.....50
Elevator .....50
Railroad .....50
Cronk & Carrier Mfg. Co.:
Loose Axle.....60&10
Roller Bearing.....70
Griffin Mfg. Co.:
Solid Axle, No. 10, $12.00..60&10
Roller Bearing, No. 11, $15.00, 60&10
Roller Bearing, Ex. Ho., No. 22, $18.00.....60&10
Bull Dog, $24.00.....70
Lane Bros. Co.:
Parlor, Ball Bearing, $4.00; Standard, $3.15; No. 105, $2.85; New Model $2.80; New Champion per set of 4 Hangers, complete with track.....$2.25
Barn Door, Standard.....60&10
Hinged .....net $5.85
Covered .....60&5
Special .....70&5
Trolley Hangers and track ..50%
Lawrence Bros.:
Cleveland .....70&7½
Clipper, No. 75.....60
Crown .....55&10
Cyclone, No. 10.....net $6.50
Tandem, No. 50.....net $7.50
New York.....55&10
Trolley, No. 30, ₱ pair.....$1.25
McKinney Mfg. Co.:
Roller Bearing, Nos. 1 and 2..70%
Anti-Friction .....60
Hinged Hangers, King Charm.60%
Richards Mfg. Co.:
Hangers, Nos. 47, 48, 147, 247, 60&5%
Pioneer Wood Track, No. 3..$2.25
Roller B'r'g St'l Track No. 12.$2.20
Roller B'r'g St'l Track No. 13.$2.50
Roller B'r'g, Nos. 39, 41, 43, 70&7½%
Hero, Adj. Track No. 19..50&10%
Adjustable Track Tandem Trolley Track No. 16.....50&10%
Seal, Steel Track No. 8.....$2.25
Auto Adj. Track No. 22..50&5%
Trolley B. D. No. 17, $1.25; F. D. No. 120, $2.25; No. 121, $2.45; No. 150.....$2.50
Safety Underwriters F. D. No. 101 .....50%
Tandem No. 41..2½ and 3 60&10%
Palace, Adjustable Track No. 132 .....50&5%
Royal, Adjustable Track No. 122 .....50&10%
Ives' Wood Track No. 1.....$2.25
Trolley B. D. No. 20.....50&10%
Trolley B. D. No. 24, $1.30; No. 27, $1.40; No. 28.....$1.60
Roller Bearings, Nos. 37, 38, 39, 41, 43, 44, Sizes 1 and 2.70&7½%
Anti-friction, No. 42; No. 44, sizes 2½ and 3.....60%
Hinged Tandem No. 48....60&5%
Folding Door B. B. Swivel No. 135 .....40%
Taylor & Boggis F'y Co.'s Kidder's Roller Bearing, ₱ doz., 4 in., $12.00; 5 in., $14.00..40&10%
Myers' Stayon Hangers.....60%

### Hangers— Garment—
Pullman Trouser, ₱ gro., No. 1 $9.00; No. 4, $24.00; No. 5, $16.50; No. 8, Black Enamel, $7.50; No. 10, $21.00; No. 12, $8.00; No. 15, Rods, $9.00; No. 18, Loops.....$10.00
Victor Folding.....₱ gro. $9.60

### Gate—
Myers' Patent Gate Hangers, ₱ doz. net .....50%

### Joist and Timber—
Lane Bros. Co.....35%

### Hasps—
Griffin's Security Hasp.....50&10%
McKinney's Perfect Hasp, ₱ doz..60%

### Hatchets—
*Regular list, first qual.40&12½@—*
*Second quality*.....*50&10&5@—*

### Heaters, Carriage—
Clark, No. 5, $1.25; No. 5B, $1.50; No. 3, $1.75; No. 3D, $2.00; No. 7D, $2.25; No. 3E, $2.50; No. 1, $3.00.....25
Clark Coal, ₱ doz., $0.75.....20%

### Hinges—
### Blind and Shutter Hinges
*Surface Gravity Locking Blind:*
*Doz. Sets with Fastenings, Net, No. 1, $0.70; No. 3, $1.25; No. 5, $2.67.*
*Mortise Shutter*.....*80%*
*Mortise Reversible Shutter*...*80%*
North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3 for Brick, $11.50.....10
Charles Parker Co.....70@75
Parker Wire Goods Co.
Hale & Benjamin Automatic Blind Hinges .....20
Hale's Blind Awning Hinges No. 110, for wood, $9.00; No. 111, for brick, $9.00.....20

Reading's Gravity.....60%
Stanley's Steel Gravity Blind Hinges, No. 1617½, ₱ doz. sets, without screws, $0.95; with screws, $1.25.
Wrightsville Hardware Co.:
O. S., Lull & Porter.....75&5
Acme, Lull & Porter.....75
Queen City Reversible.....75
Shepard's Noiseless, Nos. 60, 65, 55 .....75&5
Niagara, Gravity Locking, Nos. 1, 3 & 5.....75&5
Clark's O. P., No. 1.....75&10
Clark's O. P., Nos. 3 and 5....75&5%
Tip Pat'n, No. 1.....75&10%
Clark's No. 3.....75&5%
Buffalo Gravity Locking, Nos. 1, 3 & 5.....70&10&5
Shepard's Double Locking.....75%
Champion Gravity Locking.....75&5
Pioneer .....75&10
Empire .....65
W. H. Co.'s Mortise Gravity Locking, No. 2.....60&10

### Gate Hinges—
*Clark's or Shepard's—Doz. sets:*

| | | | |
|---|---|---|---|
| *No.* | *1* | *2* | *3* |
| *Hinges with L't'chs.* | *$2.00* | *2.70* | *5.00* |
| *Hinges only*..... | *1.25* | *1.90* | *3.50* |
| *Latches only*..... | *.70* | *.75* | *.85* |

*New England:*
*With Latch*.....*doz..@$2.00*
*Without Latch*.....*doz..@$1.60*
*Reversible Self-Closing:*
*With Latch*.....*doz..@$1.75*
*Without Latch*.....*doz..@$1.35*
*Western:*
*With Latch*.....*doz. $1.75*
*Without Latch*.....*doz..$1.15*
Wrightsville Hardware Co.:
Shepard's or Clark's Hinges and Latches, Hinges only or Latches only Nos. 1, 2 or 3.....70%

### Miscellaneous—
Griffin Mfg. Co., Fleur de Lis Surface Hinges, ₱ doz. prs.....$1.00

### Pivot Hinges—
Bommer Bros. Pivot, Ball Bearing .....40%
Lawson Mfg. Co. Matchless.....50

### Spring Hinges—
*Holdback, Cast Iron...$6.75@$7.00*
*Non-Holdback, C'st Iron$6.50@$6.75*
J. Bardsley:
Bardsley's Non Checking Mortise Floor Hinges.....40
Bardsley's Patent Checking.33⅓%
Bommer Bros.:
Spring Butt Hinges.....40%
Surface Floor, Ball Bearing .....40%
Mortise Floor, Ball Bearing.40
Lavatory Hinges.....40
Non-Holdback Screen Door, Nos. 2000 and 900.....40%
Holdback Screen Door, No. 999.....₱ gro. $9.00
Chicago Spring Butt Co.:
Chicago Spring Hinges.....25%
Triple End Spring Hinges....50
Chicago (Ball Bearing) Floor.50
Garden City Engine House...25
Keene's Saloon Door.....25
Columbian Hardware Co.:
Acme, Wrought Steel.....30
Acme, Brass.....25
American .....20
Columbia, ₱ gr., No. 14, $9.00; No. 18.....$25.00
Columbia, Adj., No. 7, ₱ gr.$12.00
Gem, new list.....30
Clover Leaf and Acorn, per gro. .....$12.00
Oxford, new list.....30%
Floor Spring Hinges.....65&10
Columbian Steel.....65&10%
Lawson Mfg. Co.:
Matchless Spring Hinges.....30
Matchless Jamb Hinges.....30%
Richards Mfg. Co.:
Superior Double Acting Floor Hinges .....10%
Shelby Spring Hinge Co.:
Buckeye All Steel Holdback Screen Door.....₱ gr. $9.00
Chief Ball Bearings Floor Hinge .....50
Ball Bearing Door.....25
No. 777, Sheet Steel Holdb'k, ₱ gr. pr.....$9.00
Standard Mfg. Co.:
Champion Double Acting Door Hinge .....25&10&10%
Standard Double Acting Floor Hinge .....25&10&10
Superior Spring Hinge Co.:
Superior Floor Hinges.....33⅓
Spring Hinges.....33⅓

Extra 10¢ often given on most of these Hinges.

### Wrought Iron Hinges—
*Strap and T Hinges, &c., list February 10, 1908:*
*Light Strap Hinges..50&10%*
*Heavy Strap Hinges..60&5%*
*Light T Hinges*.....*50%*
*Heavy T Hinges*.....*40%*
*Extra Hvy. T Hinges.50&10%*
*Hinge Hasps*.....*33⅓%*
*Cor. Heavy Strap....60&5%*
*Cor. Ex. Heavy T...50&10%*
*Screw Hook and Strap.* *6 to 12 in..lb.3½¢*; *1½ to 30 in..lb.3¼¢*; *22 to 36 in..lb.3¢*
*Screw Hook and Eye:*
*½ to 1 inch*.....*lb.6¼¢*
*⅝-inch*.....*lb.7½¢*
*½-inch*.....*lb.8½¢*

Extra 10¢&7½%.

### Hitchers, Stall—
Covert Mfg. Co., Stall Hitchers..30&2%

### Hods— Coal—
*M'f'gr's list, price per gross:*

| | | | | |
|---|---|---|---|---|
| *Inch* | *15* | *16* | *17* | *18* |
| *Galv. Open*.... | *$35* | *$39* | *$42* | *$46* |
| *Jap. Open*... | *26* | *28* | *31* | *35* |
| *Galv. Funnel*... | *43* | *48* | *52* | *56* |
| *Jap. Funnel*.... | *33* | *36* | *39* | *43* |

And 7½&5%

### Masons' Etc.
Cleveland Wire Spring Co.:
Steel Brick, No. 162 .....each $1.05
Steel Mortar, No. 158.....each $1.35

### Hoes— Eye-

*Scovil and Oval Pattern, 60&10@60&10&10%*
*Grub, list Feb. 25, 1898, 70&10@70&10&10%*
D. & H. Scovil.....27½
Am. Fork & Hoe Co. (Scovil Pattern).....60%

### Handled—

*NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.*

Cronk's Weeding, No. 1, $2.00; No. 2, $2.50
Star Double Bit.....$2.50
Ft. Madison Cotton Hoe....70&10&10%
Ft. Madison Crescent Cultivator Hoe, ₱ doz.....70&10%
Ft. Madison Mattock Hoes:
Regular Weight.....₱ doz. 40&5%
Junior Size.....₱ doz. $4.00
Ft. Madison Sprouting Hoe, ₱ doz., 60&10%
Ft. Madison Dixie Tobacco Hoe.....75&10&7½%
Kretsinger's Cut Easy.....70&10%
Warren Hoe.....45&10%
W. & C. Iwan Hoe.....75&2
B. B. 6 in. Cultivator Hoe.....$3.40
B. B. [illegible].....$3.50
Acme Weeding.....₱ doz., net, $1.35
W. & C. Iwan Shuffle Hoe, ₱ doz. $5.25

### Hoisting Apparatus—

See *Machines, Hoisting.*

### Holders— Bit—

Angular, ₱ doz. $24.00.....45&10%

### Door—

Bardsley's, Iron, 40%; Brass and Bronze.....25
Empire.....50
Pullman.....25
Richards Mfg. Co.: No. 117, Ever-ready, 40%; Nos. 118, 119, Sure Grip.....50%
Superior.....33⅓%

### File and Tool—

Nicholson File Holders and File Handles.....33⅓@40%

### Fruit Jar—

Triumph Fruit Jar Holder, ₱ gross, $18.00; ₱ doz.....$2.00

### Trace and Rein—

Fernald Double Trace Holder, ₱ doz. pairs.....$1.25
Dash Rein Holder, ₱ doz.....$1.25

### Hones—Razor—

Pike Mfg. Co., Belgian and Swaty, 50%; German.....33⅓%

### Hooks—Cast Iron—

Bird Cage, Reading.....40
Clothes Line, Reading List.....40
Coat and Hat, Reading.....45&20
Coat and Hat, Wrightsville.....60&5
Harness, Reading List.....40%

### Wire—

*Belt, Nos. 1 to 15....75&10@80%*
*Wire C. & H. Hooks..80@80&10%*
Bradley Metal Clasp Wire, Coat and Hat, 75&10@80%; Ceiling, 75&10@80
Columbian Hdw. Co., Gem.....75&10
Parker Wire Goods Co., King..75&10%
Wire Goods Co.:
Acme, 60&10%; Chief, 70&10%; Crown, 75%; Czar, 65&10%; V Brace, 75%; Czar Harness, 50%; Ceiling, 75%

### Wrought Iron—

*Box, 6 in., per doz., $0.90; 8 in., $1.15.*
*Cotton.....doz. $1.25@$1.50*
Wrought Staples, Hooks, &c. See Wrought Goods.

### Miscellaneous—

*Hooks, Bench,* see *Stops, Bench.*
*Rush, Light, doz., $6.20; Medium, $6.75; Heavy, $7.65*
*Grass, best, all sizes, per doz., $2.75@$3.00*
*Grass, common grades, all sizes, per doz.....$1.25@$1.50*
*Whiffletree.....lb. 5¼@6c*
*Hooks and Eyes:*
*Brass.....60@60&10%*
*Malleable Iron.....70@70&10%*
Covert Mfg. Co. Gate and Seattle Hooks.....40%
Ft. Madison Cut-Easy Corn Hooks, ₱ doz. $3.25 net
Turner & Stanton Co. Cup and Shoulder.....85&10%
Beach Hooks. See Bench Stops.
Corn Hooks. See Knives, Corn.

### Horse Nails—

See *Nails, Horse.*

### Horseshoes—

See *Shoes, Horses.*

### Hose, Rubber—

*Garden Hose, ¾-inch:*
*Competition.....ft. 6@6½¢*
*3 ply Guaranteed.....ft. 8½@9¢*
*4-ply Guaranteed....ft. 9½@12¢*
*Cotton Garden, ¾-in., coupled*
*Low Grade.....ft. 8@9c*
*Fair Quality.....ft. 10@11c*

### Irons— Sad—

*From ¼ to 10.....lb. 2½@2¾¢*
*B. B. Sad Irons.....lb. 3¼@3½¢*
*Mrs. Potts', cents per set:*

| | Nos. 59 | 55 | 60 | 65 |
|---|---|---|---|---|
| *Jap'd Cups* | 86 | 93 | 96 | 93 |
| *Tin'd Cups* | 91 | 88 | 1.01 | 98 |

*New England Pressing..lb.3¾@4c*

### Bar and Corner—

Richards Mfg. Co., Bar, 60&10%; Corner.....60

### Pinking—

*Pinking Irons.....doz. 60@75¢*

### Irons, Soldering

See *Coppers.*

### Jacks, Wagons—

Covert Mfg. Co.:
Auto Screw.....30&2%; Steel, 45%
Lockport.....50%
Lane's Steel.....30&5%
Richards' Tiger Steel, No. 130...50&10%
Smith & Hemenway Co.'s.....25%

### Ladder—

Richards Mfg. Co., Ladder Jacks..50%

### Jointers—

Pike Mfg. Co., Saw Jointers, $7.00..40%

## Kettles—

*Brass, Spun, Plain.....20@25%*
Enameled and Cast Iron—See Ware, Hollow.

### Knives—

### Butcher, Kitchen, &c.—

Foster Bros.' Butcher, &c.....30%
Wilkinson Shear & Cutlery Co....60%

### Corn—

Columbian Cutlery Co., Wilcut Brand Knives and Hooks.....60%
Withington Acme, ₱ doz., $2.65; Dent, $2.75; Adj. Serrated, $2.20; Serrated, $2.10; Yankee No. 1, $1.50; Yankee No. 2, $1.15.

### Drawing—

*Standard List.....80&10@—%*
C. E. Jennings & Co., Nos. 15, 46, 25&7½%
Jennings & Griffin, Nos. 41, 42, 66⅔&7½%
Swan's.....66⅔@70%
Watrous.....16⅔%
L. & I. J. White.....20&5@25%

### Hay and Straw—

*Serrated Edge, per doz. $5.00@5.50*
Iwan's Sickle Edge.....₱ doz. $9.50
Iwan's Serrated.....₱ doz. $10.00

### Miscellaneous—

*Farriers'.....doz. $2.60@3.55*
Westenholm's.....₱ doz. $3.00@3.25

### Knobs—

*Base, 2½-inch, Birch or Maple, Rubber Tip.....gro. $1.25@1.40*
*Carriage, Jap., Drive, all sizes, gro. .35@40¢*
*Door, Mineral.....doz. .65@70¢*
*Door, Por. Jap'd.....doz. .70@75c*
*Door, Por. Nickel..doz. $2.05@2.15*
Bardsley's Wood Door, Shutters, &c. 15%

## Lacing, Leather—

See *Belting, Leather*

### Ladders, Store, &c.—

Lane's Store.....25%
Myers' Noiseless Store Ladders....50%
Richards Mfg. Co.:
Improved Noiseless, No. 112.....50%
Climax Shelf, No. 113.....50%
Trolley, No. 109.....50%

### Ladles, Melting—

L. & G. Mfg. Co., Melting and Plumbers'.....25
P., S. & W.....40&10%
Reading.....60%

### Lamps,—

Hammer's M. I. Hand.....45%

### Lanterns—Tubular—

*Regular, No. 0.....doz. $4.35@4.50*
*Side Lift, No. 0.....doz. $4.60@4.75*
*Hinge Globe, No. 0. doz. $4.60@4.75*
*Other Styles.....40@40&10%*

### Bull's Eye Police—

*3-inch.....$3.75@4.00*

### Latches— Thumb—

*Roggin's Latches, Jap'd, with Screws.....doz. .35@40¢*

### Door—

Cronk & Carrier Mfg. Co., No. 101, ₱ doz. $2.00
Richards' Bull Dog, Heavy, No. 125.....50&5%
Richards' Trump, No. 127.....$1.00

### Leaders, Cattle—

*Small.....doz. .50¢; large, 60¢*
Covert Mfg. Co.:
Cotton, 45%; Hemp, 45%; Jute, 55%; Sisal, 20%

### Leathers, Pump—

See *Pumps—*

### Lifters, Transom—

R. & E.....10%

### Lines—

| *Wire Clothes, Nos.* | *18* | *19* | *20* |
|---|---|---|---|
| *100 feet* | *$2.30* | *1.95* | *1.75* |
| *75 feet* | *$1.95* | *1.65* | *1.50* |

Samson Cordage Works:
Solid Braided Chalk, Nos. 0 to 3..40%
Solid Braided Masons'.....30%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50.....₱ gr. 20%
Masons' Lines, Shade Cord, &c.; White Cotton, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50; Colors, No. 3½, $1.75; No. 4, $2.25; No. 4½, $2.75; Linen, No. 3½, $2.50; No. 4, $3.50; No. 4½, $4.50.....20%
Tent and Awning Lines: No. 5, White Cotton, $7.50; Drab Cotton $8.50.....20%
Clothes Lines: White Cotton: 50 ft. $2.75; 60 ft., $3.25, 70 ft., $3.75, 75 ft., $4.00, 80 ft., $4.25, 90 ft., $4.75, 100 ft., $5.25.....20%
Turner & Stanton Co.:
Solid Braided Chalk, Masons' and Awning Lines.....40
Clothes Lines, White Cotton.....20
Shade Cord, Cotton or Linen.....20

### Locks— Cabinet—

*Cabinet Locks....33⅓@33⅓&7½%*

### Door Locks, Latches, &c

*NOTE.—Net Prices are very often made on these goods*
Reading Hardware Co.....40
R. & E. Mfg. Co.....40

### Padlocks—

R. & E. Mfg. Co. Wrought Steel and Brass.....75&10%

### Sash, &c.—

Ives' Patent:
Crescent.....10
Automatic Gravity Metal Sash, ₱ gro., $149.58.....10
Window Ventilating.....10
Pullman Patent Ventilating Lock..25%
Reading Sash Locks.....40%
Taylor Mfg. Co., Perfect Ventilating, ₱ doz.....$0.75@$1.00

## Machines—Boring—

*Com. Upr't, without Augers, $2.00@2.25*
*Com. Angl'r, without Augers, $2.25@2.50*
Ford Auger Bit Co.....$22.00
Jennings, Nos. 1 and 1.....25&7½%
Millers' Falls.....5.75
Snell's, Upright, $2.65; Angular, $2.90
Swan's Improved.....40&10%

### Corking—

Reisinger Invincible Hand Power.... ₱ doz. $18.00

### Fence—

Williams' Fence Machines....each, $5.50

### Hoisting—

Moore's Anti-Friction Chain Hoist.30%
Moore's Hand Hoist, with Lock Brake.....20%
Moore's Cyclone High Speed Chain Hoist.....25%

### Ice Cutting—

Chandler's.....12½%

### Washing

| Boss Washing Machine Co.: | Per doz. |
|---|---|
| Boss No. 1 | $57.00 |
| Boss Rotary | $57.00 |
| Champion Rotary Banner No. 1 | $57.00 |
| Standard Champion No. 1 | $50.00 |
| Standard Perfection | $27.00 |
| Cincinnati Square Western | $33.00 |
| Uneeda American, Round | $33.60 |

### Mallets—

*Hickory.....45&5@50%*
*Lignumvita.....45&5@50%*
*Tinners' Hickory and Applewood.....doz. .45&5@50%*

### Mangers, Stable—

Swett Iron Works.....50%

### Mats, Door—

Acme Flexible Steel.....50%
Elastic Steel (W. G. Co.), new list.50%

### Mattocks—

See *Picks and Mattocks.*

### Milk Cans—See *Cans, Milk.*

### Mills, Coffee, &c.—

Enterprise Mfg. Co.:
Coffee.....20@25
Shell and Corn.....25&10
National list Jan. 1, 1902.....30
Parker's Columbia and Victoria..33⅓%
Parker's Box and Side.....50&10
Swift, Lane Bros. Co.....30%

### Motors, Water—

Divine's Red Devil.....30%

| $2.50 | 3.50 | 10.00 | 15.00 | 33⅓% |
|---|---|---|---|---|
| No. 1. | 2 | 3 | 4 | |

Lippincott's:

| No. | 1 | 2 | 3 | 4 | |
|---|---|---|---|---|---|
| | $2.50 | 3.50 | 10.00 | 15.00 | 33⅓% |

Pike Mfg. Co., Tool and Knife Grinding.....33⅓%

### Mowers, Lawn—

*NOTE.—Net prices are generally quoted*
*Cheapest, 10-in., $2.00; advance 10¢ for each size.*
*Cheap, 10-in., $2.25; advance 15@20¢ for each size.*
*Better Grade, 10-in., $3.00; advance 25¢ for each size.*

| | 12 | 14 | 16 | 18 in. |
|---|---|---|---|---|
| *High Grade...* | *$4.50* | *4.75* | *5.00* | *5.25* |

Continental.....60
Great American.....70
Great American Ball B'r'g, new list.70
Quaker City.....70
Pennsylvania.....60
Pennsylvania, Jr., Ball Bearing 50&10&5
Pennsylvania Golf.....50
Pennsylvania Horse.....33⅓&5
Pennsylvania Pony.....40&5
Philadelphia:
Styles M., S., C., K., T....70&10&5
Style A, all Steel.....60&10&5
Style E, High Wheel.....70&10&5
Drexel and Gold Coin, special list.40
Horse.....40&5
Pony.....40&5
36-in. Horse.....30&10
Eagle Horse.....30&5
I. X. L. Horse.....50

## Nails—

*Wire Nails and Brads, Miscellaneous.....85&5@85&10%*
*Cut and Wire, See Trade Report*
*Hungarian, Finishing, Upholsterers', &c.* See *Tacks.*

### Horse—

| Nos. | 6 | 7 | 8 | 9 | 10 | |
|---|---|---|---|---|---|---|
| Archer | 29 | 21 | 20 | 19 | 18 | ₱ lb. net 1.[illegible] |
| Cabinet | 13 | 12 | 12 | 11 | 11 | net ₱ lb. |
| New Haven | 25 | 21 | 20 | 19 | 18 | ₱ lb. net 1.[illegible] |
| Lilliput | 19 | 18 | 17 | 16 | 16 | 10% |
| Wedge | | | | | 70 | lb. 8½¢ |

*Jobbers' Special Brands. per lb. 9¢*

### Picture—

| | 1½ | 2 | 2½ | 3 in. |
|---|---|---|---|---|
| *Brass Hd. gro.* | *.45* | *.55* | *.60* | *.75* |
| *Por. Head, gro.* | *1.10* | *1.10* | *1.10* | |

### Upholsters—

*Brass.....30%*
*Plated.....30&10%*

### Nippers

See *Pliers and Nippers*

### Nipples—

Standard Nipple Co.:
Wrought Pipe Nipples.....80%

### Nuts— *Blank or Tapped.*

| | *Off list.* |
|---|---|
| *Cold Punched:* | |
| *Square* | *5.40@5.50¢* |
| *Hexagon* | *6.90@6.10¢* |
| *Square, C., T. & R.* | *5.80@5.90¢* |
| *Hexagon, C., T. & R.* | *6.60@6.70¢* |
| *Hot Pressed:* | |
| *Square* | *5.80¢* |
| *Hexagon* | *6.30¢* |

## Oakum—

*Best.....lb. 6½¢*
*U. S. Navy.....lb. 6 ¢*
*Navy.....lb. 5 ¢*
*Plumbers' Spun Oakum..2¾@3 ¢*

### Oil—

Pike Mfg. Co., Stonoil.....40%

### Oil Tanks—See *Tanks, Oil.*

### Oilers—

*Steel, Copper Plated.....75%*
*Chase or Paragon:*
*Brass and Copper.....50&10*
*Zinc.....65&10@70*
*Railroad.....60&10&10%*
Malleable, Hammers' Improved, Nos. 11, 12 and 13, 10%; Old Pattern, Nos. 1, 2, 3, 4, 50%.
American Tube & Stamping Co.:
Spring Bottom Cans.....70@70&10
Railroad Oilers, &c.....60@60&10
Maple City Mfg. Co.:
Spring Bottom Cans.....70@70&10
Railroad Oilers, &c.....60@60&10

### Openers—Packing Box—

Herculever, ₱ doz., $24.....30%

### Can Openers—

*Per doz.*
*Sprague, Iron Handle....30@35¢*
*Sprague, Wood Handle.....40¢*
*Sardine Scissors.....$1.75@3.00*
Can and Bottle Openers, ₱ doz., net: Yankee, $0.75@$0.85; Little Gem, $0.50@$0.65; Nifty.....$0.75

### Egg—

Hartigan Nickel Plate, ₱ doz., $2.00; Silver Plate, $4.00.

## Packing—

*Asbestos Packing, Wick and Rope, any quantity.....18@20¢*

### Rubber—

*(Fair quality goods.)*
*Sheet, C. I.....11@12¢*
*Sheet, C. O. S.....11@12¢*
*Sheet, C. B. S.....12@13¢*
*Sheet, Pure Gum.....40@45¢*
*Sheet, Red.....40@50¢*
Jenkins' '96, ₱ lb, 80¢.....25

### Miscellaneous—

*American Packing....lb. 7@10 ¢*
*Cotton Packing.....lb. 16@25 ¢*
*Italian Packing.....lb. 9@10¢*
*Jute.....lb. 4@4¼¢*
*Russia Packing.....lb. 9@10¢*

### Pails, Water, Well, &c.—

See *Buckets.*

### Paint—

Dixon's Silica-Graphite, in 1 gal. pails and 5 gal. kegs, 25%; packages of larger size.....25

### Pans— Dripping—

*Standard List...70&10@70&10&5%*
Edwards, Royal Blue.....75

### Fry—

*Common Lipped:*

| *Nos.* | *1* | *2* | *3* | *4* | *5* |
|---|---|---|---|---|---|
| *Per doz....* | *$0.75* | *0.85* | *0.95* | *1.15* | *1.30* |

### Refrigerator, Galva.—

| *Inch* | *12* | *14* | *16* | *18* |
|---|---|---|---|---|
| *Per doz....* | *$1.75* | *2.25* | *2.80* | *3.15* |

### Paper—Building Paper

*Asbestos: lb.*
*Roll Board or Building Felt, 6 to 30 lb., per 100 sq. ft...2½¢*
*Roll Board or Building Felt, 3-32 and ⅛ in., 45 to 60 lb., per 100 sq. ft.....3½¢*
*Mill Board, Sheet, 30 x 30 in., 1-32 to ½ in.....3¢*
*Per roll*
*Rosin Sized Sheathing: 500 sq. ft. Light weight, 25 lbs. to roll, [illegible]*
*Medium weight, 30 lbs. to roll. [illegible]*
*Heavy weight, 50 lbs. to roll [illegible]*
*Black Water Proof Sheathing, 500 sq. ft., 1 ply, 65¢; 2 ply, 85¢; 3 ply, $1.10; 4 ply, $1.35*
*Deadening Felt, 5, 6 and 7 sq. ft. to lb., ton.....$18.50*
*Red Rose Roofing, 108 sq. ft. per roll.....$1.75*

### Tarred Paper—

*1 ply Crea[illegible] sq. ft., [illegible] net, roll [illegible]*
*2 ply, roll 108 sq. ft.....65¢*
*3 ply, roll 108 sq. ft.....80¢*
*Slater's Felt, roll 500 sq. ft.....85¢*

### Sand Paper and Cloth—

*Flint and Emery.....40%*
*Garnet Paper and Cloth....45%*

### Parers—Apple—

Goodell Co.:
Family Bar, State....₱ doz. $15.00
Improved Bar, State....₱ doz. $36.00
New Lightning....₱ doz. $7.00
Turn Table '98....₱ doz. $6.00
White Mountain....₱ doz. $5.00
Bonanza Improved....each $7.50
Dandy....each $10.00
Eureka Improved....each $20.00
New Century....each $20.00
Ro[illegible]....each $20.00

Livingston Nail Co.:
Daisy ..... ₱ doz. $4.00
Little Star..... ₱ doz. $5.00
Rocking Table..... ₱ doz. $6.20
Reading Hardware Co.:
Advance ..... ₱ doz. $4.00
Baldwin ..... ₱ doz. $4.00
Reading 72..... ₱ doz. $3.25
Reading 78..... ₱ doz. $6.25

### Orange—

Goodell Co., Success.....each $20.00

### Potato—

Saratoga ..... ₱ doz. $7.00
White Mountain..... ₱ doz. $6.00

### Picks and Mattocks—

*(List Jan., 1908.)*

*List* .....70&10@70&10&10%
Cronk's Handled Garden Mattock, ₱ doz., $3.00.....33⅓%

### Pinking Irons—

See *Irons, Pinking.*

### Pins, Escutcheon—

*Brass* .....50@50&10%
*Iron, list Nov. 11, '85*..60@60&10%

### Pipe, Cast Iron Soil—

*Standard, 2-6 in*.....70@—%
*Extra Heavy, 2-6 in*..75&10@—%
*Fittings, Standard and Heavy,* 80&10@80&10&10%

### Pipe, Merchant—

| | *Consumers, Carloads,* Steel. Blk. | Galv. | Iron. Blk. | Galv. |
|---|---|---|---|---|
| | % | % | % | % |
| *⅛ and ¼ in.* | .66 | 50 | 64 | .. |
| *⅜ in.* | .68 | 54 | 66 | 52 |
| *½ in.* | .70 | 58 | 68 | 56 |
| *¾ to 6 in.* | .74 | 64 | 72 | 62 |
| *7 to 12 in.* | .71 | 56 | 69 | 54 |

### Pipe, Vitrified Sewer—

*Carload lots.*

*Standard Pipe and Fittings, 3 to 24 in., f.o.b. factory:*
*First class* .....87%
*Second-class* .....90%

### Pipe, Stove—

| Edwards' Nested: | Per 100 joints. C. L. | L. C. L. |
|---|---|---|
| 5 in., Standard Blue | $6.25 | $7.25 |
| 6 in., Standard Blue | 6.75 | 7.75 |
| 7 in., Standard Blue | 7.75 | 8.75 |
| 5 in., Royal Blue | 7.00 | 8.00 |
| 6 in., Royal Blue | 7.50 | 8.50 |
| 7 in., Royal Blue | 8.50 | 9.50 |
| Wheeling Corrugating Co.'s Nested: | | |
| 5 in., Uniform Color | $5.90 | $6.90 |
| 6 in., Uniform Color | 6.40 | 7.40 |
| 7 in., Uniform Color | 7.40 | 8.40 |

### Planes and Plane Irons—

### Wood Planes—

*Bench, first qual*.....30@30&10%
*Bench, second qual*...40@40&10%
*Molding* .....25@25&10%
Chapin-Stephens Co.:
Bench, First Quality.....30%
Bench, Second Quality.....40%
Molding and Miscellaneous.....25%
Toy and German.....30%
Union .....60%

### Iron Planes -

Chaplin's Iron Planes.....60%
Union .....60%

### Plane Irons—

*Wood Bench Plane Irons, list Dec. 12, '06*.....25%
Buck Bros.....30%
Chapin-Stephens Co.....25%
Union .....50%
L. & I. J. White.....20&5@25%

### Planters, Corn, Hand—

Kohler's Eclipse..... ₱ doz. $7.50

### Plates—

*Felloe* .....*lb.* 3¾@4¢
Avery Stamping Co.:
Standard Wrot. Steel Felloe Plates in 100 lb kegs, per 100 lb, ¾-in. to 1⅛-in., $4.00 net; 1¼-in. to 2-in., inclusive, $3.75 net.

### Steel Pipe Hook—

Never Break .....75&10%

### Pliers and Nippers -

*Button Pliers*....75&5@75&10&5%
*Gas Burners, per doz., 5 in., $1.25 @$1.30; 6 in., $1.45 $1.50.*

| *Gas Pipe*.. | 7 | 8 | 10 | 12-in. |
|---|---|---|---|---|
| | $2.00 | $2.25 | $2.75 | $3.50 |

Acme Nippers.....50&5%
Cronk & Carrier Mfg. Co.:
American Button.....80%
Improved Button.....75&10%
Cronk's .....60%
No. 89 Linemen's.....50%
Stub's Pattern.....45%
Combination and others.....33⅓%
Heller's Farriers' Nippers Pincers and Tools.....40&5@40&10&5%
P., S. & W. Tinners' Cutting Nippers .....40%
Swedish Side End and Diagonal Cutting Pliers.....50%
Trimo Drop Forge & Tool Co.:
Pliers and Nippers, all kinds....40%

### Plumbs and Levels—

Chapin-Stephens Co.:
Plumbs and Levels .....30@30&10%
Chapin's Imp. Brass Cor .....40@40&10%
Pocket Levels .....30@30&10%
Extension, Sights .....30@30&10%
Machinists' Levels .....40@40&10%
Disston's Plumbs and Levels....60&10%
Disston's Pocket Levels.....60&10%
Stanley's Dulex.....35%
Woods' Extension.....33⅓%

### Points, Glaziers'—

*Bulk and 1-lb. papers*....*lb.* 9¢
*½-lb. papers*.....*lb.* 9½¢
*¼-lb. papers*.....*lb.* 10¢

### Police Goods—

*Manufacturers' Lists*...25@25&5%
Tower's .....25%

### Polish—Metal, Etc—

Ladd Co.:
Putzade Liquid, ₱ gro., ½ pts., $12.00; 1 pts., $20.00; 1 qts., $40.00; ₱ doz., ½ gals., $6.35; 1 gals., $12.00.
Prestoline Liquid, No. 1 (½ pt.), ₱ doz., $3.00; No. 2 (1 qu.), $9.00..40%
Prestoline Paste.....40%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, ₱ doz. 50¢; ₱ gro. $4.50; ½ lb boxes, ₱ doz. $1.25; 1 lb boxes, ₱ doz. $2.25.
U. S. Liquid, 8 oz. cans, ₱ doz., $1.25.
Barkeepers' Friend Metal Polish, ₱ doz., $1.75.

### Stove—

Black Eagle Benzine Paste, 5 lb cans, ₱ lb 10¢
Black Eagle, Liquid, ½ pt. cans.. ₱ doz. 75¢
Black Jack Paste, ¾ lb cans. ₱ gr. $9.00
Black Kid Paste, 5 lb can...each, $0.65
Ladd's Black Beauty Liquid, per 100 tins.....$6.75
Joseph Dixon. ₱ gr. $5.75.....10%
Dixon's Plumbago..... ₱ lb 8¢
Fireside ..... ₱ gr. $2.50
Gem. ₱ gr. $1.50.....10%
Japanese ..... ₱ gr. $3.50
Jet Black..... ₱ gr. $3.50
Peerless Iron Enamel, 10 oz. cans.. ₱ doz. $1.50

### Window Polish—

Benj. P. Forbes:
Glasbright, No. 2, gal pails, ₱ doz., $24.00; each, $2.50; 1 lb cans, each .....75¢
Glasbright Powder, bbls., ₱ lb..20¢

### Poppers, Corn—

*1 qt. Square..doz.$0.80; gro.$8.75*
*1 qt. Round..doz.$0.90; gro.$10.00*
*1½ qt. Square.doz.$1.20; gro..$12.00*
*2 qt. Square..doz.$1.50; gro..$15.00*

### Post Hole and Tree Augers and Diggers—

See also *Diggers, Post Hole, &c.*

### Posts, Steel—

Steel Fence Posts, each, 6 ft., 46¢; 6½ ft., 48¢; 7 ft., 50¢.
Steel Hitching Posts.....each $1.30

### Potato Parers—

See *Parers, Potato.*

### Pots, Glue—

*Enameled* .....40%
*Tinned* .....30&10%

### Powder—

*In Canisters:*
*Duck, 1 lb*.....*each* 45¢
*Fine Sporting, 1 lb*....*each* 75¢
*Rifle, ½ lb*.....*each* 15¢
*Rifle, 1 lb*.....*each* 25¢
*In Kegs:*
*12½-lb. kegs*.....$3.50
*25-lb kegs*.....$4.50
King's Semi-Smokeless:
Keg (25 lb bulk).....$6.50
Half Keg (12½ lb bulk).....$3.50
Quarter Keg (6¼ lb bulk).....$1.90
Case 24 (1 lb cans bulk).....$8.50
Half case (1 lb cans bulk).....$4.50

| King's Smokeless: | Shot Gun. | Rifle. |
|---|---|---|
| Keg (25 lb bulk) | $12.00 | $15.00 |
| Half Keg (12½ lb bulk) | 6.25 | 7.75 |
| Quarter Keg (6¼ lb bulk) | 3.25 | 4.00 |
| Case 24 (1 lb cans bulk) | 14.00 | 17.00 |
| Half case 12 (1 lb c. bk) | 7.25 | 8.75 |

### Presses—

### Fruit, Wine and Jelly—

Enterprise Mfg. Co.....20@25%

### Seal Presses—

Morrill's No. 1, ₱ doz., $20.00.....50%

### Pruning Hooks and Shears

See *Shears.*

### Pullers, Nail, Etc.—

Cyclops .....50%
Miller's Falls, No. 3, ₱ doz., $12.00.. 33⅓&10%
Morrill's No. 1, Nail Puller, ₱ doz. $20.00 .....50%
Pearson No. 1, Cyclone Spike Puller, each $30.00.....50%
The Scranton Co. Case Lots:
No. 2B (large).....$5.50
No. 3B (small).....$5.00
Smith & Hemenway Co.:
Diamond B.....70%
Giant .....50%
Staple Pullers, Utica and Davison .....60%
Taylor Mfg. Co., Sampson Tack, ₱ doz.....$0.40

### Pulleys, Single Wheel—

| *Inch* | 1½ | 1¾ | 2 | 3 |
|---|---|---|---|---|
| *Awning or Tackle, doz* | $0.30 | .45 | .60 | 1.05 |

| *Hay Fork, Swivel or Solid Eye, doz., 4 in., $1.25; 5 in., $1.55* | | | | |
|---|---|---|---|---|
| *Inch* | 2 | 2¼ | 2½ | |
| *Hot House, doz*... | $0.65 | .85 | 1.20 | |
| *Inch* | 1¼ | 1½ | 1¾ | 2 |
| *Screw, doz*.... | $0.16 | .19 | .23 | .30 |
| *Inch* | 1¾ | 2 | 2¼ | 2½ |
| *Side, doz*..... | $0.25 | .30 | .55 | .60 |
| *Inch* | 1½ | 1¾ | 2 | 2½ |

### Sash Pulleys—

*Common Frame; Square or Round End, per doz., 1¾ and 2 in*.....*17@20¢*

*Auger Morise, no Face Plate, per doz., 1¾ and 2 in*....*20@21¢*
Acme, No. 35..1¾ in., 19¢; 2 in., 20½¢
American Pulley Co.:
Wrought Steel American Plain Axle .....50&10%
Wrought Steel, Eagle.....17@20¢
Top Notch, Electrically Welded, Nos. 3 and 4.....19¢
Common Sense..... ₱ doz. 20¢
Fox-All-Steel, Nos. 3 and 7, 2 in.... ₱ doz. 50%
Grand Rapids All Steel Noiseless..50%
Niagara, No. 25, 1¾ in., 19¢; 2 in. .....20½¢
No. 26 Troy..1¾ in., 14½¢; 2 in., 16½¢
Star, No. 26....1¾ in., 19¢; 2 in., 20½¢
Tackle Blocks—See Blocks.

### Pumps—

*Cistern* .....60%
*Pitcher Spout*.....75&5@75&10%
*Wood Pumps, Tubing, &c*....50%
Barnes Dbl. Acting (low list).....45%
Barnes Pitcher Spout.....80%
Contractors' Rubber Diaphragm, No. 2, B. & L. Block Co.....$16.00
Daisy Spray Pump..... ₱ doz. $6.50
Flint & Walling's Fast Mail Hand (low list).....50&5%
Flint & Walling's Fast Mail (low list) .....50&5%
Flint & Walling's Tight Top Pitcher .....80%
National Specialty Mfg. Co., Measuring, Nos. 2, $6.00; 3, $5.00.....30%
Myers' Pumps (low list).....
Myers' Power Pumps.....
Myers' Spray Pumps.....
} 50%

### Pump Leathers—

*Plunger and Valve Leathers—Per gro.:*

| *No*..... | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| | $5.00 | 6.00 | 7.00 | 8.00 |

| *Cup Leathers—Per 100:* | | | | |
|---|---|---|---|---|
| *Inch*.... | 2½ | 3 | 3½ | 4 |
| | $5.00 | 7.00 | 9.00 | 12.00 |

} 30%

### Punches—

*Saddlers' or Drive, good, doz*.50@75¢
*Spring, single tube, good quality* .....$1.75
*Revolving (4 tubes)*....*doz.*$3.50
Bemis & Call Co.'s Cast St'l Drive.50%
Morrill's Nos. 1AA, 1A, 1B, 1C, 1D, $15.00.....50%
Hercules, 1 die, each $5.00.....50%
Niagara Hollow Punches.....40%
Niagara Solid Punches.....55&10%
Tinners' Hollow, P., S. & W. Co..40%
Tinners' Solid, P., S. & W. Co., ₱ doz., $1.44.....40&10%

## Rail—Barn Door, &c.—

*Sliding Door, Painted Iron, 2½@2¾¢*
*Sliding Door, Wrought Brass, 1⅛ in., lb., 36¢*.....30%
Cronk's:
Double Braced Steel Rail..₱ ft. 2¾¢
O. N. T. Rail.....2¾¢
Griffin's:
xxx, ₱ 100 ft., 1 x 3-16 in., $3.25; 1¼ x 3-16 in., $3.75.
Hinged Hanger, ₱ 100 ft., 1 x 3-16 in., $3.50; 1¼ x 3-16 in., $4.00.
Lane's:
Hinged Track, ₱ 100 ft.....$3.45
O. N. T., ₱ 100 ft., 1 in., $3.12½; 1¼ in., $3.45; 1½ in., $4.00.
Standard, 1¼ in..... ₱ 100 ft. $4.00
Lawrence Bros.:
1 x 3-16 in., ₱ 100 ft., $7.50; 1¼ x 3-16 in., $8.75.....55&7½%
Trolley, No. 301, ₱ ft.....9¢
McKinney's:
Hinged Hanger Track, ₱ ft., 11¢. 60&5%
1 x 3-16 Track.....55&7½%
Myers' Stayon Track.....60&5%
Richards Mfg. Co.:
Common, 1 x 3-16 in., $3.00; 1¼ x 3-16, $3.25; 1¼ x 3-16, $3.50.
Special Hinged Hanger Rail..60&10%
Lag Screw Rail, No. 65.....50%
Gauge Trolley Track, ₱ ft., No. 31, 9¢; No. 32, 14¢; No. 33, 20¢.
No. 50.....60&10%
Nos. 61, $3.00; 62, $3.25; 63, $3.50; 64, $4.00; 45, $3.25; 46, $3.50; 49, No. 1, $3.25; 49, No. 2, $3.50.

### Rakes—

*NOTE.—Many goods are sold at net prices.*

Fort Madison Red Head Lawn....$3.25
Fort Madison Blue Head Lawn....$2.70
Cronk's:
Steel Garden: Champion, ₱ doz., 12-tooth, $3.75; 14-tooth, $4.00; 16-tooth, $4.25; Ideal, ₱ doz., 12-tooth, $3.00; 14-tooth, $3.30; 16-tooth, $3.60.
Victor, 12-tooth, $2.25; 14-tooth, $2.50; 16-tooth, $2.75.
Queen City Lawn, ₱ doz., 20 teeth, $2.85; 24, $3.00.....net
Anticlog Lawn ₱ doz.....$4.00
Malleable Garden.....70&10%
Ideal Steel Garden, ₱ doz., 12 teeth, $15.00; 14, $16.00; 16, $18.00.....80%
Kohler's:
Jumbo Lawn, 36-tooth.... ₱ doz. $5.00
Lawn Queen, 20-tooth.... ₱ doz. $2.85
Lawn Queen, 24-tooth.... ₱ doz. $3.00
Paragon, 20-tooth..... ₱ doz. $2.65
Paragon, 24-tooth..... ₱ doz. $2.75
Steel Garden, 14-tooth.... ₱ doz. $2.40
Malleable Garden, 14-tooth, ₱ doz. $1.75@2.00

### Rasps, Horse—

Disston's .....75%
Heller Bros.'.....70&5@70&10&5%
Liveright Bros.' Gold Medal.70&10@75%
McCaffrey's American Standard..... 60&10&5%
New Nicholson.....70&10@75%
See also Files.

### Razors—

John Engstrom Swedish.....65%
Sharp Shaver.....60%
Fox Razors, ₱ doz., No. 42, $24.00; No. 44, $20.00; No. 82, Platina, $36.00. } Dis. 50%

### Reels, Fishing—

Hendryx:
M 6, Q 6, A 6, B 6, M 9¼, M 16, Q 16, A 16, B 16, 4008, Rubber, Populo, Nickeled Populo.....20%
Aluminum, German Silv., Bronze.25%
1240 N, 124 N.....20%
3004 N, 06 N, 6 RM, G 9.....25%
4 N, 6 PN, 24 N, 26 PN.....20%
2904 P., 33⅓%; 2904 PN., 33⅓%; 0924 N., 33⅓%; 02084 N., 33⅓%; 002904 PN., 33⅓%; 802 N., 33⅓%.
986 PN, 2904 N, 974 PN.....25%
5009 PN, 5009 N.....20%
Competitor, 102 P, 102 PN, 202 P, 202 PN, 102 PR, 202 PR.....20%
304 P, 304 PN, 00304 P, 00304 PN.33⅓%

### Registers—*List July 1, 1903.*

*Japanned, Electroplated and Bronzed* .....70%
*White Porcelain Enamel*..50&10%
*Solid Brass or Bronze Metal*.40%

### Revolvers—

*Single Action*.....*$5¢@$1.00*
*Double Action, except 4½ cal.$2.00*
*Double Action, 4½ caliber*...$2.00
*Automatic* .....$4.00
*Hammerless* .....$4.50

### Riddles, Hardware Grade

*16 in*.....*per doz.*$2.50@$2.75
*17 in*.....*per doz.*$2.75@$3.00
*18 in*.....*per doz.*$3.00@$3.25

### Rings and Ringers—

### Bull Rings—

| | 2 | 2½ | 3 inch. |
|---|---|---|---|
| *Steel* | $0.70 | 0.75 | 0.80 doz. |
| *Copper* | $1.10 | 1.25 | 1.65 doz. |

### Hog Rings and Ringers—

*Hill's Rings, gro. boxes.$4.50@$4.50*
*Hill's Ringers, Gray Iron, doz., 60@75¢*
*Hill's Ringers, Malleable Iron, doz.80@95¢*
*Blair's Rings..per gro.$5.00@$5.50*
*Blair's Ringers...per doz.75@90¢*

### Rivets and Burrs—

*Copper* .....50@50&10%
*Carriage, Coopers', Tinners', &c.:*
*Black* .....70&10%
*Metallic Tinned*.....70%

### Bifurcated and Tubular—

*Assorted in Boxes.*
*Bifurcated, per doz. boxes, pasteboard boxes, 50 count, 23@25¢; Tin boxes, 100 count, 29@32¢.*
*Tubular, per doz. boxes, 50 count, 29@32¢; 100 count, 51@58¢.*

### Rollers—

Cronk's Stay, No. 50.....$1.00
Cronk's Brinkerhoff No. 55, $0.60; No. 56, $0.75; No. 60.....$0.75
Lane's Stay.....40%
Richards' Stay:
Handy Adj. and Reversible No. 53.75¢
O. K. Adj. and Reversible No. 58.50¢
Lag Screw, Nos. 55 and 57.....50%
Underwriters', Nos. 59, 60.....50%
Favorite, No. 54.....60%

### Rope—

*Manila, 7-16 in. diam. and larger:*
*Pure* .....*lb.* 9¢
*Sisal, 7-16 in. diam. and larger:*
*Pure* .....*lb.* 7¢
*Sisal, Hay, Hide and Bale Ropes, Medium and Coarse:*
*Pure* .....*lb.* 7½@7¾¢
*Sisal, Tarred, Medium Lath Yarn:*
*Pure* .....*lb.* 6½@6¾¢
*Cotton Rope:*
*Best, ¼-in. and larger*...18@20¢
*Medium, ¼-in. and larger.16@17¢*
*Common, ¼-in. and larger*..10¢
*In coils, ½¢ advance.*
*Jute Rope:*
*Thread, No. 1, ¼-in. and up, lb.* .....5½¢
*Thread, No. 2, ¼-in. and up, lb.* .....5¢

### Wire Rope—

*Galvanized* .....37½&2½%
*Plain* .....45&2½%

### Ropes, Hammock—

Covert Mfg. Co.:
Jute, 35%; Sisal.....20%

### Rules

*Boxwood* .....60@60&10%
*Ivory* .....35&10@35&10&5%
Chapin-Stephens Co.:
Boxwood .....60%
Flexifold .....40%
Ivory .....25@25&10%
Miscellaneous .....0@50&10%
Stephens' Combination.....55%
Stationers' .....50@50&10%
Keuffel & Esser Co.:
Folding, Wood.....35&10%
Folding, Steel.....33⅓&10%
Lufkin's Steel.....50&10%
Lufkin's Lumber.....50&10%
Upson Nut Co.:
Boxwood .....60@60&10%
Ivory .....35&10@35&10&10%

## Sash Balances—

See *Balance, Sash.*

### Sash Locks—See *Locks, Sash.*

### Sash Weights—

See *Weights, Sash.*

## Sausage Stuffers or Fillers
See *Stuffers or Fillers, Sausage.*

## Saw Frames—
See *Frames, Saw.*

## Saw Sets—See *Sets, Saw.*

## Saw Tools—See *Tools, Saw.*

## Saws—
Atkins':
- Circular ..... 45%
- Band ..... 50@50&10%
- Butcher Saws ..... 50%
- Cross Cuts ..... 35%
- One-Man Cross Cut ..... 40%
- Narrow Cross Cut ..... 50%
- Hand, Rip and Panel ..... 35&5%
- Miter Box and Compass ..... 40%
- Mulay, Mill and Drag ..... 45%
- Wood Saws ..... 40&10%

Chapin-Stephens Co.:
- Turning Saws and Frames 30@30&10%

Diamond Saw & Stamping Works:
- Sterling Kitchen Saws ... 30&10&10%

Disston's:
- Circular, Solid and Ins'ted Tooth 50%
- Band, 2 to 18 in. wide ..... 60%
- Band, ¼ to 1¾ ..... 60%
- Crosscuts ..... 45%
- Narrow Crosscuts ..... 50%
- Mulay, Mill and Drag ..... 50%
- Framed Woodsaws ..... 25%
- Woodsaw Blades ..... 25%
- Woodsaw Rods, Tinned ..... 15%
- Hand Saws, Nos. 12, 99, 9, 16, d100, D8, 120, 76, 77, 8 ..... 25%
- Hand Saws, Nos. 7, 107, 107½, 3, 1, 0, 00, Combination ..... 30%
- Compass, Key Hole, &c ..... 25%
- Butcher Saws and Blades ..... 30%

C. E. Jennings & Co.'s:
- Back Saws ..... 16⅔%
- Butcher Saws ..... 25&7½%
- Compass and Key Hole Saws, 33⅓&7½%
- Framed Wood Saws ..... 25&7½%
- Hand Saws ..... 12½%
- Wood Saw Blades ..... 33⅓&7½%

Millers Falls:
- Butcher Saws ..... 15&10%
- Star Saw Blades ..... 15&10%

Massachusetts Saw Works:
- Victor Kitchen Saws ..... 40&10&50%
- Butcher Saws Blades ..... 35@40%

Peace & Richardson's Hand Saws. 30%

Simonds':
- Circular Saws ..... 45%
- Crescent Ground Cross Cut Saws. 30%
- One-Man Cross Cuts ..... 40&10%
- Gang Mill, Mulay and Drag Saws. 45%
- Band Saws ..... 50%
- Back Saws ..... 25@25&7½%
- Butcher Saws ..... 35@35&7½%
- Hand Saws ..... 25@25&7½%
- Hand Saws, Bay State Brand .... 45%
- Compass, Key Hole, &c .. 25@25&7½%
- Wood Saws ..... 40&7½%

Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws ..... 50%

## Hack Saw Blades and Frames—
Atkins' Hack Saw Blades A A A..25%

Disston's:
- Concave Blades ..... 25%
- Keystone Blades ..... 35%
- Hack Saw Frames ..... 30%

Simonds, 25%; The Best, 35%; Culley ..... 35%

C. E. Jennings & Co.'s:
- Hack Saw Frames, Nos. 175, 180 .... 40&7½%
- Hack Saws, Nos. 175, 180, complete, 40&7½%

Goodell's Hack Saw Blades ... 40&10%

Griffin's Hack Saw Frames..35&5&10%

Griffin's Hack Saw Blades.... 35&5&10%

Star Hack Saws and Blades.... 15&10%

Sterling Hack Saw Blades..30&10&5%

Sterling Hack Saw Frames..30&10&10%

Sterling Power Hack Saw Machines, each, No. 1, $25.00; No. 2, $30.00..10%

Victor Hack Saw Blades ..... 20%

Victor Hack Saw Frames ..... 40%

Whitaker Mfg. Co.:
- Nicholson Hand Blades, Hand Frames, Power Blades ..... 40%

## Scroll—
- Barnes, No. 7, $15 ..... 25%
- Barnes' Scroll Saw Blades ..... 40%
- Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20 ..... 20%
- Lester, complete, $10.00 ..... 15&10%
- Rogers, complete, $3.50 and $4.00 .. 15&10%

## Scales—
- *Union Platform, Plain .$2.10@2.20*
- *Union Platform, Stpd .$2.20@2.30*

Chatillon's:
- Eureka ..... 25%
- Favorite ..... 40%
- Grocers' Trip Scales ..... 5%
- The Standard Portables ..... 40%
- The Standard R. R. and Wagon ..... 50&10%

## Scrapers—
- *Box, 1 Handle ..... doz. $1.85@2.10*
- *Box, 2 Handle ..... doz. $2.45@2.50*
- *Ship ... Light, $2.00; Heavy, $4.50*

Chapin-Stephens Co., Box, 3[illegible]

Richards Mfg. Co., Foot ..... 6%

## Screws—Bench and Hand
- *Bench, Iron, doz., 1 in., $2.50@ 2.75; 1¼ ... $3.00@3.25; 1½ ... $3.75*
- *Bench, Wood ..... 20@20&10%*
- *Hand, Wood ... 70&10@70&10&10%*

Chapin-Stephens Co., Hand ... 70@70&10&2½%

## Coach, Lag and Hand Rail—
- *Lag, Cone Point .80&10@80&10&5%*
- *Coach, Gimlet Point .. 80@80&10%*
- *Hand Rail ..... 70&10@75%*

## Jack Screws—
- *Standard List ..... 70&10@75%*

Millers Falls ..... 50&10&10%

Swett Iron Works ..... 70@75%

## Machine—
- *Cut Tread, Iron, Brass or Bronze:*
- *Flat Head or Round Head, 50@50&10%*
- *Fillister Head ..... 40@40&10%*
- *Rolled Thread, F. H. or R. H., Iron ..... 75&10%*
- *F. H. or R. H., Brass, Nos. 8 to 14 ..... 65&10%*

## Set and Cap—
- *Set (Iron) ..... 75&10&7½%*
- *Set (Steel), net advance over Iron ..... 25%*
- *Sq. Hd. Cap ..... 70&10&7½%*
- *Hex. Hd. Cap ..... 70&10&7½%*
- *Rd. Hd. Cap ..... 50&7½%*
- *Fillister Hd. Cap ..... 60&7½%*

## Wood—
*List July 23, 1903.*
- *Flat Head, Iron .... 87½&5@ .. %*
- *Round Head, Iron .... 85&5@ .. %*
- *Flat Head, Brass .... 80&5@ .. %*
- *Round Head, Brass .. 77½&5@ .. %*
- *Flat Head, Bronze .... 75&5@ .. %*
- *Round Head, Bronze . 72½&5@ .. %*
- *Drive Screws ..... 87½&5@ .. %*

## Scroll Saws—
See *Saws, Scroll.*

## Scythes— *Per doz.*
- *Grass, No. 1, Plain ..... $7.00*
- *Clipper, Bronzed Webb ..... $7.25*
- *No. 3 Clipper, Pol'd Webb ... $7.50*
- *No. 6 Clipper and Solid Steel. $7.75*
- *Bush, Weed and Bramble, Nos. 11, 12 and 13 ..... $7.25*
- *Grain, No. 1 ..... $9.00@9.50*
- *Bronzed Webb, No. 1 ... $9.25@9.75*
- *Nos. 3 and 4 Clipper, Grain, $9.50@10.00*
- *Solid Steel, No. 6 .... $10.00@10.50*

## Seeders, Raisin—
Enterprise ..... 25@30%

## Sets— Awl and Tool—
Fray's Tool Handles, Nos. 1, $12; 2, $16; 3, $12 ..... 50%

Millers Falls Adj. Tool Handles, No. 1, $12; No. 4, $12; No. 5, $18..20&10%

## Garden Tool Sets—
Ft. Madison Three Plows, Hoe, Rake and Shovel ..... ₱ doz. sets $9.00

## Sets, Nail—
- *Octagon ..... gro. $3.50@3.75*

Buck Bros. ..... 27½

Mayhew's ..... ₱ gro $9.00

Snell's Corrugated, Cup Pt. .... 40&10

Snell's Knurled, Cup Pt. ..... 40&10%

Victor Knurled, Cup Pt. ... ₱ gro. $7.50

## Rivet—
- *Regular list ..... 75@75&10%*

## Saw—
Atkin's:
- Criterion ..... 40%
- Adjustable ..... 40

Disston's Star, Monarch and Triumph ..... 30%

Morrill's No. 1 ..... $15.00
Nos. 3 and 4, Cross Cut .... $20.60
No. 5, Mill ..... $30.00
Nos. 10, 11, 95 ..... $15.60
No. 1 Old Style ..... $10.00
Special ..... $16.25
} 50%

Giant Royal Cross Cut ..... ₱ doz. $7.50

Royal, Hand ..... ₱ doz. $4.50

Taintor Positive ..... ₱ doz. $6.75

## Shaving—
Fox Shaving Sets, No. 30 ..... ₱ doz., net, $24.00

Smith & Hemenway Co.'s ..... 75%

## Sharpeners, Knife—
Pike Mfg. Co.:
- Fast Cut Pocket Knife Hones, ₱ doz. ..... $1.50
- Mounted Kitchen Sand Stone, ₱ doz. ..... $1.50
- Natural Grit Carving Knife Hones, ₱ doz. ..... $3.00
- Quick Cut Emery Carving Knife Hones, ₱ doz. ..... $1.50
- Quick Edge Pocket Knife Hones, ₱ doz. ..... $2.50

} 50%

## Skate—
Smith & Hemenway Co., Eureka..50

## Shaves, Spoke—
- *Iron ..... doz. $1.25*
- *Wood ..... doz. $2.00*

Barnes Stanley R & L. Co.'s .. 15

Chapin-Stephens Co. ..... 30@30&10

Goodell's, ₱ doz. $9.00 ..... 15&10

## Shears—
| *Cast Iron..* | 7 | 8 | 9 in. |
|---|---|---|---|
| *Best* | $16.00 | 18.00 | 20.00 gro. |
| *Good* | $13.00 | 15.00 | 17.00 gro. |
| *Cheap* | $7.00 | 6.00 | 7.00 gro. |

- *Straight Trimmers, &c.:*
- *Best quality Jap ..... 70&10&5%*
- *Best Quality Nickel .. 60&10&5%*
- *Tailors' Shears ..... 40@40&10%*

Acme Cast Shears ..... 40@45&5

Heinisch's Tailors' Shears ..... 40

National Cutlery Co.'s Nickel Plated, 60&10%; Japan Handles ..... 75&10%

Columbian Cutlery Co.:
- Sheep, 1900 list ..... 30&10&5%
- Grass ..... 70&10
- Horse or Mule ..... 50&10

J. Wiss & Sons Co.:
- Best Quality Jap'd ..... 60&10%
- Best Quality Nickeled ..... 50&10
- Tailors' ..... 25%

## Tinners' Snips—
- *Steel Blades ..... 20&5@20&10%*
- *Steel Laid Blades ..... 50&10%*

Acme Cast Snips ..... 40@45&5

Forged Handles, Steel Blades, Berlin ..... 50%

Heinisch's Snips ..... 40%

Jennings & Griffin Mfg. Co.'s 6½ to 10 in. ..... 33⅓&7½%

National Cutlery Co.'s Forged Steel. 50%

Niagara Snips ..... 40%

P., S. & W. Forged Handles, 25%; W. R. W. ..... 50%

J. Wiss & Sons Co.:
- Wiss Forged Steel ..... 25%

## Pruning Shears—
Cronk's Hand Shears ..... 33⅓%

Cronk's Wood Handle Shears .... 33⅓%

Disston's Combined Pruning Hook and Saw, ₱ doz. $18.00 ..... 25%

Disston's Pruning Hook only, ₱ doz., $12.00 ..... 25%

J. T. Henry Mfg. Co.:
- Pruning Shears, all grades ..... 40%

P., S. & W. Co. ..... 40&10%

Columbian Cutlery Co.:
- Hedge, Wilcut Brand ..... 60&10%
- Lawn and Border, Wilcut Brand, 60&10%

## Sheaves—Sliding Door—
Reading ..... 40%

R. & E. list ..... 15%

## Sliding Shutter—
Reading list ..... 40%

R. & E. list ..... 15%

## Shells—Shells, Empty—
Brass Shells, Empty:
- Climax, 10 and 12 gauge ..... 60&5%
- Club, Rival, 65&5%; First Quality, 60&5%

Paper Shells, Empty:
- New Rapid, 10, 12, 16 and 20 gauge, 25&10%
- Climax, 10 and 12 gauge; Acme and Magic, 10, 12, 16 and 20 gauge; Ideal, 10, 12, 16 and 20 gauge; Leader grade ..... 25&5%
- Union, League, 10 and 12 gauge, Rival Grade ..... 25%
- New Climax, Defiance, 10, 12, 14, 16 and 20 gauge; Climax, 14, 16 and 20 gauge ..... 20%
- Challenge, Monarch, 10, 12, 16 and 20 gauge; League, Union, 14, 16 and 20 gauge; Repeater Grade..20%

## Shells, Loaded—
- *Loaded with Black Powder..40%*
- *Loaded with Smokeless Powder, medium grade ..... 40&5%*
- *Loaded with Smokeless Powder, high grade ..... 40&10&10%*

Union Metallic Cartridge Co.:
- New Club, Black Powders ..... 40%
- Nitro Club, Smokeless Powders. 40&5%
- Arrow, Smokeless Powders. 40&10&10%

Winchester:
- Smokeless Repeater Grade ..... 40&5%
- Smokeless Leader Grade... 40&10&10%
- Black Powder ..... 40%

## Shingles, Metal— Per Sq.
Edwards Mfg. Co.:

| | Painted. | Galv. |
|---|---|---|
| 14 x 20 | $4.25 | $6.00 |
| 10 x 14 | 4.50 | 6.25 |
| 7 x 10 | 4.75 | 6.50 |

Wheeling Corrugating Co.:

| | | |
|---|---|---|
| Dixie, 14 x 20 in. | $4.05 | $5.05 |
| Dixie, 10 x 14 in. | 4.25 | 5.45 |
| Dixie, 7 x 10 in. | 5.25 | 6.70 |

## Shoes, Horse, Mule, &c.—
*F.o.b. Pittsburgh:*
- *Iron ..... per keg. $4.10*
- *Steel ..... per keg. $3.85*

Burden's, all sizes ..... ₱ keg $3.90

## Shot—
*25-lb. bag.*
- *Drop, up to B ..... $1.80*
- *Drop, B and larger ..... 2.05*
- *Buck ..... 2.05*
- *Chilled ..... 2.05*
- *Dust ..... 2.30*

## Shovels and Spades—
*Association List, Nov. 15, 1902.* 10%

Avery Stamping Co. ..... 40%

## Snow Shovels—
- *Long Handle ..... $3.25@$3.50*
- *Wood and Mall, D Handle, $3.75@$4.00*

## Sieves and Sifters—
- *Hunter's Imitation, gro .... $9.50*
- *Hunter's Genuine, per gro .. $12.00*

## Sifters, Ash—
Acme Ball Bearing Sales Co., Acme Automatic Ash Sifter, each, $3.25; ₱ doz. ..... $39.00

## Sieves, Seamless Metallic
*Per dozen.*

| *Mesh* | 14 | 16 | 18 | 20 |
|---|---|---|---|---|
| *Iron Wire* | $1.05 | 1.05 | 1.10 | 1.20 |
| *Tinned Wire* | $1.15 | 1.15 | 1.20 | 1.30 |

## Sieves, Wooden Rim—
*Nested, 10, 11 and 12 Inch.*
- *Mesh 18, Nested .... doz. $0.90@1.05*
- *Mesh 20, Nested .... doz. $1.00@1.05*
- *Mesh 24, Nested .... doz. $1.30@1.40*

## Sinks, Cast Iron—
*Painted. Standard list:*
- *12 x 12 to 22 x 36 in ..... 60%*
- *20 x 24 to 24 x 50 in ..... 50%*
- *24 x 60 to 24 x 120 in ..... 20%*

Barnes' low list ..... 60%

*NOTE.—There is not entire uniformity in lists used by jobbers.*

## Skeins, Wagon—
- *Cast Iron ..... 70@75&10%*
- *Steel ..... 40@45%*

## Slates, School—
*Factory Shipments.*
- *"D" Slates ..... 50@50&10%*
- *Eureka, Unexcelled Noiseless .. 60&7 tens.*
- *Victor A, Noiseless .60&4 tens &5%*

## Slaw Cutters—See *Cutters.*

## Snaps, Harness—
- *German ..... 40@40&10%*

Covert Mfg. Co.:
- Derby, 25%; Yankee, 30&2%; Yankee Roller, 30&2%.
- High Grade, 40%; Trojan ..... 40%
- Jockey ..... 25%

## Snaths—
- *Scythe ..... 50&10@60%*

## Snips, Tinners—See *Shears.*

## Spoons and Forks—
### Silver Plated—
- *Good Quality ..... 50&10@60&5%*
- *Cheap ..... 60@60&10%*

International Silver Co:
- 1847 Rogers Bros. ..... 40&10
- Rogers & Bro., William Rogers' Eagle Brand ..... 50&10%
- Anchor, Rogers Brand ..... 60%
- Wm. Rogers & Son ..... 60&10%

### Miscellaneous
- *German Silver ..... 60@60&5%*

### Tinned Iron—
- *Teas ..... per gro. 50@55¢*
- *Tables ..... per gro. $0.90@$1.00*

Atlas Mfg. Co.:
- Tea Spoons, ₱ gro. ..... 50¢@55¢
- Table Spoons, ₱ gro. ..... $0.90@$1.00

## Springs— Door—
- Bardsley's Spring and Check ..... 40%
- Chicago (Coil) ..... 40&10
- Gem (Coil) ..... 20%
- Pullman Door and Gate ..... 10%
- **Reliance (Coil)** ..... 40&10%
- **Star (Coil)** ..... 35%
- Torrey's Rod, 39 in. ..... ₱ doz. $1.00

## Carriage, Wagon, &c.—
| *1¼ in. and Wider:* | *Per 100 lb.* |
|---|---|
| *Black* | *$4.75@$5.00* |
| *Half Bright* | *$4.75@$5.00* |
| *Bright* | *$5.25@$5.50* |

- *Painted Seat Springs:*
- *1½ x 2 x 26 .... per pair. 45@47¢*
- *1½ x 3 x 28 .... per pair. 68@71¢*

## Sprinklers, Lawn—
American Foundry & Mfg. Co.: Cactus, 65%; Japanese, 70%; National, ₱ doz. ..... $12.00

Enterprise ..... 25@30%

Philadelphia No. 1, ₱ doz. $12; No. 2, $15; No. 3, $20 ..... 30%

## Squares—
- *Nickel plated .. } List Jan. 5, 1900.*
- *Steel and Iron . } 80@80&5%*
- *Rosewood Hdl. Try Square and T-Bevels ..... 60&10&10@70%*
- *Iron Hdl. Try Squares and T-Bevels ..... 40&10@40&10&10%*

Disston's Try Squares and Bevels, Rosewood Handle, 60 & 10°; Iron Stock and Bevel ..... 15%

## Squeezers, Lemon
- *Wood, Porcelain Lined:*
- *Cheap ..... doz. $1.00*
- *Good Grade ..... doz. $1.25*
- *Tinned Iron ..... doz. $0.75@1.00*
- *Iron, Porcelain Lined ... doz. $1.75*

Victor, ₱ gro. ..... $9.00

## Staples—
- *Barbed Blind ..... 85&5@85&10%*
- *Electricians' ..... 80&10&10@85%*
- *Fence Staples, Polished, $2.05;*
- *Galvanized ..... $2.35*
- *Poultry Netting Staples ..... per lb. 3¼@3½¢*

## Steels, Butchers'—
Dick's ..... 30%

Foster Bros. ..... 30

## Steelyards— ..... 30@30&10%

## Stocks and Dies—
- *Blacksmiths' ..... 50@50&10%*

Curtis Rev'ble Ratchet Die Stock ... 25

Derby Screw Plates ..... 25

Green River ..... 25%

Lightning Screw Plate ..... 25

Little Giant ..... 25

Reece's New Screw Plate ..... 25

## Stoners, Cherry—
Enterprise ..... 25%

## Stones, Axe—
Pike Mfg. Co., Axe Stones [illegible] knobs ..... 40%

## Glass Cutters' Stones—
Pike Mfg. Co., Glass Cutters' Stones, [illegible] Nobby ..... 40%

## Stones, Oil, &c.—
Pike Mfg. Co., [illegible] list ..... 33⅓%

Arkansas Stones, No. 1 ..... 50

Arkansas Stones, No. 2 ..... 40

Arkansas Stones, No. 3 ..... 30

Lily White Stones ..... 40

Rosy Red Stones ..... 40

Washita Stones, Extra, 4 to 8 in. ..... 40

Washita Stones, No. 1 ..... 30

Washita Stones, No. 2 ..... 25

Washita Stones, No. 3 ..... 20

Lily White Stones ..... 40

Rosy Red Stones ..... 40

Washita Stones, Extra, 4 to 8 in. ..... 30

Washita Stones, No. 1 ..... 25

Washita Stones, No. 2 ..... 20

Washita Stones, No. 3 ..... 15

Indian Oil Stones, Extra, 4 to 8 in. ..... 33⅓%

Quickcut Emery and Corundum Oil Stones, Double Cut ..... 40%

Quickcut Emery and Corundum Axe Stones, Double Cut ..... 33⅓%

Quickcut Emery Rubbing Bricks ..... 40

Hindostan No. 1, Regular ₱ lb. 8¢

Hindostan No. 1 Small ₱ lb. 10¢

Turley Oil Stones, Extra, 5 to 8 in. ..... ₱ lb. 30¢

Queer Creek Stones, 4 to 8 in. ..... 20

Queer Creek Slips ..... 10

Sand Stone ..... 60

33⅓%

33⅓%

33⅓%

### Scythe Stones—

Pike Mfg. Co., 1907 list:
Black Diamond S. S., ₱ gro. $12.00
Lamoille S. S., ₱ gro. $11.00
White Mountain S. S. ₱ gro. $9.50
Green Mountain S. S. ₱ gro. $7.00
Extra Indian Pond S. S. ₱ gro. $8.00
No. 1 Indian Pond S. S. ₱ gro. $7.50
No. 2 Indian Pond S. S. ₱ gro. $5.00
Leader Red End S. S. ₱ gro. $5.00
Quick Cut Emery, ₱ gro. $10.00
Pure Corundum, ₱ gro. $18.00
Crescent, $7.00
Emery Scythe Rifles, 2 Coat. $8.80
Emery Scythe Rifles, 3 Coat. $11.00
Emery Scythe Rifles, 4 Coat. $13.20
Balance of 1907 list 33⅓%
Lectro (Artificial), ₱ gro., $12.00 33⅓%
$12.00 33⅓%
Lightning (Artificial), ₱ gro., $18.00 33⅓%

### Stoppers, Bottle—

Victor Bottle Stoppers, ₱ gro. $9.00

### Stops—Bench—

Millers Falls 15&10%
Morrill's, ₱ doz., No. 1, $10.00 50%
Morrill's, No. 2, $12.50 50%

### Door—

Chapin-Stephens Co. 50@50&10%

### Plane—

Chapin-Stevens Co. 20%

### Straps—Box—

Acme Embossed, case lots. 20&10&10%
Cary's Universal, case lots. 20&10&10%

### Stretchers, Carpet—

*Cast Iron, Steel Points . . doz. 55¢*
*All Steel Socket . . . doz. $2.00@2.25*
Excelsior Stretcher and Tack Hammer Combined, ₱ doz., $6.00 20%

### Stuffers, Sausage—

Enterprise Mfg. Co., Stuffers and Lard Presses 25@25&7½%
National Specialty Co., list Jan. 1, 1902 30&5%
P., S. & W. Co. 40&10&5%

### Sweepers, Carpet—Per doz.—

Bissell Carpet Sweeper Co.:
Cyco Bearing Superba, $36.00; Triumph, $33.00; Parlor Queen, $30.00; Elite, $29.00; Boudoir, $27.00; American Queen, $27.00; Ideal, $25.00; Gold Medal, $24.00; Primier, $24.00; Prize, $24.00; Welcome, $24.00; Grand Rapids, Nickel, $24.00; Japan, $22.00; Crystal, $36.00; Grand, $36.00; Parlor Grand, $48.00; Club, $54.00; Hall, $60.00; Standard Nickel, $22.00; Standard Japan, $20.00; Crown Jewel, Nickel, $21.00; Crown Jewel, Japan, $19.00; Junior, Nickel, $22.00; Junior, Japan, $20.00.

*NOTE.—Rebates: 50c per dozen on three dozen lots; $1 per dozen on five-dozen lots; $2 per dozen on ten dozen lots*

### Tacks, Finishing Nails, &c.

*American Carpet Tacks . . . 90&40%*
*American Cut Tacks . . . . . 90&40%*
*Swedes' Cut Tacks . . . . . 90&40%*
*Swedes' Upholsterers' . . . . 90&50%*
*Gimp Tacks . . . . . 90&50%*
*Lace Tacks . . . . . 90&50%*
*Trimmers' Tacks . . . . . 90&40%*
*Looking Glass Tacks . . . . . 65%*
*Bill Posters' and Railroad Tacks, 90&50&10%*
*Hungarian Nails . . . . . 80&20%*
*Finishing Nails . . . . . 70%*
*Trunk and Clout Nails . . . 80&10%*

*NOTE.—The above prices are for Straight Weights.*

### Miscellaneous—

*Double Pointed Tacks, 90&6 tens@—%*
Se also Nails, Wire.

### Tanks, Oil and Gasoline—

Wilson & Friend Co.:

| Gal. | Gasoline | Oil |
|---|---|---|
| 30 | $2.75 | $3.00 |
| 60 | $3.50 | $4.00 |
| 110 | $5.00 | $5.75 |

### Tapes, Measuring—

*American Asses' Skin . . . . 50@—%*
*Patent Leather . . . . . 25@30&5%*
*Steel . . . . . 33⅓&5%*
*Chesterman's . . . . . 25@25&5%*
Keuffel & Esser Co.:
Favorite, Ass Skin . . . . . 40&10@50%
Favorite, Duck and Leather . . . . . 25&5@25&10%
Metallic and Steel, lower list, 35@35&5%; Pocket, 35@35&5%.
Lufkins:
Asses' Skin . . . . . 40&10@50%
Metallic . . . . . 30@30&5%
Patent Bend, Leather . . . 25&5@25&10%
Pocket . . . . . 40@40&5%
Steel . . . . . 33⅓@35%
Wiebusch & Hilger:
Chesterman's Metallic, No. 34L, etc. . . . . 25%
Chesterman's Steel, No. 1038L, etc. . . . . 35%

### Teeth, Harrow—

*Steel Harrow Teeth, plain or headed, 5/8-inch and larger, per 100 lb. . . . . $2.55@$2.80*

### Thermometers—

*Tin Case, Cabinet, Flange, Dairy, &c. . . . . 30@35%*

### Ties, Bale—Steel Wire—

*Single Loop . . . . . 82½&10%*
*Monitor, Cross Head, &c. 70&2½%*

### Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

### Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

### Tire Benders, Upsetters, &c.

See *Benders and Upsetters, Tire.*

### Tools—Coopers'—

L. & I. J. White . . . . . 20@20&5%

### Haying—

Myers' Hay Tools . . . . . 50%

### Ice Tools—

Gifford-Wood Co. . . . . 15%

### Miniature—

Smith & Hemenway Co.'s, Davidson, ₱ doz., Nickel Plated, $1.50; Gold Plated . . . . . $2.00

### Saw—

Atkins' Cross Cut Saw Tools . . . . 35&5%
Simond's Improved . . . . . 33⅓%
Simonds' Crescent . . . . . 30%

### Ship—

L. & I. J. White . . . . . 25%

### Torches—

Hammers, Engine, ₱ doz. . . . . $4.50

### Transom Lifters—

See *Lifters, Transom.*

### Traps—Fly—

*Balloon, Globe or Acme, doz., $1.15@$1.25; gro. . . . $11.50@12.00*
*Harper, Champion or Paragon, doz., $1.25@1.40; gro. $13.00@13.50*

### Game—

*Imitation Oneida . . . . . 75@10%*
Newhouse . . . . . 50&5%
Hawley & Norton . . . . . 65&10%
Victor . . . . . 75@75&10%
Oneida Community Jump . . . . . 70&5%
Stop Thief . . . . . 60%
Tree Trap . . . . . 60%
Hector . . . . . 75@75&10%

### Mouse and Rat—

*Mouse, Wood, Choker, doz. holes, 12¢*
*Mouse, Round or Square Wire, doz. 85@90¢*
Marty French Rat and Mouse Traps (Genuine), ₱ doz.:

| | Crate lots. | Small lots. |
|---|---|---|
| No. 1, Rat | $11.50 | $14.50 |
| No. 3, Rat | $5.75 | $6.50 |
| No. 3½, Rat | $4.70 | $5.25 |
| No. 5, Mouse | $2.25 | $3.00 |

Animal Trap Co.:
Out o' Sight, Mouse, ₱ doz. . . . . $0.60
Out o' Sight, Rat, ₱ doz. . . . . 1.20
Easy Set, Mouse, ₱ doz. . . . . .35
Easy Set, Rat, ₱ doz. . . . . .85
Out o' Sight Chockers, ₱ doz. holes . . . . . .12
Out o' Sight, Tin, 5-hole, ₱ doz. traps . . . . . .75

### Trowels—

Disston Brick and Pointing . . . . . 25%
Disston Plastering . . . . . 20%
Disston "Standard Brand" and Garden Trowels . . . . . 30%
Kohler's Steel Garden Trowels, ₱ gro., 5 in., $4.80; 6 in., $6.00.
Never-Break Forged Steel Garden Trowels, in bulk, net ₱ gro. $5.50
In 1 doz. boxes . . . . . ₱ gro. $6.00
Woodrough & McFarlin, Plastering . 25%

### Trucks, Warehouse, &c.—

B. & L. Block Co.:
New York Pattern . . . . . 50&10%
Western Pattern . . . . . 60&10%
Handy Trucks . . . . . ₱ doz. $16.00
Grocery . . . . . ₱ doz $15.00
McKinney Trucks . . . . . each, net $10.00
Model Stove Trucks . . . . . ₱ doz $18.50

### Tubs, Wash—

*M'f'gr's list, price per gross.*

| No. | 0 | 1 | 2 | 3 | |
|---|---|---|---|---|---|
| *Galvanized* | *$67* | *$79* | *$89* | *$99* | *10&7½&5&5%* |

### Twine, Miscellaneous—

*Flax Twine:*
*No. 9, ¼ and ½-lb. Balls . 21@23¢*
*No. 12, ¼ and ½-lb. Balls . 19@21¢*
*No. 18, ¼ and ½-lb. Balls . 16@18¢*
*No. 24, ¼ and ½-lb. Balls . 15½@17½¢*
*No. 36, ¼ and ½-lb. Balls . 15@17¢*
*Chalk Line, Cotton ½-lb. Balls . . . . . 24@29¢*
*Cotton Mops, 6, 9, 12 and 15 lb to doz. . . . . 8½@19¢*
*Cotton Wrapping, 5 Balls to lb., according to quality . . 13½@19¢*
*American 2-Ply Hemp, ¼ and ½-lb. Balls . . . . . 12½@15¢*
*American 3-Ply Hemp, 1-lb. Balls . . . . . 13½@16¢*
*India 2-Ply Hemp, ¼ and ½-lb Balls (Spring Twine) . . . 7½@9¢*
*India 3-Ply Hemp, 1-lb. Balls 7½@9¢*
*India 3-Ply Hemp, 1½-lb. Balls, 7@8½¢*
*2, 3, 4 and 5-Ply Jute, 1½-lb. Balls . . . . . 9@11¢*
*Mason Line, Linen, ½-lb. Bls. 17¢*
*No. 264 Mattress, ¼ and ½ lb. Balls, according to quality, 30@60¢*
*Wool, 3 to 6 ply . . . . B 6¢; A 7½¢*

### Vises—

*Solid Box . . . . . 50&5@50&10&5%*

### Parallel—

Athol Machine Co.:
Simpson's Adjustable . . . . . 40%
Standard . . . . . 40%
Amateur . . . . . 25%
Columbian Hdw. Co., Slide . . . . . 40&5%; 65%
Fisher & Norris Double Screw, net, each, Nos. 2, $10.50; 3, $16.00; 4, $20.50; 5, $27.00; 6, $32.00.
Fulton Mach. & Vise Co.:
F. & R. Double Swivel Machinists' . . . . . 40%
Star, Solid Jaw, Machinists' . . . . . 40%
Hollands':
Machinists' . . . . . 40@40&5%
Keystone . . . . . 65&5@70%
Lewis Tool Co.:
Adjustable Jaw . . . . . 30%
Monarch, 50%; Solid Jaw . . . . . 50%
Massey Vise Co.:
Clincher . . . . . 40%
Parallel Bar . . . . . 15%
Perfect, 15%; Lightning Grip . . . . . 15%
Merrill's . . . . . 25%
Millers Falls Oval Slide Pattern . 60&10%
Parker's:
Victor, 20@25%; Regulars . . . . 20@25%
Vulcan's . . . . . 40@45%
Combination Pipe . . . . . 55@60%
Prentiss . . . . . 20@25%
Rock Island . . . . . 25%
Snediker's X. L. . . . . 33⅓%
Stephens' . . . . . 33⅓%

### Saw Filers

Disston's D 3 Clamp and Guide, ₱ doz., $24.00, 30%; Clamps . . . . . 30%
Perfection Saw Clamps, ₱ doz. . . . $4.50
Reading . . . . . 60%

### Wood Workers—

Fulton Mach. & Vise Co.:
F. & R. Double Swivel Coachman's . . . . . 40%
Star Solid Jaw Woodworkers' . . . . 60%
Massey Vise Co.:
Lightning Grip, 15%; Perfect . . . . 15%
Wyman & Gordon's Quick Action, 6 in., $6.00; 9 in., $7.00; 14 in., $8.00.

### Miscellaneous—

Fulton Machine & Vise Co., Combination Pipe . . . . . 70%
Holland's Combination Pipe . . 60@60&5%
Massey's Quick Action Pipe . . . . . 40%
Parker's Combination Pipe:
87 Series, 60%; 187 Series, 60&5%; No. 870, 40%.
Rock Island Pipe . . . . . 25%

### Wads—*Price per M.*

*B. E., 11 up . . . . . 60¢*
*B. E., 9 and 10 . . . . . 70¢*
*B. E., 8 . . . . . 80¢*
*B. E., 7 . . . . . 80¢*
*P. E., 11 up . . . . . $1.00*
*P. E., 9 and 10 . . . . . 1.25*
*P. E., 8 . . . . . 1.50*
*P. E., 7 . . . . . 1.50*
*Dis. 15%*
*Ely's B. E., 11 and larger . $1.70@1.75*
*Ely's P. E., 12 to 20 . . . . $3.00@3.25*

### Ware, Hollow—Cast Iron, Hollow—

*Stove Hollow Ware:*
*Enameled . . . . . 45&10%*
*Ground . . . . . 50&5%*
*Plain or Unground . . . . . 60%*
*Country Hollow Ware, per 100 lbs . . . . . $2.75@$3.00*
*White Enameled Ware:*
*Maslin Kettles . . . . . 65&10%*
*Covered Wares:*
*Tinned and Turned . . . . . 35&10%*
*Enameled . . . . . 45&10%*
See also *Pots, Glue.*

### Enameled—

Agate Nickel Steel Ware . . . . . 33⅓%
El-an-ge . . . . . 60&10%
Iron Clad Ware . . . . . 70&10%
Lava and Volcanic, Enameled . . 40&10%

### Tea Kettles—

*Galvanized Tea Kettles:*

| *Inch* | *6* | *7* | *8* | *9* |
|---|---|---|---|---|
| *Each* | *45¢* | *50¢* | *65¢* | *65¢* |

### Steel Hollow Ware—

Avery Stamping Co.:
Never-Break Spiders and Griddles . . . . . 65&10%
Steel Kettles, Maslins Scotch Bowls, Tin'd . . . . . 60%
Steel Stew Pans, Stew Pots, etc., Porcelained . . . . . 50%
Cleveland Stamping & Tool Co.:
Solid Steel Spiders and Griddles . . . . . 65&5%
Solid Steel Kettles . . . . . 60&5%

### Warmers, Foot—

Pike Mfg. Co., Soapstone . . . . 40@40&10%

### Washboards—

| No. | ₱ doz. |
|---|---|
| 800—Brass King, Single Surface, Open Back | $2.80 |
| 862—White Hen, Spiral Grimp Glass | $3.35 |
| 964—Royal Blue Enamel, Single Surface, Ventilated Back | $3.35 |
| 172—Our Best, Single Zinc, Soap Drainer | $3.35 |
| 722—Soap Saver, Single Zinc, Iron Top | $3.35 |
| 100—Northern Queen, Single Zinc, Perforated, Open Back | $3.00 |
| 134—Universal, Single Zinc, Extra Family Size, Ventilated Back | $2.80 |
| 760—Banner Globe, Single Zinc, Ventilated Back | $2.25 |
| 57—Peerless, Double Zinc, Spring Protector | $3.70 |
| 56—Red Cross, Double Zinc, Swing Protector | $3.60 |
| 17—North Star, Solid Zinc, Swing Protector | $3.60 |
| 797—Jewel, Single Zinc, Pail Size | $1.25 |

### Washers—Leather, Axle—

*Solid . . . . . 90@90&10%*
*Patent . . . . . 90@90&5%*
*Coil: ⅞ 1 1⅛ 1¼ inch. 9¢ 10¢ 11¢ 14¢ per box.*

### Iron or Steel—

*Size bolt . . . . 5/16 ⅜ ½ ⅝ ¾*
*Washers . . . . $4.65 3.75 2.45 2.25 2.05*
*The above prices are based on $6.75 off list.*
*In lots less than one keg add ½¢ per lb.; 5-lb. boxes add ½¢ to list.*

Avery Stamping Co.:
Standard, in 200 lb kegs, $6.00 ₱ 100 lb. disct.; in 100 lb kegs, add 10¢ net ₱ 100 lb; in 5 or 10 lb boxes, add 50¢ net ₱ 100 lb; in 1 lb boxes, add $1.00 net ₱ 100 lb.

### Cast Washers—

*Over ½-inch, barrel lots, per lb. 1½@1¾¢*

### Wedges—

*Oil Finish . . . . . lb., 2¼@2¾¢*

### Weights—Hitching—

Covert Mfg. Co. . . . . 30&2%

### Sash—

*Per net ton, f.o.b. factory:*
*Eastern District . . . . $20.00@—*
*Western and Central Districts . . . . . $19.00@$21.00*

### Wheels, Corundum and Emery—

Pike Mfg. Co., Corundum, 65%; Emery . . . . . 75%

### Well—

*8-in., $2.00; 10-in., $2.30; 12-in., $3.00; 14-in., $4.45.*

### Wire and Wire Goods—

*Bright and Annealed:*
*6 to 9 . . . . . 72&10&7½%*
*10 to 18 . . . . . 72½&10&10%*
*19 to 26 . . . . . 75&10&10&2½%*
*27 to 36 . . . . . 77½&7½%*
*Galvanized:*
*6 to 9 . . . . . 72½&10%*
*10 to 14 . . . . . 72½&10&5%*
*15 to 16 . . . . . 72½&10&5%*
*17 to 18 . . . . . 72½%*
*19 to 26 . . . . . 70&5&2½%*
*27 to 36 . . . . . 65&10&10%*
*Coppered:*
*6 to 9 . . . . . 65&10&10%*
*10 to 14 . . . . . 70&10&5%*
*15 to 18 . . . . . 65&10&10&10%*
*19 to 26 . . . . . 70&5&2½%*
*27 to 36 . . . . . 72½&10&2½%*
*Tinned:*
*6 to 18 . . . . . 67&10&10%*
*Brass . . . . . 15½¢ lb., base*
*Copper . . . . . 15¼¢ lb., base*
*Cast Steel Wire . . . . . 50%*

### Spooled Wire—

*Annealed and Tinned . 75@75&10%*
*Brass and Copper . . . . 70@70&10%*
*Retailers' Assortments, per box, $1.90@$2.10*
Wire Clothes Line, See Lines.
Wire Picture Cord, see Cord.

### Bright Wire Goods—

*Steel Wire Goods . 90&40@90&40&10%*
*Brass Wire Goods, 90&40@90&40&10%*
*Brass Cup and Shoulder Hooks, 85&10%*

### Wire Cloth and Netting—

*Galvanized Poultry Netting, 80&2½@80&7½%*
*Painted Screen Cloth, 100 ft., $1.35*
*Standard Galv. Hardware Grade: 100 ft. rolls, 24 to 48 in. wide, Per 100 sq. ft.*
*Nos. 2, 2½ and 3 Mesh . . . . $2.75*
*Nos. 4 and 5 Mesh . . . . . $3.00*
*No. 6 Mesh . . . . . $3.25*
*Nos. 7 and 8 Mesh . . . . . $3.75*

### Wire, Barb—See *Trade Report*

### Wrenches—

*Agricultural, 80&10&5@80&10&10%*
*Alligator or Crocodile . 70&10@75%*
*Baxter Pattern S Wrenches, 70&5@70&10%*
*Drop Forged S . . . . . 45@45&5%*
Acme . . . . . 60&10%
Alligator Pattern, 70%; Bull Dog . 70%
Bemis & Call's:
Adjustable S, 40&5%; Adjustable S Pipe, 40&5%; Briggs Pattern, 40%; Combination Bright, 50%.
Steel Handle Nut . . . . . 50&5%
Combination Black . . . . . 50&5%
Merrick Pattern . . . . . 50&5%
Boardman's . . . . . 40%
Coes' Genuine Knife Hdl . . 40&10&5&5%
Coes' Genuine Steel Hdl . . 40&10&5&5%
Coes' Genuine Key Model . . 40&10&5&5%
Coes' Genuine Hammer Handle . . . . . 40&10&5&5%
Coes' "Mechanics'" . . . 40&10&10&5&5%
Donohue's Engineer . . . . . 40&10%
Eagle . . . . . 70%
Gem Pocket . . . . . 30%
Hercules . . . . . 70%
W. & B. Machinist:
Case lots . . . . . 50&10%
Less than case lots . . . . . 50%
W. & B. Railroad Special:
Case lots . . . . . 50%
Less than case lots . . . . . 40&10&5%
Solid Handles, P., S. & W. . 50&10%; full cases . . . . . 50&10&5%
Standard Nipple Mfg. Co.:
Duplex Chain . . . . . 50%
Uwanta Wrench Co.:
Uwanta Special, Iron Handle . . . . . 40&10&5%
Other Wrenches . . . . . 50%
Vulcan and Agrippa Chain . . . . . 50%
Whitaker Machinists' . . . . . 50&10%
Wizard Adjustable Ratchet . . . . . 50%

### Fruit Jar—

Beni. P. Forbes, Triumph, ₱ gro., $7.50; per doz. . . . . $0.90

### Wrought Goods—

*Staples, Hooks, &c., list March 17, '92 . . . . . 90@—%*

### Zinc—(*Cask lots at mill.*)

*Sheet . . . . . per 100 lb., $7.00*

# THE IRON AGE

New York, Thursday, October 15, 1908.

## Historic Machinery.

BY W. J. BLACKMUR.

Machine tools turning out exact work have become so common that it surprises one to remember that only a century ago there were no screw lathes and planing machines. The few engineers in those days depended on the file and chisel, and most of the fitting was done, not within 1-1000 in., but within ¼ in. The lathe was for simple turning, and there were no screw cutting lathes to do accurate work. Having become accustomed to things as they now exist, it is almost impossible to understand some of the difficulties which the first engineers had to contend with. Indeed our modern work, done with such precision, makes the work of Watts, Trevithick and others appear exceedingly rough, until it is recalled that the planing machine and the screw lathe had not then made their appearance.

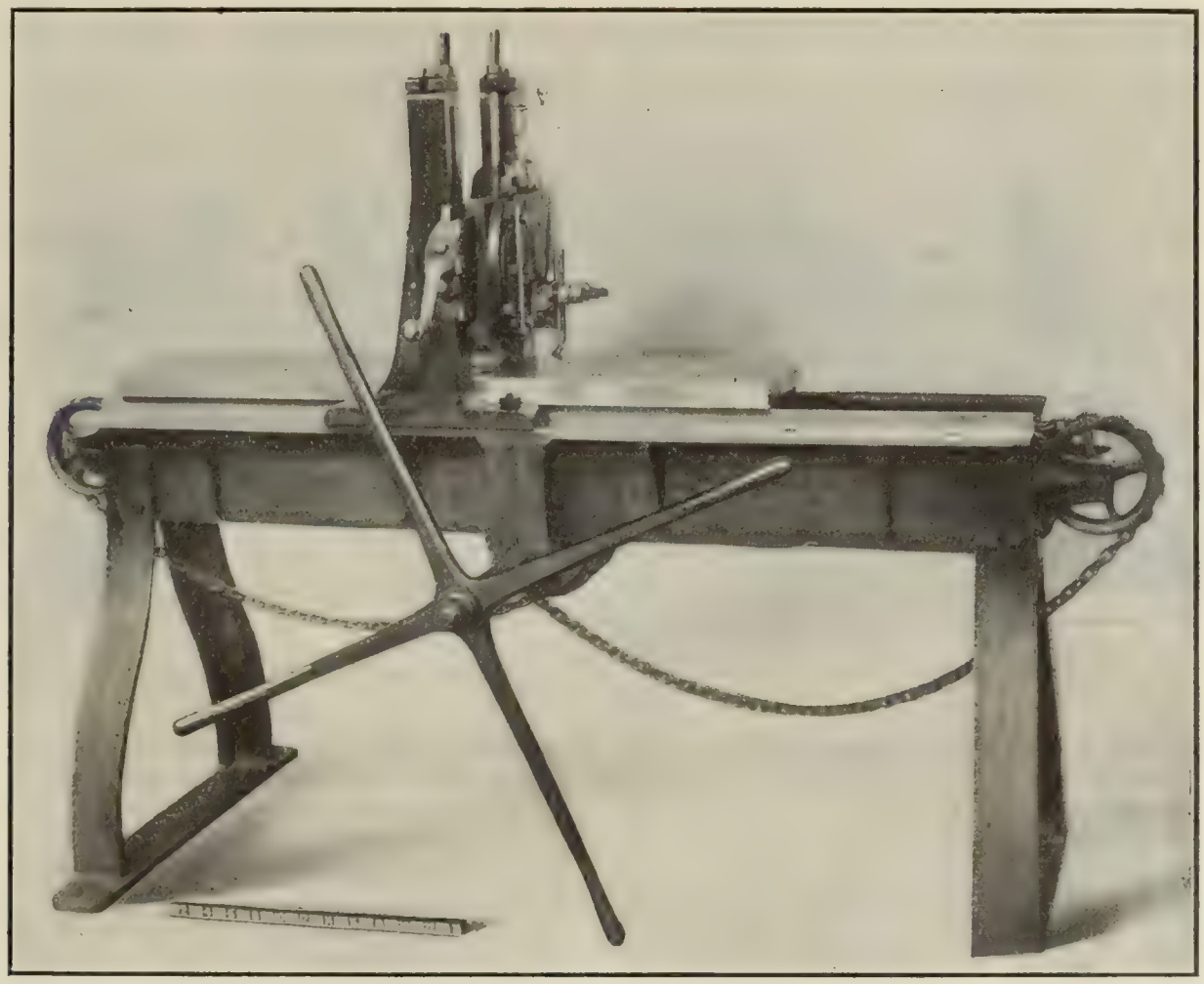


Fig. 1.—The Original Metal Planer, Now in the Patent Museum at South Kensington, England.

The Patent Museum at South Kensington, England, contains two machines which deserve recognition in mechanical history—the first machine ever used for planing iron and the first screw lathe for cutting threads and doing other work. The notice upon the planing machine, a view of which is reproduced in Fig. 1, is exceedingly short and states that it was made by Mr. Robert. From marks on the bed it is without doubt the first one made. The bed was moved backward and forward by hand through a windlass, the shaft of which carried a wooden drum underneath the bed of the machine. A chain fastened to each end of the bed, makes three turns around the wooden drum and goes over a wheel at the end of the frame. The headstock and tool holder are similar to modern planing machines and traversed across the work on a horizontal slide. The two upright screws on the headstock have separate motion.

Not far from the planing machine is the first screw lathe, which is shown in Fig. 2. The planer is exposed and can be closely inspected, but the lathe is within a glass case and carefully protected. This lathe is doubly interesting as Sir Joseph Whitworth operated this lathe for several years at the works of the inventor, Henry Maudslay, at Lambeth, England. The machine employs a lead screw and change wheels for producing screw threads. The bed consists of two triangular bars secured at a fixed distance and supported on feet by which it was secured to a bench. The hight of the centers is 1½ in. and the length of the bed about 3 ft. The headstock is fixed to the back bar only, but the carriage, which is of gun metal, slides on both bars and carries a tool holder, which can be moved to and from the work in V slides by a screw and handle. Between the two guides is a square thread lead screw 1 in. in diameter by 1¼-in. pitch. This screw is geared to the lathe spindle by change wheels, while a split nut and a clamping device at the bottom of the carriage formed a connection between it and the screw, which could be released when desired.

In another corner of the museum are the relics of Old Beelzebub, one of the ancestors of the steam engine. This engine had an ending which fitted its name, for it was destroyed by fire, but the steam piston and cylinder and much of the ironwork is left. The engine was constructed in 1769 at Kinneil, but was not a success owing to defective mechanical construction. Old Beelzebub was made to turn a water wheel, and when it was burnt down a new engine made by Watts and Boulton, called Old Bess, took its place. The piston of this engine is interesting, as it shows the crudity of mechanical work at that time. The top of the piston is removable in three sections to permit filling a circumferential recess in the piston with rope tallow and other materials to make a steam tight joint. The plates when replaced and bolted up forced the packing against the walls of the cylinder.

It seems exceedingly strange to build an engine to turn a water wheel, but these two engines were built for that purpose. Boulton was a large manufacturer of metal articles and had two water wheels to drive his

metal polishing machines. During dry weather the water would run low and from 1 to 10 horses were put to assist driving the factory. To displace these horses and to work the water wheels Old Beelzebub was constructed. It had an 18-in. cylinder, a 5-ft. stroke and worked an 18½-in. pump, pumping the water from the tail race back again to the head race, and so keeping a breast wheel 24 ft. in diameter by 6 ft. wide going when water was scarce. For a long time after this it was the practice to use engines for pumping water to drive water wheels because the motion of a water wheel was much more regular than that of the early steam engines. It was found when Old Bess was dismantled that an old furnace was under the cylinder, so even in those days some crude attempts were made at superheated steam.

Near the old engines in the museum is the Puffing Billy, and close to this is the model by which William Hedley solved the problem of locomotion. It was generally considered 100 years ago that a smooth wheel upon a smooth rail would not get enough grip to haul cars. In 1812 the cost of hay for horses and materials necessary to carry on a colliery having a long haulage was so high that unless something could be invented to supersede horses Hedley saw nothing before him and his family but ruin. It was one night after retiring, almost despondent and unable to sleep, that it suddenly occurred to him that if all the wheels of a moving machine were connected together any tendency of one to revolve without moving forward might be overcome by the remaining wheels. He resolved to test the idea and the next morning had a model made by a clock maker in Newcastle. It was successful and in 24 hr. he had invented the first railroad locomotive. The model is in a case in the museum and has gearing in the center connecting the wheels together like the works of a clock. Hedley had a full sized underframe constructed with gear connected wheels, these being turned by men upon the frame, so that the adhesion of all the coupled wheels was available for tractive effort. The frame was afterward fitted with a cast iron boiler and a single cylinder of 6-in. diameter to drive the road wheels through intermediate gearing. After repeated trials with different engines a new one was made, which was called the Puffing Billy. It ran from 1813 to June 6, 1862, when it was removed to the museum. That was the first of locomotion by steam upon smooth rails.

A cylinder of a 10-hp. engine also in the museum is worth attention, because of the method Watts employed to fasten the cylinder. It had a 48-in. stroke and was 17 in. in diameter. The steam was conducted to the ports by a pipe connecting the two and having taps which were opened and shut as required. This engine stands on 10 x 24 ft. of ground and has a sun and planet motion. As its maximum power was 13 hp., it gives some idea of the advance that has been made in the concentration of power in steam engines. Genius reveals itself in industrial inventions, and to the thoughtful there is much of interest in knowing how the appliances of today sprang from a few crude appliances.

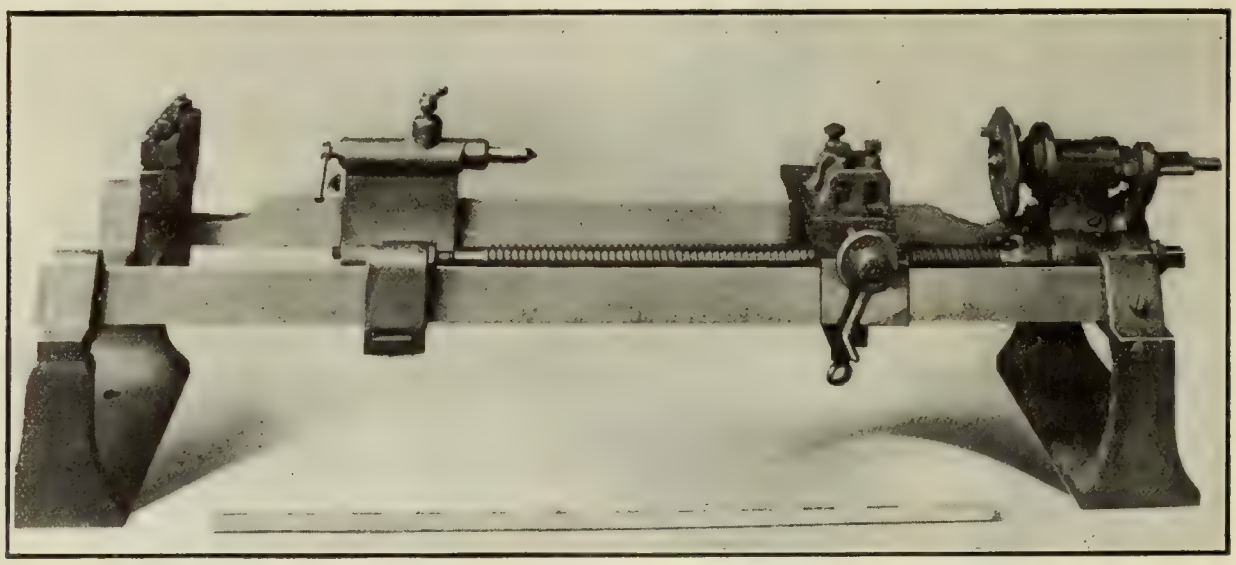


Fig. 2.—The First Screw-Cutting Lathe.—Invented by Henry Maudslay and Once Operated by Sir Joseph Whitworth.

## Grades of Lake Copper.

In his decision in the case of the Calumet & Hecla Mining Company against the Osceola Copper Mining Company, Judge Knappen, of the United States Circuit Court, at Grand Rapids, Mich., summarizes as follows the facts developed in the testimony in regard to the different grades of lake copper:

"Lake copper differs from most other copper in that it is 'native' or usually 'free' and substantially pure, arsenic and other impurities being united with the rock, where elsewhere united with the metal. Till recently practically all copper was furnace refined, and impurities were more readily removed from lake copper and a better product was obtained. But by electrolysis practically absolute purity is now obtainable, and as a result much lake copper is now refined electrolytically. Calumet refines its highest grade mineral by furnace; other grades by treating a lower grade electrolytically and mixing it with another grade not electrolytically treated, thus diluting the percentage of impurities. Its copper, however treated, is entirely lake copper and sold as 'best lake' copper (not electrolytic) and at one price. Osceola, Tamarack and Ahmeek mix their minerals with cathodes of Western copper produced by Boston & Montana, usually in equal proportions. The product is sold as 'best lake,' not as electrolytic, though but half lake. Some other lake coppers are likewise treated. Of 224,000,000 lb. of lake copper, Calumet's 95,000,000, Quincy's 16,000,000, Osceola's 18,500,000, Tamarack's 10,000,000, and Ahmeek's 3,500,000 are conceded best lake; 24,000,000 lb. of seven other mines (including Centennial's 2,250,000 and Wolverine's 10,000,000) are capable of use for all purposes as lake copper; and no reason appears why most of the remaining lake products too arsenical for high furnace refinement cannot be electrolytically refined.

"There is no inherent chemical or physical difference between equally pure furnace refined and electrolytically refined copper, if the latter is subjected to the same final furnace process, as it usually is. Electrolytic is capable of use for any purpose for which best lake is used. The ¼ cent premium of the latter is probably due to the long existing good reputation of lake. With electrolytic improvement, this preference is diminishing. The government originally specified Calumet alone for cartridges, but now indicates a willingness to take the best electrolytic. In the last five years Calumet has sold the government only 1,000,000 lb. Attempt to raise the price of lake as against electrolytic would be offset by larger use of electrolytic.

"If the distinction between lake and electrolytic is as sharply identified as complainant claims, his marketing yearly 60,000,000 lb. as lake which is but half lake raises the question as to his right to relief against monopoly in lake. But neither lake nor 'best lake' is so far a distinct commodity as to make Calumet control of Osceola, Allouez and Centennial necessarily tend to restraint of trade or monopoly in lake or best lake; hence no violation of federal laws."

# A Water Cooled Port for Open Hearth Furnaces.

At the Minnequa Works of the Colorado Fuel & Iron Company, Pueblo, Colo., Frank E. Parks and Harry A. Deuel have installed a water cooled port on the company's open hearth furnaces and have recently been granted a patent on the device, which has been giving good service. On all producer gas regenerative furnaces the greatest troubles are with the valves and port arches. In handling the latter class at the Minnequa Works four points were in view: 1. Cost of installation. 2. Cooling the arch between gas and air its entire length. 3. Placing the cooling device where the temperature of the incoming and outgoing gases would be affected as little as possible. 4. A water cooled port that would be easily applied to any design of furnace.

Fig. 1 shows a sectional view of an open hearth furnace with the cooled port applied, and Fig. 2 presents a section at right angles to that in Fig. 1. In brief, the cooling construction is as follows: A series of 2½-in. pipe is brought in over the bottom arch of the gas port. These pipe end in a bronze block so shaped that they form a solid arch at the inside of the port. At each side is a skewback bronze casting which supports this arch should the brick arches burn out or fall, and prevents the port from burning out on the sides. These bronze blocks are from 12 to 24 in. long. Good results have been secured by the use of 12-in. blocks. The supply water is brought in a 1-in. pipe which runs within a few inches of the end of the bronze block. This introduces the coldest water at the hottest point and also renders the flushing of the pipe much easier. For the Colorado works the supply water is brought some distance in ditches and generally carries considerable sediment and mud, which must not be allowed to collect or the pipes will soon burn off. To prevent this collection a high pressure line is connected with the low pressure system and by closing a valve high pressure can be turned in and the whole system flushed. The cold water being introduced at the hottest point overflows back and is taken out at the end of the furnace as indicated in Fig. 1. Over the water pipe a little silica sand is tamped and then an arch of brick is thrown over. The overflow is run into a cast iron trough and each outlet is plainly visible. The water is either taken over the McKennan valves or to the sewers.

Concerning the cost of installation, it is stated that several furnaces have been equipped at an average cost of less than $500. This includes all material and labor. The second installation would be less, as many fittings can be used continuously. The greatest renewal is in the 2½-in. line, as after being in the arch for a run of the furnace it is somewhat worn and the cost of replacement is so small that it is not advisable to take any chances of a pipe bursting.

This construction cools and maintains the length of the gas arch. The annoyance of a leak through the arch is done away with, and the producer gas introduced at a constant point, which is essential for regular, continuous working. The cooling is performed with the least possible absorption of heat from the furnace. The brick above and below are cool enough not to run but not enough to affect the incoming or outgoing gases. This has an essential bearing on the coal consumption per ton of ingots produced. The application of the port is flexible enough to meet any design of furnace without first making extensive alterations.

The first furnace on which the Parks port was installed cast its first heat April 25, 1908, and was thrown off September 16, 1908, with 315 heats cast, or an average for the run of 2.64 heats per day operating. This includes all delays incidental to furnace operation, such as bad bottoms, &c. The furnace had a handicap in the fact that it started its run with a set of checkers from which 234 heats had been made. Another furnace having this port cast its first heat June 27, and up to September 17 had cast 204 heats, or an average of 2.91 heats per day operating. This furnace in August made 80 heats, with no extra time worked; that is, it shut down on Saturday and started to charge Sunday morning.

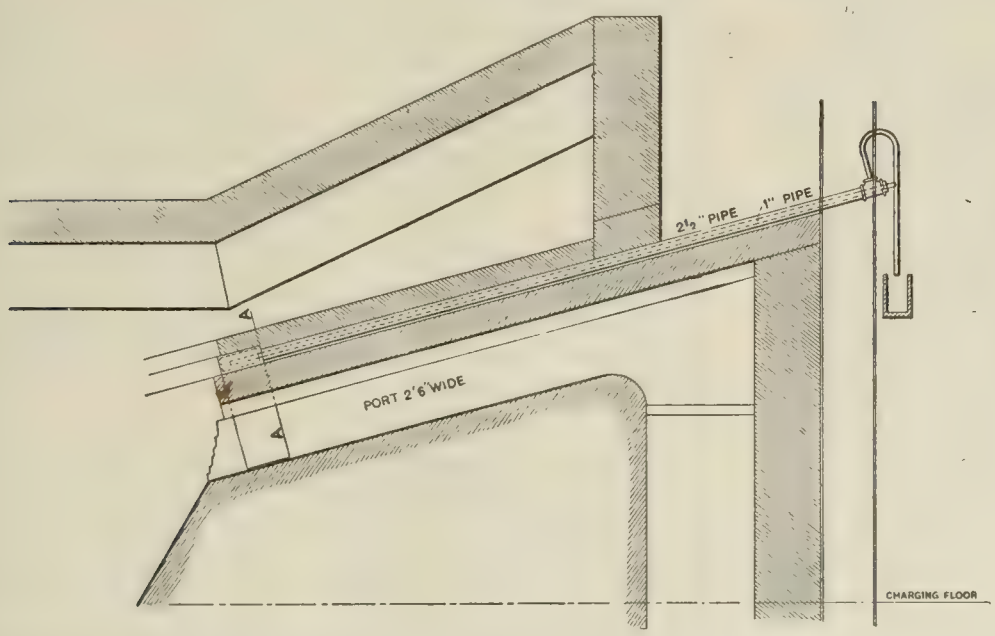



Fig. 1.—Section of Open Hearth Furnace, Showing Arrangement of Port Cooling Pipes and Bronze Box on End.

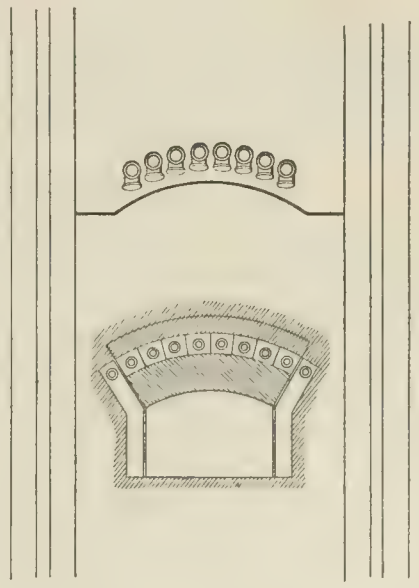


Fig. 2.—Section at A-A in Fig. 1.

**The National Steel Sheet Company.**—Through the efforts of the Mansfield Chamber of Commerce, Mansfield, Ohio, the National Steel Sheet Company has decided to locate in that city. The company proposes to erect a five-mill plant, both hot and cold rolls. There will be two departments at the start, a galvanized plate or sheet department and a sheet metal department for the manufacture of blue and black sheets. A suitable site has been secured adjoining the Pennsylvania and the Baltimore & Ohio railroad tracks. Work on the plant will be started at once, and it is expected that it will be ready for operation by February 1. The National Sheet Steel Company has a capitalization of $100,000, the principal stockholders being Canton, Ohio, and Pittsburgh capitalists. William M. Blecker is its president.

The William B. Pollock Company, Youngstown, Ohio, has received an order from the Electric Operating Construction Company, 49 Wall street, New York, for about 7500 ft. of 42, 45 and 48 in. steel riveted pipe, to be used for carrying water in the southern part of Arizona. The pipe will be laid 18 in. below the surface of the ground. The company has about completed shipment of a mile of 42 to 48 in. riveted steel pipe for a water line for the Arizona Power Company, Prescott, Ariz.

The Vilter Mfg. Company, Milwaukee, Wis., is building two refrigerating machines for the Northwestern Iron Company to be installed in its dry blast plant at Mayville, Wis. These machines are similar to those the company installed in the Gayley dry blast plant at the South Chicago Works of the Illinois Steel Company, which was illustrated and described in *The Iron Age* of October 8.

# Shop Suggestions from Employees.

At the last convention of the British Foundrymen's Association held in August at Newcastle-on-Tyne, England, a paper was read by R. W. Kenyon of the Ewbank Works, Accrington, on "How to Secure the Co-operation of the Workman in the Improvement of Shop Methods." The writer gave an account of the methods adopted at the Ewbank Works to promote good feeling, citing, as an evidence of some success in the effort, the fact that in this comparatively small plant, out of 180 workmen, clerks and travelers, there are 59 men, or one third, whose years of service with the company average 21. The first attempt to secure co-operation was made 30 years ago, when each foreman was given a monthly bonus on the saving in his department. In 1889 a bonus system for the men was started, this, in the judgment of the writer of the paper, being identical with the "premium system" in the United States, though he had never heard of such a plan when he suggested it to his firm. A price was fixed for which an article should be produced and one half of any reduction in that piece price by increasing output was paid the workman. A later move of the company was devoting its "fine fund"—the small fines imposed on employees for violations of rules—to the relief of employees in cases of accident and sickness, after the passage of the Workmen's Compensation Act giving the entire amount to cases of sickness.

A large part of the paper was given up to the "awards for suggestions" scheme as carried out at the Ewbank Works. From the author's interesting account we take the following:

### The Dayton Plan the Basis.

At its inception our "awards for suggestions" scheme was not original; it was based upon an American scheme. But in its present shape I think it is essentially original, and also a more reasonable plan than the one from which it originated. In 1903, C. B. Auel, who was for some years assistant to the general manager of the British Westinghouse Company at Trafford Park, Manchester, and is now with the Westinghouse Machine Company in Pittsburgh, Pa., suggested that our business was essentially one in which we ought to be able to get good suggestions from the men. He mentioned that the National Cash Register Company of Dayton, Ohio, had a system in operation for remunerating the men for suggestions, and advised me to get into correspondence with the company. I did so, and became an enthusiastic admirer of the company's principle of giving rewards to the men for suggestions for improvements. I found that the acceptance or rejection of the suggestions and the amount of the award were decided upon by a committee, and that a sum of about $1500 was available annually for prizes, the amount of the award being limited as far as I could gather to $50 in any single case. We followed the Dayton company's method very closely in our original plan, but knowing the skepticism of the British workman when the employer offers him a gift, we thought that it would be advisable, in order to secure his sympathetic co-operation, to have a committee on which there should be representatives of the workmen equal in number to the representatives of the employers.

Our original method was that we would have a half-yearly competition, and we arranged that all suggestions sent in should be dealt with by the committee referred to. This committee was composed of seven representing the employers and seven representing the men; the seven for the employers being three directors, the secretary and three foremen, and the seven representing the men being one man selected by the men from each of seven departments. This system was found at the outset to work satisfactorily. The voting as to the amount of the award was by ballot, and it is a singular fact that in all cases when the amounts suggested for the successful competitors were examined, the amounts suggested by the directors were always in excess of those suggested by the foremen and the men. Naturally there were some suggestions which were not considered of sufficient merit to be adopted, but on the whole the effort was fairly successful. The committee meetings were always held in the evening, and in order that the men on the committee might not feel that their time was being wasted, the directors arranged that they should be paid at their usual rate of wages for all time spent at the committee meetings.

### Objection to Employees' Committee.

A little over two years ago an incident occurred which showed that however good it was in theory to have the workmen themselves sitting on the adjudicating committee, there were objections to it in practice. One of the men told a director that he had a suggestion to make with regard to his own work, by which he could do at least 50 per cent. more work if certain alterations were made in the arrangement of certain machine tools. He was told to send in his suggestion to the committee, but this he refused to do. He said that men who had made suggestions had suffered so much from the chaff and humbug of some of the men who either had not the brains to send in suggestions or were too indifferent to do so, that if he might not make the suggestion in confidence to the directors he would drop the thing altogether. The matter was considered by the directors, and it was then decided that in future, instead of a half-yearly competition, the scheme should be made continuous, that suggestions should be sent in at any time, and that the competitor should himself decide whether the suggestion should be adjudicated upon by the committee, who would be called together for the purpose, or by the directors. It is worthy of note that since then the committee has not once been called together. In every case the directors have been asked to consider the suggestion, and to make the award if the suggestion was considered to be worthy of one.

Posters, which read as follows, are exhibited now in every part of the works, giving particulars of the amended scheme, I would specially draw your attention to Clauses 3, 4 and 5, because they are the enunciation of a new principle:

### The Scheme as Modified.

1. We propose in future that suggestions, either for improvements in methods or systems of production or manufacture, or for improvements in articles we manufacture, may be sent in at any time, instead of once in six months, as in the past. The secretary will, at any time, and in strict confidence, supply the necessary forms on which suggestions are to be made ,as in the past.

2. Suggestions may be adjudicated upon in one or two ways, at the option of the person sending in the suggestion—viz.:

(*a*) It may be sent in as before to the Suggestion Committee, who will decide what award, if any, has to be made. The sealed envelope containing the suggestion may either be left with the secretary at the office, or sent to him by post. A meeting of the committee will then be convened, and the amount of the award will be settled by the committee as in the past; or,

(*b*) Where publicity is not desired, it may be addressed to the directors, who will treat it as a confidential communication, and will not divulge the name of the person making the suggestion except with his consent or by his desire.

3. Where the scheme is submitted to the directors under paragraph (*b*), and is one for an improvement in methods or system of working or production, the directors will decide upon the merit of the suggestion and what award, if any, shall be made, and they undertake that any sum they award shall be given privately, and no mention made of it in any way except where otherwise desired.

Where no outlay in new machinery, &c., is entailed, and where the cost of altering existing machinery, tools, &c., is not of any moment, the general basis on which the award will be made (should the suggestion be adopted in its entirety by the directors) will be one-half the amount of the total saving effected during a period of two years from the day when the suggestion is put into operation. This amount will be paid quarterly so long as the man who makes the suggestion remains in our employ, but payment will cease if he leaves our employ.

Where considerable modification of the suggestion is necessary to make it practicable, or where special outlay in plant or appliances is required, then a special arrangement will need to be made between the directors and the person making the suggestion.

4. When the suggestion is submitted to the directors under paragraph (*b*), and relates to improvements in the articles already being manufactured by the firm, a special arrangement will need to be entered into in every case between the directors and the person making the suggestion.

5. In any and every case the directors undertake not to make use of any suggestion without first having come to a mutually satisfactory arrangement with the person making such suggestion, except the suggestion is a matter of public knowledge, or the company has already experimented with, or has put

into practice a similar idea, or already has the idea on its own list of improvements to be worked out.

**The Award Fund Not Limited.**

I would again direct your special attention to what I consider is the keynote of our later scheme, and the point where we now differ so materially from the scheme of the National Cash Register Company. In their scheme the amount at disposal for the awards was limited to a certain sum per annum. In our case it is absolutely unlimited, which from the workman's point of view must be a preferable arrangement. The broad principle of our scheme is that the workman shall be entitled to half the savings of the first two years after the scheme has been put into operation; that is, when the suggestion relates to a process of manufacture. Where the improvement is in any of the articles we manufacture, and it is considered to be patentable, a patent will be—and, in fact, has been—taken out at the expense of the company in the joint names of the company and the workman, and a royalty paid on each article made. I call this a really businesslike principle. The award is not a matter of charity, neither does it leave room for any dissatisfaction with the award. We give half the savings for two years, and so whether the award is £1 or £1000 depends entirely on the suggestion itself, and thus the man fixes the amount of his award.

While we have not been flooded with suggestions, I think we have no reason to be dissatisfied with the results up to now. The drawback under clause (*b*) of section 2, by which suggestions are made to the directors in confidence, is that the workmen generally are in ignorance of what is being done, and so that stimulus is lacking which was provided by the old scheme, when the suggestions were sent to the committee and the awards publicly made. I have asked my co-directors to alter this arrangement, and they are willing that in future a half yearly announcement shall be made which, while concealing identities, shall give the men a general idea as to the suggestions received, the departments from which they come, and the value of the award. I am inclined to think that at some later day, when ignorant jealousy has died down and the thinking men in our works have experienced the monetary advantages of our scheme, it would be a good plan to adopt another point of the American scheme, and to issue a handsome diploma to all successful competitors to serve as a memento of their achievement.

## Fuel Purchases Under Inspection and Analysis.

At the meeting of the Philadelphia Foundrymen's Association, October 7, William S. Gould, president of the Fuel Engineering Company, 59 Pearl street, New York, read a paper on "Systematic Inspection and Analysis of Fuels." We present a synopsis of the paper below:

The haphazard policy of many manufacturers in the purchase of fuel does not comport with the care exercised in other details of their business. The custom of trying out samples of fuels and when a certain coal or coke is found that performs well to contract for that fuel ignores the question whether the same fuel whatever its economic value is delivered throughout the term of the contract. The exact commercial value of coal or coke may be quite different from the value shown by tests of mine samples. The latter are generally selected and may represent a level of heat value which cannot be maintained. It is wiser for the consumer to test his fuel and actually know what heating power it is developing. In a case which came under the writer's notice a certain coal which had always shown wonderful heating value and freedom from sulphur was bought on strict specification. Almost immediately trouble developed, and analysis of the coal on the dump revealed so high a sulphur content that another coal had to be substituted. On investigation it was found that the mining operations had run into a vein with excessive sulphur.

It is often said of anthracite coal that it runs very uniform in quality; but the buckwheat size, for instance, has been found to range from 10 per cent. to over 40 per cent. in ash. The question of moisture is also important. Water at $2.25 to $2.60 a ton is expensive. Evaporation tests are not accurate, however carefully they may be run because it is impossible to burn the fuel at all times at the same rate and under the same conditions even in the same plant. Scientific tests of heat value made with the calorimeter check within 1 per cent., while evaporation tests will vary 10 per cent. or more. Moreover, observations of ash content are not always reliable. Of two coals with different ash content the sample with the lower ash will sometimes show also lower heat units, due to the difference in admixture of volatile constituents. Sometimes a considerable part of the ash may be dissipated by strong draft, and again the coal may not have been properly consumed, and the so-called ash would contain a large percentage of unburned carbon.

**Experience with Fuel Analysis.**

The purchase of fuels on the British thermal unit basis is no experiment. The United States Government, which is a buyer of over $6,000,000 worth of coal a year, has found by the establishment of testing laboratories and by purchase under specifications, that some of the coal offered is expensive at any price. Mines producing a high grade product cannot lose anying by selling on specification, and mines producing lower grades ought not to be willing to put themselves in the position of selling their product under a misrepresentation.

Not long ago a cargo of a high grade coal was sold on its reputation. Before accepting it the buyer required a sample to be taken and analyzed. The test showed the coal to be a very different coal in every respect. Investigation showed that, although it was a shipment from the same mining company, it came from a different vein, and that an error had been made in billing it.

When a consumer has regular analyses of his fuel, experience has shown that if the quality of his fuel is good its quality will be maintained; if poor, the quality will improve. Within three months after securing a regular service of this character, a certain plant reduced the ash content of its coal from 25.83 to 12.93 per cent., and increased the heat efficiency from about 11,000 to 12,633 B.t.u. Another plant reduced the ash content of its coal from about 28 per cent. to about 15 per cent.; another plant, from 40 to 13 per cent.; another, from 35 to 16 per cent. If a coal is being used at the rate of 6000 tons a year that contains, for instance, 10 per cent. more ash than some other coal, the cost of removing the excess ash alone would pay for regular analyses. But if such analyses reduced the ash content of the fuel to its proper percentage, and saved the cost of removing the excess 10 per cent. of ash, a much higher heating efficiency would be secured with all its consequent economies.

**A Comparison of Semi-Bituminous Coal and Anthracite.**

The question often comes up whether semibituminous coals, apparently high priced are as cheap as anthracite. Many conditions must be considered, but take the basis of heating value alone. The average of several hundred samples of anthracite buckwheat showed an ash content of 19.42 per cent.; moisture, 4.65 per cent., and British thermal units as received 11,324. If you are paying $2.25 per gross ton at tidewater, you would be able to buy 108,073 B.t.u. for 1 cent. In comparison, take the average of a large number of samples of semibituminous coals (which average is considerably below the average of the best grades), including a wide range of such coals from various districts, which showed: Ash, 6.28 per cent.; moisture, 1.93 per cent., and British thermal units as received, 14,118. At $2.60 per ton, you would be able to buy 120,181 B.t.u. for 1 cent. Comparing the net values of these average samples, the average buckwheat sample is worth 89.9 per cent. of the average semibituminous sample.

The founder is particularly interested in coke analysis. High sulphur, for instance, may be present in any grade of coke, and that coke from the same mine and made in the same ovens will vary greatly in its sulphur content. A chemist for a large mining company has stated that he has known coal to vary from 1 to 3 per cent. in sulphur within 50 ft. Ash and moisture are also factors whose variations are important. Ash varies from 6 to 16 per cent.

# The Panther.

## A Floating Foundry and Machine Shop.

An important member of the Pacific fleet now nearing Japan is the repair ship Panther, the most completely equipped vessel of its kind ever fitted out by any navy. Days were when each vessel carried its own provisions for making repairs which would suffice at least until it could make a port where permanent repairs could be made. Even now all warships have mechanics and tools for temporarily making the most usual repairs, but it is no longer possible for each ship to be sufficient unto itself. In the Panther the Pacific fleet has a complete iron and brass foundry, pattern, carpenter, forge and machine shops, as well as stores of repair parts and stock for making all kinds of repairs.

It will be remembered that during the Spanish-American War the United States Navy fitted out a vessel called the Vulcan as a repair ship to attend the fighting fleet. This forerunner of the Panther carried a number of machine tools with a small foundry equipment, but it was by no means as complete as this later repair ship. At that time the Panther was used as a cruiser having been converted to that service. Originally it was the Venezuela of the Red D Line. The



Fig. 1.—A Part of the Machine Shop on Board the Panther.



Fig. 2.—A View Toward the Structural Shop.

vessel is 312 ft. long and 42 ft. 8 in. wide. The main draft is 15 ft. 9 in. and the speed 13 knots per hour. It has a coal capacity of 675 tons and a total displacement of 3380 tons. In addition to the crew, the Panther carries about 50 mechanics.

### The Carpenter and Pattern Shop.

Practically all of the machine equipment is forward of the engines and boilers and is located on the first deck below the main deck, which is known as the machinery



Fig. 3.—A View Toward the Forge Shop.

deck and corresponds to the gun deck in an ordinary war vessel. In the woodworking department there is a Fay & Scott woodworking lathe, a wood planer, buzz saw, band saw and benches. Not a very extensive equipment it might seem for a pattern shop, but when it is considered that no where is space a more valuable item than on shipboard, the Panther is after all rather completely equipped even in this department. Closely adjoining is the general

**Machine Department,**

a section of which may be seen in Fig. 1. Here are found a larger number of tools, since it is natural to expect that there will be more operations on metal than on wood in such repairs as would occur to present day war vessels. The machinery includes two 12-in. Le Blond engine lathes, two Bradford lathes, a Bickford radial drill, the arm of which is pivoted to a bracket bolted directly to the side of the vessel; a dry and a wet grinder, a Becker-Brainard milling machine with a special self-contained countershaft with individual motor drive, a drill press, a Jarecki pipe cutting and threading machine, a Detrick & Harvey open side planer, 36 x 36 in. by 8 ft. in size; a Jones & Lamson flat turret lathe, a Putnam slide bed gap lathe, taking 16 ft. between centers normally and over 20 ft. when fully extended; a dry and a wet grinder, a Potter & Johnston and a Springfield shaper, a Bury air compressor and two square iron portable benches with vises. The five lathes are all driven from a line shaft which is connected with a motor. This is the only group drive on the vessel, all of the other machine tools being individually motor driven. An interesting drive is that of the buzz saw and wood planer in the pattern department; the motor is located between them and the belt may be placed over the driving pulley of either machine. In this way the floor space and weight of an extra motor is saved, and although only one machine can be run at a time, this is rarely, if ever, a serious disadvantage.

For work on structural materials and plates there is a department, seen in the background of Fig. 2, contain-



Fig. 4.—The Rear Main Deck, Showing the Cupola and Brass Furnace Stacks.

ing a combination punch and shear, plate bending rolls, a Watson-Stillman hydraulic bending press, &c. Still further toward the stern of the vessel is the blacksmith department, shown in Fig. 3. Here are located a steam hammer, one portable and five stationary forges, three anvils secured to cast iron blocks and a motor driven No. 6 Sturtevant forge blower. In the center of the picture may be seen a number of crucibles and sprinkling cans which are on their way to the foundry. The latter is further aft and on the deck below.

**The Foundry.**

In many respects the most interesting department in this floating shop is the foundry. The stacks of the cupola and the brass melting furnaces may be seen in the view on the deck given in Fig. 4. The furnaces are located far down in the hold and may be seen in Fig. 5. The charging floor of the cupola is on the machinery deck and all of the charging must, of course, be done by hand, since on shipboard saving of space is more to be considered than saving of manual labor. The equipment in the foundry melting department consists of a No. 1 Whiting cupola of 23 in. diameter inside the lining, a small Schwartz furnace and a Calorex melting furnace. The latter uses crucibles, which are also used for carrying the metal from the Schwartz furnace into the foundry molding room. In one corner of the melting room is located a No. 6 Sturtevant blower, driven by a steam engine of the same make, supplying blast to the cupola and the melting furnaces. Provision is also made for blowing fresh air into the foundry to keep the temperature down when the men are working.

The cupola base, as may be seen in Fig. 5, is surrounded by a low iron inclosure, to be filled with sand for catching the cupola drop. The molten iron or the molten metal from the other furnaces is carried to the foundry proper, which is a room of about 14 x 20 ft. For supporting the bull ladles or for handling copes or heavy castings, chain blocks and other lifting devices are provided which may be attached to the deck beams.

The foundry supplies, including molding sand, coke and iron for the cupola, ingot metal for the brass furnace, extra crucibles, ladle shanks, flasks, lifting and handling tackles, &c., are stored in the hold near the cupola. With the equipment provided it is possible to make a casting of any weight up to 2000 lb., and perhaps more. All of the furnaces and other equipment on board are anchored and braced so that they will not be displaced when the vessel rolls.

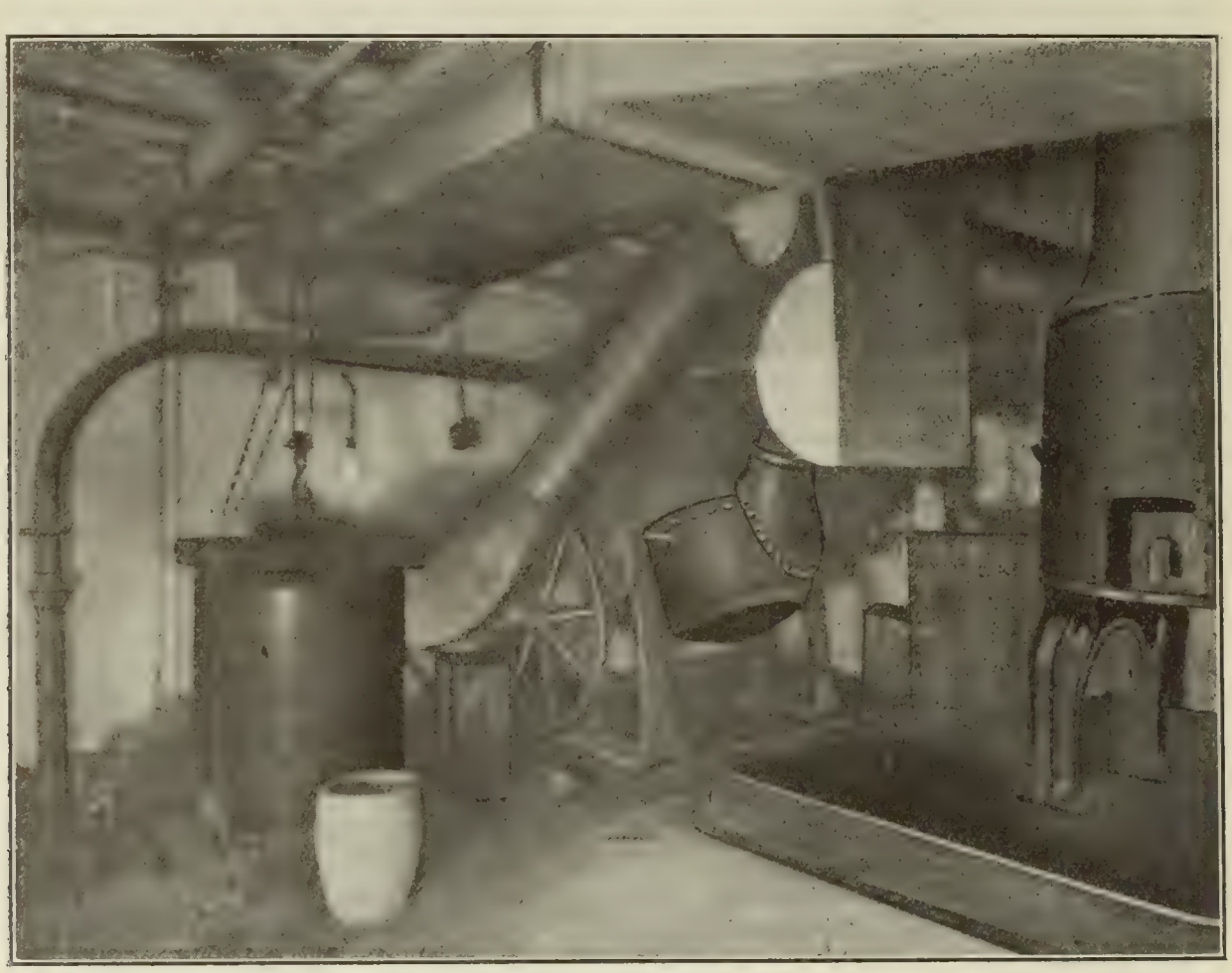


Fig. 5.—The Metal Melting Furnaces in the Hold.

## The Electric Show.

The New York Electrical Show, which closed in Madison Square Garden Wednesday, October 14, proved to be successful both in point of attendance and in the variety of exhibits. In addition to the companies mentioned in *The Iron Age* last week as showing apparatus of particular interest to manufacturers, a number of houses had exhibits on view which were not noted on the opening day. Among them was that of the Norton Company, Worcester, Mass., whose abrasive materials were exhibited in close proximity to a booth occupied by the Atchison Oildag Company, Niagara Falls, N. Y., which was demonstrating Oildag paste, a new lubricant. The Hoskins Company, 93 Erie street, Chicago, Ill., through Milton Cohen, Eastern sales manager for the company, showed the Hoskins electric furnaces, including a combustion tube furnace, muffle furnaces and an electric laboratory hot plate. The Bates Mfg. Company, 10 Fifth avenue, New York, demonstrated its hand numbering machines, and the Murphy Electrifier Company, Rochester, N. Y., displayed the Murphy electric rectifier. An interesting exhibit was that of the H. B. Camp Company, Pittsburgh, Pa., comprising a line of vitrified drain tile. The New York Pole Company, 277 Broadway, New York, made a special demonstration of a new system for reinforcing trolley poles at the base where they have become corroded. The company uses a steel cage reinforced cement column inside of the corroded pole, and sections of a reinforced pole were shown, and the method of applying the reinforcing was demonstrated by sectional drawings which were distributed. The Heany Company, 25 Broad street, New York, exhibited the Heany tungsten lamp and Heany wire, which is a fireproof magnet wire. The Gem automatic electric air pump, which, it is claimed, will fill an 18-gal, tank to a pressure of 25 lb. in 2½ min., was a feature of the exhibit of the Electric Light & Power Company of New York, and the General Electric Company, Schenectady, N. Y., showed a small Curtis turbine.

The Government estimates on crop conditions, published last week, indicate a corn crop of 2,515,000,000 bushels, or 51,000,000 bushels less than was indicated in September, and 77,000,000 bushels under the final returns for 1907. The final estimate for the bumper crop of 1906 was 412,000,000 bushels higher. The estimate for the wheat crop of 1908 is 659,030,000 bushels, while the

crop of 1907 was 634,087,000 bushels. The total of the estimates on corn, wheat, oats, rye and barley for 1908 is 4,161,354,000 bushels, while the total crops of these cereals in 1907 amounted to 4,165,413,000 bushels.

## A New Steptoe Shaper Drive.

In another part of this issue is given a description of the foundry and machine shop equipment on the United States repair ship Panther, which mentions the necessity of economizing space in the installation of machinery on shipboard. In this connection the shaper herewith illustrated and built by the John Steptoe Shaper Company, Cincinnati, Ohio, is interesting, inasmuch as it was specially designed for one of the Government revenue cutters, where the particular requirement was a very compact machine with self-contained drive. For this reason the motor stand was placed on the base of the machine and against the column, where it does not project beyond the space which must be allowed for the return stroke of the ram.

Fig. 1 shows a general view of the machine as it appears with the covers inclosing the driving gears, and Fig. 2 a three-quarter rear view in which all of the driving train is exposed. The machine is a 14-in. single geared crank shaper, and the motor a 2¼-hp. variable speed General Electric motor having a speed range of from 750 to 1500 rev. per min. On the motor shaft is a rawhide pinion with brass flanges 2 in. in diameter by 1¾ in. face. This pinion meshes with a 16-in. gear on the right side of the machine, as viewed in Fig. 2, giving a gear ratio of 8 to 1. The shaft carrying this gear has a 5-in. bearing on both sides of the column. These bearings are of cast iron and are dowled and screwed to the column against machined surfaces.

On the opposite side of the machine from the large gear is a gear 2 9-16 in. wide, having 88 teeth. This wide faced gear is used to drive the compound gear on the shaft directly above it and allows for shifting the compound gear. The larger gear on the compound gear is 9 in. in diameter by 1¼ in. face, and the smaller gear 4 in. in diameter by 1¼ in. face. By shifting these gears two changes of speed are secured. When the 4-in. gear is driving the gear directly above it, as shown in Fig. 2, the 6-in. gear is shifted sufficiently far to the right to be out of mesh with the gear above it, but is still in mesh with the wide faced gear beneath it. When the 6-in. gear engages both the gear above it and the wide faced gear, the smaller gear of the compound gear is out of mesh with the gear above it. The upper gears are on the driving shaft proper. The larger one is 8 in. in diameter and has 78 teeth, and the smaller gear is 6 in. in diameter and has 58 teeth. The hand wheel at the bottom associated with the wide faced gear is used to turn the gears sufficiently to make the compound gear mesh with the gears on the driving shaft when the compound gear is shifted to change the speed.

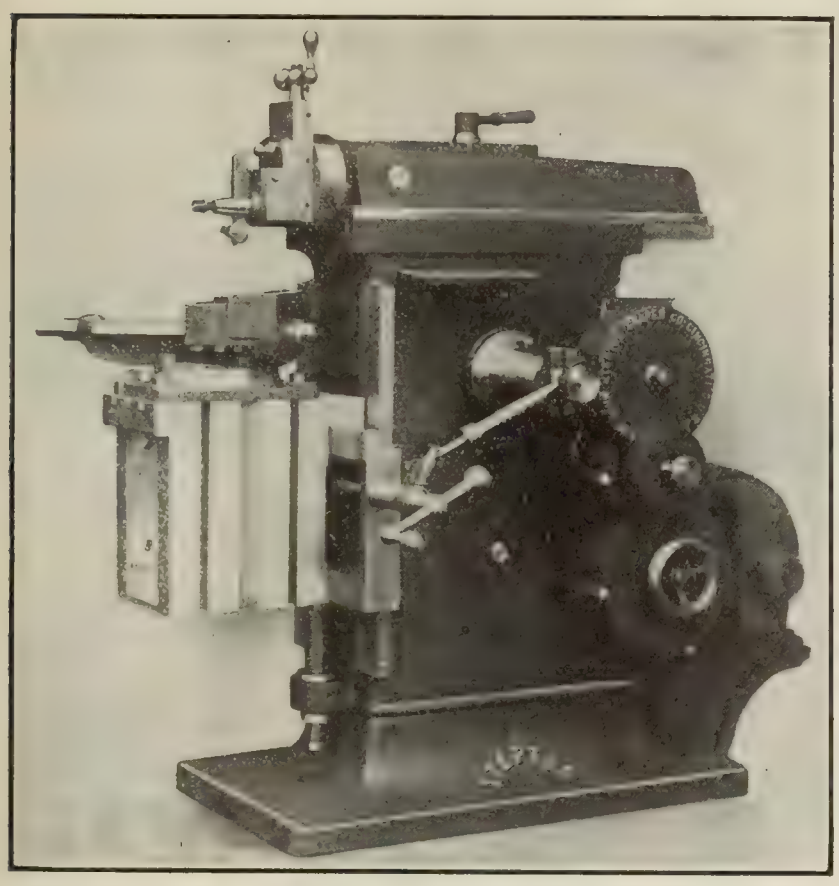


Fig. 1.—A New Shaper Motor Drive Designed by the John Steptoe Shaper Company, Cincinnati, Ohio.

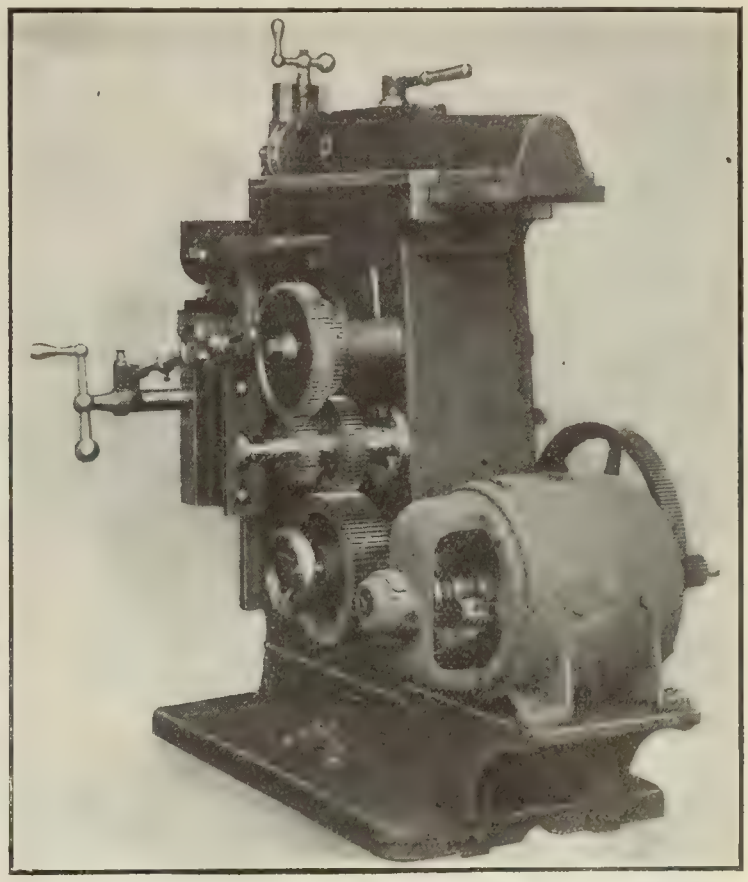


Fig. 2.—Another View of the Steptoe Motor Driven Shaper with the Gear Covers Removed.

## A Montana Power Development.

Active work on hydro-electric installations at the Rainbow Falls and the Great Falls of the Missouri River has been begun by the Great Falls Waterpower & Townsite Company, Great Falls, Mont. The energy designed to be developed in these plants is in the neighborhood of 23,000 to 24,000 hp. each at the lowest stage of water. The Rainbow dam will consist of a timber crib, rock filled structure, about 26 ft. high and 1100 ft. long between gate masonry, and will have on the south side of the river five sluice gates for the control of the river silt. On the north side a series of eight head gates and penstock tube will conduct the water from the dam to a large steel penstock, 22 ft. in diameter and 2500 ft. long, through which it will be delivered to the site of the power house, situated at Crooked Falls. From the end of this penstock water will be carried through branch tubes to the water wheel units in the power house. The number and size of these units have not as yet been determined.

It is proposed to develop both installations at once, which when concluded will distribute power throughout the northern and western part of the State for mining and manufacturing purposes. The dam at Great Falls will be constructed on practically the same lines as the Rainbow dam, and will be of about the same hight. The power house, however, will in this case be located closer to the dam and water from it to the power house will be conveyed through a forebay instead of a long penstock, as in the case of the Rainbow Falls. Details of the water wheel and electrical equipment have not yet been worked out, but work on the dams is now under way, and it is the purpose of the company to continue construction through the winter months in order that power may be turned on the line about October 1, 1909. The engineer in charge of this work is Henry A. Herrick of the firm of Charles T. Main, Boston, Mass., and construction is being superintended by Frank A. Scotten.

# The Champion Combination Tool Holder.

In lathes, planers and shapers the Champion combination tool holder, made by the Western Tool & Mfg. Company, Springfield, Ohio, may be used in a variety of ways. Fig. 1 shows the parts of the tool unassembled and, as far as possible, placed in relatively the positions they take when assembled. Figs. 2, 3, 4 and 5 show typical assemblages of the parts for the purposes indicated.

The forms of the different parts are best to be seen in Fig. 1. All of the cutters are self-hardening steel. The shank H is a steel drop forging, case hardened, having a depressed head, the surface of which is provided with circumferential notches and the forward end of the shank with a longitudinal recess. This recess takes the rear end of the cutter when the tool is assembled, as

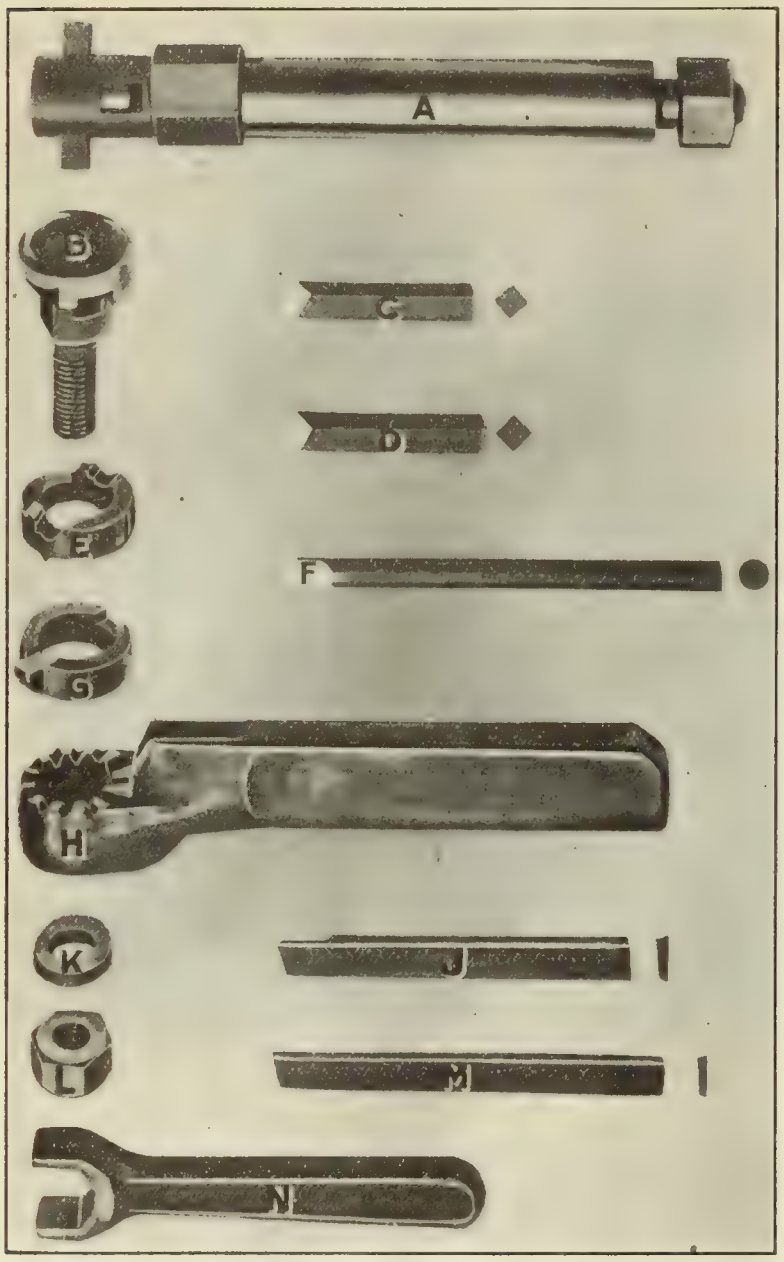



Fig. 1.—The Unassembled Parts of the Champion Combination Tool Holder Made by the Western Tool & Mfg. Company, Springfield, Ohio.

shown in Fig. 2, as a straight turning tool. In this grouping of parts there is placed immediately above the shank head the ring G of Fig. 1, which has two projections on its lower surface to engage in the notches in the shank head, recesses on its upper surface to take square cutters of the forms shown at C and D, Fig. 1, and a supporting lip under the cutting end of the cutter to prevent mashing down the ring or breaking the high speed steel cutters, which are brittle. To hold the cutter the clamping bolt B is placed with its threaded end through ring G, the shank head H and the washer K, and is tightened by the nut L, using the wrench N. The cutter C passes through the transverse square hole in the enlarged end of the clamping bolt B, and when the nut L is tightened the cutter is fixed in any position; for example, as shown in Fig. 2, or it may be turned either to the right or left at any one of several different angles corresponding to the notches on the upper surface of the shank head.

To assemble the tool as a cutting-off tool the ring G



Fig. 2.—The Straight Turning Tool Combination.



Fig. 3.—The Side Turning Tool Combination.



Fig. 4.—The Boring Tool Combination.

of Fig. 1 is replaced by the ring E, which is similar to it as far as the lower face is concerned, but is differently notched on the upper surface. On one side this ring is cut away to form, with a corresponding recess on the clamping bolt head B, a dovetail way to receive the cutter M, as shown in Fig. 3. The latter illustration happens to be that of a side tool using the cutter shown at J in Fig. 1. Either the cutting-off tool or the side tool may be assembled right or left hand. A cutter ground as a threading tool may be similarly used in the holder, but is not shown in the illustrations.

As a boring tool the same ring E is used on the holder, and the cutter F, Fig. 1, is passed transversely through the hole in the clamping head B, so as to rest in the grooves in the upper surface of the ring E. The assembled tool appears in Fig. 4. Here, as before, it is possible to adjust the cutter to different angles by caus-

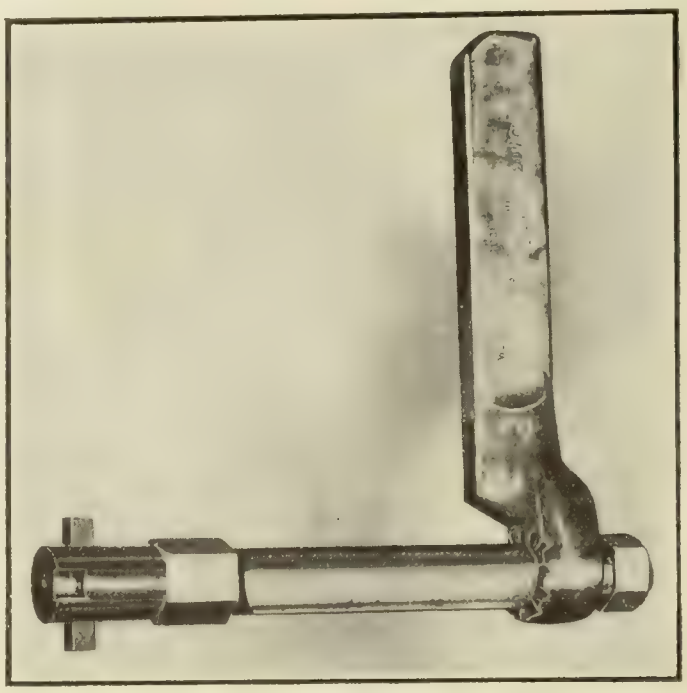


Fig. 5.—The Key-Seating Tool Combination.

ing the projections on the lower face of the ring to engage in different notches in the shank head.

A special combination of the tool, in which the part A, Fig. 1, is used, is illustrated in Fig. 5, this constituting a tool for keyseating the hubs of pulleys, gears, &c., in a planer or shaper. The cutter in the extension A is clamped by the longer nut and may be passed, as shown in both illustrations, at right angles to the axis of A, or it may be inclined by using the other holes in the sleeve and extension, which may be seen in the two illustrations. The nut at the opposite end of the extension is used to clamp the latter to the shank head H, as is plainly shown.

The Champion combination tool is furnished complete, as illustrated, or with any selection of parts to make up such combinations as may be desired.

## Increased Percentage of Mesaba Ore Shipments.

The statistics of the Lake Superior iron ore movement in September and a comparison of the totals to October 1 for 1907 and 1908 show that the Mesaba range is relatively a larger factor this year than last. This appears from the larger percentages for the ports of Superior, Duluth and Two Harbors this year. As noted last week, the September shipments down the lakes were 4,646,024 gross tons, against 4,749,655 tons in August. In September, 1907, they were 6,217,653 tons. The shipments by ports to October 1 in the two years were as follows:

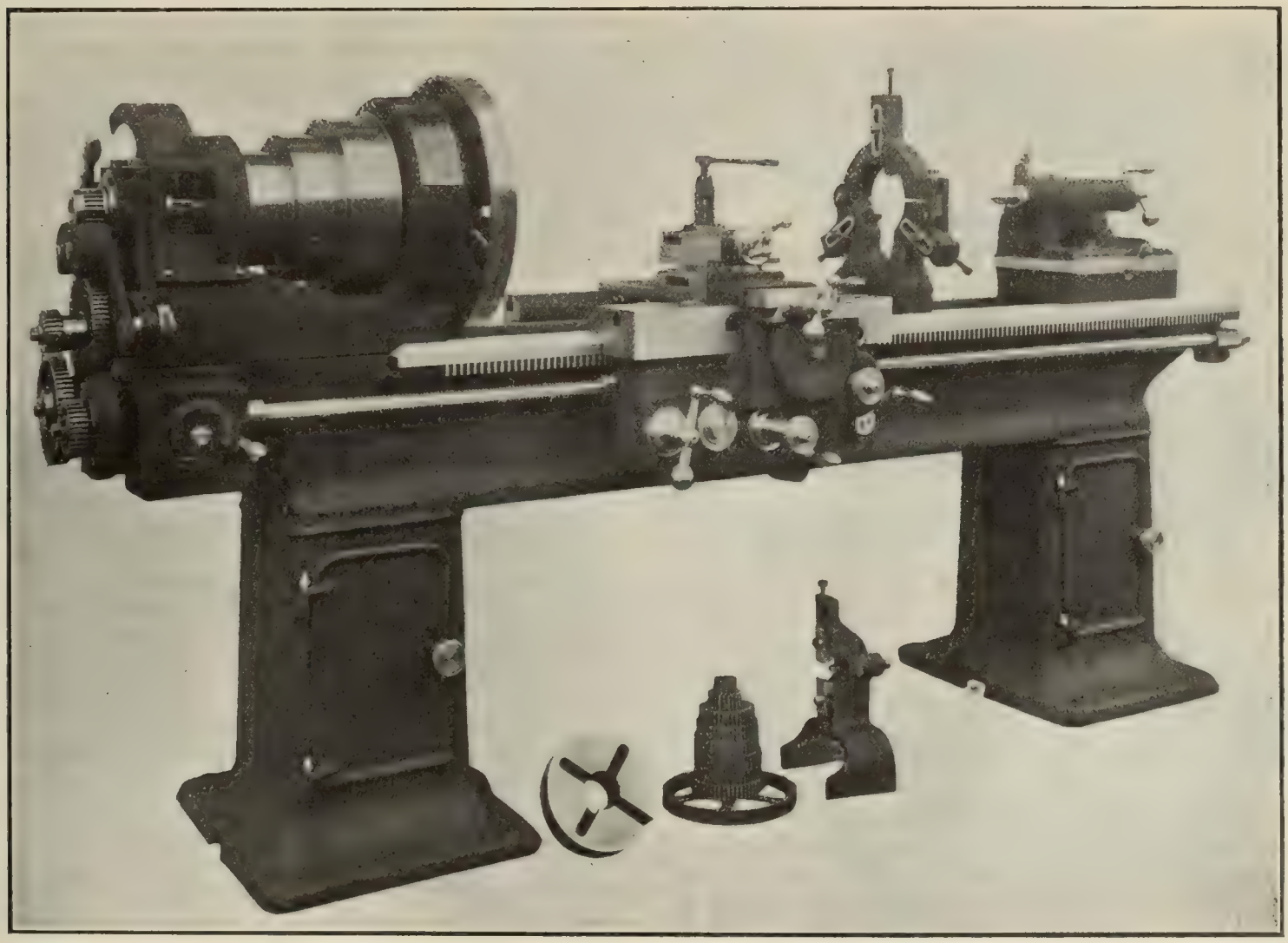
| | To October 1, 1908. | Percent. of total. | To October 1, 1907. | Percent. of total. |
|---|---|---|---|---|
| Escanaba | 2,006,192 | 12.06 | 4,473,417 | 14.64 |
| Marquette | 871,107 | 5.23 | 2,342,149 | 7.66 |
| Ashland | 1,521,146 | 9.15 | 2,722,331 | 8.91 |
| Superior | 2,264,443 | 13.62 | 5,571,918 | 18.23 |
| Duluth | 6,201,121 | 37.29 | 9,406,283 | 30.78 |
| Two Harbors | 3,766,951 | 22.65 | 6,043,108 | 19.78 |
| **Totals** | **16,630,960** | **100.00** | **30,559,206** | **100.00** |

The percentage of the three ports named above, whose shipments are Mesaba ore, apart from the relatively small amount of Vermillion range ore going to Two Harbors, is thus 73.56 this year, against 68.79 in 1907. This is in line with the previous experience that in years of diminished shipments the curtailment is most noticeable in the case of the older ranges.

## Another New Schellenbach Lathe.

All the features of the Schellenbach cone head machine illustrated in *The Iron Age*, October 1, 1908, except the quick change device for cutting threads, are found in the new 18 in. x 8 ft. plain change gear lathe herewith illustrated and built by the John B. Morris Foundry Company, Cincinnati, Ohio.

With the set of 11 change gears provided all standard threads from 2 to 72 per inch can be cut. The feed box is bolted to the bed, and affords three changes of feed for each change gear. When the machine is geared for the finest pitch, the carriage is fed at 0.005, 0.009 and 0.014 in. per revolution of the spindle. This feed change is made through the crank shown on the front face of the speed box below the headstock. A quadrant is fitted to the feed box, and is clamped to it by two screws. The latter and all other adjusting screws on the machine fit the tool post wrench. The change gears are secured to the stud and screw by slip washers, making it unnecessary to remove the nuts when changing the gears. When the crank shown on the face of the speed box is to the right, the clutch connects the lead screw directly with the change gear stem, and the other two positions for this crank connect sliding gears which give two more feed changes.



A Schellenbach 18 In. by 8 Ft. Plain Change Gear Lathe Built by the John B. Morris Foundry Company, Cincinnati, Ohio.

This machine has a double apron, which includes mechanism for rough chasing all threads without the use of the lead screw. The back gear speeds drive directly to the face plate or chuck, and the highest ratio is 17 to 1. The largest step of the cone pulley is 12 in. in diameter by 3-in. face. This machine is also manufactured in 14 and 16 in. sizes.

Members of the Milwaukee Foundry Foremen's Association were the guests of the Chicago Foundry Foremen's Association on Saturday, October 10, when the two bodies made a visit of inspection to the new steel plants at Gary, Ind.

The Youngstown Foundry & Machine Company, Youngstown, Ohio, is now operating its foundry to full capacity. It recently received a contract for all of the castings for the 42 new puddling furnaces being erected by A. M. Byers & Co., Inc., Girard, Ohio.

# The Tariff Revision Classification Problem.

WASHINGTON, D. C., October 13, 1908.—The sub-committee on the classification of the tariff act of the Senate Finance Committee will give a hearing, October 15, in this city, to members of the Board of General Appraisers for the purpose of receiving and discussing a series of amendments to the Dingley act with respect to the classification of a large number of items which are either ambiguously described in the statute or omitted from its provisions. The suggested modifications, it is understood, will also cover the form of certain paragraphs with a view to bringing them into closer conformity with the industrial development that has taken place since the present tariff law was enacted more than 11 years ago. The general scope of these amendments was discussed with the members of the board by Senator Burrows, chairman of the sub-committee, on the occasion of the hearings recently held in New York, but at the chairman's suggestion the proposed modifications are now being elaborated and reduced to definite form for presentation to the sub-committee. While these amendments relate only to classification, it should be understood that they affect the rates on a large number of imported articles, the duties on which, of course, depend upon the provisions of the paragraph in which they may be incorporated as the result of court decisions as to their proper classification.

### Classification of Metal Schedule.

The metal schedule is, perhaps, more important than any other division of the tariff act from a classification standpoint, because of the great variety of articles capable of being made directly from the various forms of partly manufactured iron and steel, copper, lead and other metals, and also because of the great progress that has been made in the technique of the industry since the Dingley act became a law. A variety of problems confront the appraising officers and the importers in the case of every imported metal product not specifically enumerated in the tariff act. It may be subject to classification as a manufacture of metal or a manufacture of wire or some other metallic article, or it may be classified by the principle of similitude to an enumerated article, or, in extreme cases, as instanced in the ferroalloy controversy, recourse may be had to section 6, which provides rates of duty for unenumerated manufactured or unmanufactured articles. Obviously, in view of the great confusion which frequently arises in the classification of importations and the great cost of customs litigation both to the Government and the importer, it is of the utmost importance that the text of the present tariff law should be so clarified and simplified as to remove all doubt at least regarding the proper classification of articles concerning which disputes have arisen since the passage of the Dingley act.

Literally hundreds of cases of sufficient importance to be made the basis of court proceedings have arisen during the past 11 years involving the classification of the metal schedule. Some of the more important ones which suggest amendments in the text of the schedule may be briefly referred to. The provision in paragraph 135 for steel bars, being without words of limitation, has been held to be more specific than the provision in paragraph 127 for "forgings of steel not specially provided for," and forged steel bars, therefore, are held to be dutiable under the former provision according to the value per pound, and not as forgings, although there is good reason to believe the framers of the tariff law intended otherwise. In another case steel crank shafts, crank axles, connecting rods, crank pins and crossheads and piston rods, which were forged and subsequently finished or nearly finished in the machine shop, have been held to be dutiable as manufactures of steel not specially provided for under paragraph 193, and not as forgings. It will therefore be seen that the tendency of appraising officers and the courts has been to limit the significance of the term "forging" as narrowly as possible.

### Steel Plate Problems.

Certain steel shapes, some flat and some curved with slotted holes drilled through them, have been held to be dutiable as "plates and steel in all forms and shapes not specially provided for" under paragraph 135, and not as "boiler or other plate iron or steel," under paragraph 126. An engraved steel plate mounted like a table top on a frame weighing over five tons and used in the manufacture of plate glass has also been classified under paragraph 135, and not under paragraph 193, which covers manufactures of metal. Steel flour plates made with one side checkered to prevent slipping and claimed to be entitled to entry under paragraph 125, which covers all forms of structural steel, have been held to be dutiable unded paragraph 135 as "plates not specially provided for." The same classification under paragraph 135 has been applied to sheets of steel cut to specific shape, according to a sketch and for a special purpose, although the importers claimed right of entry under paragraph 126, as "boiler or other plate iron or steel, sheared." In all these cases covering steel plates, the proper classification was in doubt, and in some cases decisions of collectors were reversed by the Board of General Appraisers or Board rulings were reversed by the courts.

Readers of *The Iron Age* are familiar with the long pending controversy as to the proper classification of sheet steel in strips, which received a bright finish because of the pickling process to which it was submitted before being cold rolled. The Government claimed that the pickling process and the resulting high finish of the strips brought them within the provisions of paragraph 141 for "steel, cold rolled, brightened or polished by any process to such a perfected surface finish or polish better than the grade of cold rolled smoothed only." The importer demonstrated, however, that the process of pickling, which removes the scale and whitens the surface of the steel, was a necessary operation, and was uniformly employed by manufacturers, and on the showing made the Government was defeated in several test cases. In another case cold rolled steel in coils varying from 50 to 200 ft. in length and from ½ in. to 6 in. in width, twenty-five-one-thousandths of an inch thick or thinner, has been held to be dutiable under paragraph 137 for flat steel wire or sheet steel in strips upon evidence that when the Dingley act was passed "sheet steel in strips" was a commercial designation interchangeably used with the term "flat wire" to describe cold rolled steel strips in long lengths. Hoop steel put up in coils 125 ft. in length has been held to be dutiable as such under paragraph 128, and not as cotton ties under paragraph 129, for the reason that, in the opinion of the appraising officers, it does not conform to the restriction "cut to lengths," which is interpreted to mean lengths for baling cotton: It is evident from the decision in these cases that several paragraphs of the metal schedule covering steel strips are in need of revision.

### Cylinders and Tubes.

Steel cylinders 4 ft. 20 in. by 19 ft. 8 in., have been held to be dutiable at 45 per cent. ad valorem as manufactures of metal under paragraph 193, and not at 35 per cent. ad valorem as tubes not specially provided for under paragraph 152. Steel cylinders used in the transportation of carbonic acid gas have been held to be dutiable as tubes under paragraph 152, but cylinders 19 ft. in length and 4 ft. in diameter, used for the storage of illuminating gas, have been held not to be tubes, but dutiable as manufactures of metal not specially provided for.

Horseshoe calks have been classified as manufactures of steel under paragraph 193 at 45 per cent. ad valorem, although claimed to be dutiable by similitude to horse shoes under paragraph 163.

The question as to where the line should be drawn in determining whether an old or defective article made of steel is entitled to classification as scrap has caused much litigation. Old steel rails broken into pieces of irregular length and otherwise damaged have been held to be dutiable as scrap under the provisions of paragraph 122, but new steel rails which by reason of certain defects have depreciated in value, but which are still rails

and have not lost their character or identity as such, and which are not shown to be unfit for uses other than as scrap, are held to be dutiable as rails under paragraph 130. Old fish plates worn so as to be unmerchantable are also held to be eligible to entry as scrap steel. Old and worn chains of iron and steel have also been classified as scrap where evidently not in merchantable condition.

Steel wool made from steel wire by a process which results in the destruction of the wire and would make it impossible for the customs authorities to determine the gauge of the wire used, has been held to be dutiable under paragraph 135 for "steel in all forms and shapes," and not to come within the provisions of paragraph 137, which covers articles manufactured from steel wire. On the other hand, diamond steel consisting of fine granules of steel used for stone cutting, has been classified as a manufacture of steel under paragraph 193 and not as "steel in all forms and shapes," as provided for in paragraph 135.

**The Ferroalloy Controversy.**

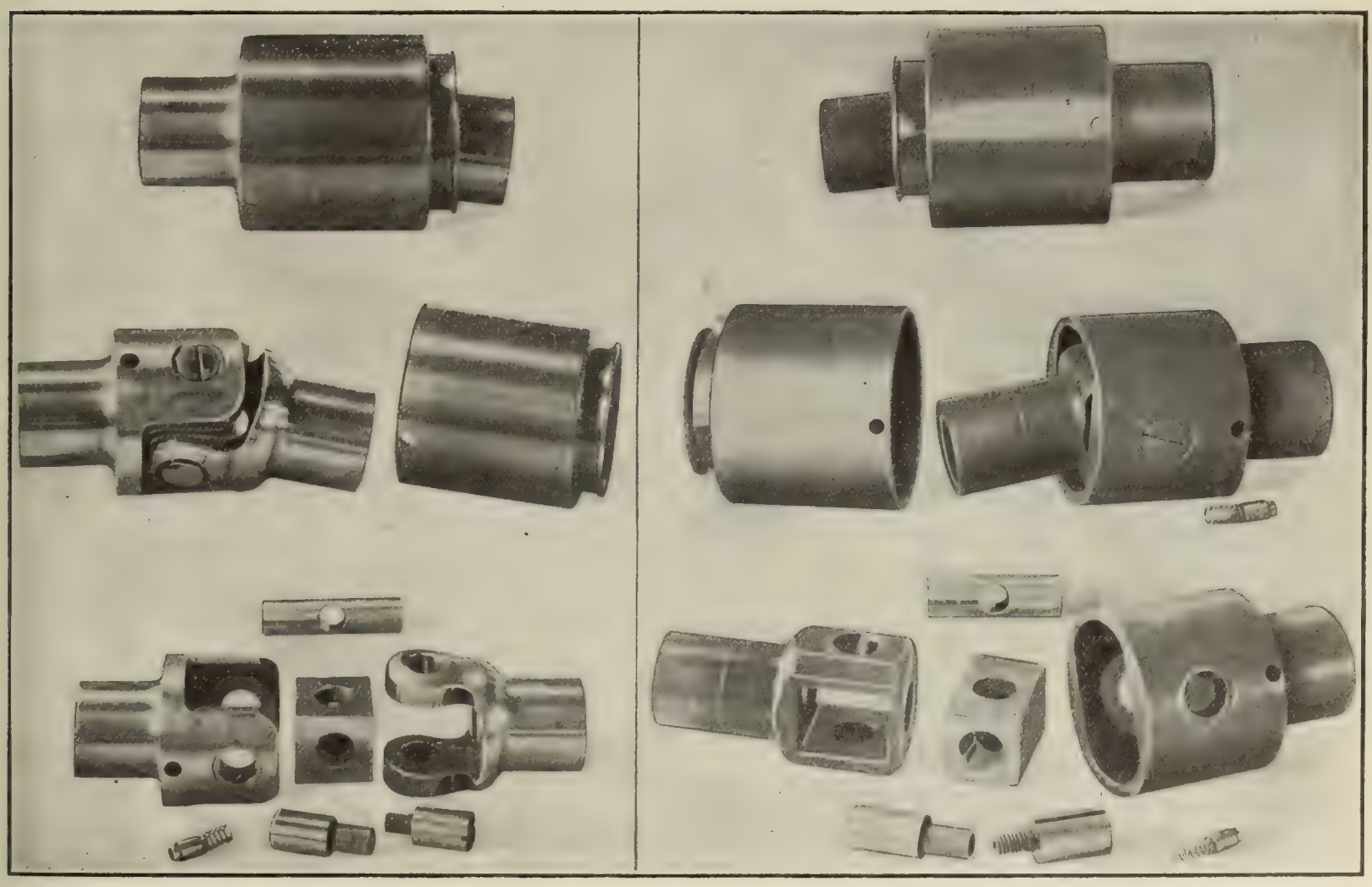
One of the most important controversies that has arisen under the metal schedule and which is still pending in the courts, is the dutiable classification of certain ferroalloys known as ferrochrome, ferrovanadium, ferromolybdenum, &c. Notwithstanding that some of these products are valued at upward of $500 per ton, they have been held by the United States Circuit Court of Appeals to be entitled to entry at a duty of $4 per ton by similitude to ferromanganese, which is specifically enumerated in paragaph 122. The Government has contended for a classification for these products as "metals, unwrought" or as "unenumerated manufactured articles," both of which are provided for at the rate of 20 per cent., and a third test case is now being prepared with a view to carrying the issue to the United States Supreme Court. When the Dingley act was passed very little use was made of the ferroalloys referred to, and none of them were being produced in the United States on a commercial scale. The manufacture of ferrochrome by electric smelting has since been undertaken, but it is claimed cannot be continued if the imported article can be brought in on the basis of a $4 duty. There is no doubt that the new tariff act will provide an accurate classification for the ferroalloys, probably on an ad valorem basis, which would furnish adequate protection for any newly discovered alloy that may come on the market in the future.

W. L. C.

## Two New Kinsler-Bennett Universal Joints.

The Kinsler-Bennett Company, Hartford, Conn., is bringing out two new universal joints, known as Types D and E, herewith illustrated. Both are designed particularly for automobile and motor boat transmissions of light and medium type, but are applicable to other machinery in general.

In Type D the joint is of simple construction, with forks of steel forgings in which are inserted hardened steel bushings. The block and pins are also of hardened steel; in fact, all working parts are thus treated, insuring long wearing qualities. The pins, ¾ in. in diameter, afford a large wearing surface. The joint has a dustproof steel cover held in place by a spring plug. The cover, fitting the outside of the yoke, serves to make a stiffer joint. The diameter of the joint is 3 in. and that of the case 3¼ in.



Type D. Type E.

Two New Universal Joints Made by the Kinsler-Bennett Company, Hartford, Conn.

In the Type E joint the body is a casing in which are inserted hardened steel bushings. The sleeve, or yoke, has a rectangular opening in which is held a hardened steel block. The joint is held together by a ¾-in. pin. All working parts are hardened. Like the Type D, this joint has a dustproof steel cover, held in place by a spring plug. The diameter of the joint is 3 in. and of the casing 3¼ in. The unassembled views of both joints show a threaded portion on one of the short pins. The design of this has been changed, and will hereafter be made with a long plain shank which will telescope into the other short pin, making it practically one piece. Thus the joint will be entirely without screws.

The Superior Steel Company, Carnegie, Pa., manufacturer of hot and cold rolled strip steel for drawing and stamping purposes, is completing a new and modern 16-in. hot rolling department, and expects to place it in operation about December 1. This addition will permit the company to roll all widths and thicknesses in strip steel from 6 to 16 in. wide and will increase the capacity of the plant about 50 per cent.

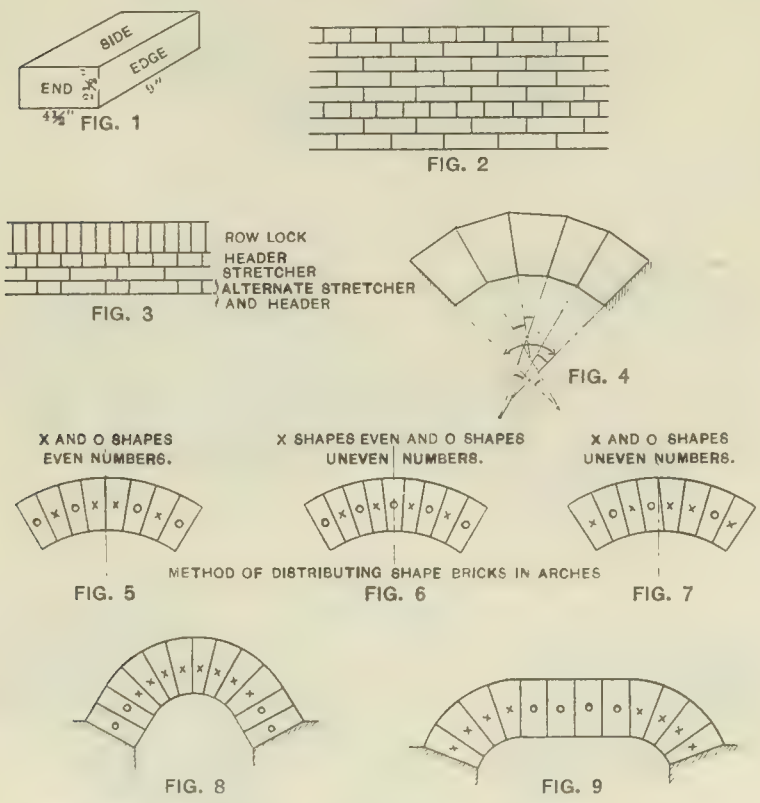
# Heating and Melting Furnace Work.

## Shape Brick and Methods of Calculating Requirements.

BY ULRICH PETERS.

A subject to which perhaps the least attention is paid in practical or theoretical discussions by engineers is that of the detailed construction and arrangement of bricks in furnaces, flues and foundations. Usually the mill bricklayer is supplied with no other information than an outline drawing of the furnace and flues he is about to build or rebuild. Detail questions generally come up when the roof arch or some other part of the furnace falls in—sometimes almost before the light of its fire is seen. The old time method of chipping bricks to suitable shapes has been abandoned almost entirely by adopting shape bricks, and in order to obtain practical gas tight walls of greater strength all necessary cutting to exact dimensions should be done by grinding. This gives better results in quality of workmanship and economy of labor.

The building of the different parts of the furnace has an important bearing on its life. So-called shape bricks of the best obtainable grade of refractory material of moderate sizes are used and kept in stock. Suitable ready made shapes have been in practical use for years for building up and repairing walls, ports and arches in the least time and with the least cutting and trimming of the bricks. Most of the geometrical brick shapes have in the interval progressed to certain standard dimensions, commonly called "stock shapes." Sizes vary more or less with the maker and the composition of the refactory material, which may have a different coefficient of expansion and contraction in the process of manufacture. So far only the natural tendency has been followed in the adoption of these standard forms, and no attempt seems to have been made to investigate for the best geometrical forms or those giving the greatest number of combinations with the smallest number of different stock shapes. Complicated and irregular shapes are avoided as much as possible in furnace construction, as they are liable to cracks and distortions, and not being specially re-pressed are not as strong as the sizes now in common use.




The Use of Straight and Shape Brick in Wall and Arch Construction.

### Standard Shapes.

The adopted standard mill size of a straight furnace brick in the United States measures 9 in. in length, 4½ in. in width and is 2½ in. thick. As a stock shape it is commonly known as "9-in. straight," and is shown in Fig. 1. Evidently a greater number of combinations would result from adopting 2¼ in. in thickness instead of 2½ in. The stretcher as well as the header courses, being then multiples of the individual dimensions, would match in all the various combinations for plain wall constructions. Firebrick, as well as the common red brick, are usually undersize and laid with very little clay mortar; if possible, rubbed close at the joints. Therefore little or no allowance is given for the vertical joints in the following standard thickness table:

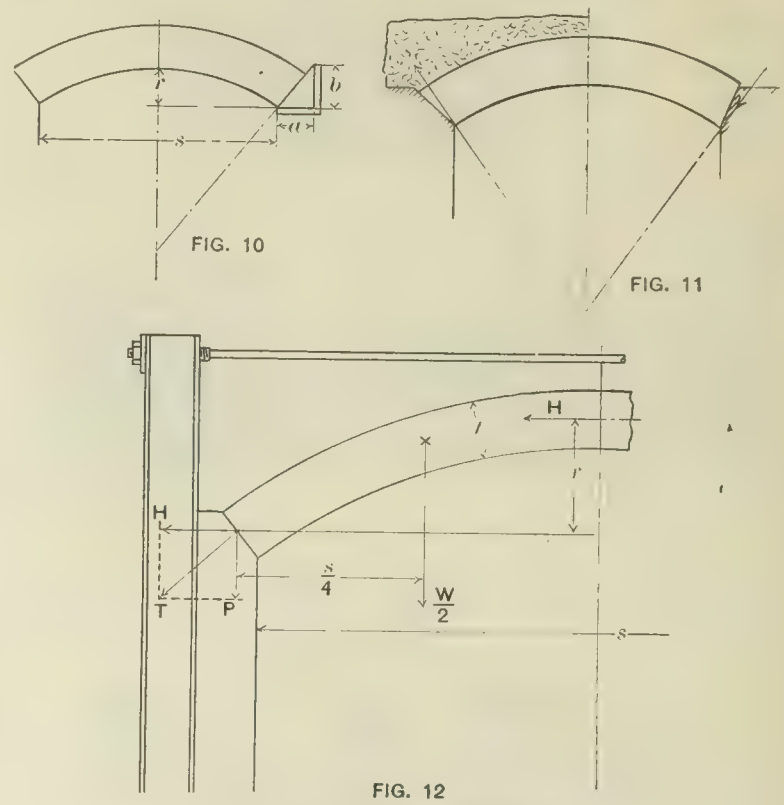
*Thicknesses of Brick Walls.*

| | Inches. | | Ft. | In. |
|---|---|---|---|---|
| ½ brick thick | 4½ | 2¾ bricks thick | 2 | 0¾ |
| 1 brick thick | 9 | 3 bricks thick | 2 | 3 |
| 1½ bricks thick | 13½ | 3½ bricks thick | 2 | 7½ |
| 2 bricks thick | 18 | 4 bricks thick | 3 | 0 |
| 2½ bricks thick | 22½ | &c. | | |

For the horizontal joints of the courses of furnace masonry about ¼ in. for mortar is allowed, so that the hights of brick walls are as follows:

| | Inches. | | Inches. |
|---|---|---|---|
| 1 course high | 2½ | 5 courses high | 13¼ |
| 2 courses high | 5¼ | 6 courses high | 16 |
| 3 courses high | 8 | 9 courses high | 24 |
| 4 courses high | 10½ | &c. | |

The rules governing the construction of building masonry also apply in furnace work—*i. e.*, the bricks should be in bond and if possible none of the vertical joints of the alternate courses should meet. The latter rule is, however, not strictly observed in the bond usually employed in furnace walls, in which for five to nine rows of alternate stretchers one row of header is used as face bond, Fig. 2. It takes much less time to build and practically answers the purpose as well as a better bond, being more or less temporary as compared with the life of furnaces in general. As a rule all brickwork should be topped off with headers or a row lock, Fig. 3, to prevent the breaking out or falling out of bricks in the top layer.




Details of Skewbacks.

The principal tapering shapes are further known as wedges, side arch and key bricks. In the wedge shape the sides taper toward the ends, while in side arches the sides taper toward the edges. Both shapes are extensively used in forming arches and circles. The key brick, whose edges taper toward the ends, are the shapes mainly employed for circular walls of coke ovens, lining of blast furnaces, &c. The accompanying table of taper bricks will be found convenient for practical reference. Other very important shapes are enumerated in a separate table.

### Rules for the Construction of Arches and Circles.

The construction of furnace arches according to best practice involves several problems. Arches and circles of various radius or diameter are built by proper com-

binations of the different taper bricks and the use of straights for enlarging. Evidently the sum of the included angle of all the single bricks equals the total angle of the arch between the skewbacks, as in Fig. 4. For a complete circle the total angle is naturally 360 degrees, and the sum of all the taper brick angles used to form the circle will have to check up with the total angle of the circle. This gives us an easy method for figuring the proper angle of skewbacks, also a quick method by which to choose the taper and number of bricks to suit a certain skewback.

The accompanying table gives the number of brick required to form circles of various diameters and is intended for ready reference. For circles in general the number of taper bricks is derived from the equations below, wherein

$r$ = the inner radius of circle in inches.
$t$ = the thickness of circle in inches.
$x$ = the number of adopted X shapes tapering $b$ to $a$ inches.
$y$ = the number of adopted Y shapes tapering $d$ to $e$ inches.

The outer circumference is then

$$C = 2\pi\ (t + r) = bx + dy,$$

and the inner circumference

$$c = 2\pi\ r = ax + ey.$$

Solving both equations for $x$, we have:

$$x = \frac{2\pi\ (et - dr + er)}{eb - ad.}$$

Or

$$x = \frac{2\pi}{b}\ \frac{et - bt + er}{e - a}$$

if $d$ equals $b$, as is ordinarily the case.

For the number of Y shapes we have similarily:

$$y = \frac{2\pi\ (at - br + ar)}{ad - eb}$$

and

$$y = \frac{2\pi}{b}\ \frac{at - br + ar}{a - e}$$

if again $d$ equals $b$.

The figuring of arches having the span $s$, the rise $r$ and the angle $a$ of skewbacks can be conducted on one of two plans. The first is to make a test by the conditions involved in the equation

$$c = ax + ey,$$

which is to say, the length of the inside arc should equal the sum of the $a$ and $e$ lengths of the X and Y bricks used. Further, the sum of the angles of these shapes should equal twice the complementary angle of the skewbacks—*i. e.*:

$$\Sigma < (x + y) = 180 - 2a.$$

By a few trials it will be possible to arrive at figures checking with both equations.

The other plan is more direct and much similar to the former calculation of circles. Here the length of the outer arc C and that of the inner arc c, previously calculated from tables, are substituted in the general equation

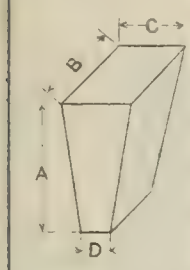
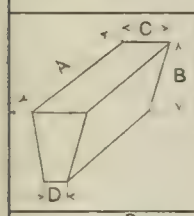
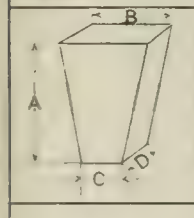
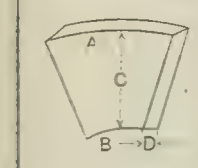
$$x = \frac{c\ C - dc}{cb - da}$$

Or for

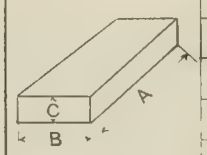
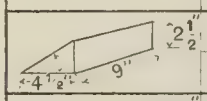
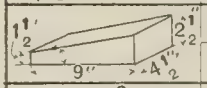
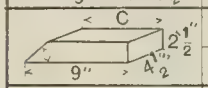
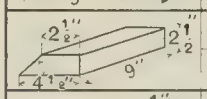
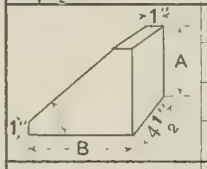
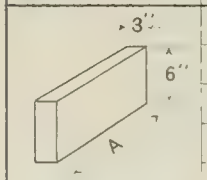
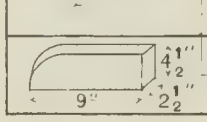
$$y = \frac{a\ C - bc}{ad - be}$$

It is much quicker and more accurate for the determination of the number and sizes of shapes required in an arc to use a little of the simple mathematics given than to rely only on a big scale layout, which according to the experience of the writer is seldom practically close enough.

After knowing the exact number of brick shapes required for an arch, it is necessary to distribute them in such a manner as to form a symmetrical arch, Figs. 5, 6 and 7, also a strong arch. From the sketches of arches in Figs. 8 and 9 it is evident that even though both the same kind and number of shapes are used, the arch in Fig. 8 will be much stronger than the other. In distributing the shapes the tendency should be to throw those of greater taper toward the crown of the arch. Under any conditions a practical bricklayer will never use a greater number of straights than about 50 per cent. of the total required for an arch. Straights and taper brick should interchange as much as possible and two straights should be avoided, because they often cause

| SKETCH | DIMENSIONS A | B | C | D | NAME | INCLUDED ANGLE | NO. OF BRICK TO THE CIRCLE | INSIDE CIRCLE |
|---|---|---|---|---|---|---|---|---|
|  | 9 | 4 1/2 | 2 1/2 | 1 7/8 | No. 1 WEDGE | 3° 32′ | 102 | |
| | 9 | 4 1/2 | 2 1/2 | 1 1/2 | No. 2 WEDGE | 6° 21′ | 56 | |
| | 9 | 4 1/2 | 2 1/2 | 2 | No. 3 WEDGE OR BULLHEAD | 3° 10′ | 113 | |
| | 9 | 6 3/4 | 2 1/2 | 1 1/2 | No. 2A WEDGE | 6° 21′ | 56 | |
| | 9 | 6 3/4 | 2 1/2 | 2 | No. 3A WEDGE | 3° 10′ | 113 | |
| | 9 | 13 1/2 | 2 1/2 | 1 1/2 | No. 2 WEDGE TILE | 6° 21′ | 56 | |
| | 9 | 13 1/2 | 2 1/2 | 2 | No. 3 WEDGE TILE | 3° 10′ | 113 | |
| | 9 | 13 1/2 | 3 1/2 | 2 1/4 | 18 1/2″ ARCH [1] | | | |
|  | 9 | 4 1/2 | 2 1/2 | 2 1/8 | No. 1 SIDE ARCH | 5° 0′ | 72 | |
| | 9 | 4 1/2 | 2 1/2 | 2 | No. 1A SIDE ARCH | 6° 21′ | 56 | |
| | 9 | 4 1/2 | 2 1/2 | 1 3/4 | No. 2 SIDE ARCH | 8° 23′ | 42 | |
| | 9 | 4 1/2 | 2 1/2 | 1 1/2 | No. 2A SIDE ARCH | 12° 40′ | 28 | |
| | 9 | 4 1/2 | 2 1/2 | 1 | No. 3 SIDE ARCH | 18 | 20 | |
|  | 9 | 4 1/2 | 4 | 2 1/2 | No. 1 KEY | 3° 10′ | 113 | |
| | 9 | 4 1/2 | 3 1/2 | 2 1/2 | No. 2 KEY | 5° 43′ | 63 | |
| | 9 | 4 1/2 | 3 | 2 1/2 | No. 3 KEY | 9° 43′ | 38 | |
| | 9 | 4 1/2 | 2 1/4 | 2 1/2 | No. 4 KEY | 14° 24′ | 25 | |
| | 9 | 6 | 5 3/8 | 2 1/2 | 9 X 6 KEY | | | |
|  | 9 | 6 1/2 | 4 1/2 | 2 1/2 | No. 1 CIRCLE | 30 | 12 | 33″ |
| | 9 | 7 3/16 | 4 1/2 | 2 1/2 | No. 2 CIRCLE | 25° 24′ | 14 | 45″ |
| | 9 | 7 3/8 | 4 1/2 | 2 1/2 | No. 3 CIRCLE | 20 | 18 | 51″ |
| | 9 | 6 7/16 | 6 | 3 | No. 1 CUPOLA BRICK | 24 | 15 | 30″ |
| | 9 | 6 3/4 | 6 | 3 | No. 2 CUPOLA BRICK | 21° 10′ | 17 | 36″ |
| | 9 | 7 3/16 | 6 | 3 | No. 3 CUPOLA BRICK | 17° 10′ | 21 | 48″ |
| | 9 | 7 1/2 | 6 | 3 | No. 4 CUPOLA BRICK | 14 24′ | 25 | 60″ |

1. IN ALL TAPERS.
2. FOR REGENERATIVE FURNACES.
3. ALL SIZES.
4. FOR INCLINED WELLS AND SKEWBACKS, ETC.
5. SAME AS FEATHER EDGE.
6. USED FOR SUPPORTING CHECKER WORK OF REGENERATIVE FURNACES.
7. USED AROUND DOOR OPENINGS.

| SKETCH | DIMENSIONS A | B | C | NAME | INCLUDED ANGLE |
|---|---|---|---|---|---|
|  | 9 | 4 1/2 | 2 1/2 | 9″ STRAIGHT | |
| | 9 | 4 1/2 | 1″ | 1″ SPLIT | |
| | 9 | 4 1/2 | 1 1/4 | 1 1/4″ SPLIT | |
| | 9 | 4 1/2 | 1 1/2 | 1 1/2″ SPLIT | |
| | 9 | 4 1/2 | 2″ | 2″ SPLIT | |
| | 9 | 2 1/4 | 2 1/2 | SOAP | |
| | 9 | 2 3/4 | 2 3/4 | CHECKER BRICK [2] | |
| | | | | BLOCKS AND STRAIGHTS [3] | |
|  | | | | FEATHER EDGE [4] | 29° 3′ |
|  | | | | EDGE SKEW [5] OR | 18 26′ |
| | | | | No. 3 SKEW | |
|  | | | 6 1/8 | No. 1 SKEW [5] | 41° |
| | | | 7 | BEVEL END [5] | 51° 20′ |
|  | | | | BEVEL EDGE [5] | 48° 20′ |
|  | 7 | 7 | | 7 X 7 SKEW BACK | 45 |
| | 7 | 9 | | 7 X 9 | 36 25′ |
| | 9 | 9 | | 9 X 9 | 45 |
| | 9 | 12 | | 9 X 12 | 36 1 1/2′ |
|  | | | | 18″ REGENERATOR TILE [6] | |
| | | | | 21″ | |
| | | | | 22″ | |
| | | | | 24″ | |
| | | | | 27″ | |
|  | | | | JAMB [7] | |

Details of Various Shape Brick Used in Furnace Construction.

the easy slipping out of single bricks and the consequent failures of arches.

The most natural form of a roof and such arches as are not subjected to other loads is the curve in which a perfectly flexible rope will hang—*i. e.*, the catenary curve. Building a flat roof arch to the customary circular form of the false work is really not a mistake, for under the high temperature any arch will change its curvature and rise from the influence of the expansion of the bricks and tend to open up at the joints of the back, in many instances also causing the collapsing of a roof arch. Sand distributed on top serves here as the only effective means of keeping the arch bricks relatively in place, besides helping greatly to hold the heat in the furnace.

With respect to the proper choice of skewbacks, there

| INSIDE DIAMETER OF CIRCLE | WEDGE BRICK | | | | SIDE ARCH BRICK | | | | KEY BRICK | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. 2 TAPER 2½" TO 1½" | No. 8 TAPER 2½" TO 2" | 9 INCH STRAIGHT | TOTAL | No. 2A TAPER 2½" TO 1½" | No. 1A TAPER 2½" TO 2" | 9 INCH STRAIGHT | TOTAL | No. 4 TAPER 4½" TO 2¼" | No. 3 TAPER 4½" TO 3" | No. 2 TAPER 4½" TO 3½" | No. 1 TAPER 4½" TO 4" | TOTAL |
| 1′-1½″ | | | | | 28 | | | 28 | | | | | |
| 1′-3″ | | | | | 25½ | 5½ | | 31 | | | | | |
| 1′-6″ | | | | | 23 | 11 | | 34 | 25 | | | | 25 |
| 1′-9″ | | | | | 18½ | 19 | | 37½ | | | | | 27½ |
| 2′-0″ | | | | | 14 | 27 | | 41 | 17 | 13 | | | 30 |
| 2′-3″ | 56 | | | 56 | 11 | 34 | | 45 | | | | | 32 |
| 2′-6″ | 51 | 9 | | 60 | 8 | 41 | | 49 | 9 | 25 | | | 34 |
| 2′-9″ | 48½ | 15½ | | 64 | 4 | 48½ | | 52½ | | | | | 36 |
| 3′-0″ | 46 | 22 | | 68 | | 56 | | 56 | | 38 | | | 38 |
| 3′-3″ | 42½ | 29 | | 71½ | | 56 | 4 | 60 | | | | | 40 |
| 3′-6″ | 39 | 36 | | 75 | | 56 | 8 | 64 | | 32 | 10 | | 42 |
| 3′-9″ | 35 | 44 | | 79 | | 56 | 11½ | 67½ | | | | | 44 |
| 4′-0″ | 31 | 52 | | 83 | | 56 | 15 | 71 | | 25 | 21 | | 46 |
| 4′-3″ | 26 | 60½ | | 86½ | | 56 | 19 | 75 | | | | | 48½ |
| 4′-6″ | 21 | 69 | | 90 | | 56 | 23 | 79 | | 19 | 32 | | 51 |
| 4′-9″ | 18½ | 75½ | | 94 | | 56 | 26½ | 82½ | | | | | 53 |
| 5′-0″ | 16 | 82 | | 98 | | 56 | 30 | 86 | | 13 | 42 | | 55 |
| 5′-3″ | 10½ | 91 | | 101½ | | 56 | 34 | 90 | | | | | 57 |
| 5′-6″ | 5 | 100 | | 105 | | 56 | 38 | 94 | | 6 | 53 | | 59 |
| 5′-9″ | 2½ | 106½ | | 109 | | 56 | 42 | 98 | | | | | 61 |
| 6′-0″ | | 113 | | 113 | | 56 | 46 | 102 | | | 63 | | 63 |
| 6′-3″ | | 113 | 3½ | 116½ | | | | | | | | | 65 |
| 6′-6″ | | 113 | 7 | 120 | | | | | | | 58 | 9 | 67 |
| 6′-9″ | | 113 | 11 | 124 | | | | | | | | | 69 |
| 7′-0″ | | 113 | 15 | 128 | | | | | | | 52 | 19 | 71 |
| 7′-6″ | | | | | | | | | | | 47 | 29 | 76 |
| 8′-0″ | | | | | | | | | | | 42 | 38 | 80 |
| 8′-6″ | | | | | | | | | | | 37 | 47 | 84 |
| 9′-0″ | | | | | | | | | | | 31 | 57 | 88 |
| 9′-6″ | | | | | | | | | | | 26 | 66 | 92 |
| 10′-0″ | | | | | | | | | | | 21 | 76 | 97 |
| 10′-6″ | | | | | | | | | | | 16 | 85 | 101 |
| 11′-0″ | | | | | | | | | | | 11 | 94 | 105 |
| 11′-6″ | | | | | | | | | | | 5 | 104 | 109 |
| 12′-0″ | | | | | | | | | | | | 113 | 113 |
| 12′-6″ | | | | | | | | | | | | 113 | 117 |

Table of Brick Required for Various Circles.

are several points to consider. In the first place, having regard to scientific correctness, the skewback line should be radial. But this condition is not practicable where it is desirable to have only a limited number of stock shapes at hand. For radial skewbacks the ratio of the rise $r$ to the span $s$ will be, as in Fig. 10:

$$\frac{r}{s} = \frac{\sqrt{a^2 + b^2} - b}{2a}$$

For 45-degree skewbacks $a = b$ and

$$\frac{r}{s} = 0.207.$$

The furnace builder will keep in mind, when not meeting the above conditions exactly, that a low skewback, shown to the left of Fig. 11, is better adapted for underground or loaded arches, such as flues, &c., while for arches not loaded, as in the case of roof arches, a slightly higher skewback, as shown on the right of Fig. 11, is to be recommended on account of its greater wedging action.

### Roof Arch Binding.

Roof arches exert a considerable thrust on the skewbacks, Fig. 12. This thrust per running foot of arch has two components, the horizontal thrust H and the vertical thrust P, which latter is simply equal to half the total weight of the roof arch. As seen in the figure, the horizontal thrust component is figured from the approximate relation

$$H = \frac{W s}{8 r}$$

to

$$Hr = \frac{W}{2} \times \frac{s}{4}$$

And substituting for the weight $W = 128 \times s \times t$, if 128 is the weight of brick of 1 cu. ft.,

$$H = \frac{16 t s^2}{r}$$

In which $t$ = thickness and $r$ = rise of arch in inches and $s$ = span in feet. It is easy to proportion from the above formulas the spacing of buckstaves and the size of tie rods.

## Swedish Iron and Steel Production in 1907.

The production of various forms of iron and steel in Sweden in 1907 differed but slightly from the totals in 1906. The number of furnaces in blast last year averaged 130, against 128 in 1906. The following statistics, which are in metric tons, are from official sources, as given in the *Bulletin* of the American Iron and Steel Association:

| | 1907. | 1906. |
|---|---|---|
| Iron ore | 4,480,070 | 4,502,597 |
| Coal | 305,338 | 296,980 |
| Pig iron | 615,778 | 604,789 |
| Charcoal blooms from pig iron | 174,405 | 178,298 |
| Bessemer ingots and castings | 77,036 | 84,633 |
| Open hearth ingots and castings | 341,893 | 311,435 |
| Crucible ingots and castings | 1,287 | 1,457 |
| Blister steel | 416 | 522 |
| Total steel | 420,632 | 398,047 |
| Bar iron and steel | 198,533 | 206,124 |
| Nail and wire rods and bands | 139,240 | 125,051 |
| Other shaped iron and steel bars | 15,025 | 11,965 |
| Plates, not including sheets | 21,246 | 21,063 |
| Tube blocks, hollow blooms, billets | 44,975 | 28,880 |

The pig iron exports from Sweden were about 129,800 metric tons in 1907, against 112,200 tons in 1906. The exports of merchant bars last year amounted to 154,200 tons, as against 194,400 tons in 1906.

## A New Oliver Surfacer.

A new product of the Oliver Machinery Company, Grand Rapids, Mich., is a four-roll, double belted, single cylinder, cabinet surfacer, capable of feeding at the rate of 15, 20, 25 and 33 ft. per minute. The machine is made in three widths, to plane 24, 26 and 30 in. wide, and the bed will lower to plane material from 1-16 to 7 in. thick. It may be used as a fine surfacer on finished material or as a roughing planer, and is therefore fitted for pattern shops, planing mills, novelty works, piano factories, railroad shops and Government works. Motor drive may be applied if desired.

The Milwaukee Locomotive Mfg. Company, North Milwaukee, Wis., is finding an active demand for its gas locomotives, used for freight transfer uses in a variety of manufacturing plants. Engines have recently been shipped to New Orleans for use on a cotton plantation, and to Hobart, Cal., for the Sierra Nevada Lumber Company. Another engine is being completed to go to the Postal Milling Company, St. Louis. The engines have been given severe tests in hauling loaded freight cars, and the company reports many inquiries concerning their use for local shipping yards.

## Tin Plate Assorting Room Illumination.

To properly light the assorting rooms of tin plate works is difficult because of the very exacting requirements. The illuminant must be low in intrinsic brilliancy so that the reflection from the tin plate will not be a glare in the eyes of the inspectors, making the examination faulty and uncertain. Shadows must be eliminated as much as possible, so that there may be the same intensity of illumination on the entire surface of the plate. It is also necessary that over all the tables the light be of uniform intensity, because those assorting the plates are continually moving from table to table, and if the light is not of the same intensity in different localities defective plates may be passed and perfect ones condemned. To insure correct assorting it is essential that the illumination be of even distribution throughout the entire working part of the room.

The ordinary 16-candlepower incandescent lamps are most universally used, and in considerable number, to obtain satisfactory results. They are open to the objections, however, that they are not always of the same intensity and quality (a new lamp will be much brighter than an old one), and that it is hard to secure uniform distribution throughout the room.

The Cooper Hewitt lamp, when properly placed, has been found to overcome many of the former difficulties and can be adopted throughout the plant. As will be seen from the illustration herewith, which shows the interior of the assorting room at the Monessen, Pa., works of the American Sheet & Tin Plate Company, shadows are almost entirely eliminated. This is due in part to the wide diffusion of the light, the source being a bar, in this case 21 in. long, instead of a spot. The location of the lamps also has much to do with eliminating shadows.

An advantage of the Cooper Hewitt system of lighting over arc or incandescent lighting is that little or no care is necessary to keep the lamps in operating condition; the occasional replacing of a tube is all that the lamps require. There are less moving parts than in any arc lamp and absence of complicated mechanism is obviously desirable.

The room in the plant referred to is 200 ft. long by 60 ft. wide, and the assorting benches are placed around the walls and down the center, as shown in the illustration. These benches are 6 ft. wide and stand about 29 in. from the floor. When incandescent lighting was used 210 16-candlepower lamps were required; these consumed 56 watts per lamp and were supplied with current at 220 volts. On one side of the room it was necessary to burn 90 lamps, 24 hr. per day, 300 days per year, making 7200 hr. per lamp per year; the balance of the lamps, 120 in number, burned 10 hr. per day, or 3000 hr. per year, making a total of 1,008,000 burning hours per year for all lamps. At 56 watts per lamp, the annual power consumption was 56,448 kw.-hr., and at 1½ cents per kilowatt-hour cost $846.72. The total candlepower for the room was about 3360, assuming that all the lamps were up to the standard photometer test. The average life of the incandescent lamp is 800 hr., so it was necessary to use 1260 lamps each year, costing 18 cents, or $226.80. The total cost for current and maintenance with incandescent lamps was, therefore, $1073.52 per year. These lamps were placed about 3½ ft. apart and were hung about 4½ ft. above the tables. No reflectors were used.



View in the Assorting Room at the Monessen Works of the American Sheet & Tin Plate Company, Showing the Present Lighting Equipment of Cooper Hewitt Lamps.

This equipment has been replaced with 34 type H automatic lighting Cooper Hewitt lamps, which are designed to operate in series on 110 or 220 volts; 14 of these lamps burn 24 hr. per day, 300 days per year, and 20 lamps burn 10 hr. per day, 300 days per year, making a total of 160,800 burning hours for 34 lamps. At 192 watts per lamp the current consumption per year is 30,873.6 kw.-hr., and at 1½ cents per kilowatt-hour costs $463.10. The maximum cost of maintenance is guaranteed by the lamp manufacturer not to exceed one tube per lamp per year, or, in this case, $268.94. This is the maximum, but based on the average life of tubes in commercial installations, the actual cost may fall considerably below this figure. The candlepower of the Cooper Hewitt equipment is 10,200.

The locations and positions of the Cooper Hewitt lamps are shown in the engraving. They are suspended from heavy iron poles and brackets, and are controlled by several switches on a board centrally located, so that if one portion of the room is to be lighted it is not necessary to light all. Each lamp is equipped with a white enameled reflector, which gives a proper distribution of light downward.

By adopting these lamps in this installation the quality of light is greatly improved and the quantity in-

creased more than threefold with a net saving of at least $341.48 per year, and the number of defective plates passed has been greatly reduced.

### A Northern Electric Crane Derrick.

A view of an interesting electric crane derrick recently installed in the yard of the St. Louis Basket & Box Company, St. Louis, Mo., by the Northern Engineering Works, Detroit, Mich., is shown in the accompanying illustration. The derrick has an effective radius of 75 ft. The mast is 60 ft. high, and the load lifting capacity is 5 tons. The derrick is supported by steel stiff legs and steel standards, and the entire derrick frame is constructed of structural steel. Three direct current motors supplied with current at 110 volts independently operate the three movements of the machine. The hoisting speed is 60 to 120 ft. per minute, the trolleying speed 125 to 150 ft. per minute, and the swinging speed at the rate of one to two revolutions per minute. The gearing throughout is of steel. The load is held at any hight by a type of mechanical screw brake and electric brake.



An Electric Crane Derrick for Handling Logs, Built for the St. Louis Basket & Box Company by the Northern Engineering Works.

This derrick is employed for handling logs in the yard of the company before mentioned, and is located on the river bank, so that it may handle the material from the river to the factory yard. The photograph was taken at high water, at which stage of water the entire contract was erected. It will be noticed that the trolley travels between the latticed girders of the jib. A suitable inclosure is provided for the mechanism and the operator to give protection from the weather.

A protest has been made by engineers against the decision of the British Local Government Board relative to reinforced concrete structures. This board, which supervises construction work in all the municipalities of England, has fixed the period for repayment of loans on reinforced concrete structures built by municipalities at 15 years, while for stone, brick, steel and even for concrete unreinforced by steel the loan period is 30 years. A higher tax rate is thus imposed in the case of reinforced concrete construction.

Hannah Furnace of the Republic Iron & Steel Company, at Youngstown, Ohio, is being repaired and put in shape for blast, but it will not be started in the near future, unless it is necessary to blow out No. 3 stack at Haselton, for relining. If that stack continues to work properly, Hannah Furnace will remain idle.

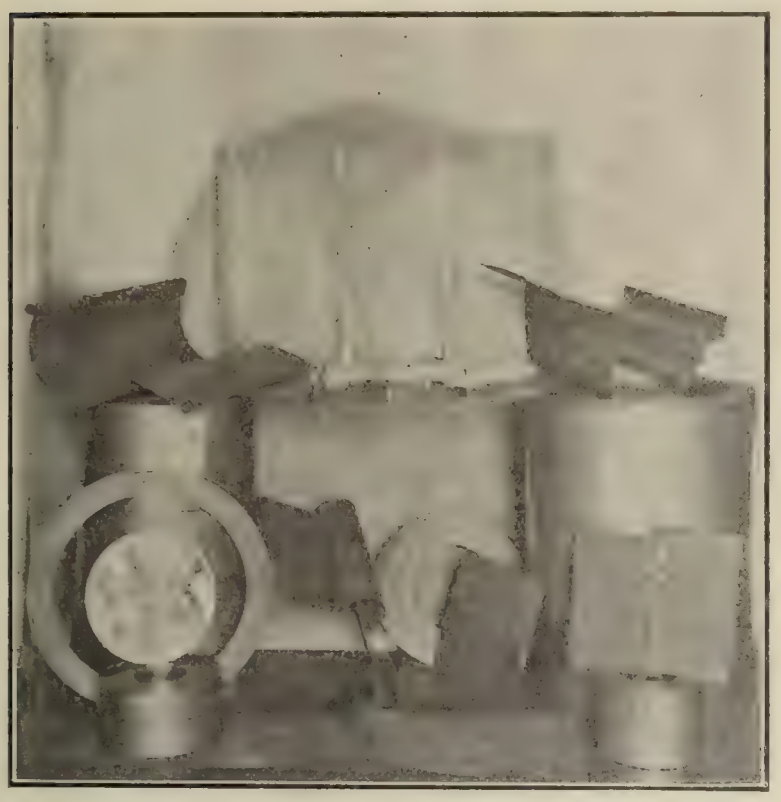
## Monel Metal.

### A New Metal for the Sheet Metal Worker.

A new metal which, to speak conservatively, promises much to the sheet metal worker, has been produced under the name Monel Metal. So far as the worker in sheet metal is concerned, particularly the roofer, the metal is of special interest as a product meeting the requirements of copper as a roofing material without the shortcomings of that metal. It is composed roughly of 72 per cent. nickel, 1½ per cent. iron and the remainder copper, and has shown a remarkable resistance to acid or other corrosion, which bespeaks the high degree of resistance to weather conditions needed in a roof. It has the correspondingly important property, particularly as compared with copper, of showing relatively smaller expansion and contraction changes, so that the matter of taking care of changes in the length of the sheets for different outside temperatures is not a problem. It possesses a high degree of ductility and flexibility, so that it can be formed up to suitable shapes and bent into such locks as go, for example, with the standing seam roofing, and it can readily be soldered and admits of the use of a killed acid as a flux, another detail of practical importance. In appearance it looks not unlike sheet zinc, and while a little tougher to cut than sheet copper, it does not, with good snips, show the characteristic burrs or edges commonly obtainable when handling zinc.

Some idea of its scope of use as a sheet metal may be gained from the accompanying reproduction of a photograph. On each side toward the background is a roll of the metal given an unusually smooth finish, this being another attractive feature of the metal, namely, that on account of its large nickel content, it can be readily polished. Moreover, the metal seems not to be affected by the atmosphere, as stated, for such darkening as the polished surface may take on is readily removed with the rubbing by the finger, bringing out the bright luster of polished nickel. On top of each of these rolls is seen a form of gutter, this to indicate the practicability of using the metal in the cornice brake, and therefore the scope which the metal has as a material for corrosion resisting cornices. Spanning the gap between the two rolls is a sample of the metal turned into standing seam roofing. Underneath is a piece of the metal formed into a ridge roll and alongside of this is an example of flat seam work. At the front of the picture at the right hand is some of the metal riveted with Monel rivets, and the picture also shows a number of corrugated gaskets of the

form in which copper is commonly seen. The background of the picture itself is a large sheet of the metal, which is made as wide as 36 in. and as long as 96 in. In the



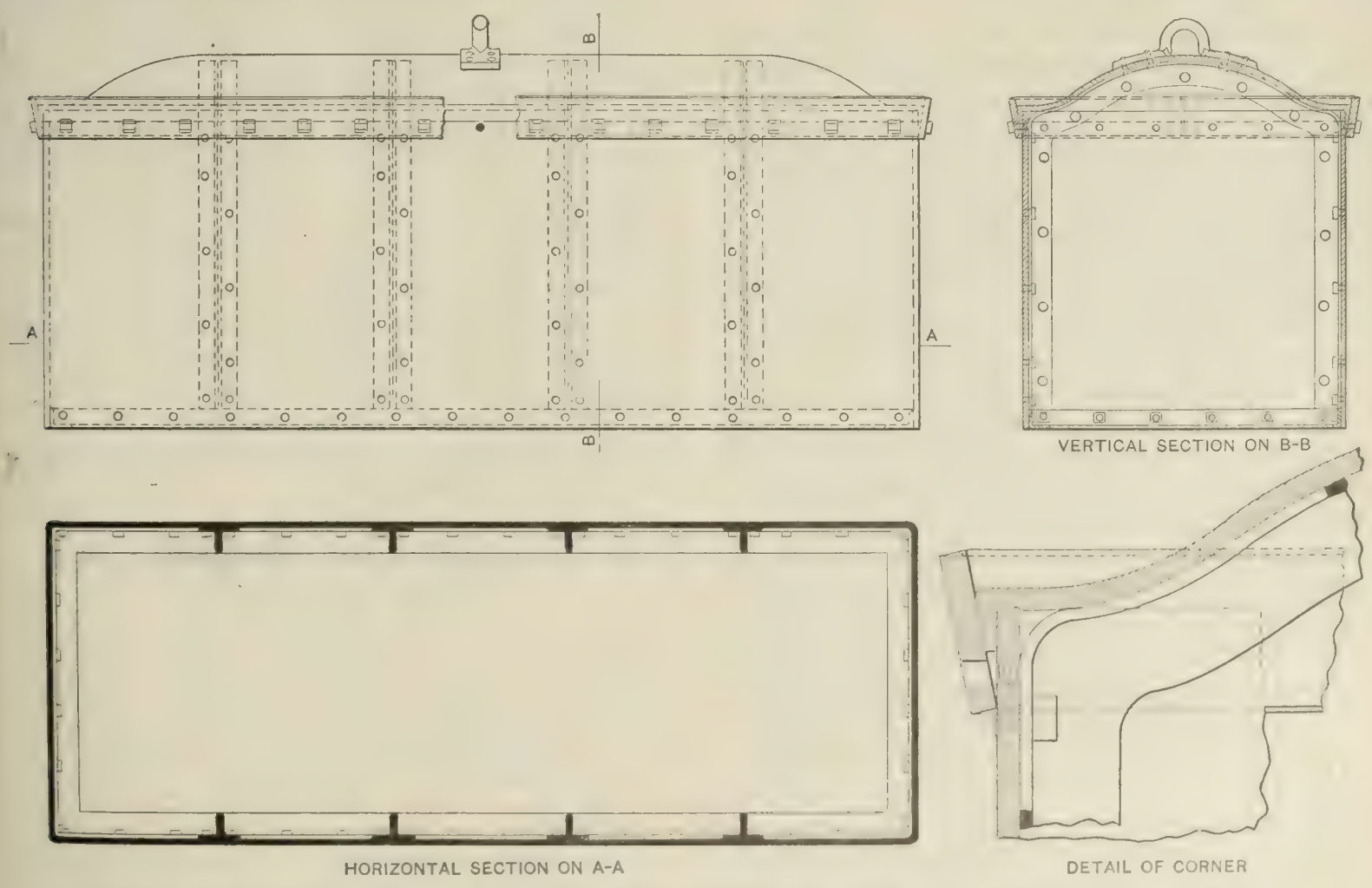
Products of Monel Metal Sheets Made by the American Sheet & Tin Plate Company.

upper center against this background is a view of some soldered seams.

The secret of the properties and possibilities of Monel Metal seems to lie in the content of the ore as it is found in nature, the combination of the elements appearing to give it the resistance to corrosion, a high degree of tensile strength, considerable ductility and flexibility, which means ease of working, and relatively small expansion and contraction changes with changes in temperature. The Monel Metal occurs in the ores, which are found in Canada, as a natural alloy of nickel and copper, which requires only the removal of some of its iron to be refined into the commercial product. Whereas nickel itself, as a pure metal, is relatively expensive, owing to the difficulty of isolating it, the treatment of this ore means merely the removal of impurities and the reduction of the iron to a percentage not over, say, 1½ per cent. of the entire product, when the result is Monel Metal. The foregoing statements are intended to outline its place as a rolled product in sheet metal form. It also possesses the quality of being readily cast, and in a cast form it possesses a high degree of strength. For example, it is stated that, whereas, American standard steel castings range from 60,000 lb. per square inch tensile strength in soft castings to 85,000 lb. for hard castings, and whereas the Government specifications for manganese bronze castings require 60,000 lb. tensile strength, and in nickel steel castings 85,000 lb., the Monel Metal castings have shown a tensile strength for what are known as grades "B," "C" and "D" of 85,000, 75,000 and 70,000 lb. per square inch, respectively. Its strength when rolled rises to 108,750 lb. tensile strength per square inch. In short, it may be said that *The Iron Age* has seen made of Monel Metal kitchen utensils, chafing dishes, mugs, spoons, and the like; castings of automobile parts, propeller blades and gear wheels; screws, rivets and tacks; soap dishes, sponge receptacles, and other products such as are made with a brass base nickel plated, the Monel Metal when highly finished having the desired nickel polish.

## National Welded Annealing Boxes.

The National Mfg. Company, Pittsburgh, Pa., is manufacturing a line of square and oblong shaped welded annealing boxes for use in sheet, tin plate and other lines of work. They are constructed of wrought iron. The sides of the smaller sized boxes are of one piece welded at one corner, while the larger oblong shaped boxes use two pieces of metal to form the sides, which are welded at diagonally opposite corners, as shown in the illustration. By the use of the patent strip (Johnston patent) the life of the box is prolonged from 33 to 75 per cent. One great advantage is that the box can be renewed, which is not true of boxes made of cast steel or steel plate. Among the plants now using the boxes are the Phillips Tin Plate Company, Clarksburg, W. Va., and the McKeesport Tin Plate Company, McKeesport, Pa. N. D. Yant & Co., Beaver avenue, N. S., Pittsburgh, Pa., are selling agents for the National welded annealing boxes.




Details of a Welded Wrought Iron Annealing Box as Made by the National Mfg. Company, Pittsburgh, Pa

# THE IRON AGE

Established in 1855.

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## Employees' Co-operation in Improving Shop Methods.

The last convention of the British Foundrymen's Association produced a paper of a sort usually appealing more directly to machine shop managers and on a subject on which proprietors of some of the so-called modern shops in this country have levied a special claim. "Securing the Co-operation of the Workman in the Improvement of Workshop Methods" is not a theme on which a supposedly labor union ridden country would be expected to furnish the best information. Nevertheless the author, R. W. Kenyon, a portion of whose paper is given elsewhere, demonstrated that in the Ewbank Works at Accrington, England, the attempt to establish a better relation between shop owner and workmen has resulted more successfully than in many shops on this side. This may be due in part to the fact that it is not a large works, and thus the chances are greater for the more direct communication between proprietors and men that would increase confidence and promote good feeling. It is to be noted, however, that the Accrington firm, which was an early experimenter with something akin to the premium system as practiced in the United States, has improved upon the shop suggestion scheme as ordinarily employed in this country, and this departure has no doubt had much to do with the success that has been attained. The further fact that control by a union shop committee is not known at the Ewbank Works should be credited with its proper share of the good results.

A plan which makes it possible for an employee who has in mind an improvement on existing practice to impart it to the directors of the company, without the mediation of his foreman and without any publicity, has advantages over the "suggestion box" scheme, as commonly worked. Why the change was made from having all suggestions passed upon by a joint committee of employees and the management is told in Mr. Kenyon's paper. It will be seen that the main obstacles to the free use of the original plan by employees who had ideas and wanted to realize on them were their coemployees. Foremen, too, were not always friendly to suggestions which experience might prove to have real merit. It is significant that employees with suggestions to make have preferred to take their chances with their employers rather than have their ideas passed upon by foremen or fellow workmen.

In Great Britain, as in the United States, the works making use of the suggestion box are a small minority. And it is noteworthy that the Ewbank Works plan is given publicity at a time when in this country the idea is passing out of favor. A recent writer gives some reasons for this:

> So far from most of the suggestions being good, the fact is that very few of them are good, while many of them are nothing more than ill-considered complaints. Under these circumstances the large majority of them must be rejected, and this soon kills the interest in the plan among the working force. Authors of suggestions always, of course, consider theirs as worth adoption, and when most of them are rejected a comparison of notes among the force soon leads to a discovery of the fact by all, and the natural result of a loss of interest follows. In some cases, indeed, the result has been worse than this, rejections having been charged to ill will on the part of foremen and others and acceptances to favoritism, and so far from inaugurating an era of good feeling, the tendency of the plan has been to inaugurate an era of ill feeling. Some again have had their enthusiasm cooled by the presence in the shop of one or more chronic suggesters, who are always suggesting impracticable things, and following up their suggestions with insistence and importunity in a manner which has led to a little less than disgust on the part of all concerned. On the whole, it is perhaps this suggester of impracticable things who has done more than all others to bring the plan into disrepute.

There are observable cycles in the practical working out of the labor question. Profit sharing and bonus systems were much talked about 20 years ago; but the number of establishments employing either is and has been exceedingly small. Ten years ago collective bargaining, conciliation and conference relations between employees' and employers' organizations appeared to have come into new favor in the metal trades of the country. But what seemed a promising advance toward co-operation has given place to a period in which opposition is the dominant note. Antagonism has been preached by union leaders as the natural attitude of the employee toward his employer, and an answering skepticism of the benefits of any scheme of co-operation is shown by employers who under other conditions might take the initiative in enlarging the workman's opportunity. This situation, as much as any inherent weakness in the shop suggestion plan, is responsible for the failure of the latter to do what was so generally expected of it. Moreover, the disappointing outcome of the one conspicuous effort, in a famous Ohio plant, to win the confidence of the employee by doing things for him over and above paying him wages will not soon pass out of mind. At that plant, it will be recalled, the suggestion box was one of the most widely advertised features of the régime of supposedly good feeling.

Necessarily the trying out of ways and means to the best basis of shop operations will mean the rejection of one and the retention of some other method. Because one scheme of enlisting employees in the improvement of practice has shown drawbacks it does not follow that an intelligent, inventive employee, capable of initiative, will not be discovered and find his desert. The unprogressive union and the unfriendly foreman should not be strong enough to defeat him.

## Canadian Competition with British Rail Manufacturers.

For some years after 1883, when the first bounty law was enacted at Ottawa, British iron and steel manufacturers strongly protested against this policy, as they had long done against the high duties in the Canadian tariff on iron and steel products imported from England. Since the middle nineties, however, there has been an end of these protests in Parliament at Westminster, because the British manufacturers realized that protests were futile. They naturally still look with disfavor on the bounty policy of the Canadians. But a stronger word than disfavor will be required to describe their feelings when they realize that the enormous bounties, tax exemptions and other concessions by the Canadian Government to domestic steel plants help these concerns in their com-

petition against British steel companies for rail orders in India.

The tariff reformers in England have long based part of their case for a protective tariff on dumping in Great Britain by American and German manufacturers. The Punjab rail order secured by Sydney, Nova Scotia, opens up a new vista for these followers of Mr. Chamberlain; for a British law that has for its purpose the prevention of dumping by bounty-supported colonial manufacturers would cause no end of friction between the mother country and the colonies and tend more to the disruption of the empire than to the welding of it together by the beneficent bonds of trade on which the English tariff reformers since 1903 have laid such unctious emphasis. That the Dominion Iron & Steel Company should dump in India, or in any other country, will occasion surprise in the iron and steel trade the world over; for it was on the grievous complaints of the Dominion Company that in 1904 the Parliament at Ottawa passed the first anti-dumping law, in order that the rod mill at Sydney might be adequately protected against dumping from wire-rod mills in the United States. Wire rods were then on the free list in Canada, because at that time a bounty of $6 a ton on their production was paid. Hence the celerity with which the Canadian Government went to the aid of the Sydney mill when its business was regarded by the Dominion Iron & Steel Company as seriously threatened by American competition.

## Our Supreme Court and Compulsory Patent Working.

The United States Supreme Court has just handed down a decision in which for the first time in its history it takes up the question of the right of a patentee to restrain by injunction the infringement of his patent where the defense sets up that the nonuse of the invention constitutes a condition opposed to public policy. The lower courts having jurisdiction in patent matters have passed upon the question from time to time with varying decisions, but the principle had not been established by the final authority. Nor can it be said that the question is fully settled in this latest decision, except that Justice McKenna, speaking for the court, states by inference that a case might arise where, regarding the situation of the parties in view of the public interest, a court of equity would be justified in withholding relief by injunction, leaving to the patentee the redress afforded by action to recover royalties. The decision involves a pithy review of general principles of the American patent laws which is full of suggestion at this time, when their amendment is prominently in the public mind in its bearing upon the principle of the compulsory working of patents and, perhaps, that of compulsory license.

The case in point is that of the Eastern Paper Bag Company versus the Continental Paper Bag Company, and involves the so-called Liddell patent for an improvement on a machine for making a self-opening paper bag, comprising only the mechanism for distending and folding down one end of a paper tube. The question of validity of patent or infringement is unessential in the consideration of the litigation. The real issue was the allegation of the defendant that a court in equity had no jurisdiction to grant an injunction restraining the defendant from employing his machine "even if the said Liddell patent were valid, and even if the defendant's paper bag machine were to be held to infringe that patent, because the said patent is a mere paper proposition which the complainant has never put into effect or use, and because it is contrary to equity to suppress a useful and established business, like that which the defendant is prosecuting with its paper bag machines, at the request of a complainant which simply owns one paper-bag machine patent that has never been employed by that complainant in any way in any paper-bag machinery, and because the complainant in this case has a plain, adequate and complete remedy at law for any infringement which may have been done."

In other words, the defendant expresses a willingness to pay a proper royalty for the use of the Liddell patent, if it has been infringed, but protests against an injunction restraining it from using the invention at all. The patent was pronounced valid, and that issue was dropped. The Circuit Court, the original jurisdiction, made this comment:

> No machine for practical manufacturing purposes was ever constructed under the Liddell patent. The record also shows that the complainant, so to speak, locked up its patent. It has never attempted to make any practical use of it, either itself or through licensees, and, apparently, its proposed policy has been to avoid this. In this respect it has not the common excuse of a lack of means, as it is unquestioned that the complainant is a powerful and wealthy corporation. We have no doubt that the complainant stands in the common class of manufacturers who accumulate patents merely for the purpose of protecting their general industries and shutting out competitors.

The Circuit Court of Appeals, usually the final jurisdiction in patent matters, upheld the complainant's case and issued the desired permanent injunction, all the time granting the facts as set forth by the Circuit Court, but Judge Aldrich dissented, stating his position in brief, as follows:

> Simple nonuse is one thing. Standing alone, nonuse is no efficient reason for withholding injunction. There are many reasons for nonuse which, upon explanation, are cogent, but when acquiring, holding and nonuse are only explainable upon the hypothesis of a purpose to abnormally force trade into unnatural channels—a hypothesis involving an attitude which offends public policy, the conscience of equity, and the very spirit and intention of the law upon which the legal right is founded—it is quite another thing. This is an aspect which has not been considered in a case like the one here.

Quoting Judge Aldrich before the Supreme Bench, the defendant's counsel asked:

> What was that wrongful purpose? It was the purpose to make more money with the existing old reciprocating Lorenz & Honiss machines and the existing old complicated Stilwell machines than could be made with new Liddell machines, when the cost of building the latter was taken into account. And this purpose was effective to cause the long and invariable nonuse of the Liddell invention, notwithstanding that new Liddell machines might have produced better paper bags than the old Lorenz & Honiss machines or the old Stilwell machines were producing.

Judge McKenna, giving the opinion of the majority of the Supreme Court, upholding the decision of the Court of Appeals in granting the injunction, commenting upon this contention of the defendant, states:

> But, granting all this, it is certainly disputable that the nonuse was unreasonable or that the rights of the public were involved. There was no question of a diminished supply or of increase of prices, and can it be said, as a matter of law, that a nonuse was unreasonable which had for its motive the saving of the expense that would have been involved in changing the equipment of a factory from one set of machines to another? And even if the old machines could have been altered, the expense would have been considerable. As to the suggestion that competitors were excluded from the use of the new patent, we answer that such exclusion may be said to have been of the very essence of the right conferred by the patent, as it is the privilege of any owner of property to use or not to use it, without question of motive. . . .
>
> We have seen that it has been the judgment of Congress from the beginning that the sciences and the useful arts could be best advanced by giving an exclusive right to an inventor. The only qualification ever made was against aliens in the act of 1832. That act extended the privilege of the patent law to aliens, but required them "to introduce into public use in the United States the invention or improvement within one year from the issuing thereof," and indulged no intermission of the public use for any period longer than six months. A violation of the law rendered the patent void. The act was repealed in 1836. It is manifest that Congress has not overlooked the subject of the nonuser of patented inventions.
>
> And another fact may be mentioned. In some foreign countries the right granted to an inventor is affected by nonuse.

This policy, we must assume, Congress has not been ignorant of, nor of its effects. It has, nevertheless, selected another policy; it has continued that policy through many years. We must assume that experience has demonstrated its wisdom and beneficial effect upon the arts and sciences. . . . Whether, however, a case connot arise where, regarding the situation of the parties in view of the public interest, a court of equity might be justified in withholding relief by injunction, we do not decide.

Justice Harlan, dissenting, thinks that the original bill should have been dismissed; that the facts are such that the court should have declined, upon grounds of public policy, to give any relief to the plaintiff by injunction.

Under the new British patent act, as it is now understood in this country, such a case could not arise because no provision is made in the compulsory working clause for revoking a patent where it is permitted to lie idle. Neither could the case be brought under the Canadian act, for if the patent were unused the right to employ it under a license could be obtained by the infringer. With the details of this latest American litigation the workings of the patent systems of the three countries are well exemplified. They provide food for thought as to what is the best practice to embody in the proposed Federal amendments.

## Blast Furnace Building in the Lake Erie Region.

The announcement this week that two 400-ton blast furnaces will be built at Buffalo for the production of merchant pig iron calls attention again to the great contribution that district has made to the country's pig iron capacity in the past few years. At the same time, it emphasizes the economic advantage of furnace sites on the shore of Lake Erie. Not to go minutely into statistical comparisons, or to restate the familiar reasons for the lake shore development, it will serve the present purpose simply to point out how much of the blast furnace construction of the few years since 1900 has been carried on in the Lower Lake region.

In 1890 there were but six active coke blast furnaces between Detroit and Buffalo and in those cities. Three furnaces were built in Buffalo in the early sixties, but they were abandoned in the seventies. At Tonawanda a small furnace was built in 1873, but it was cold in the eighties, and was only reconstructed in 1891. Cleveland contributed the pig iron production of all Lake Erie, apart from the small output of charcoal iron at Detroit, there being besides the five furnaces owned or leased by the Cleveland Rolling Mill Company, the Emma furnace of the Union Rolling Mill Company. The capacity of these six furnaces in 1890 was 230,000 gross tons a year.

Ten years later the number of Lake Erie coke furfurnaces had increased to twelve, one furnace having been abandoned at Cleveland, while three had been built at Buffalo, two at Tonawanda, N. Y., and two at Lorain, Ohio. The capacity was then 1,085,000 gross tons.

Since 1900 the development has been astonishing. At Buffalo, 10 new furnaces have been added, while another is incomplete. One has been built at Erie, Pa., two at Cleveland, two at Lorain, two at Toledo and two at Detroit, including the rehabilitation of an old charcoal stack as a coke furnace. A furnace is under construction at Cleveland and two others are definitely projected of about the same capacity as the two just announced for Buffalo. Thus the furnaces in operation or ready to operate on the shores of Lake Erie now number 31, with an annual capacity of 3,740,000 tons, while two are building, with a combined capacity of 265,000 tons, and four are projected, with an annual capacity of 480,000 tons.

Recapitulating, the number and capacities of Lake Erie blast furnaces in the three years named were as follows, the figures for 1908 including furnaces building and those for which plans have been made:

| Year. | No. furnaces. | Annual capacity. Gross tons. |
|---|---|---|
| 1890 | 6 | 230,000 |
| 1900 | 12 | 1,085,000 |
| 1908 | 37 | 4,485,000 |

Counting only completed furnaces the increase between 1900 and 1908 was 19 furnaces, with a capacity of 3,740,000 tons a year. This represents an increase in capacity of 245 per cent. The best obtainable comparison for the whole country is in the figures given in the Directory of the American Iron and Steel Association, which show that the blast furnace capacity of the United States on November 1, 1901, was 24,800,000 gross tons, and on November 1, 1907, 34,800,000 tons, a gain of 40 per cent. It is significant that the total of 19 furnaces built in the Lake Erie region between 1900 and 1908 compares with a total of 21 built in the same time in the Pittsburgh District and the Shenango Valley in Pennsylvania and the Mahoning Valley in Ohio. Of the total of 37 furnaces built, building or projected on the shores of Lake Erie, 18 are steel works and 19 merchant furnaces, the latter supplying almost exclusively the foundry trade.

## Hill Lands Show More Ore Than Estimated.

In speaking for publication on the Great Northern ore lease to the United States Steel Corporation, James J. Hill said last week that up to the end of the present fiscal year of the ore trust, December 7, 1908, the Steel Corporation will have paid in about $2,000,000 since the lease was made. To be exact, the amount figures out $1,963,500, counting a minimum of 750,000 tons for 1907 at 85 cents royalty and a minimum of 1,500,000 tons at 88.4 cents royalty for 1908. "But the Steel Corporation," adds Mr. Hill, "has not taken a ton of ore out of the lands leased to it. It has been engaged exclusively in exploration work, drilling and stripping the surface above the ore bodies, and in making arrangements for rapid economical mining. The ore lies as a rule from 60 to more than 100 ft. under the surface. In this exploration work it has expended approximately $4,000,000, so that by the end of the year the company will have paid about $6,000,000 without extracting a ton of ore. The exploration work showed the mines to contain a much greater amount of ore than was estimated at the time of the contract. The estimates then ranged between 500,000,000 and 750,000,000 tons."

**McClure Hot Blast Stove Contracts.**—G. W. McClure, Son & Co., Bessemer Building, Pittsburgh, have received a contract from the Colonial Iron Company, New York, for the erection of three 18 x 75 ft. stoves and all of the necessary piping, at the company's furnaces at Riddlesburg, Pa. Work was commenced last week on the contract. The firm has also received an order from the Worth Brothers Company for the erection of three stoves 22 x 90 ft., to be built at Coatesville, Pa. The same firm has practically completed 16 of the 32 hot blast stoves contracted for by the Indiana Steel Company, Gary, Ind., and is rapidly completing the work on a contract for seven stoves being erected for the Tennessee Coal, Iron & Railroad Company, Ensley, Ala.

The Standard Steel Car Company, Pittsburgh, will build all of the 1000 steel cars for the Chicago & Alton Railroad at its Hammond, Ind., works. The plates and shapes for these cars will come from the Illinois Steel Company.

Hyde Brothers & Co., having offices in Pittsburgh and New York, have recently been appointed representatives in these districts by the Standard Boiler & Plate Iron Company, Niles, Ohio, for its line of boilers, tanks, blast furnace and steel plate construction, &c.

## The Canadian Railroads' Limited Buying.

TORONTO, October 9, 1908.—For about a year the gross earnings of Canadian railroads have been on the decline. This change is particularly marked in the case of the Grand Trunk Railway Company, whose annual meeting was held in London, England, a few days ago. Present conditions give every indication—it is scarcely too much to say they give every assurance—that the turn for the better has come, and that the railroads will be fairly busy from this time forward. When the traffic returns get back to their former high showing the work of railroad building and betterment will be carried on on its former large scale. To solve the problem of keeping up net earnings in the face of falling gross earnings, railroad companies have had to skimp their maintenance expenditures. The upkeep of roads formerly afforded liberal business to manufacturers of rails, bridge material, locomotives, cars and other equipment, for it had become the rule to charge more of this account to income than was the case a decade ago. If revenue yielded less for the maintaining or rather improving of the system, capital could be drawn upon. In this country the difficulty of selling new issues of stocks or bonds never became so great as it was for a time within the last twelvemonth in the United States. Still, even capital outlay has been very sparing since the beginning of the trade reaction, notwithstanding that both the Canadian Pacific and the Grand Trunk companies were able to sell their issues. This restricted spending on the systems may be put down to a waiting policy, the railroad companies evidently believing that the prices of material and labor would decline below the minimum points reached in the dull period. Now that the signs point to a continued upward movement in trade, the companies are buying less reservedly. The rail mill at Sault Ste. Marie started up with good business in hand and with enough to keep operating upon for some time. It was not alone the apparent certainty of prices going up rather than down that impelled the railroad companies to place orders for material and equipment. They had a big grain traffic to handle, and it became necessary to put their systems in a state of efficiency in the heavy traffic sections.

Railroad companies are not so indifferent to the rail duty as they were a while ago, when their business was so flourishing. As the three leading systems have each a great mileage, and as each has big programmes of new construction to carry out, the $7 a ton is felt as a burdensome charge just now. So far the rail making companies of Canada have been able to keep to themselves the greater part of the benefit of this duty, though there have been some considerable rail importations within the last 18 months. If, however, the Canadian demand for rails becomes dull the home mills may close down, as the Sault mill did, or may look to the outside market, as the Sydney mill is reported to have done in one case. If rails were among the articles for whose manufacture a bounty is provided, the selling of them abroad might be unremunerative, for it is a condition of the bounty act that on none of the specified articles shall the bounty be paid when they are exported. If they are exported after the bounty has been paid the money must be returned to the Government. It is true the domestic pig iron and the steel ingots entering into Canadian rails are materials on which bounty has been paid, but as none has been paid on rails themselves their exportation calls for no refunds to the treasury. Steel blooms and steel billets are, however, not exportable without permission from the Government or without return of the bounty paid on the ingots from which they are made.

Since the annual meeting of the Grand Trunk Railway Company in London a few days ago there have been rumors that the Grand Trunk Pacific Railway Company will ask to be relieved of its agreement to lease and operate the Eastern Division of the National Transcontinental Railway, which division is to extend from Moncton in New Brunswick to Winnipeg in Manitoba. It is known that there is dissatisfaction among British shareholders of the parent and proprietary company, the Grand Trunk Railway. Some of these are demanding that a Canadian board be constituted to keep close supervision of the management. Especially there is a desire to have the shareholders more in touch with what is going on in respect to the Grand Trunk Pacific Railway. As the company has to pay a rental of 3 per cent. on the cost for the operating of the Eastern Division, the company's desire to keep down the cost is entirely natural. There is no doubt that under Government management the cost of construction is much greater than it would be under capable private enterprise. Charges of overclassification were made in the last session of Parliament, both by a Government engineer and by a Grand Trunk engineer. There are both room and temptation for tremendous waste, and when the division is finished a great part of it will have little or no traffic originating value. C. A. C. J.

## Seattle Trade Notes.

SEATTLE, Wash., October 3, 1908.—Within a short time many more men will be at work in the metal trades in Seattle and other Puget Sound cities than at present. One employer, who is working but half force at present, announced a few days ago that it would soon be necessary for him to increase his crew. In fact, there is a general air of activity in the trade. The lumber interests, practically paralyzed for many months because of the freight rate controversy with the railroads and the lack of demand from the interior and Eastern States, are rapidly recovering. Iron working establishments, dependent largely on the lumber industry, are stimulated, together with every other line of business in the Pacific Northwest.

A close observer of transportation affairs a few days ago predicted a severe car famine in this vicinity by November. The resumption on a large scale of lumber and shingle shipments, and the replenishing of merchandise and other stocks allowed to run down during the depression, will have a tendency to tax the transcontinental lines to their utmost. The approach of the Chicago, Milwaukee & St. Paul Railroad on this account, is watched with increased interest. Only a few days ago the rails were laid to the summit of the Cascade Mountains, from the east side. It had been planned to reach this point before the first fall of snow; although the snow arrived before the steel reached the summit, the track was laid in time to avoid the severe winter season. The completion of this railroad, which will be accomplished without any doubt by the middle of next summer, will prove a great factor in solving the transportation problem of the Pacific Northwest. A few days ago President Earling, with William Rockefeller and other directors of the road, visited the city. Mr. Earling told of the White Special, which it is proposed to run from Seattle to Chicago, with one or two sleepers running through to New York. The equipment will be exclusively for transcontinental travel. No local day travel will be carried. Several trains for this run are now under construction.

The members of the recent Chamber of Commerce excursion from this city were practically unanimous in pronouncing the roadbed of the new Seattle, Portland & Spokane Railroad up the north bank of the Columbia River from Vancouver, Wash., to Pasco, the best in the entire 1100 miles of the trip.

A meeting of the Oregon District of the United Metal Trades Association has been called at Portland for October 22, when it is proposed to initiate the formation of a foremen's organization similar to the Milwaukee Foundry Foremen's Association. The foremen of all the plants in the Oregon District will be invited to attend. The employers, of course, do not expect to have anything to do with the organization, more than to get it under way for the educational value it will have and the mutual advantage to all concerned. Similar movements will be inaugurated in the Washington and the British Columbia districts, although no date has yet been set for meetings.

Building activity in Seattle continues without abatement. Notwithstanding the slump in January, February and March of this year, the permits up to the present time average more than $1,000,000 a month for the year 1908. October promises to be especially heavy. In all probability work will commence on the second of the Metropolitan Building Company's series of steel structures. The first, the White Building, 11 stories high, has

the outer masonry work nearly completed. The Metropolitan Building, equal in size, will adjoin. Armour & Co. some time ago announced the intention of putting up a building costing several hundred thousand dollars on a site one block from the King Street Passenger Station. The permit may be taken out in October for this structure, as well as for a number of others in the business district. The value of permits issued in September by the superintendent of buildings was $1,104,631. The larger number of these was for residences, requiring comparatively little structural steel.

The advantage of building with prices at the present figure on structural materials is being urged in the city, and many large property holders are figuring on putting up buildings now which they would otherwise have delayed for a year or so. The architect in charge of the erection of the new 8-story Archbald Hotel announces that the building is going forward on a basis of $125,000, whereas a year ago it would have cost $160,000. Steel is going up and it will be completed by the beginning of the year.

The Seattle bank clearings for the month of September were $40,240,530, the heaviest since October, 1907, which was the banner month in the history of the city.

W. T. P.

## The Dominion Steel Company Exporting Rails.

MONTREAL, October 9, 1908.—The price at which the Dominion Iron & Steel Company has secured the order for 9000 tons of rails for the Southern Punjab Railway, apparently in competition with British steel making companies, is certain to be a matter of much discussion in England. This is the first oversea export order that has been secured by the Dominion Company since its rail mill was installed in 1905, it having had one order for the Elevated Railway Company at Boston. It is doubtful whether on the pig iron and steel ingots which go into this Punjab order the company will draw from the Dominion Treasury the bounties of $1.10 a ton on pig iron and of $1.65 a ton on steel ingots, which are payable under the Bounty act of 1906, when this material goes into rails for service in Canada.

In the early days of the Sydney plant, before the rail and the rod mills were in operation, the company exported pig iron and steel ingots to England; and on these products drew bounties in accordance with the terms of the Bounty acts of 1899 and 1903. But two years ago, when the Tariff Commission and the House of Commons at Ottawa were engaged in the general revision of the tariff of 1897, there were rumors that the United States Steel Corporation intended to establish an iron and steel making plant in the neighborhood of the Detroit River, Ontario. Mr. Fielding, the Minister of Finance, in his exposition of the financial resolutions on which the Bounty act of 1906 is based, stated that while Canada would welcome the establishment of a plant by the Steel Corporation it was not willing that the latter should draw on the Dominion Bounty Fund in respect of iron and steel exported from Canada.

In the numerous bounty laws enacted from 1883 onward at Ottawa, there were no provisions withholding bounties from the export business. As a matter of fact, while in the period between 1854 and 1883 a fair quantity of pig iron had been exported from Canadian furnaces, there was no export trade amounting to anything from 1883 to 1901, when the Dominion Iron & Steel Company began to market part of the output of its furnaces in England and Scotland. But the likelihood of the Steel Corporation going into the iron and steel manufacturing business in Ontario put the Dominion Government on its guard; and in the bounty law as it now stands there is a provision intended to apply to the export trade.

The law sets out that bounties may be paid out of the consolidated revenue fund on a definite list of products "manufactured in Canada for consumption therein." Whether or not the Dominion Company can successfully claim bounties on the raw material that has gone into its first oversea export order will depend on what construction the Department of Trade and Commerce at Ottawa, which certifies for the payment of bounties, puts on the words "manufactured in Canada for consumption therein." It is on pig iron and ingots, not on rails, that bounties are paid; and it will not be very difficult for the Steel Company to claim that the pig metal and open hearth product that has gone into the Punjab rails were manufactured in Canada "for consumption therein." Pig metal made in Canada is sold to agricultural implement manufacturers. Agricultural implements nowadays figure quite largely in the export returns of the Department of Trade and Commerce; but there is no record that has been made public in Canadian newspapers that the bounty on pig iron was ever withheld when the metal went into agricultural implements that were shipped abroad. As the law stands, the Indian order raises a nice question for the Department of Trade and Commerce, with the odds rather in favor of the Dominion Company establishing its claim.

Over in England the Indian order for Sydney is likely to raise another issue, and an issue which will dislocate the cherished theories of those followers of Mr. Chamberlain who insist that if England will only set up protective duties against imports from the United States, Germany and other non-British countries, with preferences for Canadian and other Colonial products, the Dominion manufacturers will submit to much lower duties on imports from Great Britain. The tariff preferences on pig iron and steel rails in Canada, as they have existed since 1897, have been practically worthless to the British iron and steel industry because of the large bounties which Canada bestows on these industries in the Dominion, and also because under a Dominion law Canadian railroad companies receiving subsidies for new roads may be compelled to lay these new roads with rails made in Canada.

E. P.

## A Late Strike Injunction in Federal Courts.

At Seattle, Wash., an injunction has just been granted in the United States Circuit Court against the Pacific Coast Federation of 'Longshoremen, the Puget Sound Council, Pacific 'Longshoremen, and various officers and members who are named, who have been carrying on a strike for several months against the Alaska Steamship Company and the Alaska Pacific Steamship Company. The case is of interest in view of the political prominence the injunction issue has received. On July 25 an application for a preliminary writ of injunction was filed and the case was set for hearing on August 3. A postponement was made to a later date, but the defendants did not appear. The court has now issued a restraining order to prevent them from in any manner interfering with, hindering, obstructing or stopping the business of the steamship company; from compelling or inducing or attempting to compel by threats, intimidation or violence any employees of the two companies to leave their service; from attempting to prevent by threats or violence any persons from entering the service of the companies; from congregating upon or about the premises of the steamship companies or the streets adjacent for the purpose of intimidating employees, or hindering them in their duties; from maintaining at or near the premises any pickets in a threatening or intimidating manner and from interfering with the employees of the two companies in going to or from their work.

The attorney for the defendants offered affidavits to show that an orderly strike was being conducted, and that the strikers had not counseled or countenanced violence, but the court considered that the specific charges of violence and threats, of tearing down the posted orders of the court and of attacks on nonunion men were sufficiently proved to justify the granting of an order for an injunction. Judge Hanford said that plainly the strikers had violated Section 4 of the Sherman Anti-Trust law by the commission of acts of violence, making threats and doing the things which in the contemplation of the law constitute restraint of trade and an interference with commerce. The court added: "There is cause for invoking the power of the court in this case because violence has been threatened, because violence has been committed and business has been interfered with."

## Customs Decisions.

### Copper Alloy Bars.

In sustaining a protest filed by the Driver-Harris Wire Company, Newark, N. J., the Board of United States General Appraisers holds that hot-rolled rods or bars composed of an alloy of copper and phosphor tin, copper representing 94 per cent. of the composition, and used solely as raw material for making wire, is free of duty under the tariff provision for "composition metal of which copper is a component material of chief value not specially provided for." The customs authorities decided that the merchandise was subject to duty as "copper rods," with a duty of 2½ cents per pound, whereas the importers alleged exemption of duty as indicated above. In addition to the claim for free entry, the importing company set up the further contention that, if the goods are not entitled to entry under the free list, they are dutiable either at 10 or 20 per cent., as unenumerated manufactured or unmanufactured articles. In his decision for the Board, however, General Appraiser Fischer confines his conclusions to the claim for free entry. He says:

The rods or bars here in question are not available for any practical purpose until they are subjected to further manipulation and manufacture. In its imported condition the article is the raw material for the wire drawer. It must be considered as an ordinary or commercial form of alloy metal. Following the principle as announced in decision of the court as to nickel alloy in the form of rods, Boker versus the United States, these articles are in no sense to be regarded as manufactured articles. It then remains to determine what provision in the act covers or includes this article as a metal.

It is stated by Mr. Fischer that while there has been some trade testimony offered in this case to demonstrate what in fact constitutes the composition metal of commerce, the evidence submitted is wholly unsatisfactory. In conclusion, the decision says:

It appears to us that the provision in the tariff for all composition metal did not contemplate one kind of composition metal or copper alloy, but that by the further words, "of which copper is a component material of chief value," Congress did provide for an alloy metal of the kind here in question, composed of 94 per cent. of copper and 5 per cent. of tin. We hold the merchandise to be free of duty under paragraph 533 of the tariff as a composition metal not specially provided for, and we sustain that claim in the protest.

### Gun Locks.

The Board has affirmed the legality of the action of the collector of customs at Chicago in assessing additional duties on extra detachable locks accompanying importations of double-barreled breech-loading shotguns by Von Lengerke & Antoine, Chicago. The guns were assessed at $6 each, and in addition thereto 35 per cent. under paragraph 158 of the tariff act, and the additional parts at 50 per cent., under the same paragraph, as "parts of such guns." The importers contended that the extra parts are interchangeable parts, and should have been classified with the gun as a unit or entirety. In reaching the conclusion that the extra parts are dutiable, General Appraiser Fischer has this to say:

It is admitted that the extra detachable locks have been fitted and adjusted carefully to the particular gun which they accompany, and can only be used with that gun. That, however, will not prevent a separate classification of such extra parts. The breechloading guns as imported were complete and ready for use, and each had attached thereto a pair of detachable locks. In use but one pair of locks can be used on a gun at a time, and it follows that the extra or additional ones are in no sense to be regarded as an indispensable part of the entirety.

The Crane Iron Company, Catasauqua, Pa., which has had a corporate existence under various names since 1839, has been granted a perpetual charter by Governor Stuart of Pennsylvania under the name of the Crane Iron Works, having a capital stock of $750,000, of which $502,133.33 is paid in. The rechartering of this famous company, now controlled by the Empire Steel & Iron Company, which holds 10,034 of the 15,000 shares of stock, is an interesting story. It was originally chartered in June, 1839, under the name of the Lehigh Crane Iron Company. On April 11, 1861, it was chartered for a period of 25 years from 1864, and then the name was changed to the Crane Iron Company. On July 12, 1885, it was again chartered, this time under the act of 1874, to exist for 20 years from 1889. The incorporators of the company are all men identified with the Empire Company, including Leonard Peckitt, president; J. W. Fuller, Sr., Archer H. Brown, J. S. Stillman, A. A. Fowler, E. R. Chapin, C. H. Zehnder and H. S. Hart.

## Philadelphia's Rapid Transit.

In a sumptuous volume in undressed leather, the Millard Construction Company presents an account of the construction and equipment of the Market Street Subway-Elevated portion of the Philadelphia Rapid Transit Company's system. The story of the latest development in rapid travel through the streets of Philadelphia is told most interestingly, beginning with the granting of franchises for several routes of rapid transit lines by the councils of the city of Philadelphia in 1901. The Market street Subway-Elevated consists of 7.41 miles of structure and 17.20 miles of single track. It extends from a terminal at Sixty-ninth street west of the city boundary on an east and west line to the ferries on the Delaware River. The original franchise providing for an elevated road the length of Market street, was amended so as to permit the building of the subway between the Schuylkill and Delaware rivers, this portion of the line being something over two miles in length. The running time from Sixty-ninth street to Second street is 27 minutes eastward. Between the City Hall and Second street the running time is seven minutes, or less than half the best time possible on the surface line. The East Market street section of the subway is 5888 ft. long. Its general width out to out of walls is 37 ft. and the clear head room is 14 ft. The distance center to center of tracks is 13 ft. 3 in. It is a rectangular tunnel of reinforced concrete. All of the structural steel used is covered with concrete, the only iron visible being at the stations. The engineering problems involved in this eastern section, as the volume before us points out, were unique. It underlies a mile or more of the busiest street in Philadelphia. The route is lined on both sides with large buildings, many of them converted and added to from time to time on old foundations. Further, the street was riddled with a century's accumulation of gas and water pipes, sewers, electric wire conduits and fire mains, in places too close together to admit a hand between them. The problem before the Millard Company's engineers, the working out of which was a conspicuous triumph, was that of building a double track subway and reconstructing the sewer system, building an adequate concrete sewer each side behind the walls of the train tube, and also rebuilding and arranging the telephone, telegraph, electric power and light, gas, water and high pressure fire systems without interrupting the service in any of them. The methods followed in solving these problems are given in detail, and the letter press is made luminous by illustrations of various portions of the subway and of the connected power house and equipment. Full page portraits are also given of the officers of the Philadelphia Rapid Transit Company, and the officers and engineers of the construction company.

The separate bridge over the Schuylkill River, which the subway-elevated made necessary, was the 20th bridge constructed over that river within the city limits, 10 being for streets and 10 for railroads. It is 576 ft. long and carries four tracks, two for the elevated railroad trains, which pass to the subway east of the river, and two for the street railroad cars, which converge from the surface lines in West Philadelphia into the subway. A third rail supplies power for the elevated and subway trains; the cars entering the subway from the surface lines are operated by overhead trolley.

The new line was thrown open to public travel from Sixty-ninth street to the Second street station on August 3, 1908, though the western portion had been in use for some months. Philadelphia was the last of the large cities to get elevated and subway transportation, but the first in which the subways were built by private capital. The volume commemorating this great enterprise says that it was carried through under difficulties never before encountered in similar work, and that whether it will pay directly is a question yet to be determined.

## A Pittsburgh Bar Iron Reminiscence.

The recent sesquicentennial celebration of Pittsburgh brought out much of antiquarian interest in connection with the manufacturing establishments of that city. One of the important iron enterprises there which flourished for many years, and now forms part of the American Steel & Wire Company, was the business founded in 1824 by Dr. Peter Shoenberger, who died about 1856. He and his associates operated what was at first known as the Juniata Iron Mill, and a blast furnace subsequently connected with it was operated by a separate firm under the style of Shoenberger, Blair & Co. Both branches were eventually united under the name of the Shoenberger Steel Company. For many years Gen. C. L. Fitzhugh was president of the company, in which he and John Z. Speer and G. A. Steiner were the active partners, and these were the men who were directing the business when the Shoenberger interests were taken over in 1899 by the American Steel & Wire Company. In looking over the early records of the company, William L. Hirsch, the local sales agent of the Steel & Wire Company, found a price-list issued in the early 30's which has a peculiar interest at present in view of the great difference in the price of bar iron and hoop iron as compared with prices ruling at the present time. The old price-list is as follows:

JUNIATA IRON WORKS.

The subscribers, owners of the above establishment, manufacture and have constantly on hand the following articles, all of which they warrant to be made from the best Juniata blooms:

*Bar Iron.*

| | |
|---|---|
| From 5 in. to 1½ broad, by ⅜ thick | $100 |
| Dandy Tire, 1⅜, 1¼ and 1 in. broad, by ⅜ | 125 |
| Saddle tree, 1¼, 1⅛ and 1 in. by ¼, 3-16 and ⅛ | 120 |
| ⅞ in. by ¼, 3 1-16 and ⅛ | 125 |
| ¾ in. by ¼, 2-16 and ⅛ | 140 |
| ⅝ in. by ¼, 3-16 and ⅛ | 150 |

*Square Iron.*

| | |
|---|---|
| From 2½ in. to 1 in. broad | 100 |
| ⅞ in. wide | 110 |
| ¾ in. wide | 115 |
| ⅝ in. wide | 120 |
| ½ in. wide | 125 |
| ⅜ in. wide | 140 |
| 5-16 in. wide | 150 |
| ¼ in. wide | 155 |

*Round Iron.*

| | |
|---|---|
| From 2½ in. to 1 in. thick | 100 |
| ⅞ in. thick | 110 |
| ¾ in. thick | 115 |
| ⅝ in. thick | 120 |
| ½ in. thick | 125 |
| ⅜ in. thick | 140 |
| 5-16 in. thick | 152 |
| ¼ in. thick | 158 |

*Hoop Iron.*

| | |
|---|---|
| 6d, 3d, 10d, 12d, 16d and 20d | 115 |
| 5d | 120 |
| 4d | 125 |
| 3d | 135 |
| 1 in. broad | 140 |
| ⅞ in. broad | 145 |
| ¾ in. broad | 150 |
| ⅝ in. broad | 158 |

P. SHOENBERGER & SON,
Warehouse in the City, Wood st., No. —.
Pittsburgh, ....., 1830.

The *American Wire Rope News* for September, published by the American Steel & Wire Company, gives several interesting articles by engineers on the uses to which wire rope is placed. One of these articles describes an elevator hoist in the store of Marshall Field & Co., Chicago; another treats of logging with wire rope on the Pacific Coast; the third is on the subject of draining and reclaiming swamp lands in Arkansas and Louisiana; the fourth describes the wire rope used on the Arctic steamship Roosevelt.

The American Blower Company, Detroit, Mich., announces that it has a limited supply of leather covered vest pocket sized copies of the Manual for Engineers compiled by Prof. Charles E. Ferris of the University of Tennessee, which will be supplied free as long as they last to any engineer or contractor who applies for one.

## Iron Slag Blocks in the United States.

The use of iron slag blocks for street paving has received some attention in engineering circles recently because of the legal contest over the receipt of bids by the Borough of Brooklyn for the paving of several streets with such blocks. The charge was made by interests representing other kinds of paving that the iron slag blocks could be secured through but one channel, and that therefore no real competition for the paving contract was possible. An investigation of the manufacture and use of iron slag blocks has been made by the *Engineering News*, which gives the experience of engineering departments of several cities.

Blast furnace slag is used in the manufacture of this class of paving, the molten slag being poured into block molds. Such use of slag from blast furnaces originated in England, and the product was introduced into the United States 15 or 20 years ago, in most cases the blocks being imported. At that time a blast furnace in Pennsylvania undertook their manufacture, but this continued for only a short time. Another furnace company in this country which was approached by an engineer some time ago concerning the manufacture of iron slag blocks replied that it had investigated the matter, but found its slag too silicious and too low in alumina for the manufacture of paving like that which had been imported. The slags produced abroad showed just the contrary in these two respects. It was added that in the annealing to which the blocks are subjected the slags made from Lake Superior ores contain no elements assisting the hardening process, while ores used in Europe produce slags showing great strength and density after annealing. A representative of a firm which manufactures these blocks in the Newcastle district in England investigated the slags made at the American furnace plant in question, and took a number of samples back to England, but nothing came of the proposal to establish a plant in this country.

### Experience with Slag Blocks for Paving.

The reports from various cities which have used iron slag blocks are not uniform. In the Borough of Brooklyn, New York, the blocks laid between street railroad tracks have flaked badly on the surface, though otherwise showing good wearing properties. In the Borough of the Bronx it has been found that the pavement is very slippery, and chips to an irregular surface so that teams generally avoid it if possible. At Baltimore, Md., the street railroad company reported on the use of these blocks in the paving between rails, and for 2 ft. outside of the track which the company is required by law to lay. They were found to stand up well under heavy traffic, and were used principally on streets formerly paved with sheet asphalt. The use of the blocks as new paving in a street is not recommended, because of their being extremely noisy under heavy traffic, and because the horses do not maintain their position in inclement weather as well as on Belgian blocks. Philadelphia laid nine miles of iron slag paving 10 years ago, but on account of the extensive chipping of the edges and the unsightly appearance of the heavily traveled streets, the material fell into disfavor. Toronto engineers do not recommend the iron slag blocks, their experience being that the surface is too slippery. In Montreal they have been in use for 16 years, and are reported hard, durable, with an even top and giving full satisfaction.

One of the chief objections urged against iron slag blocks is that they are now made only in England, and that there is apparently an understanding among the manufacturers, who have but a single selling agency in the United States. The cost, as reported from various cities, ranges from $50 to $55 a thousand, while in England the blocks are selling at $12 a thousand, and can be bought in Canada for $34 a thousand. While the experience above summarized is on the whole not unfavorable, it would yet seem that the subject is worthy of investigation by American blast furnace companies because much as the one important outlet for blast furnace has been at present is in the form of slag cement. [illegible]."

## PERSONAL.

H. S. Braman has been appointed superintendent of blast furnaces of the Youngstown Sheet & Tube Company, Youngstown, Ohio.

Robert A. McKean of Coffin & McKean, constructing engineers, Fulton Building, Pittsburgh, has returned from Europe.

Edgar M. Moore, Farmers' Bank Building, Pittsburgh, has returned from Europe.

Dr. P. Héroult, the inventor of the electric steel processes which bear his name, has just arrived from France for a stay of a few months.

Howard P. Eells, president of the Bucyrus Company, South Milwaukee, Wis., sailed October 1 for a trip to various European points.

William O. Vilter, secretary and treasurer of the Vilter Mfg. Company, Milwaukee, Wis., arrived home October 1, after an extended European trip, having been abroad since last March.

Robert J. Gross, Dunkirk, N. Y., has resigned as vice-president of the American Locomotive Company, an office which he has held since the organization of the company in 1901.

Charles Churchill of Charles Churchill & Co., Ltd., London, England, is to visit in this country a number of the machinery and tool manufacturers for which his company is English selling agent. He plans to be in New York during the annual meeting of the Machine Tool Builders' Association, October 20.

Edwin E. Bartlett, president of the Boston branch, National Metal Trades Association, has sailed for Europe, planning to be absent six weeks.

G. M. Laughlin, Jr., general superintendent of Soho mills, and E. L. Messler, general superintendent of Pittsburgh coke ovens and blast furnaces of the Jones & Laughlin Steel Company, who have been hunting in New Brunswick, are expected home this week.

F. H. Buhl of Sharon, Pa., is extending his Twin Falls canal in Idaho to reclaim 700,000 acres of arid land. Water will be drawn from the Snake River. The project includes a system to carry the water supply across Salmon River Canyon, which is about 1650 ft. wide, and whose bed is 500 ft. below the level of the proposed canal.

John B. Howat has resigned as vice-president and general manager of the Dillon-Griswold Wire Company, Sterling, Ill., and will become head of the newly incorporated Sharon Hardware Mfg. Company, Sharon, Pa.

## The Philadelphia Foundrymen's Association.

The regular monthly meeting of the Philadelphia Foundrymen's Association was held at the Manufacturers' Club October 7. In the absence of the president, Josiah Thompson occupied the chair. The business transacted was largely of a routine nature. Resolutions of sympathy and regret concerning the recent death of Walter E. Devlin, president of the Philadelphia Hardware & Malleable Iron Company, a member of the association, were adopted. Mr. Devlin, who was a son of Thomas Devlin, president of the Foundrymen's Association, was well known in the trade, particularly in the hardware branch.

The paper for the evening's discussion was on "Systematic Inspection and Analysis of Fuels," by W. S. Gould, president of the Fuel Engineering Company, New York. An abstract of the paper is printed in another portion of this issue. A short discussion followed the reading of the paper, after which the meeting adjourned.

The third convention of the Lakes to the Gulf Deep Waterway Association was held at the Auditorium Theatre, Chicago, October 7, 8 and 9, and was attended by stcver 4000 delegates representing the commercial and intereo'rial interests of the Mississippi Valley. A notable Iron Co: of the occasion was the presence of the two lead- a period dential candidates, William H. Taft and William changed t' it was ag: J. Bryan, who in addresses delivered before the convention on Wednesday strongly indorsed the deep waterways project embodied in the plans of the association. Included in the list of speakers who addressed the convention were James J. Hill, Theodore P. Shonts, David R. Francis and John Temple Graves. The State of Illinois will submit to the voters at the coming November election the question of a constitutional amendment to provide a bond issue of $20,000,000, of which $17,000,000 is to be spent in the building of the deep waterway to the Gulf. The remaining $3,000,000 is to be used in developing electric power from the water of the Desplaines River, from the sale of which the whole $20,000,000 is to be paid back to the State. Resolutions adopted by the convention strongly indorsed this proposed bond issue and demanded that a definite and vigorous policy of waterways improvement, beginning with the Lakes-to-the-Gulf deep waterway, be propmtly adopted and put into operation by the National Government.

## OBITUARY.

JOHN W. MUTE of St. Louis, Mo., president of the St. Louis Car Wheel Company, died at his summer home in Portland, Maine, October 5, aged 47 years.

ROBERT DEELEY, founder of the firm of Robert Deeley & Co., manufacturers of machinery at 541 West Thirty-second street, New York City, died October 5, aged 81 years. He was born in England and came to this country 53 years ago. He organized the firm which bore his name in 1868, and retired about four years ago, leaving the business in control of his son, Thomas E. Deeley.

GEORGE F. WILSON, treasurer of the Globe Wire Company, Harrison, N. J., died October 4, aged 52 years.

GEORGE WILSON, secretary of the New York Chamber of Commerce for the last 40 years, died October 8, aged 72 years. He was born in New York and was educated in the local public schools. He entered the Chamber of Commerce in 1856 as assistant secretary. In 1861, after Fort Sumter had been fired on, Mr. Wilson resigned and entered the navy as paymaster on the Valley Forge. At the close of the war he resumed his old position, and when John Austen Stevens resigned in 1868 he was unanimously elected secretary. On all subjects connected with the commercial and financial history of New York City he was a mine of information. In the prosperity and dignity of the Chamber of Commerce his ambition was centered. He was a member of the New England Society in New York, the New York Commandery of the Loyal Legion, the Naval Order of the United States, the Metropolitan Museum of Art, American Museum of Natural History, and the New York and Long Island historical societies.

THEODORE S. BASSETT, president of the United States Rubber Reclaiming Works, New York City, and vice-president of the Iron Foundry Company, Derby, Conn., died suddenly at his country home at Fort Trumbull Beach, Milford, Conn., October 7, aged 69 years. He was born at Derby, Conn., and was once postmaster of Derby, having been appointed by President Cleveland.

JOSEPH PAINTER, Sr., head of the firm of Joseph Painter & Sons of Lebanon, Pa., operating an iron foundry at Myerstown, Pa., died October 9, aged 86 years.

HENRY W. CORTES, president of the Bering-Cortes Hardware Company, Houston, Texas, was killed in a runaway accident October 4. He was born in Galveston 52 years ago, and in 1885 removed to Houston, where he became a member of the firm of Bering & Cortes, which continued until 1901, when the business was incorporated under the present style.

An actual shortage of 1579 cars on September 30 is reported by Canadian railroads, due to the large movement of grain in Western Canada. For the United States and Canada, the American Railway Association's reports show on that date a surplus of 125,678 cars, the smallest of the year, and less than one-third the maximum figure, 413,438, on April 29. The reduction in the last two weeks of September was 44,974 cars, of which 21,000 are box cars and 17,000 coal cars.

# NEWS OF THE WORKS.

### Iron and Steel.

The Rockdale Iron Company's furnace at Rockdale, Tenn., is now making foundry iron. In July and August and for a few days in September it was burdened for ferrophosphorus.

The Temple Iron Company's furnace at Reading, Pa., is again in blast after being out for more than nine months.

At the Nittany Iron Company's furnace, Bellefonte, Pa., additional boiler capacity is being installed and general repairs made. The furnace has been out of blast since the middle of April.

The Upson Nut Company's furnace, at Cleveland, Ohio, is out for relining. It was last relined in the early months of 1906, being then known as River Furnace.

The drought is responsible for the closing down of one blast furnace, that of the Bessie Ferro-Silicon Company, at New Straitsville, in the Hocking Valley, Ohio.

The Meehan Boiler & Construction Company, Leetonia, Ohio, builder of tanks, blast furnaces, steel pipe and plate construction, is building a Mullen gas washer to be used in connection with the blast furnaces of the Salem Iron Company at Leetonia. The company has recently completed work on new dust catchers, downcomers and piping for Nos. 1 and 2 furnaces of the Columbus Iron & Steel Company, Columbus, Ohio, and is building a complete new furnace shell with dust catchers, downcomers and piping for the Wellston Steel & Iron Company, Wellston, Ohio.

Repairs are being rushed on the rolling mill of the Western Steel Car & Foundry Company, at Anniston, Ala., and operations will probably be resumed during the coming week.

Announcement is made that the Bessemer rolling mill of the Tennessee Coal, Iron & Railroad Company, at Bessemer, Ala., will be put in operation during the coming week, employing a double shift of men.

### General Machinery.

The Termaat & Monahan Company, Oshkosh, Wis., manufacturer of gasoline engines, has purchased property adjoining its plant for the erection of a new building. The company will make a specialty of marine gas engines.

The Pennsylvania Forge Company, Philadelphia, Pa., which recently awarded contract to the Belmont Iron Works for the construction of its new shop, is not yet ready to purchase additional machine tools. The new building will be of steel construction throughout, and will have a greater capacity in both the forge and machine departments.

The Thomas Carlin's Sons Company, 1600 River avenue, N. S., Pittsburgh, builder of shears, grinding pans, contractors' equipment, &c., notices considerable improvement in its line and reports inquiries more numerous than for some time past. Recent orders taken and on which deliveries are being made include the following: One No. 5 shear to cut 3½ in. sq., two No. 40 to cut 1¼ in., and one No. 18 to cut 2¼ in., all belted, for shipment to Birmingham, Ala.; one No. 1 belted shear to cut 6 in. sq., for Toledo; one 7 ft. wet pan for a steel foundry in St. Louis; two No. 18 belted shears to cut 2¼ in., for Elizabeth; one No. 44 to cut 1 in. and one No. 28 to cut 1¼ in., for Chicago; One No. 2 belted shear to cut 5 x 5 in., for Los Angeles, Cal., and a similar one for Columbia, Pa.; one belted No. 38 to cut 1¾ in., for Springfield, Ill., besides other machinery, including a 3-ton double drum electric hoist and derrick, one No. 61 motor driven shear and a No. 38 belted shear for Eastern shipment.

The new plant which the Wilbraham-Green Blower Company, Philadelphia, Pa., is erecting at Pottstown, Pa., will consist of a machine shop, 85 x 200 ft., with a 10-ton electric traveling crane running the entire length of the building; power house, pattern storage building two stories high, and an office building. A spur from the Philadelphia & Reading Railroad will run through the machine shop. The company is now moving its machinery and expects to be installed in its new plant between November 1 and 15.

### Power Plant Equipment.

The Virginia Light & Water Company, Virginia, Minn., is arranging to install a steam plant consisting of two 200-hp. boilers and a 500-gal. pump. This equipment is to be installed in a brick power house which will be erected to accommodate it.

Oliver L. Baer, Pittsburgh, has sold a 4000-hp. Reilly multicoil feed water tube heater to be installed in the boiler plant of A. M. Byers & Co.'s new works at Girard, Ohio.

N. C. Davis, Keenan Building, Pittsburgh, has sold a 100-hp. Riverside gas engine and an 80-kw. generator, to be installed in the electric light plant at Philippi, W. Va.; 25-hp. gas engine and an Aldrich duplex pump and outfit with a capacity of 300,000 gal., Kittanning Brick & Fire Clay Company, Kittanning, Pa.; 200,000-gal. steam pump, East McKeesport Water Company, Wilmerding, Pa.; two 10-hp. Bessemer gas engines, McGinnis-Smith Company, Pittsburgh; motor rotary pump to be used as a sewage ejector in the new office building to be erected by the Henry W. Oliver estate, Pittsburgh, and a 20-hp. Bessemer gas engine to Taylor & Dean, structural iron manufacturers, Pittsburgh.

The Danville Light, Heat & Power Company, Danville, Ind., has purchased a site for a new and larger plant, of steel, brick and cement construction, 50 x 114 ft. It will supply Plainfield and Brownsburg as well as Danville.

The New York Air Brake Company has leased for a term of years, with an option of purchase, the plant of the Watertown Engine Company, which it will take over on November 1. It will utilize the plant for the manufacture of a special type suction gas engine, and will also continue the present business of the Watertown Engine Company. A little later additional machinery will be added and the plant increased.

The Board of Water Commissioners, Canandaigua, N. Y., has requested an appropriation of $35,000 to be used for installing two motor driven centrifugal pumps, 2,500,000 gal. capacity each. Bids will be called for by the Board of Water Commissioners as soon as the appropriation is granted. Electric power from the Ontario Light & Traction Company will be used to operate the pumps.

The County Board of Supervisors, Yonkers, N. Y., has authorized the Almshouse Committee to prepare specifications for furnishing and installing one additional pump and engine in connection with the sewage disposal plant at the County Almshouse.

The Williamsville Electric Light & Power Company, Williamsville, N. Y., is having plans prepared for a new power house, 50 x 50 ft. Water turbines and generators will be installed.

Articles of incorporation of the Elbridge Engine Company, Rochester, N. Y., have been filed. The company is incorporated with $25,000 capital stock and is to manufacture and deal in engines. The directors for the first year are Lyman J. Seely, George E. DeLong and W. H Salmon, all of Rochester.

The Albany & Hudson Railroad, R. H. Smith, general manager, Albany, N. Y., is receiving bids for an addition to its power house at Stuyvesant Falls. The following equipment will be installed in the new building when completed: One 1500-kw. turbogenerator, new boilers, stack, condenser, excitor, pumps and appurtenances.

### Foundries.

The Central Foundry Company, Milwaukee, Wis., contemplates a number of plant improvements which it intends to make this fall with a view to increasing its facilities. This work will be undertaken in the belief that business conditions during the coming year will be greatly improved and that the present is an opportune time to take care of such work.

The Hildreth interests in the Hildreth Mfg. Company, Lansing, Mich., have been acquired by R. H. Scott and E. F. Peer, president and vice-president of the company. N. E. Hildreth, treasurer and superintendent of the gasoline engine department, will sever his connection with the company as soon as his successor is appointed. Mr. Hildreth leaves the company after a continuous service of over 15 years at the plant, which has a daily capacity of about 14 tons of castings, used principally by manufacturers of gas engines and automobiles.

The Gibbs Foundry & Machine Company, Watsontown, Pa., has acquired the old Susquehanna Foundry & Machine Works, which it is repairing preparatory to placing it in operation for the manufacture of furnaces and attachments that can be supplied to hot air furnaces, making a combination heater, giving hot air for the first floor and hot water for the upper floors. Sufficient capital has been secured to operate the plant on a large scale. C. A. Gibbs is manager.

### Bridges and Buildings.

The Pittsburgh Bridge & Iron Works, Rochester, Pa., has received a contract from the Berger Mfg. Company, Canton, Ohio, for the erection of three steel buildings, requiring 300 tons of steel, also an order for another building at Mansfield, Ohio, 125 tons, a crane runway at Erie, 100 tons, and miscellaneous orders amounting to 200 tons.

A charter has been granted under Pennsylvania laws to the Independent Bridge Company, a Pittsburgh corporation, which will engage in the erection of bridges and various steel structures. E. C. Chalfant is the manager.

Vollkommer & Co., engineers and contractors, Empire Building, Pittsburgh, have received a contract for a 65 x 100 ft. steel building, as an extension to the cold rolled department of the Interstate Steel Company, Brackenridge, Pa. The present equipment will be sufficient for an increased output in this department. The new building will be completed about November 25.

### Fires.

The plant of the Greater New York Metallic Bed Company, Philadelphia, Pa., was burned October 11, the loss being about $40,000.

The plant of the Columbus Machinery Company, Columbus, Miss., was damaged $20,000 by fire October 9.

### Hardware.

The plant of the Canada Nut Company, Niagara Falls, has been purchased by the Ingersoll Nut Company, which is identified with the John Morrow Screw, Ltd., Ingersoll, Ont. It has not yet been determined whether the business will be continued at Niagara Falls or Ingersoll.

# The Iron and Metal Trades

## Railroad Inquiry Slightly Better.

### Pig Iron Markets Uniformly Dull.

October promises to be remembered as a month in which the iron market drifted after having shown through a succession of months measurable gains in buying power. With the elections less than three weeks ahead, there is no disposition to discount the outcome, though here and there buyers are announcing what they will do in the way of contracts after November 3. Some signs are recognized of preparations by the railroads to take care in the near future of imperative needs, particularly in equipment.

Steel manufacturers have found in the situation in the past half year proof that the wear and tear demand of the country calls for an increase in commonly accepted estimates. It is now evident, however, that the production of Standard Rails, which is the product to suffer most from the depression, will be less than 40 per cent. of the average output of the past two years. The South Chicago and Ensley mills have been best employed, the former having a record of 50 per cent. operation for the year. Of actual Rail orders only about 5000 tons are reported in the past week, the Illinois mill taking 3300 tons from the Missouri, Kansas & Texas. At Chicago considerable improvement is noted in the buying of Track Supplies.

Structural business shows some life, though comparisons with the volume of work passing through the fabricating shops a year ago are far from encouraging. In the past week the Carolina, Clinchfield & Ohio bridge contract, 3000 tons, has been closed and the New York Central has taken 3000 tons for bridges for its belt line at Buffalo. Bids are going in this week for 6000 tons for the McKinley Traction Syndicate bridge over the Mississippi River at St. Louis. At Pittsburgh a conference of fabricators last week discussed the conditions resulting from recent indiscriminate competition, but no steps were taken to bring about a change.

Among Plate orders is one for 6000 tons for the 1000 car contract recently let by the Chicago & Alton.

Steel Bar specifications have been a conspicuously good feature in finished material, but in the Sheet and Tin Plate trades operations are much restricted. Probably less than 50 per cent. of Sheet mill capacity is at work and of Tin Plate mills less than 40 per cent.

The export trade continues very satisfactory. Argentina is one of the most promising fields for Rail orders just now, and British mills have closed a fair business there.

All Pig Iron markets are conspicuously dull. In the East good inquiries have come up for Iron for next year, and there are relatively larger uncovered requirements for this year than in Central and Western districts. As for several months, the business done in all parts of the country goes largely to the furnaces nearest the consumer.

Coke contracts for the first half of next year are up for consideration, but furnacemen and producers are well apart on price. The reported purchase by the Algoma Steel Company from the Pocahontas Coke Company is a contract renewal. After being shut down for some time the Sault mill is starting, and its coke requirements for the year are put at 150,000 to 200,000 tons.

The Lake Superior Ore movement for the year is now estimated at 22,000,000 to 23,000,000 tons.

## A Comparison of Prices.

**Advances Over the Previous Month in Heavy Type, Declines in Italics.**

At date, one week, one month and one year previous.

| | Oct. 14, 1908. | Oct. 7, 1908 | Sept. 9, 1908. | Oct. 9, 1907. |
|---|---|---|---|---|
| **PIG IRON,** Per Gross Ton: | | | | |
| Foundry No. 2, Standard, Philadelphia | **$16.75** | $16.75 | $16.50 | $20.00 |
| Foundry No. 2, Southern, Cincinnati | **15.75** | 15.75 | 15.50 | 21.25 |
| Foundry No. 2, Local, Chicago | *16.50* | 16.50 | 17.00 | 22.50 |
| Basic, delivered Eastern Pa. | **15.50** | 15.50 | 15.25 | 18.50 |
| Basic, Valley Furnace | *14.00* | 14.25 | 14.50 | 19.50 |
| Bessemer, Pittsburgh | 15.90 | 15.90 | 15.90 | 22.90 |
| Gray Forge, Pittsburgh | 14.40 | 14.40 | 14.40 | 20.40 |
| Lake Superior Charcoal, Chicago | 19.50 | 19.50 | 19.50 | 26.50 |
| **BILLETS, &c.,** Per Gross Ton: | | | | |
| Steel Billets, Pittsburgh | 25.00 | 25.00 | 25.00 | 28.50 |
| Forging Billets, Pittsburgh | 27.00 | 27.00 | 27.00 | 31.00 |
| Open Hearth Billets, Phila. | 26.20 | 26.20 | 26.20 | 31.00 |
| Wire Rods, Pittsburgh | 33.00 | 33.00 | 33.00 | 36.00 |
| Steel Rails, Heavy, at mill | 28.00 | 28.00 | 28.00 | 28.00 |
| **OLD MATERIAL,** Per Gross Ton: | | | | |
| Steel Rails, Melting, Chicago | *14.75* | 14.75 | 15.00 | 17.00 |
| Steel Rails, Melting, Phila. | *15.00* | 15.00 | 15.25 | 16.25 |
| Iron Rails, Chicago | **18.00** | 18.00 | 16.75 | 20.25 |
| Iron Rails, Philadelphia | *19.50* | 20.50 | 20.00 | 20.50 |
| Car Wheels, Chicago | *15.25* | 15.25 | 15.50 | 24.50 |
| Car Wheels, Philadelphia | 15.00 | 15.00 | 15.00 | 23.00 |
| Heavy Steel Scrap, Pittsburgh | **15.25** | 15.00 | 14.25 | 17.25 |
| Heavy Steel Scrap, Chicago | **13.50** | 13.00 | 13.00 | 15.00 |
| Heavy Steel Scrap, Philadelphia | *15.00* | 15.00 | 15.25 | 16.00 |
| **FINISHED IRON AND STEEL,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Refined Iron Bars, Philadelphia. | 1.45 | 1.45 | 1.45 | 1.75 |
| Common Iron Bars, Chicago | 1.50 | 1.50 | 1.50 | 1.78 |
| Common Iron Bars, Pittsburgh. | 1.40 | 1.40 | 1.40 | 1.70 |
| Steel Bars, Tidewater, New York | 1.56 | 1.56 | 1.56 | 1.81 |
| Steel Bars, Pittsburgh | 1.40 | 1.40 | 1.40 | 1.60 |
| Tank Plates, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Tank Plates, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Beams, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Beams, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Angles, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Angles, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Skelp, Grooved Steel, Pittsburgh | 1.45 | 1.45 | 1.45 | 1.85 |
| Skelp, Sheared Steel, Pittsburgh. | 1.50 | 1.50 | 1.50 | 1.95 |
| **SHEETS, NAILS AND WIRE,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Sheets, Black, No. 28, Pittsburgh. | 2.50 | 2.50 | 2.50 | 2.60 |
| Wire Nails, Pittsburgh | 1.95 | 1.95 | 1.95 | 2.05 |
| Cut Nails, Pittsburgh | 1.80 | 1.80 | 1.80 | 2.10 |
| Barb Wire, Galv., Pittsburgh | 2.40 | 2.40 | 2.40 | 2.50 |
| **METALS,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Lake Copper, New York | *13.75* | 13.75 | 14.00 | 15.00 |
| Electrolytic Copper, New York | *13.37½* | 13.50 | 13.85 | 14.75 |
| Spelter, New York | **4.77½** | 4.85 | 4.75 | 5.40 |
| Spelter, St. Louis | 4.62½ | 4.70 | 4.62½ | 5.20 |
| Lead, New York | *4.35* | 4.45 | 4.60 | 4.68 |
| Lead, St. Louis | *4.20* | 4.30 | 4.45 | 4.52 |
| Tin, New York | *29.25* | 29.50 | 30.50 | 34.70 |
| Antimony, Hallett, New York | *7.75* | 7.75 | 8.00 | 11.00 |
| Nickel, New York | 45.00 | 45.00 | 45.00 | 45.00 |
| Tin Plate, 100 lb., New York | $3.89 | $3.89 | $3.89 | $4.09 |

## Chicago.

FISHER BUILDING, October 14, 1908.—(*By Telegraph.*)

In some lines of mill products improvement is noted both in specification and new orders. New Steel car construction, while as yet relatively light is furnishing the mills some much needed tonnage in the Structural Shape and Plate departments. This has been increased by additional contracts which include 681 Steel gondola cars of 60-ton capacity, placed by the Illinois Central Railroad with the Cambria Steel Company, for delivery at the rate of 40 cars per day beginning November 1, and 200 Steel and 20 wooden passenger cars ordered by the Harriman lines from the Pullman Company. There is a considerably better movement in Track Supplies, orders for which are not only more numerous, but are for larger lots. Of standard Rails, 5000 tons, all for immediate shipment, represents the aggregate of new orders taken last week by the Illinois Steel Company. The No. 1 Rail mill at the South Works continues in operation, though gaited down to moderate capacity, and has business enough to keep it running in this way for several weeks. Both the Sheared and Universal Plate mills are again active, the only finishing mill at this plant now idle being the Light Rail mill. Another Open Hearth furnace has been started, making 11 under heat. The aggregate of Structural Shapes for bridge and car construction placed by the railroads last week was 66,000 tons. A large amount of Steel for building structures is being figured on, but the more important contracts of this kind are slow in coming to closure. On the whole, however, mill specifications are considerably im-

proved. Steel Bar specifications are coming out in larger volume, and the demand for Sheets is holding its own. There are no transactions of interest in Pig Iron, but the Scrap market holds firm with slight advances on some grades, notably Heavy Melting Steel and Old Steel Rails. The general disposition among buyers seems to be to wait until after the election before making commitments for future requirements.

**Pig Iron.**—Very little new business developed last week. What buying there was concerned the requirements of the smaller consumers, which are largely for immediate delivery, though here and there some lots ranging from 200 to 500 tons have been sold for shipment through the first quarter. No change has taken place in the Southern situation, the principal Alabama furnaces not having receded from their price of $13, Birmingham, for No. 2 Foundry. Some business, it is reported, is being done on this basis in the South and West, but consumers in Northern territory find nothing attractive at the present time in such values, nor is it likely their views will be changed in this respect so long as Northern Iron is available at $16.50, at furnace. Quite a number of inquiries are coming in for forward shipments covering the first quarter and half of next year, but as far as can be learned no sales of considerable tonnage have resulted. At the same time it is evident that some of the large consumers are seriously contemplating entering the market with a view to closing contracts for this period, and it is likely that within the next week or two furnaces will be asked to figure on noteworthy quantities. The commencement of a general buying movement prior to the November elections is, in the opinion of operators, hardly to be expected, but it is believed that there is in the aggregate considerable Iron, the placing of orders for which is now being deferred, but will come soon thereafter. Together with stock in yards and Iron due on contracts, it is estimated that the needs of melters for the remainder of the year are fairly well supplied. Interest, therefore, centers mainly in the establishment of a satisfactory price basis between consumers and producers for next year's business. The following quotations are for October, November and December delivery, f.o.b. Chicago:

| | |
|---|---|
| Lake Superior Charcoal | $19.50 to $20.00 |
| Northern Coke Foundry, No. 1 | 17.00 to 17.50 |
| Northern Coke Foundry, No. 2 | 16.50 to 17.00 |
| Northern Coke Foundry, No. 3 | 16.00 to 16.50 |
| Northern Scotch, No. 1 | 17.50 to 18.00 |
| Southern Coke, No. 1 | 17.35 to 17.85 |
| Southern Coke, No. 2 | 16.85 to 17.35 |
| Southern Coke, No. 3 | 16.35 to 16.85 |
| Southern Coke, No. 4 | 15.85 to 16.35 |
| Southern Coke, No. 1 Soft | 17.35 to 17.85 |
| Southern Coke, No 2 Soft | 16.85 to 17.35 |
| Southern Gray Forge | 15.35 to 15.85 |
| Southern Mottled | 15.10 to 15.60 |
| Malleable Bessemer | 17.00 to 17.50 |
| Standard Bessemer | 17.65 to 18.10 |
| Jackson Co. and Kentucky Silvery, 6 % | 19.90 to 20.40 |
| Jackson Co. and Kentucky Silvery, 8 % | 20.90 to 21.40 |
| Jackson Co. and Kentucky Silvery, 10 % | 22.90 to 23.40 |

(*By Mail.*)

**Billets and Rods.**—Sales of only a few small lots, mainly carloads, of Forging Billets are reported for the week. Aside from Steel Axle requirements for the construction of new cars, recently placed, little new work is coming up to increase activities in the forge shops. The price on Forging Billets is $28.50, base, Chicago, which, we are advised, is generally maintained. Wire Rods show little change. Specifications continue to come out in a volume proportionate to the output of Wire products. We quote the following prices, which are said to be uniformly held: Bessemer, $33; Basic, $34; Chain, $33, all at Pittsburgh.

**Rails and Track Supplies.**—Included in the new Rail orders booked by the Illinois Steel Company last week are 3300 tons for the Missouri, Kansas & Texas Railroad, and an aggregate of 1700 tons, composed of smaller orders from other roads. All of these orders are for immediate shipment. Besides the contracts actually closed, there are 2500 tons of Standard Rails pending. The business offered from the roads in Track Supplies this week shows considerable improvement. Several orders of Bolts and Spikes ranging from 1000 to 3000 kegs have been added to those on the books of the Illinois Steel Company, whose business in these lines is now averaging about 4000 kegs per week, and as much more is going to the Carnegie Steel Company. The Joliet Bolt and Spike mills have forward orders booked sufficient for six weeks' work. A lot of 200 tons of Street Car Rails has been taken by the Pennsylvania Steel Company, and an order for 1500 tons of Standard Section Rails for an electric traction line has been secured by the Cambria Steel Company. Specifications for 800 tons accompanied the latter order, and the remainder is for prompt delivery. Recent offerings of Light Rails have fallen off slightly. Prices are unchanged with the exception of a little firming up on Bolts, which are advanced 5c. per 100 lb. We quote as follows: Angle Bars, accompanying Rail orders, 1908 delivery, 1.50c.; car lots, 1.60c.; Spikes, 1.80c. to 1.90c., according to delivery; Track Bolts, 2.15c. to 2.20c., base, Square Nuts, and 2.30c. to 2.35c., base, Hexagon Nuts. The store prices on Track Supplies range from 0.15c. to 0.20c. above mill prices. Light Rails, 25 to 45 lb., $26; 20-lb., $27; 16-lb., $28; 12-lb., $29. Standard sections, $28, f.o.b. mill, full freight to destination.

**Structural Material.**—While several contracts are pending which include an aggregate tonnage of considerable size, few noteworthy closures have been made. All the orders taken by the American Bridge Company were for lots of less than 100 tons, except one of 200 tons for the Consolidated Power Company, Deadwood, S. D. The Modern Steel Structural Company, Waukesha, Wis., was the successful bidder on a public letting on a highway bridge at Ottawa, Ill., amounting to 902 tons. This is a four-span structure with one bascule span of 117 ft. The successful bid for this contract was $61,490, the next lowest being $74,400, and the highest $99,000; the offerings included erection of the superstructure and roadway. Bids are to be opened this week on 7000 tons for the McKinley bridge over the Mississippi River at St. Louis; about 2000 tons, required for approaches, will be let later. Prices were submitted on about 500 tons for the Great Northern Railway, but no awards have been made. Plans for the Dolese & Shepard Company stone crusher plant at Gary, Ill., are now in the hands of fabricators for figures. Owing to alterations in the size of the plans as originally designed, and the substitution of wood and concrete in various structures, the quantity of Steel required has been cut from 2200 to 600 tons. A contract for 500 tons has been let by the Pullman Company to the Kenwood Bridge Company. Of the railroad business in the market, the McClintic-Marshall Construction Company secured 2600 tons from the Northern Pacific, and the Wisconsin Steel Company 200 tons from the Chicago, Milwaukee & St. Paul. The Missouri, Kansas & Texas is asking figures on 450 tons. About 4000 tons of Structural Shapes for the construction of 1000 cars recently ordered by the Chicago & Alton went to the Illinois Steel Company. The mills are better supplied with specifications than for some time. Prices from store are 1.95c. to 2c. Mill prices at Chicago are as follows: Beams and Channels, 3 to 15 in., inclusive, 1.78c.; Angles, 3 to 6 in., ¼-in. and heavier, 1.78c.; larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 15 in., 1.88c.; Zees, 3 in. and over, 1.78c.; Tees, 3 in. and over, 1.83c.

**Plates.**—The principal new business placed is comprised of the Plates that will enter into the construction of the 1000 cars recently ordered by the Chicago & Alton Railway. This amounts to 6000 tons, and will be rolled by the Illinois Steel Company. Orders and specifications from other sources are light, and consist chiefly of small lots for immediate use. Large jobbing interests are not increasing their stocks, being content to order only for necessary replacements. Prices are still being shaded up to $2 a ton by a few mills, but conditions in this respect are not materially changed. We quote mill shipments as follows: Tank Plates, ¼-in. and heavier, wider than 6¼ and up to 100 in. wide, inclusive, car lots Chicago, 1.78c.; 3-16 in., 1.88c.; Nos. 7 and 8 gauge, 1.93c.; No. 9, 2.03c.; Flange quality, in widths up to 100 in., 1.88c., base, for ¼-in. and heavier, with the same advance for lighter weights; Sketch Plates, Tank quality, 1.88c.; Flange quality, 1.98c. Store prices on Plates are as follows: Tank Plates, ¼-in. and heavier, up to 72 in. wide, 2c. to 2.10c.; from 72 to 96 in. wide, 2.10c. to 2.20c.; 3-16 in. up to 60 in. wide, 2.10c. to 2.25c.; 72 in. wide, 2.30c. to 2.40c.; No. 8, up to 60 in. wide, 2.10c. to 2.15c.; Flange and Head quality, 0.25c. extra.

**Sheets.**—Reports from both mills and jobbers agree in the statement that business has, at least, not decreased in volume. Galvanized Sheets hold the lead in demand, with Light Black Sheets following, fairly strong. The heavier gauges of Black Sheets, however, are less active. Regular prices continue to be cut from $1 to $2 a ton. We quote mill shipments as follows, Chicago: Blue Annealed, No. 10, 1.98c.; No. 12, 2.05c.; No. 14, 2.08c.; No. 16, 2.18c.; Box Annealed, Nos. 17 to 21, 2.43c.; Nos. 22 to 24, 2.48c.; Nos. 25 and 26, 2.53c.; No. 27, 2.58c.; No. 28, 2.68c.; No. 29, 2.78c.; No. 30, 2.88c.; Galvanized Sheets, Nos. 10 to 14, 2.63c.; Nos. 15 and 16, 2.83c.; Nos. 17 to 21, 2.98c.; Nos. 22 to 24, 3.13c.; Nos. 25 and 26, 3.33c.; No. 27, 3.53c.; No. 28, 3.73c.; No. 30, 4.23c.; Black Sheets from store: Blue Annealed, No. 10, 2.15c.; No. 12, 2.20c.; No. 14, 2.25c.; No. 16, 2.35c.; Box Annealed, Nos. 18 to 21, 2.60c.; Nos. 22 to 24, 2.65c.; No. 26, 2.70c.; No. 27, 2.75c.; No. 28, 2.85c.; No. 30, 3.25c.; Galvanized from store; Nos. 10 to 16, 3c.; Nos. 18 to 20, 3.15c.; Nos. 22 to 24, 3.30c.; No. 26, 3.50c.; No. 27, 3.70c.; No. 28, 3.90c.; No. 30, 4.40c. to 4.45c.

**Bars.**—The leading interest reports a very satisfactory volume of business in specifications against Steel Bar contracts. These have increased considerably during the present month, and the mills of the principal interest are now being operated at between 80 and 85 per cent. of capacity. But for hesitation due to pre-election causes, specifications would probably be heavier than they are. Little new business is coming out, owing to the fact that manufacturers generally have their requirements well covered by contracts. The demand for Iron Bars continues quiet, and orders coming to the mills are generally accompanied with requests for rush shipments. While the outside mills in this district are

running a little fuller in Steel departments, no gain is apparent in the Bar Iron output. Prices on both Steel and Iron Bars are, we are advised, being well maintained. Quotations, Chicago, are as follows: Steel Bars, 1.58c., with half extras; Iron Bars, 1.50c.; Hoops, No. 13, and lighter, 1.98c., full extra Hoop card; Bands, No. 12 gauge, and heavier, 1.58c., half extra Steel Bar card; Soft Steel Angles and Shapes, 1.68c., half extras. Store prices are as follows: Bar Iron, 2c. to 2.15c.; Steel Bars, 1.90c. to 2c.; Steel Bands, 1.90c., as per Bar card, half extras; Soft Steel Hoops, 2.25c. to 2.35c., full extras.

**Merchant Pipe.**—Buyers still adhere to the policy of confining purchases to cover only nearby needs. These have not increased in volume, and if they show any improvement at all it is too slight to be noticeable. The following mill discounts are quoted: Black Pipe, ¾ to 6 in., 73.2; 7 to 12 in., 70.2; Galvanized, ¾ to 6 in., 63.2. These discounts are subject to one point on the base. From store, in small lots, Chicago jobbers quote 73 per cent. on Black Steel Pipe, ¾ to 6 in. About three points above these prices is asked for Iron Pipe.

**Boiler Tubes.**—There is some buying of Locomotive Tubes by the railroads, which reflects a little more activity in repair work. Merchant Tubes are extremely quiet, the movement so far showing no evidence of renewed activity among the boiler shops. Mill quotations, for future delivery, on the base sizes, are as follows: 2¾ to 4¼ in., inclusive, Steel Tubes, 63.2; Iron, 50,2; Seamless, 50.2; 2½ in. and smaller, and lengths over 18 ft., and 2½ in. and larger, and lengths over 22 ft., 10 per cent. extra. Store prices are as follows:

| | Steel. | Iron. | Seamless. |
|---|---|---|---|
| 1 to 1½ in. | 35 | 35 | 35 |
| 1¾ to 2¼ in. | 50 | 35 | 35 |
| 2½ in. | 52½ | 35 | 35 |
| 2¾ to 3 in. | 60 | 47½ | 47½ |
| 6 in and larger | 50 | 35 | .. |

**Merchant Steel.**—Specifications for miscellaneous agricultural shapes and specialties used by Hardware manufacturers are coming out in fairly satisfactory volume. There is also a somewhat better demand for Tire Steel from the vehicle makers. The new orders being entered are few, and are generally for small lots, both from jobbers and manufacturers. We quote, as follows: Planished or Smooth Finished Tire Steel, 1.78c.; Iron Finish, up to 1½ x ½ in., 1.73c., base, Steel card; Iron Finish, 1½ x ½ in. and larger, 1.58c., base, Tire card: Channels for solid Rubber Tires, ¾ to 1 in., 2.08c., and 1⅛ in. and larger, 1.98c.; Smooth Finished Machinery Steel, 2.08c.; Flat Sleigh Shoe, 1.63c.; Concave and Convex Sleigh Shoe, 1.83c.; Cutter Shoe, 2.05c.; Toe Calk Steel, 2.13c.; Railroad Spring, 1.98c.; Crucible Tool Steel, 7¼c. to 8c., and still higher prices are asked on special grades. Cold Rolled Shafting on contracts for 100 tons and over, 57 per cent. off; 56 per cent. off in car lots; 52 per cent. in less than car lots, on which carload freight is allowed within base territory.

**Cast Iron Pipe.**—Water Pipe orders of considerable size are few and far apart, and even the smaller lettings are not as plentiful as they were a few weeks ago. A dropping off in the demand, however, is usually expected at this season of the year. The only municipal tonnage of any consequence reported as advertised for bids is 400 tons for La Crosse, Wis. The 900 tons for Hope, Ark., noted in last report as up for letting, will be placed by the general contractors. The business now moving is comprised largely of the smaller sizes, there being nothing doing in sizes larger than 24 in. The railroads are buying practically nothing. The rate of freight on Cast Iron Pipe has been advanced 25c. a ton, effective October 1, in Central and Western territory, covering shipments to all points north of the Ohio River from the South. Prices are unchanged, and we quote nominally, per net ton, Chicago, as follows: Water Pipe, 4 in., $27; 6 to 12 in., $26; 16 in. and up, $25, with $1 extra for Gas Pipe.

**Metals.**—Consumers are adhering closely to hand to mouth purchases in supply of their current needs. There is but scant demand for Copper, the price of which shows no fluctuation of importance. Users are not disposed to add to their stocks further than necessity demands, and it is believed that many are holding off until after election. Quotations are as follows: Casting Copper, 13½c.; Lake, 13¾c. to 14c., in car lots, for prompt shipment; small lots, ¼c. to ⅜c. higher: Pig Tin, car lots, 32½c.; small lots, 34½c.; Lead, Desilverized, 4.60c. to 4.65c., for 50-ton lots; Corroding, 4.85c. to 4.95c., for 50-ton lots; in car lots, 2¼c. per 100 lb. higher; Spelter, 4.80c.; Cookson's Antimony, 10½c., and other grades, 9¾c. to 10¼c.; Sheet Zinc is $7, f.o.b. La Salle, in car lots of 600-lb. casks. On Old Metals we quote: Copper Wire, 13½c.; Heavy Copper, 13¼c.; Copper Bottoms, 12c.; Copper Clips, 13¼c.; Red Brass, 12c.; Yellow Brass, 9½c.; Light Brass, 7c.; Lead Pipe, 4.30c.; Zinc, 3¾c.; Pewter, No. 1, 21c.; Tin Foil, 23c.; Block Tin Pipe, 25c.

**Old Material.**—An inquiry for Heavy Melting Steel for shipment to the Pittsburgh District, coupled with a demand for a moderate tonnage of the same material by a local mill interest, has advanced the price of this grade 50c. a ton. The former circumstance, however, does not seem to be backed by conditions that are likely to result in heavy purchases for shipment to that market, as the difference in values is not wide enough at present to afford a profitable basis for such transactions. One sale of 100 tons of Heavy Melting Steel to a local consumer at $14 is reported, and it it said that the same interest has offered to take upward of 1000 tons at this price. The Rerolling Steel Rails offered by the railroads last week, of which there were several fair-sized lots, brought top prices, some sales netting $16 on connecting lines. Other material included in these lists also commanded fair prices, although a large portion of the 16,000 tons offered was diverted to other markets. A manufacturer of metal beds is reported to be in the market for 1000 tons or more of No. 1 Cast. This and Stove Plate and Light Scrap are in a little better demand, though sales are usually of lots of limited tonnage. The large dealers do not seem inclined to let their accumulated stocks go at the present level of prices, which, it is claimed, is not high enough to net a desirable margin of profit. The market is, therefore, being supplied mainly by material from first hands. The railroad offerings to be closed this week consist of 1550 tons from the St. Paul, and 5500 tons from the Baltimore & Ohio; the latter including 2000 tons of Rerolling Steel Rails. The following prices are per gross ton, f.o.b. Chicago:

| | |
|---|---|
| Old Iron Rails | $18.00 to $18.50 |
| Old Steel Rails, rerolling | 16.00 to 16.50 |
| Old Steel Rails, less than 3 ft. | 14.75 to 15.25 |
| Relaying Rails, standard sections, subject to inspection | 21.50 to 22.50 |
| Old Car Wheels | 15.25 to 15.75 |
| Heavy Melting Steel Scrap | 13.50 to 14.00 |
| Frogs, Switches and Guards, cut apart | 14.00 to 14.50 |
| Mixed Steel | 10.25 to 10.75 |

The following quotations are per net ton:

| | |
|---|---|
| Iron Fish Plates | $16.50 to $17.00 |
| Iron Car Axles | 20.00 to 20.50 |
| Steel Car Axles | 17.50 to 18.00 |
| No. 1 Railroad Wrought | 13.50 to 14.00 |
| No. 2 Railroad Wrought | 12.50 to 13.00 |
| Railway Springs | 13.00 to 13.50 |
| Locomotive Tires, smooth | 13.25 to 13.75 |
| No. 1 Dealers' Forge | 10.75 to 11.25 |
| Mixed Busheling | 8.25 to 8.75 |
| Iron Axle Turnings | 7.00 to 7.50 |
| Soft Steel Axle Turnings | 7.00 to 7.50 |
| Machine Shop Turnings | 7.00 to 7.50 |
| Cast Borings | 5.50 to 6.00 |
| Mixed Borings, &c | 5.50 to 6.00 |
| No. 1 Mill | 8.00 to 8.50 |
| No. 2 Mill | 7.00 to 7.50 |
| No. 1 Boilers, cut to Sheets and Rings | 8.50 to 9.00 |
| No. 1 Cast Scrap | 13.50 to 14.00 |
| Stove Plate and Light Cast Scrap | 11.75 to 12.25 |
| Railroad Malleable | 12.50 to 13.00 |
| Agricultural Malleable | 11.25 to 11.75 |
| Pipes and Flues | 10.25 to 10.75 |

## San Francisco.

SAN FRANCISCO, CAL., October 7, 1908.

The Iron and Steel trade has shown a noticeable improvement in nearly all lines in the latter part of September and the first few days of this month. Buyers still manifest a tendency to conservatism, but demands are more general than they have been for some time, and in one or two departments business promises to assume comparatively large proportions. The local machine shops are all fairly employed at present, and there is a slight increase of activity among the foundries. The Pig Iron market is still in a rather demoralized condition, and there is no particular movement in Cast Iron Pipe. Merchant Pipe and oil well supplies are in moderate demand, as development in the oil fields is being carried on more actively, but the movement of Merchant Pipe from the East is very small, as the local jobbers are well stocked. While little business has developed in mining machinery, the mining and logging railroads as well as other small railroad lines on the Coast are now coming into the market for supplies. More inquiries for both light and standard Steel Rails have been received in the last 10 days than for many months previous, and while few deals have yet been concluded, there is a prospect of a very fair volume of business in this line before the end of the month. The demand for miscellaneous materials for railroad work is also becoming more general, and the increasing movement in these lines seem to indicate that many of the smaller roads are beginning to depart from their policy of cutting down expenditures. Jobbers report some activity in Steel Plates, as the result of a number of riveted Steel Pipe contracts, and there is a prospect of a good demand for Steel Bars and Wire products.

**Structural Material.**—The local building situation offers considerable encouragement, as new plans for class A construction are announced almost daily and numerous contracts have been placed in the last two weeks. While there is little work of much magnitude under way, enough is being started to call for a considerable tonnage. The increase in the valuation of San Francisco building permits issued last month over that of August indicates a general resumption

of activities, the amount being $3,799,543, the largest of any month so far this year, in comparison with $2,450,000 for the month previous. Building projects of moderate size are being carried out with very little delay, as money is rapidly becoming available in larger quantities. Many of the savings banks are now making loans for buildings purposes, and funds are also being secured with less difficulty from other sources. Numerous building projects are also being carried out in other parts of the State, and a considerable tonnage has been contracted for outside work in the last few weeks. Steel Bars for reinforced concrete construction are beginning to move again in some volume, though the demand is by no means as great as a year ago. The outlook in this line is good. Several hundred tons of twisted Bars have been placed for a large hotel at Sacramento, Cal., and the contract for 600 tons for the State Prison at San Quentin has been let. The Smith-Rice Company has taken a contract for the Structural Steel work on the San Francisco National Bank Building, at the corner of California and Liedesdorff streets, and the Ralston Iron Works has taken a contract for the Steel and Cast Iron for a building on Market street, near First, for $11,855. Work is being started on the Louis A. Levy Building, at the corner of Van Ness avenue and Geary street, the Steel and Iron for which will be furnished by August Heckscher. A contract for Iron and Steel on a seven-story structure on Ellis street, near Mason, has been awarded to W. B. Kyle. Several large municipal structures are now in prospect, and one or two may be under way some time next year. Sketch plans for the City and County Hospital, to cost some $200,000, have been approved, and contracts will probably be let next January. It has now been about decided to tear down the old City Hall and erect an entirely modern structure to accommodate the offices of the city, though it is doubtful whether any work will be done on this project in the near future.

**Pig Iron.**—While the local foundries have a little more work on hand than last month, they are by no means busy and the consumption of Pig Iron shows no material increase. All the foundries are carrying stocks sufficient to last them for months and show no inclination to increase their holdings at present. There is no business of any consequence for future delivery, though some holders are offering liberal inducements. It is difficult to quote any definite prices, as the market is too dull to fix an established figure. Some No. 3 Pig Iron has been offered as low as $20, but $24 is about the lowest figure at which No. 1 English, Scotch or Chinese Pig Iron is now offered, while some brands, for which there is a little demand, are held as high as $30.

**Cast Iron Pipe.**—Cast Iron Pipe remains dull, some of the larger handlers reporting no inquiries in the last two weeks. The local situation is quiet, as neither the gas company nor the water company shows any inclination to take up the work of repair on a large scale, and there is a prospect of much delay before the Pipes are laid for the new fire protection system. Some business, however, is developing in the southern part of the State and the outlook is good for a moderate activity before long, as a large number of new water works projects are being started in the interior towns. There is nothing under way at present to call for any heavy tonnage, and there is no prespect of a large movement of Cast Iron Pipe for some time. Quotations in San Francisco are unchanged, being as follows: 4 to 6 in., $36; 8 to 12 in., $35; over 12-in., $34, with $1 extra for Gas Pipe.

**Merchant Pipe.**—The jobbing movement of Merchant Pipe shows a decided increase since the middle of September, more than making up for the former dullness. The jobbing trade in general, however, has been well supplied and lively competition has brought about considerable cutting of prices. The movement from manufacturer to jobber is still very small, as few of the jobbers show any inclination to add to their stocks at present. Prices to jobbers, however, are strictly maintained. The differential on Steel Pipe in carload lots is unchanged, as follows:

| | Steel. Black. | Steel. Galv. |
|---|---|---|
| | % | % |
| ⅛ to ¼ in | 56.5 | 40.5 |
| ⅜ in | 58.5 | 44.5 |
| ½ in | 60.5 | 48.5 |
| ¾ to 6 in | 64.5 | 54.5 |
| 7 to 12 in | 61.5 | 46.5 |
| Extra strong, plain ends: | | |
| ⅛ to ⅜ in | 49.5 | 37.5 |
| ½ to 4 in | 56.5 | 44.5 |
| 4½ to 8 in | 52.5 | 40.5 |
| Double extra strong, plain ends: | | |
| ½ to 8 in | 45.5 | 34.5 |

**Scrap.**—There are heavy accumulations of Scrap Iron and Steel in San Francisco, with very little market for them. The larger handlers are holding out for former prices, but many small dealers have larger stocks than they can afford to carry and are unloading at whatever they can get. The local foundries are getting small lots of heavy Cast Iron Scrap as low as $13, and will not buy much at that price. There is no movement of any importance in Scrap Steel, though two lots of less than 100 tons were shipped to England recently, one lot consisting of Old Rails.

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Richard B. Carr, San Francisco manager of sales for the Carnegie Steel Company, is now in the East.

The John A. Roebling's Sons Company's new five-story reinforced concrete building, at the corner of Folsom and Hawthorne streets, is now practically complete and the stock is being mode in.

The Union Iron Works has been appointed agent for Williamson Bros. & Co., Philadelphia, and for the American Ship Windlass Company.

After an existence of 50 years the Fulton Iron Works is to go out of existence. The determination on the part of the directors to give up the struggle against unfavorable conditions was reached about two weeks ago, after consultations with their attorney and some of the creditors. A meeting of creditors was called last week, and a plan was formulated for closing out the company's affairs and paying off all liabilities. A statement was made showing assets of $1,028,-149, which leaves a surplus over and above liabilities of about $396,000. In addition to this sum there is stock fully paid up to the amount of $200,000, making a total of nearly $600,000 leeway for the creditors. President Shiers says: "The molders' strike of about 16 years ago was the turning point in the iron works of San Francisco. A great deal of work then went East, and people here found they could get fairly good deliveries, except on emergency orders, and began to buy regularly in the East. Many Eastern machinery houses accordingly sent agents to this city and opened branches here, and they have taken a great amount of Iron work, which is lost to San Francisco."

The Stockton Iron Works is building a large skid dredger for the American Dredging Company, which is working on the Government canal east of Stockton, Cal., on the Calaveras River. The machine is in the nature of an experiment and is intended for work where water cannot be obtained to float an ordinary dredger.

The Willamette Iron & Steel Works, Portland, Ore., is about to start work on two new vessels for the Government for use on Puget Sound.

The Campbell-Kelly Company has been incorporated in Tonopah, Nev., with a capital stock of $60,000, by H. P. Campbell, W. T. Kelly and J. C. Cole. It will carry on a foundry business.

The Armstrong Mfg. Company has been organized in Portland, Ore., by E. P. Armstrong, J. M. Crook and Clarence H. Gilbert, with a capital stock of $35,000. It will engage in a machinery business.

## St. Louis.

ST. LOUIS, October 12, 1908.

As St. Louis is an important manufacturing center, it, of course, has a variety of interests in that line, both great and small, in the scope of their business. With these establishments there are some whose output at this season of the year is very materially increased, while with others the demand is on the wane for a time, and in reporting conditions this normal state of matters should be reckoned with. In illustration of this it should create no surprise that the demand for Iron and Steel from certain interests is not so active, though this is more than offset by a marked gain in other directions. Nearly all the offices report orders for various lines, accompanied with urgent requests for prompt shipment, which feature has interesting significance. There is beginning to be complaint of car shortage at the South, and engines are also, it is claimed, badly needed. Certain roads are said now to be urging delivery of engines ordered last year, which delivery had previously been required to be postponed.

**Coke.**—The market for Coke has latterly not shown any activity beyond a number of sales of small lots for prompt shipment. In the early part of last week a leading house secured an order for 1500 tons for prompt shipment and another house reports inquiry for 700 tons shipment up to July, 1909. The drouth in the Collinsville District is causing considerable inconvenience through delayed shipments and also tends to strengthen prices. We quote 72 hr. Connellsville Foundry at over, $2.25 to $2.50, with some brands held at a premium. The lower price is for prompt and the higher price for shipment over 1909.

**Pig Iron.**—While there are some foundrymen in the market for Pig Iron, as shown by inquiries and sales reported by the principal sales agencies, there is an evident disposition on the part of buyers to confine their purchases to small lots or hold off altogether. Most of the business, actual and prospective, has requirement for either immediate or last quarter shipment. A leading house reports sales for the week totalling 2000 tons. Another seller, the middle of the week, closed a deal for 600 tons for shipment from November to April, inclusive. Other houses report conditions quiet except a fair number of orders for small lots. These orders are, for the most part, from small consumers. There are still being received requests both to an-

ticipate deliveries and for hurrying forward shipments en route. The price range is $12.50 to $13 for balance of the year, and $13 for first quarter 1909, f.o.b. Birmingham, for No. 2 Foundry. It is understood on some Alabama Iron and some resale Iron the market price of $13 is shaded 50c. per ton.

**Finished Iron and Steel.**—The demand for Structural Material is still characterized by the receipt on the part of the leading sellers of numerous orders for contracts which cover buildings of medium size. These sales indicate a steady though moderate increase of business not only in the city, but in the section for which St. Louis is the distributing center, reaching as far south as Texas, from which State, and Oklahoma, the bulk of the orders are received, though some good sized orders are coming from Memphis, Tenn. In Bars the demand is ruling steady, and there appears to be more disposition on the part of jobbers to carry stocks. From railroad sources orders for light material for track and shop work are becoming more plentiful and for increased quantities. The demand for Light Rails has fallen off, but there has been an inquiry made by a trunk line for 3000 tons of Standard Rails for prompt shipment.

**Old Material.**—A slight improvement is reported in the tone of the market owing to continued operations by the local mills that recently started up, some of which have increased their working force. There has, however, been no material change in values, with not enough consumptive demand to warrant classing the market other than that of mainly dealers' transactions, since the majority of the operations are of that character. The Missouri Pacific Railroad has a list out of 1000 tons and the Wabash Railroad is offering 200 tons of miscellaneous Scrap. We quote, as follows, per gross ton, f.o.b. St. Louis:

| | |
|---|---|
| Old Iron Rails | $16.50 to $17.00 |
| Old Steel Rails, rerolling | 15.50 to 16.00 |
| Old Steel Rails, less than 3 ft | 14.25 to 14.75 |
| Relaying Rails, standard sections, subject to inspection | 23.00 to 24.00 |
| Old Car Wheels | 15.00 to 15.50 |
| Heavy Milling Steel Scrap | 13.50 to 14.00 |
| Frogs, Switches and Guards, cut apart | 13.50 to 14.00 |
| Mixed Steel | 10.25 to 10.75 |

The following quotations are per net ton:

| | |
|---|---|
| Iron Fish Plates | $15.00 to $15.50 |
| Iron Car Axles | 18.50 to 19.00 |
| No. 1 Railroad Wrought | 13.50 to 14.00 |
| No. 2 Railroad Wrought | 12.50 to 13.00 |
| Railway Springs | 13.00 to 13.50 |
| Locomotive Tires, smooth | 13.00 to 13.50 |
| No. 1 Dealers' Forge | 11.50 to 12.00 |
| Mixed Borings, &c | 5.50 to 6.00 |
| Machine Shop Turnings | 8.00 to 8.50 |
| No. 1 Boilers, cut to Sheets and Rings | 9.50 to 10.00 |
| No. 1 Cast Scrap | 12.00 to 12.50 |
| Railroad Malleable | 11.00 to 11.50 |
| Agricultural Malleable | 10.00 to 10.50 |
| Pipes and Flues | 8.75 to 9.50 |

**Lead, Spelter, Etc.**—Lead is weak at 4.30c. Lead Ore is $26 per 1000 lb. f.o.b. Joplin. The demand is slow. Spelter is stronger with 4.70c. bid, but no sales. We learn that a large quantity has recently been purchased by a leading brass manufacturer at an advance on the current market price. Zinc Ore is ruling at 36c. to 37c. per ton, Joplin basis.

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The Christopher & Simpson Architectural Iron & Foundry Company reports an improved demand for Structural Steel from the Southwest, and a moderate demand for Steel in the city, for structures of medium size.

The Geo. J. Fritz Foundry & Machine Company states that it is having some call for Laundry Machines, the manufacture of which is the company's specialty.

It is expected that ground will be broken for the new post office building in about two weeks. This structure is to cost $1,250,000.

The shops of the leading railroads in St. Louis territory are now open and busy in repair work.

## Birmingham.

BIRMINGHAM, ALA., October 12, 1908.

**Pig Iron.**—The business offered in this market the past week was of hardly sufficient volume to test the strength of quotations, but the attitude of sellers is apparently unchanged. A schedule of $13 Birmingham is being adhered to for deliveries covering the remainder of this year and the first quarter of next, and recent transactions indicate the maintenance of such a basis. The principal consideration among latest transactions, however, was 300 tons of 4 per cent. Silicon Iron which sold at $14 per ton Birmingham. A number of carloads for early shipment are reported sold on the basis of $13, and an effort to secure 150 tons of No. 2 at $12.50 per ton Birmingham, cash, is known to have been unsuccessful. One of the small producers recently refused 300 tons for delivery in the first quarter at $13 per ton. An inquiry for 1400 tons of No. 3 Foundry, shipment to commence promptly, is pending, as well as for a comparatively small lot of Charcoal Iron. The latter grade is quoted firmly at $20 f.o.b. furnace. Considerably more interest is evinced by the trade generally, and a period of some activity is expected to follow the Presidential election, but there is some speculation as to the ultimate level of prices. Present indications favor the maintenance of the $13 schedule on deliveries for the remainder of this year, and, so far as can be ascertained, no lower figures have been named on deliveries further advanced. Producers are in some instances more or less apprehensive as to the result which Iron in the hands of merchants will have on the market. The extent of engagements for speculative purposes is not definitely known, but there have been some recent additions. It is quite improbable that the surplus production will have become a factor at the beginning of the new year, although the available capacity will no doubt be equal to a material improvement in the demand.

**Cast Iron Pipe.**—No addition has been made to the list of prospective lettings since last report, and producers generally expect a quiet market for the next 30 days The contracts for Hope, Ark., and Lenoir, N. C., which covered approximately 1000 tons each of Water Pipe, were awarded the Dimmick Pipe Company, Birmingham. The figures at which these orders were placed are not given out. On comparatively small lots, which are fairly satisfactory in the aggregate, published quotations have been maintained, but an average of prices received in all recent transactions would probably result in lower figures than has been anticipated. The demand for Cast Iron Soil Pipe has improved and preparations are being made for the operation of additional producing capacity. We quote Water Pipe as follows, per net ton, f.o.b. cars here: 4 in. to 6 in., $24; 8 in. to 12 in., $23; over 12 in., average, $22, with $1 per ton extra for Gas Pipe. These quotations are probably shaded on large municipal contracts.

**Old Material.**—A moderate volume of Light Cast and Stove Plate is being moved and prices received are satisfactory. The resumption of operations at one of the idle mills in this district is expected to result in some demand for Steel Scrap at an early date. There is practically no demand for Old Car Wheels, with similar reports as to Iron Rails and Axles. Dealers' asking prices are as follows, per gross ton, f.o.b. cars here:

| | |
|---|---|
| Old Iron Rails | $14.50 to $15.00 |
| Old Iron Axles | 15.50 to 16.00 |
| Old Steel Axles | 13.00 to 13.50 |
| No. 1 Railroad Wrought | 13.50 to 14.00 |
| No. 2 Railroad Wrought | 10.50 to 11.00 |
| No. 1 Country Wrought | 11.00 to 11.50 |
| No. 1 Machinery | 11.00 to 11.50 |
| No. 1 Steel | 9.50 to 10.00 |
| Stove Plate and Light Cast | 9.50 to 10.00 |
| Cast Borings | 5.00 to 5.50 |

## Pittsburgh.

PARK BUILDING, October 14, 1908.—(*By Telegraph.*)

**Pig Iron.**—The recent blowing in of several blast furnaces in the two valleys, with the consequent large increase in output, principally in Basic Iron, is commencing to tell on prices of that grade which are soft and lower. Several large inquiries for Basic for the first four and six months of 1909 are in the market, and a sale of 5000 tons of Basic for first quarter has been made, at $14.25, Valley furnace. We also note a sale to a local Steel concern of 5000 tons of Basic, all for shipment this year, at about $14, Valley furnace, or $14.90, Pittsburgh. There is not much doing in Bessemer or Foundry Iron, but there is a fair amount of inquiry for Malleable Bessemer, which ranges in price from $14.25 to $14.50, Valley furnace. Small sales of Bessemer from carloads up to 100 tons bring about $15, Valley furnace. We quote standard Bessemer Iron at $15, Basic $14, Malleable Bessemer $14.25 to $14.50, No. 2 Foundry $14.35 to $14.50, and Forge $13.50, all at Valley furnace, with a freight rate of 90c. a ton for Pittsburgh delivery.

**Steel.**—There is little inquiry for Billets or Sheet and Tin Bars, consumers being covered by contracts, but shipments by the mills against specifications are fairly heavy. The forges are taking out a larger tonnage of Forging Billets than they were some time ago. We quote Bessemer and Open Hearth Billets, 3½ in. and larger, up to and including 0.25 carbon, $25; 0.26 to 0.60 carbon, $1 extra; over 0.60 carbon, $2 extra, all f.o.b. Pittsburgh. For Wheeling, Martins Ferry, Follansbee, Newcastle, Sharon, Steubenville and Washington (Pa.) delivery, half the freight, or 50c. additional, is charged. Sheet and Tin Bars in random lengths are $27, f.o.b. Pittsburgh. Forging Billets take $2 advance over Rolling Billets.

(*By Mail.*)

A little freer buying is observed, and the new orders entered are showing a marked increase. Specifications against contracts are also coming in well, and if present conditions are maintained for the next two weeks October will show a material increase in actual orders entered and tonnage shipped out by the mills over September. Basic Pig Iron is fairly active, and some large inquiries are out for the shipment over the first half of next year. The market on Basic Iron is soft, however, and reports are that

$14.25, at Valley furnace, has been shaded on some desirable business for Western delivery. There is not much inquiry for Bessemer, which is reasonably firm, at $15, Valley furnace. Foundry Iron prices are fairly steady, but not much tonnage is being sold. A fair amount of Steel in Billets, Sheet and Tin Bars is moving out from the mills, but few new orders are being placed, most consumers being covered by contracts. The Pipe trade continues moderately active and shipments by the mills against contracts for Steel Bars are showing an increase. The market on Old Material is firm, and prices on some lines are higher. Negotiations are under way for Furnace Coke, for delivery over the first half of next year, but as yet no large tonnage has been sold, the ideas of the furnacemen and the Coke makers as to prices being somewhat apart. As a whole, the situation is showing betterment, but it comes very slowly.

**Ferromanganese.**—Although inquiry is light, prices are firm, and it is still the opinion of sellers that they may soon be higher. We quote 80 per cent. foreign at $42.50 to $43, seaboard, for prompt shipment, the rate to Pittsburgh being $1.95 a ton. For future delivery from $1 to $2 more is asked.

**Ferrosilicon.**—A violent break has occurred in the price of this material, and we now quote 50 per cent. Ferrosilicon at $65 to $65.50, Pittsburgh. We note a sale of about 75 tons, to be delivered at the rate of 25 tons a month for the next three months at about $65, Pittsburgh.

**Muck Bar.**—The market is absolutely stagnant as regards new orders. We quote best grades of Muck Bar, made from all Pig Iron, at $25, Pittsburgh.

**Wire Rods.**—Consumers of Wire Rods are specifying quite freely against contracts, but very few new orders are being placed. Prices are firm, and we quote Bessemer Rods at $33; Basic, $34, and Chain Rods, $33, Pittsburgh.

**Skelp.**—No new Skelp orders of moment have been placed in this market for a long time. The mills rolling Skelp are able to operate only part time, as the Pipe mills have been but light buyers for a good while. Prices are nominally as follows: Grooved Steel Skelp, 1.45c. to 1.50c.; Sheared Steel Skelp, 1.50c. to 1.60c.; Grooved Iron Skelp, 1.60c. to 1.70c., and Sheared Iron Skelp, 1.70c. to 1.75c., f.o.b. Pittsburgh.

**Steel Rails.**—While some in the trade believe that the railroads may come in after the election and place large contracts for next year's delivery, it is pointed out that they have so much trouble in financing loans that little in the way of new business may be expected for some time. There is a good demand for Light Rails, the Carnegie Steel Company having taken about 1800 tons in the past week. Prices on Light Rails rolled from Billets, which are still being shaded from $1 to $2 a ton for Rerolled Rails, are as follows: $25 for 25 to 45 lb. Sections, with $1 advance for 20 lb., $2 advance for 16-lb., and $3 advance for 12-lb. Standard Sections are $28, at mill, and Angle Splice Bars, 1.65c., at mill.

**Plates.**—A little more activity is observed among the Plate mills. New orders coming in from the boiler shops are few, as most of these are running to very light capacity. Hardly enough new orders are coming up to test prices, but there is still a disposition on the part of some mills that do not roll the very large sizes to shade prices from $1 to $2 a ton, and this competition is usually met by the larger mills. Regular prices on Plates are as follows: Tank Plates, ¾ in. thick, 6¼ in. up to 100 in. wide, 1.60c., base, at mills, Pittsburgh. Extras over this price are as follows:

Tank, Ship and Bridge quality, ¼ in. thick on edges, 100 in. wide, down to but not including 6 in. wide, is taken as base.

Steel Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per square foot, shall be considered ¼-in. Plate. Steel Plates over 72 in. wide must be ordered ¼-in. thick on edge, or not less than 11 lb. per square foot, to take base price. Steel Plates over 72 in. wide ordered less than 11 in. per square foot down to the weight of 3-16-in. shall take the place of 3-16-in.

Percentages as to overweight on Plates, whether ordered to gauge or weight, to be governed by the Association of American Steel Manufacturers' Standard Specifications.

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|---|---|
| Gauges under ¼-in. to and including 3-16-in. Plates on thin edges | $0.10 |
| Gauges under 3-16-in. to and including No. 8 | .15 |
| Gauges under No. 8 to and including No. 9 | .25 |
| All sketches (excepting straight taper Plates varying not more than 4 in. in width at ends, narrowest end being not less than 30 in.) | .10 |
| Complete Circles | .20 |
| Boiler and Flange Steel Plates | .10 |
| "A. B. M. A." and ordinary Firebox Steel Plates | .20 |
| Still Bottom Steel | .30 |
| Marine Steel | .40 |
| Locomotive Firebox Steel | .50 |
| Shell grade of Steel is abandoned. | |
| For widths over 100 in. up to 110 in | .05 |
| For widths over 110 in. up to 115 in | .10 |
| For widths over 115 in. up to 120 in | .15 |
| For widths over 120 in. up to 125 in | .25 |
| For widths over 125 in. up to 130 in | .50 |
| For widths over 130 in | 1.00 |

TERMS.—Net cash 30 days. Pacific Coast base, 1.50c., f.o.b. Pittsburgh.

**Structural Material.**—Some fairly large orders have been placed and a good deal of work is now in sight. The McClintic-Marshall Construction Company has taken 2200 tons of girder bridge work for the Northern Pacific Railroad, and the American Bridge Company has closed some bridge work for Western roads. Bids have gone in on a good deal of work, among which is a bridge for the Iowa Central across the Mississippi River at Keithsburg, 4000 tons; an electrical railroad bridge at St. Louis, 6000 tons; a viaduct for the Cincinnati Southern at Cincinnati, 2700 tons; additional work for the Grand Central Station, New York City, 1600 tons, and a city building in Chicago, 11,000 tons. Bids have also been asked on one section of the Northwestern Railway Station at Chicago, about 4000 tons. A meeting of the Structural Steel fabricators was held on Tuesday in the offices of the Jones & Laughlin Steel Company in this city to see if plans can be devised for bettering the situation in the Structural trade, but at this wriing nothing has been given out as to what action was taken. Prices on fabricated work are still ruinously low, being in many cases below cost to concerns that have to buy their plain material. We quote f.o.b. mill, Pittsburgh: I-Beams and Channels, 3 to 15 in., inclusive, 1.60c., net; I-Beams over 15 in., 1.70c., net; H-Beams over 8 in., 1.80c.; Angles, 3 to 6 in., inclusive, ¼ in. and up, 1.60c., net; Angles, over 6 in., 1.70c., net; Angles, 3 x 3 in. and up, less than ¼ in., 1.50c., base, half extras, Steel Bar card; Tees, 3 in. and up, 1.65c., net; Zees, 3 in. and up, 1.60c., net; Angles, Channels and Tees under 3 in., 1.50c., base, half extras, Steel Bar card; Deck Beams and Bulb Angles, 1.90c., net; Hand Rail Tees, 3c., net: Checkered and Corrugated Plates, 3c., net.

**Sheets.**—We note quite an active demand for Corrugated Sheets, one mill that rolls Iron Sheets advising us that it has work ahead for the next three or four weeks. Black and Galvanized Sheets are quiet, jobbers still pursuing the policy of placing orders only for actual needs. It is estimated that at present less than 50 per cent. of the entire Sheet capacity is active. Prices are still being shaded, but it is stated that this is not being done to the extent it was two or three weeks ago, several mills that were naming low prices on Sheets now quoting very close to official prices. For shipment from mill, regular prices, which are shaded by some mills from $1 to $2 a ton, are as follows: Blue Annealed Sheets, No. 10 and heavier, 1.80c.; Nos. 11 and 12, 1.85c.; Nos. 13 and 14, 1.90c.; Nos. 15 and 16, 2c.; Box Annealed, Nos. 17 to 21, 2.25c.; Nos. 22 to 24, 2.30c.; Nos. 25 and 26, 2.35c.; No. 27, 2.40c.; No. 28, 2.50c.; No. 29, 2.60c.; No. 30, 2.70c. Galvanized Sheets, Nos. 10 and 11, 2.45c.; Nos. 12 and 14, 2.55c.; Nos. 15 and 16, 2.65c.: Nos. 17 to 21, 2.80c.; Nos. 22 and 24, 2.95c.; Nos. 25 and 26, 3.15c.; No. 27, 3.35c.; No. 28, 3.55c.; No. 29, 3.70c.; No. 30, 3.95c.; No. 28, Painted Roofing Sheets, $1.75 per square, and Galvanized Roofing Sheets, No. 28, $3.10 per square, for 2½-in. corrugations. These prices are subject to a rebate of 5c. per 100 lb. to the large trade under the usual conditions, jobbers charging the usual advances for small lots from store.

**Tin Plate.**—Good orders for Tin Plate have been placed in the past week by the canning interests for delivery next spring, and we are advised that some large additional contracts from the same trade are under negotiation. About 40 per cent., perhaps less, of the Tin Plate capacity is active at present. Prices continue to be shaded to some extent, the amount of the concession depending largely on the nature of the order. The regular price of Tin Plate is $3.70 for 100 lb. Cokes, 14 x 20, f.o.b. Pittsburgh, terms 30 days, less 2 per cent. off for cash in 10 days, this price being subject to the usual rebate of 5c. per base box in large lots.

**Hoops and Bands.**—Some small orders are being placed, but the bulk of the shipments being made by the mills are on specifications against contracts which are coming in fairly well. We quote: Steel Hoops, 1.80c., base, full Hoop card prices; Steel Bands, 1.40c., base, half Steel card extra, all f.o.b. cars, Pittsburgh, in carload lots, for delivery during 1908.

**Iron and Steel Bars.**—New orders for both Iron and Steel Bars are still light and not very numerous, but specifications against contracts are coming in at a good pace, and shipments of Steel Bars by the mills in October promise to show a large increase over September. Stocks held by jobbers are low, and on new orders requests are usually made for prompt shipment. In Iron Bars the situation is only fairly active, the mills continuing to run intermittently, operations depending on the number of new orders booked. We are advised that prices on Steel Bars are being absolutely held, and this applies in a large measure to Iron Bars. We quote Iron Bars at 1.40c., base, for Pittsburgh delivery, and 1.35c., base, for Western points, to which freight is added, except Chicago, the price for which is 1.50c., delivered. We quote Steel Bars at 1.40c., Pittsburgh, for base sizes.

**Merchant Steel.**—Specifications against contracts placed by the implement makers some time ago are coming in quite freely, and shipments by the mills in October are practically certain to show an increase over last month. On the few small orders being placed, buyers still insist on prompt shipments, showing conclusively that stocks held by jobbers are very light. Prices on Shafting are fairly well maintained, only the very large orders being allowed an extra discount over regular prices. We quote Cold Rolled Shafting at 57

per cent. off in carloads and 52 per cent. in less than carloads, delivered in base territory. Prices on Merchant Steel are being shaded, regular quotations being as follows: Smooth Finished Machinery Steel, 1.80c. to 1.90c.; Flat Sleigh Shoe, 1.75c. to 1.85c.; Cutter Shoe Steel, 2.15c. to 2.25c.; Toe Calk, 1.90c. to 1.95c.; Railroad Spring Steel, 1.60c. to 1.75c., the higher prices being for Pennsylvania Railroad analysis. Carriage Spring Steel is 1.80c.; Tire Steel, Iron finish, 1½ x ½ in. and heavier, 1.40c.; under 1½ in., 1.55c. Planished Tire Steel is 1.60c., all f.o.b. at mill.

**Railroad Spikes.**—Only small orders for Spikes for repair work are coming in from the railroads, but the demand for the smaller sizes continues active, and the mills have a good deal of tonnage on their books and are somewhat behind in deliveries. We quote: Standard sizes, 4½ x 9-16 in., at $1.70, and the smaller sizes at $1.80 per 100 lb. in carload and larger lots, with an advance of 5c. per 100 lb. for less than carload, f.o.b. Pittsburgh:

**Spelter.**—Prices have shown a sharp advance. We now quote prime grades of Western Spelter at about 4.70c., East St. Louis, equal to 4.82½c., Pittsburgh.

**Merchant Pipe.**—The Ohio Fuel Supply Company was in the market for 25 miles of 8-in. Line Pipe, but the prices quoted by the mills on this inquiry were so uniform and so high that it decided to lift 15 miles and relay it, with the result that it is now inquiring for 57,000 ft. of 8-in., which has not yet been placed. There is also an inquiry in the market for 6 to 7 miles of 4-in. Pipe. The general demand is holding up well, and the leading Pipe mills are able to operate to 60 per cent. or more of capacity. Prices on Iron Pipe, which were being shaded more or less, are now very firm, most mills quoting regular discounts. On Steel Pipe prices are absolutely firm, and no concessions are being made. Discounts on Steel Pipe, ¾ to 6 in., to the large trade, are 76 and 5 per cent. off list. Regular discounts are as follows:

*Merchant Pipe.*

| | Jobbers, carloads, Steel. | |
|---|---|---|
| | Black. | Galv. |
| | % | % |
| ⅛ to ¼ in. | 67 | 51 |
| ⅜ in. | 69 | 55 |
| ½ in. | 71 | 59 |
| ¾ to 6 in. | 75 | 65 |
| 7 to 12 in. | 72 | 57 |
| Extra strong, plain ends: | | |
| ⅛ to ⅜ in. | 60 | 48 |
| ½ to 4 in. | 67 | 55 |
| 4½ to 8 in. | 63 | 51 |
| Double extra strong, plain ends: | | |
| ½ to 8 in. | 56 | 45 |

Discounts on Genuine Iron Pipe are as follows:

| | Black. | Galv. |
|---|---|---|
| | % | % |
| ⅛ to ¼ in. | 65 | .. |
| ⅜ in. | 67 | 53 |
| ½ in. | 69 | 57 |
| ¾ to 6 in. | 73 | 63 |
| 7 to 12 in. | 70 | 55 |
| Extra strong, plain ends: | | |
| ⅛ to ⅜ in. | 58 | 46 |
| ½ to 4 in. | 65 | 53 |
| 4½ to 8 in. | 61 | 49 |
| Double extra strong, plain ends: | | |
| ½ to 8 in. | 54 | 43 |

**Boiler Tubes.**—Practically no new orders are being placed by the railroads for Boiler Tubes beyond an occasional small order for repair work. The demand for Merchant Tubes is also dull, and prices are somewhat demoralized. Regular discounts on Merchant Tubes in small lots, on which an extra 5 per cent. or more is allowed in carloads, are as follows: For Merchant Tubes in small lots, on which an extra 5 per cent. is allowed in carloads, discounts are as follows:

*Boiler Tubes.*

| | Iron. | Steel. |
|---|---|---|
| 1 to 1½ in. | 42 | 47 |
| 1¾ to 2¼ in. | 42 | 59 |
| 2½ in. | 47 | 61 |
| 2¾ to 5 in. | 52 | 65 |
| 6 to 13 in. | 42 | 59 |

2½ in. and smaller, over 18 ft. long, 10 per cent. net extra.
2¾ in. and larger, over 22 ft. long, 10 per cent. net extra.

**Iron and Steel Scrap.**—Last week the Pennsylvania Railroad sold a heavy tonnage of Scrap, and prices secured on nearly all grades showed a marked advance over the previous sale by this road. Heavy Steel Scrap went at about $15.25, Pittsburgh; No. 1 Rerolling Rails at about $17.25; Cast Scrap at about $14.50, and Malleable Scrap at about a $14.50 basis for Pittsburgh delivery. The lists of the Pennsylvania Railroad East, the Baltimore & Ohio and the New York Central closed on Tuesday, and the Norfolk & Western list will close October 16. The demand for Scrap is quite active, a good deal of tonnage having been sold by dealers. In fact, the present demand for Scrap seems to be larger than the available supply, with the result that prices are very firm, and on most lines are higher. We quote, per gross ton: Heavy Steel Scrap, for Pittsburgh, Follansbee, Monessen, Sharon and Steubenville delivery, $15.25 to $15.50; Heavy Steel Scrap for hand charged Open Hearth furnaces, pieces weighing 10 lb. minimum to 300 lb. maximum, $1 a ton higher; Cast Iron Borings, $9.25 to $9.50; Bundled Sheet Scrap, $12.50 to $12.75; No. 1 Busheling Scrap, $14.25 to $14.50; No. 2, $10.75 to $11; No. 1 Railroad Wrought Scrap, $16.75 to $17; No. 1 Cast Scrap, $14.75 to $15; Iron Axles, $22.50 to $23; Sheet Bar Crop Ends, $19 to $19.25; Low Phosphorus Melting Stock, guaranteed 0.04 and under in Phosphorus, $18.50; Rerolling Rails, $17.50 to $17.75; Steel Axles, $19.50 to $20; Grate Bars, $12.50 to $12.75; Old Car Wheels, $15.50 to $16; Machine Shop Turnings, $10.25 to $10.50; Railroad Malleable Scrap, $14.50 to $14.75; Iron Rails, $19; Locomotive Tires, $17 to $17.25, all f.o.b. Pittsburgh. We note sales of about 1000 tons of Railroad Wrought Scrap at $16.75, delivered Mahoning Valley; 500 tons of Heavy Steel Scrap at $15.50; 200 tons of Locomotive Tires, smooth inside, at $17.50; 700 tons of Wrought Iron Turnings at $10.25; 500 tons of Cast Iron Borings at $9.75; 200 tons of Heavy Cast Scrap at $14, and 100 tons of Old Iron Rails at $19, all f.o.b. Pittsburgh.

**Coke.**—Some inquiry is in the market for Furnace Coke for delivery over the first six months of 1909, but the ideas of the furnacemen and the Coke makers as to prices are far apart, with the result that as yet no large tonnage has been closed. Furnaces as a rule offer about $1.55 per ton at oven for Furnace Coke for first six months, while the Coke makers ask $1.85 to $1.90. Stocks in the yards are unusually heavy, with the result that a good deal of Coke is pressing the market for sale for prompt shipment. We quote Connellsville Furnace Coke for prompt delivery at about $1.50 and for the balance of the year at $1.60 to $1.65, at oven. For shipment over first half of 1909 from $1.75 to $1.85 is quoted. Connellsville 72-hr. Foundry Coke is held at $2 to $2.25, at oven, but outside makes are offered at lower prices. The output is running close to 200,000 tons a week, which is less than half the output of the Upper and Lower Connellsville regions at this time a year ago.

## Philadelphia.

PHILADELPHIA, PA., October 13, 1908.

Founders' Week exercises have engrossed the attention of the trade, and in a large number of instances business was suspended at noon each day of the week. Such orders as developed were to a large extent from out of town sources, but the aggregate volume was not large. Sales were usually small and for prompt shipment, as there seems to be absolutely no disposition to contract ahead in any way, pending the result of the approaching election. While the view taken by the trade regarding the future is more cheerful, confidence is lacking when it comes to undertaking any proposition of importance. Both crude and finished materials have been very dull, and in no branch of the trade has anything like active buying developed.

**Pig Iron.**—The local market was considerably interrupted by the celebration of the two hundred and twenty-fifth anniversary of the founding of the city of Philadelphia, and business in a majority of cases was practically at a standstill. Some little business developed, but it came largely from out of town sources. Melters, unless in urgent need of Iron, are not placing orders for any large tonnage. There has been some very good inquiry for nearly all grades for forward delivery, but hesitancy is shown when it comes to placing business. The nearness of the approaching election is no doubt responsible for this condition, as prospective buyers seem to think that a delay of a few weeks will make no material difference and that after the election is over plans regarding the future can be more intelligently made. The bulk of the business transacted during the week has been in the Foundry grades, but the individual tonnages taken have in practically every case been small. There is still some No. 2 X Foundry Iron to be had at $16.75, delivered, but it is rapidly becoming scarcer, considerably more being sold at $17, delivered, while occasional sales of special lots at a further advance of 25c. are reported. Low grade Irons are still in good demand. The Cast Iron Pipe makers are in the market for some round tonnages, but as a rule are not placing orders at present prices, which they consider high. With the present curtailed production, however, these grades are scarce and few producers have any large tonnage for sale. Southern Foundry Irons have been inactive, as have also the Virginia Irons, irregular sales of small spot lots at full prices being reported. There is a fairly steady demand for Forge Iron. The quantities asked for are not large nor for any extended delivery, but in the aggregate reach a pretty fair tonnage. Prices for standard grades of Forge Iron remain quite firm, as the available supply for early delivery is reported as being small. There is considerable inquiry for Basic Iron, one melter being in the market for 10,000 tons for delivery over the balance of this and the early part of next year. Inquiries for several small lots for delivery the balance of this year have been before the trade, and some has been sold for such shipment at $15.50, delivered. For any delivery extending into next year sellers are firm, at $16. Low Phosphorus Iron is inactive, as buyers of this grade do not seem to come into the market very freely, and no sales of importance have been

reported for several weeks. The market on the whole maintains its strength. For delivery in buyers' yards, eastern Pennsylvania and nearby territory, the following range of prices for delivery the remainder of the year are quoted:

| | |
|---|---|
| Eastern Pennsylvania, No. 2 X Foundry | $16.75 to $17.00 |
| Eastern Pennsylvania, No. 2 Plain | 16.25 to 16.50 |
| Virginia, No. 2 X Foundry | 17.00 |
| Virginia, No. 2 Plain | 16.75 |
| Gray Forge | 15.50 to 15.75 |
| Basic | 15.50 to 16.00 |
| Low Phosphorus | 20.00 to 20.50 |

**Ferromanganese.**—A somewhat better demand for both prompt and forward delivery is to be noted. Inquiries for 500 tons for Western shipment and several for smaller lots for nearby delivery are reported. Prices appear to be firmer, and there is again a wider range in quotations. While business could probably be done at $44.50 to $45, Baltimore, $46 to $47 has been named by some sellers for delivery early next year.

**Plates.**—There was a rather better run of business during the week. Specifications were larger, but the demand continues irregular. Some fair boat propositions are before the trade, a nearby shipyard having received orders for two 300-ft. steamships. Some little locomotive business has also been coming out, and the trade feels more encouraged regarding future business. Prices are being well maintained, and are quoted as follows, for delivery in this vicinity:

| | Carloads. Cents. | Parts carload. Cents. |
|---|---|---|
| Tank, Bridge and Boat Steel | 1.75 | 1.80 |
| Flange or Boiler Steel | 1.85 | 1.95 |
| Commercial Firebox | 1.95 | 2.00 |
| Marine | 2.15 | 2.20 |
| Locomotive Firebox Steel | 2.25 | 2.30 |

The above are base prices for ¼-in. and heavier. The following extras apply:

| | Extra per 100 lb. |
|---|---|
| 3-16-in. thick | $0.10 |
| Nos. 7 and 8. B. W. G | .15 |
| No. 9, B. W. G | .25 |
| Plates over 100 to 110 in | .05 |
| Plates over 110 to 115 in | .10 |
| Plates over 115 to 120 in | .15 |
| Plates over 120 to 125 in | .25 |
| Plates over 125 to 130 in | .50 |
| Plates over 130 in | 1.00 |

**Steel Billets.**—A slight falling off in the volume of orders is to be noted. Business continues of a day to day character and mills in this territory are just about able to maintain the present curtailed rate of production. Prices are unchanged, Ordinary Rolling Steel being quoted at $26.20 for delivery in this territory, with $28.20 named for Forging Steel, subject to the usual extras for high carbons and special sizes.

**Structural Material.**—The volume of business placed during the week has not been large. Current orders are usually small and of a miscellaneous character, the larger propositions, of which there are several before the trade, including boat, bridge and car work, being rather slow in developing. Prices are fully maintained and for delivery in this territory range from 1.75c. to 1.90c., according to specifications.

**Sheets.**—A fair run of business continues to come out, but orders are small, and for current consumption only Mills have very little business ahead, but are able to maintain close to full capacity on day to day orders. Prices are unchanged, and for mill shipment range as follows, a tenth extra being added for small lots: Nos. 18 to 20, 2.50c.; Nos. 22 to 24, 2.60c.; Nos. 25 to 26, 2.70c.; No. 27, 2.80c.; No. 28, 2.90c.

**Bars.**—Sales have been small and irregular. Consumers are inclined to defer placing orders. No heavy tonnages are expected to come out the present month. Prices are somewhat firmer. Refined Iron Bars being quoted at 1.45c. to 1.50c., delivered in this territory, with but very little shading reported. Steel Bars are quoted at 1.55c., delivered, but are not in very strong demand. Rerolled Bars are quoted at 1.50c., delivered in this territory.

**Old Material.**—The market has again quieted down and during the past week was rather dull. The business transacted was mainly in small spot lots in the leading grades at practically unchanged prices. Consumers as a rule appear willing to pay inside figures, but sellers hold for outside quotations, neither side being disposed to make concessions. For prompt delivery in buyers' yards, eastern Pennsylvania and adjoining territory, quotations are nominally as follows:

| | |
|---|---|
| No. 1 Steel Scrap and Crops | $15.00 to $15.50 |
| Low Phosphorus | 18.50 to 19.00 |
| Old Steel Axles | 21.50 to 22.00 |
| Old Iron Axles | 22.50 to 23.00 |
| Old Iron Rails | 19.50 to 20.00 |
| Old Car Wheels | 15.00 to 15.50 |
| Choice No. 1 R. R. Wrought | 18.25 to 18.75 |
| Machinery Cast | 15.25 to 15.75 |
| Railroad Malleable | 14.00 to 15.00 |
| Wrought Iron Pipe | 13.75 to 14.25 |
| New Bundled Sheets | 13.50 to 14.00 |
| No. 1 Forge Fire Scrap | 12.00 to 12.50 |
| No. 2 Light Iron | 9.00 to 9.50 |
| Wrought Turnings | 11.50 to 12.00 |
| Stove Plate | 13.00 to 13.50 |
| Cast Borings | 11.00 to 11.50 |
| Grate Bars | 13.50 to 14.00 |

**Coke.**—The market continues dull. Business has been coming out slowly, and the orders placed have been rather small. Prices are firm, Foundry Coke being quoted from $2.15 to $2.40, at oven, with Furnace Coke at $1.65 to $1.85, at oven. For delivery in this territory the following range of prices is named:

| | |
|---|---|
| Connellsville Furnace Coke | $3.65 to $3.90 |
| Foundry Coke | 4.15 to 4.40 |
| Mountain Furnace Coke | 3.25 to 3.50 |
| Foundry Coke | 3.75 to 4.00 |

## Cincinnati.

CINCINNATI, OHIO, October 14, 1908.—(*By Telegraph.*)

Election excitement is playing havoc with the Iron and Steel trades, and such orders as are being placed are strictly hand to mouth, although correspondence is optimistic, and inquiries partake of good promise for the future, based on satisfactory election results. In the machinery markets standard tools and special machinery are having a very fair sale, everything considered, while some inquiries coming in from the manufacturers of engines, boiler and conveying machinery for Iron suggest confidence in the future, and that the crude product has in the estimation of users about reached the minimum in price. One of the most satisfactory phases of the situation to Iron and Steel men is the constant injunction to hurry shipments on contract, which indicates that there is some consumption which is increasing. The Northern and Eastern furnacemen still have the best of the situation, with Southern producers maintaining a well organized front. Foundries in this territory are increasing their melts slowly. Scrap dealers are still endeavoring to force prices, although some items have slumped off considerably since the first of the month.

**Pig Iron.**—There is no material change to be noted in prices on either Northern or Southern, save that the minimum price on Northern can probably be shaded for a round tonnage. A number of large manufacturers who are or have been in the past few weeks in the market for Iron are feeling for prices on next year's delivery, and one large Central Ohio interest is buying Foundry and Charcoal Iron, the greater part of which is for 1909 delivery. The Foundry inquiry is reported closed to-day, 1000 tons coming from a nearby furnace, 500 tons from the Valley, and all for the last quarter. The Valley Iron sold on a basis of about $15.80, delivered. The Charcoal Iron will most likely come from Michigan or Wisconsin, as Lake Superior is specified, 2000 tons in deliveries of 500 tons per quarter, or the option of taking it all at first quarter prices. This Iron is quotable at from $18 to $18.50, at furnace. An Ohio Pipe interest is asking for prices on Foundry Iron for delivery to its new plant. A large pump manufacturing interest is asking for prices on 450 tons, each of 2 to 2½ per cent. Silicon, 2 to 3 and 3 to 4 per cent. Silvery Iron, deliveries to extend to July, for its Massachusetts plant. Either Southern or Virginia furnaces will doubtless take this business. A Western electric manufacturing interest wants prices on 200 tons of special analysis Foundry Iron for early delivery. One of the large furnaces on Silvery Iron is reported out of blast, but the blowing in of a new furnace in Jackson County last week leaves still two in Ohio producing High Silicons. This Iron is firm at $18.50 for 8 per cent. Little is heard now of low grades, the demand seeming to be confined almost entirely to Foundry, Malleable and Basic. Some fear of a car shortage is expressed in this territory, where river transportation has always been a factor in shipments of Coke and Iron. There is no likelihood of water navigation before the first of the year, which fact, coupled with the rapid diminution of idle cars and so many out of commission needing repairs, suggests possible trouble in getting Iron, Coal and Coke if the expected improvement materializes. For early delivery and the last quarter, based on freight rates of $3.25 from Birmingham and $1.20 from Hanging Rock, we quote as follows, f.o.b. Cincinnati:

| | |
|---|---|
| Southern Coke, No. 1 | $16.25 to $16.75 |
| Southern Coke, No. 2 | 15.75 to 16.25 |
| Southern Coke, No. 3 | 15.25 to 15.75 |
| Southern Coke, No. 4 | 15.00 to 15.50 |
| Southern Coke, No. 1 Soft | 16.25 to 16.75 |
| Southern Coke, No. 2 Soft | 15.75 to 16.25 |
| Southern Coke, Gray Forge | 14.25 to 14.75 |
| Ohio Silvery, 8 per cent. Silicon | 19.70 |
| Lake Superior Coke, No. 1 | 16.45 to 16.95 |
| Lake Superior Coke, No. 2 | 15.95 to 16.45 |
| Lake Superior Coke, No. 3 | 15.45 to 15.95 |
| Standard Southern Car Wheel | 22.25 to 22.75 |
| Lake Superior Car Wheel | 21.75 to 22.25 |

(*By Mail.*)

**Coke.**—Alabama furnaces are still buying Virginia Coke notwithstanding the ending of the strike troubles and the transfer of a part of oven activities to the Alabama field. It is reported here that 2000 ovens were put out in the Connellsville field last week owing to the continued drought. Virginia Furnace Coke is still quotable at $1.75, at oven; Foundry, $2.10 to $2.25; Connellsville Foundry, $2.25 and Furnace about $1.75; Pocahontas quotable at about the same prices as Wise County grades. The new furnaces recently blown in in the north Alabama and lower Tennessee region

are said to be taking any surplus Coke in that district occasioned by the recent lighting of ovens.

**Finished Material.**—There are some fairly good sales from stores of Structural Iron and Steel, twisted Bars for concrete work and some Boiler Tubes, prices on which are unchanged. One dealer reports that collections have been seriously affected, and that the income from this source had fallen off fully 50 per cent. in the last 30 days. Dealers are quoting to the trade f.o.b. Cincinnati, as follows: Iron Bars, carload lots, 1.55c., base, with half extras; small lots from store, 1.85c., base, half extras; Steel Plates, carload lots, 1.75c., base, with half extras; small lots from store, 1.85c., base, half extras; Base Angles, carload lots, 1.85c., base; small lots from store, 2.10c.; Beams, Channels and Structural Angles, 1.85c., base; small lots from store, 2.10c.; Plates, ¼-in. and heavier, carload lots, 1.85c.; small lots from store, 2c.; Blue Annealed Sheets, heavy, No. 16, carload lots, 2.15c.; small lots from store, 2.50c.; No. 14, carload lots, 2.05c.; small lots from store, 2.40c.; No. 10 and heavier, carload lots, 1.95c.; small lots from store, 2.20c.; No. 12, carload lots, 2c.; small lots from store, 2.30c.; Sheets (Light), Black, No. 28, carload lots, 2.65c.; Galvanized Sheets, No. 28, carload lots, 3.70c.; Steel Tire, 4-in. and heavier, carload lots, 1.95c.; Plates, 3-16 and No. 8, carload lots, 2c.; small lots from store, 2.20c.

**Old Material.**—It is an unusually strong dealers' market. There is practically no buying by consumers locally, although some interesting inquiries for Relayers are reported as coming from the South and Southwest, where favorable weather conditions permit of railroad work during the fall and winter season. Select Railroad Wrought remains firm and some good sales are being negotiated in this territory. Dealers manifest faith in improved conditions after election and are holding firm on the following prices, which are f.o.b. Cincinnati:

| | |
|---|---|
| No. 1 R. R. Wrought, net ton | $12.50 to $13.50 |
| Cast Borings, net ton | 5.00 to 5.50 |
| Heavy Melting Steel Scrap, gross ton | 13.50 to 14.50 |
| Steel Turnings, net ton | 6.00 to 7.00 |
| No. 1 Cast Scrap, net ton | 12.00 to 13.00 |
| Burnt Cast, net ton | 9.00 to 10.00 |
| Old Iron Axles, net ton | 16.50 to 17.50 |
| Old Iron Rails, gross ton | 15.00 to 16.00 |
| Old Steel Rails, short, gross ton | 13.00 to 14.00 |
| Old Steel Rails, long, gross ton | 12.50 to 13.50 |
| Relaying Rails, 56 lb. and up, gross ton | 20.00 to 21.00 |
| Old Car Wheels, gross ton | 13.00 to 14.00 |
| Low Phosphorus Scrap, gross ton | 14.00 to 15.00 |

## Buffalo.

BUFFALO, N. Y., October 13, 1908.

**Pig Iron.**—Specifications against existing contracts continue to come in freely and there is some slight inquiry for forward delivery as well as for immediate shipment, but as a rule buyers are covered for immediate requirements and are now holding off until after the election for the placement of new business of any magnitude. The appended quotations approximate current market prices at Buffalo as closely as possible:

| | |
|---|---|
| No. 1 X Foundry | $15.50 to $16.00 |
| No. 2 X Foundry | 15.25 to 15.75 |
| No. 2 Plain | 14.75 to 15.25 |
| No. 3 Foundry | 14.50 to 15.00 |
| Gray Forge | 14.25 to 14.75 |
| Basic | 15.00 |
| Malleable Bessemer | 15.50 to 16.50 |
| Charcoal | 20.00 to 20.50 |

**Old Material.**—The market is decidedly inactive in most lines. Prices are firm, but both dealers and consumers are holding off on transactions involving much tonnage, awaiting the outcome of the election. We quote as follows per gross ton, f.o.b. Buffalo:

| | |
|---|---|
| Heavy Melting Steel Scrap | $14.50 to $15.00 |
| No. 1 Railroad Wrought | 15.00 to 15.50 |
| No. 1 Railroad and Machinery Cast Scrap | 14.00 to 14.50 |
| Old Steel Axles | 17.00 to 17.50 |
| Old Iron Axles | 20.00 to 20.50 |
| Old Car Wheels | 15.00 to 15.50 |
| Railroad Malleable | 13.00 to 13.50 |
| Boiler Plate | 12.00 to 12.50 |
| Locomotive Grate Bars | 11.50 to 12.00 |
| Pipe | 11.50 to 12.00 |
| Wrought Iron and Soft Steel Turnings | 8.00 to 8.25 |
| Clean Cast Iron Borings | 6.50 to 7.00 |
| No. 1 Busheling Scrap | 12.50 to 13.00 |

**Finished Iron and Steel.**—The volume of orders in Bars, Plates and Railroad Material continues fair, with neither noticeable improvement nor decline. Business in Structural Material is rather lighter, although there are encouraging indications of the development of new business in the near future. The Buffalo Structural Steel Company was the low bidder for 240 tons of Beams and 60 tons of Columns for the Sinclair, Rooney & Co. wholesale building here, and it is expected that the contract will be let this week. It is probable that Bethlehem Shapes will be used. Bids will be received in about a week for 500 tons of Steel and Iron required in the construction of the vaudeville theater at Toronto, which the Shea Amusement Company of Buffalo is to erect. The specifications for Structural Material for the Onondaga Hotel, to be erected in Syracuse, at a cost of $800,000, and which are being prepared by Buffalo architects, will not be issued until after the first of the year.

## Cleveland.

CLEVELAND, OHIO, October 13, 1908.

**Iron Ore.**—The merchant firms are planning to have their Ore shipments pretty well cleaned up by November 1. The movement has held up fairly well so far this month, but it is expected to fall off considerably after this week. The Steel Corporation reduced its shipments about the first of the month by using fewer outside boats, and the owners of several other outside steamers have been notified by the corporation that their boats will be loaded for only one more trip. Some merchant Ore will be shipped in November, but it will be only in small lots. The shipments this month are expected to reach about 4,000,000 tons. Ore men do not expect that the total movement will exceed 23,000,000 tons, and some think that it will not be much over 22,000,000 tons. The market continues quiet. A few small sales are still being made, but it is not expected that any large tonnages will be sold before the close of navigation. Prices at Lake Erie docks; per gross ton, are as follows: Old Range Bessemer, $4.50; Mesaba Bessemer, $4.25; Old Range Non-Bessemer, $3.70; Mesaba Non-Bessemer, $3.50.

**Pig Iron.**—The market continues quiet. Few consumers are showing an inclination to cover for their first half requirements until after election, the only inquiry of any size being for 4000 tons of Basic Iron. The largest sales noted during the week comprised 600 tons of No. 2 Foundry and 500 tons of Malleable Bessemer, the former bringing $15 and the latter $15.25, at Toledo furnace. A few small sales of Foundry Iron were made to consumers, who needed a little for spot shipment or to fill them out for the balance of the year. Foundries as a rule have small stocks on hand and orders for shipment on contract are fairly good. The melt seems to have improved slightly. Consumers have followed a very cautious policy during the past few months, and it is not believed that any have contracted for more Foundry Iron for the balance of the year than they will use in that time. Prices remain stationary at the level that has prevailed for the past few weeks. Local furnaces quote No. 2 Foundry at $14.50 to $15, at furnace, the lower price being named in some cases for outside shipments. The Valley price of $14.35 to $14.50, at furnace, is being shaded to $14.25. The majority of the furnace interests are not disposed to take on business for the first half delivery at present prices. For prompt shipment and for the balance of the year we quote, delivered, Cleveland, as follows:

| | |
|---|---|
| Bessemer | $15.90 to $16.15 |
| Northern Foundry, No. 1 | 15.40 to 15.80 |
| Northern Foundry, No. 2 | 15.25 to 15.40 |
| Northern Foundry, No. 3 | 14.90 to 15.25 |
| Gray Forge | 14.25 to 14.50 |
| Southern Foundry, No. 2 | 16.85 to 17.35 |
| Jackson County Silvery, 8 per cent. Silicon | 20.05 |

**Coke.**—No improvement is noted in the demand. Prices remain stationary, with the exception of spot Furnace Coke, which is somewhat firmer, because the output has been curtailed by the drouth. There are practically no inquiries for next year's delivery, for either Furnace or Foundry Coke. Some furnace interests are willing to cover for their requirements for the first half, but producers object to making contracts except for a stated tonnage. We quote Standard Connellsville Furnace Coke, for spot shipment, at $1.60 to $1.70, at oven, about the same prices being asked for the balance of the year. We quote 72-hr. Connellsville Foundry Coke at $2 to $2.25, at oven.

**Finished Iron and Steel.**—New business is exceedingly light in all lines. Specifications are holding up fairly well, the volume of orders being about the same as in the previous two weeks, but somewhat lighter than during a portion of September. Orders for Steel Bars are much better than for other lines, the life of the Bar market being the good demand from the implement, rivet, bolt and drop forging makers. The largest new contract placed during the week was one from the Toledo Shipbuilding Company for 500 tons of Plates and Shapes for repair work. This company has just closed a contract for a 460-ft. freight boat to be built for Rufus P. Ranney and others of Cleveland, which will require about 3500 tons of Plates and Shapes. The Plate situation shows no improvement, new orders and specifications being very light. The most of the new business that is being taken is at a cut of $2 a ton, that being the price that is quoted by a majority of the smaller mills. The price of Steel Bars, which is generally being held firm, is reported as being shaded by one Western mill. The demand for Iron Bars is very light. The only orders received from railroads for repair work are for small tonnages. Local Bar Iron mills continue to operate at less than their full capacity. The Structural outlook is far from promising. Some fair specifications have come in during the week from bridge building plants, but not much new work is in sight in county and municipal work, and new mills in building [illegible]

work is expected to come up in this territory during the balance of the season. The demand for Sheets is light, showing no change. Prices are being shaded from $1 to $2 a ton. There is some improvement in the demand for Light Rails from Coal mining companies, and a few car lot sales are reported. Jobbers report that both their mill and warehouse business is holding up fairly well, orders being nearly all for small lots. The largest volume of their orders is for Steel Bars and Structural Shapes. Consumers, as a rule, are holding off as much as possible in the placing of new orders until after election. We quote Iron Bars, 1.45c., Cleveland, for car lots; Steel Bars, 1.50c., Cleveland, for car lots, half extras; Beams and Channels, 1.70c., base, Cleveland, and Plates, ¼-in. and heavier, 1.70c., Cleveland. We quote Sheets, mill shipments, car lots, Cleveland, as follows, these regular prices being shaded: Blue Annealed, No. 10, 1.90c.; Box Annealed, No. 28, 2.60c.; Galvanized, No. 28, 3.65c. Jobbers quote Iron and Steel Bars out of stock at 1.65c. to 1.70c., Beams and Channels from warehouse are 2c. and Plates, ¼-in. and heavier 1.90c. Warehouse prices on Sheets are as follows: Blue Annealed, No. 10, 2.10c.; Box Annealed, No. 28, 2.70c.; Galvanized, No. 28, 3.80c. Warehouse prices on Boiler Tubes, 2¾ to 5 in., are 64 per cent. discount, and on Black Merchant Iron Pipe, base sizes, 71 per cent. discount.

**Old Material.**—The market continues dull. Prices are stationary and fairly firm. No large inquiries are out and the only sales reported are small lots for immediate needs. The majority of the dealers have large stocks on hand and there is less buying of Scrap to hold for higher prices, although some dealers continue to pick up what Scrap they can at bargain prices. The most of the buying by dealers, however, is to fill orders. Sales to consumers are mostly in car lots. The railroad offerings this week include 5000 tons to be sold by the Baltimore & Ohio Railroad. In this list are 2500 tons of Old Steel Rails. Dealers' prices to the trade, per gross ton, f.o.b. Cleveland, are as follows:

| | |
|---|---|
| Old Steel Rails | $14.00 to $14.50 |
| Old Iron Rails | 17.00 to 17.50 |
| Steel Car Axles | 19.00 to 19.50 |
| Old Car Wheels | 15.00 to 15.50 |
| Heavy Melting Steel | 13.75 to 14.25 |
| Relaying Rails, 50 lb. and over | 22.00 to 23.00 |
| Railroad Malleable | 13.25 to 13.75 |
| Agricultural Malleable | 12.00 to 12.50 |
| Light Bundled Sheet Scrap | 9.50 to 10.00 |

The following quotations are per net ton, f.o.b. Cleveland:

| | |
|---|---|
| Iron Car Axles | $20.00 to $20.50 |
| Cast Borings | 7.00 to 7.50 |
| Iron and Steel Turnings and Drillings | 8.00 to 8.50 |
| Steel Axle Turnings | 8.50 to 9.00 |
| No. 1 Busheling | 12.00 to 12.50 |
| No. 1 Railroad Wrought | 13.50 to 14.00 |
| No. 1 Cast | 12.00 to 13.00 |
| Stove Plate | 10.75 to 11.25 |
| Bundled Tin Scrap | 8.00 to 9.00 |

## New York.

NEW YORK, October 14, 1908.

**Pig Iron.**—Business in this market seemed to drop off with September, and there is little apparent prospect of another movement before November. Several good sized inquiries are pending. New England business is still largely in the hands of furnaces in Western New York. Where furnaces recently started up are working to accumulate a backlog occasional contracts are made at cut prices. Some negotiations have been started for next year's Iron, deliveries to the middle and, in some cases, to the end of the year. In other cases founders are known to have uncovered wants for the last two months of this year. We continue to quote, at tidewater, Northern No. 1 Foundry, $17.25 to $17.75; No. 2 Foundry, $16.75 to $17.25, and No. 2 Plain, $15.75 to $16.25. Alabama Irons are quoted $17.50 to $17.75 for No. 1 Foundry, and $16.75 to $17.25 for No. 2 Foundry.

**Steel Rails.**—The South Chicago mill has taken orders for 5000 tons in the past week, including 3300 tons for the M., K. & T. It also has 2500 tons pending. No inquiries for 1909 have come up, and it is certain that a large volume of orders which have passed as contracts will go without specifications to the end of this year.

**Structural Material.**—A good many railroad bridge orders have been placed lately, calling for from 75 to 300 tons of Steel. The Georgia & Florida placed 475 tons with the American Bridge Company, and the Atlantic Coast Line and the Grand Trunk have taken, respectively, 350 and 220 tons. The New York Central's contract for 3060 tons for its Buffalo Belt Line railroad went to the Fort Pitt Bridge Works, Pittsburgh. The 3000 tons for the Carolina, Clinchfield & Ohio is reported to have been awarded to the Pennsylvania Steel Company, and the St. Paul placed 715 tons with the Wisconsin Bridge Company. Locally, 1500 tons for the second section of the Grand Central terminal and 200 tons for yard work are pending, while the Central of New Jersey is asking for 300 tons for a pier on the North River. Several local building contracts are still withheld, and little new work is making its appearance. On plain material we quote as follows, for mill shipments, delivery at tidewater: Beams, Channels, Angles and Zees, 1.76c.; Tees, 1.81c. On Beams, 18 to 24 in., and Angles, over 6 in., the extra is 0.10c. Structural Material, cut to lengths, is sold in small lots at about 2¼c.

**Bars.**—The situation in the Bar Iron trade appears to be strengthening, influenced by better reports from the West. The Eastern manufacturers have of late more generally adhered to the quotation of 1.40c., at mill, equivalent to 1.50c., tidewater. It may be possible that some Iron can be bought at 1.45c., tidewater, but the number of makers willing to accept that rate has certainly diminished. The volume of business is not large, but the stronger prices are apparently based on the advanced cost of raw materials as the supply of cheap Scrap has, it is said, been practically exhausted and the mills are running on materials costing considerably more. Steel Bars continue to be held at 1.56c., tidewater.

**Plates.**—The week has been exceedingly quiet. The demand for small lots has shown a further shrinkage. Consumers in this locality appear to be only doing repair work and their shops are running spasmodically. Prices continue to be held as follows, at tidewater, for standard sized Plates: Sheared Plates, 1.76c. to 1.86c.; Flange Plates, 1.86c. to 1.96c.; Marine Plates, 2.16c. to 2.26c.; Firebox Plates, 2.65c. to 3.50c., according to specifications.

**Ferroalloys.**—While there has been continued buying of Ferromanganese, which in some quarters is thought to have exhausted the stray lots which have been a burden on the market of late, we hear of 600 tons of this metal which is still available at $42.50, f.o.b. Baltimore. We understand that $44 is being accepted for next year's delivery, as far forward as June. Fifty per cent. Ferrosilicon is still commanding $68 to $70, and we hear of a sale of 100 tons made to one of the largest Steel works in this country yesterday. Foreign interests are dominating the market in this line at present.

**Cast Iron Pipe.**—Some of the large lettings in this vicinity recently advertised are evidently not likely to lead to business. Several of them are not taken seriously in the trade, being regarded as efforts to compel local water companies to make more favorable arrangements with the municipalities. Business is almost at a standstill, even orders for carload lots being quite rare. Pipe manufacturers whose experience has covered several panic periods state that never before have they known the month of October to be characterized by so little buying. Carload lots continue to be nominally quoted at $24 to $24.50 for 6-in.

**Old Material.**—A little demand is noted for Cast Scrap, and some buying has taken place in Heavy Melting Steel Scrap and in Castings and Borings. General business, however, has been extremely dull, with light inquiries. Dealers are holding prices firmly as the quantity of Old Material now coming out is not large, and hope is entertained that the demand may improve after the election. Ruling quotations are as follows, per gross ton, New York and vicinity:

| | |
|---|---|
| Old Girder and T Rails for melting | $11.50 to $12.00 |
| Heavy Melting Steel Scrap | 11.50 to 12.00 |
| Old Steel Rails, rerolling lengths | 14.00 to 14.50 |
| Relaying Rails | 22.50 to 23.00 |
| Old Iron Rails | 16.50 to 17.00 |
| Standard Hammered Iron Car Axles | 18.50 to 19.00 |
| Old Steel Car Axles | 15.50 to 16.00 |
| No. 1 Railroad Wrought | 15.00 to 16.00 |
| Iron Track Scrap | 12.00 to 13.00 |
| No. 1 Yard Wrought, long | 14.00 to 14.50 |
| No. 1 Yard Wrought, short | 12.50 to 13.50 |
| Light Iron | 7.00 to 7.50 |
| Cast Borings | 7.50 to 8.00 |
| Wrought Turnings | 8.50 to 9.00 |
| Wrought Pipe | 11.00 to 11.50 |
| Old Car Wheels | 14.00 to 14.50 |
| No. 1 Heavy Cast, broken up | 13.50 to 14.00 |
| Stove Plate | 11.50 to 12.00 |
| Locomotive Grate Bars | 11.50 to 12.00 |
| Malleable Cast | 12.50 to 13.00 |

## Iron and Industrial Stocks.

NEW YORK, October 14, 1908.

The market for securities has been affected by the complications in Europe. The possibility of a serious war involving several o fthe great nations of Europe caused rather heavy selling of American securities by European holders, which was particularly noticeable on Friday of last week. Prices were then somewhat depressed, but a recovery occurred as the indications increased of a peaceful settlement of the various points in the international controversy. The iron and steel stocks participated with railroad stocks in the decline and recovery. The Can stocks advanced on the statement that the large holdings of the late W. B. Leeds had been taken over by a syndicate composed of leading stockholders. The range of prices on active iron and steel stocks, from Thursday of last week to Tuesday of this week, was as follows: United States Steel common 45 to 47¼, preferred 107¾ to 109⅞; Bethlehem Steel common 22½ to 23, preferred 46 to 46½; Car and Foundry common 39¼ to 40⅝, preferred 102½ to 102⅝; Locomotive common 46 to 49⅜, preferred 105; Steel Foundries new, 30 to 35; Cambria Steel 35½ to 36¼; Colorado Fuel 33¾ to 36¼;

Crucible Steel common 6⅛, preferred 41½ to 42; Pressed Steel common 32 to 33½, preferred 93½; Railway Spring common 36¾ to 38¼; Republic common 21 to 22⅜, preferred 78 to 80; Sloss-Sheffield common 61¾ to 64; Cast Iron Pipe common 24 to 25¾, preferred 71½ to 72; Can common 6¼ to 7, preferred 65 to 69⅜. Last transactions up to 1.30 p.m. to-day are reported at the following prices: United States Steel common 46½, preferred 109¾, bonds 102⅛; Car & Foundry common 40, preferred 101½; Locomotive common 48, preferred 105; Colorado Fuel 35¾; Pressed Steel common 32½, preferred 92; Railway Spring common 37½; Republic common 22¼, preferred 78; Sloss-Sheffield common 64; Cast Iron Pipe common 24¾, preferred 71½; Can common 7¼, preferred 68¾.

**Dividends.**—The International Steam Pump Company has declared the regular quarterly dividend of 1½ per cent. on the preferred stock, payable November 2.

The Harbison-Walker Refractories Company, Pittsburgh, has declared a quarterly dividend of 1½ per cent. on its preferred stock, payable October 20.

## Metal Market.

NEW YORK, October 14, 1908.

**Pig Tin.**—There has been a steady decline throughout the week, but very little business going through in this market. Monday showed the only buying activity, but it was due to the absolute dullness preceding that this day's transactions are worth commenting on. In actual volume the business done even on that day was of little significance. In London there was much greater activity, especially yesterday, when 1300 tons were sold. It is said that one of the chief operators there threw over large lots of spot with the natural result of a wide break in prices. London is supposed to possess the biggest stocks held there in a long time. Here stocks are only fair, but in view of the absence of consumptive demand no apprehension is felt, as it is held that as this is an off season there is ample time for transferring some of the large London stock to this side in case of an increase in demand. Reports concerning shipments from the Straits vary between 4100 and 5000 tons for the month. Prices here during the week were as follows:

| | Cents. |
|---|---|
| October 7 | 29.50 |
| October 8 | 29.50 |
| October 9 | 29.35 |
| October 12 | 29.20 |
| October 13 | 29.10 |
| October 14 | 29.25 |

The London market closed about £2 lower than last week, with £132 7s. 6d. for spot, and £134 2s. 6d. for futures.

**Copper.**—This metal continues to be extremely dull, and uninteresting. Sales for consumption are very meagre here, though in London there was a little buying early in the week. Stocks in Europe continue to pile up, and it is estimated that there are 50,000 tons in England alone at present, as compared with 12,000 to 15,000 tons this time last year. On the Continent, it is said, there is about as much metal now as in England. Odd lots of Lake may be picked up here at 13⅝c., although most dealers are quoting 13¾c., while some are, indeed, asking 14c., in the absence of real customers. Electrolytic is offered at 13⅜c. to 13½c. The London market was quoted to-day at £59 15s. for spot, £60 12s. 6d. for futures, and £63 for Best Selected. These figures, it will be noted, are just a shade above those named a week ago.

**Waterbury Average.**—The Waterbury Average for August was 13.75c.

**Pig Lead.**—Tempting buyers, which we understand have not yet come forward, the American Smelting & Refining Company has cut prices. Late last Wednesday it came out with an "official" cut of 10c., lowering its quotations from 4.60c. to 4.50c., New York. This, it seems, failed to produce the desired effect, for yesterday it again made a similar reduction, leaving the price at this writing 4.40c. There was no excited scramble for the metal to-day, and the feeling in the trade is that the market must come down still lower. The big producers have been holding the umbrella over the independents for some time, and are still holding it, despite their cutting. The independents are looking for customers now, naming 4.35c. to 4.40c., New York. The London market is quoted £13 6s. 3d. to-day.

**Spelter.**—The market is a shade higher, at 4.77½c. to 4.82½c. here and 4.62½c. to 4.67½c. in St. Louis. Stocks in this country are very large, but they are said to be in the control of strong interests. London cables £19 15s. at the close to-day.

**Aluminum.**—Th price of No. 1 Ingots has been cut to 29c., and the new price of 36c. has been named for Sheets. This reduction is so marked that it has occasioned considerable comment in the trade, and has caused speculation as to what the next move will be.

**Antimony.**—The European market is firm, but everything is very quiet here, owing to the large stocks on hand. Cookson's is still quoted 8c. to 8¼c.; Hallett's 7[illegible] to 8c.

**Nickel.**—The metal remains unchanged, at 45c. for 10-ton lots, and 50c. to 60c. for smaller quantities.

**Tin Plates.**—Prices are unchanged, at $3.89, New York, and $3.70, Pittsburgh, for 100 lb. IC Coke Plates.

**Old Metals.**—The demand is fair, but consumers are only supplying their immediate needs. Dealers' selling prices are as follows:

| | Cents. |
|---|---|
| Copper, Heavy and Crucible | 12.50 to 12.75 |
| Copper, Heavy Wire | 12.25 to 12.50 |
| Copper, Light and Bottoms | 11.50 to 11.75 |
| Brass, Heavy | 9.00 to 9.25 |
| Brass, Light | 7.25 to 7.50 |
| Heavy Machine Composition | 11.75 to 12.00 |
| Clean Brass Turnings | 8.25 to 8.50 |
| Composition Turnings | 9.50 to 9.75 |
| Lead, Heavy | 4.12⅛ to 4.25 |
| Lead, Tea | 3.75 |
| Zinc Scrap | 3.25 to 3.50 |

**M. A. Hanna & Co. Will Build More Furnaces at Buffalo.**—Two more blast furnaces will be built in Buffalo by M. A. Hanna & Co. of Cleveland. An option has been secured on 2,500 ft. of water front on the Niagara River, and the deal for the land will be closed soon. The work of erecting the new furnaces will be started about the first of the year. Each will have a daily capacity of about 300 tons. The two furnaces will be erected simultaneously, and it is expected that they will be ready for operation in the latter part of 1910. The site selected is between Buffalo and Tonawanda, a short distance nearer Buffalo than the new plant of the Wickwire Steel Company. In connection with the new furnaces ore docks will be built and the most modern machinery for handling ore will be installed. Before the stacks are completed the improvements that are being made by the government in the Niagara River will be finished, and large ore boats will be able to discharge their cargoes directly on the new Hanna docks. M. A. Hanna & Co.'s lease of the three furnaces of the Buffalo Union Furnace Company, which was made for 10 years, expires in about two years, and is not to be renewed. The Buffalo Union furnaces will then revert to the owners, and M. A. Hanna & Co. will try, by the erection of the new furnaces, to hold the trade they have built up in the East.

The Mesta Machine Company, Pittsburgh, has just secured a contract from the Tennessee Coal, Iron & Railroad Company, Ensley, Ala., for two long crosshead blowing engines, with steam and air cylinders 84 in. in diameter and 60 in. stroke. These low pressure engines will be compounded with steam high pressure engines now doing duty in the Ensley plant, and which this company furnished some time ago. The Mesta company now has 24 engines of this type in operation at the Ensley plant, and those just ordered will make a total of 26, the largest installation of engines in any one place in the country by a single concern. The Mesta company also has a contract for the building of a 600-ton metal mixer for the Ensley plant, which will undoubtedly be the largest metal mixer in operation in the United States, the ones now in use being rated at 300 tons capacity per day. The machinery will be operated by hydraulic pressure, and will consist principally of cast steel, the large lockers weighing about 60 tons each. The shell will be made of heavy steel plates and will be furnished by John Mohr & Son, Chicago.

Notices have been posted at all the mills of the Carnegie Steel Company in the Sharon District announcing a readjustment of wages in all departments, taking effect January 1, 1909. Whether there will be any reduction in wages of the men will not be known until the schedules are made out in December. Under the terms of the scales under which the men work three months' notice is required for either side before a change in rates can be made.

A Pennsylvania charter has been granted to the Bethlehem Steel Products Company, Bethlehem, Pa., a corporation said to have been formed to act as a selling agent for the Bethlehem Steel Company. The capital of the company is nominal. The three incorporators named are President Archibald Johnston of the steel company, Barry H. Jones and Eugene G. [illegible] of [illegible]

# The Machinery Trade.

NEW YORK, October 14, 1908.

The demand for machinery the past week was very light, and in view of the spurt in business a few weeks ago, at which time it was hoped that a steady improvement had begun, some houses are discouraged by the scanty orders and inquiries received. Few of the large interests appear to be active, and some of them that have practically placed orders for machine tools are withholding the final details, so that the orders cannot be entered and shipped. A greater tendency to hold off until conditions improve has developed, and consequently no new propositions of magnitude have come up that will require the immediate purchase of any considerable amount of machinery. The trade is much interested in the plans of the Erie Railroad to electrify part of its system for suburban travel, and while the project will call for the purchase of a large amount of mechanical equipment, it will be some time before that part of the work will be reached. Supply dealers, especially those who handle power plant accessories, report an exceedingly light demand.

The demand for small power equipment is not as good as the trade was led to expect from the inquiries that came in last spring and early in the summer. The proportion of orders resulting from the inquiries made in the trade was small as compared to the usual results, and this, it is said, is largely due to the fact that many buildings which were projected for erection this fall are not to be constructed for a time at least. Power men who follow the situation closely in this respect state there were many disappointments among prospective builders, chiefly because of the fact that they were not able to finance their ventures. This does not mean that the projects were entirely given up, and the trade is hoping now that in the spring there will be more money in circulation and the plans of the real estate and construction operators will mature.

### National Machine Tool Builders' Convention.

An interesting programme has been arranged for the fall meeting of the National Machine Tool Builders' Association, which will take place Tuesday and Wednesday, October 20 and 21, at the Hotel Imperial, New York. Fred L. Eberhardt, president of the association, and the other officers have made extra efforts to make the meeting an attractive one to the members, and besides the usual committee reports and the annual election of officers there will be a number of addresses on subjects of live interest to the trade. Capt. Godfrey L. Carden, who has been traveling in Europe for the Bureau of Manufactures of the Department of Commerce and Labor investigating machine tool business, especially in the Continental countries, will make an address detailing the machine tool situation there, and J. W. Carrol of the *American Machinist*, who has also recently been among machinery men in Europe, will talk along the same lines. Harrington Emerson, engineer, 30 Church street, New York, will make an address on the subject of the system of paying employees, and he will refer to various methods of offering employees a bonus and other paying systems.

The American Street & Interurban Railway Association is holding its twenty-seventh annual convention at Atlantic City, N. J., and there are a large number of exhibits on Young's Pier of material used in the construction and operation of street railroads.

### Erie Railroad's Electrification Plans.

Plans are being prepared by the the Erie Railroad engineering department for electrifying a section of the company's New Jersey service, and this will result in the purchase of power equipment and other machinery and equipment aggregating several million dollars. The estimates now being made up provide for electrifying the system to Suffern, N. Y., a distance of 32 miles, and the indications are that it will not be long before there are some substantial inquiries in this market for machinery and equipment to carry out the project. The statement has been made that E. H. Harriman had pledged $14,000,000 to enable the railroad to electrify more than 100 miles of its New Jersey suburban service, but this has not been confirmed and the report was no doubt based on the fact that several months ago the company's engineers prepared an estimate for electrifying about 120 miles of the company's system, which would then have cost something like that sum. It is not thought by the Erie engineers that the construction of 32 miles of road will necessitate a proportionate expenditure of the original estimate, and with a view to obtaining an idea as to the exact amount of the proposed expenditure new specifications and estimates are being prepared. It is stated that it is it is admitted by Erie officials that the construction of 32 miles of road now being estimated upon will be begun as soon as the engineering details are completed. In addition to the construction material and operating equipment, the company will have to buy some special rolling stock for its electrical system and the trade generally will be benefited by the buying.

Another Erie project that will call for some large purchasing is the construction of new car shops at Hornell, N. Y., a site for which was purchased some time ago. The construction of the shops at that point was put off from time to time during the last few months, but now it is stated that at least some of the work will be done during the winter months, while the shops may be completed some time next year.

Some large purchasing has been done of late by the Tennessee Coal, Iron & Railroad Company, which, it is understood, is for the company's furnaces and steel plant at Ensley, Ala., where it was announced $2,000,000 is to be spent for improvements. These improvements include the remodeling and rebuilding of three furnaces, each of which has a capacity of 235 tons a day and which are to be increased to a capacity of 385 tons a day. A 600-ton mixer is to be installed in the steel plant, together with considerable electric machinery and equipment for an electrical repair shop. The specifications also include blowing engines and a water purifying plant.

Victor Beutner, a prominent engineer of Pittsburgh, Pa., under whose supervision manufacturing plants aggregating in value $40,000,000 have been constructed, has several contracts on hand for Portland cement plants, for the equipment of which a large quantity of machinery will be required. One of the recent contracts secured is that for the construction of a 3600-bbl. plant for the Lumberman's Portland Cement Company, whose offices are in the R. A. Long Building, Kansas City, Mo. This company, which is composed of prominent lumbermen of the Middle West, owns extensive lands at Carlyle, 5 miles north of Iola on the Atchison, Topeka & Santa Fé Railroad, the lime rock and shale deposits on which are identical with those used by the Iola and Kansas Portland cement companies. It owns extensive natural gas territory and natural gas will be used for fuel. The plant will contain five 8 x 125 ft. rotary kilns operated under the dry process. The type of grinding machinery to be used will not be determined until a thorough trial has been given the Kent mill and air separator installation in the Altoona Portland Cement Company's plant, for which Victor Beutner is also engineer. The plant of this latter company is about finished and will be shortly placed in operation. This plant is of 2500 bbl. capacity, and its complete construction and equipment in six months is believed to be a record. Mr. Beutner has also plans for a 3600-bbl. plant for the Union Portland Cement Company, which owns large mineral deposits and gas rights at Gas, Allen County, Kan. It is expected that ground will be broken for the Lumberman's Portland Cement Company within the next 30 days, and for that of the Union Portland Cement Company early next spring.

Contracts have been let for the steel work and construction of the new plant to be erected by the Heine Safety Boiler Company, St. Louis, Mo., and which has been previously referred to in these columns. This plant will necessitate the installation of a large number of additional machine tools, which, with the power plant equipment, have not yet been purchased.

E. D. & A. F. Cronk, 9 Liberty street, Utica, N. Y., will purchase a 3-ton hand power traveling crane, with 100 ft. of track and two switches, for the new machine shop they are to erect. They will be ready for bids in about three months for one 18 in. by 6 ft. lathe, one medium size shaper and one 24-in. boring mill.

There have been some inquiries in the market of late from the Public Service Corporation of New Jersey, Newark, N. J., made through J. T. Whittlesey, chief engineer of the company. The inquiries are chiefly for small lots of equipment to be added to the company's various shops.

The Standard Water Meter Company, Flatbush, Brooklyn, N. Y., has reorganized, with a paid in capital stock of $100,000, and intends to increase largely its production by the installation of additional machinery. The company has purchased considerable new machinery the past week.

The Standard Oil Company has been placing orders for material for an addition to its Pratt Works at Long Island City. It is understood that all of the power equipment has been ordered.

Bids will be opened at the office of the Department of Public Charities, foot of East Twenty-sixth street, New York, October 26, for supplying equipment for a combined steam and formaldehyde disinfecting system for the new municipal lodging house on Twenty-fifth street, near First avenue, and the equipment will include the usual chambers and retorts. Separate bids will be taken on vacuum air pumps, motors, separators, air filters, &c.

### Business Changes.

Foundry & Machine Company, Waterbury, Conn., which has been represented in New York by Ernest T. Matthewson, who is now a member of the first named concern.

## Cleveland Machinery Market.

CLEVELAND, OHIO, October 13, 1908.

The past week has been a very quiet one with the local machine tool dealers. No orders of any size were taken and no large inquiries developed. The falling off in sales as compared with the few previous weeks is due largely to the fact that practically no further orders have come from the automobile builders who have been the life of the market for the past six weeks or more. The political campaign is having considerable effect on the machinery houses. Manufacturers, as a rule, are holding off until the result of the election is known before placing their orders. Buying during the week has been limited mostly to single tools. Tool builders whose recent improvement in orders has been due to the automobile trade are similarly affected and report fewer orders, while builders of machinery not used in making automobiles report conditions about the same as they have been during the past month or so. Nearly all the automobile makers have finished their buying for the season and not much business is expected from this source during the next few months.

While more activity is looked for after election, the majority of the dealers and builders are not expecting a great deal of improvement in the demand for machine tools before the first of the year. Tool manufacturers, however, are confident that better times will soon be here, and the majority of them are building tools for stock. The demand for second-hand tools continues fairly good, but the supply of good second-hand tools is scarce.

Builders of heavy handling machinery report some improvement in inquiries. There is a better demand for locomotive cranes, orders coming almost entirely from industrial plants. Practically no inquiries are coming from railroads for heavy machinery or locomotive cranes. Makers of heavy forgings report business very light owing to the absence of orders for railroad work and from shipyards. Inquiries for steel castings are better, but competition is resulting in the quoting of very low prices. The general foundry situation remains about stationary, the majority of the jobbing foundries running about one-half of their capacity. Orders are mostly for small lots of castings for immediate needs.

Outside of machinery lines the general situation with manufacturers continues to improve in a majority of industries.

The fifth annual "acquaintance excursion" of the Cleveland Chamber of Commerce was held on October 7. About 350 business man took part in the trip to Newburg, were they visited the plants of the American Steel & Wire Company and inspected the territory along the Upper Cuyahoga River, which is expected to develop into an important manufacturing district. The plants of the American Steel & Wire Company through which the visitors were shown by officials of the company were the Newburg Steel Works, the Central Furnaces and the new Cuyahoga plant, which is nearing completion and will be ready for operation in a few weeks.

The Cleveland Punch & Shear Works Company has recently received an order from the Western Steel Car Company, Chicago, for considerable machinery equipment for that company's new shop. The order includes two large multiple punches, each weighing over 100,000 lb., and a number of horizontal and vertical punches. The company has also received an order for several punches and shears for the Albany shops of the New York Central Railroad.

The Fitzsimons Company, Cleveland, has been incorporated with a capitalization of $250,000 to manufacture shafting. Thomas G. Fitzsimons, who has been engaged in the manufacture of shafting for several years under the name of Fitzsimons & Co. and others are the incorporators.

The Akron Heater Company, Akron, Ohio, has been incorporated with a capital stock of $5000 by Will C. Scott and others to manufacture heaters, radiators and stoves.

Bids for a double drum cylinder Corliss hoisting engine and for four 150-hp. marine boilers have been received by John W. Seaver, engineer, for the ore property that is to be opened up by the Tod-Stambaugh Company, Cleveland, at Hibbing, Minn. It is expected that specifications will be prepared and bids received soon for the other machinery equipment for the mine.

The Western office of the Waterbury Farrel Foundry & Machine Company, 1012 Williamson Building, Cleveland, reports that the orders taken in that office during the third quarter of the year were more than double those received during the first six months. Among recent orders taken by this company was one from Theodore Kundtz, Cleveland, for considerable special machinery for the complete equipment of a shop for the manufacture of general hardware used in

received an order from the Park Drop Forge Company, Cleveland, for two hammers and one press for additional equipment for its forge plant. The order for the hammers was placed a year ago, but was cancelled during the period of depression. The Waterbury Company has also taken an order for two large bolt machines for shipment to the Pacific Coast.

## Chicago Machinery Market.

CHICAGO, ILL., October 13, 1908.

Business in machinery shows no distinct improvement, and the demand continues irregular and intermittent in all lines. October has not opened as auspiciously with the machine tool trade as the movement in the last two weeks of September seemed to promise. A little spurt in that period brought out an increased number of small orders, and inspired hopes that it might prove the beginning of much desired permanent betterment for which all are watching. Last week's transactions included only a moderate lot of small orders, which, as a rule, comprised one or two tools each, there being few sales covering a larger assortment of equipment. The most important sale reported was one amounting to about $4000 made by a Canal street dealer, which represented the requirements of a manufacturing plant. Since the appearance of the recent list of tools for the St. Paul Railroad, which was mentioned in these columns a few weeks ago, and bids on which are now being considered, nothing of any consequence has come into the market from the railroads. Even the desultory orders from such sources are so scarce as to be almost a negligible factor. It is recognized, however, that on every hand there is a strong inclination on the part of industrial interests generally to hold plans in abeyance until next month, at least, and for this reason developments of pronounced interest are not looked for in the meantime.

Some of the larger producers of prime movers in heavy motive power equipment are fairly busy on orders from new steel mills and furnaces, and other strongly financed industries, which were in position to carry forward projected plans in face of adverse financial conditions. While most of the heavy contracts of this kind were placed months ago, they have furnished work at a critical time and have helped to fill shop capacities that must otherwise have been idle. A conspicuous example in point is the new steel plant of the Indiana Steel Company at Gary, Ind., in which a large amount of the machinery equipment has been installed; much more will, however, be required before it is completed.

Forecasts of new business for the immediate future cannot, of course, be safely predicted upon expectations of a demand arising from similar undertakings of like magnitude, but a general extension of activities, such as is hoped will soon develop, will more widely distribute the benefits of new machinery requirements.

All of the switchboard apparatus for the new mills of the Indiana Steel Company at Gary, Ind., is being furnished by the Western Electric Company, Chicago. Installations already completed amount to $150,000, and the execution of the entire contract will approximately double this sum. Some departments of the Western Electric works at Hawthorne are running practically full and the plant as a whole is a little better occupied than it has been for some months. Work on the new additions, which include three large buildings, is being carried steadily forward. The steel work of one structure is now nearly in completion and the others are under way.

The National Wire Cloth Company, Niles, Mich., has secured a new factory site upon which it has decided to erect a new plant. The main building will be of concrete and brick construction, 120 by 300 ft., with saw tooth roof, in addition to which there will be auxiliary buildings for the power house, warehouse and other uses. Motive power for the plant will be furnished either by a gas producer plant or by electrical current supplied from an established central station. This question is now under consideration and the company is investigating various types of gas producers designed for such service. Individual motor drives will be arranged for the operation of the machinery as far as possible, and considerable equipment of this and other kinds will be required to bring the plant up to the modern standard contemplated in the plans. In its arrangement the new plant will be designed to house the National Cable & Mfg. Company, an organization closely allied to the National Wire Cloth Company, which manufactures cables for lightning rods and other conductors of electric current.

The Armstrong-Blum Mfg. Company, Chicago, has designed and will soon have ready for the market a new tool in the form of a tool post grinder fitted for attachment to lathes and planers. This tool is arranged for adjustment to lathes or planers of any kind or size, and is driven from the cone on a lathe over a drum pulley supported by a frame attached to the machine. When used on a

able speeds are supplied by the cones when operated as a lathe attachment, and the lathe may be used for other work without removing the grinder frame. It is designed especially for service in general machine shops for increasing the range of work practicable with standard equipment. The company is also preparing patterns for, and soon will be able to furnish, a larger size of its Marvel hack saw. The new pattern will accommodate blades from 14 to 17 in., and will have capacity for cutting 6 x 6 in. bars. It will be ready for the market in about two months.

The E. L. Essley Machinery Company, Chicago, has secured the exclusive agency in Chicago territory for the 20-in. upright drill made by the Barnes Drill Company, Rockford, Ill. This tool was described in *The Iron Age* of April 30, 1908. The company has also been appointed Chicago agent for the improved automatic high speed hack saw made by the Racine Gas Engine Company, Racine Junction, Wis.

Bids will be received until November 2 for machinery equipment required for the new City Hall, Chicago, on which the preliminary work of construction is now in progress. The machinery embraced in specifications on file at the office of Holabird & Roche, architects, Monadnock Building, Chicago, includes boilers, engines, pumps, elevators, refrigerating apparatus, generators, dynamos, and all the auxiliary appliances necessary for a complete light, heat and power station Specifications call for six boilers in all, five of which will be of the water tube type, and one of horizontal tubular type with Dutch oven; the water tube boilers will be equipped with mechanical stokers. The engines will be either full Corliss releasing gear type or semi-Corliss non-releasing gear, four valve type, all for direct connected service; three of them being horizontal cross compound and one horizontal single cylinder; all are required for direct connected service with an aggregate of 1575 hp. The elevator service will consist of 14 main elevators either of hydraulic or electric type, and four direct lift plunger basement hoists. The generator equipment will include one 400 kw., two 250 kw. and one 150 kw. direct connected units. Suitable pumps to operate the system are included in the list, together with an adequate motor driven coal and ash conveyor with weighing hopper. John J. Hanberg is the Commissioner of Public Works.

Two cupolas of notable size have recently been furnished by the Whiting Foundry Equipment Company, Harvey, Ill., to the Standard Cast Iron Pipe & Foundry Company, Bristol, Pa. These cupolas are of the standard No. 12 type made by the company, and have a capacity of from 30 to 35 tons per hour. The shells are 108 in. in diameter and are encircled with wind boxes 150 in., with 10½ in. linings. These are fitted with two rows of tuyeres, there being eight in each row.

The Board of Public Works of Milwaukee has awarded the contract for a new 12,000,000 gal. pump for the North Point Water Works to the Allis-Chalmers Company, after having made a careful investigation of the various bids submitted. The company agrees to have the pump installed and ready for use within nine months. The contract price is $67,000.

## New England Machinery Market.

WORCESTER, MASS., October 13, 1908.

A decidedly more cheerful tone pervades the machine tool trade. The Boston dealers report a week of better business. The volume of orders booked was larger, though one reason for this was the receipt of final ratification of the awards for the Watertown Arsenal list, and of several other lots of some size. The universal report of the dealers is that inquiries look more promising of actual business. Yet, while there is a growing tendency to discount the national election, a hesitation is still noticeable in the placing of machinery contracts, the intervening time being so short that to entirely overlook this element of the market is hardly to be expected.

Among the machine tool builders a somewhat better condition exists, though the change is slight, as might be expected. In a few cases a recent succession of orders which gave decided encouragement has stopped for the time being. But to offset this in considering the trade as a whole other machinery builders are booking more business than they did. The manufacturers speak of their prospects with a good deal greater confidence.

Few of the New England machine tool establishments will be without a representative at the meeting of the National Machine Tool Builders' Association at New York next week. There seems to be an unanimous desire to meet with contemporaries from other parts of the country and discuss matters, especially the outlook as it appears in the various sections. Few questions of importance will be discussed at the meeting, so far as the members from New England have heard. There will be the usual interchange of views as to anxious to place certain appurtenances of their lines on a more equitable basis as to prices, including such items as motor drive. It has been the experience of this branch of the business, as it was with the lathe builders before they accomplished the readjustment, that they are selling what may be called accessories at a loss or at the best at no profit. The interchange of experiences at the meetings of the lathe section resulted in very material advantage to the manufacturers. The planer builders have gone part way in this matter, but they still have considerable to accomplish before they are in a position to get a fair profit on everything that they sell.

The National Supply and Machinery Dealers' Association is agitating the matter of adherence to resale prices. It is claimed that not all of the dealers are carrying out this principle. A specific case is that of chucks, their manufacturers believing that violations of the resale price agreement between them and their customers are more numerous than they like. The most important individual instance of this sort proved to be a mistake on the part of the dealer, but it is said that in some sections of the country the practice has become somewhat common. The cause of this is the action of purchasing departments in crowding the dealers for lower prices. In New England concessions on the part of supply dealers appear to have been rare. Very few instances occur when the charge is made against a competitor, and cutting prices usually gets to the ears of the trade sooner or later and becomes a subject of comment. In this connection a letter written by a dealer in answer to the inquiry of a manufacturer regarding business conditions gives an interesting sidelight on the experiences of the supply trade. The letter states: "The sales department of many large manufacturing concerns are endeavoring, in every way possible, to induce jobbers to replenish their stocks. The purchasing departments of some of these corporations do not give the jobbers much encouragement. If all of them would let loose the requisitions they are now holding up, distributing them among jobbers like ourselves, we do not think it would require much persuasion on the part of their sales departments to get the jobbers to stock up liberally. The sales departments of most manufacturing concerns tell us that business is going to revive and to send in our orders. When our salesmen call on their purchasing departments they tell us that they are buying only what they actually need and that their present requirements are limited."

It should be stated that the supply trade has began to pick up, and there are signs of a return to normal conditions of buying on the part of its customers. Orders received appear to indicate the beginning of the end of the hand to mouth practice which has been followed for the last year.

The Becker Milling Machine Company, Hyde Park, Mass., which recently took over the business of the Becker-Brainard Milling Machine Company, has organized, with Eugene N. Foss as president, John Becker, treasurer and general manager, and Elmer P. Howe, secretary.

The Chase Rolling Mill Company, Waterbury, Conn., brass manufacturer, will build a one-story addition, 60 x 220 ft., of brick and steel. The new building will take care of a natural growth of the business, providing an extension of rolling mill facilities on ordinary lines of product.

The Foster-Richardson Company, Westboro, Mass., manufacturer of metal bedsteads, will require no new equipment for the new section of its plant which will replace that recently destroyed by fire. The building will be 30 x 65 ft., two stories.

Alvah B. Way has resigned as secretary and treasurer of the new Peck & Way Mfg. Company, which will manufacture small springs at Forestville, Conn., a suburb of Bristol. Mr. Way was recently with the Wallace Barnes Company, Bristol.

The Simplex Mfg. Company, Granby, Conn., will move to Thompsonville, Conn., where it will occupy a building which will be fitted for the purpose. The company is in the market for metal shears for stripping ⅛-in. sheet stock, power presses, motors for group drive in operating machinery, ball bearing shaft hangers, gas forging and tempering furnaces, and heating apparatus for building.

William B. Boardman, receiver of the Mechanical Toy Movement Company, Bridgeport, Conn., manufacturer of talking machines, states that it is very unlikely that the company will ever resume business. The factory equipment and unfinished parts of the product will be sold.

The Schleicher & Sons Piano Company, Stamford, Conn., requests a denial of the report widely published in the daily press that it plans to erect a large factory building. The present plant is ample for the company's needs.

The Prentiss Tool & Supply Company has taken the exclusive agency for the grinding machines of the Heald Machine Company, Worcester, Mass., for New York and New England, including the branch offices at Syracuse and Buffalo.

The Heald Machine Company, Worcester, Mass., has brought out a new ring grinder which differs from the previous type in that it is equipped with hand instead of power

is the advantage of the hand feed in grinding narrow surfaces.

The brass industry of Waterbury, Conn., and the rest of the Naugatuck Valley shows a very marked improvement. Practically all of the works are back to full running time, and the forces of some of them, perhaps the majority, bring production close to the normal. Here are some of the answers to direct inquiry as to conditions:

Chase Rolling Mill Company: "Present conditions are not far from normal, and the outlook is much better than it was a while ago."

Waterbury Mfg. Company, brass goods: "Business has improved over earlier in the year. Trade has been fair this fall, say, two-thirds of a business for this company."

American Ring Company: "Business with us during the last six weeks has shown a decided improvement, which leads us to hope for a normal condition before the first of the year. For the past three weeks we have been running full time with a gradually increasing force."

Waterbury Clock Company: "Our business of the last three months has been very satisfactory, approximating our normal business."

American Pin Company: "We have one or two departments which were very much behind, and are running overtime for a week or two. We are approaching full business."

Oakville Company, wire and metal goods: "The volume of business in what we call our 'cutting-up shops' has increased and is still increasing. Some departments have felt the revival to a marked degree and are running to their full capacity. Others are still doing but 60 to 75 per cent. of their normal business. Should the present rate of increase continue, say two months longer, it would give business equal to that before the depression."

Noera Mfg. Company, brass specialties: "Business has improved remarkably since September 1. In fact, we have quite a number of orders for goods to be manufactured for spring delivery; this notwithstanding the fact that some of the jobbers stipulate that these goods are to be shipped only in event of Taft's election."

Berbecker & Rowland Mfg. Company, furniture hardware: "We find the condition of business somewhat better and are running our works full time."

## Cincinnati Machinery Market.

CINCINNATI, OHIO, October 13, 1908.

Drifting along with a careful and tender regard for all signals of a hopeful nature the machine tool builders of this section, while not yet as a class anywhere near normal in hours and forces, are making ready for what is expected to be one of the most substantial buying movements ever experienced in the trade. Signs pointing to such a consummation are, in the minds of the larger manufacturers, plentiful. The rapid absorption of idle car accumulations, the wonderful growth of automobile industry everywhere, and evidences in correspondence that substantial specifications are held up all over the country waiting the result of the election, and ready to be released the minute the results of that election are known and satisfactory, develop these reflections. The war talk also suggests some returns in the tool line. Large manufacturers in this district have profited many thousands of dollars through various wars abroad.

One large manufacturer in this district has compiled a list of specifications for equipment amounting to $12,000, and this, he says, will be placed if the election results as he anticipates and desires. Another here has one for $5000, and others announce themselves to the same effect. If this same plan is carried out in other trade centers the results are obvious.

The largest local machinery sales concern reports business showing a slight betterment, with prospects improving daily. This concern has several important lists of specifications on which it is figuring. Late inquiries indicate a growing interest in standard lines of milling machines and special machinery. Inquiries for second-hand machinery do not show material gain, at least not in a commensurate ratio with those for new tools.

Acting Chief Engineer of the Water Works Commission Benzenberg has completed his computations on the first list of tool specifications announced, and the awards have just been made. These show that competition was close and bidders were widely distributed. The estimate on the list of 12 items comprising 22 tools was $13,000. The successful bids foot up $10,159. Practically the entire list was taken by Cincinnati manufacturers, although a few items were negotiated by selling agents in other cities and territory. For instance, the 36-in. engine lathe specified for the Main Station in item No. 1 was a Lodge & Shipley, but furnished by the Motch & Merryweather Machinery Company, Cleveland. This bid was $2427. Item 2, an 18-in. engine lathe, went to the American Tool Works Company, Cincinnati, at its bid of $1102. Items 3, 4, 5, 6, 9 and 12, 16-in. engine lathe, 14-in. engine lathe, 30-in. metal planer, two 16-in. shapers, 18-in. upright drill and an emery wheel floor stand, went to the E. A. Kinsey Company, Cincinnati. The 16 and 14 in. engine lathes, items 3 and 4, respectively, went at $888 and $714, the products of the R. K. Le Blond Machine Tool Company, Cincinnati; item 5, one 30-in. metal planer, will be furnished by the G. A. Gray Company, Cincinnati, the price, $1350; item 6, two 16-in. shapers, are built by the Queen City Machine Tool Company, the price, $1150; item 9, one 18-in. upright drill, a product of the Cincinnati Machine Tool Company, the price, $246. Item 12, for one emery wheel floor stand, built by the Brickford Safety Emery Wheel Company, the price ,$98.70. Item 7, two 48-in. radial drills, was secured by the Fosdick Machine Tool Company, Cincinnati, at $1864. Item 10, three 20-in. wet tool grinders, will be furnished by Manning, Maxwell & Moore, the price, $425. Item 8, calling for three 20-in. upright drills, amounts to $799.50, and went to the Queen City Supply Company. The tools will be driven by belt motor drives built by the Cincinnati Machine Tool Company.

At the plant of the Lodge & Shipley Machine Tool Company evidences multiply of an aggressive policy and expectations of an improved market. Workmen are just finishing the laying of a heavy oak floor in the new 90 x 200 ft. concrete addition to the main building, which now measures 650 ft. in length, and is one of the finest and best lighted shops in the district. The new addition will be known as the erecting shop.

At the various foundries evidences accumulate of increased melts, and a few workmen are added from time to time. A number of foundrymen also have made, and are making, additions and improvements. At the new plant of the John J. Bruce Foundry Company, on Colerain avenue, the new concrete pattern building has been completed, and the details of handling and storing the patterns worked out. The new building is a splendid example of this type of fireproof construction, 40 x 50 ft. in size, and admirably adapted to the purpose. The company is running a heat daily of from 12 to 15 tons each. It is the intention to build an addition soon in which to locate the planers and other tools.

The Steptoe Shaper Company has sold a 16-in. single gear shaper for shipment to Denver, Colo.; 14-in. to New York, and another, a 16-in. single gear, to go to Buena Ventura, South America. President Broxterman notes that September closed admirably with his concern and is quite optimistic on future possibilities.

A letter from Secretary-Treasurer C. E. Drury of the Eureka Castings & Machine Company, a newly incorporated concern at Dayton, Ohio, verifies published statements of the taking over by that concern of the business of the Eureka Foundry Company. The new company is capitalized at $25,000 and the officers are: J. E. Zimmerman, president and general manager; W. H. O. Ryan, vice-president, and C. E. Drury, secretary-treasurer. The company will make a specialty of high grade gray iron castings.

Isaac Phelps, E. C. Phelps, and Mrs. Blanche Scarlett Phelps have incorporated in Covington, Ky., the Phelps Iron & Steel Company. The capital is fixed nominally at $4000.

Tool and machinery manufacturers in this territory generally are interested in the expected report in a few days from the railroads which will define the question of consolidation of carload shipments at car rates. It was thought to have been settled to the satisfaction and in the interests of the manufacturers at one time recently, but was held up again, and is now in the hands of the Receivers' and Shippers' Association.

President Fred. A. Geier of the Cincinnati Milling Machine Company is leaving Europe, and is expected in New York a day or so before the convention of the National Tool Builders' Association, which will meet October 20 and 21, at the Hotel Imperial, and which he will attend. The heads of practically all the larger establishments here will attend this meeting, which is expected to be a more than ordinarily interesting one. It is quite certain that the price question will be a leading topic at the meeting.

## Philadelphia Machinery Market.

PHILADELPHIA, PA., October 13, 1908.

The celebration of the 225th anniversary of the founding of the city of Philadelphia, which lasted throughout the week, resulted in a virtual suspension of business in many directions. The members of the Local Supply & Machinery Association decided to close their business places every afternoon except Saturday, and the same policy was followed by a number of manufacturers. Others closed every alternate day, so that it can readily be seen that business was largely suspended. Such trade as developed was mostly from out of town sources. One concern, whose plant was recently destroyed by fire, placed orders for several thousand dollars' worth of new equipment, and is about ready, if it has not already done so, to place orders for even a larger amount. Inquiries have not been plentiful, the disposition of the trade

at large continuing along lines of extreme conservatism. Some few orders have been placed, subject to countermand should the coming election result unfavorably to the buyers' views, but in a majority of instances prespective buyers refuse to make any purchases until after the result of the election is known, except in cases of urgent need, where equipment is required to carry out work for which orders have already been placed. Few are willing to hazard an opinion as to the return of normal conditions. Some who have booked a fair amount of business, which in most cases is confined to equipment of a special character, rather than for that of the so-called standard tools, talk very optimistically, but even then their views are based on a favorable election.

The railroads still maintain a waiting policy, and nothing of any moment is expected to develop from that direction during the current month.

Manufacturers as a rule make no important gains in production. Here and there a maker of special tools reports increased activity, in one or two instances running up to 75 per cent. of normal capacity, but these cases are exceptional, in the majority of instances 50 to 60 per cent. representing the average, while quite a large number have not yet reached the 50 per cent. mark. The situation on the whole does not show much betterment as far as actual work is concerned; some improvement, however, is expected during the closing months of the year. Quite a fair lot of equipment for the Government will probably come out during that time, but it is now pretty generally believed that it will be well into next year before we will be able to report conditions as having returned to the normal.

Foreign demand still drags, no important inquiries having developed, and such business as does come out is usually small and of a special character.

The second-hand machinery market has reflected strongly the general condition of the trade. The business transacted has been along narrow lines, interrupted to a considerable extent by local conditions.

The demand for castings, both iron and steel, continues irregular. In some instances a betterment is to be noted, but in others the orders received are individually unimportant. Foundries as a rule have been melting more material, but the gains made have not been in the direction of machinery castings.

The Philadelphia Rapid Transit Company is having plans prepared under the direction of Chief Engineer W. S. Twining for an addition to its car barn at Twenty-sixth street and Allegheny avenue. The new building will be of reinforced concrete, 80 x 500 ft.

The Harlan & Hollingsworth Company, Wilmington, Del., is understood to have about completed plans for a new building to be used for the manufacture of steel cars, according to a scheme of expansion outlined some time ago. Details are not available, but it is believed that the building will be of structural steel and brick construction.

The Eynon & Evans Mfg. Company reports business to have increased steadily in July, August and September, the last month showing the more consistent gain. Orders have been small individually, but in good number and some departments of the plant are now fairly well occupied. There has been a decided improveemnt in the demand for steam jet blowers; some good business pending in this department, and the outlook on the whole is considered encouraging.

The Royersford Foundry & Machine Company, Royersford, Pa., reports business in the machinery line in August and September to have shown a considerable improvement over the preceding two months. The plant is working about two-thirds time, with about two-thirds its regular force, and has booked quite a few orders recently for punch and shear machinery.

The Link Belt Company, Nicetown, reports a continued run of small orders, with occasional bookings of large propositions, including, among others, a large monobar chain conveyor for coal mining purposes, and three conveyors and a steel tank equipment for another coal concern, both in this State. Orders for some extensive belt conveyors for phosphate handling have been received from the South, while special conveyors for wood refuse are to be furnished New York customers, and a special ammunition carrier chain has been ordered for New England delivery.

The R. S. Newbold & Son Company, Norristown, Pa., has recently booked some considerable orders for blast furnace equipment, including a large order for gas stoves, mains and piping for a furnace in the central part of the State, also a good order for gas mains, down comers, valves, &c., for a nearby furnace, and two large scrubbers for a gas plant in the Middle West. These orders will keep the boiler shop department of this company's plant busy for the balance of the year, as well as giving considerable work to the foundry and machine shop departments. About 75 per cent. of the normal production is now being made by this concern.

The Hilles & Jones Company, Wilmington, Del., advises us that new business booked in September showed some little increase over that of the previous month. More inquiries have come out, and the situation is believed to be better. Among recent contracts secured the following are to be noted: Boiler shop equipment, including punching and shearing machines, plate planers, &c., for the new boiler shops of the Bath Iron Works, Bath, Maine, to replace that destroyed by fire; sundry punches, shears and bending rolls of large size for several of the large railroads, including the New York Central and the Delaware, Lackawanna & Western Railway, from the Maryland Steel Company's Marine Department, Sparrows Point, Md., a heavy plate edge planing machine to plane 36 ft. at one setting. A notable shipment by the Hilles & Jones Company recently included a boiler shop outfit, including punching and shearing machines, plate bending rolls and flanging clamps for export to Cuba.

## Government Purchases.

WASHINGTON, D. C., October 13, 1908.

The Isthmian Canal Commission will receive bids until November 2, Circular No. 473, for pneumatic hoists, pipe threading machine, back geared shaper, motor driven grinder, electric drill, band saws, planer, jacks and other supplies.

The Bureau of Yards and Docks, Navy Department, Washington, will receive bids until November 14 for a coal and ash handling plant for the power plant at the Charleston Navy Yard.

The time for opening bids for four beam and four chamber cranes for the Isthmian Canal Commission, Circular No. 467, has again been extended from October 17 to October 27.

The following bids were opened October 5 for supplies for the Isthmian Canal Commission, Circular No. 466:

Class 16.—One duplex horizontal feed pump—Bidder 41, Fairbanks, Morse & Co., Chicago, Ill., $88; 42, Fox Bros. & Co., New York, $74.49; 46, Gardner Governor Company, Quincy, Ill., $98; 78, Manning, Maxwell & Moore, New York, $82.65; 81, Meyer Brothers, New York, $125; 86, Motley, Green & Co., New York, $90; 87, National Electrical Supply Company, Washington, D. C., $115; 109, H. A. Rogers Company, New York, $98.75; 142, Henry R. Worthington, New York, $79.

Class 17.—Two rotary force pumps—Bidder 42, Fox Bros. & Co., New York, $16.78; 51, Goulds Mfg. Company, New York, $26; 77, Manhattan Supply Company, New York, $24, $34 and $40; 85, Montgomery & Co., New York, $17, $20, $24, $66.60, $75.60 and $85.40; 86, Motley, Green & Co., New York, $20; 87, National Electrical Supply Company, New York, $20; 108, J. B. Roach, Brooklyn, N. Y., $18.54; 109, H. A. Rogers Company, New York, $18.98; 141, F. T. Witte Hardware Company, New York, $17.

The following bids were opened October 6 for machinery for the navy yards:

Class 21.—Twelve pneumatic hammers—Bidder 43, Chicago Pneumatic Tool Company, New York, $258; 44, Cleveland Pneumatic Tool Company, Cleveland, Ohio, $300; 45, Columbus Pneumatic Tool Company, Columbus, Ohio, $180; 64, Dayton Pneumatic Tool Company, Dayton, Ohio, $240; 96, Helwig Mfg. Company, St. Paul, Minn., $220; 97, Independent Pneumatic Tool Company, Chicago, Ill., $342; 131, Manhattan Supply Company, New York, $480; 132, Charles W. Mavedell, San Francisco, Cal., $513; 153, George Oldham & Sons Company, Frankford, Pa., $270; 156, Pittsburgh Pneumatic Company, Canton, Ohio, $480; 186, Standard Railway Equipment Company, St. Louis, Mo., $420; 23, Ingersoll-Rand Company, New York, $307.80.

Class 22.—Eleven pneumatic drills and three end spindle pneumatic drills—Bidder 43, Chicago Pneumatic Tool Company, New York, $975; 44, Cleveland Pneumatic Tool Company, Cleveland, Ohio, $835; 97, Independent Tool Company, Chicago, Ill., $917; 131, Manhattan Supply Company, New York, $1257; 132, Charles W. Mavedell, San Francisco, Cal., $1006.80; 233, Ingersoll-Rand Company, New York, $1142.33.

Class 61.—Twenty-five nonreversible pneumatic drilling machines—Bidder 43, Chicago Pneumatic Tool Company, New York, $965.85; 44, Cleveland Pneumatic Tool Company, Cleveland, Ohio, $1347.20; 97, Independent Pneumatic Tool Company, Chicago, Ill., $950.25; 233, Ingersoll-Rand Company, New York, $1211.30.

Class 62.—Twenty-five nonreversible drilling machines—Bidder 43, Chicago Pneumatic Tool Company, New York, $1072.50; 44, Cleveland Pneumatic Tool Company, Cleveland, Ohio, $1423.75; 97, Independent Pneumatic Tool Company, Chicago, Ill., $1026.30; 233, Ingersoll-Rand Company, New York, $1955.31 and $1845.36.

Class 63.—Twenty-five pneumatic drilling and reaming machines—Bidder 43, Chicago Pneumatic Tool Company, New York, $1200.50; 44, Cleveland Pneumatic Tool Company, Cleveland, Ohio, $1628.75; 97, Independent Pneumatic Tool Company, Chicago, Ill., $1105.20; 233, Ingersoll-Rand Company, New York, $1960.04 and $1845.45.

Class 64.—Twelve pneumatic drilling and reaming machines Bidder 43, Chicago Pneumatic Tool Company, New York, $645; 44, Cleveland Pneumatic Tool Company, Cleveland, Ohio, $846.62; 97, Independent Pneumatic Tool Company, Chicago, Ill., $606.20; 233, Ingersoll-Rand Company, New York, $1003.45 and $1075.25.

Class 65.—Forty pneumatic hammers for chipping and caulking—Bidder 43, Chicago Pneumatic Tool Company, New York, $839.50; 44, Cleveland Pneumatic Tool Company, Cleveland, Ohio, $1396; 57, Dayton Pneumatic Tool Company, Dayton, Ohio, $817.36; 97, Independent Pneumatic Tool Company, Chicago, Ill., $809.50; 153, George Oldham & Sons Company, Frankford, Pa., $1508.45; 156, Pittsburgh Pneumatic Company, Canton, Ohio, $745.50; 233, Ingersoll-Rand Company, New York, $1649.48 and $1641.28.

Class 66.—Fifteen pneumatic riveting hammers—Bidder 43, Chicago Pneumatic Tool Company, New York, $465.65; 44, Cleveland Pneumatic Tool Company, Cleveland, Ohio, $823.25; 57, Dayton Pneumatic Tool Company, Dayton, Ohio, $451.38; 97, Independent Pneumatic Tool Company, Chicago, Ill., $394.80; 153, George Oldham & Sons Company, Frankford, Pa., $587.10; 156, Pittsburgh Pneumatic Tool Company, Canton, Ohio

$444.17; 233, Ingersoll-Rand Company, New York, $699.71 and $699.33.

Class 67.—Eight pneumatic riveting hammers—Bidder 43, Chicago Pneumatic Tool Company, New York, $255.30; 44, Cleveland Pneumatic Tool Company, Cleveland, Ohio, $455.80; 57, Dayton Pneumatic Tool Company, Dayton, Ohio, $223.28; 97, Independent Pneumatic Tool Company, Chicago, Ill., $203.75; 153, George Oldham & Sons Company, Frankford, Pa., $315.40; 156, Pittsburgh Pneumatic Company, Canton, Ohio, $235.51; 186, Standard Railway Equipment Company, St. Louis, Mo., $360; 233, Ingersoll-Rand Company, New York, $338.90 and $31.72.

Class 68.—Fifteen pneumatic holders-on—Bidder 43, Chicago Pneumatic Tool Company, New York, $225; 44, Cleveland Pneumatic Tool Company, Cleveland, Ohio, $258; 97, Independent Pneumatic Tool Company, Chicago, Ill., $226.60; 186, Standard Railway Equipment Company, St. Louis, Mo., $277.50.

Class 69.—Five pneumatic drilling machines—Bidder 43, Chicago Pneumatic Tool Company, New York, $432.30; 44, Cleveland Pneumatic Tool Company, Cleveland, Ohio, $461.25; 97, Independent Pneumatic Tool Company, Chicago, Ill., $309.25.

Class 70.—Five pneumatic drilling machines—Bidder 43, Chicago Pneumatic Tool Company, New York, $432.30; 44, Cleveland Pneumatic Tool Company, Cleveland, Ohio, $499.55; 97, Independent Pneumatic Tool Company, Chicago, Ill., $334.95.

Class 194.—One electric hoist—Bidder 16, Alfred Box & Co., Philadelphia, Pa., $200; 93, Hoisting Machinery Company, New York, $313; 141, Niles-Bement-Pond Company, New York, $740; 225, Yaye & Towne Mfg. Company, New York, $459.

The following bids were received at the Bureau of Yards and Docks, Navy Department, Washington, D. C., October 3, for four 1000 kw. and two 500 kw. turbo alternators for the navy yards:

General Electric Company, Schenectady, N. Y., $119,900; Westinghouse Machine Company, Pittsburgh, Pa., $89,995; Allis Chalmers Company, Milwaukee, Wis., $119,310.

Under bids opened August 10, Circular No. 456, for machinery for the Isthmian Canal Commission, the American Hoist & Derrick Company, St. Paul, Minn., has been awarded class 1, one locomotive crane, $6958, and class 2, two derricks and accessories, $1722.58.

The following awards have been made for machinery for the navy yards, bids for which were opened August 25:

Henshaw, Bulkley & Co., San Francisco, Cal., class 11, one back geared crane shaper, $515.

Handlan-Buck Mfg. Company, St. Louis, Mo., class 12, one drill press, $218.

Vulcan Iron Works, Wilkes-Barre, Pa., class 101, one double end saddle tank locomotive, $5150.

Class 13, one engine lathe, has been canceled.

## Tin Truth.

Under the above title a most interesting 40-page pamphlet has been published by the Follansbee Brothers Company, Pittsburgh, Pa. The purpose of this book, as stated, is to describe clearly and concisely the general conditions governing the manufacture of high grade tin plate, together with the processes, methods and raw materials employed in its making, so that those who read may learn what constitutes high grade plate, what is necessary to its manufacture and how to select it. The information given is set forth under a number of headings, covering the following subjects: The qualities of roofing tin plates; development of the base plate, 1720 to 1908; action of chemical elements in raw material; iron ore supply; making of pig iron; processes for making steel and iron; knobbling process; puddling process; Bessemer process; open hearth process; the Follansbee hammered open hearth process; the finished product.

It will be seen from the array of subjects that practically everything in connection with the manufacture of tin plate has been touched upon. The information given is historical, technical and scientific. The statements and matter set forth are taken from standard authorities which are named. The conclusion arrived at is that open hearth steel is the most suitable material from which to make high grade tin plate. The booklet is profusely illustrated, and will attract the attention of those who are not deeply interested in the technical details. These illustrations are all reproduced from photographs taken in the open hearth works and tin plate mills of the company.

Aeronautics is to be a leading subject at the annual meeting December 1 to 4 of the American Society of Mechanical Engineers in New York city. An exhaustive paper on this subject will be presented by Major George O. Squier, of the Signal Corps, U. S. A., and a popular lecture on the same subject will be given by Lieutenant Frank P. Lahm, also of the Signal Corps, which will be illustrated with lantern views and moving pictures of the

## Trade Publications.

**General Machinery.**—Drew Machinery Agency, Manchester, N. H. The 1908 stock list of the company. Quotes machinery in storage for immediate delivery, which includes a general line of metal and wood working machinery and special equipment, such as laundry machinery, blacksmith apparatus, stave and hoop machinery, &c.

**Condensing Apparatus.**—Alberger Condensing Company, 95 Liberty street, New York. Catalogue No. 9. Size 6 x 9 in.; pages 95. Reviewed in *The Iron Age*, October 1, 1908, but incorrectly referred to as Catalogue No. 8.

**Twist Drills and Chucks.**—Celfor Tool Company, 217 Railroad avenue, Chicago, Ill. Booklet, 21 pages. The Celfor drill, which is essentially a high speed twist drill, is shown and described here and some of its performances are related. The drill is made by twisting a flat bar of steel. It is claimed that the weight of the cutting portion is less than the weight of the cutting portion of a milled drill, and a special chuck is made by the company to hold it. The drill is adapted for extremely rapid work, and a 1¾-in. drill is shown in operation drilling forged connecting rods 8 in. thick, feeding 1¾ in. per minute.

**Tube Expanders and Tube Cutters.**—Gustav Wiedeke & Co., Dayton, Ohio. A combination calendar and price-list recently issued by this company shows several types of tube expanders and cutters made by the company, and contains descriptions and prices. The main illustration is a picture of the largest passenger engine in the world, in use on the Chicago & Alton Railroad.

**Foundry Equipment.**—Whiting Foundry Equipment Company, Harvey, Ill. Catalogues for binder. Size, 6 x 9 in. No. 49, superseding No. 26, deals with trucks and turntables, surface tracks, tramways, frogs, switches, &c.; No. 50, superseding No. 42, illustrates and describes the various types of the Whiting cupola and its accessories, and gives practical hints and general information on the subject; No. 51, superseding No. 40, pertains to the different types of air hoists, air receivers and hose trolleys; No. 52, superseding No. 27, is devoted to brass foundry equipment, such as crucible tongs, shanks, pick-up tongs, brass furnaces, small tumblers, &c.; No. 53, superseding No. 102, is descriptive of the Moyer overhead tramrail system for delivering metal to molding floors, for handling cores and for cleaning room service; No. 54, superseding No. 41, refers to spur geared, roller drive and friction geared tumblers, and exhaust systems, and No. 55, superseding No. 29, to power sand sifters.

**Manganese Steel Castings.**—American Brake Shoe & Foundry Company, 405 Western Union Building, Chicago, Ill. Leaflet. Enumerates and illustrates various castings of manganese steel manufactured for gold, silver, copper, lead, zinc, iron and coal mines, smelters and chemical works. The castings range in size from pinions and sprocket chains to heavy crusher, screen and dredge parts. High carbon specially treated steel castings, and vanadium, chrome, nickel and chrome nickel steel castings are also manufactured for mine and quarry work.

**High Power Millers.**—Cincinnati Milling Machine Company, Cincinnati, Ohio. Catalogue. Size 6 x 9 in.; pages 51. Illustrates an entirely new line of horizontal and vertical milling machines, which are built on the unit system, each group of mechanisms being assembled as a complete unit, and all units interchangeable between the horizontal and vertical machines. These machines are supplied with constant speed belt drive, right angle belt drive, constant speed motor drive, or variable speed motor drive. Change from one to the other is easily made by the owner. Among the new features of the machine are a locked tumbler, the elimination of torsional strains in the main driving shaft, a treadle arrangement to facilitate quick and easy speed changing, and a single plunger trip operating a trip clutch mounted on a shaft running ten times as fast as the feed screw. The vertical machines are similar to the horizontal except that the spindle is in a vertical position. It is unusually long, has its bearings both mounted in a single piece head casting, and this head casting or frame has long and wide bearings on the main frame of the machine. Each size of the vertical miller is intended to do as heavy work as the equivalent size of horizontal machine.

**Drills and Cutters.**—Baldwin Steel Company, 132 Reade street, New York City. Catalogue 6 x 9 in., 81 pages. Describes the drills made by this company, both straight and taper shank and special drills with oil tubes. It also describes and catalogues reamers and the Hodson patented reinforced stay bolt tap. In the line of cutters are such tools as plain milling cutters with inserted teeth, concave and convex cutters, as well as special forms for cutting gears, slots and angles.

**Brass, Bronze and Aluminum Foundry Equipment.**—The S. Obermayer Company, Cincinnati, Ohio. Catalogue. Second edition of a special catalogue of supplies and equipment for brass, bronze and aluminum foundries and special outfits for experimental purposes. Attention is also called to Partamol, which is a new compound for parting molds, and is claimed to be an excellent substitute for lycopodium. It is claimed that

# HARDWARE

THE management of freight matters is both for the State and the individual encumbered with a mass of details that call for careful and even minute attention, but at the same time it has to do with general principles of very wide application. The manner in which transportation is the subject of legislation makes it indeed necessary for a thorough and well posted traffic man to be familiar with the laws which have been enacted and the legal principles which apply in this important field. In taking this broad outlook it should be remembered that commerce is the effort to overcome the inequalities of nature, and to promote the distribution to points near or remote of the material wealth and resources which nature has gathered in her various storehouses. The farmer in Texas or Argentina builds his house with Hammer and Nails which came from the great iron storehouse of the Lake Superior district; and from the same source comes the Wire to fence his fields and the implements to cultivate his soil and harvest his crops. In the same manner the golden harvests of the West, the cotton of the South, and the wealth stored in the water power of Niagara and the rivers of New England are distributed throughout the world through the instrumentality of commerce. The humblest toiler, who has never traveled ten miles from the place of his birth, obtains in exchange for his labor a cup of tea from the latest harvest of Cathay, sugar from Cuba or Hawaii, bread from Dakota, meat from the great "Corn Belt," and coal that ages ago was stored in the ground. Commerce knows no distinction between the peasant and the king, in her distribution of nature's bounty; demanding a fair exchange from all.

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The railway, in the world of commerce, is an instrumentality for overcoming distance and the inequalities of nature. The farmer and the manufacturer find no greater barrier in shipping across the Alleghenies or the Rocky Mountains than they would encounter on the dead level of the Grand Prairie of Illinois, because the builders of railways have created a new geography in which mountains have been reduced to the level of the plain, making a highway in the desert. In a manner even more striking, the railway has overcome the barrier of distance, to such an extent that a box of Hardware can be shipped a thousand miles by rail at the same cost that it could be sent a few miles by horse and dray. The Illinois Hardware merchant who invented Barb Wire, and twisted the first strands with a grindstone while his wife turned the crank, could scarcely have distributed his product 100 miles by wagons, but through the instrumentality of the railway the benefit which his invention conferred upon the farmer has been distributed impartially through every State in the Union, and to every country of the world. The railway taps all the storehouses of nature and of human labor and invention, and distributes their wealth far and wide among the people. Not a little of the dignity of commercial life is connected with the recognition of the facilities which are within reach, and the breadth of the field which is thus opened, giving splendid opportunities for enterprise and skill.

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The Interstate Commerce law, with various amendments enacted by Congress, is an effort on the part of the people to assist by law the equal distribution of the the law is to promote equality in the use of the railroads, giving to the smallest shipper the same service that can be obtained by the greatest, on equal terms as to cost. This ideal has actually been realized, as nearly as any ideal can be worked out in material affairs. The smallest shipper of iron or steel pays the same rates for corresponding shipments as the United States Steel Corporation, which ships each year several millions of carloads of materials and products. An incident in the recent history of this great corporation illustrates forcibly the recognition that is given to the ideal that all shippers should stand on an equal basis. Every employee who handles the traffic affairs of the various enterprises controlled by that corporation received not long since a letter from Judge Gary, its executive head, giving the most emphatic instructions that the law must be obeyed in letter and spirit in all their business affairs with the railroads. Twenty-five years ago a letter of this character would have provoked a smile in the business world, and might have cost the writer his high position unless he could have explained to the directors that it was a mere piece of business strategy; but now it is accepted with general approval and there is no shadow of suspicion that it is not intended in good faith.

## Condition of Trade.

The steady consumption of goods throughout the country, a gradual increase in the movement of merchandise in the various branches of trade, and the more general employment of factory hands are features of the market which indicate the progress which is being made toward normal conditions. The last few weeks, while not bringing a heavy demand for Hardware and Metal products, have certainly witnessed an improvement in the general situation. Manufacturers are free from the pressure under which their works have been run for several years, and are permitted to enjoy the satisfaction which is connected with being able to accommodate their customers by prompt shipments. The moderate quantity in which goods are being bought, both by the large and the smaller trade, involves increased labor in the handling of the business. As there is a near approach to election day more attention seems to be given to political matters, and trade feels to some extent the distracting influence of this diverting of thought and energy. Together with this, there is something of a disposition to await the result of the election and be content for the present to take care of business which comes along in regular course. In the matter of collections there is a good deal of unevenness in the experience of the trade. Money in general continues abundant, but some merchants and manufacturers find collections slow and rather unsatisfactory. With the movement of the crops conditions in the agricultural sections are certainly easier and remittances are giving no ground for complaint.

### Chicago.

It is hardly to be expected that the spirit of conservatism which has dominated commercial transactions for months past should experience any radical change just now. It is well, perhaps, for the business interests of the country that it should not; for it is manifestly a safer and better policy to run at a cautious speed until the signal lights show clear ahead. The wisdom of this

well as other lines, for whatever improvement there is in the movement of goods is to a very great extent the result of increased consumption of the lines affected. The demand for seasonable goods continues fairly active, and because of a simultaneous rush of orders for certain articles required to supply the needs of winter trade, jobbers are under the necessity of shipping some of them short. While, as a whole, there is no marked increase in the general volume of business, the trend is steadily toward improvement. However, it should be observed that the business of many of the Western jobbers has suffered comparatively little diminution, so that, even now, the situation for them is not such as to avoke serious complaint. Nor, indeed, is any heard, save as it is expressed, in a desire for full restoration of confidence and the re-establishment of normal conditions in all branches of trade and manufacture. The continuation of building operations in the city of Chicago upon a plane, but little below that of last year is reflected in a fair degree of activity among local Hardware dealers. The class of buildings being erected call chiefly for medium grades of Builders' Hardware, such as are commonly used in the construction of dwellings, apartments and business houses of moderate size. As indicated by the issue of building permits for nine months ending September 30, the total cost of buildings in Chicago for 1908 was $45,779,065, as against $46,424,880 for the corresponding period of 1907. The difference in value in favor of last year is less than 1½ per cent., while the record for this year shows a distinct gain in number of buildings and frontage covered. The effect of this activity is also seen in an improved local demand for Builders' Tools, which are reported to be moving more freely than for some time. Altogether, the outlook is by no means discouraging, and the feeling among the Hardware trade is, that as soon as the distractions of politics have been cleared away, the fundamental prosperity of the country will assert itself in renewed industrial activity.

## St. Paul.

FARWELL, OZMUN, KIRK & CO.—Trade has continued since our last on about the lines expected. The weather has been very favorable for threshing and marketing the crops, and the movement of grain to market is phenomenal. Another feature connected with it is the unusually large amount of wheat that is now going forward direct to foreign ports, which shows that the grain is wanted and wanted now. This enables the terminal elevators to relieve the local elevators, and they, in turn, are able to reduce the stock in hands of the farmers.

This unusual condition of the market has also had a very favorable effect on prices, thus steadying and holding them firm in the face of an unprecedented movement of grain. Ordinarily, such a movement would insure a considerable fall in prices, while this fall the prices have been firm, and the farmers, and not the speculators, are getting what the grain is really worth.

In these conditions collections cannot be otherwise than good, and the prospect now is that generally throughout the Northwest, collections will be satisfactory, and at end of the year accounts will be better paid up than they have been for several years past.

Trade may not show quite so much improvement as collections do, but it is in healthy condition, and may fairly be considered normal. This, too, notwithstanding the country is within less than a month of the Presidential election. This election does not disturb the Northwest as much as did 1896 and 1900. Still trade in certain lines is affected, and will stay so until the decision is made and perhaps longer. We believe that the opinion of the great body of intelligent business men is that if Mr. Taft be elected business will respond favorably, and that we may reasonably expect a period of more than usual activity to follow. The conditions of business are certainly favorable for this result. If the election should go in favor of Mr. Bryan, it is also believed by them to be quite as certain that there will be more or less uncertainty and a correspondingly halting along the lines, which may be expected to continue until business interests individually can determine their bearings and see more definitely where they are likely to stand. Whichever way the election may go, it is a consolatory thought that the country is "not going permanently to the dogs" in any event.

## Cleveland.

THE W. BINGHAM COMPANY.—A good, healthy trade is coming to this market from the country for all kinds of Hardware. The increase in the number of orders for Builders' Hardware in the last 30 days is quite noticeable, showing that there has been a large number of buildings erected in spite of the adverse money market, about which we have heard so much. Crops of all kinds through this section are being gathered and are showing up in large quantities. Of course some of our crops have been affected by the continued drouth, especially in the potato line. Fruits and cereals have panned out much better than was anticipated.

The nearer we come to the Presidential election, the more talk we hear about politics, and we suppose for the next 30 days more attention will be paid to political matters than has been shown for the last six months, and every one of us will be glad when the "die is cast." Politics always have been and always will be a business disturber, in spite of the efforts of the business men to ignore same as much as possible.

Manufacturers are out with prices for next season, so that orders can be taken for goods for future shipment—that is, along in the forepart of next year—such as Steel Goods, Shovels, Spades, Ice Cream Freezers, Lock Sets and other Builders' Hardware. As we approach the holidays there will be many orders placed for goods that are seasonable for this class of trade, and we look forward to a good, healthy business in Cutlery, Scissors, Shears, Razors, Plated Ware, Carvers, Butcher Knives, Chafing Dishes and Coffee Percolators; in fact, the whole line for holiday trade with the Cleveland jobbers is almost unlimited.

Prices are firm and customers can buy Hardware in all its different lines with the assurance that the prices named them will be correct. They need not be afraid of any decline, for all kinds of Hardware are low in price and there is no necessity for a revision. At the present price of Pure Manila and Sisal Hemp Rope we think it would be greatly to the advantage of the trade to place their orders now for shipment the forepart of next year. They are exceedingly low and the quality of goods sold in this market by Cleveland jobbers is exactly what it is represented to be—pure Manila fiber hemp and pure Sisal, no mixture. We do not believe in adulteration. It is preferable to sell a good article at a reasonable price than to offer a poor article at a little lower price. Good, reliable goods we believe always hold and make permanent trade. As Abe Lincoln said, "You can't fool all the people all the time."

## Nashville.

GRAY & DUDLEY HARDWARE COMPANY.—We have nothing interesting at this time to say in regard to trade conditions. While each month shows a very slight improvement over the preceding month, the business so far this fall has been a disappointment to the jobbers and manufacturers in this section.

The night riders in the black tobacco section of Kentucky and a small portion of Tennessee, in their efforts to maintain the price of tobacco, have greatly disturbed trade conditions. The Farmers' Union, in the cotton sections, are not disposed to sell their cotton at the present market price, and for this reason it will probably come on the market very slowly for a little while. Crops generally have turned out pretty well, being above the average in most products. If our farmers would sell their various products at the present prices it would certainly put them in a better financial condition than they have been for a decade. The closest students of political economy in this section have been unable to tell us why we are not prospering. Collections are better in October than they were in August and September.

## St. Louis.

NORVELL-SHAPLEIGH HARDWARE COMPANY. — Two weeks have passed since our last report of conditions in *The Iron Age*, and we are very pleased to announce that

the month of September, 1908, exceeded in volume of business the same month of 1907. This is extremely gratifying, especially from the fact that matters in the Southern countries are about 30 days late, and the money from the crops has not yet been received in the usual volume at this time. Therefore, we believe that in this section of the country the best conditions this year are yet to be realized. We have waited a long time for the turn of the tide, and it is very pleasant to believe that from now on, month by month, the records will exceed those of a year ago.

The realization of the crop prospects has not been quite as good as was anticipated, and conditions are very much spotted indeed. We believe, however, that the general result of the 1908 crop will be that it has exceeded in money value that of all preceding years. This being true, it is difficult to realize that there can be much further timidity or uncertainty in regard to business.

The tonnage of the railroads is steadily increasing. New enterprises are being started in much greater numbers than in the past, and while it will take some little time in the nature of things for a very active business to be brought back to the manufacturers, they will receive the business before long, and things will be running in a normal channel.

Collections are good. The atmosphere seems to be very cheerful, and as soon as the political contest is decided we feel that we will be once more on a smooth sea with a fair wind.

## Philadelphia.

SUPPLEE HARDWARE COMPANY.—The celebration in Philadelphia of its 225th anniversary, designated as Founders' Week, which began Sunday, October 4, ended Saturday, October 10, at midnight. This wonderful celebration was not alone confined in interest to Philadelphia and its inhabitants, nor alone to those whose ancestors came to this country 225 years ago. All those who have come here since that time, even up to the present day, were naturally interested. This city, therefore, opened its arms to all who were able to visit here during the week.

The various interesting events began at 8 o'clock a.m., and continued up to 8 p.m., the important parades beginning at 12 o'clock or 1 o'clock in the afternoon. The number of persons who surrounded Broad street ranged from 400,000 to 800,000, and on Friday, the most important day, the crowd was estimated as about a million persons. The Friday, October 9, celebration, or pageant, was something wonderful, showing representations of the important vessels arriving as far back as 1616 up to July 1776 and 1777, when the resolution was presented and adopted that our various States should be free and independent; and when the United States flag was made and adopted.

The week brought thousands upon thousands of visitors to our city, not only from surrounding States, but from far distant States. The business men who came to our city did not come to buy goods, but to enjoy the week and the various parades, and some of our own customers told us they had attended each day the 8 a.m., the 1 p.m., and the 8 p.m. celebrations, as well as the one on Friday, which began at 8 p.m., and extended up to 12 o'clock midnight.

One peculiar thing was noticeable, that is, the absence of conversation in regard to the trade conditions of the country. The expense incurred by many of those present shows they were not suffering financially, whatever the feeling throughout the country for the last nine months would indicate. Another astonishing thing that has lately presented itself is that the deposits made throughout the country in the trust companies and savings funds societies show equal to those of a year ago.

Among the matters brought to public attention during the week were the number of private dwellings in the city, 310,000, of which 65,000 were built in the last few years; over 850 churches, 335 hospitals, 1400 institutions devoted to the relief of suffering, over 300 public schools, and some 2000 miles of graded and paved streets. The amount of goods manufactured in Philadelphia in a year is something amazing, over 28,000,000 yards of woolen goods; many millions of pairs of hose and half hose; over 34,000,000 yards of worsted goods; 2663 locomotives; over 45,000,000 yards of carpet, over 2,000,000 dozen pieces of underwear, over 180,000,000 yards of cotton products, and over 5,000,000 hats.

It is very unusual for the writer to touch on anything in his letters to *The Iron Age* outside of the trade of the country. From a conversation the writer had with some business men in the city, they do not predict a large increase in trade before the election of the President takes place early in November, and both manufacturers and jobbers wish this election was satisfactorily passed. Fortunately the crops throughout the country show quite an increase in wheat even over last year; the corn crop is very large and so is the cotton crop, and manufacturers consulted are largely in hopes of an increased trade by the middle of November. Some manufacturers are encouraged by larger orders already, although others think their trade will not increase before the date named. The banks throughout the entire country have large deposits, more so than a year ago. Collections, unfortunately, have been very slow recently.

## Omaha.

LEE-GLASS-ANDREESEN HARDWARE COMPANY.—Trade conditions in the trans-Missouri region are normal and satisfactory. The political situation seems to have little or no effect on the general trend of traffic. Business keeps up remarkably well. Stocks in the hands of retail merchants are well assorted, but not large. It requires constant buying in small lots to keep the assortment as it should be; consequently orders received by jobbers are numerous, but light in quantities. This shows a conservative spirit exists, with the idea of doing a maximum volume of business with a minimum of stock on hand.

The Hardware market is comparatively featureless and as most lines appear to occupy a fairly firm position it is very likely that values as a rule will remain about where they are for the remainder of the year.

## Louisville.

BELKNAP HARDWARE & MFG. COMPANY.—The market is aptly described in *The Iron Age* of last week, viz: as marking time. This does not mean, however, that there is zest or apathy. A fellow can get a deal of exercise marking time if he will only raise his knee high enough. Certain articles of manufacture and in common use are so low in price as to attract the attention of the alert buyers, who must ever be on the lookout for just such opportunities. Great tonnages of Bolts, Wrenches, &c., we take it, have been placed at the factories as the trade became convinced that as far as they were concerned at least, that hardpan had been reached. This conviction was strengthened by the manifest unwillingness of makers to enter into long-time contracts. Immediate specifications and shipment at sellers' own time have been the features of such transactions.

The railroads are bestirring themselves, too, as they realize that the roadbeds must be made ready for the winter's flow, and that the cars have been worn out carrying excursionists to and from conventions—freight cars, too, have had to take the place of boats since our rivers have gone dry. Alack, the good money that might be put into equipment and maintenance of way, were it not necessarily squandered in bureaus of statistics for State commissions and the like. Elaborate figures are furnished and tabulated never to be used. They are probably not understood in the first place. The universal remedy for all railroad ills in the popular mind, and that is whence the commission gets its inspiration, is lower rates, lower rates. Reduce the rates, is the cry, whether passenger or freight. Squeeze the life out of them, and you have treated them as they deserve. In the meantime, there must be better service and faster trains, and that means heavier track, more substantial bridges, larger tunnels and more safety devices. If we might have liberal national regulation and cut out all the State or local commissions we should expect to see a vast change for the better. But that is in the far distant future, we fear.

Meanwhile we are actually giving the railroads more

to do than a little while back. The long string of empties have been run off the sidings and into the shops to be made ready for service. There is a demand for them now, and car shortage before the season is over is freely predicted.

Fortunately, money has kept easy, and all that that means in the way of lubricating the channels of trade has been freely enjoyed.

Politics are tame enough, the spellbinder looking forward to this period of his harvest, has been wofully disappointed. The fact is that the talking machine so common in public resorts, with its vaudeville records, has got him beat as an attraction. For genuine disturbance we have had to go all the way to the Balkans. Is it the Young Turk or the old Turk—the unspeakable one—who is responsible for a new Bulgarian flag? However that may be, it is safe to predict that on the baseball diamond, when the really great conflict comes off, next time the man on first will amble—this is extracted from the official report—all the way to second if only for the looks of the thing. The moral is obvious—once begun, finish your job.

### Baltimore.

CARLIN & FULTON.—From general reports, the Hardware trade since September 1 has shown a great improvement when compared with the months preceding it, and has approached very closely in amount that of the corresponding month of a year ago, but in other lines the retail trade complain that the continued warm weather has interfered somewhat with the sale of fall goods, especially of textiles and of wearing apparel generally.

The drought which continued for so long over a large portion of the East, though drying up the springs and streams and pastures, fortunately did little damage to the important crops and the harvests have been abundant; but, on the other hand, in portions of the Carolinas the tremendous rains of August caused great floods with devastation to crops over a large section of country, and where such has been the case business is not active.

With the vast area of our country it is hardly possible to have a complete failure of any crop, and while there may be local disaster or shortage it can seldom be general. The agricultural statistics as furnished by the Government show the basis on which we can safely make our predictions for the future business conditions, and give us something more tangible than mere hopes or wishes.

The market price for cereals has been much more satisfactory than that for cotton, though the immense crop of the latter staple may atone for the present low market quotations. Last year the planters throughout the South were criticized very unfavorably for holding back their crops in order to obtain an ideal price, which never was reached, and the policy this year, we understand, is also pretty much the same; but suppose the entire crop had been thrown upon the market, what would have been the result? Would not the farmer have been forced through necessity to have accepted almost any figure that might have been offered, whereas by united effort the crop was moved gradually and declines were never of a radical nature at any one time.

Locally bank clearings show a large decrease from those of a year ago, which would seemingly show a largely diminished activity in business; but are bank clearings always representative of the actual bona-fide business conditions? A frenzy of speculation on the floors of the stock exchanges may swell enormously the clearings of any financial center and would make it appear that a great business revival had occurred, whereas a dull stock market would show a corresponding depression. Speculation is undoubtedly one form of business, but were the business of the stock exchanges limited to the sale and delivery of the securities traded in actual business, conditions would be more truthfully represented. The gross earnings of the great transportation companies of the country, the reports of the custom houses at the sea ports, and the statements as issued by the Department of Agriculture of the Government tell the story more truthfully than that given by the financial columns of a metropolitan daily.

In a few days the election will have occurred, and then we believe the energies of the country will be devoted to its business interests, and the trade of the politician will become correspondingly dull.

A presidential campaign is certainly educational, for never before have we had so many political economists, financiers and statesmen as have been developed since this one began, and we will not regret when the discussion in the country store will turn toward crops rather than on candidates, and the problems for the press will be the employment of labor and capital rather than the counting of votes.

## NOTES ON PRICES.

**Wire Nails.**—The movement of Nails is confined to moderate quantities, from mills, both on new business and specifications on contracts. Requests for prompt shipment usually accompany orders, indicating that jobbers' stocks are low. Prices continue to be well if not in all cases inflexibly maintained. Quotations are as follows f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

| | |
|---|---|
| Carloads, to jobbers | $1.95 |
| Carload lots to retail merchants | 2.00 |
| Less than carloads to jobbers | 2.00 |
| Less than carloads to retail merchants | 2.10 |

*New York.*—The local market continues without change in its general features. The demand is moderate. Nails are held on the basis of $2.30 per keg in small lots at store, but this price is not strictly adhered to by all sellers.

*Chicago.*—While specifications against contracts are coming out fairly well, new orders show a slight falling off, as compared with the business of the latter part of September. In view of the fact that there has been no change in basic conditions, the slower movement is generally attributed to political agitation, which to some extent, doubtless, is affecting business in all lines. Buyers are estimating their forward requirements on a conservative basis, and are ordering in small lots for quick shipment. No deviation from regular prices is reported. Quotations are as follows: $2.13 in car lots to jobbers, and $2.18 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

*Pittsburgh.*—New orders for Wire Nails are coming in at a fairly satisfactory rate, but buyers continue the policy of placing orders only for actual needs, not being disposed to accumulate stocks at present. The trade usually requests prompt shipments on orders, showing that stocks held by jobbers are very low. Prices are being well maintained, and we are advised there is an entire absence of any cutting. Quotations for base sizes are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

| | |
|---|---|
| Carloads, to jobbers | $1.95 |
| Carload lots to retail merchants | 2.00 |

Galvanized Nails are quoted at $1 over the price of the regular Nails.

**Cut Nails.**—Shipments from mills are fairly heavy, made up of orders for small lots, as jobbers are not anticipating future needs. The general price is $1.80, base, per keg, f.o.b. Pittsburgh, but this price continues to be shaded to the large trade. In the Western market Iron Cut Nails are held at an advance of 10 cents per keg over Steel Cut Nails, but this differential is not observed in the East.

*New York.*—The demand in the local market is light, as it has been for some time. Nails are held on the basis of $2.15 per keg for small lots at store, but some sellers are occasionally inclined to shade this figure.

*Chicago.*—The demand for Cut Nails has not increased enough to encourage jobbers to augment their stocks in anticipation of a more active future movement. There is on the whole a little more activity observed, but buying is wholly confined to small lots for immediate use. Prices are, however, fairly firm at current quotations. We quote Chicago prices as follows: In car lots to jobbers, Iron Cut Nails, $2.08; Steel Cut Nails, $1.98.

In small lots from store: Iron Cut Nails, $2.25; Steel Cut Nails, $2.15.

*Pittsburgh.*—A fair run of new orders is being placed, but they are for small lots only for actual needs, the large trade not being disposed to anticipate requirements. Specifications against contracts are coming in fairly well, and shipments by the mills are moderately heavy. The general market is $1.80, base, per keg, f.o.b. Pittsburgh, but $1.75 is made, on carloads and over. In the Western market Iron Cut Nails are held at an advance of 10 cents per keg over Steel Cut Nails, but this differential is not observed in the East.

**Barb Wire.**—While demand is not as large as was anticipated for this season from all sections of the country, the movement from mills is fairly satisfactory. Regular quotations are reported as being maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

| | Painted. | Gal. |
|---|---|---|
| Jobbers, carload lots | $2.10 | $2.40 |
| Retailers, carload lots | 2.15 | 2.45 |
| Retailers, less than carload lots | 2.25 | 2.55 |

*Chicago.*—The demand is not what it ought to be at this season, when buying for the fall trade is usually well under way. The same causes that affect other Wire products is in some measure responsible for the relatively small business moving. Prices, we are advised, are undisturbed by any irregularity and are regularly held. Quotations are as follows: Jobbers, Chicago, car lots, Painted, $2.28; Galvanized, $2.58; to retailers, car lots, Painted, $2.33; Galvanized, $2.63; retailers, less than car lots, Painted, $2.45; Galvanized, $2.75; Staples, bright, in car lots, $2.25; Galvanized, $2.55; car lots, to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

*Pittsburgh.*—Fall trade seems to have opened up to some extent, as some fairly large new orders have been booked by the mills in the past week or two, particularly from sections of the country that have been favored by heavy rain. There is also a good run of small orders, and actual shipments of Barb Wire going out from the mills at present are larger than for some time. We are advised that prices are being absolutely maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

| | Painted. | Gal. |
|---|---|---|
| Jobbers, carload lots | $2.10 | $2.40 |
| Retailers, carload lots | 2.15 | 2.45 |
| Retailers, less than carload lots | 2.25 | 2.55 |

**Plain Wire.**—Orders are largely for quantities covering nearby requirements from jobbers and fence manufacturers. Mills are in position to make prompt shipments, a request frequently accompanying orders. Regular prices are reported as being well maintained. Quotations per 100 lb. to jobbers in carload lots are as follows, on a basis of $1.80 for Plain and $2.10 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the price to retailers being 5 cents additional:

| Nos. | 6 to 9 | 10 | 11 | 12&12½ | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|
| Annealed | $1.80 | 1.85 | 1.90 | 1.95 | 2.05 | 2.15 | 2.25 | 2.35 |
| Galvanized | 2.10 | 2.15 | 2.20 | 2.25 | 2.35 | 2.45 | 2.85 | 2.95 |

*Chicago.*—A fair amount of new business is coming in and the demand from manufacturers of Fencing is, all things considered, reasonably good. The disposition to hold specifications as close as possible to current requirements is still pronounced and, in consequence, prompt shipments are generally required—a condition the mills are so far able to meet. The maintenance of regular prices, it is claimed, is quite general. We quote as follows: Car lots to jobbers, $1.98, f.o.b. Chicago, and to retailers, $2.05.

*Pittsburgh.*—The Fence manufacturers are placing some large orders for Wire Fencing, one leading concern advising us that it has booked more orders so far this month than in the entire month of September. Jobbers are commencing to stock up to some extent, but as a rule, the bulk of the orders represent actual needs of the buyers. The market is firm, and it is stated that regular prices are being well maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

| | Painted. | Gal. |
|---|---|---|
| Jobbers, carload lots | $2.10 | $2.40 |
| Retailers, carload lots | 2.15 | 2.45 |
| Retailers, less than carload lots | 2.25 | 2.55 |

**Stove Pipe and Elbows.**—There is considerable activity in the market for Stove Pipe and Elbows. On account of general conditions and a fear of lower prices merchants have bought somewhat sparingly of these goods. As a result manufacturers' production has been curtailed, and now that trade requirements are more urgent, some are finding it difficult to handle business as desired. For this reason prices are, perhaps, firmer than during the summer, although current quotations are low in relation to the present level of raw material and represent a considerable decline from prices ruling a year ago.

**Dripping Pans.**—There is no cessation in the sharp competition which has resulted in the present low prices for Dripping Pans. The prevailing irregularity is such that it is difficult to name a price which will represent the market, quotations to the same class of trade ranging all the way from 75 to 80 per cent. discount.

**Bolts.**—Manufacturers of Bolts state that business continues to show improvement, although the demand from large consumers is still light. Orders from the trade are in very fair volume, and prices are well maintained.

**Conductor Pipe.**—A noteworthy feature of the market on Conductor Pipe and Evans Trough is the fact that a price has now been established on Copper lines, which until recently have been weak and irregular. The published discount is now 50 and 10 per cent.

**Soil Pipe.**—There is very little activity in Cast Iron Soil Pipe and Fittings, and such business as is doing is at concessions in price. The market is low and irregular, but as regards the light business doing it may be represented by a discount on Standard 2-6 in. of 70 and 10 per cent., on Extra Heavy from 75 and 10 to 80 per cent., and on Fittings from 80 and 10 to 85 per cent.

**Sash Cord.**—Quotations on Sash Cord, which have been pretty steady for a long period, are firm at the present time. Jobbers' prices, though still sometimes lower than those of the manufacturers', seem to be somewhat higher than they were, in as much as stocks purchased at the lowest figures touched in the spring are largely disposed of. The market on small lots may be represented by a quotation on Nos. 8 to 12 of 21 to 22 cents per lb.

**Window Glass.**—Among important recent events is the issuing of a call for a general meeting of representatives of hand operated Window Glass factories, to be held on October, 14, 15 and 16 at Pittsburgh. The call was sent out by the committee who has had charge of forming a manufacturers' organization. The committee feels that it has done about all that is possible for it to do, and considers it proper to place the matter in the hands of the manufacturers for them to complete the work. About 1300 pot capacity of hand operated plants is supposed to be making Glass at the present time. Workmen and representatives of hand operated factories failed to come to an understanding on wages for the month of October. It is recognized that a settlement of these two important matters in a satisfactory manner means much for the successful continuance of Window Glass manufacturing in this country. It is reported that published discounts of manufacturers are not adhered to in all cases, being shaded sometimes by producers who are anxious to market goods. Some manufacturers who make a specialty of turning out a high quality of Glass are understood to be holding prices steadily. Manufacturers' discounts, for hand blown Glass, from manufacturers' list of January 1, 1901, are as follows: For regular single strength Glass, 90 and 20 per cent.; for double strength Glass, 90 and 25 per cent. Eastern jobbers' quotation from jobbers' list, October 1, 1903, for all sizes of single and double strength Glass, covering the territory east of Chicago, is 90 and 20 per cent. discount.

**Rope.**—The movement of Rope continues moderate in volume and orders represent light requirements as a usual thing. Owing to the scarcity of Jute Fiber and the demand for Jute goods, some manufacturers have advanced

prices and others are expecting to do so if the fiber continues to advance. General quotations for Rope 7-16 in. in diameter and larger are as follows: Pure Manila, 9 cents; Pure Sisal, 7 cents; No. 1 Jute, ¼ in. and up, 5½ cents; No. 2 Jute, ¼ in. and up, 5 cents.

**Linseed Oil.**—Business is largely confined to small lots in barrels, of which there is a fair volume. Quotations are as follows: State and Western Raw in small lots, 41 cents per gallon; City Raw, 42 to 43 cents, in small lots per gallon. Boiled Oil is 1 cent advance on Raw.

**Spirits Turpentine.**—The prospect of the formation of the proposed selling company in the South is thought by some to have caused an uncertainty in the minds of prospective buyers as to the future stability of the market. The argument is advanced in certain quarters that the formation of such a company is likely to result in sharp competition with other large interests and an irregular market. Local demand is light. The New York market is represented by the following quotations: Oil Barrels, 38 to 38½ cents; Machine Made Barrels, 38½ to 39 cents per gallon.

## Trade Items.

AT the Tennessee State Fair held recently, the Gray & Dudley Hardware Company, Nashville, distributed 10,000 watch fobs as souvenirs. The fob was in the shape of a Griddle and was turned out at the company's foundry, while the leather strap attached was a product of the company's Harness factory.

THE LOWE BROTHERS COMPANY, Dayton, Ohio, has found its New England business growing so rapidly as to make necessary an additional branch, which has just been located in Boston. The company has taken a warehouse at 21-23-25 Farnsworth street, where offices and display rooms will be maintained for the special benefit of its customers in New England. The company's New York branch, which has heretofore supplied this section, will be occupied with the rapidly growing business in the territory immediately about the metropolis.

LINCOLN-WILLIAMS TWIST DRILL COMPANY, Taunton, Mass., has issued a handy price-list of its Peerless High Speed Twist Drills, which are made with straight or taper or V shanks. This line of Drills was formerly advertised under the name of Yankee, but finding that that word had been adopted by another manufacturer of Cutting Tools, the company changed the name of the line to Peerless. The price-list describes in detail the method of manufacturing the Drills, and recommends them as strong, durable, highly finished and calculated to give satisfaction to the most exacting user.

THE INDEPENDENT STOVE COMPANY, makers of "Renown" stoves and ranges, formerly of Detroit, Mich., is now installed in its new plant, at Owosso, Mich. The moving of the plant was accomplished in record time. The dismantling of the Detroit plant did not begin until October 1, and within eight days from its commencement the company loaded and shipped to Owosso 29 carloads of equipment and material, and at the same time got the new factory into such shape that everything was prepared to begin mounting stoves on October 12.

THE MISSISSIPPI RETAIL HARDWARE ASSOCIATION, John E. Sommers, secretary, Clarksdale, will hold its next annual meeting in Jackson, May 11 and 12, 1909. As is the case with so many other annual gatherings of State retail Hardware associations, it has been determined to provide quarters for an exhibition of Hardware products by manufacturers and jobbers.

AT the annual meeting of the New York State Association of Hardware Jobbers, held at the Hotel Rochester, Rochester, on the 8th instant, the former officers were reelected for the ensuing year, as follows: Edgar C. Neal, Buffalo, president; Robert H. Treman, Ithaca, vice-president; Joseph Born, Syracuse, secretary-treasurer; Irving D. Booth, Elmira, and James H. Boucher, Rochester, directors.

THE third annual convention of the Wisconsin Retail Implement and Vehicle Dealers' Association will be held at Milwaukee, December 8, 9 and 10, at the Republican House. This association includes many Hardware merchants and was organized several years ago in response to a general sentiment that it was desirable to have a separate meeting rather than to transact business relating to the handling of Agricultural Implements in connection with the convention of the Wisconsin Retail Hardware Association, which meets in February.

WILLIAM A. TOTTLE & Co., Baltimore, Md., proprietors of the Crown Brush Works, have made arrangements with C. K. Turner & Sons, 116 Broad street, New York, to handle their export business on Brushes of various kinds, such as Paint, Varnish, Sweeping, Dusting, Artist Brushes, &c.

IN connection with the farmers' fall festival in Richmond, Ind., one of the local papers issued a special edition of large proportions in which a good deal of matter on agricultural topics was published. One of the advertising pages was occupied with an imposing announcement of the Jones Hardware Company of Richmond, in which attention was directed to the noteworthy growth of this house during the 25 years of its existence. The business was inaugurated in a store 20 x 100 ft. in dimensions, while the space now occupied amounts to about 120,000 square ft. of floor area. Over 50 employees are required the year round, and the daily average number of customers is said to be 500. The motto of the company as it appears in the advertisement and on its stationery is "Most Everything."

## AMONG THE HARDWARE TRADE.

The firm of Hightower & Graves, Atlanta, Ga., has been dissolved and reorganized as the Hightower & Graves Company, Inc. The new concern expects to carry a complete line of general Hardware, Builders' Hardware and tools, in addition to the lines of Stoves, Ranges, Refrigerators, &c., formerly sold by the old firm, Hightower & Graves.

The Davis Hardware Company, Fort Scott, Kan., has increased its capital stock from $10,000 to $20,000, and amended its charter by changing the name to Armstrong-Davis Hardware Company. A retail stock of Shelf and Heavy Hardware, Stoves, Tinware, Paints, Oils, Sporting and Athletic Goods is handled.

The stock of S. J. and T. F. Thomas in the S. J. Thomas Company, Gainesville, Fla., has been bought by S. J. Gunn, C. W. Sproull and T. W. Shands, who will continue the business under the old name, but with increased capital and larger stock.

The Hinkley Hardware Company has purchased the business of Julius Marr, St. Joseph, Mo., and will handle Shelf Hardware, Stoves, Tinware and Sporting Goods, the latter being an addition to the lines handled by the former proprietor.

A. F. Hamann has purchased the Hardware, Stove, Paint and Sporting Goods business of Fred Strube, Lake Park, Iowa.

D. R. Magers, Hutchinson, Kan., has sold his Hardware, Paint and Sporting Goods business to Cover & Neighbors.

P. V. Lenz, Carroll, Iowa, has been succeeded in the Hardware, Stove and Plumbing business by Lenz & Collison.

Ball Bros. are opening a Hardware, Stove, Implement, Paint and Sporting Goods store at Bartley, Neb.

A fire in the store of John Simpson Hardware Company, Tehama, Cal., caused a $10,000 loss.

THE E. A. PFLUEGER COMPANY, Akron, Ohio, has issued its illustrated catalogue for 1908-9, referring to an extensive line of Fishing Tackle, Reels, Hooks, Artificial Bait, &c. The book is carefully indexed, and the price-lists of goods are clear and, for the most part, accompanied by actual size illustrations.

## CATALOGUE SYSTEM OF A WESTERN HARDWARE HOUSE.

IN the accompanying Fig. 1 is illustrated the catalogue department of a Western Hardware house, the efficiency and convenience of which will doubtless appeal to many of our readers who are looking for good ideas along this line. At the left is a cabinet containing 60 drawers which are numbered consecutively. Catalogues, circulars and other printed matter are here arranged in alphabetical order under goods. Drawer No. 39, for instance, might refer to Rules; 40 to Sand Paper and Scales; 41 to Steel Goods, &c. Of course, these drawers might also contain other articles which would be shown by the index. Each drawer has a card label on the front, giving its number and the principal lines which it refers to.



*Fig. 1.—Catalogue Department of a Western Hardware House; File at the Left, with Open Shelves and Electrotype Cabinet at the Right.*

#### Two Alphabetical Card Indexes

are employed, one under firm names, Fig. 2, and the other under goods, Fig. 3. Knowing the name of the firm manufacturing a certain article, the firm index card would show the number of the drawer in which the catalogue would be found. Not knowing the name of the manufacturer, the index under articles would show the number of the drawer in which the catalogues of the line in question were contained. Where concerns make more than one line, the printed matter is separated, if possible, so that it may be filed in the proper drawer. Otherwise confusion is, of course, avoided by the cross index.

On the shelves at the right of the main cabinet will be observed some open shelves, on which are kept the larger catalogues and those which are frequently referred to. These are not so numerous but that they can be neatly arranged and easily kept track of without indexing.

Below the shelves is an electrotype cabinet, in which the company keeps its advertising cuts. They are all indexed, the drawers being divided into sections and lettered. Under C would be found Chisels, Clippers, Collars, Cuspidors, &c.

The company states that previous to installing this system its catalogues were kept in large drawers, and great difficulty was experienced in finding the right one. Since they have been classified in the file drawers, they may be easily and quickly referred to. It is the business of one of the clerks to keep up the catalogues both on the shelves and in the file. All incoming printed matter is referred to him; he examines, classifies, and files it, destroying old editions as new ones are received. Nothing of this character that comes to hand is thrown away without giving it some consideration.

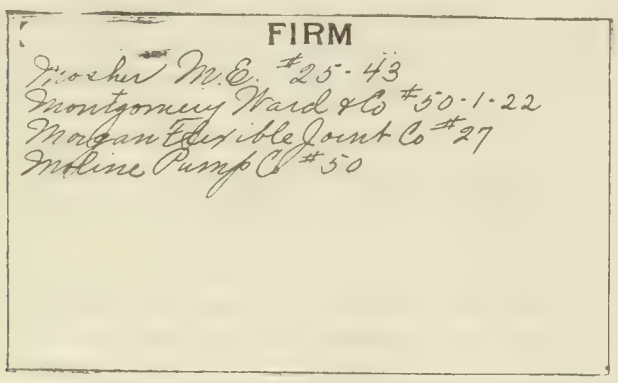



*Fig. 2.—Card from Index Under Firm Names.*

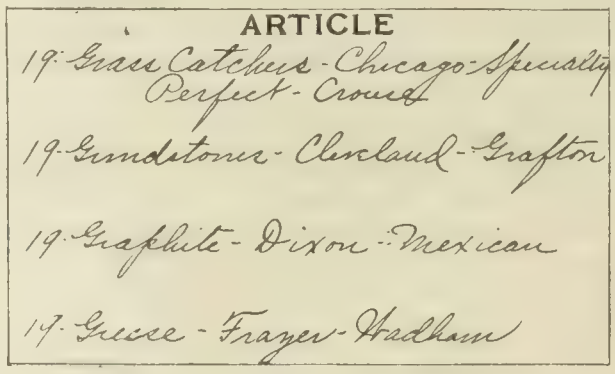



*Fig. 3.—Card from Index of Goods.*

THE former Ohnstrand Metal Furniture Company, Jamestown, N. Y., is now the Jamestown Metal Furniture Company. Artistic equipments in steel and bronze for public buildings, banks, offices and libraries are furnished.

## Southern Supply and Machinery Dealers' Association.

A MEETING of the officers and Executive Committee of the Southern Supply and Machinery Dealers' Association was held in Louisville, Ky., on the 21st and 22d ult. Those present were J. C. Miller, president, Huntington, W. Va.; Alvin M. Smith, secretary-treasurer, Richmond, Va.; J. A. Riechman, chairman, Memphis, Tenn., and Mallory Bedingfield, E. F. Hartfelder, Savannah, Ga., H. C. Clark, Charlotte, N. C., members of the Executive Committee, and W. H. Banks, chairman Manufacturers' and Conference Committee, Huntington, W. Va. Suitable resolutions were passed relative to the death of Charles H. Briggs, Briggs-Weaver Machinery Company, Dallas, Texas, former president of the association. Resolutions were also passed reindorsing the resale plan as adopted by many of the manufacturers, who were urged to assist the membership as much as possible in maintaining these prices. The members of the association were requested to take up with their various trade bodies the subject of the proposed advances in railroad freight rates. A resolution also prevailed urging the Postmaster-General to abandon his effort to have public school principals throughout the country instruct their pupils in the beauties of the parcel post system. The members were urged to give preference in their purchases to concerns affiliated with the American Supply and Machinery Manufacturers' Association, and the manufacturers on the other hand were asked to market their product only through the legitimate trade and to discontinue the practice of selling their lines through brokers, manufacturers' agents, &c., who call on consumers.

H. E. Boyden, Medford, Ore., has been succeeded by the Medford Hardware Company, J. G. Bigham, manager.

# HARDWARE FREIGHTS.

## A Texas Merchant's Method of Handling Freights.

THE following outline of methods pursued by an able wholesale merchant will be suggestive as showing the attention which is given to the subject and the way in which freight matters are taken care of in his establishment:

In every well regulated business freight matters should be in charge of one competent person.

The manager of the freight department should be supplied with all the up to date freight tariffs, which are always easily obtainable from the freight agents. He should make himself familiar with all the details. If he strikes a knotty point he should get the information required from the freight bureau, if there is any such in his city, or if not, from the most competent freight agent.

1. ATTENTION TO INVOICES.—I use the following system: Invoices and bills of lading are pinned together when received. The invoice is refigured in order to discover any mistakes in price, extension or addition. Next it is filed away in an alphabetical box file, and held until the goods arrive and are entered on the receiving book by the receiving clerk.

2. RECEIVING CLERK'S WORK.—After the goods have arrived the receiving clerk checks up with the freight clerk. If all the goods come up correctly as invoiced, the bill of lading and expense bill are filed away, and the invoice is pasted on the invoice book, and from there posted on the ledger.

3. TREATMENT OF ERRORS AND CLAIMS.—If the goods check short or are damaged, or the rates are too high, or the weights are not correct, the freight clerk takes the bill of lading and expense bill and writes a letter to the freight agent, giving the nature of the claim in detail and sends all to him by mail. I have found by experience that when a freight claim is sent to the freight agent by an office boy, it is much more frequently lost or misplaced that when it is sent by mail.

4. FREIGHT CLAIM BOOK.—I keep a special book for this purpose, which I label, "Freight Claim Book." In this book each railroad company has one or more pages, on which a record is kept of all the claims made against that company. Every claim must specify the date and number of expense bill, name of shipper, date of bill of lading, nature of damage, amount claimed, &c.; also the page of the letter book on which the letter giving details of the claim has been copied. When a claim is settled, I write across the face in red ink, "paid," and give date of payment. I also draw a blue line through the center of that claim.

5. NEGLECTED CLAIMS.—I find it necessary to check over this book from time to time, to see if any of the claims have become "ancient history" or have cultivated "gray whiskers." In that case, a gentle reminder to the freight agent with a request to resurrect such and such a claim will bring good results.

6. PATIENCE AND COURTESY.—I have discovered by experience that I can produce better results by patience, kindness and courtesy towards the claim departments of the railroads than by bluster, threatening suits or insulting language. I have also found that as a rule the railroad companies are honorable and are willing to adjust and settle legitimate claims.

## A Manufacturer's Experience.

The following letter from a prominent manufacturer narrates his recent experience with a railroad company whose claim department declined to stand for damage to shipment which had been acknowledged by the company's inspector:

I note you describe how to present claims to the transportation companies. A recent experience of ours shows the necessity for care and thoroughness, as well as knowledge in handling these matters. We received from the —— railroad a carload of Cold Rolled Sheets. On receipt the material was found badly rusted, which damage was evidently caused through a leaky car. We immediately notified the railroad people of its condition before unloading, and requested that they have a representative inspect the material, as it was our intention to claim damages. They complied with this request, and their representative definitely acknowledged the damage and instructed us to unload and present our bill. We did so and were much surprised at the refusal of the claim department to admit our claim. A lengthy correspondence was had, with the final result that the railroad company definitely refused to pay the damage, claiming that we had not proven that the damage was caused by a leaky car.

**Acknowledged the Damage.**

You can see that we pursued what would usually be considered a proper course in presenting our claim, and in fortifying it with an explanation by the railroad's representative, yet the claim was disallowed. This seems to us to be an instance of definite unfairness to the shipper, yet the only appeal is a suit at law, which would not be warranted by the amount of money involved.

This case illustrates that the damage and its causes must not only be approved by the railroad's inspector, but the responsibility must be acknowledged by the claim department before being recognized. This at least appears to be the rule, so far as the —— Railroad is concerned. We have not had a similar experience with any other railroad in the country, but we now exercise care in having the railroad committed before consignments are unloaded.

**Now Exercising Greater Care.**

If this series of articles on Hardware freights is read with proper care by the merchant, he will certainly be benefited, as there are many ways to economize in freights and also devious ways by which consignments can be made to advantage, requiring only the knowledge which you are imparting to your readers.

## Freight Losses, Like Cash Discounts, Are Imposing in the Aggregate.

An Ohio merchant, in commending the articles on this subject which have appeared in our columns, writes suggestively as follows:

Your articles on Hardware Freights are interesting in that they bring out some ideas for saving in freights that have been overlooked by most merchants, principally because the amount in any one case was small, and it took too much trouble to get the matter righted. These little losses are a good deal like discounts, not large amounts, but the aggregate, when carefully computed, is an occasion for astonishment to those who have never done anything of the kind. We are inclined, or at least have been, to take the bills presented to us for freight as correct. I think it is a safe rule to adopt that there is no more accuracy in the ordinary bill clerk of a railroad than there is in any other class, and therefore they need as much watching as we do.

I had a case this morning. Two barrels of Venetian Red came in from New York, rate 39 cents. They were billed to us at 860 pounds, when the actual weight was but 713 pounds, a correction worth making. As the importer who shipped the goods to us failed to inclose a B/L, I am compelled to write for one. In the meantime I had to pay the freight, and will put in my claim as soon as I get my papers.

I speak of this to call merchants' attention to the necessity for insisting on B/L for all shipments, so that mistakes can be rectified promptly, so that a checking can be made on the goods when they come in. I am glad that the subject is being brought forward for discussion, because it means, I hope, the stopping of one of the small leaks that often adds very much to our expense accounts. Profits are too small to overlook any kind of a leak. There always has been a leak in freight bills, and it is time that some effort was made to stop it.

**Insist on Having Bill of Lading.**

It is a good idea to check up carefully all goods that are bought and to weigh all the oil that comes in and to measure the volatile liquids, such as Tur-

**Weigh and Measure.**

pentine and Alcohol (wood) or denatured spirits. These liquids are subject to leakake, and often a delay on the road of Turpentine shipment means quite a loss that would never be discovered unless the goods are weighed or measured.

## General Classification Sheet.

A Michigan retail merchant writes as follows referring especially to the value to the merchant of a general classification sheet:

We are glad to note that you have taken up the discussion of Hardware Freights, for we regard this as a vital matter, and any effective method followed out will, in our judgment, benefit all classes of dealers. For a number of years it has been our custom in checking off our freight expense bills to search out any errors in extension or rate. In cases where bill of lading has been furnished and the rate contracted for, to see that no variance existed, and in other cases to see if we had been given the correct classification and rate.

We have been more or less familiar with the classification sheet and the tariff rate of freight from the various points where we make our purchases. The result has been that we have found errors that have crept in both in the extension and tariff rate, mainly by oversight of the agent or billing clerk, due largely to press of work. The merchant having a general classification sheet can keep a record of the rate on various classes of freight from jobbing and manufacturing points to refer to in carefully going over the expense bills. While this method is valued in the saving of money by detecting mistakes, it is of no little value in securing freight equalization from selling centers on some classes of staple goods. This plan enables the dealer to order from the most favorable point for freight.

**Ordering from Favorable Point.**

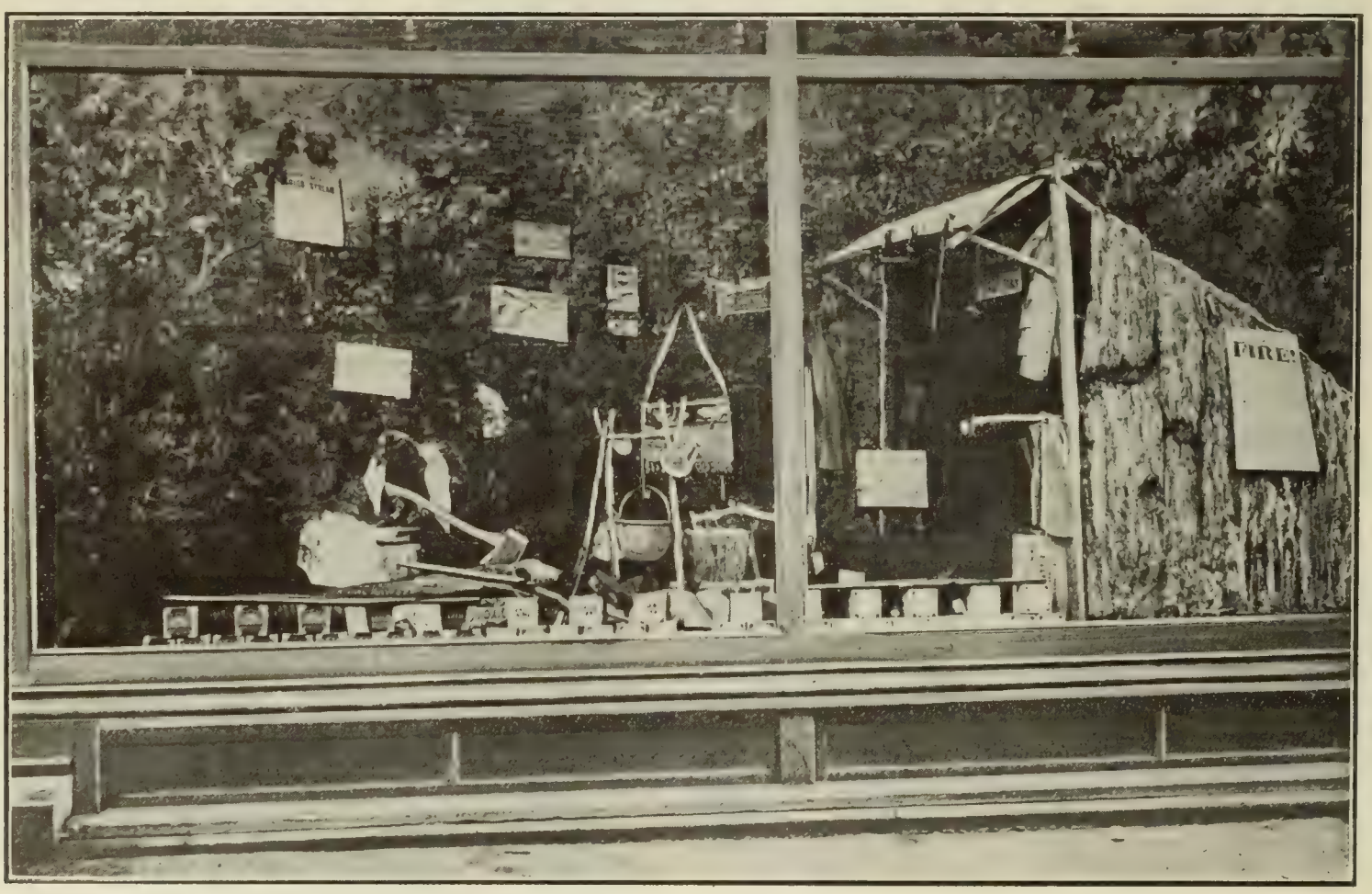
While we have not followed the plan as vigilantly as we might, we are convinced by the amount we have saved that it is profitable work for a rainy day as well as any business day. This method should go hand in hand with the payment and discounting of invoices.

Relative to claims for overcharge, errors, or damage, the rank and file of railroads are slow in adjusting, as is well known. We believe all claims should be persistently pressed for payment, and that any dealer who neglects to give the proper attention to these matters, is overlooking important work that would yield a return amply sufficient to pay for the time it involved.

## A HUNTER'S CAMP.

A HUNTER'S CAMP in the Adirondacks is the subject of the window display of H. D. Thompson & Co., Malone, N. Y., which is reproduced herewith. The display was installed during the County Fair held in Malone and was pronounced remarkable for its naturalness, its local color and the pains with which it was worked out to the most minute details. For a background an excellent sky effect was obtained by using light blue cheese cloth stretched tight, while the woods were represented by young cedar trees from 4 to 7 ft. high, with maple branches, stumps, &c., arranged to carry out the illusion. The ground was covered with autumn leaves and a half hewn log with an Axe sticking in it was shown at one side of the camp fire which burned in front of the camp. The fireplace was realistically made from blackened stones, ashes and burn wood and bark, with a Kettle suspended above it from notched sticks and camp cooking utensils hanging about. The effect of fire was given by a hidden electric light.

The camp was of the lean-to design, built of poles and bark and covered with Paroid roofing. It was 7 ft. long by 6 ft. wide and about 6 ft. high—just about the dimensions which an actual camp would have. Inside was a bough bed, and partly covered with a heavy blanket lay a dummy figure of a man representing the hunter turned in for the night. Near him was a card on which was written with charcoal, "Please go away and let me sleep." A hunter's license was in evidence and a ½-pint flask lay near at hand. Two stuffed deer heads were placed so that the animals seemed to be inspecting the camp and the sleeping hunter. A wash basin on a Winchester cartridge box and a dirty towel hanging on a limb, with a few cans of baked beans, cracker boxes, &c., completed the picture.




*Window Display of H. D. Thompson & Co., Representing a Hunter's Camp in the Adirondacks.*

For advertising effect Savage, Marlin and Winchester signs were hung on the trees, and the hunter's outfit showed the different kinds of supplies, &c., carried in stock. A few modern Guns and small quantities of ammunition of all kinds were shown. Revolvers, Hunting Knives, Hatchets, Compasses, Hunting Coats, Leggins, Meat Saws, and, in fact, everything a hunter might require, were shown, but always in small quantities, so as not to break the general effect.

The selling power of the display was good and covered the entire line shown. The firm states that every day numerous sales were made which could be traced directly to the display.

## Price-Lists, Circulars, Etc.

*Manufacturers in Hardware and related lines are requested to send us copies of catalogues, price lists, &c., for our Catalogue Department in New York; and at the same time to call attention to any new goods or additions to their lines, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.*

GRINBERG BROTHERS, 153-156 South street, New York: Illustrated catalogue of Enterprise and Eagle gas and oil Stoves, Royal Coal and Ranges, Stove and hot air Pipes, stiff and adjustable sheet metal Elbows, &c.

GOSHEN SWEEPER COMPANY, Grand Rapids, Mich.: Illustrated catalogue and price list covering an extensive line of Carpet Sweepers.

STANDARD PAINT COMPANY, 100 William street, New York: Illustrated catalogue referring to Ruberoid Roofing; also booklets and circulars referring to Insulating Specialties, Metal Preservative Paints, &c.

CINCINNATI MFG. COMPANY, Cincinnati, Ohio: Catalogue No. 32, relating to Brushes, Wire Goods, Bird Cages, Ornamental Steel and Bronze Work, Stable Fittings, and Ticket Punches.

FOREST CITY BIT & TOOL COMPANY, Rockford, Ill.: Catalogue H, referring to Wood Boring Bits, Hollow Mortising Chisels, Common Mortising Chisels and Mortising and Boring Machine Tools.

LINDSAY LIGHT COMPANY, Chicago and 91 Chambers street, New York: Illustrated catalogue of Gas Lights, Incandescent Mantles, Burners and Lighting Specialties, &c.

KEMP MFG. COMPANY, Toronto, Ont.: Illustrated catalogue, with convenient thumb index, referring to Enameled Steel Ware, Tin and Japanned Ware, Sheet Steel and Galvanized Ware, Copper Ware, Elbows, Lanterns, Oil Stoves, Wire Goods, and general Kitchen Furnishings.

G. A. SWINEFORD COMPANY, Canton, Ohio: Illustrated catalogue of Hardware Specialties, including Hay Carriers, Forks, Pulleys, &c.; Lawn Rakes, Barn Door Rail and Rollers, Hay Knives, Steel Snow Shovels, Cold Chisels. &c.

J. P. EUSTIS MFG. COMPANY, Boston, Mass.: Illustrated Brasscrafters' catalogue, with 1908 supplement referring to Metal Frame French Plate Mirrors, Shower Baths, and a general line of Bath Room Accessories.

CASSADY-FAIRBANK MFG. COMPANY, 6106-6130 La Salle street, Chicago, Ill.: 1908 catalogue supplement illustrating Kitchen Specialties, Soap Dishes, Match Holders, Nickel Plated Steel Ferrules, Handles, Dowels, Fruit Jar Wrenches, Towel Bars and Racks, Flat Iron Cleaners, Lampstoves, Pot Covers and Rack, Bath Tub Seats, Broom and Brush Holders, &c.

J. B. FOOTE FOUNDRY COMPANY, Fredericktown, Ohio: Illustrated catalogue relating to Church and School Bells and another devoted to Block Machines. Separate circulars show Ice Cream Freezers and Washing Machines.

NATIONAL MFG. COMPANY, Sterling, Ill.: Booklet showing Big 4 Barn Door Hangers and Rail, Washburn Door Latch and Stay Roller.

KNAPP & SPENCER COMPANY, Sioux City, Iowa: Sheets for insertion in its loose leaf catalogue, relating to Tools, Firearms, Skates and other fall and winter goods.

PHILADELPHIA LAWN MOWER COMPANY, Philadelphia, Pa.: Illustrated catalogue for 1909 covering an extensive line of hand and horse Mowers, Lawn Sprinklers, Grass Collectors, Horse Boots, &c. Some of the machines are illustrated by full page color plates.

SILVER MFG. COMPANY, Salem, Ohio: Circular relating to the Ohio Ensilage Cutters, which gives lists of universities, agricultural experiment stations, charitable and public institutions using the Cutters. The machines are also used by dairymen, stockmen and farmers.

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Warnhoff & McClees Hardware Company, Wachita, Kan., has dissolved partnership, having been succeeded by the McClees-Weeds Hardware Company, which has been incorporated with a capital of $15,000.

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# Here and There in the Sales Department.

BY SAMUEL MASTERS.

## IV.—PREPARING A CATALOGUE.

CHARLES MARTIN, the manager of the city store of Hartman Brothers, was full of enthusiasm concerning the catalogue of factory supplies which I had been asked to prepare.

"We want to make it complete, Sam," said he. "There aren't many people who know how very extensive our assortment is. There is hardly a week that someone doesn't express surprise at finding we have this or that, and tell me of the orders they could have given me if they had known we handled it. We want to put in everything that goes into a factory, whether as a part of its equipment or tools in the hands of the workmen. Just titles, you know, with the briefest description in order to show the assortment, and arranged so that anyone can find what he wants without searching for it. Let's make it a handbook—a list to which every Ironvillian who wants anything for use about a factory will turn and find it, and of a size to go into any man's pocket."

"Shall we put in prices, Mr. Martin?" I asked.

"No! No!" said he irritably. "How can we, Sam? This isn't a department store. We can't even mark the goods on our shelves with plain figures, because every man who has an account wants something off. We will make this a list of goods. I'll fix the prices if it is necessary to make any reduction from the regular figures."

### Quality the Keynote.

Hartman, Junior, wanted to retain the title of "Blue Book." "It stands for quality—just what our stock represents. The Ironville blue book gives a list of the 'quality' among our citizens, and everyone who has a copy will know what the title means. Make it look like the jewelry book and the effect will be strengthened with every person who has seen a copy—and it's a mighty good model to follow for those who haven't."

### Making Haste Slowly.

The work progressed slowly. If my memory serves me aright, I rewrote the manuscript a dozen times, in order to mention goods which had been overlooked, or to boil down what had been written. At first, I tried to say something about each article—to call attention to its best features, praise its finish or excellence or comment on its cheapness; but the general effect was not good, and the blue pencil trimmed out all redundancy until little more than a bare list of articles remained. In the "over" stock bins I found many articles which were not displayed in the store. The wholesale stock sheets were searched for articles which could be added to the line carried in the city store. It was the first time that a comprehensive list of the goods for the city trade had ever been complied, and the task was not an easy one.

### Creating a New Stock.

In a number of instances the catalogue led to changes in the stock. It was found, for instance, that the line of Dirt Shovels needed strengthening by the addition of a brand that could be sold to compete with a cheap contractor's Shovel handled by two of the local competitors. This was done. The assortment of Machinist's Tools was thoroughly revised. The stock of Emery in cans was enlarged. A competitive line of Sandpaper was added. The house had carried foundry riddles for the benefit of two or three large buyers, and now added Crucibles, Chaplets, Brushes, Bellows, Rammers and an assortment of Molders' Tools of a standard brand. A few Plumbers' Tools of the kind used in factory fitting were added to until a goodly assortment of appliances for plumbers resulted. Indeed, it seems to me now that there were few classes of goods which were catalogued just as I found them.

### Selling Job Lots.

There were other articles which were removed from the regular stock and placed upon a job list. In this I was permitted to follow a plan I had used for my former employer. I made up a list of the job goods, had it set in type at a nearby printer's without much of an attempt to classify the items, and furnished each salesman, wholesale and retail, with copies for his own and his customers' use. He was permitted to quote a moderate reduction from the regular prices, and was given a bonus of 5 per cent. upon his sales. Most of the goods were sold in this way without much urging, the small unsaleable balance being disposed of through a New York auction house.

### Co-operation.

Everybody was willing to assist me. Mr. Martin and Hartman, Junior, were known to be especially interested in what I was doing, and stockmen, clerks and buyers readily fell into line. Mr. Martin disliked detail work, and when the list of goods in any class showed a weakness, was content to give me instructions as to what he wanted added to strengthen it, and let me take the matter up with the buyers, reporting to him from time to time as developments occurred. Clerks who had felt that their stocks lacked in some particulars, stated the facts to me, thinking that I might be able to secure an improvement where they had failed. Stockmen told me of goods which did not move. The buyer of factory goods told me of a number of things which seemed to him to be good, but to which Mr. Martin had not given favorable attention. Everything that came to me was put into presentable shape and put before Mr. Martin or Hartman, Junior, for a ruling.

### Harmony Maintained.

I very seldom took matters to Hartman, Junior, and with a single exception, when Hartman, Junior, was consulted, it was before anything had been said to Mr. Martin. Mr. Hartman would then discuss the subject in hand with Mr. Martin in a way that would bring that gentleman to the point of view desired, and he would then give me instructions to do just what it had been predetermined would be best to have done. In every way possible I avoided a direct issue with Mr. Martin, or bringing about disputes between him and Hartman, Junior.

### All Work and No Play.

At this time I rarely left the store before 10 o'clock at night. At six, the curtains were drawn and the doors locked, and after a hasty lunch I set about exploring the shelves and stock cases. I felt that this was my opportunity for gaining an intimate acquaintance with the stock, and there was not a drawer or shelf or cupboard or bin whose contents I did not know, as well as the clerk in charge—and better in instances.

I had a powerful spur to activity. It was the first time since I had entered Hartman Brothers' employ that I had found any chance for material advancement. In addition I had met the girl who afterwards became my wife, and felt that I must succeed for the sake of a future with her. If I left undone a single thing which would have contributed to success, I cannot now recall it.

### The Early Worm.

For about two weeks at one stage of the work I found it expedient to get to work very early in the morning in order to accomplish what I wished to do. One morning at about half past five o'clock Hartman, Junior, walked around the end of a counter and found me seated on a paper spread out on the floor, busily listing a line of draughtsman's and surveyors' tools which had been stowed away and nearly forgotten. There was very little said by either of us, and he passed on to catch an early train out of town. I remember that I was distinctly annoyed at being found out, for Hartman, Junior, believed working overtime was a sign of incapacity; but I do not now think that my industry lowered me in his estimation.

*(To be continued.)*

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C. PETER BOOS, for many years in the retail Hardware business in Jersey City, N. J., died suddenly on the 7th instant. Mr. Boos was born in Germany and was brought to this country by his parents when two years old. He had been identified with the Hardware business of the city for a period of nearly 35 years.

# THE HARDWAREMAN IN POLITICS.

AN ADDRESS BY HON. F. F. JONES, VILLISCA, IOWA.

POLITICS in the highest sense deals with the administration of public affairs in the interest of the peace, prosperity and safety of the State. There is another sense in which politics means the conduct of public affairs so as to carry elections and secure public office —party intrigue and political wire pulling.

Those engaged in political activities, who are serving the best interests of the State, may be called statesmen.

Those engaged in working politics for private advantage or party success we will call politicians.

The former are *men* in politics.

The latter are *spoilsmen* in politics.

The political need of this day and age in all phases of public affairs is the elimination of the *spoilsmen*, and the substitution of *men*—level headed, broad gauged, forceful men. Men with standing in their communities. Men with business training and ability. Men of character.

I am persuaded that these specifications can be fully met from the ranks of the Hardwaremen of Iowa.

In your respective communities you know that the forceful characters, the aggressive workers and the alert and self-reliant men include a large percentage of business men. They are organizers, they have the initiative, and, best of all, they have ingrained in their characters a disposition to be *square*.

But the civic conscience of the business men engrossed in his business is not strong. He is interested in his personal affairs to the neglect of his duty as a patriotic citizen. He feels that he stands to lose in every way by having to do with politics. Many of his best friends suggest to him that it is "no place for a decent man." He knows that he must deal with a fickle public, and that it will be impossible to please all factions. So he "sticks to business," while some fellow who has no business or reputation that politics can harm, cheerfully assumes the activities and absorbs the honors or distributes them to his friends.

This hesitancy to accept office or to have to do with politics obtains not only with business men, but with men of large caliber and good character of all professions and callings.

### Afraid of Politics.

Such men are afraid of politics because of the *methods* employed. And it is hardly fair to criticise men for avoiding a service in which because of prevailing methods his business is jeopardized, his reputation besmirched, his motives impugned, and his freedom of thought and action questioned by some *boss* or *faction* or *selfish interest*.

Business men in politics are desirable. They exert a wholesome influence upon the people at large. They insist that economy be practiced in administration, and that the public service be made more efficient. But if we are to persuade superior men in increasing numbers to greater activity along political lines, our citizenship must become a party to some much needed *reforms*.

1. We as a people need to revise our *moral standards* as applied to politics.

2. We as a people need to use more business sense in our attitude toward *men and measures* political.

A man who is tricky in politics will need watching in business, and is not to be trusted too far in his transactions with his neighbors. He may belong to the "meetin' house" and conduct a respectable business, but if he is dishonest in politics he is dishonest.

Prevailing political methods cannot be reformed in a single campaign, but the influence of the church in public affairs, the training in our colleges and the work of good business men in politics are shaping public opinion and helping to revise and improve our standards, so that the demand for cleaner methods is becoming more and more imperative.

### Business Sense in Politics.

A salesman presents a business proposition to a business man in a businesslike way. And yet the conservative man will stop and think and figure the deal over carefully, considering it in all its relationships to himself and his business before coming to a decision.

Few men take so much pains in dealing with political propositions. The matter is dismissed or decided without investigation. Petitions are signed for or against measures without knowing the occasion for the petition. Explanations and suggestions are accepted from persons whom we would not trust in a business transaction and from newspapers that are known to be thoroughly unreliable. We do worse things than these. We allow ourselves to be influenced and carried off our feet by the flimsiest sort of clap trap. We don't think.

I will venture the assertion that any Hardwareman when he hires a clerk for his business makes a careful investigation as to his character, ability, honesty and fitness for the place. Trifling things that you might criticize are overlooked in the interest of efficient service that may come to you and your business. If he fills the bill as to honesty, ability, &c., you hire him.

People as a rule apply no such methods in selecting and supporting men for office even in their own party. Little or no investigation is made. Character and ability count for little as against "our faction" or some trifling personal misunderstanding or difference of opinion. They do not use business sense in these matters.

### Business Men Beneficial to the Service.

We all notice, whether we have to do with public affairs or not, the improvement in the public service when managed by level headed business men. The finances are in better shape, economies are practiced, taxes are less. The protection is better. Property is worth more and every interest has a square deal. Such conditions are a better advertisement to attract capital and desirable citizens to a town than promises of bonuses and exemptions from city burdens for a term of years.

Similar improvements will be obtained in the management of our cities when the right kind of men are placed in charge of their affairs. Municipal government has been characterized as "America's conspicuous failure." The mismanagement, graft, corruption and lawlessness of our cities have a close relationship with the selfish greed of dishonest corporate and private enterprises.

In legislation I have noticed that business men and farmers are more conservative than professional men in the matter of appropriations. A large percentage of the questions and bills up for consideration are commercial in their nature. I think that business men understand the "stories the figures tell" better than can those who have had no business training. The business man is needed in the Legislature as well as the professional man and the farmer, and from the very nature of the business and the peculiar ability required he makes good in many of the State offices.

Politics may not be a good thing for you to engage in from the standpoint of business. But you are interested in the communities in which you live. Your interest and activity in local politics will give character to your home political affairs, and make for better conditions along up the line. You have the ability. You know how to approach men. You know how to organize. You have a standing that will enable you to help mold public opinion. You have the opportunities and opportunities involve responsibilities in these matters.

The State educates its citizenship with two objects in view:

1. That the citizen shall be self-supporting.

2. That the citizen shall be able to return a service of value to the State.

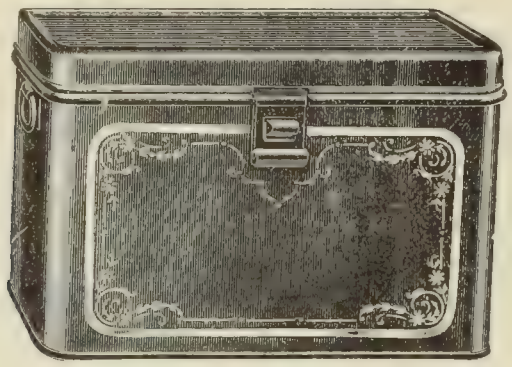
You can render no more valuable service than to help make political affairs as clean and businesslike as your Hardware business, and to help select men for public office with the same care and business sense you use in the selection of men for your employ. In these things we evidence our patriotism as surely as in obeying the law and being a good citizen.

---

J. R. McLAUGHLIN, who has been connected with the Lisk Mfg. Company for the past 18 years, has accepted the position of general manager of the Atlantic Stamping Company, Rochester, N. Y.

## The R. C. Bread Box.

The Republic Metalware Company, Buffalo, N. Y., has recently put on the market the new Bread Box here illustrated. The special features to which attention is called are the rounded seamless corners and edges, and the seamless one-piece cover. It is japanned in black with gold decoration, and is described as a handsome, stiff and durable box. Because of the method of construction, crumbs, dust, &c., cannot collect in the corners, making it easy to keep sweet and clean, while it has the further sanitary feature of a ventilated back. The cover fits down snug and tight on a large bead around the body so

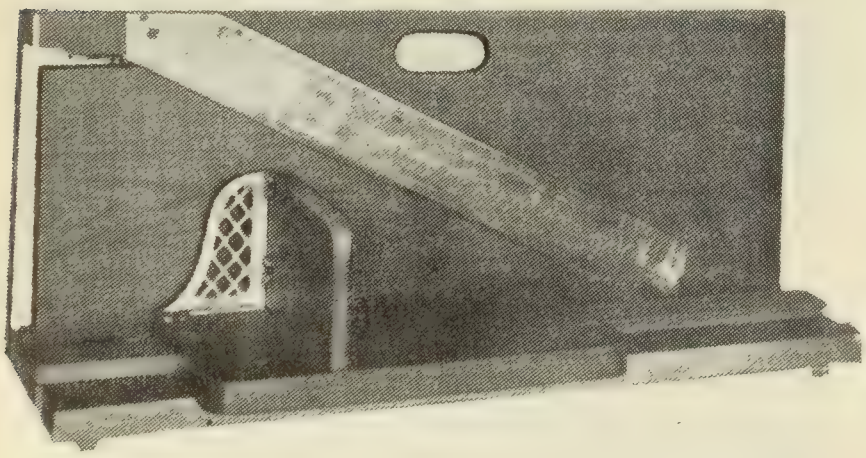


*The R. C. Bread Box.*

that small insects cannot get inside. Three sizes are stocked: No. 112, measuring 11 x 13⅝ x 9½ in.; No. 113, 12 x 17 x 11½ in., and No. 115, 14 x 19½ x 13 in.

## The Gem Slicing Machine.

The slicing machine shown herewith is made of hardwood with nickelplated castings and screws, and the construction and finish is represented as being of the highest grade. The slicer is designed to take the place of the bread knife, cutting every slice the exact thickness

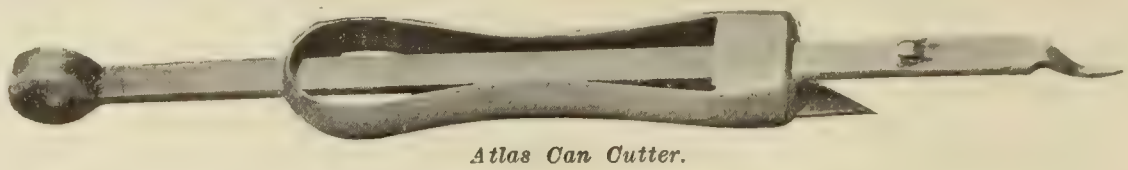


*The Gem Slicing Machine.*

wanted, thus obviating much labor, especially when making sandwiches. In addition, it will slice almost everything that is sliced with a knife, including ham, bacon, cabbage, pineapples, cheese, cake and vegetables. The device is offered by the Horton & Link Mfg. Company, Herkimer, N. Y.

## Atlas Can Cutter.

The Household Necessities Mfg. Company, Philadelphia, Pa., is putting on the market the can cutter illustrated herewith. Instead of cutting a hole out of the top of the can, as do many of the can openers offered for this purpose, this opener cuts the whole top off the can. The operation is described as a simple one, requiring no adjusting for any size can other than the mere moving of the handle. The directions for use are as follows: First remove the label from the can; then insert the point of the cutter in the center of the top, pushing it down as far as it will go. The handle should then be pulled down to a horizontal position and a firm hold taken with one hand, while the other is placed on the top of the can. The point of the knife is then pushed



*Atlas Can Cutter.*

into the wall of the can a little to the left of the seam, after which by pulling the handle the can is cut around until the seam is reached, thus completely severing the top from the can. It is explained that the cutter may also be used as an ice pick by sticking the point of the cutter in the ice and pounding down with the handle until the ice is cracked.

## C-B Combination Hose Reel Truck, Drainer and Lawn Sprinkler.

William Jasperson, St. Mary's, Ohio, is putting on the market the new form of hose reel shown in the accompanying illustrations. It is substantially constructed of cast iron, malleable iron and brass, and is described as exceptionally strong and durable. It is made in sizes accommodating ½ or ¾ in. hose, and stands 40 in. high to the top of the sprinkler head, which will be observed on the end of the pipe, forming the main axis of the reel. The diameter of the reel itself is 14 in. When reeling or unreeling hose the device is turned down into a horizontal position resting on the wheels at one end and at

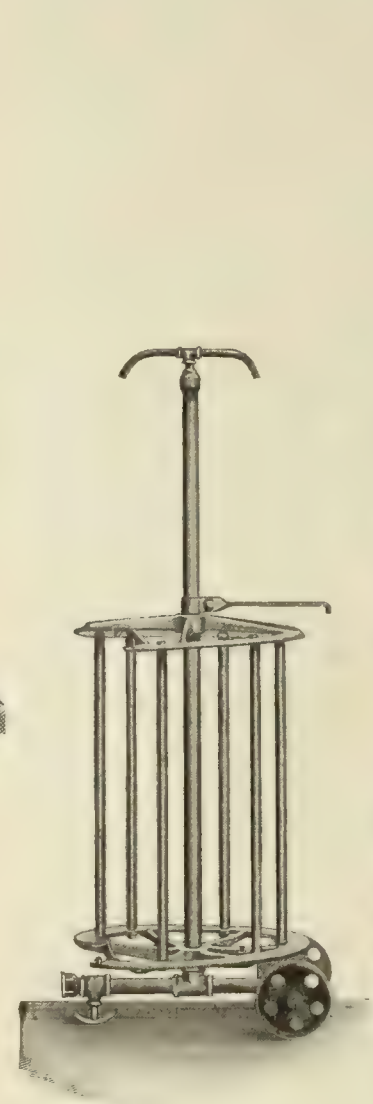


*Fig. 1.—C-B Combination Hose Reel Truck and Sprinkler.*



*Fig. 2.—Hose Truck with Hose on Reel in Upright Position for Draining.*

the other on the brace, which will be observed projecting to the right above the reel. A rack and small cam not shown in the cut keep the reel from revolving in more than one direction. The leading feature to which attention is called by the manufacturer is that after the hose has been reeled up and the reel is again placed in the vertical position, as shown in Fig. 2, the hose is completely drained by the natural force of gravity, thus add-

ing materially to the life of any grade of hose. The device may be used as a lawn sprinkler by attaching the hose to the base by means of a union hose coupling which is provided. The head may be fitted either with the Blake sprinkler head or the two-arm device shown, which is said to throw an excellent spray. Under the base, in addition to the wheels, is a shoe, which enables one to drag the reel over the lawn by pulling the hose while the sprinkler is in operation. The sprinkler head forms a handle by which the device may be inclined at a slight angle and trundled around on the wheels like an ordinary truck. Being only 16 in. in extreme width, the truck does not require much storage space when not in use.

## The Excelsior Cylinder Washing Machine No. 31.

The lever attachment high speed cylinder washer shown in Fig. 1 is put on the market by Wayne Mfg.

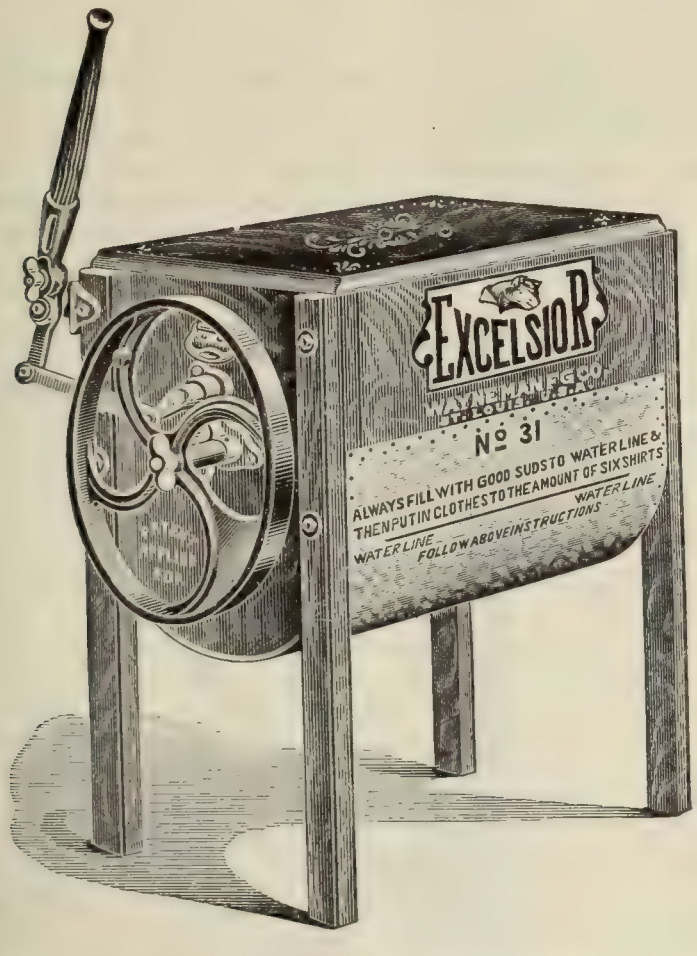



*Fig. 1.—The Excelsior Cylinder Washing Machine No. 31.*

Company, St. Louis, Mo. The ends and sides of the tub are made of selected, thoroughly seasoned and kiln dried lumber. The bottom is of heavily galvanized iron. The interior parts of the machine are illustrated in Fig. 2.

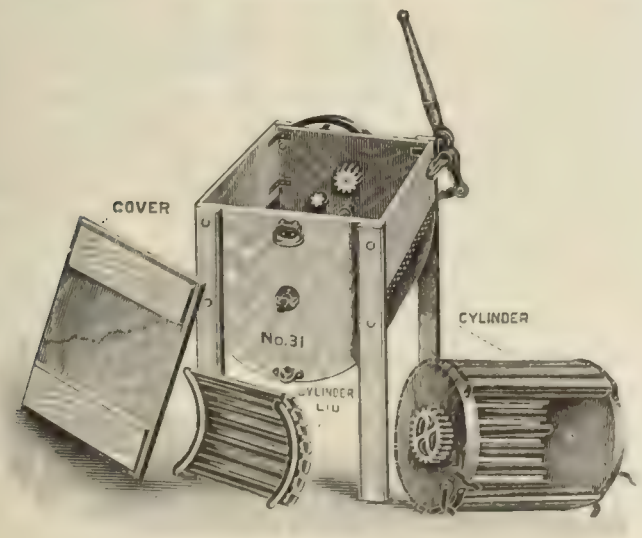



*Fig. 2.—The Washer Open, Displaying Interior Parts and Closure Scheme of Lid.*

The cylinder is constructed of 1-in molding, to form a perfect washboard, and the water is let in and forced out between the rubbers. Four cleats in the cylinder, running lengthwise, act as agitators, throwing the water against the clothes as they revolve in an opposite direction, to wash away all dirt that has been brought to the surface by the washboard arrangement of the cylinder. The cylinder is heavily bound by galvanized iron strips, and the lid is constantly removable. The cleats that hold the rubbers, forming the cylinder lid, are extended to fit the end rubber of the main cylinder. The lid is fastened

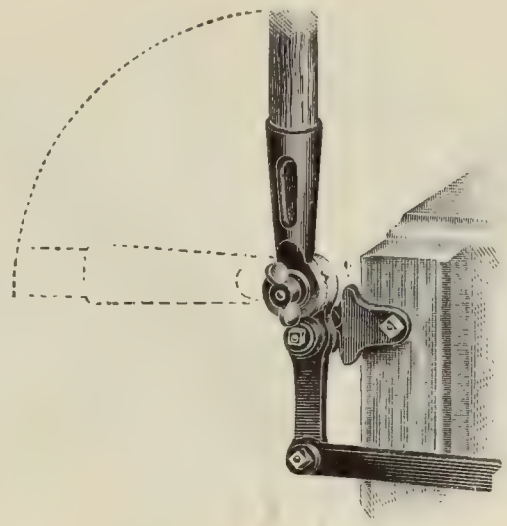


*Fig. 3.—Handle Socket and Adjusting Device.*

by a patent lock and counter lock, both being moved with ease, but absolutely holding the lid when placed in proper position. All gearing is placed on the inside of the tub, which is referred to as being very simple, avoiding injury to children or adults. All metal parts inside the tub are heavily galvanized. As shown in Fig. 3, the lever handle can be placed at any angle desired by the operator. It is stated that the adjustable feature of the handle is peculiar only to this washer, and that the machine works nearly as easily with a load as without. The washer is well finished in natural wood, covered by two heavy coats of best varnish. All outside castings are finished in gold bronze, while the wheel is painted either red or green. The legs are made of heavy oak, substantially bolted to the machine. The inside dimensions of the tub are 21⅞ x 18⅜ x 20 in., the size of the cylinder is 17¾ x 15 in., having a capacity of about seven shirts; and the quantity of water needed is from three to four buckets. The net weight of the washer, crated, is 110 lb.

## Dunne's Mitre Draw Clamp and Cutter.

The combination draw clamp and cutter here illustrated has just been put on the market by the Burgess-Norton Mfg. Company, Geneva, Ill. It is fitted with

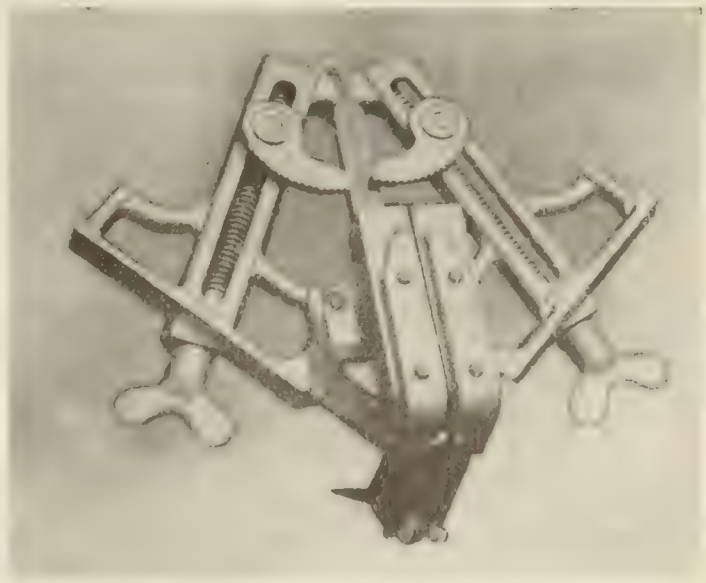


*Fig. 1.—Dunne's Miter Draw Clamp with Saw Guide in Position.*

lead screws and dogs, by means of which the work is firmly clamped and held in position. The clamp will accommodate and hold molding of any size or shape, and it is stated that after cutting the miters no shooting or

planing of ends is necessary to make a finished job. Fig. 1 shows the tool with the adjustable saw guide in position, while in Fig. 2 it is removed to clamp and hold together the mitered ends of molding for nailing. Fig. 3 illustrates its use as a miter cutter. In operation the clamp is firmly screwed to a bench or table, or it may be

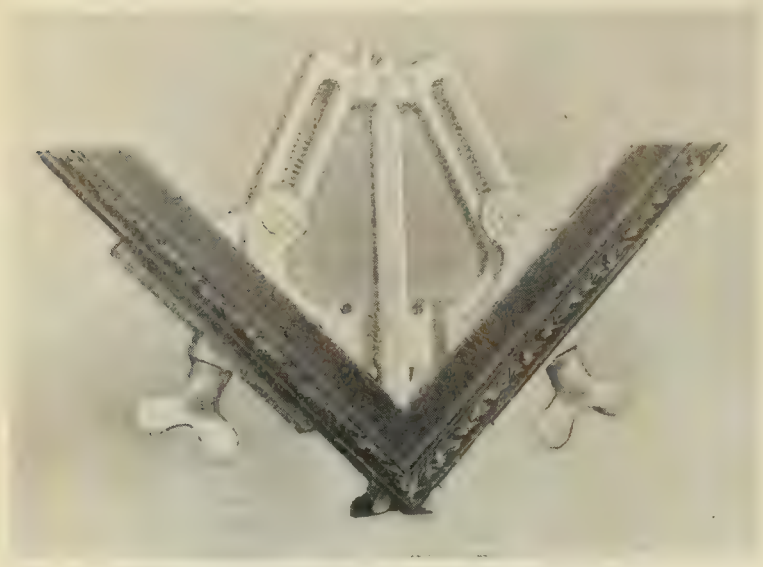


*Fig. 2.—Draw Clamp with Saw Guide Removed, Holding Mitered Ends for Nailing.*

held in a vise by the projecting lip of the clamp; the saw guide is then attached with a thumb screw and the molding pushed up snugly against the front of the clamp, where it is securely fastened by the clamp screws. After the miters are cut and the saw guide removed the moldings are fitted in the clamp to be joined as shown in Fig. 2. The back of the clamp acts both as a guide rest and stop in cutting the miter, and it is stated that the

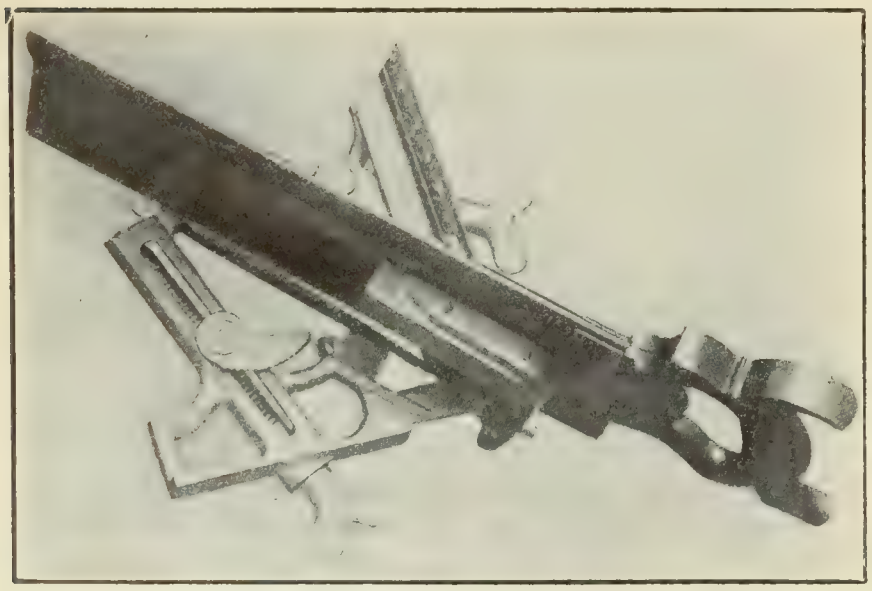


*Fig. 3.—Draw Clamp Used as a Miter Cutter.*

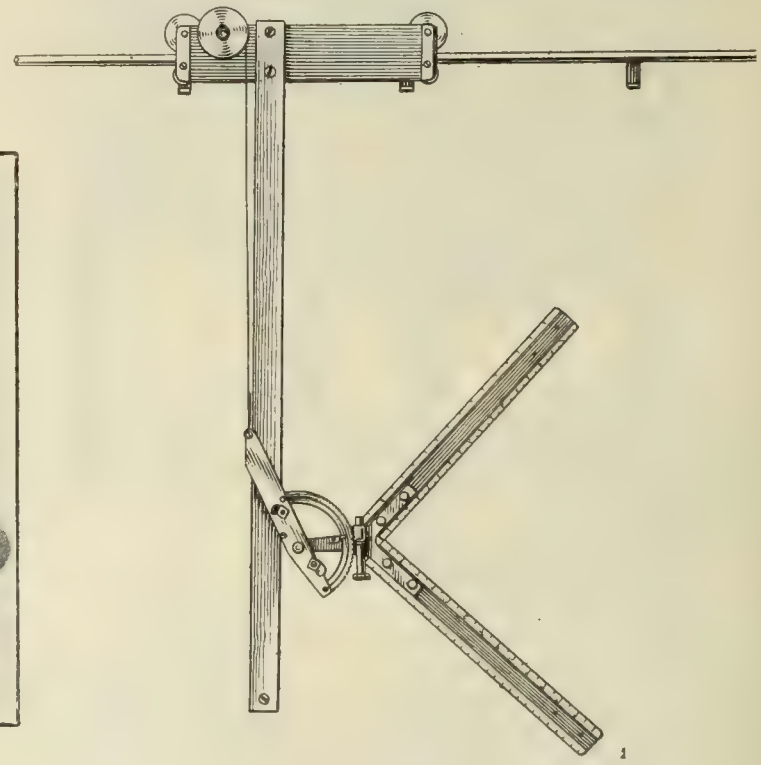
guide can be adjusted to prevent any side movement of the saw, thus assuring a true cut. The extreme simplicity of the tool, together with its efficiency and accuracy, are claimed as its distinctive features.

## The Shamrock Enameled Ware.

The Norvell-Shapleigh Hardware Company, St. Louis, Mo., has lately put on the market a full line of high quality enameled ware under the name of "Shamrock." As might be inferred from the name, the color of the ware is a beautifully blended green, in light and dark shades, the inside of the utensils being finished in white. As customary with the company's special brands, the ware is offered with a label of elegant design, the special feature of which is the reproduction of a shamrock. The label provides for the noting of size and selling price. In packing the ware the utmost care is exercised to insure safe carriage, all pieces being separately wrapped and sealed. The company issues a circular giving suggestions as to effective show window display of the ware, and is also ready to furnish an advertising outfit to the merchant, including curtain sign or banner, lapel buttons and post card.

## The Noyes Vertical T Square.

The Emmert Mfg. Company, Waynesboro, Pa., is offering the drafting instrument shown herewith. It comprises a vertically arranged T square, having a protractor with scales sliding vertically on it. The head of the T square is provided with a set of four rollers, guided upon a straight steel track, which is to be fastened to the top of a drawing board. One pair of the rollers is beveled and run on ball bearings, arranged so that the weight of the head will hold it upon the track without lost motion, and making possible a free and sensitive movement. The head also carries a spring balanced drum to which is attached a cord connecting with the vertically sliding protractor and holding the latter to the blade. The protractor is also guided upon the blade by rollers to give a more sensitive movement. Thus it is evident that the instrument moves in horizontal and vertical parallel lines. Pivoted to the sliding protractor is a forked arm, to which are attached interchangeable scales. The arm is provided with a worm, which engages notches cut in the rim of the protractor, and which can be quickly pressed out of engagement therewith. The notches are spaced three degrees apart, making possible an instantaneous setting of the instrument to any multiple of three degrees, which includes all the most commonly used angles—0, 15, 30, 45, 60, 75 and 90. The three-degree angle is convenient, as it is the usual draft given to patterns, being suitable for the conventional angle used for showing screw threads and various other



*The Noyes Vertical T Square.*

cases. To obtain fine adjustment, the neck of the worm is graduated with 12 divisions, so that one division represents one-quarter of a degree. One-half of this, or one-eighth degree, can be easily read, which is as fine as is necessary for drawing. The interchangeable scales are furnished with any desired graduations. In addition to the advantages of the instrument for the horizontal board it is equally well suited for the vertical. It is pointed out that the instrument conserves speed and accuracy in making projections, and combines T square, protractor, scales and triangle into one self-contained whole, depending from the top of the board and eliminating the use of the parallel rule with its inaccuracies. A further extension of the use of the instrument is in making drawings as large as 6 x 10 ft., with the same ease, accuracy and speed as on a 24 x 36 in. board.

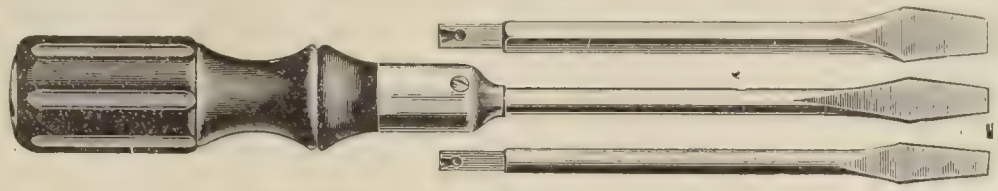
## Geo. H. Bishop & Co.'s Greyhound Hand Saws.

Geo. H. Bishop & Co., Lawrenceburg, Ind., are making a new line of Hand Saws, which they are introducing under the brand "Greyhound." In naming instead of number-

ing the saw, the firm is departing from its usual custom, and indeed this is said to be the only Bishop Saw which will be designated by a name. The Saw is offered as a strictly high grade tool, and is made from a steel on which the firm has been experimenting for years to secure a fine grain and tough body that could be backed with an absolute guarantee. To these features are added accuracy and evenness of temper, so that the Saws are declared to cut fast, run easy in all kinds of wood, and hold their sharpness and set for a long time. In workmanship and finish it is claimed that they leave nothing to be desired, and the hang of the blade has been studied and adjusted with the greatest care. Greyhound Saws are made in both straight and skew back, and in 18, 20, 22, 24 and 26 in. lengths. They are packed one in a box.

## The Swift-Waters Interchangable Screw Driver.

The Swift-Waters Mfg. Company, Berlin, Conn., is putting on the market an interchangeable screwdriver, arranged so that either one of three blades may be used, the substitution of one for the other being quickly and easily accomplished. In the center of the handle is a solid steel bar with a flat disk at its inner end next the blade to prevent heading, which permits the tool to stand severe usage. The blades are of 5-16 in. round stock. As the illustration shows, their ends are squared and recessed to take a spring button, which is governed by an indestructible spring of piano wire. A quick pull removes the blade, disengaging the holding plug.



*Swift-Waters Interchangeable Screw Driver.*

# PAINTS, OILS AND COLORS

### Animal, Fish and Vegetable Oils—

| | ℔ gal. bbls. |
|---|---|
| Linseed, State and Western, raw | 41 @43 |
| City, Raw | 43 @44 |
| Boiled, 1¢ ℔ gal. advance on Raw. | |
| Raw, Calcutta, in bbls | 70 @.. |
| Lard, Prime, Winter | 75 @78 |
| Extra No. 1 | 51 @52 |
| No. 1 | 49 @50 |
| Cotton-seed, Crude, f.o.b. mill | 29 @30 |
| Summer Yellow, prime | 38¾@39¼ |
| Summer, White | 41 @41½ |
| Yellow Winter | 45 @47 |
| Tallow, Acidless | 60 @61 |
| Menhaden, Brown, Strained | 35 @36 |
| Northern Crude | 24 @.. |
| Southern | 24 @.. |
| Light Strained | 35 @36 |
| Bleached Winter | 37 @39 |
| Ex. Bleached Winter | 39 @41 |
| Cocoanut, Ceylon | ℔ lb 6¾@ 6⅞ |
| Cochin | ℔ lb 7¼@ 7½ |
| Cod, Domestic, Prime | 38 @40 |
| Newfoundland | 40 @42 |
| Red, Elaine | 41 @42 |
| Saponified | ℔ lb 6 @ 6⅛ |
| Olive, Yellow | $0.95@$1.25 |
| Neatsfoot, Prime | 55 @58 |
| Palm, Lagos | ℔ lb 6½@.. |

### Mineral Oils—

| | ℔ gal. |
|---|---|
| Black, 29 gravity, 25@30 cold test | 13 @13½ |
| 29 gravity, 15 cold test | 13½@14 |
| Summer | 12½@13 |
| Cylinder, light filtered | 20½@21 |
| Dark filtered | 18 @19 |
| Paraffine, 903-907 sp. gravity | 14½@15 |
| 903 sp. gravity | 13½@14 |
| 883 sp. gravity | 11 @11½ |
| Red | 13½@14 |

### Miscellaneous—

| | |
|---|---|
| Barytes: | |
| White, Foreign | ℔ ton $18.50@20 50 |
| Amer., floated | ℔ ton 17.00@18.00 |
| Off color | ℔ ton 12.50@15 00 |
| Chalk, in bulk | ℔ ton 3.00@ 3.40 |

| | ℔ gal. |
|---|---|
| China Clay, Imported | ℔ ton 11.50@18.00 |
| Cobalt, Oxide | ℔ 100 lb 1.45@ 2.60 |
| Whiting, Commercial | ℔ 100 lb 42@52 |
| Gilders | ℔ 100 lb .55@ .60 |
| Ex. Gilders | ℔ 100 lb .60@ .65 |

### Putty, Commercial—℔ 100 lb

| | |
|---|---|
| In bladders | $1.70 @1.80 |
| In bbls. or tubs | 1.20 @1.45 |
| In 1 lb to 5 lb cans | 2.65 @2.95 |
| In 12½ to 50 lb cans | 1.50 @1.90 |

### Spirits Turpentine—℔ gal.

| | |
|---|---|
| In Oil bbls | 38½@39 |
| In machine bbls | 39 @39½ |

### Glue—

| | ℔ lb |
|---|---|
| Cabinet | 12 @15 |
| Common Bone | 7½@ 9 |
| Extra White | 18 @24 |
| Fish, liquid, 50 gal. bbls., per gallon | 60 @1.20 |
| Foot Stock, White | 12 @14 |
| Foot Stock, Brown | 9 @11 |
| German Common Hide | 10 @12 |
| German Hide | 12 @18 |
| French | 10 @40 |
| Irish | 13 @16 |
| Low Grade | 10 @12 |
| Medium White | 14 @17 |

### Gum Shellac—

| | ℔ lb |
|---|---|
| Bleached, Commercial | 23 @24 |
| Bone Dry | 28 @29 |
| Button | 30 @40 |
| Diamond I | @37 |
| Fine, Orange | 34 @35 |
| A. C. Garnet | 27 @28 |
| G. A. L | 20 @21 |
| Kala Button | 18 @19 |
| D. C | @36 |
| Octagon B | 35 @36 |
| T. N | 25 @26 |
| V. S. O | @37 |

### Colors in Oil—

| | ℔ lb |
|---|---|
| Black, Lampblack | 12 @14 |
| Blue, Chinese | 36 @46 |
| Blue, Prussian | 32 @36 |
| Blue, Ultramarine | 13 @16 |
| Brown, Vandyke | 11 @14 |
| Green, Chrome | 12 @16 |
| Green, Paris | @24 |
| Sienna, Raw | 12 @15 |
| Sienna, Burnt | 12 @15 |
| Umber, Raw | 11 @14 |
| Umber, Burnt | 11 @14 |

### White and Red, Lead &c.—

| | ℔ lb |
|---|---|
| Lead, English white, in Oil | 10⅛@10⅜ |
| Lead, American White: | |
| Dry and in Oil, 100, 250 and 500 lb kegs | 7 |
| Dry and in Oil, 25 and 50 lb kegs | 7¼ |
| Dry and in Oil, 12½ lb kegs | 7½ |
| In Oil, 25 lb tin pails | 7½ |
| In Oil, 12½ lb tin pails | 8 |
| In Oil, 1, 2, 3 and 5 lb tin cans, ass't | 9 |
| Red Lead and Litharge: | |
| In 100 lb kegs | 7 |
| In 25 and 50 lb kegs | 7¼ |
| In 12½ lb kegs | 7½ |
| In lots of less than 500 lbs, ½¢ ℔ lb advance over above prices of White and Red Lead and Litharge. | |
| Lead, American. Terms: On lots of 500 lbs and over, 60 days, or 2% for cash if paid in 15 days from date of invoice. | |

### Zinc, Dry—

| | ℔ lb |
|---|---|
| American, dry | 5⅛@ 5⅝ |
| Red Seal (French process) | 6¾@ 7 |
| Green Seal | 7¼@ 7½ |
| German Red Seal (French process) | 6⅝@ 7 |
| Green Seal | 7¼@ 7⅝ |
| White Seal | 7¾@ 8¼ |
| French, Red Seal | 8⅜@ 8¾ |
| Green Seal | 10⅜@10⅝ |

### Dry Colors—

| | ℔ lb |
|---|---|
| Black, Carbon | 6½@10 |
| Black Drop, American | 3½@ 8 |
| Black Drop, English | 5 @15 |
| Black, Ivory | 16 @20 |
| Lamp, commercial | 4 @ 6 |
| Blue, Celestial | 4 @ 6 |
| Blue, Chinese | 31 @33 |
| Blue, Prussian | 29 @31 |
| Blue, Ultramarine | 3½@15 |
| Brown, Spanish | ½@ 1 |
| Carmine, No. 40 | $3.10@3 25 |
| Green, Chrome, ordinary | 3½@ 5 |
| Green, Chrome, pure | 17 @25 |
| Ocher, American | ℔ ton $8.50@16.00 |
| American Golden | 2½@ 3¼ |
| French | 1¼@ 2 |
| Foreign Golden | 3 @ 4 |
| Orange Mineral, English | 10 @12 |
| French | 12¾@13 |
| German | 12 @13 |
| American | 9 @10 |
| Red, Indian, English | 4½@ 6 |
| American | 3 @ 3¼ |
| Red, Turkey, English | 4 @10 |
| Red, Tuscan, English | 7 @10 |
| Red, Venetian, Amer. | ℔ 100 lb $0.50@1.25 |
| English | ℔ 100 lb $1.15@1.00 |
| Sienna, Italian, Burnt and Powdered | 3 @ 9 |
| Italian, Raw, Powdered | 3 @ 7 |
| American, Raw | 1½@ 2 |
| American Burnt and Pow'd. | 1½@ 2 |
| Talc, French | ℔ ton $18 00@25.00 |
| American | ℔ ton 15.00@25.00 |
| Terra Alba, French | ℔ 100 lb .90@ 1.00 |
| English | ℔ 100 lb .80@ 1.00 |
| American | ℔ 100 lb, No. 1. .75@ .80 |
| American | ℔ 100 lb, No. 2. .60@ .65 |
| Umber, T'key, Bnt, & Pow. | 2⅝@ 3 |
| Turkey, Raw and Powdered | 2¾@ 3 |
| Burnt, American | 1½@ 2 |
| Raw, American | 1½@ 2 |
| Yellow, Chrome, Pure | 13¾@15 |
| Vermilion, American Lead | 7 @25 |
| Quicksilver, bulk | 65 @.. |
| Quicksilver bags | @66 |
| English, Imported | 65 @70 |
| Chinese | $0.90@1.00 |


# THE IRON AGE

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# Current Hardware Prices.

**General Goods.**—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

**Special Goods.**—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

**Range of Prices.**—A range of prices is indicated by means of the symbol @. Thus 33⅓ @ 33⅓ & 10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

**Names of Manufacturers.**—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1907, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

**Standard Lists.**—"The Iron Age Standard Hardware Lists" contains the list prices of many leading goods.

**Additions and Corrections.**—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

## Adjusters, Blind—

Columbian and Domestic.....33⅓%
North's .....10%
Upson's Patent, ₱ gro., $29.90.....10%
Zimmerman's—See Fasteners, Blind.

### Window Stop—

Ives' Patent.....35%
Ives' Stop Bead Screws and Washers .....10%
Taplin's Perfection.....35%

## Ammunition—See *Caps, Cartridges, Shells, &c.*

## Anti—Rattlers—

Fernald Mfg. Co. Burton Anti-Rattlers, ₱ doz. pairs, Nos. 1, $0.75; 2, $0.60; 4, $1.00; 5, $0.50.
Fernald Quick Shifter, ₱ doz. pairs .....$2.00@$3.00

## Anvils—American—

Eagle Anvils.....₱ lb @8 ¢
Hay-Budden, Wrought.....9½@9¾ ¢
Trenton .....₱ lb 9½@9¾ ¢

### Imported—

Swedish Solid Steel Sisco, Superior, ₱ lb.....10@10½ ¢
Peter Wright & Sons, ₱ lb, 84 to 349 lb, 11¢; 350 to 600 lb, 11½¢.

## Anvil, Vice and Drill—

Millers Falls Co., $18.00.....15&10%

## Apple Parers—See *Parers, Apple, &c.*

## Aprons, Blacksmiths'—

Livingston Nail Co.....10%

## Augers and Bits—

*Com. Double Spur....75&10@80%*
*Jennings' Patn., Bright.65&10@70%*
*Black Lip or Blued...65@65&5%*
*Boring Mach. Augers.....70%*
*Car Bits, 12-in. twist.....40&10%*
Ford's Auger and Car Bits.....40&5
Ft. Washington Auger Co., Conard's .....35%
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip. R. Jennings' list, 25&7½%
No. 30, R. Jennings' list.....50%
Russell Jennings'.....25&10&2½%
L'Hommedieu Car Bits.....15%
Mayhew's Countersink Bits.....45%
Pugh's Black.....20%
Pugh's Jennings' Pattern.....35%
Snell's Auger Bits.....60%
Snell's Bell Hangers' Bits.....60%
Snell's Car Bits, 12-in. twist.....60%
Snell's King Auger Bits.....50%
Swan's .....65&10@70
Swan's, Jennings' Pattern.....50
Wright's Jennings' Bits.....50%

## Bit Stock Drills—

See *Drills, Twist.*

## Expansive Bits—

Clark's Pattern, No. 1, ₱ doz., $26; No. 2, $18.....60&10%
Ford's, Clark's Pattern...60&5@60&10%
C. E. Jennings & Co., Steer's Pat..25%
Lavigne Pat., small size, $18.00; large size, $26.90.....60&10%
Swan's .....60%

## Gimlet Bits—

*Per gro.*
*Common Dbl. Cut.....$3.00@3.25*
*German Pattern, Nos. 1 to 10, $4.75; 11 to 13, $5.75*

## Hollow Augers—

*Bonney Pat., per doz..$5.50@6.00*
Ames .....20&10%
Universal .....20%

## Ship Augers and Bits—

*Ship Augers.....40&10@—%*
Ford's .....33⅓&5%
C. E. Jennings & Co.:
L'Hommedieu's .....6%
Watrous' .....33⅓&7½%
Snell's .....48%

## Awl Hafts—See *Handles, Mechanics' Tool.*

## Awls—

*Boad Awls:*
*Handled .....gro. $2.75@3.00*
*Unhdld., Shldered...gro.63@66¢*
*Unhandled, Patent..gro.66@70¢*
*Peg Awls:*
*Unhandled, Patent..gro. 31@34¢*
*Unhdld, Shldered..gro. 65@70¢*
*Scratch Awls:*
*Handled, Com...gro. $3.50@4.00*
*Handled, Socket.gro.$11.50@12.00*

## Awl and Tool Sets—See *Sets, Awl and Tool.*

## Axes—

*Single Bit, base weights: Per doz.*
*First Quality.....$4.75@5.00*
*Second Quality.....$4.25@4.50*
*Double Bit, base weights:*
*First Quality.....$7.00@7.50*
*Second Quality.....$6.50@6.75*

## Axle Grease—

See *Grease, Axle.*

## Axles—Iron or Steel.

*Concord, Loose Collar...4¼@4½¢*
*Concord, Solid Collar....4½@5 ¢*
*No. 1 Common, Loose...3½@4 ¢*
*No. 1½ Com., New Style.4¼@4¾¢*
*No. 2 Solid Collar.....4¼@4¾¢*
*Half Patent:*
*Nos. 7, 8, 11 and 12.....70%*
*Nos. 13 to 14.....70%*
*Nos. 15 to 18...70&10@70&10&5%*
*Nos. 19 to 22...70&10@70&10&5%*

## Boxes, Axles—

*Common and Concord, not turned .....lb., 5@6¢*
*Common and Concord, turned, lb., 6@7¢*
*Half Patent.....lb., 9½@10¢*

## Bait—Fishing—

Hendryx:
A Bait.....20%
B Bait.....25%
Competitor Bait.....20&5%

## Balances—Sash—

Caldwell new list.....50&10%
Pullman .....50&10%

## Spring—

*Light Spring Balances.60@60&5%*
Chatillon's:
Light Spg. Balances.....50@50&10%
Straight Balances.....40@40&10%
Circular Balances.....50&10%
Large Dial.....30%

## Barb Wire—See *Wire, Barb.*

## Bars—Crow—

*Steel Crowbars, 10 to 40 lb.... per lb., 2¼@2½¢*

## Towel—

No. 10 Ideal, Nickel Plate..₱ gro. $8.50

## Beam, Scale—

*Scale Beams.....40%*
Chattillon's No. 1.....30%
Chatillon's No. 2.....40%

## Beaters, Carpet—

Holt-Lyon Co.:
No. 12 Wire Coppered ₱ doz. $0.80; Tinned .....$0.85
No. 11 Wire Coppered ₱ doz. $1.15; Tinned .....$1.20
No. 10 Wire Tinned.....₱ doz. $1.50

## Beaters Egg—

Dover Stamping & Mfg. Co.:
Genuine Dover, per gro., No. 1, Tumbler Size, $7.50; No. 2, Family Size, $7.50; No. 3, Extra Family Size, $24.00; No. 4, Hotel Size, $30.00.
Holt-Lyon Co.:
Holt, per doz., No. 5, Jap'd, $0.80; No. A, Jap'd, $1.15; No. B, Jap'd, $1.85; No. 6, Jap'd, $1.65.
Lyon, Jap'd, per doz., No. 2, $1.35.
Taplin Mfg. Co.:
Improved Dover, per gro., No. 60, $6.00; No. 75, $6.50; No. 100, $7.00; No. 102, Tin'd, $8.50; No. 150, Hotel, $15.00; No. 152, Hotel Tin'd, $17.00; No. 200, Tumbler, $8.50; No. 202, Tumbler Tin'd, $9.50; No. 300, Mammoth, per doz., $25.00.

## Bellows—

*Blacksmith, Standard List:*
*Split Leather.....60&10@65%*
*Grain Leather.....50@50&10%*

Hand—

| | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|
| *Inch..* | | | | | |
| *Doz..* | *$5.00* | *5.50* | *6.00* | *6.50* | *7.50* |

Molders—

| | 10 | 12 | 14 | 16 |
|---|---|---|---|---|
| *Inch..* | | | | |
| *Doz..* | *$7.50* | *9.00* | *12.00* | *15.00* |

Net Prices.

## Bells—Cow—

*Wrought Cow Bells.....75%*
Jersey .....75&10%
Texas Star.....50%

## Door—

Home, R. & E. Mfg. Co's.....55&10%

## Hand—

*Polished, Brass.....60@60&10%*
*White Metal.....60@60&10%*
*Nickel Plated.....50&10%*
*Swiss .....50&10%*
Coue's Globe Hand Bells.....33⅓@35%

## Miscellaneous—

*Farm Bells.....lb., 2¼@2½¢*
*Church and School....60@60&10%*

## Belting—Leather—

*First Quality, Ex. Hy., Strictly Short Lap.....60&10%*
*Standard .....70&10@70&10&5%*
*Light Double.....75&10%*
*Cut Leather Lacing.....50%*
*Leather Lacing Sides, per sq. ft. 23@24¢*

## Rubber—

*Competition (Low Grade), 70&10@75%*
*Standard .....60&10@70%*
*Best Grades.....40@50%*

## Bench Stops—

See *Stops, Bench*

## Benders and Upsetters, Tire—

Green River Tire Benders and Upsetters .....20%

## Bicycle Goods—

John S. Leng's Son & Co.'s 1908 list:
Cham, Parts, Spokes.....
Tubes .....60%

## Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

## Blocks Tackle—

*Common Wooden.....75@75&5%*
B. & L. B. Co.:
Boston Wood Snatch, 50%; Eclipse Steel, 75%; Hollow Steel, 50&10%; Star Wire Rope, 50%; Tarbox Metal Snatch, 50%; Tarbox New Style Steel, 50&10%; Wire Rope Snatch, 50%.
Lane's Patent Automatic Lock and Junior .....30%
See also Machines, Hoisting.

## Boards, Stove—

*Paper and Wood Lined.....55%*
*Embossed .....55%*

## Boards, Wash—

See *Washboards.*

## Bobs, Plumb—

Keuffel & Esser Co.....33⅓&10%

## Bolts Carriage, Machine, &c,—

*Common Carriage (cut thread):*
*¾ x 6 and smaller..75&5@—%*
*Larger and longer....70&5@—%*
*Phila. Eagle, $5.00 list...80@—%*
*Bolt Ends.....70&10@—%*
*Machine (Cut Thread):*
*⅜ x 4 and smaller..75&10@—%*
*Larger and longer...70&10@—%*

## Door and Shutter—

*Cast Iron Barrel, Japanned, Round Brass Knobs:*

| | *Inch* | *3* | *4* | *5* | *6* | *8* |
|---|---|---|---|---|---|---|
| *Per doz..* | | *$0.30* | *.35* | *.45* | *.60* | *.80* |

*Cast Iron Spring Foot, Jap'd:*

| | *Inch* | *6* | *8* | *10* |
|---|---|---|---|---|
| *Per doz.* | | *$1.20* | *1.50* | *2.25* |

*Cast Iron Chain, Flat, Japanned:*

| | *Inch* | *6* | *8* | *10* |
|---|---|---|---|---|
| *Per doz.* | | *$1.00* | *1.40* | *1.65* |

*Cast Iron Flat Shutter, Jap'd, Brass Knobs:*

| | *Inch* | *6* | *8* | *10* |
|---|---|---|---|---|
| *Per doz.* | | *$0.75* | *.95* | *1.25* |

*Wrought Barrel Japanned, 80&10@80&10&5%*
*Barrel Bronzed.....60&10%*
*Spring .....70&10@70&10&10%*
*Shutter .....50&5@50&10&5%*
*Square Neck.....75@75&10%*
*Square .....70&10&10@80%*
Ives' Mortise.....10%
Ives' Wrought Metal.....10%

## Expansion—

F. H. Evans' Crescent.....40@60%
Richards Mfg. Co.....55&10%
Star Expansion Bolt Co.:
Star, Lag Screw Type..60&10&5&2½%
Star, Wood Screw Type.....40%
Star, Machine, Single Wedge....60%
Star, Machine, Double Wedge....60%
Steward & Romain Mfg. Co.:
Style No. 13, Double.....60%
Style No. 1, Single.....60%
Style No. 100, Dbl. Jaw, Single..55%
Lag Screw.....66⅔%

## Plow and Stove—

*Plow .....65&5@70%*
*Stove .....85@85&5%*

## Tire—

*Common Iron.....80%*
*Norway Iron.....80%*
American Screw Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84...82½%
Bay State, list Dec. 28, '99.....80%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84...82½%
Eclipse, list Dec. 28, '99.....80%
Russell, Burdsall & Ward Bolt & Nut Co.:
Empire, list Dec. 28, '99.....80%
Norway Phila., list Oct. '84.....80%
Eagle .....82½%
Shelton Co.:
Tiger Brand, list Dec. 28, '99....80%
Phila., Eagle, list Oct. 16, 1884..82½%
Upson Nut Co.:
Tire Bolts.....72½%

## Borers, Bung—

*Borers Bung, Ring, with Handle:*

| | *Inch.....* | *1¼* | *1½* | *1¾* | *2* |
|---|---|---|---|---|---|
| *Per doz...* | | *$4.80* | *5.60* | *6.40* | *8.00* |
| *Inch.....* | | | | *2¼* | *2½* |
| *Per doz.....* | | | | *$8.65* | *11.50* |

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.75; No. 3, $2.50 each.....25%

## Boxes, Mitre—

C. E. Jennings & Co.....25%
Langdon, New Langdon and Langdon Improved, 20&10%; Langdon Acme .....15&10%
Perfection .....40%
Seavey .....45%

## Braces—

*Comman Ball, American....$1.50*
Barber's .....50&10&10@60&10%
Fray's Genuine Spofford's.....60%
Fray's No. 61, 166, 206, 614.....50%
C. E. Jennings & Co.....50&5%
Mayhew's Ratchet.....60%
Mayhew's Quick Action Hay Pat...50%
Millers Falls Drill Braces.....25&10%
P., S. & W. Co., Peck's Pat....60&10%

## Brackets—

*Wrought Steel.....75&10&5@80%*
Bradley Metal Clasp...80&10@80&10&5%
Griffin's Pressed Steel.....75@75&10%
Griffin's Folding Brackets.....70&10%
Taplin Victor Handy Egg Beater Bracket .....₱ doz. $1.50

## Bright Wire Goods—

See *Wire and Wire Goods.*

## Broilers—

Kilbourne Mfg. Co.....75&20%
Wire Goods Co.....75%

## Buckets, Galvanized—

*M'fr's list, price per gross.*

| | *Quart..* | *10* | *12* | *14* |
|---|---|---|---|---|
| *Water, Reg...* | | *26.85* | *29.50* | *33.50* |
| *Water, Hvy...* | | *45.35* | *48.00* | *52.00* |
| *Fire, Rd. Btm.* | | *32.00* | *34.65* | *38.65* |
| *Well .....* | | *37.35* | *41.35* | *45.35* |

10&7½&5&5%

## Bull Rings—See *Rings, Bull.*

## Butts—Brass—

*Wrought, High List, Oct. 16, '06.65%*
Cast Brass, Tiebout's.....40&10%

## Cast Iron—

*Fast Joint, Broad....40&10@50%*
*Fast Joint, Narrow...40&10@50%*
*Loose Joint.....70&10@75%*
*Loose Pin.....70&10@75%*
*Mayer's Hinges .....70@70&5*
*Parliament Butts.....70@70&5*

## Wrought Steel—Bright.

*Light Narrow, Light Reversible .....70&5%*
*Reversible and Broad..70&5%*
*Loose Joint, Narrow, Light Inside Blind, &c.....70%*
*Back Flaps, Table Chest.65%*

*Japanned.*

*Light Narrow, Loose Pin. 40&5%*
*Light Narrow, Ball Tip..60%*
*Broad .....40&5%*
*Steeple Tipped.....70%*
*Ball Tipped.....70%*

Extra, 10%

## Cages, Bird—

Hendryx Brass: Series 3000, 5000, 1100, net list; 1200, 15%; 200, 300, 900 ..... 30%
Hendryx Bronze: Series 700, 800....30%
Hendryx Enameled.....35%

## Calipers—See *Compasses.*

## Calks, Toe and Heel—

*Blunt, 1 prong, per 100 lb., $3.50@$3.85*
*Sharp, 1 prong, per 100 lb., $4.00@$4.35*
Burke's, 1 pg. Blunt Toe, 3¾¢; 2 pg. Blunt Toe, 4¼¢; 1 pg. Sharp Toe, 4¼¢; 2 pg. Sharp, 4¾¢; Blunt Heel, 4¼¢; Sharp Heel.....4¾¢
Lautier, Blunt, 4@4¼¢; Sharp, 4½@4¾¢
Perkins', Blunt, ℔ lb, 3.65¢; Sharp, 4.15¢

## Can Openers—

See *Openers, Can.*

## Caps, Percussion—

*Eley's E. B.....52@55¢*
*G. D.....per M 33@35¢*
*F. L.....per M 40@42.*
*G. E.....per M. 48@50¢*
*Musket .....per M 62@63¢*

## Primers—

*Berdan Primers, $2 per M..20&5%*
*Primer Shells and Bullets..15&10%*
*All other primers per M. $1.52@1.60*

## Carpet Stretchers—

See *Stretchers, Carpet.*

## Cartridges—

*Blank Cartridges:*
*32 C. F., $5.50.....10&5%*
*38 C. F., $7.00.....10&5%*
*22 cal. Rim, $1.50.....10&5%*
*32 cal. Rim, $2.75.....10&5%*
*B. B. Caps, Con. Ball, Swgd. $190*
*B. B. Caps, Round Ball.....$1.49*
*Central Fire.....25%*
*Target and Sporting Rifle. 15&5%*
*Primed Shells and Bullets. 15&10%*
*Rim Fire, Sporting.....50%*
*Rim Fire, Military.....15&5%*

## Casters—

*Bed .....65&10@70%*
*Plate .....60@60&5%*
*Philadelphia .....70&10@75%*
Acme, Ball Bearing.....35%
Gem (Roller Bearing).....70&10&10&5%
Steel Gem (Roller Bearing).....70%
Standard Ball Bearing.....45%
Yale (Double Wheel) low list...40&10%

## Cattle Leaders—

See *Leaders, Cattle.*

## Chain, Proof Coil—

*American Coil, Straight Link:*

| 3-16 | ¼ | 5-16 | ⅜ | ½ | ⅝ |
|---|---|---|---|---|---|
| $7.80 | 5.20 | 4.25 | 3.60 | 3.40 | 3.20 |

¾-⅞-1 1⅛ to 1¼ inch.
$3.10 3.20
*In cask lots, deduct 25¢.*
*German Coil.....70%*
*German Pattern Coil:*
*6-0 to 1.....70&10&5%*
*2 and 3.....60&10&10@70%*
*4, 5 and 6.....50&10@5&10&5%*

## Halter—

*Halter Chains.....60&5@60&10%*
*German Pattern Halter Chains, list July 24, '97....60&10&5@70%*
Covert Mfg. Co.:
Halter .....35&5%

## Cow Ties—

See *Halters and Ties.*

## Trace, Wagon, &c.-

*Traces, Western Standard: 100 pr.*
*6½—6-3, Straight, with ring. $28.00*
*6½—6-2, Straight, with ring. $29.00*
*6½—8-2, Straight, with ring. $32.00*
*6½—10-2, Straight, with ring. $37.00*
*NOTE.—Add 2c per pair for Hooks Twist Traces: add per pair for Nos. 2 and 3, 2c: No. 1, 3c; No. 0, 4c to price of Straight Link.*
*Eastern Standard Traces, Wagon Chain, &c...60&10@60&10&5%*

## Miscellaneous—

*Jack Chain, list July 10, '93:*
*Iron .....60&10&7½%*
*Brass .....65%*
*Safety and Plumbers' Chain. 75%*
*Gal. Pump Chain....lb., 1½@15%*
Bridgeport Chain Co.:
Triumph Halter and Coil.35&2½@40
Triumph Dog.....50&10@60
Brown Halter and Coil....45@50&5
Covert Mfg. Co.:
Breast, Halter, Heel, Rein, Stallion .....40%
Oneida Community:
American Halter, Dog and Kennel Chains .....35&2½@50
Niagara Dog Leads and Kennel Chains .....45@50&5
Wire Goods Co.:
Dog Chain.....70%
Universal Dbl.-Jointed Chain....70%

## Chain and Ribbon, Sash—

Oneida Community:
Steel Chain.....60%
Pullman:
Bronze Chain, 60%; Steel Chain, Coppered .....60&10
Sash Chain Attachments, per set 8¢
Aluminov Sash Ribbon, per 100 ft. .....$2.00@$5.00
Sash Ribbon Attachments, per set 8¢

## Chalk—

*Carpenters' Blue.....gro., 50¢*
*Carpenters' Red.....gro., 50¢*
*Carpenters' White.....gro., 40¢*

## Checks, Door—

Burdsley's .....15%
Pullman per gro .....$24.00
Russwin .....32½%

## Chests, Tool—

American Tool Chest Co.:
Boys' Chests, with Tools.....55%
Youths' Chests, with Tools.....40%
Gentlemen's Chests, with Tools..30%
Farmers', Carpenters, etc., Chests, with Tools .....20%
Machinists' and Pipe Fitters' Chests, Empty.....45%
Tool Cabinets.....45%
C. E. Jennings & Co.'s Machinists' Tool Chests.....7½%

## Chisels—

## Socket Framing and Firmer

*Standard List.....80&10@—%*
Buck Bros.....30%
C. E. Jennings & Co.:
Socket Firmer No. 10.....25&7½%
Socket Framing No. 15.....25&7½%
Swan's .....66⅔@70%
L. & I. J. White & Co.....30@30&5%

## Tanged—

*Tanged Firmers.....30&5@35%*
Buck Bros.....30%
C. E. Jennings & Co. Nos. 191, 181..25%
L. & I. J. White Co.....25&5%

## Cold—

*lb.*
*Cold Chisels, good quality. 13@15¢*
*Cold Chisels, fair quality. 11@12¢*
*Cold Chisels, ordinary.... 9@10¢*

## Chucks—

Almond Drill Chucks.....35%
Almond Turret Six Tool Chuck.....40%
Beach Pat, each $8.00.....35&5%
Empire .....25%
Blacksmiths' .....25%
Jacobs' Drill Chucks.....35%
Pratt's Positive Drive.....25%
Skinner Lathe Chucks:
Independent .....35%
Universal, Reversible Jaws.....35%
Universal, Com. Style Jaws.....40%
Combination, Reversible Jaws....35%
Combination, Com. Style Jaws...40%
Round Body or Box Body, 2 Chuck Jaws .....25%
Geared Scroll Chucks.....25%
Drill Chucks:
New Model, 25%; Geared Pattern, 25%; Skinner Patent, ...25%
Positive Drive.....40%
Planer Chucks.....20
Standard .....45
Drill Press Vises.....30
Face Plate Jaws.....35
Standard Tool Co.:
Improved Drill Chuck.....45%
Union Mfg. Co.:
Combination, Nos. 1, 2, 3, 4, 5, 6, 7, 8 and 17, 40%; No. 21.....35%
Scroll Combinations, Nos. 83 and 84 .....30%
Geared Scroll, Nos. 33, 34 and 35..25%
Independent Iron, Nos. 18 and 318..35%
Independent Steel, No. 64.....25%
Union Drill, Nos. 000, 00, 100, 101, 102, 103, 104.....35%
Union Czar Drill.....25%
Universal, 11, 12, 16, 17, 13, 14, 15..40%
Universal No. 42.....35%
Iron Face Plate Jaws, Nos. 28, 30, 48 and 50.....35%
Steel Face Plate Jaws, Nos. 70 and 72 .....30%
Westcott Patent Chucks:
Lathe Chucks.....50%
Little Giant Auxiliary Drill.....50
Little Giant Double Grip Drill...50%
Little Giant Drill, Improved.....50%
Oneida Drill.....50%
Scroll Combination Lathe.....50%
Whitaker Mfg. Co.:
National Drill.....25%

## Clamps—

Adjustable Hammers.....20&5%
Carriage Makers', Star, P., S. & W. Co. .....50%
Besly, Parallel.....33⅓&10%
Myers' Hay Rack.....50
Lineman's Swedish Neverturn.....65%
Wood Workers' Hammers.....40&5%
Saw Clamps, see Vises, Saw Filers'

## Cleaners, Drain,

Iwan's Champion, Adjustable.....50%
Iwan's Champion, Stationary.....40%

## Sidewalk—

Star Socket, All Steel..℔ doz. $4.05 net
Star Shank, All Steel..℔ doz. $3.24 net
W. & C. Shank, All Steel, ℔ doz., 7½ in., $3.00; 8 in., $3.25.

## Cleavers, Butchers'—

Foster Bros.....30%
Fayette R. Plumb.....30
L. & I. J. White Co.....30

## Clippers, Horse and Sheep—

Chicago Flexible Shaft Co:
1902 Chicago Horse, each..$10.75
20th Century Horse, each...$5.00
Lightning Belt Horse, each.$15.00
Chicago Belt Horse, each. $20.00
Stewart's Enclosed Gear Roll Bearing Horse, each.... $6.75
Stewart's New Model Sheep Shearing Machine each $12.75
Stewart Enclosed Gear Shearing Machine No. 8, each. $9.75
} 15%

## Clips, Axle—

*Regular Styles, list July 1, '07. 80&80&10%*

## Cloth and Netting, wire

See *Wire, &c.*

## Cocks, Brass—

*Hardware list*
*Plain Bibbs, Globe, Kerosene, Racking, Liquor, Bottling &c .....75%*
*Compression Bibbs .....70%*

## Coffee Mills—

See *Mills, Coffee.*

## Collars, Dog—

Nickel Chain, Water B. Stevens & Son's list .....40%
Leather, Walter B. Stevens & Son's list .....40%

## Compasses, Dividers, &c.

*Ordinary Goods.....70&10@75%*

## Conductor Pipe,—

*L. C. L. to Dealers:*

| | Gal. Steel. | Charcoal. | Copper. |
|---|---|---|---|
| *Northeastern:* | | | |
| | 70&10% | 50&10&7½% | 50&10% |
| *Eastern:* | | | |
| | 70&10&5% | 50&10&7½% | 50&10% |
| *Central:* | | | |
| | 75&5% | 60% | 50&10% |
| *Northwestern:* | | | |
| | 75&2½% | 60% | 50&10% |
| *Western:* | | | |
| | 70&7½% | 50&12½% | 50&5% |
| *Tennessee:* | | | |
| | 70&10% | 50&12½% | 50&10% |
| *Southern:* | | | |
| | 70% | 50&12½% | 50&5% |
| *Southwestern:* | | | |
| | 70% | 50&5% | 50&5% |

*Terms, 60 days: 2% cash 10 days. Factory shipments generally delivered.*
See also Eave Troughs.

## Coolers, Water—

L. & G. Mfg. Co.:

| Gal. | 2 | 3 | 4 | 6 | 8 |
|---|---|---|---|---|---|
| Galvanized, ea. | $1.85 | $2.00 | $2.25 | $2.90 | $3.90 |
| Galvanized, Lined, side handles, Gal. | 2 | 3 | 4 | 6 | 8 |
| Each | $1.95 | $2.15 | $2.40 | $3.30 | $4.15 |

White Enameled.....10%
Agate Lined.....10%

## Coppers' Tools—

See *Tools, Coopers'.*

## Coppers, Soldering—

*Soldering Coppers, 3 lb. to pair and heavier, 20¢; lighter than 3 lb. to pair.....22¢*

## Cord— Sash—

*Braided, Drab.....lb. 35¢*
*Braided, White, Com., Nos. 8 to 12, 20¢; No. 7, 20½¢; No. 6, 21½¢. In lots of 12 doz. or over, 1 cent less per pound.*
*Cable Laid Italian, lb., No. 18. 37¢*
*Italian, lb., A, No. 18, 25¢; B, 22¢*
*Common India.....lb., 11@11½¢*
*Cotton Sash Cord, Tw'ted. 18@20¢*
*Patent Russia.....lb....20¢*
*Cable Laid Russia.....lb...21¢*
*India Hemp, Br'd'd.....lb...21¢*
*India Hemp, Twisted...lb. 13@14¢*
*Patent India, Twisted..lb...17¢*
Pearl Braided, cotton, No. 6, ℔ lb, 20½¢; No. 7, 19½¢; Nos. 8 to 12, 19½¢, in 12 doz. to 100 doz. lots.
Eddystone Braided, Nos. 8 to 12, 26¢; 7, 26½; 6, 27½¢.
Harmony Cable Laid Italian, Nos. 7 to10.....℔ lb 23¢
Pullman:
Wire Sash Cord.....10%
Sash Cord Attachments, per 100..$2.00
Samson, Nos. 8 to 12:
Braided, ℔ lb., Drab Cotton, 55¢; Italian Hemp, 40¢@50¢; Linen, 65¢; White Cotton, 50¢; Spot Cord.....50¢
Massachusetts, White...℔ lb 40¢
Massachusetts, Drab...℔ lb 45¢
Phoenix, White, Nos 8 to 12... 27¢
} 15%
Silver Lake, per lb.:
A, Drab, 45¢; A, White, 40¢; B, Drab, 40¢; B, White, 35¢; Italian Hemp, 40¢; Linen....57½¢
See also Chain and Ribbon.

## Wire, Picture—

*Full Length.....90@—%*
*Short Length.....90&20@—%*
Hendryx Standard Wire Picture Cord, old list, 85&10%
Turner & Stanton Co. Wire Picture Cord .....90%

## Cradles—

*Grain .....50%*

## Crayons—

*White Round Crayons, Cases, 100 gro., $8.00, $8.50, $9.00 and $10.00 according to grade.*
Zelnicker's Lumber: ℔ gro
White and Purple, Indelible....$7.50
Blue, Red, Green Yellow and Terra Cotta $6.50 Black.....$4.50
Giant Lumber, 5¾ in. x 15 16 in. round, all colors, $12.00; Indelibles, $11.00; Blacks.....$10.00
Genuine Soapstone, Metal Workers', 5 in. x ¼ in. Round, $2.50; 5 in. x ¼ in. Square, $1.75; 5 x ½ x 3-16, $2.50; 5 x 1¼ x 3-16.....$3.00
Silromark, Black, $2.25; Blue, Red and Yellow.....$2.50

## Crooks, Shepperds'—

Fort Madison, per doz. Heavy, $5.50
Light .....$5.00

## Crow Bars—See *Bars, Crow.*

## Cultivators—

Victor Garden.....50

## Cutlery, Table—

International Silver Company:
No. 12 M. Ivy Knives, $17.50 doz., $2.50
Star, Each Rogers & Hamilton and Arcadian .....75¢
Wm. Rogers & Son.....75¢ doz., $2.00

## Cutters— Glass—

H. H. Murray Co.....40
Red Devil.....40
B. Mfg. Co.....40
Woodward.....40

## Meat and Food—

Auction

| No. | 10 | 8 | 6 | 4 | 2 | 1 | 0 | 00 |
|---|---|---|---|---|---|---|---|---|
| Each | $5 | $7 | $8 | $9 | $10 | $12 | $15 | $20 |

Enterprise

| Nos. | 5 | 10 | 12 | 22 | 32 |
|---|---|---|---|---|---|
| Each | $2 | $5 | $2.75 | $4.50 | 25@50&5% |
| No. 202 | $1.50 | | | | 40&5% |

P. S. & W. Co.:
Ideal .....40@40&5%
Hales .....60&5%
Little Giant.....℔ doz 40@50%

| Nos.. | 305 | 310 | 312 | 320 | 322 |
|---|---|---|---|---|---|
| | $35.00 | $48.00 | $44.00 | $72.00 | $68.00 |

New Triumph No. 605, ℔ doz. $24.00, 40%
Russwin Food, No. 1, $24.00; No. 2, $27.00; 3, $42.00.....45&10&10%

| | $15.00 | $18.00 |
|---|---|---|

Enterprise Beef Shavers.....25@30%

## Slaw and Kraut—

Henry Disston & Sons:
Slaw and Kraut Cutters.....35%
Corn Graters.....30%
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife....℔ doz. $3.00
Combined Slaw Cutter and Corn Grater .....℔ doz. $4.00

## Tobacco—

*All Iron, Cheap...doz, $4.25@4.50*
Enterprise .....25@30
National, ℔ doz., No. 1, $21; No. 2 $18 .....40%

## Diggers, Post Hole, &c—

Disston's:
Rapid, ℔ doz., $24.00.....25%
Samson, ℔ doz., $34.00.....25%
Iwan's Pat. Post Hole and Well Auger .....40%
Vaughan Pattern Post Hole Augers, ℔ doz., $7.00
Perfection Post Hole Diggers, ℔ doz. .....$8.50
Split Handle Post Hole Diggers. ℔ doz., $7.50
Hercules Pattern, ℔ doz.....$9.50
Kohler's, ℔ doz., Universal, $14.00; Little Giant, $12.00; Hercules, $10.00; Invincible, $9.00; Rival, $8.50; Pioneer.....$7.50
Never-Break Crucible Steel Post Hole Diggers .....60%

## Dividers—See *Compasses.*

## Drawing Knives—

See *Knives, Drawing.*

## Dressers Emery Wheel—

Sterling Emery Wheel Dressers.....35%
Sterling Wheel Dresser Cutters.....35%

## Drills and Drill Stocks—

*Blacksmith's Common Drilling Machines .....$1.50@1.75*
Breast, Millers Falls.....15&10
Breast, P., S. & W.....33⅓
C. & C. Ratchet.....25
Reversible Ratchet Die Stocks....25%
Goodell Automatic Drills.50&10@60&10
Millers Falls Automatic Drills, Graves', per doz., Nos. 1, $4.86; 2, $8.16.
Millers Falls Automatic Drills.33⅓&10%
Ratchet, Curtis & Curtis.....25%
Ratchet, Parker's.....40%
Ratchet, Weston's.....40%
Ratchet, Weston's, Style H Improved .....40@40&5%
Ratchet, No. 012.....40@40&5
Ratchet, Celebrated.....40@40&5%
Ratchet, Whitney's, P., S. & W.. 40&10@50%
Whitney's Adjustable, No. 30, $12.00, 33⅓%

## Twist Drills—

*Bit Stock.....70@70&5%*
*Taper and Straight Shank. 60&10@70%*

## Drivers, Screw—

*Screw D'ver Bits, per doz. 45@50¢*
Balsey's Screw Holder and Driver, ℔ doz., 2½-in., $6; 4-in., $7.50; 6-in., $9 .....50%
Buck Bros.' Screw Driver Bits.....30%
Champion .....50%
Disston's .....70%
Fray's Hol. H'dle Sets, No. 3, $12..50%
F. & d's Brace Screw Drivers. ..40&10
Gay's Double Action Ratchet .....35%
Goodell's Auto.....65@65&10
Mayhew's Black Handle.....40%
Mayhew's Monarch.....40%
Millers Falls, ℔ doz., Nos 11, $9.95; 12, $13.73; 20, $8.17; 21, $8.46; 41, $13.43; 42, $17.21.
Smith & Hemenway Co. Neverturn, 66⅔; Elmora, 60%; Star, 30&10%
Swan's:
Nos. 7565 to 7568, 60%; No. 7540 40&10%

## Eave Trough, Galvanized—

| *Territory.* | *Gal. Steel.* | *Copper.* |
|---|---|---|
| *Northeastern* | *75&10&5%* | *50&10%* |
| *Eastern* | *80%* | *50&10%* |
| *Central* | *80&10&5%* | *50&10%* |
| *Northwestern* | *80&10&5%* | *50&10%* |
| *Western* | *80&5%* | *50&5%* |
| *Tennessee* | *80&5%* | *50&10%* |
| *Southern* | *75&10%* | *50&5%* |
| *Southwestern* | *75&10&2½%* | *50&5%* |

*Terms 2% 10 days cash. Factory shipments generally delivered.*
*Note.—Lower prices are used in some sections.*
See also Conductor Pipe and Elbows.

## Elbows and Shoes—

*Factory shipments, all terms 2%:*

| *Size* | *Gal. Steel Galv. & Tinned* | *Copper* |
|---|---|---|
| *Sizes 3, 4* | | *30%* |
| *Sizes 5, 6, 7, 8* | | *40&10%* |
| *No. 26* | | *30%* |
| *No. 24* | | *40%* |
| *Copper Elbows* | | *30%* |

## Elbows, Stove Pipe—

Enterprise Stovepipe Elbows .....40&10&10%
Royal Blue .....40&10&10
Reeves' Dover Flat Crimp Pipe .....40&5%

## Emery, Turkish—

| | ¼ to 46: | ½ to 220: | Flour. |
|---|---|---|---|
| *Kegs.....lb.* | *5¢* | *5½¢* | *3½¢* |
| *½ Kegs.....lb* | *5½¢* | *5¾¢* | *3¾¢* |
| *¼ Kegs.....lb.* | *5½¢* | *6¢* | *4¢* |

*10-lb. cans.*
*10 in case....6½¢* 7 ¢ 6 ¢
*10-lb. cans, less than 10.....10 ¢* 10 ¢ 8 ¢
*Less quantity..10 ¢* 10 ¢ 8 ¢

*NOTE.—In lots 1 to 3 tons a discount of 10% is given.*

### Extensions, Bit—
Ford's Auger Bit Extensions....40&5%

### Extractors, Lemon Juice—
*—See Squeezers, Lemon.*

## Fasteners, Blind—
Zimmerman's Jap'd and Galv., 50 & 5%; Bronze and Plated.....50%
Walling's .....50%
Upson's Patent.....40%

### Cord and Weight—
Ives, ₱ gro., $1.08.....10%
Titan, ₱ gro., $0.66.....10%

### Corrugated—
Acme Corrugated Fasteners.....70%

### Faucets—
*Cork Lined.....50&10@60%*
*Metallic Key, Leather Lined, .. 60&10@70%*
*Red Cedar.....40&5@40&10&5%*
*Petroleum .....70&10@75%*
B. & L. B. Co.:
Metal Key.....60&10%
Star .....60%
West Lock.....50&10%
John Sommer's Peerless Tin Key....40%
John Sommer's Boss Tin Key.....50%
John Sommer's Victor Mtl. Key.50&10%
John Sommer's Duplex Metal Key..60%
John Sommer's Diamond Lock.....40%
John Sommer's I.X.L. Cork Lined..50%
John Sommer's Reliable Cork Lined.. 50&10%
John Sommer's Chicago Cork Lined.60%
John Sommer's O. K. Cork Lined...50%
John Sommer's No Brand, Cedar....50%
John Sommer's Perfection, Cedar....40%
Self Measuring:
Enterprise, Self Measuring and Pump, ₱ doz., $36.00.....40&10%
Lane's, ₱ doz., $36.00.....40&10%
National Measuring, ₱ doz. $36.40&10%

### Felloe Plates—
See *Plates, Felloe.*

### Files— Domestic—
*List Nov. 1, 1899.*
*Best Brands.....70&10@75&10%*
*Standard Brands.....75&10@80&10%*
*Lower Grade....75&10&10@80&10%*
Gold Medal.....70%
McCaffrey's American Standard, 60&10&10%

### Imported—
*Stubs' Tapers, Stubs' list, July 24, '97.....33⅓@40%*

### Fixtures, Fire Door—
Richards Mfg. Co.:
Universal, No. 103; Special, No. 104 .....$3.75
Fusible Links, No. 96.....50%
Expansion Bolts, No. 107.....60&10%

### Grindstone—
*Net Prices:*

| *Inch* | *15* | *17* | *19* | *21* |
|---|---|---|---|---|
| *Per doz* | *$3.60* | *3.85* | *4.15* | *4.65* |

Peck, Stow & Wilcox Co.:

| In | 15 | 17 | 19 | 21 | 24 |
|---|---|---|---|---|---|
| | $4.00 | 4.40 | 4.75 | 5.50 | 6.50 |

....30%
Reading Hardware Co.....60%

### Fodder Squeezers—
See *Compressors.*

### Forks—
*NOTE. — Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.*
Iowa Dig-Ezy Potato.....60&10%
Victor, Hay.....60&15&2½%
Victor, Manure.....66⅔%
Victor, Header.....65%
Champion, Hay.....66⅔%
Champion, Header.....65%
Champion, Manure.....60&15&2½%
Columbia, Hay.....60&20%
Columbia, Manure.....70%
Columbia, Spading.....70&12½%
Hawkeye Wood Barley.....40%
W. & C. Potato Digger.....60&10%
Acme Hay.....60&20%
Acme Manure, 4 tine.....60&10&5%
Dakota Header.....60&20%
Jackson Steel Barley.....60&20%
Kansas Header.....65%
W. & C. Favorite Wood Barley....40%
Plated.—See Spoons.

### Frames— Wood Saw—
*White, S'g't Bar, per doz.75@80¢*
*Red, S'g't Bar, per doz.$1.00@1.25*
*Red, Dbl. Brace, per doz.$1.40@1.50*

### Freezers, Ice Cream—

| *Qt* | *1* | *2* | *3* | *4* | *6* |
|---|---|---|---|---|---|
| *Each* | *$1.25* | *$1.60* | *$1.90* | *$2.20* | *$2.80* |

### Fruit and Jelly Presses—
*See Presses, Fruit and Jelly.*

### Fry Pans—See *Pans, Fry.*

### Fuse— *Per 1000 Feet.*
*Hemp .....$2.35*
*Cotton .....3.20* | 50&25%
*Waterproof Sql. Taped..3.65*
*Waterproof Dbl. Taped..4.40* | 50&25%
*Waterproof Tpl. Taped..5.15*

## Gates, Molasses and Oil—
*Stebbins' Pattern.....80@80&5%*

### Gauges—
*Marking, Mortise, &c..50@50&10%*
Chapin-Stephens Co.:
Marking, Mortise, &c.....50&50&10
Disston's Marking Mortise, &c..67½
Wire, Brown & Sharpe's.....33⅓%
Wire, Morse's.....25%
Wire, P., S. & W. Co.....33⅓%

### Gimlets— Single Cut—
*Numbered assortments, per gro*
*Nail, Metal, No. 1, $2.00; 2, $2.30*
*Spike, Metal, No. 1, $4.00; 2, $4.30*
*Nail, Wood Handled, No. 1, $2.30; 2, $2.60*
*Spike, Wood Handled, No. 1, $4.30; 2, $4.60*

### Glass, American Window
See *Trade Report.*

### Glasses, Level—
Chapin-Stephens Co.....65@65&10%

### Glue, Liquid Fish—
*Bottles or Cans, with Brush, 25&10@50%*
Elwell's .....40%

### Grease, Axle—
*Common Grade...gro.$6.00@$6.50*
Dixon's Everlasting, 10-lb. pails, ea. 85¢; in boxes, ₱ doz., 1 lb, $1.20; 2 lb.....$2.00
Helmet Hard Oil.....25%

### Griddles, Soapstone—
Pike Mfg. Co.....33⅓&33⅓&10%

### Grinders—
Pike Mfg. Co.:
Hand and Foot Power, Pyko Nos. 1, 2, 3; Pyko Primo; Pyko Peerless; Pyko Spiral (foot power).33⅓%
Mower Knife and Tool, $5.00..40&10%
Royal Mfg. Co.:
Alundum Grinding Machines, each, Nos. 01, $1.75; 1A, $2.50; 10, $5.00 .....30%
Alundum Sickle Grinders, each, Nos. 20, $5.00; 20A, $6.00; 20A Combined, $6.50.....30%
Alundum Disc Grinders, each, $2.50 .....30%

### Grindstones—
Pike Mfg. Co.:
Improved Family Grindstones, ₱ inch, ₱ doz., $2.00.....33⅓%
Richards Mfg. Co., Eli and Cycle, Ball Bearing, mounted.....40%

### Grips, Nipple—
Perfect Nipple Grips.....40&10&2%

## Halters and Ties—
*Cow Ties.....65@65&10%*
Bridgeport Chain Co.:
Triumph Coil and Halters.35&2½@40%
Brown Coil and Halters...45@50&5%
Brown Cow Ties.....50&5@50&10&5%
Brown Tie Outs.....70&10@75&5%
Covert Mfg. Co.:
Web .....30&2%
Jute Rope.....55%
Sisal Rope.....20%
Cotton Rope.....45%
Hemp Rope.....45%
Oneida Community:
Am. Coil and Halters.....40@40&5%
Am. Cow Ties.....45@50%
Niagara Coil and Halters...45@50&5%
Niagara Cow Ties.....45&5@50&10&5%

### Hammers—
#### Handled Hammers—
Heller's Machinists'....55&10@55&10&5%
Heller's Farriers.....40&5@40&10&5%
Peck, Stow & Wilcox Co.:
Crucible Steel.....40&10@50%
Farriers' .....40&10@50%
Riveting .....40&10@50%
Machinists' .....66⅔@5%
Blacksmiths' .....50%
Fayatte R. Plumb:
A. E. Nail.....40&2½@40&12½%
Eng. and B. S. Hand.50&10&5@60&5%
Machinists' Hammers.....60&10&5%
Rivet and Tinners'.40&7½@40&12½&5%
Victor Magnetic Tack, ₱ gro....$7.75

#### Heavy Hammers and Sledges—
*Under 3 lb., per lb., 50¢...80&10%*
*3 to 5 lb., per lb., 40¢...80&10&10%*
*Over 5 lb., per lb., 30¢.....*
*Over 5 lb., per lb., 30¢.80&10&10%*

### Handles—
#### Agricultural Tool Handles
*Axe, Pick, &c....60&10@60&10&5%*
*Hoe, Rake, &c.....40%*
*Fork, Shovel, Spade, &c.:*
*Long Handles.....40%*
*D Handles.....40%*

#### Cross-Cut Saw Handles—
Atkins' .....40%
Champion .....50%
Disston's .....50%

#### Mechanics' Tool Handles—
*Auger, assorted...gro.$3.00@$3.50*
*Brad Awl.....gro.$1.65@$1.75*
*Chisel Handles, Ass'd, per gro.:*
*Tanged Firmer, Apple, $2.40@ $2.65; Hickory.....$2.15@2.40*
*Socket Firming, Apple, $1.75@ $1.95; Hickory.....1.60@1.75*
*Socket Framing, Hickory, $1.60@$1.75*
*File, assorted.....gro.$1.30@$1.40*
*Hammer, Hatchet, &c., 60&10@60&10&5%*
*Hand Saw, Varnished, doz., 80¢ 85¢; Not Varnished.....65@75¢*
*Plane Handles:*
*Jack, doz., 30¢; Fore, doz...45¢*
Chapin-Stephens Co.:
Carving Tool.....30@30&10
Chisel .....60@60&10
File and Awl.....60@60&10
Saw and Plane.....30@30&10
Screw Driver.....30@30&10
Millers Falls Adj. and Ratchet Auger Handles .....15&10%
Nicholson Simplicity File Handle.... ₱ gro. $0.85@$1.50
J. L. Osgood:
Indestructible File and Tool, ₱ gro., No. 1, $8.00; No. 2 $8.50; No. 3, $9.00; No. 4, $9.50; No. 5, $10.00.....gro. lots 10%
W. A. Zelnicker Supply Co.:
Hammer, ₱ doz., 12 in., $2.00; 14 in., $2.00; 16 in., $2.30; 18 12., $2.50; 20 in., $2.70; 22 in., $3.00; 24 in., $3.30; 26 in., $3.50; 30 in., $3.80.
Sledge, ₱ doz., oval, 30 in., $3.80; octagon, 30 in., $3.80; oval, 36 in., $4.00; octagon, 36 in., $4.00.
Axe, ₱ doz., 28 to 34 in., $5.60; 36 in., $5.80.
Adze, ₱ doz., 36 in., $5.80; 36 in., $7.80.
Pick, ₱ doz., R. R., 36 in., $8.00; coal, 34 in., $5.80.
Hatchet, ₱ doz., 12 to 14 in., $2.00.
} 50%

### Hangers—
*NOTE.—Barn Door Hangers are generally quoted per pair, without track and Parlor Door Hangers per double set with track, &c.*
Chicago Spring Butt Co.:
Friction .....25%
Oscillating .....25%
Big Twin.....25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door.....50%
Elevator .....30%
Railroad .....50%
Cronk & Carrier Mfg. Co.:
Loose Axle.....60&10%
Roller Bearing.....70%
Griffin Mfg. Co.:
Solid Axle, No. 10, $12.00..60&10%
Roller Bearing, No. 11, $15.00, 60&10%
Roller Bearing, Ex. Hy., No. 22, $18.00.....60&10%
Bull Dog, $24.00.....70%
Lane Bros. Co.:
Parlor, Ball Bearing, $4.00; Standard, $3.15; No. 105, $2.85; New Model, $2.80; New Champion per set of 4 Hangers, complete with track.....$2.25
Barn Door, Standard.....60&10
Hinged .....net $6.08
Covered .....60&5
Special .....70&5
Trolley Hangers and track ..50%
Lawrence Bros.:
Cleveland .....70&7½%
Clipper, No. 75.....60%
Crown .....55&10%
Cyclone, No. 40.....net $6.50
Tandem, No. 50.....net $7.50
New York.....55&10%
Trolley, No. 30, ₱ pair.....$1.25
McKinney Mfg. Co.:
Roller Bearing, Nos. 1 and 2..70%
Anti-Friction .....60%
Hinged Hangers, King Charm.60%
Richards Mfg. Co.:
Hangers, Nos. 47, 48, 147, 247, 60&5%
Pioneer Wood Track, No. 3..$2.25
Roller B'r'g St'l Track No. 12.$2.20
Roller B'r'g St'l Track No. 13.$2.50
Roller B'r'g, Nos. 39, 41, 43, 70&7½%
Hero, Adj. Track No. 19..50&10%
Adjustable Track Tandem Trolley Track No. 16.....50&10%
Seal, Steel Track No. 8.....$2.25
Auto Adj. Track No. 22..50&5%
Trolley B. D. No. 17, $1.25; F. D. No. 120, $2.25; No. 121, $2.45; No. 150.....$2.50
Safety Underwriters F. D. No. 101 .....50%
Tandem No. 44..2½ and 3 60&10%
Palace, Adjustable Track No. 132 .....50&5%
Royal, Adjustable Track No. 122 .....50&10%
Ives' Wood Track No. 1.....$2.25
Trolley B. D. No. 20.....50&10%
Trolley B. D. No. 24, $1.30; No. 27, $1.40; No. 28.....$1.60
Roller Bearings, Nos. 37, 38, 39, 41, 43, 44, Sizes 1 and 2.70&7½%
Anti-friction, No. 42; No. 44, sizes 2½ and 3.....60%
Hinged Tandem No. 48....60&5%
Folding Door B. B. Swivel No. 135 .....10%
Taylor & Boggis F'y Co.'s Kidder's Roller Bearing, ₱ doz., 4 in., $12.00; 5 in., $14.00..40&10%
Myers' Stayon Hangers.....60%

### Hangers— Garment—
Pullman Trouser, ₱ gro., No. 1 $9.00; No. 4, $24.00; No. 5, $16.50; No. 8, Black Enamel, $7.50; No. 10, $21.00; No. 12, $8.00; No. 15, Rods, $9.00; No. 18, Loops.....$10.00
Victor Folding.....₱ gro. $9.60

### Gate—
Myers' Patent Gate Hangers, ₱ doz. net .....50%

### Joist and Timber—
Lane Bros. Co.....35%

### Hasps—
Griffin's Security Hasp.....50&10%
McKinney's Perfect Hasp, ₱ doz..60%

### Hatchets—
*Regular list, first qual.40&12½@—*
*Second quality.....50&10&5@—*

### Heaters, Carriage—
Clark, No. 5, $1.25; No. 5B, $1.50; No. 3, $1.75; No. 3D, $2.00; No. 7D, $2.25; No. 3E, $2.50; No. 1, $3.00.....25%
Clark Coal, ₱ doz., $0.75.....20%

### Hinges—
#### Blind and Shutter Hinges
*Surface Gravity Locking Blind: Doz. Sets with Fastenings, Net, No. 1, $0.70; No. 3, $1.25; No. 5, $2.65.*
*Mortise Shutter.....80%*
*Mortise Reversible Shutter..80%*
North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%
Charles Parker Co.....70@75%
Parker Wire Goods Co.
Hale & Benjamin Automatic Blind Hinges .....20%
Hale's Blind Awning Hinges, No. 110, for wood, $9.00; No. 111, for brick, $9.00.....20%
Reading's Gravity.....60%
Stanley's Steel Gravity Blind Hinges, No. 1647½, ₱ doz. sets, without screws, $0.95; with screws, $1.25.
Wrightsville Hardware Co.:
O. S., Lull & Porter.....75&5%
Acme, Lull & Porter.....75%
Queen City Reversible.....75%
Shepard's Noiseless, Nos. 60, 65, 55 .....75&5%
Niagara, Gravity Locking, Nos. 1, 3 & 5.....75&5%
Clark's O. P., No. 1.....75&10%
Clark's O. P., Nos. 3 and 5....75&5%
Tip Pat'n, No. 1.....75&10%
Clark's No. 3.....75&5%
Buffalo Gravity Locking, Nos. 1, 3 & 5.....70&10&5%
Shepard's Double Locking.....75%
Champion Gravity Locking.....75&5%
Pioneer .....75&10%
Empire .....65%
W. H. Co.'s Mortise Gravity Locking, No. 2.....60&10%

### Gate Hinges—
*Clark's or Shepard's—Doz. sets:*

| *No.* | *1* | *2* | *3* |
|---|---|---|---|
| *Hinges with L't'chs.* | *$2.00* | *2.70* | *5.00* |
| *Hinges only.....* | *1.25* | *1.90* | *3.50* |
| *Latches only.....* | *.70* | *.75* | *.35* |

*New England:*
*With Latch.....doz..@$2.00*
*Without Latch.....doz..@$1.60*
*Reversible Self-Closing:*
*With Latch.....doz..@$1.75*
*Without Latch...doz. ...@$1.35*
*Western:*
*With Latch.....doz. $1.75*
*Without Latch.....doz..$1.15*
Wrightsville Hardware Co.:
Shepard's or Clark's Hinges and Latches, Hinges only or Latches only, Nos. 1, 2 or 3.....70%

### Miscellaneous—
Griffin Mfg. Co., Fleur de Lis Surface Hinges, ₱ doz. prs.....$1.00

### Pivot Hinges—
Bommer Bros. Pivot, Ball Bearing .....40%
Lawson Mfg. Co. Matchless.....30%

### Spring Hinges—
*Holdback, Cast Iron...$6.75@$7.00*
*Non-Holdback, C'st Iron$6.50@$6.75*
J. Bardsley:
Bardsley's Non-Checking Mortise Floor Hinges.....40%
Bardsley's Patent Checking.33⅓%
Bommer Bros.:
Spring Butt Hinges.....40%
Surface Floor, Ball Bearing .....40%
Mortise Floor, Ball Bearing.40%
Lavatory Hinges.....40%
Non-Holdback Screen Door, Nos. 2000 and 900.....40%
Holdback Screen Door, No. 999.....₱ gro. $9.00
Chicago Spring Butt Co.:
Chicago Spring Hinges.....25%
Triple End Spring Hinges....50%
Chicago (Ball Bearing) Floor.50%
Garden City Engine House...25%
Keene's Saloon Door.....25%
Columbian Hardware Co.:
Acme, Wrought Steel.....30%
Acme, Brass.....25%
American .....30%
Columbia, ₱ gr., No. 14, $9.00; No. 18.....$25.00
Columbia, Adj., No. 7, ₱ gr.$12.00
Gem, new list.....30%
Clover Leaf and Acorn, per gro. .....$12.00
Oxford, new list.....30%
Floor Spring Hinges.....65&10%
Columbian Steel.....65&10%
Lawson Mfg. Co.:
Matchless Spring Hinges.....30%
Matchless Jamb Hinges.....30%
Richards Mfg. Co.:
Superior Double Acting Floor Hinges .....40%
Shelby Spring Hinge Co.:
Buckeye All Steel Holdback Screen Door.....₱ gr. $9.00
Chief Ball Bearings Floor Hinge .....50%
Ball Bearing Door.....25%
No. 777, Sheet Steel Holdb'k, ₱ gr. pr.....$9.00
Standard Mfg. Co.:
Champion Double Acting Door Hinge .....25&10&10%
Standard Double Acting Floor Hinge .....25&10&10%
Superior Spring Hinge Co.:
Superior Floor Hinges.....33⅓%
Spring Hinges.....33⅓%

Extra 10% often given on most of these Hinges.

### Wrought Iron Hinges—
*Strap and T Hinges, &c., list February 10, 1908:*
*Light Strap Hinges..50&10%*
*Heavy Strap Hinges..60&5%*
*Light T Hinges.....50%*
*Heavy T Hinges.....40%*
*Extra Hvy. T Hinges.50&10%*
*Hinge Hasps.....33⅓%*
*Cor. Heavy Strap....60&5%*
*Cor. Ex. Heavy T...50&10%*
} Extra 10&7½&2½%

*Screw Hook and Strap.*
*6 to 12 in..lb.3½¢*
*1½ to 20 in..lb.3¼¢*
*22 to 36 in..lb.3 ¢*

*Screw Hook and Eye:*
*3, to 4 inch.....lb.6¼¢*
*5/8-inch .....lb.7½¢*
*½-inch .....lb.8½¢*

### Hitchers, Stall—
Covert Mfg. Co., Stall Hitchers..30&2%

### Hods— Coal—
*M'f'gr's list, price per gross:*

| *Inch* | *15* | *16* | *17* | *18* |
|---|---|---|---|---|
| *Galv. Open* | *$35* | *$39* | *$42* | *$46* |
| *Jap. Open* | *26* | *28* | *31* | *35* |
| *Galv. Funnel* | *43* | *48* | *52* | *56* |
| *Jap. Funnel* | *33* | *36* | *59* | *43* |

*10&7½&65%*

### Masons' Etc.
Cleveland Wire Spring Co.:
Steel Brick, No. 162.....each $1.05
Steel Mortar, No. 158.....each $1.35

### Hoes— Eye—
*Scovil and Oval Pattern, 60&10@60&10&10%*
*Grub, list Feb. 23, 1899, 70&10@70&10&10%*
D. & H. Scovil....27½%
Am. Fork & Hoe Co. (Scovil Pattern)....60%

### Handled—
*NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.*
Cronk's Weeding, No. 1, $2.00; No. 2, $2.50
Star Double Bit....$2.50
Ft. Madison Cotton Hoe....70&10&10%
Ft. Madison Crescent Cultivator Hoe, ₱ doz....70&10%
Ft. Madison Mattock Hoes: Regular Weight....₱ doz. 40&5%; Junior Size....₱ doz. $4.00
Ft. Madison Sprouting Hoe, ₱ doz., 60&10%
Ft. Madison Dixie Tobacco Hoe....75&10&7½%
Kretsinger's Cut Easy....70&10%
Warren Hoe....45&10%
W. & C. Ivanhoe....75&2%
B. B. 6 in., Cultivator Hoe....$3.40
B. B., 6½ in....$3.50
Acme Wedding....₱ doz., net, $4.35
W. & C. L'tning Shuffle Hoe, ₱doz. $5.25

### Hoisting Apparatus—
See *Machines, Hoisting.*

### Holders— Bit—
Angular, ₱ doz. $24.00....45&10%

### Door—
Bardsley's, Iron, 40%; Brass and Bronze....25%
Empire....50%
Pullman....25%
Richards Mfg. Co.: No. 117, Ever-ready, 40%; Nos. 118, 119, Sure Grip....50%
Superior....33⅓%

### File and Tool—
Nicholson File Holders and File Handles....33⅓@40%

### Fruit Jar—
Triumph Fruit Jar Holder, ₱ gross, $18.00; ₱ doz....$2.00

### Trace and Rein—
Fernald Double Trace Holder, ₱ doz. pairs....$1.25
Dash Rein Holder, ₱ doz....$1.25

### Hones—Razor—
Pike Mfg. Co., Belgian and Swaty, 50; German....33⅓%

### Hooks—Cast Iron—
Bird Cage, Reading....40%
Clothes Line, Reading List....40%
Coat and Hat, Reading....45&20%
Coat and Hat, Wrightsville....60&5%
Harness, Reading List....40%

### Wire—
*Belt, Nos. 1 to 15....75&10@80%*
*Wire C. & H. Hooks..80@80&10%*
Bradley Metal Clasp Wire, Coat and Hat, 75&10@80%; Ceiling..75&10@80%
Columbian Hdw. Co., Gem....75&10%
Parker Wire Goods Co., King..75&10%
Wire Goods Co.: Acme, 60&10%; Chief, 70&10%; Crown, 75%; Czar, 65&10%; V Brace, 75%; Czar Harness, 50; Ceiling, 75%.

### Wrought Iron—
*Box, 6 in., per doz., $0.90; 8 in., $1.15.*
*Cotton....doz. $1.25@$1.50*
Wrought Staples, Hooks, &c. See Wrought Goods.

### Miscellaneous—
*Hooks, Bench, see Stops, Bench.*
*Hush, Light, doz., $6.20; Medium, $6.75; Heavy, $7.65*
*Grass, best, all sizes, per doz., $2.75@$3.00*
*Grass, common grades, all sizes, per doz....$1.25@$1.50*
*Whiffletree....lb. 5¼@6¢*
*Hooks and Eyes: Brass....60@60&10%; Malleable Iron....70@70&10%*
Covert Mfg. Co. Gate and Scuttle Hooks....40%
Ft. Madison Cut-Easy Corn Hooks, ₱ doz. $3 25 net
Turner & Stanton Co. Cup and Shoulder....85&10%
Bench Hooks—See Bench Stops.
Corn Hooks—See Knives, Corn.

### Horse Nails—
See *Nails, Horse.*

### Horseshoes—
See *Shoes, Horses.*

### Hose, Rubber—
*Garden Hose, ¾-inch: Competition....ft. 6@6½¢; 3 ply Guaranteed....ft. 8½@9¢; 4-ply Guaranteed....ft. 9½@12¢*
*Cotton Garden, ¾-in., coupled: Low Grade....ft. 8@ 9¢; Fair Quality....ft. 10@11¢*

### Irons— Sad—
*From ¼ to 10....lb. 2½@2¾¢*
*B. B. Sad Irons....lb. 3¼@3½¢*
*Mrs. Potts', cents per set:*

| | Nos. 50 | 55 | 60 | 65 |
|---|---|---|---|---|
| *Jap'd Cups* | 86 | 93 | 96 | 93 |
| *Turd Cups* | 91 | 88 | 1.01 | 98 |

*New England Pressing..lb. 3¾@4¼¢*

### Bar and Corner—
Richards Mfg. Co., Bar, 60&10%; Corner....60%

### Pinking—
*Pinking Irons....doz. 60@6 ¢*

### Irons, Soldering
See *Coppers.*

### Jacks, Wagons—
Covert Mfg. Co.: Auto Screw....30&2%; Steel, 45%; Lockport....50%
Lane's Steel....30&5%
Richards' Tiger Steel, No. 130...50&10%
Smith & Hemenway Co.'s....25%

### Ladder—
Richards Mfg. Co., Ladder Jacks..50%

### Jointers—
Pike Mfg. Co., Saw Jointers, $7.00..40%

### Kettles—
*Brass, Spun, Plain....20@25%*
Enameled and Cast Iron—See Ware, Hollow.

### Knives—
### Butcher, Kitchen, &c.—
Foster Bros.' Butcher, &c....30%
Wilkinson Shear & Cutlery Co....60%

### Corn—
Columbian Cutlery Co., Wilcut Brand Knives and Hooks....60%
Withington Acme, ₱ doz., $2.65; Dent, $2.75; Adj. Serrated, $2.20; Serrated, $2.10; Yankee No. 1, $1.50; Yankee No. 2, $1.15.

### Drawing—
*Standard List....80&10@—%*
C. E. Jennings & Co., Nos. 45, 46, 25&7½%
Jennings & Griffin, Nos. 41, 42, 66⅔&7½%
Swan's....66⅔@70%
Watrous....16⅔%
L. & I. J. White....20&5@25%

### Hay and Straw—
*Serrated Edge, per doz. $5.00@5.50*
Iwan's Sickle Edge....₱ doz. $9.50
Iwan's Serrated....₱ doz. $10.00

### Miscellaneous—
*Farriers'....doz. $2.60@3.55*
Wostenholm's....₱ doz. $3.00@3.25

### Knobs—
*Base, 2½-inch, Birch or Maple, Rubber Tip....gro. $1.25@1.40*
*Carriage, Jap., Drive, all sizes, gro. 35@40¢*
*Door, Mineral....doz. 65@70¢*
*Door, Por. Jap'd....doz. 70@75¢*
*Door, Por. Nickel..doz. $2.05@2.15*
Bardsley's Wood Door, Shutters, &c. 15%

### Lacing, Leather—
See *Belting, Leather*

### Ladders, Store, &c.—
Lane's Store....25%
Myers' Noiseless Store Ladders....50%
Richards Mfg. Co.: Improved Noiseless, No. 112....50%; Climax Shelf, No. 113....50%; Trolley, No. 109....50%

### Ladles, Melting—
L. & G. Mfg. Co., Melting and Plumbers'....25%
P., S. & W....40&10%
Reading....60%

### Lamps,—
Hammer's M. I. Hand....45%

### Lanterns—Tubular—
*Regular, No. 0....doz. $4.35@4.50*
*Side Lift, No. 0....doz. $4.60@4.75*
*Hinge Globe, No. 0. doz. $4.60@4.75*
*Other Styles....40@40&10%*

### Bull's Eye Police—
*3-inch....$3.75@4.00*

### Latches— Thumb—
*Roggin's Latches, Jap'd, with Screws....doz. 35@40¢*

### Door—
Cronk & Carrier Mfg. Co., No. 101, ₱ doz. $2.00
Richards' Bull Dog, Heavy, No. 125....50&5%
Richards' Trump, No. 127....$4.50

### Leaders, Cattle—
*Small....doz. 50¢; large, 60¢*
Covert Mfg. Co.: Cotton, 45%; Hemp, 45%; Jute, 35%; Sisal, 20%.

### Leathers, Pump—
See *Pumps—*

### Lifters, Transom—
R. & E....10%

### Lines—

| *Wire Clothes, Nos.* | *18* | *19* | *20* |
|---|---|---|---|
| *100 feet* | *$2.30* | *1.95* | *1.75* |
| *75 feet* | *$1.95* | *1.65* | *1.50* |

Samson Cordage Works: Solid Braided Chalk, Nos. 0 to 3..40%; Solid Braided Masons'....30%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50....₱ gr. 20%
Masons' Lines, Shade Cord, &c.; White Cotton, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50; Colors, No. 3½, $1.75; No. 4, $2.25; No. 4½, $2.75; Linen, No. 3½, $2.50; No. 4, $3.50; No. 4½, $4 50....20%
Tent and Awning Lines: No. 5, White Cotton, $7.50; Drab Cotton, $8.50....20%
Clothes Lines, White Cotton: 50 ft., $2.75; 60 ft., $3.25; 70 ft., $3.75; 75 ft., $4.00; 80 ft., $4.25; 90 ft., $4.75; 100 ft., $5 25....20
Turner & Stanton Co.: Solid Braided Chalk, Masons' and Awning Lines....40%
Clothes Lines, White Cotton....20%
Shade Cord, Cotton or Linen....20%

### Locks— Cabinet—
*Cabinet Locks....33⅓@33⅓@5%*

### Door Locks, Latches, &c
*NOTE.—Net Prices are very often made on these goods.*
Reading Hardware Co....10%
R. & E. Mfg. Co....10%

### Padlocks—
R. & E. Mfg. Co. Wrought Steel and Brass....75&10%

### Sash, &c.—
Ives' Patent: Crescent....10%; Automatic Gravity Metal Sash, ₱ gro., $149.58....10%; Window Ventilating....10%
Pullman Patent Ventilating Lock..25%
Reading Sash Locks....40%
Taylor Mfg. Co., Perfect Ventilating, ₱ doz....$0.75@$1.00

### Machines—Boring—
*Com. Upr't, without Augers, $2.00@2.25*
*Com. Angl'r, without Augers, $2.25@2.50*
Ford Auger Bit Co....$22.00
Jennings', Nos. 1 and 4....25&7½%
Millers' Falls....5.75
Snell's, Upright, $2.65; Angular, $2.90
Swan's Improved....40&10%

### Corking—
Reisinger Invincible Hand Power... ₱ doz. $48.00

### Fence—
Williams' Fence Machines....each, $5.50

### Hoisting—
Moore's Anti-Friction Chain Hoist, 30%
Moore's Hand Hoist, with Lock Brake....20%
Moore's Cyclone High Speed Chain Hoist....25%

### Ice Cutting—
Chandler's....12½%

### Washing
Boss Washing Machine Co.: Per doz.
Boss No. 1....$57.00
Boss Rotary....$57.00
Champion Rotary Banner No. 1. $57.00
Standard Champion No. 1....$50.00
Standard Perfection....$27.00
Cincinnati Square Western....$33.00
Uneeda American, Round....$33.60

### Mallets—
*Hickory....45&5@50%*
*Lignumvitæ....45&5@50%*
*Tinners' Hickory and Applewood....doz. 45&5@50%*

### Mangers, Stable—
Swett Iron Works....50%

### Mats, Door—
Acme Flexible Steel....50%
Elastic Steel (W. G. Co.), new list, 50%

### Mattocks—
See *Picks and Mattocks.*

### Milk Cans—See *Cans, Milk.*

### Mills, Coffee, &c.—
Enterprise Mfg. Co.: Coffee....20@25%; Shell and Corn....25&10%
National list Jan. 1, 1902....30%
Parker's Columbia and Victoria..33⅓%
Parker's Box and Side....50&10%
Swift, Lane Bros. Co....30%

### Motors, Water—
Divine's Red Devil....30%

| $2.50 | 3.50 | 10.00 | 15.00 | |
|---|---|---|---|---|
| No. 1. | 2 | 3 | 4 | |
| Lippincott's: No. | 1 | 2 | 3 | 4 |
| | $2.50 | 3.50 | 10.00 | 15.00..33⅓% |

Pike Mfg. Co., Tool and Knife Grinding....33⅓%

### Mowers, Lawn—
*NOTE.—Net prices are generally quoted*
*Cheapest, 10-in., $2.00; advance 10¢ for each size.*
*Cheap, 10-in., $2.25; advance 15@20¢ for each size.*
*Better Grade, 10-in., $3.00; advance 25¢ for each size.*

| | 12 | 14 | 16 | 18 in. |
|---|---|---|---|---|
| *High Grade...* | *$4.50* | *4.75* | *5.00* | *5.25* |

Continental....60
Great American....70
Great American Ball B'r'g, new list. 70%
Quaker City....70%
Pennsylvania....60
Pennsylvania, Jr., Ball Bearing, 50&10&5%
Pennsylvania Golf....50%
Pennsylvania Horse....33⅓&5
Pennsylvania Pony....40&5%
Philadelphia: Styles M., S., C., K., T....70&10&5%; Style A, all Steel....60&10&5%; Style E, High Wheel....70&10&5%; Drexel and Gold Coin, special list, 40%; Horse....40&5%; Pony....40&5%; 36-in. Horse....30&10%; Eagle Horse....30&5%; I. X. L. Horse....50%

### Nails—
*Wire Nails and Brads, Miscellaneous....85&5@a 85&10%*
*Cut and Wire, See Trade Report.*
*Hungarian, Finishing, Upholsterers', &c. See Tacks.*

### Horse—

| Nos | 6 | 7 | 8 | 9 | 10 | |
|---|---|---|---|---|---|---|
| Anchor | 25 | 21 | 20 | 19 | 18 | .. ₱ lb. net, 12¢ |
| Coleman | 13 | 12 | 12 | 11 | 11 | net ₱ lb |
| New Haven | 25 | 21 | 20 | 19 | 18 | .. ₱ lb. net, 12¢ |
| Livingston | 19 | 18 | 17 | 16 | 16 | ... 10% |
| Western | | | | | | ₱ lb 8½¢ |

*Jobbers' Special Brands, per lb. 9¢*

### Picture—

| | 1½ | 2 | 2½ | 3 in |
|---|---|---|---|---|
| *Brass Hd gro.* | *.45* | *55* | *60* | |
| *Por. Head, gro.* | *1.10* | *1.10* | *1.10* | |

### Upholsters—
*Brass....30%*
*Plated....30&10%*

### Nippers—
See *Pliers and Nippers.*

### Nipples—
Standard Nipple Co.: Wrought Pipe Nipples....80%

### Nuts— *Blank or Tapped.*
*Cold Punched: Off list.*
*Square....5.60¢*
*Hexagon....6.20¢*
*Square, C., T. & R....6.00¢*
*Hexagon, C., T. & R....6.80¢*
*Hot Pressed: Square....6.10¢; Hexagon....6.60¢*

### Oakum—
*Best....lb. 6½¢*
*U. S. Navy....lb. 6 ¢*
*Navy....lb. 5 ¢*
*Plumbers' Spun Oakum..2¾@3 ¢*

### Oil—
Pike Mfg. Co., Stonoil....40%

### Oil Tanks—See *Tanks, Oil.*

### Oilers—
*Steel, Copper Plated....75%*
*Chase or Paragon: Brass and Copper....50&10%; Zinc....65&10@70%*
*Railroad....60&10&10%*
Malleable, Hammers' Improved, Nos. 11, 12 and 13, 10%; Old Pattern, Nos. 1, 2, 3, 4, 50%.
American Tube & Stamping Co.: Spring Bottom Cans....70@70&10%; Railroad Oilers, &c....60@60&10%
Maple City Mfg. Co.: Spring Bottom Cans....70@70&10%; Railroad Oilers, &c....60@60&10%

### Openers—Packing Box—
Herculever, ₱ doz., $24....30%

### Can Openers—
*Per doz.*
*Sprague, Iron Handle....30@35¢*
*Sprague, Wood Handle....40¢*
*Sardine Scissors....$1.75@3.00*
Can and Bottle Openers, ₱ doz., net: Yankee, $0.75@$0.85; Little Gem, $0.50@$0.65; Nifty....$0.75

### Egg—
Hartigan Nickel Plate, ₱ doz., $2.00; Silver Plate, $4.00.

### Packing—
*Asbestos Packing, Wick and Rope, any quantity....18@20¢*

### Rubber—
*(Fair quality goods.)*
*Sheet, C. I....11@12¢*
*Sheet, C. O. S....11@12¢*
*Sheet, C. B. S....12@13¢*
*Sheet, Pure Gum....40@45¢*
*Sheet, Red....40@50¢*
Jenkins' '96, ₱ lb, 80¢....25

### Miscellaneous—
*American Packing....lb. 7@10 ¢*
*Cotton Packing....lb. 16@25 ¢*
*Italian Packing....lb. 9@10¢*
*Jute....lb. 4@4½¢*
*Russia Packing....lb. 9@10¢*

### Pails, Water, Well, &c.—
See *Buckets.*

### Paint—
Dixon's Silica-Graphite, in 1 gal. pails and 5 gal. kegs, 25%; packages of larger size....20

### Pans— Dripping—
*Standard List...70&10@70&10&5%*
Edwards, Royal Blue....75

### Fry—
*Common Lipped:*

| *Nos* | *1* | *2* | *3* | *4* | *5* |
|---|---|---|---|---|---|
| *Per doz....* | *$0.75* | *0.85* | *0.95* | *1.15* | *1.30* |

### Refrigerator, Galva.—

| *Inch* | *12* | *14* | *16* | *18* |
|---|---|---|---|---|
| *Per doz....* | *$1.75* | *2.25* | *2.80* | *3.15* |

### Paper—Building Paper
*Asbestos: lb.*
*Roll Board or Building Felt, 6 to 30 lb., per 100 sq. ft..2½¢*
*Roll Board or Building Felt, 3-32 and ⅛ in., 45 to 60 lb., per 100 sq. ft....3½¢*
*Mill Board, Sheet, 40 x 40 in., 1-32 to ½ in....3¢ Per roll.*
*Rosin Sized Sheathing: 500 sq. ft. Light weight, 25 lbs. to roll, 48@50¢*
*Medium weight, 30 lbs. to roll, 56@70¢*
*Heavy weight, 40 lbs. to roll, 75@78¢*
*Black Water Proof Sheathing, 500 sq. ft., 1 ply, 65¢; 2 ply, 85¢; 3 ply, $1.10; 4 ply, $1.25.*
*Deafening Felt, 9, 6 and 3 sq ft. to lb., ton....$7 50*
*Red Rope Roofing 250 sq. ft. per roll....$1.75*

### Tarred Paper—
*1 ply Coal 400 sq. ft., ton....$15@$18.00*
*2 ply, roll 108 sq. ft....65¢*
*3 ply, roll 108 sq. ft....80¢*
*Slater's Felt Coal 500 sq. ft. 80¢*

### Sand Paper and Cloth—
*Flint and Emery....50@50%*
*Garnet Paper and Cloth....25%*

### Parers—Apple—
Goodell Co.: Family Bay State....₱ doz. $15.00; Improved Bay State....₱ doz. $36.00; New Lightning....₱ doz. $7 00; Turn Table '98....₱ doz. $6.00; White Mountain....₱ doz. $5 00; Bonanza Improved....each $7.50; Dandy....each $15.00; Eureka Improved....each $20.00; New Century....each $20.00; Ranger....each $30.00

Livingston Nail Co.:
Daisy ..... ℔ doz. $4.00
Little Star ..... ℔ doz. $5.00
Rocking Table ..... ℔ doz. $6.20
Reading Hardware Co.:
Advance ..... ℔ doz. $4.00
Baldwin ..... ℔ doz. $4.00
Reading 72 ..... ℔ doz. $3.25
Reading 78 ..... ℔ doz. $6.25

### Orange—
Goodell Co., Success ..... each $20.00

### Potato—
Saratoga ..... ℔ doz. $7.00
White Mountain ..... ℔ doz. $6.00

### Picks and Mattocks—
*(List Jan., 1908.)*
*List* ..... 70&10@70&10&10%
Cronk's Handled Garden Mattock, ℔ doz., $3.00 ..... 33⅓%

### Pinking Irons—
See *Irons, Pinking.*

### Pins, Escutcheon—
*Brass* ..... 50@50&10%
*Iron, list Nov. 11, '85* ..60@60&10%

### Pipe, Cast Iron Soil—
*Standard, 2-6 in.* ..... 70@—%
*Extra Heavy, 2-6 in.* ..75&10@—%
*Fittings, Standard and Heavy,* 75&10@80%

### Pipe, Merchant—

| | Consumers, Steel. Blk. | Galv. | Carloads, Iron. Blk. | Galv. |
|---|---|---|---|---|
| | % | % | % | % |
| ⅛ and ¼ in. | 66 | 50 | 64 | .. |
| ⅜ in. | 68 | 54 | 66 | 52 |
| ½ in. | 70 | 58 | 68 | 56 |
| ¾ to 6 in. | 74 | 64 | 72 | 62 |
| 7 to 12 in. | 71 | 56 | 69 | 54 |

### Pipe, Vitrified Sewer—
*Carload lots.*
*Standard Pipe and Fittings, 8 to 24 in., f.o.b. factory:*
*First-class* ..... 87%
*Second-class* ..... 90%

### Pipe, Stove—

| | Per 100 joints. C. L. | L. C. L. |
|---|---|---|
| Edwards' Nested: | | |
| 5 in., Standard Blue | $6.25 | $7.25 |
| 6 in., Standard Blue | 6.75 | 7.75 |
| 7 in., Standard Blue | 7.75 | 8.75 |
| 5 in., Royal Blue | 7.00 | 8.00 |
| 6 in., Royal Blue | 7 50 | 8.50 |
| 7 in., Royal Blue | 8.50 | 9.50 |
| Wheeling Corrugating Co.'s Nested: | | |
| 5 in., Uniform Color | $5.90 | $6.90 |
| 6 in., Uniform Color | 6.40 | 7.40 |
| 7 in., Uniform Color | 7.40 | 8.40 |

### Planes and Plane Irons—
#### Wood Planes—
*Bench, first qual.* ..... 30@30&10%
*Bench, second qual.* ..40@40&10%
*Molding* ..... 25@25&10%
Chapin-Stephens Co.:
Bench, First Quality ..... 30%
Bench, Second Quality ..... 40%
Molding and Miscellaneous ..... 25%
Toy and German ..... 30%
Union ..... 60%

#### Iron Planes -
Chaplin's Iron Planes ..... 60%
Union ..... 60%

#### Plane Irons—
*Wood Bench Plane Irons, list Dec. 12, '06* ..... 25%
Buck Bros. ..... 30%
Chapin-Stephens Co. ..... 25%
Union ..... 50%
L. & I. J. White ..... 20&5@25%

### Planters, Corn, Hand—
Kohler's Eclipse ..... ℔ doz. $7.50

### Plates—
*Felloe* ..... lb. 3¾@4¢
Avery Stamping Co.:
Standard Wrot. Steel Felloe Plates in 100 lb kegs, per 100 lb, ¾-in. to 1⅛-in., $4.00 net; 1¼-in. to 2-in., inclusive, $3.75 net.

### Steel Pipe Hook—
Never-Break ..... 75&10%

### Pliers and Nippers -
*Button Pliers* ..... 75&5@75&10&5%
*Gas Burners, per doz., 5 in., $1.25 @$1.30; 6 in., $1.45, $1.50.*

| Gas pipe.. | 7 | 8 | 10 | 12-in. |
|---|---|---|---|---|
| | $2.00 | $2.25 | $2.75 | $3.50 |

Acme Nippers ..... 50&5%
Cronk & Carrier Mfg. Co.:
American Button ..... 80%
Improved Button ..... 75&10%
Cronk's ..... 60%
No. 89 Linemen's ..... 50%
Stub's Pattern ..... 45%
Combination and others ..... 33⅓%
Heller's Farriers' Nippers, Pincers and Tools ..... 10&5@40&10&5%
P., S. & W. Tinners' Cutting Nippers ..... 40%
Swedish Side, End and Diagonal Cutting Pliers ..... 50%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds ..... 40%

### Plumbs and Levels—
Chapin-Stephens Co.:
Plumbs and Levels ..... 30@30&10%
Chapin's Imp. Brass Cor. ..40@40&10%
Pocket Levels ..... 30@30&10%
Extension, Sights ..... 30@30&10%
Machinists' Levels ..... 40@40&10%
Disston's Plumbs and Levels ..... 60&10%
Disston's Pocket Levels ..... 60&10%
Stanley's Dulex ..... 35%
Woods' Extension ..... 33⅓%

### Points, Glaziers'—
*Bulk and 1-lb. papers* ..... lb. 9 ¢
*½-lb. papers* ..... lb. 9½¢
*¼-lb. papers* ..... lb. 10 ¢

### Police Goods—
*Manufacturers' Lists* ..25@25&5%
Tower's ..... 25%

### Polish—Metal, Etc—
Ladd Co.:
Putzade Liquid, ℔ gro., ½ pts., $12.00; 1 pts., $20.00; 1 qts., $40.00; ℔ doz., ½ gals., $6.35; 1 gals., $12.00.
Prestoline Liquid, No. 1 (½ pt.), ℔ doz., $3.00; No. 2 (1 qu.), $9.00..40%
Prestoline Paste ..... 40%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, ℔ doz. 50¢; ℔ gro. $4.50; ½ lb boxes, ℔ doz. $1.25; 1 lb boxes, ℔ doz. $2.25.
U. S. Liquid, 8 oz. cans, ℔ doz., $1.25.
Barkeepers' Friend Metal Polish, ℔ doz., $1.75.

### Stove—
Black Eagle Benzine Paste, 5 lb cans, ℔ lb 10¢
Black Eagle, Liquid, ½ pt. cans.. ℔ doz. 75¢
Black Jack Paste, ¾ lb cans, ℔ gr. $9.00
Black Kid Paste, 5 lb can...each, $0.65
Ladd's Black Beauty Liquid, per 100 tins ..... $6.75
Joseph Dixon. ℔ gr. $5.75 ..... 10%
Dixon's Plumbago ..... ℔ lb 8¢
Fireside ..... ℔ gr. $2.50
Gem, ℔ gr. $4.50 ..... 10%
Japanese ..... ℔ gr. $3.50
Jet Black ..... ℔ gr. $3.50
Peerless Iron Enamel, 10 oz. cans.. ℔ doz. $1.50

### Window Polish—
Benj. P. Forbes:
Glasbright, No. 2, gal pails, ℔ doz., $24.00; each, $2.50; 1 lb cans, each ..... 75¢
Glasbright Powder, bbls., ℔ lb..20¢

### Poppers, Corn—
*1 qt. Square..doz.$0.80; gro.$8.75*
*1 qt. Round..doz.$0.90; gro.$10.00*
*1½ qt. Square.doz.$1.20; gro..$12.00*
*2 qt. Square..doz.$1.50; gro..$15.00*

### Post Hole and Tree Augers and Diggers—
See also *Diggers, Post Hole, &c.*

### Posts, Steel—
Steel Fence Posts, each, 6 ft., 46¢; 6½ ft., 48¢; 7 ft., 50¢.
Steel Hitching Posts ..... each $1.30

### Potato Parers—
See *Parers, Potato.*

### Pots, Glue—
*Enameled* ..... 40%
*Tinned* ..... 30&10%

### Powder—
*In Canisters:*
*Duck, 1 lb* ..... each 45¢
*Fine Sporting, 1 lb* ..... each 75¢
*Rifle, ½-lb* ..... each 15¢
*Rifle, 1 lb* ..... each 25¢
*In Kegs:*
*12½-lb. kegs* ..... $3.50
*25 lb. kegs* ..... $4.50
King's Semi-Smokeless:
Keg (25 lb bulk) ..... $6.50
Half Keg (12½ lb bulk) ..... $3.50
Quarter Keg (6¼ lb bulk) ..... $1.90
Case 24 (1 lb cans bulk) ..... $8.50
Half case (1 lb cans bulk) ..... $4.50

| King's Smokeless: | Shot Gun. | Rifle. |
|---|---|---|
| Keg (25 lb bulk) | $12.00 | $15.00 |
| Half Keg (12½ lb bulk) | 6.25 | 7.75 |
| Quarter Keg (6¼ lb bulk) | 3.25 | 4.00 |
| Case 24 (1 lb cans bulk) | 14.00 | 17.00 |
| Half case 12 (1 lb c. bk) | 7.25 | 8.75 |

### Presses—
#### Fruit, Wine and Jelly—
Enterprise Mfg. Co. ..... 20@25%

#### Seal Presses—
Morrill's No. 1, ℔ doz., $20.00 ..... 50%

### Pruning Hooks and Shears
See *Shears.*

### Pullers, Nail, Etc.—
Cyclops ..... 50%
Miller's Falls, No. 3, ℔ doz., $12.00.. 33⅓&10%
Morrill's No. 1, Nail Puller, ℔ doz. $20.00 ..... 50%
Pearson No. 1, Cyclone Spike Puller, each $30.00 ..... 50%
The Scranton Co. Case Lots:
No. 2B (large) ..... $5.50
No. 3B (small) ..... $5.00
Smith & Hemenway Co.:
Diamond B ..... 70%
Giant ..... 50%
Staple Pullers, Utica and Davison ..... 60%
Taylor Mfg. Co., Sampson Tack. ℔ doz. ..... $0.40

### Pulleys, Single Wheel—

| Inch | 1½ | 1¾ | 2 | 3 |
|---|---|---|---|---|
| Awning or Tackle, doz | $0.30 | .45 | .60 | 1.05 |
| Hay Fork, Swivel or Solid Eye, doz., 4 in., $1.25; 5 in., $1.55 | | | | |
| Inch | 2 | 2¼ | 2½ | |
| Hot House, doz | $0.65 | .85 | 1.20 | |
| Inch | 1¼ | 1½ | 1¾ | 2 |
| Screw, doz | $0.16 | .19 | .23 | .30 |
| Inch | 1¾ | 2 | 2¼ | 2½ |
| Side, doz | $0.25 | .40 | .55 | .60 |
| Inch | 1½ | 1¾ | 2 | 2½ |

### Sash Pulleys—
*Common Frame; Square or Round End, per doz., 1¾ and 2 in* ..... 17@20¢
*Auger Mortise, no Face Plate, per doz., 1¾ and 2 in* ....20@21¢
Acme, No. 35..1¾ in., 19¢; 2 in., 20½¢
American Pulley Co.:
Wrought Steel American Plain Axle ..... 50&10%
Wrought Steel, Eagle ..... 17@20¢
Top Notch, Electrically Welded, Nos. 3 and 4 ..... 19¢
Common Sense ..... ℔ doz. 20¢
Fox-All-Steel, Nos. 3 and 7, 2 in.... ℔ doz. 50%
Grand Rapids All Steel Noiseless..50%
Niagara, No. 25, 1¾ in., 19¢; 2 in. ..... 20½¢
No. 26 Troy..1¾ in., 14½¢; 2 in., 16½¢
Star, No. 26....1¾ in., 19¢; 2 in., 20½¢
Tackle Blocks—See Blocks.

### Pumps—
*Cistern* ..... 60%
*Pitcher Spout* ..... 75&5@75&10%
*Wood Pumps, Tubing, &c* .... 50%
Barnes Dbl. Acting (low list) ..... 45%
Barnes Pitcher Spout ..... 80%
Contractors' Rubber Diaphragm, No. 2, B. & L. Block Co. ..... $16.00
Daisy Spray Pump ..... ℔ doz. $6.50
Flint & Walling's Fast Mail Hand (low list) ..... 50&5%
Flint & Walling's Fast Mail (low list) ..... 50&5%
Flint & Walling's Tight Top Pitcher ..... 80%
National Specialty Mfg. Co., Measuring, Nos. 2, $6.00; 3, $5.50 ..... 30%
Myers' Pumps (low list) }
Myers' Power Pumps } 50%
Myers' Spray Pumps }

### Pump Leathers—
*Plunger and Valve Leathers—Per gro.:*

| No. | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| | $5.00 | 6.00 | 7.00 | 8.00 |

*Cup Leathers—Per 100:*

| Inch | 2½ | 3 | 3½ | 4 |
|---|---|---|---|---|
| | $5.00 | 7.00 | 9.00 | 12.00 |

} 80%

### Punches—
*Saddlers' or Drive, good,* doz. 50@75¢
*Spring, single tube, good quality* ..... $1.75
*Revolving (4 tubes)* ....doz. $3.50
Bemis & Call Co.'s Cast St'l Drive.50%
Morrill's Nos. 1AA, 1A, 1B, 1C, 1D, $15.00 ..... 50%
Hercules, 1 die, each $5.00 ..... 50%
Niagara Hollow Punches ..... 40%
Niagara Solid Punches ..... 55&10%
Tinners' Hollow, P., S. & W. Co..40%
Tinners' Solid, P., S. & W. Co., ℔ doz., $1.44 ..... 40&10%

### Rail—Barn Door, &c.—
*Sliding Door, Painted Iron,* 2½@2¾¢
*Sliding Door, Wrought Brass, 1⅛ in., lb., 36¢* ..... 30%
Cronk's:
Double Braced Steel Rail..℔ ft. 2¾¢
O. N. T. Rail ..... 2¾¢
Griffin's:
xxx, ℔ 100 ft., 1 x 3-16 in., $3.25; 1¼ x 3-16 in., $3.75.
Hinged Hanger, ℔ 100 ft., 1 x 3-16 in., $3.50; 1¼ x 3-16 in., $4.00.
Lane's:
Hinged Track, ℔ 100 ft. ..... $3.45
O. N. T., ℔ 100 ft., 1 in., $3.12½; 1¼ in., $3.45; 1½ in., $4.00.
Standard, 1¼ in. ..... ℔ 100 ft. $4.00
Lawrence Bros.:
1 x 3-16 in., ℔ 100 ft., $7.50; 1¼ x 3-16 in., $8.75 ..... 55&7½%
Trolley, No. 301, ℔ ft. ..... 9¢
McKinney's:
Hinged Hanger Track, ℔ ft., 11¢ ..... 60&5%
1 x 3-16 Track ..... 55&7½%
Myers' Stayon Track ..... 60&5%
Richards Mfg. Co.:
Common, 1 x 3-16 in., $3.00; 1¼ x 3-16, $3.25; 1¾ x 3-16, $3.50.
Special Hinged Hanger Rail..60&10%
Lag Screw Rail, No. 65 ..... 50%
Gauge Trolley Track, ℔ ft., No. 31, 9¢; No. 32, 14¢; No. 33, 20¢.
No. 50 ..... 60&10%
Nos. 61, $3.00; 62, $3.25; 63, $3.50; 64, $4.00; 45, $3.25; 46, $3.50; 49, No. 1, $3.25; 49, No. 2, $3.50.

### Rakes—
*NOTE.—Many goods are sold at net prices.*
Fort Madison Red Head Lawn....$3.25
Fort Madison Blue Head Lawn....$2.70
Cronk's:
Steel Garden: Champion, ℔ doz., 12-tooth, $3.75; 14-tooth, $4.00; 16-tooth, $4.25; Ideal, ℔ doz., 12-tooth, $3.00; 14-tooth, $3.30; 16-tooth, $3.60.
Victor, 12-tooth, $2.25; 14-tooth, $2.50; 16-tooth, $2.75.
Queen City Lawn, ℔ doz., 20 teeth, $2.85; 24, $3.00 ..... net
Anticlog Lawn, ℔ doz. ..... $1.00
Malleable Garden ..... 70&10%
Ideal Steel Garden, ℔ doz., 12 teeth, $15.00; 14, $16.00; 16, $18.00 ..... 80%
Kohler's:
Jumbo Lawn, 36-tooth.... ℔ doz. $5.00
Lawn Queen, 20-tooth.... ℔ doz. $2.85
Lawn Queen, 24-tooth.... ℔ doz. $3.00
Paragon, 20-tooth ..... ℔ doz. $2.65
Paragon, 24-tooth ..... ℔ doz. $2.75
Steel Garden, 14-tooth.... ℔ doz. $2.40
Malleable Garden, 14-tooth, ℔ doz. $1.75@2.00

### Rasps, Horse—
Disston's ..... 75%
Heller Bros. ..... 70&5@70&10&5%
Liveright Bros.' Gold Medal..70&10@75%
McCaffrey's American Standard ..... 60&10&5%
New Nicholson ..... 70&10@75%
See also Files.

### Razors—
John Engstrom Swedish ..... 65%
Sharp Shaver ..... 60%
Fox Razors, ℔ doz., No. 42, $24.00; No. 44, $20.00; No. 82, Platina, $36.00. } Disc. 50%

### Reels, Fishing—
Hendryx:
M 6, Q 6, A 6, B 6, M 9¼, M 16, Q 16, A 16, B 16, 4008, Rubber, Populo, Nickeled Populo ..... 20%
Aluminum, German Silv., Bronze.25%
1210 N, 124 N ..... 20%
3004 N, 06 N, 6 RM, G 9 ..... 25%
4 N, 6 PN, 24 N, 26 PN ..... 20%
2904 P., 33⅓%; 2904 PN., 33⅓%; 0924 N., 33⅓%; 02084 N., 33⅓%; 002904 PN., 33⅓%; 802 N., 33⅓%.
986 PN, 2904 N, 974 PN ..... 25%
5009 PN, 5009 N ..... 20%
Competitor, 102 P, 102 PN, 202 P, 202 PN, 102 PR, 202 PR ..... 20%
304 P, 304 PN, 00304 P, 00304 PN.33⅓%

### Registers—*List July 1, 1903.*
*Japanned, Electroplated and Bronzed* ..... 70%
*White Porcelain Enamel..50&10%*
*Solid Brass or Bronze Metal.40%*

### Revolvers—
*Single Action* ..... 95¢@$1.00
*Double Action, except 44 cal.* $2.00
*Double Action, 44 caliber* ... $2.00
*Automatic* ..... $4.00
*Hammerless* ..... $4.50

### Riddles, Hardware Grade
*16 in.* ..... *per doz.* $2 50@$2.75
*17 in.* ..... *per doz.* $2.75@$3.00
*18 in.* ..... *per doz.* $3.00@$3.25

### Rings and Ringers—
#### Bull Rings—

| | 2 | 2½ | 3 inch. |
|---|---|---|---|
| Steel | $0.70 | 0.75 | 0.80 doz. |
| Copper | $1.10 | 1.25 | 1.65 doz. |

#### Hog Rings and Ringers—
*Hill's Rings, gro. boxes.$4.50@$4.50*
*Hill's Ringers, Gray Iron, doz., 60@75¢*
*Hill's Ringers, Malleable Iron, doz.80@95¢*
*Blair's Rings..per gro.$5.00@$5.50*
*Blair's Ringers...per doz.75@90¢*

### Rivets and Burrs—
*Copper* ..... 50@50&10%
*Carriage, Coopers', Tinners', &c.:*
*Black* ..... 70&10%
*Metallic Tinned* ..... 70%

### Bifurcated and Tubular—
*Assorted in Boxes.*
*Bifurcated, per doz. boxes, pasteboard boxes, 50 count, 23@25¢; Tin boxes, 100 count, 29@32c.*
*Tubular, per doz. boxes, 50 count, 29@32¢; 100 count, 51@58¢.*

### Rollers—
Cronk's Stay, No. 50 ..... $1.00
Cronk's Brinkerhoff No. 55, $0.60; No. 56, $0.75; No. 60 ..... $0.75
Lane's Stay ..... 40
Richards' Stay:
Handy Adj. and Reversible No. 53.75¢
O. K. Adj. and Reversible No. 58.50¢
Lag Screw, Nos 55 and 57 ..... 50
Underwriters', Nos. 59, 60 ..... 50%
Favorite, No. 54 ..... 60%

### Rope—
*Manila, 7-16 in. diam. and larger:*
*Pure* ..... lb. 9¢
*Sisal, 7-16 in. diam. and larger:*
*Pure* ..... lb. 7¢
*Sisal, Hay, Hide and Bale Ropes, Medium and Coarse:*
*Pure* ..... lb. 7½@7¾¢
*Sisal, Tarred, Medium Lath Yarn:*
*Pure* ..... lb. 6½@6¼¢
*Cotton Rope:*
*Best, ¼-in. and larger..16½@18¢*
*Medium, ¼-in. and larger.15@16¢*
*Common, ¼-in. and larger..7½¢*
*In coils, ½¢ advance.*
*Jute Rope:*
*Thread, No. 1, ¼-in. and up, lb.* ..... 5½¢
*Thread, No. 2, ¼-in. and up, lb.* ..... 5¢

#### Wire Rope—
*Galvanized* ..... 37½&2½%
*Plain* ..... 45&2½%

### Ropes, Hammock—
Covert Mfg. Co.:
Jute, 35%; Sisal ..... 20%

### Rules
*Boxwood* ..... 60@60&10%
*Ivory* ..... 35&10@35&10&5%
Chapin-Stephens Co.:
Boxwood ..... 60%
Flexifold ..... 40%
Ivory ..... 25@25&10%
Miscellaneous ..... 50@50&10%
Stephens' Combination ..... 55%
Stationers' ..... 50@50&10%
Keuffel & Esser Co.:
Folding, Wood ..... 35&10%
Folding, Steel ..... 33⅓&10%
Lufkin's Steel ..... 50&10%
Lufkin's Lumber ..... 50&10%
Upson Nut Co.:
Boxwood ..... 60@60&10%
Ivory ..... 35&10@35&10&10%

### Sash Balances—
See *Balance, Sash.*

### Sash Locks—See *Locks, Sash.*

### Sash Weights—
See *Weights, Sash.*

## Sausage Stuffers or Fillers

See *Stuffers or Fillers, Sausage.*

## Saw Frames—

See *Frames, Saw.*

## Saw Sets—See *Sets, Saw.*

## Saw Tools—See *Tools, Saw.*

## Saws—

Atkins':
- Circular ..... 45%
- Band ..... 50@50&10%
- Butcher Saws ..... 50%
- Cross Cuts ..... 35%
- One-Man Cross Cut ..... 40%
- Narrow Cross Cut ..... 50%
- Hand, Rip and Panel ..... 35&5%
- Miter Box and Compass ..... 40%
- Mulay, Mill and Drag ..... 45%
- Wood Saws ..... 40&10%

Chapin-Stephens Co.:
- Turning Saws and Frames. 30@30&10%

Diamond Saw & Stamping Works:
- Sterling Kitchen Saws ... 30&10&10%

Disston's:
- Circular, Solid and Ins'ted Tooth. 50%
- Band, 2 to 18 in. wide ..... 60%
- Band, ¼ to 1¾ ..... 60%
- Crosscuts ..... 45%
- Narrow Crosscuts ..... 50%
- Mulay Mill and Drag ..... 50%
- Framed Woodsaws ..... 25%
- Woodsaw Blades ..... 25%
- Woodsaw Rods, Tinned ..... 15%
- Hand Saws, Nos. 12, 99, 9, 16, d100, D8, 120, 76, 77, 8 ..... 25%
- Hand Saws, Nos. 7, 107, 107½, 3, 1, 0, 00, Combination ..... 30%
- Compass, Key Hole, &c ..... 25%
- Butcher Saws and Blades ..... 30%

C. E. Jennings & Co.'s:
- Back Saws ..... 16⅔%
- Butcher Saws ..... 25&7½%
- Compass and Key Hole Saws, 33⅓&7½%
- Framed Wood Saws ..... 25&7½%
- Hand Saws ..... 12½%
- Wood Saw Blades ..... 33⅓&7½%

Millers Falls:
- Butcher Saws ..... 15&10%
- Star Saw Blades ..... 15&10%

Massachusetts Saw Works:
- Victor Kitchen Saws ..... 40&10&50%
- Butcher Saws Blades ..... 35@40%

Peace & Richardson's Hand Saws. 30%

Simonds':
- Circular Saws ..... 45%
- Crescent Ground Cross Cut Saws. 30%
- One-Man Cross Cuts ..... 40&10%
- Gang Mill, Mulay and Drag Saws. 45%
- Band Saws ..... 50%
- Back Saws ..... 25@25&7½%
- Butcher Saws ..... 35@35&7½%
- Hand Saws ..... 25@25&7½%
- Hand Saws, Bay State Brand .... 45%
- Compass, Key Hole, &c .. 25@25&7½%
- Wood Saws ..... 40&7½%

Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws ..... 50%

## Hack Saw Blades and Frames—

Atkins' Hack Saw Blades A A A .. 25%

Disston's:
- Concave Blades ..... 25%
- Keystone Blades ..... 35%
- Hack Saw Frames ..... 30%

Simonds, 25%; The Best, 35%; Culley ..... 35%

C. E. Jennings & Co.'s:
- Hack Saw Frames, Nos. 175, 180 .... 40&7½%
- Hack Saws, Nos. 175, 180, complete, 40&7½%

Goodell's Hack Saw Blades .... 40&10%

Griffin's Hack Saw Frames .. 35&5&10%

Griffin's Hack Saw Blades .... 35&5&10%

Star Hack Saws and Blades .... 15&10%

Sterling Hack Saw Blades .. 30&10&5%

Sterling Hack Saw Frames .. 30&10&10%

Sterling Power Hack Saw Machines, each, No. 1, $25.00; No. 2, $30.00 .. 10%

Victor Hack Saw Blades ..... 20%

Victor Hack Saw Frames ..... 10%

Whitaker Mfg. Co.:
- National Hand Blades, Hand Frames, Power Blades ..... 40%

## Scroll—

Barnes, No. 7, $15 ..... 25%

Barnes' Scroll Saw Blades ..... 40%

Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20 ..... 20%

Lester, complete, $10.00 ..... 15&10%

Rogers, complete, $3.50 and $4.00 .. 15&10%

## Scales—

*Union Platform, Plain. $2.10@2.20*

*Union Platform, Stpd. $2.20@2.30*

Chatillon's:
- Eureka ..... 25%
- Favorite ..... 40%
- Grocers' Trip Scales ..... 50

The Standard Portables ..... 40%

The Standard R. R. and Wagon ..... 50&10%

## Scrapers—

*Box, 1 Handle ..... doz. $1.85@2.10*

*Box, 2 Handle ..... doz. $2.35@2.50*

*Ship ... Light, $2.00; Heavy, $4.50*

Chapin-Stephens Co., Box, 50&20&10

Richards Mfg. Co., Foot ..... 60

## Screws—Bench and Hand

*Bench, Iron, doz., 1 in., $2.50@2.75; 1¼, $3.00@3.25; 1½, $3.50@3.75*

*Bench, Wood ..... 20@20&10%*

*Hand, Wood .... 70&10@70&10&10%*

Chapin-Stephens Co., Hand ..... 70@70&10&2½

## Coach, Lag and Hand Rail—

*Lag, Cone Point. 80&10@80&10&5%*

*Coach, Gimlet Point. . 80@80&10%*

*Hand Rail ..... 70&10@75%*

## Jack Screws—

*Standard List ..... 70&10@75%*

Millers Falls ..... 50&10&10

Swett Iron Works ..... 70@75

## Machine—

*Cut Tread, Iron, Brass or Bronze:*
- *Flat Head or Round Head, 50@50&10%*
- *Fillister Head ..... 40@40&10%*

*Rolled Thread, F. H. or R. H., Iron ..... 75&10%*

*F. H. or R. H., Brass, Nos. 8 to 14 ..... 65&10%*

## Set and Cap—

*Set (Iron) ..... 75&10&7½%*

*Set (Steel), net advance over Iron ..... 25%*

*Sq. Hd. Cap ..... 70&10&7½%*

*Hex. Hd. Cap ..... 70&10&7½%*

*Rd. Hd. Cap ..... 50&7½%*

*Fillister Hd. Cap ..... 60&7½%*

## Wood—

*List July 23, 1903.*

*Flat Head, Iron ..... 87½&5@ .. %*

*Round Head, Iron .... 85&5@ .. %*

*Flat Head, Brass ..... 80&5@ .. %*

*Round Head, Brass .. 77½&5@ .. %*

*Flat Head, Bronze .... 75&5@ .. %*

*Round Head, Bronze . 72½&5@ .. %*

*Drive Screws ..... 87½&5@ .. %*

## Scroll Saws—

See *Saws, Scroll.*

## Scythes—

*Per doz.*

*Plain Grass, Cutting Edge Polished ..... $6.25@$6.50*

*Clipper, Bronzed Web . $6.50@$6.75*

*Solid Steel, Web and Backs Polished ..... $7.00@$7.25*

*Bush, Weed and Bramble, Painted ..... $6.50@$6.75*

*Grain, Painted, Cutting Edge Polished ..... $8.25@$8.50*

*Clipper Grain, Bronze Web, $8.50@$8.75*

## Seeders, Raisin—

Enterprise ..... 25@30%

## Sets—Awl and Tool—

Fray's Tool Handles, Nos. 1, $12; 2, $16; 3, $12 ..... 50

Millers Falls Adj. Tool Handles, No. 1, $12; No. 4, $12; No. 5, $18 .. 20&10%

## Garden Tool Sets—

Ft. Madison Three Plows, Hoe, Rake and Shovel ..... ℔ doz. sets $9.00

## Sets, Nail—

*Octagon ..... gro. $3.50@3.75*

Buck Bros. ..... 27½%

Mayhew's ..... ℔ gro $9.00

Snell's Corrugated, Cup Pt. ..... 40&10%

Snell's Knurled, Cup Pt. ..... 40&10%

Victor Knurled, Cup Pt. ... ℔ gro. $7.50

## Rivet—

*Regular list ..... 75@75&10%*

## Saw—

Atkin's:
- Criterion ..... 40%
- Adjustable ..... 40%

Disston's Star, Monarch and Triumph ..... 30%

Morrill's No. 1 ..... $15.00
Nos. 3 and 4, Cross Cut .... $20.60
No. 5, Mill ..... $30.00
Nos. 10, 11, 95 ..... $15.60
No. 1 Old Style ..... $10.00
Special ..... $16.25
} 50%

Giant Royal Cross Cut ..... ℔ doz. $7.50

Royal, Hand ..... ℔ doz. $4.50

Taintor Positive ..... ℔ doz. $6 75

## Shaving—

Fox Shaving Sets, No. 30 ..... ℔ doz., net, $24.00

Smith & Hemenway Co.'s ..... 75%

## Sharpeners, Knife—

Pike Mfg. Co.:
- Fast Cut Pocket Knife Hones, ℔ doz ..... $1.50
- Mounted Kitchen Sand Stone, ℔ doz ..... $1.50
- Natural Grit Carving Knife Hones, ℔ doz ..... $3.00
- Quick Cut Emery Carving Knife Hones, ℔ doz ..... $1.50
- Quick Edge Pocket Knife Hones, ℔ doz ..... $2.50

} 50%

## Skate—

Smith & Hemenway Co., Eureka .. 50%

## Shaves, Spoke—

*Iron ..... doz. $1.25*

*Wood ..... doz. $2.00*

Barney's (Stanley R. & L. Co.) ... 45

Chapin-Stephens Co. ..... 30@30&10

Goodell's, ℔ doz. $9.00 ..... 15&10

## Shears—

| | 7 | 8 | 9 in. | |
|---|---|---|---|---|
| *Cast Iron* | | | | |
| *Best* | $16.00 | 18.00 | 20.00 | gro. |
| *Good* | $13.00 | 15.00 | 17.00 | gro. |
| *Cheap* | $5.00 | 6.00 | 7.00 | gro. |

*Straight Trimmers, &c.:*
- *Best quality Jap ..... 70&10&5%*
- *Best Quality Nickel .. 60&10&5%*

*Tailors' Shears ..... 40&10&10%*

Acme Cast Shears ..... 40@40&5%

Heinisch's Tailor's Shears ..... 10

National Cutlery Co.'s Nickel Plated, 60&10%; Japan Handles ..... 50&10%

Columbian Cutlery Co.:
- Sheep, 1900 list ..... 30&10&5
- Grass ..... 50&5
- Horse or Mule ..... 50&10

J. Wiss & Sons Co.:
- Best Quality Lap'd ..... 60&10
- Best Quality Nickeled ..... 50&10
- Tailors' ..... 25

## Tinners' Snips—

*Steel Blades ..... 20&5@20&10*

*Steel Laid Blades .. ..... 50&10%*

Acme Cast Snips ..... 40@45&5%

Forged Handles, Steel Blades, Berlin ..... 50%

Heinisch's Snips ..... 40%

Jennings & Griffin Mfg. Co.'s 6½ to 10 in ..... 33⅓&7½%

National Cutlery Co.'s Forged Steel. 50%

Niagara Snips ..... 40%

P., S. & W. Forged Handles, 25%; W. R. W ..... 50%

J. Wiss & Sons Co.:
- Wiss Forged Steel ..... 25%

## Pruning Shears—

Cronk's Hand Shears ..... 33⅓%

Cronk's Wood Handle Shears .... 33⅓%

Disston's Combined Pruning Hook and Saw, ℔ doz, $18.00 ..... 25%

Disston's Pruning Hook only, ℔ doz., $12.00 ..... 25%

J. T. Henry Mfg. Co.:
- Pruning Shears, all grades ..... 40%

P., S. & W. Co. ..... 40&10%

Columbian Cutlery Co.:
- Hedge, Wilcut Brand ..... 60&10%
- Lawn and Border, Wilcut Brand, 60&10%

## Sheaves—Sliding Door—

Reading ..... 40%

R. & E. list ..... 15%

## Sliding Shutter—

Reading list ..... 40%

R. & E. list ..... 15%

## Shells—Shells, Empty—

Brass Shells, Empty:
- Climax, 10 and 12 gauge ..... 60&5%
- Club, Rival, 65&5%; First Quality, 60&5%

Paper Shells, Empty:
- New Rapid, 10, 12, 16 and 20 gauge, 25&10%
- Climax, 10 and 12 gauge; Acme and Magic, 10, 12, 16 and 20 gauge; Ideal, 10, 12, 16 and 20 gauge; Leader grade ..... 25&5%
- Union, League, 10 and 12 gauge, Rival Grade ..... 25%
- New Climax, Defiance, 10, 12, 14, 16 and 20 gauge; Climax, 14, 16 and 20 gauge ..... 20%
- Challenge, Monarch, 10, 12, 16 and 20 gauge; League, Union, 14, 16 and 20 gauge; Repeater Grade .. 20%

## Shells, Loaded—

*Loaded with Black Powder .. 40%*

*Loaded with Smokeless Powder, medium grade ..... 40&5%*

*Loaded with Smokeless Powder, high grade ..... 40&10&10%*

Union Metallic Cartridge Co.:
- New Club, Black Powders ..... 40%
- Nitro Club, Smokeless Powders. 40&5%
- Arrow, Smokeless Powders. 40&10&10%

Winchester:
- Smokeless Repeater Grade ..... 40&5%
- Smokeless Leader Grade ... 40&10&10%
- Black Powder ..... 40%

## Shingles, Metal—Per Sq.

Edwards Mfg. Co.:

| | Painted. | Galv. |
|---|---|---|
| 14 x 20 | $4.25 | $6.00 |
| 10 x 14 | 4.50 | 6.25 |
| 7 x 10 | 4.75 | 6.50 |

Wheeling Corrugating Co.:

| | | |
|---|---|---|
| Dixie, 14 x 20 in. | $4.05 | $5.05 |
| Dixie, 10 x 14 in. | 4.25 | 5.45 |
| Dixie, 7 x 10 in. | 5.25 | 6.70 |

## Shoes, Horse, Mule, &c.—

*F.o.b. Pittsburgh:*

*Iron ..... per keg. $4.10*

*Steel ..... per keg. $3.85*

Burden's, all sizes ..... ℔ keg $3.90

## Shot—

*25-lb. bag.*

*Drop, up to B ..... $1.80*

*Drop, B and larger ..... 2.05*

*Buck ..... 2.05*

*Chilled ..... 2.05*

*Dust ..... 2.30*

## Shovels and Spades—

*Association List, Nov. 15, 1902. 40%*

Avery Stamping Co. ..... 40%

## Snow Shovels—

*Long Handle ..... $3.25@$3.50*

*Wood and Mall, D Handle, $3.75@$4.00*

## Sieves and Sifters—

*Hunter's Imitation, gro. .... $9.50*

*Hunter's Genuine, per gro. . $12.00*

## Sifters, Ash—

Acme Ball Bearing Sales Co., Acme Automatic Ash Sifter, each, $3.25; ℔ doz ..... $39.00

## Sieves, Seamless Metallic

| | Per dozen. | | | |
|---|---|---|---|---|
| *Mesh* | 14 | 16 | 18 | 20 |
| *Iron Wire* | $1.05 | 1.05 | 1.10 | 1.20 |
| *Tinned Wire* | $1.15 | 1.15 | 1.20 | 1.30 |

## Sieves, Wooden Rim—

*Nested, 10, 11 and 12 Inch.*

*Mesh 18, Nested .... doz. $0.90@0.95*

*Mesh 20, Nested .... doz. $1.00@1.05*

*Mesh 24, Nested .... doz. $1.30@1.40*

## Sinks, Cast Iron—

*Painted, Standard List:*
- *12 x 12 to 22 x 36 in ..... 60%*
- *20 x 24 to 24 x 50 in .... 50*
- *24 x 66 to 24 x 120 in .... 30*

Barne's New List ..... 60%

*NOTE.—There is not entire uniformity in lists used by Jobbers.*

## Skeins, Wagon—

*Cast Iron ..... 70@75&10%*

*Steel ..... 40@45%*

## Slates, School—

*Factory Shipments.*

*"D" Slates ..... 50@50&10%*

*Eureka, Unexcelled Noiseless .. 60&7 tens.*

*Victor A, Noiseless. 60&4 tens &5%*

## Slaw Cutters—See *Cutters.*

## Snaps, Harness—

*German ..... 40@40&10%*

Covert Mfg. Co.:
- Derby, 25%; Yankee, 30&2%; Yankee Roller, 30&2%
- High Grade, 40%; Trojan ..... 10
- Jockey ..... 25%

## Snaths—

*Scythe ..... 50&10@60%*

## Snips, Tinners—See *Shears.*

## Spoons and Forks—

### Silver Plated—

*Good Quality ..... 50&10@60&5%*

*Cheap ..... 60@60&10%*

International Silver Co:
- 1847 Rogers Bros. ..... 40&10%
- Rogers & Bro., William Rogers' Eagle Brand ..... 50&10%
- Anchor, Rogers Brand ..... 60%
- Wm. Rogers & Son ..... 60&10%

### Miscellaneous

*German Silver ..... 60@60&5%*

### Tinned Iron—

*Teas ..... per gro. 50@55¢*

*Tables ..... per gro. $0.90@$1.00*

Atlas Mfg. Co.:
- Tea Spoons, ℔ gro ..... 50¢@55¢
- Table Spoons, ℔ gro ..... $0.90@$1.00

## Springs—Door—

Bardsley's Spring and Check ..... 40%

Chicago (Coil) ..... 40&10%

Gem (Coil) ..... 20%

Pullman Door and Gate ..... 10%

Reliance (Coil) ..... 40&10%

Star (Coil) ..... 35%

Torrey's Rod, 39 in. ..... ℔ doz. $1.00

## Carriage, Wagon, &c.—

*1¼ in. and Wider: Per 100 lb.*
- *Black ..... $4.75@$5.00*
- *Half Bright ..... $4.75@$5.00*
- *Bright ..... $5.25@$5.50*

*Painted Seat Springs:*
- *1½ x 2 x 26 .... per pair. 45@47¢*
- *1½ x 3 x 28 .... per pair. 68@71¢*

## Sprinklers, Lawn—

American Foundry & Mfg. Co.:
- Cactus, 65%; Japanese, 70%; National, ℔ doz ..... $12.00

Enterprise ..... 25@30%

Philadelphia No. 1, ℔ doz, $12; No. 2, $15; No. 3, $20 ..... 30%

## Squares—

*Nickel plated .. } List Jan. 5, 1900.*
*Steel and Iron . } 80@80&5*

*Rosewood Hdl. Try Square and T-Bevels ..... 60&10&10@70%*

*Iron Hdl. Try Squares and T-Bevels ..... 40&10@40&10&10%*

Disston's Try Squares and Bevels, Rosewood Handle, 60 & 10%; Iron Stock and Bevel ..... 15%

## Squeezers, Lemon

*Wood, Porcelain Lined:*
- *Cheap ..... doz. $1.00*
- *Good Grade ..... doz. $1.25*

*Tinned Iron ..... doz. $0.75@1.00*

*Iron, Porcelain Lined ... doz. $1.75*

Victor, ℔ gro ..... $9.00

## Staples—

*Barbed Blind ..... 85&5@85&10%*

*Electricians' ..... 80&10&10@85%*

*Fence Staples, Polished, $2.05; Galvanized ..... $2.35*

*Poultry Netting Staples ..... per lb. 3¼@3½¢*

## Steels, Butchers'—

Dick's ..... 30%

Foster Bros.' ..... 30%

## Steelyards—.... 30@30&10%

## Stocks and Dies—

*Blacksmiths' ..... 50@50&10%*

Curtis Rev'ble Ratchet Die Stock .. 25%

Derby Screw Plates ..... 25%

Green River ..... 25%

Lightning Screw Plate ..... 25%

Little Giant ..... 25%

Reece's New Screw Plate ..... 25%

## Stoners, Cherry—

Enterprise ..... 25@30%

## Stones, Axe—

Pike Mfg. Co., Axe Stones (all kinds ..... 33⅓%

## Glass Cutters' Stones—

Pike Mfg. Co., Glass Cutters' Stones and Supplies ..... 10

## Stones, Oil, &c.—

Pike Mfg. Co., 1907 list: ℔ lb.
- Arkansas St. No. 1, 5 to 8 in ..... $2.80
- Arkansas St. No. 1, 5 to 8 in ..... $3.50
- Arkansas Slips No. 1 ..... $1.00
- Lily White Washita, 4 to 8 in. 60¢
- Rose Red Washita, 4 to 8 in. 60¢
- Washita St., Extra, 4 to 8 in. 50¢
- Washita St., No. 1, 4 to 8 in. 40¢
- Washita St., No. 2, 4 to 8 in. 30¢
- Lily White Slips ..... 90¢
- Rose Red Slips ..... 90¢
- Washita Slips, Extra ..... 80¢
- Washita Slips, No. 1 ..... 70¢
- Washita Slips, No. 2 ..... 40¢
- India Oil Stones (entire list) .. 33⅓%
- Quickcut Emery and Corundum Oil Stone, Double Grit ..... 40%
- Quickcut Emery and Corundum Axe Stone, Double Grit ..... 33⅓%
- Quickcut Emery Rubbing Bricks. 40%
- Hindostan No. 1, R'g'lar ℔ lb. 8¢
- Hindostan No. 1 Small ℔ lb. 10¢
- Turkey Oil Stones, Extra, 5 to 8 in ..... ℔ lb. 80¢
- Queer Creek Stones, 4 to 8 in 20¢
- Queer Creek Slips ..... 10¢
- Sand Stone ..... 6¢

} 33⅓%

} 33⅓%

### Scythe Stones—

Pike Mfg. Co., 1907 list:
Black Diamond S. S. ℔ gro. $12.00
Lamoille S. S. ℔ gro. $11.00
White Mountain S. S. ℔ gro. $9.50
Green Mountain S. S. ℔ gro. $7.00
Extra Indian Pond S. S. ℔ gro. $8.00
No. 1 Indian Pond S. S. ℔ gro. $7.50
No. 2 Indian Pond S. S. ℔ gro. $5.00
Leader Red End S. S. ℔ gro. $5.00
Quick Cut Emery ℔ gro. $10.00
Pure Corundum ℔ gro. $18.00
Crescent $7.00
Emery Scythe Rifles, 2 Coat. $8.80
Emery Scythe Rifles, 3 Coat. $11.00
Emery Scythe Rifles, 4 Coat. $13.20
Balance of 1907 list 33⅓%
Lectro (Artificial), ℔ gro., $12.00 $12.00 33⅓%
Lightning (Artificial), ℔ gro., $18.00 33⅓%

### Stoppers, Bottle—

Victor Bottle Stoppers ℔ gro. $9.00

### Stops— Bench—

Millers Falls 15&10%
Morrill's, ℔ doz., No. 1, $10.00 50%
Morrill's, No. 2, $12.50 50%

### Door—

Chapin-Stephens Co. 50@50&10%

### Plane—

Chapin-Stevens Co. 20%

### Straps— Box—

Acme Embossed, case lots 20&10&10%
Cary's Universal, case lots 20&10&10%

### Stretchers, Carpet—

*Cast Iron, Steel Points . . doz. 55¢*
*All Steel Socket . . . doz. $2.00@2.25*
Excelsior Stretcher and Tack Hammer Combined, ℔ doz., $6.00 20%

### Stuffers, Sausage—

Enterprise Mfg. Co., Stuffers and Lard Presses 25@25&7½%
National Specialty Co., list Jan. 1, 1902 30&5%
P. S. & W. Co. 40&10&5

### Sweepers, Carpet—

Per doz.—
Bissell Carpet Sweeper Co.:
Cyco Bearing Superba, $36.00; Triumph, $33.00; Parlor Queen, $30.00; Elite, $29.00; Boudoir, $27.00; American Queen, $27.00; Ideal, $25.00; Gold Medal, $24.00; Primier, $24.00; Prize $24.00; Welcome, $24.00; Grand Rapids, Nickel, $24.00; Japan, $22.00; Crystal, $36.00; Grand, $36.00; Parlor Grand, $48.00; Club, $54.00; Hall, $60.00; Standard Nickel, $22.00; Standard Japan, $20.00; Crown Jewel, Nickel, $21.00; Crown Jewel, Japan, $19.00; Junior, Nickel, $22.00, Junior, Japan, $20.00.

*NOTE.—Rebates: 50¢ per dozen on three dozen lots; $1 per dozen on five-dozen lots; $2 per dozen on ten-dozen lots*

### Tacks, Finishing Nails, &c.

*American Carpet Tacks . . . 90&40%*
*American Cut Tacks . . . . . 90&40%*
*Swedes' Cut Tacks . . . . . 90&40%*
*Swedes' Upholsterers' . . . . 90&50%*
*Gimp Tacks . . . . . 90&50%*
*Lace Tacks . . . . . 90&50%*
*Trimmers' Tacks . . . . . 90&40%*
*Looking Glass Tacks . . . . . 65%*
*Bill Posters' and Railroad Tacks, 90&50&10%*
*Hungarian Nails . . . . . 80&20%*
*Finishing Nails . . . . . 70%*
*Trunk and Clout Nails . . . 80&10%*
*NOTE.—The above prices are for Straight Weights.*

### Miscellaneous—

*Double Pointed Tacks, 90&6 tens@—%*
Se also Nails, Wire.

### Tanks, Oil and Gasoline—

Wilson & Friend Co.:

| Gal. | Gasoline | Oil |
|---|---|---|
| 30 | $2.75 | $3.00 |
| 60 | $3.50 | $4.00 |
| 110 | $5.00 | $5.75 |

### Tapes, Measuring—

*American Asses' Skin . . . . 50@—%*
*Patent Leather . . . . . 25@30&5%*
*Steel . . . . . 33⅓&5%*
*Chesterman's . . . . . 25@25&5%*
Kenffel & Esser Co.:
Favorite, Ass Skin 40&10@50%
Favorite, Duck and Leather 25&5@25&10%
Metallic and Steel, lower list, 35@35&5%; Pocket, 35@35&5%.
Lufkins:
Asses' Skin 40&10@50%
Metallic 30@30&5%
Patent Bend, Leather 25&5@25&10%
Pocket 40@40&5%
Steel 33⅓@35%
Wichusch & Hilger:
Chesterman's Metallic, No. 34L, etc. 25%
Chesterman's Steel No. 1038L, etc. 35%

### Teeth, Harrow—

*Steel Harrow Teeth, plain or headed, ⅝-inch and larger, per 100 lb. . . . . $2.55@$2.80*

### Thermometers—

*Tin Case, Cabinet, Flange, Dairy, &c. . . . . 30@35%*

### Ties, Bale—Steel Wire—

*Single Loop . . . . . 82½&10%*
*Monitor, Cross Head, &c. . 70&2½%*

### Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

### Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

### Tire Benders, Upsetters, &c.

See *Benders and Upsetters, Tire.*

### Tools—Coopers'—

L. & I. J. White 20@20&5%

### Haying—

Myers' Hay Tools 50%

### Ice Tools—

Gifford-Wood Co. 15%

### Miniature—

Smith & Hemenway Co.'s, Davidson, ℔ doz., Nickel Plated, $1.50; Gold Plated $2.00

### Saw—

Atkins' Cross Cut Saw Tools 35&5%
Simond's Improved 33⅓%
Simonds' Crescent 30%

### Ship—

L. & I. J. White 25%

### Torches—

Hammers, Engine, ℔ doz. $4.50

### Transom Lifters—

See *Lifters, Transom.*

### Traps—Fly—

*Balloon, Globe or Acme, doz., $1.15@$1.25; gro. . . . $11.50@12.00*
*Harper, Champion or Paragon, doz., $1.25@1.40; gro. $13.00@13.50*

### Game—

*Imitation Oneida . . . . . 75@10%*
Newhouse 50&5%
Hawley & Norton 65&10%
Victor 75@75&10%
Oneida Community Jump 70&5%
Stop Thief 60%
Tree Trap 60%
Hector 75@75&10%

### Mouse and Rat—

*Mouse, Wood, Choker, doz. holes, 12¢*
*Mouse, Round or Square Wire, doz. 85@90¢*
Marty French Rat and Mouse Traps (Genuine), ℔ doz.:

| | Crate lots. | Small lots. |
|---|---|---|
| No. 1, Rat | $11.50 | $14.50 |
| No. 3, Rat | $5.75 | $6.50 |
| No. 3½, Rat | $4.70 | $5.25 |
| No. 5, Mouse | $2.25 | $3.00 |

Animal Trap Co.:
Out o' Sight, Mouse, ℔ doz. $0.60
Out o' Sight, Rat, ℔ doz. 1.20
Easy Set, Mouse, ℔ doz. .35
Easy Set, Rat, ℔ doz. .85
Out o' Sight Chockers, ℔ doz. holes .12
Out o' Sight, Tin, 5-hole, ℔ doz. traps .75

### Trowels—

Disston Brick and Pointing 25%
Disston Plastering 20%
Disston "Standard Brand" and Garden Trowels 30%
Kohler's Steel Garden Trowels, ℔ gro., 5 in., $4.80; 6 in., $6.00
Never-Break, Forged Steel Garden Trowels, in bulk, net ℔ gro. $5.50
In 1 doz. boxes ℔ gro. $6.00
Woodrough & McParlin, Plastering 25%

### Trucks, Warehouse, &c.—

B. & L. Block Co.:
New York Pattern 50&10%
Western Pattern 60&10
Handy Trucks ℔ doz. $16.00
Grocery ℔ doz $15.00
McKinney Trucks, each, net $10.00
Model Stove Trucks ℔ doz $18.50

### Tubs, Wash—

*M'f'gr's list, price per gross.*

| No. | 0 | 1 | 2 | 3 | |
|---|---|---|---|---|---|
| *Galvanized* | *$67* | *$79* | *$89* | *$99* | *10&7½&5&5%* |

### Twine, Miscellaneous—

*Flax Twine:*
*No. 9, ¼ and ½-lb. Balls . 21@23¢*
*No. 12, ¼ and ½-lb. Balls . 19@21¢*
*No. 18, ¼ and ½-lb. Balls . 16@18¢*
*No. 24, ¼ and ½-lb. Balls . 15½@17½¢*
*No. 36, ¼ and ½-lb. Balls . 15@17¢*
*Chalk Line, Cotton ½-lb Balls . . . . . 24@29¢*
*Cotton Mops, 6, 9, 12 and 15 lb to doz. . . . . 8½@19¢*
*Cotton Wrapping, 5 Balls to lb according to quality . . 13½@19¢*
*American 2-Ply Hemp, 1-lb ½-lb. Balls . . . . . 12½@15¢*
*American 3-Ply Hemp, 1-lb Balls . . . . . 13½@16¢*
*India, 2-Ply Hemp, 1½-lb. Balls, Balls (Spring Twine) . . 7½@9¢*
*India 3-Ply Hemp, 1-lb. Balls 7½@9¢*
*India 3-Ply Hemp, 1½-lb. Balls, 7@8½¢*
*2, 3, 4 and 5-Ply Jute, 1½-lb. Balls . . . . . 9@11¢*
*Mason Line, Linen, ½-lb. Bls. 17¢*
*No. 264 Mattress, ¼ and ½ lb. Balls, according to quality. 30@60¢*
*Wool, 3 to 6 ply . . . . B 6¢; A 7½¢*

### Vises—

*Solid Box . . . . . 50&5@50&10&5%*

### Parallel—

Athol Machine Co.:
Simpson's Adjustable 40%
Standard 40%
Amoteau 25%
Columbian Hdw. Co., Slide 40&5%; 65

Fisher & Norris Double Screw, net, each, Nos. 2, $10.50; 3, $16.00; 4, $20.50; 5, $27.00; 6, $32.00.
Fulton Mach. & Vise Co.:
F. & R. Double Swivel Machinists' 40%
Star, Solid Jaw, Machinists' 40%
Hollands':
Machinists' 40@40&5%
Keystone 65&5@70%
Lewis Tool Co.:
Adjustable Jaw 30%
Monarch, 50%; Solid Jaw 50%
Massey Vise Co.:
Clincher 40%
Parallel Bar 15%
Perfect, 15%; Lightning Grip 15%
Merrill's 25%
Millers Falls Oval Slide Pattern 60&10%
Parker's:
Victor, 20@25%; Regulars 20@25%
Vulcan's 40@45%
Combination Pipe 55@60%
Prentiss 20@25%
Rock Island 25%
Snediker's X. L. 33⅓%
Stephens' 33⅓%

### Saw Filers

Disston's D 3 Clamp and Guide, ℔ doz., $24.00, 30%; Clamps 30%
Perfection Saw Clamps, ℔ doz. $4.50
Reading 60%

### Wood Workers—

Fulton Mach. & Vise Co.:
F. & R. Double Swivel Coachman's 40%
Star Solid Jaw Woodworkers' 60%
Massey Vise Co.:
Lightning Grip, 15%; Perfect 15%
Wyman & Gordon's Quick Action, 6 in., $6.00; 9 in., $7.00; 14 in., $8.00.

### Miscellaneous—

Fulton Machine & Vise Co., Combination Pipe 70%
Holland's Combination Pipe 60@60&5%
Massey's Quick Action Pipe 40%
Parker's Combination Pipe:
87 Series, 60%; 187 Series, 60&5%; No. 870, 40%.
Rock Island Pipe 25%

### Wads— *Price per M.*

*B. E., 11 up . . . . . 60¢*
*B. E., 9 and 10 . . . . . 70¢*
*B. E., 8 . . . . . 80¢*
*B. E., 7 . . . . . 80¢*
*P. E., 11 up . . . . . $1.00*
*P. E., 9 and 10 . . . . . 1.25*
*P. E., 8 . . . . . 1.50*
*P. E., 7 . . . . . 1.50*
*Ely's B. E., 11 and larger . $1.70@1.75*
*Ely's P. E., 12 to 20 . . . . $3.00@3.25*

Dis. 15%

### Ware, Hollow—

### Cast Iron, Hollow—

*Store Hollow Ware:*
*Enameled . . . . . 45&10%*
*Ground . . . . . 50&5%*
*Plain or Unground . . . . . 60%*
*Country Hollow Ware, per 100 lbs . . . . . $2.75@$3.00*
*White Enameled Ware:*
*Muslin Kettles . . . . . 65&10%*
*Covered Wares:*
*Tinned and Turned . . . . . 35&10%*
*Enameled . . . . . 45&10%*
See also *Pots, Glue.*

### Enameled—

Agate Nickel Steel Ware 33⅓%
Enamelware 60&10%
Iron Clad Ware 70&10%
Lava and Volcanic, Enameled 40&10%

### Tea Kettles—

*Galvanized Tea Kettles:*

| *Inch* | *6* | *7* | *8* | *9* |
|---|---|---|---|---|
| *Each* | *45¢* | *50¢* | *55¢* | *65¢* |

### Steel Hollow Ware—

Avery Stamping Co.:
Never-Break Spiders and Griddles 65&10%
Steel Kettles, Maslins Scotch Bowls, Tin'd 60%
Steel Stew Pans, Stew Pots, etc., Porcelained 50%
Cleveland Stamping & Tool Co.:
Solid Steel Spiders and Griddles 65&5%
Solid Steel Kettles 60&5%

### Warmers, Foot—

Pike Mfg. Co., Soapstone 40@40&10%

### Washboards—

| No. | ℔ doz. |
|---|---|
| 800 Brass King, Single Surface, Open Back | $2.80 |
| 862 White Hen, Spiral Grimp Glass | $3.35 |
| 964—Royal Blue Enamel, Single Surface, Ventilated Back | $3.35 |
| 172—Our Best, Single Zinc, Soap Drainer | $3.35 |
| 722—Soap Saver, Single Zinc, Iron Top | $3.35 |
| 100—Northern Queen, Single Zinc, Perforated, Open Back | $3.00 |
| 134—Universal, Single Zinc, Extra Family Size Ventilated Back | $2.80 |
| 760 Banner Globe, Single Zinc, Ventilated Back | $2.25 |
| 57 Peerless, Double Zinc, Spring Protector | $3.70 |
| 56—Red Cross, Double Zinc, Swing Protector | $3.60 |
| 17—North Star, Solid Zinc, Swing Protector | $3.60 |
| 797—Jewel, Single Zinc, Pail Size | $1.25 |

### Washers—Leather, Axle—

*Solid . . . . . 90@90&10%*
*Patent . . . . . 90@90&5%*
*Coil: ⅞ 1 1¼ 1¼ inch. 9¢ 10¢ 11¢ 14¢ per box.*

### Iron or Steel—

*Size bolt. ⅜ ½ ⅝ ¾ ⅞*
*Washers . . . . $4.65 3.75 2.45 2.25 2.05*
*The above prices are based on $6.75 off list.*
*In lots less than one keg add ½¢ per lb.; 5-lb. boxes add ½¢ to list.*

Avery Stamping Co.:
Standard, in 200 lb kegs, $6.00 ℔ 100 lb. disct.; in 100 lb kegs, add 10¢ net ℔ 100 lb; in 5 or 10 lb boxes, add 50¢ net ℔ 100 lb; in 1 lb boxes, add $1.00 net ℔ 100 lb.

### Cast Washers—

*Over ½-inch, barrel lots, per lb. 1½@1¾¢*

### Wedges—

*Oil Finish . . . . . lb., 2¼@2¾¢*

### Weights—Hitching—

Covert Mfg. Co. 30&2%

### Sash—

*Per net ton, f.o.b. factory:*
*Eastern District . . . . $20.00@—*
*Western and Central Districts . . . . . $19.00@$21.00*

### Wheels, Corundum and Emery—

Pike Mfg. Co., Corundum, 65%; Emery 75%

### Well—

*8-in., $2.00; 10-in., $2.30; 12-in., $3.00; 14-in., $4.45.*

### Wire and Wire Goods—

*Bright and Annealed:*
*6 to 9 . . . . . 72&10&7½%*
*10 to 18 . . . . . 72½&10&10%*
*19 to 26 . . . . . 75&10&10&2½%*
*27 to 36 . . . . . 77½&7½%*
*Galvanized:*
*6 to 9 . . . . . 72½&10%*
*10 to 14 . . . . . 72½&10&5%*
*15 to 16 . . . . . 72½&10&5%*
*17 to 18 . . . . . 72½%*
*19 to 26 . . . . . 70&5&2½%*
*27 to 36 . . . . . 65&10&10%*
*Coppered:*
*6 to 9 . . . . . 65&10&10%*
*10 to 14 . . . . . 70&10&5%*
*15 to 18 . . . . . 65&10&10&10%*
*19 to 26 . . . . . 70&5&2½%*
*27 to 36 . . . . . 72½&10&2½%*
*Tinned:*
*6 to 18 . . . . . 67&10&10%*
*Brass . . . . . 15½¢ lb., base*
*Copper . . . . . 14¼¢ lb., base*
*Cast Steel Wire . . . . . 50%*

### Spooled Wire

*Annealed and Tinned . 75@75&10%*
*Brass and Copper . . . . 70@70&10%*
*Retailers' Assortments, per box. $1.90@$2.10*
Wire Clothes Line, See Lines.
Wire Picture Cord, see Cord.

### Bright Wire Goods—

*Steel Wire Goods . 90&40@90&40&10%*
*Brass Wire Goods, 90&40@90&40&10%*
*Brass Cup and Shoulder Hooks, 85&10%*

### Wire Cloth and Netting—

*Galvanized Poultry Netting, 80&2½@80&7½%*
*Painted Screen Cloth, 100 ft., $1.35*
*Standard Galv. Hardware Grade: 100 ft. rolls, 24 to 48 in. wide, Per 100 sq. ft.*
*Nos. 2, 2½ and 3 Mesh . . . . $2.75*
*Nos. 4 and 5 Mesh . . . . . $3.00*
*No. 6 Mesh . . . . . $3.25*
*Nos. 7 and 8 Mesh . . . . . $3.75*

### Wire, Barb—See *Trade Report*

### Wrenches—

*Agricultural, 80&10&5@80&10&10%*
*Alligator or Crocodile . . 70&10@75%*
*Baxter Pattern S Wrenches, 70&5@70&10%*
*Drop Forged S . . . . . 45@45&5%*
Acme 60&10%
Alligator Pattern, 70%; Bull Dog, 70%
Bemis & Call's:
Adjustable S, 40&5%; Adjustable S Pipe, 40&5%; Briggs Pattern, 40%; Combination Bright, 50%.
Steel Handle Nut 50&5%
Combination Black 50&5%
Merrick Pattern 50&5%
Boardman's 40
Coes' Genuine Knife Hdl. 40&10&5&5
Coes' Genuine Steel Hdl. 40&10&5&5
Coes' Genuine Key Model 40&10&5&5
Coes' Genuine Hammer Handle 40&10&5&5
Coes' "Mechanics'" 40&10&10&5&5
Donohue's Engineer 40&10%
Eagle 70%
Gem Pocket 30%
Hercules 70%
W. & B. Machinist:
Case lots 50&10
Less than case lots 50%
W. & B. Railroad Special:
Case lots 50%
Less than case lots 40&10&5
Solid Handles, P., S. & W. 50&10%; full cases 50&10&5%
Standard Nipple Mfg. Co.:
Duplex Chain 50%
Uwanta Wrench Co.:
Uwanta Special, Iron Handle 40&10&5%
Other Wrenches 50%
Vulcan and Agrippa Chain 50%
Whitaker Machinists' 50&10%
Wizard Adjustable Ratchet 50%

### Fruit Jar—

Beni, P. Forbes, Triumph, ℔ gro., $7.50; per doz. $0.90

### Wrought Goods—

*Staples, Hooks, &c., list March 17, '02 . . . . . 90@—%*

### Zinc— *(Cask lots at mill.)*

*Sheet . . . . . per 100 lb., $7.00*

# THE IRON AGE

New York, Thursday, October 22, 1908.

## The Keystone Gasoline Well Driller.

In *The Iron Age* June 25, 1908, there was described a gasoline engine driven road roller, the first of its type, and now, marking a still further invasion of the gasoline engine into the steam engine field, there is announced a gasoline driven well drilling machine by the Keystone Driller Company, Beaver Falls, Pa. That both of these applications were not made successfully earlier has been due in large part to certain acknowledged limitations of gasoline engines as compared with steam engines. Particularly in well drilling the steam engine has certain advantages as a motive power—reversibility, fine speed adjustment (to suit the drop of the drill and the depth of the well), and substantially constant power under variable speeds. Given a means of approximating these advantages with a gasoline engine which has its own peculiar advantages of convenience and the combination is nearly ideal. In the Keystone driller this has been accomplished in the transmission which permits the engine to run at constant speed in one direction, at which its highest efficiency is realized, while the drive may be reversed and the speed changed. It was an even more difficult problem than confronted automobile manufacturers, as a few stepped changes of speed are not sufficient for well drilling. It is significant that both the road roller and the well driller in their gasoline engine driven forms have been developed by builders of their steam prototypes.

Primarily the gasoline driller is intended for use where fuel or water is scarce, but in any locality it compares favorably with a steam driven machine. In fact the only difference between the Keystone gasoline and steam drillers is the substitution of the gasoline engine and its equipment for the steam engine and boiler, with the addition of the specially devised power transmission. In the elimination of the boiler alone, saving its weight and the attention and repairs it requires, much has been gained.

Figs. 1 and 2 give side and end views of the new driller, and details of the engine and transmission are given in Figs. 3 and 4. The machines are made in two sizes and in traction and nontraction types. The No. 3 plain machine has a 14-hp. engine, the No. 3 combined driller and traction engine and the No. 5 nontraction machine each have 20-hp. engines, and the No. 5 traction machine a 30-hp. engine. The engines are of two-cylinder, four-cycle type, with pistons opposed, so that the crank shaft receives an impulse at every revolution. Also since one piston counterbalances the other there is practically no vibration. The crank shaft bearing and the pistons are inclosed to exclude dust, but nevertheless all of the internal parts of the engine are easily removable through a covered aperture in the engine frame.

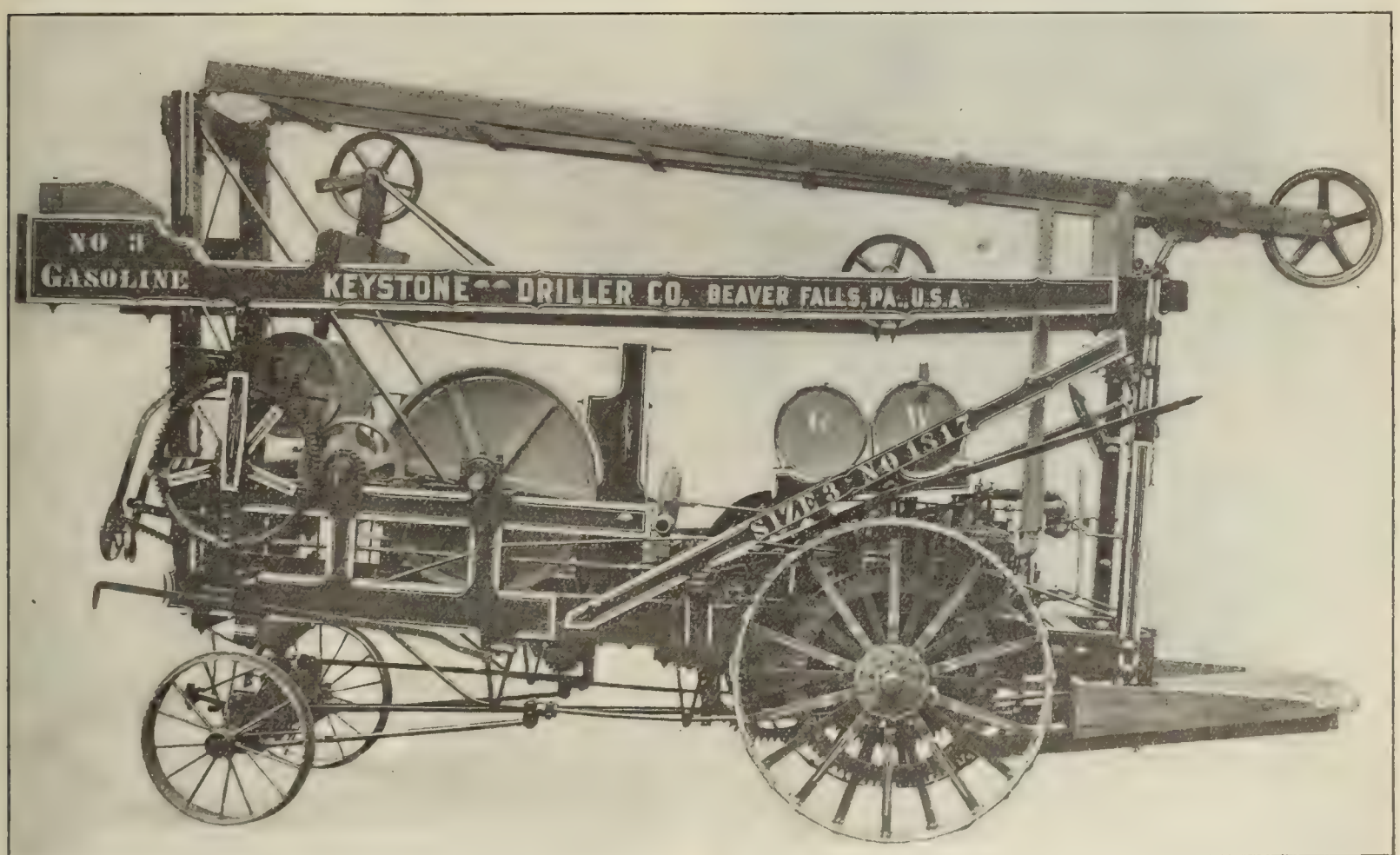



Fig. 1. The Keystone Auto Gasoline Drilling Machine.

The engine is light and strong. It is oiled by a splash system from a reservoir in the crank case, hence grease cups and oilers for the pistons and crankshaft bearings are not required. A check valve prevents oil from leaking out from the main bearings of the engine. The cylinders and frame of the engine are cast in separate pieces, so that any single part may be replaced at less expense. The engine is governed by a fly ball type of throttling governor driven direct by the engine without belts, and through it the constant speed which the engine will maintain can be changed as desired.

The cylinders and frame are cast iron. The cylinders are water jacketed. The very long pieces at the ends of the engine rest upon and are securely bolted to the side sills of the machine, not only preventing displacement or disarrangement of the engine, but bracing and stiffening the frame of the machine as well. The pistons are of close grained iron, ribbed and braced, and permit a very close fitting to the cylinders. The rings are also close grained hard iron and are about twice the thickness of such rings as commonly made, principally to insure their perfect fit, so as to hold the compression and working pressure of the engine by preventing leakage. The valves are of a special steel highly resistant to wear and




Fig. 2.—Front View, Showing Controls and Transmission.

oxidizing effects of the gases. A large valve area and lift makes it possible for the engine to operate at piston speeds of 1000 ft. per minute and take in full charges, giving the highest mean effective pressure. The rated power of the engine being based on a piston speed of 550 ft. per minute, the engine is capable of developing much more than its normal power.

The crankshaft and connecting rod are steel forgings of liberal proportions, and the bearings of the crankshaft and connecting rod are phosphor bronze and of large surface. They are flooded, self-oiling and arranged to use the oil over repeatedly. No oil cups except one feeder are required for the entire internal part of the engine. All bearings are adjustable for wear.

Jump spark ignition is used and a timer of the company's own make, which is claimed to conduce to long life of batteries. Each machine is equipped with duplicate sets of five cells of battery, each arranged in a weatherproof box with the spark coil. After the engine is started the ignition current is furnished by a dynamo, thus relieving the batteries. Both sets of batteries and the igniting dynamo are controlled by a switch placed on the left rear post just below the steering and control wheels. A key is provided for the switch, without which it is impossible to start the machine. The carburetor is of the gravity float feed type.

Two 40-gal. galvanized iron tanks, marked G and W in the Figs. 1 and 2, contain the gasoline and cooling

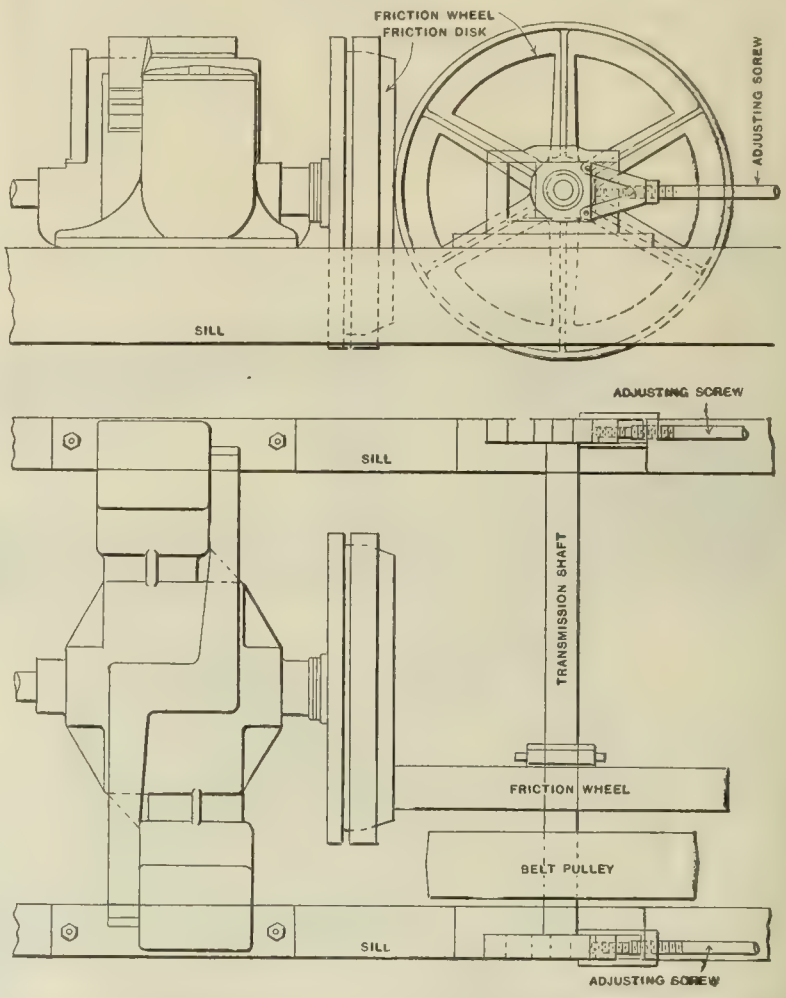



Fig. 4.—Elevation and Plan of the Variable Speed Reversible Transmission.

water for the engine jacket. A tank full of gasoline will run the engine under ordinary loads for 30 hr., 5 or 6 gal. will run it 10 hr. without load and one tank full of water is sufficient to cool the engine for 24 hr.

It is specially to be noticed that in the motor there is but one pair of gears. These are made of steel and iron, are of coarse pitch and large teeth, and run in oil. The engines are equipped with a starting device, and in addition each cylinder is provided with a valve for relieving about two-thirds of the compression, so that even though these engines are of comparatively large power, they are very easily started under any circumstances.

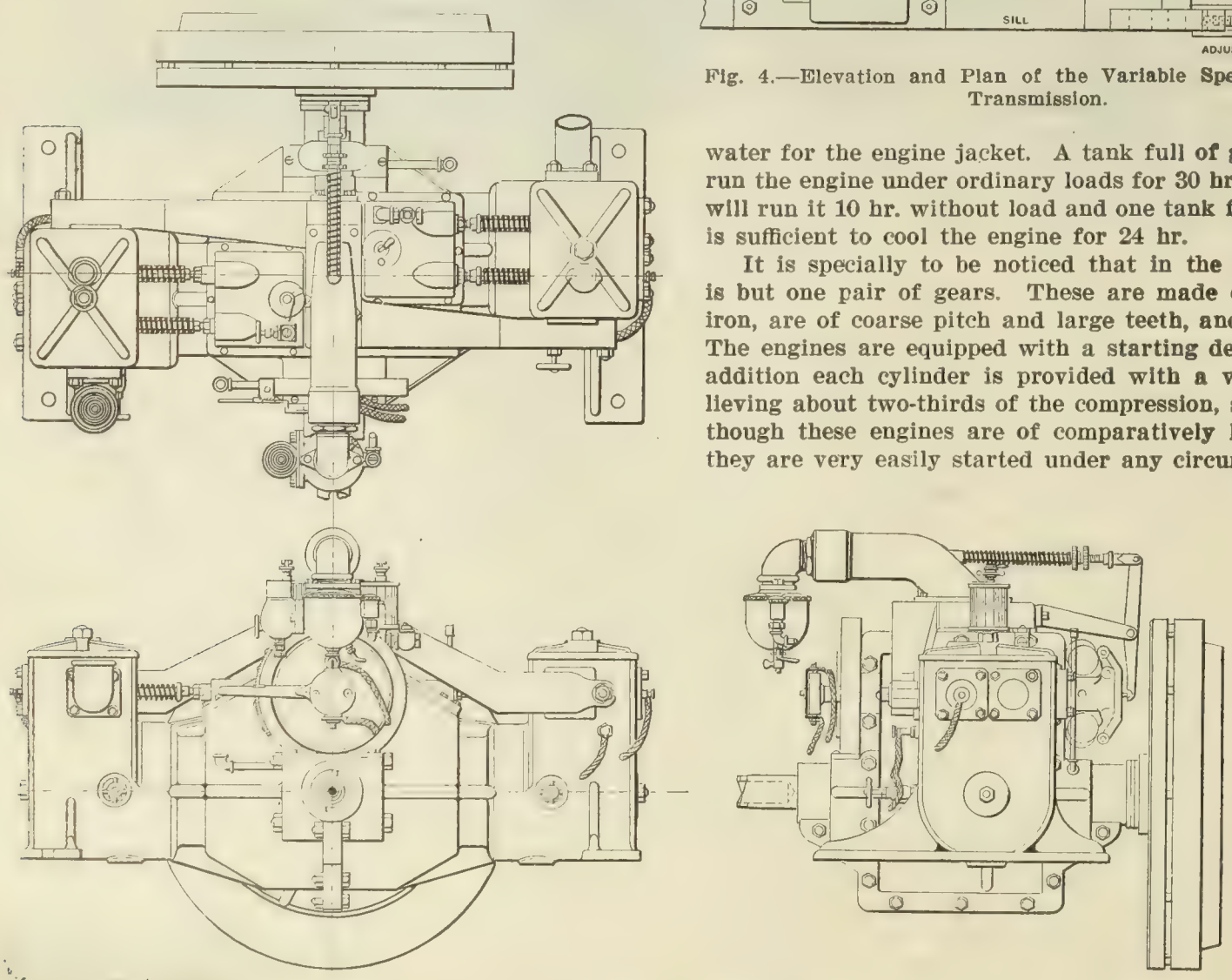


Fig. 3.—Plan, Side and End Views of the Engine.

One of the new features of the machine is shown in Fig. 2, an automobile type of front axle and steering device. The axle is stiffer than formerly, and the steering mechanism is of the worm and sector self-locking type, controlled by a steering wheel at the rear of the machine. An emergency brake is placed on the left side of the machine near the steering and control wheels at the driver's post.

That which more than all else has made the gasoline driller a success is the graduated reversible power transmission. This comprises a combination friction driving disk and flywheel on the motor and a driven wheel on a transverse transmission shaft. On the latter shaft at one end is placed a pulley which drives the drilling mechanism by belt, and on the other end of the shaft is the traction driving gear. This transverse shaft runs in hardened steel ball bearings, slidable so as to engage the driven wheel with the friction driving disk at any point across the diameter of the latter, so that the speed may be graded from zero to high speed in either direction. The friction driving disk has a hardwood filling, with the end grain exposed, and will wear down 2 in. before needing renewal. The position of the driven wheel is instantly controlled by a lever and hand wheel on each end of the machine.

The motor runs constantly in one direction at any speed, determined by the governor, from 250 to 500 rev. per min., and at such speed will develop any power placed upon it from no load to full load, as required. At the forward end of the machine are located all controlling means necessary during the operation of drilling, just as those for propelling the machine as a traction engine are located at the rear platform. Blast for a forge fire used in dressing tools is furnished by a rotary blower supplied with the machine and driven by a friction contact with the flywheel of the engine. A hose is used to convey the air to the forge on the ground.

On the traction machine the traction gearing is driven from a pinion on the end of the transverse shaft, as before stated. The ability to vary the speeds is of importance here as well, so that steep hills can be negotiated.

All the drilling tools, derrick, &c., used in well drilling are carried on the machine in the same manner as on a steam driven driller. Provision is also made for attaching a trailer or tender wagon, in which may be carried extra fuel and water for several days, and additional pipe, camping equipment, provisions, &c. The tractive power is sufficient to haul several trailer wagons or other machines if necessary.

## The Texas Metal Trades Association.

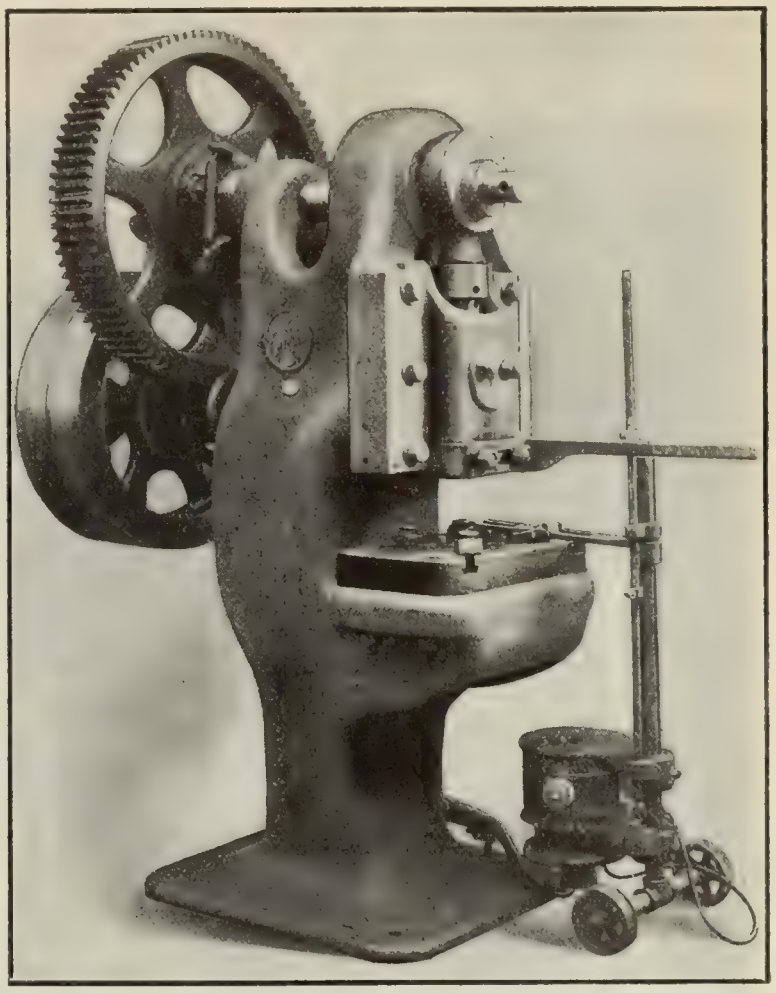
The annual convention of the Texas Metal Trades Association was held in San Antonio, October 8 and 9, with good attendance. W. S. Mosher, president, of Dallas, was in the chair, and W. C. Trout, secretary, of Lufkin, was at his desk. It was resolved to incorporate under the laws of Texas, the membership to include founders, machinists, boiler and tank builders and structural and bridge builders. Three new members were added to the organization, besides the election of Hardy Greenwood of San Antonio to honorary membership.

Papers and discussions were as follows: D. R. Jamerson, Union Iron Works, Houston, on "Shop Cost System"; W. C. Trout, Lufkin Foundry & Machine Company, Lufkin, on "Buyers' Contracts," especially that applying on pig iron and as adopted by the Iron Buyers' Association; E. Y. Hartwell, Hartwell Iron Works, Houston, on "Molding Machines." Hardy Greenwood, San Antonio, sales agent for Pioneer pig iron and Milwaukee Solvay foundry coke, led the discussion on freight matters.

The members all appeared satisfied that the organization had done effective work in the past year. The election of officers for the ensuing year resulted as follows: W. C. Trout, Lufkin, president; J. H. Holmgreen, Alamo Iron Works, San Antonio, vice-president; D. R. Jamerson, Union Iron Works, Houston, secretary. Committees were appointed, and it was decided to meet in Beaumont next year.

## The Ferracute Electric Press Operator.

An electric press operator is used by the Ferracute Machine Company, Bridgeton, N. J., to take the place of a boy while testing single-stroke presses. Its function is to depress the treadle at the proper intervals to keep the press in continuous operation, but it is not intended as a substitute for a human operator in the doing of work on the press. The company makes a specialty of presses for stamping sheet metals, and before shipping its machines tests them by running them a day or so that any defects in their action may be revealed. Machines of this class are usually provided with a clutch connecting the fly wheel or gear wheel to the shaft, which is engaged when the operator places his foot on a treadle. Formerly boys were employed to do this during testing, but the recently constructed electric operator, shown in the illustration,



An Electric Device for Continuously Operating a Single-Stroke Press While Under Test, Built and Used by the Ferracute Machine Company, Bridgeton, N. J.

has been found to do the work much more satisfactorily.

The essential part of the contrivance is a weight or plunger which is raised by a solenoid and dropped by gravity when the current is broken. The core of the solenoid projects through the top of its casing, affording an opportunity to suspend it by a latch when not in use. What corresponds to the foot of a boy is connected to the solenoid by a ball joint, eliminating friction when pressure is applied to the treadle. An arm attached to the ram of the press raises the trip rod as the ram nears the top of its stroke, breaking the current and releasing the weighted core or plunger which then drops upon the treadle. The trip rod descends with the arm until contact is again made, when the weight raises and the continued making and breaking of the circuit gives the desired intermittent vertical motion closely resembling the action of a human foot on the treadle.

The device is adjustable to adapt it to the wide variety of sizes of presses built by the company, there being a split sleeve at the base, allowing the foot to be adjusted up or down, and the trip rod being long enough to reach the rams of all ordinary sizes of presses. The necessary portability of the apparatus is secured by mounting it on casters, so that it may be pulled or pushed to the machine that it is desired to operate. In the Ferracute shops all the machine tools are motor driven and current supply for the electric operator may be obtained in any part of the works.

# Shop Heating and Ventilation.

## The System Used in the Abendroth & Root Mfg. Company's Plant.

The accompanying drawings and half-tones illustrate a heating system recently installed in the plant of the Abendroth & Root Mfg. Company at Newburgh, N. Y., that presents some interesting solutions of problems in heating and ventilation. The outfit was designed by the engineers of the Green Fuel Economizer Company, Matteawan, N. Y., which concern furnished and installed the complete plant. The fan system is employed, an important feature of which is that it delivers the heated air near the floor level.

The building is of the typical frame type used for bridge, boiler and sheet metal work, one story high, covering a large area and with a high roof. The walls are of open construction and the exposed surfaces are composed largely of glass, having high radiating and conducting properties and admitting a considerable leakage of cold air. As is usual in shops where work of the nature is carried on, the workmen are quite active, so that the temperature required does not exceed 55 to 60 degrees, and as the men are scattered pretty well about the building a thorough distribution of heat is imperative, the conditions differing considerably from those in a shop where the men work at benches. Further, there is a large amount of stock and iron work generally on hand, which takes a considerable length of time to heat up.

The old-fashioned method of stringing steam pipes along the walls was prohibited, on the ground that the results are invariably a prism of excessive heat near the walls, which promptly radiates from the adjacent windows or ascends to the region of the roof, leaving the central portion of the building cold. To secure a distribution of heat, even approximately uniform, with the steam pipe or direct system, it would be necessary to place coils in the center of the building, and as clearance must usually be provided for cranes, the connections have to be kept clear of the runways; the coils, which, of course, always form a pocket, would be dripped by piping under the floors, which is seldom feasible in a building of this nature and tends to increase expense and inaccessibility, or around the end wall where they generally cross windows or cut off doors. With a fan system, it is often not convenient to run air distributing pipes in the interior of the shop on account of cranes.

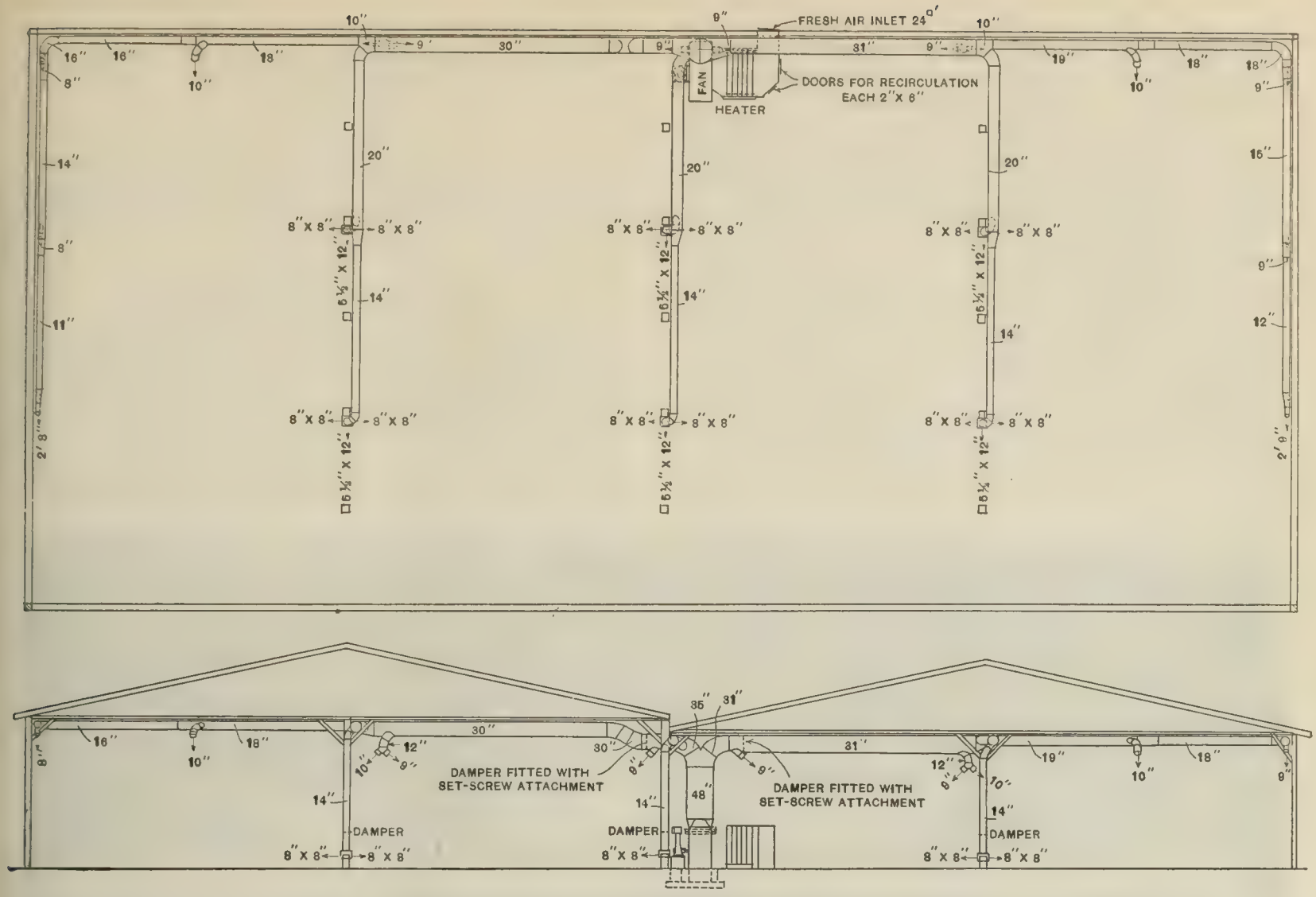
In this installation the fan and heater coils are placed at the central point of an end wall, the fan discharging upward into the main header duct which branches from the vertical duct on either side above the top of the end windows. From the main header duct branches are led at right angles along each row of columns, and pipes are dropped down alternate columns. These discharge in three directions, 2 ft. above the floor, bringing the heat to the point where it is needed and from which point it rises of its own accord after accomplishing its purpose. The opinion of the designers is that the trouble experienced with apparatus formerly installed is that, while the upper part of the building and the roof are well heated, the inhabited zone remains cold. This comes about through what is apparently an attempt on the part of the designers to force the hot air downward from the outlets a considerable distance by means of momentum currents. However, the momentum of an air jet is not long preserved, and in general it is considered desirable in ventilating to depend upon momentum as little as possible, since it only implies drafts and gives an uneven distribution.



View in the Shop of the Abendroth & Root Mfg. Company, Newburgh, N. Y., Showing Location of Motor, Fan, Heater, Main Air Duct and Arrangement of Branches and Outlets.

The general subject of the most suitable air velocities, the size and position of discharge openings, and the interaction and relative importance of momentum and convection currents is one that frequently receives too little attention in the planning of heating and ventilating arrangements. In the present case care in this regard has secured the result that the shop is found heated evenly with the least amount of steam in the shortest possible time. The use of three discharges near the floor on each drop gives good distribution and avoids the trouble experienced with one large pipe blowing directly in one place, which in other plants is sometimes claimed to be so bad that the men cannot work at that particular spot.

As the number of occupants in the present case is relatively small for the size of the building, a considerable economy is effected by drawing the air supply from the interior of the building, although provision is also

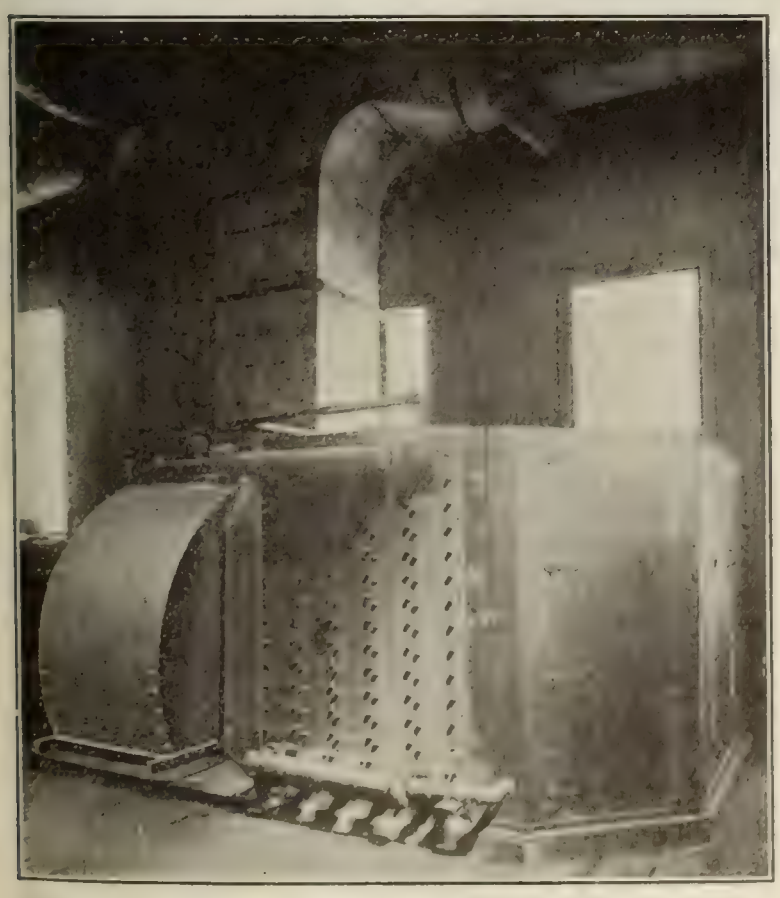



Plan and Elevation, Showing Location of Fan, Heater and Air Ducts.

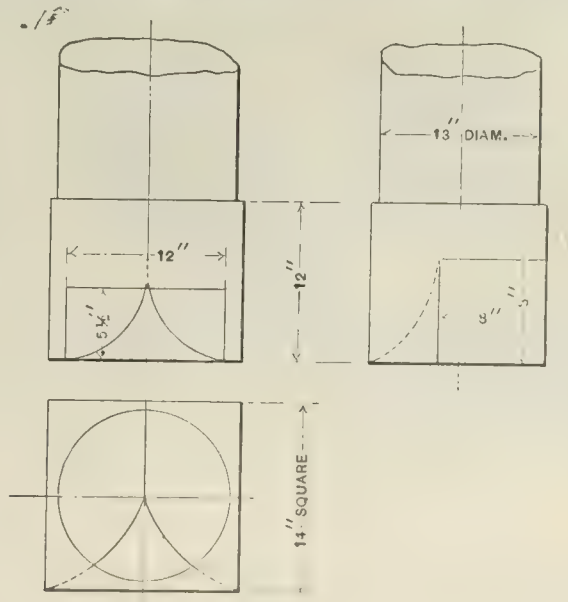
made for supplying fresh air in mild weather or in case an uncomfortable amount of smoke or dust makes a rapid change of air desirable. The air can be recirculated in the morning while warming up the building and then fresh air supplied for the remainder of the day.

The heating and ventilating apparatus consists of a Green steel plate fan of the three-quarter housing type, having a wheel 6 ft. in diameter and 3 ft. 6 in. wide. Directly connected to the same shaft is a Green 7 x 8 in. vertical center crank throttling engine, open frame type, with hand lubrication.

On the inlet side of the fan is placed the heater, of the patent Green type, containing 4080 lin. ft. of 1-in. pipe divided into five sections, having four rows of pipe each, making the total depth of the heater 20 rows. One section is arranged to take the exhaust from the fan engine and the remaining four sections may be supplied with either exhaust steam from the main engine or live steam at will. Each section is independent of the others, having its own inlet and drip, so that any section may be shut off. Each section consists of horizontal lines of wrought iron pipe, expanded into cast iron headers at each end. The covers of these headers are removable, so that the pipes may readily be cleaned or repaired, also providing an effective means of plugging a damaged pipe in a few minutes so that the heater may be used until it can conveniently be shut down for more permanent repairs, an advantage which a mechanic experienced in heating coils will appreciate. When a pipe needs replacing, instead of taking the whole heater apart the defective pipe can be pulled out through the header and replaced with a perfect pipe by any one who can expand a tube into a header, and as the tubes are made from 1-in. wrought iron steam pipe, they can, of course, be bought almost anywhere. It is often necessary to cover the heater with insulating material; when this is done with the Green heater all ordinary repairs may be made



The Fan, Heater and Vertical Air Duct.

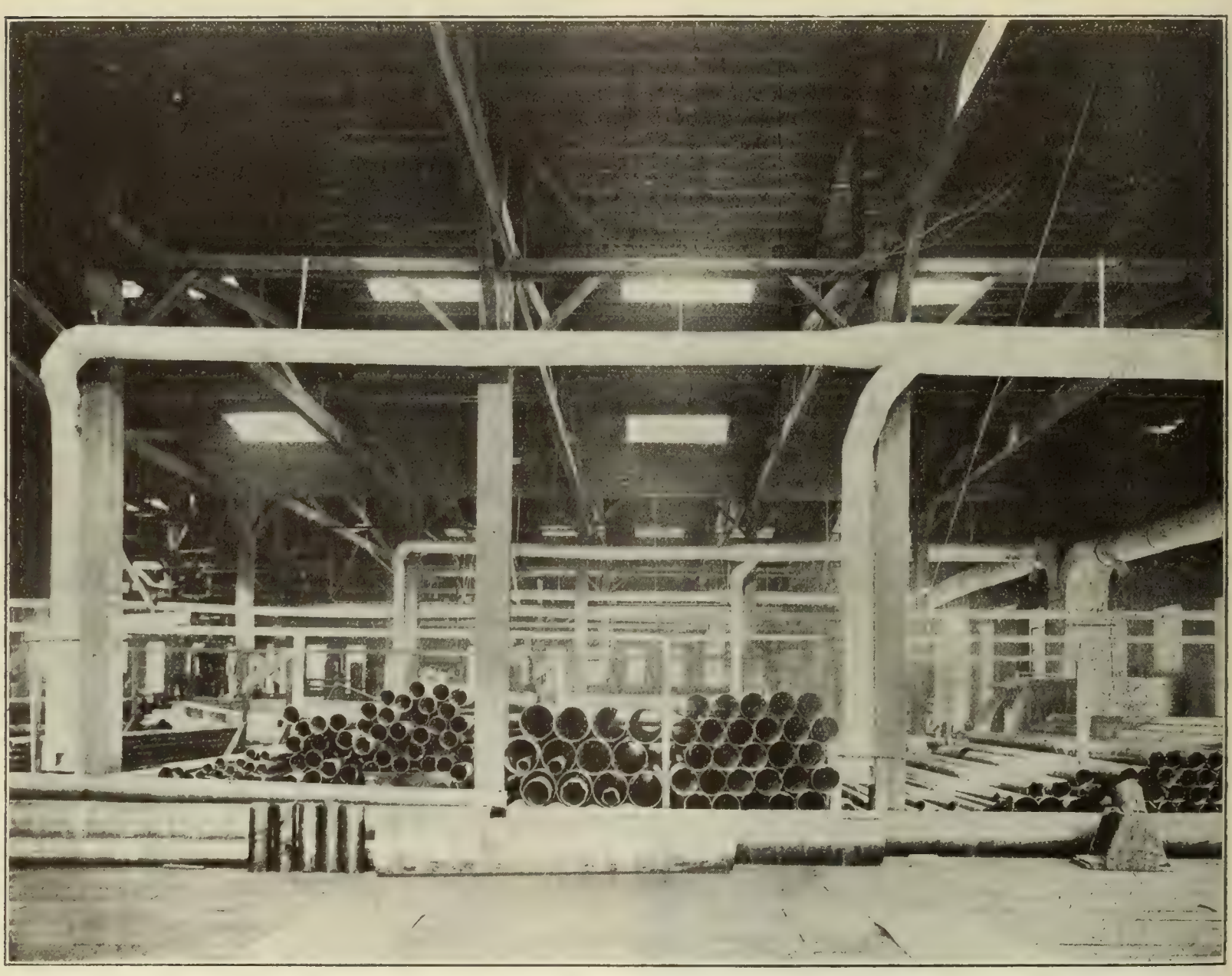



Front and Side Elevation and Plan of Air Duct Outlets.

without disturbing the covering. Owing to the fact that the pipes are horizontal, and all of exactly the same length, and as in addition the steam and water of condensation travel always in the same direction, it is claimed that this heater is notably efficient.

The steam circulates positively and any air present is carried to the outlet. There is no possibility of steam passing directly from the inlet to the outlet through the header. This form of heater is also well adapted for the circulation of hot or cold water or of cold brine, as the pipes are easily cleaned.

An examination of the sizes of pipes and of the sizes of outlets as shown on the accompanying plan indicates that the total area of the 34 outlets is 2186 sq. in., or 15.2 sq. ft. This means that for every 100 cu. ft. of air delivered by the fan the velocity through the outlets averages 6.5 ft. per minute. Thus for 10,000 cu. ft. delivered by the fan per minute, depending, of course, upon the speed at which it is run, the average velocity of air through the outlets would be 650 ft. per minute. The reduction in velocity in the ducts from the fan to the outlets is not very great. The area of the 48-in. pipe, for example, is 1810 sq. in. and serves the 2186 sq. in. of outlet areas, indicating that the velocity at the fan is about 20 per cent. greater than the average at the outlets.



The Distributing Main, Branches and Outlets.

**The Universal Rolling Mill Company.**—A new company consisting of several parties formerly connected with the Waynesburg Forge, Sheet & Tin Mills at Waynesburg, Pa., has been organized as the Universal Rolling Mill Company with a capital stock of $75,000. It has acquired the sheet department of the above named plant and is removing it to Bridgeville, Pa., where a five-acre site has been secured having railroad connections with the Pennsylvania and Wabash systems. The output will consist largely of special heavy gauge steel sheets and light strips, intended more particularly for the manufacture of shovels and other sheet metal tools, as well as steel for stamping out various sheet metal products required in the manufacture of agricultural implements. It is the intention of the company later on to establish in connection with the mill a drop forging and stamping department for making these products. The present equipment will consist of three sheet mills, direct driven by a 30 x 30 Corliss engine, power being furnished by a battery of Geary water tube boilers. It is expected to have the plant in operation about the middle of next January. H. B. Duncan is president and Walter H. Baker secretary and treasurer.

## An Alabama Briquette Project.

The Standard Fuel Company, Birmingham, Ala., has been organized to manufacture and sell a fuel briquette made of soft coal and coke breeze, and expects to build and equip a plant within the next six months to turn out this product. The essential feature of the new briquette lies in the character of the binder used, which is said to be a vegetable substance not highly inflammable, and yielding no smoke in combustion. The briquettes remain firm and hard under heat, and, like anthracite, do not disintegrate until entirely consumed. They burn with but little flame, and are practically smokeless. In a recent test a briquette 2½ in. in diameter by 1½ in. in length, after burning 1½ hours, was found to be but half consumed, and after cooling was put back into the fire, and continued to burn over an hour longer before it was entirely reduced to ashes. Its superiority in this respect is ascribed chiefly to the character of binder used, which it is claimed contains no tar products in its composition. These briquettes are made on a special machine designed by R. M. Hale, formerly in charge of the briquetting experiments carried on by the Illinois Steel Company, with a view to briquetting furnace flue dust, which was afterward abandoned in favor of the sintering process. The officers of the company are Theodore Davis, president; R. M. Hale, vice-president and engineer; R. E. Seibels, secretary and treasurer.

# The Cape May Sand Company's Plant.

BY L. G. BAYLEY.

The Cape May Sand Company's plant is located on the southern coast of the State of New Jersey on the shore of Delaware Bay. On account of the natural formation of the bay and the tidal effects, the sand deposit at this location is unexcelled.

Prior to the organization of the present company, in 1905, the plant was run on a small scale, but since new machinery and other improvements have been added 150,000 tons of sand and gravel have been shipped to all parts of the United States and Canada, to be used for many different purposes. While improvements are constantly being made, and larger ones are contemplated, plans having been made for an extensive wharf, for sand barges and a plant exclusively for filtration purposes, the present operations consist of the following:

A dry grading process, installed in a large, well heated building, shown in the accompanying illustration. A wet grading process, where the machinery is not covered, but supported on heavy timber framing, surrounded by the bins on the ground floor, as shown in the rear of the building in the illustration; a blacksmith shop, repair shop, engine and boiler room, Italian quarters, storeroom and offices; a track system for the sand trucks, clam shell bucket cranes and locomotives for hauling; three miles of the beach have been staked off for future operations.



The Cape May Sand Company's Plant.

Large clam bucket cranes, supported on trestle track work along the beach of the Delaware Bay being well in the water when at high tide, are used for taking up the sand and gravel, depositing it in 50-ton sand trucks, which are made of very heavy timber work. When full the trucks are moved to the plant, where they are unloaded within easy reach of the lower hoppers of the conveyors, consisting of an endless chain of buckets, running at a steep grade to a hight of 60 ft. above the ground level.

The lower hoppers being filled, the buckets of the conveyor pass through them, depositing the sand and gravel in a wet state into hoppers at the top of the timber work. The top hoppers communicate with the inside of revolving horizontal drums built in steps or terraces to within 10 or 15 ft. of the ground level. The top or first drums are made of sheet steel perforated with certain sized holes and are slightly inclined, so that as they revolve the material inside is thoroughly shaken and moves down toward the lower end.

In the wet grading process a 3-in. supply of water is pumped into the top hopper, meeting the discharges of sand from the bucket conveyor and flows with the material throughout the entire process of grading until it passes out through the walls of the last bin at the foot of the framework.

All the large pebbles, shells, &c., which do not pass through the meshes of the drum are carried along by the rotation of the latter and discharged through the lower end into a hopper, which communicates by means of a wooden pipe or spout to the inside of a cylindrical drum immediately under the first, this drum being made of heavy wire having a very large mesh. Here the pebbles and shells are separated from the rest, which falls through the meshes into a bin of large capacity beneath.

The sand which passes through the perforation of the top or first drum is washed along wooden channels into the front opening of the next drum, of a smaller mesh. Here it is tumbled and washed through the meshes into a wooden trough beneath and passed on to the next drum farther on and a little below. The graded pebbles and gravel pass out through the lower end of the drum into wooden hoppers, which are connected by spouts of different lengths with the respective bins below. In this manner the material is separated into eight or nine grades of sand and gravel.

As the material reaches the lower series of drums it becomes bulky and is not so easily passed through the finer meshes of the wire drums. For this reason the discharge is not so great and the meshes become more easily clogged. The drums are therefore increased in number, running in pairs, and an extra stream of water is directed on the outside of them, helping to wash away the fine sand which clogs the meshes.

The lower set of drums discharges the graded material through the lower ends into individual hoppers, which communicate with one spout discharging into the bin, while the fine sand passing through the meshes is washed along the trough beneath into a large bin at the extreme lower end of the apparatus. The water soon passes off through openings in the sides of the bins, leaving a very fine deposit of sand, which is designated as No. 0 grade.

While the material produced by the wet process is good enough for all practical purposes, the grades are not so evenly sorted as in the dry process. This is done under cover, in a heated building. No water is used, but the material falls by gravity into the bins, and from one series of drums to others immediately below but farther advanced, until it reaches the lowest set of drums, 9 or 10 ft. from the ground. The process is the reverse of the wet, the finer grades of sand being separated first. For this reason the top drums are in pairs, since they have to take the bulk of material.

As in the wet process, the material is raised to a top hopper by means of an endless chain of buckets. Here it is screened to get rid of the larger pebbles and shell deposit. The rest falls into a hopper beneath the screen and is dropped through a metal spout into a long horizontal rotary kiln on the ground floor of the building. One end of this kiln, which is lined with firebrick throughout, is open to and connected directly with a coke furnace which is provided with a 5-hp. blower. The other end of the kiln is open to a chimney and inclines

toward that end, so that as the kiln revolves the sand and gravel are tumbled toward and out the chimney end into a hopper, where it is lifted by means of an endless chain conveyor to the top drums, as in the case of the wet process.

The high temperature through which the sand has been made to pass thoroughly dries it. That which passes through the meshes of the drums is caught in individual hoppers and discharged into the respective bins by means of spouts of different lengths or chutes.

While there are at present sufficient screens to make eight or nine different grades of material, there is no reason why grades of any degree cannot be made for any purpose by changing the size of the mesh. In the wet process the material is loaded into the cars for shipment by means of clam shell bucket cranes, but in the dry process each bin is furnished with a small bucket chain conveyor, which shoots the material through spouts into the cars on the sidings. The bucket conveyors are operated by individual clutches on a horizontal shaft, which runs the full length of the delivery side of the bins.

Less than half a mile from the plant is a natural formation of "wind blown" or sand dunes, excellently adapted for filtration purposes without any preparation whatever, 1000 tons of this material having been shipped for that purpose recently. While for filtration purposes it is difficult to get a pure sand, free from loam and other foreign matter, seashore or ocean washed sand is entirely devoid of these impurities. It is also a recognized fact that round or globular grains are preferable to a sharp or angular formation for filtration purposes.

The sand from this plant is used for foundation work, building and concrete construction, asphalt paving, concrete bricks, the purification of water supply, sewage disposal and steel or iron molding. Much has been furnished for the sand blast process of cleaning castings. For this purpose a tough hardness of grain is preferable to a brittle hardness, and a clean hard tough grain sand can perhaps best be had from ocean washed or seashore sand.

The offices of the Cape May Sand Company are in Cape May City, N. J., a few miles from the plant. Frank Entrikin is president, Lafayette Miller vice-president, and J. Henry Edmunds treasurer and manager.

## The Standard Gauge Mfg. Company.

The Standard Gauge Mfg. Company, which has been actively engaged in the manufacture of indicating and recording gauges, at Syracuse, N. Y., will move its plant and main office about November 1 to Foxboro, Mass., where the manufacture of these lines will be carried on extensively. This factory, recently purchased, adjoins the Taunton branch of the New York, New Haven & Hartford River Railroad, and comprises about 10 acres of land with the buildings already erected. There are two main buildings, each 60 x 210 ft., of brick and heavy mill construction, three stories and basement, giving available floor space in these two buildings alone of about 100,000 sq. ft.

The main power plant is installed in a two-story brick building, located between the two main buildings referred to, and consists of three Harris-Corliss engines and four Roberts return tubular boilers of 500 hp. capacity, along with other apparatus which goes to make up an ideal power plant. A 30 x 42 ft. two-story carpenter shop and a 38 x 42 ft. forge or blacksmith shop are also situated between the two main buildings. A thoroughly well equipped one-story brick foundry, 60 x 150 ft., is located north of the main buildings. A plant for the production and storage of gas is located near one of the main buildings, and has a capacity of 300,000 cu. ft. in 24 hr., while a separate two-story brick building with slate roof and conveniently located serves as an administration building.

The purpose of the company is to develop and manufacture a complete line of measuring instruments for industrial purposes. It was incorporated in 1899 for $25,000 capital, which was increased in 1904 to $150,000, and to take care of the present enlargement in the business its capital has been further increased. Watson E. Goodyear is president; Bennett B. Bristol, treasurer; Edgar H. Bristol, vice-president, and Arthur F. Mundy, secretary. The sales office addresses will be as heretofore: New York, 1770 Hudson Terminal, Fulton Building, and Chicago, 752 Monadnock Building.

## Sheet Steel and Cement in Building Construction.

A new and undoubtedly large field for the consumption of metal lath and cement is about to be opened by the growing popularity of the cemented, or what is commonly called the "stuccoed," house. This has proved an important influence in the development of a rapid and more economical method for making metal lath, which has come about coincidently with the excellence and cheapness of the American Portland cements. The scarcity and advancing price of lumber also have much to do with stimulating this form of exterior finish which is now well established as a fashion for new construction, but there is a much wider field for its use in the covering of the old frame houses now standing, estimated to number at least 6,000,000. The fact that, at a comparatively small cost, the appearance of such houses can be greatly improved and the comfort of the occupants, both in winter and summer, considerably increased appeals strongly in favor of the undertaking. It is said that the saving in fuel and repairs will in most cases run from 10 to 20 per cent. on the cost of the improvement, making it attractive from an investment standpoint.

It would be possible to estimate the great tonnage of sheet steel and cement likely to be required for this purpose, but beyond that it is certain that the wide distribution of demand and more general acquaintance of the public with the possibilities of these materials for reconstruction work will extend the use to stables and outhouses for animal protection, with resulting economy in food expenditure. By the same process a rough plank fence can be converted into a handsome paneled wall.

## Customs Decisions.

### Iron Ore for Paint Making.

Importers of oxide of iron, having failed to reach an agreement with Collector Fowler of New York regarding the classification of the product, have brought a test case before the Board of United States General Appraisers. The controversy with the customs authorities is arousing deep interest among wholesale paint dealers, especially those engaged in the manufacture of dry colors. The chief cases to come before the board stand in the names of C. D. Stone & Co. and R. F. Downing & Co. of New York, and the American Shipping Company, Chicago. All of the firms mentioned are customs brokers and represent the actual importers.

It appears from the testimony submitted that the oxide of iron is produced from iron ore which has been manipulated by processes of grinding, levigating, kiln drying and powdering. According to the importers, the commodity should be allowed to enter this country at the rate of 40 cents per ton under the tariff provision for iron ore. This contention, however, the Government denies, and avers that the product has lost its identity as iron ore owing to the processes to which it has been subjected, and has been converted into a new and distinct article of commerce known and recognized as a dry color, and dutiable accordingly. Judge Waite took testimony last week at Boston in a similar case standing in the name of George Z. Collins & Co. The Government's interests are being safeguarded by Charles D. Lawrence, assistant treasury counsel.

One of the New York members of the joint commission of New Jersey and New York on a Hudson River bridge has made plans for a bridge at Fort Washington about 181st street, New York. The shores of the river at this point are high bluffs and a 1400-ft. cantilever span over the New York half of the channel, which is the deeper, and three 640-ft. simple spans over the shallower westerly half are proposed.

# A Workshop Microscope.*

BY J. E. STEAD, MIDDLESBROUGH, ENGLAND.

During the last few years many improved forms of microscope stands have been designed for the examination of metals and alloys, and there are few standard makers of this class of apparatus who have not turned their attention in that direction. The developments have, however, tended toward the requirement of the laboratory rather than of the workshop, and it can be stated, probably without contradiction, that there is not to be found

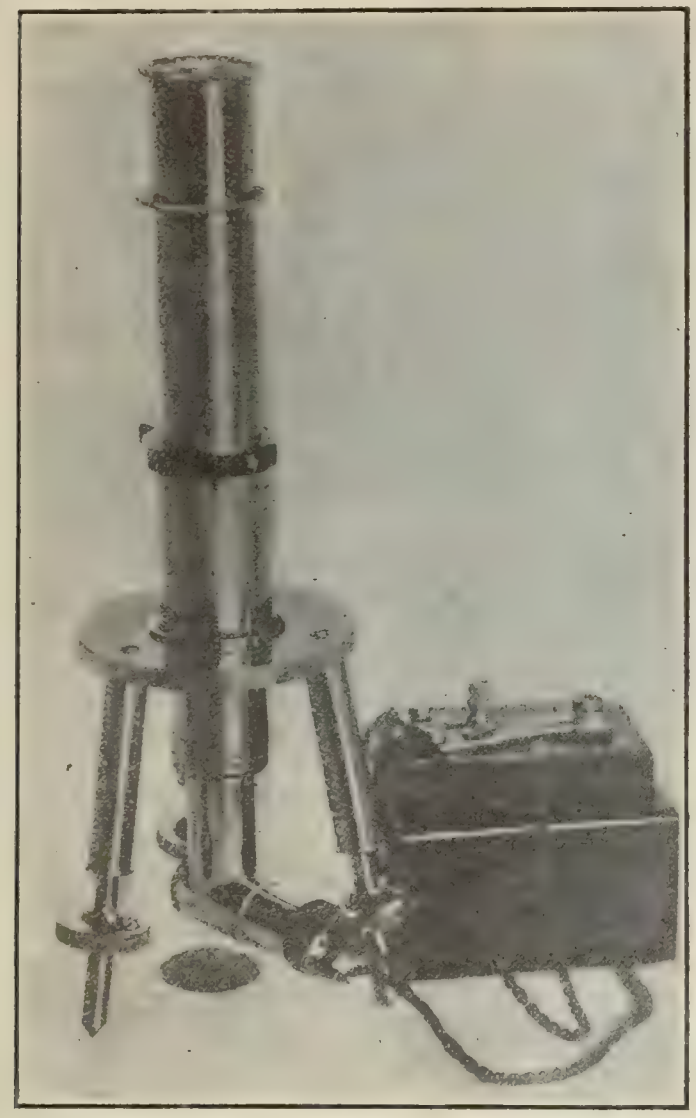


Fig. 1.

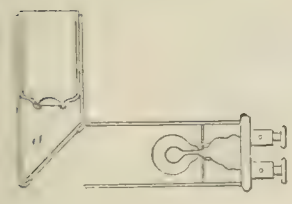


Fig. 2.

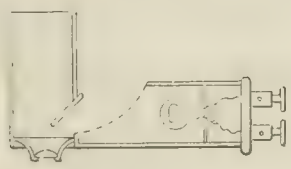


Fig. 3.

A Workshop Microscope.

in the market a simple form of stand with illuminating arrangement suitable for the use of foundry foremen and assistants in steel and engineering establishments. That there is need of such an instrument is undoubted. For most purposes a high power magnification is not required. For instance, the examination of steel castings and forgings, in order to determine whether or not the treatment to which they have been subjected has been suitable for the purpose required, does not need a greater magnification than 20 to 50 diameters. Such magnification would enable the foundryman to determine approximately what is the proportion of phosphorus in his castings and pig iron, and whether or not the percentage of combined carbon is great or small. In designing a microscope for use in the workshop, three essential conditions are imperative:

1. It must be simple, contain as few parts as possible, and be capable of bearing rather rough handling.

2. The illuminating reflectors and source of light must be attached to the object glasses.

3. The cost must be low.

The design of the microscope eventually approved was submitted to J. Swift & Son, who made the model exhibited and illustrated in Fig. 1. The stand consists of a disk supported by three legs, the length of which can be adusted by turning the milled screws. The lower terminals of the legs consist of hard steel points, and the upper ends are secured by screws into the brass disk. The microscope tube, 8 in. in length, is free to slide through a second tube secured in the center of the disk, and when in use focus is obtained by moving the tube upward and downward by the fingers. When the focus is found the tube can be fixed, if desired, by a small set screw, not shown in the illustration.

The illumination is effected by the devices shown in Figs. 2 and 3. Fig. 2 represents a vertical section through the 1½ in. object glass and illuminator. The latter consists of two tubes united as shown, at the junction of which a ½-in. cover glass, *a*, is placed at an angle of 45 degrees. One limb slides on the lowest part of the object glass, and into the other is placed a 4-volt incandescent electric lamp. A small 4-volt dry battery supplies the electric current for the lamp. When the circuit is made, by switch or button, the rays from the lamp are partly reflected on the object, which is thereby sufficiently lighted to enable its structure to be clearly seen. The illumination can be changed from vertical or direct to oblique by a very simple device. The lamp is masked on the lower side by coating it with a metallic paint just sufficient to admit rays passing horizontally to the corner glass reflector, but not downward. By removing the corner glass and rotating the lamp through 90 degrees the rays then fall obliquely on the object.

The illuminator in Fig. 3 is similar in general design to the last, but it is so constructed that a 1-3 in. objective can be employed. In this, the reflector is placed above the nose of the objective. It consists of a piece of silver glass placed at an angle of about 45 degrees. As the position of the lamp is constant with relation to the reflector, the latter is fixed once for all at the exact angle to give the maximum illumination of the object. The silvered reflector slides into the slit cut in the objective and projects about ⅛ in. outside, so that when it requires cleaning it can be readily removed and replaced. It is advisable to force the light to a maximum, for although the lamps do not last as long under such conditions they can be readily replaced with new ones, which cost only one shilling each, and the illumination obtained is so much better.

When working with this microscope the object can, after preparation and leveling, be placed on an ordinary table or flat surface and the nose of the objective placed over it. The battery, if convenient, can be carried in a coat pocket, or be placed on a table near the microscope and the light switched on by pressing the button. Very little electricity is required, for it is only when looking at the object that the current is used. When it is desired to examine the finished surface of parts of machinery the microscope is placed over the part the examination of which is required, and the light is switched on. The sharp pointed legs of the stand when pressed on to the metal prevents the microscope from slipping. In this way either flat or curved surfaces can, after suitable preparation, be readily examined.

The structure of badly annealed steel castings and overheated steel is too well known to require illustration in this note, but the appearance of pig iron containing varying proportions of phosphorus is not so well known, therefore a few reproductions of photomicrographs of such metal are exhibited. In preparing cast iron to examine for phosphorus it is not necessary to polish the metal surface highly, a workshop polish being sufficient. The etching is best effected by 20 per cent. nitric acid water. When examining finished and turned castings after polishing with the finest English emery, a ring of plasticine is pressed on the metal, and into this inclosed space of metal the acid is poured and allowed to act for from two to three minutes, after which the acid is allowed to escape by removing the plasticine ring. After washing the etched surface by pouring water over it, it is dried by blotting paper and can be at once examined.

* A paper read at the Middlesbrough meeting of the Iron and Steel Institute, September 30, 1908.

## The Lea-Degen Turbine Pump.

A new type of high duty turbine pump, built in sizes of from 3 to 24 in. discharge and in single and multi-stage patterns, is being placed on the market by the Lea Equipment Company, 136 Liberty street, New York. Fig. 1 shows a four-stage pump, Fig. 2 is an axial vertical section of a three-stage pump, and the remainder of the illustrations give curves from tests made by Prof. James E. Denton of the Stevens Institute of Technology on a two-stage pump. While the principle of the action of the pump is not unlike that of others already familiar, there are certain details which it is believed have been improved so as to eliminate the most serious objections found in earlier designs. This line of turbine pumps has been in process of development for nearly four years.

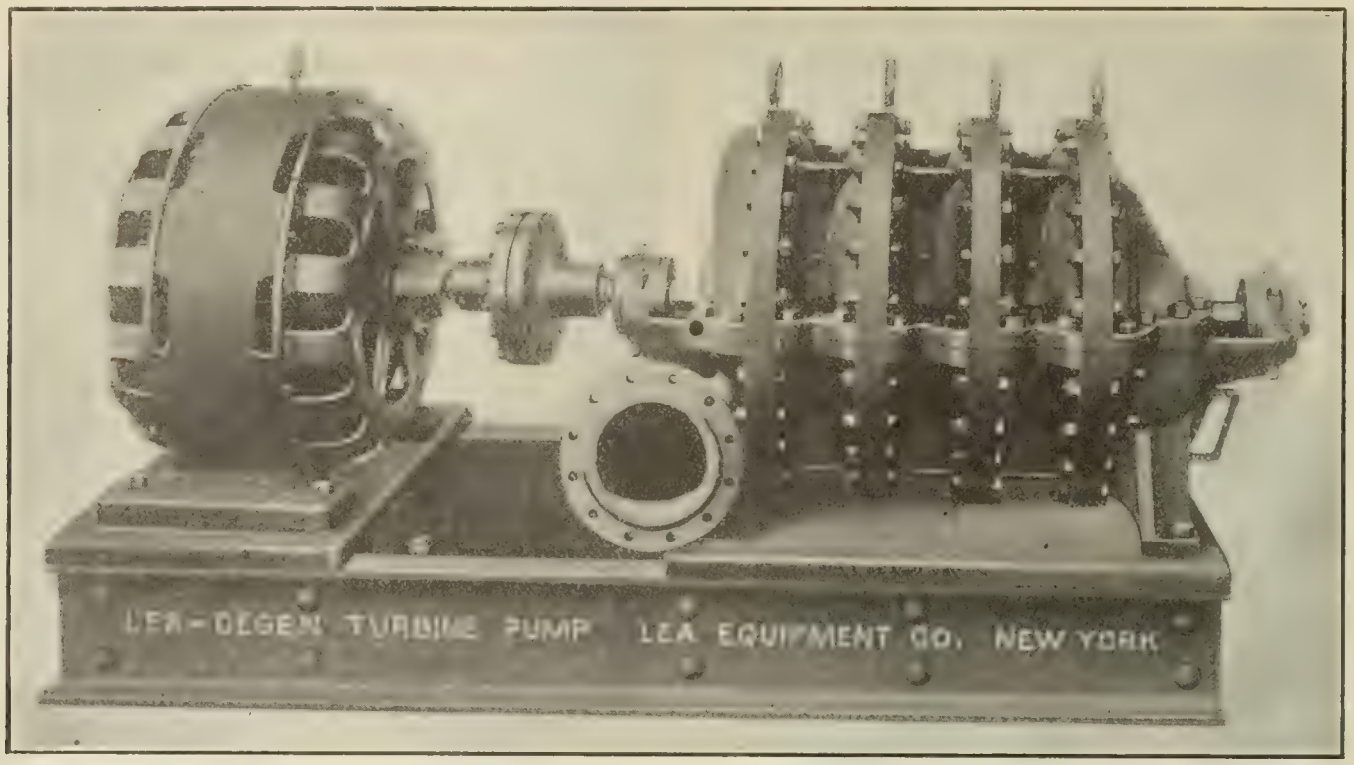



Fig. 1.—A 10-In. Four-Stage Lea-Degen Motor Driven Turbine Pump, Capacity 2400 Gal. Per Minute Under 568 Ft. Head.

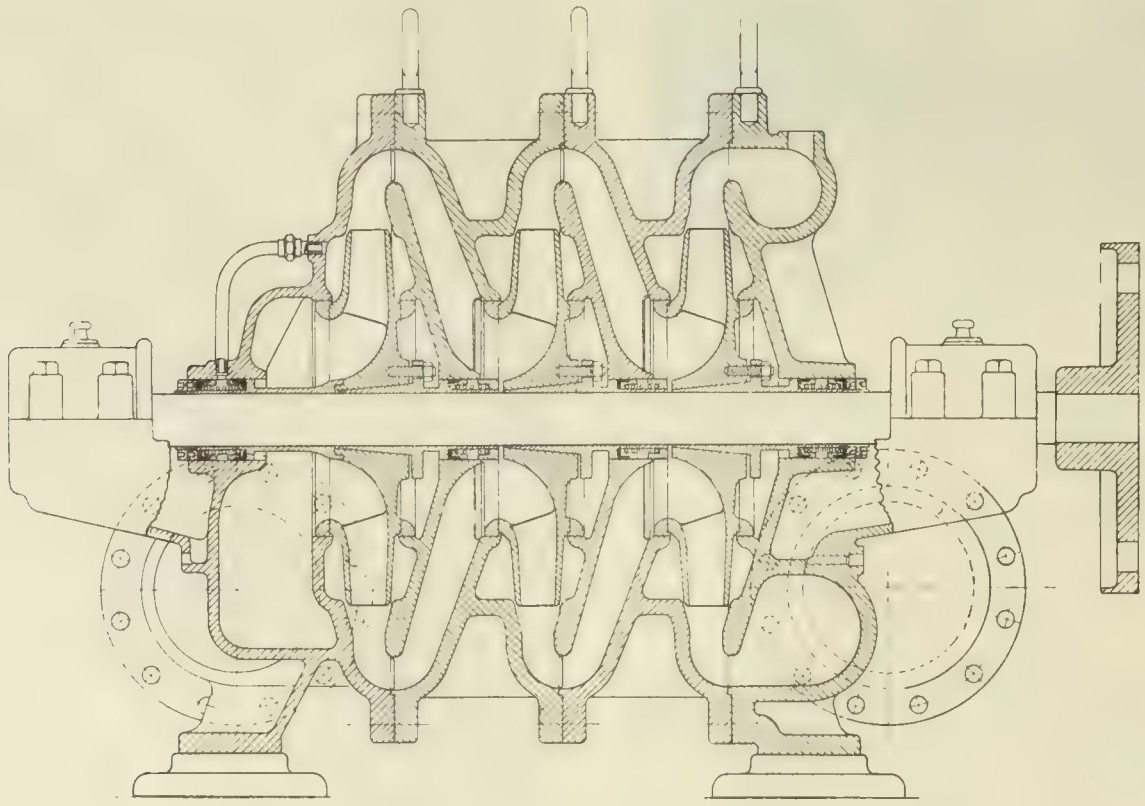


Fig 2.—Vertical Longitudinal Section of a Three-Stage Turbine Pump.

As will be seen from both Figs. 1 and 2, the pumps are made in separable units, and by assembling those of required size and number a pump may be built capable of raising water to any hight from 7 to 1000 ft., or possibly even more. The capacities range from 75 to 30,000 gal. per minute. Each unit parts horizontally, and the connections between the separable units are such that the entire top of a multi-phase pump may be removed intact to allow inspection of the packing or wheels. The suction and discharge connections are placed below the center line of the pump, allowing removal of the top without breaking the water connection, and at the same time they are shaped to give practically no obstruction to the easy flow of the liquid. One of the notable features, the packing, consists of right angled cup leathers, held in place by springs so that they are tight under all conditions and yet allow the shaft to oscillate any distance necessary. The packing is quickly renewable and is claimed not to be affected by wear of the shaft or sleeve. The shaft is straight and without shoulders, except at the bearings. The wheels are secured to taper bronze sleeves, which permit their easy removal even if parts become rusted. These sleeves cover the shaft throughout its closed part and also form part of the automatic packing.

Another patented feature is the diffusing nozzle deflectors. With them it is possible to get an extremely high efficiency throughout a wide range of service, and as there are no parts to become loose the pump will remain indefinitely in working condition and retain its efficiency. The bearings are self-oiling and have no connection with the suction or discharge lines, so that it is impossible for water to leak into them. The bases are made of cast iron distance pieces bolted to steel channel beams; thus it is possible to make them any length or size required. The nature of the passages through the impellers and guiding vanes is such that balancing is automatically provided for, and it is claimed that no difficulty is experienced from end thrust.

One of the most remarkable things brought out in the report of the test is that even with a large variation of speed there is practically no change in efficiency. The pump tested was of two-stage pattern, having a 10-in. suction, and 10-in. discharge pipe. The diameter of each wheel was 24 in. and number of blades eight.

The balancing is accomplished by varying the width of the water space on both sides of the wheels between the rim of the wheel and the case. Experiments showed that as the wheel was moved laterally in the case, the pressure between the wheel and case increased on the side where the clearance was greatest and decreased on the opposite side. It is therefore possible to balance the end thrust by shifting the shaft endways. A ball thrust bearing is, however, provided on each end of the shaft.

In the test the pump was driven by a General Electric direct current multipolar motor directly connected to the pump shaft. The pump was designed for practically equal efficiency for all speeds between 400 and 600 rev. per min., therefore the efficiency test was made 400, 500 and 600 revolutions respectively. Fig. 3 shows the gallon lift curve for 400 rev. per min., Fig. 4 the same curve for 500 rev. per min. and Fig. 5 the same for 600 rev. per min.

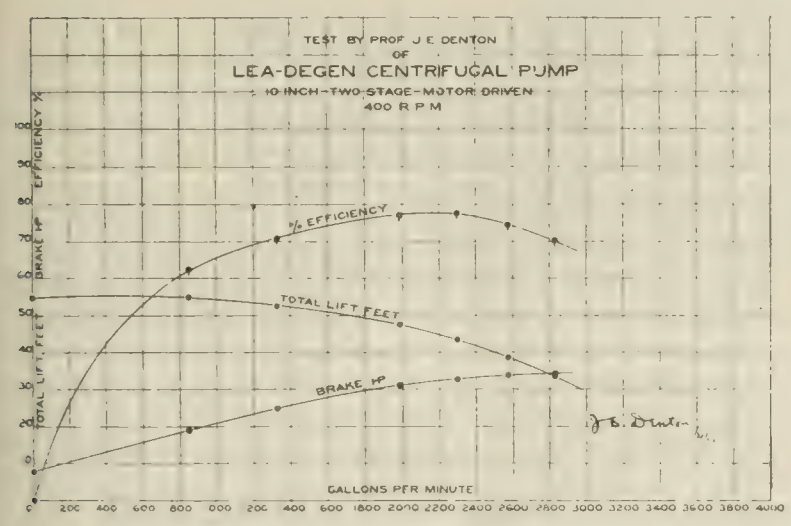



Fig. 3.—Curves for 400 Rev. Per Min.

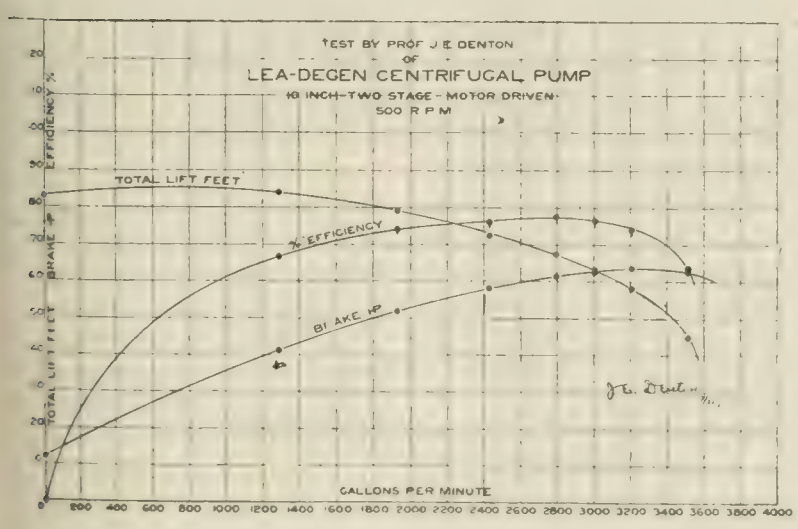



Fig. 4.—Curves for 500 Rev. Per Min.

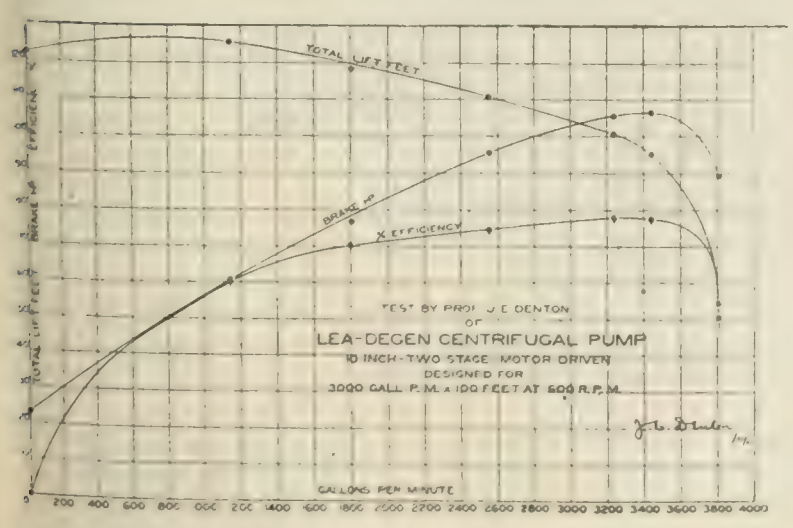



Fig. 5.—Curves for 600 Rev. Per Min.
Curves for Efficiency, Lift and Horsepower at Different Capacities and Speeds.

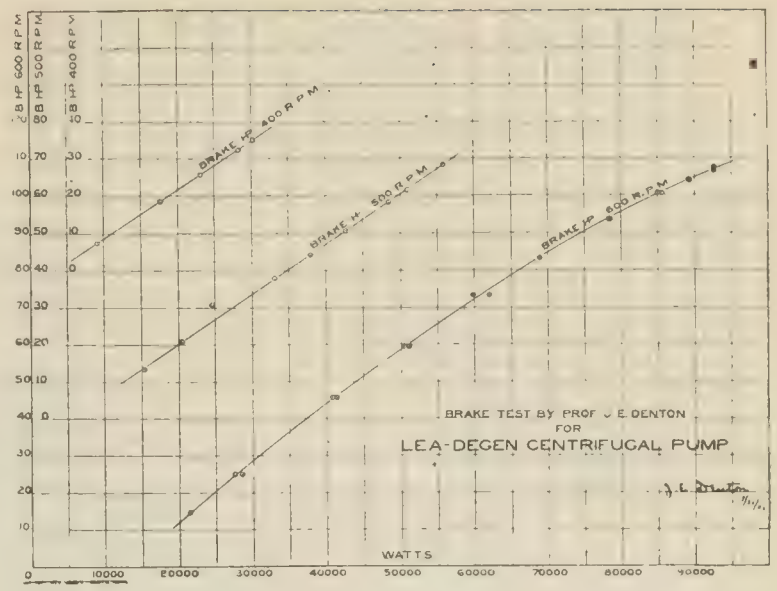



Fig. 6.—Brake-Horsepower-Watts Curves for 400, 500 and 600 Rev. Per Min.

The brake-horsepower-watt curve is shown in Fig. 6. From these curves the horsepower corresponding to the watts supplied to drive the motor during the pump test was determined and taken as the horsepower to drive the pump.

The test gave the following results: At 400 rev. per min., the efficiency was 77.7 per cent. and the capacity 2296 gal. per minute under a head of 43.6 ft.; at 500 rev. per min., the efficiency was 77.6 per cent. and the capacity 2794 gal. under a head of 67.4 ft., and at 600 rev. per min., the efficiency was 77.97 per cent. and the capacity 3235 gal. under a head of 100.7 ft. In round numbers, therefore, the capacity at maximum efficiency is directly proportional to the speed and the head is proportional to the square of the speed. At each speed the efficiency averaged more than 76 per cent. over a range of 600 gal. of capacity for the lower two speeds and 900 gal. at the higher speed, the head remaining nearly constant.

## Rolling Mill Machinery Contracts.

The Lewis Foundry & Machine Company, Groveton, Pa., has received a contract from the National Sheet Steel Company, Mansfield, Ohio, for a complete rolling mill outfit, consisting of one stand of 26-in. roughing housings, one stand of 24-in. cold mill housings, and four stands of 26-in. finishing housings, with miscellaneous rolls for all of them, and a 126-in. squaring shear, which will be built and shipped about January 1; also a contract for the complete equipment of two stands of 26-in. finishing housings for the Seneca Iron & Steel Company, Buffalo, N. Y., to be completed in six weeks, and which is in addition to 10 stands of 26-in. housings built by the Lewis Company some time ago; also a contract for a bar mill of two stands of 18-in. housings for the National Rolling Mill Company, Vincennes, Ind., to be completed in three weeks.

Late shipments of this company included an 8 and a 12 in. train, complete for rolling hoop iron, and a No. 5 roll lathe for the new plant of the Clark Steel Hoop Company, Punxsutawney, Pa.; one 9-in. train for rolling cotton ties, for Weyman & Conners, Moline, Ala., and a No. 3 roll lathe for shipment to the City of Mexico, republic of Mexico. The Lewis Foundry & Machine Company is operating its plant to nearly full capacity, and the orders now on its books for rolling mill equipment, rolls, shears, &c., will enable it to run practically full to the first of the year. It reports an improvement in its line, considerable estimating being done on proposed additions to various iron and steel plants.

The Pittsburgh capitalists who recently purchased 28,000 acres of coal lands in Greene County from J. V. Thompson of Uniontown, Pa., have organized the New Connellsville Coal & Coke Company, with a capital stock of $1,500,000. The new concern proposes to erect a large number of coke ovens on its property.

# The Dieterich Universal Drive Axle.

Remarkable as has been the development of the automobile both in point of time and degree of perfection attained, there is still the objection of too great complication. Inventors who are now satisfied with the results obtained are working for simplification. It is the history of the evolution of all machines on which many have worked. Originally simple but inefficient, then efficient but complicated, and finally, when the standard form has been reached, efficiency is maintained and the original simplicity again approached.

In addition to the motor, the power plant of an automobile comprises clutch, change gear and real axle, the latter including a differential gear. The functions of all these elements are required in every successful automobile, but it has remained for L. M. Dieterich of the Herma Securities Company, Kansas City, Mo., to combine them all in one unit—the rear axle. In other words, the clutch, transmission box, and differential gear are eliminated as separate devices in the Dieterich universal drive axle. Not only has it all of the advantages of any former combination of these parts, but some which most of them do not have and others peculiarly its own. For example, instead of a series of stepped speeds any speed forward or backward may be obtained within the maximum and minimum limits, at will, or automatically, according

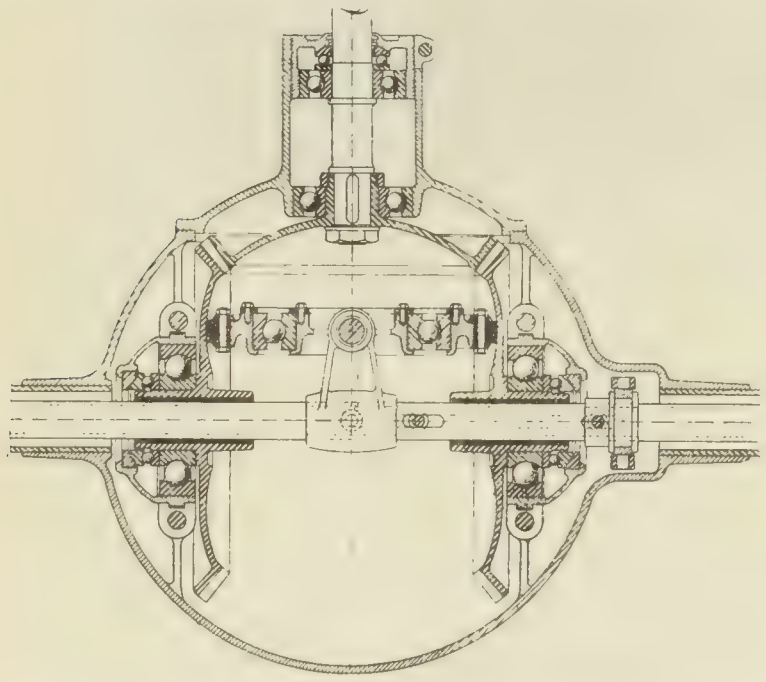


Fig. 1.—The Model A Dieterich Universal Drive Axle.

to the road resistance, and positively, *i. e.*, without slipping; each wheel is driven positively at the proper speed when turning a corner; a constant speed motor is used; speed control of the car is through one foot pedal; another foot pedal for the brake, and a steering wheel completes the car control, and the mechanism throughout is dust and oilproof and self-adjusting.

The simplest form of the device through which variable speed is obtained is shown in Fig. 1. This merely gives the variable speeds and does not combine the functions of a clutch and differential gear, the two driving wheels being necessarily revolved at the same speed, unless one is left loose on the axle and one driving wheel alone does the propelling, or unless a differential is added.

Model A, that illustrated in Fig. 1, will serve best to reveal the principle of the speed changing. Attached to the axle is an arm carrying a pivoted friction wheel. This wheel is in contact with cupped disks concentric with the axle, but not attached to it, and driven in opposite directions by a bevel gear engaging bevel gear teeth formed on the peripheries of the disks. Obviously, when the pivoted wheel is held parallel to the axle the rim of the wheel is driven by the revolving disks with the same peripheral velocity, and the center of the wheel therefore remains stationary; in other words, the car is not moving. If now this friction wheel is inclined with the axle so that its contact with one disk is on a smaller diameter than before, and its contact with the other disk on a larger diameter the peripheral speeds imparted to the friction wheel on one side will be greater than on the other, and the wheel as a body will be given an orbital movement the velocity of which will be the mean of the velocities at the circles of contact with the driving disks, which will cause the axle to revolve at that velocity. An opposite inclination of the wheel will produce a similar effect, but in a reverse direction, so that the axle will be driven backward. The greater the inclination of the friction wheel the greater the speed of the axle, and the change is gradual, not by steps as with change gear devices. It is therefore possible to obtain any speed from standstill to the maximum in either direction.

Fig. 1 is interesting also in showing the manner in which ball bearings are provided for carrying the load of all the running parts and also the thrust of the driving disks and the bevel gear on the propeller shaft which connects to the engine through universal joints.

The principle of speed changing in this manner is not new, but the way in which it has been applied contains a number of features which have been protected by patents by the inventor. One of the principal things that makes for the success of the device and overcomes objections to it as ordinarily constructed is the material selected to give the friction drive. The disks themselves are cast iron, but the friction wheel is provided with treads formed of compressed cork inserts which give a high coefficient of friction. Particularly since the contact is a rolling and not a sliding one, it is a static instead of a dynamic coefficient of friction which is realized, and this is considerably higher than the dynamic coefficient, being in the case of polished cork against cast iron in the neighborhood of 0.89 when running in oil and under a contact pressure of 50 lb. Running in oil is a condition which would seriously impair the effectiveness of frictional contact between any other two known materials.

With this variable speed transmission the two driving disks are always driven at the same speed, therefore the engine can be operated under its most efficient conditions. Also the contacting speed is constant for any speed of the finally driven parts, as the friction wheel runs at constant speed. The drive material is therefore under a constant even duty, and since a very high contact speed is allowed, a lower contact pressure is required and the highest power transmitting efficiency is secured without danger of slipping.

An explanation of the fact that this is described as a positive drive where ordinarily this term is used to distinguish that which is not a friction drive, for example, a gear drive, may seem in order. As the inventor states, positive or unyielding power transmission implies the transmission of power up to destruction of the original form of material of the contacting parts. With gears the transmission is no longer positive if a tooth breaks, and similarly a friction drive ceases to be positive if abrasion occurs. In the design and construction of the Dieterich friction drive allowance is made in the ratios of surfaces and speeds to insure that no slip shall occur, hence the drive is, in the true definition of that word, positive.

To show several radically different possibilities of constructing the driving axle embodying the speed changing device in combination with the other features necessary or desirable in an automobile, Figs. 2 and 3 are included. Model B, shown in Fig. 2, is a rather elaborate construction, in which the end of the propeller shaft entering the axle housing carries a spider which, through a set of tension springs, is in driving connection with another spider mounted on a short shaft in axial alignment with the propeller shaft. This latter shaft carries a spur gear meshing with another spur gear on the axis of which is arranged a bevel gear driving two bevel gears concentric with the axle. These two bevel gears in their mechanical relation to each other and the floating friction wheels, and the driving and operating arrangement with respect to the axle and an operating lever, respectively, are identical with the model A construction shown in Fig. 1. The bevel gear nearest the

axle center is keyed to a similar bevel gear, which, through a bevel gear parallel to the axle, drives another bevel gear concentric to the axle. Between the latter two bevel gears concentric to the axle is another duplication of model A construction.

The operating parts controlling the speed of each axle shaft are connected by a lever and link system.

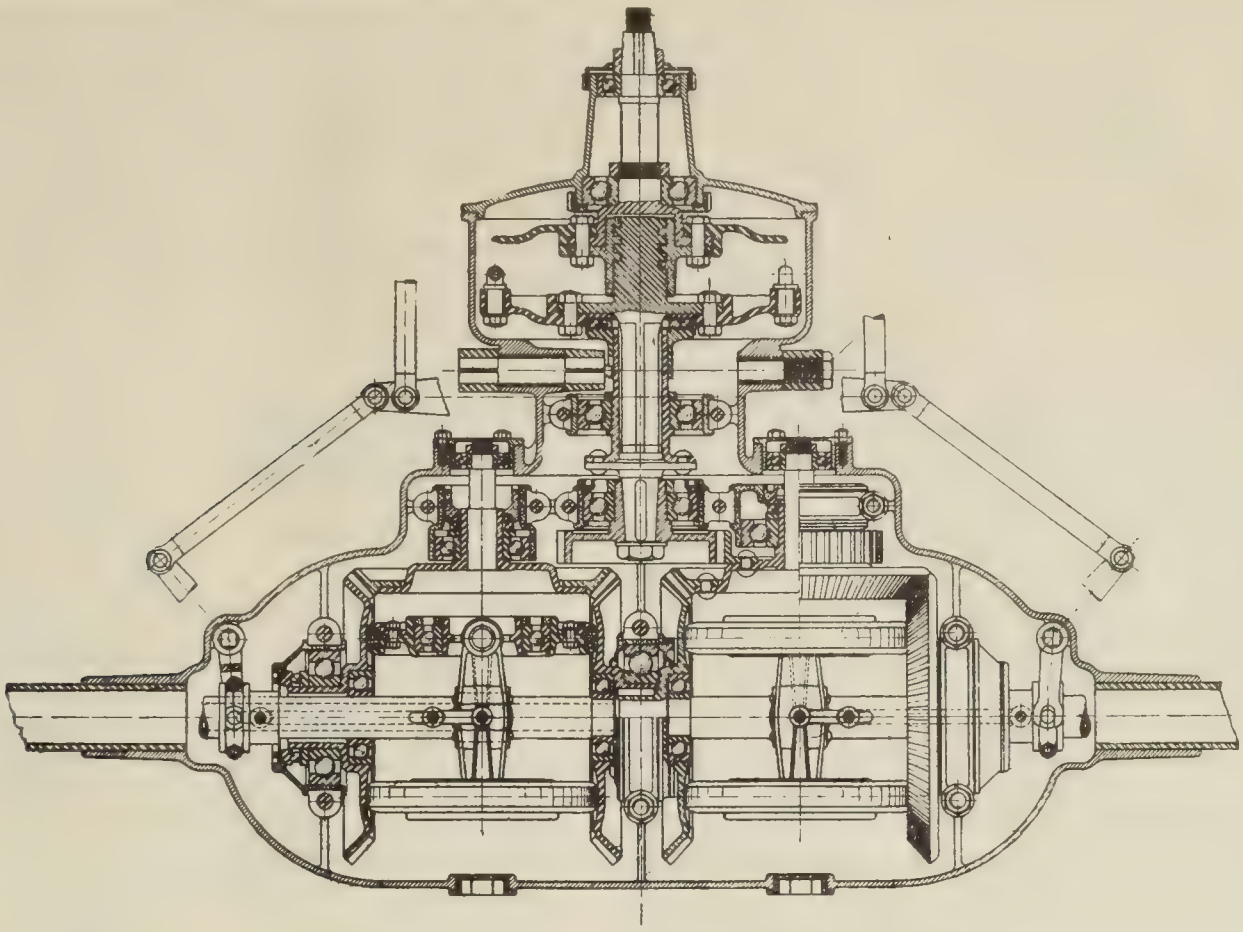


Fig. 2.—The Model B Dieterich Universal Drive Axle.

The equalizer in this system is centrally connected to a pull rod, which is actuated by a control lever operated by the driver. This last operating lever will, therefore, effect the gradual, even speed change of both wheels at will. As, however, the pull rod is not worked by the operating lever directly, but by the interposition of a tension spring and slot arrangement, a receding of the pull rod is allowed if the spring is overcome. This occurs whenever the road resistence calls for a heavier torque than is delivered to the wheels at such speed as set by the operating lever. Then the driving springs, located between the propeller shaft spiders, will elongate, and the angular change of respective position of these two spiders will force the lower one toward the axle center through a screw and nut device between the two spiders. The sleeve, revolubly mounted on the lower spider hub, will engage and press down a forked lever pivoted on the axle housing, and move, by another fork outside of the housing, the center of the equalizer. By this action the equalizer is forced backward, overcoming the tension of the spring between the pull rod and the operating lever and, at the same time the speed of both wheels is lowered according to the road resistance calling for higher torque. A subsequent smaller road resistance reduces the tension on the spider springs, which then change their respective positions in the reverse directions to that described, and, throughout the whole lever connection freedom is given to the action of the spring between the operating lever and pull rod to increase the

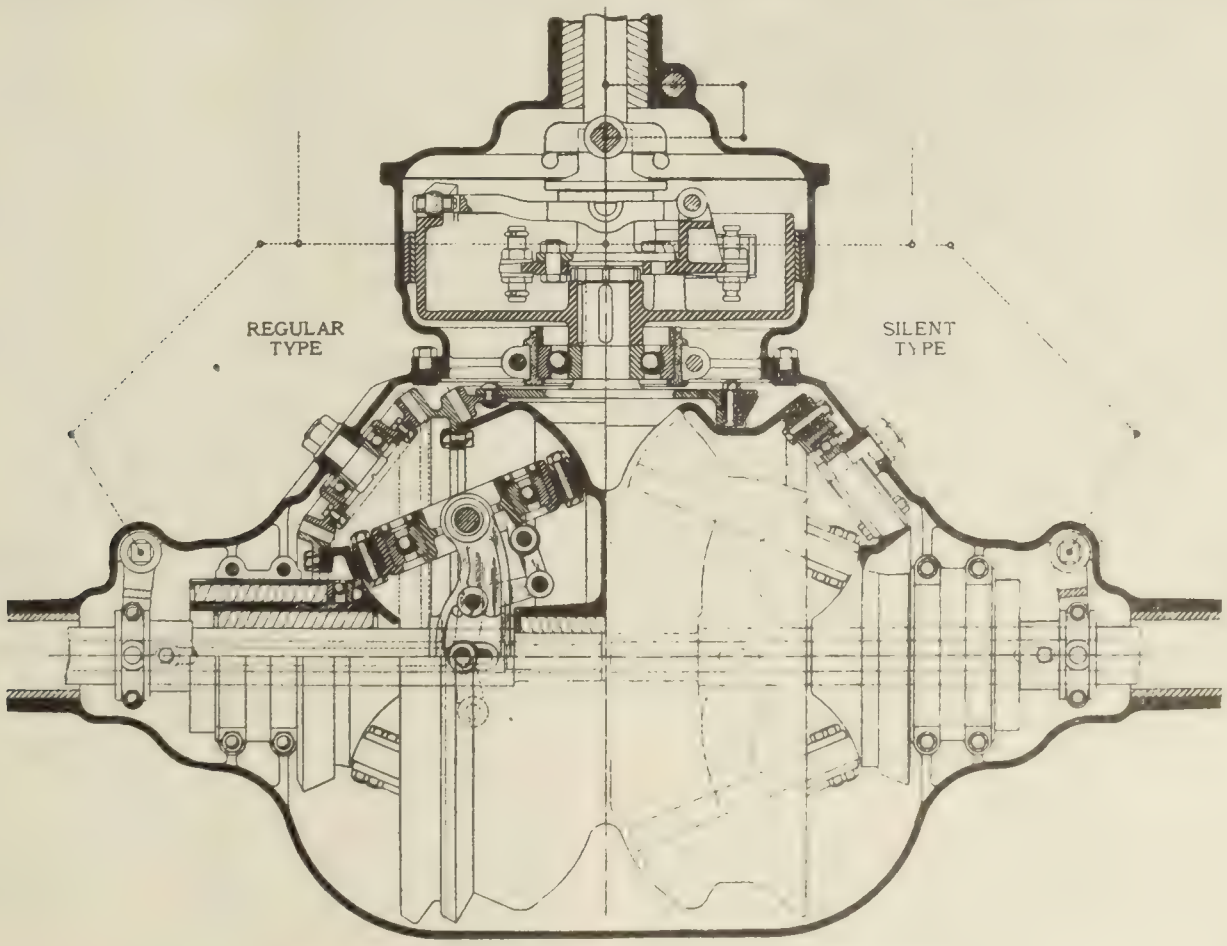



Fig. 3.—The Model C Dieterich Universal Drive Axle.

wheel speed until the torque and road resistance are balanced, or until the highest speed limit is reached (as given by the momentary position of the operating lever.

In Fig. 2 parts of two pull rods are shown, leading from the equalizer forward, parallel to the propeller shaft. The pull rods connect with the steering mechanism and are in the position shown when the car is running straight. As soon as the steering mechanism is operated, forcing the car into a curved path, the equalizer swings on its center, the position of the floating disks is changed accordingly for each axle shaft, and the outer wheel turns faster and the inner wheel slower, according to the deflection of the front wheels. The car speed is not, however, changed thereby.

This construction, therefore, permits of the gradual change of car speed in forward or reverse direction, at will or automatically, according to the road resistance, and imparts to each driving wheel automatically the proper ratio of speed to torque when turning a corner. It therefore eliminates, not only as model A does, the clutch and separate transmission device, but also the differential gear. It necessitates, however, the operation of an independent brake for slowing down or stopping, if the reaction upon the motor is undesirable.

The model C construction shown in Fig. 3 is the one recommended by the designer, not only because it contains all the characteristics of the invention, but also as its principal arrangement permits of the most compact and economical construction so far developed. Fig. 3 shows two types of the model C construction—on the left side a bevel gear design and on the right side a silent type, in which friction drive is employed throughout. The initial drive, as in model B, consists of two spiders connected by six tension springs, and the change of respective position of these spiders, under change of torque resistance, actuates a lever, pivoted on one spider, through the medium of an inclined plane integral with the other spider. This lever in its turn operates, by means of a similar sleeve as in model B, the equalizer and floating friction wheels, as previously described.

The spider on the propeller shaft is in the form of a drum, on which a brake band is fastened, which expends under the action of a lever actuated by a boss on the driven spider whenever the latter tries to overrun the driving spider. The expanding brake band, operating against a brake lining in the stationary housing, therefore automatically maintains the car speed at absolutely such value as prescribed by the position of the controlling lever and prevents an overrunning or coasting of the car without any reaction upon the motor. As this automatic brake does very light, but decidedly frequent work, its brake surfaces have been chosen steel to steel, hardened.

On the driven spider shaft is mounted a bevel gear (or cork drive), engaging, on one side only, a bevel gear (or smooth bevel) of a peculiar shaped drum, which revolves around the axle shafts at their inner ends and contains one double circular path for the driving set of each axle shaft. By means of an interposed bevel gear (or cork drive) another double circularly dished part is actuated for each axle shaft. The position in which the floating friction wheels are shown is that corresponding to zero axle speed and was selected to make the construction as compact as possible. To make this arrangement possible a different angular speed for the driving disks was necessary to produce an even circumferential speed at the contact points, with the floating friction wheels in the position shown. The rest of the construction is similar to that employed for models A and B.

Fish oil now being used largely to take the place of cottonseed oil for tempering, owing to the high price of the latter, the N. B. Cook Oil Company, 148 Front street, New York, calls attention to the fact that it makes a specialty of all grades of menhaden fish oil and of refined water white seal oil, which it imports. It is also a wholesale dealer in the various grades of sperm, whale, cod, lard and neatsfoot oils and whale oil soap. This company was recently incorporated under the laws of New York. It was founded in 1865. The officers of the company are: Alpin J. Dunn, president and treasurer; Frank Harvey Field, vice-president, and William A. Delahay, secretary.

## The American Shipbuilding Company.

At the annual meeting of the American Shipbuilding Company of Cleveland, held at Jersey City, N. J., October 14, but one change was made in the list of officers and directors, W. C. Carpenter, New York, being chosen director in place of Frank W. Hart of Cleveland. The ninth annual report, which is signed by Chairman W. L. Brown and President James C. Wallace, says that the close of the fiscal year finds the company with little new business on its books. However, it completed a number of large vessels in the year ending June 30, 1908, and did a fair business in its various repair yards and dry docks. The balance sheet on June 30 was as follows:

*Resources.*

| | | |
|---|---|---|
| Plants and property | | $17,182,021.33 |
| Additions to plants, 1907-08 | | 487,819.64 |
| Material on hand (market value) | | 589,862.90 |
| Accounts and bills receivable | | 3,582,872.85 |
| Due on bonds sold | | 596,610.00 |
| Due on contracts | | 206,130.41 |
| Cash | | 1,195,481.68 |
| Total | | $23,840,798.81 |

*Liabilities.*

| | | |
|---|---|---|
| Preferred stock | $7,900,000.00 | |
| Common stock | 7,600,000.00 | |
| | | $15,500,000.00 |
| Accounts and bills payable | | 1,673,668.89 |
| Reserve for maintenance | 500,000.00 | |
| Reserve for fire insurance | 154,572.78 | |
| | | 654,572.78 |
| Earnings | $1,713,907.86 | |
| Less dividends, preferred | $553,000.00 | |
| Depreciation and maintenance | 387,961.08 | |
| | 940,961.08 | |
| | $772,946.78 | |
| Balance, June 30, 1907 | $5,695,610.36 | |
| Less common dividends, 6 per cent | 456,000.00 | |
| | 5,239,610.36 | |
| Working capital, June 30, 1908 | | 6,012,557.14 |
| Total | | $23,840,798.81 |

The following statement is given of vessels built in the fiscal year at the various plants, carrying capacity being based on 19 ft. draft:

| | Vessels built. | Carrying capacity, net tons. |
|---|---|---|
| Superior | 2 | 15,000 |
| Lorain | 8 | 62,000 |
| Cleveland | 3 | 19,000 |
| Detroit | 4 | 32,000 |
| Bay City | 2 | 19,000 |
| Buffalo | 2 | 3,000 |
| Chicago | 2 | 18,000 |
| Totals | 23 | 168,000 |

The company now has under contract four vessels. The report says of the condition of business and of the construction work it has under way:

"Owing to the general depression in business all over the country, which has been felt very keenly in all branches of the iron and steel industry, and especially so in the lake carrying trade, which depends largely upon the movement of coal and ore for its business, the outlook is not at all bright for any great amount of bulk freight vessel construction this year. The passenger business all over the lakes has been very good, and there is some talk of new construction in this direction.

"Work is now under way on enlarging the small dry dock at the Superior plant, to make it the same size as the other dock. A new boiler shop building is being erected at the Lorain plant, and should be in operation about January 1. A contract has been let for one of the largest dry docks on the lakes, to be built at our Buffalo plant, which should be completed inside of one year."

Regarding the reports that the Carnegie Steel Company will erect a large plate mill at Munhall, Pa., to occupy the site of the present roundhouse and locomotive departments, W. W. Blackburn, secretary of the company, states that it is not contemplated at this time.

# The Iron & Steel Electrical Engineers.

The second annual meeting (third serial) of the Association of Iron & Steel Electrical Engineers took place in Chicago, October 14, 15 and 16. The Western Society of Engineers courteously placed its rooms in the Monadnock Block at the disposal of the association for its business sessions. The quarters of the society have recently been remodeled and enlarged so as to afford a commodious and well arranged audience room, with committee, reception and library rooms, which are admirably adapted to the holding of deliberations such as occupied the attention of this body.

An election of officers to serve for the coming year was held at the opening session, which resulted in the selection of the following:

J. C. Reed, Pennsylvania Steel Company, Steelton, Pa., president.

G. M. Sturgess, Lackawanna Steel Company, Buffalo, first vice-president.

L. R. Palmer, Jones & Laughlin Steel Company, Pittsburgh, second vice-president.

E. W. Yearsley, Midvale Steel Company, Philadelphia, treasurer.

G. H. Winslow, National Tube Company, Pittsburgh, secretary.

### President Reed's Remarks.

Following the disposal of this business, the meeting was addressed by the newly elected president, who briefly reviewed the important achievements that have been made in the application of electrical power to the manufacture of iron and steel. Touching the possibility of future development in this direction and the importance of the field covered by the aims of the association, he spoke as follows:

There is no other field of endeavor in which such rapid strides have been made within the last few years as in that which we are pursuing, namely, the promotion of the application of electricity for the more economical production of iron and steel. We have heard much in the past year relative to the conservation of the national resources of the country ,especially those with which we have mostly to deal, namely, iron ore and fuel. We have already introduced most wonderful economies in the fuel consumption necessary for the production of power, so much so that the electric method of application of power is used to the exclusion of all others in the most modern steel plants, notwithstanding the fact that installations necessary to use this method are enormously expensive. The electric furnace is rapidly coming into use, both at home and abroad, and is already a successful competitor in the manufacture of so-called crucible steel, and it is only a question of time, in my mind, when the open hearth and possibly the blast furnace itself will give way before a more scientific and economical process of steel and iron production in which electricity is very apt to play the leading role and in which low grade ores can be used, the supply of which is well nigh inexhaustible. This is the field which lies before us; and while there are many difficulties in the way of accomplishing all that is desired, we have every reason to believe that the advance will be in the future, as it has been in the past, both steady and rapid.

Among the subjects that received attention at this meeting were the "Standardizing of Electrical Apparatus," which was considered in general discussion; "Electro-Magnets for Scrap Breaking," by G. W. Richardson of the Pencoyd Works; "Lifting Magnets," by C. Pirtle of the Electric Controller & Mfg. Company; "Electric Motor Drives," by E. W. Yearsley; "Increases in Production by Machinery on Motor Driven Line Shafts," by G. H. Winslow; "Mill Type Motors and Controllers" and "Low Pressure Steam Turbines and Centrifugal Compressors" were discussed by Messrs. Knight, Whiting, Callan and Bilsland, representatives of the General Electric Company, whose presentation of these topics was keenly appreciated by an audience capable of critical analysis and discriminating judgment of all points raised. A talk upon "Low Pressure Turbines" was given by Edwin Yawger of the Westinghouse Machine Company; "Power Transformer and A. C. Motors" was responded to by W. A. Layman of the Wagner Electric Company: "A. C. and D. C. Motors," by Gano S. Dunn of the Crocker-Wheeler Company, and "Gas Engines and Turbo Generators" was taken up by E. T. Adams of the Allis-Chalmers Company.

### Visits to Local Plants.

Time was found between the various business sessions for visits to some of the notable electric machinery and iron and steel plants in Chicago and vicinity. On Thursday morning members of the association visited the Western Electric Company's works at Hawthorne, and on Friday they went to Gary, Ind., as guests of the Allis-Chalmers Company to inspect the partly completed plant of the Indiana Steel Company. Much interest was also manifested in the examination of two 2000-kw. Allis-Chalmers twin tandem gas engine driven generators at the Illinois Steel Company's South Works; the 500-kw. Rateau D. C. turbo generator at the McCormick Works of the International Harvester Company, and the 100,000-kw. 9000-volt, 3-phase underground system at the Commonwealth-Edison Company's lighting plant.

The young society appears to be keenly interested in its special fields. The discussions are animated, and there is a frank give and take among the members themselves and among them and the representatives of the different electrical manufacturing interests. The users of such equipment in the steel works and rolling mills expose clearly what their special requirements are, while the electrical works experts point out the considerations, from their side, which affect construction and operation. Indeed, so frank are these discussions that there seems some hesitation, on both sides, to permit of wider publicity.

The following list of members shows how completely the experts of the leading steel works of this country are actively represented:

Peter D. Brown, Ohio Works, Carnegie Steel Company, Youngstown, Ohio.
James F. Chapman, Colorado Fuel & Iron Company, Pueblo, Colo.
Palmer Collins, American Steel & Wire Company, Pittsburgh, Pa.
Harry A. Cox, Carnegie Steel Company, Donora, Pa.
R. D. Davenport, Carnegie Steel Company, New Castle, Pa.
James Farrington, La Belle Iron Works, Steubenville, Ohio.
J. F. Jelley, Phœnix Iron Works, Phœnixville, Pa.
D. J. Jones, Republic Iron & Steel Company, Bessemer Works, Youngstown, Ohio.
O. R. Jones, Youngstown Sheet & Tube Company, Youngstown, Ohio.
Frank H. Kittredge, Illinois Steel Company, Joliet, Ill.
A. T. Koehler, National Tube Company, Wheeling, W. Va.
H. Hughart Laughlin, Jones & Laughlin Steel Company, Pittsburgh, Pa.
H. A. Lewis, Alan Wood Iron & Steel Company, Conshohocken, Pa.
Chas. A. Menk, Homestead Works, Carnegie Steel Company, Munhall, Pa.
Geo. H. McFeaters, Lorain Steel Company, Johnstown, Pa.
Robt. W. McGarvey, Carnegie Steel Company, Sharon, Pa.
Frank W. McKee, Jones & Laughlin Steel Company, Aliquippa Works, Woodlawn, Pa.
L. R. Palmer, Jones & Laughlin Steel Company, South Side Works, Pittsburgh, Pa.
Alex. Paterson, Seneca Iron & Steel Company, Buffalo, N. Y.
C. W. Parkhurst, Cambria Steel Company, Johnstown, Pa.
Jno. C. Reed, Pennsylvania Steel Company, Steelton, Pa.
R. C. Reed, Duquesne Works, Carnegie Steel Company, Duquesne, Pa.
G. W. Richardson, American Bridge Company, Pencoyd Works, Philadelphia, Pa.
R. R. Shepherd, Inland Steel Company, Indiana Harbor, Ind.
B. R. Shover, Indiana Steel Company, Gary, Ind.
W. E. Snyder, American Steel & Wire Company, Pittsburgh, Pa.
F. W. Stevens, American Bridge Company, Ambridge Works, Ambridge, Pa.
G. M. Sturgess, Lackawanna Steel Company, Buffalo, N. Y.
F. P. Townsend, National Tube Company, Lorain, Ohio.
S. S. Wales, Homestead Works, Carnegie Steel Company, Munhall Pa.
G. H. Winslow, National Tube Company, 559 Frick Building Annex, Pittsburgh, Pa.
Fred H. Woodhull, Lukens Iron & Steel Company, Coatesville, Pa.
A. J. Woodworth, Maryland Steel Company, Sparrows Point, Md.
E. W. Yearsley, Midvale Steel Company, Philadelphia, Pa.

**The Gayley Dry Air Blast at Toledo.**—Julian Kennedy, consulting engineer, Pittsburgh, is installing a Gayley dry air system at the two blast furnaces of the Toledo Furnace Company, Toledo, Ohio. It will have some special features not embodied in other installations which are expected to add considerable efficiency to the operation of the plant, materially reducing the cost. It is expected to have the system ready for operation about February 1.

# The Bullard Boring and Reaming Bar and Grinder.

Among other boring mill accessories the Bullard Machine Tool Company, Bridgeport, Conn., manufactures a combination boring and reaming bar for use in cored holes only, and a special machine for accurately grinding the cutters used in the bar. Both are shown in the accompanying illustrations.

The combination bar and its group of cutters are shown in Fig. 1. The bar has two openings, at right angles to one another; an approximately square one for the three cutters which perform the operations preliminary to sizing and finishing, and a deeper one for the two reamer like cutters which finish the hole. The chamfering cutter A, seen in position in the bar, is used for chamfering the corners of the hole, so that succeeding cutters will not be brought in contact with the scale, and will have a true surface to start on. The roughing cutter B is then passed through to remove the scale, after which the truing cutter C is used to correct the error caused by the roughing cutter following the core.

The sizing cutter D, cutting at both ends, is a trifle smaller than the finished hole, and precedes the final cutter E to save the latter from unnecessary wear, and to insure a uniform amount of stock for finishing at all times. The final cutter, acting as a reamer, works in the same manner as cutter D. Both of these cutters float free in the bar and therefore cannot cut large. Provision is made for maintaining the size of the final cutter, which is slotted and drilled for a taper adjusting pin. It will be noticed that the system is highly developed for economical and accurate work. All cutters are of high speed steel except the carbon steel finishing reamer.

The cutter grinder, Fig. 2, is of simple construction, but accurate in its adjustments and operations. The cutting and clearance angles must be precise, and the machine provides the means for accomplishing this work quickly and cheaply. The cutters are made of rough rolled stock of standard sizes. Practically the only machining operation is the cutting off from the bar to approximately the required length, except on the finishing reamer, which is slotted and drilled for the taper adjusting pin, as stated. The cutters are then hardened and ground to the required lengths for boring and finishing a specified diameter of hole.

The grinder consists of a wheel stand and base upon which is mounted the slide F, adjustable by micrometer screw and dial from or toward the cup grinding wheel, by means of which correct lengths of cutters are easily obtained. The cross slide G is hand actuated to travel the work across the face of the wheel, and is hinged on a rod at the inner end of the slide F, so that it may be adjusted vertically by means of the screw H to grind clearance angles, &c. The desired angles are clearly indicated by a graduated dial not seen in the illustration.

The cutter block I may be swiveled to obtain the proper cutting angle by releasing the thumb nut J, which works in a circular slot, and setting the stop screw K in the required position. When the stop screw K is against the sleeve on the clamp bolt J the swivel block is located for grinding the diameter land; another stop screw at the opposite end of the slot locates the block for grinding the relief.

The chamfering, roughing and truing cutters being

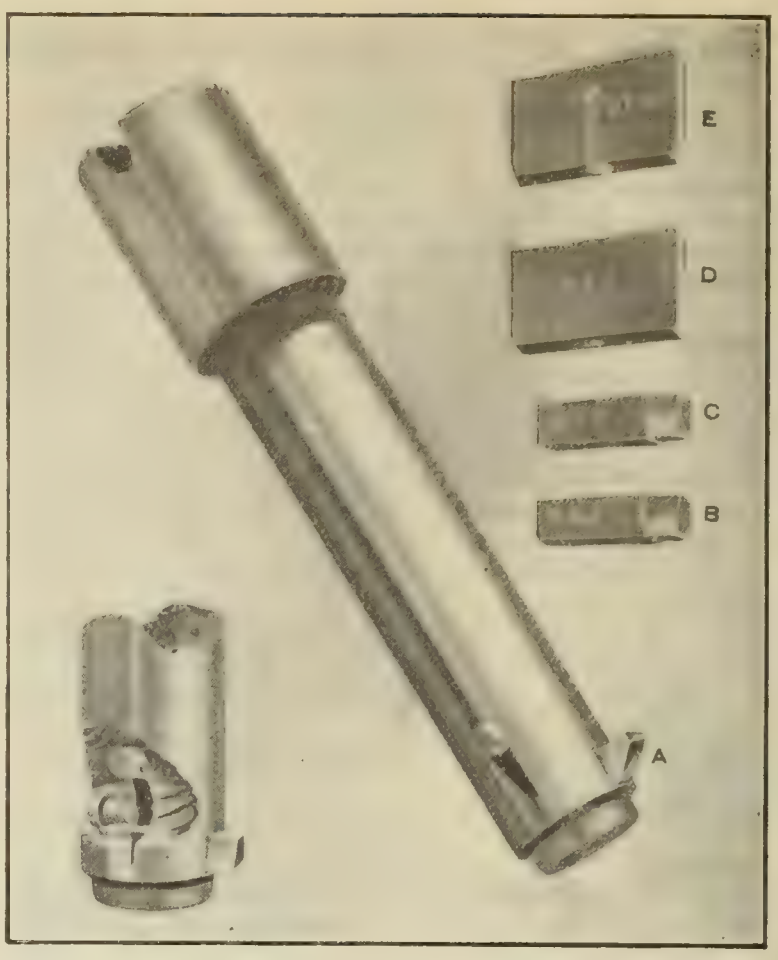



Fig. 1.—The Bullard Combination Boring and Reaming Bar.

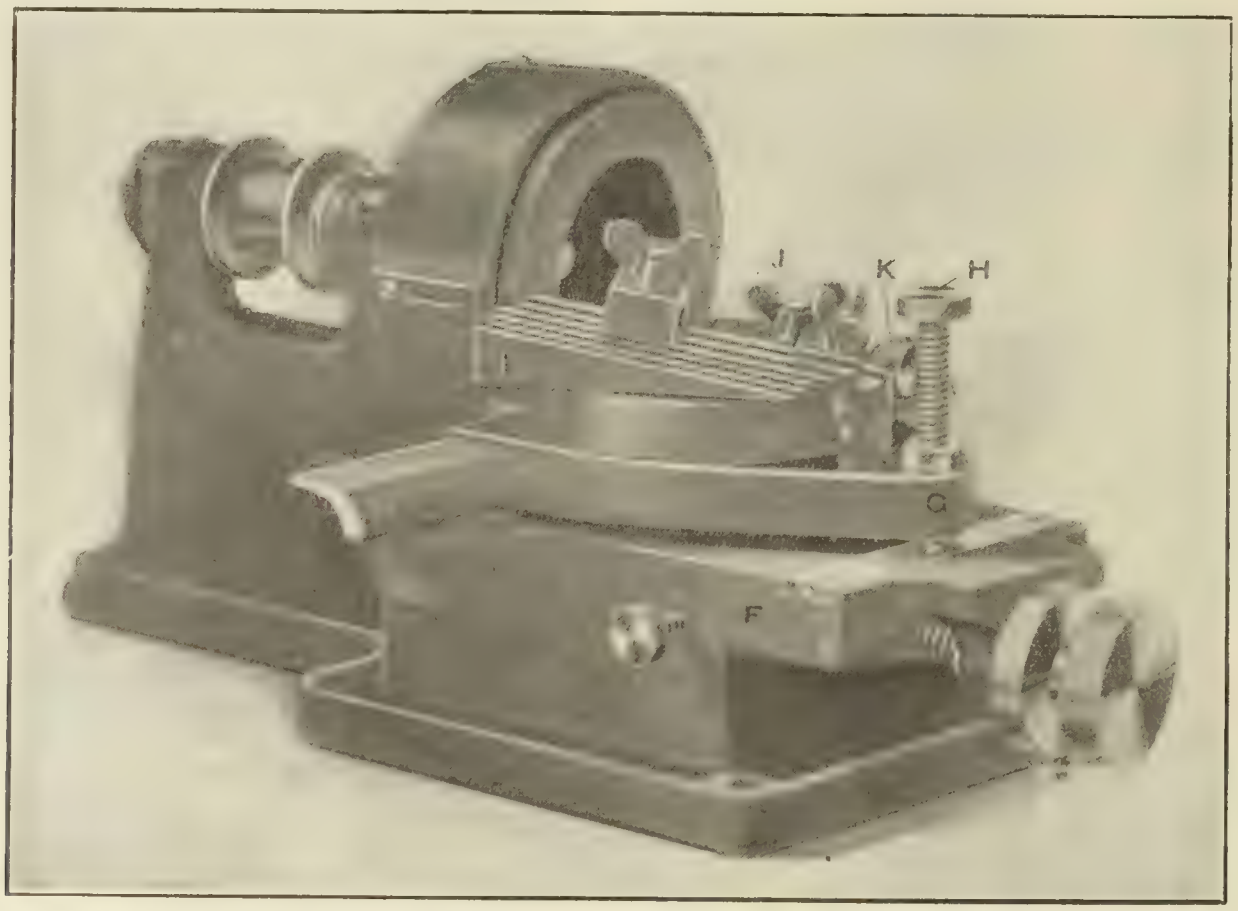



Fig. 2.—A Special Machine for Grinding the Reaming Cutters Used in the Bullard Combination Bar.

of square stock, may be ground by hand on any ordinary wheel, but the sizing and reaming cutters, upon which the accuracy of the hole depends, must be perfectly ground, both ends alike in all details, to obtain good work. To accomplish this the blank is cleaned of its scale by using a disk grinder, and is then secured to the cutter block while one end is ground straight, and at the correct back clearance angle. The operation is repeated at the opposite end. Then follow the diameter land, top clearance and cutting angle operations, each being ground on both ends before the cutter is set for the subsequent surface. The grinder is designed as a bench machine, but may be mounted on a pedestal if desired.

With the combination bar the company furnishes a complete table of sizes, angles, &c., for each cutter for holes ranging from 1 to 6 in. The bars are furnished in a number of sizes, each having a variation between minimum and maximum capacity; that of the smallest size from 1 to 1¾ in., and the largest from 4 to 6 in. One group of six sizes is for use in turret heads of 24-in. vertical turret lathes and 30-in. mills, and another group, also of six sizes, is for turret heads of 36-in. vertical lathes and 42-in. standard and 42-in. and 54-in. rapid production mills. The cutters and reamers need not be discarded after they have been ground too small for the size for which they were made, but may be ground to a smaller size.

## The Mechanical Cleaning of Iron Ores.*

BY T. C. HUTCHINSON.

The present paper contains an account of experience in smelting Cleveland District iron ore, obtained over a period of years from one mine, and of the varying yield of iron and consumption of fuel and flux due to varying amounts of impurities in the ore. From 1895 to 1901 an increase was noticed in the consumption of ore, fuel and limestone per ton of iron made. From 67.37 cwt., 12.698 cwt. and 22.44 cwt. of ore, flux and coke per ton of pig iron in 1895, the consumption rose to 69.25 cwt., 14.66 cwt. and 23.18 cwt., respectively, in 1900, and was only slightly less than the latter figures in the first nine months of 1901, before mechanical cleaning was started. A form of cleaning belt similar to that used at neighboring iron mines was put in in October, 1901, and the consumption of minerals per ton of pig iron fell from 107.102 cwt., as in 1900, to 102.92 cwt. Later some alterations were required in the cleaning apparatus, and at the same time the increase of pillar workings at the mine gave a larger admixture of shale, so that furnace cast sheets suffered. The following table shows how costs ran up as iron content went down and impurities increased:

*Actual Cost of Smelting the Same Main Bed of Iron Ore, but with Varying Admixtures of Impurities Delivered from the Mine.*

| Iron ore containing metallic iron. Per cent. | Material consumed per ton of pig iron produced. | Cwt. | Cost of material used in smelting a ton of pig iron. £ | s. | d. |
|---|---|---|---|---|---|
| 27.34 | Iron ore | 67.22 | 0 | 18 | 5.826 |
| | Coke | 21.90 | 0 | 18 | 0.81 |
| | Limestone | 13.80 | 0 | 3 | 5.4 |
| | Totals | 102.92 | 2 | 0 | 0.036 |
| 26.28 | Iron ore | 70.02 | 0 | 19 | 3.066 |
| | Coke | 23.09 | 0 | 19 | 0.591 |
| | Limestone | 13.61 | 0 | 3 | 4.83 |
| | Totals | 106.72 | 2 | 1 | 8.487 |
| 25.52 | Iron ore | 72.104 | 0 | 19 | 9.9432 |
| | Coke | 23.581 | 0 | 19 | 5.4519 |
| | Limestone | 15.845 | 0 | 3 | 11.535 |
| | Totals | 111.530 | 2 | 3 | 2.9301 |
| 24.97 | Iron ore | 72.784 | 1 | 0 | 0.1872 |
| | Coke | 24.647 | 1 | 0 | 4.0053 |
| | Limestone | 15.471 | 0 | 3 | 10.413 |
| | Totals | 112.902 | 2 | 4 | 2.6055 |

In August, 1908, about 13 per cent. of impurities were being mechanically removed from the ore by the cleaning belt. It is too costly to break up all the shale and all the ore. The lumpy shale is picked out by boys who travel with the belt until the ore is cleaned and passed over the end of the belt into trucks ready for delivery to the calcining kilns. The shale riddled through a ½-in. screen is also put aside; the small pieces could not be picked out otherwise as the expense would be too great. They pass to a transverse belt which carries them on to the shale trough on the main belt. The cost of the installation is about one penny per ton of ironstone for cleaning, this covering everything, including interest, redemption and repairs.

Detailed analyses of the cleaned iron ore, the small mixed iron ore and the large shale containing respectively,

| | Iron, per cent. |
|---|---|
| Cleaned iron ore | 27.06 |
| Small mixed iron ore | 23.25 |
| Large shale | 20.94 |

as taken out by belt were given in the paper, in tables with theoretic calculations showing coke and limestone required to smelt each quality, together with composition, weight and percentage of slag produced, consumption of coke, and finally the cost of smelting each description of material taken at the same prices throughout. This last table is as follows:

*Comparison of Cost of Minerals Per Ton of Pig Iron.*

| | Weight. Cwt. | Amount. £ | s. | d. | Total cost per ton of pig. £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Cleaned iron ore: | | | | | | | |
| Iron ore containing 27.06 per cent. iron | 68.0 | 0 | 18 | 8.4 | | | |
| Coke | 22.0 | 0 | 18 | 1.8 | | | |
| Limestone | 13.5 | 0 | 3 | 4.5 | | | |
| Totals | 103.5 | | | | 2 | 0 | 2.7 |
| Small iron ore: | | | | | | | |
| Iron ore containing 23.25 per cent. iron | 79.1 | 1 | 1 | 9.0 | | | |
| Coke | 28.5 | 1 | 3 | 6.1 | | | |
| Limestone | 32.0 | 0 | 8 | 0 | | | |
| Totals | 139.6 | | | | 2 | 13 | 3.1 |
| Shale: | | | | | | | |
| Shale containing 20.94 per cent. iron | 88.0 | 1 | 4 | 2.4 | | | |
| Coke | 36.5 | 1 | 10 | 1.3 | | | |
| Limestone | 54.0 | 0 | 13 | 6.0 | | | |
| Totals | 178.5 | | | | 3 | 7 | 9.7 |

This comparison of cost does not include the increased cost of wages, calcination and general charges, which would be proportional to the decrease in production as compared with the total weight of minerals charged into the furnace, and when these are added, the increased cost of manufacture appears to put outside the range of practical economy smelting either the small iron ore or the shale.

After many years of careful observation and comparison of costs of smelting ores containing varying proportions of impurities, the writer reached these conclusions: That whether these impurities are charged into the furnace in larger or smaller percentages as compared with the main bed of iron ore, the coke and limestone requirements and the cost of smelting increase in exact ratio; that it is cheaper to pick out impurities mechanically than to melt them out in the blast furnace; that mechanical cleaning is desirable, and can be applied to all descriptions of ores used in the manufacture of pig iron.

Reports that the Page Woven Wire Fence Company, Monessen, Pa., is installing another open hearth furnace in its plant are untrue. This company will put in operation about November 1 a large number of fence weaving looms which have just been installed in its new addition, and which were made necessary as a result of increased orders for fencing. The new building is of brick and steel construction, about 100 ft. square, three stories. The plant is able to supply this new department with material, as some time ago the company completed the building of another large open hearth furnace which is now in operation. The company reports trade as being quite good, considering general conditions, and it anticipates a large business the coming year.

* Synopsis of a paper read at the Middlesbrough, Eng., meeting of the Iron and Steel Institute, September 28-October 1 1908. Mr. Hutchinson is connected with the Skinningrove Iron Works in the Cleveland District.

# Designing and Fitting Crankshafts.

BY H. S. BROWN, NEW YORK.

In designing, machining and assembling the crankshaft of a steam or gas engine, cost and strength are more to be considered than pleasing form. A liberal amount of metal giving ability to withstand severe duty must be provided. In the following the cases of good and bad design and construction referred to are such as have come to the author's notice.

### Faulty Design.

In the design, Fig. 1, there is a weak point at *a*. To offset the weakness of this thin section, steel forged cranks have been substituted for cast iron. An objection to adding metal outside of the crank pin hole is that in a heavy type of bed, the shaft is placed as low as possible to prevent vibration, and there can be little clearance between the crank and bed, as shown at *b*, Fig. 1. Another remedy is to reduce the pin diameter in the crank disk to allow a greater cross section at *a*, but the pin is then the weak point, and in numerous cases has broken off at the shoulder. A shoulder is bad; even when the smaller diameter of the pin is large enough, a straight pin is safer.

The crank shown in Fig 2 was broken by water in the cylinder. The weakness lay in the ribs at *a a*, which, though possibly sufficiently strong under normal conditions, were damaged in casting, because allowance was not made for shrinkage. In many foundries molds are uncovered and sand enough removed to cool the castings over night so as to have them ready for the cleaning department in the morning. The thin parts cooling before the heavy sections, there arise tremendous shrinkage strains. The author recalls a heavy casting for a rush job which was taken too quickly from the sand and hauled about 30 miles in the open air to the shop; within 24 hours after its arrival it exploded with a loud report. For a similar cause the arms of fly wheels have been known to break and open up nearly ⅛ in. while on the boring mill. A disk crank, if of a ribbed pattern, should not be uncovered after casting for at least 24 hours, and should be made from good close grained charcoal iron, with scrap made up of gates and risers from a previous cast; no common yard scrap should be used. While it is better to break the crank than the cylinder or frame, it is still better to locate the weak point in the crosshead, piston or cylinder head. Design should allow for the possibility of water in the cylinder.

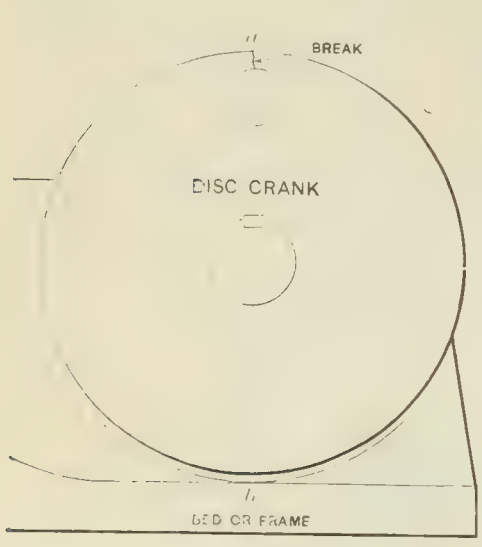



Fig. 1

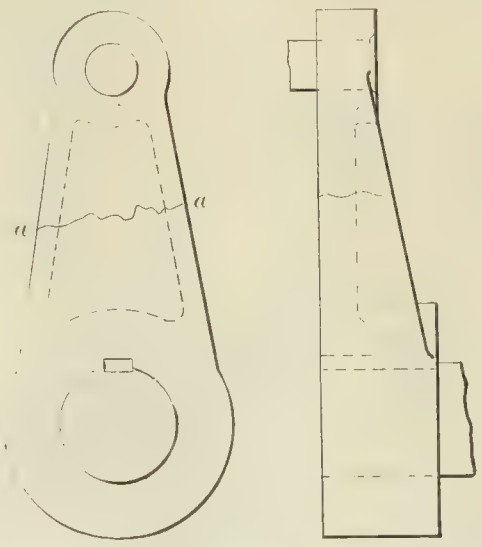


Fig. 2.

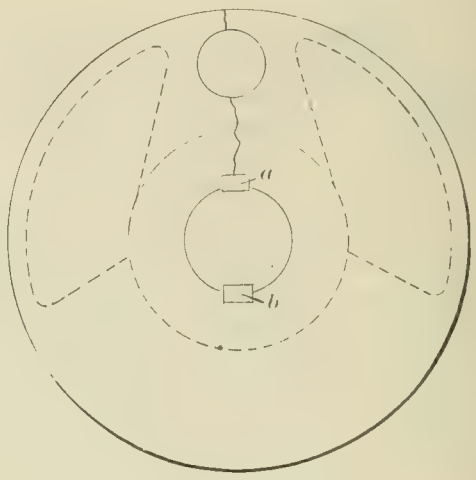


Fig. 3.

Typical Weaknesses of Cranks.

A weak point common in short throw cranks is indicated in Fig. 3. The keyway at *a* forms a starting point for a crack across the short distance between the shaft and the pin. The key should be at *b*, where strength is afforded by the counterbalance in the crank.

### Key Fitting.

Lack of sufficient metal is not always the weakness; workmanship is often at fault, especially in the fitting of keys. Even when a good pattern is fitted to the keyway, the key planed to pattern, and driven home without any hand fitting, nine times out of ten the key will bear top and bottom at the thick end only. This is not only a poorly fitted key, and likely to work loose, but it has a tendency to throw the crank over. Similarly the key will probably have an imperfect side bearing, for which reason also it is likely to work loose. To properly fit a crank key, the keyways should be scraped to a bearing on a hardened master key, using a light coating of lamp black or red lead to show the high spots. This should be done before the crank is put on the shaft, and the two keyways should be exactly the same width. When the crank is put on, a blank key fitting perfectly on the sides should be kept in the keyways to make them come fair.

Care should be taken in selecting the grade of steel for the key. Dead soft steel should never be used, as it is likely to bend or upset, and change its shape in fitting, and the fitter is tempted to rivet the end over to cover up defective fitting. Where an inspector is responsible for the work, he should see the key before it is finally driven home. Bars of selected steel should be kept in stock and very close to size to save forging and planing. The author has found steel of the following analysis very satisfactory:

| | Per cent. |
|---|---|
| Carbon | 0.40 |
| Silicon | 0.11 |
| Sulphur | 0.036 |
| Phosphorus | 0.039 |
| Manganese | 0.50 |

The key should be fitted by scraping after it has been filed nearly to a bearing. It should never be driven in dry, as there is danger of cutting, which destroys the surface of the key and keyway. During the process of scraping a very light coating of oil only should be used; no lamp black nor red lead, as they will not show the fit properly. The oil will show the fit when driving the key fairly snug. For driving or drawing, the key should be planed on the end of a bar (not cut off to a short length), and the end of the bar should be turned up, to drive against in drawing the key out. A drift should never be used, as there is danger of bruising the main bearing of the shaft with the hammer, and the drift will destroy the key way and upset the key end.

There are different opinions in regard to the fitting of keys. One will have it fit top and bottom only, while another will have it fit only on the sides, but why this is so is hard to understand. The duty of a crank key is to carry a suddenly applied load greater than that which a shrink fit of the crank on the shaft alone would provide for; examples are the sudden reversing of a rolling mill engine, water in the cylinder, &c. In such cases, if the key does not fit sidewise, the crank will move on the shaft, and when the engine is reversed will move in the opposite direction, each time with less resistance, until it finally works loose. The key should fit its entire length on all four sides.

If the engine is for rough service, or if the crank is enclosed, the face will be painted, and it is sufficient after the key is driven home and the bar cut off (by hack saw

or cape chisel) to chip and file the end of the key close to the face of the crank and shaft. If the crank face is to be polished, the key should be chipped off to within about 1-32 in. of the crank face, then with a set and very light hammer, the end of the key should be calked over the seam and the face finished in a lathe if there is one large enough to swing the crank. This is good practice, as a cut may be taken over the whole crank to true it up on the shaft. This applies to a disk crank only. When finishing the crank, the crank pin bore should be closed with a cast iron disk to form a solid face; otherwise there will be trouble in polishing over the opening.

**Assembling.**

In preparing the crank and shaft for assembling, there are many important points to consider. First, the amount of shrinkage. The author has seen cranks crack in cooling, and has also seen them set fast when about half way on, both from excessive shrinkage. Some seem to think the more shrinkage allowed the better, but after the elastic limit of the metal is passed shrinkage has no value in strengthening the combination of parts; on the contrary, it is the beginning of weakness. If a cast iron disk is bored to, say 10 in., with shrinkage allowed so that the disk when heated to a bright red, will just go on the shaft, if the disk does not crack in cooling, it will be found that after drawing it off from the shaft the metal has set and the bore will be larger than it was originally.

From his experience the author has found that when heating the crank for assembling, a straight bore is satisfactory if the proper shrinkage is allowed. To locate the crank a bar of iron just the length of the main bearing should be clamped to the shaft to form a stop, for, as with the crank pin, there should be no shoulder on the shaft. If there is to be a finished cut over the back of the crank hub after it is keyed on the shaft, the gauge bar should be the depth of the cut shorter than the main bearing.

Instances of accident, expense and delay have demonstrated that a straight bore is objectionable when a crank is forced on by hydraulic pressure. Take, for example, a crank 10 in. thick, the inside edge must pass over 10 in. of the shaft under heavy pressure, which will clean off the lubricant, and the dry surface is likely to cut. This has occurred repeatedly, and after the cutting has started the maximum power of the press will not move the crank either on or off. Then the crank must be drilled and split off with wedges. When once a cut has started it will increase in size in the shape of a ridge or hump preceding a groove that also increases in depth and width. Fig. 4 illustrates the condition somewhat exaggerated. The cutting starts at *a*, and at *b* the crank sticks fast. In some cases the pressure will burst the crank. A curious feature of this abrasion is that the lumps raised are as hard as tempered steel, and it is necessary to chip around them and dig them out. The tremendous pressure required to force them together will reduce the diameter of the shaft, and increase the bore of the crank changing the amount of shrinkage originally allowed. At taper bore in the crank with the same taper on the shaft, allowing shrinkage, will give far better results. Fig. 5 illustrates the required condition. The crank will pass easily on the shaft quite a distance, allowing the lubricant (white lead and oil) to remain on the surface, and when once confined it will follow the crank in its travel over the shaft, and in a large measure do away with the liability to cutting. With the taper bore the condition is that of a wedge. The shaft acting as such tends to open the bore of the crank as it advances. This in a measure allows a part of the lubricant to enter between the two surfaces. The front edge of the crank as it advances is not subjected to the same stress as in the case of the straight bore. By experiment the author has found that very close to 1-1000 in. for each inch diameter of crank bore is a safe shrinkage. This will not produce strain beyond the elastic limit, and in ordinary service the crank would hold without a key, and if the crank was removed from the shaft, it would go on the second time with nearly the same pressure. The white lead and oil used as a lubricant should be carefully strained to remove all grit, as a small particle might start cutting. A small groove 1-16 in. deep and ¼ in. wide should be cut near the end of the crank bore, and filled with white lead before the crank is started on.

An important feature of the taper fit is that the crank is not compelled to travel so far under severe pressure and still obtain the same shrinkage. In finishing the bore

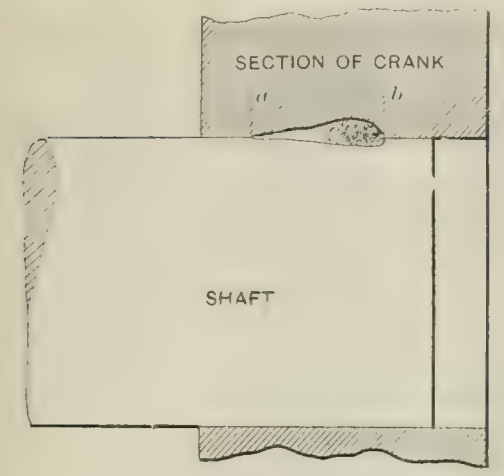



Fig. 4.

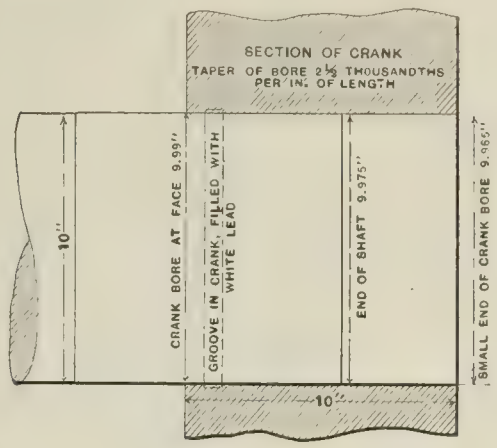



Fig. 5.

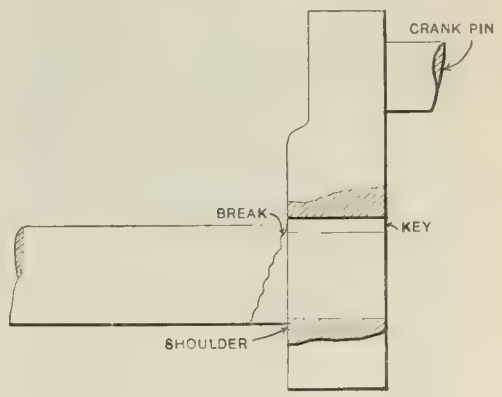



Fig. 6.

Assembling the Crank and Shaft.

of the crank in the lathe or boring mill a small portable grinder should be used which will give a smooth clean surface which is very important, as it removes all grit left from the boring tool.

The bore for the crank pin should be the same taper as the shaft, and a dummy pin fitted in by scraping. During the scraping the alignment of the pin should be tested with a small sensitive level on the pin when at the top and at its quarter travel. If the shaft has been previously leveled accurately, the bore will be made perfectly parallel with the shaft.

**The Crank Pin.**

The steel for the pin should be carefully selected to give satisfactory service. Some years ago the author was called to inspect a crank pin that would not run without heating. It had been experimented with for months without success. A sample of the steel was sent to a chemist, and he found it about 0.20 carbon. A new pin was furnished with the following analysis, which stopped the heating trouble:

| | Per cent. |
|---|---|
| Carbon | 0.46 |
| Silicon | 0.10 |
| Sulphur | 0.049 |
| Phosphorus | 0.038 |
| Manganese | 0.61 |

The journals of both pin and shaft should be ground to a finish. Ordinary lathe finish with filing is poor practice. It is impossible to file a true surface on a pin turning at a high speed, to say nothing of a large shaft at a low speed.

A number of years ago the author was in the employ of a steam engine builder, who received an order to furnish an engine to be installed in a plant where the full load was to be put on the engine the first time it was

started and as soon as it was up to the required speed, which time was not to exceed one-half minute. As a matter of fact, the larger part of the load was on the engine when the steam was turned on. This was before the days of perfected grinding machines, but we were convinced that the cross head and crank pins, together with the shaft bearings, should be ground to insure cool running. A small grinder was rigged to fit in the tool post of a shaft lathe, with a driving drum overhead. All the bearings of the engine were ground, but the fitting of the main bearing box was done after the engine was bolted down on its foundation. When all was ready the steam was turned on, and in a few seconds the maximum speed was obtained, and the trial was run without the slightest show of heating. (The mean effective pressure was about 45 lb.) The material in the shaft was probably largely responsible for the cool running.

**The Shaft.**

For shafts, steel of the following analysis has been found to give good results:

| | Per cent. |
|---|---|
| Carbon | 0.42 |
| Silicon | 0.11 |
| Sulphur | 0.045 |
| Phosphorus | 0.038 |
| Manganese | 0.61 |
| Nickel | 3.50 |

This gives a good strong shaft, and the manganese gives a hard wearing surface. When ordering shafts the analysis should be specified, and when it is received sample chips should be tested to verify the order as given. As showing the importance of close attention to the composition of shafts the author has a record of a forging containing 0.21 per cent. carbon and 0.136 per cent. sulphur which was considered dangerous and was condemned. Another record is that of a crank shaft for a large cross compound engine which was high in sulphur and phosphorus, and broke, as shown in Fig. 6; both ends of the shaft gave out in the same way and at the same point. It might be mentioned that there was a shoulder on the shaft to butt against when forcing it on, which bears out the contention that shoulders are dangerous.

There seems to be a question among builders as to which method of placing the crank on the shaft is the better and safer,—heating and shrinking, or forcing on with a hydraulic press. With the hydraulic process the first cost of the press for large work and the time consumed in forcing the crank on is a serious item, and the danger of cutting, as previously referred to, must also be considered. For heating and shrinking a plain furnace of brick and sheet iron is of small first cost. The fuel is trifling, and with proper shrinkage there is no danger of loss or delay. In the author's many years of practice he has never known of an accident when proper conditions in shrinkage were observed, and there can be no doubt but that evenly heating a crank after machining is beneficial to the casting, as it removes all strains. A heat that will just show red in the dark is sufficient for proper shrinkage.

Great Britain exported 48,069 tons of steel rails in August, as compared with 38,765 tons in August, 1907, and 66,210 tons in August, 1906. A revival of business with the Argentine Republic is noted. That country took 18,412 tons of British rails in August, as compared with 5074 tons in August, 1907. The exports to British South Africa, British India, Australasia and Canada in August amounted to 15,633 tons. In August, 1907, they were 20,456 tons, and in August, 1906, 31,911 tons. The exports of rails from Great Britain in the eight months ending with August amounted to 301,456 tons, as compared with 279,952 tons in the corresponding period of 1907 and 303,995 tons in the first eight months of 1906.

Attention has been directed to the fact that in recent months American steamships have been laid up idle in New York harbor and at other ports, when foreign steamships have been employed by the United States Government in carrying supplies and materials for the construction of the Panama Canal. Owners of such idle steamships are co-operating to urge the passage by the House at Washington at its next session, of the joint resolution passed by the Senate in March, 1908, providing that under certain conditions preference be given in the carrying of materials for the Panama Canal to vessels owned in the United States.

## Electrolytic Production of Sheets and Tubes.

Sherard Cowper-Coles of London read a paper at the recent Middlesbrough meeting of the Iron and Steel Institute, describing an electrolytic process for making tubes, cylindrical vessels, sheets and wire in one or two operations from crude or scrap iron or direct from the ore, without smelting, rolling or drawing, and at a cost hitherto thought impossible. Briefly, the process consists in placing crude iron (which may contain those elements which are at present so detrimental to the production of high class iron or steel) or finely divided iron ore in vessels in which an acid solution is circulated, using an insoluble anode material. Or the process may combine the use of soluble and insoluble anodes. The crude iron or iron ore being in each case connected to the positive pole of a dynamo, the iron goes into solution and is deposited on cylinders or plates which may be either rotated or stationary, depending upon the class of finished product required.

The process lends itself to the recovery of iron more especially from carbonated ores, "blue billy," and bog ores. The author considers that it will also prove a valuable adjunct where pig iron is used for precipitating copper, permitting of the recovery of the iron instead of wasting it. When it is desired to produce a highly finished sheet a metal sheet of the desired surface is wrapped around the cathode and held in position by grooves and wedges. When it is desired to produce tubes, iron mandrels somewhat smaller than the internal diameter of the finished tube are coated with lead by electrodeposition or by having lead drawn over them. Thus prepared the mandrels are rotated in an apparatus designed for the purpose. When the desired thickness of iron has been deposited the mandrel is heated to a temperature sufficient to melt out the lead and thus permit of easy withdrawal. The electrolyte employed consists of a 20 per cent. solution of sulpho-cresylic acid saturated with iron. A peculiar feature of electro-deposited iron, the paper states, is that it creeps to an extraordinary degree with a rounded smooth edge over any material. Under certain conditions when employing a rotating cathode long tentacles form 6 in. or more in length in the direction of rotation, with approximately the same curvature as the mandrel.

One application of the process referred to is the production of bimetallic tubing and plates, that is, tubes and sheets coated on one side with copper or other metal or alloy. An important possibility of the electrolytic process the author considers to be the introduction of some new ferrous alloys which cannot be made by fusion. Alloys of iron and nickel have already been produced electrolytically. It is added that electrolytic iron sheets can be obtained with a highly finished surface, can be readily welded, coated with tin and zinc by dipping in a molten bath of these metals, coated with zinc by the Sherardizing process, or electrogalvanized. Photo-micrographs of electrolytic iron were shown. In a specimen of a sheet the structure appeared very minute as compared with wrought iron, the crystal grains being elongated at right angles to the surface of the steel, and there was not the same tendency to form a definite crystalline structure as in the case of electro deposited copper, which always crystallizes at right angles to the cathode surface.

The properties of electrolytic iron appear to depend largely on the amount of hydrogen present, and therefore on the annealing which reduces or eliminates the occluded hydrogen. The iron when charged with hydrogen is magnetic and when magnetized becomes a powerful magnet as compared with ordinary steel. The hydrogen varies in quantity according to the conditions under which deposition takes place, and the more hydrogen the iron contains the greater is its hardness.

## A Bliss Automatic Side-Seaming Machine.

An automatic side seaming machine recently designed and built by the E. W. Bliss Company, 11 Adams street, Brooklyn, N. Y., and an example of its work are shown in Fig. 1. Fig. 2 gives a section of a seam such as this machine forms and closes at one revolution of the main driving gear. This type of seam is regarded as the best where, to absolutely exclude moisture from the goods to be packed in a can, a very strong and extra tight seam is required. For example, to pack for shipping, such chemicals as chloride of lime, caustic soda and bleaching powder, cans with this type seam are used almost exclusively.

The machine is provided with a movable carriage on which the rolled body blank is clamped between rings and is carried into position over the forming horn. The rings serve the purpose of retaining the correct diameter of body required to insure a good fit of the top and bottom in the locked can. The clamping rings are also fitted with a gauge which enables the operator to set the blank so that the finished seam will not have too long an end extending on the outside of the can.

When the body is clamped in position the carriage, through the large hand wheel on its end, is moved into the machine and the body forced over the horn and into position for the seam to be formed and locked. An end support for the free end of the horn is afforded by a part carried on the moving carriage. Only a few seconds is taken to place and clamp the body, and possibly 5 sec. more to turn the hand wheel to carry the body under the slide ready to form the seam.

The machine is geared 7 2-3 to 1 and is double acting. The crankshaft has three eccentrics, with throws of 1 in., which operate the inside ram for the second stage of the seam. The outer slide, which has ½-in. movement and is operated by two cams on the crankshaft, forms the first stage of the seam.

The horn on which the cam is seamed has a sliding blade operated by a cam from one end of the crankshaft. To make the first stage of the seam, this blade is raised above the top surface of the horn in position for the outer slide to do the forming, after which it drops to a lower position, and the inside ram, following down, completes the seam. The carriage is then withdrawn and the

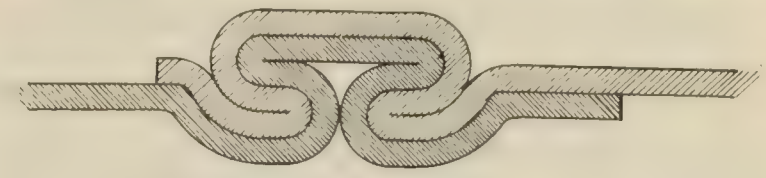


Fig. 2.—Section of the Seam Formed.

finished can taken out. The machine shown will seam cans from 21 to 30 in. in diameter and up to 40 in. extreme length, handling stock from No. 28 to No. 20 gauge thickness.

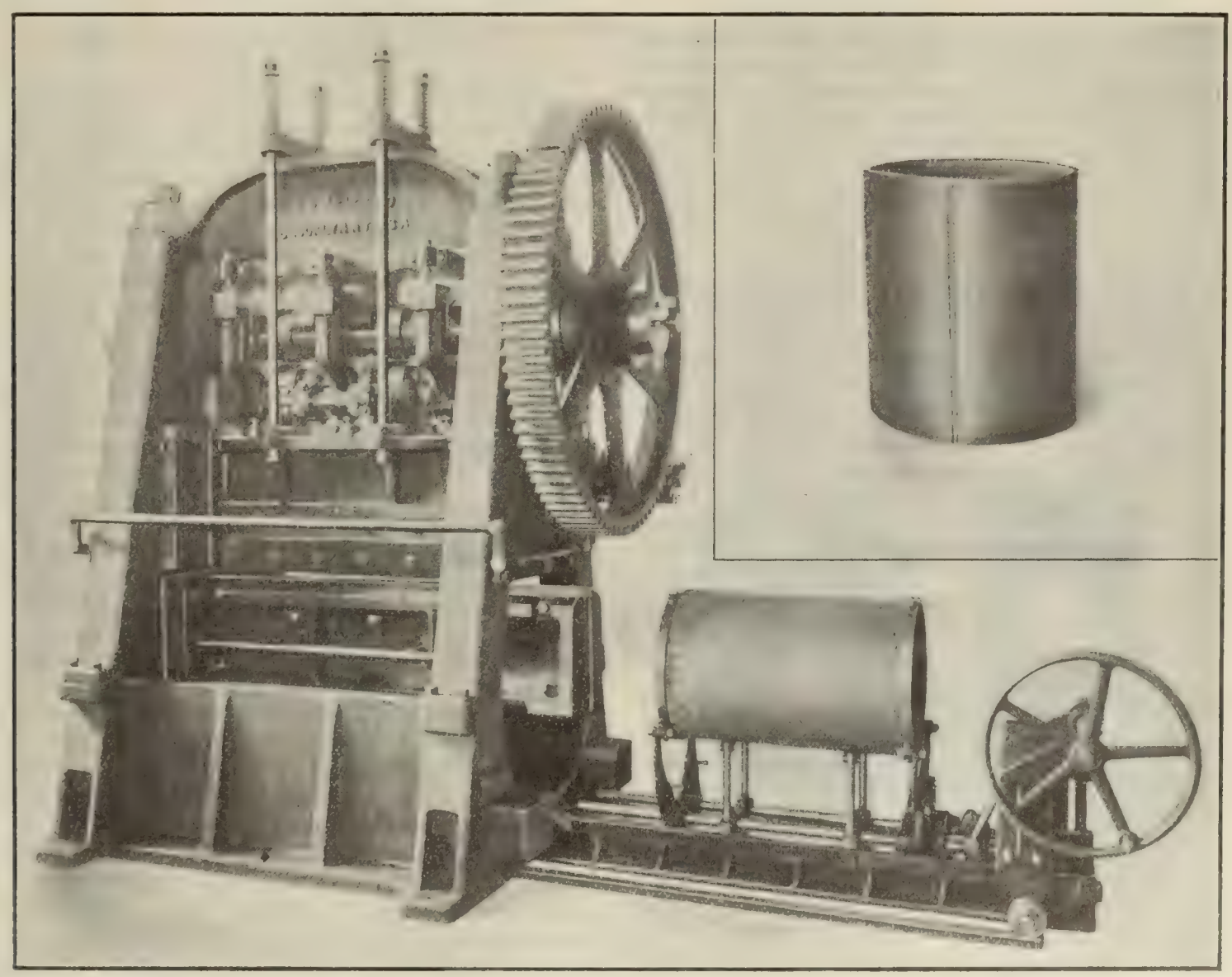


Fig. 1.—An Automatic Side Seaming Machine Built by the E. W. Bliss Company, Brooklyn, N. Y., and an Example of Its Work.

The Sylvester Company, 70 Kilby street, Boston, is rebuilding the structures which were destroyed by fire last spring at its Danvers Iron Works, Danversport, Mass. Contracts have been made for the erection of the main rolling mill building, 100 x 225 ft., entirely of steel construction; scrap storage shed, 75 x 112 ft., and office and machine shop building, 50 x 75 ft. The two latter buildings are of wooden frame. The company expects to have the complete plant in operation in three or four months, when it will be prepared to furnish all sizes of merchant refined iron bars. The equipment will consist of puddling and heating furnaces, an 18-in. muck mill, and 18 and 10 in. finishing mills. The spike and bolt factory, in which are manufactured spikes, bolts, hot pressed nuts, &c., was not burned and is at the present time in operation.

The Indiana Steel Company, Gary, Ind., is asking bids on the erection of the third and fourth units of its open hearth plant, each unit to contain 14 open hearth furnaces. Bids are asked on 140 gas producers for these furnaces, or as many as may be necessary to supply gas for them. The company is also asking bids on 12 gas producers for heating furnaces for the merchant mill and three gas producers for a 25-ton daily capacity steel casting plant.

# Different Plans of Paying Employees.*

## The Advantages and Disadvantages of Each Plan to the Employer and Employee.

BY HARRINGTON EMERSON, NEW YORK.

That system of paying wages is best which guarantees a minimum wage in return for time surrendered, which varies wages to suit different ages, trades, time and character of service, which in addition to guaranteeing wages sets up a definite equivalent in work or output for each minute of employment, which enables each man to show his own personal efficiency and rewards him accordingly, which gives both employer and employee an absolutely square deal. This is the standard by which to judge any system of wage reward for work done. Day wages, piece rates, premium systems only partly fulfill this standard, and each in its way has both good features and bad features.

### The Three Forms of Paying Wages.

The reward for work done is a very old problem, as old as life. The writer has watched and studied all the extremes from slave and forced labor to $15 a day men in the Alaska gold fields. He finds that all forms of paying wages can be divided into three; time rewards irrespective of performance; performance rewards irrespective of time; and reward of personality irrespective of either time or performance. These three systems may be called day wages, piece rates and bonus rewards.

All living things work more or less for their existence. In early humanity when men had the morals and practices of wolves, the man that put forth the most exertion generally landed the biggest reward. He was on piece rate. Women were not on piece work. Their work was from dawn until dusk if not a good part of the night in addition. It was not measurable, and all they got out of it was support. Slaves were also on day work, getting in return for the work a support very much as a horse or dog is supported. There was a third form of reward, as when herds were kept or crops grown. In this case the reward depended partly on the intensity of work, and partly, even to a greater degree, on the intelligence of the worker, so that the more intelligent man was able to earn more than the average as in the Bible story of Jacob and Laban. These three systems have persisted into modern industrial life. We have day wages, a commuted form of slave support. We have piece rates, a return to the earliest individualism. We have modern wage systems which permit the employee to determine in a measure his own rate of pay.

### The Day Rate.

One advantage of day rate to employers lies in the simplicity of the system. So many days, so much pay. It is almost as simple as ordering oats and hay for street car horses. On the Assouan dam in Egypt, employing 5000 men, they were all paid off daily at sunset. The advantage to employee is the certainty of pay without individual responsibility, just as children or horses are fed whether they work or not. The disadvantage to employer is that there is no equation between pay and work. A man may work with only 10 per cent. efficiency yet receive full wages. The disadvantage to employee is that even if he is a man of 200 per cent. efficiency he receives no more wages than the man who shows only 10 per cent. efficiency.

Day wages are all right for such work as street car drivers, for sailors, for policemen and gate keepers, for all kinds of work where the worker's presence is more important than the output.

### The Piece Rate.

The advantages of piece rate to employers are that it fixes the labor price of the product, that it substitutes a measure of cost certainty for cost uncertainty, that it relieves him of responsibility for conditions, that it secures the active interest of the men. The advantages to employee are that it enables the energetic pushing worker to earn more than the slow, indifferent worker.

The disadvantages to employers are very many, a few of which are:

1. No piece rate can permanently stand. However fair it was when first put in, conditions change so rapidly that it soon becomes unfair to the employer, the change is resisted and there are accusations of bad faith.

2. It relieves the employer of a responsibility which is distinctly his. It is the employer's business to force up output by improved conditions, not the business of the employee. It is immeasurably more difficult to cheapen output under piece rates. Piece rates almost invariably result in limitation of output, thus increasing overhead charges.

The disadvantages to the employee are that it makes him a machine. Under piece rate the most recent and untrustworthy apprentice may earn as much as the oldest and most reliable man. An employee is not a machine. A faithful man of long experience, service and reliability is worth more to the employer than the untried youth who as yet is merely dexterous. Nothing can be more disheartening than to have all qualities of character sunk in a uniform piece rate.

### Premium Systems.

An improvement on either the day rate or piece rate was evolved by F. A. Halsey, editor of the *American Machinist*. He evolved a system which retained all the advantages of the day rate system to the employee, with many of the advantages of piece rate to either employee or employer. Under Mr. Halsey's methods the employee has a guaranteed day or hourly rate. A fixed time is, however, set for the performance of any task, and if the employee reduces the set time he receives a premium. The relation of the premium to time reduction permits of many variations without altering the fundamental principles of Mr. Halsey's plan. One employer may give the employee all the time he saves, in which case the plan virtually results in a different piece rate for each different rate of pay.

Another employer, as under the Rowan and Cardullo plans, gives the employee a big premium for a small reduction in time, and neither wages nor premium if the work is done in no time. The Santa Fe bonus plan applied to the work of 8000 men, carefully determines a standard time for the operation, gives the employee at standard rate all he saves below this time and 20 per cent. premium on wages for time actually busy. If the employee takes longer than standard time, the premium rapidly diminishes, until at time and a half there is no premium. These different variations of the Halsey plan have more or less advantages for employer and employee.

### Standard Time Determination.

In connection with wages, F. W. Taylor introduced the new principle of standard time determination. By means of a time study the exact time is determined in which any job, of any kind whatever, ought to be done. Standard time can be applied to day work, or to piece work, or to premium work. A standard amount could be determined for a day's work, and the worker be credited with his pay when it was done whether sooner or later. In such a case by means of standard determination day work passes over into piece work. Having determined time, Mr. Taylor paid an increased rate if the tale of pieces was turned out in this time. He therefore paid an extra reward above piece rates for standard performance.

Mr. Gantt also established standard time, guaranteed day rates, but paid a bonus for doing the task in standard time. The bonus line is on the Halsey principle of giving to worker higher pay per hour the more he does. The Santa Fe bonus system also used standard time determinations, and applied them to a slight modification of the Halsey plan. The linking of scientifically determined standard time with wages, whether paid by the day, by the piece, or with a premium, constituted a great advance.

### The Efficiency Principle.

The adoption of the efficiency principle in connection with all shop operations of every kind and description constitutes a further advance. The method of paying employees not by the day or by the piece, but for their efficiency over a long period of time, irrespective of what

* Read before the National Machine Tool Builders' Association, New York City, October, 1908.

jobs they are doing, is part of an advanced system of shop management and shop control. Efficiency is the relation between what is and what ought to be. It is of universal applicability.

If a train is scheduled to run from New York to Chicago in 18 hr. and carry 125 passengers and it actually takes 20 hr. and carries 100 passengers, the time efficiency is 90 per cent. and the carrying efficiency is 80 per cent. Efficiency, is, however, preferably applied to the records of a whole month rather than to those of a single train. Efficiency can be applied to a day rate system, to a piece rate system or to any of the Halsey premium plans. In day rate, if for example the monthly hours are 250, and the worker was present only 200, his day's efficiency is only 80 per cent., and we could well pay him an increased bonus up to 100 per cent. attendance using the Santa Fe curve for this purpose. If the man is working on piece rate we can determine that his output ought to be 1000 a month, and if it is only 800, his efficiency as a piece worker is 80 per cent., and we could pay a bonus for increased efficiency. Efficiency, however, has been most extensively applied to the Halsey premium methods.

### The Efficiency Principle Analyzed.

Under "efficiency" three questions that are usually jumbled together are carefully separated and each one studied and settled without reference to the other. The jumbling of these problems is responsible for most of the difficulties between employer and employee. These three questions are: 1. Current rate of wages. 2. Standard times for given work. 3. Individual efficiency.

1. It is to be assumed that current rates of wages will fluctuate. There will always be bargaining between employer and employee, or the employer may decide what rates he will pay per hour and employ only those willing to work at this rate, or a union may decide that none of its members can be employed at less than a given rate. No employer can force wages downward in a time of great industrial activity and employees cannot force wages upward in a time of great industrial depression.

2. The scientific, accurate and constantly corrected determination of standard time for any and all work is probably the most important yet most neglected part of modern shop control. We know perfectly well what furnaces, boilers, steam engines, dynamos, machine tools, race horses, bicycle riders, and athletes ought to be able to do, and smilarly there is not a job in any manufacturing plant in the United States that cannot be more or less accurately standardized, most of them with extreme accuracy. In work under my direction my assistants have had to give standard times for the repairs of an exploded locomotive and have succeeded within 5 per cent. Stand ard times compared with actual times show exactly where the losses are, why output is costing more than it should.

3. In a given standard time of 5 hr. one man will always take 3 hr. or less, another will always take 10 hr. or more. The standard time is all right, but the men vary in ability ,skill, energy, ambition and persistence. This quality of the man is his own private property, and under this latest system we may pay a man day wages, but we also determine his individual efficiency, so that we knew what men are 120 per cent. men and what men are 50 per cent. men, not as single job, but as to a whole week's or month's or year's work. To pay a man a bonus related to his efficiency is an easy way of securing his co-operation, although there might be other ways not involving money payments.

### A Square Deal Essential.

I do not care how strongly a shop is unionized, no union can consistently object to or prevent either standard time or efficiency statements of employees, provided the intention is a "square deal." They can and do object to a time study of their jobs or to particular forms of bonus. As both of these matters are capable of being met in many different ways the objections accomplish nothing. The main thing for the employer to know is the exact measure of the men and the efficiency of results. The particular method of encouraging efficiency and eliminating the unfit is a question to be handled according to local conditions. It may be encouraging to know that when the square deal was kept in view the handling of the men has always been the easiest part of the problem. Certain men by character and disposition are normally 100 per cent., others normally 110 per cent.

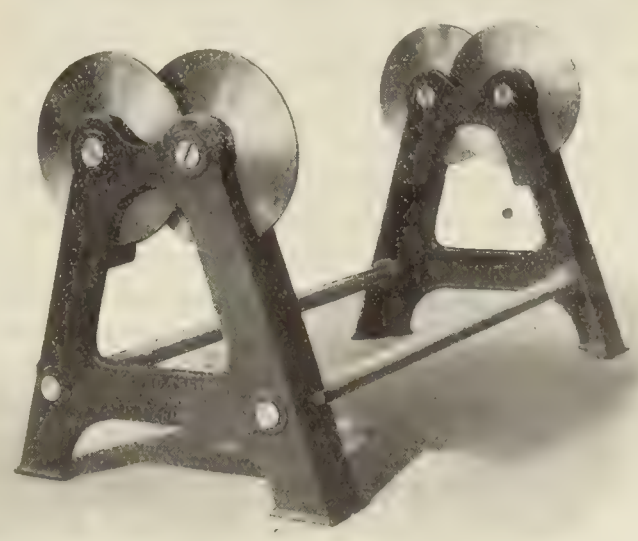
No schedules average correctly which pull down a 110 per cent. man below this figure; no schedules are correct which give a 110 per cent. man an efficiency of 125 per cent. Schedules are tabulated and followed just as closely as men. Schedules that prove uniformly too high on a good man are reinvestigated, and, if necessary, corrected. Schedules that prove uniformly too low on a 100 per cent. man are also investigated and bad conditions are either eliminated so that the schedule comes up, or after full investigation if neither men nor conditions are at fault, it is raised.

The higher a man's efficiency, the lower the cost of his output. If a man falls in efficiency, up goes cost; if a man increases in efficiency, down goes cost and up goes pay, so that any man who is not treated fairly can drop his efficiency and punish his employer. Even if he drops to 90 per cent. he may still be a very good man, but the loss to the firm is severe.

This system applied to a shop of about 1000 men brought the average efficiency of the shop as a whole up from 60 per cent. to 101 per cent., increased output 67 per cent. and lowered direct labor and overhead costs 36 per cent., although the pay of the men increased an everage of 20 per cent. The system was based on absolutely fair treatment of the men, on securing their confidence, of making high efficiency of mutual advantage to both employer and employee.

## The Twentieth Century Balance Tester.

A contrivance of convenient form in which rotary parts, such as pulleys, armatures, polishing wheels, &c., can be accurately tested for radial balance, is made by



The Twentieth Century Balance Tester Made by the Rockford Tool Company, Rockford, Ill.

the Rockford Tool Company, Rockford, Ill. It takes the place of improvised arrangements of horses and parallel straight edges, which at best are inconvenient and likely to be inaccurate.

The Twentieth Century balance tester consists of four nearly frictionless disks mounted in pairs on cast iron frames joined at the bottom by two steel tie rods. The disks are hardened and ground and rotate on delicate ball bearing pivots, which minimize friction. To accommodate work of various lengths the disk frames are adjustable in their distance from one another, the tie rods being secured in one of the frames by set screws for that purpose. Regardless of the position in which the balancer is placed, the disks are always parallel and the device is ready for use without preliminary adjustment except as to length.

The machine is made in two sizes, No. 1, designed to stand on a bench, built to accommodate a piece 22 in. in diameter by 20 in. long, and weighing 30 lb., and No. 2, intended to stand on the floor, capable of balancing work up to 46 in. in diameter by 30 in. long, and weighing 80 lb.

# THE IRON AGE

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## Legislation and International Steel Trade.

Some statements made in the current discussion of economic questions show how incompetent is any treatment of them which assumes that legislation is practically the sole arbiter of international trade. It is so often assumed that a trade condition which appears objectionable may be cured by passing a law, or that there might never have been cause for complaint had proper legislation been enacted in the beginning. A political campaign is peculiarly a time when all such questions come into judgment and it is the rule rather than the exception that legislative remedies are then proposed which later are found to be utterly delusive, often at heavy cost in experience.

It is interesting to note the proposals that have come forward from time to time, and are now being urged again, relative to legislation bearing on the iron trade of the United States. Doubtless the same arguments will be repeated, when the iron and steel schedules of the present tariff come up for readjustment next winter. Without entering at all into the discussion of these questions, as tariff questions, it is pertinent to call attention to one or two considerations that seem to be overlooked. Chief of these is the fact that the conditions under which iron and steel manufacture is now carried on in what are known as the iron and steel countries of the world are the product of many years of development, and therefore will not change suddenly and cannot be violently wrested by legislation or by executive decree. Iron and steel works have been built in the locations in which the industry especially flourishes in the various countries, because the builders were able to assemble raw materials advantageously, and in turn knew of markets close by or within reasonable distance, in which the bulk of their product could be sold. Domestic trade has been built up on lines to a large extent peculiar to each country. Foreign trade in iron and steel has been built up in the case of Great Britain, as an example, because iron and steel were chief among the things it had to offer in exchange for products of other countries, and therefore the latter were, in a sense, bound to take iron and steel. Such foreign trade will stick chiefly for the same reason and not for legislative reasons.

Views now and then put forth appear to assume that there is in other countries a large iron and steel works capacity, with no particular employment, waiting for an opportunity to possess the iron trade of the United States whenever the appropriate enabling legislation is enacted at Washington. This indefinite overhanging capacity is regarded as having a great potential influence upon iron and steel prices in the United States. Among a number of things this view ignores is the great disparity between the normal iron and steel consumption of the United States and the entire capacity of the iron and steel works of, say, Great Britain, Germany, France and Belgium, that can be put upon export trade in iron and steel from all those countries. For example, it was gravely proposed by some of the journalistic doctors, in the heat of the steel rail controversy last year, to remove the tariff on steel rails, so that the rail mills of Europe could supply our railroads. Apparently no obstacle existed, in the minds of these gentlemen, to wheeling into line, within a few months, spare rail mill capacity abroad equal to the production of 3,000,000 to 4,000,000 tons of rails in a year. It is true that there is rail mill capacity in the world in excess of the greatest total output reached in any year. But any important expansion in that product abroad in an ordinary year would be at the expense of other finished forms and of so serious a disturbance of the lines on which the ordinary business of individual plants is laid out as to preclude its being done on anything but high level prices. It may be said generally that apart from exceptional occasions, when home capacity is temporarily inadequate, the wants of American consumers of iron and steel will be supplied by American mills.

Steel plant is not built anywhere in the world with a view to making incursions at profitless prices upon a distant trade ordinarily and legitimately commanded by works built to supply such trade. A good deal was said about the dumping possibilities of a Canadian steel plant built on the east coast some years ago, yet all the British alarm seems to have been without cause. A single small order taken in a colonial market is the sum total of the assessable damage of a half dozen years.

All the trend of events in the iron trade in recent years has been away from a destructive and retaliatory competition in iron and steel products. In the leading iron and steel producing countries the manufacturers of those commodities will largely occupy the field in their respective countries. Home business must chiefly make their profits. Home consumers must buy most of their output at prices determined by domestic standards and conditions. If the evolution of steel manufacture in the leading countries has made profits more certain and uniform than formerly on domestic business—and this is true in the United States, Germany and England—it would be strange, indeed, if the much smaller volume of export business done with countries not strong producers of steel should always be treated as trade to be slaughtered. Much less reason is there for expecting that each of the leading steel countries will prey upon the home markets of the others.

## Harvard's Courses for Business Men.

Harvard University has announced its decision to open certain courses of the new Graduate School of Business Administration, just beginning its first year, to such business men who may wish to avail themselves of the exceptional facilities offered for advanced instruction in important elements of commercial and industrial practice. This action resulted from a considerable demand for the opportunity from business men of Boston and vicinity, who desire to develop their knowledge of the science of business as it applies to those enterprises with which they are associated. Their numerous petitions afford a striking proof of the fact that business is now regarded and conducted, much more than it used to be, as an exact science, and that a thorough training in the underlying principles of the science is now considered

a most desirable and in some cases an essential asset in connection with the practical knowledge gained by experience.

The special field opened to those who are not regularly enrolled in the Graduate School will be that of corporation finance. The lecture hours are assigned to the late afternoon to meet the convenience of this class of special students, and some of the subjects are as follows: Initial stages of organization, incorporation, flotation, management of the capital account, management of the surplus account, consolidation of corporations, types of consolidation, corporation insolvency and receiverships, reorganization of corporations. The course will be conducted by assigned readings and study and discussion of selected cases, in connection with the lectures.

This new Graduate School constitutes an important advance in the pedagogy of business. Other similar institutions are well established, as, for instance, at the University of Pennsylvania, Dartmouth, the universities of Michigan and Minnesota, and a night course at the University of New York. But the Harvard school goes farther than the others. The student must have earned the degree of A. B. or S. B. before enrolment, and must study for two years before receiving the degree of Master of Business Administration. It is provided, however, that special students may take courses useful to them, as it is recognized that many men who do not happen to be college graduates will be qualified for such courses by maturity and business experience. Thus a young business man already familiar with the routine of his business might wish to take a course in economic resources, comprehending such subjects as commercial organization and policy, or the practical work of the first year of the curriculum in methods of determining profit, loss or valuation. It is under this class of special student that business men will be enrolled for the single group of courses. We may presume that other groups will be similarly opened if the initial experiment proves a success, giving to the business man the opportunity to take up the subdivisions of accounting, commercial law, economic resources, industrial organization, banking and finance, transportation, insurance and public business. The list of lecturers and instructors comprises many men holding high place in business, professional and educational life.

## Accident Prevention in Iron and Steel Manufacture.

The extraordinary number of railroad collisions during the first ten days of this month in which work trains have been concerned calls attention to the need of improvement in the methods of controlling their movements. In every instance reported they are the result of general carelessness or disregard of orders on the part of the work train crew. Such trains, operated by irresponsible employees, careless of their own safety, constitute a menace to the security of the whole system of transportation.—*Engineering News.*

Similarly the statistics of accidents in shops and factories show that they are to a very large extent the result of the carelessness of the injured or of fellow employees. Inability to prove negligence by employers in so many damage cases, and the reversal of so many jury verdicts by higher courts, whose decisions take account solely of the law, uninfluenced by sympathy with the injured, must account in great part for the increasing disposition to place laws on the statute books making the compensation certain, regardless of the responsibility of the plaintiff. In the iron industry, the more careful compilation of statistics in recent years and the more systematic and uniform handling of accident matters under the regime of the large corporations, has given an insight into actual conditions which was not possible in the days of the separate operation of a large number of competing plants. In the case of the United States Steel Corporation, as a conspicuous example, while naturally the subject is one on which publicity is not to be expected to the extent common with other operations of the corporation, it is known that a most broad minded and progressive policy has been developed. Not only has it been shown by the statistics collected that employees' negligence is in nearly all accident cases a factor, if not solely responsible, but through the unusual efforts and expenditures of the operating companies it is increasingly difficult (if it may be put that way) for negligence to result in injury.

The efforts of iron and steel companies to reduce the possibilities of accident have been noteworthy in the past few years. In all structural work and in all equipment extra expenditures are made to increase the factor of safety beyond limits ordinarily considered ample. Emphasis has been laid, moreover, on the precedence that must be given over every other consideration, to that of safeguarding employees against injury. At one important conference on this subject, held by representatives of a large steel interest, the policy of the directors was laid down definitely as that of reducing output if the rate previously maintained could not be kept up, and at the same time afford a high degree of security to workmen, considering the character of the employment.

It is quite true that State workshop inspectors have encountered opposition from manufacturers to the enforcement of some of their regulations, just as it is true that these offices have been made use of at times in burdening manufacturing companies or relieving them from burdens, according to the relations they sustained to the inspector or his deputies. But referring specifically to iron and steel manufacture, and over and above compliance with legal regulations, there is no question about the advanced stand taken in the matter of safety provisions. What has proved a particularly hard side of the problem is the indifference of employees and their failure to appreciate the necessity of care and of obedience to safety requirements, under the sweeping introduction of labor saving equipment.

## The Cash Basis in Business.

One of the chief reasons why the automobile industry has withstood the business depression with so few serious breakdowns of credit and such relative prosperity is that the trade had been established on a cash basis. It is true that the unexpected happened, the demand for most classes of cars having been so well maintained that business instead of falling off was finally impelled upward. Yet where sharp competition exists in a trade, where there is a strenuous, expensive striving for business with professional pride as a conspicuous factor, the natural tendency is to book business on a credit basis. Had this been done in the automobile industry it would not be today the most important factor in the machine tool market and a great buyer of materials and supplies; probably it would be an unimportant element, because book accounts would be a heavy load to carry, with bank balances correspondingly small.

This fact has made a potent impression in other lines of business. There are few cases on record of a trade as a whole agreeing to do a cash business and holding to it. In the automobile industry the customer must make a substantial cash deposit to bind his order and must pay the balance upon delivery, the bill of lading generally reaching him through his bank, delivery being made only on payment in full of the bill. Such a condition must seem

almost Utopian to manufacturers of and dealers in the equipment with which automobiles are built. Their customers have never been held to a cash basis, except where credit was poor or unknown. Otherwise, individual cases have been governed by circumstances. While many customers have taken advantage of cash discounts or have paid promptly in 30 days, or whatever other time has been specified in the contract, many others have consulted their own convenience, sometimes because it was necessary, and in other instances because the money might be used otherwise to better advantage temporarily. Serious losses have resulted through failures because of the existing system of credit.

The contrast between it and that of the automobile people has been so sharply defined as to attract unusual and envious attention. It is believed that the effect will be a further tightening of credits and a more universal effort toward a cash basis. Few concerns are strongly enough entrenched to establish an unbreakable cash system without the co-operation of their competitors. But a trade as a whole could do so. No one could logically contend that an agreement of this sort would be in restraint of trade. On the contrary, the opposite would be true. It is not difficult to believe that the more credits are eliminated the better it is for the owners, for their employees and for those from whom materials, supplies and equipment are purchased, and consequently for the community as a whole.

For some years business has been gradually getting nearer to the cash basis, though in the average it has still a long way to go before that enviable condition is reached. But the tendency exists, and seems to grow stronger. The long credits which used to be common practice are no longer tolerated, unless under exceptional circumstances, and almost always with security of some sort to guard against contingencies. A period of depression may temporarily weaken a trend toward improved methods, but it is fair to suppose that the movement will be renewed as business returns to normal. Thus the promise is that credits will be more and more restricted as time goes on. The experience of the automobile trade should have an important influence in this direction. It would be difficult to find a more suggestive object lesson.

## The American Electrochemical Society.

The American Electrochemical Society will hold its annual meeting in New York city October 30 and 31. The sessions of October 30, beginning at 9 a. m., will be held at the Chemistry Building, College of the City of New York, which is located on Amsterdam avenue, running from 138th street to 140th street. The sessions of October 31 will be held at the Chemists' Club, 108 West Fifty-fifth street. The headquarters for registering and information will be at the Hotel Cumberland, Fifty-fourth street and Broadway, opening on the evening of October 29.

An interesting programme has been arranged. President J. H. Finley of the College of the City of New York will welcome the society. Among the papers to be presented are the following: "Use of a Mercury Cathode in the Determination of Metal," by A. Harold Porter and Francis C. Frary; "Passivity of Nickel and Iron," by E. P. Schoch; "Electrolytic Corrosion of the Bottom of Oil Tanks," by A. A. Knudson; "Corrosion of Underground Structures," by Albert F. Ganz; "Function of Oxygen in the Corrosion of Metals," by W. H. Walker; "Theory of Electrolytic Paints," by W. D. Bancroft; "Simple Methods for the Prevention of Electrolytic Corrosion," by Maximilian Toch; "The Lash Steel Process and the Electric Furnace," by F. A. J. Fitzgerald; "Heat Losses of Furnaces Through Walls," by Carl Hering.

An informal subscription dinner will be held on the evening of October 30 at Reisenweber's, Fifty-eighth street and Eighth avenue. A smoker will be tendered the society by special invitation of the Chemists' Club, in the Assembly Room of the club, 108 West Fifty-fifth street, on the evening of October 31.

**The La Belle Iron Works.**—Among industrial operations iron and steel works seem to lend themselves in a special way to treatment in artistically effective publications. One of the latest of these is an 8 x 10 in. flat book of 58 pages, with a colored cover of unusual attractiveness, put out by the La Belle Iron Works, Steubenville, Ohio, and entitled "From Mine to Market." The frontispiece is a group picture of the 14 founders of the La Belle Iron Works, evidently a co-operative enterprise in nail making at its inception in 1852. All the original owners have now passed away, John Wright, Sr., the last survivor, having died in 1907, aged 84. The book is profusely illustrated, the views beginning with the La Belle Iron Works mines on the Mesaba range, and end ing with illustrations of the various products of the Steubenville works, including cut nails, sheets, plates and wrought pipe. The title "From Mine to Market" in spite of its frequent use, is adopted, it is explained, to emphasize the fact that the La Belle Iron Works are self-contained. An unusual advantage in fuel cost is due to the fact that the coal seams owned by the company directly underlie its property or are immediately adjacent thereto. They contain a supply of fuel estimated to be equal to the demands of the next 100 years. The illustrations of the company's blast furnaces, open hearth works and finishing mills show to what an extent the artist can highten the effect of the prosaic and commonly unattractive interior of a steel plant.

The United States McAdamite Metal Company, 18 to 28 Rapelye street, Brooklyn, N. Y., announces some remarkable tests which have been obtained on McAdamite metal. The Henry Souther Engineering Company, Hartford, Conn., made an endurance test of 12,234,600 revolutions and the metal did not fail under a load of 30 lb. up to 10,000,000 revolutions, when the load was increased to 45 lb. Another made by the Royal Typewriter Company was a bearing test against steel ball bearings on a typewriter carriage of over 700,000 revolutions, and it is still running satisfactorily without any sign of wear on the McAdamite casting. Another by the Mechanics' Institute, Rochester, N. Y., showed tensile strength of 46,000 lb. to the square inch. The Van Auken Motor & Machine Company, Bridgeport, Conn., states that the metal has been used on connecting rods on a 100-hp. engine, and these have been found to stand the strain so well that the company expects to adopt the metal on all its connecting rod work.

The United States Sherardizing Company, New Castle, Pa., sole owner of the United States patents, has granted licenses to the following manufacturers: Corbin Screw Corporation, New Britain, Conn.; National Metal Molding Company, Pittsburgh; Lunkenheimer Company, Cincinnati, Ohio; Michigan Bolt & Nut Company, Detroit, Mich.; W. F. Norman Sheet Metal & Mfg. Company, Nevada, Mo.; Stanley Works, New Britain, Conn. The New Castle Forge & Bolt Company, New Castle, Pa., which has operated a sherardizing plant for some time, is completing an order of the American Bridge Company for a carload of bolts, for use in connection with work of the Connecticut Power Company's transmission line from Vermont to Connecticut, also a carload of sherardized roofing nails for the Standard Paint Company, New York.

The J. G. Brill Company, Philadelphia, manufacturer of cars and trucks, is offering $500 in prizes to the senior students of the technical schools of the United States who will be graduated in 1909 for theses on the "Design of an Electric Railway Car for City Service." The first prize is $250, the second $150, and the third $100. Copies of a circular bearing on this subject can be secured by application to the technical department of the company.

# OBITUARY.

BENNETT H. BROUGH.

Bennett H. Brough, secretary of the Iron and Steel Institute, died at Newcastle-on-Tyne, England, October 3. He was educated at the Royal School of Mines, London, and at the Royal Prussian Academy of Mining at Clausthal, in the Hartz Mountains. He was for some time instructor in mine surveying at the Royal School of Mines, and is the author of the standard English treatise on mine surveying (first edition, 1888; tenth edition, 1903). His official connection with the Iron and Steel Institute dates from 1884, when he was appointed co-editor of its *Journal*. In 1890, when the Iron and Steel Institute made its first visit to America, he accompanied it in the



BENNETT H. BROUGH.

capacity of assistant to secretary J. S. Jeans, whom he succeeded in 1903.

Mr. Brough was a knight of the Swedish Order of Wasa, associate of the Royal School of Mines, fellow of the Geological Society, and member of the council of the Institution of Mining Engineers. He also served on the councils of the Institute of Chemistry and of the Chemical Society. He served as juror at the Inventions Exhibition, London, 1885, and at the Paris Exhibition, 1900. He received a medal for the collection illustrating the mineral resources of Great Britain formed by him at the request of the Royal Commission for the Chicago Exposition of 1893. He was the author of numerous papers on mining and metallurgy, published in the various scientific and technical journals connected with arts and manufactures, and his lectures on mine surveying (1892), on metalliferous deposits (1900), and on non-metallic minerals (1903), delivered before the Society of Arts, have been published in book form.

In 1904, when the Iron and Steel Institute paid its second visit to this country, Mr. Brough was in the delegation, and his charming personality won many friends for him on this side of the Atlantic.

JOHN W. NUTE, president of the St. Louis Car Wheel Company, who died at Portland, Me., October 5, aged 47 years, was born in Maine. He was graduated from Lafayette College, Easton, Pa., 1882, and was a tutor there for two years. In 1884 and 1885 he was assistant engineer in the Surveying Department of Philadelphia. He was assistant resident manager of the Wabash Railway at Moberly, Mo., in 1886 and 1887. He began with the St. Louis Car Wheel Company as sales agent in 1892, and became secretary and general manager in 1897. In 1902 he was elected president of the company, which position he held at the time of his death. He was also secretary and treasurer of the Decatur Car Wheel & Mfg. Company and the Atlanta Car Wheel & Mfg. Company. He was a member of the Lawyers' Club of New York and the University, Mercantile and Noonday clubs of St. Louis. He leaves a widow and three sons.

DR. FREDERIC A. C. PERRINE, Plainfield, N. J., died October 20, aged 46 years. Born in New Jersey and graduated from Princeton, he became professor in electrical science at the Leland Stanford University, California, and still later president of the Stanley Electrical Mfg. Company, Pittsfield, Mass. Following this he was a consulting engineer, with offices in New York, Philadelphia and other cities. He was the author of many volumes on electrical science. He leaves a wife, two daughters and a son.

# PERSONAL.

John E. O'Neil has been elected president and treasurer of the Davison Foundry Company, Chicago, to succeed O. H. Davison, who has resigned and retired from the company.

James McNaughton has been elected vice-president of the American Locomotive Company and manager of the sales department, succeeding R. J. Gross, resigned. William L. Reid takes Mr. McNaughton's place as manager of the Schenectady Works of the company. Mr. McNaughton's mechanical experience, coupled with his extensive railroad acquaintance, makes him particularly well fitted for the position. In 1898 he became superintendent of the Brooks Works, and was later made general superintendent. Prior to that time he was affiliated with the Northern Pacific, Wisconsin Central and other Western railroads and prominent in motive power affairs.

W. B. Huskey has been appointed sales manager for the Cleveland District of the Allis-Chalmers Company, succeeding Geo. A. Williams. Mr. Huskey has for several years looked after the crushing and cement machinery department of this company in the Cleveland territory.

A party of officials of the American Sheet & Tin Plate Company, including C. W. Bray, president; Eugene W. Pargny, vice-president; H. L. Austin, auditor, and others, has recently made an inspection trip to the plants at Leechburg, Vandergrift, Scottdale, Morgantown and Monessen.

W. F. Look, who has been superintendent of the Chicago & Northwestern iron ore docks at Escanaba, Mich., for a number of years, has resigned, and is succeeded by H. J. Robertson.

B. F. Bourne, president of the Bourne-Fuller Company, Cleveland, Ohio, returned home October 18 from an extended trip through Europe.

Charles S. Hall has resigned as general manager of the New York Shipbuilding Company, Camden, N. J., and will retire from active business. He is succeeded by George M. Andrews, formerly superintendent of engine construction for the company.

George G. Prentice of the George G. Prentice Company, New Haven, Conn., manufacturer of automatic turret machines, has just returned from a European trip, and brings with him some good orders. He visited England, Germany, France and Italy.

At the annual meeting of the Federation of Trade Press associations, held in Chicago last week, David Williams, publisher of *The Iron Age*, was elected president.

There is now in this country Kommerziewrath Wilhelm Funcke, the president of the Hardware Manufacturers' Association of Germany and the head of the firm of Funcke & Huck of Hagen, Westphalia, one of the largest independent rolling mills. Mr. Funcke, who is accompanied by his son, Oscar Funcke, an engineer, has gone to the Northwest, and will return via Southern Texas.

H. T. Gilbert, who has been manager of sales for the Sharon Steel Hoop Company, Sharon, Pa., has taken the management of the Chicago office of the company, which is established at 604 Commercial National Bank Building. Besides handling hoops, bands and other shapes

made by the mill. Mr. Gilbert will give special attention to the introduction and development of steel fireproofing material, including concrete and twisted bars and all shapes required for this purpose in the erection of large structures. All inquiries for fireproofing and reinforcing material will be handled from the Chicago office.

W. L. Cooper, formerly of the Chicago office of Robert W. Hunt & Co. and for a number of years that firm's representative in England, returned to London last week after a month's stay in the United States.

H. P. James, formerly electrical engineer of the Bryant Electric Company now occupies the position of sales manager for the new line of push button specialties recently placed on the market by the Cutler-Hammer Mfg. Company, Milwaukee, Wis. Previous to his connection with the Bryant Electric Company he was electrical inspector and engineer for the Associated Factory Mutual Fire Insurance companies. In his present position he will have the opportunity to turn to practical account the result of his experience in the inspection, testing and manufacture of electric lighting supplies.

## Plans for Tariff Hearings.

WASHINGTON, D. C., October 20, 1908.—The hearings before the sub-committee on Classification of the Senate Finance Committee, set for October 15, were postponed to a date not yet determined during the week beginning November 3. The sub-committee will then have before it several members of the Board of General Appraisers and probably the chief of the Customs Division of the Treasury Department, who will present suggestions for changes in the classification of the Dingley act, designed to eliminate ambiguities and to provide for a large number of articles that have come into commercial importance since the Dingley law was enacted. The postponement of the hearings has been rendered necessary by the fact that the National Monetary Commission, of which all the Senators on the Finance Committee are members, has appointed a meeting in this city on November 8, and it was found impossible to bring the members of the sub-committee together in Washington on two different occasions during the heat of the campaign.

### Scope of Hearings on Classification.

The work of the sub-committee is limited to the matter of classification, but obviously the question of rates as the result of classification must necessarily be considered, and it goes without saying that no feature of the prospective revision is of greater importance than that assigned to this particular sub-committee, of which Senator Burrows of Michigan is chairman. At the meeting to be held early in November the sub-committee will decide whether before Congress convenes hearings will be accorded importers and domestic manufacturers on the subject of classification or deferred until after the Ways and Means Committee has prepared the preliminary draft of the bill. Due notice will be given in this correspondence of any further hearings, whether held in public or in executive session.

Senator Hopkins of Illinois, chairman of the Sub-committee on Rates of the Senate Finance Committee, has formally announced that he will call a meeting of his sub-committee in this city about November 20. The list of witnesses to be summoned on that occasion will probably be limited to the officials of the Treasury Department and the Board of General Appraisers, but it is understood that written or printed suggestions for tariff changes, including briefs in support thereof, will then be received. Indications are multiplying, which foreshadow vigorous efforts on the part of the Senate Finance Committee to limit the revision of the Dingley act to a very conservative readjustment with but little reduction in the average ad valorem equivalent of the protection afforded by the Dingley law. The steps being taken by the Senate Committee to secure detailed information in advance of the draft of a bill by the Ways and Means Committee are wholly unprecedented in the annals of tariff legislation and indicate a determination to control the form and effect of the new tariff law.

### Court of Customs Appeals.

The proposition for the establishment of a court of customs appeals, which has recently been strongly indorsed by commercial organizations in various parts of the couutry, is now receiving the serious attention of Senator Burrows' sub-committee, which is also charged with the revision of the customs administrative laws. The advocates of this legislation include importers, domestic manufacturers, jobbers and dealers, and the support given it by the domestic producers—who, of course, are interested equally with the importers in securing the early decision of controversies determining rates of duty and therefore margins of protection afforded by the tariff—has given the campaign for the enactment of this legislation a very decided impetus and has added to the interest which the Congressional tariff committees feel in the matter. As heretofore indicated in this correspondence, the bill before Senator Burrows' sub-committee is understood to have been drafted by the Board of General Appraisers and provides for the creation of a United States court of three judges, to have exclusive jurisdiction over appeals from the Board of General Appraisers. The present jurisdiction of the circuit courts and circuit courts of appeals would be abolished should this bill become a law, and the decisions of the new court would be final except in a few instances, in which application for writs of certiorari would lie to the United States Supreme Court.

It is understood that the Ways and Means Committee will hold a meeting in Washington during the week, beginning November 9, to arrange a programme of hearings and to plan the preliminary work of drafting a tariff bill. The efforts being made by that committee to secure information regarding foreign costs of production in the principal industries are not meeting with much success. Reports are coming in from American Consuls abroad describing the failure that has attended their efforts to induce foreign manufacturers to answer the interrogatories prepared by the committee. British manufacturers especially resent the inquiries as inquisitorial and peculiarly illtimed for the reason that the British Parliament recently refused to permit the newly created British commission now engaged in making a census of production to present a similar series of questions to English manufacturers. It seems probable that this particular line of inquiry will have to be abandoned and chief reliance placed upon data secured by the special agents of the Bureau of Manufactures and other confidential employees, who are now gathering information in the leading foreign markets. W. L. C.

**The Milwaukee School of Trades.**—This institution has opened its fall season with students in both the day and evening classes which practically tax the capacity of the school. Milwaukee occupies a unique position in that it is the only city in this country which has taken over, as a part of its public school system, a complete school of trades. The school was started three years ago by prominent manufacturers, who are members of the Merchants' and Manufacturers' Association; and secured quarters formerly occupied by the Pawling & Harnischfeger Company, manufacturer of electric cranes. By a special legislative enactment the School Board this year assumed the control of the school, with an Advisory Committee composed of active manufacturers as part of the Governing Board. The school is splendidly equipped for instruction in machine work, pattern making, plumbing and carpentry, and is accomplishing a great deal for young men who are following the various courses provided. It is under the personal direction of Prof. C. F. Perry, who is assisted by competent instructors at the heads of the various departments. The school will be represented at the annual convention of the National Society for the Promotion of Industrial Education, to be held at Atlanta, November 19-21, and the Milwaukee School Board will pass a resolution asking the association to hold its next convention in that city in the belief that the School of Trades, as conducted by the city, will be of particular interest to those engaged in the promotion of industrial education.

## The Colorado Fuel & Iron Company.

The sixteenth annual report of the Colorado Fuel & Iron Company deals with the operations of the fiscal year ending June 30, 1908. The income account, condensed, makes the following showing as compared with the previous year:

| | 1908. | Decrease. |
|---|---|---|
| Total gross earnings | $22,099,880 | $1,692,419 |
| Total operating expenses | 19,322,064 | 1,611,806 |
| Total net earnings | $2,777,816 | $80,613 |
| Management expenses | 224,449 | 37,935 |
| Balance | $2,553,367 | $42,678 |
| Other income | 327,127 | 68,926 |
| Total income | $2,880,494 | $111,604 |
| Bond interest | $1,054,305 | $1,909 |
| Taxes | 177,127 | *16,436 |
| Total fixed charges | $1,231,432 | *$14,527 |
| Balance | $1,649,062 | $126,131 |
| Rentals, provisions for sinking funds, insurance, losses on railroad ore traffic, guarantees, &c | 1,354,696 | *49,595 |
| Surplus | $294,366 | $175,726 |

* Increase.

The comparative balance sheet as of June 30, condensed, shows the following totals:

*Assets.*

| | June 30, 1908. | June 30, 1907. |
|---|---|---|
| Real estate (property and securities) and equipment | $41,939,320.31 | $41,919,448.66 |
| Cash on hand | 1,548,377,97 | 3,013,222.33 |
| Securities—stocks and bonds | 5,341,939.44 | 5,351,043.69 |
| Bills receivable | 866,849.54 | 676,882.96 |
| Due from customers, less offsets | 2,899,287.71 | 2,576,516.64 |
| Inventories, reserve funds, &c | 4,486,432,02 | 4,178,729.03 |
| Total current assets | 15,142,886.68 | 15,796,394.65 |
| Sunrise & Chicago Stripping and Ore Development | $246,540.80 | $193,184.37 |
| Lime quarry stripping | 34,311.06 | ..... |
| Royalties on leased lands paid in advance | 20,263.43 | 22,600.63 |
| Hospital | 15,101.95 | 23,031.36 |
| Total deferred assets | $316,217.24 | $238,816.36 |
| Total assets | $57,398,424.23 | $57,954,659.67 |
| To profit and loss to balance, being excess of liabilities over all assets | 1,229,932.45 | 1,077,196.02 |
| Totals | $58,628,356.68 | $59,031,855.69 |

*Liabilities.*

| | | |
|---|---|---|
| Capital stock—common | $34,235,500.00 | $34,235,500.00 |
| Capital stock—preferred | 2,000,000.00 | 2,000,000.00 |
| Total capital stock | $36,235,500.00 | $36,235,500.00 |
| Total funded debt | 19,945,000.00 | $19,945,000.00 |
| Total capital liabilities | $56,180,500.00 | $56,180,500.00 |
| Unpaid general and freight vouchers, pay and time checks, interest accrued but not due, taxes, &c. | 1,488,787.97 | 1,892,670.65 |
| Provisional accounts: | | |
| Fund for payment of personal injury | $9,806.65 | $9,806.65 |
| Fund for payment of fire insurance | ..... | 72,537.17 |
| Fund for relining blast furnaces | 154,672.89 | 114,020.66 |
| Fund for rebuilding open hearth furnaces | 15,428.15 | 15,428.15 |
| Fund for emergencies | 21,570.39 | 44,702.84 |
| Sinking fund—real estate | 738,563.50 | 676,012.38 |
| Iron lands development fund | 19,027.13 | 26,177.19 |
| Total provisional accounts | $959,068.71 | $958,685.04 |
| Totals | $58,628,356.68 | $59,031,855.69 |

Other financial statements are given, which enter with great detail into the disbursements by the company.

The statement of production shows sales in the past fiscal year of 2,203,278 tons of coal, 145,463 tons of coke, 37 tons of iron ore and 388,499 tons of iron and steel, all in tons of 2000 lb. The total production for the year was 4,276,095 tons of coal, 789,987 tons of coke, 647,270 tons of iron ore and 391,128 tons of limestone, most of which was used in the Minnequa Works in the manufacture of the iron and steel sold.

President J. F. Welborn's comments on the results of the year are brief. He says:

"The gross earnings from operation were $22,099,880.18, being $1,692,418.62 less than the previous year, a decrease of 7.1 per cent.; the operating expenses were $19,322,064.45, being $1,611,806 less than the previous year, a decrease of 7.7 per cent., and the net earnings from operation were $2,553,366.55, a decrease of $42,677.67, or 1.6 per cent. The net income from all sources was $2,880,494.03, being $111,603.81 less than the previous year, a decrease of 3.7 per cent. After providing for all fixed charges, sinking funds, rentals, &c., there remains a surplus carried to the credit of profit and loss of $294,365.51.

"The improvements referred to in the last annual report were completed early in the year, and the expenditures for maintenance at all of the properties have been on a liberal basis, with the result that their physical condition has been improved, and the company is now able to do a much larger business than ever before. It can safely be said that, with a renewal of the demand for the company's products sufficient to permit of full operations, the gross earnings will exceed those in former times, and the ratio of net income to gross earnings will be increased."

### The New Board of Directors.

Five new directors were elected at the annual meeting of the stockholders of the company held in Denver October 19. The new directors represent the Rockefeller interests in the company. They are F. T. Gates, Star J. Murphy, H. F. Cooper, D. C. Beaman and J. A. Writer. The directors who retired were Edwin Gould, Winslow S. Pierce, Alvin W. Krech, Benjamin Nicoll and E. W. Oglebay.

The Rockefeller interests, whose representatives were formerly active in the management of the company, again assumed an active share in the direction of the company's affairs several months ago, when the directors elected L. M. Bowers vice-president, in charge of the company's finances. Mr. Bowers has not been re-elected, and to his other offices has been added that of chairman of the Executive Committee, George J. Gould retiring from that position. The election of these additional Rockefeller representatives to the board leaves the practical control of the company in the hands of the Rockefeller interests. E. H. Harriman's name was retained in the list of directors.

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At Indianapolis, Ind., 46 manufacturing companies have organized a freight bureau to look after railroad rates and particularly to correct what is considered discrimination against that city. The Illinois-Indiana boundary established by the railroads as a freight basing line is an important factor in the situation. On one class of commodities cited, Chicago has a rate of 30 cents to Kansas City, while Indianapolis pays 55 cents. On a carload this would give a Chicago manufacturer an advantage of $55.20 over his Indianapolis competitor. A number of instances have been brought forward, since the agitation began, of contracts taken by manufacturers in other cities whose rate was more favorable than that of Indianapolis, though the haul was less. It is said that Indianapolis has lost some industries because freight rates were against that city and has found this condition a handicap in inducing new industries to locate.

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The reorganization committee of the Sheffield Coal & Iron Company, Sheffield, Ala., consisting of E. C. Converse, James Gayley, Randal Morgan, William M. Douglass, and C. William Funk, has sent a circular to stockholders referring to a change in its plan. Of the $500,000 of cash subscriptions from stockholders originally called for, $350,000 has been pledged, and the committee has arranged to cover the balance by an underwriting. With this modification the original scheme will be carried out. It is probable that the mortgages on the properties of the Sheffield Coal & Iron Company and the Sheffield Coal, Iron & Steel Company will be foreclosed, so as to facilitate the acquisition of all the properties.

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In the eight months ending with August the production of pig iron in Belgium was 782,700 tons, as against 950,640 tons in the first eight months of 1907.

# The Machine Tool Builders.

## The Annual Meeting of the National Machine Tool Builders' Association.

The opening of the seventh annual convention of the National Machine Tool Builders' Association at the Hotel Imperial, New York city, on Tuesday, October 20, was marked by a large attendance, and the session proved to be one of the most interesting ever held by the organization, largely because of the importance attached to the reports of the officers and the interest connected with the address of the chief speaker of the day.

Previous to these features of the meeting, the usual routine attending the opening sessions of the organization was carried out. In this connection, after calling the meeting to order, President Fred L. Eberhardt of Gould & Eberhardt, Newark, N. J., announced the following committees:

Auditing: A. E. Newton, Prentice Brothers Company, Worcester, Mass., and C. A. Hoefer, Hoefer Mfg. Company, Freeport, Ill.

Resolutions: E. M. Woodward, Woodward-Powell Planer Company, Worcester, Mass., and A. T. Barnes, W. F. & John Barnes Company, Rockford, Ill.

Nominations: F. E. Reed, F. E. Reed Company, Worcester, Mass.; J. B. Doan, American Tool Works Company, Cincinnati, Ohio, and Winthrop Ingersoll, Ingersoll Milling Machine Company, Rockford, Ill.

President Eberhardt and Secretary P. E. Montanus served as the Press Committee.

### The Report of the President.

President Eberhardt then presented his report, which is in part as follows:

The experience of the past year amply demonstrates that the profits of busy years must support the business during a depression—a fact which the purchasing public must not be allowed to lose sight of. Any effort of accomplishment in life must be sized up and judged from the standpoint of the average. Therefore it behooves us to be ever ready with our hand upon the lever and our eye upon the track.

There is a vast difference between the pioneer and the squatter. The constant endeavor on the part of the American machine tool industries in forging into the future and keeping and maintaining the record of being in the front of the procession of progress costs money—hard dollars and cents—which must be earned in order to be spent. The National Prosperity Association of St. Louis says, "Our prosperity came with the prosperity of the railroads and it declined when adversity struck the railroads. We do not believe we can have the full measure of prosperity again until the railroads are prosperous."

There is no question in my mind but that the depression we are emerging from started with the larger interests, and it seems to me from observations that can be made that the clouds are breaking, and we will soon look back on the business experience of 1908 as a thing of the past, from which we may philosophize, we hope, under more pleasant conditions later on—but do not let us forget the lesson.

It seems to me that it is not only a natural, but a very sensible thing for manufacturers of allied interests to get together periodically and discuss interests which they may have in common, just as it has been the spirit and intention of our association to work out our affairs in an intelligent manner. It is for this purpose that we are gathered here at this time, and in order to better facilitate this end, we have set apart an entire afternoon for our various committees to convene individually, and to better discuss the various subjects they may have to consider.

In conclusion I would submit for the consideration of our members, the appointment or election of a Committee on Foreign Trade and Affairs. It seems to me that there is a vast amount of data and information which might be accumulated and tabulated with particular reference to our industry, which would give the American machine tool manufacturer a more intelligent idea of the obstacles and handicaps with which he is now confronted, not only between our own country and other countries of the world, but that will also point out the advantage or disadvantage, if any, in comparison with fighting for trade with the same foreign country that some other foreign nation might be fighting for. The information which such a committee might gather would be useful and invaluable in presenting the claims of our particular industry before the United States Government, Department of Commerce and Labor. Judging from the correspondence I have seen, the present head, Hon. Oscar Strauss, is very desirous of hearing from the various industries of this country as to what their needs are, and I feel that this department is looking for information which an association like ours would then be in shape to give.

I would also suggest for your consideration the appointment or election of a committee to study the subject with an idea of devising ways and means to minimize or prevent accidents in the machine shop. I understand that the American Foundrymen's Association has such a committee at the present time, of which Thomas D. West, of Sharpsville, Pa., is chairman, and believe that the work of such a committee could not but help be of great future good. This question may be brought more forcibly to our attention later on, should our government inaugurate the employer's liability measures which are being so strenuously advocated by President Roosevelt.

The statement of W. P. Davis, treasurer, showed the organization to be in an excellent financial condition, and Secretary Montanus followed with his annual report as follows:

### The Secretary's Report.

Since the May convention we have made active and strenuous efforts to increase our membership, and the various chairmen of the machinery committees furnished me with a lengthy list of eligible people to whom I wrote courteous letters, inviting them to join the association before the fall convention.

Altogether and up to date I have sent out 20 apprenticeship diplomas called for by 11 different firms, thus indicating growing interest in the apprenticeship system as outlined in our previous conventions.

An important pamphlet issued by the Department of Commerce and Labor, called "Tariff Series No. 3," being "Tariffs on Machines, Machine Tools and Vehicles," was received, and on acknowledging it I requested that a copy be mailed to each of our members. I have just received an acknowledgment stating that the request would be cheerfully complied with, and you will no doubt receive a copy within a few days, and you will find it of exceedingly interesting matter and one of value for future reference.

During August and September I issued circular letters Nos. 65 and 66, in reference to what had been done by the membership on the matter of a uniform cost accounting system, which has been an important subject before this body for several conventions, and at our last convention a resolution was adopted to accept the recommendations of the Cost Accounting Committee and to adopt the plans as outlined. The letters referred to asked for information as to what had been done by the members along these lines, and 76 replies were received, while 15 did not answer.

Numerous letters received from the chairmen of the various machine tool classifications indicate a very active interest in all matters pertaining to the industry, and therefore I am permitted to say that this most important branch of our association is quietly working out beneficial results.

The reports of the various committees which followed showed the members to be active in the affairs of the organization, but nothing of particular moment to be added to the reports as entered at the last meeting, was offered.

Capt. Godfrey L. Carden, who has spent six months of the present year in inspecting and reporting on installations and shop economics of machine tool manufacturers in western Europe, was then introduced.

Captain Carden, whose reports to the Department of Commerce and Labor, to which he has been temporarily attached, has aroused considerable interest among the machine tool manufacturers, stated that he visited shops in Germany, Switzerland and northern Italy, France and a portion of the United Kingdom, and proved in his address that he not only investigateed shop conditions, but had an eye open for the possible commercial advantages of American manufacturers. Among other things he said:

### Captain Carden's Address.

Until the present year there has been no special agent in the field reporting solely on the machine tool situation. Other interests represented comprise the manufacturers of agricultural implements, the cotton manufacturers, the milling interests and the cotton seed oil manufacturers. The appropriation for the present fiscal year is less by $10,000 than it was for the previous fiscal year, and it will be recognized that the extent to which these investigations can be carried on, the number of men who can be put into the field, and the diversity of interests which can be represented, is largely a matter of appropriation.

I mention these facts because in a recent address of the Secretary of the Department of Commerce and Labor the necessity of a closer working agreement between the Department and the manufacturers generally was emphasized. The Department has labored to bring about not only a national congress of manufacturing interests, but the existence of a national advisory committee at the Capitol. In the lists of manufacturing associations represented at the last national congress I fail to find the name of the National Machine Tool Builders' Association.

AMERICA HAS LED THE WORLD.

In the manufacture of high-grade machine tools America in the past decade and a half has easily led the world. We have enjoyed the benefits of an enormous territory in which our facilities have hardly been equal to the demand. Under existing conditions we have not felt foreign competition, and the result has been that many of our manufacturers have been enabled to specialize, and by that I mean they have been able to confine their efforts to the manufacture of a very limited number of designs of tools, and in some cases, as you all know, American manufacturers have confined themselves to one tool design, and even to one size of that design. Under such conditions it has been possible to give one's whole attention, thought and energy to the development of a special tool, and it is not to be wondered at that the superlative has been attained in the building of certain special machines under such conditions. As the antithesis, I recall asking a prominent French machine tool manufacturer recently how many different designs of tools he manufactured, and he replied, 152. He added: "If our territory were not restricted, perhaps, we, too, could specialize, and if we could but specialize as do you Americans it ought not to be impossible for us to gain a like amount of knowledge, but we have not a sufficient territory, and in order to keep our shops going it is necessary to take almost every order that comes along, and for this purpose we must keep a vast quantity of patterns on hand." There are but few shops specializing in Europe in the American sense of the term. I have in mind now one firm which is confining its attention largely to lathes, and it is able to do this by reason of having practically a subsidy from its Government in the shape of constant orders for Government equipment.

But the country which concerns our American manufacturers more than any other is Germany. Owing to enormous demands at home, our American manufacturers have not been able to give that close attention to the foreign field which they might otherwise have done had conditions here been unfavorable. There are American firms which do know and appreciate the foreign situation, but my own observation impels me to believe that the majority of our manufacturers have either an erroneous or inadequate knowledge of the foreign field. In consequence of this they have not given the German, in particular, credit for learning and developing. Many of our manufacturers do not know what has become of their tools beyond Sandy Hook; they do not know where their tools are placed abroad, and many are unable to say what prices have been charged by the agents. I mention this as illustrating the apparent helplessness of many of our firms in the matter of their selling connections.

In the year 1907 the German machine tool manufacturers imported 9106 complete machine tools. Of this number, about 70 per cent. came from America. During the same year German machine tool manufacturers exported 52,553 complete machine tools and covered 23 foreign countries in these sales. In point of weight almost as many machine tools in the shape of accessories and spare parts were exported by the German manufacturers in the same period. Of all the countries covered by the German exporters, Italy was the heaviest purchaser, and, in my opinion, Italy, of all European countries, is more ready to buy American machine tools than any other. Bear in mind the figures of 52,000 and more machine tools exported by German manufacturers in the last year, and it must be evident that there is a demand for tools somewhere outside of our own country.

Broadly speaking, the American machine tool excels, both in design and workmanship, and in the accuracy with which it works, the foreign built tool. Size for size, the American medium class machine tool brings more money than does the foreign built article. A German machine tool which sells for about 8000 marks ($2000) represents the same size and class American tool which brings abroad 10,000 marks ($2500).

American machine tools are not bought abroad as a rule because of superior merit. The moment a foreign tool approximates in point of accuracy to an American machine tool, the foreigner will buy the product of his own country; this is natural and to be expected. The foreign buyer has been educated up to a point where he expects to pay more for an American machine tool than for a European built one.

TECHNICAL EDUCATION.

It is technical education which is placing Germany where she is to-day in the manufacturing field. Germany probably leads the world in economics and in economical attachments and devices. At one technical institution for learning, Charlottenberg, they are graduating no less than 1800 young men every year; they are maintaining a student force there of between 4000 and 5000, and not only Charlottenberg, but Leipzic, Munich, Hanover, Dresden, Dantzig and many other technical colleges are carrying on a similar work, and these young men, as fast as they are graduated, carrying with them the highest degree of engineering education, are absorbed by the great iron and steel and machinery plants, and they are the men who are making Germany what she is in the world to-day. If the German machine tool builders were only able to specialize as do many of our own, I would predict that it would not be long before they were abreast of our designers.

We excel the foreigner, whenever we do excel him, by reason of superior technical knowledge. This is the crux of the whole situation, and it is sheer madness for any American firm which proposes to hold its own in foreign competition to ignore technical education. Fifteen years ago one might have traveled the length of the Rhine territory, which is one of the great manufacturing districts of Germany, and everywhere, I am told, one would have found English tools; to-day all this is changed, there is only one English house, so far as I was able to observe, which is really doing a serious business in Germany, and such English tools as are in service in German shops date their origin from purchase of years gone by.

There are a great many machine tool houses in Germany. Many are mediocre, others are doing good work, while there are a few which may be classed as really dangerous competitors of the best American machine tool firms. If any American manufacturer doubts this statement, I invite his attention to the Chemnitz District, and in particular to the establishments of J. E. Reinecker, Wanderer Works, Schubert & Salzer, and Werkzeugmaschinenfabrik Union. I have not mentioned here the Loewe Works, the shops in Carlsruhe or in Grefenstaden, or in Mulhouse, or in other noteworthy places, all of which are relatively doing as good work. It matters not whether all or any one of these firms can actually be accused of copying American machines; the fact remains that the work turned out by these German establishments so closely approximates to standard American work as to make it very difficult for the general run of buyers to detect any difference.

It is apparent, however, that during the last two years some of our manufacturers have neglected the foreign trade, and that we have not been as careful in matters of deliveries as the business warranted. One of the leading commercial men of all Prussia said to me in the course of conversation that he verily believed that the German tool builders had been able to profit during the last year by the failure of American firms to make good their representations regarding deliveries of the past two years.

WAGES.

There appears to be a tendency to advance wages among the better class of the German shops, especially in and around Berlin; the Chemnitz District pays less in wages, I believe, than any other part of Germany. At the Lowe Works the wages for good tool men vary from 85 pfg. to 1 mark 20 pfg. an hour (a mark is about 24 cents, and there are 100 pfgs. to a mark). On the whole, however, they do not yet understand, in a great majority of German shops, how to operate the greatest number of tools with the least number of men; this calls for the highest degree of intelligence and skill, such as found to-day in a most enhanced form in our best American shops. As I remarked before, however, we have not been giving the German credit for learning in the same line, but he is learning, and he is learning fast, and if we propose to keep ahead in shop efficiency, we must look to the training of our workmen from boyhood up. In this connection I cannot refrain from calling attention to the high state of discipline in the German plants, and for this fine discipline the Germans have really to thank their military system. It is the German army of to-day which is the great institution of learning for the mass of the German people, and to thoroughly understand and appreciate German economical development, the German army must be reckoned with.

The Germans are rapidly acquiring technical knowledge, and already they have an extraordinarily fine shop organization; they have everything but territory, and with territory, the ability to specialize. Their country is too restricted to make it possible for a new firm to hope to live on domestic trade. Export trade is therefore the life of the nation, and every thought and every energy is directed to-day in the interest of export.

CONDITIONS IN OTHER CONTINENTAL COUNTRIES.

In Switzerland to-day there is only one machine tool building house of importance, and the same statement applies to Italy. Switzerland, however, is a large user of machine tools of high grade. Here is a wonderful country, devoid as it is of coal and iron, yet enjoying almost unlimited water power, without a seaport, and yet manufacturing the highest grade of machinery of noted lines and exporting this machinery to all parts of the civilized world. For this work the highest grade of machine tools is demanded, and I know of no finer installation in all Europe of high grade machine tools than can be found on the floors of the Brown, Boveri & Co. works.

Northern Italy promises in the next 10 years a greater industrial development relatively than any other part of Europe, and I know no part of the Old World so friendly to Americans as Northern Italy. At the time of my visit in April last I observed industrial plants in process of erection over a vast extent of territory on the south slope of the Alps. Italian and Swiss engineers have combined to make available a vast amount of electric power in the Alps for

Northern Italy. The street cars in Milan to-day are run by electric power conveyed from the Alps, and in the little town of Legnano more than 40,000 hp. is used.

Within the last two years and a half it is calculated more than 50,000,000 lires ($10,000,000) worth of machine tools were imported for new Italian shops, and of this amount American manufacturers, it is estimated, secured about 60 per cent. My own view on the subject is that we should have secured 90 per cent. To be sure many of the orders were for automobile factories, and much of this business has now resolved itself into a few large plants; but, aside from the automobile business, the industrial development in northern Italy is exceptionally good and has been good during the present year. The Italians are enthusiastic about their country, declaring that it is a new country and that it dates its existence from the time independence was gained under Garibaldi. This territory should be studied by our manufacturers, and right here let me say that our great need is to export, with our tools, men. Machine tools cannot be sold in Europe as at home. If the foreign trade is worth having, if our manufacturers believe that we should develop foreign connections, and be in position to avail of this foreign business, when to hold our organizations together, when affairs and conditions at home are below normal, then we must go at it intelligently and with fixed purpose. Men must be exported with our tools, and they must be men who will live abroad and become seasoned.

American machine tool business in France has of late been largely confined, it would seem, to the automobile builders, and yet there is an enormously rich section in central France where very few of our manufacturers are personally known and where very few go. I have referred in some of my special reports to finding certain American tools in interior French plants, which were not liked because they were not understood; on the other hand, I know of American machine tools which are regarded with special favor in certain shops, and largely because some American manufacturer found it possible to illustrate the working capacity of the machines. It was my observation that there were more English tools going into French shops than elsewhere on the Continent.

I hope I have awakened enough of interest to make it appreciated that the foreign trade is one requiring the very closest attention and thought. In Europe it is a business which is open only to the high grade tools. That there is a vast market for machine tools abroad is apparent, not only from our own export figures, but from the export figures of other countries. The object of the Department of Commerce and Labor has been to assist our manufacturers in making known through the *Daily Consular and Trade Reports* the existence of possible markets and the state of development in the trade in foreign countries. I think you will all appreciate that this requires close working agreements between our manufacturers and the Department and that exchange of ideas and mutual assistance which was suggested by the secretary in his address before the last National Congress.

**Remarks by J. B. Doan.**

Supplementing Captain Carden's address, J. B. Doan spoke on the necessity of manufacturers taking steps at once to establish better foreign relations. He gave the result of his observations on a recent visit to Europe, continuing in part as follows:

I desire to suggest that a large and strong committee of this association be appointed to devise ways and means for the promotion of European and other foreign trade along the following lines and any others which may be suggested as the subject is developed by that committee:

*a.* That this committee should consider the matter of prices and offer this association advice and suggestions as to the advisability of establishing in the various countries prices which are proper to meet the competitive conditions encountered there, having in mind that these conditions may be entirely different than those we have at home.

*b.* That this committee should consider the subject of advertising in mechanical papers which have a foreign circulation, and should request of the publishers of said papers an increased and more efficient service in all foreign countries.

*c.* That this committee should address itself to Secretary Strauss of the Department of Commerce and Labor, and commend the efforts of its officer, Capt. Godfrey L. Carden.

*d.* That the committee should use its best efforts to have this work continued not only in Europe, but in every continent on the globe.

*e.* That the committee should make up a schedule of the duties imposed by foreign countries on American machine tools and endeavor to have the same reduced, in reciprocation of which the United States should reduce the duties on some articles we find necessary to import. Example: We import goods in greater value from France than we export to her; therefore, why permit her to raise the duty on our machine tools? This can, no doubt, be prevented by the proper effort, and the same effort for more advantageous tariff conditions can be made with the other countries.

The writer is informed that during the last Government fiscal year the Bureau of Commerce and Labor returned to the United States Treasury the sum of $13,000, which might have been used in the interests of the machine tool builders along the same lines as followed by Captain Carden had we made a sufficient effort to secure such service.

I am also informed that the agricultural implement manufacturers, the woolen manufacturers and several other lines of trade have obtained Government appropriations for the furthering of their business interests abroad. Up to this time the machine tool builders have neglected the opportunity.

I suggest that this proposed committee should consist of at least 12 representative machine tool builders who have interests abroad, who are more or less posted on the subject of foreign trade, and who will give their time to the development of this very important work. The present depression in the machine tool business only emphasizes the necessity of a larger foreign trade, which I am confident can be had with the proper effort.

**WEDNESDAY MORNING.**

Previous to the address of Harrington Emerson on "Different Plans of Paying Employees," Secretary Montanus referred to the advisability of having a Committee on Ocean Bills of Lading. William R. Corwine of the National Council of Commerce briefly outlined the objects of that organization and urged the association to become a member of that body. Action on the matter was deferred.

The following were admitted to membership: Powell Tool Company, Worcester, Mass.; Charles P. Allen Company, Barry, Mass.; W. E. Gang & Co., Cincinnati, Ohio.

Claims for the spring meeting of the association were put forward for Milwaukee and Rochester by representatives from those cities, but the next place of meeting was not decided upon, the president announcing that action in the matter would be taken later on. The rest of the morning's session was given over to the hearing of Mr. Emerson's paper and the subsequent discussion.

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The chairmen of the Committees on Janitors and Supplies of the New York Board of Education have decided to discontinue the use of oxalic acid and rock salt as a fuel having compound at the various school buildings in New York City. Of the 500 janitors in charge of school heating plants many had reported savings of from 10 to 30 per cent. by using the compound in connection with refiring their ashes, but a careful examination into the matter had shown an injurious effect of the chemical upon the shells and tubes of boilers. It was, therefore, decided that whatever the saving might be, it was not best to attempt it at the expense of hazard to the boilers. The investigation will be continued under the new order with a view to discovering whether the enforced refiring of ash pit refuse will not produce practically as great a saving as has been claimed for such refiring combined with the use of oxalic acid and salt.

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The Youngstown Sheet & Tube Company, Youngstown, Ohio, has under way some improvements and additions to its rod and wire mills at Struthers, Ohio, which it bought some months ago from the Morgan Spring Company. The present buildings are being used for the wire department, the output of which is being doubled, while the rod mill is also being double stranded. Some new buildings are being erected which will be used for the nail factory, warehouse and pickling and galvanizing departments for barb wire and fencing. It is expected that these new additions will be completed and the machinery ready for operation about January. This company has been delayed in starting its two new blast furnaces which are about completed, but it is expected that one stack will be started about October 20 and the other in November.

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The export trade returns of Great Britain continue to make unfavorable comparisons with those for 1907. For the first nine months of this year the iron and steel exports amounted to 3,109,120 gross tons, as compared with 4,002,919 tons for the corresponding period of 1907, and the value fell off from £35,623,000 to £28,246,000. In all manufactured articles the decline in value of exports from the total for the first three quarters of 1907 amounted to £31,471,000.

# NEWS OF THE WORKS.

### Iron and Steel.

The National Mfg. Company, N. S., Pittsburgh, recently received an order from one company for 50 of its small wrought steel annealing boxes with the Johnston patent strip for use in tin plate work, and orders from two others for six and eight boxes, respectively. The construction of this type of box, with the fact that it can be repaired, after considerable service, thus prolonging its life, is one of the reasons for its extensive use in sheet and tin mills.

The Forter-Miller Engineering Company, Hartje Building, Pittsburgh, is installing for the Latrobe Steel & Coupler Company, Melrose Park, Chicago, a 30-ton basic open hearth furnace, which makes the third furnace of this capacity installed for that plant by the Forter-Miller Company. The Riter-Conley Mfg. Company, Pittsburgh, Pa. has the contract for the steel addition to the open hearth building to contain this new furnace, and Julian Kennedy, Pittsburgh, is consulting engineer for the work.

The Pope Tin Plate Company, Pittsburgh, had five of its 12 hot mills in operation last week at its tin plate plant at Steubenville, Ohio.

Geo. H. Lowe, Edward H. Ball and others have leased the rolling mill at Elmira Heights, Elmira, N. Y., and are making extensive improvements, remodeling, refitting and re-equiping the entire plant. The remodeled mill will have a capacity of 30,000 tons of bars per year, and will be ready for operation about November 1. Gustav Benjamin, president of the Federal Rolling Mill Company, Buffalo, N. Y., will have full charge of the sales department.

No. 3 furnace of the Woodward Iron Company at Woodward, Ala., will be put in blast by November 1.

Repairs are being rushed on No. 3 furnace of the Republic Iron & Steel Company at Thomas, Ala., which will probably be ready for operation early in November.

### General Machinery.

The Thomas Carlin's Sons Company, 1600 River avenue, N. S., Pittsburgh, has in the past week secured orders for the following belt driven shears for use in iron and steel works: One No. 61, to cut 2¾ in. square; one No. 38, to cut 1¾ in., and one No. 40, to cut 1¼ in., all for shipment to Kansas City, Mo. The company is also building a 9-ft. dry grinding pan for a Pittsburgh concern.

The Emerson Steam Pump Company, Alexandria, Va., has purchased 3 acres of ground on which it will erect a new manufacturing plant. Plans for the new buildings have not yet been perfected, and purchases of additional machine tools will not be made until the new plant is completed.

Bids will be received until October 24 at the office of the president of the University of Alabama, University, Ala., for engineering, laboratory and power plant equipment for the engineering building and for materials and construction of a central heating system.

The Universal Machine Company, Albion, Mich., which has been incorporated with a capital stock of $100,000 to manufacture the Universal typesetting machine, the invention of A. G. Baker, is negotiating with the Board of Trade of Saginaw with the view of securing a location in that city for a new plant. The company is at present perfecting the dies and patterns for manufacturing the machines.

The High School Board of Education of Berkeley, Cal., will receive bids until November 2 for equipment for the Department of Mechanical Arts of the Berkeley Polytechnic High School, including machinery, motors and other electric apparatus, tools, benches, &c. J. V. Mendenhall is clerk of the board.

The McDermott Tool Works, Martins Ferry, Ohio, manufacturer of general forgings, drilling and fishing tools for oil, gas and artesian wells, is getting ready to market a new galvanizing machine, but owing to delay in receiving the gears the machine was not completed, but is now being assembled. The machine is stated to have a number of new features and advantages over present machines now on the market.

### Power Plant Equipment.

The construction of an electric road connecting Waco and Austin, Texas, is being planned by the W. D. Boyce Engineering Company, St. Louis, Mo. It is understood that arrangements for financing this enterprise have been completed, but plans and specifications of the work have not yet been entirely worked out. The length of the road will be 110 miles. It will run through Temple, located about midway of the route, where a power house is being erected at a cost of about $200,000.

The city of St. Marys, Kan., recently authorized a $47,000 bond issue, of which $15,000 will be devoted to the construction of an electric light plant and $32,000 for a water works. It is stated that bids for equipment and material and contrsuction will close November 10. The engineers are Burns & McDonnell, Kansas City, Mo. H. B. Mees is city clerk.

The Gas Engine Company, Cleveland, Ohio, is now manufacturing the Wile gas producer, formerly made by the Wile Gas Power Company.

The Citizens Electric Service Company, Bath, N. Y., is in the market for two gas engines to be installed in its new power plant. Bids will be received by the Tower Engineering Company, 226 Ohio street, Buffalo, N. Y.

### Bridges and Buildings.

N. D. Yant & Co., fabricators of structural steel, Beaver avenue and Rebecca street N. S., Pittsburgh, have been awarded a contract by Capt. F. C. Boggs, general purchaser for the Isthmian Canal Commission, Washington, D. C., for the steel work on a new power plant to be erected at Colon, Isthmus of Panama. The material is now being turned out and must be shipped within a few weeks, this being a rush contract.

### Foundries.

C. L. Tittle, who conducts a general foundry business at Blairsville, Pa., making a specialty of castings for steel works, glass houses, &c., has recently improved his plant by the installation of a trolley in the foundry and by considerably increasing the floor space. The business was established in 1877, being the oldest foundry in that district, and all of last year it was in operation every day, running close to full capacity.

The New Orleans Foundry & Iron Company, New Orleans, La., which recently purchased the plant of the Schwartz Foundry Company, has organized with a capital stock of $100,000 and intends to make improvements to the plant. In addition to carrying on a general foundry business the company manufactures sugar mills and sugar mill machinery. Louis Kohlmann is president; A. Katz, vice-president, and S. Kohlmann, secretary and treasurer.

The new plant of the Coatesville Foundry & Machine Company, Coatesville, Pa., is equipped with modern machinery for the manufacture of gray iron castings, the main foundry building being 114 x 210 ft., in which is a 20-ton cupola. A complete equipment for making patterns has been installed and a modern machine shop fitted up for finishing castings.

The Lebanon Foundry Company, Lebanon, Ind., which purchased the plant of the Lebanon Radiator Company, reports that business has picked up considerably the last 30 days and that prospects are bright. The company does a general foundry business in connection with the manufacture of radiators, making a specialty of automobile cylinder work.

The Atlas Foundry Company, recently incorporated at Marion, Ind., with $16.000 capital stock, reports that it will be ready for business December 1. It has one contract that will run the foundry to two-thirds its capacity. The officers are: M. F. Gartland, president; J. H. Schaumleffel, vice-president, and John C. Haswell, secretary-treasurer. The company reports the outlook for business good.

### Fires.

The plant of the Milwaukee Woven Wire Company, Milwaukee, Wis., was seriously damaged by fire October 15, the total loss being estimated at $20,000. The factory building was erected seven years ago and was valued at $7000 the destroyed contents being valued at $13,000.

The plant of the Agee Wagon Works, Camden, Ark., was destroyed by fire October 16, the loss being estimated at $40,000.

The fire at the plant of the Youngstown, Iron & Steel Roofing Company, Youngstown, Ohio, October 17, was confined entirely to the lath department, located four blocks away from the plant where black and galvanized iron and steel sheets and other products are made, so that there will be no delay whatever in filling orders by the company for black and galvanized sheets. The damage done to the lath department, which did not exceed $50,000, will be repaired in a very short time and no serious delay will be experienced in filling orders from this department. The loss was almost entirely covered by insurance, and the work of rebuilding the burned portion of the lath department has already been started.

### Hardware.

The Davenport Ladder Company, Davenport, Iowa, formerly owned by W. C. Hayward, has been incorporated with an authorized capital of $50,000. The business will continue in control of the same interests and management as before, and although no extensive enlargements are contemplated for the present, the company will probably increase the capacity of the plant some time during the coming year.

A fire loss sustained by the Meyer Furnace Company Peoria, Ill., October 14, seriously damaged the plant. The extent of the damage is at this writing not definitely ascertained, but the greatest loss is due to the destruction of patterns. Contracts have already been let for new patterns, and the company hopes to be in position to promptly execute all orders within a few weeks. Luckily the warehouse was less seriously damaged, and from the stock on hand presses needs can be taken care of by prompt shipments from this source.

Butterfield & Co., Derby Line, Vt., took advantage of the lull in trade to improve their plant. They have entirely refitted their toolroom, installing machines with the idea of constantly increasing the accuracy of their tools, which they regard as a

most important part of their product. A complete line of new machines is being put in for the manufacture of their Reece and Derby screw plates, which will double their present capacity. New machinery is also being added for the manufacture of reamers. Other improvements include a new store house, 75 x 125 ft., and new offices.

**Miscellaneous.**

S. M. Wright, president of the Wright Lime & Cement Company, Memphis, Tenn., is considering the erection of a plant at New Orleans, La., for the manufacture of steel slack barrels and other steel packages.

The International Nut Company, Niagara Falls, N. Y., which has purchased the plant of the American Nut Company and which is preparing plans for an additional building, 70 ft. square two stories high, has incorporated, with a capital stock of $225,000. The company will manufacture nickeled and brass plated nuts made direct from the bar and cut, drilled and threaded by its own process.

The recent statement in these columns concerning the new plant of the Pacific Tank Company, Los Angeles, Cal., was not entirely correct. The company, which manufactures wooden tanks and wooden water pipe, has purchased 12 acres of ground and intends to build a factory on the site, but it will not be used as a rolling mill. While the company purchases large quantities of iron and wire for hooping and banding its tanks, the greater amount of raw material run through its factory is in the shape of rough lumber.

The statement in these columns October 1 that the Locke Insulator Works, Lima, N. Y., was considering a proposition to move to Shortsville, N. Y., is incorrect. The only insulator works in Lima is that of the Lima Insulator Company, which has considered no proposition to move its plant to Shortsville.

The Youngstown Car Mfg. Company, Youngstown, Ohio, has received a contract from the Water Works Department of Philadelphia for 12 ash dump cars of steel construction, and also for three 60,000-lb. M. C. B. hopper bottom cars, with steel centers and all steel tops, and an order from the Sandusky Portland Cement Company, Syracuse, Ind., for 10 steel gondola cars for use in hauling clays, &c.

The P. H. Learner Company, Kokomo, Ind., has been incorporated with $20,000 capital stock. The company manufactures special cement machinery for ventilating chimneys, shingles, drain tile and ornamental porch column molds. The business was started in Elwood a year ago, grew rapidly, and the plant was moved to Kokomo, where capital was obtained for the needed extension of the plant. The officers are: President, Schuyler C. Rees; vice-president, John R. McIntosh; secretary-treasurer, Perl H. Learner. The company states that its business is growing rapidly and that it is continually adding new features.

The Acheson Mfg. Company, Braddock, Pa., manufacturer of valves, fittings and brass castings, is operating its plant to about 80 per cent. of capacity and 50 hr. a week. The company has leased one of its buildings, formerly occupied by the National Lead & Oil Company, to the Standard Steel Box Company. The latter company is having the plant equipped for the manufacture of pressed steel boxes for crating beer and water bottles.

The Brooks plant of the American Locomotive Company, Dunkirk, N. Y., has started construction on an order of 30 engines for the Argentine Railroad of South America. The engines are to be narrow gauge type, 10 for passenger service and the rest for freight use. On completion they will be knocked down, boxed and shipped to New York, where they will be loaded aboard a steamer for South America.

The city of Buffalo, Francis G. Ward, Commissioner, Room 1, City and County Building, is having plans prepared for the construction and equipment of a municipal asphalt plant to be used for street repair work.

The Union Fibrous Talc Company, Gouverneur, N. Y., lately organized by W. E. H. Mathewson, Springfield, Mass.; F. N. Freeman and O. J. David and others of Gouverneur, is having plans prepared for a 30-ton talc mill.

The Ernst Weiner Company, New York, has received an order from a large contracting company for 35 gondola cars, 80,000 lb capacity, to be used for carrying filling in material for suburban districts. Delivery of these cars will be made about December 1.

The number of men employed at the car works of the Alabama Great Southern Railway, at Gadsden, Ala., has recently been doubled.

The large plant of the Pittsburgh Plate Glass Company, at Tarentum, Pa., recently destroyed by fire, will be rebuilt at once, and a large amount of new equipment will be needed.

Plans drawn by R. Winthrop Pratt, Columbus, Ohio, for a mechanical filtration plant for the purification of the water supply at Wyandotte, Mich., have been approved by the Board of Public Works and City Council. The cost of this improvement is estimated at $25,000.

The McDermott Bros. Company, recently incorporated, has taken over the plant formerly owned by McDermott Bros. While no new machinery will be purchased at present, the company contemplates enlarging its plant for the manufacture of boilers, tanks, stacks, rotary kilns, and all kinds of wrought iron plate work. John H. McDermott is president and general manager, and Robert Reichart, secretary and treasurer.

The American Steel Wheel Company, Alexandria, Ind., is building an adition to its plant and expects to have it completed and machinery installed in 60 days, at which time the plant will be run full force. The company is the successor to the Keefer-Hart Iron & Steel Company and was incorporated in June with $250,000 capital stock. J. G. Brannum is president; J. S. Postal, vice-president; J. R. Welch, secreatry, and A. A. Gallman, treasurer. The company manufactures pressed steel vehicle wheels.

The H. C. Frick Coke Company has awarded contracts for the construction work and materials for 80 miners' houses near Brownsville, Pa., the former contract going to the Nicola Building Company and the material, including 850,000 ft. of lumber, to the Kendall Lumber Company, both of Pittsburgh.

The Anderson Forging Company, Indianapolis, Ind., has changed its name to the Indiana Forging Company.

The Warner Gear Company, Muncie, Ind., formerly a copartnership, was recently incorporated with $500,000 capital stock. The company makes automobile parts, such as transmission gears, differential gears, steering gears, cone clutches, control levers, &c. It reports business exceedingly prosperous, with the plant running night and day all this year and the entire capacity sold for 1909. The company employs between 350 and 400 men.

The Empire Lead Company, Olean, N. Y., organized with a capital stock of $300,000 for developing new lead mines recently opened near Olean, has purchased a 100-hp. boiler, 30-hp. engine, 180-ton crusher, air compressor and a traction engine. Other equipment will be required a little later.

The Faatz-Reynolds Felting Company, Lestershire, N. Y., will soon start construction on an addition to its boiler house and will install engine and generator. It will equip its factory with motor drive.

The Howland Paper Bag Company, Tonawanda, N. Y., will move its present plant to Dexter, N. Y., and operate it in connection with the plant of the Dexter Sulphite Pulp & Paper Company. Part of the present machinery at the Tonawanda plant will be moved to the new location and other machinery will be added. Work of moving will be started in about six weeks.

**Ames Alloy High Pressure Sheet Packing.**—As a substitute for wire, asbestos filled copper, corrugated copper or steel gaskets, and particularly the many varieties of rubber and asbestos sheet leather packings, the United States Indestructible Gasket Company, 16 South William Street, New York, is offering the Ames alloy high pressure sheet packing, for making tight joints between flanges, valves, steam chests, &c. The sheet packing is carried in stock 1-64, 1-32, 1-16 and 3.32 in. thick and up to 84 in. wide. Other thicknesses can be had to order. Gaskets are furnished in any size or shape to blue print. The packing is claimed not to melt under about 700 deg. F., and has been tested under pressures up to 6000 lb., thus making it suitable for the highest steam pressures and hydraulic work. It is also claimed not to stick to the flanges in patches when the joint is broken, which would have the disadvantage of making the flanges uneven and cause leaks. All but the thickest packing can be readily cut if emergency should compel it. The packing is also declared not to deteriorate, dry out or crack if subjected to months and years of standing in stock or service. Being oil, acid, gas, heat, fume, steam and water proof, it is a packing exceptionally well adapted for use anywhere on land or sea.

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The regular monthly meeting of the Engineers' Society of Western Pennsylvania was held in the society rooms, Fulton Building, Pittsburgh, on the evening of October 20. Papers were presented by H. A. Steen on "Electrically Operated Brakes for Industrial Purposes," and by H. W. Whitten on "The Effect of Wind on Heating and Ventilation." Robert M. Greene, Ambridge, Pa., and E. K. Hiles, Pittsburgh, were elected to membership.

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The Engineers' Society of Milwaukee held its first meeting for the winter season on the evening of October 14 in the assembly hall of the Builders' Club, 456 Broadway. Russell Smith of the Otis Elevator Company, Chicago, read a paper on "High Speed Elevators for Large Buildings."

# The Iron and Metal Trades

## Large Contracts for Basic Pig Iron in Pittsburgh.

### Two Mississippi Bridges Awarded.

### Wire Business Very Large.

While there is still a good deal of hesitation in covering early requirements, there has been more business done than has been generally expected. There have been some large transactions in Basic Pig in the Pittsburgh district for prompt delivery, and a contract has also been closed for the supply at the rate of 6000 tons a month, for two and one-half years, of Basic Pig, to a Steel plant recently completed. The contract may run for two years longer, if the buyer elects, and is on a sliding scale, based on cost to the furnace. The same buyer has taken 10,000 tons from another furnace, delivery this year, at less than $14, Valley furnace.

A moderate amount of business has been done in the East, in Basic Iron, where quotations below $16 have been withdrawn, and there is an inquiry in the market for a block of 10,000 tons. Purchases of Southern Basic Pig have also been recently made, on quite a liberal scale, for the St. Louis district.

Upward of 10,000 tons of Low Phosphorus Pig have been sold lately, to steel makers and to casting plants, for this year's delivery at $20.

Aside from a few larger transactions, founders are not contracting for much Iron; in fact, in some distributing centers, inquiries have been temporarily withdrawn.

Southern makers are maintaining their firm attitude as to prices. The only recent deviation appears to have occurred in the case of a sale of 4000 tons to a merchant firm.

The Wire industry continues the conspicuous exception to the general rule that sales are below the normal. Lately Wire makers have received orders in excess of their capacity.

During the week the two bridges across the Mississippi have been let. The McKinley Bridge at St. Louis has been awarded to the Pennsylvania Steel Company. It calls for 6000 tons of material. The Keithsburg Bridge of the Iowa Central has been let to McClintic-Marshall, the tonnage being 4000 tons.

The bids for 2500 tons of viaduct work at Cincinnati are being opened, and the material, 2000 tons, for a library at St. Louis, has been placed. The Emigrant Savings Bank of New York has contracted for 5000 tons of Structural Material.

The St. Paul road has made arrangements for the building of 2500 additional freight cars, which will require about 7000 tons of material, which will probably be placed at once. The better demand from the car building shops has also stimulated some buying of Charcoal Pig Iron, and some fair business has been placed.

For the lake boat to be built for Cleveland interests at the Toledo yard, the material, involving 3000 tons of Plates and Shapes, has been ordered.

The leading interest has secured orders for about 8000 tons of Tin Plates for the salmon pack. The deliveries are to be made prior to March 1.

It has developed that inquiries for large quantities of Cast Iron Pipe arising in New Jersey are not serious. Helena, Mont., is in the market for 9000 tons. The Soil Pipe makers have held a meeting and are aiming at an advance in prices of 5 per cent.

A Pittsburgh Steel interest has made heavy purchases lately of Melting Scrap, gathering some of it in the Chicago District. The market has hardened to $16 to $16.50, Pittsburgh.

## A Comparison of Prices.

**Advances Over the Previous Month in Heavy Type, Declines in Italics.**

At date, one week, one month and one year previous.

| | Oct.21, 1908. | Oct.14, 1908. | Sept.16, 1908. | Oct.16, 1907. |
|---|---|---|---|---|
| **PIG IRON,** Per Gross Ton: | | | | |
| Foundry No. 2, Standard, Philadelphia | $16.75 | $16.75 | $16.75 | $20.00 |
| Foundry No. 2, Southern, Cincinnati | 15.75 | 15.75 | 15.75 | 21.25 |
| Foundry No. 2, Local, Chicago | 16.50 | 16.50 | 16.50 | 22.00 |
| Basic, delivered Eastern Pa. | **16.00** | 15.50 | 15.25 | 18.50 |
| Basic, Valley Furnace | *13.85* | 14.00 | 14.50 | 19.50 |
| Bessemer, Pittsburgh | *15.65* | 15.90 | 15.90 | 22.90 |
| Gray Forge, Pittsburgh | 14.40 | 14.40 | 14.40 | 20.40 |
| Lake Superior Charcoal, Chicago | 19.50 | 19.50 | 19.50 | 26.00 |
| **BILLETS, &c.,** Per Gross Ton: | | | | |
| Steel Billets, Pittsburgh | 25.00 | 25.00 | 25.00 | 28.00 |
| Forging Billets, Pittsburgh | 27.00 | 27.00 | 27.00 | 31.00 |
| Open Hearth Billets, Phila | 26.20 | 26.20 | 26.20 | 31.00 |
| Wire Rods, Pittsburgh | 33.00 | 33.00 | 33.00 | 35.00 |
| Steel Rails, Heavy, at mill | 28.00 | 28.00 | 28.00 | 28.00 |
| **OLD MATERIAL,** Per Gross Ton: | | | | |
| Steel Rails, Melting, Chicago | *14.75* | 14.75 | 15.00 | 16.75 |
| Steel Rails, Melting, Phila | *15.00* | 15.00 | 15.25 | 16.25 |
| Iron Rails, Chicago | 18.00 | 18.00 | 18.00 | 20.25 |
| Iron Rails, Philadelphia | *19.50* | 19.50 | 20.50 | 20.50 |
| Car Wheels, Chicago | 15.25 | 15.25 | 15.25 | 24.50 |
| Car Wheels, Philadelphia | 15.00 | 15.00 | 15.00 | 22.75 |
| Heavy Steel Scrap, Pittsburgh | **15.25** | 15.25 | 14.25 | 17.25 |
| Heavy Steel Scrap, Chicago | **13.75** | 13.50 | 13.00 | 15.00 |
| Heavy Steel Scrap, Philadelphia | *15.00* | 15.00 | 15.25 | 16.00 |
| **FINISHED IRON AND STEEL,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Refined Iron Bars, Philadelphia | 1.45 | 1.45 | 1.45 | 1.75 |
| Common Iron Bars, Chicago | 1.50 | 1.50 | 1.50 | 1.78 |
| Common Iron Bars, Pittsburgh | 1.40 | 1.40 | 1.40 | 1.70 |
| Steel Bars, Tidewater, New York | 1.56 | 1.56 | 1.56 | 1.81 |
| Steel Bars, Pittsburgh | 1.40 | 1.40 | 1.40 | 1.60 |
| Tank Plates, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1 86 |
| Tank Plates, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Beams, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Beams, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Angles, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Angles, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Skelp, Grooved Steel, Pittsburgh | 1.45 | 1.45 | 1.45 | 1.85 |
| Skelp, Sheared Steel, Pittsburgh | 1.50 | 1.50 | 1.50 | 1.95 |
| **SHEETS, NAILS AND WIRE,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Sheets, Black, No. 28, Pittsburgh | 2.50 | 2.50 | 2.50 | 2.60 |
| Wire Nails, Pittsburgh | 1.95 | 1.95 | 1.95 | 2.05 |
| Cut Nails, Pittsburgh | *1.75* | 1.80 | 1.80 | 2.05 |
| Barb Wire, Galv., Pittsburgh | 2.40 | 2.40 | 2.40 | 2.50 |
| **METALS,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Lake Copper, New York | 13.75 | 13.75 | 13.75 | 13.25 |
| Electrolytic Copper, New York | *13.25* | 13.37½ | 13.50 | 12.87½ |
| Spelter, New York | **4.77½** | 4.77½ | 4.75 | 5.55 |
| Spelter, St. Louis | **4.62½** | 4.62½ | 4.60 | 5.35 |
| Lead, New York | *4.22½* | 4.35 | 4.52½ | 4.65 |
| Lead, St. Louis | *4.07½* | 4.20 | 4.40 | 4.50 |
| Tin, New York | **29.50** | 29.25 | 28.55 | 31.20 |
| Antimony, Hallett, New York | 7.75 | 7.75 | 7.75 | 11.00 |
| Nickel, New York | 45.00 | 45.00 | 45.00 | 45 00 |
| Tin Plate, 100 lb., New York | $3.89 | $3.89 | $3.89 | $4.09 |

## Chicago.

FISHER BUILDING, October 21, 1908.—(*By Telegraph.*)

Another lot of 2500 freight cars has been added to the number which the Chicago, Milwaukee & St. Paul Railroad has decided to build at its Milwaukee Shops. This makes 7500 cars in all for which orders for Steel underframes have been placed within the past 30 days with the Bettendorf Axle Company, Davenport, Iowa. From this source alone, mill bookings of Plates and Structural Shapes have within that time been increased by 35,000 tons. This has been considerably augmented by recent Steel car orders from other lines as well as by orders and specifications from manufacturing interests. The demand for Steel Bars is notably strong, as is shown by the large increase of specifications entered in the first two weeks of the present month by the leading interest over any like period this year. This is in a large measure due to activity of the implement interests. Only a moderate amount of Structural Material was closed last week by fabricators, but there is a good deal of business in sight which seems likely to be placed in the near future. In four projects now pending there are included 53,000 tons, all of which concerns work that is either under way or is about to be undertaken. While the tonnage of new Rail orders is insignificant, specifications are coming out a little better, so that the mills are able to continue in operation at moderate capacity. Business in Light Rails holds up well, and bids fair to make October the equal of any month in the year. While there has been no heavy buying of Pig Iron by the large interests, the aggregate sales show a marked im-

provement in general buying. It is apparent that a good many consumers are disposed to discount the future to the extent at least of covering for their fourth quarter requirements. With the exception of some Silicon Iron, trading has been very largely with the Northern furnaces. The limited tonnage of Scrap coming on the market is seemingly not in excess of current consumption. Prices are, therefore, well sustained, with a slight upward tendency on a few grades, such as Heavy Melting Steel and No. 1 Wrought.

**Pig Iron.**—The transfers of tonnage within the past week aggregate a considerable increase over what has been lately moving. The general run of sales, it is true, embraced lots of only a few hundred tons, but they were numerous and included deliveries about equally divided between the last quarter of this and the first quarter of next year. Among the more important trades reported are 2000 tons of Malleable Bessemer sold by M. A. Hanna & Co. to the Belle City Malleable Iron Company, Racine, Wis.; 2000 tons of Southern Charcoal Car Wheel Iron, from the Shelby Iron Company, purchased by the Chicago, Milwaukee & St. Paul Railroad for its Milwaukee car wheel shop, and around 800 tons of Northern Iron, analysis grades, bought by the Western Electric Company. There is also a better demand for Silicon Iron, and orders for Southern Silicon aggregating about 1000 tons have recently been entered. With this exception there is very little Southern coming into the Northern market, since the lowest price offered—$12.50, Birmingham, for No. 2 Foundry—puts it well above the delivered figure of Northern furnaces on last quarter deliveries. The same condition exists with respect to first half requirements, on which the Alabama furnaces still ask $13, Birmingham, or $17.35, Chicago, for No. 2 Foundry, while $17 is available from sellers of Northern Iron. Inquiries have been more plentiful in the past few days, most of them relating to shipments extending through the first half of next year. They are beginning to indicate, moreover, something more than a passive market interest, and are altogether of a firmer tone than they have been for some time. More liberal purchases by the railroads on account of repair work and new car building have had a stimulating effect on the railroad foundry interests. In some of these foundries the melt has increased considerably within the last 60 days, but the general jobbing trade is improving very slowly. The entire market situation, so far as the demand is concerned, may be said to be somewhat stronger, both actually and sentimentally. The Zenith Furnace, at Duluth, Minn., and the second stack of the Northwestern Iron Company, at Mayville, Wis., are getting ready for operation, and will be blown in in the near future. The following quotations are for October, November and December delivery, f.o.b. Chicago:

| | |
|---|---|
| Lake Superior Charcoal | $19.50 to $20.00 |
| Northern Coke Foundry, No. 1 | 17.00 to 17.50 |
| Northern Coke Foundry, No. 2 | 16.50 to 17.00 |
| Northern Coke Foundry, No. 3 | 16.00 to 16.50 |
| Northern Scotch, No. 1 | 17.50 to 18.00 |
| Southern Coke, No. 1 | 17.35 to 17.85 |
| Southern Coke, No. 2 | 16.85 to 17.35 |
| Southern Coke, No. 3 | 16.35 to 16.85 |
| Southern Coke, No. 4 | 15.85 to 16.35 |
| Southern Coke, No. 1 Soft | 17.35 to 17.85 |
| Southern Coke, No. 2 Soft | 16.85 to 17.35 |
| Southern Gray Forge | 15.35 to 15.85 |
| Southern Mottled | 15.10 to 15.60 |
| Malleable Bessemer | 17.00 to 17.50 |
| Standard Bessemer | 17.65 to 18.10 |
| Jackson Co. and Kentucky Silvery, 6 % | 19.90 to 20.40 |
| Jackson Co. and Kentucky Silvery, 8 % | 20.90 to 21.40 |
| Jackson Co. and Kentucky Silvery, 10 % | 22.90 to 23.40 |

*(By Mail.)*

**Billets and Rods.**—The market gives no evidence of a more stirring movement in Forging Billets than has been experienced in recent weeks. The demand continues to be for small lots, orders for which are placed by consumers only as necessities require. We quote Forging Billets at $28.50, base, Chicago, being advised that this figure is generally realized on current transactions. A fair amount of specifications for Wire Rods is being entered. We quote the following prices, which, we are advised, are being regularly maintained: Bessemer, $33; Basic, $34; Chain, $33, all at Pittsburgh.

**Rails and Track Supplies.**—The fact that no new contracts of any consequence for Standard Rails are being placed by the railroads is not particularly disappointing, since not much is looked for in this line until some features of uncertainty respecting future conditions have become clearer and more settled. Specifications against existing contracts, however, are being furnished more regularly and in better volume. Orders for the suspension of Rail shipments recently issued by a Western line have been restored, and specifications are being furnished as heretofore. Last week's business in Spikes and Bolts produced a fair average sustaining the improvement noted in the preceding week. A contract for 1200 tons of Light Rails in a single order from a Louisiana lumber company, was received last week by the Illinois Steel Company, and the total business for the first half of the month amounts to something over 3000 tons; at the present rate October business should exceed 5000 tons. In addition to orders recently placed by the Chicago City Railway with the Lorain Steel Company for special Steel track work, specifications are being prepared for a considerable lot of like material, which will probably be turned out by the same mill. The standard Rail mill of the Illinois Steel Company has specifications in hand to warrant operation at present capacity for more than 30 days, and the prospects are now favorable to the indefinite continuance of activity in this department. We quote as follows: Angle Bars, accompanying Rail orders, 1908 delivery, 1.50c.; car lots, 1.60c.; Spikes, 1.80c. to 1.90c., according to delivery: Track Bolts, 2.15c. to 2.20c., base, Square Nuts, and 2.30c. to 2.35c., base, Hexagon Nuts. The store prices on Track Supplies range from 0.15c. to 0.20c. above mill prices. Light Rails, 25 to 45 lb., $26; 20-lb., $27; 16-lb., $28; 12-lb., $29. Stand Sections, $28, f.o.b. mill, full freight to destination.

**Structural Material.**—The situation in Structural Material is considerably improved. More business is being placed and there is a large amount pending on which early closure is expected. Included in the Keithsburg bridge, the McKinley Traction Syndicate bridge at St. Louis, the new Northwestern Depot and track elevation work in connection therewith, and the new Chicago City Hall are embraced Structural requirements of over 53,000 tons, some of which will probably be let within a few days and all probably within a month. It is understood that the 8000 tons for the McKinley bridge has not at this writing been definitely awarded; announcement of the disposition of this contract and also that for 4200 tons in the Northwestern Depot structure is expected in a day or two. Bids will be asked October 26 on 24,000 tons for the Northwestern track elevation and train shed work. T. C. Thompson & Brother, Birmingham, Ala., have secured a contract for 1100 tons to be used in the Empire Building, Birmingham. Preliminary figures on 4600 tons have been furnished on the Vendome Building, Chicago, for estimating purposes, but it is stated that this material will not come into the market until some time next spring. The order for 600 tons for the Dolese & Shepard stone plant was secured by the Kenwood Bridge Company. The Great Northern Railway is taking figures on 500 tons of bridge material, and the Soo Line is reported to be in the market for 200 tons. Contracts have been placed by John Peirce for 2000 tons required for the Central Library, St. Louis, and it is understood that the Brown-Ketchum Iron Works, Indianapolis, was the successful bidder. Orders for an additional 2500 Steel underframes placed by the Chicago, Milwaukee & St. Paul Railroad call for around 7000 tons of Structural Shapes, which tonnage will doubtless be placed with the mills without delay. The Illinois Steel Company's Structural mill is supplied with specifications to fill out its rolling schedule for at least 30 days. Prices from store are 1.95c. to 2c. Mill prices at Chicago are as follows: Beams and Channels, 3 to 15 in., inclusive, 1.78c.; Angles, 3 to 6 in., ¼-in. and heavier, 1.78c.; larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 15 in., 1.88c.; Zees, 3 in. and over, 1.78c.; Tees, 3 in. and over, 1.83c.

**Plates.**—More new Plate tonnage is being supplied to the mills by new car orders than from any other source. Another lot of 2500 Steel underframes ordered for cars to be built by the Chicago, Milwaukee & St. Paul Railroad will add between 3000 and 4000 tons of Plates to the aggregate of mill bookings. Business from other sources continues light, and is made up of miscellaneous orders of small size for immediate shipment. General market conditions are without notable change, and except for concessions of from $1 to $2 a ton, that continue to be offered by some mills of limited size capacity, prices are well maintained. We quote mill shipments as follows: Tank Plates, ¼-in. and heavier, wider than 6¼ and up to 100 in. wide, inclusive, car lots, Chicago, 1.78c.; 3-16 in., 1.88c.; Nos. 7 and 8 gauge, 1.93c.; No. 9, 2.03c.; Flange quality, in widths up to 100 in., 1.88c., base, for ¼-in. and heavier, with the same advance for lighter weights; Sketch Plates, Tank quality, 1.88c.; Flange quality, 1.98c. Store prices on Plates are as follows: Tank Plates, ¼-in. and heavier, up to 72 in. wide, 2c. to 2.10c.; from 72 to 96 in. wide, 2.10c. to 2.20c.; 3-16 in. up to 60 in. wide, 2.10c. to 2.25c.; 72 in. wide, 2.30c. to 2.40c.; No. 8, up to 60 in. wide, 2.10c. to 2.15c.; Flange and Head quality, 0.25c. extra.

**Sheets.**—Western mills report a fair volume of business which, in spite of some adverse conditions, holds at an even level, with here and there some gain. The principal demand is for Galvanized Sheets, in which there is also a fairly active movement from jobbers' stocks. There is not much doing, however, in heavier gauges of Black Sheets. While as much as $2 a ton below regular mill prices is occasionally heard of, such concessions are less frequent than they were, and price conditions may be said to be generally firmer. We quote mill shipments as follows, Chicago: Blue Annealed, No. 10, 1.98c.; No. 12, 2.05c.; No. 14, 2.08c.; No. 16, 2.18c.; Box Annealed, Nos. 17 to 21, 2.43c.; Nos. 22 to 24, 2.48c.; Nos. 25 and 26, 2.53c.; No. 27, 2.58c.; No. 28, 2.68c.; No. 29, 2.78c.; No. 30, 2.88c.; Galvanized Sheets, Nos. 10 to 14, 2.63c.; Nos. 15 and 16, 2.83c.; Nos. 17 to 21, 2.98c.; Nos. 22 to 24, 3.13c.; Nos. 25 and 26, 3.33c.; No. 27,

3.53c.; No. 28, 3.73c.; No. 30, 4.23c.; Black Sheets from store: Blue Annealed, No. 10, 2.15c.; No. 12, 2.20c.; No. 14, 2.25c.; No. 16, 2.35c.; Box Annealed, Nos. 18 to 21, 2.60c.; Nos. 22 to 24, 2.65c.; No. 26, 2.70c.; No. 27, 2.75c.; No. 28, 2.85c.; No. 30, 3.25c.; Galvanized from store; Nos. 10 to 16, 3c.; Nos. 18 to 20, 3.15c.; Nos. 22 to 24, 3.30c.; No. 26, 3.50c.; No. 27, 3.70c.; No. 28, 3.90c.; No. 30, 4.40c. to 4.45c.

**Bars.**—Steel Bars show a relatively better degree of activity than other mill products, and specifications are quite satisfactory. In the first two weeks of October the leading interest booked more tonnage than for all of September, which month was practically double that of August. Rolling schedules are therefore well filled and conditions are more nearly normal now than they have been since last year. This activity is not shared by Iron Bars, orders for which continue to come out slowly. The Bar Iron mills in this district are running about as they have been, their operation being governed by the accumulation of specifications. Prices on Steel Bars are reported to be undisturbed by any deviation from the regular schedule and are reasonably well maintained on Iron Bars. Quotations, Chicago, are as follows: Steel Bars, 1.58c., with half extras; Iron Bars, 1.50c.; Hoops, No. 13, and lighter, 1.98c., full extra Hoop card; Bands, No. 12 gauge, and heavier, 1.58c., half extra Steel Bar card; Soft Steel Angles and Shapes, 1.68c., half extras. Store prices are as follows: Bar Iron, 2c. to 2.15c.; Steel Bars, 1.90c. to 2c.; Steel Bands, 1.90c., as per Bar card, half extras; Soft Steel Hoops, 2.25c. to 2.35c., full extras.

**Merchant Pipe.**—Controlled by the same conditions that have been existent for some months past, the movement of Pipe is unmarked by features of particular interest. Buyers still adhere to the practice of ordering single carloads, where they formerly purchased in lots of 10 to 20 carloads. It is stated that the majority of orders are made by wire, and consumers are not making much allowance for delay in deliveries, but are relying upon prompt shipments for replenishment of their stocks. The following mill discounts are quoted: Black Pipe, ¾ to 6 in., 73.2; 7 to 12 in., 70.2; Galvanized, ¾ to 6in., 63.2. These discounts are subject to one point on the base. From store, in small lots, Chicago jobbers quote 73 per cent. on Black Steel Pipe, ¾ to 6 in. About three points above these prices is asked for Iron Pipe.

**Boiler Tubes.**—Considerable improvement has developed in the demand for Locomotive Tubes, owing to the extended amount of repair work now under way in railroad shops. There are also some inquiries for lots of Locomotive Tubes which indicate a disposition on the part of the roads to anticipate wants a little farther ahead than they have been doing. There has been no appreciable increase in the demand for Merchant Tubes, which continues quiet. Mill quotations for future delivery, on the base sizes, are as follows: 2¾ to 4¼ in., inclusive, Steel Tubes, 63.2; Iron, 50.2; Seamless, 50.2; 2½ in. and smaller, and lengths over 18 ft., and 2½ in. and larger, and lengths over 22 ft., 10 per cent. extra. Store prices are as follows:

| | Steel. | Iron. | Seamless. |
|---|---|---|---|
| 1 to 1½ in. | 35 | 35 | 35 |
| 1¾ to 2¼ in. | 50 | 35 | 35 |
| 2½ in. | 52½ | 35 | 35 |
| 2¾ to 3 in. | 60 | 47½ | 47½ |
| 6 in. and larger | 50 | 35 | .. |

**Merchant Steel.**—The implement makers are coming in with fairly liberal specifications against contracts for Bars and miscellaneous Shapes. Jobbers are beginning to stock ahead to some extent, and their orders are not so closely confined to immediate needs. Altogether, trade in all lines under this head shows considerable improvement. We quote as follows: Planished or Smooth Finished Tire Steel, 1.78c.; Iron Finish, up to 1½ x ½ in., 1.73c., base, Steel card; Iron Finish, 1½ x ½ in. and larger, 1.58c., base, Tire card; Channels for solid Rubber Tires, ¾ to 1 in., 2.08c. ,and 1⅛ in. and larger, 1.98c.; Smooth Finished Machinery Steel, 2.08c.; Flat Sleigh Shoe, 1.63c.; Concave and Convex Sleigh Shoe, 1.83c.; Cutter Shoe, 2.05c.; Toe Calk Steel, 2.13c.; Railroad Spring, 1.98c.; Crucible Tool Steel, 7¼c. to 8c., and still higher prices are asked on special grades. Cold Rolled Shafting on contracts for 100 tons and over, 57 per cent. off; 56 per cent. off in car lots; 52 per cent. in less than car lots, on which carload freight is allowed within base territory.

**Cast Iron Pipe.**—Among the contracts taken last week by the United States Cast Iron Pipe & Foundry Company were 300 tons for La Crosse, Wis., and 600 tons for Kansas City, Mo. The town of Elwood, Kan., is holding a letting to-day for 300 tons, and a small tonnage is coming up at Kerwin, Kan., on October 24. A more important letting advertised for October 29 is one at Helena, Mont., for 40 miles of Water Pipe for the construction of a new waterworks system. The sizes required range from 4 to 24 in., the approximate quantity being in the neighborhood of 9000 tons. While no announcements have been made by the cities of St. Paul and Minneapolis as to their Pipe requirements for the coming year, it is remembered that these are usually brought up for consideration near the close of the year, and may, therefore, come out before long. Prices on routine orders are said to be considerably firmer, though low figures are still made in competitive bids for desirable sizes. Prices are unchanged, and we quote nominally, per net ton, Chicago, as follows: Water Pipe, 4 in., $27; 6 to 12 in., $26; 16 in. and up, $25, with $1 extra for Gas Pipe.

**Metals.**—Considerable weakness has developed in Lead, which has gone off in price 15c. per 100 lb., at which level it is not any too firm. Weakness of Lead has not yet been reflected in Spelter. Copper prices are unchanged, and transactions for this metal are confined almost exclusively to small lots representing consumers' instant needs. Quotations are as follows: Casting Copper, 13½c.; Lake, 13¾c. to 14c., in car lots, for prompt shipment; small lots, ¼c. to ⅜c. higher: Pig Tin, car lots, 31¾c.; small lots, 34½c.; Lead, Desilverized, 4.45c. to 4.55c., for 50-ton lots; Corroding, 4.70c. to 4.80c., for 50-ton lots; in car lots, 2¼c. per 100 lb. higher; Spelter, 4.80c.; Cookson's Antimony, 10½c., and other grades, 9¾c. to 10¼c.; Sheet Zinc is $7, f.o.b. La Salle, in car lots of 600-lb. casks. On Old Metals we quote: Copper Wire, 13½c.; Heavy Copper, 13¼c.; Copper Bottoms, 12c.; Copper Clips, 13¼c.; Red Brass, 12c.; Yellow Brass, 9½c.; Light Brass, 7c.; Lead Pipe, 4.30c.; Zinc, 3¾c.; Pewter, No. 1, 21c.; Tin Foil, 23c.; Block Tin Pipe, 25c.

**Old Material.**—The Scrap market, while losing nothing in firmness, has not developed anything of special interest in demand, either present or prospective. The recent buying of a small tonnage of Melting Steel for the Pittsburgh and eastern Ohio territory was shortlived in its effects and was disappointing to those who saw in this the beginning of a strong upward movement. There is, however, enough local demand to take care of all that is coming out in this grade, and the price holds firm, within the range of current quotations. All Rerolled Steel Rails offered by the roads are going readily at the top of the market. A lot of 500 tons on a late list of the Chicago & Northwestern was taken by a local consumer, through a dealer, at $16.50; a list closed last week by the Chicago, Milwaukee & St. Paul brought an equivalent price, and other items on this list are reported to have commanded figures well within the range of values as represented by quotations. The following prices are per gross ton, f.o.b. Chicago:

| | |
|---|---|
| Old Iron Rails | $18.00 to $18.50 |
| Old Steel Rails, rerolling | 16.00 to 16.50 |
| Old Steel Rails, less than 3 ft. | 14.75 to 15.25 |
| Relaying Rails, standard sections, subject to inspection | 22.50 to 23.50 |
| Old Car Wheels | 15.25 to 15.75 |
| Heavy Melting Steel Scrap | 13.75 to 14.25 |
| Frogs, Switches and Guards, cut apart | 14.00 to 14.50 |
| Mixed Steel | 10.25 to 10.75 |

The following quotations are per net ton:

| | |
|---|---|
| Iron Fish Plates | $16.50 to $17.00 |
| Iron Car Axles | 20.00 to 20.50 |
| Steel Car Axles | 17.50 to 18.00 |
| No. 1 Railroad Wrought | 13.75 to 14.25 |
| No. 2 Railroad Wrought | 12.75 to 13.25 |
| Railway Springs | 13.00 to 13.50 |
| Locomotive Tires, smooth | 13.25 to 13.75 |
| No. 1 Dealers' Forge | 10.75 to 11.25 |
| Mixed Busheling | 8.25 to 8.75 |
| Iron Axle Turnings | 7.25 to 7.75 |
| Soft Steel Axle Turnings | 7.25 to 7.75 |
| Machine Shop Turnings | 7.25 to 7.75 |
| Cast Borings | 5.75 to 6.25 |
| Mixed Borings, &c | 5.75 to 6.25 |
| No. 1 Mill | 8.00 to 8.50 |
| No. 2 Mill | 7.00 to 7.50 |
| No. 1 Boilers, cut to Sheets and Rings | 8.50 to 9.00 |
| No. 1 Cast Scrap | 13.50 to 14.00 |
| Stove Plate and Light Cast Scrap | 11.75 to 12.25 |
| Railroad Malleable | 12.50 to 13.00 |
| Agricultural Malleable | 11.25 to 11.75 |
| Pipes and Flues | 10.25 to 10.75 |

The Blue Island Car & Equipment Company, Chicago, Ill., is contemplating the installation of a small Scrap rolling mill for the manufacture of Rods used in its Bolt and Nut shop and car repair work. The company is now ready to receive propositions on an 18 in. roughing and a 10 in. finishing mill, with all accessories.

## St. Louis.

St. Louis, October 19, 1908.

Leading interests in all lines report a steady run of business with the exception of those with whom this is normally the quiet time, and with these preparations are being made for taking care of new business when the season opens. The prospect is regarded as warranting in some special cases an enlargement of the plants, and with all so-called idle plants there are numerous deals being made for supplying goods for future delivery, though buyers show a disposition to order conservatively. While there is a remarkable degree of activity in the erection of residences, apartment houses and buildings for mercantile and factory purposes, the placing of contracts for large structures as regards the Steel work is still delayed with but two exceptions, that of the superstructure of the McKinley bridge and the Steel work for the new shops of the American Car & Foundry Company. Outside of St. Louis there are also a number of new buildings of

medium size for which local agencies are receiving the contracts for supplying the Structural material. There is in this territory an occasional indication of a marked character pointing to improved conditions with some railroads, independent of the continuous demand for track and other supplies of a light character. Reference is here made to the contract of the Missouri, Kansas & Texas Railroad for 3300 tons of Standard Rails just placed with the leading Steel interest.

**Coke.**—There is an active demand for Coke ,principally for prompt shipment. The price is ruling firm for deferred shipments, but easier for nearby deliveries. We quote $2.25 for prompt, $2.50 for deferred shipment, with some special brands held at $2.75 for 72-hr. Connellsville Foundry, f.o.b. oven. Shipments from the district have been subject to less complaint for delay.

**Pig Iron.**—The feature of the market on Pig Iron as indicated by sales reported by the leading agencies is that with some of them the sales are mainly for prompt shipment or covering the last quarter. Some have had a moderate demand for more extended shipment. While there are houses which report having only numerous small orders, others have found a better demand, one reporting sales of 1000 tons for 1908 and first quarter 1909, another finding a local demand for the same quantity, half of which is for immediate shipment and the balance for second quarter 1909. There is a demand developing for Malleable Bessemer and also for High Phosphorus. It is given out that an order for about 8000 tons of Basic was placed a few days since. There is some demand for Southern Charcoal Car Wheel Iron. Prices depend on quantity and time of delivery, together with quality and brands. For immediate and last quarter shipment $12.50, Birmingham, would be accepted for large and $13 for small orders. No quotations of less than $13 for No. 2 Foundry f.o.b. Birmingham, are current in this market covering deliveries for 1909. There is not much disposition to place contracts for the second quarter of 1909, and offerings for next year's delivery are not general.

**Finished Iron and Steel.**—The demand for Structural Material, in addition to requirements for small buildings in the city, is characterized by a similar demand from outside territory, mainly in the Southwest, where conditions through realizing from the crops place matters on a steadily improving basis financially. With the exception of the placing of the contract for the superstructure of the McKinley bridge and the new shops of the American Car & Foundry Company, no large contracts have been let, though there are several which are pending. The slight reduction in the price of Bar Iron will, it is thought, stimulate sales. There is a better demand from railroads for miscellaneous material, particularly for Sheets and Plates. A renewed demand for Light Rails from lumber interests is reported.

**Old Material.**—Business is somewhat slower. In fact, the mills are pursuing the policy of purchasing from hand to mouth. The large dealers are holding for a better market, and their buying is of a speculative character. For this reason prices are practically made by their purchasers at present. Foundrymen have of late to some extent substituted, where practicable, low grade Iron in place of Scrap. The Vandalia Railroad has just sold 200 tons and the Terminal Railroad 2000 tons of miscellaneous Scrap. There are no new offerings by the railroads in this section at present. In order to effect large sales concessions would have to be made. We quote dealers' prices per gross ton, f.o.b. St. Louis, as follows:

| | |
|---|---|
| Old Iron Rails | $16.50 to $17.00 |
| Old Steel Rails, rerolling | 15.50 to 16.00 |
| Old Steel Rails, less than 3 ft | 14.25 to 14.75 |
| Relaying Rails standard sections, subject to inspection | 23.00 to 24.00 |
| Old Car Wheels | 15.00 to 15.50 |
| Heavy Melting Steel Scrap | 13.50 to 14.00 |
| Frogs, Switches and Guards, cut apart | 13.50 to 14.00 |
| Mixed Steel | 10.25 to 10.75 |

The following quotations are per net ton:

| | |
|---|---|
| Iron Fish Plates | $15.00 to $15.50 |
| Iron Car Axles | 18.50 to 19.00 |
| No. 1 Railroad Wrought | 13.50 to 14.00 |
| No. 2 Railroad Wrought | 12.50 to 13.00 |
| Railway Springs | 13.00 to 13.50 |
| Locomotive Tires, smooth | 13.00 to 13.50 |
| No. 1 Dealers' Forge | 11.50 to 12.00 |
| Mixed Borings, &c | 5.50 to 6.00 |
| Machine Shop Turnings | 8.00 to 8.50 |
| No. 1 Boilers, cut to Sheets and Rings | 9.50 to 10.00 |
| No. 1 Cast Scrap | 12.00 to 12.50 |
| Stove Plate and Light Cast Scrap | 10.50 to 11.00 |
| Railroad Malleable | 11.00 to 11.50 |
| Agricultural Malleable | 10.00 to 10.50 |
| Pipes and Flues | 8.75 to 9.50 |

**Lead, Spelter, &c.**—Lead is dull and weak. Special brands are held at 4.35c. Lead Ore is quoted at $26 to $27, Joplin basis. Spelter is in fair demand as there is a good inquiry from both Brass and Galvanizing sources. The market is 4.75c. for prompt and 4.90c. to 4.95c. for deferred shipments. Zinc Ore is steady at $36 to $36.50, Joplin basis.

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The American Car & Foundry Company has made application for a permit to erect a new car wheel foundry at 2201-25 South First street. The foundry is to consist of three buildings to cost $90,000.

The E. E. Souther Iron Company states that there is some improvement, mainly from outside territory, for Gutter Pipe.

The Beckwith Brothers Company finds the demand for Steel Plates has developed in a marked manner since October 1.

The St. Louis Malleable Casting Company reports a gradual improvement since the first of the month.

The Curtis & Co. Mfg. Company has had about a 10 per cent. gain in its business, taking all lines into account, during the past 30 days.

J. C. Miller, agent for the Pennsylvania Steel Company, has just closed the contract for the superstructure for the McKinley bridge.

## Cleveland.

CLEVELAND, OHIO, October 20, 1908.

**Iron Ore.**—Shipments have fallen off considerably the past week, and they will be very light for the balance of the season. Shipments from some of the mines will be cleaned up this week. Merchant firms will have little Ore to bring down the lakes after November 1, although in the case of one or two properties that were not operated early in the season all the Ore has been sold that can be gotten out before the end of navigation, and small shipments will drag along for several weeks. Some of the big freighters that have been carrying Ore for the Steel Corporation have come down with their last cargoes, and other boats that are now on their way down will go into winter quarters as soon as their cargoes are discharged. The market continues very dull. A few small sales were made during the week to consumers that wanted a little more of certain Ores, but the aggregate tonnage sold did not amount to much. There are no inquiries out for any fair tonnages, and Ore firms do not expect to sell more than a small amount during the balance of the season. Little, if any, unsold Ore will be shipped. Prices at Lake Erie docks, per gross ton, are as follows: Old Range Bessemer, $4.50; Mesaba Bessemer, $4.25; Old Range Non-Bessemer, $3.70; Mesaba Non-Bessemer, $3.50.

**Pig Iron.**—The market shows a little more activity, particularly in the Eastern demand for Foundry Iron. A local interest reports the sale at its Pennsylvania and New York furnaces of several 1000-ton lots of Foundry Iron and a number of lots of 100 tons and over for delivery during the balance of the year. About half of this Iron was sold to Eastern consumers and the remainder to consumers in the Pittsburgh District. The sale of a good round tonnage of Basic Iron for delivery during the balance of the year is also reported. Among the inquiries pending is one from the National Car Wheel Company for 3000 tons of Foundry Iron for the balance of the year, and it is reported that it will buy a larger tonnage if the price is satisfactory. There is also an inquiry from a Michigan jobbing foundry for 1000 tons of Foundry Iron. An improvement in the local demand is shown by a larger number of car lot sales. Foundries have only small stocks on hand, and consumers, as a rule, are taking shipments on contract promptly. In the Toledo territory we note the sale of a few lots of 500 tons and under for delivery extending through the first quarter at $15 to $15.25, at furnace. Prices remain stationary, at about $14.35 to $14.50, Valley furnace, for No. 2 Foundry. There are some inquiries for next year's delivery, but the majority of the furnace interests are not anxious to sell that far ahead, especially at present prices. Some are quoting No. 2 Foundry at $15 for the first half, but are not making any sales at that price. Some furnace interests are looking for firmer prices after election and are not taking on business at present prices. No Malleable or Bessemer sales are reported, and the only inquiry noted is one for a few hundred tons of the former. For the balance of the year we quote, delivered, Cleveland, as follows:

| | |
|---|---|
| Bessemer | $15.90 to $16.15 |
| Nothern Foundry, No. 1 | 15.40 to 15.80 |
| Northern Foundry, No. 2 | 15.25 to 15.40 |
| Northern Foundry, No. 3 | 14.90 to 15.25 |
| Gray Forge | 14.25 to 14.50 |
| Southern Foundry, No. 2 | 16.85 to 17.35 |
| Jackson County Silvery, 8 per cent. Silicon | 20.05 |

**Coke.**—There is an inquiry from one blast furnace interest in this territory for Furnace Coke for the first half delivery. Consumers as a rule, however, seem to be in no hurry to cover for their next year's requirements. A few sales of Foundry Coke are reported for delivery over the balance of the year and extending through the first quarter and first half. We quote Standard Connellsville Furnace Coke for spot shipment at $1.50 to $1.60, at oven. Producers are asking about $1.90 for the first half. We quote 72-hr. Connellsville Foundry Coke at $2 to $2.25, at oven.

**Finished Iron and Steel.**—Mills are still getting a fair volume of specifications on contracts, the greater part being for Steel Bars and Structural Shapes. While orders on contracts are nearly as numerous as they have been at any time during the past few weeks, specifications are for smaller ton-

nages than they were a month ago. These are coming largely from manufacturing plants and the implement makers, whose plants in this territory are fairly busy. New business is light, but there are few consumers who are under contract and not much is expected for the present in the way of new business. Manufacturers are usually ordering material only for their immediate needs. The only large contract closed during the week was for 2000 tons of Plates and 1000 tons of Structural Shapes for the lake boat that the Toledo Shipbuilding Company secured the contract last week to build for Rufus P. Ranney and others of this city. Specifications on this contract are expected in about two weeks. The demand for Iron Bars continues light, showing no improvement. One of the two local Bar Iron mills is able to keep running all the time, and the other is being operated part of the time. The price of Bar Iron is firm, and one leading producer has notified its sales agents to make no contracts for future deliveries at present prices, specifications being required with orders. While orders for Structural Material on contracts are holding up fairly well, mainly for small building operations, little new business is in sight. Large bridge companies have little work on hand, and no building projects are coming up soon that will require much material. There is still a fair demand for Light Rails, new contracts having been placed during the week for several car lots. The demand for Billets is limited to an occasional sale of a car lot. The demand for Plates continues light, although some new orders are being received for car lots and less. Prices are being shaded $2 a ton by a majority of the smaller mills. There is not much demand for Sheets, and prices are being shaded from $1 to $2 a ton. Jobbers report a slight falling off in mill orders and warehouse business. Mill agents are looking for some improvement in the demand soon after election. We quote Iron Bars, 1.45c.; Cleveland, for car lots; Steel Bars, 1.50c., Cleveland, for car lots, half extras; Beams and Channels, 1.70c., base, Cleveland, and Plates, ¼-in. and heavier, 1.70c., Cleveland. We quote Sheets, mill shipments, car lots, Cleveland, as follows, these regular prices being shaded: Blue Annealed, No. 10, 1.90c.; Box Annealed, No. 28, 2.60c.; Galvanized, No. 28, 3.65c. Jobbers quote Iron and Steel Bars out of stock at 1.65c. to 1.70c. Beams and Channels from warehouse are 2c., and Plates, ¼-in. and heavier, 1.90c. Warehouse prices on Sheets are as follows: Blue Annealed, No. 10, 2.10c.; Box Annealed, No. 28, 2.70c.; Galvanized, No. 28, 3.80c. Warehouse prices on Boiler Tubes, 2¾ to 5 in., are 64 per cent. discount, and on Black Merchant Iron Pipe, base sizes, 71 per cent. discount.

**Old Material.**—No change is apparent in the local Scrap market, which continues firm and dull, with prices on about the same basis as they have been for several weeks. Turnings and Drillings are, perhaps, slightly firmer, although no change is noted in the quotation. The demand for all lines is light, being confined to small lots for early needs. Dealers do not appear willing to sell at present prices, but are holding on to the large stocks they have accumulated, expecting to get higher prices later. A few dealers are still quite active in buying up Scrap to add to their stocks, looking for higher prices after the election. Dealers' prices to the trade, per gross ton, f.o.b. Cleveland, are as follows:

| | |
|---|---|
| Old Steel Rails | $14.00 to $14.50 |
| Old Iron Rails | 17.00 to 17.50 |
| Steel Car Axles | 19.00 to 19.50 |
| Old Car Wheels | 14.50 to 15.00 |
| Heavy Melting Steel | 13.75 to 14.25 |
| Relaying Rails, 50 lb. and over | 22.00 to 23.00 |
| Railroad Malleable | 13.25 to 13.75 |
| Agricultural Malleable | 12.00 to 12.50 |
| Light Bundled Sheet Scrap | 9.50 to 10.00 |

The following quotations are per net ton, f.o.b. Cleveland:

| | |
|---|---|
| Iron Car Axles | $20.00 to $20.50 |
| Cast Borings | 7.00 to 7.50 |
| Iron and Steel Turnings and Drillings | 8.00 to 8.50 |
| Steel Axle Turnings | 8.50 to 9.00 |
| No. 1 Busheling | 12.00 to 12.50 |
| No. 1 Railroad Wrought | 13.50 to 14.00 |
| No. 1 Cast | 12.00 to 13.00 |
| Stove Plate | 10.75 to 11.25 |
| Bundled Tin Scrap | 8.00 to 9.00 |

## Cincinnati.

CINCINNATI, OHIO, October 21, 1908.—(*By Telegraph.*)

Iron and Steel interests, both crude and finished product, seem to be resting in this market. While there is comparatively little new business going, a sentiment of optimism is seen in the character and volume of inquiries and the firm attitude of furnace people, particularly Southern. Some specifications for good sized structures in the South and Southwest are engaging the attention of sales agents, and a number of building projects in this immediate territory held up for several months are going ahead. Representatives of large concerns manufacturing parts that enter into agricultural implements and vehicles are meeting with the Agricultural Implement & Vehicle Dealers' Association this week at Columbus. Old Material dealers are much concerned over what they allege to be discrimination in this territory favoring furnace people in shipments of Pig Iron from a new furnace. Dealers do not look for much business until after the election ,which is engaging the attention of all large consumers and manufacturers in this immediate locality to the exclusion of practically all else.

**Pig Iron.**—Dealers are booking only such orders as indicate immediate needs and for early shipments. At least one of the inquiries mentioned last week, that of the Western Electric Company, has been supplied, but the large pump interest and the Ohio Pipe interest are understood to be still in the market. A south central Ohio interest is asking for prices on about 600 tons of Foundry Iron for the balance of the year, and two small lots are wanted by parties in Illinois and Indiana. A southern Ohio Steel making interest is feeling the market for some Basic, which is expected to be taken by a Virginia furnace, at around $13 to $13.25, at furnace. It is reported here that a furnace of the Bird Iron Company at Ironton is ready to blow in next week. Princess Furnace, at Glen Wilton, which was banked recently for some slight repairs, is expected to blow in in about 10 days. There seems to be no early change indicated in affairs of Southern furnaces which, particularly those of Alabama, are holding for $13, Birmingham, for No. 2, deliveries extending into the first quarter. A purchase of 1500 tons Lake Superior Charcoal Iron by an Ohio interest is reported to have been at about $18, at furnace. Some resale Iron, which has turned up the past week or so, has, it is understood, been withdrawn until after election, parties believing a better market is indicated. Northern No. 2 is held fairly firm at $14.75, Ironton, although sales are said to have been made at 25c. less and Valley Iron at 50c. less. Standard Southern Charcoal is quotable at $19, at furnace, for No. 2, and $1 more for chilling grades. For early delivery and remainder of the year, based on freight rates of $3.25 from Birmingham, and $1.20 from Hanging Rock, we quote f.o.b. Cincinnati, as follows:

| | |
|---|---|
| Southern Coke, No. 1 | $16.25 to $16.75 |
| Southern Coke, No. 2 | 15.75 to 16.25 |
| Southern Coke, No. 3 | 15.25 to 15.75 |
| Southern Coke, No. 4 | 15.00 to 15.50 |
| Southern Coke, No. 1 Soft | 16.25 to 16.75 |
| Southern Coke, No. 2 Soft | 15.75 to 16.25 |
| Southern Coke, Gray Forge | 14.25 to 14.75 |
| Ohio Silvery, 8 per cent. Silicon | 19.70 |
| Lake Superior Coke, No. 1 | 16.45 to 16.95 |
| Lake Superior Coke, No. 2 | 15.95 to 16.45 |
| Lake Superior Coke, No. 3 | 15.45 to 15.95 |
| Standard Southern Car Wheel | 22.25 to 22.75 |
| Lake Superior Car Wheel | 21.75 to 22.25 |

(*By Mail.*)

**Coke.**—Sellers report the market exceedingly dull and listless so far as new business is concerned, although consumers are taking shipments on contract in good form. There are some inquiries on next year's business, with the producers quoting reluctantly and some of them not at all. Such as are, however, name a price of about $1.75, at oven, on Virginia Furnace brands for the first half and for Foundry $2.25. Spot Virginia Coke can be bought now at around $2; Pocahontas the same. Nothing is heard of spot business here on Connellsville brands, but a price of $1.90 and up is quoted for the first half on Furnace; Foundry grades, $2.25 to $2.35; spot business, $2 to $2.25.

**Finished Iron and Steel.**—Aside from some very good sales of special Steels to automobile builders and Twisted Steel Bars for concrete work, the finished material markets are dull, and little improvement is expected until the election excitement has subsided. Dealers and agents in this market for large Eastern corporations making Structural Material are interested in the letting of the Eighth street viaduct, which will take 2550 tons; some Structural Material for a large hotel at Asheville, N. C., and about 1800 tons for Texas points. The trustees of the Cincinnati Southern Railroad discussed the viaduct bids in session here this afternoon and referred them to their attorney for computation, the award being expected to be made at a meeting to be held next Monday. The low bidder is understood to be a Pittsburgh concern. Iron and Steel Bars are quiet, and there is no immediate prospect of betterment; all specifications are seemingly held up until after election. Collections are not good. Dealers are quoting to the trade, f.o.b. Cincinnati, as follows: Iron Bars, carload lots, 1.55c., base, with half extras; small lots from store, 1.85c., base, half extras; Steel Plates, carload lots, 1.75c., base, with half extras; small lots from store, 1.85c., base, half extras; Base Angles, carload lots, 1.85c., base; small lots from store, 2.10c.; Beams, Channels and Structural Angles, 1.85c., base; small lots from store, 2.10c.; Plates, ¼-in. and heavier, carload lots, 1.85c.; small lots from store, 2c.; Blue Annealed Sheets, heavy, No. 16, carload lots, 2.15c.; small lots from store, 2.50c.; No. 14, carload lots, 2.05c.; small lots from store, 2.40c.; No. 10 and heavier, carload lots, 1.95c.; small lots from store, 2.20c.; No. 12, carload lots, 2c.; small lots from store, 2.30c.; Sheets (Light), Black, No. 28, carload lots, 2.65c.; Galvanized Sheets, No. 28, carload lots, 3.70c.; Steel Tire, 4-in. and heavier, carload lots, 1.95c.; Plates, 3-16 and No. 8, carload lots, 2c.; small lots from store, 2.20c.

**Old Material.**—Dealers report business exceedingly quiet all along the line, the mills making absolutely no inquiry for

anything. Some spot sales of select Railroad Wrought for working up into commercial specialties bring top prices for cash, but there is practically nothing doing in other lines of Scrap. Dealers here have an immense stock of Old Car Wheels. Relayers and short and long Rails upon which they expect to realize big returns when business opens up. There is no change in prices, dealers holding for the following, which are f.o.b. Cincinnati:

| | |
|---|---|
| No. 1 R. R. Wrought, net ton | $12.50 to $13.50 |
| Cast Borings, net ton | 5.00 to 5.50 |
| Heavy Melting Steel Scrap, gross ton | 13.50 to 14.50 |
| Steel Turnings, net ton | 6.00 to 7.00 |
| No. 1 Cast Scrap, net ton | 12.00 to 13.00 |
| Burnt Cast, net ton | 9.00 to 10.00 |
| Old Iron Axles, net ton | 16.50 to 17.50 |
| Old Iron Rails, gross ton | 15.00 to 16.00 |
| Old Steel Rails, short, gross ton | 13.00 to 14.00 |
| Old Steel Rails, long, gross ton | 12.50 to 13.50 |
| Relaying Rails, 56 lb. and up, gross ton | 20.00 to 21.00 |
| Old Car Wheels, gross ton | 13.00 to 14.00 |
| Low Phosphorus Scrap, gross ton | 14.00 to 15.00 |

## Philadelphia.

PHILADELPHIA, PA., October 20, 1908.

A waiting market prevails in nearly every branch of the Iron and Steel trade. Buyers who have deferred making purchases for one reason or another during the past few months now hold off until after the coming election has been decided. Little business, therefore, is expected to come out in the next two weeks, but it is believed that a good share of the large volume which is undoubtedly being held in abeyance will be released early in November. Sales in this territory have been confined to small lots, particularly in the Foundry grades of Pig Iron. Steel making Irons showed more activity, and some fair tonnages of both Basic and Low Phosphorus were sold. The finished material market continues on about an even basis, but the bulk of the orders are small.

**Pig Iron.**—Sales have been light, particularly in Foundry grades. Buyers are not placing orders except for small lots for current needs, and while there has been a good run of inquiries both for deliveries during November and December, as well as for the first quarter of next year, those running into any tonnage are usually held up pending the outcome of the election. Sellers appear in the majority of cases less anxious to book any large orders for forward delivery; in fact, in a number of cases quote only for prompt shipment. The position of the furnaces in eastern Pennsylvania is strong, prices being well maintained, with no disposition to shade whatever. Not so much can be said of some of the central Pennsylvania furnaces, which seem to be more willing to make slight concessions, but usually figures quoted are not attractive enough to overcome the conservative policies of buyers in this territory, and no sales of moment are reported. Inquiries from several of the local foundries for lots ranging from 1000 to 2000 tons for delivery during the balance of the year have been before the trade, but in each case so far the buyer has deferred placing the business. Under the circumstances it looks as if there might be quite a good volume of business placed early in November, and sellers hope that with the releasing of these delayed orders the trade will show a forward movement, leading to better conditions all around. Prices for the Standard eastern Pennsylvania Foundry grades are strong, and the amount of No. 2 X available at $16.75, delivered, is smaller. The majority of sellers hold and make sales at $17, delivered in this territory during the balance of this year for this grade, and at that are not willing to book very heavy quantities. Southern Iron remains quiet, and while there has been some inquiry, particularly for low grade Irons, the volume of orders has been comparatively small. A trifle more business has been done by the sellers of Virginia Foundry Iron, but sales have generally been confined to small lots, the largest transaction during the week by one seller being 300 tons of No. 2 X, for delivery in this city during the balance of the year, at $17, delivered. Forge Iron has been in better demand, a moderate run of small orders having been placed at $15.50 to $15.75, delivered, while a lot of 1000 tons for shipment during the next 60 days is reported at $15.50, delivered. This grade continues scarce and prices are fully maintained. The Steel makers have again come into the market. The orders for Basic Iron placed, while not very large, have been for delivery during the balance of the year, and will probably average 3000 to 4000 tons. Prices of this grade are firmer. While it was possible several weeks ago to purchase for prompt shipment at $15.50, delivered, it is now apparently impossible to do better than $16 for any delivery during the next six months, and it was at the latter figure at which the recent sales were made. A better demand for Low Phosphorus Iron has also developed. Inquiries which were on the market for some fair tonnages for New England and Western shipment, as well as for several thousand tons for local consumption, are understood to have been closed at prices equal to $20, delivered in this territory. Notwithstanding the light business the tone of the market is strong throughout. Both buyers and sellers are awaiting development, while in the meantime producers report that Iron already purchased is being freely taken by melters. Quotations are practically unchanged, and for delivery in eastern Pennsylvania and nearby territory the following range of prices is named for deliveries during the remainder of the year:

| | |
|---|---|
| Eastern Pennsylvania, No. 2 X Foundry | $16.75 to $17.00 |
| Eastern Pennsylvania, No. 2 Plain | 16.25 to 16.50 |
| Virginia, No. 2 X Foundry | 17.00 |
| Virginia, No. 2 Plain | 16.75 |
| Gray Forge | 15.50 to 15.75 |
| Basic | 16.00 |
| Low Phosphorus | 20.00 to 20.50 |

**Ferromanganese.**—Sales have been very small, although there is still some fair business under consideration. Prices are somewhat firmer. For prompt shipment $44.50 to $45, Baltimore, could probably be done, but for deliveries running over the first half of next year $46 to $46.50, Baltimore, is quoted.

**Plates.**—Business continues on about an even basis. Orders are mostly small, but there has been a larger number of specifications. Current transactions are of a miscellaneous character. Some little railroad and shipyard business has been placed, while several good propositions are pending, but will likely be delayed until some time next month. Prices are being firmly held and range as follows for deliveries in this vicinity:

| | Carloads. Cents. | Parts carload. Cents. |
|---|---|---|
| Tank, Bridge and Boat Steel | 1.75 | 1.80 |
| Flange or Boiler Steel | 1.85 | 1.95 |
| Commercial Firebox | 1.95 | 2.00 |
| Marine | 2.15 | 2.20 |
| Locomotive Firebox Steel | 2.25 | 2.30 |

The above are base prices for ¼-in. and heavier. The following extras apply:

| | Extra per 100 lb. |
|---|---|
| 3-16-in. thick | $0.10 |
| Nos. 7 and 8, B. W. G. | .15 |
| No. 9, B. W. G. | .25 |
| Plates over 100 to 110 in. | .05 |
| Plates over 110 to 115 in. | .10 |
| Plates over 115 to 120 in. | .15 |
| Plates over 120 to 125 in. | .25 |
| Plates over 125 to 130 in. | .50 |
| Plates over 130 in. | 1.00 |

**Steel Billets.**—The volume of business coming out appears to be diminishing. Orders in some cases are not large enough to take even the curtailed output of plants, and it is hardly expected that any heavy tonnage will be placed in the near future, as consumers are placing orders to cover immediate needs only. Prices are being fully maintained in this territory, ordinary Rolling Steel being quoted at $26.20, Forging Steel $28.20, delivered in this territory, subject to the usual extras for high carbons and special sizes.

**Structural Material.**—The demand seems to improve, but the orders placed are usually small. The Pennsylvania Steel Company has taken one good contract during the week for a bridge over the Mississippi River at St. Louis—the material required running a little over 6000 tons. Fabricators have taken some small building work, but the business, on the whole, is still very irregular, and manufacturers report little increase in the aggregate tonnage taken. Prices for delivery in this territory still range from 1.75c. to 1.90c., according to specifications.

**Sheets.**—The tonnage of orders taken has not been so good, and mills enter the week with a rather light volume of business on their books. The bulk of the orders placed are small and generally for prompt shipment, manufacturers not being particularly optimistic regarding business in the near future. Prices are unchanged, and for mill shipment range as follows, a tenth extra being added for small lots: Nos. 18 to 20, 2.50c.; Nos. 22 to 24, 2.60c.; Nos. 25 to 26, 2.70c.; No. 27, 2.80c.; No. 28, 2.90c.

**Bars.**—Business is being held up to a considerable extent, and a waiting market prevails. Orders taken are usually small, and cover only immediate needs of consumers. Prices are fairly firm, notwithstanding the fact that most of the mills are operating on a greatly restricted output. Refined Iron Bars for delivery in this territory are quoted at 1.45c. to 1.50c. A small demand only is reported for Steel Bars, which are quoted at 1.55c., with Rerolled Bars at 1.50c., for delivery in this vicinity.

**Coke.**—A little more activity has developed in the Coke market. Several inquiries for fair quantities for delivery both during this year and the first half of next year are reported. Sales of moderate lots of spot Furnace Coke, at slightly less than recently quoted prices, are reported, but producers are firm for forward delivery. For spot shipment Furnace Coke is quoted at $1.50 to $1.65, at oven, with forward deliveries $1.65 to $1.85. Foundry Coke is quoted at $2.15 to $2.25, at oven, for prompt shipment, and $2.25 to $2.40 for forward delivery. For delivery in this territory the following range of prices is named:

| | |
|---|---|
| Connellsville Furnace Coke | $3.65 to $3.90 |
| Foundry Coke | 4.15 to 4.40 |
| Mountain Furnace Coke | 3.25 to 3.50 |
| Foundry Coke | 3.75 to 4.00 |

**Old Material.**—The market appears to have gained strength the past week, particularly in the grades used by

the rolling mills. Heavy Melting Steel Scrap has not been active. Some mills have been picking up odd lots at $15 and a shade better, but no round lots have been sold. Activity has developed in Borings, Turnings and Railroad Wrought, which have been taken quite freely, and prices on the two former show an advance, while some fair quantities of choice No. 1 Railroad Wrought have been sold at $18.50, delivered. Little business has been done in specialties, quotations on which are unchanged. For prompt delivery in buyers' yards, eastern Pennsylvania and nearby territory, quotations are nominally as follows:

| | |
|---|---|
| No. 1 Steel Scrap and Crops | $15.00 to $15.50 |
| Low Phosphorus | 18.50 to 19.00 |
| Old Steel Axles | 21.50 to 22.00 |
| Old Iron Axles | 22.50 to 23.00 |
| Old Iron Rails | 19.50 to 20.00 |
| Old Car Wheels | 15.00 to 15.50 |
| Choice No. 1 R. R. Wrought | 18.25 to 18.75 |
| Machinery Cast | 15.25 to 15.75 |
| Railroad Malleable | 14.00 to 15.00 |
| Wrought Iron Pipe | 14.25 to 14.75 |
| New Bundled Sheets | 13.50 to 14.00 |
| No. 1 Forge Fire Scrap | 12.00 to 12.50 |
| No. 2 Light Iron | 9.00 to 9.50 |
| Wrought Turnings | 12.25 to 12.75 |
| Stove Plate | 13.00 to 13.50 |
| Cast Borings | 11.50 to 12.00 |
| Grate Bars | 13.50 to 14.00 |

## Pittsburgh.

PARK BUILDING, October 21, 1908.—(*By Telegraph.*)

**Pig Iron.**—With a good deal of activity in both Basic and Bessemer Iron and a fairly heavy inquiry for delivery in first quarter and first half of next year, prices on both grades have further declined and are now below actual cost to furnaces that have to buy materials. A leading local consumer of Basic Iron has closed a contract with a Cleveland interest for about 6000 tons per month for a period of two and one-half years, with the privilege of extending the contract two years longer on a sliding scale arrangement based on the actual cost to the furnace of making Iron. When the cost is $14 or under, the consumer is charged 7 per cent. above this cost, and for every advance of 50c. a ton in the cost of making up to $17, the payment is to be 1 per cent. more, but the maximum is 12 per cent. above actual cost. The fact that a furnace interest would make such a contract has caused no little comment. The same consumer has bought 10,000 tons of Basic from a Valley interest, all for delivery this year, at a shade under $14, at furnace. Another consumer has bought about 4000 tons of Basic for November to February shipment at $13.90, Valley furnace, and also about 1500 tons for prompt shipment at $13.85. We quote Basic Iron for delivery this year at $13.85 to $13.90, Valley furnace, and for first quarter of next year at $14. Bessemer Iron has also declined in price, and has sold at $14.75, or lower, Valley furnace. One sale of 2000 tons is reported at $14.75, and another sale of 3000 tons at slightly under this price, all for reasonably prompt shipment. We quote Bessemer Iron at $14.75, Valley furnace, but on a firm offer this price could be shaded. There is some inquiry for Malleable Bessemer Iron, and it is held at about $14.25, Valley furnace. Foundry Iron is quiet, No. 2 being about $14.25 to $14.50, Valley furnace, but there is nothing doing in Gray Forge, which is absolutely neglected.

**Steel.**—There is practically no new inquiry for Billet or Sheet and Tin Bars, owing to the light demand for the products made from them. We quote Bessemer and Open Hearth Billets, 3⅞ in. and larger, up to and including 0.25 carbon, $25; 0.26 to 0.60 carbon, $1 extra; over 0.60 carbon, $2 extra, all f.o.b. Pittsburgh. For Wheeling, Martins Ferry, Follansbee, Newcastle, Sharon, Steubenville and Washington (Pa.) delivery, half the freight, or 50c. additional, is charged. Sheet and Tin Bars in random lengths are $27.50, f.o.b. Pittsburgh. Forging Billets take $2 advance over Rolling Billets.

(*By Mail.*)

As we get closer to the election, now only two weeks away, the tendency to defer buying except what is absolutely needed is becoming decidedly more marked, so that new orders in the Iron and Steel trades are few and far apart. This is particularly true of the finished lines, but in Pig Iron quite a heavy tonnage of Basic has been sold to two leading consumers, part of it on a long time contract on a sliding scale basis, and the balance for delivery this year. Much talk is heard about very large orders for all kinds of Finished Iron and Steel that are being held up waiting the result of the election, but these are no doubt greatly exaggerated, and many people will no doubt be disappointed if business does not start off with a rush on the morning of November 4. Such a condition is hardly likely, as everything at present would seem to be against it. The railroads are not likely to buy any large quantities of material for delivery this year.

**Ferromanganese.**—With little new inquiry, the tone of the market seems to be slightly weaker. We quote foreign 80 per cent. for prompt shipment at $42 to $42.50, seaboard, the freight rate to Pittsburgh being $1.95 a ton. For delivery over the next four to six months slightly higher prices are asked.

**Ferrosilicon.**—This material is weak in price, and we quote 50 per cent. at $65, Pittsburgh. On a firm offer this price might be shaded.

**Wire Rods.**—Few new orders are being placed, but specifications against contracts are coming in at a fairly satisfactory rate. A leading producer of Rods that ordinarily does not seek business in the open market is now understood to be soliciting orders. We quote Bessemer Rods at $33, Chain Rods, $33, and Basic Rods, $34, Pittsburgh.

**Muck Bar.**—We do not hear of any recent sales and continue to quote best grades, made from all Pig Iron, at, nominally, $25, Pittsburgh.

**Skelp.**—The plant of Moorhead, Brother & Co., Inc., in this city, makers of Skelp, started up on Monday to partial operation after being idle for some months. The Skelp market continues extremely quiet. Prices are nominally as follows: Grooved Steel Skelp, 1.45c. to 1.50c.; Sheared Steel Skelp, 1.50c. to 1.60c.; Grooved Iron Skelp, 1.60c. to 1.70c., and Sheared Iron Skelp, 1.70c. to 1.75c., f.o.b. Pittsburgh.

**Steel Rails.**—As yet no inquiries have come out for Rails for 1909 delivery, and none is expected for some little time. James McCrea, president of the Pennsylvania Railroad, now in Pittsburgh, is quoted as saying that the requirements of his company will be much heavier in 1909 than they were in 1908, but this is not saying much, as the road bought practically nothing this year. It placed a contract for about 50,000 tons early in the year; but, owing to dispute as to prices and specifications, the Rails were never taken out. A small quantity in Standard Sections is being specified for against contracts, but such tonnage is by no means heavy. The demand for Light Rails is holding up quite well, the Carnegie Steel Company having sold about 1500 tons in the past week. Nos. 1 and 2 Edgar Thomson Rail mills are running to about 30 per cent. of capacity, but No. 3 mill is down. Prices on Light Rails rolled from Billets, which are still being shaded from $1 to $2 a ton for Rerolled Rails, are as follows: $25 for 25 to 45 lb. Sections, with $1 advance for 20 lb., $2 advance for 16 lb., and $3 advance for 12 lb. Standard Sections are $28, at mill, and Angle Splice Bars, 1.65c., at mill.

**Plates.**—The hearing in the injunction proceedings in the Plates for the Brooklyn Water Works job is to be held October 23. Few new orders for Plates are being placed. Prices continue to be shaded from $1 to $2 a ton on the small amount of new business that is coming up. Regular prices on Plates are as follows: Tank Plates, ¾ in. thick, 6¼ in. up to 100 in. wide, 1.60c., base, at mill, Pittsburgh. Extras over this price are as follows:

Tank, Ship and Bridge quality, ¼-in. thick on edges, 100 in. wide, down to but not including 6 in. wide, is taken as base.

Steel Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per square foot, shall be considered ¼-in. Plate. Steel Plates over 72 in. wide must be ordered ¼-in. thick on edge, or not less than 11 lb. per square foot, to take base price. Steel Plates over 72 in. wide ordered less than 11 in. per square foot down to the weight of 3-16-in. shall take the place of 3-16-in.

Percentages as to overweight on Plates, whether ordered to gauge or weight, to be governed by the Association of American Steel Manufacturers' Standard Specifications.

| | |
|---|---|
| Gauges under ¼-in. to and including 3-16-in. Plates on thin edges | $0.10 |
| Gauges under 3-16-in. to and including No. 8 | .15 |
| Gauges under No. 8 to and including No. 9 | .25 |
| All sketches (excepting straight taper Plates varying not more than 4 in. in width at ends, narrowest end being not less than 30 in.) | .10 |
| Complete Circles | .20 |
| Boiler and Flange Steel Plates | .10 |
| "A. B. M. A." and ordinary Firebox Steel Plates | .20 |
| Still Bottom Steel | .30 |
| Marine Steel | .40 |
| Locomotive Firebox Steel | .50 |
| Shell grade of Steel is abandoned. | |
| For widths over 100 in. up to 110 in | .05 |
| For widths over 110 in. up to 115 in | .10 |
| For widths over 115 in. up to 120 in | .15 |
| For widths over 120 in. up to 125 in | .25 |
| For widths over 125 in. up to 130 in | .50 |
| For widths over 130 in | 1.00 |

TERMS.—Net cash 30 days. Pacific Coast base, 1.50c., f.o.b. Pittsburgh.

**Structural Material.**—Inquiries are better. The McClintic-Marshall Construction Company has taken a contract for the Iowa Central bridge at Keithsburg, across the Mississippi River. It includes 18 spans of deck Plate Girders, each 67 ft. long, two additional spans of Plate Girders, each 203 ft. long, and 10 spans of riveted through Trusses, each 205 ft. long, the contract calling for 4000 tons of Steel. Waddell & Harrington, Kansas City, Mo., are the consulting engineers. The same company has also taken 1500 tons of Steel for improvements to the Grand Central station of the New York Central in New York City, and the Steel for new buildings for the American Car & Foundry Company at St. Louis, including Steel foundry, Wheel foundry and machine shop, about 800 tons. Contracts have been placed for the new Empire Building in Birmingham, Ala., and the Steel, about 1100 tons, will likely be placed within a week. Nothing definite was accomplished at the meeting of the Structural Steel fabricators, held in this city last week, and we understand that prices on fabricated work are still going very

low. Some large work is in sight which is expected to be placed soon after the election. Deliveries of material by the mills are very prompt. We quote, f.o.b. mill, Pittsburgh: I-Beams and Channels, 3 to 15 in., inclusive, 1.60c., net; I-Beams over 15 in., 1.70c., net; H-Beams over 8 in., 1.80c.; Angles, 3 to 6 in., inclusive, ¼ in. and up, 1.60c., net; Angles, over 6 in., 1.70c., net; Angles, 3 x 3 in. and up, less than ¼ in., 1.50c., base, half extras, Steel Bar card; Tees, 3 in. and up, 1.65c., net; Zees, 3 in. and up, 1.60c., net; Angles, Channels and Tees under 3 in., 1.50c., base, half extras, Steel Bar card; Deck Beams and Bulb Angles, 1.90c., net; Hand Rail Tees, 3c., net; Checkered and Corrugated Plates, 3c., net.

**Sheets.**—A fairly active demand is noted for Sheets, particularly Roofing Sheets, which, however, are usually active at this season of the year. Galvanized Sheets are also moving out quite freely. There is more or less shading in prices of both Black and Galvanized Sheets, two or three of the leading mills being quite aggressive in going after orders. Nevertheless, a fairly large proportion of the actual orders for Sheets is being placed at close to regular prices. For shipment from mill, regular prices, which are shaded on large orders by some mills from $1 to $2 a ton, are as follows: Blue Annealed Sheets, No. 10 and heavier, 1.80c.; Nos. 11 and 12, 1.85c.; Nos. 13 and 14, 1.90c.; Nos. 15 and 16, 2c.; Box Annealed, Nos. 17 to 21, 2.25c.; Nos. 22 to 24, 2.30c.; Nos. 25 and 26, 2.35c.; No. 27, 2.40c.; No. 28, 2.50c.; No. 29, 2.60c.; No. 30, 2.70c. Galvanized Sheets, Nos. 10 and 11, 2.45c.; Nos. 12 and 14, 2.55c.; Nos. 15 and 16, 2.65c.; Nos. 17 to 21, 2.80c.; Nos. 22 and 24, 2.95c.; Nos. 25 and 26, 3.15c.; No. 27, 3.35c.; No. 28, 3.55c.; No. 29, 3.70c.; No. 30, 3.95c.; No. 28, Painted Roofing Sheets, $1.75 per square, and Galvanized Roofing Sheets, No. 28, $3.10 per square, for 2½-in. corrugations. These prices are subject to a rebate of 5c. per 100 lb. to the large trade under the usual conditions, jobbers charging the usual advances for small lots from store.

**Tin Plate.**—Within the last two weeks a large contract for Tin Plate has been placed by the leading salmon packing interest, approximating 8000 tons, all of which is to be delivered prior to March 1. Fully as much additional tonnage is expected to be placed within the next two weeks, and for the same deliveries. The Sabraton plant of the American Sheet & Tin Plate Company is still closed down for lack of water, but this company is increasing its other Tin Plate operations, now having 43 per cent. of its capacity active. Inquiries are a little better, particularly from the canning interests, and in a general way probably about 45 per cent. of the total Tin Plate capacity is active. Prices on desirable orders continue to be shaded from 10c. to 15c. per box, but on small orders very close to regular figures are being obtained. The regular price of Tin Plate is $3.70 for 100 lb. Cokes, 14 x 20, f.o.b. Pittsburgh, terms 30 days, less 2 per cent. off for cash in 10 days, this price being subject to the usual rebate of 5c. per base box in large lots.

**Hoops and Bands.**—A few small orders are being placed, but the mills are running mostly on specifications against contracts, which are coming in at a fairly steady rate. Regular prices on Hoops and Bands are being maintained, as follows: Steel Hoops, 1.80c., base, full Hoop card prices; Steel Bands, 1.40c., base, half Steel card extra, all f.o.b. cars, Pittsburgh, in carload lots, for delivery during 1908.

**Iron and Steel Bars.**—Conditions in the Steel Bar trade continue to show betterment, one leading interest stating that its specifications against contracts so far this month are fully 10,000 tons ahead of the same period last month. Shipments by the leading Steel Bar interests—the Republic, Carnegie and Jones & Laughlin companies—are getting heavier, the bulk of them being specifications against contracts, but at the same time a few new orders are being placed, although not very large. For the first time in a year the Brown-Bonnell mills at Youngstown, the largest Steel Bar mill owned by the Republic Iron & Steel Company, is in full operation in all departments. In Iron Bars there is a moderate activity, specifications against contracts being fair, but very little new business is being placed. On orders for Iron Bars, buyers usually request rush shipments, showing that the buying is for actual needs only and that stocks held by jobbers are very light. Prices on both Iron and Steel Bars are being well maintained. We quote Iron Bars at 1.40c., base, for Pittsburgh delivery, and 1.35c., base, for Western points, to which freight is added, except Chicago, the price for which is 1.50c., delivered. We quote Steel Bars at 1.40c., Pittsburgh, for base sizes.

**Railroad Spikes.**—Some improvement is observed in the demand for Spikes from the railroads, one road having placed an order with a local mill last week for 1000 kegs, and some additional new business is pending. However, the tonnage in Railroad Spikes shipped out by the mills this year will make a sorry showing as compared with last year. Orders for the smaller sizes continue active, and the mills are filled up for the next three or four weeks. Prices are firm, and we quote: Standard sizes, 4½ x 9-16 in., at $1.70, and the smaller sizes at $1.80 per 100 lb. in carload and larger lots, with an advance of 5c. per 100 lb. for less than carload, f.o.b. Pittsburgh:

**Merchant Steel.**—Specifications against contracts are coming in at a fairly steady rate, but new orders being placed are few and almost entirely for small lots for actual needs. Several mills report a heavier demand for Tire Steel, and shipments by the mills are showing slight betterment. On large orders for Shafting the regular discounts continue to be shaded to the extent of two or three points. Regular prices on Cold Rolled Shafting are 57 per cent. off in carloads and 52 per cent. on less than carloads, delivered in base territory. Prices on Merchant Steel are being shaded, regular quotations being as follows: Smooth Finished Machinery Steel, 1.80c. to 1.90c.; Flat Sleigh Shoe, 1.75c. to 1.85c.; Cutter Shoe Steel, 2.15c. to 2.25c.; Toe Calk, 1.90c. to 1.95c.; Railroad Spring Steel, 1.60c. to 1.75c., the higher prices being for Pennsylvania Railroad analysis. Carriage Spring Steel is 1.80c.; Tire Steel, Iron finish, 1½ x ½ in. and heavier, 1.40c.; under 1½ in., 1.55c. Planished Tire Steel is 1.60c., all f.o.b. at mill.

**Spelter.**—While stocks of Spelter are said to be very heavy, they are in strong hands, and as a result there is not much pressure to sell, and the tone of the market is firm, with prices slightly higher. We quote prime grades of Western Spelter at about 4.67½c., East St. Louis, equal to 4.80c., Pittsburgh, some sellers asking higher prices.

**Merchant Pipe.**—We note a fair demand from the general trade. Present conditions in the Pipe trade are fairly satisfactory. The leading mills are pretty well filled on the large sizes, and have a fair tonnage on their books in but weld sizes. Prices on both Iron and Steel Pipe are being well maintained. Discounts on Steel Pipe, ¾ to 6 in., to the large trade, are 76 and 5 per cent. off list. Regular discounts are as follows:

*Merchant Pipe.*

| | Jobbers, carloads, Steel. | |
|---|---|---|
| | Black. | Galv. |
| | % | % |
| ⅛ to ¼ in | 67 | 51 |
| ⅜ in | 69 | 55 |
| ½ in | 71 | 59 |
| ¾ to 6 in | 75 | 65 |
| 7 to 12 in | 72 | 57 |
| Extra strong, plain ends: | | |
| ⅛ to ¾ in | 60 | 48 |
| ⅛ to 4 in | 67 | 55 |
| 4½ to 8 in | 63 | 51 |
| Double extra strong, plain ends: | | |
| ½ to 8 in | 56 | 45 |

Discounts on Genuine Iron Pipe are as follows:

| | Black. | Galv. |
|---|---|---|
| | % | % |
| ⅛ to ¼ in | 65 | .. |
| ⅜ in | 67 | 53 |
| ½ in | 69 | 57 |
| ¾ to 6 in | 73 | 63 |
| 7 to 12 in | 70 | 55 |
| Extra strong, plain ends: | | |
| ⅛ to ⅜ in | 58 | 46 |
| ½ to 4 in | 65 | 53 |
| 4½ to 8 in | 61 | 49 |
| Double extra strong, plain ends: | | |
| ½ to 8 in | 54 | 43 |

**Boiler Tubes.**—A few small scattering orders for Locomotive Tubes are being placed by the railroads for repair work, but beyond this there is no new buying. The demand for Merchant Tubes is excessively dull, and prices are more or less shaded. For Merchant Tubes in small lots, on which an extra 5 per cent. is allowed in carloads, discounts are as follows:

*Boiler Tubes.*

| | Iron. | Steel. |
|---|---|---|
| 1 to 1½ in | 42 | 47 |
| 1¾ to 2¼ in | 42 | 59 |
| 2½ in | 47 | 61 |
| 2¾ to 5 in | 52 | 65 |
| 6 to 13 in | 42 | 59 |

2½ in. and smaller, over 18 ft. long, 10 per cent. net extra.
2¾ in. and larger, over 22 ft. long, 10 per cent. net extra.

**Iron and Steel Scrap.**—A leading local consumer of Scrap is reported to have bought in the last week or two a very large tonnage of Heavy Steel Melting Scrap in the Chicago District and at other points and at prices which figure out from $16 to $16.50, delivered Pittsburgh. The Scrap situation is very strong at present, the demand being larger than the available supply, and prices are decidedly firm. We quote, per gross ton: Heavy Steel Scrap, for Pittsburgh, Follansbee, Monessen, Sharon, and Steubenville delivery, $15.25 to $15.50; Heavy Steel Scrap for hand charged Open Hearth furnaces, pieces weighing 10 lb. minimum to 300 lb. maximum, $1 a ton higher; Cast Iron Borings, $9.25 to $9.50; Bundled Sheet Scrap, $12.50 to $12.75; No. 1 Busheling Scrap, $14.25 to $14.50; No. 2, $10.75 to $11; No. 1 Railroad Wrought Scrap, $16.75 to $17; No. 1 Cast Scrap, $14.75 to $15; Iron Axles, $22.50 to $23; Sheet Bar Crop Ends, $19 to $19.25; Low Phosphorus Melting Stock, guaranteed 0.04 and under in Phosphorus, $18.50; Rerolling Rails, $17.50 to $17.75; Steel Axles, $19.50 to $20; Grate Bars, $12.50 to $12.75; Old Car Wheels, $15.50 to $16; Machine Shop Turnings, $10.25 to $10.50; Railroad Malleable Scrap, $14.50 to $14.75; Iron Rails, $19; Locomotive Tires, $17 to $17.25, all f.o.b. Pittsburgh.

**Coke.**—The continued dry weather is seriously affecting operations at the Coke plants, and as a result prices on both Furnace and Foundry Coke for prompt shipment are a little higher. Furnace Coke is now held for spot delivery at $1.55 to $1.60, and Connellsville 72-hr. Foundry Coke at $2.15 to $2.25 per net ton, at oven. Furnace Coke for shipment in first half of next year is held by the makers at $1.85 to $1.90, while the furnaces are bidding $1.65 to $1.75. The output of Connellsville Coke last week was about 195,000 tons, only a little over 40 per cent. of capacity. Unless there are heavy rains soon some of the Coke plants will have to shut down entirely for lack of water.

## Buffalo.

BUFFALO, N. Y., October 20, 1908.

**Pig Iron.**—Business continues about the same as last week, with possibly somewhat larger shipments on contracts, and a slight increase in small orders for immediate shipment. A little more interest is being shown in business for early next year delivery, as evidenced by considerable inquiry during the week. Furnacemen, however, are rather lukewarm in the matter of making quotations for such deliveries, preferring to wait until after November 3. We quote as follows, f.o.b. Buffalo:

| | |
|---|---|
| No 1 X Foundry | $15.50 to $16.00 |
| No. 2 X Foundry | 15.25 to 15.75 |
| No. 2 Plain | 14.75 to 15.25 |
| No. 3 Foundry | 14.50 to 15.00 |
| Gray Forge | 14.25 to 14.75 |
| Basic | 15.00 |
| Malleable Bessemer | 15.50 to 16.50 |
| Charcoal | 20.00 to 20.50 |

**Old Material.**—The market is stagnant, with few signs of activity manifest in any line, and no improvement is looked for during the next two weeks. Prices remain practically unchanged, and quotations are nominally as follows, per gross ton, f.o.b. Buffalo:

| | |
|---|---|
| Heavy Melting Steel Scrap | $14.50 to $15.00 |
| No. 1 Railroad Wrought | 15.00 to 15.50 |
| No. 1 Railroad and Machinery Cast Scrap | 14.00 to 14.50 |
| Old Steel Axles | 17.00 to 17.50 |
| Old Iron Axles | 20.00 to 20.50 |
| Old Car Wheels | 15.00 to 15.50 |
| Railroad Malleable | 13.00 to 13.50 |
| Boiler Plate | 12.00 to 12.50 |
| Locomotive Grate Bars | 11.50 to 12.00 |
| Pipe | 11.50 to 12.00 |
| Wrought Iron and Soft Steel Turnings | 8.00 to 8.25 |
| Clean Cast Iron Borings | 6.50 to 7.00 |
| No. 1 Busheling Scrap | 12.50 to 13.00 |

**Finished Iron and Steel.**—Orders for Bars, Plates and Structural Shapes have increased somewhat in number, but quantities still remain small, and it is not expected that any large orders will be placed prior to election. One or two contracts have been made contingent upon the result of the election, one for $25,000 worth of machinery, requiring Structural Shapes containing a clause providing for cancellation. The contract for the Structural Material for the Sinclair-Rooney Building here is held back for the present, also the contract for the Enos & Sanderson Hardware Company's warehouse. The Pinckerton Construction Company, Philadelphia, has been awarded a contract for the construction of the East Aurora extension of the Buffalo Southern Railway, for which Lackawanna Steel Company's Rails will be used.

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The Federal Rolling Mill Company, Buffalo, of which Gustav Benjamin is president, has completed arrangements to act as sales agent for the entire output of the rolling mill at Elmira Heights, Elmira, N. Y.

## Birmingham.

BIRMINGHAM, ALA., October 19, 1908.

**Pig Iron.**—The transactions reported during the past week are not indicative of a change in the status of the market. Melters have in practically all cases limited the proportions of their engagements to actual requirements, and as a result the aggregate of sales is comparatively small. As to the strength of quotations, a definite statement is not warranted. The sale of 4000 tons of Foundry grades to a merchant interest at lower figures than a schedule of $13 is reported, but on small lots for prompt shipment, which have largely composed the week's business, this schedule has been maintained. There are still no reports of lower figures than $13, Birmingham, having been named for the first quarter, and a recent bona fide inquiry from a large Pipe manufacturer failed to elicit quotation on deliveries further advanced. The prospects for an early improvement in the demand, based upon inquiries from all lines of foundry trades, are very promising, but the attitude of prospective purchasers is such that the inception of a buying movement can only be conjectured. An optimistic feeling generally exists among producers, as is evinced by the fact that there has been no cessation of repairs to idle furnaces, and two stacks in addition to those previously mentioned will be ready for operation by November 15. The recent sale of Basic Iron by a local interest is worthy of note, inasmuch as the operation of two large stacks for some months will probably be required to fill the orders on hand, thus decreasing the output of Foundry grades. The latest sale of Basic reported was 10,000 tons, which brought $13 per ton, Birmingham. By November 1 the production of Foundry Iron in this State is expected to be represented by 19 stacks. There are at present 17 stacks in operation on Foundry grades, with six making Basic.

**Cast Iron Pipe.**—The aggregate of comparatively small orders placed in this market during the past week is attractive and prices received are satisfactory. No large contracts for letting at an early date are being advertised, but the outlook in the Middle West is promising and a significant tonnage is expected to develop from points along the Pacific Coast. There is also a prospect for a large Gas Pipe order from Cuban points. The output of Southern plants is now close to normal, and in view of large contracts recently secured by such interests, the likelihood of sufficient stock accumulation to become a factor is quite removed. No change is authorized in published quotations, the market being quoted firm at the following prices for Water Pipe per net ton, f.o.b. cars here: 4 to 6 in., $24; 8 in. to 12 in., $23; over 12 in., average, $22, with $1 per ton extra for Gas Pipe. These quotations are probably shaded on large municipal contracts.

**Old Material.**—Dealers are unable to add to their stock in proportions desired by reason of the general disposition to await developments in the Pig Iron market. Consumers are likewise indisposed to purchase under existing conditions, and the inactivity is more pronounced. There has been no effort to create a demand at the expense of quotations, and dealers' asking prices are unchanged. We quote as follows, per gross ton, f.o.b. cars here:

| | |
|---|---|
| Old Iron Rails | $14.50 to $15.00 |
| Old Iron Axles | 15.50 to 16.00 |
| Old Steel Axles | 13.00 to 13.50 |
| No. 1 Railroad Wrought | 13.50 to 14.00 |
| No. 2 Railroad Wrought | 10.50 to 11.00 |
| No. 1 Country Wrought | 11.00 to 11.50 |
| No. 2 Country Wrought | 9.50 to 10.00 |
| No. 1 Machinery | 11.00 to 11.50 |
| No. 1 Steel | 9.50 to 10.00 |
| Stove Plate and Light Cast | 9.50 to 10.00 |
| Cast Borings | 5.00 to 5.50 |

## Metal Market.

NEW YORK, October 21, 1908.

**Pig Tin.**—Business throughout the last week was somewhat more active than during the preceding week. While there was a steady demand here, it was really of small volume until yesterday, when between 200 and 250 tons were reported to have been sold. Prices fluctuated in accordance with the fall and rise of the London market. In London a better business was also reported, and the news cables announced that operators there were anticipating the outcome of the American election and were planning an upward movement. Private cable advices to-day mention active buying in London for a large American consumer. Buying in the New York market yesterday was apparently of a speculative nature, the operations being based upon the London advices. It succeeded in jumping prices from 29.10c. to 29.50c. Prices here during the week were as follows:

| | Cents. |
|---|---|
| October 14 | 29.20 |
| October 15 | 29.20 |
| October 16 | 29.10 |
| October 19 | 29.10 |
| October 20 | 29.25 |
| October 21 | 29.50 |

The London market to-day showed an advance of £1 17s. 6d., as compared with the quotation of a week ago, naming £134 5s. for spot and £135 15s. for futures. The arrivals so far this month aggregate 1635 tons, and it is figured that about 1505 tons are afloat. Considerable interest is shown in the trade concerning the latest statistical compilation of C. Mayer, secretary of the New York Metal Exchange. This document, which is sent in printed form to members of the exchange, gives the history of the movement of Pig Tin by months from 1893 to date. It shows the shipments, deliveries, visible supply and London and New York prices. A hasty analysis of it shows that by averaging the prices of the months throughout this period when the visible supply was the same as it is now, the average London price figures some £20 below the present London quotation. Of course, some consideration should be given the great increase in deliveries during this period into consumption. The compilation is worthy of perusal, and is like all of Mr. Mayer's clever statistical work, timely to say the least.

**Copper.** Due probably to the fact that important Naugatuck Valley consumers came into the market last week, the market is firmer and general business has been stimulated somewhat. The Valley interest bought about 5000 tons of Electrolytic for delivery extending over the balance of this year. We understand that the price paid was 13⅜c., delivered. Lake is now held by the producers at 14c. There are still odd lots to be had, however, from outside holders, and it is said that these may be picked up at

13½c. to 13¾c. There is plenty of Electrolytic to be had, the best quotation being 13.50c., delivered, in the Naugatuck Valley, 30 days. This figure equals 13.25c., net cash, f.o.b. New York. London is a shade stronger to-day, at £60 for spot, £60 17s. 6d. for futures and £63 for Best Selected. Exports so far this month are making a good showing, amounting to 15,321 tons.

**Pig Lead.**—Another reduction in the price of shipment Lead was made last Thursday by the American Smelting & Refining Company. The price was dropped to 4.30c. for 50-ton lots, f.o.b. New York. This price comes down to the level of the outside interests, but has brought forth no new business, and consequently no further cutting by the independent holders. St. Louis quotes 4.07½c. to 4.10c. London is unchanged at £13 6s. 3d.

**Spelter.**—There is no change. This market is 4.77½c. to 4.82½c., and St. Louis telegraphs 4.62½c. to 4.67½c. London is a shade lower at £19 12s. 6d.

**Aluminum.**—Prices have again been reduced. No. 1 Ingots are now quoted at 26c. for 25-ton lots and 25¾c. for larger quantities. Sheets are now 35c., base.

**Antimony.**—The market is unchanged. Cookson's is quoted 8c. to 8¼c., Hallett's 7¾c. to 8c. and other brands 7½c. to 7¾c.

**Nickel.**—Prices are unchanged, at 45c. for 10-ton lots and 50c. to 60c. for smaller quantities.

**Tin Plates.**—Nothing of interest has developed. Prices remain at $3.89, New York, and $3.70c., Pittsburgh, for 100 lb. I. C. Coke Plates. Swansea is unchanged, at 12s. 3d.

**Old Metals.**—The demand is light, consumers awaiting the result of the election. Dealers' selling prices are as follows:

| | Cents. |
|---|---|
| Copper, Heavy and Crucible | 12.75 to 13.00 |
| Copper, Heavy Wire | 12.50 to 12.75 |
| Copper, Light and Bottoms | 11.50 to 11.75 |
| Brass, Heavy | 9.00 to 9.25 |
| Brass, Light | 7.25 to 7.50 |
| Heavy Machine Composition | 11.75 to 12.00 |
| Clean Brass Turnings | 8.25 to 8.50 |
| Composition Turnings | 9.50 to 10.00 |
| Lead, Heavy | 4.00 |
| Lead, Tea | 3.75 |
| Zinc Scrap | 3.25 to 3.50 |

L. Vogelstein & Co., 100 Broadway, New York, furnish the following figures of German imports and exports of copper from January to August, 1908: Imports, 107,387 tons; exports, 5442 tons; apparent consumption, 101,945 tons, as compared with apparent consumption during the same period in 1907 of 78,409 tons. Of the quantity imported 99,211 tons came from the United States.

## New York.

NEW YORK, October 21, 1908.

**Pig Iron.**—Aside from one sale of about 5000 tons of Foundry Iron, transactions during the week have been limited. Few melters have covered beyond this year, and many still need Iron for the two last months of the current year. We quote, at tidewater, Northern No. 1 Foundry, $17.25 to $17.75; No. 2 Foundry, $16.75 to $17.25, and No. 2 Plain, $15.75 to $16.25. Alabama Irons are quoted $17.50 to $17.75 for No. 1 Foundry, and $16.75 to $17.25 for No. 2 Foundry.

**Steel Rails.**—The Pennsylvania Steel Company has taken orders for 7000 tons of Rails in the past week, of which 5000 tons is for the Philadelphia & Reading Railroad, 1000 tons for a Long Island trolley line, and 1000 tons for a Pennsylvania trolley line. A 2100-ton purchase by the Ann Arbor Railroad, made some weeks ago, has just been announced, the order going to the Lackawanna Steel Company. The Pittsburgh District mill will roll next week a 2000-ton order for immediate delivery. For South Chicago scattering orders amounting to about 1000 tons were taken.

**Structural Material.**—Last week's orders taken by the American Bridge Company amounted to nearly 15,000 tons, including the Oliver contract of about 10,000 tons, and other fabricating companies took 13,000 to 14,000 tons in the week. The Emigrant Savings Bank contract for Steel has been awarded to Post & McCord, and it is expected that the fabricating will be done by the American Bridge Company. The Ritz-Carlton Hotel building has been taken by Levering & Garrigues, and most of the Steel will be rolled by the Lackawanna Steel Company. Bids have gone in on the Belnord, or Hoyt, Apartment House, the Steel requirements being now figured at 5000 tons. The Hudson County, N. J., highway bridge over the Hackensack River, 1800 tons, was taken by the American Bridge Company, and the McClintic-Marshall Construction Company received the contract for 1500 tons for the New York Central terminal at Forty-second street. It is reported that the bids for this last work were around $44 a ton for fabricating, or $6 a ton less than the basis of the preceding New York Central contract, which was let about six months ago. The same road is now asking bids on 2000 tons additional for its terminal work. The Penn Bridge Company, Beaver Falls, Pa., has recently taken contracts for Steel lock gates for the Government, at Hales Bar, Tenn., 240 tons; for the Steel work for the Standard Sanitary Mfg. Company's new foundry building at New Brighton, Pa., 560 tons; for five bridges for the Department of Public Works, New York State, 250 tons; also 200 tons for bridges in North Carolina. The most important pending business is that for the Chicago & Northwestern sation and approaches at Chicago. The first inquiry, made some time ago, was for 6000 tons for the station; bids have now been asked on 24,000 tons more for the approaches, Steel canopies, &c. For the three colliers recently awarded by the Government to the Maryland Steel Company, a portion of the shapes will be rolled at Steelton, Pa., and the Plates at the Central Iron & Steel Company's mills at Harrisburg, from Pennsylvania Steel Company's slabs. While much of the large Structural business recently done has evidently been put through on a Pittsburgh basis of 1.30c. for plain material, the general run of small work is still based on 1.60c. For tidewater deliveries, shipments from mill, we continue to quote as follows: Beams, Channels, Angles and Zees, 1.76c.; Tees, 1.81c. On Beams, 18 to 24 in., and Angles, over 6 in., the extra is 0.10c. Structural Material, cut to lengths, is sold in small lots at about 2¼c.

**Ferroalloys.**—Ferromanganese is quoted at $43, Baltimore, duty paid. There is a good inquiry, but we hear of no sales of importance. Fifty per cent. Ferrosilicon is still held at $68 to $70. An inquiry in the market from a prominent Pittsburgh builder of blowing engines, having a large Steel foundry, calls for 300 tons of 12 per cent. We understand that the order has not yet been placed.

**Bars.**—While the demand appears to be confined to small lots, the market for Bar Iron is fairly firm at 1.45c. to 1.50c., tidewater. The mills report that specifications on contracts are now being received a little more freely, indicating that consumption has grown somewhat. Steel prices are unchanged at 1.56c., tidewater.

**Plates.**—As far as can be ascertained, no orders of importance are being placed in this vicinity. The demand for small lots for a portion of the week showed a gratifying increase in number, but the aggregate of such transactions was not heavy. Prices continue as follows, at tidewater, for standard sized Plates: Sheared Plates, 1.76c. to 1.86c.; Flange Plates, 1.86c. to 1.96c.; Marine Plates, 2.16c. to 2.26c.; Firebox Plates, 2.65c. to 3.50c., according to specifications.

**Cast Iron Pipe.**—The city of New York is expected within the next week or two to ask for bids on about 1300 tons for the Coney Island high pressure fire service. Very little new work is now coming up, and Pipe manufacturers report that the demand for small lots has practically ceased for the season. No inquiries are being received for next year's delivery. Carload lots are nominally quoted at $23.50 to $24 for 6-in.

**Old Material.**—Some demand is reported for low grade Scrap, but consumers generally are not disposed to make purchases for stock. Operations seem likely to be decidedly light until after election. While the market is quiet, prices are well sustained, as follows, per gross ton, New York and vicinity:

| | |
|---|---|
| Old Girder and T Rails for melting | $11.50 to $12.00 |
| Heavy Melting Steel Scrap | 11.50 to 12.00 |
| Old Steel Rails, rerolling lengths | 14.00 to 14.50 |
| Relaying Rails | 22.50 to 23.00 |
| Old Iron Rails | 16.50 to 17.00 |
| Standard Hammered Iron Car Axles | 18.50 to 19.00 |
| Old Steel Car Axles | 15.50 to 16.00 |
| No. 1 Railroad Wrought | 15.00 to 16.00 |
| Iron Track Scrap | 12.00 to 13.00 |
| No. 1 Yard Wrought, long | 14.00 to 14.50 |
| No. 1 Yard Wrought, short | 12.50 to 13.50 |
| Light Iron | 7.00 to 7.50 |
| Cast Borings | 7.50 to 8.00 |
| Wrought Turnings | 8.50 to 9.00 |
| Wrought Pipe | 11.00 to 11.50 |
| Old Car Wheels | 14.00 to 14.50 |
| No. 1 Heavy Cast, broken up | 13.50 to 14.00 |
| Stove Plate | 11.50 to 12.00 |
| Locomotive Grate Bars | 11.50 to 12.00 |
| Malleable Cast | 12.50 to 13.00 |

## Iron and Industrial Stocks.

NEW YORK, October 21, 1908.

The stock market has been quiet, but firm, as the various influences both here and abroad have not been of a character to unsettle sentiment. Apparently confidence is felt that the approaching election will not result in conditions likely to disturb values. The iron and industrial stocks have shown little activity, as trade developments are not of a character to cause either liquidation or extensive buying. The range of prices on active stocks in this class from Thursday of last week to Tuesday of this week was as follows: United States Steel common 46⅛ to 47⅛, preferred 108¾ to 110⅛; Bethlehem Steel common 20 to 21, preferred 45½; Car & Foundry common 40⅛ to 40¾, preferred 102 to 102¼; Locomotive common 48½ to 50¼, preferred 105; Steel Foundries new 30; Cambria Steel 35¾ to 36⅛;

Colorado Fuel 35 to 35⅞; Crucible Steel common 6 to 6½, preferred 42½ to 44½; Pressed Steel common 32 to 32⅞, preferred 93⅞; Railway Spring common 38; Republic common 22¼ to 22⅜, preferred 79 to 79½; Sloss-Sheffield common 62½ to 64, preferred 103¼; Cast Iron Pipe common 24⅛ to 25¾; Can common 6¾ to 7, preferred 66½ to 68⅞. Last transactions up to 1.30 p.m. to-day are reported at the following prices: United States Steel common 47⅜, preferred 110, bonds 102¾; Car & Foundry common 40¾, preferred 102; Locomotive common 49¾, preferred 105; Colorado Fuel 36⅝; Pressed Steel common 33, preferred 92; Railway Spring common 38; Republic common 22½, preferred 79¼; Sloss-Sheffield common 64½; Cast Iron Pipe common 24⅛, preferred 71; Can common 7, preferred 67½.

**Dividends.**—The Pennsylvania Steel Company has declared a semiannual dividend of 3½ per cent. on the preferred stock, payable November 2.

Henry R. Worthington, Inc., has declared the regular semiannual dividend of 3½ per cent. on the preferred stock, payable November 2.

## Politics and Trade in Canada.

TORONTO, October 17, 1908.—The political campaign, which has been going on in this country for the last five weeks, and which was in an incipient stage of activity for as many weeks before that, will close on the 26th inst., the day of voting for all but five of the 221 constituencies, into which the country is divided for Dominion election purposes. Whether the Government is sustained or defeated at the polls, the end of the contest will be welcomed by the commercial community. With this struggle between the two political parties decided, the atmosphere of trade is expected to become settled and business improvement to become progressive. The campaign is believed to be the last of the series of occurrences retarding the revival of trade. Unfavorable though it has been to business, the campaign was not one for the determining of any vital question. Commercial enterprise was looking on, but not as if the battle were between its champion and its oppressor. The tariff has not been a subject of conspicuous legend or the banner of either party. Little, in fact, has been said about it in the platforms or in the newspapers of either the Conservatives or the Liberals. But the fight has been a hot one from the day it opened, and it will doubtless wax hotter until the day it closes. Seldom have the people of Canada given themselves up to politics as they have done for the last month. While men are discussing the record of the Government, keenly identifying themselves with the fortunes of their several candidates, reading campaign literature, keeping themselves informed as to the progress of the campaign, attending political meetings, engaging in political arguments, and in general are letting themselves be engrossed in politics, they cannot be giving much energy to buying and selling. Retailers, wholesalers, commercial travelers and manufacturers will be glad when the polls close a week from Monday night.

In every other way conditions have been collecting their strength on the side of trade revival, and trade revival is expected to show very perceptibly increasing activity after the elections. In the Northwest the railroads are forwarding the crop with a celerity they were incapable of in any former season. Most of the Canadian Pacific line from Winnipeg to Fort William is now double tracked. At the head of the lakes, both the Canadian Pacific and the Canadian Northern have greater terminal elevator accommodations than ever. So far little has been heard of the usual cry of car shortage, and of insufficient power. Yet this season the crop to be handled is of a tonnage at least twice as great as was that of a year ago. But the railroads have not had the enormous business on their Eastern lines, which formerly made it impossible to spare all the rolling stock required for their Western traffic. It is further to be considered that the Grand Trunk Pacific is now a collector of grain over a large extent of country west of Winnipeg. The railroads are well seconded by the lake carriers, of which an unusually large fleet is this season in the grain trade. On the part of the farmers, there is no very strong motive to hold grain off the market. After the disappointment of the 1907 crop, and after the land-gambling experience of the two years immediately preceding, the farmers need the money. Happily falling in with the pressure to sell, is a market that offers them high prices. Good weather for the transportation is another propitious element in the situation. If navigation remains open well into next month, there will be such a clearance of the bins and elevators as the West never before experienced.

Business men with whom the writer has talked about the outlook concede that the crop proceeds controllable by the farmers—that is, what is left after the liquidation of pressing debts—will suffice to give a very marked impulse to trade. "Concede" is the word to use in this connection, for, as a rule, the business men of Canada are still very conservative. Their spirits have not run back to the high mark on the scale at which they stood two years ago. At that time business men were not looking for obstacles to trade. The country was going forward and exerting a pulling power that brought every line of trade and industry forward with it. It seemed impossible that there could be an arrest of such national vigor. At all events, the banks and mercantile interests calculated on its continuance, and "expansion" was the order of the day up to the middle of last year. The sharpness of the reaction that then set in has made caution almost as much the habit of mind as optimism then was.

Though much moderated, trade in Canada was at no time greatly depressed. Take the period from the opening of the current fiscal year up to the end of August. In that five-month period, usually not a time of high activity, the country's imports of iron and steel and products thereof kept up fairly well. Here are some of the items of imports from the United States under that head for the term in question:

| | | | |
|---|---|---|---|
| Harvesters | $86,730 | Typewriting machines | $160,705 |
| Mowing machines | 56,821 | Printing presses | 55,567 |
| Plows | 152,420 | Textile machinery | 81,983 |
| Implement parts | 185,143 | Sundry machinery | 2,212,980 |
| Bar iron | 282,218 | Steel rails | 192,388 |
| Canada plates, &c. | 106,486 | Angles, beams, &c. | 595,966 |
| Rough castings | 123,458 | Hoop, band, &c. | 68,871 |
| Cast scrap | 65,548 | Sheets and plates | 335,579 |
| Locomotives | 273,586 | Scales and balances | 67,060 |
| Gasoline engines | 322,511 | Galvanized sheets | 148,293 |
| Steam engines | 86,772 | Steel | 311,465 |
| Pipe fittings | 112,974 | Stoves | 164,497 |
| Hardware | 125,230 | Switches and frogs | 35,872 |
| Steel bridges, &c. | 118,150 | Tubing | 242,626 |
| Pig iron | 198,352 | Wire, &c. | 164,061 |
| Locks | 73,523 | Nuts, rivets, bolts | 29,789 |
| Automobiles | 184,647 | Wrought and steel scrap | 59,232 |
| Automobile parts | 57,710 | Cutlery | 39,088 |
| Ore crushers, &c. | 37,251 | Firearms | 112,965 |
| Farmers' portable engines | 418,521 | Steel plate for bridges | 135,687 |
| Steam shovels | 62,203 | milling cutters | 102,567 |
| Threshing machines | 208,127 | Iron and steel for Saws | 25,435 |
| Parts of threshing machines | 146,144 | Tools | 268,725 |
| Sewing machines | 65,810 | Sundry iron and steel articles | 1,099,019 |
| Type casting machines | 51,373 | | |

C. A. C. J.

**French Iron Ore for Great Britain.**—The Ironmasters' Association of the Meurthe and Moselle has sent a representative to England to investigate the chances for the export of iron ore from French Lorraine to Great Britain. The exports of these ores to Belgium and Germany were 1,211,046 tons in 1906, while only 882,200 tons in 1905, special freight rates being granted on such shipments by the German Government. Co-operation by the French railroad reaching the Briery and Longwy ore districts is expected to assist in establishing exports to Great Britain by way of Calais or other ports. The *Iron and Coal Trades Review* notes that the small extent of other foreign supplies of ores suitable for making acid steel is favorable to the entrance of the French Lorraine ores into Great Britain.

**Monel Metal Gaskets, Washers, Etc.**—The United States Indestructible Gasket Company, 16 South William street, New York, to whose attention the qualities of Monel metal were called some months ago, recognized its merit for gaskets, washers, tubes, &c., and is developing the trade along these lines.

# The Machinery Trade.

NEW YORK, October 21, 1908.

Much complaint is heard among machinery houses of the unfavorable condition of business which was exceedingly light the past week, and it is becoming more apparent that any betterment must await the outcome of the election next month. The orders and inquiries received were few, and while in some quarters a slight improvement in railroad and street railroad buying is reported, these purchases, covering only tools for replacement, were insufficient to counterbalance the falling off in industrial plant requirements. The large industrial companies are inactive and no substantial inquiries from the railroads are reported. Several of the latter, however, are about to start construction of new shops, which though small, will necessitate the purchase of considerable new machinery. Dealers in power plant equipment and accessories report a light demand.

The convention of the National Machine Tool Builders' Association, which was held Tuesday and Wednesday at the Hotel Imperial, New York, brought many prominent machinery men to the city. A number of the visitors arrived a day earlier and spent their time visiting dealers, and export men who specialize in machine tools received a good deal of their attention. The visitors all seem to take a cheerful view of the business situation. Several representative machine tool manufacturers said that in the last two or three weeks their business has picked up, and at least one manufacturer reported that his orders for this month were satisfactory. Most of the manufacturers have caught up on their orders, and in about every branch of the machine tool business equipment can now be had for prompt delivery. Several of the visitors stated that they have added to their shop forces in the last few weeks. The proceedings of the convention are elsewhere given in detail.

**Machinery Requirements of La May Machine Works.**

The La May Machine Works, Arthur C. La May, general manager, 48 North Water street, Rochester, N. Y., is now ready to receive preliminary bids, and will place orders within the next 60 days for the following machinery to be installed in the new plant it is to erect: One 14 in. x 6 ft. lathe, 1 16 in. x 6 ft. lathe, 1 32 in. x 14 ft. engine lathe, 1 26-in. turret lathe. 1 24-in. plain turret lathe, 1 No. 5 bench lathe, 2 11 in. x 4 ft. speed lathes, 1 11 in. x 5 ft. speed lathe, 1 9-in. universal hand lathe, with ⅛, 3-16, 5-16, ⅜, 7-16 and ½ in. extra collets; 1 26 in. x 12 ft. lathe, 1 22 in. x 12 ft. lathe, 1 18 in. x 10 ft. lathe, 1 18 in. x 8 ft. lathe, 1 18 in. x 6 ft. lathe, 1 16 in. x 10 ft. lathe, 1 16 in. x 8 ft. lathe, 9 16 in. x 6 ft. lathes, 6 14 in. x 6 ft. lathes, 3 12 in. x 5 ft. lathes, 1 17-in. screw machine, power cross feed turret; 1 plain head screw machine with automatic chuck and wire feed, 1 16-in. shaper, 1 24-in. shaper, 1 36 x 36 in. x 8 ft. planer, with two heads; 1 24 x 24 in. x 8 ft. planer, 1 42-in. planer, electrically operated with variable speed motor; 1 No. 2 universal milling machine, 1 No. 5 bench milling machine, 1 No. 2 vertical milling machine, with circular attachments; 1 No. 1 compound vertical spindle milling machine, 1 No. 24 plain milling machine, 1 No. 3 vertical spindle milling machine, 1 No. 3 plain milling machine, 1 No. 2 key seating machine, 1 No. 1 key seating machine, 1 No. 13 universal tool grinder, with internal attachments; 1 10 x 72 in. plain grinder, 1 No. 2 surface grinder, 1 No. 5 grinder on column, 2 drill grinders, 1 No. 6A disk grinder, 2 wet grinders, 2 No. 6 tool grinders, 2 No. 3 arbor presses, 1 No. 3½ arbor press, 1 motor driven boring mill, 2 motor driven testing machines, 1 automatic gear cutter, 1 70-lb. hammer, 1 3-in. cutting off machine, 1 No. 7 pipe machine, 1 two-spindle centering machine, 3 filing machines, 1 No. 2 filing machine, 1 boring mill, 3 single spindle drills, 1 two-spindle drill, 1 20-in. drill, 1 4-in. radial drill, with speed box and universal table; 10 20-in. drills, 1 motor driven 72-in. radial drill, 1 air tempering gas furnace, 1 forge, 1 3½ to 6 in. toggle drawing press, 1 1½ to 4 in. toggle drawing press, 1 No. 5 cold saw, 1 inclinable press, 3½-in. stroke; 2 inclinable presses, 2½-in. stroke; 2 No. 19 inclinable standard presses; 2 No. 18 inclinable standard presses, 1 No. 3 press, 1 3-ton hand power crane, 1 15-ton hand power crane, 40 patent swivel bottom vises, 24 iron tool racks, 1 oil extractor, 1 300-lb. anvil, 1 6-in. box vise, 2 Babbit melting pots, 1 No. 1 rack cutting attachment for milling machine, with index attachments; 1 tool makers' universal vise, 1 metal jig saw, 1 No. 1 slotting attachment, shafting, hangers, pulleys, belting, &c. The flask ovens and furnaces for the new brass foundry will be manufactured by the company.

The new plant which the company will erect will be located on a site of 15 acres, and the first group of buildings to be erected will consist of a main manufacturing building, 180 x 200 ft., brass foundry, 30 x 50 ft., and a power plant, 40 x 60 ft. As soon as the buildings can be finished construction will be started on a malleable iron foundry. The plant will be equipped with modern machinery, the larger machines to be operated by individual motors and the smaller grouped and operated from motor driven line shafts. The company will manufacture boring and tapping machines, a special line of can making and canning machinery, and all kinds of automatic high speed machines for various lines of manufacturing.

The plans of the Denver & Rio Grande Railroad to spend a large amount of money in extending its terminals in Denver, Pueblo, Grand Junction, Salida, and Salt Lake City and for the purchase of additional equipment will be of considerable interest to the machinery trade as soon as the details are known, in that it is expected that the work will necessitate the purchase of quite a little mechanical equipment. In connection with these plans for expansion the construction of additional shops by several other roads is of interest. The Tampa Northern Railroad, Tampa, Fla., has broken ground for its new repair and car shops at Palmetto Beach, the main building to be 90 x 200 ft. This, with the three other buildings which will complete the group, will be equipped for car repairing and construction. The Wisconsin & Michigan Railroad is to rebuild its shop and store house at Peshtigo, Wis., which were recently destroyed by fire. The new shop will be 60 x 110 ft., and the store house 30 x 60 ft., both buildings of concrete and brick construction. Shop and other equipment will likely be required by the Atchison, Topeka & Santa Fe Railroad, to replace that lost in the fire October 18, which burned the round house and shops at Amarillo, Texas. The damage done to the plant at that place is estimated at $100,000.

It is understood that bids were closed the past week for the five large traveling cranes to be purchased by the New York Central Railroad. These cranes, which aggregate in value about $40,000, are intended for the new West Albany shops, and it is expected that as soon as the bids have been tabulated the orders will be placed, which will probably be within the next few weeks.

The buying of the Tennessee Coal, Iron & Railroad Company for its Ensley, Ala., plant, where extensive improvements are being made, has helped to give an encouraging tone to the market. In addition to the inquiries for the large engines, the order for which was given to the Mesta Machine Company, Pittsburgh, Pa., as was stated in *The Iron Age* last week, the company has had inquiries in the trade for coal handling and conveying equipment and other material, and as the work on the additions is already under way, it is thought that the entire matter will be closed out very shortly.

The Tropenas Steel Company, New Castle, Del., has let contract for an additional building, 90 x 180 ft., which is the same size as the present building, which is almost completed. Specifications for the machinery required for the new building have not yet been prepared.

President S. W. Luitwieler of the Luitwieler Pumping Engine Company, Los Angeles, Cal., is in Rochester, N. Y., negotiating the purchase of property on which his company proposes to erect an eastern factory for the manufacture of steam, gasoline and electric pumping engines, also the following fire apparatus equipped on automobile trucks, arranged so that the same power used for propelling the machine is also used to operate the pumps, &c.; a combination of fire pump, hose, chemical engine and chemical hose with ladders on one automobile; fire engine with ladders, fire engine with hose and ladders, chemical engine, combination chemical engine with hose, and an auxiliary squad automobile. A complete line of foundry and machine shop equipment will be required.

The Lozier Motor Company, manufacturer of gas engines, Plattsburgh, N. Y., will soon start construction on a $50,000 addition to its foundry and machine shop. Machinery and equipment for the new building has not yet been purchased.

Bids for barge canal contracts, Nos. 40, 41, 46, 47 and 68, involving an expenditure of nearly $7,000,000, will be received November 17 and 18 by F. C. Stevens, Superintendent of the State Department of Public Works, Albany, N. Y. Contract No. 40 calls for the improvement of the canal from Lockport to Sulphur Springs, about 5 miles, at an estimated cost of $2,516,743; No. 41, for the construction of an embankment at Irondequoit Creek; No. 46, construction of the canal from Fox Ridge to Galen, about 9½ miles; No. 47, construction of the canal from Galen to Lyons, about 14½ miles; No. 68, for the construction of locks in the Hudson River at Mechanicsville, Stillwater and Northumberland at an estimated cost of $1,175,000. On October 15 barge canal contract No. 55 was awarded to Arthur McMullen, New York, at a bid of $905,347, as against the engineers' estimate of $1,014,525. The contract covers the construction of a dam and appurtenances near Delta at the headwaters of the Mohawk River. On October 13 contract was awarded to the Pennsylvania Bridge Company, Beaver Falls, Pa., for $23,676 for the construction of four superstructures of bridges. Award of contract No. 61 for canal construction in Monroe County, near Brockport, was made to E. M. Graves, Cleveland, Ohio, for $1,047,994.

## Chicago Machinery Market.

CHICAGO, ILL., October 20, 1908.

Last week's business in machine tools was enlivened somewhat by the Pullman Company's purchase of a number of machines aggregating about $20,000. This equipment, it is understood, is required to handle the work involved in steel car construction, which has come into the shops lately through orders for cars of this type, for both passenger and freight service, placed by the Harriman lines. The machine tool trade regards this as a forerunner of more extended orders of the same kind that will doubtless come out as soon as the railroads again begin to purchase new rolling stock on a large scale. It is believed that in future car building the proportion of steel cars will rapidly increase, in which event many existing plants will find it necessary to add to their equipment new tools especially adapted for handling this work. The outlook in this direction, therefore, affords a promising prospect for machine tool manufacturers, and for this reason the development of the steel car industry is being watched with a good deal of interest.

Miscellaneous orders continue to be somewhat scattered and have, on the whole, not increased appreciably. The demand for rolls, punches and shears of the heavier tyye, such as find place in the modern boiler, tank and structural shops, is extremely quiet. Lighter tools of the same class for sheet metal work are, however, more active.

Builders of concrete mixers and block making machines have felt the affects of the depression in shortened sales, but not in as marked a degree as is noted in many other lines. The demand for such equipment has been relatively good throughout the West, save in California, where the abrupt decline in building operations, brought about by the stringency of money, cut off a prospectively large volume of business. The steadily growing use of concrete for building purposes has, however, led to the establishment of a number of new shops for the manufacture of concrete machinery in the smaller towns throughout the Middle West, and it is to small enterprises of such character, in this and other lines, that the machine tool market owes a large share of its support.

The Krieger Tool & Mfg. Company, Grand Rapids, Mich., with Chicago offices under the management of C. F. Mayer at 83 West Randolph street, has in course of development at its shops an improved combination boring bar and a new cut-off tool. It is expected that these new tools will be ready for the market within a few months, and will form an important addition to the line of boring bar, tool holders and cutters now made by the company.

A new two-story shop, 60 x 72 ft., of brick construction, is being built by A. H. Radloff, Leavenworth, Kan., manufacturer of vehicles, for the equipment of which some power machinery and tool equipment will be required.

The United Fence Company, Port Huron, Mich., has purchased a site on the St. Clair River with a dock frontage of 135 ft. and land frontage of 295 ft., upon which it will erect a practically fireproof brick and concrete building, 50 x 135 ft., exclusively for manufacturing purposes. Two fireproof warehouses, one for raw material, 100 x 135 ft., and another for finished products, 100 x 150 ft., will also be built. The river front will be improved with a filled dock that will permit the landing of boats drawing 20 ft. of water, and a railroad switch running the entire length of the land frontage will complete the shipping facilities. Plans for the plant contemplate the installation of modern machinery and equipment throughout for which over $12,000 will be expended. All machinery will be driven with individual motors of three phase alternating type, and the works have been designed for a capacity of at least 10,000 rods in 10 hr. of any width of fence. The officers of the company are M. De. Pendergast, president; John A. McCrae, secretary and treasurer.

Among the machinery plant extensions planned is a new machine shop building that will be added to the works of the Connersville Blower Company, Connersville, Ind. This building will be 90 x 126 ft., and will be used for the manufacture of the smaller sizes of blowers made by the company, and also for the production of new vacuum cleaning machinery and appliances, which are being added to the line. A number of machine tools for the equipment of the new shop will be bought.

A new steel working shop for ship repair work has been established at Manitowoc, Wis., by Rhode & Braxmeier. Both members of this co-partnership were formerly engaged with the Manitowoc Steam Boiler Works, which made a specialty of marine work. The necessary machinery equipment for the new works was supplied by the H. A. Stocker Machinery Company, Chicago.

The Common Council of Milwaukee, Wis., has passed a resolution directing the Board of Public Works to proceed at once with the construction of a municipal lighting plant, and the resolution has been signed by the City Comptroller. The proposition to have a municipal lighting plant in Milwaukee has been under consideration for several years, and two years ago a bond issue of $800,000 was authorized and a site purchased. Various factors, however, contributed to delay the undertaking. The Legislature of Wisconsin, at its last session passed a public utilities law which it was thought would so adjust the city lighting conditions as to make it unwise to erect a municipal plant. Various city organizations passed resolutions urging that the plan be abandoned, but the recent action of the Common Council indicates that the plant will be constructed. From the bond issue there are still funds available amounting to $233,626. Architects have reported that a plant, adequate for the city's needs, can be built with the money now available. A gas producer plant, it is estimated, can be erected for $220,000 and a steam plant for $148,541. The carrying out of the Council's resolution will mean the purchase of a large amount of motive power machinery and electrical equipment.

The Hawley Down Draft Furnace Company, Chicago, has moved its offices from the plant to 641 to 644 First National Bank Building.

The Oliver Estate, which is erecting a new office building at Pittsburgh, has recently placed an order for a 22 and 38 x 33 in. vertical cross compound Corliss engine with the Corliss Engine Company, Corliss, Wis.

## Cleveland Machinery Market.

CLEVELAND, OHIO, October 20, 1908.

Business among the local machine tool dealers has shown no particular change during the past week. Some report a fair number of small orders, but with others the volume of sales has not kept up as compared with September. Sales during the week were confined almost entirely to single tools in small sizes, the buying being well scattered among various kinds of manufacturing industries, a new tool being added here and there to provide additional equipment or to replace an old wornout machine. Inquiries are far from plentiful. Prospective buyers of machinery equipment larger than single tool requirements are holding off until after election, and it is believed that there will be considerable improvement in the volume of orders in November. A number of manufacturers in this territory have under consideration the addition of considerable machinery to their plants, and as soon as the result of the political contest is known they will decide whether they will purchase the new equipment at once or wait until the business outlook is more satisfactory. An inquiry was received during the week from the Wheeling & Lake Erie Railroad for several woodworking tools for its temporary repair shops at Norwalk. About the only sales at present to the automobile builders is a single tool here and there to fill in.

Among the machine tool and general machinery builders the situation remains about stationary. Some report a slight improvement in orders, but these are not sufficient to warrant a fuller operation of the plants, which are running at about the same capacity as during the past two months. When new men are put to work they are usually to replace others. Builders of automatic machinery report some improvement in orders and inquiries. Some manufacturers who have not previously used automatic machines are now installing them for the purpose of further reducing their cost of production. The demand for large electrical equipment is very light, but builders of small motors report some improvement in orders. The jobbing foundry situation remains quiet, with no improvement in orders.

The Cleveland branch of the National Metal Trades Association has just compiled some figures showing the activity of the local metal working shops as compared with a year ago. During the period from June 18 to October 3 1354 new men were put to work in the shops of the local members of the association, as compared with 3583 put to work during the same period of 1907. The Executive Board of the Cleveland branch, at a meeting this week, will make arrangements for a noonday luncheon, during which the members will have a general talk over business conditions.

Bids for the machinery equipment for the new iron ore property that is to be opened up at Hibbing, Minn., by the Tod-Stambaugh Company will be received shortly by John W. Seaver, engineer, Cleveland. The equipment which will be required includes a hoisting engine, air compressors, etc., 100-kw. generator and the mine haulage system. Several air or electric locomotives will be purchased for the latter. Contracts for the power house and shaft house will also be placed soon. The contract for four 150-hp. marine boilers for the plant has been given to the D. Connelly Boiler Company, Cleveland.

John W. Seaver, engineer, Cleveland, is receiving bids for the equipment for the new foundry to be erected by the Otis Elevator Company atYonkers, N. Y. Contracts for the cupola, scales, blower and building have practically been

closed. Orders will be placed soon for the following cranes: Two 15-ton electric traveling cranes, two 5-ton electric portable jib cranes, two 3-ton hand portable cranes and one electric I-beam trolley crane.

The National Acme Mfg. Company, Cleveland, reports a slow but steady improvement in the demand for automatic machines. Not only have the domestic orders increased, but the company is getting a fairly good volume of foreign orders.

The Cleveland Rock Drill Company, selling agent for the mining department of the Cleveland Pneumatic Tool Company, reports an improvement in orders for pneumatic drills for mining operations. This company has recently received an order for 50 drills for use in the Cobalt region, and has also taken some good orders for drills for Michigan copper mines and for Western silver mines.

The Hydro-Electric Company, Warren, Ohio, has awarded a contract for the erection of its new power plant. Orders for the machinery equipment have been placed.

The Warren City Tank & Boiler Company, which for years has operated a large plant in Warren, Ohio, has taken out incorporation papers, with a capitalization of $150,000. The incorporators are Alfred R. Hughes, Daniel J. O'Rouke, John D. Edwards, Benjamin W. Edwards and Bert H. Seiple.

The Federal Foundry Supply Company, Cleveland, has been organized to manufacture foundry supplies and has established a plant at 2639-2651 East Seventy-ninth street, in property formerly occupied by the American Washboard Company. The company's principal products at present are dry core binders and foundry flour. The officers of the company are F. M. Douglass, president; Ralph Ditty, vice-president, and L. A. Bright, secretary and treasurer.

Work will be started soon on the new cast iron pipe plant to be built in Coshocton, Ohio, by the J. B. Clow Company of Chicago. The contracts will be placed at the company's Chicago office.

An interesting talk on welding by the ferrofix process was given to the Cleveland Metal Trades Superintendents' and Foremen's Club a few days ago by T. Davidson Brown of the American Ferrofix Company of Philadelphia.

## Cincinnati Machinery Market.

CINCINNATI, OHIO, October 20, 1908.

For part of this week a considerable portion of the brains and energy of the local and district tool making industry will be transferred to New York; while, also, as inconsistent as it might seem to some, a part of it is detained at home to attend to business.

Although with local sales concerns there is not reported any special energy developed from the buying side, inquiries seem to have improved both in character and volume; and this is particularly true of the manufacturing concerns. There have recently been placed with local makers of drills, planers, shapers and milling machines, some hurry orders and the readiness with which buyers have taken up the correspondence and willingness to conform to price and shipping regulations have suggested to the minds of these manufacturers that needs of the tool room have been staved off about as long as they can be, and with the election results favorable some very good buying may be expected along about the middle of November.

Among the car builders in this section there is a feeling of hopefulness, superinduced by needs of the railroads, and general business conditions, which promise a gradual increase in tonnage all through the country. There have already been placed some very promising orders for coal carrying cars, and these are being rushed because of the increased demands on the roads brought about by low water everywhere, which shuts off river competition, and the bad condition of so many cars has necessitated rush orders for repairs in those shops devoted to that work.

At the plant of the Cincinnati Car Company in Winton place indications point strongly to better business in the line of street and interurban cars. An invitation recently received to bid on about a dozen interurbans, a large crane car and several freight cars is from the Philippines. It has just completed a good sized shipment of cars built for the Public Service Corporation of New Jersey. A large order which has been in abeyance for some time is practically closed, it is understood, and the Cincinnati concern the beneficiary.

Word from Bucyrus, Ohio, indicates that the car department of the American Clay Machinery Company, which has been operating on half time, was recently placed on a 10-hr. schedule, with work enough ahead to keep the plant [illegible] the remainder of the year.

The Cincinnati and southern Ohio representation at this week's meeting of the National Tool Builders' Association is one of the largest in the history of the organization. Realizing that the present is a critical period in the trade, and that the subject of prices and contracts is likely to be considerably disturbed within the next few weeks and months through political and commercial uncertainties, as many as could conveniently get away have gone to attend the meeting. The greater number of these left Cincinnati Sunday evening in a special Pullman car, which was placed by the Big Four and New York Central lines for their exclusive accommodation. President Fred Geier of the Cincinnati Milling Machine Company timed his arrival from his European trip to be on hand, and so did President William Lodge of the Lodge & Shipley Machine Tool Company, although the latter has been home long enough to get acquainted with the trend of things at his plant for a few days ere leaving for the meeting. Others on the special were: B. B. Quillen, Cincinnati Planer Company; August Tuechter, Cincinnati Machine Tool Company; Wm. W. Greaves, Greaves, Klusman & Co.; W. T. S. Johnson, Bradford Machine Tool Company; Richard K. Le Blond, R. K. LeBlond Machine Tool Company; J. B. Doan, American Tool Works Company; A. M. Watcher, Queen City Machine Tool Company; Wm. E. Gang, Wm. E. Gang Company; Wm. J. Radcliff, E. A. Kinsey Company; George Gradolf, Bickford Drill & Tool Company; William Boye, Schumacher & Boye; Henry Dreses, Dreses Machine Tool Company; H. Mueller, Mueller Machine Tool Company; Rufus King, King Machine Tool Company; President Sebastian, Sebastian Lathe Company; H. W. Kreuzberg, Champion Tool Works Company; C. Wood Walter, Cincinnati Milling Machine Company; P. G. March, Cincinnati Shaper Company, and Clifford F. Kern, Kern Machine Tool Company.

There are not many inquiries for second-hand machinery, and dealers are not carrying very large stocks. Everything in this line seems to be held in abeyance until election is decided.

Local foundries are, for the most part, satisfied that conditions, especially such as relate to the making of castings for machine tool manufacturers, are bound to improve soon, and these are making preparations to handle largely increased melts. Twelve to 15 tons daily is about representative of what most local jobbing foundries are doing, and heats taken off all the way from three days a week to five and a half.

The Phelps Steel & Iron Company, which was recently incorporated in Kentucky by Isaac Phelps, E. C. Phelps and Blanche Scarlett Phelps, has located offices in the Union Trust Building, Cincinnati. The company is selling agent for the Eastern Steel Company, Buffalo Steel Company and Union Steel Company.

E. T. Paul, Robert Mollet, A. L. Conrad, R. F. Armstrong, J. W. Jackson, J. A. Thompson and George Lewis have incorporated at Columbus, Ohio, the Bluffton, Ohio, Foundry & Machine Company for $5000, and are putting in shape the building at the corner of Grove and Jackson streets, Bluffton, for doing a general machine shop business.

Visitors from Lima, Ohio, report industrial conditions in that city improving rapidly. The plant of the Lima Locomotive & Machine Company is now running almost capacity; the two railroad shops, the Cincinnati, Hamilton & Dayton and the Lake Erie & Western, are increasing their forces and time, and the large plant of the Ohio Steel Foundry Company, which was established and started at about the time the commercial depression visited the country, is showing evidences daily of increased energy, after intermittent shutdowns along with many others in the steel casting business in various parts of the country.

As a rule manufacturers of small and medium sized units in electrical power machinery in this section report excellent business, and those makers of boilers and engines such as are used in the South and Southwest have also been busy and operating almost to their normal capacity.

Manufacturers of electrically driven tools, and particularly the portable ones, report excellent business, with inquiries increasing. It is understood that the cordial reception accorded a new device soon to be brought out in this territory will warrant a considerable extension to plant and office, with a reorganization of the business on lines to take care of it. A number of manufacturers of heavier tools are redesigning them, and the outlook in this line is exceedingly good.

## Philadelphia Machinery Market.

PHILADELPHIA, PA., October 20, 1908.

A decidedly more cheerful tone is to be noted in the machinery trade, not due to any increased volume of business that has come out during the week, but more particularly to the fact that the Presidential election is but two weeks off and it is pretty generally believed that after that has been decided the turning point in the machine tool trade will have been reached. It is scarcely expected that any great volume of orders will be placed during the remainder of the present year, but there is undoubtedly a considerable number held in abeyance, and it is expected that many of these will be released shortly after election. The railroads still keep out of the market, but it is encouraging to note

that they are more actively engaged in repair work. Locomotive building is at the low water mark, although there have been somewhat better inquiries from some of the Western railroads and from foreign sources, so that a more hopeful view of that situation is taken. The shipyards in this territory are more actively engaged. In addition to Government orders, taken by several yards, some orders for merchant vessels have been recently booked, which has helped this branch of business materially. Industrial plants generally cannot be said to show any particular gain in production, due largely to the fact that large and important contracts have been held up in this field as well as in machine tools.

Sales of machinery and tools have been along narrow lines. The bulk of the business has been confined to single tool propositions, largely those of the medium and smaller classes. An occasional order for a heavy tool is reported while there has been a fair sprinkling of orders for equipment of a special nature. Dealers report inquiries rather weak, buyers adhering to their policy of deferring action regarding purchases as long as possible.

Manufacturers report no appreciable gain in the volume of business taken. Orders come in irregularly, and little, if any, increase in production is to be noted. Considerable attention has been paid by the trade to the twenty-seventh annual convention of the American Street & Interurban Railway Association, held at Atlantic City, N. J., the past week, and it is reported that the convention and the exhibit of machine tools and appliances were highly successful. A number of the local machine tool builders and merchants also express considerable interest in the meeting of the National Machine Tool Builders' Association, during the current week, in New York, and quite a few have announced their intention of attending, it being expected that the business situation in different sections of the country will be pretty generally discussed.

A shade better demand for equipment for export is to be noted, but no business of any moment has developed. Such business as has been placed has been largely confined to special tools and machinery.

Second-hand machine tool merchants report a little more business, but the demand is still quite irregular, purchases being deferred wherever possible. Current orders have been mainly for tools of the smaller classes, for both wood and metal working machinery. The second-hand boiler and engine trade is dull. Some good propositions are before the trade in the way of new power equipment, but orders develop slowly.

No particular change is to be noted in the demand for castings. Iron and steel casting plants about hold their own in the way of production, but new business comes out irregularly and individual orders are usually small.

Plans by H. J. Webster, engineer, are being estimated on for a 51 x 56 ft. planing mill and a 23 x 27 ft. box factory, to be erected at Dickenson and Water streets, for the Provident Lumber Company.

The American Die & Tool Company, Reading, Pa., states that orders during the past two months show an increase of at least 50 per cent. in its small tool department. In the heavier tools and in the special machinery line, however, business develops but slowly.

The Energy Elevator Company continues to operate its plant at full capacity. Local orders are reported fairly satisfactory, while some good business has been received from out of town customers, among which was a duplicate order for nine elevators for Denver, Colo. Orders for heavy freight elevators have also been received from the West and South.

Th Newton Machine Tool Works, Inc., reports business during the month of September as being the best for any month this year, although it did not include orders of any large size, but a number of individual tools, most of which were for milling and cold saw cutting off machines. Orders were all from domestic buyers and did not represent any particular class, coming from varied sources, such as railroads, electrical machinery manufacturers and the Government. From inquiries in hand, this company believes that quite a fair business will develop during the next month or so.

The Wm. Steele & Sons Company, engineer and contractor, has been awarded the contract to build a coal pocket and trestle at the northeast corner of Tenth and Norris streets for the Philadelphia & Reading Railway, which is to be built in connection with the elevation of its tracks along Ninth street, the contract price being $34,400. The same contractor is bidding on a one-story addition, 60 x 138 ft., to the plant of the Quaker City Rubber Company, Comly and Milnor streets, Holmesburg, Philadelphia.

The Standard Pressed Steel Company reports a fair run of orders for pressed steel shaft hangers and pillow blocks. Orders coming in are small individually, but aggregate a fair total, consumers following the plan of ordering in small lots rather than carry any large stocks. The export trade does not improve much, although the outlook is better, and it is believed that some good business will develop before the close of the year.

## New England Machinery Market.

WORCESTER, MASS., October 20, 1908.

The machinery situation is generally characterized as having greater strength, though this is not indicated so much by increasing orders as by an intangible something, probably based largely on greater activity in other lines, which causes dealers and manufacturers alike to feel a greater confidence in the immediate future of the market. An occasional exception among the machine tool builders has noted a marked increase in orders, necessitating increased production. The Potter & Johnston Machine Company, Pawtucket, R. I., is an instance of this. Generally speaking, business is slightly better with the manufacturers and hardly more so with the dealers, though more seems to be doing in second-hand tools. The large manufacturing houses have never rescinded the order given their purchasing departments to buy nothing excepting what was absolutely needed, and though the letter of the rule has not been lived up to strictly of late, it is, nevertheless, a strong influence on the buying. It is believed that the time is close at hand when purchasing agents will have a freer hand, which will release great numbers of requisitions which have been favorably passed upon, including not a small amount of machinery. At present no lists of any account are mentioned in the trade.

The market for woodworking machinery has improved in about the same ratio as that for machine tools. Prices in this trade have been low, the manufacturers having met the situation of poor business by cutting their lists. Machinery has been offered considerably below the market as it existed a year ago. No co-operation between manufacturers to maintain their lists has existed, and consequently price cutting was inevitable. But there is already discussion as to advancing prices, a move which will come as soon as the demand strengthens sufficiently. It is maintained that the situation of the woodworking machinery people is very different from that of the machine tool trade, in that comparatively little business is done through dealers. Where the welfare of dealers must be considered changes in prices are not so easily accomplished as where trade is direct with the customer, it is argued. Consequently the woodworking machinery trade expects to be able to return to the prices of a year ago without serious trouble. It is interesting to note that some business was placed in this line which would not have been booked had prices been maintained, but on the other hand experience has shown that in many other cases buyers would not yield to the inducement of a lower market.

The transportation interests continue to report an increasing demand for rolling stock. The railroads are constantly adding new freight cars to the active service list, and the coastwise steamers are carrying larger cargoes. More sailing vessels are being put to work. The trucking companies of Boston and other cities are hauling more goods than they were.

It is not wholly decided that the Powell Tool Company, of which A. M. Powell is the head, will remain in Worcester. Capitalists are investigating the enterprise with a view to offering inducements to locate elsewhere, and a movement is on foot in Worcester to retain the industry by providing capital for its enlargement. The company will manufacture the new Powell accelerating cut metal planer.

The McCue Company, Hartford, Conn., manufacturer of automobile and carriage parts, is to erect a new plant in that city, to replace the present factory. The company has made a specialty of carriage gears and carriage hardware, and now expects to add automobiles and automobile parts, which will make necessary about 20,000 sq. ft. of additional floor space.

The Franklin H. Kalbfleish Company, Broadway and Sixteenth street, New York, manufacturing chemist, is to rebuild its plant at Waterbury, Conn., which was recently destroyed by fire. The new structure will be 30 x 100 ft., one story. The company states that new equipment has been provided for.

It is proposed to give an industrial exposition in Worcester next spring, under the auspices of the Worcester Branch, National Metal Trades Association, the Mechanics' Association and the Board of Trade.

In addition to the information concerning the brass industry of the Naugatuck Valley, published last week, the American Brass Company, which operates large works at Waterbury, Ansonia and Torrington, while not yet running full time, is working nearer to that point than it has for many months, business having improved of late. The Randolph Clowes Company, Waterbury, brass and copper rolling mills, boiler and tube works, notes that while the volume of business is not back to what it was prior to October, 1907, there has been a large increase in the last month, and business is now very much better than it has been at any time in the past year, and the outlook is good for a very satisfactory volume of orders during the coming winter. The Pilling Brass Company, Waterbury, brass, German silver

and copper, 6 in. and narrower, 0.005 and thinner, states that its business is very near normal. The New England Watch Company, Waterbury, has its factory working full time, but with a force about four-sevenths of what it was a year ago. The Novelty Mfg. Company, Waterbury, specialties in metal goods, finds that the average business received at the present time compares very favorably with that of the year prior to the slump. The factory is running full handed and full time, and there is a disposition on the part of the trade generally to purchase more liberally than at any time since the first of the year. The Matthews & Willard Mfg. Company department of the Scovill Mfg. Company, Waterbury, states that while orders have been a little slow, the company thinks at the present time business is picking up, which it believes is the general feeling throughout the Naugatuck Valley. Inquiries in the brass industry developed no answers indicating exceptions to the rule of improved conditions.

The American Metal Hose Company, Waterbury, Conn., has been incorporated under Connecticut laws with capital stock of $50,000. The company states that it will deal in flexible metallic hose, tubing, conduits, &c., which will be to some extent imported and which will later be manufactured for it in Waterbury. It is not contemplated to build a factory in the near future. E. L. Frisbie, Jr., is president of the corporation; John A. Coe, Jr., treasurer, and George H. Benham, secretary.

The E. J. Flather Mfg. Company, Nashua, N. H., has brought out a new 30-in. vertical turret machine, which combines the usual characteristics of a boring mill with the turning and thread cutting features of an engine lathe. The machine is new in the company's line, which has hitherto been confined to automatic gear cutting machines. The unique feature of the new machine is the vertical adjustment of the cross rail to facilitate operations on work of a wide range of hights.

The Macfarlane Bros. Mfg. Company, Bridgeport, Conn., which will manufacture silverware, has let the contract for a new factory on State street, to be of brick, 30 x 112 ft., and three stories.

The receivers of the Electric Vehicle Company, Hartford, Conn., have been authorized by the court to continue the manufacturing end of the business for three months longer.

The annual meeting of the Boston & Maine Railroad resulted in a radical change in the directorate, which is believed to imply a control that will carry on improvements as contemplated under the plans of the New York, New Haven & Hartford Railroad. The latter's direct ownership of the system is impossible under the decision of the Massachusetts courts. But the influence of the New Haven road will undoubtedly prevail in the Boston & Maine management, and this is taken to mean extensive improvements. One of the acts of the annual meeting was to authorize the issuing of $12,000,000 in bonds, the proceeds of which will probably go toward improvements. These should include the new repair shops at Somerville, concerning which there has been much conjecture for a year or two. Plans have been made for great works, which, when completed, embraceing facilities both for locomotive and car repairs, will cost something like $2,000,000. To put present rolling stock in shape to conform with New York, New Haven & Hartford ideas would mean much better facilities for repairs. The Boston & Maine should be a large influence in local markets for all sorts of railroad supplies and materials during the next year or two, unless the common understanding of the situation is very far wrong.

The Potter & Johnston Machine Company, Pawtucket, R. I., manufacturer of automatic turret machines and other machine tools, has experienced a marked improvement in business during the past fortnight, and has gone on a 45-hr. basis, an increase from five days of 8 hr. each, Saturday forenoons having been added to the schedule. The company reports the new business as consisting of both domestic and European orders. John Johnston of the company has just returned from a European trip, visiting Germany, France, Belgium and Great Britain. He found business dull abroad, but picking up a little at the present time.

The Manville Brothers Company, 27-33 Benedict street, Waterbury, Conn., has purchased from Frederick E. Cross of the Cross & Spiers Machine Company, Waterbury, all of the drawings, patterns, &c., of the different lines of machinery and presses that the latter has been manufacturing. In the future the Manville Brothers Company will make these lines of work, and Mr. Cross will be connected with it as a special representative.

## Government Purchases.

WASHINGTON, D. C., October 20, 1908.

Bids will be received until October 28 at the office of the purchasing agent of the Panama Railroad, New York, for 12 mogul freight locomotives.

Bids will be received until November 10 at the office of the Lighthouse Engineer, Tompkinsville, N. Y., for machinery for the new lamp shop.

The Isthmian Canal Commission will soon ask bids for three electrically operated unloading cranes to be erected at La Boca.

The following bids were opened October 13 for machinery for the navy yards:

Class 1.—One universal grinding machine—Bidder 146, Pacific Tool & Supply Company, San Francisco, Cal., $2042; 177, William L. Sargent, Fitchburg, Mass., $1074.

Class 2.—One screw cutting engine lathe—Bidder 62, Garvin Machine Company, New York, $894 and $904; 113, Manning, Maxwell & Moore, New York, $975; 146, Pacific Tool & Supply Company, San Francisco, Cal., $1046 and $1138.

Class 3.—One power punching press—Bidder 58, Ferracute Machine Company, Bridgeton, N. J., $390; 73, Hallidie Machinery Company, Seattle, Wash., $840; 187, Toledo Machine & Tool Company, Toledo, Ohio, $450 and $310; 211, E. W. Bliss Company, Brooklyn, N. Y., $475.

Class 4.—One 16 in. by 10 ft. engine lathe—Bidder 62, Garvin Machine Company, New York, $1169; 73, Hallidie Machinery Company, Seattle, Wash., $1130; 113, Manning, Maxwell & Moore, New York, $1315; 146, Pacific Tool & Supply Company, San Francisco, Cal., $1470.75; 213, Caldwell Brothers, Seattle, Wash., $1125.

Class 5.—One 24-in. screw cutting engine lathe—Bidder 57, Frevert Machinery Company, New York, $1741; 62, Garvin Machine Company, New York, $1767; 73, Hallidie Machinery Company, Seattle, Wash., $1920; 113, Manning, Maxwell & Moore, New York, $2400, $2480 and $2450; 127, Niles-Bement-Pond Company, New York, $2394 and $2274; 146, Pacific Tool & Supply Company, San Francisco, Cal., $2329; 213, Caldwell Brothers, Seattle, Wash., $2040.

Class 6.—One full universal radial drill—Bidder 113, Manning, Maxwell & Moore, New York, $1650; 127, Niles-Bement-Pond Company, New York, $1632 and $1582; 146, Pacific Tool & Supply Company, San Francisco, Cal., $1975; 213, Caldwell Brothers, Seattle, Wash., $1800.

Class 7.—Four pneumatic hammers—Bidder 30, Chicago Pneumatic Tool Company, New York, $86; 33, Cleveland Pneumatic Tool Company, Cleveland, Ohio, $100; 45, Dayton Pneumatic Tool Company, Dayton, Ohio, $80; 71, Helwig Mfg. Company, St. Paul, Minn., $133.50; 84, Independent Pneumatic Tool Company, Chicago Ill., $88; 85, Ingersoll-Rand Company, New York, $102.48; 119, C. W. Marvedel, San Francisco, Cal., $171; 141, George Oldham & Sons Company, Frankford, Pa., $104; 148, Pittsburgh Pneumatic Company, Canton, Ohio, $170; 178, Standard Railway Equipment Company, St. Louis, Mo., $140.

Class 8.—Two pneumatic Drills—Bidder 84, Independent Pneumatic Tool Company, Chicago, Ill., $101; 85, Ingersoll-Rand Company, New York, $147.72; 119, C. W. Marvedel, San Francisco, Cal., $128.25; 178, Standard Railway Equipment Company, St. Louis, Mo., $139.

Class 11.—One engraving machine—Bidder 9, Baker Brothers, Toledo, Ohio, $1067; 73, Hallidie Machinery Company, Seattle, Wash., $1050.

Class 12.—One motor driven lathe—Bidder 20, Compressed Air Machinery Company, San Francisco, Cal., $1111; 46, Eccles & Smith Company, San Francisco, Cal., $1309.50; 78, Henshaw, Bulkley & Co., San Francisco, Cal., $1060 and $1130; 79, Harron, Ricard & McCone, San Francisco, Cal., $1182.13 and $975.26; 113, Manning, Maxwell & Moore, New York, $1275; 146, Pacific Tool & Supply Company, San Francisco, Cal., $1180; 171, Springfield Machine Tool Company, Springfield, Ohio, $975.

Class 176.—Four electrically driven ventilating blowers and two sets of spare parts—Bidder 39, D'Olier Engineering Company, Philadelphia, Pa., $696; 125, National Electric Tool & Supply Company, Washington, D. C., $650; 172, B. F. Sturtevant Company, Hyde Park, Mass., $685.62.

The following bids were opened October 12, Circular No. 468, for machinery for the Isthmian Canal Commission:

Class 2.—One steam hammer—Bidder 8, Baird Machinery Company, Pittsburgh, Pa., $2527; 12, Bethlehem Steel Company, South Bethlehem, Pa., $2313 and $2580; 21, Buffalo Foundry & Machine Company, Buffalo, N. Y., $2313; 49, Erie Foundry Company, Erie, Pa., $2048; 55, Fox Brothers & Co., New York, $2394.49; 95, Manning, Maxwell & Moore, New York, $2040; 102, Morgan Engineering Company, Alliance, Ohio, $2420; 111, New Jersey Foundry & Machine Company, New York, $2200; 114, Niles-Bement-Pond Company, New York, $2094; 140, Joseph T. Ryerson & Son, Chicago, Ill., $2600; 144, William Sellers Company, Philadelphia, Pa., $2450; 164, Vermilye & Power, New York, $2270.

Class 3.—One universal grinding machine—Bidder 18, Brown & Sharpe Mfg. Company, Providence, R. I., $790.55; 53, Fairbanks Company, New York, $750; 55, Fox Brothers & Co., New York, $733, $575 and $489; 163, Vandyck-Churchill Company, New York, $775 and $825.

Class 4.—Two upright drills—Bidder 8, Baird Machinery Company, Pittsburgh, Pa., $435; 59, Garvin Machinery Company, New York, $480 and $390; 95, Manning, Maxwell & Moore, New York, $368 and $540; 114, Niles-Bement-Pond Company, New York, $376; 124, C. T. Patterson Company, New Orleans, La., $520; 161, Tucker Tool & Machine Company, New York, $351.50; 163, Vandyck-Churchill Company, New York, $470.

Class 5.—One 36 in. by 24 ft. engine lathe—Bidder 8, Baird Machinery Company, Pittsburgh, Pa., $3688; 53, Fairbanks Company, New York, $2595; 55, Fox Brothers & Co., New York, $2840, $2499 and $2090; 59, Garvin Machine Company, New York, $2175 and $2275; 95, Manning, Maxwell & Moore, New York, $2455, $2375 and $2450; 114, Niles-Bement-Pond Company, New York, $2445 and $2477; 124, C. T. Patterson Company, New Orleans, La., $2665; 163, Vandyck-Churchill Company, New York, $2050; 164, Vermilye & Power, New York, $2200.

Class 6.—One 14 in. by 6 ft. engine lathe—Bidder 8, Baird Machinery Company, Pittsburgh, Pa., $420; 26, Champion Tool Works Company, Cincinnati, Ohio, $444; 53, Fairbanks Company, New York, $410; 55, Fox Brothers & Co., New York, $396; 59, Garvin Machine Company, New York, $463, $427, $488 and $452; 95, Manning, Maxwell & Moore, New York, $460 and $515; 103, Motley, Green & Co., New York, $440; 114, Niles-Bement-Pond Company, New York, $443; 124, C. T. Patterson Company, New Orleans, La., $490; 132, Pratt & Whitney Company, Hartford, Conn., $523; 161, Tucker Tool & Machine Company, New York, $430; 163, Vandyck-Churchill Company, New York, $490; 164, Vermilye & Power, New York, $385.

Class 7.—One 14-in. engine lathe—Bidder 8, Baird Machinery Company, Pittsburgh, Pa., $678.60; 26, Champion Tool Works Company, Cincinnati, Ohio, $719; 53, Fairbanks Company, New York, $609; 55, Fox Brothers & Co., New York,

$646.80; 59, Garvin Machine Company, New York, $645 and $615; 95, Manning, Maxwell & Moore, New York, $655 and $715; 114, Niles-Bement-Pond Company, New York, $687.50; 132, Pratt & Whitney Company, Hartford, Conn., $790; 163, Vandyck-Churchill Company, New York, $765.

Class 8.—Six riveting hammers and 18 chipping hammers—Bidder 28, Chicago Pneumatic Tool Company, New York, $528; 31, Cleveland Pneumatic Tool Company, Cleveland, Ohio, $540; 74, Independent Pneumatic Tool Company, Chicago, Ill., $473.40; 75, Ingersoll-Rand Company, New York, $690; 152, Standard Railway Equipment Company, St. Louis, Mo., $900.

Class 9.—Fifteen nonreversible air drills and two reversible air drills—Bidder 28, Chicago Pneumatic Tool Company, New York, $775; 31, Cleveland Pneumatic Tool Company, Cleveland, Ohio, $767; 74, Independent Pneumatic Tool Company, Chicago, Ill., $713; 75, Ingersoll-Rand Company, New York, $1165.50 and $1098; 152, Standard Railway Equipment Company, St. Louis, Mo., $1283.

Class 10.—One generator—Bidder 20, Buffalo Forge Company, Buffalo, N. Y., $1219; 29, James Clark, Jr., Electric Company, Louisville, Ky., $1060; 56, Fort Wayne Electric Works, Fort Wayne, Ind. $925; 61, General Electric Company, Schenectady, N. Y., $1295; 65, A. D. Granger Company, New York, $1407, $1481 and $1485; 99, August Mietz, New York, $3200; 146, Shepard Engineering Company, Williamsport, Pa., $1165; 156, B. F. Sturtevant Company, Hyde Park, Mass., $1156; 167, Western Electric Company, New York, $915; 168, Westinghouse Electric & Mfg. Company, Pittsburgh, Pa., $974.

The following bids were opened October 10 for two boilers, with superheaters and stokers for the Boston Navy Yard:

The Babcock & Wilcox Company, New York, item 1, $21,227, B. & W. boilers, Foster superheaters, Roney stokers and flue, deduct $970 for B. & W. superheaters; item 4, $19,487, B. & W boilers, B. & W. superheaters, Roney stokers and flue; item 4, $19,337, Stirling boilers, U superheaters, Roney stokers and flue; guaranteed evaporation of 10.85 pounds of water per pound dry coal from and at 212 degrees F. when boiler is operated at or near its rating.

Edge Moor Iron Company, Edge Moor, Del., item 2, $9000, steel stack; bid 1, item 4, $30,500, Edge Moor boilers, Roney stokers, Foster superheaters, steel stack; bid 2, item 4, $240, deduct if Wetzel stokers are substituted; bid 3, item 4, $275 add if Murphy stokers are substituted; guaranteed evaporation 10.728.

Heine Safety Boiler Company, St. Louis, Mo., item 4a, $29,874, Heine boilers, Murphy stokers, Heine superheaters, steel stack, flue, &c., guaranteed evaporation 10.5; item 4b, $265 add if Roney stokers are substituted, guaranteed evaporation 10.5; item 4c, $1545 add if Foster superheaters are substituted.

Girtanner Chain Grate & Construction Company, St. Louis, Mo., $3150 for stokers only.

A. D. Granger Company, New York, item 1, $37,914, Oswego-McNaull boilers, Roney stokers, Foster superheaters.

E. Keeler Company, Williamsport, Pa., item 1, $29,876, Keeler boilers, Foster superheaters, Roney stokers, steel stack; item 1a, $29,832, if Wetzel stokers are substituted. Alternate bids: item 1b, $29,706, same as item 1, but substituting Murphy for Roney stokers; item 1c, $31,786, same as item 1, but using Jones underfeed stokers; guaranteed evaporation 10.5.

The York Engineering Company, York, Pa., has been awarded contract at $5300 for boilers, &c., for the central heating and power station of the Weather Bureau at Mt. Weather, Va.

The Westinghouse Machine Company, Pittsburgh, Pa., has been awarded contract for two 5000 and four 1000 kw. turbo alternators for the navy yards.

The following awards have been made for machinery for the navy yards, bids for which were opened August 25:

Pratt & Whitney Company, Hartford, Conn., class 112, one toolmakers' engine lathe, $843; class 113, one tooth spindle profiling machine, $1150; class 114, one gang drill, $652.

Bullard Machine Tool Company, Bridgeport, Conn., class 111, one vertical turret lathe, $2250.

Tucker Tool & Machine Company, New York, class 115, one universal slotting machine, $80.75.

Prentiss Tool & Supply Company, New York, class 116, one slip roll former, $68.50

United States Electrical Tool Company, Cincinnati, Ohio, class 117, one portable electric internal binder, $86.40.

Awards have been made as follows for machinery for the navy yards, bids for which were opened September 1:

Herdey Machine Company, Torrington, Conn., class 11, one lathe, $1745; class 12, one lathe, $900.

Niles-Bement-Pond Company, New York, class 13, three triple geared engine lathes, $7695; class 15, one single shaping machine, $2240; class 17, three traveling head shaping machines, $4480.

Vandyck-Churchill Company, New York, class 14, one back geared engine lathe, $3385.

Hill, Clarke & Co., Boston, Mass., class 16, one universal shaping machine, $600.

Under bids opened September 8 for oil furnaces, &c., for the Isthmian Canal Commission, Manning, Maxwell & Moore, New York, have been awarded item 7, one flue welding furnace with three charging openings, $155.

Henshaw, Bulkley & Co., San Francisco, Cal., have been awarded class 21, one compressed air locomotive, $2695, under bids opened September 15 for machinery for the navy yards.

Under opening of September 22 for machinery for the navy yards, the Chandler & Farquhar Company, Boston, Mass., has been awarded class 91, one multiple drilling machine, $715, and class 92, one multiple drilling machine, $431.

Under opening of September 29 for machinery for the navy yards, the Frevert Machinery Company, New York, has been awarded class 51, one power feed drill press, $422.

The following awards have been made for supplies for the Isthmian Canal Commission, Circular No. 466, bids for which were opened October 5:

Henry R. Worthington, New York, class 16, one duplex horizontal feed pump, $79.

Fox Brothers & Co., New York, class 17, two rotary force pumps, $16.78.

The following awards have been made for pneumatic machines for the navy yards, bids for which were opened October 6:

Columbus Pneumatic Tool Company, Columbus, Ohio, class 21, 12 pneumatic hammers, $180.

Cleveland Pneumatic Tool Company, Cleveland, Ohio, class 22, 11 pneumatic drills and three-end spindle pneumatic drill, $835.

## Trade Publications.

**Locomotive Fire Boxes and Tube Plates.**—William H. Wood Locomotive Fire Box & Tube Plate Company, Media, Pa. Catalogue. Principally taken up by detailed drawings showing fire boxes and tube plates made for various railroads by the company for application to different styles of locomotive boilers.

**Injectors, Ejectors, Check Valves and Jet Apparatus.**—Hayden & Derby Mfg. Company, 85 Liberty street, New York. Catalogue, 6 x 9; 51 pages. Considerable information on injectors in general is contained in this volume, including directions for adapting injectors to different conditions, general suggestions as to the proper types to select, &c. The Manhattan automatic injector is illustrated and described both as to its manufacture and the results claimed to follow its use. Directions for connecting are given, and a number of types are shown with the aid of sectional diagrams and full views. The Hayden-Derby ejector is similarly treated, and some space is devoted to strainers, drip funnels and the Hancock swing check valves.

**Steam Goods, Mill, Mine and Water Works Supplies.**—H. R. Boynton Company, 214-216 North Los Angeles street, Los Angeles, Cal. Catalogue, 5 x 7½ in.; 379 pages. This is a well compiled jobbers' catalogue of plumbing supplies, pipe castings and boiler tubes, fittings and valves, boilers, radiators, steam pumps, &c. The volume is comprehensively indexed, bound in cloth and in addition to illustrating and listing a large part of the company's line the book contains useful data and tables.

**Pressure Pumps and Saws.**—The Burke Machinery Company, Cleveland, Ohio. Price-list folder calling attention to leaflets, which are inclosed, quoting new prices on cold cutting-off saws, to go into effect October 1, and another leaflet calling attention to a new pressure pump the company is putting on the market, which will pump up to 200 or 250 lb. pressure, and is especially designed for pumping pressure for testing valves and similar brass work.

**Gold and Silver Mill Machinery.**—Chalmers & Williams, Commercial National Bank Building, Chicago, Ill. Catalogue No. 1, section J. Illustrates by sectional drawings a rapid cyanide filter. This machine is especially designed for use in plants where gold and silver ores are worked and a large filter capacity is required. It consists of a steel plate cylinder fixed at an angle of about 45 degrees to the horizontal, the filter plate being suspended inside from the top of a shell so that the filter is practically self-contained. Results of tests are given.

**Rotary Converters.**—Allis-Chalmers Company, Milwaukee, Wis. Bulletin No. 1045. Describes a rotary converter having several important features: Special provision for properly ventilating of the armature; ventilating spacers so designed as to circulate air through the armature (by thus keeping the temperature low the machine is able to stand heavy overloads without injury); iron loss and heating of the poles reduced to a minimum by a special arrangement; a built-up armature of thin disks punched from very soft and specially prepared steel of uniform quality and high permeability. After punching these disks are japanned to prevent eddy currents.

**Friction Clutches.**—Carlyle Johnson Machine Company, Hartford, Conn. Catalogue D, 35 pages, 4½ x 7 in. Treats of the company's line of Johnson friction clutches. The volume is much larger than previous issues, containing considerable additional information, especially in regard to the successful driving of machinery direct from line shafting through friction clutches, eliminating countershafting. The clutch is shown in section and in its applications for various purposes. The lists are very complete, extending to clutch parts, which are numbered to correspond to the numbers indicating the parts on sectional views. The cover design of the previous issues, showing the emblem of the clutch, is maintained. The 35 pages are 4½ x 7 in.

Statistics just published by the United States Geological Survey show that the quantity of limestone used for furnace flux in the United States in 1907 was 17,119,297 gross tons, against 16,077,202 tons in 1906. The average value per ton was 53 cents at the quarry in 1907, as compared with 47 cents in 1906, the advance in price being due to the increased cost of production.

# HARDWARE

OUR cities from their rapid increase in number, size and commercial importance attract their full measure of attention from those who are considering social and economic conditions and tendencies. The agricultural classes also have a prominent place, as they are recognized as in large measure the sources of wealth, upon whose well being the prosperity of the country in no small degree depends. Between these two are the towns and villages scattered through the length and breadth of the land, to whose welfare comparatively little thought is given. Many schemes are broached and put in operation for the uplifting of the masses and for the advancement of the trade interests of the cities. The "poor farmer"—who is after all about the best representative of comfortable and prosperous life, and who is envied by multitudes of less well to do people—is the object of special solicitude with our law makers. The commission recently appointed by the President is even now considering what can be done to promote his welfare. The towns and villages, however, seem to be left out in the cold to shift for themselves. Between the rich and wide spreading agricultural sections on the one hand and the great cities growing in population, trade and wealth on the other hand, the rural communities which should be local centers of life and trade, are lost sight of.

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That it is important to keep alive the rural communities and to advance their interest is a fact which should have much more consideration than has heretofore been given it in the various associations of merchants in Hardware and other branches of trade. Such associations should not be content with the simple recognition of the fact. They should emphasize it. They should be aggressive in asserting it, and prompt in the furtherance of policies for the benefit of these business centers outside of the large cities. Instead of spending time on some minor question which seems trifling in the comparison, or in the criticism of some trade practice which after all amounts to very little in dollars and cents, it would be well for these associations to take hold with vigor of the great problem of building up the towns and villages not only in trade but in everything that contributes to their welfare. It will also be in order for the commission which is considering what can be done for the farmers, to consider at the same time what can be done for the towns, not for the sake of the towns, but for the sake of the farmers.

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It cannot be emphasized too much that the welfare of these communities is essential to the well-being of the country as a whole. Their decadence in recent years and the continuing tendency towards their further decline is retrogression when the interests of the country as a whole are considered. Where there are villages with enterprising and successful merchants, good schools and churches, opportunities for the refinements and comforts of life, a self-respecting and prosperous people, the farming population find a market in which they can buy and sell, and have within easy reach many things which are essential to normal and wholesome life. If, however, the village runs down, and its business dries up and the churches and schools deteriorate, and its best people move away, and it assumes a shiftless and sleepy aspect which well befits its decadence, there is in precisely the same measure a lessening of the opportunities of the neighboring farmers, a detracting from their well being and a tendency to lower the type of life they live. The welfare of the farming classes is inseparably bound up with the prosperity of the towns and villages. They must have access to some well-to-do and enterprising place where they may have contact with the world at large and receive the stimulus of a broader life than that which is concerned merely with the cultivation of the soil.

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## Condition of Trade.

During the past year there have been many comparisons made of the volume of current business with that of a corresponding month a year ago. These have practically all been to the disadvantage of the later month, as the financial storm occurred in the end of October, 1907. It is a gratifying feature of the situation that comparisons hereafter to be made will, it is presumed, show to the advantage of the later period, in which a gradual return of prosperity is to be set over against trying months of uncertainty and business depression. Instead of endeavoring as has been the fashion to make the best of current business as not too greatly below that of a a year ago, it will hereafter be permitted those who enjoy such comparisons, to point out the manner in which the coming months chronicle more or less important gains over the same months of 1907, with perhaps a still more pronounced improvement in 1909 over the corresponding months of 1908. While business at this time is feeling some of the effects of the depression and is also limited by the attention given to political matters and the waiting for the result of the election now so near at hand, it gives in general no reason for complaint. So far as the Hardware market is concerned there is fair though not by any means heavy demand for general Shelf goods and those which enter into general use, while heavy goods and those used by railroads and in connection with larger enterprises are less active. A good deal of business is being done in regular course by the jobbing houses in supplying the needs of the retail trade, whose policy is to buy in small quantities. Changes in price in the Hardware field are not many or important. With a good deal of revision here and there and with more concessions than advances in price, the market is pretty well sustained and is characterized by a fairly steady tone. It is, however, a market which gives those charged with the responsibility of purchasing goods abundant opportunity for care and skill, as there are many lines in which there is more or less diversity of quotation, so that the most advantageous prices can only be obtained on careful inquiry. In some cases where goods have recently been advanced by the manufacturers the jobbers are in a position to undersell them.

### Chicago.

While business is to some extent being held in leash waiting the outcome of the approaching election, it is gratifying to observe that the movement of Hardware goods reflects the effect of this influence in only a moderate degree. It is, of course, difficult—impossible, indeed—to analyze with accuracy and precisely measure the opposing forces operating for and against more rapid recovery of full commercial vigor, but the activities dis-

played in various lines of goods are straws that indicate the trend of the current. Reviewing market conditions in this light, it is reassuring to find a marked improvement in the demand for such articles of Hardware as are largely used by the railroads. Depleted stores and more extended operations in car repair work have compelled these interests to buy with greater liberality in the past few weeks than at any time within a year; and while their purchases are limited to the supply of present needs, these are plainly growing more general and urgent. Bolt and Nut manufacturers particularly will not only profit by an extension of activities in this direction, but the increased volume of new car construction resulting from recent orders placed with car builders will call for still more of their product. Another line concerning which reports continue to be of a favorable character is that of Builders' Hardware. For the past two months the demand has been growing, and in order to meet it it has been necessary for factories to work to fuller capacity, so that a number of them are now running nearly full. It may be said, therefore, that so far as the Western trade in this line is concerned, business is fairly satisfactory as to volume of orders coming out. In this respect conditions are not far short of what they were a year ago, but owing to the reductions that have been made in prices in the meantime, the sales totals are correspondingly smaller. The same thing is true of some other Hardware goods, but prices on the whole are holding pretty even at present levels, and the disposition to make concessions from established schedules is certainly no more pronounced than it has been at any time this year. Notwithstanding, while merchants, both wholesale and retail, are, for the time being, reluctant to discount the future far ahead in placing orders, it is none the less true that the current requirements of the trade are great enough to maintain a reasonable degree of activity in the distribution of manufactured products.

## NOTES ON PRICES.

**Wire Nails.**—The volume of Nails being shipped from the mills shows no falling off, although demand is still confined to immediate requirements. A request for prompt delivery is the rule, both on new business and shipments on contract orders. Prices continue to be well if not in all cases inflexibly maintained. Quotations are as follows f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

| | |
|---|---|
| Carloads, to jobbers | $1.95 |
| Carload lots to retail merchants | 2.00 |
| Less than carloads to jobbers | 2.00 |
| Less than carloads to retail merchants | 2.10 |

*New York.*—Local demand is moderate and more or less spasmodic in character. With some Nail houses the volume of business is equal to that of the same period last year. Nails are held on the basis of $2.30 per keg in small lots at store, but some sellers are occasionally inclined to shade this figure.

*Chicago.*—Business has quickened somewhat in the past week, and new orders are coming in at a better rate. The character of buying is such as, observed from week to week, shows more or less fluctuation, but it is thought that October will make a satisfactory showing as compared with September. There is no change in the general demand for prompt shipments or the holding of orders close to immediate requirements. Prices, it is said, are being steadily maintained. Quotations are as follows: $2.13 in car lots to jobbers, and $2.18 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

*Pittsburgh.*—The election is now only two weeks away, and the trade is buying only such quantities of Nails as it absolutely needs to cover present wants. Orders for carloads and less quantities usually carry a request for prompt shipment, indicating that stocks everywhere are low. We are advised that prices are well maintained, and specifications against contracts are coming in at a fairly satisfactory rate. Quotations for base sizes are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

| | |
|---|---|
| Carloads, to jobbers | $1.95 |
| Carload lots to retail merchants | 2.00 |

Galvanized Nails are quoted at $1 over the price of the regular Nails.

**Cut Nails.**—Improvement in demand is almost imperceptible as compared with recent weeks, but it is somewhat in advance of that of previous months. There are some new orders, together with specifications on contracts. There is no disposition to buy speculatively. The general price is $1.80, base, per keg, f.o.b. Pittsburgh, but this price continues to be shaded to the large trade. In the Western market Iron Cut Nails are held at an advance of 10 cents per keg over Steel Cut Nails, but this differential is not observed in the East.

*New York.*—There is comparatively little doing in Steel Cut Nails in the local market. Nails are held on the basis of $2.15 per keg for small lots at store, but this price is not strictly adhered to by all sellers.

*Chicago.*—The demand for Cut Nails increases very slowly in volume, and while it is considerably larger than at its low point some months back, it is yet far from normal. Jobbers are buying only what is required to maintain necessary stock assortments and consumers are likewise buying only for actual present needs. We quote Chicago prices as follows: In car lots to jobbers, Iron Cut Nails, $2.08; Steel Cut Nails, $1.98.

*Pittsburgh.*—New demand is very light, and is made up of small orders to cover present needs of consumers. Specifications against contracts are fairly active, but yet there is no disposition on the part of jobbers to buy ahead. Prices are fairly well maintained by the mills and the jobbers, but there is some cutting. The general market is $1.80, base, per keg, f.o.b. Pittsburgh, but $1.75 is made, on carloads and over. In the Western market Iron Cut Nails are held at an advance of 10 cents per keg over Steel Cut Nails, but this differential is not observed in the East.

**Barb Wire.**—Buying is not up to the volume anticipated by the mills for the season, as it is somewhat light and confined to immediate requirements. Manufacturers are hopeful of an increased demand in the near future. Regular quotations are reported as being maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

| | Painted. | Gal. |
|---|---|---|
| Jobbers, carload lots | $2.10 | $2.40 |
| Retailers, carload lots | 2.15 | 2.45 |
| Retailers, less than carload lots | 2.25 | 2.55 |

*Chicago.*—Though a little slow in starting, the movement in Barb Wire is gathering strength, as is evidenced by a better run of orders in the past few days. While it is likely the aggregate of fall business will fall short of expectations, a fair amount of new business is yet looked for. Prices are reported firm and unchanged. Quotations are as follows: Jobbers, Chicago, car lots, Painted, $2.28; Galvanized, $2.58; to retailers, car lots, Painted, $2.33; Galvanized, $2.63; retailers, less than car lots, Painted, $2.45; Galvanized, $2.75; Staples, bright, in car lots, $2.25; Galvanized, $2.55; car lots, to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

*Pittsburgh.*—New buying is rather light, and is confined to small orders for actual needs, the new business offering being a disappointment to the mills, which anticipated a heavier inquiry for Wire at this time than they are getting. We are advised that regular prices are being maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

| | Painted. | Gal. |
|---|---|---|
| Jobbers, carload lots | $2.10 | $2.40 |
| Retailers, carload lots | 2.15 | 2.45 |
| Retailers, less than carload lots | 2.25 | 2.55 |

**Plain Wire.**—Demand for Plain Wire is of larger proportions than that for Barb Wire, although Fence manufacturers are showing conservatism in placing orders in anticipation of actual needs. Regular prices are reported as being well maintained. Quotations per 100 lb. to jobbers in carload lots are as follows, on a basis of $1.80

for Plain and $2.10 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the price to retailers being 5 cents additional:

| Nos. | 6 to 9 | 10 | 11 | 12&12½ | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|
| Annealed | $1.80 | 1.85 | 1.90 | 1.95 | 2.05 | 2.15 | 2.25 | 2.35 |
| Galvanized | 2.10 | 2.15 | 2.20 | 2.25 | 2.35 | 2.45 | 2.85 | 2.95 |

*Chicago.*—Specifications from Fence makers are coming out in good volume, and the new orders are under the circumstances quite satisfactory. Here and there consumers are going further ahead with orders anticipating future requirements, but this is by no means general. Prices are reported to be well maintained. We quote as follows: Car lots to jobbers, $1.98, f.o.b. Chicago, and to retailers, $2.05.

*Pittsburgh.*—Demand for Wire from the Fence manufacturers is fairly active, but most of the orders being placed represent only actual needs of the buyers who are not yet showing a disposition to accumulate stocks. It is believed that after the election is out of the way demand for Wire will show material betterment. It is stated that the mills and the large trade are absolutely maintaining prices. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

| | Painted. | Gal. |
|---|---|---|
| Jobbers, carload lots | $2.10 | $2.40 |
| Retailers, carload lots | 2.15 | 2.45 |
| Retailers, less than carload lots | 2.25 | 2.55 |

**Snow Shovels.**—Purchases of long handled steel Snow Shovels are being made by the retail trade in the Northern States at prices considerably lower than those prevailing last year. The market may be represented in a general way by a quotation of $2.50 to $2.75 per dozen. D Handled Snow Shovels are from 15 to 20 cents higher.

**Glaziers' Points.**—While the prices of most manufacturers of Zinc Glaziers' Points have not been changed recently, the market may be said to be somewhat stiffer. The improved tone is due to the fact that one or two makers, whose quotations have been especially low, are now naming slightly higher figures.

**Pipe Cutters.**—As is generally known by the trade, prices on Barnes & Saunders' pattern Pipe Cutters have been reduced by competition among the manufacturers to an unremunerative basis. There are rumors that an effort is being made to improve the situation, but it is not yet clear whether or not they will be attended by success.

**Cast Iron Fittings.**—While business in Cast Iron Fittings is not in large proportions, the market is fairly steady as leading manufacturers continue to work in harmony. Current quotations to average trade may be represented by a discount on L's, T's, &c., of 70 per cent., and on Bushings, Plugs, Flange Unions, &c., of 70 and 10 to 75 per cent.

**Leather Belt Lacing.**—The strong tone of the leather market, which has previously been referred to in these columns, is still noteworthy. No further advances have occurred within two or three weeks, but should they occur in the near future, they would occasion no surprise on the part of the larger trade.

**Tacks.**—Some manufacturers of Tacks have been withdrawing concessions formerly offered and are naming higher prices. It is doubtful, however, whether the general market will experience much immediate benefit from this movement on the part of the manufacturers, as many jobbers have fair stocks of Tacks purchased at materially lower prices.

**Sheathing Paper.**—On better grades of rosin sized Sheathing Paper, quotations are practically unchanged. Low figures on cheaper products are occasionally reported, although some manufacturers whose prices have been the lowest have withdrawn their extreme quotations and are making advances of from $1 to $2 per ton.

**Chain.**—A conference of Chain manufacturers is being held this week in a Western city, but no report of their action has yet been received. On proof Coil Chain prices have been fairly well maintained, but irregularity continues to be reported in German pattern Chain.

**Bolts and Nuts.**—The manufacturers of Bolts and Nuts have been in session conferring in regard to the business situation, and unite in reporting a steady market and a good condition of trade, with a prospect of an increased demand after election. Prices, which are said to be well maintained, remain without change.

**Rope.**—Business in hard fiber goods is not holding up, either in size or frequency of orders, to the volume transacted during the early part of this month, which was somewhat behind that for the corresponding period of September. There is really not enough demand to test values, except when an occasional inquiry approximating a carload has been received. In response to the latter quotations lower than card prices are doubtless made to obtain the order. Manufacturers of Jute products have generally advanced prices, including those on Rope, the increase being from ¼ to ½ cent per pound. The advance in prices has stimulated demand to some extent. General quotations for Rope 7-16 in. in diameter and larger are as follows: Pure Manila, 9 cents; Pure Sisal, 7 cents; No. 1 Jute, ¼ in. and up, 5¾ to 6 cents; No. 2 Jute, ¼ in. and up, 5¼ to 5½ cents.

**Window Glass.**—The meeting held in Pittsburgh last week to perfect the hand operated Window Glass manufacturers' organization, was attended by more than 100 persons, representing 1600 pot capacity. In addition to Window Glass manufacturers, jobbing houses were well represented, as were also supply firms. This is said to have been the largest Window Glass meeting in point of numbers ever held in this country. The percentage of factories represented was not, however, large enough to make the formation of the association a certainty, so that four committees, each consisting of two persons, were appointed to visit manufacturers who had not signified their intention to join in the movement. The committees were instructed to report at an adjourned meeting to be held to-morrow, the 22d inst. Those most interested in the formation of the organization are hopeful of a successful outcome at this meeting. The local demand for Glass continues light, but a moderate and possibly temporary increase in business is anticipated by the jobbers with the coming of cold weather. Manufacturers' discounts, for hand blown Glass, from manufacturers' list of January 1, 1901, are as follows: For regular single strength Glass, 90 and 20 per cent.; for double strength Glass, 90 and 25 per cent. Eastern jobbers' quotation from jobbers' list, October 1, 1903, for all sizes of single and double strength Glass, covering the territory east of Chicago, is 90 and 20 per cent. discount.

**Linseed Oil.**—The demand in the local market is still largely confined to small lots, as heretofore. State and Western Oils are not very firm at current quotations. Indications are reported of a tendency on the part of crushers to make some concessions in former prices, to close contract orders for future delivery. Quotations for five-barrel lots are as follows: State and Western Raw, 41 to 42 cents per gallon; City Raw, 43 to 44 cents per gallon. Boiled Oil is 1 cent advance on Raw. Carload lots are quoted at about 1 to 1½ cents less per gallon than the foregoing prices.

**Spirits Turpentine.**—The net result of fluctuations since our report last week, caused by trade conditions in the South, is an advance of ½ cent per gallon. The demand in the local market continues light. The New York market is represented by the following quotations: Oil Barrels, 38½ to 39 cents; Machine Made Barrels, 39 to 39½ cents per gallon.

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WITH a view to keeping their name and business before the trade, the Richards Mfg. Company, Aurora, Ill., began to issue attractive monthly photograph calendars in January, 1907. At first the edition printed was small, but the cards proved very popular and the demand for them has steadily increased, until the company is now sending out nearly 11,000 copies each month. The company will be pleased to put any Hardware merchant, architect or contractor on its mailing list for the calendars upon application.

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JOHN E. STRICKLAND, senior member of the Hardware, plumbing and mill supply firm of John E. Strickland & Sons, Carthage, N. Y., died on the 4th inst. Mr. Strickland had been in business in that city since 1871.

# THE STORE SYSTEM OF WM. KRUEGER COMPANY.

THE accompanying illustrations represent blank forms and tags used in the wholesale and retail establishment of Wm. Krueger Company, Neenah, Wis. In Fig. 1 is illustrated the blank used when ordering goods either by mail or from salesmen who call upon the com-

ORDER NO 8035 NEENAH, WIS. April 22, 1908
SHIP VIA Car NW
WHEN Rush
F. O. B. Milw.
TERMS 60/2/10 To John Pritzlaff Hdw. Co
SALESMAN Stansbury Milwaukee, Wis.

WM. KRUEGER COMPANY
RETAILERS AND JOBBERS OF
HEAVY AND SHELF HARDWARE
AND HOUSE FURNISHING GOODS

| QUANTITY | SIZE | DESCRIPTION | PRICE | | |
|---|---|---|---|---|---|
| 1 Doz | #2 | Wheel Barrows | 18.00 | 18 | 00 |
| ½ Doz | #17 | 3 Tined Stripped Otsego Forks | 4.20 | 2 | 10 |
| 10 Keg | 10¢ | Wire Nails | | | |
| | | Ship Thursday or oblige | | | |
| | | Wm Krueger Co | | | |

*Fig. 1.—Blank for Ordering Goods.*

pany. A carbon copy is taken on a colored duplicate and is found to be of great assistance in checking invoices. The order number is put in the left hand corner, and, as will be noticed, the request is printed immediately under it to "put this number on invoice, boxes, &c." This immediately identifies the invoice with the order and boxes of goods received.

### Shop Order Blanks.

For all job work the shop order blanks shown in Figs. 2 and 3 are used. These blanks are padded to-

WM. KRUEGER CO.
Date February 10-1908 No. 3912
Name John Jones
When Feby 12th Assigned Smith

Put Eaves Trough and Conductor on House

Quoted 10¢ per. ft. & Extras.
Charged FEB 13 1908 (387)

*Fig. 2.—White Shop Order Blank, Actual Size 4 x 6 In.*

gether, the one illustrated in Fig. 2 being printed on white paper, 4 x 6 in. in size, while that shown in Fig. 3 is on buff paper, the same length as Fig. 2, but twice the width. White and buff sheets alternate and are perforated along the left-hand edge so they may be torn from the book. When the order is taken it is written in duplicate by the aid of carbon sheet, and the white sheet remains in the order book until the job is completed. The buff sheet (Fig. 3) is given to the workman who makes a report of material and time on the right-hand half. When this report is turned in by the workman the white sheet, Fig. 2, is taken from the book

WM. KRUEGER CO.
Date February 10-1908 No. 3912
Name John Jones
When Feby 12th Assigned Smith

Put Eaves Trough and Conductor on House

REPORT
Material 107 ft. of 4" Eaves Trough
53 ft. of 3" Conductor
6 Elbows
18 Hangers
2# Solder

Commenced 7 A.M. Date Feb. 12
Completed 3-30 P.M. Date Feb. 12
Time 7½ hours

Signed Frank Smith

*Fig. 3.—Buff Shop Order Blank, 6 x 8 In.*

and pasted along the edge to the left-hand half of Fig. 3. The job is charged to the customer and so marked, the number following date of charge being the journal page on which the charge is made. The order number is also put on the journal charge, which makes it very easy to refer to the workman's report if any question arises relative to the charge as shown on the journal.

This shop order form also serves as a check on all charges for job work, and makes it almost impossible for any job to be completed and not charged, besides be-

WM. KRUEGER COMPANY
NEENAH, WISCONSIN
Date February 8-1908
Account Henry Hansen Deliver to 123 Chestnut St
Ordered by Telephone Neenah
CHARGED Fenton PAID COLLECT

| | | | | | | |
|---|---|---|---|---|---|---|
| 1 | 1 | Keg 10d Wire Nails | | | | |
| 1 | 1 | Roll Rid AA Bldg. Paper | | | | |
| 1 | 1 | Maydole Hammer | | | | |

Checked by C. T. FEB 10 1908

*Fig. 4.—Blank for Taking Down Orders Received, Actual Size 7 x 8 In.*

Deliver to Thomas Adams
Address 637 Wisconsin Ave.
When This P.M. Chgd W.K.K.
Paid Coll.
Remarks Bring back wringer for Repairs
WM. KRUEGER COMPANY.
3"

*Fig. 5.—Delivery Tag, Actual Size 3 x 6¼ In.*

ing a check on each workman's time, as the total time must be shown on each workman's report slip for the day.

### Orders Received.

The blank illustrated in Fig. 4 is 7 x 8 in. in size, printed on blue tinted paper, and is used in taking down orders for goods given either in person or by telephone. These may be turned over to be filled by any one of the clerks. There is little likelihood of these forms being lost or destroyed as they are of a distinctive color, so that all the employees recognize their importance at a glance, while an odd slip of paper might be destroyed. The use of this form is also a check on goods to be charged, and saves many questions regarding addresses and other details of transactions which might come up in the absence

of written orders. For delivering goods the tag illustrated in Fig. 5 is used. This is about 3 x 6¼ in. in size, and contains printed headings fully covering information connected with the delivery of goods. These include the name and address of the purchaser, time the delivery is to be made, whether the goods have been paid for or are to be collected for or charged. There is also




*Fig. 6.—Reverse Side of Delivery Tag.*

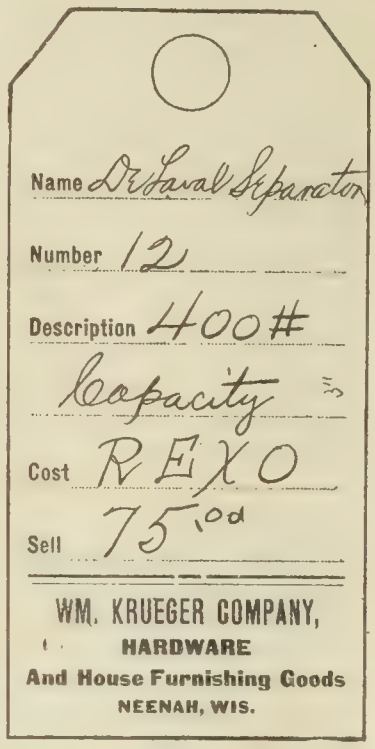



*Fig. 7.—Price Tag, Actual Size 2½ x 5¼.*

a line for remarks. In this instance a Wringer is to be brought to the store for repairs.

The reverse side of the tag contains the illustration and wording shown in Fig. 6, calculated to impress customers favorably with the progressive character of the company. The price tag, shown in Fig. 7, is used on all large goods, such as Stoves, Washing Machines, Cream Separators, Bicycles, &c. Smaller tags and labels are used for marking smaller goods.

## The Memphis Conventions.

AT the conventions of the National Hardware Association and the American Hardware Manufacturers' Association, which will be held in Memphis, Tenn., November 18 to 20, all the members of both associations and a number of the visitors will be furnished with an identification badge, similar to those used at former gatherings. These badges will display the name of the individual and the name and address of the company he represents. In this connection F. D. Mitchell, secretary of the American Hardware Manufacturers' Association, 309 Broadway, New York, is sending out return postals upon which it is requested that the names of those who are intending to attend the conventions will be entered.

This gathering of the trade promises to be one of the largest and most successful in the history of the two associations. As already announced, the headquarters of the jobbers will be at the Gayoso Hotel, and of the manufacturers at the Peabody Hotel, both hotels being under the same management and practically identical as regards appointment and service.

The Stone & Brown Company, Malta, Ill., has purchased the Hardware stock of Harrington & Pease and W. H. Haish & Co., of that place, and with these additions will carry a line, including Hardware, Farm Machinery, Stoves, Tin, Wooden Ware, Lumber, Paints and Varnishes; Tank Heaters and Building Material. An office will also be maintained at Sycamore, Ill.

G. L. Gripton, Britton, Mich., suffered a partial loss of stock by fire, and is now doing business in rented quarters while his store is being rebuilt. He handles Shelf Hardware, Stoves, Tinware, Paints, Oils, Sporting and Athletic Goods, Windmills, Pumps and Gasoline Engines.

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## AGGRESSIVE METHODS OF A MASSACHUSETTS MERCHANT.

EARLY last spring Ervin E. Smith, a Hardware merchant of Lowell, Mass., made an investigation, the results of which caused him to sit up and take notice. By a canvass of the farmers and other outlying residents of the district tributary to Lowell, he found that a majority of the families had mail order house catalogues and were using them in buying some of their household requirements.

Concluding that he must do something to get and hold the business in his locality, Mr. Smith decided to get out some printed matter of his own, calculated to interest this class of customers and bring them into his store. Accordingly he prepared and sent out by mail at favorable times some sheets similar to that which is reproduced in the accompanying illustration. They were printed on both sides and referred to seasonable and staple goods, as well as specialties in which the farmers would likely be interested, prices being quoted to correspond as closely as possible with those of the catalogue houses.

The sheets were all the same size, about 8¾ x 11½ in., and plates were made of each page with the idea




*Sample Advertising Sheet Issued by Ervin E. Smith, Lowell, Mass.*

that with a few alterations a catalogue of about 50 pages might be issued another year.

As an indication of the results accomplished, Mr. Smith states that in spite of general conditions his spring business was considerably ahead of last year.

It has not been found necessary to make prices quite as low as the catalogue houses. Some articles are used as leaders, and fairly good prices are obtained for other goods. These matters were handled intelligently by studying the publications of the Western houses, estimating cost of deliveries, &c.

Better results are being obtained from the circulars this fall than in the spring, as the printed matter has been followed up by samples, letters, &c. At the present time Mr. Smith is sending out a circular letter about roofing. The idea is to keep the name of the concern before the people so prominently that when they are in need of goods in the Hardware line this store will be the first place thought of.

The mailing list has been made up in various ways. One method suggested is to get a copy of the town voting lists and have the town clerk or some one else who is well acquainted cross off the undesirable names. Whenever an unknown customer comes into the store his name and address are taken, making it possible to find out whether previous advertising has reached him and at the same time insuring that he will receive all future matter. Hardly any one can be considered dead wood among this class of trade, since it is conducted on a strictly cash basis, and every body has to buy more or less Hardware.

## TACTFUL CO-OPERATION.

*The Great Business Lubricant That Wears Longest and Makes the Load Pull Easiest. Are You Using It?*

BY RICHMOND.

HAVE you ever noticed how the wheel of a Wagon "runs dry"? First a slight squeak; then a grinding howl; then it "sets tight";—so tight that the wheel will no longer turn, and the best team on earth cannot pull the load. Lubricant is the solution of the problem.

**Keep Your Business Lubricated.**

Tact is the best business lubricant. No amount of push and energy will keep the load moving without it. Jealousy, opposition, dissatisfaction, each and all create friction in business. Friction causes the wheels to run dry, and unless it is overcome it will retard or entirely stop the progress of the business.

Use tact, and by means of it get the co-operation of everyone connected with the business. Tact and co-operation;—no other formula means so much to the driver of a business band wagon loaded with the trials of modern business intricacies and heavy competition.

**Business a Machine.**

The staff of a business house is like a complicated machine. It needs constant attention and adjusting, and above all, *lubrication.* Even with the best of care there will be some friction—some wear and tear; but these can and should be minimized. In just the proportion in which the merchant succeeds in reducing or eliminating these retarding influences will he reduce his expenses and his losses, and increase his gains.

**Direct Personal Bearing.**

If a single small screw is loose in a great machine, its entire output may be distorted and imperfect. This little obscure part, working out of harmony, may render ineffective the strong arm or lever that does the heavy work or controls the action of the whole. A jealous or dissatisfied clerk may, even without intention, upset the well laid plans of the manager or the head of the house. Worse than that and more difficult to combat is the silent and unseen influence that such a spirit sends out through an organization.

**Get the Confidence of Employees.**

The full confidence of employees is worth gold dollars to the merchant. It is the first step toward the co-operation that every business must have in order to reach the highest degree of success.

Successes without this?

Yes, of a certain kind and degree, but if these were analyzed they would be found to be of more or less temporary nature, and in 9 cases out of 10 they fall short of the best possible results.

**Meetings of Executives.**

It is not necessary nor advisable to discuss business standing or rating or other close business questions with the general staff, but business promotion properly handled will prove a subject rich in results. Under this heading might be classified store arrangement, special sales, advertising, window displays and store systems.

Every employee should have ideas on these subjects. If he hasn't he should be set about thinking them up or find another position.

Regular meetings of the executive staff are of untold value. *Ideas count.* The success of a business depends more and more upon the brain power behind it. Co-operation and concentration are needed, and the greater the degree in which these can be obtained and utilized the better.

# Uniform Bills of Lading.

ON November 1 carriers and shippers will begin using the new Bill of Lading forms in Official Classification territory, and it is expected the same procedure will prevail shortly in Western and Southern territory, subject, possibly, to slight minor modifications necessary to meet peculiar conditions.

### STRAIGHT BILL OF LADING.

The straight Bill of Lading on which all but a small fraction of freight is carried, is reproduced in Fig. 1.

Uniform Bill of Lading—Standard form of Straight Bill of Lading approved by the Interstate Commerce Commission by Order No. 787 of June 27, 1908.

**Railroad Company.**

Shippers No.....

**STRAIGHT BILL OF LADING—ORIGINAL—NOT NEGOTIABLE.**

Agents No.....

RECEIVED, subject to the classifications and tariffs in effect on the date of issue of this Original Bill of Lading,

*at*.....*19*

from.....the property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned and destined as indicated below, which said Company agrees to carry to its usual place of delivery at said destination, if on its road, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the conditions, whether printed or written, herein contained (including conditions on back hereof) and which are agreed to by the shipper and accepted for himself and his assigns.

*The Rate of Freight from*.....

*to*.....*is in Cents per 100 Lbs.*

| IF..Times 1st | IF 1st Class | IF 2d Class | IF Rule 25 | IF 3d Class | IF Rule 26 | IF Rule 28 | IF 4th Class | IF 5th Class | IF 6th Class | IF Special per ... | IF Special per..... |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |

(Mail Address - Not for purposes of Delivery)

Consigned to.....

Destination,.....State of.....County of.....

Route,.....Car Initial.....Car No.....

| NO. PACKAGES | DESCRIPTION OF ARTICLES AND SPECIAL MARKS | WEIGHT (Subject to Correction) | CLASS OR RATE | CHECK COLUMN |
|---|---|---|---|---|
| | SAMPLE COPY. | | | |

If charges are to be prepaid, write or stamp here, "To be Prepaid."

Received $..... to apply in prepayment of the charges on the property described hereon.

Agent or Cashier.

Per.....

(The signature here acknowledges only the amount prepaid.)

Charges Advanced:

$.....

.....Shipper. .....Agent.

Per..... Per.....

(This Bill of Lading is to be signed by the shipper and agent of the carrier issuing same.)

*Fig. 1.—Straight Bill of Lading.*

### Conditions Governing Shipments.

On the back of this form and of all the other forms of bills of lading here described, are printed the conditions governing all shipments, as follows:

SEC. 1. The carrier or party in possession of any of the property herein described shall be liable for any loss thereof or damage thereto, except as hereinafter provided.

No carrier or party in possession of any of the property herein described shall be liable for any loss thereof or damage thereto or delay caused by the act of God, the public enemy, quarantine, the authority of law, or the act or default of the shipper or owner, or for differences in the weights of grain, seed or other commodities caused by natural shrinkage or discrepancies in elevator weights. For loss, damage or delay caused by fire occurring after 48 hr. (exclusive of legal holidays) after notice of the arrival of the property at destination or at port of export (if intended for export) has been duly sent or given, the carrier's liability shall be that of warehouseman only. Except in case of negligence of the carrier or party in possession (and the burden to prove freedom from such negligence shall be on the carrier or party in possession), the carrier or party in possession shall not be liable for loss, damage or delay occurring while the property is stopped and held in transit upon request of the shipper, owner or party entitled to make such request; or resulting from a defect or vice in the property or from riots or strikes. When in accordance with general custom, on account of the nature of the property, or when at the request of the shipper the property is transported in open cars, the carrier or party in possession (except in case of loss or damage by fire, in which case the liability shall be the same as though the property had been carried in closed cars) shall be liable only for negligence, and the burden to prove freedom from such negligence shall be on the carrier or party in possession.

SEC. 2. In issuing this bill of lading this company agrees to transport only over its own line, and except as otherwise provided by law acts only as agent with respect to the portion of the route beyond its own line.

No carrier shall be liable for loss, damage or injury not oc-

curring on its own road or its portion of the through route, nor after said property has been delivered to the next carrier, except as such liability is or may be imposed by law, but nothing contained in this bill of lading shall be deemed to exempt the initial carrier from any such liability so imposed.

SEC. 3. No carrier is bound to transport said property by any particular train or vessel, or in time for any particular market or otherwise than with reasonable dispatch, unless by specific agreement indorsed hereon. Every carrier shall have the right in case of physical necessity to forward said property by any railroad or route between the point of shipment and the point of destination; but if such diversion shall be from a rail to a water route the liability of the carrier shall be the same as though the entire carriage were by rail.

The amount of any loss or damage for which any carrier is liable shall be computed on the basis of the value of the property (being the *bona fide* invoice price, if any, to the consignee, including the freight charges, if prepaid) at the place and time of shipment under this bill of lading, unless a lower value has been represented in writing by the shipper or has been agreed upon or is determined by the classification or tariffs upon which the rate is based, in any of which events such lower value shall be the maximum amount to govern such computation, whether or not such loss or damage occurs from negligence.

Claims for loss, damage or delay must be made in writing to the carrier at the point of delivery or at the point of origin within four months after delivery of the property, or, in case of failure to make delivery, then within four months after a reasonable time for delivery has elapsed. Unless claims are so made the carrier shall not be liable.

Any carrier or party liable on account of loss of or damage to any of said property shall have the full benefit of any insurance that may have been effected upon or on account of said property, so far as this shall not avoid the policies or contracts of insurance.

SEC. 4. All property shall be subject to necessary cooperage and baling at owner's cost. Each carrier over whose route cotton is to be transported hereunder shall have the privilege, at its own cost and risk, of compressing the same for greater convenience in handling or forwarding, and shall not be held responsible for deviation or unavoidable delays in procuring such compression. Grain in bulk consigned to a point where there is a railroad, public or licensed elevator, may (unless otherwise expressly noted herein, and then if it is not promptly unloaded) be there delivered and placed with other grain of the same kind and grade without respect to ownership, and if so delivered shall be subject to a lien for elevator charges in addition to all other charges hereunder.

SEC. 5. Property not removed by the party entitled to receive it within 48 hr. (exclusive of legal holidays) after notice of its arrival has been duly sent or given may be kept in car, depot or place of delivery of the carrier, or warehouse, subject to a reasonable charge for storage and to carrier's responsibility as warehouseman only, or may be, at the option of the carrier, removed to and stored in a public or licensed warehouse at the cost of the owner and there held at the owner's risk and without liability on the part of the carrier, and subject to a lien for all freight and other lawful charges, including a reasonable charge for storage.

The carrier may make a reasonable charge for the detention of any vessel or car, or for the use of tracks after the car has been held 48 hr. (exclusive of legal holidays), for loading or unloading, and may add such charge to all other charges hereunder and hold such property subject to a lien therefor. Nothing in this section shall be construed as lessening the time allowed by law or as setting aside any local rule affecting car service or storage.

Property destined to or taken from a station, wharf or landing at which there is no regularly appointed agent shall be entirely at risk of owner after unloaded from cars or vessels or until loaded into cars or vessels, and when received from or delivered on private or other sidings, wharves or landings shall be at owner's risk until the cars are attached to and after they are detached from trains.

SEC. 6. No carrier will carry or be liable in any way for any documents, specie, or for any articles of extraordinary value not specifically rated in the published classification or tariffs, unless a special agreement to do so and a stipulated value of the articles are indorsed hereon.

SEC. 7. Every party, whether principal or agent, shipping explosive or dangerous goods, without previous full written disclosure to the carrier of their nature, shall be liable for all loss or damage caused thereby, and such goods may be warehoused at owner's risk and expense or destroyed without compensation.

SEC. 8. The owner or consignee shall pay the freight and all other lawful charges accruing on said property, and, if required, shall pay the same before delivery. If upon inspection it is ascertained that the articles shipped are not those described in this bill of lading, the freight charges must be paid upon the articles actually shipped.

SEC. 9. Except in case of diversion from rail to water route, which is provided for in section 3 hereof, if all or any part of said property is carried by water over any part of said route, such water carriage shall be performed subject to the liabilities, limitations and exemptions provided by statute and to the conditions contained in this bill of lading not inconsistent with such statutes or this section, and subject also to the condition that no carrier or party in possession shall be liable for any loss or damage resulting from the perils of the lakes, sea or other waters; or from explosion, bursting of boilers, breakage of shafts, or any latent defect in hull, machinery or appurtenances; or from collision, stranding, or other accidents of navigation, or from a prolongation of the voyage. And any vessel carrying any or all of the property herein described shall have the liberty to call at intermediate ports, to tow and be towed, and assist vessels in distress, and to deviate for the purpose of saving life or property.

The term "water carriage" in this section shall not be construed as including lighterage across rivers or in lake or other harbors, and the liability for such lighterage shall be governed by the other sections of this instrument.

SEC. 10. Any alteration, addition or erasure in this bill of lading which shall be made without any indorsement thereof hereon, signed by the agent of the carrier issuing this bill of lading, shall be without effect, and this bill of lading shall be enforceable according to its original tenor.

These conditions deserve the closest scrutiny, as they are essential and important parts of the contract between the shipper and the railroad in regard to the transportation of goods.

### Shipping Order.

The copy of the Bill of Lading which is retained by the railroad is precisely the same as the one illustrated above, except that it is headed as shown in Fig. 2.

For use in connection with the Standard form of Straight Bill of Lading approved by the Interstate Commerce Commission by Order No. 787 of June 27, 1908.

**Railroad Company.**

Shippers No.

**THIS SHIPPING ORDER** must be legibly filled in, in ink, in indelible Pencil, or in Carbon, and retained by the Agent.

Agents No.

RECEIVE, subject to the classifications and tariffs in effect on the date of issue of this Shipping Order,

at

*Fig. 2.—Shipping Order Form.*

### Memorandum Bill of Lading.

A memorandum bill of lading is also made out and given to the shipper, which is identical with the original bill of lading (Fig. 1) except that it is headed as shown in Fig. 3.

It is to be observed that this memorandum is not a copy of the bill of lading, and cannot take its place, but is simply an acknowledgment that the shipment has been made. It is intended only for filing or record.

The set of three forms, thus illustrated and described, are printed on white paper and are the only forms of bills of lading permissible for straight shipments. Under no circumstances are they negotiable.

### SHIPMENTS TO ORDER.

For order shipments another set of three bills of lading is provided, consisting of an original, a shipping order, and a memorandum corresponding in a general way to the three forms described above. The first of these, the Order Bill of Lading, original, must be printed on yellow paper, and the other forms on blue paper, the tints being mandatory to prevent any confusion in the character of the two sets of documents. The Order Bill of Lading, original, is exactly the same as the Straight Bill of Lading, shown in Fig. 1, except that it is headed as shown in Fig. 4, and that it has on its back a blank space under the head of "Endorsements."

Transportation officials assert that order shipments, aggregating perhaps but 1 or 2 per cent. of all goods

forwarded, give all concerned more trouble than all the rest.

Much annoyance and delay will be saved by a realization that Order Shipments will not be delivered by carrier to consignee except on presentation of the Original Order Bill of Lading, properly indorsed, and the regulations governing such shipments will be as rigidly adhered to as in the handling of bank drafts, checks and other financial documents by financiers.

The Order Set of three is completed by the addition of a "Shipping Order" and "Memorandum," the details

For use in connection with the Standard form of Straight Bill of Lading approved by the Interstate Commerce Commission by Order No. 787 of June 27, 1908.

**Railroad Company.**

**THIS MEMORANDUM** is an acknowledgment that a bill of lading has been issued and is not the Original Bill of Lading, nor a copy or duplicate, covering the property named herein, and is intended solely for filing or record.

Shippers No.....

Agents No.....

RECEIVED, subject to the classifications and tariffs in effect on the date of the receipt by the carrier of the property described in the Original Bill of Lading,

.....19

*Fig. 3.—Memorandum Form.*

of which are the same as the Straight Shipment set, except that they are printed on blue instead of white paper.

### Size of Sheets and Signatures.

The width of all the forms must be 8½ in., but while 11 in. is the prescribed length for regular use, it is recognized that some shippers will require more room and they will be permitted to increase or decrease the length.

It will also be observed that provision is made for the signatures of both shippers and carriers on all the forms.

The forms adopted are the result of painstaking conferences between carriers, shippers, bankers and others interested, covering a period of over three years, and are issued under the auspices of the Uniform Bill of Lading Committee, composed of representatives of the Trunk Line Association, New England Roads, Central Freight Association and Association of Lake Lines, of which committee C. C. McCain, 143 Liberty street, New York, is chairman.

### Interstate Commerce Commission Recommendation

The Interstate Commerce Commission in its report, No. 787 of June 27 last, concerning the matter of Bills of Lading, recommended "the adoption and use of a uniform Bill of Lading by all carriers subject to the act to Regulate Commerce, from and after the first day of November 1, 1908." Notwithstanding the fact that the new Bill of Lading is technically only recommended and not prescribed, it will undoubtedly come into very general use on November 1. Some railroads which have not yet adopted it will, it is thought, do so in the near future.

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**The Hardware business of C. L. Swanson & Co., Sargent, Neb., has been sold, but is still being run by Mr. Swanson, who is closing out the old stock.**

## Trade Items.

MILLER & BREWER, 83 Maiden Lane, New York, jobbers of Nails, Spikes, Chain, &c., have purchased the stock of the Salem Nail Company, which until recently carried on business at 279 Pearl street. The stock includes Galvanized Bolt Rods, Wire, Galvanized and Copper Nails, Boat Nails and Spikes, &c., and will be disposed of by Miller & Brewer at their own address.

THE PRITCHARD-STRONG COMPANY, Rochester, N. Y., has issued a large folder entitled "Brother Bill's New Propositions," referring to Prisco Metal Ware Specialties and listing eight combination orders with which the life size cut-out of Brother Bill is furnished free.

THE UNION METALLIC CARTRIDGE COMPANY, 313 Broadway, New York, has got out two attractive easel cards for use on counters, showcases or in show windows. They are cut-outs representing a pair of quail in natural colors standing on actual size boxes of the company's Nitro Club and Arrow Loaded Shot Gun Shells.

## Requests for Catalogues, Etc.

*The trade is given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.*

**REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate:**

FROM THE VERNON HARDWARE COMPANY, Vernon, Texas, whose building and entire stock were destroyed by fire on the 4th inst. The company intends to resume business before very long, and will value catalogues, discount sheets, &c., relating to general Hardware, Sporting Goods, Tinware, Buggies, &c.

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FROM THE CASH HARDWARE COMPANY, Cedar Bluffs, Neb., which has succeeded Adam Lockner in the retail Hardware, Stove, Implement, Paint and Sporting Goods business.

---

G. S. BUCK has succeeded to the position of advertising manager of Butler Brothers, Chicago, made vacant by the death of J. O. Perkins. Mr. Buck has for several years been advertising manager of the Buck Stove & Range Company, St. Louis, and has edited that company's house organ entitled "Buck's Shot."

Uniform Bill of Lading—Standard form of Order Bill of Lading approved by the Interstate Commerce Commission by Order No. 787 of June 27, 1908.

**Railroad Company.**

Shippers No.....

**ORDER BILL OF LADING—ORIGINAL.**

Agents No.....

RECEIVED, subject to the classifications and tariffs in effect on the date of issue of this Original Bill of Lading,

*at* ..... *19*

from ..... the property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown) marked, consigned and destined as indicated below, which said Company agrees to carry to its usual place of delivery at said destination, if on its road, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the conditions, whether printed or written, herein contained (including conditions on back hereof) and which are agreed to by the shipper and accepted for himself and his assigns.

**The surrender of this Original ORDER Bill of Lading properly indorsed shall be required before the delivery of the property. Inspection of property covered by this bill of lading will not be permitted unless provided by law or unless permission is indorsed on this original bill of lading or given in writing by the shipper.**

*The Rate of Freight from* .....

*100 Lbs.* IF Special IF Special per ...

*Fig. 4.—Order Bill of Lading, Original.*

# Developments in Parcel Post Campaign.

FROM OUR SPECIAL CORRESPONDENT.

WASHINGTON, D. C., October 20, 1908.

THE campaign against the enactment of parcel post measures at the coming session of Congress is already actively under way and interesting developments may be recorded. The announcement made in this correspondence several weeks ago to the effect that the Postmaster-General claims to have obtained from President Roosevelt a promise that he will recommend in his forthcoming annual message the authorization of an experimental parcel post on rural routes has aroused the retailers in the Hardware, drug, grocery, tobacco and other lines, and active steps are being taken to acquaint the President with the views of the merchants of the country doing business in small towns and villages.

**Letters of Protest to the President.**

Several trade organizations, among which those representing the Hardware trade are prominent, have brought the matter to the attention of their members, and the President has begun to receive letters of protest accompanied by written and printed arguments designed to show the great injury to the small merchant that would inevitably follow such an entering wedge as an experimental parcel post, which in the nature of things would soon be expanded to the giant proportions to which the rural free delivery service has grown.

The President has already outlined a large part of his forthcoming message and will proceed rapidly with its completion as soon as the smoke of the coming political conflict has cleared away. It is obvious, therefore, that there is no time to be lost by those who wish to impress their views upon the President before his message is reduced to its final form.

**The Pledging of Candidates for Congress.**

Another line of work to which retailers are addressing themselves with considerable energy is the questioning of candidates for Congress who are to go before the people on November 3. Members elected this fall, it should be borne in mind, do not take their seats until December, 1909, unless Congress is called in extra session after March 4 next. The pledging of these candidates to oppose parcel post measures is good work, but, of course, it will be remembered that in the case of new members it will have no bearing upon the proceedings at the coming session. Wherever a Congressman is up for re-election, however, this work will be of the greatest importance, and in view of the comprehensiveness of the retail organizations in the principal trades, this pledging of candidates ought to include every member of the House in the next Congress, and therefore every re-elected member who will sit during the coming session.

In this connection merchants should be prepared to subordinate other issues and give their hearty support to candidates who pledge themselves to oppose parcel post schemes of all kinds. It is unfortunate that factional and local fights are being made against some of the most pronounced opponents of these postal schemes in the House. In no case is the parcel post an issue, but should any of those members who have fought the retail merchants' battles in Congress be defeated, the blow to the anti-parcel post campaign would be almost as severe as if the parcel post had been the direct issue.

**Activity of the National Grange.**

All opponents of a parcel post will be interested to learn that the National Grange, Patrons of Husbandry, will hold its annual convention in this city soon after the November elections and will again indorse a domestic parcel post and instruct its officers to urge the necessary legislation upon Congress at its coming session. The selection of Washington as the meeting place and November as the time obviously is part of a well conceived plan to bring a large number of members of the Grange to the capital during the period immediately before the meeting of Congress, when Members and Senators are reaching Washington from all parts of the country and before their attention is absorbed with the Congressional proceedings. This movement should be followed carefully and its effect counteracted by energetic work on the part of the retailers.

**Arguments of Experimental Parcel Post Advocates.**

The chief arguments to be used by the friends of a domestic parcel post in urging an appropriation for an experiment on rural routes will be that the wiping out of the annual postal deficit is of the utmost importance and that the proposed experiment will determine definitely whether this can be done by a rural parcel post, whether such a parcel post is in all respects practicable, and, finally, whether retail merchants will actually be injured to the extent that has been urged by the opponents of the scheme. In support of the assertion that a rural parcel post would soon eliminate the current deficit, which in round numbers is about $10,000,000 per annum, the Postmaster-General has declared that if three 11-lb. packages, upon which the postage would be 25 cents each, were handled every day by each rural carrier, the deficit would disappear. On this basis he figures an additional income of about $210 per route, which on the basis of 41,200 routes would amount to $8,652.000.

**Interesting if True.**

These figures are quite imposing and might mislead those who are unfamiliar with postal affairs, but retail merchants should examine them very carefully and in the light of past experience in the development of the rural free delivery service. It goes without saying that there will be very few 11-lb. packages paying 25 cents each sent over the rural routes by the country merchant, for the reason that the postage thereon would be absolutely prohibitory. To bring in an equal amount of income from smaller packages would mean an enormous increase in the labor to be performed by the carriers, for, unless all the rural routes of the country were fitted up with new mail boxes at an expense of several million dollars, merchandise could not be delivered with other mail in the boxes now in use, but would require to be carried to residences, which in many sections are distant from boxes an average of a quarter of a mile. Such a merchandise delivery would double the length of the average route and necessitate an enormous increase in the number of carriers.

**New Business Would Hardly Distribute Itself Automatically.**

It is also clearly apparent that new business over the rural routes could not be expected to distribute itself automatically at the rate of three 11-pound packages per day for each route. It goes without saying that on some routes the business would be many times that on other routes, and those familiar with country merchandising do not need to be told that on certain days of the week the business would be many fold heavier than on other days. Yet the service must be equipped to handle the maximum business on any route on any day, and this could only be done by the installation of an entirely different equipment from that now in use, as it would require heavier wagons, more horses and shorter routes.

**Deficit Would Undoubtedly Be Increased Rather Than Diminished.**

From these rough calculations, which, however, are based on a careful study of the postal service, it is clear that the small gain in revenue from the handling of an average of 33 pounds of merchandise per day per route would be completely swallowed up and a new and larger deficit incurred on account of the expense of new equipment and additional carriers, not to mention the cost of new rural mail boxes capable of containing 11-pound packages of merchandise of various shapes and sizes.

**A Question for the Farmers.**

The question will naturally present itself at this point as to whether the farmers of the country would be willing to permit themselves to be put forward as demanding a parcel post if they appreciated the fact that it would mean a per capita tax of $4 or $5 for new mail boxes for the occasional reception of a package of merchandise. Only those who are familiar with the "campaign of education" which the Postoffice Department was

obliged to make to induce the farmers to pay for the small mail boxes now in use will be able to form even a faint idea of what it would mean to compel the ten or twelve million patrons of existing routes to install new boxes costing several times as much as the old ones.

**Effect of the Postmaster General's Proposition.**

Right here it may be pertinent to inquire who would pay the $8,652,000 which the Postmaster-General declares would be derived from the handling of three 11-lb. packages of merchandise per day per route. Of course, the answer is, the retail merchants in the rural communities. No retailer needs to be told that the farmers would not pay the postage, and whether they were willing or not the cut-throat competition of reckless fly-by-night competitors who would offer to pay the postal charges would force the most conservative merchant to get into line or sacrifice a considerable part of his trade. The Postmaster-General's entire proposition, therefore, takes on this preposterous aspect, that the retail merchants of the country would be called upon to pay an enoromous sum to hold a part of their present trade, while the rest of it would be diverted to the mail order houses, which could not be prevented from utilizing the rural parcel post by indirect means, not to mention the enormous advantage the catalogue concerns would secure should Congress authorize the Postmaster-General's collateral project for the reduction of the general merchandise rate to 12 cents per pound, and the increase in the weight limit to 11 lb.

## The Warren System Hardware Store Equipment.

IN an attractively printed volume of 18 large pages, illustrating and describing the Warren System of Hardware Store Equipment, just issued by the J. D. Warren Mfg. Company, Chicago, the advantages of orderly and systematic display of Hardware goods are treated from a standpoint of practical experience, embodying ideas along this line that are presented in a convincing manner and well worth consideration. Among the features of economic interest covered by this system is the saving of time of both customers and clerks resulting from the arrangement, which enables goods to be located and shown without delay, this being accomplished by providing a sample space back of the glass and a separate compartment for the different numbers and sizes represented by the sample. Loss from deterioration of samples is also prevented, and the difficulties of maintaining stock assortments are to a large extent overcome. It is pointed out that the new merchant finds in this system a solution to the vexing problem of arranging, classifying and displaying stock, which he could not hope to reach except as a result of years of experience. Touching the percentage of saving effected in increased sales, saving in capital required, goods saved from injury, &c., through the use of this store equipment, an interesting and striking summary of the experience of customers is shown. Among the illustrations of stores equipped with the Warren fixtures are several from foreign countries, including Johannesburg, South Africa; Honolulu, Hawaiian Islands, and Brandon, Manitoba, in addition to which installations in other countries are referred to.

DAVID B. MCILWAINE, 176 Fulton street, New York, has lately been appointed sole American representative of Ward & Payne, Sheffield, England, for their line of Sheep Shears, Hedge Shears, Garden Shears, Addis Carving Tools, &c. Mr. McIlwaine will visit the trade throughout the country and will be in a position to offer lower prices on this well-known line of Sheep Shears than heretofore.

S. L. ALLEN & Co., Philadelphia, Pa., will move their offices to the Denckla Building, corner Eleventh and Market streets, about October 26. The firm has outgrown its old quarters, and in the new building will have 3700 sq. ft. of floor space, good light and all modern improvements. The firm has just completed a new five-story fireproof addition to its factory, having a floor space of 1½ acres.

## MIRRORS AND GRILLS IN WINDOW DISPLAY.

BY FAR WEST.

WHERE it is found undesirable to use the whole of a large window for one class of goods, temporary divisions may be made by using mirrors and grills. Mirrors are the most effective, especially if the sides are made to taper to the mirror at the back of the window.

**Dividing Windows.**

If the window is large enough repeat this once or twice, and the space lost by this arrangement of the mirrors is more than compensated by the reflection they make. They should be about 2 ft. high, but, whatever hight, no article should extend above them. Without good light mirrors are of little use. Well lighted windows are as essential these days as good displays. Mirrors double the effectiveness.

Grills are useful as division lines only if made as they ordinarily are of wooden spindle work, on parallel line in steps or tapered The latter is very poor, and is not recommended. Other division lines may be made by using twisted crepe paper in the different colors. By far the best material to use is something out of the store that can be made to serve two purposes. Manila or Sisal Rope is not used enough in window trimming. Owing to its composition there are possibilities in Rope that as yet, to a great extent, are undeveloped. A grill can be made

**Making Grills.**

entirely of Rope by using ¾ or 1 in. for the parallel supports, with the spindles of different sizes from ⅝ to ¼ in. An excellent one is made by using Bevels laid flat on cans of Paint. They can be built any hight and length desired. If you have no Tennis Net, a Hammock stretched like one serves to separate a Sporting Goods display. A row of Pick Handles serves well, dividing a tool from a Cutlery display.

One of the prettiest grills can be made of Auger Bits. Take a full set of the Blued and another of Polished Bits and start each Bit in a strip of wood about 3 in. wide by 1 in. thick, just so they will stand up right. If there is a tendency to topple over the strips may be nailed or screwed to the floor of the window.

Strips of Poultry Netting, 12 to 24 in. wide, may be used. One division may be made of the 1-in. mesh, another of the 2-in. Wire Screens, 18 to 24 in. wide, in copper, galvanized and black, make effective divisions, and are something new in this connection. A glance through the stock will reveal many articles from which grills can be made and the effectiveness of the window trimming increased.

## Florida Retail Hardware Association.

THE retail Hardware merchants of Florida will meet in the Board of Trade Auditorium in Jacksonville on the 28th inst., at 11 a.m., for the purpose of organizing a State association. Every retail Hardwareman in the State is cordially invited and earnestly requested to attend the meeting. A sufficient number of merchants have already expressed their intention of being present to insure an organization, but important committees, such as Executive, Grievance and Transportation, are to be appointed, and it is desirable that as large a representation of the trade of the State should be in attendance as possible. The call for the meeting has been issued by W. K. Jackson, Jackson & Wilson Company, Lakeland, who will be pleased to furnish any information in regard to the gathering. M. L. Corey, secretary of the National Retail Hardware Association, will be present and will co-operate in the effort to establish a live and progressive Hardware body in Florida.

THE LOGAN-GREGG HARDWARE COMPANY, Pittsburgh, Pa., in connection with its "Hardware Hints" for October, has issued a booklet designed to place before the trade in convenient form useful information and prices on a varied line of seasonable specialties, including Gas Stoves and Stove Supplies, fall Sporting Goods, Cutlery and holiday lines. A pamphlet is also sent out devoted to Community Silverware.

# Here and There in the Sales Department.

BY SAMUEL MASTERS.

## V.—MAKING A MAILING LIST.

IT took me about 10 weeks to get Hartman Brothers' "Blue Book" ready for the printers. The actual writing of its pages required no more than two weeks, but it was no small task to reduce to order a list of the wares in the storeroom, the big basement and the warehouse in the rear; and the revision of the line to fill up the gaps and to cut off the dead goods took still longer. It would have taken less time if I had been willing to use lists made out by the clerks; but I felt that I wanted to know beyond doubt just what the store contained, and would accept no data given me by persons interested in making a good showing. Hartman, Jr., grew quite impatient before the work was done, but the questions constantly brought to him for decision as to assortment, &c., made it evident to him, I think, that progress was being made, not only upon the book, but in bringing about a better order of things generally.

### How the Stock Took Shape.

Tools and factory supplies were but a part of Hartman Brothers' line. The business had been carried on for 35 years, having been started by the father of the two "boys," who now composed the firm. It was first a retail Hardware store, catering to the farmers who traded in Ironville and the carpenters and blacksmiths in the surrounding villages, as well as to the local demands. It had always carried House Furnishing, Hardware, Locks, Bolts and Butts, Farm and Home Bells, Scales and Steel Yards. In the early days it had been the practice to put into stock any article of iron mongery for which inquiries were made, and so as factories sprung up and grew a line of supplies for their use was gradually formed. It was in this manner that the modest line of Hartman, the father, grew into the varied assortment carried by the sons.

### Division of Duties.

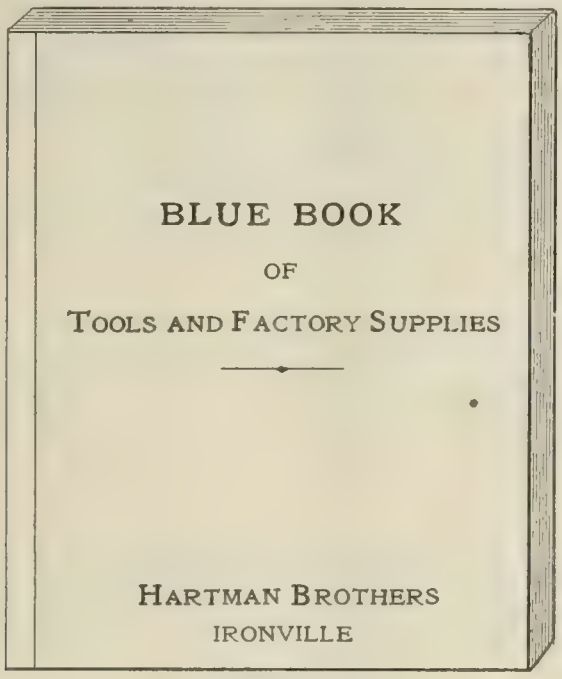
Hartman, Senior, was the first manager of what is now known as the city store, and never entirely relinquished the idea that he was directing its activities, although he had for a number of years assumed as his share of the business the general oversight of its finances, accounts and collections. Hartman, Junior, was the first salesman to pack a grip with samples and visit the surrounding towns, and had thus founded its wholesale branch. At this time, however, he had charge of the commercial end of the business, including the buying, the oversight of the wholesale department, and as much of the direction of the city store as his brother and Charles Martin, the manager, would permit.

### A Complete Catalogue Desired.

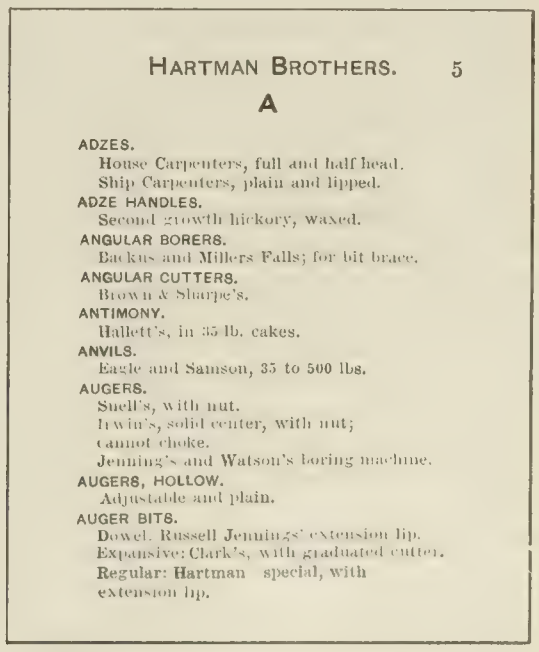
Hartman, Junior, wanted the book to cover not only the tools and manufacturers' supplies, but the other materials carried as well. In order to mention these, display advertisements were placed at intervals in the book, each devoted to a line, as Cutlery, Jewelers' Tools, Home Outfits of Tools for the Handy Man, Silverware, Builders' Supplies, Hotel Kitchen Ware, Laundry Goods, and others. While the arrangement of the matter was different, the information given was about the same as in the body of the book—names of goods in stock, with little or no description. In all, the catalogue contained nearly 200 pages, and listed one of the most complete lines of Hardware carried at that time east of Chicago and St. Louis.

### Catering to Mechanics.

At about the time the book was finished, one of the competing Hardware firms was declared "unfair" by the local labor organizations for declining to abandon the sale of a boycotted line of Hammers. It seemed to Mr. Martin a propitious time to canvass for the trade of the skilled workmen, and it was decided to order an extra quantity of the new book, and get them into the hands of the workmen by means of the unions. In a number of instances the secretaries of the unions copied the membership roll for us for a consideration. In others it was not deemed politic to give out such a list, as it might fall into improper hands, and the secretaries were paid to address the envelopes and mail the books. In still other instances, where neither course could be pursued, permission was obtained to send to the meeting place of the unions a copy for each member, to be given out in the meeting or placed where members could help themselves. In the week following this distribution, more tools were sold to mechanics than in the previous month, and a steady trade resulted, which in itself soon paid for the cost of the catalogue.




*The Catalogue Cover.*


HARTMAN BROTHERS. 5

A

ADZES.
House Carpenters, full and half head.
Ship Carpenters, plain and lipped.
ADZE HANDLES.
Second growth hickory, waxed.
ANGULAR BORERS.
Backus and Millers Falls; for bit brace.
ANGULAR CUTTERS.
Brown & Sharpe's.
ANTIMONY.
Hallett's, in 35 lb. cakes.
ANVILS.
Eagle and Samson, 35 to 500 lbs.
AUGERS.
Snell's, with nut.
Irwin's, solid center, with nut; cannot choke.
Jenning's and Watson's boring machine.
AUGERS, HOLLOW.
Adjustable and plain.
AUGER BITS.
Dowel: Russell Jennings' extension lip.
Expansive: Clark's, with graduated cutter.
Regular: Hartman special, with extension lip.

*A Page from the Blue Book.*

### Out of Town Customers.

Another portion of the edition was sent to out of town factory customers. Before becoming the manager of the city store Mr. Martin had covered the territory tributary to Ironville, visiting the principal factories. Three men were now required to cover the same territory. A catalogue was sent to each customer with a letter requesting permission to send additional copies to workmen in such crafts as bought their own Tools. In a number of instances the customers agreed to distribute the books, and it was believed, although, of course, it could not be proven, that an increased trade for certain kind of factory supplies resulted in a number of the big factories, who made out requisitions for supplies, because the workmen became familiar with the Hartman line and called specifically for articles listed in the catalogue.

**The Main Mailing List.**

The uses of the catalogue so far mentioned, however, were not the uses contemplated when the plan for action was outlined. In discussing the matter with Hartman, Junior, one of the principal reasons assigned for preparing a book was the fact that the preparation of a mailing list would form an excuse for preparing a list of concerns to be used as "prospects" in a campaign for orders; no firms to appear thereon unless it was known that their orders would be accepted by Mr. Clark, the credit manager.

When suggested to Mr. Martin that the list be made up upon this basis he declared that it would be impossible; that Mr. Clark would not pass a hundred firms in all businesses in the city, and that to consult him would be to simply kill any scheme for a general distribution, as he would turn down all the names submitted to him. Anyway, Mr. Martin said, it would be best to let his two city salesmen give the books personally to the buyers upon whom they called. This list was found to comprise about thirty names, and one of the men thought it beneath his dignity to peddle books in this manner, and Mr. Martin and his man had a heated argument before the salesman was brought into line.

**Directory Lists Valueless.**

Mr. Martin then suggested that the classified list in the back of the directory be used, but this was found of no value. Under the heading of "Fence Manufacturers," for instance, was found the name of the old German, who did odd jobs at rough carpentering for Hartman Brothers, below the name of a large maker of Steel Fence, while the name of Hartman Brothers appeared still further down, although their only connection with the business of fence building was the sale of Fence Wire.

**A List Based Upon Credits.**

Hartman Junior approached while we were looking at the directory, and Mr. Martin told him of the problem on hand and the difficulties encountered. I repeated my plea to be allowed to make up a list of my own from all sources available and secure Mr. Clark's approval of the names. Hartman Junior sided with me.

"Let him try it, Charley," said he. "If Clark turns down good people we can show him up to Senior and get him jarred loose from his position. At any rate you will know just where you stand, and that is more than you know now. And when Senior comes to you about your small business it won't be a bad thing to have some facts to put up to him as to why you don't sell more people."

And it was so agreed.

(*To be continued.*)

## The Corbin Bros. Company.

THE Corbin Bros. Company, New Britain, Conn., recently incorporated, has occupied its newly erected plant, and is prepared to supply the trade with a complete line of Trunk Locks and Suit Case Locks, a large line of Padlocks; also Wardrobe, Drawer and Chest Locks, both flat keyed and barrel keyed, as well as miscellaneous stamped and drawn work. The company is equipped to manufacture by the most modern methods. The factory is a large one-story building with saw tooth roof. The power house is separated from the main structure. The business is an independent one, not being connected with any other Hardware interests. The Board of Officers is a strong combination, with George W. Corbin, president; A. F. Corbin, vice-president; A. L. Mackay, secretary, and George L. Corbin, treasurer. George W. Corbin has been prominently identified with the manufacturing interests of New Britain for a long period. For 30 years he was with the Corbin Cabinet Lock Company, retiring from the presidency last year. He has a very large acquaintance in the Hardware trade all over the country. Vice-President A. F. Corbin served for a number of years as general superintendent and a director of the Corbin Cabinet Lock Company and is an expert in mechanical and manufacturing practice. A. L. Mackay is manager of the sales department as well as secretary. He was formerly head salesman for the Corbin Cabinet Lock Company, and has a specially intimate knowledge of the trade in New York State, the Middle West and Canada. Treasurer George L. Corbin was formerly assistant secretary and a director of the Corbin Cabinet Lock Company, and for 10 years visited the trade on the Pacific Coast and through the South.

## Price-Lists, Circulars, Etc.

*Manufacturers in Hardware and related lines are requested to send us copies of catalogues, price-lists, &c., for our Catalogue Department in New York; and at the same time to call attention to any new goods or additions to their lines, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.*

WOODHOUSE CHAIN WORKS, Trenton, N. J.: Catalogue illustrating Hand Made and Machine Made Chains, including Coil, Log, Wagon, German Pattern, Dredge, Conveyor, &c.

PAGE WOVEN WIRE FENCE COMPANY, Adrian, Mich.: Illustrated folder relating to the characteristics of the Page Woven Wire Fence.

A. J. JORDAN CUTLERY COMPANY, St. Louis, Mo.: Catalogue No. 33, illustrating Pocket Cutlery, Razors, Manicure Goods, Game or Chicken Shears, Carving Sets, Butcher and Kitchen Knives, Solid and Plated Flat Ware, Solid Silver Hollow Ware, Solid and Silver Plated Toilet Sets, Solid Silver Novelties, Cut Glass, &c.

CHATTANOOGA ROOFING & FOUNDRY COMPANY, Chattanooga, Tenn.: Booklet No. 25 devoted to the New Century Metal Shingles, painted or galvanized.

SUN MFG. COMPANY, Columbus, Ohio: Catalogue relating to Showcases, illustrating Counter, Floor and Display Cases in a variety of designs and for various purposes.

E. T. LIPPERT SAW COMPANY, Pittsburgh, Pa., operating Penn Saw Works, Millvale, Pa., and Pittsburgh Saw Works, Pittsburgh: Price-list No. 42 covering an extensive line of Saws and Saw Mills Supplies and containing much information of value to users of Saws.

FRANK B. DICKSON, for several years secretary of the California Retail Hardware Association, has resigned. For some months past the work of the association has been handicapped by the lack of funds and the executive committee has found it impossible to carry out the important plans formulated at the annual convention held last March. Mr. Dickson, finding it out of the question to carry on the work of his office with the association finances in unsatisfactory shape, tendered his resignation, and has been succeeded by LeRoy Smith, a member of the Smith Brothers Hardware Company, Oakland, who will act during the balance of the association year. Mr. Smith is regarded as very well equipped for the position, and as soon as feasible will start upon a visiting tour through the different sections of the State covered by the association.

THE GEORGE P. CLARK COMPANY, Windsor Locks, Conn., manufacturer of Trucks, Casters, &c., has been exhibiting this fall at various State and agricultural fairs. The main feature of the display was a large revolving wheel, on which many different styles of Casters were attached, any of which could be brought to the close examination of persons interested. Ladies were much interested in a little bed with a doll in it, which was fitted with the firm's Bracket Bed Casters. On a panel were shown several styles of Rubber Tired Furniture Casters, such as are used on office chairs, pianos, &c. Several styles of Trucks were exhibited, special attention being attracted by an Ash Can Truck. In addition Rubber and Iron Wheels fitted to Axles were shown.

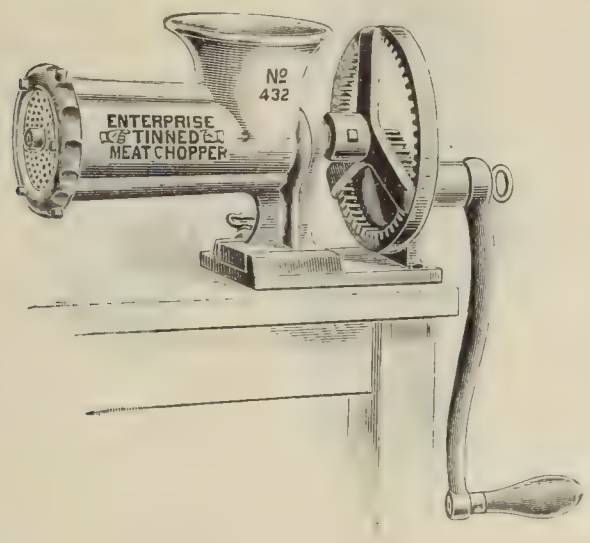
L. D. Perring has purchased the business of S. C. Eaton in Surrey, N. D., and will handle Shelf and Heavy Hardware, Stoves, Tinware, Paints and Oils.

## The George P. Clark Company's Bar Iron Truck.

The George P. Clark Company, Windsor Locks, Conn., manufacturer of trucks and casters, has recently made some changes in its bar iron truck calculated to add to its strength and durability. The truck is adapted for use where heavy metals have to be handled, including hot metal rods in brass or steel mills as well as for sheet lead, pig tin, &c. It is mounted on 18-in. wheels, having a 3-in. face and is heavily braced. The platform is 3 x 6 ft., of 2½-in. hard wood, covered with steel plates ¼ in. thick. The plates are fastened to platform by countersunk screws. On either side of platform are three heavy iron sockets fitted with stakes of 1 in. diameter steel and 14 in. high. Trucks are made in special sizes of platform, mounting, &c., to meet any customer's requirements.

## The Enterprise Meat and Food Choppers with Gears.

The Enterprise Mfg. Company of Pennsylvania, Philadelphia, Pa., is offering the geared chopper shown herewith, for use by butchers, farmers, &c. A desirable feature is that the chopper can be removed from the base and placed in an ice chest. The chopper is made in two sizes: No. 422, weighing 21 lb., and No. 432, weighing 32½ lb.




*The Enterprise Meat and Food Choppers, with Gears.*

## The True Miter Box.

A new miter box just placed on the market by the Nicholls Mfg. Company, Ottumwa, Iowa, is here illustrated. The features of this tool to which attention is especially directed are the high lift of the saw and the ease of its adjustability at different hights. In Fig. 1 the saw is raised about 2 in. above the bed, while in Fig. 2 it is shown raised to full hight. The saw guides telescope in cast iron sleeves, in which they are held in the position shown by a spring brake so adjusted as to require but a light tap on the guides to lower the saw onto the work. This movement is also controlled by a small lever at the foot of the front guide sleeve. The box is made of cast iron, malleable iron and steel, the side and bed plates being cast in one piece. A swinging bar carrying the front sleeve post moves over a graduated scale marking the angle degrees. A birchwood bottom, ¾ x 5 x 24 in., is provided for the box and may be easily replaced when worn out. The miter box is made in three sizes, A, B and C, which accommodate, respectively, saws 4 x 26, 4 x 28 and 5 x 28 in., with a capacity for cutting 9-in. right angles and 6-in. 45-degree miters. All parts of the tool are represented as accurate, being machined, and all holes jig drilled, thus insuring a fit of every part, which can be replaced when required.

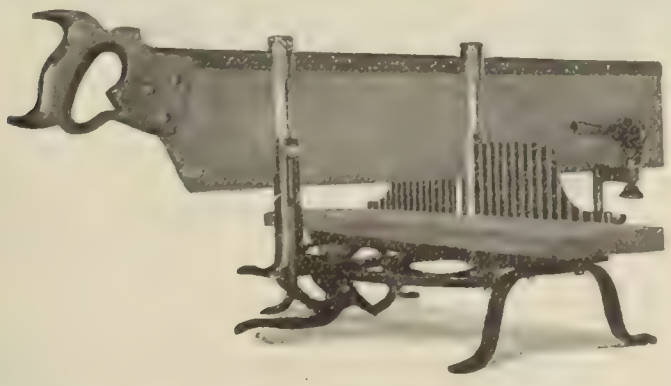


*Fig. 1.—The True Miter Box, with Saw Raised About 2 In. Above Bed.*



*Fig. 2.—The True Miter Box, with Saw Raised to Full Hight.*

## The Economy Fireless Cooker.

The Republic Metalware Company, Buffalo, N. Y., is manufacturing the fireless cooker, shown herewith, Fig. 2 being a cutaway view to show the number and arrangement of cooking vessels. The cooker consists of a double galvanized steel vessel with walls packed with a specially prepared material that is non-odorless and a non-conductor of heat. The device is easily and thoroughly cleaned. The double cover is locked down airtight by an ingeniously arranged handle, and the outside of the cooker is painted a dark maroon. The outfit with each cooker consists of two hot plates with wire bail, one galvanized steel sliding cover, one 10 qt. covered enameled kettle, with wire bail, one 6 qt. covered enameled stewpan, with side handles, and a 3 qt. covered enameled vegetable or pudding pan. This provides three cooking vessels, so that one meat or stew and two vegetables, or meat, vegetable and pudding can be cooked at the same time. The food is first cooked a short time in the ordinary way, then put in the cooker, where it will be thoroughly cooked in three hours, or can be left in the cooker much longer, and still be hot and even more palatable. It is explained that there is no danger of scorching or burning, that no watching is required, but it is left alone until wanted to serve.




*Fig. 1.—The Economy Fireless Cooker.*



*Fig. 2.—Interior of Economy Fireless Cooker.*

## The Lindstrom Linesmen's New Side Cutting Plier.

Schuchardt & Schutte, 136 Liberty street, New York, as sole agents for F. E. Lindstrom, Eskilstuna, Sweden, have put on the market a new line of linemen's side cutting pliers, one of which is represented in Fig. 1. They are made of the best grade of steel, and because of the box joint construction the jaws open unusually wide apart. The feature which is said to be peculiar to these pliers is shown in more detail in the illustration of the head, Fig. 2. It will be noticed that the jaws do not quite touch when the cutting edges are close together. This arrangement provides for wear on the cutting edges, so that they will cut with the same ease when partially worn as when they are new. The pliers are furnished in all sizes, from 4 to 10 in., and are finished in natural color, except the side cutters, which are bright.



*Fig. 1.—The Lindstrom Linesmen's New Side Cutting Plier.*

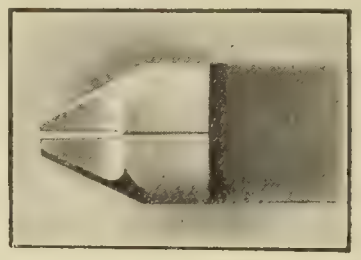
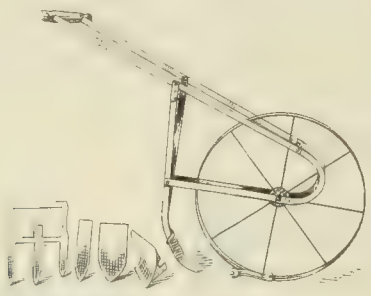


*Fig. 2.—Head of Lindstrom Plier.*

## The Superior Garden Plow.

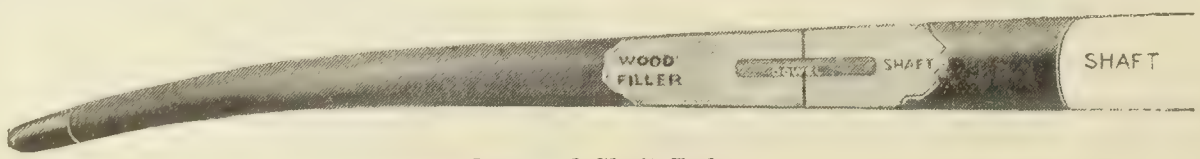
The Bridgewater Plow Corporation, Bridgewater, Va., is putting on the market the garden plow, shown herewith. It is supplied with a handle, as illustrated, or with regular plow handles if desired. Among the advantages embodied in the implement the following are referred to by the manufacturer: That it is light of draft and easily controlled; that it is simple in construction; that the handles are quickly adjusted to suit the hight of the operator; that the adjustability of the shovel beam enables the operator to secure the same draft in hard, compact soil with but little more expenditure of power than is necessary in friable loam; that the draft is before the shovel instead of at the point or behind it; that the plow is light, durable, constructed on scientific principles calculated to withstand the most rigid tests in any soil, and will meet the most exacting demands of the careful gardener.



*The Superior Garden Plow.*

## Improved Shaft End.

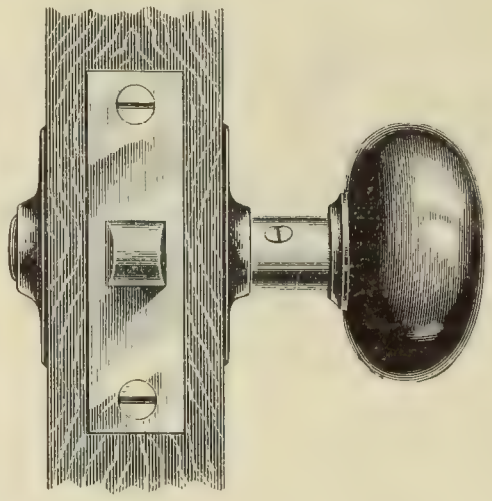
Crandal, Stone & Co., Binghamton, N. Y., are putting on the market the shaft end shown herewith designed for repairing broken shafts. These ends are now furnished with a hardwood dowel, with a hole bored in the wood filler in the shaft end to receive it. As illustrated, the shaft can also be bored to receive the dowel, and by dressing the shaft properly to fit close against the filler, it is claimed, that a strong joint may be obtained. The dowel is offered as an improvement, calculated to secure the repair against the possibility of weakness.




*Improved Shaft Ends.*

## Schoolhouse Fire Door Sets.

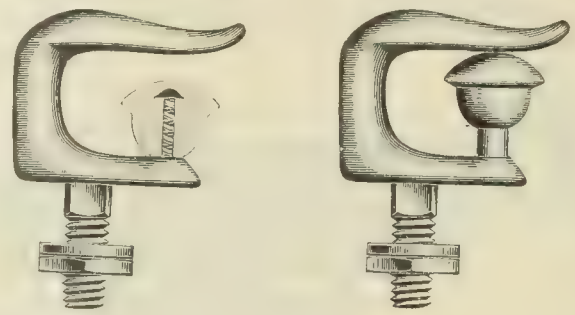
To conform to the laws of Ohio, which require that every room in all school buildings be connected with a separate fire escape, with door swinging outward, the Taylor & Boggis Foundry Company, Cleveland, Ohio, has put on the market the fire door sets, represented in the accompanying illustration. The set has a knob only on the inside, and is furnished for doors up to 2¼ in. thick, with cast bronze front and bolt, and three styles of knobs, one of which is made in cast bronze and the other two in wrought bronze, with roses to match.



*Schoolhouse Fire Door Sets.*

## Nashua Safety Check Hooks.

The Nashua Saddlery Hardware Company, Nashua, N. H., is putting on the market the check hook, two views of which, open and closed, are presented herewith. The device is referred to by the company as simple and effective and capable of operation with one hand. It is furnished in gilt, nickel plate, brass and imitation rubber.

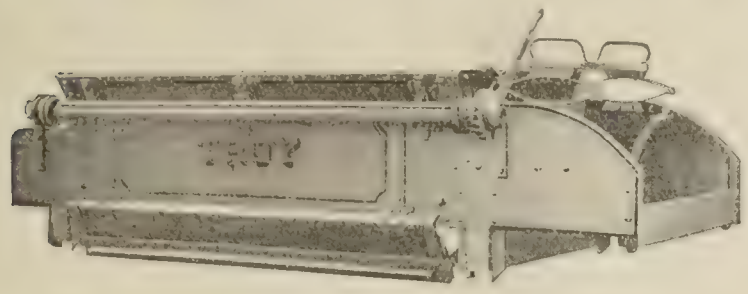


Open. Closed.

*Nashua Safety Check Hook.*

## The Troy Dump Box.

The Troy dump box, here shown, is made by the Troy Wagon Works Company, Troy, Ohio. It is built of hard wood, with steel doors or bottoms, which are reinforced the full length of the under side and on ends. It is claimed that these doors will scarcely show wear




*The Troy Dump Box.*

that they will never shrink in dry weather, and will not swell or spring as a result of wet weather or wet loads. The doors lap full length where they meet and it is impossible to close the bottoms without getting this lap, which, in connection with the angle reinforcement on the ends of the doors, makes a sealed box that will not lose any of its load. The top edges of the box are all protected with iron to prevent wear from shovels, &c. The box may be used on ordinary teaming or farm wagon gears and enables contractors, teamsters and others who own such gears to equip them with a bottom dump box that will hold fine sand, gravel, crushed stone, loose earth, cinders, ashes or any such material. The box saves all the time necessary to unload in the usual way, since it dumps instantly, and the driver needs no assistance, the dumping mechanism being released by means of a foot trip without even changing the hold on the reins. There is an adjustable distributing device, so that the load will not necessarily drop all in one place, but may be scattered along as desired. The capacity of the box is 1½ cu. yd., rounded load, and with a top box added 2 cu. yd. It is made for gears either 38 or 42 in. between bolster stakes.

L. N. Smith & Co. have succeeded to the Hardware, Paint and Sporting Goods business of L. N. Smith, Eyota, Minn.

## PAINTS, OILS AND COLORS

### Animal, Fish and Vegetable Oils—

| | ₱ gal bbls. |
|---|---|
| Linseed, Western, Raw | 41 @.. |
| State, Raw | 42 @43 |
| City, Raw | 43 @44 |
| Boiled, 1¢ ₱ gal. advance on Raw. | |
| Raw, Calcutta, in bbls | 70 @.. |
| Lard, Prime, Winter | 74 @78 |
| Extra No. 1 | 51 @52 |
| No. 1 | 49 @50 |
| Cotton-seed, Crude, f.o.b. mill | 29½@30 |
| Summer Yellow, prime | 38 @39 |
| Summer White | 40½@41 |
| Yellow Winter | 43 @43½ |
| Tallow, Acidless | 59 @60 |
| Menhaden, Brown, Strained | 35 @36 |
| Northern Crude | 23½@.. |
| Southern | 23½@.. |
| Light Strained | 35 @36 |
| Bleached Winter | 37 @39 |
| Ex. Bleached Winter | 39 @41 |
| Cocoanut, Ceylon ₱ lb | 6½@6¾ |
| Cochin ₱ lb | 7¼@7½ |
| Cod, Domestic, Prime | 38 @40 |
| Newfoundland | 40 @42 |
| Red, Elaine | 42 @43 |
| Saponified ₱ lb | 6½@.. |
| Olive Yellow | $0.95@$1.25 |
| Neatsfoot, Prime | 55 @58 |
| Palm, Lagos ₱ lb | 6⅛@6¼ |

### Mineral Oils—

| | ₱ gal. |
|---|---|
| Black, 29 gravity, 25@30 cold test | 13 @13½ |
| 29 gravity, 15 cold test | 13½@14 |
| Summer | 12½@13 |
| Cylinder, light filtered | 20½@21 |
| Dark filtered | 18 @19 |
| Paraffine, 903 907 sp. gravity | 14½@15 |
| 903 sp. gravity | 13½@14 |
| 883 sp. gravity | 11 @11½ |
| Red | 13½@14 |

### Miscellaneous—

| | |
|---|---|
| Barytes: | |
| White, Foreign ₱ ton | $18.50@20.50 |
| Amer. floated ₱ ton | 17.00@18.00 |
| Off color ₱ ton | 12.50@15.00 |
| Chalk, in bulk ₱ ton | 3.00@3.40 |
| China Clay, Imported ₱ ton | 11.50@18.00 |
| Cobalt, Oxide ₱ 100 lb | 1.45@2.60 |
| Whiting, Commercial ₱ 100 lb | 42@52 |
| Gilders ₱ 100 lb | .55@.60 |
| Ex. Gilders ₱ 100 lb | .60@.65 |

### Putty, Commercial—₱ 100 lb

| | |
|---|---|
| In bladders | $1.70 @1.80 |
| In bbls. or tubs | 1.20 @1.45 |
| In 1 lb to 5 lb cans | 2.65 @2.95 |
| In 12½ to 50 lb cans | 1.50 @1.90 |

### Spirits Turpentine— ₱ gal.

| | |
|---|---|
| In Oil bbls | 40 @40½ |
| In machine bbls | 40½@41 |

### Glue—

| | ₱ lb |
|---|---|
| Cabinet | 12 @15 |
| Common Bone | 7½@9 |
| Extra White | 18 @24 |
| Fish, liquid, 50 gal. bbls., per gallon | 60 @1.20 |
| Foot Stock, White | 12 @14 |
| Foot Stock, Brown | 9 @11 |
| German Common Hide | 10 @12 |
| German Hide | 12 @18 |
| French | 10 @40 |
| Irish | 13 @16 |
| Low Grade | 10 @12 |
| Medium White | 14 @17 |

### Gum Shellac—

| | ₱ lb |
|---|---|
| Bleached, Commercial | 23 @24 |
| Bone Dry | 26 @27 |
| Button | 30 @40 |
| Diamond I | @37 |
| Fine, Orange | 34 @35 |
| A. C. Garnet | 27 @28 |
| G. A. L. | 20 @21 |
| Kala Button | 18 @19 |
| D. C. | @38 |
| Octagon B | 35 @36 |
| T. N. | 25 @26 |
| V. S. O. | @37 |

### Colors in Oil—

| | ₱ lb |
|---|---|
| Black, Lampblack | 12 @14 |
| Blue, Chinese | 36 @46 |
| Blue, Prussian | 32 @36 |
| Blue, Ultramarine | 13 @16 |
| Brown, Vandyke | 11 @14 |
| Green, Chrome | 12 @16 |
| Green, Paris | @24 |
| Sienna, Raw | 12 @15 |
| Sienna, Burnt | 12 @15 |
| Umber, Raw | 11 @14 |
| Umber, Burnt | 11 @14 |

### White and Red, Lead &c.—

| | ₱ lb |
|---|---|
| Lead, English white, in Oil | 10⅛@10⅜ |
| Lead, American White: | |
| Dry and in Oil, 100, 250 and 500 lb kegs | 7 |
| Dry and in Oil, 25 and 50 lb kegs | 7¼ |
| Dry and in Oil, 12½ lb kegs | 7½ |
| In Oil, 25 lb tin pails | 7½ |
| In Oil, 12½ lb tin pails | 8 |
| In Oil, 1, 2, 3 and 5 lb tin cans, ass't | 9 |
| Red Lead and Litharge: | |
| In 100 lb kegs | 7 |
| In 25 and 50 lb kegs | 7¼ |
| In 12½ lb kegs | 7½ |
| In lots of less than 500 lbs. ½¢ ₱ lb advance over above prices of White and Red Lead and Litharge. | |

Lead, American. Terms: On lots of 500 lbs and over, 60 days, or 2 for cash if paid in 15 days from date of invoice.

### Zinc, Dry—

| | ₱ lb |
|---|---|
| American, dry | 5⅛@5⅝ |
| Red Seal (French process) | 6¾@.. |
| Green Seal | 7¼@7½ |
| German Red Seal (French process) | 6⅝@7 |
| Green Seal | 7¼@7⅝ |
| White Seal | 7⅞@8¼ |
| French, Red Seal | 8⅜@8⅞ |
| Green Seal | 10⅜@10⅝ |

### Dry Colors—

| | ₱ lb |
|---|---|
| Black Carbon | 6½@10 |
| Black Drop, American | 3½@8 |
| Black Drop, English | 5 @15 |
| Black, Ivory | 16 @20 |
| Lamp, commercial | 4 @6 |
| Blue, Celestial | 4 @6 |
| Blue, Chinese | 30 @32 |
| Blue, Prussian | 28 @30 |
| Blue, Ultramarine | 3½@15 |
| Brown, Spanish | ½@1 |
| Carmine, No. 40 | $3.10@3.25 |
| Green, Chrome, ordinary | 3½@5 |
| Green, Chrome, pure | 17 @25 |
| Ocher, American ₱ ton | $8.50@16.00 |
| American Golden | 2½@3¼ |
| French | 1¼@2 |
| Foreign Golden | 3 @4 |
| Orange Mineral, English | 10 @12 |
| French | 12¾@13 |
| German | 12 @13 |
| American | 9 @10 |
| Red, Indian, English | 4½@6 |
| American | 3 @3¼ |
| Red, Turkey, English | 4 @10 |
| Red, Tuscan, English | 7 @10 |
| Red, Venetian, Amer. ₱ 100 lb | $0.50@1.25 |
| English ₱ 100 lb | $1.15@1.60 |
| Sienna, Italian, Burnt and Powdered | 3 @9 |
| Italian, Raw, Powdered | 3 @7 |
| American, Raw | 1½@2 |
| American Burnt and Pow'd | 1½@2 |
| Talc, French ₱ ton | $18.00@25.00 |
| American ₱ ton | 15.00@25.00 |
| Terra Alba, French ₱ 100 lb | .90@1.00 |
| English ₱ 100 lb | .80@1.00 |
| American ₱ 100 lb, No. 1 | .75@.80 |
| American ₱ 100 lb, No. 2 | .60@.65 |
| Umber, T'key, Bnt, & Pow | 2¾@3 |
| Turkey, Raw and Powdered | 2¾@3 |
| Burnt, American | 1½@2 |
| Raw, American | 1½@2 |
| Yellow, Chrome, Pure | 13¾@15 |
| Vermilion, American Lead | 7 @25 |
| Quicksilver, bulk | 65 @.. |
| Quicksilver, bars | @66 |
| English, Imported | 65 @70 |
| Chinese | $0.90@1.00 |


# THE IRON AGE

*The oldest paper in the world devoted to the interests of the Hardware, Iron, Machinery and Metal Trades, and a standard authority on all matters relating to those branches of industry.*

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# Current Hardware Prices.

**General Goods.**—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

**Special Goods.**—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

**Range of Prices.**—A range of prices is indicated by means of the symbol @. Thus 33⅓ @ 33⅓ & 10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

**Names of Manufacturers.**—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued annually, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

**Standard Lists.**—"The Iron Age Standard Hardware Lists" contains the list prices of many leading goods.

**Additions and Corrections.**—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

## Adjusters, Blind—

Columbian and Domestic.....33⅓%
North's .....10%
Upson's Patent, ₱ gro., $29.90.....10%
Zimmerman's—See Fasteners, Blind.

### Window Stop—

Ives' Patent.....35%
Ives' Stop Bead Screws and Washers .....10%
Taplin's Perfection.....35

## Ammunition—See *Caps, Cartridges, Shells, &c.*

## Anti—Rattlers—

Fernald Mfg. Co. Burton Anti-Rattlers, ₱ doz. pairs, Nos. 1, $0.75; 2, $0.60; 4, $1.00; 5, $0.50.
Fernald Quick Shifter, ₱ doz. pairs .....$2.00@$3.00

## Anvils—American—

Eagle Anvils.....₱ lb @8 ¢
Hay-Budden, Wrought.....9½@9¾¢
Trenton .....₱ lb 9½@9¾¢

### Imported—

Swedish Solid Steel Sisco, Superior, ₱ lb.....10@10½¢
Peter Wright & Sons, ₱ lb, 84 to 349 lb, 11¢; 350 to 600 lb, 11½¢.

## Anvil, Vice and Drill—

Millers Falls Co., $18.00.....15&10

## Apple Parers—See *Parers, Apple, &c.*

## Aprons, Blacksmiths'—

Livingston Nail Co.....10%

## Augers and Bits—

*Com. Double Spur....75&10@80%*
*Jennings' Patn., Bright.65&10@70%*
*Black Lip or Blued...65@65&5%*
*Boring Mach. Augers.....70%*
*Car Bits, 12-in. twist.....40&10%*
Ford's Auger and Car Bits.....15&5
Ft. Washington Auger Co., Conard's .....35%
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 11 ext. lip. R. Jennings' list 25&7½
No. 30, R. Jennings' list.....50%
Russell Jennings'.....25&10&2½
L. Hammedieu Car Bits.....15
Mayhew's Countersink Bits..... 15
Pugh's Black.....20%
Pugh's Jennings' Pattern.....35
Snell's Auger Bits..... 60
Snell's Bell Hangers' Bits.....60
Snell's Car Bits, 12-in. twist.....60%
Snell's King Auger Bits.....50
Swan's .....65&10&7½
Swan's, Jennings' Pattern.....50
Wright's Jennings' Bits.....50

### Bit Stock Drills—

See *Drills, Twist.*

### Expansive Bits—

Clark's Pattern, No. 1, ₱ doz., $26, No. 2, $18..... 60&10
Ford's, Clark's Pattern...60&5@60&10
C. E. Jennings & Co., Steer's Pat..25
Lavigne Pat., small size, $18.00; large size, $26.00.....60&10%
Swan's .....60%

### Gimlet Bits—

*Per gro.*
*Common Dbl Cut.....$3.00@3.25*
*German Pattern, Nos. 1 to 10, $4.75; 11 to 13, $5.75*

### Hollow Augers—

*Bonney Pat., per doz..$5.50@6.00*
Nicks .....20&10
Universal .....20

### Ship Augers and Bits—

*Ship Augers.....40&10@—%*
Jennings' .....33⅓&5
C. E. Jennings & Co.:
Improved Ewbank's .....6
Common .....33⅓&5%
Solid Center .....48%

## Awl Hafts—See *Handles, Mechanics' Tool.*

## Awls—

*Brad Awls:*
*Handled .....gro. $2.75@3.00*
*Unhdld, Shldered...gro.63@66¢*
*Unhandled, Patent..gro.66@78¢*
*Peg Awls:*
*Unhandled, Patent..gro. 31@34¢*
*Unhdld, Shldered..gro. 65@70¢*
*Scratch Awls:*
*Handled, Com...gro. $3.50@4.00*
*Handled, Socket.gro.$11.50@12.00*

## Awl and Tool Sets—See *Sets, Awl and Tool.*

## Axes—

*Single Bit, base weights: Per doz.*
*First Quality.....$4.75@5.00*
*Second Quality.....$4.25@4.50*
*Double Bit, base weights:*
*First Quality.....$7.00@7.50*
*Second Quality.....$6.50@6.75*

## Axle Grease—

See *Grease, Axle.*

## Axles—Iron or Steel.

*Concord, Loose Collar...4¼@4½¢*
*Concord, Solid Collar....4½@5 ¢*
*No. 1 Common, Loose...3½@4 ¢*
*No. 1½ Com., New Style.4¼@4¾¢*
*No. 2 Solid Collar.....4¼@4¾¢*
*Half Patent:*
*Nos. 7, 8, 11 and 12.....70%*
*Nos. 13 to 14.....70%*
*Nos. 15 to 18...70&10@70&10&5%*
*Nos. 19 to 22...70&10@70&10&5%*

### Boxes, Axles—

*Common and Concord, not turned .....lb., 5@6¢*
*Common and Concord, turned, lb., 6@7¢*
*Half Patent.....lb., 9½@10¢*

## Bait—Fishing—

Hendryx:
A Bait.....20
B Bait.....25%
Competitor Bait.....20&5%

## Balances—Sash—

Caldwell new list.....50&10%
Pulaman .....50&10%

### Spring—

*Light Spring Balances.60@60&5%*
Chattillon's:
Light Spg. Balances.....50@50&10
Straight Balances.....40@40&10
Circular Balances.....50&10%
Large Dial.....30%

## Barb Wire—See *Wire, Barb.*

## Bars—Crow—

*Steel Crowbars, 10 to 40 lb.... per lb., 2¼@2½¢*

## Towel—

No. 10 Ideal, Nickel Plate..₱ gro. $8.50

## Beam, Scale—

*Scale Beams.....40%*
Chattillon's No. 1.....30%
Chatillon's No. 2.....40%

## Beaters, Carpet—

Holt Lyon Co.:
No. 12 Wire Coppered ₱ doz. $0.80; Tinned .....$0.85
No. 11 Wire Coppered ₱ doz. $1.15; Tinned .....$1.20
No. 10 Wire Tinned.....₱ doz. $1.50

### Beaters Egg—

Dover Stamping & Mfg Co.:
Genuine Dover, per gro., No. 1, Tumbler Size, $7.50; No. 2, Family Size, $7.50; No. 3, Extra Family Size, $24.00; No. 4, Hotel Size, $30.00.
Holt-Lyon Co.:
Holt, per doz., No. 5, Jap'd $0.80; No. A, Jap'd, $1.15; No. B, Jap'd, $1.85; No. 6, Jap'd, $1.65.
Lyon, Jap'd, per doz., No. 2, $1.35.
Taplin Mfg. Co.:
Improved Dover, per gro., No. 60, $6.00; No. 75, $6.50; No. 100, $7.00; No. 102 Tin'd, $8.50; No. 150, Hotel, $15.00; No. 152, Hotel Tin'd, $17.00; No. 200, Tumbler, $8.50; No. 202, Tumbler Tin'd, $9.50; No. 300, Mammoth, per doz. $25.00.

## Bellows—

*Blacksmith, Standard List:*
*Split Leather.....60@10@65%*
*Grain Leather.....50@50&10%*

### Hand—

| *Inch..* | *6* | *7* | *8* | *9* | *10* |
|---|---|---|---|---|---|
| *Doz..* | *$5.00* | *5.50* | *6.00* | *6.50* | *7.50* |

### Molders—

| *Inch..* | *10* | *12* | *14* | *16* |
|---|---|---|---|---|
| *Doz..* | *$7.50* | *9.00* | *12.00* | *15.00* |

*Net Prices.*

## Bells—Cow—

*Wrought Cow Bells.....75%*
Jersey .....75&10%
Texas Star.....50

### Door—

Home, R. & E. Mfg. Co.'s.....55&10%

### Hand—

*Polished, Brass.....60@60&10%*
*White Metal.....60@60&10%*
*Nickel Plated.....50&10%*
*Swiss .....50&10%*
Cone's Globe Hand Bells.....33⅓@35%

### Miscellaneous—

*Farm Bells.....lb., 2¼@2½¢*
*Church and School....60@60&10%*

## Belting—Leather—

*First Quality, Ex. Hy., Strictly Short Lap.....60&10%*
*Standard .....70&10@70&10&5%*
*Light Double.....75&10%*
*Cut Leather Lacing.....50%*
*Leather Lacing Sides, per sq. ft. 23@24¢*

### Rubber—

*Competition (Low Grade), 70&10@75%*
*Standard .....60&10@70%*
*Best Grades.....40@50%*

## Bench Stops—See *Stops, Bench*

## Benders and Upsetters, Tire—

Green River Tire Benders and Upsetters .....20%

## Bicycle Goods—

John S. Leng's Son & Co.'s 1908 list:
Chain, Parts, Spokes.....50%
Tubes .....60%

## Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

## Blocks Tackle—

*Common Wooden.....75@75&5%*
B. & L. B. Co.:
Boston Wood Snatch, 50%; Eclipse Steel, 75; Hollow Steel, 50&10; Star Wire Rope, 50%; Tarbox Metal Snatch, 50; Tarbox New Style Steel, 50&10; Wire Rope Snatch, 50.
Lane's Patent Automatic Lock and Junior .....30%
See also Machines, Hoisting.

## Boards, Stove—

*Paper and Wood Lined.....55%*
*Embossed .....55%*

## Boards, Wash—

See *Washboards.*

## Bobs, Plumb—

Kendel & Esser Co.....33⅓&10

## Bolts Carriage, Machine, &c,—

*Common Carriage (cut thread):*
*⅜ x 6 and smaller..75&5@—%*
*Larger and longer....70&5@—%*
*Phila. Eagle, $3.00 list...80@—%*
*Bolt Ends.....70&10@—%*
*Machine (Cut Thread):*
*⅜ x 4 and smaller..75&10@—%*
*Larger and longer...70&10@—%*

### Door and Shutter—

*Cast Iron Barrel, Japanned, Round Brass Knobs:*

| *Inch* | *3* | *4* | *5* | *6* | *8* |
|---|---|---|---|---|---|
| *Per doz..* | *$0.30* | *.35* | *.45* | *.60* | *.80* |

*Cast Iron Spring Foot, Jap'd:*

| *Inch* | *6* | *8* | *10* |
|---|---|---|---|
| *Per doz.....* | *$1.20* | *1.50* | *2.25* |

*Cast Iron Chain, Flat, Japanned:*

| *Inch* | *6* | *8* | *10* |
|---|---|---|---|
| *Per doz.....* | *$1.00* | *1.40* | *1.65* |

*Cast Iron Flat Shutter, Jap'd, Brass Knobs:*

| *Inch* | *6* | *8* | *10* |
|---|---|---|---|
| *Per doz.....* | *$0.75* | *.95* | *1.25* |

*Wrought Barrel Japanned, 80&10@80&10&5%*
*Barrel Bronzed.....60&10%*
*Spring .....70&10@70&10&10%*
*Shutter .....50&5@50&10&5%*
*Square Neck.....75@75&10%*
*Square .....70&10&10@80%*
Ives' Mortise.....10
Ives' Wrought Metal.....10

### Expansion—

E. H. Evans' Crescent.....40@60%
Richards Mfg. Co.....55&10%
Star Expansion Bolt Co.:
Star Lag Screw Type..60&10&5&2½%
Star, Wood Screw Type.....40%
Star, Machine, Single Wedge....60%
Star, Machine, Double Wedge....60%
Steward & Romain Mfg. Co.:
Style No. 13, Double.....60%
Style No. 1, Single.....60
Style No. 100, Dbl. Jaw, Single..55%
Lag Screw.....66⅔%

### Plow and Stove—

*Plow .....65&5@70*
*Stove .....85@85&5%*

### Tire—

*Common Iron.....80%*
*Norway Iron.....80%*
American Screw Co.:
Norway Phila., list Oct. 16, '84...80
Eagle Phila., list Oct. 16, '84...82½
Bay State, list Dec. 28, '99.....80
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84...82½
Eclipse, list Dec. 28, '99.....80%
Russell, Burdsall & Ward Bolt & Nut Co.:
Empire, list Dec. 28, '99.....80%
Norway Phila., list Oct. '84.....80%
Eagle .....82½%
Shelton Co.:
Tiger Brand, list Dec. 28, '99....80%
Phila., Eagle, list Oct. 16, 1884..82½%
Upson Nut Co.:
Tire Bolts.....72½%

## Borers, Bung—

*Borers Bung, Ring, with Handle:*

| *Inch.....* | *1¼* | *1½* | *1¾* | *2* |
|---|---|---|---|---|
| *Per doz...* | *$4.80* | *5.60* | *6.40* | *8.00* |
| *Inch.....* | | *2¼* | | *2½* |
| *Per doz.....* | | *$8.65* | | *11.50* |

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.75; No. 3, $2.50 each.....25%

## Boxes, Mitre—

C. E. Jennings & Co.....25%
Langdon, New Langdon and Langdon Improved, 20&10%; Langdon Acme .....15&10%
Perfection .....40%
Seavey .....15%

## Braces—

*Comman Ball, American....$1.50*
Barber's .....50&10&10@60&10%
Fray's Genuine Spofford's.....60%
Fray's No. 61, 166, 206, 614.....50%
C. E. Jennings & Co.....50&5%
Mayhew's Ratchet.....60%
Mayhew's Quick Action Hay Pat...50%
Millers Falls Drill Braces.....25&10
P., S. & W. Co., Peck's Pat....60&10%

## Brackets—

*Wrought Steel.....75&10&5@80%*
Bradley Metal Clasp...80&10@80&10&5
Griffin's Pressed Steel.....75@75&10
Griffin's Folding Brackets.....70&10%
Taplin Victor Handy Egg Beater Bracket .....₱ doz, $1.50

## Bright Wire Goods—See *Wire and Wire Goods.*

## Broilers—

Kilbourne Mfg. Co.....75&20%
Wire Goods Co.....75%

## Buckets, Galvanize—

*M'fr's list, price per gross.*

| *Quart..* | *10* | *12* | *14* | |
|---|---|---|---|---|
| *Water, Reg...* | *26.85* | *29.50* | *33.50* | 10@7½&5% |
| *Water, Hvy...* | *45.35* | *48.00* | *52.00* | |
| *Fire, Rd. Btm.* | *32.00* | *34.65* | *38.65* | |
| *Well .....* | *37.35* | *41.35* | *45.35* | |

## Bull Rings—See *Rings, Bull.*

## Butts—Brass—

*Wrought, High List, Oct. 6, '06.65%*
Cast Brass, Tiebout's.....40&10%

### Cast Iron—

*Fast Joint, Broad....40&10@50%*
*Fast Joint, Narrow...40&10@50%*
*Loose Joint.....70&10@75%*
*Loose Pin.....70&10@75%*
*Mayer's Hinges.....70@70&5*
*Parliament Butts.....70@70&5*

### Wrought Steel—

*Bright.*
*Light Narrow, Light Reversible .....70&5%*
*Reversible and Broad..70&5%*
*Loose Joint, Narrow, Light Inside Blind, &c.....70%*
*Back Flaps, Table Chest.65%*
*Japanned.*
*Light Narrow, Loose Pin, 40&5%*
*Light Narrow, Ball Tip..60%*
*Broad .....40&5%*
*Steeple Tipped.....70%*
*Ball Tipped.....70%*

*Extra, 10—*

## Cages, Bird—

Hendryx Brass: Series 3000, 5000, 1100, net list; 1200, 15%; 200, 300, 900 ..... 30%
Hendryx Bronze: Series 700, 800.... 30%
Hendryx Enameled..... 35%

## Calipers—See *Compasses.*

## Calks, Toe and Heel—

*Blunt, 1 prong, per 100 lb., $3.50@$3.85*
*Sharp, 1 prong, per 100 lb., $4.00@$4.35*
Burke's, 1 pg. Blunt Toe, 3¾ ¢; 2 pg. Blunt Toe, 4¼ ¢; 1 pg. Sharp Toe, 4¼ ¢; 2 pg. Sharp, 4¾ ¢; Blunt Heel, 4¼ ¢; Sharp Heel..... 4¾ ¢
Lautier, Blunt, 4@4¼ ¢; Sharp, 4½@4¾ ¢
Perkins', Blunt, ₱ lb, 3.65 ¢; Sharp, 4.15 ¢

## Can Openers—

See *Openers, Can.*

## Caps, Percussion—

*Eley's E. B..... 52@55¢*
*G. D..... per M 34@35¢*
*F. L..... per M 40@42¢*
*G. E..... per M. 48@50¢*
*Musket ..... per M 62@63¢*

## Primers—

*Berdan Primers, $2 per M..20&5%*
*Primer Shells and Bullets..15&10%*
*All other primers per M. $1.52@1.60*

## Carpet Stretchers—

See *Stretchers, Carpet.*

## Cartridges—

*Blank Cartridges:*
*32 C. F., $5.50..... 10&5%*
*38 C. F., $7.00..... 10&5%*
*22 cal. Rim, $1.50..... 10&5%*
*32 cal. Rim, $2.75..... 10&5%*
*B. B. Caps, Con. Ball, Swgd. $1.90*
*B. B. Caps, Round Ball..... $1.40*
*Central Fire..... 25%*
*Target and Sporting Rifle. 15&5%*
*Primed Shells and Bullets. 15&10%*
*Rim Fire, Sporting..... 50%*
*Rim Fire, Military..... 15&5%*

## Casters—

*Bed ..... 65&10@70%*
*Plate ..... 60@60&5%*
*Philadelphia ..... 70&10@75%*
Acme, Ball Bearing..... 35%
Gem (Roller Bearing)..... 70&10&10&5
Steel Gem (Roller Bearing)..... 70%
Standard Ball Bearing..... 45%
Yale (Double Wheel) low list...40&10%

## Cattle Leaders—

See *Leaders, Cattle.*

## Chain, Proof Coil—

*American Coil, Straight Link:*

| 3-16 | ¼ | 5-16 | ⅜ | ½ | ⅝ |
|---|---|---|---|---|---|
| $7.80 | 5.20 | 4.25 | 3.60 | 3.40 | 3.20 |

¾-⅞-1 1⅛ to 1¼ inch.
$3.10 3.20
*In cask lots, deduct 25¢.*
*German Coil..... 70%*
*German Pattern Coil:*
*6-0 to 1..... 70&10&5%*
*2 and 3..... 60&10&10@70%*
*4, 5 and 6.... 50&10@50&10&5%*

## Halter—

*Halter Chains..... 60&5@60&10%*
*German Pattern Halter Chains, list July 24, '97.... 60&10&5@70%*
Covert Mfg. Co.:
Halter ..... 35&5%

## Cow Ties—

See *Halters and Ties.*

## Trace, Wagon, &c.—

*Traces, Western Standard: 100 pr.*
*6½—6-3, Straight, with ring. $28.00*
*6½—6-2, Straight, with ring. $29.00*
*6½—8-2, Straight, with ring. $32.00*
*6½—10-2, Str'ght, with ring. $37.00*
*NOTE.—Add 2c per pair for Hooks Twist Traces: add per pair for Nos. 2 and 3, 2c; No. 1, 3c; No. 0, 4c to price of Straight Link.*
*Eastern Standard Traces, Wagon Chain, &c... 60&10@60&10&5%*

## Miscellaneous—

*Jack Chain, list July 10, '93:*
*Iron ..... 60&10&7½%*
*Brass ..... 65%*
*Safety and Plumbers' Chain. 75%*
*Gal. Pump Chain....lb., 4½@5%*
Bridgeport Chain Co.:
Triumph Halter and Coil. 35&2½@40%
Triumph Dog..... 50&10@60%
Brown Halter and Coil....45@50&5%
Covert Mfg. Co.:
Breast, Halter, Heel, Rein, Stallion ..... 40%
Oneida Community:
American Halter, Dog and Kennel Chains ..... 35&2½@40%
Niagara Dog Leads and Kennel Chains ..... 45@50&5%
Wire Goods Co.:
Dog Chain..... 70%
Universal Dbl.-Jointed Chain....70%

## Chain and Ribb n, Sash—

Oneida Community:
Steel Chain..... 60%
Pullman:
Bronze Chain, 60%; Steel Chain, Coppered ..... 60&10%
Sash Chain Attachments, per set..8¢
Aluminov Sash Ribbon, per 100 ft. ..... $2.00@$5.00
Sash Ribbon Attachments per set 8¢

## Chalk—

*Carpenters' Blue.....gro., 50¢*
*Carpenters' Red.....gro., 50¢*
*Carpenters' White.....gro., 40¢*

## Checks, Door—

Bardsley's ..... 45%
Pullman, per gro..... $54.00
Russwin ..... 33⅓%

## Chests, Tool—

American Tool Chest Co.:
Boys' Chests, with Tools..... 55%
Youths' Chests, with Tools..... 40%
Gentlemen's Chests, with Tools..30%
Farmers', Carpenters, etc., Chests, with Tools ..... 20%
Machinists' and Pipe Fitters' Chests, Empty..... 45%
Tool Cabinets..... 45%
C. E. Jennings & Co.'s Machinists' Tool Chests..... 7½%

## Chisels—

## Socket Framing and Firmer

*Standard List.....80&10@—%*
Buck Bros..... 30%
C. E. Jennings & Co.:
Socket Firmer No. 10..... 25&7½%
Socket Framing No. 15..... 25&7½%
Swan's ..... 66⅔@70%
L. & I. J. White & Co..... 30@30&5%

## Tanged—

*Tanged Firmers.....30&5@35%*
Buck Bros..... 30%
C. E. Jennings & Co. Nos. 191, 181..25%
L. & I. J. White Co..... 25&5%

## Cold—

*lb.*
*Cold Chisels, good quality. 13@15¢*
*Cold Chisels, fair quality. 11@12¢*
*Cold Chisels, ordinary.... 9@10¢*

## Chucks—

Almond Drill Chucks..... 35%
Almond Turret Six-Tool Chuck..... 40%
Beach Pat, each $8.00..... 35&5%
Empire ..... 25%
Blacksmiths' ..... 25%
Jacobs' Drill Chucks..... 35%
Pratt's Positive Drive..... 25%
Skinner Lathe Chucks:
Independent ..... 35%
Universal, Reversible Jaws..... 35%
Universal, Com. Style Jaws..... 40%
Combination, Reversible Jaws....35%
Combination, Com. Style Jaws...40%
Round Body or Box Body, 2 Chuck Jaws ..... 25%
Geared Scroll Chucks..... 25%
Drill Chucks:
New Model, 25%; Geared Pattern, 25%; Skinner Patent, ...25%
Positive Drive..... 40%
Planer Chucks..... 20%
Standard ..... 45%
Drill Press Vises..... 30%
Face Plate Jaws..... 35%
Standard Tool Co.:
Improved Drill Chuck..... 45%
Union Mfg. Co.:
Combination, Nos. 1, 2, 3, 4, 5, 6, 7, 8 and 17, 40%; No. 21.....35%
Scroll Combinations, Nos. 83 and 84 ..... 30%
Geared Scroll, Nos. 33, 34 and 35..25%
Independent Iron, Nos. 18 and 318.35%
Independent Steel, No. 64..... 25%
Union Drill, Nos. 000, 00, 100, 101, 102, 103, 104..... 35%
Union Czar Drill..... 25%
Universal, 11, 12, 16, 17, 13, 14, 15..40%
Universal No. 42..... 35%
Iron Face Plate Jaws, Nos. 28, 30, 48 and 50..... 35%
Steel Face Plate Jaws, Nos. 70 and 72 ..... 30%
Westcott Patent Chucks:
Lathe Chucks..... 50%
Little Giant Auxiliary Drill..... 50%
Little Giant Double Grip Drill...50%
Little Giant Drill, Improved..... 50%
Oneida Drill..... 50%
Scroll Combination Lathe..... 50%
Whitaker Mfg. Co.:
National Drill..... 25%

## Clamps—

Carriage Makers', Star, P., S. & W. Co. ..... 50%
Besly, Parallel..... 33⅓&10%
Hammer & Co.:
Adjustable ..... 20&5%
Carriage Makers' H. P. Screw.40&5%
Myers' Hay Rack..... 50%
Lineman's Swedish Neverturn..... 65%
Saw Clamps, see Vises, Saw Filers'

## Cleaners, Drain,

Iwan's Champion, Adjustable..... 50%
Iwan's Champion, Stationary..... 40%

## Sidewalk—

Star Socket. All Steel..₱ doz. $4.05 net
Star Shank. All Steel..₱ doz. $3.24 net
W. & C. Shank, All Steel, ₱ doz., 7½ in., $3.00; 8 in., $3.25.

## Cleavers, Butchers'—

Foster Bros..... 30%
Fayette R. Plumb..... 30%
L. & I. J. White Co..... 30%

## Clippers, Horse and Sheep—

Chicago Flexible Shaft Co.:
1902 Chicago Horse, each..$10.75
20th Century Horse, each...$5.00
Lightning Belt Horse, each.$15.00
Chicago Belt Horse, each..$20.00
Stewart's Enclosed Gear Roll Bearing Horse, each.....$6.75
Stewart's New Model Sheep Shearing Machine, each.$12.75
Stewart Enclosed Gear Shearing Machine, No. 8, each..$9.75
} 20%

## Clips, Axle—

*Regular Styles, list July 1, '05. 80&80&10%*

## Cloth and Netting, wire

—See *Wire, &c.*

## Cocks, Brass—

*Hardware list:*
*Plain Bibbs, Globe, Kerosene, Racking, Liquor, Bottling, &c ..... 75%*
*Compression Bibbs..... 70%*

## Coffee Mills—

See *Mills, Coffee.*

## Collars, Dog—

Nickel Chain, Walter B. Stevens & Son's list ..... 40%
Leather, Walter B. Stevens & Son's list ..... 40%

## Compasses, Dividers, &c.

*Ordinary Goods.....70&10@75%*

## Conductor Pipe,—

*L. C. L. to Dealers:*

| | Gal. Steel. | Charcoal. | Copper. |
|---|---|---|---|
| *Northeastern:* | | | |
| | 70&10% | 50&10&7½% | 50&10% |
| *Eastern:* | | | |
| | 70&10&5% | 50&10&7½% | 50&10% |
| *Central:* | | | |
| | 75&5% | 60% | 50&10% |
| *Northwestern:* | | | |
| | 75&2½% | 60% | 50&10% |
| *Western:* | | | |
| | 70&7½% | 50&12½% | 50&5% |
| *Tennessee:* | | | |
| | 70&10% | 50&12½% | 50&10% |
| *Southern:* | | | |
| | 70% | 50&12½% | 50&5% |
| *Southwestern:* | | | |
| | 70% | 50&5% | 50&5% |

*Terms, 60 days: 2% cash 10 days. Factory shipments generally delivered.*
See also Eave Troughs.

## Coolers, Water—

L. & G. Mfg. Co.:

| Gal. | 2 | 3 | 4 | 6 | 8 |
|---|---|---|---|---|---|
| Galvanized, ea. | $1.85 | $2.00 | $2.25 | $2.90 | $3.90 |
| Galvanized, Lined, side handles, Gal. | 2 | 3 | 4 | 6 | 8 |
| Each | $1.95 | $2.15 | $2.40 | $3.30 | $4.15 |

White Enameled..... 10%
Agate Lined..... 10%

## Coppers' Tools—

See *Tools, Coopers'.*

## Coppers, Soldering—

*Soldering Coppers, 3 lb. to pair and heavier, 20¢; lighter than 3 lb. to pair.....22¢*

## Cord—Sash—

*Braided, Drab.....lb. 35¢*
*Braided, White, Com., Nos. 8 to 12, 21¢; No. 7, 21½¢; No. 6, 22½¢. In lots of 12 doz. or over, 1 cent less per pound.*
*Cable Laid Italian, lb., No. 18. 37¢*
*Italian, lb., A, No. 18, 25¢; B, 22¢*
*Common India.....lb., 11@11½¢*
*Cotton Sash Cord, Tw'ted. 18@20¢*
*Patent Russia.....lb.... 20¢*
*Cable Laid Russia.....lb...21¢*
*India Hemp, Br'd'd.....lb...21¢*
*India Hemp, Twisted...lb. 13@14¢*
*Patent India, Twisted..lb...17¢*
Pearl Braided, cotton, No. 6, ₱ lb. 20½¢; No. 7, 19½¢; Nos. 8 to 12, 19½¢, in 12 doz. to 100 doz. lots.
Eddystone, Braided, Nos. 8 to 12, 26¢; 7, 26½; 6, 27½¢.
Harmony Cable Laid Italian, Nos. 7 to10..... ₱ lb 23¢
Pullman:
Wire Sash Cord..... 10%
Sash Cord Attachments, per 100..$2.00
Samson, Nos. 8 to 12:
Braided, ₱ lb., Drab Cotton, 55¢; Italian Hemp, 40¢@50¢; Linen, 65¢; White Cotton, 50¢; Spot Cord.....50¢
Massachusetts, White...₱ lb 40¢
Massachusetts, Drab....₱ lb 45¢
} 15%
Phoenix, White, Nos 8 to 12....27¢
Silver Lake, per lb.:
A, Drab, 45¢; A, White, 40¢; B, Drab, 40¢; B, White, 35¢; Italian Hemp, 40¢; Linen....57½¢
See also Chain and Ribbon.

## Wire, Picture—

*Full Length.....90@—%*
*Short Length.....90&20@—%*
Hendryx Standard Wire Picture Cord, old list, 85&10%
Turner & Stanton Co. Wire Picture Cord ..... 90%

## Cradles—

*Grain ..... 50%*

## Crayons—

*White Round Crayons, Cases, 100 gro., $8.00, $8.50, $9.00 and $10.00 according to grade.*
Zelnicker's Lumber: ₱ gro.
White and Purple, Indelible....$7.50
Blue, Red, Green, Yellow and Terra Cotta, $6.50; Black.....$4.50
Giant Lumber, 5¼ in. x 15-16 in. round, all colors, $12.00; Indelibles, $14.00; Blacks.....$10.00
Genuine Soapstone, Metal Workers', 5 in. x ¼ in. Round, $2.50; 5 in. x ¼ in. Square, $1.75; 5 x ½ x 3-16, $2.50; 5 x 1¼ x 3-16.....$3.00
Suremark, Black, $2.25; Blue, Red and Yellow..... $2.50

## Crooks, Shepperds'—

Fort Madison, per doz., Heavy, $5.50; Light ..... $5.00

## Crow Bars—See *Bars, Crow.*

## Cultivators—

Victor Garden..... 50%

## Cutlery, Table—

International Silver Company:
No. 12 M'd'm Knives, 1847, ₱ doz. $3.50
Star, Eagle, Rogers & Hamilton and Anchor ..... ₱ doz. $3.00
Wm. Rogers & Son .... ₱ doz. $2.50

## Cutters—Glass—

H. H. Mayhew Co..... 40%
Red Devil..... 60
B. Mfg. Co..... 40%
Woodward ..... 50

## Meat and Food—

American ..... 30

| Nos. | 401 | 402 | 403 | 404 | 405 | 406 | 407 |
|---|---|---|---|---|---|---|---|
| Each | $5 | $7 | $10 | $12 | $25 | $50 | $60 |

Enterprise:

| Nos. | 5 | 10 | 12 | 22 | 32 | |
|---|---|---|---|---|---|---|
| Each | $2 | $3 | $2.75 | $1.50 | $6 | 25@25&7½ |

No. 202, $1.50 ..... 10&7½
P., S. & W. Co.:
Ideal ..... 40@40&5
Hales ..... 60&5%
Little Giant..... ₱ doz. 40@50%

| Nos. | 305 | 310 | 312 | 320 | 322 |
|---|---|---|---|---|---|
| | $35.00 | $48.00 | $44.00 | $72.00 | $68.00 |

New Triumph No. 605, ₱ doz. $24.00, 40%
Russwin Food, No. 1, $24.00; No. 2, $27.00; 3, $42.00..... 45&10&10
$15.00 $18.00
Enterprise Beef Shavers..... 25@30%

## Siaw and Kraut—

Henry Disston & Sons:
Slaw and Kraut Cutters..... 35%
Corn Graters..... 30%
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife....₱ doz. $3.00
Combined Slaw Cutter and Corn Grater ..... ₱ doz. $4.00

## Tobacco—

*All Iron, Cheap...doz, $4.25@4.50*
Enterprise ..... 25@30%
National, ₱ doz., No. 1, $21; No. 2, $18 ..... 40%

## Diggers, Post Hole, &c—

Disston's:
Rapid, ₱ doz., $24.00..... 25%
Samson, ₱ doz., $34.00..... 25%
Iwan's Pat. Post Hole and Well Auger ..... 40%
Vaughan Pattern Post Hole Augers, ₱ doz., $7.00
Perfection Post Hole Diggers, ₱ doz. ..... $8.50
Split Handle Post Hole Diggers, ₱ doz., $7.50
Hercules Pattern, ₱ doz..... $9.50
Kohler's, ₱ doz., Universal, $14.00; Little Giant, $12.00; Hercules, $10.00; Invincible, $9.00; Rival, $8.50; Pioneer..... $7.50
Never-Break Crucible Steel Post Hole Diggers ..... 60%

## Dividers—See *Compasses.*

## Drawing Knives—

See *Knives, Drawing.*

## Dressers Emery Wheel—

Sterling Emery Wheel Dressers..... 35%
Sterling Wheel Dresser Cutters..... 35%

## Drills and Drill Stocks—

*Blacksmith's Common Drilling Machines .....$1.50@1.75*
Breast, Millers Falls..... 15&10%
Breast, P., S. & W..... 33⅓
C. & C. Ratchet..... 25%
Reversible Ratchet Die Stocks....25%
Goodell Automatic Drills. 50&10@60&10
Millers Falls Automatic Drills, Graves', per doz., Nos. 1, $4.86; 2, $8.16.
Millers Falls Automatic Drills. 33⅓&10%
Ratchet, Curtis & Curtis..... 25%
Ratchet, Parker's..... 40%
Ratchet, Weston's..... 40%
Ratchet, Weston's, Style H Improved ..... 40@40&5%
Ratchet, No. 012..... 40@40&5%
Ratchet, Celebrated..... 40@40&5%
Ratchet, Whitney's, P., S. & W., 40&10@50%
Whitney's Adjustable, No. 10, $12.00, 33⅓%

## Twist Drills—

*Bit Stock..... 70@70&5%*
*Taper and Straight Shank, 60&10@70%*

## Drivers, Screw—

*Screw D'ver Bits, per doz. 45@50¢*
Balsey's Screw Holder and Driver, ₱ doz., 2½-in., $6; 4-in., $7.50; 6-in., $9 ..... 50%
Buck Bros.' Screw Driver Bits..... 30%
Champion ..... 50%
Disston's ..... 70%
Fray's Hol. H'dle Sets, No. 3, $12..50%
Ford's Brace Screw Drivers....40&10%
Gay's Double Action Ratchet..... 35%
Goodell's Auto..... 65@65&10%
Mayhew's Black Handle..... 40%
Mayhew's Monarch..... 40%
Millers Falls, ₱ doz., Nos. 11, $9.95; 12, $13.73; 20, $8.17; 21, $8.46; 41, $13.43; 42, $17.21.
Smith & Hemenway Co. Neverturn, 66⅔; Elmora, 60%; Star, 30&10%
Swan's:
Nos. 7565 to 7568, 60%; No. 7540, 40&10%

## Eave Trough, Galvanized—

| *Territory.* | *Gal. Steel.* | *Copper.* |
|---|---|---|
| *Northeastern..* | *75&10&5%* | *50&10%* |
| *Eastern.....* | *80%* | *50&10%* |
| *Central.....* | *80&10&5%* | *50&10%* |
| *Northwestern..* | *80&10&5%* | *50&10%* |
| *Western.....* | *80&5%* | *50&5%* |
| *Tennessee.....* | *80&5%* | *50&10* |
| *Southern.....* | *75&10%* | *50&5%* |
| *Southwestern..* | *75&10&2½%* | *50&5%* |

*Terms, 2% for cash. Factory shipments generally delivered.*
*Note. Lower prices are made in some sections.*
See also Conductor Pipe and Elbows.

## Elbows and Shoes—

*Factory shipments, all territories Galv. Steel, Galv. C. I. and Copper.*
*Sizes 2, 3, 4..... 80*
*Sizes 1½, 2½, 3½, 5, 6...60&10%*
*No. 26..... 50*
*No. 24..... 25*
*Copper Elbows..... 50*

## Elbows, Stove Pipe—

Edwards Standard Blue 40&10&10
Edwards Royal Blue 40&10&10
Reeves Dover Flat Crimp 40&10&5

## Emery, Turkish—

| | 4 to 46: | 54 to 220: | Flour. |
|---|---|---|---|
| *Kegs .....lb.* | 5 ¢ | 5¼¢ | 3½¢ |
| *½ Kegs.....lb.* | 5½¢ | 5¾¢ | 3¾¢ |
| *¼ Kegs.....lb.* | 5½¢ | 6 ¢ | 4 ¢ |

*10 lb. cans,*
*10 in case....6½¢ 7 ¢ 6 ¢*
*10-lb. cans, less*
*than 10.....10 ¢ 10 ¢ 8 ¢*
*Less quantity..10 ¢ 10 ¢ 8 ¢*
*NOTE.—In lots 1 to 3 tons a discount of 10% is given.*

### Extensions, Bit—
Ford's Auger Bit Extensions....40&5%

### Extractors, Lemon Juice—
—See *Squeezers, Lemon.*

### Fasteners, Blind—
Zimmerman's Jap'd and Galv., 50 & 5 ; Bronze and Plated.....50 %
Walling's .....50 %
Upson's Patent.....40%

### Cord and Weight—
Ives, ₱ gro., $1.08.....10%
Titan, ₱ gro., $0.66.....10%

### Corrugated—
Acme Corrugated Fasteners.....70%

### Faucets—
*Cork Lined.....50&10@60%*
*Metallic Key, Leather Lined, ..*
*60&10@70%*
*Red Cedar.....40&5@40&10&5%*
*Petroleum .....70&10@75%*
B & L. B. Co.:
Metal Key.....60&10
Star .....60 %
West Lock.....50&10%
John Sommer's Peerless Tin Key....40 %
John Sommer's Boss Tin Key.....50 %
John Sommer's Victor Mtl. Key.50&10 %
John Sommer's Duplex Metal Key..60%
John Sommer's Diamond Lock.....40%
John Sommer's I.X.L. Cork Lined..50%
John Sommer's Reliable Cork Lined..
50&10%
John Sommer's Chicago Cork Lined.60 %
John Sommer's O. K. Cork Lined...50%
John Sommer's No Brand, Cedar....50 %
John Sommer's Perfection, Cedar....40%
Self Measuring:
Enterprise, Self Measuring and Pump, ₱ doz., $36.00.....10&10
Lance, ₱ doz., $36.00.....10&10
National Measuring, ₱ doz., $36.10&10

### Felloe Plates—
See *Plates, Felloe.*

### Files— Domestic—
*List Nov. 1, 1899.*
*Best Brands.....70&10@75&10%*
*Standard Brands.....75&10@80 %*
*Lower Grade....75&10&10@80&10%*
Gold Medal.....70
Nicholson's American Standard, 60&10&10%

### Imported—
*Stubs' Tapers, Stubs' list, July 24, '97.....33⅓@40 %*

### Fixtures, Fire Door—
Richards Mfg. Co.:
Universal, No. 193; Special, No. 194.....$5.75
Double Links, No. 96.....50
Expansion Bolts, No. 107.....60&10 %

### Grindstone—
*Net Prices:*

| | | | | | |
|---|---|---|---|---|---|
| *Inch* | *15* | *17* | *19* | *21* | |
| *Per doz.* | *$3.60* | *3.85* | *4.15* | *4.65* | |
| Peck, Stow & Wilcox Co.: | | | | | |
| Dr. | 15 | 17 | 19 | 21 | 24 |
| | $4.00 | 4.40 | 4.75 | 5.50 | 6.50....30% |

Reading Hardware Co.....60%

### Fodder Squeezers—
See *Compressors.*

### Forks—
*NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.*
Iowa Dig. Ex. Potato.....60&10 %
Victor Hay.....60&15&2½ %
Victor Manure.....66⅔ %
Victor, Header.....65%
Champion Hay.....66⅔ %
Champion, Header.....65%
Champion, Manure.....60&15&2½ %
Columbia, Hay.....60&20 %
Columbia, Manure.....70 %
Columbia, Spading.....70&12½ %
Hawkeye Wood Barley.....10 %
W & C Potato Digger.....60&10%
Acme Hay .....60&20 %
Acme Manure, 4 tine.....60&10&5%
Dakota Header.....60&20 %
Jackson Steel Barley.....60&20%
Kansas Header.....65 %
W. & C. Favorite Wood Barley....40%
Plated. See Spoons.

### Frames— Wood Saw—
*White, S'g't Bar, per doz.75@80¢*
*Red, S'g't Bar, per doz.$1.00@1.25*
*Red, Dbl. Brace, per doz.$1.40@1.50*

### Freezers, Ice Cream—

| | | | | | |
|---|---|---|---|---|---|
| *Qt.* | *1* | *2* | *3* | *4* | *6* |
| *Each* | *$1.25* | *$1.60* | *$1.90* | *$2.20* | *$2.80* |

### Fruit and Jelly Presses—
*See Presses, Fruit and Jelly.*

### Fry Pans—See *Pans, Fry.*

### Fuse— *Per 1000 Feet.*
*Hemp .....$2.75*
*Cotton .....3.20* } Extra 5% often given.
*Waterproof Sul. Taped..3.65*
*Waterproof Dbl. Taped..4.40*
*Waterproof Tpl. Taped..5.15*

### Gates, Molasses and Oil—
*Stebbins' Pattern.....80@80&5%*

### Gauges
*Marking, Mortise, &c..50@50&10%*
Chapin-Stephens Co.:
Marking, Mortise, &c.....50&50&10%
Disston's Marking Mortise, &c. 67½%
Wire, Brown & Sharpe's.....33⅓%
Wire, Moser's .....25%
Wire, P. S. & W. Co.....33⅓%

### Gimlets— Single Cut—
*Numbered assortments, per gro.*
*Nail, Metal, No. 1, $2.00; 2, $2.30*
*Spike, Metal, No. 1, $4.00; 2, $4.30*
*Nail, Wood Handled, No. 1, $2.30; 2, $2.60*
*Spike, Wood Handled, No. 1, $4.30; 2, $4.60*

### Glass, American Window
See *Trade Report.*

### Glasses, Level—
Chapin-Stephens Co.....65@65&10%

### Glue, Liquid Fish—
*Bottles or Cans, with Brush, 25&10@50%*
Elwell's .....40%

### Grease, Axle—
*Common Grade...gro.$6.00@$6.50*
Dixon's Everlasting, 10-lb. pails, ea. 85c ; in boxes, ₱ doz., 1 lb, $1.20; 2 lb.....$2.00
Helmet Hard Oil.....25%

### Griddles, Soapstone—
Pike Mfg. Co.....33⅓@33⅓&10%

### Grinders—
Pike Mfg. Co.:
Hand and Foot Power, Pyko Nos. 1, 2, 3; Pyko Primo; Pyko Peerless; Pyko Spiral (foot power).33⅓%
Mower Knife and Tool, $5.00..40&10%
Royal Mfg. Co.:
Alundum Grinding Machines, each, Nos. 01, $1.75; 1A, $2.50; 10, $5.00 .....30%
Alundum Sickle Grinders, each, Nos. 20, $5.00; 20A, $6.00; 20A Combined, $6.50.....30%
Alundum Disc Grinders, each, $2.50 .....30%

### Grindstones—
Pike Mfg. Co.:
Improved Family Grindstones, ₱ inch, ₱ doz. $2.00.....33⅓%
Richards Mfg. Co., Eli and Cycle, Ball Bearing, mounted.....40%

### Grips, Nipple—
Perfect Nipple Grips.....40&10&2%

## Halters and Ties—
*Cow Ties.....65@65&10%*
Bridgeport Chain Co.:
Triumph Coil and Halters,35&2½@40%
Brown Coil and Halters...45@50&5 %
Brown Cow Ties.....50&5@50&10&5 %
Brown Tie Outs.....70&10@75&5 %
Covert Mfg. Co.:
Web .....30&2%
Jute Rope.....55 %
Sisal Rope.....20%
Cotton Rope.....45%
Hemp Rope.....45 %
Oneida Community:
Am. Coil and Halters.....40@40&5%
Am. Cow Ties.....45@50
Niagara Coil and Halters...45@50&5%
Niagara Cow Ties.....45&5@50&10&5%

### Hammers—
### Handled Hammers—
Heller's Machinists'....55&10@55&10&5%
Heller's Farriers.....40&5@40&10&5 %
Peck, Stow & Wilcox Co.:
Crucible Steel.....40&10@50 %
Farriers' .....40&10@50 %
Riveting .....40&10@50 %
Machinists' .....66⅔@5
Blacksmiths' .....50%
Fayatte R. Plumb:
A. E. Nail.....40&2½@40&12½%
Eng. and B. S. Hand.50&10&5@60&5%
Machinists' Hammers.....60&10&5%
Rivet and Tinners'.40&7½@40&12½&5%
Victor Magnetic Tack, ₱ gro....$7.75

### Heavy Hammers and Sledges—
*Under 3 lb., per lb.. 50¢...80&10%*
*3 to 5 lb., per lb., 40¢...80&10&10%*
*Over 5 lb., per lb., 30¢.....*
*Over 5 lb., per lb., 30¢.80&10&10%*

### Handles—
### Agricultural Tool Handles
*Axe, Pick, &c....60&10@60&10&5%*
*Hoe, Rake, &c.....40%*
*Fork, Shovel, Spade, &c.:*
*Long Handles.....40%*
*D Handles.....40%*

### Cross-Cut Saw Handles—
Atkins' .....40%
Champion .....50%
Disston's .....50%

### Mechanics' Tool Handles—
*Auger, assorted...gro.$3.00@$3.50*
*Brad Awl.....gro.$1.65@$1.75*
*Chisel Handles, Ass'd, per gro.:*
*Tanged Firmer, Apple, $2.40@$2.65; Hickory.....$2.15@2.40*
*Socket Firming, Apple, $1.75@$1.95; Hickory.....1.60@1.75*
*Socket Framing, Hickory, $1.60@$1.75*
*File assorted.....gro.$1.30@$1.40*
*Hammer, Hatchet, &c., 60&10@60&10&5%*
*Hand Saw, Varnished, doz., 80&85¢; Not Varnished.....65@75¢*
*Plane Handles:*
*Jack, doz., 30¢; Fore, doz...45¢*
Chapin-Stephens Co.:
Carving Tool .....30@30&10%
Cutsel .....60@60&10 %
File and Awl.....60@60&10 %
Saw and Plane.....30@30&10 %
Screw Driver .....30@30&10%
Millers Falls Adj. and Ratchet Auger Handles .....15&10%
Nicholson Simplicity File Handle .... ₱ gro. $0.85@$1.50
J. L. Osgood:
Indestructible File and Tool, ₱ gro. No. 1, $8.00; No. 2, $8.50; No. 3, $9.00; No. 4, $9.50; No. 5, $10.00.....gro. lots 10%

W. A. Zelnicker Supply Co.:
Hammer, ₱ doz., 12 in., $2.00; 14 in., $2.00; 16 in., $2.30; 18 12., $2.50; 20 in., $2.70; 22 in., $3.00; 24 in., $3.30; 26 in., $3.50; 30 in., $3.80.
Sledge, ₱ doz., oval, 30 in., $3.80; octagon, 30 in., $3.80; oval, 36 in., $4.00; octagon, 36 in., $4.00.
Axe, ₱ doz., 28 to 34 in., $5.60; 36 in., $5.80.
Adze, ₱ doz., 36 in., $5.80; 36 in., $7.80.
Pick, ₱ doz., R. R., 36 in., $8.00; coal, 34 in., $5.80.
Hatchet, ₱ doz., 12 to 14 in., $2.00.
} 50%

### Hangers—
*NOTE.—Barn Door Hangers are generally quoted per pair, without track and Parlor Door Hangers per double set with track, &c.*
Chicago Spring Butt Co.:
Friction .....25%
Oscillating .....25%
Big Twin.....25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door.....50%
Elevator .....30%
Railroad .....50%
Cronk & Carrier Mfg. Co.:
Loose Axle.....60&10%
Roller Bearing.....70 %
Griffin Mfg. Co.:
Solid Axle, No. 10, $12.00..60&10%
Roller Bearing, No. 11, $15.00, 60&10%
Roller Bearing, Ex. Hy., No. 22, $18.00.....60&10%
Bull Dog, $24.00.....70%
Lane Bros. Co.:
Parlor, Ball Bearing, $4.00; Standard, $3.15; No. 105, $2.85; New Model, $2.80; New Champion per set of 4 Hangers, complete with track. .....$2.25
Barn Door, Standard.....60&10 %
Hinged .....net $6.08
Covered .....60&5 %
Special .....70&5 %
Trolley Hangers and track ..50%
Lawrence Bros.:
Cleveland .....70&7½%
Clipper, No. 75.....60 %
Crown .....55&10 %
Cyclone, No. 40.....net $6.50
Tandem, No. 50.....net $7.50
New York.....55&10 %
Trolley, No. 30, ₱ pair.....$1.25
McKinney Mfg. Co.:
Roller Bearing, Nos. 1 and 2..70%
Anti-Friction .....60
Hinged Hangers, King Charm.60 %
Richards Mfg. Co.:
Hangers, Nos. 47, 48, 147, 247. 60&5%
Pioneer Wood Track, No. 3...$2.25
Roller B'r'g St'l Track No. 12.$2.20
Roller B'r'g St'l Track No. 13.$2.50
Roller B'r'g, Nos. 39, 41, 43, 70&7½%
Hero, Adj. Track No. 19..50&10%
Adjustible Track Tandem Trolley Track No. 16.....50&10%
Seal, Steel Track No. 8.....$2.25
Auto Adj. Track No. 22..50&5%
Trolley B. D. No. 17, $1.25; F. D. No. 120, $2.25; No. 121, $2.45; No. 150 .....$2.50
Safety Underwriters F. D. No. 101 .....50%
Tandem No. 44..2½ and 3 60&10 %
Palace, Adjustable Track No. 132 .....50&5%
Royal, Adjustable Track No. 122 .....50&10
Ives' Wood Track No. 1.....$2.25
Trolley B. D. No. 20.....50&10 %
Trolley B. D. No. 24, $1.30; No. 27, $1.40; No. 28..... $1.60
Roller Bearings, Nos. 37, 38, 39, 41, 43, 44. Sizes 1 and 2 70&7½%
Anti-friction, No. 42; No. 44, sizes 2½ and 3.....60%
Hinged Tandem No. 48....60&5%
Folding Door B. B. Swivel No. 135 .....40%
Taylor & Boggis F'y Co.'s Kidder's Roller Bearing, ₱ doz., 4 in., $12.00; 5 in., $14.00..40&10%
Myers' Stayon Hangers.....60%

### Hangers— Garment—
Pullman Trouser, ₱ gro., No. 1 $9.00; No. 4, $24.00; No. 5, $16.50; No. 8, Black Enamel, $7.50; No. 10, $21.00; No. 12, $8.00; No. 15, Rods, $9.00; No. 18, Loops.....$10.00
Victor Folding.....₱ gro. $9.60

### Gate—
Myers' Patent Gate Hangers, ₱ doz. net .....50%

### Joist and Timber
Lane Bros. Co.....35%

### Hasps—
Griffin's Security Hasp.....50&10%
McKinney's Perfect Hasp, ₱ doz..60%

### Hatchets—
*Regular list, first qual.40&12½@—*
*Second quality.....50&10&5@—*

### Heaters, Carriage—
Clark, No. 5, $1.25; No. 5B, $1.50; No. 3, $1.75; No. 3D, $2.00; No. 7D, $2.25; No. 3E, $2.50; No. 1, $3.00.....25%
Clark Coal, ₱ doz., $0.75.....20%

### Hinges—
### Blind and Shutter Hinges
*Surface Gravity Locking Blind: Doz. Sets with Fastenings, Net, No. 1, $0.70; No. 3, $1.25; No. 5, $2.65.*
*Mortise Shutter.....80%*
*Mortise Reversible Shutter...80%*
North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3 for Brick, $11.50.....10%
Charles Parker Co.....70&75 %
Parker Wire Goods Co.
Hale & Benjamin Automatic Blind Hinges .....20%
Hale's Blind Awning Hinges, No 110 for wood, $9.00; No. 111, for brick, $9.00.....20%
Reading's Gravity.....60%
Stanley's Steel Gravity Blind Hinges, No. 1617½ ₱ doz. sets, without screws, $0.95; with screws, $1.25.
Wrightsville Hardware Co.:
O. S., Lull & Porter.....75&5%
Acme, Lull & Porter.....75%
Queen City Reversible.....75%
Shepard's Noiseless, Nos. 60, 65, 55 .....75&5%
Niagara, Gravity Locking, Nos. 1, 3 & 5.....75&5%
Clark's O. P., No. 1.....75&10%
Clark's O. P., Nos. 3 and 5....75&5%
Tip Pat'n, No. 1.....75&10%
Clark's No. 3.....75&5%
Italo Gravity Locking, Nos. 1, 3 & 5.....70&10&5%
Shepard's Double Locking.....75%
Champion Gravity Locking.....75&5%
Pioneer .....75&10%
Empire .....65%
W. H. Co.'s Mortise Gravity Locking, No. 2.....60&10%

### Gate Hinges—
*Clark's or Shepard's—Doz. sets:*

| *No.* | *1* | *2* | *3* |
|---|---|---|---|
| *Hinges with L't'chs.* | *$2.00* | *2.70* | *5.00* |
| *Hinges only.....* | *1.25* | *1.90* | *3.50* |
| *Latches only.....* | *.70* | *.75* | *.35* |

*New England:*
*With Latch.....doz..@$2.00*
*Without Latch.....doz..@$1.60*
*Reversible Self-Closing:*
*With Latch.....doz..@$1.75*
*Without Latch...doz. ...@$1.35*
*Western:*
*With Latch.....doz. $1.75*
*Without Latch.....doz..$1.15*
Wrightsville Hardware Co.:
Shepard's or Clark's Hinges and Latches, Hinges only or Latches only, Nos. 1, 2 or 3.....70%

### Miscellaneous—
Griffin Mfg. Co., Fleur de Lis Surface Hinges, ₱ doz. prs.....$1.00

### Pivot Hinges—
Bommer Bros. Pivot, Ball Bearing .....40%
Lawson Mfg. Co. Matchless.....30

### Spring Hinges—
*Holdback, Cast Iron...$6.75@$7.00*
*Non-Holdback, C'st Iron$6.50@$6.75*
J. Bardsley:
Bardsley's Non-Checking Mortise Floor Hinges.....40%
Bardsley's Patent Checking.33⅓ %
Bommer Bros.:
Spring Butt Hinges.....40%
Surface Floor, Ball Bearing .....40%
Mortise Floor, Ball Bearing.40%
Lavatory Hinges.....40%
Non-Holdback Screen Door, Nos. 2000 and 900.....40%
Holdback Screen Door, No. 999.....₱ gro. $9.00
Chicago Spring Butt Co.:
Chicago Spring Hinges.....25%
Triple End Spring Hinges....50
Chicago (Ball Bearing) Floor.50%
Garden City Engine House....25 %
Keene's Saloon Door.....25 %
Columbian Hardware Co.:
Acme, Wrought Steel.....30%
Acme, Brass.....25%
American .....30%
Columbia, ₱ gr., No. 14, $9.00; No. 18.....$25.00
Columbia, Adj., No. 7, ₱ gr.$12.00
Gem, new list.....30%
Clover Leaf and Acorn, per gro. .....$12.00
Oxford, new list.....30%
Floor Spring Hinges.....65&10%
Columbian Steel.....65&10%
Lawson Mfg. Co.:
Matchless Spring Hinges.....30%
Matchless Jamb Hinges.....30%
Richards Mfg. Co.:
Superior Double Acting Floor Hinges .....40%
Shelby Spring Hinge Co.:
Buckeye All Steel Holdback Screen Door.....₱ gr. $9.00
Chief Ball Bearings Floor Hinge .....50%
Ball Bearing Door.....25%
No. 777, Sheet Steel Holdb'k, ₱ gr. pr.....$9.00
Standard Mfg. Co.:
Champion Double Acting Door Hinge .....25&10&10%
Standard Double Acting Floor Hinge .....25&10&10%
Superior Spring Hinge Co.:
Superior Floor Hinges.....33⅓%
Spring Hinges.....33⅓%
} Extra 10% often given on most of these Hinges.

### Wrought Iron Hinges—
*Strap and T Hinges, &c., list February 10, 1908:*
*Light Strap Hinges..50&10%*
*Heavy Strap Hinges..60&5%*
*Light T Hinges.....50%*
*Heavy T Hinges.....40%*
*Extra Hvy. T Hinges.50&10%*
*Hinge Hasps.....33⅓%*
*Cor. Heavy Strap....60&5%*
*Cor. Ex. Heavy T...50&10%*
} Extra 10&7½%.

*Screw Hook and Strap.* { *6 to 12 in..lb.3½¢* / *1½ to 20 in..lb.3¼¢* / *22 to 36 in..lb.3 ¢* }

*Screw Hook and Eye:*
*½ to 1 inch.....lb.6¼¢*
*⅝-inch .....lb.7½¢*
*½-inch .....lb.8½¢*

### Hitchers, Stall—
Covert Mfg. Co., Stall Hitchers..30&2%

### Hods— Coal—
*M'f'gr's list, price per gross:*

| *Inch* | *15* | *16* | *17* | *18* |
|---|---|---|---|---|
| *Galv. Open....* | *$35* | *$39* | *$42* | *$46* |
| *Jap. Open....* | *26* | *28* | *31* | *35* |
| *Galv. Funnel...* | *43* | *48* | *52* | *56* |
| *Jap. Funnel....* | *33* | *36* | *59* | *43* |

} 10&7½&5%

### Masons' Etc.
Cleveland Wire Spring Co.:
Steel Brick, No. 162.....each $1.05
Steel Mortar, No. 158.....each $1.35

### Hoes— Eye-

*Scovil and Oval Pattern,*
*60&10@60&10&10%*
*Grub, list Feb. 23, 1899,*
*70&10@70&10&10%*
D. & H. Scovil.....27½%
Am. Fork & Hoe Co. (Scovil Pattern).....60%

### Handled—

*NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.*
Cronk's Weeding, No. 1,$2.00; No. 2,$2.50
Star Double Bit.....$2.50
Ft. Madison Cotton Hoe....70&10&10%
Ft. Madison Crescent Cultivator Hoe, ₱ doz.....70&10%
Ft. Madison Mattock Hoes:
Regular Weight.....₱ doz. 40&5%
Junior Size.....₱ doz. $4.00
Ft. Madison Sprouting Hoe, ₱ doz., 60&10%
Ft. Madison Dixie Tobacco Hoe..... 75&10&7½%
Kretsinger's Cut Easy.....70&10%
Warren Hoe.....45&10%
W. & C. Ivanhoe.....75&2%
B. B. 6 in., Cultivator Hoe.....$3.40
B. B., 6½ in.....$3.50
Acme Wedding.....₱ doz., net, $1.35
W. & C. L'tning Shuffle Hoe, ₱doz.$5.25

### Hoisting Apparatus—

See *Machines, Hoisting.*

### Holders— Bit—

Angular, ₱ doz. $2.40.....45&10%

### Door—

Bardsley's, Iron, 40; Brass and Bronze.....25%
Empire.....50%
Pullman.....25%
Richards Mfg. Co.: No. 117, Ever-ready, 40%; Nos. 118, 119, Sure Grip.....50%
Superior.....33⅓%

### File and Tool—

Nicholson File Holders and File Handles.....33⅓@40%

### Fruit Jar—

Triumph Fruit Jar Holder, ₱ gross, $18.00; ₱ doz.....$2.00

### Trace and Rein—

Fernald Double Trace Holder, ₱ doz. pairs.....$1.25
Dash Rein Holder, ₱ doz.....$1.25

### Hones—Razor—

Pike Mfg. Co., Belgian and Swaty, 50%; German.....33⅓%

### Hooks—Cast Iron—

Bird Cage, Reading.....40%
Clothes Line, Reading List.....40%
Coat and Hat, Reading.....45&20%
Coat and Hat, Wrightsville.....60&5%
Harness, Reading List.....40%

### Wire—

*Belt, Nos. 1 to 15....75&10@80%*
*Wire C. & H. Hooks..80@80&10%*
Bradley Metal Clasp Wire, Coat and Hat, 75&10@80; Ceiling..75&10@80
Columbian Hdw. Co., Gem.....75&10%
Parker Wire Goods Co., King..75&10%
Wire Goods Co.:
Acme, 60&10%; Chief, 70&10%; Crown, 75%; Czar, 65&10%; V Brace, 75%; Czar Harness, 50%; Ceiling, 75%.

### Wrought Iron—

*Box, 6 in., per doz., $0.90; 8 in., $1.15.*
*Cotton.....doz.$1.25@$1.50*
Wrought Staples, Hooks, &c.
See Wrought Goods.

### Miscellaneous—

*Hooks, Bench,* see *Stops, Bench.*
*Bush, Light, doz., $6.20; Medium, $6.75; Heavy, $7.65*
*Grass, best, all sizes, per doz., $2.75@$3.00*
*Grass, common grades, all sizes, per doz.....$1.25@$1.50*
*Whiffletree.....lb.5¼@6¢*
*Hooks and Eyes:*
*Brass.....60@60&10%*
*Malleable Iron.....70@70&10%*
Covert Mfg. Co. Gate and Scuttle Hooks.....40%
Turner & Stanton Co. Cup and Shoulder.....85&10%
Bench Hooks. See Bench Stops.
Corn Hooks. See Knives, Corn.

### Horse Nails—

See *Nails, Horse.*

### Horseshoes—

See *Shoes, Horses.*

### Hose, Rubber—

*Garden Hose, ¾-inch:*
*Competition.....ft. 6@6½¢*
*3 ply Guaranteed....ft. 8½@9¢*
*4 ply Guaranteed....ft. 9½@12¢*
*Cotton Garden, ¾-in., coupled:*
*Low Grade.....ft. 8@ 9¢*
*Fair Quality.....ft.10@11¢*

### Irons— Sad-

*From ½ to 10.....lb.2½@2¾¢*
*B. B. Sad Irons.....lb.3¼@3½¢*
*Mrs. Potts', cents per set:*

| | Nos. 50 | 55 | 60 | 65 |
|---|---|---|---|---|
| Jap'd Cups | 86 | 93 | 96 | 93 |
| Tin'd Cups | 91 | 88 | 1.01 | 98 |

*New England Pressing..lb.3¾@4¢*

### Bar and Corner—

Richards Mfg. Co., Bar, 60&10%; Corner.....60

### Pinking—

*Pinking Irons.....doz.60@65¢*

### Irons, Soldering

See *Coppers.*

### Jacks, Wagons—

Covert Mfg. Co.:
Auto Screw.....30&2%; Steel, 45%
Lockport.....50%
Lane's Steel.....30&5%
Richards' Tiger Steel, No. 130...50&10%
Smith & Hemenway Co.'s.....25%

### Ladder—

Richards Mfg. Co., Ladder Jacks..50%

### Jointers—

Pike Mfg. Co., Saw Jointers, $7.00..40%

## Kettles—

*Brass, Spun, Plain.....20@25%*
Enameled and Cast Iron—See Ware, Hollow.

### Knives—

### Butcher, Kitchen, &c.—

Foster Bros.' Butcher, &c.....30%
Wilkinson Shear & Cutlery Co....60%

### Corn—

Columbian Cutlery Co., Wilcut Brand Knives and Hooks.....60%
Ft. Madison Cut-Easy.....$3.25
Withington Acme, ₱ doz., $2.65; Dent, $2.75; Adj. Serrated, $2.20; Serrated, $2.10; Yankee No. 1, $1.50; Yankee No. 2, $1.15.

### Drawing—

*Standard List.....80&10@—%*
C. E. Jennings & Co., Nos. 45, 46, 25&7½%
Jennings & Griffin, Nos. 41, 42, 66⅔&7½%
Swan's.....66⅔@70%
Watrous.....16⅔%
L. & I. J. White.....20&5@25%

### Hay and Straw—

*Serrated Edge, per doz.$5.00@5.50*
Iwan's Sickle Edge.....₱ doz. $9.50
Iwan's Serrated.....₱ doz. $10.00

### Miscellaneous—

*Farriers'.....doz.$2.60@3.55*
Westenholm's.....₱ doz. $3.00@3.25

### Knobs—

*Base, 2½-inch, Birch or Maple. Rubber Tip.....gro.$1.25@1.40*
*Carriage, Jap., Drive, all sizes, gro.35@40¢*
*Door, Mineral.....doz.65@70¢*
*Door, Por. Jap'd.....doz.70@75¢*
*Door, Por. Nickel..doz.$2.05@2.15*
Bardsley's Wood Door, Shutters, &c.15%

## Lacing, Leather—

See *Belting, Leather*

### Ladders, Store, &c.—

Lane's Store.....25%
Myers' Noiseless Store Ladders....50%
Richards Mfg. Co.:
Improved Noiseless, No. 112.....50%
Climax Shelf, No. 113.....50%
Trolley, No. 109.....50%

### Ladles, Melting—

L. & G. Mfg. Co., Melting and Plumbers'.....25%
P. S. & W.....40&10%
Reading.....60%

### Lamps,—

Hammer's M. I. Hand.....45%

### Lanterns—Tubular—

*Regular, No. 0.....doz.$4.35@4.50*
*Side Lift, No. 0.....doz.$4.60@4.75*
*Hinge Globe, No. 0.doz.$4.60@4.75*
*Other Styles.....40@40&10%*

### Bull's Eye Police—

*3-inch.....$3.75@4.00*

### Latches— Thumb—

*Roggin's Latches, Jap'd, with Screws.....doz.35@40¢*

### Door—

Cronk & Carrier Mfg. Co., No. 101, ₱ doz. $2.00
Richards' Bull Dog, Heavy, No. 125.....50&5%
Richards' Trump, No. 127.....$1.50

### Leaders, Cattle—

*Small.....doz.50¢; large, 60¢*
Covert Mfg. Co.:
Cotton, 45%; Hemp, 45%; Jute, 35%; Sisal, 20%.

### Leathers, Pump—

See *Pumps—*

### Lifters, Transom—

R. & E.....10%

### Lines—

| | | | |
|---|---|---|---|
| *Wire Clothes, Nos.* | *18* | *19* | *20* |
| *100 feet* | *$2.30* | *1.95* | *1.75* |
| *75 feet* | *$1.95* | *1.65* | *1.50* |

Samson Cordage Works:
Solid Braided Chalk, Nos. 0 to 3..40%
Solid Braided Masons'.....30%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50.....₱ gr. 20%
Masons' Lines, Shade Cord, &c.; White Cotton, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50; Colors, No. 3½, $1.75; No. 4, $2.25; No. 4½, $2.75; Linen, No. 3½, $2.50; No. 4 $3.50; No. 4½, $4.50.....20
Tent and Awning Lines: No. 5, White Cotton, $7.50; Drab Cotton, $8.50.....20
Clothes Lines, White Cotton: 50 ft., $2.75; 60 ft., $3.25; 70 ft., $3.75; 75 ft., $4.00; 80 ft., $4.25; 90 ft., $4.75; 100 ft. $5.25.....20
Turner & Stanton Co.:
Solid Braided Chalk, Masons' and Awning Lines.....40
Clothes Lines, White Cotton.....20
Shade Cord, Cotton or Linen.....20

### Locks— Cabinet—

*Cabinet Locks....33⅓@33⅓&7½%*

### Door Locks, Latches, &c

*NOTE.—Net Prices are very often made on these goods.*
Reading Hardware Co.....40
R. & E. Mfg. Co.....40

### Padlocks—

R. & E. Mfg. Co. Wrought Steel and Brass.....75&10%

### Sash, &c.—

Ives' Patent:
Crescent.....10%
Automatic Gravity Metal Sash, ₱ gro., $149.58.....10
Window Ventilating.....10
Pullman Patent Ventilating Lock..25%
Reading Sash Locks.....40%
Taylor Mfg. Co., Perfect Ventilating, ₱ doz.....$0.75@$1.00

## Machines—Boring—

*Com. Upr't, without Augers, $2.00@2.25*
*Com. Angl'r, without Augers, $2.25@2.50*
Ford Auger Bit Co.....$22.00
Jennings', Nos. 1 and 4.....25&7½%
Millers' Falls.....5,75
Snell's, Upright, $2.65; Angular, $2.90
Swan's Improved.....40&10%

### Corking—

Reisinger Invincible Hand Power... ₱ doz. $48.00

### Fence—

Williams' Fence Machines....each, $5.50

### Hoisting—

Moore's Anti-Friction Chain Hoist,30%
Moore's Hand Hoist, with Lock Brake.....20%
Moore's Cyclone High Speed Chain Hoist.....25%

### Ice Cutting—

Chandler's.....12½%

### Washing

| Boss Washing Machine Co.: | Per doz. |
|---|---|
| Boss No. 1 | $57.00 |
| Boss Rotary | $57.00 |
| Champion Rotary Banner No. 1 | $57.00 |
| Standard Champion No. 1 | $50.00 |
| Standard Perfection | $27.00 |
| Cincinnati Square Western | $33.00 |
| Uneeda American, Round | $33.60 |

### Mallets—

*Hickory.....45&5@50%*
*Lignumvitæ.....45&5@50%*
*Tinners' Hickory and Applewood.....doz.45&5@50%*

### Mangers, Stable—

Swett Iron Works.....50%

### Mats, Door—

Acme Flexible Steel.....50%
Elastic Steel (W. G. Co.), new list.50

### Mattocks—

See *Picks and Mattocks.*

### Milk Cans—See *Cans, Milk.*

### Mills, Coffee, &c.—

Enterprise Mfg. Co.:
Coffee.....20@25%
Shell and Corn.....25&10
National list Jan. 1, 1902.....30
Parker's Columbia and Victoria..33⅓%
Parker's Box and Side.....50&10
Swift, Lane Bros. Co.....30%

### Motors, Water—

Divine's Red Devil.....30%

| $2.50 | 3.50 | 10.00 | 15.00 | |
|---|---|---|---|---|
| No. 1. | 2 | 3 | 4 | 33⅓% |

Lippincott's:

| No. | 1 | 2 | 3 | 4 | |
|---|---|---|---|---|---|
| | $2.50 | 3.50 | 10.00 | 15.00 | 33⅓% |

Pike Mfg. Co., Tool and Knife Grinding.....33⅓%

### Mowers, Lawn—

*NOTE.—Net prices are generally quoted*
*Cheapest, 10-in., $2.00; advance 10¢ for each size.*
*Cheap, 10-in., $2.25; advance 15@20¢ for each size.*
*Better Grade, 10-in., $3.00; advance 25¢ for each size.*

| | 12 | 14 | 16 | 18 in. |
|---|---|---|---|---|
| *High Grade* | *$4.50* | *4.75* | *5.00* | *5.25* |

Continental.....60
Great American.....70%
Great American Ball B'r'g, new list.70%
Quaker City.....70%
Pennsylvania.....60%
Pennsylvania, Jr., Ball Bearing, 50&10&5%
Pennsylvania Golf.....50%
Pennsylvania Horse.....33⅓&5%
Pennsylvania Pony.....40&5%
Philadelphia:
Styles M., S., C., K., T....70&10&5%
Style A, all Steel.....60&10&5%
Style E, High Wheel.....70&10&5%
Drexel and Gold Coin, special list.10%
Horse.....40&5%
Pony.....40&5%
36-in. Horse.....30&10%
Eagle Horse.....30&5%
I. X. L. Horse.....50%

## Nails—

*Wire Nails and Brads, Miscellaneous.....85&5@85&10%*
*Cut and Wire, See Trade Report.*
*Hungarian, Finishing, Upholsterers', &c. See Tacks.*

### Horse—

| Nos. | 6 | 7 | 8 | 9 | 10 | |
|---|---|---|---|---|---|---|
| Anchor | 23 | 21 | 20 | 19 | 18 | ₱ lb. net, 12¢ |
| Coleman | 13 | 12 | 12 | 11 | 11 | net ₱ lb |
| New Haven | 23 | 21 | 20 | 19 | 18 | ₱ lb. net, 12¢ |
| Livingston | 19 | 18 | 17 | 16 | 16 | 10% |
| Vaughan | | | | | | ₱ lb 85¢ |

*Jobbers' Special Brands.*
*per lb.9¢*

### Picture—

| | 1½ | 2 | 2½ | 3 in. |
|---|---|---|---|---|
| *Brass Hd. gro.* | *55* | *55* | *60* | *75* |
| *Por. Head. gro.* | *1.10* | *1.10* | *1.10* | |

### Upholsters—

*Brass.....30%*
*Plated.....30&10%*

### Nippers—

See *Pliers and Nippers.*

### Nipples—

Standard Nipple Co.:
Wrought Pipe Nipples.....80

### Nuts— *Blank or Tapped.*

*Cold Punched:* *Off list.*
*Square.....5.60¢*
*Hexagon.....6.20¢*
*Square, C., T. & R.....6.50¢*
*Hexagon, C., T. & R.....6.80¢*
*Hot Pressed:*
*Square.....6.40¢*
*Hexagon.....6.60¢*

## Oakum—

*Best.....lb.6½¢*
*U. S. Navy.....lb.6 ¢*
*Navy.....lb.5 ¢*
*Plumbers' Spun Oakum..2¾@3 ¢*

### Oil—

Pike Mfg. Co., Stonoil.....40%

### Oil Tanks—See *Tanks, Oil.*

### Oilers—

*Steel, Copper Plated.....75%*
*Chase or Paragon:*
*Brass and Copper.....50&10%*
*Zinc.....65&10@70%*
*Railroad.....60&10&10%*
Malleable, Hammers' Improved, Nos. 11, 12 and 13, 10%; Old Pattern, Nos. 1, 2, 3, 4, 50%.
American Tube & Stamping Co.:
Spring Bottom Cans.....70@70&10
Railroad Oilers, &c.....60@60&10
Maple City Mfg. Co.:
Spring Bottom Cans.....70@70&10%
Railroad Oilers, &c.....60@60&10

### Openers—Packing Box—

Herculever, ₱ doz., $2.....30%

### Can Openers—

*Per doz.*
*Sprague, Iron Handle....30@35¢*
*Sprague, Wood Handle.....40¢*
*Sardine Scissors.....$1.75@3.00*
Can and Bottle Openers, ₱ doz., net: Yankee, $0.75@$0.85; Little Gem, $0.50@$0.65; Nifty.....$0.75

### Egg—

Hartigan Nickel Plate, ₱ doz., $2.00; Silver Plate, $4.00.

## Packing—

*Asbestos Packing. Wick and Rope, any quantity.....18@20¢*

### Rubber—

*(Fair quality goods.)*
*Sheet, C. I.....11@12¢*
*Sheet, C. O. S.....11@12¢*
*Sheet, C. B. S.....12@13¢*
*Sheet, Pure Gum.....40@45¢*
*Sheet, Red.....40@50¢*
Jenkins' '96, ₱ lb. 80¢.....25

### Miscellaneous—

*American Packing....lb. 7@10 ¢*
*Cotton Packing.....lb.16@25 ¢*
*Italian Packing.....lb. 9@10¢*
*Jute.....lb. 4@4½¢*
*Russia Packing.....lb. 9@10¢*

### Pails, Water, Well, &c.—

See *Buckets.*

### Paint—

Dixon's Silica-Graphite, in 1 gal. pails and 5 gal. kegs, 25; packages of larger size.....20

### Pans— Dripping—

*Standard List.....75&10@80%*
Edwards, Royal Blue.....75

### Fry—

*Common Lipped:*

| *Nos.* | *1* | *2* | *3* | *4* | *5* |
|---|---|---|---|---|---|
| *Per doz.* | *$0.75* | *0.85* | *0.95* | *1.15* | *1.30* |

### Refrigerator, Galva.—

| *Inch* | *12* | *14* | *16* | *18* |
|---|---|---|---|---|
| *Per doz.* | *$1.75* | *2.25* | *2.80* | *3.15* |

### Paper—Building Paper

*Asbestos:* *lb.*
*Roll Board or Building Felt, 6 to 30 lb., per 100 sq. ft.. 2½¢*
*Roll Board or Building Felt, 3-32 and ⅛ in., 45 to 60 lb., per 100 sq. ft.....3½¢*
*Mill Board, Sheet, 40 x 70 in., 1-32 to ½ in.....3¢*
*Per roll*
*Rosin Sized Sheathing: 500 sq. ft. Light weight, 25 lbs. to roll, $3@3.25¢*
*Medium weight, 30 lbs. to roll, 3.50@3.75¢*
*Heavy weight, 40 lbs. to roll, 4.75@5¢*
*Black Water Proof Sheathing, 500 sq. ft., 1 ply, 65¢; 2 ply, 85¢; 3 ply, $1.10; 4 ply, $1.35.*
*Deafening Felt, 9, 6 and 4 lb., 81 ft. to lb., ton.....$14.50*
*Red Rope Roofing, 250 sq. ft. per roll.....$1.75*

### Tarred Paper—

*1 ply (roll 400 sq. ft.), ton $17.00@$18.00*
*2 ply, roll 108 sq. ft.....4.5¢*
*3 ply, roll 108 sq. ft.....8¢*
*Slater's Felt, roll 500 sq. ft.....3¢*

### Sand Paper and Cloth—

*Emt and Emery.....30&10%*
*Garnet Paper and Cloth....25%*

### Parers—Apple

Goodell Co.:
Family Boy State.....₱ doz. $15.00
Improved Boy State.....₱ doz. $20.00
New Lightning.....₱ doz. $7.00
Turn Table '98.....₱ doz. $6.00
White Mountain.....₱ doz. $5.00
Bonanza Improved.....each $7.50
Dandy.....each $10.00
Eureka Improved.....each $20.00
New Century.....each $20.00
Ranger.....each $30.00

.....₱ lb 80¢

Livingston Nail Co.:
Daisy ....℔ doz. $4.00
Little Star....℔ doz. $5.00
Rocking Table....℔ doz. $6.20
Reading Hardware Co.:
Advance ....℔ doz. $4.00
Baldwin ....℔ doz. $4.00
Reading 72....℔ doz. $3.25
Reading 78....℔ doz. $6.25

### Orange—
Goodell Co., Success....each $20.00

### Potato—
Saratoga ....℔ doz. $7.00
White Mountain....℔ doz. $6.00

### Picks and Mattocks—
*(List Jan., 1908.)*
*List* ....70&10@70&10&10%
Cronk's Handled Garden Mattock, ℔ doz., $3.00....33⅓%

### Pinking Irons—
See *Irons, Pinking.*

### Pins, Escutcheon—
*Brass* ....50@50&10%
*Iron, list Nov. 11, '85*..60@60&10%

### Pipe, Cast Iron Soil—
*Standard, 2-6 in*....70&10%
*Extra Heavy, 2-6 in*..75&10@80%
*Fittings, Standard and Heavy,* 80&10@85%

### Pipe, Merchant—

| | Consumers, Steel. Blk. % | Galv. % | Carloads, Iron. Blk. % | Galv. % |
|---|---|---|---|---|
| ⅛ and ¼ in. | 66 | 50 | 64 | .. |
| ⅜ in. | 68 | 54 | 66 | 52 |
| ½ in. | 70 | 58 | 68 | 56 |
| ¾ to 6 in. | 74 | 64 | 72 | 62 |
| 7 to 12 in. | 71 | 56 | 69 | 54 |

### Pipe, Vitrified Sewer—
*Carload lots.*
*Standard Pipe and Fittings, 3 to 24 in., f.o.b. factory:*
*First-class* ....87%
*Second-class* ....90%

### Pipe, Stove—

| | Per 100 joints. C. L. | L. C. L. |
|---|---|---|
| Edwards' Nested: | | |
| 5 in., Standard Blue | $6.25 | $7.25 |
| 6 in., Standard Blue | 6.75 | 7.75 |
| 7 in., Standard Blue | 7.75 | 8.75 |
| 5 in., Royal Blue | 7.00 | 8.00 |
| 6 in., Royal Blue | 7.50 | 8.50 |
| 7 in., Royal Blue | 8.50 | 9.50 |
| Wheeling Corrugating Co.'s Nested: | | |
| 5 in., Uniform Color | $5.90 | $6.90 |
| 6 in., Uniform Color | 6.40 | 7.40 |
| 7 in., Uniform Color | 7.40 | 8.40 |

### Planes and Plane Irons—
#### Wood Planes—
*Bench, first qual*....30@30&10%
*Bench, second qual*...40@40&10%
*Molding* ....25@25&10%
Chapin-Stephens Co.:
Bench, First Quality....30%
Bench, Second Quality....40%
Molding and Miscellaneous....25%
Toy and German....30%
Union ....60%

#### Iron Planes -
Chaplin's Iron Planes....60%
Union ....60%

#### Plane Irons—
*Wood Bench Plane Irons, list Dec. 12, '06*....25%
Buck Bros....30%
Chapin-Stephens Co....25%
Union ....50%
L. & I. J. White....20&5@25%

### Planters, Corn, Hand—
Kohler's Eclipse....℔ doz. $7.50

### Plates—
*Felloe* ....*lb*. 3¾@4¢
Avery Stamping Co.:
Standard Wrot. Steel Felloe Plates in 100 lb kegs, per 100 lb, ¾-in. to 1⅛-in., $4.00 net; 1¼-in. to 2-in., inclusive, $3.75 net.

### Steel Pipe Hook—
Never-Break ....75&10%

### Pliers and Nippers -
*Button Pliers*....75&5@75&10&5%
*Gas Burners, per doz., 5 in., $1.25 @$1.30; 6 in., $1.45, $1.50.*

| Gas pipe.. 7 | 8 | 10 | 12-in. |
|---|---|---|---|
| $2.00 | $2.25 | $2.75 | $3.50 |

Acme Nippers....50&5%
Cronk & Carrier Mfg. Co.:
American Button....80%
Improved Button....75&10%
Cronk's ....60%
No. 80 Linemen's....50%
Stub's Pattern....45%
Combination and others....33⅓%
Heller's Farriers' Nippers, Pincers and Tools....40&5@40&10&5%
P., S. & W. Tinners' Cutting Nippers ....40%
Swedish Side, End and Diagonal Cutting Pliers....50%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds....40%

### Plumbs and Levels—
Chapin-Stephens Co.:
Plumbs and Levels....30@30&10%
Chapin's Imp. Brass Cor..40@40&10%
Pocket Levels....30@30&10%
Extension Sights....30@30&10%
Machinists' Levels....40@40&10%
Disston's Plumbs and Levels....60&10%
Disston's Pocket Levels....60&10%
Stanley's Dulex....35%
Woods' Extension....33⅓%

### Points, Glaziers'—
*Bulk and 1-lb. papers*....*lb*. 9 ¢
*½-lb. papers*....*lb*. 9½¢
*¼-lb. papers*....*lb*. 10 ¢

### Police Goods—
*Manufacturers' Lists*...25@25&5%
Tower's ....25%

### Polish—Metal, Etc—
Ladd Co.:
Putzade Liquid, ℔ gro., ½ pts., $12.00; 1 pts., $20.00; 1 qts., $40.00; ℔ doz., ½ gals., $6.35; 1 gals., $12.00.
Prestoline Liquid, No. 1 (½ pt.), ℔ doz., $3.00; No. 2 (1 qu.), $9.00..40%
Prestoline Paste....40%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, ℔ doz. 50¢; ℔ gro. $4.50; ½ lb boxes, ℔ doz. $1.25; 1 lb boxes, ℔ doz. $2.25.
U. S. Liquid, 8 oz. cans, ℔ doz., $1.25.
Barkeepers' Friend Metal Polish, ℔ doz., $1.75.

### Stove—
Black Eagle Benzine Paste, 5 lb cans, ℔ lb 10¢
Black Eagle, Liquid, ½ pt. cans.. ℔ doz. 75¢
Black Jack Paste, ¾ lb cans, ℔ gr. $9.00
Black Kid Paste, 5 lb can...each, $0.65
Ladd's Black Beauty Liquid, per 100 tins....$6.75
Joseph Dixon, ℔ gr. $5.75....10%
Dixon's Plumbago....℔ lb 8¢
Fireside ....℔ gr. $2.50
Gem, ℔ gr. $4.50....10%
Japanese ....℔ gr. $3.50
Jet Black....℔ gr. $3.50
Peerless Iron Enamel, 10 oz. cans.. ℔ doz. $1.50

### Window Polish—
Benj. P. Forbes:
Glasbright, No. 2, gal pails, ℔ doz., $24.00; each, $2.50; 1 lb cans, each ....75¢
Glasbright Powder, bbls., ℔ lb..20¢

### Poppers, Corn—
*1 qt. Square..doz. $0.80; gro. $8.75*
*1 qt. Round..doz. $0.90; gro. $10.00*
*1½ qt. Square..doz. $1.20; gro. $12.00*
*2 qt. Square..doz. $1.50; gro. $15.00*

### Post Hole and Tree Augers and Diggers—
See also *Diggers, Post Hole, &c.*

### Posts, Steel—
Steel Fence Posts, each, 6 ft., 46¢; 6½ ft., 48¢; 7 ft., 50¢.
Steel Hitching Posts....each $1.30

### Potato Parers—
See *Parers, Potato.*

### Pots, Glue—
*Enameled* ....40%
*Tinned* ....30&10%

### Powder—
*In Canisters:*
*Duck, 1 lb*....*each* 45¢
*Fine Sporting, 1 lb*....*each* 75¢
*Rifle, ½-lb*....*each* 15¢
*Rifle, 1 lb*....*each* 25¢
*In Kegs:*
*12½-lb. kegs*....$3.50
*25 lb. keys*....$4.50
King's Semi-Smokeless:
Keg (25 lb bulk)....$6.50
Half Keg (12½ lb bulk)....$3.50
Quarter Keg (6¼ lb bulk)....$1.90
Case 24 (1 lb cans bulk)....$8.50
Half case (1 lb cans bulk)....$4.50

| King's Smokeless: | Shot Gun. | Rifle. |
|---|---|---|
| Keg (25 lb bulk) | $12.00 | $15.00 |
| Half Keg (12½ lb bulk).. | 6.25 | 7.75 |
| Quarter Keg (6¼ lb bulk) | 3.25 | 4.00 |
| Case 24 (1 lb cans bulk).. | 14.00 | 17.00 |
| Half case 12 (1 lb c. bk).. | 7.25 | 8.75 |

### Presses—
#### Fruit, Wine and Jelly
Enterprise Mfg. Co....20@25%

#### Seal Presses—
Morrill's No. 1, ℔ doz., $20.00....50%

### Pruning Hooks and Shears
See *Shears.*

### Pullers, Nail, Etc.—
Cyclops ....50%
Miller's Falls, No. 3, ℔ doz., $12.00.. 33⅓&10%
Morrill's No. 1, Nail Puller, ℔ doz $20.00 ....50%
Pearson No. 1, Cyclone Spike Puller, each $30.00....50%
The Scranton Co. Case Lots:
No. 2B (large)....$5.50
No. 3B (small)....$5.00
Smith & Hemenway Co.:
Diamond B....70%
Giant ....50%
Staple Pullers, Utica and Davison ....60%
Taylor Mfg. Co., Sampson Tack, ℔ doz....$0.40

### Pulleys, Single Wheel—

| Inch | 1½ | 1¾ | 2 | 3 |
|---|---|---|---|---|
| Awning or Tackle, doz | $0.30 | .45 | .60 | 1.05 |

| Hay Fork, Swivel or Solid Eye. doz., 4 in., $1.25; 5 in., $1.55 Inch | 2 | 2¼ | 2½ |
|---|---|---|---|
| Hot House, doz | $0.65 | .85 | 1.20 |
| Inch | 1¼ | 1½ | 1¾ | 2 |
| Screw, doz | $0.16 | .19 | .23 | .30 |
| Inch | 1¾ | 2 | 2¼ | 2½ |
| Side, doz | $0.25 | .40 | .55 | .60 |
| Inch | 1½ | 1¾ | 2 | 2½ |

### Sash Pulleys—
*Common Frame; Square or Round End, per doz., 1¾ and 2 in*....*17@20¢*

*Auger Morlise, no Face Plate, per doz., 1¾ and 2 in*....*20@21¢*
Acme, No. 35..1¾ in., 19¢; 2 in., 20½¢
American Pulley Co.:
Wrought Steel American Plain Axle ....50&10%
Wrought Steel, Eagle....17@20¢
Top Notch, Electrically Welded, Nos. 3 and 4....19¢
Common Sense....℔ doz. 20¢
Fox-All-Steel, Nos. 3 and 7, 2 in.... ℔ doz. 50%
Grand Rapids All Steel Noiseless..50%
Niagara, No. 25, 1¾ in., 19¢; 2 in. ....20½¢
No. 26 Troy..1¾ in., 14½¢; 2 in., 16½¢
Star, No. 26....1¾ in., 19¢; 2 in., 20½¢
Tackle Blocks—See Blocks.

### Pumps—
*Cistern* ....60%
*Pitcher Spout*....75&5@75&10%
*Wood Pumps, Tubing, &s*....50%
Barnes Dbl. Acting (low list)....45%
Barnes Pitcher Spout....80%
Contractors' Rubber Diaphragm, No. 2, B. & L. Block Co....$16.00
Daisy Spray Pump....℔ doz. $6.50
Flint & Walling's Fast Mail Hand (low list)....50&5%
Flint & Walling's Fast Mail (low list) ....50&5%
Flint & Walling's Tight Top Pitcher ....80%
National Specialty Mfg. Co., Measuring, Nos. 2, $6.00; 3, $5.50....30%
Myers' Pumps (low list)....
Myers' Power Pumps....
Myers' Spray Pumps....
} 50%

### Pump Leathers—
*Plunger and Valve Leathers—Per gro.:*

| No. | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| | $5.00 | 6.00 | 7.00 | 8.00 |

| Cup Leathers—Per 100: Inch | 2½ | 3 | 3½ | 4 |
|---|---|---|---|---|
| | $5.00 | 7.00 | 9.00 | 12.00 |

} 40%

### Punches—
*Saddlers' or Drive, good, doz*....50@75¢
*Spring, single tube, good quality* ....$1.75
*Revolving (4 tubes)*....*doz*. $3.50
Bemis & Call Co.'s Cast St'l Drive..50%
Morrill's Nos. 1AA, 1A, 1B, 1C, 1D, $15.00....50%
Hercules, 1 die, each $5.00....50%
Niagara Hollow Punches....40%
Niagara Solid Punches....55&10%
Tinners' Hollow, P., S. & W. Co..40%
Tinners' Solid, P., S. & W. Co., ℔ doz., $1.44....40&10%

## Rail—Barn Door, &c.—
*Sliding Door, Painted Iron,* 2½@2¾¢
*Sliding Door, Wrought Brass, 1⅛ in., lb., 36¢*....30%
Cronk's:
Double Braced Steel Rail..℔ ft. 2¾¢
O. N. T. Rail....2¾¢
Griffin's:
xxx, ℔ 100 ft., 1 x 3-16 in., $3.25; 1¼ x 3-16 in., $3.75.
Hinged Hanger, ℔ 100 ft., 1 x 3-16 in., $3.50; 1¼ x 3-16 in., $4.00.
Lane's:
Hinged Track, ℔ 100 ft....$3.45
O. N. T. ℔ 100 ft., 1 in., $3.12½; 1¼ in., $3.45; 1½ in., $4.00.
Standard, 1¼ in....℔ 100 ft. $4.00
Lawrence Bros.:
1 x 3-16 in., ℔ 100 ft., $7.50; 1¼ x 3-16 in., $8.75....55&7½%
Trolley, No. 301, ℔ ft....9¢
McKinney's:
Hinged Hanger Track, ℔ ft., 11¢. 60&5%
1 x 3-16 Track....55&7½%
Myers' Stayon Track....60&5%
Richards Mfg. Co.:
Common, 1 x 3-16 in., $3.00; 1¼ x 3-16, $3.25; 1¼ x 3-16, $3.50.
Special Hinged Hanger Rail..60&10%
Lag Screw Rail, No. 65....50%
Gauge Trolley Track, ℔ ft., No. 31, 9¢; No. 32, 14¢; No. 33, 20¢.
No. 50....60&10%
Nos. 61, $3.00; 62, $3.25; 63, $3.50; 64, $4.00; 45, $3.25; 46, $3.50; 49, No. 1, $3.25; 49, No. 2, $3.50.

### Rakes—
*NOTE.—Many goods are sold at net prices.*
Fort Madison Red Head Lawn....$3.25
Fort Madison Blue Head Lawn....$2.70
Cronk's:
Steel Garden: Champion, ℔ doz., 12-tooth, $3.75; 14-tooth, $4.00; 16-tooth, $4.25; Ideal, ℔ doz., 12-tooth, $3.00; 14-tooth, $3.30; 16-tooth, $3.60.
Victor, 12-tooth, $2.25; 14-tooth, $2.50; 16-tooth, $2.75.
Queen City Lawn, ℔ doz., 20 teeth, $2.85; 24, $3.00....net
Anticlog Lawn, ℔ doz....$4.00
Malleable Garden....70&10%
Ideal Steel Garden, ℔ doz., 12 teeth, $15.00; 14, $16.00; 16, $18.00....80%
Kohler's:
Jumbo Lawn, 36-tooth....℔ doz. $5.00
Lawn Queen, 20-tooth....℔ doz. $2.85
Lawn Queen, 24-tooth....℔ doz. $3.00
Paragon, 20-tooth....℔ doz. $2.65
Paragon, 24-tooth....℔ doz. $2.75
Steel Garden, 14-tooth....℔ doz. $2.40
Malleable Garden, 14-tooth, ℔ doz. $1.75@2.00

### Rasps, Horse—
Disston's ....75%
Heller Bros.'....70&5@70&10&5%
Liveright Bros.' Gold Medal..70&10@75%
McCaffrey's American Standard.... 60&10&5%
New Nicholson....70&10@75%
See also Files.

### Razors—
John Ewestrom Swedish....65%
Sharp Shaver....60%
Fox Razors, ℔ doz., No. 42, $24.00; No. 44, $20.00; No. 82, Platina, $36.00. } Dis. 50%

### Reels, Fishing—
Hendryx:
M 6, Q 6, A 6, B 6, M 9¼, M 16, Q 16, A 16, B 16, 4008, Rubber, Populo, Nickeled Populo....20%
Aluminum, German Silv., Bronze..25%
1240 N, 124 N....20%
3004 N, 06 N, 6 RM, G 9....25%
4 N, 6 PN, 24 N, 26 PN....20%
2904 P., 33⅓%; 2904 PN., 33⅓%; 0924 N., 33⅓%; 02084 N., 33⅓%; 002904 PN., 33⅓%; 802 N., 33⅓%.
986 PN, 2904 N, 974 PN....25%
5009 PN, 5009 N....20%
Competitor, 102 P, 102 PN, 202 P, 202 PN, 102 PR, 202 PR....20%
3M P, 304 PN, 00304 P, 00304 PN..33⅓%

### Registers—*List July 1, 1903.*
*Japanned, Electroplated and Bronzed* ....70%
*White Porcelain Enamel*..50&10%
*Solid Brass or Bronze Metal*..40%

### Revolvers—
*Single Action*....*95¢@$1.00*
*Double Action, except 44 cal.*..*$2.00*
*Double Action, 44 caliber*...*$2.00*
*Automatic* ....*$4.00*
*Hammerless* ....*$4.50*

### Riddles, Hardware Grade
*16 in*....*per doz*. $2.50@$2.75
*17 in*....*per doz*. $2.75@$3.00
*18 in*....*per doz*. $3.00@$3.25

### Rings and Ringers—
#### Bull Rings—

| | 1 | 1½ | 3 inch. |
|---|---|---|---|
| Steel | $0.70 | 0.75 | 0.80 doz. |
| Copper | $1.10 | 1.25 | 1.65 doz. |

#### Hog Rings and Ringers—
*Hill's Rings, gro. boxes*..$4.50@$4.50
*Hill's Ringers, Gray Iron, doz., 60@75¢*
*Hill's Ringers, Malleable Iron, doz*..80@95¢
*Blair's Rings..per gro*. $5.00@$5.50
*Blair's Ringers...per doz*. 75@90¢

### Rivets and Burrs—
*Copper* ....50@50&10%
*Carriage, Coopers', Tinners', &c.:*
*Black* ....70&10%
*Metallic Tinned*....70%

### Bifurcated and Tubular—
*Assorted in Boxes.*
*Bifurcated, per doz. boxes, pasteboard boxes, 50 count, 23@25¢; Tin boxes, 100 count, 29@32¢.*
*Tubular, per doz. boxes, 50 count, 29@32¢; 100 count, 51@58¢.*

### Rollers—
Cronk's Stay, No. 50....$1.00
Cronk's Brinkerhoff No. 55, $0.60; No. 56, $0.75; No. 60....$0.75
Lane's Stay....40%
Richards' Stay:
Handy Adj. and Reversible No. 53.75¢
O. K. Adj. and Reversible No. 58.50¢
Lag Screw, Nos. 55 and 57....50%
Underwriters', Nos. 59, 60....50%
Favorite, No. 54....60%

### Rope—
*Manila, 7-16 in. diam. and larger:*
*Pure* ....*lb*. 9¢
*Sisal, 7-16 in. diam. and larger:*
*Pure* ....*lb*. 7¢
*Sisal, Hay, Hide and Bale Ropes, Medium and Coarse:*
*Pure* ....*lb*. 7½@7¾¢
*Sisal, Tarred, Medium Lath Yarn:*
*Pure* ....*lb*. 6½@6¾¢
*Cotton Rope:*
*Best, ¼-in. and larger*..16½@18¢
*Medium, ¼-in. and larger*..15@16¢
*Common, ¼-in. and larger*..7½¢
*In coils, ½¢ advance.*
*Jute Rope:*
*Thread, No. 1, ¼-in. and up, lb.* ....5½¢
*Thread, No. 2, ¼-in. and up, lb.* ....5¢

### Wire Rope—
*Galvanized* ....37½&2½%
*Plain* ....45&2½%

### Ropes, Hammock-
Covert Mfg. Co.:
Jute, 35%; Sisal....20%

### Rules
*Boxwood* ....60@60&10%
*Ivory* ....35&10@35&10&5%
Chapin-Stephens Co.:
Boxwood ....60%
Flexifold ....40%
Ivory ....25@25&10%
Miscellaneous ....50@50&10%
Stephens' Combination....55%
Stationers' ....50@50&10%
Keuffel & Esser Co.:
Folding, Wood....35&10%
Folding, Steel....33⅓&10%
Lufkin's Steel....50&10%
Lufkin's Lumber....50&10%
Upson Nut Co.:
Boxwood ....60@60&10%
Ivory ....35&10@35&10&10%

## Sash Balances—
See *Balance, Sash.*

### Sash Locks—See *Locks, Sash.*

### Sash Weights—
See *Weights, Sash.*

### Sausage Stuffers or Fillers
See *Stuffers or Fillers, Sausage.*

### Saw Frames—
See *Frames, Saw.*

### Saw Sets—See *Sets, Saw.*

### Saw Tools—See *Tools, Saw.*

### Saws—
Atkins':
- Circular ..... 45%
- Band ..... 50@50&10%
- Butcher Saws ..... 50%
- Cross Cuts ..... 35%
- One-Man Cross Cut ..... 40%
- Narrow Cross Cut ..... 50%
- Hand, Rip and Panel ..... 35&5%
- Miter Box and Compass ..... 40%
- Mulay, Mill and Drag ..... 45%
- Wood Saws ..... 40&10%

Chapin-Stephens Co.:
- Turning Saws and Frames .30@30&10%

Diamond Saw & Stamping Works:
- Sterling Kitchen Saws ....30&10&10%

Disston's:
- Circular, Solid and Ins'ted Tooth .50%
- Band, 2 to 18 in. wide ..... 60%
- Band, ¼ to 1¾ ..... 60%
- Crosscuts ..... 45%
- Narrow Crosscuts ..... 50%
- Mulay Mill and Drag ..... 50%
- Framed Woodsaws ..... 25%
- Woodsaw Blades ..... 25%
- Woodsaw Rods, Tinned ..... 15%
- Hand Saws, Nos. 12, 99, 9, 16, d100, D8, 120, 76, 77, 8 ..... 25%
- Hand Saws, Nos. 7, 107, 107½, 3, 1, 0, 00, Combination ..... 30%
- Compass, Key Hole, &c ..... 25%
- Butcher Saws and Blades ..... 30%

C. E. Jennings & Co.'s:
- Back Saws ..... 16⅔%
- Butcher Saws ..... 25&7½%
- Compass and Key Hole Saws, 33⅓&7½%
- Framed Wood Saws ..... 25&7½%
- Hand Saws ..... 12½%
- Wood Saw Blades ..... 33⅓&7½%

Millers Falls:
- Butcher Saws ..... 15&10%
- Star Saw Blades ..... 15&10%

Massachusetts Saw Works:
- Victor Kitchen Saws ..... 40&10&50%
- Butcher Saws Blades ..... 35@40%

Peace & Richardson's Hand Saws .30%

Simonds':
- Circular Saws ..... 45%
- Crescent Ground Cross Cut Saws .30%
- One-Man Cross Cuts ..... 40&10%
- Gang Mill, Mulay and Drag Saws .45%
- Band Saws ..... 50%
- Back Saws ..... 25@25&7½%
- Butcher Saws ..... 35@35&7½%
- Hand Saws ..... 25@25&7½%
- Hand Saws, Bay State Brand ....45%
- Compass, Key Hole, &c ..25@25&7½%
- Wood Saws ..... 40&7½%

Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws ..... 50%

### Hack Saw Blades and Frames—
Atkins' Hack Saw Blades A A A ..25%

Disston's:
- Concave Blades ..... **25%**
- Keystone Blades ..... **35%**
- Hack Saw Frames ..... 30%

Simonds, 25%; The Best, 35%; Culley ..... 35%

C. E. Jennings & Co.'s:
- Hack Saw Frames, Nos. 175, 180 .... 40&7½%
- Hack Saws, Nos. 175, 180, complete, 40&7½%

Goodell's Hack Saw Blades ....40&10%

Griffin's Hack Saw Frames ..35&5&10%

Griffin's Hack Saw Blades ....35&5&10%

Star Hack Saws and Blades ....15&10%

Sterling Hack Saw Blades ..30&10&5%

Sterling Hack Saw Frames ..30&10&10%

Sterling Power Hack Saw Machines, each, No. 1, $25.00; No. 2, $30.00 ..10%

Victor Hack Saw Blades ..... 20%

Victor Hack Saw Frames ..... 40%

Whitaker Mfg. Co.:
- National Hand Blades, Hand Frames, Power Blades ..... 40%

### Scroll—
Barnes, No. 7, $15 ..... 25%

Barnes' Scroll Saw Blades ..... 40%

Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20 ..... 20%

Lester, complete, $10.00 ..... 15&10%

Rogers, complete, $3.50 and $4.00 .. 15&10%

### Scales—
*Union Platform, Plain .$2.10@2.20*

*Union Platform, Stpd .$2.20@2.30*

Chatillon's:
- Eureka ..... 25
- Favorite ..... 40
- Grocers' Trip Scales ..... 50

The Standard Portables ..... 40

The Standard R. R. and Wagon ..... 50&10%

### Scrapers—
***Box, 1 Handle .....doz. $1.85@2.10***

***Box, 2 Handle .....doz. $2.35@2.50***

***Ship...Light, $2.00; Heavy, $4.50***

Chapin-Stephens Co., Box ..30@30&10%

Richards Mfg. Co., Foot ..... 60%

### Screws—Bench and Hand
***Bench, Iron, doz., 1 in., $2.50@ 2.75; 1¼ in. $3.00@3.25; 1½ in. $3.50@3.75***

***Bench, Wood ..... 20@20&10%***

***Hand, Wood....70&10@70&10&10%***

Chapin-Stephens Co., Hand.... 70@70&10&2½%

### Coach, Lag and Hand Rail—
***Lag, Cone Point .80&10@80&10&5%***

***Coach, Gimlet Point ..80@80&10%***

***Hand Rail ..... 70&10@75%***

### Jack Screws—
***Standard List ..... 70&10@75%***

### Machine—
*Cut Tread, Iron, Brass or Bronze:*
- *Flat Head or Round Head, 50@50&10%*
- *Fillister Head .....40@40&10%*
- *Rolled Thread, F. H. or R. H., Iron ..... 75&10%*
- *F. H. or R. H., Brass, Nos. 8 to 14 ..... 65&10%*

### Set and Cap—
- *Set (Iron) .....75&10&7½%*
- *Set (Steel), net advance over Iron ..... 25%*
- *Sq. Hd. Cap .....70&10&7½%*
- *Hex. Hd. Cap .....70&10&7½%*
- *Rd. Hd. Cap .....50&7½%*
- *Fillister Hd. Cap .....60&7½%*

### Wood—
*List July 23, 1903.*
- *Flat Head, Iron.....87½&5@..%*
- *Round Head, Iron....85&5@..%*
- *Flat Head, Brass.....80&5@..%*
- *Round Head, Brass..77½&5@..%*
- *Flat Head, Bronze....75&5@..%*
- *Round Head, Bronze.72½&5@..%*
- *Drive Screws.....87½&5@..%*

### Scroll Saws—
See *Saws, Scroll.*

### Scythes—
| | Per doz. |
|---|---|
| *Plain Grass, Cutting Edge Polished* | *$6.25@$6.50* |
| *Clipper, Bronzed Web* | *$6.50@$6.75* |
| *Solid Steel, Web and Backs Polished* | *$7.00@$7.25* |
| *Bush, Weed and Bramble, Painted* | *$6.50@$6.75* |
| *Grain, Painted, Cutting Edge Polished* | *$8.25@$8.50* |
| *Clipper Grain, Bronze Web* | *$8.50@$8.75* |

### Seeders, Raisin—
Enterprise ..... 25@30%

### Sets—Awl and Tool—
Fray's Tool Handles, Nos. 1, $12; 2, $16; 3, $12 ..... 50%

Millers Falls Adj. Tool Handles, No. 1, $12; No. 4, $12; No. 5, $18 ..20&10%

### Garden Tool Sets—
Ft. Madison Three Plows, Hoe, Rake and Shovel..... ℔ doz. sets $9.00

### Sets, Nail—
*Octagon .....gro. $3.50@3.75*

Buck Bros. ..... 27½

Mayhew's ..... ℔ gro. $9.00

Snell's Corrugated, Cup Pt.....40&10%

Snell's Knurled, Cup Pt.....40&10%

Victor Knurled, Cup Pt....℔ gro. $7.50

### Rivet—
*Regular list .....75@75&10%*

### Saw—
Atkin's:
- Criterion ..... 40%
- Adjustable ..... 40%

Disston's Star, Monarch and Triumph ..... 30%

Morrill's No. 1 ..... $15.00
Nos. 3 and 4, Cross Cut....$20.60
No. 5, Mill ..... $30.00
Nos. 10, 11, 95 ..... $15.60
No. 1 Old Style ..... $10.00
Special ..... $16.25
} 50%

Giant Royal Cross Cut.....℔ doz. $7.50

Royal, Hand ..... ℔ doz. $4.50

Taintor Positive ..... ℔ doz. $6.75

### Shaving—
Fox Shaving Sets, No. 30 ..... ℔ doz., net, $24.00

Smith & Hemenway Co.'s ..... 75%

### Sharpeners, Knife—
Pike Mfg. Co.:
- Fast Cut Pocket Knife Hones, ℔ doz ..... $1.50
- Mounted Kitchen Sand Stone, ℔ doz ..... $1.50
- Natural Grit Carving Knife Hones, ℔ doz ..... $3.00
- Quick Cut Emery Carving Knife Hones, ℔ doz ..... $1.50
- Quick Edge Pocket Knife Hones, ℔ doz ..... $2.50

} 50%

### Skate—
Smith & Hemenway Co., Eureka ..50%

### Shaves, Spoke—
- *Iron .....doz. $1.25*
- *Wood .....doz. $2.00*

Bailey's (Stanley R. & L. Co.)..... 45

Chapin-Stephens Co.....30@30&10%

Goodell's, ℔ doz. $9.00..... 15&10%

### Shears—
| | 7 | 8 | 9 in |
|---|---|---|---|
| *Cast Iron* | | | |
| *Best* | $16.00 | 18.00 | 20.00 gro. |
| *Good* | $13.00 | 15.00 | 17.00 gro. |
| *Cheap* | $5.00 | 6.00 | 7.00 gro. |

*Straight Trimmers, &c.:*
- *Best quality Jap ..... 70&10&5%*
- *Best Quality Nickel...60&10&5%*

*Tailors' Shears .....40@40&10*

Acme Cast Shears ..... 40@40&5

Heinisch's Tailor's Shears ..... 5

National Cutlery Co.'s Nickel Plated 60&10; Japan Handles .... 5&10

Columbian Cutlery Co.:
- Sheep, 1900 list ..... 50&10&5
- Grass ..... 50&5
- Horse or Mule ..... 50&5

J. Wiss & Sons Co.:
- Best Quality Jap'd ..... 60&5
- Best Quality Nickeled.... 50&10
- Tailors' ..... 25

### Tinners' Snips—
*Steel Blades .....20&5@2½&10*

Acme Cast Snips ..... 40@45&5%

Forged Handles, Steel Blades, Berlin ..... 50%

Heinisch's Snips ..... 40%

Jennings & Griffin Mfg. Co.'s 6½ to 10 in ..... 33⅓&7½%

National Cutlery Co.'s Forged Steel .50%

Niagara Snips ..... 40%

P., S. & W. Forged Handles, 25%; W. R. W. ..... 50%

J. Wiss & Sons Co.:
- Wiss Forged Steel ..... 25%

### Pruning Shears—
Cronk's Hand Shears ..... 33⅓%

Cronk's Wood Handle Shears....33⅓%

Disston's Combined Pruning Hook and Saw, ℔ doz. $18.00 ..... 25%

Disston's Pruning Hook only, ℔ doz., $12.00 ..... 25%

J. T. Henry Mfg. Co.:
- Pruning Shears, all grades ..... 40%

P., S. & W. Co. ..... 40&10%

Columbian Cutlery Co.:
- Hedge, Wilcut Brand ..... 60&10%
- Lawn and Border, Wilcut Brand, 60&10%

### Sheaves—Sliding Door—
Reading ..... 40%

R. & E. list ..... 15%

### Sliding Shutter—
Reading list ..... 40%

R. & E. list ..... 15%

### Shells—Shells, Empty—
Brass Shells, Empty:
- Climax, 10 and 12 gauge ..... 60&5%
- Club, Rival, 65&5%; First Quality, 60&5%

Paper Shells, Empty:
- New Rapid, 10, 12, 16 and 20 gauge, 25&10%
- Climax, 10 and 12 gauge; Acme and Magic, 10, 12, 16 and 20 gauge; Ideal, 10, 12, 16 and 20 gauge; Leader grade ..... 25&5%
- Union, League, 10 and 12 gauge, Rival Grade ..... 25%
- New Climax, Defiance, 10, 12, 14, 16 and 20 gauge; Climax, 14, 16 and 20 gauge ..... 20%
- Challenge, Monarch, 10, 12, 16 and 20 gauge; League, Union, 14, 16 and 20 gauge; Repeater Grade..20%

### Shells, Loaded—
- *Loaded with Black Powder..40%*
- *Loaded with Smokeless Powder, medium grade .....40&5%*
- *Loaded with Smokeless Powder, high grade .....40&10&10%*

Union Metallic Cartridge Co.:
- New Club, Black Powders ..... 40%
- Nitro Club, Smokeless Powders, 40&5%
- Arrow, Smokeless Powders, 40&10&10%

Winchester:
- Smokeless Repeater Grade ..... 40&5%
- Smokeless Leader Grade...40&10&10%
- Black Powder ..... 40%

### Shingles, Metal—Per Sq.
Edwards Mfg. Co.:

| | Painted. | Galv. |
|---|---|---|
| 14 x 20 | $4.25 | $6.00 |
| 10 x 14 | 4.50 | 6.25 |
| 7 x 10 | 4.75 | 6.50 |

Wheeling Corrugating Co.:

| | | |
|---|---|---|
| Dixie, 14 x 20 in. | $4.05 | $5.05 |
| Dixie, 10 x 14 in. | 4.25 | 5.45 |
| Dixie, 7 x 10 in. | 5.25 | 6.70 |

### Shoes, Horse, Mule, &c.—
*F.o.b. Pittsburgh:*
- *Iron .....per keg. $4.10*
- *Steel .....per keg. $3.85*

Burden's, all sizes.....℔ keg $3.90

### Shot—
| | 25-lb. bag. |
|---|---|
| *Drop, up to B* | *$1.80* |
| *Drop, B and larger* | 2.05 |
| *Buck* | 2.05 |
| *Chilled* | 2.05 |
| *Dust* | 2.30 |

### Shovels and Spades—
*Association List, Nov. 15, 1902. 40%*

Avery Stamping Co. ..... 40%

### Snow Shovels—
*Long Handle .....$3.25@$3.50*

*Wood and Mall, D Handle, $3.75@$4.00*

### Sieves and Sifters—
*Hunter's Imitation, gro. ....$9.50*

*Hunter's Genuine, per gro..$12.00*

### Sifters, Ash—
Acme Ball Bearing Sales Co., Acme Automatic Ash Sifter, each, $5.25 ℔ doz. ..... $30.00

### Sieves, Seamless Metallic
*— Per dozen.*

| Mesh | 14 | 16 | 18 | 20 |
|---|---|---|---|---|
| *Iron Wire* | $1.05 | 1.05 | 1.10 | 1.20 |
| *Tinned Wire* | $1.15 | 1.15 | 1.20 | 1.30 |

### Sieves, Wooden Rim—
*Nested 10, 11 and 12 Inch*
- *Mesh 18, Nested....doz. $0.90@0.95*
- *Mesh 20, Nested....doz. $1.00@1.05*
- *Mesh 24, Nested ...doz. $1.30@1.40*

### Sinks, Cast Iron
*Painted Standard list:*
- *12 x 12 to 22 x 36 in ..... 60%*
- *20 x 24 to 24 x 50 in .... 50*
- *24 x 60 to 24 x 120 in .... 20*

Enameled Iron List ..... 60%

*NOTE.—There is not entire uniformity in lists used by jobbers.*

### Skeins, Wagon—
*Cast Iron .....70@75&10%*

*Steel .....40@45%*

### Slates, School—
*Eureka, Unexcelled Noiseless.. 60&7 tens.*

***Victor A, Noiseless .60&4 tens &5%***

### Slaw Cutters—See *Cutters.*

### Snaps, Harness—
*German .....40@40&10%*

Covert Mfg. Co.:
- Derby, 25%; Yankee, 30&2%; Yankee Roller, 30&2%
- High Grade, 40%; Trojan ..... 40%
- Jockey ..... 25%

### Snaths—
*Scythe .....50&10@60%*

### Snips, Tinners—See *Shears.*

### Spoons and Forks—
#### Silver Plated—
- *Good Quality.....50&10@60&5%*
- *Cheap .....60@60&10%*

International Silver Co:
- 1847 Rogers Bros. ..... 40&10
- Rogers & Bro., William Rogers' Eagle Brand ..... 50&10%
- Anchor, Rogers Brand ..... 60%
- Wm. Rogers & Son ..... 60&10%

#### Miscellaneous
*German Silver.....60@60&5%*

#### Tinned Iron—
- *Teas .....per gro. 50@55¢*
- *Tables .....per gro. $0.90@$1.00*

Atlas Mfg. Co.:
- Tea Spoons, ℔ gro. ..... 50¢@55¢
- Table Spoons, ℔ gro. ..... $0.90@$1.00

### Springs—Door—
Bardsley's Spring and Check ..... 40%

Chicago (Coil) ..... 40&10%

Gem (Coil) ..... 20%

Pullman Door and Gate ..... 10%

Reliance (Coil) ..... 40&10%

Star (Coil) ..... 35%

Torrey's Rod, 39 in. ..... ℔ doz. $1.00

### Carriage, Wagon, &c.—
| | Per 100 lb. |
|---|---|
| *1¼ in. and Wider:* | |
| *Black* | *$4.75@$5.00* |
| *Half Bright* | *$4.75@$5.00* |
| *Bright* | *$5.25@$5.50* |

*Painted Seat Springs:*
- *1½ x 2 x 26....per pair .45@47¢*
- *1½ x 3 x 28....per pair .68@71¢*

### Sprinklers, Lawn—
American Foundry & Mfg. Co.:
- Cactus, 65%; Japanese, 70%; National, ℔ doz. ..... $12.00

Enterprise ..... 25@30%

Philadelphia No. 1, ℔ doz. $12; No. 2, $15; No. 3, $20 ..... 30%

### Squares—
*Nickel plated.. } List Jan. 5, 1900.*
*Steel and Iron. } 80@80&5%*

*Rosewood Hdl. Try Square and T-Bevels .....60&10&10@70%*

*Iron Hdl. Try Squares and T-Bevels .....40&10@40&10&10%*

Disston's Try Squares and Bevels, Rosewood Handle, 60 & 10%; Iron Stock and Bevel..... 15%

### Squeezers, Lemon
*Wood, Porcelain Lined:*
- *Cheap .....doz. $1.00*
- *Good Grade. .....doz. $1.25*

*Tinned Iron.....doz. $0.75@1.00*

*Iron, Porcelain Lined...doz. $1.75*

Victor, ℔ gro. ..... $9.00

### Staples—
*Barbed Blind.....85&5@85&10%*

*Electricians' .....80&10&10@85%*

*Fence Staples, Polished, $2.05:*
- *Galvanized .....$2.35*

*Poultry Netting Staples.....*
*per lb. 3¼@3½¢*

### Steels, Butchers'—
Dick's ..... 30%

Foster Bros.' ..... 30

### Steelyards—....30@30&10%

### Stocks and Dies—
*Blacksmiths' .....50@50&10%*

Curtis Reversible Ratchet Die Stock..25

Derby Screw Plates ..... 25

Green River ..... 25

Lightning Screw Plate ..... 25

Little Giant ..... 25

Reece's New Screw Plate ..... 25%

### Stoners, Cherry—
Enterprise ..... 25@30

### Stones, Axe—
Pike Mfg. Co., Axe Stone and kinds ..... 50¢

### Glass Cutters' Stones—
Pike Mfg. Co., Glass Cutters' Stones and Supplies ..... 10

### Stones, Oil, &c.—
Pike Mfg. Co., 1907 list: ℔ lb.
- Arkansas St., No. 1, 5 to 8 in. ..... $1.50
- Arkansas St., No. 1, 5 to 8 in. ..... $1.50
- Arkansas Slips No. 1 ..... $1.00
- Lily White Washita, 4 to 8 in. 60¢
- Rose Red Washita, 4 to 8 in. 60¢
- Washita St., Extra, 4 to 8 in. 50¢
- Washita St., No. 1, 4 to 8 in. 40¢
- Washita St., No. 2, 4 to 8 in. 30¢
- Lily White Slips ..... 90¢
- Rose Red Slips ..... 90¢
- Washita Slips, Extra ..... 80¢
- Washita Slips, No. 1 ..... 70¢
- Washita Slips, No. 2 ..... 40¢

} 33⅓%

India Oil Stones, entire lists ..33⅓%

Quickcut Emery and Corundum Oil Stone, Double Grit ..... 40%

Quickcut Emery and Corundum Axe Stone, Double Grit ..... 33⅓%

Quickcut Emery Rubbing Bricks ..40%

Hindostan No. 1, R'g'lar ℔ lb. 8¢

Hindostan No. 1, Small, ℔ lb. 10¢

Turkey Oil Stones, Extra 5 to 8 in. ..... ℔ lb. 80¢

} 33⅓%

### Scythe Stones—

Pike Mfg. Co., 1907 list:
Black Diamond S. S.. ₱ gro. $12.00
Lamoille S. S..... ₱ gro. $11.00
White Mountain S. S. ₱ gro. $9.50
Green Mountain S. S. ₱ gro. $7.00
Extra Indian Pond S.S. ₱ gro. $8.00
No. 1 Indian Pond S.S. ₱ gro. $7.50
No. 2 Indian Pond S.S. ₱ gro. $5.00
Leader Red End S. S. ₱ gro. $5.00
Quick Cut Emery.... ₱ gro. $10.00
Pure Corundum..... ₱ gro. $18.00
Crescent ..... $7.00
Emery Scythe Rifles, 2 Coat. $8.80
Emery Scythe Rifles, 3 Coat. $11.00
Emery Scythe Rifles, 4 Coat. $13.20
Balance of 1907 list 33⅓%
Lectro (Artificial), ₱ gro., $12.00. $12.00 ..... 33⅓
Lightning (Artificial), ₱ gro., $18.00 ..... 33⅓%

### Stoppers, Bottle—

Victor Bottle Stoppers..... ₱ gro. $9.00

### Stops— Bench—

Millers Falls..... 15&10%
Morrill's, ₱ doz., No. 1, $10.00.... 50%
Morrill's, No. 2, $12.50..... 50%

### Door—

Chapin-Stephens Co..... 50@50&10%

### Plane—

Chapin-Stevens Co..... 20%

### Straps— Box—

Acme Embossed, case lots.. 20&10&10%
Cary's Universal, case lots... 20&10&10%

### Stretchers, Carpet—

*Cast Iron, Steel Points..doz. 55¢*
*All Steel Socket...doz. $2.00@2.25*
Excelsior Stretcher and Tack Hammer Combined, ₱ doz., $6.00.... 20%

### Stuffers, Sausage—

Enterprise Mfg. Co., Stuffers and Lard Presses..... 25@25&7½%
National Specialty Co., list Jan. 1, 1902 ..... 30&5%
P., S. & W. Co..... 40&10&5%

### Sweepers, Carpet—

Per doz.—
Bissell Carpet Sweeper Co.:
Cyco Bearing Superba, $36.00; Triumph, $33.00; Parlor Queen, $30.00; Elite, $29.00; Boudoir, $27.00; American Queen, $26.00; Ideal, $25.00; Gold Medal, $24.00; Primier, $24.00; Prize, $24.00; Welcome, $24.00; Grand Rapids, Nickel, $21.00; Japan, $22.00; Crystal, $36.00; Grand, $36.00; Parlor Grand, $48.00; Club, $54.00; Hall, $60.00; Standard Nickel, $22.00; Standard Japan, $20.00; Crown Jewel, Nickel, $21.00; Crown Jewel, Japan, $19.00; Junior, Nickel, $22.00; Junior, Japan, $20.00.

*NOTE.—Rebates: 50c per dozen on three dozen lots: $1 per dozen on five-dozen lots; $2 per dozen on ten dozen lots*

## Tacks, Finishing Nails, &c.

*American Carpet Tacks...90&40%*
*American Cut Tacks.....90&40%*
*Swedes' Cut Tacks.....90&40%*
*Swedes' Upholsterers'....90&50%*
*Gimp Tacks.....90&50%*
*Lace Tacks.....90&50%*
*Trimmers' Tacks.....90&40%*
*Looking Glass Tacks.....60%*
*Bill Posters' and Railroad Tacks, 90&50&10%*
*Hungarian Nails.....80&20%*
*Finishing Nails.....70%*
*Trunk and Clout Nails...80&10%*

*NOTE.—The above prices are for Straight Weights.*

### Miscellaneous—

*Double Pointed Tacks, 90&6 tens@—%*
Se also Nails, Wire.

### Tanks, Oil and Gasoline—

| Wilson & Friend Co.: Gal. | Gasoline | Oil |
|---|---|---|
| 30 | $2.75 | $3.00 |
| 60 | $3.50 | $4.00 |
| 110 | $5.00 | $5.75 |

### Tapes, Measuring—

*American Asses' Skin....50@—%*
*Patent Leather.....25@30@5%*
*Steel .....33⅓@5%*
*Chesterman's .....25@25@5%*
Keuffel & Esser Co.:
Favorite, Ass Skin..... 10&10@50%
Favorite, Duck and Leather..... 25&5@25&10%
Metallic and Steel, lower list, 35@35&5; Pocket, 35@35&5.
Lufkins:
Asses' Skin.....40&10@50%
Metallic .....30@30&5%
Patent Bend, Leather...25&5@25&10%
Pocket .....10@10&5%
Steel .....33⅓@35%
Wichusch & Hilger:
Chesterman's Metallic, No. 34L, etc. .....25%
Chesterman's Steel, No. 1038L, etc. .....35%

### Teeth, Harrow—

*Steel Harrow Teeth, plain or headed, ⅝-inch and larger, per 100 lb.....$2.55@$2.80*

### Thermometers—

*Tin Case, Cabinet, Flange, Dairy, &c.....30@35%*

### Ties, Bale—Steel Wire—

*Single Loop.....82½&10%*
*Monitor, Cross Head, &c..70&2½%*

### Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

### Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

### Tire Benders, Upsetters, &c.

See *Benders and Upsetters, Tire.*

### Tools—Coopers'—

L. & I. J. White.....20@20&5%

### Haying—

Myers' Hay Tools.....50%

### Ice Tools—

Gifford-Wood Co.....15%

### Miniature—

Smith & Hemenway Co.'s, Davidson, ₱ doz., Nickel Plated, $1.50; Gold Plated.....$2.00

### Saw—

Atkins' Cross Cut Saw Tools....35&5%
Simond's Improved.....33⅓%
Simonds' Crescent.....30%

### Ship—

L. & I. J. White.....25%

### Torches—

Hammers, Engine, ₱ doz.....$4.50

### Transom Lifters—

See *Lifters, Transom.*

### Traps—Fly—

*Balloon, Globe or Acme, doz., $1.15@$1.25; gro....$11.50@12.00*
*Harper, Champion or Paragon, doz., $1.25@1.40; gro.$13.00@13.50*

### Game—

*Imitation Oneida.....75@10%*
Newhouse .....50&5%
Hawley & Norton.....65&10%
Victor .....75@75&10%
Oneida Community Jump.....70&5%
Stop Thief.....60%
Tree Trap.....60%
Hector .....75@75&10%

### Mouse and Rat—

*Mouse, Wood, Choker, doz. holes, 12¢*
*Mouse, Round or Square Wire, doz. 85@90¢*
Marty French Rat and Mouse Traps (Genuine), ₱ doz.:

| | Crate lots. | Small lots. |
|---|---|---|
| No. 1, Rat..... | $11.50 | $14.50 |
| No. 3, Rat..... | $5.75 | $6.50 |
| No. 3½, Rat..... | $4.70 | $5.25 |
| No. 5, Mouse..... | $2.25 | $3.00 |

Animal Trap Co.:
Out o' Sight, Mouse, ₱ doz.....$0.60
Out o' Sight, Rat, ₱ doz..... 1.20
Easy Set, Mouse, ₱ doz..... .35
Easy Set, Rat, ₱ doz..... .85
Out o' Sight Chockers, ₱ doz. holes ..... .12
Out o' Sight, Tin, 5-hole, ₱ doz. traps ..... .75

### Trowels—

Disston Brick and Pointing.....25%
Disston Plastering.....20%
Disston "Standard Brand" and Garden Trowels.....30%
Kohler's Steel Garden Trowels, ₱ gro., 5 in., $4.80; 6 in., $6.00.
Never-Break, Forged Steel Garden Trowels, in bulk, net ₱ gro. $5.50
In 1 doz. boxes..... ₱ doz. $6.00
Woodrough & McParlin, Plastering.....25%

### Trucks, Warehouse, &c.—

B. & L. Block Co.:
New York Pattern.....50&10%
Western Pattern.....60&10%
Handy Trucks..... ₱ doz. $16.00
Grocery ..... ₱ doz $15.00
McKinney Trucks.....each, net $10.00
Model Stove Trucks..... ₱ doz $18.50

### Tubs, Wash—

*M'f'gr's list, price per gross.*

| | No. 0 | 1 | 2 | 3 | |
|---|---|---|---|---|---|
| *Galvanized* | $67 | $79 | $89 | $99 | 10&7½&5&5% |

### Twine, Miscellaneous—

*Flax Twine:*
*No. 9, ¼ and ½-lb. Balls .21@23¢*
*No. 12, ¼ and ½-lb. Balls .19@21¢*
*No. 18, ¼ and ½-lb. Balls .16@18¢*
*No. 24, ¼ and ½-lb. Balls. 15½@17½¢*
*No. 36, ¼ and ½-lb. Balls .15@17¢*
*Chalk Line, Cotton ½-lb. Balls .....24@29¢*
*Cotton Mops, 6, 9, 12 and 15 lb to doz.....8½@19¢*
*Cotton Wrapping, 5 Balls to lb according to quality..13½@19¢*
*American 2 Ply Hemp, ½-lb. Balls.....12½@15¢*
*American 3-Ply Hemp, 1-lb Balls .....13½@16¢*
*India, 2-Ply Hemp, ½-lb. Balls, Balls (Spring Twine)...7½@9¢*
*India 3-Ply Hemp, 1-lb. Balls 7½@9¢*
*India 2-Ply Hemp, 1½-lb. Balls, 7@8½¢*
*2, 3, 4 and 5-Ply Jute, 1¼-lb. Balls .....9@11¢*
*Mason Line, Linen, ½-lb. Bls. 47¢*
*No. 264 Mattress, ¼ and ½ lb. Balls, according to quality. 30@60¢*
*Wool, 3 to 6 ply....B 6¢; A 7½¢*

## Vises—

*Solid Box. .....50&5@50&10&5%*

### Parallel—

Athol Machine Co.:
Simpson's Adjustable.....40%
Standard .....40%
Amateur .....25%
Columbian Hdw. Co.. 40&5%:
Slide .....65%
Fisher & Norris Double Screw, net, each, Nos. 2, $10.50; 3, $16.00; 4, $20.50; 5, $27.00; 6, $32.00.
Fulton Mach. & Vise Co.:
F. & R. Double Swivel Machinists' .....40%
Star, Solid Jaw, Machinists'.....40%
Hollands':
Machinists' .....40@40&5%
Keystone .....65&5@70%
Lewis Tool Co.:
Adjustable Jaw.....30%
Monarch, 50%; Solid Jaw.....50%
Massey Vise Co.:
Clincher .....40%
Parallel Bar.....15%
Perfect, 15%; Lightning Grip.....15%
Merrill's .....25%
Millers Falls Oval Slide Pattern.60&10%
Parker's:
Victor, 20@25%; Regulars....20@25%
Vulcan's .....40@15%
Combination Pipe.....55@60%
Prentiss .....20@25%
Rock Island.....25%
Snedikers X. L.....33⅓%
Stephens' .....33⅓%

### Saw Filers

Disston's D 3 Clamp and Guide, ₱ doz., $24.00, 30%; Clamps.....30%
Perfection Saw Clamps, ₱ doz....$4.50
Reading .....60%

### Wood Workers—

Fulton Mach. & Vise Co.:
F. & R. Double Swivel Coachman's .....40%
Star Solid Jaw Woodworkers'....60%
Massey Vise Co.:
Lightning Grip, 15%; Perfect....15%
Wyman & Gordon's Quick Action, 6 in., $6.00; 9 in., $7.00; 14 in., $8.00.

### Miscellaneous—

Fulton Machine & Vise Co., Combination Pipe.....70%
Holland's Combination Pipe..60@60&5%
Massey's Quick Action Pipe.....40%
Parker's Combination Pipe:
87 Series, 60%; 187 Series, 60&5%; No. 870, 40%.
Rock Island Pipe.....25%

## Wads—*Price per M.*

*B. E., 11 up.....60¢*
*B. E., 9 and 10.....70¢*
*B. E., 8.....80¢*
*B. E., 7.....80¢*
*P. E., 11 up.....$1.00*
*P. E., 9 and 10..... 1.25*
*P. E., 8..... 1.50*
*P. E., 7..... 1.50*
*Dis. 15%*
*Ely's B. E., 11 and larger.$1.70@1.75*
*Ely's P. E., 12 to 20....$3.00@3.25*

### Ware, Hollow—

### Cast Iron, Hollow—

*Stove Hollow Ware:*
*Enameled .....45&10%*
*Ground .....50&5%*
*Plain or Unground.....60%*
*Country Hollow Ware, per 100 lbs .....$2.75@$3.00*
*White Enameled Ware:*
*Muslin Kettles.....65&10%*
*Covered Wares:*
*Tinned and Turned.....35&10%*
*Enameled .....45&10%*
See also *Pots, Glue.*

### Enameled—

Agate Nickel Steel Ware.....33⅓%
El-an-ge .....60&10%
Iron Clad Ware.....70&10%
Lava and Volcanic, Enameled..40&10%

### Tea Kettles—

*Galvanized Tea Kettles:*

| *Inch* | 6 | 7 | 8 | 9 |
|---|---|---|---|---|
| *Each* | 45¢ | 50¢ | 55¢ | 65¢ |

### Steel Hollow Ware—

Avery Stamping Co.:
Never-Break Spiders and Griddles .....65&10%
Steel Kettles, Maslins Scotch Bowls, Tin'd.....60%
Steel Stew Pans, Stew Pots, etc., Porcelained .....50%
Cleveland Stamping & Tool Co.:
Solid Steel Spiders and Griddles .....65&5%
Solid Steel Kettles.....60&5%

### Warmers, Foot—

Pike Mfg. Co., Soapstone....40@40&10%

### Washboards—

| No. | ₱ doz. |
|---|---|
| 800—Brass King, Single Surface, Open Back..... | $2.80 |
| 862—White Hen, Spiral Grimp Glass ..... | $3.35 |
| 964—Royal Blue Enamel, Single Surface, Ventilated Back..... | $3.35 |
| 172—Our Best, Single Zinc, Soap Drainer ..... | $3.35 |
| 722—Soap Saver, Single Zinc, Iron Top ..... | $3.35 |
| 100—Northern Queen, Single Zinc, Perforated, Open Back..... | $3.00 |
| 134 Universal, Single Zinc, Extra Family Size Ventilated Back.... | $2.80 |
| 760—Banner Globe, Single Zinc, Ventilated Back..... | $2.25 |
| 57 Peerless, Double Zinc, Spring Protector ..... | $3.70 |
| 56—Red Cross, Double Zinc, Swing Protector ..... | $3 60 |
| 17 North Star, Solid Zinc, Swing Protector ..... | $3.60 |
| 797—Jewel, Single Zinc, Pail Size. | $1.25 |

### Washers—Leather, Axle—

*Solid .....90@90&10%*
*Patent .....90@90&5%*
*Coil: ⅞ 1 1¼ 1¼ inch. 9¢ 10¢ 11¢ 14¢ per box.*

### Iron or Steel—

*Size bolt.... 5/16 ⅜ ½ ⅝ ¾*
*Washers....$4.65 3.75 2.45 2.25 2.05*
*The above prices are based on $6.75 off list.*
*In lots less than one keg add ½¢ per lb.; 5-lb. boxes add ½¢ to list.*

Avery Stamping Co.:
Standard, in 200 lb kegs, $6.00 ₱ 100 lb. disct.; in 100 lb kegs, add 10¢ net ₱ 100 lb; in 5 or 10 lb boxes, add 50¢ net ₱ 100 lb; in 1 lb boxes, add $1.00 net ₱ 100 lb.

### Cast Washers—

*Over ½-inch, barrel lots, per lb. 1½@1¾¢*

### Wedges—

*Oil Finish.....lb., 2¼@2¾¢*

### Weights—Hitching—

Covert Mfg. Co.....30&2%

### Sash—

*Per net ton, f.o.b. factory:*
*Eastern District.....$20.00@—*
*Western and Central Districts .....$19.00@$21.00*

### Wheels, Corundum and Emery—

Pike Mfg. Co., Corundum, 65%; Emery .....75%

### Well—

*8-in., $2.00; 10-in., $2.30; 12-in., $3.00; 14-in., $4.45.*

### Wire and Wire Goods—

*Bright and Annealed:*
*6 to 9.....72&10&7½%*
*10 to 18.....72½&10&10%*
*19 to 26.....75&10&10&2½%*
*27 to 36.....77½&7½%*
*Galvanized:*
*6 to 9.....72½&10%*
*10 to 14.....72½&10&5%*
*15 to 16.....72½&10&5%*
*17 to 18.....72½%*
*19 to 26.....70&5&2½%*
*27 to 36.....65&10&10%*
*Coppered:*
*6 to 9.....65&10&10%*
*10 to 14.....70&10&5%*
*15 to 18.....65&10&10&10%*
*19 to 26.....70&5&2½%*
*27 to 36.....72½&10&2½%*
*Tinned:*
*6 to 18.....67&10&10%*
*Brass .....15½¢ lb., base*
*Copper .....14¾¢ lb., base*
*Cast Steel Wire.....50%*

### Spooled Wire—

*Annealed and Tinned.75@75&10%*
*Brass and Copper....70@70&10%*
*Retailers' Assortments, per box, $1.90@$2.10*
Wire Clothes Line. See Lines.
Wire Picture Cord, see Cord.

### Bright Wire Goods—

*Steel Wire Goods.90&40@90&40&10%*
*Brass Wire Goods, 90&40@90&40&10%*
*Brass Cup and Shoulder Hooks, 85&10%*

### Wire Cloth and Netting—

*Galvanized Poultry Netting, 80&2½@80&7½%*
*Painted Screen Cloth, 100 ft., $1.35*
*Standard Galv. Hardware Grade: 100 ft. rolls, 24 to 48 in. wide, Per 100 sq. ft.*
*Nos. 2, 2½ and 3 Mesh....$2.75*
*Nos. 4 and 5 Mesh.....$3.00*
*No. 6 Mesh.....$3.25*
*Nos. 7 and 8 Mesh.....$3.75*

### Wire, Barb—See *Trade Report*

### Wrenches—

*Agricultural, 80&10&5@80&10&10%*
*Alligator or Crocodile..70&10@75%*
*Baxter Pattern S Wrenches, 70&5@70&10%*
*Drop Forged S.....45@45&5%*
Acme .....60&10%
Alligator Pattern, 70%; Bull Dog..70%
Bemis & Call's:
Adjustable S, 40&5%; Adjustable S Pipe, 40&5%; Briggs Pattern, 40%; Combination Bright, 50%.
Steel Handle Nut.....50&5%
Combination Black.....50&5%
Merrick Pattern.....50&5%
Boardman's .....40%
Coes' Genuine Knife Hdl...40&10&5&5%
Coes' Genuine Steel Hdl...40&10&5&5%
Coes' Genuine Key Model..40&10&5&5%
Coes' Genuine Hammer Handle..... 40&10&5&5%
Coes' "Mechanics'"...40&10&10&5&5%
Donohue's Engineer.....40&10%
Eagle .....70%
Gem Pocket.....30%
Hercules .....70%
W. & B. Machinist:
Case lots.....50&10%
Less than case lots.....50%
W. & B. Railroad Special:
Case lots.....50%
Less than case lots.....40&10&5%
Solid Handles, P., S. & W..50&10%; full cases.....50&10&5%
Standard Nipple Mfg. Co.:
Duplex Chain.....50%
Uwanta Wrench Co.:
Uwanta Special, Iron Handle.... 40&10&5%
Other Wrenches.....50%
Vulcan and Agrippa Chain.....50%
Whitaker Machinists'.....50&10%
Wizard Adjustable Ratchet.....50%

### Fruit Jar—

Benj. P. Forbes, Triumph, ₱ gro.. $7.50; per doz.....$0.90

### Wrought Goods—

*Staples, Hooks, &c., list March 17, '92.....90@—%*

## Zinc— (*Cask lots at mill.*)

*Sheet.....per 100 lb., $7.00*

# THE IRON AGE

New York, Thursday, October 29, 1908.

## The Flather 30-in. Vertical Turret Machine.

An innovation in the line of machinery built by the E. J. Flather Mfg. Company, Nashua, N. H., and a machine embodying features original to its kind, is a 30-in. vertical turret machine which incorporates in a boring mill the turning and threading functions of an engine lathe. Especially notable is the vertical adjustment of the cross rail, which greatly extends the range of work that can be handled. A screw feed for the turret replaces the usual rack and pinion mechanism. The chuck spindle bearing has interesting details. The machine is fitted with a gear box giving 12 changes of feed, or screw pitch for both longitudinal and transverse travel of the turret, and all feeds are reversible. Through back gears and a two-speed countershaft 16 changes of table speed are obtained, and it is also designed to obtain these speeds with change speed box from a single pulley or a variable speed motor. The machine is powerfully constructed, being designed to stand up to the heaviest work. The base and column are one casting, the inside of which is ribbed and trussed. Steel and phosphor-bronze gears are used where required, and all are incased and well lubricated.

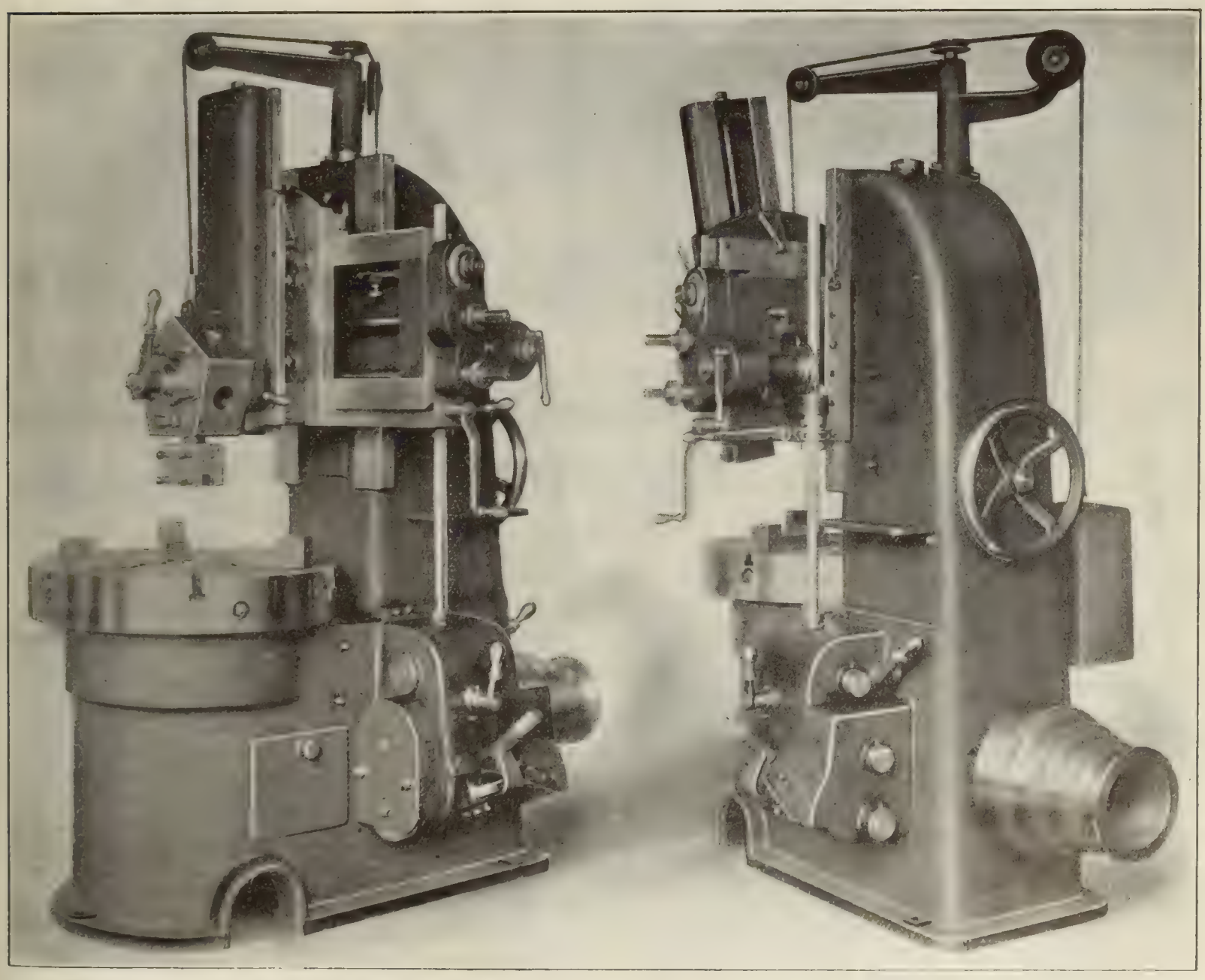


Fig. 1.—Two Views of the New 30-In. Vertical Turret Machine Built by the E. J. Flather Mfg. Company, Nashua, N. H.

General views of the machine are given in Fig. 1 and Figs. 2 and 3 show mechanical details. The power is transmitted from the four-step pulley on the shaft *a* through planed bevel gears to the vertical shaft *b*, and through the spur gear *c* to the spindle *d*. The eight pulley speeds from the cone itself and the two-speed countershaft are doubled by back gearing. For the direct drive the clutch *g* engages the gear *f*, and for the back gear drive the clutch *g* is disengaged by the same movement that slides the gears on the quill into mesh with gears *e* and *f*. The speeds range from 4 to 25 rev. per min. through the back gears and from 29 to 164 direct. The chuck spindle has a large angular thrust bearing, and the side strains are taken by a vertical taper bushing scraped to a bearing the full length, while ample provision is made for taking up wear of the spindle and for lubrication.

The change feed mechanism is driven by the gear *h*, Fig. 2, and consists of a cone of six gears and a sliding pinion. The driving pinion is cut the entire length of the cone. The six feeds correspond to 7, 8, 9, 10, 11½ and 12 to the inch, and are tripled by a double clutch located at the end of the cross rail. These are for both horizontal and vertical feeds. Provision is made for using change gears on the side of the gear box, so that any unusual feed or pitch may be had

The turret slide, details of which are given in Fig. 3, is mounted on a swivel saddle attached to the cross slide by a central stud. It is raised and lowered by a quadruple thread screw *i* and nut connected with the elevating shaft by bevel gears *j*. The feed of the turret is controlled by an adjustment on the end of the cross rail, providing an automatic trip and also acting as a vertical stop gauge for use in connection with a graduated dial.

All stops are within the cross rail on what is known as the trip rod. At the end of this rod is the index dial, graduated to read fractions of an inch. On the back of the dial is a very fine tooth clutch, which engages the trip rod. The rotating of the disk, to give the desired

depth at which the down feed shall stop, causes a dog to come into position to release at the proper moment the feed clutch mechanism shown on the vertical feed rod in Fig. 1. Fixed automatic stops are placed at both ends of the cross slide, which automatically trip the feed when the adjustable stops are not set.

The vertical travel of the cross rail is, as already stated, an important feature and unusual in this class of machine. The vertical adjustment is 17½ in., which facilitates operations on work of different hights, at the same time giving rigid support for the turret. The rail is raised and lowered by a hand wheel, through a screw having a ball bearing thrust. The maximum distance under the cross rail is 26 in. and the minimum 8½ in., and the maximum distance under the turret head is 28½ in. The vertical travel of the turret slide is 17 in. The maximum horizontal travel of the cross slide is 23 in., and the swing of the machine is 32 in., the table being 30 in. in diameter.

The turret is pentagonal, 10 in. in diameter, and the tools are clamped in place by hardened steel set screws and bushing nuts or side binders when preferred. The diameter of the holes in the turret in which keyways are cut is 2¼ in. The lock key, of hardened steel, is tapered and fits in the hardened steel index ring *k*, Fig. 3. The binder mechanism of the turret is so constructed that the handle remains in a vertical position when it has released the turret; the necessary movement is slight. Binder handles are furnished for both the turret slide and cross slide and also for the vertical adjustment of the cross rail.

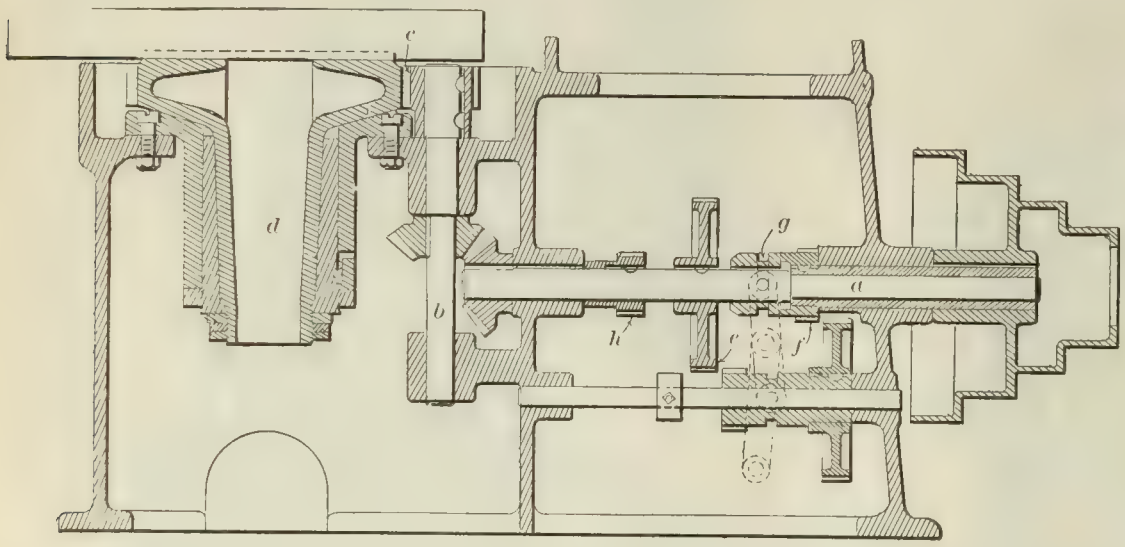



Fig. 2.—Sectional Elevation Through the Base of the Flather Vertical Turret Machine, Showing the Drive.

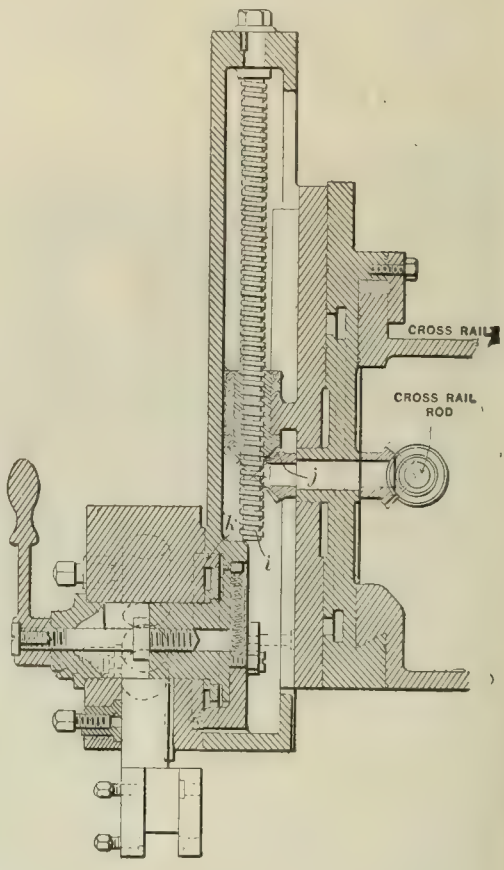



Fig. 3.—Vertical Section Through the Turret Slide.

The turret is counterbalanced. A ⅜-in. steel rope passes over three pulleys mounted on two arms; one of them, from which the weight is directly suspended, is stationary; the other swings on ball bearings. By this arrangement, no matter what the position of the swinging arm may be as it moves with the lateral travel of the turret, the rope maintains a direct pull clear of the turret slide.

The machine is controlled entirely from the working side. The bottom handle, Fig. 1, operates the sliding gear used in securing the first six changes of feed. That above it reverses the feeds, and at the right of the reverse lever is that for operating the back gears. The lever on the cross rail gear case gives the second series of feeds, while that at the back of the rail controls all feeds, an upward pull disengaging everything. The vertical feed is engaged by a slip clutch on the end of the feed rod, and the cross feed by a sliding gear on the end of the feed screw.

The largest diameter of the four-step cone is 14 in., width of belt 3¼ in., diameter of countershaft pulleys 16 in., width of belt for countershaft pulleys 4 in., floor space 47 x 68 in., hight over all 88 in., and weight 5300 lb.

On September 9 the first steel ingot ever cast in Denmark was produced at the new works of Burmeister & Wain at Copenhagen. It is to be used as the pedestal of a bust of G. A. Hagemann, the director of the Polytechnic School at Copenhagen.

## German Iron Trade Conditions.

While the failure to organize a general pig iron syndicate in Germany and the decision not to renew the Rhenish-Westphalian Pig Iron Syndicate, which terminates with this year, have been a disturbing factor in the German iron trade, it is not yet certain that the outcome will be indiscriminate competition. A proposal to form an association of manufacturers apart from the Kraft Works, which firm is blamed with the failure to renew the Rhenish-Westphalian Syndicate, has not been carried out. The important firm of Thyssen & Co. is reported to have made offers of pig iron at reduced prices, and in two or three cases other important interests have made arrangements with merchant firms for the marketing of their pig iron. The Siegerland Pig Iron Syndicate has decided to dissolve December 31. The Lorraine-Luxemburg Pig Iron Syndicate has not determined upon its course. The attitude of the Gelsenkirchen Company is an important consideration. The fact that this company has established its own sales department and that the German Luxemburg Company has also made an arrangement for selling its iron are considered significant of the dissolution of the syndicate. Whether in the event of the pig iron syndicates being discontinued some sort of understanding about prices can be secured by most of the producers is still a question. The fact that syndicate operations have been continued for 15 years is favorable to some sort of an arrangement which will prevent an entirely open market.

A slight improvement in the output of semifinished steel by the Steel Syndicate was noted in September, but the sales of shapes showed a decrease. The volume of business in railroad material is practically stationary. Negotiations continue for re-establishing the Upper Silesian Steel Syndicate.

The Gas and Boiler Tube Syndicate has recently received notice from Thyssen & Co. of withdrawal from the agreement in June, 1910.

Inquiries for bids on the construction of the buildings to be erected by the Crane Company of Chicago, at Verona, Pa., near Pittsburgh, are expected to be sent out early in November. Plans are being made by a firm of engineers in the Marquette Building, Chicago. Some time ago the company purchased a large frontage on the Allegheny River and the Allegheny Valley Railroad, upon which it is proposed to erect a model plant for the manufacture of valves, fittings, &c., to supply its Eastern trade.

# The Newton Combined Rotary Planer and Saw.

A new extra heavy type of combined rotary planing and sawing machine has been developed by the Newton Machine Tool Works, Inc., Philadelphia, Pa. This machine was particularly designed to handle the larger and heavier types of structural material, such as the Bethlehem special structural shapes. Either the usual types of saw blade or a rotary planing head may be used. The drive is through the saw spindle the length of which is equal to the diameter of the saw blade. The saddle is with an adjustable automatic and positive safety release. The release is tripped by the lever A, Fig. 1, either at will or at predetermined points in the carriage travel by adjustable dogs on the trip rod B. The feed is changed through the lever C, which, as shown in Fig. 2, operates a device for shifting the driven friction roller across the face of the driving disk. The work table has T slots cut from the solid, and also clamping yokes, seen in Fig. 2, for holding the work. Lateral hand adjustment of the work table top is provided for facilitating cutting girders, I beams and H columns to exact lengths. It is frequently more convenient to hold angles, stiffeners and irregular shapes on either the auxiliary table D, Fig. 2, or the V block E.

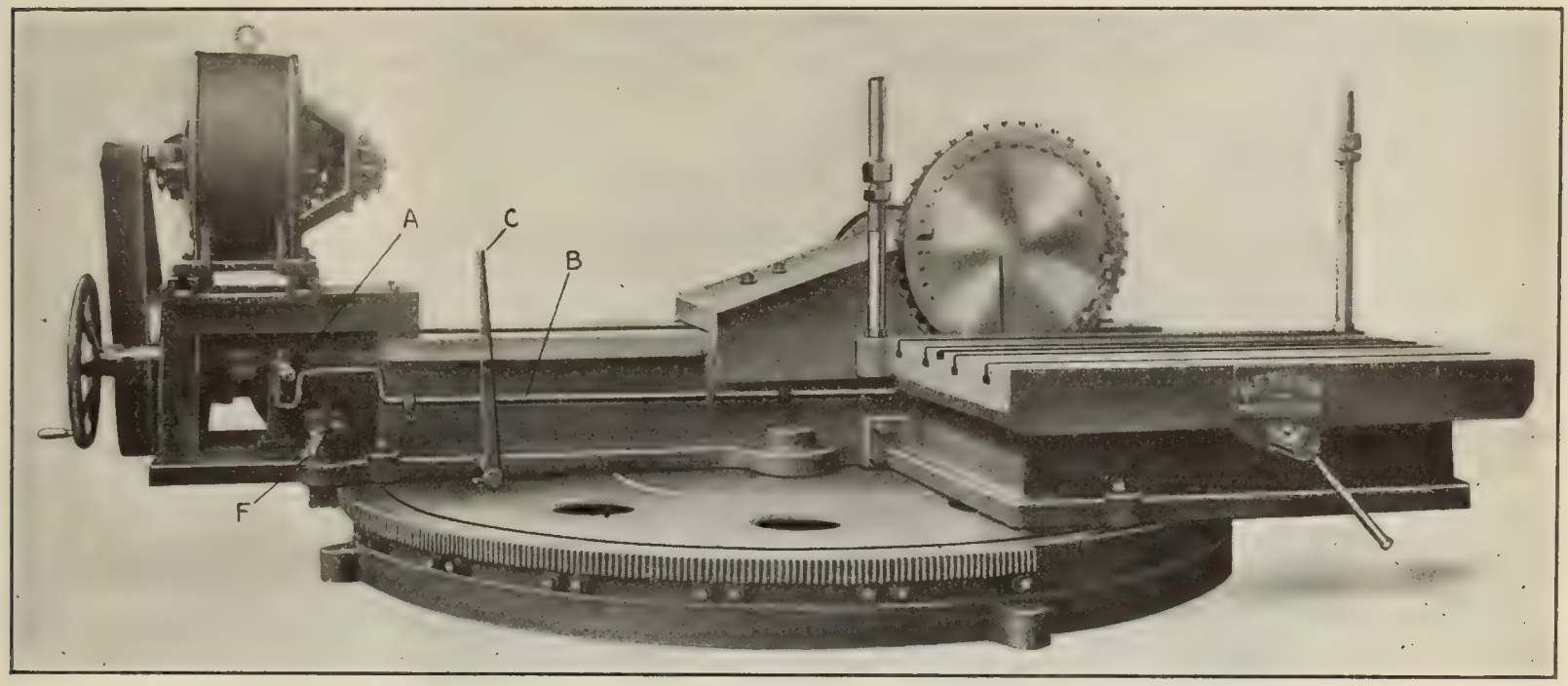



Fig. 1.—One Side of the Newton Combination Machine, Showing it Equipped as a Rotary Planer.

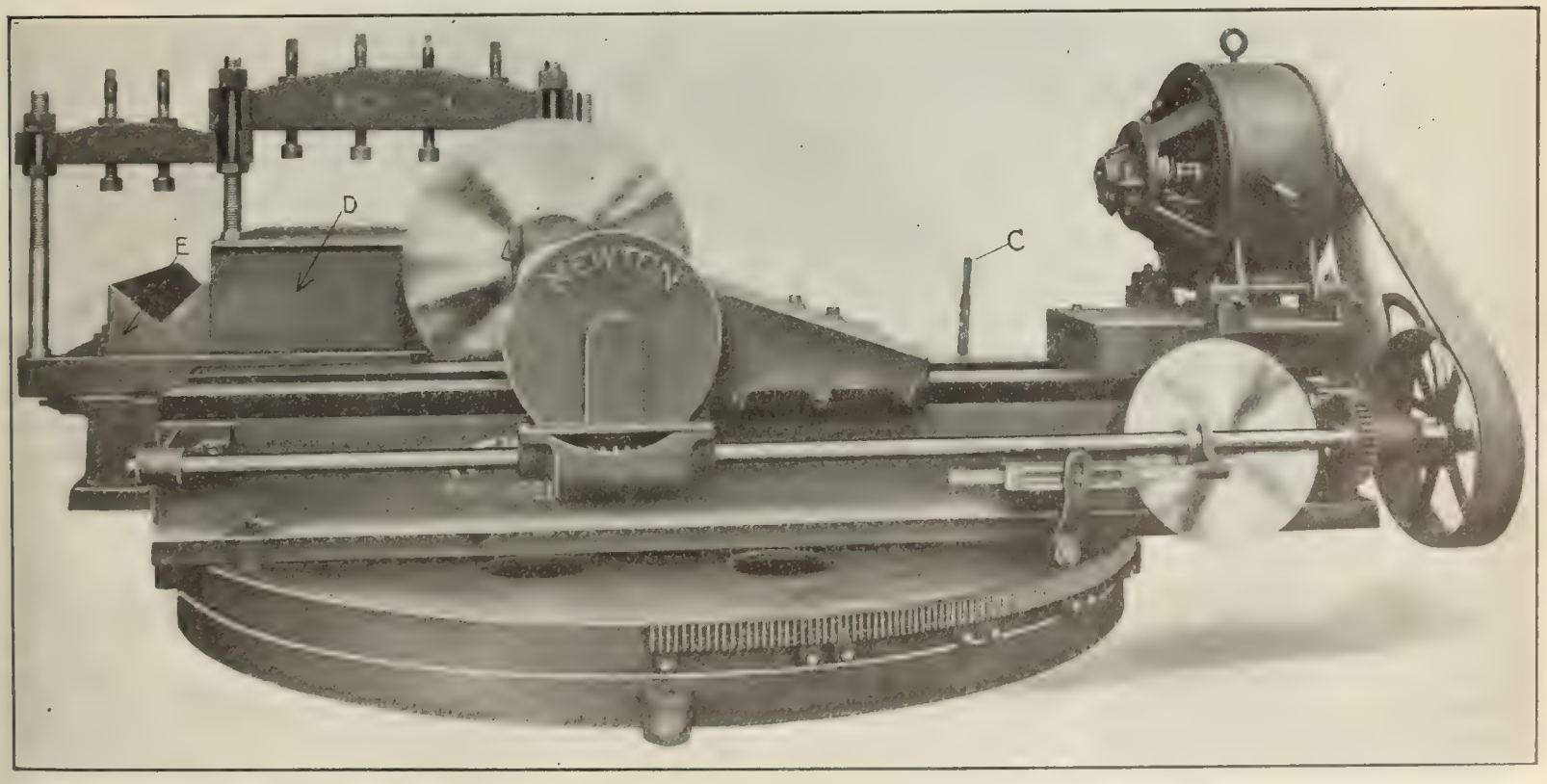



Fig. 2.—The Opposite Side of the Machine When Arranged for Cold Sawing.

of massive proportions to insure freedom from chatter.

The main driving gear is of hammered steel and is placed between the two spindle bearings to reduce the twisting moment. It is driven through intermediate spur gears and a worm and worm wheel by a 6-in. face pulley connected by belt to a 15-hp. motor. The worm wheel is of bronze, while the worm is of hardened steel; both run in oil. The gears are of a ratio to give a suitable peripheral speed to the saw blade, with a comparatively slow speed of the worm, a feature which the builder has found desirable in the application of a worm and worm wheel drive in cold saw cutting off machines, milling machines and chord and I-bar boring machines.

The saddle or carriage of the machine has an automatic friction feed, variable up to 1½ in. per minute,

These machines are furnished with or without the circular base which is shown in the illustrations. Where the latter is used, the machine proper may be swiveled to different angles by a circular adjustment operated either by hand or power. Power operation is provided on the machine illustrated, and is under the control of lever F, Fig. 1, which throws a pinion into action engaging a circular rack on the base. The saw blades used on the machine shown are 36 in. in diameter, but larger ones may be used. An installation of these machines equipped with 52-in. saw blades was recently made for the Bethlehem Steel Company, which is employing feeds of 1 in. per minute on its largest work with these tools. Without the circular base the machine weighs 21,000 lb.; adding the base increases the weight about 4000 lb.

## The Stockbridge All-Geared Drive Shaper.

The 18-in. shaper illustrated is a new type built by the Stockbridge Machine Company, Worcester, Mass. Instead of adding a gear box to an existing model to produce an all geared drive shaper, the company entirely redesigned this machine so as to withstand the strains likely to be put upon it. Such a tool must perform the severest duty, with high speed steels, without chatter, a test which the Stockbridge machine is claimed to have successfully endured in the builder's shop and several others. The shaper embodies the special mechanisms characteristic of the company's shapers, together with several new features designed to add materially to producing capacity, notable among them being a gear box in which simplicity of construction and operation were particularly aimed at.

The gear box is mounted on the back of the shaper and bolted direct to the column, giving a strong, stiff drive as well as compactness, which latter advantage is important where floor space is a consideration. Ten changes of speed for each position of the ram can be had, five from the direct drive and five through back gears, with a range of from 7 to 90 strokes a minute. Fig. 1 shows the machine equipped with a constant speed motor, any make of which may be mounted on the extended base. Fig. 2 is a section through the gear box of a belt driven tool. Fig. 3 shows the unusual construction of the rocker arm.

Referring to Figs. 1 and 2, the operation of the gear box is through the combination of a dial, C, the position of which determines the speed, and a lever, A, which engages and disengages the gear giving that speed. On the driving shaft *k* is mounted a pulley for belt drive, or a gear driven through an intermediate gear by the motor pinion. Keyed to the shaft is a cone of five gears meshing corresponding gears on the intermediate shaft *l* which run loose on friction rings. This shaft is hollow and contains a plunger, at the outer end of which is fastened a dial marked with the different speeds in the range of the machine, indicating the five positions of the plunger as it is rotated. The plunger, not shown in the drawing, is operated in engaging the gears of the cone by the handle A. This handle is fastened to the collar *m*, which is connected to the plunger by a link at *n* to cause the plunger to slide when the lever is moved. A section of the plunger opposite the cone of gears is of reduced diameter, leaving space for five triangular projections spirally placed on the plunger and in one piece with it. The projections have a part in performing the function of a diving key, each assisting in engaging one of the five loose gears. No two projections are in line, and the longitudinal space between each two is sufficient to permit the free passage of a wedge pin when, all gears being disengaged, the plunger is rotated by means of the dial. The function of the wedge pin is to engage the friction. Thus, when a certain speed of ram is desired, the dial, and with it the plunger, is rotated until the projection for that speed is opposite the wedge pin of its gear. The handle *a* then slides the plunger, causing the wedge pin to ride up on the inclined surface of its projection, which engages the friction. The opposite motion of the lever brings the wedge pin back to neutral position, free of its projection. By this arrangement no two gears can be engaged at the same time, and all five gears may be thrown out at once, so that the motor or driving pulley may continue running with the ram idle.

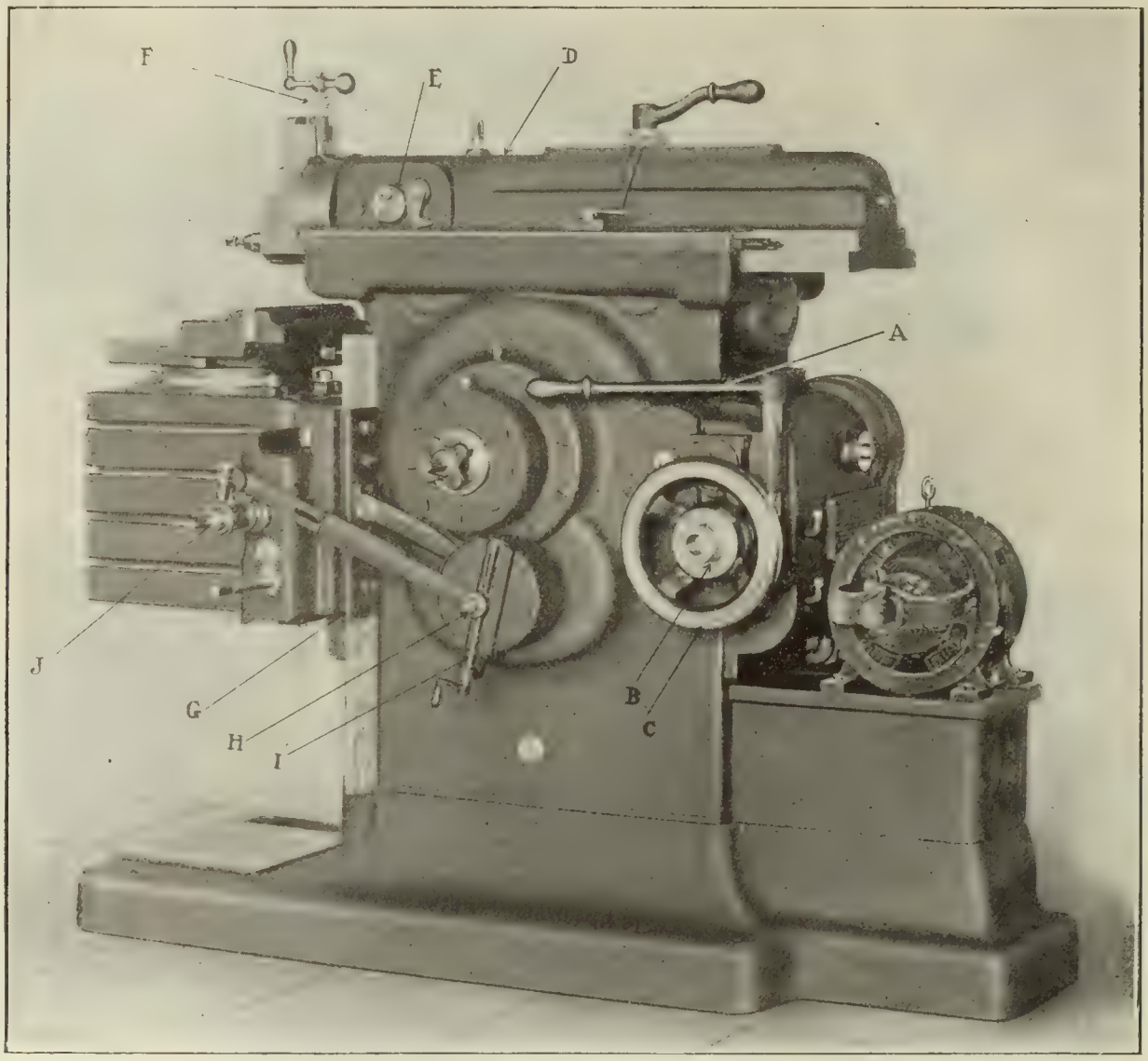



Fig. 1.—The New 18-In. All-Geared Drive Shaper, Built by the Stockbridge Machine Company, Worcester, Mass.

The number of speeds is doubled by back gears. The sliding clutch *r* engages either the gear *o* for the direct drive or the gear *p* for the back gear drive. Any adjustment of a friction ring that may be necessary is taken care of by a screw reached through a handhole in the back of the gear box. The hand wheel *c* on the intermediate shaft is used for moving the ram by hand. The gears run in oil, and the boxes are all bronze bushed and provided with self-oiling bearings.

The use of the Stockbridge patent two-piece crank is another reason for strength in the machine, that the power developed at the driving shaft may be delivered to the tool point. Besides being powerful, the crank gives an even cutting speed the entire length of the cut and a quick return of between three and four to one. The

construction is such that this return is obtained without jar to the machine, for the speed, while high through the center, is gradually retarded and accelerated, reversing the stroke smoothly and easily.

As the rocker arm transmits the motion of the crank to the ram, it also must be strong, which is the occasion for making it, as shown in Fig. 3, with a cored U-shaped rib on either side to give great rigidity. The slot in the rocker arm is of unusual depth and width, to provide ample bearing surface for the crank pin block. The rocker arm is held between two boxes at the bottom and is tied to the ram at the top to prevent any tendency to twist.

The ram *d*, Fig. 1, is of new design. In section it is a small circle at the top, with straight sides the remainder of the distance, and its hight is sufficient to give stiffness, preventing the possibility of buckling. The ram is also well braced and ribbed on its inside.

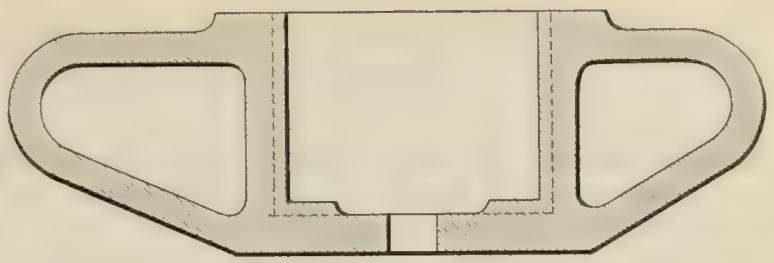


Fig. 3.—Cross Section of the New Stockbridge Rocker Arm.

chance of buckling when the shaper is taking a long stroke.

The machine is supplied with either revolving or regular box table. The vise is of the swivel type, with graduated base reading to degrees. The base is extended well to the front and has cored T slots for bolting work to it. For motor drive any constant speed motor

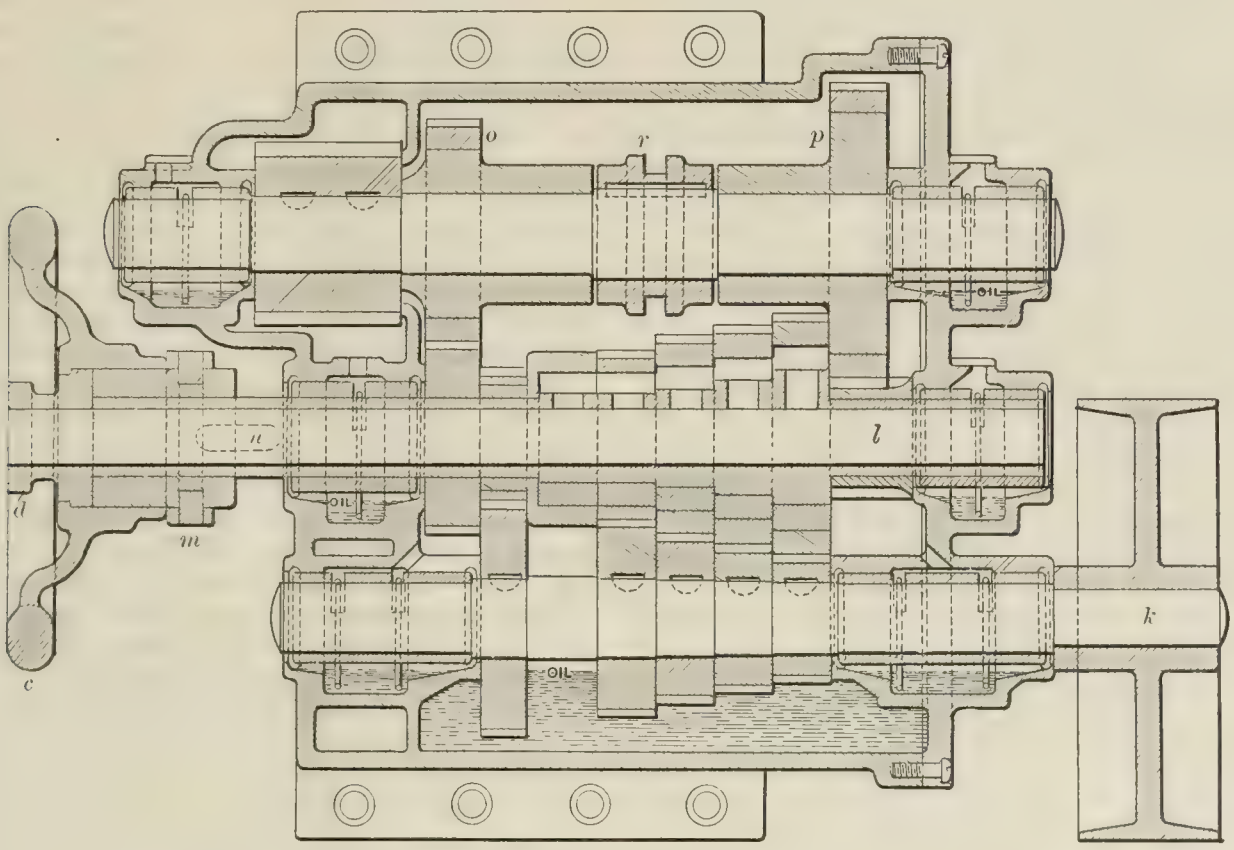



Fig. 2.—Section of the Gear Box of an All-Geared Belt-Driven Stockbridge Shaper.

A departure from common practice has been made in the ram gibs. On the operating side of the machine the slide is solid with the column; on the other side is a one-piece gib bolted directly to the column. Taper packings are provided for taking up wear. This construction adds to the general stiffness of the shaper.

The method of attaching the table cross rail to the column is new to shaper practice, though long employed in milling machine design. With this construction one gib is solid with the cross rail, which, besides giving extra stiffness, prevents possibility of the cross rail tipping away from the column when the gib on the other side of the column is loosened. The adjusting gib *g* is on the operating side of the machine, and by simply tightening the two binder screws the bar is locked to the column. No time is lost in going to the other side of the machine to unloosen and then to tighten binder bolts, as where two loose gibs are employed.

The automatic feed to the head, shown at *e*, is that regularly used in the company's shapers. The feed screw is furnished with a micrometer collar graduated to read to thousandths of an inch. In the cross feed mechanism no parts are exposed, the whole being inclosed. The direction and amount of the feed is determined by the position of the cross feed block *h*. Moving the block by the screw *i* from one side to the other of the center of the crank changes the direction of the feed, and this may be done while the machine is in operation.

The cross feed screw *j* has micrometer adjustment to thousandths of an inch. The driving gear, in addition to the large bearing surface on its face, has its hub supported both on the outside and inside, removing all can be applied, but a speed of 1200 rev. per min. is recommended. The machine weighs 3000 lb.

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At Brooklyn, N. Y., the Appellate Division of the Supreme Court has decided that a contract made by an employer with labor organizations, to employ only union men, is valid. The Stereotypers' and Electrotypers' Union demanded the unionizing of the United States Printing Company, and the company finally agreed to employ only union men. Three employees were notified by the company that they could no longer remain in the company's employ unless they joined the union, whereupon they sued the unions to set aside the contract on the ground that the printing company's officers were compelled by duress and intimidation to execute it, and asked that the printing company be enjoined from discharging them. In the trial evidence was presented by the plaintiffs showing that a boycott was organized by the unions against the printing company, and that the latter was thus forced to make the contract. The trial court held that the unions' efforts to unionize the company were not unlawful and that the contract was executed voluntarily. This decision has now been sustained.

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The Fort Pitt Bridge Works, Pittsburgh, with works at Canonsburg, Pa., has received an order from the New York Central Railroad for 3000 tons of bridge work. It was the lowest bidder for the construction of a steel bridge across the Monongahela River at Monongahela City, Pa., but the contract for this bridge has not yet been definitely placed.

# The Metal Mixer and the Open Hearth Process.

## Direct Metal Makes Possible An Important Advance in Basic Steel Production.

At the recent Middlesbrough, England, meeting of the Iron and Steel Institute a paper was read by Arthur E. Pratt, of London, on the "Future Development of the Metal Mixer and the Open Hearth Process." The author said that the metal mixer is at present employed mainly to save remelting, to secure a constant supply of metal of uniform composition, sometimes to effect desulphurization by using high manganese metal, and in all cases incidentally to afford a certain amount of purification in addition to uniformity. Little has been done, however, to increase the natural purifying action. The evolution of the mixer was briefly sketched. The converter shaped mixer is generally equipped with an oil or gas blowing pipe for the application of external heat. The cylindrical or open hearth mixers are fired by gas through movable heads. The air supplied through these heads is often regenerated and sometimes the gas also. The 300-ton mixer at Clairton, Pa., is fired with natural gas, while the 300-ton vessel of the Lackawanna Steel Company at Buffalo is oil fired. This artificial heating, besides preventing setting, permits of adding cold metal in the mixer. At Clairton, Pa., the mixer was designed to melt down about 20 per cent. of scrap. In cases where much scrap melting is done the heads or upper ends and also the body or cone ends of the mixer are provided with cooling blocks or rings. In some cases use is actually made of a tilting open hearth furnace as a mixer instead of a steel furnace.

At Hoerde the mixer is used for desulphurizing, this being effected by the use of high manganese metal. The only other metalloid appreciably affected in the mixer is silicon, though not to the same extent. A small amount of silicon is oxidized and fluxed by the oxides of iron and manganese formed during the pouring. Under favorable conditions 70 per cent. or more of the sulphur may be eliminated. The author suggests that an increased elimination of impurities in the modern mixer may be obtained by maintaining a cover of basic oxidizing slag to which if necessary additions of calcium chloride, flourspar, &c., may be made to increase fluidity.

### Modifications of the Open-Hearth Process.

In the latter portion of his paper the author considers a modification of the open hearth process in connection with the use of direct metal and regards the method he lays out as the line on which the open hearth process will develop in the future. A liberal synopsis of this part of the paper follows:

The numerous modifications of the open hearth process which have been devised or put into practice may be divided into two main classes, of which the Bertrand-Thiel and the Talbot processes may be taken as the best and most typical. The first class aims chiefly at improving the quality of the product by getting rid of the greater part of the foul slag at a certain stage of the process, and providing a clean slag for finishing. In the Bertrand-Thiel process this end is attained by the utilization of two furnaces. At an earlier date, however, when H. H. Campbell introduced the tilting furnace at Steelton, he adopted the method of pouring the whole charge into a ladle, and then pouring it back again, leaving the foul slag in the ladle and making a clean slag in the furnace. The provision of a clean finishing slag is now recognized as a very important factor, and one which no future modification of the open hearth process can afford to neglect.

The second class of modifications aims chiefly at increasing the rapidity of the process by facilitating the interaction of the metalloids and fluid oxides, usually by the "washing" action of an oxidizing basic slag. The Talbot continuous process has the additional advantage of securing continuity of work. The Monell process presents one feature of great interest. This process consists in preheating the lime and ore to incipient fusion on the open hearth and then adding the furnace metal. During or after the resulting reaction, the greater part of the slag is drawn off, and the bath of metal is then heated up to a high temperature before any further additions are made. In pouring furnace metal on to fused or semi-fused oxides and lime, the process is merely a washing process, but in withholding oxides until the bath has been raised from a low to a high temperature the process introduces a new principle, although probably the inventor himself was unaware of its full significance. The rapid interaction of the metalloids and oxides is also one of the features which will inevitably be embodied in the open hearth process of the future, as will the increased yield which many of the existing modifications attain.

### Three Periods in Furnace Operations.

In the ordinary open hearth process, whether acid or basic, three main periods may be distinguished: 1. The melting down period during which scrap, with or without solid pig, is melted down in the open hearth furnace. 2. The low temperature or exothermic reaction period, during which a portion of the metalloids other than carbon, together with a small amount of the carbon, are eliminated. 3. The high temperature or endothermic reaction period, during which the greater portion of the carbon and the remaining amounts of the other metalloids are eliminated. In the ordinary process these periods follow and merge in one another, and are conducted in one furnace which is heated up through the whole range of temperature between the commencement of the process and the casting temperature. Hence an intermediate period between 2 and 3 may also be distinguished during which a considerable amount both of the carbon and of the other metalloids are eliminated together. In fact, this intermediate period is an overlapping of the exothermic and endothermic periods. Under the conditions of ordinary practice this is inevitable, for however sharply the endothermic reactions by which the carbon is eliminated may in theory be distinguished from the exothermic reactions by which the other metalloids are eliminated, yet in practice it is necessary, especially in basic work, to bring the bath to a "quiet boil," and so secure a proper mixing of the metal with the slag in order to eliminate the metalloids. In ordinary work, therefore, this "intermediate" period during which the two classes of reactions overlap, occupies the greater part of the whole process.

In a bath of metal containing carbon and the other usual metalloids, all the metalloids except carbon give the most complete and rapid reduction of the added oxides when the bath is at comparatively low temperatures. Carbon, on the other hand, gives the most complete and rapid reduction only at high temperatures, while at intermediate temperatures the reduction effected, both by carbon and the other metalloids, is very incomplete and slow. Reduction should be carefully distinguished from elimination, as the terms have not the same significance. For example, it might be possible to completely eliminate all the metalloids by means of a partial reduction of the added oxides without adding anything to the yield.

Since the more complete the reduction the higher the yield, this intermediate period is inefficient. Any process, therefore, in which the bath of metal is raised from a low to a high temperature while elimination is taking place is not working efficiently, since it must necessarily pass through this intermediate period. On the other hand, if the oxidizing slag is withdrawn and no further additions of oxide are made until a high temperature is attained, time is wasted in heating up the bath of metal. Further, it is clear from the above considerations that any process in which, for example, both the carbon and the phosphorus in the bath of metal are eliminated at the same time will not give so satisfactory a reduction of oxides as when these elements are eliminated independently. One of the objects of the author's method of work is to avoid this intermediate and inefficient period, to attain the requisite high temperature without delay, and, further, to avoid the elimination of carbon and the other metalloids together as far as possible. While in the ordinary process the three chief periods follow and merge in one another, it is readily demonstrated that if these periods are completely separated and are carried out simultaneously and independently, a much greater

rapidity of work is possible than is the case when all or some of the periods are carried out *seriatim*.

**Three Types of Furnace Employed.**

In working according to this method three types of furnace are employed, viz: 1. A large gas fired metal mixer of modern type or a large tilting open hearth furnace, known as the "finer." This is employed to receive charges of blast furnace or cupola metal as they are tapped, or it may take charges from an ordinary metal mixer. In this finer is maintained a cover of basic oxidizing slag, lime and oxides being added from time to time to replace portions of foul slag which are poured off. The slag may be rendered more fluid when necessary by the addition of flourspar, calcium chloride, &c. This slag is employed for washing and refining the metal, and serves to eliminate part of the metalloids. The finer should be maintained at such a comparatively low temperature, that as much of the silicon, manganese, sulphur and phosphorus as possible is eliminated without the removal of much of the carbon. The finer is, in fact, employed for performing the exothermic reactions. Each charge of metal is thus partly refined, so that the bulk of the metal in the finer forms a constant stock which can be drawn from as required containing the greater part of the carbon and only small amounts of the other metalloids.

2. A furnace, known as the "scrapper," of similar design to the finer, but having a large heat supply so as to work at very high temperatures. The scrapper is used for melting down scrap and heating it in its molten condition to a very high temperature. Scrap is charged continuously, in small portions at a time, into the molten scrap which is already in the scrapper and is thus melted. The scrapper thus serves as a store of highly heated molten scrap which can be drawn from as required.

3. A series of furnaces known as "finishers." These are ordinary open hearth furnaces, either fixed or tipping, which are employed for making the finished steel from charges of finer metal and fluid scrap in the following manner: A charge of molten scrap is conveyed from the scrapper and charged into one of the finishers. Oxides and lime are then added, or they may be charged before adding the scrap. It is preferable for the lime and oxides to be preheated together in a special furnace, or they may be charged into the scrapper and preheated there, being subsequently charged into the finisher with the molten scrap. The scrap, lime and oxides being already in the finisher, a charge of finer metal is then added. Owing to the store of heat contained in the molten scrap, a violent reaction occurs between the carbon in the finer metal and the molten oxides, the carbon together with any small amounts of the other metalloids being rapidly eliminated. The rapidity of work is further increased when the necessary oxides are preheated in the scrapper as, under these conditions, the oxides dissolve in and impregnate the charge of fluid scrap and thus allow of very intimate mixture with the metalloids. The bath of metal is then finished in the usual way by such further additions as may be required, and is tapped completely out of the furnace.

**High Heat for Quick Reactions.**

It is highly desirable for the proper working of this process that a sufficient store of heat is available to give a rapid reaction between the carbon and the fluid oxides and thus to avoid the "intermediate" reactions which are slower and less efficient. This is done by maintaining the metal in the scrapper at as high a temperature as is practicable, so that the heat required is drawn from that contained in the charge of scrap which is conveyed to the finisher. When the available scrap is insufficient to supply this heat, a certain quantity of metal from the finer may be charged into the scrapper and heated up with the molten scrap so as to make up the necessary bulk of highly heated metal. When this is done, however, oxides should not be present in the scrapper, as they would react prematurely with the carbon in the added finer metal and tend to chill the metal. Such premature reaction also violates the principle of specialization. On the other hand, when ample scrap is available it may be carburized in the scrapper so as to increase further the yield in the finisher.

The above process is eminently suitable where reasonable amounts of scrap are available; in fact, the larger the amount of scrap the more rapid the process. In may, however, be carried out when no scrap can be obtained. In this case there are two alternative methods of carrying out the principle of specialization. The first is to use a Talbot furnace for the finisher and work it on the continuous system. This is, in effect, carrying out the Talbot process in two furnaces, utilizing the first for the exothermic, and the second for the endothermic reactions. The other alternative, which enables the whole of the finished charge to be tapped instead of only a portion, is as follows: The scrapper is termed the heater and is charged with finer metal, which it heats to a high temperature in the absence of oxides. The finishers in this case take charges from the heater, or from both heater and finer. In order to prevent the reaction being too violent, owing to the comparatively large amount of carbon present in the metal, oxides should be added in the finishers in portions, and not all at once, and the charges may also be added in portions, while it is advisable to use finishers with a deep bed. Owing to the store of heat available, and to the preliminary fining, the reactions will be extremely rapid, and the whole process will compare very favorably with the ordinary "pig and ore" process.

**The Use of Fluid Scrap.**

The first thing that calls for notice is the use of fluid scrap in the manner suggested. It is at present the custom to melt down the scrap in the open hearth furnace. This involves a waste of much time and labor, even with the use of expensive charging machines, not only in charging, but in waiting for the charge to melt. Further, it serves to diminish the yield, for the scrap becomes oxidized in melting down, so that less oxides are needed to eliminate the metalloids, and hence less iron is reduced into the bath. This is more particularly the case when light scrap is employed. By charging all the scrap into one furnace and melting it there, the scrap may be readily conveyed by ladle in the fluid state to the open hearth furnaces, thus saving considerable time and labor, and affording a constant stock which can be drawn from as required. Furthermore, there is no oxidation due to exposure during melting, the scrap being plunged at once into a bath of highly heated fluid metal in which it quickly melts. The destructive action due to melting down on the furnace bed is also avoided. In the process already described, this method of utilizing fluid scrap has also a further important object. In order to obtain a rapid and efficient carbon elimination it is necessary to provide a store of heat in the metal itself rather than to rely on the comparatively slow heating power of the furnace. In the Talbot continuous process (which is intended to dispense with scrap) this necessary store of heat is obtained by retaining a large proportion of the finished charge in the furnace. By utilizing fluid scrap, however, it may be heated up in the scrapper so as to provide the store of heat which is required, and hence the whole of the charge may be tapped from the open hearth when finished. This heating up also renders the fluid scrap easier to handle, for, being practically already steel, it is not so readily handled as the more fusible furnace metal unless it is rendered conveniently fluid by a high temperature. To summarize, the advantages of using a scrapper and preheated fluid scrap in the manner described are a saving in time and labor, a higher yield and more rapid reactions in the open hearth.

**Not a Triple Equipment of Furnaces.**

In the author's process, the three chief periods of the open hearth process occur simultaneously each in a separate furnace under the best working conditions. Thus the scrapper is continually melting down scrap, the finer is continually performing the exothermic reactions, and the finishers are continually performing the endothermic reactions. This does not involve three furnaces instead of one, as might appear at first sight, the fact being that each furnace specializes in one period instead of performing all three in turn. For instance, a plant consisting of finer, scrapper and five finishers working the author's process would compare with a plant consisting of a mixer and five open hearth furnaces working the ordi-

nary process. The difference would be that the former plant would turn out the same quantity of finished metal in considerably less time, and so have a much greater output. In the plant working the ordinary process, each of the five furnaces would have to run through the three periods in turn, and would also waste time in heating up the bath of metal, &c. In the author's plant each of the five furnaces deals with the last period only, and loses no time in waiting or heating up, and even shortens the period, owing to the promotion of a sharp ore reaction. The only extra piece of apparatus is the scrapper, the advantages of which have already been pointed out. Indeed, the fact that at the present time often considerable quantities of scrap are melted down in the metal mixer indicates that the advantages of charging scrap into one furnace and dealing with it in a liquid state rather than charging it solid into several furnaces are beginning to be realized. The further economy which the system of specialization effects in working each furnace continually under the same conditions of temperature and regularity of heat demand needs no emphasis.

One further point with regard to specialization may be referred to. If the practical difficulties involved could be overcome, it would be better to preheat the ore and limestone to the point of incipient fusion in a special furnace or cupola, and add them in this state to the charge of scrap in the finisher. In this semifluid and intimately mixed state they are in the best condition for obtaining the desired reaction, and by independent heating there is no demand on the store of heat which is required for the endothermic reactions. This suggestion has already been made, but no attempts seem to have been made to carry it out.

It is recognized that a rapid intermixture of furnace metal with fluid oxides and basic slag, whether by a washing process or otherwise, gives a greater yield owing to the more complete reduction of oxides by the metalloids, and also considerably shortens the process. Therefore all efforts to improve the open hearth process in the future must take this factor into consideration. In the process under discussion it should be noted that this washing action takes place both in the finer and in the finisher, and that there is every facility for obtaining the increased yield due to the reactions in question. The reaction with the slag is also facilitated as in the Talbot and similar processes by the fact that the added metal is of less specific gravity than the bulk of the metal already in the furnace, and so tends to form a layer immediately beneath the slag, by which the reaction is greatly promoted.

**Slag Removal.**

Returning once more to the process under discussion, the question of the slag requires consideration. It is now well recognized that the removal of foul slag half way through the process and the making of a clean finishing slag enables a much better quality of steel to be made, particularly with respect to freedom from phosphorus. In the author's process this principle of having a clean slag for the final stages is carried out by removing a large proportion of the metalloids in the finer, thus enabling a very clean finishing slag to be obtained in the finisher. Another point with regard to slag is its bulk. A thick layer of slag is extremely nonconducting and renders it very difficult for the flame of the furnace to heat up the bath of metal. In the finer only sufficient slag is present to purify each charge of furnace metal, and, since the charges are relatively small as compared with the bulk of metal present, the covering of slag will be thin. In the finisher the amounts of metalloids to be removed by the slag are comparatively small, so that again only a thin cover is necessary. The action of an oxidizing basic slag on the furnace bottom is extremely deleterious, and hence the entire use of fluid metal and scrap and the avoidance of a melting down period or of the preheating of such a slag directly on the furnace bottom makes for a long furnace campaign.

In outlining the present process, the author does not claim that all the principles involved are original. Many of them have been known for a long time, and have within recent years done very good service in the hands of the practical steelmaker. He would, however, claim foundation of the whole process, and he believes he has evolved a process which combines all the good features of the various processes at present in use, and at the same time avoids many of their drawbacks, while possessing special advantages of its own. The great need of the British steel industry is a process by which the highest grade of steel can be cheaply made from our low grade native ores. Such a process would enable the British steelmaker to depend less on imported ores and to compete on better terms with more fortunate rivals possessing immense deposits of high grade ore which is "mined" with a steam shovel. It is to the basic open hearth process of the future that we must look—a process that will combine a greatly increased yield and large outputs with a rapidity of work approximating to that of the Bessemer process.

**Advantages.**

The advantages of the process may be stated as follows:

1. Continuity. The finer and scrapper are worked on continuous principles, while the finishers have no periods of waiting or melting down and thus are also continuously at work.

2. Increased yield due to greater reduction of oxides and absence of oxidation by air.

3. Rapid work and increased output for a given size of furnace, due to the principle of specialization, use of fluid metal and scrap, &c.

4. With high phosphorus metal the slag from the finer is valuable as a fertilizer.

5. Low labor costs, saving in fuel and longer life of furnaces owing to the entire use of fluid metal and scrap and not cooling down the finishers by charging cold scrap.

6. Very high grade steel can be made from very low grade metal, owing to the principle of specialization and keeping the foul slag away from the finishers.

7. Ordinary small sized fixed open hearth furnaces can be employed as finishers, and no large ladles or cranes are required. By employing small finishers tapping in rotation, a regular supply of steel to the mills at frequent intervals is obtained.

8. There is a constant stock both of molten scrap and partly refined mixer metal. No furnace is kept waiting while another is making bottom or refining a charge. The working of the charges is also under perfect control.

9. No dead soft metal is locked up anywhere. As soon as the metal is dead soft it is tapped completely; a large portion is not reserved for contamination by a fresh charge of unrefined metal.

10. The conditions of temperature in all the furnaces are constant. There are no alternations of chilling and reheating with consequent waste of time and fuel due to performing low temperature and high temperature reactions, melting down, &c., all in the same furnace.

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A. M. Byers & Co., Inc., Pittsburgh, have let additional contracts for equipment in their new plant, at Girard, Ohio, consisting of a 21-in. three-high muck mill with squeezer, a 16-in. three-high roughing mill and 12-in. finishing mill, of the Belgian type, for the manufacture of skelp to supply their pipe mills at Pittsburgh. This equipment will be built by the A. Garrison Foundry Company, Pittsburgh. A battery of 500-hp. Babcock & Wilcox auxiliary boilers will be installed. Two shears, ore pan, crusher and roll lathe will be furnished by the Geo. A. Hogg Iron & Steel Foundry Company, Pittsburgh. A mono-rail electrical system for carrying coal and other material in the puddle mill will be built by Heyl & Patterson, Pittsburgh. At the rate with which this new mill is being equipped, it will probably be in operation about February or March.

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Bids have been invited by the Pennsylvania Railroad for 44 steel passenger cars and a number of postal cars. The new equipment will be of the same design as the 200 steel cars now being delivered by the Pressed Steel Car Company, Pittsburgh. The new cars will be used on the main line east of Pittsburgh, the greater portion of them to be assigned to the New York Division to be used for tunnel service. The company has announced that no wooden equipment will be used in the tunnels, which are

## The Growth of Cast Iron by Heating.

In a late issue of the London *Times Engineering Supplement*, reference is made to the fact that "according to experiments recently conducted it appears that repeated exposure to high temperatures will cause a very considerable permanent expansion of cast iron." Then follows some comment on the subject, from which it appears that the writer had overlooked the very full statement of his original work in this direction presented by Alex. E. Outerbridge, Jr., before several technical societies in 1904, as well as the subsequent discussion, published in the United States. It may be said, too, that the Committee of Science and Arts of the Franklin Institute awarded the Elliott Cresson gold medal to Mr. Outerbridge in 1904 for these discoveries. Mr. Outerbridge's attention was called to the statements in the *Times* article, and he writes of them to *The Iron Age* as follows:

**Mr. Outerbridge's Comment.**

"The article contains in brief space a surprising number of incorrect conclusions, drawn apparently from imperfect recollection of one of my papers on the 'Mobility of Molecules of Cast Iron.'

"First, it attributes the permanent increase in volume of cast iron when subjected to repeated heating and cooling to 'an increase in the amount of graphite (free carbon) at the expense of the cementite (combined carbon).'

"Second, it says: 'The particulars of the experiments do not give any accurate data as to the kind of iron or the temperatures used, so that it is not easy to verify the statements.'

"Third, it concludes as follows: 'If this (decrease of strength) is as serious as we are inclined to anticipate, the process will have to be rigorously deprecated.'

"Referring to the foregoing criticisms, *seriatim*, permit me to quote from my original communication on the subject of permanent expansion of cast iron under the influence of prolonged heating and cooling, presented at the annual meeting of the American Institute of Mining Engineers, February, 1904, published in the *Transactions:*

> All grades of cast iron do not increase in cubical dimensions equally. Soft iron, containing but little combined carbon, increases more rapidly than harder iron containing more combined carbon, while white iron, in which nearly all of the carbon is in the combined form, does not expand sufficiently to overcome the original shrinkage, even after all of the combined carbon has been changed to graphite, or, rather, to that form of free carbon known as Ledebur's "temper-carbon," by this annealing process.

"I exhibited at the meeting bars of soft cast iron, containing originally over 3½ per cent. free carbon, and less than ¼ of 1 per cent. combined carbon, that had been permanently enlarged about 40 per cent. in cubical volume, and were subsequently increased to 46 per cent., after which no further permanent increase in bulk was obtained by subsequent heating. In another part of the same paper I referred still more definitely to the fact that the permanent expansion of cast iron was not caused by the conversion of combined carbon into the graphitic form, but that 'the astonishing change in volume is a molecular, not a chemical, one, thus substantiating my original theory of the molecular mobility of cast iron.' (See *Transactions*, Am. Inst., M. E., xxvi, p. 176, 1896.)

"With respect to lack of accurate data as to the temperatures used, the following quotation from the same paper may be given:

> These bars have been heated in a case-hardening furnace provided with a pyrometer. . . . At first a temperature not exceeding 1200 deg. F. was maintained, and under these conditions it was necessary to heat and cool the bars about a hundred times, in order to obtain an increase in cubical dimensions equal to that shown in the bars submitted herewith. By increasing the temperature to about 1450 deg. F. an increase in length of about 1-16 in. per heat is obtained. The bar submitted for your inspection, which shows an increase over its untreated companion bar of 1 11-16 in. in length and ⅛ in. in cross section (over 40 per cent.), has been heated and cooled 27 times.

"After giving the actual records of breaking tests of treated and untreated companion bars, cast in the same molds from the same iron, the following statement is made in the original paper in regard to strength: 'The fact that there is a loss of tensile and transverse strength of from 25 to 30 per cent. in some of the tests might seem, at first sight, to put a barrier in the way of practical application of these new observations, but such is not the case.' A description is then given of the expanding of two half patterns made of cast iron which were quite elaborate in design, and after some expensive machine work had been put on them were each found to be a quarter of an inch too short and 3-32 in. too narrow. These were successfully elongated and widened without warping, and they were saved from the scrap pile. A photograph is also shown of other castings, including a small pump piston, which had been enlarged and restored to use by this process. In very many cases the reduction in strength is entirely negligible, though it will be seen the fact was not neglected in the paper.

"In the years that have intervened since the publication of these remarkable facts accounts have appeared in print from time to time of similar practical applications which have been made by others. I have not only been told of a number of such useful and valuable applications, but have received letters describing others, and even requests for information in regard to royalty or shop rights. I have always replied that the investigations were regarded by me purely from a scientific standpoint, and were communicated to the association named without restriction as to publication, and no application was made to the Patent Office, or even thought of by me, and that I am always pleased to hear of any extensions of the principles advanced in my papers to practical use in work shops. ALEX. E. OUTERBRIDGE, JR."

## The Society of Naval Architects and Marine Engineers.

The sixteenth general meeting of the Society of Naval Architects and Marine Engineers will be held in Assembly Room No. 1, Engineering Societies Building, New York, November 19 and 20, and will begin at 10 a.m. each day. There will be a banquet in Delmonico's large hall at 7 p.m., November 20. Tickets are $5 each. The council will meet at 3 p.m., November 18, in the Council Room No. 716, seventh floor, Engineering Societies Building. Following is a list of the papers expected to be read during the meeting:

"The War Eagle," by Charles H. Cramp; "Practical Methods of Conducting Trials of Vessels," by Col. E. A. Stevens; "The Influence of Midship Section Shape Upon the Resistance of Ships," by Naval Constructor D. W. Taylor, U. S. N.; "Further Experiments Upon Longitudinal Displacement and Its Effect Upon Resistance," by Prof. H. C. Sadler; "Further Analysis of Propeller Experiments," by Clinton H. Crane; "Deviation of the Compass Aboard Steel Ships; Its Avoidance and Correction," by Lieut. Commander L. H. Chandler, U. S. N.; "The Influence of Free Water Ballast Upon Ships and Floating Docks," by Naval Constructor T. G. Roberts, U. S. N.; "Recent Inventions as Applied to Modern Steamships," by W. Carlile Wallace; "Service Test on the S. S. Harvard," by Prof. C. H. Peabody; "Trials of the United States Scout Cruiser Chester Fitted with Parsons Turbines," by Charles P. Wetherbee; "Some Remarks on the Steam Turbine," by J. W. Powell; "Shipbuilding on the Great Lakes," by Robert Curr; "The Steamer Commonwealth," by J. H. Gardner and W. T. Berry; "Fire Boats," by Charles C. West; "Sea Going Suction Dredges," by Thomas M. Cornbrooks; "The British International Trophy Race of 1908," by W. P. Stephens; "Transportation of Submarines," by Naval Constructor W. J. Baxter, U. S. N.

Last week the first heat was made in the new foundry of the Bollinger-Andrews Construction Company, at Verona, Pa., near Pittsburgh. The foundry is 60 x 360 ft., having a daily capacity of 250 tons. The company also recently put in operation its new machine shop, 80 x 200 ft., and reports that it has orders for nearly 10,000 tons of finished castings, of which one-third are mill castings and the balance ingot molds for steel plants. George L. Bollinger is president; Thomas L. Andrews, vice-president and general manager; Weaver H. Rogers, secretary, and J. N. Carey, chief engineer.

# A Ferracute Metal Casket Press.

A remarkable double action toggle drawing press was recently built for the Montross Metal Casket Company, Philadelphia, Pa., by the Ferracute Machine Company, Bridgeton, N. J. This press weighs 100 tons and is capable of exerting a pressure of 1000 tons. It stands 18 ft. high and occupies a floor space of 10 x 14 ft. A 55-hp. motor provides the drive. With the press in Fig. 1 is shown the product, a casket of 1-16 in. steel (or copper) 6 ft. long, 20 in. wide and 16 in. deep, including the cover, which alone is 4 in. deep, and the blanks and intermediate stages in the forming of the two parts, body and lid. Fig. 2 is a detail of the mechanism which locks the outer ram to the frame during the redrawing operation, and Fig. 3 shows a set of dies.

The successive operations on the body are cutting the blank, drawing the shell to a depth of 9½ in., redrawing to the full depth of 12 in., trimming the edge and forming the edge. The operations on the lid are the same, omitting the redrawing operation. The shells are annealed before the redrawing. The lubricant used is a wire-drawing compound obtained from the New York & New Jersey Lubricant Company, New York City.

Dies for such large work must, of course, be commensurate in size with the product, but by careful designing material has been economized in the dies illustrated, and they are smaller than would be expected necessary. Fig. 3 shows the drawing dies for the last drawing operation, the lower die being shown on the floor, the upper die or blank holder resting upon it with a punch suspended above. The drawing dies are made from a special steel casting, with the drawing or wearing surfaces of hardened steel. The dies for forming the grooves in the body and cover are cast iron with hardened steel forming surfaces.

The frame of the press is composed of four heavy cast iron columns, each column reinforced by two 4¾-in. steel rods. The eight rods add materially to the tensile strength of the columns, which are united near their base by heavily trussed cast iron beds and at the top by stays. The machine is practically two presses mounted on the same base and driven from a single source. This construction allows vertical pressure to be communicated to the double ram at four points. The adjusting screws on the four pitmans are so connected by gearing that one hand wheel moves them all. The adjustment is exceedingly delicate, one turn of the hand wheel giving 0.001 in. adjustment. An electric motor is provided for adjusting by power, so that when the ram is to be raised or lowered a considerable amount it may be done quickly.

Hanging on to the inner ram by four heavy studs is an outer ram, which descends with the inner ram for about half its stroke and then stops as the blank holder and lower die come together. At this point it is locked in place by four toggle levers, the pressure exerted by which is adjustable by nuts on the tie rods. These toggles work on the wedge principle, and when forced into place by adjustable wedges upon the descending ram, transfer the pressure of the blank holder to the frame of the machine instead of the main shaft as in a cam press. Fig. 2 is a sectional view, showing one of the toggle levers with the ram at the top of its stroke. In this sectional view *r* is the inner ram, *o* the other ram, *l* the toggle lever, *w* the wedge attached to the inner ram, which forces the toggle lever outward when the ram is descending, *s* the steel bearing surface at the top of the toggle lever, *t* the steel projection on the column under which the toggle lever is forced by the descending ram, and *b* is the bed of the press.

This device has been used by the Ferracute Machine Company for many years on small presses, but is believed never to have been applied before to large drawing presses. One advantage of this construction is that the whole outer ram may be quickly removed by taking the nuts off the top of the studs and allowing the ram to drop down and be removed entirely from the press. In

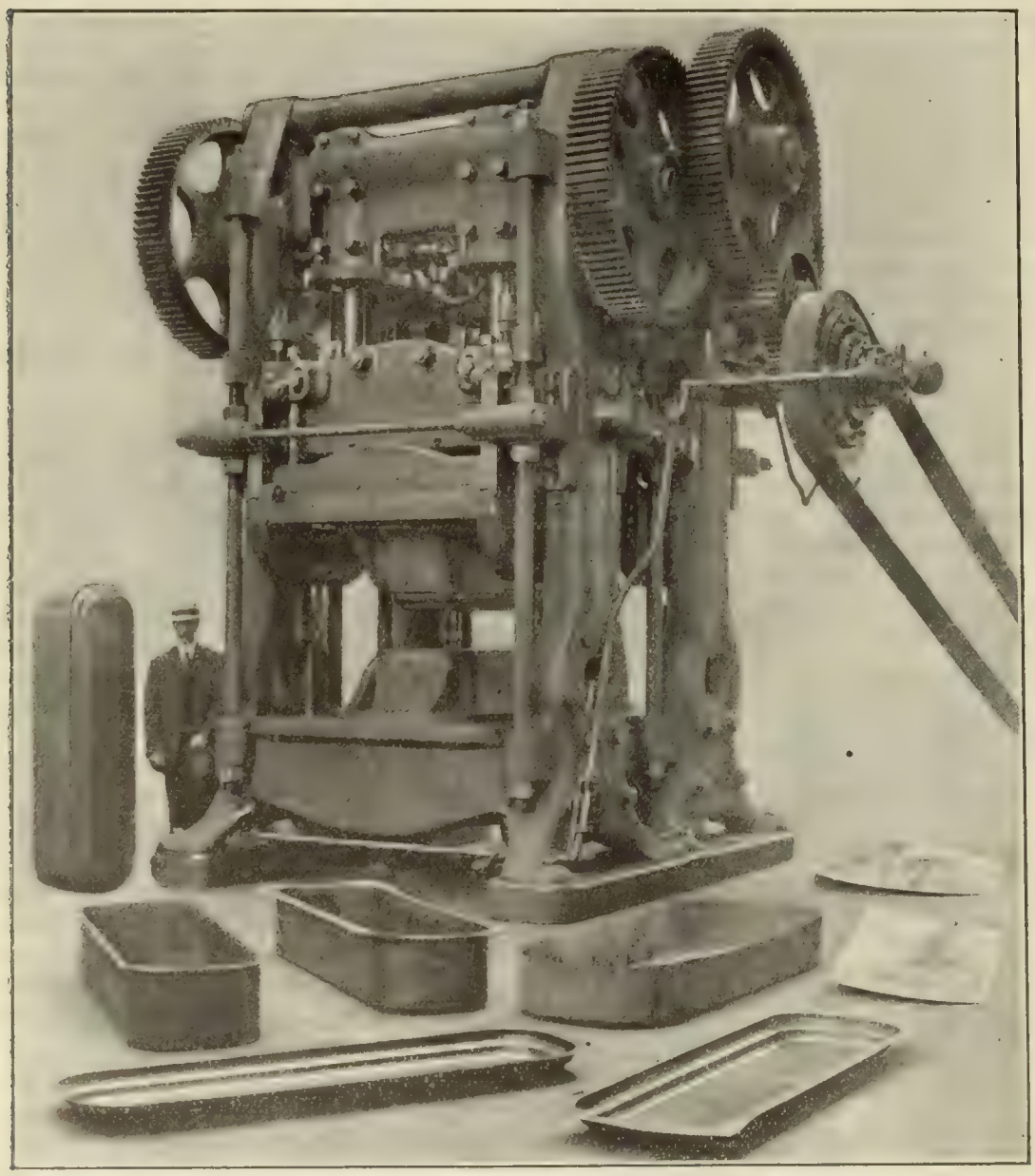


Fig. 1. A 1000-Ton Press Built for the Montross Metal Casket Company by the Ferracute Machine Company.

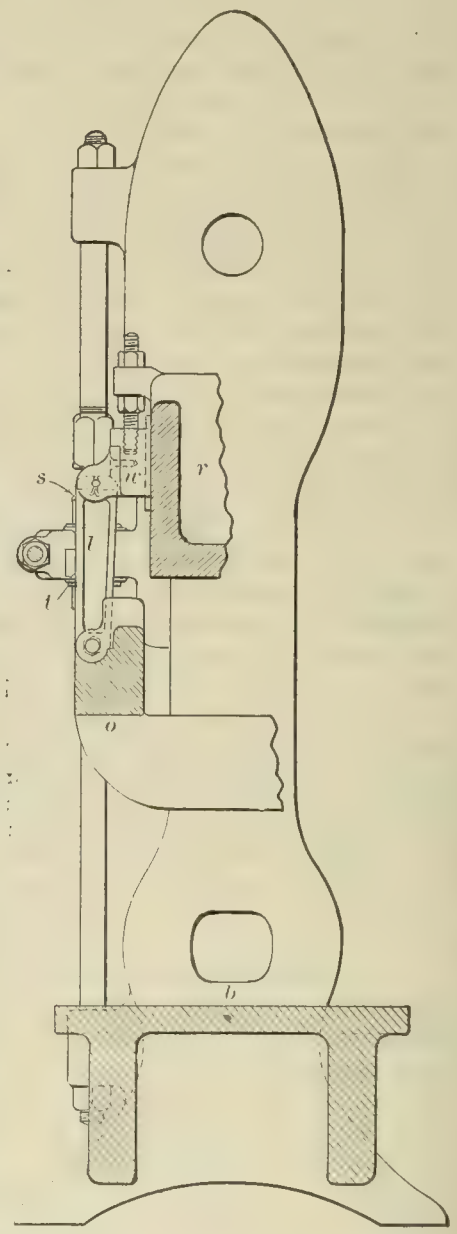



Fig. 2.—A Detail of the Outer Ram Locking Mechanism.

such case the machine becomes a single action press in which the full power of the ram is available and suitable for operating cutting dies by reason of its long, accurate

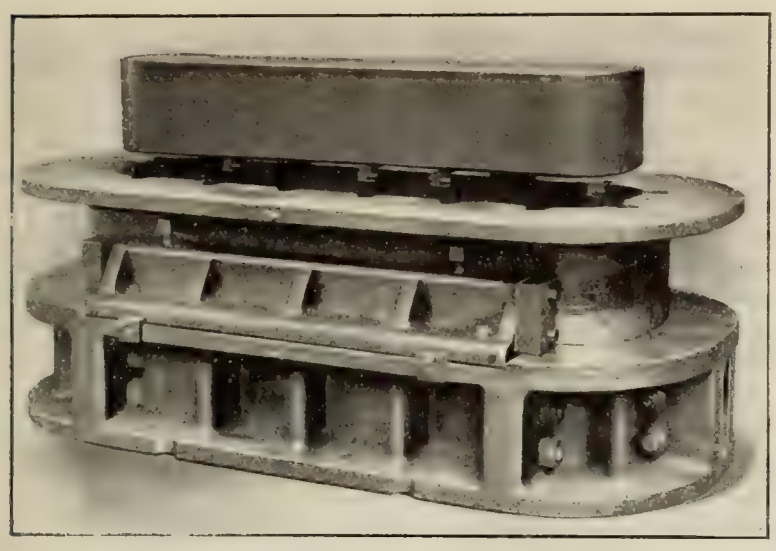


Fig. 3.—The Dies for the Second Drawing Operation on Metal Caskets.

and adjustable gibbed slide bearings. This transformation of a double action press into a single action press is claimed to be a new feature.

The machine is triple geared, and all the gearing is cut from the solid. The five large gears are each 5 ft. in diameter by 10-in. face. The ratio of gearing is 200 to 1. The controlling lever at the right of the machine as viewed in Fig. 1 will instantly stop and start the ram at any point of its stroke up or down. All of the control of the machine is at this side. The friction clutch used on the driving pulley is one that has been used on other machines of the company's manufacture, and is especially adapted for high speed and heavy service. The stroke of the inner ram or punch is 28 in. As much as 24-in. stroke may be given the outer ram, but with the press adjusted, as shown in the illustration, the stroke is 14 in., and a shell of nearly that depth can be drawn.

The flywheel is 40 in. in diameter by 7-in. face, weighs 1150 lb., and runs at 500 rev. per min. The two crank shafts are each 10 in. diameter, and are forged from high carbon steel, the pinions are phosphor bronze. An adjustable positive knockout attachment is used in connection with the dies. Two of the rods which connect the knockout with the ram can be seen in Fig. 1.

With no special devices to facilitate handling the blanks and shells two operations per minute are easily performed. A longer time is required to insert and remove the heavy blanks and shells than to perform the drawing operation.

The press is equally well adapted for drawing bathtubs, automobile bodies, metallic boats, horsetroughs and other articles of large size in steel or copper.

## The Roberts Blast Furnace Relief Valve.

Hinged explosion doors at the tops of blast furnaces and downcomers are being displaced by relief valves of large diameter, arranged to open automatically when the top pressure becomes excessive owing to "slips" or explosions. It has been found, however, that when "slips" or explosions take place large quantities of coke, ore and limestone are frequently discharged through the relief valves, a result which causes much annoyance and expense and sometimes endangers life. The illustrations show two forms of relief valves designed and patented by Frank C. Roberts, Philadelphia, to overcome this objection. In both cases the valves proper are inverted cones resting on removable seats and attached to the ends of counterweighted levers. In Fig. 1 the bottom of the valve carries a series of prongs with spaces between, and of such length that the lower ends are not exposed above the seat when the valve is open as in Fig. 2. In Fig. 2 there is attached to the valve a heavy screen, open at the bottom, and of such length that the bottom of the screen is not exposed above the seat when the valve is open as in the illustration. In Fig. 1 the spaces between the prongs and in Fig. 2 the openings in the screens are of such size as to permit only the gas and smaller pieces of stock to be discharged through them when a "slip" takes place. Should the spaces between the prongs or the openings in the screens become clogged, they can be cleaned from the outside by raising the valve to the desired point above the seat. The valve shown in Fig. 1 is in use at the plant of the Warwick Iron & Steel Company, Pottstown, Pa.

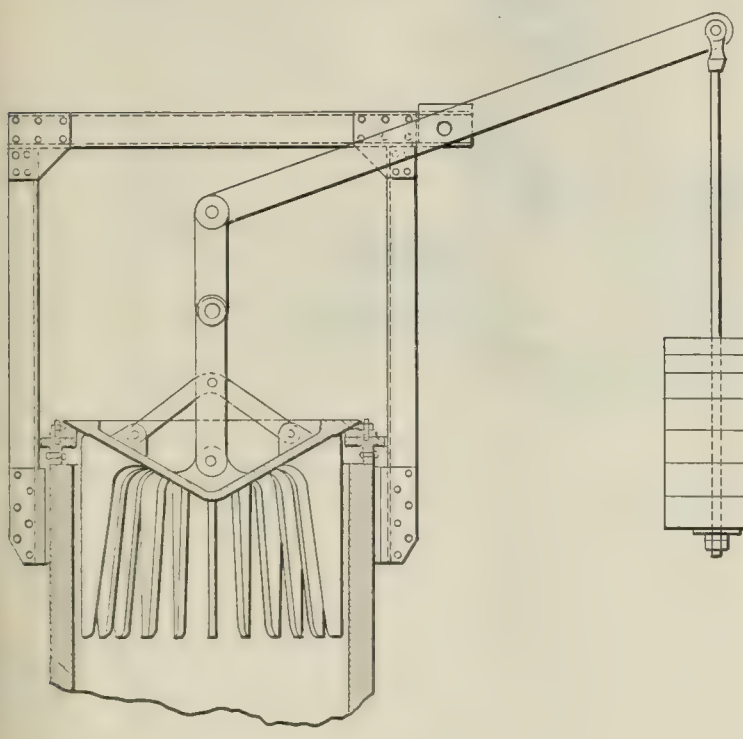


Fig. 1.—Blast Furnace Relief Valve Carrying Prongs.

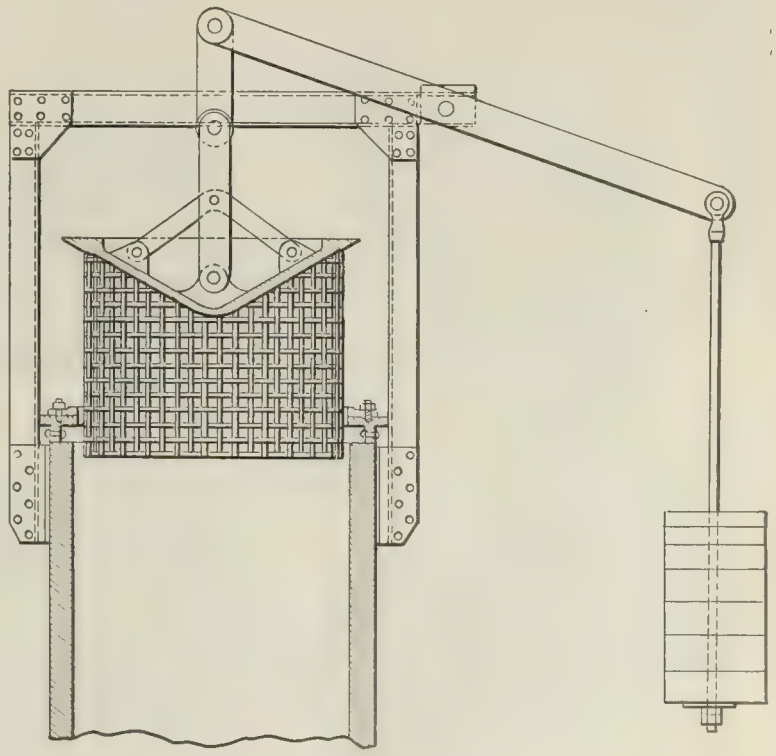


Fig. 2.—Relief Valve, Open, with Screen.

The Brazil Factory Promoting Club has been organized at Brazil, Ind., for the purpose of encouraging the location there of new industries. The city is the center of the block coal field of the State, and cheap fuel is one of the inducements offered. D. H. Davis is president; Del Stewart, vice-president; Roy Shattuck, secretary, and D. W. Brattin, treasurer.

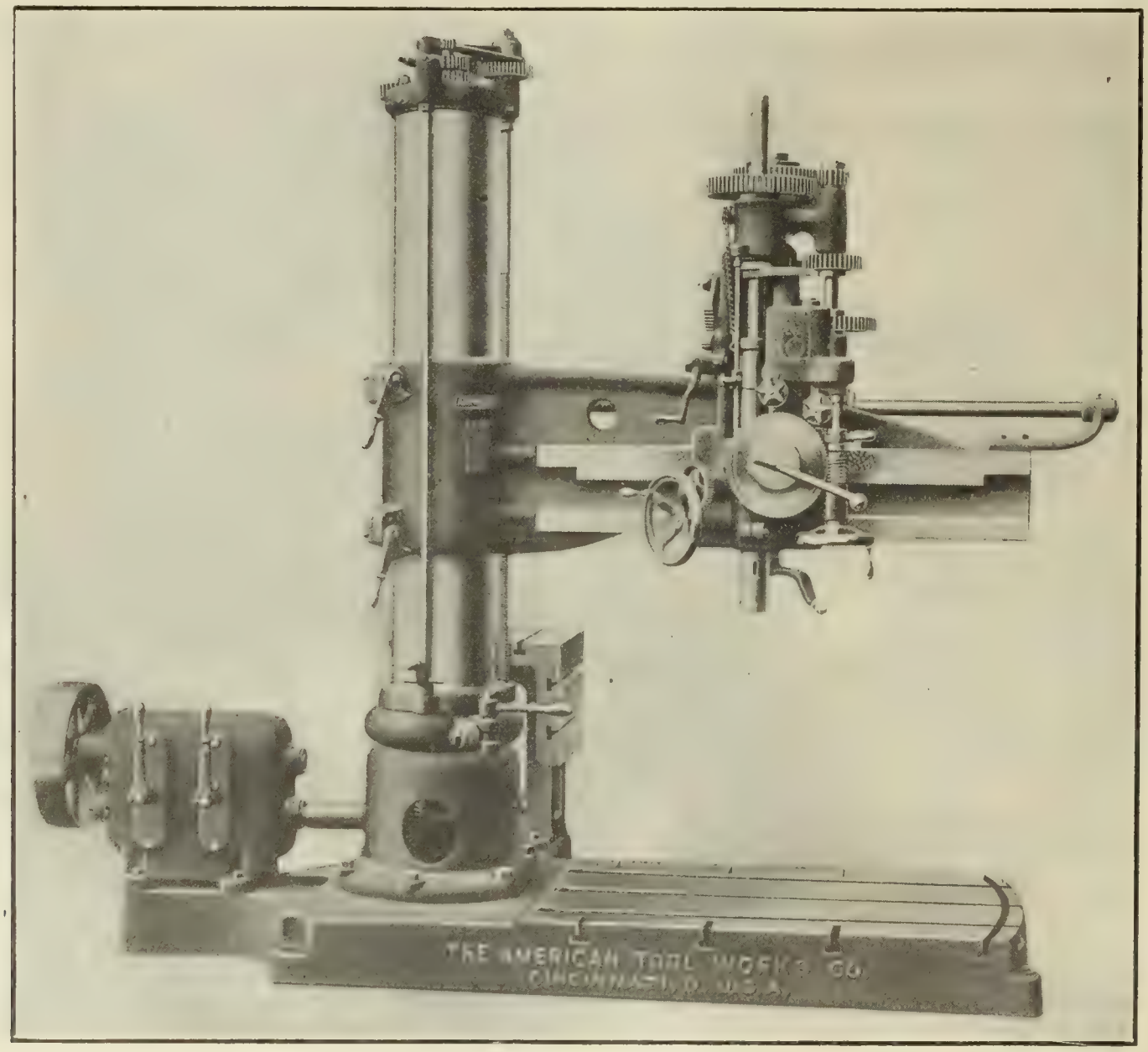
The lockout at the plant of the Driggs-Seabury Ordnance Corporation at Sharon, Pa., has been settled, the men deciding to accept a proposition made by the company to take back as many of the men as possible and at the rate of wage proposed originally by the company when the strike was declared.

The city of Canton, Ohio, through its Board of Trade, has undertaken the raising of a fund of $50,000 for the purpose of securing new industries for that city. About $16,000 has already been subscribed, and the committee

# The American Triple-Geared High Speed Radial Drill.

A new radial drill, the general features of which will be incorporated in the 4, 5, 6 and 7 ft. arm sizes built by the American Tool Works Company, Cincinnati, Ohio, is shown in the accompanying illustration in the 4-ft. size. The description given herewith for this size applies also for the larger sizes in all respects except as to dimensions. Principally the machine has been designed to adapt it to the use of high speed steel twist drills, such, for example, as the Celfor type, with which it is possible to do extremely rapid drilling. Drills of the sort referred to are provided with liberal clearance, so that the tendency of the chips to crowd at high speed and heavy feeds is avoided, making it possible to operate at speeds much beyond those possible with the ordinary twist drills.

From the standpoint of producing capacity, the company regards this drill as the most remarkable tool it has developed in some time.




The 4-Ft. Triple-Geared High-Speed Radial Drill Built by the American Tool Works Company, Cincinnati, Ohio.

The new machine is not only provided with a wide range of spindle speeds, but, being capable of transmitting a greater power than usual, is particularly adapted to heavy tapping. In a test, referred to later, of a 4-ft. machine, a 6-in. pipe tap was driven without evidence of distress. Other tests record remarkable results in the way of rapid drilling.

Particular attention is directed to the powerful frictions in the speed box, tapping attachment and feed worm wheel, the latter operated by a quick return handle. Another thing the tests demonstrated is that these frictions hold when the drill or tap has reached its limit. The friction is therefore practically a positive clutch so far as the power needed is concerned. By rounding the edges of the teeth of the gears in the triple gear mechanism and by a special feature, the details of which are not disclosed at this time, the gears may be thrown in at high speed with practically no shock to the parts. Accidents from careless handling are thereby eliminated and rapid manipulation of the gear changes made without danger of breakage. This no-shock feature and the fact that all other speeds are thrown in by frictions gives some indication of what is posible in the way of rapid handling without danger to the machine, and which would be altogether out of the question if it were necessary to engage slip gears and jaw clutches of the ordinary type.

The new machine is built only as a plain radial drill, but it is equipped with either cone pulley or speed box drive. The 4-ft. size drills to the center of a circle 8 ft. 1½ in. in diameter. The greatest distance from the spindle to the base is 4 ft. 10½ in., the traverse of the spindle 15 in., and the traverse of the head on the arm 3 ft. 4¼ in. The feeding mechanism on the head affords eight rates of feed, ranging in geometrical progression from 0.0066 to 0.0633 in. per revolution of the spindle. Turning the dial on the speed box gives any one of these feeds, according to the index provided on the box and with reference to a fixed pointer. It is not necessary to refer to tables or keys to show what should be the subsequent handling of levers. When all geared feeds are provided instead of belted feeds, a greater producing capacity is insured and rapidity of change and positive action. The feeds operate through a friction, which permits crowding a drill to its limit without straining the feed works. At any position of the spindle the feed can be automatically tripped by an adjustable trip dog and pointer acting on a worm clutch. Depth graduations on the spindle allow all depths to be read from zero. Two or more tripping dogs can be used, making it possible to counterbore any number of holes without resetting. The trip acts automatically at the full depth of the spindle, preventing breakage of feed mechanism by overtravel.

The speed box is a powerful one of the geared friction type, providing four changes of speed, each instantly available by the handling of the two levers shown. The frictions are of the company's patent double band type, composed of but few parts; hense they can be made large

enough not to slip under the severest cuts, and loose, delicate parts are avoided. As before stated, there is no shock to the parts when throwing in any speeds. Any type of motor may be attached through gears, chain or belt directly to the speed box. It is the company's experience that a motor on a base connected by a gear to the four-speed box is the most efficient, simple and serviceable arrangement.

Twenty-four changes of speed are provided for the spindle, ranging from 18 to 356 rev. per min., in geometrical progression. Any change may be made without stopping the machine. Because of the wide range of spindle speeds and the exceptional driving power the machine may be effectively used either with ordinary or high speed twist drills of large sizes. The spindle is counterbalanced and has a frictional quick advance and return.

The column is of double tubular type, having a sleeve or outer column which revolves on conical roller bearings hardened and ground. This outer column is clamped in any position by a patent speed clamping ring like that used on other of the company's machines. The outer column is practically integral with the inner column, which extends the entire hight and has full bearings on the outer column at both top and bottom. The arm is of parabolic beam and tube section, offering high resistence to bending and torsional strains. The lower line of the arm is parallel with the base, making it possible to bring work close to the column without requiring a long reach of the spindle. The arm is clamped to the column by two binder levers and is raised and lowered rapidly by a double thread coarse pitch screw hung on ball bearings and controlled by a convenient lever.

For rapid movement only the head is moved along the arm by a hand wheel operating a spiral pinion in a rack. The device is self-locking at all points, so that it is only necessary to use the hand binder for the heavier operations. The triple gears are located on the head, where the greatest speed reduction is brought direct to the spindle. They may be engaged or disengaged while the machine is running by a lever conveniently located. The tapping mechanism is carried on the head between the triple gears and speed box, thus giving to the frictions the benefit of the triple gear ratio. Consequently unusually heavy tapping can be done, and the taps can be backed out at an accelerated speed. The lever for starting, stopping or reversing the spindle is on the head and maniplated from the front of the machine.

The base is of massive proportions, strongly ribbed, especially at the point of support of the column. The base is planed and has large T-slots with ample metal around them for securing work directly to the base. An extension to the base at the rear of the column accommodates a plain box or a universal table. The table has a top surface of 20 x 20 in., and also a side surface, which gives the equivalent of an angle plate. Both the top and side surfaces are planed and T-slotted.

The following tests of a 4-ft. triple geared high speed radial drill are interesting as showing something of the remarkable producing capacity of this machine:

*Drilling Test in Steel 1 In. Thick.*

| Size of drill. Inches. | Speeds. Rev. | Cutting speed. Feet. | Feeds. Per rev. | Feeds. Inches per min. | Back gears. Ratio. | Back gears. Position. | Actual Hp. |
|---|---|---|---|---|---|---|---|
| 9/16 H. S. | 356 | 52.3 | 0.012 | 4.27 | 1.48 | Top. | 4.2 |
| 3/4 H. S. | 313 | 61.5 | 0.012 | 3.75 | 1.48 | Top. | 10.8 |
| 1 1/32 H. S. | 188 | 50.9 | 0.024 | 4.51 | 1.48 | Top. | 9.0 |
| 1 5/32 H. S. | 188 | 56.9 | 0.024 | 4.51 | 1.48 | Top. | 9.3 |
| 1 23/32 H. S. | 128 | 57.6 | 0.024 | 3.07 | 4.22 | Middle. | 8.4 |
| 1 3/32 H. S. | 167 | 86.2 | 0.012 | 2.00 | 1.48 | Top. | 7.8 |

*Drilling Test in Cast Iron 2 In. Thick.*

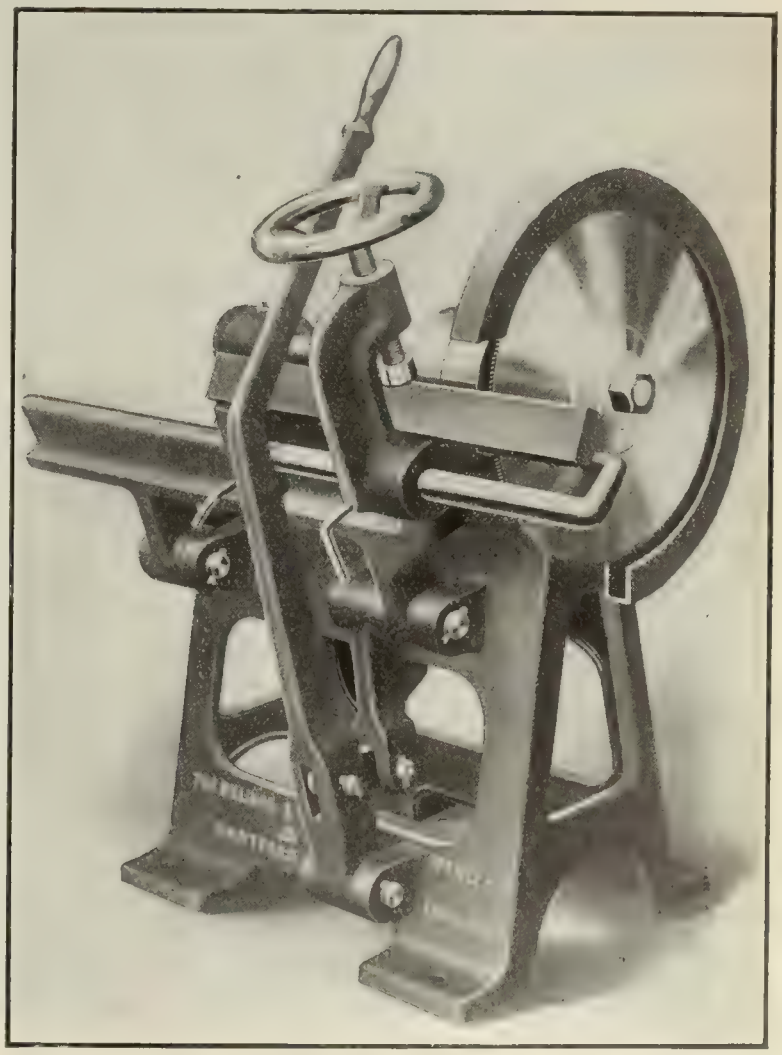
| Size of drill. Inches. | Speeds. Rev. | Cutting speed Feet. | Feeds. Per rev. | Feeds. Inches per min. | Back gears Ratio. | Back gears Position. | Actual Hp. |
|---|---|---|---|---|---|---|---|
| 1/2 C. | 356 | 46.6 | 0.046 | 16.3 | 1.48 | Top. | 5.75 |
| 1 C. | 216 | 56.6 | 0.046 | 9.9 | 1.48 | Top. | 5.45 |
| 1 1/32 H. S. | 313 | 84.5 | 0.046 | 14.4 | 1.48 | Top. | 13.2 |
| 1 7/32 H. S. | 313 | 99.8 | 0.046 | 14.4 | 1.48 | Top. | 15.3 |
| 1 5/32 H. S. | 216 | 83.1 | 0.033 | 7.1 | 1.48 | Top. | 12.9 |
| 1 23/32 H. S. | 216 | 97.6 | 0.033 | 7.1 | 1.48 | Top. | 16.8 |
| 1 31/32 H. S. | 128 | 66.0 | 0.033 | 4.22 | 4.22 | Middle. | 15.6 |
| 3 1/2 H. S. | 60 | 55.0 | 0.024 | 1.44 | 4.22 | Middle. | 10.2 |

*Tapping Test with Pipe Taps in Cast Iron 2 In. Thick.*

| Diameter tap. In. | Speeds. Rev. | Cutting speed. Feet. | Feeds. Per rev. | Feeds. Inches per min. | Back gears. Ratio. | Back gears. Position. | Actual Hp. |
|---|---|---|---|---|---|---|---|
| 4 | 18 | 21.2 | 1/8 | 2 1/4 | 12.02 | Bottom. | 6.6 |
| 5 | 18 | 26.2 | 1/8 | 2 1/4 | 12.02 | Bottom. | 7.7 |
| 6 | 18 | 30.8 | 1/8 | 2 1/4 | 12.02 | Bottom. | 9.0 |

## An Improved Billings & Spencer Hot and Cold Saw.

The Billings & Spencer Company, Hartford, Conn., has brought out an improved hot and cold saw capable of cutting hot, steel sections up to 3 in. diameter, and cutting cold, soft steel and iron sections up to 1½ in. diameter. The machine, while similar in design to the older model, differs materially in details of construction. It is designed for the rapid cutting of bar stock and the ends of such forgings as crank shafts, spindles, axles, &c. Being able to cut cold as well as hot metal, it will



The Latest Type Hot and Cold Saw Built by the Billings & Spencer Company, Hartford, Conn.

serve for general purposes as well as for those of the forge shop.

The illustration shows a square bar clamped to the carriage ready for cutting. The drive is from a pulley on the saw spindle. Provision is made for the attachment of a motor to drive by belt to the spindle pulley. The spindle has bronze bushed bearings with ring oilers. The feed of the saw is by hand through a combination of levers. The carriage is stopped in both backward and forward positions, the latter by an adjustable stop, in all cases by coming in contact with the frame. A gauge is provided for cutting duplicate lengths.

The diameter of the saw is 20 in., its thickness ⅛ in. and its speed 2500 rev. per min. The belt is 4 in. wide. The machine complete weighs 900 lb., and without the motor occupies a floor space of 36 x 56 in., and with it 54 x 56 in.

R. Pitaval has acquired by purchase the *Echo des Mines et de la Metallurgie*, the *Journal du Four Electrique et de l'Electrolyse*, the *Revue Generale de l'Acetylene* and the *Annuaire Universel des Mines et de la Metallurgie*. The editorial and business offices have been transferred to 68 Rue de la Chaussee d'Antin, Paris.

# A Plant for Hardening High Speed Steels.

The use of the barium chloride bath for heating high speed steels as a part of the process of hardening such steels has been attended with very satisfactory results, on the testimony of those who were among the first to adopt it in the United States. The employment of electricity for heating the bath was described in an article in *The Iron Age* of January 3, 1907, page 17, and its advantages pointed out. In this country, however, the gas furnace has been especially adapted to the barium chloride process, and is used by those who have been instrumental in the more general introduction of this method of hardening. Wheelock, Lovejoy & Co., representatives of the Firth-Sterling Steel Company, were quick to recognize the value of the barium chloride bath, and at their New York and Boston warehouses have installed such plants for hardening the tools of their customers. A view of the hardening equipment provided at the New York store of the company, at 23 Cliff street, is given in Fig. 1. In addition to the crucible gas furnace for the barium chloride bath, the outfit includes preheating furnaces, an oil tempering furnace and quenching baths.

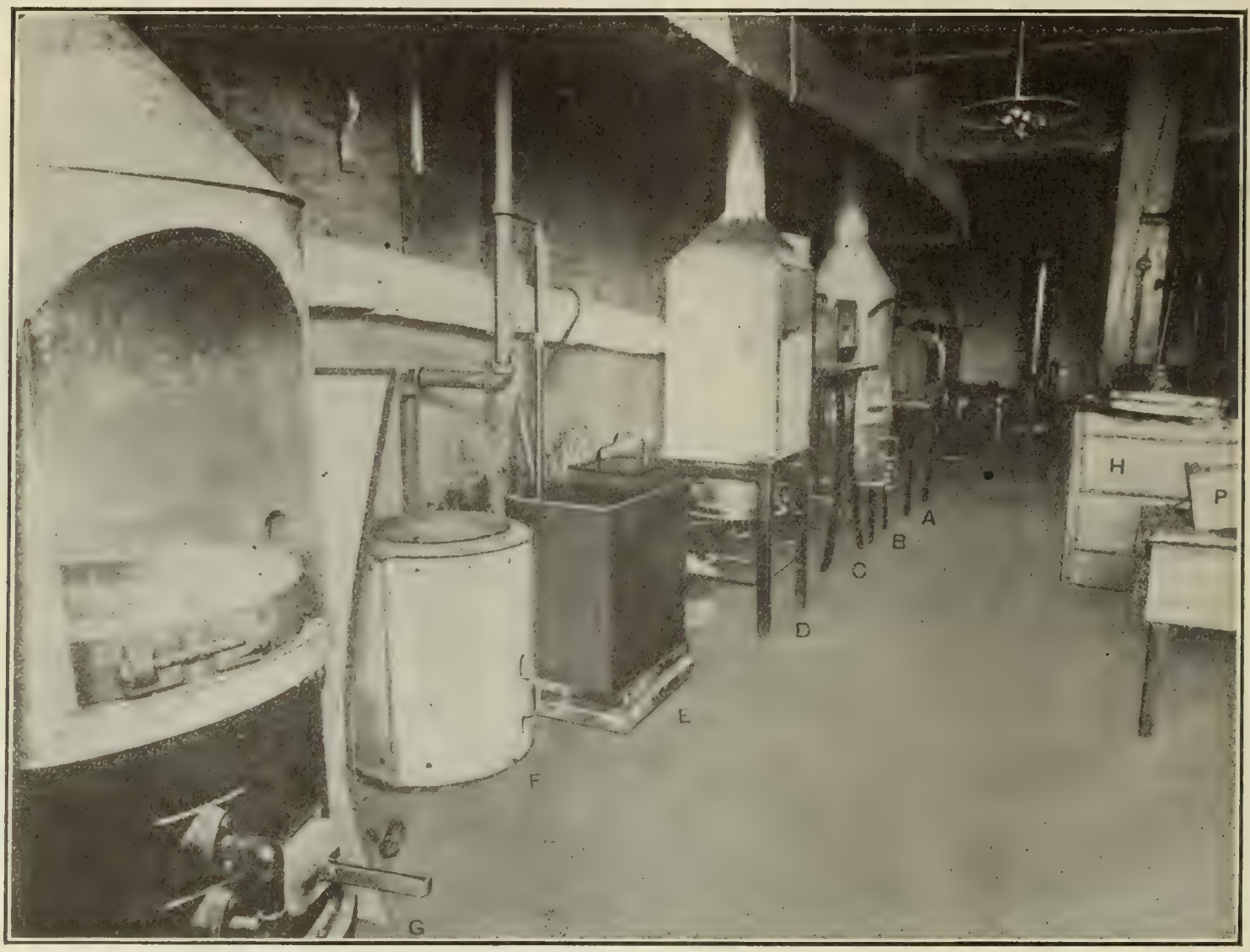



Fig. 1.—Equipment of Wheelock, Lovejoy & Co., New York, for Hardening Steel Tools.

In the illustration, beginning at the farther end of the line, A is an oven furnace used for preheating large tools, B a hooded gas furnace for heating the barium chloride bath, C a forge used for preheating smaller articles, D a hooded lead pot for the treatment of carbon steels, E an oil tempering vat equipped with a thermometer, F a pickling tub, G a large barium chloride gas furnace, H an oil quenching vat and P a pyrometer on a portable stand. A No. 3 American Gas Furnace Company blower, driven by an electric motor, supplies the blast at a pressure running up to 5 lb., and gas is taken from city pipes. In Fig. 2 is shown the barium chloride gas furnace of the American Gas Furnace Company with hood removed. It has a sheet metal shell, lined with special firebrick, capable of withstanding high temperatures. A graphite crucible, which contains the bath, is set in the furnace, as shown in Fig. 3. The crucible, as it has been commonly used in these furnaces, comes up just beyond the furnace chamber rim, and since the gases must be kept from contact with the melted barium chloride bath, it has been customary to cement the joint between the crucible and the rim. Wheelock, Lovejoy & Co. avoid the necessity of sealing the joint and at the same time prevent the unbearable chlorine fumes that would result if the flame reached the barium chloride, by using a long crucible, the rim of which is flush with the upper side of the firebrick top, as shown in the illustration. The hatched portions of Fig. 3 at the sides show the special firebrick lining, inclosing which is a sheet metal shell. The top fits so close to the crucible that there is no play of flame, though the necessary vent is afforded. The exhaust opening provided in the furnace chamber in the usual construction of these furnaces is at the side of the gas inlet. The gas is admitted at an angle, so that the flame makes a complete circuit of the crucible before coming to the exhaust opening, thus giving an even heat. A firebrick plug fitted with a handle closes the exhaust opening, according to the construction shown in Fig. 2, so that the loss of heat may be kept at the minimum.

The barium chloride furnace in the plant illustrated has been employed largely in the hardening of taps, reamers, cutting dies, drills, milling cutters and saws. The tool to be treated is first heated in an auxiliary furnace. Meanwhile the barium chloride has been melted in the crucible and brought to the temperature required, as indicated by the pyrometer. A small amount of soda ash is thrown upon the bath, preventing the giving off of fumes and thus also saving the steel from discoloration. When the desired temperature is reached, as indicated by the pyrometer, the steel is plunged in the bath. Unless the tool be small and thin, there will be a measurable reduction in the temperature of the bath, and the steel is usually kept immersed until the temperature again mounts to that indicated before its introduction. For high speed steels this temperature is usually 2150 degrees F. Then follows quenching. This is always done in an oil bath, except in the case of lathe tools, which may be treated in an open fire. To cool such tools as cutters and reamers by an air blast would doubtless cause them to be brittle.

Drawing the temper of the hardened tools is accomplished in an oil bath, a thermometer being used. The temperature is regulated by the requirements of the tool. For high speed steels this ranges from 400 to 450 degrees F.

The low temperature at which lead melts and the rapid oxidation of a lead bath, with the formation of a heavy scum, called for the substitute that has been provided in the barium chloride bath. It was found in experiments made with the lead bath in hardening high speed steel that it was impossible to retain the high temperature in the bath that is necessary to insure uniform results. In addition to making possible high temperatures, the barium chloride avoids the oxidation that sometimes takes place as tools are passed from the hardening to the oil quenching bath. Where the barium chloride leaves a film on the tool this can readily be brushed off or jarred off on removal from the quenching bath. The brittleness often found in tools with thin projecting parts, as in cutters, after hardening in usual ways, is obviated by the barium chloride bath. Further, the temperature being raised evenly, tools with irregular or projecting surfaces may be hardened without the liability to warping or changing their size, which often causes difficulty. Perhaps the most important fact in connection with the use of barium chloride for hardening is that the tools retain their size and shape much better than if treated in a gas furnace or an open fire of any kind.

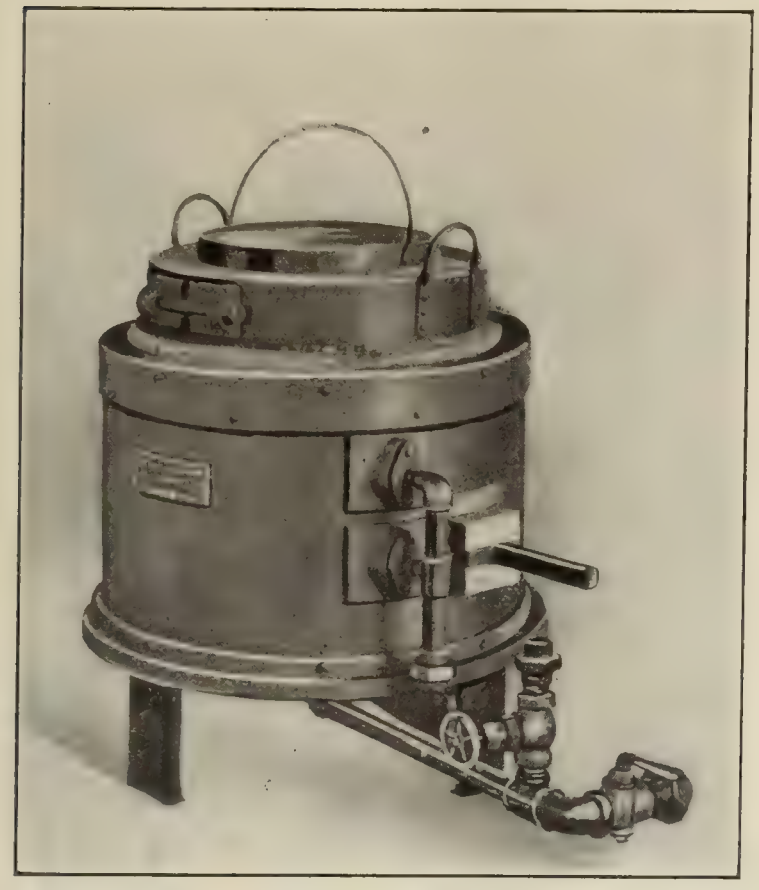


Fig. 2.—Crucible Gas Furnace of the American Gas Furnace Company for Barium Chloride Bath.

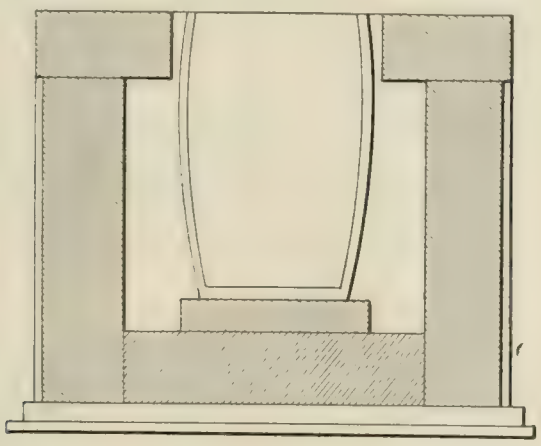


Fig. 3.—Section of Barium Chloride Gas Furnace and Crucible.

## Customs Decisions.

### Loom Pickers.

It has been decided by the Board of United States General Appraisers that loom pickers composed of raw hide and metal cannot be admitted to duty at 35 per cent. under the provision in the tariff act for "manufactures of leather." P. H. Petry & Co., New York, and Charles Bond, Philadelphia, appeared before the board as protestants against the action of the customs authorities in classifying the merchandise at 45 per cent. under the metal schedule. Several other claims for lower duty were made by the importers, but the board confined itself to the consideration of the claim for duty as manufactures of leather. General Appraiser Fischer, who writes the decision for the board, says that articles made of raw hide are not entitled to consideration under the paragraph of the act providing for manufactures of leather. The protests are, therefore, overruled.

### Iron Ore for Paint.

The refusal of the Government to grant the classification sought by importers of hematite iron ore was attacked before General Appraiser McClelland October 19, when witnesses were called and testimony was adduced to prove that the contention of the protestants for lower duty should be granted. The United States Circuit Court of Appeals decided last May that hematite iron ore, which in its imported condition cannot be used as a pigment, is dutiable as "iron ore," rather than as "colors, pigments, crude, not otherwise specially provided for," under paragraph 58. This decision was in the nature of a victory for the importers making the test case, and it was assumed the end of the controversy had been reached. Recently, however, the Government refused to grant the lower rate of duty sought by New York importers on importations claimed to be identical. The Treasury Department, however, now maintains that many of the importations being made are not properly dutiable under the iron ore schedule, but should pay the rates provided for colors. The importers, on the other hand, claim that no difference exists in the character of the products granted lower duty by the Appellate Court and those now under investigation by the Board of Appraisers. In order to convince the General Appraisers of the correctness of their claims, the importers called several well-known dealers, while the Government also sought to prove its contention by competent witnesses.

### Sundry Decisions.

The Board of United States General Appraisers has recently disposed of a number of routine customs cases affecting the classification of metal imports. The following protests were sustained: A. Kastor & Bros., pocket knives; Knauth, Nachod & Kuhne, umbrella and cane handles of metal; Hermann Boker & Co., steel in strips; Charles Seitz, needles with machines; Hermann Boker & Co., nickel alloy in sheets; Morris European & American Express Company, Ltd., automobiles repaired abroad; Arthur W. Robson, steel tubes; American Bead Company, miniature cinematographs. Protests overruled were filed by De Dietrich Import Company, automobile parts: A. Kastor & Bros., lamp scissors; Swayne, Hoyt & Co., powdered ochre containing lead; Thomas Meadows & Co., carriages of metal and wood; L. W. Levy & Co., toy gambling devices of metal.

**The New England Foundrymen's Association.**—The monthly meeting of this society was held at the Exchange Club, Boston, October 22, with President Henry F. Arnold in the chair. Announcement was made that the Committee on Shortages would make a full report of the result of its investigations at the November meeting. M. W. Alexander, General Electric Company, Lynn, gave an interesting talk on "The Necessity for and the Methods of the Apprentice System," which was followed by a discussion. The usual dinner was served.

Hyde Brothers & Co., Empire Building, Pittsburgh, have received a contract for 14 125-hp. Hyde waste heat boilers, to be installed in the new puddling plant being built by A. M. Byers & Co., Inc., at Girard, Ohio.

# The Oval Blast Furnace of the Newport Iron Works.

At the recent Middlesbrough, Eng., meeting of the Iron and Steel Institute, the visiting engineers were particularly interested in the new No. 5 blast furnace of the Newport Iron Works of Sir B. Samuelson & Co., Ltd., which was built in oval, rather than circular, form, the design being the patent of Francis Samuelson and William Hawdon. The aim of the inventors was said to be to obtain an output equal to that of a modern American furnace, but with a lower initial cost, and a more economical operating cost. The following details of this new furnace and of the tunnel system of ore handling provided in connection with it are taken from the London *Iron and Coal Trades Review:*

Putting, for the time being, other considerations to one side, the three essentials in a plant for large makes are: The necessary area in the melting zone of the furnace, or at the level of the tuyeres, where the oxygen of the air blown in is brought in contact with the fuel, which, of course, produces the necessary heat to smelt the ore; capacity of blowing engines, by which is understood the necessary volume and pressure of blast; and sufficient stove capacity to heat up the volume of air to the required temperature.

The American pig iron makers obtain the first essential by increasing the diameter of the well of the furnace at the tuyeres (to get the larger area at the melting zone). This, of course, has necessitated a corresponding increase in the power of their blowing engines, in order to obtain the necessary blast pressure to penetrate the additional mass of ore in the well of the furnace. It is well known that if the mass is not thoroughly penetrated by the blast, a center cone remains unmelted, which not only adds materially to the consumption of fuel, but prevents the making of good iron.

### High Blast Pressure Means Expensive Engines.

This increased pressure is the principal and most serious matter for consideration. Increased capacity, as regards dealing with the volume of air for increased makes, is necessary in both blowing engines and stoves. The stoves, to withstand the higher pressure, have to be more strongly built, and are therefore more costly. But the most costly item, and the one which it was sought to avoid in the oval furnace, is the enormous strength requisite in the blowing engines, which, of course, increases with the pressure of blast required, and because of the additional strength required to withstand the higher pressure, the air mains and adjuncts are also more costly. A blast pressure of 5 to 6 lb. per square inch was usual under the older designs; one of 12 to 15 lb., or even more, is common with the new design adopted in American practice.

The oval furnace built by Messrs. Samuelson is blown by the old blowing engines, and works on a pressure of 6 lb. blast with very great regularity, while the results, both as regards make and fuel consumption, are highly satisfactory. The furnace, which is making Cleveland iron, averaged over the three months ending with May last, an output of 1344 tons per week, the best four weeks averaging 1447 tons per week. The installation of this furnace necessitated no alteration in the existing plant.

It is obvious that an engine giving a 15-lb. per square inch pressure of blast requires about two and one-half times the horsepower of an engine blowing 6 lb. blast pressure, in addition to which the boiler capacity must be proportionately greater. Blowing engines made for such high pressures are very costly units, and require considerable labor and attention in repairs. Hence, well on to 50 per cent. of the horsepower required for the production of the higher pressure of blast is saved in an engine of lower pressure, and this power becomes available for generating electricity or for other purposes—a very great desideratum where there are steel works in connection with the blast furnaces.

The inventors claim that the adoption of their oval furnace, whether in an old or new plant, is productive of this valuable saving of power. It will be observed from the accompanying sectional views, Figs. 1 and 2, that the oval well on its minor axis is much narrower than the round. The distance, therefore, from tuyere to tuyere is less, and consequently a lower pressure of blast penetrates the material in front of the tuyeres and at the melting zone in the furnace. With a round furnace of the same area the diameter is necessarily large (*i.e.*, a greater distance from tuyere to tuyere), and a correspondingly greater pressure of blast becomes necessary.

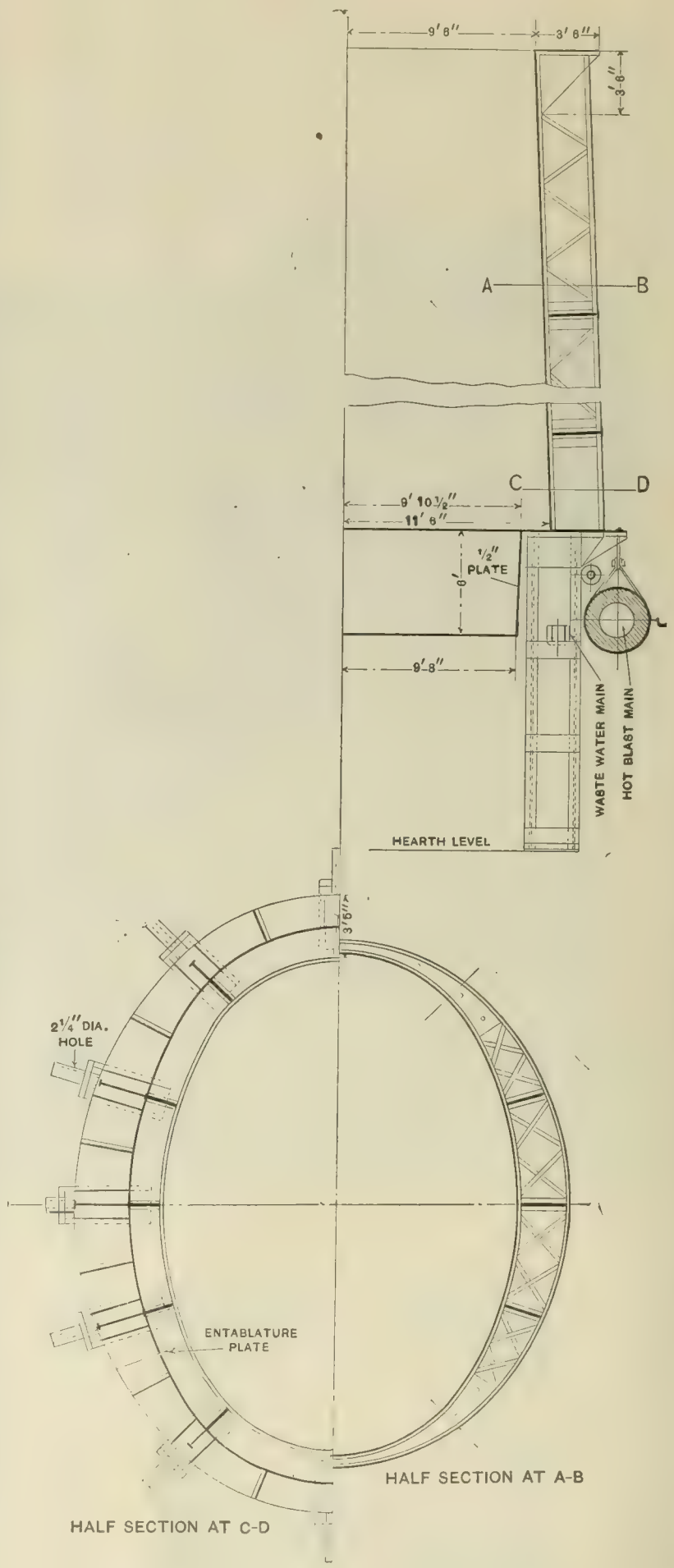



Fig. 1.—Half Sectional Elevation and Plan of Oval Blast Furnace at the Newport Iron Works, Middlesbrough, England.

Fig. 1 shows how girders are placed both round the shell and vertically, to strengthen the oval form. The pressure of materials inside the furnace, without this support would tend to bulge out the sides of the oval. These girders are composed of 9-in. beams at the ends, and increased to 4 ft. by 7½ in. deep lattice girders at the sides. The charging bell is oval, giving an equal distribution of materials at the top of the furnace, which is maintained throughout the melting process.

A certain amount of doubt was expressed by experts as to whether the oval would work with as great regularity as the circular form, but this has apparently been quite set at rest by the very regular working of the furnace in question, which has since its erection, given less trouble than almost any other furnace at Newport Works. The claimed regularity in the quality of the iron should be of great benefit to the steel worker, and the large makes, with a satisfactory saving in fuel con-

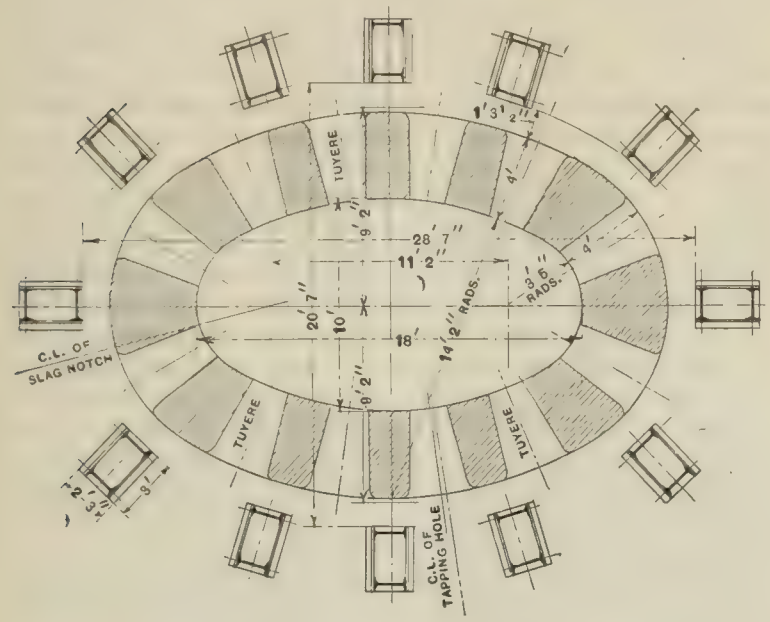



Fig. 2.—Sectional Plan at Tuyeres of Oval Blast Furnace.

sumption, from a comparatively cheap plant, form a welcome asset in the economical manufacture of pig iron.

**Ore Storage and Tunnel System.**

The new ore handling system, which is about completed, and the conditions it was designed to meet are described as follows:

It has long been stated that the supply of best rubio ore from the Bilbao District of Spain is running low, and with present rate of consumption will not last many years longer. The extended use of steel in Great Britain during the last few years has entailed a heavy demand for hematite pig iron, and as practically the whole of the British supplies of ore for this class of iron are in the Cumberland District and are of comparatvely small dimensions, the East Coast and Welsh firms who have taken up the manufacture of steel have imported the cheaper Spanish ores in order to compete with the Cumberland makers. Cumberland, in its turn, as its own supplies became exhausted, has also been obliged to purchase from abroad. So great has been the demand, not only in Great Britain, but on the Continent and America, for Spanish rubio ores, that the best ores in the Bilbao District have been rapidly used up, until now some difficulty is experienced in obtaining Bilbao ores of the best quality. Consequently, the smelter who uses these ores has been obliged to look further afield for supplies, and large quantities are now imported into this country from the North and South shores of the Mediterranean, from the South of Spain, and from Algeria.

When rubio ore was first imported, for many years, in fact until its exhaustion was being felt, its quality was reliable and fairly uniform; nowadays it is anything but so. It has become unrelable as regards its contents of silicon, sulphur, and phosphorus, while the Mediterranean ores are usually mechanically fine and of varying analysis. Such being the case, users are met with the difficulty of mixing these various ores in right proportions when filling them into blast furnaces. One cargo differs from the next, and it can easily be seen that when filling from the stock of some thousands of tons of ore, unless great care is exercised, trouble will result, for the pig maker is called upon to deliver iron giving an analysis of not more than 0.05 per cent. of phosphorus, and 0.05 per cent. of sulphur, and as coke, which is used to smelt the ores, adds some 0.008 per cent. of phosphorus, and also some sulphur, a very small margin is left for variation of these elements in the ore which has to be used. It was a consideration of these facts which led Messrs. Samuelson to decide upon the erection of their present extensive storage yard and stock bunkers.

These bunkers will be capable of holding 35,000 tons of ore. There are two tunnels, as shown in the cross-section, each being 9 ft. wide and 9 ft. 6 in. high. Inside the tunnels, and through the concrete which forms them, are placed chutes 8 ft. 6 in. apart, in zig-zag fashion, along the length of the tunnel. A slide in these chutes, actuated by hand, allows the ore to pass from the stock into buckets, of 2 tons capacity, which will run along the tunnels on to a platform outside, where the ore will be tipped into 30-ton cars. These cars will be hauled to the furnaces, tipped into a hopper close to the furnace hoists, and the ore from thence drawn into barrows, which will be taken on to the hoist platforms in the usual way. The furnaces at Newport Works are not adapted to the American incline system.

The sides and center of the ore store are formed of slag, which is tipped to its natural angle of rest, 45 degrees, and faced with lumps of slag, which are grouted together with cement. The storage space over the tunnels is divided transversely into four main parts by concrete piers, and is also divided lengthwise by a wall which separates the ore lying over one tunnel from that lying over the other tunnel, thus dividing the storage space into eight main parts. Between the piers are iron trestles, to carry the superstructure, and these again, if necessary, will be planked up with wood to divide the parts further into smaller compartments. The object of these divisions is to give separate storage to each cargo of ore as it comes from the wharves and is tipped into the ore store. Each cargo is analyzed, and will be drawn from according to the mixtures of ores required.

The buckets will be moved through the tunnels by rope haulage, actuated by an electrically-driven winch or drum. The buckets will be uncoupled opposite the desired chute, then filled by the withdrawal of the slide, hitched to the rope, and so drawn on the platform at the end of the tunnels, where one man and a boy attend to tipping them into the trucks, so that very little manual labor will be required in filling up and mixing these ores from the stock yard.

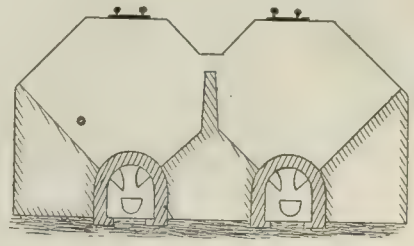


Fig. 4.—Cross Section of Tunnels and Ore Stock Piles.

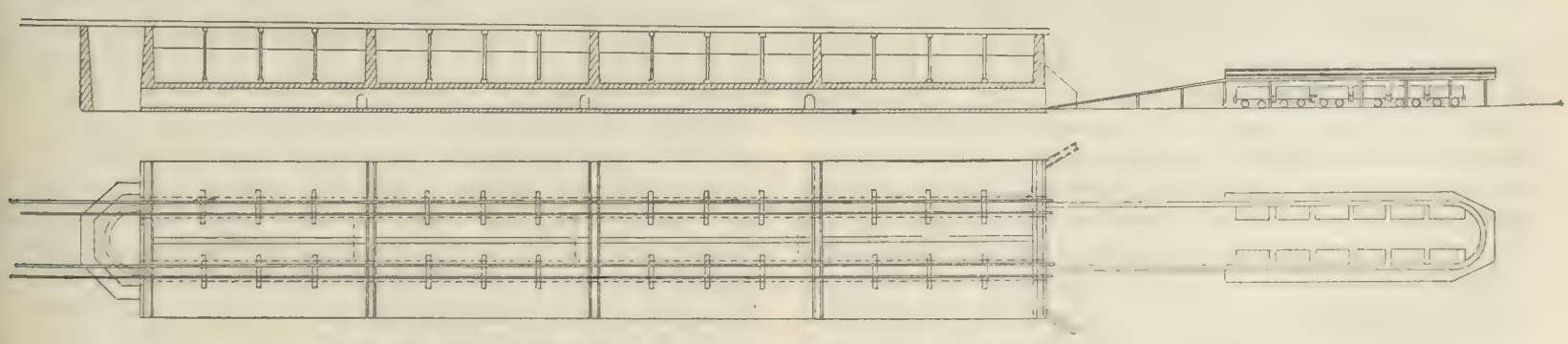


Fig. 3.—Plan and Sectional Elevation of Ore Storage and Tunnel System.

# A New Waltham Bench Lathe.

Many improvements have been made in the latest model of bench lathe built by the Waltham Machine Works, Waltham, Mass. Among its most prominent features are the range of work accommodated—up to 8 in. diameter and 32 or 36 in. long for work held between centers, and a wire chucking capacity through the spindle of ⅝ in.; an increased weight of the slide rest, a swiveled squaring device for the slide rest with a long bearing on the front of the bed, and clearance on the front of the foot stock to give more room for operating the slide rest handle. In the machine as a whole the general aims were simplicity of construction, pleasing outlines, ease of making adjustments, a light running but rigid spindle, and attachments convenient to handle and of most useful size.

The bed is furnished in two lengths as before suggested, and has two large pedestals. On the back of the bed is a T groove extending its length, and as the bed is otherwise symmetrical this groove can be used on the front if the work requires it.

To allow a large chuck capacity within reasonable spindle diameter, on account of the high speed often required, a spindle has been adopted with straight bearings running in split taper bushings which are closed to fit the spindle by adjusting nuts threaded to outer bushings. The inner faces of the bushings serve as thrust bearings, and as the adjustable collet and check nut are attached to the hub of the pulley, the removal of the pulley screw is all that is required to draw the spindle out through the front bearings. The spindle is as easily returned and without disturbing the adjustment. In the flange at the large end of the cone pulley there are three circles of index holes used for dividing work. To relieve these holes of use when, for convenience in chuck operating, it is desired to lock the cone pulley, another circle of holes is provided in the smaller flange at the opposite end of the pulley, and a strong pin passes through the outer end of the headstock casting to engage these holes.

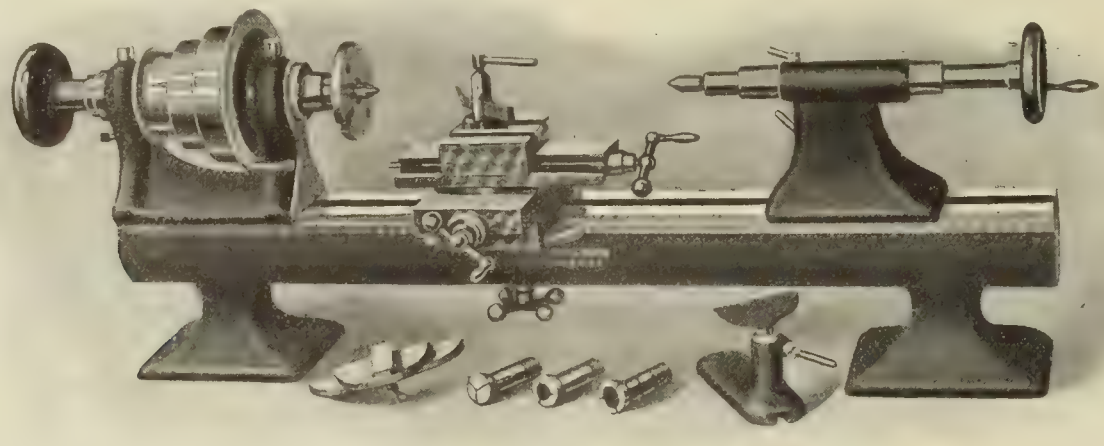
Two forms of wire chuck are furnished, one of which is of reinforced construction so that pieces up to 13-16 in. diameter can be taken into the chuck to a depth of ⅞ in. The spindle of the footstock is 9¼ in. long, and has a bearing the full length of the casting, 6¼ in. At the hub of the foot stock hand wheel are micrometer graduations. The hand rest is of usual form and is clamped to the bed by a bolt which also secures the slide rest and other attachments.

For turning operations two forms of slide rest are furnished. One having a plain squaring device on the front of the bed, and the other a swiveling arrangement turning to 45 degrees either way. The latter in connection with the swivel above the lower slide provides for turning or grinding two angles with one setting of the slide rest. The squaring devices on both slide rests have a bearing against the front of the bed below the lowest parts of the headstock and footstock, enabling them to be made longer and therefore more accurate. The upper swivel of the slide rest turns on a central pin, and is clamped by two bolts and operated by a single lever. The feed screws have hardened bearings and are provided with indexes graduated to 0.001 in. on the swivel screw and 0.0005 in. on the cross slide screw. The tool slide is flat on the top so as to take the various attachments and has two T grooves for the tool post.

For outside grinding there is furnished in place of the usual tool post grinder an attachment which clamps directly to the tool slide and the slide rest. Even with a grinding wheel of comparatively large size there is therefore less freedom from vibration. A vertical screw adjustment secures the accurate alignment of the centers. A two-step pulley is furnished with the outside grinding attachment, giving, in connection with the countershaft, 12 speeds between 1000 and 11000 rev. per min. The grinding wheel may be used on either end of the spindle and on the opposite end there is a taper hole to take a small arbor with which a smaller wheel may be used for inside grinding if desired. In general, however, a special attachment is furnished for that purpose, having a sliding spindle. This spindle may be swung away by loosening a clamping screw when it is necessary to examine the work, and instantly returned to its former position, which it would be difficult to do if the cross feed screw of the slide rest was depended upon. This attachment also has vertical screw adjustment for aligning.

In general, for screw cutting, it is better to use a special attachment which clamps to the rear of the bed. With this multiples of the thread on the master screw can be cut, and with the three screws furnished, all the more common threads can be cut. Other screws with special threads can be had, including metric threads. The master screw is directly beneath the swinging screw holder, and the nut is attached to the same holder eliminating the tendency to twist the bar or bend the nut carrying lever, that is encountered when the screw is placed at the headstock end of the bed. A holder for circular thread cutters is used and means are provided for tipping the cutter to the required angle in either direction. A tool post for rectangular tools can be furnished, but the circular cutters are recommended as in connection with the graduations on the hand wheel duplicate diameters of taps and screws can easily be obtained. When it is necessary to use the slide rest the whole attachment, including the hardened support for the tool holder stop screw can be tipped back by loosening three clamping screws. With the slide rest style of attachment any thread between 5 and 100 per inch may be cut by using the required gears.

In addition to turning and grinding it is possible to do milling operations in this bench lathe by using a milling slide rest designed for this purpose. The one furnished with the Waltham lathe dispenses with the usual idler pulleys by a special arrangement of the drive, so that the cutter spindle may be driven at any hight or at any angle. The horizontal slide can be swiveled through a full circle and by using the cutter spindle vertically, any angular cut can be made. The attachment can be applied either on the front or back of the lathe. The cutter spindle takes the same chuck as the headstock



The New 8-In. Bench Lathe Made by the Waltham Machine Works, Waltham, Mass.

spindle, and an index having three circles of holes permits the use of the attachment for holding the work while the cutter or grinding wheel is carried by the headstock spindle. An overhanging arm serves as an arbor support.

As an accessory to the bench lathe, a milling stand may be supplied, which, using the headstock and slide rest of the lathe, makes a convenient little bench miller. The company also makes a number of special attachments for use with the bench lathe, including a back rest, face plate, special headstock, and a three speed countershaft with a grinding shaft.

## The Potter & Johnston Screw Shaving and Turning Machine.

The Potter & Johnston Machine Company, Pawtucket, R. I., has brought out a new screw shaving and turning machine. This is specially designed for use with draw-in collets to finish studs from the bar or forgings, to reduce or round shafts on the ends, to finish bolt and screw heads and nuts, and to do a variety of other work. Quite frequently it is desired to point a bolt or a screw; the largest size of the machine will pass the hexagon head of a 1½-in. bolt through the collet and securely grip it ready for pointing. The tool is built in three sizes, Nos. 3, 4 and 5. That illustrated is the largest size.

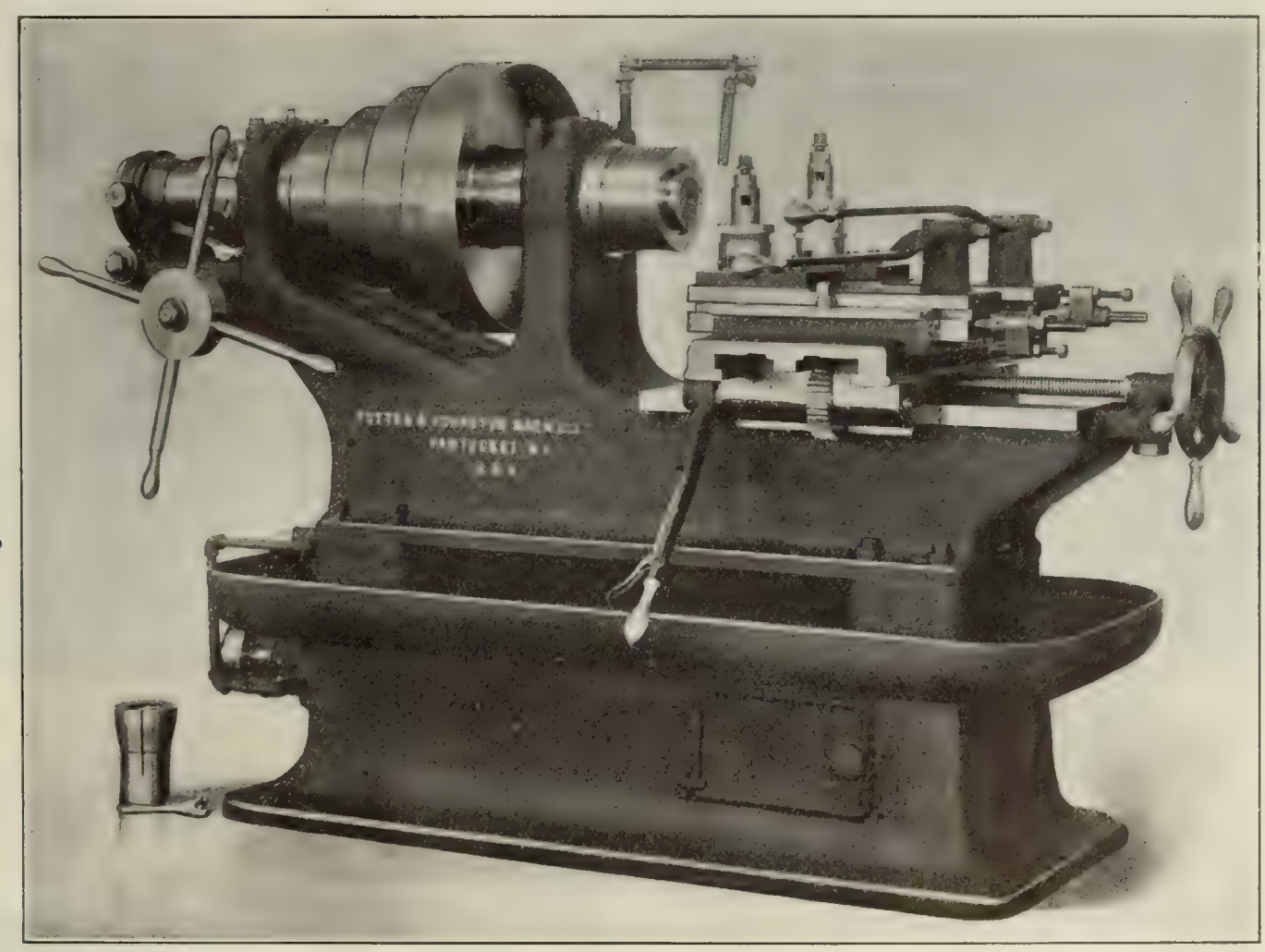
Two split collets and a pair of bushings are furnished with the machine in sizes to meet requirements within the capacity of the tool. Split bushings with either straight or taper hole may be used. On the No. 5 machine, as shown, the collet mechanism is operated by a pilot wheel located at the head of the machine. For the two smaller sizes a long hand lever suffices. The patented automatic universal lever chuck may be applied to the spindle nose, and is useful for gripping castings or forgings of all diameters up to 12 or 14 in. for performing short operations, such as facing, chamfering, recessing, &c. The automatic chuck is operated by a lever, and where pieces can be inserted into and removed from the chuck with one hand, it is unnecessary to stop the spindle.

The carriage has two slides, front and rear, in each of which is mounted a tool post. Each slide has its own operating lever for the longitudinal movement, which is by rack and pinion. Where more than one tool is needed for the front slide a hexagon turret may be substituted, with provision for carrying six tools. The turret is a solid steel forging, of great strength. For the cross movement the carriage is fed by rack and pinion, through a ratchet lever. The carriage is located at any position on the bed by a screw operated by a pilot wheel at the end of the machine.

The dimensions of the various sizes are as follows:

| | No. 3. | No. 4. | No. 5. |
|---|---|---|---|
| Swing over bed, inches | 16½ | 21 | 24¾ |
| Swing over carriage, inches | 7 | 8 | 12½ |
| Travel of carriage, inches | 8½ | 16 | 18½ |
| Travel of cross slide, inches | 5¼ | 7½ | 8 |
| Travel of tool slides, inches | 4 | 7 | 7½ |
| Width of belt, inches | 3 | 4 | 4 |
| Number of steps on cone | 4 | 4 | 4 |
| Diameter of front spindle bearing, inches | 2 7/16 | 3 9/16 | 5¾ |
| Diameter of rear spindle bearing, inches. | 2¼ | 3¼ | 5⅜ |
| Diameter hole through spindle quill, in.. | 1 | 1½ | 3 |
| Two-speed countershaft with tight and loose pulleys to run at, rev. per min. | 150-200 | 100-150 | 115-150 |
| Approximate weight, pounds | 1,800 | 2,400 | 3,350 |

The spindle of the No. 5 machine is mounted in babbitt boxes; in the smaller sizes the spindle bearings are of bronze. The collets are of tool steel, all parts subject to wear being hardened, and all revolving parts are accurately ground. The oil reservoir in the base of the machine is of large capacity. All oil is thoroughly strained before returning to the tank, and a large pump is provided that a supply of oil equal to any requirement may be assured.



The New Screw Shaving and Turning Machine Built by the Potter & Johnston Machine Company, Pawtucket, R. I.

The relation of antimony to babbitt, antifriction and other metals is the subject treated in a leaflet issued by C. W. Leavitt & Co., St. Paul Building, New York City. It shows the percentage of antimony and of other metals used in Britannia metal, pewter, Babbitt, general bearing metals, linotype and electrotype. Special attention is called to the A. S. P. brand of English Star antimony, advocated by the firm for the preparation of mixtures in which antimony is to be used.

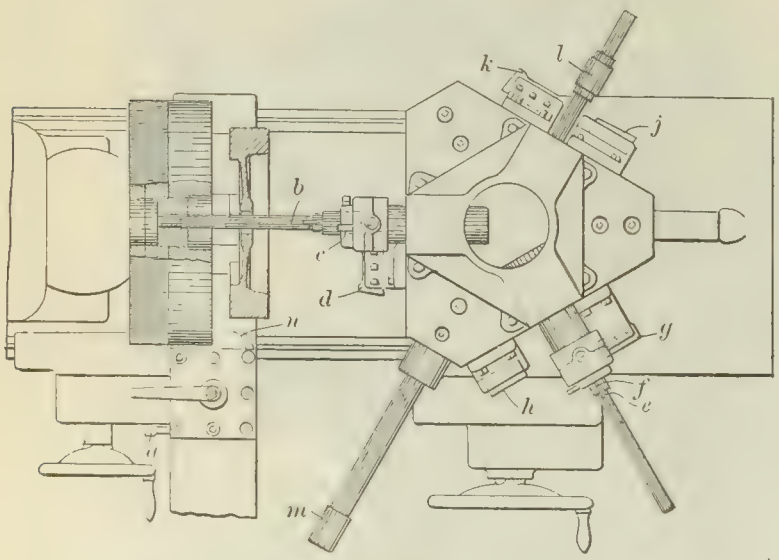
The American Furnace & Machine Company, Fulton Building, Pittsburgh, builder of gas producers, heating furnaces, &c., has received a contract from the National Brake & Electric Company, Milwaukee, Wis., for a 15-ton acid open hearth furnace.

## Pond Turret Lathe Work.

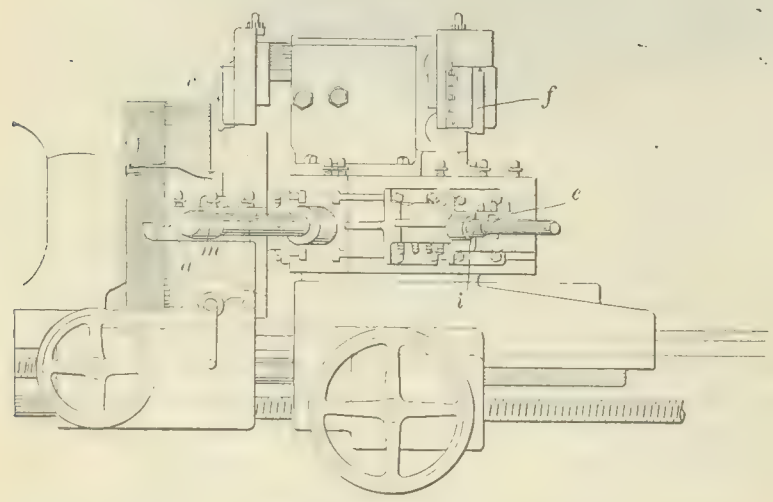
A rapid method of machining flywheels all over, suitable where large numbers of gasoline engines are built, is indicated in the accompanying illustrations. On the machine employed, a Pond rigid turret lathe, the carriage may be run under the chuck so that wide facing tools may be bolted directly to the broad faces of the turret. Two settings of the work are required to finish the opposite sides of the flywheels, and the two operations in detail are as follows:

For the first operation, Fig. 1, the work is held on the inside of the rim by a four-jaw chuck, using the hard jaws. By means of the tool *a* in the carriage turret, the face of the rim taper fits on the interior of the rim, the web and the hub are first rough turned. Then using the bar *b*, which has a piloting end supported in a bushing in the chuck, the hole in the hub is rough bored and the outside diameter of the flywheel is rough turned with a turning cutter, *c*, held in an extension turret tool holder, while at the same time the taper fit is rough formed by a forming cutter, *d*, held in a facing head.

The bore is finished using a finishing boring cutter *e*, in a boring bar having a pilot end supported in a bushing in the chuck. At the same time the outside diameter of the flywheel is finished, using a finishing turning cutter, *f*, held in an extension turret tool holder, and the rim and hub are faced with two finishing facing cutters *g* and *h*, held in facing heads. The work is steadied by a bushing, *i*, on the boring bar, while taking these facing




TOP VIEW



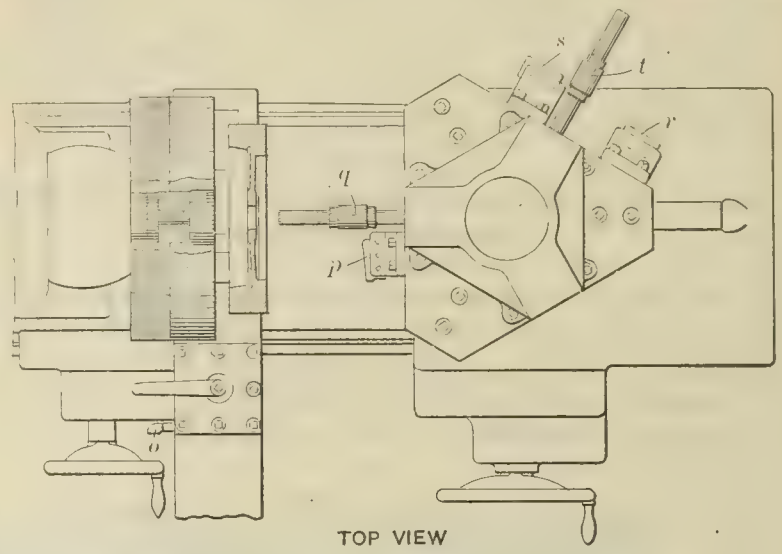

ELEVATION

Fig. 1.—First Operation in Finishing a Gasoline Engine Flywheel.

cuts, and the boring cutter and turning cutter are set so that they have finished cutting before the facing cuts begin.

With the facing cutter *j* held in a facing head, the face of the web is finished and the taper fit is finished with the forming cutter *k* held in a facing head. While doing this the work is supported by a bushing *l*, held on a supporting arbor. Finally the bore is reamed, using a reamer, *m*, held on a floating reamer holder, and the groove on the inside of the rim is cut by a bent tool, *n*, held in the carriage turret.

This side of the wheel being finished, the work is reset for the second operation, and is held in soft jaws bored to fit its outside diameter, as in Fig. 2. As before, the face and side of the rim, web and hub are rough turned, using the tool *o* in the carriage turret, and then the inside of the rim and the web are finished, using a cutter, *p*, in a facing head, while the work is supported




TOP VIEW

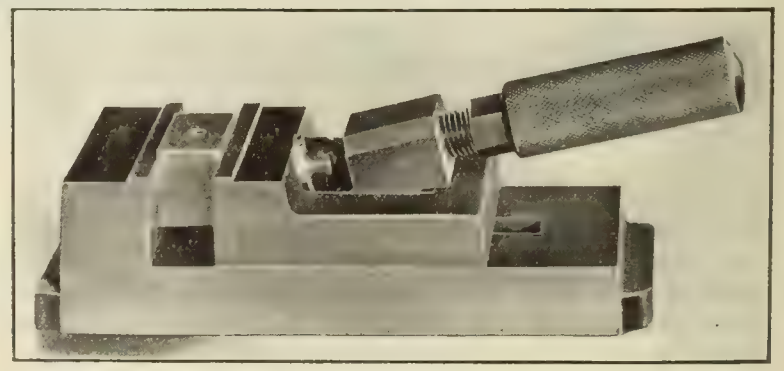
Fig. 2.—Second Operation, Finishing the Opposite Side.

by a bushing, *q*, held on a supporting arbor having a pilot end supported on a bushing in the chuck. The last work on the wheel is the finish facing of the rim and hub, using the facing cutters *r* and *s*, held in facing heads, while the work is supported by a bushing, *t*, held on a supporting arbor having a pilot end supported in a bushing in the chuck. The time required to thus finish a flywheel of about 18½ in. diameter is about 60 min.

## The Armstrong Quick Action Drill Vise.

A convenient tool for toolmakers and general machine shop use is the quick action drill vise made by the Armstrong Bros. Tool Company, Chicago, Ill. The quick adjustment of the sliding jaw and the means employed to set it quickly and firmly at any point within its range of travel are the chief features of its design.

The screw head carrying the vise screw is hinged to a post which projects downward through a slot in the movable jaw, and is connected to a wedge key fitting into a bevel slotted runway in the under side of the base. The screw head is provided with eccentric bearings, which rest upon the top of the base so that downward



A New Quick Action Drill Vise Made by the Armstrong Bros. Tool Company, Chicago, Ill.

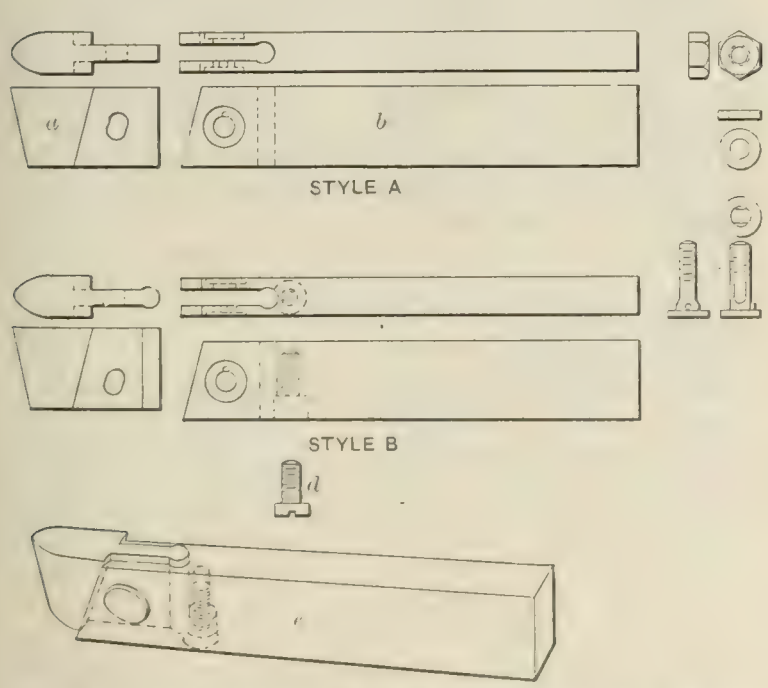
pressure of the handle tightens the wedge in the slot below and clamps the jaw firmly to the base. Its release is instantly effected by raising the handle, thus allowing the jaw to slide backward or forward without restraint. The inclined position of the screw exerts a downward pressure on the work, which adds to the firmness of its holding power. A safe and convenient means of holding the work in position is furnished by the straight milled handle, which affords ample leverage against the tendency to twist under the strain of cutting.

The vise is made in three sizes, designated as 1-V, 2-V and 3-V, having respectively the following dimensions: Width of jaw, 2, 2¾ and 3½ in.; depth of jaw, 1 5-16, 1 3-16 and 1 7-16 in.; opening, 1¾, 2½ and 3 in.; weight 11, 8½ and 16 lb.

## The New Bocorselski Tool Holder.

The Baush Machine Tool Company, Springfield, Mass., has brought out a new high speed tool holder, the invention of F. E. Bocorselski of the company. Its details in two styles are shown in the illustration.

In the style A holder, *b* is the holder proper, made of 0.2 per cent. carbon steel, case hardened. The high speed steel tools are made in the general form shown at *a* and are drop forged to the different shapes employed in lathe work. The shank of the tool fits into the slot of the holder and is clamped in position by the bolt *c*. This connection of the two parts, coupled with the angle of pressure between them, makes one solid piece, and it is impossible for the tool to tip while in use. The high speed tools being made of the same width and thickness as the holder—*i. e.*, the section areas being equal—there is not the tendency for the tools to heat up as quickly nor retain their heat as long as in constructions where this feature is absent.

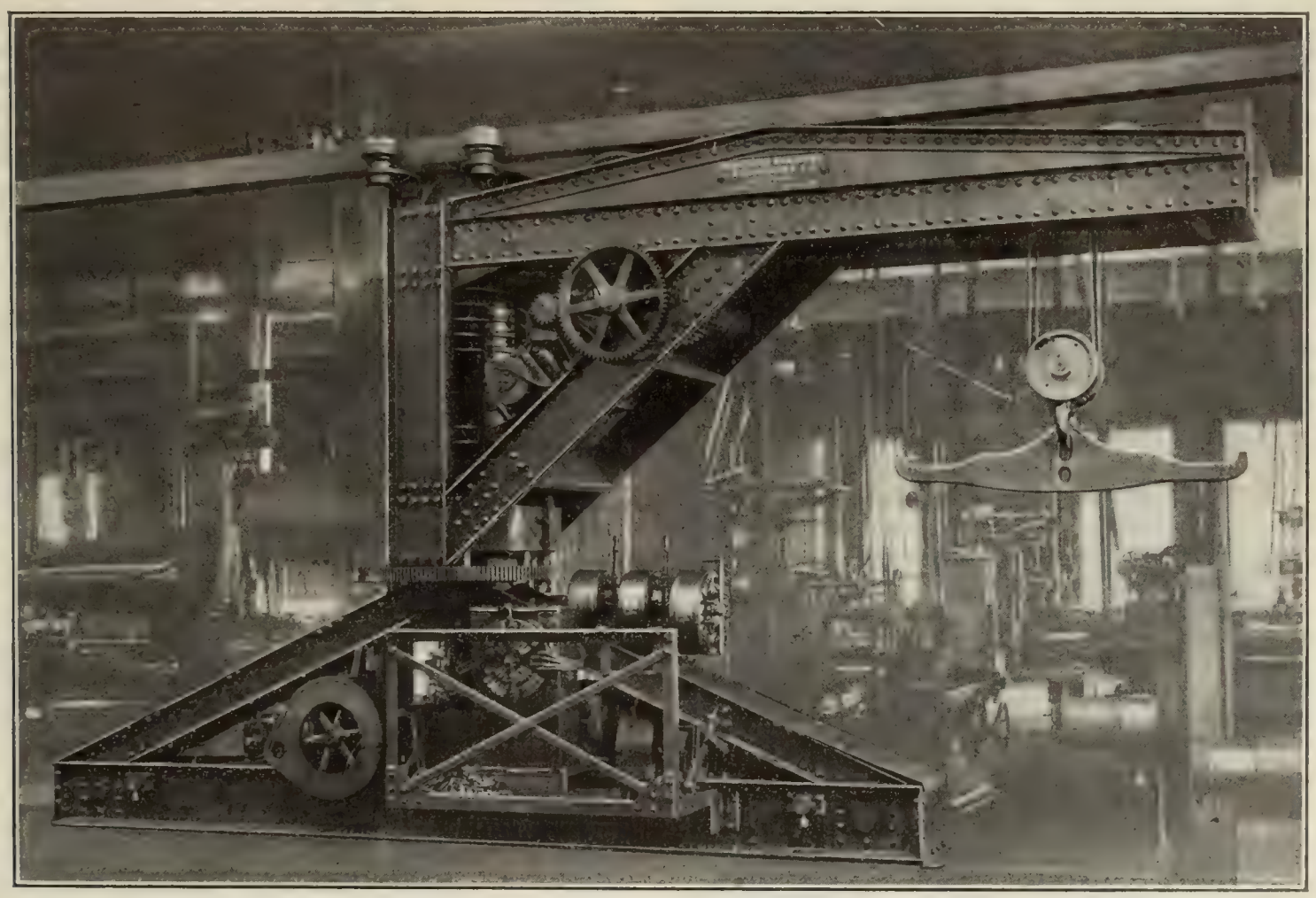



The Bocorselski High-Speed Tool Holder, Made by the Baush Machine Tool Company, Springfield, Mass.

In style B the same general principles are involved, but in this holder the form of the shank is made to fit the rounded end of the slot, necessitating the use of the ejector *d*, which forces out the cutting tool. Style B assembled is shown at *e*.

## A Special Whiting Jib Crane.

An electric traveling jib crane of special design was recently installed in the Burnside shops of the Illinois Central Railroad by the Whiting Foundry Equipment Company, Harvey, Ill. Its function is the lifting and transporting of wheels and axles from the pits to wheel lathes or storage spaces. The leading features of the design are the low head room required and the absolute control of the load which is afforded, the load being automatically sustained at any point.



A Special Electric Traveling Jib Crane Built by the Whiting Foundry Equipment Company, Harvey, Ill.

The crane has a capacity of 7 tons, an effective radius of 12 ft. and a maximum lift of 10 ft. It runs on a single rail beneath, with an I-beam track above to support the wheels. These runways extend the length of the shop top of the mast, the latter being held in position by guide parallel to a row of erecting pits. The track is placed as close to the columns separating the erecting floor from the machine shop floor as safe clearance permits, so that the crane serves the erecting pits on one side of the track and the wheel lathes on the other.

The crane is operated by four motors—a hoist motor of 15 hp., giving a lifting speed of 16 ft. per minute; a trolley traveling motor of 2 hp., which racks the trolley on the jib at the rate of 90 ft. per minute; a jib rotating motor of 2 hp., which swings the jib at a rate of 2 rev. per min., and a crane traveling motor of 10 hp., which propels the crane at a speed of 180 ft. per minute. Perfect control of the load at all times is secured through an improved double automatic safety brake, so that the load may be raised and lowered by power, and at the same time automatically sustained. The brake attachment, through which this control is effected, consists of two independent brakes, one electrical and the other mechanical. The electric brake is operated by a solenoid in circuit with the hoisting motor, and is arranged to be automatically thrown into action when the current is cut off from the hoisting motor circuit.

The corporate name of the Dodge Coal Storage Company has been changed to the J. M. Dodge Company. James M. Dodge, chairman of the Link-Belt Company, Nicetown, Philadelphia, is president.

# Manganese Steel Rails on Curves.*

## Experience of the Boston Elevated with Cast Rails.

BY H. M. STEWARD, BOSTON, MASS.

Within a few months after the elevated division of the Boston Elevated Railway Company was opened for traffic (June, 1901), it was found that the rails on the curves were wearing out at an unprecedented rate. As about 40 per cent. of the entire length of the line is curved, the question of maintenance and the cost of rail renewals became, and still is, a serious problem. The tracks on the elevated division were first laid with Bessemer rail having a low carbon content (about 0.45 per cent.) and the life of the outer rail on the sharp curves was very short, averaging about 60 days. On account of this excessive rail wear the railroad company determined to make a trial of manganese steel rail, and a curve in the subway near Park street station, having a center radius of 82 ft., was selected for the trial. In 1902 the outer rail of the curve was relaid with manganese rails. These rails were cast in 20-ft. lengths, conforming as nearly as possible to the American Society of Civil Engineers' 85-lb section, and were purchased of William Wharton, Jr., & Co., Inc.

The Bessemer rail which was in the track immediately preceding the installation of the manganese rail wore down 0.065 ft. in 44 days, as shown in Fig. 1. The manganese rail remained in service up to August, 1908, when it was removed on account of an accident. It will, however be replaced in the track within a short time and will be allowed to wear out completely. Fig. 2 shows the result of this experiment after the manganese rail had been in service six years, 3 months and seven days, or 2291 days. The amount worn from the top of the rail is only 0.046 ft., which is certainly remarkable and illustrates the great resistance this metal offers to rolling friction.

The traffic over this piece of track in 1902 was, of course, much less than at present, averaging probably 1000 cars, or 36,000 tons, per day, as against 1700 cars, or 62,000 tons, per day at present. Consequently the manganese rail, on account of the constant increase in traffic, has given even better service than the comparative results show.

Other instances could be cited, but in these cases the manganese rail has not been in service such a long period of time, although the comparative results are equally as good. This one example, however, is probably sufficient to illustrate the long life and value of rails made from this metal.

### Special Bessemer Rails.

From time to time we have made other experiments with special rollings of Bessemer, nickel-steel and open hearth rails. In 1903 the Cambria Steel Company furnished us with some Bessemer rail having a carbon content of about 0.78 per cent., the wearing qualities of which were very satisfactory when compared with ordinary Bessemer rail and were far better than the nickel-steel and open hearth rail which we have obtained up to the present time. None of these rails, however, approached the manganese rail in length of life.

As it is of interest to compare the life of different brands of rails under the same conditions, I have selected five curves of short radii and have prepared a tabulation showing the comparative life of five different kinds of rail (see accompanying table). We have not been able to actually test all of these rails on each of the curves, but from the actual results obtained on curves of similar radius we are able to estimate closely the life of the rails.

The general use of manganese steel on tangents does not seem to me to be advisable. Even under the severe traffic of the elevated division ordinary rail has given fairly satisfactory service for over seven years. Our tangent rail does not, of course, receive such hard usage as that on steam roads and the joints do not suffer from the pounding of heavy locomotives. Manganese steel, while offering great resistance to grinding friction, will not, in my opinion, offer as great resistance to heavy blows on account of its ductility. Under heavy locomotive service I should say that the joints would batter and bend down some time before the rail would otherwise wear out. Its high cost also prohibits its use for this purpose.

In our service we find that manganese rail will not withstand side wear equally as well as top wear. The grinding friction from the flat of the tire does not seem to have the same effect on manganese steel as the cutting action of the flanges, and we have found it advisable to protect the side of the head of manganese rail, holding the flanges away from it by means of a check or guard rail fastened securely to the inner rail of the curve. As the guard rail can be readily lubricated, it does not wear out particularly fast and we can afford to allow it take the side wear and in this way protect the manganese rail.

On account of the excellent results obtained from manganese steel, the railroad company purchased during the last two or three years about 4700 lin. ft. of this rail at an average cost of $6.70 per foot. In 1902 and 1903 the railroad company purchased about 700 ft. of manganese rail at an average cost of $5 per lineal foot. The cost of Bessemer rail, to this company, averages about 39 cents per lineal foot.

All the manganese rail used by the company up to the present time has been cast in lengths not exceeding 20 ft. On account of its having been necessary to cast the rail, the cost has been exceedingly high, due not so much to the cost of the metal as to the labor involved in making the patterns, casting and especially in finishing the rails. As it is not possible to machine the metal, the only way it can be finished to form is by grinding.

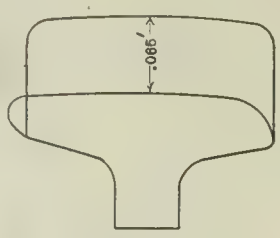



Fig. 1.—Ordinary Bessemer Rail, 85 lb. per yd.; Am. Soc. C. E. section. Laid March 13, 1902. Removed April 26, 1902. Life, 44 days.

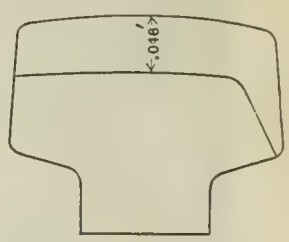



Fig. 2.—Cast Manganese Steel Rail. Laid April 26, 1902. Worn section traced August 3, 1908 (rail still in service). Life until August 3, 1908, 2291 days = 6 yr. 3 m. 7 d.

*Comparative Life of Rails on Typical Sharp Curves, Boston Elevated Railway.*

Speed of trains from 8 to 10 miles per hour.

| Location of curve. | Radius. Feet. | Ordinary Bessemer rail. Mos. | Ordinary Bessemer rail. Days. | High carbon Bessemer rail. Mos. | High carbon Bessemer rail. Days. | Nickel steel rail. Mos. | Nickel steel rail. Days. | Manganese steel rail. Mos. | Manganese steel rail. Days. | Open hearth rail. Mos. | Open hearth rail. Days. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Park street (Subway), southbound track | 82 | 2 | 3 | 8 | 18† | 3 | 12† | 76 | 4* | 1 | 11 |
| Adams Square (Subway), northbound track | 89 | 2 | 17 | 10 | 15 | 4 | 4† | 80 | 10† | 1 | 27 |
| Park street (Subway), southbound track | 90 | 2 | 16 | 10 | 11† | 4 | 3† | 66 | 15* | 1 | 20† |
| Haverhill street, northbound track | 100 | 4 | 3 | 11 | 13 | 6 | 19 | 128 | 9† | 2 | 21 |
| Sullivan Square loop | 106 | 3 | 7 | 13 | 8 | 5 | 7† | 101 | 5† | 2 | 7 |

* Still in service. † Estimated life from actual results on curves of similar radius.

* A paper read at the Atlantic City meeting of the American Street and Interurban Railway Engineering Association, October 16, 1908. Mr. Steward is roadmaster of the Boston Elevated Railway Company.

### Manganese Rails to Be Rolled.

Recently the question of rolling manganese rail has been taken up by two companies in this country and at least one in England. It is proposed to roll manganese rails in lengths up to 33 ft. and of any section desired. The Boston Elevated Railway Company has not as yet obtained and made a trial of rolled manganese rail, but is about to do so and has already placed orders for a limited quantity. When the rolled manganese rail is received the company proposes to make a comparative test with cast manganese rail of the same quality as was used on the Park street curve. If the rolling of manganese rail is found to be successful and the metal is as good as when cast, the cost ought to be very much less than at present and the use of the material for track purposes should increase.

We have also used manganese steel extensively in frogs, switch points, &c. The difference in life between manganese steel and ordinary frogs and switch points is great enough to warrant its use and will more than pay for the difference in first cost alone, while if the cost of maintenance is taken into consideration manganese steel is the cheapest metal that can be used.

As to the comparative cost of maintenance, the general maintenance of track, outside of rail renewals, should not vary appreciably whether the track be laid with manganese rail or Bessemer rail. Taking the curve at Park street as a basis, and assuming that the life of manganese rail at this point would be eight years and that of Bessemer rail about two months, I should say that the following figures would be a fair estimate of the comparative cost of maintenance per lineal foot of single rail for a period of eight years:

| | |
|---|---|
| Cost of manganese rail per foot | $6.70 |
| Bonds, spikes, &c | .09 |
| Labor | .22 |
| Total cost of maintenance | $7.01 |
| Cost of Bessemer rail per foot (50 renewals) | $19.50 |
| Spikes, bonds, &c | 3.25 |
| Renewals of ties, account "spike killing" | 2.90 |
| Labor | 15.50 |
| Total | $41.15 |

This comparison, it should be understood, is made from one specific case in which the costs can be very closely estimated. The same proportions might or might not apply in other instances.

**Bureau of American Manufacturers in Europe.**—Pitt & Scott, Ltd., import and export freight agents, 35 Broadway, New York, announce that for the purpose of filling a need of American manufacturers for better facilities abroad the Bureau of American Manufacturers in Europe has recently been organized and is open to all reputable American firms. This bureau has leased a large six-story building in the business heart of London, England, and foreign buyers visiting that city will be invited to attend the exhibition of American goods which will be carried permanently. A monthly bulletin will be sent to buyers in every quarter of the globe, personal letters will be dispatched to them at frequent intervals and every mode of advertising consistent with progressive business methods will be employed to make the exhibit a profitable enterprise for the members participating. A staff of experienced salesmen will be engaged, possessed of mechanical educations in the lines to be demonstrated, writing rooms and private conversation rooms will be maintained, and buyers will be served as carefully and as thoroughly as would be possible at the home offices of the respective members. The "community" idea has been in vogue in Germany for many years, and has proved convenient for the buyer and profitable for the manufacturer, but this is the first time that such an enterprise has taken root in England. A comprehensive system of reports between Europe and America will keep the members in close touch with foreign conditions and it is anticipated that a large increase in exports will attend this new movement.

The blast furnace of the Midland Steel Company, Midland, Pa., has been started again after being shut down for three months for relining and other repairs.

## Peerless High Speed Reamers.

Where high speed drills are employed because of their efficiency and economy in the drilling of holes, it is consistent to use high speed reamers to finish the holes and still further decrease the cost of production. The Cleveland Twist Drill Company, Cleveland, Ohio, in introducing the Peerless high speed reamers, emphasizes the fact that the blades alone are of high speed steel, the body being soft steel. They are not only cheaper because they contain less of the more expensive steel, but are claimed to be stronger than the solid high speed reamers because of the toughness of the softer steel body.

Their special construction is interesting, the blades being fitted into and solidly joined to the body by a process called brazo-hardening, developed and patented by this company. The manufacturer's confidence in the integrity of the junction effected is shown in the guarantee to replace any reamers which develop defects in this respect. The high speed blades only are hardened, so

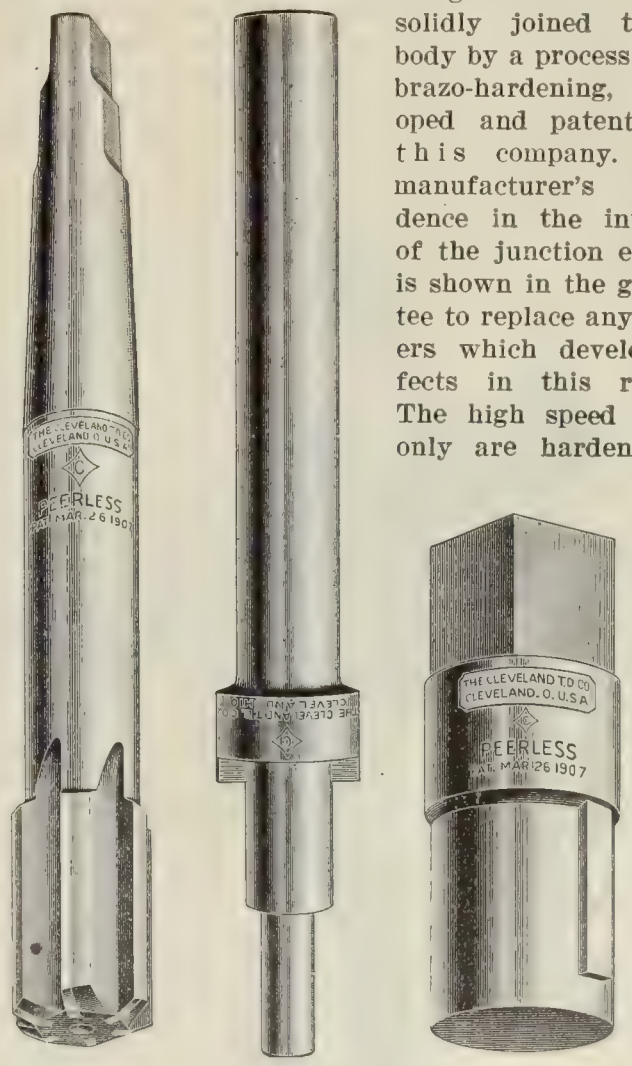



Fig. 1. Fig. 2. Fig. 3.

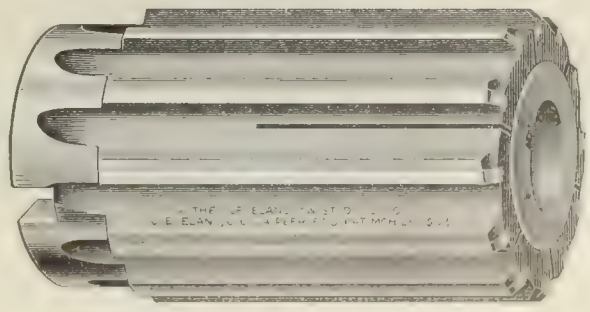


Fig. 4.

Peerless High Speed Reamers and Parts.

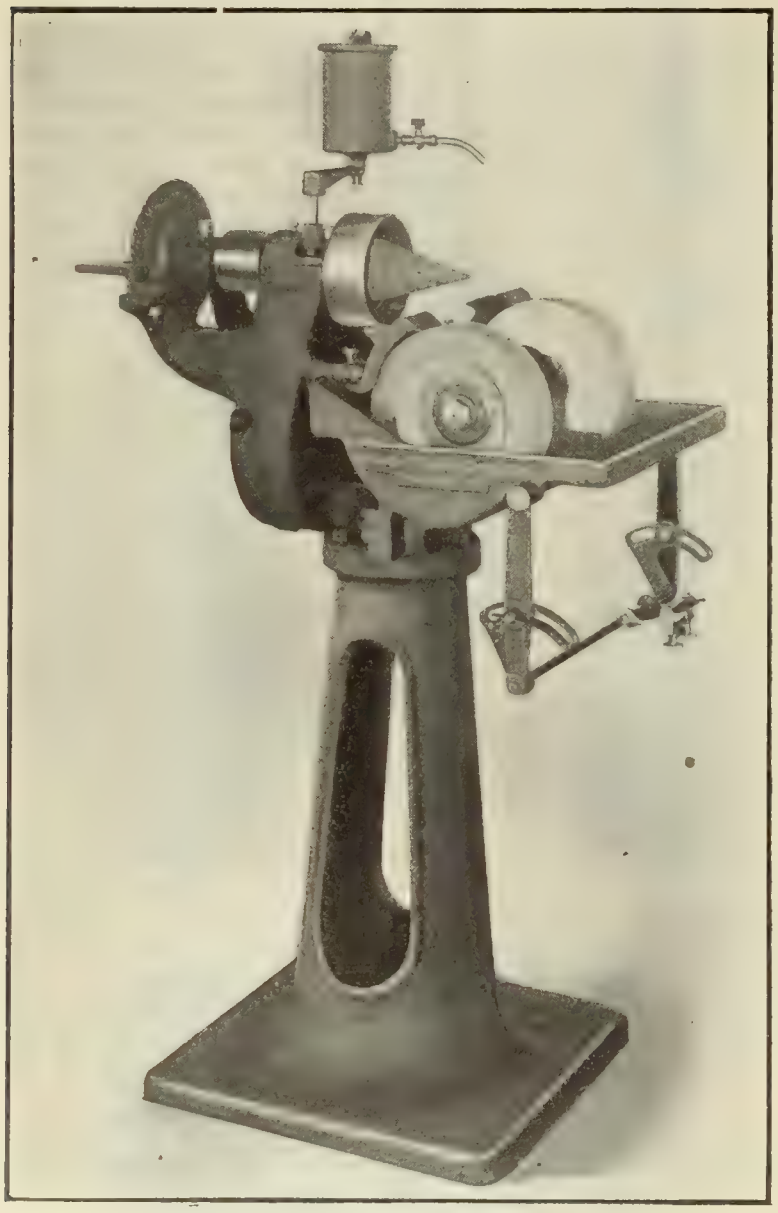
that while Peerless reamers have the hardness and cutting qualities of solid high speed tools, they are less brittle than even carbon steel reamers.

The Peerless high speed reamers include the styles known as hand reamers, core reamers, chucking reamers, shell core reamers and shell chucking reamers, and each are furnished either as solid or expansion types. Fig. 1 shows a solid core reamer with taper shank and the Cleveland double tang, Fig. 2 a shell reamer arbor, Fig. 3 a hand shank for a shell reamer and Fig. 4 an expansion shell reamer. The Peerless high speed expansion reamers are especially interesting, because their manner of expanding is made possible only by the soft bodies. The expansion takes place at the cutting end of the reamers and answers a double purpose—to keep them up to size at the point where they are most subject to wear, and to vary the amount of longitudinal clearance according to

the material to be cut and so prevent jamming in the hole. These expansion reamers, it is claimed, will stand more expansion than carbon steel reamers of similar design and are the only expansion reamers which have as many cutting edges as a solid reamer.

## The Mummert, Wolf & Dixon Combination Tool Sharpener.

A tool sharpening machine, comprising revolving oilstones, an emery grinder, a grinding cone and a leather stropping wheel for quickly sharpening edge tools and general grinding is a new product of the Mummert, Wolf & Dixon Company, Hanover, Pa. This machine is adapted for sharpening all kinds of edge tools, such as are used in pattern shops, planing mills, furniture factories, vehicle works and all kinds of woodworking shops. In this machine two of the company's regular revolving oilstones are mounted on one arbor, while an ordinary emery



A Complete Edge Tool Sharpening Machine Built by the Mummert, Wolf & Dixon Company, Hanover, Pa.

wheel, a grinding cone and a leather wheel are mounted on another arbor above and at right angles to the first arbor.

The oilstone wheels in this machine take the place of the ordinary grindstone, emery grinders and bench oilstones in the sharpening of edge tools. One oilstone wheel is comparatively coarse grained, and is adapted for fast grinding or quickly roughing down, the other has a very fine grain and puts on the smooth keen edge. Both stones are very sharp and effective in their work. The oilstone wheels are kept saturated with kerosene, which keeps them clean and sharp, preventing glazing, and also does not allow the tool to heat. The principal purpose of the grinding cone is for sharpening pattern makers' gouges with inside bevels. It is conveniently mounted, between, above and back of the oilstone wheels. The leather wheel is for stropping the tools after grinding. The edge of the leather on one side of the wheel projects outward, this edge can be used for stropping the inside bevel of gouges, while the face of the wheel is used for flat tools, such as chisels, plane bits, &c. On the back end of the upper spindle is mounted a regular grinding wheel. This spindle will carry an 8 or 10 in. wheel. By using a narrow wheel this can be used for gumming saws, grinding moulding bits, &c. In fact, by having an assortment of wheels all kinds of work can be done.

For those preferring a tool holding attachment for grinding plane bits, chisels, &c., such a one can be applied, as shown in the front in the illustration, and can be swung up into position and conveniently used. When not in use it is left hanging down out of the way as shown.

The oilstone wheels are placed in a pan which serves to catch all the oil that may drip from the wheels. At the back of the wheels are oil guards which prevent the stones from throwing oil. The oil pot at the top serves to supply the stones with oil, allowing it to drop very slowly, as there is only a very little required after they have been saturated. The oil pot is held on a swinging arm, which allows it to be moved from side to side or back out of the way when stropping on the leather wheel. The oilstone wheel arbor is driven from the upper back arbor through spur and spiral gears, and runs much slower than the upper grinding wheel arbor.

The grinder as here illustrated is for countershaft drive. The countershaft can either be placed overhead or underneath the floor. For motor drive a special pedestal is furnished on which the motor is placed and belted to the pulley on the upper arbor. The distance from the motor shaft to the upper arbor is approximately 30 in., requiring a belt about 6 ft. long. A 1-hp. motor is about the size required.

The oilstone wheel should be thoroughly saturated with kerosene before starting. The wheels readily absorb the oil, and when not running appear to be dry, but as soon as they are up to speed the oil is brought to the surface by centrifugal force. The adhesion of the oil to the stone prevents it from flying off. After the stones have once been saturated it is only necessary to occasionally put on a few drops of oil.

The regular equipment of the grinder includes two oilstone wheels, 8 in. diameter by 2 in. face; one grinding cone, 3 in. diameter by 5 in. long; one grinding wheel, 8 in. diameter by ½ in. face, and one leather wheel, 5 in. diameter by 2 in. face. The pulley on the machine is 3 in. diameter by 2¼ in. face for a 2-in. belt. The speed of the upper arbor is 1800 rev. per min., and that of the oilstone wheel arbor 260 rev. per min. The countershaft is intended to run at 600 rev. per min. Its driving pulley is 9 in. diameter by 2¼ in. face and the tight and loose pulleys are 5½ in. diameter by 2½ in. face. The weight complete is 270 lb.

The Badger Malleable & Mfg. Company, South Milwaukee, Wis., has begun construction work on a new plant, the buildings and equipment of which will cost approximately $60,000. The principal buildings, which will consist of the foundry, machine and pattern shops, will be of concrete, brick and steel construction. Some of the buildings will be of reinforced concrete throughout and absolutely fireproof. The foundry building will be 240 ft. long, varying in width from 104 to 90 ft. The machine shop will be 60 x 200 ft., and fireproof. Besides these there will be a reinforced concrete warehouse with a solid reinforced concrete vault, 20 x 50 ft. The company does a general jobbing malleable foundry business in addition to manufacturing several of its own specialties.

The report of the Bureau of Navigation at Washington shows that shipbuilding in the United States in the third quarter of 1908 amounted to 20,887 tons, distributed as follows: 306 wooden vessels of 12,979 tons capacity and 13 steel vessels of 7908 tons. The gross tonnage for the corresponding quarter of 1908 was 133,092, showing a falling off of 112,205 tons. On the Great Lakes in the third quarter of last year 17 steel steamers were built of 75,830 tons capacity, against 7 of 2657 tons capacity in the third quarter of 1908.

## The Crucible Steel Company of America.

The eighth annual report of the Crucible Steel Company of America, giving the results of operations in the year ending August 31, 1908, furnishes the following statement of that year's financial outcome:

| | | |
|---|---|---|
| Operating profits for the year | | $129,206.66 |
| Total monthly provisions made for the revision of inventory values and for contingencies | | 649,231.20 |
| Net loss for the year | | $520,024.54 |
| Dividend on preferred stock No. 21, paid December 31, 1907 | $244,365.00 | |
| Expended for additions and improvements | 168,973.07 | |
| | | 413,338.07 |
| Excess of payments and charges over operating profits for the year, accounted for as below | | $933.362.61 |
| Decrease in current assets: | | |
| In inventories— | | |
| Raw, process and finished materials | $1,707,051.45 | |
| Supplies, spares, tools, &c. | 43,989.15 | |
| | | $1,751,040.60 |
| Less increases— | | |
| In cash | $480,971.29 | |
| In investments (at cost) | 159,600.00 | |
| In deferred charges | 21,933.71 | |
| In bills and accounts receivable in excess of increase in bills and accounts payable | 155,172.99 | |
| | | 817,677.99 |
| Balance as above | | $933,362,61 |

The balance sheet, as of August 31, 1908, is as follows:

*Assets.*

| | | |
|---|---|---|
| Real estate, plant, &c. | | $45,328,943.42 |
| Additions and improvements | $168,973.07 | |
| Real estate at Howe-Brown & Co., Ltd., Works | 31,635.00 | |
| | | 200,608.07 |
| | | $45,529,551.49 |
| Taxes, insurance, &c., paid in advance and chargeable against future operations | | 71,720.90 |
| Investments, bonds and stocks | | 240,000.00 |
| Inventories of raw and finished materials | $3,693,911.95 | |
| Supplies, spares, tools, &c. | 1,151,212.62 | |
| | $4,845,124.57 | |
| Bills receivable | 25,870.65 | |
| Accounts receivable | 1,174,234.59 | |
| Cash in banks and on hand | 1,048,164.58 | |
| | | 7,093,394.39 |
| Total | | $52,934,666.78 |

*Liabilities.*

| | | |
|---|---|---|
| Preferred stock | $24,436,500.00 | |
| Common stock | 24,578,400.00 | |
| | | $49,014,900.00 |
| Purchase money mortgages | | 200,000.00 |
| Bills payable | $1,481,418.95 | |
| Accounts payable | 447,244.51 | |
| Accrued interest and taxes | 17,328.31 | |
| | | 1,945,991.77 |
| Insurance fund | | 35,339.74 |
| Reserve for contingencies | | 45,541.00 |
| Surplus as of August 31, 1907 | $2,457,283.81 | |
| Deduct loss for the year ended August 31, 1908, after charging against the operating profits the total monthly provisions made for the revision of inventory values and for contingencies aggregating $649,231.20 | 520,024.54 | |
| | $1,937,259.27 | |
| Deduct dividend on preferred stock No. 21, paid December 31, 1907. | 244,365.00 | |
| Undivided surplus, August 31, 1908 | | 1,692,894.27 |
| Total | | $52,934,666.78 |

From the accompanying remarks to the stockholders submitted by Chairman William G. Park and President Frank B. Smith, the following extracts are taken:

"Owing to the financial panic which occurred in October, 1907, and the consequent depression, the volume of business declined 55 per cent., as compared with the preceding year, so that whereas the company was earning its dividends in September and October, it suffered a continuous operating loss from November 1, 1907, to June 30, 1908. Notwithstanding these operating losses, the company, after charging off all expenses, including maintenance of its plants, was able to show an excess of direct operating profits over operating losses of $129,206.66.

"During the year, however, owing to the continued decline in the price of raw material and the unsettled business conditions and to the policy of carrying the assets on a conservative basis, the inventory values were revised monthly. After providing for all contingencies, and the marking down of the inventories for the full period by $602,496.43, a net loss was shown of $520,024.54.

"At the end of the first quarter, during which the company earned a net profit of $187,688.30, a dividend of 1 per cent. was paid to the preferred stockholders, amounting to $244,365.00, in the hope that the business depression would only be temporary and that the company would continue further distributions throughout the year. As business grew steadily worse, it was deemed advisable to suspend the payment of dividends until these could be declared without impairment of the company's surplus. The expenditure for additional property during the period was kept as low as possible, consistent with the needs of the business, and amounted to $168,973.07, as compared with $1,072,286.43 in the preceding period.

"The compensation of the receivers of the Clairton Steel Company, referred to in previous reports, was fixed during the year by the United States Court. The amount of $20,000 was paid to the Union Trust Company of Pittsburgh as one of the receivers and charged against the reserve which had been provided for same in previous years. The chairman of your company, as joint receiver, declined to make any charge for his services. Reserves have been made in the accounts sufficient to cover all contingent and unsettled claims of which the company has any knowledge whatsoever.

"The volume of orders for the company's product, both for immediate and future shipment, fell very considerably early in the fiscal year, and steadily declined until the month of July, since which time the business has shown considerable improvement. The tonnage of unfilled contracts and orders on hand at August 31, 1908, however, is still below normal, being 72,984 tons, as compared with 101,910 tons at August 31, 1907, a decrease of 28 per cent.

"The attention of the stockholders is directed to the strong financial position which the company occupies at the end of the year of depression through which it has passed. The company has no bonded debt, either outstanding or authorized. The current assets at August 31, 1908, amount to $7,093,394.39, including $1,048,164.58 in cash, while the current liabilities were reduced to $1,945,991.77, making an excess of current assets over current liabilities of $5,147,402.62, or $302,278.05 in excess of its total inventories. This financial condition, together with the economies effected in conducting the business, places the company in a favorable position to benefit by the return of business to a normal state."

---

The International Nickel Company, 43 Exchange place, New York, is now filling a contract with the Pennsylvania Railroad, which calls for a roof of nickel copper for the great terminal station in New York. It is said that this will be the first roof of its kind in the world. It will represent a high grade of metal, containing over 70 per cent. nickel and the balance copper. This combination is known as Monel metal, and the sheets are rolled for the company by the American Sheet & Tin Plate Company. The workmen who are laying the roof report that the metal solders and seams as easily as sheet copper. The contract is a large one, as the building is of enormous extent.

M. Dumuis reports in *La Métallurgie* that he has been experimenting at the Firminy Steel Works with an electric furnace having a single electrode and a hearth arranged to conduct the current. On the basis of preliminary tests, which were encouraging, a 2-ton furnace is to be built.

# THE IRON AGE

Established in 1855.

New York, Thursday, October 29, 1908.

Entered at the New York Post Office, as Second Class Mail Matter.

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## A Significant Pig Iron Contract.

The term contract for basic pig iron entered into recently by a Pittsburgh District steel company and a Central Western blast furnace has been variously commented on in the trade. There would be more agreement doubtless as to the distribution of advantages as between buyer and seller, if more details were known. The general statement that has become public is that the buyer is to pay the cost of manufacturing the iron, plus 7 per cent., when such cost is $14 or under, with 1 per cent. additional for every 50-cent advance over $14, up to a maximum of 12 per cent. profit. It may be taken for granted that if the terms of the contract were as well known to the trade as to the companies directly concerned, it would be generally regarded as maintaining a fair balance of advantages. It need scarcely be said that "cost," as embodied in such a contract, would certainly mean considerably more than cost of labor and of assembling raw materials, and that the assurance of a clean minimum profit of close to $1 a ton on more than 50 per cent. of its output would not be unwelcome to many a furnace in lean years, not to say average years. The size of blast furnace profits in years so near by as 1906 and 1907 may make it difficult to get the right perspective on such a deal as has just been closed.

The blast furnaces of the Central West which depend chiefly on the overflow of demand from steel companies which have more steel making than pig iron making capacity have gone for months on a meager ration, and it will be many months, in all probability, before the large steel companies will need the services of the merchant furnace interest. It is a time in which a term contract on a sliding scale would have most attraction to a merchant furnace. The foundry trade cannot be turned to on short notice by a furnace that has catered for a considerable period to consumers of steel making irons. It is a trade by itself, which requires continuous cultivation by the furnace company direct or through selling agents, and when new brands come forward time is required to win the favor of the foundryman.

Plainly an interest which mines its own ore and manufactures its own coke is best prepared to undertake such a contract as is now under discussion. Technically the ore company and the coke company, though closely identified with the furnace company in the case of several important merchant pig iron interests, are distinct organizations and count their own profits on the basis of market prices or sliding scale prices, in their transactions with the furnace company. Ore ownership is much more important than that of coal or coke, for a fairly high level of ore prices may be counted on as a fixed factor, now that ore lands have been so largely taken up, while coke has much wider fluctuations and occasionally dips close to the cost line. We may assume that market prices of all raw materials govern in making up furnace cost of the basic iron in question, and therefore that the ore profit in certain years, with two tons of ore to a ton of pig iron, would be well in excess of that on the pig

The transaction suggests that there are interesting possibilities also in the foundry pig iron trade in term contracts between large melters of iron and important furnace companies controlling through closely connected interests their supplies of fuel and iron ore.
iron.

## Employee Partnership and Other Revolutionary Proposals.

The proposal made this month by Sir Christopher Furness to his striking employees to become partners in the Middleton Shipbuilding Yard, at Hartlepool, and the Harbor Dockyard, at West Hartlepool, England, has been widely commented upon in Great Britain. It recalls other revolutionary suggestions that were the fruit of industrial disturbances.

At the time of the anthracite coal strike in 1902 we had in this country the serious advocacy of Government seizure of the mines and their operation in the interest of the public. The proposal seemed to be based on the idea that, as the mine owners and strikers were deadlocked and the public suffered, a short cut must be taken to the operation of the mines. Government seizure of capital, and presumably a bargain with labor at its terms, seemed to commend itself to the economic doctors, rather than that the Government should lay hold of the miners and compel them to get out coal on the terms offered by the operators. A makeshift was finally devised for tiding over the crisis in anthracite mining, and except in Socialistic meetings the operation of coal mines on public account is not now considered a live issue. Government ownership of railroads and the telegraph has been a subject of rather more than academic discussion, however, in view of the telegraphers' strike and the recent tidal wave of railroad legislation.

Financial troubles have a way also of making men think of fundamental changes in financial and commercial methods. It was so in 1893, and the few years following. Some of the proposals, like those aiming at greater flexibility in money supply, were calculated to improve conditions; others, like free silver, meant only a plunge into greater disaster. In the past year we have seen a turning aside from the long common practice of adjusting prices somewhat to the purchasing ability of the community—prices of both commodities and labor. To an unparalleled degree, prices of manufactured articles and the products of the soil, and particularly prices of labor, have been maintained in the face of business depression and greatly diminished return for capital. To some extent, political considerations have produced this condition. Presently that factor will not be so prominent, and it may then be possible to discover just how much of an advance has been made toward a new era—whether in iron and steel prices, for example, and in the labor that is so large a factor in them, the transition from panic to the beginnings of a new prosperity can be made without a real readjustment.

In Great Britain the pressure of hard times and the repeated insistence of the labor unions on forcing an issue when work is most slack are responsible for the proposal of Sir Christopher Furness, alluded to above. In the address to his employees announcing his willingness

to bring them into a new relation to the company, Sir Christopher said that weariness of the friction continually arising under the present order had brought him to the decision to propose partnership, or, if the union preferred, he would sell it the entire plant and business. He made a plain statement of things commonly overlooked by the labor unions, solemnly urging that the discovery of ways of increasing their joint efficiency is the greatest of all the problems confronting British capital and labor.

The partnership plan, which the employees of the Hartlepool shipyard have until November 26 to consider, provides for the creation of employees' shares to be paid for in installments by 5 per cent. deductions from wages. All employees are to take such shares and any one leaving the company's employ is to sell his holdings to another. The employees' stock is to receive 4 per cent., whether any profits are divided by the company or not, though it is required that this 4 per cent. be earned in any case. The remaining capital of the company next receives 5 per cent. interest. Afterward the two classes of stock participate in any dividends declared, those of the employees applying on their stock until it is paid for. It is made a consideration of the arrangement that "under no conditions whatever shall the employee co-partners go on a strike against the directions and decisions of their co-partners governing the administration of the business." A works council is provided for the promotion of friendly relations between the firm and its labor partners and for settling disputes. Trade union officials in the district, in addition to delegates elected by the employees, would have a place on this board. Provision is made for outside arbitration, where the works council fails to settle controversies.

Profit sharing, so called, is not new, but it is not growing in favor. In the United States the same few examples of it that have been known for years still stand practically alone. The acquisition of shares by employees has its most conspicuous example in the United States Steel Corporation, but there such purchase is entirely optional, and there is no accompanying provision for representation of employees in any conference body. The Hartlepool shipyard plan recognizes that unless a plan can be devised that offers some guarantee to British industry against repeated disaster through strikes, its handicap in international competition will go on increasing. Yet it is to be questioned if any of the possibilities of profit that are contained in the scheme of Sir Christopher Furness will weigh heavily enough with his employees to induce them to surrender the privilege of striking. It is much of a question, moreover, if the habit of getting simply wages at regular intervals is one from which the average British union workman will want to break. One year of bad business would put the partnership plan under serious strain, and there would always be at hand the clever union leader with convincing proof that the scheme was devised to bring the workmen more completely under the control of designing capital.

## Our Foreign Market for Machinery.

The address of Capt. Godfrey L. Carden at the meeting of the National Machine Tool Builders' Association, printed in our last issue, made a profound impression upon the members in bringing home to them, with facts and figures, their failure to make the most of the foreign market, and particularly in the contrast between their enterprise in this direction and that of their German competitors. A resulting action of the association was the appointment of a committee of 12 members, whose primary purpose is to urge upon the Department of Commerce and Labor the vital necessity of continuing the investigation of conditions of the machinery market abroad, in which work Captain Carden has distinguished himself in the past year.

The subject is one of great importance. Conditions as they now exist accentuate the grave error of neglecting the foreign market while business is good at home. The persistent, skillful sales methods of foreign machine builders, notably the Germans, with their finely developed commercial organization, apparently never become apathetic in the attempt to broaden the market for manufactured products. In America the effort is more spasmodic. It is quite natural, perhaps, that this should be so. The Germans must go outside of their own country at all times, even when home industrial conditions are at their best, if their works are to operate at maximum production. The Americans, however, can dispose of their full product to domestic customers when business is at high tide here. In 1906 every machine shipped abroad was begrudged the foreign customer, because deliveries at home were in desperate straits. During a period of domestic activity, while we are neglecting the machinery trade of other countries, foreign competitors are making themselves stronger in their old fields and establishing themselves in new ones. That Germany should export in 1907 over 52,000 machine tools, and practically as many more in point of weight in the form of accessories and duplicate parts, very far exceeding exportations from the United States, is a fact that points the moral. These figures astonished the machine tool builders; they had little realization that conditions had reached such a point. They know what it would have meant to their works during the year past if they could have had the share of this enormous total which undoubtedly would have been theirs had the foreign market been better and more consistently worked.

The Machine Tool Builders' Association wants more detailed information. The usual Government reports of conditions in the foreign machinery market have not been sufficiently specific. The machine builders hold that the Government agents should find out facts such as where those German machines went, the ports to which they were shipped and names of their users, and the work which they are to do. The agents should tell them, well in advance of actual buying and with full particulars, conditions which promise to develop into a market. Captain Carden gave much information in his address which Government reports do not appear to contain. It is the old trouble of the consular reports, dealing much in generalities and statistics, but stale in valuable information. The reports of special agents should go into most minute particulars, such as are not now obtainable except through occasional advices from agents abroad, or from personal visits of manufacturers and their agents to foreign customers. Systematic endeavor has been lacking. Investigation toward a knowledge complete enough to be really important has been a haphazard one, with the exception of the work which Captain Carden has begun. He made the statement that to his knowledge 32 representatives of German machine tool people are now in this country investigating American works and their products, and promptness is made an essential feature of their reports, as is evidenced by the use of the cable instead of the mails for forwarding news. Americans are prone to maintain that their enterprise has no equal, and the boast is well founded in some directions; but in developing the foreign trade in machinery we are at present

not at the front. There is a vivid realization of this today. The year of depression has made the foreign market much more temptingly important than it was when times were good at home, or when, a few years ago, the European machine tools were much more nearly outclassed.

The complaint of the work of the consular offices is not confined to America. Manufacturers of other countries make the same protest concerning their own systems. Probably there is foundation for the excuse that the Government cannot be expected to do the work alone. Individual and association effort must be an important adjunct, if results, from the standpoint of the manufacturer, are to be complete. The field to be covered in detail of product, as, for instance, the sub-divisions into which machinery can be classified, is a broad one. The Government should provide a substantial basis of knowledge from which specialized investigation may be made. The machine tool trade would accomplish a good deal through co-operation along these lines. An exchange of intimate knowledge of conditions would amalgamate into a most valuable trade asset. American prices are higher, but it is generally conceded that the machinery is better. Sales must be effected in the European field against the normal predisposition to patronize home industries, and with the advantage to the foreign builder of being located close at hand as compared with the Americans. But the European field is not the only one. That the German exports of 1907 went to 23 countries speaks of the constantly extending scope of the market, much of which Americans as a whole have almost entirely neglected. These new buyers constitute a field that may afford a market when both Europe and America are dull. The subject is a difficult one, requiring strong, intelligent and unremitting work, in which a most powerful factor should be cooperation of effort between Government, association and the individual manufacturer and dealer.

There are other labors which quite properly would come within the scope of duties of the new committee of 12, among them being the mattter of prices to foreign customers. Dealers abroad who carry American machine tools have sought a better basis from time to time, urging as most important a stability of prices. This has been met in large part by the policy of maintaining lists regardless of the condition of the market, a policy which was again approved during the informal gatherings incident to the national convention, the opinion of the members being shared by the dealers who made their wishes known. Possibly the suggestion made to the meeting that special prices to meet competitive conditions in other countries is worthy of consideration.

**The California Rifled Pipe Line.**—The 8-in. rifled pipe line for oil, extending from Bakersfield, Kern County, Cal., to Port Costa on San Francisco Bay, constructed by the Associated Pipe Line Company, has been completed and oil was started last month. The line is 282 miles long and was built at a cost of $4,500,000. The daily flow will be from 17,000 to 20,000 barrels of heavy fuel oil. The rifling of pipe for carrying heavy oil was the invention of John D. Isaacs, now consulting engineer for the Harriman lines at Chicago. It was described in *The Iron Age* of August 1, 1907, page 325. On the interior of the pipe are cut corrugations about ⅛ in. deep, these spiral curves making a complete circuit every 10 ft. Thus the water pumped in with the oil goes to the outside of the interior of the pipe and following the rifling forms a thin sheen about the oil. The two move along together, the oil forming a central core that does not come into direct contact with the pipe. Relay pumping stations are established every 23 miles.

## The Steel Corporation's Quarterly Statement.

The United States Steel Corporation has issued its statement of earnings, covering its subsidiary companies, for the quarter ending September 30, 1908. It compares as follows with the corresponding quarter of 1907:

| | 1908. | 1907. |
|---|---|---|
| July earnings | $8,599,630 | $13,804,167 |
| August earnings | 9,152,311 | 15,279,173 |
| September earnings | 9,354,333 | 14,720,945 |
| Total after deducting all expenses incident to operations, including ordinary repairs and maintenance of plants, and interest on bonds and fixed charges of subsidiary companies | $27,106,274 | $43,804,285 |
| Less appropriations for the following purposes: | | |
| Sinking funds on bonds of subsidiary companies | $436,675 | $589,358 |
| Depreciation and reserve funds | 5,359,182 | 6,519,822 |
| Special improvement and replacement funds | ..... | 1,000,000 |
| | $5,795,857 | $8,109,180 |
| Net earnings | $21,310,417 | $35,695,105 |
| Deduct interest for the quarter on U. S. Steel Corporation bonds outstanding | $5,946,809 | $5,633,122 |
| Sinking funds on the U. S. Steel Corporation: | | |
| Bonds: | | |
| Installments | 1,012,500 | 1,012,500 |
| Interest on bonds in sinking funds | 352,653 | 291,340 |
| | $7,311,962 | $6,936,962 |
| Balance | $13,998,455 | $28,758,143 |
| Dividends for the quarter on stocks of U. S. Steel Corporation: | | |
| Preferred, 1¾ per cent | $6,304,919 | $6,304,919 |
| Common, ½ per cent | 2,541,513 | 2,541,513 |
| | $8,846,432 | $8,846,432 |
| Surplus for the quarter | $5,152,023 | $19,911,711 |
| Unfilled orders on hand were as follows: | | |
| September 30. tons | 3,421,977 | 6,425,008 |

At the corresponding time in 1907 an appropriation of $15,000,000 was made from the quarter's earnings for new plants, construction, &c., leaving a balance of $4,911,-711 to be carried to surplus.

The earnings for the quarter ending June 30, 1908, were $20,265,756 and for the previous quarter they were $18,229,005. The total earnings for nine months of this year have thus been $65,601,035.

The surplus June 30 was $195,595, and March 31 it was $7865.

Unfilled orders June 30 were 3,313,876 tons, and March 31 they were 3,765,343 tons.

**A Coke Oven Plant of New Design.**—The Mount Hope Coke Company, Uniontown, Pa., has placed with John W. Seaver, consulting and contracting engineer, Cleveland, Ohio, a contract for equipping its new plant at Lynn, Pa., with a coal leveler, a coke pusher and a turntable. These will all be of the latest and most approved design, and of heavy construction. The coke oven plant is laid out on an entirely new plan. It consists of two banks of ovens with 75 ovens in each bank. The ovens are of the new rectangular type, 5 ft. wide and 30 ft. long. The two banks are arranged to face each other with a line of tracks between them. On these tracks traverse the machines, and at the end of the track is a turntable, so that the machines can be traversed along each row of ovens, and then be turned round and retrace their path facing the ovens of the other row. This general plan affords a marked economy in the construction of the plant.

The Ann Arbor Railroad has placed an order with the American Locomotive Company, New York, for 10 consolidation locomotives, to weigh 191,000 lb. each. They will be built at the Schenectady Works.

# The Machine Tool Builders.

## Closing Session of the National Machine Tool Builders' Association.

The seventh annual convention of the National Machine Tool Builders' Association at the Hotel Imperial, New York, came to a close on Wednesday afternoon, October 21, after it had been decided to hold the spring meeting of the organization at Milwaukee. The proceedings of the meetings up to Wednesday afternoon were reported in *The Iron Age* last week, pages 1158 to 1160.

At the opening of Wednesday afternoon's session Fred. A. Geier, president of the Cincinnati Milling Machine Company, Cincinnati, Ohio, in submitting his report for the Committee on Cost Accounting, stated that his committee favored the taking up of the cost question in the various groups of the organization. The committee, he said, will never be entirely successful in its work until the organization knows the cost of its products. The exchange of information on the question of costs would benefit the organization, and while machine tool builders could be active competitors as far as getting business was concerned, he felt that the getting of cost facts would result in material benefit to all hands. He closed by stating that it would be well to have these details thoroughly worked out so as to impress on buyers an appreciation of values rather than a depreciation of values.

E. M. Woodward, Woodward & Powell Planer Company, Worcester, Mass., for the Committee on Resolutions, offered a resolution to the effect that members do not pass over the important subject of cost accounting. The resolution urged that the association take action to ascertain the percentage to be charged for capital invested, for yearly depreciation and for the depreciation of tools, fixtures, patents, &c. He offered another resolution to the effect that the association forward to Secretary Straus of the Department of Commerce and Labor and to Chief Carson of the Bureau of Manufactures a vote of thanks for the able work done under their direction by Captain Carden in the interest of the American machine tool builders abroad, and to ask that the work of investigating and reporting on the same lines be continued by Captain Carden in countries not covered heretofore. Both resolutions were adopted.

The convention also adopted a resolution instructing the officers to take steps toward affiliating with the National Council of Commerce.

### To Revise the Constitution and By-Laws.

A report made by C. Wood Walter, Cincinnati Milling Machine Company, Cincinnati, Ohio, for a special committee to revise article 3, section 1 C, of the by-laws aroused considerable discussion. This section prescribes that only manufacturers of machine tools can be admitted to membership, and it was suggested that the section be made to read "builders of machine tools and machine tool accessories," so as to admit manufacturers in kindred lines. Mr. Walter stated that it had been difficult to draw the line, and in going over the constitution he found several other clauses which while they suited the needs of the organization at the time of its formation would have to be changed. A motion calling for the appointment of a committee to revise the constitution and by-laws was passed and a committee consisting of Mr. Walter, A. E. Newton, Prentice Brothers Company, Worcester, Mass.; P. E. Montanus, Springfield Machine Tool Company, Springfield, Ohio, was appointed.

The president appointed a committee of 12 to take up with the Department of Commerce and Labor the question of continuing Captain Carden's work, and it was announced that the committee would visit Washington within a few days to urge the cause of the association. The committee is as follows: President, Fred. L. Eberhardt, Gould & Eberhardt, Newark, N. J.; Murray Shipley, Lodge & Shipley Machine Tool Company, Cincinnati, Ohio; H. L. Flather, Flather & Co., Inc., Nashua, N. H.; C. H. Alvord, Hendey Machine Company, Torrington, Conn.; W. R. Warner, Warner & Swasey Company, Cleveland, Ohio; F. A. Geier, Cincinnati Milling Machine Company, Cincinnati, Ohio; E. M. Woodward, Woodward & Buell Planer Company, Worcester, Mass.; A. T. Barnes, W. F. & John Barnes Company, Rockford, Ill.; J. B. Doan, American Tool Works Company, Cincinnati, Ohio; P. E. Montanus, Springfield Machine Tool Company, Springfield, Ohio; C. A. Johnson, Gisholt Machine Company, Madison, Wis., and W. P. Davis, W. P. Davis Machine Company, Rochester, N. Y.

J. W. Carrel of the *American Machinist* addressed the association on "The Commercial Side of the Machine Tool Industries in Europe and a Review of European Conditions." The paper was an instructive one and the hearers were informed of many things of commercial interest to them.

All the officers were re-elected, but previous to taking that action C. A. Johnson, first vice-president of the association, suggested that in the future the officers be elected for two years, with a proviso making them ineligible to succeed themselves. This recommendation was referred to the Committee on Constitution and By-Laws previously appointed. The officers of the association are:

President, Fred. L. Eberhardt, Newark, N. J.; first vice-president, C. A. Johnson, Madison, Wis.; second vice-president, E. P. Bullard, Jr., Bridgeport, Conn.; treasurer, W. P. Davis, Rochester, N. Y.; secretary, P. E. Montanus, Springfield, Ohio.

### The Outing.

On Thursday the machine tool builders and almost 500 additional representatives of the mechanical trades were the guests of *Machinery*, the place selected for the outing this year being Point View Island, on Long Island Sound. The party sailed by special steamer, arriving just at the time when a big shore dinner was most welcome. After being entertained by the Cincinnati delegation, who under August Tuechter's able leadership, sang the "Cincinnati Song," composed by C. Wood Walter, and put to the charming old tune of "Annie Lyle," everybody went out to the athletic fields to witness the games.

The sports included a potato race, a baseball game between the East and the West, a sack race, a three-legged race and a pushball game.

The score of the ball game was 8 to 7, in favor of the Western team. The captains were C. E. Johnson of the Gisholt Machine Company, Madison, Wis., for the West, and D. B. Bullard of the Bullard Machine Tool Company, Bridgeport, Conn., for the East. The members of the teams were as follows:

| EAST. | WEST. |
|---|---|
| D. B. Bullard, Bullard Machine Tool Company, Bridgeport, Conn. | H. W. Kreuzburg, Champion Tool Works Company, Cincinnati, Ohio. |
| F. E. Bocorselski, Baush Machine Tool Company, Springfield, Mass. | D. Hunt, Jr., Warner & Swasey Company, Cleveland, Ohio. |
| P. B. Gale, Hartford Machine Screw Company, Hartford, Conn. | R. T. Lane, Standard Tool Company, Cleveland, Ohio. |
| W. H. Taylor, Tabor Mfg. Company, Philadelphia, Pa. | R. K. LeBlond, R. K. LeBlond Machine Tool Company, Cincinnati, Ohio. |
| P. M. Brotherhood, Manning, Maxwell & Moore, Inc., New York. | A. M. Watcher, Queen City Machine Tool Company, Cincinnati, Ohio. |
| A. R. Stedfast, Hill, Clarke & Co., Inc., Boston, Mass. | C. A. Johnson, Gisholt Machine Company, Madison, Wis. |
| D. M. Wright, Henry & Wright Mfg. Company, Hartford, Conn. | W. L. Schellenbach, John B. Morris Foundry Company, Cincinnati, Ohio. |
| U. Eberhardt, Gould & Eberhardt, Newark, N. J. | G. H. Feltes, U. S. Electrical Tool Company, Cincinnati, Ohio. |
| H. C. Warren, Jr., Mutual Machine Company, Hartford, Conn. | Rufus King, King Machine Tool Company, Cincinnati, Ohio. |

There were 14 entries in the exciting and laughable potato race, as follows: Chas. H. Besly, Chas. H. Besly & Co., Chicago; F. C. Billings, Billings & Spencer Company, Hartford, Conn.; E. B. Doe, Simplex Mfg. Company, Danbury, Conn.; W. S. Gorton, Standard Welding Companay, Cleveland, Ohio; R. B. Jacobs, Jacobs Mfg. Company, Hartford, Conn.; E. A. Johnson, Watson-Stillman Company, New York; T. G. Meacham, New Process Raw Hide Company, Syracuse, N. Y.; C. H. Peirson, E. F. Houghton & Co., Philadelphia; L. D. Rockwell, New York; E. C. Smith, Attleboro, Mass.; A. K. Spencer, Crocker-Wheeler Company, Ampere, N. J.; Chas. A.

Strelinger, Chas. A. Strelinger Company, Detroit, Mich.; W. W. Totman, Whitney Mfg. Company, Hartford, Conn.; E. H. Waring, Crocker-Wheeler Company, Ampere, N. J. Mr. Peirson was the winner.

There were 12 entries in the sack race, as follows: C. L. Goodrich, Pratt & Whitney Company, Hartford, Conn.; A. W. Graham, Diamond Machine Company, Providence, R. I.; D. Halstead, Carver File Company, Philadelphia; C. E. Holgate, Gould & Eberhardt, Newark, N. J.; R. B. Jacobs, Jacobs Mfg. Company, Hartford, Conn.; J. Judd, New Haven Mfg. Company, New Haven, Conn.; D. R. Mackintosh, Link-Belt Company, Philadelphia; C. A. Mackintosh; S. Robertson, Walter D. Foster Company, New York; C. T. Schmitt, Walter D. Carpenter Company, New York; E. Von Campe, Standard Tool Company, Cleveland, Ohio; T. G. William. C. L. Goodrich was the winner.

Sixteen entered the three-legged race, as follows: W. C. Buell, Westmacott Gas Furnace Company, Providence, R. I., and A. W. Graham, West Haven Mfg. Company, New Haven, Conn.; A. Carpenter, E. T. Houghton & Co., Philadelphia, and A. T. Dowd, Walker M. Levett Company, New York; E. Von Campe, Standard Tool Company, Cleveland, Ohio, and C. E. Chapple, New Jersey Steel Company, Rahway, N. J.; C. E. Watrous, Cutler-Hammer Mfg. Company, New York, and H. A. Pratt, Westinghouse Electric & Mfg. Company, Pittsburgh; C. T. Schmitt, Walter D. Carpenter Company, New York, and C. L. Goodrich, Pratt & Whitney Company, Hartford, Conn.; W. H. Miller, Pratt & Whitney Company, Hartford, Conn., and R. B. Jacobs, Jacobs Mfg. Company, Hartford, Conn.; J. Judd, New Haven Mfg. Company, New Haven, Conn., and J. B. Anderson, Cleveland Automatic Machine Company, Cleveland, Ohio. Carpenter and Dowd were the winners.

## Machinery Manufacturers in Canada.

TORONTO, October 24, 1908.—Throughout the last twelvemonth, when Canadian trade generally was in reduced vigor, the demand for machinery continued noticeably better than that for other lines that might be expected to keep pace with it. This remark applies, however, to a division of the machinery trade rather than to the whole of it. The sales of machinery for shop equipment fell away very sharply indeed from their volume of any one of the last three or four years immediately preceding. It was in plant for construction, mining, metallurgical, agricultural and power purposes that the machinery business was least inactive. Outfit was required for the carrying on of operations sustained by conditions quite independent of the recent trade depression. The contracts let by the Dominion, Provincial and municipal authorities—contracts whose performance was required to be in progress during the last twelvemonth—call for a very large aggregate outlay upon construction plant. Relatively dull as it has otherwise been, the year 1908 belongs to an era distinguished above all other periods in the history of the country for the great number and cost of such public undertakings going forward. Several sections of the National Transcontinental Railway were put under contract this year. The Ontario Government's railroad northward through the Nipissing District, numerous harbor improvements, the dredging of channels, the building of wharves, the installing of municipal water works, lighting plants, &c., are some of the chief objects on which contractors continue to be engaged for public employers.

In consequence of the initiation of the Ontario Government's power policy the Ontario Power Company, which obtained from the Government the contract to furnish the electricity, is making a large addition to its producing plant. The Government itself, through its Commission, has contracted for the building of a transmission system extending over 300 miles. The Government's further contract for the electrical equipment of the line and for the stations is about to be awarded. The tenders of the Canadian General Electric Company and of the Canadian Westinghouse Company of Hamilton are so near each other that the Hydro-Electric Commission has announced it will probably divide the half-million-dollar contract between the two.

Besides the public construction work, on account of which plant has been and still is in demand, is the uncovering from time to time of rich new veins in the Cobalt and Montreal River silver fields. The wealth of several of these deposits is so great that the working of them would be promoted rather than retarded by bad times, for they themselves speedily furnish the operating capital that the caution of investors would have rendered unobtainable otherwise, and the dull times makes labor plentiful. For the equipment of these mines much money has been expended. The splendid superficial yield of the properties has, in most cases, made the raising of the required money for the sinking of shafts an easy matter. At Trout Lake, at Thorald, and other points smelting and refining works have been established and equipped. As money raised on the public credit afforded funds for Dominion, Provincial and municipal construction work to be pushed forward on a large scale in the dull period; as money yielded by the surface deposits of silver mines furnished the capital for "going down"; so the splendid prospects of the crops a month before maturity guaranteed money to pay for harvest machinery sold there. In the departments mentioned, therefore, the machinery trade was comparatively well maintained.

The equipping of factories, however, gave little business to the builders of outfit in the current year. Expansion had been the rule for some years. Old factories were being enlarged, branches at points distant from the main establishment were being opened, new companies and new works were being multiplied—all this in the time from 1903 on to 1907. But it stopped sharply toward the close of the latter year and is not yet showing much revival. Hence machinery for such industrial works has not been in much call of late.

Canadian manufacturers of machinery have not been much better off though than if the demand on contractors, mining and power development account had waned with the demand for most other things. Their competitors elsewhere, having quieter times at home, were keener than they have formerly been for the Canadian business. Accordingly much of the Canadian trade was not secured by Canadian machinery makers. In the five months ending with August the imports of machinery comprehended in tariff item 453 amounted to $2,229,208. This item includes telephone and telegraph instruments, electric and galvanic batteries, electric motors, dynamos, generators, sockets, insulators, electric apparatus not otherwise provided for, boilers not otherwise provided for, several other kinds of machinery, iron and steel castings for machines specified in the item. On these articles the general tariff rate is 27½ per cent. ad valorem. In times like these the duty is not a serious deterrent of an import trade. As a matter of fact, the Canadian manufacturer of machinery of this description and the Canadian foundrymen are practically without protection. Their raw material—the pig iron and steel used—is subject to duties in most cases higher than this. That is to say, the duty element in the prices they pay on their material exceeds the duty element in the price they get for their product. The machine shops and foundries have for the most part been running with greatly reduced labor forces since the beginning of the present year. Their case is certain to be pressed strongly on the attention of the Government. Manufacturers of mowing machines, reapers, harvesters, binders and attachments for binders are entitled to a drawback of 99 per cent. of the duty paid on their imported raw material, when they present satisfactory proof that the material was consumed in the domestic manufacture of such harvest machinery. But no other machinery manufacturers are favored by the concession of a drawback. C. A. C. J.

The *Diario de la Marina* of Havana, Cuba, announces that there were "denounced" in September 10,920 hectares of iron lands in Baracoa, Nibeyon; 34 hectares in Mayari and 180 hectares in Manzanillo, El Pilon.

## The Annual Report of the Commissioner of Patents.

WASHINGTON, D. C., October 27, 1908.—The annual report of Edward B. Moore, Commissioner of Patents, which has just been made public, is of unusual interest to manufacturers, patent and trademark owners and inventors, following as it does congressional legislation which has greatly increased the efficiency of the patent system and the force engaged in its administration. There is still much opportunity for improvement, however, and the commissioner bespeaks the co-operation of all who are interested in the subject of patent protection in his efforts to increase the facilities of the bureau.

### The Patent System Earns a Big Surplus.

Few persons are aware of the fact that the United States Patent Office, notwithstanding its enormous importance and its niggardly treatment at the hands of Congress, is not only self-supporting but is now covering into the treasury an annual surplus of more than $250,000. Since the organization of the office there has accumulated in the treasury a net surplus of $6,972,070. Nearly this whole sum has been paid by inventors and manufacturers, but not a dollar of it is now available for the purpose of improving the efficiency of the bureau. The commissioner in his report calls attention to the necessity for the erection of a suitable building for the Patent Office, the cost of which, including the necessary ground, could be entirely paid out of the accumulated surplus if Congress should authorize the appropriation. A bill providing for a new building is now pending in the Senate and its passage at the coming session is urgently recommended. The patent offices of Great Britain and Germany have outgrown their accommodations and each of these countries has recently erected new buildings which are vastly superior in every respect to the one that now houses the United States Patent Office.

The business of the Patent Office continues to increase in nearly all branches of the work. There were received in the last fiscal year 58,527 applications for mechanical patents, 1091 applications for designs, 207 applications for re-issues, 2036 caveats, 7467 applications for trademarks, 810 applications for labels and 339 applications for prints. There were 34,902 patents granted, including reissues and designs, and 6135 trademarks, 636 labels and 279 prints were registered. The number of patents that expired during the year was 24,270. The number of allowed applications which, by operation of law, were forfeited for nonpayment of the final fees was 6520. The total receipts of the office were $1,874,180 and the expenditures $1,608,292, leaving a surplus for the year of $265,888, which was covered into the treasury.

### A New Division to Be Created.

Although Congress at its last session made a small increase in the number and compensation of the employees of the office, the commissioner urges much more generous treatment during the coming fiscal year. He has in contemplation the creation of a new division of much importance to inventors and manufacturers, to be known as the Division of Classification, the duty of which will be to classify all patents, both American and foreign, and digest publications on scientific subjects relating to patents. The commissioner asserts that, with a proper classification or digest of all patents of all nations and technical and scientific publications, the work of the office can be carried on at much less expense and the facilities for making validity and other searches on the part of manufacturers, inventors and attorneys vastly improved. The proposed system of classification is imperative, owing to the fact that the United States has issued 900,000 patents to date and the office, in addition to that number, has more than 1,000,000 foreign patents in its files.

Inventors, manufacturers and others who have followed with anxiety the effort on the part of Congress to bring about the destruction of the large number of models heretofore stored at considerable expense in a rented building, will be glad to learn that, notwithstanding the legislation enacted last winter, all the more important models are still in the possession of the Patent Office. In one of the annual appropriation bills passed last winter a commission consisting of the Secretary of the Interior, the Commissioner of Patents and the Secretary of the Smithsonian Institution was appointed to determine which of the models should be preserved as of "possible benefit to patentees or of historical value," such models to be transferred to the new National Museum building and the remainder to be "disposed of by sale, gift or otherwise," in the discretion of the Commissioner of Patents. Under this authority some of the models have been placed in the Smithsonian Institution, 4000 unapplied models of little importance have been sold and the balance, which embraces the greater part of the collection, has been temporarily stored, pending the completion of the new museum building.

The organization of the many industrial combinations which have been created in the last few years has made it necessary to increase materially the schedule of fees for the assignment of patents. Nearly all these combinations are the owners of patents which they have acquired either from subsidiary corporations or individuals. In the organization of one of these combinations a few months ago assignments transferring titles to 2592 patents were offered for record and under the rule in force at the time, which provided a maximum fee of $3 for all assignments of 1000 words or over, the Government received but $78 for the 26 deeds of transfer necessary to complete the transaction. Upon the recommendation of the Commissioner of Patents, Congress at its last session passed a bill which became a law May 27, 1908, permitting a charge of $1 for each paper containing 300 words or less, $2 for each paper containing up to 1000 words and $1 for each additional 1000 words or fraction thereof. The increased fees under this new law will exceed $10,000 per annum.

The Commissioner of Patents has also put into effect a new scale of prices for copies of the drawings and specifications of patents. For many years copies of patents embracing entire classes were furnished at 2 cents each and of sub-classes at 3 cents each, while the price for a single patent was 5 cents. It was demonstrated that the cost of the printed specifications and drawings was between 4 and 5 cents, and as there was no reason for continuing the sale of copies at an actual loss a uniform price of 5 cents per copy was adopted. The gain since the rule went into effect foreshadows an annual increase of revenue from this source of about $15,000 per annum. W. L. C.

## OBITUARY.

O. M. HARTZELL, for many years identified with the iron trade in Pittsburgh, died in San Rafael, Cal., October 19, the result of self-inflicted wounds. Mr. Hartzell is supposed to have been despondent over the recent death of his wife. He leaves two sons, one of whom is connected with the Carnegie Steel Company.

ORVILLE P. MOON, manager of the Standard Lighting Company Division of the American Stove Company, Cleveland, Ohio, died October 26 of typhoid fever, aged 41 years. Before going to Cleveland four years ago he was manager of the National Stove & Foundry Company, Lorain, Ohio.

**A Large Cast Steel Annealing Box.**—The Union Steel Casting Company, Pittsburgh, has recently built a cast steel annealing box, 190 in. long, 62 in. wide inside and 54 in. high over all. The general thickness of the steel used in the building of this box was 1⅜ in., and the box weighs 19,180 lb. In the construction of the box trusses are cast at regular intervals directly under the roof. The lower chord or cross bar of these trusses ties the sides together just where the roof begins to spring, and struts or uprights run thence to the roof, with the result that, even on so large a box, the roof will not sag with consequent distortion to the sides. This, combined with the fact that the box is cast in an integral piece, insures full piling light and a hermetical seal throughout a long life. The company has been manufacturing this style of annealing box for several years, and reports that a number of its boxes were in good condition after being in the furnace over 200 times. A description of the box appeared in *The Iron Age* of March 12, 1908.

## The Michigan Copper & Brass Company.

The October issue of the *Metal Industry*, New York, presents an article describing the new plant of the Michigan Copper & Brass Company, Detroit, Mich. Illustrations are given of the interior of the rolling mill, the wire rod mill, the brazed tube mill, the casting shops, &c. From the description the following extracts are taken:

Ground was first broken in January, 1906, and the first manufactured goods shipped in August, 1907. Considering the period of construction, the most active this country has ever experienced, the time required for building may be regarded short. Unfortunately but a few weeks after commencing manufacture the panic of October last, with the ensuing widespread depression, was encountered. Nevertheless, the directors and management in the face of this condition, one which would have deterred a less courageous and determined body of men, decided to continue active operations, convinced that the expected period of dullness could wisely be devoted to perfecting its organization, with resulting ability to produce goods fully equal to those of longer established mills.

The plant is situated on the Detroit River extending therefrom to Jefferson avenue, west, and covers 13 acres. During the navigation season all copper mined in Michigan and shipped East passes the rear of the company's property, permitting of a supply being received direct from steamboat to the company's own dock. During the winter months raw materials and supplies are received over the company's siding, an extension of the Michigan Central Railroad.

It is only in the last decade that the brass rolling business has amounted in volume sufficient to spur manufacturers to install labor saving devices and appliances; moreover, the process of manufacture, unlike the iron and steel business, for example, has undergone since its inception in America no radical change, the development being confined to improvements only.

The Michigan Copper & Brass Company in ordering its equipment made use of the knowledge others had gained in their extensive experience in these particulars, accompanying the main installation by such accessories as electric cranes, pneumatic hoists, improved blocking machines for coiling the metal as delivered from the rolls, latest type of furnaces and muffles, fast turning rolls, automatic stokers to boilers, in fact, every appliance known in the business, making the mill up to date in every respect. Among the older mills it is only the more progressive that have yet brought into play these conditions, calculated to save labor and facilitate production. The importance of these is not to be underestimated when it is remembered that but three-quarters of a cent per pound margin represents the difference between dividends and no dividends; therefore a saving of a fraction of a cent per pound means much.

The building is of brick and steel measuring 587 ft. long and 186 ft. wide and contains the entire equipment of brass and copper rolling, wire and tube mills, permitting of easy supervision, and was so planned that extensions can be readily added, the engine and boiler capacity being ample to permit of this. The water supply, an adequate amount of which is so essential, is obtained from the Detroit River by means of a 24-in. cast iron pipe extending into the stream underneath the dock to the harbor line.

The power is mainly furnished by an Allis-Chalmers cross-compound vertical engine direct connected to a 12-in. shaft, steam being supplied from Wickes boilers, fed by Murphy automatic stokers. The hot rolls are the product of the A. Garrison Foundry Company, Pittsburgh, and the cold rolls of the Farrel Foundry & Machine Company, Ansonia, Conn., the Waterbury-Farrel Foundry & Machine Company, Waterbury, Conn., furnishing the rod rolls. The Morgan Construction Company, Worcester, Mass., turned out the wire machinery, and the Richards Mfg. Company, Bloomsburg, Pa., the draw benches. The Torrington Mfg. Company, Torrington, Conn., the E. J. Manville Machine Company, Waterbury, Conn., and the Waterbury Machine Company, Waterbury, Conn., were concerned in the furnishing of slitters, smaller wire drawing machines, straightening machines, &c. Annealing furnaces were designed and installed by the Rockwell Engineering Company, New York.

The raw material enters the rear of the plant from the river side and steadily progresses in process of manufacture to the Jefferson avenue end of the building, where are located shipping rooms equipped with cranes and hoists for shipment by carload and dray.

The officers of the company are George H. Barbour, president; James E. Danaher, vice-president; D. M. Ireland, second vice-president; John R. Owen, secretary; George H. Barbour, Jr., treasurer. Directors: George H. Barbour, D. M. Ireland, Jas. E. Danaher, H. B. Ledyard, Jas. T. Whitehead, E. J. Corbett, Jeremiah Dwyer, F. M. Alger, F. T. Moran.

President Barbour is also vice-president and general manager of the Michigan Stove Company, Detroit, manufacturer of the celebrated Garland stoves and ranges. The establishment of these mills is due to his energy, constructive ability and desire to aid in the growth of Detroit as a manufacturing center. The correctness of his conclusion that there was sufficient scope for the enterprise has been demonstrated by the amount of business which in a year of extreme depression has already reached this company.

Jeremiah Howe, the first superintendent, entered the employ of the Coe Brass Mfg. Company, Torrington, Conn., in 1871, remaining there in various capacities until 1881, when he went to Detroit as shipping clerk for the Detroit Copper & Brass Rolling Mills, rising to the position of superintendent. Soon after leaving their employ he occupied himself in organizing the present Michigan Copper & Brass Company, aiding Mr. Barbour in that work. During the period of construction Mr. Howe was actively employed as superintendent and general adviser. To his judgment was left the class of goods to be manufactured, size of mill, &c., with result that the mills were equipped to make brass and copper in every variety of sheets, wire, rods and tubes, with the exception of seamless tubing, the intention being to take this up later. Unfortunately soon after manufacturing was commenced in August, 1907, Mr. Howe was obliged to forego his duties because of sickness.

John R. Owen, the secretary, entered the employ of Randolph & Clowes, Waterbury, Conn., operating brass and copper rolling mills, in 1895, in the capacity of purchasing agent, continuing with them for three years. He then started with the Coe Brass Mfg. Company, Torrington and Ansonia, Conn., in the commercial department of that company, resigning in 1908.

John Tyler, the present superintendent, was formerly superintendent of the Chicago Brass Company, Kenosha, Wis., and prior thereto was in the employ of the Coe Brass Mfg. Company, Torrington and Ansonia, Conn. He assisted prominently in the development of the latter mentioned mills for several years succeeding their purchase from trustees of Wallace & Sons, after which he was transferred by the management to Kenosha. His connection with the brass industry dates from 1886. Others holding responsible positions in the mechanical, accounting and selling departments have had a long experience in the brass and copper trades.

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The Allegheny Cornice & Skylight Company, Allegheny, Pa., has recently installed a 13-ft. forming press, weighing 156,000 lb., which has a capacity for bending plate up to ¼ in. This company is furnishing all the fireproof sheet metal windows for several buildings now being erected in Pittsburgh, including the Fort Pitt Hotel, Renshaw & May buildings, the Morganza Reformatory and the new Connellsville Bank, Connellsville, Pa. These windows were passed by, and have the label of, the National Fire Underwriters of Chicago.

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The Pittsburgh Valve, Foundry & Construction Company, Pittsburgh, has received a large contract from the Riter-Conley Mfg. Company for miscellaneous castings, to be used in constructing the blast furnaces of the Indiana Steel Company, Gary, Ind.

# NEWS OF THE WORKS.

### Iron and Steel.

The plant of the Elmira Rolling Mill Company, at Elmira Heights, N. Y., has been taken over by the Elmira Heights Iron & Steel Company, which will place the plant in operation November 4, with a member of the company in each of the most responsible positions, thereby insuring the best shop results as to workmanship and quality. The plant has been undergoing repairs the past three months, and considerable new machinery has been added to make it an up to date mill in every respect. George H. Lowe, who operated the works for the Federal Rolling Mill Company, will be secretary and manager, and Edwin Ball, Jr., superintendent. The product will be refined bar iron and steel and will be sold by the Federal Rolling Mill Company, with offices in the D. S. Morgan Building, Buffalo, N. Y.

Soho Furnace of the Jones & Laughlin Steel Company, Pittsburgh, was blown in this week and all the blast furnaces of this company are now in operation.

No. 4 furnace of the Ohio Works of the Carnegie Steel Company, Youngstown, Ohio, has blown out for relining and repairs. Nos. 1 and 3 stacks are in operation, No. 2 having been blown out some time ago for relining.

The furnace of the Williamson Iron Company, at Birmingham, Ala., has been put in blast after a period of some months' idleness. This plant is being operated by B. F. Wilson, who was formerly superintendent of the Tennessee Coal, Iron & Railroad Company's furnace at Oxmoor, Ala.

No. 2 furnace of the Tennessee Coal, Iron & Railroad Company's Ensley, Ala., plant is temporarily out of blast by reason of an explosion which damaged its lining.

Five of the ten idle hot mills of the Shenango plant of the American Sheet & Tin Plate Company resumed operations October 19, after having been closed down for some time for extensive repairs, and the remaining five mills were started October 21. There are now 25 mills in operation at the plant. As the result of the greater mill output the tinning house will be placed in operation. The company, which closed down 26 of the mills at its plant at Monessen, Pa., has started 12 of them, and the remainder are being repaired so that they can be started within the next few weeks. The mills are all under one roof, and were closed down for repairs about three weeks ago.

### General Machinery.

The Cotton States Iron Works Company contemplates building a plant in Ensley, Ala., to cost about $15,000. The location for the plant has not yet been selected nor have plans been prepared by the company, which will be composed of J. J. Walker and other local men.

The Giese Mfg. Company, Grand Island, Neb., has been organized with a paid up capital of $25,000, to manufacture windmills, pumps, tanks, gray iron castings, &c., and expects to be running there by the first of the year. This company was organized by Giese Brothers, of the Giese Brothers Mfg. Company, Holstein, Neb.

The Consolidated Granite Company, Winsten-Salem, N. C., will be in the market for mechanical equipment within the next few months, but is not ready at the present time to make purchases.

The Pomona Mfg. Company, Pomona, Cal., will double the capacity of its plant, the new space to be used principally for the manufacture of a gasoline motor traction engine adaptable for farm use. The construction and machine departments will be extended and the foundry will be moved to another section of the property.

The Union Pacific Railroad intends to rebuild its roundhouse and machine shop at Beaumont, Texas, which were recently destroyed by fire.

The Crossley Machine Company, Trenton, N. J., recently incorporated, has succeeded the Crossley Mfg. Company, and will continue the same line of business.

Recent sales of the American Blower Company, Detroit, Mich., include: Engines.—Fried & Reineman, Pittsburgh, Pa.; Stephens Adamson Mfg. Company, Aurora, Ill.; Westinghouse Electric & Mfg. Company, Pittsburgh, Pa.; Fairbanks, Morse & Co., Chicago, Ill.; City of Rocky Mount, N. C.; Ault & Wiborg Company, Cincinnati, Ohio; Allis-Chalmers Company, Milwaukee, Wis.; Isthmian Canal Commission; Flint Body Company, Flint, Mich.; Western Electric Company, Boston, Mass.; W. T. Osborne & Co., Kansas City, Mo. Heating and ventilating apparatus.—National Museum, Library of Congress; American Lead Pencil Company, Murfreesboro, Tenn.; Packard Motor Car Company, Detroit, Mich.; Bullock Electric Mfg. Company, Cincinnati, Ohio; Zechine Coal Company, Newcomb, Tenn.; International Paper Company, Brownsville, N. Y., and Livermore Falls, Maine; Sanitary Can Company, Indianapolis, Ind.; Trussed Concrete Steel Company, Youngstown, Ohio; Armstrong Cork Company, Lancaster, Pa.; Toledo Furnace Company, Toledo, Ohio; Auburn, N. Y., Light, Heat & Power Company; American Shipbuilding Company, Lorain, Ohio; Dutchess Tool Company, Fishkill-on-Hudson, N. Y.; Water Works, Beatrice, Neb.

The Empire Machine Works, O. B. Smith, proprietor, Frankfort, Ind., is building a new machine shop in order to provide room for an expanding business.

The Southwestern Engineering & Supply Company, engineer and contractor, Houston, Texas, which makes a specialty of the installation of ice making and refrigerating machinery and equipment, expects in the near future to provide a shop with facilities for the overhauling and repairing of ice machines.

### Power Plant Equipment.

Samuel W. Hay's Sons, Farmers Bank Building, Pittsburgh, have sold two Ridgeway engines, one 18 x 19 in., to drive a Clifford fan, and one 17 x 18 in., to drive an electric generator to be installed by the Mt. Pleasant Coke Company, Greensburg, Pa.

Owing to increase in orders the plant of the Pennsylvania Steel Pulley Company, N. S., Pittsburgh, is being operated to nearly full capacity. The company is making some extensive additions and improvements in its machinery to give an increased output, which is made necessary owing to the larger demand for its steel pulleys.

Bonds in the sum of $10,000 have been authorized by East Lansing, Mich., for the construction of a water works and sewerage system. It is expected that the pumps will be operated by electric power, although construction plans are not yet fully developed.

The Sterling Engine Company, Buffalo, N. Y., manufacturer of gasoline engines, marine motors, &c., has increased its capital stock from $75,000 to $125,000.

A contract for the installation of an electric light and water plant at Herington, Kan., has been secured by the Squire Electric Company, Kansas City, Mo.

The Parker Boiler Company, Philadelphia, Pa., is erecting two 100-hp. boilers for the Young Men's Christian Association, Milwaukee, Wis.; two 267-hp. boilers, University of Washington, Seattle, Wash., and one 203-hp. boiler, Philadelphia *Inquirer*, Philadelphia, Pa.

Bids have been asked on two 85-hp. engines, two 50-kw. generators and two boilers by the Joliet National Bank, Joliet, Ill., for the equipment of a new power house, which it is arranging to build. Plans for this work have been prepared by Julien Barnes, 153 La Salle street, Chicago, Ill.

The village authorities of Walthill, Neb., are considering the installation of a combined water and electric light system. Estimates on the cost of such a plant will be asked for in the near future.

The United Cigarette Machine Company, Lynchburg, Va., which has used several Foos engines in its power plant for eight or ten years, has recently placed an order with the Foos Gas Engine Company, Springfield, Ohio, for a 100-hp. multiple cylinder vertical engine and producer gas plant complete. This engine will be direct connected to a General Electric dynamo, to supply current for the operation of its new plant, which is nearing completion.

Muralt & Co., New York, have secured the contract for the enlargement of the hydro-electric plant of the Riverhead Electric Company, Riverhead, L. I. The old water wheel will be taken out and new Trump turbines of the vertical shaft type will be installed. The electric equipment will be of the three-phase alternating current type. There is also an auxiliary steam plant for emergency purposes.

### Foundries.

William N. Crouch, Norwood, N. Y., has purchased the plant at Fayetteville, N. Y., formerly known as the Beard Foundry, and consisting of machine shop, pattern shop, finishing room, cupola, &c. Mr. Crouch will make extensive improvements to the plant and will do a general foundry and machine shop business.

The National Malleable Castings Company, Sharon, Pa., is making some large additions and improvements to its plant, including the erection of two steel buildings, one 72 x 250 ft. and the other 40 x 425 ft.

The Pitts-Thompson Foundry Company, Dubuque, Iowa, expects to build a new and larger foundry in the near future, but plans for this improvement are not fully enough matured to admit of detailed information concerning them.

The Advance Stove Works, Evansville, Ind., is erecting an addition to the molding department, and is putting on between 15 and 20 more molders. Other improvements are under consideration, and in addition to quite a number of new machines recently installed, new boilers will be put in, also a new plant telephone system.

The Georgia Iron Works, Augusta, Ga., whose foundry was damaged by fire August 29, has completed repairs to the building at an expense of $3000. The company is building a new fireproof pattern shop, warehouse and pattern storage building at a cost of $8000. The fire in the foundry did not close down the plant, which is now in full operation.

The Thomas D. West Foundry Company, Sharpsville, Pa., has resumed in part after having been closed down for the past several months. The plant is now running to about 50 per cent. of its capacity, but it is expected to resume in full shortly after

the election, when about 100 additional men will be placed at work.

The Powers & Maxwell Foundry Company, Darlington, Beaver County, Pa., is closing up its business, and as soon as this is done the charter will be surrendered. The action is voluntary and all liabilities will be taken care of by the company.

**Fires.**

On October 20 the tipple of the Elkins Coal Company, at Bretz, near Morgantown, W. Va., was destroyed by fire. The loss is estimated at $30,000.

The plants of the Peoria Foundry Company and the Meyer Furnace Company, Peoria, Ill., were partly burned October 15, the loss of the former being placed at $25,000 and the latter company at $15,000.

The shops of the Wabash Railroad at Moberly, Mo., were damaged $10,000 by fire October 21.

The foundry of the Union Machine Company, Nashville, Tenn., was damaged $20,000 by fire October 21.

The main building of the plant at Terra Cotta, D. C., of the National Fireproofing Company, Pittsburgh, Pa., was damaged $30,000 by fire October 21.

The ornamental iron plant of the Henzmann Mfg. Company, Louisville, Ky., was burned October 16, the loss being about $10,000.

The coal tipple of the Fairmont Coal Company, Fairmont, W. Va., was destroyed by fire October 19, the loss being about $30,000.

The Thomas Spring & Gear Company's plant at Canisteo, N. Y., was damaged by fire on October 21.

**Hardware.**

The Howler Mfg. Company, Montgomery, Ala., has been organized with a capital of $50,000 to manufacture patented self-heating sad irons and alcohol stoves. The officers of the company are J. C. Virden, president and treasurer; R. L. Harmon, vice-president, and M. M. Freed, secretary. The plant will be operated by electricity, and the company will soon be in the market for a planer, core oven and glass and brass receptacles.

The American Recording Lock Company, Elkhart, Ind., which in April last succeeded to the Chicago Recording Time Lock Company, an Illinois corporation, states that it has contracts now outstanding for more than 7000 locks. The reorganized company has $150,000 capital stock. The officers are: President, James G. Trainer; vice-president, W. W. Sterling; treasurer, J. Milton Trainer; secretary, L. C. Bush.

**Miscellaneous.**

The General Fireproofing Company, Youngstown, Ohio, has received a contract for $86,000 worth of furniture and equipment to be installed in the new court house now being built at Wilkes-Barre, Pa., and a contract, amounting to about $50,000, for metal furniture and equipment to be installed in a courthouse in Westchester County, N. Y. The company has received numerous other smaller orders for steel furniture and other office equipment and is running its plant to practically full capacity.

The George H. Pilling & Son Company, Philadelphia, Pa., manufacturer of surgical, veterinary and dental instruments, whose present building on Arch street is 80 x 125 ft., is asking bids for a five-story addition, 62 x 65 ft., to be built in the rear of the present building and facing on Twenty-third street.

The Copper Roller Bearing Trolley Wheel Company, Coxsackie, N. Y., recently incorporated with a capital stock of $100,000, has leased the John Brown lumber yards, near the tracks of the West Shore Railroad in West Coxsackie, and is now getting the buildings in shape for the manufacture of a patented trolley wheel and copper, brass and bronze specialties. William F. Weyburn is president and Green B. Raum, Jr., treasurer. William B. Townsend of West Coxsackie and Henry A. Jordan of the Jordan-Marsh Drug Company, also of Coxsackie, are interested.

The Regester Company, Westminster, Md., incorporated with a capital stock of $20,000, has purchased the plant, patterns and machinery of the J. Regester's Sons Company, Baltimore, which is retiring from business. The new company will manufacture a full line of plumbers' and steam fitters' brass goods and all kinds of castings.

The Trio Mfg. Company, Rock Island, Ill., has been incorporated with a capital stock of $40,000, to manufacture electrical specialties. J. T. Marron is president.

The Manitowoc Seating Company, Manitowoc, Wis., has been incorporated for the manufacture of school and church furniture. The company, it is stated, will erect a large factory at once. The new company is headed by M. H. Murphy and the enterprise is said to be strongly backed by local capital.

The Jamestown Metal Furniture Company, Jamestown, N. Y., is to build an addition to its plant, 60 x 230 ft., five stories high.

The report that the Central Supply Company, Indianapolis, Ind., has purchased the plant of the Knecht & Thomas Pump Company of that city is incorrect. Stock in the latter company has been purchased by some of the stockholders of the former company, but the Central Supply Company, which is a jobber of plumbing, steam, water and gas supplies, has as a company no interest in the Knecht & Thomas Pump Company.

The Preston Fabric Tire Company, Buffalo, N. Y., recently incorporated by Christian Wesp, Morris R. Evans, Philip Wesp, Jr., Alonzo B. Collins and James F. Preston for the manufacture of automobile and bicycle tires and firehose, has purchased the plant of the old King Spring Company, at Niagara and West Delevan streets, and will remodel the building and add new machinery.

Oliver L. Bear, Curry Building, Pittsburgh, representative of Benjamin F. Kelley & Son, New York, has sold a large combined live and exhaust steam hot water service heated, to be installed in the addition to the Fort Pitt Hotel, Pittsburgh. These heaters are especially designed for the most economical use of live steam. Exhaust steam is always in use, and live steam under thermostatic control is admitted only and in such quantities as needed. It is especially adapted for use in hotels, laundries, hospitals and manufacturing establishments where hot water is used in quantities.

The Corning Machine Company, Corning, N. Y., will erect a two-story garage building at 143 East Market street. The entire second floor of the building will be fitted up as a modern machine shop. The equipment at the present shop will be moved to the new location and later on several new machines will be added.

At the plant of the Aluminum Company of America, at New Kensington, Pa., the men have been ordered on double turn, and about 800 hands are now employed. The company reports a large volume of business on the books, and a prosperous winter is looked for.

## Schoen Steel Wheels.

The Carnegie Steel Company, which now manufactures and controls the Schoen solid forged and rolled steel wheel, has issued a pamphlet dealing with the different stages of manufacture and presenting the advantages of the steel wheel. It is claimed that the flange of the Schoen wheel will successfully withstand a lateral thrust more than five times as great as is required to break or force off the flange of the best reinforced cast iron wheel. Other advantages urged are freedom from defects and failures, maximum mileage, and a practical uniformity of surface wear due to the homogeneity of metal in the wearing body of the rim.

Referring to the mechanical defects in equipment which are largely responsible for changes in wheel contour, the necessity is emphasized of reducing these mechanical irregularities to a minimum. Where the contour has been altered by uneven wear beyond proper limits, steel wheels must be withdrawn from service and placed in a lathe and a proper contour restored by turning. This of course means some loss of mileage because of the metal turned off. "With due care and attention, however, to the causes of uneven wear this loss of wearing body may be greatly reduced and the life and real economy of the wheel much increased. To this end care should be exercised in making wheels according to the tape marks thereon, so that two wheels on the same axle shall not vary to exceed a maximum of 1-16 in. in diameter." Other considerations are urged with a view to the best adjustment and maintenance of equipment for maximum life of wheel.

It is stated that a Schoen wheel with a 3-in. or 3½-in. thickness of rim can be produced for but a small percentage more than a wheel of the same type with a 2-in. or 2½-in. rim; therefore the value of the steel wheel in service can be greatly increased by specifying the greatest amount of wearing body. Illustrations are given showing how the steel is converted by forging and rolling from a slab to the finished wheel with greatest density of metal in the rim.

Schoen steel wheels are in use by the Bessemer & Lake Erie Railroad, the Duluth & Iron Range Railroad, Long Island Railroad, Pennsylvania Railroad and the Southern Pacific and Union Pacific, as well as by the subway and elevated roads in New York, Brooklyn and Philadelphia. It is stated that the Pennsylvania Railroad has 66,000 Schoen steel wheels in service, that several other companies have 10,000 and upward, while a still larger number have from 200 to 1000 Schoen wheels in use.

# The Iron and Metal Trades

## A Vigorous Buying Movement in Pig Iron.

### Large Season Contracts for Wire for Canada.

Interest has centered in the Pig Iron markets in certain sections of the country. A strong buying movement originated with consumers in northern New York, outside of Buffalo proper, spread toward Albany, embraced New England to some extent, and extended southward toward Philadelphia. Just how large the sales have been it is difficult to trace, because the orders were distributed, but it is estimated that there were included about 12,000 tons of Malleable Bessemer to a New England and New York interest, upward of 15,000 tons of Foundry Iron to a large electrical plant, with more pending, close to 10,000 tons to manufacturers of radiators, 14,000 tons to one New York Pipe foundry and 5000 tons to a New Jersey Pipe foundry. Throughout this territory there are further heavy inquiries, which, like the sales referred to, deal with deliveries for the balance of the year and for the first quarter, little Iron being booked for the second quarter. The market has strengthened and low sellers are now in line.

There has been continued interest in Bessemer and Basic Pig in the Pittsburgh District, where the markets have displayed symptoms of weakness. To furnaces which must buy their Ore and Coke in the open market prices are getting uncomfortably close to cost, but that of course does not apply to those who control all or part of their own Ore.

Reports on the export markets continue cheerful. With the exception of Japan, the sales to and inquiries from the principal consuming countries are growing. Among recent transactions are a lot of 5000 tons of Rails for the Argentine and about 13,000 tons of Shapes in two lots to Canada. Season contracts have been closed during the past week for various Wire products for the Canadian market, the business footing up to 30,000 tons.

A conservative estimate of the tonnage of Structural Shapes which will be closed in the near future puts it at 150,000 tons. This, however, includes the 24,000 tons just awarded to the American Bridge Company for the approaches and outside work on the new Northwestern station in Chicago. Among the other contracts awarded are 4000 tons for a viaduct at Cincinnati and 2800 tons for a viaduct at Texicanna, Texas. We note also the sale of 2000 tons for transmission towers for an electric power line in North Carolina, by Milliken Bros., who have thus far this year produced 10,000 tons of this class of structure, for which special facilities are required. From the leading mill centers come the reports that the specifications for Steel Bars, on the contracts placed some time since, are coming in quite freely.

The Old Material markets continue quite firm. Pittsburgh notes sales of 12,000 tons of Borings and Turnings.

A more cheerful tone pervades the Metal markets. While considerably exaggerated in the press reports, there has been a better movement in Copper. While the buying is not as large in volume as it was in July, it is more widely distributed. Electrolytic was available until early in the week at 13½c., but it is doubtful whether it can now be purchased at 13⅝c. Lead is stronger, at 4.35c., New York, and Spelter is slightly higher, at 4.85c., New York.

## A Comparison of Prices.

**Advances Over the Previous Month in Heavy Type, Declines in Italics.**

At date, one week, one month and one year previous.

| | Oct.28, 1908. | Oct.21, 1908. | Sept.30, 1908. | Oct.30, 1907. |
|---|---|---|---|---|
| **PIG IRON,** Per Gross Ton: | | | | |
| Foundry No. 2, Standard, Philadelphia | $16.75 | $16.75 | $16.75 | $19.50 |
| Foundry No. 2, Southern, Cincinnati | 15.75 | 15.75 | 15.75 | 20.25 |
| Foundry No. 2, Local, Chicago | 16.50 | 16.50 | 16.50 | 21.50 |
| Basic, delivered Eastern Pa. | 16.00 | 16.00 | 16.00 | 18.25 |
| Basic, Valley Furnace | *13.85* | 13.85 | 14.25 | 19.50 |
| Bessemer, Pittsburgh | *15.40* | 15.65 | 15.90 | 22.90 |
| Gray Forge, Pittsburgh | 14.40 | 14.40 | 14.40 | 20.40 |
| Lake Superior Charcoal, Chicago | 19.50 | 19.50 | 19.50 | 26.00 |
| **BILLETS, &c.,** Per Gross Ton: | | | | |
| Steel Billets, Pittsburgh | 25.00 | 25.00 | 25.00 | 28.00 |
| Forging Billets, Pittsburgh | 27.00 | 27.00 | 27.00 | 31.00 |
| Open Hearth Billets, Phila. | 26.20 | 26.20 | 26 20 | 30.00 |
| Wire Rods, Pittsburgh | 33.00 | 33.00 | 33.00 | 35.00 |
| Steel Rails, Heavy, at mill | 28.00 | 28.00 | 28.00 | 28.00 |
| **OLD MATERIAL,** Per Gross Ton: | | | | |
| Steel Rails, Melting, Chicago | *14.50* | 14.75 | 14.75 | 16.00 |
| Steel Rails, Melting, Phila. | 15.00 | 15.00 | 15.00 | 13.50 |
| Iron Rails, Chicago | 18.00 | 18.00 | 18.00 | 19.50 |
| Iron Rails, Philadelphia | *19.50* | 19.50 | 20.50 | 20.50 |
| Car Wheels, Chicago | 15.25 | 15.25 | 15.25 | 24.50 |
| Car Wheels, Philadelphia | 15.00 | 15.00 | 15.00 | 20.50 |
| Heavy Steel Scrap, Pittsburgh | **15.50** | 15.25 | 15.00 | 16.75 |
| Heavy Steel Scrap, Chicago | **14.00** | 13.75 | 13.00 | 14.00 |
| Heavy Steel Scrap, Philadelphia | 15.00 | 15.00 | 15.00 | 13.50 |
| **FINISHED IRON AND STEEL,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Refined Iron Bars, Philadelphia. | 1.45 | 1.45 | 1.45 | 1.75 |
| Common Iron Bars, Chicago | 1.50 | 1.50 | 1.50 | 1.78 |
| Common Iron Bars, Pittsburgh. | 1.40 | 1.40 | 1.40 | 1.70 |
| Steel Bars, Tidewater, New York | 1.56 | 1.56 | 1.56 | 1.76 |
| Steel Bars, Pittsburgh | 1.40 | 1.40 | 1.40 | 1.60 |
| Tank Plates, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Tank Plates, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Beams, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Beams, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Angles, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Angles, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Skelp, Grooved Steel, Pittsburgh | 1.45 | 1.45 | 1.45 | 1.85 |
| Skelp, Sheared Steel, Pittsburgh. | 1.50 | 1.50 | 1.50 | 1.95 |
| **SHEETS, NAILS AND WIRE,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Sheets, Black, No. 28, Pittsburgh. | 2.50 | 2.50 | 2.50 | 2.60 |
| Wire Nails, Pittsburgh | 1.95 | 1.95 | 1.95 | 2.05 |
| Cut Nails, Pittsburgh | *1.75* | 1.75 | 1.80 | 2.05 |
| Barb Wire, Galv., Pittsburgh | 2.40 | 2.40 | 2.40 | 2.50 |
| **METALS,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Lake Copper, New York | **14.00** | 13.75 | 13.75 | 14.25 |
| Electrolytic Copper, New York | **13.50** | 13.25 | 13.37½ | 14.00 |
| Spelter, New York | **4.85** | 4.77½ | 4.80 | 5.40 |
| Spelter, St. Louis | **4.70** | 4.62½ | 4.65 | 5.30 |
| Lead, New York | *4.35* | 4.22½ | 4.47½ | 4.60 |
| Lead, St. Louis | *4.20* | 4.07½ | 4.32½ | 4.50 |
| Tin, New York | *29.50* | 29.50 | 29.62½ | 32.00 |
| Antimony, Hallett, New York | **8.00** | 7.75 | 7.75 | 11.00 |
| Nickel, New York | 45.00 | 45.00 | 45.00 | 45.00 |
| Tin Plate, 100 lb, New York | $3.89 | $3.89 | $3.89 | $4.09 |

## Chicago.

FISHER BUILDING, October 28, 1908.—(*By Telegraph.*)

The leading transaction of the week in rolled products was the award of 24,000 tons of Structural Shapes for the approaches and other outside work of the Chicago & Northwestern Depot to the American Bridge Company, to which is added 4100 tons in the depot building proper for which only the general contract was placed. Nearly 6000 tons was included in other contracts closed. The outlook for a growing tonnage of Structural Material is quite assuring, there being more than 18,000 tons involved in five separate projects on which orders for Steel will probably be placed within the next 30 days. Besides the undertakings of notable size, there is an increasing number of small jobs coming into the market. Railroads are coming in for supplies more freely than for some time, and as a result there is a fairly good run of Spike, Bolt and Rail fitting orders. Having no surplus stocks to fall back on, the railroads almost invariably require prompt shipments of such orders. The Joliet Bolt and Spike mills of the Illinois Steel Company are now in full operation. Except in Light Sections, for which there is a reasonably good demand, no new Rail business of consequence is being entered. Merchant Pipe, Boiler Tubes and Plates are quiet, and no movement of interest is observed in these lines. Steel Bar specifications are reported by the leading interests to be quite satisfactory, and the record for October will exceed that of any month of the

present year. The Bay View Bar mills of the Illinois Steel Company are all on this week. The most notable feature of the Scrap market is the limited tonnage coming into the market from first hands. The demand from mills and melters has been slowly increasing, and is now great enough to take care of all material brought out. In the meantime dealers generally are making no tenders from reserve stocks at current prices.

**Pig Iron.**—The market developed considerable activity last week, especially in the transfer of small lots, both for immediate delivery and first quarter shipment. Some weeks ago it was believed that the Iron already contracted for by consumers would be fully adequate for their needs through the remaining months of the year. At the rate of consumption at that time this estimate was probably not far out of the way, but in a number of instances melters have recently bought additional Iron for prompt delivery because of the exhaustion of supplies through increased output. This is encouraging in its significance of general betterment which is more noticeable in railroad foundries than elsewhere. That is to say, these interests which have been doing next to nothing for several months are now taking on a fair amount of work and are reasonably active. The Northern producers continue in practical control of the market, and for the time being the Southern furnaces are out of it in this district. There is less Southern Iron available at $12.50 for last quarter than was the case a week or two ago, and while $13 at Birmingham is generally held for first half shipments, there is not much incentive under present market conditions for active selling efforts in the North. An Indiana radiator factory had an inquiry out last week for 2500 tons of Foundry Iron, most of which, it is understood, has been purchased. There are quite a number of inquiries running up to 1000 tons, on which the prospects for closure in the next few days are said to be most promising. While prices on Northern Iron have not firmed up appreciably, it may be said that the general situation is improved. The following quotations are for November and December delivery, f.o.b. Chicago:

| | |
|---|---|
| Lake Superior Charcoal | $19.50 to $20.00 |
| Northern Coke Foundry, No. 1 | 17.00 to 17.50 |
| Northern Coke Foundry, No. 2 | 16.50 to 17.00 |
| Northern Coke Foundry, No. 3 | 16.00 to 16.50 |
| Northern Scotch, No. 1 | 17.50 to 18.00 |
| Southern Coke, No. 1 | 17.35 to 17.85 |
| Southern Coke, No. 2 | 16.85 to 17.35 |
| Southern Coke, No. 3 | 16.35 to 16.85 |
| Southern Coke, No. 4 | 15.85 to 16.35 |
| Southern Coke, No. 1 Soft | 17.35 to 17.85 |
| Southern Coke, No. 2 Soft | 16.85 to 17.35 |
| Southern Gray Forge | 15.35 to 15.85 |
| Southern Mottled | 15.10 to 15.60 |
| Malleable Bessemer | 17.00 to 17.50 |
| Standard Bessemer | 17.65 to 18.10 |
| Jackson Co. and Kentucky Silvery, 6 % | 19.90 to 20.40 |
| Jackson Co. and Kentucky Silvery, 8 % | 20.90 to 21.40 |
| Jackson Co. and Kentucky Silvery, 10 % | 22.90 to 23.40 |

(*By Mail.*)

**Billets and Rods.**—An order for 2000 tons of Forging Billets has been placed by the Phoenix Horse Shoe Company, Joliet, Ill., with the Carnegie Steel Company, for delivery to its Poughkeepsie plant. Aside from this the general demand is extremely light, consisting only of small lots for immediate requirements. Inquiries are not of a character indicating an early resumption of round tonnage purchases. The regular price of $28.50, base, Chicago, for Forging Billets is unchanged, and is being held with reasonable firmness. Wire Rod specifications are fairly satisfactory. We quote the following prices, which we are advised are being regularly maintained: Bessemer, $33; Basic, $34; Chain, $33, all at Pittsburgh.

**Rails and Track Supplies.**—What few inquiries are in the market for Standard Section Rails concern small lots required for immediate use. The aggregate of these is too small to cut much figure in rolling schedules. What is of more importance in this respect is that specifications from the larger railroad systems are coming out fairly well, thus enabling the mills to keep going at the reduced capacity to which they are gaited. Of the miscellaneous orders placed the only one of noteworthy size is for 2100 tons by the Ann Arbor Railroad with the Lackawanna Steel Company, which is understood to be for early delivery. Among the orders entered for Track Supplies by the Illinois Steel Company were 2000 kegs of Spikes from the Missouri Pacific; 500 kegs from the Wabash, and 60,000 continuous rail joints from the Southern Pacific. New business in Light Rails continues fairly satisfactory; the October bookings of the Illinois Steel Company will be somewhat in excess of September, having been increased this week by an order for 1200 tons. Regular prices are still subject to some shading, though not to the extent of some weeks ago. We quote as follows: Angle Bars, accompanying Rail orders, 1908 delivery, 1.50c.; car lots, 1.60c.; Spikes, 1.80c. to 1.90c., according to delivery: Track Bolts, 2.15c. to 2.20c., base, Square Nuts, and 2.30c. to 2.35c., base, Hexagon Nuts. The store prices on Track Supplies range from 0.15c. to 0.20c. above mill prices. Light Rails, 25 to 45 lb., $26; 20-lb., $27; 16-lb., $28; 12-lb., $29. Standard Sections, $28, f.o.b. mill, full freight to destination.

**Structural Material.**—Market interest this week has been focused upon the letting of 24,000 tons of Structural Material for the viaducts and trainsheds of the new Chicago & Northwestern Depot, which has just been awarded to the American Bridge Company. The general contract for the depot building, 4100 tons, has been awarded to the Geo. A. Fuller Company, but the work has not yet been given out to fabricators. Other closures of the week include San Antonio Hotel, San Antonio, Texas, 1060 tons, taken by the McClintic-Marshall Construction Company; the St. Louis Post Office, 1355 tons, which went to the Brown-Ketchum Iron Works, Indianapolis; a Missouri Pacific viaduct at Texicanna, Texas, 2800 tons, awarded to the Stupp Brothers Company, St. Louis; a gymnasium at Salt Lake City, Utah, 375 tons, taken by Silver Brothers of that city; the Knights of Columbus Building, Denver, 100 tons, secured by the Minneapolis Steel & Machinery Company; the City Hall Building at Hibbing, Minn., 200 tons, booked by the American Bridge Company, and 375 tons for a Hoover & Mason ore handling plant at Ashtabula, Ohio, which was awarded to the Variety Iron Works, Cleveland. Bids are now being asked on 1800 tons required for the approaches to the McKinley Bridge at St. Louis, contracts for the main structure calling for 6000 tons of material having been awarded last week to the McClintic-Marshall Construction Company. Bids on 3600 tons for the Cook County (Ill.) Hospital are to be opened November 23, and offers from fabricators have already been submitted on 500 tons required for the construction of the Lucius G. Fisher Building, Quincy and Market streets, Chicago. Fabricators are figuring on 3000 tons for the Blackstone Hotel, Chicago, bids on which are to go in within a few days. Plans for the new office building of the People's Gas Light & Coke Company, which will require 9500 tons, have been submitted for figures. There is a fair amount of business in small lots of Structural Materials, and inquiries are coming out in an encouraging manner. Prices from store are 1.95c. to 2c. Mill prices at Chicago are as follows: Beams and Channels, 3 to 15 in., inclusive, 1.78c.; Angles, 3 to 6 in., ¼-in. and heavier, 1.78c.; larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 6in. on one or both legs, 1.88c.; Beams, larger than 15 in., 1.88c.; Zees, 3 in. and over, 1.78c.; Tees, 3 in. and over, 1.83c.

**Plates.**—Few new Plate orders of any considerable size were included in the very moderate tonnage entered last week by the mills. Boiler shops, tank builders and other Plate users are running extremely light and are supplying their meager wants to a large extent from warehouse stocks. Jobbers are profiting by this diversion of orders, although business with them is, on the whole, only fair. Price conditions have undergone no material change, and there is still cutting on mill shipments, which, however, does not go beyond $1 to $2 a ton. We quote mill shipments as follows: Tank Plates, ¼-in. and heavier, wider than 6¼ and up to 100 in. wide, inclusive, car lots, Chicago, 1.78c.; 3-16 in., 1.88c.; Nos. 7 and 8 gauge, 1.93c.; No. 9, 2.03c.; Flange quality, in widths up to 100 in., 1.88c., base, for ¼-in. and heavier, with the same advance for lighter weights; Sketch Plates, Tank quality, 1.88c.; Flange quality, 1.98c. Store prices on Plates are as follows: Tank Plates, ¼-in. and heavier, up to 72 in. wide, 2c. to 2.10c.; from 72 to 96 in. wide, 2.10c. to 2.20c.; 3-16 in. up to 60 in. wide, 2.10c. to 2.25c.; 72 in. wide, 2.30c. to 2.40c.; No. 8, up to 60 in. wide, 2.10c. to 2.15c.; Flange and Head quality, 0.25c. extra.

**Sheets.**—Galvanized Sheets continue to hold the lead in demand, which is rather better for Corrugated than for Plain Sheets. Some of the smaller mills are well filled up. The Atlanta Sheet & Tin Plate Company is running double turn and will soon install another galvanizing pot, which will practically double its output in this department. Jobbers report an increased movement in Sheets from store, especially on lighter gauges. Prices are somewhat firmer. Cuts of $2 a ton on Galvanized Sheets now represent the extreme limit, while Black Sheets are even firmer. We quote mill shipments as follows, Chicago: Blue Annealed, No. 10, 1.98c.; No. 12, 2.05c.; No. 14, 2.08c.; No. 16, 2.18c.; Box Annealed, Nos. 17 to 21, 2.43c.; Nos. 22 to 24, 2.48c.; Nos. 25 and 26, 2.53c.; No. 27, 2.58c.; No. 28, 2.68c.; No. 29, 2.78c.; No. 30, 2.88c.; Galvanized Sheets, Nos. 10 to 14, 2.63c.; Nos. 15 and 16, 2.83c.; Nos. 17 to 21, 2.98c.; Nos. 22 to 24, 3.13c.; Nos. 25 and 26, 3.33c.; No. 27, 3.53c.; No. 28, 3.73c.; No. 30, 4.23c.; Black Sheets from store: Blue Annealed, No. 10, 2.15c.; No. 12, 2.20c.; No. 14, 2.25c.; No. 16, 2.35c.; Box Annealed, Nos. 18 to 21, 2.60c.; Nos. 22 to 24, 2.65c.; No. 26, 2.70c.; No. 27, 2.75c.; No. 28, 2.85c.; No. 30, 3.25c.; Galvanized from store: Nos. 10 to 16, 3c.; Nos. 18 to 20, 3.15c.; Nos. 22 to 24, 3.30c.; No. 26, 3.50c.; No. 27, 3.70c.; No. 28, 3.90c.; No. 30, 4.40c to 4.45c.

**Bars.**—Steel Bar specifications entered by the Illinois Steel Company thus far in October will run over 20,000 tons, and continue to come in at a good rate. New business taken is relatively small, but there are a good many small orders, representing uncovered requirements, still being placed. The implement makers now have their work on goods for spring delivery well under way, and, with no stocks to draw

from, they are looking to the mills to supply them with prompt shipment. Increased car repair work and more new car building have favorably affected the demand for Bar Iron, though business has not grown sufficiently in volume to warrant continuous operation of the mills. Steel Bar prices are said to be absolutely maintained, and Bar Iron is reasonably firm at current quotations. Quotations, Chicago, are as follows: Steel Bars, 1.58c., with half extras; Iron Bars, 1.50c.; Hoops, No. 13, and lighter, 1.98c., full extra Hoop card; Bands, No. 12 gauge, and heavier, 1.58c., half extra Steel Bar card; Soft Steel Angles and Shapes, 1.68c., half extras. Store prices are as follows: Bar Iron, 2c. to 2.15c.; Steel Bars, 1.90c. to 2c.; Steel Bands, 1.90c., as per Bar card, half extras; Soft Steel Hoops, 2.25c. to 2.35c., full extras.

**Merchant Pipe.**—The demand has not declined during the present month, and is, in fact, expected to show a slight gain over September. General conditions, however, are not materially changed, since buyers are unwilling to anticipate their wants beyond the time required for renewal shipments. A little more latitude in this respect is looked for by the mills when the disturbing political issues have been settled by the elections. The following mill discounts are quoted: Black Pipe, ¾ to 6 in., 73.2; 7 to 12 in., 70.2; Galvanized, ¾ to 6 in., 63.2. These discounts are subject to one point on the base. From store, in small lots, Chicago jobbers quote 73 per cent. on Black Steel Pipe, ¾ to 6 in. About three points above these prices is asked for Iron Pipe.

**Boiler Tubes.**—There is little doing in Merchant Tubes. Many Boiler makers, who ordinarily buy in quantity for mill shipment, are now relying upon jobbers' stocks to supply their immediate needs. There is a continued demand of fair proportions for Locomotive Tubes, but there is wide room for improvement even here. Mill quotations for future delivery, on the base sizes, are as follows: 2¾ to 4¼ in., inclusive, Steel Tubes, 63.2; Iron, 50.2; Seamless, 50.2; 2½ in. and smaller, and lengths over 18 ft., and 2½ in. and larger, and lengths over 22 ft., 10 per cent. extra. Store prices are as follows:

| | Steel. | Iron. | Seamless. |
|---|---|---|---|
| 1 to 1⅛ in. | 35 | 35 | 35 |
| 1¾ to 2¼ in. | 50 | 35 | 35 |
| 2½ in. | 52½ | 35 | 35 |
| 2¾ to 5 in. | 60 | 47½ | 47½ |
| 6 in. and larger | 50 | 35 | .. |

**Merchant Steel.**—Specifications and orders fell off somewhat last week, but this is attributed to pre-election influences. Makers of agricultural machinery are quite busy, and will require material to continue their operations, so that the outlook for the coming months is by no means discouraging. We quote as follows: Planished or Smooth Finished Tire Steel, 1.78c.; Iron Finish, up to 1½ x ½ in., 1.73c., base, Steel card; Iron Finish, 1½ x ½ in. and larger, 1.58c., base, Tire card; Channels for solid Rubber Tires, ¾ to 1 in., 2.08c., and 1⅛ in. and larger, 1.98c.; Smooth Finished Machinery Steel, 2.08c.; Flat Sleigh Shoe, 1.63c.; Concave and Convex Sleigh Shoe, 1.83c.; Cutter Shoe, 2.05c.; Toe Calk Steel, 2.13c.; Railroad Spring, 1.98c.; Crucible Tool Steel, 7¼c. to 8c., and still higher prices are asked on special grades. Cold Rolled Shafting on contracts for 100 tons and over, 57 per cent. off; 56 per cent. off in car lots; 52 per cent. in less than car lots, on which carload freight is allowed within base territory.

**Cast Iron Pipe.**—The only prospective business of considerable size reported is 2800 tons of Water Pipe to be let November 3 by the city of Los Angeles, Cal. A lot of 300 tons was let last week by the town of Ellwood, Kan., to a general contractor. There is not much in sight for the near future, the new lettings advertised being chiefly for unimportant lots. Prices are unchanged, and we quote nominally, per net ton, Chicago, as follows: Water Pipe, 4 in., $27; 6 to 12 in., $26; 16 in. and up, $25, with $1 extra for Gas Pipe.

**Metals.**—More new business developed the last week than has been seen for a like period since the middle of August. The demand for Copper is especially active. Several large consumers, both East and West, have covered their requirements for November and December. The effect of this spurt has been to strengthen Copper prices slightly, the advance in this market amounting to about ¼c. Other Metals have not shared in this movement to any appreciable extent. Lead, in fact, is weaker and is moving slowly. Spelter is slightly firmer. Quotations are as follows: Casting Copper, 13¾c.; Lake, 14c. to 14¼c., in car lots, for prompt shipment; small lots, ¼c. to ⅜c. higher; Pig Tin, car lots, 31¾c.; small lots, 34½c.; Lead, Desilverized, 4.35c. to 4.45c., for 50-ton lots; Corroding, 4.60c. to 4.70c., for 50-ton lots; in car lots, 2¼c. per 100 lb. higher; Spelter, 4.85c.; Cookson's Antimony, 10½c., and other grades, 9¾c. to 10¼c.; Sheet Zinc is $7, f.o.b. La Salle, in car lots of 600-lb. casks. On Old Metals we quote: Copper Wire, 13½c.; Heavy Copper, 13¼c.; Copper Bottoms, 12c.; Copper Clips, 13¼c.; Red Brass, 12c.; Yellow Brass, 9½c.; Light Brass, 7c.; Lead Pipe, 4.30c.; Zinc, 3¾c.; Pewter, No. 1, 21c.; Tin Foil, 23c.; Block Tin Pipe, 25c.

**Old Material.**—Small offerings of Scrap from the railroads and other sources, coupled with increased consumption, operate to hold values firm at the present level. Rolling mills are buying more liberally, and are taking Scrap readily at minimum prices, and on some grades are paying outside figures. Practically all the material moving is what comes into the market from first hands for sale on track. But little tonnage of any kind is being moved from or taken into dealers' yards, which are all well crowded with stock. It is estimated by those closely in touch with the situation that there are approximately 200,000 tons piled in the yards of local dealers. That these interests hold optimistic views of the future is evident from the fact that they are making no effort to unload at present prices. Heavy Melting Steel is in good demand, and is slightly stronger. No railroad Scrap of any consequence was offered last week, and but two lists are out for closure this week. These are the Chicago, Burlington & Quincy, 4000 tons, including 650 tons of Railroad Wrought and 100 tons of Rerolled Steel Rails, and the Chicago, St. Paul, Minneapolis & Omaha, 1825 tons, in which are 500 tons of Old Car Wheels. The following prices are per gross ton, f.o.b. Chicago:

| | |
|---|---|
| Old Iron Rails | $18.00 to $18.50 |
| Old Steel Rails, rerolling | 16.00 to 16.50 |
| Old Steel Rails, less than 3 ft | 14.50 to 14.75 |
| Relaying Rails, standard sections, subject to inspection | 22.50 to 23.50 |
| Old Car Wheels | 15.25 to 15.75 |
| Heavy Melting Steel Scrap | 14.00 to 14.50 |
| Frogs, Switches and Guards, cut apart | 14.25 to 14.75 |
| Mixed Steel | 10.25 to 10.75 |

The following quotations are per net ton:

| | |
|---|---|
| Iron Fish Plates | $16.50 to $17.00 |
| Iron Car Axles | 20.00 to 20.50 |
| Steel Car Axles | 17.50 to 18.00 |
| No. 1 Railroad Wrought | 13.75 to 14.25 |
| No. 2 Railroad Wrought | 12.75 to 13.25 |
| Railway Springs | 13.00 to 13.50 |
| Locomotive Tires, smooth | 13.25 to 13.75 |
| No. 1 Dealers' Forge | 10.75 to 11.25 |
| Mixed Busheling | 8.25 to 8.75 |
| Iron Axle Turnings | 7.25 to 7.75 |
| Soft Steel Axle Turnings | 7.25 to 7.75 |
| Machine Shop Turnings | 7.25 to 7.75 |
| Cast Borings | 5.75 to 6.25 |
| Mixed Borings, &c | 5.75 to 6.25 |
| No. 1 Mill | 8.00 to 8.50 |
| No. 2 Mill | 7.00 to 7.50 |
| No. 1 Boilers, cut to Sheets and Rings | 8.50 to 9.00 |
| No. 1 Cast Scrap | 13.50 to 14.00 |
| Stove Plate and Light Cast Scrap | 11.75 to 12.25 |
| Railroad Malleable | 12.50 to 13.00 |
| Agricultural Malleable | 11.50 to 12.00 |
| Pipes and Flues | 10.25 to 10.75 |

Matthew Addy & Co., Chicago, have been appointed exclusive selling agents for the product of the Williamson Furnace of the Williamson Iron Company, Birmingham, Ala.

Hickman, Williams & Co., Chicago, have been appointed exclusive agents for the sale of Bessie Ferrosilicon Pig Iron made at New Straitsville, Ohio, for all territory west and south of Pennsylvania, exclusive of Baltimore.

## Pittsburgh.

PARK BUILDING, October 28, 1908.—(*By Telegraph.*)

**Pig Iron.**—The low prices ruling for Basic Iron have stirred up large consumers, and there are now inquiries in the market for 40,000 to 50,000 tons for delivery over first quarter and first half of next year. Several furnace companies that have recently sold Iron to the Pittsburgh Steel Company are now said to be holding Basic Iron firmly at $14, at furnace. There is also a good deal of inquiry for Bessemer and Foundry Iron, two local consumers being in the market for upward of 5000 tons of Northern and Southern Foundry for first quarter delivery. The tone of the market is stronger. It is believed that some very large tonnages of Bessemer, Basic and Foundry Iron will be sold immediately after the election. We quote Basic Iron at $13.85 to $13.90, Valley furnace, for spot delivery, but the tonnage available at these prices is small. Several small lots of Bessemer Iron for spot shipment have sold at $14.50, Valley furnace, and we quote the market for spot Bessemer at $14.50 to $14.60, and for first half delivery at $14.75 to $15, at furnace. We note a sale of 200 tons of Bessemer at $14.50, at furnace, and 1500 tons, deliveries running into first half of next year, at $14.75, Valley furnace. We quote Malleable Bessemer at $14.25 to $14.50, No. 2 Foundry at $14.50, and Forge at $13.50, Valley furnace, the freight to Pittsburgh being 90c. a ton.

**Steel.**—A round tonnage of Basic Open Hearth Billets, made by the New York State Steel Company, was recently sold in this market, at considerably less than regular prices. The new demand for Billets and Sheet and Tin Bars is very quiet, and the tonnage being taken out in specifications against contracts has also fallen off. We quote Bessemer and Open Hearth Billets, 3⅞ in. and larger, up to and including 0.25 carbon, $25; 0.26 to 0.60 carbon, $1 extra; over 0.60 carbon, $2 extra, all f.o.b. Pittsburgh. For Wheeling, Martins Ferry, Follansbee, Newcastle, Sharon, Steubenville and Washington (Pa.) delivery, half the freight, or 50c. additional, is charged. Sheet and Tin Bars in random lengths are $27.50, f.o.b. Pittsburgh. Forging Billets take $2 advance over Rolling Billets.

*(By Mail.)*

Activity continues in Bessemer and Basic Iron, particularly in the latter, consumers evidently being attracted by the low prices now ruling. To furnaces that have to buy Ore and Coke in the open market these prices are certainly below cost of production. In addition to the sliding scale contract for Basic Iron made by the Pittsburgh Steel Company with the Dover Iron & Coal Company, through M. A. Hanna & Co., of Cleveland, the former has also bought 15,000 tons or more on straight purchases for delivery this year, and is said to have offers out for 5000 tons more. A local interest that was in the market last week for a round tonnage of Bessemer, Low Phosphorus and Charcoal Iron has closed for about 1500 tons of Bessemer for extended delivery on the basis of $14.75, at Valley furnace, but we note that prompt Bessemer has sold at $14.50. Some negotiations are on for fairly large blocks of Basic, Bessemer and Foundry Iron for delivery through first quarter and first half of next year. With the election out of the way, it is believed that a good deal of business will be closed. The Pig Iron market is certainly in buyers' favor and they are not slow to appreciate the situation and take advantage of it. Few new orders are coming up for Billets or Sheet and Tin Bars, and it is intimated that regular prices on Steel are not being so rigidly held as they were some time ago.

**Ferromanganese.**—We note a sale of a fairly large tonnage for delivery into next year, on the basis of about $42, seaboard. We quote foreign 80 per cent. for prompt shipment, at $42 to $42.50, and for delivery through first half of next year, at $43, the rate to Pittsburgh being $1.95 a ton.

**Ferrosilicon.**—This material continues weak, and we quote 50 per cent. at $64 to $64.50, Pittsburgh.

**Wire Rods.**—Not much new business is coming out, but buyers are specifying quite freely against contracts made some time ago, particularly several of the large Chain manufacturers, who bought quite heavily of Chain Rods two or three months ago. We quote Bessemer Rods at $33, Chain Rods $33, and Basic Rods $34, Pittsburgh.

**Muck Bar.**—The plant of the Wilkes Rolling Mill Company at Sharon, Pa., which has been closed down for several months, will probably start up early in November. It makes Muck Bar for the open market as well as Sheets. There is some inquiry for small lots. We quote best grades, made from all Pig Iron, at nominally $25, Pittsburgh.

**Skelp.**—The market continues very dull, and none of the mills making Skelp is able to run to full capacity. Prices are nominally as follows: Grooved Steel Skelp, 1.45c. to 1.50c.; Sheared Steel Skelp, 1.50c. to 1.60c.; Grooved Iron Skelp, 1.60c. to 1.70c., and Sheared Iron Skelp, 1.70c. to 1.75c., f.o.b. Pittsburgh.

**Steel Rails.**—Last week was the best in Standard Sections and Light Rails that the Carnegie Steel Company has had for some time. It received one new order for 2000 tons and specifications against contracts for over 6000 tons, and also sold between 2200 and 2300 tons of Light Rails. The company is also making regular shipments of Rails abroad, its export business forming a large part of its output. Prices on Light Rails rolled from Billets, which are still being shaded from $1 to $2 a ton for Rerolled Rails, are as follows: $25 for 25 to 45 lb. Sections, with $1 advance for 20 lb., $2 advance for 16 lb., and $3 advance for 12 lb. Standard Sections are $28, at mill, and Angle Splice Bars, 1.65c., at mill.

**Plates.**—While the Plate mills in the Chicago District are participating in the tonnage needed for the Steel car orders placed by the Chicago, Milwaukee & St. Paul and other roads, practically none of this business has come to Pittsburgh. The demand for Plates from Boiler shops and other consumers continues light. President Hoffstot of the Pressed Steel Car Company states that he does not expect much betterment in the demand for Steel cars before next spring. The local shops of the Pressed Steel Car Company and the Butler shops of the Standard Steel Car Company furnish a good part of the tonnage for local Plate mills, but both of these concerns have done very little for six months or more. The 23,000 tons of Plates for the extension to the Brooklyn Water Works are still held up by legal complications. Prices on Plates continue to be shaded, mostly on the narrow sizes, from $1 to $2 a ton. Regular prices on Plates are as follows: Tank Plates, ¾ in. thick, 6¼ in. up to 100 in. wide, 1.60c., base, at mill, Pittsburgh. Extras over this price are as follows:

Tank, Ship and Bridge quality, ¼-in. thick on edges, 100 in. wide, down to but not including 6 in. wide, is taken as base.

Steel Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per square foot, shall be considered ¼-in. Plate. Steel Plates over 72 in. wide must be ordered ¼-in. thick on edge, or not less than 11 lb. per square foot, to take base price. Steel Plates over 72 in. wide ordered less than 11 in per square foot down to the weight of 3-16-in. shall take the place of 3-16-in.

Percentages as to overweight on Plates, whether ordered to gauge or weight, to be governed by the Association of American Steel Manufacturers' Standard Specifications.

| | |
|---|---|
| Gauges under ¼-in. to and including 3-16-in. Plates on thin edges | $0.10 |
| Gauges under 3-16-in. to and including No. 8 | .15 |
| Gauges under No. 8 to and including No. 9 | .25 |
| All sketches (excepting straight taper Plates varying not more than 4 in. in width at ends, narrowest end being not less than 30 in.) | .10 |
| Complete Circles | .20 |
| Boiler and Flange Steel Plates | .10 |
| "A. B. M. A." and ordinary Firebox Steel Plates | .20 |
| Still Bottom Steel | .30 |
| Marine Steel | .40 |
| Locomotive Firebox Steel | .50 |
| Shell grade of Steel is abandoned. | |
| For widths over 100 in. up to 110 in | .05 |
| For widths over 110 in. up to 115 in | .10 |
| For widths over 115 in. up to 120 in | .15 |
| For widths over 120 in. up to 125 in | .25 |
| For widths over 125 in. up to 130 in | .50 |
| For widths over 130 in | 1.00 |

TERMS.—Net cash 30 days. Pacific Coast base, 1.50c., f.o.b. Pittsburgh.

**Structural Material.**—The Steel for the Empire Building, at Birmingham, Ala., has not yet been placed, and no local work of moment has been given out in the past week. It is reported, but not confirmed, that two or three large jobs are held up pending the result of the election. Prices on plain material are reported as being maintained, but when it comes to fabricating some very low figures are being made. We quote, f.o.b. mill, Pittsburgh: I-Beams and Channels, 3 to 15 in., inclusive, 1.60c., net; I-Beams over 15 in., 1.70c., net; H-Beams over 8 in., 1.80c.; Angles, 3 to 6 in., inclusive, ¼ in. and up, 1.60c., net; Angles, over 6 in., 1.70c., net; Angles, 3 x 3 in. and up, less than ¼ in., 1.50c., base, half extras, Steel Bar card; Tees, 3 in. and up, 1.65c., net; Zees, 3 in. and up, 1.60c., net; Angles, Channels and Tees under 3 in., 1.50c., base, half extras, Steel Bar card; Deck Beams and Bulb Angles, 1.90c., net; Hand Rail Tees, 3c., net; Checkered and Corrugated Plates, 3c., net.

**Sheets.**—The Sheet trade is not in satisfactory condition from the standpoint of new orders. There is a fairly heavy demand for Corrugated Sheets, but Black and Galvanized continue quiet. It is said that concessions in prices are less frequent than they were some time ago. For shipment from mill, regular prices, which are shaded on large orders by some mills from $1 to $2 a ton, are as follows: Blue Annealed Sheets, No. 10 and heavier, 1.80c.; Nos. 11 and 12, 1.85c.; Nos. 13 and 14, 1.90c.; Nos. 15 and 16, 2c.; Box Annealed, Nos. 17 to 21, 2.25c.; Nos. 22 to 24, 2.30c.; Nos. 25 and 26, 2.35c.; No. 27, 2.40c.; No. 28, 2.50c.; No. 29, 2.60c.; No. 30, 2.70c. Galvanized Sheets, Nos. 10 and 11, 2.45c.; Nos. 12 and 14, 2.55c.; Nos. 15 and 16, 2.65c.; Nos. 17 to 21, 2.80c.; Nos. 22 and 24, 2.95c.; Nos. 25 and 26, 3.15c.; No. 27, 3.35c.; No. 28, 3.55c.; No. 29, 3.70c.; No. 30, 3.95c.; No. 28, Painted Roofing Sheets, $1.75 per square, and Galvanized Roofing Sheets, No. 28, $3.10 per square, for 2½-in. corrugations. These prices are subject to a rebate of 5c. per 100 lb. to the large trade under the usual conditions, jobbers charging the usual advances for small lots from store.

**Tin Plate.**—The Tin Plate mills, including those of the leading interest, are operating to only about 45 per cent. of capacity, and it is somewhat doubtful if this average can be maintained unless there is an increase in orders. A large tonnage in Bright Plate is under negotiation with several of the leading salmon packers, which is expected to be closed shortly. Prices continue to be shaded from 10c. to 15c. a box or more, depending on the desirability of the order. The regular price of Tin Plate is $3.70 for 100 lb. Cokes, 14 x 20, f.o.b. Pittsburgh, terms 30 days, less 2 per cent. off for cash in 10 days, this price being subject to the usual rebate of 5c. per base box in large lots.

**Hoops and Bands.**—The Clark Steel Hoop Company is actively at work building its new mill at Punxsutawney, Pa., and will be a factor in the Steel Hoop trade next year. Few orders are being placed for Hoops and Bands, but specifications against contracts are fair. It is said that regular prices are being maintained as follows: Steel Hoops, 1.80c., base, full Hoop card prices; Steel Bands, 1.40c., base, half Steel card extra, all f.o.b. cars, Pittsburgh, in carload lots, for delivery during 1908.

**Iron and Steel Bars.**—Specifications against contracts for Steel Bars are very satisfactory, and this material is showing more activity than any other mill product. October shipments by the Steel Bar mills will show a very large increase over September. In fact, the Steel Bar trade has reached a nearly normal condition, and indications are that the mills will be pretty well employed during the winter months. The demand for Iron Bars is only fair, and the same is true of specifications against contracts. We are advised that prices on both Iron and Steel Bars are being strongly maintained. We quote Iron Bars at 1.40c., base, for Pittsburgh delivery, and 1.35c., base, for Western points, to which freight is added, except Chicago, the price for which is 1.50c., delivered. We quote Steel Bars at 1.40c., Pittsburgh, for base sizes.

**Railroad Spikes.**—More inquiry for Spikes is coming from the railroads than for some time, but this is confined largely to repair work. It is too late in the season to start track laying on an extensive scale. We note a continued large demand for the smaller sizes, the mills being booked up for two or three weeks. Prices are firm, and we quote: Standard sizes, 4½ x 9-16 in., at $1.70, and the smaller sizes

at $1.80 per 100 lb. in carload and larger lots, with an advance of 5c. per 100 lb. for less than carload, f.o.b. Pittsburgh.

**Merchant Steel.**—Implement makers are specifying fairly well against contracts for Tire and Spring Steels. We are also advised that jobbers are placing more liberal orders, and are inclined to carry larger stocks than for some time, so that this trade is showing some betterment in demand. On large orders for Shafting the regular discounts continue to be shaded to the extent of two or three points. Regular prices on Cold Rolled Shafting are 57 per cent. off in carloads and 52 per cent. on less than carloads, delivered in base territory. Prices on Merchant Steel are being shaded, regular quotations being as follows: Smooth Finished Machinery Steel, 1.80c. to 1.90c.; Flat Sleigh Shoe, 1.75c. to 1.85c.; Cutter Shoe Steel, 2.15c. to 2.25c.; Toe Calk, 1.90c. to 1.95c.; Railroad Spring Steel, 1.60c. to 1.75c., the higher prices being for Pennsylvania Railroad analysis. Carriage Spring Steel is 1.80c.; Tire Steel, Iron finish, 1½ x ½ in. and heavier, 1.40c.; under 1½ in., 1.55c. Planished Tire Steel is 1.60c., all f.o.b., at mill.

**Spelter.**—The market is quiet, but prices are fairly firm. We quote best grades of Western Spelter at about 4.62½c., East St. Louis, equal to 4.75c., Pittsburgh.

**Merchant Pipe.**—A favorable feature of the Pipe market is the fact that jobbers have pretty well worked off the heavy stocks they were carrying earlier in the year, and are now inclined to place larger orders. An inquiry is in the market for 4 miles of 10-in. Pipe for a gas line. An inquiry from the Western Pacific Railroad for 20 miles of 8-in. Pipe has been in the market for some months. The general demand for Pipe continues fairly satisfactory, and is showing a slow but steady gain, shipments by the mills this month showing a slight increase over September. We are advised that prices on both Iron and Steel Pipe are being maintained by the mills, but in some cases are being slightly shaded by jobbers. Discounts on Steel Pipe, ¾ to 6 in., to the large trade, are 76 and 5 per cent. off list. Regular discounts are as follows:

*Merchant Pipe.*

| | Jobbers, carloads, Steel. | |
|---|---|---|
| | Black. | Galv. |
| | % | % |
| ⅛ to ¼ in. | 67 | 51 |
| ⅜ in. | 69 | 55 |
| ½ in. | 71 | 59 |
| ¾ to 6 in. | 75 | 65 |
| 7 to 12 in. | 72 | 57 |
| Extra strong, plain ends: | | |
| ⅛ to ⅜ in. | 60 | 48 |
| ½ to 4 in. | 67 | 55 |
| 4½ to 8 in. | 63 | 51 |
| Double extra strong, plain ends: | | |
| ½ to 8 in. | 56 | 45 |

Discounts on Genuine Iron Pipe are as follows:

| | Black. | Galv. |
|---|---|---|
| | % | % |
| ⅛ to ¼ in. | 65 | .. |
| ⅜ in. | 67 | 53 |
| ½ in. | 69 | 57 |
| ¾ to 6 in. | 73 | 63 |
| 7 to 12 in. | 70 | 55 |
| Extra strong, plain ends: | | |
| ⅛ to ⅜ in. | 58 | 46 |
| ½ to 4 in. | 65 | 53 |
| 4½ to 8 in. | 61 | 49 |
| Double extra strong, plain ends: | | |
| ½ to 8 in. | 54 | 43 |

**Boiler Tubes.**—Railroads are doing more repair work, hence orders for Locomotive Tubes are showing some betterment. The demand for Merchant Tubes continues very quiet. Prices are more or less shaded, depending on the order. For Merchant Tubes in small lots, on which an extra 5 per cent. is allowed in carloads, discounts are as follows:

*Boiler Tubes.*

| | Iron. | Steel. |
|---|---|---|
| 1 to 1½ in. | 42 | 47 |
| 1¾ to 2¼ in. | 42 | 59 |
| 2½ in. | 47 | 61 |
| 2¾ to 5 in. | 52 | 65 |
| 6 to 13 in. | 42 | 59 |

2½ in. and smaller, over 18 ft. long, 10 per cent. net extra.
2¾ in. and larger, over 22 ft. long, 10 per cent. net extra.

**Iron and Steel Scrap.**—In the past week a large local consumer of Scrap has bought very heavily of Borings and Turnings, taking upward of 12,000 tons. We also note a fairly large inquiry for Heavy Steel Scrap, although most of the large consumers have pretty heavy stocks on hand and are not willing to buy except at favorable prices. The available supply of Heavy Steel Scrap is limited, recent purchases of the Pittsburgh Steel Company and other consumers having practically cleaned up the stocks held by dealers. Prices are very firm. It is believed that after the election there will be a heavier buying movment, as the consumption is undoubtedly larger now than at any time this year. Dealers quote as follows per gross ton: Heavy Steel Scrap for Pittsburgh, Follansbee, Monessen, Sharon and Steubenville delivery, $15.50 to $15.75; Heavy Steel Scrap for hand charged Open Hearth furnaces, pieces weighing 10 lb. minimum to 300 lb. maximum, $1 a ton higher; Cast Iron Borings, $10 to $10.25; Bundled Sheet Scrap, $12.50 to $12.75; No. 1 Busheling Scrap, $14.25 to $14.50; No. 2, $10.75 to $11; No. 1 Railroad Wrought Scrap, $16.75 to $17; No. 1 Cast Scrap, $14.75 to $15; Iron Axles, $22.50 to $23; Sheet Bar Crop Ends, $19.50 to $20; Low Phosphorus Melting Stock, guaranteed 0.04 and under in Phosphorus, $18.25; Rerolling Rails, $17.50 to $17.75; Steel Axles, $19.50 to $20; Grate Bars, $12.50 to $12.75; Old Car Wheels, $16; Machine Shop Turnings, $10.75 to $11; Railroad Malleable Scrap, $14.50 to $14.75; Iron Rails, $18 to $18.50; Locomotive Tires, $17 to $17.25, all f.o.b. Pittsburgh. We note sales of 8000 to 10,000 tons of Cast Iron Borings to one consumer at prices ranging from $10 to $10.50, delivered, and 3000 to 4000 tons of Turnings to the same consumer at $11 to $11.50, delivered; also 150 tons of Heavy Steel Scrap at $15.50, delivered, and a reported sale of 1000 tons at $16, delivered.

**Coke.**—A recent report sent out by the Independent Coke Producers' Association shows the total number of ovens in the Upper and Lower Connellsville regions to be 36,776, of which 17,561 were active last week and 19,215 were idle. Owing to scarcity of water, the Frick Coke Company banked 1300 ovens in the north end of the region—600 at Standard Works, 500 at Southwest Works Nos. 1 and 2, and 200 at Central Mines. There has recently been a moderate rainfall in the region, which has relieved to some extent the water shortage. Prices of Furnace and Foundry Coke are a little firmer, and we quote Furnace Coke at $1.55 to $1.60 and Connellsville 72-hr. Foundry at $2.15 to $2.25 per net ton at oven for prompt delivery. Several large furnace companies are in the market for their supply for first half of next year.

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Crocker Brothers, New York, have appointed Robert A. Bruce, formerly with the Carnegie Steel Company, as their representative in the Pittsburgh District. The Pittsburgh office of the firm for the present will be in connection with the offices of Reed F. Blair & Co., Frick Building. Crocker Brothers are the exclusive representatives in this country of the Darwen-Mostyn Iron Company, manufacturer of standard English 80 per cent. Ferromanganese and other Ferroalloys; of the Electro Metals, Ltd., Welland, Ontario, for the sale of their 50 per cent. Ferrosilicon, and of the Ashover Fluorspar Mines, Ltd., Ashover, England. They are also sales agents for several well-known brands of Northern and Southern Foundry, Low Phosphorus and Charcoal Irons.

## St. Louis.

ST. LOUIS, October 26, 1908.

Probably it is within bounds to claim that St. Louis has taken up with the Steel frame method of construction on as large a scale, relatively, as any American city, but the reinforced concrete system is now popular with owners and contractors. Orders for Structural Material to a large extent will be placed by outside contractors in the near future, but except for the buildings already undertaken there will be a lull in the demand until new projects are developed and the time reached for placing contracts for other structures which have been determined upon, but in regard to which the plans are undergoing revision.

**Coke.**—The demand for Coke continues active, but is principally coming from the smaller consumers who stipulate prompt shipment. The larger buyers are not in the market to any extent at present; they are, however, furnishing specifications for shipment on contract and showing urgency for supplies. Prices are firm on the basis of $2.25 for prompt and $2.50 for deferred shipment for round lots f.o.b. oven, Connellsville, for 72-hr. Foundry. In a jobbing way a small premium is secured on these figures. The leading sellers state that Connellsville producers are not urging liberal contracts to be made on the basis of present prices for 1909 delivery.

**Pig Iron.**—The feature of the market which is engaging the attention of both buyers and sales agencies is the range in the price of Pig Iron as indicated by the views of various furnace interests covering contracts for 1909. Inquiry among the principal sellers develops that this range on standard quality Southern No. 2 Foundry is from $13 to $14, Birmingham, for first half, while there are some large companies which will not name a price for 1909 shipment. A limited number of buyers is in the market for lots of 500 tons and upward, and but few sales outside of the requirements of the smaller buyers which, however, continue fairly numerous. An inquiry for 200 to 300 tons Virginia Car Wheel Iron is reported from a Car Wheel manufacturing company in this territory. We quote the market range as follows: No. 2 Foundry, Birmingham, shipment last quarter 1908, $12.50; for first half 1909 the lowest price and that which covers most transactions is $13. Sales, however, are reported at $13.50 by Southern furnace interests.

**Finished Iron and Steel.**—The demand for Structural Material is quite fair, but is still characterized by sales of small lots covering an extended territory. These sales are of a miscellaneous description, the material being wanted

for all classes of structures and also for highway bridges and other public improvements. The leading Steel interest has an inquiry for a large tonnage of Standard Rails from a Kansas electric line. Light Rails are still in fairly good demand from coal and lumber interests. Track material is in active request, particularly Spikes and Bolts; the demand for the latter has been so large that orders are now subject to three to four weeks' delay in shipment. The railroads in this section are buying Plates and Sheets in larger quantities, and there is a quite free sale of Bar Iron and its products to the jobbing trade.

**Old Material.**—A better demand has developed during the week, especially for Foundry grades, but there has not been sufficient urgency in the demand to bring about any material advance for these grades. More interest is manifested in old Car Wheels, but no business of consequence has as yet resulted from these inquiries. There is an urgent demand for first class Relaying Rails with very light offerings, owing to their scarcity. Rolling mill grades remain stationary in respect to prices, as the mills continue to pursue a hand to mouth method of buying. There will in the near future undoubtedly be more activity. None of the railroads is making offerings this week. We quote dealers' prices per gross ton, f.o.b. St. Louis, as follows:

| | |
|---|---|
| Old Iron Rails | $16.50 to $17.00 |
| Old Steel Rails, rerolling | 15.50 to 16.00 |
| Old Steel Rails, less than 3 ft | 14.25 to 14.75 |
| Relaying Rails, standard sections, subject to inspection | 23.00 to 24.00 |
| Old Car Wheels | 15.00 to 15.50 |
| Heavy Melting Steel Scrap | 13.50 to 14.00 |
| Frogs, Switches and Guards, cut apart | 13.50 to 14.00 |
| Mixed Steel | 10.25 to 10.75 |

The following quotations are per net ton:

| | |
|---|---|
| Iron Fish Plates | $15.00 to $15.50 |
| Iron Car Axles | 18.50 to 19.00 |
| No. 1 Railroad Wrought | 13.50 to 14.00 |
| No. 2 Railroad Wrought | 12.50 to 13.00 |
| Railway Springs | 13.00 to 13.50 |
| Locomotive Tires, smooth | 13.00 to 13.50 |
| No. 1 Dealers' Forge | 11.50 to 12.00 |
| Mixed Borings, &c | 5.50 to 6.00 |
| Machine Shop Turnings | 8.00 to 8.50 |
| No. 1 Boilers cut to Sheets and Rings | 9.50 to 10.00 |
| No. 1 Cast Scrap | 12.00 to 12.50 |
| Stove Plate and Light Cast Scrap | 10.50 to 11.00 |
| Railroad Malleable | 11.00 to 11.50 |
| Agricultural Malleable | 10.00 to 10.50 |
| Pipes and Flues | 9.50 to 10.00 |

**Lead, Spelter, &c.**—The Lead market is ruling quiet at 4.10c. to 4.12½c. Lead Ore is weak and nominally held at $25 to $25.50 per 1000 lb., Joplin basis. Spelter is in fair demand and firm at 4.70c. to 4.75c. The demand from Brass and Galvanizing interests continues fairly good. Zinc Ore is held at $36 per ton for high quality; lower grades selling at less.

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The National Enameling & Stamping Company is running its plant at Granite City on full time. It has recently been making very heavy purchases of Pig Iron, and has also bought Scrap in liberal quantities.

The Commonwealth Steel Company finds this month some further improvement in the demand from railroads.

A. Yule and N. P. Withington of the De Camp Bros. & Yule Iron, Coal & Coke Company have returned from a visit to the Virginia Coke fields. They report that section suffering from drought, which has necessitated shutting down some of the ovens. A great deal of development work is going on in opening up mines, and some of the companies contemplate the erection of a considerable number of Coke ovens. They report the demand for Coke as quite satisfactory and regard the prospects for business in 1909 as very encouraging.

## Philadelphia.

PHILADELPHIA, PA., October 27, 1908.

The volume of actual orders placed the past week has been comparatively small, which was not unexpected with the Presidential election but one week off. Inquiries show a decided improvement, prospective buyers evidently getting a line on the market, so as to enable them to place orders immediately after the election, if so desired. In some few cases the election is being discounted, but the majority are taking no chances and will wait until after the result is known and shape their policies accordingly. A fair amount of business is expected to come out in any event early next month, but whether the volume will be sufficient to start a general forward movement remains to be seen.

**Pig Iron.**—Taken in the aggregate, there has been a fair business transacted in the Foundry grades. Individual orders have usually been small. Little has been done for strictly 1909 delivery. Producers appear to have the situation well in hand, and quotations on standard grades are being firmly maintained. The monthly statistics of the Eastern Pennsylvania Pig Iron Association, compiled for its meeting last week, show orders to have again increased over those of the previous month, while stocks on furnace banks show a further decline. Orders no doubt could have been largely increased had sellers been willing to book all the tonnage offered, but it is evident that there was no particular effort made to book large quantities at to-day's prices, at which the margin of profit in a number of cases is rather small, and, in fact, it may be said that buying has to a large extent been discouraged by sellers. Consumption appears to be slightly greater than the present capacity in this territory, and while an increase in production during the month is to be noted, it has been largely in Basic Iron, so that should any material improvement in the demand for the Foundry and Forge grades develop, it is quite probable that producers would have to put in some of their still idle furnaces to meet the demand. Inquiries again show up quite strongly. Some are for fair-sized lots, for delivery during the balance of the year. While a few of these, notably one for 2500 tons of No. 3 Foundry, are expected to develop into orders this week, others will no doubt be held up until after election, as has been the case with the majority of the larger inquiries that have recently come before the trade, or, as in several instances, result in orders for about 10 per cent. of the amount inquired for. While prices show no advance they are decidedly firmer, there being less tendency shown by furnaces outside the immediate territory to make concessions. Some producers who were accepting $16.75 for No. 2 X Foundry are now firm at $17, delivered. A little more selling of off grade Irons is to be noted, but the tonnages have not been large, and prices for such grades, particularly for mill cinder Irons, range 25 to 50 cents. below those obtained for standard brands. Southern Foundry Irons have not been active. There is a moderate demand from some of the Pipe foundries for low grade Irons, but little is to be had at prices which interest the consumers. Sales of Virginia Irons have been largely confined to small tonnages, for prompt shipment at full prices. Practically nothing is being taken, however, for extended forward delivery. Forge Iron shows a shade more activity. There has been considerable scattered buying of small lots, at prices ranging from $15.50 to $15.75, while several round lots have been taken at $15.50, delivered. A 1000-ton lot for early next year, and several other good blocks for shipment in the next 60 days, are being figured on. This grade is still rather scarce, and while quotations are not higher they are decidedly firmer for standard brands. The Basic Iron market is quieter. No further sales have been reported, but nearly all the mills are in the market for this grade, principally for next year's delivery, but want a concession on the present price. Sellers are very firm, and $16, delivered, appears to be bottom price at present, either for this or early next year shipment. Some few sales of Low Phosphorus Iron are reported, but they are all small lots for prompt and early shipment. Prices for this grade show a little more strength as sellers are now pretty well sold up for the balance of the year. The tone of the market, even though immediate business has been light, is more optimistic. While but little is expected to develop this week, it is believed that quite a buying movement will develop immediately after the election. Quotations on all grades are firmly maintained, and for delivery in buyers' yards, eastern Pennsylvania and adjoining territory during the remainder of the year, the following range of prices is named:

| | |
|---|---|
| Eastern Pennsylvania, No. 2 X Foundry | $16.75 to $17.00 |
| Eastern Pennsylvania, No. 2 Plain | 16.25 to 16.50 |
| Virginia, No. 2 X Foundry | 17.00 |
| Virginia, No. 2 Plain | 16.75 |
| Gray Forge | 15.50 to 15.75 |
| Basic | 16.00 |
| Low Phosphorus | 20.00 |

**Ferromanganese.**—The business transacted in the past week has been extremely light. Some few inquiries for prompt Ferro have come out, but orders have not yet developed. Prices are unchanged. For prompt delivery $44 to $45, Baltimore, is quoted, with $46 to $46.50 named for delivery extending over the first half of next year.

**Plates.**—No material improvement in the demand is to be noted. Specifications come out somewhat irregularly and mills report about an even volume of business. There is a fair demand for bridge, boat and locomotive Steel, but the individual tonnages taken are usually small. Several fairly good specifications for car Plates are before the trade and makers feel more encouraged regarding business in the near future. Quotations are being firmly maintained and range as follows for delivery in this territory:

| | Carloads. Cents. | Parts carload. Cents. |
|---|---|---|
| Tank, Bridge and Boat Steel | 1.75 | 1.80 |
| Flange or Boiler Steel | 1.85 | 1.95 |
| Commercial Firebox | 1.95 | 2.00 |
| Marine | 2.15 | 2.20 |
| Locomotive Firebox Steel | 2.25 | 2.30 |

The above are base prices for ¼-in. and heavier. The following extras apply:

| | Extra per 100 lb. |
|---|---|
| 3-16-in. thick | $0.10 |
| Nos. 7 and 8, B. W. G | .15 |
| No. 9, B. W. G | .25 |
| Plates over 100 to 110 in | .05 |
| Plates over 110 to 115 in | .10 |
| Plates over 115 to 120 in | .15 |
| Plates over 120 to 125 in | .25 |
| Plates over 125 to 130 in | .50 |
| Plates over 130 in | 1.00 |

**Steel Billets.**—But little business has been placed either

for Rolling or Forging Steel, buyers deferring their orders to a considerable extent until after election, and the mills are not booking enough to take the present curtailed output. Prices are unchanged. Ordinary Rolling Steel is quoted at $26.20, with Forging Steel at $28.20, delivered in this territory, subject to the usual extras for high carbons and special sizes.

**Structural Material.**—Orders have not been large individually, but they aggregate close to the average tonnage recently booked. Propositions of any size are still held in abeyance, the specifications coming out being largely of a miscellaneous character. Prices are firm, and for delivery in this vicinity range from 1.75c. to 1.90c., according to specifications.

**Sheets.**—There has been a slight let up in the volume of business placed, and order books are not in very satisfactory condition. Mills have but little business ahead, orders being almost entirely for prompt shipment. Quotations show no variation, prices for mill shipments ranging as follows, a tenth extra being added for small lots: Nos. 18 to 20, 2.50c.; Nos. 22 to 24, 2.60c.; Nos. 25 to 26, 2.70c.; No. 27, 2.80c.; No. 28, 2.90c.

**Bars.**—There is a somewhat stronger demand for the better grades of Refined Iron Bars. The volume of orders continues on about an even basis, and prices are a shade stronger, due largely to the firmness of Pig Iron and Old Material. For delivery in this territory quotations for Refined Iron Bars range from 1.45c. to 1.55c.; Steel Bars, 1.55c.; Rerolled Steel Bars, 1.50c.

**Coke.**—A small volume of business is reported, although the tone of the market is somewhat better. Some fair contracts for Foundry Coke are before the trade, both for this and next year's delivery. Furnace Coke for prompt shipment shows no particular change, but for next year's delivery prices are stronger and advancing, with a number of producers refusing to quote at this time. Foundry Coke for prompt shipment is quoted at $2.15 to $2.25, at oven, and for forward shipment $2.25 to $2.40, at oven, is named. Furnace Coke for prompt delivery is quoted at $1.50 to $1.65, at oven, and $1.65 to $1.90 for next year's shipment. For delivery in buyers' yards in this territory during the remainder of the year the following range of prices is named:

| | |
|---|---|
| Connellsville Furnace Coke | $3.65 to $3.90 |
| Foundry Coke | 4.15 to 4.40 |
| Mountain Furnace Coke | 3.25 to 3.50 |
| Foundry Coke | 3.75 to 4.00 |

**Old Material.**—The market is decidedly stronger on all grades. Sales have not been large, however, mills continuing to pick up odd lots at close to ruling quotations. Consumers show more inclination to take tonnage, but sellers have stiffened up perceptibly and in a majority of cases hold pretty close to the outside range of quotations, with mills offering to do business at the inside range. A waiting market prevails and but little business of any size is expected to develop before election. Prices are practically unchanged, and for delivery in buyers' yards, eastern Pennsylvania and nearby territory, are nominally quoted as follows:

| | |
|---|---|
| No. 1 Steel Scrap and Crops | $15.00 to $15.50 |
| Low Phosphorus | 18.50 to 19.00 |
| Old Steel Axles | 21.50 to 22.00 |
| Old Iron Axles | 22.50 to 23.00 |
| Old Iron Rails | 19.50 to 20.00 |
| Old Car Wheels | 15.00 to 15.50 |
| Choice No. 1 R. R. Wrought | 18.50 to 19.00 |
| Machinery Cast | 15.25 to 15.75 |
| Railroad Malleable | 14.00 to 15.00 |
| Wrought Iron Pipe | 14.25 to 14.75 |
| New Bundled Sheets | 13.50 to 14.00 |
| No. 1 Forge Fire Scrap | 12.00 to 12.50 |
| No. 2 Light Iron | 9.00 to 9.50 |
| Wrought Turnings | 12.25 to 12.75 |
| Stove Plate | 13.00 to 13.50 |
| Cast Borings | 11.50 to 12.00 |
| Grate Bars | 13.50 to 14.00 |

## Birmingham.

BIRMINGHAM, ALA., October 26, 1908.

**Pig Iron.**—The market is extremely quiet, but without evidence of weakness. Producers in all cases adhere to the established quotation on deliveries for the remainder of this year, and the first quarter of next, without manifesting anxiety as to the present condition of order books or as to the result the approaching election will have on the trade. The number of inquiries received indicates a favorable outlook for melters, but it seems to have been generally conceded that the time to take hold for anticipated requirements is not yet at hand. In this connection it is to be noted that a number of old contracts have recently been reinstated. The sales of the past week are of no consequence, comparatively. The principal consideration was a limited tonnage for prompt shipment, which is understood to have been placed at lower figures than $13 per ton. It is also understood that it is possible to make similar engagements, but the demand has been so desultory and involved such a limited tonnage as to hardly feature in a summary of conditions existing. A recent effort to secure 500 to 1000 tons for the remainder of the year at figures below $13, Birmingham, was unsuccessful, while the $13 schedule was the quotation elicited by a bona fide inquiry for 1000 tons, to be delivered during the first quarter. No quotations are reported having been made on first half deliveries, the basis of $13 for No. 2 being applicable to strictly first quarter shipments. An accurate report of the stock now on furnace yards is unobtainable. There is known to have been considerably more of low grades produced by some concerns than was anticipated, but the differential between grades in quotations has not been affected. The addition to the active producing capacity during the past week probably represents a surplus, and the policy of other concerns in this respect is indicative of the advisability of such action.

**Cast Iron Pipe.**—The business of the past week was composed largely of scattering lots of small proportions. An average of the prices received indicates the maintenance of published quotations, but an absence of orders for large sizes, both in Water and Gas Pipe, is noted. The lack of orders for large sizes has not resulted in an accumulation, although there has been no reduction in the output of plants in operation. It is understood that lettings recently advertised by Eastern cities are being held in abeyance, and inquiries from the Middle West have taken no definite form, but a rumor to the effect that approximately 40,000 tons of Water Pipe will soon be required for extensions to water works at San Francisco, Cal., is being given some credence by Southern producers. For comparatively small lots of Water Pipe the following prices are firm, per net ton, f.o.b. cars here: 4 to 6 in., $24; 8 to 12 in., $23; over 12-in., average $21, with $1 per ton extra for Gas Pipe. These quotations are probably shaded on large municipal contracts.

**Old Material.**—Quotations are being adhered to, but in the absence of a firm demand an index to values is not afforded. A number of inquiries are pending and dealers are generally optimistic, without success in efforts to increase stocks. We quote dealers' asking prices as follows, per gross ton, f.o.b. cars here:

| | |
|---|---|
| Old Iron Rails | $14.50 to $15.00 |
| Old Iron Axles | 15.50 to 16.00 |
| Old Steel Axles | 13.00 to 13.50 |
| No. 1 Railroad Wrought | 13.50 to 14.00 |
| No. 2 Railroad Wrought | 10.50 to 11.00 |
| No. 1 Country Wrought | 11.00 to 11.50 |
| No. 2 Country Wrought | 9.50 to 10.00 |
| No. 1 Machinery | 11.00 to 11.50 |
| No. 1 Steel | 9.50 to 10.00 |
| Stove Plate and Light Cast | 9.50 to 10.00 |
| Cast Borings | 5.00 to 5.50 |

## Buffalo.

BUFFALO, N. Y., October 27, 1908.

**Pig Iron.**—Quite a distinct improvement is observed in the tone of the local market, and the feeling is more optimistic. Reports from furnaces show increased shipments, the call for tonnage on contracts growing larger daily and the inflow of small orders for this year's delivery continuing in good volume. There is also a notable augmentation in the volume of inquiry for next year's deliveries. Very little business is being closed for 1909, however, furnacemen holding off on quotations until after election. We quote as follows, f.o.b. Buffalo:

| | |
|---|---|
| No. 1 X Foundry | $15.50 to $16.00 |
| No. 2 X Foundry | 15.25 to 15.75 |
| No. 2 Plain | 14.75 to 15.25 |
| No. 3 Foundry | 14.50 to 15.00 |
| Gray Forge | 14.25 to 14.75 |
| Basic | 15.00 |
| Malleable Bessemer | 15.50 to 16.50 |
| Charcoal | 20.00 to 20.50 |

**Old Material.**—Business remains quiet, pending the outcome of the election, with little dealing in any line. Prices are stationary and nominal as follows, per gross ton, f.o.b. Buffalo:

| | |
|---|---|
| Heavy Melting Steel Scrap | $14.50 to $15.00 |
| No. 1 Railroad Wrought | 15.00 to 15.50 |
| No. 1 Railroad and Machinery Cast Scrap | 14.00 to 14.50 |
| Old Steel Axles | 17.00 to 17.50 |
| Old Iron Axles | 20.00 to 20.50 |
| Old Car Wheels | 15.00 to 15.50 |
| Railroad Malleable | 13.00 to 13.50 |
| Boiler Plate | 12.00 to 12.50 |
| Locomotive Grate Bars | 11.50 to 12.00 |
| Pipe | 11.50 to 12.00 |
| Wrought Iron and Soft Steel Turnings | 8.00 to 8.25 |
| Clean Cast Iron Borings | 6.50 to 7.00 |
| No. 1 Busheling Scrap | 12.50 to 13.00 |

**Finished Iron and Steel.**—The demand is well maintained for Bars, Plates and railroad material in small quantity orders, the aggregate making a very satisfactory tonnage, somewhat above that of the last week or two. In Structural Material there is not so much doing, although one or two contracts of considerable size have been closed.

## Cleveland.

CLEVELAND, OHIO, October 27, 1908.

**Iron Ore.**—Only a few small lots were sold the past week. Inquiries are pending, but whether they will result in sales depends on the outcome of the election. It is possible that there will be a little spurt of buying next week, but it cannot be much for the reason that only a small tonnage can be gotten out of the mines and shipped between election day and the close of navigation. Shipments continue to fall off, and more lake boats have been taken out of commission. The tonnage to be moved in November will be light, although nearly all the merchant firms will have to keep at work on some of their properties as long as weather permits in order to fill contracts for certain Ores. Owing to the crowded condition of the lower lake docks a large percentage of the Ore that is being brought down now is being shipped directly to the furnaces. Prices at Lake Erie docks, per gross ton, are as follows: Old Range Bessemer, $4.50; Mesaba Bessemer, $4.25; Old Range Non-Bessemer, $3.70; Mesaba Non-Bessemer, $3.50.

**Pig Iron.**—A fairly good demand is reported for Foundry Iron for delivery outside of this territory, and considerable tonnage has been sold. Inquiries in this immediate territory, however, are rather scarce. Many consumers wish to cover for their requirements early in the year, and a large share of the transactions and inquiries are for the balance of this year and the first quarter or first two months of 1909. Some of the furnace interests that have been reluctant to take on business for next year have changed their policy in that regard as the result of seeing some of their competitors eagerly picking up such orders. We note the sale by a local interest from its furnace in the Pittsburgh District of 4000 tons of No. 1 Foundry to a consumer in the Pittsburgh District at $14.70, at furnace, for the balance of the year delivery, and the sale by the same interest to the National Car Wheel Company of 3000 tons of No. 3 Foundry for November, December and January delivery. A local furnace interest reports the sale of two 1000-ton lots, one for the last and first quarter, and the other for the first half. The latter sale was made to a Northern Ohio consumer at $15, at furnace, for No. 2, which is higher than the ruling market quotations. Some tonnage of No. 2 for nearby delivery has been sold at $14.75 for the first quarter, and other sales are reported for that delivery for $14.50, but the latter price probably can be shaded. For first half we quote No. 2 at $14.50 to $14.75, at furnace. For balance of the year No. 2 is quoted at $14.25 to $14.40, Valley furnace. Several inquiries for lots of Foundry Iron ranging from 100 to 1000 tons are pending. There has been an inquiry out for about 2000 tons for a local Pipe plant, but it is understood that the order has not yet been placed. In the East there is an inquiry from an electrical concern for 1500 tons. Regarding the report that it had sold some tonnage of Malleable Iron to a Columbus consumer, a local interest with a furnace in the Valley states that it was offered $14.50, Valley furnace, for 1000 tons for first half delivery, but did not accept the offer. At Toledo we quote No. 2 Foundry and Malleable at $15 to $15.25. We note the sale of 1000 tons of each at Toledo for deliveries through the balance of the year and the first quarter. In Basic Iron we note the sale of one 500-ton lot and an inquiry for 3000 tons for the balance of the year. For the balance of the year we quote, delivered Cleveland, as follows:

| | |
|---|---|
| Bessemer | $15.65 to $16.00 |
| Northern Foundry, No. 1 | 15.40 to 15.80 |
| Northern Foundry, No. 2 | 15.25 to 15.40 |
| Northern Foundry, No. 3 | 14.90 to 15.25 |
| Gray Forge | 14.25 to 14.50 |
| Southern Foundry, No. 2 | 16.85 to 17 35 |
| Jackson County Silvery, 8 per cent. Silicon | 20.05 |

**Coke.**—Inquiries for Furnace Coke for the first half of next year have improved, but producers and consumers have not yet gotten together on prices. The former are now asking from $1.75 to $1.90, at oven, for Standard Connellsville Furnace Coke for first half. For spot shipment about $1.55 to $1.65 is asked. The Foundry Coke market is still quiet, consumers deferring the placing of contracts for next year. We quote 72-hr. Connellsville Foundry Coke at $2 to $2.25, at oven, for spot shipment and future delivery.

**Finished Iron and Steel.**—Little activity has been seen in any line the past week. Mills report a fair volume of specifications on contracts, largely for Steel Bars, but these show a falling off both in number and size of orders as compared with earlier in the month. No new business of importance has developed, although some orders for small lots continue to come in. Manufacturing plants are fairly busy, the bulk of the orders on contracts coming from various manufacturers, including the implement makers. Consumers are usually specifying only for their early requirements. The policy of waiting until after election is being pretty generally followed by consumers from whom the mills are looking for new business, and no improvement is expected until the political contest is settled. The Structural situation in this territory, however, offers no prospect of any material improvement during the balance of the year. Some small building projects are expected to come up, but the large bridge building plants that depend mainly on railroad work and use large tonnages when they are busy have little work on hand or in sight. The lake shipyards have taken no more orders and have only a limited amount of new work on hand, although they may close some contracts after election. The Bar Iron market is duller than it has been for some time, the mills getting very little outside of specifications on contracts. The price is being firmly maintained, and mills are not disposed to make contracts for delivery far ahead at present prices. The price of Steel Bars is firm. The demand for Plates is light, sales being limited to car lots and less. The larger share of the Plate business is being taken by the smaller mills at a concession of about $2 a ton. Sheets are quiet, with prices shaded from $1 to $2 a ton. The demand for Light Rails continues quite good. The price is being shaded $2 a ton to meet the competition of rerolling mills. In new business we note the sale of two carloads of Angles in competition with rerolling mills. While jobbers report a falling off in mill orders, their warehouse business is holding up well, and their sales from stock during the month will exceed their September business. We quote Iron Bars, 1.45c., Cleveland, for car lots; Steel Bars, 1.50c.; Cleveland, for car lots, half extras; Beams and Channels, 1.70c., Cleveland, and Plates, ¼ in. and heavier, 1.70c., Cleveland. We quote Sheets, mill shipments, car lots, Cleveland, as follows: Blue Annealed, No. 10, 1.90c.; Box Annealed, No. 28, 2.60c.; Galvanized, No. 28, 3.65c. Jobbers quote Iron and Steel Bars out of stock at 1.65c. to 1.70c. Beams and Channels from warehouse are 2c., and Plates, ¼ in. and heavier, 1.90c. Warehouse prices on Sheets are as follows: Blue Annealed, No. 10, 2.10c.; Box Annealed, No. 28, 2.70c.; Galvanized, No. 28, 3.80c. Warehouse prices on Boiler Tubes, 2¾ to 5 in., are 64 per cent. discount, and on Black Merchant Iron Pipe, base sizes, 71 per cent. discount.

**Old Material.**—Yard dealers continue to add to their stocks by buying all the Scrap they can pick up at satisfactory prices. As far as the actual demand from consumers is concerned, the market was even quieter the past week than for some time, but in spite of this prices are a little firmer than they were earlier in the month. No inquiries for tonnages of any size are coming from consumers. Sales to local mills are mostly in carload lots. These mills have fair sized stocks on hand and are only buying to fill out. There is practically no demand for Cast Scrap from foundries. Dealers' prices to the trade, per gross ton, f.o.b. Cleveland, are as follows:

| | |
|---|---|
| Old Steel Rails | $14.00 to $14.50 |
| Old Iron Rails | 17.00 to 17.50 |
| Steel Car Axles | 19.00 to 19.50 |
| Old Car Wheels | 14.50 to 15.00 |
| Heavy Melting Steel | 13.75 to 14.25 |
| Relaying Rails, 50 lb. and over | 22.00 to 23.00 |
| Railroad Malleable | 13.25 to 13.75 |
| Agricultural Malleable | 12.00 to 12.50 |
| Light Bundled Sheet Scrap | 9.50 to 10.00 |

The following quotations are per net ton, f.o.b. Cleveland:

| | |
|---|---|
| Iron Car Axles | $20.00 to $20.50 |
| Cast Borings | 7.00 to 7.50 |
| Iron and Steel Turnings and Drillings | 8.00 to 8.50 |
| Steel Axle Turnings | 8.50 to 9.00 |
| No. 1 Busheling | 12.00 to 12.50 |
| No 1 Railroad Wrought | 13.50 to 14.00 |
| No. 1 Cast | 12.00 to 13.00 |
| Stove Plate | 10.75 to 11.25 |
| Bundled Tin Scrap | 8.00 to 9.00 |

## Cincinnati.

CINCINNATI, OHIO, October 28, 1908.—(*By Telegraph.*)

The consensus of opinion in this market indicates a better feeling all along the line. Conservative sellers report that October will close considerably better than September. Machinery people are just now occupied with politics, largely to the exclusion of business, in this, the home of a Presidential nominee, but an optimistic trend is suggested by the nature of correspondence, and several large tool concerns are busied with bids for equipment to be placed immediately after the results of the election are known. In the Pig Iron markets Malleable seems to have the lead in inquiry, something like 15 or 20 large concerns asking for prices, and the situation is reflected in preparations among furnacemen for changing to Malleable. Some good inquiries for Structural Material come from the South and Southwest, and from the far West come orders for Relaying Rails. Owners of puddling furnaces are feeling the market for low grade Irons because of the high price of Scrap, and a large tonnage of Forge is likely to be contracted ere the end of the month.

**Pig Iron.**—Selling agents seem to believe that the crux of the price situation is reached, and some are issuing circular letters defining their views and asking expressions from correspondents on the subject. It is generally admitted that the consumption of Iron in the South is advancing at a rate considerably in advance of production, and consequently that the South is not likely to be a factor in any price reductions

soon. A circular sent out by a prominent firm to-day says, among other things: "Northern Iron is being sold to-day for prices very near if not at the cost of production. As a result, a large number of Northern furnaces are out preferable to operating without profit. In the meantime, and contrary to expectations, the Southern producers show no desire to crowd their product on the market, but are holding back, declaring they have full order books, and are not anxious concerning the future. Consequently we believe that Northern Iron is relatively cheaper than Southern, and on to-day's prices can be delivered at most points in the East and Central West for less than Southern. A natural adjustment of values will cause Northern to advance or Southern to decline. It is more likely that Northern will advance upon indication of an increase in demand, which will probably appear after the election." The circular ends with a suggestion that the wise consumer is now covering for the first quarter and first half of 1909, and that seemingly it is about what a number are doing, for there are indications of business at all agencies. Interesting to consumers in this territory is the announcement of the Hocking Valley Railroad which handles Pig Iron shipments from Columbus, South Columbus, New Straitsville, Wellston and Jackson, of a general reduction to Chicago, East St. Louis, Indianapolis, and other points, of 5c. to 15c. per ton. The Cincinnati, Hamilton & Dayton has also issued the same tariff, effective in the State on November 4, interstate November 25. The Ironton rate will, therefore, be from the dates named, $1.10, instead of as now, $1.20. The same rates will prevail on shipments via the Hocking Valley in the State October 26, interstate November 18. All other roads operating in this territory are expected to follow suit before the end of the year. A difference of opinion regarding the Cincinnati-Hamilton and Hamilton-Cincinnati rate will also be adjusted soon. A rolling mill plant in Indiana is in the market for a large quantity of Forge Iron because of the high price of Scrap. A manufacturer of bath tubs and sanitary appliances is in the market for about 1900 tons of No. 2 Soft, No. 3 Foundry ,and Gray Forge for delivery November and December. A number of Jobbing foundries in Ohio, Indiana and Kentucky are buying in small lots, and some Steel makers in this territory are getting prices on Basic. The lowest price heard to-day for straight Ohio No. 2 Foundry is $14.75, although the price of $14.50, Ironton, is heard repeatedly, with an announced ultimatum of $15, Ironton, as a standard quotation for spot and first quarter business. Some resale Alabama Iron in the Chicago District, at $12.50, Birmingham, served to unsettle the local market a bit, as sales are being made daily at $13, and $13.50 is asked for second quarter. For the balance of the year we quote, based on freight rates of $3.25 from Birmingham, and $1.25 from the Hanging Rock District, f.o.b. Cincinnati, as follows:

| | |
|---|---|
| Southern Coke, No. 1 | $16.25 to $16.75 |
| Southern Coke, No. 2 | 15.75 to 16.25 |
| Southern Coke, No. 3 | 15.25 to 15.75 |
| Southern Coke, No. 4 | 15.00 to 15.50 |
| Southern Coke, No. 1 Soft | 16.25 to 16.75 |
| Southern Coke, No. 2 Soft | 15.75 to 16.25 |
| Southern Coke, Gray Forge | 14.25 to 14.75 |
| Ohio Silvery, 8 per cent. Silicon | 19.70 |
| Lake Superior Coke, No. 1 | 16.45 to 16.95 |
| Lake Superior Coke, No. 2 | 15.95 to 16.45 |
| Lake Superior Coke, No. 3 | 15.45 to 15.95 |
| Standard Southern Car Wheel | 22.25 to 22.75 |
| Lake Superior Car Wheel | 21.75 to 22.25 |

(*By Mail.*)

**Coke.**—The market is quiet, with shipments on contract moving promptly, and little spot business coming out. Inquiries are accumulating for 1909 business, and some good contracts are in sight. There is no improvement in the demand for furnace grades. For Connellsville Furnace Coke $1.75, at oven, can be done for the first half, and on Virginia grades $1.85 to $2. It is reported here that a considerable tonnage of Pocahontas Furnace Coke is under negotiation. Quotations on this Coke run about $1.90 to $2,at oven, on business for the first six months.

**Finished Iron and Steel.**—The South and Southwest furnish some material for bids on Structural work, but business in other lines is quite dull. Prices are being well maintained by the jobbers. The trustees of the Cincinnati Southern Railroad have formally awarded the 4000-ton contract for material for the Eighth Street Viaduct in this city, including six items and amounting to $165,244, to the Riter-Conley Mfg. Company, Pittsburgh. There were 13 bidders. Work is to be completed April 15, 1909. The Noelcke-Richards Company, Indianapolis, secured the Steel and Castings contract for a 14-story building in Birmingham. Bids will be opened soon for the Structural Material for a large hotel to be erected in Birmingham. Considerable material will also be needed for the Woodward High School Building in Cincinnati for which bids have been taken by the School Board of the city. Dealers are quoting to the trade, f.o.b. Cincinnati, as follows: Iron Bars, carload lots, 1.55c., base, with half extras; small lots from store, 1.85c., base, half extras; Steel Plates, carload lots, 1.75c., base, with half extras; small lots from store, 1.85c., base, half extras; Base Angles, carload lots, 1.85c., base; small lots from store, 2.10c.; Beams, Channels and Structural Angles, 1.85c., base; small lots from store, 2.10c.; Plates, ¼-in. and heavier, carload lots, 1.85c.; small lots from store, 2c.; Blue Annealed Sheets, heavy, No. 16, carload lots, 2.15c.; small lots from store, 2.50c.; No. 14, carload lots, 2.05c.; small lots from store, 2.40c.; No. 10 and heavier, carload lots, 1.95c.; small lots from store, 2.20c.; No. 12, carload lots, 2c.; small lots from store, 2.30c.; Sheets (Light), Black, No. 28, carload lots, 2.65c.; Galvanized Sheets, No. 28, carload lots, 3.70c.; Steel Tire, 4-in. and heavier, carload lots, 1.95c.; Plates, 3-16 and No. 8, carload lots, 2c.; small lots from store, 2.20c.

**Old Material.**—It is very quiet and largely still a dealers' market. Inquiries made recently show that local dealers are carrying the largest stocks of any in the country. With comparatively nothing doing it is difficult to gauge trade conditions accurately, although dealers are holding firm on quotations. A recent shipment of Relayers from this market—3000 tons for San Francisco to be used in the building of a special road—is reported to have been sold at $25 f.o.b. East St. Louis, and to be reshipped from that point. Offerings from railroads are not extensive because of the small accumulations in the shops which have been for the most part idle for many months. Dealers' prices to the trade, f.o.b. Cincinnati, are as follows:

| | |
|---|---|
| No. 1 R. R. Wrought, net ton | $12.50 to $13.50 |
| Cast Borings, net ton | 5.00 to 5.50 |
| Heavy Melting Steel Scrap, gross ton | 13.50 to 14.50 |
| Steel Turnings, net ton | 6.00 to 7.00 |
| No. 1 Cast Scrap, net ton | 12.00 to 13.00 |
| Burnt Cast, net ton | 9.00 to 10.00 |
| Old Iron Axles, net ton | 16.50 to 17.50 |
| Old Iron Rails, gross ton | 15.00 to 16.00 |
| Old Steel Rails, short, gross ton | 13.00 to 14.00 |
| Old Steel Rails, long, gross ton | 12.50 to 13.50 |
| Relaying Rails, 56 lb. and up, gross ton | 20.00 to 21.00 |
| Old Car Wheels, gross ton | 13.00 to 14.00 |
| Low Phosphorus Scrap, gross ton | 14.00 to 15.00 |

## The Coal Trade.

BY FREDERICK E. SAWARD.

It may be taken as an indication of a change for the better in general business that there is a larger movement of coal than was the case even a month ago. It is most notable in the soft coal end of the industry and in the steam coal trade generally. Our largest carrier of bituminous coal is recording weekly tonnages that are up to those of 1906, and in the average rather bettter than many weeks in 1907. It has been a hard year for the coal producers, for the prices are less than a year ago, but the consumer has had the lower range as a help to his economies.

One does not hear of car shortage this season. In fact, returns relative to cars in service show that the surplus is dwindling, but it must be borne in mind that October is normally the busiest month of the year in coal transportation circles, and it will not be an adverse sign, or indication, if idle cars increase somewhat during the winter. Railroad conditions are now such that coal shippers are securing much better service than heretofore, and the ease of movement, the slight amount of trouble with regard to delayed shipments, &c., tend to give the impression that the amount of business being done is really less than the traffic figures show.

The anthracite situation is reflected in the fact that shipments now compare favorably with the same period of 1907, the cut off in tonnage moved having been effected in July and August. This means that in the period of discounts the shipments were running at a less quantity because of dull trade, and that from September forward to April—the season of no discounts—the tonnage is a growing one, and the year's total will compare favorably with 1907, in view of the cash basis that has prevailed.

Small coal has continued easy. Buckwheat is offered at considerably less at tidewater than was the case a week or two ago. This refers to individual grades. The companies continue to ask the same old price, but have more free coal than for some time. Rice in the cheaper grades is a drug on the market, and is not only suffering from demurrage charges but is selling at most ridiculous prices. Barley is dragging along on a low basis and is not as easily sold as heretofore.

At line points, especially on the Lehigh Valley and the Jersey Central, the smaller coals are still short and ruling at very high prices, but there is an inclination to get easier, and with increased production prices will probably show a falling off.

Line trade on prepared sizes has shown good results for the past two weeks, and there is very little being sold at less than circular rates. Egg seems to be the only size difficult to move, but the condition relative to that size is much more satisfactory than was the case a week ago.

As stated above, there has been an increase in the soft coal tonnage shipped from mines to market, and it is to be noted, also, that there is comparatively little stock in hand with dealers and consumers. The change in tonnage moved to market has been great in the past four weeks. In the first eight months of the current year the decline was large.

and one need but glance at these figures to learn what the dullness in coal traffic means to certain of our railroad lines:

| Route carried over. | 1907. Tons. | 1908. Tons. |
|---|---|---|
| Pennsylvania | $38,684,536 | 29,256,973 |
| Baltimore & Ohio | 21,946,669 | 16,591,106 |
| Norfolk & Western | 9,769,288 | 8,258,833 |
| Chesapeake & Ohio | 7,560,042 | 8,292,559 |
| Pittsburgh & Lake Erie | 10,774,987 | 6,821,455 |
| New York Central | 5,559,416 | 4,194,499 |
| Buffalo, Rochester & Pittsburgh. | 5,126,056 | 3,701,082 |

The figures credited to the New York Central, the Buffalo, Rochester & Pittsburgh and the Pittsburgh & Lake Erie cover only coal and coke originating on the tracks of those roads. Statistics of the other roads include coal received from connecting lines.

As to prices, the free burning anthracite at the New York loading ports may be quoted at the following figures per gross ton:

| | |
|---|---|
| Pea | $3.20 to $3.25 |
| Buckwheat | 2.45 to 2.50 |
| Rice or No. 2 Buck | 1.75 to 2.00 |
| Individual and Washery Pea | 3.00 to 3.10 |
| Washery Buckwheat | 2.15 to 2.35 |
| Washery Rice | 1.60 to 1.80 |
| Barley | 1.35 to 1.50 |

Bituminous coal is quoted as follows at New York:

| | |
|---|---|
| Georges Creek | $3.20 to $3.45 |
| High Grade, three-quarters lump | 3.10 to 3.20 |
| High Grade, gas, run of mine | 3.00 to 3.10 |
| Best Miller vein coals | 2.75 to 2.90 |
| Good Miller and Moshannon | 2.60 to 2.70 |
| Best Somerset | 2.65 to 2.75 |
| Ordinary Somerset | 2.50 to 2.55 |
| Fairmont, three-quarters | 2.80 to 2.90 |
| Fairmont, run of mine | 2.50 to 2.60 |
| Odds and ends | 2.30 to 2.45 |

Bituminous prices at the mines are as follows:

*Pennsylvania Railroad Coals.*

| | |
|---|---|
| Georges Creek | $1.50 to $1.80 |
| Best Miller vein | 1.30 to 1.40 |
| Good Miller and Moshannon | 1.15 to 1.25 |
| Best gas coal, three-quarters lump | 1.25 to 1.35 |
| Best gas coal, run of mine | 1.15 to 1.25 |
| Best gas coal, slack | .40 to .50 |
| Ordinary Clearfield | 1.00 to 1.10 |
| Ordinary Latrobe | .95 to 1.05 |

*Baltimore & Ohio Railroad Coals.*

| | |
|---|---|
| Georges Creek | $1.50 to $1.80 |
| Best Somerset | 1.25 to 1.35 |
| Somerset | 1.10 to 1.15 |
| West Virginia Freeport | .80 to .90 |
| Fairmont District, three-quarters lump | .90 to 1.00 |
| Fairmont District, run of mine | .70 to .80 |
| Fairmont District, slack | .40 to .50 |

The movement to market is expected to be greater after the middle of November on all manufacturing and steam sizes—both hard and soft coals.

## Iron and Industrial Stocks.

NEW YORK, October 28, 1908.

Stocks have been strong, evidently in the belief that the Presidential election will not result unfavorably for business interests. Fluctuations have been within narrow limits in the case of most stocks, but Sloss-Sheffield made a sharp gain, and Allis-Chalmers preferred reached 38⅜, its highest point this year. The United States Steel sinking fund 5 per cent. bonds sold up to 103¼, which is the highest price they have thus far realized. The range of prices on active iron and industrial stocks from Thursday of last week to Tuesday of this week was as follows: United States Steel common 47⅛ to 48¼, preferred 110 to 110¾; Bethlehem Steel common 20⅛ to 21; Car & Foundry common 40⅜ to 42⅞, preferred 102 to 103; Locomotive common 49½ to 50⅝, preferred 105½; Steel Foundries new 30 to 31; Cambria Steel 36¼ to 36¾; Colorado Fuel 36 to 37¾; Crucible Steel common 6½ to 7, preferred 45 to 47½; Pressed Steel common 33 to 34, preferred 94; Railway Spring common 37⅞ to 39; Republic common 22½ to 24, preferred 79½ to 81¼; Sloss-Sheffield common 64¼ to 71½, preferred 103½ to 106¼; Cast Iron Pipe common 23¾ to 24¾, preferred 70; Can common 6½ to 7, preferred 66 to 68. Last transactions up to 1.30 p.m. to-day are reported at the following prices: United States Steel common 48, preferred 110⅝, bonds 103¼; Car & Foundry common 42½, preferred 102¾; Locomotive common 50, preferred 106⅜; Colorado Fuel 37⅛; Pressed Steel common 34, preferred 92; Railway Spring common 40¼; Republic common 24¼, preferred 81¼; Sloss-Sheffield common 71½; Cast Iron Pipe common 24½, preferred 70; Can common 6⅞, preferred 68.

**Dividends.**—The Warwick Iron & Steel Company has declared the regular semiannual dividend of 3 per cent., payable November 14.

The J. G. Brill Company has declared a quarterly dividend of 1¾ per cent. on the preferred stock, payable November 2.

The United States Steel Corporation has declared the regular quarterly dividend of 1¾ per cent. on the preferred stock, payable November 30, and ½ per cent. on the common stock, payable December 30.

# Metal Market.

NEW YORK, October 28, 1908.

**Pig Tin.**—A considerable improvement in the volume of business has taken place since the middle of the month. Trade does not have the snap and go to it that many would wish, yet it is a vast improvement over last month. The demand comes from consumers, many of them being out of town. The leading consuming interest has been buying again, both in the Straits Settlements and New York. Price changes during the week have been within narrow limits, as follows:

| | Cents. |
|---|---|
| October 21 | 29.50 to 29.60 |
| October 22 | 29.45 |
| October 23 | 29.40 |
| October 26 | 29.25 |
| October 27 | 29.50 |
| October 28 | 29.50 |

On Monday the volume of business probably exceeded 300 tons which was the largest single day's business in many weeks. Saturday, too, there was a fair turnover. Arrivals so far this month aggregate 2440 tons, and there are afloat for American ports 1380 tons. It is estimated that deliveries into consumption this month will be about 2500 tons. The London market closes to-day, at £133 15s. for spot, and £135 7s. 6d. for futures.

**Copper.**—The more confident opinion in the minds of business men regarding the outcome of the national campaign is given as the reason for the improvement in Copper buying and prices. On no other ground can the good buying of the last fortnight be explained. Buying, while not in so large a volume as in July, was more diversified. The fact that prices did not shoot up to 14c., with the first sign of buying was perhaps one reason why there was such a general participation. Consumers in the Naugatuck Valley have paid 13.75c. for Electrolytic, delivered 30 days, which is equivalent to 13.50c. cash, New York. Offers at 13.50c. cash have been refused to-day and 13.62½c. asked. The leading selling interest has advanced its price to foreign consumers to-day. For Lake 14c. is asked, and Casting rules at 13.25c. to 13.37½c. These prices are for shipment during the remainder of the year, and for 1909 shipment premiums are demanded. Selling agencies are very reluctant to quote on next year's business. The foreign demand is good, and there is a prospect that melters there will soon buy more heavily. It is well known that during the September decline they held off, hoping to buy at under 13c. The exports are of normal volume, aggregating 18,122 tons for the first 27 days this month. The London market closes today at £61 8s. 6d. for spot, and £62 6s. 3d. for futures.

**Pig Lead.**—Until Friday the outside interests were easily the cheapest sellers, and took the business. On that day their prices advanced to 4.25c., New York. The next day 4.27½c. was asked, and on Monday a rush of inquiries and buying orders came in which carried prices to 4.35c., to 4.45c., New York. The St. Louis market is 4.20c. to 4.25c. Some sellers have withdrawn from the market, and others are unwilling to make quotations.

**Spelter.**—Considerably more firmness has developed in the Spelter market, and some St. Louis holders are not selling even at 4.70c. to 4.75c. In New York the market is quoted at 4.85c. to 4.90c. Buying has been on a somewhat broader scale.

**Antimony.**—Import prices are slightly higher, but this has only been reflected in a trifling way in the retail markets. Hallett's can be had at 8c., Cookson's at 8.25c., and outside brands at 7.75c. to 8c.

**Aluminum.**—Importers of Aluminum apparently cannot compete with the new price of domestic producers, which as announced last week is 26c., base, for No. 1 Ingots.

**Nickel.**—Prices are unchanged, at 45c. for large lots, and 50c. to 60c. for smaller ones.

**Tin Plate.**—The market is dull and uninteresting. Prices are unchanged at $3.89, New York, and $3.70, Pittsburgh, for 100 lb. IC Coke Plates.

**Old Metals.**—The market is in a somewhat unsettled state, for the reason that new business is coming in but slowly, and the demand is light. Nevertheless, the continued firmness of the London Copper market, as well as the domestic, has given strength to Copper bearing Scrap, and prices are somewhat higher. The following range of dealers' selling quotations represents actual transactions during the week:

| | Cents. |
|---|---|
| Copper, Heavy and Crucible | 13.00 to 13.25 |
| Copper, Heavy and Wire | 12.75 to 13.00 |
| Copper, Light and Bottoms | 11.75 to 12.00 |
| Brass, Heavy | 9.25 to 9.50 |
| Brass, Light | 7.25 to 7.50 |
| Heavy Machine Composition | 12.00 to 12.25 |
| Clean Brass Turnings | 8.25 to 8.50 |
| Composition Turnings | 9.50 to 10.00 |
| Lead, Heavy | 4.00 |
| Lead, Tea | 3.75 |
| Zinc Scrap | 3.50 |

The Cambria Steel Company, Johnstown, Pa., has started another blast furnace, making six out of its eight stacks now in operation.

## New York.

NEW YORK, October 28, 1908.

**Pig Iron.**—On Thursday last a buying movement set in in Northern New York, which has since spread throughout the State, has embraced parts of New England, and has since embraced this district. It has included Malleable, Bessemer, Foundry and Forge Irons, and in the aggregate was large, with some blocks of 10,000 tons and upward. There have been numerous sales of 1000 tons, many interests participating. A considerable number of buyers had large inquiries out, among them some of the largest melters in this part of the country. Some low figures were made earlier in the movement, but the limits have been raised considerably. We quote, at tidewater, Northern No. 1 Foundry, $17.25 to $17.75; No. 2 Foundry, $16.75 to $17.25, and No. 2 Plain, $15.75 to $16.25. Alabama Irons are quoted $17.50 to $17.75 for No. 1 Foundry, and $16.75 to $17.25 for No. 2 Foundry.

**Steel Rails.**—In a few instances there is tentative discussion by railroads of their rail requirements for 1909, and business is expected to result before many weeks. In the case of the Pennsylvania Railroad, whose probable requirements for next year have been put at 150,000 tons, the tonnage talked of is moderate, considering that no rails were bought this year. However, 50,000 tons have been rolled this year for the Pennsylvania on orders carried over from 1907. Current rail business is exceedingly light. In New York the City Railway has placed 750 tons of Girder Rails with the Pennsylvania Steel Company.

**Structural Material.**—Orders for plain material have been of fair volume recently, and considerable business has been done in the lighter shapes. A year of depression has now rolled around, and comparisons with 1907 are consequently beginning to be favorable. The fabricating contracts let in the present month are quite certain to exceed the tonnage of those for October, 1907, and the showing of the American Bridge Company will be more favorable than for some months, by reason of the 24,000-ton contract for the Chicago & Northwestern terminal work at Chicago. In the past week the receivers of Milliken Brothers, Inc., have taken 2000 tons of transmission tower work in North Carolina, making a total of close to 10,000 of such business this company has had this year. The same interest has the Steel for the Bossert apartment hotel in Brooklyn, about 800 tons. The Steel for the Hoyt apartment house, 5000 tons, is expected to be awarded within a day or two. Competition has been very close. The Stock Quotation Building, 850 tons, will also probably be awarded this week. For the Central of New Jersey pier work, 800 tons, the contract went to L. F. Shoemaker & Co., 45 Broadway. The New York Central's pending business includes 3500 tons for new suburban stations within the electric zone, and an additional amount for yard work. A good many moderate sized building contracts have been let in various parts of the country, the Steel tonnage ranging from 200 to 800. The Boston & Albany piers to replace those burned at Boston, and calling for 2000 tons, are about to be let. In the West the most important new project is the Denver viaduct, 4000 tons, to be built by the Union Pacific, Burlington, Colorado & Southern, and Denver, Northwestern & Pacific. A contract just made by the Erie Railroad with the Ralston Steel Car Company, Columbus, Ohio, for 1000 Steel underframes for cars already in service, will require a considerable tonnage of channels. For plain material, shipped from mill, tidewater deliveries, we quote as follows: Beams, Channels, Angles and Zees, 1.76c.; Tees, 1.81c. On Beams, 18 to 24 in., and Angles, over 6 in., the extra is 0.10c. Structural Material, cut to lengths, is sold in small lots at about 2¼c.

**Bars.**—A somewhat better movement has taken place in Bar Iron, with the market steady at 1.45c. to 1.50c., tidewater. Steel Bars continue to be held at 1.56c., tidewater.

**Plates.**—Trade is light, the demand being confined to small lots. Prices continue as follows, at tidewater, for Standard sized Plates: Sheared Plates, 1.76c. to 1.86c.; Flange Plates, 1.86c. to 1.96c.; Marine Plates, 2.16c. to 2.26c.; Firebox Plates, 2.65c. to 3.50c., according to specifications.

**Ferroalloys.**—Little or no change is observed in this market. Ferromanganese is dull, at about $43, Baltimore, and 50 per cent. Ferrosilicon can be had at $68 to $70, delivered.

**Cast Iron Pipe.**—Manufacturers characterize the market as almost dead. An occasional purchase of a carload lot is made, but inquiries for quantities of considerable size are decidedly rare. Carload lots are quoted at $23.50 to $24 for 6 in.

**Old Material.**—Some demand is noted for Heavy Melting Steel Scrap, Wrought Pipe, Borings and Turnings. While Cast Scrap is rather quiet, a little more inquiry has developed for Stove Plate. The volume of business, taking all lines, is much under what it should be at this season, but dealers are anticipating a better demand after the election, and are holding their stocks quite firmly in the expectation of a more active market at that time. Quotations are as follows, per gross ton, New York and vicinity:

| | |
|---|---|
| Old Girder and T Rails for melting | $11.50 to $12.00 |
| Heavy Melting Steel Scrap | 11.50 to 12.00 |
| Old Steel Rails, rerolling lengths | 14.00 to 14.50 |
| Relaying Rails | 22.50 to 23.00 |
| Old Iron Rails | 16.50 to 17.00 |
| Standard Hammered Iron Car Axles | 18.50 to 19.00 |
| Old Steel Car Axles | 15.50 to 16.00 |
| No. 1 Railroad Wrought | 15.00 to 16.00 |
| Iron Track Scrap | 12.00 to 13.00 |
| No. 1 Yard Wrought, long | 14.00 to 14.50 |
| No. 1 Yard Wrought, short | 12.50 to 13.50 |
| Light Iron | 7.00 to 7.50 |
| Cast Borings | 7.50 to 8.00 |
| Wrought Turnings | 8.50 to 9.00 |
| Wrought Pipe | 11.00 to 11.50 |
| Old Car Wheels | 14.00 to 14.50 |
| No. 1 Heavy Cast, broken up | 13.50 to 14.00 |
| Stove Plate | 11.50 to 12.00 |
| Locomotive Grate Bars | 11.50 to 12.00 |
| Malleable Cast | 12.50 to 13.00 |

The Pope Tin Plate Company, Pittsburgh, mills at Steubenville, Ohio, has opened a branch office in rooms 189-190 Columbia Building, 29 Broadway, New York City, with H. M. Easton manager, who will look after the Eastern trade, more particularly in New York City and immediate vicinity.

## Freight Subways for New York City.

William J. Wilgus, president of the Amsterdam Corporation, and formerly vice-president of the New York Central Railroad, has completed a report on the transportation facilities of Manhattan, as the result of the investigation he has been carrying on for some time, as referred to in *The Iron Age* of August 13, page 455. The report has been submitted to the Public Service Commission of New York. He advocates the construction of freight subways beneath the sidewalks of the business districts of Manhattan. The estimated cost of such a system is from $80,000,000 to $100,000,000. Cartage subways are contemplated, tapping both sides of the principal business streets below Forty-second street. The report shows in detail the inadequacy of the present methods of freight distribution, and points out that the difficulties will be increased by the proposed removal from streets and public places of the tracks of the only railroad that now has direct rail access to Manhattan Island. Mr. Wilgus's conclusions are thus stated:

> An analysis of the freight problem of Manhattan Island appears to justify the conclusion that the present status is advantageous neither to the public nor the carriers; that previous studies and reports over a period of 40 years favor an elevated railroad on the waterfront for passenger but not for freight purposes; that the leading commercial interests of the community are seeking a solution that will retain to the city its supremacy as the leading port of the country; that the general public will be most benefited by a method that will relieve the streets of vehicular traffic; that the water and rail carriers will support a treatment of the subject that will expedite and cheapen the distribution of freight; and that the proper solution appears to lie in the adoption of an electrically operated cartage subway system beneath the sidewalks of the business districts of Manhattan, connected by high-speed routes with the principal rail and water carriers of the port. With suitable arrangements for harmonizing the various interests in New York and New Jersey, the suggested solution is believed to have sufficient merit to attract the investment of private capital under terms alike attractive to the investor and the municipality.

**Oxy-Acetylene Blow Pipe Demonstration.**—A demonstration of cutting steel and autogenous welding of steel, iron and aluminum was given in the metallurgical laboratory of the School of Mines at Columbia University on the evening of October 23 by the Equitable Engineering Company, 60 Wall street, New York. The most interesting test was one of cutting. The work consisted of four plates, each 1 in. thick by 6 in. wide, riveted together, making a section of 24 sq. in. The cutting was done with an oxy-acetylene blow pipe with an auxiliary high pressure oxygen jet, in a total cutting time of 6 min. The Nelson Goodyear acetylene genarating apparatus was used.

The McClintic-Marshall Construction Company, Pittsburgh, with works at Rankin, Pottstown and Carnegie, Pa., has increased its capital stock from $900,000 to $5,000,000. This company's works have a fabricating capacity of about 150,000 tons of steel per annum, and it is the largest independent structural steel concern in the country.

## Civil Service Examination for the Bureau of Corporations.

The United States Civil Service Commission announces an examination on November 17, 1908, to secure eligibles from which to make certifications for the appointment of special examiners and special agents in the Bureau of Corporations, Department of Commerce and Labor, as the needs of the service may require, at salaries ranging from $1200 to $3500 per annum, except that for Group D positions the minimum salary will be $900 per annum. The salaries of these positions are not fixed by law, but their amount is determined by the Secretary of Commerce and Labor on the recommendation of the Commissioner of Corporations in accordance with the work to be done and the qualifications desired in each case. The examination will be divided into the following branches, weighted as indicated:

| Subjects. | Weights. |
|---|---|
| 1. General educational training | 30 |
| 2. Special training and experience | 50 |
| 3. Thesis | 20 |
| Total | 100 |

In rating the first branch of the examination the competitor's whole educational training will be considered. Appropriate questions in the application form will afford him opportunity to give his educational history in full, but any facts not apparently called out by those questions, and believed by him to be of importance, should also be stated. In particular, all courses of study in economic, political or legal subjects should be fully described, and the amount of time devoted to each should be stated. If any theses or other papers have been presented by the competitor in connection with any degree conferred upon him, such papers or copies of them should be submitted.

In rating the second branch of the examination, consideration will be given to all the competitor's special training and experience which in any way tends to fit him for any branch of the work of the Bureau of Corporations, the nature of which is briefly indicated in this announcement. The evidence of this special training which the competitor will be required to submit will fall into the following classification: 1. His sworn statement showing (*a*) his specialized and advanced study in economics, politics and law (this information also forms a part of the basis for rating the first branch, and repetition is unnecessary, as one complete statement will answer for both purposes), and (*b*) his business or professional experience. 2. The recommendations of persons qualified to judge as to his fitness for any one or more of the several groups of positions described below. The value of these recommendations will necessarily depend upon the extent and nature of the recommender's acquaintance with the competitor, which must be stated in the recommendation. 3. Any writings, the result of his original work, which the competitor may have published on economic subjects of any kind (including financial and statistical), or in relation to corporations.

The third branch of the examination will be a thesis, or discussion, which the competitor will be required to write in the examination room. He may select for this paper any one of a number of subjects which will be given him by the examiner. These subjects will be general in their nature, and will be sufficiently varied to permit a fair selection by men possessing any of the several groups of qualifications described below. Only three hours will be allowed for the writing of this paper, as its chief purpose is to test the competitor's readiness and alertness, as well as his general information in the lines of inquiry most nearly related to the work of the Bureau of Corporations.

The groups of positions for which this examination is held are arranged in a general way as follows:

Group A.—Men of extensive practical business experience or extensive economic training, or both, competent to undertake a general investigation of an economic problem, to direct the collection of information by field agents and otherwise, and to present the results.

Group B.—Men of economic training, capable of doing the subordinate or detail work indicated in Group A under general instructions and supervision.

Group C.—Men qualified to gather information in the field, with sufficient economic and literary training to present it properly in written reports. Such men should be fitted to meet on a proper footing all classes of men.

Group D.—Men of particular training and experience in the preparation and study of statistical information.

Group E.—Men who have a thorough knowledge of commercial accounting and auditing or of general business and financial methods.

Applicants should at once apply to the United States Civil Service Commission, Washington, D. C., for application Form 1586. No application will be accepted unless properly executed and filed with the Commission at Washington. Circular No. 719, issued October 7, 1908, gives additional information and a list of the cities in which examinations will be held.

## PERSONAL.

George L. Bollinger of the Bollinger-Andrews Construction Company, Pittsburgh, has sailed for Europe to be gone two months.

Arthur V. Davis, general manager of the Aluminum Company of America, Pittsburgh, has returned from Europe.

Howard L. Bodwell has become assistant district master mechanic of the American Sheet & Tin Plate Company, being located at Vandergrift, Pa.

George B. Massey of the Bucyrus Company, South Milwaukee, Wis., has been appointed resident engineer of the company at New York, with office at 50 Church street.

Prof. Charles R. Richards, formerly director of the department of manual training, Teachers' College, Columbia University, has been appointed director of Cooper Union for the Advancement of Science and Art, New York.

Andrew Carnegie is expected in New York at an early date.

Veryl Preston of New York, president of the Eastern Steel Company, has returned from a trip to the iron ore district on the northern coast of Cuba.

George H. Ismon has returned to the sale of wire products, with which he had long been identified. He has recently engaged with the Pittsburgh Steel Company which he will represent in the southeastern part of the country with temporary headquarters at Savannah, Ga., Post-office box 548.

J. A. Kinkead has resigned as engineer of tests of the American Locomotive Company, Schenectady, N. Y., to become manager of sales for the Parkesburg Iron Company, Parkesburg, Pa., in the New York, New England and Canadian districts. His office will be 2601 Singer Building, New York.

E. Z. Crowe, formerly connected with the American Trust & Savings Company, Birmingham, Ala., has been appointed secretary and treasurer of the Southern Pipe & Foundry Company, North Birmingham, Ala., to succeed F. H. Winship, resigned.

R. E. Campbell, who has been connected with the Campbell Mfg. Company, Gadsden, Ala., since its organization, has severed his connection with that company and will probably engage in the manufacture of cast iron specialties at Decatur, Ala.

H. N. Case, for a number of years with the Becker-Brainerd Milling Machine Company, Hyde Park, Mass., is now connected with the Boston office of the Fairbanks Company, as salesman in the machine tool department.

A bulletin posted at the Bethlehem Steel Works, South Bethlehem, Pa., October 22, made the following announcement: "Beginning to-day, the following organization will go into effect: President, Charles M. Schwab; first vice-president, Archibald Johnston; second vice-president, H. S. Snyder; general manager, E. G. Grace; general superintendent, C. Austin Buck; secretary and treasurer, B. H. Jones; general sales agent, A. D. Mixsell; auditor, F. A. Shick; assistant to President Schwab, J. H. Ward;; assistant to general manager, John D. Hagenbuch."

J. M. Ellis has been appointed sales agent in New York for the Bethlehem Steel Company, with offices on the eleventh floor of the Trinity Building, 111 Broadway.

# The Machinery Trade.

NEW YORK, October 28, 1908.

In view of the light demand for machinery the past few months and the hesitancy on the part of those who have projected large enterprises to proceed with their plans, it was not unexpected that very little business would develop the past week, and that those who contemplated making purchases of any magnitude would hold off until after election. As a result the orders and inquiries received were few and covered only a tool or two each, mostly of the lighter class. The lighter tools have been more in demand for some time than those of the heavier class, because purchases have been mostly for replacement or for additions to equipment in small plants rather than for railroad shops or industrial plants that handle heavy work. The wide difference in the demand for the two classes of tools is shown by the business of a large builder, whose plant, devoted to the lighter class, is operating at about normal capacity, while its other works, which produce the heavy tools, such as are used by the railroads and the more important industrial corporations, are running much below normal. While the greater demand for the lighter tools is considered a healthy sign, the railroads will have to come into the market more freely before there will likely be a noticeable increase in business. This, we understand, they are preparing to do provided the result of the election is favorable. Several of the roads have prepared lists of tools which will probably be submitted for bids within the next few months.

Successful tests were made last week of the new high pressure service of the New York Fire Department. Several of the large cities have installed a high pressure service, but most of the installations cover only the congested parts of the cities, and it is likely that the success of the operations will lead not only to the extension of the system in cities where they are already installed, but also to the installation of such systems in other cities. These installations necessitate the purchase of a great deal in the way of pumping machinery and accessories, and it is likely that further development will be of considerable importance to manufacturers of electric and pumping machinery.

Announcement has been made that the projected rapid transit trolley line from Newark, N. J., to connect with the Hudson Companies' tunnels at Jersey City will be completed by 1910, and this will make some big purchasing before long. As has been told here before, the Hudson Companies has given up its project to build an independent line from Jersey City to Park place in Newark through an arrangement made with the Pennsylvania Railroad by which the latter company will give up part of its track system to a high speed electric line from Newark to New York. New plans for financing the tunnel system were adopted several days ago, and now it is understood the Pennsylvania Railroad will go on with the work on the Newark line, part of the grading of which was done early last spring. It is understood that the Pennsylvania Railroad will electrify its system somewhat further than Newark, and the carrying out of its plans will entail the building of a large power house at Harrison, N. J., where a freight and passenger terminal is also to be constructed. Plans for this project were made more than a year ago, and inquiries were out in the heavy power trade with a view to getting figures on the work, but as far as can be learned no orders were placed. It is probable that the negotiations with the Hudson Companies caused a delay, and now that an understanding has been reached by the Hudson Companies and the Pennsylvania officials it is thought that it will not be long before the trade hears of extensive requirements for power equipment, construction material and rolling stock.

The St. Paul & Des Moines Railroad, Des Moines, Ia., has secured property at East Nineteenth street and Grand avenue, where it will erect a repair shop, 100 x 200 ft., to cost about $20,000, exclusive of the power and machinery equipment.

The International Car Company, New Orleans, La., has purchased 36 acres of ground, where it will erect substantial shops for the manufacture of cars. Plans for the new shop are being prepared, and it is expected that the company will be ready to take up the matter of equipment within the next few weeks.

The Petroleum Iron Works Company, Sharon, Pa., is to build additions to its plant which will considerably increase the capacity for all classes of steel plate construction. The company will add 80 x 150 ft. to both ends of the present building, which, when the additions are completed, will be 150 ft. wide and 480 ft. long. The grading for the new construction has been done and work will be started this week on the foundations.

The Chamber of Commerce, Binghamton, N. Y., closed negotiations October 21 with the Georgian Mfg. Company by which the latter will take over the plant on Glenwood avenue and the Lackawanna Railroad formerly occupied by the Innes-Demarest Stove Company. Consulting engineers S. O. & H. A. Lacey, Phelps Bank Building, have been retained to prepare plans for the rebuilding of the present buildings and for construction of other new buildings on the additional site of three acres which has also been acquired. The company will engage in the manufacture of brass and iron goods, and will equip a modern iron foundry, brass foundry, pattern shop and machine shop. The company states that the plans it contemplates when carried out will mean an ultimate investment of $300,000, and will give employment to 400 men.

The large trunk factory of L. Goldsmith & Son, at Cherry and Canal streets, Newark, N. J., was partly destroyed by fire October 20, and the company has leased a factory at Malvern, Pacific and Chestnut streets, for which equipment is being installed, to resume work in filling its pending orders. The company expects to rebuild on the site of its old plant, and plans are being prepared for a factory building to cost about $100,000. The equipment now being installed in the temporary plant is only emergency material, and the new plant will be brought up to date with the latest trunk making equipment. The capacity of the new plant will be upwards of 4000 trunks a year, and the plant will consist of three large buildings, each four stories in hight. A new power plant, the size of which has not been decided as yet, will be installed, together with the latest wood and metal working equipment for trunk making.

P. Steiger & Co., Spring street, Newark, N. J., are having plans prepared for a trunk and bag factory which will include two buildings of mill construction, one to be 50 x 80 ft. and the other 60 x 125 ft. Both structures will be three stories high, and it is estimated that they will cost $20,000. The company will probably require considerable woodworking machinery and, perhaps, some metal stamping equipment.

The American Compressor & Pump Company, 26 Cortlandt street, New York, has been organized to manufacture air and gas compressors, high duty vacuum pumps, pneumatic specialties, &c. The company's works, at 718 East Pratt street, Baltimore, Md., are in charge of Alex. Slaysman, Jr., of the well-known firm of Slaysman & Co., engineer, machinist and manufacturer of automatic can making machinery, and having a fully organized shop equipped with improved tools, the company is prepared to make prompt shipments. The products are thoroughly tested in the shops, simple in design, and all parts are interchangeable. The sales department is in charge of Frederick B. Vail, who has just severed his connection as general sales agent of the American Compressor Works, with whom he has been since the organization of the company, and previously was manager of the Clayton Air Compressor Works.

# Chicago Machinery Market.

CHICAGO, ILL., October 27, 1908.

Transactions of the past week in machinery were of the same general character that has characterized trade through many preceding weeks. A fair amount of inquiry for miscellaneous equipment is coming out, but the disposition to withhold orders for the present seems a little more pronounced as election time draws near. If even a fair proportion of the machinery inquiries of the past two months, on which orders are still unplaced, should develop into actual business early in November, it would mean a sensible acceleration over the present movement. Most of the large industrial enterprises now in contemplation involving heavy purchases of machinery have to do with the future more than with the immediate present, but they nevertheless give assurance of better things to come. One of the most important projects of this kind, of local interest, is that of the proposed electrification of the Illinois Central suburban line. This work has been under consideration in a tentative way for some time, but a resolution passed at the meeting of the Board of Directors last week gives assurance of the commencement of this work within a few months with the expectation of its completion in the first half of 1910.

In addition to the Pullman Company's recent purchase of tools, reference to which was made in last report, the trade is now figuring on an equipment of pneumatic tools for the same interest. Business in this line is generally quiet and the orders for compressors are too small and infrequent to be at all satisfactory.

Speaking of trade conditions as affecting his line, a manufacturer of motors remarked upon the evident scarcity of stocks of such equipment. Ordinarily machinery manufacturers and dealers keep a fair line of standard size motors in stock to supply hurried orders, but it now seems that these

are very much depleted. In evidence of this the speaker pointed to the unusual number of hurried orders, not a few of which demanded shipment by express, and predicted that with the first signs of returning activity there will be more liberal buying of small and medium size motors than has been seen for some time.

As indicating the interest manifested by manufacturers in new shop equipment, it is stated that the inquiries received by Pawling & Harnischfeger, Milwaukee, Wis., are keeping the full force of its engineering and estimating department quite busy. This is interpreted as foreshadowing an increased volume of business in the near future. Among the important orders recently entered is one for five 10-ton cranes of spans from 84 to 110 ft. for installation at the Saucon Plant of the Bethlehem Steel Company. This makes a total of 21 cranes furnished for this plant, all of them being of long span and built for high speeds and heavy mill duty where hard service is required. Other recent orders include an extensive lumber handling system for the Tremont Lumber Company, Rochelle, La., consisting of 13,000 ft. of 15-in. I-beam runways with four electric traveling hoists and necessary equipment; two pillar cranes of 20 and 10 ton capacity, respectively, Chicago, Milwaukee & St. Paul Railroad; one 5-ton crane, Lynchburg Foundry Company, and electric traveling hoists for Williams & Wilson, Canada, and Pettibone-Mulliken Company, Chicago.

The Goetz & Flodin Mfg. Company, Chicago, has secured a site at the northwest corner of Clybourn avenue and Willard street, where a new plant will be erected. Plans for this improvement are now being prepared and will soon be placed in the hands of contractors for figures. The company builds copper and iron tanks, making a specialty of brewery work. Power plant equipment will consist of a battery of steam boilers and a direct connected generating unit. The new factory is designed to have nearly twice the capacity of the one now occupied, and for its equipment there will be required considerable new equipment in the way of tools.

The Nevada-California Power Company, Goldfield, Nev., is perfecting surveys for a new power plant, and it is hoped that plans will be completed and ready to receive bids on or about February 1 of next year. The proposed work will involve the laying of about two miles of wood-stave pipe, 3000 to 4000 ft. of steel pressure pipe, the purchase of two or three 1500 or 2000 kw. generators, with water wheels, valves, transformers and other equipment necessary to complete the installation. The plans will also involve the construction of a new power house and dams. All of the work will be done by contract.

A new electric light plant and water works will be built at Winnfield, La. The plants will be constructed under the direction of H. W. Wright, who has been appointed by the city as superintendent, and who desires catalogues and literature descriptive of electric and pumping machinery.

Machinery equipment included in plans being drawn by the Harvey Electric Light & Power Company, Harvey, N. D., for new electric light plants include a 150-hp. boiler and 125-hp. Corliss engine and an electric generator and other apparatus of corresponding capacity. It is expected that bids on this equipment will be sought early in November.

Plans are being prepared by Jager & Stravs, Security Bank Building, Minneapolis, Minn., for the construction of a gas plant for the People's Gas Light & Fuel Company, Minneapolis, Minn. The work contemplated will involve the purchase of mains, machinery and material, the details of which are now being worked out.

A water works plant is being built at Alexandria, Neb., by E. N. Averell. This work includes the construction of a reinforced concrete reservoir and the installation of hydraulic pumping engines and a turbine water wheel, which equipment has not yet been purchased.

## Cincinnati Machinery Market.

CINCINNATI, OHIO, October 27, 1908.

A part of October was so unproductive in new business and the scarcity of substantial inquiries so conspicuous that tool manufacturers in this district were predicting a worse close than that of September, but within the past few days there seems to have been an undercurrent begotten by optimism or business necessity that has encouraged these manufacturers to believe now that October will show a gain over the preceding month. Interviews with heads of departments of the larger manufacturers, which include lathe, milling machine, shaper, drill, boring mill and electrically operated tool machinery, leads to this conclusion and warrants the definite statement that in the Central West, at least, the first month of the last quarer shows disinct improvement.

The mails of Saturday brought to a half dozen large manufacturers of tools in this district some very nice orders for lathes, drills, horizontal boring, drilling and milling machinery and shapers. One recent order received by a large manufacturer of heavy metal working machinery calls for five machines for the Pullman shops, a couple for Boston and several others for large steel manufacturers of the Pennsylvania District. A large horizontal boring, drilling and milling machine manufactured by the Fosdick Machine Tool Company goes to the Pittsburgh District; another of the same type was shipped East. The list of tools purchased by the municipality of Cincinnati for the various stations of the city water works plant, and which was published in *The Iron Age* of last week, is in the hands of the various manufacturers and dealers, with requests for immediate delivery.

Secretary John M. Manley of the Cincinnati Metal Trades Association is already busy with the details of the December meeting of the association. The date is the 1st, and some very prominent speakers of State and international importance will be heard. The membership is now about 70 and a number of new applications are to be considered at this meeting.

The Business Men's Club is a great rendezvous for tool manufacturers at the noon hour. Several important projects in which machinery manufacturers are taking a leading interest and prominence are under discussion at this time, conspicuous among which are the three months' trip to South American points, mentioned in these pages from time to time; the working out of plans for the machinery and technical section of the new Ohio Mechanics' Institute structure, which has been made possible through the generosity of Mrs. Thomas Emery; the development of the new Machinery Sales Building, to occupy an entire block below Fourth street and between Vine and Walnut streets, &c.

The situation with most manufacturers of tools and allied machinery in this district is the same. A few that have been working full time with a limited force are quietly making preparations for increasing working forces directly or soon after election, believing from the character of inquiries and reports received that they will be needed. Others that have kept the best part of their mechanical department intact working on tools for stock or developing new things and redesigning standard machines are preparing advertising campaigns and working out publicity problems in order to take advantage at the earliest possible moment of the expected reaction directly after election.

The most confirmed inactivity prevails among dealers in second-hand machinery. There are few inquiries and fewer sales.

Manufacturers of boilers and engines are not very enthusiastic, but are hopeful withal and expect a change for the better immediately after election, as the necessity for power equipment to drive additional and new machinery will be the first thing apparent in shops installing new equipment. Manufacturers of throttling engines and types of boilers used in the South and Southwest in the sugar, rice and cotton producing districts report conditions satisfactory and in some instances quite encouraging.

Foundries will not report for October as good a month, in the main, as September. Most jobbing foundries, save those manufacturing small miscellaneous castings, will show a lighter tonnage melted this month than the preceding one.

### The South American Invasion.

Plans have been matured by manufacturers of the Cincinnati District for the three months' trip through South America in the interests of trade, and the proposed itinerary is in the hands of those interested. As noted when the plan was originated by the Manufacturers' Club of Cincinnati, E. H. Hargrave of the Cincinnati Tool Company and F. B. Wiborg of the Ault & Wiborg Company have given unremitting care and much time to the project and recently in New York completed the itinerary, which abandons the original plan of rounding the Straits of Magellan by ship. Instead the ports on the west coast will be visited by rail. The Royal Mail steamship chartered for the trip will have a large exhibition room, 50 x 300 ft., in which will be attractively arranged the various tools, machinery and products represented by the passengers. At least 50 are expected, of which number about 30 have already signed. The entire trip will consume 90 days and the cost to each person will be $1400, which will cover all items except hotel bills and incidental expenses incurred by the members while off the steamer. The itinerary announced, but which is subject to change, in the interval, is as follows:

| | Miles. |
|---|---|
| Leave New York January 10, 4 p.m.; arrive San Juan January 15 | 1,500 |
| Leave San Juan January 17, 5 p.m.; arrive Barbadoes January 19 | 500 |
| Leave Barbadoes January 19; arrive Para, Brazil, January 23 | 1,200 |
| Leave Para January 24; arrive Pernambuco January 28. | 1,120 |
| Leave Pernambuco January 29; arrive Bahia January 30. | 380 |
| Leave Bahia February 1; arrive Rio Janeiro February 5. | 1,085 |
| Leave Rio Janeiro February 10; arrive San Paulo February 11 | 190 |
| Leave San Paulo, Santos, February 13; arrive Montevideo February 14 | 910 |
| Leave Montevideo February 17; arrive Buenos Ayres February 18 | 110 |

At this point the party expects to leave the boat and cross the continent via the Trans-Andes Railway to Santiago and Valparaiso, Chili. The party will return to Buenos Ayres, where the steamer will be waiting, and the return to New York will be begun, arriving there about the middle of March.

## Cleveland Machinery Market.

CLEVELAND, OHIO, October 27, 1908.

No greater activity was noticed in the local machinery market during the past week than earlier in the month, but dealers were not disappointed, as no change was expected on the eve of the Presidential election. Inquiries, however, appear to show some improvement, but prospective purchasers are slow in placing orders, those who want anything more than a single tool holding off until after election before making their purchases. The most important sale during the week was about 30 miscellaneous woodworking tools to the Wheeling & Lake Erie Railroad for its Norwalk and Toledo shops. A hitch has occurred over the building of the main shops of this company in Norwalk, to replace those recently burned, and the expected list of iron working tools has not yet been sent out. Sales by machinery houses during the week were limited, almost entirely to single tools.

Some tool builders report a better volume of inquiries, and are quite hopeful of improved conditions next month. When the automobile builders practically quit buying several weeks ago, with the exception of an occasional tool, the orders of the tool builders would have showed a temporary falling off had not new business developed from other kinds of manufacturers. Buying by other manufacturers in various lines, however, has improved considerably, so that the volume of orders is holding up fairly well. A portion of the improved demand is coming from the railroads. While no large orders or inquiries are coming from this source, there is an increase in the sale of single tools for railroad shops.

Local engineering firms have more work on hand that at any time before during the year, and are figuring on considerable work that will probably be started early next year. The prospective work includes new industrial plants and additions to existing plants, and the carrying out of these projects will necessitate the purchase of a certain amount of machinery and power equipment.

The demand for second-hand machine tools continues fairly good, and with the supply of good used tools not larger than the demand, dealers are able to keep their stocks of second-hand tools moving. The demand is particularly good for second-hand milling and gear cutting machines.

The foundry trade shows little if any improvement. There is an occasional spurt in the demand for castings, but buyers as a rule continue to buy in small lots for immediate needs. Orders for light castings are better than for heavy castings.

The Marion Steam Shovel Company, Marion, Ohio, has an inquiry out for 12 lathes for its machine shop.

A company, to be known as the Cleveland Machine Tool Works, is being formed by J. G. Bellinger and Fred W. Bowler, to place on the market a new constant speed drive horizontal boring mill. The machine has been practically perfected and its manufacture will be started soon. The company has established a plant at 1519 East Thirty-second street, where some machinery has been installed. This will be enlarged soon and the company is in the market for some additional machine tool equipment.

The Foote-Burt Company, Cleveland, maker of drills and bolt cutters, reports that its plant is being operated at 75 per cent. of its full capacity, its present output being larger than it was three or four years ago, the plant having been enlarged since that time. This company has been running at the present rate for about two months. For some time its orders were largely from automobile builders, but recently its sales to other lines of manufacturers and to the railroads have improved, and while large orders are not coming in, the company is getting a fair volume of business and reports that the outlook for further improvement is quite encouraging.

The Republic Stamping & Enameling Company, Canton, Ohio, reports that it is getting such a large volume of business that it is far behind on orders and that its plant, which has been running night and day for some time, will continue to do so for the balance of the year. The company has enough orders on hand to keep its plant busy for the rest of the year, and a month ago gave instructions to its salesmen to stop taking orders for delivery before next January.

The plant of the Roberts Motor Company, maker of marine, automobile and other motors, will probably be moved from Clyde to Sandusky, Ohio. The Chamber of Commerce of the latter city recently took up the matter and the stock necessary to secure the removal has been subscribed for and a deal practically closed for the taking over the vacant plant of the Vincent Valve Company as a site for the motor company.

The Canton-Hughes Pump Company, Canton, Ohio, reports a very satisfactory improvement in its business. The company is now running its plant at full capacity and overtime till 9 p.m. to keep up on its orders.

Lorain, Ohio, has under consideration the erection of a municipal lighting plant. F. C. Work, electrical engineer, has been engaged to prepare plans and estimates.

W. L. Sackman, maker of dies, stamps, &c., Akron, Ohio, and others have incorporated the Sackman Mfg. Company, with a capitalization of $25,000.

The Cleveland Electric Illuminating Company has purchased additional land for a site for a large power plant and may commence its erection next spring, the time of carrying out its plans depending to a large extent on the financial outlook.

The Cleveland branch of the National Metal Trades Association will hold a fall meeting and noonday luncheon at the Gillsy Hotel October 29. The members will talk over business conditions and other matters.

The Cleveland office and salesrooms of Manning, Maxwell & Moore will be moved November 1 from their present location at Ontario street and St. Clair avenue to 1292 Ontario street. The new quarters will give the company about three times as much display room as it has at present.

## Philadelphia Machinery Market.

PHILADELPHIA, PA., October 27, 1908.

Last week's business was comparatively small, and little improvement is anticipated the current week. Prospective buyers are generally disposed to withhold orders until after the election. Without doubt, quite a number of orders are thus being held up, and should the election be considered favorable a good portion of these will be placed in the near future. With the present condition of stocks in dealers' and manufacturers' warerooms, however, it will take a great deal more business than is now in sight to have any material bearing on the output of plants. Still even a small revival in buying will no doubt set things moving in the right direction. Once fairly started, the trade believes that the machine tool business will continue until at least something like normal conditions are attained. It must be remembered that a real start cannot be made until many of the large industrial plants, which have not been averaging this year much over 50 per cent. of their normal capacity, are again actively engaged. While even now some of these plants are occasional buyers for extension in a minor way, as well as for replacement, as there is always some tool or other which reaches its limit of usefulness, even in dull times, buying in quantity can only be expected when plants are busy and the demand from other sources is sufficient to cause the growth of new enterprises and extensions of those already established.

Sales during the week have been confined in great part to single tool propositions, largely those of a special nature. Inquiries also have been few. Sellers are not forcing business, but at the same time anything that looks like a probable order is given careful attention. Encouragement is taken in the more active conditions of the railroads, particularly in the continued reduction in the number of idle freight cars and the reported increased activity of car repair shops. Western roads have placed further orders for motive power and rolling stock, but in the East the same conservative policy on the part of the railroads is being maintained.

Manufacturers report orders rather spotty, covering a wide variety of equipment. Those manufacturing the smaller tools, as well as those making special equipment, report the better volume of business. The heavy tool builders receive occasional orders, but the demand is quite irregular. In standard tools the makers, owing to large stocks on their floors, will be able to take a considerable volume of business before any increase in actual production will be noted.

A fair volume of business has been transacted in second-hand machinery and tools. This branch of the trade, however, feels the same depressing effects as the general trade, but probably not quite so extensively, as many buyers, who, under ordinary circumstances would purchase new tools, turn to the second-hand market owing to the reduced cost of such equipment. Sales recently cover a wide variety of tools, largely of the medium and smaller sizes, the prevailing sales being in the nature of single tools.

Quite a fair sprinkling of inquiries has been before the trade for both new and second-hand power equipment. The business closed, however, has not been large, although the trade is more encouraged with the outlook for business.

Activity in the foundry trade is not very pronounced. An occasional good order both for gray iron and steel castings is reported, but the bulk of the business placed is for small spot lots to cover immediate needs of customers. Foundries are about able to hold former gains in produc-

tion, although few are running to anything like normal capacity, the majority averaging from 40 to 60 per cent. only.

The Cornell Economizer Company and David Townsend, consulting and mechanical engineer, announce the removal of their offices from the Witherspoon Building to 55 De Long Building, southeast corner of Thirteenth and Chestnut streets, Philadelphia, on November 1.

The United States Mint, in this city, is asking proposals for the construction of a steel and concrete coal bunker, according to plans of the Supervising Architect of Treasury Department. The estimated cost is $25,000. Plans and specifications may be seen at the office of the Superintendent, Seventeenth and Spring Garden streets.

The Racquet Club Garage, 1602 Chancellor street, Philadelphia, is asking for estimates for the installation of a 4000-lb. freight elevator, a complete heating system and a second-hand registering gasoline pump. Particulars may be obtained from G. D. Smith, manager.

Ballinger & Perrot, architects and engineers, are taking bids for the erection of an addition to a manufacturing building for the George P. Pilling & Son Company, Twenty-third and Arch streets, Philadelphia, manufacturer of surgical instruments. The addition, which is to be built at 110 North Twenty-third street, measures 62 x 65 ft., on the ground plan, and is to be five stories.

Proposals will be opened November 3 for a quantity of supplies required by the Philadelphia Navy Yard, including under Schedule 464, a grinding machine; Schedule 499, wrought iron pipe; Schedule 503, copper pipe and brass valves; Schedule 507, magnesia pipe covering. Specifications and proposals may be obtained from the Navy Pay Office, this city, or from the Bureau of Supplies and Accounts, Washington, D. C.

Work on at least a part of the proposed new buildings of the Curtis Publishing Company, which when complete will take in the block bounded by Sixth, Seventh, Sansom and Walnut streets, will, it is now understood, be started early in December. The portion to be erected measures 240 ft. on Walnut street, by 237 ft. on Sixth street, with an irregular depth. The power plant is to be located at what is now known as 616 to 620 Sansom street. The plans and specifications are shortly expected to come out for estimate. The buildings and their equipment will be of the most modern type, with every facility for the conduct of the company's business.

## New England Machinery Market.

BOSTON, MASS., October 27, 1908.

Scattering sales of machinery have been made in the last few days, but the market is waiting another week for the election to become a past influence. There are many inquiries for machinery, the feeling being strong that it will be desirable to place orders soon in anticipation of first-rate business. But in most cases orders are not yet placed. It is practically certain that the railroads will make very large purchases of equipment of all kinds unless the unexpected happens in politics. It is said that plans for the expenditure of several hundreds of millions of dollars are contemplated by the great companies, and it is believed that a large amount of this money will figure in contracts before the first of the year. It is certain that the railroads are without stocks of supplies, and that much machinery is needed for their repair shops. It was common talk at the convention of the machine tool builders last week that a large market is promised from this quarter, which should serve to accelerate business sharply. The same condition exists with the electric railroads everywhere, and they, too, should be in the market on a large scale before a great while.

An increasing number of machine tool builders report that business is improving, with more orders booked, some of them from unexpected quarters. This improvement is still slight, and does not apply so much to the heavy as to the lighter classes of machinery. There is a feeling of greater cheerfulness, one reason for which is the influence of the New York convention, where the interchange of views of the situation had excellent results. There was a practical unanimity of opinion that prices should remain unchanged, though a few manufacturers believe that an advance should be made later, but the large majority of the members present expressing themselves in the groups representing the several branches of the trade, believe that the lists are about as they should be and will not require a change, at any rate for some time to come, with the exception of certain accessories which have been sold too low as compared with prices as a whole.

Some improvement is noted in the drop forging business in its relations to manufacturing outside of the automobile trade. This latter side of the business is most prosperous, the drop forging establishments which specialize on automobile work being very busy. Such an instance is that of the Wyman & Gordon Company, Worcester, whose works are running full, though not at quite the same speed as during the recent prosperous period. The demand for automobile forgings is just as good as ever, the difference coming in the other branches of product, including forgings for the machine tool industry.

The Henry G. Thompson & Son Company, New Haven, Conn., has brought out a new power hack saw machine which contains a number of new features, including a quick return motion of the saw.

A dispatch from Bangor, Maine, states that the Pintsch Compressed Gas Company is to establish a large plant for the manufacture of its products at Brewer to supply the railroads of that section. A pipe line will be run to the railroad yards at Bangor.

I. S. Spencer's Sons, Inc., Guilford, Conn., manufacturers of scales, general hardware and gray iron castings, contemplate erecting an addition to their plant, which will give 2000 sq. ft. of new floor space. The company states that it will probably install a new plating dynamo to care for an increased equipment and a new circular saw table. This company has been able to run practically full time for the last year, and in the face of increasing demand for its products must provide new manufacturing facilities.

H. G. Barr, Worcester, Mass., manufacturer of drills, has moved his business to the factory at 21 Hermon street, the change being made necessary by the occupation of the whole of the building formerly occupied for the purposes of another manufacturing concern.

The store of Hill, Clarke & Co., Inc., Boston, was wet down on the night of October 23, entailing the usual serious loss in such cases. Prompt action on the part of employees reduced the damage to the large stock of machine tools on the floor, but there is always the element of unknown damage to hidden parts, which, of course, cannot be stated in dollars at this time. This is the third loss to stocks of machine tools in Boston within a year, the Chandler & Farquhar Company and the Niles-Bement-Pond Company being the previous sufferers. The adjustment of insurance causes complication where losses to machinery are confined to water, there being no practical way of getting at exact figures, leaving the matter one of estimate. During the unavoidable delay of insurance adjustment machinery cannot be moved from the scene of the fire, which in itself entails inconvenience and possible loss at a time when tools are being sold from stock. In the case of the fire of Hill, Clarke & Co. orders received cannot be filled from the store for this reason.

## Government Purchases.

WASHINGTON, D. C., October 27, 1908.

The Isthmian Canal Commission will soon ask bids for two electric air compressors.

The Isthmian Canal Commission will receive bids until November 16, Circular No. 475, for three rapid unloading cranes.

The Bureau of Yards and Docks, Navy Department, Washington, will receive bids until November 21 for installing pumping machinery, water mains, &c., at the Pensacola Navy Yard.

The following bids were opened October 20 for machinery for the navy yards:

Class 11.—One straight side single crank power trimming press—Bidder 23, E. W. Bliss Company, Brooklyn, N. Y., $1850; 71, Ferracute Machine Company, Bridgeton, N. J., $900; 73, Frevert Machinery Company, New York, $1432; 89, Henshaw, Bulkley & Co., San Francisco, Cal., $1628 and $1656; 93, Harron, Ricard & McCone, San Francisco, Cal., $1263 and $1093; 146, Pacific Tool & Supply Company, San Francisco, Cal., $1188; 187, Toledo Machine & Tool Company, Toledo, Ohio, $1265 and $1095; 217, Eccles & Smith Company, San Francisco, Cal., $1050.

Class 13.—One belt driven floor grinder and one motor driven floor grinder—Bidder 89, Henshaw, Bulkley & Co., San Francisco, Cal., $560; 93, Harron, Ricard & McCone, San Francisco, Cal., $440; 146, Pacific Tool & Supply Company, San Francisco, Cal., $525.14; 155, Ransom Mfg. Company, Oshkosh, Wis., $144.90.

Class 14.—One upright hammer—Bidder 89, Henshaw, Bulkley & Co., San Francisco, Cal., $930 and $890; 93, Harron, Ricard & McCone, San Francisco, Cal., $906 and $838; 141, Niles-Bement-Pond Company, New York, $797; 146, Pacific Tool & Supply Company, San Francisco, Cal., $898; 217, Eccles & Smith Company, San Francisco, Cal., $660.

Class 132.—One duplex fire pump—Bidder 28, Blake & Knowles Steam Pump Company, New York, $490 and $540; 74, Fairbanks Company, New York, $475; 134, Manning, Maxwell & Moore, New York, $500; 208, Warren Steam Pump Company, New York, $163.

The following bids were opened October 19, Circular No. 470, for a complete rock crushing plant for the Isthmian Canal Commission:

Item 1.—Complete rock crushing plant—Bidder 1, Charles L. Inslee, New York, $71,515; 2, Allis-Chalmers Company, Milwaukee, Wis., $76,220.80; 3, Motley, Green & Co., New York, $69,616.38.

Bids were opened at the office of the Isthmian Canal Commission, Washington, D. C., October 16, Circular No. 469, for two clam shell dredge machines with boilers, as follows:

Item 1.—Two hoisting engines; 2, two boilers, stacks, breechings and accessories; 4, two derricks; 5, three clam-shell buckets; 7, one service pump.

Atlantic Equipment Company, New York, item 1, for one engine only, $8120, for two engines, $13,800; 2, $10,450; 4, $7232; 5, $3441; 7, $280; total, $43,599, complete on two engines.

Dobbie Foundry & Machine Company, New York, 4, $5921.60; 5, $2995.90.

G. & W. Mfg. Company, New York, item 1, $8396; 2, $9300; 4, $4400; 5, $2640; 7, $185; total, part, $25,682.

Harlan & Hollingsworth Corporation, Wilmington, Del., item 2, $8241.

Hayward Company, New York, item 4, $7800; 5, $3360; cost for spare parts under item 5, $283.50.

Manning, Maxwell & Moore, New York, item 2, $7754; 4, $7800; 5, $3360; for spare parts under item 4, $326; for spare parts under item 5, $283.50.

Maryland Steel Company, Sparrows Point, Md., item 2, $8200.

Moran Company, Seattle, Wash., item 1, $8150; 2, $12,067; 4, $4200; 5, $2220; 7, $200; total, $29,266.

American Hoist & Derrick Company, St. Paul, Minn., item 1, $6322, including two slewing engines; 2, $12,052; 4, $5134; 5, $3399; 7, $107; total, $31,574.

Lenher Engineering Company, New York, item 1, $8650; 2, $10,500; 4, $7800; 5, $3360; 7, $200; total, $35,685; spare parts under item 4, $326; spare parts under item 5, $283.50.

Pusey & Jones Company, Wilmington, Del., item 2, $8435.

The following bids were opened on September 30 by the Light House Inspector, Tompkinsville, N. Y., for an electric plant on light vessel No. 67:

F. D. Smith, New York, $3100, accepted, $2944 and $3230; Joseph Barre & Co., New York, $3150. Eastern Electrical Company, New Bedford, Mass., $3232. Westinghouse Electric & Mfg. Company, New York, $3250. Griscom-Spencer Company, New York, $3661 and $3867. James Reilly Sons Company, New York, $3800. Peters & Peters, New York, $4000.

Bids for furnishing two kerosene oil engines with air compressor for the fog signal at the Grand Pointe au Sable, Mich, light station were opened on October 8 by the light house engineer, Milwaukee, Wis., as follows:

Fairbanks, Morse & Co., Chicago, Ill., $3030, accepted. August Mietz, New York, $3800.

The following bids were opened on October 21 by the chief signal officer of the army for furnishing electrical supplies as follows:

Crocker-Wheeler Company, Baltimore, Md., item 6, two motor generators, $145. Holtzer-Cabit Electric Company, Brookline, Mass., item 6, $111.32. General Electric Company, Schenectady, N. Y., item 6, $222.50.

Under bids opened September 22 for machinery for the navy yards the Long & Alstatter Company, Hamilton, Ohio, has been awarded class 1, one double punch and shear, $4700.

The following awards have been made for supplies for the navy yards, bids for which were opened October 13:

Hallidie Machinery Company, Seattle, Wash., class 11, one engraving machine, $1050.

Springfield Machine Tool Company, Springfield, Ohio, class 12, one motor driven lathe, $975.

National Electric Tool & Supply Company, Washington, D. C., class 176, four electrically driven ventilating blowers and two sets of spare parts, $650.

Under bids opened October 12, Circular No. 468, for machinery for the Isthmian Canal Commission, the Independent Pneumatic Tool Company, Chicago, Ill., has been awarded class 8, six riveting hammers and 18 chipping hammers, $473.40, and class 9, 15 nonreversible air drills and two reversible air drills, $713.

## Trade Publications.

**Tool Steels.**—Halcomb Steel Company, Syracuse, N. Y. Booklet No. 3. Devoted to the company's various grades of tool steel, giving colored facsimiles of labels which are attached to eight grades, and in each case states the purpose for which they are adapted, the tools for which they are intended to be used, and the heats at which they are to be forged and hardened. Tables of temperatures for heating, hardening and tempering, as well as correct colors to which tools should be drawn in order to derive the best results are included.

**Bending Tools.**—Wallace Supply Company, 26 Cortlandt street, New York City. Catalogue. Contains illustrations and brief descriptions of angle bending tools, automatic rail bender and straightener, ring benders, eye benders, conduit elbow former, and pipe bending machines. Illustrations of work done on the machines, and specifications and prices of the Benson steel spring lock coupling are included.

**Power Hack Saws.**—Racine Gas Engine Company, Racine, Wis. Circular. Refers to the Racine improved automatic high speed power hack saw which was described and illustrated in *The Iron Age* July 2, 1908. This machine is claimed to cut off 6-in. round steel bar in 45 minutes with a common hack saw blade 0.032 in. thick.

**Bolt Cutters.**—Landis Machine Company, Waynesboro, Pa. Catalogue. Size, 6 x 9¼ in.; pages, 40. Illustrates and describes the Landis, 1, 1¼, 1½, and 2 in. single head bolt cutters, 1, 1¼, 1½ and 2 in. double head bolt cutters, and 1, 1½ and 2 in. triple bolt cutters, Landis 1½-in. single stay bolt cutters, 1½-in. double stay bolt cutters, 1½-in. double-head motor-driven bolt cutters, and 2-in. single motor-driven bolt cutters. The Landis all steel die head used in connection with the machines mentioned above was described in *The Iron Age* October 1, 1908. Pipe and nipple threading machines are also shown.

**Fuel Economy and Smoke Prevention.**—Furnace Economy Company, 208 Union Trust Building, Baltimore, Md. Pamphlet. Deals with the company's divided draft device and pre-heated air system which is offered as a means to secure fuel economy and smoke prevention at comparatively small cost and quick installation.

**Coal Tipples, Washers, Screens and Conveying Machinery.**—Jeffrey Mfg. Company, Columbus, Ohio. Bulletins and folders. Bulletin No. 22 shows various installations of Jeffrey coal tipples and shaking screens, and gives line drawings showing model arrangements of a combined coal tipple and washer, a 400-ton washing plant, a river tipple to load barges, a three-track tipple and its equipment, a three-track slope tipple, with empty car haul, &c. Chutes, weigh baskets, rotary tipple dump, the 26-B Shortwall coal cutter, crab locomotive, and A-5 electric rotary drill are also illustrated. Bulletin No. 27 illustrates installations of Jeffrey coal washing equipments of various types for different grades of coal, and also shows swing hammer pulverizers, and steel cars and larries. Booklet No. 57 D illustrates a few Jeffrey appliances for handling logs, lumber, refuse, saw dust, shavings, pulp wood, chips, boxes, barrels, &c. Folder 67 C pertains to Jeffrey Century rubber belt conveyors for handling bags, chips, coal, mill tailings, crushed stone, clay, mail bags, &c.

**Air Compressors.**—National Brake & Electric Company, Milwaukee, Wis. Pamphlet. Contains illustrations of direct and alternating current portable and stationary types of air compressors, and a reprint of an editorial from the *Street Railway Journal*, entitled, "Compressed Air in Railway Work."

**Traction Engines.**—Abenaque Machine Works, Westminster Station, Vt. Catalogue. Descriptive of the Abenaque gasoline traction engines, made in sizes of from 2 to 25 hp. of several different types, and adapted to many different applications. Several portable gas and gasoline engine outfits are also shown.

**Planers.**—Cincinnati Planer Company, Cincinnati, Ohio. Catalogue No. 10. Size, 6 x 9 in.; pages, 56. Contains general descriptions and illustrations of Cincinnati planers, including the 22, 24, 26, 28, 30, 33, 36, 42, 48, 56, 62, 72, and 84 in. standard planers the 30 and 36 in. extra heavy planers, 37 and 42 in. heavy forge planers, 24 x 34 in., 30 x 36 in., 36 x 48 in., 42 x 56 in., and 48 x 60 in. widened planers, 24-in. variable speed motor-driven planer, 37-in. variable speed belt-driven planer, 42-in. variable speed motor-driven forge planer, and 56 x 72 in. plain motor-driven planer. The countershaft, ring-oiling hangers, self-oiling pulleys, planer chuck, improved planer centers, the Whalen patent planer tool and other planer tools, and the improved leveling block are also dealt with. Information on the erection and care of Cincinnati planers is included.

**Spark Coils.**—Western Electric Company, Chicago, Ill. Bulletin No. 6476. Pertains to spark coils for automobiles and motor boats of the dashboard type. The synchronous ignition system is explained, and data on electric ignition of internal combustion engines with special reference to the requirements of spark coils is included.

**Motor Drives and Switchboard Panels.**—Fort Wayne Electric Works, Fort Wayne, Ind. Bulletins. No. 1111 is devoted to electric motor drives, as applied to machine tools. Illustrates the company's various types of direct and alternating current motors, and shows these in connection with machine tools, such as boring mills, planers, drills, presses, lathes, shapers, pumps, band saws, &c. Bulletin No. 1110 refers to standard multiphase switchboard panels for use on two or three-phase systems of either 1150 or 2300 volts, and designed for generators having capacities from 10 to 300 kw., 1150 volts, and 20 to 600 kw., 2300 volts.

**Stokers.**—Detroit Stoker and Foundry Company, Detroit, Mich. Hanger and catalogue. The hanger is 12 x 16 in., and shows installations in manufacturing plants of the Detroit Automatic stokers of the reciprocating feed and worm conveyor feed types. Line drawings show the methods of applying these stokers to various types of boilers. The catalogue is 6 x 9 in., contains 48 pages, and further shows installations of the stokers and their connection with different boilers. The accessibility and parts of the stokers are dealt with, and tables giving factors of evaporation, standard specifications of horizontal tubular boilers, efficiencies, heating surfaces of horizontal tubular boilers, &c., are included.

**Gas and Gasoline Engines.**—Jacobson Machine Mfg. Company, Warren, Pa. Bulletin K. Descriptive of the Jacobson gas and gasoline engines for electric lighting service, showing various types of electric light plants, including portable and semi-portable types. For this class of work, covering the electric lighting field up to 600 lamps capacity, the engines are built in three types, the throttling, in sizes from 2½ to 25 hp.; the automatic, in sizes from 8 to 30 hp., and the tandem, in sizes above 40 hp.

# HARDWARE

THERE is a growing tendency on the part of cities and towns to cultivate a local spirit and impress on the outlying territory their presence and attractions, with an ultimate, if not the immediate object of promoting trade relations. This is usually done by a united effort on the part of the people of the towns in some enterprise that is taken hold of loyally by all classes, and especially by the business men, as, for example, the celebration of a home week, the observance of some anniversary, the holding of an autumn festival, or some similar enterprise that may appeal to the people. Such events properly worked up, as the preparations are duly made and invitations extended, and celebrated by industrial parades, the presenting of special attractions in the stores, the cultivation of an enthusiastic local spirit, have usually proved decidedly advantageous. It is, indeed, something to have the people of the town unite in such efforts. The coming together and working together in the forming and carrying out of such plans is in itself a benefit. The business transacted as the immediate result will not probably be of great value, but is worth something, as it has strengthened the relations with existing customers and probably laid the foundations for larger future trade. The chief benefit, however, is in the emphasis that is laid on the town as a place for trade. The attention of the farmers has been attracted to it. It has more prominence than it before possessed and is more likely to secure business than rival towns in the vicinity which make no such appeal for patronage. As the result of such efforts there will thus naturally be in the town a new and more aggressive spirit, while at the same time it will stand better in the surrounding country. Both of these influences should be helpful in a business way.

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An important event in the transportation world is the fact that the new uniform bill of lading, as recommended by the Interstate Commerce Commission, becomes effective for general use November 1 on all the roads covered by the official classification. It will come into use on that date wherever the blank forms are furnished by the railroad, but it has been decided that until January 1, 1909, shippers may continue to use their old forms where they have a supply on hand. The Western roads have fallen into line in the adoption of the new form. At a meeting of the Executive Committee of the Western Classification, held in Chicago October 23, it was decided that all the Western roads will adopt the new document as soon as legal formalities can be complied with. It will be necessary to file an amendment to the forthcoming issue of the Western Classification, as it contains a rule regarding loss or damage which is in conflict with the new bill of lading. In the ordinary course this amendment must be filed 30 days with the Interstate Commerce Commission before it becomes effective.

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The Western roads had practically decided not to adopt the new form, for the present, and the current issue of the Western Classification contains a rule in which the carriers accepted their common law and statutory liability for loss or damage. The bankers, however, have hastened action to adopt the Uniform Bill of Lading. A year ago they offered strenuous opposition to the new form at the hearing before the Interstate Commerce Commission, but they have now decided that it will be to their interest in advancing funds against bills of lading to have one form adopted by all the railroads. The New York banks, it is understood, have intimated to the carriers that they will refuse to discount drafts against bills of lading, excepting where the commission's form is used. Everything therefore points to a general use of the new bill of lading, which should certainly be given a fair trial. Experience will doubtless suggest modifications which can be made when the reason for them is developed.

## Condition of Trade.

There have been few events of importance in the Hardware field since our last review of the market. The general features of the situation are substantially unchanged. The demand is, all things considered, of fair volume, representing a hand to mouth policy on the part of the trade in the matter of buying. Manufacturers are in most cases able to ship orders promptly. With few important reductions in price there are a good many minor revisions mostly in the direction of lower prices. Freight allowances are in some cases more freely made. The trade recognizes that there is a possibility of the development of cheaper raw material in case the spirit of competition should have free play, or costs be reduced owing to the reduction of wages. What will be the effect of tariff agitation or revision if it is seriously undertaken is also recognized as introducing an element of uncertainty. At the present time the election is attracting some of the attention which would otherwise be given to business, and there is something of the traditional awaiting the result of the campaign before striking out boldly in new or enlarged enterprises. Meanwhile things in the country generally and in Hardware circles especially are constantly getting into better shape. High priced stocks are pretty well worked off. Old accounts are to a good extent cleared up. Expenses have very generally been reduced. Good crops commanding excellent prices are beginning to move to market. Capital is abundant and awaiting opportunity for profitable investment. Apart from the railroads and great enterprises there is a fair degree of activity, and in this way large quantities of goods are going into consumption. Thus there continues to be a strong and healthful approach to normal conditions which justifies a vigorous though conservative prosecution of business, without reason to apprehend any serious disturbance or interruption. Compared with the state of things a year ago we are certainly pretty well out of the woods.

### Chicago.

A natural tendency of the times which is perhaps especially emphasized just now by the impending results of the coming election is to delay the placing of orders for goods to be made up for the spring trade. Manufacturers are naturally anxious to forecast future demand as far as possible, and to that end it has been the custom to make contracts with distributors covering the demands of the forward season far enough in advance to enable them to gauge their purchases of material and to afford ample time in which to manufacture the goods needed. The caution inspired among buyers by the financial and industrial crisis of last fall led to the discontinuance of forward buying, in so far as was possible, as well as unusual delay in providing for indispensable needs. The same conditions are this year operating against early buying, but, if started a little later than usual, it is hoped that when it does begin it will be upon

a more liberal scale. New prices of steel goods, including Forks, Hoes, Rakes, Shovels, &c., for the coming season are now in the hands of the trade. Considerable readjustment has been noted in these schedules, but the general average of the entire list remains about the same. From inquiries put out by the jobbing interests concerning prices on other lines of spring goods, it is evident that manufacturers are disposed to adhere pretty closely to last year's prices, and though there are a few exceptions to this rule, they are generally in the direction of slightly increased values. Not much is expected to develop before the first fortnight in November that will furnish an indication of what may be expected in trade movements for the remainder of the year. Just now there seems to be a general reluctance to extend contract obligations beyond what is involved in meeting the present demands of consumption, but there is not lacking a spirit of optimism which looks forward with a strong degree of hopefulness to the beginning of a steady forward movement, as soon as the distracting outside issues have been settled.

## NOTES ON PRICES.

**Wire Nails.**—It is believed that the tonnage of Wire Nails shipped during October will be larger than during the preceding month, showing a healthy increase in demand, notwithstanding somewhat of a decrease in the volume of business during the past week. The restoration of normal conditions is anticipated in the near future. Specifications against contracts are being received by the mills quite freely, and a disposition is shown on the part of some buyers to order in more liberal quantities. Prices continue to be well if not in all cases inflexibly maintained. Quotations are as follows f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

| | |
|---|---|
| Carloads, to jobbers | $1.95 |
| Carload lots to retail merchants | 2.00 |
| Less than carloads to retail merchants | 2.10 |

*New York.*—Demand in the local market has been light during the week, but it is anticipated that it will be better within a week or so. Nails are held on the basis of $2.30 per keg in small lots at store, but some sellers are occasionally inclined to shade this figure.

*Chicago.*—All things considered, the demand for Wire Nails is holding up well. New business has, in the past week, been restricted somewhat, but it is attributed more to pre-election conservatism than to any other cause. Conditions have not otherwise undergone any material change, and a compensating acceleration is looked for in November. Specifications are coming out at a fairly satisfactory rate and prices are reported to be well maintained. Quotations are as follows: $2.13 in car lots to jobbers, and $2.18 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

*Pittsburgh.*—New orders being placed for Wire Nails continue quite heavy, and in the first half of this month actual orders entered by the leading mills were much heavier than anticipated, one large interest reporting that its actual orders entered in this period were larger than its capacity for production. Specifications against contracts are also coming in very freely, and shipments of Wire Nails by the mills in October will show an increase over September. While the large trade is still inclined to place orders only in small lots for actual needs, yet in the past week or two there has been more of a tendency to increase the size of orders, and it is believed before long the trade will be anticipating its requirements to some extent. We are advised that prices are being absolutely maintained by the mills. Quotations for base sizes are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

| | |
|---|---|
| Carloads, to jobbers | $1.95 |
| Carload lots to retail merchants | 2.00 |

Galvanized Nails are quoted at $1 over the price of the regular Nails.

**Cut Nails.**—At a meeting of the Eastern Cut Nail Association held last week existing prices were reaffirmed. The manufacturers reported some improvement in the volume of business and that buyers were ordering in more liberal quantities. It is anticipated that the business for the present month will show an increase over September. The general price is $1.80, base, per keg, f.o.b. Pittsburgh, but this price continues to be shaded to the large trade. In the Western market Iron Cut Nails are held at an advance of 10 cents per keg over Steel Cut Nails, but this differential is not observed in the East.

*New York.*—The local market continues quiet and without any particularly interesting features. Nails are held on the basis of $2.15 per keg for small lots at store, but this price is not strictly adhered to by all sellers.

*Chicago.*—The market exhibits no signs of renewed animation. New orders are light, covering only immediate needs. Specifications against contracts are coming out slowly in accordance with the slow depletion of stocks. Price conditions are unchanged, some concessions from established schedules being obtainable on good orders. We quote Chicago prices as follows: In car lots to jobbers, Iron Cut Nails, $2.08; Steel Cut Nails, $1.98.

*Pittsburgh.*—New orders being placed with the mills are showing a slight increase, but in most cases buyers are still confining their purchases to small lots for actual needs. Specifications are coming in fairly well, and shipments of Cut Nails by the mills this month will probably be a little heavier than in September. Prices are firm, and, we are advised, are being quite well maintained. The general market is $1.80, base, per keg, f.o.b. Pittsburgh, but $1.75 is made, on carloads and over. In the Western market Iron Cut Nails are held at an advance of 10 cents per keg over Steel Cut Nails, but this differential is not observed in the East.

**Barb Wire.**—The month's business has not been up to the expectations of manufacturers, but a more liberal movement is looked for next month. Regular quotations are reported as being maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

| | Painted. | Gal. |
|---|---|---|
| Jobbers, carload lots | $2.10 | $2.40 |
| Retailers, carload lots | 2.15 | 2.45 |
| Retailers, less than carload lots | 2.25 | 2.55 |

*Chicago.*—The demand is not up to expectations and the volume of new business coming out is comparatively light. A stronger movement is anticipated by the mills in the early weeks of November, but the season's business will probably fall short of earlier estimates. Prices, it is stated, are being regularly held. Quotations are as follows: Jobbers, Chicago, car lots, Painted, $2.28; Galvanized, $2.58; to retailers, car lots, Painted, $2.33; Galvanized, $2.63; retailers, less than car lots, Painted, $2.45; Galvanized, $2.75; Staples, bright, in car lots, $2.25; Galvanized, $2.55; car lots, to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

*Pittsburgh.*—The volume of new orders being placed in Barb Wire is showing an increase, and it is believed that when the election is out of the way the trade will be still more liberal. There is no doubt but that a good deal of business is being held back pending the result of the election. It is stated that regular prices are being maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

| | Painted. | Gal. |
|---|---|---|
| Jobbers, carload lots | $2.10 | $2.40 |
| Retailers, carload lots | 2.15 | 2.45 |
| Retailers, less than carload lots | 2.25 | 2.55 |

**Plain Wire.**—Orders placed by Fence manufacturers, while fairly heavy, are confined to present requirements. The large trade is showing more liberality in placing orders. Regular prices are reported as being well maintained. Quotations per 100 lb. to jobbers in carload lots are as follows, on a basis of $1.80 for Plain and $2.10 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the price to retailers being 5 cents additional:

| Nos. | 6 to 9 | 10 | 11 | 12&12½ | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|
| Annealed | $1.80 | 1.85 | 1.90 | 1.95 | 2.05 | 2.15 | 2.25 | 2.35 |
| Galvanized | 2.10 | 2.15 | 2.20 | 2.25 | 2.35 | 2.45 | 2.85 | 2.95 |

*Chicago.*—Conservatism in providing for anticipated wants is still a ruling factor in general buying. There is, however, a reasonably good demand for Fencing, as a result of which Fence makers are ordering in a fairly liberal way for prompt shipment. Prices are being well maintained by the leading interests among mills and jobbers. We quote as follows: Car lots to jobbers, $1.98, f.o.b. Chicago, and to retailers, $2.05.

*Pittsburgh.*—We are advised that new demand is quite heavy, the Fence manufacturers placing fairly heavy orders, but as a rule are confining their actual purchases to current needs. However, there is more disposition on the part of the large trade to anticipate future requirements than for some time. As soon as the election is over a large increase in the volume of new business is confidently expected. The mills advise us that regular prices are being maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

| | Painted. | Gal. |
|---|---|---|
| Jobbers, carload lots | $2.10 | $2.40 |
| Retailers, carload lots | 2.15 | 2.45 |
| Retailers, less than carload lots | 2.25 | 2.55 |

**Poultry Netting.**—Next season's prices on Poultry Netting have been announced this week by leading manufacturers, who are apparently acting in harmony. A decline of about 7½ per cent. is shown from last year's prices. Discounts of 80 and 10 to 80, 10 and 5 per cent. on Netting galvanized after weaving may be named as fairly representing the new level of the market to retail buyers. On Netting galvanized before weaving a further concession is obtainable.

**Jack and Safety Chain.**—Firmness is now shown by quotations on Jack and Safety Chain and there is some improvement in demand. The market may be represented in a general way by discounts on Iron Jack Chain of 60, 10 and 5 per cent., on Brass Jack Chain of 65 per cent., and on Safety Chain, 75 per cent.

**Hardware Grade Wire Cloth.**—Coincident with the publication of next season's prices on Galvanized Poultry Netting, manufacturers are announcing an advance of about 50 cents per 100 sq. ft. on Hardware Grade Wire Cloth. Prices on this line have been very low for a year or more, and, it is said, have shown little profit to manufacturers, some of whom have discontinued production. According to the new schedule, the price to the retail trade on Nos. 2, 2½ and 3 mesh Cloth would be about $3 per 100 sq. ft., but jobbers have purchased liberally at the low prices which have been prevailing and for this reason their quotations may not at once reflect the full amount of the manufacturers' advance.

**Bright Wire Goods.**—A stiffening tendency has at length developed in Bright Wire Goods as quoted to the larger trade. The market to close buyers is from 5 to 10 per cent. higher.

**Coil Chain.**—It is reported that manufacturers of Chain took no action for importance at their meeting of last week. Prices on both Proof Coil Chain and German Pattern Chain are not as firm as they might be.

**Lawn Mowers.**—With the advance of the season in which Lawn Mowers are purchased by the larger trade it develops that the prices first announced on machines of the lowest grade have not been maintained. Some manufacturers have reduced their quotations on the cheapest machines, and have also discontinued the effort to get the differential for larger sizes in these lines.

**Copper Wire.**—Bare Copper Wire for electrical purposes was advanced ¼c. per pound Monday, October 26, from 14¾c. to 15c., base, in carload lots, mill shipment.

**Snow Shovels.**—As reported in our last issue, some manufacturers have been making low quotations on long handled steel Snow Shovels, the figures mentioned applying to the cheapest lines of goods. Somewhat higher prices are asked by concerns who offer a better grade of Shovels and who make a point of the quality of their goods.

**Builders' Hardware.**—Manufacturers of Builders' Hardware and the trade at large unite in reporting that there is a material improvement in this branch of the Hardware business. Increased building activity in many sections is reflected in actual orders as well as in inquiries, and purchases of stock goods are more liberal than for some time. Under the circumstances prices, although still low, are naturally firm.

**Rope.**—There is but little activity in the Cordage market, as buyers continue to hold off purchasing or confine orders to limited quantities. As heretofore, Rope can be bought at various prices, according to quality. The accompanying prices fairly represent the market on good quality Rope. General quotations for Rope 7-16 in. in diameter and larger are as follows: Pure Manila, 9 cents; Pure Sisal, 7 cents; No. 1 Jute, ¼ in. and up, 5¾ to 6 cents; No. 2 Jute, ¼ in. and up, 5¼ to 5½ cents.

**Window Glass.**—At a meeting of Eastern Window Glass Jobbers' Association, held in New York on the 27th inst., no change was made in prices, owing to general conditions and light demand. A meeting of the Western Window Glass Jobbers' Association was scheduled to be held in Chicago on the same day. Large Window Glass jobbers and representatives of hand made factories are urging merchants to stock up on Glass, contending that if the manufacturers' organization becomes a reality, higher prices will prevail. Western and Southern concerns have quoted merchants, from manufacturers' list of January 1, 1901 90 and 25 per cent. discount, on single and 90 and 30 per cent. discount on double, to 90 and 30 on single and 90 and 35 per cent. on double. At an adjourned meeting of manufacturers to hear from the committees that were appointed to visit manufacturers who had not consented to join the manufacturers' association movement, the committees reported that all manufacturers had not yet agreed to come in. When the committees are ready to make a favorable report another meeting of manufacturers will be called. Manufacturers' regular discounts, for hand blown glass, from manuufacturers' list of January 1, 1901, are as follows: For single strength Glass, 90 and 20 per cent.; for double strength Glass, 90 and 25 per cent. Eastern jobbers' quotation from jobbers' list October 1, 1903, for all sizes single and double strength Glass, covering the territory east of Chicago, is 90 and 20 per cent. discount.

**Linseed Oil.**—The Seed market has advanced during the week, but has not resulted in strengthening the Oil market. It is reported that considerable has been sold on the basis of 39 cents for Raw, covering delivery to March. Demand for five-barrel lots has been confined to nearby requirements. Quotations for five-barrel lots are as follows: State and Western Raw, 41 cents per gallon; City Raw, 42 to 43 cents per gallon. Boiled Oil is 1 cent advance on Raw.

**Spirits Turpentine.**—Requirements continue light in this market, and orders are for small lots. Prices have advanced during the week, reflecting improvement in Southern markets. The New York market is represented by the following quotations: Oil Barrels, 40 to 40½ cents; Machine Made Barrels, 40½ to 41 cents per gallon.

## Death of Andrew King.

THE death of Andrew King, an old-time Hardware merchant and manufacturer, took place at his home in Ripley, Ohio, on October 16. Mr. King was born in Boston, Mass., and in the early '60s was identified with houses in New York and Chicago, producing Builders' Hardware. It has been said of him that he was the first or among the first to introduce the selling of Hardware in the Middle West, through the medium of traveling salesmen. For the last 42 years Mr. King has made his headquarters at Ripley, Ohio, conducting a retail Hardware business there, and for some years he was president and general manager of the Ripley Hinge Works, which went out of existence in 1885.

D. H. Hurd has succeeded Frank Cruff in the Hardware business at Lucca, N. D.

## American Agricultural Implements in Peru.

ACTIVE measures are being taken by Eduardo Higginson, consul general of Peru in New York City, to encourage American manufacturers of Agricultural Implements and machinery to cultivate the Peruvian market. He states that there is a large market in that country not only for wheat crop machinery, but also for Tools, &c., to handle barley, corn and other cereals and potatoes. The farmers will welcome suitable appliances for sowing, cultivating and harvesting these crops.

The government of Peru is also desirous of aiding in the agricultural development of the country and announces through Consul General Higginson that it will establish a permanent agricultural exhibition on the grounds of the National School of Agriculture at Lima. American firms are invited to participate by sending exhibits of such goods as they may desire to introduce, with full instruction as to operation and use.

This exhibition will afford our manufacturers an opportunity to place their products before the agricultural people of Peru under the most favorable auspices. The announcement continues as follows:

A Government Commission of Judges will report upon the advantages of the various kinds of machines exhibited, and all exhibitors whose machines are favorably reported upon by the Commission will receive an Official Diploma, copies of which will be sent to exhibitors, and which will be invaluable as an advertisement, as they will bear the government's endorsement and recommendation.

The Peruvian government will pay all shipping expenses from the port of New York to Peru, and duties will be waived on the importation, it being understood, however, that all exhibits that are sent will remain in the hands of the National School of Agriculture at Lima as a permanent exhibit, without any obligation on the part of the government or of the said school to indemnify the makers or exhibitors.

All shipments intended for this exhibition should be sent to Kraemer & Foster, 24 Stone street, New York City, who have been appointed the shipping agents for the Government of Peru for this purpose, and who will take charge of the forwarding of all goods for the exhibition, mailing to each manufacturer a copy of the bill of lading showing the shipment of the goods.

## National Sporting Goods Dealers' Association.

IT has been determined to hold the second meeting of the National Sporting Goods Dealers' Association during the coming February at such place as may be chosen by the Board of Directors elected at the organization meeting which was held a few weeks since in Chicago. It has been thought best to devote the intervening time to the enrollment of new members, deferring the actual work to be undertaken in furtherance of the purposes of the association until after the February gathering.

Among the representative Sporting Goods men who are identified with the association and took an active part in the deliberations at the Chicago meeting are the following:

Charles Antoine, Von Lengerke & Antoine, Chicago; Justus Von Lengerke, Von Lengerke & Detmold, New York; C. J. Schmelzer, Schmelzer Arms Company, Kansas City, Mo.; R. S. Kennedy, Kennedy Bros. Arms Company, St. Paul, Minn.; T. W. Stake, Schoverling, Daly & Gales, New York; Ad. R. Roll, Roll-Crawford-Brendamour Company, Cincinnati, Ohio; R. J. Leacock, R. J. Leacock Sporting Goods Company, St. Louis; G. B. Allen, Rawlings Sporting Goods Company, St. Louis; Charles J. Godfrey, Jr., Charles J. Godfrey Company, New York; H. T. Willenbrink, The Sutcliffe Company, Louisville, Ky.; Fred Schmidt, J. G. Schmidt Sons, Memphis, Tenn.; H. B. Cameron, Walter G. Clark Company, Omaha, Neb.; W. R. Burkhard, W. R. Burkhard Company, St. Paul, Minn.; Charles Stonebraker, E. K. Tryon Company, Philadelphia, Pa.; J. W. Dunham, Dunham-Fulton Arms Company, Oshkosh, Wis., and W. B. Jarvis, W. B. Jarvis Company, Grand Rapids, Mich.

The officers of the association are as follows: Charles Antoine, Chicago, president; T. W. Stake, New York City, vice-president; C. J. Schmelzer, Kansas City, Mo., treasurer; W. B. Jarvis, Grand Rapids, Mich., secretary; directors: Charles Antoine, T. W. Stake, Charles J. Schmelzer, Justus Von Lengerke, R. S. Kennedy, Ad. R. Roll and R. J. Leacock.

## The Memphis Conventions.

THE programme for the fifteenth convention of the American Hardware Manufacturers' Association, which will be held in conjunction with the annual meeting of the National Hardware Association at Memphis, Tenn., November 18, 19 and 20, is about to be distributed. On Tuesday afternoon, the 17th, there will be a meeting of the Executive Committee. On Wednesday forenoon what will be in the nature of an open joint session with the National Hardware Association will be held, the first exclusive manufacturers' session taking place in the afternoon. Two executive sessions will be held on Thursday, and on Friday afternoon there will be another meeting of the Executive Committee. The Thursday morning session will be a notable one, formal addresses being made by A. T. Stebbins, president of the National Retail Hardware Association; by James A. Emery on "Class Legislation and Business," and by B. A. Franklin of Miller & Franklin (Business Economists), Boston, Mass.

The entertainment features provided include a visit to a cotton compressor on Wednesday afternoon, a reception and hop in the evening, a card party and luncheon for the ladies at the Memphis Country Club on Thursday forenoon, a subscription banquet on Thursday evening and a boat ride on Friday afternoon.

The New York-Chicago special train to Memphis, which is under the management of W. H. Bennett, 40 Dearborn street, Chicago, will convey quite a large number of well-known jobbers and manufacturers to the convention. This train will leave New York City on Sunday morning, November 15, about 10.30, over the New York Central Road, arriving in Chicago on Monday morning. The headquarters while in Chicago will be at the Auditorium Annex. The party will leave Chicago at 5.30 p.m. over the Illinois Central Road.

## George H. Sargent's Eightieth Birthday.

GEORGE H. SARGENT, who occupies a distinguished position in the Hardware trade, will doubtless during the next few days be the recipient of many letters of congratulation and kindly wishes in view of the fact that his eightieth birthday occurs October 29. In addition to the distinction which Mr. Sargent enjoys as an eminent manufacturer and merchant and a public spirited citizen, he has a host of friends, through the trade and beyond it, by whom he is held in warm affection and high regard on account of his personal qualities.

THE YALE & TOWNE MFG. COMPANY, 9-15 Murray street, New York, has recently been awarded the contract for the new office building in course of erection on the site of the old Fifth Avenue Hotel at Twenty-third street and Fifth avenue. The doors throughout the building are of hollow steel and the locks will be of the same type as furnished by the company for the campanile tower, 700 ft. high, of the Metropolitan Life Insurance Company. The contract was secured at an increase in price, because of the type of lock, which is referred to as the latest evolution in Hardware. There are no visible means of fastening this lock to the door after it is applied, and there is no cutting or mortising of the edge of the door.

THE KEUFFEL & ESSER COMPANY, New York and Hoboken, N. J., has opened an additional branch house at 252 Notre Dame street, West, Montreal, Canada. A complete stock of Drawing Materials, Mathematical and Surveying Instruments, Measuring Tapes, &c., will be carried and blue printing will be done for the trade. The company has a four-story modern store and office building and the business is under competent management. The other branch houses are in Chicago, St. Louis and San Francisco.

HUBBARD & Co., manufacturers of Shovels, Railroad Tools, &c., have moved their offices from the plant at Sixty-second street and the Allegheny Valley Railroad to Sixty-third and Butler strets, Pittsburgh.

## The New Hardware District in New York City.

RECENT removals in New York City have added increased prominence as a Hardware district to the section east of Broadway and north of Chambers street. Centre street seems to mark the eastern boundary of the district, which, however, shows a tendency to advance northward, both on this thoroughfare and also on Lafayette street, which parallels it one block west.

Centralization of trades is usually characteristic of the larger cities and in New York the sections occupied by the different branches of the Hardware trade have always been quite well defined. The metal, machinery and machine tool, heating, plumbing, supply, electrical trade, &c., are all more or less closely grouped. The Hardware district proper, after the movement from Beekman, Pearl, Platt streets and contiguous territory, has been recognized as running mainly two or three blocks west of Broadway and centering about Chambers street. This quarter may still be regarded as the heart of the trade, but each year sees accessions to the houses making their headquarters on the easterly side of Broadway and further uptown.

Emphasis has been added to this movement during the present year by the removal of the Russell & Erwin Mfg. Company to 94-98 Lafayette street, between White and Walker streets, and later by the removal of P. & F. Corbin and Wiebusch & Hilger to the new Hardware Building, corner of Lafayette and Walker streets. Patterson, Gottfried & Hunter have occupied their new building between Grand and Howard streets, on Lafayette. The Fairbanks Company has for some years been located at the corner of Lafayette and Broome streets. Some of the Builders' Hardware houses also have branches for their contract departments on Fifth avenue, Twenty-sixth and Thirty-eighth streets.

This general section has several desirable features which have recommended it to houses seeking new quarters. In the first place, it is very easy of access, being right on the line of the Subway, which reaches both up and downtown and makes the Grand Central and the downtown railroad stations easy to reach. To go to Brooklyn, the Subway or the Brooklyn or Williamsburg bridges may be used, as well as the new Manhattan Bridge now building. As is, of course, desirable, the district is not far distant from the old and most important Hardware territory west of Broadway, which must still be regarded as the heart of the trade.

## A Novel Method of Purchasing.

A UNIQUE method of placing an original stock order was recently put in practice by the Lenoir Hardware & Furniture Company, Lenoir, N. C. Having decided to put in a stock of Paints, the buyer of the company fixed a date on which he would see all the representatives of Paint houses who were soliciting the order, allowing each 30 minutes' private interview in which to talk his line and quote his prices. It was announced that only one manufacturer's goods would be purchased as the company felt that it could push one line and handle it with greater satisfaction than two or more. Ten different salesmen presented themselves, all of whom were such splendid representatives of their calling that the company would have been glad to do business with them all. One line was at last selected, however, and the salesmen left town in the most friendly spirit after posing for a group photograph.

THE jury of awards of the Jamestown Tercentennial Exposition has just issued to the Simonds Mfg. Company, Fitchburg, Mass., and Chicago, Ill., a certificate awarding that company a gold medal on Simonds Saw Steel. This material is used in the Simonds Saws and Knives.

THE RETAIL DEPARTMENT of C. F. Ballard's business at Washington, Ohio, has been sold to Henry A. Link and will hereafter be conducted under the firm name of Henry A. Link & Co. Mr. Ballard will handle Hardware at wholesale exclusively.

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# JOHN STEEL'S START IN A CITY HARDWARE STORE.

BY LONGBEACH.

WANTED.—Young man familiar with Tools, Shelf Hardware and Cutlery. State salary expected. References required. Apply by letter to the Y. R. NAILOR HARDWARE COMPANY, ——, Pa.

JOHN STEEL, a youth with an ambition to make good in the Hardware business, read this advertisement with keen interest and enthusiasm. It appeared in a daily paper published in a large Pennsylvania city. He had had a little experience in a store in the Ohio town in which he was born, but was anxious to ally himself with a larger establishment covering a wider field, and this seemed to present the opportunity. "I'll write this very day," said John, and he did. A week came and went but no answer. At the end of the second week John announced that he intended writing for the return of his letter of recommendation. "You should have sent a copy and kept the original," said his father. "Of course, another letter could be obtained in this case, but as a rule original papers should be retained." "Common courtesy requires the return of the one I sent," commented John. "That may be," said his father, "but in writing for it, see to it that your letter is courteous."

It was but a day or two after this conversation that a letter came for John from the firm, returning his letter of recommendation, with an apology for the delay, which John willingly granted, as the letter went on to say that he could come up prepared to go to work.

### On the Ground.

A few hours ride in a train brought John to the city and early in the afternoon he stood before the show windows of the Y. R. Nailor Hardware Company, which was located on the main street in a busy suburb of the city. The building was a two-story frame. Painted across the front in large letters were the words: "Builders' and Painters' Supplies, Oils, Varnishes and Stains." The double door divided the two windows, one of which was somewhat larger than the other. Though coming from a country town, the windows, in John's judgment, showed lack of skill in arrangement.

### Makes the Acquaintance of "Y. R."

Entering the store he inquired for Mr. Nailor of a young man with a sandy mustache. "Yes, he is around," he answered. "Come this way." Then calling to a scholarly looking man entering the office, with a young face, but hair and mustache quite white, "Y. R., here's a young man wants to see you." Somewhat startled by this unusual address, John approached and introducing himself, was instantly put at ease by the courtesy of the head of the firm. The details were soon arranged and John was hired for $12 a week, with the promise of a raise if he proved worthy.

Taking him through the store, Mr. Nailor introduced him to the light mustached young man as his son, finally handing him over to a young man whose fancy ran to gay checked trousers of a peculiar cut, who was to show him the stock and the firm's way of taking care of its customers. Introducing himself as also from Ohio, Lewis Canthook, discovering John had no place to stay, told him to come with him when the store closed, that his boarding place was near and he would have no trouble in getting a room. The store being open evenings, Canthook went to supper at 5 o'clock, taking John with him. The landlady located him for $5 a week for room and board.

### The Initiation.

The next day Canthook asked John if he had been initiated. "Initiated," repeated John. "Into what and by whom?" "Oh! Y. R. has a form he will put you through." Wondering what the mysterious initiation could be, John puzzled his brain for some time, finally concluding it must be a catechism on price-lists or a test on names and uses of Hardware articles. Therefore he was a little nervous when told Y. R. wanted to see him at the rear of the store. One of the delivery wagons had pulled up at the rear side door, where the unloading and shipping was done. Mr. Nailor was talking to the driver, who had unloaded a sample trunk. John arrived in time to notice that it was a weighty matter, judging by the struggles the driver, a husky German, was having in getting it off the wagon.

"We would like you to carry that trunk upstairs," said Mr. Nailor to John, as he came up. His heart sank at the prospect of lugging 500 lb., doubting if he could lift even one end. But he answered as cheerfully as he could, on the spur of the moment, "All right, sir," stooping at the same time to grasp the handle, when a hand was laid upon his shoulder and Mr. Nailor said kindly, "Never mind, John, it is the spirit we want, not the muscle in this case."

### His Duties.

He was then told that his duties would be in the store waiting on the trade and keeping the Tools, Shelf Hardware and Cutlery in proper shape. John was given the cost mark and told to see what he could do. The cost mark was evidently the production of Mr. Nailor, who had been a professor of Greek in a preparatory school before entering the Hardware business, as it contained the five vowels, a, e, i, o, u, in numerical value from 1 to 5. The balance, up to nine, being taken at random from the alphabet, with the last letter, z, representing naught.

Commencing at once John took the boxes from the shelves, examining the contents, then cleaning both shelves and boxes thoroughly, wiping the shelves with a damp cloth and the boxes with a dry one, it being the rule of the house that Feather Dusters were for sale only, their use in the store being strictly forbidden.

### "Won't You Wait on Me?"

Busying himself with the shelves John noticed that, in contrast to the leisurely way of shopping to which he was accustomed, every one that came in was in a great hurry, cries of "won't you wait on me" seeming to fall upon deaf ears. This was very annoying to him, and he found he could do either one of two things: be indifferent, like most of his fellow clerks, or do his best to please the customers. He chose the latter plan, determining that if they wanted to be quickly served he would practice along that line. He felt he was on the right track when a customer told him he was quite an improvement over some of the clerks.

"We are very well satisfied," said Mr. Nailor at the end of the day, when John went to the office to report, "with the way you are taking hold of things. This is a busy place and our trouble has been in getting help that can go ahead, see things to do, and then do them."

## A Striking Parade Float.

A FEATURE of the commercial float parade of the Ka-Noo-No Carnival, which is held annually in Syracuse, N. Y., in connection with the New York State Fair, was a float entered by the New Process Raw Hide Company of that city. This display attracted much attention and was awarded first prize in the machinery division as the "best appointed and most symbolic" of the exhibits. The special feature of the display was a globe supported on an upright shaft passing through the center and having a bearing at the top and bottom. The globe proper was about 5 ft. in diameter and was of one-ply raw hide formed in two hemispheres, which were attached to a large gear ring at the center. Inside the globe were 30 incandescent lamps, and as New Process Raw Hide is quite translucent the effect at night was very striking. The pinion was of Raw Hide carried on an upright shaft, with a bearing at the bottom. This pinion was rotated by a chain drive under the wagon from one of the rear wheels, motion being imparted to the globe as the wagon moved.

The Hardware business of the late F. J. Parsons, Thompsonville, Conn., has been taken over by C. P. Chase, W. A. Fletcher and F. A. Stuart, who will continue it under the name of the Thompsonville Hardware Company. The new proprietors are the owners of the Thompsonville Lumber Corporation, and Mr. Chase is the head of the lumber house of C. P. Chase & Co., Springfield, Mass., which conducts one of the largest yards in the city.

# THE PERSONAL ELEMENT IN MEETING MAIL ORDER COMPETITION.

BY RICHMOND.

AFTER all, when you analyze the subject, when you weigh the pros and cons of all that has been said and written upon it, when you study conditions in different localities, the whole matter simmers down to just one person, and that person is *the merchant himself.*

Yes, it is "up to" him!

After he has studied the question carefully—and what merchant worthy the name has not done so in these days—after he has listened to the important word that has been passed in the conventions, after he has read and digested everything that he can find in his trade journals, after he is *sure* that he understands his own local conditions thoroughly, *then he should sit down and study himself.*

### Making Sure of Local Conditions.

Please note after he is *sure* that he understands his own local conditions; not an idle remark by any means! Regrettably there are still merchants who do *not* understand their own local conditions *thoroughly.* Witness the salesman who has been traveling through a given territory for a number of years. How he prompts and advises some of his customers!

"You don't need quite so many of those, and you can use more of this article, while this third item here you ought to double up on; it's a great seller in this territory."

Yes, you've heard similar remarks many times if you have frequented local Hardware stores. The more shame to the merchant!

And give the salesman due credit. He has 10, yes, 50 times as much territory to keep in touch with as has the individual merchant. *But he knows* the territory. He is a student. He is mixing brains with his work, and incidentally he is makig more money for his house and increasing his own income by brain power, not by physical force.

### Study Mail Order Literature.

Now, analyze the literature that the mail order houses send out; not alone the catalogues, but also (and this is of equal if not greater importance) the follow-up circulars and letters that the local merchant's customers are receiving almost daily. Note the personal ring to them. Note the apparent familiarity of the writer with the conditions and needs in a given locality.

Bluff! Yes, largely, but it hews close to the line. Not one writer in a thousand has visited the territory that his literature is covering for the mail order houses. His information may first have been compiled from an encyclopedia or a geography, then rounded out with notes taken from the inquiries received.

### Playing Upon Human Nature.

Some of the letters have been known to go so far as to say that if Jim Smith (of Back Woods Station) would address his letters and inquiries to "Mr. Samuel Howard," the general manager, (?) the latter would be delighted to fill his orders personally.

Bosh!

Jim Smith may possibly be one customer of 200,000, and his purchase is likely to amount to a couple of dollars toward the grand total of twenty or thirty or forty millions which the mail order house will get within the year. Still, the "general manager" will be "delighted to give personal attention to his business!"

It doesn't seem credible, does it? But mind you, these things are happening in every merchant's territory—*yours* is no exception. The characteristics of the various "Jim Smiths" are pretty well understood and strongly played upon. Another example of "brain power" and foresight as applied to a business!

### What Is the Local Merchant Doing?

Does he really know this existing condition in his field? If not, then why?

It is nobody's fault but his own!

It is a comparatively easy matter to get this literature through friends, and while it may not be just as easy, it is nevertheless of infinitely greater importance to "get busy" and counteract it.

By emitting long drawn wails about mail order competition? No!

By telling customers that the mail order house is a robber; by kicking because people lack public spirit and send their money away from home; by howling because the local merchants need that money to pay taxes and keep up the roads? No!

Remember this: No kind of an enterprise was ever put upon its feet by "mud slinging" methods. "Muck raking" has never yet stirred up anything good, and it never will.

Call a man a thief and you are suspected of being one yourself.

### Then How Can the Problem Be Solved?

By simple, straightforward business-like progressiveness. Honest, straight-to-the-point announcements in the local papers. This feature of the question has been covered many times by *The Iron Age.*

A card index list of customers and prospective customers who shall receive regularly well written letters and circulars. This plan has also been explained in detail in these columns. By the way, many admirable circulars and posters can be obtained from the manufacturers without cost.

Store events of general interest that will make people anxious to visit the store—not only "sales," but exhibitions and demonstrations—and above all, under all conditions, *always* a cordial welcome and cheerful and attractive surroundings.

### The Personal Element.

Now for the personal element in the question, to quote from one of the first paragraphs, "then he should sit down and study himself."

Do the local merchants actually *know* themselves? Do they understand their own attitude, their own qualifications, and above all, their own limitations?

The questions may bring a smile, but *think* of them. These are the days of "brain power" business successes. Muscle and brawn are indispensable in their places, but the brains behind our great enterprises are the dynamos that are keeping the muscle and brawn occupied.

Do you know the merchant who is getting up at 5 in the morning, sweeping out his own store, carefully dusting his stock, arranging his displays, building racks and fixtures, pounding and tinkering all day long, and possibly until 9 at night? There are numbers of them, keeping as a rule very presentable stores and fairly clean stocks, but still barely making a living! *And why?*

They have not studied themselves!

They have never thought that in spending the long hours at menial tasks they have neglected the higher and broader possibilities.

The advertising work is put over for "to-morrow" (and "to-morrow never comes"). The business letters are delayed. The books are behind.

Busy? Yes, busy as can be! Never through! Yet for $8 a week, or even less, expended for intelligent help this merchant might be relieved of two-thirds of the work he is now doing, and be left with plenty of time for the sort of *thought* and *action* that would make his struggling enterprise a rushing success.

### The Business "Has Been."

Do you know the merchant who is a business "has been?" Personally neat, financially well-to-do, with pleasing address, but with a volume of sales slowly but surely diminishing—his fortune was made in the past.

He arrives at the store at 9 in the morning, keeps the books, looks over the mail, reads the sporting magazines, goes fishing and lets his stock grow dusty and shop worn on the shelves.

He will not mark down prices to clear those shelves. It wasn't necessary when he made his money (25 years ago). "Sales" will not fit his business—they might start price wars. The advertisements are set cards. Expensive circulars furnished by manufacturers lie idle under the counters. You may know this merchant and be

familiar with his remarks, but if not, well—rest assured that his species is still in existence.

**By the Way.**

A couple of live young fellows bought out one of this kind a few years ago, and received a severe rebuke when they sold out a lot of the old goods for less than they had paid him for them, but within those few years they have quadrupled the business that he was doing when they succeeded him.

They had been clerks in another store, and they had studied ways and means and knew how to apply their energy.

They have never written a protest nor voiced a complaint about the mail order houses.

*They realized that the problem was "up to" themselves.*

## Surfaces in Which to Stick Pocket Knives.

AMONG the most striking and effective displays of Pocket Cutlery are those made by sticking the Knife blades into some surface in which they will hold. All blades and attachments should be left open showing exactly what the Knives contain, and making a bristling array of shining steel points.

GROUND WORK.—Surfaces in which the Knives may be stuck for such display may be prepared in several ways. The method most commonly followed is to tack sheets of cork on a wooden frame, covering the cork with some material of rich color, which will afford a good background for the Knives.

MOST DESIRABLE COVERING.—Plush is probably the richest looking material which can be used for this purpose, and will make the most elaborate display. It also has a long nap which will conceal the holes made where the blades have been stuck through. Although the first cost is a little greater, it will undoubtedly pay a merchant to use plush because of greater satisfaction in the end. It is not always economy to save on first cost when doing a job of this kind, which will last a long time.

CHEAPER MATERIAL.—Other kinds of material will do, however, such as Woolen cloth, felt and even Canton flannel. Care should be taken in choosing the color. If anything is used which will soon turn rusty or fade the work is as good as wasted.

A strong dark shade is preferred, as it makes a rich background, and will not show the dirt—an important consideration for long wear. Black is good.

ADAPTING THE IDEA.—Various ways of adapting this idea will suggest themselves to any merchant, such as balls, cylinders, cubes, pillars, stands, &c. Many forms of cases may be used inside the store, in the show window, or even in the doorway, or on the outside wall. If possible displays should be covered by glass, in which case the goods will be protected from dirt and dampness, and will only need to be polished up semioccasionally. Displays kept within reach of the public must, of course, be covered to prevent handling and petty thefts.

SOFT PINE INSTEAD OF CORK.—Soft pine is a substitute for cork, which may be used by merchants in preparing displays of this nature. It is necessary to apply this, so that the grain will run in the right direction, allowing the points of the Knife blades to be stuck firmly into the wood. It is also necessary to look after the goods a little more closely, and keep them polished up, as wood is not as dry as cork, and there is danger that the Knives will rust.

## Requests for Catalogues, Etc.

*The trade is given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.*

REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate:

FROM W. P. NEED, who has engaged in business in Elma, Iowa, carrying Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints, Oils and Sporting Goods.

FROM THE BAKER-BROOKS LIVE STOCK COMPANY, Grand Lake, Colo., which is adding a stock of Shelf and Builders' Hardware, Stoves, Tinware, Paints, Oils and Sporting Goods.

## AN UP TO DATE CATALOGUE FILE.

A VERY complete and up to date catalogue filing system can be installed and operated at a very small expense by the use of an ordinary vertical letter file with a small card cabinet for the index and cross index. A most satisfactory class of cabinet is a regular 4-high sectional unit, to which can be added extra sections or units as the accumulation of catalogues may require. This cabinet should be equipped with manila guide cards numbered consecutively from 1 up as far as the number of the catalogues to be filed may require. Each guide card acts as a folio behind which are to be filed all catalogues issued by the firm or company designated by the number on the tab. Each concern is indexed on a small card applying the same number as the guide card behind which the catalogues are filed. This card should give the name and address of the company and should have a tabulated list of the various articles which it manufactures, as shown by Fig. 1. These cards are filed alphabetically in a small cabinet of as many drawers as the size of the catalogue file demands; one section of the file being used for the index of firms and the other for the cross index of material. A sample card from the latter index is reproduced in Fig. 2.

| | |
|---|---|
| BROWN & SHARPE MFG CO., | 91 |
| Providence, R.I. | |
| | |
| Gauges, | |
| Micrometers, | |
| Calipers, | |
| Milling Machines (Universal) | |
| Milling Machines (Plain) | |
| Milling Machines Feeds | |
| | |
| | |

*Fig 1.—Card from Manufacturers' Index.*

The cross index is made by taking separately each of the items tabulated on the firm index and using them as a heading on the cross index cards. These cards are the same style and size as the regular index. The form on the cross index is reversed—that is, the material appears at the top of the card and the various firms which manufacture this material are tabulated with the folio number opposite each name, showing just where to locate the catalogue in the file.

| GAUGES | |
|---|---|
| | |
| The Bristol Co. | 210 |
| Brown & Sharpe Mfg Co. | 91 |
| The Haines Gauge Co. | 206 |
| The L.S. Starrett Co. | 490 |
| Schaeffer & Budenberg | 243 |
| The Ashton Valve Co. | 423 |
| | |
| | |
| | |

*Fig. 2.—Card from Index of Goods.*

This system seems adaptable to almost any class of catalogue filing, although the method of cross indexing may be changed slightly to suit the class of catalogues to be filed. In case of large general catalogues which are too bulky to be placed in the file itself, the same method of indexing can be followed and the catalogues placed on top of the cabinet or on suitable shelves provided for them.

# THE BOOKKEEPING SYSTEM OF H. L. TWINE.

H. L. TWINE is an intelligent and energetic merchant, handling general Hardware and mill, factory, and contractors' supplies, at Yonkers, N. Y. When embarking in business several years ago, he was confronted with the need of an efficient and comprehensive method of bookkeeping which would admit of keeping close track of the business, but which at the same time would be simple and not extravagant as regards the time or clerical force required to handle it. Not finding exactly what he wanted in any one system, Mr. Twine, having a taste for such matters, set to work to evolve a system of his own which, with the improvements and modifications naturally developing, is in use at the present time. He does not claim originality for all the features of his system, frankly stating that he has appropriated, adapted and combined many of the ideas of others. Recourse is had to the Cash Register and its adjuncts, as well as to various card files, such as are now offered by manufacturing stationers. When originally installed, however, the system had several features of novelty which have since come into more or less common use.

CLERK'S DAILY STATEMENT

| | | DOLLARS | CENTS |
|---|---|---|---|
| REMOVE AMOUNT PLACED IN CASH-DRAWER FOR CHANGE | | | |
| Balance | Cash in Drawer | 5 0 | 00 |
| Add Amount | Paid Out No. of Slips 2 | 1 | 25 |
| | Total Cash Taken In | 5 1 | 25 |
| Deduct Amount | Rec'd on Acc't No. of Slips | 10 | 00 |
| | Cash Sales | 41 | 25 |
| | Total Credit Sales No. of Slips | | |
| Deduct | Credit Sales Ret'd | | |
| | Net Credit Sales | | |
| | Total Sales Add Cash Sales and Net Credit Sales | | |

I hereby certify that the above is correct to the best of my knowledge.

A. B. C. Clerk

Date 7/7/08

*Fig. 1.—Clerk's Cash Register Report.*

HARDWARE. TELEPHONE 2499

H. L. TWINE,
14 WARBURTON AVENUE,
YONKERS, N. Y. Apr 1908

C. A. Clark & Co
238 N. Broadway
Yonkers, N. Y.

| | | | | |
|---|---|---|---|---|
| 2940 | Apr | 1 | 1 Bolt | 30 |
| 3955 | " | " | 8 M&S Bolt 1/2 x 8" | 30 |
| 3974 | " | 3 | 14 ft 20" Gate Chain 23½ lbs @ 6¢ | 140 |
| 2412 | " | 7 | 8⅓ Oz #112 S. Pulley | 708 |
| 2387 | " | 8 | 1 Oz 8" Hack S Blade | 65 |
| 196 | " | 15 | 1 N 8" T Hge. | 10 |
| 2187 | " | 37 | 1 Sc. Door Catch | 20 |
| 2874 | " | 29 | 4 Brass Buttons 1½ | 16 |
| 3924 | | | 1 Chain Bolt | 25 |
| | | | | 1044 |

*Fig. 2.—Customer's Monthly Invoice or Statement.—The Original on Top is Torn Off at the Dotted Line, Leaving a Duplicate for Filing.*

### Recording Sales.

All sales are recorded in the cash register, which has a paper tape registering the amounts. In the case of cash sales, the amount is rung up, but charge transactions appear on the tape as zero, with CHG. in front, showing that a credit slip has been issued. All tickets, whether cash or credit, are numbered so that it is an easy matter for the office to check up and make certain that none are missed. A multiple drawer register is used, each clerk having his own drawer, being held responsible for its correctness and submitting to the office each day a report on the blank shown in Fig. 1, together with a purse containing the money to be turned in from his drawer. Total cash and sales records for each day are obtained by filling out a page of a record book furnished by the manufacturer whose cash register is used. This shows the daily cash and credit sales of each clerk. There is also a place for entering all amounts paid out, including the total of checks issued, obtained from the check book stubs, and all petty cash disbursements, coming under the headings, expressage, freight, cartage, boat, carfare, &c.

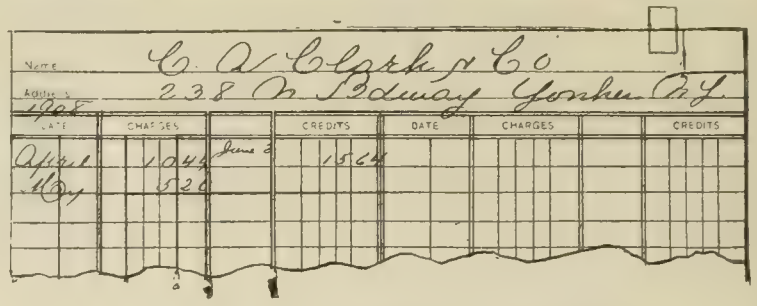
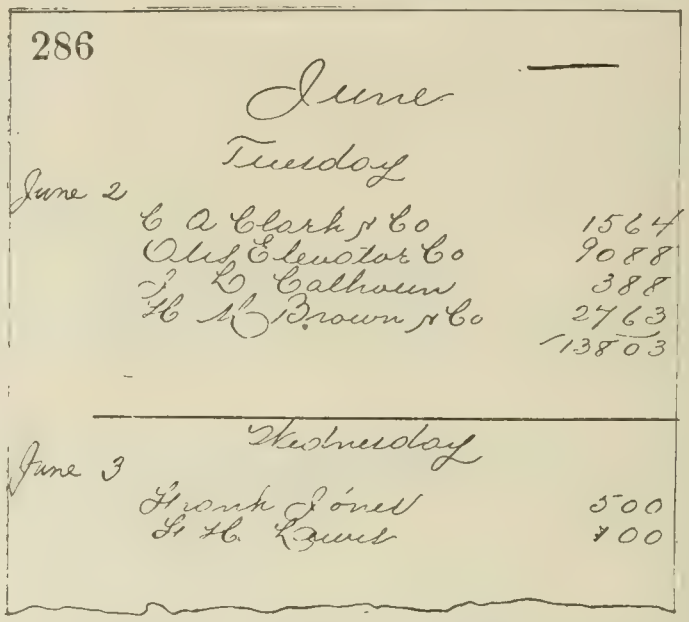



*Fig. 3.—Card from Customers' Card Ledger.*


286

June

Tuesday

June 2

| | |
|---|---|
| C A Clark & Co | 1564 |
| Otis Elevator Co | 9088 |
| L L Calhoun | 388 |
| H K Brown & Co | 2763 |
| | 13803 |

Wednesday

June 3

| | |
|---|---|
| Frank Jones | 500 |
| H H Lewis | 700 |

*Fig. 4.—Method of Entering Up Remittances Received.*

No ledger records are kept of bank accounts, which are daily brought up to date on the back of the check book stubs, and may be compared with the pass book from time to time. The daily balance is figured in the manner indicated by the following example:

| | |
|---|---|
| Balance | $1,708.96 |
| Deposit | 179.00 |
| Total | $1,887.96 |
| Checks issued | 87.00 |
| | $1,800.96 |

### Charging and Invoicing.

From this method of keeping track of the business done each day and the cash handled, we come to the system of charging, billing and booking credit sales. As already stated, these are written up on the cash register slips, the same as cash sales. After the slips have reached the office and have been checked up numerically to make sure that none are lost, the credit sales are charged to running bills or statements which are kept

with duplicate attached in a loose leaf binder. The original copy goes to the customer the first of the month, and the duplicate is filed in a binder for office reference. The form of statement used with duplicate attached is shown in Fig. 2. In the column headed "Order No." will be found the customer's order number, or if as in this case he does not number orders, the name of the job for which the item was purchased or any other hint which might assist in identification. The duplicate statement for the office file has one extra column on the left hand side for entering the number of the sales slip from which the charge was made, thus facilitating back reference if necessary. The advantages of this method of billing are obvious:

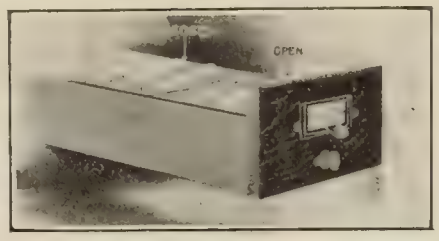



*Fig. 5.—File Drawer Containing Ledger Cards of Buying Accounts, Unpaid Accounts in Front.*

1.—It prevents unnecessary copying of detailed items.

2.—It permits statements to go out promptly on the

HARDWARE. H. L. TWINE. TELEPHONE 2499
MILL, FACTORY AND CONTRACTORS' SUPPLIES
14 WARBURTON AVENUE,
PURCHASED OF YONKERS, N. Y. May 4, 1908
Sargent & Co
New York City
N. Y.

NO RECEIPT REQUIRED.

ENCLOSED PLEASE FIND CHECK FOR AMOUNT OF STATEMENT FOR
April acct $47.56

*Fig. 6.—Pay Slip.—The Original Is Sent with Check; the Duplicate Kept on File.*

first of the month, since to complete them only one day's charges need be written up.

3.—It enables a customer to get a complete statement of his account to date at short notice whenever he wants it.

### The Customers' Ledger

is not a book but a card file, every account being kept on a separate card which is ruled like a ledger page, as illustrated in Fig. 3. Of course no single items are shown here, the debit entries being the totals of the monthly statements as rendered. If items are wanted they can immediately be obtained by referring to the duplicate statement, which is kept on file as already explained. The cards are kept in two file drawers with alphabetical indexes which occupy compartments in the safe. They do not occupy much room and are easily moved about so as to have them convenient to work in hand. One drawer contains open accounts and the other those which are balanced. This arrangement prevents considerable unnecessary handling, the cards being easily removed from one file and transferred to the other. An ingenious method is employed of indicating to the eye the accounts which are behind and need to be followed up and those on which credit has been cut off. This is done by putting colored tabs on the cards like the one shown in the upper right hand corner of the illustration.

### All Remittances Received,

whether in cash or checks, are entered up under date in a sort of day book, as indicated in Fig. 4. An ordinary narrow blank book is used for this purpose, and there is no attempt to devote a page to a date. One day's receipts may often require only a few lines and thus admit of getting three or four days on a page. From the entries in this book payments are posted to the account cards like the credit entry on the card reproduced in Fig. 3. As posted, the entries are of course checked off.

### Buying Accounts

are kept on the same kind of ledger cards as customers' accounts, but they are kept in a different file drawer, an arrangement which is found very convenient. Unnecessary handling is further avoided by having in this drawer, Fig. 5, two sets of alphabetical index cards of different colors. Accounts of houses to which the business is debtor are kept in the index at the front end of the drawer. When all bills are paid, balancing an account, the card is transferred to the index in the back, where it remains out of the way until the account is reopened by another purchase. Thus the forward file of unpaid accounts is always small and easy to handle. The difference in the color of the index cards, already referred to, enables the eye to distinguish at a glance the open and the closed accounts.

### The System of Paying Bills

is a convenient one, calculated to prevent errors and confusion, as well as unnecessary handling. Invoices, when received, are held until the goods are in and checked, after which they are placed in a file to be paid when due. In making remittances a duplicate pay slip is used, as illustrated in Fig. 6. Invoices are not returned with checks, but are filed away with the duplicate of the pay slip pinned to them, which gives all necessary information regarding the remittance. Ledger cards are taken from the file drawer, while checks are being prepared, and payments made are posted. The cards of course are taken from the front end of the drawer (Fig. 5), but when the payment balances the account the card goes into the file in the rear of the drawer, as already explained.

### Monthly Record Sheet.

The description has now covered the firm's method of handling cash sales and keeping cash records, the method of entering and invoicing credit sales, rendering monthly bills and keeping charge accounts, and the method of handling purchasing accounts and making payments. In Fig. 7 is shown a portion of a monthly record sheet, which is filled out for every day in the month and which from the totals obtained by footing up the columns shows at a glance the exact details of the business for the month. The first column is for credit sales, the second for cash sales and the third shows payments received on charge accounts. The first and second columns added together give the total amount of sales, and the second and third added give the total cash received. PAID OUT refers to payments made for stock, STORE ACCOUNT includes running expenses, such as rent, clerk hire, &c., and CASH DISCOUNTS covers the cash discount taken on purchase payments. This page is from a record book made especially to the order of the firm, fitted with lock and key, and kept in the safe.

1908 April

| | Credit | Cash | Money Received | Paid Out | Store Account | Cash Discounts |
|---|---|---|---|---|---|---|
| Wednesday | 1 | 17 40 | 1 23 30 | 1 17 17 | 4 40 | 1 8 35 |
| Thursday | 2 | 14 01 | 13 26 26 | 10 51 10 | 1 50 | 2 64 |
| Friday | 3 | 21 43 37 | 18 48 | 1 77 16 | | 50 |
| Saturday | 4 | 21 31 | 46 66 47 | 60 66 | 2 60 | 1 20 70 |
| | | 6 31 5 | | 46 00 | 48 00 | 3 15 |
| Monday | 6 | 15 47 | 47 23 37 | 1 24 42 | 7 27 | 1 46 |
| Total | | 71 12 56 | 3 20 0 8 31 | 4 4 6 7 64 | 7 10 0 7 09 | 1 4 1 0 2 5 |
| | | | 71 34 16 | 3 20 0 8 31 | | 27 44 |
| | | 10 9 3 4 75 | 1 6 8 1 4 1 7 | | | |

*Fig. 7.—Monthly Record Sheet.*

Stock is taken annually, and a complete balance sheet is made up showing the results of the business for the year. The figures from which the sheet is made up are taken from the balance sheet of the previous year, from the monthly record book, just described, and the ledger accounts due and owing.

## The Light Brigade in Window Display.

A CORRESPONDENT suggests that a window display of Lamps, Lanterns, &c., may be based on the following stanza from Tennyson's "Charge of the Light Brigade," emphasis on the *light*:

*"When can their glory fade?*
*Oh, the wild charge they made?*
*All the world wondered.*
*Honor the charge they made!*
*Honor the Light Brigade,*
*Noble six hundred!"*

In describing the arrangement of a window to illustrate these lines, the correspondent writes as follows:

"The flooring of the window forms the 'valley of death' alluded to in the poem. The hillside and pathway down which the lamps march can be readily constructed out of empty packing cases, over which is loosely thrown a covering of gray tissue paper held in position by tacks or glue. After the boxes have been covered with the paper the effect can be greatly improved by a little shading of the paper with the skilful use of the marking brush. Small sized Lamps, such as Night Lamps, should be placed on the upper shelves in the background and keep on steadily increasing the size of the Lamps as they near the front or base of the window. By so doing you will be able to produce without further effort the far-away effect so much sought after and often hard to obtain in ordinary exhibits. A Gasoline Torch to which is tied a little fluffy piece of cotton in imitation of the smoke of battle can be made to represent the advance of the opposing force, in front of which a few noble Lamps lay prostrate."

## Tool and Cutlery Window.

A WINDOW display installed in the Hardware store of Ramsey & Frenary, Front Royal, Va., and prepared by V. H. Keeler, is shown in the accompanying illustration. The background was made of boards, covered with blue crepe paper, on which a variety of Tools were fastened by means of brass cup hooks. On the floor of the window was a display of Cutlery. Articles in the latter line were shown on easels made of ½-in. lumber sawed out in the shape of a shield, which is the manufacturer's trademark. We are advised that this attractive window sold lots of goods. The preparation of the display occupied about three hours.

THE SYRACUSE CHILLED PLOW COMPANY, Syracuse, N. Y., recently completed the purchase of the stock, patterns and good will of the King Chilled Plow Company, formerly located in Phelps, N. Y. The stock and patterns are being removed to Syracuse, and in future the business will be conducted from that place, where repairs for the King line of Plows can also be obtained.

BEALS & Co., Buffalo, N. Y., owing to the great increase in their business, have found their facilities inadequate. They have accordingly taken possession of the buildings formerly occupied by Pratt & Letchworth, R. G. Wright & Co. and the Hudor Company. This means about 75 per cent. additional floor space, giving the firm especially large and well equipped iron, steel and Hardware warehouses.

## The Winchester Guaranty.

THE Winchester Repeating Arms Company, New Haven, Conn., directs the attention of the trade to a practice among certain distributers selling its Firearms and Ammunition at cut prices, of obliterating and otherwise altering serial numbers and other distinguishing proof and inspection marks, placed on all of the company's Repeating Shot Guns, Repeating Rifles and Single Shot Rifles. These marks are features of the system under which these products are guaranteed as to material, workmanship, inspection and other details and qualities and the company's guaranty ends, it is announced, when the Guns are tampered with in any way. Purchasers of Winchester Guns, Ammunition, &c., are cautioned against buying goods thus altered.

## Price-Lists, Circulars, Etc.

*Manufacturers in Hardware and related lines are requested to send us copies of catalogues, price-lists, &c., for our Catalogue Department in New York; and at the same time to call attention to any new goods or additions to their lines, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.*

NEW DEPARTURE MFG. COMPANY, Bristol, Conn.: Catalogues relating to Fire Bells for fire engines, hose carriages, &c.; Car Bells, Trolley Harps and Coaster Brakes for bicycles.

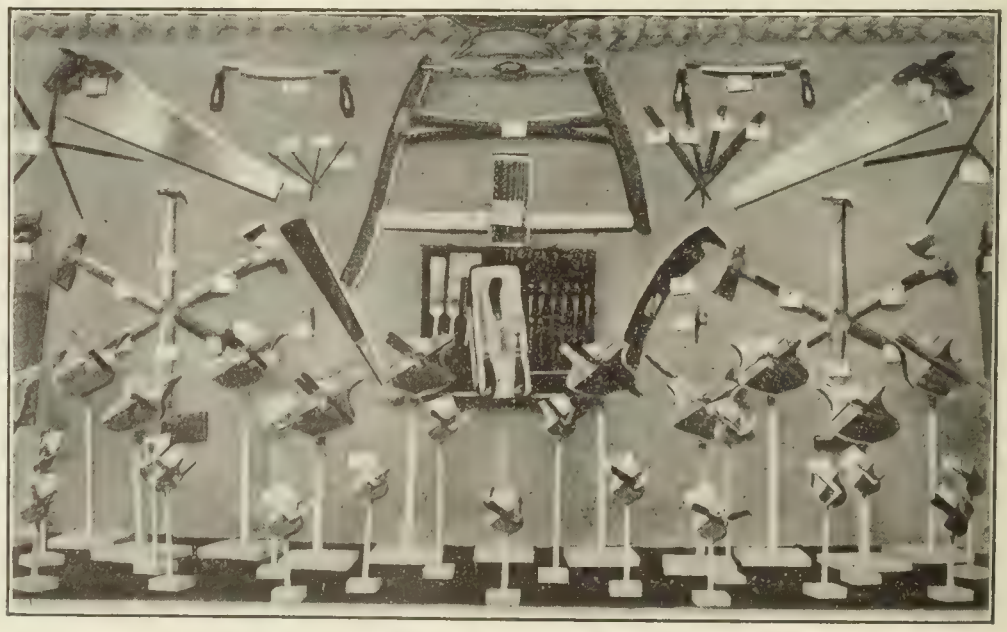
HARBER BROTHERS COMPANY, Bloomington, Ill.: Catalogue of Vehicles, including Buggies, Surreys, Road Wagons, Delivery Wagons, Top Carriages, Phaetons, &c.

HOLLOW CABLE MFG. COMPANY, Hornell, N. Y.: Folder illustrating Preston's Patent Braided Wire Box Band.

T. H. CHUBB ROD COMPANY, Post Mills, Vt.: Twenty-fifth illustrated catalogue and price-list relating to Fishing Rods and Trimmings, Reels, Hooks, Nets, Minnow Traps, Minnow Buckets, Bait, Spoons, &c.

J. H. W. CLIMAX COMPANY, 275-279 Passaic street, Newark, N. J.: Catalogue relating to Jail Locks, Padlocks, Switch Locks, Night Latches and Elevator and Gate Locks and Latches.

RELIANCE BALL BEARING DOOR HANGER COMPANY, 1 Madison avenue, New York: Illustrated catalogue and price-list relating to Ball Bearing Hangers for single and double doors; also Two and Three Speed Hangers for moving doors in the same direction, so that all are opened or closed at the same time. A Bar Lock for elevator doors and Ball Bearing Drawer Slide are also illustrated.



*Window Display of Ramsey & Frenary.*

MARBLE SAFETY AXE COMPANY, Gladstone, Mich.: Illustrated catalogue and price-list relating to Safety Pocket Axes, Hunting Knives, Pocket Knives, Rifle Sights, &c.

EUGENE DIETZGEN COMPANY, 214-220 East Twenty-third street, New York: Catalogue and price-list of Drawing Materials and Surveying Instruments.

# HARDWARE FREIGHTS.

## The New Uniform Bill of Lading.

THE new uniform bill of lading, to which extended reference was made in our last issue, will be open to amendment at any time after it has become effective through proceedings before the Interstate Commerce Commission. The document has been under discussion so long, and the commission has taken so much time to consider all the objections that have been offered, that it is only on minor points or provisions that it may be found open to attack. If any of these minor provisions are found to work injustice, or if they are not in line with the settled principles of law, they can be modified after full consideration.

### The Commission's Authority.

There has been some question whether the commission had the authority under the law to issue a blanket order prescribing at one full swoop all the provisions and conditions that should appear in a bill of lading. The commission, after fully considering this point, came to the conclusion that it did not have the power to do this. Section 15 of the Heuburn law, however, gives the commission explicit power "to determine and prescribe . . . what regulation or practice in respect to such transportation is just, fair and reasonable to be thereafter followed"; when a formal complaint has been filed and all parties have had a fair hearing in the manner prescribed in the law. Under this clause of the law, any rule or regulation published by the railroads, or used like the provisions of a bill of lading to fix the conditions under which freight shall be carried, can be attacked in the same manner as an unjust rate.

### Ratified by the Railroads.

There were grave doubts whether Congress could delegate to a commission the power to make or "initiate" tariffs. This question was avoided by merely giving to the Interstate Commerce Commission the power to change or modify a rate after complaint and hearing, leaving to the railroads the full power to "initiate" rates. This power to change or modify rates and regulations has been accepted by the railroads, and their acceptance is sufficient evidence that it is "good law." For the same reasons the commission may not have the power to "initiate" a bill of lading, but may have ample authority to act upon complaints that may be offered by shippers after a document adopted by the railroads has gone into effect.

### Formal Complaints.

There has been much criticism of the "four months' clause," as well as of other minor provisions. If, after a fair trial, shipping interests find that any one of these provisions works injustice, a formal complaint can be filed, and in the course of a hearing on this complaint the commission can obtain definite evidence to guide it in making any change that may be found necessary.

While the commission has been deluged with criticism and advice during the past year, and every line of the document has been attacked either by shippers or railroads, the proceedings thus far have been mere discussion and there has been so much dust thrown up that the commission may have found it impossible to distinguish between carping criticism and well founded objections. It is doubtful whether any form of bill of lading could be drafted that would not be open to objections of this character. After the document has gone into effect, however, the period of discussion will end, and the real authority of the commission will begin, to hear definite evidence in legal form and make any order that may be found necessary.

## A Western Jobber's Comments.

*To the Editor:* With reference to your articles on Hardware Freights, you cannot lay too much stress on the necessity of checking freight bills. We are peculiarly subject to overcharges west of the river gateways, because it is frequent that the sum of two locals is charged and the through rate ignored. I will venture the assertion that any jobber doing a respectable business can save the salary of a first class traffic man and make money on the investment. Our policy is to have duplicate expense bills sent us, which we first verify, afterwards tendering the correct amount in exchange for the originals. It is rare that the writer pays a bunch of freight bills where he finds all of them correct. The time to get your refund is before the money has been passed to the carrier, because when it goes up in the shape of a claim you are never sure just when it will be paid.

**Checking Up Freight Bills.**

The recent tariffs seem to have been constructed not to be understood, but to confuse. The same may be said of the classifications. The time was when a man of ordinary intelligence and information could take a tariff and easily estimate the rate from any particular territorial district in classes or commodities, but to learn these new issues is very like learning your alphabet again. And, too, items that formerly mixed in a carload shipment are, many of them, now contraband; hence the utmost caution is necessary. It appears that the railways are retaliating for having been compelled to forego passes to special friends and rebates to large shippers.

**Tariffs and Classifications.**

The character of help employed could be vastly improved if better pay was had. The employees in the freight offices are constantly shifting; a new face is seen every week. This is not considered good practice by any business save the railroad business.

**R. R. Clerks Not Efficient.**

The delay in the payment of claims amounts to an outrage. The writer has known claims to be held up for a year, when the record and filing was clear and proper. It goes to the freight claim agent, he sends you a number, and when you write him asking the status of a certain claim, it is dollars to doughnuts that you will not receive a reply.

**Holding Up for a Year.**

I have never been able to appreciate the necessity for more than one classification. The official which applies East and North carries items at a lower classification up to the gateways than the Western does west of the river. This argues that the

**Why More Than One Classification?**

CLAIM No. 100

MR. L. J. Reynolds Agent, L. E. & W. & S. Railway.

We hand you herewith Expense Bill No. 9999 issued by your office on Oct 1st 1908

For a shipment from New York City

Consisting of 5 Cases Hardware

The claim we make is for $2.45

as follows: 5 Cases Hardware 25 Gilbert $1.17

" " " 1 Case Tin Cups .28

$2.45

We file herewith the original Bill of Lading and copy of Invoice to us.

The above claim filed with me this 3rd day of Oct 1908

L. J. Reynolds Agent.

Yours truly,

Webber-Ayers Hdw. Co.

Per [illegible]

*Form Used by Webber-Ayers Hardware Company to Guard Against Loss of Papers Filed in Making Claims.*

value and risk, or both, changes immediately the item crosses the river. The position is not tenable.

Another annoyance is the loss of the papers in a claim filed with the local agent. This can be overcome by taking his receipt. We use a blank form for this purpose. [The blank filled out to show its use is reproduced herewith.] This form is made in duplicate, the agent signing the original which is for your file, and when the freight claim agent acknowledges giving number of claim, attach same to the receipt, and your claim is then complete. If he fails to forward to freight claim agent you have his receipt, and can make him deliver.

**The Loss of Claim Papers.**

If all the ills we are called upon to bear, and bear unnecessarily, were recited, it would make a book; hence I desist from sheer despair, with the hope, vain though it may be, that ere the millennium dawns railroads will concede that the shipper has some rights that must be respected.

Yours truly,

W. W. WEBBER.

FORT SMITH, ARK.

# Here and There in the Hardware Store.

BY SAMUEL MASTERS.

## VI.—THE CREDIT MAN.

MR. CLARK, the credit man for Hartman Bros., was a promoted bookkeeper, who had shown ability as a collector of doubtful accounts in the days of Peter Hartman, the father of the present partners. His methods were the same that had been in effect since the day when the house had but one man on the road. The ruling as to credit was made at the time the order was received. If the salesman's report as to the customer's ability to pay was not satisfactory, or was not in consonance with the ratings in Dun and Bradstreet, the order was held up and special reports as to the customer's standing called for. Aggravating delays in filling a customer's first order were almost invariable, and the salesman's attempts to get further business were seriouly hampered by an unfavorable impression thus created. Mr. Clark was as pleased to pass favorably upon a new account as the salesman was to have him do so, but his inborn Scotch caution prevented him from taking needless risks—and all risks looked needless to him. He had beside his desk two Amberg filing or transfer cases in which he kept orders pending a credit ruling, with the correspondence relating to them, and they were generally pretty well filled.

### Discount and Interest Account a Profitable One.

The credit man had, as is usual, direct charge of the collections, and the Discount and Interest account was the measure by which he gauged his work. The firm had sufficient capital to enable it to discount all its bills, and Mr. Clark was careful to deduct every cent the invoices permitted. On the other hand, the customers of the house were not urged to take discounts, but were encouraged, when their credit was good, to let their bills run beyond the discount period. If they were not paid at maturity, interest was charged for the overdue period, at 6 per cent. per annum. By working both ends of the game to the limit of their possibilities, Mr. Clark made the Discount and Interest account one of the most profitable upon the books, and the amount of the savings or earnings thus made gave him an influence with Hartman, Senior, that protected him from criticism of his methods by Hartman, Junior, or the sales managers.

### The Demand Imperative vs. The Request Courteous.

Besides his slowness in passing upon new accounts the salesmen felt that they had just cause for complaint in the dunning letters Mr. Clark wrote. I know that he was anxious not to offend, and chose with great care the words and phrases with which to tell the house's customers they must pay up or take the consequences; but his very anxiety and care led to disastrous consequences. He finally hit upon a few short sentences upon which he rung the changes needed to suit the individual case in hand, which resulted in a curt, ungracious statement of the indebtedness and a request for payment that had the effect of an imperative demand with implied penalties. If interest could be charged the penalty was not merely implied, but was clearly stated.

### Dunning Letters—The Ideal Letter Still to Be Evolved.

The hardest business letter to write is a dun. Article after article has been written by successful credit men telling how to write collection letters, but the letter that is sure to produce results without wounds is still to be evolved. No man likes to get a dunning letter. The ordinary buyer likes to feel that his trade is valued—that the firm who sells him is willing to trust him and considers his account a safe one. It is always a shock to him to be called to account because his account is a few weeks past due, and if the reminder is not couched in most inoffensive terms he is going to take offence, not with the house, but with the credit man. He knows that the house counts him a friend, and that the fact that he is numbered among its regular customers is a matter of gratulation to its whole force. The salesman has told him so. It is the "picayune cuss" that runs the collections and tries to imagine himself a banker that is to be blamed for any acerbity the letter may contain. The salesman has possibly told him this also, and felt that he had handled the matter very creditably when he succeeded in loading the customer's irritation upon the credit man's head and kept the account alive for his house by so doing.

### Explanations Desired.

If a debtor found he would be unable to meet a payment when due, and would see or write Mr. Clark, giving some promise as to the date when he would pay, he would generally find his explanation satisfactory, and there would be no trouble; but to the precise mind of the credit man, to allow an obligation to pay lapse with seeming indifference merited rebuke, and the man or firm that was well able to pay, but made a practice of letting bills run a short time past the date of payment, awoke him to scorn.

### Hiding Behind the Credit Man.

It is easy to see how Mr. Martin's city salesmen, whose salaries were not dependent upon the amount of business upon their individual order books, could make Mr. Clark's methods a shield for their lack of hustle. From their point of view it was much better to spend their time coddling a few good accounts than to canvass energetically among the smaller fry. And so the credit man came to bear not only the burden of his own business sins, but those of the city sales department and its sales policy, so at variance with his own ideas. The harder he was assailed by Mr. Martin and his men the more he sought to justify himself by proving the poor judgment of the sales force, and the less chance there was for an agreed basis of action between the two. Yet it was to secure this agreement that I had to attempt.

*(To be continued.)*

# LETTERS FROM THE TRADE.

*Our readers are invited to discuss in these columns questions of trade interest connected with the manufacture or sale of Hardware. We shall be pleased to have a free expression of opinion on subjects deserving the attention of Hardware merchants and manufacturers.*

### Accommodating Nails in Small Space.

*To the Editor:* We would be glad if some one would tell us through the columns of *The Iron Age* of a way to carry Nails satisfactorily in a limited amount of space. We occupy a room 50 by 90 ft., but we dislike using about 60 ft. of counter to put our Nails under.

We have seen some double deck Nail bins, but have not heard any one say that this method of handling was entirely satisfactory, on account of the liability of mixing the Nails.

NEBRASKA.

## AMONG THE HARDWARE TRADE.

The Salem Hardware Company has been incorporated in Salem, Ore., handling Shelf and Heavy Hardware, Stoves, Tinware and Paints and Oils.

The Boyd & Murray Hardware Company has recently commenced business in Columbus, Neb., carrying a stock of Shelf and Heavy Hardware, Stoves, Tinware, Paints and Oils.

A. Milby & Co. have put in a general stock in Moriarty, N. M., including Shelf Hardware, Stoves, Tinware and Agricultural Implements.

The Nevada City Hardware Company has succeeded to the business of the Turner-Hadley Company in Nevada City, Colo., and will carry a wholesale and retail stock of Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints, Oils, Sporting Goods, Mine, Mill and Electrical Supplies, Glassware and Crockery.

The store of Bobzin & Jones in Kellogg, Iowa, has been destroyed by fire, the value of the stock being about $20,000. H. E. Jones of the firm will probably continue the business under the style of H. E. Jones & Bros. The firm handles Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints, Oils, Furniture and Plumbing Supplies.

The branch store which the Johnson Hardware Company has conducted at Marshallville, Ohio, has been discontinued and the stock has been moved to the company's main store at Barberton, Ohio.

### The Westinghouse Christmas Packages.

For the holiday trade the Westinghouse Electric & Mfg. Company, Pittsburgh, Pa., is putting up sewing machine motors, electric sad irons and electric hot plates in two sizes, in packages wrapped in handsome holly paper, tied with red ribbon, and then rewrapped in transparent paper through which the colors are visible. Each package carries an appropriate card and label conveying the wishes of the season and provided with a space in which the donor may write his or her name and the name of the one for whom the present is intended. The packages given a place in the merchant's show window and on the store shelves present a handsome appearance, while the articles put up in this manner enable one to give something useful without sacrificing the cherished Christmas traditions of holly and red ribbon.

### The B. & S. 15 Degree Angle Automobile Wrenches.

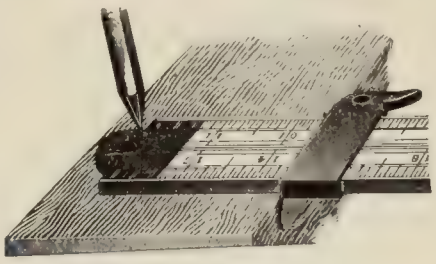
The Billings & Spencer Company, Hartford, Conn., is putting out a new set of 15-degree angle double end wrenches that are adapted to use on automobiles. The wrenches, seven in number, ranging from 1¼ to 7-16 in., milled openings, are put up in serviceable waterproof kit bags of duck or drill, and are furnished either semifinished or full case hardened finish. This is designed as a convenient set for the automobilist, or for general use.

### S. & S. Pliers.

Schuchardt & Schütte, 136 Liberty street, New York, are putting on the market the S. & S. pliers in gun metal finish of German production. They include the different styles of long and short, flat and round nose, chain, electricians', milliners', end cutting and lineman's side cutting pliers. The gun metal finish is alluded to as more durable than polished or nickel plated surfaces, and proof against moisture and rust. The pliers all have box joints, which in these goods permit of wide openings. In this connection the house has prepared attractive show cards with easel back for show window or counter display, which are for gratuitous distribution to the larger trade carrying this line of pliers. The cards are 15 in. high and 12 in. wide, covered with dark blue paper with the inscription at top "S. & S. Pliers in Gun Metal Finish" in aluminum lettering.

### The Howell Rule Gauge.

A rule gauge which is intended for use in connection with an ordinary 2-ft. folding rule is shown in the accompanying illustration. It is a device complete in itself and enables the carpenter to lay off a line with great accuracy and rapidity. The point is made that it is not

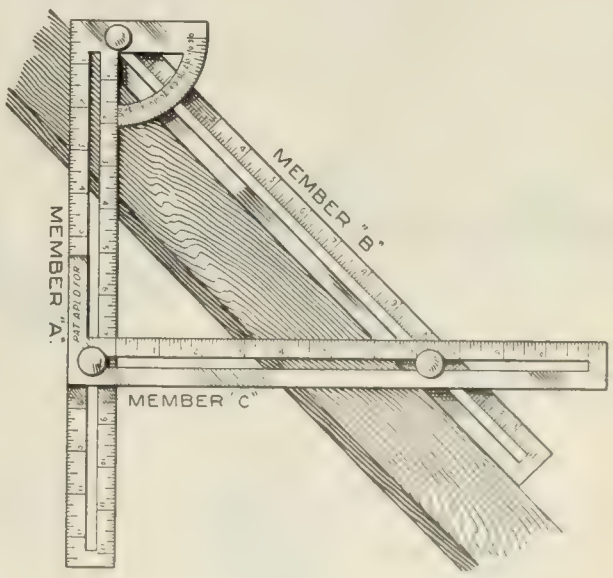


*The Howell Rule Gauge.*

necessary to consider the steadiness with which the pencil or the rule is held, as the gauge fixes the line and keeps it absolutely in position. The gauge is put on the market by the A. W. Miller Mfg. Company, Nevada Building, Cincinnati, Ohio.

### The A B C Protractor Square.

The Crookston Tool Company, Crookston, Minn., is introducing the protractor square illustrated herewith. The device is referred to as a time saving tool, and is shown applied to a stick of timber. The square consists of three members designated respectively as A, B, and C. The upper end of member A has a degree circle, and each member is slotted, rendering it adjustable. Member B has a stationary pin which goes through a hole in member A, and the two members fasten together with a thumb nut. Member C is fastened to the other two members by means of thumb nuts which move in the slots. Member C has a strap so as to square it up with member

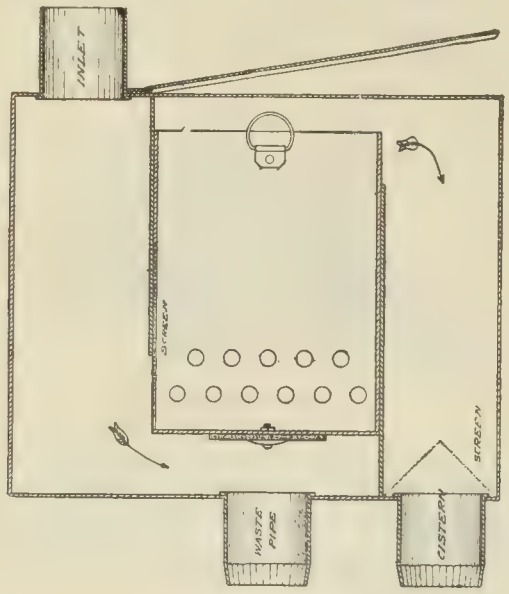



*The A B C Protractor Square.*

A, and by turning the end of member C that is attached to member A, upward toward the degree circle, the tool readily folds up. In order to operate the square it is only necessary to set it at the right numbers and it figures absolutely correct. The square gives degrees, bevels, cuts, lengths of timber, hight of roof and width of building all in one setting. The claim is made that no expert is required to operate it, and that a little practice is all that is needed. The square is used to secure rafter measurements; to get hip and jack rafters for a square building; to obtain a projecting brace that holds up the timber which carries the hay fork track in barns; to obtain the cuts for a stairway, as well as obtaining bevels for the base or plate in an octagon or any other number of corners. The square is designed for carpenters, contractors and building mechanics generally, and may be used to advantage in manual training schools.

## The Watson Sanitary Filter and Cut-Off.

The accompanying illustration shows a combined cut-off and filter designed for securing a supply of water in the cistern free from dust, *débris* or particles of foreign matter generally, manufactured by the James A. Watson Company, Bradley, Ill. The particular feature of the device consists of a metal basket or magazine containing

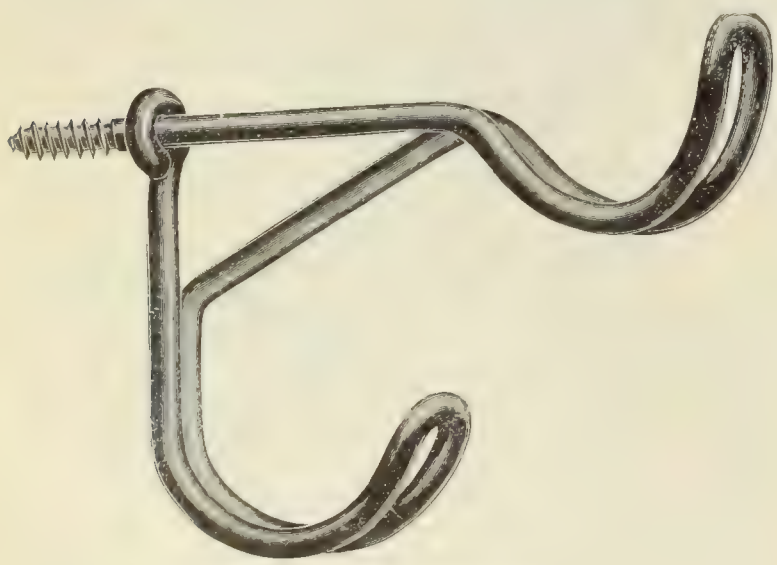



*The Watson Sanitary Filter and Cut-Off.*

the filtering material, such as charcoal and gravel. When this magazine is held up from the bottom of the cut-off chamber, the rain water coming from the roof can immediately reach the discharge to the waste pipe. After the roofs have become clean, and it is desired to fill the cistern, the magazine is lowered and in lowering covers the port to the waste pipe and forces the water to flow through the holes in the bottom of the magazine and thence through the filtering material into the compartment leading to the cistern.

## The Crook Coat and Hat Hook.

The Wright Wire Company, Worcester, Mass., has brought out a new coat and hat hook called the Crook. The purpose of the manufacturer was to produce a good rather than a cheap product, in which strength plays an

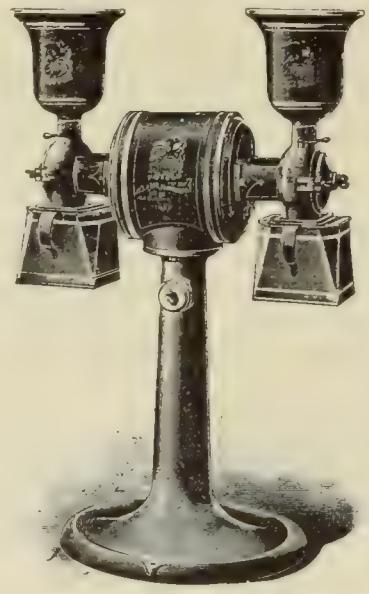


*Crook Coat and Hat Hook.*

important part, there being no shrinkage in size of wire or otherwise to reduce cost. The Crook is new, in that the upper hook is dropped below the screw shank or point of attachment, affording opportunity for the deep curve form which holds the load securely and away from the wall and without interfering with the lower hook. The shank being above both hooks the strain comes in direct down pull, maintaining vertical alignment. The design also makes possible a deep angular brace supporting and strengthening the whole hook, and permitting plenty of clearance between the two parts. While it takes more wire than usual to make such a hook and larger boxes to pack them the company believes these considerations are outweighed by the resulting advantages.

## The Enterprise Pedestal Electric Mill.

The pedestal electric mill shown herewith is offered by the Enterprise Mfg. Company of Pa., Philadelphia, Pa. The mill is made for either alternating or direct current. The grinders are direct connected with the shaft of the motor, thus dispensing with the use of gears and reducing the number of wearing parts consistent with perfect

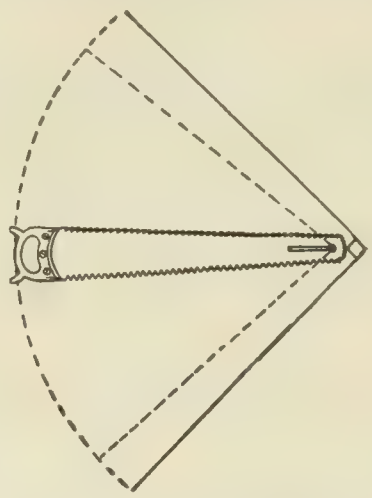


*The Enterprise Pedestal Electric Mill.*

work. They are operated by means of a snap switch on the machine, which saves much time. One side of the mill is fitted with tooth grinders which cut the coffee, and the other with ribbed grinders for pulverizing. Each hopper holds six pounds of coffee. The mills will granulate three pounds of coffee per minute and pulverize a half pound. They are self-cleaning and the cans, or receivers, are inclosed as a protection against dust.

## Anderson's Triple Cutting Saw.

The William G. Anderson Company, 501 Sudbury street, Boston, Mass, is putting on the market the saw shown herewith, intended for cutting wood or metal, and especially designed for sawing in angles and corners. It is referred to by the company as taking the place of a splitting saw, a cross cut saw, and as it will work at all angles, the use of a brace and bit in cutting through a partition or floor are avoided. In the illustration the dotted lines indicate the range in which the saw will work. The end of the saw is hardened, so that it takes the place of a hack saw in cutting metals. The saw is made in all sizes from 16 to 26 in., and in two qualities. The end is provided with fine teeth and extra hardened.

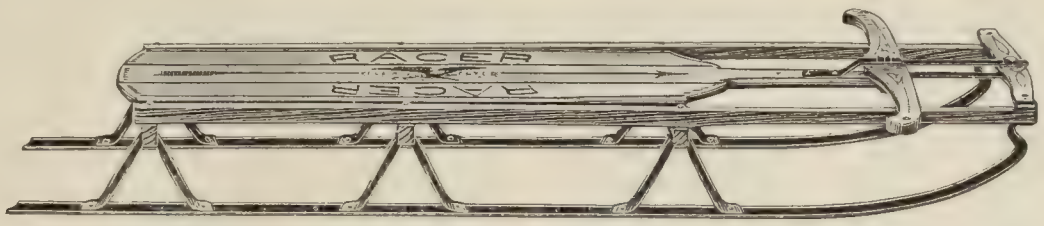


*Anderson's Triple Cutting Saw.*

A slot is made in the center of the blade, just back of the end, and a wire nail driven through the slot into a small board or a surface upon which work is being done, gives the opportunity for leverage. By swinging the blade right and left for a few seconds the nail, screw or pipe may be readily cut off and in positions inaccessible to a hack saw or chisel. This, it is claimed, results in saving the work as well as the time lost in removing them by methods now commonly employed.

## The Flexible Flyer Racer.

S. L. Allen & Co., 1107 Market street, Philadelphia, Pa., are introducing a new type of their flexible flyer sleds, as shown herewith. The racer is built low and rather narrow, with unusual length of runner, extending well forward and to the rear to insure high speed. It is stated that with three standards on a side the sled is extra strong, and that the springing of the runners by the steering bar is perfect. The runner steel is a patent section said to insure successful steering, the finish is the best and the sled will stand more hardship than any other size made by the firm. The racer is 56 in. long, 6¼ in. high and 13 in. wide, weighing 16 lb.




*Flexible Flyer Racer.*

BENJAMIN P. FORBES, 409 Superior avenue, N. W., Cleveland, Ohio, has recently purchased the patent on the Triumph Fruit Jar Wrench, which has been made for a number of years on a royalty by the Forbes Chocolate Company of that city, and will continue to manufacture it. He is also putting on the market Glasbrite which is used for removing grime from the dingiest windows in grinding rooms and skylights, and in factories, foundries, shops, &c. Samples of Glasbrite will be sent gratuitously by Mr. Forbes upon request.

# PAINTS, OILS AND COLORS

### Animal, Fish and Vegetable Oils—

| | ℔ gal. bbls. |
|---|---|
| Linseed, Western, Raw | 41 @.. |
| State, Raw | 42 @.. |
| City, Raw | 43 @44 |
| Boiled, 1¢ ℔ gal. advance on Raw. | |
| Raw, Calcutta, in bbls | 70 @.. |
| Lard, Prime, Winter | 74 @78 |
| Extra No. 1 | 51 @52 |
| No. 1 | 49 @50 |
| Cotton-seed, Crude, f.o.b. mill | 28 @29 |
| Summer Yellow, prime | 36¾@37 |
| Summer, White | 40½@41 |
| Yellow Winter | 43 @45 |
| Tallow, Acidless | 59 @60 |
| Menhaden, Brown, Strained | 35 @36 |
| Northern Crude | 27 @30 |
| Southern | 23½@.. |
| Light Strained | 35 @36 |
| Bleached Winter | 37 @39 |
| Ex. Bleached Winter | 39 @41 |
| Cocoanut, Ceylon ℔ lb | 6½@ 6¾ |
| Cochin ℔ lb | 7¼@ 7½ |
| Cod, Domestic, Prime | 38 @40 |
| Newfoundland | 40 @42 |
| Red, Elaine | 40 @42 |
| Saponified ℔ lb | 5⅞@ 6 |
| Olive, Yellow | $1.15@$1.25 |
| Neatsfoot, Prime | 55 @58 |
| Palm, Lagos ℔ lb | 6 @ 6½ |

### Mineral Oils—

| | ℔ gal. |
|---|---|
| Black, 29 gravity, 25@30 cold test | 13 @13½ |
| 29 gravity, 15 cold test | 13½@14 |
| Summer | 12½@13 |
| Cylinder, light filtered | 20½@21 |
| Dark, filtered | 18 @19 |
| Paraffine, 903-907 sp. gravity | 14½@15 |
| 903 sp. gravity | 13½@14 |
| 883 sp. gravity | 11 @11½ |
| Red | 13½@14 |

### Miscellaneous—

| | |
|---|---|
| Barytes: | |
| White, Foreign ℔ ton | $18.50@20 50 |
| Amer. floated ℔ ton | 17.00@18.00 |
| Off color ℔ ton | 12.50@15.00 |
| Chalk, in bulk ℔ ton | 3.00@ 3.40 |
| China Clay, Imported, ℔ ton | 11.50@18.00 |
| Cobalt, Oxide ℔ 100 lb | 1.45@ 2.60 |
| Whiting, Commercial ℔ 100 lb | 42@52 |
| Gilders ℔ 100 lb | .55@ .60 |
| Ex. Gilders ℔ 100 lb | .60@ .65 |

### Putty, Commercial— ℔ 100 lb

| | |
|---|---|
| In bladders | $1.70 @1.80 |
| In bbls. or tubs | 1.20 @1.45 |
| In 1 lb to 5 lb cans | 2.65 @2.95 |
| In 12½ to 50 lb cans | 1.50 @1.90 |

### Spirits Turpentine— ℔ gal.

| | |
|---|---|
| In Oil bbls | 39 @39½ |
| In machine bbls | 39½@40 |

### Glue— ℔ lb

| | |
|---|---|
| Cabinet | 12 @15 |
| Common Bone | 7½@ 9 |
| Extra White | 18 @24 |
| Fish, liquid, 50 gal. bbls., per gallon | 60 @1.20 |
| Foot Stock, White | 12 @14 |
| Foot Stock, Brown | 9 @11 |
| German Common Hide | 10 @12 |
| German Hide | 12 @18 |
| French | 10 @40 |
| Irish | 13 @16 |
| Low Grade | 10 @12 |
| Medium White | 14 @17 |

### Gum Shellac— ℔ lb

| | |
|---|---|
| Bleached, Commercial | 22 @23 |
| Bone Dry | 26 @27 |
| Button | 30 @40 |
| Diamond I | @40 |
| Fine, Orange | 34 @35 |
| A. C. Garnet | 27 @28 |
| G. A. L. | 20 @21 |
| Kala Button | 18 @19 |
| D. C. | @42 |
| Octagon B | 35 @36 |
| T. N. | 24 @25 |
| V. S. O. | @40 |

### Colors in Oil— ℔ lb

| | |
|---|---|
| Black, Lampblack | 12 @14 |
| Blue, Chinese | 36 @46 |
| Blue, Prussian | 32 @36 |
| Blue, Ultramarine | 13 @16 |
| Brown, Vandyke | 11 @14 |
| Green, Chrome | 12 @16 |
| Green, Paris | @24 |
| Sienna, Raw | 12 @15 |
| Sienna, Burnt | 12 @15 |
| Umber, Raw | 11 @14 |
| Umber, Burnt | 11 @14 |

### White and Red, Lead &c.— ℔ lb

| | |
|---|---|
| Lead, English white, in Oil | 10⅛@10⅝ |
| Lead, American White: | |
| Dry and in Oil, 100, 250 and 500 lb kegs | 7 |
| Dry and in Oil, 25 and 50 lb kegs | 7¼ |
| Dry and in Oil, 12½ lb kegs | 7½ |
| In Oil, 25 lb tin pails | 7½ |
| In Oil, 12½ lb tin pails | 8 |
| In Oil, 1, 2, 3 and 5 lb tin cans, ass't | 9 |
| Red Lead and Litharge: | |
| In 100 lb kegs | 7 |
| In 25 and 50 lb kegs | 7¼ |
| In 12½ lb kegs | 7½ |
| In lots of less than 500 lbs, ½¢ ℔ lb advance over above prices of White and Red Lead and Litharge. | |

Lead, American. Terms: On lots of 500 lbs and over, 60 days, or 2% for cash if paid in 15 days from date of invoice.

### Zinc, Dry— ℔ lb

| | |
|---|---|
| American, dry | 5⅛@ 5⅝ |
| Red Seal (French process) | 6¾@ 7 |
| Green Seal | 7¼@ 7½ |
| German Red Seal (French process) | 6⅝@ 7 |
| Green Seal | 7¼@ 7⅝ |
| White Seal | 7⅞@ 8¼ |
| French, Red Seal | 8¾@ 8⅞ |
| Green Seal | 10⅜@10⅝ |

### Dry Colors— ℔ lb

| | |
|---|---|
| Black, Carbon | 6½@10 |
| Black Drop, American | 3½@ 8 |
| Black Drop, English | 5 @15 |
| Black, Ivory | 16 @20 |
| Lamp, commercial | 4 @ 6 |
| Blue, Celestial | 4 @ 6 |
| Blue, Chinese | 30 @32 |
| Blue, Prussian | 28 @30 |
| Blue, Ultramarine | 3½@15 |
| Brown, Spanish | ½@ 1 |
| Carmine, No. 40 | $3.10@3.25 |
| Green, Chrome, ordinary | 3½@ 5 |
| Green, Chrome, pure | 17 @25 |
| Ocher, American ℔ ton | $8.50@16.00 |
| American Golden | 2½@ 3¼ |
| French | 1¼@ 2 |
| Foreign Golden | 3 @ 4 |
| Orange Mineral, English | 10 @12 |
| French | 12¾@13 |
| German | 12 @13 |
| American | 9 @10 |
| Red, Indian, English | 4½@ 6 |
| American | 3 @ 3¼ |
| Red, Turkey, English | 4 @10 |
| Red, Tuscan, English | 7 @10 |
| Red, Venetian, Amer. ℔ 100 lb | $0.50@1.25 |
| English ℔ 100 lb | $1.15@1.60 |
| Sienna, Italian, Burnt and Powdered | 3 @ 9 |
| Italian, Raw, Powdered | 3 @ 7 |
| American, Raw | 1½@ 2 |
| American Burnt and Pow'd | 1½@ 2 |
| Talc, French ℔ ton | $18.00@25.00 |
| American ℔ ton | 15.00@25.00 |
| Terra Alba, French ℔ 100 lb | .90@ 1.00 |
| English ℔ 100 lb | .80@ 1.00 |
| American ℔ 100 lb, No. 1 | .75@ .80 |
| American ℔ 100 lb, No. 2 | .60@ .65 |
| Umber, T'key, Bnt. & Pow. | 2¾@ 3 |
| Turkey, Raw and Powdered | 2¾@ 3 |
| Burnt, American | 1½@ 2 |
| Raw, American | 1½@ 2 |
| Yellow, Chrome, Pure | 12¾@15 |
| Vermilion, American Lead | 7 @25 |
| Quicksilver, bulk | 65 @.. |
| Quicksilver, bags | @66 |
| English, Imported | 65 @70 |
| Chinese | $0.90@1.00 |


# THE IRON AGE

*The oldest paper in the world devoted to the interests of the Hardware, Iron, Machinery and Metal Trades, and a standard authority on all matters relating to those branches of industry.*

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# Current Hardware Prices.

**General Goods.**—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

**Special Goods.**—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

**Range of Prices.**—A range of prices is indicated by means of the symbol @. Thus 33⅓ @ 33⅓ & 10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

**Names of Manufacturers.**—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued annually, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

**Standard Lists.**—"The Iron Age Standard Hardware Lists" contains the list prices of many leading goods.

**Additions and Corrections.**—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

### Adjusters, Blind—
Columbian and Domestic.....33⅓%
N[illegible].....10%
Upson's Patent, ₱ gro., $29.90.....10%
Zimmerman's—See Fasteners, Blind.

### Window Stop—
Ives' Patent.....35%
Ives' Stop Bead Screws and Washers.....10%
Taplin's Perfection.....35%

### Ammunition—See *Caps, Cartridges, Shells, &c.*

### Anti—Rattlers—
Fernald Mfg. Co. Burton Anti-Rattlers, ₱ doz. pairs, Nos. 1, $0.75; 2, $0.60; 4, $1.00; 5, $0.50.
Fernald Quick Shifter, ₱ doz. pairs.....$2.00@$3.00

### Anvils—American—
Eagle Anvils.....₱ lb @8 ¢
Hay-Budden, Wrought.....9½@9¾¢
Trenton.....₱ lb 9½@9¾¢

### Imported—
Swedish Solid Steel Sisco, Superior, ₱ lb.....10@10½¢
Peter Wright & Sons, ₱ lb, 84 to 349 lb, 11¢; 350 to 600 lb, 11½¢.

### Anvil, Vice and Drill—
Millers Falls Co., $18.00.....15&10%

### Apple Parers—See *Parers, Apple, &c.*

### Aprons, Blacksmiths'—
Livingston Nail Co.....10%

### Augers and Bits—
*Com. Double Spur....75&10@80%*
*Jennings' Patn., Bright.65&10@70%*
*Black Lip or Blued...65@65&5%*
*Boring Mach. Augers.....70%*
*Car Bits, 12-in. twist.....40&10%*
Ford's Auger and Car Bits.....40&5%
Ft. Washington Auger Co., Conard's.....35%
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip. R. Jennings' list, 25&7½%
No. 30, R. Jennings' list.....50%
Russell Jennings'.....25&10&2½%
L'Hommedieu Car Bits.....15%
Mayhew's Countersink Bits.....45%
Pugh's Black.....20%
Pugh's Jennings' Pattern.....35%
Snell's Auger Bits.....60%
Snell's Bell Hangers' Bits.....60%
Snell's Car Bits, 12-in. twist.....60%
Snell's King Auger Bits.....50%
Swan's.....65&10@70
Swan's, Jennings' Pattern.....50%
Wright's Jennings' Bits.....50%

### Bit Stock Drills—
See *Drills, Twist.*

### Expansive Bits—
Clark's Pattern, No. 1, ₱ doz., $26; No. 2, $18.....60&10%
Ford's, Clark's Pattern...60&5@60&10%
C. E. Jennings & Co., Steer's Pat..25%
Lavigne Pat., small size, $18.00; large size, $26.00.....60&10%
Swan's.....60%

### Gimlet Bits—
*Per gro.*
*Common Dbl. Cut.....$3.00@3.25*
*Gedge Pattern, Nos. 1 to 10, $4.75; 11 to 13, $5.75*

### Hollow Augers—
*Bonney Pat., per doz..$5.50@6.00*
Ames.....20&10%
Douglas.....20%

### Ship Augers and Bits—
*Ship Augers.....40&10@—%*
Ives.....33⅓&5%
C. E. Jennings & Co.:
Ives.....6[illegible]
Wright.....33⅓&7½%
Swan.....48%

### Awl Hafts—See *Handles, Mechanics' Tool.*

### Awls—
*Brad Awls:*
*Handled.....gro. $2.75@3.00*
*Unhdld, Shldered...gro.63@66¢*
*Unhandled, Patent..gro.66@70¢*
*Peg Awls:*
*Unhandled, Patent..gro. 31@34¢*
*Unhdld, Shldered..gro. 65@70¢*
*Scratch Awls:*
*Handled, Com...gro. $3.50@4.00*
*Handled, Socket..gro.$11.50@12.00*

### Awl and Tool Sets—See *Sets, Awl and Tool.*

### Axes—
*Single Bit, base weights: Per doz.*
*First Quality.....$4.75@5.00*
*Second Quality.....$4.25@4.50*
*Double Bit, base weights:*
*First Quality.....$7.00@7.50*
*Second Quality.....$6.50@6.75*

### Axle Grease—
See *Grease, Axle.*

### Axles—Iron or Steel.
*Concord, Loose Collar...4¼@4½¢*
*Concord, Solid Collar....4½@5 ¢*
*No. 1 Common, Loose...3½@4 ¢*
*No. 1½ Com., New Style.4¼@4¾¢*
*No. 2 Solid Collar.....4¼@4¾¢*
*Half Patent:*
*Nos. 7, 8, 11 and 12.....70%*
*Nos. 13 to 14.....70%*
*Nos. 15 to 18...70&10@70&10&5%*
*Nos. 19 to 22...70&10@70&10&5%*

### Boxes, Axles—
*Common and Concord, not turned .....lb., 5@6¢*
*Common and Concord, turned, lb., 6@7¢*
*Half Patent.....lb., 9½@10¢*

### Bait—Fishing—
Hendryx:
A Bait.....20%
B Bait.....25%
Competitor Bait.....20&5%

### Balances—Sash—
Caldwell new list.....50&10%
Pullman.....50&10%

### Spring—
*Light Spring Balances.60@60&5%*
Chatillon's:
Light Spg. Balances.....50@50&10%
Straight Balances.....40@40&10%
Circular Balances.....50&10%
Large Dial.....30%

### Barb Wire—See *Wire, Barb.*

### Bars—Crow—
*Steel Crowbars, 10 to 40 lb.... per lb., 2¼@2½¢*

### Towel—
No. 10 Ideal, Nickel Plate..₱ gro. $8.50

### Beam, Scale—
*Scale Beams.....40%*
Chattillon's No. 1.....30%
Chatillon's No. 2.....40%

### Beaters, Carpet—
Holt-Lyon Co.:
No. 12 Wire Coppered ₱ doz. $0.80; Tinned.....$0.85
No. 11 Wire Coppered ₱ doz. $1.15; Tinned.....$1.20
No. 10 Wire Tinned.....₱ doz. $1.50

### Beaters Egg—
Dover Stamping & Mfg. Co.:
Genuine Dover, per gro., No. 1, Tumbler Size, $7.50; No. 2, Family Size, $7.50; No. 3, Extra Family Size, $24.00; No. 4, Hotel Size, $30.00.
Holt-Lyon Co.:
Holt, per doz., No. 5, Jap'd, $0.80; No. A, Jap'd, $1.15; No. B, Jap'd, $1.85; No. 6, Jap'd, $1.65.
Lyon, Jap'd, per doz., No. 2, $1.35.
Taplin Mfg. Co.:
Improved Dover, per gro., No. 60, $6.00; No. 75, $6.50; No. 100, $7.00; No. 102, Tin'd, $8.50; No. 150, Hotel, $15.00; No. 152, Hotel Tin'd, $17.00; No. 200, Tumbler, $8.50; No. 202, Tumbler Tin'd, $9.50; No. 300, Mammoth, per doz. $25.00.

### Bellows—
*Blacksmith, Standard List:*
*Split Leather.....60&10@65%*
*Grain Leather.....50@50&10%*

### Hand—
| *Inch..* | *6* | *7* | *8* | *9* | *10* |
|---|---|---|---|---|---|
| *Doz..* | *$5.00* | *5.50* | *6.00* | *6.50* | *7.50* |

### Molders—
| *Inch..* | *10* | *12* | *14* | *16* |
|---|---|---|---|---|
| *Doz..* | *$7.50* | *9.00* | *12.00* | *15.00* |

Net Prices.

### Bells—Cow—
*Wrought Cow Bells.....75%*
Jersey.....75&10
Texas Star.....50%

### Door—
Home, R. & E. Mfg. Co.'s.....55&10%

### Hand—
*Polished, Brass.....60@60&10%*
*White Metal.....60@60&10%*
*Nickel Plated.....50&10%*
*Swiss.....50&10%*
Cone's Globe Hand Bells.....33⅓@35%

### Miscellaneous—
*Farm Bells.....lb., 2¼@2½¢*
*Church and School....60@60&10%*

### Belting—Leather—
*First Quality, Ex. Hy., Strictly Short Lap.....60&10%*
*Standard.....70&10@70&10&5%*
*Light Double.....75&10%*
*Cut Leather Lacing.....50%*
*Leather Lacing Sides, per sq. ft. 23@24¢*

### Rubber—
*Competition (Low Grade), 70&10@75%*
*Standard.....60&10@70%*
*Best Grades.....40@50%*

### Bench Stops—
See *Stops, Bench*

### Benders and Upsetters, Tire—
Green River Tire Benders and Upsetters.....20%

### Bicycle Goods—
John S. Leng's Son & Co.'s 1908 list:
Chain, Parts, Spokes.....50%
Tubes.....60%

### Bits—
Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

### Blocks Tackle—
*Common Wooden.....75@75&5%*
B. & L. B. Co.:
Boston Wood Snatch, 50%; Eclipse Steel, 75%; Hollow Steel, 50&10%; Star Wire Rope, 50%; Tarbox Metal Snatch, 50%; Tarbox New Style Steel, 50&10%; Wire Rope Snatch, 50%.
Lane's Patent Automatic Lock and Junior.....30%
See also Machines, Hoisting.

### Boards, Stove—
*Paper and Wood Lined.....55%*
*Embossed.....55%*

### Boards, Wash—
See *Washboards.*

### Bobs, Plumb—
Keuffel & Esser Co.....33⅓&10%

### Bolts Carriage, Machine, &c.—
*Common Carriage (cut thread):*
*⅜ x 6 and smaller..75&5@—%*
*Larger and longer....70&5@—%*
*Phila. Eagle, $3.00 list...80@—%*
*Bolt Ends.....70&10@—%*
*Machine (Cut Thread):*
*¾ x 4 and smaller..75&10@—%*
*Larger and longer...70&10@—%*

### Door and Shutter—
*Cast Iron Barrel, Japanned, Round Brass Knobs:*
| *Inch* | *3* | *4* | *5* | *6* | *8* |
|---|---|---|---|---|---|
| *Per doz..* | *$0.30* | *.35* | *.45* | *.60* | *.80* |

*Cast Iron Spring Foot, Jap'd:*
| *Inch* | *6* | *8* | *10* |
|---|---|---|---|
| *Per doz.* | *$1.20* | *1.50* | *2.25* |

*Cast Iron Chain, Flat, Japanned:*
| *Inch* | *6* | *8* | *10* |
|---|---|---|---|
| *Per doz.* | *$1.00* | *1.40* | *1.65* |

*Cast Iron Flat Shutter, Jap'd, Brass Knobs:*
| *Inch* | *6* | *8* | *10* |
|---|---|---|---|
| *Per doz.* | *$0.75* | *.95* | *1.25* |

*Wrought Barrel Japanned, 80&10@80&10&5%*
*Barrel Bronzed.....60&10%*
*Spring.....70&10@70&10&10%*
*Shutter.....50&5@50&10&5%*
*Square Neck.....75@75&10%*
*Square.....70&10&10@80%*
Ives' Mortise.....10
Ives' Wrought Metal.....10%

### Expansion—
F. H. Evans' Crescent.....40@60%
Richards Mfg. Co.....55&10%
Star Expansion Bolt Co.:
Star, Lag Screw Type..60&10&5&2½%
Star, Wood Screw Type.....10%
Star, Machine, Single Wedge....60%
Star, Machine, Double Wedge....60%
Steward & Romain Mfg. Co.:
Style No. 13, Double.....60%
Style No. 1, Single.....60%
Style No. 100, Dbl. Jaw, Single..55%
Lag Screw.....66⅔%

### Plow and Stove—
*Plow.....65&5@70%*
*Stove.....85@85&5%*

### Tire—
*Common Iron.....80%*
*Norway Iron.....80%*
American Screw Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84...82½%
Bay State, list Dec. 28, '99.....80%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84...82½%
Eclipse, list Dec. 28, '99.....80%
Russell, Burdsall & Ward Bolt & Nut Co.:
Empire, list Dec. 28, '99.....80%
Norway Phila., list Oct. '84.....80%
Eagle.....82½%
Shelton Co.:
Tiger Brand, list Dec. 28, '99....80%
Phila., Eagle, list Oct. 16, 1884..82½%
Upson Nut Co.:
Tire Bolts.....72½%

### Borers, Bung—
*Borers Bung, Ring, with Handle:*
| *Inch.....* | *1¼* | *1½* | *1¾* | *2* |
|---|---|---|---|---|
| *Per doz...* | *$4.80* | *5.60* | *6.40* | *8.00* |
| *Inch.....* | | *2¼* | | *2½* |
| *Per doz.....* | | *$8.65* | | *11.50* |

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.75; No. 3, $2.50 each.....25%

### Boxes, Mitre—
C. E. Jennings & Co.....25%
Langdon, New Langdon and Langdon Improved, 20&10%; Langdon Acme.....15&10%
Perfection.....40%
Seavey.....45%

### Braces—
*Comman Ball, American....$1.50*
Barber's.....50&10&10@60&10%
Fray's Genuine Spofford's.....60%
Fray's No. 61, 166, 206, 614.....50%
C. E. Jennings & Co.....50&5%
Mayhew's Ratchet.....60%
Mayhew's Quick Action Hay Pat..50%
Millers Falls Drill Braces.....25&10%
P., S. & W. Co., Peck's Pat....60&10%

### Brackets—
*Wrought Steel.....75&10&5@80%*
Bradley Metal Clasp...80&10@80&10&5%
Griffin's Pressed Steel.....75@75&10%
Griffin's Folding Brackets.....70&10%
Taplin Victor Handy Egg Beater Bracket.....₱ doz. $1.50

### Bright Wire Goods—
See *Wire and Wire Goods.*

### Broilers—
Kilbourne Mfg. Co.....75&20%
Wire Goods Co.....75%

### Buckets, Galvanized—
*M'fr's list, price per gross.*
| *Quart..* | *10* | *12* | *14* |
|---|---|---|---|
| *Water, Reg...* | *26.85* | *29.50* | *33.50* |
| *Water, Hvy...* | *45.35* | *48.00* | *52.00* |
| *Fire, Rd. Btm.* | *32.00* | *34.65* | *38.65* |
| *Well.....* | *37.35* | *41.35* | *45.35* |

10&6⅔½&5%

### Bull Rings—See *Rings, Bull.*

### Butts—Brass—
*Wrought, High List, Oct. 6,'06.65%*
Cast Brass, Tiebout's.....40&10%

### Cast Iron—
*Fast Joint, Broad....40&10@50%*
*Fast Joint, Narrow...40&10@50%*
*Loose Joint.....70&10@75%*
*Loose Pin.....70&10@75%*
*Mayer's Hinges.....70@70&5*
*Parliament Butts.....70@70&5*

### Wrought Steel—Bright.
*Light Narrow, Light Reversible.....70&5%*
*Reversible and Broad..70&5%*
*Loose Joint, Narrow, Light Inside Blind, &c.....70%*
*Back Flaps, Table Chest.65%*
*Japanned.*
*Light Narrow, Loose Pin, 40&5%*
*Light Narrow, Ball Tip..60%*
*Broad.....40&5%*
*Steeple Tipped.....70%*
*Ball Tipped.....70%*

Extra, 10%

## Cages, Bird—

Hendryx Brass. Series 3000, 5000, 1100, net list; 1200, 15%; 200, 300, 900 ..... 30%
Hendryx Bronze: Series 700, 800.... 30%
Hendryx Enameled..... 35%

## Calipers—See *Compasses.*

## Calks, Toe and Heel—

*Blunt, 1 prong, per 100 lb., $3.50@$3.85*
*Sharp, 1 prong, per 100 lb., $4.00@$4.35*
Burkes, 1 pg. Blunt Toe, 3¾¢; 2 pg. Blunt Toe, 4¼¢; 1 pg. Sharp Toe, 4¼¢; 2 pg. Sharp, 4¾¢; Blunt Heel, 4¼¢; Sharp Heel..... 4¾¢
Lautier, Blunt, 4@4¼¢; Sharp, 4½@4¾¢
Perkins, Blunt, ℔ lb, 3.65¢; Sharp, 4.15¢

## Can Openers—

See *Openers, Can.*

## Caps, Percussion—

*Eley's E. B.....52@55¢*
*G. D.....per M 35¢*
*F. L.....per M 40@42¢*
*G. E.....per M. 48@50¢*
*Musket .....per M 62@63¢*

## Primers—

*Berdan Primers, $2 per M..20&5%*
*Primer Shells and Bullets..15&10%*
*All other primers per M. $1.52@1.60*

## Carpet Stretchers—

See *Stretchers, Carpet.*

## Cartridges—

*Blank Cartridges:*
*32 C. F., $5.50.....10&5%*
*38 C. F., $7.00.....10&5%*
*22 cal. Rim, $1.50.....10&5%*
*32 cal. Rim, $2.75.....10&5%*
*B. B. Caps, Con. Ball, Swgd. $1.90*
*B. B. Caps, Round Ball.....$1.40*
*Central Fire.....25%*
*Target and Sporting Rifle. 15&5%*
*Primed Shells and Bullets. 15&10%*
*Rim Fire, Sporting.....50%*
*Rim Fire, Military.....15&5%*

## Casters—

*Bed .....65&10@70%*
*Plate .....60@60&5%*
*Philadelphia .....70&10@75%*
Acme, Ball Bearing..... 35%
Gem (Roller Bearing).....70&10&10&5
Steel Gem (Roller Bearing)..... 70%
Standard Ball Bearing..... 45%
Yale (Double Wheel) low list...40&10%

## Cattle Leaders—

See *Leaders, Cattle.*

## Chain, Proof Coil—

*American Coil, Straight Link:*

| 3-16 | ¼ | 5-16 | ⅜ | ½ | ⅝ |
|---|---|---|---|---|---|
| $7.80 | 5.20 | 4.25 | 3.60 | 3.40 | 3.20 |

⅝-¾-1 1⅛ to 1¼ *inch.*
$3.10 3.20

*In cask lots, deduct 25¢.*
*German Coil.....70%*
*German Pattern Coil:*
*6-0 to 1.....70&10&5%*
*2 and 3.....60&10&10@70%*
*4, 5 and 6.....50&10@50&10&5%*

## Halter—

*Halter Chains.....60&5@60&10%*
*German Pattern Halter Chains, list July 24, '97....60&10&5@70%*
Covert Mfg. Co.:
Halter ..... 35&5%

## Cow Ties—

See *Halters and Ties.*

## Trace, Wagon, &c.—

*Traces, Western Standard: 100 pr.*
*6½—6-3, Straight, with ring. $28.00*
*6½—6-2, Straight, with ring. $29.00*
*6½—8-2, Straight, with ring. $32.00*
*6½—10-2, Str'ght, with ring. $37.00*
*NOTE.—Add 2c per pair for Hooks Twist Traces: add per pair for Nos. 2 and 3, 2c; No. 1, 3c; No. 0, 4c to price of Straight Link.*
*Eastern Standard Traces, Wagon Chain, &c...60&10@60&10&5%*

## Miscellaneous—

*Jack Chain, list July 10, '93:*
*Iron .....60&10&7½%*
*Brass .....65%*
*Safety and Plumbers' Chain. 75%*
*Gal. Pump Chain....lb., 4½@5%*
Bridgeport Chain Co.:
Triumph Halter and Coil. 35&2½@40%
Triumph Dog..... 50&10@60%
Brown Halter and Coil....45@50&5%
Covert Mfg. Co.:
Breast, Halter, Heel, Rein, Stallion ..... 40%
Oneida Community:
American Halter, Dog and Kennel Chains ..... 35&2½@40%
Niagara Dog Leads and Kennel Chains ..... 45@50&5%
Wire Goods Co.:
Dog Chain..... 70%
Universal Dbl.-Jointed Chain....70%

## Chain and Ribbon, Sash—

Oneida Community:
Steel Chain..... 60%
Pullman:
Bronze Chain, 60%; Steel Chain, Coppered ..... 60&10%
Sash Chain Attachments, per set..8¢
Aluminoy Sash Ribbon, per 100 ft. ..... $2.00@$5.00
Sash Ribbon Attachments, per set..8¢

## Chalk—

*Carpenters' Blue.....gro., 50¢*
*Carpenters' Red.....gro., 50¢*
*Carpenters' White.....gro., 40¢*

## Checks, Door—

Parkin's ..... 15%
Pullman, per gro..... $54.00
Rosswin ..... 33⅓%

## Chests, Tool—

American Tool Chest Co.:
Boys' Chests, with Tools..... 55%
Youths' Chests, with Tools..... 40%
Gentlemen's Chests, with Tools..30%
Farmers', Carpenters, etc., Chests, with Tools ..... 20%
Machinists' and Pipe Fitters' Chests, Empty..... 45%
Tool Cabinets..... 45%
C. E. Jennings & Co.'s Machinists' Tool Chests..... 7½%

## Chisels—

## Socket Framing and Firmer

*Standard List.....80&10@—%*
Buck Bros..... 30%
C. E. Jennings & Co.:
Socket Firmer No. 10.....25&7½%
Socket Framing No. 15.....25&7½%
Swan's ..... 66⅔@70%
L. & I. J. White & Co.....30@30&5%

## Tanged—

*Tanged Firmers.....30&5@35%*
Buck Bros..... 30%
C. E. Jennings & Co. Nos. 191, 181..25%
L. & I. J. White Co..... 25&5%

## Cold—

*lb.*
*Cold Chisels, good quality. 13@15¢*
*Cold Chisels, fair quality. 11@12¢*
*Cold Chisels, ordinary.... 9@10¢*

## Chucks—

Almond Drill Chucks..... 35%
Almond Turret Six-Tool Chuck.....40%
Beach Pat, each $8.00.....35&5%
Empire ..... 25%
Blacksmiths' ..... 25%
Jacobs' Drill Chucks..... 35%
Pratt's Positive Drive..... 25%
Skinner Lathe Chucks:
Independent ..... 35%
Universal, Reversible Jaws..... 35%
Universal, Com. Style Jaws..... 40%
Combination, Reversible Jaws....35%
Combination, Com. Style Jaws...40%
Round Body or Box Body, 2 Chuck Jaws ..... 25%
Geared Scroll Chucks..... 25%
Drill Chucks:
New Model, 25%; Geared Pattern, 25%; Skinner Patent, ...25%
Positive Drive..... 40%
Planer Chucks..... 20%
Standard ..... 45%
Drill Press Vises..... 30%
Face Plate Jaws..... 35%
Standard Tool Co.:
Improved Drill Chuck..... 45%
Union Mfg. Co.:
Combination, Nos. 1, 2, 3, 4, 5, 6, 7, 8 and 17, 40%; No. 21.....35%
Scroll Combinations, Nos. 83 and 84 ..... 30%
Geared Scroll, Nos. 33, 34 and 35..25%
Independent Iron, Nos. 18 and 318.35%
Independent Steel, No. 64..... 25%
Union Drill, Nos. 000, 00, 100, 101, 102, 103, 104..... 35%
Union Czar Drill..... 25%
Universal, 11, 12, 16, 17, 13, 14, 15..40%
Universal No. 42..... 35%
Iron Face Plate Jaws, Nos. 28, 30, 48 and 50..... 35%
Steel Face Plate Jaws, Nos. 70 and 72 ..... 30%
Westcott Patent Chucks:
Lathe Chucks..... 50%
Little Giant Auxiliary Drill..... 50%
Little Giant Double Grip Drill...50%
Little Giant Drill, Improved..... 50%
Oneida Drill..... 50%
Scroll Combination Lathe..... 50%
Whitaker Mfg. Co.:
National Drill..... 25%

## Clamps—

Carriage Makers', Star, P., S. & W. Co. ..... 50%
Besly, Parallel..... 33⅓&10%
Hammer & Co.:
Adjustable ..... 20&5%
Carriage Makers' H. P. Screw. 40&5%
Myers' Hay Rack..... 50%
Lineman's Swedish Neverturn..... 65%
Saw Clamps, see Vises, Saw Filers'

## Cleaners, Drain,

Iwan's Champion, Adjustable..... 50%
Iwan's Champion, Stationary..... 40%

## Sidewalk—

Star Socket. All Steel..℔ doz. $4.05 net
Star Shank. All Steel..℔ doz. $3.24 net
W. & C. Shank, All Steel, ℔ doz., 7½ in., $3.00; 8 in., $3.25.

## Cleavers, Butchers'—

Foster Bros..... 30%
Fayette R. Plumb..... 30%
L. & I. J. White Co..... 30%

## Clippers, Horse and Sheep—

Chicago Flexible Shaft Co.:
1902 Chicago Horse, each..$10.75
20th Century Horse, each...$5.00
Lightning Belt Horse, each.$15.00
Chicago Belt Horse, each..$20.00
Stewart's Enclosed Gear Roll Bearing Horse, each.....$6.75
Stewart's New Model Sheep Shearing Machine each.$12.75
Stewart Enclosed Gear Shearing Machine, No. 8, each..$9.75
} 20%

## Clips, Axle—

*Regular Styles, list July 1, '05, 80&80&10%*

## Cloth and Netting, wire

—See *Wire, &c.*

## Cocks, Brass—

*Hardware list:*
*Plain Bibbs, Globe, Kerosene, Racking, Liquor, Bottling, &c .....77%*
*Compression Bibbs.....70%*

## Coffee Mills—

See *Mills, Coffee.*

## Collars, Dog—

Nickel Chain, Walter B. Stevens & Son's list ..... 40%
Leather, Walter B. Stevens & Son's list ..... 40%

## Compasses, Dividers, &c.

*Ordinary Goods.....70&10@75%*

## Conductor Pipe,—

*L. C. L. to Dealers:*

| | Gal. Steel. | Charcoal. | Copper. |
|---|---|---|---|
| *Northeastern:* | | | |
| | 70&10% | 50&10&7½% | 50&10% |
| *Eastern:* | | | |
| | 70&10&5% | 50&10&7½% | 50&10% |
| *Central:* | | | |
| | 75&5% | 60% | 50&10% |
| *Northwestern:* | | | |
| | 75&2½% | 60% | 50&10% |
| *Western:* | | | |
| | 70&7½% | 50&12½% | 50&5% |
| *Tennessee:* | | | |
| | 70&10% | 50&12½% | 50&10% |
| *Southern:* | | | |
| | 70% | 50&12½% | 50&5% |
| *Southwestern:* | | | |
| | 70% | 50&5% | 50&5% |

*Terms, 60 days: 2% cash 10 days. Factory shipments generally delivered.*
See also Eave Troughs.

## Coolers, Water—

L. & G. Mfg. Co.:

| Gal. | 2 | 3 | 4 | 6 | 8 |
|---|---|---|---|---|---|
| Galvanized, ea. | $1.85 | $2.00 | $2.25 | $2.90 | $3.90 |

Galvanized, Lined, side handles,

| Gal. | 2 | 3 | 4 | 6 | 8 |
|---|---|---|---|---|---|
| Each | $1.95 | $2.15 | $2.40 | $3.30 | $4.15 |

White Enameled..... 10%
Agate Lined..... 10%

## Coppers' Tools—

See *Tools, Coopers'.*

## Coppers, Soldering—

*Soldering Coppers, 3 lb. to pair and heavier, 20¢; lighter than 3 lb. to pair.....22¢*

## Cord— Sash—

*Braided, Drab.....lb. 35¢*
*Braided, White, Com., Nos. 8 to 12, 21¢; No. 7, 21½¢; No. 6, 22½¢. In lots of 12 doz. or over, 1 cent less per pound.*
*Cable Laid Italian, lb., No. 18. 37¢*
*Italian, lb., A, No. 18, 25¢; B, 22¢*
*Common India.....lb., 11@11½¢*
*Cotton Sash Cord, Tw'ted. 18@20¢*
*Patent Russia.....lb....20¢*
*Cable Laid Russia.....lb...21¢*
*India Hemp, Br'd'd.....lb...21¢*
*India Hemp, Twisted...lb. 13@14¢*
*Patent India, Twisted..lb...17¢*
Pearl Braided, cotton, No. 6, ℔ lb, 20½¢; No. 7, 19½¢; Nos. 8 to 12, 19½¢, in 12 doz. to 100 doz. lots.
Eddystone Braided, Nos. 8 to 12, 26¢; 7, 26½; 6, 27½¢.
Harmony Cable Laid Italian, Nos. 7 to10.....℔ lb 23¢
Pullman:
Wire Sash Cord..... 10%
Sash Cord Attachments, per 100..$2.00
Samson, Nos. 8 to 12:
Braided, ℔ lb., Drab Cotton, 55¢; Italian Hemp, 40¢@50¢; Linen, 65¢; White Cotton, 50¢; Spot Cord.....50¢
Massachusetts, White...℔ lb 40¢
Massachusetts, Drab...℔ lb 45¢
Phoenix, White, Nos 8 to 12....27¢
} 15%
Silver Lake, per lb.:
A, Drab, 45¢; A, White, 40¢; B, Drab, 40¢; B, White, 35¢; Italian Hemp, 40¢; Linen....57½¢
See also Chain and Ribbon.

## Wire, Picture—

*Full Length.....90@—%*
*Short Length.....90&20@—%*
Hendryx Standard Wire Picture Cord, old list. 85&10%
Turner & Stanton Co. Wire Picture Cord ..... 90%

## Cradles—

*Grain .....50%*

## Crayons—

*White Round Crayons, Cases, 100 gro., $8.00, $8.50, $9.00 and $10.00 according to grade.*
Zelnicker's Lumber: ℔ gro.
White and Purple, Indelible....$7.50
Blue, Red, Green, Yellow and Terra Cotta, $6.50; Black.....$4.50
Giant Lumber, 5¼ in. x 15-16 in. round, all colors, $12.00; Indelibles, $14.00; Blacks.....$10.00
Genuine Soapstone, Metal Workers', 5 in. x ¼ in. Round, $2.50; 5 in. x ¼ in. Square, $1.75; 5 x ½ x 3-16, $2.50; 5 x 1¼ x 3-16..... $2.90
Suremark, Black, $2.25; Blue, Red and Yellow..... $2.50

## Crooks, Shepperds'—

Fort Madison, per doz., Heavy, $5.50; Light ..... $5.00

## Crow Bars—See *Bars, Crow.*

## Cultivators—

Victor Garden..... 50%

## Cutlery, Table—

International Silver Company:
No. 12 M'd'm Knives, 1847 ℔ doz. $3.50
Star, Eagle Rogers & Hamilton and Anchor ..... ℔ doz. $3.00
Wm. Rogers & Son..... ℔ doz. $2.50

## Cutters— Glass—

H. H. Mayhew Co..... 40%
Red Devil ..... 60
B. Mfg. Co..... 40
Woodward ..... 50

## Meat and Food—

American ..... 20

| Nos | 401 | 402 | 403 | 404 | 405 | 406 | 407 |
|---|---|---|---|---|---|---|---|
| Each | $5 | $7 | $10 | $12 | $25 | $5 | |

Enterprise:

| Nos | 5 | 10 | 12 | 22 | 32 | |
|---|---|---|---|---|---|---|
| Each | $2 | $3 | $2.75 | $4.50 | $6 | 25@25&7½ |
| No. 202 | $0.50 | | | | | 10&7½ |

P. S. & W. Co.:
Ideal ..... 40@40&5%
Hales ..... 60&5%
Little Giant..... ℔ doz. 40@50%

| Nos.. | 305 | 310 | 312 | 320 | 322 |
|---|---|---|---|---|---|
| | $35.00 | $48.00 | $44.00 | $72.00 | $68.00 |

New Triumph No. 605, ℔ doz. $24.00, 40%
Russwin Food, No. 1, $24.00; No. 2, $27.00; 3, $12.00..... 45&10&10%
$15.00 $18.00
Enterprise Beef Shavers..... 25

## Slaw and Kraut—

Henry Disston & Sons:
Slaw and Kraut Cutters..... 35
Corn Graters..... 30
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife....℔ doz. $3.00
Combined Slaw Cutter and Corn Grater ..... ℔ doz. $4.00

## Tobacco—

*All Iron, Cheap...doz, $4.25@4.50*
Enterprise ..... 25@30%
National, ℔ doz., No. 1, $21; No. 2, $18 ..... 40%

## Diggers, Post Hole, &c—

Disston's:
Rapid, ℔ doz., $24.00..... 25%
Samson, ℔ doz., $34.00..... 25%
Iwan's Pat. Post Hole and Well Auger ..... 40%
Vaughan Pattern Post Hole Augers, ℔ doz.. $7.00
Perfection Post Hole Diggers, ℔ doz. ..... $8.50
Split Handle Post Hole Diggers, ℔ doz., $7.50
Hercules Pattern, ℔ doz..... $9.50
Kohler's, ℔ doz., Universal, $14.00; Little Giant, $12.00; Hercules, $10.00; Invincible, $9.00; Rival, $8.50; Pioneer..... $7.50
Never-Break Crucible Steel Post Hole Diggers ..... 60%

## Dividers—See *Compasses.*

## Drawing Knives—

See *Knives, Drawing.*

## Dressers Emery Wheel—

Sterling Emery Wheel Dressers..... 35%
Sterling Wheel Dresser Cutters..... 35%

## Drills and Drill Stocks—

*Blacksmith's Common Drilling Machines .....$1.50@1.75*
Breast, Millers Falls..... 15&10%
Breast, P., S. & W..... 33⅓%
C. & C. Ratchet..... 25%
Reversible Ratchet Die Stocks.... 25%
Goodell Automatic Drills. 50&10@60&10%
Millers Falls Automatic Drills, Graves', per doz., Nos. 1, $4.86; 2, $8.16.
Millers Falls Automatic Drills. 33⅓&10%
Ratchet, Curtis & Curtis..... 25%
Ratchet, Parker's..... 40%
Ratchet, Weston's..... 40%
Ratchet, Weston's, Style H Improved ..... 40@40&5%
Ratchet, No. 012..... 40@40&5%
Ratchet, Celebrated..... 40@40&5%
Ratchet, Whitney's, P., S. & W.. 40&10@50%
Whitney's Adjustable, No. 10, $12.00, 33⅓%

## Twist Drills—

*Bit Stock.....70@70&5%*
*Taper and Straight Shank, 60&10@70%*

## Drivers, Screw—

*Screw D'ver Bits, per doz. 45@50¢*
Balsey's Screw Holder and Driver, ℔ doz., 2½-in., $6; 4-in., $7.50; 6-in., $9 ..... 50%
Buck Bros.' Screw Driver Bits..... 30%
Champion ..... 50%
Disston's ..... 70%
Fray's Hol. H'dle Sets, No. 3, $12..50%
Ford's Brace Screw Drivers....40&10%
Gay's Double Action Ratchet..... 35%
Goodell's Auto..... 65@65&10
Mayhew's Black Handle..... 40%
Mayhew's Monarch..... 40%
Millers Falls, ℔ doz., Nos. 11, $9.95; 12, $13.73; 20, $8.17; 21, $8.46; 41, $13.43; 42, $17.21.
Smith & Hemenway Co., Neverturn, 66⅔; Elmora, 60%; Star, 30&10%
Swan's:
Nos. 7565 to 7568, 60%; No. 7540, 40&10%

## Eave Trough, Galvanized—

| *Territory.* | *Gal. Steel.* | *Copper.* |
|---|---|---|
| *Northeastern* | *75&10&5%* | *50&10%* |
| *Eastern* | *80%* | *50&10%* |
| *Central* | *80&10&5%* | *50&10%* |
| *Northwestern* | *80&10&5%* | *50&10%* |
| *Western* | *80&5* | *50&5* |
| *Tennessee* | *80&5* | *50&10%* |
| *Southern* | *75&10%* | *50&5%* |
| *Southeastern* | *75&10&2½%* | *50&5* |

*Terms 2% for cash. Factory shipments generally delivered.*
*Note. Lower prices are made in some sections.*
See also Conductor Pipe and Elbows.

## Elbows and Shoes—

*Factory shipments, all territories: Galv. Steel, Galv. C. I. and Copper.*
*Sizes 2, 3, 4..... 80%*
*Sizes 1½, 2½, 3½, 5, 6...60&10%*
*No. 26..... 50*
*No. 24..... 25*
*Copper Elbows..... 50*

## Elbows, Stove Pipe—

Edwards Standard Blue... 40&10&5%
Edwards, Royal Blue..... 40&10&1
Reeves, Dover, Flat Crimp..40&10&5

## Emery, Turkish—

| | 4 to 46: | 5 to 220: | Flour. |
|---|---|---|---|
| *Kegs.....lb.* | 5 ¢ | 5½¢ | 8½¢ |
| *½ Kegs.....lb.* | 5½¢ | 5¾¢ | 8¾¢ |
| *¼ Kegs.....lb.* | 5½¢ | 6 ¢ | 9 ¢ |

*10-lb. cans, 10 in case....6½¢ 7¢ 6¢*
*10-lb. cans, less than 10....10¢ 10¢ 8¢*
*Less quantity..10¢ 10¢ 8¢*

*NOTE.—In lots 1 to 3 tons a discount of 10% is given.*

### Extensions, Bit—
Ford's Auger Bit Extensions....40&5%

### Extractors, Lemon Juice—
—See *Squeezers, Lemon.*

### Fasteners, Blind—
Zimmerman's Jap'd and Galv., 50 & 5%; Bronze and Plated.....50%
Walling's .....50%
Upson's Patent.....40%

### Cord and Weight—
Ives, ₱ gro., $1.08.....10%
Titan, ₱ gro., $0.66.....10%

### Corrugated—
Acme Corrugated Fasteners.....70%

### Faucets—
*Cork Lined.....50&10@60%*
*Metallic Key, Leather Lined, ..60&10@70%*
*Red Cedar.....40&5@70&10&5%*
*Petroleum.....70&10@75%*
B. & L. B. Co.:
Metal Key.....60&10%
Star .....60%
West Lock.....50&10%
John Sommer's Peerless Tin Key....40%
John Sommer's Boss Tin Key.....50%
John Sommer's Victor Mtl. Key.50&10%
John Sommer's Duplex Metal Key..60%
John Sommer's Diamond Lock.....40%
John Sommer's I.X.L. Cork Lined..50%
John Sommer's Reliable Cork Lined..50&10%
John Sommer's Chicago Cork Lined.60
John Sommer's O. K. Cork Lined...50%
John Sommer's No Brand, Cedar....50%
John Sommer's Perfection, Cedar....40%
Self Measuring:
Enterprise, Self Measuring and Pump, ₱ doz., $36.00.....40&10%
Lane's, ₱ doz., $36.00.....40&10%
National Measuring, ₱ doz. $36.40&10%

### Felloe Plates—
See *Plates, Felloe.*

### Files— Domestic—
*List Nov. 1, 1899.*
*Best Brands.....70&10@75&10%*
*Standard Brands.....75&10@80%*
*Lower Grade....75&10&10@80&10%*
Gold Medal.....70%
McCaffrey's American Standard, 60&10&10%

### Imported—
*Stubs' Tapers, Stubs' list, July 24, '97.....33⅓@40%*

### Fixtures, Fire Door—
Richards Mfg. Co.:
Universal, No. 103; Special, No. 104 .....$3.75
Fusible Links, No. 96.....50%
Expansion Bolts, No. 197.....60&10%

### Grindstone—
*Net Prices:*

| *Inch* | *15* | *17* | *19* | *21* |
|---|---|---|---|---|
| *Per doz.* | *$3.60* | *3.85* | *4.15* | *4.65* |

Peck, Stow & Wilcox Co.:

| In. | 15 | 17 | 19 | 21 | 24 | |
|---|---|---|---|---|---|---|
| | $4.00 | 4.40 | 4.75 | 5.50 | 6.50 | ....30% |

Reading Hardware Co.....60%

### Fodder Squeezers—
See *Compressors.*

### Forks—
*NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.*
Iowa Dig-Ez-y Potato.....60&10
Victor, Hay.....60&15&2½
Victor, Manure.....66⅔
Victor, Header.....65
Champion, Hay.....66⅔
Champion, Header.....65%
Champion, Manure.....60&15&2½
Columbia, Hay.....60&20
Columbia, Manure.....70%
Columbia, Spading.....70&12½
Hawkeye Wood Barley.....40%
W. & C. Potato Digger.....60&10%
Acme Hay.....60&20
Acme Manure, 4 tine.....60&10&5
Dakota Header.....60&20
Jackson Steel Barley.....60&20%
Kansas Header.....65
W. & C. Favorite Wood Barley....40%
Plated.—See Spoons.

### Frames— Wood Saw—
*White, S'g't Bar, per doz.75@80¢*
*Red, S'g't Bar, per doz.$1.00@1.25*
*Red, Dbl. Brace, per doz.$1.40@1.50*

### Freezers, Ice Cream—

| *Qt.* | *1* | *2* | *3* | *4* | *6* |
|---|---|---|---|---|---|
| *Each* | *$1.25* | *$1.60* | *$1.90* | *$2.20* | *$2.80* |

### Fruit and Jelly Presses—
*See Presses, Fruit and Jelly.*

### Fry Pans—See *Pans, Fry.*

### Fuse— *Per 1000 Feet.*
*Hemp.....$2.75*
*Cotton.....3.20* } Extra 5@10% often given.
*Waterproof Sgl. Taped..3.65*
*Waterproof Dbl. Taped..4.40*
*Waterproof Tpl. Taped..5.15*

### Gates, Molasses and Oil—
*Stebbins' Pattern.....80@80&5%*

### Gauges
*Marking, Mortise, &c..50@50&10%*
Chapin-Stephens Co.:
Marking, Mortise, &c.....50&50&10
Dayton Marking, Mortise, &c..67½
Wm. Brown & Sharpe's.....33⅓%
Wm. Morse's.....25%
Wm. P. S. & W. Co.....33⅓%

### Gimlets— Single Cut—
*Numbered assortments, per gro.*
*Nail, Metal, No. 1, $2.00; 2, $2.30*
*Spike, Metal, No. 1, $4.00; 2, $4.30*
*Nail, Wood Handled, No. 1, $2.30; 2, $2.60*
*Spike, Wood Handled, No. 1, $4.30; 2, $4.60*

### Glass, American Window
See *Trade Report.*

### Glasses, Level—
Chapin-Stephens Co.....65@65&10%

### Glue, Liquid Fish—
*Bottles or Cans, with Brush, 25&10@50%*
Elwell's .....40%

### Grease, Axle—
*Common Grade...gro.$6.00@$6.50*
Dixon's Everlasting, 10-lb. pails, ea. 85¢; in boxes, ₱ doz., 1 lb, $1.20; 2 lb.....$2.00
Helmet Hard Oil.....25%

### Griddles, Soapstone—
Pike Mfg. Co.....33⅓@33⅓&10%

### Grinders—
Pike Mfg. Co.:
Hand and Foot Power, Pyko Nos. 1, 2, 3; Pyko Primo; Pyko Peerless; Pyko Spiral (foot power).33⅓%
Mower Knife and Tool, $5.00..40&10%
Royal Mfg. Co.:
Alundum Grinding Machines, each, Nos. 01, $1.75; 1A, $2.50; 10, $5.00 .....30%
Alundum Sickle Grinders, each, Nos. 20, $5.00; 20A, $6.00; 20A Combined, $6.50.....30%
Alundum Disc Grinders, each, $2.50 .....30%

### Grindstones—
Pike Mfg. Co.:
Improved Family Grindstones, ₱ inch, ₱ doz., $2.00.....33⅓%
Richards Mfg. Co., Eli and Cycle, Ball Bearing, mounted.....40%

### Grips, Nipple—
Perfect Nipple Grips.....40&10&2%

### Halters and Ties—
*Cow Ties.....65@65&10%*
Bridgeport Chain Co.:
Triumph Coil and Halters.35&2½@40%
Brown Coil and Halters...45@50&5%
Brown Cow Ties.....50&5@50&10&5%
Brown Tie Outs.....70&10@75&5%
Covert Mfg. Co.:
Web .....30&2%
Jute Rope.....35%
Sisal Rope.....20%
Cotton Rope.....45%
Hemp Rope.....45%
Oneida Community:
Am. Coil and Halters.....40@40&5%
Am. Cow Ties.....45@50%
Niagara Coil and Halters...45@50&5%
Niagara Cow Ties.....45&5@50&10&5%

### Hammers—
#### Handled Hammers—
Heller's Machinists'....55&10@55&10&5%
Heller's Farriers.....40&5@40&10&5%
Peck, Stow & Wilcox Co.:
Crucible Steel.....40&10@50%
Farriers' .....40&10@50%
Riveting .....40&10@50%
Machinists' .....66⅔@5%
Blacksmiths' .....50%
Fayatte R. Plumb:
A. E. Nail.....40&2½@40&12½%
Eng. and B. S. Hand.50&10&5@60&5%
Machinists' Hammers.....60&10&5%
Rivet and Tinners'.40&7½@40&12½&5%
Victor Magnetic Tack, ₱ gro....$7.75

#### Heavy Hammers and Sledges—
*Under 3 lb., per lb., 50¢...80&10%*
*3 to 5 lb., per lb., 40¢...80&10&10%*
*Over 5 lb., per lb., 30¢.....*
*Over 5 lb., per lb., 30¢.80&10&10%*

### Handles—
#### Agricultural Tool Handles
*Axe, Pick, &c....60&10@60&10&5%*
*Hoe, Rake, &c.....40%*
*Fork, Shovel, Spade, &c.:*
*Long Handles.....40%*
*D Handles.....40%*

#### Cross-Cut Saw Handles—
Atkins' .....40%
Champion .....50%
Disston's .....50%

#### Mechanics' Tool Handles—
*Auger, assorted...gro.$3.00@$3.50*
*Brad Awl.....gro.$1.65@$1.75*
*Chisel Handles, Ass'd, per gro.:*
*Tanged Firmer, Apple, $2.40@$2.65; Hickory.....$2.15@2.40*
*Socket Firming, Apple, $1.75@$1.95; Hickory.....1.60@1.75*
*Socket Framing, Hickory, $1.60@$1.75*
*File assorted.....gro.$1.30@$1.40*
*Hammer, Hatchet, &c., 60&10@60&10&5%*
*Hand Saw, Varnished, doz., 80¢ 85¢; Not Varnished.....65@75¢*
*Plane Handles:*
*Jack, doz., 30¢; Fore, doz...45¢*
Chapin-Stephens Co.:
Carving Tool .....30@30&10%
Chisel .....60@60&10
File and Awl.....60@60&10
Saw and Plane.....30@30&10
Screw Driver.....30@30&10
Millers Falls Adj. and Ratchet Auger Handles .....15&10%
Nicholson Simplicity File Handle ..₱ gro. $0.85@$1.50
J. L. Osgood:
Indestructible File and Tool, ₱ gro., No. 1, $8.00; No. 2, $8.50; No. 3, $9.00; No. 4, $9.50; No. 5, $10.00.....gro. lots 10%

W. A. Zelnicker Supply Co.:
Hammer, ₱ doz., 12 in. $2.00; 14 in., $2.00; 16 in., $2.30; 18 12., $2.50; 20 in., $2.70; 22 in., $3.00; 24 in., $3.30; 26 in., $3.50; 30 in., $3.80.
Sledge, ₱ doz., oval, 30 in., $3.80; octagon, 30 in., $3.80; oval, 36 in., $4.00; octagon, 36 in., $4.00.
Axe, ₱ doz., 28 to 34 in., $5.60; 36 in., $5.80.
Adze, ₱ doz., 36 in., $5.80; 36 in., $7.80.
Pick, ₱ doz., R. R., 36 in., $8.00; coal, 34 in., $5.80.
Hatchet, ₱ doz., 12 to 14 in., $2.00.
} 50%

### Hangers—
*NOTE.—Barn Door Hangers are generally quoted per pair, without track and Parlor Door Hangers per double set with track, &c.*
Chicago Spring Butt Co.:
Friction .....25%
Oscillating .....25%
Big Twin.....25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door.....50%
Elevator .....30%
Railroad .....50%
Cronk & Carrier Mfg. Co.:
Loose Axle.....60&10%
Roller Bearing.....70%
Griffin Mfg. Co.:
Solid Axle, No. 10, $12.00..60&10%
Roller Bearing, No. 11, $15.00, 60&10%
Roller Bearing, Ex. Hy., No. 22, $18.00.....60&10%
Bull Dog, $24.00.....70%
Lane Bros. Co.:
Parlor, Ball Bearing, $4.00; Standard, $3.15; No. 105, $2.85; New Model, $2.80; New Champion per set of 4 Hangers, complete with track.....$2.25
Barn Door, Standard.....60&10%
Hinged .....net $6.08
Covered .....60&5%
Special .....70&5%
Trolley Hangers and track...50%
Lawrence Bros.:
Cleveland .....70&7½%
Clipper, No. 75.....60%
Crown .....55&10%
Cyclone, No. 40.....net $6.50
Tandem, No. 50.....net $7.50
New York.....55&10%
Trolley, No. 30, ₱ pair.....$1.25
McKinney Mfg. Co.:
Roller Bearing, Nos. 1 and 2..70%
Anti-Friction .....60
Hinged Hangers, King Charm.60%
Richards Mfg. Co.:
Hangers, Nos. 47, 48, 147, 247, 60&5%
Pioneer Wood Track, No. 3..$2.25
Roller B'r'g St'l Track No. 12.$2.20
Roller B'r'g St'l Track No. 13.$2.50
Roller B'r'g, Nos. 39, 41, 43, 70&7½%
Hero, Adj. Track No. 19..50&10%
Adjustable Track Tandem Trolley Track No. 16.....50&10%
Seal, Steel Track No. 8.....$2.25
Auto Adj. Track No. 22..50&5%
Trolley B. D. No. 17, $1.25; F. D. No. 120, $2.25; No. 121, $2.45; No. 150.....$2.50
Safety Underwriters F. D. No. 101 .....50%
Tandem No. 41..2½ and 3 60&10%
Palace, Adjustable Track No. 132 .....50&5%
Royal, Adjustable Track No. 122 .....50&10%
Ives' Wood Track No. 1.....$2.25
Trolley B. D. No. 20.....50&10%
Trolley B. D. No. 24, $1.30; No. 27, $1.40; No. 28.....$1.60
Roller Bearings, Nos. 37, 38, 39, 41, 43, 44, Sizes 1 and 2.70&7½%
Anti-friction, No. 42; No. 44, sizes 2½ and 3.....60%
Hinged Tandem No. 48....60&5%
Folding Door B. B. Swivel No. 135 .....40%
Taylor & Boggis F'y Co.'s Kidder's Roller Bearing, ₱ doz., 4 in., $12.00; 5 in., $14.00..40&10%
Myers' Stayon Hangers.....60%

### Hangers— Garment—
Pullman Trouser, ₱ gro., No. 1 $9.00; No. 4, $24.00; No. 5, $16.50; No. 8, Black Enamel, $7.50; No. 10, $21.00; No. 12, $8.00; No. 15, Rods, $9.00; No. 18, Loops.....$10.00
Victor Folding.....₱ gro. $9.60

### Gate—
Myers' Patent Gate Hangers, ₱ doz. net .....50%

### Joist and Timber—
Lane Bros. Co.....35%

### Hasps—
Griffin's Security Hasp.....50&10%
McKinney's Perfect Hasp, ₱ doz..60%

### Hatchets—
*Regular list, first qual.40&12½@—*
*Second quality.....50&10&5@—*

### Heaters, Carriage—
Clark, No. 5, $1.25; No. 5B, $1.50; No. 3, $1.75; No. 3D, $2.00; No. 7D, $2.25; No. 3E, $2.50; No. 1, $3.00.....25
Clark Coal, ₱ doz., $0.75.....20%

### Hinges—
#### Blind and Shutter Hinges
*Surface Gravity Locking Blind: Doz. Sets with Fastenings, Net. No. 1, $0.70; No. 3, $1.25; No. 5, $2.65.*
*Mortise Shutter.....80%*
*Mortise Reversible Shutter...80%*
North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3 for Brick, $11.50.....10%
Charles Parker Co.....70@75
Parker Wire Goods Co.
Hale & Benjamin Automatic Blind Hinges .....20%
Hale's Blind Awning Hinges, No. 110, for wood, $9.00; No. 111, for brick, $9.00.....20%
Reading's Gravity.....60%
Stanley's Steel Gravity Blind Hinges, No. 1647½, ₱ doz. sets, without screws, $0.95; with screws, $1.25.
Wrightsville Hardware Co.:
O. S., Lull & Porter.....75&5%
Acme, Lull & Porter.....75%
Queen City Reversible.....75%
Shepard's Noiseless, Nos. 60, 65, 55 .....75&5%
Niagara, Gravity Locking, Nos. 1, 3 & 5.....75&5%
Clark's O. P., No. 1.....75&10%
Clark's O. P., Nos. 3 and 5....75&5%
Tip Pat'n, No. 1.....75&10%
Clark's No. 3.....75&5%
Buffalo Gravity Locking, Nos. 1, 3 & 5.....70&10&5%
Shepard's Double Locking.....75%
Champion Gravity Locking.....75&5%
Pioneer .....75&10
Empire .....65%
W. H. Co.'s Mortise Gravity Locking, No. 2.....60&10%

#### Gate Hinges—
*Clark's or Shepard's—Doz. sets:*

| *No.* | *1* | *2* | *3* |
|---|---|---|---|
| *Hinges with L't'chs.* | *$2.00* | *2.70* | *3.00* |
| *Hinges only.....* | *1.25* | *1.90* | *3.50* |
| *Latches only.....* | *.70* | *.75* | *.85* |

*New England:*
*With Latch.....doz..@$2.00*
*Without Latch.....doz..@$1.60*
*Reversible Self-Closing:*
*With Latch.....doz..@$1.75*
*Without Latch...doz. ...@$1.35*
*Western:*
*With Latch..... doz. $1.75*
*Without Latch.....doz..$1.15*
Wrightsville Hardware Co.:
Shepard's or Clark's Hinges and Latches, Hinges only or Latches only, Nos. 1, 2 or 3.....70%

#### Miscellaneous—
Griffin Mfg. Co., Fleur de Lis Surface Hinges, ₱ doz. prs.....$1.00

#### Pivot Hinges—
Bommer Bros. Pivot, Ball Bearing .....40%
Lawson Mfg. Co. Matchless.....30%

#### Spring Hinges—
*Holdback, Cast Iron...$6.75@$7.00*
*Non-Holdback, C'st Iron$6.50@$6.75*
J. Bardsley:
Bardsley's Non-Checking Mortise Floor Hinges.....40%
Bardsley's Patent Checking.33⅓%
Bommer Bros.:
Spring Butt Hinges.....40%
Surface Floor, Ball Bearing .....40%
Mortise Floor, Ball Bearing.40%
Lavatory Hinges.....40%
Non-Holdback Screen Door, Nos. 2000 and 900.....40%
Holdback Screen Door, No. 999.....₱ gro. $9.00
Chicago Spring Butt Co.:
Chicago Spring Hinges.....25%
Triple End Spring Hinges....50%
Chicago (Ball Bearing) Floor.50%
Garden City Engine House...25%
Keene's Saloon Door.....25%
Columbian Hardware Co.:
Acme, Wrought Steel.....30%
Acme, Brass.....25%
American .....30%
Columbia, ₱ gr., No. 14, $9.00; No. 18.....$25.00
Columbia, Adj., No. 7, ₱ gr.$12.00
Gem, new list.....30
Clover Leaf and Acorn, per gro. .....$12.00
Oxford, new list.....30%
Floor Spring Hinges.....65&10
Columbian Steel.....65&10%
Lawson Mfg. Co.:
Matchless Spring Hinges.....30%
Matchless Jamb Hinges.....30
Richards Mfg. Co.:
Superior Double Acting Floor Hinges .....40%
Shelby Spring Hinge Co.:
Buckeye All Steel Holdback Screen Door.....₱ gr. $9.00
Chief Ball Bearings Floor Hinge .....50%
Ball Bearing Door.....25%
No. 777, Sheet Steel Holdb'k, ₱ gr. pr.....$9.00
Standard Mfg. Co.:
Champion Double Acting Door Hinge .....25&10&10%
Standard Double Acting Floor Hinge .....25&10&10%
Superior Spring Hinge Co.:
Superior Floor Hinges.....33⅓%
Spring Hinges.....33⅓%

#### Wrought Iron Hinges—
*Strap and T Hinges, &c., list February 10, 1908:*
*Light Strap Hinges..50&10%*
*Heavy Strap Hinges..60&5%*
*Light T Hinges.....50%*
*Heavy T Hinges.....40%*
*Extra Hvy. T Hinges.50&10%*
*Hinge Hasps.....33⅓%*
*Cor. Heavy Strap....60&5%*
*Cor. Ex. Heavy T...50&10%*
*Screw Hook and Strap.* { *6 to 12 in..lb..3½¢* / *1½ to 20 in..lb..3½¢* / *22 to 36 in..lb..3¢* } *Extra 10&7½%.*
*Screw Hook and Eye:*
*3 to 4 inch.....lb..6½¢*
*⅝-inch .....lb..7½¢*
*½-inch .....lb..8½¢*

### Hitchers, Stall—
Covert Mfg. Co., Stall Hitchers..30&2%

### Hods— Coal—
*M'f'gr's list, price per gross:*

| *Inch* | *15* | *16* | *17* | *18* |
|---|---|---|---|---|
| *Galv. Open....* | *$35* | *$39* | *$42* | *$46* |
| *Jap. Open..* | *26* | *28* | *31* | *35* |
| *Galv. Funnel...* | *43* | *48* | *52* | *56* |
| *Jap. Funnel....* | *33* | *36* | *39* | *43* |

*10&7½&5%*

### Masons' Etc.
Cleveland Wire Spring Co.:
Steel Brick, No. 162.....each $1.05
Steel Mortar, No. 158.....each $1.35

, Extra 10% often given on most of these Hinges.

### Hoes— Eye

*Scovil and Oval Pattern, 60&10@60&10&10%*
*Grub, list Feb. 23, 1899, 70&10@70&10&10%*
D. & H. Scovil....27½
Am. Fork & Hoe Co. (Scovil Pattern) ....60%

### Handled—

*NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.*

Cronk's Weeding, No. 1, $2.00; No. 2, $2.50
Star Double Bit....$2.50
Ft. Madison Cotton Hoe....70&10&10%
Ft. Madison Crescent Cultivator Hoe, ₱ doz....70&10%
Ft. Madison Mattock Hoes:
Regular Weight.... ₱ doz. 40&5%
Junior Size.... ₱ doz. $4.00
Ft. Madison Sprouting Hoe, ₱ doz., 60&10%
Ft. Madison Dixie Tobacco Hoe.... 75&10&7½
Kretsinger's Cut Easy....70&10
Warren Hoe....45&10%
W. & C. Ivanhoe....75&2½
B. B. 6 in., Cultivator Hoe....$3.40
B. B., 6½ in....$3.50
Acme Wedding....₱ doz., net, $4.35
W. & C. L'tning Shuffle Hoe, ₱ doz. $5.25

### Hoisting Apparatus—

See *Machines, Hoisting.*

### Holders— Bit—

Angular, ₱ doz. $24.00....45&10%

### Door—

Bardsley's, Iron, 40%; Brass and Bronze ....25%
Empire ....50%
Pullman ....25%
Richards Mfg. Co.: No. 117, Ever-ready, 40%; Nos. 118, 119, Sure Grip ....50%
Superior ....33⅓%

### File and Tool—

Nicholson File Holders and File Handles ....33⅓@40%

### Fruit Jar—

Triumph Fruit Jar Holder, ₱ gross, $18.00; ₱ doz....$2.00

### Trace and Rein—

Fernald Double Trace Holder, ₱ doz. pairs ....$1.25
Dash Rein Holder, ₱ doz....$1.25

### Hones—Razor—

Pike Mfg. Co., Belgian and Swaty, 50%; German....33⅓%

### Hooks—Cast Iron—

Bird Cage, Reading....40%
Clothes Line, Reading List....40%
Coat and Hat, Reading....45&20%
Coat and Hat, Wrightsville....60&5
Harness, Reading List....40%

### Wire—

*Belt, Nos. 1 to 15....75&10@80%*
*Wire C. & H. Hooks..80@80&10%*
Bradley Metal Clasp Wire, Coat and Hat, 75&10@80; Ceiling..75&10@80
Columbian Hdw. Co., Gem....75&10%
Parker Wire Goods Co., King..75&10%
Wire Goods Co.:
Acme, 60&10%; Chief, 70&10%; Crown, 75%; Czar, 65&10%; V Brace, 75%; Czar Harness, 50%; Ceiling, 75%.

### Wrought Iron—

*Box, 6 in., per doz., $0.90; 8 in., $1.15.*
*Cotton ....doz. $1.25@$1.50*
Wrought Staples, Hooks, &c. See Wrought Goods.

### Miscellaneous—

*Hooks, Bench, see Stops, Bench.*
*Bush, Light, doz., $6.50; Medium, $6.75; Heavy, $7.65*
*Grass, best, all sizes, per doz., $2.75@$3.00*
*Grass, common grades, all sizes, per doz....$1.25@$1.50*
*Whiffletree ....lb. 5½@6c*
*Hooks and Eyes:*
*Brass ....60@60&10%*
*Malleable Iron....70@70&10%*
Covert Mfg. Co. Gate and Scuttle Hooks ....40%
Turner & Stanton Co. Cup and Shoulder ....85&10%
Bench Hooks. See Bench Stops.
Corn Hooks. See Knives, Corn.

### Horse Nails—

See *Nails, Horse.*

### Horseshoes—

See *Shoes, Horses.*

### Hose, Rubber—

*Garden Hose, ¾-inch:*
*Competition ....ft. 6@6½¢*
*3 ply Guaranteed....ft. 8½@9¢*
*4 ply Guaranteed....ft. 9½@12¢*
*Cotton Garden, ¾-in., coupled:*
*Low Grade....ft. 8@9¢*
*Fair Quality....ft. 10@11¢*

### Irons— Sad—

*From ¼ to 10....lb. 2½@2¾¢*
*B. B. Sad Irons....lb. 3¼@3½¢*
*Mrs. Potts', cents per set:*

| | Nos. 50 | 55 | 60 | 65 |
|---|---|---|---|---|
| Jap'd Caps | 86 | 93 | 96 | 93 |
| Tin'd Caps | 91 | 88 | 1.01 | 98 |

*New England Pressing..lb. 3½@4¢*

### Bar and Corner—

Richards Mfg. Co. Bar, Cast Corner ....

### Pinking—

*Pinking Irons....doz. 60@8[illegible]¢*

### Irons, Soldering

See *Coppers.*

### Jacks, Wagons—

Covert Mfg. Co.:
Auto Screw....30&2%; Steel, 45%
Lockport ....50%
Lane's Steel....30&5%
Richards' Tiger Steel, No. 130...50&10%
Smith & Hemenway Co.'s....25%

### Ladder—

Richards Mfg. Co., Ladder Jacks..50%

### Jointers—

Pike Mfg. Co., Saw Jointers, $7.00..40%

## Kettles—

*Brass, Spun, Plain....20@25%*
Enameled and Cast Iron—See Ware, Hollow.

### Knives—

### Butcher, Kitchen, &c.—

Foster Bros.' Butcher, &c....30%
Wilkinson Shear & Cutlery Co....60%

### Corn—

Columbian Cutlery Co., Wilcut Brand Knives and Hooks....60%
Ft. Madison Cut-Easy....$3.25
Withington Acme, ₱ doz., $2.65; Dent, $2.75; Adj. Serrated, $2.20; Serrated, $2.10; Yankee No. 1, $1.50; Yankee No. 2, $1.15.

### Drawing—

*Standard List....80&10@—%*
C. E. Jennings & Co., Nos. 45, 46, 25&7½%
Jennings & Griffin, Nos. 41, 42, 66⅔&7½%
Swan's ....66⅔@70%
Watrous ....16⅔%
L. & I. J. White....20&5@25%

### Hay and Straw—

*Serrated Edge, per doz. $5.00@5.50*
Iwan's Sickle Edge....₱ doz. $9.50
Iwan's Serrated....₱ doz. $10.00

### Miscellaneous—

*Farriers' ....doz. $2.60@3.55*
Wostenholm's ....₱ doz. $3.00@3.25

### Knobs—

*Base, 2½-inch, Birch or Maple, Rubber Tip....gro. $1.25@1.40*
*Carriage, Jap., Drive, all sizes, gro. 35@40¢*
*Door, Mineral....doz. 65@70¢*
*Door, Por. Jap'd....doz. 70@75¢*
*Door, Por. Nickel..doz. $2.05@2.15*
Bardsley's Wood Door, Shutters, &c. 15%

## Lacing, Leather—

See *Belting, Leather*

### Ladders, Store, &c.—

Lane's Store....25%
Myers' Noiseless Store Ladders....50%
Richards Mfg. Co.:
Improved Noiseless, No. 112....50%
Climax Shelf, No. 113....50%
Trolley, No. 109....50%

### Ladles, Melting—

L. & G. Mfg. Co., Melting and Plumbers' ....25%
P., S. & W....40&10%
Reading ....60%

### Lamps,—

Hammer's M. I. Hand....45%

### Lanterns—Tubular—

*Regular, No. 0....doz. $4.35@4.50*
*Side Lift, No. 0....doz. $4.60@4.75*
*Hinge Globe, No. 0. doz. $4.60@4.75*
*Other Styles....40@40&10%*

### Bull's Eye Police—

*3-inch ....$3.75@4.00*

### Latches— Thumb—

*Roggin's Latches, Jap'd, with Screws ....doz. 35@40¢*

### Door—

Cronk & Carrier Mfg. Co., No. 101, ₱ doz. $2.00
Richards' Bull Dog, Heavy, No. 125 ....50&5%
Richards' Trump, No. 127....$1.50

### Leaders, Cattle—

*Small....doz. 50¢; large, 60¢*
Covert Mfg. Co.:
Cotton, 45%; Hemp, 45%; Jute, 35%; Sisal, 20%.

### Leathers, Pump—

See *Pumps—*

### Lifters, Transom—

R. & E....10%

### Lines—

| *Wire Clothes, Nos.* | *18* | *19* | *20* |
|---|---|---|---|
| *100 feet* | *$2.30* | *1.95* | *1.75* |
| *75 feet* | *$1.95* | *1.65* | *1.50* |

Samson Cordage Works:
Solid Braided Chalk, Nos. 0 to 3..40%
Solid Braided Masons'....
Silver Lake Braided Chalk, No. 0, $6.60; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50....₱ gr. 20%
Masons' Lines, Shade Cord & Co.:
White Cotton, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50; Colors, No. 3½, $1.75; No. 4, $2.25; No. 4½, $2.75; Linen, No. 3½, $2.50; No. 4, $3.00; No. 4½, $4.50....20%
Tent and Awning Lines: No. 5, White Cotton, $7.50, Drab Cotton $8.50 ....20%
Clothes Lines: White Cotton, 50 ft. $2.75; 60 ft., $3.25; 70 ft., $3.75; 75 ft., $4.00; 80 ft., $4.25; 90 ft., $4.75; 100 ft., $5.25 ....
Turner & Stanton Co.:
Solid Braided Chalk, Masons' and Mariners' Lines ....
Clothes Lines, White Cotton....20%
Shade Cord, Colors or Linen....20%

### Locks— Cabinet—

*Cabinet Locks....33⅓@37½@75%*

### Door Locks, Latches, &c

*NOTE.—Net Prices are very often made on these goods.*
Russell Hardware Co....
R. & E. Mfg. Co....

### Padlocks—

R. & E. Mfg. Co., Wrought Steel and Brass ....75&10%

## Sash, &c.—

Ives' Patent:
Crescent ....10%
Automatic Gravity Metal Sash, ₱ gro., $149.58....10%
Window Ventilating....10%
Pullman Patent Ventilating Lock..25%
Reading Sash Locks....40%
Taylor Mfg. Co., Perfect Ventilating, ₱ doz....$0.75@$1.00

## Machines—Boring—

*Com. Upr't, without Augers, $2.00@2.25*
*Com. Angl'r, without Augers, $2.25@2.50*
Ford Auger Bit Co....$22.00
Jennings', Nos. 1 and 4....25&7½%
Millers' Falls....5.75
Snell's, Upright, $2.65; Angular, $2.90
Swan's Improved....40&10%

### Corking—

Reisinger Invincible Hand Power... ₱ doz. $48.00

### Fence—

Williams' Fence Machines....each, $5.50

### Hoisting—

Moore's Anti-Friction Chain Hoist.30%
Moore's Hand Hoist, with Lock Brake ....20%
Moore's Cyclone High Speed Chain Hoist ....25%

### Ice Cutting—

Chandler's ....12½%

### Washing

| Boss Washing Machine Co.: | Per doz. |
|---|---|
| Boss No. 1 | $57.00 |
| Boss Rotary | $57.00 |
| Champion Rotary Banner No. 1 | $57.00 |
| Standard Champion No. 1 | $50.00 |
| Standard Perfection | $27.00 |
| Cincinnati Square Western | $33.00 |
| Uneeda American, Round | $33.60 |

### Mallets—

*Hickory ....45&5@50%*
*Lignumvitæ ....45&5@50%*
*Tinners' Hickory and Applewood ....doz. 45&5@50%*

### Mangers, Stable—

Swett Iron Works....50%

### Mats, Door—

Acme Flexible Steel....50%
Elastic Steel (W. G. Co.), new list.50%

### Mattocks—

See *Picks and Mattocks.*

### Milk Cans—See *Cans, Milk.*

### Mills, Coffee, &c.—

Enterprise Mfg. Co.:
Coffee ....20@25%
Shell and Corn....25&10%
National list Jan. 1, 1902....30%
Parker's Columbia and Victoria..33⅓%
Parker's Box and Side....50&10%
Swift, Lane Bros. Co....30%

### Motors, Water—

Divine's Red Devil....30%

| $2.50 | 3.50 | 10.00 | 15.00 | |
|---|---|---|---|---|
| No. 1. | 2 | 3 | 4 | |

Lippincott's:

| No. | 1 | 2 | 3 | 4 | |
|---|---|---|---|---|---|
| | $2.50 | 3.50 | 10.00 | 15.00 | 33⅓ |

Pike Mfg. Co., Tool and Knife Grinding ....33⅓%

### Mowers, Lawn—

*NOTE.—Net prices are generally quoted*
*Cheapest, 10-in., $2.00; advance 10¢ for each size.*
*Cheap, 10-in., $2.25; advance 15@20¢ for each size.*
*Better Grade, 10-in., $3.00; advance 25¢ for each size.*

| | 12 | 14 | 16 | 18 in. |
|---|---|---|---|---|
| *High Grade...* | *$4.50* | *4.75* | *5.00* | *5.25* |

Continental ....60%
Great American....70%
Great American Ball B'r'g, new list.70%
Quaker City....70%
Pennsylvania ....60%
Pennsylvania, Jr., Ball Bearing 50&10&5
Pennsylvania Golf....50%
Pennsylvania Horse....33⅓&5
Pennsylvania Pony....40&5
Philadelphia:
Styles M., S., C., K., T....70&10&5
Style A all Steel....60&10&5
Style E. High Wheel....70&10&5
Drexel and Gold Com. special list.40
Horse ....40&5
Pony ....40&5
36-in Horse....30&10
Eagle Horse....35&5
I. X. L. Horse....50

## Nails—

*Wire Nails and Brads, Miscellaneous ....85&5@85&10%*
*Cut and Wire. See Trade Report*
*Hungarian, Finishing, Upholsterers', &c. See Tacks*

### Horse—

| No. | 6 | 7 | 8 | 9 | 10 | |
|---|---|---|---|---|---|---|
| Anchor | 23 | 21 | 20 | 19 | 18 | ₱ lb. 12½¢ |
| Columbia | 23 | 12 | 12 | 11 | 11 | net ₱ lb. 12¢ |
| New Haven | 23 | 21 | 20 | 19 | 18 | net 12¢ |
| Lippincott | 19 | 18 | 17 | 16 | 16 | 13½ |
| Wrought | | | | | | ₱ lb. 8½¢ |

*Jobbers' Special Brands, per lb. 9¢*

### Picture—

| | 1½ | 2 | 2½ | 3 in. |
|---|---|---|---|---|
| *Brass Hd. gro.* | *.45* | *.55* | *.60* | *.70* |
| *Por. Head, gro* | *1.10* | *1.10* | *1.10* | |

### Upholsters—

*Brass ....30%*
*Plated ....30&10%*

### Nippers—

*See Pliers and Nippers.*

### Nipples—

Standard Nipple Co.:
Wrought Pipe Nipples....80

### Nuts— *Blank or Tapped.*

| *Cold Punched:* | *Off list.* |
|---|---|
| *Square* | *5.60¢* |
| *Hexagon* | *6.20¢* |
| *Square, C., T. & R.* | *6.00¢* |
| *Hexagon, C., T. & R.* | *6.80¢* |
| *Hot Pressed:* | |
| *Square* | *6.10¢* |
| *Hexagon* | *6.60¢* |

## Oakum—

*Best ....lb. 6½¢*
*U. S. Navy....lb. 6 ¢*
*Navy ....lb. 5 ¢*
*Plumbers' Spun Oakum..2¾@3 ¢*

### Oil—

Pike Mfg. Co., Stonoil....40%

### Oil Tanks—See *Tanks, Oil.*

### Oilers—

*Steel, Copper Plated....75%*
*Chase or Paragon:*
*Brass and Copper....50&10%*
*Zinc ....65&10@70%*
*Railroad ....60&10&10%*
Malleable, Hammers' Improved, Nos. 11, 12 and 13, 10%; Old Pattern, Nos. 1, 2, 3, 4, 50%.
American Tube & Stamping Co.:
Spring Bottom Cans....70@70&10%
Railroad Oilers, &c....60@60&10%
Maple City Mfg. Co.:
Spring Bottom Cans....70@70&10%
Railroad Oilers, &c....60@60&10%

### Openers—Packing Box—

Herculever, ₱ doz., $24....30%

### Can Openers—

| | *Per doz.* |
|---|---|
| *Sprague, Iron Handle....* | *30@35¢* |
| *Sprague, Wood Handle....* | *40¢* |
| *Sardine Scissors....* | *$1.75@3.00* |

Can and Bottle Openers, ₱ doz., net: Yankee, $0.75@$0.85; Little Gem, $0.50@$0.65; Nifty....$0.75

### Egg—

Hartigan Nickel Plate, ₱ doz., $2.00; Silver Plate, $4.00.

## Packing—

*Asbestos Packing, Wick and Rope, any quantity....18@20¢*

### Rubber—

*(Fair quality goods.)*

| | |
|---|---|
| *Sheet, C. I.* | *11@12¢* |
| *Sheet, C. O. S.* | *11@12¢* |
| *Sheet, C. B. S.* | *12@13¢* |
| *Sheet, Pure Gum* | *40@45¢* |
| *Sheet, Red* | *40@50¢* |

Jenkins' '96, ₱ lb, 80¢....25%

### Miscellaneous—

*American Packing....lb. 7@10 ¢*
*Cotton Packing....lb. 16@25 ¢*
*Italian Packing....lb. 9@10¢*
*Jute ....lb. 4@4¼¢*
*Russia Packing....lb. 9@10¢*

### Pails, Water, Well, &c.—

See *Buckets.*

### Paint—

Dixon's Silica-Graphite, in 1 gal. pails and 5 gal. kegs, 25%; packages of larger size....20%

### Pans— Dripping—

*Standard List....75&10@80%*
Edwards, Royal Blue....75%

### Fry—

*Common Lipped:*

| *Nos.* | *1* | *2* | *3* | *4* | *5* |
|---|---|---|---|---|---|
| *Per doz....* | *$0.75* | *0.85* | *0.95* | *1.15* | *1.30* |

### Refrigerator, Galva.—

| *Inch* | *12* | *14* | *16* | *18* |
|---|---|---|---|---|
| *Per doz....* | *$1.75* | *2.25* | *2.80* | *3.15* |

### Paper—Building Paper

| *Asbestos:* | *lb.* |
|---|---|
| *Roll Board or Building Felt, 6 to 30 lb., per 100 sq. ft.* | *2½¢* |
| *Roll Board or Building Felt, 3-32 and ⅛ in., 45 to 60 lb., per 100 sq. ft.* | *3½¢* |
| *Mill Board, Sheet, 40 x 60 in., 1-32 to ½ in.* | *3¢* |

*Per roll.*

*Rosin Sized Sheathing: 500 sq. ft. Light weight, 25 lbs. to roll, $[illegible]*
*Medium weight, 30 lbs. to roll, 50[illegible]*
*Heavy weight, 40 lbs. to roll, $[illegible]*
*Black Water Proof Sheathing, 500 sq. ft., 1 ply [illegible] 85c; 3 ply, $1.15; 4 ply, $1.35*
*Deafening Felt, 9, 6 and [illegible] sq. ft. to lb., ton....$[illegible]*
*Red Rope Roofing, [illegible] sq. ft. per roll....$1.75*

### Tarred Paper—

*1 ply Coal 400 sq. ft., ton, $[illegible]*
*2 ply, roll [illegible] sq. ft....[illegible]*
*3 ply, roll [illegible] sq. ft....88¢*
*Slater's Felt, coal 500 sq. ft., [illegible]*

### Sand Paper and Cloth—

*Flint and Emery....50&10%*
*Garnet Paper and Cloth....25%*

### Parers—Apple—

Goodell Co.:
Family Bay State....₱ doz. $15.00
Improved Bay State....₱ doz. $36.00
New Lightning....₱ doz. $7.00
Turn Table '98....₱ doz. $6.00
White Mountain....₱ doz. $5.00
Bonanza Improved....each $7.50
Dandy....each $10.00
Eureka Improved....each $20.00
New Century....each $20.00

Livingston Nail Co.:
Daisy ..... ℔ doz. $4.00
Little Star ..... ℔ doz. $5.00
Rocking Table ..... ℔ doz. $6.20
Reading Hardware Co.:
Advance ..... ℔ doz. $4.00
Baldwin ..... ℔ doz. $4.00
Reading 72 ..... ℔ doz. $3.25
Reading 78 ..... ℔ doz. $6.25

### Orange—

Goodell Co., Success ..... each $20.00

### Potato—

Saratoga ..... ℔ doz. $7.00
White Mountain ..... ℔ doz. $6.00

## Picks and Mattocks—

*(List Jan., 1908.)*

*List* ..... *70&10@70&10&10%*
Cronk's Hand'ed Garden Mattock, ℔ doz., $3.00 ..... 33⅓%

## Pinking Irons—

See *Irons, Pinking.*

## Pins, Escutcheon—

*Brass* ..... *50@50&10%*
*Iron, list Nov. 11, '85* .. *60@60&10%*

## Pipe, Cast Iron Soil—

*Standard, 2-6 in* ..... *70&10%*
*Extra Heavy, 2-6 in* .. *75&10@80%*
*Fittings, Standard and Heavy, 80&10@85%*

## Pipe, Merchant—

| | *Consumers, Steel.* | | *Carloads, Iron.* | |
|---|---|---|---|---|
| | *Blk.* % | *Galv.* % | *Blk.* % | *Galv.* % |
| *⅛ and ¼ in* .. | *66* | *50* | *64* | .. |
| *⅜ in* ..... | *68* | *54* | *66* | *52* |
| *½ in* ..... | *70* | *58* | *68* | *56* |
| *¾ to 6 in* .... | *74* | *64* | *72* | *62* |
| *7 to 12 in* .... | *71* | *56* | *69* | *54* |

## Pipe, Vitrified Sewer—

*Carload lots.*

*Standard Pipe and Fittings, 3 to 24 in., f.o.b. factory:*
*First-class* ..... *87%*
*Second-class* ..... *90%*

## Pipe, Stove—

| | Per 100 joints. C. L. | L. C. L. |
|---|---|---|
| Edwards' Nested: | | |
| 5 in., Standard Blue | $6.25 | $7.25 |
| 6 in., Standard Blue | 6.75 | 7.75 |
| 7 in., Standard Blue | 7.75 | 8.75 |
| 5 in., Royal Blue | 7.00 | 8.00 |
| 6 in., Royal Blue | 7.50 | 8.50 |
| 7 in., Royal Blue | 8.50 | 9.50 |
| Wheeling Corrugating Co.'s Nested: | | |
| 5 in., Uniform Color | $5.90 | $6.90 |
| 6 in., Uniform Color | 6.40 | 7.40 |
| 7 in., Uniform Color | 7.40 | 8.40 |

## Planes and Plane Irons—

### Wood Planes—

*Bench, first qual* ..... *30@30&10%*
*Bench, second qual* ... *40@40&10%*
*Molding* ..... *25@25&10%*

Chapin-Stephens Co.:
Bench, First Quality ..... 30%
Bench, Second Quality ..... 40%
Molding and Miscellaneous ..... 25%
Toy and German ..... 30%
Union ..... 60%

### Iron Planes -

Chaplin's Iron Planes ..... 60%
Union ..... 60%

### Plane Irons—

*Wood Bench Plane Irons, list Dec. 12, '06* ..... *25%*
Buck Bros. ..... 30%
Chapin-Stephens Co. ..... 25%
Union ..... 50%
L. & I. J. White ..... 20&5@25%

## Planters, Corn, Hand—

Kohler's Eclipse ..... ℔ doz. $7.50

## Plates—

*Felloe* ..... *lb. 3¾@4¢*
Avery Stamping Co.:
Standard Wrot. Steel Felloe Plates in 100 lb kegs, per 100 lb, ¾-in to 1⅜-in., $4.00 net; 1¼-in. to 2-in., inclusive, $3.75 net.

## Steel Pipe Hook—

Never-Break ..... 75&10%

## Pliers and Nippers -

*Button Pliers* .... *75&5@75&10&5%*
*Gas Burners, per doz., 5 in., $1.25 @$1.30; 6 in., $1.45, $1.50.*

| *Gas pipe* .. | *7* | *8* | *10* | *12-in.* |
|---|---|---|---|---|
| | *$2.00* | *$2.25* | *$2.75* | *$3.50* |

Acme Nippers ..... 50&5%
Cronk & Carrier Mfg. Co.:
American Button ..... 80%
Improved Button ..... 75&10%
Cronk's ..... 60%
No. 80 Linemen's ..... 50%
Stub's Pattern ..... 45%
Combination and others ..... 33⅓%
Heller's Farriers' Nippers, Pincers and Tools ..... 40&5@40&10&5%
P., S. & W. Tinners' Cutting Nippers ..... 40%
Swedish Side, End and Diagonal Cutting Pliers ..... 50%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds .... 40%

## Plumbs and Levels—

Chapin-Stephens Co.:
Plumbs and Levels ..... 30@30&10%
Chapin's Imp. Brass Cor. ..... 40@40&10%
Pocket Levels ..... 30@30&10%
Extension Sights ..... 30@30&10%
Machinists' Levels ..... 40@40&10%
Disston's Plumbs and Levels .. 60&10%
Disston's Pocket Levels ..... 60&10%
Stanley's Dulex ..... 35%
Woods' Extension ..... 33⅓%

## Points, Glaziers'—

*Bulk and 1-lb. papers* .... *lb. 9 ¢*
*½-lb. papers* ..... *lb. 9½¢*
*¼-lb. papers* ..... *lb. 10 ¢*

## Police Goods—

*Manufacturers' Lists* .. *25@25&5%*
Tower's ..... 25%

## Polish—Metal, Etc—

Ladd Co.:
Putzade Liquid, ℔ gro., ½ pts., $12.00; 1 pts., $20.00; 1 qts., $40.00; ℔ doz., ½ gals., $6.35; 1 gals., $12.00.
Prestoline Liquid, No. 1 (½ pt.), ℔ doz., $3.00; No. 2 (1 qu.), $9.00 .. 40%
Prestoline Paste ..... 40%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, ℔ doz. 50¢; ℔ gro. $4.50; ½ lb boxes, ℔ doz. $1.25; 1 lb boxes, ℔ doz. $2.25.
U. S. Liquid, 8 oz. cans, ℔ doz., $1.25.
Barkeepers' Friend Metal Polish, ℔ doz., $1.75.

### Stove—

Black Eagle Benzine Paste, 5 lb cans, ℔ lb 10¢
Black Eagle, Liquid, ½ pt. cans.. ℔ doz. 75¢
Black Jack Paste, ¾ lb cans, ℔ gr. $9.00
Black Kid Paste, 5 lb can ... each, $0.65
Ladd's Black Beauty Liquid, per 100 tins ..... $6.75
Joseph Dixon, ℔ gr. $5.75 ..... 10%
Dixon's Plumbago ..... ℔ lb 8¢
Fireside ..... ℔ gr. $2.50
Gem, ℔ gr. $4.50 ..... 10%
Japanese ..... ℔ gr. $3.50
Jet Black ..... ℔ gr. $3.50
Peerless Iron Enamel, 10 oz. cans.. ℔ doz. $1.50

### Window Polish—

Benj. P. Forbes:
Glasbright, No. 2, gal pails, ℔ doz., $24.00; each, $2.50; 1 lb cans, each ..... 75¢
Glasbright Powder, bbls., ℔ lb .. 20¢

## Poppers, Corn—

*1 qt. Square .. doz. $0.80; gro. $8.75*
*1 qt. Round .. doz. $0.90; gro. $10.00*
*1½ qt. Square . doz. $1.20; gro. $12.00*
*2 qt. Square .. doz. $1.50; gro. $15.00*

## Post Hole and Tree Augers and Diggers—

See also *Diggers, Post Hole, &c.*

## Posts, Steel—

Steel Fence Posts, each, 6 ft., 46¢; 6½ ft., 48¢; 7 ft., 50¢.
Steel Hitching Posts ..... each $1.30

## Potato Parers—

See *Parers, Potato.*

## Pots, Glue—

*Enameled* ..... *40%*
*Tinned* ..... *30&10%*

## Powder—

*In Canisters:*
*Duck, 1 lb* ..... *each 45¢*
*Fine Sporting, 1 lb* .... *each 75¢*
*Rifle, ½-lb* ..... *each 15¢*
*Rifle, 1 lb* ..... *each 25¢*
*In Kegs:*
*12½-lb. kegs* ..... *$3.50*
*25-lb. kegs* ..... *$4.50*
King's Semi-Smokeless:
Keg (25 lb bulk) ..... $6.50
Half Keg (12½ lb bulk) ..... $3.50
Quarter Keg (6¼ lb bulk) ..... $1.90
Case 24 (1 lb cans bulk) ..... $8.50
Half case (1 lb cans bulk) ..... $4.50

| King's Smokeless: | Shot Gun. | Rifle. |
|---|---|---|
| Keg (25 lb bulk) | $12.00 | $15.00 |
| Half Keg (12½ lb bulk) | 6.25 | 7.75 |
| Quarter Keg (6¼ lb bulk) | 3.25 | 4.00 |
| Case 24 (1 lb cans bulk) | 14.00 | 17.00 |
| Half case 12 (1 lb c. bk) | 7.25 | 8.75 |

## Presses—

### Fruit, Wine and Jelly—

Enterprise Mfg. Co. ..... 20@25%

### Seal Presses—

Morrill's No. 1, ℔ doz., $20.00 ..... 50%

## Pruning Hooks and Shears

See *Shears.*

## Pullers, Nail, Etc.—

Cyclops ..... 50%
Miller's Falls, No. 3, ℔ doz., $12.00 .. 33⅓&10%
Morrill's No. 1, Nail Puller, ℔ doz. $20.00 ..... 50%
Pearson No. 1, Cyclone Spike Puller, each $30.00 ..... 50%
The Scranton Co. Case Lots:
No. 2B (large) ..... $5.50
No. 3B (small) ..... $5.00
Smith & Hemenway Co.:
Diamond B ..... 70%
Giant ..... 50%
Staple Pullers, Utica and Davison ..... 60%
Taylor Mfg. Co., Sampson Tack, ℔ doz. ..... $0.40

## Pulleys, Single Wheel—

| *Inch* ..... | *1½* | *1¾* | *2* | *3* |
|---|---|---|---|---|
| *Awning or Tackle, doz.* ..... | *$0.30* | *.45* | *.60* | *1.05* |
| *Hay Fork, Swivel or Solid Eye, doz., 4 in., $1.25; 5 in., $1.55* | | | | |
| *Inch* ..... | *2* | *2¼* | *2½* | |
| *Hot House, doz* .. | *$0.65* | *.85* | *1.20* | |
| *Inch* ..... | *1¼* | *1½* | *1¾* | *2* |
| *Screw, doz* .... | *$0.16* | *.19* | *.23* | *.30* |
| *Inch* ..... | *1¾* | *2* | *2¼* | *2½* |
| *Side, doz* ..... | *$0.25* | *.40* | *.55* | *.60* |
| *Inch* ..... | *1½* | *1¾* | *2* | *2½* |

## Sash Pulleys—

*Common Frame; Square or Round End, per doz., 1¾ and 2 in* ..... *17@20¢*
*Auger Mortise, no Face Plate, per doz., 1¾ and 2 in* .... *20@21¢*
Acme, No. 35 .. 1¾ in., 19¢; 2 in., 20½¢
American Pulley Co.:
Wrought Steel American Plain Axle ..... 50&10%
Wrought Steel, Eagle ..... 17@20¢
Top Notch, Electrically Welded, Nos. 3 and 4 ..... 19¢
Common Sense ..... ℔ doz. 20¢
Fox-All-Steel, Nos. 3 and 7, 2 in.... ℔ doz. 50%
Grand Rapids All Steel Noiseless .. 50%
Niagara, No. 25, 1¾ in., 19¢; 2 in. ..... 20½¢
No. 26 Troy .. 1¾ in., 14½¢; 2 in., 16½¢
Star, No. 26 .... 1¾ in., 19¢; 2 in., 20½¢
Tackle Blocks—See Blocks.

## Pumps—

*Cistern* ..... *60%*
*Pitcher Spout* ..... *75&5@75&10%*
*Wood Pumps, Tubing, &c* .... *50%*
Barnes Dbl. Acting (low list) ..... 45%
Barnes Pitcher Spout ..... 80%
Contractors' Rubber Diaphragm, No. 2, B. & L. Block Co. ..... $16.00
Daisy Spray Pump ..... ℔ doz. $6.50
Flint & Walling's Fast Mail Hand (low list) ..... 50&5%
Flint & Walling's Fast Mail (low list) ..... 50&5%
Flint & Walling's Tight Top Pitcher ..... 80%
National Specialty Mfg. Co., Measuring, Nos. 2, $6.00; 3, $5.50 ..... 30%
Myers' Pumps (low list) ..... } 50%
Myers' Power Pumps ..... }
Myers' Spray Pumps ..... }

## Pump Leathers—

*Plunger and Valve Leathers—Per gro.:*

| *No* ..... | *1* | *2* | *3* | *4* |
|---|---|---|---|---|
| | *$5.00* | *6.00* | *7.00* | *8.00* |

*Cup Leathers—Per 100:*

| *Inch* .... | *2½* | *3* | *3½* | *4* |
|---|---|---|---|---|
| | *$5.00* | *7.00* | *9.00* | *12.00* |

} 30%

## Punches—

*Saddlers' or Drive, good, doz. 50@75¢*
*Spring, single tube, good quality* ..... *$1.75*
*Revolving (4 tubes) .... doz. $3.50*
Bemis & Call Co.'s Cast St'l Drive. 50%
Morrill's Nos. 1AA, 1A, 1B, 1C, 1D, $15.00 ..... 50%
Hercules, 1 die, each $5.00 ..... 50%
Niagara Hollow Punches ..... 40%
Niagara Solid Punches ..... 55&10%
Tinners' Hollow, P., S. & W. Co.. 40%
Tinners' Solid, P., S. & W. Co., ℔ doz., $1.44 ..... 40&10%

## Rail—Barn Door, &c.—

*Sliding Door, Painted Iron, 2½@2¾¢*
*Sliding Door, Wrought Brass, 1⅛ in., lb., 36¢* ..... *30%*
Cronk's:
Double Braced Steel Rail .. ℔ ft. 2¾¢
O. N. T. Rail ..... 2¾¢
Griffin's:
xxx, ℔ 100 ft., 1 x 3-16 in., $3.25; 1¼ x 3-16 in., $3.75.
Hinged Hanger, ℔ 100 ft., 1 x 3-16 in., $3.50; 1¼ x 3-16 in., $4.00.
Lane's:
Hinged Track, ℔ 100 ft. ..... $3.45
O. N. T., ℔ 100 ft., 1 in., $3.12½; 1¼ in., $3.45; 1½ in., $4.00.
Standard, 1¼ in. ..... ℔ 100 ft. $4.00
Lawrence Bros.:
1 x 3-16 in., ℔ 100 ft., $7.50; 1¼ x 3-16 in., $8.75 ..... 55&7½%
Trolley, No. 301, ℔ ft. ..... 9¢
McKinney's:
Hinged Hanger Track, ℔ ft., 11¢. 60&5%
1 x 3-16 Track ..... 55&7½%
Myers' Stayon Track ..... 60&5%
Richards Mfg. Co.:
Common, 1 x 3-16 in., $3.00; 1⅛ x 3-16, $3.25; 1¼ x 3-16, $3.50.
Special Hinged Hanger Rail .. 60&10%
Lag Screw Rail, No. 65 ..... 50%
Gauge Trolley Track, ℔ ft., No. 31, 9¢; No. 32, 14¢; No. 33, 20¢.
No. 50 ..... 60&10%
Nos. 61, $3.00; 62, $3.25; 63, $3.50; 64, $4.00; 45, $3.25; 46, $3.50; 49, No. 1, $3.25; 49, No. 2, $3.50.

## Rakes—

*NOTE.—Many goods are sold at net prices.*

Fort Madison Red Head Lawn .... $3.25
Fort Madison Blue Head Lawn .... $2.75
Cronk's:
Steel Garden: Champion, ℔ doz., 12-tooth, $3.75; 14-tooth, $4.00; 16-tooth, $4.25; Ideal, ℔ doz., 12-tooth, $3.00; 14-tooth, $3.30; 16-tooth, $3.60.
Victor, 12-tooth, $2.25; 14-tooth, $2.50; 16-tooth, $2.75.
Queen City Lawn, ℔ doz., 20 teeth, $2.85; 24, $3.00 ..... net
Anticlog Lawn, ℔ doz. ..... $1.00
Malleable Garden ..... 70&10%
Ideal Steel Garden, ℔ doz., 12 teeth, $15.00; 14, $16.00; 16, $18.00 ..... 80%
Kohler's:
Jumbo Lawn, 36-tooth .... ℔ doz. $5.00
Lawn Queen, 20-tooth .... ℔ doz. $2.85
Lawn Queen, 24-tooth .... ℔ doz. $3.00
Paragon, 20-tooth ..... ℔ doz. $2.65
Paragon, 24-tooth ..... ℔ doz. $2.75
Steel Garden, 14-tooth .... ℔ doz. $2.40
Malleable Garden, 14-tooth, ℔ doz. $1.75@2.00

## Rasps, Horse—

Disston's ..... 75%
Heller Bros. ..... 70&5@70&10&5%
Liveright Bros.' Gold Medal. 70&10@75%
McCaffrey's American Standard ..... 60&10&5%
New Nicholson ..... 70&10@75%
See also Files.

## Razors—

John Ekenstrom Swedish ..... 65%
Sharp Shaver ..... 60
Fox Razors, ℔ doz., No. 42, $24.00; No. 44, $20.00; No. 82, Platina, $36.00. } Dis. 50%

## Reels, Fishing—

Hendryx:
M 6, Q 6, A 6, B 6, M 9¼, M 16, Q 16, A 16, B 16, 4008, Rubber, Populo, Nickeled Populo ..... 20%
Aluminum, German Silv., Bronze. 25%
1210 N, 124 N ..... 20%
3004 N, 06 N, 6 RM, G 9 ..... 25%
4 N, 6 PN, 24 N, 26 PN ..... 20%
2904 P., 33⅓%; 2904 PN., 33⅓%; 0924 N., 33⅓%; 02084 N., 33⅓%; 002904 PN., 33⅓%; 802 N., 33⅓%.
986 PN, 2904 N, 974 PN ..... 25%
5009 PN, 5009 N ..... 20%
Competitor, 102 P, 102 PN, 202 P, 202 PN, 102 PR, 202 PR ..... 20%
304 P, 304 PN, 00304 P, 00304 PN. 33⅓%

## Registers—*List July 1, 1903.*

*Japanned, Electroplated and Bronzed* ..... *70%*
*White Porcelain Enamel* .. *50&10%*
*Solid Brass or Bronze Metal* . *40%*

## Revolvers—

*Single Action* ..... *95¢@$1.00*
*Double Action, except 44 cal.* *$2.00*
*Double Action, 44 caliber* ... *$2.00*
*Automatic* ..... *$4.00*
*Hammerless* ..... *$4.50*

## Riddles, Hardware Grade

*16 in* ..... *per doz. $2.50@$2.75*
*17 in* ..... *per doz. $2.75@$3.00*
*18 in* ..... *per doz. $3.00@$3.25*

## Rings and Ringers—

### Bull Rings—

| | *2* | *2½* | *3 inch.* |
|---|---|---|---|
| *Steel* ..... | *$0.70* | *0.75* | *0.80 doz.* |
| *Copper* ..... | *$1.10* | *1.25* | *1.65 doz.* |

### Hog Rings and Ringers—

*Hill's Rings, gro. boxes $4.50@$4.50*
*Hill's Ringers, Gray Iron, doz., 60@75¢*
*Hill's Ringers, Malleable Iron, doz. 80@95¢*
*Blair's Rings .. per gro. $5.00@$5.50*
*Blair's Ringers ... per doz. 75@90¢*

## Rivets and Burrs—

*Copper* ..... *50@50&10%*
*Carriage, Coopers', Tinners', &c.:*
*Black* ..... *70&10%*
*Metallic Tinned* ..... *70%*

### Bifurcated and Tubular—

*Assorted in Boxes.*
*Bifurcated, per doz. boxes, pasteboard boxes, 50 count, 23@25¢; Tin boxes, 100 count, 29@32¢.*
*Tubular, per doz. boxes, 50 count, 29@32¢; 100 count, 51@58¢.*

## Rollers—

Cronk's Stay, No. 50 ..... $1.00
Cronk's Brinkerhoff No. 55, $0.60; No. 56, $0.75; No. 60 ..... $0.75
Lane's Stay ..... 40%
Richards' Stay:
Handy Adj. and Reversible No. 53.75¢
O. K. Adj. and Reversible No. 58.50¢
Lag Screw, Nos. 55 and 57 ..... 50%
Underwriters', Nos. 59, 60 ..... 50%
Favorite, No. 54 ..... 60%

## Rope—

*Manila, 7-16 in. diam. and larger:*
*Pure* ..... *lb. 9¢*
*Sisal, 7-16 in. diam. and larger:*
*Pure* ..... *lb. 7¢*
*Sisal, Hay, Hide and Bale Ropes, Medium and Coarse:*
*Pure* ..... *lb. 7½@7¾¢*
*Sisal, Tarred, Medium Lath Yarn:*
*Pure* ..... *lb. 6½@6¾¢*
*Cotton Rope:*
*Best, ¼-in. and larger. 16½@18¢*
*Medium, ¼-in. and larger. 15@16¢*
*Common, ¼-in. and larger .. 7½¢*
*In coils, ½¢ advance.*
*Jute Rope:*
*Thread, No. 1, ¼-in. and up, lb.* ..... *5½¢*
*Thread, No. 2, ¼-in. and up, lb.* ..... *5¢*

### Wire Rope—

*Galvanized* ..... *37½&2½%*
*Plain* ..... *45&2½%*

## Ropes, Hammock—

Covert Mfg. Co.:
Jute, 35%; Sisal ..... 20%

## Rules

*Boxwood* ..... *60@60&10%*
*Ivory* ..... *35&10@35&10&5%*
Chapin-Stephens Co.:
Boxwood ..... 60%
Flexifold ..... 40%
Ivory ..... 25@25&10%
Miscellaneous ..... 50@50&10%
Stephens' Combination ..... 55%
Stationers' ..... 50@50&10%
Keuffel & Esser Co.:
Folding, Wood ..... 35&10%
Folding, Steel ..... 33⅓&10%
Lufkin's Steel ..... 50&10%
Lufkin's Lumber ..... 50&10%
Upson Nut Co.:
Boxwood ..... 60@60&10%
Ivory ..... 35&10@35&10&10%

## Sash Balances—

See *Balance, Sash.*

## Sash Locks—See *Locks, Sash.*

## Sash Weights—

See *Weights, Sash.*

### Sausage Stuffers or Fillers
See *Stuffers or Fillers, Sausage.*

### Saw Frames—
See *Frames, Saw.*

### Saw Sets—See *Sets, Saw.*

### Saw Tools—See *Tools, Saw.*

### Saws—
Atkins':
- Circular ..... 45%
- Band ..... 50@50&10%
- Butcher Saws ..... 50%
- Cross Cuts ..... 35%
- One-Man Cross Cut ..... 40%
- Narrow Cross Cut ..... 50%
- Hand, Rip and Panel ..... 35&5%
- Miter Box and Compass ..... 40%
- Mulay, Mill and Drag ..... 45%
- Wood Saws ..... 40&10%

Chapin-Stephens Co.:
- Turning Saws and Frames. 30@30&10%

Diamond Saw & Stamping Works:
- Sterling Kitchen Saws .... 30&10&10%

Disston's:
- Circular, Solid and Ins'ted Tooth. 50%
- Band, 2 to 18 in. wide ..... 60%
- Band, ¼ to 1¾ ..... 60%
- Crosscuts ..... 45%
- Narrow Crosscuts ..... 50%
- Mulay, Mill and Drag ..... 50%
- Framed Woodsaws ..... 25%
- Woodsaw Blades ..... 25%
- Woodsaw Rods, Tinned ..... 15%
- Hand Saws, Nos. 12, 99, 9, 16, d100. D8, 120, 76, 77, 8 ..... 25%
- Hand Saws, Nos. 7, 107, 107½, 3, 1, 0, 00, Combination ..... 30%
- Compass, Key Hole, &c ..... 25%
- Butcher Saws and Blades ..... 30%

C. E. Jennings & Co.'s:
- Back Saws ..... 16⅔%
- Butcher Saws ..... 25&7½%
- Compass and Key Hole Saws, 33⅓&7½%
- Framed Wood Saws ..... 25&7½%
- Hand Saws ..... 12½%
- Wood Saw Blades ..... 33⅓&7½%

Millers Falls:
- Butcher Saws ..... 15&10%
- Star Saw Blades ..... 15&10%

Massachusetts Saw Works:
- Victor Kitchen Saws ..... 40&10&50%
- Butcher Saws Blades ..... 35@40%

Peace & Richardson's Hand Saws. 30%

Simonds':
- Circular Saws ..... 45%
- Crescent Ground Cross Cut Saws. 30%
- One-Man Cross Cuts ..... 40&10%
- Gang Mill, Mulay and Drag Saws. 45%
- Band Saws ..... 50%
- Back Saws ..... 25@25&7½%
- Butcher Saws ..... 35@35&7½%
- Hand Saws ..... 25@25&7½%
- Hand Saws, Bay State Brand .... 45%
- Compass, Key Hole, &c .. 25@25&7½%
- Wood Saws ..... 40&7½%

Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws ..... 50%

### Hack Saw Blades and Frames—
Atkins' Hack Saw Blades A A A .. 25%

Disston's:
- Concave Blades ..... 25%
- Keystone Blades ..... 35%
- Hack Saw Frames ..... 30%

Simonds, 25%; The Best, 35%; Culley ..... 35%

C. E. Jennings & Co.'s:
- Hack Saw Frames, Nos. 175, 180 .... 40&7½%
- Hack Saws, Nos. 175, 180, complete, 40&7½%

Goodell's Hack Saw Blades .... 40&10%

Griffin's Hack Saw Frames .. 35&5&10%

Griffin's Hack Saw Blades .... 35&5&10%

Star Hack Saws and Blades .... 15&10%

Sterling Hack Saw Blades .. 30&10&5%

Sterling Hack Saw Frames .. 30&10&10%

Sterling Power Hack Saw Machines, each, No. 1, $25.00; No. 2, $30.00 .. 10%

Victor Hack Saw Blades ..... 20%

Victor Hack Saw Frames ..... 40%

Whitaker Mfg. Co.:
- National Hand Blades, Hand Frames, Power Blades ..... 40%

### Scroll—
Barnes, No. 7, $15 ..... 25%

Barnes' Scroll Saw Blades ..... 40%

Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20 ..... 20%

Lester, complete, $10.00 ..... 15&10%

Rogers, complete, $3.50 and $4.00 .. 15&10%

### Scales—
*Union Platform, Plain. $2.10@2.20*

*Union Platform, Stpd. $2.20@2.30*

Chatillon's:
- Eureka ..... 25%
- Favorite ..... 40%
- Grocers' Trip Scales ..... 50%
- The Standard Portables ..... 40%
- The Standard R. R. and Wagon ..... 50&10%

### Scrapers—
*Box, 1 Handle ..... doz. $1.85@2.10*

*Box, 2 Handle ..... doz. $2.35@2.50*

*Ship ... Light, $2.00; Heavy, $4.50*

Chapin-Stephens Co., Box .. 30@30&10%

Richards Mfg. Co., Foot ..... 60%

### Screws—Bench and Hand
*Bench, Iron, doz., 1 in., $2.50@2.75; 1¼, $3.00@3.25; 1¼, $3.50@3.75*

*Bench, Wood ..... 20@20&10%*

*Hand, Wood .... 70&10@70&10&10%*

Chapin-Stephens Co., Hand ..... 70@70&10&2½%

### Coach, Lag and Hand Rail—
*Lag, Cone Point. 80&10@80&10&5%*

*Coach, Gimlet Point .. 80@80&10%*

*Hand Rail ..... 70&10@75%*

### Jack Screws—
*Standard List ..... 70&10@75%*

Millers Falls ..... 50&10&10%

Swett Iron Works ..... 70@75

### Machine—
*Cut Tread, Iron, Brass or Bronze:*
- *Flat Head or Round Head, 50@50&10%*
- *Fillister Head ..... 40@40&10%*

*Rolled Thread, F. H. or R. H., Iron ..... 75&10%*

*F. H. or R. H., Brass, Nos. 8 to 14 ..... 65&10%*

### Set and Cap—
*Set (Iron) ..... 75&10&7½%*

*Set (Steel), net advance over Iron ..... 25%*

*Sq. Hd. Cap ..... 70&10&7½%*

*Hex. Hd. Cap ..... 70&10&7½%*

*Rd. Hd. Cap ..... 50&7½%*

*Fillister Hd. Cap ..... 60&7½%*

### Wood—
*List July 23, 1903.*

*Flat Head, Iron ..... 87½&5@.. %*

*Round Head, Iron .... 85&5@.. %*

*Flat Head, Brass ..... 80&5@.. %*

*Round Head, Brass .. 77½&5@.. %*

*Flat Head, Bronze .... 75&5@.. %*

*Round Head, Bronze. 72½&5@.. %*

*Drive Screws ..... 87½&5@.. %*

### Scroll Saws—
See *Saws, Scroll.*

### Scythes— *Per doz.*
*Plain Grass, Cutting Edge Polished ..... $6.25@$6.50*

*Clipper, Bronzed Web. $6.50@$6.75*

*Solid Steel, Web and Backs Polished ..... $7.00@$7.25*

*Bush, Weed and Bramble, Painted ..... $6.50@$6.75*

*Grain, Painted, Cutting Edge Polished ..... $8.25@$8.50*

*Clipper Grain, Bronze Web. $8.50@$8.75*

### Seeders, Raisin—
Enterprise ..... 25@30%

### Sets— Awl and Tool—
Fray's Tool Handles, Nos. 1, $12; 2, $16; 3, $12 ..... 50%

Millers Falls Adj. Tool Handles, No. 1, $12; No. 4, $12; No. 5, $18 .. 20&10%

### Garden Tool Sets—
Ft. Madison Three Plows, Hoe, Rake and Shovel ..... ℔ doz. sets $9.00

### Sets, Nail—
*Octagon ..... gro. $3.50@3.75*

Buck Bros. ..... 27½%

Mayhew's ..... ℔ gro. $9.00

Snell's Corrugated, Cup Pt. .... 40&10%

Snell's Knurled, Cup Pt. ..... 40&10%

Victor Knurled, Cup Pt. ... ℔ gro. $7.50

### Rivet—
*Regular list ..... 75@75&10%*

### Saw—
Atkin's:
- Criterion ..... 40%
- Adjustable ..... 40%

Disston's Star, Monarch and Triumph ..... 30%

Morrill's No. 1 ..... $15.00
Nos. 3 and 4, Cross Cut .... $20.60
No. 5, Mill ..... $30.00
Nos. 10, 11, 95 ..... $15.60
No. 1 Old Style ..... $10.00
Special ..... $16.25
} 50%

Giant Royal Cross Cut ..... ℔ doz. $7.50

Royal, Hand ..... ℔ doz. $4.50

Taintor Positive ..... ℔ doz. $6.75

### Shaving—
Fox Shaving Sets, No. 30 ..... ℔ doz., net, $24.00

Smith & Hemenway Co.'s ..... 75%

### Sharpeners, Knife—
Pike Mfg. Co.:
- Fast Cut Pocket Knife Hones, ℔ doz ..... $1.50
- Mounted Kitchen Sand Stone, ℔ doz ..... $1.50
- Natural Grit Carving Knife Hones, ℔ doz ..... $3.00
- Quick Cut Emery Carving Knife Hones, ℔ doz ..... $1.50
- Quick Edge Pocket Knife Hones, ℔ doz ..... $2.50

} 50%

### Skate—
Smith & Hemenway Co., Eureka .. 50%

### Shaves, Spoke—
*Iron ..... doz. $1.25*

*Wood ..... doz. $2.00*

Bailey's (Stanley R. & L. Co.) ..... 45%

Chapin-Stephens Co. ..... 30@30&10%

Goodell's, ℔ doz. $9.00 ..... 15&10%

### Shears—

| | | | |
|---|---|---|---|
| *Cast Iron .. 7* | *8* | *9 in.* | |
| *Best ... $16.00* | *18.00* | *20.00* | *gro.* |
| *Good ... $13.00* | *15.00* | *17.00* | *gro.* |
| *Cheap .. $5.00* | *6.00* | *7.00* | *gro.* |

*Straight Trimmers, &c.:*
- *Best quality Jap ..... 70&10&5%*
- *Best Quality Nickel .. 60&10&5%*

*Tailors' Shears ..... 40@40&10%*

Acme Cast Shears ..... 40@40&5%

Heinisch's Tailor's Shears ..... 10%

National Cutlery Co.'s Nickel Plated, 60&10%; Japan Handles ..... 70&10%

Columbian Cutlery Co.:
- Sheep, 1900 list ..... 30&10&5%
- Grass ..... 50&10%
- Horse or Mule ..... 50&10%

J. Wiss & Sons Co.:
- Best Quality Jap'd ..... 60&10%
- Best Quality Nickeled ..... 50&10%
- Tailors' ..... 25

### Tinners' Snips—
*Steel Blades ..... 20&5@20&10%*

*Steel Laid Blades ..... 75&10%*

Acme Cast Snips ..... 40@45&5%

Forged Handles, Steel Blades, Berlin ..... 50%

Heinisch's Snips ..... 40%

Jennings & Griffin Mfg. Co.'s 6½ to 10 in ..... 33⅓&7½%

National Cutlery Co.'s Forged Steel. 50%

Niagara Snips ..... 40%

P., S. & W. Forged Handles, 25%; W. R. W. ..... 50%

J. Wiss & Sons Co.:
- Wiss Forged Steel ..... 25%

### Pruning Shears—
Cronk's Hand Shears ..... 33⅓%

Cronk's Wood Handle Shears .... 33⅓%

Disston's Combined Pruning Hook and Saw, ℔ doz. $18.00 ..... 25%

Disston's Pruning Hook only, ℔ doz., $12.00 ..... 25%

J. T. Henry Mfg. Co.:
- Pruning Shears, all grades ..... 40%

P., S. & W. Co. ..... 40&10%

Columbian Cutlery Co.:
- Hedge, Wilcut Brand ..... 60&10%
- Lawn and Border, Wilcut Brand, 60&10%

### Sheaves—Sliding Door—
Reading ..... 40%

R. & E. list ..... 15%

### Sliding Shutter—
Reading list ..... 40%

R. & E. list ..... 15%

### Shells—Shells, Empty—
Brass Shells, Empty:
- Climax, 10 and 12 gauge ..... 60&5%
- Club, Rival, 65&5%; First Quality, 60&5%

Paper Shells, Empty:
- New Rapid, 10, 12, 16 and 20 gauge, 25&10%
- Climax, 10 and 12 gauge; Acme and Magic, 10, 12, 16 and 20 gauge; Ideal, 10, 12, 16 and 20 gauge; Leader grade ..... 25&5%
- Union, League, 10 and 12 gauge, Rival Grade ..... 25%
- New Climax, Defiance, 10, 12, 14, 16 and 20 gauge; Climax, 14, 16 and 20 gauge ..... 20%
- Challenge, Monarch, 10, 12, 16 and 20 gauge; League, Union, 14, 16 and 20 gauge; Repeater Grade .. 20%

### Shells, Loaded—
*Loaded with Black Powder .. 40%*

*Loaded with Smokeless Powder, medium grade ..... 40&5%*

*Loaded with Smokeless Powder, high grade ..... 40&10&10%*

Union Metallic Cartridge Co.:
- New Club, Black Powders ..... 40%
- Nitro Club, Smokeless Powders. 40&5%
- Arrow, Smokeless Powders. 40&10&10%

Winchester:
- Smokeless Repeater Grade ..... 40&5%
- Smokeless Leader Grade ... 40&10&10%
- Black Powder ..... 40%

### Shingles, Metal— Per Sq.

| Edwards Mfg. Co.: | Painted. | Galv. |
|---|---|---|
| 14 x 20 | $4.25 | $6.00 |
| 10 x 14 | 4.50 | 6.25 |
| 7 x 10 | 4.75 | 6.50 |

| Wheeling Corrugating Co.: | | |
|---|---|---|
| Dixie, 14 x 20 in. | $4.05 | $5.05 |
| Dixie, 10 x 14 in. | 4.25 | 5.45 |
| Dixie, 7 x 10 in. | 5.25 | 6.70 |

### Shoes, Horse, Mule, &c.—
*F.o.b. Pittsburgh:*
- *Iron ..... per keg. $4.10*
- *Steel ..... per keg. $3.85*

Burden's, all sizes ..... ℔ keg $3.90

### Shot—

| | 25-lb. bag. |
|---|---|
| *Drop, up to B* | *$1.80* |
| *Drop, B and larger* | *2.05* |
| *Buck* | *2.05* |
| *Chilled* | *2.05* |
| *Dust* | *2.30* |

### Shovels and Spades—
*Association List, Nov. 15, 1902. 40%*

Avery Stamping Co ..... 40%

### Snow Shovels—
*Long Handle ..... $2.50@$2.75*

*Wood and Mall, D Handle. $2.65@$2.90*

### Sieves and Sifters—
*Hunter's Imitation, gro .... $9.50*

*Hunter's Genuine, per gro .. $12.00*

### Sifters, Ash—
Acme Ball Bearing Sales Co., Acme Automatic Ash Sifter, each, $3.25; ℔ doz ..... $39.00

### Sieves, Seamless Metallic

| | *Per dozen.* | | | |
|---|---|---|---|---|
| *Mesh* | *1½* | *16* | *18* | *20* |
| *Iron Wire* | *$1.05* | *1.05* | *1.10* | *1.20* |
| *Tinned Wire* | *$1.15* | *1.15* | *1.20* | *1.30* |

### Sieves, Wooden Rim—
*Nested, 10, 11 and 12 Inch.*

*Mesh 18, Nested .... doz. $0.90@0.95*

*Mesh 20, Nested .... doz. $1.00@1.05*

*Mesh 24, Nested .... doz. $1.30@1.40*

### Sinks, Cast Iron—
*Painted, Standard list:*
- *12 x 12 to 22 x 36 in ..... 60%*
- *20 x 24 to 24 x 50 in ..... 50%*
- *24 x 60 to 24 x 120 in ..... 30%*

Barnes' low list ..... 60%

*NOTE.—There is not entire uniformity in lists used by jobbers.*

### Skeins, Wagon—
*Cast Iron ..... 70@75&10%*

*Steel ..... 40@45%*

### Slates, School—
*Factory Shipments*

*Eureka, Unexcelled Noiseless .. 60&7 tens.*

*Victor A, Noiseless. 60&4 tens &5%*

### Slaw Cutters—See *Cutters.*

### Snaps, Harness—
*German ..... 40@40&10%*

Covert Mfg. Co.:
- Derby, 25%; Yankee, 30&2%; Yankee Roller, 30&2%.
- High Grade, 40%; Trojan ..... 40%
- Jockey ..... 25%

### Snaths—
*Scythe ..... 50&10@60%*

### Snips, Tinners—See *Shears.*

### Spoons and Forks—
#### Silver Plated—
*Good Quality ..... 50&10@60&5%*

*Cheap ..... 60@60&10%*

International Silver Co:
- 1847 Rogers Bros. ..... 40&10%
- Rogers & Bro., William Rogers' Eagle Brand ..... 50&10%
- Anchor, Rogers Brand ..... 60%
- Wm. Rogers & Son ..... 60&10%

#### Miscellaneous
*German Silver ..... 60@60&5%*

#### Tinned Iron—
*Teas ..... per gro. 50@55¢*

*Tables ..... per gro. $0.90@$1.00*

Atlas Mfg. Co.:
- Tea Spoons, ℔ gro ..... 50¢@55¢
- Table Spoons, ℔ gro ..... $0.90@$1.00

### Springs— Door—
Bardsley's Spring and Check ..... 40%

Chicago (Coil) ..... 40&10%

Gem (Coil) ..... 20%

Pullman Door and Gate ..... 10%

Reliance (Coil) ..... 40&10%

Star (Coil) ..... 35%

Torrey's Rod, 39 in ..... ℔ doz. $1.00

### Carriage, Wagon, &c.—

| | *Per 100 lb.* |
|---|---|
| *1¼ in. and Wider:* | |
| *Black* | *$4.75@$5.00* |
| *Half Bright* | *$4.75@$5.00* |
| *Bright* | *$5.25@$5.50* |

*Painted Seat Springs:*
- *1½ x 2 x 26 .... per pair. 45@47¢*
- *1½ x 3 x 28 .... per pair. 68@71¢*

### Sprinklers, Lawn—
American Foundry & Mfg. Co.:
- Cactus, 65%; Japanese, 70%; National, ℔ doz ..... $12.00

Enterprise ..... 25@30%

Philadelphia No. 1, ℔ doz. $12; No. 2, $15; No. 3, $20 ..... 30%

### Squares—
*Nickel plated .. } List Jan. 5, 1900.*
*Steel and Iron. } 80&5@80&10%*

*Rosewood Hdl. Try Square and T-Bevels ..... 60&10&10@70%*

*Iron Hdl. Try Squares and T-Bevels ..... 40&10@40&10&10%*

Disston's Try Squares and Bevels, Rosewood Handle, 60 & 10%; Iron Stock and Bevel ..... 15%

### Squeezers, Lemon
*Wood, Porcelain Lined:*
- *Cheap ..... doz. $1.00*
- *Good Grade ..... doz. $1.25*

*Tinned Iron ..... doz. $0.75@1.00*

*Iron, Porcelain Lined ... doz. $1.75*

Victor, ℔ gro ..... $9.00

### Staples—
*Barbed Blind ..... 85&5@85&10%*

*Electricians' ..... 80&10&10@85%*

*Fence Staples, Polished, $2.05; Galvanized ..... $2.35*

*Poultry Netting Staples ..... per lb. 3¼@3½¢*

### Steels, Butchers'—
Dick's ..... 30%

Foster Bros.' ..... 30%

### Steelyards — .... 30@30&10%

### Stocks and Dies—
*Blacksmiths' ..... 50@50&10%*

Curtis Rev'ble Ratchet Die Stock .. 25%

Derby Screw Plates ..... 25%

Green River ..... 25%

Lightning Screw Plate ..... 25%

Little Giant ..... 25%

Reece's New Screw Plate ..... 25%

### Stoners, Cherry—
Enterprise ..... 25@30%

### Stones, Axe—
Pike Mfg. Co., Axe Stones (all kinds) ..... 33⅓%

### Glass Cutters' Stones—
Pike Mfg. Co., Glass Cutters' Stones and Supplies ..... 40%

### Stones, Oil, &c.—
Pike Mfg. Co., 1907 list: ℔ lb
- Arkansas St. No. 1, 3 to 5½ in. $2.80
- Arkansas St. No. 1, 5½ to 8 in. $3.50
- Arkansas Slips No. 1 ..... $1.40
- Lily White Washita, 4 to 8 in. 60¢
- Rose Red Washita, 4 to 8 in. 60¢
- Washita St., Extra, 4 to 8 in. 50¢
- Washita St., No. 1, 4 to 8 in. 40¢
- Washita St., No. 2, 4 to 8 in. 25¢
- Lily White Slips ..... 90¢
- Rose Red Slips ..... 90¢
- Washita Slips, Extra ..... 80¢
- Washita Slips, No. 1 ..... 70¢
- Washita Slips, No. 2 ..... 40¢
- India Oil Stones (entire list) .. 33⅓%
- Quickcut Emery and Corundum Oil Stone, Double Grit ..... 40%
- Quickcut Emery and Corundum Axe Stone, Double Grit ..... 33⅓%
- Quickcut Emery Rubbing Bricks. 40%
- Hindostan No. 1, R'g'lar. ℔ lb 8¢
- Hindostan No. 1 Small .. ℔ lb 10¢
- Turkey Oil Stones, Extra, 5 to 8 in. ..... ℔ lb 80¢
- Queer Creek Stones, 4 to 8 in 20¢
- Queer Creek Slips ..... 20¢

} 33⅓%
} 33⅓%

## Scythe Stones—

Pike Mfg. Co., 1907 list:
Black Diamond S. S.. ℔ gro. $12.00
Lamoille S. S..... ℔ gro. $11.00
White Mountain S. S. ℔ gro. $9.50
Green Mountain S. S. ℔ gro. $7.00
Extra Indian Pond S.S. ℔ gro. $8.00
No. 1 Indian Pond S.S. ℔ gro. $7.50
No. 2 Indian Pond S.S. ℔ gro. $5.00
Leader Red End S. S. ℔ gro. $5.00
Quick Cut Emery.... ℔ gro. $10 00
Pure Corundum..... ℔ gro. $18.00
Crescent .....$7.00
Emery Scythe Rifles, 2 Coat. $8.80
Emery Scythe Rifles, 3 Coat. $11.00
Emery Scythe Rifles, 4 Coat. $13.20
Balance of 1907 list 33⅓%
Lectro (Artificial), ℔ gro., $12.00 $12.00 .....33⅓%
Lightning (Artificial), ℔ gro., $18.00 .....33⅓%

33⅓%

## Stoppers, Bottle—

Victor Bottle Stoppers.....℔ gro. $9.00

## Stops— Bench—

Millers Falls.....15&10%
Morrill's, ℔ doz., No 1, $10.00....50%
Morrill's, No. 2, $12.50.....50%

## Door—

Chapin-Stephens Co.....50@50&10%

## Plane—

Chapin-Stevens Co.....20%

## Straps— Box—

Acme Embossed, case lots..20&10&10%
Cary's Universal, case lots...20&10&10%

## Stretchers, Carpet—

*Cast Iron, Steel Points..doz. 55¢*
*All Steel Socket...doz. $2.00@2.25*
Excelsior Stretcher and Tack Hammer Combined, ℔ doz., $6.00....20%

## Stuffers, Sausage—

Enterprise Mfg. Co., Stuffers and Lard Presses.....25@25&7½%
National Specialty Co., list Jan. 1, 1902 .....30&5%
P., S. & W. Co.....40&10&5%

## Sweepers, Carpet—

### Per doz.—

Bissell Carpet Sweeper Co.:
Cyco Bearing Superba, $36.00; Triumph, $33.00; Parlor Queen, $30.00; Elite, $29.00; Boudoir, $27.00; American Queen, $27.00; Ideal, $25.00; Gold Medal, $24.00; Primier, $24.00; Prize, $24.00; Welcome, $24.00; Grand Rapids, Nickel, $24.00; Japan, $22.00; Crystal, $36.00; Grand, $36.00; Parlor Grand, $48.00; Club, $54.00; Hall, $60.00; Standard Nickel, $22.00; Standard Japan, $20.00; Crown Jewel, Nickel, $21.00; Crown Jewel, Japan, $19.00; Junior, Nickel, $22.00; Junior, Japan, $20.00.

*NOTE.—Rebates: 50c per dozen on three dozen lots; $1 per dozen on five-dozen lots; $2 per dozen on ten-dozen lots.*

## Tacks, Finishing Nails, &c.

*American Carpet Tacks...90&40%*
*American Cut Tacks.....90&40%*
*Swedes' Cut Tacks.....90&40%*
*Swedes' Upholsterers'....90&50%*
*Gimp Tacks.....90&50%*
*Lace Tacks.....90&50%*
*Trimmers' Tacks.....90&40%*
*Looking Glass Tacks.....65%*
*Bill Posters' and Railroad Tacks, 90&50&10%*
*Hungarian Nails.....80&20%*
*Finishing Nails.....70%*
*Trunk and Clout Nails...80&10%*

*NOTE.—The above prices are for Straight Weights.*

## Miscellaneous—

*Double Pointed Tacks, 90&6 tens@—%*
Se also Nails, Wire.

## Tanks, Oil and Gasoline—

Wilson & Friend Co.:

| Gal. | Gasoline | Oil |
|---|---|---|
| 30 | $2.75 | $3 00 |
| 60 | $3.50 | $4.00 |
| 110 | $5.00 | $5.75 |

## Tapes, Measuring—

*American Asses' Skin....50@—%*
*Patent Leather.....25@30&5%*
*Steel .....33⅓&5%*
*Chesterman's .....25@25&5%*
Keuffel & Esser Co.:
Favorite, Ass Skin.....40&10@50%
Favorite, Duck and Leather..... 25&5@25&10%
Metallic and Steel, lower list, 35@35&5%; Pocket, 35@35&5%.
Lufkins:
Asses' Skin.....40&10@50%
Metallic .....30@30&5%
Patent Bend, Leather...25&5@25&10%
Pocket .....40@40&5%
Steel .....33⅓@35%
Wiebusch & Hilger:
Chesterman's Metallic, No. 34L, etc. .....35%
Chesterman's Steel, No. 1038L, etc. .....35%

## Teeth, Harrow—

*Steel Harrow Teeth, plain or headed, ⅝-inch and larger, per 100 lb.....$2.55@$2.80*

## Thermometers—

*Tin Case, Cabinet, Flange, Dairy, &c.....30@35%*

## Ties, Bale—Steel Wire—

*Single Loop.....82½&10%*
*Monitor, Cross Head, &c.70&2½%*

## Tinners' Shears, &c.—

*See Shears, Tinners', &c.*

## Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

## Tire Benders, Upsetters, &c.

See *Benders and Upsetters, Tire.*

## Tools—Coopers'—

L. & I. J. White.....20@20&5%

## Haying—

Myers' Hay Tools.....50%

## Ice Tools—

Gifford-Wood Co.....15%

## Miniature—

Smith & Hemenway Co.'s, Davidson, ℔ doz., Nickel Plated, $1.50; Gold Plated.....$2.00

## Saw—

Atkins' Cross Cut Saw Tools....35&5%
Simond's Improved.....33⅓%
Simonds' Crescent.....30%

## Ship—

L. & I. J. White.....25%

## Torches—

Hammers, Engine, ℔ doz.....$4.50

## Transom Lifters—

See *Lifters, Transom.*

## Traps—Fly—

*Balloon, Globe or Acme, doz., $1.15@$1.25; gro.....$11.50@12.00*
*Harper, Champion or Paragon, doz., $1.25@1.40; gro.$13.00@13.50*

## Game—

*Imitation Oneida.....75@10%*
Newhouse .....50&5%
Hawley & Norton.....65&10%
Victor .....75@75&10%
Oneida Community Jump.....70&5%
Stop Thief.....60%
Tree Trap.....60%
Hector .....75@75&10%

## Mouse and Rat—

*Mouse, Wood, Choker, doz. holes, 12¢*
*Mouse, Round or Square Wire, doz. 85@90¢*
Marty French Rat and Mouse Traps (Genuine), ℔ doz.:

| | Crate lots. | Small lots. |
|---|---|---|
| No. 1, Rat..... | $11.50 | $14.50 |
| No. 3, Rat..... | $5.75 | $6.50 |
| No. 3½, Rat..... | $4.70 | $5.25 |
| No. 5, Mouse..... | $2.25 | $3.00 |

Animal Trap Co.:
Out o' Sight, Mouse, ℔ doz.....$0.60
Out o' Sight, Rat, ℔ doz..... 1.20
Easy Set, Mouse, ℔ doz..... .35
Easy Set, Rat, ℔ doz..... .85
Out o' Sight Chockers, ℔ doz. holes ..... .12
Out o' Sight, Tin, 5-hole, ℔ doz. traps ..... .75

## Trowels—

Disston Brick and Pointing.....25%
Disston Plastering.....20%
Disston " Standard Brand " and Garden Trowels.....30%
Kohler's Steel Garden Trowels, ℔ gro., 5 in., $4.80; 6 in., $6.00.
Never-Break, Forged Steel Garden Trowels, in bulk, net ℔ gro. $5.50
In 1 doz. boxes.....℔ gro. $6.00
Woodrough & McParlin, Plastering.25%

## Trucks, Warehouse, &c.—

B. & L. Block Co.:
New York Pattern.....50&10%
Western Pattern.....60&10%
Handy Trucks.....℔ doz. $16.00
Grocery .....℔ doz $15.00
McKinney Trucks.....each, net $10.00
Model Stove Trucks.....℔ doz $18.50

## Tubs, Wash—

*M'f'gr's list, price per gross.*

| | No. 0 | 1 | 2 | 3 |
|---|---|---|---|---|
| *Galvanized* | $67 | $79 | $89 | $99 |

*10&7½ &5&5%*

## Twine, Miscellaneous—

*Flax Twine:*
*No. 9, ¼ and ½-lb. Balls.21@23¢*
*No. 12, ¼ and ½-lb. Balls.19@21¢*
*No. 18, ¼ and ½-lb. Balls.16@18¢*
*No. 24, ¼ and ½ -lb. Balls. 15½@17½¢*
*No. 36, ¼ and ½-lb. Balls.15@17¢*
*Chalk Line, Cotton ½-lb. Balls .....24@29¢*
*Cotton Mops, 6, 9, 12 and 15 lb to doz.....8½@19¢*
*Cotton Wrapping, 5 Balls to lb.. according to quality..13½@19¢*
*American 2-Ply Hemp, ¼ and ½-lb. Balls.....12½@15¢*
*American 3-Ply Hemp, 1-lb Balls .....13½@16¢*
*India 2-Ply Hemp, 1½-lb. Balls, Balls (Spring Twine)...7½@9¢*
*India 3-Ply Hemp, 1-lb. Balls 7½@9¢*
*India 2-Ply Hemp, 1½-lb. Balls, 7@8½¢*
*2, 3, 4 and 5-Ply Jute, 1½-lb. Balls .....9@11¢*
*Mason Line, Linen, ½-lb. Bls.17¢*
*No. 264 Mattress, ¼ and ½ lb. Balls, according to quality. 30@60¢*
*Wool, 3 to 6 ply....B 6¢; 7½¢*

## Vises—

*Solid Box.....50&5@50&10&5%*

## Parallel—

Athol Machine Co.:
Simpson's Adjustable.....40%
Standard .....40%
Amateur .....25%
Columbian Hdw. Co., 40&5%;
Slide .....65%
Fisher & Norris Double Screw, net, each, Nos. 2, $10.50; 3, $16.00; 4, $20.50; 5, $27 00; 6, $32.00.
Fulton Mach. & Vise Co.:
F. & R. Double Swivel Machinists' .....40%
Star, Solid Jaw, Machinists'.....40%
Hollands':
Machinists' .....40@40&5%
Keystone .....65&5@70%
Lewis Tool Co.:
Adjustable Jaw.....30%
Monarch, 50%; Solid Jaw.....50%
Massey Vise Co.:
Clincher .....40%
Parallel Bar.....15%
Perfect, 15%; Lightning Grip.....15%
Morrill's .....25%
Millers Falls Oval Slide Pattern.60&10%
Parker's:
Victor, 20@25%; Regulars....20@25%
Vulcan's .....40@45%
Combination Pipe.....55@60%
Prentiss .....20@25%
Rock Island.....25%
Snediker's X. L.....33⅓%
Stephens' .....33⅓%

## Saw Filers

Disston's D 3 Clamp and Guide, ℔ doz., $24.00, 30%; Clamps.....30%
Perfection Saw Clamps, ℔ doz....$4.50
Reading .....60%

## Wood Workers—

Fulton Mach. & Vise Co.:
F. & R. Double Swivel Coachman's .....40%
Star Solid Jaw Woodworkers'....60%
Massey Vise Co.:
Lightning Grip, 15%; Perfect....15%
Wyman & Gordon's Quick Action, 6 in., $6.00; 9 in., $7.00; 14 in., $8.00.

## Miscellaneous—

Fulton Machine & Vise Co., Combination Pipe.....70%
Holland's Combination Pipe..60@60&5%
Massey's Quick Action Pipe.....40%
Parker's Combination Pipe:
87 Series, 60%; 187 Series, 60&5%; No. 870, 40%.
Rock Island Pipe.....25%

## Wads— *Price per M.*

*B. E., 11 up.....60¢*
*B. E., 9 and 10.....70¢*
*B. E., 8.....80¢*
*B. E., 7.....80¢*
*P. E., 11 up.....$1.00*
*P. E., 9 and 10..... 1.25*
*P. E., 8..... 1.50*
*P. E., 7..... 1.50*

*Dis. 15%*

*Ely's B. E., 11 and larger.$1.70@1.75*
*Ely's P. E., 12 to 20....$3.00@3.25*

## Ware, Hollow—

### Cast Iron, Hollow—

*Stove Hollow Ware:*
*Enameled .....45&10%*
*Ground .....50&5%*
*Plain or Unground.....60%*
*Country Hollow Ware, per 100 lbs .....$2.75@$3.00*
*White Enameled Ware:*
*Maslin Kettles.....65&10%*
*Covered Wares:*
*Tinned and Turned.....35&10%*
*Enameled .....45&10%*

See also *Pots, Glue.*

### Enameled—

Agate Nickel Steel Ware.....33⅓%
El-an-ge .....60&10%
Iron Clad Ware.....70&10%
Lava and Volcanic, Enameled..40&10%

### Tea Kettles—

*Galvanized Tea Kettles:*

| *Inch* | 6 | 7 | 8 | 9 |
|---|---|---|---|---|
| *Each* | 45¢ | 50¢ | 55¢ | 65¢ |

### Steel Hollow Ware—

Avery Stamping Co.:
Never-Break Spiders and Griddles .....65&10%
Steel Kettles, Maslins Scotch Bowls, Tin'd.....60%
Steel Stew Pans, Stew Pots, etc., Porcelained .....50%
Cleveland Stamping & Tool Co.:
Solid Steel Spiders and Griddles .....65&5%
Solid Steel Kettles.....60&5%

### Warmers, Foot—

Pike Mfg. Co., Soapstone....40@40&10%

## Washboards—

| No. | ℔ doz. |
|---|---|
| 800—Brass King, Single Surface, Open Back..... | $2.80 |
| 862—White Hen, Spiral Grimp Glass ..... | $3.35 |
| 964—Royal Blue Enamel, Single Surface, Ventilated Back..... | $3.35 |
| 172—Our Best, Single Zinc, Soap Drainer ..... | $3.35 |
| 722—Soap Saver, Single Zinc, Iron Top ..... | $3.35 |
| 100—Northern Queen, Single Zinc, Perforated, Open Back..... | $3.00 |
| 134—Universal, Single Zinc, Extra Family Size, Ventilated Back....$2.80 | |
| 760—Banner Globe, Single Zinc, Ventilated Back..... | $2.25 |
| 57—Peerless, Double Zinc, Spring Protector ..... | $3.70 |
| 56—Red Cross, Double Zinc, Swing Protector ..... | $3.60 |
| 17—North Star, Solid Zinc, Swing Protector ..... | $3.60 |
| 797—Jewel, Single Zinc, Pail Size. | $1.25 |

## Washers—Leather, Axle—

*Solid .....90@90&10%*
*Patent .....90@90&5%*
*Coil: ⅞ 1 1¼ 1¼ inch. 9¢ 10¢ 11¢ 14¢ per box.*

## Iron or Steel—

*Size bolt.... 5/16 ⅜ ½ ⅝ ¾*
*Washers....$4.65 3.75 2.45 2.25 2.05*
*The above prices are based on $6.75 off list.*
*In lots less than one keg add ½¢ per lb.; 5-lb. boxes add ½¢ to list.*

Avery Stamping Co.:
Standard, in 200 lb kegs, $6.00 ℔ 100 lb. disct.; in 100 lb kegs, add 10¢ net ℔ 100 lb; in 5 or 10 lb boxes, add 50¢ net ℔ 100 lb; in 1 lb boxes, add $1.00 net ℔ 100 lb.

## Cast Washers—

*Over ½-inch, barrel lots, per lb. 1½@1¾¢*

## Wedges—

*Oil Finish.....lb., 2¼@2¾¢*

## Weights—Hitching—

Covert Mfg. Co.....30&2%

## Sash—

*Per net ton, f.o.b. factory:*
*Eastern District.....$20.00@—*
*Western and Central Districts .....$19.00@—*

## Wheels, Corundum and Emery—

Pike Mfg. Co., Corundum, 65%; Emery .....75%

## Well—

*8-in., $2.00; 10-in., $2.30; 12-in., $3.00; 14-in., $4.45.*

## Wire and Wire Goods—

*Bright and Annealed:*
*6 to 9.....72¢10¢7½%*
*10 to 18.....72½¢10¢10%*
*19 to 26.....75¢10¢2½%*
*27 to 36.....77½¢7½%*
*Galvanized:*
*6 to 9.....72½¢10%*
*10 to 14.....72½¢10¢5%*
*15 to 16.....72½¢10¢5%*
*17 to 18.....72½%*
*19 to 26.....70¢5¢2½%*
*27 to 36.....65¢10¢10%*
*Coppered:*
*6 to 9.....65¢10¢10%*
*10 to 14.....70¢10¢5%*
*15 to 18.....65¢10¢10%*
*19 to 26.....70¢5¢2½%*
*27 to 36.....72½¢10¢2½%*
*Tinned:*
*6 to 18.....67¢10¢10%*
*Brass .....15½¢ lb., base*
*Copper .....14¾¢ lb., base*
*Cast Steel Wire.....50%*

## Spooled Wire—

*Annealed and Tinned.75@75&10%*
*Brass and Copper....70@70&10%*
*Retailers' Assortments, per box, $1.90@$2.10*
Wire Clothes Line, See Lines.
Wire Picture Cord, see Cord.

## Bright Wire Goods—

*Steel Wire Goods.90&40@90&40&10%*
*Brass Wire Goods, 90&40@90&40&10%*
*Brass Cup and Shoulder Hooks, 85&10%*

## Wire Cloth and Netting—

*Galvanized Poultry Netting, 80&2½@80&7½%*
*Painted Screen Cloth, 100 ft., $1.35*
*Standard Galv. Hardware Grade: 100 ft. rolls, 24 to 48 in. wide, Per 100 sq. ft.*
*Nos. 2, 2½ and 3 Mesh....$2.75*
*Nos. 4 and 5 Mesh.....$3.00*
*No. 6 Mesh.....$3.25*
*Nos. 7 and 8 Mesh.....$3.75*

## Wire, Barb—See *Trade Report*

## Wrenches—

*Agricultural, 80&10&5@80&10&10%*
*Alligator or Crocodile..70&10@75%*
*Baxter Pattern S Wrenches, 70&5@70&10%*
*Drop Forged S.....45@45&5%*
Acme .....60&10%
Alligator Pattern, 70%; Bull Dog..70%
Bemis & Call's:
Adjustable S, 40&5%; Adjustable S Pipe, 40&5%; Briggs Pattern, 40%; Combination Bright, 50%.
Steel Handle Nut.....50&5%
Combination Black.....50&5%
Merrick Pattern.....50&5%
Boardman's .....40%
Coes' Genuine Knife Hdl...40&10&5&5%
Coes' Genuine Steel Hdl...40&10&5&5%
Coes' Genuine Key Model..40&10&5&5%
Coes' Genuine Hammer Handle..... 40&10&5&5%
Coes' " Mechanics' "...40&10&10&5&5%
Donohue's Engineer.....40&10%
Eagle .....70%
Gem Pocket.....30%
Hercules .....70%
W. & B. Machinist:
Case lots.....50&10%
Less than case lots.....50%
W. & B. Railroad Special:
Case lots.....50%
Less than case lots.....40&10&5%
Solid Handles, P., S, & W..50&10%; full cases.....50&10&5%
Standard Nipple Mfg. Co.:
Duplex Chain.....50%
Uwanta Wrench Co.:
Uwanta Special, Iron Handle.... 40&10&5%
Other Wrenches.....50%
Vulcan and Agrippa Chain.....50%
Whitaker Machinists'.....50&10%
Wizard Adjustable Ratchet.....50%

## Fruit Jar—

Beni. P. Forbes, Triumph, ℔ gro., $7.50; per doz.....$0.90

## Wrought Goods—

*Staples, Hooks, &c., list March 17, '92.....90@—%*

## Zinc— *(Cask lots at mill.)*

*Sheet.....per 100 lb., $7.00*

# THE IRON AGE

New York, Thursday, November 5, 1908.

## Brightman Shafting Machinery.

Machinery for finishing shafting, bronze rods, tubing, &c., by the turned process in all sizes from 1 to 6 in., inclusive, is built by the Brightman Mfg. Company, Shelby, Ohio. The product heretofore has been intended principally for the larger plants, but recently the company has designed equipment for shafting users who wish to make it for themselves. One of the first essentials was a lower cost of production of the machines in question and more compact form. To these ends all unnecessary appurtenances have been eliminated, with the result that the machines can be sold at a price fairly competitive with that asked for the ordinary class of machinery that is used for this work.

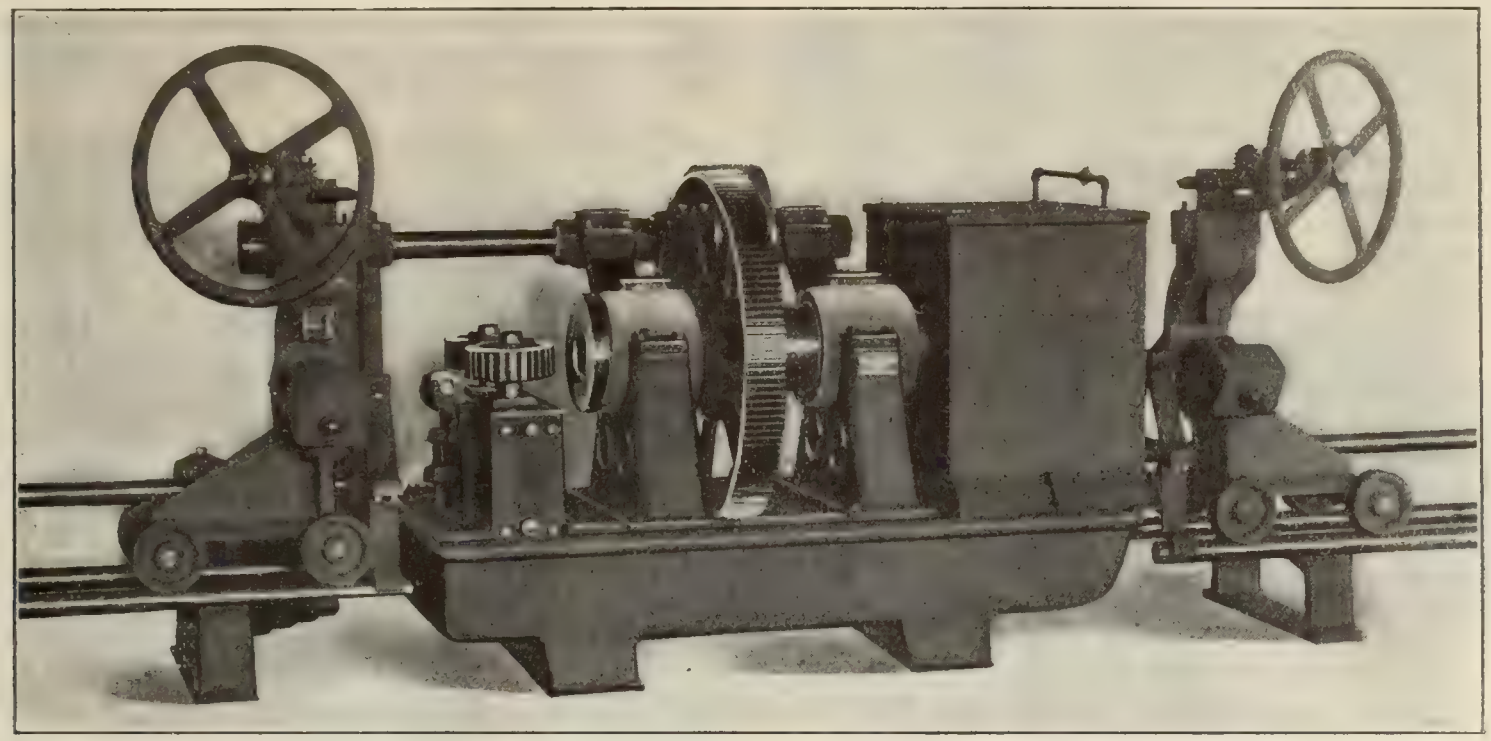


Fig. 1.—Turning Machine for Shafting, Built by the Brightman Mfg. Company, Shelby, Ohio.

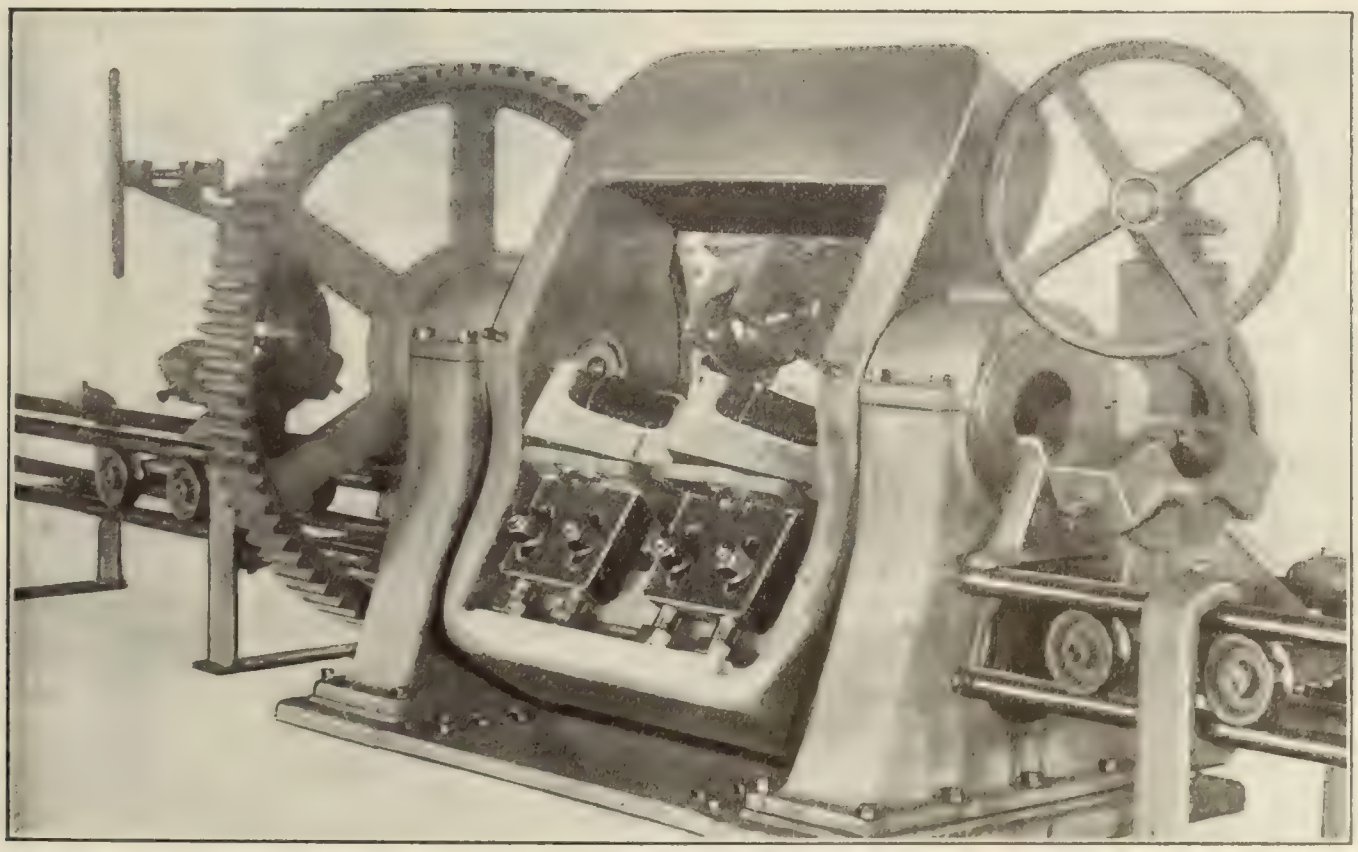


Fig. 2.—Brightman Shaft Straightening and Finishing Machine.

Fig. 1 shows the turning machine. The rough bar, tube or rod is fed in at the left end by a set of feed rollers which are driven through worm wheels and worms attached to perpendicular and horizontal shafts, from a four-step cone pulley to regulate the feed. The material is centered by a guide roller placed in front of the feeding roller, which has a perpendicular adjustment, and the feed rollers provide lateral adjustment. After leaving the feed rollers the material enters a hollow cylinder through a bushing to the guide head. This guide head contains guides set in segmental slots, and having screw adjustment. The material then passes to the cutter head which contains steel cutters and guides set in segmental slots, which cutters and guides also have screw adjustment. This cutter or finishing head turns the material to size, after which it is ready for the straightening or finishing machine, shown in Fig. 2.

The heads of the turning machine are bolted to a cylinder having hollow bearings, through which the material passes in the process of turning. The cylinder is driven through a gear by a pinion on a horizontal shaft. The bed of the machine is a receptacle for a soap solution which is continually pumped to the cutters by a small pump in the rear of the machine. This solution drains back into the bed and is used over repeatedly. A casing that surrounds the cutter heads retains the chips or turn-

ings, which can be readily cleaned out while the machine is in operation through side openings in the casing. At ench end of the machine tracks are provided upon which a gripping device travels which will hold the material from revolving with the machine. Material as short as 8 ft. can be turned, and there is no limit to the length except the space allowed in the building.

The machine illustrated in Fig. 2 is for the purpose of straightening rounds in the solid, both rough and finished, steel pipe, bronze rods, tubes, &c. The straightener consists of a bed with upright pedestal bearings, supporting a revolving frame which has hollow journals and the straightening mechanism. The latter consists of three rolls having concave surfaces. The rolls are supported by bearing blocks, having a swivel and screw adjustment. The roll supports are secured to the revolving frame so as to project alternately from opposite sides.

At each end of the straightener, tracks are provided upon which travels a gripping device similar to that on the turning machine and performing the same function, namely, that of holding the material to be straightened from revolving. The contact of the concave rolls in the revolving frame will produce varying speeds according to the amount of concave surface put on the rolls. A certain amount of slipping of the rolls on the work occurs which has the effect of producing a very fine finish, as well as straightening the shafting. The rolls are adjusted at an angle to the shaft according to its diameter, and each roll has a segmental line of contact with the shaft. This will prevent all gouging out or breaking of edges of flaws or cracks which might be found in the surface of the material, and will admit of such flaws and cracks being smoothed over.

Both machines are furnished for either belt or motor drive. The turning machine weighs approximately 13,000 lb. and the straightening and finishing machine about 21,000 lb.

## Galvanized Steel Grillage Beams.

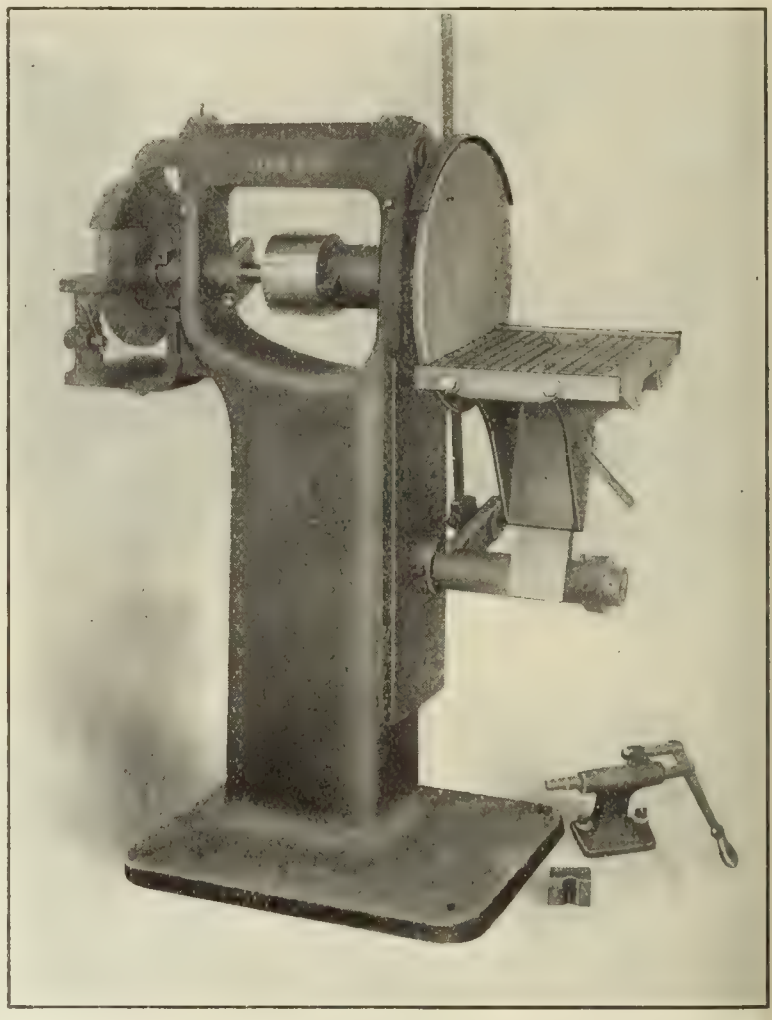
The receivers of Milliken Brothers, Inc., 11 Broadway, New York, have lately made some extensive experiments in connection with protecting from oxidation the steel grillage beams used in building construction. More or less water is present in nearly every building where grillage beams are used. Therefore, unless the beams are absolutely protected, there will be oxidation. As such beams are not usually exposed to view and cannot be examined, if oxidation takes place after the building is up and the oxidation becomes serious, the security of the building is threatened.

Finding that coating the beams with paint, asphalt or tar cannot be absolutely relied on for a great length of time, Milliken Brothers have experimented with galvanizing by the hot process, after all the shop work has been done on the steel. It has been shown that concrete will adhere to galvanized steel beams as firmly as to unpainted beams which are largely used for grillage work and much better than to painted beams. Architects and engineers who have had occasion to examine galvanized Ashlar anchors and galvanized pipes used in connection with concrete have found that concrete will attach itself as readily to galvanized material as ungalvanized material. The advantage of galvanizing is that it gives the steel beam a complete zinc coating, which will resist the action of the water and therefore protect the steel. The expense connected with the galvanizing is considered small in comparison with the resulting benefits.

**A British Marine Engine Consolidation.**—The Liverpool *Journal of Commerce* of October 24, says: "We are in a position to state, with official confirmation, that the whole of the marine engine works of the northeast coast are on the eve of jointly signing a working agreement in the form of an amalgamation representing firms valued at a total of £5,000,000. The scheme includes practically all the marine engine firms carrying on business on the Tyne, Wearside, Tees and at Hartlepool. It is expected that the signatures will be all completed within the next week. Negotiations have been proceeding for eight months. The basis of the scheme is economy in production, by concentration of management, classification and standardization of work so as to get the maximum amount of production from the different classes of machinery. There will also be a scheme of proportionate pooling of profits."

## A Garvin Combination Grinder.

An 18-in. disk grinder has been brought out by the Garvin Machine Company, New York City, the frame of which suggests the company's specialty—milling machines. The unique feature of the grinder is the manner of oscillating the work table. The oscillating is accomplished by power from a crank pin in a worm wheel on the overhead countershaft, which is connected by a rod to a rocker carrying the table. The rocker arm is slotted where the rod connects to it, providing an adjustment for varying the extent of the swing of the table. The table



A New Wheel and Disk Grinder Built by the Garvin Machine Company, New York.

has vertical adjustment of 3½ in., its surface has adjustable squaring edges, and it also has an extension that draws out for long work.

Opposite the 18-in. disk wheel is a solid 12-in. emery wheel, with a guard and work support. The lever tailstock shown on the floor at the base of the machine is used for grinding off round washers or collars. The V block fits in a groove in the table, and is used for finishing the ends of shafts, removing the burr which comes from cutting off or centering. Grease cups are provided for the oiling of all bearings to exclude emery dust and grindings.

A new plan is followed in putting on the emery disks. The disks are kept in stock, and have their backs already coated with a glue preparation that when moistened causes the disks to adhere firmly to the steel disk without requiring a press for applying them. The weight of the machine is 1150 lb.

By an unusual coincidence, the White Star Line's largest three steamers were at dock in New York at the same time last week, as follows: Adriatic, 25,000 tons; the Celtic, 21,035 tons, and the Baltic, 23,876 tons. These vessels total 69,911 tons, surpassing the displacement of the famous Spanish Armada by 10,791 tons.

# Woods Truing Devices for Wood Planer Heads.

In developing its specialty, wood planing machinery, the S. A. Woods Machine Company, Boston, Mass., has demonstrated that to increase the capacity and improve the product of a planer, harder knives, better grinding and more accurate setting are important. In this connection the company has brought out a truing device for grinding the cutting knives while they are revolving at cutting speed, and thereby true them so that the several knives will follow one exact path, each doing the same amount of work as the others.

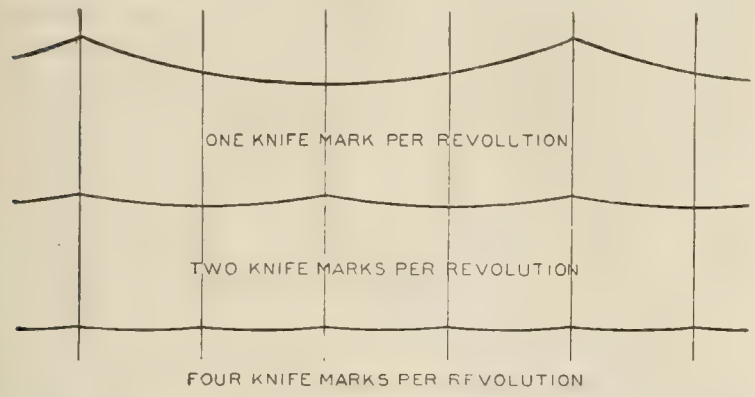



Fig. 1.—Comparison of Knife Marks on a Board Surface.

It has been found that no matter how careful the setting of the knives in the head while it is at rest, inaccuracies develop when it is set in motion, as evidenced by the knife marks on the wood, that made by one blade being always more prominent than the others. This is known as the revolution mark, as distinguished from the individual knife mark, which is left by each knife of a head that has been carefully trued at its regular cutting speed. The difference is readily apparent in the finish of the board. Thus with a feed of 100 ft. and a speed of 3900 rev. per min. by a four-knife cutter head, the individual knife marks, when all teeth are cutting equally, would measure 13 to the inch. The revolution marks made by one knife which does more than its share of the work would be one-quarter as close, or 3¼ marks to the inch. These relations, exaggerated, are shown in Fig. 1.

Experiments have proved that, owing to centrifugal force, the setting of knives while the head is at rest, no matter how accurately this may be done, will yield to distortion when the head is speeded up; therefore the necessity of truing the knife edges while the head is running at working speed. After the edges become dulled another truing restores them to their required keenness, and the process may be repeated until the heel produced by the grinding becomes so large as to be objectionable.

The truing device shown in Fig. 2 is typical of the line. It consists of a straight slide bar with a slide carrying an abrasive stick. In operation the slide bar is set parallel to the cutting cylinder and the slide is slowly moved from end to end while the cutter head is revolving. Provision is made for moving the stick toward or away from the head, and holding it firmly to the work.

The top truing device is a permanent fixture of the machine to which it is attached, being firmly hinged so that it may be swung back out of the way when not in use, as shown in Fig. 3. On the planing and matching machines the bottom device always remains in position, the slide being drawn out to one side when not in use, as also shown in Fig. 3. The truing process on the bottom head can be completed without stopping the machine or raising the top cutter head. On the molders the bottom truing device is detachable, the drop table being swung down to permit of attachment or removal.

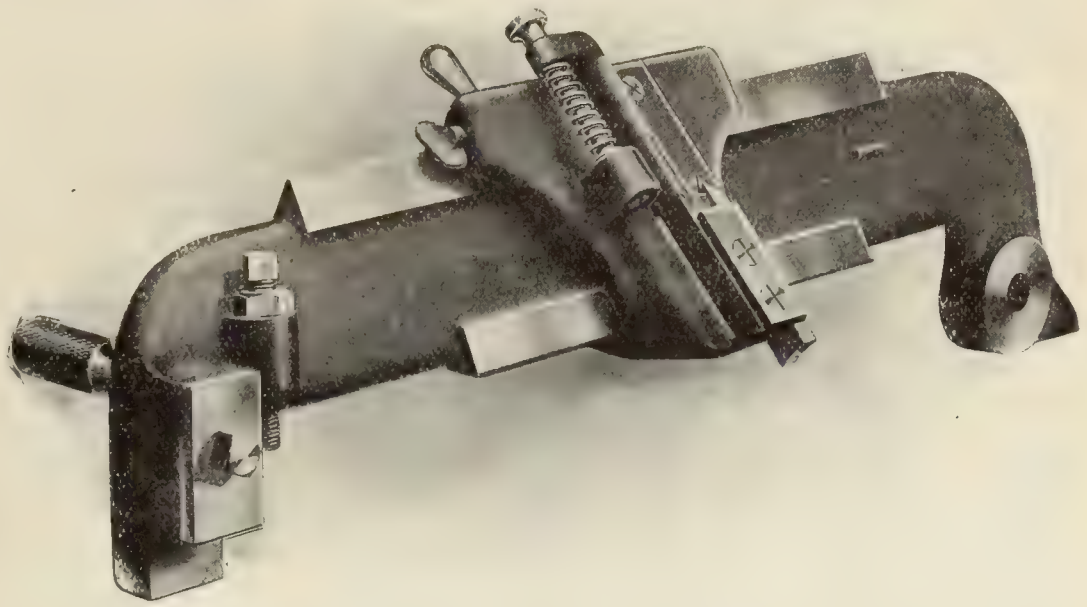


Fig. 2.—A Top Truing Device for a Planer and Matcher Made by the S. A. Woods Machine Company, Boston, Mass.

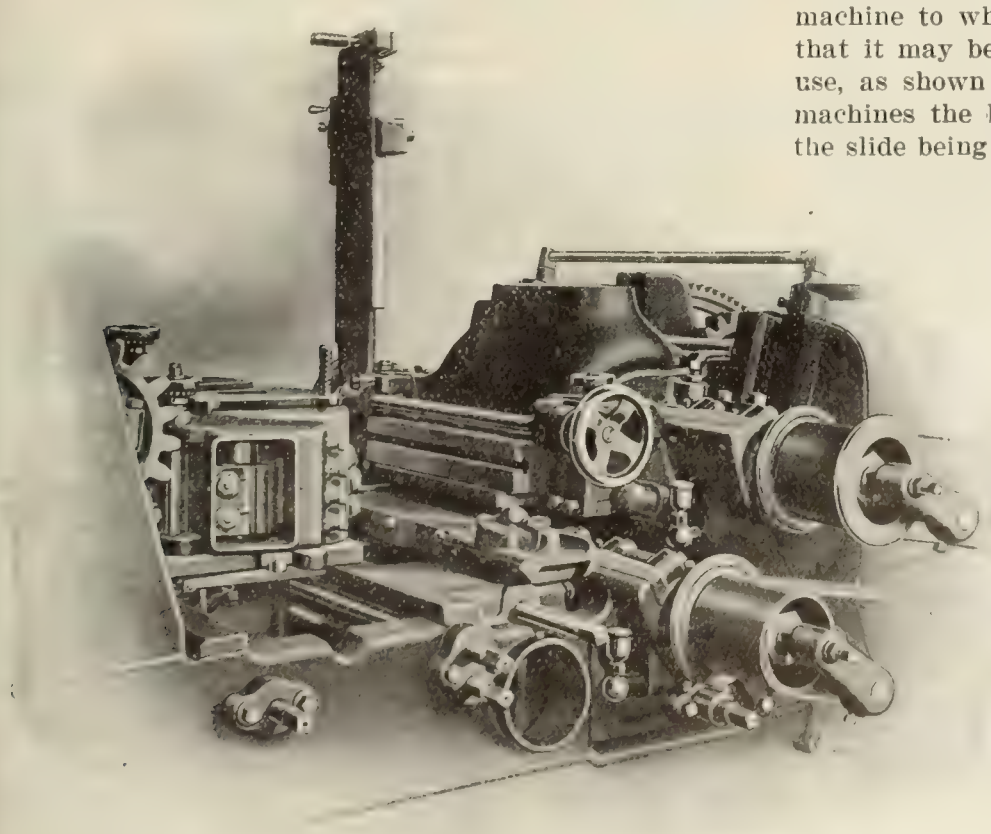


Fig. 3.—A Planer and Matcher with Top and Bottom Truing Devices Out of Action.

The company also makes a side head truing device, which is rigidly held on the matcher plate and is moved vertically past the cutters by a screw and crank. Angular adjustment may be made for truing the cutters to give a bevel edge on the stock. The device may be quickly attached or removed while the machine is running.

The truing devices work equally well with knives of high speed steel. The operator is cautioned, however, to take special care in this work, because the sparks given off are very dull, and hardly visible in a bright day, making it necessary to rely on feeling and sound rather than sight to determine when the process of truing is complete.

# TOOL STEEL MAKING IN STYRIA.*

BY R. F. BÖHLER.

In a metallurgical sense the Austrian Empire is one of the richest countries of Europe, and Styria especially is and always has been the ideal country for tool steel making. It possesses the most extensive and excellent supplies of spathic ores, while its forests furnish charcoal and its mountain torrents abundant water power. It is only natural that the history of the Styrian steel trade should be a venerable one and its origins be lost in the mists of remotest antiquity.

In Roman times Styrian steel was famous. To quote Swank on this point: "Among the provinces which contributed largely to the Roman supply of iron was Noricum corresponding to Styria and Carinthia in Austria. Both Pliny and Ovid who lived at the beginning of the Christian era speak of Norican steel as being of superior quality, and it is certain that ferrum Noricum was celebrated throughout Italy before their day. The best of swords were made from it in the reign of Augustus. Horace speaks of them. The spathic ores of Styria are still in high favor and the supply of ore, especially in the famous iron mountain of Erzberg, shows no sign of exhaustion at the end of twenty centuries of almost constant use." In the eighth century mining was taken up again at the Erzberg and has not been stopped since. Throughout the middle ages Styrian steel was considered superior beyond comparison, and was in fact shipped to the remotest corners of the civilized world, which is astonishing, if we stop to think how difficult, slow and unsafe transportation was in those times of the "Holy Roman Empire of German Race."

About 1740 the Sheffield watchmaker, Huntsman, for the first time succeded in refining steel by melting it in a crucible. He, however, exhibited the "worldly wisdom," as Percy politely styles it, of keeping his process secret. According to the popular tradition of Sheffield, knowledge of the process was finally obtained by the "heartless and knavish trick of a rival steelmaker," who, disguised as a shelter seeking vagabond, stole the secret and made it the property of the metallurgical world.

### The Styrian Steel Makers are Progressive.

Now Styria was the ideal country to take up the new process. For, besides its pure ores, its charcoal and water power, it moreover possessed both graphite and clay excellently fit for crucible making, while other countries get the graphite, for instance, all the way from Ceylon. Raw steel, the material of old fame and produced in the old way on the charcoal hearth, was now used for remelting in the newly introduced crucibles, and in fact still is to-day. This accounts for the rather widespread opinion that Styrian steelmakers are incurable, sticking to old-fashioned methods and afraid of improvements. This widespread opinion is, it is safe to say, a widespread mistake. They do keep up old methods until the new ones prove superior, but they do not drop them for cheaper ones at the cost of the product. On the contrary, Styrian steelmakers have always been the very pioneers of progress. At Urtl, for instance, a blast furnace is recorded to have been in operation since 1567, and puddled steel was regularly produced as far back as 1835. Another instance is the history of tungsten steel. Franz Mayer of Styria is assigned the credit of having first applied tungsten to cast steel on a large scale. He exhibited samples of it at the Vienna Congress of 1858 at a time when tungsten alloy steel was generally considered a ridiculous experiment. Franz Mayer himself perhaps realized to a moderate degree only the most astounding development tungsten steel was to take. The path he showed us has led to quite unexpected points of view and actually to a new world, metallurgically speaking, the world of high speed work.

Not wishing to dwell upon the tool steelmaking process in general, I shall merely mention a number of special features characteristic of Styria which, it will be seen, are so many special reasons for the superiority of Styrian tool steel.

### Modern Appliances.

Take for instance the Kapfenberg works, the largest crucible steel plant in existence, situated about an hour's ride from the old iron city of Leoben of mining school fame. Founded in 1446, they are at the same time the most ancient and the most modern. The entire heat treatment throughout the work is under control of an extensive pyrometric system and the latest types of electric hardening, annealing and melting furnaces are in use, as well as all of the modern physical and microscopical testing devices. Different from the methods customary in this country, the crucibles at Kapfenberg are manufactured on the premises and are used only once, although the majority of them would be able to bear a second or third charging. The reason for limiting their use to one heat only is to be found in the nature of the crucible process, which, far from being a mere remelting operation, involves a multitude of chemical reactions taking place between the iron, carbon, manganese of the raw materials, the carbon and silicon of the crucible material and the different slags formed at the various stages of the melting.

Most of these reactions vary in degree when the same crucible is used repeatedly, therefore absolute uniformity of the product can only be depended upon when crucibles are used but once. In order to be able to fulfill this great desideratum and furthermore to have absolute control over the chemical composition of the different kinds of crucibles employed for the various qualities of tool and special steel, the Kapfenberg works include a crucible factory on the premises.

Only very pure graphite can be used for the purpose; when containing impurities to any extent it has to undergo a special purifying treatment. Styrian graphite as used for crucibles contains on an average:

| C | $SiO_2$ | $Al_2O_3$ | $Fe_2O_3$ | $P_2O_5$ | $K_2O$ | $H_2O$ |
|---|---|---|---|---|---|---|
| 77.80 | 13.04 | 6.12 | 0.44 | 0.01 | 0.43 | 1.95 per ct. |

The refractory clay is dried in spacious sheds, then crushed by electrically driven grinding mills, and in the state of a fine dry powder conveyed by means of elevators to the storerooms. Suitable amounts of these materials are then taken through rotating mixers and worked into a paste in a battery of troughs and the plastic mass fed into a set of squeezers. Every squeezer supplies the material for a pair of double acting shaping presses from which the crucibles emerge in their final form. The crucible factory has a capacity of from 12,000 to 15,000 crucibles per week, while the drying houses hold 50,000 to 70,000 of them. Careful and gradual drying is indispensable, the crucibles are therefore kept slowly traveling through the drying houses, being shifted at certain intervals from cooler to hotter and drier sections, the entire trip taking six to seven weeks.

The second characteristic feature and perhaps the main cause of the excellence of Styrian steel may be found in the extremely pure ores of the Erzberg, that is, Ore Mountain. The view shown in Fig. 1 gives an idea of a small section only. The giant steps or terraces shown go up to the hight of 5000 ft., and the whole conical mountain of that peculiar reddish iron ore tint, surrounded by wood clad and snow topped mountains reaching 6000 ft. and more, really presents an imposing appearance. Besides being of so great an historical and metallurgical interest, the Erzberg is in fact one of the sights of the Alps. Erzberg ore is almost entirely free from noxious impurities; crude ore yields 38 per cent. to 40 per cent., roasted ore as much as 52 per cent. of iron. Analysis made by the Austrian Government Assay Office average for the crude ore

Fe = 38.9 per cent.
Mn = 2.1 per cent.
P = 0.017 per cent.
S = traces.
Cu = traces.

* Read before the New York Academy of Sciences, Section of Astronomy, Physics and Chemistry, and reprinted from the School of Mines *Quarterly* of Columbia University.

At the base of the mountain very silicious ores are found that are smelted in coke blast furnaces, while the higher regions consist of ores low in silica, as given in Table I.

*Table I.—Analysis of Erzberg Ore.*

| | From mountain base. | | From mountain top. | |
|---|---|---|---|---|
| FeO, $Fe_2O_3$ | 55 | 53 | 51 | 55 |
| MnO | 2 | 3 | 4 | 3 |
| $SiO_2$ | 16 | 10 | .. | .. |
| $CO_2$ | 24 | 26 | 37 | 40 |
| MgO, CaO, &c. | 3 | 8 | 8 | 2 |

**Styrian Charcoal Furnace Practice.**

While the working of Erzberg is uniform and carried on for common account by the Austrian Alpine Mining Company, the smelting in the charcoal blast furnaces at Vordernberg is under the management of the various owners. The one controlled by the Kapfenberg works is shown in Fig. 2. They all look very much like this one, reminding one of a medieval castle rather than of a sky-scraping coke blast furnace. Also, they do not produce quantity but quality.

*Table II.—Comparison of Blast Furnace Practice.*

| | Pounds of charcoal burned per ton of iron produced. White iron. | Gray iron. |
|---|---|---|
| In Styria | 1,300 | 1,500 |
| In Sweden | 1,850 | 2,050 |
| In United States | 1,640 to 1,800 | 2,400 |

The hight of Styrian charcoal blast furnaces varies between 40 and 50 ft., their throat diameter ranges from 3½ to 6½ ft., their bosh diameter from 6½ to 11 ft.; the output in 24 hr. amounts from 20 to 60 tons. The ratio of fuel to burden varies from 1.3 to 1.3½ as compared with the ratios of 1.2 to 1.2½ in general Swedish practice (low figures for gray, high figures for white iron). This is due to the fact that the Styrian siderite is easily reduced, and that owing to its peculiar composition only a small quantity of flux is needed. For the same reasons the amount of fuel burned per ton of iron produced compares favorably with the figures for American and Swedish practice (see Table II.).

Typical analyses of Styrian charcoal pig iron are shown in Table III.

*Table III.—Analysis of Styrian Charcoal Pig Iron (Ledebur).*

| | Gray. | Mottled. | White. |
|---|---|---|---|
| C | 3.78 | 3.01 | 3.72 |
| Graphite | 3.07 | 2.26 | ... |
| Mn | 2.52 | 2.33 | 0.69 |
| Si | 1.35 | 1.79 | 0.12 |
| S | 0.05 | 0.03 | 0.02 |
| P | 0.03 | 0.04 | 0.07 |
| Cu, Co, Ni | 0.11 | 0.05 | ... |

Because of the easy combustion of charcoal the blast is kept at a lower pressure and a lower temperature than is customary in the case of coke. With coke the larger amounts of ashes contained in the fuel and the chemical nature of these ashes make a greater quantity of flux necessary, and the slag thus formed has a melting point superior to the temperatures generally reached in charcoal blast furnaces. At the low temperatures of the latter the metal is less liable to absorb S, As, Sb, Cu, Ti, &c., and this fact, togther with the initial purity of the fuel, results in the greater purity of the product.

**Charcoal Refineries Used.**

The pig iron is converted into steel in the charcoal refinery, and this extensive use of charcoal may be considered another special feature of Styrian steelmaking. The refining process is a costly one, as one may judge by the time it takes; to convert a given quantity of pig iron into steel it takes as many days on the charcoal hearth as it takes hours in the puddling furnace and minutes in the Bessemer converter. Nevertheless this ancient way of refining has been maintained; for the production of a high carbon steel, chemically pure so to speak, is more to be depended upon by this process than by any other.

The oldest apparatus and the one still in common use is the finery fire or hearth. It is a flat pit lined on all four sides with iron plates, above one of which is placed, slanting downward, the tuyere for conducting the blast. The pit having first been filled with charcoal, the pig iron is placed on it and melted down by the blast.

The chemical reactions underlying the operation are different in character from the other methods of decarburization technically employed. With gray pig iron the process is carried out in three stages bearing different names. In the first, called "fining," silicon is oxidized into silicic acid, the greatest part of the manganese and part of the carbon. In this way gray iron is converted into white. The second stage, the "crude refining" involves further oxidation of the carbon partly by the direct action in the air, partly by the indirect action of the oxides contained in the slag. At the end of the second stage the material has acquired the qualities of steel. Finally the third stage, called "complete refining," consists in the oxidation of the remainder of the carbon, that is to say, in the conversion of steel into wrought iron. Consequently if gray pig iron be used for making wrought iron, the material must be melted down three times, while in the case of white iron the first fining is dispensed with and two meltings suffice. For the production of steel complete refining is not required and two meltings are



Fig. 1.—The Erzberg or Ore Mountain in Styria.

sufficient in the case of gray iron, or only one in the case of white iron.

On an average the charcoal hearth steel is composed of:

C = 0.800 to 1.300 per cent.
Mn = 0.043 per cent.
Si = 0.020 per cent.
S = 0.005 per cent.
P = 0.015 to 0.019 per cent.
Cu = 0 004 per cent.
Co = traces.
Ni = traces.

This analysis shows that if the carbon be deducted all the other impurities taken together amount to 0.087 to 0.091 per cent., half of which is manganese. Refined steel is therefore superior in chemical purity to any other kind of raw steel and forms the first and most valuable raw material for the manufacture of Styrian crucible steel.

In the second place puddled steel is used as a further raw material, mostly in connection with refined steel. It is made from the same charcoal pig iron in puddling furnaces of a special kind with a slight charge. By this method, however, it is not possible to produce steel of such chemical purity as by the finery process, owing to the higher temperatures of the gas furnaces, the greater rapidity of the reactions, and the difficulty of regulating the temperatures at the various stages of the process.

The melting takes from 3 to 4 hr.; its progress is tested by the foreman with a search iron. The chemical reactions now taking place in the interior of the crucibles build up one of the most complex problems of scientific metallurgy. Certain amounts of iron oxide are inevitably brought into the crucible on the surface of the pieces of raw steel and pig iron, and also by the slag contained in the weld steel. Moreover, there is air in the spaces between the material. On melting, the oxides present and those formed under the influence of the inclosed air first form an oxidizing slag, rich in iron, that acts upon the carbon content of the bath. Carbon monoxide is formed and produces a slight boil. If the crucibles are poor in graphite, a decrease in carbon can thus take place during this first period of the process; if, however, the crucibles contain a considerable amount of graphite, no loss of carbon will be noticed in the steel.

During the following period of the melting the slag gradually grows poorer in iron. This is partly due to the carbon in the steel and in the crucible material now acting upon the $Fe_3O_4$ contained in the slag, partly to the dissolving of crucible material bringing about an increase of the total quantity of slag. The slag by and by loses its oxidizing influence and the graphite laid bare by the dissolving of the crucible wall is absorbed by the steel.



Fig. 2.—The Kapfenberg Charcoal Blast Furnace in Styria.

To produce the softest kinds of crucible steel, ingot iron must be used. It is made from charcoal pig iron in a small basic open hearth furnace specially designed for the purpose and yielding a product of extreme purity.

These products then, charcoal pig iron and the materials derived from it in the different ways described above (together with tungsten, chromium, molybdenum, nickel, vanadium, tantalum, uranium, &c., or their alloys in the case of special steels), form the raw materials for the manufacture of Styrian tool steel. In carefully calculated proportions they are charged into the preheated crucibles as will be seen presently.

### The Modern Styrian Crucible Furnace.

Different from the type in use in this country, the modern Styrian crucible furnace is of the overground pattern, allowing an easy handling of the crucibles by means of suspended tongs. One furnace holds 40 to 50 crucibles, the object of limiting the number being to insure uniformity of temperature which could not so well be obtained if the furnace were built to hold more. The furnaces are fitted with Siemens regenerators and have a forewarming pit with two separate compartments kept at 400 degrees and 800 degrees C., respectively. The empty crucibles are placed in the first compartment, and after remaining there for 4 hr. they are filled with the raw materials and transferred to the second chamber for another period of 4 hr. They are finally shifted red hot into the melting furnace.

At the same time the silicon of the clay is reduced and conveyed into the bath.

The temperature is of great influence on these reactions and so is the presence of manganese. The rôle of the latter is particularly complicated. It makes a great difference whether the manganese is contained in the raw materials or added as $Mn_3O_4$ and at what stage of the process the addition is made.

As to the last stage, the "killing" and the nature of the changes taking place during that time, the views of the different authorities do not coincide. The general belief is that the killing may be due merely to the evolution of gases. It is more likely, however, that killing chiefly acts through enabling the metal to absorb further silicon from the walls of the crucible, thus increasing its solvent power for gas* and thus enabling it to retain in solution during solidification the gas which it contains when molten. When this stage has been reached, the foreman operating the charge will give the signal for the teeming. Such slight differences of temperature as should happen to exist between the different crucibles are equalized by uniting the 40 crucibles of one charge in a ladle previously heated, from the bottom of which the steel is cast into iron molds.

### The Care Taken to Secure Good Ingots.

By a special device in the form of a collar of refractory material the pipe due to shrinkage is localized at the

* Howe, "Metallurgy of Steel," p 304.

very top of the ingot and entirely removed. Every ingot is tested as to physical homogeneity, grain structure and purity of surface, flaws being carefully removed by emery wheels or pneumatic chisels, before the ingot is taken to the hammer plant or rolling mill. The latter, electrically driven, does quick work and heavy hydraulic presses are in operation for certain purposes, but the greatest part of Styrian tool steel is hammer forged. Again, this process is slow and costly, but the best kneading of the material and thus its finest grain is obtained by it. Such hammer forging, with the heat treatment and proper manipulation in general, appears to be of greater influence on the final quality of high class tool steel than is often thought to be the case. It requires particular care, a skilled eye and a trained hand, and may in fact be called an art. Now in the course of centuries of intimate acquaintance with tool steel, generations of workmen have arisen in the Styrian Alps with whom this art has become second nature.

In consequence of all of this, Styrian steel will be met with everywhere. Besides all kind of tools it is used for scores of other purposes in which highest quality is the main requirement; army rifles, armor piercing shells, shrapnels and shotproof screens are now made of it, and so are the vital parts of recoil field guns, motor cars, steam turbines, &c.

Even in America, in the world's greatest of ironmaking and iron using countries, Styrian steel is used to a large extent, being found in the workshops of a number of the largest railroads and imported on a large scale for the United States Army Ordnance Department and other important concerns.

## The Pennsylvania Railroad Commission.

HARRISBURG, PA., November 2, 1908.—Pennsylvania's new State Railroad Commission has issued its first regulation, directing that after November 15 the street railroad companies of the State prohibit riding on the front platforms of closed cars and that all riding on open cars be limited to the capacity of the first seat. This order, which was sent to 168 operating companies in the State, was issued as the result of inquiries made into accidents and will be effective no matter what crowds are to be handled. It has caused some discussion in view of the fact that in some of the iron, steel and coal districts the operatives of plants and mines are required to ride outside because their presence in the cars in working clothes might soil the seats or the clothing of passengers and cause claims for damages.

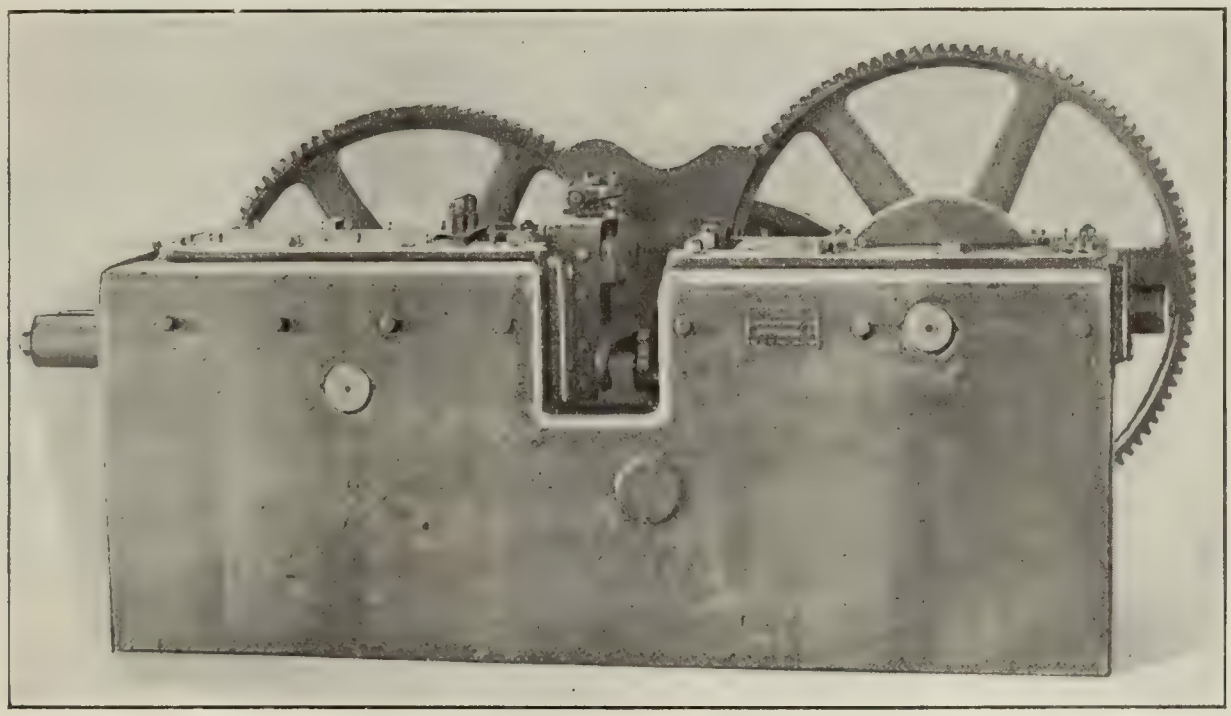
There is also considerable interest in the regulation in that it directs that the order be obeyed when the act creating the commission is held to give it only power to recommend to companies certain lines of action, the recourse in event of disobedience being for the commission to certify the facts to the Secretary of Internal Affairs, charged with supervision of the railroads by the constitution of the State, and the Attorney-General for prosecution. The commission, however, takes the position that the order is necessary for public safety and expects it to be followed. A committee of managers of companies has been received by the commission and agreed to put the order into effect.

The commission is now acting upon complaints relative to shipping and other details of railroad operation and will announce a number of decisions shortly. It has now got into full working order, an elaborate system and organization having been perfected.

## A New Acme Hot Pressed Nut Machine.

The accompanying illustration shows the features of a line of hot pressed nut machines recently placed on the market by the Acme Machinery Company, Cleveland, Ohio, for making nuts by the hot pressed process. This machine has been especially designed for rapid work production and low cost for repairs.

The bed is a single steel casting four times as strong as an iron bed of the same weight. The gears are steel castings with cut teeth. The cutter slide, crowner slide and piercer slide are steel castings. The linings are hardened tool steel, phosphor bronze and cast iron strips, plates and bushings. The operating cams are steel castings with hardened tool steel faces running against hard steel rollers. When the piercer is punching the nut all the rest of the mechanism ceases its motion, so that there is never any pressure on the nut during the moment of piercing, thus lessening the tendency to strip or score the punch or piercer. The bed of the machine is so designed as to contain oil pools into which all the cams dip at every revolution.



A New Hot Pressed Nut Machine, Built by the Acme Machinery Company, Cleveland, Ohio.

The new movements introduced into these machines, together with their great weight and power, make it possible to form steel nuts on them as readily as iron nuts. The machine is made in two sizes. The 1-in. machine weighs about 7 tons, occupies a floor space of 9 ft. 1 in. by 5 ft. 1 in., and requires 7½ hp. for its drive. The 1½ in. machine weighs 10 tons, occupies a floor space of 11 ft. 2 in. by 5 ft. 8 in., and requires about 10 hp.

The rolling mill of the Weller Rolling Mill & Forge Company, Gadsden, Ala., recently operated by the Emery Steel Company, has been leased by the R. C. Forster Company, Birmingham, Ala., which will use the plant to supply billets for its mill in East Birmingham. It is not the intention of the R. C. Forster Company to produce finished bars from the Weller mill at the present time, but when the market will warrant its doing so the company will probably turn out finished bars there.

# The Lash Steel Process.*

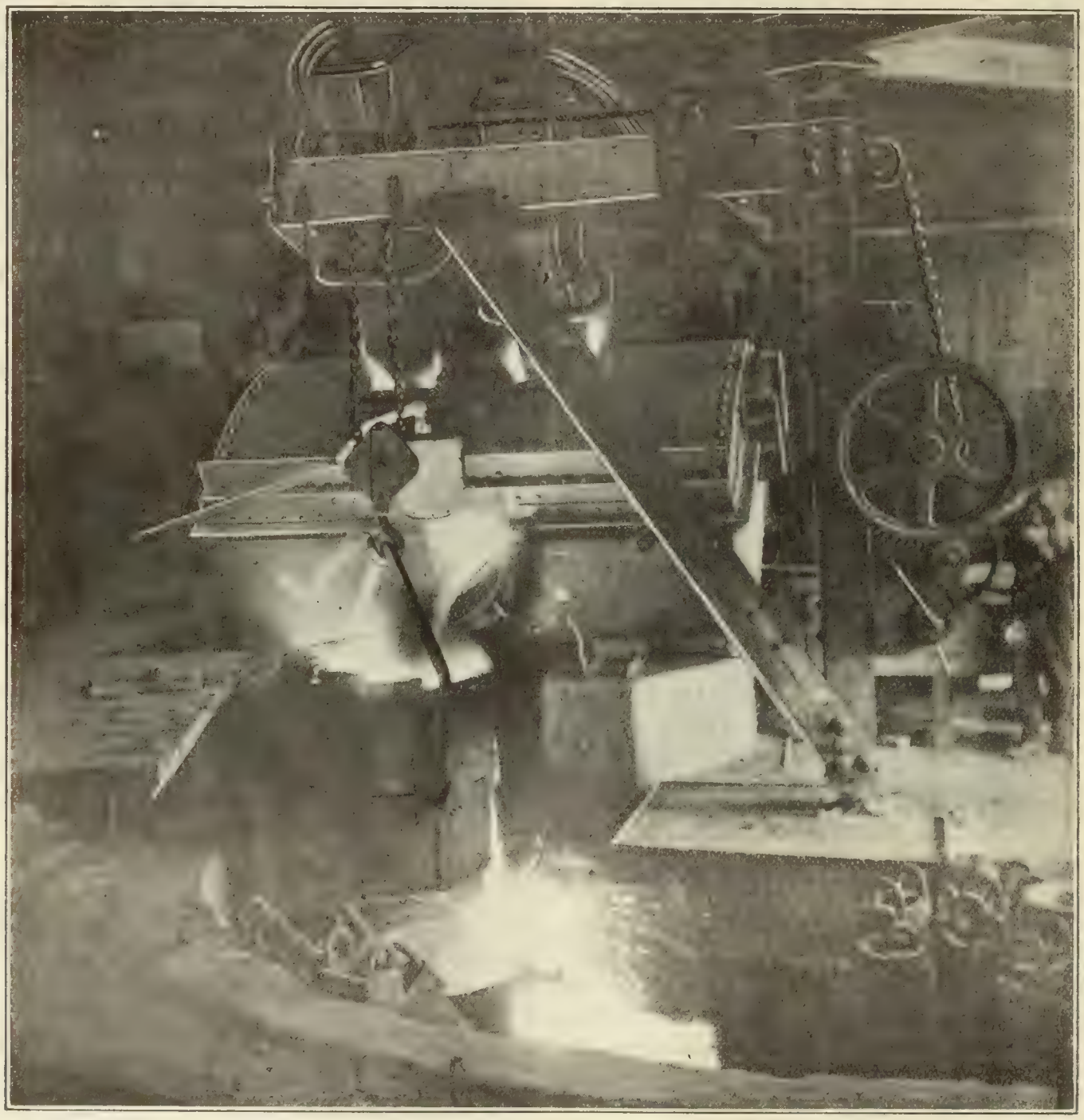
## Results Secured with the Heroult Electric Furnace.

BY F. A. J. FITZ GERALD, NIAGARA FALLS, N. Y.

The object of the paper is to describe the Lash process [patented by Horace W. Lash, Cleveland, Ohio, and described in *The Iron Age* of August 8, 1907] and the possibilities of its application to the electric furnace. Discussions which inevitably arise when a metallurgical process of this kind is successful, as to whether a similar method has been tried before, are upprofitable and out of place.

The mixture used in the Lash process consists of finely divided ore, coke and iron high in metalloids. The metalloids contained in the cast iron appear to act as reducing agents, and besides this the cast iron appears to act as a carrier of the carbon, so that in the working of the process it may be supposed that carbide of iron (as $Fe_3C$) acts as a reducer. Besides these main constituents of the mixture lime or other fluxes may be added, sawdust to make the mixture porous, and some suitable binder when it is desired to briquette the mass. The advantage of using the Lash process in the open hearth furnace is due to the greater cheapness of iron in the form of ore than as pig iron, so that other things equal the greater the proportion of iron that may be used in the form of ore the cheaper the process.

It is well known that steel has been directly produced in the electric furnace from a mixture of ore and carbon, this being best illustrated by the work of Major Stassano. In the experiments made at Sault Ste. Marie, under the auspices of the Canadian Government, pig iron was produced from ore, the consumption of energy amounting to about 0.28 hp. year per ton; but in the Stassano experiments the energy consumed per ton of steel produced amounted to 0.62 hp. year. If the energy required to produce a ton of steel in the electric furnace could be reduced from the amount required in the Stassano experiments, and brought nearer to the results obtained per ton of pig iron at Sault Ste. Marie, the field of usefulness of the electric furnace in the metallurgy of iron and steel would be very greatly extended. The serious difficulty experienced in most processes for the manufacture of steel direct in the electric furnace is the serious loss of metal in the slag. This, however, was not to be feared in the Lash process, as preliminary experiments made in the laboratories of FitzGerald & Bennie showed that the steel obtained from the Lash mixture amounted to 98 per cent. of the iron contained in the charge.



Heroult Furnace as Employed at Niagara Falls, N. Y., in Connection with the Lash Steel Process.

Of the various furnaces which might be used to investigate the working of the Lash process, it was found most convenient to build a 3-ton furnace of the Héroult type. One of these furnaces was built at Niagara Falls under the direction of Robert Turnbull and about 50 tons of steel produced. Chemical and physical tests of some of these steels are as follows:

*Chemical Analyses.*

| | Heat No. 9. | Heat No. 11. | Heat No. 23. | Heat No. 27. |
|---|---|---|---|---|
| Carbon | 0.10 | 0.08 | 0.92 | 0.22 |
| Manganese | 0.75 | 0.09 | 0.41 | 0.94 |
| Phosphorus | 0.015 | 0.015 | 0.038 | 0.033 |
| Sulphur | 0.070 | 0.007 | 0.026 | 0.056 |
| Silicon | 0.02 | 0.09 | 0.13 | 0.03 |

* Abstract of a paper read at the fourteenth general meeting of the American Electro-Chemical Society, in New York, October 31, 1908.

*Physical Tests.*

| Heat No. | Tensile strength. | Elastic limit. | Elongation. Per cent. | Reduction. Per cent. |
|---|---|---|---|---|
| 9 | 57,000 | 34,000 | 33 | 58 |
| 27 | 77,000 | 45,000 | 28 | 56 |

The physical tests were made from pieces 1 in. square. The elongation was determined in a length of 2 in. The steel of heat No. 27 was treated with 0.1 per cent. of titanium.

In making the steel a great many different experiments were tried, and this changing of conditions, as well as the inadequacy of the apparatus used, prevented the attainment of the highest efficiency. Nevertheless it was found that the Lash mixture could be completely reduced and steel obtained therefrom with a consumption of only 0.27 hp. year per ton. An excessive amount of energy was used in finishing the steel, owing to the inexperience of the men employed; nevertheless, it is believed, from the results of the experiments, that on a commercial scale a production of four tons of steel per horsepower year can be reached.

While trouble was experienced in some of the experiments owing to the rapid wearing away of the electrodes, this objection was overcome to a great extent, and it is believed that this source of expense can be brought down to a reasonable amount. In the Stassano furnace the consumption of electrodes would probably be less than in the Héroult furnace, although it is not possible to say whether the energy consumption would be as low. The electrode problem suggests the advantage of a furnace in which no electrodes are required, like the Colby-Kjellin induction furnace. Unfortunately this furnace is not suitable for the handling of slags which are inevitable in the Lash process, but the modification of this type, known as the Röchling-Rodenhauser furnace should give interesting results, as it has a form which is not open to the objections found in the earlier designs.

**Discussion.**

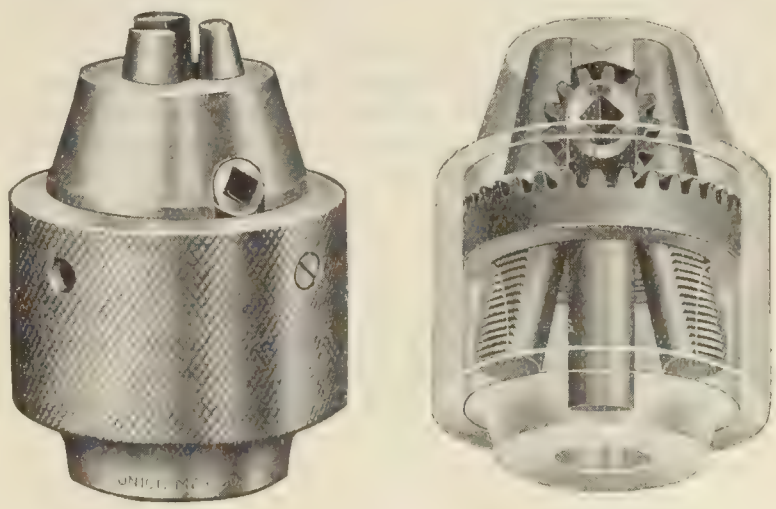
In connection with the reading of the paper, Mr. FitzGerald threw on the screen a view of the Héroult furnace as employed in the experiments at Niagara Falls. It is reproduced herewith. The ingots were bottom cast, the steel being poured from the ladle into the center runner shown at the right of the illustration. The ingots weighed from 200 to 425 lb. A view was also given of the Röchling-Rodenhauser modification of the Colby-Kjellin induction furnace, in which it is the expectation to test the Lash process eventually. The original type of this furnace was only used for refining operations, the narrowness of the channel making it impossible to handle slags. In answer to questions, Mr. FitzGerald said that at first in the experiments at Niagara Falls it was found that a good deal of iron went into the slag—up to 15 per cent. in some cases. In later runs the loss amounted to 6 per cent. But when the power consumption was brought down lower, the loss of iron in the slag was also much reduced. He showed some excellent cold bending tests of Lash process steel; also one bent bar of steel containing 1-10 of 1 per cent. titanium, in which a fibrous structure was shown, resembling wrought iron, together with laminations. The cast iron used in the furnace at Niagara Falls was in the form of borings or shotted pig iron. The mixture had varied somewhat as to the percentage of ore, but for the most part 60 per cent. iron ore was used, 23 per cent. cast iron, with the remainder made up of fluxes and carbon.

Henry D. Hibbard referred to the great advantage of the electric furnace in the production of heat without oxidation. In the open hearth furnace all the effects are produced by oxygen. It is the great servant of the steelmaker, but it must be fairly well eliminated or it will give all manner of trouble. Yet the drawback about steel production with the electric furnace was the size of the investment required. He found a resemblance between the Lash process and the Uchatius process which was in use in Austria some years ago. It involved a mixture of finely divided iron ore and granulated cast iron, with carbon in some form, but a crucible was employed instead of a furnace.

Prof. J. W. Richards said that the production of steel involved, first, melting the ingredients, and second, an oxidizing process. The latter is a matter of having sufficient surface to work on, in adding ore for oxidizing the carbon and silicon. Two kinds of furnaces are required for the two operations. Referring to the loss of iron in the slag, he considered it no serious matter. In the open hearth furnace there is considerable loss in this way. In the Monell process it amounts to 15 to 20 per cent., and yet that process is commercially quite successful. In the development of the electric furnace he thought the best results are to be obtained by the co-operation of practical steel men with electro chemists. A great deal has to be learned about steel making, and the electro chemist will avoid many pitfalls by collaborating with an experienced steelmaker.

## The Union Geared Drill Chuck.

Exterior and phantom views of a new drill chuck which is about to be placed on the market by the Union Mfg. Company, New Britain, Conn., appear herewith. This chuck is similar in design to the Union Czar drill chuck, which the same company has been making for several years, but in the manner of getting the strongest grip on the drill adds to the older type the principle of a geared drill chuck. Unlike the latter style of chuck as it is usually made, the circular rack is inclosed and is



The New Geared Drill Chuck Made by the Union Mfg. Company, New Britain, Conn.

operated by a contained and inclosed pinion which is not a part of the tightening key. By virtue of the construction the teeth of the pinion are kept always in line with the teeth of the circular rack, which prevents breaking the teeth and also does away with an accumulation of dirt and dust, such as is likely to foul an exposed operating device. It is believed that this form of chuck will prove more satisfactory than one in which the pinion is on the key or the circular rack is exposed. The Union geared drill chuck is made in the same sizes as the Union Czar drill chuck—namely, Nos. 1, 2 and 3, holding respectively 3-16, 5-16 and ½ in drills.

The new plant to be erected by the Crane Company of Chicago at Oakmont, Pittsburgh, is designed to take care of the scattered pipe-bending divisions of the various branches of the company and to concentrate them near the pipe mills. Other work incidental to power plant construction will also be done at the Oakmont plant. The plans for the new works are not completed, being in course of preparation at Chicago.

The widespread prevalence of drouth conditions the past six months promises to have some influence on the cast iron pipe trade. In many cities and towns the absolute necessity of larger water power plants has been sharply demonstrated. Chicago advices state that a large number of municipalities are now figuring on selling securities with a view to increasing their water facilities.

# Chains and Chain Making.*

BY JAMES H. BAKER.

### Early History.

Just when chains were first made is uncertain, because the word has meant almost any kind of connection. Thousands of years ago rings of metal were made and fastened to cloth, thus making chain armor. Later rings were joined together by other metal rings, and this was the first metal chain. Apparently chains were used more as ornaments than anything else up to about 125 years ago, although occasional patents were issued during the past 275 years. The first patent the author has knowledge of was issued in England in 1634 and described as follows:

"A Way for the Mearing of Shipps with Iron Chaynes by finding out the True Heating, Ppaeing and Temping of Iyron for that Ppose, and that he hath nowe attayned to the True Use of the said Chaynes and that the same wilbe for the great saveing of cordage and Safety of Shipps, and will redound to the Good of our Common Wealth."

In 1690 a British admiral recommended the use of chain moorings, but not until 100 years ago were chains used as ships' cables. (The original meaning of "cable" was "capable.") For nearly 100 years more there was no progress. Almost all conceivable forms of chain were brought out between 1790 and 1820. Many machines were invented later for making the different kinds of chain, but in this country nearly all the welded chain is still made either by hand or under simple power hammers. There has been quite a development in wire wound or

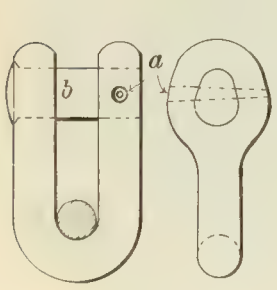


FIG. 1

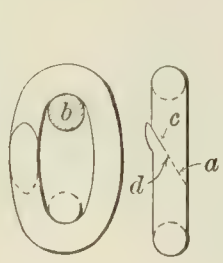


FIG. 2

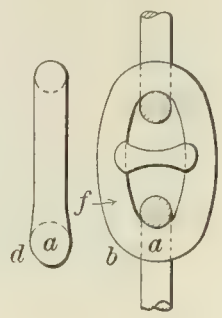


FIG. 3

weldless chains, and electric welding has made progress within the last 25 years, but both these methods so far have only been successful in light chains. Wire wound chains hardly run over ¼ in. and electrically welded not over ½ in.

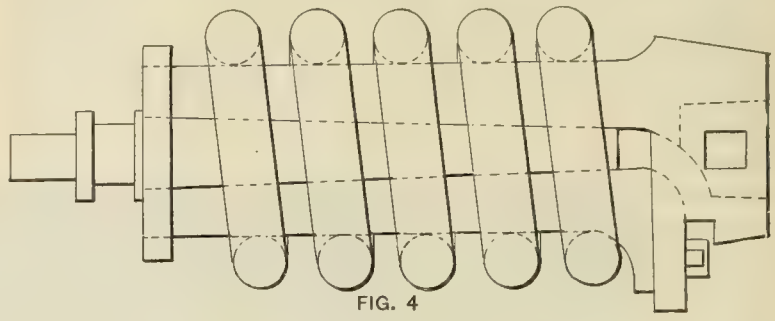
In 1783 a patent was issued in England for making chain by casting link after link into one another, and annealing the chain when done. Later this was tried under improved conditions in France, but has not succeeded. Another patent, in 1791, covered a combination of metal and leather to prevent noise and give elasticity, probably because hempen cables were noiseless and would stretch and recover a great deal. Iron chains were objected to because they would not stretch. In 1808 the first chain was put on a vessal as a cable and then numerous patents in England followed quickly. The one that probably had the most to do with furthering the use of chain cables was granted in 1808 to Samuel Brown for swivels and shackles. Shackles met the greatest objection to iron cables, which was that they could not be quickly parted, while a hempen cable could easily be cut. A shackle such as the one in Fig. 1 has a tapered pin *a*, which is easily removed, and then the bolt *b* can be driven out. The form of shackle first patented has scarcely changed since. All shackles, rings, hooks, end links, &c., should be heavier than the body of the chain, often much heavier. The shackle shown is a joining shackle. End or anchor shackles were and are larger.

To simulate the stretch of hempen cables twisted links with studs in them were patented, and it was claimed that a cable of these would stretch and recover 8 or 10 ft., but these never came into general use.

* From a paper presented before the Engineers' Society of Western Pennsylvania.

### English Progress.

* Side welding, while practiced somewhat, did not become prominent until about 1840, and became more so as sizes increased. It has fallen into disrepute with the United States Government, probably due to the method by which side welds are made. Fig. 2 shows a link of which one-half of the lap at *a* has been welded. The link *b* in this link is then shifted to the other end and the remaining part of the lap, *c*, welded. When, as is likely, slag is imprisoned at *d*, a good weld is not made, and the larger the diameter the more difficult it is to expel this slag by hand working. Moreover, the large links

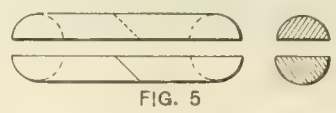

FIG. 4

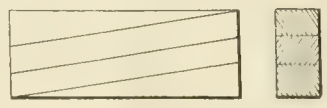
are hard to heat properly with the cold link *b* in such close proximity. Stud chain in the largest sizes, if made, as it should be, by proper machinery, would unquestionably be the best as well as the cheapest, and no doubt such machinery can be devised. The only end welded chain comparable to a good side welded article is hand welded, and that is expensive.

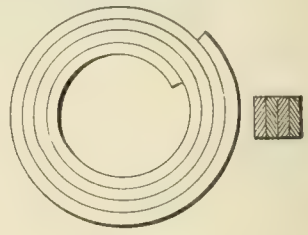
In 1813 stud chain, Fig. 3, was patented, and seems to be the last English patent of much consequence, though many efforts were made there in the next 10 years to improve chain. Studs were welded in the links, but these, too, soon passed away. Studs have been mostly of cast iron, but our Government now uses drop forged studs and demands that the grooves for the links be milled. During this time close link chain—that is, unstudded—kept pace in the manner of making, and in the improvement of the iron for it, but less has been said about close link chain, as the interest largely centered in ship's cables. Nearly all improvements as to forms of welded chain were made in England, but this country has made great progress in the direction of increasing production and stands abreast of any country in the matter of fine material for chains. At *a*, Fig. 3, is shown a crown at the weld, which all fine end welded links have, and this swell is often also sidewise, as at *d;* but, even with the crown, the links will be weak at the point where the ends of the laps come, indicated by *b*. The best end welded links have the ends of the laps carried well back on the sides, or about to *f*.

In 1811 an English patent was granted for winding rods into a spiral and cutting the links from it.† Fig. 4 shows a device which was operated by hand, taking the rod hot as it came from the rolls.

Fig. 5 shows a blank of half round section, the two halves of which are welded together, with their end


FIG. 5


FIG. 6


FIG. 7

welds diametrically opposite. Fig. 6 shows a blank of square bar bent three times around and welded. Fig. 7 shows a Belgian method. This compound winding and welding at the same heat has the objection of necessitating the links to be of too great length for many purposes.

An English patent in 1812 was for link blanks, Fig. 8, forged with heavy parts to form the ends of the links. Figs. 9 and 10 show an effort to form the studs integral

* From "Chain Cables and Chains," by Thomas W. Traill. Crosby, Lockwood & Co., London.

† Of interest in this connection is an article on "The Manufacture of Chain," by L. B. Powell, in *The Iron Age*, January 5, 1905.

with the links. Figs. 11 and 12 show links welded and looped. This is probably one of the oldest forms of chain, though at first the links were not welded. Fig. 13 shows how, about 80 years ago, link stock was rolled so as to give extra strength at the welds. This was rolled in the usual way to the size of the large part, then passed through an extra set of rolls to reduce the intermediate parts, and then cut at an angle white hot. Fig. 14 shows a plan for making links from a solid bar, cut at an angle, after punching out the central portions *e*, *e*, and finally bending and welding together *a* and *a'* and *b* and *b'*. This plan has been elaborately tried in other forms,

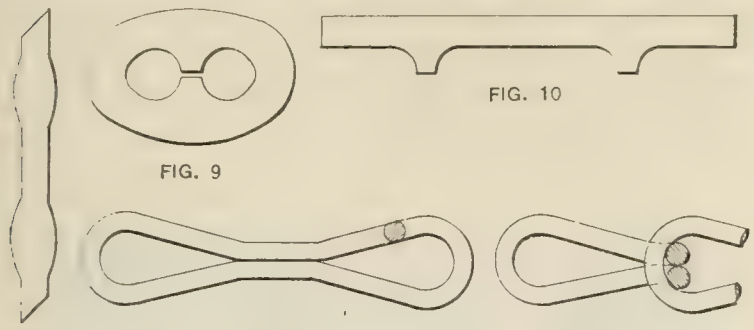


FIG. 8 FIG. 9 FIG. 10 FIG. 11 FIG. 12

such as star sections. All the above ideas except the Belgian and the intermediate rolling were brought out within about 14 years after the introduction of the first iron cable in 1808.

### American Progress.

It seems strange that the largest chain of any length ever produced in this country was made about 130 years ago, when there were no rolling mills or steam hammers used here. It was 500 yards long and the links were made of 3½ in. square stock, with the corners slightly rounded. Each link weighed about 275 lb. This chain cost the Colonies over $2000 per ton and was made to keep British ships from ascending the upper Hudson River. The contract was given in the evening and work on it commenced next morning at Sterling, about 20 miles back of West Point, N. Y. It was shipped in lengths of eight links each on ox carts and joined at the river. There were seven welding and 10 forging fires at work on it. When finished it was held at the desired hight in the river by logs and bolted together. Notwithstanding all the English enterprise later, it was nearly 50 years after the production of this large chain before that country made a chain as large as 1½ in., and it seems that this country has not made as large chain since.

There is not much on record concerning chain making in this country. Little chain was made in factories here until about the time of the Civil War. A ship's cable chain works was established about 1835 or 1840 in Boston, and in 1865 the Carr Chain Works was incorporated at Troy, N. Y., and became quite a factor, especially in the making of fine chains. This company is believed to have been in some way connected with the Burden Iron Works. About the same time A. Hewitt & Co. established a works in Trenton, N. J., which also made much progress. One among the earliest was the Hayden Chain Works, at Columbus, Ohio, which started by making harness and saddlery chains and finally made high class crane chains and had much to do with displacing English chain in this country. Even up to 20 years ago English chain still had a hold here, one brand, the Lord Ward, being very popular for certain work. Pittsburgh to-day is the largest producer of chains in the country, the principal works being the James McKay Company, Jones & Laughlin and the Standard Chain Company. In the last named company the Baker Chain Works was merged. Pittsburgh not only stands first in production, but it is at the head in fine chain material in both iron and steel.

Many curious and some very ingenious machines have been invented for making welded chain, such as those for making it automatically from the straight rod, &c. A large number of chain patents have been issued in this country, but the great bulk of all chain made here is hand welded, such as crane chains, and about all chains from 1¼ in. in diameter up, or if not strictly hand welded, nearly so. Most smaller chain of the usual quality is made by coiling the links, cutting them at an angle and welding in dies. At first the hammers carrying the dies were generally operated by foot, but more and more these are being operated by power, even down to quite light chains. Men become very expert, and a proficient man or boy can cut 250 light links per minute. They are wound at a very rapid rate, and an expert can weld 500 links per hour of light chain. Heating for all such work is usually done in flat top furnaces, the links being suspended through holes in the tops of the furnace and held by rods with hooks on their ends. Usually a boy places the links on the hooks and puts them into the furnace, and the chain maker takes each link from the furnace, threads it into the chain and places it in the dies, turning it once or twice while welding.

### Electrically Welded Chain.

Electric welding of chain was first tried about a quarter of a century ago by taking two half links, Fig. 15, and joining them at *a a*. Links as large as 3 in. diameter of stock have been made by this process, but it seems it had to be abandoned for large chain. Recently electrically welded chain up to ½ or ⅝ in. has been made commercially by automatically cutting the blanks from a bar so as to form a socket in one end and a corresponding taper on the other end of the link blank, Fig. 16. This is then bent and joined on one side and these joints welded. This obviates the usual amount of upset in such cases. The laps, or area of contact is much larger than in the squarely cut ends, and a nice appearing and good weld is made.

### Weldless Chains.

Weldless chains have greater strength in the small sizes, say, below ¼ in. than welded chains, because the wire from which they are made, being cold drawn, has a much greater strength than rod steel; the smaller the chain the more difficult it is to make a weld which will be as strong as the rod from which the link is made.

### Nomenclature.

The chains of commerce have as many names as the uses to which they are put. Proof chain is such as has been pulled in a testing machine up to a certain strain. This is usually somewhat below one-half of the load it should take to break the chain. B chain is an abbreviation of "best"; competition resulted in B B (Best, Best) and later B B B (three B), so that now hardly any one speaks of one B chain. Well made chain of Swedish iron when pulled to the breaking point is stiff enough for a walking stick, caused by the links closing in on each other sidewise. Dredge chain is the same as three B, but should have special attention paid to the hardness of its stock to stand wear in sand and dirt. Steel chain resembles Swedish iron chain in extreme elongation. Nearly all common chain is now made of steel, and a good deal of chain above common is also made of this material and is giving satisfactory service. But for particular

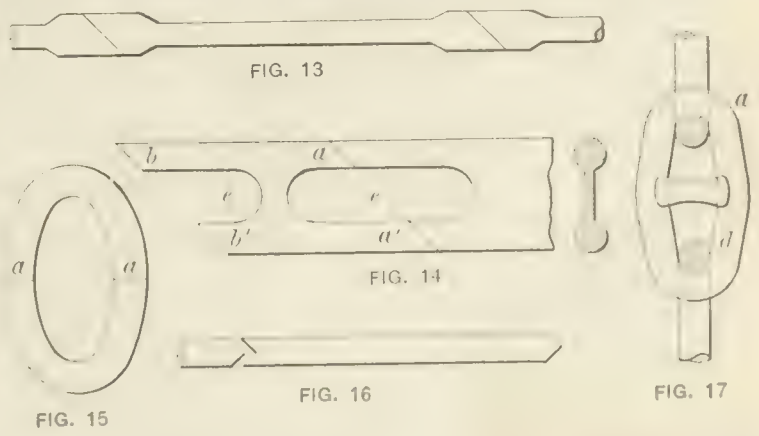


FIG. 13 FIG. 14 FIG. 15 FIG. 16 FIG. 17

purposes, especially where great safety and resistance to wear are required, special iron is keeping first place. All welded chain manufacturers make some iron chain.

### Wear.

The greater the number of links in a given length the longer the chain will wear, for the greater the angle at which the links play in each other the faster the wear. Therefore, a chain will wear, sometimes more than double as fast in one part as in another. For instance, the old style tongue chain on wagons wore much faster next to the tongue than at the horse's collar. Breast chains

wore faster in the center than at the ends next to the horse's shoulder. It used to be the custom to make these chains with heavier parts accordingly.

Chains used in critical places should be annealed at times. The principal need for this arises from a strain sufficient to bend the links, as this bending being really "cold work" on the material hardens it. If certain that a chain has had no strain over, say, one-quarter of its proof strength, or one-eighth of its breaking load, then there is little occasion for annealing. But if a chain has been strained well up to its breaking strength it should be annealed, if that is every day. Of course, there is no sense in using a chain to this limit except in dire need.

**Reliability.**

Much depends on the honesty both of the manufacturer and the chain maker. Honesty in the manufacturer has an influence on his workmen, because he will endeavor to keep as honest men as he can find for making chains, which are intended for work which would be dangerous without such care. This may seem a platitude, but the preference should be given always to men who have the best character for honesty. A good chain maker knows when he is making a doubtful weld. Chains are generally proved, but while this is important proving does not tell all the story. Users should understand that they should not expect common chain, which has a wide and useful field of its own, to equal the higher class product needed for certain purposes.

All manufacturers give tables on chain; Trail already referred to gives a most complete collection of tables. They are, therefore, omitted here, but some rules that have been deduced by the author and found useful are given below. From the nature of the case figures as to the strength of chain can only be given approximately:

*Dimensions of Links.*

Stud Chain.—Maximum length inside, four diameters of the bar from which it is made. Maximum width inside, 60 per cent. of inside maximum length.

Standard Close Link.—Maximum length inside, three diameters of the bar from which it is made. Maximum width inside, 70 per cent. of maximum length inside.

Coil Chain.—This generally runs about like close link, but if anything somewhat longer in the links.

Crane Chain.—Length inside, 2⅝ times the diameter of the bar from which it is made, but it varies a good deal. However, as a rule the shorter the link the better. (Allowable variations under maximum dimensions may not be over 4 per cent. and should not be more than 2 per cent.)

*Weights.*

Stud Chain.—3¾ times the weight of the bar from which it is made. (This includes the stud, it being equalized by the extra length of link.)

Standard Close Link.—3¾ times the weight of the bar from which it is made.

Coil Chain.—3⅝ times the weight of the bar from which it is made.

Crane Chain.—4 times the weight of the bar from which it is made. (This extra weight is due to the links being somewhat shorter and to the crowns on the welded links being heavier than on common links.)

*Breaking Strength for Well Made Chain.*

Stud Chain.—165 per cent. of the strength of the bar from which it is made.

Standard Close Link.—138 per cent. of the strength of the bar from which it is made.

Coil Chain.—120 per cent. of the strength of the bar from which it is made.

B. B. Crane Chain.—145 per cent. of the strength of the bar from which it is made.

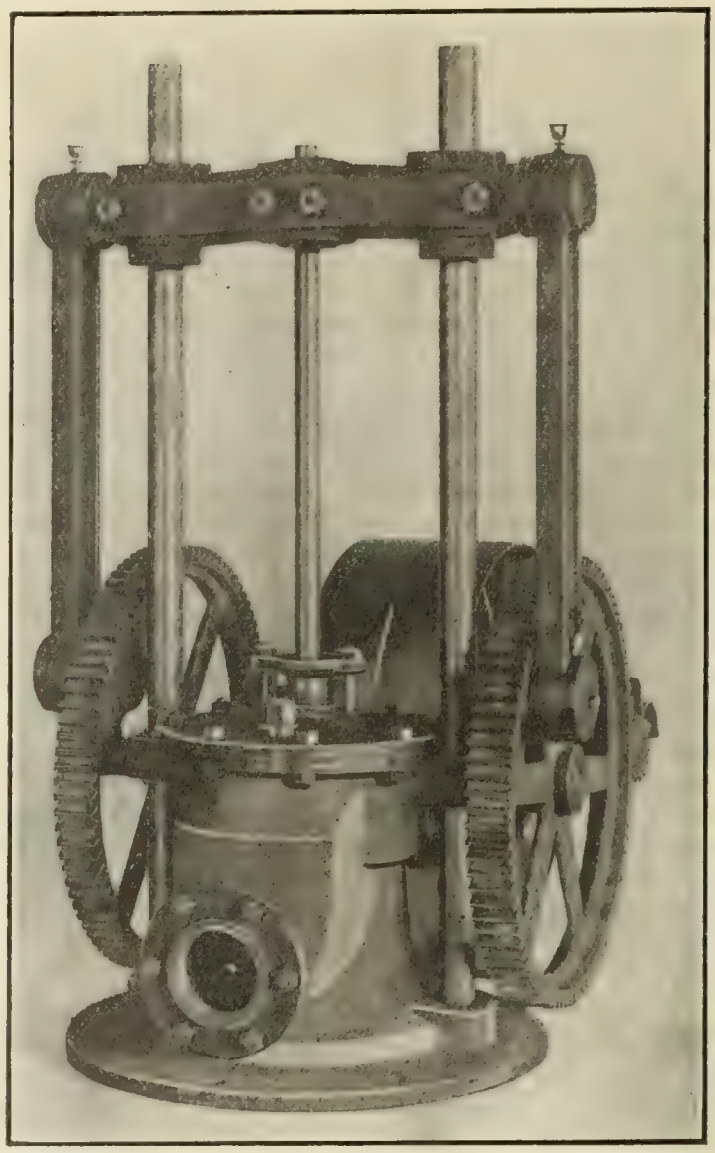
The weight and strength run a little higher on the light sizes up to about 1 in., as the bars from which these are made are 1.32 in. larger in diameter than the nominal size of the chain. When in light sizes, the chain is made of exact size bars the chain size is given as "neat." Ordinary, or die chain, from ¼ in. down, becomes further and further lowered in strength compared with the bar as the sizes become smaller, hence the greater strength of weldless chains in the very small sizes.

Fig. 17 shows how the sides of the links straighten at *d;* and, therefore, bend at *a*, when the chain has been loaded sufficiently to distort the links and explains why links will not stand double the load of the bar, because while the metal is stretching generally, the stretch is very much greater in the outer line at the quarter, and added to this is the fact that the ends of the laps end about at this point.

## A New Myers Bulldozer Working Head.

Strength, simplicity and accessibility were aimed at in the improved form of bulldozer power working head for deep well pumping, now being introduced by F. E. Myers & Bro., Ashland, Ohio. As in earlier forms of Myers heads the power is applied close to the base, and the construction is such that all the working parts may be removed without disturbing the position of the base or the belt. In addition the new head does not require breaking the discharge line. The power is transmitted directly from the belt pulley through two sets of gears to the piston rod. The side rods are almost in line with the piston rod on the working stroke, relieving the machine from side strain and decreasing the likelihood of breakage.

The cross head is made in halves, and by removing the four bolts shown in the illustration it, with the side



A New Power Working Head for Deep Well Pumping, Made by F. E. Myers & Bro., Ashland, Ohio.

arms, may be laid back on the belt pulleys, permitting the piston rod and plunger to be drawn up through the head of the pump without disturbing the belt or pipe connections. The cross head guides are steel shafts, supported by lugs at the top and bottom of the base. The gears and pinions are of coarse pitch and wide face. The wrist pins are of steel and are riveted into the gear wheels. All bearings are large; the pinion boxes are babbitted and the wrist pins and cross head bearings have removable brass bushings. The suction pipe is supported on a separate collar placed directly under the stuffing box cap, and is easily reached by removing the latter.

The working head illustrated is designed for a 24-in. stroke, and will take a suction pipe up to 8 in. diameter and a discharge pipe up to 6 in. diameter. It is fitted with 6 x 30 in. tight and loose pulleys.

William Farris & Brothers, bridge engineers and contractors, Diamond Bank Building, Pittsburgh, have recently closed contracts for a new warehouse and mill building for the Deal Brothers Milling Company, Cumberland, Md., and several highway bridges in West Virginia, among them a 300-ft. span in Hampshire County.

## The Billings & Spencer Improved Trimmer Miller.

The trimmer miller, Fig. 1, is a new type embodying a number of improvements developed from the experience of its builder, the Billings & Spencer Company, Hartford, Conn., in making trimming dies for use in its forge shop. The special purpose of the machine is the finishing of trimming and punching dies for forgings and sheet metal work. In the making of a die the opening is first drilled out, following the general line of the pattern, which leaves a rough, scolloped surface. The trimmer miller finishes the opening to line and also gives to it the necessary relief or clearance. The angle of the cutter determines the degree of relief. To insure good work the cutter must be rigid, and the design of the machine is based upon this necessary consideration.

The inverted spindle holding the cutter is placed in an opening in the center of a heavy universal carriage, operated in the usual way by hand wheels from two sides, the operator standing at the corner between them, one hand on each. He is thus able to guide the work to the cutter at will. The design of the spindle, with its collet and hand wheel, is new. The collet *a*, Fig. 2, is of unusual pattern. Though of the common spring type the angle of its taper is very much less than usual. At its base is tapped a thread into which screws the drawback rod *b*, at the lower end of which is the hand wheel *c*. This design is such that the action of the wheel not only serves to draw the collet down, binding the cutter securely, but in the reverse direction forces out the collet, releasing the cutter. This latter function of the rod is especially necessary because of the long taper of the collet, which is very different from the obtuse angle used in the usual construction. The designers of the machine discarded the obtuse angle on the theory that it may develop a decided tendency to let the cutter work loose. Consequently the long angle was adopted with the drawback rod mechanism to operate it easily and practically. Another feature of the spindle is the means of taking up wear through the taper bronze bushing *d*, which permits the overcoming of the tendency of the spindle to work loose in its bearings. The oiling arrangement is also interesting. At the base of the collet is the oil reservoir *e*, from which a spiral groove encircles the spindle. The revolving of the spindle works the oil to the top, where an oil groove keeps it from overflowing.

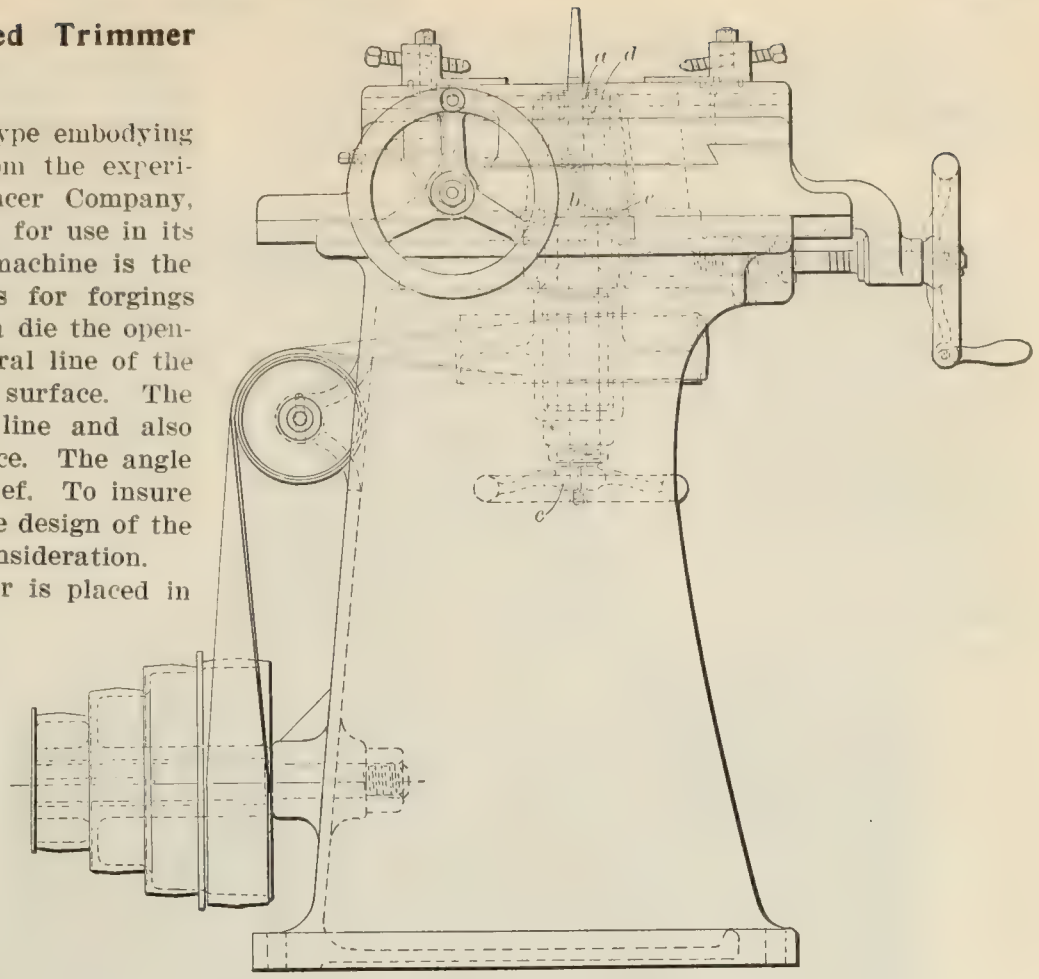


Fig. 2.—Elevation of the Billings & Spencer Improved Trimmer Miller.

The work is held in a chuck or vice as shown. Keyways are cut in the table, corresponding to keyways in the jaws or bunters, so that by removing keys the bunters may be moved in or out from the cutter to correspond to the size of the work. Each bunter has a shelf extending toward the cutter for work to rest on when it is so small as to come within the area of the open space about the cutter. The maximum capacity between the jaws is 16 in. wide and any length. The travel of the table is 5 in. in one direction and 12 in. in the other.

Collets are furnished of the following sizes: ⅜, ½, ⅝ and ¾ in. The cutter speeds are 210, 350 and 580 rev. per min., and are afforded by a three-step cone driving pulley. The weight with the countershaft ready for shipment is 1600 lb. The floor dimensions are 40 x 45 in.

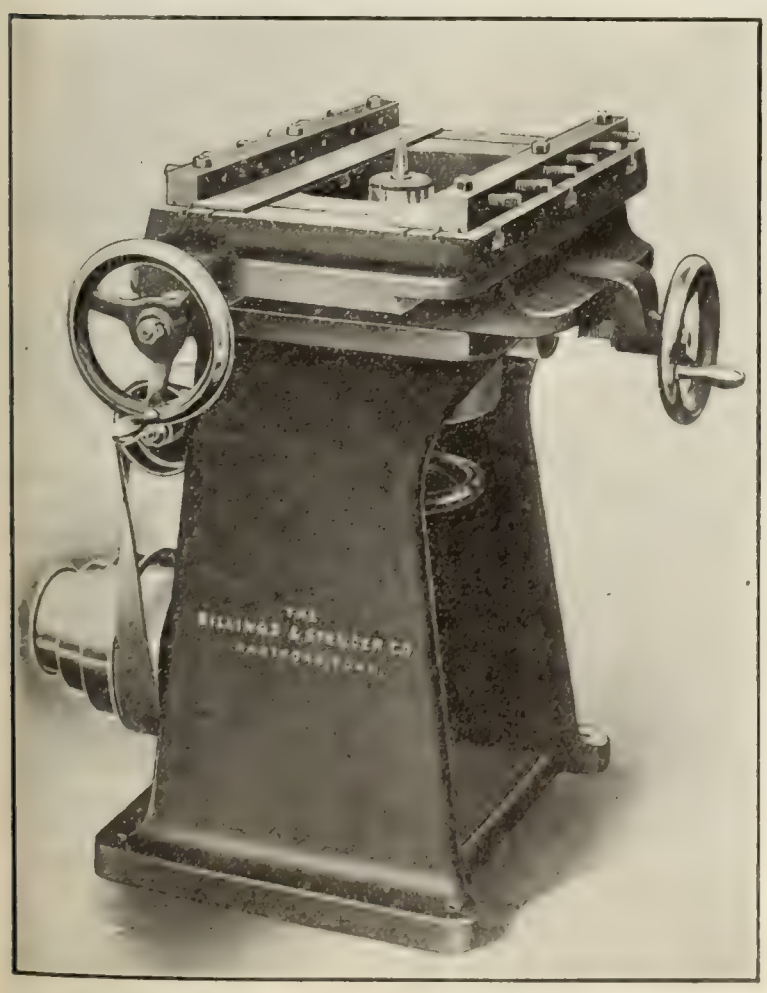


Fig. 1.—The New Billings & Spencer Miller for Trimming Dies.

## Benson Mines Development.

The Benson iron mines in St. Lawrence County, N. Y., which passed some time ago into the hands of well-known Eastern pig iron producers, will be more extensively worked in the near future. The Benson Mines Company acquired the property in the latter part of 1906, and operated it on a moderate scale through a portion of last year. Later, the leading stockholders—John C. Eden, A. W. Thompson, Wayne Wills and others—disposed of their interests, and the company has now the following officers: President, August Heckscher, New York; vice-president, T. I. Crane, Philadelphia; treasurer, W. A. Pilling, Philadelphia; secretary, F. A. Berthold, 43 Exchange place, New York. Pilling & Crane, Philadelphia, are selling agents.

It has been decided to build a nodulizing plant at the mines, with several rotary kilns having a capacity of 150 tons each a day. The coarser ore will be shipped as mined, as heretofore, and the finer concentrates will be converted into nodules. The present capacity of the concentrating plant is 500 to 700 tons a day, though it has not been operated thus far at this rate. In mining two heavy steam shovels are employed. The average metallic iron content of the magnetic ores at Benson mines is 33 per cent. Concentrates from this ore finer than 50 mesh, have analyzed 64.18 per cent. iron, 1.58 per cent. manganese, 0.461 per cent. sulphur and 0.037 per cent. phosphorus. The phosphorus varies from 0.025 to 0.05 per cent. The nodulizing process brings the sulphur below the percentage noted.

# A Novel Belt Conveyor System.

## Its Use in Concrete Construction on the New York Barge Canal.

In connection with the construction of the Barge Canal by the State of New York a Bureau of Publication and Reports has been organized through which publicity is given to details of the various contracts and to articles descriptive of the progress of the work. A monthly publication of this bureau is the *Barge Canal Bulletin*, edited by Noble E. Whitford, resident engineer, Albany. In a recent issue the following interesting article appeared, describing the belt conveyor system now in use at Locks Nos. 4 and 5 on Contract No. 11:

The magnitude of the Barge Canal contracts which have so far been placed under construction has been productive of at least one good result. Confronted with the necessity of moving vast quantities of material expeditiously and at the minimum of cost, the various contractors have introduced and are using numerous mechanical appliances in furtherance of this end, some of which are original, either in design or adaptation, and others which have been employed with success elsewhere in the broad field of engineering, but have hitherto been unknown along the line of the canals. Most of these appliances are so expensive to install that with smaller contracts their initial cost would have precluded their use.

Within the radius of perhaps a mile from Lock No. 4, in the vicinity of Waterford, the eastern terminus of the Barge Canal, is built, or planned, a group of massive concrete structures requiring, in the aggregate, more than a quarter of a million cubic yards of this material in their construction. Its handling, therefore, to advantage, becomes a matter of great interest. Most of the devices and equipment for this entire system were designed and supplied by the Robins Conveying Belt Company, New York, but the general scheme and many of the minor devices were designed by Herschel Roberts, president of the contracting firm, and himself an engineer of note. It should be borne in mind that while the dry materials, cement, sand and stone have been conveyed on belts before, the successful transfer of the aggregate, after its mixture, from the mixer to the form, without rehandling, is understood to be an entirely novel extension of their use. By an examination of the accompanying illustrations, Figs. 1 to 4, the course of the materials from the car to the mixer and of the aggregate thence to the locks may be readily traced.

Standard gauge tracks run to a point about midway between Locks Nos. 4 and 5, at which point a Hains concrete mixer is located. This point is about in the center of distribution of approximately 100,000 yards of concrete work. Four parallel side tracks afford sufficient room for the cars for supplying materials for 500 yards of concrete per day. One of these is for empty cars, another for stone and another for sand. In each of the two latter a hopper is constructed and the cars are dumped into these; thence the materials are taken by belt conveyors to the top of the mixer. When the bins on top of the mixer are filled, the stone and sand automatically overflow and the sand passes by a direct chute into a sand storage bin. A similar excess of stone automatically overflows upon a belt equipped with a movable tripper car, so as to enable the stone to be distributed throughout the length of a storage bin adjoining the sand bin. Other belts pass underneath these storage bins and then rise on a slight curve, so as to feed the materials when wanted to the first mentioned belts, and these deliver them again to the top of the mixer. The fourth track is used chiefly for cement, and it passes along the side of a cement house, which is 50 x 150 ft., capable of housing about 10,000 barrels. Through the center of this house and just under the floor level runs a 20-in. belt, and after this leaves the cement house it curves gradually to the elevation of the mixer floor of the Hains mixer, from which point the bags are handled by one or two men, who place and untie them, ready for the men at the mixer hoppers. It will be seen, therefore, that the only shoveling required on any of the materials is that involved in getting the stone and sand from the ends of the cars down to the hopper, and that the carrying and lifitng of cement is reduced to the minimum.

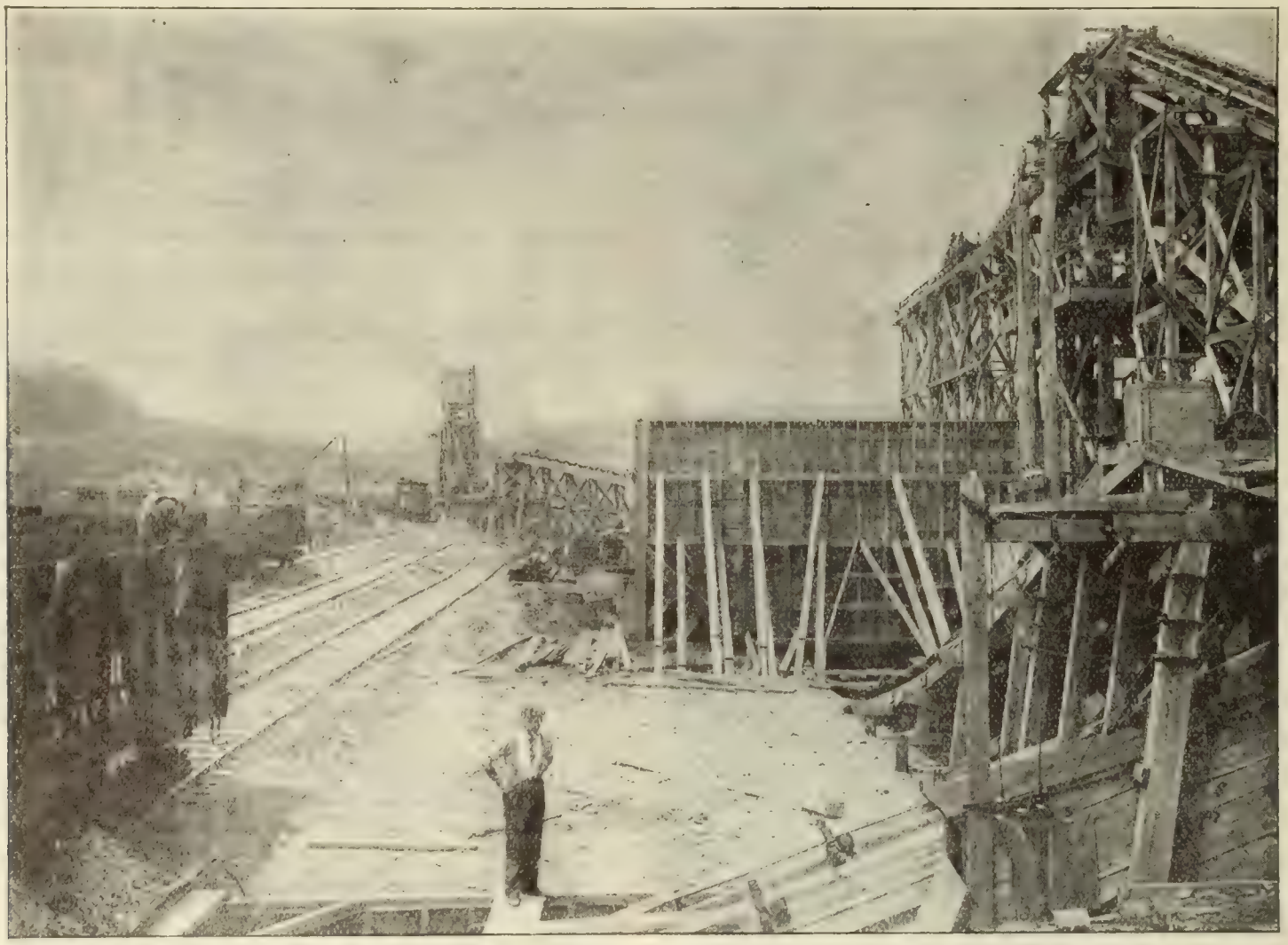


Fig. 1.—In this view are shown at the left three of the tracks, the fourth, not shown, passing through the cement house, in rear of the point of view. In the foreground, rising to the right, are the stone and sand belts from the hoppers beneath the tracks—on the first stage of their journey. In connection with the tall structure on the right, containing the mixer, are the bins for supplies of sand and stone, and over them the trestle and tripper car by which the stone is distributed.

This plant can handle about a cubic yard per minute, but it has rarely been found possible to keep a sufficient number of places open and ready for concrete to maintain operations on this scale with the desired regularity. The maximum output thus far for an eight-hour day has been 450 yards. Handling the mixed material at that rate involves the necessity for some method of transportation likely to be more steady and continuous than trains and buckets. For this reason, and because of the large quantities involved in this work, the contractors decided to attempt the delivery and placing of the mixed concrete, at least to the locks, by means of belt conveyors.



Fig. 2.—In the right foreground the sand and stone are transferred to a second pair of belts stretching away to the top of the mixer. Underneath is the cement belt, carrying up the sacks from the cement house, of which the end of the roof is shown. The chute for surplus sand from the mixer to the bin below is also shown.



Fig. 3.—From the upper end of Lock No. 5 and facing backward toward the mixer, shown in the distance. From the mixer the trestle leads to the middle foreground, bearing the track upon which is shown the huge tripper car. Between the rails is shown the belt, carrying concrete to the car. In the foreground is the boom, depressed, with its belt, delivering concrete into a short spout at the form.

The lower hopper of the main mixer is arranged with chutes and a short tilting spout, so that with the spout in one position the concrete can be fed into buckets, cars or wagons on one side of its center line, and when in the opposite position to the belt conveyors. Three such conveyors are required to reach the further end of either of the locks. The installation for Lock No. 5, the first one started and now completed, required one conveyor 80 ft. long, another 137 ft. long and then the conveyor running through the center of the lock, which is 600 ft. long. Each of the first two conveyors discharges into a Hains mixer hopper, so as to feed properly to the succeeding belt, and also so as to hold up the delivery of a whole or a part of a batch of concrete in case of any necessity for shutting down quickly. These three belts run at a speed of about 450 ft. per minute, but each succeeding one runs slightly faster than its predecessor, so as to correct, especially on the long belt, any excessive loading of the belt at the mixer.

The structure supporting the long belt through the locks also supports a huge tripper car, equipped with a boom 45 ft. long; this latter can be elevated or depressed to an angle of 20° and revolves through an arc of about 200°, so as to reach both sides of the lock. The main shaft passes up on this tripper car at an angle of 20° and trips its load upon the boom, which carries a conveyor operated by an independent motor. This car is propelled by five men, operating a capstan and winding the car along on a rope at the rate of about 6 ft. per minute. The boom is lifted and swung by hand winches, but all other work throughout the plant is done by electric motors. Current for these is taken from the lines of the Hudson River Water Power Company at about 13,000 volts and transformed to 550 volts at the works.

The structure supporting the conveyor and tripper car through the lock also carries electric wires with devices for connecting the wiring on the car at frequent intervals, so as to move back and forth. It also carries the main water pipe, as it passes from the Mohawk River to the lower end of the work. By connections placed at frequent intervals in this pipe, water is continually supplied to the car, and this is piped to the end of the boom where it can be instantly controlled, so as to supply to the concrete, just before it is deposited in the forms, any quantity of moisture in addition to that used at the mixer. From the end of the boom swinging spouts of various lengths, according to conditions, have been used, so as to collect all particles of the concrete to a narrow space when dropping them into the forms, and this device, with its swinging motion, has proved to be almost ideal, for, unlike any form of bucket discharging a large volume quickly, with the usual outrush of grout incident to that operation, it deposits the particles gradually and produces exactly the desired consistency throughout the mass. Moreover, it deposits the concrete in truly horizontal layers of any desired thickness.

The sections of the lock walls were built in lengths of about 40 ft. and the face forms were in sections 6 ft. high. Half of this hight was filled and the boom was then swung to the section on the opposite side of the lock, so as to give the lower 3 ft. in the first section a chance to take on its initial set before the top 3 ft. was added. The method adopted in building one of these sections was to start in one corner and then by moving the car backward or forward, swinging the boom in its arc and also swinging the spout across about 6 ft. of width to reach all parts of the section, readily forming any desired thickness. At first the grout required on top of an old section, prior to starting a new one, was sent out over the conveyors from the mixer, but later this was more readily accomplished by taking the dry cement to the section and adding water through the swinging spout from the end of the boom.

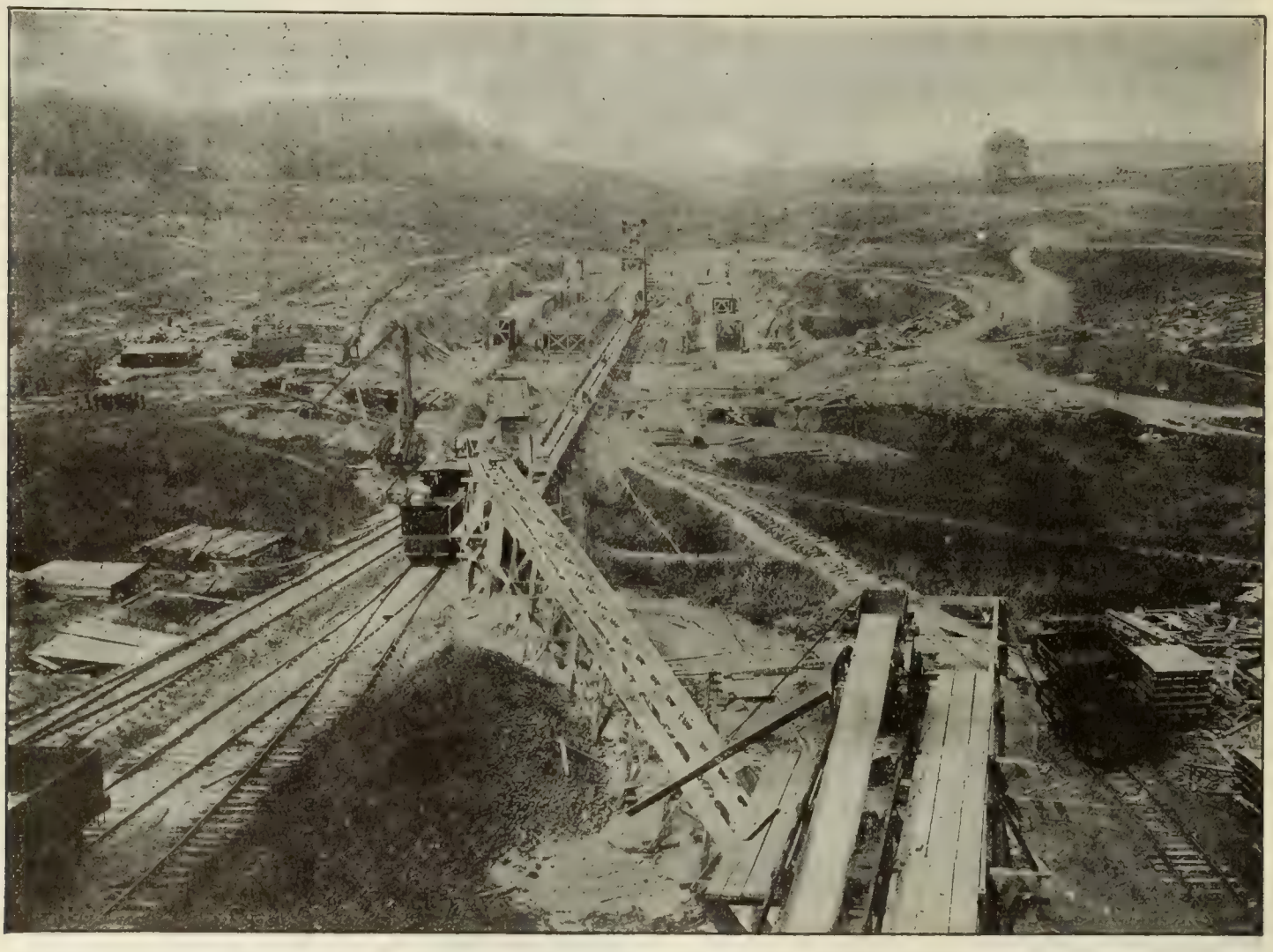


Fig. 4.—A general view of the works at Lock No. 5, looking northwest; taken from the mixer and showing arrangement of plant.

This plant has lately been used also in building the north and south core walls of Lock No. 5, containing about 800 yards and 1400 yards, respectively. These walls are over 30 ft. high, where they join the lock walls, and extend 200 ft. and 600 ft., respectively, from the lock walls. This work was done by means of "home made" bottom dumping cars of about 1 cubic yard capacity, run to the tops of the walls and supplied from the tripper car boom. In order to secure continuous operation of the belts for this work, on which only two cars could be used, the material delivered, when the cars were not in position, dropped into the section of the core wall nearest the lock, which was otherwise left for that purpose until final completion.

Mr. Roberts considers that this belt conveyor system

has decided advantages over the train and bucket method of conveyance, and he believes that better concrete is produced by it, saying that it seems perfectly clear that, instead of the particles becoming separated by dropping through the several hoppers and spouts from the mixer to the work, exactly the opposite result is obtained, and that the materials are better mixed at the end of their journey than when they leave the mixer itself; moreover, that so long as the concrete is fairly wet, it is evident that the last drop it takes from the boom, frequently as high as 15 ft, is a decided advantage rather than otherwise and that any uncoated stone that may have passed through the mixer receives a most effectual coating of the mortar as it finally drops into the mass.

## The Krieger Lathe Boring Bar Holder.

A bracket holder for boring bars, drills, reamers and similar tools used in lathes, just brought out by the Krieger Tool & Mfg. Company, Grand Rapids, Wis., furnishes in a single attachment means of accommodating

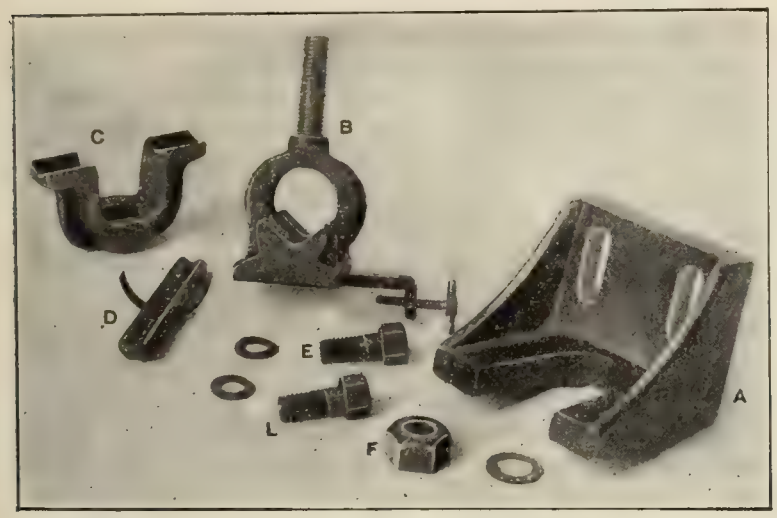



Fig. 1.—Unassembled Parts of the Boring Bar Holder for Lathes. Made by the Krieger Tool & Mfg. Company, Grand Rapids, Wis.

tools of several different sizes. In addition to this advantage it is provided with a vertical adjustment, which facilitates centering.

This double adjustable bracket is composed of few and simple parts, as may be seen from Fig. 1, which shows it unassembled. It consists of a malleable cast bracket piece, A, having a slotted base which is clamped to the carriage without removing the tool post; a holder dog, B, which is clamped to the face of the bracket by draw bolts, E L, and carries a bar supporting a hand screw for vertical adjustment; a clamp yoke, C, formed with grooved bearing arms that are clamped against the bar by the nut F on the threaded stem of the holder dog, and a reducing block, D, used in connection with tools from ¼ to ¾ in. in diameter, which fits in the saddle of the holder dog, where it is held in place by flat binding springs.

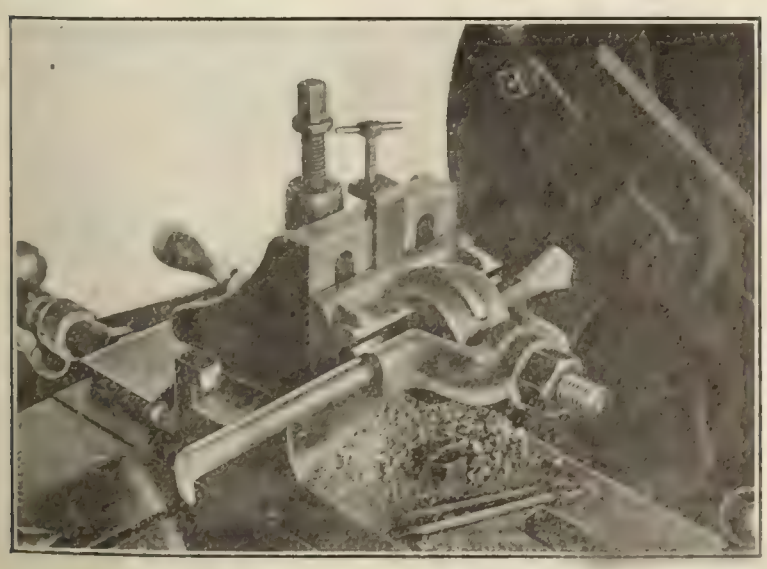


Fig. 2.—The Krieger Holder Supporting a Boring Bar.

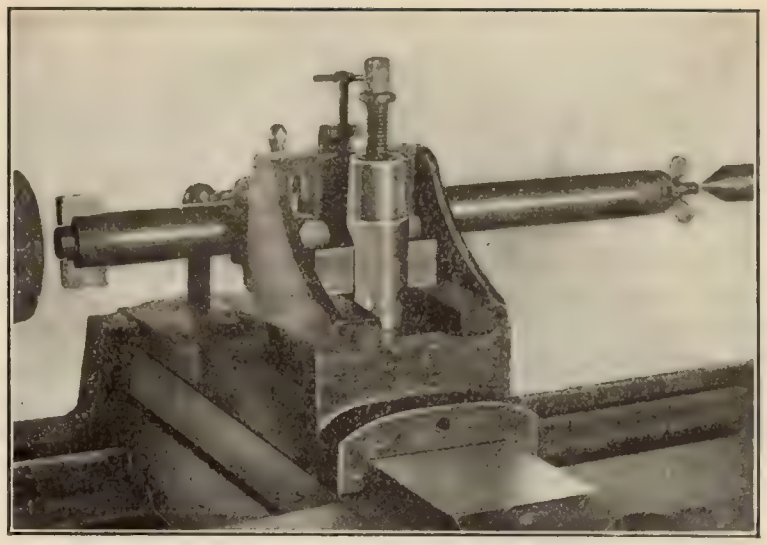


Fig. 3.—A Reaming Cutter Held in the Krieger Holder.

Front and rear views of the assembled tool set in position on a lathe carriage are shown in Figs. 2 and 3, which also illustrate its adaptability to different kinds of work. Boring bars, drills, &c., from ¼ to 2½ in. in diameter comprise the range of capacity of the two sizes, No. 1 and No. 2, in which the bracket is made, No. 1 holding tools from ¼ to 1¼ in. and No. 2 from ½ to 2½ in. There is obvious economy in the flexibility thus afforded both in investment and time saved as compared with holders limited to single sizes, of which a greater number is required to cover the same scope of operations and which involve numerous changes and resetting.

The hight of vertical adjustment on size No. 1 is 1¾ in. and on No. 2 3 in., with bar bearings of widths respectively 4 and 6 in. These ample bearing surfaces insure a high degree of rigidity, which is enhanced by the firm manner of attaching to the lathe carriage. The No. 1 bracket fits lathes with 14 to 20 in. swing and the No. 2 is designed for swings of 20 to 30 in.

## An Interesting Wire Rope Tramway.

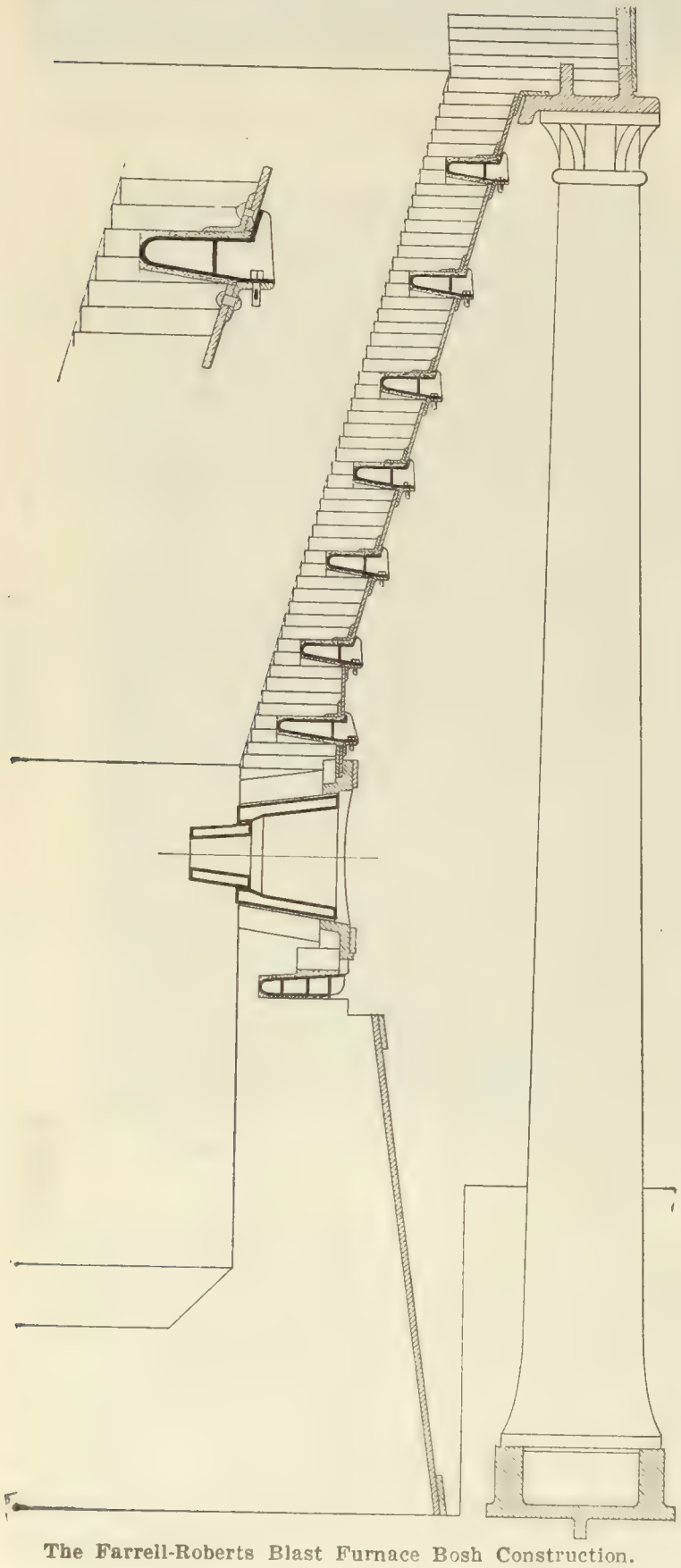
An overhead wire rope tramway believed to be unlike any other in this country was recently installed for the Monterey Lime Company, San Francisco, Cal., at its plant about 40 miles below Monterey, by the Hallidie-Painter Tramway Company, successor to the California Wire Works, Oakland, Cal. The tramway runs from the company's kilns to the ocean, approximately 2½ miles, and passes over very rough country. In one place there is a span about 2600 ft. long and a number of others vary from 800 to 1600 ft.

The tramway handles lime in barrels, two barrels to each carrier. The barrels are enclosed in the carriers so that they are completely protected from rain and heavy fogs which are quite prevalent in that part of the country. Two attendants take care of the tramway, one at the loading and the other at the unloading end. The capacity is 50 barrels per hour. The operation is very simple; the carriers stop to load and unload automatically, and are automatically started when the next carrier comes in. The Monterey Lime Company has found the tramway of considerable benefit to it in the reduction of the cost of lime handling. Previously this was done by teams, and it is stated that the change in the mode of handling the lime has made such a difference to the company that where there was formerly a loss there is now a profit.

A sharp break in bar silver, October 3, both in London and New York brought the price down to the lowest figure reached in five years. At London silver declined 5 16d. to 23 1-16d. an ounce and New York quotations followed by declining ⅞ of a cent to 50 cents an ounce. China sold silver freely in the London market, causing the break.

## The Farrell-Roberts Bosh Construction.

Some of the experiences of the past few years with blast furnaces operating under high pressure and rapid driving have shown the need of great care in designing the furnace bosh when it is equipped with cooling plates. Accidents involving loss of life have resulted from failure of the bosh construction. And after a furnace equipped with bosh plates has been in blast for some time, trouble may arise from the brickwork between the plates becoming worn on the inside of the furnace, allowing the inner ends of the bosh plates to settle, displacing their water connections and rendering their removal difficult. Furnace managers, moreover, are not agreed



The Farrell-Roberts Blast Furnace Bosh Construction.

that the bosh plate forms the best bosh protection. Some prefer a bosh jacket with a thin lining of firebrick, the aim being to save expense, secure ample strength and maintain smooth and uniform bosh walls. The point is made, however, that unless the number of rows of bosh plates is excessive, less heat is extracted from the furnace by the circulating water in the bosh plates than is lost through the bosh jacket, and that for rapid driving and large products the former is preferable. This suggests, therefore, that the best bosh design would combine the merits of both types, providing a construction which would maintain the thickness of the brick walls, securely hold the bosh plates in position and at the same time insure against serious accidents.

The design of bosh shown in the illustration is offered as fulfilling these requirements. It is covered by patents granted individually to Austin Farrell, Marquette, Mich., furnace manager of the Cleveland-Cliffs Iron Company, and Frank C. Roberts, Philadelphia. As indicated, it consists of a bosh jacket extending from the mantel to the top of the hearth. Openings are provided in the jacket for the bosh plates with an angle section band above the openings on the inside and a similar angle section band below the opening on the outside, the angles both above and below extending around the jacket. The openings are slightly larger than the bosh plates, and the latter are constructed with a lip on the upper side bearing against the jacket and a flange on the lower side which is bolted to the outer angle on the jacket. This construction permits the ready removal of the bosh plates and securely holds them in position when the brickwork is worn away. In the illustration the bosh brickwork is 13½ in. thick and the bosh plates extend 9 in. within the jacket.

The cost of this construction, it is stated, is not more than that of an ordinary bosh equipped with bosh plates, while the strength and freedom from danger are much greater. The brickwork is less expensive by reason of the thin walls and absence of arches or other special supports for the brickwork over the bosh plates, and this saving, combined with the reduction in the cost of the bosh plates, amounts to approximately the cost of the bosh jacket. The durability of this form of bosh is indicated by the experience of the Cleveland-Cliffs Iron Company at its Gladstone and Marquette Furnaces in Michigan, both of which have a somewhat similar construction in use. In the former case the furnace has been in continuous operation for seven years and nine months and in the latter case for over five years. One of the large furnaces of the Wharton Steel Company at Wharton, N. J., is being equipped with a bosh of this design.

## Western Electric Changes.

At a meeting of the Board of Directors of the Western Electric Company, held in Chicago, October 30, the following changes among the officers were made: E. M. Barton retired as president, becoming chairman of the Board of Directors. H. B. Thayer was elected president; H. A. Halligan and F. R. Welles, vice-presidents; William P. Sidley, vice-president and general counsel; George C. Pratt, secretary. Mr. Thayer had been vice-president for a number of years, and has been connected with the company for 28 years. He has had his residence in New York City and will continue to reside there. Mr. Halligan had for some time been secretary and in charge of a large part of the American business. Mr. Welles has been connected with the company for more than 30 years, and has charge of its foreign business, residing in Paris. Mr. Sidley has been acting as counsel for the company, and will continue so. His office of vice-president will not involve severing his connection with the firm of Holt, Wheeler & Sidley, of which he has been a member for some years.

The Western Electric Company is engaged in consolidating its manufacturing business at its Hawthorne plant in Chicago. It is removing to that plant the manufacturing heretofore carried on at Clinton street in Chicago, and the principal portion of that which has been conducted at its factory in New York City. Some of the engineering and other administrative work of the company will be conducted at New York. This is for the purpose of avoiding duplication between the Chicago and New York offices, and between the engineering department of the company and the telephone companies, its principal customers.

The Cuyuna Iron Range Railway Company, Duluth, Minn., has been incorporated, with a capital stock of $100,000, for the purpose of building and operating an ore line from the Cuyuna range to the head of Lake Superior.

## Coaling Barges at Havana, Cuba.

The type of coaling barge shown by the illustrations has been adopted by the Havana Coal Company in the work of outside coaling required for the large steamers making port at Havana, Cuba. E. H. Sanborn, the Philadelphia manager of the company, who evolved the plan of equipment, has changed the design in several particulars, notably in the shape of the conveyor tower, substituting a tapered steel structure for the rectangular wooden one provided on the early boats of which Fig. 1 is an example. The improved facility brought about by the introduction of these barges, which were built by Quigley, Davis & Dorp, Camden, N. J., is due to the elasticity of arrangement which permits coaling at the water level, or at deck hight; and in the easy access to vessels surrounded by small lighters which may be receiving or delivering freight. The diagram, Fig. 2, gives a clear idea of this feature: the bow of the coaler can be run between or over the lighters, thus avoiding the delay of waiting for the clearance necessary to broadside loading.

The conveying apparatus, made by the Link-Belt Company, Philadelphia, consists of V-shaped buckets, 20 x 20 in., attached at intervals of 36 in. to two strands of steel roller chain, running noiselessly in a trough 130 ft. long, built alongside the keelson of the barge and below the level of a false deck, as indicated in Fig. 3. The conveyor dumps at the top of the tower on the forward side into the hopper of a 60-ft. telescopic chute, 15 in. in diameter. With this chute the barge has a range of delivery from the water line to a bunker hatch 40 ft. above. The conveyor returns down the after side of the tower and along the deck where it is covered by a steel plate roof to deflect lumps of coal when the barge is being loaded. The conveyor travels at a speed of 120 ft. per minute, and can deliver 100 tons of coal per hour if run continuously, which, however, is rarely possible, as trimming in the bunkers necessitates intermittent operation. A 35-hp. engine, located at the base of the tower, is required because of the frequent starting of the conveyor under full load.

The efficiency of the barge has been demonstrated under the varying conditions imposed by the time limits of the liners' anchorage, which often involves a stop for coal only, with its consequent demand for immediate attention; loading as high as 1200 tons in 8 hr. has been attained.* Many cases have occurred in which the coaling began at 4 p.m., continuing all night to be completed at 8 a.m. next day, when the vessel cleared. Ordinarily, the coaling is done from one barge on each side of a liner, though two on a side have been employed.

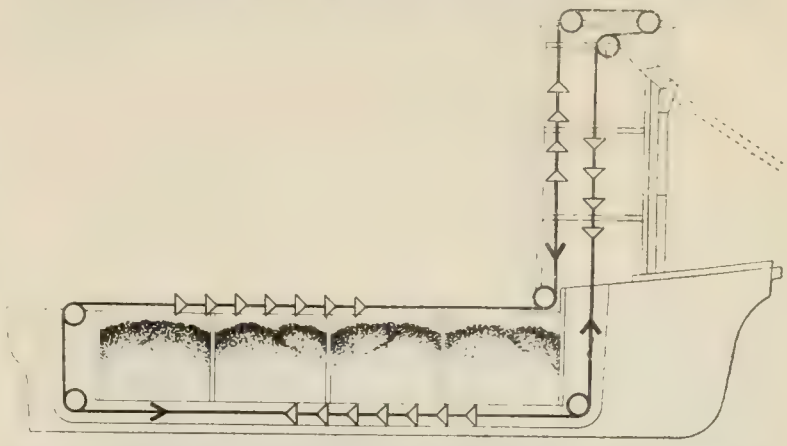


Fig. 3.—Sectional Diagram of a Barge, Showing the Course of the Link-Belt Conveyor.

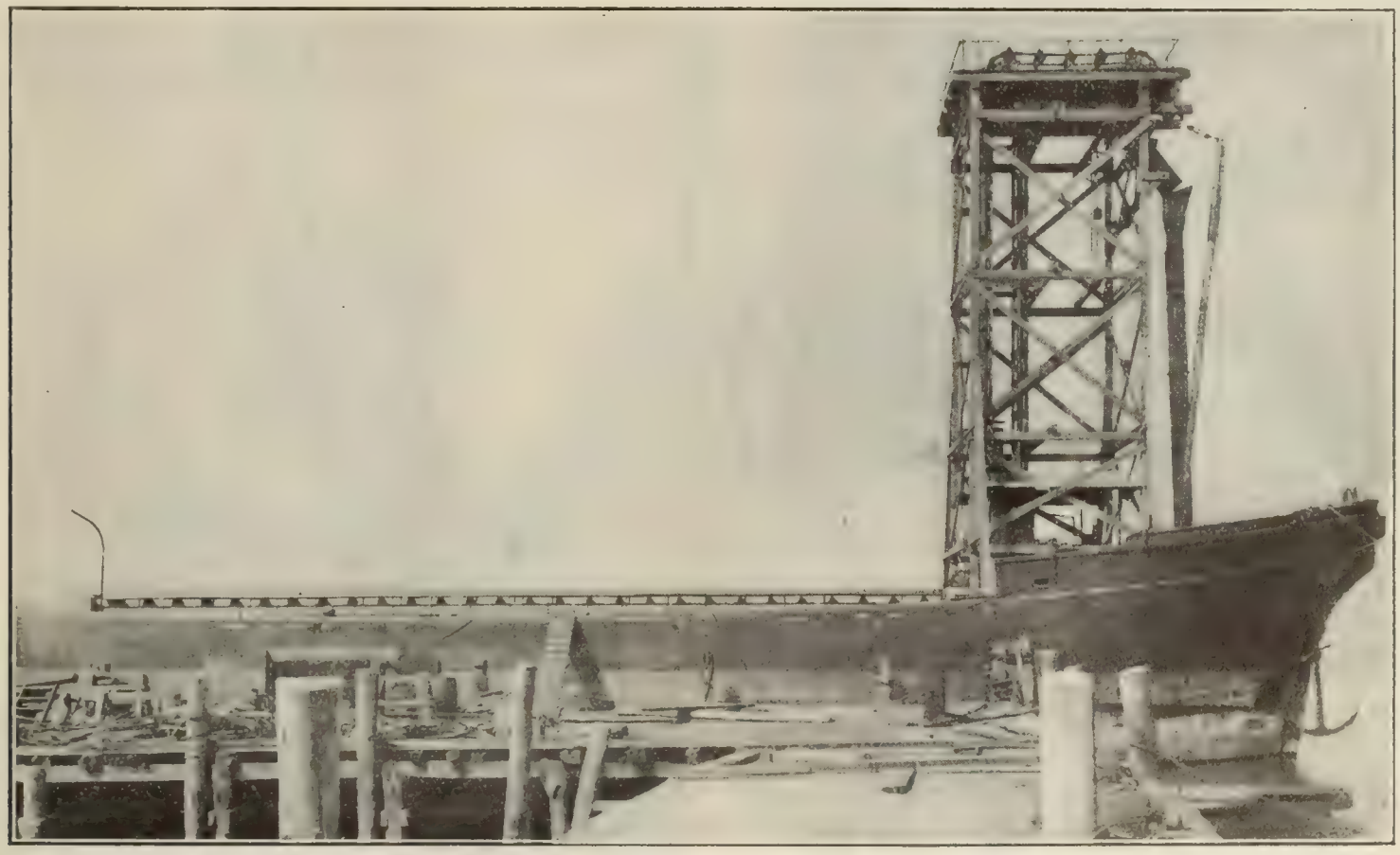


Fig. 1.—One of the Earlier Sanborn Coaling Barges Used by the Havana Coal Company.

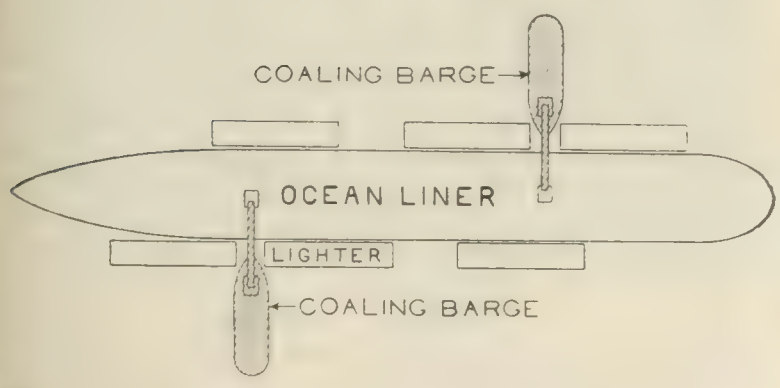



Fig. 2.—Diagram Showing Two Barges Coaling a Liner While Lighters Are Receiving or Delivering Freight.

At a meeting of the newly elected directors of the Crucible Steel Company of America, held in Pittsburgh last week, the following officers were elected: William G. Park, chairman of the Executive Committee; Frank B. Smith, president; Reuben Miller, Herbert DuPuy, John A. Sutton and C. C. Ramsey, vice-presidents; Alexander Thomas, secretary; Charles W. Rowlands, assistant secretary; Julius Bieler, treasurer; A. A. H. Niebaum, assistant treasurer; George A. Turville, comptroller. Executive Committee: William G. Park, A. W. Mellon, Reuben Miller, Frank B. Smith, Herbert DuPuy, J. D. Lyon and James H. Park.

* In this connection an editorial concerning vessel loading and unloading economies in *The Iron Age*, February 13, 1908, may be interesting.

# Nugent Engine Oiling Devices.

For effective lubrication of engine or other bearings the oil should be delivered where needed, with a positive and easily regulated feed. Two oiling devices for trunk or gas engines designed to fulfill these requirements are manufactured by Wm. W. Nugent & Co., Chicago. The sectional and side elevations, Fig. 1, illustrate the application of one of these devices to a vertical trunk engine only the plan of piping and attaching, but also indicate the manner of operating.

In the device as adapted to a horizontal gas engine, Fig. 2, the oil is forced to the pins by the pumping action of the telescopic tubes *a* and *b*. The oilers are supplied with check valves, *c*, and stuffing boxes, *d*. The positions of these tubes when the engine is on forward center are indicated by the dotted lines *a'* and *b'*. Oil passing from the cup reservoir *e* is carried through the tube *b* to the crosshead pin through the tubes *b* and *f*, the latter

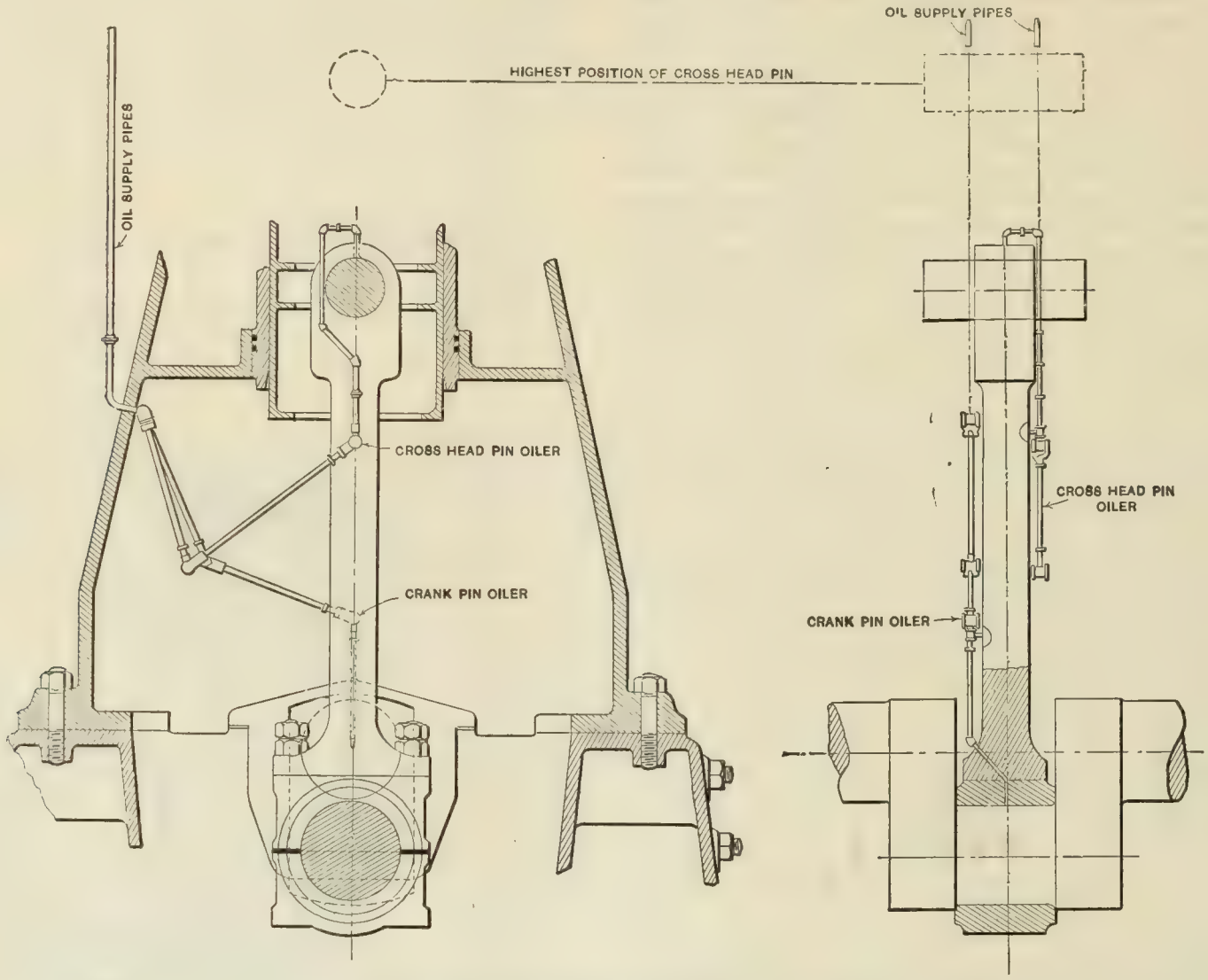



Fig. 1.—Oil Device for a Vertical Gas Engine Made by Wm. W. Nugent & Co., Chicago, Ill.

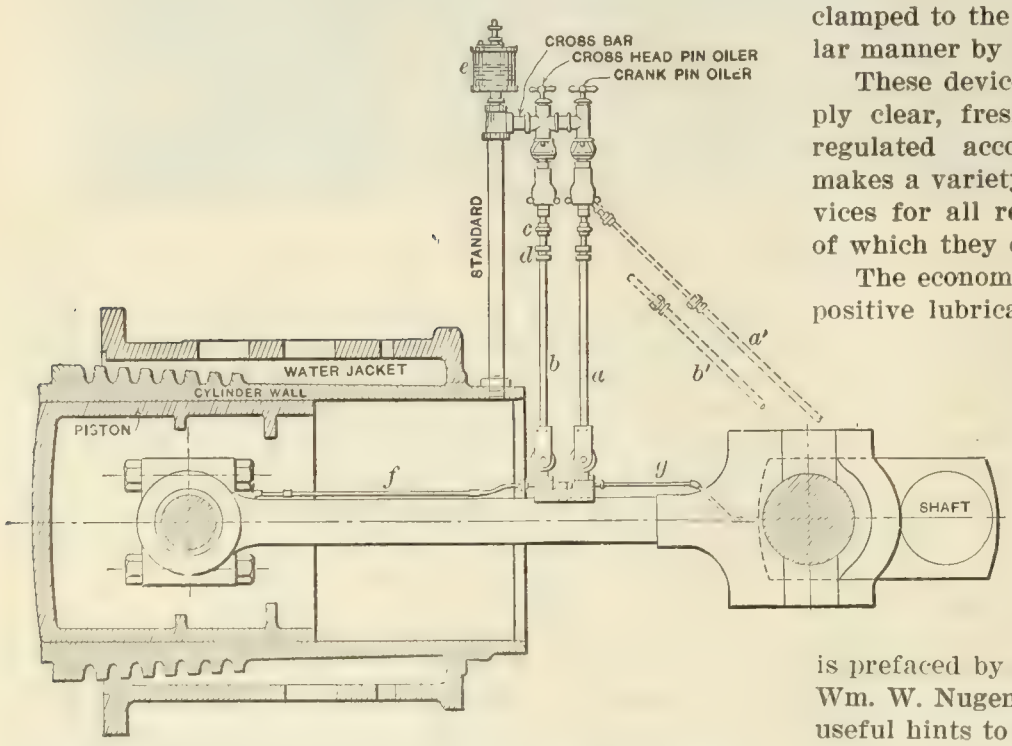



Fig. 2.—Nugent Oiling Device for a Horizontal Gas Engine.

for oiling the center crank and crosshead pin, and Fig. 2 the manner of attaching the other to a horizontal gas engine.

In both cases oil is forced under pressure through tubes provided with check valves, directly to the bearings. These tubes in Fig. 1 are connected with the oil supply pipe by oil tight steel knuckle joints and are similarly connected at the middle joints and discharge ends. The two views in this engraving show clearly not clamped to the shaft. The crank pin is served in a similar manner by the tubes *b* and *g*.

These devices are built to stand high speeds and supply clear, fresh oil in quantities which can be closely regulated according to requirements. The company makes a variety of telescopic and knuckle joint oiling devices for all reciprocating parts of engines, to all types of which they can be readily attached.

The economy in wear and tear effected by regular and positive lubrication of fast running bearings is observed not only in the prolonged life of the wearing parts, but also in the saving of oil. The use of too much oil is not only wasteful, but frequently results in positive damage to bearings. The joints of these oilers are made of hardened steel, and it is claimed by the manufacturers that they will outwear the engine. A new catalogue issued by the company describing its line of oilers is prefaced by an article on "How to Oil an Engine," by Wm. W. Nugent, which contains valuable information and useful hints to engineers upon this subject.

An item printed on page 1088 in *The Iron Age* of October 15, mentioned contracts secured by the Meehan Boiler & Construction Company, Leetonia, Ohio. It should have read Lowellville, Ohio, the company having been located at the latter place for many years.

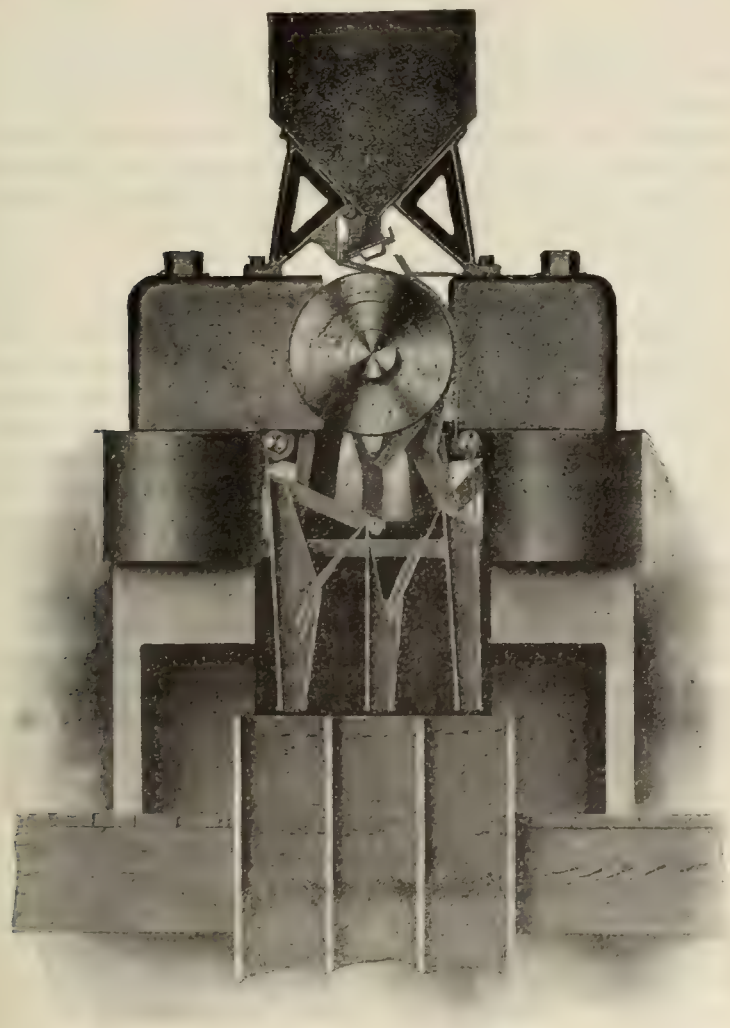
Corrigan, McKinney & Co., Cleveland, Ohio, are rebuilding their blast furnace at Scottdale, Pa. It is expected to be ready for operation early in December.

## The International Magnetic Ore Separator.

The magnetic properties of certain ores early suggested the possibility of utilizing electro-magnets in the concentration of these ores. This idea was first conceived at a time when electric current was not very generally available commercially; a fact which prevented the development of such apparatus at that time. However, with the present day facilities for obtaining electric current in any locality this system has been made commercially practicable, and the Western Electric Company, New York, in its new International Type E separator, claims to have an efficient and economical machine for concentrating magnetic ores.

This separator is of the bipolar revolving drum type, the field magnets being energized by two form wound field coils of large capacity, which are mounted on the two legs of the field magnets. The field frame is cast from dynamo steel and the revolving drum or armature is built up of steel laminations, which are carefully annealed, thus reducing the core loss to a minimum. There is no winding or electrical connection of any sort on the armature, a construction that insures reliability under the most severe conditions. The only moving part in the separator is the armature, which is rotated by a pulley belted to a shaft or an electric motor. The motor drive is preferable because it permits of adjusting the speed to suit the conditions of operation.

The operation of this machine is very simple. The ore is fed from a hopper at the top of the machine through an adjustable gate, the function of which is to



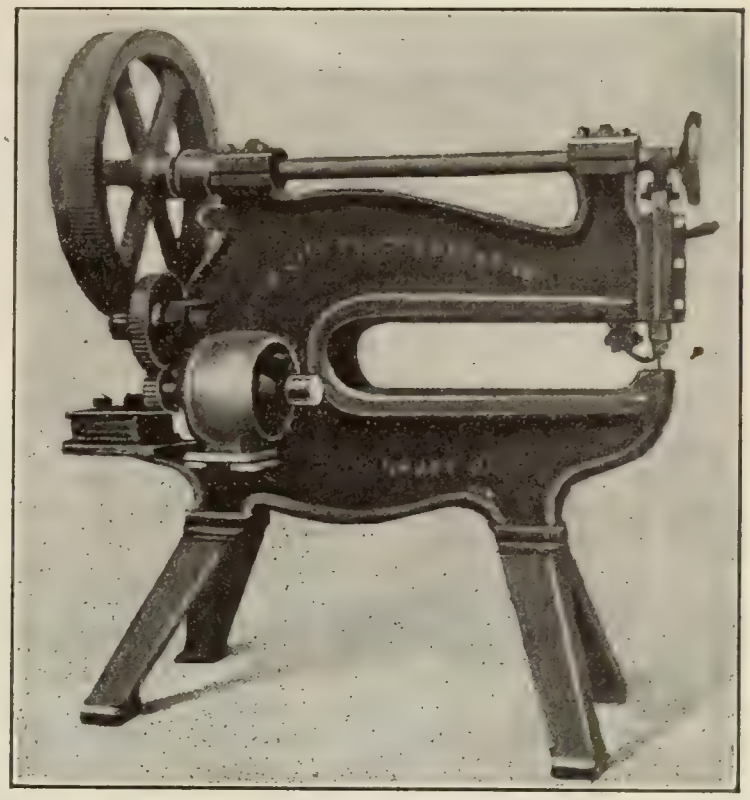
Sectioned View of the International Type E Magnetic Ore Separator Made by the Western Electric Company, New York.

regulate and distribute the flow upon the armature. As this armature revolves the material is carried under the pole face at one side. The magnetic material adheres to the armature while the nonmagnetic material drops off. There is a field pole on each side of the armature for directing and concentrating the magnetic field of force. There is, therefore, at or near the bottom of the armature a neutral point where a reversal of magnetism takes place. When the material reaches this point even the most highly magnetic substances will be thrown off. By means of adjustable deflector plates arranged beneath the armature, the different products may be collected as desired from under the surface of the rotor as they are successively thrown off under the gradually weakening attraction. The adjustment is so fine that materials differing but slightly in magnetic susceptibility may be separated with the greatest facility.

These machines have a capacity of from 60 to 100 tons a day, and many of them are now being used in mines in this country and Mexico. They are also especially well adapted for the separation of flue dust from blast furnaces, cleaning up of bone ashes, glass sand, &c., as iron in any form is readily removed.

## A Queen City Sheet Metal Punch.

A recent product of the Queen City Punch & Shear Company, Cincinnati, Ohio, is a new quick acting porta-



A New Quick Acting Motor Driven Sheet Metal Punch, Built by the Queen City Punch & Shear Company, Cincinnati, Ohio.

ble motor driven sheet metal punch. It is designed to economize in time and be specially useful in different parts of the shop. The head is operated with cam motion giving a direct stroke. The front of the jaw is made narrow to accommodate very small work, and the throat gap has a hight of 2 in. to accommodate offsets or angles in special work. The die is set solid in the housing, not attached in the ordinary way, and is therefore not likely to get out of alignment. The depth of throat is 24 in. and the capacity 3-16 x 3-16 in. The punch is designed to be driven by a ½-hp. direct current motor. Swivel wheels or casters can be attached to the legs of the machine so that it may readily be moved to any part of the shop. The weight is approximately 780 lb.

**A. S. M. E. Monthly Meeting.** "The High Powered Rifle and Its Ammunition" will be the subject of a lecture by Franklin Phillips, president of the Hewes & Phillips Iron Works, Newark, N. J., and inspector of small arms practice in the New Jersey National Guard, given at the monthly meeting of the American Society of Mechanical Engineers Tuesday evening, November 10. It will cover something of the great advance which has been made in the last few years in accurate rifle shooting and the development of the rifle as an instrument of precision. Lantern slides will be used to illustrate details of rifle construction and the actual use of the arm in the field and target practice.

Hubbard & Co., Pittsburgh, Pa., manufacturer of shovels, spades and scoops, have recently increased their capital from $99,000 to $500,000. The increase was not made for any specific purpose, but was done so that the capital would more nearly represent the actual investment of the firm in its plants.

# Electrically Driven Rolling Mills.*

## Results With Siemens Companies' Installations.

BY C. KOETTGEN AND C. A. ABLETT.

The employment of electric power for rolling mill driving offers great facilities for the exact measurement of the power required for different classes of work, and enables the knowledge as to how the power varies for different sections, and how it is affected by variations in temperature and quality of the metal, to be widely extended. The power which a mill is taking can be seen at a glance from the ammeter, which may be fitted with a scale to read horsepower instead of amperes. The total horsepower hours or kilowatt hours required per day or per shift can be read directly from a suitable integrating meter. Continuous records can also be easily obtained showing how the current, speed and voltage of the mill motor vary under different conditions by using three instruments—*i. e.*, recording volt-meter, ammeter and speed indicator, each of which automatically trace their records on a strip of paper. These records show the exact value of the power required during each pass. Such results are almost impossible to obtain from a steam engine, owing to the labor involved in working out the very large number of indicator diagrams which have to be taken.

In many Continental mills advantage is taken of the integrating meters to keep daily records of the tons rolled of various sections and the kilowatt hours required, so that the cost of rolling each section is known exactly.

The figures in table I refer to three mills. The high values for the kilowatt hours per ton rolled for the channels and tees under reference Nos. 11-14 may be chiefly attributed to the cooling of the section toward the last passes, the temperature coming down to about 850 degrees. This cooling is due to the large surface which the section presents in proportion to its weight. In addition these sections require more passes than the simpler square or round bars; the channels, for instance, are given 13 passes, as compared with six for the round bars.

The 1.7-in. diameter round bars require a greater power than the 1.2-in round bars, but the output of the larger round bars was comparatively small as compared with that of the smaller ones, and the power recorded includes that when running the mill round light.

The results for the sheets show large values for the kilowatt hours per ton, owing to the large number of passes required, and to rapid cooling of the sheets. The temperature of the metal before the first pass ranged from 1183 to 1250 degrees, while at the last pass it had come down to 800 degrees.

TABLE I.

| No. | Type of section. | Energy required, kilowatt hours per ton. | Final length. Feet. | Weight of billets. Pounds. | Dimensions of billet. Inches. | Output per day. Tons. | Remarks. |
|---|---|---|---|---|---|---|---|
| 1. | Flanged mine rails, 28 lb. per yard | 37.5 | 92-97 | 860-910 | 5.1 by 5.7 | 143.0 | |
| 2. | Flanged mine rails, 24 lb. per yard | 41.8 | 68-94 | 550-760 | 5.1 by 5.7 | 135.0 | |
| 3. | Flanged mine rails, 20 lb. per yard | 44.5 | 130 | 660-875 | 5.1 by 5.7 | 115.5 | |
| 4. | Flanged mine rails, 18 lb. per yard | 47.5 | 90-135 | 550-815 | 5.1 by 5.7 | 114.0 | Bessemer steel. |
| 5. | Flanged mine rails, 12 lb. per yard | 48.6 | 87-135 | 353-547 | 4.3 by 4.7 | 117.0 | |
| 6. | Flanged mine rails, 8 lb. per yard | 54.0 | 113-139 | 330-375 | 4.3 by 4.7 | 88.0 | |
| 7. | Round bars, 1.2 in. in diameter | 38.3 | 89 | 327 | 5.1 by 5.1 | ... | |
| 8. | Round bars, 1.7 in. in diameter | 40.3 | 43.5 | 287 | 5.1 by 5.1 | ... | |
| 9. | Square bars, 0.8 in. square | 42.0 | 82 | 165 | 5.1 by 5.1 | ... | |
| 10. | Square bars, 1.4 in. square | 28.8 | 51 | 335 | 5.1 by 5.1 | ... | |
| 11. | Channels, 1.57 x 0.79 x 0.2 in | 63.50 | 98 | 187 | 5.1 by 5.1 | ... | |
| 12. | Channels, 1.18 x 0.59 x 0.16 in | 111 | 105 | 154 | 5.1 by 5.1 | ... | |
| 13. | Tees, 1.2 x 0.16 in | 136 | 82 | 110 | 5.1 by 5.1 | ... | Bessemer steel with elastic limits from 23.5 to 28 tons per square inch. |
| 14. | Tees, 1.38 x 1.8 in | 68.2 | 88.5-92 | 155 | 5.1 by 5.1 | ... | |
| 15. | Flats, 2.35 x 0.4 in | 33.3 | 98 | 330 | 5.1 by 5.1 | ... | |
| 16. | Flats, 1.95 x 0.4 in | 41.5 | 106 | 294 | 5.1 by 5.1 | ... | |
| 17. | Flats, 1.5 x 0.32 in | 52.0 | 105 | 176 | 5.1 by 5.1 | ... | |
| 18.* | Sheets, 42 x 95 x 0.09 in | 84.0 | .. | 388 | 7.9 square. | ... | |
| 19.† | Sheets, 51 x 147 x 0.22 in | 95.0 | .. | 450 | 33.5 by 15 by 4.7 | ... | |
| 20.‡ | Sheets, 48 x 88 x 0.1 in | 80.0 | .. | 415 | 6.7 square. | ... | |

* Three sheets were rolled from each billet. † One sheet was rolled from each billet. ‡ Three sheets were rolled from each billet.

### Determination of Motor Power.

Such results as the above are of considerable assistance in settling the correct size of the motor for a new mill for a certain required output of similar sections. Taking as an example the result for the 24-lb. flanged mine rails given in the table under reference No. 2, it will be seen that 41.8 kw. hours per ton are required with an output of 135 tons per day. The total energy required per day of 10 working hours is therefore 5640 kw. hours, and the mean output of the motor is 564 kw. Making due allowance for the efficiency of the motor, the average horsepower of the motor given during the day will be 700. It would, however, be necessary to increase the average power of the motor considerably, and the amount of the increase necessary can only be found by careful consideration of the arrangement of the mill, of local conditions, and by previous experience. The mill from which the results referred to above were obtained was driven by a motor capable of giving 1200 b.h.p. continuously.

It is not merely sufficient to dimension the motor so as to deal with the average power required, making due allowance for interruptions in working and so forth, but it must also be capable of giving as an overload the maximum power required. A case was cited in which the maximum power taken by the motor was 650 kw., while the average power was 368 kw. This corresponds to a maximum output of 810 hp., and an average output of 460 hp.

A considerable margin should be allowed between the maximum power which is probably required and that which the motor can give, as the maximum power required frequently occurs toward the last passes when the material is becoming cold, and a comparatively small variation in the temperature of the material is found to have a very considerable effect on the power required for rolling. This, of course, assumes that the number of passes in the case of the new mill is about the same as that for the old mill, and that the drafts are very similar. Should heavier drafts, however, be taken in one or two passes of the new mill, the power must be correspondingly increased. In any case, experience shows it to be desirable that the motor should be able to give as a maximum overload a torque corresponding to twice its normal full load rating.

### Flywheels.

If no flywheel were used, a motor of larger size than that which corresponds to the average power would have to be installed in order to deal with the maximum power, but the flywheel will so reduce the maximum power which the motor has to give, that the size corresponding to the average power can be installed. The size of the motor cannot, of course, be reduced below this limit, although in some cases it is of advantage to provide a still heavier flywheel in order to equalize the power taken from the supply mains. With a direct current motor the necessary fall in speed can be obtained by using a compound winding, but with a three-phase motor a resistance must be inserted in the rotor circuit, which increases the slip of the motor. Records taken on a 1200-hp. three-phase motor show that the flywheel has reduced the maximum power which the motors is required to give from 1980 hp. to 1200 hp., while the maximum variation in speed was from 163 rev. per min. to 152 rev. per min., about 7 per cent. variation. A flywheel is most suitable for equaliz-

* From a paper read at the Middlesbrough, Eng., meeting of the Iron and Steel Institute, September 30, 1908. Mr. Koettgen is managing director of the Siemens Brothers' Dynamo Works, Ltd., London, Eng., with which Mr. Ablett is also connected.

ing fluctuations in power where the maxima only last a very short time, and where there is time between successive maxima for the flywheel to regain its speed. Should the maxima last a long time a much heavier flywheel is required, because a much larger amount of energy has to be given up. In the case of a looping mill where the metal may be in the rolls for several minutes, it is practically impossible to obtain any equalization with the aid of a flywheel and the motor must be large enough to give the maximum power required.

The flywheel must not only be capable of dealing with the fluctuations of energy required for each pass, but also the total energy which it had to give up as it drifted down in speed in order to make up the balance of the energy which it was not able to regain in the interval between the passes. Such a drifting down in speed is very clearly shown in passes 1 to 5 of a roughing mill of which a record was taken, and the amount of energy which was given up and regained at each pass is shown in table II:

TABLE II.

| No. of Pass. | Speed at commencement of pass. Revolutions per minute. | Speed at End of pass. Revolutions per minute. | Energy given up by flywheel during pass. Horsepower seconds. | Energy regained by flywheel between passes. Horsepower seconds. | Difference. | |
|---|---|---|---|---|---|---|
| | | | *Roughing Rolls.* | | | |
| 1 | 163 | 159 | 1700 | 300 | .... | —1400 |
| 2 | 159.8 | 157 | 1150 | 200 | .... | — 950 |
| 3 | 157.5 | 154 | 1450 | 650 | .... | — 800 |
| 4 | 155.5 | 153 | 1100 | 200 | .... | — 900 |
| 5 | 153.6 | 152 | 600 | 2950 | + 2350 | .... |
| 6 | 159 | 156.5 | 1050 | 1450 | + 400 | .... |
| | | | *Finishing Rolls* | | | |
| 1 | 160 | 157 | 1300 | 750 | .... | — 550 |
| 2 | 158.8 | 158.3 | 200 | 750 | + 550 | .... |
| 3 | 160.3 | 159.1 | 300 | 650 | + 350 | .... |
| 4 | 160.5 | 159.5 | 450 | 950 | + 500 | .... |
| 5 | 161.8 | .... | .... | .... | .... | .... |

The table shows that while in the heaviest single pass the flywheel had only to give up 1700 hp. seconds, yet owing to the drifting down in speed which ocurred during the first five passes in the roughing rolls the flywheel had to give up a total of 4050 hp. seconds to make up the balance of the energy which it could not regain between the passes. In proportioning a flywheel, therefore, for a definite case, such a possible drifting down in the speed should not be overlooked.

Where a three-phase motor is used, and the fall in speed is obtained by placing a slip resistance in the rotor circuit, a loss of power takes place in the slip resistance which is proportional to the slip required and to the power which the motor is giving. No such loss of power takes place in the case of a direct current motor where the fall in speed is obtained by using a compound winding. In consequence of this, with a three-phase motor, a less fall in speed is usually allowable than is the case with a direct current motor, and consequently a heavier flywheel has to be used to give out the same amount of energy.

It is sometimes stated that the loss of power which occurs in providing a slip resistance for a three-phase motor in order to enable the flywheel to reduce the peaks which the motor has to carry, can be avoided by providing an automatic arrangement by which the slip resistance is only connected in the rotor circuit when the load is such that the current taken by the motor exceeds a predetermined limit, and is switched out again when the maximum load is passed.

There is not, however, the saving in efficiency which would appear at first sight, as the slip resistance remains connected in circuit during the periods of maximum load (when the power lost is also maximum) whether it is provided with an automatic arrangement or not, and it is only switched out of circuit during the periods of minimum load when the loss of power is comparatively small. It cannot be said generally whether the employment of an automatic slip resistance is an advancing or not; each particular case must be judged on its merits.

### Output of an Electrically Driven Mill.

It is almost invariably found that when a steam engine driving a rolling mill is replaced by an electric motor a greater output is obtained from the mill. The rail mill from which results Nos. 1 to 6 in table I were taken was installed for an output of 100 tons per day, but the results show that this figure has been considerably exceeded, and 150 tons per day have been obtained a good many times. The reason a greater output can be obtained from an electrically driven mill than from a steam driven mill is that the speed of the electrically driven mill remains very nearly constant, whatever work it is doing, and in this case the speed of the electrically driven mill was much increased when the electric drive was installed. The rails were handled by a lever man and a catcher with tongs, and it was found that when the mill was driven by steam at 100 rev. per min., the speed at which the rails left the mill continually varied, so that they were not easy to catch, as the catcher never knew at quite what speed they were coming. When the mill was driven electrically the speed was increased to about 140 rev. per min, and the men found it was comparatively easy to catch the rails, because, although they were leaving the rolls at a higher speed, they always came at the same speed. The men who were working on piece work approached the management to have the speed of the mill still further increased, and it was then increased up to a maximum of 163 rev. per min., it being necessary to speed up the gas engine driven alternators in the power house.

The fact that the speed did not fall as much as 10 per cent. even at the heaviest pass was also found an advantage in enabling a large output to be obtained, as there were no delays, such as took place when the steam engine was almost stalled by a heavy pass. The steady speed obtained with electrical driving is partly due to the fact that the overload capacity of an electric motor is much greater than that of a steam engine, and partly to the fact that an electric motor responds instantaneously to any increased demands for power. An electric motor which is capable of giving, say, 1000 hp. continuously can work very economically when only giving 700 hp. or so, and is quite capable of giving a torque corresponding to 2000 hp. instantaneously. It thus may be said to have an overload capacity of over 180 per cent. An economical steam engine, on the other hand, only has an overload capacity of about 25 per cent. more than its normal rated horsepower. A steam engine can, of course, be made to give a much greater overload than this, but it would not work economically when giving the average power required.

### Drafts Taken with a Reversing Rolling Mill.

Recently several tests have been made on reversing blooming mills to ascertain the work required to roll out ingots to different elongations. The electrical equipment for a reversing mill may be briefly described as consisting of an Ilgner flywheel converter set and a reversible mill motor. The Ilgner flywheel converter set, which runs continuously in one direction and requires practically constant power, is driven from the source of supply, and consists of one or more variable voltage dynamos which supply current at varying voltage to the reversing mill motors, and a flywheel which equalizes the variations in the power required by the reversing mill motors. This electrical equipment is working economically in the sense that the greatest output is obtained for a given capital outlay, if the drafts are taken so that the motor is giving constant torque at each pass, this torque being the maximum working torque of the motor.

The curve in Fig. 1 is drawn to show a comparison of two methods of rolling a 3-ton ingot measuring 19½ x 19½ to 17½ x 17½ down to 6 x 4 rail billets in 11 passes. This curve is taken from the results given by Dr. Karl Wendt of Georgsmarienhuette in a recent paper. The curve given by Dr. Wendt related to ingots weighing 4850 lb., but as the ingot in the present case would weigh about 6700 lb., the ordinates of the curve, which represent the work required for elongation, are all increased in the proportion of 6700 to 4850. The full lines which are drawn horizontally show the elongations and work done, corresponding to drafts, which are so arranged that the motor gives equal torque at each pass, this torque being

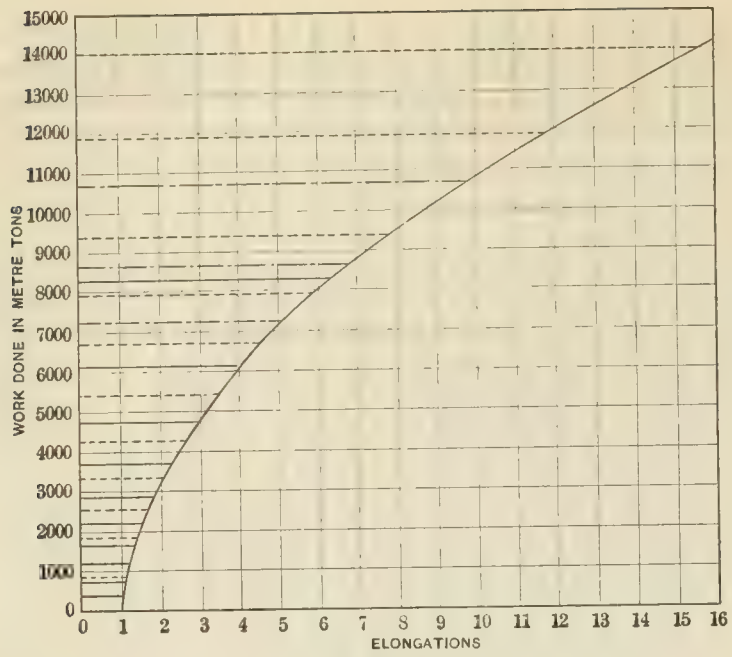



Fig. 1.—Curves for Blooming 3-Ton Ingot.

Full lines show the elongation and work done where the torque in each pass is constant and equal to 90 ton-meters. Chain-dotted lines show the elongation and work done where the torque in the last passes is reduced from 90 ton-meters to 55 ton-meters. Dotted lines show the elongation and work done where the drafts in each pass are selected arbitrarily.

90-ton meters. Table III. shows the drafts taken to obtain this result:

TABLE III.

| | Dimensions in inches. | Torque. Ton-meters. |
|---|---|---|
| — | 19½ by 19½ to 17½ by 17½ | — |
| 1st pass | 18 by 19½ to 17½ by 17½ | 90 |
| 2d pass | 16.8 by 19½ to 16.8 by 17½ | 90 |
| 3d pass | 16.8 by 18.2 to 16.8 by 17½ | 90 |
| 4th pass | 16.8 by 16.4 | 90 |
| 5th pass | 14.6 by 16.4 | 90 |
| 6th pass | 12.6 by 16.4 | 90 |
| 7th pass | 12.6 by 13.2 | 90 |
| 8th pass | 12.6 by 10 | 90 |
| 9th pass | 9.4 by 10 | 90 |
| 10th pass | 6 by 10 | 90 |
| 11th pass | 6 by 4 | 90 |

The last two passes are shown as above merely for the purposes of comparison. In an electrically driven mill it would be found better to arrange them somewhat differently, in order to reduce the size of the flywheel converter set.

The dotted lines in Fig. 1 show the elongations corresponding to drafts in the case of a mill for which electric driving came under consideration, and where in working out the power required the torque was found to vary between very wide limits, as shown in Table IV:

TABLE IV.

| | Dimensions in inches. | Torque. Ton meters. |
|---|---|---|
| — | 19½ by 19½ to 17½ by 17½ | — |
| 1st pass | 19½ by 16½ to 17½ by 16½ | 186 |
| 2d pass | 19½ by 13½ to 17½ by 13½ | 164 |
| 3d pass | 16½ by 13½ | 110 |
| 4th pass | 13½ by 13½ | 102 |
| 5th pass | 13½ by 10½ | 82 |
| 6th pass | 13½ by 8 | 82 |
| 7th pass | 10½ by 8 | 73 |
| 8th pass | 8 by 8 | 53.5 |
| 9th pass | 8 by 6 | 46.5 |
| 10th pass | 8 by 4 | 53.5 |
| 11th pass | 6 by 4 | 33 |

It will be seen by comparing Tables III and IV, that while in the first case the ingot is rolled out in 11 passes by a motor capable of giving 90-ton meters torque, in this latter case the motor was required to give 186 ton-meters torque in the first pass, and this gradually fell to 33 ton-meters torque in the last pass.

The curves on Fig. 2 show a comparison between the torques and elongations in the two cases, the full lines representing the rolling out of the ingot when the motor is giving constant torque, and the dotted lines the second case.

The driver of an electrically driven mill has the ammeter in the mill motor circuit always in front of him, and as the reading of the ammeter is exactly proportional to the torque which the motor is giving so long as the field of the motor remains constant, he is able to see when the drafts are being so taken that the motor is giving its maximum torque—that is to say, the greatest possible output is obtained from the equipment. In order to facilitate this the position of the ammeter needle corresponding to the maximum working torque of the motor can be suitably marked. While the drafts with an electrically driven reversing mill can be so taken as to get the maximum output of the mill without much difficulty, it is impossible to attempt such a thing with a steam driven reversing mill, as there is no ready means of showing the torque which the steam engine is giving, and the question of attempting to take the drafts, so as to obtain the maximum output, becomes a matter of long experience—that is to say, trial and error—for if too heavy drafts are taken the engine is stalled, and if the drafts

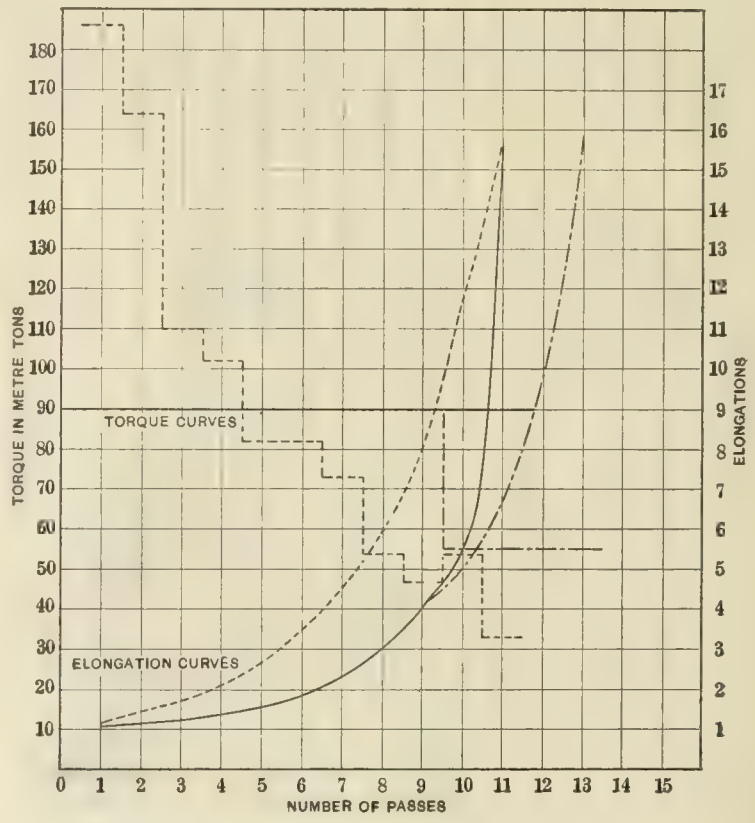



Fig. 2.—Curves for Blooming 3-Ton Ingot.

Full lines show the elongation and torque where the torque in each pass is constant and equal to 90 ton-meters. Chain-dotted lines show the elongation and torque where the torque in the last passes is reduced from 90 ton-meters to 55 ton-meters. Dotted lines show the elongation and torque where the drafts in each pass are selected arbitrarily.

are too light the proper output is not obtained from the mill.

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**Discussion.**

A. Lamberton remarked in discussing the paper that there is no question of the propriety and utility of driving rolling mills by electricity. Where the motor runs constantly in one direction this would undoubtedly be an ideal method of driving, but some question arises as to the complicated installations required for working reversing mills. He indicated a method of driving a reversing mill by steam, which he believed could compete with an electrical drive. The common way of driving a reversing mill is by clutches, but the shock is tremendous. He would still use the clutch arrangement but with some modifications. He would put in two friction clutches simply to start the masses from rest slowly. As soon as the reversing mill came within 5 per cent. of the normal speed a positive clutch went in automatically. Since the two were running at almost the same speed the latter went in almost without any shock. He believed there were important possibilities in this construction, of which more would be heard.

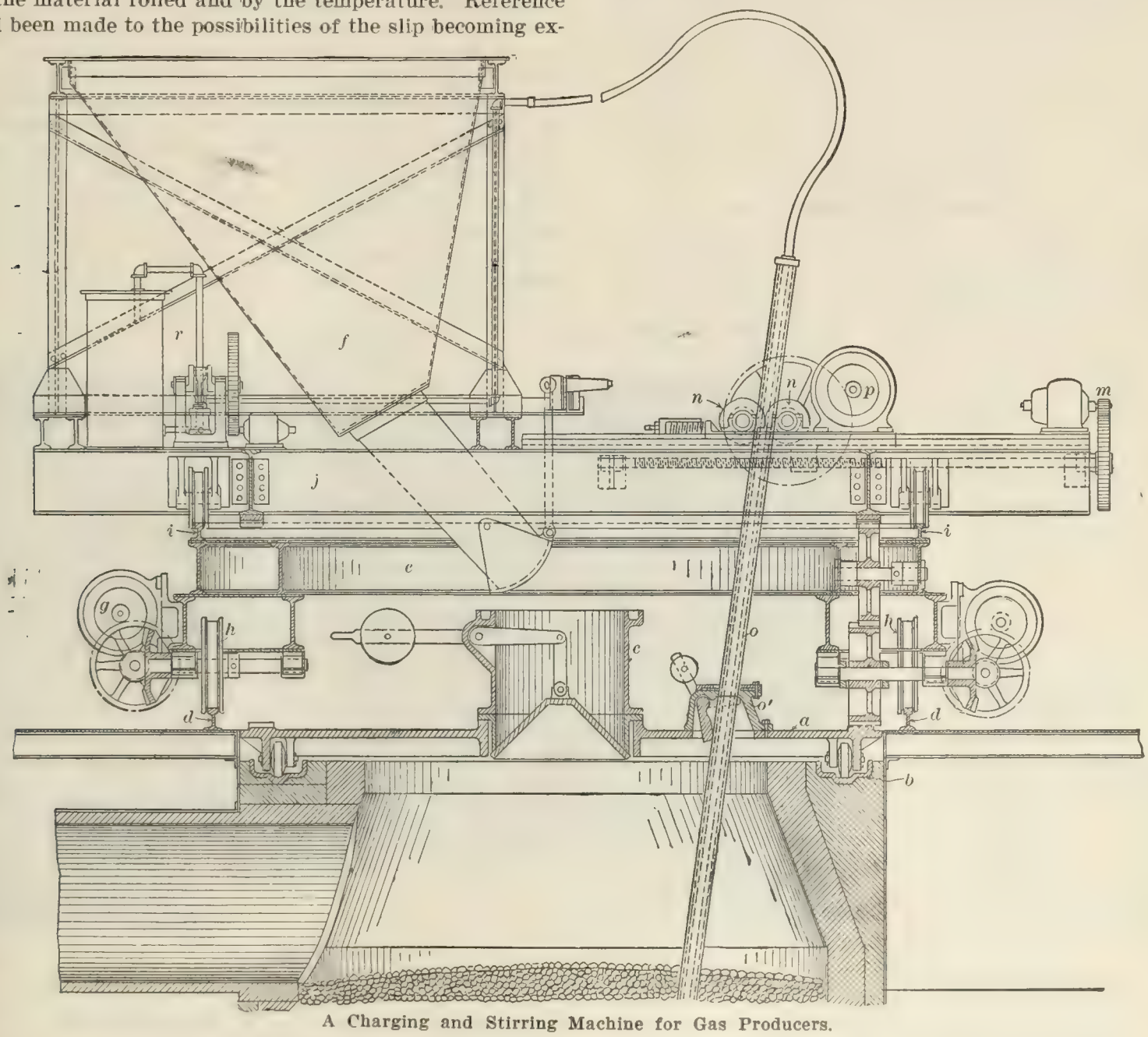
A. Greiner of the Cockerill Works, Seraing, Belgium, said that the coupling of electric motors to rolling mills is absolutely indispensable. In Germany a dozen plants are being built of from 8000 to 13,000 hp. after a thorough study of the question of electric drive. In some cases the current is produced by steam turbines, and in other cases by gas engines. Reckoning coal at its present price and allowing 15 per cent. for depreciation of machinery the conclusion was reached that electricity is nearly as economical as steam, in spite of much higher

cost of installation, when the electricity is produced from the waste gases of blast furnaces. This cost goes up appreciably when coal has to be burned to supply current. The rolling of a ton of ingots cost 12 cents in the first instance and about 18 cents where coal is used. In a three-high mill driven by a motor of 1000 hp. the change of velocity went up to 20 per cent. on finishing passes. The speed variation of 7 per cent. referred to in the paper he considered too small. A continuous current motor is to be preferred for rolling mill driving, as it is better able to stand high overloads.

C. A. Ablett, one of the writers of the paper, replying to an inquiry for the actual cost of electric drive, said that the paper gave kilowatt figures from which costs could be figured out according to varying conditions. Comparisons of the cost of rolling electrically and by steam are not easy as between different companies, since the power required is affected greatly by the composition of the material rolled and by the temperature. Reference had been made to the possibilities of the slip becoming excessive, reducing the output. If there is a considerable interval between the passes there is no necessity for an automatic slip regulator.

## A Charging and Stirring Machine for Gas Producers.

The S. R. Smythe Company, Pittsburgh, Pa., has devised a machine for charging gas producers and for stirring the coal during the gasifying operation, patents having been granted to Horace E. Smythe and Edmund W. Shinn. The apparatus is equipped for traveling along a line of gas producers and consists in the main of a car which is motor driven and carries a revolving platform and other mechanism. It is provided with an operator's cage in which are controllers connected to the various motors, and it is calculated that one man operating the machine, with the addition of one gas maker, can feed the coal, poke the charge and operate a battery of 10 to 12 producers. In the illustration a gas producer is shown with a revolving top plate *a*. A circular channel *b* on the top of the producer body constitutes a track for the wheels of the top plate and a water pan for a gas seal. The car *e* travels over the producers on the rails *d*. It carries the hopper *f* having an inclined bottom and a spout through which fuel is delivered into the hopper *e*. The motor *g* drives the car through spur gears, a shaft and bevel gears, the latter being connected with the wheels *h*.




A Charging and Stirring Machine for Gas Producers.

The car *e* supports a circular track *i* on which travel the wheels of the revolving carriage *j*. The trolley supports a radially movable bed plate provided with the lug *k*, in which the radially arranged screw *l* works. The screw is rotated by the motor *m* and intermediate gearing. The bed plate carries the rollers *n*, one of which is fixed and the other movable. The carriage of the latter gives the rotary motion of the poker *o* while in the fire, and the rolls, which are held in tension by spiral springs, secure the poker and give it the vertical motion for poking the fire to any depth that may be required. The rollers are grooved so as to form a circular pass between them for the reception of the poker, which is actuated

**Cut Gears of Large Size.**—The Fawcus Machine Company, Pittsburgh, has recently furnished eight cut gears of unusual size, two of the largest being nearly 14 ft. in diameter, with 88 teeth, 5½-in. pitch and 18-in. face, the heaviest weighing about 25,000 lb. They are to be used in heavy sugar cane crushing machinery, especially designed for a plantation near Havana, Cuba. The great size of the gears is required by the heavy load which they will be obliged to carry, as they will transmit 400 hp. When the order was received by the Fawcus Company a special machine of 20 ft. diameter and 42-in. face, capable of cutting practically any pitch, was designed and built in its own shops. Subsequently, it was found that the work could be handled with the old equipment, and the contract was completed in about two months' time. The gears were made in four cast steel segments which were bolted and keyed to an iron spider. The pinions are of solid steel.

vertically by the motor *p* and intermediate gearing. The poker is hollow, and two flexible tubes, leading to its upper end, one of them being connected with a tube which extends to the lower end of the hollow in the poker, convey cooling water, supplied from the pump and tank at *r*.

In order to poke a charge in the gas producer the car, with the poker elevated above the top plates of the producers, is moved along the rail until the axes of rotation of the top plate and the trolley *j* are in alignment. Mechanism is provided for adjusting the poker to the required position above any poke hole. In the operation of poking, the top plate and the trolley *j* are given a rotary movement. When the charge has been sufficiently poked the motors involved in the operation are stopped and the poker is lifted from the poke hole; the car is moved so as to bring the trolley over the top plate of another producer and the operation is repeated. The machine accomplishes the poking of the entire charge from center to circumference to any desired depth. The poker has a zigzag movement in the charge as it travels in a circle with the poke hole, the latter serving as a fulcrum for the poker.

The S. R. Smythe Company is about to construct a machine after the design above detailed, and will install it in connection with an existing gas producer plant.

## The Columbia Hydraulic Ram.

One of the features of the hydraulic ram made by the Columbia Steel Company, Portland, Ore., is the construction of the ram body with relation to the waste valve, which gives a direct passage, insuring a smooth, continuous movement of the water until it has left the waste valve. By referring to Fig. 1, a cross section of the ram, it will be seen that the ram body is so designed that when the waste valve is open the drive water has a straight shoot through the ram, which means the elimination to the greatest possible extent of the loss by friction so excessive in rams having circuitous passages through their waste valves. This absence of friction allows the drive water to attain a high velocity, causing a quick, sharp closing of the waste valve, which results in the utilization of the maximum amount of power in the water with the minimum amount of waste. Another feature of the construction is the placing of the delivery valve immediately above the waste valve, so that the course of the water through the delivery valve to the air chamber is direct and automatically deflected by the shape and position of the waste valve. Still another feature is the motion of the waste valve, whereby a supply of air is taken into the upper portion of the ram body with every stroke. This furnishes a positive air supply and eliminates the troubles of water logging so prevalent in rams where the old style snifter valve is used.

The drive pipe, which is of varying length, is attached to the ram body by a flanged joint. The waste valve *a* is suspended by its curved arm from a bearing *b*. The spindle *c* carrying the valve *a* also has attached to it by means of an adjustable collar a flat coil spring *d*, which engages on a log or ear on the flange of the frame body. By moving this set collar the spring may be set to any desired tension to meet varying conditions of head and speed. The discharge valve *e* allows the water to enter the air chamber whence it is carried to its destination by a pipe connected to the opening *f*.

The operation is as follows: The drive water flows through the open waste valve *a* until the required velocity is attained, when it has sufficient force to close the valve. During its flow the water has gathered a certain amount of energy. This energy (momentum) is liberated when the flow is suddenly arrested, and will then exert a force sufficient to overcome the discharge pressure on top of the valve *f* which now opens and allows a portion of the water to enter the air chamber. While the valve *a* is closing, it rotates the collar on the spindle *c*, placing the spring *d* in tension, until the flow through the discharge opening is completed and the discharge valve closes, when the water in the drive pipe comes to rest and the direction of the moving column is reversed, causing a tendency to a vacuum in the upper portions of the ram body. At this instant the tension of the spring *d* assists the partial vacuum in opening the waste valve *a* and admits a supply of air imediately under the discharge valve *e* ready to be discharged into the air chamber on the next stroke.

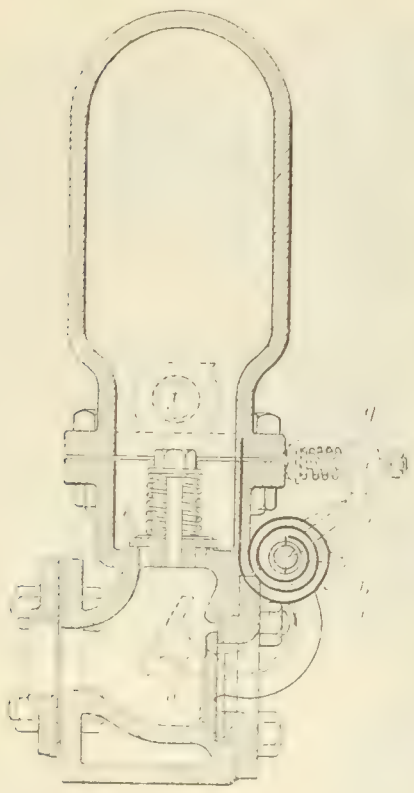


Fig. 1.—Vertical Section of the Columbia Hydraulic Ram.

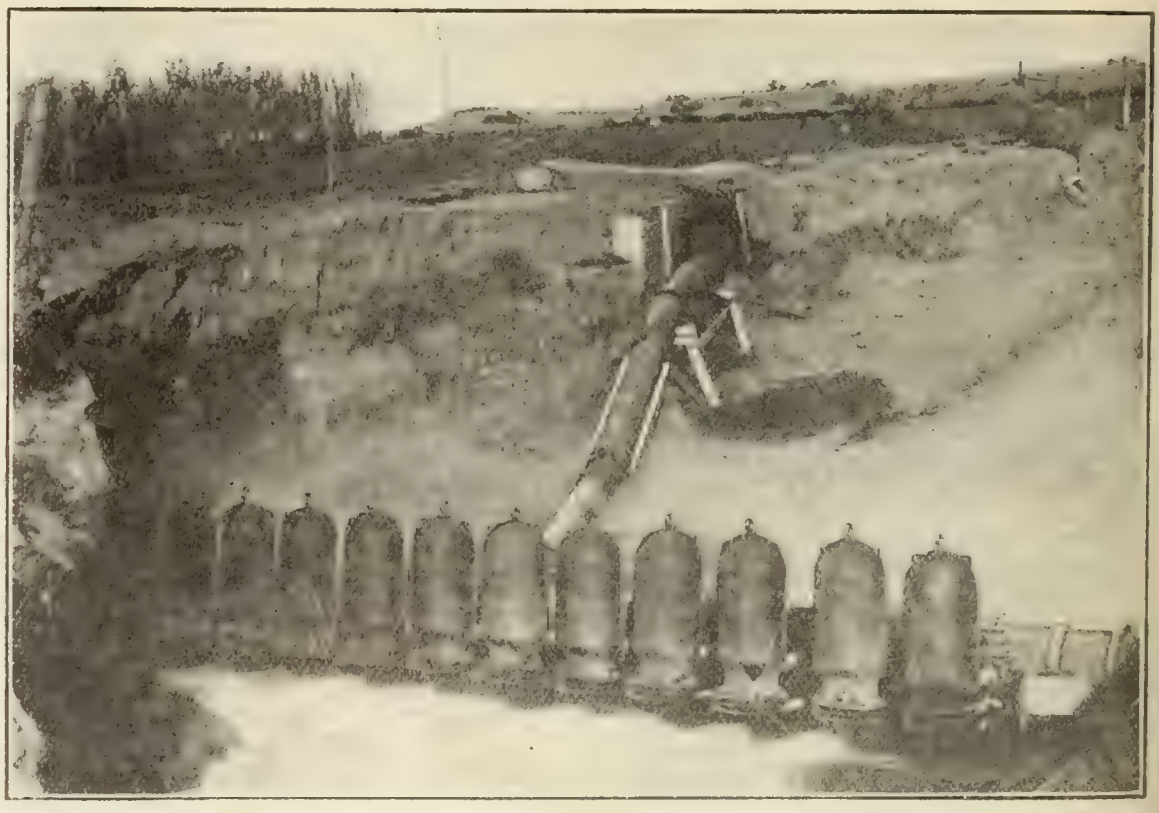


Fig. 2.—An Installation of the Columbia Rams for Irrigating in the Yakima Valley, Washington.

Where the ratio of fall to lift is small and the rebound in the water is consequently slight, the auxiliary spring is attached to an upper arm *g* projecting from the hub of the waste valve on the spindle *c;* this is called the rebound or low ratio attachment.

A recent installation of Columbia rams at Sunnyside, in the Yakima Valley, Washington, is shown in Fig. 2. It consists of 11 6-in. rams, operating under a fall of 37.6 ft. and a lift of 143.11 ft. from the rams. Under these conditions, with a consumption of 5.11 cu. ft. per second of drive water, 1.15 cu. ft. of water per second is lifted to the point of delivery. This is stated to be a higher efficiency than has been attained by a water wheel directly connected to a centrifugal pump, hence the claim that this is the most economical and efficient machine for irrigating purposes where a moderate fall can be obtained.

The Columbia ram is made in sizes having drive pipes of from 1 to 6 in., and can be operated under heads of from 2 to 40 ft., and will elevate 40 ft. for every foot of fall.

## Customs Decisions.

### Steel Forgings.

After a delay of two years the Board of United States General Appraisers October 31 handed down a decision sustaining a protest filed by Thomas Prosser & Son, New York, regarding the rate of duty to accrue on importations of merchandise alleged by the Government to be dutiable as "manufactures of metal" at 45 per cent.

It was shown from the testimony that the articles in dispute consist of crank axles, piston rods, cross heads, crank pins, crank shafts and connecting rods. The articles are entirely of steel and are formed or produced by hammering or pressing. The importers set up the contention that the merchandise should be allowed to enter at the rate of 35 per cent. under the provision in the tariff act for "forgings." General Appraiser Fischer, who writes the decision for sub-board No. 2, finds that the weight of evidence is in favor of the importers and their contention is accordingly sustained.

Two years ago when the same sub-board had reached a decision favorable to the importers, the full board of general appraisers took the determination of the question out of the jurisdiction of the sub-board and thereupon proceeded to make a decision against the Prosser firm. The importers then appealed to the United States courts, alleging that the action of the full board in interfering with the decision of the sub-board was illegal. This contention the courts upheld and the determination of the issue was remanded for decision to the sub-board originally having jurisdiction.

### Steel Bowls for Separators.

The Board of General Appraisers has disposed of a customs controversy concerning rate of duty to accrue on importations of steel hoods or bowls for cream separator machinery by holding that the merchandise is dutiable at 4 7-10 cents per pound as "pressed, sheared or stamped steel shapes," or as "steel in all forms or shapes not specially provided for, valued above 16 cents per pound." F. J. Arend, New York, the importer, was able to show by uncontradicted testimony that the bowls or hoods are made by pressing from a sheet or plate of steel, and that no other labor is expended upon them after leaving the press than to coat them with tin. The testimony further shows that this tinning was done solely for the purpose of protecting the bowls from atmospheric influences and that it is removed in the process of the further manufacture necessary to prepare the articles for their ultimate use as parts of cream separators The inability of the Government to controvert successfully the evidence submitted by the importers leads the board to sustain the protestant's contention for the lower duty The classification imposed by the Government is reversed.

### Welding Material.

Metal and borax welding material has been decided by the Board of Appraisers to be dutiable at the rate of 45 per cent. under the provision in the tariff for manufactures of metal, or of which metal is the component material of chief value. The Chicago Metal Reduction Company set up the claim that the article is dutiable either as a mineral substance or else as an enumerated or unenumerated article under section 6. The board finds that the classification complained of is correct and that the return made by the collector of customs must stand.

Several routine decisions were handed down during the past week by the board affecting the classification of metal importations. The board sustained protests as follows: The Pickering Governor Company, Hartford, Conn., steel strips; J. W. Hampton, Jr., & Co., Philadelphia, steel strips; J. C. Metzger & Co., New York, steel strips; Hermann Boker & Co. and George Nash & Co., New York, cold rolled smoothed only steel strips. Claims overruled included Joseph F. McCoy & Co. and others, New York, steel in strips; United Metal Box Corner Company, strip steel coated with tin; Borgfeldt & Co., Baltimore and Newport News, dog collars of metal and leather.

### Copper Cash Swords.

A controversy regarding the classification to be awarded so-called "copper cash swords" was settled by the Board of United States General Appraisers when it was decided that articles of this description imported by Soy Kee & Co., New York, are dutiable properly at the rate of 45 per cent. under the provision in the tariff act for "articles of metal not specially provided for." The importers contended that the classification of the articles was erroneous and that the swords should be admitted to free entry as "coins," or, if dutiable, they should be assessed at 35 per cent. as "swords," or at 10 or 20 per cent. under section 6, which provides for unmanufactured or manufactured articles. In denying the contentions of the importers, General Appraiser Fischer, who writes the decision for the board, says that swords in question are made up of a number of copper coins corded together and securely fastened around an iron rod or bar covered with metal foil. The general appraiser acknowledges that the articles are in the form of swords. At the same time the chief contention of the importers is for duty as "coins," which claim the board holds to be without merit. The classification returned by the collector is therefore upheld and the protests overruled.

## Advance in Freight Rates.

Effective early in November the railroads operating west of Chicago have made an advance of 60 per cent. in rates on iron and steel in carloads, moving from Chicago to the industries of northern Illinois, as far as the Mississippi. The rate in this territory was formerly 5 cents per 100 lb., but has been advanced to 8 cents. There has also been an advance of 1 cent per 100 lb. in the rate on iron and steel from Chicago to East St. Louis, making the rate 9 cents instead of 8.

The railroads east of the Mississippi have "checked in" general advances in both class and commodity rates, the latter covering nearly all of the important commodities carried. The lines west of the Mississippi have checked in a general advance in commodity rates.

The new tariffs are ready to be printed and filed with the Interstate Commerce Commission.

The Grand Trunk Railway Company of Canada will formally take over the electrified International Tunnel between Sarnia, Ont., and Port Huron, Mich., November 12. The work was completed some months ago by the Westinghouse Electric & Mfg. Company, which has since been carrying on the operation of trains through the tunnel by electricity. The electrification of the St. Clair tunnel has attracted the attention of engineers in all parts of the world. The installation of the electric plant cost $500,000, including the power plant, wiring, locomotives and other equipment for an overhead wire power supply system. Four heavy electric locomotives have been built for the work. They are among the largest of their kind in the world, have a tractive power 30 per cent. greater than the steam locomotives and can haul trains at an average speed of 10 miles an hour over the heavy tunnel grades. The new system also insures safety from noxious gases, which is more important than efficiency or speed, as the St. Clair tunnel, since its completion in 1891, has gained an unenviable notoriety by the number of fatal accidents which have occurred in it.

The E. Keeler Company, Williamsport, Pa., has been awarded contract for 12 410-hp. water tube boilers for the Isthmian Canal Commission. These boilers, which will be installed in two plants, one to be located at Gatun and the other at Miraflores, will be used to operate the cable ways and other machinery for building the locks and dams at those points. This is said to be the largest order for boilers placed by the Isthmian Canal Commission, and is the first prominent plant to be installed on the Isthmus. The boilers will be used in operating the canal after construction work is finished. The general contract for the work was taken by the D'Olier Engineering Company, Philadelphia, Pa., and includes Foster superheaters and Ajax shaking grates.

# THE IRON AGE

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## The Iron Market 12 Years Ago.

On November 4, 1896, the business interests of the United States celebrated tumultuously the victory for sound money, won at the polls on the day preceding. In *The Iron Age* of November 5, just 12 years in advance of the present issue, were the first of the well remembered chronicles of that time—announcements of orders for iron and steel that had been made absolute because the election result had removed the condition originally attached to them. The memory of the average producer or dealer still retains so perfect an impression of the tenor of the industrial news that filled the newspapers 12 years ago that no citations from the record are necessary. Plants were reported as starting up in every quarter; working forces were increased; projects whose carrying forward was contingent on the defeat of free silver began to show life. In the iron trade, working forces were increased and orders flowed in from a variety of sources immediately following the election. There was, in fact, so hilarious a campaign of prosperity on paper that the necessity of an appeal for moderation soon became apparent. In *The Iron Age* of November 19, just two weeks after the first effects of the election upon the iron trade had been bulletined, this note of warning was sounded:

> There is a widely prevalent feeling in the iron trade that the hysterical "booming," to which many have lent themselves lately is doing vastly more harm than good. It is raising expectations which are doomed to meet with disappointment. In fact, there is an undertone of that kind even now. There is being urged in favor of an early and substantial rise in prices that the whole country is bare of stocks and that the requirements for replenishing are alone sufficient to make a rushing demand. It is urged, too, that the country is generally down at the heels and ragged, so far as repairs and renewals of equipment and plant are concerned. People point to the rise in cereals and discourse about the effect which that must have upon buying on the part of farmers.
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> All this is conceded and is the foundation upon which the expectation of a strong revival in business rests. The only questions are, how soon the improvement will come, how much headway it will secure, and how long it will last. The sanguine insist that it is coming now and is going to be tremendous. The conservatives expect a gradual and moderate improvement. They say that it takes time to finance new undertakings, and that, above all, this is not the season in which the iron trade can expect much. . . . If matters shape themselves favorably it is the second half of January, February and March which brings out the spring and early summer requirements and starts the mills running double turn.

The report of the American Iron and Steel Association, covering 1896 and the early months of 1897, commenting on what actually did happen after the spurt which followed even so momentous an election, says that the year closed with business in all lines no better than it had been at its beginning; that after November and December had seen the release of the pent up orders of the preceding months of uncertainty and anxiety, no fresh tide of activity and prosperity came to take their place. Prices fell steadily, and in the spring months of 1897 were lower than they had ever been, while wages were very generally reduced. In December, 1896, occurred the dissolution of the wire nail pool, and in the same month the billet pool came to an end. In February, 1897, came the sensational collapse of the steel rail pool, and in May the beam pool went to pieces. Bessemer pig iron sold in May at $9.25 a ton, and steel billets touched $13.85. The whole year 1897 was marked by the painful effort of the iron and steel trades to establish themselves on a sound basis after so remarkable a succession of disturbing events. Measured by pig iron production the year showed an increase of about 12 per cent. over the starveling rate of 1896. How gradual was the widening of consumption appears from a pig iron production of 8,623,127 gross tons in 1896, 9,652,680 tons in 1897, 11,773,934 tons in 1898 and 13,620,703 tons in the boom year 1899. As against a 12 per cent. increase in one year following 1896, and 58 per cent. in three years, there was in a single year following the reaction of 1904 an increase of 40 per cent. in pig iron production, or to 22,992,380 tons in 1905.

This leaf from the iron trade history of later 1896 and earlier 1897 is reproduced chiefly to emphasize the contrasts between the conditions and the possibilities then and the conditions and possibilities now. Anything more revolutionary than the changes that have come over the American iron trade in the 12 years beginning with the November election of 1896 could scarcely be imagined. If there is one conclusion of general application to which the record points it is that while panics break in suddenly upon prosperity, there is no quick reverse sequence of panic and prosperity. A return to prosperity is more than a mere matter of declaration, and it may be slow-paced even when a measure of confidence has been restored and the fear of hurtful legislation removed.

## The Producer Gas Marine Engine.

Much optimistic discussion has appeared of late concerning the use of producer gas engines in large units for marine propulsion, based to an important extent upon the recent successful performance of the old British gunboat Rattler, which was equipped with this motive power for experimental purposes. The opinion has grown that the time is not far distant when the largest types of vessels will be using gas engines in place of steam, effecting great economy in fuel consumption, and, in the case of warships, giving largely increased radius of action and the important advantage of practically smokeless funnels. The London *Engineer* devotes the leading editorial of a recent issue to this subject, the writer taking so conservative a view of the problems facing engineers in the development of this type of marine engine as to seem extremely skeptical of early results in installations of large size. The logic of his argument appears to be well sustained by the facts he cites. While admitting that gas power will eventually become a definite integral part of marine engineering, he points out that the enthusiast is apt to lose sight of, or, at least, slur over the limitations of the gas engine and producer as at present constructed and by so doing renders a disservice to the cause of progress. While we may be quite certain that gas power will play an important part in marine engine development, we may be equally certain that the process will be slow and tedious. Evolution and not revolution is the keynote of this as of most other engineering problems, and the idea of very large war or merchant ships propelled by internal combustion engines of many thousand horsepower as an immediate possibility is a dream and nothing more.

The difficulties which must be overcome, according to this analysis of the status of the producer gas engine, are enumerated. In brief, the engine must be reversible, which is easily accomplished in small units through a reversing propeller or clutch and gearing, but up to the present time the largest size which has satisfactorily been made reversible is 80 b.hp. As to type of engine, the horizontal presents serious objections for marine purposes, because of the inaccessibility of the exhaust valve which present practice places at the bottom of the cylinder end, with the valve spindle pointing downward and requiring considerable vertical space, which would bring an important mechanism in the bilge of the ship even if the center line of the shaft could be raised sufficiently, which is very improbable. As was the case with the horizontal marine steam engine, radiating surfaces would be below the working platforms, making ventilation by the introduction of cool air a serious problem. From these difficulties the deduction is made that the vertical gas engine will have to be adopted, and the statement is made that much more experience is necessary with this type ashore before it can be adapted for marine propulsion. Then comes the problem of the size of cylinder, of which the writer says:

Many of the difficulties connected with gas engines are known to be a function of the size of the cylinder; below a certain diameter they do not exist, but they increase in magnitude and importance as this diameter is exceeded, and this feature, which is now universally recognized, has led many competent engineers to the view that it is better to accept an increase in the number of cylinders and limit their diameter rather than to court the troubles which lurk hidden in the larger sizes. How far this view will influence the development of the marine engine remains to be seen, and though the mind turns rather naturally against the idea of multiplicity of parts, we may in time get used to it, and contemplate quite calmly an arrangement with 20 or more cylinders on one shaft. Mr. Yarrow has shown that with petrol engines a boat can be successfully run with 20 cylinders, though not all on one shaft, and our submarine boats from the A to C classes, inclusive, have 16 cylinders capable of developing an aggregate of about 800 b.hp.

Apart from the objection of multiplicity of parts, an increase of the number of cylinders has many advantages. The variation of turning moment is considerable in an engine having, say, four cylinders, and a flywheel is necessary to insure steady running. Further, with a gas engine the mean pressure cannot be reduced to any great extent without danger of misfire, owing to the mixture being too weak; hence large variation in speed is out of the question with few cylinders.

To meet the requirements of a marine gas engine which shall compare favorably in control with our present steam engines, it would appear to be necessary to have a sufficient number of cylinders, so that reduction in speed may be first obtained to a certain extent by reducing the strength of the mixture, and afterward by cutting out one or more cylinders; but the number of cylinders left in action at the slowest speed which may be required must be sufficient to give a reasonably uniform turning moment. Weight will also be saved by an increase in the number of cylinders. This may appear paradoxical, but the reason is that the smaller the diameter of the cylinder the higher the speed of revolution at which the engine can be run. It is not always remembered, when reference is made to the extreme lightness which is obtained per horsepower in petrol engines that this is not because they are internal combustion engines, but on account of their extremely high speed of revolution.

At the other end of the scale the large slow running gas engine, using blast furnace or producer gas, where the mean pressure per square inch in the cylinders is not sensibly different from that obtained in petrol engines, the weight per horsepower is enormous. For the purpose of warships, where weight and space occupied are primary considerations, a large number of cylinders appears inevitable.

So much for the mechanical difficulties. In addition there are the thermal problems under which head come the design and operation of the gas producer. Of this the article states:

Any marine engineer who has inspected a shore installation of a gas plant designed for bituminous coal will at once realize that the very large space occupied by the apparatus for purifying the gas makes the adoption of such a plant impossible on board ship. With anthracite or coke the gas plant does not occupy excessive space, but probably no ship owner or naval authority would consent to be tied down to these fuels, especially in view of their limited supply as compared with steam coal. What is required is a gas producer which, without bulky or elaborate cleaning apparatus, can produce a gas satisfactory for the purpose from ordinary steam coal.

The position taken by the *Engineer* agrees with the opinions of numerous engineering experts on this side of the Atlantic. Dr. Charles E. Lucke, professor of mechanical engineering in Columbia University, recently said: "You cannot go in the market to-day and buy a gas engine that will drive a large ship. There are plenty of designers that will promise to build one, but engineering experience has proved that it is a long trip from designer to successful installation."

## The Unions' Right to Fine Their Members.

Much has been accomplished by the courts of the several States in the past year or two in establishing the limits within which difficulties between employers and their employees may be legally carried on in the attempt to secure settlement under the duress of strikes. The Massachusetts Supreme Court has just made another contribution to this class of legal precedent in a decision which determines the principles underlying the rights of the several parties where a labor union seeks to use the punishment of the fine in compelling its members to join in a strike, the court holding that the union may be enjoined from imposing a fine under these conditions on the ground that a third party, the employer, would be a sufferer by the action. The decision in a previous Massachusetts case is affirmed, in which it was held that "the imposition of such a fine by which members of an organization were coerced into refusing to trade with the plaintiff (the employer), not a member, to his great damage," was inconsistent with the ground upon which the right to competition in trade is based, and against him was not justifiable.

The case just decided was that of the Willcutt & Sons Company vs. Driscoll and others, members of the Bricklayers' Benevolent and Protective Association, in which the plaintiff prayed for an injunction restraining the union from imposing fines on members where the sole purpose was to compel workmen to go out on strike. A strike was in progress, and the defendants found two men at work for the plaintiff, one a journeyman who had been a member of the union, the other a foreman who was then a member. These men were threatened by the defendants with fines of $100, but refused to leave their work. The defendants reported the fact to the union, and it was voted to prefer charges against the two for working contrary to the union rules. A temporary injunction was issued, restraining further action. In deciding the case for the plaintiff the majority of the court holds:

If it were only between the person fined and the party imposing the fine, then with some degree of plausibility it might be said that the former had no right to complain or at least had waived the right; but it is manifest that neither of the immediate parties to the fine can, either by agreement among themselves or waiver, justify the invasion of the right of a third party, if any he has, to object to it. It cannot be successfully contended that as against the right of some party other than the association and its members an act, otherwise a violation of the third party's rights, is any less a violation because done by some member in obedience to a by-law. An interference with the right of a third party cannot be justified upon the ground that the intruder is acting in accordance with an agreement between him and some other person. In a word, so long as a fine is imposed for the guidance of members in matters in which outside parties have no interest, or in which there is no violation of a right of an outside party, then no such party can complain. But when the right of such party is invaded it is no defense, either to the person fined or to those who have imposed the

fine, that the invasive act was done in accordance with the by-laws of an association.

If it be said that the member fined may take his choice either to leave the organization or abide by its rules to which he has before assented, and that where there is a choice there can be no coercion, the answer is that in almost every conceivable case of coercion, short of an actual overpowering of the physical forces of the victim, there is a choice. The highwayman who presents his cocked pistol to the traveler and demands his purse under pain of instant death in case of refusal offers his victim a choice. He may either give up his purse and live or refuse and die. And so the member of a labor union has the choice either to pay the fine or leave the union. Is it difficult to realize what that choice is in these days of organized labor? Is it too much to say that many times it is very difficult, indeed practically impossible, for a workman to get bread for himself and his family by working at his trade unless he is a member of a union?

The court goes on to state that labor unions are entitled to protection to the extreme limit of the law, but holds that to allow such fines threatens a free labor market. A minority opinion of the court, signed by two justices, states:

The law does not do so vain a thing as to allow the formation of labor unions and to declare their right to initiate and by lawful means to carry on a justifiable strike, and then refuse them the use of the only practical means by which their acknowledged rights may be secured. What seems to us the fallacy of the majority opinion is its failure to act upon the fact that the strike in this case was upon justifiable grounds, and, of course, was lawful. The right of an employer to conduct his business without interference in the labor market is subordinate to the right of his employees to strike and to maintain the strike in a lawful manner. As against this right of the employees the employer has no right to have their labor flow to him uninfluenced or undiverted.

The opinion of the minority of the court in this case appears to be more reasonable. Unions are formed for the purpose of securing advantages for their members, either by making demands for better terms from employers or by resisting reductions in wages. This being recognized, how are they to enforce discipline among their members except by fines? They must not resort to violent methods, and when they simply use the peaceful means of a fine it would seem wise not to interfere with such a regulation.

## Congressional Tariff Committee Hearings.

WASHINGTON, D. C., November 3, 1908.—Many inquiries are being received here by Senators, Representatives and Treasury officials from parties desiring to be informed as to the steps that should be taken to secure an opportunity to be heard by the tariff committees of Congress before the prospective new tariff bill is formulated. These inquiries come from importers as well as domestic manufacturers and reflect the very lively interest in the tariff question that has been aroused by the preliminary movements of the Senate Finance and the House Ways and Means committees.

### The Preparation of Data.

Experience in connection with the framing of the last three tariff laws has demonstrated the necessity for systematic work in the preparation and presentation of representations intended to influence the Congressional committees. As the first step letters, which may be identical, or practically so, should be addressed to Representative Sereno E. Payne, chairman of the Ways and Means Committee, and to Senator Nelson W. Aldrich, chairman of the Senate Finance Committee, describing briefly the industry in which the writer is interested and asking to be advised when the committee will give hearings on the particuar schedule covering such industry; also as to whether the committee desires to receive written statements with regard to rates, classification or administrative features of the proposed new tariff law before hearings on the several schedules are begun. With a view to receiving the greatest possible consideration at the hands of the tariff committees, it has sometimes been found desirable in connection with the framing of tariff bills in the past to solicit the co-operation of the Senators representing the State and the Congressman representing the district in which the writer's business is located. In such cases it may be well to supply Senators and Congressmen with copies of all communications forwarded to the tariff committees. No disappointment should be felt should replies be received to the effect that no hearings are immediately in contemplation; hearings will ultimately be held and all requests for notice thereof will receive attention in due time.

In preparing for hearings it is well to bear in mind the conditions under which they will be held. Written statements should be prepared at least in duplicate, and, while as comprehensive as possible, should be no longer than is absolutely necessary to properly present the subject. Fifteen or 20 min. is about the usual time granted to a single representative of an important industry at the formal hearings, although frequently a much longer period is occupied in cross examination by members of the committee. Experience has demonstrated that it is unwise to print statements prepared for the Congressional committees, as printing imparts a conventional appearance that too often causes the document in question to be ignored or consigned to the waste basket. Statements should be carefully typewritten on the writer's letterheads rather than in the form of an unidentified legal brief. The little extra pains taken in the preparation of papers for the attention of Congressional committees is usually amply repaid by their increased impressiveness.

### Prospective Committee Meetings.

Three meetings of the tariff committees are scheduled for November, but it is probable that no hearings will be held for the benefit of domestic manufacturers or importers until after Congress convenes, although it is possible that the Ways and Means Committee, which it is understood will assemble in Washington during the week beginning November 9, will give hearings for a few days before the end of the month and will then adjourn for a fortnight or more. Senator Burrow's Sub-committee on Classification of the Senate Finance Committee will give a hearing before the 15th instant, but the only witnesses to be examined will be members of the Board of General Appraisers and Treasury officials. The sub-committee will receive suggestions for changes in classification with a view to removing ambiguities in the present law and also for the purpose of providing specifically for many important articles omitted from the classification of the Dingley act. Senator Hopkins' Sub-committee on Rates of the Senate Finance Committee has announced a meeting here on November 20, but no programme has been adopted. It is understood that the meeting will be limited to executive sessions, at which the work of drafting tariff schedules will be laid out. The two sub-committees headed by Senators Burrows and Hopkins will probably hold joint meetings later on to arrange the basis of the maximum and minimum schedules, which it is now expected will supersede the single column tariff of the present law.

### Form of Maximum and Minimum Schedules.

Two schemes are under consideration for the double column tariff. One involves merely the incorporation in the proposed law of a section authorizing the President in his discretion—presumably in the event of discriminations against American commerce—to raise the rates prescribed in the schedules by certain percentages. These percentages will not be uniform as to all paragraphs, but will probably range between 20 and 50 per cent., and the section referred to will specify by number the paragraphs to which the several increases will apply. The alternative plan is to adopt the system followed by France, Germany, Russia and other countries having double column tariffs and which involves the specification of two rates in parallel columns for practically every item. The former scheme involves much less labor on the part of compilers than the latter, but does not admit of the accurate and logical treatment of all items that characterizes the new German tariff, in which all important paragraphs are divided into numerous sub-classifications, to each of which the maximum and minimum rates are adjusted with close reference to the requirements of the domestic industry involved. W. L. C.

# The American Patent Law.—I.

## Its Attitude Toward Inventors.

BY JOHN D. MORGAN.*

The United States has the most liberal patent laws of any country in the world, considered from the standpoint of the patentee. The United States has likewise played an exceedingly important part in the great industrial revolution of the past few decades. It is quite true that our patent system had its genesis in the early stirrings of the industrial spirit in England and the first gropings there for a knowledge of the crafts of southern Europe. But the formulation of the distinctively American system, following soon after the institution of our government, preceded in all its important elements and policies the great activities that within the memory of living men have transformed the industrial world and further and necessarily have influenced mightily many departments of life, individual and communal.

### Patents and Industrial Development.

It cannot be gainsaid that patents have formed an important factor in bringing about modern industrial conditions. Improvement was inevitable aside from legal stimulus as long as natural resources on the one hand and thinking, comfort loving and power craving man, on the other hand, were brought together. But the swiftness and completeness with which the conquest was accomplished and is still going on find their only explanation in the control of his property which the inventor has through patents.

That the United States, which at the opening of this period was largely an undeveloped and consequently a predominantly agricultural country, should have acquired its prominent place in industrial history cannot be explained apart from the great liberality of its patent laws and the scrupulous care of the courts in administering those laws in the spirit in which they were framed.

### Liberal Features of the American Law.

Some of the distinguishing liberal principles of the American law will be set forth in brief. It is true that each of these principles is not peculiarly American, but it is equally true that in the laws of no other country are they brought together and bestowed upon every inventor who chooses to avail himself of them. These points or principles may be stated briefly as follows:

1. *Bringing the inventor himself into communication with the Patent Office.*

This is effected by requiring that the application be filed by him under oath. Protection is thus afforded the inventor against the stealing of his invention, and especially through false filings by others. It further conduces greatly to an accurate and ample disclosure of the true nature of the invention in any particular case. No slight advantage is the personal recognition given to the inventor in the published patent, both for the reputation gained in itself and also for the possible pecuniary rewards either directly from the invention or from the additional earning power which may come there through.

2. *Granting the patent to the prior inventor rather than to the prior applicant.*

This is done by permitting a full hearing for all rival applicants for patent on the same invention on the question of priority of invention, and granting the patent in accordance with the results of the trial.

This feature of the law is of inestimable value to the meritorious inventor who through poverty, ill health, lack of available time, or through other actual disadvantage is slow in bringing his invention to perfection. The elaborate and efficient procedure in the Patent Office gives such an one ample opportunity to present his case, and if entitled to the patent to have it awarded him. Even more than this, if a patent has already been granted to one not the first inventor a second patent will be granted to the true inventor, thus enabling him to appear before the courts on an equal legal footing with the grantee of the first patent.

3. *The careful search as to novelty.*

This search extends through the patents of all important nations and through the principal scientific publications. The work of the United States Patent Office on this line bears an enviable reputation even in other countries. When the volume of business transacted, together with the numerical limits of the examining corps, is considered, the results attained are entitled to our greatest admiration. The drawing of a patent application, and especially the framing of the claims, is attended with two dangers. On the one hand, the claims must not be drawn too broadly else they will be invalid for lack of the novelty over previous inventions required by law. Nor should the claims be too narrow, as in that case the applicant fails to receive legally that which is actually his. The search at the Patent Office, reported in full to the applicant, is thus a warning and a direction to so present his application as to secure the best possible protection.

With the multitudinous patents which have been issued in many arts it would practically be impossible to draw properly a patent application without such a search, and for such a search to be the private enterprise of the individual applica t would in many cases render the application for patent prohibitively expensive. This search has proved of vast value in framing applications for patent to be filed in countries where there is no novelty search or an inadequate one. It has likewise proved of inestimable value in decreasing litigation. Lastly, to it above all other agencies can be ascribed the possibility of successfully issuing the great number of patents which are taken out in these days of intense industrial activity.

4. *A liberal policy toward pioneer inventors.*

Under this policy, frequently the first to devise means toward a certain end has received a patent covering substantially all such means, and the courts had construed such patents in the same liberal spirit in which Patent Office has granted them. A case in point is that of Professor Bell and the telephone. Such control of a great department of human activity has brought vast pecuniary rewards to many meritorious inventors.

5. *The liberal policy toward improvers.*

This liberal policy toward improvers has gone hand in hand with the generous attitude of the Patent Office and courts toward the great pioneer inventors. It may be generally stated that no inventor is debarred from receiving a patent by reason of the relation of his invention to the prior art on grounds other than that of lack of novelty. It is, of course, required of him that he have passed beyond the limit of mere mechanical skill. When it is recalled that minor inventions are frequently of great pecuniary value, the advantage of this feature will be more clearly appreciated. However, this policy has led to the issuance of vast numbers of overlapping patents. That is, if the invention presented by an inventor in his application is useful and novel, a patent will issue to him therefor, notwithstanding the fact that a machine or apparatus or article constructed, or a method practiced, according to the principles of his patent would infringe one or more prior patents. This does not affect the property rights of any one. The issuance of such patents in no wise affects the scope or status of prior patents, nor on the other hand does the issuance of a patent to the improver change the relation of his machine or other patented thing to prior patents.

6. *The length of monopoly period granted.*

In the United States the period for which a patent is granted is 17 years from the date of issuance of the patent. There is no time limit covering the period of pendency in the Patent Office. All that is required is that the applicant respond within one year to each action by the examiner and that the prosecution of the application be diligent and in good faith. In England 15 months is allowed for prosecuting the application, and the patent runs 14 years from date if issuance. In Germany an applicant is limited to 16 years from the date of filing his application.

7. *The nature of the monopoly.*

That is, the absolute and unqualified property in the invention bestowed upon the patentee for the period of

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the patent. This unqualified property in the invention is signalized by (*a*) absence of direct taxation upon the patent; (*b*) absence of a working requirement; and (*c*) possession of the right of nonuser.

### Uniformity of the Patent Policy.

Our patent laws in most of their essential features have been as they now are throughout the period of great industrial development of the last few decades. In fact, in their broad spirit and essential principles they have been a unity from the beginning. The interpretation and application of these laws by the courts have naturally been progressive, but here also the attitude has been consistent and the spirit harmonious with that of the Congress.

The framers of the Constitution bestowed the patent granting power upon Congress in the very broadest terms, as will appear from the following:

> The Congress shall have power . . . to promote the progress of science and useful arts by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries.

The apt and concise language is admirable. There is a recognition that there would necessarily be some progress in science and the useful arts, even were inventions to become immediately the prey of competitors. There is, however, a further clear recognition of the fact that that progress would be inconsiderable without patent protection and the consequent hope of gain held out to inventors. Therefore the power bestowed on Congress was "to promote the progress" of the arts.

### Early Industrial Conditions.

Now that we have outlined the advantages and also the development of the patent law, it might be well to glance for a moment at the industrial conditions that those laws were primarily to meet.

The industry of the time was typified by the individual craftsman, although of course, the machine as an entity had some place in the industrial world. Yet the force to which the constitutional convention and, later, Congress looked to "promote the progress of science and the useful arts" was the individual practicing his craft in its entirety with his own hands and who, while so practicing, from his experience supplemented by the constructive imagination, was able to improve that craft in process, appliance or machine. Congress intended to give him for a few years the exclusive right to his discovery, and then at the end of that time other individuals could also take it up and its benefits thus pass from community to community. They looked, and logically, too, for development not revolution. They thought of patents as distinct and separate things and not, as they are to-day, an interwoven, continuous fabric covering almost entirely that which is greatest and best and most productive in the advance of the industrial arts.

### Industrial Development Reflected in Patent Activities.

That Congress had correctly conceived the conditions of the time and of the succeeding decades is shown by the fact that in almost a half century following only about 10,000 patents were issued, or at the average of about 200 a year. As indicating the change in conditions it may be stated that this is about the issue for two consecutive days at the present time! Approximately half the patents issued by the United States have been issued in the last 17 years. In other words, nearly half the issued patents are now alive. The issued patents are more than 900,000 in number; nearly 440,000 of these are in force. Nearly 75 per cent. of all American patents have been issued in the last 30 years.

### The Industrial Revolution.

This increase in inventive activity is but one feature of the great industrial revolution that has taken place. The independent craftsman has disappeared. His place has been taken primarily by the great corporation operating through gigantic mills and factories, and the individual finds his place no longer as the craftsman but as the operative. If he be a person of intelligence, skill and judgment, he is yet a specialist in charge of but some small fragment of an art. A great majority of the human beings involved are operatives of and attendants upon automatic machinery. The relative scarcity of skilled craftsmen is a matter of solicitous discussion at this time, and active steps to remedy this condition are already under way in various quarters.

As a part of this revolutionary change we must consider the vast investments in industrial enterprises. In certain lines success is out of the question except for enterprises and establishments founded and conducted on a vast scale. In many industries and with many enterprises, patents are of the very essence of the situation, while with others patents form an important and valuable element of their assets and earning power. There are, of course, small concerns both in the industrial and patent fields that are prosperous, but the industrial situation is signalized by the conditions just stated.

Another feature of the situation is the vast number of overlapping patents. This is, a patent is issued for an invention which, though novel, is covered by the claims of another living and usually previously issued patent. This is a condition which has been brought about largely through the vast growth and rapid development of the industrial arts. The amount of observation that a particular kind of machine or a particular process undergoes in these days from trained and skilled persons, a large proportion of whom are endowed more or less with the constructive imagination, is a thing unforeseen and undreamed of in the old days of the individual craftsman in a community relatively agricultural. In addition, the multiplying and piling up of new means are cumulative and intensive to the last degree. With all this goes the knowledge by each person involved that through the patent laws he can secure to himself any contribution he may be able to make to the advance of his art.

Had the number interested in each art remained few and widely separated, highly individualistic in skill and experience, the development of the arts would have continued to be slow, and it is likely that patents would be more separate and individualistic and in many cases a patent would have expired before an improvement thereon was patented, or at least there would be relatively few overlapping patents. This would have left an exceedingly simple situation.

The patent law was originally framed by Congress to meet the then foreseen conditions which had been briefly set out and, to some degree at least, they owe their broad and beneficent provisions to the apprehension by early congresses of the meager rewards which inventors can hope for in a sparsely settled country devoted largely to agricultural pursuits. In these latter days, when conditions have been so marvelously and widely transformed that those laws now operate in the richest and most inviting industrial field, gigantic enterprises employing resources inconceivable to the legislators, inventors and manufacturers of a century ago, and requiring proportionately large returns, find in these same liberal provisions of the law one of the chief incentives for their tremendous activities. By a strange and interesting paradox, industrial and patent conditions as far removed from each other as possible within the scope of our conception have their needs fulfilled in these same laws.

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The Indestructible Steel Wheel Company, Chicago, which has its plant at Lebanon, Ind., will build a large addition in the winter or spring. The company started in a small way in Chicago two years ago to manufacture pressed steel wheels. The business grew rapidly, and in looking about for a country location in order to expand and also avoid labor troubles, the company selected Lebanon, incorporated with $50,000 capital stock, and built a plant on a 3-acre site. Last year the capital stock was increased to $100,000 to meet extension requirements. The factory at present is equipped to turn out 200 sets of wheels a day. The company has just put on the market a 16-in. wheelbarrow wheel. It manufactures all kinds of automobile steel stampings. Harry J. Fish is president; Wm. E. Metzel, vice-president; Wm. J. De Vol, vice-president; Louis A. Lamm, secretary-treasurer.

# OBITUARY.

S. D. V. BURR.

Samuel DeVere Burr, for many years a writer on engineering and scientific subjects, and well known among the journalists of the technical press, died of appendicitis at his home in Plainfield, N. J., October 28, aged 53 years. Born in New York City, Mr. Burr moved to Plainfield with his parents and entered the then new Stillman High School. He was a member of the first graduating class, which went out in 1870. Of a mechanical bent, he continued his education at Rutgers College, New Brunswick, N. J., securing the degree of civil engineer from that institution in 1875. He subsequently received the degrees of A. B. and A. M. For about a year he taught school near Freehold, N. J.

Mr. Burr assisted his father in compiling a large two-volume work on the Centennial Exposition, entitled "Four Thousand Years of the World's Progress to the Present Time." Later he contributed to the *Engineering News*, with which he was employed editorially for three years. He was on the editorial staff of the *Scientific American* for six years. For 16 years, from 1888 to 1903, he was mechanical editor of *The Iron Age*. He was connected with the *Metal Industry* for the last three years, and was its managing editor at the time of his death.

As an author, Mr. Burr is known for three works, "Bicycle Repairing," "Tunneling Under the Hudson" and "Rapid Transit in New York and Other Large Cities." The last named book was prepared at the request of the New York Chamber of Commerce. He was a man of wide attainments and exceptional versatility. He was a skillful pianist and a master of photography. An indefatigable student of science in its varied forms, he possessed to an admirable degree the art of applying his mental riches to practical affairs. He was equally at home in civil and mechanical engineering. His work on *The Iron Age* was chiefly in the line of describing machinery, but the columns of the paper were frequently favored with his contributions on other subjects, as well as editorial discussions. He was a lucid writer, and had a peculiarly vigorous and epigrammatic style. He leaves a widow, a married daughter, and a son, Hudson C. Burr, at present a college student.

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JOHN ROYLE, senior member of John Royle & Sons, machine builders, Paterson, N. J., died October 31, aged 86 years. He came from England with his parents when he was eight years old. He worked in cotton mills as a boy, and founded the firm in 1840 for the manufacture of force pumps and water wheels. He invented machinery for the manufacture of silk, and became one of the largest builders of this kind of machinery in America.

HUGH KELLY, one of the largest buyers of sugar machinery, died in New York City, October 30. He had lived in New York for 49 years. He engaged in West Indian trade at an early age, and established the present house which bears his name. He founded a number of the largest refineries of cane sugar in the West Indies, and his long experience in mercantile trade in the Caribbean Islands made him one of the best known men in the business. He had important interests also in maritime and municipal affairs.

CYRUS C. CURRIER of the firm of Cyrus Currier & Sons, machinists and manufacturers of special machinery, Newark, N. J., died October 30, at his home in South Orange, N. J. He was born in 1847, and the business which he had been conducting in Newark had been established by his father. Mr. Currier's two brothers were formerly identified with the firm.

OLE JOHNSON, Milwaukee, Wis., well known as an inventor and contractor, died suddenly of heart disease at Duluth, Minn., October 24, aged 54 years. He invented a number of improvements in coal handling machinery, and as a contractor had built large coal docks at Milwaukee and other lake ports. He was born in Norway and located in Milwaukee 28 years ago. He leaves a widow, two sons and a daughter.

GUSTAVE CANET, one of the most famous engineers which France has produced, died at Saint-Aubin-sur-Mer (Calvados) October 9. Born at Belfast September 29, 1846, he entered the Ecole Centrale des Arts et Manufactures in 1866. As a lieutenant of artillery he was made a prisoner on the surrender of Neuf-Brisach in the Franco-German war and on the conclusion of peace reentered the practice of his profession, his war experience having decided him to pay particular attention to war material. He entered the London Ordnance Works Company under Vavasseur, and in 1881 returned to France to organize the artillery branch of the Forges de la Mediterranee. When that plant was purchased in 1897 by Schneider & Co., Creusot, he joined that famous firm, retaining an active connection with it until 1907. He took a keen interest in the work of the great engineering societies and was made an honorary member of the Iron and Steel Institute and of the American Society of Mechanical Engineers.

# PERSONAL.

John H. Judson has opened an office as a consulting, mining and metallurgical engineer in the Mills Building, New York. He has had a long experience in many branches of the profession.

Charles M. Dally, secretary and treasurer of the European Churchward Steel Company, 29 Broadway, New York, sailed for Europe November 4, expecting to return on or about December 20.

Andrew Carnegie arrived in New York from Europe October 29.

L. G. Finlay has opened an office in the New England Building, Cleveland, Ohio, for the handling of power plant equipment, consisting of steam and gas engines, steam turbines, pumps, &c. He has also been appointed agent for the Sight Feed Oil Pump Company, Milwaukee, Wis.

G. K. McMullen, formerly sales manager of the Fox Machine Company, Grand Rapids, Mich., has tendered his resignation to take effect November 15, and will at that time engage in business for himself, announcement of which will be made later.

George Bartol, general manager of the Otis Steel Company, Ltd., Cleveland, has gone for a two months' trip to England and France.

J. E. Frantz of the Landis Tool Company, Waynesboro, Pa., returned from Europe October 30, after an absence of six weeks.

Albert Ladd Colby, consulting engineer, New York, has returned from Europe after over a year's absence, passed in studying different types of by-product coke ovens and recovery processes and testing American coal in by-product ovens. Until he opens a new office in this city his address will be care Engineers' Club, New York, or South Bethlehem, Pa.

Hugh A. Brown has resigned from the Crocker-Wheeler Company, manufacturer and electrical engineer, to whose Chicago office he has been attached for several years. He now takes up the work of sales manager for the Rockaway Coaster Company, Cincinnati, in which he has a substantial interest.

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The Southern Marine Works, Algiers, La., whose shops have been idle for the last six months, has been reorganized and the business taken over by the Union Marine Works, an organization composed of new interests and incorporated with a capital stock of $50,000. The old shops are being remodeled, and when completed will have a floor space of 187 x 290 ft. The plant is advantageously located for handling ship work, having a river frontage of nearly 600 ft. The officers of the company are as follows: Victor Loisel, president and manager; F. W. Sadler, vice-president; W. J. Tierney, assistant manager; H. Loisel, secretary and treasurer.

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The report that the Aluminum Company of America, New Kensington, Pa., had put its plant on double turn is untrue. The company is operating to only partial capacity at present.

## Canada's Elections and the Tariff.

TORONTO, October 31, 1908.—The Laurier Government having been sustained in the general elections held on Monday, there is not likely to be any sharp departure from the ideas that have been followed for years in the administration of Canadian affairs. In particular, the fiscal and trade policies may be expected to continue as they were. The present tariff is about as symmetrical a cross between the two leading varieties—a protective tariff and a revenue tariff—as it is possible to produce. How long it may remain thus balanced no one can say, and the Government itself does not pretend to say. It answered the Government's purposes up to the present, but if modifications are found necessary in order to keep it in conformity with those purposes, modifications will be made.

### Not a Rigid Tariff Policy.

Readiness to adapt may be taken as the characteristic of the Laurier Government's tariff policy. It is in contrast with the more definite, not to say rigid, policy of the Opposition, which is protection tempered with reciprocity with Britain. If the Laurier Government finds its revenue needs outstripping the returns from its sources of taxation, it will change the tariff so as to make it more productive of revenue. This may involve the correlative change of making the tariff less productive of protection. It is to be remembered, however, that the Liberal party is not pledged to protection; indeed, its platform (drawn up in 1983) declares against protection. In budget speech after budget speech Mr. Fielding, the Finance Minister, has spoken of the tentative character of the tariff and of the more perfect state toward which it was tending. Its protective features were treated as necessary evils.

True, the Laurier Government took steel rails off the free list and made them dutiable at the rate of $7 a ton, established the anti-dumping duty to penalize importers of bargain price goods, put the high tax on German goods, and went far beyond its predecessor in its use of the bounty system for fostering home industry. But against these things are to be set the lowering in 1897 of the general duties on important staples coming mainly from the United States, the granting of the preference on British goods and on the goods of certain British colonies, the adoption of the intermediate tariff, and the reciprocity treaty with France, as well as the reciprocity negotiations with other European countries. As to which side of the scales the next change will fall Government policy affords no indication. That policy may be described as of the hand to mouth kind.

### The Attitude of Manufacturers.

If times do not greatly improve, there will be strong pressure from the manufacturing industries whose chief bulwark for years has been not the tariff, but the absorbing prosperity of the United States. Should trade across the line not greatly improve, this market will have a strong flow of imports from that quarter. Whether trade has or has not a complete revival, the Government will have need of an abundant revenue, for it is committed to tremendous outlays. The promises made in the election campaign cannot be redeemed except by very large annual increases in expenditure. These, of course, call for the raising of new capital, but the annual charges on new capital account will be large. Moreover, such new services as rural mail delivery, which is just being inaugurated, mean large annual deficits in the several departments concerned, which will have to be provided for by increasing the revenue from customs. It is to be expected that tariff changes henceforth will be determined by revenue needs, not by the importunities of manufacturers.

But the manufacturers mean to be as strenuous for protection as ever. At the last annual meeting of their association they made known to the Government their desire to have a permanent Tariff Commission established. Sir Wilfrid Laurier told them, in a speech delivered at their banquet, that he was not averse to having such a commission constituted if it should be on lines similar to those proposed for a standing Tariff Commission in the United States. On the Government's side a permanent commission always ready for hearings, and on the manufacturers' side an organization always bringing forward cases to show the need of tariff amendment in this point or that, the respective parts of the general public and of Parliament in the business of tariff making would tend to become of minor importance. It is scarcely probable that the association's wishes in this matter will be precisely met.

### The Manufacturers' Tariff Expert.

The Manufacturers' Association has a mastery of the tariff question which is not surpassed by that of the Finance Minister. Its Tariff Committee is a very able body, and the tariff facts collected and arranged are handled by the committee to the best effect. Besides, the association has a tariff expert whom the Customs Department will find it difficult to match. He was trained by many years' responsible service in that department, from which he retired last year to take the position the association offered him. He is giving his attention to the undervaluation problem, and the result of his activity is likely to be very telling for strengthening the checks upon violations of the anti-dumping clause. It is undeniable that the anti-dumping duty is being more and more evaded as time and inventiveness render the shifts of traders more proof against detection. The anti-dumping duty did its work fairly well at the outset, but it now misses a large percentage of the business it should be levied upon. It is part of the duty of the association's tariff expert to "confound the knavish tricks" of importers or consignors who have learned how to deceive the customs officials as to values.

If the tariff of the United States is lowered materially in the next revision, or if the principle of reciprocity is made a larger element in shaping the country's foreign trade relations, there can hardly be a doubt that the Canadian Government will be prepared to discuss a *quid pro quo* arrangement with the Washington Government. The intermediate tariff was devised for reciprocity purposes, and Mr. Fielding showed that it is not to be considered a cast iron basis of negotiation, for he made concessions even from its special rates to the government of France.

C. A. C. J.

## Trade Publications.

**Silica Bricks.**—Mount Union Silica Brick Company, Mount Union, Pa. Catalogue. Size, 3¾ x 6½ in.; pages, 36. Deals with high grade silica bricks, and illustrates the numerous sizes of standard shapes, bricks for glass works, roof bricks, regular shapes to be made to order, coke oven crown bricks, and Siemens steel furnace blocks. Several pages contain useful information in the way of rules, tables, temperatures, and weights and measures.

**Electric Cranes.**—Whiting Foundry Equipment Company, Harvey, Ill. Illustrated booklet dealing exclusively with crane equipment for railroad shops. Views are shown of interesting installations in locomotive repair and boiler shops, railroad machine shops, foundries, car shops, power houses, coaling stations and yards. These include electric traveling cranes of various capacity of the overhead and gantry type, electric transfer tables, hand electric and compressed air pillar cranes and traveling bracket and jib cranes of various types.

**Injectors, Ejectors, Check Valves and Jet Apparatus.**—Hayden & Derbey Mfg. Company, 85 Liberty street, New York. Catalogue, 6 x 9 in., 51 pages. In the review of this catalogue which appeared in *The Iron Age*, October 22, 1908, the Metropolitan automatic injector was incorrectly referred to as the Manhattan automatic injector.

The George Washington, the first steamship of the North German Lloyd to exceed 20,000 tons gross register, being about 25 per cent. larger than the Kronprinzessin Cecilie and Kaiser Wilhelm II of the same line, was launched at the Stettiner Vulcan yards, Bredow, Germany, October 31, and was christened by David Jayne Hill, United States Ambassador. The George Washington is 722 ft. 5 in. long, 78 ft. beam and has a depth of 54 ft. from the upper saloon deck. The displacement at draft of 33 ft. is 36,000 tons. There are two four-cylinder quadruple expansion engines of 20,000 hp.

# Pig Iron Production.

## October Output, 1,563,483 Tons.

### Active Capacity Makes a Substantial Gain in the Month.

Through the prompt co-operation of the furnace companies we are able to present the monthly statistics of pig iron production within four days of the end of the month. In October the production of coke and anthracite pig iron was 1,563,483 tons, a gain of 145,000 tons over September. The steel works furnaces produced 996,481 tons and the merchant furnaces 567,002 tons. The daily rate for the steel works furnaces was thus 32,144 tons and for the merchant furnaces 18,290 tons, the latter class showing the more pronounced gain. The number of active furnaces showed a net gain of 12 in October, or to 200. The daily rate of production by months for this year is as follows:

*Daily Rate of Production.—Gross Tons.*

| | Steel works. | Merchant. | Total. |
|---|---|---|---|
| January | 21,432 | 12,286 | 33,718 |
| February | 25,717 | 11,446 | 37,163 |
| March | 27,145 | 12,474 | 39,619 |
| April | 24,185 | 14,104 | 38,289 |
| May | 24,505 | 13,098 | 37,603 |
| June | 23,923 | 12,521 | 36,444 |
| July | 25,762 | 13,525 | 39,287 |
| August | 28,952 | 14,899 | 43,851 |
| September | 31,117 | 16,183 | 47,300 |
| October | 32,144 | 18,290 | 50,434 |

**October Product by Districts.**

The table below gives the production of coke and anthracite furnaces in October and the four months preceding:

*Monthly Pig Iron Production.—Gross Tons.*

| | June. (30 days) | July. (31 days) | August. (31 days) | Sept. (30 days) | Oct. (31 days) |
|---|---|---|---|---|---|
| New York | 61,249 | 66,498 | 83,004 | 108,453 | 120,191 |
| New Jersey | 15,963 | 14,830 | 16,866 | 16,544 | 16,790 |
| Lehigh Valley. | 26,357 | 28,028 | 36,701 | 42,184 | 42,782 |
| Schuylkill Val. | 23,814 | 25,115 | 24,586 | 23,918 | 47,210 |
| Lower Susquehanna and Lebanon Val. | 31,058 | 26,204 | 23,632 | 24,170 | 31,304 |
| Pittsburgh Dis. | 259,771 | 303,645 | 362,417 | 359,132 | 387,207 |
| Shenango Val. | 58,244 | 82,978 | 91,534 | 93,372 | 102,953 |
| West. Penn. | 59,521 | 63,433 | 73,207 | 72,633 | 97,052 |
| Md., Va. and Kentucky | 46,802 | 46,635 | 47,492 | 50,150 | 51,844 |
| Wheeling Dis. | 16,539 | 19,405 | 24,368 | 23,409 | 25,239 |
| Mahoning Val. | 89,238 | 93,635 | 103,021 | 102,606 | 115,315 |
| Central and North. Ohio. | 70,283 | 92,737 | 117,016 | 119,163 | 119,480 |
| Hocking Valley, Hanging Rock and S. W. Ohio | 20,342 | 20,187 | 19,909 | 22,376 | 21,872 |
| Mich.,Minn.,Mo., Wis., Colo. | 34,363 | 40,029 | 35,542 | 39,408 | 43,465 |
| Chicago Dist. | 153,162 | 152,981 | 156,537 | 167,896 | 171,732 |
| Alabama | 110,196 | 123,301 | 122,840 | 126,137 | 135,907 |
| Tennessee, Georgia and Texas | 15,229 | 18,488 | 21,159 | 27,447 | 33,140 |
| Totals | 1,092,131 | 1,218,129 | 1,359,831 | 1,418,998 | 1,563,483 |

Among furnaces blown in in October were Zenith at Duluth, Wickwire at Buffalo, one Swede and Temple in the Schuylkill Valley, one Palmerton in the Lehigh Valley, Soho and Midland in the Pittsburgh district, two Cambria in western Pennsylvania, Bird Coleman in the Lebanon Valley, Globe, Jackson and Marting in the Hanging Rock district, one Gadsden and Williamson in Alabama and one Mayville in Wisconsin.

The list of furnaces blown out in October includes one Bethlehem and Crumwold in the Lehigh Valley, one Carrie in the Pittsburgh district, Upson in northern Ohio, one Ohio in the Mahoning Valley, one Ensley in Alabama and Johnson City in Tennessee.

**Production of Steel Companies.**

Returns from all the plants of the United States Steel Corporation, the Cambria, Pennsylvania, Maryland, Lackawanna, Wheeling, Republic, Youngstown Sheet & Tube Company, Jones & Laughlin, La Belle, Bethlehem, Calumet, Inland, Colorado and Tennessee (Ensley) companies show the following totals of product month by month. We give separately a statement of the output of spiegeleisen and ferromanganese, which is included for each month in the total production:

*Production of Steel Companies.—Gross Tons.*

| | Pig.—Total production. | | | Spiegeleisen and ferromanganese. | |
|---|---|---|---|---|---|
| | 1906. | 1907. | 1908. | 1907. | 1908. |
| January | 1,358,015 | 1,406,397 | 664,415 | 21,477 | 20,254 |
| February | 1,226,760 | 1,317,923 | 745,802 | 19,444 | 9,402 |
| March | 1,400,395 | 1,424,827 | 841,502 | 31,091 | 13,750 |
| April | 1,333,591 | 1,446,788 | 725,548 | 26,527 | 12,363 |
| May | 1,372,423 | 1,470,080 | 759,674 | 28,822 | 17,823 |
| June | 1,293,437 | 1,457,230 | 717,689 | 30,942 | 15,958 |
| July | 1,323,391 | 1,452,557 | 798,639 | 25,343 | 10,250 |
| August | 1,237,485 | 1,445,685 | 897,052 | 23,696 | 14,932 |
| September | 1,264,380 | 1,417,153 | 933,514 | 30,270 | 8,938 |
| October | 1,452,200 | 1,514,521 | 996,481 | 35,105 | 12,174 |
| November | 1,411,350 | 1,084,114 | ..... | 21,861 | ..... |
| December | 1,445,528 | 659,459 | ..... | 19,480 | ..... |

**Capacity in Blast November 1 and October 1.**

In the following table is given the weekly capacity of coke and anthracite furnaces in blast November 1 and October 1, based largely on their performance in the preceding month in each case:

*Coke and Anthracite Furnaces in Blast.*

| Location of furnaces. | Total number of stacks. | November 1. Number in blast. | November 1. Capacity per week. | October 1. Number in blast. | October 1. Capacity per week. |
|---|---|---|---|---|---|
| New York: | | | | | |
| Buffalo | 15 | 11 | 24,550 | 10 | 23,303 |
| Other New York. | 7 | 3 | 3,822 | 3 | 3,926 |
| New Jersey | 8 | 2 | 3,724 | 2 | 3,855 |
| Spiegel | 2 | 0 | 0 | 0 | 0 |
| Pennsylvania: | | | | | |
| Lehigh Valley | 25 | 7 | 8,483 | 9 | 9,713 |
| Spiegel | 3 | 2 | 535 | 1 | 130 |
| Schuykill Valley. | 15 | 7 | 10,661 | 5 | 6,421 |
| Low. Susquehanna | 7 | 2 | 3,614 | 2 | 3,335 |
| Spiegel | 1 | 0 | 0 | 0 | 0 |
| Lebanon Valley | 10 | 4 | 3,495 | 3 | 2,305 |
| Pittsburgh Dist. | 45 | 32 | 87,599 | 31 | 81,841 |
| Spiegel | 3 | 2 | 2,555 | 2 | 1,956 |
| Shenango Valley. | 20 | 12 | 23,247 | 11 | 20,853 |
| W. Pennsylvania. | 27 | 15 | 23,044 | 13 | 19,047 |
| Maryland | 4 | 2 | 4,235 | 2 | 3,905 |
| Wheeling District. | 14 | 3 | 5,698 | 3 | 5,462 |
| Ohio: | | | | | |
| Mahoning Valley. | 18 | 10 | 26,045 | 11 | 26,507 |
| Central and North. and Michigan. | 22 | 11 | 28,980 | 12 | 28,996 |
| Hocking Valley, Hang. Rock and S. W. Ohio | 14 | 8 | 6,590 | 4 | 3,603 |
| Illinois and Indiana | 24 | 15 | 38,780 | 15 | 37,208 |
| Spiegel | 2 | 0 | 0 | 0 | 0 |
| Minnesota | 1 | 1 | 1,530 | 0 | 0 |
| Wisconsin | 6 | 2 | 2,650 | 1 | 1,785 |
| Missouri & Colorado | 7 | 4 | 6,216 | 4 | 6,002 |
| The South: | | | | | |
| Virginia | 23 | 10 | 6,571 | 9 | 7,004 |
| Kentucky | 5 | 1 | 1,106 | 1 | 1,050 |
| Alabama | 46 | 23 | 31,388 | 22 | 31,948 |
| Tennessee | 18 | 10 | 7,077 | 11 | 7,220 |
| Georgia & Texas | 3 | 1 | 490 | 1 | 550 |
| Totals | 395 | 200 | 362,685 | 188 | 337,925 |

**A Record of Active Capacity.**

The active weekly capacity in coke and anthracite iron has shown the following fluctuations since January 1, 1904:

| | Capacity per week. | | Capacity per week |
|---|---|---|---|
| November 1, 1908 | 362,685 | May 1 | 484,031 |
| October 1 | 337,925 | April 1 | 484,240 |
| September 1 | 313,112 | March 1 | 479,737 |
| August 1 | 284,590 | February 1 | 482,156 |
| July 1 | 264,452 | January 1, 1906 | 463,673 |
| June 1 | 259,284 | December 1, 1905 | 475,814 |
| May 1 | 268,674 | November 1 | 460,449 |
| April 1 | 264,890 | October 1 | 445,468 |
| March 1 | 267,437 | September 1 | 442,563 |
| February 1 | 241,925 | August 1 | 440,088 |
| January 1, 1908 | 232,652 | July 1 | 408,617 |
| December 1, 1907 | 347,372 | June 1 | 443,092 |
| November 1 | 491,436 | May 1 | 452,041 |
| October 1 | 511,397 | April 1 | 449,564 |
| September 1 | 507,768 | March 1 | 403,157 |
| August 1 | 513,471 | February 1 | 405,792 |
| July 1 | 528,170 | January 1, 1905 | 377,879 |
| June 1 | 523,220 | December 1, 1904 | 357,846 |
| May 1 | 524,538 | November 1 | 334,249 |
| April 1 | 496,456 | October 1 | 319,249 |
| March 1 | 511,035 | September 1 | 291,573 |
| February 1 | 492,359 | August 1 | 246,092 |
| January 1, 1907 | 507,397 | July 1 | 272,301 |
| December 1, 1906 | 513,860 | June 1 | 336,107 |
| November 1 | 500,580 | May 1 | 368,244 |
| October 1 | 469,665 | April 1 | 337,257 |
| September 1 | 441,426 | March 1 | 308,751 |
| August 1 | 449,908 | February 1 | 272,692 |
| July 1 | 460,570 | January 1, 1904 | 185,636 |
| June 1 | 472,622 | | |

## Seattle Trade Notes.

SEATTLE, WASH., October 24, 1908.—At a date to be announced in the near future a conference will be held at San Francisco between representatives of Los Angeles, the California and the United Metal Trades associations and the traffic managers of the transcontinental railroads on the subject of securing a greater differential than is at present given in favor of Pacific Coast concerns on sheet metal, structural iron and raw material. The meeting will probably take place within the next two weeks.

The contemplated organization of the foremen in the metal trades in the Oregon jurisdiction, which was to have been effected at a banquet and convention in Portland October 22, was postponed owing to the absence from the State at that time of some of the moving spirits in the undertaking. The organization, however, is expected to be launched within a short time, after which similar steps will be taken in Washington and British Columbia.

A dispatch from Valdez, Alaska, announces that on October 23, following a hard legal fight, the Alaska Central Railroad was again thrown into the hands of a receiver, with O. G. Labaree of Spokane and John Goodwin of Valdez as trustees, qualifying in bonds of $50,000. John H. Graves, attorney for the applicant in the foreclosure suit, declared in court that Canadian bankers, holding $3,000,000 of Alaska Central bonds, proposed to complete the road to the Matanuska coal fields immediately in order to retrieve their losses.

As the result of the failure of the White Pass & Yukon Railroad to agree on a satisfactory rate for hauling ore from the Conrad mines on Windy Arm, Alaska, to Skagway, a dispatch from that northern port says that J. N. Riblett of the Riblett Aerial Tramway Company has been making surveys at the instance of Col. J. H. Conrad for the building of a tram over the famous Chilkoot Pass in the manner of the one constructed in 1898. Colonel Conrad declares that the money has been pledged, and that the cost will be about $400,000. White Pass officials, who began in the spring the construction of a spur from White Horse to the mines on Windy Arm, and completed ore bunkers at Skagway at heavy expense, scoff at the idea of the tram as impracticable. Work on the railroad spur to the mines ceased some time ago.

Activity in railroad work and the running of surveys for new lines continue in the State of Washington. Steel rails are now laid over the summit of the Cascade Mountains on the main line of the Chicago, Milwaukee & St. Paul, and for 15 miles into King County on the west side. Grant, Smith & Co., contractors, have just removed enormous grading outfits from the North Bank road to do heavy filling between Cle Elum and Easton.

Surveyors are reported at work all along the Columbia River above Kennewick, locating the line for the contemplated extension of the so-called North Bank road to a connection with the main line of the Great Northern. Nearly all the dynamos have been installed by the Great Northern in the plant being built at Leavenworth to provide electric power for sending trains through the Cascade tunnel. Men are preparing to wire the tunnel, and the plant will be completed by the first of next year. General Manager J. M. Gruber of the Great Northern, who is now here, has just completed an inspection of this work, together with that of the branch line, 40 miles long, from Moses Coulee in eastern Washington into the Big Bend country, in Douglas County. Mr. Gruber declares that his road is abundantly supplied with cars to meet the demands of any shippers, and that there is no danger of a car famine on that line.

The Seattle Electric Company, operating the street railroad system of this city, is actively hastening preparations for handling the crowds for the Alaska-Yukon-Pacific Exposition next summer. The grounds are on a portion of the campus of the University of Washington, 35 minutes' ride by trolley from the downtown district. New lines are being extended to the fair grounds and additional facilities provided in every way. Considerable rolling stock has been ordered for delivery in the spring.

W. T. P.

## Universal Portland Cement.

On Saturday, October 31, a large number of members of the Engineers' Society of Western Pennsylvania made a visit to the plant of the Universal Portland Cement Company, at Universal, Pa., near Pittsburgh. In addition to this plant the company operates one at South Chicago, Ill., and another at Buffington, Ind. The South Chicago plant was the first built. The Pittsburgh plant commenced operations in December, 1907, and has a daily output of 4500 barrels. All the plants are located near blast furnaces of the United States Steel Corporation, of which the Universal Portland Cement Company is a subsidiary, and all use furnace slag, carefully selected from the product of furnaces making Bessemer pig iron, with a mixture of practically pure calcite limestone. On the trip to Universal each member of the party was furnished with a printed description of the process employed, as follows:

"The raw material is stored in separate storage bins at one end of the raw material building. From these bins the stone is fed to Gates gyratory crushers which prepare it for the driers. The stone from the crushers and the slag direct from the storage bins are fed to the driers which are maintained at sufficient temperature to drive off all moisture. From the driers each of the raw materials is conveyed to ball mills where the rolling and impact of forged chrome steel balls reduce them to an extreme fineness.

"From the ball mills the materials are conveyed to separate hoppers from which they are drawn off and properly proportioned by an electrically operated weighing device. The slag and stone now united pass to the tube mills where flint pebbles rolling in a steel drum thoroughly mix and complete the grinding of raw material. The raw mixture is now ready for the process of calcination, which is conducted in rotary kilns 120 ft. long, 7 ft. 6 in. in diameter.

"Leaving the rotary kilns, the burnt clinker passes to the storage pit, where it is cooled and thoroughly cured. It is now ready to be finished and is conveyed to the finishing mill hoppers by electrically operated cranes. Passing through jaw crushers the clinker is fed to Kent mills and then passed over Newago separators. To the fine material leaving the separators is now automatically added the desired quantity of gypsum. This automatic device accurately proportions the quantity of gypsum to a given weight of cement and thus insures uniform setting time.

"Leaving this device the material passes through tube mills similar to those used in finishing the raw material and is conveyed from the tube mills, when ground to the specified fineness, on a belt conveyor, from which it is automatically tripped into the various bins. This belt, almost 1-3 mile long, passes the full length of the stock house, which has a storage capacity of 500,000 barrels. This large capacity insures well aged cement and, owing to the facilities for packing, permits of prompt shipment. An automatic sampling device, taking samples continuously from the finished cement belt, gives the samples on which the various tests for quality are made. Uniformity in the chemical composition of the slag and limestone insures a finished product remarkably uniform in action and color."

Following is the company's total production of Universal Portland cement by years: 1900, 32,443 barrels; 1901, 164,316 barrels; 1902, 318,710 barrels; 1903, 462,930 barrels; 1904, 473,294 barrrels; 1905, 1,735,343 barrels; 1906, 2,076,000 barrels; 1907, 2,300,000 barrels; 1908 (estimated), 6,000,000 barrels.

The visitors were taken through all the departments of the plant and returned to Pittsburgh, after having passed an exceedingly interesting and enjoyable day.

The Fosdick Machine Tool Company, Cincinnati, Ohio, has appointed Perkins & Frecker, New York, agents for its line of radial drills for New York and vicinity, and Mortimer & Alcorn, Cleveland, Ohio, agents for its complete line of radial drills and horizontal boring, drilling and milling machines for northern Ohio.

# NEWS OF THE WORKS.

### Iron and Steel.

The Keystone Iron & Steel Company, Pittsburgh, Pa., has asked for a State charter. The applicants are James P. Kelley, Michael B. Kelley, Benjamin Haas and Eugene S. Reilly of Pittsburgh.

The Central Iron & Steel Company has ordered repairs made to its No. 1 furnace at Harrisburg, Pa. It may be started about the middle of the month.

The plant of the Wilkes Rolling Mill Company, Sharon, Pa., is expected to resume operations about November 15, after a shutdown of some months. Its finished product is sheets but it also makes muck bar for the open market.

The Thomas Iron Company, Easton, Pa., has two stacks at Hokendauqua, Pa., in blast, and will probably start one of its Hellertown furnaces in a few days. A third Hokendauqua furnace, which has been out for repairs and improvements, will probably be started early in January.

Zenith Furnace at Duluth, Minn., went in blast October 24.

B Furnace of the Bethlehem Steel Company, South Bethlehem, Pa., went out October 22 for relining.

The New Jersey Zinc Company has put in blast one of its furnaces at Palmerton, Pa.

The Cambria Steel Company, Johnstown, Pa., now has six furnaces in blast, two having been added to the active list in October.

Bird Coleman Furnace of the Lackawanna Steel Company at Cornwall, Pa., was put in blast early in October on merchant pig iron.

The Thomas Furnace Company, Milwaukee, Wis., expected to put its reconstructed and enlarged furnace in blast on Wednesday, November 4.

Of the Ensley Furnaces of the Tennessee Coal, Iron & Railroad Company, No. 1 and No. 6 went out in October. No. 2 was put in blast October 3.

The furnace of the Cranberry Furnace Company at Johnson City, Tenn., was blown out October 4 for relining.

The Clark Steel Hoop Company, Punxsutawney, Pa., has awarded a contract to William Swindell & Brother, German National Bank Building, Pittsburgh, for the erection of a Swindell heating furnace. Workmen are now engaged on its construction and expect to have it completed in a couple of weeks.

### General Machinery.

The Connellsville Iron Works, New Haven, Pa., is erecting an addition, 30 x 60 ft., of mill construction, with sheet steel siding and roof, in which it will shortly install new angle shears, plate shears, air compressors, pneumatic tools, &c., which have been bought. The company manufactures mine cars, larries, elevators and other equipment for mines, and this new addition will largely increase its capacity.

A small ice plant has been recently installed at St. Andrews, Fla., by the St. Andrews Ice & Power Company, having cold storage facilities in connection with the plant. The equipment consists of one 10-ton ice machine and generative power machinery furnished by the Columbus Iron Works, Columbus, Ga.,

The Star Drilling Machine Company, Portland, Ore., has completed the building of a new plant for the manufacture of portable well drilling machinery and upright steam engines, in which the necessary machinery has been installed. The company expects to begin operations at once.

The Atlantic Hydraulic Machinery Company has been organized to develop turbine pumps of a special design, which will be built for the present by contract. The directors are N. W. Akimoff, 1022 Drexel Building, Philadelphia, Pa.; J. F. Cullen and G. E. Mehring.

The reports of the new shops to be erected in the South by the Armour Car Lines, Chicago, were much exaggerated. The company contemplates erecting a small repair shed somewhere in the South, possibly at Meridian, Miss., the cost of which will be only a few thousand dollars.

The Shelbyville Foundry & Machine Works, Shelbyville, Ind., is running to fullest capacity and reports prospects bright in the engine business. The company is planning the erection of a new building which will about double the present capacity.

The A. Garrison Foundry Company, Pittsburgh, is building a 36-in. motor driven roll lathe for the Sweet's Steel Company, Williamsport, Pa., and a double shear of special design for the Oliver Iron & Steel Company, Pittsburgh, for cutting 16 bolt rods simultaneously.

The Mesta Machine Company, Pittsburgh, has received a contract from the Berger Mfg. Company, Canton, Ohio, for a 28-in. sheet mill and gear drive, and is also rebuilding an old 40 x 60 in. slide valve type of engine, which, however, is not a Mesta, for the La Belle Iron Works, Steubenville, Ohio. This engine will have a new 40 x 60 in. Corliss cylinder with the latest type of valve gearing and governor. It will be used to drive a skelp mill. The latter contract calls for a four weeks' delivery, but the Mesta Machine Company has workmen engaged day and night in turning out the necessary parts, and expects to make shipment in three weeks, which will be record time for work of this character. The company states that the volume of orders received in the past 30 days is greater than for any corresponding time during the last year.

The Weatherly Foundry & Machine Company, Weatherly, Pa., has purchased machinery, patents, &c., of the H. A. Frantz Mfg. Company, Cherryville, Pa., manufacturer of kerosene, oil and gas engines. The equipment will be moved to Weatherly where the manufacture of gas engines will be started as soon as the machinery can be placed.

The Kelley Electric Machine Company, Buffalo, N. Y., has incorporated with a capital stock of $25,000 to manufacture the Kelley electric routing machine which is designed for a great variety of work. This machine, which was formerly made by the Stevenson Machine Company, is now manufactured by the new company with increased facilities at 254 Court street. G. W. Francis is president; W. M. Wilson, vice-president and George M. Kelly, secretary and treasurer.

The Evans-McDowell Machinery Company, Syracuse, N. Y., has been incorporated with $20,000 capital by Harry R. Evans, J. Kenyon McDowell and Wilbur Van Duyn.

The Elmira Machine Works Company, 208 College avenue, Elmira, N. Y., has increased its capital from $10,000 to $35,000. The additional capital will be used to increase the facilities and improve the plant. James H. Eastgate is manager.

### Power Plant Equipment.

The Mondovi Light & Power Company, Mondovi, Wis., has been incorporated, with a capital stock of $35,000, the incorporators being B. S. Lockwood, A. D. Alt, Carl J. Holmes and John Pierce.

Application for a Pennsylvania charter has been made by the Erie City Gas Engine Company, Erie, Pa. The applicants are William H. Brown, Alex. Loeb, Max Loeb and J. R. Craid of Erie.

The Neshkoro Light & Power Company, Neshkoro, Wis., has been incorporated, with a capital stock of $20,000, its purpose being to establish a hydro-electric plant to furnish light and power for small motors to the village, of Neshkoro and Redgranite, the latter village being 10 miles distant from the former. An 80-kw. generator will be installed. The incorporators are E. D. Morse, Gustav Dahlke, Charles T. Dahlke and E. J. Dahlke.

The city clerk of Wenatchee, Wash., will receive bids until November 24 for extensions to the water works, the work to consist of constructing a pumping station, furnishing pump, motor and starting panel, construction of pipe tunnel, &c.

The Board of Trustees of the State Hospital for the Insane at Warren, Pa., will receive bids until November 17 for two 80-hp. natural gas engines and two triplex power pumps of 955 gal. per minute capacity.

W. N. Kratzer & Co., Pittsburgh, have been awarded a contract for a large addition to the plant of the Oil City Boiler Works, Oil City, Pa. The order calls for a steel frame building 180 x 355 ft., to be set on concrete foundations and having brick walls. The building has a central division 60 ft. wide, 48 ft. high, spanned by a 25-ton electric traveling crane, and on each side is a 60-ft. leanto, 34 ft. high, both equipped with 5-ton cranes. A 30-ft. rivet tower with 59 ft. clearance will be at one end of the building, and will contain three 10-ton cranes. About 400 tons of structural material will be required and the building is to be completed about April 1.

Bids will be received at the office of the town clerk, Las Amimas, Colo., until November 9, for the construction of a new pumping plant, including building and equipment and for extensions to the present mains, approximately 23,000 ft. of cast iron pipe.

### Foundries.

F. C. Hendrickson and others of Cumberland, Md., contemplate the establishment of a steel casting plant.

The Florence Machine Works, Florence, Ala., will build an addition to its foundry, 40 x 80 ft., which it expects to have in operation by December 1.

The Union Machine & Supply Company, Nashville, Tenn., whose foundry was recently destroyed by fire, will rebuild as quickly as possible, but will not be in the market for machinery, as it operates an extensive machine shop and is in a position to build all the machinery required. The new foundry will be electrically operated.

A No. 30 Newton cupola was installed in the Rensselaer Polytechnic Institute, Troy, N. Y., last summer, making the foundry department complete.

The Kutztown Foundry & Machine Company, Philadelphia, contemplates making a number of improvements and additions to its plant at Kutztown, Pa., which will consist of the erection of new buildings and the installation of some little special machinery. The improvements to be made are to be acted upon by the Board of Directors and will depend on the money they appropriate.

**Fires.**

The plant of the Buehler Machine Company, St. Marys, Ohio, was damaged $10,000 by fire October 22.

**Hardware.**

The Carnahan Stamping & Enameling Company, Canton, Ohio, is just completing a large new office building and is starting an addition to its enamel room, 108 x 132 ft. in size. The company is also installing three additional muffle gas producing furnaces of the Houston type, which it expects to have in heat by December 1.

The Universal Paint & Varnish Company, Pittsburgh, has erected a new building, about 40 x 50 ft., of brick and heavy mill construction, three stories high, which has been equipped with electrically operated mixing, grinding and other machinery, besides tanks, &c., for the manufacture of paints and varnishes. The boiler department and storage house is in the rear of this new building. A. B. Pruett, formerly of the Specialty Oil & Paint Company, Pittsburgh, is the head of the new company.

The Reeves Pulley Company, Columbus, Ind., has just completed a new boiler plant, completely isolated from the main factory. This building is 40 x 50 ft., having a concrete floor, corrugated iron siding and composition gravel roof. Two new tubular boilers, 18 x 72 ft., and new stack 52 x 80 ft., have also been installed. In setting these boilers they were placed 40 in. above the grates and the combustion chamber back of the bridge wall was made 5 ft. 6 in. from the boiler to the bottom of the fire brick floor. The boilers are suspended from steel beams so that no weight comes on the brick work. The company has also put in a new heating plant, together with all necessary conveyors, blowers, heaters, pumps, &c.

**Miscellaneous.**

The Sharon Scale Truck Mfg. Company has been organized and proposes to erect a plant at Sharon, Pa., for the manufacture of a combined truck and scale, under patents granted to E. L. Gage of Toledo, Ohio. The incorporators are E. L. Gage, A. E. Gage of Toledo, C. L. Bishop, William Devlin and C. V. Vinton of Sharon.

The Saunemin Gas Company, Saunemin, Ill., is installing an acetylene gas plant, involving an expenditure of about $9000, the equipment being furnished by the Acetylene Apparatus Mfg. Company, Chicago.

None of the machinery was destroyed by the recent fire at the plant of the Meyer Furnace Company, Peoria, Ill., and that which was damaged is being repaired. The company is already getting its plant in running order again.

The recent fire at the plant of the Franklin Kalbfleisch Company at Waterbury, Conn., only destroyed one of the buildings and not the entire plant. This building is to be reconstructed.

Lieut.-Col. Samuel Garcia Cuellar, adjutant to President Diaz of Mexico, while in Indianapolis, Ind., last week, bought an asphalt plant of Hetherington & Berner of that city, to be shipped in three weeks to the City of Mexico.

The Barcalo Mfg. Company, Buffalo, N. Y., manufacturer of iron and brass bedsteads, is arranging to build a large brick addition to its plant at Kentucky and Tecumseh streets and the Erie Railroad tracks. The new building will be equipped with modern machinery and will increase the capacity 20 per cent.

D. C. N. Collins, consulting engineer, 29 Broadway, New York, has awarded the contract for the reinforced concrete stock house for the Alsen American Portland Cement Company, Alsen, N. Y., to the Turner Construction Company, New York. The plans and specifications cover the design for cement bins 25 ft. high for holding loose cement, and this work is to be finished before January 1.

The Oakland Motor Car Company, Pontiac, Mich., has under construction a new addition to its factory which will enable it to increase its output for 1909 to 1500 cars. It is expected the new building will be completed within the next 60 days.

Vollkommer & Co., Pittsburgh, manufacturers of supplies for enameling concerns, who last week suffered a loss by fire and water, their main building being destroyed, have already commenced operations on the construction of a new building. It will be of steel and brick construction, 60 x 85 ft., and will have double the capacity of the one destroyed. This will be in service in about five weeks, but the firm has made necessary arrangements for caring for its customers' orders, which it can fill without loss of time.

The Empire Machine & Stamping Company, Buffalo, N. Y., has purchased property on Schenk street, North Tonawanda, N. Y., and is considering moving the plant to North Tonawanda and operating on an increased scale.

**The Philadelphia Foundry Foremen.**—At the October meeting of the Associated Foundry Foremen of Philadelphia and vicinity, held on the 20th, the following officers were nominated to serve during the ensuing year: President, W. A. Perrine, Abram Cox Stove Company, Philadelphia; vice-president, E. H. McCoy, Stanley G. Flagg & Co., Philadelphia; secretary, D. M. Kittenger, American Bridge Company, Pencoyd, Pa.; treasurer, C. M. Benkert, Fairmount Foundry Company, Philadelphia. These officers will be balloted for at the next regular meeting. Two applications to membership were received and accepted. The subject of the education of apprentices in the foundry was brought before the meeting, and considerable interest was caused by the general discussion which followed of the methods pursued in various shops, the age of apprentices when entering the foundry, difference between shops where day rate and piece work systems are in use, progress of the boy during the years of his apprenticeship and his prospects of becoming an intelligent molder when through his term. A discussion also took place on the methods for manufacturing semisteel.

## Mining Machinery in Mexico.

DURANGO, October 27, 1908.—The withdrawal of the obnoxious clause in the new mining law in Mexico has already had a beneficial effect upon the mining industry, which for a year or more has been in a greatly depressed condition on account of the financial upheaval in the United States. The sudden check to the influx of capital for investment in mines, which immediately followed the monetary panic last fall, was severely felt in the mining districts in Mexico. Expenses were cut down, and orders for new machinery in many instances countermanded. The fall in the market price of metals caused the absolute stoppage of the operations of many of the most important companies, notably at Cananea, Sonora, and partially, at Velardeña, Durango, while other copper properties of less note also stopped producing, or greatly curtailed their output. Thousands of workmen were thrown out of employment in the various mining camps thus affected. The situation was a gloomy one at the best, but it was rendered still more serious by the sudden appearance of a new factor in the shape of what was speedily designated an "anti-foreign" clause in the proposed revised mining regulations put forward by the Department of Fomento. This clause expressly prohibited foreign corporations from acquiring mining titles in the republic, the ostensible object being to compel outside companies to organize under Mexican laws.

The minister who is considered responsible for the new law invited full and free discussion and criticism of the measure from the interests likely to be affected by it. The public journals for months gave space to the views of their readers, foreign and native, upon the subject, the general opinion being strongly adverse to the sentiment embodied in the famous "Article 144."

The action of the Government, which has disapproved of the obnoxious clause and struck it out of the new law, has given cause for a feeling of widespread satisfaction among aliens engaged in mining operations throughout the country. This sentiment is finding expression in increased activity in the mining districts, as is shown by the placement of orders for mining machinery which had long been held up pending a settlement of the vexatious question suddenly brought to the front as to the Government's actual attitude toward foreign investors.

The local press of the capital thus reflects the improved conditions since the defeat of the clause referred to: "Although the time has been short since the announcement that the proposed law would be put away, many of the machinery houses report actual sales which had not been anticipated, and at the same time dealers declare that the feeling among the mining element has grown from despondency to optimism."

It was estimated by the Consul-General of the United States in Mexico some little time ago that the total sum of United States capital invested in Mexico in mining and smelting enterprises was no less than $125,000,000, gold. D.

The New York Machinery Exchange, 136 Liberty street, New York, has incorporated to manufacture special machinery and to represent manufacturers of machine tools and special machinery. The company will also deal in second-hand machinery. Jesse L. Law is interested.

# The Iron and Metal Trades

## Heavy Buying of Pig Iron.

### A Flood of Inquiries.

### Iron Production Largely Increased.

It is yet too early to measure the effect of the election upon the Iron and allied industries which must, of course, participate in the fruits of the encouragement of enterprise in all directions which is generally expected to follow. That consumption of Iron and Metals will increase is conceded by all, and that buying for the future and for stocking up may develop in considerable proportions is expected by many. In those branches in which low prices have been ruling an almost violent buying movement may develop. There are some indications of it in Pig Iron. In other branches, including almost the entire series of Finished products in which prices have been more or less successfully maintained during the last year, there is little inducement to anticipate future requirements, because no advances are expected, and because there is little danger of delays in deliveries during the winter months. The country is bare of stocks, it is true, but manufacturers are in a position to quickly respond to any call for additional goods.

We had occasion to call attention to the fact that in certain districts some large buying had developed in anticipation of the election. It appears now that a good deal of this buying was tempted by concessions, but that it was followed by further sales of magnitude since our last report, at a somewhat better range of prices.

Chicago reports an active market for Pig Iron, with sales aggregating about 50,000 tons, which includes one block of 20,000 tons for shipment through the first half, to an agricultural implement interest. The bulk of the whole business was taken by Northern furnaces who are relatively lower in that district than the Southern producers. Cincinnati estimates that the amount of Iron sold through that market footed up 75,000 tons. There has been some good selling in New England and in the Buffalo District. Our Cleveland correspondent notes sales in that district during the week of about 40,000 tons of Foundry Iron, with large inquiries pending, among which is one for 27,000 tons from a Pipe shop. Pittsburgh reports a number of transactions in Pig Iron, of which the largest authentic sale comprised 10,000 tons of Basic for St. Louis delivery, but rumors credited a large local Steel company with purchases of 30,000 to 40,000 tons of Basic in addition to contracts previously made. Local foundries have bought considerable quantities of Foundry Iron.

From all quarters comes the report of very large inquiries and close testing of the market by large and small consumers for delivery, not only during the balance of the year but also for first and second quarter of 1909.

Additional Steel car orders have come up for consideration, the number needed for four roads being about 6000. There is also new work in volume coming up for the locomotive shops, one system needing 25 new engines. The Grand Trunk Railway has ordered 2000 cars from the Pressed Steel Car Company, Pittsburgh. They will be of especially heavy construction, requiring about 20 tons of various Shapes for each car. The Plates, Shapes, Bars and Axles, amounting to about 40,000 tons, will be furnished by the Carnegie Steel Company.

The leading Structural interest has closed for 5000 tons of Girder and Bridge work for the Atchison, Topeka & Santa Fé, and a Pittsburgh fabricator has secured the contract for 3000 tons of 9-ft. riveted Pipe for Mexico. The Plates and Shapes for a boat to be built at Toledo, 3500 tons, have been awarded.

Bids have gone in and are being considered for 11,000 tons of Shapes for the Chicago City Hall, 9500 tons for the People's Gas Company, 5300 tons for the Blackstone Hotel, 3500 tons for a mercantile building in Chicago and about 8000 tons for the Curtis Building in Philadelphia.

The Metals are stronger. A good volume of business has been done in Copper and Electrolytic closes at 13¾c. to 13⅞c. cash, with little available at the inside figure.

The production of Pig Iron during October, exclusive of Charcoal Iron, was 1,563,483 tons, a gain over September of 145,000 tons. The daily rate was 50,434 tons, against 47,300 tons during September. We enter November with 200 blast furnaces in operation, whose capacity is rated at 362,685 tons, a gain of 12 furnaces in number and of close to 25,000 tons weekly in capacity.

## A Comparison of Prices.

**Advances Over the Previous Month in Heavy Type, Declines in Italics.**

At date, one week, one month and one year previous.

| | Nov. 4, 1908. | Oct. 28, 1908. | Oct. 7, 1908. | Nov. 6. 1907. |
|---|---|---|---|---|
| **PIG IRON,** Per Gross Ton: | | | | |
| Foundry No. 2, Standard, Philadelphia | $16.75 | $16.75 | $16.75 | $19.00 |
| Foundry No. 2, Southern, Cincinnati | 15.75 | 15.75 | 15.75 | 20.25 |
| Foundry No. 2, Local, Chicago | 16.50 | 16.50 | 16.50 | 21.50 |
| Basic, delivered Eastern Pa. | **16.00** | 16.00 | 15.50 | 18.00 |
| Basic, Valley Furnace | *13.90* | 13.85 | 14.25 | 18.50 |
| Bessemer, Pittsburgh | *15.65* | 15.40 | 15.90 | 20.90 |
| Gray Forge, Pittsburgh | 14.40 | 14.40 | 14.40 | 19.90 |
| Lake Superior Charcoal, Chicago | 19.50 | 19.50 | 19.50 | 25.50 |
| **BILLETS, &c.,** Per Gross Ton: | | | | |
| Steel Billets, Pittsburgh | 25.00 | 25.00 | 25.00 | 28.00 |
| Forging Billets, Pittsburgh | 27.00 | 27.00 | 27.00 | 30.00 |
| Open Hearth Billets, Phila. | 26.20 | 26.20 | 26.20 | 30.00 |
| Wire Rods, Pittsburgh | 33.00 | 33.00 | 33.00 | 34.00 |
| Steel Rails, Heavy, at mill | 28.00 | 28.00 | 28.00 | 28.00 |
| **OLD MATERIAL,** Per Gross Ton: | | | | |
| Steel Rails, Melting, Chicago | *14.50* | 14.50 | 14.75 | 16.00 |
| Steel Rails, Melting, Phila. | **15.25** | 15.00 | 15.00 | 13.50 |
| Iron Rails, Chicago | 18.00 | 18.00 | 18.00 | 19.50 |
| Iron Rails, Philadelphia | *19.75* | 19.50 | 20.50 | 19.00 |
| Car Wheels, Chicago | 15.25 | 15.25 | 15.25 | 24.50 |
| Car Wheels, Philadelphia | 15.00 | 15.00 | 15.00 | 19.00 |
| Heavy Steel Scrap, Pittsburgh | **15.50** | 15.50 | 15.00 | 15.50 |
| Heavy Steel Scrap, Chicago | **15.00** | 14.00 | 13.00 | 14.00 |
| Heavy Steel Scrap, Phila. | **15.25** | 15.00 | 15.00 | 13.50 |
| **FINISHED IRON AND STEEL,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Refined Iron Bars, Philadelphia | 1.45 | 1.45 | 1.45 | 1.75 |
| Common Iron Bars, Chicago | 1.50 | 1.50 | 1.50 | 1.78 |
| Common Iron Bars, Pittsburgh | 1.40 | 1.40 | 1.40 | 1.70 |
| Steel Bars, Tidewater, New York | 1.56 | 1.56 | 1.56 | 1.76 |
| Steel Bars, Pittsburgh | 1.40 | 1.40 | 1.40 | 1.60 |
| Tank Plates, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Tank Plates, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Beams, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Beams, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Angles, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Angles, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Skelp, Grooved Steel, Pittsburgh | 1.45 | 1.45 | 1.45 | 1.70 |
| Skelp, Sheared Steel, Pittsburgh | 1.50 | 1.50 | 1.50 | 1.80 |
| **SHEETS, NAILS AND WIRE,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Sheets, Black, No. 28, Pittsburgh | 2.50 | 2.50 | 2.50 | 2.60 |
| Wire Nails, Pittsburgh | 1.95 | 1.95 | 1.95 | 2.05 |
| Cut Nails, Pittsburgh | *1.75* | 1.75 | 1.80 | 2.05 |
| Barb Wire, Galv., Pittsburgh | 2.40 | 2.40 | 2.40 | 2.50 |
| **METALS,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Lake Copper, New York | **14.00** | 14.00 | 13.75 | 14.50 |
| Electrolytic Copper, New York | **13.75** | 13.50 | 13.50 | 14.37½ |
| Spelter, New York | **4.90** | 4.85 | 4.85 | 5.50 |
| Spelter, St. Louis | **4.80** | 4.70 | 4.70 | 5.35 |
| Lead, New York | *4.35* | 4.35 | 4.45 | 4.60 |
| Lead, St. Louis | 4.30 | 4.20 | 4.30 | 4.40 |
| Tin, New York | **30.37½** | 29.50 | 29.50 | 30.60 |
| Antimony, Hallett, New York | **8.00** | 8.00 | 7.75 | 10.50 |
| Nickel, New York | 45.00 | 45.00 | 45.00 | 45.00 |
| Tin Plate, 100 lb., New York | $3.89 | $3.89 | $3.89 | $4.09 |

## Chicago.

FISHER BUILDING, November 4, 1908.—(*By Telegraph.*)

It is gratifying to note that on the eve of election the Iron and Steel market exhibits no signs of uneasiness, and while there have been no transactions of significant interest in finished material, a number of important projects now in hand are being carried unhesitatingly forward. Satisfactory progress is being made in negotiations for the construction of four Chicago buildings, structures which will require an aggregate of over 23,000 tons of Steel. The largest of these is the City Hall, calling for 11,000 tons, on which the bids submitted by general contractors have been opened and are now under consideration. Judging from the number of structural enterprises on which estimates are being made up, the outlook for increased activity is quite encouraging. The volume of specifications against Steel Bar contracts for the month of October was highly satisfactory, exceeding by a considerable margin, so far as the principal interest was concerned, that of any previous month in this year. This signifies a larger measure of activity in Steel working plants, especially among the implement makers, who are making up a liberal line of stock for the coming season. No developments are reported in the attitude of railroads respecting engagements for 1909 Rail tonnage, and rolling schedules of the Rail mills are almost wholly dependent upon specifications, which are only fair. Light Rails, however, continue active, which reflects a better degree of activity in lumber and mining operations. Anticipating the possibility of firmer prices after election, a good many melters last week

began covering in a moderate way for anticipated Pig Iron requirements through the first quarter and, in some cases, for the first half of next year. It was observed, however, that there was nothing of a speculative nature in this movement, since all purchases were made on a conservative basis, in the belief that prices would at least not recede materially from the present level. Scrap Iron holds firm, with slight advances on Melting Steel and rolling mill grades.

**Pig Iron.**—As was foreshadowed by the eagerness manifested in recent inquiries for Pig Iron, a determined buying movement developed last week, which resulted in the transfer of a considerable tonnage of Foundry Iron. It was not so much the aggregate volume of sales as the character of buying that attracted attention. The business was widely distributed, being composed largely of orders ranging from 200 to 500 tons, with occasional lots of 1000 to 1500 tons, it being estimated that a total of around 25,000 tons was placed in this way through the local selling agents. While a large part of the Iron taken was for the first and second quarters of next year, a considerable portion of it was for November and December shipment. Considering the spread of 50c. to $1 a ton between the price of Northern and Southern furnaces, the fact that the bulk of the business was taken by the former interests occasioned no surprise. There were, notwithstanding, a number of small sales of Southern Iron made for last quarter and first half delivery, but from the nature of these transactions is believed that they represent brands required for mixtures. It is claimed that $13, Birmingham, is being strictly maintained on forward business, though it is likely that some of the prompt shipment orders were placed at $12.50. There are still quite a number of inquiries in the market, among which are some of considerable size, one from a local consumer being for 1500 tons. A good many prospective buyers asked for options on tonnage at present prices good for acceptance after election, but so far as can be learned such propositions were not considered by sellers. At this writing, on Election Day, trading is suspended, awaiting the outcome. The leading producers are unwilling to quote beyond the instant, and prices therefore are largely nominal. Some of the larger consumers were included among the buyers, but only for moderate lots. The Allis-Chalmers Company took a few hundred tons of Lake Superior Charcoal, the Crane Company purchased around 1000 tons, part of which was Southern Silicon, the remainder being Northern Iron, and the leading radiator interest also added to its previous purchases. The following quotations are for November and December delivery, f.o.b. Chicago:

| | |
|---|---|
| Lake Superior Charcoal | $19.50 to $20.00 |
| Northern Coke Foundry, No. 1 | 17.00 to 17.50 |
| Northern Coke Foundry, No. 2 | 16.50 to 17.00 |
| Northern Coke Foundry, No. 3 | 16.00 to 16.50 |
| Northern Scotch, No. 1 | 17.50 to 18.00 |
| Southern Coke, No. 1 | 17.35 to 17.85 |
| Southern Coke, No. 2 | 16.85 to 17.35 |
| Southern Coke, No. 3 | 16.35 to 16.85 |
| Southern Coke, No. 4 | 15.85 to 16.35 |
| Southern Coke, No. 1 Soft | 17.35 to 17.85 |
| Southern Coke, No. 2 Soft | 16.85 to 17.35 |
| Southern Gray Forge | 15.35 to 15.85 |
| Southern Mottled | 15.10 to 15.60 |
| Malleable Bessemer | 17.00 to 17.50 |
| Standard Bessemer | 16.90 to 17.40 |
| Jackson Co. and Kentucky Silvery, 6 % | 19.90 to 20.40 |
| Jackson Co. and Kentucky Silvery, 8 % | 20.90 to 21.40 |
| Jackson Co. and Kentucky Silvery, 10 % | 22.90 to 23.40 |

(*By Mail.*)

**Billets and Rods.**—The demand for Forging Billets is still limited to the small orders required for immediate use, and no inquiries are reported that seem to indicate renewed interest on the part of buyers. The Western market is reported firm, as to price; in fact, the size and character of transactions constituting the present movement offer little incentive to sellers to depart from the regular schedule, which is $28.50, Chicago. While not much new business in Wire Rods is being entered, specifications against contracts are being furnished with reasonable liberality. We quote the following prices, which are reported to be firmly held: Bessemer, $33; Basic, $34; Chain, $33, all at Pittsburgh.

**Rails and Track Supplies.**—Business in Light Rails is much more satisfactory, relatively, than in standard sections. The local interest booked one order last week of 2500 tons, and the aggregate for the month exceeded expectations, reaching 8000 tons. Occasional orders for traction Rails are being placed by interurban lines; one of 3800 tons for a Michigan system was secured last week by the Illinois Steel Company, and another lot of 2500 tons is pending. Specifications from the steam roads are only fair, but a lot of 5000 tons was included in the aggregate supplied to the local mill. No orders for notable quantities of Spikes and Bolts are being placed, but a fair number of scattered lots is being taken by the roads which invariably insist upon prompt shipments. The position of the railroad interests, respecting the purchase of track material and supplies, is apparently unchanged, and there is no disposition in any quarter to anticipate future needs. Light Rail prices are reasonably firm in the West, where, as a rule, they are not shaded more than $1 a ton, but in Southern territory competition has forced more liberal concessions. We quote as follows: Angle Bars, accompanying Rail orders, 1908 delivery, 1.50c.; car lots, 1.60c.; Spikes, 1.80c. to 1.90c., according to delivery; Track Bolts, 2.15c. to 2.20c., base, Square Nuts, and 2.30c. to 2.35c., base, Hexagon Nuts. The store prices on Track Supplies range from 0.15c. to 0.20c. above mill prices. Light Rails, 25 to 45 lb., $26; 20-lb., $27; 16-lb., $28; 12-lb., $29. Standard Sections, $28, f.o.b. mill, full freight to destination.

**Structural Material.**—The leading transaction in the local market was the opening of bids on Monday for the construction of the new City Hall, for which 11,000 tons of Structural Shapes will be required. Ten bids were submitted, the lowest, $3,295,000, being that of the Noel Construction Company, Baltimore, the only outside competitor. The next in order were the Alling Construction Company, Chicago, $3,333,333; Thompson-Starrett Company, Chicago, $3,370,000; John Griffiths & Sons, Chicago, $3,436,000, and Wells Bros. Company, Chicago, $3,437,000. At this writing no award of the contract has been made, but it is understood that owing to irregularity in tenders, there is some doubt as to whether the business will go to either of the two lowest bidders. Figures are in on the Blackstone Hotel, 3000 tons, and the office building of the People's Gas Light & Coke Company, 9500 tons. For the *Dry Goods Reporter* building, to be erected by Lucius G. Fisher, 500 tons of fabricated material was taken by the Morava Construction Company. Among the smaller transactions closed were 100 tons for a power house to be built by the Bisbee Naco Water Company, Bisbee, Ariz., and 110 tons for a Denver hotel, both of which were taken by the Minneapolis Steel & Machinery Company; six steel grain tanks amounting to 100 tons which went to the El Paso Foundry & Machine Company, and three small bridges for California points which were distributed between the Belfontain Bridge Company, Belfontain, Ohio; Clinton Bridge & Iron Works, Clinton, Iowa, and the Union Iron Works, Los Angeles, Cal. Among a number of miscellaneous orders taken by the American Bridge Company were 125 tons from the U. S. Smelting Company for an auxiliary building, Bingham, Utah, and 225 tons for a warehouse at Salt Lake City. In addition to the improvement already realized in the demand for Structural Material, there is a notable increase in inquiries embracing a large variety of work which seems destined to develop a considerable amount of business in the near future. The local mill is well supplied with specifications to keep it busy well through the present month. Prices from store are 1.95c. to 2c. Mill prices at Chicago are as follows: Beams and Channels, 3 to 15 in., inclusive, 1.78c.; Angles, 3 to 6 in., ¼-in. and heavier, 1.78c.; larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 15 in., 1.88c.; Zees, 3 in. and over, 1.78c.; Tees, 3 in. and over, 1.83c.

**Plates.**—There has been some improvement in the general demand for Plates, but it is by no means as forward as in some other mill products. The most important new tonnage has come from recent orders placed for cars and a growing volume of Structural business; as a result there is more doing in Universal than in Sheared Plates. The general run of orders comprises only the actual requirements of work in hand, and, in this respect, evidences no change in the attitude of buyers. Nor has there been any modification of the situation as to prices, which are still subject to some irregularity, occasioned by the willingness of a few mills to concede from $1 to $2 a ton from the regular schedule, especially on narrow sizes. We quote mill shipments as follows: Tank Plates, ¼-in. and heavier, wider than 6¼ and up to 100 in. wide, inclusive, car lots, Chicago, 1.78c.; 3-16 in., 1.88c.; Nos. 7 and 8 gauge, 1.93c.; No. 9, 2.03c.; Flange quality, in widths up to 100 in., 1.88c., base, for ¼-in. and heavier, with the same advance for lighter weights; Sketch Plates, Tank quality, 1.88c.; Flange quality, 1.98c. Store prices on Plates are as follows: Tank Plates, ¼-in. and heavier, up to 72 in. wide, 2c. to 2.10c.; from 72 to 96 in. wide, 2.10c. to 2.20c.; 3-16 in. up to 60 in. wide, 2.10c. to 2.25c.; 72 in. wide, 2.30c. to 2.40c.; No. 8, up to 60 in. wide, 2.10c. to 2.15c.; Flange and Head quality, 0.25c. extra.

**Sheets.**—The past week or two has advanced the position of the mills very little so far as increase in new business is concerned, but, withal, there has been no appreciable diminution of demand from the Western trade, which is supplying a fair amount of new business in which Galvanized Sheets predominate. It is believed that some orders that would otherwise have been placed have been held up pending the results of the election, and on this account a little more activity is looked for in the next week or two, in any event. Prices on light Black Sheets are reported to be fairly well maintained and are somewhat firmer on Galvanized, though some mills are yet shading regular prices from $1 to $2 a ton on desirable orders. We quote mill shipments as follows, Chicago: Blue Annealed, No. 10, 1.98c.; No. 12, 2.05c.; No. 14, 2.08c.; No. 16, 2.18c.; Box Annealed, Nos. 17 to 21, 2.43c.; Nos. 22 to 24, 2.48c.; Nos. 25 and 26, 2.53c.; No. 27, 2.58c.; No. 28, 2.68c.; No. 29, 2.78c.; No. 30, 2.88c.; Galvanized Sheets, Nos. 10 to 14, 2.63c.; Nos. 15 and 16, 2.83c.; Nos. 17 to 21, 2.98c.; Nos. 22 to 24, 3.13c.; Nos. 25 and 26, 3.33c.; No. 27, 3.53c.; No. 28, 3.73c.; No. 30, 4.23c.; Black Sheets from store: Blue

Annealed, No. 10, 2.15c.; No. 12, 2.20c.; No. 14, 2.25c.; No. 16, 2.35c.; Box Annealed, Nos. 18 to 21, 2.60c.; Nos. 22 to 24, 2.65c.; No. 26, 2.70c.; No. 27, 2.75c.; No. 28, 2.85c.; No. 30, 3.25c.; Galvanized from store: Nos. 10 to 16, 3c.; Nos. 18 to 20, 3.15c.; Nos. 22 to 24, 3.30c.; No. 26, 3.50c.; No. 27, 3.70c.; No. 28, 3.90c.; No. 30, 4.40c. to 4.45c.

**Bars.**—The most favorable conditions to be found in any division of the market are presented in the demand for Steel Bars. While there is comparatively little new business, specifications are coming out in satisfactory volume, so that the Bay View mills of the Illinois Steel Company are now running practically full. Specifications received by this interest for October amounted to 18,000 tons in addition to which 7000 tons of new business was entered. The independent mills in this district continue partially active. The demand for Bar Iron holds fairly even, and consists mainly of small lots required to meet present needs. Specifications against contract are subject to the same restrictions. The mills are, therefore, unable to anticipate rolling schedules far in advance. No deviation from regular prices on Steel Bars is reported, and Bar Iron likewise is held with reasonable firmness. Quotations, Chicago, are as follows: Steel Bars, 1.58c., with half extras; Iron Bars, 1.50c.; Hoops, No. 13, and lighter, 1.98c., full extra Hoop card; Bands, No. 12 gauge, and heavier, 1.58c., half extra Steel Bar card; Soft Steel Angles and Shapes, 1.68c., half extras. Store prices are as follows: Bar Iron, 2c. to 2.15c.; Steel Bars, 1.90c. to 2c.; Steel Bands, 1.90c., as per Bar card, half extras; Soft Steel Hoops, 2.25c. to 2.35c., full extras.

**Merchant Pipe.**—Through August, September and October there has been practically no variation in the totals representing the business of the leading interest for these months. The demand continues even, not only in amount, but in character as well. Jobbers' purchases are measured by the estimated consumptive demand of 30 to 60 days ahead, with no allowance for requirements beyond that time. The following mill discounts are quoted: Black Pipe, ¾ to 6 in., 73.2; 7 to 12 in., 70.2; Galvanized, ¾ to 6 in., 63.2. These discounts are subject to one point on the base. From store, in small lots. Chicago jobbers quote 73 per cent. on Black Steel Pipe, ¾ to 6 in. About three points above these prices is asked for Iron Pipe.

**Boiler Tubes.**—Locomotive Tubes are moving fairly well under the increased requirements for repair work. It is observed, however, that orders include only what is absolutely required for the equipment of engines actually needed for present service. The railroads, in other words, have not begun to buy or replenish their storehouse stocks in anticipation of future needs. Merchant Tubes are extremely inactive, and mill shipments are especially light since jobbers' stocks are largely depended upon for the supply of current wants. Mill quotations for future delivery, on the base sizes, are as follows: 2¾ to 4¼ in., inclusive, Steel Tubes, 63.2; Iron, 50.2; Seamless, 50.2; 2½ in. and smaller, and lengths over 18 ft., and 2½ in. and larger, and lengths over 22 ft., 10 per cent. extra. Store prices are as follows:

| | Steel. | Iron. | Seamless. |
|---|---|---|---|
| 1 to 1½ in. | 35 | 35 | 35 |
| 1¾ to 2¼ in. | 50 | 35 | 35 |
| 2½ in. | 52½ | 35 | 35 |
| 2¾ to 5 in. | 60 | 47½ | 47½ |
| 6 in. and larger | 50 | 35 | .. |

**Merchant Steel.**—Within the past two weeks some slowing up in Merchant Steel specifications has been noted, but no especial significance is attached to this tardiness, except that it points to temporary hesitation, which it is believed will disappear after this week. General conditions seem to afford encouragement, in that there is a noticeable tendency on the part of jobbers to order a little further ahead than they have been doing. We quote as follows: Planished or Smooth Finished Tire Steel, 1.78c.; Iron Finish, up to 1½ x ½ in., 1.73c., base, Steel card; Iron Finish, 1½ x ½ in. and larger, 1.58c., base, Tire card; Channels for solid Rubber Tires. ¾ to 1 in., 2.08c., and 1⅛ in. and larger, 1.98c.; Smooth Finished Machinery Steel, 2.08c.; Flat Sleigh Shoe, 1.63c.; Concave and Convex Sleigh Shoe, 1.83c.; Cutter Shoe, 2.05c.; Toe Calk Steel, 2.13c.; Railroad Spring, 1.98c.; Crucible Tool Steel, 7¼c. to 8c., and still higher prices are asked on special grades. Cold Rolled Shafting on contracts for 100 tons and over 57 per cent. off; 56 per cent. off in car lots; 52 per cent. in less than car lots, on which carload freight is allowed within base territory.

**Cast Iron Pipe.**—In the absence of any purchases of round lots last week, business was made up chiefly of small orders, those entered by the leading interest amounting to around 2000 tons. The city of Helena, Mont., let a general contract for the construction of a new water works, which included 3500 tons of Pipe, to the American Light & Water Company, Kansas City, Mo. It is expected that the city of Detroit will come into the market about the middle of the month for about 3700 tons. The foundries, though not running to full capacity, are fairly well employed. We quote nominally per ton, Chicago, as follows: Water Pipe, 4 in., $27; 6 to 12 in., $26; 16 in. and up, $25, with $1 extra for Gas Pipe.

**Metals.**—The improved demand noted in last week's report was followed up by still more liberal buying which embraced a number of good contracts from leading consumers covering deliveries extending through November and December, with a few as far ahead as February. Under the stimulus of this demand Copper prices hardened and registered an advance of at least a quarter of a cent a pound. Lead also, which for some weeks has been sluggish and weak, moved up 20 cents per 100 lb. Spelter likewise shared in the general advance although to a less extent. Following the wake of Ingot Metal, Old Metals are in better demand at slightly advanced prices. Quotations are as follows: Casting Copper, 14c.; Lake, 14¼c. to 14½c., in car lots, for prompt shipment; small lots, ¼c. to ⅜c. higher; Pig Tin, car lots, 32½c.; small lots, 34½c.; Lead, Desilverized, 4.55c. to 4.65c., for 50-ton lots; Corroding, 4.80c. to 4.90c., for 50-ton lots; in car lots, 2¼c. per 100 lb. higher; Spelter, 4.90c.; Cookson's Antimony, 10½c., and other grades, 9¾c. to 10¼c.; Sheet Zinc is $7, f.o.b. La Salle, in car lots of 600-lb. casks. On Old Metals we quote: Copper Wire, 13¾c.; Heavy Copper, 13½c.; Copper Bottoms, 12¼c.; Copper Clips, 13½c.; Red Brass, 12¼c.; Yellow Brass, 9¾c.; Light Brass, 7c.; Lead Pipe, 4.35c.; Zinc, 3¾c.; Pewter, No. 1, 21c.; Tin Foil, 23c.; Block Tin Pipe, 25c.

**Old Material.**—All of the tonnage offered by the railroads last week was promptly taken at good prices, which in some instances exceeded the outside figures of current quotations. There is plenty of material stored in dealers' yards, but it is in strong hands, and is being resolutely held for higher prices, which the holders confidently expect will be realized within reasonable time. Under these circumstances, therefore, the market is dependent upon the daily outcome from original sources for the current supply. Inasmuch as the railroads, which are the principal producers, are tendering less than the normal quantity of Old Material and the consumption is slowly but steadily growing, the situation from the sellers' viewpoint seems to favor an upward tendency in values. The mills are taking Wrought Scrap freely and other mill grades are in good demand. Heavy Melting Steel has firmed up 50c. a ton as a result of liberal purchases by Open Hearth melters whose inquiries indicate further needs. The entire list is, in fact, stronger this week, with a positive advance of from 25c. to 50c. a ton on the majority of items quoted. Several small lists are offered by the railroads for closure on Wednesday. These include 2000 tons from the Chicago & Northwestern, 450 tons from the Omaha line, 600 tons from the Michigan Central, and 300 tons from the Wisconsin Central. A recent sale of 1100 tons of Relaying Rails by a Western road is said to have been made on a basis of $23, Chicago. The following prices are per gross ton, f.o.b. Chicago:

| | |
|---|---|
| Old Iron Rails | $18.00 to $18.50 |
| Old Steel Rails, rerolling | 16.25 to 16.75 |
| Old Steel Rails, less than 3 ft. | 14.50 to 15.00 |
| Relaying Rails, standard sections, subject to inspection | 22.50 to 23.50 |
| Old Car Wheels | 15.25 to 15.75 |
| Heavy Melting Steel Scrap | 15.00 to 15.50 |
| Frogs, Switches and Guards, cut apart | 14.25 to 14.75 |
| Mixed Steel | 10.25 to 10.75 |

The following quotations are per net ton:

| | |
|---|---|
| Iron Fish Plates | $16.75 to $17.25 |
| Iron Car Axles | 20.00 to 20.50 |
| Steel Car Axles | 17.50 to 18.00 |
| No. 1 Railroad Wrought | 14.00 to 14.50 |
| No. 2 Railroad Wrought | 13.00 to 13.50 |
| Railway Springs | 13.00 to 13.50 |
| Locomotive Tires, smooth | 13.25 to 13.75 |
| No. 1 Dealers' Forge | 11.00 to 11.50 |
| Mixed Busheling | 8.25 to 8.75 |
| Iron Axle Turnings | 8.00 to 8.50 |
| Soft Steel Axle Turnings | 8.00 to 8.50 |
| Machine Shop Turnings | 8.00 to 8.50 |
| Cast Borings | 6.50 to 7.00 |
| Mixed Borings, &c | 6.50 to 7.00 |
| No. 1 Mill | 8.00 to 8.50 |
| No. 2 Mill | 7.00 to 7.50 |
| No. 1 Boilers, cut to Sheets and Rings | 9.00 to 9.50 |
| No. 1 Cast Scrap | 13.50 to 14.00 |
| Stove Plate and Light Cast Scrap | 12.00 to 12.50 |
| Railroad Malleable | 13.00 to 13.50 |
| Agricultural Malleable | 11.50 to 12.00 |
| Pipes and Flues | 10.25 to 10.75 |

W. G. Murray, formerly engaged with the David Evans & Co. Pig Iron selling agency, has accepted a position as salesman with the Chicago agency of Matthew Addy & Co., in the Rookery Building.

Raising into position in one piece a steel stack 72 in. in diameter and 105 ft. high, weighing between 18 and 20 tons, is a feat recently performed at the Crocker-Wheeler Company's plant at Ampere, N. J. The stack is a temporary one in the sense that it will be displaced when future demands require extending the boiler plant to the final capacity the design contemplates, 4800 boiler hp. The present capacity under natural draft is 800 hp., with an ultimate capacity under artificial draft of 1600 hp. The stack was built by the Dover Boiler Works, Dover, N. J., and was designed and erected by Walter Kidde, engineer and constructor, New York City.

## Pittsburgh.

PARK BUILDING, November 4, 1908.—(*By Telegraph.*)

**Pig Iron.**—The largest sale of the week was 10,000 tons of Basic, bought by a St. Louis manufacturer of Steel Castings for first half of next year at about $17, delivered, St. Louis. This Iron is said to come from Columbus, Ohio, netting the seller about $14.50, at furnace, the freight to St. Louis being $2.50 a ton. Had the Iron been sold by a Valley furnace it would have netted $13.90 to the furnace, the freight thence to St. Louis being $3.10 a ton. There are also reports that the Pittsburgh Steel Company has bought from 30,000 to 40,000 tons more of Basic, all for delivery this year, at an average of about $13.90, at Valley furnace, but this is not officially confirmed. There have been several smaller sales of Basic for this year's delivery at $13.85 and up to $14, at Valley furnace. We note a sale of 500 tons of Bessemer for November and December shipment at $14.75, Valley furnace. The Standard Mfg. Company has bought about 2000 tons of Southern No. 2 Foundry for its Louisville Works and the Westinghouse Electric & Mfg. Company has bought some tonnage of Northern No. 2 Foundry. Prices on Bessemer and Basic seem to be a little firmer. We quote Bessemer for prompt shipment at $14.75; Basic, $13.90 to $14; Malleable Bessemer, $14.25 to $14.50; No. 2 Foundry, $14.50, and Forge, $13.50, all at Valley furnace, the rate to Pittsburgh being 90c. a ton.

**Steel.**—Some small sales of Billets and Sheet and Tin Bars are still being made by outside mills at 50c. to $1 a ton under prices of the large Steel manufacturers who, we are advised, are adhering rigidly to regular prices. New orders are light, and for small quantities only, most regular consumers being covered by contract. We quote Bessemer and Open Hearth Billets, 3⅞ in. and larger, up to and including 0.25 carbon, $25; 0.26 to 0.60 carbon, $1 extra; over 0.60 carbon, $2 extra, all f.o.b. Pittsburgh. For Wheeling, Martins Ferry, Follansbee, Newcastle, Sharon, Steubenville and Washington (Pa.) delivery, half the freight, or 50c. additional, is charged. Sheet and Tin Bars in random lengths are $27.50, f.o.b. Pittsburgh. Forging Billets take $2 advance over Rolling Billets.

(*By Mail.*)

With the election out of the way, it is not unlikely there will be a moderate increase in business in the Steel trade. It is known that quite a number of orders for material of different kinds have been held up pending the result of the election, but reports of large contracts for Rails and Cars to be placed at once in the event of Taft's election are much exaggerated and, in most cases, untrue. It is expected that within a short time a number of the leading railroads will be in the market for a large tonnage of Rails for 1909 delivery, but few orders are expected to be placed for shipment this year. The local situation has been extremely quiet for the past few days, and the active inquiry for Basic and Foundry Pig Iron, noted in this report in the last two or three weeks, has quieted down to some extent, but while prices of Pig Iron are not actually higher the tone of the market is firmer. Reports are that the Pittsburgh Steel Company has again been a heavy buyer of Basic for delivery this year, being credited with buying upward of 40,000 tons, part of this coming from the valleys and part from other districts. A Western interest has also bought 10,000 tons of Basic for delivery next year, and there have been smaller sales, aggregating 5000 to 10,000 tons. The demand for Bessemer Iron is quiet, but for Foundry Iron is fairly active. The Westinghouse Electric & Mfg. Company has bought a fairly large tonnage, and the Standard Sanitary Mfg. Company has bought some Southern No. 2 for delivery at its Louisville, Ky., works. The Steel market is quiet, and on the small amount of business that is coming in the market several of the outside Steel concerns that are not among the largest producers occasionally take contracts for a few hundred tons of Billets, Sheet or Tin Bars and furnish this Steel at $1 a ton or thereabouts less than is charged by the larger interests. The tonnage is insignificant, however, as the leading consumers of Steel have their regular sources of supply and for reasons of policy do not go out in the open market. The volume of business in Finished Material is holding up pretty well, orders booked in October showing an increase over September, and shipments by the mills were also heavier. Some large contracts for Structural Steel have been placed, mostly in Chicago and New York, and considerable business is pending. The Wire trade is heavy, actual orders entered by the leading interests in October being the largest in any one month in this year. There is more inquiry in the Coke trade, and prices for prompt Coke are higher. The Scrap trade is active, and the demand for Heavy Steel Scrap seems to be heavier just now than the available supply, with the result that prices are very firm.

**Ferromanganese.**—The quotation of $42 in this report last week on 80 per cent. Ferro for prompt shipment was a typographical error. The market on prompt Ferro is about $42.75, seaboard, a local interest reporting a sale of 50 tons at that price, equal to $44.70, Pittsburgh. On Ferro for delivery over first quarter and first half of next year, $43, seaboard, or $44.95, Pittsburgh, is quoted, and the market is firm at this price.

**Ferrosilicon.**—Prices continue weak, and we note a sale of 50 tons for November and December at $64, Pittsburgh.

**Wire Rods.**—Not many orders for Rods are being placed, but the trade is specifying freely against contracts, and the mills are shipping out a heavier tonnage than for some time. Prices are firm, and we quote Bessemer Rods at $33, Chain Rods $33 and Basic $34, Pittsburgh.

**Muck Bar.**—The market is quiet, the only sale reported being one of 350 to 400 tons at about $25, Pittsburgh.

**Skelp.**—A local producer of Skelp has contracted with a Pipe mill for a fairly large Iron tonnage, to be used in making Iron Pipe. Prices are nominally as follows: Grooved Steel Skelp, 1.45c. to 1.50c.; Sheared Steel Skelp, 1.50c. to 1.60c.; Grooved Iron Skelp, 1.60c. to 1.70c., and Sheared Iron Skelp, 1.70c. to 1.75c., f.o.b. Pittsburgh.

**Steel Rails.**—Orders for both Standard Sections and Light Rails in the past week were very light. It is a notable fact that probably more than half of the limited output of the Carnegie Steel Company's Edgar Thomson mill for some months has been Rails for export shipment. This company is making regular shipments of Rails to Japan and other countries, aggregating a considerable tonnage. Prices on Light Rails rolled from Billets, which are still being shaded from $1 to $2 a ton for Rerolled Rails, are as follows: $25 for 25 to 45 lb. Sections, with $1 advance for 20 lb., $2 advance for 16 lb., and $3 advance for 12 lb. Standard Sections are $28, at mill, and Angle Splice Bars, 1.65c., at mill.

**Plates.**—The South & Western Railroad has placed an order with the Pressed Steel Car Company for 2200 Steel gondola cars, and we understand the Plates and Shapes will be furnished by a local mill. A Western road is in the market for 500 Steel cars, and a Virginia road for 1500 Steel gondola cars. Both these contracts are expected to be placed soon. The court now has the papers in the Brooklyn water works job, and is expected to render a decision in a short time. This contract calls for about 19,000 tons of Plates for lock bar Pipe. If it is placed with the T. A. Gillespie Company of this city, the Plates will be rolled by the Carnegie Steel Company, which has also taken a contract for 3500 tons of Plates and Shapes for a boat to be built for the Ranney interests by the Toledo Shipbuilding Company. The general demand for Plates is quiet, practically no orders being received from the local Steel car companies. Prices on Plates continue to be shaded, mostly on the narrow sizes, from $1 to $2 a ton. Regular prices on Plates are as follows: Tank Plates, ¾ in. thick, 6¼ in. up to 100 in. wide, 1.60c., base, at mill, Pittsburgh. Extras over this price are as follows:

Tank, Ship and Bridge quality, ¼-in. thick on edges, 100 in. wide, down to but not including 6 in. wide, is taken as base.

Steel Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per square foot, shall be considered ¼-in. Plate. Steel Plates over 72 in. wide must be ordered ¼-in. thick on edge, or not less than 11 lb. per square foot, to take base price. Steel Plates over 72 in. wide ordered less than 11 in. per square foot down to the weight of 3-16-in. shall take the place of 3-16-in.

Percentages as to overweight on Plates, whether ordered to gauge or weight, to be governed by the Association of American Steel Manufacturers' Standard Specifications.

| | |
|---|---|
| Gauges under ¼-in. to and including 3-16-in. Plates on thin edges | $0.10 |
| Gauges under 3-16-in. to and including No. 8 | .15 |
| Gauges under No. 8 to and including No. 9 | .25 |
| All sketches (excepting straight taper Plates varying not more than 4 in. in width at ends, narrowest end being not less than 30 in.) | .10 |
| Complete Circles | .20 |
| Boiler and Flange Steel Plates | .10 |
| "A. B. M. A." and ordinary Firebox Steel Plates | .20 |
| Still Bottom Steel | .30 |
| Marine Steel | .40 |
| Locomotive Firebox Steel | .50 |
| Shell grade of Steel is abandoned. | |
| For widths over 100 in. up to 110 in | .05 |
| For widths over 110 in. up to 115 in | .10 |
| For widths over 115 in. up to 120 in | .15 |
| For widths over 120 in. up to 125 in | .25 |
| For widths over 125 in. up to 130 in | .50 |
| For widths over 130 in | 1.00 |

TERMS.—Net cash 30 days. Pacific Coast base, 1.50c., f.o.b Pittsburgh.

**Structural Material.**—The American Bridge Company has taken about 5000 tons of bridge and girder work for the Atchison, Topeka & Santa Fé. Bids will go in this week on the new building for the Curtis Publishing Company, Philadelphia, 8000 to 10,000 tons. The McClintic-Marshall Construction Company has taken about 1000 tons for a new hotel at San Antonio, Texas; W. N. Kratzer & Co., 350 tons, for an extension to the Oil City Boiler Works; the Penn Bridge Company, Beaver Falls, Pa., about 500 tons for the new foundry building of the Standard Sanitary Mfg. Company at New Brighton, Pa.; the Fort Pitt Bridge Works, about 3000 tons of bridge work for the New York Central, and the Riter-Conley Mfg. Company a contract for some extensions to Steel buildings of the National Malleable Castings Company at Sharon, Pa. A good deal of work is pending and is expected to come out shortly. Complaints are still heard of the low prices at which work is being taken, and it is claimed that some large jobs have been placed at practically actual cost. We quote, f.o.b. mill, Pittsburgh:

I-Beams and Channels, 3 to 15 in., inclusive, 1.60c., net; I-Beams over 15 in., 1.70c., net; H-Beams over 8 in., 1.80c.; Angles, 3 to 6 in., inclusive, ¼ in. and up, 1.60c., net; Angles, over 6 in., 1.70c., net; Angles, 3 x 3 in. and up, less than ¼ in., 1.50c., base, half extras, Steel Bar card; Tees, 3 in. and up, 1.65c., net; Zees, 3 in. and up, 1.60c., net; Angles, Channels and Tees under 3 in., 1.50c., base, half extras, Steel Bar card; Deck Beams and Bulb Angles, 1.90c., net; Hand Rail Tees, 3c., net; Checkered and Corrugated Plates, 3c., net.

**Sheets.**—No improvement is seen in orders for Sheets, the demand being small and mostly for Corrugated and Galvanized. Prices are reported firmer, any concessions now being made not being over $1 to $2 a ton and confined largely to Galvanized Sheets. For shipment from mill, regular prices, which are shaded on large orders by some mills from $1 to $2 a ton, are as follows: Blue Annealed Sheets, No. 10 and heavier, 1.80c.; Nos. 11 and 12, 1.85c.; Nos. 13 and 14, 1.90c.; Nos. 15 and 16, 2c.; Box Annealed, Nos. 17 to 21, 2.25c.; Nos. 22 to 24, 2.30c.; Nos. 25 and 26, 2.35c.; No. 27, 2.40c.; No. 28, 2.50c.; No. 29, 2.60c.; No. 30, 2.70c. Galvanized Sheets, Nos. 10 and 11, 2.45c.; Nos. 12 and 14, 2.55c.; Nos. 15 and 16, 2.65c.; Nos. 17 to 21, 2.80c.; Nos. 22 and 24, 2.95c.; Nos. 25 and 26, 3.15c.; No. 27, 3.35c.; No. 28, 3.55c.; No. 29, 3.70c.; No. 30, 3.95c.; No. 28, Painted Roofing Sheets, $1.75 per square, and Galvanized Roofing Sheets, No. 28, $3.10 per square, for 2½-in. corrugations. These prices are subject to a rebate of 5c. per 100 lb. to the large trade under the usual conditions, jobbers charging the usual advances for small lots from store.

**Tin Plate.**—The demand for Terne Plate is about over for this season, but for Bright Plate is quite active, the American Sheet & Tin Plate Company having recently entered some very heavy orders from leading salmon packers for delivery prior to March 1, while part has gone to outside mills. We are advised that prices on Coke Plate are very firm, full prices being realized on all the large orders recently placed. The American Sheet & Tin Plate Company has started five hot mills at its Sabraton, W. Va., plant, and expects to start the other five mills in a week or two. A water pumping plant is being installed in this works to do away with the shortage of water, which caused the recent shutdown. We now quote full regular prices on Tin Plate, as follows: $3.70 for 100 lb. Cokes, 14 x 20, f.o.b. Pittsburgh, terms 30 days, less 2 per cent. off for cash in 10 days, this price being subject to the usual rebate of 5c. per base box in large lots.

**Hoops and Bands.**—Not many orders are being placed, but specifications against contracts are fair. Regular prices, which are reported as being maintained, are as follows: Steel Hoops, 1.80c., base, full Hoop card prices; Steel Bands, 1.40c., base, half Steel card extra, all f.o.b. cars, Pittsburgh, in carload lots, for delivery during 1908.

**Iron and Steel Bars.**—Specifications against contracts and new orders for Steel Bars entered by the mills in October were much heavier than in September, and are steadily increasing. The Republic Iron & Steel Company, one of the leading producers of Steel Bars, is operating to 75 per cent. or more of capacity. Other leading makers of Steel Bars report activity, and shipments are heavier at present than at any time this year. The railroads are increasing their car repair work, and the large orders for cars recently placed by Western roads will require a heavy tonnage of both Iron and Steel Bars. Orders for Iron Bars are fair, and the same is true of specifications against contracts, but none of the Bar Iron mills is able as yet to operate to normal capacity. We quote Iron Bars at 1.40c., base, for Pittsburgh delivery, and 1.35c., base, for Western points, to which freight is added, except Chicago, the price for which is 1.50c., delivered. We quote Steel Bars at 1.40c., Pittsburgh, for base sizes.

**Railroad Spikes.**—The Wabash and one other Western line have recently placed some fairly large orders for Railroad Spikes, and it is reported that some other roads will shortly come in the market. Practically all the Spikes being ordered now by the railroads will be used in repair work. The demand for the smaller sizes continues active, and the mills are well filled up. Prices are firm, and we quote: Standard sizes, 4½ x 9-16 in., at $1.70, and the smaller sizes at $1.80 per 100 lb. in carload and larger lots, with an advance of 5c. per 100 lb. for less than carload, f.o.b. Pittsburgh.

**Merchant Steel.**—The past week has been quiet, but this is probably due to consumers holding off until after the election. Specifications against contracts are fair, and the outlook is regarded as fairly satisfactory. Some small orders are being entered for Shafting, but most large consumers placed their contracts some time ago, against which they are now specifying quite freely. Regular prices on Cold Rolled Shafting are 57 per cent. off in carloads and 52 per cent. on less than carloads, delivered in base territory. Prices on Merchant Steel are being shaded, regular quotations being as follows: Smooth Finished Machinery Steel, 1.80c. to 1.90c.; Flat Sleigh Shoe, 1.75c. to 1.85c.; Cutter Shoe Steel, 2.15c. to 2.25c.; Toe Calk, 1.90c. to 1.95c.; Railroad Spring Steel, 1.60c. to 1.75c., the higher prices being for Pennsylvania Railroad analysis. Carriage Spring Steel is 1.80c.; Tire Steel, Iron finish, 1½ x ½ in. and heavier, 1.40c.; under 1½ in., 1.55c. Planished Tire Steel is 1.60c., all f.o.b., at mill.

**Spelter.**—The market is decidedly firmer, some of the St. Louis smelters holding firmly at 4.70c., St. Louis, equal to 4.82½c., Pittsburgh. We quote prime grades of Western Spelter at 4.65c. to 4.70c., East St. Louis.

**Merchant Pipe.**—The Riter-Conley Mfg. Company has taken a contract for fabricating 3000 tons of Steel Riveted Pipe of 9 ft. diameter and smaller for the Mexican Light & Power Company, Mexico City. Some small inquiries are in the market for Line Pipe and Casing, aggregating possibly 15 miles, but there are no large contracts in sight, it being too late in the season to start large jobs of outside work. The demand for Pipe is holding up remarkably well, new orders and shipments by the mills in October showing an increase over the previous month. The mills are firmly holding prices on both Iron and Steel Pipe, but occasionally jobbers shade prices to some extent. Discounts on Steel Pipe, ¾ to 6 in., to the large trade, are 76 and 5 per cent. off list. Regular discounts are as follows:

*Merchant Pipe.*

| | Jobbers, carloads, Steel. | |
|---|---|---|
| | Black. | Galv. |
| | % | % |
| ⅛ to ¼ in. | 67 | 51 |
| ⅜ in. | 69 | 55 |
| ½ in. | 71 | 59 |
| ¾ to 6 in. | 75 | 65 |
| 7 to 12 in. | 72 | 57 |
| Extra strong, plain ends: | | |
| ⅛ to ⅜ in. | 60 | 48 |
| ½ to 4 in. | 67 | 55 |
| 4½ to 8 in. | 63 | 51 |
| Double extra strong, plain ends: | | |
| ½ to 8 in. | 56 | 45 |

Discounts on Genuine Iron Pipe are as follows:

| | Black. | Galv. |
|---|---|---|
| | % | % |
| ⅛ to ¼ in. | 65 | .. |
| ⅜ in. | 67 | 53 |
| ½ in. | 69 | 57 |
| ¾ to 6 in. | 73 | 63 |
| 7 to 12 in. | 70 | 55 |
| Extra strong, plain ends: | | |
| ⅛ to ⅜ in. | 58 | 46 |
| ½ to 4 in. | 65 | 53 |
| 4½ to 8 in. | 61 | 49 |
| Double extra strong, plain ends: | | |
| ½ to 8 in. | 54 | 43 |

**Boiler Tubes.**—There is very little new buying in Merchant Tubes, and only a fair demand for Railroad Tubes for repair work. In fact, new orders for both Locomotive and Merchant Tubes for some months have been few and far between, and this has been the leanest year in this trade in a long time. Prices are shaded more or less and the market is generally unsatisfactory. For Merchant Tubes in small lots, on which an extra 5 per cent. is allowed in carloads, discounts are as follows:

*Boiler Tubes.*

| | Iron. | Steel. |
|---|---|---|
| 1 to 1½ in. | 42 | 47 |
| 1¾ to 2¼ in. | 42 | 59 |
| 2½ in. | 47 | 61 |
| 2¾ to 5 in. | 52 | 65 |
| 6 to 13 in. | 42 | 59 |

2½ in. and smaller, over 18 ft. long, 10 per cent. net extra.
2¾ in. and larger, over 22 ft. long, 10 per cent. net extra.

**Iron and Steel Scrap.**—The Scrap trade is in rather peculiar condition at present. While large consumers are pretty well covered and the actual tonnage being sold is light, the market is firm and prices seem destined to go higher. Heavy purchases over the last month or six weeks by the Pittsburgh Steel Company and other large consumers have pretty well cleaned up the available supply of Heavy Steel Scrap, Borings, Turnings and other lines, and a good many dealers who have sold short are now compelled to cover on these sales. It is reported that small dealers have offered as high as $16 on Heavy Steel Scrap to cover these short sales. The only items in the Scrap trade that seem to be lagging are Cast Scrap and Low Phosphorus Melting Scrap, the latter having recently declined sharply in price. Prices are very firm and dealers quote as follows, per gross ton: Heavy Steel Scrap for Pittsburgh, Follansbee, Monessen, Sharon and Steubenville delivery, $15.50 to $15.75; Heavy Steel Scrap for hand charged Open Hearth furnaces, pieces weighing 10 lb. minimum to 300 lb. maximum, $1 a ton higher; Cast Iron Borings, $10 to $10.25; Bundled Sheet Scrap, $12.50 to $12.75; No. 1 Busheling Scrap, $14.25 to $14.50; No. 2, $10.75 to $11; No. 1 Railroad Wrought Scrap, $16.75 to $17; No. 1 Cast Scrap, $14.75 to $15; Iron Axles, $22.50 to $23; Sheet Bar Crop Ends, $19.50 to $20; Low Phosphorus Melting Stock, guaranteed 0.04 and under in Phosphorus, $18.25; Rerolling Rails, $17.50 to $17.75; Steel Axles, $19.50 to $20; Grate Bars, $12.50 to $12.75; Old Car Wheels, $16; Machine Shop Turnings, $10.75 to $11; Railroad Malleable Scrap, $14.50 to $14.75; Iron Rails, $18 to $18.50; Locomotive Tires, $17 to $17.25, all f.o.b. Pittsburgh. We note a sale of 500 tons of Heavy Steel Scrap to a consumer at about $15.75, and

250 tons of Busheling Scrap at about $13.90, f.o.b. Pittsburgh.

**Coke.**—Prices on both Furnace and Foundry Coke for prompt shipment are decidedly firmer and somewhat higher. A sale of a round tonnage of Standard Connellsville Furnace Coke for prompt shipment is reported at $1.70 per net ton at oven, but there are some conditions attached to the sale which account for the high price obtained. We note, however, that prompt Furnace Coke is now held at $1.65 to $1.70 at oven, while on contracts for first half of next year Coke makers are quoting $1.85 to $1.90, and in some cases as high as $2 at oven. Furnaces are deferring contracts, with the result that little tonnage has been sold for next year. We hear of one contract placed for about 15 cars a day, of strictly Connellsville Furnace Coke, for the first three months of next year, on the basis of $1.85 at oven. Out of 37,630 ovens in the Upper and Lower Connellsville region 17,427 were active last week and 20,203 were idle. The output was 188,939 tons, a decrease over the previous week of nearly 10,000 tons.

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The Keystone Iron & Steel Company, recently incorporated under the laws of Pennsylvania with a capital of $25,000, has opened an office at 1301 Park Building, Pittsburgh, and will deal in Iron and Steel, Scrap and Mill Supplies. Ben Haas is manager.

## San Francisco.

SAN FRANCISCO, October 28, 1908.

Some branches of the Iron and Steel business show a further improvement. While there are few large transactions to report, the outlook is for a gradual increase of activity for some time. The increased demand for Structural Material is the cause of the greatest encouragement, as many new building enterprises are now being carried out both in this city and elsewhere on the coast, and from the plans that are constantly being announced it is likely that there will be further improvement along this line. Steel Rails and Track Supplies for the small railroads in various parts of the State are beginning to move, and many new inquiries have recently been received. The demand for mining machinery, however, is still limited, and mining supplies in general are moving only in small quantities. While there is a large amount of development going on in the oil regions, the demand for supplies shows little improvement, though the movement of Merchant Pipe to the coast has increased somewhat over that of the last month or two. There is more marine repair work going on than for some time. Bids have been called for on some large lots of machinery and supplies for the Los Angeles aqueduct, but few awards have been made of late. The Pig Iron market remains uninteresting. Supplies of Scrap are large, with a limited demand. Considerable Old Pipe in merchantable lengths is being overhauled, coated with asphaltum and put on the market.

**Structural Material.**—The demand for Fabricated Steel for building purposes has increased very materially in the last month. Work is now actively under way on a large number of structures in San Francisco, and many very fair contracts have been let, while the work projected for the immediate future will call for larger quantities than have been moved for several months. The contracts in general are somewhat smaller than many of those that have been let in the past two years, owing to the fact that very few tall structures are being started. The present demand in the local building line is for store space, office accommodations being already sufficient for present needs. Nevertheless the class of work in general calls for Steel frame work, and many builders plan to add more stories later on. Work is also being started on a few buildings of fairly large size. Local prices for Structural Steel are very low, owing to keen competition among the local fabricators, and as a result less work than usual for San Francisco is being done in the East. Dyer Bros. have been awarded a contract for Steel work on a nine-story building on Post street, near Grant avenue, for $35,000. A contract has been let for the Steel work on a four-story reinforced concrete building for Chas. Hughes. The Pacific Rolling Mill Company has recently taken a contract for the Steel work for the new Cliff House, for additional Steel construction for the Palace Hotel and the Phelan Building, and for a number of buildings outside of San Francisco, including the Hall of Justice at San Jose, Cal. Among the structures for which plans have recently been announced are an eight-story building on Post street, near Grant avenue; an eight-story building for the District Appellate Court and the Hastings College of Law, at the corner of Polk and Fulton streets, the estimated cost being $450,000; a $250,000 building for the London-Paris National Bank, at the corner of Sansome and Sutter streets, and a large four-story Steel frame building for the St. Francis Hospital, at Hyde and Bush streets. A contract has been awarded for the construction of two new buildings for the State Hospital at Agnew, Cal., for $85,860. A proposition is under way for the erection of a hospital for Alameda County, Cal., to cost at least $300,000. The Baker Iron Works has taken a contract to erect the Structural work for a six-story building at Los Angeles for $13,985. While the low prices for Steel work tend to lessen the demand for architectural Cast Iron, the foundries are doing more work in this line than for some time. The demand is mostly for ornamental Iron work, such as columns and bases.

**Pig Iron.**—Foundry business has not increased to any great extent, though there is now a fair amount of architectural work on hand, and there is slightly more demand for gas engine castings and general jobbing work. Some of the foundries are in a poor position, as is indicated by the recent sale of the comparatively new plant of the Mechanics' Foundry to the Enterprise Foundry Company for a price far below its original cost. Stocks of Pig Iron have decreased very little, and practically none is being moved at present. There is little Scotch Pig Iron on the market. Some Chinese Pig Iron is being brought in, but this is nearly all on contracts. Chinese Pig Iron is offered at about $25. There are large offerings of a good grade of Continental Pig Iron, equivalent to No. 2 Alabama, at $23, and large purchases could probably be made for less.

**Cast Iron Pipe.**—As far as actual business is concerned, Cast Iron Pipe remains in about the same position as earlier in the month, as there have been no transactions of any importance, and no tonnage worth mentioning has been moved for some time. A few large orders are in prospect, and with a number of smaller transactions which are likely to be closed in the near future the outlook is better. There is an inquiry for 3000 tons for the Los Angeles aqueduct, the bids on which will be opened next week. No bids have yet been called for on the local fire protection system, but it has been announced that about 40,000 tons will be required, and bids will probably be called for within the next 90 days. A proposition is on foot to establish an independent fire protection system in the town of Sonora, Cal. About 2000 ft. of Gas Pipe will soon be laid by the gas company at Santa Rosa, Cal. The Cudahy ranch, near Los Angeles, will soon be in the market for nearly $15,000 worth of Pipe for a water system, from 16 in. to 6 in. The town of Yuba City, Cal., is preparing to install a complete new water system, with larger and heavier Pipe than is now in use.

**Merchant Pipe.**—The movement of Merchant Pipe from the East shows a considerable increase, the jobbers having been ordering more liberally. The tonnage, however, is not large. The jobbing business is about the same as before, with a good many small orders and considerable price cutting. The city of Los Angeles has ordered a fairly large lot of Merchant Pipe for use on the aqueduct. The usual discount is quoted on jobbers' carloads:

| | Steel. Black. % | Steel. Galv. % |
|---|---|---|
| ⅛ to ¼ in. | 56.5 | 40.5 |
| ⅜ in. | 58.5 | 44.5 |
| ½ in. | 60.5 | 48.5 |
| ¾ to 6 in. | 64.5 | 54.5 |
| 7 to 12 in. | 61.5 | 46.5 |
| Extra strong, plain ends: | | |
| ⅛ to ⅜ in. | 49.5 | 37.5 |
| ½ to 4 in. | 56.5 | 44.5 |
| 4½ to 8 in. | 52.5 | 40.5 |
| Double extra strong, plain ends: | | |
| ½ to 8 in. | 45.5 | 34.5 |

**Merchant Steel.**—The jobbing demand for Merchant Steel in miscellaneous shapes shows considerable increase and deliveries are being made on numerous orders. No transactions of much magnitude are reported, but the volume of sales made by local houses appears to be gradually increasing. The city of Los Angeles is now in the market for a lot of Drill Steel for use on the aqueduct. The movement of Hoop Steel to the coast shows some increase, but the tonnage is small.

**Rails and Railroad Supplies.**—While there is a general inquiry for Steel Rails, especially Heavy Rails, and miscellaneous supplies, few transactions of any moment have been concluded recently, and buyers are apparently holding off until after the election.

**Old Material.**—Large quantities of Old Material are piled up in the local yards, and there is practically no movement. Prices are accordingly unsettled, and no definite quotations can be given on most varieties. Good heavy Cast Iron Scrap is offered at $16, and large quantities could be had considerably cheaper.

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The Balfour Spike & Mfg. Company has been incorporated at Tacoma, Wash., to manufacture a patent Railroad Spike. The capital stock is $100,000, and the incorporators are J. W. Balfour, R. H. Buddy, Chas. Rickenbaugh, M. W. Dibble, and Frank Armstrong.

Mr. Abenheimer, Pacific Coast manager for the Arthur Koppel Company, has returned from a tour of the Pacific Northwest. He will leave in December for a vacation trip to Europe.

Word has been received here from Berlin, Germany, of the death of George E. Dow, head of the George E. Dow Pumping Engine Company of this city. This company has

under consideration a proposition to erect a large plant on its property in this city, at an expense of about $600,000.

The United Steel Studding Company has been incorporated in San Francisco with a capital stock of $50,000. The directors are F. H. Huddart, A. W. Nash, J. W. Richards and A. E. De Armond.

After a six weeks' successful run the experimental Lyon electric furnace, at Heroult, Cal., has shut down. It made 4600 lb. of Pig Iron in the last 24 hr. of operation. The furnace is considered quite satisfactory and a commercial furnace is expected to be ready for operation by January 1.

The Risdon Iron Works has taken a contract to build two fireboats for the city of San Francisco for $262,200. Bids have also been called for on the pumping stations and machinery for the new fire protection system.

California railroad lines will publish the following rates on imported Iron and Steel products from Gulf ports to California terminals: Machinery and machines, carloads, per 100 lb., $1.26; Iron or Steel plow beams, 76c.; plow points, shares, harrow disks, &c., 90c.; plows and extra parts for same, $1.12; Wire Rope and Cable Iron, 99c.

The California Metal Trades Association is starting an active agitation looking to a number of changes in the freight rates on Boiler Plate, Structural Steel and ornamental Iron from points east of the Mississippi. The principal point at issue is the establishment of a differential between plain and fabricated structural material, and the wishes of the local association will be put forward at the next meeting of the Transcontinental Freight Bureau in Chicago. An active campaign is also going on to retain coast patronage for local shops.

## St. Louis.

ST. LOUIS, November 2, 1908.

Building operations are promising. Holders of surplus funds are taking up with renewed vigor investments in various forms of productive real estate. The weekly returns covering this line of business show up well. New buildings to cost over $1,000,000 were either announced or begun during the past week within the city limits. The near approach of the settlement of the political contest has been the occasion of the postponement of a number of large transactions in various lines until after the election. It has curtailed the action of the seller as well as that of the buyer, and in consequence reduced the volume and scope of offerings of staple commodities. It is current opinion that this waiting mood will be confined to the period referred to, it being merely the usual ante-election hesitancy.

**Coke.**—The leading sales agencies report quite an active demand for Coke, mainly for prompt shipment and coming principally from the smaller buyers. Larger consumers show more interest in the market and are making inquiries regarding price and shipment. For prompt shipment prices are firm at $2.25 for standard brands of 72-hr. Foundry, at oven, Connellsville. For 1909 shipment $2.50 is asked for first half. In some cases buyers are disposed to request shipment on contract to be anticipated and have increased their orders. Shipments are coming forward in a satisfactory manner. Furnace Coke is in good demand for shipment over balance of this year and first half of 1909. We quote $1.65 to $1.85, at oven, West Virginia.

**Pig Iron.**—The market for Pig Iron has been more active. With most of the sellers this demand has been mainly for prompt shipment. One house reports having an inquiry for 6000 tons of Southern No. 2 Foundry for shipment over 1909. Another company reports a sale of 2000 tons of Ohio strong Foundry for shipment over the first quarter of 1909. The actual business reported is coming principally from the smaller buyers. The large buyers seem disposed to hold off, having probably covered for their requirements for this year. Such interest as the large buyers manifest is directed to supplies of 1909 Iron. Business appears to be pretty closely confined to the first quarter, though we hear of some sales for the second quarter. For shipment over the last half none of the sales agencies is able to make offerings. A leading house reports an inquiry for 1000 tons of Malleable Bessemer, shipment of 500 tons to be made during the last two months of 1908 and 500 tons over the first quarter of 1909; also inquiries aggregating 2500 tons of No. 2 Foundry for the same shipment. Furnaces are reported as continuing to accept in some cases $12.50, Birmingham, for No. 2 Foundry, for shipment over the balance of 1908. For special brands or sales of small lots for the same shipment we hear $13 named. For first quarter 1909 all the leading sellers are firm, at $13.

**Finished Iron and Steel.**—The leading interests report the demand for Structural Material confined mainly to fabricators, and with these companies the specifications are for comparatively small jobs about evenly divided between St. Louis and St. Louis territory. During the past week there has been a marked increase in the inquiry from this source. With the railroads gradually increasing their orders for all kinds of track material, Plates, Tank Steel, &c., jobbers are drawing on contracts and prices have stiffened. Bars and Bar Products are finding a steady call, and Light Rails are in request from lumber and mining interests.

**Old Material.**—There is more demand for No. 1 Cast Scrap. In fact, the inquiry for foundry grades is now better than for the past six months, and a small advance in price has resulted. In the main, however, the character of the buying continues of a hand to mouth sort. A feature of importance is the fact that some quite large orders have been placed with the privilege of cancellation November 4. If the buyer is not heard from these orders are to be filled according to specifications; consequently there is liable to be a marked increase in activity the coming week. The demand for Relaying Rails continues quite good, with small stocks on the market. There are no railroad lits out. We quote dealers' prices per gross ton, f.o.b. St. Louis, as follows:

| | |
|---|---|
| Old Iron Rails | $16.50 to $17.00 |
| Old Steel Rails, rerolling | 15.50 to 16.00 |
| Old Steel Rails, less than 3 ft | 14.25 to 14.75 |
| Relaying Rails, standard sections, subject to inspection | 23.00 to 24.00 |
| Old Car Wheels | 15.00 to 15.50 |
| Heavy Melting Steel Scrap | 13.50 to 14.00 |
| Frogs, Switches and Guards, cut apart | 13.50 to 14.00 |
| Mixed Steel | 10.25 to 10.75 |

The following quotations are per net ton:

| | |
|---|---|
| Iron Fish Plates | $15.00 to $15.50 |
| Iron Car Axles | 18.50 to 19.00 |
| No. 1 Railroad Wrought | 13.50 to 14.00 |
| No. 2 Railroad Wrought | 12.50 to 13.00 |
| Railway Springs | 13.00 to 13.50 |
| Locomotive Tires, smooth | 13.00 to 13.50 |
| No. 1 Dealers' Forge | 11.50 to 12.00 |
| Mixed Borings, &c. | 5.50 to 6.00 |
| Machine Shop Turnings | 8.00 to 8.50 |
| No. 1 Boilers cut to Sheets and Rings | 9.50 to 10.00 |
| No. 1 Cast Scrap | 12.50 to 13.00 |
| Stove Plate and Light Cast Scrap | 10.50 to 11.00 |
| Railroad Malleable | 11.00 to 11.50 |
| Agricultural Malleable | 10.00 to 10.50 |
| Pipes and Flues | 9.50 to 10.00 |

**Lead, Spelter, &c.**—The market for Lead is firmer and the demand is somewhat better. We quote 4.20c. to 4.30c., with special brands held higher. Lead Ore is dull and nominal at $27 per 1000 lb., Joplin basis. Spelter is quite active and firm, at 4.80c. Zinc Ore is held at $36 per ton, Joplin basis. There is some disposition to buy Spelter for forward shipment.

## Philadelphia.

PHILADELPHIA, PA., Nvember 3, 1908.

The market has a decidedly stronger tone throughout. Buyers in a number of instances were inclined to discount the election and placed orders covering requirements for the balance of the year, as well as the first quarter of 1909, while some buyers would have placed orders for still further deliveries, but in this they are discouraged by sellers, who are inclined to take orders, particularly for Pig Iron, for prompt delivery only. Inquiries have been more numerous in many lines, and buyers are testing the market and getting lines on prices, so that, should to-day's election prove favorable, they will be in a position to formulate their policies as to the future without delay. The railroad situation is no doubt improving, and some of the Eastern roads are now preparing to come into the market for cars, locomotives and Rails, as well as for maintenance of way betterments. The finished material market is probably not as buoyant as the Pig Iron market, Structural Material being the exception, as there is, no doubt, a large amount of business pending in this line. In the other classes of material, however, about a steady volume of business prevails, and while there is a considerable tonnage ahead in some lines, others are not so favorably situated.

**Pig Iron.**—There has been quite a buying movement. The individual orders have not been large, but the aggregate tonnage taken has been quite heavy. The bulk of the business was in the Foundry grades, although some fair lots of Forge, Basic and Low Phosphorus have been sold. Consumers are inclined to buy more freely, but in this sellers do not meet their views, and in a number of instances refuse to sell for delivery beyond the end of the current year; but some sales have been made extending over the first quarter of next year, although few in this territory are willing to contract for shipment beyond that period. Eastern Pennsylvania furnaces maintain a very firm attitude, and orders coming in are reported as somewhat larger than current production; in fact, the Empire Steel & Iron Company will blow in another stack the current week to meet the increasing demand. Several of the producers outside the immediate district, who have been underselling the market, are now understood to be maintaining current quotations, having booked all the low price tonnage they wanted. Sales during the week cover a somewhat wider range of tonnage than has recently been the case, the larger proportion of the business having been in lots ranging from 50 to 3000 tons, of both No. 2 X and No. 2 Plain Foundry, at full prices for delivery during the balance of the year; some larger lots, however, ranging up to 1000 and 1800 tons have also been closed, but these in the majority of cases extend over into next year's delivery. The Cast Iron Pipe Foundries are in

the market for 3000 to 10,000 ton lots, but sellers still refuse to meet their views regarding prices. Southern Foundry Iron has not been active, but prices are firmly held. Virginia Foundry Irons have been more active. Quite a fair buying movement has developed, principally from the West, orders from this territory and from New England being still rather small. One seller has disposed of over 4200 tons, about equally divided between No. 2 X and No. 2 Plain, at full prices, equal to $17 and $16.75, respectively, delivered, in this territory. An improvement in the demand for Forge Iron has also been noted, and several 1000-ton lots for delivery in the next two months and for the first quarter of next year have been sold at $15.50, delivered. Some smaller lots have been done at $15.75, delivered, while off grade Forge has been sold in small lots at about 50 cents under the market. The Steel makers are still inquiring for round lots of Basic for both prompt and forward delivery, but are slow in placing orders, the only sale coming out during the week being of 3000 tons of Virginia Basic for Western delivery during the first quarter, at a reported price equal to a shade better than $16, delivered, in this territory. Further sales of Low Phosphorus Iron have been made recently, one seller disposing of an aggregate of 3000 tons, the greater portion of which was for Western delivery. Prices for this grade are somewhat firmer and quotations for delivery in this territory show a slightly higher range. A large volume of inquiries for all grades is before the trade, but sellers are not disposed to book large tonnages at the present range of prices, which are being firmly maintained. For delivery in buyers' yards, eastern Pennsylvania and nearby territory, the following range is quoted for deliveries during the remainder of the year, and in some instances extending into the first quarter of next year:

| | |
|---|---|
| Eastern Pennsylvania, No. 2 X Foundry | $16.75 to $17.00 |
| Eastern Pennsylvania, No. 2 Plain | 16.25 to 16.50 |
| Virginia, No. 2 X Foundry | 17.00 |
| Virginia, No. 2 Plain | 16.75 |
| Gray Forge | 15.50 to 15.75 |
| Basic | 16.00 |
| Low Phosphorus | 20.00 to 20.50 |

**Ferromanganese.**—More inquiry has developed both for small tonnages for early shipment, as well as round lots for next year's delivery, but orders do not develop freely. Quotations still show a wide range. While $43 to $44, Baltimore, can be done in some instances, other sellers hold at $45 to $46, with the outside figure for deliveries in the first half of next year.

**Plates.**—Specifications are a trifle heavier, but new business comes out slowly. Some fair orders for bridge, boat and locomotive Plates have been booked, but nothing in the way of large tonnages have been closed. Considerable business is pending, and the trade is encouraged with the outlook for the future. Prices for delivery in this territory are being fully maintained and range as follows:

| | Carloads. Cents. | Parts carload. Cents. |
|---|---|---|
| Tank, Bridge and Boat Steel | 1.75 | 1.80 |
| Flange or Boiler Steel | 1.85 | 1.95 |
| Commercial Firebox | 1.95 | 2.00 |
| Marine | 2.15 | 2.20 |
| Locomotive Firebox Steel | 2.25 | 2.30 |

The above are base prices for ¼-in. and heavier. The following extras apply:

| | Extra per 100 lb. |
|---|---|
| 3-16-in. thick | $0.10 |
| Nos. 7 and 8, B. W. G. | .15 |
| No. 9, B. W. G. | .25 |
| Plates over 100 to 110 in. | .05 |
| Plates over 110 to 115 in. | .10 |
| Plates over 115 to 120 in. | .15 |
| Plates over 120 to 125 in. | .25 |
| Plates over 125 to 130 in. | .50 |
| Plates over 130 in. | 1.00 |

**Steel Billets.**—There has been no improvement in the demand. Orders continue small, and are largely for prompt shipment, covering only the immediate demands of consumers. Ordinary Rolling Billets ar queoted at $26.20, and Forging Billets, $28.20, for delivery in this territory, subject to the usual extras for high carbons and special sizes.

**Structural Material.**—A moderate volume of business, mostly for small tonnages, continues to be taken by local mills and fabricators, but a larger volume of business is under consideration. That some of this will come out shortly after the election is generally believed, the trade viewing the situation as far as the future is concerned quite optimistically. Prices are being well maintained, and for delivery in this territory range from 1.75c. to 1.90c., according to specification.

**Sheets.**—A somewhat more active demand has developed, and mills were again able to enter the week working full capacity. Orders, however, continue small individually, and, for the greater part, cover immediate needs only. Prices are unchanged, quotations for mill shipments ranging as follows, a tenth extra being added for small lots: Nos. 18 to 20, 2.50c.; Nos. 22 to 24, 2.60c.; Nos. 25 to 26, 2.70c.; No. 27, 2.80c.; No. 28, 2.90c.

**Bars.**—While no particular increase in the demand for Refined Iron Bars is to be noted, the market shows increased strength. There is undoubtedly less shading of prices, and in some instances quotations have been advanced. The orders coming out, however, are small individually and largely for early shipment. For delivery in this territory prices for Refined Iron Bars range from 1.45c. to 1.55c., dependent on grade and tonnage. Steel Bars are not active, but prices are firmly held at 1.55c., with Rerolled Bars quoted at 1.50c., delivered, in this vicinity.

**Coke.**—There has been some betterment in the demand for Furnace Coke, several buyers being in the market for next year's supply. Foundry Coke has not been so active, inquiries being largely for small lots for early delivery. Prices are unchanged but stronger. Foundry Coke for prompt shipment ranges from $2.15 to $2.25, at oven, and $2.25 to $2.40 for forward delivery. Prompt Furnace Coke is quoted at $1.50 to $1.65, at oven, for prompt shipment, and $1.65 to $1.90 for next year's delivery. For delivery in buyers' yards in this territory during the next 60 days, the following range of prices is named:

| | |
|---|---|
| Connellsville Furnace Coke | $3.65 to $3.90 |
| Foundry Coke | 4.15 to 4.40 |
| Mountain Furnace Coke | 3.25 to 3.50 |
| Foundry Coke | 3.75 to 4.00 |

**Old Material.**—There has been a fair number of small sales of some grades during the week at prices somewhat above the low range recently quoted. Buyers are in the market for round tonnages in a number of instances, but sellers are inclined to confine their transactions to small spot lots. The market has a decidedly better tone throughout, and several grades show advances of from 25c. to 50c. a ton. In some grades which have been inactive quotations are nominally unchanged, but for prompt deliveries in buyers' yards, eastern Pennsylvania and nearby territory, the following range about represents the market:

| | |
|---|---|
| No. 1 Steel Scrap and Crops | $15.25 to $15.75 |
| Low Phosphorus | 18.50 to 19.00 |
| Old Steel Axles | 21.50 to 22.00 |
| Old Iron Axles | 22.50 to 23.00 |
| Old Iron Rails | 19.75 to 20.25 |
| Old Car Wheels | 15.00 to 15.50 |
| Choice No. 1 R. R. Wrought | 18.75 to 19.25 |
| Machinery Cast | 15.25 to 15.75 |
| Railroad Malleable | 14.50 to 15.50 |
| Wrought Iron Pipe | 14.50 to 15.00 |
| New Bundled Sheets | 13.50 to 14.00 |
| No. 1 Forge Fire Scrap | 12.00 to 12.50 |
| No. 2 Light Iron | 9.00 to 9.50 |
| Wrought Turnings | 12.50 to 13.00 |
| Stove Plate | 13.00 to 13.50 |
| Cast Borings | 11.75 to 12.25 |
| Grate Bars | 13.50 to 14.00 |

W. H. Blakey, who for a number of years was connected with Plitt & Co., Iron and Steel merchants, has engaged in the same line of business under his own name, with office at 313 Hale Building, Juniper and Chestnut streets, Philadelphia.

## Cincinnati.

CINCINNATI, OHIO, November 4, 1908.—(*By Telegraph.*)

The local market has gradually assumed increasing strength until all agencies are now engaged on important deals or options of some kind in Pig Iron, and factors in the finished Iron and Steel trade are alert to possibilities. The topic of conversation in Pig Iron circles Tuesday was the announcement of a prominent central Pipe maker that he would buy 27,000 tons of Iron to-day in the event of the Presidential election going to his liking. This covers six months' requirements. An Indiana manufacturer who wanted to speculate on a 10,000-ton lot of Southern Iron at a price of less than $12.50, Birmingham, is understood to have been unsuccessful in his quest. The Scrap people are holding announced prices firm, with the expectation of doing an immense business.

**Pig Iron.**—About the only change to be noted in prices of Iron in this market for the balance of the year is the tendency of furnaces to firm up on existing quotations and to make $13, Birmingham, for No. 2 the minimum on Southern and $15 at furnace for No. 2 on Northern. It is freely predicted that the conditions of the past few months on Northern and Southern will be reversed and that the Southern product will be the drug if Southern Iron makers continue in their attitude of independence. All local agencies were busy with telegrams and long distance telephones yesterday, indicating a confidence in election results, and some good sized options were closed. A conservative opinion placed the amount of Iron sold through this market the past week at 75,000 tons and in the Central West at from 100,000 to 150,000 tons. Inquiries are not so numerous, but deals are being closed without the formality of letter inquiry. The declaration of the Pipe maker who will close for a half year's requirements is the most engaging. Then follow a Chicago manufacturer of Tacks who wants 3000 tons of Basic for next year and 2000 tons for this; a central Ohio manufacturer with an inquiry for 3000 tons of Foundry and Gray Forge, all Northern, for the first quarter; a northern Ohio manufacturer of agricultural implements who wants 1000 tons of No. 2 Soft, No. 2 Foundry and No. 3 Foundry for the first six months, and numerous foundrymen and manufacturers who will purchase in lots of 100 to 500

tons. Ohio Silveries are still quotable at $18, at furnace. Not much is heard of low grades, but Southern Forge is probably obtainable at about $11, Birmingham, for balance of the year. Many agencies which forecasted election results in special circular letters to the trade are now reaping returns. Some Southern furnaces are cautioning their sales representatives in the matter of next year quotations and seem disposed to be extremely conservative. For the balance of the year we quote, based on freight rates of $3.25 from Birmingham, and $1.20 from the Hanging Rock District, f.o.b. Cincinnati, as follows:

| | |
|---|---|
| Southern Coke, No. 1 | $16.25 to $16.75 |
| Southern Coke, No. 2 | 15.75 to 16.25 |
| Southern Coke, No. 3 | 15.25 to 15.75 |
| Southern Coke, No. 4 | 15.00 to 15.50 |
| Southern Coke, No. 1 Soft | 16.25 to 16.75 |
| Southern Coke, No. 2 Soft | 15.75 to 16.25 |
| Southern Coke, Gray Forge | 14.25 to 14.75 |
| Ohio Silvery, 8 per cent. Silicon | 19.70 |
| Lake Superior Coke, No. 1 | 16.45 to 16.95 |
| Lake Superior Coke, No. 2 | 15.95 to 16.45 |
| Lake Superior Coke, No. 3 | 15.45 to 15.95 |
| Standard Southern Car Wheel | 22.25 to 22.75 |
| Lake Superior Car Wheel | 21.75 to 22.25 |

(*By Mail.*)

**Coke.**—The market is remarkably quiet, and no change is to be noted in prices. There seems to be a disposition on the part of producers to contract a little further into next year, and it is quite certain that $2.25 at oven may be done on shipments through the first half of Virginia grades (Foundry), and as for Furnace Coke, not enough inquiry is out to hazard an opinion. Consumption seems to be increasing a little, although some districts are at considerable expense for water because of the continued drought. Connellsville Furnace Coke is quotable at $1.75, at oven for the first half; Virginia grades, $1.85 to $2.

**Finished Iron and Steel.**—The South and Southwest are still regarded as the most promising districts for early business, and some interesting contracts are being considered. The concrete building of the United States Printing Company, in Norwood, Ohio, is a late award, secured by the American Foundry & Machine Company, Pittsburgh. It will run $60,000 or $70,000. Among the early contracts which will use Structural Material is the extension planned to the water works plant at Newton Falls, Ohio, under the direction of the Reliance Engineering Company, Cincinnati. Bids are to be asked in a few days for about 6000 ft. of 4 and 6 in. Pipe; also pumping machinery, a couple of 50 hp. boilers, one high pressure fire service pump, one domestic service and one air compressor. A municipal building in Indiana which is expected to go through soon will involve the expenditure of between $75,000 and $100,000. Among the dealers prices are well maintained, with no product showing more than ordinary strength. Talk of advance in Bar Iron does not mature. Dealers are quoting to the trade, f.o.b. Cincinnati, as follows: Iron Bars, carload lots, 1.55c., base, with half extras; small lots from store, 1.85c., base, half extras; Steel Plates, carload lots, 1.75c., base, with half extras; small lots from store, 1.85c., base, half extras; Base Angles, carload lots, 1.85c., base; small lots from store, 2.10c.; Beams, Channels and Structural Angles, 1.85c., base; small lots from store, 2.10c.; Plates, ¼-in. and heavier, carload lots, 1.85c.; small lots from store, 2c.; Blue Annealed Sheets, heavy, No. 16, carload lots, 2.15c.; small lots from store, 2.50c.; No. 14, carload lots, 2.05c.; small lots from store, 2.40c.; No. 10 and heavier, carload lots, 1.95c.; small lots from store, 2.20c.; No. 12, carload lots, 2c.; small lots from store, 2.30c.; Sheets (Light), Black, No. 28, carload lots, 2.65c.; Galvanized Sheets, No. 28, carload lots, 3.70c.; Steel Tire, 4-in. and heavier, carload lots, 1.95c.; Plates, 3-16 and No. 8, carload lots, 2c.; small lots from store, 2.20c.

**Old Material.**—Dealers have been simply waiting until election is over, when they confidently expect a big buying movement and are preparing accordingly. There is no change in prices, and absolutely no item of Scrap is exciting any kind of demand. Quotations, f.o.b. Cincinnati, are as follows:

| | |
|---|---|
| No. 1 R. R. Wrought, net ton | $12.50 to $13.50 |
| Cast Borings, net ton | 5.00 to 5.50 |
| Heavy Melting Steel Scrap, gross ton | 13.50 to 14.50 |
| Steel Turnings, net ton | 6.00 to 7.00 |
| No. 1 Cast Scrap, net ton | 12.00 to 13.00 |
| Burnt Cast, net ton | 9.00 to 10.00 |
| Old Iron Axles, net ton | 16.50 to 17.50 |
| Old Iron Rails, gross ton | 15.00 to 16.00 |
| Old Steel Rails, short, gross ton | 13.00 to 14.00 |
| Old Steel Rails, long, gross ton | 12.50 to 13.50 |
| Relaying Rails, 56 lb and up, gross ton | 20.00 to 21.00 |
| Old Car Wheels, gross ton | 13.00 to 14.00 |
| Low Phosphorus Scrap, gross ton | 14.00 to 15.00 |

The Western Boat & Engine Company, New York, has incorporated to take over the plant formerly owned by Newbury & Dunham at the foot of West 210th street. The company's plant is completely equipped for the manufacture of motor launches, engines, &c. Frederick Floyd, who was for a number of years connected with Newbury & Dunham as superintendent, is general manager.

## Birmingham.

BIRMINGHAM, ALA., November 2, 1908.

**Pig Iron.**—The recent efforts of leading melters to effect departures from the established schedule of prices on 1909 deliveries by offering cash for round tonnages have been wholly unsuccessful. Efforts to secure shaded quotations on significant tonnages for early delivery, subject to acceptance at a later date, were also without success, and the market is generally conceded to be stronger. Of the recent offerings at concessions from the basis being adhered to, 20,000 tons for delivery covering the first half is most significant. An offer of 3000 tons at lower figures than those quoted was made by a local melter, and 5000 tons for early shipment would have been placed by another concern at the figures desired. A cash offer of $12.50 for 1200 tons to be delivered during the first quarter was refused, and an order for 5000 to 10,000 tons for delivery covering the entire first half is available at figures around such a basis. The actual sales recently reported aggregate but a small tonnage, ranging from carloads to lots of 300 tons. It is probable that limited quantities for prompt delivery are still available at lower figures than $13, but no such figures were the consideration in any transactions among latest reports. A recent comparison of order books with the rate of production indicates that a significant proportion of tonnage booked for delivery during the present year is to be carried over into next year, which, taken with the sales so far effected for first quarter delivery, warrants the attitude of indifference by producers as to such commitments. The fact that the larger portion of first quarter commitments now on record is to be resold must, of course, be considered, but the limited extent of provision for anticipated requirements by all lines of foundry trades is likewise a consideration.

**Cast Iron Pipe.**—No contracts of significance have been placed with Southern producers since last report, but the aggregate of minor orders for maintenance work is fairly attractive. The demand for small sizes has predominated, and as a result the prices received are more satisfactory. It is stated upon good authority that orders now in hand for popular sizes are practically equal to the output of available producing capacity during the winter months, and an early advance in quotations is quite likely. The principal contract in sight at this time is to cover approximately 4000 tons of Water Pipe for the city of Nashville, Tenn. Bids will be received November 10. A number of orders for attractive tonnages are pending, and will no doubt be placed soon after the election. There has been a decided improvement in the inquiry for lots of 500 to 1000 tons. We quote the following on Water Pipe, per net ton, f.o.b. cars here: 4 to 6 in., $24; 8 to 12 in., $23; over 12-in., average $22, with $1 per ton extra for Gas Pipe. On large municipal contracts these quotations are probably shaded.

**Old Material.**—As is noted in other markets, more interest is manifested by all parties concerned, but actual transactions are not indicative of an improvement in conditions. The fact that consumers have in but few cases provided for their requirements to any extent is encouraging, and dealers continue to increase their stocks. We quote dealers' asking prices, as follows, per gross ton, f.o.b. cars here:

| | |
|---|---|
| Old Iron Rails | $14.50 to $15.00 |
| Old Iron Axles | 15.50 to 16.00 |
| Old Steel Axles | 13.00 to 13.50 |
| No. 1 Railroad Wrought | 13.50 to 14.00 |
| No. 2 Railroad Wrought | 10.50 to 11.00 |
| No. 1 Country Wrought | 11.00 to 11.50 |
| No. 2 Country Wrought | 9.50 to 10.00 |
| No. 1 Machinery | 11.00 to 11.50 |
| No. 1 Steel | 9.50 to 10.00 |
| Stove Plate and Light Cast | 9.50 to 10.00 |
| Cast Borings | 5.00 to 5.50 |

## Buffalo.

BUFFALO, N. Y., November 3, 1908.

**Pig Iron.**—A considerable increase in buying in Foundry grades has occurred during the week, and the total tonnage of sales is notably ahead of the preceding week. Foundries requiring Pig Iron for business in hand for finished product have evidently concluded that prices would not be materially less and might advance after election. There is, however, no inclination toward speculative buying on the part of consumers to provide for business not yet in hand; most of the inquiry being for deliveries beginning at once and running through the first quarter. Prices are firmer, although not quotably higher except for forward deliveries. We quote for current quarter and first quarter 1909, f.o.b. Buffalo:

| | |
|---|---|
| No. 1 X Foundry | $15.50 to $16.00 |
| No. 2 X Foundry | 15.25 to 15.75 |
| No. 2 Plain | 14.75 to 15.25 |
| No. 3 Foundry | 14.50 to 15.00 |
| Gray Forge | 14.25 to 14.75 |
| Basic | 15.00 |
| Malleable Bessemer | 15.50 to 16.50 |
| Charcoal | 20.00 to 20.50 |

**Old Material.**—The market continues to be uneventful

and quiet, and although there is rather more inquiry from consumers, dealers are in most instances holding back, in anticipation of better prices being obtainable after election, and few sales are consummated. Prices remain firm, but unchanged, as follows, per gross ton, f.o.b. Buffalo:

| | |
|---|---|
| Heavy Melting Steel Scrap | $14.50 to $15.00 |
| No. 1 Railroad Wrought | 15.00 to 15.50 |
| No. 1 Railroad and Machinery Cast Scrap | 14.00 to 14.50 |
| Old Steel Axles | 17.00 to 17.50 |
| Old Iron Axles | 20.00 to 20.50 |
| Old Car Wheels | 15.00 to 15.50 |
| Railroad Malleable | 13.00 to 13.50 |
| Boiler Plate | 12.00 to 12.50 |
| Locomotive Grate Bars | 11.50 to 12.00 |
| Pipe | 11.50 to 12.00 |
| Wrought Iron and Soft Steel Turnings | 8.00 to 8.25 |
| Clean Cast Iron Borings | 6.50 to 7.00 |
| No. 1 Busheling Scrap | 12.50 to 13.00 |

**Finished Iron and Steel.**—The volume of business in Bars and Plates and general lines, aside from material for railroad work, has kept up pretty well, and several good contracts have been placed both for domestic and Canadian consumption. One local bedstead manufacturing concern has placed an order for 500 tons of Angles with the Buffalo Steel Company and 500 tons of Bars with local jobbers. The Lackawanna Steel Company has commenced shipment on the order for 12,000 tons of Rails recently placed by the Northern Pacific. It is stated that that contract for the Structural Steel required for the Schenectady County court house at Schenectady, about 500 tons, will be awarded next week. That portion of the Canadian General Electric Company's requirements specifying acid Open Hearth Steel for the St. Andrews dam, about 2800 tons, was not included in the contract given last week to the United States Steel Products Export Company, and it will probably be placed abroad.

## Cleveland.

CLEVELAND, OHIO, November 4, 1908.—(*By Telegraph.*)

Instead of showing some falling off, as had been expected, Ore shipments in October were larger than in any previous month this year. They aggregated 5,099,110 tons, or about 450,000 tons more than September. The total season's shipments down the lakes, to November 1, were 21,730,070 tons. The result of the election will stimulate the Ore movement somewhat during the balance of the season, and it is now expected that the total shipments will exceed 24,000,000 tons.

(*By Mail.*)

**Iron Ore.**—With the exception of one sale of about 10,000 tons of non-Bessemer Ore, the market has been quiet. There are a few inquiries pending that will result in the sale of a limited tonnage if the outcome of the election is regarded as satisfactory. The present activity in the Pig Iron market, it is thought, may also encourage some furnace interests to buy a little more Ore. It is so late in the season, however, that the Ore firms are not anxious to take on any more tonnage and are not seeking business. Ore shipments will now fall off rapidly. Few, if any, wild vessels will be loaded after this week, and the barges of the Steel Corporation fleet have been sent up the lakes for their last cargoes. As fast as they come down they will be placed in winter quarters. The merchant Ore firms that operate their own boats intend to keep them running as long as possible, as some of them will continue to bring down Ore until early in December. Prices at Lake Erie docks, per gross ton, are as follows: Old Range Bessemer, $4.50; Mesaba Bessemer, $4.25; Old Range non-Bessemer, $3.70; Mesaba non-Bessemer, $3.50.

**Pig Iron.**—A heavy buying movement of Foundry Iron started last week, and is still in progress, the markets showing as much activity as at any time during the past two years. Sales of Foundry Iron by local interests exceed 40,000 tons. Of this over 25,000 tons was sold by local furnaces, the greater part of which was for delivery in this city and immediate territory. In addition to the heavy sales, inquiries are pending for about 50,000 tons of Foundry Iron, and it is expected that orders for a portion of this will have been placed by the time this is printed. The most important inquiry is from the Massillon Iron & Steel Company for 27,000 tons, 9000 tons each of Nos. 2, 3 and 4, deliveries to be equally distributetd during the first six months of next year. Of the large number of sales that have been made few have been conditional on the result of the election. Consumers seem to have come to the conclusion that prices will go no lower, and that there is a possibility of an advance after election, and they are anxious to cover for at least a portion of their requirements for the first half. It is estimated that from 60 to 75 per cent. of the consumers of Foundry Iron in this territory have made purchases during the past week or have inquiries out. The majority of the sales were for the first quarter, some being for the balance of the year and first quarter, and others for the first half. Furnace interests, however, prefer not to sell at present for the entire first half. A number of 1000 ton lots were sold, few being of larger size, and many 300 and 500 ton lots were contracted for. A large share of the tonnage for the first quarter was sold at $14.50, for No. 2, at furnace. In a few cases for outside shipment it is understood that this price was shaded to meet competition having more favorable freight rates. For local and nearby delivery considerable brought $14.75 to $15, at furnace, for No. 2. As the result of the heavy buying the two local furnaces are pretty well filled up for the first quarter delivery, and one local furnace that has taken on considerable business at $14.50 has advanced its price, and is holding firmly to $15, at furnace, for No. 2 for outside shipments for the first half, and $15.50, delivered Cleveland. Some tonnage has been sold at the advance in price. Sales at Toledo are reported during the week aggregating about 15,000 tons of Foundry Iron to western Ohio, Indiana and Michigan consumers, at $15 to $15.25, at furnace, for No. 2, for the first quarter and first half. In addition to the sales noted in this territory, a local interest, with furnaces in the Pittsburgh District and western New York, reports the sale of considerable Foundry Iron for the balance of the year. This interest, which has so far refused to sell Iron for delivery after January 1, is now ready to take orders for delivery after the first of the year, and is quoting a price of $15 for No. 2. Reports from the Valley indicate that considerable Foundry Iron was sold there during the week, although one interest that has held firmly at $15 for No. 2 made no sales. Nearly all the consumers that are buying are covering pretty fully for their expected requirements for the first quarter. The largest Foundry Iron inquiry now pending, aside from the one mentioned above, is for 4000 tons. In other grades of Iron the local market is rather quiet. We note the sale of two 1000 ton lots of Basic, and a local Steel plant has an inquiry out for 1000 tons. A local interest reports inquiries for Basic aggregating about 25,000 tons, but refused to quote until after election. A few sales of small lots of Malleable Iron were made, but the large consumers of Malleable have not yet come into the market. The activity in Northern Iron has aroused some interest in the Southern product, which has been practically kept out of this market for several months, owing to the difference in price. Among the inquiries for Southern is one for 1000 tons of No. 1 Soft. For the balance of the year we quote, delivered Cleveland, as follows:

| | |
|---|---|
| Bessemer | $15.40 to $15.90 |
| Northern Foundry, No. 1 | 15.65 to 16.00 |
| Northern Foundry, No. 2 | 15.40 to 15.65 |
| Northern Foundry, No. 3 | 15.00 to 15.40 |
| Gray Forge | 14.25 to 14.50 |
| Southern Foundry, No. 2 | 16.85 to 17.35 |
| Jackson County Silvery, 8 per cent. Silicon | 20.05 |

**Coke.**—The market is somewhat firmer, and there is an increased inquiry for Foundry Coke for the first half, some tonnage having been sold. We quote Standard Connellsville Furnace Coke at $1.75, at oven, for the balance of the year, and about $1.90 to $2 for the first half. We quote 72-hr. Connellsville Foundry Coke at $2.15 to $2.25, at oven, for prompt delivery. For the first half as high as $2.50 is being asked.

**Finished Iron and Steel.**—Buyers have been holding off as much as possible until after election. Specifications, while lighter than a month ago, are holding up fairly well. Consumers, however, are ordering in smaller quantities, and only for their immediate needs. As the end of the year is so near at hand, it is expected that this policy will be followed the next two months, manufacturers not wanting large stocks on hand at inventory time. A few contracts for both Iron and Steel Bars were closed during the week, the former coming from railroads for repair work. The largest single order on contract was for 500 tons of Plates and Shapes for a lake boat that is being built at Toledo. Boat builders are figuring on one or two new boats, contracts for which may soon be closed. Mills are getting some orders on contracts for carload lots, but nearly all the orders are for smaller tonnages. The demand for Structural Material is light, and not much improvement is expected this year. The demand for Plates from all consumers is light, practically all the business going to the smaller mills that continue to shade prices from $1 to $2 per ton. The price on Steel Bars is being firmly maintained, and there is little, if any, cutting in the price of Iron Bars. Rivet manufacturers report quite an improvement in the demand from railroads. Jobbers continue to do a fairly good warehouse business, and expect soon to place some good sized orders for stock. Jobbers' mill orders are light, but some inquiries are pending that will probably result in improvement. We quote Iron Bars, 1.45c., Cleveland, for car lots; Steel Bars, 1.50c., Cleveland, for car lots, half extras; Beams and Channels, 1.70c., Cleveland, and Plates, ¼-in. and heavier, 1.70c., Cleveland. We quote Sheets, mill shipments, car lots, Cleveland, as follows: Blue Annealed, No. 10, 1.90c.; Box Annealed, No. 28, 2.60c.; Galvanized, No. 28, 3.65c. Jobbers quote Iron and Steel Bars out of stock at 1.65c. to 1.70c. Beams and Channels from warehouse are 2c., and Plates, ¼-in. and heavier, 1.90c. Warehouse prices on Sheets are as follows: Blue Annealed, No. 10, 2.10c.; Box Annealed, No. 28, 2.70c.; Galvanized, No. 28, 3.80c. Warehouse prices on Boiler Tubes, 2¾ to 5 in., are 65 per cent. discount, and on Black Merchant Iron Pipe, base sizes, 71 per cent. discount.

**Old Material.**—A better feeling prevails, and the market is very firm, although few inquiries are coming from consumers, sales being limited to small lots, for immediate needs. Dealers are still buying what Scrap they can, but are not able to pick up much at the prices they are willing to pay. Dealers' prices to the trade, per gross ton, f.o.b. Cleveland, which are unchanged, are as follows:

| | |
|---|---|
| Old Steel Rails | $14.00 to $14.50 |
| Old Iron Rails | 17.00 to 17.50 |
| Steel Car Axles | 19.00 to 19.50 |
| Old Car Wheels | 14.50 to 15.00 |
| Heavy Melting Steel | 13.75 to 14.25 |
| Relaying Rails, 50 lb. and over | 22.00 to 23.00 |
| Railroad Malleable | 13.25 to 13.75 |
| Agricultural Malleable | 12.00 to 12.50 |
| Light Bundled Sheet Scrap | 9.50 to 10.00 |

The following quotations are per net ton, f.o.b. Cleveland:

| | |
|---|---|
| Iron Car Axles | $20.00 to $20.50 |
| Cast Borings | 7.00 to 7.50 |
| Iron and Steel Turnings and Drillings | 8.00 to 8.50 |
| Steel Axle Turnings | 8.50 to 9.00 |
| No. 1 Busheling | 12.00 to 12.50 |
| No. 1 Railroad Wrought | 13.50 to 14.00 |
| No. 1 Cast | 12.00 to 13.00 |
| Stove Plate | 10.75 to 11.25 |
| Bundled Tin Scrap | 8.00 to 9.00 |

## Metal Market.

NEW YORK, November 4, 1908.

**Pig Tin.**—An increase in the deliveries into consumption and a falling off in shipments from the Straits were responsible for much more favorable statistics than had generally been expected. According to compilation of C. Mayer, deliveries into consumption during October were 3000 tons. As the arrivals were only 2500 tons, stocks decreased 500 tons, making stocks in America now 1674 tons, as compared with 2159 tons at the end of September. The total visible supply decreased, and on October 31 was 17,524 tons. This is 500 tons less than last month, and is the first important decline in the visible supply in a year. The total American deliveries for the first 10 months of this year amount to 27,250 tons, compared with 32,250 tons in the same period last year. The publication of these statistics resulted in a sharp advance in prices in the London market, which was quickly reflected in this country. While some of the trade anticipated more favorable statistics, few, if any, believed they would be so marked as they were. A good business was done on Thursday and Friday of last week, which resulted in a fair advance then. Since these figures have been published the market has advanced further. The daily range of prices has been as follows:

| | Cents. |
|---|---|
| October 28 | 29.40 to 29.50 |
| October 29 | 29.45 to 29.55 |
| October 30 | 30.00 |
| November 2 | 30.25 |
| November 4 | 30.37½ |

The London market closes firm to-day at £137 15s. for spot and £139 2s. 6d. for futures.

**Copper.**—Further advances in prices and more general inquiry have marked the course of this market. The large contract taken by the Westinghouse Companies for the Pennsylvania Railroad electrification, while an important piece of news in itself, was chiefly welcomed because it was believed to be the forerunner of many similar contracts. The decision to use the catenary construction was favorable to the Copper market, taking, as it does, an increased tonnage of this metal. European advices this morning were favorable, and prices in London were higher, closing at £62 1s. 3d. for spot, and £62 17s. 6d. for futures. The business transacted in London, in a speculative way, was large, amounting to 1200 tons of spot, and 1400 tons of futures. Prices in this country are higher, although the market is considerably unsettled. Lake is 14c. to 14.12½c., Electrolytic 13.75c. to 13.87½c., with very little offering at the inside price. The exports of Copper in September were 21,762 tons, making a total for the 10 months this year of 248,807 tons, compared with 157,064 tons in the same months last year.

**Lead.**—The demand has broadened, and while prices are unchanged from last week, there is a reluctance on the part of the cheapest seller, the American Smelting & Refining Company, to sell large lots or for more than six weeks in the future. Its price to-day for shipment Lead in 50-ton lots is 4.30c., New York; at the same time independent sellers are asking 4.30c., St. Louis, and 4.45c., New York.

**Spelter.**—The market is higher than last week. Inquiries have been much more numerous, but orders, at least such as are known, have not been large. The market for spot is 4.90c. to 4.95c., New York, and 4.80c., St. Louis. At least one seller is quoting on a basin of 4.90c., St. Louis, and 5.05c., New York, for December delivery. Nothing is offered for next year.

**Antimony.**—The market is very dull, and there is no change in price. Hallett's can be had at 8c., Cookson's at 8.25c., and outside brands at 7.75c. to 8c. The low prices of Antimonial Lead have adversely influenced the demand for Antimony, as most of its uses at this time are in composition with Lead.

**Aluminum.**—Foreign sellers are reported to be again looking into the possibilities of this market, but have as yet named no prices. The producer here is asking the unchanged price of 26c., for No. 1 ingots

**Nickel.**—Prices are unchanged at 45c. for large lots and 50c. to 60c. for smaller quantities.

**Tin Plate.**—Business is dull, and some price cutting is reported. Quotations are $3.89, New York, and $3.70, Pittsburgh, for 100-lb. IC Coke Plates.

**Old Metals.**—All holders of Old Metals are unwilling to sell at these prices, believing higher ones will shortly prevail. Quotations have again advanced, and the following are dealers' selling pricese:

| | Cents. |
|---|---|
| Copper, Heavy and Crucible | 13.25 to 13.50 |
| Copper, Heavy and Wire | 13.00 to 13.25 |
| Copper, Light and Bottoms | 12.00 to 12.25 |
| Brass, Heavy | 9.50 to 9.75 |
| Brass, Light | 7.25 to 7.50 |
| Heavy Machine Composition | 12.25 to 12.75 |
| Clean Brass Turnings | 8.25 to 8.50 |
| Composition Turnings | 9.50 to 10.00 |
| Lead, Heavy | 4.00 |
| Lead, Tea | 3.75 |
| Zinc Scrap | 3.50 |

## New York.

NEW YORK, November 4, 1908.

**Pig Iron.**—A considerable number of sales have been made during the week, and this morning brings a flood of inquiries which indicate a deep interest. In some cases buyers state need of Iron for this year, but the bulk of the requirements are to cover at least a part of the first and second quarters. The market is firmer. We quote, at tidewater, $17.50 to $17.75 for No. 1 Northern Foundry; $17 to $17.50 for No. 2 Foundry, and $16 to $16.50 for No. 2 Plain. Alabama Irons are quoted, $17.50 to $17.75 for No. 1 Foundry, and $17 to $17.50 for No. 2 Foundry.

**Steel Rails.**—The Chesapeake & Ohio has placed an order for 2000 tons of Rails for immediate rolling at the South Chicago mill. The order for 12,000 tons for the Northern Pacific, reported in a press telegram, is really the placing of specifications with the Lackawanna Steel Company for the immediate rolling of that much of an old contract. One inquiry for 10,000 tons of Rails has come in this week, and the question of next year's requirements will be taken up soon by a number of roads. The Pennsylvania Railroad is expected to come into the market this month or next for a round tonnage, and the inevitable discussion of the price the Steel mills should have for complying with the exacting Pennsylvania specification will come up again. Track Supplies have been active of late. One order for 20,000 Angle Bars was booked by an eastern Pennsylvania mill.

**Structural Material.**—Locally, the largest contract of the past week is 5000 tons, for the Hoyt apartment building, which goes to the American Bridge Company. This company's bookings in October were about 20 000 tons, not including the Hoyt contract or the Chicago & Northwestern's 24,000 tons for Chicago terminals. The Cincinnati viaduct, 3550 tons, recently referred to, was taken by the Riter & Conley Company, Pittsburgh. Of pending work at Chicago, 30,000 tons will be required by four mercantile and office buildings, and a goodly number of such projects are about to be put forward in other parts of the country. In New York City mention is again made of the new municipal buildings, which will be placed next year. They call for about 15,000 tons. The Chesebrough addition to the Whitehall Building is also a live project. It will mean about 10,000 tons of Steel. In the past week, J. B. & J. M. Cornell, New York, have taken 2700 tons of Structural Steel, and Iron and Steel Castings for Contract No. 14, New York State Barge Canal. About 800 tons of Structural Steel is called for by three other Barge Canal contracts, for which bids will be opened November 17. The general contractors for the Stock Quotation Building, on Beaver street, New York, have placed the Steel, 800 tons, with the Eastern Steel Company. We continue to quote on tidewater deliveries, mill shipments as follows: Beams, Channels, Angles ,and Zees, 1.76c.; Tees, 1.81c. On Beams, 18 to 24 in., and Angles, over 6 in., the extra is 0.10c. Structural Material, cut to lengths, is sold in small lots at about 2¼c.

**Ferroalloys.**—Some Ferrosilicon has been sold cheaper than $68, but it cannot be said that this is a true criterion of the market. Ferromanganese is steady at about $43, Baltimore.

**Bars.**—The market has been rather quiet, although a few sellers are reported to have had some good Bar Iron business, with prices holding at 1.45c. to 1.50c., tidewater. Steel Bars are unchanged, at 1.56c., tidewater.

**Plates.**—The demand is limited to occasional small lots. Prices continue as follows, at tidewater, for Standard sized Plates: Sheared Plates, 1.76c. to 1.86c.; Flange Plates, 1.86c. to 1.96c.; Marine Plates, 2.16c. to 2.26c.; Firebox Plates, 2.65c. to 3.50c., according to specifications.

**Cast Iron Pipe.**—The city of Passaic, N. J., opened bids October 30 on 7 miles of 6 to 20 in. Water Pipe, aggregating

about 25,000 tons, but the general impression is that the contract will not be awarded for some time. The city of New York has received bids on 1400 tons of Pipe for the Coney Island high pressure service. The general demand is still light, with carload lots quoted at $23.50 to $24, tidewater, for 6-in.

**Old Material.**—Rolling mills are the best buyers in a generally dull market, taking small lots of Wrought Scrap, Rerolling Rails, Borings and Turnings. Steel makers are making some inquiry for Heavy Melting Steel Scrap, but are trying to get lower prices. Foundries are doing little. Prices are unchanged, quotations being as follows, New York and vicinity, per gross ton:

| | |
|---|---|
| Old Girder and T Rails for melting | $11.50 to $12.00 |
| Heavy Melting Steel Scrap | 11.50 to 12.00 |
| Old Steel Rails, rerolling lengths | 14.00 to 14.50 |
| Relaying Rails | 22.50 to 23.00 |
| Old Iron Rails | 16.50 to 17.00 |
| Standard Hammered Iron Car Axles | 18.50 to 19.00 |
| Old Steel Car Axles | 15.50 to 16.00 |
| No. 1 Railroad Wrought | 15.00 to 16.00 |
| Iron Track Scrap | 12.00 to 13.00 |
| No. 1 Yard Wrought, long | 14.00 to 14.50 |
| No. 1 Yard Wrought, short | 12.50 to 13.50 |
| Light Iron | 7.00 to 7.50 |
| Cast Borings | 7.50 to 8.00 |
| Wrought Turnings | 8.50 to 9.00 |
| Wrought Pipe | 11.00 to 11.50 |
| Old Car Wheels | 14.00 to 14.50 |
| No. 1 Heavy Cast, broken up | 13.50 to 14.00 |
| Stove Plate | 11.50 to 12.00 |
| Locomotive Grate Bars | 11.50 to 12.00 |
| Malleable Cast | 12.50 to 13.00 |

**Erie Canal Work.**—The following material will be required for Erie Barge Canal construction, bids for which will be opened at Albany November 17 and 18: Contract No. 40—627,140 lb. Structural Steel, 5286 lb. Iron castings, 64,200 lb. Metal Bars for reinforcing concrete, 250,000 lb. metal for guard gates. No. 46—575,400 lb. Structural Steel, 26,800 lb. Steel Bars for reinforcing concrete, 12,800 lb. Steel Castings, 6600 lb. special machined Castings, 6000 lb. Wrought Iron Chain, 96,000 lb. metal for buffer beams, 25,000 lb. metal for lock valves, 188,000 lb. metal for lock gates, 25,000 lb. special machinery Castings. No. 47—158,000 lb. Structural Steel, 23,000 lb. Bars for reinforcing concrete, 1750 lb. Wrought Iron, 10,400 lb. Steel Castings, 6600 lb. machined Iron Castings, 24,000 lb. metal for lock valves, 90,000 lb. metal for buffer beams, 180,000 lb. metal for lock gates. No. 68—180,000 lb. Structural Steel, 61,000 lb. metal reinforcing for concrete, 26,000 lb. special machined Castings, 770,000 lb. metal for lock gates, 240,000 lb. metal for buffer beams, 100,000 lb. metal for lock valves.

## Iron and Industrial Stocks.

NEW YORK, November 4, 1908.

The market showed alternate strength and weakness, but with no pronounced tendency in either direction until Monday when a vigorous buying movement set in which forced prices of some stocks up considerably. The range of prices on active stocks from Thursday of last week to Tuesday of this week was as follows: United States Steel common 47⅛ to 48⅛, preferred 110⅜ to 111⅝; Bethlehem Steel common 22, preferred 49 to 50⅞; Car & Foundry common 41¾ to 42¾, preferred 103¼; Locomotive common 49¾ to 51⅛, preferred 106⅛ to 106½; Steel Foundries new, 30⅛ to 31; Cambria Steel 35⅞ to 36½; Colorado Fuel 35¾ to 37⅜; Crucible Steel common 7⅛ to 7¼, preferred 48⅛ to 48⅜; Pressed Steel common 33½ to 34¾, preferred 95 to 95½; Railway Spring common 39⅜ to 41½, preferred 96½; Republic common 23¾ to 24½, preferred 81 to 81½; Sloss-Sheffield common 70 to 73¾, preferred 108; Cast Iron Pipe common 24⅝ to 26, preferred 70 to 71; Can common 6⅞ to 7⅜ preferred, 67½ to 69½. Last transactions up to 1.30 p.m. to-day are reported at the following prices: United States Steel common 49⅞, preferred 114¼, bonds 100⅞, ex-interest; Car & Foundry common 44½, preferred 105¼; Locomotive common 53⅝, preferred 108¾; Colorado Fuel 37½; Pressed Steel common 36⅛, preferred 95, ex-dividend; Railway Spring common 43; Republic common 24¾, preferred 82½; Sloss-Sheffield common 74½; Cast Iron Pipe common 26¾, preferred 72; Can common 7½, preferred 70.

**Dividends.**—The Pressed Steel Car Company has declared the regular quarterly dividend of 1¾ per cent. on the preferred stock, payable November 25.

**Enterprise Engines.**—The Enterprise Mfg. Company, Columbiana, Ohio, which has heretofore been manufacturing its line of type S engines with throttling governor for saw mill and general purposes to which a portable and semiportable engine could be adapted, will hereafter in addition to making this engine, build it with an automatic governor, which has been found to be an approved type of drive for saw mills. It is also being extensively used for irrigating rice fields, many of them being successfully applied to this service in Arkansas, on account of their economy over the throttling type. A new circular on this engine has been prepared for use of the trade. The company has also arranged for and will shortly place on the market a complete line of high speed automatic engines, intended for electrical service and where an efficient high speed engine is required, to be made in sizes from 25 to 250 hp., fitted for direct or belt drive, to be known as its type A. It is now completing one of these engines, 15 x 14 in., for direct connection to a 105 kw. Westinghouse alternating current generator, for installation in an electric light plant at Columbiana, Ohio.

Prof. J. O. Arnold, Sheffield, Eng., has reported on a new fusion welding process for uniting aluminum, copper, lead, tin, zinc and their alloys to and with iron and steel. He considers that the weld made by the process is a true molecular weld, and states that the welding operations have not deteriorated the quality of the steel. His microscopical examination of some of the welds showed an intermolecular absorption of the copper and steel, making the weld stronger than the steel itself. Licenses to employ the process in connection with rock drills and for tramway welds have already been issued, and it is stated that the British Government ordnance superintendent has made use of the process for putting caps upon shells and for gas rings in ordnance.

The stockholders of the National Steel Sheet Company, which was recently organized, and which has commenced the erection of a plant in Mansfield, Ohio, have elected the following directors and officers: William M. Blecker, president and treasurer; W. A. Neale, vice-president; George A. Lindoerfer, secretary and assistant treasurer; George Miller, superintendent. Directors: William M. Blecker of Canton, W. A. Neale of Pittsburgh, Elmer E. Mack of Canton, M. Green of Canton, George A. Lindoerfer of Cleveland, and George A. Miller of Canton.

The joint annual convention of the National Municipal League and American Civic Association, to be held in Pittsburgh November 16 to 19, will be addressed by President James J. Hill of the Great Northern Railroad on "The National Resources of the Country"; by President James McCrea of the Pennsylvania Railroad on "The Pennsylvania Railroad and the Smoke Nuisance," and by G. R. Taylor of the Illinois Central Railroad on "The Illinois Central Railroad and the Smoke Nuisance."

The Erie Railroad Company's report for the year ending June 30, 1908, states that 54.37 per cent. of the total operating expenses was paid by the company direct to labor, being distributed among 38,403 employees. The report adds: "The several State and Federal laws recently enacted, reducing the daily hours of service of certain classes of employees, have been made effective and have created a large additional expense without any corresponding return."

Williams, White & Co., Moline, Ill., manufacturers of bulldozers, heavy punching and shearing machinery, power hammers, drop hammers, &c., have opened an office in room 808 House Building, Pittsburgh, in charge of Frank Ryman, for some years connected with the Oliver Iron & Steel Company, Pittsburgh, and who has had many years of experience in the manufacture of forgings.

During the month of October 55,970 gross tons of 4 x 4 in. billets were rolled in the No. 1 blooming mill of the American Steel & Wire Company at the Newburgh works, Cleveland, Ohio. This is a new record for that mill, and is considered a remarkable tonnage for a mill of its kind.

The Lebanon Valley Iron Company has placed contracts for a new 16-in. mill for its plant at Lebanon, Pa. It will be the second addition to the plant in a year, a 12 and 8 in. combination mill having been added last summer.

# The Machinery Trade.

NEW YORK, November 4, 1908.

Merchants generally the past week gave much attention to politics, and with the National election intervening the light demand for machinery was not surprising, especially in view of the tendency of the past few weeks to withhold specifications and orders, pending the outcome of the election. From reliable sources it is learned that business that would ordinarily have been placed, but has been held in abeyance, aggregates a large amount, and if only a good proportion is released considerable activity can be expected shortly in the machinery trade. Perhaps this year unusual precaution has been taken by the large buyers, especially the railroads which still adhere to their policy of retrenchment, but now that the election has been settled favorably, from the viewpoint of business men generally, it is expected that much of the business held up will be placed shortly. Of this large trade much is expected from the railroads, several of which are said to have substantial lists ready to submit for bids, or in course of preparation, and which, it is thought in the trade, they will now issue as soon as all details are completed. In addition to purchases of mechanical equipment, the railroads are preparing to spend large sums of money for new rolling stock and for repairs. Lately a considerable number of orders has been placed for steel cars, and manufacturers' plants are more active, as is shown by the intention of the American Car & Foundry Company to increase its capacity at St. Louis, Mo., where it is to construct a substantial addition. Locomotive builders have also shared in the increase of railroad buying, and being now practically assured of considerable of the new business being placed that has been held up are to increase their forces and output.

The activity among the car and locomotive builders will undoubtedly mean the purchase of large quantities of machine tool equipment by them within the next few months, and it will not be surprising to hear of the two leading interests becoming prominent factors in the machinery market. Of these the most prominent before the trade at the present time is the American Locomotive Company, New York, which has under consideration the purchase of machine tools aggregating in value $275,000. It is understood that the list covering this large amount of machinery has been prepared, but has been held in abeyance. This equipment is to be installed in the various plants as business warrants. As the company's business is steadily increasing, it is thought that a good portion of the tools will be soon purchased, and while bids may not be asked at once on the whole list, specifications for substantial lots of tools are expected to be issued shortly. A few months ago the company purchased $200,000 worth of machine tools for its Pittsburgh plant.

**Westinghouse Gets the Pennsylvania Electrification.**

Further activity on the part of the railroads is evidenced by the contract just placed by the Pennsylvania Railroad with the Westinghouse Electric & Mfg. Company, Pittsburgh, Pa., for the initial equipment, amounting to about $5,000,000, for electrifying the New York terminals, including the stretch of track between Jersey City and Newark, N. J. In addition to the generating apparatus, the contract covers a large number of heavy electric locomotives, and it is said that it will take 20 months to install the system. It is roughly estimated that about 250,000 hp. will be used in the electric zone under the river and on land. The Westinghouse Company will begin at once to build the engines and the power producing machinery. The awarding of this large contract will mean much to trades involved in the manufacture and establishment of electrical apparatus, and will undoubtedly stimulate other companies to place contracts which have been held up. Manufacturers of power equipment not produced by the Westinghouse Electric & Mfg. Company will secure substantial orders for their equipment for the carrying out of the project. The more important is probably the boiler equipment that will be required for developing the power which will probably be generated at Harrison, N. J., where the railroad has for some time contemplated the construction of a large power plant. Freight and passenger terminals are also to be established at that point. In addition to the large contract just placed, other work of importance is to be undertaken which will not only require the purchase of electrical apparatus, but many other classes of machinery.

For some time the Grand Trunk Pacific Railroad, whose quarters are in Montreal, Canada, has been preparing plans for its new repair shops to be erected at Winnipeg, Man. This company is constructing an extensive railroad system and will need a large amount of mechanical equipment to take care of its rolling stock. We understand that the entire plant, which will consist of a number of shops, will cost nearly $1,000,000, and that plans have been completed for shops costing half of this sum. Contracts will shortly be placed for the first of the new shops, which will be 174 x 823 ft., of brick and steel construction. It is probable that as soon as the first building is under way contracts for other buildings to comprise the group will be awarded. The shops, which will be equipped with modern machinery for making repairs to the rolling stock, will be built about 2 miles from the city limits. Frank W. Morse is vice-president and general manager.

The new repair shop to be erected at Des Moines, Iowa, by the St. Paul & Des Moines Railroad will be 70 x 126 ft., with an L 40 x 42 ft., the probable cost of the construction being from $10,000 to $15,000. The company has most of the equipment that will be installed in the new building this season.

The new building, 60 x 230 ft., five stories high, being constructed by the Jamestown Metal Furniture Company, Jamestown, N. Y., is not an addition to the present plant, but is one of three buildings of equal size which are to comprise a new plant. While the machinery in the present plant will be moved to the new buildings and the company has already purchased a large amount of equipment for the new plant, some additional equipment will probably be required later which will cover principally power presses.

The Oil City Boiler Works, Oil City, Pa., is to largely increase the capacity of its plant by the erection of new buildings, which are expected to be completed by April. Owing to the large demand for its products the company some time ago decided that it would be necessary to enlarge the plant and acquired a site bounded by Duncan and Elm streets and the Erie Railroad, south of the original plant. The company has let contract for the construction of additional buildings on the recently acquired property, 180 x 355 ft., of brick and steel construction.

The Western Maryland Coal & Coke Company is planning to build a hydraulic electric plant to develop the water power of the Youghiogheny River in the vicinity of Friendsville, Md., and John L. Bogart, the well-known hydro-electric expert of 141 Broadway, New York, has been called in consultation on the plan. The company proposes to generate about 20,000 hp., which is to be transferred for coal mining, lighting and general manufacturing purposes. It is probable that some extensive dam construction will be included in the project, and that, together with the power material, will aggregate a large expenditure.

The Minnesota & Ontario Power Company, which was recently organized with offices in Minneapolis, Minn., has engaged of J. G. White & Co., 43 Exchange place, New York, as consulting and contracting engineers to complete the construction of a large dam and hydro-electric power plant at International Falls, Minn. This plant will be used to develop water power which will be utilized for running a ground wood sulphite and news print paper plant. J. G. White & Co. are now establishing a construction plant at a cost of about $50,000, and this will be used for the construction of an immense dam and power plant which will aggregate from 20,000 to 25,000 hp. The company has established an operating office at Minneapolis, where the buying details will be arranged. The Minnesota & Ontario Power Company will purchase its own lumbering equipment and the machinery for its manufacturing plant. It is understood that the company has further manufacturing projects and will in the future be large buyers of general machinery equipment. It was recently organized with a capital stock of $7,000,000, and the president, Edward W. Backus of the Backus-Brooks Company, Minneapolis, and a number of other capitalists prominent in the lumber and paper mill business are interested in the scheme.

The Ed. L. Fleehearty Company, San Antonio, Texas, is in the market for steam and gasoline engines, turbines, Pelton water wheels, special riveted and other pipe, brass tubing, hydraulic packing, belting, &c.

The Craig Water Power Company, Roanoke, Va., will develop two hydro-electric plants, one to furnish 800 hp. and the other 1800 hp. The company is to build an electric plant for lighting and power purposes in Roanoke. A. L. Sibert is president; Louis A. Scholz, vice-president, and Henry Scholz, secretary and treasurer. C. S. Wenges of Brownstown, Pa., hydraulic engineer, is preparing plans and specifications.

# New England Machinery Market.

BOSTON, MASS., November 2, 1908.

October's totals exceeded those of September with most of the machinery dealers, and there is enough business in sight to make November a still better month. The immediate presence of the election has had a retarding influence the past few days, but in spite of this, some good orders have been placed. With election a thing of the past, the expectation is keen that the betterment of business will continue

with accelerating pace. Orders placed contingent upon the election will total large figures, it is said. The machine tool trade has not seen a great number of actual offers of such contracts, but a good deal of business which has been promised to be placed in case of a satisfactory political outcome, especially from the great railroad systems, should reach dealers and builders soon.

Another exceedingly important influence on the market should be the placing of orders to replenish stocks of raw materials and supplies. As has been often stated, hand to mouth buying by large and small consumers has caused stockrooms and storerooms to look like barren, wasted floor space. Those who have had occasion to go through industrial works and the stores of dealers in supplies and in commodities which enter into manufactured products, have been constantly impressed by the buying that would have to be done when business revived. A considerable percentage of manufacturers have accumulated some stocks of finished products, but on the other hand there are many establishments which have produced only in sufficient quantity to meet actual demand. The activity which should result from these conditions promises to become impressive.

Every line of the metal industry seems to be improving, some more rapidly than others. A few have already returned to normal conditions, while an occasional rare exception is rushed with business. The reports from manufacturers are unvarying, excepting in the matter of degree. The machinery builders always expect to be among the last to feel material improvement, but it is certain that they have started. Orders are being received in greater numbers, inquiry is active, and occasionally a sale of considerable size is booked. Manufacturers are chary of disclosing the names of customers, because in most cases they know that contracts for tools already placed are the forerunners of other business yet to come. Where machinery establishments have accumulated large stocks their confidence in the wisdom of their policy appears to them to be borne out by the promise of an active market, in which immediate deliveries will be important. It is not generally expected that the return of full productive capacity will come with a rush, nor is it hoped that such will be the case, the majority of manufacturers and dealers believing that a gradual, though not too slow, resumption of a full market will be the most wholesome influence.

Shop forces are being increased deliberately and carefully. In most works the best men have been retained, work having been given them whenever possible. In them the nucleus of a first rate organization is already established. Lessons learned in 1906, when any sort of a mechanic commanded the wages of high-grade journeymen, have not been forgotten. The apprentice systems have been fostered to as great an extent as possible under adverse conditions, and this will help. Second rate men are being hired at their true value. As for wages, there has been little decrease with good men. It has been only with those who had been receiving pay beyond their worth that a decrease has gone into effect. Manufacturers in metal lines are at an advantage in this element of cost with inferior help only.

A decided improvement in business conditions is noted in many of the manufacturing plants of Greenfield, Mass. The tap and die industry, which is the mainstay of the town, has not suffered proportionately with business generally, the plants have been fairly busy most of the time. Other concerns of the town have had a more prosperous 12 months than the average. Practically every industry of Greenfield is considerably busier than it was a few months ago.

In the Naugatuck Valley the machine builders who depend upon the brass manufacturers as important customers are beginning to feel the effects of the general improvement of the great industry of the section, and expect the influence to grow more pronounced in the near future.

The chair industry of Gardner, Mass., is rapidly recovering, the factories running at much nearer full capacity than at any time for a year. The condition is reflected in the machine shops of the town, which specialize on chair machinery; they report that the demand for this class of equipment has improved decidedly.

The Wachusett Machine Company, Fitchburg, Mass., is making inquiries on a long list of machine shop and foundry equipment, which, it is stated by the buyers, is for a new concern which will be located in South Carolina. Inquiries extend to second-hand as well as new tools. This list follows: Vertical boring machine, 72 in., diameter, 54 in. under rail; McCabe double spindle lathe, 20 in. 6 ft. between centers, with taper attachment, if possible; radial drill to work to centers of 8 ft.; universal milling machine, 20 in. by 7 in. by 18 in.; pipe machine, 2 in. by 8 in.; bolt machine, automatic attachment, to cut up to 2 in., for cutting, turning and heading bolts and tapering nuts; screw cutting engine lathe, 20 in. 10 ft. between centers, hollow spindle, turret attachment; screw cutting engine lathe, 10 in. swing, 5 ft. between centers; combination disk and surface grinder, with drill and ring grinder attachment; 2-ton floor scale; 1000-lb. floor scale; 1-ton platform scale for warehouse; 12-in. sensitive drill; 20-in. drill press; 28-in. drill press; power bending rolls, 72 in. face; combination punch and shears, 36 in. throat, to punch ¾-in. diameter through ¾-in. plate; cold saw to cut 6 in. square or other shapes; power hammer to handle 6-in. forgings; two blacksmith forges for heavy work; 1500-lb. anvil; 1350-lb. anvil; boiler flue welder; two general service abrasive grinders; 30-hp. electric motor; 20-hp. motor; 12 track lifting jacks; two 10-ton hydraulic jacks; two 20-ton hydraulic jacks; 12 screw jacks, assorted sizes from 6 in. up; wheel press for 4 ft. diameter wheels, 100 tons pressure; air riveter; air drill; flexible shaft; portable keyseater; 5-ton traveling hand crane, 25-ft. span; centering machine; hack saw; bulldozer; 2-ton cupola; blower for cupola; jib crane, air lift; tumbler; elevator; foundry ladles, ½, 1 and 2 tons, and hand ladle; oil pump for emptying tanks; water grinder for heavy work; three steel tanks for oil, 5000 to 6000 gal. capacity; two tanks for oil, 500 gal. capacity; 300 to 500 ft. overhead trolley; sand blast for cleaning castings.

The Chandler & Farquhar Company, Boston, has purchased the complete machine equipment of the Boston Vibrator Company, comprising a miscellaneous assortment of tools, and the equipment of another plant, the name of which is not announced, including 17 milling machines, turret lathe, screw machines and general machinery.

Connecticut industrial stocks are showing a tendency to advance, especially of those concerns which manufacture metal goods and machinery. Changes noted are the advance of American Brass Company from $105 to $106; Colt's Patent Fire Arms Mfg. Company, Hartford, from $79 to $80; Eagle Lock Company, Terryville, from $70 to $72 (par value $25); Pratt & Whitney Company, Hartford, preferred, from $97 to $97½, and Whitlock Coil Pipe Company, Hartford, from $105 to $110. A few slight decreases in quoted values are noted in textile stocks, but none in metal lines.

The United States Envelope Company announces as a result of a recent meeting that it will erect the large plant at Springfield, Mass., mention of which was made some months ago. A tract of land containing some 88,000 sq. ft., on the Boston & Albany Railroad, was acquired last year. In a general way the plans call for buildings to contain between 350,000 and 400,000 sq. ft. of floor space. It is understood they will be of brick, mill construction.

The Henry Paper Company is building a large addition to its mills at Lincoln, N. H.

The Kwality Tool Company, New Haven, Conn., has been incorporated in Connecticut with capital stock of $5000. The incorporators are George P. Butler, Nettie B. Butler and Daisy N. Church.

## Chicago Machinery Market.

CHICAGO, ILL., November 2, 1908.

Trade in machinery lines for the month of October has been by no means uniform; orders were fairly plentiful, for the times, at the beginning of the month, and held about even for the first two weeks, but there has been a noticeable falling off since that time. It is a generally expressed belief that this halt is directly due to a desire on the part of buyers to defer action until after election. There is, indeed, no other reasonable cause to be assigned since the general trend of developments in financial and industrial matters has in the meantime been steadily toward improvement, which in some directions is more pronounced than in others. If it is true, therefore, that a considerable volume of business is being held back until the results and the balloting on November 3 is known, there ought, under favorable conditions, to be a decidedly better movement immediately after that event. At the same time no phenomenal rush of orders is looked for, nor, indeed, desired, by the best informed trade interests, since it is felt that a sudden spurt of this nature would certainly result in reaction of corresponding force. What is desired is a steady, conservative, but positive, growth of demand that will within reasonable time bring the machinery trade back to a volume of normal average, and there is widespread confidence in the retainment of this result not many months hence.

Although the railroads have become more active in the purchase of supplies, the restriction against the renewal of tool equipment, further than is absolutely necessary, still holds. Both the Santa Fé and the Rock Island have recently been in the market with a few scattering orders, which, however, included nothing of noteworthy interest. The contract car repair shops have been working pretty full handed of late and have been forced to buy a few new tools to expedite work. The machine tool business is, in fact, made up of the indispensible wants of various industries, and there are but few enterprises actually under way calling for new equipment of any considerable size. Bids are being submitted by dealers on a few machines required for Swift & Co.'s car shops. These include a heavy hydraulic wheel press, a wheel boring machine and heavy axle lathe.

The remarkable expansion in demand for automobiles has continued to grow during the past year in face of general industrial depression. Manufacturers of these machines have enjoyed a fairly prosperous business throughout the year, and some have even found it necessary to increase their productive capacity. With this end in view McCord & Co., Chicago, makers of automobile radiators and lubricators, are preparing to remove their plant for the manufacture of these goods to Detroit, Mich. They will occupy a part of the plant of the Hugh Wallace Company, on the south side of North Grand boulevard east, between Riopelle and Orleans streets. Preliminary to this step the company established a temporary branch plant for the manufacture of automobile radiators a few months ago in a part of the plant of the Penberthy Company. This branch will now be consolidated with the manufacture of other accessories in the new factory, which is 50 x 258 ft., two stories. Present plans contemplate the erection, a little later, of a brass and aluminum foundry. The machinery equipment for the Detroit plant will be supplied in large part from the present Chicago works, although some new tools and machinery will be needed. Motive power will be supplied by electric current from outside sources, which will be distributed through group motor drives. Motors for this purpose will be purchased. McCord & Co. also manufacture railroad supplies, and this department will continue its headquarters in Chicago, as heretofore.

The Gunnell Machine Company, Manitowoc, Wis., manufacturer of steel working tools and appliances, has increased its capital stock from $35,000 to $50,000, the purpose being to enlarge the plant and to equip it with new tools and appliances suitable for all kinds of marine construction and repair work.

We are advised by B. F. Thum, clerk of the Village Board, Safford, Ariz., that an electric light plant will be constructed at that place by private interests, work upon which is expected to begin in November.

The Willow Springs Electric Light & Water Plant, Willow Springs, Mo., has been purchased by J. Sam Brown, Nevada, Mo. Some necessary repairs are now being made, but it is probable that the whole system will be reconstructed in the spring.

The Franklin Mining Company, Highland, Wis., incorporated with a capital stock of $100,000, has just erected four shaft houses on zinc ore mines in the Highland District, and expects to install a power plant in the near future. H. Lewis is superintendent.

McDowell, Stocker & Co., Chicago, note a recent falling off in orders following a fairly good business for the first two weeks of the month. Among the heavier tools included in recent sales were four of the largest size Becker-Brainard milling machines. This company is also Chicago agent for the Racine hack saw.

## Cleveland Machinery Market.

CLEVELAND, OHIO, November 2, 1908.

Business with the local machine tool dealers is quieter than for several weeks, the more noticeable inactivity being attributed to the election being close at hand and buyers holding off until the political contest should be decided. Outside of single tools, two or three fairly good orders were placed, but these had been pending for several weeks. Few inquiries came in. Taking October as a whole, dealers report that the volume of their business was not quite so large as during September. The falling off in October is due largely to the fact that the automobile people, who were heavy buyers in September, bought very little machinery equipment in October. Although the volume was less, the total number of October sales made by some of the machinery houses was larger than in the previous month, the absence of good sized orders cutting down the volume. While machinery houses are looking for an improvement in orders in November, should the result of the election be regarded as favorable, the end of the year is so near at hand that they do not expect much betterment before January. Under normal conditions machinery dealers usually regard December as a poor month for them.

With the tool manufacturers orders and inquiries are light, the effect of the political campaign being as noticeable on their business as on that of the dealers. Some orders have been placed conditional on the result of the election.

In second-hand machinery the market is quiet, the demand being less active than in the past few weeks.

Jobbing foundries report no improvement in the volume of their business. Orders for castings are still mostly for small lots for immediate needs. In a majority of manufacturing lines outside of machinery, business continues to grow slowly, and the outlook for further improvement is favorable.

At the fall meeting and luncheon of the Cleveland Branch of the National Metal Trades Association, held October 29, business conditions were discussed by many of the leading manufacturers of the city who were present, and the general feeling regarding the future outlook was quite optimistic. Nearly all the speakers reported that business had already shown considerable improvement, and they look for greater activity after election. Some of the expressions of the firms represented were as follows:

National Screw & Tack Company: "Our business for the last two months shows a satisfactory increase. The reports from the agricultural districts show that they are placing their orders for the usual amounts. The feeling among a number of manufacturers in our line of business is that if election goes right there need be no fear about business. Our company feels the same way."

Cleveland Hardware Company: "We do considerable business with the farmers. They have all contracted this year as they always have done. Business spurted a little last month, and we believe that it is now simply hanging fire until after election. Out West they do not seem to realize that there was a panic. Our traveling men tell us that business is all right in those sections. In St. Joseph, Mo., several business men came together a few days ago from different cities, and not one reported other than that jobbing business was fairly good in those sections. Collections are normal."

C. O .Bartlett & Snow Company, crushing, elevating and conveying machinery: "Our company has done from 85 to 95 per cent. of the business done last year. A little over 25 per cent. of this business was foreign trade. Prospects are very good for the future."

Avery Stamping Company: "In regard to business we are well pleased with the volume in some of our lines. The future looks good."

Bruce-Meriam-Abbott Company, gas engine builder: "We have closed more business in the last 15 days than we did in the 10 months previously. We have many inquiries, and the outlook in our line is very good."

Peerless Motor Car Company: "We have as many orders on our books as on March 15 last year. We have about 950 employees at work, and this month we have shipped more cars than ever before in any one month, and this is not the season for our product."

Ferro Machine & Foundry Company: "The outlook for next year is very good. We deal largely with the automobile trade. We also build a large line of marine engines that we ship all over the country. We are working night and day in our machine department. The trade seems to order in small quantities, contracting for the season's requirements, but not in any specific amount. Our correspondence with 1000 agents shows that business is getting better. We do quite an extensive foreign business, which is better than last year."

John S. Oram, barrel machinery: "Orders are improving and the outlook is very much better."

Johnson & Jennings Company: "We are on the eve of a wonderful development in manufacturing and commercial industry. The hard times are back of us, things are picking up and the good times are in front."

Allyne Brass Foundry Company: "Business has been fairly good. We expect it to be very good next year."

The Davis Steam Generator Company, Toledo, Ohio, has been incorporated with a capitalization of $100,000, by Samuel S. Davis, Walker Morrison, L. J. Pugh, A. H. Razor and John M. Ormond, to manufacture a new steam boiler, the invention of S. S. Davis. The company will soon select a site for a plant.

The Firestone Tire & Rubber Company, Akron, Ohio, has purchased the plant of the Globe Foundry & Machine Company, adjoining the Firestone Company's present plant, and announces that it will use the site for a large new factory building, erection of which will be started in the spring.

The Cleveland Railway Supply Company has been incorporated with a capitalization of $30,000, to deal in railroad supplies, by W. S. Newhall, who has been engaged in that business, and others. The company has offices in the Citizens' Building.

The H. F. Patton Mfg. Company, Cleveland, has been incorporated with a capitalization of $50,000, by H. F. Patton, B. L. Laird, J. E. McGilvrey, L. S. Lafferty and May H. Prentice. The company will make a specialty of the manufacture of stereopticons and other lecture equipment.

The contract for the steel work for the main building of the sheet mills to be erected by A. B. Clark and others of Canton has been awarded to the Massillon Toledo Bridge Company, according to reports from Canton. Although it was announced that the plant would be built in Massillon, it is possible that a site will be selected in some other city.

The Doe Battery & Mfg. Company, Kent, Ohio, has been formed to manufacture batteries and specialties, and is fitting up a plant. Walter S. Doe is general manager of the company and F. D. Pitkin is secretary and treasurer.

The Home Specialty Company, Lorain, Ohio, has been organized to manufacture galvanized iron mail boxes for private houses. The company is building a plant at 419 Kent street in that city.

The Standard Pattern Works, 5333 St. Clair avenue,

Cleveland, which has been operated as a partnership, has been incorporated under the name of the Standard Pattern Works Company, with a capitalization of $10,000.

## Cincinnati Machinery Market.

CINCINNATI, OHIO, November 2, 1908.

Enough matters of outside interest have enlisted the attention of heads of large tool and general machinery manufacturing concerns in this district during the week and month past to disturb seriously the even tenor of office routine, and now, on the very eve of election, awaiting the returns, it is only to be expected that some would assert, "We are all at sea; we do not really know; we feel that there is to be a big business revival very soon—when this election excitement is over. Our correspondence leads us to expect this." The largest shops the past week have been converted during the noon hour into temporary lecture interiors, and speakers of more or less eloquence have harangued the workmen along political lines.

Office forces report an increasingly optimistic tone to correspondence, and the belief is current that some good sized orders for equipment for railroad shops, agricultural implement factories and miscellaneous manufacturing concerns, held up for weeks and months, will be released as soon as election results are known and construed as favorable. The opportunity given our large tool manufacturers, members of the National Machine Tool Builders' Association and of the National Metal Trades Association, to confer with the officials of the latter, who have been in session here—the semiannual gathering—to arrange for details of the annual meeting to be held in New York City late in March, and hear reports from officials and committees, was an incident of the week and was largely embraced.

Inquiry of tool manufacturers as to conditions of October's closing indicate that in the main it was light and scarcely up to expectations as produced by developments during the month, or, in other words, what they were led to expect from tone of correspondence and actual orders during the early and middle month. On the other hand, the large dealers have had a very good month. One concern reports results of its machine tool department being the best month's income since September, 1907, sales having been of standard tools mainly. One sale of the month was at a dealer's and included specifications for nine machines, and this same concern has a number of specifications for shop equipment dependent on the results of election.

Second-hand tools are a drug, and dealers are making special prices to move any accumulation they may have. Dealers in this territory are generally well stocked on all types of standard tools and machinery, and prepared for any unusual buying movement.

Engineering concerns are very busy with drawings and specifications for large buildings and additions to existing plants, such structures as are not located in or very near Cincinnati being mainly in the South. Some nice lists for equipment are in the hands of promotors of these enterprizes, but mainly dependent on election results.

The foundry industry has been at a standstill for several weeks; save those institutions which make a specialty of miscellaneous small castings for standard labor saving and modern office devices. Some foundrymen have bought iron in the past week or ten days, but in small lots mainly, anticipating a general increase in the price of iron if the election results favorably.

Reports from firms and concerns which do business with the agricultural implement manufacturers indicate that these last have been and are busy; some of them not noticing the effects of the depression. This last was forcibly brought out at the annual meeting last week in Columbus of the National Association of Agricultural Implement and Vehicle Manufacturers, which was largely attended. Among other things accomplished in session, a resolution indorsed the bill now in Congress for the creation of a court of patent appeals, but disapproved the extension of the terms under which patents are now granted. The association also declared for the passage by State legislatures of effective peddlers' licenses; opposed the parcel post as being inimical to the interests of retail dealers; asked that the laws of the several States in relation to interstate commerce be made uniform; pledged the members to mutual efforts toward shortening of terms of credit; indorsed the appointment of R. R. Dennis as special agent of the Department of Commerce, and favored the appointment of additional agents in the work being done with reference to foreign implement manufacturing.

Judge Hanna of the Indiana Superior Court, Indianapolis, has approved the sale of the Insley Iron Works by the receiver, William H. Insley, to Jacquelin S. Holliday, for $6150.

Reports from pig iron sales agencies indicate that the manufacturers of plows, cultivators and other farm implements in the Central West have been gradually increasing time and forces, and some of them are now working night and day, notably the Oliver Works, at South Bend, Ind., where employees have been put on extra time and night shifts inaugurated.

According to plans prepared by the Owens Bottle Machine Company, Toledo, Ohio, an addition to its plant is an early possibility.

Chief Electrician W. A. Hopkins of the Wabash Railroad is completing the installation of electric motors in the shops at Fort Wayne, Ind. Except the use of steam for the operation of the air compressor, and for heating, all machinery in the Fort Wayne shops will henceforth be motor driven. The work has been completed at the Moberly, Mo., shops of the company.

Reports for the quarter at the last meeting of the Columbus Chain Company, Columbus, Ohio, showed the best quarter's business of the year, and particularly the month of October. At this meeting the regular quarterly dividend of 1½ per cent. on the preferred stock was declared, as also the usual dividend on the common. The company's plant has been given a complete overhauling, and is excellently equipped for the expected improvement in business.

Among the Ohio inventors securing patents on articles through H. E. Dunlap, patent lawyer of Wheeling, W. Va., B. M. H Lange, assignor to the Toledo Machine & Tool Company, is given papers for a friction clutch; to W. H. Rabbe, E. W. Hardeu and M. E. Dempsey, Hamilton, Ohio, for a railroad frog; to J. N. Vail, Bryan, Ohio, a rail clamp.

### The National Metal Trades Meeting.

Executive councillors of the National Metal Trades Association concluded on Friday in this city an interesting mid-year meeting. First Vice-President H. P. Eells, Bucyrus Company, South Milwaukee, Wis., was absent, in Europe, and Councillor George Mesta, Mesta Machine Company, Pittsburgh, was detained by business, otherwise the full council was present. President F. K. Copeland, Sullivan Machinery Company, Chicago, presided, and others present were: Treasurer William Lodge, Lodge & Shipley Machine Tool Company, Cincinnati; Second Vice-President J. H. Schwacke, William Sellers & Co., Inc., Philadelphia; Councillors: John R. Black, F. E. Reed Company, Worcester, Mass.; P. B. Kendig, Seneca Falls Mfg. Company, Seneca Falls, N. Y.; C. Bermingham, Canadian Locomotive Company, Ltd., Kingston, Ont.; M. K. Bowman, Griscom-Spencer Company, New York City; H. W. Hoyt, Great Lakes Engineering Works, Detroit, Mich.; E. P. Robinson, Atlantic Works, East Boston, Mass.; W. A. Layman, Wagner Electric Company, St. Louis, Mo.; honorary member, M. H. Barker, American Tool & Machine Company, Boston, and Commissioner Robert Wuest and Secretary N. W. Dingwall of the Cincinnati offices of the association.

Reports submitted at the meeting show an increase in the assets of the association, which while not representing a great sum, is in the estimation of the officials, and recalling trade conditions, very pleasing. The total membership of the association is now 726. It was determined also, in view of the few resignations or changes during the year, that the membership is entitled to special congratulation, and it was accepted by the officials as evidence of belief of the association's value to the manufacturing industry at large. From reports at the meeting it was shown that business improvement has made the greatest development in the East, 68 per cent. of the operatives being now employed, as shown by payrolls.

The next meeting of the association will be held at the Astor Hotel, New York, late in March, the exact date to be determined in the meantime.

## Philadelphia Machinery Market.

PHILADELPHIA, PA., November 2, 1908.

The volume of business transacted during October in the local machinery market can hardly be termed satisfactory. Nearly all lines, excepting probably certain classes of special equipment, will show a falling off when compared with September. This condition was not unexpected, as, in view of the Presidential campaign, a large volume of business was temporarily held in abeyance. Inquiries, however, have been numerous, many developing from buyers who will no doubt be prepared to enter the market shortly after election or early in the coming year. The trade, therefore, has been looking forward and basing its opinions on what business was expected to develop in the near future, rather than on that done during the month. In this they have been encouraged by the improved condition of the railroads, which, in the West, particularly, have placed some good orders for rolling stock, motive power and maintenance of way betterments. Several of the Eastern roads now show a disposition to come into the market in the same way, and while this business does not directly benefit the trade, its indirect in-

fluence strengthens the situation quite materially. It is also known that some of the roads are quietly looking over their approximate future needs in the way of machine tools, not with the view of immediate purchases, but in order that they may be prepared for any emergency, which should develop from more active conditions.

Manufacturers generally report unchanged conditions. There has been a fair run of single tool business in the medium and smaller lines of tools, with some good inquiry, and an occasional order for equipment of the heavier type coming largely from the Government or from the iron and steel industries. No particular improvement is to be noted in the operation of the larger plants. Some of the smaller ones, however, as well as some builders of special tools report a slight increase in orders and output during the month just closed. Sales have not shown any particular increase during the month, the business transacted being irregular. Purchases are frequently made without a great deal of shopping around, which would make it appear—inasmuch as it has been generally the custom to spread inquiries rather broadcast—that the volume of business before the trade was not so great as it was some time ago. Transactions continue almost entirely of the single tool variety, and it is seldom that orders covering any number of tools have been taken.

There has been no improvement in the demand for tools for export, particularly those of the standard types. Special tools have been in a shade better demand, but on the whole this branch of the trade has been rather quiet. Manufacturers transacting an established business abroad in special tools and power transmission equipment report but a moderate volume of orders, which are usually small individually.

There has probably been a little more business transacted in the second-hand machinery market. Machinery merchants as well as second-hand dealers have made some fair sales of second-hand equipment recently, inasmuch as quite a few tools, which have but little active service, have become available and find fairly ready buyers owing to their reduced cost. Sales cover quite a varied range of equipment, but the bulk of the business is confined to tools of the smaller classes.

Considerable variation is to be noted in the reports of foundries as to the volume of business during the month. Some have gained materially, others have not, but on the whole a slight betterment about represents the condition of the trade. Orders are usually for prompt shipment, consumers still refraining to place business in advance of their needs.

The property of the Heindel Mfg. Company, Hanover, Pa., which was recently declared a bankrupt, will be sold by George D. Gitt, trustee, at public sale at the above location, November 14. The sale will include all the real estate, buildings, tools, &c. Efforts will be made to sell it as a complete manufacturing plant.

The District of Columbia will advertise for bids in the near future for an extension to the water system, duplicating the supply, and for fire protection to the Home for the Aged and Infirm, at Blue Plains. An addition will be made to the power house, and an elevated tank of 23,000 gal. capacity, pumps, artesian well, pipe lines, &c., will be required. W. L. Webster is superintendent of construction, 104 District Building, Washington, D. C.

The Hess Machine Works reports no particular increase in the volume of business taken during the month. The outlook for the future, however, is considered a shade better, both for export and domestic orders. Business recently has been somewhat irregular, but includes among others orders for two sets of file making machines for export to Russia, as well as several for domestic customers. A slight betterment is also noted in the demand for machinery equipment of a special nature.

The Baldwin Locomotive Works reports an improvement in the demand. Quite a number of orders for small lots of engines have been received, while one for 12 locomotives of the Atlantic type has been received from the Chicago, Milwaukee & St. Paul Railroad. The business booked has shown recently the best increase since the first of the year. The plant continues in operation with greatly reduced forces, but more encouragement regarding the future is expressed.

The W. E. Shipley Company, machinery merchant, Bourse Building, Machinery Hall, has purchased the entire remaining equipment of the late George H. Jones Motor Company, Camden, N. J. The equipment includes lathes, planers, grinders, presses, special machinery motors, forges, &c. The Shipley Company reports a fair volume of business during the month, but not as large as in the previous one. The outlook for the future is fair, as quite a considerable amount of new business is being figured on.

Willson, Harris & Richards, architects and engineers, are engaged in preparing plans for a four-story brick addition, 85 x 225 ft., to the manufacturing plant of Fels & Co., Seventy-third street and Woodland avenue, Philadelphia.

## Government Purchases.

WASHINGTON, D. C., November 2, 1908.

The Bureau of Yards and Docks, Navy Department, Washington, will receive bids until November 21 for a 5000 cu. ft. air compressor and accessories for each of the navy yards at Boston, Mass., and Mare Island, Cal.

The Isthmian Canal Commission will receive bids until November 23, Circular No. 476, for a quantity of supplies, including tapping machines, pipe cutter, test pump, &c.

The Isthmian Canal Commission will receive bids until November 27, Circular No. 477, for steel dump barges.

Bids will be received at the office of the Superintendent of Prisons, Washington, D. C., until November 30, for a 25-hp. electric motor for the penitentiary at Atlanta, Ga.

The Isthmian Canal Commission will soon ask bids for five Scotch marine boilers, a wood boring machine, &c.

The following bids were opened October 22, Circular No. 471, for machinery for the Isthmian Canal Commission:

Class 1.—One locomotive crane and one grab bucket—Bidder 30, Brown Hoisting Machinery Company, Cleveland, Ohio, $9173; 32, Browning Engineering Company, Cleveland, Ohio, $7966.25; 117, Industrial Works, Bay City, Mich., $8480; 120, Interstate Engineering Company, Bedford, Ohio, $9700; 244, American Hoist & Derrick Company, St. Paul, Minn., $6958, with 1½-yard bucket $921.06, 2½-yard bucket $1206.47, 2-yard bucket $1028.24 must be added.

Class 3.—Forty duplex horizontal oil pumps—Bidder 42, Central Metal & Supply Company, Baltimore, Md., $1990; 77, Fairbanks, Morse & Co., Chicago, Ill., $1820; 84, Fox Brothers & Co., New York, $2470; 90, Gardner, Governor Company, Quincy, Ill., $2235; 147, Manning, Maxwell & Moore, New York, $2595.60 and $2810; 159, Motley, Green & Co., New York, $1890; 163, National Electrical Supply Company, Washington, D. C., $2461.50; 189, Platt Iron Works Company, Dayton, Ohio, $2590; 193, Queen City Supply Company, Cincinnati, Ohio, $2520.50; 241, Henry R. Worthington, New York, item 3, 30 pumps, $1429.50, $1609.80, $2310.60, $2249.40; for ten pumps, $1163.10, $1113.90, $914.90.

Class 4.—Fourteen duplex horizontal plunger pumps—Bidder 42, Central Metal & Supply Company, Baltimore, Md., $2226; 70, Emerson Steam Pump Company, Alexandria, Va., $3105; 77, Fairbanks, Morse & Co., Chicago, Ill., $1778; 84, Fox Brothers & Co., New York, $2055.98; 90, Gardner Governor Company, Quincy, Ill., $2430; 147, Manning, Maxwell & Moore, New York, $2344 and $3010; 159, Motley, Green & Co., New York, $2050; 163, National Electrical Supply Company, Washington, D. C., $2658.60; 189, Platt Iron Works Company, Dayton, Ohio, $2290; 193, Queen City Supply Company, Cincinnati, Ohio, $2721.90; 241, Henry R. Worthington, New York, six pumps, $941.10, $586.26, $1968.12; two pumps, $1040.82, $608.74; six pumps, $1339.32.

Class 5.—Fourteen duplex vertical feed pumps—Bidder 42, Central Metal & Supply Company, Baltimore, Md., $2090; 57, M. T. Davidson Company, New York, $1718; 77, Fairbanks, Morse & Co., Chicago, Ill., $2028; 84, Fox Brothers & Co., New York, $2133; 90, Gardner Governor Company, Quincy, Ill., $1764; 147, Manning, Maxwell & Moore, New York, $2475; 159, Motley, Green & Co., New York, $2511.50; 163, National Electrical Supply Company, Washington, D. C., item 6, $617.40 189, Platt Iron Works, Dayton, Ohio, $2492; 193, Queen City Supply Company, Cincinnati, Ohio, item 6, $632.10; 241, Henry R. Worthington, New York, item 5, two pumps, $834.10; two pumps, $570.06; six pumps, $1389.60 and $717.66; item 6, $449.70.

Class 6.—One pneumatic flue welder—Bidder 84, Fox Brothers & Co., New York, $699 and $598; 159, Motley, Green & Co., New York, $685; 174, R. J. O'Neil, Denver, Colo., $300; 204, Joseph T. Ryerson & Son, Chicago, Ill., $410.

Class 7.—Three arbor presses—Bidder 18, Edwin E. Bartlett, Boston, Mass., $121, accepted; 141, Lucas Machine Tool Company, Cleveland, Ohio, $885.

The following bids were opened October 26, Circular No. 472, for machinery for the Isthmian Canal Commission:

Class 1.—One piston pump—Bidder 50, Fairbanks, Morse & Co., Chicago, Ill., $56 and $62; 56, Fox Brothers & Co., New York, $68; 58, Gardner Governor Company, Quincy, Ill., $64; 93, Manning, Maxwell & Moore, New York, $87 and $90; 102, Motley, Green & Co., New York, $75; 108, National Electrical Supply Company, Washington, D. C., $83; 127, Queen City Supply Company, Cincinnati, Ohio, $79.80; 171, Henry R. Worthington, New York, $126.

Class 2.—One plate straightening machine—Bidder 13, Bertsch & Co., Cambridge City, Ind., $1090; 56, Fox Brothers & Co., New York, $986.32; 93, Manning, Maxwell & Moore, New York, $1350; 114, Niles-Bement-Pond Company, New York, $1520; 140, William Sellers & Co., Philadelphia, Pa., $1710

Class 3.—Seven direct connected generators and engines—Bidder 35, D'Olier Engineering Company, Philadelphia, Pa., $2485; 41, Electric Machinery Company, Minneapolis, Minn., $2502.50; 45, Erie Mfg. & Supply Company, Erie, Pa., $4200; 55, Fort Wayne Electric Works, Fort Wayne, Ind., $2317; 56, Fox Brothers & Co., New York, $3338.93; 61, General Electric Company, Schenectady, N. Y., $2989; 63, A. D. Granger Company, New York, $3143; 78, Interstate Electric Company, New Orleans, La., $2100; 98, August Mietz, New York, $1865; 115, Northern Electric Mfg. Company, Madison, Wis., $2366; 148, Sprague Electric Company, New York, $2608.20; 154 B. F. Sturtevant Company, Hyde Park, Mass., $2695; 165, Western Electric Company, New York, $2352; 166, Westinghouse Electric & Mfg. Company, Pittsburgh, Pa., $2377.

The following bids were opened October 27 for machinery for the navy yards:

Class 1.—One four-wheeled switching locomotive—Bidder 10, American Locomotive Company, New York, $5150 and $4250; 40, Burnham, Williams & Co., Philadelphia, Pa., $4850; 84, Davenport Locomotive Works, Davenport, Iowa, $4230; 156, Lima Locomotive & Machine Company, Lima, Ohio, $4200 and $6800; 224, H. K. Porter Company, Pittsburgh, Pa., $4435 and $6625; 294, Vermilye & Power, New York, $5095 and $8500; 296, Vulcan Iron Works, Wilkes Barre, Pa., $4100 and $6300.

Class 11.—Two heavy pattern upright drills—Bidder 70, Compressed Air Machinery Company, San Francisco, Cal., $432; 92, Frevert Machinery Company, New York, $414; 124, Hen-

shaw, Bulkley & Co., San Francisco, Cal., $390; 125, Harron, Ricard & McCone, San Francisco, Cal., $438 and $365.70; 174, Manning, Maxwell & Moore, New York, $410 and $415; 198, Niles-Bement-Pond Company, New York, $433; 225, Pacific Tool & Supply Company, San Francisco, Cal., $409.

Class 12.—Two nipple and pipe mill machines—Bidder 124, Henshaw, Bulkley & Co., San Francisco, Cal., $900; 125, Harron, Ricard & McCone, San Francisco, Cal., $962.50, $620 and $440; 294, Vermilye & Power, New York, $574.

Class 51.—One five-ton foundry furnace—Bidder 133, Hawley Down Draft Furnace Company, Chicago, Ill., $4020.08; 166, Marks Fuel Oil Equipment Company, Norfolk, Va., $3495.

Class 111.—One single traveling head shaping machine—Bidder 174, Manning, Maxwell & Moore, New York, $2375; 198, Niles-Bement-Pond Company, New York, $2475.

Class 112.—One single head motor driven bolt cutter—Bidder 94, Fairbanks Company, New York, $640; 163, Landis Machine Company, Waynesboro, Pa., $760; 174, Manning, Maxwell & Moore, New York, $670; 288, Tucker Tool & Machine Company, New York, $540.

Class 113.—One floor grinder—Bidder 67, James Clark, Jr., Electric Company, Louisville, Ky., $139.50; 94, Fairbanks Company, New York, $139.50; 211, Oliver Machinery Company, New York, $139.50; 217, S. M. Price Machinery Company, Norfolk, Va., $138; 244, Ransom Mfg. Company, Oshkosh, Wis., $158; 288, Tucker Tool & Machine Company, New York, $260.

Class 141.—Direct current equipment for 50-ton Niles electric traveling crane—Bidder 49, Cleveland Crane & Engineering Company, Wickliffe, Ohio, $2490; 198, Niles-Bement-Pond Company, New York, $1775 and $1350.

Class 151.—Four inclosed motors—Bidder 35, Burke Electric Company, Erie, Pa., $1331; 76, D'Olier Engineering Company, Philadelphia, Pa., $1360; 89, Electro Dynamic Company, Bayonne, N. J., $1196; 115, General Electric Company, Schenectady, N. Y., $1509; 134, Holtzer-Cabot Electric Company, Brookline, Mass., $1274.23; 178, Manhattan Supply Company, New York, $1267.20; 195, Northern Electric Mfg. Company, Madison, Wis., $4367; 257, B. F. Sturtevant Company, Hyde Park, Mass., $1156.70; 265, Sprague Electric Company, New York, $1127; 301, Wickes Brothers, Saginaw, Mich., $1267; 309, Western Electric Company, New York, $1225.60.

Class 152.—Three portable electric blowers—Bidder 76, D'Olier Engineering Company, Philadelphia, Pa., $90; 134, Holtzer-Cabot Electric Company, Brookline, Mass., $85; 201, National Electrical Supply Company, Washington, D. C., $123; 275, Sirocco Engineering Company, New York, $160.

Class 154.—One combination tool grinding and sharpening machine—Bidder 18, Baldwin, Tuthill & Bolton, Grand Rapids, Mich., $71.50; 77, Drew Machinery Agency, Manchester, N. H., $81.50; 92, Frevert Machinery Company, New York, $70.

Class 155.—One punching and shearing machine—Bidder 64, Cleveland Punch & Shear Works, Cleveland, Ohio, $2750 and $2200; 137, Hilles & Jones Company, Wilmington, Del., $2600; 198, Niles-Bement-Pond Company, New York, $2945; 228, Prentiss Tool & Supply Company, New York, $2793; 301, Wickes Brothers, Saginaw, Mich., $2623.75.

Class 156.—One motor driven cut-off machine—Bidder 15, American Wood Working Machinery Company, Rochester, N. Y., $223; 65, Cordesman-Rechtin Company, Cincinnati, Ohio, $464.75; 91, J. A. Fay & Egan Company, New York, $385.35 and $635.25; 211, Oliver Machinery Company, New York, $525; 268, H. B. Smith Machine Company, Smithville, N. J., $360.50.

Class 157.—One automatic railroad cut-off saw—Bidder 15, American Wood Working Machinery Company, Rochester, N. Y., $360; 36, Bentell & Margedant Company, Hamilton, Ohio, $455; 91, J. A. Fay & Egan Company, New York, $594.30; 112, Greenlee Brothers Company, Chicago, Ill., $586; 174, Manning, Maxwell & Moore, New York, $490; 330, S. A. Woods Machine Company, South Boston, Mass., $658.

Class 158.—One bevel hand saw—Bidder 15, American Wood Working Machinery Company, Rochester, N. Y., $408; 36, Bentell & Margedant Company, Hamilton, Ohio, $420; 65, Cordesman-Rechtin Company, Cincinnati, Ohio, $421.64; 77, Drew Machinery Agency, Manchester, N. H., $473; 91, J. A. Fay & Egan Company, New York, $454.65; 92, Frevert Machinery Company, New York, $438; 93, Fairbanks Company, New York, $405; 108, Greaves, Klusman & Co., Cincinnati, Ohio, $443; 174, Manning, Maxwell & Moore, New York, $735; 211, Oliver Machinery Company, New York, $518; 237, B. M. Root Company, York, Pa., $435; 303, White Tool & Supply Company, Cleveland, Ohio, $437.50; 325, Fox Machine Company, Grand Rapids, Mich., $468.

Class 159.—One improved jointing and facing machine—Bidder 15, American Wood Working Machinery Company, Rochester, N. Y., $200; 36, Bentell & Margedant Company, Hamilton, Ohio, $233; 77, Drew Machinery Agency, Manchester, N. H., $188.32; 91, J. A. Fay & Egan Company, New York, $292.95; 92, Frevert Machinery Company, New York, $154; 93, Fairbanks Company, New York, $155; 108, Greaves, Klusman & Co., Cincinnati, Ohio, $216; 112, Greenlee Brothers Company, Chicago, Ill., $353; 174, Manning, Maxwell & Moore, New York, $355; 211, Oliver Machinery Company, New York, $254 and $298; 268, H. B. Smith Machine Company, Smithville, N. J., $215; 325, Fox Machine Company, Grand Rapids, Mich., $238.

Class 160.—One universal saw bend—Bidder 15, American Wood Working Machinery Company, Rochester, N. Y., $497; 36, Bentell & Margedant Company, Hamilton, Ohio, $485; 65, Cordesman-Rechtin Company, Cincinnati, Ohio, $470.10; 91, J. A. Fay & Egan Company, New York, $595.35; 112, Greenlee Brothers Company, Chicago, Ill., $684; 174, Manning, Maxwell & Moore, New York, $600; 211, Oliver Machinery Company, New York, $588, $627 and $648; 228, Prentiss Tool & Supply Company, New York, $464.40; 268, H. B. Smith Machine Company, Smithville, N. J., $463.70; 325, Fox Machine Company, Grand Rapids, Mich., $559.

Class 162.—One independent dove tailer and variety shaper—Bidder 15, American Wood Working Machinery Company, Rochester, N. Y., $354.40; 65, Cordesman-Rechtin Company, Cincinnati, Ohio, $287.28; 91, J. A. Fay & Egan Company, New York, $365.40; 173, Montgomery & Co., New York, $374; 174, Manning, Maxwell & Moore, New York, $255; 178, Manhattan Supply Company, New York, $396.

Class 163.—One power wiring machine—Bidder 77, Drew Machinery Agency, Manchester, N. H., $107.15; 173, Montgomery & Co., New York, $99; 178, Manhattan Supply Company, New York, $104.50; 328, Knox & Brother, New York, $83.30.

Class 164.—One rod and dowel machine—Bidder 15, American Wood Working Machinery Company, Rochester, N. Y., $203; 36, Bentell & Margedant Company, Hamilton, Ohio, $195; 91, J. A. Fay & Egan Company, New York, $178.50; 92, Frevert Machinery Company, New York, $194; 228, Prentiss Tool & Supply Company, New York, $158.

Class 165.—One No. 3 improved drilling and tapping machine—Bidder 77, Drew Machinery Agency, Manchester, N. H., $1873; 173, Montgomery & Co., New York, $1814.95; 174, Manning, Maxwell & Moore, New York, $1825; 178, Manhattan Supply Company, New York, $1874; 228, Prentiss Tool & Supply Company, New York, $1535; 294, Vermilye & Power, New York, $1850; 328, Knox & Brother, New York, $1953.

Class 167.—One band resawing machine—Bidder 15, American Wood Working Machinery Company, Rochester, N. Y., $1291; 36, Bentell & Margedant Company, Hamilton, Ohio, $1380; 39, Berlin Machine Works, Beloit, Wis., $1415; 65, Cordesman-Rechtin Company, Cincinnati, Ohio, $1289; 91, J. A. Fay & Egan Company, New York, $1571.85 and $1273.65; 170, W. D. Mershaun & Co., Saginaw, Mich., $1580.65; 268, H. B. Smith Machine Company, Smithville, N. J., $1414.

Class 169.—One improved core machine—Bidder 97, Falls Rivet & Machine Company, Cuyahoga Falls, Ohio, $254; 173, Montgomery & Co., New York, $262; 294, Vermilye & Power, New York, $265.

Class 170.—One automatic circular grinding machine—Bidder 18, Baldwin, Tuthill & Bolton, Grand Rapids, Mich., $192.60; 92, Frevert Machinery Company, New York, $198; 211, Oliver Machinery Company, New York, $200; 314, Walter A. Zelnecker Supply Company, St. Louis, Mo., $175.

Class 171.—One motor driven power press—Bidder 160, Loy & Nawrath Company, Newark, N. J., $1943; 174, Manning, Maxwell & Moore, New York, $1675; 213, George A. Ohl & Co., Newark, N. J., $1950; 228, Prentiss Tool & Supply Company, New York, $2155.

Class 240.—One punch and shear—Bidder 17, Buffalo Forge Company, Buffalo, N. Y., $73; 28, John Brown & Son, Baltimore, Md., $95; 94, Fairbanks Company, New York, $80; 174, Manning, Maxwell & Moore, New York, $73; 178, Manhattan Supply Company, New York, $90; 240, William Reed & Son, Boston, Mass., $96.25.

Bids were opened October 26 at the office of the Isthmian Canal Commission for two four-wheel saddle tank locomotives, as follows:

G. & W. Mfg. Company, New York, $7546; Davenport Locomotive Works, Davenport, Iowa, $6288; American Locomotive Company, New York, $6300; H. K. Porter Company, Pittsburgh, Pa., $6040; Lima Locomotive & Machine Company, Lima, Ohio, $5800; Vulcan Iron Works, Wilkes-Barre, Pa., $5900.

The following bids were opened by the Superintendent of Prisons, Washington, D. C., October 26, for ice making machinery for the Atlanta penitentiary:

Arctic Ice Machine Company, Canton, Ohio, $510; Fred W. Wolf Company, Chicago, Ill., $425; Pilsbrey-Becker Engineering & Supply Company, St. Louis, $740.48; Henry Vogt Machine Company, Louisville, Ky., $510; Creamery Package Mfg. Company, Chicago, Ill., $476; Triumph Ice Machine Company, Cincinnati, Ohio, $550; Ruemmeli-Dawley Mfg. Company, St. Louis, Mo., $598; Tate-Nordmeyer Engineering Company, St. Louis, Mo., $599; Brunswick Refrigerating Company, New Brunswick, N. J., $595; Vilter Mfg. Company, Milwaukee, Wis., $680.50; Fisher Machine Works Company, Leavenworth, Kan., $572; Gardner Governor Company, Quincy, Ill., $42 and $35 for pump; Reaves & Skinner Mfg. Company, St. Louis, Mo., $33 for pump; Canton Boiler & Engineering Company, Canton, Ohio, $510.

The Sullivan Machinery Company, Chicago, Ill., has been awarded contract for an air compressor for Fort Washington, Md.

The following awards have been made for machinery for the navy yards, bids for which were opened September 8:

Harron, Ricard & McCone, San Francisco, Cal., class 1, one No. 4 high power universal milling machine, $2522; class 4, one upright drill, $367.50; class 5, one 14-in. lathe, $956.36; class 6, two lathe holders, $1172.82.

Niles-Bement-Pond Company, New York, class 2, one vertical boring and turning mill, $3993.

Alliance Machine Company, Alliance, Ohio, class 161, one plate joggling machine, $3895.

Under bids opened October 12, Circular No. 468, for machinery for the Isthmian Canal Commission, the Western Electric Company, New York, has been awarded class 10, one generator, $915.

Under bids opened October 20 for machinery for the navy yards, the Warren Steam Pump Company, New York, has been awarded class 132, one duplex fire pump, $463.

**Edge's Weight Computer for Structural Shapes.**—Engineers, draftsmen and others having to do with computations involving the weights of steel shapes will find useful a contrivance manufactured and sold by the Edge Computer Sales Agency, St. Paul Building, New York. The device is mounted on heavy cardboard, 9½ in. square, with metal corners. A cover paper contains on the inside instructions for its use. A circular graduated disk of two diameters and with a tab is pivoted at its center and plays over circular graduations on the board. Certain scales are used for finding the weights of plates, angles and beams when the dimensions are given. The scales are logarithmic and the principle of the computer is similar to that of a slide rule. It is accurate to within about one-third of 1 per cent. The computer sells for $2.

Standardization of spark plugs for automobiles has been attempted by the Association of Licensed Automobile Manufacturers. The mechanical branch of this association for some time has been working on proposed standards for the dimensions. The form now agreed upon has a ⅞ in. diameter of thread 18 pitch, a shouldered or flanged seat 1⅛ in. in diameter, a minimum length below the shoulder of ½ in. and a hexagon head ⅞ in. across the flats.

# HARDWARE

DENATURED alcohol has in this country been thus far a disappointment. The great things to be accomplished by means of it as a source of power, illumination and heat have to no great extent materialized. It is but an insignificant factor industrially and commercially. Unwise legislation has perhaps had something to do with this tardy development. Under the old law it was not practicable to manufacture the alcohol on a small scale, as the legal restrictions on its manufacture left its production largely to great concerns who would make it in large quantities. The new alcohol law is, however, much more favorable to the establishment of distilling plants of moderate size. It is possible that further progress should be made in the modification of the law so as to encourage or at least permit the producing of the alcohol locally, on a scale that will be most advantageous to the farmers throughout the country, so as to insure a lower cost of manufacture than has yet been reached. There is certainly no reason why the price in this country should not be materially reduced. The course of things abroad, notably in Germany, has been such as to justify the hope that industrial spirits may yet play an important part in this country in furnishing the public with cheap and efficient fuel and light, and at the same time in advancing the welfare of the farmers whose products will enter into the production of the alcohol, of which in turn so many uses can be found in connection with farming operations and rural life.

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While the development of the manufacture of denatured alcohol has been thus slow and disappointing, there has been a correspondingly low production of the utensils and appliances which are called for in its use. With the increased prospect of a lower price for the spirits there is, however, a quickening of enterprise on the part of manufacturers of appliances in which it can be used. Until quite recently the denatured alcohol industry, with respect to utilities for its consumption, was in the condition characteristic of many new enterprises. Until within a short time the products of American manufacturers were few in number, although of high efficiency and quality, and users of alcohol were obliged to depend upon imported appliances of varying merit. Since it became apparent that the new alcohol law could be administered under regulations relieved of the drastic features originally adopted by the Internal Revenue Bureau, the production of utilities in this country has, however, received a very decided impetus. An excellent opportunity to inspect all the principal lines of appliances for the consumption of denatured alcohol, including Stoves, Lamps, Laundry Irons, Chafing Dishes, Refrigerators, &c., will be afforded Hardware merchants and the public during the coming annual convention of the National Grange, Patrons of Husbandry, to be held in Washington, November 10 to 20. During the convention an elaborate exhibit of these appliances will be open to the public, the object of the Grange being to increase the demand for the utilities which, if generally distributed, will insure the consumption of an enormous quantity of denatured spirits and render it practicable for farmers in all sections to produce and denature alcohol even in competition with the largest distilling establishments now engaged in its manufacture. This whole subject is one deserving the best attention of the Hardware trade, to whom is left so largely the making and distribution of the utilities and appliances employed in the consumption of denatured alcohol.

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## Condition of Trade.

Whatever difference of opinion may have found expression during the campaign, it is a matter of congratulation in which all may unite that there is no doubt as to the result. If it were a matter of uncertainty, the formal and final decision depending on the canvassing of votes in doubtful States, or the precarious action of returning boards and courts, it would be a national calamity, fraught with immediate peril to commercial and industrial interests. For the decisiveness of the verdict, whether welcome or unwelcome, there may be rejoicing among the victors and the vanquished alike. It is now known, as far as the question can be determined at the polls, what in general will be the policy of the new administration. The promise of a judicious and conservative administration will have influence in increasing public confidence, and thus tend to promote activity in business, and enterprise on the part of capital. The energies, too, which have dissipated in other directions, or held in abeyance, may now be devoted to productive efforts in the field of business. The quickening of trade along regular lines is to be looked for, with a gradual broadening of enterprise and expenditure, thus continuing the progress toward recovery. While large and exceptional outlays by railroads and great corporations are not to be expected as long as the fundamental questions in regard to State and National control are unsettled problems, the usual course of business, responding to the consuming efficiency of 80,000,000 well to do people, will keep in movement great quantities of products agricultural and manufactured, and give, at least, a fair degree of occupation to factories and merchants through the length and breadth of the land. The situation is an interesting one, with enough still of uncertainty to call for conservatism and prudence, but with sufficient foundation of assured well being to give confidence and courage. It is a situation in which each man by prosecuting his own business with energy and in a hopeful spirit will be advancing the public welfare.

### Chicago.

There is no doubt but that a good deal of business during the past month, and especially in the last fortnight, has been held back awaiting the outcome of election. Indeed, it was apparent from current comment that business interests were more concerned as to future developments than with present conditions. And while it seems to be the policy of every one to move slowly, accepting no unnecessary risks, yet there is and has been a remarkable unanimity of confidence and deep seated belief on every hand that whatever might befall politically the commercial and industrial interests of the country cannot be permanently halted, but must, in the nature of things, rise superior to whatever obstacles that may develop. In noting characteristic features of trade at the present time, the representative of a leading Hardware manufacturer observed that the number of orders coming in is quite satisfactory, as is the average list of items thereon, but the quantities represented by each item are much smaller than is ordinarily the case, showing that buyers have not ceased to carefully restrict purchases to immediate necessities. This pruning process, as is well known, has been going on for some time, with the

natural result of reducing stocks to the closest possible limit. The practice, moreover, has not been confined to the retail trade alone, but has characterized the buying of the jobbing trade as well. In view of these facts, some experienced merchants are beginning to question the wisdom of the ultraconservatism along these lines. It is argued that the soundness of basic conditions warrant—in any case—the expectation of a steady, if slow, increase in demand, with the possibility of its swelling more rapidly than is anticipated. A sudden spurt of buying, if lasting but a few weeks, would, with the stocks now in hand both in factory and warehouses, cause a sudden influx of orders that would precipitate temporary congestion. Looking at the situation from this view point, some buyers are beginning to order with a little more liberality, but at the same time exercising conservative caution against overoptimistic estimates. It is too early to determine what response will be made to the new prices announced last week on Poultry Netting and Hardware grade Wire Cloth. Considering the reduction of 7½ per cent. offered in the schedule from last year's prices, the leading distributers anticipate a generous volume of first orders for spring shipment. Prices on Painted Wire Cloth have not yet been given out, but will probably be announced before the middle of November.

### Boston.

BIGELOW & DOWSE COMPANY.—Since the middle of August there has been a slight improvement in trade throughout New England, and it seems fair to say that the Hardware jobbers have done a normal business as compared with last year—while some claim a slight increase in sales. There is surely a better feeling and more inclination to place orders in anticipation of a fair business in the future.

Stocks are low, but are generally well assorted. It is not necessary for the jobbers to carry large stocks, while the factories are in shape to make prompt shipments and the retailers appreciate the advantage of having reduced their oversurplus, and will be more cautious in future purchases. Before the panic nearly every one had gone beyond a safe limit in buying, but having reduced their stocks as well as their liabilities they will not hasten to overburden themselves again.

Improved conditions must come gradually, and we do not look for a great rush of trade even if the Republican ticket is elected. The last convention of the National Hardware Association in October, 1907, marked the commencement of the panic; let us hope that their next meeting at Memphis the present month may mark its ending.

### Portland, Oregon.

FAILING-MCCALMAN COMPANY.—In this the last week before the national election we are for the first time feeling a little something of the ante-election dullness, but this dullness has no promise of continuing. All houses in our line in Portland report an excellent business and have every reason for expecting an indefinite continuance of the same.

This year all our producing industries have been in a flourishing condition, excepting only the lumbering interest, and now we believe we can say that this is not only beginning to look up but is looking up decidedly, as we hear of the reopening of mills that have been shut down for some time. We therefore expect the remaining two months of the year to show a decided improvement in business over the rest of the year.

### Nashville.

GRAY & DUDLEY HARDWARE COMPANY.—We are suffering from a prolonged drought, one of the longest we ever had in this section. It has done no very serious damage, as it commenced about the time the crops were maturing. A good rain would certainly add materially to the comfort of the people and somewhat to the health of the community, and would be a wonderful restorer to pasture lands.

The night riders in the tobacco section of the country who have done so much to injure business it seems have spread over into Tennessee, where they started out with a pretty strong organization. The firm stand, however,

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taken by our State authorities will no doubt have a good effect in wiping out this clan not only in Tennessee, but in other Southern States.

While business is not satisfactory in this section of the country, we are glad to say that we have just closed the best month's business we have had since the financial troubles October last year. This is, to say the least, encouraging. It is the universal prediction of all classes of people that business will be good after election. We ourselves don't know of any reason why this should be the starting point of good business, but think rather that the increase would be gradual each month; but we are perfectly willing to join in the procession on the morning of the 4th and "whoop things up at a lively rate."

We are unable to give any reason why business should not be good. The country seems to be in a prosperous condition; there seems to be more lack of confidence than lack of money. The knowing ones say confidence will be restored on November 3. "Here's hoping it will."

### Louisville.

BELKNAP HARDWARE & MFG. COMPANY.—Business keeps up remarkably well, when one considers that the whole central part of the country has been afflicted with a drought until we are threatened with a lapse into the infertility of Sahara and considering that we are also afflicted with a flood of campaign eloquence, which does not compensate for the lack of cloud sent moisture.

The cartoons grow more and more pointed and the collectors of campaign funds grow more persistent as the great climax approaches. The claims set up by the rival candidates for the labor vote and the negro vote are rung into the newspaper columns day by day. The last purchased hats are all too small for most of these gentlemen for the next few days. After that we shall expect to see a gradual shrinkage, no matter which way the election goes.

Locally much interest is centered in the action of Tennessee's chief executive in laying hold of the night rider question as vigorously as he has done in person. Personal ease, political engagements and everything else were relegated to a secondary place for the time being in order that these violators of the law should be apprehended and dealt with as they deserve. It has set an example to the governors of the other States, and should the night riders attempt to regulate the price of tobacco, cotton or catfish they will most likely find an obstacle in fearless officers of the law and grand juries as well. We are bound to get out of this mediævalism which has cast a blight upon certain rural districts in this part of the country for the past year or so.

### St. Louis.

NORVELL-SHAPLEIGH HARDWARE COMPANY.—The month of October has kept up the fair promise made by September and has been extremely satisfactory. The volume of sales has been very heavy.

At the time this is written the election is still several days off and there has been a little slackening up in the volume of business, which is usual just before a national election. We are quite sure the country will be safe no matter what happens, and look forward with confidence to a large business the balance of the year and in the spring of 1909.

St. Louis is having her usual beautiful Indian summer weather, which occurs at this time of the year and makes this section of the country so attractive in the autumn.

Harvest is practically over and farmers are turning their attention to improvements and betterments on their places. Verily, this has been a wonderful year for the farmer—abundant crops, with extraordinarily high prices for almost every commodity he raises.

Prices for spring goods are being made gradually and everybody is on the *qui vive* to secure orders for future shipment.

Collections are good, prices are firm and the outlook is generally healthy and encouraging.

### Cleveland.

W. BINGHAM COMPANY.—About the time this edition of *The Iron Age* goes to press the die will have been cast as to which of the two great parties shall dominate the policy under which our country shall run for the next four years. Both candidates will have been weighed in the balance and the voters will have registered their opinion as to which of the two men should be elected to the great office of President of the United States to rule over us for the next four years. Surely, we will all be very grateful when this tension is off and business and the general welfare of the country become the paramount issue. Many large deals have been deferred until this great political question is settled.

The general trend of business in this section at the present time is very good, and we enter the fall season knowing that customers are in need of many goods that they have delayed taking into stock early. Now they are placing orders in more liberal quantities than in former months. Quite a good deal of new business is being booked for shipment the fore part of next year. After November 3 we look for a great revival of trade in all its branches.

Holiday goods are being purchased and are going forward in good quantities. It is surprising the amount of Nails and Wire that is being sold and shipped, especially at this time of the year. Perhaps this is on account of the unusually pleasant fall weather we have had, enabling a great many jobs that it was thought impossible to finish before bad weather set in to be completed before the first of the year. We are looking hopefully into the future and believe we are going to have larger business in this section for the balance of this year, and we will be in shape for a splendid business start the first of the year.

### Philadelphia.

SUPPLEE HARDWARE COMPANY.—By the time *The Iron Age* reaches its various subscribers throughout the country the result of the Presidential election will be known. Presidential candidates are never discussed by the Hardware associations, and very few of the Hardware merchants in our country ever discuss this subject either with their customers or employees, but all hope that the conditions of next year will improve and run largely back to the conditions of 1906 and 1907, although it is generally considered the conditions of the last six months have been far less disastrous than feared in October, 1907, and less failures have occurred in the Hardware trade. To be sure, the trade have bought very carefully, not only fearing trouble, but knowing business would be somewhat held back by the consumers.

The weather was very, very warm and summerlike during the entire months of September and October, consequently there has been practically no call for winter goods. The first cold weather began on Friday, October 30, and on Saturday a few orders for goods used in winter were received. The weather is good now for fall trade, and we think should be very good for retailers' collections of funds from consumers.

## NOTES ON PRICES.

**Wire Nails.**—The market shows a gratifying steadiness in demand as well as in prices. The output of the mills in October exceeded that of the previous month, and indications point to a continued activity. The demand has included new business and specifications on contract orders. Prices continue to be well if not in all cases inflexibly maintained. Quotations are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

| | |
|---|---|
| Carloads, to jobbers | $1.95 |
| Carload lots to retail merchants | 2.00 |
| Less than carloads to jobbers | 2.00 |
| Less than carloads to retail merchants | 2.10 |

Galvanized Nails are quoted at $1 over the price of the regular Nails.

*New York.*—While the market has been comparatively quiet during the week, the movement of Nails has continued from day to day. A few orders have been placed for carloads by Nail houses for retail customers, so that in the event of a brisk demand on the mills after election they would not be annoyed by delay in having

their Nails shipped. Nails are held on the basis of $2.30 per keg in small lots at store, but some sellers are occasionally inclined to shade this figure.

*Chicago.*—October business not only exceeded that of the preceding month, but overreached the total of the corresponding month a year ago. New orders are coming in at a rate which, under present conditions, is regarded as quite satisfactory, and shipments are keeping pace with the present mill capacity. While there is no general inclination to buy ahead of present requirements, there is, in this policy, an element of strength that tends to establish a firmer confidence in the steadiness of onward developments. Prices, we are advised, continue to be firmly maintained. Quotations are as follows: $2.13 in car lots to jobbers, and $2.18 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

*Pittsburgh.*—The Wire and Wire Nail trades are more active at present than any of the other finished lines, actual new orders for Wire Nails and specifications against contracts received during October by the American Steel & Wire Company and the Pittsburgh Steel Company, the two leading producers, being much heavier than in September. In fact, the Wire Nail trade seems to be nearer getting back to a normal condition than any other finished line. Jobbers are showing a disposition to buy in larger quantities, and specifications against contracts are coming in very freely. We are advised that prices are being absolutely maintained by the mills, and there is every expectation that November business will show a healthy increase over October. Quotations for base sizes are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

| | |
|---|---|
| Carloads, to jobbers | $1.95 |
| Carload lots to retail merchants | 2.00 |

Galvanized Nails are quoted at $1 over the price of the regular Nails.

**Cut Nails.**—Demand continues upon about the same restricted basis as for some time, though a slight improvement is reported by manufacturers for October over that of September. Buyers follow the policy of restricting orders to necessities. The general price for Steel Cut Nails is $1.80, base, per keg, f.o.b. Pittsburgh, for less than carloads, and $1.75 for carloads and larger lots. In the Western market Iron Cut Nails are held at an advance of 10 cents per keg over Steel Cut Nails, but this differential is not observed in the East.

*New York.*—The demand has been comparatively light as compared with that for Wire Nails. Steel Cut Nails are held on the basis of $2.15 per keg for small lots at store, but this price is not strictly adhered to by all sellers.

*Chicago.*—Slight improvement is noted in the demand for Cut Nails, but it has not reached a point that deserves special emphasis. There is no disposition on the part of buyers to increase their purchases beyond actual present requirements which call principally for small orders for prompt shipment. Prices are unchanged, with a possible shade of 5 cents a keg from regular quotations on carload orders. We quote Chicago prices as follows: In car lots to jobbers, Iron Cut Nails, $2.08; Steel Cut Nails, $1.98.

*Pittsburgh.*—The Cut Nail manufacturers have reaffirmed prices and report slight improvement in volume of new orders and also in specifications against contracts. We are advised that shipments of Cut Nails in October showed a slight increase over September. Prices are fairly firm, and $1.75, Pittsburgh in carloads and larger lots seems to be minimum of the market. The general market is $1.80, base, per keg, f.o.b. Pittsburgh, but $1.75 is made, on carloads and over. In the Western market Iron Cut Nails are held at an advance of 10 cents per keg over Steel Cut Nails, but this differential is not observed in the East.

**Barb Wire.**—Business in this line is not as brisk as manufacturers anticipated it would be this fall. New orders have been received by the mills in limited quantity, but present conditions are looked upon as being more encouraging for an enlarged trade. Regular quotations are reported as being maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

| | Painted. | Gal. |
|---|---|---|
| Jobbers, carload lots | $2.10 | $2.40 |
| Retailers, carload lots | 2.15 | 2.45 |
| Retailers, less than carload lots | 2.25 | 2.55 |

*Chicago.*—New business has picked up considerably in the past week, and quite a number of good sized orders have been entered. The outlook for an increased tonnage this month is regarded as promising. Shipments are fairly heavy. Prices are reported to be satisfactorily maintained. Quotations are as follows: Jobbers, Chicago, car lots, Painted, $2.28; Galvanized, $2.58; to retailers, car lots, Painted, $2.33; Galvanized, $2.63; retailers, less than car lots, Painted, $2.45; Galvanized, $2.75; Staples, bright, in car lots, $2.25; Galvanized, $2.55; car lots, to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

*Pittsburgh.*—New orders being received by the mills for Barb Wire are still somewhat light, but it is confidently believed that November will show an increase over October. It is claimed that a good deal of new tonnage is being held up, pending the result of the election, and that this will be released as soon as this important event is out of the way. There is no denying the fact, however, that the trade in Barb Wire so far this fall has been a disappointment to the mills. It is stated that prices are being well maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

| | Painted. | Gal. |
|---|---|---|
| Jobbers, carload lots | $2.10 | $2.40 |
| Retailers, carload lots | 2.15 | 2.45 |
| Retailers, less than carload lots | 2.25 | 2.55 |

**Plain Wire.**—Fence manufacturers are the largest buyers of Plain Wire just now, but they are showing some conservatism in the size of their orders. A more liberal demand is looked for by the mills. Quotations per 100 lb. to jobbers in carload lots are as follows, on a basis of $1.80 for Plain and $2.10 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the price to retailers being 5 cents additional:

| Nos. | 6 to 9 | 10 | 11 | 12&12½ | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|
| Annealed | $1.80 | 1.85 | 1.90 | 1.95 | 2.05 | 2.15 | 2.25 | 2.35 |
| Galvanized | 2.10 | 2.15 | 2.20 | 2.25 | 2.35 | 2.45 | 2.85 | 2.95 |

*Chicago.*—Encouraged by a present and prospective demand for Fencing, of reasonably satisfactory proportions, Fence manufacturers are buying on a little more liberal scale; at the same time they have not abandoned that degree of conservatism which holds them against anticipating distant needs, yet the lines are not so closely drawn in this respect as was the case not long ago. Buying on a larger scale is looked for after the doubts of the election contest are cleared away. We are advised that prices are regularly maintained. We quote as follows: Car lots to jobbers, $1.98, f.o.b. Chicago, and to retailers, $2.05.

*Pittsburgh.*—Fence manufacturers are placing some fairly large orders, but are still inclined to the policy of buying only such Wire as they require in the near future. With the election out of the way it is believed the volume of new business in Plain Wire will soon show a decided increase. The mills advise us that prices are being well maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

| | Painted. | Gal. |
|---|---|---|
| Jobbers, carload lots | $2.10 | $2.40 |
| Retailers, carload lots | 2.15 | 2.45 |
| Retailers, less than carload lots | 2.25 | 2.55 |

**Lawn Mowers.**—The reduction in Lawn Mower prices as a result of competition, to which reference was made in our last issue, seems to have affected only the cheapest machines. On the lowest grade of Mowers prevailing quotations to average trade may be represented by an upset price for all sizes of $2 per machine.

**Picks and Mattocks, Etc.**—The majority of manufacturers of Picks, Mattocks, Sledges and other heavy Tools are said to be in favor of higher prices, and large handlers of these goods express the belief that any pronounced improvement in demand will bring about an

immediate advance. Present quotations on Picks and Mattocks are low. The market may be represented in a general way by a discount of 75 and 10 per cent.

**Wire Screen Cloth.**—It is generally expected in the trade that the announcement of next season's price on Wire Screen Cloth will be made the latter part of this week.

**Rope.**—Business for October is regarded by some distributors of Rope as showing larger sales than any month during this past year. This does not mean that demand is normal. There has been, however, a gradual improvement in demand, though largely for small lots during the autumn. Jute products show more strength than others. General quotations for Rope, 7-16 in. in diameter and larger, are as follows: Pure Manila, 9 cents; Pure Sisal, 7 cents. Mixed grades of both kinds grade down in price according to quality. Jute Rope, ¼-in. and up, No. 1, 5¾ to 6 cents; No. 2, 5¼ to 5½ cents.

**Spirits Turpentine.**—The local market has shown but little activity during the week and the demand has been for small lots. Prices have dropped off about ½-cent per gallon. The New York market is represented by the following quotations: Oil Barrels, 39½ to 40 cents; Machine Made Barrels, 40 to 40½ cents per gallon.

**White Lead.**—During the past month the market for White Lead in Oil has shown considerable strength, notwithstanding the weakness in pig lead. While buyers have not been inclined to anticipate their requirements to the extent of placing contracts for future delivery, there has been a fairly satisfactory jobbing demand. Quotations for best brands are as follows: Lots of 500 lb. and over, in 100-lb. kegs and upward, 7 cents per pound; in lots of less than 500 lb., ½ cent per pound advance.

**Linseed Oil.**—The advance of 1 cent per gallon in Oil last week was largely speculative, based upon the reported damage by frost of the Argentine Flaxseed crop, which is believed by some to have been exaggerated, as such reports often are. While the card price shows the advance, the market is not strong at these figures. Demand for 5-barrel lots has been confined to nearby requirements. Quotations for 5-barrel lots are as follows: State and Western Raw, 42 cents per gallon; City Raw, 43 to 44 cents per gallon. Boiled Oil is 1 cent advance on Raw.

**Window Glass.**—The failure thus far to complete the manufacturers' organization has led to lower prices being named by some manufacturers, and the prevailing discounts are said to be about 90 and 30 per cent. for single strength and 90 and 40 per cent. for double strength Glass, from manufacturers' list, January 1, 1901. The fear has been expressed that if the arrangements for the manufacturers' organization cannot be perfected within the next two weeks, the American Window Glass Company, which is said to be carrying nearly a million boxes of machine made Glass, will be forced to put this on the market. If the company is obliged to do so some think that 90 and 50 per cent. discount will be about the current price. Monroe Lemon, secretary of the Columbia Glass Company, Wellsboro, Pa., has sent the following circular letter to the wholesale Window Glass trade:

Owing to the failure of a little more than a dozen Window Glass plants, all co-operative, principally in West Virginia, to sign up, the proposed selling agency plan is still in abeyance and cannot be consummated unless every factory joins. We inclose you herewith a list of the operating pots, showing the probable production up to March 1 of over 6,000,000 boxes. This quantity, you know, is ample for all needs up to October 1 next year, as the predicted consumption for this year is only 6,000,000 boxes. We understand that prices of 90 and 40 on single and 90 and 45 on double are freely being made. The American Company will certainly sell every box it produces, no matter how low prices go. If the jobbers are so inclined they need buy very little Glass between now and the first of the year, and in the meantime can reduce their own stocks to make room for lower priced glass. Neither manufacturers or jobbers can make any money under existing conditions. With 1910 pots in actual operation at present, it is not hard to predict that much lower prices will certainly rule in the near future, unless the proposed organization is carried to a successful conclusion at once.

We feel that every dealer should know these conditions as they exist, and be governed accordingly.

Accompanying this letter Mr. Lemon submits the following estimate of the Glass now in manufacturers' hands and the quantity that would be produced by a 1910 pot capacity between October 1, 1908, and March 1, 1909:

| | Boxes. |
|---|---|
| Estimated stock October 1, machine factories | 750,000 |
| Hand factories | 250,000 |
| Hand production, 30,560 boxes per day from October 1 to March 1 next, 130 days | 3,972,800 |
| Machine production, October 1 to March 1, five months | 1,250,000 |
| Total production, October 1 to March 1, five months | 6,222,800 |
| Machine production to October 1, seven months | 1,750,000 |
| Total | 7,972,800 |

Following is a list of 47 hand operated plants now in operation, having a capacity of about 1600 pots:

INDIANA.

Blackford Window Glass Co., Vincennes.
Vincennes Window Glass Co., Vincennes.

KANSAS.

Baker Bros. Glass Co., Caney.
Caney Glass Co., Caney.
Chanute Window Glass Co., Chanute.
Cheyenne Window Glass Co., Caney.
Coffeyville Window Glass Co., Coffeyville.
Fredonia Window Glass Co., Fredonia.
Kansas Glass Co., Coffeyville.
Osage Window Glass Co., Independence.

NEW YORK.

Getman Glass Co., Cleveland.

OHIO.

Camp Glass Co., Mt. Vernon.
Case & Merry Co., Maumee.
Central Window Glass Co., Utica.
Enterprise Glass Co., Sandusky.
Licking Window Glass Co., Utica.
Utica Glass Co., Utica.

PENNSYLVANIA.

Allegheny Window Glass Co.
American-French-Belgian Co., Du Bois.
Consolidated Window Glass Co., Bradford and branches.
Eldred Window Glass Co., Punxsutawney.
Fairchance Window Glass Co., Fairchance.
Federated Glass Co., Point Marion.
Jeannette Glass Co., Point Marion.
Kane Window Glass Co., Kane.
Kerwin Window Glass Co., Eldred.
Masontown Window Glass Co., Masontown.
New Bethlehem Window Glass Co., New Bethlehem.
Pennsylvania Window Glass Co., Kane.
Point Marion Glass Co., Point Marion.
Standard Window Glass Co., Kane.

WEST VIRGINIA.

Crescent Window Glass Co., Weston.
Clarksburg Window Glass Co., Clarksburg.
Dunkirk Window Glass Co., South Charleston.
Fairmont Window Glass Co., Fairmont.
Grafton Window Glass Co., Weston.
Ideal Window Glass Co., West Union.
W. R. Jones Glass Co., Morgantown.
Lafayette Window Glass Co., Clarksburg.
Marilla Window Glass Co., Morgantown.
Patterson Window Glass Co., Cameron.
Peerless Window Glass Co., Clarksburg.
Salem Co-operative Window Glass Co., Salem.
Tuna Glass Co., Clarksburg.
Wells Glass Co., Sisterville.
West Fork Glass Co., Clarksburg.

There are 104 hand operated plants, all told, in this country, and most of those not now in operation are probably ready to start up as soon as they see any prospect for making money.

## The Sherwood Metal Working Company.

NEGOTIATIONS were concluded during the past week by which the Sherwood Metal Working Company, Syracuse, N. Y., manufacturer of Metal Frame Adjustable Window Screens, was consolidated with the large Screen manufacturing concerns whose combined product is sold through the Continental Company, Detroit, Mich. Up to this time the Continental Company has confined itself almost entirely to the Wood Screen business, but with the taking over of the Sherwood plant it will place on the market on a large scale the metal Screens which are being manufactured under the patents of W. E. Sherwood.

The company will immediately proceed to enlarge the Sherwood plant and a night force will be added to install new metal working machinery and equipment. Before the opening of the Screen business next year it is estimated that the plant will turn out a total of 200 carloads or 1,440,000 metal Screens. F. Q. Briggs of the John A. Roebling's Sons Company, Trenton, N. J., recently bought a large interest in the company and was instrumental in consummating the deal. He has been elected one of the directors for the ensuing year.

E. C. ATKINS & Co., Indianapolis, Ind., have recently issued an attractively printed booklet entitled "Atkins Crosscut Saws," in which the special features and advantages of this product are forcibly pointed out. Illustrations are presented of a number of the Saws, and the company will be pleased to furnish copies of the booklet gratis on application.

## FLORIDA RETAIL HARDWARE ASSOCIATION.

A LARGE and representative gathering of retail Hardware merchants from all parts of Florida assembled in the Board of Trade Auditorium, Jacksonville, on the 28th and 29th ult., and as a result of their deliberations the Florida Retail Hardware Association was organized. More than 30 well-known merchants became members of the association, and within 60 days it is confidently expected that the number of members will be nearly doubled. The call for the meeting, as we have already noted, was issued by W. K. Jackson, Jackson & Wilson Company, Lakeland. The meeting at the Board of Trade Auditorium followed an informal gathering in the parlors of the Aragon Hotel on Wednesday afternoon, when the preliminary arrangements for the organization were made.

In recognition of the valuable services of Mr. Jackson in inaugurating the movement he was chosen temporary chairman of the morning session, and W. Detwiler, Lakeland Hardware Company, Lakeland, temporary secretary. After the temporary organization was perfected S. B. Hubbard of the S. B. Hubbard Hardware Company, Jacksonville, delivered an address of welcome on behalf of the Hardware merchants of the city. The response to Mr. Hubbard's felicitous address was made by C. L. Wilson of the Bartow Hardware Company.

M. L. Corey, secretary of the National Retail Hardware Association, was present at the meeting, and substantially aided in the work of organization. He also delivered an able address in which he pointed out the benefits to be derived from an association of this kind.

### Election of Officers.

The following officers were unanimously chosen:

PRESIDENT, M. E. Grouber, West Palm Beach.
VICE-PRESIDENT, B. F. Watts, Leesburg.
TREASURER, D. L. Thomas, Tampa.
SECRETARY, W. K. Jackson, Lakeland.
EXECUTIVE COMMITTEE: C. F. Smedley, Jacksonville; R. F. McNeil, Live Oak; M. B. Bates, Jr., Quincy.

Col. J. T. L. Brown, president of the Board of Trade of Tampa, and president of the State Fair Association, came before the association and extended a courteous and eloquent invitation to hold the next meeting in Tampa during the State Fair in February. Colonel Brown's invitation on behalf of the city was accepted, and the convention will be held during that month, although the precise date has not yet been determined.

After adjournment the Hardwaremen proceeded to the dock, where they boarded a steamer and were given a delightful and enjoyable four hours' sail as the guests of the Hardwaremen of Jacksonville, a sumptuous lunch being served en route.

## Uniform Bill of Lading.

OWING to physical hindrances which have developed among shippers in providing themselves with the new uniform bill of lading forms, prescribed for use after November 1, it has been decided by the committee having charge of the matter to allow shippers to use their own forms in bills of lading, shipping receipts and dray tickets until December 31, provided all such forms are stamped as follows:

This shipment is tendered and received subject to the terms and conditions of the company's uniform bill of lading, effective November 1, 1908. This receipt is not negotiable, and if the shipment is consigned "to order" must be exchanged for the company's uniform order bill of lading.

..... .....
Shipper's signature. Agent's signature.

This does not waive the application of the terms of the contract after November 1, nor is it permitted to carriers to issue bills of lading on other than the new forms. The extension of time is solely to enable shippers to use their present forms subject to the terms and conditions of the new uniform bill of lading, until they can provide themselves with the authorized forms before January 1.

THE GEORGE P. CLARK COMPANY, Windsor Locks, Conn., manufacturer of Trucks and Casters, has just removed its New York office from the Postal Telegraph Building to Room 2338, Park Row Building.

## Catalogue File of C. H. Curtiss & Co.

THE accompanying illustration shows the catalogue file used in the office of C. H. Curtis & Co., Tarrytown, N. Y. The shelves are built up against the wall 10 to 12 in. apart, and are divided into compartments by vertical partition boards. The compartments so formed are numbered consecutively by 10s, thus making it possible to keep 10 catalogues in each compartment and give every book a different number, which will at the same time indicate the place in which it belongs. Thus catalogues 22 and 29 would be in the third compartment on the upper shelf. Numbers are plainly marked on the front of the catalogues, and also on the edges of the different shelves above the compartments, as indicated in the illustration.

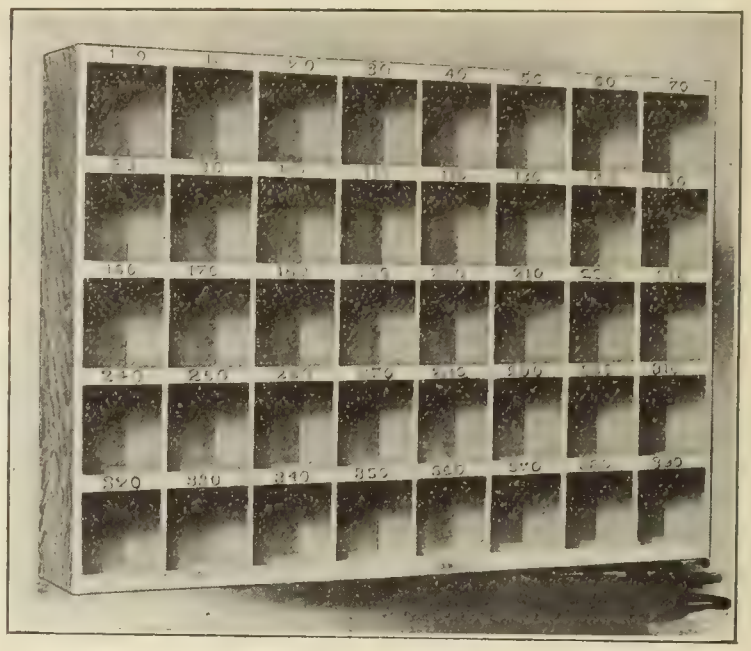


*Fig. 1.—Catalogue File of C. H. Curtiss & Co.*

### The Index to the Catalogues

is an excellent one, consisting of two card indexes, which are kept in the same drawer. One index, Fig. 2, refers to manufacturers, the card, of course, mentioning their product and the number of their catalogue. The other index, Fig. 3, refers to lines of goods, and indicates the numbers of the catalogues referring to them. It would probably be an advantage to give the manufacturers' names beside the catalogue numbers on the goods index cards. If this were done, completing the cross reference considerable time and bother might be saved. Another possible improvement in the system would be to add addresses to cards in the manufacturers' index, which might frequently save looking it up elsewhere.

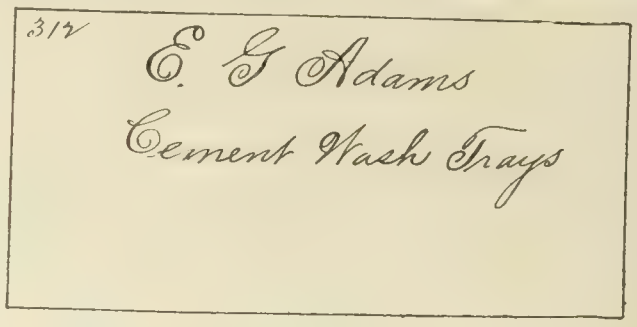



*Fig. 2.—Card from Manufacturers' Index.*

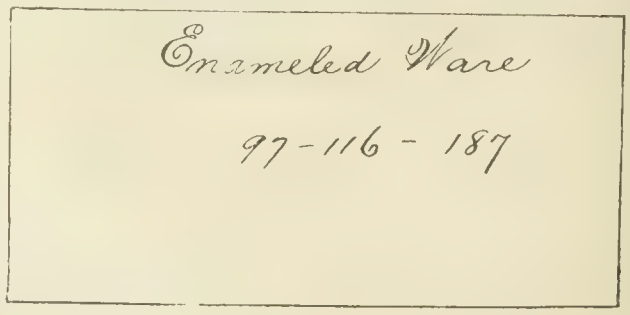



*Fig. 3.—Card from Index of Goods.*

It should be added that the file illustrated is designed for small and moderate-sized books. Large, heavily bound catalogues are kept in separate shelves, where they can be quickly recognized from appearance or printed title without reference to the index.

# Holiday Trade in the Hardware Store.

HARDWARE merchants throughout the country are now laying their plans and making preparations for the holiday trade. In view of the success which has attended intelligent efforts to push the sale of articles in Hardware and related lines which can very well be offered during the holiday season, it is not unlikely that the movement this year will be prosecuted with more enterprise and energy than ever before. During the next few weeks we will present some articles on the subject of the cultivation of Christmas holiday business, giving hints and suggestions which may be of value to the trade. In this connection we will also reproduce a number of window displays made by Hardware merchants which have been found effective in attracting attention to the store and the line of goods thus offered for sale.

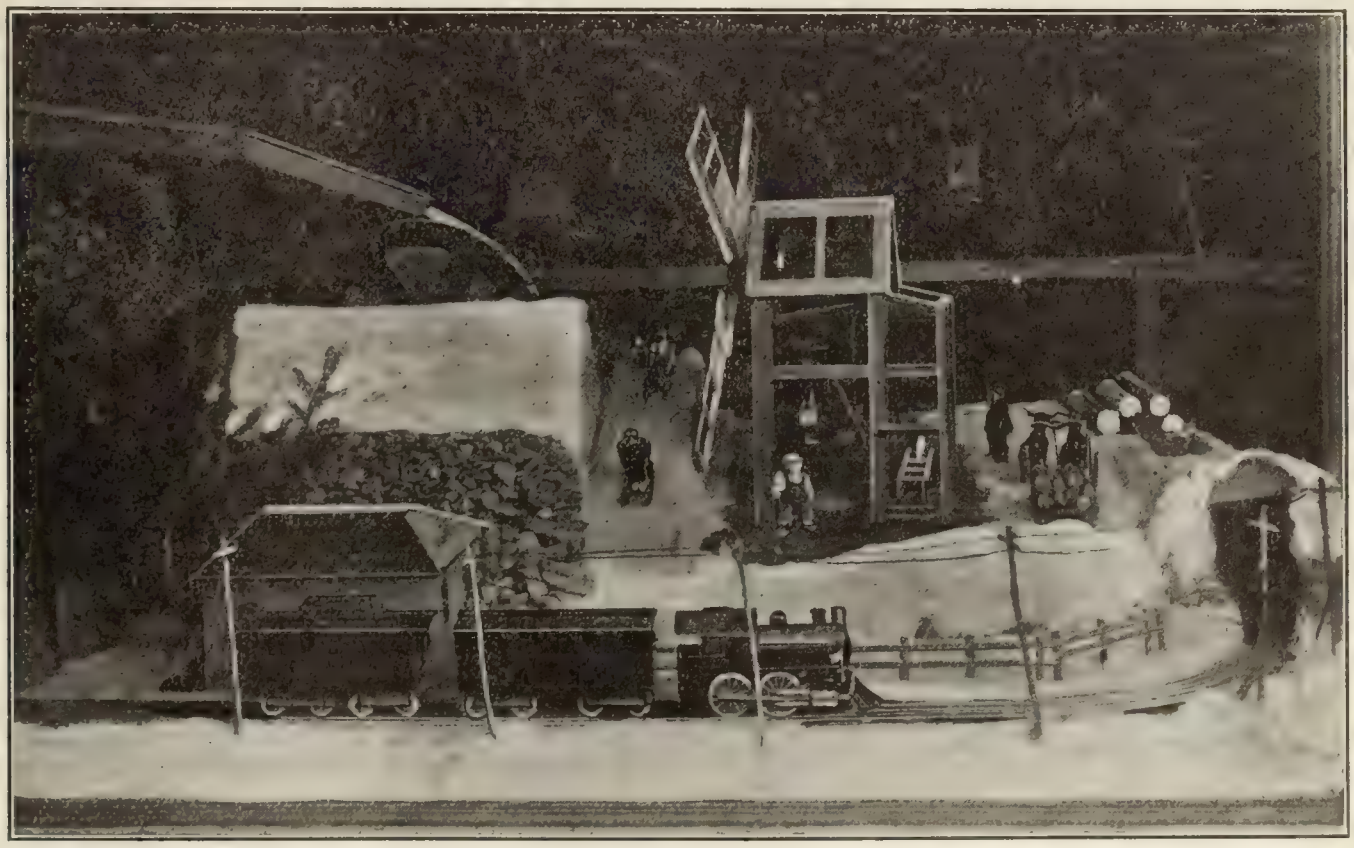
## Christmas Window of John M. Page & Co.

John M. Page & Co., Naugatuck, Conn., have a store front of about 75 ft., which is divided into four windows, each nearly 6 ft. deep. This excellent display space is made use of to good advantage. For the past 10 years the firm has used one of these windows during the Christmas season for a mechanical display. The other windows were fixed up with holiday goods and the results from the combination were excellent.

One of the firm's mechanical displays is reproduced herewith, its effectiveness being well suggested by the excellent photograph. In the rear of the window to the left of the picture is an overshot water wheel, which was made in the store and has done duty more than one season. It was about 3 ft. in diameter, and was fed from the city water supply, a waste pipe underneath carrying the water away. In the center of the window was an old country wind mill complete in every detail, with gristmill on the second floor and bolting machine on the first. The saw mill connected with the plant contained a Circular Saw run by power from the water mill, transmitted by a belt which also turned the arms of the windmill. At the right of the mill was a road leading up from below, on which may be seen an ox team and load of logs. The Sled was homemade, but the oxen were bought at a toy store. Between the mill and the water wheel was another road with children coasting. The children were dolls dressed by the firm's women friends and their Sleds were made of their wood painted to resemble the real thing.

On the lower level at the foot of the hill and passing around on the back side was a moving electric train run by electricity from the lighting system of the store, with station, telegraph poles and wires, rail fence and other details. Broken stone, evergreens, &c., complete the picture, while the ground was covered with white cotton to represent snow.

The whole display was certainly very complete and attractive and calculated to rivet the attention of all observers, but especially the younger members of the community.



*Mill Scene in Holiday Show Window of John M. Page & Co.'s Hardware Store.*

## Hubbard & Co.'s Extensions.

EXTENSIVE additions to their plant have recently been completed by Hubbard & Co., Pittsburgh, manufacturers of Shovels, Railroad Tool Supplies, &c., which will about triple the production in Forgings, Hot Forged Bolts, &c., besides increasing the capacity for Pole Line Hardware, both galvanized and plain, which is a specialty with the company. The buildings are of steel and brick construction, the forge shop being 90 x 100 ft., finishing room, 75 x 90 ft.; warehouse, 62 x 100 ft., and machine shop, 35 x 80 ft. Contracts have been let for and deliveries are now being made on new equipment, including Acme Headers and Forging Machines, Threading Machines and Nut Tappers, large Punch and Shear, Bulldozer, some additional machine tools and a 200 hp. Miller Gas Engine. The company this week awarded a contract to the Dravo Contracting Company, Pittsburgh, for a new pumping station to be located below its plant on the Allegheny River. This building will be circular, 25 ft., and will furnish water for the entire plant, including gas engines, fire system, &c., and will have a filter bed affording a large supply of clear water. The station will contain two De Laval centrifugal pumps, one of which will be held in reserve for emergency purposes. Its pumping capacity will be 500,000 gallons of water in ten hours. In addition to the pumping apparatus, a new 75 hp. Miller gas engine and Western Electric Company's motors and generators will be installed. It is expected that the machinery will be set up and in operation by about December 15.

The Antlers Mercantile Company, Antlers, Okla., has been succeeded by the Finley Hardware Company, incorporated with a fully paid capital stock of $8000, the officers being F. G. Speer, president; J. Mitchell Vick, vice-president; C. A. Finley, secretary and treasurer.

# Washington Letter.

## THE NATIONAL GRANGE AND DENATURED ALCOHOL.

WASHINGTON, November 3, 1908.

THE National Grange, Patrons of Husbandry, hold their national convention in this city, November 10 to 20. Among the subjects to which special attention will be given is denatured alcohol and its production and use throughout the country. There will be an exhibit, to which the public is invited, of utensils and appliances for the consumption of alcohol, including Stoves, Lamps and other larger and smaller articles.

**German Alcohol Appliances.**

Up to this time many of these articles have been imported, the best being those which have received the approval of the German national monopoly organized to promote the sale of alcohol and alcohol appliances throughout the German Empire, in consequence of which the annual consumption of industrial spirits in that country is now something like 70,000,000 gallons. In spite of an import tax of 45 per cent. ad valorem, increased to about 60 per cent. by freight charges, &c., imported appliances until quite recently were retailed at an advantage in price as compared with the products of American manufacturers. German producers have been making alcohol utilities for 10 or 15 years, and have long since outgrown the experimental stage, as the official monopoly, by requiring that all appliances handled by them must first undergo severe tests by their experts for a period of one year, has acccomplished wonders in increasing the safety, economy and efficiency of German alcohol utilities.

**American Devices on the Market**

There are now six or eight different alcohol Stoves of American make on the market, several types of American Lamps, three American Alcohol Flatirons, many different domestic makes of Chafing Dishes, Hot Plates, &c. and other devices will be offered to the public as soon as the necessary dies for their production can be manufactured. All of these domestic products have the style and good appearance characteristic of American appliances, and while all of them are as well made, durable, safe, efficient and economical as the imported lines, most of them embrace improvements on their foreign models.

**The Great Superiority of Denatured Alcohol Over Any Other Fuel for Household Purposes**

has been fully demonstrated not only abroad but in this country since the free alcohol law went into force. Official tests have shown that because alcohol can be vaporized and burned in a mantle for lighting purposes, its entire efficiency thus being developed, it is cheaper than any petroleum product costing only one-third as much, to say nothing of superior cleanliness. The comparison with ordinary burning fluids for cooking purposes is not quite so advantageous to alcohol, but its superior safety is a factor that cannot be overlooked and that offsets the slightly greater cost. Denatured alcohol does not vaporize at ordinary temperatures and therefore cannot explode, while if it becomes ignited the flame may easily be extinguished by suffocation or by the addition of a relatively small amount of water, whereas the mixing of water with petroleum products simply serves to spread the conflagration. Denatured spirits stored in any quantity are looked upon with favor by the underwriters; insurance rates are therefore lower and no vexatious restrictions are imposed upon storerooms, warehouses, &c.

**Exhibitors During Convention.**

Exhibitors whose wares will be shown during the convention of the National Grange in this city will number a score or more, and will include the following:

ALCOHOL APPLIANCES BUREAU, Townsend Building, New York.—A line of high grade Alcohol Lamps and Fixtures.

MANNING, BOWMAN & CO., Meriden, Conn.—A complete line of Heating and Cooking Stoves for denatured alcohol, supplemented by a comprehensive assortment of Chafing Dishes and other alcohol burning appliances.

LANDERS, FRARY & CLARK, New Britain, Conn.—A line of alcohol Cooking Stoves.

G. COHN & CO., 334 Broadway, New York.—An extensive line of imported German alcohol Lamps and Heating and Cooking Stoves.

RAILWAY & STATIONARY REFRIGERATOR COMPANY.—A line of Refrigerators in which the freezing mixture is ethyl chloride manufactured with the use of specially denatured alcohol. These Refrigerators are of all sizes from those suitable for small private families up to installations large enough for refrigerator cars, steamships, &c. These devices supply dry air refrigeration and simultaneously produce substantial quantities of ice.

UNITED STATES INDUSTRIAL ALCOHOL COMPANY, New York City.—An exhibit of the various classes of packages in which Pyro denatured alcohol is distributed.

The exhibit will be in charge of several experts, who will give demonstrations of the various devices shown and all desired information regarding prices, deliveries, &c.

## CATALOGUE HOUSES OPENLY DECLARE FOR PARCEL POST

A NEW and exceedingly interesting trend has been given to the campaign for the enactment of parcel post legislation, and especially to the effort now being made to secure the adoption of the Bristow-Meyer rural parcel post project. The leading mail order houses, which heretofore have pretended neutrality on the subject or have even declared themselves to be opposed to parcel post because of their superior system of distribution which would have to be abandoned, have now thrown off the mask and are not only openly advocating the Postmaster-General's measures, but are flooding the mails of Senators and Representatives with communications from their customers protesting against the present rate of postage on merchandise and urging the passage of the pending bills drafted in the Post Office Department.

**The Change of Front of the Catalogue Houses.**

The managers of the catalogue houses are undoubtedly shrewd men, and in modifying their public position with respect to parcel post legislation they have merely weighed carefully the pros and cons and have reached the conclusion that, while their advocacy of a parcel post may militate against the authorization of the project by Congress by justifying the contentions of the retail merchants that the catalogue concerns have always favored this legislation and would be its chief beneficiaries, yet, on the other hand the influence of their many thousand customers brought to bear upon Senators and Congressmen will overbalance any possible disadvantage resulting from their championship. The advocacy of the parcel post with special reference to the rural free delivery by the big mail order concerns is now unequivocal, as will be seen from the following extract from a letter addressed to a customer by a large Chicago catalogue house:

We wish to advise that we have always been in favor of the Parcel Post law, as there is no doubt whatever that this law would greatly affect our customers' interests as well as our own. There are a great number of small packages which we must ship by express on account of the weight that would be handled through the mail were this law in effect, and it would save our customers a great deal of inconvenience by having them call at the express station for their goods. Were this Parcel Post law enacted the rural free delivery would be put into use in delivering these packages. We sincerely hope to see the day when this law will be enacted and feel safe in saying that it is only a short time off.

**Stereotyped Petitions for Support of Legislators.**

The result of the change of front on the part of catalogue houses is seen in the letters and petitions—the latter on stereotyped forms, which are understood to have been inclosed in packages of merchandise shipped by the catalogue houses—which are being found by Senators and Representatives in their mail. The plan of campaign appears to have been worked out very systematically, for the distribution of these petitions has been so extensive as to reach not only members and Senators in the present Congress, but candidates for seats in the House who,

even if elected, will have no vote until December, 1909. It is apparent, therefore, that the mail order managers have taken a leaf out of the book of the retailers in their efforts to secure pledges concerning parcel post legislation not only from members of the present Congress but from those who may be chosen at the elections being held to-day throughout the country.

**The Plans for the Coming Campaign**

to secure the authorization of an experimental rural parcel post are rapidly taking shape, and the danger that menaces the retailer on this account is daily becoming more apparent. Friends of the project are even doing missionary work among the retailers and are soliciting support on two grounds, first, that if the Bristow-Meyer plan should be adopted by Congress it would put an end to agitation for a general parcel post; and, second, that, pending a thorough test of the practicability of a rural parcel post, Congress could not be induced to extend the system; while, should it not justify the claims made as to the benefits that would be derived by retail merchants, Congress would certainly refuse further appropriations for its support and the entire parcel post movement would come to an end.

**Adoption of Rural Parcel Post Would Stimulate Demand for Further Legislation.**

The readers of *The Iron Age* who have followed the developments of the past few years, especially in connection with the expansion of the rural free delivery service, do not need to be told that the adoption of a rural parcel post, so far from putting an end to legislation, would merely stimulate a demand from all parts of the country for a general parcel post. In fact, it is difficult to see how Congress could refuse such an extension, especially if the postal officials could make a respectable showing regarding the alleged success of the institution as applied to rural routes. As to the effect of the proposed experiment on rural routes, the Post Office Department is so fully committed to the project and would so completely control all official reports on the subject, that it goes without saying that the experiment would merely serve to redouble the present demand.

**P. O. Department Would Ignore Economic Side of Question.**

In this connection the fact must constantly be kept in mind that the Post Office Department views all postal innovations from a purely administrative standpoint, and gives little or no consideration to the important economic questions involved which appeal so strongly to retail merchants and other opponents of paternalistic legislation. It is not necessary to assume, therefore, that postal officials would be obliged deliberately to misrepresent the facts in order to present a basis for an extension of the rural parcel post experiments, for it is obvious that what might appear to be a success from an administrative standpoint would be an abject failure from the standpoint of an important class of injured citizens.

**Conditions in Great Britain.**

The efforts which the Post Office Department has been making through postal treaties to increase the apparent discrimination in the matter of postal rates between the domestic and the international service gives point to the results of an investigation of conditions in Great Britain recently made in the interest of the retail merchants of the Northwest by L. A. Fleming, Minneapolis, Minn. In describing his observations, Mr. Fleming among other things says:

American friends of so-called postal reforms point to the absence of express companies in the Kingdom of Great Britain as one of the good results that have been obtained, and say this is entirely due to the existing postal laws. But if there are no express companies in Great Britain, there are scores and hundreds of forwarding agents that perform the functions of our American express companies. The railroads are themselves engaged in the forwarding business, making low rates for service by fast express, exceeding in limit of weight and size of packages received by the limitations of the postal service by many pounds, even by hundreds of pounds.

Any attempt at comparison between carrying methods in Great Britain with those in vogue in the United States is useless because of the very short distances between points in the former.

I asked the managers of some of the leading stores in Ireland, Scotland and England if parcel post offered great opportunities for them to send business into the country, and without exception they admitted that the business by post was decreasing, while the express by rail and for forwarding agents looking for car lot assignments was increasing.

Eleven pound packages and under are but a small quantity of package shipments.

From the best information at hand, it is evident that the big carriers have nullified parcel post in Great Britain, and what they have left the railroads have picked up. These carriers receive all manner of parcels, put hundreds in baskets, and thus get the very lowest rates of transportation. They give their patrons lower rates than they could otherwise obtain and because of their concessions charge them 4 cents on each consignment, a "booking charge" which gives the carrier a very fair return for his kindness to the shipper. Little packages go by parcel post as a rule, and many of the larger department stores use the mails for delivering goods to out of town customers.

These low rates but add to the burdens of the merchant of the interior. The independent retailer in the country has few friends. Cheap rates, co-operative stores, chain stores, mail order houses by the thousand, fares paid entirely, special excursions with fares paid, and "tontine" establishments tend but to make the independent merchant, be he a grocer or "draper," as they call dry goods dealers, only a small potato of the kind that are many in the hill.

Our mutual friends, the English general merchant, the independent grocer and the small retailer have been almost completely relegated to a parsimonious living by co-operation, mail order retailing, the carriers or forwarding agent, and last but not least, by cheap excursions to cities.

That these same evils will, if they obtain a foothold in the United States, accomplish the same results for the American general merchant and retailer I firmly believe.

**Averag Number of Parcels Handled in Great Britain During Year 2.5 Per Capita.**

When the fact is borne in mind that the catalogue house, as known and operated in the United States, does not exist in Great Britain, the force of Mr. Fleming's observations is materially increased. The latest official statistics, as shown by the annual report of the British Postmaster-General for the year ended March 31, 1908, disclosed the fact that, notwithstanding the success claimed for the domestic parcel post on every score except that of expense, the average number of parcels per capita handled during the year was only 2.5. If these figures show anything they indicate that a similar institution adopted in the United States would be of little or no value to the average taxpayer—and certainly would not compensate the farmer for the expense of installing package boxes—while the catalogue houses would receive an annual cash bonus aggregating millions of dollars.

## F. E. Myers & Bro.

WE are advised by F. E. Myers & Bro., Ashland, Ohio, that they have reconstructed and re-equipped the entire brass department of their works, both foundry and machine shop. The foundry, which has been reconstructed along modern lines, with a view of producing Brass Castings of the highest quality, is in charge of an experienced foreman, possessing a thorough knowledge of metallurgy. The brass machine department, which has been placed on the third floor, in a large, well lighted room, has been equipped with new machinery throughout, including the most modern turret lathes fitted with automatic chucks, self-opening dies and special tools and jigs of every description, for the rapid and accurate production of all the brass parts required in the construction of Pumps. This department is also in the hands of a man who is an expert in his field, and who is thoroughly familiar with the production and manufacture of brass goods. A special department has been added for the manufacture of a superior line of Spray Nozzles. These Nozzles are made in considerable variety for every requirement and condition, and have been developed along the lines recommended by the experimental stations of the various States.

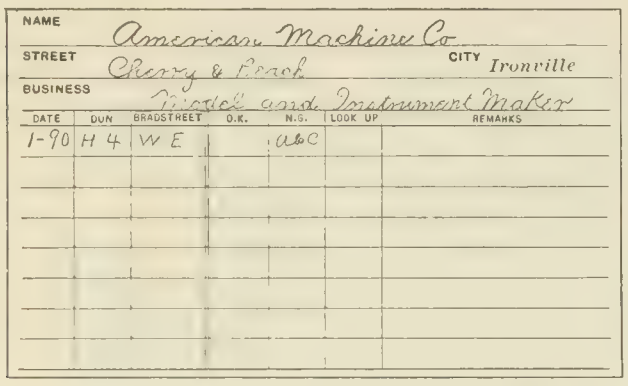
Dewane Brothers, Cooperstown, Wis., handling Hardware, Farm Machinery, Wagons, Buggies, Sleighs, &c., are erecting a new two-story and basement store building, 60 x 84 ft., at Maribel, Wis., for the accommodation of a branch store, which will be operated in connection with the Cooperstown business.

# Here and There in the Hardware Store.

BY SAMUEL MASTERS.

## VII.—ESTABLISHING A BASIS FOR CREDIT.

MR. CLARK, the credit man for Hartman Brothers, knew that I was at work upon a mailing list for the new blue book. I had told him about the book and the increased orders we hoped it would bring, and he pronounced it good; said he had always thought we ought to have a catalogue, and was glad to see such a book in preparation. I told him of some of the weak places in the line that had developed with the formal listing of the goods and the means being taken to strengthen them, and he grew quite interested—as I


NAME American Machine Co
STREET Cherry & Brook CITY Ironville
BUSINESS Tinsel and Instrument Maker

| DATE | DUN | BRADSTREET | O.K. | N.G. | LOOK UP | REMARKS |
|---|---|---|---|---|---|---|
| 1-90 | H 4 | W E | | abc | | |

*Face of Credit, Calls and Sales Card, Actual Size 5 x 3 In.*

have since found that any department manager will be in evidence of weaknesses and shortcomings in other departments. He lent me his commercial agency books as aids in making up the list, and at my request gave me some hints as to how to judge the fitness of the firms by the credit rating. Without any intent of giving me a ruling as to credits that would affect his freedom to accept or reject accounts at his will, he gave me some very definite ideas as to what he considered a safe risk, and the treatment I might expect to be given to the different names presented to him.

### Setting Credit Limits.

I had asked him where he thought I ought to set the limit, so as to cut out undesirables and avoid waste of copies of the blue book.

"I don't think," said he, "that I would go below K 3½ in Dun in any business. Firms with lower ratings might be good for what they would buy, but they would have to be investigated—no use to spend your ammunition upon doubtful game."

"Then if I stop at K 3½, anything above that will be all right, will it?" I asked.

"No! No!" said he. "The credit rating and the capital must agree. A firm may be well rated as to capital, but quoted as 'slow pay,' and we wouldn't want their account upon any terms. Watch the credit column, Sam. The capital rating gives an idea as to the amount in dollars that a firm's purchases can be and still be within the limits of prudence. For instance, it is just as safe to sell a $50 order to a man with a rating of $1000 as to sell a bill of $500 to a firm rated at $50,000 if they pay their accounts when due; but if the $50,000 firm doesn't pay promptly and the $1000 firm does, the larger capital rating of the one firm is no inducement to accept its order in preference to the smaller firm's. In fact, I'd rather take the little account than the large one, for there would be less to lose—but we don't want either."

### Records of Sales, Calls and Credits.

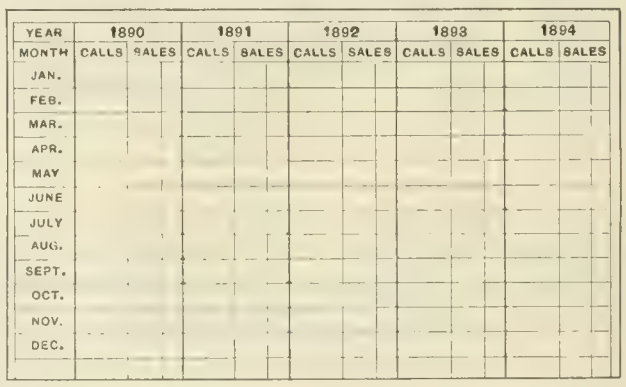
Before beginning upon the list I had some cards printed like the one shown herewith, and decided to fill out the A portion of the list and secure a credit ruling upon the firms before going further, for upon my ability to secure such a ruling and the sales manager's willingness to use the approved list as a basis for solicitation depended the success of my present line of action. I first took the names, beginning with A of local business firms represented in the ledger indexes for three years back. There were comparatively few of these. Then the back of the city directory was consulted and names of manufacturers not already listed were written upon cards. Finally Dun and Bradstreet were consulted and additional names secured, and the commercial ratings for all were entered. When I had finished I had about 300 cards written ready for the inspection of Mr. Clark, the credit manager.

### Securing Credit Rulings.

I took a handful of the cards—perhaps 50—to Mr. Clark and showed him what was desired. He was a little surprised—and I think somewhat displeased—to find that the assistance he had given me had had such a result and did not look with much favor upon the scheme. It meant, he said, a lot of work for him, and, in addition, he was not willing to approve for credit without having the order in hand. He, however, took the cards, saying he wanted to talk the matter over with Hartman, Sr., and that afternoon returned them to me properly indorsed, saying that it must be understood that the approvals simply meant that from any present knowledge an order for a normal amount would be approved, but that each order must be approved as heretofore. He realized the value to the city manager of such a ruling, as a guide for solicitation, and was willing to co-operate so far as he could. Cards which he initialed as O. K. were to be submitted to him at six months' intervals; those pronounced N. G. were not to be submitted so long as the rating remained unchanged; those marked "Look up" were to be indorsed with the contents of special reports from the commercial agencies and returned to him for a ruling. To all of this I was glad to yield a ready assent.

### A Spirit of Mutual Helpfulness an Aid.

In all the work that followed my relations with Mr. Clark were very pleasant. I was careful to see that the cards were properly filled out and that he was given no unnecessary trouble in connection with their approval. I had the freedom of the ledgers in checking the sales, in noting increases and decreases in the purchases, and his bookkeepers were instructed to give me all the assistance they could. They were always busy, but by avoiding the statement and trial balance periods, I managed to get the information I needed with but little interruption to the work. In fact, more than once I spent an evening with a bookkeeper helping him in his checking to find a discrepancy in his balance, so that he would have time to devote to me and my record of sales. It was understood that Hartman, Jr., wanted the work done and that



| YEAR | 1890 | | 1891 | | 1892 | | 1893 | | 1894 | |
|---|---|---|---|---|---|---|---|---|---|---|
| MONTH | CALLS | SALES | CALLS | SALES | CALLS | SALES | CALLS | SALES | CALLS | SALES |
| JAN. | | | | | | | | | | |
| FEB. | | | | | | | | | | |
| MAR. | | | | | | | | | | |
| APR. | | | | | | | | | | |
| MAY | | | | | | | | | | |
| JUNE | | | | | | | | | | |
| JULY | | | | | | | | | | |
| AUG. | | | | | | | | | | |
| SEPT. | | | | | | | | | | |
| OCT. | | | | | | | | | | |
| NOV. | | | | | | | | | | |
| DEC. | | | | | | | | | | |

*Back of Credit, Calls and Sales Card.*

Hartman, Sr., gave it his approval, and every one in the accounting force was willing to help.

### An Offensive Understrapper.

Only once did I have any trouble in the accounting department. I needed at one time some information concerning purchases made from local factories in order to use the data as a basis for claims for reciprocal trade. Mr. Clark referred me to the debit ledger, which as it happened, contained salary and personal accounts of the Hartmans and general accounts considered confidential. I went to the ledger in the noon hour in order not to interrupt the work of the bookkeeper, and was soon busily engaged in transcribing the totals I needed when to my surprise Mr. Clark's assistant ordered me in a most

offensive fashion to close the book and leave the office. Mr. Clark and both the Hartmans were at lunch and this man was temporarily in charge of the office, so I beat a retreat with what grace I could muster, and asked Mr. Clark upon his return so to arrange matters that I could get the information I needed.

**Snobbishness Hard to Endure.**

Of all the things which are hard to bear by a youngster in an organization, snobbery or abuse of authority on the part of those just above him is the worst. If this large bodied, small spirited slave of a ruling pen and balance sheet had spoken to me quietly I should have been content to let the matter rest until Mr. Clark's return with no thought of offense, but he bawled at me from a distance of 3 ft. a peremptory demand to "shut up that book and get out of here," with a very evident intent to create an impression upon every one within hearing. It was a little thing—too small for comment ordinarily—but it is one of the incidents that is most vivid in my recollection of that time, marking the only discourtesy I ever experienced while in Hartman Brothers' employ. It perhaps served a useful purpose, for I then resolved never to offend in like manner, and I do not think I ever have done so. I have since had dealings with thousands of associates in the large corporations which have employed me, and have had hundreds in my own departments, but never to my knowledge have I made any undue exercise of authority or willfully hurt the feelings of another, and I have learned to be especially considerate of those in subordinate positions.

**The Thing That Counts.**

I had an interesting conversation a few days ago with the vice-president of one of the largest concerns in the world—a man of large experience and honored by all who know him. "Masters," said he, "there is only one thing that really counts with me in this game of business. Men and matters come and go. Every deal and every detail is finished and disappears, to be replaced by others. The only one thing that remains is the sense of satisfaction I have when I consider that I have always given every man his just due and have done good to others when I had opportunity."

But this is a long digression from the subject in hand.

*(To be continued.)*

# HARDWARE FREIGHTS.

## The Origin and Effect of the Interstate Commerce Law.

BEFORE the Interstate Commerce law was enacted, in 1887, there was nothing to make it the legal duty of a railroad to charge all shippers the same rates. Under the common law a common carrier might charge one shipper a higher rate than another for the same identical service, and it was not necessary to publish tariffs nor to enforce them if published. The railroads all had their books of printed tariffs which were followed on "local" shipments, but on all business which amounted to anything in the way of tonnage the actual rates were fixed privately by contract between the traffic officials and the shipper. Even where an industry was located on one road and had no advantages of competition between two or more roads it could get inside rates, because every railroad was anxious to build up industries on its own line, and would meet in favor of its industries any concessions offered to competitors on other railroads.

**Making Rates in the Dark.**

The public did not like this method of making rates in the dark. Investigation showed that a few large corporations had been thrifty enough to collect rebates on shipments made by their smaller competitors, and while there were only a few notorious cases of this kind the demand for national legislation to regulate railroads became overwhelming and Congress was forced to act. As a matter of fact the railroads were usually fair under the old system. They did not build up one industry with rebates at the expense of its competitors as a general practice. Whatever rates they made on a commodity were generally open to all the shippers of that commodity, and there were few cases where an industry suffered from discrimination.

**In the Case of Petroleum**

a few of the pioneer shippers joined together and helped the railroads to maintain rates that would be profitable to the carriers. The "pioneers" divided their business so as to give each road its agreed share of the tonnage of petroleum, which made the business profitable for the carriers and saved them from the necessity of cutting each other's throats to get the traffic. This was the master secret of the men who built up the Standard Oil trust. There were very few shippers in other lines who succeeded in getting this plan into operation. The average manufacturer was satisfied if he could get rebates on his own business that would keep him on all fours with his competitors.

**The Reagan Bill.**

The people, by instinct or reason, had the right idea in demanding legislation that would keep all shippers on an equal basis, but it may be open to question whether the law that was finally enacted was the best method of attaining the right. The original Reagan bill, introduced in Congress in 1884 by Judge Reagan of Texas, did not provide for any commission nor for any regulation of rates by national authority. It was merely intended to cover the defect in the common law by prohibiting the railroad from charging one shipper more or less than another. It provided a simple legal preceeding by which a shipper who had any suspicions could find out just what his competitors were paying by bringing the railroad officials into court and making them "'fess up." This bill if it had become a law would have promoted competition between the railroads.

**Bill Would Have Gone to the Root of the Evil.**

Statesmen, whether they serve as courtiers in an empire or legislators in a republic, seldom neglect opportunities to increase their power over the affairs of the people. Too many of them are impressed with the idea that legislation or imperial grace is the great source of the material prosperity of the people and that the affairs of commerce should be regulated by the personal will of some august representative of government. The Reagan bill would have gone to the root of the evil of which the people complained, but it was "too easy" and simple, and, besides, it would promote competition among railroads in carrying the traffic of the country, and this was not satisfactory to the railroad attorneys, who constituted a majority of Congress in those times.

**The Law as Finally Enacted in 1887**

provided for a national Interstate Commerce Commission, whose members would embody the grace of a great and beneficent government in redressing the wrongs of the people. All tariffs must be filed with this commission, and when filed they became legal rates which must be enforced. The commission was given no power excepting to "hen around" and investigate, and incidentally to prosecute any railroad which did not observe its published rates. For nearly 20 years the law was a fraud against the rights of the shippers of the country. The "list prices," or paper tariffs, of the period before the law was enacted became in the course of time, through the application of the law, the actual rates which shippers were required to pay, and a subsequent amendment made it a crime for any shipper to seduce a railroad official into accepting less than the published rates.

**An Unwritten Portion of the Law**

authorized competing railroads to meet and agree upon the tariffs which they were to file with the commission, while the written law forbid any changes in the rates so agreed upon without filing new tariffs at Washington which would give three days' notice of any reduction and ten days' notice of any advance. The present law requires any change in rates to be filed 30 days before becoming effective.

**Good Features in the Original Law.**

There were, of course, some good features in the original law, such as the long and short haul clause and the prohibition of money pools, and the Hepburn law has corrected many of the one-sided provisions of the original act. The mischief of erecting paper tariffs into legal rates was accomplished years ago, and it would be fruitless now to lament the wrong that was done to shippers. Any changes in rates which are made in the future can be challenged before the commission, so that the shipper now has a fair opportunity to protect his interests.

It is evident, however, from the history of this particular legislation, that business men should consider carefully before they indorse popular schemes for the regulation of commerce by the Government. There is no effective way to regulate the Government and see that it does its work of regulation in the proper manner. The safest legislation is of the old direct form, which simply prescribes rules of conduct without clothing officials with any power to manage or direct the affairs of commerce or of the people.

**Application of the Hepburn Law.**

This is well illustrated in the application of the Hepburn law. The simple direct features of the law, which merely define what is right and what is wrong, are easily enforced through the judicial power of the commission and have proved very satisfactory. In numerous cases since the passage of the law where the commission has essayed to "manage" or direct railroad business through the medium of administrative rulings or orders the results have been disappointing, to put it mildly. A long list of these general orders might be cited which have created confusion and injustice to the shippers of the country.

**Judicial Power.**

The Hepburn law, however, has given to the commission a judicial power that was greatly needed to protect shippers against specific instances of injustice, and the commission, composed in the main of men learned in the law and possessing high qualifications for judicial duty, has given general satisfaction in its decisions in the cases that have been tried before it. In no instance have shippers appealed from these decisions to the courts, although in several cases the railroads have taken appeals.

As a judicial tribunal the commission has a great future before it, because a large number of the complaints filed can be disposed of without formal proceedings, and the important cases which require "formal" hearings are duly considered by members of the commission who have had vastly greater experience in handling these intricate traffic questions than any judge on the bench. A court could only declare that a rate was "unreasonable," and then leave the parties to the case in the air, because courts cannot prescribe what rates shall be charged; but Congress has given the commission the additional power to go on and fix a reasonable rate.

**Before the Hepburn Law Was Enacted**

the commission had very little power in traffic matters, excepting to agitate the "rebate" question and thus assist the railroads in erecting their "list prices" into legal rates, but the Hepburn act has given the commission broad powers which make it second only to the Supreme Court as a national tribunal.

**Smallest Shipper Can Obtain Prompt Attention.**

A citizen must have a large purse for costs and legal expenses and must wait with patience for several years if he would get the attention of the Supreme Court to any wrong that he has suffered; but the smallest shipper can obtain prompt attention of the Interstate Commerce Commission without costs or legal expense if he has suffered any wrong forbidden by the law or has been charged an excessive or unreasonable rate. As a national bureau to manage the railroads the commission has proved a failure, but as a court to hear grievances and do justice in thousands of specific cases it has proved itself the most businesslike and capable tribunal in the world.

## Price-Lists, Circulars, Etc.

*Manufacturers in Hardware and related lines are requested to send us copies of catalogues, price-lists, &c., for our Catalogue Department in New York; and at the same time to call attention to any new goods or additions to their lines, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.*

D. W. BOSLEY COMPANY, Fulton and May streets, Chicago, Ill.: Catalogue 1908-1909 devoted to Weather Strips made of rubber and felt; also rubber, window, bar and counter cleaners and floor scrubbers, &c.

GERSTENDORFER BROS., 231-235 East Forty-second street, New York: Catalogue of decorative specialties under the registered trademark Sapolin. These include Enamels, Stains, Gold Paints, Polishes, Carriage Colors, &c.

MANDT WAGON COMPANY, Stoughton, Wis., branch of Moline Plow Company: Catalogue showing Farm Wagons and Repairs, Bob Sleds, &c.

DILLINGHAM MFG. COMPANY, Sheboygan, Wis.: Catalogues illustrating new Iceberg hardwood Refrigerators, Ice Chests, Grocers' Wooden Ware, Medicine Cabinets, Spice Cabinets, Commodes, Blacking Cases, Clock Shelves, Folding Tables, Lap Boards, Kitchen Cupboards, Step-ladders, Ironing Boards, Wash Benches, &c.

J. W. QUILLING MFG. COMPANY, Quincy, Ill.: Leaflet illustrating the Faultless Carpet Stretcher and Tacker, with directions for laying carpet. Also a combination Tack Puller, Corkscrew and Can Opener.

WARREN AXE & TOOL COMPANY, Warren, Pa.: Catalogue relating to Axes, Peavies, Cant and Mill Hooks, Timber Carriers or Lug Hooks, Pike Poles, Pickaroons, Bark and Cedar Spuds, Swamp and Loading Hooks, Grapple Hooks, Skidding Tongs, Rafting and Chain Dogs, Toe Rings, &c.

S. L. ALLEN & Co., Philadelphia, Pa.: Illustrated booklet devoted to Flexible Flyer Sleds, which are shown in a variety of sizes.

KEYSTONE MFG. COMPANY, Buffalo, N. Y.: Descriptive illustrated catalogue of Mechanics' Tools, including Ratchets, Socket Wrenches, Tap Wrenches and Stud Drivers, Westcott Adjustable S Wrenches, Taper Sleeves, Steel Sockets, Drilling Posts, Nail Sets, &c.

MEHLBACH SADDLE COMPANY, 106 Chambers street, New York: Equestrian outfits, including the Whitman and other Saddles, Bridles, Bits, Snaps, Stirrups, Spurs, Leggins, Riding Whips and Crops, &c.

CARNAHAN STAMPING & ENAMELING COMPANY, Canton, Ohio: Illustrated catalogue and price list of French Gray Enameled Ware.

ABBEY & IMBRIE, 18 Vesey street, New York: Wholesale catalogue No. 175, relating to Fishing Tackle, including Hooks, Lines, Flies, Sinkers, Rods, Rod Mountings, Reels, Spoons, Bait, Minnows, &c.

MANNING, BOWMAN & Co., Meriden, Conn., and 25 West Broadway, New York: Twelve page booklet, illustrating and describing Gas Stoves, Chafing Dishes, Meteor Circulating Coffee Percolators, Tea Kettles, Tea Pots, Toasters, Sauce Pans, Travelers' Companions, Cutlet Dishes, all used in connection with denatured alcohol.

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In the article in our last issue on the new Hardware district in New York City, Fox Bros. & Co. were omitted in the enumeration given of houses in Hardware and allied lines embraced in this section. This firm has been located at 126, 128, 130 Lafayette street for the past three years, and was thus a pioneer in the movement. As manufacturers and manufacturers' agents they handle Railroad, Machine Shop, Mining and Contracting Supplies, Saw Mill Machinery, Sugar Plantation Equipment, Lumbering Supplies and Mining, Woodworking and Metal Working Machinery, with factories at Peekskill, N. Y., Woodbine, N. J., and Indiana, Pa.

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G. J. Vayhinger has purchased the Hardware business of Phillips Bros., in Montesano, Wash.

## The O. I. C. Pendulum Washing Machine.

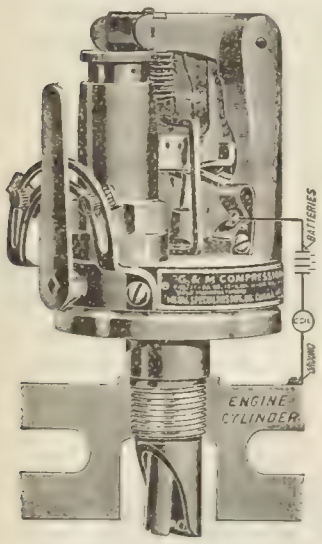
The O. I. C. pendulum washing machine manufactured by the H. F. Brammer Mfg. Company, Davenport, Iowa, has a wooden lever handle to which is attached a rod on the lower end of which is a ball, the rod and ball forming the pendulum. The machine is operated by another rod held in the hand, which can be attached to the ball, as most convenient when sitting, or to the hook near the top of the lever handle when standing. It is pointed out that the pendulum attachment greatly reduces the labor of washing the clothes, as the work is all performed by a swinging movement of the arm.

## The Des Moines Elaterite.

A water proofing and bonding material made by the Elaterite Paint & Mfg. Company, Des Moines, Iowa, and known as No. 60 Des Moines elaterite, is described in a booklet devoted to the subject as an intensely adhesive, nonporous, acid resisting and absolutely waterproof pure carbon. The effectiveness of elaterite as a waterproof coating and a bonding material is ascribed to its adhesive quality and its elastic character, it is claimed, prevents cracking or checking under the extremes of contraction and expansion due to weather condtions. It is claimed that the plaster coat can be directly applied either on the inside of exposed walls or on outside walls treated with elaterite without furring or lathing. Its use on foundations is especially recommended for its water proofing effect, and for the same purpose it is applied to the back of marble or stone facing walls or window and door sills. Because of its extreme elasticity it is said to have great covering capacity, one gallon being sufficient to cover from 125 to 200 sq. ft. one coat, or 80 to 100 sq. ft. two coats on cement, brick or stone surfaces, depending, of course, upon the porosity of the surface. When used on wood or metal its covering capacity is largely increased.

## The G and M Compression Igniter.

A self-contained igniter described as suitable for all kinds of internal combustion engines made by the Metal Specialties Mfg. Company, 18-30 West Randolph street, Chicago, is here illustrated. The igniter is a make and break device, operated by gas under compression in the engine clinder, which acts upon and raises a small piston contained in the igniter. The passage in the igniter, through which the compression is carried from the engine to igniter cylinder, is applied with a valve, which may be set to either advance or retard the time of ignition, so that it may be controlled with accuracy. There is no mechanical connection with any moving part of the engine, and since the electrical circuit is not made or broken at any other place than at the contact points within the cylinder the danger from fire caused by internal sparks is eliminated. The igniter is simple in its mechanism and operation, and is so designed that it can be screwed in place of the side tube, mechanical make and break, or jump spark plug, and can also be instantly adjusted to suit the compression of any engine. The superior results of the hammer make and break contact here employed are said to be easier starting, greater power, steadier running, no misfires and less straining and jerking of the engine. The time during which the points remain closed may be regulated at will. In case of neglect to open the switch in stopping the engine, no drain of the batteries will occur, as it is said to be impossible for the igniter points to remain in contact, regardless of where and how the engine may be stopped. When necessary the contact points may be readily replaced, and all parts are made interchangeable. All moving parts are made of tool steel and properly tempered.




*The G. & M. Compression Igniter.*

## The Yost Improved No. 1 Wood Workers' and Pattern Makers' Vise.

The G. M. Yost Mfg. Company, Meadville, Pa., is offering the vise shown in the accompanying illustrations. In its construction no stop pins or springs are used. The hub is cast solid on the back jaw, and a sleeve fits over it which locks the vise positively in any position required, so that there can be no shake or lost motion. The nut is made of malleable iron and the hinge or plate for fastening to the bench is so constructed that it is unnecessary to cut away any part of the bench in mounting the vise. The jaws are 8 in. wide by 16 in. long, while the depth from the face of the jaw to the top of beam is 3½ in. The device for adjusting the front jaw to a taper is referred to as being simple and durable. The rack bar for holding the vise in a vertical position is held by friction. In Fig. 2 one of the different positions in which the vise can be used is shown.

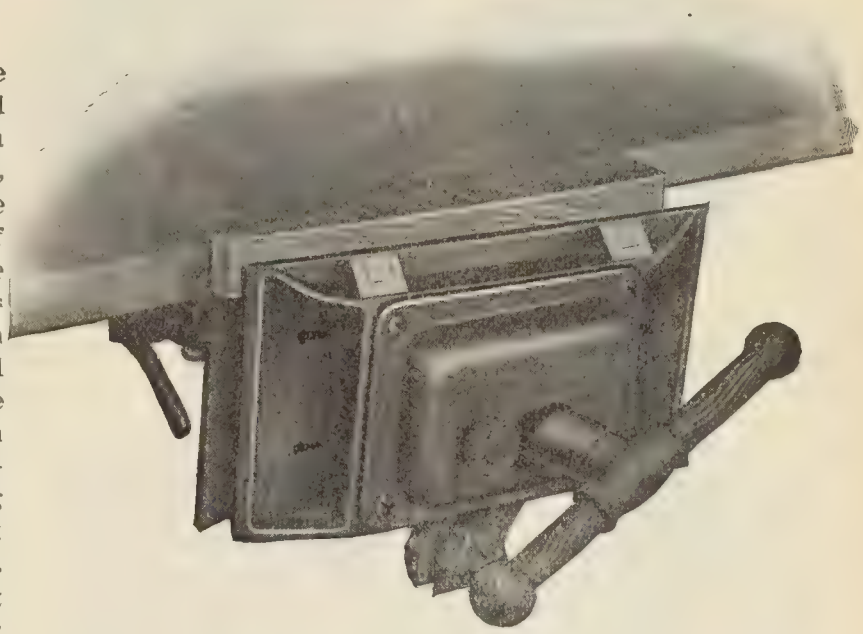


*Fig. 1.—The Yost Improved No. 1 Woodworkers' and Patternmakers' Vise.*



*Fig. 2.—One of the Different Positions in Which the Yost Vise Can Be Used.*

W. E. Rife, formerly interested in the Blue Valley Mercantile Company, Beatrice, Neb., has purchased the Richards Hardware Company's stock and business at Edgar, Neb. Mr. Richards, former owner of this business, expects to re-engage in the Hardware business, and is seeking a suitable location for the establishment of a Hardware store.

## The Sterling No-Rivet Damper Clip.

A convenient and easily applied damper clip is a new specialty offered by Meister & Cochran, Sterling, Ill. It is designed for attachment to circular damper plates without rivets. Fig. 1 represents the handle clip, and the manner of attachment of it and the tail piece to the damper

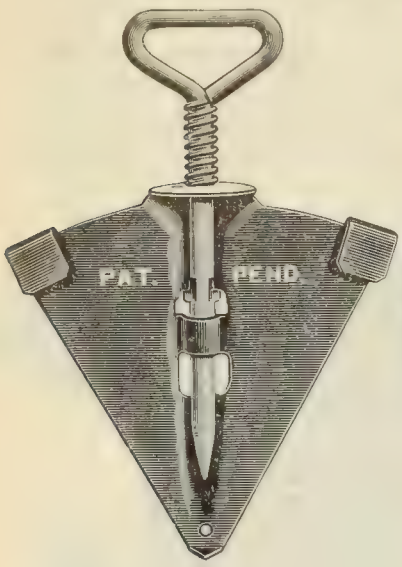



Fig. 1.

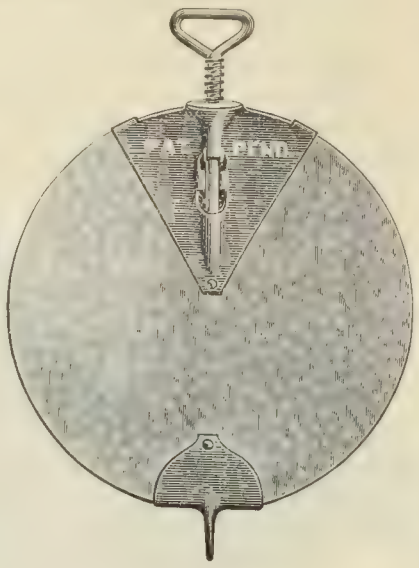


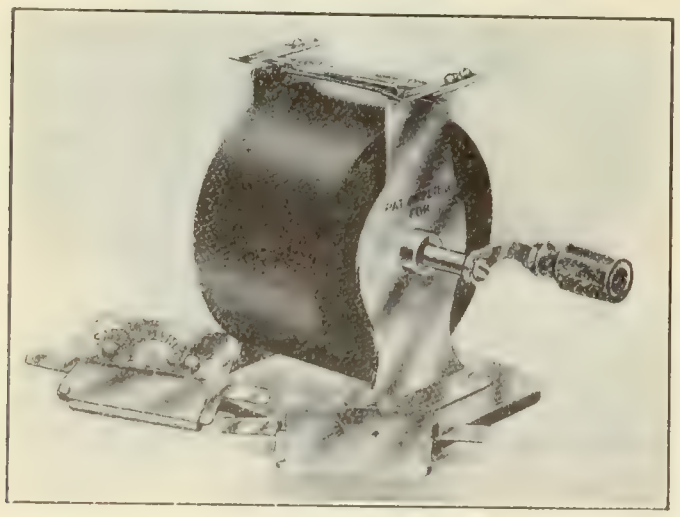

Fig. 2.

*The Sterling No-Rivet Damper Clip.*

is shown in Fig. 2. It is held in place by shoulder lugs, which clamp the rim of the damper, and is secured at the point by a right angle bend, which pierces the plate and is clinched on the opposite side. When fitted to circles over 10 in. in diameter the edge of the damper is clipped off, so that the shoulder comes flush with the place. The tail pieces are fastened in the same manner as the clip.

## Rotary Safety Razor Strop.

The rotary stropper here illustrated, is designed to strop or sharpen any safety razor blade that has become dull or blunted by usage. It is composed of two upright steel side plates, which carry a cylinder mounted on a shaft and revolved by a crank on one side. The cylinder is covered with the best quality of razor strop. The tops of the side plates are fitted to receive a holder in which the blade is fastened, and by pressing the blade down on the cylinder it will lie in the proper angle to take an



*The Rotary Safety Razor Strop.*

edge from the stropper as the cylinder is revolved. Both sides of the blade can be stropped, and the holder is so arranged that the blade can easily be removed and reversed. As soon as pressure on the blade is relaxed two springs act on the lateral extensions of the holder, raising the blade and preventing the strop being cut. The stropper is simply constructed and is said to do effective work. All of the attachments, as well as the stropper itself, are nickel plated and of neat appearance. The device is manufactured by Werner & Co., 203 South Canal street, Chicago.

## The Imperial Gearless Motor Washer.

The washing machine shown herewith is being introduced by the Imperial Motor Company, Grove City, Pa. The tub is of the best quality, corrugated on the inside like a washboard. The motor is gearless, having no cogs, pulleys, belts or piston rack. It has a single shaft, is direct connected, with no lost motion or friction, and it is stated will carry an exceptionally heavy load under the dasher. It is stated that the cost of meter service is from 3 to 6 cents for water, to do the average washing, but that this nominal expense is more than counterbalanced in the saving of gas or fuel, as only half the time is required to do the work. All working parts are standard, renewable and interchangeable, and worn parts can




*The Imperial Gearless Motor Washer.*

be replaced by any one with ordinary intelligence. The clothes are not boiled, but are cleansed by agitation and suction, the motor turning the dasher more than 60 times a minute in boiling suds. The equipment is complete, including motor, tub and full set of hose, ready to attach to the kitchen faucet. The company guarantees the motor for a period of one year, against defective material or workmanship, and makes the assertion that with proper care and usage it will last indefinitely.

## The Enterprise Electric Meat Chopper No. 820.

The accompanying illustration represents an electric meat chopper put on the market by the Enterprise Mfg. Company, of Pa., Philadelphia, Pa. The chopper is direct connected with the shaft of the motor, thus dispensing




*The Enterprise Electric Meat Chopper No. 820.*

with the use of gears, and the capacity is larger than that of the company's belted machines. It is operated by means of a snap switch which saves much time. The chopper is detachable, so that it can be placed in ice chest if desired.

## Keystone Weston Ratchet.

The Keystone Mfg. Company, Buffalo, N. Y., has added to its line the ratchet shown herewith. This is referred to as being similar to the well-known English "Weston" ratchet, although representing some improvements upon it. The tool illustrated is designed for rough and heavy work of all kinds, including railroad, structural, bridge, &c. It is made in the long feed type shown in the illustration, in four sizes, with handles 12, 14, 16 and 18 in. long, and in 12 and 14 in. sizes of a short feed



*Keystone Weston Ratchet.*

for boilermaker's use, for square shank drills only. The company remarks that the tools are of superior workmanship and finish.

## The Universal Hack Saw Frame No. 1908.

The West Haven Mfg. Company, New Haven, Conn., is offering the improved hack saw frame shown herewith. It is alluded to as being extra strong and light in weight. It takes regular length blades, from 6 to 12 in., and will work equally well with any one of the different sizes. The frame is made of fine quality crucible steel ¾ x 3-16 in., and is highly nickel plated, as is also the slide. The blade is held in place by a knurled nut, so as to prevent it falling when the strain is relieved for the purpose of adjustment. The accuracy of graduation for the placing of the slide for the different lengths of blades is referred to as an important feature. The spaces are all marked for the different lengths, so there is no guesswork as to where to place the slide for any length of blade, thus making adjustments rapid. The slide is held in place at any desired point by a latch revolving on a screw, one end of which fastens in the graduation slot of the frame stock. The distance from the bottom of the frame to the tooth edge of the saw is 3⅛ in. The handle is 1⅜ in. in diameter and 4⅛ in. long, and the blade is easily turned to cut in four positions without removal from the frame.



*The Universal Hack Saw Frame No. 1908.*

## The Elmore Square Shank Screwdriver.

The Elmore Tool Mfg. Company, Hartford, Conn., has designed the screwdriver shown herewith especially intended for machinists's use. The entire blade, shank and head of the tool are forged from square steel bars, which permits the use of a wrench in loosening cap and other large screws. The line includes various sizes, all fitted with serviceable black rubberoid handles.




*The Elmore Square Shank Screwdriver.*

## The North Wales Door Holder.

The new style door holder shown herewith, is being placed on the market by the North Wales Machine Company, Inc., North Wales, Pa. Patents have been applied for. The holder is small and neat in appearance and aside from the necessary tension springs and rubber cap, consists of but three parts, the casing, slide and operating catch. Fig. 2 shows the action of the various parts, that of the catch being in the nature of a roller between the inclined surface of the slide and inside of the casing, permitting the slide to be readily pushed downward by the operator's foot, but positively preventing any return motion until the operating catch is released, which can be done by a slight upward pressure of the foot under the catch. As there is a free downward movement, the firmness with which the door is held at any position is dependent entirely on the pressure exerted by the operator. There are no pawls or ratchets connected with the operating of the device, and the springs play no part in the actual operation, the catch spring simply holding the catch in a locked position until released, while the foot spring enables the rubber socket to get a firm hold on the floor when the necessary pressure is applied. The rubber socket is of the usual standard type, and being cushioned by the tension spring, will wear for a long time before replacing. The device when in use is fastened in an upright position at the base of the door. It is made of iron, finished in antique bronze, and measures about 8 in. over all. A smaller size will also be made in bronze.

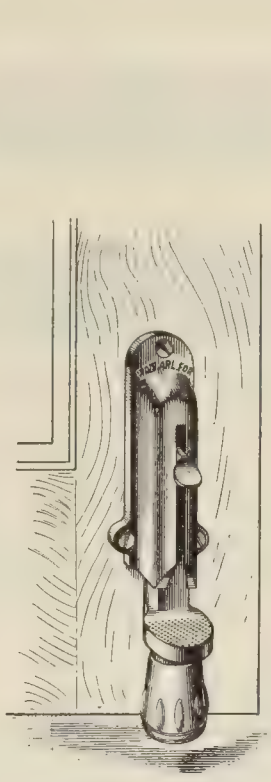


*Fig. 1.—The North Wales Door Holder.*

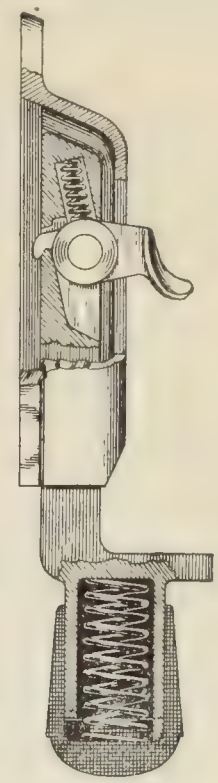


*Fig. 2.—Construction of Door Holder.*

## B. & S. All Steel Screwdriver.

The Billings & Spencer Company, Hartford, Conn., has added to its product a new and improved line of all steel screwdrivers, two of which are shown herewith. Fig. 1 represents the regular model and Fig. 2 an extra heavy style with square shank for the application of a wrench. The tools are made of drop forged steel throughout with points carefully tempered, and are complete in one piece. The handles are of special design, insuring an easy and positive grip, with nothing to loosen or get out of order. The screwdrivers are described as light, effective and durable. They are listed in 11 sizes, including two of the heavier model with square shank.



*Fig. 1.—B. & S. All Steel Screwdriver, Regular Model.*

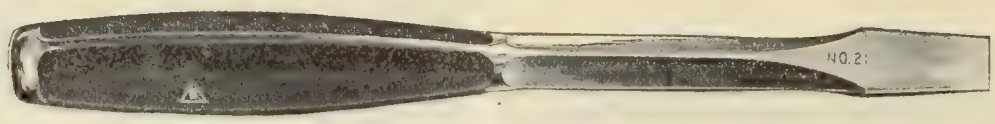


*Fig. 2.—B. & S. Screwdriver, Heavy Model with Square Shank.*

## The Enterprise Tent Cot.

A very compact tent-cot designed for the convenience of invalids, campers, or others sleeping out of doors is



*The Enterprise Tent Cot.*

shown in the accompanying illustration, the weight of which does not exceed 30 lb., and is therefore easily portable. It is made by the Enterprise Bed Company, Hammond, Ind. The cot frame is of hard maple painted green, and is covered with 10-ounce brown duck, while 8-ounce duck of the same color is used for the canopy or tent. The openings at the side and ends are provided with adjustable flaps, which may be raised or lowered by the occupant from within. The openings are protected from the intrusion of insects by strong mosquito netting. The canvas sides, tops and ends are collapsible, and fold down closely within the frame, as shown. The tent-cot is entirely self-contained, and is described as being impervious to rain or sun, and at the same time ample provision is made for ventilation. There are no detached parts which might be misplaced, even the mosquito netting under the big side curtain being permanently fastened in place, so that it can be operated independently or rolled up and down with the curtain as desired.

## The Sun Mfg. Company's Show Cases.

The Sun Mfg. Company, Columbus, Ohio, is making a line of counter showcases and display cases in various sizes and styles, golden oak finish, adapted to general merchandise; also special cases for different lines of goods. Some of the cases are shipped knocked down, resulting in a saving of freight. The company also manufactures prescription cases and counters, cashiers' desks, combination showcases and money drawers, &c. In a recent catalogue issued by the company most of the illustrations are made from photographs, showing the cases exactly as they look when in use.

The Hardware store and business of J. T. Moore, Monticello, Ind., has been purchased by Dye & Gardner. Mr. Gardner will have full charge and management of the business.

# PAINTS, OILS AND COLORS

### Animal, Fish and Vegetable Oils—

| | ℔ gal bbls. |
|---|---|
| Linseed, Western, Raw | 41 @.. |
| State, Raw | 42 @.. |
| City, Raw | 42 @43 |
| Boiled, 1¢ ℔ gal. advance on Raw. | |
| Raw, Calcutta, in bbls | 70 @.. |
| Lard, Prime, Winter | 74 @78 |
| Extra No. 1 | 51 @52 |
| No. 1 | 49 @50 |
| Cotton-seed, Crude, f.o.b. mill | 28 @29 |
| Summer Yellow, prime | 36¾@37 |
| Summer, White | 40½@41 |
| Yellow Winter | 43 @45 |
| Tallow, Acidless | 59 @60 |
| Menhaden, Brown, Strained | 35 @36 |
| Northern Crude | 27 @30 |
| Southern | 23½@.. |
| Light Strained | 35 @36 |
| Bleached Winter | 37 @39 |
| Ex. Bleached Winter | 39 @41 |
| Cocoanut, Ceylon | ℔ lb 6¼@6¾ |
| Cochin | ℔ lb 7¼@7½ |
| Cod, Domestic, Prime | 38 @40 |
| Newfoundland | 40 @42 |
| Red, Elaine | 40 @42 |
| Saponified | ℔ lb 5¾@6 |
| Olive, Yellow | $1.15@$1.25 |
| Neatsfoot, Prime | 55 @58 |
| Palm, Lagos | ℔ lb 6 @6¼ |

### Mineral Oils—

| | ℔ gal. |
|---|---|
| Black, 29 gravity, 25@30 cold test | 13 @13½ |
| 29 gravity, 15 cold test | 13½@14 |
| Summer | 12½@13 |
| Cylinder, light, filtered | 20½@21 |
| Dark, filtered | 18 @19 |
| Paraffine, 903-907 sp. gravity | 14½@15 |
| 903 sp. gravity | 13½@14 |
| 883 sp. gravity | 11 @11½ |
| Red | 13½@14 |

### Miscellaneous—

| | |
|---|---|
| Barytes: | |
| White, Foreign | ℔ ton $18.50@20 50 |
| Amer. floated | ℔ ton 17.00@18.00 |
| Off color | ℔ ton 12.50@15.00 |
| Chalk, in bulk | ℔ ton 3.00@ 3.40 |
| China Clay, Imported | ℔ ton 11.50@18.00 |
| Cobalt, Oxide | ℔ 100 lb 1.45@ 2.60 |
| Whiting, Commercial | ℔ 100 lb 42@52 |
| Gilders | ℔ 100 lb .55@ .60 |
| Ex. Gilders | ℔ 100 lb .60@ .65 |

### Putty, Commercial—

| | ℔ 100 lb |
|---|---|
| In bladders | $1.70 @1.80 |
| In bbls. or tubs | 1 20 @1.45 |
| In 1 lb to 5 lb cans | 2.65 @2.95 |
| In 12½ to 50 lb cans | 1.50 @1.90 |

### Spirits Turpentine—

| | ℔ gal. |
|---|---|
| In Oil bbls | 39¼@39¾ |
| In machine bbls | 39¾@40¼ |

### Glue—

| | ℔ lb |
|---|---|
| Cabinet | 12 @15 |
| Common Bone | 7½@ 9 |
| Extra White | 18 @24 |
| Fish, liquid, 50 gal. bbls., per gallon | 60 @1.20 |
| Foot Stock, White | 12 @14 |
| Foot Stock, Brown | 9 @11 |
| German Common Hide | 10 @12 |
| German Hide | 12 @18 |
| French | 10 @40 |
| Irish | 13 @16 |
| Low Grade | 10 @12 |
| Medium White | 14 @17 |

### Gum Shellac—

| | ℔ lb |
|---|---|
| Bleached, Commercial | 22 @23 |
| Bone Dry | 26 @27 |
| Button | 30 @40 |
| Diamond I | @40 |
| Fine, Orange | 34 @35 |
| A. C. Garnet | 27 @28 |
| G. A. L. | 20 @21 |
| Kala Button | 18 @19 |
| D. C. | @42 |
| Octagon B | 35 @36 |
| T. N. | 24 @25 |
| V. S. O. | @40 |

### Colors in Oil—

| | ℔ lb |
|---|---|
| Black, Lampblack | 12 @14 |
| Blue, Chinese | 36 @46 |
| Blue, Prussian | 32 @36 |
| Blue, Ultramarine | 13 @16 |
| Brown, Vandyke | 11 @14 |
| Green, Chrome | 12 @16 |
| Green, Paris | @24 |
| Sienna, Raw | 12 @15 |
| Sienna, Burnt | 12 @15 |
| Umber, Raw | 11 @14 |
| Umber, Burnt | 11 @14 |

### White and Red, Lead &c.—

| | ℔ lb |
|---|---|
| Lead, English white, in Oil | 10⅛@10⅜ |
| Lead, American White: | |
| Dry and in Oil, 100, 250 and 500 lb kegs | 7 |
| Dry and in Oil, 25 and 50 lb kegs | 7¼ |
| Dry and in Oil 12½ lb kegs | 7½ |
| In Oil, 25 lb tin pails | 7½ |
| In Oil, 12½ lb tin pails | 8 |
| In Oil, 1, 2, 3 and 5 lb tin cans, ass't | 9 |
| Red Lead and Litharge: | |
| In 100 lb kegs | 7 |
| In 25 and 50 lb kegs | 7¼ |
| In 12½ lb kegs | 7½ |
| In lots of less than 500 lbs, ½¢ ℔ lb advance over above prices of White and Red Lead and Litharge. | |
| Lead, American. Terms: On lots of 500 lbs and over, 60 days, or 2% for cash if paid in 15 days from date of invoice. | |

### Zinc, Dry—

| | ℔ lb |
|---|---|
| American, dry | 5⅛@ 5⅝ |
| Red Seal (French process) | 6¾@ 7 |
| Green Seal | 7¼@ 7½ |
| German Red Seal (French process) | 6⅝@ 7 |
| Green Seal | 7¼@ 7⅝ |
| White Seal | 7⅞@ 8¼ |
| French, Red Seal | 8⅜@ 8⅞ |
| Green Seal | 10⅜@10⅝ |

### Dry Colors—

| | ℔ lb |
|---|---|
| Black, Carbon | 6½@10 |
| Black Drop, American | 3½@ 8 |
| Black Drop, English | 5 @15 |
| Black, Ivory | 16 @20 |
| Lamp, commercial | 4 @ 6 |
| Blue, Celestial | 4 @ 6 |
| Blue, Chinese | 30 @32 |
| Blue, Prussian | 28 @30 |
| Blue, Ultramarine | 3½@15 |
| Brown, Spanish | ½@ 1 |
| Carmine, No. 40 | $3.10@3.25 |
| Green, Chrome, ordinary | 3½@ 5 |
| Green, Chrome, pure | 17 @25 |
| Ocher, American | ℔ ton $8.50@16.00 |
| American Golden | 2½@ 3¼ |
| French | 1¼@ 2 |
| Foreign Golden | 3 @ 4 |
| Orange Mineral, English | 10 @12 |
| French | 12¾@13 |
| German | 12 @13 |
| American | 9 @10 |
| Red, Indian, English | 4½@ 6 |
| American | 3 @ 3¼ |
| Red, Turkey, English | 4 @10 |
| Red, Tuscan, English | 7 @10 |
| Red, Venetian, Amer. | ℔ 100 lb $0.50@1.25 |
| English | ℔ 100 lb $1.15@1.60 |
| Sienna, Italian, Burnt and Powdered | 3 @ 9 |
| Italian, Raw, Powdered | 3 @ 7 |
| American, Raw | 1½@ 2 |
| American Burnt and Pow'd | 1½@ 2 |
| Talc, French | ℔ ton $18 00@25 00 |
| American | ℔ ton 15.00@25.00 |
| Terra Alba, French | ℔ 100 lb .90@ 1.00 |
| English | ℔ 100 lb .80@ 1.00 |
| American | ℔ 100 lb, No. 1, .75@ .80 |
| American | ℔ 100 lb, No. 2, .60@ .65 |
| Umber, T'key, Bnt, & Pow. | 2¾@ 3 |
| Turkey, Raw and Powdered | 2¾@ 3 |
| Burnt, American | 1½@ 2 |
| Raw, American | 1½@ 2 |
| Yellow, Chrome, Pure | 12¾@15 |
| Vermilion, American Lead | 7 @25 |
| Quicksilver, bulk | 65 @.. |
| Quicksilver, bags | @66 |
| English, Imported | 65 @70 |
| Chinese | $0.90@1.00 |

# Current Hardware Prices.

**General Goods.**—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

**Special Goods.**—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

**Range of Prices.**—A range of prices is indicated by means of the symbol @. Thus 33⅓ @ 33⅓ & 10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

**Names of Manufacturers.**—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued annually, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

**Standard Lists.**—"The Iron Age Standard Hardware Lists" contains the list prices of many leading goods.

**Additions and Corrections.**—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

### Adjusters, Blind—
Columbian and Domestic.....33⅓%
North's .....10%
Upson's Patent, ℔ gro., $29.90.....10%
Zimmerman's—See Fasteners, Blind.

### Window Stop—
Ives' Patent.....10%
Ives' Stop Bead Screws and Washers .....10%
Taplin's Perfection.....10%

### Ammunition—See *Caps, Cartridges, Shells, &c.*

### Anti—Rattlers—
Fernald Mfg. Co. Burton Anti-Rattlers, ℔ doz. pairs, Nos. 1, $0.75; 2, $0.60; 4, $1.00; 5, $0.50.
Fernald Quick Shifter, ℔ doz. pairs .....$2.00@$3.00

### Anvils—American—
Eagle Anvils.....℔ lb @8 ¢
Hay-Budden, Wrought.....9½@9¾¢
Trenton .....℔ lb 9½@9¾¢

### Imported—
Swedish Solid Steel Sisco, Superior, ℔ lb.....10@10½¢
Peter Wright & Sons, ℔ lb, 84 to 319 lb, 11¢; 350 to 600 lb, 11½¢.

### Anvil, Vice and Drill—
Millers Falls Co., $18.00.....15&10%

### Apple Parers—See *Parers, Apple, &c.*

### Aprons, Blacksmiths'—
Livingston Nail Co.....10%

### Augers and Bits—
*Com. Double Spur....75&10@80%*
*Jennings' Patn., Bright.65&10@70%*
*Black Lip or Blued...65@65&5%*
*Boring Mach. Augers.....70%*
*Car Bits, 12-in. twist.....40&10%*
Ford's Auger and Car Bits.....40&5%
Ft. Washington Auger Co., Conard's .....35%
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip. R. Jennings' list, 25&7½%
No. 30, R. Jennings' list.....50%
Russell Jennings'.....25&10&2½
L'Hommedieu Car Bits.....15%
Mayhew's Countersink Bits.....15%
Pugh's Black.....20%
Pugh's Jennings' Pattern.....35%
Snell's Auger Bits.....60%
Snell's Bell Hangers' Bits.....60%
Snell's Car Bits, 12-in. twist.....60%
Snell's King Auger Bits.....50%
Swan's .....65&10%
Swan's, Jennings' Pattern.....50%
Wright's Jennings' Bits.....50%

### Bit Stock Drills—See *Drills, Twist.*

### Expansive Bits—
Clark's Pattern, No. 1, ℔ doz., $26; No. 2, $18.....60&10%
Ford's, Clark's Pattern...60&5@60&10%
C. E. Jennings & Co., Steer's Pat..25%
Lavigne Pat., small size, $18.00; large size, $26.00.....60&10%
Swan's .....60%

### Gimlet Bits—
*Per gro.*
*Common Dbl. Cut.....$3.00@3.25*
*German Pattern, Nos. 1 to 10, $4.75; 11 to 13, $5.75*

### Hollow Augers—
*Bonney Pat., per doz..$5.50@6.00*
Ames .....20&10%
Universal .....20%

### Ship Augers and Bits—
*Ship Augers.....40&10@—%*
Ford's .....33⅓&5%
C. E. Jennings & Co.:
L'Hommedieu's ..... 6%
Watrous' .....33⅓&7½%
Snell's .....48%

### Awl Hafts—See *Handles, Mechanics' Tool.*

### Awls—
*Brad Awls:*
*Handled .....gro. $2.75@3.00*
*Unhdld, Shldered...gro.63@65¢*
*Unhandled, Patent..gro.66@70¢*
*Peg Awls:*
*Unhandled, Patent..gro. 31@34¢*
*Unhdld, Shldered..gro. 65@70¢*
*Scratch Awls:*
*Handled, Com...gro. $3.50@4.00*
*Handled, Socket.gro.$11.50@12.00*

### Awl and Tool Sets—See *Sets, Awl and Tool.*

### Axes—
*Single Bit, base weights: Per doz.*
*First Quality.....$4.75@5.00*
*Second Quality.....$4.25@4.50*
*Double Bit, base weights:*
*First Quality.....$7.00@7.50*
*Second Quality.....$6.50@6.75*

### Axle Grease—See *Grease, Axle.*

### Axles—Iron or Steel.
*Concord, Loose Collar...4¼@4½¢*
*Concord, Solid Collar....4½&5 ¢*
*No. 1 Common, Loose...3½@4 ¢*
*No. 1½ Com., New Style.4¼@4¾¢*
*No. 2 Solid Collar.....4¼@4¾¢*
*Half Patent:*
*Nos. 7, 8, 11 and 12.....70%*
*Nos. 13 to 14.....70%*
*Nos. 15 to 18...70&10@70&10&5%*
*Nos. 19 to 22...70&10@70&10&5%*

### Boxes, Axles—
*Common and Concord, not turned .....lb., 5@6¢*
*Common and Concord, turned, lb., 6@7¢*
*Half Patent.....lb., 9½@10¢*

### Bait—Fishing—
Hendryx:
A Bait.....20%
B Bait.....25%
Competitor Bait.....20&5%

### Balances—Sash—
Caldwell new list.....50&10%
Pullman .....50&10%

### Spring—
*Light Spring Balances.60@60&5%*
Chatillon's:
Light Spg. Balances.....50@50&10%
Straight Balances.....40@40&10%
Circular Balances.....50&10%
Large Dial.....30%

### Barb Wire—See *Wire, Barb.*

### Bars—Crow—
*Steel Crowbars, 10 to 40 lb.... per lb., 2¼@2⅓¢*

### Towel—
No. 10 Ideal, Nickel Plate..℔ gro. $8.50

### Beam, Scale—
*Scale Beams.....40%*
Chattillon's No. 1.....30%
Chatillon's No. 2.....40%

### Beaters, Carpet—
Holt-Lyon Co.:
No. 12 Wire Coppered ℔ doz. $0.80; Tinned .....$0.85
No. 11 Wire Coppered ℔ doz. $1.15; Tinned .....$1.20
No. 10 Wire Tinned.....℔ doz. $1.50

### Beaters Egg—
Dover Stamping & Mfg. Co.:
Genuine Dover, per gro., No. 1, Tumbler Size, $7.50; No. 2, Family Size, $7.50; No. 3, Extra Family Size, $24.00; No. 4, Hotel Size, $30.00.
Holt-Lyon Co.:
Holt, per doz., No. 5, Jap'd, $0.80; No. A, Jap'd, $1.15; No. B, Jap'd, $1.85; No. 6, Jap'd, $1.65.
Lyon, Jap'd, per doz., No. 2, $1.35.
Taplin Mfg. Co.:
Improved Dover, per gro., No. 60, $6.00; No. 75, $6.50; No. 100, $7.00; No. 102, Tin'd, $8.50; No. 150, Hotel, $15.00; No. 152, Hotel Tin'd, $17.00; No. 200, Tumbler, $8.50; No. 202, Tumbler Tin'd, $9.50; No. 300, Mammoth, per doz., $25.00.

### Bellows—
*Blacksmith, Standard List:*
*Split Leather.....60&10@65%*
*Grain Leather.....50@50&10%*

Hand—

| *Inch..* | *6* | *7* | *8* | *9* | *10* |
|---|---|---|---|---|---|
| *Doz..* | *$5.00* | *5.50* | *6.00* | *6.50* | *7.50* |

Molders—

| *Inch..* | *10* | *12* | *14* | *16* |
|---|---|---|---|---|
| *Doz..* | *$7.50* | *9.00* | *12.00* | *15.00* |

Net Prices.

### Bells—Cow—
*Wrought Cow Bells.....75%*
Jersey .....75&10%
Texas Star.....50%

### Door—
Home, R. & E. Mfg. Co.'s.....55&10%

### Hand—
*Polished, Brass.....60@60&10%*
*White Metal.....60@60&10%*
*Nickel Plated.....50&10%*
*Swiss .....50&10%*
Cone's Globe Hand Bells.....35⅓@35⅓%

### Miscellaneous—
*Farm Bells.....lb., 2¼@2½¢*
*Church and School....60@60&10%*

### Belting—Leather—
*First Quality, Ex. Hy., Strictly Short Lap.....60&10%*
*Standard .....70&10@70&10&5%*
*Light Double.....75&10%*
*Cut Leather Lacing.....50%*
*Leather Lacing Sides, per sq. ft. 23@24¢*

### Rubber—
*Competition (Low Grade), 70&10@75%*
*Standard .....60&10@70%*
*Best Grades.....40@50%*

### Bench Stops—See *Stops, Bench*

### Benders and Upsetters, Tire—
Green River Tire Benders and Upsetters .....20%

### Bicycle Goods—
John S. Leng's Son & Co.'s 1908 list:
Chain, Parts, Spokes.....50%
Tubes .....60%

### Bits—
Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

### Blocks Tackle—
*Common Wooden.....75@75&5%*
B. & L. B. Co.:
Boston Wood Snatch, 50%; Eclipse Steel, 75%; Hollow Steel, 50&10%; Star Wire Rope, 50%; Tarbox Metal Snatch, 50%; Tarbox New Style Steel, 50&10%; Wire Rope Snatch, 50%.
Lane's Patent Automatic Lock and Junior .....30%
See also Machines, Hoisting.

### Boards, Stove—
*Paper and Wood Lined.....55%*
*Embossed .....55%*

### Boards, Wash—See *Washboards.*

### Bobs, Plumb—
Keuffel & Esser Co.....33⅓&10%

### Bolts Carriage, Machine, &c,—
*Common Carriage (cut thread):*
*⅜ x 6 and smaller..75&5@—%*
*Larger and longer....70&5@—%*
*Phila. Eagle, $3.00 list...50@*
*Bolt Ends.....70&10@—%*
*Machine (Cut Thread):*
*¾ x 4 and smaller..75&10@—%*
*Larger and longer...70&10@—%*

### Door and Shutter—
*Cast Iron Barrel, Japanned, Round Brass Knobs:*

| *Inch* | *3* | *4* | *5* | *6* | *8* |
|---|---|---|---|---|---|
| *Per doz..* | *$0.30* | *.35* | *.45* | *.60* | *.80* |

*Cast Iron Spring Foot, Jap'd:*

| *Inch* | *6* | *8* | *10* |
|---|---|---|---|
| *Per doz.* | *$1.20* | *1.50* | *2.25* |

*Cast Iron Chain, Flat, Japanned:*

| *Inch* | *6* | *8* | *10* |
|---|---|---|---|
| *Per doz.* | *$1.00* | *1.40* | *1.65* |

*Cast Iron Flat Shutter, Jap'd, Brass Knobs:*

| *Inch* | *6* | *8* | *10* |
|---|---|---|---|
| *Per doz.* | *$0.75* | *.95* | *1.25* |

*Wrought Barrel Japanned, 80&10@80&10&5%*
*Barrel Bronzed.....60&10%*
*Spring .....70&10@70&10&10%*
*Shutter .....50&5@50&10&5%*
*Square Neck.....75@75&10%*
*Square .....70&10&10@80%*
Ives' Mortise.....10%
Ives' Wrought Metal.....10%

### Expansion—
E. H. Evans' Crescent.....10@60%
Richards Mfg. Co .....35&10%
Star Expansion Bolt Co.:
Star, Leg Screw Type 60&10&5&2%
Star, Wood Screw Type.....10%
Star, Machine, Single Wedge....60%
Star, Machine, Double Wedge....60%
Steward & Romain Mfg. Co.:
Style No. 13, Double.....60%
Style No. 1, Single.....60%
Style No. 100, Dbl. Jaw, Single..55%
Lag Screw.....66⅔%

### Plow and Stove—
*Plow .....65&5@70%*
*Stove .....85@85&5%*

### Tire—
*Common Iron.....80%*
*Norway Iron.....80%*
American Screw Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84...82½%
Bay State, list Dec. 28, '99.....80%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84...82½%
Eclipse, list Dec. 28, '99.....80%
Russell, Burdsall & Ward Bolt & Nut Co.:
Empire, list Dec. 28, '99.....80%
Norway Phila., list Oct. '84.....80%
Eagle .....82½%
Shelton Co.:
Tiger Brand, list Dec. 28, '99....80%
Phila., Eagle, list Oct. 16, 1884..82½%
Upson Nut Co.:
Tire Bolts.....72½%

### Borers, Bung—
*Borers Bung, Ring, with Handle:*

| *Inch.....* | *1¼* | *1½* | *1¾* | *2* |
|---|---|---|---|---|
| *Per doz...* | *$4.80* | *5.60* | *6.40* | *8.00* |
| *Inch.....* | | *2¼* | | *2½* |
| *Per doz.....* | | *$8.65* | | *11.50* |

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.75; No. 3, $2.50 each.....25%

### Boxes, Mitre—
C. E. Jennings & Co.....25%
Langdon, New Langdon and Langdon Improved, 20&10%; Langdon Acme .....15&10%
Perfection .....40%
Seavey .....45%

### Braces—
*Comman Ball, American....$1.50*
Barber's .....50&10%@60&10%
Fray's Genuine Spofford's.....60%
Fray's No. 61, 166, 206, 614.....50%
C. E. Jennings & Co.....50&5%
Mayhew's Ratchet.....60%
Mayhew's Quick Action Hay Pat...50%
Millers Falls Drill Braces.....25&10%
P., S. & W. Co., Peck's Pat....60&10%

### Brackets—
*Wrought Steel.....75&10&5@80%*
Bradley Metal Clasp...80&10&10&5%
Griffin's Pressed Steel.....75@75&10%
Griffin's Folding Brackets.....70&10%
Taplin Victor Handy Egg Beater Bracket .....℔ doz. $1.50

### Bright Wire Goods—See *Wire and Wire Goods.*

### Broilers—
Kilbourne Mfg. Co.....75&20%
Wire Goods Co.....75%

### Buckets, Galvanized—
*M'f'r's list, price per gross.*

| *Quart..* | *10* | *12* | *14* | |
|---|---|---|---|---|
| *Water, Reg...* | *26.85* | *29.50* | *33.50* | List Prices 65% |
| *Water, Hvy...* | *45.35* | *48.00* | *52.00* | |
| *Fire, Rd. Btm.* | *32.00* | *34.65* | *38.65* | |
| *Well .....* | *37.35* | *41.35* | *45.35* | |

### Bull Rings—See *Rings, Bull*

### Butts—Brass—
*Wrought, High List, Oct. 26, '06 65%*
Cast Brass, Tiebout's.....40&10%

### Cast Iron—
*Fast Joint, Broad....40&10@50%*
*Fast Joint, Narrow...40&10@50%*
*Loose Joint.....70&10@75%*
*Loose Pin .....70&10@75%*
*Maner's Hinges .....70@70&5*
*Parliament Butts.....70@70&5*

### Wrought Steel—
*Bright.*
*Light Narrow, Light Reversible .....70&5%*
*Reversible and Broad..70&5%*
*Loose Joint, Narrow, Light Inside Blind, &c.....70%*
*Back Flaps, Table Chest.65%*
*Japanned.*
*Light Narrow, Loose Pin, 40&5%*
*Light Narrow, Ball Tip..60%*
*Broad .....40&5%*
*Steeple Tipped.....70%*
*Ball Tipped.....70%*

Extra, 10

## Cages, Bird—

Hendryx Brass: Series 3000, 5000, 1100, net list; 1200, 15%; 200, 300, 900 ..... 30%
Hendryx Bronze: Series 700, 800....30%
Hendryx Enameled..... 35%

## Calipers—See *Compasses.*

## Calks, Toe and Heel—

*Blunt, 1 prong, per 100 lb., $3.50@$3.85*
*Sharp, 1 prong, per 100 lb., $4.00@$4.35*
Burke's, 1 pg. Blunt Toe, 3¾¢; 2 pg. Blunt Toe, 4¼¢; 1 pg. Sharp Toe, 4¼¢; 2 pg. Sharp, 4¾¢; Blunt Heel, 4¼¢; Sharp Heel.....4¾¢
Lautier, Blunt, 4@4¼¢; Sharp, 4½@4¾¢
Perkins', Blunt, ℔ lb, 3.65¢; Sharp, 4.15¢

## Can Openers—

See *Openers, Can.*

## Caps, Percussion—

*Eley's E. B.....52@55¢*
*G. D.....per M 34@35¢*
*F. L.....per M 40@42¢*
*G. E.....per M. 48@50¢*
*Musket .....per M 62@63¢*

### Primers—

*Berdan Primers, $2 per M..20&5%*
*Primer Shells and Bullets..15&10%*
*All other primers per M. $1.52@1.60*

## Carpet Stretchers—

See *Stretchers, Carpet.*

## Cartridges—

*Blank Cartridges:*
*32 C. F., $5.50.....10&5%*
*38 C. F., $7.00.....10&5%*
*22 cal. Rim, $1.50.....10&5%*
*32 cal. Rim, $2.75.....10&5%*
*B. B. Caps, Con. Ball, Swgd. $1.90*
*B. B. Caps, Round Ball.....$1.49*
*Central Fire.....25%*
*Target and Sporting Rifle. 15&5%*
*Primed Shells and Bullets. 15&10%*
*Rim Fire, Sporting.....50%*
*Rim Fire, Military.....15&5%*

## Casters—

*Bed .....65&10@70%*
*Plate .....60@60&5%*
*Philadelphia .....70&10@75%*
Acme, Ball Bearing.....35%
Gem (Roller Bearing).....75&10&10&5
Steel Gem (Roller Bearing).....70%
Standard Ball Bearing.....45%
Yale (Double Wheel) low list...40&10%

## Cattle Leaders—

See *Leaders, Cattle.*

## Chain, Proof Coil—

*American Coil, Straight Link:*

| 3-16 | ¼ | 5-16 | ⅜ | ½ | ⅝ |
|---|---|---|---|---|---|
| $7.80 | 5.20 | 4.25 | 3.60 | 3.40 | 3.20 |

¾-⅞-1 1⅛ to 1¼ inch.
$3.10 3.20
*In cask lots, deduct 25¢.*
*German Coil.....70%*
*German Pattern Coil:*
*6-0 to 1.....70&10&5%*
*2 and 3.....60&10&10@70%*
*4, 5 and 6.....50&10@50&10&5%*

### Halter—

*Halter Chains.....60&5@60&10%*
*German Pattern Halter Chains, list July 24, '97....60&10&5@70%*
Covert Mfg. Co.:
Halter .....35&5%

## Cow Ties—

See *Halters and Ties.*

## Trace, Wagon, &c.-

*Traces, Western Standard: 100 pr.*
*6½—6-3, Straight, with ring. $28.00*
*6½—6-2, Straight, with ring. $29.00*
*6½—8-2, Straight, with ring. $32.00*
*6½—10-2, Str'ght, with ring. $37.00*
*NOTE.—Add 2c per pair for Hooks Twist Traces: add per pair for Nos. 2 and 3, 2c; No. 1, 3c; No. 0, 4c to price of Straight Link.*
*Eastern Standard Traces, Wagon Chain, &c...60&10@60&10&5%*

## Miscellaneous—

*Jack Chain, list July 10, '93:*
*Iron .....60&10&5@60&10&10%*
*Brass .....65%*
*Safety and Plumbers' Chain. 75%*
*Gal. Pump Chain....lb., 4½@5%*
Bridgeport Chain Co.:
Triumph Halter and Coil.35&2½@40
Triumph Dog.....50&10@60
Brown Halter and Coil....45@50&5%
Covert Mfg. Co.:
Breast, Halter, Heel, Rein, Stallion .....40%
Oneida Community:
American Halter, Dog and Kennel Chains .....35&2½@40%
Niagara Dog Leads and Kennel Chains .....45@50&5%
Wire Goods Co.:
Dog Chain.....70%
Universal Dbl.-Jointed Chain....70%

## Chain and Ribbon, Sash—

Oneida Community:
Steel Chain.....60%
Pullman:
Bronze Chain, 60%; Steel Chain, Coppered .....60&10%
Sash Chain Attachments, per set..8¢
Aluminoy Sash Ribbon, per 100 ft. .....$2.00@$5.00
Sash Ribbon Attachments, per set..8¢

## Chalk—

*Carpenters' Blue.....gro., 70¢*
*Carpenters' Red.....gro., 50¢*
*Carpenters' White.....gro., 40¢*

## Checks, Door—

Bardsley's .....45%
Pullman, per gro.....$54.00
Russwin .....33⅓%

## Chests, Tool—

American Tool Chest Co.:
Boys' Chests, with Tools.....55%
Youths' Chests, with Tools.....40%
Gentlemen's Chests, with Tools..30%
Farmers', Carpenters, etc., Chests, with Tools .....20%
Machinists' and Pipe Fitters' Chests, Empty.....45%
Tool Cabinets.....45%
C. E. Jennings & Co.'s Machinists' Tool Chests.....7½%

## Chisels—Socket Framing and Firmer

*Standard List.....80&10@—%*
Buck Bros.....30%
C. E. Jennings & Co.:
Socket Firmer No. 10.....25&7½%
Socket Framing No. 15.....25&7½%
Swan's .....66⅔@70%
L. & I. J. White & Co.....30@30&5%

## Tanged—

*Tanged Firmers.....30&5@35%*
Buck Bros.....30%
C. E. Jennings & Co. Nos. 191, 181..25%
L. & I. J. White Co.....25&5%

## Cold—

*lb.*
*Cold Chisels, good quality. 13@15¢*
*Cold Chisels, fair quality. 11@12¢*
*Cold Chisels, ordinary.... 9@10¢*

## Chucks—

Almond Drill Chucks.....35%
Almond Turret Six-Tool Chuck.....40
Beach Pat, each $8.00.....35&5%
Empire .....25%
Blacksmiths' .....25%
Jacobs' Drill Chucks.....35%
Pratt's Positive Drive.....25%
Skinner Lathe Chucks:
Independent .....35%
Universal, Reversible Jaws.....35%
Universal, Com. Style Jaws.....40
Combination, Reversible Jaws....35%
Combination, Com. Style Jaws...40%
Round Body or Box Body, 2 Chuck Jaws .....25%
Geared Scroll Chucks.....25%
Drill Chucks:
New Model, 25%; Geared Pattern, 25%; Skinner Patent, ...25%
Positive Drive.....40
Planer Chucks.....20%
Standard .....45%
Drill Press Vises.....30
Face Plate Jaws.....35%
Standard Tool Co.:
Improved Drill Chuck.....45%
Union Mfg. Co.:
Combination, Nos. 1, 2, 3, 4, 5, 6, 7, 8 and 17, 40%; No. 21.....35%
Scroll Combinations, Nos. 83 and 84 .....30%
Geared Scroll, Nos. 33, 34 and 35..25%
Independent Iron, Nos. 18 and 318.35%
Independent Steel, No. 64.....25%
Union Drill, Nos. 000, 00, 100, 101, 102, 103, 104.....35%
Union Czar Drill.....25%
Universal, 11, 12, 16, 17, 13, 14, 15..40%
Universal No. 42.....35%
Iron Face Plate Jaws, Nos. 28, 30, 48 and 50.....35%
Steel Face Plate Jaws, Nos. 70 and 72 .....30%
Westcott Patent Chucks:
Lathe Chucks.....50%
Little Giant Auxiliary Drill.....50%
Little Giant Double Grip Drill...50%
Little Giant Drill, Improved.....50%
Oneida Drill.....50%
Scroll Combination Lathe.....50%
Whitaker Mfg. Co.:
National Drill.....25%

## Clamps—

Carriage Makers', Star, P., S. & W. Co. .....50%
Besly, Parallel.....33⅓&10%
Hammer & Co.:
Adjustable .....20&5%
Carriage Makers' H. P. Screw.40&5%
Myers' Hay Rack.....50%
Lineman's Swedish Neverturn.....65%
Saw Clamps, see Vises, Saw Filers'

## Cleaners, Drain,

Iwan's Champion, Adjustable.....50%
Iwan's Champion, Stationary.....40%

### Sidewalk—

American Fork & Hoe Co.:
Star Socket.....℔ doz. $4.00 net
Star Shank.....℔ doz. $3.50 net
Shank, ℔ doz., x 7½, $3.50; Shank x 8.....$3.75

## Cleavers, Butchers'—

Foster Bros.....30%
Fayette R. Plumb .....30
L. & I. J. White Co.....30

## Clippers, Horse and Sheep—

Chicago Flexible Shaft Co.:
1902 Chicago Horse, each..$10.75
20th Century Horse, each...$5.00
Lightning Belt Horse, each.$15.00
Chicago Belt Horse, each..$20.00
Stewart's Enclosed Gear Roll Bearing Horse, each.....$6.75
Stewart's New Model Sheep Shearing Machine, each.$12.75
Stewart Enclosed Gear Shearing Machine, No. 8, each..$9.75
} 20%

## Clips, Axle—

*Regular Styles, list July 1, '05, 80&80&10%*

## Cloth and Netting, wire—See *Wire, &c.*

## Cocks, Brass—

*Hardware list:*
*Plain Bibbs, Globe, Kerosene, Racking, Liquor, Bottling, &c .....75%*
*Compression Bibbs.....70%*

## Coffee Mills—

See *Mills, Coffee.*

## Collars, Dog—

Nickel Chain, Walter B. Stevens & Son's list.....40%
Leather, Walter B. Stevens & Son's list .....40%

## Compasses, Dividers, &c.

*Ordinary Goods.....70&10@75%*

## Conductor Pipe,—

*L. C. L. to Dealers:*

| | Gal. Steel. | Charcoal. | Copper. |
|---|---|---|---|
| *Northeastern:* | | | |
| | 70&10% | 50&10&7½% | 50&10% |
| *Eastern:* | | | |
| | 70&10&5% | 50&10&7½% | 50&10% |
| *Central:* | | | |
| | 75&5% | 60% | 50&10% |
| *Northwestern:* | | | |
| | 75&2½% | 60% | 50&10% |
| *Western:* | | | |
| | 70&7½% | 50&12½% | 50&5% |
| *Tennessee:* | | | |
| | 70&10% | 50&12½% | 50&10% |
| *Southern:* | | | |
| | 70% | 50&12½% | 50&5% |
| *Southwestern:* | | | |
| | 70% | 50&5% | 50&5% |

*Terms, 60 days; 2% cash 10 days. Factory shipments generally delivered.*
See also Eave Troughs.

## Coolers, Water—

L. & G. Mfg. Co.:

| Gal. | 2 | 3 | 4 | 6 | 8 |
|---|---|---|---|---|---|
| Galvanized, ea. | $1.85 | $2.00 | $2.25 | $2.90 | $3.90 |
| Galvanized, Lined, side handles, Gal. | 2 | 3 | 4 | 6 | 8 |
| Each | $1.95 | $2.15 | $2.40 | $3.30 | $4.15 |

White Enameled.....10%
Agate Lined.....10%

## Coppers' Tools—

See *Tools, Coopers'.*

## Coppers, Soldering—

*Soldering Coppers, 3 lb. to pair, and heavier, 20¢; lighter than 3 lb. to pair.....22¢*

## Cord—Sash—

*Braided, Drab.....lb. 35¢*
*Braided, White, Com., Nos. 8 to 12, 21¢; No. 7, 21½¢; No. 6, 22½¢. In lots of 12 doz. or over, 1 cent less per pound.*
*Cable Laid Italian, lb., No. 18. 37¢*
*Italian, lb., A, No. 18, 25¢; B, 22¢*
*Common India.....lb., 11@11½¢*
*Cotton Sash Cord, Tw'ted. 18@20¢*
*Patent Russia.....lb....20¢*
*Cable Laid Russia.....lb...21¢*
*India Hemp, Br'd'd.....lb...21¢*
*India Hemp, Twisted...lb. 13@14¢*
*Patent India, Twisted..lb...17¢*
Pearl Braided, cotton, No. 6, ℔ lb, 20½¢; No. 7, 19½¢; Nos. 8 to 12, 19½¢, in 12 doz. to 100 doz. lots.
Eddystone, Braided, Nos. 8 to 12, 26¢; 7, 26½; 6, 27½¢.
Harmony Cable Laid Italian, Nos. 7 to10.....℔ lb 23¢
Pullman:
Wire Sash Cord.....10%
Sash Cord Attachments, per 100..$2.00
Samson, Nos. 8 to 12:
Braided, ℔ lb., Drab Cotton, 55¢; Italian Hemp, 40¢@50¢; Linen, 65¢; White Cotton, 50¢; Spot Cord.....50¢
Massachusetts, White...℔ lb 40¢
Massachusetts, Drab....℔ lb 45¢
Phoenix, White, Nos 8 to 12....27¢
} 15%
Silver Lake, per lb.:
A, Drab, 45¢; A, White, 40¢; B, Drab, 40¢; B, White, 35¢; Italian Hemp, 40¢; Linen....57½¢
See also Chain and Ribbon.

## Wire, Picture—

*Full Length.....90@—%*
*Short Length.....90&20@—%*
Hendryx Standard Wire Picture Cord, old list, 85&10%
Turner & Stanton Co. Wire Picture Cord .....90%

## Cradles—

*Grain .....50%*

## Crayons—

*White Round Crayons, Cases, 100 gro., $8.00, $8.50, $9.00 and $10.00 according to grade.*
Zehnicker's Lumber: ℔ gro.
White and Purple, Indelible....$7.50
Blue, Red, Green Yellow and Terra Cotta, $6.50; Black.....$4.50
Grant Lumber, 5¼ in. x 15-16 in. round, all colors, $12.00; Indelibles, $14.00; Blacks.....$10.00
Genuine Soapstone, Metal Workers', 5 in. x ¼ in. Round, $2.50; 5 in. x ¼ in. Square, $1.75; 5 x ½ x 3-16, $2.50; 5 x 1¼ x 3-16.....$3.00
Suremark, Black, $2.25; Blue, Red and Yellow.....$2.50

## Crooks, Shepperds'—

American Fork & Hoe Co.:
Montana .....℔ doz. $4.50

## Crow Bars—See *Bars, Crow.*

## Cultivators—

American Fork & Hoe Co.:
Victor Garden.....50&10%

## Cutlery, Table—

International Silver Company:
No. 12 M'd'm Knives, 1847, ℔ doz. $3.50
Star, Eagle, Rogers & Hamilton and Anchor.....℔ doz. $3.00
Wm. Rogers & Son.....℔ doz. $2.50

## Cutters—Glass—

H. H. Mayhew Co.....40%
Red Devil.....60%
B. Mfg. Co.....40%
Woodward .....50%

## Meat and Food—

American .....30%

| Nos. | 401 | 402 | 403 | 404 | 405 | 406 | 407 |
|---|---|---|---|---|---|---|---|
| Each | $5 | $7 | $10 | $12 | $25 | $50 | $60 |

Enterprise:

| Nos. | 5 | 10 | 12 | 22 | 32 | |
|---|---|---|---|---|---|---|
| Each | $2 | $3 | $2.75 | $4.50 | $6 | 25@25&7½% |

No. 202, $1.50.....40&7½%
P., S. & W. Co.:
Ideal .....40@40&5%
Hales .....60&5%
Little Giant.....℔ doz. 40@50%

| Nos. | 305 | 310 | 312 | 320 | 322 |
|---|---|---|---|---|---|
| | $35.00 | $48.00 | $44.00 | $72.00 | $68.00 |

New Triumph No. 605, ℔ doz. $24.00, 40%
Russwin Food, No. 1, $24.00; No. 2, $27.00; 3, $12.00.....15&10&10%
$15.00 $18.00
Enterprise Beef Shavers.....25@30%

## Slaw and Kraut—

Henry Disston & Sons:
Slaw and Kraut Cutters.....35%
Corn Graters.....30%
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife....℔ doz. $3.00
Combined Slaw Cutter and Corn Grater .....℔ doz. $4.00

## Tobacco—

*All Iron, Cheap...doz, $4.25@4.50*
Enterprise .....25@30%
National, ℔ doz., No. 1, $21; No. 2, $18 .....40%

## Diggers, Post Hole, &c—

Disston's:
Rapid, ℔ doz., $24.00.....25%
Samson, ℔ doz., $34.00.....25%
Iwan's Pat. Post Hole and Well Auger .....40%
Vaughan Pattern Post Hole Augers, ℔ doz., $7.00
Perfection Post Hole Diggers, ℔ doz. .....$8.50
Split Handle Post Hole Diggers, ℔ doz., $7.50
Hercules Pattern, ℔ doz.....$9.50
Kohler's, ℔ doz., Universal, $14.00; Little Giant, $12.00; Hercules, $10.00; Invincible, $9.00; Rival, $8.50; Pioneer.....$7.50
Never-Break Crucible Steel Post Hole Diggers .....60%

## Dividers—See *Compasses.*

## Drawing Knives—

See *Knives, Drawing.*

## Dressers Emery Wheel—

Sterling Emery Wheel Dressers.....35%
Sterling Wheel Dresser Cutters.....35%

## Drills and Drill Stocks—

*Blacksmith's Common Drilling Machines .....$1.50@1.75*
Breast, Millers Falls.....15&10%
Breast, P., S. & W.....33⅓%
C. & C. Ratchet.....25%
Reversible Ratchet Die Stocks....25%
Goodell Automatic Drills 50&10@60&10%
Millers Falls Automatic Drills, Graves', per doz., Nos. 1, $4.86; 2, $8.16.
Millers Falls Automatic Drills, 33⅓&10%
Ratchet, Curtis & Curtis.....25%
Ratchet, Parker's.....40%
Ratchet, Weston's.....40%
Ratchet, Weston's, Style H Improved .....40@40&5%
Ratchet, No. 012.....40@40&5%
Ratchet, Celebrated.....40@40&5%
Ratchet, Whitney's, P., S. & W.. 40&10@50%
Whitney's Adjustable, No. 10, $12.00, 33⅓%

## Twist Drills—

*Bit Stock.....70@70&5%*
*Taper and Straight Shank. 60&10@70%*

## Drivers, Screw—

*Screw Driver Bits, per doz. 45@50¢*
Balsey's Screw Holder and Driver, ℔ doz., 2½-in., $6; 4-in., $7.50; 6-in., $9 .....50%
Buck Bros.' Screw Driver Bits.....30%
Champion .....50%
Disston's .....70%
Fray's Hol. H'dle Sets, No. 3, $12..50%
Ford's Brace Screw Drivers....40&10%
Gay's Double Action Ratchet.....35%
Goodell's Auto.....65@65&10%
Mayhew's Black Handle.....40%
Mayhew's Monarch.....40%
Millers Falls, ℔ doz., Nos. 11, $9.95; 12, $13.73; 20, $8.17; 21, $8.46; 41, $13.43; 42, $17.21.
Smith & Hemenway Co., Neverturn, 66⅔%; Elmora, 60%; Star, 30&10%
Swan's:
Nos. 7565 to 7568, 60%; No. 7540, 40&10%

## Eave Trough, Galvanized—

| *Territory.* | *Gal. Steel.* | *Copper.* |
|---|---|---|
| *Northeastern* | 75&10&5% | 50&10% |
| *Eastern* | 80% | 50&10% |
| *Central* | 80&10&5% | 50&10% |
| *Northwestern* | 80&10&5% | 50&10% |
| *Western* | 80&5% | 50&5% |
| *Tennessee* | 80&5% | 50&10% |
| *Southern* | 75&10% | 50&5% |
| *Southwestern* | 75&10&2½% | 50&5% |

*Terms.—2% for cash. Factory shipmeets generally delivered.*
*Note.—Lower prices are made in some sections.*
See also Conductor Pipe and Elbows.

## Elbows and Shoes—

*Factory shipments, all territories: Galv. Steel, Galv. C. I. and Copper.*
*Sizes 2, 3, 4.....80%*
*Sizes 1½, 2½, 3½, 5, 6...60&10%*
*No. 26.....50%*
*No. 24.....25%*
*Copper Elbows.....50%*

## Elbows, Stove Pipe—

Edwards, Standard Blue....40&10&10%
Edwards, Royal Blue.....40&10&10%
Reeves, Dover, Flat Crimp..40&10&5%

## Emery, Turkish—

| | *4 to 46:* | *54 to 220:* | *Flour.* |
|---|---|---|---|
| *Kegs.....lb.* | 5 ¢ | 5½¢ | 3½¢ |
| *½ Kegs.....lb.* | 5¼¢ | 5¾¢ | 3¾¢ |
| *¼ Kegs.....lb.* | 5½¢ | 6 ¢ | 4 ¢ |

*10-lb. cans, 10 in case....6½¢ 7 ¢ 8 ¢*
*10-lb. cans, less than 10.....10 ¢ 10 ¢ 8 ¢*
*Less quantity..10 ¢ 10 ¢ 8 ¢*
*NOTE.—In lots 1 to 3 tons a discount of 10% is given.*

### Extensions, Bit—
Ford's Auger Bit Extensions....40&5%

### Extractors, Lemon Juice—
—See *Squeezers, Lemon.*

## Fasteners, Blind—
Zimmerman's Jap'd and Galv., 50 & 5%; Bronze and Plated.....50%
Walling's .....50%
Upson's Patent.....40%

### Cord and Weight—
Ives, ℔ gro., $1.08.....10%
Titan, ℔ gro., $0.66.....10%

### Corrugated—
Acme Corrugated Fasteners.....70%

### Faucets—
*Cork Lined.....50&10@60%*
*Metallic Key, Leather Lined, .. 60&10@70%*
*Red Cedar.....40&5@40&10&5%*
*Petroleum .....70&10@75%*
B. & L. B. Co.:
Metal Key.....60&10%
Star .....60%
West Lock.....50&10%
John Sommer's Peerless Tin Key....40%
John Sommer's Boss Tin Key.....50%
John Sommer's Victor Mtl. Key.50&10%
John Sommer's Duplex Metal Key..60%
John Sommer's Diamond Lock.....40%
John Sommer's I.X.L. Cork Lined..50%
John Sommer's Reliable Cork Lined.. 50&10%
John Sommer's Chicago Cork Lined.60%
John Sommer's O. K. Cork Lined...50%
John Sommer's No Brand, Cedar....50%
John Sommer's Perfection, Cedar....40%
Self Measuring:
Enterprise, Self Measuring and Pump, ℔ doz., $36.00.....40&10%
Lane's, ℔ doz., $36.00.....40&10%
National Measuring, ℔ doz. $36.40&10%

### Felloe Plates—
See *Plates, Felloe.*

### Files— Domestic—
*List Nov. 1, 1899.*
*Best Brands.....70&10@75&10%*
*Standard Brands.....75&10@80%*
*Lower Grade....75&10&10@80&10%*
Gold Medal.....70%
McCaffrey's American Standard, 60&10&10%

### Imported—
*Stubs' Tapers, Stubs' list, July 24, '97.....33⅓@40%*

### Fixtures, Fire Door—
Richards Mfg. Co.:
Universal, No. 103; Special, No. 104 .....$3.75
Fusible Links, No. 96.....50%
Expansion Bolts, No. 107.....60&10%

### Grindstone—
*Net Prices:*

| | | | | |
|---|---|---|---|---|
| *Inch* | *15* | *17* | *19* | *21* |
| *Per doz.* | *$3.60* | *3.85* | *4.15* | *4.65* |

Peck, Stow & Wilcox Co.:

| In | 15 | 17 | 19 | 21 | 24 |
|---|---|---|---|---|---|
| | $4.00 | 4.40 | 4.75 | 5.50 | 6.50....30% |

Reading Hardware Co.....60%

### Fodder Squeezers—
See *Compressors.*

### Forks—
American Fork & Hoe Co.:
Iowa Dig-Ezy Potato.....70&5%
Hay, Regular, 3-tine.....45&20&12½%
Hay, Regular, 4-tine.....60&7½&5%
Champion, Hay.....60&12½%
Acme, Hay.....60&20
Manure, Regular, 4-tine.....65&5%
Manure, Regular, 5 and 6 tine...70%
Champion, Manure.....65&5%
Columbia, Manure.....70%
Acme, 4-tine.....60&10&5%
Round Shoulder Header, 4-tine..65%
Champion, Header.....65%
Dakota, Header.....65%
Kansas Header.....65%
Wood, Barley.....35&5
Steel, Barley.....66⅔
Columbia, Spading.....70&7½&5%

### Frames— Wood Saw—
*White, S'g't Bar, per doz.75@80¢*
*Red, S'g't Bar, per doz.$1.00@1.25*
*Red, Dbl. Brace, per doz.$1.40@1.50*

### Freezers, Ice Cream—

| *Qt.....* | *1* | *2* | *3* | *4* | *6* |
|---|---|---|---|---|---|
| *Each....* | *$1.25* | *$1.60* | *$1.90* | *$2.20* | *$2.80* |

### Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

### Fry Pans—See *Pans, Fry.*

### Fuse— *Per 1000 Feet.*
*Hemp .....$2.75*
*Cotton .....3.20*
*Waterproof Sgl. Taped..3.65*
*Waterproof Dbl. Taped..4.40*
*Waterproof Tpl. Taped..5.15*
20&2½%

## Gates, Molasses and Oil—
*Stebbins' Pattern.....80@80&5%*

### Gauges—
*Marking, Mortise, &c..50@50&10%*
Chapin-Stephens Co.:
Marking, Mortise, &c.....50&5&10%
Disston's Marking, Mortise, &c. 67½%
Wire, Brown & Sharpe's.....33⅓%
Wire, Morse's.....25%
Wire, P., S. & W. Co.....33⅓%

### Gimlets— Single Cut—
*Numbered assortments, per gro.*
*Nail, Metal, No. 1, $2.00; 2, $2.30*
*Spike, Metal, No. 1, $4.00; 2, $4.30*
*Nail, Wood Handled, No. 1, $2.30; 2, $2.60*
*Spike, Wood Handled, No. 1, $4.30; 2, $4.60*

### Glass, American Window
See *Trade Report.*

### Glasses, Level—
Chapin-Stephens Co.....65@65&10%

### Glue, Liquid Fish—
*Bottles or Cans, with Brush, 25&10@50%*
Elwell's .....40%

### Grease, Axle—
*Common Grade...gro.$6.00@$6.50*
Dixon's Everlasting, 10-lb. pails, ea. 85¢; in boxes, ℔ doz., 1 lb, $1.20; 2 lb.....$2.00
Helmet Hard Oil.....25%

### Griddles, Soapstone—
Pike Mfg. Co.....33⅓@33⅓&10%

### Grinders—
Pike Mfg. Co.:
Hand and Foot Power, Pyko Nos. 1, 2, 3; Pyko Primo; Pyko Peerless; Pyko Spiral (foot power).33⅓%
Mower Knife and Tool, $5.00..40&10%
Royal Mfg. Co.:
Alundum Grinding Machines, each, Nos. 01, $1.75; 1A, $2.50; 10, $5.00 .....30%
Alundum Sickle Grinders, each, Nos. 20, $5.00; 20A, $6.00; 20A Combined, $6.50.....30%
Alundum Disc Grinders, each, $2.50 .....30%

### Grindstones—
Pike Mfg. Co.:
Improved Family Grindstones, ℔ inch, ℔ doz., $2.00.....33⅓%
Richards Mfg. Co., Eli and Cycle. Ball Bearing, mounted.....40%

### Grips, Nipple—
Perfect Nipple Grips.....40&10&2%

## Halters and Ties—
*Cow Ties.....65@65&10%*
Bridgeport Chain Co.:
Triumph Coil and Halters.35&2½@40%
Brown Coil and Halters...45@50&5%
Brown Cow Ties.....50&5@50&10&5%
Brown Tie Outs.....70&10@75&5%
Covert Mfg. Co.:
Web .....30&2%
Jute Rope.....35%
Sisal Rope.....20%
Cotton Rope.....45%
Hemp Rope.....45%
Oneida Community:
Am. Coil and Halters.....40@40&5%
Am. Cow Ties.....45@50%
Niagara Coil and Halters...45@50&5%
Niagara Cow Ties.....45&5@50&10&5%

### Hammers—
#### Handled Hammers—
Heller's Machinists'....55&10@55&10&5%
Heller's Farriers.....40&5@40&10&5%
Peck, Stow & Wilcox Co.:
Crucible Steel.....40&10@50%
Farriers' .....40&10@50%
Riveting .....40&10@50%
Machinists' .....66⅔@5%
Blacksmiths' .....50%
Fayette R. Plumb:
A. E. Nail.....40&2½@40&12½%
Eng. and B. S. Hand.50&10&5@60&5%
Machinists' Hammers.....60&10&5%
Rivet and Tinners'.40&7½@40&12½&5%
Victor Magnetic Tack, ℔ gro....$7.75

#### Heavy Hammers and Sledges—
*Under 3 lb., per lb., 50¢...80&10%*
*3 to 5 lb., per lb., 40¢...80&10&10%*
*Over 5 lb., per lb., 30¢.....*
*Over 5 lb., per lb., 30¢.80&10&10%*

### Handles—
#### Agricultural Tool Handles
*Axe, Pick, &c....60&10@60&10&5%*
*Hoe, Rake, &c.....40%*
*Fork, Shovel, Spade, &c.:*
*Long Handles.....40%*
*D Handles.....40%*

#### Cross-Cut Saw Handles—
Atkins' .....40%
Champion .....50%
Disston's .....50%

#### Mechanics' Tool Handles—
*Auger, assorted...gro.$3.00@$3.50*
*Brad Awl.....gro.$1.65@$1.75*
*Chisel Handles, Ass'd, per gro.:*
*Tanged Firmer, Apple, $2.40@ $2.65; Hickory.....$2.15@2.40*
*Socket Firming, Apple, $1.75@ $1.95; Hickory.....1.60@1.75*
*Socket Framing, Hickory, $1.60@$1.75*
*File, assorted....gro.$1.30@$1.40*
*Hammer, Hatchet, &c.. 60&10@60&10&5%*
*Hand Saw, Varnished, doz., 80¢ 85¢; Not Varnished.....65@75¢*
*Plane Handles:*
*Jack, doz., 30¢; Fore, doz...45¢*
Chapin-Stephens Co.:
Carving Tool .....70&5&10%
Chisel .....60&5&10%
File and Awl .....60&5&10%
Saw and Plane.....70&5&10%
Screw Driver .....30&10%
Millers Falls Adj. and Ratchet Auger Handles .....15&10%
Nicholson Simplicity File Handle ℔ gro. $1.85@$1.50
J. L. Osgood:
Indestructible File and Tool ℔ gro., No. 1 $8.00; No. 2 $8.50; No. 3 $9.00; No. 4, $9.50; No. 5, $10.00.....gr., lots 10%

W. A. Zelnicker Supply Co.:
Hammer, ℔ doz., 12 in., $2.00; 14 in., $2.00; 16 in., $2.30; 18 12., $2.50; 20 in., $2.70; 22 in., $3.00; 24 in., $3.30; 26 in., $3.50; 30 in., $3.80.
Sledge, ℔ doz., oval, 30 in., $3.80; octagon, 30 in., $3.80; oval, 36 in., $4.00; octagon, 36 in., $4.00.
Axe, ℔ doz., 28 to 34 in., $5.60; 36 in., $5.80.
Adze, ℔ doz., 36 in., $5.80; 36 in., $7.80.
Pick, ℔ doz., R. R., 36 in., $8.00; coal, 34 in., $5.80.
Hatchet, ℔ doz., 12 to 14 in., $2.00.
50%

#### Hangers—
*NOTE.—Barn Door Hangers are generally quoted per pair, without track and Parlor Door Hangers per double set with track, &c.*
Chicago Spring Butt Co.:
Friction .....25%
Oscillating .....25%
Big Twin.....25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door.....50%
Elevator .....30%
Railroad .....50%
Cronk & Carrier Mfg. Co.:
Loose Axle.....60&10%
Roller Bearing.....70%
Griffin Mfg. Co.:
Solid Axle, No. 10, $12.00..60&10%
Roller Bearing, No. 11, $15.00, 60&10%
Roller Bearing, Ex. Hy., No. 22, $18.00.....60&10%
Bull Dog, $24.00.....70%
Lane Bros. Co.:
**Parlor, Ball Bearing, $4.00;** Standard, $3.15; No. 105, $2.85; New Model, $2.80; New Champion per set of 4 Hangers, complete with track.....$2.25
Barn Door, Standard.....60&10%
Hinged .....net $6.08
Covered .....60&5%
Special .....70&5%
**Trolley Hangers and track..50%**
Lawrence Bros.:
Cleveland .....70&7½%
Clipper, No. 75.....60%
Crown .....55&10%
Cyclone, No. 40.....net $6.50
Tandem, No. 50.....net $7.50
New York.....55&10%
Trolley, No. 30, ℔ pair.....$1.25
McKinney Mfg. Co.:
**Roller Bearing, Nos. 1 and 2..70%**
Anti-Friction .....60%
Hinged Hangers, King Charm.60%
Richards Mfg. Co.:
Hangers, Nos. 47, 48, 147, 247, 60&5%
Pioneer Wood Track, No. 3..$2.25
Roller B'r'g St'l Track No. 12.$2.20
Roller B'r'g St'l Track No. 13.$2.50
Roller B'r'g, Nos. 39, 41, 43, 70&7½%
Hero, Adj. Track No. 19..50&10%
Adjustable Track Tandem Trolley Track No. 16.....50&10%
Seal, Steel Track No. 8.....$2.25
Auto Adj. Track No. 22..50&5%
Trolley B. D. No. 17, $1.25; F. D. No. 120, $2.25; No. 121, $2.45; No. 150.....$2.50
Safety Underwriters F. D. No. 101 .....50%
Tandem No. 41..2½ and 3 60&10%
Palace, Adjustable Track No. 132 .....50&5%
Royal, Adjustable Track No. 122 .....50&10%
Ives' Wood Track No. 1.....$2.25
Trolley B. D. No. 20.....50&10%
Trolley B. D. No. 24, $1.30; No. 27, $1.40; No. 28.....$1.60
Roller Bearings, Nos. 37, 38, 39, 41, 43, 44, Sizes 1 and 2.70&7½%
Anti-friction, No. 42; No. 44, sizes 2½ and 3.....60%
Hinged Tandem No. 48....60&5%
Folding Door B. B. Swivel No. 135 .....40%
Taylor & Boggis F'y Co.'s Kidder's Roller Bearing, ℔ doz., 4 in., $12.00; 5 in., $14.00..40&10%
Myers' Stayon Hangers.....60%
Extra 5@10% often given.

#### Hangers— Garment—
Pullman Trouser, ℔ gro., No. 1 $9.00; No. 4, $24.00; No. 5, $16.50; No. 8, Black Enamel, $7.50; No. 10, $21.00; No. 12, $8.00; No. 15, Rods, $9.00; No. 18, Loops.....$10.00
Victor Folding.....℔ gro. $9.60

#### Gate—
Myers' Patent Gate Hangers, ℔ doz. net .....50%

#### Joist and Timber—
Lane Bros. Co.....35%

### Hasps—
Griffin's Security Hasp.....50&10%
McKinney's Perfect Hasp, ℔ doz..60%

### Hatchets—
*Regular list, first qual.40&12½@—*
*Second quality.....50&10&5@—*

### Heaters, Carriage—
Clark, No. 5, $1.25; No. 5B, $1.50; No. 3, $1.75; No. 3D, $2.00; No. 7D, $2.25; No. 3E, $2.50; No. 1, $3.00.....25
Clark Coal, ℔ doz., $0.75.....20

### Hinges—
#### Blind and Shutter Hinges
*Surface Gravity Locking Blind:*
*Doz. Sets with Fastenings, No. 1, $0.70; No. 3, $1.25; No. 5, $2.65.*
*Mortise Shutter.....80%*
*Mortise Reversible Shutter...80%*
North's Automatic Blind Fastener, No. 2, for Wood, $0.90; No. 3 for Brick, $1.50.....10
Charles Parker Co .....70&7%
Parker Wire Goods Co.
Hale & Benjamin Automatic Blind Hinges .....20
Hale's Blind Awning Hinges No. 110, for wood, $9.00; No. 111, for brick, $9.00.....20%

Reading's Gravity.....60%
Stanley's Steel Gravity Blind Hinges, No. 1647½, ℔ doz. sets, without screws, $0.95; with screws, $1.25.
Wrightsville Hardware Co.:
O. S., Lull & Porter.....75&5%
Acme, Lull & Porter.....75%
Queen City Reversible.....75%
Shepard's Noiseless, Nos. 60, 65, 55 .....75&5%
Niagara, Gravity Locking, Nos. 1, 3 & 5.....75&5%
Clark's O. P., No. 1.....75&10%
Clark's O. P., Nos. 3 and 5....75&5%
Tip Pat'n, No. 1.....75&10%
Clark's No. 3.....75&5%
Buffalo Gravity Locking, Nos. 1, 3 & 5.....70&10&5%
Shepard's Double Locking.....75%
Champion Gravity Locking.....75&5%
Pioneer .....75&10%
Empire .....65%
W. H. Co.'s Mortise Gravity Locking, No. 2.....60&10%

#### Gate Hinges—
*Clark's or Shepard's—Doz. sets:*

| *No.* | *1* | *2* | *3* |
|---|---|---|---|
| *Hinges with L't'chs.* | *$2.00* | *2.70* | *5.00* |
| *Hinges only.....* | *1.25* | *1.90* | *3.50* |
| *Latches only.....* | *.70* | *.75* | *.95* |

*New England:*
*With Latch.....doz..@$2.00*
*Without Latch.....doz..@$1.60*
*Reversible Self-Closing:*
*With Latch.....doz..@$1.75*
*Without Latch...doz. ...@$1.35*
*Western:*
*With Latch.....doz. $1.75*
*Without Latch.....doz..$1.15*
Wrightsville Hardware Co.:
Shepard's or Clark's Hinges and Latches, Hinges only or Latches only, Nos. 1, 2 or 3.....70%

#### Miscellaneous—
Griffin Mfg. Co., Fleur de Lis Surface Hinges, ℔ doz. prs.....$1.00

#### Pivot Hinges—
Bommer Bros. Pivot, Ball Bearing .....40%
Lawson Mfg. Co. Matchless.....30%

#### Spring Hinges—
*Holdback, Cast Iron...$6.75@$7.00*
*Non-Holdback, C'st Iron$6.50@$6.75*
J. Bardsley:
Bardsley's Non-Checking Mortise Floor Hinges.....40%
Bardsley's Patent Checking.33⅓%
Bommer Bros.:
Spring Butt Hinges.....40%
Surface Floor, Ball Bearing .....40%
Mortise Floor, Ball Bearing.40%
Lavatory Hinges.....40%
Non-Holdback Screen Door, Nos. 2000 and 900.....40%
Holdback Screen Door, No. 999.....℔ gro. $9.00
Chicago Spring Butt Co.:
Chicago Spring Hinges.....25%
Triple End Spring Hinges....50%
Chicago (Ball Bearing) Floor.50%
Garden City Engine House...25%
Keene's Saloon Door.....25%
Columbian Hardware Co.:
Acme, Wrought Steel.....30%
Acme, Brass.....25%
American .....30%
Columbia, ℔ gr., No. 14, $9.00; No. 18.....$25.00
Columbia, Adj., No. 7, ℔ gr.$12.00
Gem, new list.....30%
Clover Leaf and Acorn, per gro. .....$12.00
Oxford, new list.....30%
Floor Spring Hinges.....65&10%
Columbian Steel.....65&10%
Lawson Mfg. Co.:
Matchless Spring Hinges.....30%
Matchless Jamb Hinges.....30%
Richards Mfg. Co.:
Superior Double Acting Floor Hinges .....40%
Shelby Spring Hinge Co.:
Buckeye All Steel Holdback Screen Door.....℔ gr. $9.00
Chief Ball Bearings Floor Hinge .....50%
Ball Bearing Door.....25%
No. 777, Sheet Steel Holdb'k, ℔ gr. pr.....$9.00
Standard Mfg. Co.:
Champion Double Acting Door Hinge .....25&10&10%
Standard Double Acting Floor Hinge .....25&10&10%
Superior Spring Hinge Co.:
Superior Floor Hinges.....33⅓%
Spring Hinges.....33⅓%
Extra 10% often given on most of these Hinges.

#### Wrought Iron Hinges—
*Strap and T Hinges, &c., list February 10, 1908:*
*Light Strap Hinges..50&10%*
*Heavy Strap Hinges..60&5%*
*Light T Hinges.....50%*
*Heavy T Hinges.....40%*
*Extra Hvy. T Hinges.50&10%*
*Hinge Hasps.....33⅓%*
*Cor. Heavy Strap....60&5%*
*Cor. Ex. Heavy T...50&10%*
Extra 10&10&10%.
*Screw Hook and Strap. 6 to 12 in..lb.3½¢ 12 to 24 in..lb.3¼ 24 to 36 in..lb.3*
*Screw Hook and Eye: ½ inch .....lb.6¼ ⅝ inch .....lb.7½ ¾ inch .....lb.8½*

### Hitchers, Stall—
Covert Mfg. Co., Stall Hitchers..30&2%

### Hods— Coal—
*M'f'gr's list, price per gross:*

| *Inch* | *15* | *16* | *17* | *18* |
|---|---|---|---|---|
| *Galv. Open....* | *$35* | *$39* | *$42* | *$46* |
| *Jap. Open....* | *26* | *28* | *31* | *35* |
| *Galv. Funnel...* | *48* | *48* | *52* | *56* |
| *Jap. Funnel....* | *33* | *36* | *39* | *43* |

### Masons' Etc.
Cleveland Wire Spring Co.:
Steel Brick, No. 162.....each $1
Steel Mortar, No. 158.....each $1.

### Hoes—Eye-

*Scovil and Oval Pattern, 60&10@60&10&10%*
*Grub, list Feb. 23, 1899, 70&10@70&10&10%*
D. & H. Scovil....27½
Am. Fork & Hoe Co. (Scovil Pattern)....60&5

### Handled—

Cronk's Weeding, No. 1, $2.00; No. 2, $2.50
Star Double Bit....$2.50
American Fork & Hoe Co.:
Regular, Cotton....75&10&5&2½
Crescent, Cultivator....75&2½
Mattock, Senior....70
Mattock, Junior....70
Sprouting....50
Tobacco, Harper's....66⅔&15&10
Warren....55&10&10&5
Ivanhoe....65&15&10
Cultivator, B B 6....70&10&10&5
Cultivator, B B 6½....70&10&10&5
Weeding, Acme....72½&10&2½
Scuffle, Lightning....60&5

### Hoisting Apparatus—

See *Machines, Hoisting.*

### Holders—Bit—

Angular, ℔ doz. $24.00....45&10%

### Door—

Bardsley's, Iron, 40%; Brass and Bronze....25%
Empire....50%
Pullman....25%
Richards Mfg. Co.: No. 117, Ever-ready, 40%; Nos. 118, 119, Sure Grip....50%
Superior....33⅓%

### File and Tool—

Nicholson File Holders and File Handles....33⅓@40

### Fruit Jar—

Triumph Fruit Jar Holder, ℔ gross, $18.00; ℔ doz....$2.00

### Trace and Rein—

Fernald Double Trace Holder, ℔ doz. pairs....$1.25
Dash Rein Holder, ℔ doz....$1.25

### Hones—Razor—

Pike Mfg. Co., Belgian and Swaty, 50%; German....33⅓%

### Hooks—Cast Iron—

Bird Cage, Reading....40%
Clothes Line, Reading List....40%
Coat and Hat, Reading....45&20
Coat and Hat, Wrightsville....60&5
Harness, Reading List....40%

### Wire—

*Belt, Nos. 1 to 15....75&10@80%*
*Wire C. & H. Hooks..80@80&10%*
Bradley Metal Clasp Wire, Coat and Hat 75&10@80; Ceiling..75&10@80
Columbian Hdw. Co., Gem....75&10
Parker Wire Goods Co., King..75&10
Wire Goods Co.:
Acme, 60&10%; Chief, 70&10%; Crown, 75%; Czar, 65&10%; V Brace, 75; Czar Harness, 50%; Ceiling, 75

### Wrought Iron—

*Box, 6 in., per doz., $0.90; 8 in., $1.15.*
*Cotton....doz. $1.25@$1.50*
Wrought Staples, Hooks, &c.—See Wrought Goods.

### Miscellaneous—

*Hooks, Bench,* see *Stops, Bench.*
*Bush, Light, doz., $6.20; Medium, $6.75; Heavy, $7.65*
*Grass, best, all sizes, per doz., $2.75@$3.00*
*Grass, common grades, all sizes, per doz....$1.25@$1.50*
*Whiffletree....lb. 5¼@6¢*
*Hooks and Eyes:*
*Brass....60@60&10%*
*Malleable Iron....70@70&10%*
Covert Mfg. Co. Gate and Scuttle Hooks....40%
Turner & Stanton Co. Cup and Shoulder....85&10%
Bench Hooks—See Bench Stops.
Corn Hooks—See Knives, Corn.

### Horse Nails—

See *Nails, Horse.*

### Horseshoes—

See *Shoes, Horses.*

### Hose, Rubber—

*Garden Hose, ¾-inch:*
*Competition....ft. 6@6½¢*
*3-ply Guaranteed....ft. 8½@9¢*
*4-ply Guaranteed....ft. 9½@12¢*
*Cotton Garden, ¾-in., coupled:*
*Low Grade....ft. 8@ 9¢*
*Fair Quality....ft. 10@11¢*

### Irons—Sad—

*From 4 to 10....lb. 2½@2¾¢*
*B. B. Sad Irons....lb. 3½@3½¢*
*Mrs. Potts', cents per set:*

| | Nos. 50 | 55 | 60 | 65 |
|---|---|---|---|---|
| Jap'd Caps | 86 | 93 | 96 | 93 |
| Tin'd Caps | 91 | 88 | 1.01 | 98 |

*New England Pressing..lb. 3¾@4¢*

### Bar and Corner—

Richards Mfg. Co., Bar, 60&10%; Corner....60%

### Pinking—

*Pinking Irons....doz. 60@85¢*

### Irons, Soldering

See *Coppers.*

### Jacks, Wagons—

Covert Mfg. Co.:
Auto Screw....30&2%; Steel, 45%
Lockport....50%
Lane's Steel....30&5%
Richards' Tiger Steel, No. 130...50&10%
Smith & Hemenway Co.'s....25%

### Ladder—

Richards Mfg. Co., Ladder Jacks..50%

### Jointers—

Pike Mfg. Co., Saw Jointers, $7.00..40%

### Kettles—

*Brass, Spun, Plain....20@25%*
Enameled and Cast Iron—See Ware, Hollow.

### Knives—

### Butcher, Kitchen, &c.—

Foster Bros.' Butcher, &c....30%
Wilkinson Shear & Cutlery Co....60%

### Corn—

Columbian Cutlery Co., Wilcut Brand Knives and Hooks....60%
American Fork & Hoe Co.:
Easy Cut, ℔ doz., No. 10 C H...$2.10
Easy Cut, ℔ doz., No. 10 B C H..$2.20
Acme, ℔ doz....$2.35
Dent, ℔ doz....$2.35
Adjustable, Serrated, ℔ doz....$1.90
Serrated, ℔ doz....$1.85
Yankee, No. 1 C H....$1.35
Yankee, No. 2 C H....$1.15

### Drawing—

*Standard List....80&10@—%*
C. E. Jennings & Co., Nos. 45, 46, 25&7½%
Jennings & Griffin, Nos. 41, 42, 66⅔&7½%
Swan's....66⅔@70%
Watrous....16⅔%
L. & I. J. White....20&5@25%

### Hay and Straw—

*Serrated Edge, per doz. $5.00@5.50*
Iwan's Sickle Edge....℔ doz. $9.50
Iwan's Serrated....℔ doz. $10.00

### Miscellaneous—

*Farriers'....doz. $2.60@3.55*
Wostenholm's....℔ doz. $3.00@3.25

### Knobs—

*Base, 2½-inch, Birch or Maple, Rubber Tip....gro. $1.25@1.40*
*Carriage, Jap., Drive, all sizes, gro. 35@40¢*
*Door, Mineral....doz. 65@70¢*
*Door, Por. Jap'd....doz. 70@75¢*
*Door, Por. Nickel..doz. $2.05@2.15*
Bardsley's Wood Door, Shutters, &c. 15%

### Lacing, Leather—

See *Belting, Leather*

### Ladders, Store, &c.—

Lane's Store....25%
Myers' Noiseless Store Ladders....50%
Richards Mfg. Co.:
Improved Noiseless, No. 112....50%
Climax Shelf, No. 115....50%
Trolley, No. 109....50%

### Ladles, Melting—

L. & G. Mfg. Co., Melting and Plumbers'....25%
P., S. & W....40&10
Reading....60

### Lamps,—

Hammers M. I. Hand....45%

### Lanterns—Tubular—

*Regular, No. 0....doz. $4.35@4.50*
*Side Lift, No. 0....doz. $4.60@4.75*
*Hinge Globe, No. 0. doz. $4.60@4.75*
*Other Styles....40@40&10%*

### Bull's Eye Police—

*3-inch....$3.75@4.00*

### Latches—Thumb—

*Roggin's Latches, Jap'd, with Screws....doz. 35@40¢*

### Door—

Cronk & Carrier Mfg. Co., No. 101, ℔ doz $2.00
Richards' Bull Dog, Heavy, No. 125....50&5%
Richards' Trump, No. 127....$1.35

### Leaders, Cattle—

*Small....doz. 50¢; large, 60¢*
Covert Mfg. Co.:
Cotton, 45%; Hemp, 45%; Jute, 35%; Sisal, 20%.

### Leathers, Pump—

See *Pumps.*

### Lifters, Transom—

R. & E....10%

### Lines—

| *Wire Clothes, Nos.* | *18* | *19* | *20* |
|---|---|---|---|
| *100 feet* | *$2.30* | *1.95* | *1.75* |
| *75 feet* | *$1.95* | *1.65* | *1.50* |

Samson Cordage Works:
Solid Braided Chalk, Nos. 0 to 3..40%
Solid Braided Masons'....30%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50....℔ gr. 20%
Masons' Lines, Shade Cord, &c.; White Cotton, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50; Colors, No. 3½, $1.75; No. 4, $2.25; No. 4½, $2.75; Linen, No. 3½, $2.50; No. 4, $3.50; No. 4½, $4.50....20%
Tent and Awning Lines: No. 5, White Cotton, $7.50; Drab Cotton, $8.50....20%
Clothes Lines, White Cotton: 50 ft., $2.75; 60 ft., $3.25; 70 ft., $3.75; 75 ft., $4.00; 80 ft., $4.25; 90 ft., $4.75; 100 ft., $5.25....20%
Turner & Stanton Co.:
Solid Braided Chalk, Masons' and Awning Lines....40%
Clothes Lines, White Cotton....20%
Shade Cord, Cotton or Linen....20%

### Locks—Cabinet—

*Cabinet Locks....33⅓@33⅓@5%*

### Door Locks, Latches, &c—

*NOTE.—Net Prices are very often made on these goods.*
Reading Hardware Co....40%
R. & E. Mfg. Co....10%

### Padlocks—

R. & E. Mfg. Co. Wrought Steel and Brass....75&10%

### Sash, &c.—

Ives' Patent:
Crescent....10%
Automatic Gravity Metal Sash, ℔ gro., $149.58....10%
Window Ventilating....10%
Pullman Patent Ventilating Lock..25%
Reading Sash Locks....40%
Taylor Mfg. Co., Perfect Ventilating, ℔ doz....$0.75@$1.00

### Machines—Boring—

*Com. Upr't, without Augers, $2.00@2.25*
*Com. Angl'r, without Augers, $2.25@2.50*
Ford Auger Bit Co....$22.00
Jennings', Nos. 1 and 4....25&7½%
Millers' Falls....5.75
Snell's, Upright, $2.65; Angular, $2.90
Swan's Improved....40&10

### Corking—

Reisinger Invincible Hand Power... ℔ doz. $48.00

### Fence—

Williams' Fence Machines....each. $5.50

### Hoisting—

Moore's Anti-Friction Chain Hoist, 30%
Moore's Hand Hoist, with Lock Brake....20%
Moore's Cyclone High Speed Chain Hoist....25%

### Ice Cutting—

Chandler's....12½%

### Washing

| Boss Washing Machine Co.: | Per doz. |
|---|---|
| Boss No. 1 | $57.00 |
| Boss Rotary | $57.00 |
| Champion Rotary Banner No. 1 | $57.00 |
| Standard Champion No. 1 | $50.00 |
| Standard Perfection | $27.00 |
| Cincinnati Square Western | $33.00 |
| Uneeda American, Round | $33.60 |

### Mallets—

*Hickory....45&5@50%*
*Lignumvitæ....45&5@50%*
*Tinners' Hickory and Applewood....doz. 45&5@50%*

### Mangers, Stable—

Swett Iron Works....50%

### Mats, Door—

Acme Flexible Steel....50%
Elastic Steel (W. G. Co.), new list. 50%

### Mattocks—

See *Picks and Mattocks.*

### Milk Cans—See *Cans, Milk.*

### Mills, Coffee, &c.—

Enterprise Mfg. Co.:
Coffee....20@25%
Shell and Corn....25&10
National list Jan. 1, 1902....30%
Parker's Columbia and Victoria..33⅓%
Parker's Box and Side....50&10%
Swift, Lane Bros. Co....30%

### Motors, Water—

Dixie's Red Devil....30%

| $2.50 | 3.50 | 10.00 | 15.00 | |
|---|---|---|---|---|
| No. 1. | 2 | 3 | 4 | |
| Lippincott's: | | | | |
| No.... | 1 | 2 | 3 | 4 |
| | $2.50 | 3.50 | 10.00 | 15.00...33⅓% |

Pike Mfg. Co., Tool and Knife Grinding....33⅓%

### Mowers, Lawn—

*NOTE.—Net prices are generally quoted*
*Cheapest, 10-in., $2.00; advance 10¢ for each size.*
*Cheap, 10-in., $2.25; advance 15@20¢ for each size.*
*Better Grade, 10-in., $3.00; advance 25¢ for each size.*

| | *12* | *14* | *16* | *18 in.* |
|---|---|---|---|---|
| *High Grade* | *$4.50* | *4.75* | *5.00* | *5.25* |

Continental....60%
Great American....50%
Great American Ball B'r'g, new list. 70%
Quaker City....70%
Pennsylvania....60%
Pennsylvania, Jr., Ball Bearing. 50&10&5%
Pennsylvania Golf....50%
Pennsylvania Horse....33⅓&5%
Pennsylvania Pony....40&5%

### Nails—

*Wire Nails and Brads, Miscellaneous....85&5@85&10%*
*Cut and Wire.* See *Trade Report.*
*Hungarian, Finishing, Upholsterers', &c.* See *Tacks.*

### Horse—

| Nos. | 6 | 7 | 8 | 9 | 10 | |
|---|---|---|---|---|---|---|
| Anchor | 23 | 21 | 20 | 19 | 18 | ℔ lb, net, 12¢ |
| Coleman | 13 | 12 | 12 | 11 | 11 | net ℔ lb |
| New Haven | 23 | 21 | 20 | 19 | 18 | ℔ lb, net, 12¢ |
| Livingston | 19 | 18 | 17 | 16 | 16 | 10% |
| Western | | | | | | ℔ lb 8½¢ |

*Jobbers' Special Brands, per lb. 9¢*

### Picture—

| | *1½* | *2* | *2½* | *3 in.* |
|---|---|---|---|---|
| *Brass Hd, gro.* | *.45* | *.55* | *.60* | *.70* |
| *Por. Head, gro.* | *1.10* | *1.10* | *1.10* | |

### Upholsters—

*Brass....30%*
*Plated....30&10%*

### Nippers—

See *Pliers and Nippers.*

### Nipples—

Standard Nipple Co.:
Wrought Pipe Nipples....80%

### Nuts—*Blank or Tapped.*

| *Cold Punched:* | *Off list.* |
|---|---|
| *Square* | *5.60¢* |
| *Hexagon* | *6.20¢* |
| *Square, C., T. & R.* | *6.00¢* |
| *Hexagon, C., T. & R.* | *6.80¢* |
| *Hot Pressed:* | |
| *Square* | *6.10¢* |
| *Hexagon* | *6.60¢* |

### Oakum—

*Best....lb. 6½¢*
*U. S. Navy....lb. 6 ¢*
*Navy....lb. 5 ¢*
*Plumbers' Spun Oakum..2¾@3 ¢*

### Oil—

Pike Mfg. Co., Stonoil....40%

### Oil Tanks—See *Tanks, Oil.*

### Oilers—

*Steel, Copper Plated....75%*
*Chase or Paragon:*
*Brass and Copper....50&10%*
***Zinc*....65&10@70%**
*Railroad....60&10&10%*
Malleable, Hammers' Improved, Nos. 11, 12 and 13, 10%; Old Pattern, Nos. 1, 2, 3, 4, 50%.
American Tube & Stamping Co.:
Spring Bottom Cans....70@70&10%
Railroad Oilers, &c....60@60&10%
Maple City Mfg. Co.:
Spring Bottom Cans....70@70&10%
Railroad Oilers, &c....60@60&10%

### Openers—Packing Box—

Herculever, ℔ doz., $24....30%

### Can Openers—

| | *Per doz.* |
|---|---|
| *Sprague, Iron Handle* | *30@35¢* |
| *Sprague, Wood Handle* | *40¢* |
| *Sardine Scissors* | *$1.75@3.00* |

Can and Bottle Openers, ℔ doz., net: Yankee, $0.75@$0.85; Little Gem, $0.50@$0.65; Nitty....$0.75

### Egg—

Hartigan Nickel Plate, ℔ doz., $2.00; Silver Plate, $4.00.

### Packing—

*Asbestos Packing, Wick and Rope, any quantity....18@20¢*

### Rubber—

*(Fair quality goods.)*

| | |
|---|---|
| *Sheet, C. I.* | *11@12¢* |
| *Sheet, C. O. S.* | *11@12¢* |
| *Sheet, C. B. S.* | *12@13¢* |
| *Sheet, Pure Gum* | *40@45¢* |
| *Sheet, Red* | *40@50¢* |
| Jenkins' '96, ℔ lb, 80¢ | 25% |

### Miscellaneous—

| | |
|---|---|
| *American Packing* | *lb. 7@10 ¢* |
| *Cotton Packing* | *lb. 16@25 ¢* |
| *Italian Packing* | *lb. 9@10¢* |
| *Jute* | *lb. 4@4¼¢* |
| *Russia Packing* | *lb. 9@10¢* |

### Pails, Water, Well, &c.—

See *Buckets.*

### Paint—

Dixon's Silica-Graphite, in 1 gal. pails and 5 gal. kegs, 25%; packages of larger size....20

### Pans—Dripping—

*Standard List....75&10@80%*
Edwards, Royal Blue....75%

### Fry—

*Common Lipped:*

| *Nos.* | *1* | *2* | *3* | *4* | *5* |
|---|---|---|---|---|---|
| *Per doz.* | *$0.75* | *0.85* | *0.95* | *1.15* | *1.30* |

### Refrigerator, Galva.—

| *Inch* | *12* | *14* | *16* | *18* |
|---|---|---|---|---|
| *Per doz.* | *$1.75* | *2.25* | *2.80* | *3.15* |

### Paper—Building Paper

*Asbestos:* *lb.*
*Roll Board or Building Felt, 6 to 30 lb., per 100 sq. ft..2½¢*
*Roll Board or Building Felt, 3-32 and ⅛ in., 45 to 60 lb., per 100 sq. ft....3½¢*
*Mill Board, Sheet, 40 x 40 in., 1-32 to ½ in....3¢*
*Per roll.*
*Rosin Sized Sheathing: 500 sq. ft.*
*Light weight, 25 lbs. to roll, 48@58¢*
*Medium weight, 30 lbs. to roll, 56@70¢*
*Heavy weight, 40 lbs. to roll, 75@78¢*
*Black Water Proof Sheathing, 500 sq. ft., 1 ply, 65¢; 2 ply, 85¢; 3 ply, $1.10; 4 ply, $1.25.*
*Deafening Felt, 9, 6 and 4½ sq. ft. to lb., ton....$54.50*
*Red Rope Roofing, 250 sq. ft. per roll....$1.75*

### Tarred Paper—

*1 ply (roll 400 sq. ft.), ton, $34.00@$38.00*
*2 ply, roll 108 sq. ft....65¢*
*3 ply, roll 108 sq. ft....88¢*
*Slater's Felt (roll 500 sq. ft.).80¢*

### Sand Paper and Cloth—

*Flint and Emery....50&10%*
*Garnet Paper and Cloth....25%*

### Parers—Apple—

Goodell Co.:

| | |
|---|---|
| Family Bay State | ℔ doz. $15.00 |
| Improved Bay State | ℔ doz. $36.00 |
| New Lightning | ℔ doz. $7.00 |
| Turn Table '98 | ℔ doz. $6.00 |
| White Mountain | ℔ doz. $5.00 |
| Bonanza Improved | each $7.50 |
| Dandy | each $10.00 |
| Eureka Improved | each $20.00 |
| New Century | each $20.00 |
| Ranger | each $30.00 |

Livingston Nail Co.:
Daisy ..... ℔ doz. $4.00
Little Star ..... ℔ doz. $5.00
Rocking Table ..... ℔ doz. $6.20
Reading Hardware Co.:
Advance ..... ℔ doz. $4.00
Baldwin ..... ℔ doz. $4.00
Reading 72 ..... ℔ doz. $3.25
Reading 78 ..... ℔ doz. $6.25

### Orange—
Goodell Co., Success ..... each $20.00

### Potato—
Saratoga ..... ℔ doz. $7.50
White Mountain ..... ℔ doz. $6.00

### Picks and Mattocks—
*(List Jan., 1908.)*
*List* ..... 70&10@70&10&10%
Crook's Handled Garden Mattocks ℔ doz., $3.00 ..... 33⅓%

### Pinking Irons—
See *Irons, Pinking.*

### Pins, Escutcheon—
*Brass* ..... 50@50&10%
*Iron, list Nov. 11, '85* ..... 60@60&10%

### Pipe, Cast Iron Soil—
*Standard, 2-6 in* ..... 70&10%
*Extra Heavy, 2-6 in* ..... 75&10@80%
*Fittings, Standard and Heavy,* 80&10@85%

### Pipe, Merchant—

| | Consumers, Steel. Blk. | Galv. | Carloads, Iron. Blk. | Galv. |
|---|---|---|---|---|
| | % | % | % | % |
| ⅛ and ¼ in. | 66 | 50 | 64 | .. |
| ⅜ in. | 68 | 54 | 66 | 52 |
| ½ in. | 70 | 58 | 68 | 56 |
| ¾ to 6 in. | 74 | 64 | 72 | 62 |
| 7 to 12 in. | 71 | 56 | 69 | 54 |

### Pipe, Vitrified Sewer—
*Carload lots.*
*Standard Pipe and Fittings, 8 to 24 in., f.o.b. factory:*
*First-class* ..... 87%
*Second-class* ..... 90%

### Pipe, Stove—

| Per 100 joints. | C. L. | L. C. L. |
|---|---|---|
| Edwards' Nested: | | |
| 5 in., Standard Blue | $6.25 | $7.25 |
| 6 in., Standard Blue | 6.75 | 7.75 |
| 7 in., Standard Blue | 7.75 | 8.75 |
| 5 in., Royal Blue | 7.00 | 8.00 |
| 6 in., Royal Blue | 7.50 | 8.50 |
| 7 in., Royal Blue | 8.50 | 9.50 |
| Wheeling Corrugating Co.'s Nested: | | |
| 5 in., Uniform Color | $5.90 | $6.90 |
| 6 in., Uniform Color | 6.40 | 7.40 |
| 7 in., Uniform Color | 7.40 | 8.40 |

### Planes and Plane Irons—
### Wood Planes—
*Bench, first qual* ..... 30@30&10%
*Bench, second qual* ..... 40@40&10%
*Molding* ..... 25@25&10%
Chapin-Stephens Co.:
Bench, First Quality ..... 30%
Bench, Second Quality ..... 40%
Molding and Miscellaneous ..... 25%
Toy and German ..... 30%
Union ..... 60%

### Iron Planes
Chaplin's Iron Planes ..... 60%
Union ..... 60%

### Plane Irons—
*Wood Bench Plane Irons, list Dec. 12, '06* ..... 25%
Buck Bros. ..... 50
Chapin-Stephens Co. ..... 25
Union ..... 50
L. & I. J. White ..... 20&5@25

### Planters, Corn, Hand—
Kohler's Eclipse ..... ℔ doz. $7.50

### Plates—
*Felloe* ..... lb. 3¾@4¢
Avery Stamping Co.:
Standard Wrot. Steel Felloe Plates in 100 lb kegs, per 100 lb, ¾-in. to 1⅛-in., $4.00 net; 1¼-in. to 2 in., inclusive, $3.75 net.

### Steel Pipe Hook—
Never-Break ..... 75&10%

### Pliers and Nippers
*Button Pliers* ..... 75&5@75&10&5%
*Gas Burners, per doz., 5 in., $1.25 @$1.30; 6 in., $1.45, $1.50.*

| *Gas pipe* | 7 | 8 | 10 | 12-in. |
|---|---|---|---|---|
| | $2.00 | $2.25 | $2.75 | $3.50 |

Acme Nippers ..... 50&5%
Cronk & Carrier Mfg. Co.:
American Button ..... 80%
Improved Button ..... 75&10%
Cronk's ..... 60%
No. 80 Linemen's ..... 50%
Stub's Pattern ..... 45%
Combination and others ..... 33⅓%
Heller's Farriers' Nippers, Pincers and Tools ..... 40&5@40&10&5%
P., S. & W. Tinners' Cutting Nippers ..... 40%
Swedish Side, End and Diagonal Cutting Pliers ..... 50%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds ..... 40%

### Plumbs and Levels—
Chapin-Stephens Co.:
Plumbs and Levels ..... 30@30&10%
Chapin's Imp. Brass Cor. ..... 40@40&10%
Pocket Levels ..... 30@30&10%
Extension Sights ..... 30@30&10%
Machinists' Levels ..... 40@40&10%
Disston's Plumbs and Levels ..... 60&10%
Disston's Pocket Levels ..... 60&10%
Stanley's Dulex ..... 35%
Woods' Extension ..... 33⅓%

### Points, Glaziers'—
*Bulk and 1-lb. papers* ..... lb. 9 ¢
*½-lb. papers* ..... lb. 9½¢
*¼-lb. papers* ..... lb. 10 ¢

### Police Goods—
*Manufacturers' Lists* ..... 25@25&5%
Tower's ..... 25%

### Polish—Metal, Etc—
Ladd Co.:
Putzade Liquid, ℔ gro., ½ pts., $12.00; 1 pts., $20.00; 1 qts., $40.00; ℔ doz., ½ gals., $6.35; 1 gals., $12.00.
Prestoline Liquid, No. 1 (½ pt.), ℔ doz., $3.00; No. 2 (1 qu.), $9.00 ..... 40%
Prestoline Paste ..... 40%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, ℔ doz. 50¢; ℔ gro. $4.50; ½ lb boxes, ℔ doz. $1.25; 1 lb boxes, ℔ doz. $2.25.
U. S. Liquid, 8 oz. cans, ℔ doz., $1.25.
Barkeepers' Friend Metal Polish, ℔ doz., $1.75.

### Stove—
Black Eagle Benzine Paste, 5 lb cans, ℔ lb 10¢
Black Eagle, Liquid, ½ pt. cans.. ℔ doz. 75¢
Black Jack Paste, ¾ lb cans, ℔ gr. $9.00
Black Kid Paste, 5 lb can ... each, $0.65
Ladd's Black Beauty Liquid, per 100 tins ..... $6.75
Joseph Dixon. ℔ gr. $5.75 ..... 10%
Dixon's Plumbago ..... ℔ lb 8¢
Fireside ..... ℔ gr. $2.50
Gem, ℔ gr. $4.50 ..... 10%
Japanese ..... ℔ gr. $3.50
Jet Black ..... ℔ gr. $3.50
Peerless Iron Enamel, 10 oz. cans.. ℔ doz. $1.50

### Window Polish—
Benj. P. Forbes:
Glasbright, No. 2, gal pails, ℔ doz., $24.00; each, $2.50; 1 lb cans, each ..... 75¢
Glasbright Powder, bbls., ℔ lb.. 20¢

### Poppers, Corn—
*1 qt. Square .. doz. $0.80; gro. $8.75*
*1 qt. Round .. doz. $0.90; gro. $10.00*
*1½ qt. Square. doz. $1.20; gro. $12.00*
*2 qt. Square .. doz. $1.50; gro. $15.00*

### Post Hole and Tree Augers and Diggers—
See also *Diggers, Post Hole, &c.*

### Posts, Steel—
Steel Fence Posts, each, 6 ft., 46¢; 6½ ft., 48¢; 7 ft., 50¢.
Steel Hitching Posts ..... each $1.30

### Potato Parers—
See *Parers, Potato.*

### Pots, Glue—
*Enameled* ..... 40%
*Tinned* ..... 30&10%

### Powder—
*In Canisters:*
*Duck, 1 lb* ..... each 45¢
*Fine Sporting, 1 lb* ..... each 75¢
*Rifle, ½-lb* ..... each 15¢
*Rifle, 1 lb* ..... each 25¢
*In Kegs:*
*12½-lb. kegs* ..... $3.50
*25-lb. kegs* ..... $4.50
King's Semi-Smokeless:
Keg (25 lb bulk) ..... $6.50
Half Keg (12½ lb bulk) ..... $3.50
Quarter Keg (6¼ lb bulk) ..... $1.90
Case 24 (1 lb cans bulk) ..... $8.50
Half case (1 lb cans bulk) ..... $4.50

| King's Smokeless: | Shot Gun. | Rifle. |
|---|---|---|
| Keg (25 lb bulk) | $12.00 | $15.00 |
| Half Keg (12½ lb bulk) | 6.25 | 7.75 |
| Quarter Keg (6¼ lb bulk) | 3.25 | 4.00 |
| Case 24 (1 lb cans bulk) | 14.00 | 17.00 |
| Half case 12 (1 lb c. bk) | 7.25 | 8.75 |

### Presses—
### Fruit, Wine and Jelly—
Enterprise Mfg. Co. ..... 20@25%

### Seal Presses—
Morrill's No. 1, ℔ doz., $20.00 ..... 50%

### Pruning Hooks and Shears
See *Shears.*

### Pullers, Nail, Etc.—
Cyclops ..... 50%
Miller's Falls, No. 3, ℔ doz., $12.00.. 33⅓&10%
Morrill's No. 1, Nail Puller, ℔ doz. $20.00 ..... 50%
Pearson No. 1, Cyclone Spike Puller, each $30.00 ..... 50%
The Scranton Co. Case Lots:
No. 2B (large) ..... $5.50
No. 3B (small) ..... $5.00
Smith & Hemenway Co.:
Diamond B ..... 70%
Giant ..... 50%
Staple Pullers, Utica and Davison ..... 60%
Taylor Mfg. Co., Sampson Tack, ℔ doz ..... $0.40

### Pulleys, Single Wheel—

| *Inch* | 1½ | 1¾ | 2 | 3 |
|---|---|---|---|---|
| *Awning or Tackle, doz* | $0.30 | .45 | .60 | 1.05 |

*Hay Fork, Swivel or Solid Eye, doz., 4 in., $1.25; 5 in., $1.55*

| *Inch* | 2 | 2¼ | 2½ |
|---|---|---|---|
| *Hot House, doz* | $0.65 | .85 | 1.20 |
| *Inch* | 1¼ | 1½ | 1¾ | 2 |
| *Screw, doz* | $0.16 | .19 | .23 | .30 |
| *Inch* | 1¾ | 2 | 2¼ | 2½ |
| *Side, doz* | $0.25 | .40 | .55 | .60 |
| *Inch* | 1½ | 1¾ | 2 | 2½ |

### Sash Pulleys—
*Common Frame; Square or Round End, per doz., 1¾ and 2 in* ..... 17@20¢
*Auger Morilse, no Face Plate, per doz., 1¾ and 2 in* ..... 20@21¢
Acme, No. 35 .. 1¾ in., 19¢; 2 in., 20½¢
American Pulley Co.:
Wrought Steel American Plain Axle ..... 50&10%
Wrought Steel, Eagle ..... 17@20¢
Top Notch, Electrically Welded, Nos. 3 and 4 ..... 19¢
Common Sense ..... ℔ doz. 20¢
Fox-All-Steel, Nos. 3 and 7, 2 in.... ℔ doz. 50%
Grand Rapids All Steel Noiseless .. 50%
Niagara, No. 25, 1¾ in., 19¢; 2 in. ..... 20½¢
No. 26 Troy .. 1¾ in., 14½¢; 2 in., 16½¢
Star, No. 26 .... 1¾ in., 19¢; 2 in., 20½¢
Tackle Blocks—See Blocks.

### Pumps—
*Cistern* ..... 60%
*Pitcher Spout* ..... 75&5@75&10%
*Wood Pumps, Tubing, &c* ..... 50%
Barnes Dbl. Acting (low list) ..... 45%
Barnes Pitcher Spout ..... 80%
Contractors' Rubber Diaphragm, No. 2 B. & L. Block Co. ..... $16.00
Daisy Spray Pump ..... ℔ doz. $6.50
Flint & Walling's Fast Mail Hand (low list) ..... 50&5%
Flint & Walling's Fast Mail (low list) ..... 50&5%
Flint & Walling's Tight Top Pitcher ..... 80%
National Specialty Mfg. Co., Measuring, Nos. 2, $6.00; 3, $5.50 ..... 30%
Myers' Pumps (low list) } 50%
Myers' Power Pumps } 50%
Myers' Spray Pumps } 50%

### Pump Leathers—
*Plunger and Valve Leathers—Per gro.:*

| *No* | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| | $5.00 | 6.00 | 7.00 | 8.00 |

*Cup Leathers—Per 100:*

| *Inch* | 2½ | 3 | 3½ | 4 |
|---|---|---|---|---|
| | $5.00 | 7.00 | 9.00 | 12.00 |

} 30%

### Punches—
*Saddlers' or Drive, good, doz.* 50@75¢
*Spring, single tube, good quality* ..... $1.75
*Revolving (4 tubes)* ..... doz. $3.50
Bemis & Call Co.'s Cast St'l Drive. 50%
Morrill's Nos. 1AA, 1A, 1B, 1C, 1D, $15.00 ..... 50%
Hercules, 1 die, each $5.00 ..... 50%
Niagara Hollow Punches ..... 40%
Niagara Solid Punches ..... 55&10%
Tinners' Hollow, P., S. & W. Co.. 40%
Tinners' Solid, P., S. & W. Co., ℔ doz., $1.44 ..... 40&10%

## Rail—Barn Door, &c.—
*Sliding Door, Painted Iron,* 2½@2¾¢
*Sliding Door, Wrought Brass, 1⅛ in., lb., 36¢* ..... 30%
Cronk's:
Double Braced Steel Rail .. ℔ ft. 2¾¢
O. N. T. Rail ..... 2¾¢
Griffin's:
xxx, ℔ 100 ft., 1 x 3-16 in., $3.25; 1¼ x 3-16 in., $3.75.
Hinged Hanger, ℔ 100 ft., 1 x 3-16 in., $3.50; 1¼ x 3-16 in., $4.00.
Lane's:
Hinged Track, ℔ 100 ft. ..... $3.45
O. N. T., ℔ 100 ft., 1 in., $3.12½; 1¼ in., $3.45; 1½ in., $4.00.
Standard, 1¼ in. ..... ℔ 100 ft. $4.00
Lawrence Bros.:
1 x 3-16 in., ℔ 100 ft., $7.50; 1¼ x 3-16 in., $8.75 ..... 55&7½%
Trolley, No. 301, ℔ ft. ..... 9¢
McKinney's:
Hinged Hanger Track, ℔ ft., 11¢ 60&5%
1 x 3-16 Track ..... 55&7½%
Myers' Stayon Track ..... 60&5
Richards Mfg. Co.:
Common, 1 x 3-16 in., $3.00; 1⅛ x 3-16, $3.25; 1¼ x 3-16, $3.50.
Special Hinged Hanger Rail .. 60&10%
Lag Screw Rail, No. 65 ..... 50%
Gauge Trolley Track, ℔ ft., No. 31, 9¢; No. 32, 14¢; No. 33, 20¢.
No. 50 ..... 60&10%
Nos. 61, $3.00; 62, $3.25; 63, $3.50; 64, $4.00; 45, $3.25; 46, $3.50; 49, No. 1, $3.25; 49, No. 2, $3.50.

### Rakes—
*NOTE.—Many goods are sold at net prices.*
American Fork & Hoe Co.:
Lawn, ℔ doz., No. 24, $2.50; No. 20 ..... $2.25
Fort Madison Blue Head Lawn .... $2.50
Cronk's:
Steel Garden; Champion, ℔ doz., 12-tooth, $3.75; 14-tooth, $4.00; 16-tooth, $4.25; Ideal ℔ doz., 12-tooth, $3.00; 14-tooth, $3.30; 16-tooth, $3.60
Victor, 12 tooth, $2.25; 14-tooth, $2.50; 16-tooth, $2.75.
Queen City Lawn, ℔ doz., 20 teeth, $2.85; 24, $3.00 ..... net
Anticlog Lawn ℔ doz. ..... $4.00
Malleable Garden ..... 70&10
Ideal Steel Garden, ℔ doz., 12 teeth, $15.00; 14, $16.00; 16, $18.00 ..... 80%
Kohler's:
Jumbo Lawn, 36-tooth .... ℔ doz. $5.00
Lawn Queen, 20 tooth .... ℔ doz. $2.85
Lawn Queen, 24 tooth .... ℔ doz. $3.00
Paragon, 20-tooth ..... ℔ doz. $2.65
Paragon, 24 tooth ..... ℔ doz. $2.75
Steel Garden, 14-tooth .... ℔ doz. $2.40
Malleable Garden, 14-tooth, ℔ doz. $1.75@2.00

### Rasps, Horse—
Disston's ..... 75%
Heller Bros. ..... 70&5@70&10&5%
Liverright Bros.' Gold Medal. 70&10@75
McCaffrey's American Standard .... 60&10&5%
New Nicholson ..... 70&10@75%
See also Files.

### Razors—
John Engstrom Swedish ..... 65%
Sharp Shaver ..... 60%
Fox Razors, ℔ doz., No. 42, $21.00; No. 44, $20.00; No. 82, Platina, $36.00. } Disc. 50%

### Reels, Fishing—
Hendryx:
M 6, Q 6, A 6, B 6, M 9¼, M 16, Q 16, A 16, B 16, 4068, Rubber, Populo, Nickeled Populo ..... 20%
Aluminum, German Silv., Bronze. 25%
1210 N, 124 N ..... 20%
3004 N, 06 N, 6 RM, G 9 ..... 25%
4 N, 6 PN, 24 N, 26 PN ..... 20%
2904 P., 33⅓%; 2904 PN., 33⅓%; 0924 N., 33⅓%; 02084 N., 33⅓%; 002904 PN., 33⅓%; 802 N., 33⅓%.
986 PN, 2904 N, 974 PN ..... 25%
5009 PN, 5009 N ..... 20%
Competitor, 102 P, 102 PN, 202 P, 202 PN, 102 PR, 202 PR ..... 20%
304 P, 304 PN, 00304 P, 00304 PN. 33⅓%

### Registers—*List July 1, 1903.*
*Japanned, Electroplated and Bronzed* ..... 70%
*White Porcelain Enamel* .. 50&10%
*Solid Brass or Bronze Metal* . 40%

### Revolvers—
*Single Action* ..... 95¢@$1.00
*Double Action, except 44 cal.* $2.00
*Double Action, 44 caliber* ... $2.00
*Automatic* ..... $4.00
*Hammerless* ..... $4.50

### Riddles, Hardware Grade
*16 in* ..... per doz. $2.50@$2.75
*17 in* ..... per doz. $2.75@$3.00
*18 in* ..... per doz. $3.00@$3.25

### Rings and Ringers—
### Bull Rings—

| | 2 | 2½ | 3 inch. |
|---|---|---|---|
| *Steel* | $0.70 | 0.75 | 0.80 doz. |
| *Copper* | $1.10 | 1.25 | 1.65 doz. |

### Hog Rings and Ringers—
*Hill's Rings, gro. boxes* .$4.50@$4.50
*Hill's Ringers, Gray Iron, doz., 60@75¢*
*Hill's Ringers, Malleable Iron, doz.* .80@95¢
*Blair's Rings .. per gro.* $5.00@$5.50
*Blair's Ringers ... per doz.* 75@90¢

### Rivets and Burrs—
*Copper* ..... 50@50&10%
*Carriage, Coopers', Tinners', &c.:*
*Black* ..... 70&10%
*Metallic Tinned* ..... 70%

### Bifurcated and Tubular—
*Assorted in Boxes.*
*Bifurcated, per doz. boxes, pasteboard boxes, 50 count, 23@25¢; Tin boxes, 100 count, 29@32¢.*
*Tubular, per doz. boxes, 50 count, 29@32¢; 100 count, 51@58¢.*

### Rollers—
Cronk's Stay, No. 50 ..... $1.00
Cronk's Brinkerhoff No. 55, $0.60; No. 56, $0.75; No. 60 ..... $0.75
Lane's Stay ..... 40%
Richards' Stay:
Handy Adj. and Reversible No. 53. 75¢
O. K. Adj. and Reversible No. 58. 50¢
Lag Screw, Nos. 55 and 57 ..... 50%
Underwriters', Nos. 59, 60 ..... 50%
Favorite, No. 54 ..... 60%

### Rope—
*Manila, 7-16 in. diam. and larger:*
*Pure* ..... lb. 9¢
*Sisal, 7-16 in. diam. and larger:*
*Pure* ..... lb. 7¢
*Sisal, Hay, Hide and Bale Ropes, Medium and Coarse:*
*Pure* ..... lb. 7½@7¾¢
*Sisal, Tarred, Medium Lath Yarn:*
*Pure* ..... lb. 6½@6¾¢
*Cotton Rope:*
*Best, ¼ in. and larger* .16½@18¢
*Medium, ¼-in. and larger* .15@16¢
*Common, ¼-in. and larger* .. 7½¢
*In coils, ½¢ advance.*
*Jute Rope:*
*Thread, No. 1, ¼-in. and up, lb.* ..... 5½¢
*Thread, No. 2, ¼-in. and up, lb.* ..... 5¢

### Wire Rope—
*Galvanized* ..... 37½&2½%
*Plain* ..... 45&2½%

### Ropes, Hammock—
Covert Mfg. Co.:
Jute, 35 ; Sisal ..... 20

### Rules
*Boxwood* ..... 60@60&10%
*Ivory* ..... 35&10@35&10&5%
Chapin-Stephens Co.:
Boxwood ..... 60
Flexifold ..... 40
Ivory ..... 25@25&10
Miscellaneous ..... 50@50&10
Stephens' Combination ..... 55
Stanley's ..... 50@50&10%
Kenffel & Esser Co.:
Folding, Wood ..... 35&10%
Folding, Steel ..... 33⅓&10
Luflin's Steel ..... 50&10
Lufkin's Lumber ..... 50&10
Upson Nut Co.:
Boxwood ..... 60@60&10%
Ivory ..... 35&10@35&10&10

### Sash Balances—
See *Balance, Sash.*

### Sash Locks—See *Locks, Sash.*

### Sash Weights—
See *Weights, Sash.*

## Sausage Stuffers or Fillers

See *Stuffers or Fillers, Sausage.*

## Saw Frames—

See *Frames, Saw.*

## Saw Sets—See *Sets, Saw.*

## Saw Tools—See *Tools, Saw.*

## Saws—

Atkins':
- Circular ..... 45%
- Band ..... 50@50&10%
- Butcher Saws ..... 50%
- Cross Cuts ..... 35%
- One-Man Cross Cut ..... 40%
- Narrow Cross Cut ..... 50%
- Hand, Rip and Panel ..... 35&5%
- Miter Box and Compass ..... 40%
- Mulay, Mill and Drag ..... 45%
- Wood Saws ..... 40&10%

Chapin-Stephens Co.:
- Turning Saws and Frames. 30@30&10%

Diamond Saw & Stamping Works:
- Sterling Kitchen Saws ..... 30&10&10%

Disston's:
- Circular, Solid and Ins'ted Tooth. 50%
- Band, 2 to 18 in. wide ..... 60%
- Band, ¼ to 1¾ ..... 60%
- Crosscuts ..... 45%
- Narrow Crosscuts ..... 50%
- Mulay, Mill and Drag ..... 50%
- Framed Woodsaws ..... 25%
- Woodsaw Blades ..... 25%
- Woodsaw Rods, Tinned ..... 15%
- Hand Saws, Nos. 12, 99, 9, 16, d100, D8, 120, 76, 77, 8 ..... 25%
- Hand Saws, Nos. 7, 107, 107½, 3, 1, 0, 00, Combination ..... 30%
- Compass, Key Hole, &c. ..... 25%
- Butcher Saws and Blades ..... 30%

C. E. Jennings & Co.'s:
- Back Saws ..... 16⅔%
- Butcher Saws ..... 25&7½%
- Compass and Key Hole Saws, 33⅓&7½%
- Framed Wood Saws ..... 25&7½%
- Hand Saws ..... 12½%
- Wood Saw Blades ..... 33⅓&7½%

Millers Falls:
- Butcher Saws ..... 15&10%
- Star Saw Blades ..... 15&10%

Massachusetts Saw Works:
- Victor Kitchen Saws ..... 40&10&50%
- Butcher Saws Blades ..... 35@40%

Peace & Richardson's Hand Saws. 30%

Simonds':
- Circular Saws ..... 45%
- Crescent Ground Cross Cut Saws. 30%
- One-Man Cross Cuts ..... 40&10%
- Gang Mill, Mulay and Drag Saws. 45%
- Band Saws ..... 50%
- Back Saws ..... 25@25&7½%
- Butcher Saws ..... 35@35&7½%
- Hand Saws ..... 25@25&7½%
- Hand Saws, Bay State Brand ..... 45%
- Compass, Key Hole, &c. 25@25&7½%
- Wood Saws ..... 40&7½%

Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws ..... 50%

## Hack Saw Blades and Frames—

Atkins' Hack Saw Blades A A A. 25%

Disston's:
- Concave Blades ..... 25%
- Keystone Blades ..... 35%
- Hack Saw Frames ..... 30%

Simonds, 25%; The Best, 35%; Culley ..... 35%

C. E. Jennings & Co.'s:
- Hack Saw Frames, Nos. 175, 180 .... 40&7½%
- Hack Saws, Nos. 175, 180, complete, 40&7½%

Goodell's Hack Saw Blades .... 40&10%

Griffin's Hack Saw Frames. 35&5&10%

Griffin's Hack Saw Blades .... 35&5&10%

Star Hack Saws and Blades .... 15&10%

Sterling Hack Saw Blades. 30&10&5%

Sterling Hack Saw Frames. 30&10&10%

Sterling Power Hack Saw Machines, each, No. 1, $25.00; No. 2, $30.00. 10%

Victor Hack Saw Blades ..... 20%

Victor Hack Saw Frames ..... 40%

Whitaker Mfg. Co.:
- National Hand Blades, Hand Frames, Power Blades ..... 40%

## Scroll—

Barnes, No. 7, $15 ..... 25%

Barnes' Scroll Saw Blades ..... 40%

Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20 ..... 20%

Lester, complete, $10.00 ..... 15&10%

Rogers, complete, $3.50 and $4.00 .. 15&10%

## Scales—

*Union Platform, Plain. $2.10@2.20*

*Union Platform, Stpd. $2.20@2.30*

Chatillon's:
- Eureka ..... 25%
- Favorite ..... 40%
- Grocers' Trip Scales ..... 50%

The Standard Portables ..... 40%

The Standard R. R. and Wagon ..... 50&10%

## Scrapers—

*Box, 1 Handle ..... doz. $1.85@2.10*

*Box, 2 Handle ..... doz. $2.35@2.50*

*Ship ... Light, $2.00; Heavy, $4.50*

Chapin-Stephens Co., Box. 30@30&10%

Richards Mfg. Co., Foot ..... 66%

## Screws—Bench and Hand

*Bench, Iron, doz., 1 in., $2.50@*
*2.75; 1¼, $3.00@3.25; 1½, $3.50@3.75*

*Bench, Wood ..... 20@20&10%*

*Hand, Wood .... 70&10@70&10&10%*

Chapin-Stephens Co., Hand ..... 70@70&10&2½%

## Coach, Lag and Hand Rail—

*Lag, Cone Point. 80&10@80&10&5%*

*Coach, Gimlet Point .. 80@80&10%*

*Hand Rail ..... 70&10@75%*

## Jack Screws—

*Standard List ..... 70&10@75%*

Millers Falls ..... 50&10&10%

Swett Iron Works ..... 70@75%

## Machine—

*Cut Tread, Iron, Brass or Bronze:*
*Flat Head or Round Head, 50@50&10%*
*Fillister Head ..... 40@40&10%*
*Rolled Thread, F. H. or R. H., Iron ..... 75&10%*
*F. H. or R. H., Brass, Nos. 8 to 14 ..... 65&10%*

## Set and Cap—

*Set (Iron) ..... 75&10&7½%*
*Set (Steel), net advance over Iron ..... 25%*
*Sq. Hd. Cap ..... 70&10&7½%*
*Hex. Hd. Cap ..... 70&10&7½%*
*Rd. Hd. Cap ..... 50&7½%*
*Fillister Hd. Cap ..... 60&7½%*

## Wood—

*List July 23, 1903.*

*Flat Head, Iron .... 87½&5@.. %*
*Round Head, Iron .... 85&5@.. %*
*Flat Head, Brass .... 80&5@.. %*
*Round Head, Brass .. 77½&5@.. %*
*Flat Head, Bronze .... 75&5@.. %*
*Round Head, Bronze . 72½&5@.. %*
*Drive Screws ..... 87½&5@.. %*

## Scroll Saws—

See *Saws, Scroll.*

## Scythes— *Per doz.*

*Plain Grass, Cutting Edge Polished ..... $6.25@$6.50*
*Clipper, Bronzed Web . $6.50@$6.75*
*Solid Steel, Web and Backs Polished ..... $7.00@$7.25*
*Bush, Weed and Bramble, Painted ..... $6.50@$6.75*
*Grain, Painted, Cutting Edge Polished ..... $8.25@$8.50*
*Clipper Grain, Bronze Web. $8.50@$8.75*

## Seeders, Raisin—

Enterprise ..... 25@30%

## Sets— Awl and Tool—

Fray's Tool Handles, Nos. 1, $12; 2, $16; 3, $12 ..... 50%

Millers Falls Adj. Tool Handles, No. 1, $12; No. 4, $12; No. 5, $18. 20&10%

## Garden Tool Sets—

American Fork & Hoe Co.:
- Rake, Shovel and Hoe, ℔ doz. sets, No. 3 P F ..... $7.25

## Sets, Nail—

*Octagon ..... gro. $3.50@3.75*

Buck Bros ..... 27½%

Mayhew's ..... ℔ gro. $9.00

Snell's Corrugated, Cup Pt. .... 40&10%

Snell's Knurled, Cup Pt. ..... 40&10%

Victor Knurled, Cup Pt. ... ℔ gro. $7.50

## Rivet—

*Regular list ..... 75@75&10%*

## Saw—

Atkin's:
- Criterion ..... 40%
- Adjustable ..... 40%

Disston's Star, Monarch and Triumph ..... 30%

Morrill's No. 1 ..... $15.00 } 50%
Nos. 3 and 4, Cross Cut .... $20.60 }
No. 5, Mill ..... $30.00 }
Nos. 10, 11, 95 ..... $15.60 }
No. 1 Old Style ..... $10.00 }
Special ..... $16.25 }

Giant Royal Cross Cut ..... ℔ doz. $7.50

Royal, Hand ..... ℔ doz. $4.50

Taintor Positive ..... ℔ doz. $6.75

## Shaving—

Fox Shaving Sets, No. 30 ..... ℔ doz., net, $24.00

Smith & Hemenway Co.'s ..... 75%

## Sharpeners, Knife—

Pike Mfg. Co.:
- Fast Cut Pocket Knife Hones, ℔ doz. ..... $1.50 } 50%
- Mounted Kitchen Sand Stone, ℔ doz. ..... $1.50 }
- Natural Grit Carving Knife Hones, ℔ doz. ..... $3.00 }
- Quick Cut Emery Carving Knife Hones, ℔ doz. ..... $1.50 }
- Quick Edge Pocket Knife Hones, ℔ doz. ..... $2.50 }

## Skate—

Smith & Hemenway Co., Eureka. 50%

## Shaves, Spoke—

*Iron ..... doz. $1.25*
*Wood ..... doz. $2.00*

Bailey's (Stanley R. & L. Co.) ..... 45%

Chapin-Stephens Co. ..... 30@30&10%

Goodell's, ℔ doz. $9.00 ..... 15&10%

## Shears—

| | 7 | 8 | 9 in. |
|---|---|---|---|
| *Cast Iron* | | | |
| *Best* | $16.00 | 18.00 | 20.00 gro. |
| *Good* | $13.00 | 15.00 | 17.00 gro. |
| *Cheap* | $5.00 | 6.00 | 7.00 gro. |

*Straight Trimmers, &c.:*
*Best quality Jap ..... 70&10&5%*
*Best Quality Nickel. . 60&10&5%*
*Tailors' Shears ..... 40@40&10%*

Acme Cast Shears ..... 40@40&5%

Heinisch's Tailor's Shears ..... 10%

National Cutlery Co.'s Nickel Plated, 60&10%; Japan Handles ..... 70&10%

Columbian Cutlery Co.:
- Sheep, 1900 list ..... 30&10&5%
- Grass ..... 50&10%
- Horse or Mule ..... 50&10%

J. Wiss & Sons Co.:
- Best Quality Jap'd ..... 60&10%
- Best Quality Nickeled ..... 50&10%
- Tailors' ..... 25%

## Tinners' Snips—

*Steel Blades ..... 20&5@20&10%*
*Steel Laid Blades ..... 50&10%*

Acme Cast Snips ..... 40@45&5%

Forged Handles, Steel Blades, Berlin ..... 50%

Heinisch's Snips ..... 40%

Jennings & Griffin Mfg. Co.'s 6½ to 10 in. ..... 33⅓&7½%

National Cutlery Co.'s Forged Steel. 50%

Niagara Snips ..... 40%

P., S. & W. Forged Handles, 25%; W. R. W. ..... 50%

J. Wiss & Sons Co.:
- Wiss Forged Steel ..... 25%

## Pruning Shears—

Cronk's Hand Shears ..... 33⅓%

Cronk's Wood Handle Shears .... 33⅓%

Disston's Combined Pruning Hook and Saw, ℔ doz. $18.00 ..... 25%

Disston's Pruning Hook only, ℔ doz., $12.00 ..... 25%

J. T. Henry Mfg. Co.:
- Pruning Shears, all grades ..... 40%

P., S. & W. Co. ..... 40&10%

Columbian Cutlery Co.:
- Hedge, Wilcut Brand ..... 60&10%
- Lawn and Border, Wilcut Brand, 60&10%

## Sheaves—Sliding Door—

Reading ..... 40%

R. & E. list ..... 15%

## Sliding Shutter—

Reading list ..... 40%

R. & E. list ..... 15%

## Shells—Shells, Empty—

Brass Shells, Empty:
- Climax, 10 and 12 gauge ..... 60&5%
- Club, Rival, 65&5%; First Quality, 60&5%

Paper Shells, Empty:
- New Rapid, 10, 12, 16 and 20 gauge, 25&10%
- Climax, 10 and 12 gauge; Acme and Magic, 10, 12, 16 and 20 gauge; Ideal, 10, 12, 16 and 20 gauge; Leader grade ..... 25&5%
- Union, League, 10 and 12 gauge, Rival Grade ..... 25%
- New Climax, Defiance, 10, 12, 14, 16 and 20 gauge; Climax, 14, 16 and 20 gauge ..... 20%
- Challenge, Monarch, 10, 12, 16 and 20 gauge; League, Union, 14, 16 and 20 gauge; Repeater Grade. 20%

## Shells, Loaded—

*Loaded with Black Powder. . 40%*
*Loaded with Smokeless Powder, medium grade ..... 40&5%*
*Loaded with Smokeless Powder, high grade ..... 40&10&10%*

Union Metallic Cartridge Co.:
- New Club, Black Powders ..... 40%
- Nitro Club, Smokeless Powders. 40&5%
- Arrow, Smokeless Powders. 40&10&10%

Winchester:
- Smokeless Repeater Grade ..... 40&5%
- Smokeless Leader Grade. . 40&10&10%
- Black Powder ..... 40%

## Shingles, Metal— Per Sq.

Edwards Mfg. Co.:

| | Painted. | Galv. |
|---|---|---|
| 14 x 20 | $4.25 | $6.00 |
| 10 x 14 | 4.50 | 6.25 |
| 7 x 10 | 4.75 | 6.50 |

Wheeling Corrugating Co.:

| | | |
|---|---|---|
| Dixie, 14 x 20 in. | $4.05 | $5.05 |
| Dixie, 10 x 14 in. | 4.25 | 5.45 |
| Dixie, 7 x 10 in. | 5.25 | 6.70 |

## Shoes, Horse, Mule, &c.—

*F.o.b. Pittsburgh:*
*Iron ..... per keg. $4.10*
*Steel ..... per keg. $3.85*

Burden's, all sizes ..... ℔ keg $3.90

## Shot—

| | 25-lb. bag. |
|---|---|
| *Drop, up to B* | $1.80 |
| *Drop, B and larger* | 2.05 |
| *Buck* | 2.05 |
| *Chilled* | 2.05 |
| *Dust* | 2.30 |

## Shovels and Spades—

*Association List, Nov. 15, 1902. 40%*

Avery Stamping Co. ..... 40%

## Snow Shovels—

*Long Handle ..... $2.50@$2.75*
*Wood and Mall, D Handle, $2.65@$2.90*

## Sieves and Sifters—

*Hunter's Imitation, gro. .... $9.50*
*Hunter's Genuine, per gro. . $12.00*

## Sifters, Ash—

Acme Ball Bearing Sales Co., Acme Automatic Ash Sifter, each, $3.25; ℔ doz. ..... $39.00

## Sieves, Seamless Metallic

| | Per dozen. | | | |
|---|---|---|---|---|
| | *Mesh* | *14* | *16* | *18* | *20* |
| *Iron Wire* | $1.05 | 1.05 | 1.10 | 1.20 |
| *Tinned Wire* | $1.15 | 1.15 | 1.20 | 1.30 |

## Sieves, Wooden Rim—

*Nested, 10, 11 and 12 Inch.*

*Mesh 18, Nested .... doz. $0.90@0.95*
*Mesh 20, Nested .... doz. $1.00@1.05*
*Mesh 24, Nested .... doz. $1.30@1.40*

## Sinks, Cast Iron—

*Painted, Standard list:*
*12 x 12 to 22 x 36 in ..... 60%*
*20 x 24 to 24 x 50 in ..... 50%*
*24 x 60 to 24 x 120 in ..... 30%*

Barnes' low list ..... 60%

*NOTE.—There is not entire uniformity in lists used by jobbers.*

## Skeins, Wagon—

*Cast Iron ..... 70@75&10%*
*Steel ..... 40@45%*

## Slates, School—

*Factory Shipments.*

*"D" Slates ..... 50@50&10%*

*Eureka, Unexcelled Noiseless .. 60&7 tens.*
*Victor A, Noiseless. 60&4 tens 45%*

## Slaw Cutters—See *Cutters.*

## Snaps, Harness—

*German ..... 40@40&10%*

Covert Mfg. Co.:
- Derby, 25%; Yankee, 30&2%; Yankee Roller, 30&2%.
- High Grade, 40%; Trojan ..... 40%
- Jockey ..... 25%

## Snaths—

*Scythe ..... 50&10@60%*

## Snips, Tinners—See *Shears.*

## Spoons and Forks—

### Silver Plated—

*Good Quality ..... 50&10@60&5%*
*Cheap ..... 60@60&10%*

International Silver Co:
- 1847 Rogers Bros. ..... 40&10%
- Rogers & Bro., William Rogers' Eagle Brand ..... 50&10%
- Anchor, Rogers Brand ..... 60%
- Wm. Rogers & Son ..... 60&10%

### Miscellaneous

*German Silver ..... 60@60&5%*

### Tinned Iron—

*Teas ..... per gro. 50@55¢*
*Tables ..... per gro. $0.90@$1.00*

Atlas Mfg. Co.:
- Tea Spoons, ℔ gro. ..... 50¢@55¢
- Table Spoons, ℔ gro. ..... $0.90@$1.00

## Springs— Door—

Bardsley's Spring and Check ..... 40%

Chicago (Coil) ..... 40&10%

Gem (Coil) ..... 20%

Pullman Door and Gate ..... 10%

Reliance (Coil) ..... 40&10%

Star (Coil) ..... 35%

Torrey's Rod, 39 in. ..... ℔ doz. $1.00

## Carriage, Wagon, &c.—

| *1¼ in. and Wider:* | *Per 100 lb.* |
|---|---|
| *Black* | $4.75@$5.00 |
| *Half Bright* | $4.75@$5.00 |
| *Bright* | $5.25@$5.50 |

*Painted Seat Springs:*
*1½ x 2 x 26 .... per pair. 45@47¢*
*1½ x 3 x 28 .... per pair. 68@71¢*

## Sprinklers, Lawn—

American Foundry & Mfg. Co.:
- Cactus, 65%; Japanese, 70%; National, ℔ doz. ..... $12.00

Enterprise ..... 25@30%

Philadelphia No. 1, ℔ doz. $12; No. 2, $15; No. 3, $20 ..... 30%

## Squares—

*Nickel plated .. } List Jan. 5, 1900.*
*Steel and Iron . } 80&5@80&10%*

*Rosewood Hdl. Try Square and T-Bevels ..... 60&10&10@70%*

*Iron Hdl. Try Squares and T-Bevels ..... 40&10@40&10&10%*

Disston's Try Squares and Bevels, Rosewood Handle, 60 & 10%; Iron Stock and Bevel ..... 15%

## Squeezers, Lemon

*Wood, Porcelain Lined:*
*Cheap ..... doz. $1.00*
*Good Grade. ..... doz. $1.25*
*Tinned Iron ..... doz. $0.75@1.00*
*Iron, Porcelain Lined ... doz. $1.75*

Victor, ℔ gro. ..... $9.00

## Staples—

*Barbed Blind ..... 85&5@85&10%*
*Electricians' ..... 80&10&10@85%*
*Fence Staples, Polished, $2.05; Galvanized ..... $2.35*
*Poultry Netting Staples. ..... per lb. 3¼@3½¢*

## Steels, Butchers'—

Dick's ..... 30%

Foster Bros.' ..... 30%

## Steelyards— .... 30@30&10%

## Stocks and Dies—

*Blacksmiths' ..... 50@50&10%*

Curtis Rev'ble Ratchet Die Stock. 25%

Derby Screw Plates ..... 25%

Green River ..... 25%

Lightning Screw Plate ..... 25%

Little Giant ..... 25%

Reece's New Screw Plate ..... 25%

## Stoners, Cherry—

Enterprise ..... 25@30%

## Stones, Axe—

Pike Mfg. Co., Axe Stones (all kinds) ..... 33⅓%

## Glass Cutters' Stones—

Pike Mfg. Co., Glass Cutters' Stones and Supplies ..... 40%

## Stones, Oil, &c.—

Pike Mfg. Co., 1907 list: ℔ lb.
- Arkansas St. No. 1, 3 to 5½ in. $2.80
- Arkansas St. No. 1, 5½ to 8 in. $3.50
- Arkansas Slips No. 1 ..... $4.00
- Lily White Washita, 4 to 8 in. 60¢
- Rosy Red Washita, 4 to 8 in. 60¢
- Washita St., Extra, 4 to 8 in. 50¢
- Washita St., No. 1, 4 to 8 in. 40¢
- Washita St., No. 2, 4 to 8 in. 25¢
- Lily White Slips ..... 90¢
- Rosy Red Slips ..... 90¢
- Washita Slips, Extra ..... 80¢
- Washita Slips, No. 1 ..... 70¢
- Washita Slips, No. 2 ..... 40¢

(33⅓%)

- India Oil Stones (entire list). 33⅓%
- Quickcut Emery and Corundum Oil Stone, Double Grit ..... 40%
- Quickcut Emery and Corundum Axe Stone, Double Grit ..... 33⅓%
- Quickcut Emery Rubbing Bricks. 40%

Hindostan No. 1, R'g'lar. ℔ lb. 8¢
Hindostan No. 1 Small. ℔ lb 10¢
Turkey Oil Stones, Extra, 5 to 8 in. ℔ lb 80¢
Queer Creek Stones, 4 to 8 in. 20¢
Queer Creek Slips ..... 40¢
Sand Stone ..... 6¢

(33⅓%)

### Scythe Stones—

Pike Mfg. Co., 1907 list:
Black Diamond S. S. ₱ gro. $12.00
Lamoille S. S. ₱ gro. $11.00
White Mountain S. S. ₱ gro. $9.50
Green Mountain S. S. ₱ gro. $7.00
Extra Indian Pond S. S. ₱ gro. $8.00
No. 1 Indian Pond S. S. ₱ gro. $7.50
No. 2 Indian Pond S. S. ₱ gro. $5.00
Leader Red End S. S. ₱ gro. $5.00
Quick Cut Emery.... ₱ gro. $10 00
Pure Corundum..... ₱ gro. $18.00
Crescent ..... $7.00
Emery Scythe Rifles, 2 Coat. $8.80
Emery Scythe Rifles, 3 Coat. $11.00
Emery Scythe Rifles, 4 Coat. $13.20
Balance of 1907 list 33⅓%.
Lectro (Artificial), ₱ gro., $12.00 33⅓%; $12.00 ..... 33⅓%
Lightning (Artificial), ₱ gro., $18.00 ..... 33⅓%

### Stoppers, Bottle—

Victor Bottle Stoppers..... ₱ gro. $9.00

### Stops— Bench—

Millers Falls..... 15&10%
Morrill's, ₱ doz., No. 1, $10.00.... 50%
Morrill's, No. 2, $12.50..... 50%

### Door—

Chapin-Stephens Co..... 50@50&10%

### Plane—

Chapin-Stevens Co..... 20%

### Straps— Box—

Acme Embossed, case lots.. 20&10&10%
Cary's Universal, case lots... 20&10&10%

### Stretchers, Carpet—

*Cast Iron, Steel Points..doz. 55¢*
*All Steel Socket...doz. $2.00@2.25*
Excelsior Stretcher and Tack Hammer Combined, ₱ doz., $6.00.... 20%

### Stuffers, Sausage—

Enterprise Mfg. Co., Stuffers and Lard Presses..... 25@25&7½%
National Specialty Co., list Jan. 1, 1902 ..... 30&5%
P., S. & W. Co..... 40&10&5%

### Sweepers, Carpet—

Per doz.—

Bissell Carpet Sweeper Co.:
Cyco Bearing Superba, $36.00; Triumph, $33.00; Parlor Queen, $30.00; Elite, $29.00; Boudoir, $27.00; American Queen, $27.00; Ideal, $25.00; Gold Medal, $24.00; Primier, $24.00; Prize, $24.00; Welcome, $24.00; Grand Rapids, Nickel, $24.00; Japan, $22.00; Crystal, $36.00; Grand, $36.00; Parlor Grand, $48.00; Club, $54.00; Hall, $60.00; Standard Nickel, $22.00; Standard Japan, $20.00; Crown Jewel, Nickel, $21.00; Crown Jewel, Japan, $19.00; Junior, Nickel, $22.00; Junior, Japan, $20.00.

*NOTE.—Rebates: 50c per dozen on three dozen lots; $1 per dozen on five-dozen lots; $2 per dozen on ten-dozen lots.*

### Tacks, Finishing Nails, &c.

*American Carpet Tacks... 90&40%*
*American Cut Tacks..... 90&40%*
*Swedes' Cut Tacks..... 90&40%*
*Swedes' Upholsterers'.... 90&50%*
*Gimp Tacks..... 90&50%*
*Lace Tacks..... 90&50%*
*Trimmers' Tacks..... 90&40%*
*Looking Glass Tacks..... 65%*
*Bill Posters' and Railroad Tacks, 90&50&10%*
*Hungarian Nails..... 80&20%*
*Finishing Nails..... 70%*
*Trunk and Clout Nails... 80&10%*

*NOTE.—The above prices are for Straight Weights.*

### Miscellaneous—

*Double Pointed Tacks, 90&6 tens@—%*

Se also Nails, Wire.

### Tanks, Oil and Gasoline—

Wilson & Friend Co.:

| Gal. | Gasoline | Oil |
|---|---|---|
| 30 | $2 75 | $3 00 |
| 60 | $3.50 | $4.00 |
| 110 | $5.00 | $5.75 |

### Tapes, Measuring—

*American Asses' Skin....50@—%*
*Patent Leather..... 25@30&5%*
*Steel ..... 33⅓&5%*
*Chesterman's ..... 25@25&5%*
Keuffel & Esser Co:
Favorite, Ass Skin..... 40&10@50%
Favorite, Duck and Leather..... 25&5@25&10%
Metallic and Steel, lower list 35@35&5%; Pocket, 35@35&5%.
Lufkins:
Asses' Skin..... 40&10@50%
Metallic ..... 33⅓@35%
Patent Bend, Leather.. 25&5@25&10%
Pocket ..... 40@40&5%
Steel ..... 33⅓@35%
Wichusch & Hilger:
Chesterman's Metallic, No. 34L, etc. ..... 25%
Chesterman's Steel, No. 1038L, etc. ..... 35%

### Teeth, Harrow—

*Steel Harrow Teeth, plain or headed, ⅝-inch and larger, per 100 lb..... $2.55@$2.80*

### Thermometers—

*Tin Case, Cabinet, Flange, Dairy, &c..... 30@35%*

### Ties, Bale—Steel Wire—

*Single Loop..... 82½&10%*
*Monitor, Cross Head, &c. 70&2½%*

### Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

### Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

### Tire Benders, Upsetters, &c.

See *Benders and Upsetters, Tire.*

### Tools—Coopers'—

L. & I. J. White..... 20@20&5%

### Haying—

Myers' Hay Tools..... 50%

### Ice Tools—

Gifford-Wood Co..... 15%

### Miniature—

Smith & Hemenway Co.'s, Davidson, ₱ doz., Nickel Plated, $1.50; Gold Plated..... $2.00

### Saw—

Atkins' Cross Cut Saw Tools.... 35&5%
Simond's Improved..... 33⅓%
Simonds' Crescent..... 50%

### Ship—

L. & I. J. White..... 25%

### Torches—

Hammers, Engine, ₱ doz..... $4.50

### Transom Lifters—

See *Lifters, Transom.*

### Traps—Fly—

*Balloon, Globe or Acme, doz., $1.15@$1.25; gro.... $11.50@12.00*
*Harper, Champion or Paragon, doz., $1.25@1.40; gro. $13.00@13.50*

### Game—

*Imitation Oneida..... 75@10%*
Newhouse ..... 50&5%
Hawley & Norton..... 65&10%
Victor ..... 75@75&10%
Oneida Community Jump..... 70&5%
Stop Thief..... 60%
Tree Trap..... 60%
Hector ..... 75@75&10%

### Mouse and Rat—

*Mouse, Wood, Choker, doz. holes, 12¢*
*Mouse, Round or Square Wire, doz. 85@90¢*
Marty French Rat and Mouse Traps (Genuine), ₱ doz.:

| | Crate lots. | Small lots. |
|---|---|---|
| No. 1, Rat..... | $11.50 | $14.50 |
| No. 3, Rat..... | $5.75 | $6.50 |
| No. 3½, Rat..... | $4.70 | $5.25 |
| No. 5, Mouse..... | $2.25 | $3.00 |

Animal Trap Co.:
Out o' Sight, Mouse, ₱ doz..... $0.60
Out o' Sight, Rat, ₱ doz..... 1.20
Easy Set, Mouse, ₱ doz..... .35
Easy Set, Rat, ₱ doz..... .85
Out o' Sight Checkers, ₱ doz. holes ..... .12
Out o' Sight, Tin, 5-hole, ₱ doz. traps ..... .75

### Trowels—

Disston Brick and Pointing..... 25%
Disston Plastering..... 20%
Disston "Standard Brand" and Garden Trowels..... 30%
Kohler's Steel Garden Trowels, ₱ gro., 5 in., $4.80; 6 in., $6.00.
Never-Break, Forged Steel Garden Trowels, in bulk, net ₱ gro. $5.50
In 1 doz. boxes..... ₱ gro. $6.00
Woodrough & McParlin, Plastering..... 25%

### Trucks, Warehouse, &c.—

B. & L. Block Co.:
New York Pattern..... 50&10%
Western Pattern..... 60&10%
Handy Trucks..... ₱ doz. $16.00
Grocery ..... ₱ doz $15.00
McKinney Trucks..... each, net $10.00
Model Stove Trucks..... ₱ doz $18.50

### Tubs, Wash—

*M'f'gr's list, price per gross.*

| No. | 0 | 1 | 2 | 3 | |
|---|---|---|---|---|---|
| *Galvanized* | $67 | $79 | $89 | $99 | 10&7½&5&5% |

### Twine, Miscellaneous—

*Flax Twine:*
*No. 9, ¼ and ½-lb. Balls. 21@23¢*
*No. 12, ¼ and ½-lb. Balls. 19@21¢*
*No. 18, ¼ and ½-lb. Balls. 16@18¢*
*No. 24, ¼ and ½-lb. Balls. 15½@17½¢*
*No. 36, ¼ and ½-lb. Balls. 15@17¢*
*Chalk Line, Cotton ½-lb. Balls ..... 24@29¢*
*Cotton Mops, 6, 9, 12 and 15 lb to doz..... 8½@19¢*
*Cotton Wrapping, 5 Balls to lb., according to quality..13½@19¢*
*American 2-Ply Hemp, ¼ and ½-lb. Balls..... 12½@15¢*
*American 3-Ply Hemp, 1-lb Balls ..... 13½@16¢*
*India, 2-Ply Hemp, 1½-lb. Balls, Balls (Spring Twine)... 7½@9¢*
*India 3-Ply Hemp, 1-lb. Balls 7½@9¢*
*India 3-Ply Hemp, 1½-lb. Balls. 7@8½¢*
*2, 3, 4 and 5-Ply Jute, 1½ lb Balls ..... 9@11¢*
*Mason Line, Linen, ½-lb Bls 12¢*
*No. 264 Mattress, ¼ and ½ lb. Balls, according to quality. 50@60¢*
*Wool, 3 to 6 ply....B 6¢: 1 7½¢*

### Vises—

*Solid Box..... 50&5@50&10&5%*

### Parallel—

Athol Machine Co.:
Simpson's Adjustable..... 10%
Standard ..... 10%
Amateur ..... 25%
Columbian Hdw. Co., Slide ..... 40&5%

Fisher & Norris Double Screw, net, each, Nos. 2, $10.50; 3, $16.00; 4, $20.50; 5, $27.00; 6, $32.00.
Fulton Mach. & Vise Co.:
F. & R. Double Swivel Machinists' ..... 40%
Star, Solid Jaw, Machinists'..... 40%
Hollands':
Machinists' ..... 40@40&5%
Keystone ..... 65&5@70%
Lewis Tool Co.:
Adjustable Jaw..... 30%
Monarch, 50%; Solid Jaw..... 50%
Massey Vise Co.:
Clincher ..... 40%
Parallel Bar..... 15%
Perfect, 15%; Lightning Grip..... 15%
Merrill's ..... 25%
Millers Falls Oval Slide Pattern. 60&10%
Parker's:
Victor, 20@25%; Regulars.... 20@25%
Vulcan's ..... 40@45%
Combination Pipe..... 55@60%
Prentiss ..... 20@25%
Rock Island..... 25%
Snediker's X. L..... 33⅓%
Stephens' ..... 33⅓%

### Saw Filers

Disston's D 3 Clamp and Guide, ₱ doz., $24.00, 30%; Clamps..... 30%
Perfection Saw Clamps, ₱ doz.... $4.50
Reading ..... 60%

### Wood Workers—

Fulton Mach. & Vise Co.:
F. & R. Double Swivel Coachman's ..... 40%
Star Solid Jaw Woodworkers'.... 60%
Massey Vise Co.:
Lightning Grip, 15%; Perfect.... 15%
Wyman & Gordon's Quick Action, 6 in., $6.00; 9 in., $7.00; 14 in., $8.00.

### Miscellaneous—

Fulton Machine & Vise Co., Combination Pipe..... 70%
Holland's Combination Pipe..60@60&5%
Massey's Quick Action Pipe..... 40%
Parker's Combination Pipe:
87 Series, 60%; 187 Series, 60&5%; No. 870, 40%.
Rock Island Pipe..... 25%

### Wads— *Price per M.*

*B. E., 11 up..... 60¢*
*B. E., 9 and 10..... 70¢*
*B. E., 8..... 80¢*
*B. E., 7..... 80¢*
*P. E., 11 up..... $1.00*
*P. E., 9 and 10..... 1.25*
*P. E., 8..... 1.50*
*P. E., 7..... 1.50*
*Dis. 15%*
*Ely's B. E., 11 and larger. $1.70@1.75*
*Ely's P. E., 12 to 20.... $3.00@3.25*

### Ware, Hollow—

### Cast Iron, Hollow—

*Stove Hollow Ware:*
*Enameled ..... 45&10%*
*Ground ..... 50&5%*
*Plain or Unground..... 60%*
*Country Hollow Ware, per 100 lbs ..... $2.75@$3.00*
*White Enameled Ware:*
*Maslin Kettles..... 65&10%*
*Covered Wares:*
*Tinned and Turned..... 35&10%*
*Enameled ..... 45&10%*

See also *Pots, Glue.*

### Enameled—

Agate Nickel Steel Ware..... 33⅓%
El-an-ge ..... 60&10%
Iron Clad Ware..... 70&10%
Lava and Volcanic, Enameled.. 40&10%

### Tea Kettles—

*Galvanized Tea Kettles:*

| *Inch* | 6 | 7 | 8 | 9 |
|---|---|---|---|---|
| *Each* | 45¢ | 50¢ | 55¢ | 65¢ |

### Steel Hollow Ware—

Avery Stamping Co.:
Never-Break Spiders and Griddles ..... 65&10%
Steel Kettles, Maslins Scotch Bowls, Tin'd..... 60%
Steel Stew Pans, Stew Pots, etc., Porcelained ..... 50%
Cleveland Stamping & Tool Co.:
Solid Steel Spiders and Griddles ..... 65&5%
Solid Steel Kettles..... 60&5%

### Warmers, Foot—

Pike Mfg. Co., Soapstone....40@40&10%

### Washboards—

| No. | ₱ doz. |
|---|---|
| 800 Brass King, Single Surface, Open Back..... | $2.80 |
| 862 White Hen, Spiral Grimp Glass ..... | $3.35 |
| 964 Royal Blue Enamel, Single Surface, Ventilated Back..... | $3.35 |
| 172—Our Best, Single Zinc, Soap Drainer ..... | $3.35 |
| 722 Soap Saver, Single Zinc, Iron Top ..... | $3.35 |
| 100 Northern Queen, Single Zinc, Perforated, Open Back..... | $3.00 |
| 134 Universal, Single Zinc, Extra Family Size, Ventilated Back.... | $2.80 |
| 769 Banner Globe, Single Zinc, Ventilated Back..... | $2.25 |
| 57 Peerless, Double Zinc, Spring Protector ..... | $3.70 |
| 56 Red Cross, Double Zinc, Swing Protector ..... | $3.60 |
| 17 North Star, Solid Zinc, Swing Protector ..... | $2.60 |
| 796 Jewel, Single Zinc, Pail Size | $1.25 |

### Washers—Leather, Axle—

*Solid ..... 90@90&10%*
*Patent ..... 90@90&5%*
*Coil: 7/8 1 1⅛ 1¼ inch. 9¢ 10¢ 11¢ 14¢ per box.*

### Iron or Steel—

*Size bolt.... 5/16 ⅜ ½ ⅝ ¾*
*Washers....$4.65 3.75 2.45 2.25 2.05*

*The above prices are based on $6.75 off list.*

*In lots less than one keg add ½c per lb; 5 lb. boxes add ½c to list.*

Avery Stamping Co.:
Standard, in 200 lb kegs, $6.00 ₱ 100 lb. discount; in 100 lb kegs, add 10¢ net ₱ 100 lb; in 5 or 10 lb boxes, add 50¢ net ₱ 100 lb; in 1 lb boxes, add $1.00 net ₱ 100 lb.

### Cast Washers—

*Over ½-inch, barrel lots, per lb. 1½@1¾¢*

### Wedges—

*Oil Finish..... lb., 2¼@2¾¢*

### Weights—Hitching—

Covert Mfg. Co..... 30&2%

### Sash—

*Per net ton, f.o.b. factory:*
*Eastern District.... $20.00@— Western and Central Districts ..... $19.00@—*

### Wheels, Corundum and Emery—

Pike Mfg. Co., Corundum, 65%; Emery ..... 75%

### Well—

*8-in., $2.00; 10-in., $2.30; 12-in., $3.00; 14-in., $4.45.*

### Wire and Wire Goods—

*Bright and Annealed:*
*6 to 9..... 72&10&7½%*
*10 to 18..... 72½&10&10%*
*19 to 26..... 75&10&10&2½%*
*27 to 36..... 77½&7½%*
*Galvanized:*
*6 to 9..... 72½&10%*
*10 to 14..... 72½&10&5%*
*15 to 16..... 72½&10&5%*
*17 to 18..... 72½%*
*19 to 26..... 70&5&2½%*
*27 to 36..... 65&10&10%*
*Coppered:*
*6 to 9..... 65&10&10%*
*10 to 14..... 70&10&5%*
*15 to 18..... 65&10&10&10%*
*19 to 26..... 70&5&2½%*
*27 to 36..... 72½&10&2½%*
*Tinned:*
*6 to 18..... 67&10&10%*
*Brass ..... 15½¢ lb., base*
*Copper ..... 15¢ lb., base*
*Cast Steel Wire..... 50%*

### Spooled Wire—

*Annealed and Tinned. 75@75&10%*
*Brass and Copper....70@70&10%*
*Retailers' Assortments, per box. $1.90@$2.10*

Wire Clothes Line, See Lines.
Wire Picture Cord, see Cord.

### Bright Wire Goods—

*Steel Wire Goods. 90&40@90&40&10%*
*Brass Wire Goods, 90&40@90&40&10%*
*Brass Cup and Shoulder Hooks, 85&10%*

### Wire Cloth and Netting—

*Galvanized Poultry Netting, 80&10@80&10&5%*
*Painted Screen Cloth, 100 ft., $1.35*
*Standard Galv. Hardware Grade: 100 ft. rolls, 2½ to 48 in. wide, Per 100 sq. ft.*
*Nos. 2, 2½ and 3 Mesh, $2.75@$3.00*
*Nos. 4 and 5 Mesh.. $3.00@$3.25*
*No. 6 Mesh..... $3.25@$3.50*
*Nos. 7 and 8 Mesh.. $3.75@$4.00*

### Wire, Barb—See *Trade Report*

### Wrenches—

*Agricultural, 80&10&5@80&10&10%*
*Alligator or Crocodile.. 70&10@75%*
*Baxter Pattern S Wrenches, 70&5@70&10%*
*Drop Forged S..... 45@45&5%*
Acme ..... 60&10%
Alligator Pattern, 70%; Bull Dog..70%
Bemis & Call's:
Adjustable S, 40&5%; Adjustable S Pipe, 40&5%, Briggs Pattern, 40%; Combination Bright, 50%.
Steel Handle Nut..... 50&5%
Combination Black..... 50&5%
Merrick Pattern..... 50&5%
Boardman's ..... 40%
Coes' Genuine Knife Hdl...40&10&5&5
Coes' Genuine Steel Hdl...40&10&5&5
Coes' Genuine Key Model..40&10&5&5%
Coes' Genuine Hammer Handle..... 40&10&5&5
Coes' "Mechanics'"...40&10&10&5&5%
Donohue's Engineer..... 10&10%
Eagle ..... 75%
Gem Pocket..... 50%
Hercules ..... 75%
W. & B. Machinist:
Case lots..... 50&5%
Less than case lots..... 50%
W. & B. Railroad Special:
Case lots..... 50%
Less than case lots..... 50&10&5%
Solid Handles, P., S. & W. 50&5%
full ..... 50&10&5%
Standard Nipple Mfg. Co.:
Duplex Chain ..... 50%
Uwanta Wrench Co:
Uwanta Special Drop Handle ..... 10&10&5%
Other Wrenches ..... 50%
Vise and Auto Clamps ..... 50%
Wright Mfg. Co. ..... 50&10%
Wizard Adjustable Ratchet ..... 60%

### Fruit Jar—

Beal, D. Foster Trimmed ₱ gro. $7.50; per doz. ..... $0.75

### Wrought Goods—

*Staples, Hooks, &c., Hat March 15, '02..... 90@—%*

### Zinc— *(Cask lots at mill.)*

*Sheet..... per 100 lb., $7.00*

# CURRENT METAL PRICES.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

## IRON AND STEEL—

### Bar Iron from store—

Refined Iron:

1 to 1⅞ in. round and square } ₩ lb 1.80¢
1½ to 4 in. x ⅜ to 1 in. }
1½ to 4 in. x ¼ to 5-16 ₩ lb 2.00¢
Rods—⅜ and 11-16 round and square ₩ lb 2.00¢

| Angles: | Cts ₩ lb |
|---|---|
| 3 in. x ¼ in. and larger | 2.25¢ |
| 3 in. x 3-16 in. and ⅛ in. | 2.30¢ |
| 1½ to 2½ in. x ¼ in. | 2.10¢ |
| 1½ to 2¾ in. x 3-16 in. and thicker | 2.05¢ |
| 1 to 1¼ in. x 3-16 in. | 2.10¢ |
| 1 to 1¼ x ⅛ in. | 2.15¢ |
| ⅞ x ⅛ in. | 2.30¢ |
| ¾ x ⅛ in. | 2.40¢ |
| ⅝ x ⅛ in. | 3.45¢ |
| ½ x 5-32 in. | 3.95¢ |

Tees:

| | |
|---|---|
| 1 in. | 2.40¢ |
| 1 ¼ in. | 2.20¢ |
| 1½ to 2½ in. | 2.10¢ |
| 3 in. and larger | 2.35¢ |
| Beams | 2.25¢ |
| Channels, 3 in. and larger | 2.25¢ |
| Bands—1½ to 6 x 3-16 to No. 8 | 2.25¢ |
| "Burden's Best" Iron, base price | 3.15¢ |
| Burden's "H. B. & S." Iron, base price | 2.95¢ |
| "Ulster" | 3.20¢ |
| Norway Bars | 3.30¢ |

### Merchant Steel from Store—

| | per lb |
|---|---|
| Bessemer Machinery | 1.90¢ |
| Toe Calk, Tire and Sleigh Shoe | 2.50@3.00¢ |
| Best Cast Steel, base price in small lots | 7¢ |

### Sheets from Store—

Black

| | One Pass, C.R. Soft Steel. | R. G. Cleaned. |
|---|---|---|
| No. 16 | ₩ lb 2.60 | 3 0¢ |
| Nos. 18 to 21 | ₩ lb 2.95 | 3.0¢ |
| Nos. 22 and 24 | ₩ 3 00 | 3 45¢ |
| No. 26 | ₩ lb 3.15 | 3.45¢ |
| No. 28 | ₩ lb 3.20 | 3.50¢ |

### Russia, Planished, &c.

Genuine Russia, according to assortment, W. Dewees'wood ₩ lb 11¾@14½
Patent Planished ₩ lb A, 10¢; B, 9¢, net.

### Galvanized.

Nos. 14 to 16 ₩ lb 3.15¢
Nos. 22 to 24 ₩ lb 3.35¢
No. 26 ₩ lb 3.75¢
No. 28 ₩ lb 4.25¢
No. 20 and lighter 36 inches wide, 5¢ higher.

### Genuine Iron Sheets—Galvanized.

Nos. 22 and 24 ₩ lb 5.50¢
No. 26 ₩ lb 6.00¢
No. 28 ₩ lb 7.25¢

### Tin Plates—

American Charcoal Plates (per box.)

"A.A.A." Charcoal:
IC, 14 x 20 $6.40
IX, 14 x 20 7.65

A. Charcoal:
IC, 14 x 20 $5.45
IX, 14 x 20 6.55

American Coke Plates—Bessemer-

IC, 14 x 20 107 lb $4.45
IX, 14 x 20 5.45

American Terne Plates—

IC, 20 x 28 with an 8 lb. coating $8 60
IX, 20 x 28 with an 8 lb. coating 10.60

### Seamless Brass Tubes—

List December 4, 1905. Base price 18¢

### Brass Tubes, Iron-Pipe Sizes—

List December 4, 1905. Base price 18¢

### Copper Tubes—

List December 4, 1905. Base price 21¢

### Brazed Brass Tubes—

List August 1, 1908. 21¼¢ ₩ lb

### High Brass Rods—

List August 1, 1908. 15½¢ ₩ lb

### Roll and Sheet Brass—

List August 1, 1908. 14¼¢ ₩ lb

## METALS—

### Tin—

Straits Pig ₩ lb 33 @33½¢

### Copper—

Lake Ingot ₩ lb 14¼@14⅜¢
Electrolytic ₩ lb 14⅛@14¼¢
Castin ₩ lb 13¾@14 ¼¢
Sheet Copper Hot Rolled, 16 oz. ₩ lb 18 ..¢
" " 14 " " " 19 ..¢
Sheet Copper Cold Rolled, 1¢ ₩ lb advance over Hot Rolled.
Sheet Copper Polished 20 in. wide and under, 1¢ advance over Cold Rolled.
Sheet Copper Polished over 20 in. wide, 2¢ advance over Cold Rolled.
Bottoms, Pits and Flats ₩ lb 21¢ basis
Planished Copper, 1¢ ₩ lb more than Polished.

### Spelter—

Western ₩ lb 5⅝@5⅞¢

### Zinc.

No 9, base, casks, ₩ lb 7.50¢ | Open ₩ lb 8.00¢

### Lead.

American Pig ₩ lb 5 @5⅛¢
Bar ₩ lb 6 @6⅛¢

### Solder.

½ & ½, guaranteed ₩ lb 21 @21¼¢
No. 1 ₩ lb 18¼@18½¢
Refined ₩ lb 16 @16¼¢
Prices of Solder indicated by private brand vary according to composition.

### Antimony—

Cookson ₩ lb ..@10¢
Hallett's @9½¢
Other Brands @9 ¢

### Bismuth—

Per. lb $1.90@$2.00

### Aluminum—

No. 1 Aluminum (guaranteed over 99% pure), in ingot for remelting:
Small lots 34¢
100-lb lots 3 ¢
Rods & Wire Base Price 34¢
Sheets Base Price 36¢

### Old Metals.

*Dealers' Purchasing Prices Paid in New York*

| | Cents |
|---|---|
| Copper, Heavy and Wire ₩ lb | 10. 5@10.50¢ |
| Copper, Light and Bottoms ₩ lb | 10.50@11.00¢ |
| Brass, Heavy ₩ lb | 8.00@ 8.25¢ |
| Heavy Machine Composition ₩ lb | 10 50@11.00¢ |
| Clean Brass Turnings ₩ lb | 7.75@ 8.00¢ |
| Composition Turnings ₩ lb | 8.25@ 8.50¢ |
| Lead, Heavy ₩ lb | ....@ 3.50¢ |
| Tea Lead ₩ lb | ....@ 3.25¢ |
| Zinc Scrap ₩ lb | ....@ 3.00¢ |


# THE IRON AGE

*The oldest paper in the world devoted to the interests of the Hardware, Iron, Machinery and Metal Trades, and a standard authority on all matters relating to those branches of industry.*

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1357

## Vanadium and Its Estimation.

BY GEORGE AUCHY, PHILADELPHIA.

One of the most interesting questions of the iron trade at the present time is whether or not vanadium is all that it is claimed to be. The property of nickel, chromium and tungsten (and manganese, also, according to Dr. Guillet, who stoutly maintains that so long as the steel is pearlitic—that is, under 3 per cent. manganese in an 0.80 carbon steel—there is no brittleness), of giving to the pearlitic steels containing them the same qualities as carbon, without lessening the resistance to shock as carbon does, has been known and utilized for many years. Now, is the new arrival and rival, vanadium, as much better than nickel and chromium as we are disposed to think it is?

**Poverty of Proof and Wealth of Assertion.**

The claim that it is so much superior, coming as it does from all quarters, and with so much confidence and emphasis, is one that it would be hardihood to question or dispute, and the writer does not propose to do so, and, moreover, is not competent to form an opinion one way or the other, but there is one thing that is clear, and it is that to which he briefly wishes to call attention, namely, the astonishing poverty of proof as compared with the exuberant wealth of assertion in this matter. It is true that J. Kent Smith, in the *Transactions* of the American Institute of Mining Engineers for 1907, gives a very remarkable instance of the immense superiority of vanadium steel over ordinary steel in resistance to shock, but a single instance is hardly convincing. The superiority might be accidental and due to something else. Going clear back to the beginning for further evidence, we find another instance, quoted by Dr. Guillet, when the preliminary tests at the Firminy Steel Works, France, gave the following:

| | Tensile. Kilos. | Elastic. Kilos. | Elongation. Per cent. |
|---|---|---|---|
| Without vanadium | 87.6 | 75.5 | 10 |
| With vanadium | 115.2 | 109.5 | 11.3 |

And the latter hardened far more by quenching.

Here is another remarkable case, and if this and Mr. Smith's instance, previously quoted, were all that we had, we would probably be satisfied that vanadium is better than nickel or chromium, but when we come next to Professor Arnold's first tests and find that in a high carbon steel an increase of vanadium from 0.14 to 0.77 per cent. raises the tensile strength only from 106.6 to 121 (without it is true lessening the elongation), we begin to feel uncertain again, for obviously nickel or chromium could accomplish this much. Another test by Professor Arnold, this one on an iron, although a very striking one, does not give us much information because we have no idea what nickel or chromium would do in an iron.

**Enthusiasm With No Apparent Reason.**

Then when we come to Dr. Guillet's own tests (*Journal* Iron and Steel Institute, 1905, II, 2118), and find that comparing his 0.20 to 0.30 per cent. vanadium steels with his 0.75 to 1 per cent. vanadium steels (he gives us no common steel tests for comparison), the latter in the great majority of cases either show no improvement at all over the former, or else an improvement in tensile strength and elasticity only at the expense of ductility and toughness, and that in the remaining cases—the cases where there really is improvement in 1 per cent. vanadium steels over 0.25 per cent. vanadium steels—the improvement does not seem greater than that we would expect from nickel or chromium, we are puzzled to account for his very evident high opinion of vanadium, a high opinion which is at its maximum in the case of quenched pearlitic nickel vanadium steels. Here he becomes very enthusiastic indeed, and the reason for his enthusiasm is not very apparent, except he has some sources of information outside his tests. These latter do not seem to justify enthusiasm. For when we hunt out, in another article, results of quenched nickel chrome steels that he tests, and compare them with these wonderful quenched nickel vanadium steels, we see that there is practically no difference in favor of vanadium, thus:

| | Tensile strength. | Elongation. Per cent. | Shock test. | Hardness. |
|---|---|---|---|---|
| C, 0.20; Ni, 6; V, 0.50 | 144 | 10 | 9 | 321 |
| C, 0.20; Ni, 6; Cr, 0.50 | 143 | 10 | 11 | 277 |
| Again: | | | | |
| C, 0.20; Ni, 6; V, 0.70 | 159.5 | 10 | 1 | 321 |
| C, 0.20; Ni, 6; W, 2 | 155 | 8 | 9 | 387 |
| Again: | | | | |
| C, 0.20; Ni, 6; V, 0.50 | 144 | 10 | 9 | 321 |
| C, 0.20; Ni, 5; Cr, 3 | 143 | 7 | 8 | 444 |

These comparisons, the best that could be found, make us so skeptical about the great superiority of quenched nickel vanadium steels that we look further through his article on quaternary steels to see if vanadium has any superiority even over the cheapest and most common of elements in the way of improving quenched nickel steels. We find:

| | Tensile strength. | Elongation. Per cent. | Shock test. | Hardness. |
|---|---|---|---|---|
| C, 0.20; Ni, 2; V, 0.30 | 117 | 8 | 11 | 387 |
| C, 0.20; Ni, 2; Si, 1.5 | 129 | 0 | 3 | 351 |
| Again: | | | | |
| C, 0.20; Ni, 2; V, 1 | 149 | 6 | 6 | 269 |
| C, 0.20; Ni, 2; Si, 0.50 | 169 | 3 | 6 | 418 |

From which it might be inferred that silicon, if not too high, is considerably superior to vanadium for use in quenched nickel steels. None of the above comparisons are selected, but all were taken that could be found, most of his tests being made on high nickel and not on pearlitic nickel steels, and but few tests on pearlitic steels are given. But these few utterly fail to corroborate the latter part of his statement that "Vanadium has the property of causing an extraordinary increase in the tensile strength of the quenched pearlitic nickel steels by comparison with the normal steels; while the elongations remain fair and the steels are markedly non-brittle. The author cannot call to mind any other element which is capable of giving similar results." On the contrary, it would seem from his own results, quoted above, that almost any other element is capable of giving similar results.

It can hardly be possible that such a universally favorable opinion of vanadium as exists in the iron trade to-day can have no foundation whatever to rest on, but why is it that when a famous investigator sets out to investigate and to prove, his results can be gone over with a fine-tooth comb, so to speak, without dragging to light any corroborative instances; and how is it that in spite of this poverty of proof, the investigator still stoutly adheres to this favorable belief?

**A Peculiar View of the Effect of Vanadium.**

In a subsequent article on "Quaternary Steels" (*Journal* Iron and Steel Institute, 1906, II, 1), Dr. Guillet again takes up vanadium, makes fresh tests, and says: "The author believes more firmly than ever in the future of nickel-vanadium steel, but he is in the position to affirm that investigations should be confined to steels containing from 0.10 to 0.30 per cent. carbon, from 2 to 7 per cent. nickel and 0.10 to 0.30 per cent. vanadium. Indeed, it is quite possible that it might become necessary to limit the amount of vanadium permissible to below 0.05 per cent." That is to say, he still believes in vanadium (more firmly than ever, in fact), but the less you use of it the better!

The obvious view favorable to vanadium that can be taken from Dr. Guillet's latest statement is that vanadium does not act to improve steel because of any good quality that it itself imparts to steel (it imparts no good quality to steel, but just the reverse), but because it takes out of the steel another bad element—oxygen—and therefor we

want just enough of it to accomplish this, and no more. The answer to this view of the case is that although it is doubtless quite true that vanadium is a far better deoxidant than carbon, manganese or silicon, yet at the same time these latter are strong deoxidants, and it is hard to believe that, at the temperature of molten steel for a considerable time, the carbon, manganese and silicon of the charge could fail to take care of all the oxygen present; that is, in a crucible steel for instance, which finishes up with 1 per cent. carbon, 0.30 per cent. manganese and 0.20 per cent. silicon, there is enough of these elements to make it impossible for the oxygen to withstand their attacks through all the period of melting, "killing" and teeming, and therefore if they take out all the oxygen, the vanadium could do no more, no matter how much stronger a deoxidant it may be.

### So-Called Deoxidizing.

The addition of aluminum or silicon to the charge just before teeming is sometimes spoken of as a deoxidizing operation, but, according to Brinell and other authorities, it is not so at all, but quiets the steel simply because it increases the solubility of the gases in the steel; the oxygen, it would seem, being already disposed of by the carbon, manganese and silicon originally present in the charge. But cannot, and as a matter of fact does not, the dissolved gas consist mainly of carbon dioxide or carbon monoxide? According to well-known facts, manganese and silicon at a low temperature have a greater affinity for oxygen than carbon has. It is on this principle that the making of washed metal depends. Therefore, we would expect that while yet in the furnace the gases would consist of oxides of carbon mainly, but that when withdrawn from the furnace, the silicon and manganese present in the charge would take out and transfer to the slag the oxygen of the carbon dioxide and monoxide.

As a matter of fact, investigation has shown the gases of cold steel to be not carbon oxides but hydrogen and nitrogen, quite as bad of course in their effect on the steel as carbon monoxide or dioxide, and absolutely beyond the curative power of vanadium. But if there is no oxygen in crucible steel, how is it that the best crucible steel will always show "slag and oxides"? The answer is that it must be all slag and no oxide. The teeming of the steel mixes up the slag with the steel to some extent, and the metal cools too quickly to permit it to all rise to the top. Right here the thought occurs, why not avoid this mixing by letting the steel get cold in the crucible in such cases where the crucible is in use for the last time? The practical objection probably would be that the crucible could not be cleanly broken away from the steel when cold, and it would be too much trouble to remove it.

To return to our subject: The case is entirely different in the strongly oxidizing open hearth furnace, and with a charge in which the carbon, manganese and silicon have been practically all burnt out. Here it would not be at all surprising if the dissolved carbon monoxide and carbon dioxide gases were not destroyed by the manganese added to the ladle before teeming, the time for the reaction being a short one. As a matter of fact, Belloc (*Bull Soc. Encouragement*, 110, 492), has proved that the gases dissolved or occluded in a cold open hearth steel containing carbon 0.10 per cent., silicon 0.03 per cent., manganese 0.38 per cent., consist very largely of oxides of carbon—dioxide and monoxide—also hydrogen and nitrogen. In such a case, then, it is quite probable that vanadium (or perhaps better, titanium, since the latter is supposed to remove nitrogen also) would serve better than manganese to add to the ladle. But even with crucible steel it is not at all beyond dispute that the carbon, manganese and silicon of a charge take out all of the oxygen. Perhaps they do not take out all the oxygen. Perhaps, therefore, the addition of vanadium serves a useful purpose, and makes a sure job of it.

### A Series of Shock Tests Needed.

But with all this granted, the puzzling question remains, why is it so hard to find actual tangible proofs of vanadium's usefulness in the experiments so far made and published? What the iron trade needs at the present time is a series of shock tests where vanadium steels, preferably hardened, are compared with nickel, chromium, tungsten, manganese and silicon steels made exactly the same way. Doubtless this has been done over and over again by different works and the results found favorable but not published. But, if so, why do those results that have been published prove so inconclusive?

One cannot believe the iron trade entirely wrong in its estimate of vanadium, but may be excused, at the same time, for having doubts; especially as it is a matter of past experience that the iron trade is not much disposed to take the trouble to get to the bottom of anything chemical, but prefers to guess at it. Thus, for instance, in the matter of such common elements as phosphorus and sulphur in steel, the trade spends thousands of dollars every year in making phosphorus and sulphur tests, but has never yet, as far as we are aware, spent a single cent to find out just how much phosphorus or sulphur it takes to spoil the steel.

### The Estimation of Vanadium.

So, although whether or not vanadium is all that it is supposed to be may remain an unsettled question for many a long year to come, one thing is sure: the chemist will be busy making vanadium tests. Luckily this is a simple matter, as follows: Reduction by strong hydrochloric acid to the $V_2O_4$ condition, evaporation with sulphuric acid to complete expulsion of the hydrochloric, dilution and titration with permanganate. This is easy if the iron be not first separated. But A. A. Blair, in a recent article in the *Journal* of the American Chemical Society, follows Campagne in stating that the iron must be separated first from the vanadium before the reduction and titration of the latter takes place. Why? It makes the method a tedious one. The only reason the writer can see is the fact that the end point of titration cannot be distinguished with much iron present, and the liquid hot when titrated. But if the liquid (in a bulk of 350 c.c.) be cold then there is no difficulty in getting the end point of the titration. Must the liquid then be hot? The following tests with vanadium solution, titrations made in the cold, seem to answer this question in the negative:

Per cent. found: 1.15; 1.13; 1.15; 1.14; 1.15; 1.11; 1.13; 1.13; 1.13; 1.12; 1.13; 1.13; 1.15; 1.16.
Per cent. present, by reduction with zinc to $V_2O_2$ form....1.13
Per cent. present, by mercurous nitrate.....1.10

Then a new vanadium chloride solution was analyzed, found to contain no impurity except alkali and the vanadium determined in an aliquot portion gravimetrically by mercurous nitrate precipitation with the following results:

Vanadium per cent.:1.36; 1.39; 1.34; 1.37; 1.35; 1.36; 1.36.
Then volumetric titrating cold, per cent.: 1.35; 1.33; 1.36; 1.33; 1.29; 1.31; 1.29.
Then with iron present equivalent to a sample of steel, titrating cold: 1.37; 1.38; 1.39; 1.38; 1.37; 1.38; 1.36; 1.38; 1.39.
Then without iron, titrating hot: 1.37; 1.37.

A point is made by Treadwell that has so far, it appears, been entirely ignored by other analysts. He states that strong hydrochloric acid reduces $V_2O_5$ to a variable mixture of $V_2O_4$ and $V_2O_3$. If this be true, results by the above would come too high. The above results quoted by the writer were plainly not too high, but yet he had three results that were too high, as follows: 1.48; 1.52; 1.55. He attributes these three results to the fact stated by Dr. Treadwell, but evidently this error is one that occurs rarely. To avoid it, the writer, when the liquid is ready for titration, instead of titrating, evaporates again to pastiness, to give the $V_2O_3$, if present, plenty of opportunity to oxidize up to $V_2O_4$. But whether or not this precaution is efficacious, and serves its purpose, the writer cannot say positively. He has not had any high results since its adoption, but may have yet some time. Or a current of air through the hot liquid before titration might serve.

A blank test made with steel drillings vanadium free must be made, not once for all, but each time a test is made, or at least every time a different bottle of sulphuric acid is used. The blank seems to vary with the sulphuric acid. But it is safest to do a blank every time.

In chromium vanadium steels, it must be found by trial, adding definite amounts of chromium to vanadium-free drillings—how much of the permanganate is used in neutralizing the green color imparted by the chromium.

# A Unique Fire Alarm System.

## That of the Maryland Steel Company at Sparrows Point.

BY J. H. K. SHANNAHAN, JR.

The town of Sparrows Point, Md., where the plant of the Maryland Steel Company is located, is situated at the mouth of the Patapsco River, and is well laid out and carefully cared for by an efficient organization under the direction of the steel company. Among the up-to-date conveniences of the town are an underground sewer system, electric lights, a water system which draws its supply from artesian wells driven to a depth of from 150 to 400 ft.; a uniformed police force and a volunteer fire department. The fire department has a hose house, centrally located, with auxiliary equipment stationed at other points about the town and works.



Fig. 1.—One of the Fire Alarm Boxes.

Perhaps one of the most unique features of the town and certainly one of the most interesting, is the fire alarm system, which is the invention of one of its own residents, A. J. Woodworth, the chief electrician of the steel company. This system, which is electrically operated, sounds each alarm by blowing a number of blasts simultaneously on three large steam whistles supplied by boilers which are constantly under steam. The numbers blown are those of the box from which the alarm is turned in, and as the whistles are located, one at the extreme western end of the works, one near the center and the other at the eastern end of the town, the whole town, including the plant, is made aware of the breaking out of a fire. Cards giving the numbers and locations of the boxes are widely distributed among the different offices in the works and the residences and public places of the town.

All members of the volunteer fire department are employees of the steel company or of the Sparrows Point Store Company. (Only employees of one or the other concerns live at Sparrows Point.) The fire department is divided into several well drilled companies. When an alarm is turned in, the members of the fire department are allowed to leave their work and proceed at once to the equipment station of the company to which they belong. If the men are detained at a fire after working hours, they are allowed overtime just as though they were in the shops on special work. Usually a company is made up of the men working in a given department, so that in case of a fire in that department, prompter service may be had. The other companies also respond, but by distributing the several companies in this manner, the work of the department is facilitated. The steel company furnishes and maintains all equipment and provides the department with a commodious meeting place, with reading room, &c.

The town, including the steel company's works, covers an area of probably two square miles, and has 15 alarm boxes distributed at suitable places. These are numbered as follows: 4, 5, 6, 7, 8, 12, 13, 14, 15, 16, 23, 24, 25, 32 and 33. Obviously a number having a cipher in it could not be blown and the numbers given the boxes were selected with a view of being easily distinguishable. Those numbers consisting of a single numeral are blown as short blasts. For a number in which two numerals appear, for instance, 24, the signal would be two short blasts followed by a pause, then four short blasts. The signal, whatever it may be, is repeated four times from the one turning in of the alarm.

The alarm boxes, Fig. 1, are of iron, similar in exterior appearance to those used in some of the cities. When the system was first installed the key to each box was placed on the door of the box behind a thin piece of glass. This proved too much of a temptation to the mischievous to turn in false alarms, so now two keys for each box are left at houses within a few yards of the pole. A sign over the box tells where the keys may be found.

When a fire is discovered, the door is unlocked, exposing a single lever, which the instructions explain is to be pulled down to the left as far as it will go, and then released. This winds a clockwork arrangement which revolves a small wheel notched with as many notches as there are blasts to be blown. If the signal is 24, the wheel will have two notches, a space, then four more, as in the diagram, Fig. 2. Just above the wheel is an arm or contact spring, set in hard rubber, whose metal point just touches the circumference of the wheel, thus forming a closed circuit. (One advantage of operating the system on a closed circuit is that if anything gets out of order, the circuit will be opened, which will cause the whistle to make a prolonged blast.) As this notched wheel, which is about 1¼ in. in diameter, revolves, the contact spring or arm comes to the vacant space caused by the notch, breaking the circuit. This releases a contact arm of a relay which is drawn back by a spring, making a contact that closes a secondary circuit through the coil operating the whistle.

The spring of the clockwork, which revolves the signal wheel, is strong enough to cause the wheel to make four complete revolutions, thus causing the signal to be repeated four times. This can be regulated at will to control the speed with which the signal is given.

The system is so arranged that an alarm cannot be turned in from two different boxes at the same time. The spring, which may be seen attached to the side of

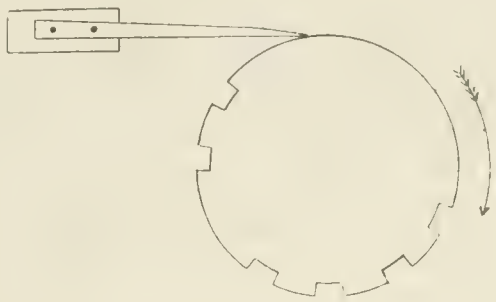


Fig. 2.—Diagram Showing the Signal Sender for the Number 24.

the box in Fig. 1, when the lever is pulled down, comes in contact with the spring on the end of the lever, which cuts out all other alarm boxes by short circuiting them, so that an alarm turned in from them would have no effect at all. The first signal given would be blown correctly.

By means of the button provided in the lower part of the box, signals may be blown independent of the clockwork signal wheel, indicating by a single blast that the fire is out, or by other blasts, which cannot be mistaken as another alarm, that more water is needed. An alarm is turned in every day at noon from first one box, then another, to test them all, and as this is thoroughly understood, the alarm sounded at that hour is not responded to.

As the system has been in continuous operation for about three years, with entire satisfaction, its practicability has been determined. While simple in design and operation, its simplicity is its greatest guarantee of efficient service.

# The Struggle in the German Iron Industry.

(*By an Occasional Correspondent.*)

MAINZ, October 22, 1908.—When in the course of the past year, the retrograde movement in business set in, the prices of finished iron and steel declined rapidly. It was particularly in the products of the open hearth and of the "pure" rolling mills, the so-called B products, that prices within a short time reached a very low level. It was lowest, probably, in the late fall of last year, and was not even overcome in the spring. Under these circumstances the struggle was resumed by the consumers of billets and blooms, and particularly the open hearth steel works, and "pure" rolling mills against the price policy of the raw material syndicates. For some time this fight has become more bitter, the relations between the "pure" and "mixed" plants having grown more strained since the Steel Syndicate and the raw material syndicates have refused to put down the prices for raw materials and for coal.

The development of the German iron industry has not been uniform through its history. Numerous rolling mills were established on the one hand and many blast furnace plants on the other. The obvious advantages of concentrated operations finally led to the rounding out or the consolidation into large "mixed" plants which embrace all the phases of iron manufacture from the pig iron to the finished product. Naturally, not all the works have been able to develop in this direction. Geographical position, at a distance from coal and ore, the lack of the enormous capital for such expansion and the characteristic German plan of retaining possession for one's self and family, all stood in the way. The result is that there are now in existence:

First, the great "mixed" works, who begin with pig iron, manufacture everything themselves, and partly own their coal and ore.

Second, the open hearth steel works, who must purchase pig iron and other charging materials, and the "pure" rolling mills dependent upon the market for billets and blooms.

### The Claims of the Dependent Works.

Between these two groups and the "mixed" works there exists in Germany a deep economic contrast which is explained by the unfavorable position of the former, as contrasted with the latter. The opinion is widely held that the much greater advantages of the "mixed" works are due exclusively to the natural results of concentrated operations and that the misery of the dependent plants is the natural consequence (deplorable possibly, but yet necessary) of economic development.

Concentrated operations do entail certain natural advantages, particularly in the production of the heavier lines. But in the products which are chiefly made by the dependent mills, the advantages referred to are forced to the background by the greater economy in handling small plants, by the greater ease of supervision, and above all, by their greater adaptability to the desires and the quality requirements of customers. The principal and almost the only reason for the superiority of the great mixed works lies in the fact that they can build up their entire production to the finished product upon duty free raw material, since they need only buy such ore as they do not themselves control, and that is duty free. Nearly the entire production of these works is free from customs payments.

The open hearth steel works produce steel from a charge which consists of about 25 per cent. of pig iron and about 75 per cent. of scrap. The duty on pig iron and scrap is 10 marks per metric ton of 1000 kilos. Calculated on 1000 kilos of steel billets, this means a customs charge of about 11 marks, while the large mixed basic Bessemer steel works may manufacture the pig iron which is the basis of their steel from free ore. The "pure" rolling mills who depend upon the open billet market are in an even more unsatisfactory position. The raw material of these mills—steel billets—is subject to a duty of 15 marks per ton. Figured on the finished product (sheets, bars, hoops, &c.), this is equivalent to a duty of 18 to 20 marks per ton. This the large "mixed" works do not bear, because their only raw material (ore) is duty free.

In England the movement in favor of protective duties is gaining ground. The abandonment on the part of Great Britain of free trade would, without doubt, seriously hurt the German industries. The German production of pig iron and of steel billets is so large that in normal times it is not, by far, absorbed by the home consumption. This means that there must be heavy exports. In free competition, the home prices would naturally be lowered, in view of this necessity to export, and the import duty on pig iron and steel could only be utilized to a very small degree. The open hearth works and "pure" rolling mills therefore demand that they be placed on an equal basis with the "mixed" works by being granted their raw material free of duty, and they regard this demand as a simple act of justice. They ask that the duties on pig iron, scrap and steel be suspended, and later on be abolished altogether. This removal of these duties, according to the opinion of the "pure" rolling mills, would strengthen the hands of the free traders in England and hamper the advocates of a protective policy.

### The Reply of the Steel Syndicate.

Naturally, the German Steel Syndicate could not remain silent under these attacks, and a reply was made in an elaborate paper. The fact is not denied that the "pure" rolling mills have a difficult struggle, but they cannot expect the Steel Syndicate to abandon the manufacture of B products for their sakes and to stop their mills. The "mixed" works are as much—or possibly as little—finishing mills as the "pure" rolling mills. The difference between them consists in that the "pure" rolling mills must buy their steel, while the "mixed" works produce it themselves. Formerly the "pure" rolling mills did partly make their own steel, but later, relying upon the competition among the "mixed" works, they extended their rolling mill facilities without thinking of permanently securing their supply of steel. Then the "mixed" works had come to an agreement, and the "pure" rolling mills could not expect the steel works to go on fighting simply for their sake. The Steel Syndicate, during the last boom, delivered steel to the German rolling mills at an expense of their foreign customers. On the rising market the Steel Syndicate sold to the "pure" rolling mills for long deliveries and even at a time when prices had risen again, they had delivered at the old prices. Now the Steel Syndicate must try to recover, by concessions in prices, their foreign customers whom they had lost for the sake of the "pure" rolling mills.

To remove the steel duty would be to cut into their own flesh, even for the petitioners who had not proved that the removal of the German iron duties would put them into a better position under prevailing conditions. The contrary would undoubtedly take place for themselves and for the whole German iron industry. All who are cognizant of the present development in the British iron industry agree in the conviction that it will not do to weaken Germany's fiscal position against her. If the great steel producing works of England do not yet furnish the rolling mills there with their requirements of steel—possibly with the idea that it will not do to supply steel to one's competitor—this does not prove that it will not be done later on. It might, under certain circumstances, entail the greatest sacrifices to recover the protection necessary for the German iron industry if the existing duties were disrupted. So far as the export of steel to England is concerned, Great Britain does not yet produce enough for its manufacturing industries and Germany has no call to encourage an increase in steel manufacture on the part of England, by declining to deliver steel to them. If Germany stopped supplying steel to England, then the English makers of sheets and wire would still, in normal times, be able to secure their steel for their home consumption cheaper than the German mills and wire drawers could get it, because then America, France, Belgium, &c., would jump into the market.

In spite of the progress made, the German iron in-

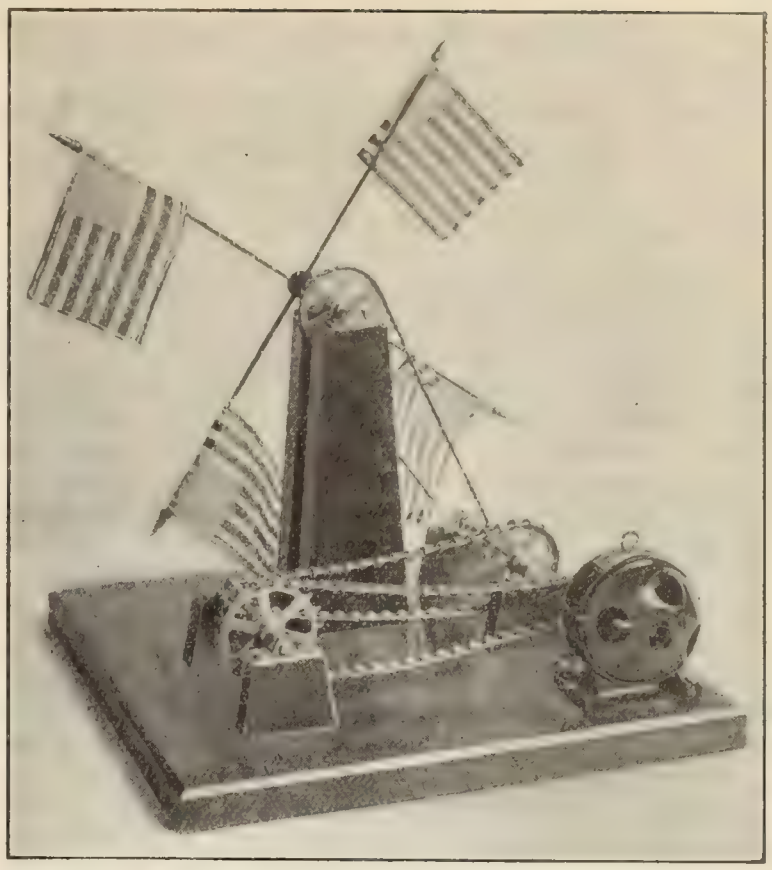
dustry has higher costs than competitors in England, Belgium and France. English authorities claim that even in spite of the German protective duties the English iron industry would crowd back the German, if it were not for the existence of the iron syndicates in Germany. But England is at work on the removal of this lack of organization. In the United States there is the Steel Corporation as a constant threat against the iron industry of the Old World. If the Steel Syndicate in Germany were to break down, which would undoubtedly take place if the duties on steel billets were removed, then the United States Steel Corporation would not have to fear retaliation from any quarter, while to-day it extends its hand to international arrangements. With such competitors in the world's markets, it is a matter of great regret that success has not yet attended the efforts to create syndicates in the B products. But it is entirely wrong to advocate measures which, like the removal of the protective duty on pig iron and steel billets, would tend to disrupt the German syndicates. It is clear that for Germany the situation in the world's markets is as unfavorable as possible to a proposal to remove the duties on pig iron and steel. The United States and France will retain their high protective duties and England is making steady progress in tariff reform. All signs point to the fact that England has entered a period of passing from the free trade to the protective principle. Therefore, Germany must not disrupt the existing protective tariff unless it is not to be put at a disadvantage in the coming negotiations with England. Even the most ardent opponent of the duty on steel must confess that this duty should be kept intact, at least, for the present, as a means of trading, in the negotiations with England. The indications are multiplying, too, that the English iron industry is aiming at the consolidations necessary for aggressive action and that its technical practice is improving.

As yet the German government has not taken any measures in this struggle. It is probable that the Reichstag, which reassembles next month, will discuss the question.

## Remarkably Small Ohio Driving Chain.

An interesting exhibit at the recent convention of the National Association of Agricultural Implement and Vehical Manufacturers, at Columbus, Ohio, was that made jointly by the Ohio Malleable Iron Company and the Jeffrey Mfg. Company of that city. This contained a display of malleable detachable link chains, including many specimens which illustrated the substantial progress recently made by the former company in the refinement and production of malleable iron. The extremely malleable and ductile qualities and high tensile strength in the iron were shown by chain links bent double and distorted in form by impact. torsion, bending and tensile strains without the occurance of fractures.

Two very small chains were also displayed to illustrate the molding qualities of the iron resulting from the high degree of fluidity obtained. The links composing the larger of these three chains were of ⅜-in. pitch, 5-16 in. wide, with a maximum area in cross section of 1-16 in., while those of the smaller chain were 5-32 in. wide, 3-16-in. pitch, with a maximum cross sectional area of only 1-32 in. This is the more striking when it is considered that the sectional area of a conduit through which iron will run has commonly been limited to 3-32 in. For this achievement much credit is also due to skillful molding.



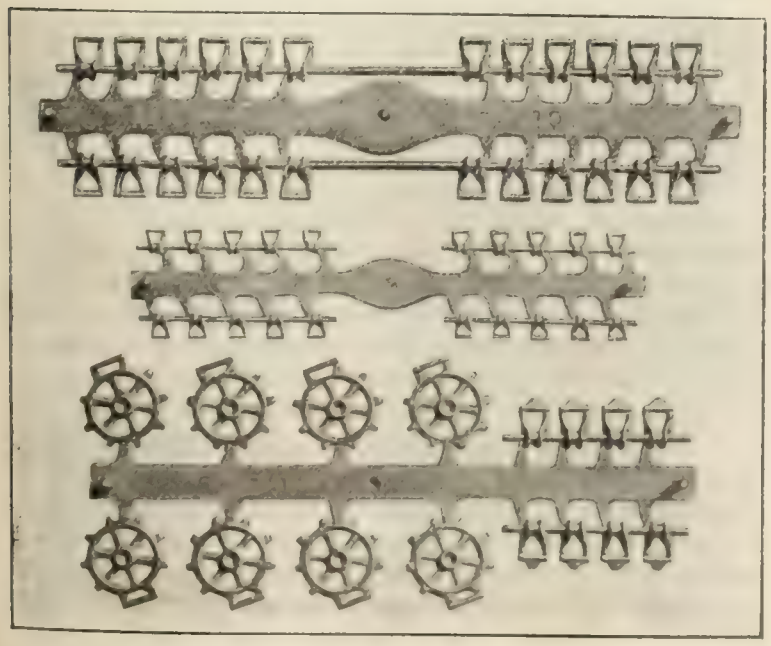
Running Exhibit Shown by the Jeffrey Mfg. Company and the Ohio Malleable Iron Company.

The larger of these chains is designated as Ohio Special .08 and the smaller as .008. Lengths of both were shown in suspension from scales, the .08 sustaining a weight of 75 lb. and the .008 of 15 lb. The pull on the former was increased by hand to 130 lb. without visible effect on the links, and as these were assembled as made, without the usual tests to develop weak or defective parts, it may be safely assumed that with such parts eliminated the larger chain would develop a safe working strength of about 30 lb., or approximately one-half that of the ordinary commercial No. 25, which has four times its maximum area in cross section.

To demonstrate the accuracy of pitch and uniformity in shape of the links composing these chains two running exhibits were shown, one a small rotary fan and the other a group of American flags, each driven by an electric motor. The former was driven through a single strand of .08 chain, and the latter, which is herewith illustrated, by two strands of .08 and one strand of .008 chain, three reductions being made. The chain speed was high in both cases, and the operation was very smooth and quiet.

At the exhibit souvenirs were distributed, consisting of a watch fob having a short length of .08 chain attached, from which a nine-tooth sprocket wheel of corresponding pitch was suspended, and three links of .008 chain pendant in the form of a stick pin. The gated pattern from which the parts forming these souvenirs were cast, imbedded in the match, were also on exhibition. This is shown in the other of the accompanying engravings.

It is stated by the companies that no special heat or composition of iron was resorted to in producing these chains, nor in fact any of the specimen links on exhibition, but that all were made in the ordinary way from regular heats and correspond in all respects to the daily run of the foundry. The Jeffrey Mfg. Company is the sole distributer of all the chains manufactured by the Ohio Malleable Iron Company.



Patterns from Which the Small Chains Are Cast by the Ohio Malleable Iron Company.

# A Modern Steel Car Plant.*

## Features of the Detroit Shops of the American Car & Foundry Company.

BY HORACE H. LANE.

The regular steel car of 100,000 lb. capacity weighs from 40,000 to 45,000 lb. In designing a plant to turn out 50 steel cars per day we must handle approximately 1100 tons of material each day. The operations this material goes through may be summed up as shearing, punching, pressing, assembling and riveting.

To do these rapidly and economically we must lay out this plant so that the material progresses steadily forward from the time it enters as raw material at one end until it emerges as the finished car at the other. We will not discuss the building of the trucks, as that is usually done in another shop. The material we have to handle consists mainly of channels, angles and plates. In addition to this we must handle the drawbars, bolsters, brake rigging and some smaller parts which go to make up the car.

After we have selected the necessary machine tools for performing the operations named, we must next arrange them in the building so that we shall be able to fabricate this material with the least amount of handling, leaving the necessary room between the machines for storing the material being worked without making an unnecessarily large and expensive building, as an excessive amount of space not only means expense of the building and ground, but increases the distance over which much of this material must be carried.

At the Detroit plant of the American Car & Foundry Company the principal tools are four heavy shears, four multiple punches and four large presses.

### Shears.

The four shears are capable of shearing a plate 10 ft. wide and 1 in. thick. There are also smaller shears of various types, including a special angle shear on a turntable so that long angles can be cut at any angle without having to swing them around the shop; that is, the shear is turned so that it stands at an angle to the pile of material, thereby economizing shop room and labor.

### Punches.

There are four multiple punches capable of punching a row of holes entirely across a plate 10 ft. wide at one stroke of the machine, and of sufficient length to take plates of 50 ft. in length. These machines deserve special mention, as they are self-spacing. There are two levers at the side of the machine (where the operator stands) like the reverse lever on a locomotive and about the same size. These levers have graduated arcs, one being graduated for inches and the other for eighths. By simply throwing these levers the machine will space any distance desired up to 7 in.; in other words, if you have a plate across which you want to punch a row of holes every 7 in., and this plate is started in the machine, with the spacing lever set to 7 in., the machine will automatically feed it through, punching a row of holes every 7 in. If instead of 7 in. you want to make it 4½ in. or any other number, you simply set the lever to read that way. A great deal of the work put through these machines has various spacings on the same sheet. The operator, keeping his schedule before him, will set these levers to the proper spacing without stopping the machine, so that the plate goes forward automatically, first making a space of 4 in., another of 2½ in. or whatever may be wanted. In addition to this the punches are all arranged with gags so that any punch can be instantly thrown out and the holes omitted wherever it is desired. The operator also has a smaller lever in front by which he can instantly gag all the punches if for any reason he wishes to omit one spacing, or if he should possibly notice before the punches go down that he had made a wrong spacing, he could prevent the punches from doing any work. These gags consist of steel blocks about 2 in. thick, above the punches, which are simply withdrawn so that the punch, instead of going through the sheet, slides up into the socket, or rather the punch and socket both slide up into the upper head or ram of the machine. These machines not only have the advantage of saving an immense amount of labor in marking and punching, but will do the work much more accurately than it is possible to do it by hand. The American Car & Foundry Company is, I believe, the only car manufacturer to use this type of machine. In addition to these multiple self-spacing punches is a variety of both small and large punches, such as will be found in any good structural shop. On some of the larger punches a great deal of special work can be done, such as coping flanges on I-beams or cutting the angles or channels to any special shape desired.

### Presses.

This shop has two 1000-ton and two 500-ton presses. By 1000-ton we mean a press which will exert a pressure of 1000 tons on the work. Many cars have pressed steel sills. These are pressed cold from plates usually ½ in. thick and perhaps 30 in. wide at the center, tapering down to 18 or 20 in. at the end, these plates, of course, being the full length of the car. This work being too long to be done at one impression, the dies are made in three sections and all three sets of dies are placed on the press at once. The plate is pushed into the press and placed so that one-third of it is pressed. It is then pushed in farther and the middle section is pressed and is then pushed on for the third impression, each section of the sheet being pressed to its final shape at one stroke so that after the sheet has been passed through the press it is finished so far as the pressing is concerned. The dies for this work are about the heaviest things to be handled in the shop. The traveling cranes are made heavy enough to handle the dies, which are of cast iron, and which have to be changed every time the press starts on a new lot of work. One of the 500-ton presses is what is known as the flanging press. This has three cylinders, the main plunger remaining stationary while the two auxiliary plungers push down the clamping bar, holding the sheet in place until the main platen comes down and bends it over. In some cars a great many sheets have the edges flanged at 90 degrees or less, according to the design of the car. This work is done on this press. The presses used at this plant all have a fixed lower platen while the upper platen descends on the work. In some other plants presses are used where the upper platen remains stationary and the lower one rises. These are perhaps more particularly adapted to small work. On some of the smaller presses I have seen men insert four pieces simultaneously from all four sides of the press, so that four pieces were pressed at once.

Each of these presses has near it a heating furnace, as most of the work pressed is heated. The heating furnaces at the large presses are 20 x 30 ft. and will take in any part of a car which needs to be heated. These are reverberatory furnaces, and in the Detroit plant they are fired with soft coal, although in some other plants they are heated with oil. In addition to the above machines there are saws for cutting off I-beams or other special shapes.

There is a variety of other equipment which cannot be enumerated in detail. The truck shop has axle lathes, wheel borers, arch bar drills, wheel presses, &c., such as are used in any truck shop. The axle lathes in the Detroit shop are especially heavy modern tools, each driven by its own motor, the Bullock multiple voltage system being used, giving six changes of speed. There is a full machine shop equipment for taking care of the tools, including a heavy planer 10 ft. wide, this being necessary for fitting up the dies used in the presses. There are also four machines for making rivets, two bulldozers for bending arch bars and upsetting and pressing various parts. There are about 30 rivet fires scattered throughout the plant. These furnaces are heated with oil and have an air blast conveyed through an underground tile pipe system, the air being furnished by blowers direct connected to high speed motors.

* Extracts from a paper read before the Detroit Engineering Society.

**Riveting.**

In a steel hopper car of 100,000 lb. capacity there are about 2400 rivets to be driven. To be exact, on Pennsylvania hoppers recently built at this plant there were 2434 rivets, on New York Central gondolas 2449 rivets, and on Southern hoppers 2340, so that when this plant was building 100 cars a day, as it was for a considerable time last year, it was driving 240,000 rivets per day, the day including a night shift.

To drive this large number of rivets to the best advantage the material is assembled as far as possible in sections, these being riveted on machines especially adapted for each particular work. For example, the whole side of a hopper or gondola car is bolted together with erection bolts and hung from a trolley over the top of a deep gap riveter. These riveters are 10 ft. gap, and in this plant we have nine of them. The Standard Steel Car Company's shop at Hammond has seven of 114 in. gap. These riveters have a heavy U-shaped frame with the open side up and are placed in a pit so that the rivet being driven is about 4 ft. from the floor. The operator who handles the riveter also has within reach two levers whereby he can raise and lower the work and also cause it to travel endwise. On a large surface like the side of a car, when handled this way, the rivets can be driven very rapidly, from a dozen to 20 rivets being sometimes put in in a minute, depending, of course, upon the accessibility of the work and the rapidity with which the operator can move it. One man shoves in the rivets, another man operates the machine and moves the work, while usually a couple more men are required to steady the work so as to bring the rivets into position rapidly. Not only car sides, but many other parts, are riveted before the work reaches the erection floor; the sills have the lugs and malleable parts all riveted in the machine before the sill goes to the erecting floor. Bolsters and many other parts of the car are riveted complete in the same manner, much of the smaller work being done on small hydraulic riveters. When the work finally comes to the erecting floor a great many rivets in every car must necessarily be driven with a pneumatic riveter, held in the hand, known in shop parlance as a "gun." These machines, such as you have all seen used in the field on structural work, do this work very rapidly, but when a hundred of them are going at once inside a building conversation is necessarily prohibited; even a megaphone would be useless. A fixed hydraulic or pneumatic riveter works so much more rapidly and quietly than the gun that, so far as possible, all work is done on the fixed machines. Some work which cannot be done on the fixed machines is done on the erecting floor with a portable riveter, which carries an air cylinder and heads the rivet at one stroke the same as the fixed machine; the best type has the cylinder attached to a toggle joist so that a small cylinder can exert the necessary pressure. In a great many places, especially in assembling the underframe, these machines can be used efficiently. A portable hydraulic riveter has been tried, but it requires such complicated connections to take care of the supply and return water that it is not practical.

**Erection.**

Two systems of erection are used. In some shops a car is erected on a pair of horses and each car is completed in its particular place; that is, one set of men builds the car complete in a fixed place, there being a number of these sets of men according to the size of the shop. The other system might be called the progressive system. In this the first gang performs a certain operation; the car is then passed along on its own trucks to the next gang and from it to another, in all about eight or ten gangs being used before the car is completed. This latter process is the one used in the Detroit plant and has been very satisfactory. The system as carried on here consists of placing the trucks on the erection floor and at once beginning the erection of the car on these trucks, the center sill being dropped on first, then the cross pieces or body bolsters, then the side sills and so on. The first gang of men simply gets far enough to put on the side sills, usually throwing a short plank across each truck while this is being done. I might also mention that the trucks are shoved closer together than their normal position so that the drawheads can be put in and the men can also get at the rivets over the trucks. This car is then pushed along to the other gangs who do the riveting on the underframe, put in the drawheads and assemble the car through its various stages, the underframe being riveted up before the upper part of the car is erected upon it. The same progressive system is used in the Berwick shops. The Pressed Steel Car Company in Pittsburgh use the other system, building each car on a pair of horses. The Standard Steel Car Company also build their cars on horses. At the Berwick shops this plan was tried for a time, but changed over to the progressive system.

There are various points for and against each system, and it might after all be largely a matter of education and training. There are a number of advantages in favor of the progressive system. One is that for the same output very much less floor space and shop building are necessary. The material of each particular kind is placed in the exact spot where it will be used. That is, the center sills, for example, would be placed at the first station; each station has only a certain class of material to look after. The men in that gang have only one particular operation to perform on each car and they become very expert in performing that operation. With a few good men in each gang to take the lead, the gangs can be filled in with common help until they are properly evened up. If not properly evened up, the output is undoubtedly limited by the weakest link in the chain. This is the one objection offered to this system; but with the proper supervision I believe that it is not a serious one. With the fixed system all the material for a car must be delivered at each of the stations. More room is required to get all around the car, as well as to pile up all the different parts required. One point of advantage in this system is that if the work is done on a piece work or premium plan, each car can be erected for a fixed price; in other words, the piece work system is possibly more adaptable where the cars are built on horses than it is where the progressive system is used. Personally I believe that the progressive is the best, but this may be partly because I have been more closely in touch with it.

**Painting.**

We have now followed the material until it has reached the assembled car, and by the time it reaches the end of the shop it is completed ready for painting. Most of these cars receive three coats of paint, but the work is done very rapidly and in good weather can be done out of doors. The Detroit plant, however, has two large paint shops capable of doing this work under cover if necessary. In the winter these shops are kept heated to a fairly high temperature in order to dry the paint as rapidly as possible. You can readily see that in a shop like the Detroit plant, where a few months ago they were turning out 100 cars per day, to store these cars until three coats of paint were dry requires a very large amount of space. Supposing the cars are painted in three days, we must have room for 300 cars, or nearly three miles of track.

**Shop Transportation of Material.**

We have so far not taken up the means of transporting the material around the shop. The eastern span of the Detroit plant carries three traveling cranes, 92 ft. span, 10 tons capacity. These cranes all run on the same track, the crane rail being 40 ft. above the ground. In the western span are two more cranes of the same type and capacity. These cranes travel at a high speed, making 480 ft. per minute, and when the shop is running to its full capacity they are kept extremely busy. As the cranes in each span run on the same track, they cannot, of course, pass each other, and each crane must do the work in its own section or the other cranes must get out of the way. Fortunately the work progresses so in these shops that the cranes seldom have to travel more than one-half or one-third of the length of the building. This entire shop is free from any belting, piping or wires which would obstruct the travel of these cranes.

Each one of the large machines has its own motor attached to it. The only shafting and belting in the

building are placed along the side and center columns, and all the piping and wiring are carried in conduits and trenches beneath the floor, so that there is nothing in the way to prevent the cranes from sweeping the entire shop. In the new shop of the Standard Steel Car Company there are two sets of cranes, termed the "local" and "express." One set runs on a track 23 ft. above the floor and the other set 20 ft. higher up.

In addition to the large cranes in the Detroit shop there are a multitude of small cranes of various types throughout the shop. Every machine of any size has its own crane, usually simply a mast and jib provided with an air hoist. These in some cases have the jib long enough so that when the material is taken from one machine it can be swung to the next. In this way the material can go forward without the aid of the main crane. On the erecting floor there is a special overhead structure provided with small hoists at each station, so that each gang of men has its own hoist for handling the material. Most of these in the Detroit plant are what are known as "air engines."

In the steel yard, adjacent to the main shop, the material when it comes in is unloaded from the cars and piled up sometimes 30 ft high. This yard is swept by two more traveling cranes of the same type as those in the shop.

### Power Equipment.

We will now consider the power necessary to operate this plant. A separate power house is built about 40 ft. away from the main shop, near the center, so that the farthest motor is not over 600 ft. from the generator. The power equipment originally installed consisted of four Babcock & Wilcox boilers, 300 hp. each, with an economizer and induced draft apparatus. In the engine room were three Westinghouse vertical compound engines, 18 x 30 x 16, rated 400 hp. each, direct connected to Westinghouse generators of 250 kw., each 240 volts direct current. Two Worthington compound duplex hydraulic pressure pumps, two Ingersoll air compressors, horizontal two-stage cross compound, each of 3000 cu. ft. capacity. In addition to these there is a condensing apparatus consisting of a Worthington barometric condenser with circulating pump, dry vacuum pump and cooling tower, there being no supply of circulating water except the city supply. The steam pressure carried is 160 lb., no superheat. The electrical apparatus is of 220 volts direct current. The hydraulic system carries a pressure of 1500 lb. per square inch, and the pneumatic system 100 lb. There is a large air receiver on the pneumatic system and in the hydraulic system there is also a large receiver for the return water, and two steam accumulators with 50-in. steam cylinders and 16-in. rams. These steam accumulators take up very much less space than the weighed accumulators and are much more lively, the inertia of the moving parts being so much less. Some two years ago this power plant was increased to about twice its former capacity. An overhead coal bin, ash conveyors, four more boilers, another Westinghouse engine and generator, the same as the others, were added. The hydraulic system was also increased by adding a triple expansion duplex pump, steam cylinders, 22, 34 and 56 in. in diameter, 36 in. stroke, 8½-in. plungers, rated capacity 600 cu. ft. per minute, this rating being, of course, against a pressure of 1500 lb. An additional air compressor was put in last year with a capacity of 6000 cu. ft. of free air per minute, so that practically this plant has been doubled all around over the original design.

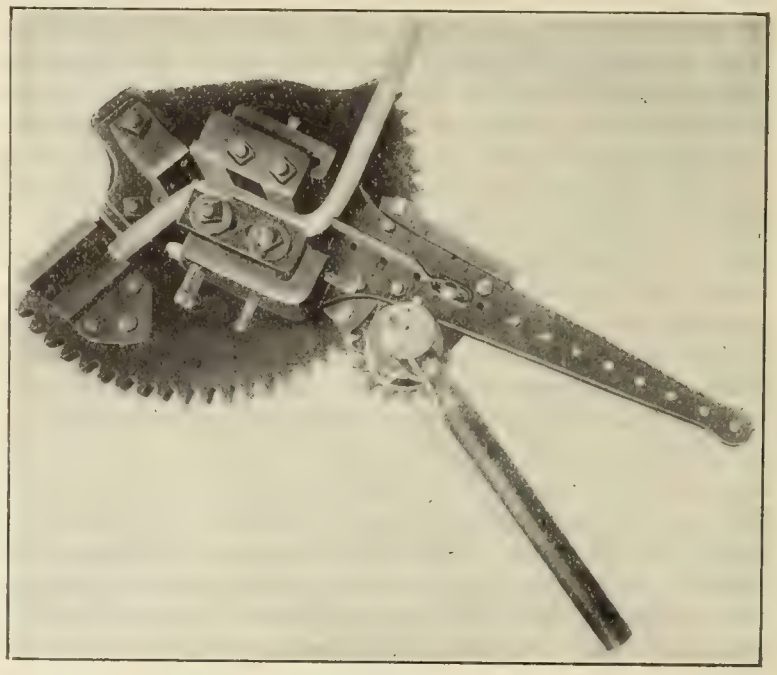
### Steel Passenger Cars.

One great field in steel car building has only just been opened up. I refer to steel passenger cars. One of the first orders for steel passenger cars was for the ones used in the New York Subway. These were built by the American Car & Foundry Company in its Berwick plant. Since then quite a few steel passenger cars have been built at this plant. They are now building some magnificent all steel passenger cars which are 84 ft. in length. This work requires different equipment, a shop differently laid out and a different class of help. Other shops are now building steel passenger cars. In some cases the railroads themselves have attempted this work. The beginning of every business is costly, and these first large steel passenger cars have been costly; however, we shall soon see shops properly equipped and designed for this work, and the day for the wooden passenger coach as well as the wooden freight car will be soon ended.

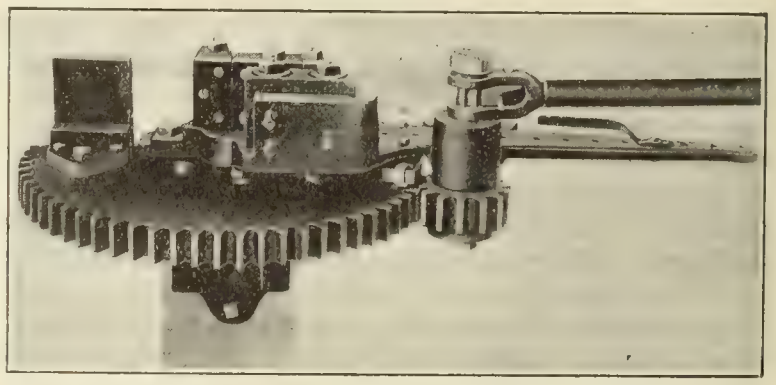
## The Wallace Hand Power Bender.

A new machine for bending rods or flat bars to any required angle has recently been brought out by the Wallace Supply Company, 19 South Jefferson street, Chicago, Ill. This machine, top and side views of which are shown in the accompanying illustrations, is intended for manufacturers and also for contractors engaged in reinforced concrete construction work who have occasion to bend rods cold.

This machine, being capable of bending flat stock 4 in. wide by ½ in. thick, or its equivalent, or a rod 1 in. thick without first heating, will be seen to be very powerful. It has an auxiliary ratchet lever which operates a pinion engaging a circular rack on the frame of the machine at a ratio of 4 2-3 to 1. The ratchet pawl may be thrown out of engagement and the machine operated with the regular levers, making it suitable for bending light stock cold, also heated stock in larger sizes at a very rapid rate. By this arrangement there are practically two machines in one; that is to say, by using the regular lever, work may be turned out rapidly when the size of the stock is not so large as to make this impossible, or when the stock may be heated. For example, the machine can bend ½ in. rod cold with the regular lever without any difficulty, and heated stock can also be bent with the regular lever up to 1 in., but to bend a 1-in. rod cold it is necessary to use the auxiliary lever with the gear and ratchet arrangement.



Top View.



Side View.

The New Hand Power Bender Sold by the Wallace Supply Company, Chicago, Ill.

The net weight of this machine is about 235 lb. It is secured in place by means of a socket, from which the machine may be removed when not in use. As will be noticed by the illustrations, set screws are employed for adjusting the dies to suit any thickness of stock to be bent. The dies are faced with tool steel and the lever is supported by anti-friction rollers.

# Tariff Revision Hearings Beginning.

WASHINGTON, D. C., November 10, 1908.—The Ways and Means Committee to-day began a series of hearings intended to form the basis of the revision of the Dingley Tariff act, which is to be accomplished at a special session of Congress to be called soon after the adjournment of the coming short session next March. Parties interested in the metal schedule, including manufacturers, importers and dealers, will be heard November 25, 26 and 27, beginning at 9.30 in the morning of each day. These hearings were foreshadowed in this correspondence several weeks ago, but the details of the committee's programme were not formulated until after the elections on the 3d inst., and in this connection the interesting fact is disclosed that if the Republicans had failed to retain control of the House no attempt would have been made to revise the tariff at this time as it would have been impossible to pass a new law in the short session in view of the rules of the Senate, which enable two or three members of that body to conduct a practically unlimited filibuster.

The programme for the hearings beginning to-day, and which will continue until the eve of the coming short session, is as follows:

Tuesday, November 10, Schedule A—Chemicals, Oils and Paints.
Thursday, November 12, Schedule H—Spirits, Wines and Other Beverages.
Friday, November 13, Schedule F—Tobacco and manufactures of.
Monday, November 16, Schedule E—Sugar, Molasses and manufactures of.
Wednesday, November 18, Schedule G—Agricultural Products and Provisions.
Friday, November 20, Schedule D—Wood and manufactures of.
Saturday, November 21, Schedule M—Pulp, Papers and Books.
Monday, November 23, Schedule B—Earths, Earthenware and Glassware.
Wednesday, November 25, Schedule C—Metals and manufactures of.
Saturday, November 28, Schedule N—Sundries.
Monday, November 30, Schedule J—Flax, Hemp and Jute, and manufactures of.
Tuesday, December 1, Schedule I—Cotton Manufactures, and Schedule L—Silks and Silk Goods.
Wednesday, December 2, Schedule K—Wool and manufactures of.
Friday, December 4, Sections 3-34, and Miscellaneous Matters.

Hearings on articles on the free list will be held on above dates in connection with the subjects to which they most nearly relate.

The committee desires that persons wishing to be heard should apply to the clerk of the committee, W. K. Payne, before the day set for the hearing, in order to be assigned a place on the programme for that day. A person making such application should state (1) his name; (2) his permanent address; (3) his temporary address in Washington; (4) whom he represents; (5) concerning what paragraphs he desires to be heard; (6) briefly, what position he expects to advocate, and (7), how much time he wishes to occupy. He should also inclose a copy of his brief and of any documents he desires filed with the committee.

### Scope of the Hearings.

Many letters and telegrams have been received by the committee inquiring as to the scope of the hearings and the particular class of information desired from those who appear for the purpose of presenting oral or written statements. The correspondent of *The Iron Age* has been at some pains to procure an authoritative statement, which may be relied upon as covering the ground comprehensively and accurately. In view of the limited time at the disposal of the committee for these hearings, it seems desirable to caution all who intend to appear to prepare themselves in advance, with a view to giving the committee the largest possible amount of real information in the shortest possible time. The committee does not desire to hear abstract discussions of principles of protection or free trade or any other academic feature of the question. It wants facts as concisely stated as possible; and, if practicable, such facts as are within the personal knowledge of the speaker. It will desire to know from each speaker whether he favors the retention of the existing provisions of law relating to the schedule in which he is interested or desires changes either in the language of the Tariff act or rates thereof, supported in each case by a brief statement of the reasons for his position.

The committee desires especially to obtain information regarding costs of production in this country, with special reference to the item of labor and the corresponding figures for those foreign countries in which competing products are manufactured. Special attention will be paid to this item of labor cost, as it is the basic principle of the protective tariff that the protection provided shall be adequate to cover the difference in wages between this and other competing countries.

### The Maximum and Minimum Plan.

Information bearing upon the maximum and minimum plan upon which the new tariff is to be based will also be sought by the committee. While Chairman Payne and his colleagues have not yet given formal consideration to this phase of the subject, it is understood that the Dingley rates as revised by the committee after these hearings will constitute the minimum or general tariff, which will be applied to the products of all countries granting to products of the United States the minimum rates of their respective tariffs. After the minimum or general tariff has been agreed upon, the so-called maximum rates will be fixed and applied to each item. These maximum rates will probably represent increases over the minimum rates of about 20 per cent. on the average—though the percentage will not be uniform in all cases—and will be levied upon the products of countries which discriminate in any way against the commerce of the United States. With regard to the maximum and minimum schedules, the committee will desire to learn the probable effect of such increases as are suggested in the way of restricting importations; also as to the probability of our being able to secure trade concessions from foreign countries on the basis of the proposed double column tariff.

It is the special desire of the committee, in view of the limited time available for these hearings, that an effort be made by the respective interests desiring to make representations to get together in advance and appoint spokesmen. Where all the interests involved in any particular schedule or paragraph can be brought to unite in a specific recommendation, it goes without saying that the work of the committee will be greatly simplified, and the probability of the adoption of the recommendation correspondingly increased. Of course, if there are conflicting interests the committee will expect to give patient hearing to all sides, bearing in mind, however, that the tariff law embraces many hundred paragraphs, and that the time to be given to any one of them must necessarily be limited.

### A Revised Classification.

The committee desires it understood that at this time it has no specific bill before it, although it has obtained from various sources a large amount of information not yet digested. During the recess experts employed by the committee have gone very carefully over the text of the Dingley act with a view to improving the language where possible so as to render the classification clear, unequivocal and up to date from a technical or industrial standpoint. The decisions of the Board of General Appraisers and of the courts have been very carefully examined, and where omissions or ambiguities in the Dingley act have been discovered an attempt has been made to redraft the respective paragraphs accordingly.

Absolutely nothing has been done in the way of revising rates beyond such incidental rate revision as necessarily accompanies the fixing of appropriate classifications for unclassified or vaguely classified items. Such rates, of course, are merely those of the Dingley act, and will be subject to such changes as are suggested in the coming overhauling of the existing law. It is probable that by the time the hearings are completed this revised classification will be made public, and parties desiring to make representations after examining it in detail will be permitted to file any written suggestions that may seem desirable. W. L. C.

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In California, where many wells yield both natural gas and water, it is stated that a system has been tried whereby the gas is separated and utilized in an engine to pump the water.

# The American Patent Law.—II.

## Its Relation to Modern Industries.

BY JOHN D. MORGAN.*

Bearing in mind the general features of our patent law, which define its position toward inventors, and recalling further the great industrial changes that have taken place during the existence of that law, and also remembering the vast number and close relation of patents in force, let us inquire more in detail into the relation of the patent law to modern industries.

Under these modern conditions of vast investments protected in greater or less degree by patents, the protection obtained is not in all cases the same in kind as in the early and simpler days of industrial development. Circumstances and facts within the limits of the law are now laid hold of to secure protection differing essentially in nature and somewhat removed in spirit from the practice and benefits had in view by the framers of the constitution and of the early statutes. Nor is it remarkable, in view of the vast changes that have transpired, that though the law has remained the same in spirit and in its general provisions the manner of its application by the courts has changed to meet the newer requirements.

### The Advent of Paper Patents.

An inventor may disclose in his application for patent merely the fruit of his intellectual effort. The law does not require that he previously shall have actually built a machine or performed a corresponding act in the other classes of invention. He is merely required to furnish a disclosure sufficient to enable those skilled in that particular art to practice the invention. It is essential for an inventor to do little except possess mental ability to work out the invention and to present it adequately by means of drawings and description to the Patent Office. This tends to remove in a very large degree any handicap resulting from lack of resources.

An inventor of limited capital, but having the requisite capacity and experience, may frequently invent and patent with but small pecuniary outlay large and important machines. If he be a man experienced in an art his patent may represent the very latest and best development and practice and have great potential value. This surely tends to "promote the progress of science and the Useful Arts." As the American law has no working requirement, and, in addition to this, the broad right of non-user has been recognized specifically by the courts, including the Supreme Court of the United States, the patentee, so far as the law is concerned, need never go any further with his invention. He has done sufficient to maintain his monopoly for the full patent period. Many have availed themselves of these conditions and these patents are known as "paper patents."

### The Effect on the Industrial Arts.

Under these conditions a somewhat peculiar development has taken place. It has become a practice in certain branches of industry to utilize paper patents in maintaining upon the market a machine which has become obsolete from the standpoint of the development of the particular art. The new machine may cost less to manufacture, it may occupy less floor space, it may be less exacting in its requirements of attendance, its wear and tear may be very much less, it may be much more rapid, it may produce a superior product, or it may unite many of these advantages together with others not enumerated. Notwithstanding this, the very fact that these things have been accomplished and that for accomplishing them a monopoly for a term of years has been bestowed, backed by the authority of the Federal Government, the net result of the entire proceeding has been to render secure in its place on the market an old machine lacking these peculiar virtues of the new.

This is accomplished through control of paper patents covering the new machines by the manufacturers of the old or marketed machine. This is frequently done by the purchase of patents from individual inventors who have worked along the lines above indicated, and frequently large concerns maintain a corps of inventors for this specific purpose. It will be seen, therefore, that in the particular instance and for the time being, the patent system is used for exactly the reverse purpose from that for which it was intended. In other words, the patents issued for improvements upon a certain machine, or for a better species of machine for doing the same thing, are kept in non-use for the purpose of allowing that machine to remain on the market from which it would be forced by the superior machines covered by the non-used patents in case they were allowed to compete with it. In its theory and literature the art has advanced, but through this very thing the practical art is held at a standstill. Nor is this result of compelling users to pay a top price for a machine not so good as the development of the art makes possible the only result, frequently the entire future development of an art is changed from what it would have been had the machines of the non-used patents been placed upon the market.

### The Other View of the Situation.

On the other hand, we have no right to stop here and declare that, in view of this, paper patents are an unmitigated evil and that steps should be at once taken to uproot that evil. The revolution which has taken place in the idustrial world has been outlined above. The vast sums of money necessary to launch many enterprises depending on patents has been mentioned. It is a question, therefore, whether capital would not hesitate to enter a field where it would not be assured of at least a strong probability of dominating that field for an extended period of time. If there was danger that after the factory was erected, the machinery purchased and installed, after great expenditures in special machines, tools and equipment useful in no other connection, through the eager, unresting inventive spirit of the age, the whole thing were rendered useless in a few years, the entire proposition would assume the complexion of speculative venture rather than of legitimate business enterprise. The returns from such an enterprise, though often liberal, seldom are such as to be attractive as mere speculations. It seems essential in such cases that the assurance of stable and foreknown conditions for a reasonable term of years is necessary in order to warrant the establishment of the industries.

This is the case with many large modern machines, the cost of production of which is prohibitive except on a basis of factory automatic or interchangeable manufacturing. It also obtains where some industry can be maintained on its present commercial footing only by being supplied with a line or series of machines used in the development of a product, the machines of the series being especially adapted to act upon the same product in various stages of manufacture as received from the machines previously acting upon it. This necessitates a factory and administration for the production of the machines equivalent to what would be required were the entire series of machines but one.

The 17 years' life of a single patent represents too brief a span for the career of such enterprises. It is only by utilizing the lives of several patents related in the same art that a longer period of monopoly sufficient to justify such enterprises can be secured. A large proportion of the paper patents so used and representing the theoretical advance of the art are produced by these very corporations, and should they through new legislation fail of the end desired, this potent means of "promoting the progress" of the arts would cease.

It is a question then whether what appeared at close range to be a perversion of the spirit and principles of the patent system is so in fact, or whether in the larger view all this does not tend to "promote the progress of science and the useful arts."

Before a final inquiry as to whether conditions ought to be changed, it might not be inapt to inquire as to what agencies are at hand to effect a change.

An inquiry as to what should be done to change this conditions of things, in case this should be thought de-

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sirable, finds its answer in the proposal (*a*) to enact a working requirement for all industries, (*b*) to enact a compulsory license law, or (*c*) to enact a law presenting those to the patentee as alternatives subject to his own election.

### A Working Requirement.

With respect to the enactment of a working requirement, let us ask what the affect of a mere naked enactment of this kind would be. It would merely amount to requiring the expenditure of certain moneys by the owners of the patent in building a single machine, and this would be without any advantage to the trade. If the law should be framed to require a working adequate to meet the demands, it would in many lines again be a nullity for the reason that the users of machines depend rather on the advertising in trade journals and the representations of salesmen for information as to what is available in the art than on examining the files of the Patent Office. Has the ordinary user of a typewriter, a telephone, a dynamo or a planer, or any other of the marketed machines the remotest idea of what the manufacturer has by way of patents locked up in his safe. If the law went further and required an owner of patents to manufacture and advertise equally all kinds of machines covered by his patents, it would be so manifestly oppressive and unpractical as to be its own condemnation. Yet what short of this would prevent the buying up and suppression of valuable patents which are an advance in the art? Competition here is industrial warfare, and patents if of any value must necessarily sometimes be used as weapons.

### Compulsory License.

As an alternative, the enactment of a compulsory license clause might be considered. In connection with this, it may be stated that such a clause is not now in force in any of the leading industrial countries. There is such a provision in the Canadian patent law, and the law is so framed that a patentee has his choice whether he shall actually work the patent in Canada or lay it open to compulsory license.

The situation of Canada is somewhat peculiar. A very large part of the consuming population of Canada is nearer to the centers of production of the United States than many parts of the United States itself. Her industrial development is also behind that of our own country, and there is doubtless a desire to interest outside capital within the country. It is sufficient here, without attempting to analyze industrial conditions in Canada to point out that those conditions are different from conditions in the United States or in Europe.

Most of the European countries have thought it advisable to enact a working requirement rather than a compulsory license requirement. The inference is fair, therefore, that they regard the working requirement as preferable to compulsory license. No detailed application of the bearing of the question of the industrial conditions in the United States and the sharp departure involved from the basic principles of our patent laws need be made in view of what has already been set out generally in connection with the consideration of the working requirement. The relation of overlapping patents to each of these, however, will be briefly considered.

In connection with all the foregoing, the bearing of the fact that overlapping patents are freely issued in the United States must not be lost sight of. The writer has personally known of patented machines which infringed a number of prior patents. One case in mind is that of a machine which when first built infringed no less than six prior patents, some of which were in commercial use and exceedingly valuable. A working requirement effective to compel a commercial exploitation of a later patent might in effect compel as well the incurrence of a number of infringement suits, or license arrangements where the later patentee would be in a poor position to negotiate a fair bargain.

Such a provision in the law would doubtless be very active in certain arts and would impose judicial and administrative duties of great volume upon some tribunal. That the Commissioner of Patents would not welcome the addition of this great burden to its already heavy duties is beyond a doubt. Furthermore, it would involve a revolution in the theory of organization of the Patent Office. Our Patent Office up to this time has not exercised jurisdiction over any question which does not involve an application for patent pending before the office. The operation of any such provision of law might eventuate in the establishment of a central national patent tribunal, a thing which is certainly desirable for reasons totally apart from the matters under discussion.

### What Would Be the Effect of Such a Law?

Such a law might operate to stay rather than "promote the progress of science and the useful arts." Under the present system the arts are certainly persistently and exhaustively developed on the intellectual—that is, the patent side, and eventually this becomes, at least in theory, the property of all. It is highly probable that were a working requirement or a compulsory license clause in force, a large corporation would have no desire to take out patents for machines other than those actually used and marketed by it.

In this connection we should consider a class of corporations which rely upon controlling or maintaining a monopoly on their product through the patents on their machines. This in itself is a legitimate use of a patent, and where the revenue is almost entirely in the sale of the product it would seem to be an injustice to compel them to yield to the demands of rivals for their machines whose ultimate object is to place the product on the market.

With reference to the domestic operation of the working requirement in Germany, the German Society for the Protection of Industrial Property has declared emphatically against the working requirement. If dissatisfaction against this requirement has arisen in a country where it has been in force for many years, and where patents do not overlap as they do here, is it likely that the industrial elements in this country would encourage the enactment of such a requirement after experiencing the exceedingly liberal treatment accorded by our present laws?

### The Right of Non-User.

This right under the law as it stands has been most clearly stated by the Supreme Court. In the telephone cases this court said:

> Counsel seem to argue that one who has made an invention and thereupon applies for a patent therefor occupies, as it were, the position of a *quasi* trustee for the public; that he is under a sort of moral obligation to see that the public acquires the right to the free use of that invention as soon as is conveniently possible. We dissent entirely from the thought thus urged. The inventor is one who has discovered something of value. It is his absolute property. He may withhold a knowledge of it from the public, and he may insist upon all the advantages and benefits which the statute promises to him who discloses to the public his invention.

A few years later, upon this point, the same court said:

> If he [a patentee] sees fit, he may reserve to himself the exclusive use of the invention or discovery. If he will neither use his device nor permit others to use it, he has but suppressed his own, . . . his title is exclusive, and so clearly within the constitutional provisions in respect to private property that he is neither bound to use his discovery himself nor permit others to use it.

Within the last few months this same question came up before the court in a modified form. It was contended in this case that the right of nonuser was exercised in a perverse spirit, and for the sake of forcing on buyers an old type of machine through nonuser of the patents of the superior machine, which patents were held by the manufacturers of the old and inferior machine. The manufacturers of this old and inferior machine sued a concern putting on the market a new machine which infringed the suppressed patent. It was merely contended in this defense that the plaintiffs were not entitled to an injunction, but only to their legal remedy of damages. In other words, in standing upon their legal rights without being in the equitable position, they were entitled only to legal remedies and not to equitable remedies. Justice Kenna, in delivering the opinion of the Supreme Court in June last, said:

But, granting all this, it is certainly disputable that the nonuse was unreasonable, or that the rights of the public were involved. There was no question of a diminished supply or of increase of prices, and can it be said, as a matter of law, that a nonuse was unreasonable which had for its motive the saving of the expense that would have been involved by changing the equipment of a factory from one set of machines to another? And even if the old machines could have been altered, the expense would have been considerable. As to the suggestion that competitors were excluded from the use of the new patent, we answer that such exclusion may be said to have been of the very essence of the right conferred by the patent, as it is the privilege of any owner of property to use or not use it without question of motive.

As possibly having some bearing upon any attempted change in the present law, so clearly construed by the highest judicial authority, as above outlined, the following dictum of Justice Kenna in the case just mentioned is not without interest:

And another fact may be mentioned. In some foreign countries the right granted to an inventor is affected by nonuse. This policy, we must assume, Congress has not been ignorant of nor of its effects. It has, nevertheless, selected another policy; it has continued that policy through many years. We may assume that experience has demonstrated its wisdom and beneficial effect upon the arts and sciences.

**Direct Taxation of Patents.**

All of the prominent European countries impose a tax directly upon all patents, usually in the form of an annuity and imposing as a penalty forfeiture or lapsing of the patent. In France and Germany, this provision is concomitant with a working requirement, and viewed from the liberal standpoint of the American law almost takes on the appearance of harshness. That these two provisions of the law co-exist might be taken to indicate that the tax was imposed principally for purposes of revenue.

From the standpoint of giving the best possible bargain to the inventor, which may be generally stated as the standpoint of the American Government, let us inquire what the effect of direct taxation would be. Individual inventors frequently have difficulty in interesting capital, and sometimes years elapse before an invention is gotten under way. It is just possible that in many cases the imposition of the annual tax with the forfeiture penalty attached would act to deprive the inventor of the fruits of his frequently lifelong labor. On the other hand, if the law were intended to step the bolstering up of a machine on the market by paper patents on improvements, there can be no doubt that in important cases the tax would be a mere bagatelle from the standpoint of the manufacturers and would be scrupulously paid. In fact, it might not unreasonably be held that such a tax is a deliberate price placed on non-user and be used to reinforce the practices that it was aimed at.

Where a patent is commercially exploited, the income from taxation upon machines and product is frequently large. It would seem, in a general way at least, that indirect taxation is better adapted to measure the success of an invention and the just liabilities of its owners to participate in the common support of the Government.

**Nature of the Question.**

The question is essentially one of industrial economics and should be decided on this basis. Any provision of this kind must, in view of what has been shown and especially in view of the decisions quoted, be regarded as a limitation of the rights now accorded inventors and a narrowing of the liberal spirit which now pervades the patent laws. That the operation of the present laws in their entirety has been a notable success, none can doubt. Whether any change is desirable should be very carefully considered.

So far as any modification of the law to meet legislation abroad which adversely affects American interests, such change should be considered separate and apart from the domestic situation.

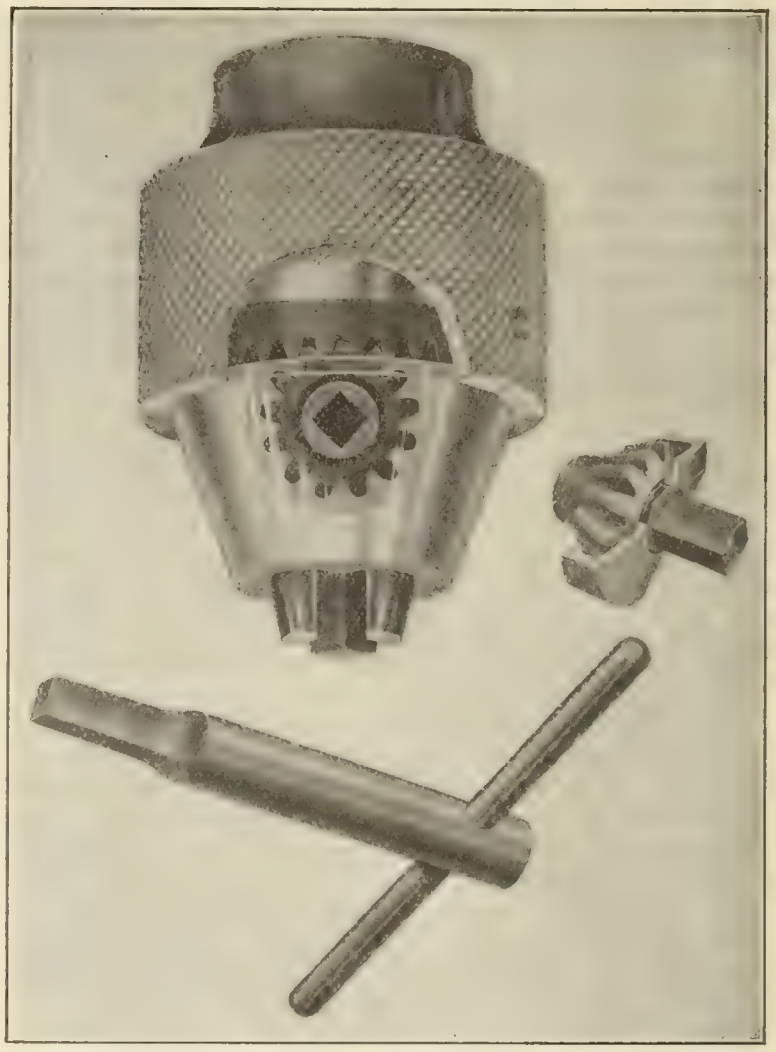
History must always put down the last half century as one of the notable periods of world development and must also accord to the United States a prominent place in that development. From our present viewpoint, furthermore, our patent laws must be recognized as one of the potent agencies in this great development.

*(Conclusion.)*

## The Latest Almond Drill Chuck.

The new inclosed pinion drill chuck made by the T. R. Almond Mfg. Company, Ashburnham, Mass., differs from the form which has been the standard with that company for 30 years only in the manner of tightening, a square ended key being used instead of a spanner. One particular advantage of the new arrangement is that it is unnecessary to hold the spindle from revolving while tightening the jaws. On sensitive drills this is particularly desirable.

The body of the chuck is recessed to receive a bevel pinion which meshes with teeth cut on the face of the jaw actuating nut. The pressure on the nut being on the back, the same wearing surface is preserved as in the Almond spanner operated chuck. A cap covers the pinion and provides a support for the outer end of it, while the inner end of the pinion has a bearing in the body of the



The New Inclosed Pinion Drill Chuck Made by the T. R. Almond Mfg. Company, Ashburnham, Mass.

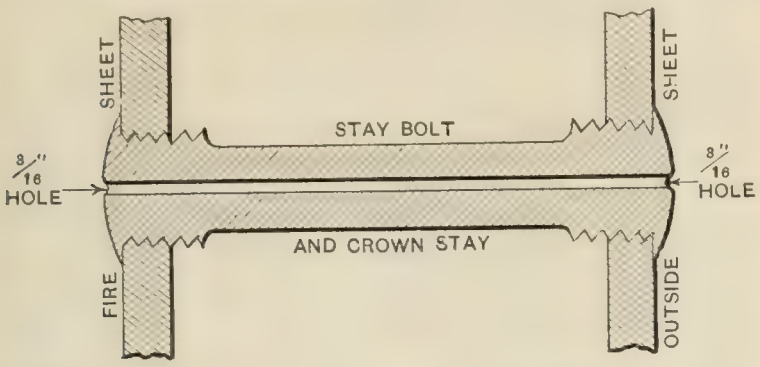
chuck. Both the pinion and the nut are made of a special grade of tool steel tempered. There are no projections on the chuck; the pinion comes flush with the surface of the chuck body and has a square hole in it to receive the key. The knurled sleeve can, as formerly, be used for quick adjustments by hand, while the key is used for the final tightening.

The Almond inclosed pinion chuck is made in three sizes. No. 1 has a capacity from zero up to 3-16 in.; No. 2, zero to 5-16 in., and No. 3, zero to ½ in. Like the Almond standard drill chuck, it has jaw holes open at their ends. This construction incidentally facilitates lubricating, but it is principally to enable making the holes with a finer finish and of exactly uniform diameter end to end to give a perfect fit and perfect bearing to the jaws.

The Fort Wayne Engineering & Mfg. Company, Fort Wayne, Ind., which was organized and incorporated six months ago with $200,000 capital stock, to manufacture engines and boilers, has built a few engines which will be tested out inside of this year, the plans for future building depending on the outcome of these tests. All the work done so far has been preliminary. The president of the company is Henry C. Paul; secretary-treasurer, James H. Haberly; chief engineer, John Astrom.

## Falls Hollow Staybolt Iron.

Even though it has been on the market for some time the extensive use which is being made of hollow staybolt iron makes it seem desirable to explain something of its manufacture, characteristics and advantages for the benefit of those who may not be familiar with it. An




A Safety Staybolt and Crown Stay as Made by the Falls Hollow Staybolt Company, Cuyahoga Falls, Ohio.

interesting vibratory test of the material as manufactured by the Falls Hollow Staybolt Company, Cuyahoga Falls, Ohio, was made recently at Purdue University. Eight samples were tested with the following results:

| No. | Tension load. Pounds per square inch. | Revolutions per minute. | Number of revolutions to rupture. |
|---|---|---|---|
| 1 | 4,000 | 100 | 10,188 |
| 2 | 4,000 | 100 | 13,123 |
| 3 | 4,000 | 100 | 8,339 |
| 4 | 4,000 | 100 | 9,363 |
| 5 | 4,000 | 100 | 8,868 |
| 6 | 4,000 | 100 | 10,880 |
| 7 | 4,000 | 100 | 11,888 |
| 8 | 4,000 | 100 | 5,318 |
| Average | | | 9,746 |

The tests were made on an Olsen staybolt machine in accordance with the specifications recommended by the Committee on Staybolts of the American Society of Testing Materials. These specifications require a tensile strength of not less than 48,000 lb. per square inch, with an elongation in 8 in. of not less than 28 per cent. and a contraction of area of not less than 45 per cent., and an ability to stand 6000 revolutions when one end is fixed and the other end (8 in. from the fixed end) is moved in a circle of 3-32 in. radius, while the bolt is under a tension load of 4000 lb.

Falls hollow staybolt iron is made from a blend of imported Swedish and native high grade iron stock, the combination of which is claimed to produce the best staybolt material. By the use of it a saving of labor and material is effected in application and renewals, as a hollow bar can be threaded its full length, screwed in the firebox, the proper length cut off, and the operation continued until the entire bar is used up. Hence, there is very little, if any, waste. In removing a broken hollow bolt, the operator has a hole exactly in the center of the bolt for his drill to follow, and nothing but the bolt is removed. On the other hand, in removing broken hollow stays with telltale holes drilled in the ends, which holes are often drilled away from the center, and sometimes through the surface of the bolt, it frequently happens that considerable of the sheet is mutilated, necessitating the reaming out of the sheet and the replacing of the bolt with one several sizes larger in diameter.

The drilling of the telltale holes in solid stays weakens the bolts at the vital point by cutting the interior fiber of the iron, and causes them to break much quicker than they otherwise would were they not drilled. The telltale in the hollow bolt is rolled through its entire length in the process of manufacture, as shown in the illustration, therefore its length is uniform throughout; no one point is weaker than another. The hollow bolt is rolled inside as well as outside, making it dense and compact, and able to withstand the unequal expansions and contractions of the firebox sheets much longer than solid bolts.

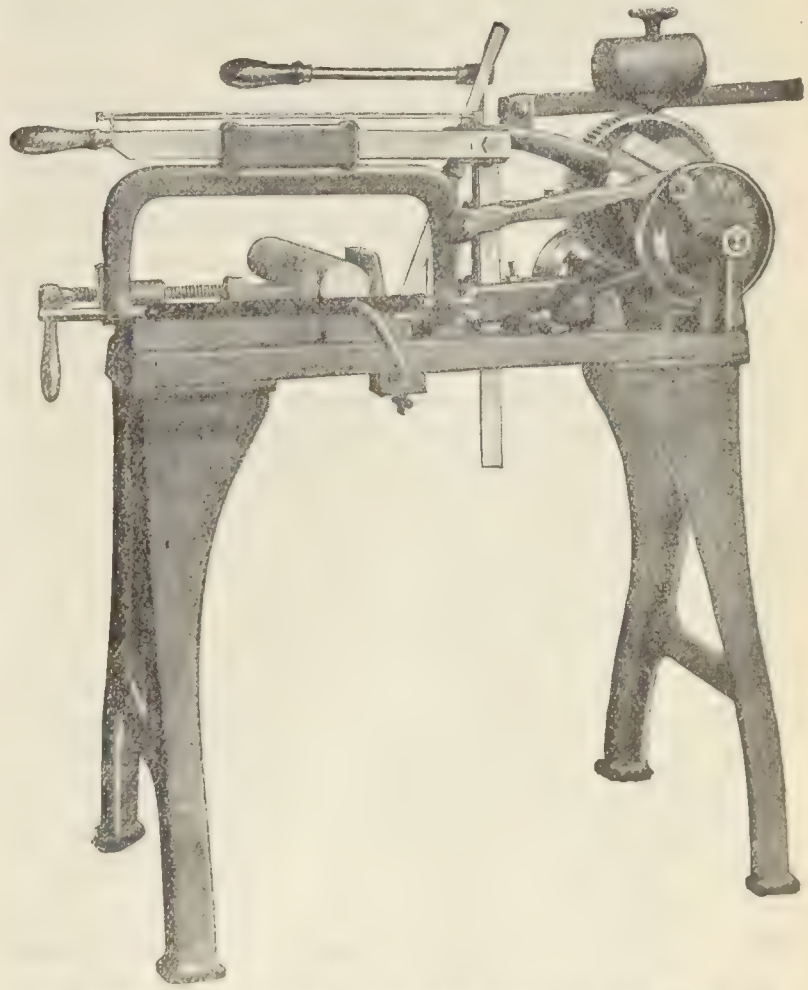
The telltale holes drilled in solid stays are likely to become clogged, and so fail to indicate a fractured bolt by the escape of steam. The telltale hole in the hollow bolt being rolled in it from end to end is kept clear by the current of air passing through it into the firebox. Incidentally this air current aids the combustion of fuel, reduces the temperature of the bolt, prevents undue expansion and contraction and protects the inner ends of the stays from burning and the side sheets cracking.

Many of the leading railroads in all parts of the world are now using hollow iron exclusively for repairs, and in new equipment it is largely employed for the short stays, crown stays and even the braces.

The advantages of the hollow bolt make it safe and economical to use for the staying of modern high pressure locomotive, marine and stationary boilers. The material is made in average lengths of from 8 to 10 ft., and in outside diameters from ⅞ to 2⅛ in. and inside diameters of ⅛ to ⅞ in. The larger sizes are suitable for use as hollow shafting, mining drills, thawing points and other special uses requiring high grade material.

## A New Milford Power Hack Saw.

The power hack saw shown in the illustration, known as the Milford No. 4, is built by the Henry G. Thompson & Son Company, New Haven, Conn. It contains several new features, notable among them being a gear drive and a quick return motion of the saw in combination with a mechanism for raising the blade during the reverse stroke. The movement of a slotted cam gives these motions. While the cut is at the standard rate of 40 strokes the return has just twice that speed, or at the rate of 80



The No. 4 Milford Power Hack Saw Made by the Henry G. Thompson & Son Company, New Haven, Conn.

strokes. The machine is geared 4 to 1. This method of drive does away with the usually large pulley and makes unnecessary the use of a small pulley on the line shaft. The quick return effects a marked saving in time, and the lifting of the saw free of the work saves the blade.

The cutting capacity of the machine is 5 x 5 in. The blades used may be 10, 11 or 12 in. long. The tight and loose pulleys are 6 in. in diameter by 1¾ in. face. The gears are machine cut, and there is adjustment for wear wherever necessary. Its floor space is 20 x 40 in. and weight 200 lb. Under test this machine made 32 cuts through a piece of unannealed Jessup steel 1 x 2 in. in an average time of 6.84 min. each.

The first six of the series of movable dams projected for the upper Ohio River are now in operation. With the completion recently of Nos. 2 and 3 of the fixed dams on the Allegheny River, Pittsburgh low has slack water for 128 miles up the Monongahela River, 25 miles up the Allegheny and 29 miles down the Ohio.

# Foundry Accounting Methods.*

BY JOHN DOUGHTON, PHILADELPHIA, PA.

While the subject of this paper is very comprehensive, covering nearly every element connected with the recording of foundry detail, I shall take up but one phase of the subject, that to my knowledge has received but very little attention. I refer to the proper handling of customers' orders. I suppose that nearly everybody in the foundry business, especially those who come in close touch with the customer, has felt at some time the need of an effective method for handling customers' orders through the foundry so as to be able to give more satisfactory deliveries, and thus prevent a great deal of complaining on the part of the customer—some method by which, if a customer asked when he could get his castings, he could be given a date that could be realized without upsetting all the previously made plans of the foundry; or, if he did not ask for any promise of shipment, the castings would be delivered to him without the necessity of his calling our further attention to the order. Any arrangement that will enable a foundryman to accomplish this should have his careful attention.

### Little Attention Paid to the Order in Which Work Is Received.

Every foundryman is aware of the importance of prompt deliveries in his efforts to secure orders, but how often, after an order has been received on the strength of certain promises of delivery, it is neglected or forgotten as far as any attempt to meet the promises are concerned. Many orders are lost because a prospective customer is not satisfied that his orders will receive proper attention, or else believes they will receive better attention by the foundryman to whom he gives the order.

In many foundries castings are made without any regard to the order in which they are wanted. When an order is received from a customer it is duly entered and the patterns are placed on a shelf in the foundry, and unless the customer has specified when he must have the castings, the patterns may remain on the shelf for almost any length of time, until the customer inquires about them. Now it may be that this same customer has other orders in the foundry. Does that fact have any effect on the order in which the castings will be made? Not at all. If the last pattern is a desirable class of work and calculated to swell the heat or tonnage, in it goes, crowding out castings less desirable for the foundry, but just as necessary to the customer. If the last pattern is an intricate or otherwise undesirable class of work it is allowed to remain on the shelf together with a lot of other undesirable work that has been allowed to accumulate. Some day the customer inquires for the castings, and then some story is invented to pacify him, and everything is turned upside down in an effort to get the castings out.

This neglected work so accumulates that, when the day of reckoning comes, the foundry has a lot of undesirable work on hand that all customers are calling for at the same time. This is not only a possible condition, but one that has been seen time and again. Very often the failure to make castings on time is blamed on the foreman, though nothing is done to assist him in knowing the order in which they should be made. The greatest harm this practice does is that some customers are receiving castings that they could well wait for, while other customers get practically nothing and are forced to wait for castings on which they may have allowed sufficient time had the foundry used some discretion and a little diligence in the filling of the order.

### Accumulation of Partly Filled Orders.

Another source of annoyance to the foundry, as well as the customer, is the accumulation of old orders that need cleaning up, some only half filled, but most of them needing but a few castings to complete the order. The reason for this accumulation of back orders is often found in the lack of proper provision for the discovery and replacing of defective castings. One result of this lack of proper methods is that one day this customer is complaining about neglected orders, and the next day it is some other customer, so that in an effort to keep them all satisfied the foundry is kept in a continuous turmoil, often resulting in bad castings and bad tempers. Another disastrous result is that the customer becomes dissatisfied and is ready to change foundries regardless of price, provided he can be made to feel that his orders will receive better attention.

By the adoption of a simple follow up system in connection with the orders all this trouble and confusion could be avoided. It must be remembered that labor in the foundry differs from other labor in this, that while the machinist or other workman sees the product of his labor continually and can replace any material found defective or is spoiled by him, the molder on the other hand does not see the product of his labor until the end of the day, or it may be after many days. A molder may complete the molding on an order, but we are far from being certain that we shall have all the castings. This feature of the foundry business (the inability of the molder to see the product of his labor and his consequent inability to discover and rectify his mistakes during the progress of his work) is responsible for a great many of the troubles of the foundryman.

FOUNDRY LAYOUT SHEET

| MONTH | DAY | MOLDER J. Brown ORDER | PAT. | PCS. | HRS. | MOLDER J. Smith ORDER | PAT. | PCS. | HRS. | MOLD ORDER | PAT. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Nov. | 2 | 4820 | B 1 | 2 | 10 | 4821 | C-2<br>C-3 | 2<br>2 | 6<br>4 | | |
| | 3 | | | | | | | | | | |
| | 4 | 4820 | B 1 | 2 | 10 | 4821 | C-2<br>C-3 | 2<br>2 | 6<br>4 | | |
| | 5 | 4820 | B 1 | 2 | 10 | 4821 | C-2<br>C-3 | 2<br>2 | 6<br>4 | | |
| | 6 | | | | | | | | | | |
| | 7 | 4820 | B 1 | 2 | 10 | 4821 | C-2<br>C-3 | 2<br>2 | 6<br>4 | | |
| | 9 | 4820 | B 1 | 2 | 10 | 4821 | C-2<br>C-3 | 2<br>2 | 6<br>4 | | |
| | 10 | | | | | | | | | | |
| | 11 | 4820 | B 1 | 2 | 10 | 4821 | C-3 | 2 | 4 | | |

Fig. 1.—Foundry Layout Sheet.

There are various order systems in use in the foundry business, probably very few foundries using the same scheme. Some of these systems are models of record keeping and make good histories of operations in the foundry, but they don't give much assistance toward filling orders with any regard to the customers' interests. By some of them it is necessary for the foundry foreman to act the part of a clerk and to spend a great deal of time going over orders that might be given to looking after the quality of work being turned out by his men. Nearly all lack any provision for handling the work with any regard to the order in which it is wanted.

### A Follow-Up System Necessary.

In looking for a solution of this problem, let us notice for a moment the methods used by an up to date pur-

*Read before the Philadelphia Foundrymen's Association, October, 1908.

chasing agent for a large plant. When he places an order for any material, the first thing he usually does is to set a date upon which he will look for shipment; he bases this date either on promises made by the shipper or on his expectations of delivery. Now it would be practically impossible for him to go over the purchase orders each day and select those needing attention, so he

DAILY WORK SHEET

NOVEMBER 2 1908

| MOLDER | ORDER | PAT. | PCS. | ORDER | PAT. | |
|---|---|---|---|---|---|---|
| J. Brown | 4820 | B 1 | 2 | | | |
| J Smith | 4821 | C-2<br>C-3 | 2<br>2 | | | |
| | | | | | | |
| | | | | | | |

Fig. 2.—Daily Work Sheet.

"tickles" this particular order for attention on a certain date, and when that date comes round he takes out this order and any others that may have been tickled for the same date and gives them all the necessary attention. If any require still further attention he fixes the date and again tickles the order as before, allowing none to be put away if unfilled without being scheduled for future attention. By this method each purchase order is looked after systematically. By precisely the same method we can look after all foundry orders.

I shall not go into details of making out foundry orders, but will describe an automatic follow-up system for following up orders systematically until every item called for on the order has been delivered. This plan consists of laying out the work as fast as orders are received, assigning each pattern to a certain molder to be made on a certain day and basing the completion of the order on the amount of work each molder has ahead of him. Each order is tickled or scheduled to be looked up on certain dates and all delinquencies are immediately reported and attention given them. In other words, the foundry is operated according to a schedule. By this plan three forms or sheets are required. The first I shall call a foundry layout sheet, the second the daily work sheet and the third the promise sheet.

### The Foundry Layout Sheet.

The foundry layout sheet, as shown in Fig. 1, is a sheet ruled horizontally and in columns, each column representing a molder or molding floor. The spaces between the horizontal lines represent working days. The lines are far enough apart to allow sufficient room for inserting four or five pattern numbers. When an order is received, the foundry order is made out in the usual way, the foreman or other qualified person indicating on each pattern the time required to mold it, the number of pieces he will make each day and the molder who will make the castings. The order clerk will then mark on the foundry layout sheet in the proper columns, according to the name of the molder, in the first space, the number of the pattern and the number of pieces to be made each day, also the time it will require the molder to spend each day to make the castings. He will carry this down until the total number of castings required is entered on the sheet, noting the date the order will be completed; this date he marks on the order as a record of when the castings are expected to be completed.

To illustrate: We receive an order for 20 castings from pattern B-1. The foreman indicates on the pattern that it will require 5 hr. for each casting, and names J. Brown as the molder; consequently 10 working days must elapse before the order is completed. We turn to the foundry layout sheet and in the column allotted to J. Brown we enter the 20 castings. Assuming the order is received on the first day of the month and is the first order, we enter two castings for the first day, two for the next and so on until the entire order of 20 castings will be completed on the twelfth day, which date we mark on the order.

This illustration is a very simple one, and I will give another not quite so simple. We receive an order for 10 castings C-2 and 20 castings C-3. The foreman says that it will require 3 hr. to make each of the first and 2 hr. for each of the second, and two of each will be made per day, and he gives the job to J. Smith. In the column allotted to Smith we enter two castings C-2 at 3 hr. each, making 6 hr., and two castings C-3 at 2 hr. each, making 4 hr., a total of 10 hr. You will note, however, that while the 10 castings, C-2, will be completed on the 6th, the 20 castings, C-3, will not be completed until the 12th. This information is entered on the order opposite each item. You will note also that while this man has a full day's work before him for the first five days, he has only 4 hr. of the next five days, so that, as the orders come in, we must fill in these days with work he is capable of handling.

This layout sheet when filled in as the orders are received will show, first, what work is assigned to each molder and the probable length of time it will take him to complete it, and, second, by referring to any certain date we can see what work is laid out for that day.

### The Daily Work Sheet.

The next step is to let the molder know in a convenient way what he is to make. For this purpose we use the daily work sheet, as shown in Fig. 2. This is a

TICKLER SHEET

NOVEMBER

| DATE | ORDER | ORDER | ORDER | ORDER | ORDER | ORDER | ORDER | |
|---|---|---|---|---|---|---|---|---|
| 2 | | | | | | | | |
| 3 | | | | | | | | |
| 4 | | | | | | | | |
| 5 | | | | | | | | |
| 6 | 4821 | | | | | | | |
| 7 | | | | | | | | |
| 9 | | | | | | | | |
| 10 | | | | | | | | |
| 11 | | | | | | | | |
| 12 | 1820 | 4821 | | | | | | |
| 13 | | | | | | | | |

Fig. 3.—Promise or Tickler Sheet.

sheet ruled horizontally, each space representing a molder or molding floor. To the left is entered the name of the molder and opposite his name is entered the patterns he is to work on and the number of pieces he is to make that particular day. This is made up from the foundry layout sheet and should be made up the day before, so as to be ready for the molder in the morning. It

should be posted in a convenient place so as to be seen by all the molders. It is a simple matter for the pattern carrier to use this sheet in getting patterns out for the molders.

The difference between the foundry layout sheet and the daily work sheet is that the daily work sheet shows only the work laid out for one day and does not show the time assigned to any job. Our system so far has provided us with a means of knowing what to expect; the next step is to know if our expectations have been fulfilled, and it becomes necessary for us to follow up each order systematically. As stated before, the date upon which we expect the complete order is entered on the copy of the order, so that by reference at any time to any order we may know when it is expected to be completed.

**The Promise or Tickler Sheet.**

We now take the copies of the orders and enter the number of the order on the promise or tickler sheet opposite the date the order is to be completed. This promise sheet, as shown in Fig. 3, consists of a sheet ruled vertically and horizontally so as to leave room for the number of an order or pattern in each space. On the left of the sheet we list the days of the month, omitting Sundays, allowing as many lines as may be thought necessary to each day. Opposite the respective dates we place the number of the orders according to the date they are to be completed, so that by turning to any one day we have a list of the orders scheduled for completion on that date.

As each day comes round, we look up the orders that were to be completed that day. If shipment is made as laid out nothing more need be done, but where shipment is not made we must get after all such orders ,obtaining new dates on which shipment will be made and entering them on the tickler sheet. When it is impossible to keep a promise made to a customer he should be notified of the change, as it may mean a great deal to him in the preparations he is making. This will often forestall complaints and will create the impression in the minds of some customers that their interests have not been ignored altogether.

The successful use of the foundry layout and daily work sheet depends largely on the manner in which the promise or tickler sheet is checked up. It should be the duty of some one each morning to check the shipments of the day before. To do this, it is only necessary to take those orders opposite a certain date and see if they have been completed as scheduled, reporting on a special form any orders not completed. It would also be well to send to the shipping clerk a list of all orders promised for completion on the following day. This will give him an opportunity to get those castings ready.

The automatic feature of the promise or tickler sheet lies in the fact that the following up of an order does not depend on somebody's memory or on a memorandum that is often lost. When an order is received, the date we expect to complete it or the date on which we have promised a shipment is entered on the order and the order number is entered opposite the proper date on the promise sheet. Thus at the proper time this order is brought to our notice, and if the castings were delivered it requires no further attention, but if for any reason shipment was not made we look the matter up, not allowing the matter to rest until we have tickled the order for future attention.

While I have spoken of tickling an order according to the date we expect to complete it, there is no reason why we should not enter the dates on which we expect to make partial shipment, if this is desirable. To sum up the whole matter, the foundry layout sheet is for the purpose of assisting the foundry in making castings in the order they are required, while the promise sheet is to assist the office in following up the foundry and reporting any delinquency as soon as it occurs.

**Rush Orders and Defective Castings.**

There is one phase of this subject that has not yet been touched. In order that our system shall work successfully as it is now laid out, it would be necessary that we receive no rush orders, that everybody be willing to wait his turn and also that we have no defective castings. But these are conditions that are not likely to exist at any time in the foundry business. Customers will send orders for castings that are wanted at once, or are wanted before our ordinary routine would give them the castings, and also the foundry will continue to make defective castings.

To provide for rush orders and the replacing of defective castings, it will be necessary for us to allow sufficient time each week to take care of them. This time will depend on the conditions existing in each foundry; so, if it is found that it requires one full day a week to take care of rush orders and defective castings, we skip one day each week and we lay out the work on the foundry layout sheet, or perhaps it may be best to skip two half days each week. For instance, it may be found from experience in one foundry that it requires nearly two days each week to handle this class of work, so that Tuesdays and Fridays of each week may be allotted to the filling of rush orders and replacing of defective castings. No work is assigned to these days from the orders as they are received, unless it be for castings that are wanted at once.

While the work for these two days is made up of rush orders and replacing defective castings, it is not to be understood as meaning that defective castings connot be replaced or rush orders filled on any but these two days. Any system to be of real service must be somewhat elastic in its operation. If a rush order is received we do as we do now, crowd it in to the best advantage, and here is where the value of our methods appear. Usually in crowding a rush order in something else is crowded out, and is often allowed to remain out, but we only crowd it along, not out, and as we have allowed the necessary time in the layout of our orders, no previously made plans are upset in our effort to get this rush order out. In entering this rush order on the foundry layout sheet we observe the same rules as in regular work, so as to know as nearly as possible the time to which work has been assigned. As replace orders are to be considered as rush orders, the same remarks apply to the replacing of defective castings as to the filling of rush orders. It sometimes happens that the foreman underestimates the time required on a given job; he will also overestimate on others, so that his estimates if made intelligently will balance up fairly well.

**Advantages of the System.**

The advantages to come from a system such as I have outlined are as follows: The foreman can know at any time how much work and what work is allotted to any molder by referring to the layout sheet. As each pattern as it is received is assigned to a workman, the foreman does not have to be hunting work for his men, but can give his time and attention to more important work, the proper running of the foundry and to the quality of work being turned out. By reference to the order we have the expected date of completion. By referring to any date in the tickler sheet we have a list of orders scheduled for completion on that date. As every order is scheduled to receive attention according to the needs of the customer or according to our expectations of shipping the castings, it can readily be seen that every order will receive due attention at the proper time, thus making it unnecessary for some one to go over the order book and list those orders that seem to be neglected. I say "seem to be" because without a very intimate knowledge of the conditions in the foundry the officeman cannot know whether an order is unfilled because of neglect or otherwise, and often he is looking up and hurrying up orders that are already receiving proper attention, while paying no attention to other orders that have gone to sleep.

It is unnecessary for me to call attention to the advantages of such a system to the buyer of castings or the advantage to the foundry in satisfied customers. By the methods here only outlined, it is possible to lay out the molding and shipping on castings of every size and weight regardless of the number of pieces wanted, the molding to cover a period of one day or two or three months or more if necessary, with the practical certainty that each piece will be molded, cast, cleaned and shipped on schedule

time, including the filling of rush orders and the replacing of defective castings.

Certain modifications of this plan might be used effectively, eliminating certain features in some cases and adding in other cases as necessity required. I can conceive of a plan where the payroll and cost system could be handled in connection with the system hereoutlined to good advantage.

There are many subjects connected with the handling of the orders that I have not touched upon, as, for instance, the handling of patterns, the handling of castings from the molding floor to the customer, the discovery of defective castings, simple accounting methods and many other subjects that suggest themselves. These all go toward making an effective system for giving prompt and satisfactory service. The difficulty with some systems is the subserviency of the foundry to the system, whereas the reverse should prevail, and the system be made to serve the needs of the foundry and the interests of its customers.

## The Philadelphia Foundrymen's Association.

The regular monthly meeting of the Philadelphia Foundrymen's Association was held in the Manufacturers' Club on the evening of November 4, with President Thomas Devlin in the chair. The Mt. Penn Stove Works, Reading, Pa., represented by Wm. R. Schaeffer, was elected to active membership. Memorial resolutions on the death of Walter E. Devlin, president of the Philadelphia Hardware & Malleable Iron Company, were presented by the committee and were ordered spread on the minutes of the association.

It was decided that a committee of three, to be named by the president, be appointed to represent the association at the meeting of the Atlantic Deeper Water Ways Association, which will hold its second convention in Baltimore, Md., November 17 to 19. The appointment of the committee was deferred.

The paper before the meeting was on "Foundry Accounting Methods," by John Doughton, Philadelphia. Considerable discussion followed the reading of the paper. It was the general opinion that Mr. Doughton's methods, adjusted and adapted to various needs, according to the character of work done in the different plants, was a step forward in this important work. After adjournment luncheon was served in the dining room of the club.

## Lake Superior Ore Shipments in October.

The comparative statement of Lake Superior iron ore shipments to November 1, 1908, and November 1, 1907, by ports is as follows in gross tons:

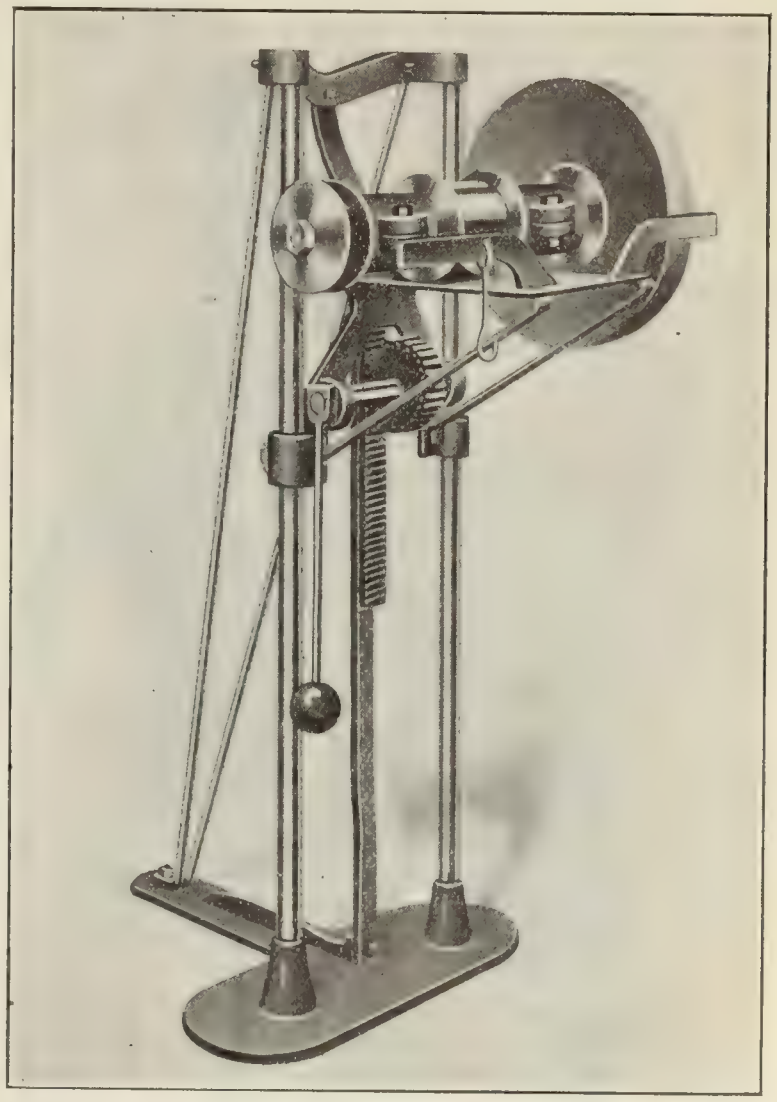
| | To November 1, 1908. | To November 1, 1907. |
|---|---|---|
| Escanaba | 2,746,116 | 5,253,043 |
| Marquette | 1,177,730 | 2,701,812 |
| Ashland | 2,019,948 | 3,103,838 |
| Superior | 2,908,619 | 6,747,945 |
| Duluth | 7,931,568 | 11,908,539 |
| Two Harbors | 4,946,091 | 7,326,684 |
| Totals | 21,730,072 | 37,041,861 |

The November movement is not expected to exceed 4,000,000 tons and may be several hundred thousand tons less. The situation differs from that of last year and the year previous, in that some belated demand for ore made its appearance this year, while in the two years previous the shipping schedules were well made up in October. The November movement last year was 4,156,076 tons, while in 1906 it was 3,734,167 tons. The shipments from Escanaba, Marquette and Superior this year have been a smaller percentage of the total than these ports contributed last year. Ashland shows a small percentage increase, while the percentage contributed by Two Harbors and Duluth, representing Mesaba ore shipments, increased from 51.91 last year to November 1 to 59.26 this year. The Superior percentage fell from 18.20 to 13.38, indicating that the Hill and other properties shipping by the Great Northern have not been as extensively worked.

## The Economy Emery Wheel Stand.

Elimination of the countershaft usually required to drive such machines and economy in cost and maintenance are the leading features of a new emery wheel stand brought out by George E. Soper, Kankakee, Ill. The stand is of unusual design in that it is arranged for direct belt connection with the line shaft or motor. Mounted on two upright posts, to which it is secured by bolted clamp collars, is the arbor frame. This carries a two-wheel spindle in the center of which is the driving pulley.

Just back of the arbor frame is a toothed rack attached to a post rising from the base, into which meshes a spur gear pinioned in the lower part of the frame. The gear is rotated by a ball lever which raises and lowers the arbor frame and so loosens or tightens the belt. This mechanism takes the place of tight and loose pulleys since when the lever is raised the belt runs idle in the frame. It also affords instant means of tightening



The Economy Emery Wheel Stand Made by George E. Soper, Kankakee, Ill.

the belt to any required tension and prevents slipping, thereby insuring the full cutting capacity of the wheel.

A feature of construction that contributes to the rigidity of the spindle bearings is the casting of the top half of the arbor bearings solid with the frame. This brings the pull of the belt against the frame itself instead of on cap screws, which are in this case only required to carry the weight of the arbor when idle. When not in use the ball lever is raised and is held by a swinging hook provided for that purpose.

In addition to an adjustable tool rest for each wheel the stand is supplied with a surfacing attachment perpendicularly adjustable to fit wheels of any size from 6 to 12 in. in diameter. The machine is rigidly braced to withstand vibration and sets on a solid cast base. Wheels from $\frac{3}{4}$ x 6 in. to 2 x 12 in. set 14 in. apart are accommodated on the arbor shaft, which also carries a $3\frac{1}{4}$ x $3\frac{1}{4}$ in. flange pulley.

Reports that the American Sheet & Tin Plate Company would erect more hot mills at its New Castle, Pa., plant are officially denied.

# The L. L. Scott Gasoline Rock Drill.

Three types of gasoline rock drills have been invented and built by L. L. Scott of Joplin, Mo., namely, the double-acting hammer type, single-acting hammer type stope drill weighing 90 lb., and a double-acting piston type drill. The latter type is illustrated herewith. The engines on all of these drills work on the two-cycle principle. One of the early types of drill was demonstrated at the American Mining Congress last year and aroused considerable attention.

Experience has indicated that a practical piston gasoline rock drill should fulfill the following requirements: It should afford an impulse on every up and every down stroke (a powerful up stroke is required for drilling holes as deep as 10 to 30 ft. on account of weight of steel to be lifted and the tendency for the steel to hang in the piston. The drill rod is swivelly connected to the piston and is free to rotate independently of the piston, as shown in Fig. 2. The rotating device is located in the lower charge receiving chamber. The crankshaft is cushioned to relieve the bearings of jar when the bit strikes the rock. The pistons are acted on by 300 lb. explosive pressure, and are practically free from the crankshaft when the bit strikes the rock. This gives the result of a free piston, at the same time the crank acts as a guide to insure the proper port opening, keeps the piston from knocking out a head, if a pocket is struck in the rock, and is a means of starting the drill. The piston has the usual U bolt chuck for holding the steel. All parts are oiled automatically by oil that is mixed with the gasoline drawn in with each suction of the engine. The drill, as a whole, permits a rigid construction and is remarkably simple. Common rock drill mountings

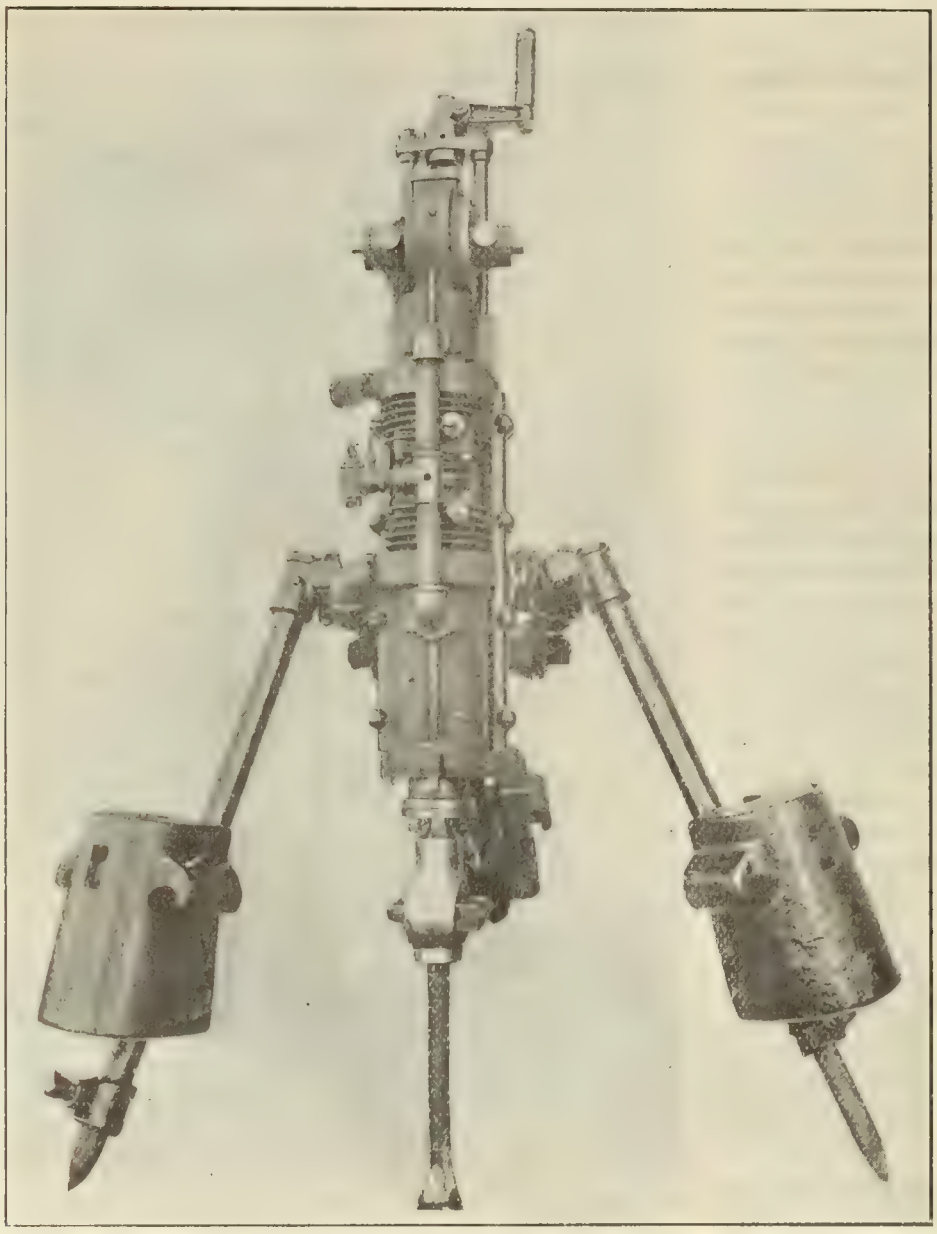


Fig. 1.—A Double Acting Piston Type Gasoline Rock Drill Designed by L. L. Scott, Joplin, Mo.

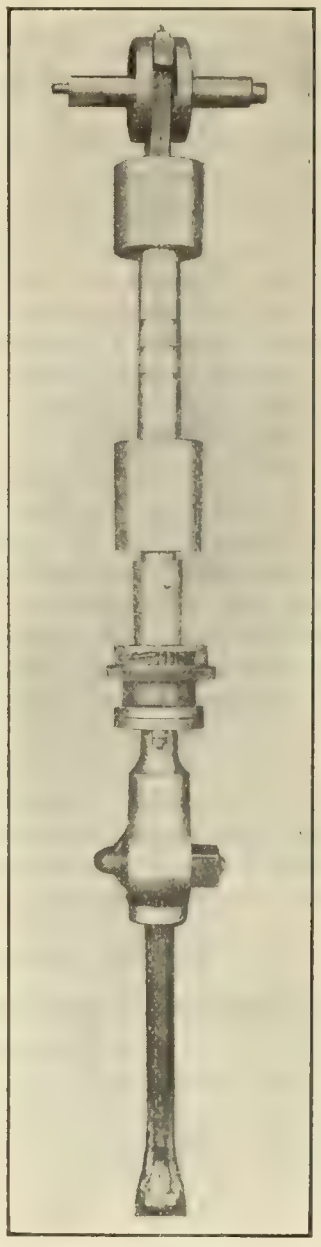


Fig. 2.—Piston and Drill Rod Removed.

hole); the working parts should be entirely inclosed water tight; the drill should be light enough for two men to handle it easily; the piston should be a solid piece of steel and yieldingly connected to the crank shaft, and the drill should have no valves, gears, push rods, cams, or other delicate parts that would not stand the hard use to which it is inevitably subjected.

The drill illustrated in Fig. 1, was built with these considerations in view. It is as compact as an air drill, and its weight is only 174 lb. It will drill 3 in. per minute in hard granite, and consume only ⅛ gal. of gasoline in 15 min. when doing hard drilling. This type of drill is adapted for deep holes from 10 to 30 ft. deep, while the small hammer type will drill shallow holes equally as fast with half the amount of gasoline. Briefly, the drill is a unique type of double-acting two-cycle gas engine. The charges are drawn in at the upper and lower ends of the drill through ports; are compressed and passed to the central part of the drill, where they are exploded alternately, one for the up and the other for the down stroke, and act on the inner faces of the are used to support the drill, in connection with the usual feed screw for feeding the drill into the rock.

The piston, piston rod and chuck are nickel steel forgings; the cylinders are semisteel castings; the cylinder heads, malleable iron castings; crank shaft, nickel steel; bearings and connecting rod, bronze; rotating device, forged steel and tool steel, and all parts are made strong enough to suit the power of the drill. Allen metal is used as metallic packing between the two explosive chambers, and will stand a temperature of 1500 degrees. The head joining the explosive chamber is made in halves, and the joint is hand scraped on a surface plate.

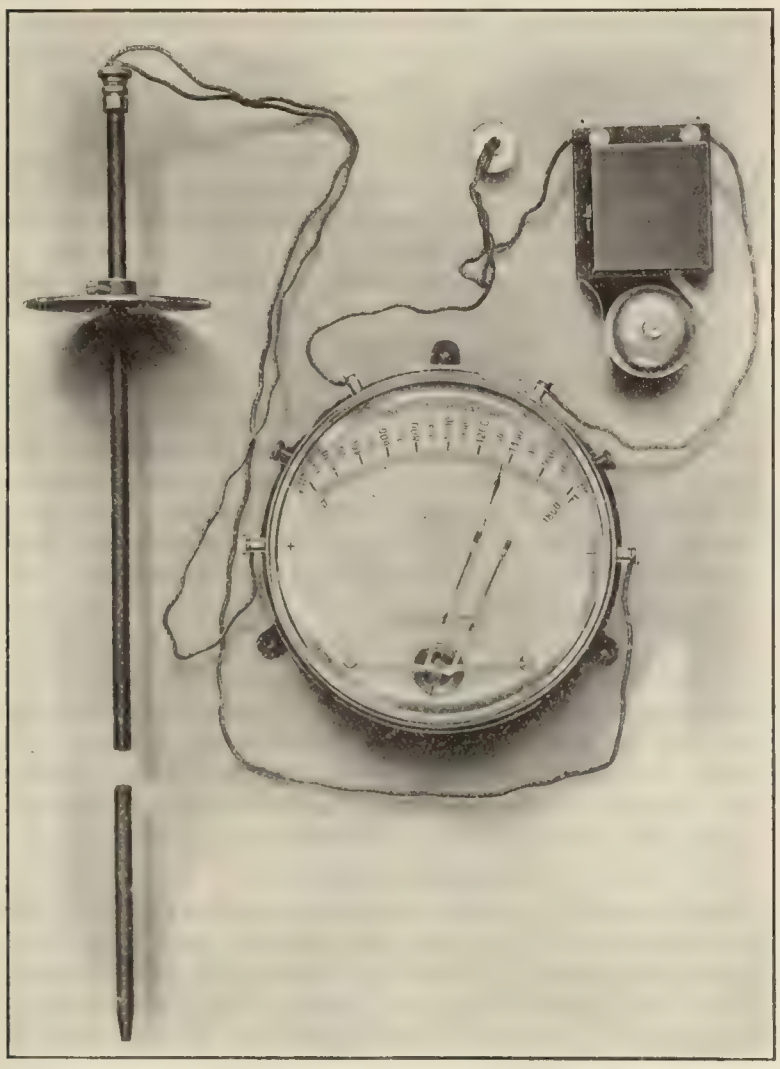
Where the drill is used underground the exhaust is either carried through a steam hose to a waste pipe leading to the mouth of the shaft or tunnel, or is run through a special valve into an inexpensive chemical solution which absorbs it. The constant suction of the intake of the engine draws air to the place where the drill is operating, and is a means of furnishing ventilation.

The advantages claimed over air drills are that the piston does not rotate, which avoids wear and friction on

the piston and rotating device; that it is impossible to knock out a cylinder head, that excessive vibration is eliminated by counterbalancing, and that there is nothing to freeze. This drill also has the advantage of low cost of equipment. It can be made as cheaply as an air drill, and contains in itself the complete power plant to operate it. It is claimed to save from 50 to 80 per cent. in fuel over air drills, besides cutting out the engine, boiler, air compressor, receiver, pipe lines, maintenance and depreciation of plant and salaries of men to operate the power plant.

## The Advance Alarm Pyrometer.

An important function has been added to the Advance electric pyrometer—that of warning by an electric bell when the temperature it measures passes prescribed maximum and minimum limits. This instrument, as made by the Wilson-Mauelen Company, 1 East Forty-second street, New York, is now available in three forms



The Parts of the Advance Electric Pyrometer with Temperature Limit Alarm, Made by the Wilson-Mauelen Company, New York.

—indicating, recording and alarm, or any combination of these forms, applicable to the measuring of any high temperatures as in furnaces, ovens, lead baths, bustle pipes, flues, &c.

With the alarm type, the alarm may be sounded wherever desired—at the door of the furnace or any distance away. A recording pyrometer shows what the temperature was at any time past or at the moment, if it is looked at, but the alarm pyrometer does not have to be watched. It can be quickly adjusted for whatever points are selected for maximum and minimum limits of temperature, or for either of them, or may be instantly adjusted to act as a simple indicator. A blast furnace attendant frequently has so much to attend to that it cannot but be a help to have his attention forcibly brought to the temperature of his hot blast or top gases when they need his attention at some unusual moment.

As the illustration shows, two currents pass through the indicator. One is that which comes from the thermo-couple in the firerod and operates the indicating pointer on the gauge. This thermo-electric current does not travel along the pointer of the instrument, but an auxiliary current from a lighting circuit or batteries does go through it when it touches either of the alarm fingers which has been set at some definite temperature point. This contact is a gentle one, but is reliable because the bell operates on 110 volts and the contacts are by an iridium pin on the pointer and carbon tips on the alarm fingers. The two contact fingers are adjustable in their position from the outside of the plate glass front, although they themselves are underneath the glass. They may be instantly changed in position and either one or both may be completely thrown out of the scale limits.

The pyrometer itself was described in *The Iron Age* August 8, 1907, and, in principle, is in no way different from other thermo-electric pyrometers. It should be emphasized that the electric circuit, of which the bell is a part, and the current of which passes through the needle or pointer of the instrument, is wholly secondary, secured from an external source and is in no way a part of nor does it in any way affect the thermo-electric current from the firerod which passes through the coil of the instrument set between the poles of the magnet and causes the deflection of the indicating hand. The exterior current is employed merely as a means of obtaining power to ring the bell. The apparatus is constructed for the alarm to work on 110 volts, but by interposing a 110-volt lamp it may be used on a 220-volt circuit, or with additional lamps on 440 volts. It is intended primarily for direct current, but will also work on alternating current, but the bell is not sounded so loud with the alternating current. It is very simple to set up and the illustration shows how the wires are to be run. The two wires disappearing into the white porcelain connector in the center show where the alarm circuit is tapped into the house current, or battery current, if that should be applied.

The complete pyrometer as illustrated includes a firerod, with an adjustable circular disk, connecting head, complete indicator and bell. The indicator is 10 in. in diameter and is believed to have the largest and most open scale of any pyrometer on the market, so that it may easily be read from a considerable distance, for it is not intended that the alarm feature shall detract from the usefulness of the instrument as a temperature indicator.

Another new feature brought out by this company that applies both to these alarm indicators and any recording pyrometers, is an automatic clock controlled commutator, with mercury contacts, which changes the connection of the alarm indicator or any recorder from one furnace to another every few minutes.

## International Standard Pipe Threads.

Note has already been made in these columns of the exhibit of screw threads as used in the United States, prepared under the auspices of the American Gas Institute for the international conference on the standardization of threads in apparatus for the use of gas, which was held in Paris last summer. It consisted of drawings and blue prints, with sample bolts, nuts, cap screws, set screws, &c.; gauges for United States standard threads; standard machine screws, stove bolts, pipe threads, &c. The American Society of Mechanical Engineers cooperated in the preparation of the exhibits through a special committee consisting of E. M. Herr, George M. Bond, William J. Baldwin and Stanley G. Flagg, Jr. This committee has prepared a report on an international standard for pipe threads and fittings which will be submitted to the American Gas Institute. The latter organization has invited the American Society of Mechanical Engineers to assist in preparing an argument in favor of the Briggs standard, to be presented at the international conference in Paris, January 1, 1909.

**Freight Rates to Pacific Coast Advanced.**—Effective January 1, 1909, the transcontinental railroads will make a general advance of 5 cents per 100 lb. in their rates to Pacific Coast points on a list of about 80 heavy commodities. The principal heavy lines of iron and steel, including steel rails, will be affected by this advance.

# Clinton Iron Ores in New York State.

## A Recent Investigation of Their Extent and Character.

A report on "Iron Ores of the Clinton Formation in New York State" has been issued as a bulletin of the Education Department of the State. It was prepared in pursuance of an act passed in 1907 appropriating $5000 "for determining what deposits of iron ore exist within the State of New York and the extent and availability thereof." The operations which form the basis of the report were carried on and the report was prepared by D. H. Newland, assistant State geologist, and C. A. Hartnagel, assistant in economic geology. In transmitting the report the State geologist, John M. Clarke, says that it "conclusively indicates that in the region of central New York there exists a commercial asset in iron of great magnitude and vast importance to the people of this State, and the conclusions herewith set forth are in essential accord with the prediction made when it was recommended that the work be undertaken." Below are given data condensed from the report, these dealing chiefly with the mining operations thus far carried on in the Clinton formation.

### Operations of a Century Ago.

The hematites accompanying the belt of Clinton strata in New York State have been worked commercially with interruptions since the early part of the last century. Regular mining operations were not begun until about 1825. A few years later charcoal forges and blast furnaces had been erected in Wayne, Madison and Oneida counties. The production of Clinton ores has averaged about 75,000 tons a year in the last few years. In 1907 it was 109,025 tons. The report puts the aggregate between 4,000,000 and 5,000,000 tons, "which is approximately the yield obtainable with the average workable seam from a square mile of area." Mining has been restricted entirely to the surface portion of the beds. The Clinton strata, comprising shales, limestones, sandstones and interbedded layers of iron ore, are found in a single bed which extends from the eastern central part of the State to the Niagara River, and thence for some distance into the Province of Ontario. The length of the belt included in New York State is about 225 miles, but it attains its largest extent between Utica on the east and Rochester on the west, a distance of about 135 miles. This portion of the belt passes through the counties of Oneida, Madison, Onondaga, Oswego, Cayuga, Wayne and Monroe. The width of the outcropping strata at the maximum is about 5 miles. It is greatest in the central part in the vicinity of Oneida Lake and immediately westward. It diminishes very gradually away from that section, narrowing more quickly toward the east, mainly because of the increasing inclination of the bed in that direction.

### A New Estimate of Clinton Ores.

It was to be expected that the writers of the report would find reason for a better estimate of Clinton ores than has prevailed heretofore, in the increasing demand for iron ores of all qualities and the general appreciation in the value of iron ore in the ground as exemplified in the Great Northern ore deal. This is indicated in the following paragraph which appears early in the report:

> The resources of the Clinton formation, known to exist within easy reach of mining operations, are so extensive that they seem to offer a promise of increased commercial importance for the future. The principal handicap to the use of the ores, hitherto, has been their relatively low iron content—from 35 to 45 per cent. But with the rapidly growing demand made upon other Eastern mining fields—which has been reflected by a steady falling off in the quality of the product in most cases—its effect is now much less apparent than formerly and will be subject, doubtless, to further reduction. A factor of considerable importance, also, in this connection is the fluxing nature of the Clinton ores, which counterbalances to an appreciable extent their deficiency of iron when used in the furnace.

### Character of the Formation.

The Clinton beds are uniformly inclined toward the south. The lowest dips are in the central portion of the belt in Wayne and Cayuga counties, and the beds are more highly inclined as they come more and more within the zone of the Appalachian uplift. In the eastern portion of the formation the Clinton outcrop reaches its highest elevation at about 1400 ft. At Clinton, Oneida County, the elevation is about 700 ft. Little effort had been made previous to the work undertaken last year toward the exploration of the Clinton ores outside the limited section in which they are mined. In the stretch from the Oneida, Herkimer County, line to the western border of Wayne County, a distance of 120 miles, measured on the outcrop, only a small portion is revealed sufficiently by exposure or mining excavation to permit of investigation from the surface. The appropriation made last year made it possible to put down a number of test holes along the concealed portion of the outcrop and for the first time to establish the position, extent and character of the ore in a general way over many parts of the area. The original plan, which called for the drilling of holes at intervals of four or five miles east and west, could not be carried out owing to the limited appropriation, so that the conclusions of the report seem to be based largely on the revelations of eight holes put down between Wallington, Wayne County, on the west, and Verona Station, Oneida County, on the east. The average interval between holes was about 10 miles, and most of the sites were selected with a view to striking the ore at a depth of between 100 and 200 ft. The character and thickness of the various strata encountered are detailed for each of the test holes, and analyses are given of the ore encountered in each case.

In general, the Clinton ores are red hematite. In some specimens a little specular hematite is present; siderite or iron carbonate also occurs locally in small amount, distributed in fine particles through the mass. The bulk of the ore, however, is amorphous hematite, red or brownish red in color and streak. The specific gravity ranges from 3.5 to 3.8. Certain structural peculiarities are described by the terms oolitic, lenticular, fossil, &c., applied in different localities. The fossiliferous and oolitic structures are sometimes found together. The oolitic structure characterizes the main bed in the eastern section, particularly around Clinton and the towns of New Hartford and Westmoreland, Oneida County. The fossiliferous ore appears at Clinton, in what is called the flux bed, and forms the single deposit in the town of Verona, Oneida County. The ore mined at Sterling Station, Cayuga County, and in the entire section of Cayuga and Wayne counties is also fossiliferous.

### Chemical Character.

The Clinton ores show considerable regularity in chemical composition. Leaving out locally occurring beds which are generally too thin or too lean to be workable, the ores throughout the state average about 40 per cent. in metallic iron. They seldom go above 45 per cent. or below 35 per cent. The higher limit is approached by the colitic bed in the vicinity of Clinton, where the mines of the Franklin Iron Mfg. Company have returned an average of 44 per cent. through a period of years. The fossil ore in the western part of the State runs from 35 or 36 per cent. to 44 or 45 per cent. The following represents the average of a large number of analyses of Clinton ores from Oneida County:

| | |
|---|---|
| Fe | 44.4 |
| $SiO_2$ | 13.09 |
| $Al_2O_3$ | 5.99 |
| MnO | 0.19 |
| CaO | 5.85 |
| MgO | 2.69 |
| S | 0.31 |
| P | 0.53 |
| $CO_2$ | 6.08 |
| $H_2O$ | 1.45 |
| O in Fe and P | 19.71 |
| Total | 100.29 |

Phosphorus and sulphur are both comparatively high in the Clinton ores. The former is seldom less than 0.25 per cent. and ranges up to more than 1 per cent. Reckoned on the basis of metallic iron, the phosphorus content will average from 1 to 2 per cent. The sulphur is more variable, being found in some ores only in traces and in others running up to 0.5 per cent. It occurs always in the form of pyrite, which seems to be

associated rather with the shale partings than intermixed with the hematite. Between the ore and wall rock there is often a thin seam of pyrite.

**Mining Methods.**

Attention has naturally been directed to the northern edge or outcrop of the Clinton beds as being the most accessible for development. The conditions are favorable for stripping or trenching throughout much of the stretch from Herkimer to western Wayne County. In places the ore is found directly beneath the soil, or at most a few feet of glacial material, and its flat dip makes it possible to extend operations to considerable distances from the outcrop before the overburden becomes excessive. At Ontario Center, Wayne County, the Furnaceville Iron Company has been engaged in working a strip of land extending for 4 miles in an east and west line. The plan consisted in opening longitudinal trenches, the first along the northern limit of the property near the outcrop, and the following ones in parallel order progressively with the removal of the ore from the preceding trench. At present about 20 ft. of overburden is taken off, while in the first cut the ore lay beneath 6 ft. of soil and rock. The trench has a width of 60 ft., and at first two shovels were used each cutting 30 ft. The shovels loaded into buckets, which were hoisted by revolving derricks and dumped on the spoil bank opposite the long face of the trench and just beyond the edge of the ore that was being uncovered. In the past year the trenching has been done by a single 100-ton shovel, which removes the rock for a width of about 45 ft., dumping directly on the spoil bank. Of the 20 ft. overburden 10 ft. consists of limestone somewhat shaly toward the top, and there is about the same thickness of soil and glacial material. It is loosened for the shovels by drilling and blasting. The 6-in. holes made by churn drills extend into the ore for about 3 in. and are 16 ft. apart. A layer of limestone 15 to 18 in. thick that remains on the ore has to be removed by hand. The ore is then loosened by blasting, after holes 3 ft. apart and extending a few inches into the underlying green argillacious limestone have been made by steam drills. A small amount of limestone sometimes adheres to the ore, but is readily removed. The ore is broken by sledges into convenient size for handling, after which it is loaded by means of a 40-ton steam shovel into the buckets of a derrick and hoisted into cars for shipment.

The Fair Haven Iron Company has pursued a similar plan in opening the property at Sterling Station. The shale and soil covering is from 10 to 20 ft. thick, and its excavation presents less difficulty than the limestone farther West. The mines at Clinton furnish the only examples of underground exploitation of these ores. The long wall method is employed, the same as used in many coal mines. It permits of complete extraction of the ore in one operation.

It is considered economical to remove the ore by open cutting when the covering does not exceed 20 ft. With a 2-ft. ore seam which yields approximately 8000 gross tons to the acre of surface the cost of stripping and removing ore under ordinary conditions is put at about $1.50 a ton. It is reported that underground mining has been carried on at Clinton for somewhat less. But there the ore is from 30 to 36 in. thick.

**Principal Mining Operations.**

The report devotes considerable space to a description of ore localities and mines. Referring first to the western end of the formation, some details are given of the operations first begun about 35 years ago near Sterling Station and revived in 1906 by the Fair Haven Iron Company, representing chiefly Albany capital. The ore as shown in the trench ranges from 30 to 38 in. thick, the average mineable ore being about 30 in. Analysis of the ore shows 34.98 per cent. metallic iron, 0.351 phosphorus and 0.044 sulphur. Shipments in 1907 are reported to have averaged between 36 and 38 per cent. metallic iron.

Some distance west of Sterling Station ore was mined in 1887 and 1888 by the Furnaceville Iron Company, which still owns the property. The thickness of the ore as mined ranged from 30 to 40 in. At present the Furnaceville Iron Company has under exploitation a strip from Ontario to Ontario Center, Wayne County. A little over 20 ft. of rock and soil are removed from above the ore bed. Ore is shipped to Emporium, Pa. Analyses show 41 to 44 per cent. metallic iron and 0.494 to 0.578 phosphorus.

The section of the Clinton belt extending through New Hartford, Kirkland, Westmoreland and Verona, Oneida County, has afforded most of the ore obtained from the formation in the eastern part of the State. For some years past operations have been restricted to the properties just east of Clinton owned by C. A. Borst and the Franklin Iron Mfg. Company, which obtain the ore entirely by underground mining. The mining of the Clinton ore for paint manufacture has been carried on by C. A. Borst since 1890, from 5000 to 10,000 tons a year being produced for that purpose. At the Franklin and Clinton mines an area of about 200 acres has been worked over by underground mining or by stripping, the latter method having been used at first, and the total ore product is estimated at about 2,000,000 tons. The Franklin and Clinton are a part of the properties of the Franklin Iron Mfg. Company, and have always been operated in connection with the company's furnace at Franklin Springs, two miles south of Clinton. Since the rebuilding of the Franklin Furnace in 1883 the mines have been intermittently active, producing about 60,000 tons a year when operated. They were closed down in November, 1907, after a campaign of two years. The ore as roughly mined will run about 40 per cent. metallic iron. The average return in the last period of operation is said to have been 40.27 per cent. By removing the rock parting the iron content can be raised to 45 per cent.

**A 600,000,000 Ton Estimate.**

The above résumé indicates generally the scope of the report and the basis of the extravagant statements recently made in the press as to the future of New York as a producer of iron ore. Indeed, the State Commissioner of Education, under the auspices of whose department the report is published, says in a prefatory note that if the State geologist's estimate of 600,000,000 tons of ore in the Clinton formation is warranted, "New York might easily become the leading iron State in the Union." In the first place, the eight holes 10 miles apart put down in a portion of the Clinton formation are a very slender basis for any estimate of tonnage, and the surprise is that the State geologist's office should have ventured on an estimate, which, even as qualified in the report, is bound to excite expectations that will be disappointed. This is the statement:

> The volume of ore which is subject to estimate within the areas mentioned is such that it must be considered one of the more important reserves in the present fields of iron mining. A great proportion, of course, will not be subject to profitable extraction for many years to come. But if limitations be put upon the estimate, so as to bring it into relation more or less close with the existing status of the mining industry, the total will still be large. Thus, to provide a reasonable basis of calculation, we may exclude all ore that is below 18 in. thick or more than 500 ft. from the surface, also leaving out of account the beds that are below the average in iron content. Under these restrictions the quantity available in the three principal areas may be placed at approximately 600,000,000 tons.

The thinness of the seams, the relatively high expense of mining, and the low grade of the ore clearly preclude an extensive use of the Clinton hematites under present conditions of the iron trade or conditions likely to exist in this generation or the next. The fact that furnace after furnace located on the Clinton formation passed out of existence in the last century, while centers of iron making activity have been built up elsewhere and have grown steadily greater, tells the story. The Clinton ores may have another day, when the exhaustion of Lake Superior ores, which has been so glibly propiesied, becomes a fact; but that remote contingency does not call for any immediate enthusiasm over these recent disclosures of the New York State Geologist.

The offices of the advertising department of the American Sheet & Tin Plate Company, J. Craig Wilson in charge, have been removed from the Bailey-Farrell Building to 54 Imperial Power Building, Pittsburgh.

# THE IRON AGE

Established in 1855.

New York, Thursday, November 12, 1908.

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## The Problem of Operation Without Orders.

It will be agreed that considering its seriousness the industrial depression of the past year has had less advertising in the press than any of its predecessors. Were it not that the exigencies of the Presidential campaign required that an issue be made of the dinner pail, probably even less would have appeared in print concerning the departure of prosperity. The suppression of the calamitous and the emphasizing of all the favorable aspects of the industrial situation have been so marked in the policy of the daily press in the past year as almost to suggest concerted effort. There has been, too, comparatively little discussion of the causes of such recessions or of preventive or curative legislation. The return of several hundred thousand foreigners to Europe since the panic has simplified to that extent the problem of unemployment, and there has been little or no agitation for more stringent immigration laws for the protection of the home labor market. Indeed, so unanimous has been the disposition to consider only the rate at which lost ground was being recovered in all industries and to make the most of all evidences of improvement, that only occasionally and locally has the suggestion come out that public work be undertaken for the purpose of giving idle men employment.

The contrast is sharp with what is going on in Great Britain in this respect. There, for an increasing army of men, the uncertainty of getting employment is coming more and more to mean the certainty of not getting it. And Germany, which seemed at first to be resisting successfully the shock of the American panic, is now greatly concerned over the serious situation of her unemployed. Both countries have pushed out far enough on lines of paternalism to make possible the further steps now called for in providing work or relief for the unemployed, without any violent wrenching of precedents.

In Great Britain the activities of the labor party have been so effective in securing legislation in the interest of employees that the proposals in behalf of the unemployed should not encounter great resistance. Yet, now that winter is at the door, the Government has but the usual makeshifts to offer. Widespread discussion is on, of the permanent aspects of the problem, and the necessity of coping with them in new ways. That important departures are being considered appears from the following, which we find, not in a socialist newspaper, nor in a speech of one of the labor party leaders, but in the editorial columns of the London *Engineer:*

> To continue manufacturing when sales cannot be effected means to continue spending money on material and wages when none is coming in. Few works can afford to carry on such a system for long, and the usual course is to reduce the weekly wage bill by dismissing men. Would it not in such cases be possible for the Government to advance money week by week so that manufacture might be continued? Money would be far better spent in such a way than on relief works, and it would return to the Government ultimately when the product was sold. Big firms are, of course, helped by their banks and by the resources of their own members, and by calling, in some cases, on reserve funds to keep their businesses together in bad seasons, but the practice is far from general.

The suggestion comes out in an article on "Labor Storage," which deals with the need of some means of "storing" labor when there is no demand for it—setting labor at work in dull seasons on the production of commodities that will be used when business revives. In the United States we have had voluminous discussions on ways and means of putting Government funds at the disposal of trade and industry, in times of unusual demand for money; but the banks have always figured as the instruments of such distribution. The suggestion that farmers should be able to get Government funds direct, with their crops as security, has come up, it is true, but never in a way to challenge serious consideration. But the idea of our London contemporary that manufacturers be government aided to keep their plants going in hard times and their workmen on the payroll, has not yet found a place on the Populist programme, possibly because the money would pass through corporate hands before reaching the workman.

There are many steps between offering such a proposal and practically embodying it in a workable scheme. To "take the tops of waves of occupation and throw them into the hollows" would be solving one of the greatest of economic problems—one almost as great as the abolition of poverty. In this country we are having in the present depression more regulation of industrial conditions by specially directed effort than was ever attempted. Railroad wages have been held up by influences proceeding from Washington. In the steel trade wages have been substantially maintained as a result of the co-operative movement to maintain prices of products. But to continue indefinitely the operation of plant when orders are not in hand—that is something for which the new American political economy has laid down no formula. It will not do to say, however, that some good work may not yet be done in reducing the peaks and filling up the troughs now described by the curve of our manufactured product over a period of years.

The railroads have been commonly singled out as having in their hands a partial cure of the iron trade's habit of violent fluctuations in prices and output. But the railroads, in turn, are dominated by the fluctuations in the price of money. They cannot afford to sell securities at low levels and put the money thus dearly bought into track and equipment at high level prices. When some progress has been made in reducing the swing in money rates, a beginning will have been made in flattening the plotted curves of iron and steel values and output.

With so large a percentage of its population engaged in agriculture, the United States will not feel so acutely as Great Britain the problem of unemployed industrial workmen. At the same time the bearing of the question upon international competition makes any effort at its solution abroad of vital interest to manufacturers at home.

Government ownership of railroads in Europe is developing some rather unsatisfactory results. Both Belgium and Switzerland report heavy deficits for the current year. Belgium is considering the necessity of a general increase in passenger and freight rates to relieve the situation. In Switzerland the unfavorable results of

state ownership promise to make this question a leading issue in the approaching elections. The mere matter of government ownership does not insure satisfactory operations of railroads.

## Extending the Life of British Patents.

An interesting side of the much discussed British patent law as it now stands, is the provision for extending the life of a patent beyond the 14 years of its original term. Formerly it was necessary to secure the action of the Privy Council in order to procure the privilege, and it has been exceedingly rare that the attempt has been made, or, at any rate, that an extension has been granted. The law now transfers jurisdiction from the Privy Council to the High Court, and rules have recently been laid down by the court which may have an important bearing on the existence of patents as time goes on, though it is not quite clear to what extent inventors will be able to make use of the provision of the law.

Briefly, under the law, the court must determine from the evidence whether the public or the inventor has been the greater gainer by the existence of the patent; whether the disclosure of the invention in the patent has given to the public the better of the bargain, in that it has gained in excess of the benefit enjoyed by the owner of the monopoly. There would, perhaps, be many cases resulting under this section of the law were it not for the ruling of the court that the petitioner for an extension must prove that he has done all that a patentee could do to launch his invention on the British market. No non-used patent would come in this category. Doubtless some inventors will consider that they have not received fair remuneration for the fruits of their brains. As was the case when the United States Patent laws contained a similar provision, instances may arise where the patentee through lack of means or other hindrance is unable to establish a market for his invention during the earlier years of the patent period, but has finally built up a business, the mainstay of which is the monopoly of the patent protection. There are likely to be cases where an extension from the comparatively short period of 14 years might be well justified. Probably, though, there will be other cases where an extension would do harm to no one nor good to the patentee because of lack of merit in the protected idea. The existence of the law may prove important in its indirect influence on certain cases, though it must always go hand in hand with the compulsory working clause of the British law.

Until early in the '70s the United States had a similar provision in its patent law, the patentee having, at the discretion of the Patent Commissioner, the privilege of a seven years' extension. To-day, the only extension is by act of Congress, a very rare proceeding indeed. Under the old law the commissioner determined the case on three factors—novelty of invention, diligence in working it, and the remuneration of the patentee, together with the consideration of the existence of corresponding expiring patents in other countries, where the inability to procure extension would throw the invention open to general use, with probable injury to American industry. Great Britain has continued the policy of extensions, the present change being toward accessibility of the tribunal having jurisdiction.

As the law now exists, the patentee has but 14 years in which to exercise his monopoly, unless there are special reasons why the term should be prolonged. In considering the question of extension, the court "shall have regard to the interest and merit of the invention in relation to the public, to the profits made by the patentee as such, and to all the circumstances of the case." In the case under notice, letters patent were granted James Johnson for an invention of a method of exhausting moisture from air for blast furnaces and converters. An assignee of the patent applied for an extension. In the course of a judgment, as the result of which he refused the application, Justice Parker laid down certain principles considered of great importance. He said that in order to decide whether an extension should be granted the court must consider the nature and importance to the public of the disclosure made in the specification, and for that purpose questions of novelty and subject matter are necessary material; and it is the duty of the petitioner for an extension of term to bring to the notice of the court all that may in any way affect the judgment of the court in these matters. But if, after hearing the evidence of the petitioner's witnesses, there is in the opinion of the court a prima facie case for upholding the validity of the patent in respect to novelty and subject matter, the court need not, as a general rule, investigate the matter further, it being always open to the objector to challenge the validity of the patent in proceedings more appropriate for that purpose. For the purpose of considering whether the patentee has been adequately remunerated, profits on his corresponding foreign patents must be taken into account, and some allowance ought also be made for profits which in all probability he received in respect of both before their expiration.

## The Factory Fire Pump and Its Care.

Underwriters are giving more careful attention to their rules governing the location and care of fire pumps in factory installations. It is asserted that instances of negligence in this very important department of fire protection are far from rare, especially in permitting pumps or their water connections to freeze. Pump manufacturers state that every spring they have large numbers of pumps to repair that show evidence of having been under severe strains due to ice within their working parts, a condition made possible by the location of the apparatus in rooms where no provision is made for a continuous temperature above the freezing point.

It is almost farcical that a manufacturer will go to the expense of installing fire pumps, not only to secure greater assurance of protection from fire, but also that he may get low insurance rates, or in some cases even decently low rates, and then permit the engineer to place the fire fighting equipment where it cannot be depended upon during very cold weather because it may be frozen and out of commission when the emergency for which it is intended shall arise. The hydrant service, or where the dry system of automatic sprinklers is employed, the sprinkler system then becomes useless. Occasionally a case arises where the plans had safeguarded the installation against the cold, but where neglect has permitted the freezing. The underwriters have been blamed for not enforcing very strict rules governing these conditions, and now, it is understood, the matter is receiving more serious thought, with a view to making the insurance restrictions governing installations and their maintenance as severe as those defining the design and construction of the apparatus itself.

The fire pump has become an important adjunct of the equipment of industrial plants, not only where there is inadequate protection from the community's fire department, but also in the larger centers where, theoretically at least, outside safeguards are wholly satisfac-

tory. It is considered a sound investment in the way of insurance to have on the premises the means of restraining a fire in its inception through the quick action of the shop fire department. Many a fire would have been checked before reaching serious proportions had there been facilities for procuring instantly a powerful stream of water. Many serious losses have been averted by the presence of the fire pump. But to accomplish this the pump must be able to start at a moment's notice, and to run at full speed without delay. Therefore the apparatus must be cared for as diligently as that which enters directly into the production of a plant.

In a great many cases this is easier of accomplishment than formerly, largely because a pump may be installed with electric motor drive and operated independently of the general power equipment. Thus driven, the pump is now frequently used in connection with the automatic sprinkler system, the bursting of a sprinkler head causing the motor and its pump to start immediately, furnishing the sprinklers with ample water supply and pressure. The advantage of the dry system in cold weather is self evident. But if the pump is to be permitted to freeze, the purpose is frustrated.

A fire pump operates at infrequent intervals; it is usually idle, excepting during test or fire drill. It is, therefore, easy of neglect. It remains an unessential part of the equipment of a plant until it is needed in the emergency of fire, and then it is all important. A busy manager may easily forget the nonproducing elements of his works; he must place these responsibilities upon subordinates who sometimes shirk their trust. Possible negligence constitutes a factor that must be taken into account by the engineers who plan the installation. It must be where neither fire nor frost can reach it. If the main power plant is in a building separate from the works, the pump may be placed there. With many city factories, yard room is small and power plants are embodied in the main building, and in such a case it is wise to fireproof the pump room so that should the building catch fire the flames could not reach the pump, a practice wholly feasible in connection with an electric motor, the current for which could enter from outside through a conduit. A recent suggestion is that the pump room be accessible from the exterior of the building through an underground passage from some other structure, permitting the entrance or egress of a man during a fire. A favorite and logical installation for a fire pump is in a small building away from the plant and heated during cold weather. In water power installations, where the pump is driven direct from the wheel, the tendency has been to locate the pump in the basement region of the main building, which is a wholly undesirable arrangement.

Fire underwriters have accomplished much in the development of the fire pump itself. They have greatly raised the standard of construction and efficiency. Special attention has been given to deterioration and the likelihood of a pump being put out of commission through the careless act of some person ignorant of its construction. The latest types of pump are highly satisfactory. Especial improvement has been achieved recently in the rotary type, which for close to a century has been doing service in fire protection. While general principles of design have not changed very much, the type has been refined in many ways until it is far more reliable and economical. The underwriters' rules have held the pump builders to sharply defined standards in design and details of construction. A great deal of good work has been done in this direction, but the claim is that a considerable percentage of the labor has been wasted in actual practice because of insufficient restrictions as to the place and manner of installation and as to maintenance.

## CORRESPONDENCE.

### Tool Steel Making in Europe and America.

*To the Editor:* It is unfortunate that an article interesting and reasonably correct from a historical standpoint should be perverted by the author in an effort to advertise his own wares. This refers to your article on "Tool Steel Making in Styria," published in the issue of November 5. When an American steel maker is asked to address a scientific society, according to American ethics, he refrains from taking advantage of the situation to advertise the goods he has for sale. Possibly there may be a different code of ethics in Europe, and from their point of view it may be justifiable to seize upon an opportunity like this to drum up trade.

To any one who has come in touch with the stolid European workmen, the talk of handing down the traditions of the trade from generation to generation is absurd nonsense. One has only to compare the European workmen with the much more intelligent class of men to be found in American steel works. There is more of the disposition in Europe to guard jealously the little secrets of the trade, some of which are at best of questionable value, and the result of this effort is to keep new knowledge out of their works instead of keeping the old knowledge in. There is a law in England imposing a penalty of two years' imprisonment with or without hard labor or a fine or both fine and imprisonment upon any person who improperly discloses trade secrets. In other words, their policy is to fine and imprison any one who tries to meet with other people in the same occupation and effect an interchange of ideas for the general advancement of the trade. This is characteristic of England, and applies equally well to Austria. This one thing probably has done more than anything else to keep European manufacturers at the tail end of the procession.

EUROPEAN AND AMERICAN CRUCIBLE PRACTICE.

Referring to the article in question, the American tool steel makers will not agree with many of the statements, particularly in regard to the methods of using crucibles, wherein they state a crucible is only used once, and endeavor to furnish a plausible reason. The true reason without doubt is that the crucibles are of such poor quality that they will only stand one heat, whereas in America an average of six or seven heats is expected. You may be very sure that the European steel maker would get six or seven heats out of his crucible also if he knew how to do it. A new crucible will "throw" more graphite and other elements into the steel than one which has been used several times. The practice of American steel makers is to melt only the lowest grades in the first heat and make their very fine product on the third or fourth heat, in which the character of the steel will not be so much contaminated from the walls of the crucible.

The description of the crucible melting furnace sounds very primitive, particularly the preheating chambers. It is surprising that a concern claiming to be progressive will still stick to what is known as "ladle heats"—that is, the entire content of the furnace is dumped into a ladle in which it does not have time to become thoroughly mixed, and the chances are that each ingot contains as many varieties of steel as there were crucibles used.

Careful research shows that it is impossible to make a large ingot which will show exactly the same analysis at the top, bottom and center. Why exaggerate this by copying the open hearth method of teeming, when the peculiar value of crucible steel is in the fact that it is manufactured in small units?

The practice of the American steel manufacturers is to put the product of each crucible into a single ingot, generally 4 in. square, the cooling taking place so quickly

that segregation is not possible, and uniformity of material results. Each ingot is cropped and carefully graded according to the carbon percentage, the quality of the steel having previously been determined by the quality of raw material used.

CUSTOMERS' REQUIREMENTS STUDIED HERE.

The American steel maker greatly excels his European competitor in one particular point, and that is he is not only a steel maker, but he is an engineer of wide and varied experience. He makes it his business not only to understand his own methods of manufacture, but he acquires every detail concerning the requirements of his customer. The result is that he brings to bear upon the tool steel business a rare faculty of judgment in selecting the kind of steel best adapted to each requirement. A tool steel may be of wonderfully good quality, yet if the carbon percentage be too high or too low for the particular kind of tool required, the result will always be disappointing.

The American tool steel manufacturer is close to his customers and studies their requirements and their practices much more closely than is generally understood. The European manufacturer is so far away from the consumer that it becomes a hit or miss proposition. He cannot study the individual requirements.

There is no doubt that some exceedingly good tool steel is manufactured in Europe. This we do not deny, but we have never yet analyzed a piece of European tool steel which could not be duplicated or excelled in this country by any one of half a dozen leading tool steel makers, and with much more uniformity, in addition to being sold at a lower price.

There is a certain class of people who are always looking for the mysterious. If they could get tool steel made in the moon they would swear by it, even though the quality might be so poor that they really should swear at it.

There is more tool steel made in the United States in one day than all of Europe produces in a week. Our European competitors must remember that William Kelley really was the inventor of the Bessemer process. They must remember also that although tungsten was first experimented with in England, it remained for America to develop the modern high speed steel with chromium and tungsten combinations, and every one of the European manufacturers has had to take his cue from the Americans. Even recently, still further advances have been made in the American manufacture of high speed steel, of which, as far as we know, the Europeans have not yet learned and therefore not yet copied. The American steel maker is the greatest student along metallurgical lines in the world. His product is shipped to every corner of the globe, and America may be safely said to take the lead in tool steel manufacture, as well as in modern production of open hearth and Bessemer product.

E. T. CLARAGE,
President Columbia Tool Steel Company.

CHICAGO, November 7, 1908.

### The Portland School of Trades.

*To the Editor:* In a recent issue of *The Iron Age* I noticed an account of the Milwaukee School of Trades in which it was stated that it occupied a unique position in that it was the only trades school in the country under the direction of the public school system. I wish to correct that statement. We have a school of trades here under the direction of the Board of Education. The school is an integral part of the public school system. We have 120 students in the day courses. We have a very well equipped drafting room, and machine, pattern, plumbing, molding and carpenter shops.

GEO. W. HAMILTON, Principal.

PORTLAND, ORE., October 31, 1908.

The Government's final estimate on the corn crop, 2,642,687,000 bushels, makes the crop the third largest in the country's history. These figures show a gain on the October estimate, due to the favorable autumn weather for maturing the corn planted late in the spring.

## The Queensboro Bridge Investigation.

Bridge Commissioner Stevenson of the city of New York has made public the report of Prof. William H. Burr and Boller & Hodge, the special commission of expert engineers, appointed to examine the Queensboro or Blackwell's Island Bridge, spanning the East River between New York and Long Island City. Complaints regarding the stability of the new bridge were first heard after the collapse of the Quebec Bridge, both being of the cantilever type. It was then asserted in one of the New York dailies, on information obtained it is understood from a former bridge commissioner, that the lower chord compression members of the new bridge were seriously unsatisfactory, as was the case with the Quebec Bridge. This criticism has been found by the commission of engineering experts to be without foundation.

As originally designed, the bridge was to be built with two elevated railroad tracks on the upper deck, but, without changing the design, it was afterward decided to increase the carrying capacity by putting on two more elevated railroad tracks. The experts now recommend that the original plan should be adhered to; that the stringers of the two inside elevated tracks should be removed to lessen the dead load, and that if elevated trains are run across the other two tracks—which will not be done at present—other reductions of the dead load should first be made. The report says:

It has been shown by actual computations that the bridge has a safe and satisfactory capacity for carrying a volume of traffic under the conditions of control found advisable by experience on the Brooklyn and Williamsburgh bridges, sufficient for a considerable future period and perhaps for a long future period. No elevated traffic can pass the structure for some time to come, as there are no connections for such traffic at the Queens Borough end of the bridge. Whenever such traffic may be required, the two elevated tracks on the upper deck will serve that purpose.

The question of further accommodation for lines of traffic on the upper deck may judiciously be left for later consideration when demanded by future requirements, and when the character of traffic to be accommodated at that time shall become known. It is only necessary so to adjust the accommodations for such future developments as will keep the unit stress in the main truss members within the limits prescribed in the specifications for regular live and dead loads or for those loads combined with the wind loading.

Professor Burr's conclusions are as follows:

The specifications for the chemical and physical requirements of both the nickel and carbon steels employed in the structure are satisfactory and in accord with the best practice of the present time.

Both the shop and mill inspection were efficiently performed, resulting in securing excellent quality of material and the fabrication of truss members of good quality and accurate dimensions.

The various members of the structure possess the full sections required by the unit stresses and the working plans, and the shipping weights correspond correctly to those sections as well as to the computed weights.

The erection was successfully and satisfactorily performed, leaving the trusses in correct alignment and elevation.

Computations in accordance with the specifications for the maximum floor loads show that the capacities of the floors for both the upper and lower decks are satisfactory.

The stresses disclosed by the stress sheet submitted with this report show that a controlled traffic on the four trolley lines of the lower deck and on two elevated railroads of the upper deck, carrying the heaviest cars of their classes now in use in the city of New York, together with a vehicular traffic on the roadway and two loaded sidewalks, may be permitted without exceeding the specified unit stresses for the regular live load and dead load.

The report makes the following final recommendations with regard to the lessening of the dead load and the use of the bridge:

1. That the stringers of the two inside tracks on the upper decks or other equivalent dead load be removed to lighten the dead load.

2. That the trolley traffic be so regulated that if four tracks are in use the cars shall not run with clear intervals between them of less than their own length.

3. That the bridge be opened for the traffic of the sidewalks, highway and four lines of trolley tracks as at present constructed, subject to the above recommendations.

4. That if any other moving loads be added to the structure such further modifications of the dead load shall first be made as will keep the total direct stresses caused by the live and dead loads within the safe limits herein set.

Under these recommendations we are confident the structure is perfectly safe.

# A Canadian Furnace and Foundry Merger.

The Canadian Iron Corporation, Ltd., $1,720,000 of whose 6 per cent. mortgage bonds were offered on the London market on October 26, is a consolidation of existing companies owning blast furnaces at Londonderry, Nova Scotia; Midland, Ont.; Drummondsville and Radnor, Quebec, and cast iron pipe and car wheel foundries at Londonderry, Nova Scotia; Three Rivers and Montreal, Quebec, and St. Thomas, Hamilton, Midland and Fort William, Ont. The capitalization of the new concern is: Preference shares, $3,000,000; common stock, $5,000,000, and mortgage bonds, $2,500,000.

This is the first merger of a comprehensive character that has taken place in the iron and steel industry of Canada. It is true that the Hamilton Blast Furnace Company and the Ontario Rolling Mills Company in 1900 merged their interests in what is now the Hamilton Steel & Iron Company. This, however, was only the merging of industries carried on in the same center of the trade. In the new merger secondary industries—car wheel and cast iron pipe making— are consolidated with a primary industry, the manufacture of pig iron. Four iron making plants located in three provinces, and as widely apart as Midland, on Georgian Bay, and Londonderry, on the Atlantic Coast, are of the consolidation, and this is the first time that any such consolidation of companies at the primary stages of the industry has been brought about.

It is a most interesting consolidation from a fiscal, an economic, a historical and also an imperial point of view; for, with English capital invested in the bonds of the new company, English capital is again employed in iron making at Londonderry, where the industry was first begun a little more than half a century ago, and where, for those times, quite a large amount of English money was lost during the years from 1855 to 1883. No fewer than 13 companies have now operated at Londonderry since 1847, and until the eleventh of these companies was chartered by the Nova Scotia Legislature in 1885, and Canadian interests came more fully into the undertaking, most of the capital came from England, and the furnace puddling plant and other equipment was under the superintendence of English iron and steel men.

### The Furnace Interests in the Merger.

The blast furnaces of the newly organized undertaking are five in number: Londonderry, 1; Drummondsville, 2; Radnor, 1, and Midland, 1. The Londonderry Furnace is of 100 tons capacity. It is of the old type, and was built in 1880 by the late David Adamson of Manchester for the Steel Company of Canada, the English Company which owned the plant until 1885, when it was succeeded by the Londonderry Iron & Steel Company, which in turn was succeeded in 1903 by the Londonderry Iron & Mining Company, now merged in the new Canada Iron Corporation.

From several aspects the Londonderry Furnace is the most interesting furnace now making iron in Canada. It is the largest furnace at which Canadian ore is used, and consequently it earns bounties under the law of 1906 at double the rate paid in respect of pig iron made at such furnaces as those at Sydney and North Sydney, Nova Scotia, and those at Hamilton and Midland, Ont., at which ores imported either from Newfoundland or the United States are used. On pig iron from Canadian ore, such as has for more than half a century been used at Londonderry, the bounty is now $2.10 a ton. The Londonderry Furnace is also the only coke furnace at work in Canada to-day, the equipment for which was brought from England. The equipment for all the other large furnaces in the Dominion was imported from the United States.

Still another interest attaches to the furnace at Londonderry. The company which owned it in 1883 was bankrupt, and it was to help it out of the receiver's hands that in 1883 the Dominion Government established bounties for the iron and steel industry—began a system which up to the end of the financial year 1907-1908 had cost the Dominion about $11,000,000, and committed it to payments which will aggregate another $10,000,000 or $11,000,000 before the existing bounty laws expire in 1912.

The two charcoal furnaces at Drummondsville, long operated by the McDougall Company, are the smallest furnaces in the Dominion. Their combined output of iron from bog ore does not exceed 12 or 14 tons a day. Like the Drummondsville furnaces, the Radnor Furnace makes charcoal iron, and its output is from 25 to 30 tons a day. The fifth furnace that has gone into the merger is at Midland, Ont. It is on the lake front there, of 125 tons capacity, and is in every respect a furnace of the modern type. It draws both its ore and its coke from the United States, and since steel rails began to be made at Sault Ste. Marie, Ont., in 1905, part of the product of the Midland Furnace has gone to the Bessemer and open hearth plant at Sault Ste. Marie.

The Midland Furnace went on the bounty list in 1898. All the other furnaces which are now of the Canada Iron Corporation undertaking had been on the bounty list long before that time. The furnace at Londonderry went on in 1883. The two small furnaces at Drummondsville and the charcoal furnace at Radnor went on at about the same time, and, according to a return presented to the House of Commons at Ottawa, on February 14, 1907, the bounty payments to the five furnaces henceforth under the control of the Canada Iron Corporation, between 1883 and June 30, 1906, aggregated $1,250,640. To the Londonderry Company the total payments during these years were $571,802; to the Canada Iron Company, in respect of the Radnor and Midland furnaces, the amount was $588,095, and to the company owning the Drummondsville furnaces the Government paid in bounties $90,743. Since June 30, 1906, the date to which the figures were carried in the Parliamentary return of February, 1907, the payments to the five furnaces have aggregated in round figures $250,000, so that up to the time of the merger, which was announced in London on October 24, the companies owning the furnaces embraced in it had received not less than $1,500,640 in bounties from the Dominion Treasury.

### The Foundry and Iron Ore Interests.

The Drummonds of Montreal, it has long been understood, practically controlled the Canada Iron Company and also the Canada Iron & Foundry Company, which before the merger operated the car wheel and pipe foundries at Hamilton, St. Thomas, Fort William, Montreal, Three Rivers and Londonderry. The Drummonds were also an important factor in the Londonderry Iron & Mining Company, while the small furnaces at Drummondsville and a foundry in Montreal were owned and operated by the McDougall Company. For nearly a quarter of a century the Drummonds have been identified with the political aspects of the iron industry in Canada. They have been prominent in all the movements since 1883 for protective duties and bounties for the industry, and from the first they have boldly taken the stand that the industry must have tariff protection against British furnaces as against furnaces in the United States. Both Conservative and Liberal governments at Ottawa have long regarded them as high authorities on the industry, and at the last revision of the tariff in 1906, when representatives of the Canada Iron & Foundry Company at Three Rivers and at Londonderry urged a reduction of the British preference to safeguard Canadian foundries from competition from Scotland, the duty on cast iron pipe in the preferential tariff was increased from $5.33 a ton to $6. Except for the competition from Glasgow, the only competition that the pipe foundries in Canada—now all controlled by the new corporation—have to meet is from American foundries, and against this competition since 1897 the Canadian foundries have had a protection of $8 a ton.

The ore deposits controlled by the new corporation are in Hastings and Renfrew counties, Ontario; bog ores in the neighborhood of Drummondsville and Radnor, Quebec; at Bathurst, N. B., and at Annapolis and Londonderry, Nova Scotia. The largest deposits are those of hematite and magnetic ores in the neighborhood of

Bathurst. These deposits lie about 24 miles to the south of the water at that port, and about 9 miles from Red Pine, a station on the Intercolonial Railway. No large quantities of ore have yet been shipped from Bathurst, but it is claimed that 20,000,000 tons of hematite ore are in sight there; that the ore carries 52 to 55 per cent. of metal, and in the prospectus issued in London it was claimed that the value of the Bathurst property alone is $10,000,000, and that large profits will be realized from the sale of ore. Before the Drummond Mining Company merged its Bathurst interests in the Canada Corporation, an agreement was made with the municipality that the company's railroad, shipping piers and furnaces, when they are built, should be exempt from taxation for 20 years, and locally there is an expectation that Bathurst will become a second Sydney. E. P.

## The Allis-Chalmers Company's Large Orders.

As continued evidence of awakening industrial activity in various parts of the country, mention of some of the orders taken by the Allis-Chalmers Company, Milwaukee, Wis., since the long list recently reported, is of exceptional interest at this time.

In the State of Wisconsin, where authorities estimate there is at least 2,000,000 hp. in unused water powers, large developments have recently been undertaken, and among the important hydraulic turbine plants of this section contracted for with the Allis-Chalmers Company is that of the Northern Hydro-Electric Company on the Peshtigo River. The initial installation will consist of five horizontal twin turbines, having each a capacity of 1500 hp., or an aggregate of 7500 hp., each direct connected to a 1000-kw. alternating current generator, with exciter units of 400 kw. combined capacity, all the machinery being of the Allis-Chalmers Company's build. This plant, which is near that of the Wausau Street Railway Company, now being equipped with hydro-electric units by the Allis-Chalmers Company, will be second in industrial importance for the Head-of-the-Lake country only to the Great Northern Power Company's immense development, where 40,000 hp. in Allis-Chalmers turbines —the largest single Francis wheels in the world—is in operation. The current generated on the Peshtigo River will be transmitted to Green Bay and neighboring towns, to be used for the operation of the street railroad system, commercial lighting and manufacturing purposes.

Other large orders placed with the Allis-Chalmers Company for hydro-electric plants include irrigation projects and central stations for power distribution in the Middle West, the plans of which have not yet been made public. Four noteworthy machines now being shipped from the Allis-Chalmers Company's works at West Allis, Wis., are two 6500 kw. generators of the water wheel type for the Niagara Falls Hydraulic Power & Mfg. Company, Niagara Falls, N. Y., and two 2500 kw. for the Cazadero station of the Portland, Ore., Railway, Light & Power Company. These machines, which are designed for 25 and 33 cycles and speeds of 300 and 333 rev. per min., respectively, have shown some notable results on shop tests, the figure of which will be published shortly.

Among purchases of the steam turbines built by the Allis-Chalmers Company are a 3250-kw. machine, for the Pacific Mills, Lawrence, Mass., which already has three of these turbines and generators in service; units of 1000 kw. capacity for the Cleveland, Southwestern & Columbus Railway and the city of Nashville, Tenn., and 500-kw. machines for the Webster & Southbridge Gas & Electric Company, city of Danville, Va.; Pennsylvania Power Company, city of Dunkirk, N. Y.; Willamette Valley Company, and city of Frankfort, Ind. In addition to the main units these orders include exciters, power transformers, lighting transformers, condensers, circulating pumps, switchboards, &c., making complete power plant equipments for the generation and distribution of alternating current.

The Industrial Lumber Company, Baumont, Texas, is preparing to install two engine type generators of 450-kw. capacity, with 17 induction motors; the Johnson Chair Company, Chicago, has bought a 500-kw. generator driven by a cross compound engine; the city of Waverly, Iowa, recently ordered a belted unit of 225 kw., and the Columbia Shade Cloth Company, New York, one of 300 kw., with a line of 26 direct current motors; the city of Blue Ridge, Ga., has contracted for a 150-kw. alternator, with transformers, switchboard and motors; the Yampa Smelting Company for a 200-kw. induction motor generator set and three 100-kw. transformers; the American Sugar Refining Company for a 500-kw. generator driven by a heavy duty engine; the American Oak Leather Company, Cincinnati, for a 250-kw. belted unit, and the Heekin Can Company of the same place for additional equipment, including 21 motors. All of the machinery ordered is to be built in the shops of the Allis-Chalmers Company and comprises auxiliary apparatus similar to that above mentioned.

The Oliver Iron Mining Company, which has over a score of Allis-Chalmers hoisting engines installed in its mines at the head of Lake Superior, is having three additional units, 28 x 60 in., built in the West Allis shops at the present time; the Alaska-Treadwell Mining Company has ordered a sixth engine of the Allis-Chalmers Company's design, and the Right of Way (Can.) Mining Company, Octave Mining Company and Goldfield Consolidated Mining Company are preparing to install similar units, except that the two hoists purchased by the first named company will be driven by Allis-Chalmers motors instead of engines.

In the pumping engine field a large number of negotiations are being brought to definite conclusion—in some cases after months of delay. Among orders recently placed with the Allis-Chalmers Company is the contract for a vertical, triple expansion, self contained pumping engine, of 12,000,000 gal. daily capacity, to be installed by the city of Milwaukee in its North Point Station, not far from where the first machine of this type ever built has been in continuous service for more than 20 years. In industrial plants, the most noteworthy addition to present equipment is that of the Pittsburgh Steel Company, which has ordered from the Allis-Chalmers Company a double acting vertical compound pumping engine for the delivery of 15,000,000 gal. daily. The Hackensack Water Company, New Milford, N. J., has contracted for a vertical triple expansion pumping engine of 14,000,000 gal. daily capacity; the city of Rock Island, Ill., will install a centrifugal fire service pump with capacity equal to a daily delivery of 2,000,000 gal.; the city of Coquet, Minn., a five stage unit of 1,000,000 gal. daily; the Delaware, Lackawanna & Western Railroad purchased a six stage centrifugal pump for lifting 7,500,000 gal. daily, and the Metropolitan Water & Sewerage Board of Boston, Mass., has ordered a centrifugal pumping engine, with complete appurtenances, for a station of 100,000,000 gal. delivery daily.

**Large Pig Iron Mixers.**—In commenting on the paper by Arthur E. Pratt on the "Future Development of the Metal Mixer," read before the recent meeting of the Iron and Steel Institute, *Stahl und Eisen* takes issue with the statement that the 750-ton mixer at Ebbw Vale is probably the largest in the world. Our German contemporary claims that while the Ebbw Vale mixer is rated at 750 tons capacity, its charge, up to this year, did not exceed 500 tons. The Rheinische Stahlwerke operates a 750 ton mixer, which it is true is not heated, but it is actually filled every Sunday, and the highest charge was 790 tons. At the Gutehoffnungs Huette a mixer is under construction, which is to have a capacity of about 900 tons.

The A. Garrison Foundry Company, Pittsburgh, is building for C. G. Hussey & Co., also of Pittsburgh, a 24 x 72 in. universal mill for rolling copper, with removable vertical rolls, so that the machine can also be used as a plate mill, being of the same style as one lately built for the Michigan Copper & Brass Company, Detroit, Mich. The firm is also building a five-stand 16-in. hot mill and a 10-in. edging mill, to work in connection with the former, for the Superior Steel Company, Carnegie, Pa.

## September Iron and Steel Exports and Imports.

The monthly report of the Bureau of Statistics of the Department of Commerce and Labor shows that the September exports of iron and steel fell somewhat under those of August. The total value of the September exports, not including ore, was $11,074,653, against $12,058,561 in August. The figures for commodities for which quantities are given show a rather striking diminution, being only 76,727 gross tons, against 87,198 tons in August. The following table gives these exports for each month of the current year:

| Month. | Gross tons. | Month. | Gross tons. |
|---|---|---|---|
| January | 74,352 | June | 69,778 |
| February | 81,755 | July | 86,803 |
| March | 96,437 | August | 87,198 |
| April | 93,522 | September | 76,727 |
| May | 64,020 | | |

The details of the exports of the same commodities for September and for the nine months ending with September, as compared with the corresponding periods of 1907, are as follows:

*Exports of Iron and Steel.*

| | September, | | Nine months, | |
|---|---|---|---|---|
| | 1908. | 1907. | 1908. | 1907. |
| | Gross tons. | Gross tons. | Gross tons. | Gross tons. |
| Pig iron | 4,116 | 6,078 | 30,568 | 60,109 |
| Scrap | 2,654 | 765 | 17,091 | 22,753 |
| Bar iron | 890 | 1,567 | 5,691 | 19,310 |
| Wire rods | 559 | 946 | 4,463 | 9,864 |
| Steel bars | 3,922 | 8,114 | 32,561 | 55,851 |
| Billets, blooms, &c. | 7,300 | 1,249 | 86,315 | 60,293 |
| Hoop, band, &c | 300 | 825 | 3,449 | 5,856 |
| Steel rails | 17,311 | 34,679 | 156,098 | 253,249 |
| Iron sheets and plates | 2,952 | 3,107 | 32,128 | 28,508 |
| Steel sheets and plates | 5,617 | 4,170 | 43,603 | 63,940 |
| Tin and terne plates | 70 | 751 | 11,401 | 8,957 |
| Structural iron and steel | 9,538 | 12,148 | 91,448 | 102,187 |
| Barb wire* | 4,902 | .... | 13,222 | .... |
| Wire | 4,563 | 12,475 | 86,324 | 116,325 |
| Cut nails | 236 | 294 | 5,529 | 5,018 |
| Wire nails | 1,862 | 4,071 | 20,292 | 34,821 |
| All other nails, including tacks | 527 | 582 | 3,536 | 5,810 |
| Pipes and fittings | 9,408 | 22,957 | 85,971 | 123,631 |
| Totals | 76,727 | 114,778 | 729,690 | 976,482 |

* Not separately stated prior to July 1, 1908.

Turning to the imports, the total value, not including ore, for September was $1,515,584, against $1,414,416 in August. The imports of commodities for which quantities are given varied but slightly from those of the previous month, being 13,122 gross tons, against 13,186 tons in August. The imports of this character for each month of the current year are shown in the following table:

| Month. | Gross tons. | Month. | Gross tons. |
|---|---|---|---|
| January | 28,008 | June | 21,109 |
| February | 19,054 | July | 18,320 |
| March | 15,885 | August | 13,186 |
| April | 12,342 | September | 13,122 |
| May | 13,584 | | |

The details of the imports of the same commodities for September and for the nine months ending with September, as compared with the corresponding periods of 1907, are as follows:

*Imports of Iron and Steel.*

| | September, | | Nine months, | |
|---|---|---|---|---|
| | 1908. | 1907. | 1908. | 1907. |
| | Gross tons. | Gross tons. | Gross tons. | Gross tons. |
| Pig iron | 8,339 | 29,030 | 65,280 | 449,147 |
| Scrap | 404 | 2,416 | 3,666 | 24,969 |
| Bar iron | 718 | 3,302 | 15,035 | 30,341 |
| Rails | 32 | 463 | 1,083 | 3,289 |
| Hoop, band, &c. | 170 | 29 | 494 | 1,375 |
| Billets, bars and steel in forms n.e.s. | 584 | 1,091 | 7,234 | 11,465 |
| Sheets and plates | 261 | 196 | 1,785 | 2,998 |
| Tin and terne plates | 1,527 | 3,462 | 49,712 | 46,706 |
| Wire rods | 774 | 625 | 8,570 | 13,299 |
| Structural iron and steel | 313 | 68 | 1,785 | 2,027 |
| Totals | 13,122 | 40,682 | 154,644 | 585,616 |

The imports of iron ore in September were 57,945 gross tons, against 47,130 tons in August. The total iron ore imports for the nine months ending with September were 482,908 gross tons, against 972,340 tons in the corresponding period of 1907.

The total value of all kinds of exports of iron and steel, not including ore, shows a heavy falling off in the nine months ending with the month of September as compared with the corresponding period of the previous year, the figures being, respectively, $115,439,368 and $146,230,407. The imports show a much heavier proportionate decrease, the figures for the same periods being, respectively, $14,923,195 and $31,697,879.

## PERSONAL.

Hugo Sack, of Rath-Duesseldorf, the inventor of the universal beam mill now in operation at the Rombach Works, is at present in this country.

R. H. Wolff, of New York, the representative in this country of the Heroult electric process, has returned from Europe.

Col. Herbert Hughes of Wm. Jessop & Sons, Ltd., Sheffield, England, is now in this country.

Loyd E. Shirley has severed his connection with the American Seeding Machine Company as superintendent of its Hoosier Drill Company Division at Richmond, Ind., and has accepted the position of superintendent of the works of the C. S. Bell Company, Hillsboro, Ohio.

E. A. Ennis and E. J. Nelson, formerly with the Mergenthaler Linotype Company as chief clerk and assistant chief clerk, respectively, have opened an office at 173 York street, Jersey City, N. J., as factory systematizers and cost men, under the firm name of Ennis & Nelson.

John R. Morgan, formerly with the Morgan Engineering Company, Alliance, Ohio, as mechanical engineer, has become general manager of the Calumet Engineering Works, Harvey, Ill.

Frank G. Bolles, for several years connected with the International Specialties Company, New York, is now with the Tungstolier Company, New York.

N. O. Fleming, purchasing agent of the Rust Boiler Company, Pittsburgh, will sever his connection with that company November 15 to accept the position of general manager of the Union Foundry & Machine Company, Mansfield, Ohio, which was recently reorganized and incorporated.

Harvey R. Hunter, North Braddock, Pa., has been appointed assistant superintendent of the Edgar Thomson Steel Works of the Carnegie Steel Company, succeeding James M. Rinard.

K. K. Knapp has been elected a director of the Allis-Chalmers Company, succeeding J. F. Neave. Other directors were re-elected.

At a meeting of the American Universal Mill Company, November 6, Charles M. Schwab was elected a director. The company owns the patents of Henry Grey, under which the Bethlehem Steel Company is manufacturing broad flanged light sections of structural steel. The Grey mill department at South Bethlehem, Pa., has been working full ever since it was put on double time last May.

President James A. Farrell, of the United States Steel Products Export Company, sailed for Europe on Tuesday.

Prof. Bradley Stoughton, of the Department of Metallurgy, Columbia University, New York, will deliver an illustrated address on "Iron and Steel," at the Section Meeting of the Franklin Institute, Philadelphia, on the evening of November 12.

Peter Donelson, of James Watson & Co., iron merchants, Glasgow, is now in this country.

The British cruiser-battleship Invincible, at its full power trial November 9, steamed 28 knots an hour for 8 hr. At a recent trial, under seven-tenths of its power, the Invincible attained a speed of 25 knots, and it was expected that at its full power it would reach 30 knots.

The Pittsburgh & Lake Erie Railroad will issue $5,000,000 in bonds at once, the proceeds to be used for the purchase of new equipment. The road has already ordered 1000 steel cars of the American Car & Foundry Company.

# NEWS OF THE WORKS.

### Iron and Steel.

The Richmond Iron Works, Richmond Furnace, Berkshire County, Mass., has acquired from Samuel G. Colt the iron furnace property in Cheshire known as the Berkshire Iron Works. In return for this property Mr. Colt has secured a substantial interest in the Richmond Iron Works. The Richmond Iron Works has been in operation since 1829, and the furnace at Cheshire was started in 1872 and has been operated by Mr. Colt for the past few years. Both of these furnaces produce a superior quality of charcoal iron and will be operated by the Richmond Iron Works.

### General Machinery.

The Carolus Mfg. Company, Sterling, Ill., has secured and is now occupying the old plant of the Sterling Mfg. Company. Need for more room to secure better facilities for handling its growing business was the object of this move. The new quarters afford increased space, and the capacity of the works has been enlarged by the installation of a number of machine tools, including lathes, drill presses, &c.

Work has been begun on the construction of terminal tracks, roundhouse and shops of the Rock Island Railroad at Hulbert, Ark., under a contract awarded to the Dalhoff Construction Company, Little Rock.

The Crocker-Wheeler Company, Ampere, N. J., has received an order for about 2500 hp. of induction motors from the Clark Thread Company, Newark, N. J. In addition to the size, this order is of considerable importance in that it marks the beginning of the electrification of the Clark mills, which have heretofore been driven by several steam engines. The motors are 5500-volt 16-cycle three-phase machines and range from 25 to 150 hp. each. The excellent showing made by the Crocker-Wheeler engineers in the equipment of a number of large cotton mills in the United States and Canada was a strong factor in the decision of the Clark Thread Company to give the order to the Crocker-Wheeler Company. The company has received an order from the Estey Organ Company, Brattleboro, Vt., for 57 induction motors, ranging from ½ to 75 hp., seven transformers and a switchboard. The plant is to be electrically driven throughout, the current to be purchased from the Connecticut River Power Company. Some of the motors will be used for driving individual machines and others for driving line shafting.

The International Harvester Company is preparing plans for converting plant No. 1, located at Genesee and Mechanic streets, Auburn, N. Y., over to electric drive. The present boiler and engine plant will be removed and electric motors, with a total of about 850 hp., will be distributed at various parts of the factory.

The Brooks Tire Machine Company of Wichita, Kan., has established a branch in Buffalo, N. Y., with offices at 391-393 Ellicott square. The company manufactures the Brooks cold tire setter, a hand power machine for upsetting tires cold while on the wheels. J. H. Baldauf of Wichita and Eugene G. Zacher, formerly advertising manager of the Buffalo Forge Company, will have charge of the Buffalo branch.

The C. C. Knight Company, Philadelphia, Pa., is to erect a six-story building, 100 x 180 ft., to cost about $150,000.

### Bridges and Buildings.

The Bollinger-Andrews Company, Pittsburgh, works at Verona, Pa., has received a contract for 500 tons of structural steel for a manufacturing plant in the Pittsburgh District, and other smaller orders which will amount to about the same tonnage.

The County Controller of Allegheny County and the County Commissioners of Washington County, Pa., will receive bids until November 25 for the erecting of a joint county bridge over the Monongahela River at Monongahela, Pa. The structure will consist of two river piers of stone on pile and concrete foundations and two concrete abutments with wings and reinforced with steel. Approaches are to be filled and paved. The superstructure is to comprise three trusses, each 455 ft. long, with a 24-ft. roadway on which are two street car tracks, one 6-ft. sidewalk, floors and all woodwork of treated kedrone construction. J. G. Chaltant, Allegheny County, engineer in Pittsburgh, and William Wylie, Washington, Pa., are the engineers from whom particulars can be had.

The Board of County Commissioners of Jasper and Porter counties, meeting at Rensselaer, Ind., will receive bids until January 12 for the construction of an iron bridge over the Kankakee River. J. H. Leatherman, Jasper County, is auditor.

### Foundries.

The Jackson Brass Foundry Company, Jackson, Mich., recently organized by R. P. Bauer and J. Van Walkenburg, has equipped a plant at 111 East Cortland street, for the manufacture of high grade brass and aluminum castings.

The Auburn Foundry Company, Auburn, Ind., has begun work on its new foundry. The principal product is automobile castings. The company also does considerable jobbing work.

The York Mfg. Company, York, Pa., has begun the construction of a large malleable iron foundry. The company has a number of orders on its books which were held up pending the outcome of the election.

The Clifton Forge Machine & Foundry Company, Clifton Forge, Va., has been incorporated, with a capital stock of $25,000, to manufacture iron and brass castings. The company has an established plant. C. H. Smith is president; L. B. Smith, vice-president, and B. C. Goodwin, secretary and treasurer.

### Power Plant Equipment.

The Choctawatchee River Light & Power Company, Dothan, Ala., has been incorporated, with an authorized capital stock of $1,000,000, of which $500,000 is paid in, for the purpose of developing water power on the Choctawhatchee River in Dale County to generate electric current. The officers are: President, A. J. Smith; vice-president and general manager, G. S. Kelley; secretary, W. C. Fritter; treasurer, A. L. Kelley.

Arrangements are being made for the construction of an electric light plant at Mackay, Idaho, by the Lost River Light & Power Company. Power for the operation of this plant will be developed from the waters of Cedar Creek.

A fund of $7100 has been provided by the town of Chanderville, Ill., through the sale of bonds, for the installation of an electric light plant. W. D. Super, city clerk.

The North Adams Gas Light Company, North Adams, Mass., has decided to erect a new power plant of about 4000 hp. capacity, at an estimated cost of $100,000.

The Board of Public Works, Grand Rapids, Mich., will receive bids until November 19 for a vertical triplex expansion pumping engine of 12,000,000 gal. capacity, and until November 27 for sewerage pumping machinery, consisting of four 40-in., four 24-in. and two 18-in. centrifugal pumps, four 175-hp., two 75-hp., two 60-hp. and three 30-hp. electric motors, vacuum pumps, piping, &c.

The Huntington Light & Power Company, Huntington, N. Y., will double its generating capacity by the installation of a 500-kw. turbine, to pay for which an issue of $50,000 in bonds will be made. Edgar L. Street, 43 Cedar street, New York, is manager.

The Electric Metals Company, 217 South Twenty-fourth street, Philadelphia, Pa., has incorporated, with a capital stock of $30,000, to produce lead under a new process giving it a degree of temper for journal bearings and for making type. The company's plant is already equipped to turn out 2 tons per day, with room to extend the furnace to a capacity of 50 tons per day. A. S. Dickinson is president and general manager; N. W. Akimoff, secretary; H. H. Sturch, treasurer, and S. P. Hutchinson, metallurgist.

The town of Baldwin, Kan., has voted a $35,000 bond issue for the purpose of building a municipal water works plant.

The Geneva-Seneca Electric Company, Geneva, N. Y., is about to build a new power house, contract for the construction of which has been awarded to the DeLaney-Roberts Construction Company, New York. The building will be 75 x 100 ft., of reinforced concrete construction, and will be equipped with a vertical steam-turbo generating set, water tube boilers, condensers, pumps, &c., with capacity of 1000 hp.

The Balance-Pressure Rotary Engine Company has been incorporated at Buffalo, with a capitalization of $50,000, to manufacture an improved rotary engine, the invention of William M. Hoffman. The company has secured manufacturing quarters, already equipped with necessary machinery, in the Day Manufacturing Building, Letchworth and Grant streets, in conjunction with the Multi-Stage Rotary Engine Company. Later the company will provide additional machinery and equipment as required.

### Fires.

The foundry of the National Mfg. Company at Pembroke, Ont., was destroyed by fire November 4.

The plant of the Nashville Saddlery Company, Nashville, Tenn., was burned November 6, the loss being about $75,000

### Hardware.

Reports that Emerson Smith & Co., saw manufacturers, Beaver Falls, Pa., had started up their factory in full are slightly exaggerated. The plant has been operating right along, though not to full capacity and is still running in that way.

M. V. Elliot of Bellefontaine, Ohio, has been seeking a suitable location in the West for the establishment of a woven wire fence factory. Points in Oklahoma and Arkansas have been under consideration, but no decision has as yet been reached.

The Burlington Willow Ware Shop, an organization subsidiary to the Burlington Basket Company, Burlington, Iowa, has taken new quarters affording better facilities and a larger output of its line of willow baskets and fancy colored straw braid baskets and furniture. A three-story and basement building, 60 x 100 ft., in the heart of the city, with a 30 x 80 wing, is wholly occupied as a factory.

Business with the Lenox Shear Company, Brookfield, Conn., has outgrown the former manufacturing facilities of the company and accordingly the plant has lately been materially enlarged. A new tempering and hardening plant, up to date in every respect, has also been installed.

The Wilder Metal Coating & Mfg. Company, W. J. Wilder,

president, Connellsville, Pa., has succeeded the American Aluminum Coating Company. The company manufactures hot process non-corrosive metal, such as aluminum coated iron and steel sheets, wire, nails, pipe and aluminum alloy sheet metal for spun ware. It has lately installed a 10-ft. pot and is making some other improvements in the plant.

The Bergman Hardware & Tool Mfg. Company, Buffalo, N. Y., has purchased a site on Niagara street and will at once erect an up to date three-story reinforced concrete factory building, 42 x 170 ft., and equip it with a full line of modern machinery for the manufacture of its specialties, pliers, tap wrenches, corner bit braces, saw sets and kindred tools. It is expected the new plant will be completed and ready for operation March 1. S. Bergman, president of the company, will withdraw from the firm of Bergman Bros. hardware merchants, January 1, and devote his entire attention to the business of the tool company. His son, Jerome Bergman, will also be taken into the company.

The Buffalo Sled Company, which manufactures sleds, steel shovels, &c., has taken over the business and the three-story brick factory of the Orient Novelty Company, North Tonawanda, N. Y., and will remove its plant from the Ross Mfg. Building, Buffalo, to that point. Hereafter, in addition to producing its own special lines, the company will manufacture the line of Morris chairs, patented tables, &c., made by the Orient Novelty Company prior to the consolidation.

The Republic Metalware Company, Buffalo, N. Y., will erect a one-story brick addition to its plant.

**Miscellaneous.**

The Western Cartridge Company, East Alton, Ill., is negotiating for a new site for its business. Locations in several Western cities have been offered, but no decision has as yet been reached concerning the removal of the plant.

The Springfield & Jacksonville Railway Company, Springfield, Ill., capitalized at $100,000, is preparing to build an interurban line about 33 miles in length, connecting that city with Jacksonville, Ill. Arrangements for financing this enterprise, it is stated, have already been made.

The Packard Motor Car Company, Detroit, whose present factory covers an area of about 14 acres, has under way some new additions, which include a new factory room for the manufacture of the Packard 3-ton truck recently introduced.

The Ingraham-Richardson Mfg. Company, Beaver Falls, Pa., has let contract for the construction of a brick and steel addition to its plant, 75 x 129 ft., two stories, the structural steel for which will be furnished by the Penn Bridge Company of Beaver Falls. Contracts for the equipment will be placed later, but the machinery requirements will be rather small as the new building will contain an enameling room, tapping room and packing room, which require but little mechanical equipment. Later the company expects to be in the market for an elevator and probably a small amount of other machinery.

The Great Northern Portland Cement Company's property and business has been taken over by the newly organized Great Lakes Portland Cement Company, Marlborough, Mich., by which, under arrangements made with the Board of Commerce of Charlevoix, Mich., the Marlborough plant will be moved to Charlevoix The old company finding the operation of its works at Marlborough unprofitable, on account of the remoteness from rock quarries and consequent expense of transportation, finally went into the hands of a receiver. The factory will have an initial output of 2500 bbl. per day.

The John R. Keim Mills, Buffalo, N. Y., manufacturer of automobile and bicycle parts and supplies, will add to the present plant at Kensington avenue and the Erie Railroad a one-story brick building for press and furnace uses.

The Gould Coupler Company, Depew, N. Y., is inclosing and roofing with steel truss roof its electric crane runway, about 500 ft. in length, forming a storage warehouse. The company is also completing a fireproof pattern vault, 63 x 222 ft., equipped throughout with steel shelving for holding the patterns.

The Carley Heater Company, Olean, N. Y., has been awarded contract for about $30,000 of machinery by the William F. Mosser Company, Boston, to be installed in a tannery which the latter company is erecting at Richmond, W. Va.

The Calmon Asbestos & Rubber Works of America, 100 Reade street, New York, has opened an office at 524 Penn avenue, Pittsburgh, in charge of Charles F. Beltz. The company manufactures a complete line of asbestos packings, including a compressed asbestos gasket with a copper vein forcement and an asbestos metal reinforced stuffing box packing, consisting of several strands of pliable alloy covered with an asbestos cushion inclosed in a woven metallic cover. An indestructible armored steam hose with an asbestos inner tube, which will not vulcanize and is guaranteed to stand a steam pressure of 200 lb., is another product of the company.

The Glen Mfg. Company, Ellwood City, Pa., manufacturer of ornamental ironwork, wire mats, wire fencing, &c., has run its plant to nearly full capacity during the past year and has a fair number of orders on its books at present. The company is filling orders as follows: Elevator inclosures and staircases for the Marine Hospital, Penn avenue, Pittsburgh; stair work, Civic Club house, Fifth avenue, Pittsburgh; stair work, Carnegie Library, Homewood District, Pittsburgh; ornamental ironwork, Liberty National Bank, Pittsburgh; fireproof porch, Amelia Brererton apartment, Pittsburgh; ornamental ironwork, Williams Building, Liberty avenue and Market street, Pittsburgh; ornamental ironwork and stair work, Rosalia Maternity Hospital, Pittsburgh; ornamental ironwork and fire escapes, St. John's Hospital, North Side, Pittsburgh, and the ornamental ironwork for the Fourteenth Ward engine house, Pittsburgh.

The Dain Mfg. Company, Canadian branch, Preston, Ont., L. D. Koser, manager, is considering erecting a plant at Bridgeburg, Ont., for the manufacture of haying machinery.

At a meeting of the stockholders of the Pittsburgh Emery Wheel Company, held in the Park Building, Pittsburgh, November 7, the directors were instructed to increase the capital stock from $50,000 to $75,000.

The plant of the United States Metals Refining Company at Grasselli, Ind., which was closed during the summer months owing to the shutting down of the lead supply in the West, is running full capacity again, turning out daily 75 tons of a pure grade of refined lead. Besides the heavy production of the parent company's own smelters, the refinery is doing a large amount of custom work, bullion being received from smelters from all parts of the United States. The Grasselli refinery is the first one in the United States to work under what is known as the Betts patents, the only other two refineries using the same process being the plant at Trail, B. C., and one recently erected at Newcastle-on-Tyne, England. The process used meets the growing demands for pure lead by the corroders and allows a more complete recovery of the by-products, such as antimony, copper and bismuth, the latter becoming completely eliminated, a feature said to be never before attained by any refining process. The electrolytic lead refinery, operating under the name of the United States Metals Refining Company, a subsidiary organization of the United States Smelting, Refining & Mining Company, has been in successful operation at Grasselli for about three years. The company reports trade conditions improving.

## The Strength of Riveted Joints.

A lecture on this subject delivered by J. W. Rausch, superintendent of the Maryland Casualty Company's inspection division, has been reprinted in pamphlet form by that company for distribution to those interested. The author discusses the standard forms of riveted joints, including single, double and triple riveted lap joints and double and triple riveted butt joints. In discussing each he shows the manner in which it may fail; that is, by the sheet tearing apart, the rivets shearing, the plate in front of the rivet hole being crushed, the plate sheared through by the rivets, or a combination of one or more of these sources of failure. He explains how to calculate the efficiency of the different features of each joint so that it may be possible to design a joint of equal strength in all respects. The calculations are gone into very thoroughly in each instance, both by general formulæ and typical numerical examples as applied. Those who are concerned with riveted plate work will find this pamphlet a valuable one to preserve for reference, as such knowledge is rarely found outside of expensive text books, especially from the pen of so reliable an authority.

The United States Circuit Court of Appeals, New York, rendered a decision November 7 in the case of the bill of complaint of the United States Government against the American Tobacco Company. The application for a receivership, which was the sensational feature of this suit, was denied as unnecessary and unreasonable. The Government was sustained in its demand for judgment, declaring the company a combination in restraint of trade, the majority of the court agreeing, on the sweeping ground that under the Sherman Anti-Trust law the merger of any two business enterprises doing interstate trade is in restraint and is prohibited, regardless of any of the acts or consequences of the combination. The issuance of an injunction was postponed until the appeal of the company to the Supreme Court shall have been disposed of. The appeal is to be taken speedily.

The Riter-Conley Mfg. Company, Pittsburgh, builder of steel plate construction of all kinds, has received a contract from the St. Clair County Gas & Electric Company, East St. Louis, Ill., for the building of a gas holder of 1,000,000 cu. ft. capacity.

# The Iron and Metal Trades

## Heavy Buying of Pig Iron.

### A Better Feeling in All Branches.

Absurd exaggeration characterizes many of the statements current in regard to the improvement which has taken place in the Iron trade, and in regard to the prospects for the winter. There has been a large buying movement, with advancing prices in Pig Iron, in practically all sections of the country. So far as can be judged, consumers have based their purchases, in most cases, as to quantity, upon the rate at which they have been melting recently. Many of them frankly admit that they themselves have not the orders ahead for delivery until spring, from their own customers. They are simply covering what they believe will be their minimum requirements because prices have been fairly low and safe.

In the aggregate, the buying has been large, and has covered all grades. It has included early deliveries, the first quarter and the first half. It is extremely difficult to estimate the whole volume, but there have been very many blocks of 5000, 8000 and 10,000 tons. Consumers in all branches have bought, including the general foundry trade, the Cast Iron Water and Soil Pipe makers, the locomotive and car builders, the stove founders and radiator manufacturers, machinery builders, Steel works and forges. There appears, too, to have been some speculative buying.

There is still a good deal of inquiry with negotiations for large lots pending, so that the movement has not yet exhausted itself. Prices are higher, and at least in one conspicuous instance the rapid rise led to the withdrawal of the buyers before the greater part of the purchases in view had been made. The advance in prices has been most conspicuous in the Central West, where they were relatively lower than in any other section three weeks since when the buying movement set in. An increasing number of sellers have withdrawn former prices, and for the present are out of the market except at an advance.

There has been quickened buying in many lines in which jobbers and the trade generally have been bare of stocks, but in the branches of the finished trade in which prices have been maintained there is little inducement to increase commitments because there is no indication of nor any desire to advance prices.

There is much room for improvement in prices in fabricated Structural Material, and efforts are being made to get at the root of the evil.

There has been more inquiry for Steel Rails, the Chicago market reporting about 70,000 tons, which probably includes 40,000 tons for the Chicago, Burlington & Quincy. The Maryland Steel Company has taken an order for 25,000 tons for the Atlantic Coast Line, and one Western road has placed 10,000 tons on an old contract.

In the Plate trade the event of the week is the placing of the order for 20,000 tons for the Brooklyn Steel Water Pipe.

Some round tonnage of Structural Material has been again secured from car builders. The latter are also taking Steel for Car Axles, one lot of 8000 tons of Axle Billets having been closed in the Chicago District. There has just been ordered a new Steel boat for the lakes, for which the material is under negotiation.

The bookings of Structural Steel include 4700 tons for New York Central yard work, 5300 tons for the Blackstone Hotel at Chicago and 3350 tons for two public buildings at St. Louis.

Old Material is stiffer and some very big business is in sight. There has been a scramble in Copper and 14½c. has been paid for Electrolytic and 14¾c. for Lake. The juggling of the metal to suit stock gambling on both sides of the Atlantic is again a feature. The trade has long since lost faith in some of the leading selling interests, and will keep the one cardinal fact in mind that production is going on at a record rate, while consumption is still considerably below normal.

The second reduction in the price of Aluminum in the last month has just been announced. No. 1 Aluminum Ingots were put down from 33c. to 29c, recently, and to 25c. now. The metal is selling at 15c. a pound in Europe.

## A Comparison of Prices.

**Advances Over the Previous Month in Heavy Type, Declines in Italics.**

At date, one week, one month and one year previous.

| | Nov. 11, 1908. | Nov. 4, 1908. | Oct. 14, 1908. | Nov. 13, 1907. |
|---|---|---|---|---|
| **PIG IRON,** Per Gross Ton: | | | | |
| Foundry No. 2, Standard, Philadelphia | **$17.00** | $16.75 | $16.75 | $19.00 |
| Foundry No. 2, Southern, Cincinnati | 15.75 | 15.75 | 15.75 | 19.75 |
| Foundry No. 2, Local, Chicago | 16.50 | 16.50 | 16.50 | 20.50 |
| Basic, delivered Eastern Pa. | **16.00** | 16.00 | 15.50 | 18.00 |
| Basic, Valley Furnace | **14.50** | 13.90 | 14.00 | 18.00 |
| Bessemer, Pittsburgh | **16.40** | 15.65 | 15.90 | 20.90 |
| Gray Forge, Pittsburgh | **14.90** | 14.40 | 14.40 | 19.40 |
| Lake Superior Charcoal, Chicago | 19.50 | 19.50 | 19.50 | 25.00 |
| **BILLETS, &c.,** Per Gross Ton: | | | | |
| Steel Billets, Pittsburgh | 25.00 | 25.00 | 25.00 | 28.00 |
| Forging Billets, Pittsburgh | 27.00 | 27.00 | 27.00 | 30.00 |
| Open Hearth Billets, Phila | 26.20 | 26.20 | 26.20 | 30.00 |
| Wire Rods, Pittsburgh | 33.00 | 33.00 | 33.00 | 34.00 |
| Steel Rails, Heavy, at mill | 28.00 | 28.00 | 28.00 | 28.00 |
| **OLD MATERIAL,** Per Gross Ton: | | | | |
| Steel Rails, Melting, Chicago | **15.00** | 14.50 | 14.75 | 15.50 |
| Steel Rails, Melting, Phila | **15.50** | 15.25 | 15.00 | 13.50 |
| Iron Rails, Chicago | 18.00 | 18.00 | 18.00 | 19.00 |
| Iron Rails, Philadelphia | **20.25** | 19.75 | 19.50 | 19.00 |
| Car Wheels, Chicago | 15.25 | 15.25 | 15.25 | 23.00 |
| Car Wheels, Philadelphia | 15.00 | 15.00 | 15.00 | 19.00 |
| Heavy Steel Scrap, Pittsburgh | **16.00** | 15.50 | 15.25 | 15.00 |
| Heavy Steel Scrap, Chicago | **14.50** | 14.50 | 13.50 | 12.50 |
| Heavy Steel Scrap, Philadelphia | **15.50** | 15.25 | 15.00 | 13.50 |
| **FINISHED IRON AND STEEL,** | | | | |
| Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Refined Iron Bars, Philadelphia | 1.45 | 1.45 | 1.45 | 1.75 |
| Common Iron Bars, Chicago | 1.50 | 1.50 | 1.50 | 1.75 |
| Common Iron Bars, Pittsburgh | 1.40 | 1.40 | 1.40 | 1.70 |
| Steel Bars, Tidewater, New York | 1.56 | 1.56 | 1.56 | 1.76 |
| Steel Bars, Pittsburgh | 1.40 | 1.40 | 1.40 | 1.60 |
| Tank Plates, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Tank Plates, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Beams, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Beams, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Angles, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Angles, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Skelp, Grooved Steel, Pittsburgh | 1.45 | 1.45 | 1.45 | 1.70 |
| Skelp, Sheared Steel, Pittsburgh | 1.50 | 1.50 | 1.50 | 1.80 |
| **SHEETS, NAILS AND WIRE,** | | | | |
| Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Sheets, Black, No. 28, Pittsburgh | 2.50 | 2.50 | 2.50 | 2.60 |
| Wire Nails, Pittsburgh | 1.95 | 1.95 | 1.95 | 2.05 |
| Cut Nails, Pittsburgh | *1.75* | 1.75 | 1.80 | 2.00 |
| Barb Wire, Galv., Pittsburgh | 2.40 | 2.40 | 2.40 | 2.50 |
| **METALS,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Lake Copper, New York | **14.75** | 14.00 | 13.75 | 14.25 |
| Electrolytic Copper, New York | **14.50** | 13.75 | 13.37½ | 13.50 |
| Spelter, New York | **5.05** | 4.90 | 4.77½ | 5.15 |
| Spelter, St. Louis | **4.90** | 4.80 | 4.62½ | 5.00 |
| Lead, New York | **4.42½** | 4.35 | 4.35 | 4.55 |
| Lead, St. Louis | **4.30** | 4.30 | 4.20 | 4.35 |
| Tin, New York | **30.75** | 30.37½ | 29.25 | 30.75 |
| Antimony, Hallett, New York | **8.12½** | 8.00 | 7.75 | 10.00 |
| Nickel, New York | 45.00 | 45.00 | 45.00 | 45.00 |
| Tin Plate, 100 lb., New York | $3.89 | $3.89 | $3.89 | $4.09 |

## Chicago.

FISHER BUILDING, November 11, 1908.—(*By Telegraph.*)

While it is true that there is this week a decided improvement in the general tone of business, it has not resulted in any phenomenal quickening of trade. For some time steady progress has been made toward betterment in financial and industrial conditions, and with the distracting issues of the late political campaign out of the way, it is fair to expect a better forward movement, but there is nothing in the present situation to warrant the extravagantly exaggerated reports of shops and factories suddenly filled to full capacity with an avalanche of orders, that have, since the election, occupied a prominent place in general press news. As a matter of fact, business in all lines is expanding in a conservative way that augurs well for its re-establishment upon a safe normal basis at no distant day. An increased number of new car orders is being placed by the railroads, and repair work is being vigorously pushed. An order for 300 Hart convertible cars with Steel under frames has been placed by the Union Pacific Railroad with the Rogers Ballast Car Company, Detroit. The Ralston Steel Car Company has secured an order for 1000 Steel under frames from the Erie Railroad, and a number of the leading Western roads are placing orders with outside shops for the repair of cars in lots ranging from a few hundred up to 2500 and more cars. The extension of such work naturally means the fuller employment of finishing mill capacity. Coincident with the announcement that Rail prices for 1909 will remain un-

changed at $28 for Bessemer and $30 for Open Hearth, it is reported that about 70,000 tons of Standard Section Rails are under negotiation in this market. The actual necessities of the roads are compelling heavier purchases of supplies, and orders for Spikes and Bolts show considerable improvement.

**Pig Iron.**—A review of last week's trading affords reassuring evidence of conservative action in the development of business. While there was no general rush of buying immediately after election, quite a number of moderate contracts were closed for first half delivery. The businss was well scattered, and the aggregate closed through local sales agents amounted to about 35,000 tons. No individual lots of Foundry Iron above 3000 tons are reported as included in this total. Southern Iron shared more liberally in last week's business, there being around 12,000 tons placed by various furnaces. One of the leading Alabama producers reported sales amounting to 5000 tons, and another 2000 tons, all at $13, Birmingham, for No. 2, for first half delivery. This price is being uniformly held on all deliveries beyond the first of the year, and the sources from which $12.50 Iron is obtainable are now few. Under the influence of better demand and prospective improvement, Northern Iron is being held somewhat firmer. The low point for furnaces in this district seems to have been reached in the sale made by a Wisconsin company on the day before election of 20,000 tons of High Phosphorus Iron to an agricultural implement company; this, at $16.25, Chicago, on a 75c. freight rate, netted $15.50, at the furnace, covering deliveries through to July next. On shipments for this period, one of the leading Northern interests has advanced its price to $17.50, but its lead has not been followed by other producers, who are asking $17, at furnace; and it is likely that offers of desirable tonnage would not be declined at a shade under this price. A local Steel maker has an inquiry out this week for 5000 tons of Basic. The feeling is general that there is definite improvement in the entire industrial situation, but at the same time there is nothing to indicate that anything like a boom is at hand. The following quotations are for November and December delivery, f.o.b. Chicago:

| | |
|---|---|
| Lake Superior Charcoal | $19.50 to $20.00 |
| Northern Coke Foundry, No. 1 | 17.00 to 17.50 |
| Northern Coke Foundry, No. 2 | 16.50 to 17.00 |
| Northern Coke Foundry, No. 3 | 16.00 to 16.50 |
| Northern Scotch, No. 1 | 17.50 to 18.00 |
| Southern Coke, No. 1 | 17.35 to 17.85 |
| Southern Coke, No. 2 | 16.85 to 17.35 |
| Southern Coke, No. 3 | 16.35 to 16.85 |
| Southern Coke, No. 4 | 15.85 to 16.35 |
| Southern Coke, No. 1 Soft | 17.35 to 17.85 |
| Southern Coke, No. 2 Soft | 16.85 to 17.35 |
| Southern Gray Forge | 15.35 to 15.85 |
| Southern Mottled | 15.10 to 15.60 |
| Malleable Bessemer | 17.00 to 17.50 |
| Standard Bessemer | 16.90 to 17.40 |
| Jackson Co. and Kentucky Silvery, 6 % | 19.90 to 20.40 |
| Jackson Co. and Kentucky Silvery, 8 % | 20.90 to 21.40 |
| Jackson Co. and Kentucky Silvery, 10 % | 22.90 to 23.40 |

(*By Mail.*)

**Billets and Rods.**—A number of inquiries for Forging Billets, ranging from 200 to 500 tons, have appeared in the market, and the outlook for improved business in this line is encouraging. As a result of recent orders placed for new cars there is more demand for Axle Billets. It is understood that the Standard Steel Company has placed an order for about 8000 tons required to make up 25,000 Axles. The actual requirements of the Chicago, Milwaukee & St. Paul Railroad for the last allotment of 5000 cars to be built in its Milwaukee shops have not yet been placed; these, it is understood, are to be of Iron. The regular price of $28.50, Chicago, for Forging Billets remains unchanged, and is reported to be fairly firm. The continued strength of Wire products is reflected in an increased amount of new business and specifications for Wire Rods. We are advised that the schedule of prices is being strictly adhered to, as follows: Bessemer, $33; Basic, $34; Chain, $33, all at Pittsburgh.

**Rails and Track Supplies.**—Announcement is made that prices on Standard Section Rails for 1909 delivery have been established by reaffirmation of the price schedule of last year, which is based on $28 a ton for Bessemer Rails. The rumor of a $4 cut on Rails, which gained wide circulation in the past few days, seems, therefore, to be wholly erroneous. It is stated that there are inquiries out for between 60,000 and 70,000 tons of Rails from leading Western roads for next year's delivery; but, as far as can be learned, no part of this tonnage has yet been placed. There is a decidedly better demand for Spikes and Bolts from nearly all lines, of which the Burlington, the Northwestern and the St. Paul roads were the leading buyers. The general attitude of the railroads respecting purchases of material encourages the belief that continued improvement may be expected in market activities touched by these interests. The movement in Light Rails is fully maintained, the volume of miscellaneous orders bringing the aggregate tonnage up to a fairly satisfactory point. No change is noted in Light Rail prices, which, though considerably firmer than they were earlier in the season, are still being shaded $1 a ton. We quote as follows: Angle Bars, accompanying Rail orders, 1908 delivery, 1.50c.; car lots, 1.60c.; Spikes, 1.80c. to 1.90c., according to delivery; Track Bolts, 2.15c. to 2.20c., base, Square Nuts, and 2.30c. to 2.35c., base, Hexagon Nuts. The store prices on Track Supplies range from 0.15c. to 0.20c. above mill prices. Light Rails, 25 to 45 lb., $26; 20-lb., $27; 16-lb., $28; 12-lb., $29. Standard Sections, Bessemer, $28; Open Hearth, $30, on lots of 500 tons and over; on smaller lots, $2 a ton extra.

**Structural Material.**—The final award of the contract for the construction of the new City Hall, involving 11,000 tons of Structural Shapes, has not yet been made. It is understood that the 3000 tons required for the Blackstone Hotel will be fabricated by the Brown-Ketcham Iron Works, Indianapolis. Figures are in on the Steel approaches to the McKinley Bridge, at St. Louis, which will take a minimum of 1600 tons of a maximum of 2400. Specifications for 4000 tons against a total of 5000 for Santa Fe bridges have been received by the American Bridge Company. An order for 480 tons to be used in the construction of the Mission Grammar School, San Francisco, went to Dyer Brothers of that city. The St. Paul Bridge & Terminal Railway, St. Paul, Minn., is in the market with an inquiry for 900 tons. A fair amount of small contracts was included in the week's transactions, which in the aggregate produced only a moderate tonnage. A feeling prevails, however, that there will be less hesitancy in the placing of orders for the projects now under negotiation. Prices from store are 1.95c. to 2c. Mill prices at Chicago are as follows: Beams and Channels, 3 to 15 in., inclusive, 1.78c.; Angles, 3 to 6 in., ¼-in. and heavier, 1.78c.; larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 15 in., 1.88c.; Zees, 3 in. and over, 1.78c.; Tees, 3 in. and over, 1.83c.

**Plates.**—What new business has been entered in the past week was comprised of small lots representing immediate requirements. Some betterment in the demand for Plates is looked for as a result of prospective activity in new Steel car construction promised by inquiries for such work now in the market. Other sources of supply, such as boiler and tank shops, are still inactive. But little irregularity in price is reported except on the narrow sizes, which continue to be shaded from $1 to $2 per ton. We quote mill shipments as follows: Tank Plates, ¼-in. and heavier, wider than 6¼ and up to 100 in. wide, inclusive, car lots, Chicago, 1.78c.; 3-16 in., 1.88c.; Nos. 7 and 8 gauge, 1.93c.; No. 9, 2.03c.; Flange quality, in widths up to 100 in., 1.88c., base, for ¼-in. and heavier, with the same advance for lighter weights; Sketch Plates, Tank quality, 1.88c.; Flange quality, 1.98c. Store prices on Plates are as follows: Tank Plates, ¼-in. and heavier, up to 72 in. wide, 2c. to 2.10c.; from 72 to 96 in. wide, 2.10c. to 2.20c.; 3-16 in. up to 60 in. wide, 2.10c. to 2.25c.; 72 in. wide, 2.30c. to 2.40c.; No. 8, up to 60 in. wide, 2.10c. to 2.15c.; Flange and Head quality, 0.25c. extra.

**Sheets.**—As respects the actual volume of business developed, the past few days has brought no noticeable change in the situation. There is, however, a tendency to buy a little more liberally. A fairly good demand for Galvanized and Light Black Sheets is coming from both manufacturers and jobbers, but the heavier gauges of Black Sheets are comparatively quiet. While concessions of $1 to $2 a ton are still being made by some mills, the general tendency is toward greater firmness. We quote mill shipments as follows, Chicago: Blue Annealed, No. 10, 1.98c.; No. 12, 2.05c.; No. 14, 2.08c.; No. 16, 2.18c.; Box Annealed, Nos. 17 to 21, 2.43c.; Nos. 22 to 24, 2.48c.; Nos. 25 and 26, 2.53c.; No. 27, 2.58c.; No. 28, 2.68c.; No. 29, 2.78c.; No. 30, 2.88c.; Galvanized Sheets, Nos. 10 to 14, 2.63c.; Nos. 15 and 16, 2.83c.; Nos. 17 to 21, 2.98c.; Nos. 22 to 24, 3.13c.; Nos. 25 and 26, 3.33c.; No. 27, 3.53c.; No. 28, 3.73c.; No. 30, 4.23c.; Black Sheets from store: Blue Annealed, No. 10, 2.15c.; No. 12, 2.20c.; No. 14, 2.25c.; No. 16, 2.35c.; Box Annealed, Nos. 18 to 21, 2.60c.; Nos. 22 to 24, 2.65c.; No. 26, 2.70c.; No. 27, 2.75c.; No. 28, 2.85c.; No. 30, 3.25c.; Galvanized from store: Nos. 10 to 16, 3c.; Nos. 18 to 20, 3.15c.; Nos. 22 to 24, 3.30c.; No. 26, 3.50c.; No. 27, 3.70c.; No. 28, 3.90c.; No. 30, 4.40c. to 4.45c.

**Bars.**—A noticeable feature in the demand for Bars is that manufacturers of railroad equipment and supplies are becoming a more important factor in the market. Orders from these interests have increased considerably, and, coupled with continued heavy specifications from the implement makers, are producing a tonnage sufficient to keep mills of the leading interest in active operation at full capacity. The independent mills are also better supplied with specifications, but are not yet able to keep all their mills going full time. The extension of car repair work has increased the demand for Iron Bars somewhat, but not enough as yet to keep them fully engaged. Quotations, Chicago, are as follows: Steel Bars, 1.58c., with half extras; Iron Bars, 1.50c.; Hoops, No. 13, and lighter, 1.98c., full extra Hoop card; Bands, No. 12 gauge, and heavier, 1.58c., half extra Steel Bar card; Soft Steel Angles and Shapes, 1.68c., half extras. Store prices are as follows: Bar Iron, 2c. to 2.15c.; Steel Bars, 1.90c. to 2c.; Steel Bands, 1.90c., as per Bar card, half extras; Soft Steel Hoops, 2.25c. to 2.35c., full extras.

**Merchant Pipe.**—The movement of Merchant Pipe con-

tinues to be controlled by present or nearby requirements of the jobbers. Prompt execution of orders favors dependence upon prompt shipment for maintenance of stock assortments, which can thus be made to meet current demands without materially increasing stocks. The general tendency, however, is toward an increasing volume of business. Mill prices are said to be firmly held. The following mill discounts are quoted: Black Pipe, ¾ to 6 in., 73.2; 7 to 12 in., 70.2; Galvanized, ¾ to 6 in., 63.2. These discounts are subject to one point on the base. From store, in small lots, Chicago jobbers quote 73 per cent. on Black Steel Pipe, ¾ to 6 in. About three points above these prices is asked for Iron Pipe.

**Boiler Tubes.**—What betterment there is in the demand comes chiefly from the growing needs of the railroads in Locomotive Tubes. While observable improvement is observed in this direction, it has not by any means brought the market up to a normal state of activity. Merchant Tubes show little, if any, gain, and in addition to the unsatisfactory volume of business some deviation from the regular schedule of discounts is reported. Mill quotations for future delivery, on the base sizes, are as follows: 2¾ to 4¼ in., inclusive, Steel Tubes, 63.2; Iron, 50.2; Seamless, 50.2; 2½ in. and smaller, and lengths over 18 ft., and 2½ in. and larger, and lengths over 22 ft., 10 per cent. extra. Store prices are as follows:

| | Steel. | Iron. | Seamless. |
|---|---|---|---|
| 1 to 1½ in. | 35 | 35 | 35 |
| 1¾ to 2¼ in. | 50 | 35 | 35 |
| 2½ in. | 52½ | 35 | 35 |
| 2¾ to 5 in. | 60 | 47½ | 47½ |
| 6 in. and larger | 50 | 35 | .. |

**Merchant Steel.**—More active work in car building and repair shops is responsible for a better demand for railroad Spring Steel. Jobbers are also buying more freely and specifications from the implement makers and others manufacturers are fairly satisfactory. We quote as follows: Planished or Smooth Finished Tire Steel, 1.78c.; Iron Finish, up to 1½ x ½ in., 1.73c., base, Steel card; Iron Finish, 1½ x ½ in. and larger, 1.58c., base, Tire card; Channels for solid Rubber Tires, ¾ to 1 in., 2.08c., and 1⅛ in. and larger, 1.98c.; Smooth Finished Machinery Steel, 2.08c.; Flat Sleigh Shoe, 1.63c.; Concave and Convex Sleigh Shoe, 1.83c.; Cutter Shoe, 2.05c.; Toe Calk Steel, 2.13c.; Railroad Spring, 1.98c.; Crucible Tool Steel, 7¼c. to 8c., and still higher prices are asked on special grades. Cold Rolled Shafting on contracts for 100 tons and over 57 per cent. off; 56 per cent. off in car lots; 52 per cent. in less than car lots, on which carload freight is allowed within base territory.

**Metals.**—While the actual consumption of Copper has not increased notably, the firmer tone in values led to considerable buying in the past week or two for anticipated wants covering a period of 60 days and in some cases three months ahead. The slight advances realized under this movement are being held with reasonable firmness. Other metals are in fairly good demand, and the entire situation is strengthened by a feeling of greater confidence. Quotations are as follows: Casting Copper, 14c.; Lake, 14¼c. to 14½c., in car lots, for prompt shipment; small lots, ¼c. to ⅜c. higher; Pig Tin, car lots, 32½c.; small lots, 34½c.; Lead, Desilverized, 4.55c. to 4.65c., for 50-ton lots; Corroding, 4.80c. to 4.90c., for 50-ton lots; in car lots, 2¼c. per 100 lb. higher; Spelter, 4.90c.; Cookson's Antimony, 10½c., and other grades, 9¾c. to 10¼c.; Sheet Zinc is $7, f.o.b. La Salle, in car lots of 600-lb. casks. On Old Metals we quote: Copper Wire, 13¾c.; Heavy Copper, 13½c.; Copper Bottoms, 12¼c.; Copper Clips, 13½c.; Red Brass, 12¾c.; Yellow Brass, 10c.; Light Brass, 7c.; Lead Pipe, 4.35c.; Zinc, 3¾c.; Pewter, No. 1, 21c.; Tin Foil, 24c.; Block Tin Pipe, 26c.

**Cast Iron Pipe.**—The principal lettings advertised for this week are 3500 tons by the city of Detroit and 4000 tons by the city of Milwaukee. Last week's business included no noteworthy transactions, being made up chiefly of routine orders, which were about on a par with those of recent weeks. We quote nominally per ton, Chicago, as follows: Water Pipe, 4 in., $27; 6 to 12 in., $26; 16 in. and up, $25, with $1 extra for Gas Pipe.

**Old Material.**—Despite the fact that there have been no heavy purchases by the consuming interests, prices of Old Material hold firm, with advances on several grades. Most of the railroad Scrap offered last week again brought top prices and in some instances sales were made at a premium over current quotations. This was notably true of Rerolling Steel Rails, one lot having been closed at $17.50. Railroad Malleable was sold at $13.50, and as high as $15.50 is reported to have been paid for No. 1 Railroad Wrought; the latter transaction, however, is not regarded as reflecting the actual market. A large part of the Scrap offered was taken by dealers, who say that no difficulty is experienced in disposing of all that is coming out to consumers. One of the factors which influences dealers in their bullish attitude is the belief that some of the large consumers who have not been buying for some time are about ready to enter the market. The outlook for an increased consumption of Heavy Melting Steel is particularly bright, and for this reason prices are firm; last week's quotations on this item were inadvertently advanced $1 instead of 50c., and should have read $14.50 to $15., which are the prevailing prices at this time. Over 14,000 tons will be offered by the railroads this week, the lists out being as follows: Chicago, Milwaukee & St. Paul, 1600 tons; Northern Pacific 3000 tons, including 1200 tons of Wrought; Santa Fe, 2200 tons; Baltimore & Ohio 7300 tons, in which there are 2000 tons of Rerolling Steel Rails, and the Wisconsin Central, 300 tons. The following prices are per gross ton, f.o.b. Chicago:

| | |
|---|---|
| Old Iron Rails | $18.00 to $18.50 |
| Old Steel Rails, rerolling | 17.00 to 17.50 |
| Old Steel Rails, less than 3 ft | 15.00 to 15.50 |
| Relaying Rails, standard sections, subject to inspection | 22.50 to 23.50 |
| Old Car Wheels | 15.25 to 15.75 |
| Heavy Melting Steel Scrap | 14.50 to 15.00 |
| Frogs, Switches and Guards, cut apart | 14.25 to 14.75 |
| Mixed Steel | 10.25 to 10.75 |

The following quotations are per net ton:

| | |
|---|---|
| Iron Fish Plates | $17.00 to $17.50 |
| Iron Car Axles | 20.00 to 20.50 |
| Steel Car Axles | 17.75 to 18.25 |
| No. 1 Railroad Wrought | 14.25 to 14.75 |
| No. 2 Railroad Wrought | 13.25 to 13.75 |
| Railway Springs | 14.25 to 14.50 |
| Locomotive Tires, smooth | 14.50 to 15.00 |
| No. 1 Dealers' Forge | 11.00 to 11.50 |
| Mixed Busheling | 8.25 to 8.75 |
| Iron Axle Turnings | 8.00 to 8.50 |
| Soft Steel Axle Turnings | 8.00 to 8.50 |
| Machine Shop Turnings | 8.00 to 8.50 |
| Cast Borings | 7.00 to 7.50 |
| Mixed Borings, &c | 7.00 to 7.50 |
| No. 1 Mill | 8.00 to 8.50 |
| No. 2 Mill | 7.00 to 7.50 |
| No. 1 Boilers, cut to Sheets and Rings | 10.00 to 10.50 |
| No. 1 Cast Scrap | 13.75 to 14.25 |
| Stove Plate and Light Cast Scrap | 12.25 to 12.75 |
| Railroad Malleable | 13.25 to 13.75 |
| Agricultural Malleable | 11.50 to 12.00 |
| Pipes and Flues | 10.50 to 11.00 |

## Philadelphia.

PHILADELPHIA, PA., November 10, 1908.

Quite a heavy buying movement set in last week after the result of the election was known. In some few instances buyers had discounted the election, but the heaviest transactions came out the latter part of the week, buyers in many cases closing on quotations made just prior to the election. With this heavy buying, particularly in Foundry Irons, came an advance in prices in those grades ranging from 25c. to 50c. a ton. The situation in the crude material market, as well as some lines of finished materials, is much stronger. Confidence is being fast restored, and consumers are backing their opinions by orders. Increased business is coming to the mills, but hardly in the volume that one is led to believe from reports in the daily press. The trade expects a heavy forward movement for a time, after which it is believed there may be a slowing down, but not sufficient to affect prices to any extent, as sellers, particularly in Pig Iron, have their capacities for the near future pretty well sold ahead. After the first of the year a steady forward movement, leading up to normal conditions is anticipated, there being no doubt that all branches of the trade would be best served by such a gradual betterment, so that idle capacity in all directions could be gradually put in service and production increased in an orderly manner. The increased volume of railroad business placed recently is viewed with satisfaction, and it is believed that before very long a great deal more, particularly Rails for next year's delivery, will come out. Increased activity on the part of some of the shipyards as well as Steel mills, particularly Armor plate makers, is looked forward to, as both yards and mills in this territory are among the low bidders for a considerable amount of Government work of that class.

**Pig Iron.** Melters have been somewhat slow in getting into the market, buyers for the greater part have been conservative, and while heavy inquiries were before the trade, not until after the result of election was known were orders placed to any marked extent. The volume of business taken during the closing days of the week was very heavy, but was confined almost entirely to Foundry grades. A number of round lots for delivery the balance of the year and extending into the first quarter of next were booked, not as large in a number of cases as buyers would have been willing to place, but sellers have the situation well in hand, and in many cases refused to accept the full tonnages offered by their customers. A large portion of the Foundry Iron sold was on the basis of $17, delivered, for No. 2 X, and while a number of orders were taken on the basis of $16.75 for this grade, it was mostly on quotations made early in the week. As far as we can learn there is now no standard No. 2 X Foundry to be had at the latter price, while $17.25 to $17.50 has been done on deliveries extending over into the next quarter. Some makers will not accept these figures for deliveries running through the first quarter, and are practically out of the market as far as Iron for the next three months

is concerned, and refuse to quote at present for deliveries beyond that date. Sales have been mostly in moderate sized lots running from 100 up to 1000 tons and in a few instances in larger amounts. Quite a good tonnage of No. 2 Plain Iron was sold at around $16.50, delivered. The Cast Iron Pipe foundries have closed for some good round lots of Pipe Iron, one purchase of 10,000 tons being reported for delivery extending into the first quarter, while another lot of several thousand tons was taken. Sellers are pretty firm on prices for this grade, and while Pipe founders are still in the market for heavy quantities, they are withholding orders, hoping that their view of prices may still be met. Virginia Foundry grades have been quite heavily sold, the bulk of the business going West, although several fair sized lots were sold to local and nearby melters. One producer disposed of an aggregate of 7000 tons and has now withdrawn from the market. Several other producers are pretty well sold up, and, while some refuse to quote, others are taking business at a slightly higher range of prices, particularly when delivery extends into the first quarter of next year. Southern Iron is decidedly strong, the recent price level having been firmly maintained, and higher prices are asked in a number of cases for forward deliveries. The business recently transacted in this territory, however, has been comparatively small. Forge Iron has not been active, and while there has been considerable inquiry the quantities sold have usually been small at unchanged prices, which, however, are decidedly firm. Steel makers have been testing the market pretty thoroughly, several inquiries for 5000-ton lots being out for early delivery and some for larger blocks for next year's delivery, but sellers are very firm on prices and no business has been closed. The market generally has a decidedly stronger tendency. A large number of inquiries for Foundry Iron are being quoted on, some running to heavy tonnages, and prices show an upward tendency. Makers who have been inclined to shade for prompt deliveries have marked up their prices and very little, if any, of the standard grades is to be had under the ruling quotations, which for delivery in buyers' yards, eastern Pennsylvania and nearby territory, range as follows for shipments extending over the balance of this and through the first quarter of next year:

| | |
|---|---|
| Eastern Pennsylvania, No. 2 X Foundry | $17.00 to $17.50 |
| Eastern Pennsylvania, No. 2 Plain | 16.50 to 17.00 |
| Virginia, No. 2 X Foundry | 17.00 to 17.50 |
| Virginia, No. 2 Plain | 16.75 to 17.00 |
| Gray Forge | 15.50 to 15.75 |
| Basic | 16.00 |
| Low Phosphorus | 20.50 |

**Ferromanganese.**—The market has developed more activity. Sales for both forward and prompt delivery have been made. One lot of 1200 tons for delivery in November, December and January brought about $43.50, Baltimore, and another of 500 tons for delivery during the first half of next year is reported at $44.75, seaboard. There is still a wide range of prices, some sellers quoting $44 to $44.50 for prompt Ferro, while others name $46, Baltimore, as the price for either prompt or forward shipments.

**Plates.**—Several of the mills in this district report the tonnage taken last week as the best for any single week for a long time. Orders so far this week continue on a very good basis. There is more disposition shown by buyers to make contracts covering future requirements, and the outlook for the future is considered much brighter. Specifications cover quite a variety of work, bridge, boat and car work predominating. Prices are being firmly maintained and rauge as follows for delivery in this territory:

| | Carloads. Cents. | Parts carload. Cents. |
|---|---|---|
| Tank, Bridge and Boat Steel | 1.75 | 1.80 |
| Flange or Boiler Steel | 1.85 | 1.95 |
| Commercial Firebox | 1.95 | 2.00 |
| Marine | 2.15 | 2.20 |
| Locomotive Firebox Steel | 2.25 | 2.30 |

The above are base prices for ¼-in. and heavier. The following extras apply:

| | Extra per 100 lb. |
|---|---|
| 3-16-in. thick | $0.10 |
| Nos. 7 and 8, B. W. G. | .15 |
| No. 9, B. W. G. | .25 |
| Plates over 100 to 110 in. | .05 |
| Plates over 110 to 115 in. | .10 |
| Plates over 115 to 120 in. | .15 |
| Plates over 120 to 125 in. | .25 |
| Plates over 125 to 130 in. | .50 |
| Plates over 130 in. | 1.00 |

**Steel Billets.**—The demand continues light and business drags. Such orders as have been booked are small and for prompt delivery. There is still nothing in the way of large orders before the trade, and the outlook is not particularly bright. Prices are unchanged. Ordinary Rolling Billets are quoted at $26.20, and Forging Billets $28.20, for delivery in this territory, subject to the usual extras for high carbons and special sizes.

**Structural Material.**—A fairly regular volume of business continues to come out, but large transactions develop slowly. A few good orders for special Shapes have been taken by some Eastern mills, one for 9000 tons of Beams for car work, from a Western concern, being reported. Several good building propositions are under consideration, but no large contracts for this class of work have been placed. Prices are firm, ranging from 1.75c. to 1.90c., according to specification, for delivery in this territory.

**Sheets.**—A fairly good demand is reported, and the local mills have been able to continue operating at full capacity. Buyers show a disposition to anticipate their needs, but the bulk of the business placed continues to be for prompt shipment. Quotations are unchanged, and range as follows, for mill shipments, a tenth extra being added for small lots: Nos. 18 to 20, 2.50c.; Nos. 22 to 24, 2.60c.; Nos. 25 to 26, 2.70c.; No. 27, 2.80c.; No. 28, 2.90c.

**Bars.**—The orders coming out are not large, and no improvement in the volume of business offered is to be noted. Prices are a shade stronger, due largely to the firm price of Pig Iron and the advancing quotations on Old Material. Quotations for Refined Iron Bars, for delivery in this territory, range from 1.45c. to 1.55c., according to grade and tonnage. Steel Bars continue dull, at 1.55c., with Rerolled Bars at 1.50c., delivered.

**Coke.**—There has been a somewhat better demand for Foundry Coke, but no orders of any size have been closed. Prices appear to be a shade firmer. Furnace Coke has been rather quiet. Quotations are unchanged, but there is considerably less low price Coke around. Foundry Coke is quoted for prompt shipment at $2.15 to $2.25, at oven and $2.25 to $2.50 for forward delivery. Prompt Furnace Coke is quoted at $1.50 to $1.65, at oven, and $1.65 to $1.90 for forward delivery. For delivery in this territory during the next two months the following range of prices is named:

| | |
|---|---|
| Connellsville Furnace Coke | $3.65 to $3.90 |
| Foundry Coke | 4.15 to 4.40 |
| Mountain Furnace Coke | 3.25 to 3.50 |
| Foundry Coke | 3.75 to 4.00 |

**Old Material.**—While there has not been much business transacted, the market has a decidedly stronger appearance, and sellers of some grades have advanced asking prices 25c. a ton. This is particularly the case in Heavy Melting Steel, consumers of which still refuse to pay the prices asked, but sales among dealers have been made at a higher level. Sales have been rather small throughout, and sellers show no disposition to dispose of any heavy quantities even at to-day's prices. Quotations, which are largely nominal, range about as follows for prompt shipment in buyers' yards, eastern Pennsylvania and adjoining territory:

| | |
|---|---|
| No. 1 Steel Scrap and Crops | $15.50 to $16.00 |
| Low Phosphorus | 18.50 to 19.00 |
| Old Steel Axles | 21.50 to 22.00 |
| Old Iron Axles | 23.50 to 24.00 |
| Old Iron Rails | 20.25 to 20.75 |
| Old Car Wheels | 15.00 to 15.50 |
| Choice No. 1 R. R. Wrought | 18.75 to 19.25 |
| Machinery Cast | 15.25 to 15.75 |
| Railroad Malleable | 14.50 to 15.50 |
| Wrought Iron Pipe | 14.75 to 15.25 |
| New Bundled Sheets | 13.50 to 14.00 |
| No. 1 Forge Fire Scrap | 12.00 to 12.50 |
| No. 2 Light Iron | 9.00 to 9.50 |
| Wrought Turnings | 12.75 to 13.25 |
| Stove Plate | 13.00 to 13.50 |
| Cast Borings | 11.75 to 12.25 |
| Grate Bars | 13.50 to 14.00 |

## St. Louis.

ST. LOUIS, November 9, 1908.

Now that the topic which has engaged the attention of the business world, together with the uncertainty as to the outcome which attended it, has been eliminated, renewals of some important but temporarily suspended new enterprises are now under way, among which is a large office building. At present the new building operations are mainly confined to structures of medium size. The most marked feature of the present situation is that inquiry shows nearly all the interests identified with railroads have been receiving a larger number of orders than during any similar period this year. In this connection is noted a quite general inquiry for Pig Iron, notwithstanding that during the past fortnight a very large tonnage had been contracted for. The manufacturing plants of St. Louis and East St. Louis are now employing more men than at any time during the present year, and it is believed that a gradual increase will take place until nearly as large a number will be employed as in 1907.

**Coke.**—While numerous inquiries indicate continued interest in Coke on the part of consumers, yet the leading sales agencies for the most part report the market as ruling quiet, transactions being small. As there is probably less Coke now available than within two weeks past, sellers are disposed to expect to find that large consumers will be inclined to cover during the month. Inquiries are principally for shipment over the first quarter of 1909. With regard to some contracts, buyers continue to ask that shipment be anticipated. While sales for the week have been somewhat smaller, there is a firm feeling, especially on Furnace grades, the price of which is expected to advance. We quote the market as follows: Standard 72-hr. Foundry, $2.25 to $2.50, and Furnace Coke, $2 to $2.25, both at oven, Connellsville. At the close we hear of the sale of 2000 tons of Connellsville

Foundry, shipment over first half 1909, and also of 25 carloads, same quality and shipment.

**Pig Iron.**—There has been an active market for Pig Iron the past week, and in the aggregate there has been quite a considerable tonnage contracted for. Leading sales agencies also report being in receipt of numerous inquiries for Southern Foundry, Malleable Bessemer and Basic. These inquiries comprise one for 4000 tons, another for 3000 tons, two for 1500 tons, three for 1000 tons, and including smaller lots total nearly 15,000 tons. Most of this Iron is wanted for shipment over the first quarter of 1909, the balance for the first half. Among the sales reported a quite large tonnage was booked for quick shipment, and for this shipment offers of $12.50, Birmingham, for No. 2 Foundry are understood to have been accepted. It is believed, however, that there is now no more standard quality Iron to be had at this price. Traveling men state that stocks are low in Foundry yards, and the leading sales agencies report Southern furnaces holding firm at $13, Birmingham, and not disposed to make offerings of shipment over second quarter. Some Ohio companies have advanced the price of Malleable Bessemer, and are now holding No. 2 Foundry at $15 to $15.25, at Ironton, shipment over first half of 1909.

**Finished Iron and Steel.**—The leading interests report there is at present more Structural Material being shipped to the Southwest, referring to new buildings, than is being contracted for at St. Louis, among which is 1000 tons for San Antonio. The new Merchants' Hotel at Alton, Ill., will require 250 tons. From fabricators there is a steady demand for small lots. The leading interest reports the inquiry for Standard Rails as better. Track material is in good demand. For Light Rails there is an increased and somewhat urgent demand coming from lumber interests. For Bars and Bar products the market has been ruling less active with regard to the demand from jobbers.

**Old Material.**—In consequence of an increase in the demand, there has been a slight advance in nearly all the list of Scrap Iron, particularly Foundry and Rolling Mill grades. Relaying Rails, especially heavy sections, continue scarce and in demand at somewhat higher figures. The offerings of Old Material on the part of the railroads comprise 2500 tons by the Missouri Pacific, 300 tons by the Vandalia and 300 tons by the Wabash. At the close of the week the market shows a better feeling than has been prevailing, and as consumers are buying more freely the situation presents less of the features of prices being made by dealers' transactions. We quote as follows, f.o.b. St. Louis, per gross ton:

| | |
|---|---|
| Old Iron Rails | $16.50 to $17.00 |
| Old Steel Rails, rerolling | 15.50 to 16.00 |
| Old Steel Rails, less than 3 ft | 14.25 to 14.75 |
| Relaying Rails, standard sections, subject to inspection | 24.00 to 24.50 |
| Old Car Wheels | 15.50 to 16.00 |
| Heavy Melting Steel Scrap | 14.00 to 14.50 |
| Frogs, Switches and Guards, cut apart | 14.00 to 14.50 |
| Mixed Steel | 10.25 to 10.75 |

The following quotations are per net ton:

| | |
|---|---|
| Iron Fish Plates | $15.50 to $16.00 |
| Iron Car Axles | 19.00 to 19.50 |
| No. 1 Railroad Wrought | 14.00 to 14.50 |
| No. 2 Railroad Wrought | 13.00 to 13.50 |
| Railway Springs | 13.00 to 13.50 |
| Locomotive Tires, smooth | 13.50 to 14.00 |
| No. 1 Dealers' Forge | 11.50 to 12.00 |
| Mixed Borings, &c | 6.00 to 6.50 |
| Machine Shop Turnings | 8.50 to 9.00 |
| No. 1 Boilers, cut to Sheets and Rings | 9.50 to 10.00 |
| No. 1 Cast Scrap | 13.00 to 13.50 |
| Railroad Malleable | 11.00 to 11.50 |
| Agricultural Malleable | 10.00 to 10.50 |
| Pipes and Flues | 9.50 to 10.00 |

**Lead, Spelter, &c.**—The market for Lead is higher with an improved demand. We quote 4.40c. to 4.50c. Lead Ore has advanced and is more active with sales at $30 per 1000 lb., Joplin basis. Spelter is in good demand at 5c. asked, and some sales reported at that price. Zinc Ore is firm at $36 per ton, Joplin basis. The demand from brass and galvanizing interests is increasing, but large transactions are checked through the strong ideas of producers who expect the market to do better.

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The American Car & Foundry Company reports that it is now in receipt of several inquiries for new passenger car equipment. It is busy with car repair work, and contemplates increasing the number of employees in the near future.

The American Brake Company states that there was a marked improvement in October over the previous month for locomotive and car brake equipment. Repair orders also keep up well. During the week an order for brakes for 500 new cars was received.

The Essmueller Mill Furnishing Company will at once erect a new shop at 1216-1224 South Eighth street to cost about $20,000. It will be two stories high, built of brick and steel.

The Williams Patent Crusher & Pulverizer Company will erect a new plant consisting of one and three story buildings at 811-819 Montgomery street, to cost $25,000.

The G. V. Bretch Butchers' Supply Company will erect a new factory on Twelfth street near Cass avenue, to cost, including lot, $50,000. It will be three stories, brick and steel.

## Cleveland.

CLEVELAND, OHIO, November 10, 1908.

**Iron Ore.**—A few small lots have been sold to furnace interests that had been waiting for the result of the election. The aggregate sold was only about 25,000 tons. One or two inquiries are pending and a little more may be sold before the end of the week. With weather conditions very favorable, shipments so far this month have been quite large for November. Unless freezing weather sets in earlier than usual at the head of the lakes, it is expected that the movement for the month will reach 3,000,000 tons, making the total movement for the season about 25,000,000 tons. Some of the merchant firms will send their boats up the lakes but once more for cargoes and will wind up their shipments by November 20, regardless of weather conditions. Others will keep their boats moving as long as possible, although the shipments after December 1 are expected to be very light. The Pittsburgh Steamship Company is dropping its barges as fast as they get down, but will continue its shipments to the end of the month. Dock piles at Lake Erie ports are crowded, and it is estimated that there is considerably more Ore there and in furnace yards than a year ago. Prices at Lake Erie docks, per gross ton, are as follows: Old Range Bessemer, $4.50; Mesaba Bessemer, $4.25; Old Range Non-Bessemer, $3.70; Mesaba Non-Bessemer, $3.50.

**Pig Iron.**—The lively buying movement which started a few days before election has continued, and further sales are reported by local furnace interests and sales agents aggregating between 50,000 and 60,000 tons. The great bulk of this was Foundry Iron, there being a small proportion of Malleable and Basic. The buyers were for the most part consumers in northern Ohio, Michigan and Indiana, consumers in the latter States having bought considerable for shipment from Toledo. A local interest also reports sales, mostly to Eastern consumers, of 8000 tons from its Pennsylvania and New York furnaces. The tonnage sold was mostly for first half delivery, although a portion of it was for the first quarter and some for the balance of the year and extending through the first quarter. The greatest interest of the week centered in the inquiry of the Masillon Iron & Steel Company for 27,000 tons of Nos. 2, 3 and 4 Foundry Iron for delivery through the first half, that company having announced that it would make the purchase of that tonnage if the election went right. Owing to the sudden firmness of the market, due to the buying movement and the result of the election, the company bought only a part of what it inquired for, and, as far as can be learned, none of it was taken by local interests. The manager of the company says he did not buy all the tonnage he intended to for the reason that the market ran away too fast, and he cannot tell when he will buy the balance. The market is very firm and the majority of furnace interests have advanced their price 50 cents a ton. It is reported that some Iron for the first half was sold last week at $14.75 for No. 2. The greater part of what was sold during the week went on the basis of $15, Valley furnace, for No. 2, but since then prices have stiffened and some has been sold on the basis of $15.25 to $15.50, and local furnaces now refuse to quote below this for delivery after the first of the year. We quote No. 2 Foundry Iron at $15, Valley furnace, for the first quarter, and $15 to $15.50 for the first half. While some inquiries are still coming in it is believed that the heavy buying movement in this territory is about over for the present. There are still good inquiries coming from the East, including one for 7500 tons of Foundry Iron. Inquiries pending in this territory are for 5000 tons of Basic, 2000 tons of Malleable, 1000 tons of Gray Forge and 1500 and 1200 tons of Foundry, as well as smaller lots of Foundry. A local Basic interest reports a good volume of inquiries, but is refusing to quote prices at present. In Southern Iron we note the sale of 1000 tons of No. 2 Soft at $13, Birmingham, to a northern Ohio foundry for first half delivery and 500 tons of No. 2 Southern to a Cleveland consumer at $12.50, Birmingham, the lower price for the latter being because of an option secured before the recent firmness of the market. For the balance of the year we quote, delivered, Cleveland, as follows:

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|---|---|
| Bessemer | $16.40 |
| Northern Foundry, No. 1 | $16.00 to 16.50 |
| Northern Foundry, No. 2 | 15.50 to 16.00 |
| Northern Foundry, No. 3 | 15.00 to 15.50 |
| Gray Forge | 14.25 to 14.75 |
| Southern Foundry, No. 2 | 17.35 |
| Jackson County Silvery, 8 per cent. Silicon | 20.05 |

**Coke.** The market has been slightly more active. Furnace Coke for spot shipment is not so plentiful as it has been and its price is somewhat firmer. One furnace interest has contracted for its first half requirements. We quote Standard Connellsville Furnace Coke at $1.90 to $2, at

oven, for first half delivery, and 72-hr. Foundry Coke at $2.30 to $2.40 for the first half and $2.25 for spot shipment.

**Finished Iron and Steel.**—While the feeling is decidedly better, the demand in Finished lines has not as yet shown much improvement. Some of the mill agencies report a slight increase in specifications on contracts for Steel Bars, Billets and Structural Material. Some fairly good orders that had been held up until after election have come in, and mills have the promise of some good sized orders on contract from jobbers and others for stock. We note the closing of new contracts for 1000 and 500 tons of Structural Material and Plates by Structural shops and 300 tons of Steel Bars. An inquiry is pending for 2000 tons of Steel specialties that come under the classification of Bar products, and for 500 tons of Billets and for 800 tons of Axle Billets. The demand for Iron Bars is still light, but prices are being firmly maintained, and mills are refusing to sell at present prices for extended delivery. The demand for Plates shows no improvement, and prices are still being shaded $1 to $2 a ton. One local Plate mill is quite busy at present, getting out its product for lake shipment before the close of navigation. The American Shipbuilding Company has taken a contract for another lake freight boat for delivery next spring, the names of the owners not being announced, and is figuring on contracts for building other boats, so that the outlook for this industry during the winter shows considerable improvement. Orders for Structural Material are coming mostly from Structural shops that have small work on hand. Some fairly good sized Structural work is in prospect, but will probably not develop before spring. Rivet manufacturers report the taking of some large orders since election. Manufacturers are expected to order in small lots for their immediate needs during the balance of the year. Jobbers report no increased activity in warehouse business. We quote Iron Bars, 1.45c., Cleveland, for car lots; Steel Bars, 1.50c., Cleveland, for car lots, half extras; Beams and Channels, 1.70c., Cleveland, and Plates, ¼-in. and heavier, 1.70c., Cleveland. We quote Sheets, mill shipments, car lots, Cleveland, as follows: Blue Annealed, No. 10, 1.90c.; Box Annealed, No. 28, 2.60c.; Galvanized, No. 28, 3.65c. Jobbers quote Iron and Steel Bars out of stock at 1.65c. to 1.70c. Beams and Channels from warehouse are 2c., and Plates, ¼-in. and heavier, 1.90c. Warehouse prices on Sheets are as follows: Blue Annealed, No. 10, 2.10c.; Box Annealed, No. 28, 2.70c.; Galvanized, No. 28, 3.80c. Warehouse prices on Boiler Tubes, 2¾ to 5 in., are 65 per cent. discount, and on Black Merchant Iron Pipe, base sizes, 71 per cent. discount.

**Old Material.**—The market, which has been firm for some time, has taken on a still stronger tone since election, and is a little more active. Buyers and sellers, however, cannot get together on prices. Dealers want higher prices and consumers are unwilling to pay an advance. Both producers and yard dealers, who have large stocks on hand, refuse to sell except at higher prices. There is little local demand for Scrap, but there is an improvement in inquiries from Pittsburgh and vicinity for Heavy Melting Steel, Turnings and Borings. The Baltimore & Ohio Railroad closed this week for a list of 4000 to 5000 tons, and the Norfolk & Western will close next week for about 1200 tons. While quotations below are unchanged, except in the case of Heavy Melting Steel, these prices in the main are those which consumers are willing to pay, and lower than dealers are willing to sell at. We quote as follows, per gross ton, f.o.b. Cleveland:

| | |
|---|---|
| Old Steel Rails | $14.00 to $14.50 |
| Old Iron Rails | 17.00 to 17.50 |
| Steel Car Axles | 19.00 to 19.50 |
| Old Car Wheels | 14.50 to 15.00 |
| Heavy Melting Steel | 14.25 to 14.75 |
| Relaying Rails, 50 lb. and over | 22.00 to 23.00 |
| Railroad Malleable | 13.25 to 13.75 |
| Agricultural Malleable | 12.00 to 12.50 |
| Light Bundled Sheet Scrap | 9.50 to 10.00 |

The following quotations are per net ton, f.o.b. Cleveland:

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|---|---|
| Iron Car Axles | $20.00 to $20.50 |
| Cast Borings | 7.00 to 7.50 |
| Iron and Steel Turnings and Drillings | 8.00 to 8.50 |
| Steel Axle Turnings | 8.50 to 9.00 |
| No. 1 Busheling | 12.00 to 12.50 |
| No. 1 Railroad Wrought | 13.50 to 14.00 |
| No. 1 Cast | 12.00 to 13.00 |
| Stove Plate | 10.75 to 11.25 |
| Bundled Tin Scrap | 8.00 to 9.00 |

**The 1909 Hand Book of Gasoline Automobiles.**—The sixth annual "Hand Book of Gasoline Automobiles" shortly to appear promises to be most useful and necessary to the automobile industry. It is published by the Association of Licensed Automobile Manufacturers, and is the authority for the public and the trade concerning the fundamental characteristics of leading American cars. This edition will be larger and more attractive in appearance than the five previous editions, which constitute an interesting and instructive index to automobile development in that time.

## Pittsburgh.

PARK BUILDING, November 11, 1908.—(*By Telegraph.*)

**Pig Iron.**—Consumers on all sides are telephoning and telegraphing to furnace sales offices for prices on large blocks of Iron for delivery in first quarter and first half of next year. Some furnacemen are refusing to quote for delivery beyond first quarter. We quote Bessemer Iron $15.50, Valley furnace, for November and December delivery, while for first quarter $16 is asked. There is a very active demand for Basic, and the minimum price for November and December delivery is $14.50 to $14.75, at Valley furnace, and it is doubtful whether much tonnage could be had at these prices. For first quarter and first half delivery furnacemen are quoting on Basic from $15 to $15.50, at furnace. Malleable is held at $15.50, at furnace. Foundry Iron is in active demand, and No. 2 Foundry is held at $15.50, Valley furnace, for prompt shipment, while as high as $16 is asked for first half delivery. Some inquiry is noted for Gray Forge, and Northern makes are now held at $14, at furnace, or $14.90, Pittsburgh.

**Steel.**—The better feeling in and higher prices for Pig Iron, and the heavy orders placed for Plates, Structural Shapes and other forms of Finished Iron and Steel are reflected in Billets, Forging Billets, and Sheet and Tin Bars, specifications against contracts in the last week or ten days having shown a material increase. Consumers of Steel are taking out more tonnage against their contracts than they had done in a long time. Prices are very firm, but unchanged. We quote Bessemer and Open Hearth Billets, 3⅞ in. and larger, up to and including 0.25 carbon, $25; 0.26 to 0.60 carbon, $1 extra; over 0.60 carbon, $2 extra, all f.o.b. Pittsburgh. For Wheeling, Martins Ferry, Follansbee, Newcastle, Sharon, Steubenville and Washington (Pa.) delivery, half the freight, or 50c. additional, is charged. Sheet and Tin Bars in random lengths are $27.50, f.o.b. Pittsburgh. Forging Billets take $2 advance over Rolling Billets.

**Coke.**—The active demand for Pig Iron has brought about some large inquiries for Furnace Coke for shipment over first half of next year, and some contracts have already been closed. One Valley furnace interest has covered its requirements for first half of next year at about $2 a ton, at oven. A Wheeling interest is in the market for 1000 tons of Furnace Coke a day, over first six months. Connellsville Furnace Coke, for prompt shipment, is now held at $1.85 to $1.90, at oven. We note a sale of 1500 tons of prompt Connellsville Furnace Coke at $1.90, at oven.

(*By Mail.*)

The decisive result of the election has had the effect of releasing a very large tonnage in Pig Iron, Steel and some forms of finished Iron and Steel. A large amount of business is also pending which will be closed this month. The Pig Iron market has reversed itself from a buyer's to a seller's market, and prices on all grades have advanced in the past week from 75c. to $1 a ton. The furnaces are decidedly stiff in their ideas as to prices, and a number of sellers absolutely refuse to quote for delivery beyond first quarter of next year. Bessemer Iron, which sold two weeks ago at less than $14.75, Valley furnace, is now firmly held at $15.50 to $15.75, some sellers quoting as high as $16. Basic Iron, which sold at $13.85, Valley furnace, two or three weeks ago, is now held at $14.50 to $15, one leading seller stating that he has refused $15 at furnace on a large tonnage of Basic for first half of the year delivery. No. 2 Foundry has advanced from 75c. to $1 a ton, and Malleable Bessemer has gone up about the same. Northern Forge is quoted 50c. higher than a week ago.

**Ferromanganese.**—In sympathy with other lines, the tone of the market on Ferro is stronger, and 80 per cent. foreign Ferro is now held at $44 to $45, seaboard, some sellers asking as high as $46. The freight from seaboard to Pittsburgh is $1.90 a ton. Several large blocks are under negotiation, and are likely to be closed this week.

**Ferrosilicon.**—The market is firmer, and we now quote 50 per cent. at $63.50 to $64.50, Pittsburgh, for November and December shipment. For delivery in first quarter and first half of next year, $65 upward is asked.

**Wire Rods.**—Few new orders are being booked, but large consumers who covered some time ago, including leading Chain and Wire Nail manufacturers, are specifying freely against contracts, and shipments of Rods by the mills are quite heavy. The market is firm, and we continue to quote Bessemer Rods at $33, Chain Rods $33, and Basic $31, Pittsburgh.

**Muck Bar.**—The advance of at least 50c. a ton in prices of Northern Forge Iron is reflected in Muck Bar, which is now held at higher figures, and we quote best grades, made from all Pig Iron, at $25.50 to $26, Pittsburgh.

**Skelp.**—Inquiries are a little better. Prices are nominally as follows: Grooved Steel Skelp, 1.45c. to 1.50c.; Sheared Steel Skelp, 1.50c. to 1.60c.; Grooved Iron Skelp, 1.60c. to 1.70c., and Sheared Iron Skelp, 1.70c. to 1.75c., f.o.b. Pittsburgh.

**Steel Rails.**—Reports given wide publicity that the manufacturers of Steel Rails would reduce prices $4 a ton, or from $28 to $24, Pittsburgh, were without foundation. On the contrary, they decided last week to maintain the present price of $28, at mill, for Standard Sections. The Cambria Steel Company has taken an order for 500 tons of 70 lb. Rails for the Manor Valley Traction Company, for delivery at Irwin, Pa. None of the leading railroads has yet placed Rail contracts for next year's delivery, but a number of them are actively figuring on their requirements, and it is expected that some large orders will be booked before the close of this year. The Carnegie Steel Company entered orders last week for about 1500 tons of Light Rails and also received some fairly large specifications against contracts. Prices on Light Rails, rolled from Billets, which are still being shaded from $1 to $2 a ton for Rerolled Rails, are as follows: $25 for 25 to 45 lb. Sections, with $1 advance for 20 lb., $2 advance for 16 lb., and $3 advance for 12 lb. Standard Sections are $28, at mill, and Angle Splice Bars, 1.65c., at mill.

**Plates.**—The contract for Riveted Pipe for the Brooklyn water works extension having finally been secured by the T. A. Gillespie Company, Pittsburgh, requiring about 20,000 tons, the Plates for making it will be furnished by the Carnegie Steel Company. The Pittsburgh & Lake Erie Railroad has placed a contract for 1000 80,000-lb. Steel coal cars with the American Car & Foundry Company, and the Plates and Shapes, 15,000 tons or more, will likely be furnished by the Jones & Laughlin Steel Company. The Carolina, Clinchfield & Ohio Railroad has ordered 2000 cars from the Pressed Steel Car Company, and the Plates and Shapes, 30,000 tons or more, will be rolled by the Carnegie Steel Company. These car orders, with that of the Grand Trunk for 2000 cars, noted last week, will take upward of 100,000 tons of Plates, Shapes and Axles, all of which will be furnished by Pittsburgh mills. Other large orders for Plates are pending, and it seems now that the mills will have at least a moderate amount of work for the winter months. Prices on Plates continue to be shaded, mostly on the narrow sizes, from $1 to $2 a ton. Regular prices on Plates are as follows: Tank Plates, ¾ in. thick, 6¼ in. up to 100 in. wide, 1.60c., base, at mill, Pittsburgh. Extras over this price are as follows:

Tank, Ship and Bridge quality, ¼-in. thick on edges, 100 in. wide, down to but not including 6 in. wide, is taken as base.

Steel Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per square foot, shall be considered ¼-in. Plate. Steel Plates over 72 in. wide must be ordered ¼-in. thick on edge, or not less than 11 lb. per square foot, to take base price. Steel Plates over 72 in. wide ordered less than 11 in. per square foot down to the weight of 3-16-in. shall take the place of 3-16-in.

Percentages as to overweight on Plates, whether ordered to gauge or weight, to be governed by the Association of American Steel Manufacturers' Standard Specifications.

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|---|---|
| Gauges under ¼-in. to and including 3-16-in. Plates on thin edges | $0.10 |
| Gauges under 3-16-in. to and including No. 8 | .15 |
| Gauges under No. 8 to and including No. 9 | .25 |
| All sketches (excepting straight taper Plates varying not more than 4 in. in width at ends, narrowest end being not less than 30 in.) | .10 |
| Complete Circles | .20 |
| Boiler and Flange Steel Plates | .10 |
| "A. B. M. A." and ordinary Firebox Steel Plates | .20 |
| Still Bottom Steel | .30 |
| Marine Steel | .40 |
| Locomotive Firebox Steel | .50 |
| Shell grade of Steel is abandoned. | |
| For widths over 100 in. up to 110 in | .05 |
| For widths over 110 in. up to 115 in | .10 |
| For widths over 115 in. up to 120 in | .15 |
| For widths over 120 in. up to 125 in | .25 |
| For widths over 125 in. up to 130 in | .50 |
| For widths over 130 in | 1.00 |

TERMS.—Net cash 30 days. Pacific Coast base, 1.50c., f.o.b. Pittsburgh.

**Structural Material.**—The Cambria Steel Company has taken orders for about 6500 tons of Plates and Structural Shapes, mostly the latter, and reports other large orders pending. The county controller of Allegheny County and the county commissioners of Washington County are advertising for bids for the erection of a bridge, taking about 4000 tons of Steel, over the Monongahela River, at Monongahela, Pa., to be opened in Pittsburgh, November 25. The Bollinger-Andrews Company has taken 500 tons of Steel for a building in Pittsburgh, and the Riter-Conley Mfg. Company has secured a contract from the Cincinnati Southern Railway for a viaduct to be built in Cincinnati, requiring about 2500 tons. Several large contracts for bridge work and Steel buildings are being figured on, which are expected to be placed within a week or two. We quote, f.o.b. mill, Pittsburgh: I-Beams and Channels, 3 to 15 in., inclusive, 1.60c., net; I-Beams over 15 in., 1.70c., net; H-Beams over 8 in., 1.80c.; Angles, 3 to 6 in., inclusive, ¼ in. and up, 1.60c., net; Angles, over 6 in., 1.70c., net; Angles, 3 x 3 in. and up, less than ¼ in., 1.50c., base, half extras, Steel Bar card; Tees, 3 in. and up, 1.65c., net; Zees, 3 in. and up, 1.60c., net; Angles, Channels and Tees under 3 in., 1.50c., base, half extras, Steel Bar card; Deck Beams and Bulb Angles, 1.90c., net; Hand Rail Tees, 3c., net; Checkered and Corrugated Plates, 3c., net.

**Iron and Steel Bars.**—The demand for Steel Bars continues heavy, the Cambria Steel Company having taken a contract for 1000 tons and other new orders nearly as large have been placed. Specifications against contracts are coming out freely, and the three leading makers of Steel Bars are now operating to more than 75 per cent. of capacity. If the present rate of new orders and specifications is maintained, these concerns expect to be operating to 90 per cent. or more of capacity before the year is out. Some orders are being placed for Iron Bars and specifications against contracts are fair. We quote Iron Bars at 1.40c., base, for Pittsburgh delivery, and 1.35c., base, for Western points, to which freight is added, except Chicago, the price for which is 1.50c., delivered. We quote Steel Bars at 1.40c., Pittsburgh, for base sizes.

**Railroad Spikes.**—More inquiry for Spikes is being received from the railroads than for some time, and in the past week or 10 days 5000 kegs or more have been placed. The demand for the smaller sizes is active, and the mills are filled up for some time. Prices are firm, and we quote: Standard sizes, 4½ x 9-16 in., at $1.70, and the smaller sizes at $1.80 per 100 lb. in carload and larger lots, with an advance of 5c. per 100 lb. for less than carload, f.o.b. Pittsburgh.

**Merchant Steel.**—General conditions in this trade are fairly satisfactory. While new orders are small, aside from Steel Bars, specifications are coming in well. The mills are making pretty heavy shipments of Shafting, consumers specifying quite freely against contracts placed some time ago. On large contracts for Shafting regular discounts are still being shaded. Regular prices on Cold Rolled Shafting are 57 per cent. off in carloads and 52 per cent. on less than carloads, delivered in base territory. Prices on Merchant Steel are being shaded, regular quotations being as follows: Smooth Finished Machinery Steel, 1.80c. to 1.90c.; Flat Sleigh Shoe, 1.75c. to 1.85c.; Cutter Shoe Steel, 2.15c. to 2.25c.; Toe Calk, 1.90c. to 1.95c.; Railroad Spring Steel, 1.60c. to 1.75c., the higher prices being for Pennsylvania Railroad analysis. Carriage Spring Steel is 1.80c.; Tire Steel, Iron finish, 1½ x ½ in. and heavier, 1.40c.; under 1½ in., 1.55c. Planished Tire Steel is 1.60c., all f.o.b., at mill.

**Spelter.**—The market has again shown a sharp advance and inquiries are better than for some time. We quote prime grades of Western Spelter at 4.75c. to 4.80c., East St. Louis, equal to 4.87½c. and 4.92½c., Pittsburgh.

**Sheets.**—A slightly better inquiry is reported in the past week, but as yet the Sheet trade, from the standpoint of new orders, is in unsatisfactory condition. It was expected that soon after the election a good many orders that were being held up would materialize, but only a part of these has come out. The demand for Electrical Sheets is active, one or two mills that make a specialty of this product being filled up for the next two or three months. Prices on Sheets are firmer, but occasionally a desirable order is being shaded about $1 a ton. For shipment from mill, regular prices, are as follows: Blue Annealed Sheets, No. 10 and heavier, 1.80c.; Nos. 11 and 12, 1.85c.; Nos. 13 and 14, 1.90c.; Nos. 15 and 16, 2c.; Box Annealed, Nos. 17 to 21, 2.25c.; Nos. 22 to 24, 2.30c.; Nos. 25 and 26, 2.35c.; No. 27, 2.40c.; No. 28, 2.50c.; No. 29, 2.60c.; No. 30, 2.70c. Galvanized Sheets, Nos. 10 and 11, 2.45c.; Nos. 12 and 14, 2.55c.; Nos. 15 and 16, 2.65c.; Nos. 17 to 21, 2.80c.; Nos. 22 and 24, 2.95c.; Nos. 25 and 26, 3.15c.; No. 27, 3.35c.; No. 28, 3.55c.; No. 29, 3.70c.; No. 30, 3.95c.; No 28, Painted Roofing Sheets, $1.75 per square, and Galvanized Roofing Sheets, No. 28, $3.10 per square, for 2½-in. corrugations. These prices are subject to a rebate of 5c. per 100 lb. to the large trade under the usual conditions, jobbers charging the usual advances for small lots from store.

**Tin Plate.**—Inquiries have been decidedly better, and additional orders from the salmon packing interests in the West have been placed. The orders from these consumers now on the books of the leading Tin Plate mills aggregate a considerable tonnage. Two or three fairly large contracts of this kind are undecided and will probably be given to the mills within the next week or 10 days. All of these orders are for delivery prior to March 1 and will help to keep the Tin Plate mills occupied during the winter months. At present the American Sheet & Tin Plate Company is operating slightly less than 50 per cent. of its Tin Plate capacity, and the larger outside mills are operating at about the same rate. Concessions in prices on both Bright and Roofing Plate are said to have entirely disappeared, and the market is firm. We now quote full regular prices on Tin Plate, as follows: $3.70 for 100 lb. Cokes, 14 x 20, f.o.b. Pittsburgh, terms 30 days, less 2 per cent. off for cash in 10 days, this price being subject to the usual rebate of 5c. per base box in large lots.

**Hoops and Bands.**—The Clark Steel Hoop Company, which is building a Hoop mill at Punxsutawney, Pa., is soliciting orders from the trade and is said to have booked a good deal of tonnage for delivery next year. The general demand continues quiet, but consumers are specifying steadily against contracts. Regular prices are reported as being maintained, as follows: Steel Hoops, 1.80c., base, full Hoop

card prices; Steel Bands, 1.40c., base, half Steel card extra, all f.o.b. cars, Pittsburgh, in carload lots, for delivery during 1908.

**Merchant Pipe.**—The general demand continue quite active. The mills are entering more new orders than at any time this year, while specifications against contracts continue to come in quite freely. It is estimated that close to 75 per cent. of the Pipe capacity is active at present. No orders for large gas or oil lines are being placed, but some small inquiries are in the market for Casing and Line Pipe, which aggregate a fair tonnage. The mills are firmly holding prices on both Iron and Steel Pipe, but occasionally jobbers shade prices to some extent. Discounts on Steel Pipe, ¾ to 6 in., to the large trade, are 76 and 5 per cent. off list. Regular discounts are as follows:

*Merchant Pipe.*

| | Jobbers, carloads, Steel. | |
|---|---|---|
| | Black. | Galv. |
| | % | % |
| ⅛ to ¼ in | 67 | 51 |
| ⅜ in | 69 | 55 |
| ½ in | 71 | 59 |
| ¾ to 6 in | 75 | 65 |
| 7 to 12 in | 72 | 57 |
| Extra strong, plain ends: | | |
| ⅛ to ⅜ in | 60 | 48 |
| ½ to 4 in | 67 | 55 |
| 4½ to 8 in | 63 | 51 |
| Double extra strong, plain ends: | | |
| ½ to 8 in | 56 | 45 |

Discounts on Genuine Iron Pipe are as follows:

| | Black. | Galv. |
|---|---|---|
| | % | % |
| ⅛ to ¼ in | 65 | .. |
| ⅜ in | 67 | 53 |
| ½ in | 69 | 57 |
| ¾ to 6 in | 73 | 63 |
| 7 to 12 in | 70 | 55 |
| Extra strong, plain ends: | | |
| ⅛ to ⅜ in | 58 | 46 |
| ½ to 4 in | 65 | 53 |
| 4½ to 8 in | 61 | 49 |
| Double extra strong, plain ends: | | |
| ½ to 8 in | 54 | 43 |

**Boiler Tubes.**—Railroads are buying Locomotive Tubes a little more freely, but orders are mostly for repair work. The demand for Merchant Tubes is only fair. In fact, the Tube market is about the quietest of the whole list, and has been for some time. For Merchant Tubes in small lots, on which an extra 5 per cent. is allowed in carloads, discounts are as follows:

*Boiler Tubes.*

| | Iron. | Steel. |
|---|---|---|
| 1 to 1½ in | 42 | 47 |
| 1¾ to 2¼ in | 42 | 59 |
| 2½ in | 47 | 61 |
| 2¾ to 5 in | 52 | 65 |
| 6 to 13 in | 42 | 59 |

2½ in. and smaller, over 18 ft. long, 10 per cent. net extra.
2¾ in. and larger, over 22 ft. long, 10 per cent. net extra.

**Iron and Steel Scrap.**—A sharp advance has occurred in nearly all lines of Scrap. While the demand from consumers is not specially active, the supply of available Scrap seems to be limited. Dealers are firm and are not inclined to sell except at good figures. On the Pennsylvania Railroad list, to be opened this week, it is expected that bids will show the highest prices offered for Scrap by dealers in some months. The list of the Pennsylvania Lines West was opened last week, and Heavy Steel Scrap brought as high as $16, for Pittsburgh and Sharon delivery. Prices on Heavy Steel Scrap, Borings and Turnings are considerably higher, but Cast Scrap and Low Phosphorus continue dull and prices are weak. Dealers quote about as follows: Heavy Steel Scrap, $16 to $16.25; Cast Iron Borings, $10.50 to $10.75; Bundled Sheet Scrap, $12.50 to $13; No. 1 Busheling Scrap, $14.25 to $14.50; No. 2, $10.75 to $11; No. 1 Railroad Wrought Scrap, $16.75 to $17; No. 1 Cast, $14.50 to $14.75; Iron Axles, $22.50 to $23; Sheet Bar Crop Ends, $19.50 to $20; Low Phosphorus Melting Stock, $18.25 to $18.50; Rerolling Rails, $17.50 to $17.75, delivered at Cambridge, Ohio, or Cumberland, Md.; Steel Axles, $19.50 to $20; Grate Bars, $12.50 to $12.75; Old Car Wheels, $16 to $16.25; Machine Shop Turnings, $11 to $11.25; Railroad Malleable Scrap, $14.75 to $15; Iron Rails, $18.75 to $19; Locomotive Tires, $17.25 to $17.50. All above quotations are per gross ton, f.o.b., Pittsburgh, unless otherwise noted. We note a sale of 500 tons of Heavy Steel Scrap at $16.25 and 250 tons of Cast Iron Borings at $10.50, delivered Pittsburgh.

**Coke.**—In sympathy with Pig Iron, the situation in Coke is showing betterment, and higher prices on prompt Coke, and for delivery in first half of the year are being asked by the Coke producers. Strictly Connellsville Furnace Coke, for prompt shipment, is now held at $1.70 to $1.75, and for delivery over first half of the year $1.90 to $2 per net ton, at oven is being quoted. At present, furnaces are not disposed to pay these higher prices for Coke, and are holding off placing their contracts. Connellsville 72-hour Foundry Coke is also higher, and is held at $2.15 to $2.25 a ton, at oven, for prompt shipment. For delivery over first half of the year from $2.25 to $2.50, at oven, is quoted. The Coke output is increasing, about 55 per cent. of the ovens in the Upper and Lower Connellsville regions now being in blast.

## Cincinnati.

CINCINNATI, OHIO, November 11, 1908.—(*By Telegraph.*)

It has been a week of increasing wakefulness on the part of all factors in every branch of the Iron and Steel trade, and the markets are all relatively stronger. The Pig Iron market is enjoying the first substantial effects of election confidence, and all agencies are busied with inquiries, some coming from the extreme West. In the immediate Central West there have been several more or less successful efforts to buy on speculation, but practically all inquiries in hand are for requirements covering the first quarter and half of next year. Shops in which repairs are made on car equipment are rushed with orders, which is shown in orders for Malleable and Foundry Irons for immediate delivery. Machine tool manufacturers have not yet felt any special effects of the improved tone, but are confident. Scrap dealers are holding firm on quotations, and are confident that the new year will usher in a big buying movement. The largest Pipe interest is credited with having made some specially good purchases of Iron for delivery in November and December at $12.50, Birmingham, for November.

**Pig Iron.**—The market is very active. All agencies are busied with inquiries for first half and quarter requirements. Notices of withdrawal from the market on deliveries covering balance of the year have been received by agents of several furnaces in both the Birmingham and Ironton districts. One large interest restricts its agents to 100-ton orders at the prevailing minimum market of $15.25, Ironton, and announces with emphasis that there is nothing obtainable at less than $13, Birmingham, on Southern Foundry grades, these rates covering deliveries over balance of the year. For next year nothing better than $13, Birmingham, for No. 2 is heard. A sale of 10,000 tons of Southern Foundry to an Indiana speculator at $12.50, Birmingham, balance of the year, is a discussed feature of the week. A Chicago electrical interest is understood to be negotiating a 5000-ton deal on speculation. Most of the inquiries noted last week are still pending, save that the car manufacturing interest which wanted Northern Foundry and Forge for the first quarter is understood to have secured the Forge. A large Tennessee manufacturing interest is reported to have bought 1000 tons of Forge at about $11, Birmingham, through special connections and influences. There appears to be a strong buying movement indicated in Malleable and Basic from inquiries at hand, and it is difficult to secure reliable quotations on either, as almost all offers are being put up to the furnaces for consideration. Ohio 8 per cent. Silicon Silveries are still quotable at $18.50, at furnace. Red River producers are maintaining the same basis of computation, notwithstanding reports of underselling. Among the heavy inquiries in this market to-day are to be noted those of the northern Indiana agricultural implement manufacturer, who wants 2000 tons low grade, sulphur under 0.07 and silicon 0.75 to 1.50, low phosphorus and high manganese, deliveries January to April, inclusive; an Indiana manufacturer, 2000 tons of Malleable for the first half; a northern Ohio melter, 1000 tons of Malleable for the second quarter; an Illinois engineering concern, 500 tons of No. 2 Alabama Foundry, for the first half; a large Illinois machine company, 500 tons of No. 2 Soft for the first half; another Illinois concern, 500 tons of Nos. 2 and 3 Foundry for the first half; a Chicago stove manufacturer, 500 tons of No. 2 Foundry for the second quarter; a Wisconsin manufacturer of bridges, 100 tons each of No. 1 Soft and No. 2 Foundry for the first half; a mining concern in the West, 500 tons of No. 1 Soft and 150 tons of .10 per cent. Silicon for early delivery, and a local Steel making concern, 3000 to 5000 tons of Basic for December, January, February and March and same amount for second quarter. The new freight rates on Iron from the Ironton and Columbus districts, ranging from 5c. to 15c. under last quoted rates, are now effective throughout the State and into nearby territory. For immediate delivery and for balance of the year we quote, based on freight rates of $3.25 from Birmingham and $1.10 from the Hanging Rock District, f.o.b. Cincinnati, as follows:

| | |
|---|---|
| Southern Coke, No. 1 | $16.25 to $16.75 |
| Southern Coke, No. 2 | 15.75 to 16.25 |
| Southern Coke, No. 3 | 15.25 to 15.75 |
| Southern Coke, No. 4 | 15.00 to 15.50 |
| Southern Coke, No. 1 Soft | 16.25 to 16.75 |
| Southern Coke, No. 2 Soft | 15.75 to 16.25 |
| Southern Coke, Gray Forge | 14.25 to 14.75 |
| Ohio Silvery, 8 per cent Silicon | 19.70 |
| Lake Superior Coke, No. 1 | 16.85 to 17.35 |
| Lake Superior Coke, No. 2 | 16.35 to 16.85 |
| Lake Superior Coke, No. 3 | 15.85 to 16.35 |
| Standard Southern Car Wheel | 22.25 to 22.75 |
| Lake Superior Car Wheel | 21.75 to 22.25 |

(*By Mail.*)

**Coke.**—Dealers report that with some prices are a little stiffer, and furnaces are inclined to hurry shipments on contract. Pocahontas Furnace Coke is quotable at $1.85 to $1.90, at oven; Wise County, $2; Connellsville, $2 to $2.25,

all for first half delivery. Some Virginia Furnace Coke is obtainable for this delivery as low as $1.85. There is no appreciable increase in inquiry or sale for Foundry grades which are quotable: Pocahontas, $2 to $2.10, at oven; Wise County, $2.25; Connellsville, $2.35 to $2.50. Effects of the long continued drought are showing with the smaller producers.

**Finished Iron and Steel.**—With the dealers there is a much better feeling apparent, although not yet strong enough to produce business. Most mills in this territory are running better than 50 per cent. The plant of the Andrews Steel Company, Newport, is operating ten mills on full time, beginning two weeks ago. The expectation is that this will be continued the balance of the year. Rumors are current here that the largest interest has advanced Iron Bars, but dealers have as yet no such notification. All factors in the finished trade are having a better line of inquiries, but admit that it is a little early to expect any marked change. Architects having in charge the building of the $500,000 Emery Memorial, for the Ohio Mechanics' Institute, are preparing drawings, and will have specifications ready for bids late in January or early in February. Little finished material, aside from twisted Steel Bars and some trusses, will be used in this structure, which is to be of reinforced concrete. Dealers are quoting to the trade, f.o.b. Cincinnati, as follows: Iron Bars, carload lots, 1.55c., base, with half extras; small lots from store, 1.85c., base, half extras; Steel Plates, carload lots, 1.75c., base, with half extras; small lots from store, 1.85c., base, half extras; Base Angles, carload lots, 1.85c., base; small lots from store, 2.10c.; Beams, Channels, and Structural Angles, 1.85c., base; small lots from store 2.10c.; Plates, ¼-in. and heavier, carload lots, 1.85c.; small lots from store, 2c.; Blue Annealed Sheets, heavy, No. 16, carload lots, 2.15c.; small lots from store, 2.50c.; No. 14, carload lots, 2.05c.; small lots from store, 2.40c.; No. 10 and heavier, carload lots, 1.95c.; small lots from store 2.20c.; No. 12, carload lots, 2c.; small lots from store, 2.30c.; Sheets (Light), Black, No. 28, carload lots, 2.65c.; Galvanized Sheets, No. 28, carload lots, 3.70c.; Steel Tire, 4-in. and heavier, carload lots, 1.95c.; Plates, 3-16 and No. 8, carload lots, 2c.; small lots from store, 2.20c.

**Old Material.**—Following the lead of Pig Iron, there is a little stiffening in price of Scrap in this market. The majority of the largest dealers have increased prices from 25 to 50 cents a ton on the more staple items. Dealers for the most part announce that present prices will not rule long, and are freely predicting higher quotations before the close of the month. There is no confirmed improvement, save a trifle better inquiry, in any line of Scrap. We quote asking prices to the trade as follows, f.o.b. Cincinnati:

| | |
|---|---|
| No. 1 R. R. Wrought, net ton | $12.75 to $13.75 |
| Cast Borings, net ton | 5.25 to 5.75 |
| Heavy Melting Steel Scrap, gross ton | 13.50 to 14.50 |
| Steel Turnings, net ton | 6.00 to 7.00 |
| No. 1 Cast Scrap, net ton | 12.00 to 13.00 |
| Burnt Cast, net ton | 9.00 to 10.00 |
| Old Iron Axles, net ton | 16.75 to 17.75 |
| Old Iron Rails, gross ton | 15.00 to 16.00 |
| Old Steel Rails, short, gross ton | 13.00 to 14.00 |
| Old Steel Rails, long, gross ton | 12.75 to 13.75 |
| Relaying Rails, 56 lb. and up, gross ton | 20.50 to 21.50 |
| Old Car Wheels, gross ton | 13.00 to 14.00 |
| Low Phosphorus Scrap, gross ton | 14.00 to 15.00 |

## Birmingham.

BIRMINGHAM, ALA., November 9, 1908.

**Pig Iron.**—The aggregate of engagements for the week just ended is placed at 50,000 to 75,000 tons. The demand has come from practically all lines of foundry trades, and a number of transactions recorded involve deliveries covering the entire first half of 1909. It is probable that in one or more round tonnage considerations early in the week the schedule of $13, Birmingham, was slightly shaded, but with indications favorable for a general buying movement, quotations have stiffened, with a tendency to advance. The present second largest producer has adopted a basis of $13.50, Birmingham, for quotations, but such figures are considered prohibitive. A lot of 500 tons of 2.25 to 2.75 per cent. Silicon Iron recently sold at $13.75, Birmingham. There has been a decided improvement in the demand for Charcoal Iron. The latest sale reported was 2500 tons of chilling grades, which brought $20, at furnace. The probable make of this grade for some months has been disposed of, but there is an accumulation of soft grades which are quoted at $19.50 at furnace. Of all recent engagements, the proportion of early shipments that has been specified is such that the tonnage to be carried over by producers has been materially increased, notwithstanding the proposed increase in the output. There is some speculation, however, as to the probable additions to first quarter commitments. The number of inquiries pending are indicative of a considerable tonnage yet to be placed, but there is apparently no eagerness among prospective purchasers to cover for their requirements. The fact that requirements in a number of cases have been provided for on the hand to mouth order for some months, no doubt accounts largely for the recent activity in the market, but the trade generally seems to anticipate a gradual improvement and is disposed to provide accordingly.

**Cast Iron Pipe.**—An advance in quotations on this commodity is not authorized, but the market is more active, with probably less shading, in order to effect the sale of round tonnages than at any time for some months past. The principal contract placed with Southern producers recently covers approximately 3000 tons of Water Pipe for the city of Los Angeles, Cal. This was awarded to the American Cast Iron Pipe Company, Birmingham, Ala., which concern was also the successful bidder on 1000 tons for Springfield, Mo. A contract to cover 1250 tons of Water Pipe for Gadsden, Ala., will be placed November 12, and 1000 tons for Spokane, Wash., is for letting about November 15. The aggregate of less than 1000 tons lots in sight is attractive, and the market generally presents a more encouraging aspect. We quote as follows, for Water Pipe, f.o.b. cars here, per net ton: 4-in. to 6-in., $24; 8-in. to 12-in., $23; over 12-in., average, $22, with $1 per ton extra for Gas Pipe.

**Old Material.**—Recent political developments are so far without a material effect upon this market. Indications are favorable for the resumption of operations at mills now idle, and an increase in the consumption is anticipated, but a comparatively small volume of business has been transacted the past week. We quote dealers' asking prices as follows, per gross ton, f.o.b. cars here:

| | |
|---|---|
| Old Iron Rails | $14.50 to $15.00 |
| Old Iron Axles | 15.50 to 16.00 |
| Old Steel Axles | 13.00 to 13.50 |
| No. 1 Railroad Wrought | 13.50 to 14.00 |
| No. 2 Railroad Wrought | 10.50 to 11.00 |
| No. 1 Country Wrought | 11.00 to 11.50 |
| No. 2 Country Wrought | 9.50 to 10.00 |
| No. 1 Machinery | 11.00 to 11.50 |
| No. 1 Steel | 9.50 to 10.00 |
| Stove Plate and Light Cast | 9.50 to 10.00 |
| Cast Borings | 5.00 to 5.50 |

## Buffalo.

BUFFALO, N. Y., November 10, 1908.

**Pig Iron.**—The market has shown a pronounced gain in strength, with decidedly greater activity in inquiry and a noteworthy increase in orders both for prompt and forward deliveries. There has as yet been no material change in the schedule of prices, but it is probable that the larger orders booked and the increased inquiry for future deliveries will impel the furnaces to advance same shortly. One of the largest of the local furnaces has stopped solicitation of business for prompt delivery, being booked to capacity to the end of the year, and is asking advances over the prices quoted below for forward shipments covering the first quarter and half of 1909. We quote for the current quarter, f.o.b. Buffalo:

| | |
|---|---|
| No. 1 X Foundry | $15.50 to $16.00 |
| No. 2 X Foundry | 15.25 to 15.75 |
| No. 2 Plain | 14.75 to 15.25 |
| No. 3 Foundry | 14.50 to 15.00 |
| Gray Forge | 14.25 to 14.75 |
| Basic | 15.00 |
| Malleable Bessemer | 15.50 to 16.50 |
| Charcoal | 20.00 to 20.50 |

**Old Material.**—The market is notably stronger, with some dealers inclined to hold material for better prices. Consumers do not readily agree to the higher schedule asked, basing their ideas of values on the prevailing prices for Pig Iron, and in consequence no large tonnages are changing hands. Sales in some lines, however, are being made at improved prices. We quote as follows, per gross ton, f.o.b. Buffalo:

| | |
|---|---|
| Heavy Melting Steel Scrap | $14.50 to $15.00 |
| No. 1 Railroad Scrap | 15.25 to 15.75 |
| No. 1 Railroad and Machinery Cast Scrap | 14.50 to 15.00 |
| Old Steel Axles | 18.00 to 18.50 |
| Old Iron Axles | 21.00 to 21.50 |
| Old Car Wheels | 15.00 to 15.50 |
| Railroad Malleable | 13.00 to 13.50 |
| Boiler Plate | 12.00 to 12.50 |
| Locomotive Grate Bars | 12.00 to 12.50 |
| Pipe | 12.00 to 12.50 |
| Wrought Iron and Soft Steel Turnings | 9.00 to 9.25 |
| Clean Cast Iron Borings | 8.00 to 8.50 |
| No. 1 Busheling Scrap | 13.00 to 13.50 |

**Finished Iron and Steel.**—Orders for Bars and Plates continue in about the same volume as prior to election, with some improvement in railroad material, aside from Rails, especially for new cars and repairs. Inquiry is becoming brisker, and there are a number of projects requiring Structural Steel in this district that will be proceeded with as soon as they can be financed. The George Kellogg Structural Company has been awarded the contract for the Structural Steel required for the Buffalo Seminary Building, about 200 tons.

Casey & Murray, Rochester, who hold contract for the construction of section No. 31, new State Barge Canal, have placed an order with Whitehead & Kales, Detroit, for 1000 tons of Structural Steel and Castings to be used in connection with lock and dam work on that section, and have orders still to place for twisted Steel Bars required for the same work, about 25 tons.

# Metal Market.

NEW YORK, November 11, 1908.

**Pig Tin.**—Consumers, having bought before election, are now out of the market. Reports of the large business transacted are either exaggerated or false. Some speculative buying has been indulged in, but in a limited way. Prices are only slightly higher than a week ago. The changes during the week have been as follows:

| | Cents. |
|---|---|
| November 4 | 30.35 to 30.37½ |
| November 5 | 30.35 |
| November 6 | 30.75 |
| November 9 | 31.25 |
| November 10 | 30.95 |
| November 11 | 30.75 |

The London market closes to-day at £139 7s. 6d. for spot and £140 17s. 6d. for futures. The arrivals so far this month are 1365 tons, and there are afloat 1662 tons.

**Copper.**—A rapid advance in the price of Copper in London following the election carried prices to new high levels for the year. It has been the busiest week in the Copper trade in nearly two years. Following a higher market in London on Wednesday, last prices for spot on that exchange advanced by Monday £2 16s. 3d. and for futures £3. On Tuesday there was a slight setback, but to-day's quotations are only slightly below those of Monday at £64 11s. 3d. for spot and £65 10s. for futures. This activity in London caused selling agencies and dealers here to very quickly readjust their prices, and to-day Lake is held at 14.75c. and Electrolytic at 14.50c., cash, an advance of ¾c. per pound in a week. This seems very rapid, and undoubtedly was caused by the attempt to crowd into two weeks the accumulated business of several. It appears somewhat strange that the Electrolytic market should have followed the Lake market so closely, as Lake Copper has been in relatively better demand for the last four months. This is on account of its being used in the manufacture of Brass and Sheet Copper, which trades were more nearly normal before election than the Wire trade, where Electrolytic Copper is extensively used. Most of the consumers of Lake Copper have covered their requirements for the year, and are now buying for the first quarter of 1909. One phase of the Copper trade, particularly the Lake trade, which, although known to many is not always taken into consideration, is that stocks of finished material in the hands of manufacturers and dealers are relatively light, and in consequence when the market began to advance so rapidly orders were sent in by dealers for large supplies. This has resulted in some places in the clogging of mills, and at least one manufacturer of Sheet Copper is much behind in orders. On receipt of orders held up pending election manufacturers at once rushed into the market to buy raw material, and in so doing advanced the price on themselves. Stocks of Copper in Europe are large, and, while these are in the hands of speculative consumers, banking interests and agents for American Copper selling companies, and so firmly held that they will not come out on declines, it may be well to observe that in all probability these supplies will be utilized in Europe should the market advance much further. Should these holders of Copper in Europe feed out their stocks exports would dwindle and American consumption even at prosperity's flood tide is not equal to the production. This production is steadily increasing, and electrical developments and extensions of existing enterprise and many new projects will have to be brought out before the consumption is as large as in the latter part of 1906 and in early 1907. Sheet Copper has been advanced to 19c. basis. The exports so far this month are less than 4000 tons.

**Waterbury Average.**—The Waterbury average for October was 13.75c.

**Lead.**—The market is in a somewhat peculiar position. Independent holders are quoting 4.42½c., New York, and 4.30c., St. Louis. This shows a slight easing from the latter part of last week, when 4.30c., St. Louis, was refused by some of these interests. The American Smelting & Refining Company continues to book orders for shipment Lead on a basis of 4.30c., New York. This company is reported to have made some very quick deliveries recently.

**Antimony.**—In common with other metals, there is more inquiry for Antimony, and this is particularly felt by importers. Prices are only slightly stronger, however, Hallett's being held at 8.12½c. to 8.25c., Cookson's 8.37½c. to 8.50c., and outside brands at 8c.

**Aluminum.**—A further reduction in the price of Aluminum was announced this week, and ton lots of No. 1 ingots are quoted at 25c. This is a cut of 4c. per pound, following one of like amount made early in October, making a total reduction since October 1 of 8c. per pound. Sheets are now held on a basis of 35c. Reports from Pittsburgh are to the effect that the demand for Aluminum Sheets is very large. These have an increasing use in the manufacture of automobile bodies.

**Nickel.**—The price of this metal is unchanged at 45c. for 10-ton lots, and 50c. to 60c. for smaller quantities.

**Tin Plates.**—Prices are absolutely without change at $3.89, New York, and $3.70, Pittsburgh, for 100-lb. IC Coke Plates. In Swansea Welsh Tin Plates are 1½d. higher, at 12s. 3d.

**Old Metals.**—Business is not so active as in some of the last few weeks, but this is because holders of metal are unwilling to dispose of their stocks at present prices. Consumers are anxious to have quotations made, and some have paid high prices for quick shipments. Some dealers are making an active campaign to secure cheap metal, and in some cases they are successful. This accounts for a part of the buying. Other dealers are anxious to cover their outstanding contracts, and as they have sold short are paying long prices. Under these conditions prices correspond more to advances in Ingot or Pig Metals rather than actual transactions in Old Metals, and dealers' selling prices are quoted as follows:

| | Cents. |
|---|---|
| Copper, Heavy and Crucible | 13.75 to 14.00 |
| Copper, Heavy and Wire | 13.50 to 13.75 |
| Copper, Light and Bottoms | 12.50 to 12.75 |
| Brass, Heavy | 9.75 to 10.00 |
| Brass, Light | 7.75 to 8.00 |
| Heavy Machine Composition | 12.75 to 13.25 |
| Clean Brass Turnings | 9.00 to 9.50 |
| Composition Turnings | 10.50 to 11.00 |
| Lead, Heavy | 4.25 |
| Lead, Tea | 4.00 |
| Zinc Scrap | 3.50 |

# New York.

NEW YORK, November 11, 1908.

**Pig Iron.**—There has been a very heavy movement, in which all interests have participated, both in this territory and in New England. The sales include 15,000 tons to one Pipe foundry. Some large inquiries are under negotiation. These include for 8000 to 10,000 tons for one New England foundry interest, 3000 tons for another, 8000 to 13,000 tons for two soil Pipe plants in this territory, and 6000 to 8000 tons for an agricultural implement maker. Manufacturers of railroad supplies are also calling for a round tonnage, while Southern Iron has been above parity here, yet, in the aggregate, quite a large tonnage has been recently sold in this district and in New England to founders who insist upon keeping some of it in their mixtures. We quote, at tidewater, $17.50 to $17.75 for No. 1 Northern Foundry, $17 to $17.50 for No. 2 Foundry, and $16 to $16.50 for No. 2 Plain. Alabama Irons are quoted at $17.50 to $17.75 for No. 1 Foundry, and $17.25 to $17.50 for No. 2 Foundry.

**Steel Rails.**—The Atlantic Coast Line has given an order for 25,000 tons of Bessemer Rails to the Maryland Steel Company, rollings beginning at the Sparrows Point mill in March. The South Chicago mill has sold 4000 tons for a traction line in Michigan, and the Lackawanna Steel Company has booked 2000 tons for the Anglo-Newfoundland Development Company, a Newfoundland corporation. The Burlington Road is reported in the market for 40,000 tons for 1909. There is no basis for reports as to any change in prices for 1909, and sales are made at $28, for Bessemer, and $30 for Open Hearth Rails. With the adoption of the new specifications, it is not expected that any large percentage of the Rail requirements for next year will be called for in Open Hearth Steel. Several roads are now canvassing the question of their needs for next year, and the placing of good sized orders is expected in the near future.

**Structural Material.**—Some indication is seen of an effort to bring up prices on fabricated work, and to cure the irregularity that has been apparent for some time in prices of Structural Steel. The amount of business taken at low figures insures the operation of a number of plants with increased forces for a good many weeks, and it is believed there is sentiment enough in favor of a better basis to make itself felt in the market. The principal local contract in the past week was the New York Central suburban station and street crossing work, 4700 tons, which went to the Lackawanna Steel Company. The new subway work at Ninety-sixth street, 1800 tons, was awarded to Terry & Tench. The Levering & Garrigues Company has the contract for the Martinique Hotel addition, 1500 tons, and the Steel will be furnished by the Lackawanna Steel Company. The latter company also furnishes the Steel for the new Hotel Blackstone, at Chicago, 5300 tons, for which the Brown-Ketcham Iron Works, Indianapolis, Ind., has the fabricating contract. The Brown-Ketcham Iron Works also has the Public Library Building, 2000 tons, and the Post Office, 1350 tons, at St. Louis, and an office building at San Antonio, Texas, 500 tons. The William Penn High School, Philadelphia, 1200 tons, goes to the Phœnix Bridge Works, and a Y. M. C. A. Building, at Pittsburgh, 850 tons, to the Jones & Laughlin Steel Company. Bids have gone in on the Twentieth Street Viaduct, at Denver, Colo., 3000 tons, to be built by four railroads; also on the Detroit-Edison Company's addition to its power house, at Delray, below Detroit, 1500 tons. Manufacturers who use the lighter Structural Shapes are inquiring for material for next year, as far ahead as July 1. Dealers have not yet bought beyond January 1,

and dealers' orders for the first quarter will not be entered much before December 1. On mill shipments, tidewater deliveries, we quote as follows: Beams, Channels, Angles and Zees, 1.76c.; Tees, 1.81c. On Beams, 18 to 24 in., and Angles, over 6 in., the extra is 0.10c. Structural Material, cut to lengths, is sold in small lots at about 2¼c.

**Ferroalloys.**—This market is quiet. Sales of 50 per cent. Ferrosilicon have been made, at $68, delivered. Ferromanganese is firm, and there is talk of an advance in the near future from $43, Baltimore, to $45.

**Bars.**—A decidedly better feeling is noted in the Bar Iron market, orders having been placed quite freely during the entire week. Inquiries are numerous, with some consumers disposed to make contracts for their requirements for six months at a shade under ruling prices. Bar Iron manufacturers, however, are firmer in their views, being undoubtedly influenced by the hardening of prices of raw material. While these manufacturers are not now organized, the smaller makers are closely observing the attitude of the leading companies, and are expected to closely follow if the latter advance their prices. While the market is more closely approaching 1.50c., tidewater, as the ruling price, it is still possible to secure some Bar Iron at 1.45c., tidewater. Steel Bars continue to be held at 1.56c., tidewater.

**Plates.**—Last Friday the judicial decision was rendered in the case of the contract for Riveted Pipe for the extension of the Brooklyn Water Works, and the injunction was dissolved with the result that the contract has been awarded to the T. A. Gillespie Company. This insures the purchase at Pittsburgh of the 20,000 tons of Plates required for this Pipe. The general demand for Plates has been decidedly better, with numerous small orders entered and an increased volume of inquiries. Among the inquiries are some for fair quantities for export. Prices are held as follows, at tidewater, for standard sized Plates: Sheared Plates, 1.76c. to 1.86c.; Flange Plates, 1.86c. to 1.96c.; Marine Plates, 2.16c. to 2.26c.; Firebox Plates, 2.65c. to 3.50c., according to specifications.

**Cast Iron Pipe.**—The Board of Water Commissioners, Amsterdam, N. Y., is having plans prepared for a high pressure line, 12½ miles long, to extend from Hanns Creek to Kellogg Reservoir, Amsterdam, to be constructed of 30-in. Cast Iron Pipe. Bids will be called for in the course of the next 60 days. The Knapp-Cramer Hardware Company, North Tonawanda, N. Y., has been awarded a contract by the local Board of Water Commissioners for 5000 ft. of 4-in., 1000 ft. of 6-in. and 1000 ft. of 12-in. Cast Iron Pipe. The company will sublet this contract. More serious attention is now being given to the proposition for a water works plant on which bids were recently opened by the city of Passaic, N. J. Indications are strong that the contract will be awarded and that the work may be undertaken by the municipality. It is understood that the lowest bidder on the Pipe for this undertaking is a Philadelphia firm. While a better tone is perceptible in the Pipe trade, the volume of business since the election has not been large. A considerable number of small orders have been placed for the Pipe needed for work to be completed this fall, but inquiries are lacking for anything like large quantities. Carload lots of 6-in. are quoted at $24 per net ton, tidewater.

**Old Material.**—Prices have responded to an improved demand in all lines, and quotations are 25 to 50 cents per ton higher. While no large transactions are reported, the demand for small quantities is general, coming from all classes of consumers. The railroad lists which have been put out for this month are much larger than had been expected, but it is believed that offerings from this quarter will speedily be absorbed. Among recent transactions are sales of about 5000 tons of Old Steel Rails at about $15.25, delivered at buyer's mill in western New York. Quotations are as follows, New York and vicinity, per gross ton:

| | |
|---|---|
| Old Girder and T Rails for melting | $11.75 to $12.25 |
| Heavy Melting Steel Scrap | 11.75 to 12.25 |
| Old Steel Rails, rerolling lengths | 14.50 to 15.00 |
| Relaying Rails | 23.00 to 23.50 |
| Old Iron Rails | 17.50 to 18.00 |
| Standard Hammered Iron Car Axles | 19.00 to 19.50 |
| Old Steel Car Axles | 16.00 to 17.00 |
| No. 1 Railroad Wrought | 15.25 to 16.00 |
| Iron Track Scrap | 12.25 to 13.00 |
| No. 1 Yard Wrought, long | 14.50 to 15.00 |
| No. 1 Yard Wrought, short | 13.00 to 14.00 |
| Light Iron | 7.50 to 8.00 |
| Cast Borings | 8.00 to 8.50 |
| Wrought Turnings | 9.00 to 9.50 |
| Wrought Pipe | 11.50 to 12.00 |
| Old Car Wheels | 14.50 to 15.25 |
| No. 1 Heavy Cast, broken up | 13.75 to 14.25 |
| Stove Plate | 11.50 to 12.00 |
| Locomotive Grate Bars | 11.50 to 12.00 |
| Malleable Cast | 12.50 to 13.00 |

## Iron and Industrial Stocks.

NEW YORK, November 11, 1908.

The security markets were greatly stimulated by the result of the election. Industrial stocks participated largely in the improved demand coming from the investing and speculating public. Among favorite stocks was United States Steel common, transactions in which constituted by far the larger part of the dealings on the New York Stock Exchange for several days in succession. It is noteworthy that on Saturday last this stock sold at 55½, which is the highest price on record, being half a dollar above the previous high price, recorded in April, 1901. Other stocks made sharp advances. The range of prices on active industrial stocks from Thursday of last week to Tuesday of this week was as follows: United States Steel common 50¼ to 55½, preferred 112¼ to 113⅝; Bethlehem Steel common 23 to 25¾, preferred 50¾ to 53½; Car & Foundry common 44½ to 47⅜, preferred 106¼ to 108; Locomotive common 53½ to 59, preferred 108½ to 110⅞; Steel Foundries, new, 32½ to 39⅞; Cambria Steel 37⅝ to 40¼; Colorado Fuel 37¾ to 40¾; Crucible Steel common 8 to 8½, preferred 50 to 53½; Pressed Steel common 36½ to 41, preferred 96½ to 99; Railroad Spring common 44 to 46¼, preferred 99 to 100⅛; Republic common 25⅜ to 28¼, preferred 83½ to 87⅞; Sloss-Sheffield common 74½ to 80, preferred 107¼ to 109; Cast Iron Pipe common 26½ to 30¼, preferred 73 to 76½; Can common 7⅝ to 9⅞, preferred 69½ to 74½. Last transactions up to 1.30 p.m. to-day are reported at the following prices: United States Steel common 54⅜, preferred 112½, bonds 101⅞; Car & Foundry common 45⅝, preferred 107; Locomotive common 56, preferred 110; Colorado Fuel 39½; Pressed Steel common 39⅜, preferred 99; Railway Spring common 45; Republic common 27¼, preferred 87; Sloss-Sheffield common 78¼; Cast Iron Pipe common 29¼, preferred 76; Can common 9½, preferred 74.

**Dividends.**—The Pittsburgh Valve, Foundry & Construction Company, Pittsburgh, has declared a quarterly dividend of 1¼ per cent.

The Niles-Bement-Pond Company has declared the regular quarterly dividend of 1½ per cent. on the preferred stock, payable November 16, and 1½ per cent. on the common stock, payable December 21.

The Pratt & Whitney Company has declared the regular quarterly dividend of 1½ per cent. on the preferred stock, payable November 16.

The Sloss-Sheffield Steel & Iron Company has declared a quarterly dividend of 1 per cent. on the common stock, payable December 1.

## More Steel Passenger Cars Ordered.

In continuance of its declared policy to make future additions to its passenger equipment as nearly fireproof and collision proof as possible, the Pennsylvania Railroad Company November 6 placed orders for 77 all steel passenger cars. This is in addition to orders for 200 of these cars which have been placed already, and of which about 110 have now been received and placed in service on regular through trains. Of the newly ordered cars, 31 will be made by the Pressed Steel Car Company. To the American Car & Foundry Company is awarded a contract for 29 of the new cars. The Standard Steel Car Company will construct 17. All of these cars are to represent the latest improvements in the art. A number of minor alterations have been made in the former design with a view to increasing the comfort of the passengers. Some further progress has also been made in the elimination of wood and other inflammable material. Aside from the mahogany window sash and seat frame there is to be no wood whatever in the cars. Out of a gross weight of about 116,000 lb. for the entire car, the wood in it will weigh only about 300 lb. The new cars will have 1300 lb. of open hearth steel for every passenger carried. The feature of construction, the factor which will secure these cars against the dangers of collision, is a central box girded 24 in. wide and 19 in. deep, extending throughout the length of the coach. To further insure the car against collapsing, its frame structure is designed upon the principle of the cantilever bridge, with the trucks as piers. The floor of the car is of magnesium cement, laid on corrugated iron. The coach is lighted by electricity, derived from train generators or storage batteries. Forced ventilation will be a feature of the new equipment. Each car will be perfectly ventilated, even when all the windows are closed.

The Pittsburgh Railways Company has placed an order with the Forged Steel Wheel Company, an identified interest of the Standard Steel Car Company, for 6000 forged steel wheels for delivery next year. The plant of the Forged Steel Wheel Company is located at Butler, Pa. The steel for the wheels will be furnished by the Carnegie Steel Company.

## Bids for Battleships and Armor.

WASHINGTON, D. C., November 10, 1908.—The Secretary of the Navy yesterday opened bids for the construction of the battleship Utah, for machinery for the battleship Florida, which is to be built in a Government yard, and for 9418 tons of armor for both battleships. Owing to the great variety of alternative bids submitted for the construction of the Utah, a very careful examination of the proposals will be necessary before an award is made, but the New York Shipbuilding Company's bid on the Department's plans and specifications was much the lowest. The Newport News Shipbuilding & Dry Dock Company submitted a series of bids for machinery for the Florida, but no other concern offered to supply the complete installation, although the Fore River Shipbuilding Company offered to furnish certain parts of the installation at specified prices.

The Carnegie Steel Company, Bethlehem Steel Company and Midvale Steel Company submitted identical bids for 8487 tons of the armor advertised for, and each of the three concerns made the lowest bid for one of the three small lots, making up the remainder of the quota. The fact that, although the Midvale Steel Company but recently entered the armor plate field as a sharp competitor of the Carnegie and Bethlehem concerns, the three companies to-day submitted practically identical bids occasioned considerable comment among officials of the Department, but as the proposals are all regarded as fairly reasonable it is assumed that the contract will be divided somewhat in accordance with the facilities of the respective competitors and their outstanding engagements.

Following is a summary of the various bids:

*Battleship Utah.*

Class 1.—Hull and turbine machinery, plans and specifications provided by the Secretary of the Navy.

Class 2.—Hull and reciprocating machinery, plans and specifications provided by the Secretary of the Navy.

Class 3.—Hull and equipment, plans and specifications provided by the Secretary of the Navy; machinery, bidder's plans and specifications.

William Cramp & Sons Ship & Engine Building Company.—Class 1, ship of 20¾ knots, delivered 35 months, $4,330,000; class 2, ship of 20¾ knots, delivered 35 months, $4,270,000; class 3, ship of 21 knots, delivered 36 months, with Cramp-Zoley turbines, $4,450,000.

Fore River Shipbuilding Company.—Class 1, no bid; class 2, no bid; class 3 (*a*), ship of 20¾ knots, 32 months, Curtis turbines, $4,463,000; (*b*) ship of 21 knots, 32 months, with Curtis turbines, $4,510,000; (*c*) ship of 20¾ knots, 32 months, with Curtis turbines, $4,472,000; (*d*) ship of 21 knots, 32 months, with Curtis turbines, $4,519,000; (*e*) ship of 20¾ knots, 32 months, with Curtis turbines, $4,393,000; (*f*) ship of 21 knots, 32 months, with Curtis turbines, $4,440,000; (*g*) ship of 20¾ knots, 32 months, with Curtis turbines, $4,413,000; (*h*) ship of 21 knots, 32 months, with Curtis turbines, $4,460,000.

Newport News Shipbuilding & Dry Dock Company.—Class 1, ship of 20¾ knots, 32 months, $4,180,000; class 2, ship of 20¾ knots, 32 months, $4,150,000; class 3 (*a*), ship of 20¾ knots, 32 months, with Parsons turbines, $4,100,000; (*b*) ship of 20¾ knots, 32 months, with reciprocating engines, $4,070,000.

New York Shipbuilding Company.—Class 1, ship of 20¾ knots, 32 months, $3,946,000; class 2, no bid; class 3, no bid.

*Machinery for Battleship Florida.*

Class 4.—In accordance with plans and specifications provided by the Secretary of the Navy.

Class 5.—In accordance with bidder's plans and specifications.

Newport News Shipbuilding & Dry Dock Company.—Class 4, machinery guaranteeing 20¾ knots, $1,715,000; class 5 (*a*), machinery, including Parsons turbines, guaranteeing 20¾ knots, $1,517,000; (*b*) machinery, including reciprocating engines, guaranteeing 20¾ knots, $1,588,000; (*c*) machinery, including reciprocating engines, guaranteeing 20¾ knots, $1,542,000.

Fore River Shipbuilding Company.—Informal proposition to supply certain items of machinery at various prices.

*Armor.*

Class A, 8487 tons; class B, 467 tons; class C, 390 tons; class D, 74 tons.

Carnegie Steel Company.—Class A, $420; class B, $415; class C, $455; class D, $600; deliveries to begin in six months and proceed at rate of 600 tons per month.

Bethlehem Steel Company.—Class A, $420; class B, $408; class C, $390; class D, $74; deliveries to begin in six months and proceed at rate of 600 tons per month.

Midvale Steel Company.—Class A, $420; class B, $405; class C, $462; class D, $512; deliveries to begin in six months and proceed at rate of 600 tons per month.

W. L. C.

## The Republic Company Acquires the Martin Coke Works.

John A. Topping, chairman of the Board of Directors of the Republic Iron & Steel Company, authorizes the statement that control of the Martin Coke Works and Connellsville coal lands, heretofore owned and operated by the Bessemer Coke Company of Pittsburgh, has been acquired by the Republic Iron & Steel Company. The property consists of 196 coke ovens and 420 acres of Connellsville coking coal, together with the complete mine equipment, railroad tracks, houses and stores. The Martin coal lands immediately adjoin an undeveloped tract of 500 acres of Connellsville coking coal land known as the Woodside property, which the Republic Iron & Steel Company owns, but which has remained undeveloped owing to the excessive cost of constructing a railroad which would be involved in opening it up. Through the control of the Martin Coke Works, the Republic Iron & Steel Company will now be able to develop the Woodside property, either by means of underground haulage through the Martin mine or by a surface railroad switch over and through the Martin lands.

The Martin Coke Works as a going plant is considered desirable as an operating proposition, aside from the advantages it offers the Republic Iron & Steel Company for developing its adjoining coal lands. The Martin Works mine contains the regular Connellsville seam, and being a drift mine can be operated at a low cost of production. The coke is of standard grade and can be produced at a cost which compares favorably with that of other well located mines in the Connellsville District.

The Republic Iron & Steel Company contemplates improving and extending the productive capacity of the Martin Works, so that within a short time it will become self-contained on coke as it now is on iron ore and pig iron.

### Increase in Iron and Steel Operations.

The Republic Iron & Steel Company has increased its blast furnace operations materially since the opening of November. At Thomas, Ala., the No. 1 Pioneer Furnace, which has been idle for a long time, was put in blast last week, so that all three furnaces there are now in operation, which has not been the case for several years. The No. 3 furnace at Thomas has been making good outputs lately, one 24 hours' run showing 330 tons. Of the six Northern furnaces of the company, five are now in operation, one Haselton in the Mahoning Valley having gone out for relining since November 1, while Hannah at Youngstown, Ohio, and Atlantic at New Castle, Pa., have started up. The company has six out of nine rolling mills in operation at about 70 per cent. of their capacity, the idle mills being the two at Birmingham, Ala., and the one at Toledo, Ohio.

## OBITUARY.

H. C. HITNER, for many years treasurer of the Potts Brothers Iron Company, Pottstown, Pa., and superintendent of the works, died November 5, aged 66 years.

GEORGE W. SCHWARTZ, Hancock, Pa., for many years an operator of iron ore mines in eastern Pennsylvania and identified with numerous business enterprises in other lines, died November 7, aged 55 years.

WILLIAM EDWARD AYRTON, a noted electrical engineer and inventor, died in London November 8, aged 61 years. He held professorships in various institutions, including that of natural philosophy and telegraphy in the Imperial College of Engineering in Japan.

GEORGE A. FAIRFIELD, Hartford, Conn., until 1906 head of the Hartford Machine Screw Company, died, suddenly, November 9, aged 74 years.

The Reading Iron Company, Reading, Pa., is preparing plans for a new pipe mill, which will be erected to take the place of a rather antiquated mill which is to be abandoned.

# The Machinery Trade.

NEW YORK, November 11, 1908.

More activity among practically all lines affiliated with the machinery trade was noticeable the past week, and though as yet the increase of business is only slight, it is believed that it marks the beginning of a steady movement. Merchants are generally more optimistic than for some time past and are glad that no rush to place orders has taken place, believing that a gradual return to normal conditions will better serve all concerned. Had a large demand suddenly developed it is feared that it would be followed by a lull which would tend to retard the growth that has begun. Machinery houses are somewhat encouraged over the slight betterment in their business since our last report; not so much as regards the orders received, but the increase in inquiries and the outlook for the near future. While most houses report an increase in inquiries, as yet these call for only a few tools each. Salesmen on the road are sending in encouraging reports, intimating considerable business soon to be placed, which also in most instances covers small lots individually but in the aggregate amounts to a large sum. The optimism of machinery houses is based to some extent on the renewed activity on the part of the large interests, particularly the railroads, which, though they are buying in a small way, are showing a tendency to come into the market more freely, especially for rolling stock. More orders for cars and locomotives have been placed, and it is expected that they will be followed by substantial purchases of machine tools.

An increased demand for cars and locomotives will necessitate the purchase of a great deal of machine tool equipment, particularly by the builders of locomotives, several of which are preparing to make large purchases as soon as business warrants. The American Locomotive Company has received an order from the Virginian Railroad for 19 locomotives to be built at the Richmond Works, which has been practically idle for some time. This order will keep the plant in operation for some months, at the end of which time it is hoped sufficient work will be received to continue it in operation. Business with the company has gradually increased and it is now operating about 50 per cent. of its capacity. It is expected that the resumption will be slow and that it will be some time before the company will be able to operate at full capacity. The receipt of this order for locomotives is of considerable interest to the machinery trade, in that the American Locomotive Company expects to purchase a large amount of machinery for its various plants as soon as business warrants. It is understood that an appropriation has been made sufficient to cover the entire requirements of the various plants when operating at full capacity and lists of tools have been prepared. It is said that the purchases of machinery will aggregate $275,000, but it is not likely that these will be made until business increases considerably.

While the volume of orders placed, tentative on the result of the election, in this territory was not as large as that of the previous Presidential election, a number of dealers and manufacturers in the Manhattan District have been recording business during the last few days which is for material ordered with the proviso that the orders be carried out if the election resulted favorably. One machine tool manufacturer in this district has recorded a half dozen orders for tools, mostly in small lots, which were given with that understanding, and an order for a good sized engine was placed with a Corliss engine builder on the same terms. A hoisting engine concern booked a number of orders which were to have been executed only in case of a favorable result of the election, and several dealers report a scattering business of the same character. The dealers report that there is no doubt that a number of orders which were placed in the market since election were a direct result of returning confidence on the part of manufacturers that business conditions would be improved, and there has been a healthy increase in the inquiries of late. This is especially true with power material in all its lines, and considering that the inquiries call for equipment for manufactures in varied lines, it is thought that there will be a general increase of orders before long.

The large shops to be erected at Winnipeg, Man., by the Grand Trunk Pacific Railroad will be constructed under the supervision of the Transcontinental Railway Commission, whose office is at Ottawa, Ont., and from whom details of the project can be secured. We understand that it is the intention to eventually spend about $1,000,000 in construction and equipment at that point, the first group of shops to be erected involving the expenditure of about $500,000. Contract has been awarded for the main building, which will be 174 x 823 ft., and it is likely that contracts will soon be let for the construction of other buildings which are to comprise the plant. These shops will necessitate the purchase of a large amount of mechanical equipment, and as the construction of the shops is likely to extend over a considerable period it is probable that the road will be in the market for machinery for some time to come. The Grand Trunk Pacific Railroad is building an extensive system, and while the main shops are to be at Winnipeg, it is probable that after the entire trackage is in operation smaller repair shops will be located at various points along the line.

The Western Maryland Railroad contemplates enlarging its shops at Hagerstown, Md.

The receivers of the Norfolk & Southern Railroad, in their report filed with the Federal Court at Norfolk, Va., make recommendations for betterments, including $65,000 for rearrangements and enlargement of shops, including those at New Bern, N. C.

The authority given by the court to F. H. Skelding and H. W. McMasteir, receivers of the Wabash-Pittsburgh Terminal Railroad, to issue receivers' certificates to the amount of $874,211, probably means the purchase of considerable new equipment at an early date. It is understood that the purchases will include some machine tools.

Plans are being prepared for a large pipe foundry to be erected at Holt, Ala., by the Central Iron & Coal Company, whose main offices are at 37 Wall street, New York. The engineering details are being arranged at Holt, where the company now has a plant, and it will be some weeks, it is stated, before they are completed and in the hands of the company's officials. In the meantime nothing will be done toward buying the equipment. The plant will be devoted to the manufacture of soil pipe in standard sizes, and it will be large enough to enable the company to turn out about 12,000 tons of finished material a year. It has not been decided as yet as to whether the orders for the equipment will be placed from Holt or from New York, and until the plans are entirely completed it is said this fact will not be made known.

The Lozier Mfg. Company, Plattsburgh, N. Y., has been incorporated by local men working through the Chamber of Commerce as a holding company, under which a $50,000 factory building will be erected and leased to the Lozier Motor Company, manufacturer of automobiles, as an addition to the present plant. Machinery and equipment for the new building will be purchased by the Lozier Motor Company. Plans for the addition have been completed and bids are now being received.

The Water Works Committee of Augusta, Ga., will receive bids until November 24 for a 6,000,000-gal. pumping engine and a 450-hp. steam plant.

The Meridian Water Works Commission, Meridian, Miss., will receive bids until November 24 for a 5,000,000-gal. horizontal cross compound crank and flywheel pumping engine.

Thomas P. Walls and Charles J. Bray have organized the firm of Walls, Bray & Co. and have opened a store at 83 Walker street, New York, which they have stocked with a full line of modern machinery, tools and supplies.

**Catalogues Wanted.**—The Teknisk Compani, Prinsens Gade 23, Christiania, Norway, desires to get in communication with manufacturers of American tools and machinery. The company makes a specialty of introducing American manufactured articles in the Scandinavian market and would like to receive catalogues and information on new equipment.

## Chicago Machinery Market.

CHICAGO, ILL., November 10, 1908

The events of the week under review have been watched with eager interest by machinery interests, which in common with all other industries, have been looking forward to November 3 as a probable turning point in the sluggish tide of business. Within the few days that have elapsed since election no developments of a striking nature in the way of large transactions have appeared, but there is an unmistakable feeling of stronger confidence already established. Here and there orders for machinery, previously placed contingent upon favorable election returns, have been automatically closed; but such deals were comparatively rare, and so far as this market is concerned, covered no requirements of significant size. Toward the end of the week, however, a number of miscellaneous inquiries for machine tools, that have been hanging fire for some time, have finally resulted in purchases, and the tendency to defer action is less evident than it was. A sale of a dozen machines—the largest of its kind within a year—is reported by one of the leading houses on the street, and a number of other trades pending are likely to be concluded within a few days. Notwithstanding a flood of extravagant rumors regarding the immediate revival of industrial operations that has been turned loose in the past few

days, there is no disposition on the part of the trade generally to indulge in overenthusiastic estimates of what may be expected in the way of improvement in the immediate future. That there will be a gradual increasing demand from this time on for machinery of all kinds is a widely accepted belief, but that it will swell all at once to phenomenal proportions seems wholly improbable to experienced observers.

Dealers' stocks of second-hand tools have been materially increased by recent purchases, and there is a better assortment on the floors of local houses than has been seen for some months. One large shipment from the East was recently received by a prominent dealer, and others have added to their lines by odd lots picked up here and there. The demand for such tools is reported to be relatively good.

A noticeable feature in the field of electrical equipment is the returning interest manifested in traction line enterprises which are rapidly developing throughout the West. Reports of the formation of new companies organized to build and equip interurban and street railroad lines are growing more and more numerous. Some of them doubtless represent speculative ventures, but many of them are well founded business propositions which will sooner or later be able to secure the necessary capital for the execution of their plans.

There is a good deal of activity in plant extension work under way and in prospect in the Union Stock Yards, Chicago, which will greatly enlarge some of the packing establishments in this district. The latest enterprise of this character is an extensive cold storage plant which is being planed as an addition to their present plant by the Morris & Co. packing interests. The building, which will be seven stories in hight, covering an area of 214 x 243 ft., will be of reinforced concrete construction throughout. Power for the operation of its machinery will probably be supplied from existing power plants, but a large amount of refrigerating machinery, including pumps and auxiliary equipment, will be required.

The Beatrice Iron Works, Beatrice, Neb., will soon begin the erection of a new factory building, 50 x 150 ft., which will be equipped with up to date machinery suitable for the manufacture of farm implements.

The Dewitt Motor Vehicle Company, North Manchester, Ind., has been incorporated to manufacture motor vehicles.

Plans and specifications for a municipal waterworks system to be installed at Yuba City, Cal., are being prepared by Guy C. McMurtry of that city. They will call for a concrete power house, gas engines, motors, pumps and an 80-ft. steel tower with a 100,000-gal. galvanized steel tank. A cash fund of $30,000 has been provided for this improvement, and bids for equipment material will soon be asked.

The United Light & Power Company, Silvis, Ill., has begun the erection of a power plant to furnish electric current for light and power in Silvis and East Moline, Ill. For the equipment of the plant the company is now in the market for the following second-hand machinery: One 100 to 150 kw. alternating cycle three-phase generator, boiler and engine of corresponding capacity; 40 series alternating inclosed arc lights; two 25 light regulators, switchboard, &c.

The Peoria Foundry Company, Peoria, Ill., is in the market for motors, cranes, tumbling mills, foundry supplies and elevator for its new fireproof brick foundry building, 60 x 144 ft., contract for the construction of which has been let.

By the bursting of a heavy engine flywheel in the municipal light plant at Frankfort, Ind., October 27, the machinery and building were badly wrecked. On immediate action taken by the City Council a 500-kw. direct connected steam turbine and generator was purchased from the Allis-Chalmers Company, Chicago, and is now being installed. To guard as far as possible against future interruption of service, it has been decided to install a duplicate unit. Bids are, therefore, being asked on a 300 turbine and generator complete, two-phase, 60-cycle; one 75-hp. two-phase induction motor, one condenser for 500-kw. turbine, and one for 300-kw. generator. Bids on this equipment will be received until November 13 at the office of City Clerk Worth Price.

## Cleveland Machinery Market.

CLEVELAND, OHIO, November 10, 1908.

With election over and the result regarded as entirely satisfactory by business interests, a decidedly optimistic feeling prevails among manufacturers in general, and this feeling is shared in by builders of machinery and machine tools. The general sentiment for some time has been that all that was needed to bring business back to its normal condition was a complete restoration of confidence, and confidence certainly does not now seem to be lacking. While it is too soon after election to notice in actual sales any decided beneficial effects of the better feeling inspired by the outcome of the election, yet more activity is already being displayed all along the line. Builders of some lines of tools, whose business showed some improvement during the latter part of last month, report a further improvement in both orders and inquiries. A number of projects for the enlargement of plants and the installation of new machinery, which were held up until after election, it is now expected will be carried out, and some newly incorporated companies will go ahead with the erection of plants.

While railroads are not as yet buying much machinery for shop equipment, an improvement from this source is expected shortly. Builders of heavy handling machinery are getting more inquiries and report considerable improvement in the outlook. Among other lines of heavy machinery the demand for heavy forging machinery, which has been very light for some time, shows a marked improvement.

With the machine tool dealers the market has been quiet during the week, no particular change for the better being noticed as yet. With election over, however, dealers are showing more activity in looking for business. Some orders that were placed by automobile builders conditional on the result of the election were finally closed during the week, and the brighter business outlook following election is expected to stimulate some further buying by some of the automobile people. Many prospective buyers of tools have been holding off, announcing that they would do nothing until after election, and machinery salesmen are now looking for a fair volume of orders from this source. While machinery dealers think the outlook is good, they do not expect a rapid increase in the volume of their business. The end of the year is so near at hand that they expect many who may be considering the purchase of new tools will hold off until the first of next year. A change noted in the condition of the machinery market is that inquiries now are nearly all for new tools. During the greater part of the fall there was about as much demand for second-hand as for new tools.

The Modern Machinery & Engineering Company, 309 Schofield Building, Cleveland, sales agent for the Potter & Johnston Machine Company, reports considerable improvement in orders and inquiries. Several industries that have not previously considered the use of automatic machines have asked for estimates and the indications are that they will result in the placing of orders before the end of the year. Among the orders recently taken by this company is one from the Everett-Metzger-Flanders Company of Detroit for 16 automatic machines for quick delivery. Among the industrial concerns that are considering the installation of automatic machines are those that manufacture water meters, cream separators and small gasoline engines for farm purposes. The water meter industry is said to be developing quite rapidly. In order to demonstrate the broad field for automatic machine work, and to make manufacturers familiar with the new automatics that are being placed on the market the Modern Machinery & Engineering Company will shortly open a demonstration shop in Detroit, where modern methods of producing duplicate work will be shown.

The Everett-Metzger-Flanders Company, Detroit, Mich., automobile builder, is remodeling the Port Huron plant of the Northern Motor Car Company, which it recently absorbed. This plant will be re-equipped especially for the manufacture of rear axles. The Everett-Metzger-Flanders Company will purchase considerable special machinery for the Port Huron plant, and is expected to have its machinery list out soon.

M. J. Hancox has severed his connection with the Standard Pattern Works, Cleveland, and has purchased the plant of the Tumney Copper & Bronze Company on East Sixty-seventh street, which he is now equipping for the manufacture of patterns, and brass, bronze and aluminum castings. A company will be organized to operate the plant under the name of the Industrial Pattern & Bronze Company. The necessary woodworking machinery is now being installed.

The Union Metal Post Company, Canton, Ohio, has increased its capital stock from $25,000 to $75,000 for the purpose of providing more capital to extend its line of manufacture. Among other new products that this company intends to place on the market are sheet steel telegraph and trolley poles.

The Royal Brass Mfg. Company, Cleveland, maker of plumbers' brass goods, has increased its capitalization from $10,000 to $25,000 to provide capital for the erection of a new plant, including a brass foundry, for the equipment of which the company will soon be in the market. The company will put up a brick plant with about 10,000 sq. ft. of floor space.

The Ajax Mfg. Company, Cleveland, maker of forging machinery, reports the receipt of a number of good orders recently, and that a very satisfactory number of inquiries are now coming in, making the outlook for a good volume of business exceedingly bright.

The Smokeless Heat & Power Company, Cleveland, has been incorporated with a capitalization of $500,000 for the placing on the market of a new apparatus for the conversion of crude or fuel oil into heat and power. James W. Keenan and others are the incorporators. The company has opened offices in the Hollenden Arcade. The company's product is now being manufactured at Lima, Ohio.

The Grabler Mfg. Company, Cleveland, is making an extensive addition to its plant by the erection of a three-story brick building, 50 x 162 ft., that will be used as a warehouse. Other additions with the view of increasing the capacity of the plant are under consideration.

Harold McGeorge has been appointed district manager for Ohio and western Pennsylvania of the New York Blower Company of Chicago, maker of heating and ventilating apparatus. His office will be at 718-720 Williamson Building, Cleveland.

The German-American Car Company, Warren, Ohio, has found its plant too small for its increasing business and has awarded a contract for the erection of an addition, 28 x 125 ft.

The Wright Auto Horn Company, Cleveland, has been incorporated with a capitalization of $35,000 by C. H. Quinlan, Robert Wright, Peter J. Mock and H. C. Powers.

## Cincinnati Machinery Market.

CINCINNATI, OHIO, November 10, 1908.

Predictions of prominent manufacturers that, with the election over and results satisfactory, the business pendulum would swing back into more normal paths, were true in part at least in this section, for in crude and in some lines of the finished product the improvement has been most marked. Conservatively speaking, however, the machine tool industry's gain as a whole is as yet discernible only in sentiment; but this sentiment is, it must be noted, entirely pleasing, and the manufacturer who does not intuitively feel in the air "better times coming" is a rarity.

Of a dozen large institutions whose heads were interviewed on the subject, the machine tool manufacturers invariably based their conclusions that improvement is in sight more from the tenor of correspondence and general feeling than on actual orders. Taking the central manufacturing community as a whole, however, election results are more than satisfactory, and some fine orders have been placed with manufacturers of woodworking machinery, ice and refrigerator plants and makers of the smaller power units in electrical machinery. Reports from jobbing foundries, too, show a relatively better tone. As a rule the larger jobbing foundries in this territory purchased iron when the price was at the minimum of $11 and $11.50 for No. 2 at Birmingham, and most yards show a good condition to take care of rush orders for castings from the tool manufacturers.

The convenience of this market to sources of both Northern and Southern pig iron supply is interesting a number of seekers after locations for industries, most of whom use iron and steel in some form. During the past week arrangements were concluded with the Crown Mfg. Company, Atlanta, Ga., manufacturer of iron beds, for the removal of its plant to Cincinnati. Negotiations, which were conducted through the Cincinnati Industrial Bureau with President P. D. Baker of the company, contemplate the early installation of machinery which will be brought from Atlanta at once into a large manufacturing building in North Fairmount, the home of the Lunkenheimer Company and other large Cincinnati institutions, and the beginning of operations by the first of the year. The plant will have a capacity of 300 beds a day and will give employment at the start to about 100 hands. The business at Atlanta will be continued as a finishing and distributing branch for the South and Southeast, but all the manufacturing will be done in Cincinnati. President Baker will make his home in Cincinnati, as will also several heads of departments whom he will bring from Atlanta.

In the rebuilding and reorganization of the shops of the Wheeling & Lake Erie Railroad Company at Norwalk and Ironville, Ohio, a number of manufacturers of woodworking machinery and machine tools in this district are anticipating some large business. Since the election a good portion of the woodworking machinery needed for these shops has been placed, and the largest makers of machinery of this class, located in Cincinnati, will be the gainers. The shops at Ironville, Ohio, a suburb of Toledo, will, it is understood, soon place specifications for equipment of tools needed.

The quarterly dinner of the Cincinnati Metal Trades Association, set for December 10, is expected to be the most important and enjoyable table function of the year in local metal trade circles. Secretary Manley is now busied with the details of speakers and other matters.

A convention of the week in which Cincinnati machinery manufacturers are interested as a class is that of the Tri-State Vehicle and Implement Dealers' Association, which will be in session three days and by Wednesday is expected to reach an attendance of 2000. The president is H. M. Clemens, Cannelton, Ind.; the secretary, P. T. Rathbun, Springfield. President Clemens, in speaking of the programme, notes that three important subjects to engage the attention of the convention are the parcel post, terms and prices, and the fertilizer trade.

One of the best of the after election orders placed in this section was that of the 70-ton ice plant for the Dayton (Ohio) Ice Mfg. & Cold Storage Company. The Triumph Ice Machine Company got the order, amounting to about $50,000, and the plant is to be finished by February 1 and in operation by April 1. The Triumph Company reports the outlook most excellent in this line.

In the announcement of the Queen & Crescent Railroad officials that men will be gradually reinstated in their old positions as fast as conditions justify tool manufacturers in this territory find considerable satisfaction. Most of those now going on are assigned to positions in the repair shops, which will necessitate rehabilitation of the toolrooms.

It is announced from Huntington, W. Va., that the Globe Foundry Company, which owns a plant valued at $75,000 that has not been in operation for several months, will arrange to commence operations in a few weeks, giving employment to several hundred men.

The incorporation at Columbus of the United States Can Company, with a capital stock of $100,000, to operate a factory at Norwood, Ohio, was an incident of the week. C. Huffman, Guy Mallon, S. C. Donahue, Charles J. Fitzgerald and Harry W. Vordenburg are the incorporators.

The Columbus Structural Steel Company, Columbus, Ohio, is enjoying a fine line of inquiry for structural material for the building of electrical arches across streets of large cities. A recent order is from Manchester, N. H., for 17 of these arches. Another similar order came from a city in Texas. The company reports several other good orders in sight.

The Delphos Mfg. Company, Delphos, Ohio, has completed a two-story brick and iron warehouse, 80 x 80 ft., and a frame and galvanized iron structure, 70 x 200 ft., to be used as a galvanizing department in which two pots will be operated. It is the intention to use the building now occupied by the galvanizing department for the manufacture of galvanized ware after January 1. Plans have been prepared for an office building, 42 x 60 ft., two stories and basement, at an estimated cost of $12,000. The company has also added another siding to its plant which will hold 24 cars, giving a siding capacity of 36 cars, and has purchased land adjoining its property where it will erect additional buildings, contracts for which have been let. The company is receiving such a large demand for its products that it has been obliged to double its capacity.

## New England Machinery Market.

BOSTON, MASS., November 10, 1908.

All branches of the machinery trade exhibit tangible evidence that the passing of the election has had the expected pronounced influence on manufacturing business. In the machine tool market the increasing demand which made October a better month than September shows a growing gain in orders booked, but the volume of new business does not by any means equal what it is expected to be in the early future. Inquiries have assumed a very different tone, having to do with capacity and adaptability for work, and with deliveries, price dickering having been discontinued. In some cases recent orders for single machines have been followed by requests for information, which indicate the purpose to purchase other tools of the same class. Dealers are considering increasing their stocks because the market is for machines for immediate shipment. This appears to be an important feature of the situation. Purchases are in most cases the carrying out of plans made while business was quiet. Users of machinery have carefully looked over their works to secure exact knowledge of improvements which should be carried out before the return of prosperous times. Definite plans were made even to the decision as to make of tools. But lack of confidence impelled most buyers to hold off with orders. Now they are ready to place their business. They do not wish to be delayed and ask for immediate shipments, if possible, from the store or warehouse of the dealer. It will not take long to deplete these stocks, and the dealers should soon be placing handsome orders with their manufacturers, some of whom are in position to supply without delay any demand that may be made on them. With other machine tool establishments a sudden heavy increase in demand might mean that within a short time deliveries would become delayed, for there are small stocks in their storerooms.

The machine tool builders share the great confidence which prevails in other lines of business, including banking. They feel that they will have a gradual improvement in business, until by the beginning of next year their works will be running full. Their orders are increasing in number and are assuming a different character. Where practically all new business was in machinery somewhat special in design, the new orders are for the standard types. The shops are gradually increasing working forces. Some of them are back on full time, but there are few cases where they are running with full working forces.

In the machine tool trade there is some talk of an in-

crease in prices. Some of the manufacturers profess to believe that by the time of the annual meeting of the National Machine Tool Builders' Association in the spring conditions will warrant a 5 or 10 per cent. advance. The trade is in a most advantageous position at this time in meeting a rising market, for almost without exception prices are where they were when the slump came, a year ago.

The supply trade is awakening sharply. The dealers report largely increased orders, chiefly from the smaller manufacturers, the larger concerns not having entered the market to any great extent, up to the present time. The Fairbanks Company, for instance, which carries a widely varying line, reports a betterment in every department. Monday's mail was the largest received for six months and more. This is a typical example of the trade. Inquiries are numerous.

Every line of manufacturing reports the changed condition of business. The awakening of industry is widely extended, there being practically no exceptions. All kinds of machinery, general metal manufacturing, brass in all its extensive applications and the widely varying list of miscellaneous industry have all felt the improvement. In Providence the revival of the jewelry manufacturing business has been reflected among the machinery people who supply this trade, constituting a by no means small industry. The confidence which has been needed apparently permeates all business interests, which is the first preliminary to good times. With hardly a week elapsed since the result of the election was known the change in this section is almost extraordinary, and the same story reaches here from other parts of the country.

Reports of new industrial plants and extensions of existing works are heard. They are as a rule rather vague, details being withheld by those who come in touch with them, because they hope to profit by being first in the field with new customers, probably some of these stories are not well based on fact. Promoters are already astir to take advantage of conditions better suited to the carrying out of their schemes, and probably they are the source of some reports of large industrial enterprises.

As has been stated, it is a little too early to see the actual results of the election. In a general way it is everywhere evident that there will be an increased business. Many of the newspaper reports are exaggerated; there is not so radical an actual change as would appear from some of the press dispatches. The indications are that lines of manufacturing close to the consumer will soon be rushed with orders; many of them are now running full normal capacity. The machine tool trade will not return to so strong a basis quite so soon, unless this is an exception among the periods following a business depression. The manufacturers look for a gradual increase in orders, probably accelerating in speed with the passing of the final weeks of the year. The year 1909 is regarded as certain to be a full one. There is a natural buoyancy of spirit, coming with the knowledge that the hard times are a thing of the past. That the end is at hand so early is regarded with pleased surprise by some of the prophets who believed that the season of depression would extend well into 1909. But it should not be lost sight of that a speedy return to normal conditions may be followed by a slight reaction, resulting from the finishing of the process of stocking up.

The railroad shops are getting back to full capacity. The great locomotive and car repair shops at Readville, Mass., the largest of the kind in New England, resumed full time yesterday, and it is understood that the Boston & Albany and Boston & Maine shops, as well as those of the minor systems of northern New England, are preparing to do likewise, where they have not already re-established their normal capacity. Interest is revived in the proposed shops of of the New York, New Haven & Hartford, which will eventually be established to take care of the rolling stock of the western end of the system, and which will be on a scale commensurate with those at Readville. No definite statement has been made by the company, but the announcement that New Haven or some other center in western Connecticut had been chosen as a site, and that work would go on immediately would create no surprise.

Business is improving with the builders of textile machinery. The large works of the Howard & Bullough Mfg. Company, Pawtucket, R. I., have gone back to full time, and recent purchases of equipment by other companies building similar lines of machinery indicate that an increasing activity is either already felt or confidently expected.

New England foundries are doing a larger business, which promises to improve still more within a short time. The pig iron people report that a large tonnage of orders has been booked in this section since election. Buyers are anxious to place contracts extending as far into 1909 as possible, but the furnaces are limiting this, all of them declining to accept business beyond the first half, while many others, comprising the majority, are limiting their contracts to the first quarter. Southern furnaces have retired from the market. Prices continue unchanged so far as is known in New England, though there is a general stiffening.

The American Optical Company, Southbridge, Mass., is to erect a large factory building, preliminary work on which has begun. Details of the plans are not yet available, but the new building will have large capacity and will be devoted to the lens department. It is proposed to build a large power plant later.

H. N. Case, recently with the Becker Milling Machine Company, Hyde Park, Mass., will be the head of the machine tool department of the Fairbanks Company, Boston.

The Standard Gauge Mfg. Company, Waterbury, Conn., which will operate a large plant at Foxboro, Mass., has been incorporated under Connecticut laws with a capital stock of $300,000. The incorporators are Bennett B. Bristol, Edgar H. Bristol and Watson E. Goodyear. The company states that this is a reincorporation of the Standard Gauge Mfg. Company of New York, the capital stock being increased to the figure named. The company has been located at Syracuse, N. Y., whence the business will soon be moved to Foxboro. The line already manufactured at Syracuse will be continued at Foxboro, together with other products which may be decided upon later.

The Crown Mfg. Company, South Norwalk, Conn., has been incorporated in Connecticut with William S. Sturtevant, Norwalk, president; Millard G. Sturtevant, Norwalk, secretary and treasurer, and Morris Yeager, Philadelphia, vice-president. The company will manufacture patented machinery, and plans to establish a machine shop and foundry at South Norwalk, though not immediately. The present headquarters are 33 Elmwood avenue, South Norwalk, and 621 Broadway, New York.

The Sagamore Mfg. Company, Fall River, Mass., textile manufacturer, has voted to build a new mill to cost $300,000.

## Philadelphia Machinery Market.

PHILADELPHIA, PA., November 10, 1908.

Now that the Presidential election has been disposed of, and in a manner that has been pretty generally satisfactory to the trade, a forward movement in business all along the line is expected. In fact, in some instances this has already made itself felt. The machine tool trade has developed signs of improvement, not that any great rush of business has come, but along with a slight increase in orders is the generally better feeling, with expressions of confidence in the future. Plans and policies which have laid dormant for some time are again being talked of, and will be taken into consideration. As far as actual buying is concerned, time will be required, and if there is a moderate steady gain in the next few months the trade will be pretty well satisfied. A good volume of business which was held up, pending the result of the election, will come out, some having already developed, but this has been mainly the small propositions, the larger ones continuing to move slowly.

The attitude of the railroads is decidedly encouraging. In addition to the order placed early last week by the Pennsylvania Railroad for the electrification of its New York terminal lines, this road has placed a large order for steel passenger cars. Other roads are placing orders for rolling stock and maintenance of way purposes, and while these do not affect the machine tool trade, as far as the railroads are concerned, it strengthens the general situation to a considerable extent.

Manufacturers express themselves as well satisfied with the present outlook. Considerable business, more particularly in the nature of special equipment, has been placed. Scattered orders for standard machine tools have also been taken, but it is from the volume of inquiries that have been received that the machine tool builders take the most encouragement, as it is believed that just as soon as industrial plants begin to get more fully occupied they will take up the question of needed additions to their equipment and place the necessary orders. Heavy increases in production of machine tool plants are not looked forward to at the time, particularly those making tools of the standard types, as practically all are carrying heavy stocks which must be moved, in part at least, before production will again be forced. The general tone of the machinery market is better, however, and the trade looks forward to materially increased activity early next year.

The export trade does not show material improvement. There has been some demand for special machinery and equipment, but for standard types of machine tools the inquiry is rather light. In the smaller lines of specialties, particularly power transmission purposes, a shade better demand is reported, but the volume of business continues small.

There has been a fair demand for second-hand machine tools. This branch of the trade also feels the generally better conditions, and while the volume of business taken has not been particularly large, there has been an increase in the sales of some classes of equipment. Transactions continue largely on the single tool basis and are mostly of a small or medium size, with probably an increased inquiry

for those of the heavier types. Second-hand engines and boilers appear to be in slightly better demand, but the trade is irregular. A few propositions of the larger type are under consideration, particularly in new equipment, but they develop slowly.

The foundry trade has a somewhat better tone, in some cases both iron and steel casting plants having taken increased tonnage, but few are able to work up to anything like normal capacity. The increased demand from the railroads is expected to be felt by the foundry trade before a great while. Current orders are small and to a great extent cover only immediate needs of consumers.

The Board of Trustees of the State Hospital at Warren, Pa., will receive bids until November 17 for furnishing and installing two 80-hp. natural gas engines and two triple power pumps of approximately 955 gal. per minute capacity. Specifications and particulars may be obtained from Charles R. Simpson, engineer, State Hospital, Warren, Pa.

The South Jersey Realty Company, 918 Real Estate Trust Building, Philadelphia, which is developing Stone Harbor, at Seven Mile Beach, N. J., is taking bids for the installation of a sewage disposal plant and laying of sewer pipes, also for a water supply plant, the water to be obtained from an artesian well to be driven 875 ft. Plans and specifications are to be had at the office of the company or from R. L. Goff, engineer, Ocean City, N. J.

Some 60 bids were opened by Director J. G. Klemmer of the Department of Supplies for the city during the past week. These were for requirements of the different departments during the coming year and covered cast iron water pipe and castings, bolts, nuts, washers, fittings, valves, iron and steel and supplies of a general nature, costing in the aggregate about $200,000. The bids are now being scheduled, and it is believed that the awards will be made the current week.

The Montross Metal Casket Company, with offices in the Weightman Building, in this city, has abandoned its intention of erecting a manufacturing plant in Wilmington, Del., and has purchased from the receiver the plant of the Pope Mfg. Company, Hagerstown, Md. This plant it finds well adapted to its needs, a 250-hp. Corliss engine and steam plant being already installed. Additional orders are being placed by this company with the Ferracute Machine Company, Bridgeton, N. J., for presses and dies, and as soon as the purchase of the Pope plant has been confirmed by the courts, it will be in the market for additional equipment, including machine tools, &c.

The Department of Public Works, city of Philadelphia, will receive proposals until November 17, for furnishing a quantity of lamp posts for the city in 1909. Specifications regarding these may be obtained from the Bureau of Lighting, Room 334, City Hall, or from Director George R. Stearns, City Hall.

Deinelt & Eisenhardt, Inc., report quite a large number of inquiries coming in, with a small increase in the resulting business. The demand for dead stroke hammers and hydraulic jacks has picked up considerably, and orders for several of each have recently been booked. This concern has under construction two large oil cloth printing machines as well as several Lovekin pipe expanding machines, one of the latter, a class B machine, taking in pipe up to 14 in. diameter, will shortly be shipped to the Norfolk Navy Yard. The outlook for the future is considered very bright.

The Philadelphia Roll & Machine Company has taken quite a volume of business the past few weeks, and expects to put its plant on full time in the near future. Orders recently taken include a complete 18 in. merchant mill, a number of sets of sheet mill rolls and sand rolls and charcoal iron castings. A large order for special annealing pots has also been booked. Inquiries have increased materially, and some very satisfactory business is expected to develop in the near future.

The Ridgway Dynamo & Engine Company, Ridgway, Pa., has moved its Philadelphia office from the Girard Building to 1017 Witherspoon Building, and has placed the office under the management of Robert S. Beecher, who is well known in the steam engine trade. With its additional lines of side crank engines and the rapidly improving business conditions throughout the country, the company reports bright prospects for a largely increased volume of business during the coming season.

## Government Purchases.

WASHINGTON, D. C., November 10, 1908.

The Isthmian Canal Commission will receive bids until November 30, Circular No. 478, for marine boilers, automatic water measuring tanks, electric drill, wood boring machine and other supplies.

The opening of bids for three rapid unloading cranes for the Isthmian Canal Commission, under Circular No. 475, has been postponed from November 16 to November 24.

Bids will be received until November 12 at the office of the Public Health & Marine Hospital Service, Washington, D. C., for one lathe, one drill, one pipe machine and one 5-hp. motor.

The Bureau of Yards and Docks, Navy Department, Washington, will receive bids until November 21 for refrigerating machinery for the naval station at Culebra, P. R.

The following bids were opened November 3 for machinery for the navy yards:

Class 61.—One improved tool and cutter grinder—Bidder 59, Fairbanks Company, New York, $456.50 and $322; 66, Frevert Machinery Company, New York, $360 and $392; 123, Manhattan Supply Company, New York, $415; 131, Norton Grinding Company, Worcester, Mass., $415; 205, Vermilye & Power, New York, $431.50; 210, Woods Engineering Company, Alliance, Ohio, $325.

Class 71.—One semi-universal grinding machine—Bidder 64, W. H. Foster Company, New York, $6749.50.

The following bids were opened November 2, Circular No. 473, for machinery for the Isthmian Canal Commission:

Class 14.—Five pneumatic geared hoists—Bidder 22, Chicago Pneumatic Tool Company, New York, $1100; 32, Detroit Hoist & Machine Company, Detroit, Mich., $1014; 47, Fox Brothers & Co., New York, $1276.18; 62, Ingersoll-Rand Company, New York, $1137.50; 85, New Jersey Foundry & Machine Company, New York, $1075; 126, Tucker Tool & Machine Company, New York, $1045.

Class 16.—One combined hand and power pipe threading and cutting machine—Bidder 4, Baird Machinery Company, Pittsburgh, Pa., $939; 5, F. S. Banks & Co., New York, $898; 37, Drew Machinery Agency, Manchester, N. H., $1812; 43, Fairbanks Company, New York, $1380; 47, Fox Brothers & Co., New York, $857.94 and $1183.06; 49, R. W. Geldart, New York, $1290; 55, Handlan-Buck Mfg. Company, St. Louis, Mo., $792.75; 68, Knox & Brother, New York, $763; 74, Manhattan Supply Company, New York, $2244; 93, J. L. Osgood, Buffalo, N. Y., $831; 126, Tucker Tool & Machine Company, New York, $919 and $1300; 134, Vermilye & Power, New York, $750; 138, Francis T. Witte Hardware Company, New York, $950.

Class 17.—One geared shaper—Bidder 4, Baird Machinery Company, Pittsburgh, Pa., $488; 43, Fairbanks Company, New York, $495; 47, Fox Brothers & Co., New York, $464 and $434.49; 55, Handlan-Buck Mfg. Company, St. Louis, Mo., $412.50; 77, Motley, Green & Co., New York, $458; 88, Niles-Bement-Pond Company, New York, $478; 93, J. L. Osgood, Buffalo, N. Y., $563.

Class 18.—One motor driven grinder—Bidder 23, Cincinnati Electric Tool Company, Cincinnati, Ohio, $29.80; 26, James Clark, Jr., Electric Company, Louisville, Ky., $45; 49, R. W. Geldart, New York, $45; 55, Handlan-Buck Mfg. Company, St. Louis, Mo., $54; 58, Hisey-Wolf Machine Company, Cincinnati, Ohio, $39; 74, Manhattan Supply Company, New York, $70.50; 78, National Electrical Supply Company, Washington, D. C., $45; 93, J. L. Osgood, Buffalo, N. Y., $38; 126, Tucker Tool & Machine Company, New York, $34.75 and $39.75; 129, United States Electrical Tool Company, Cincinnati, Ohio, $45.

Class 19.—Eight electric drills—Bidder 22, Chicago Pneumatic Tool Company, New York, $720; 23, Cincinnati Electrical Tool Company, Cincinnati, Ohio, $769.52; 26, James Clark, Jr., Electric Company, Louisville, Ky., $728; 49, R. W. Geldart, New York, $752; 58, Hisey-Wolf Machine Company, Cincinnati, Ohio, $744; 78, National Electrical Supply Company, Washington, D. C., $760; 126, Tucker Tool & Machine Company, New York, $768 and $720; 129, United States Electrical Tool Company, Cincinnati, Ohio, $640; 133, Van Dorn Electric & Mfg. Company, Cleveland, Ohio, $800.

The following bids were opened October 30 at the office of the Isthmian Canal Commission for two electric air compressor units:

Chicago Pneumatic Tool Company, New York, $4280; Ingersoll-Rand Company, New York, $7000; Sullivan Machinery Company, Claremont, N. H., $5454 and $5573.

The American Locomotive Company, New York, will be awarded contract for furnishing the Panama Railroad 12 freight oil burning locomotives of the mogul type at $11,950 each. Bids for these locomotives were opened October 28.

Under bids opened August 25 for machinery for the navy yards, the Fairbanks Company, New York, has been awarded the following classes under supplementary opening: 120, two spiral geared planers, $3232; 121, one spiral geared planer, $2193; 122, one spiral geared planer, $2354.

Under bids opened September 1 for machinery for the navy yards, the Prentiss Tool & Supply Company, New York, has been awarded class 18, one horizontal boring and drilling machine, $1719.

The following awards have been made for machinery for the navy yards, bids for which were opened October 13:

William L. Sargent, Fitchburg, Mass., class 1, one universal grinding machine, $1074.

Ferracute Machine Company, Bridgeton, N. J., class 3, one power punching press, $390.

Hallidie Machinery Company, Seattle, Wash., class 4 one 16-in. by 10-ft. engine lathe, $1130.

Garvin Machine Company, New York, class 25, one 24-in. screw cutting engine lathe, $1767.

Manning, Maxwell & Moore, New York, class 6, one full universal radial drill, $1650.

Chicago Pneumatic Tool Company, New York, class 7, for pneumatic hammers, $86.

Under bids opened October 26, Circular No. 472, for machinery for the Isthmian Canal Commission, Fairbanks, Morse & Co., Chicago, Ill., have been awarded class 1, one piston pump, $62.

Under bids opened October 26, the Vulcan Iron Works, Wilkes-Barre, Pa., has been awarded contract at $5900 for two four-wheel saddle tank locomotives for the Isthmian Canal Commission.

One statement contained in the article on page 1289 in *The Iron Age* of November 5 on "Benson Mines Developments" was in error. John C. Eden and A. W. Thompson are still directors of the company and retain their stock interests.

# HARDWARE

NEXT week at Memphis, there will be a most important gathering of the Hardware trade, as the AMERICAN HARDWARE MANUFACTURERS' ASSOCIATION, representing the makers of Hardware, and the NATIONAL HARDWARE ASSOCIATION, made up of nearly 200 prominent distributors of Hardware, hold simultaneous conventions and meet in various ways in joint session. There will also be, in accordance with recent custom, a delegation from the NATIONAL RETAIL HARDWARE ASSOCIATION, who will be the representatives of many thousands of retail merchants. Delegates, more or less formally accredited, will doubtless be present from other organizations connected with the different branches of the trade. Taken all in all, it will be a great gathering and should accomplish something for the advantage and advancement of the trade. Each of the great associations thus brought together in related, though separate meetings, has important questions concerning the policy to be pursued with a view to promoting the welfare of its members, but at the same time it should be mutually advantageous to discuss in a reasonable and fraternal spirit any matters in which there is difference of opinion or clash of interest. While the members of one of the associations are in general the customers of the other, it is gratifying to chronicle the increasingly dignified and independent spirit which characterizes the relations of the two bodies.

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It is admitted with practical unanimity by business men that the laws enacted to prevent combinations and agreements in restraint of trade need modifications. The law, as has frequently been pointed out, recognizes no distinction between reasonable and unreasonable agreements or understandings affecting the price or production of goods, but brands every concerted effort at the maintenance of price or the limiting of competition as illegal. It is no defense that the course pursued is equitable and even necessary, nor that it is in its results beneficial to the trade, and allows the making of lower prices. If there is any agreement in limiting competition or in restraint of trade it is a violation of the law. The matter was forcibly stated by the president in his last annual message when he characterized the law as "such that the business of the country cannot be conducted without violating it." Practically every branch of trade is honeycombed with infractions of the law. Pools which are obviously illegal have been dissolved, but somehow or other things go on practically as before. Combinations are given up, and agreements thrown overboard, but the manufacturers or merchants by some strange mental operation hit upon and maintain identical prices. Prices are now made by "concurrence." They happen to be uniform and identical. It would be hard to find a line of business—excepting, of course, the Hardware and iron trade—in which the law does not force men into a false position. Understandings which are reasonable, and, indeed, essential, to the successful conduct of business are, according to both the letter and the spirit of the law, illegal, and honorable men are driven to quibbling and equivocation when their own interests and the interests of the trade at large call for some kind of concert of action in the making, selling or buying of goods. If there had not been something of this kind during the past year we should have reached the anniversary of the great panic with depreciated values, and the wreckage resulting from an utterly unrestrained competition.

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At the last great Hardware gathering action was taken asking for a modification of the law so that it would prevent unreasonable and mischievous agreements, but would permit such co-operation and agreements in trade as are reasonable and necessary. The associations have, however, not taken hold of the matter in an earnest, resolute manner. They have not pointed out forcibly the injustice of the law, the hardship it entails and the mischief which would be caused by an attempt to enforce it against all offenders. Nor have they emphasized the impolicy and peril there is in leaving to the Government the option of selecting for investigation and prosecution a few out of the many violators of the law. The Memphis associations are great representative bodies. If they speak in decided tones their deliverances will have weight. Other associations will give heed and declare themselves, so that a just view of the question will be brought to the attention of the lawmakers.

## Condition of Trade.

There is unquestionably a better tone in the Hardware market, as well as in the market at large. Orders are coming in to Hardware manufacturers and jobbers more freely and cover a greater variety of goods. This condition appears to result not from any special expectation of higher values, but from the development of a more matured confidence in returning prosperity. Some manufacturers, indeed, report that recent orders are very gratifying in their volume, and they look upon them as a happy indication that trade is getting back to something like normal, even when judged by the recollection of the swift pace of recent years. But without making too much of the evident improvement there is certainly a hopeful tone in the market at large which presents a very striking contrast to the dismay and apprehension which prevailed a year ago. At that time there was the necessary curtailment of expenditure and business activity, while now with abundant money there is a general resumption of enterprise and increasing attention to the cultivation of trade along practically all lines of effort. The more full employment of the railroads is one of the indications of the growing volume of business, with the prospect that some of them will have their capacity taxed by the moving of the crops and the carrying of merchandise. In this encouraging condition of things the Government's report that the yield of corn is 50,000,000 bushels greater than last year, and that there is a much greater proportionate increase in the cotton crop has a good effect, and is another reminder of the prosperity of the agricultural classes, which must ultimately extend its influence beneficially through all the channels of trade. The advance in Copper is affecting the quotations on many Copper goods, and, whether or not the increase in price is to be regarded as normal and healthful, the announcement of higher prices acts as something of a tonic on the market. Prices, however, in Hardware generally do not show important change, and in some directions weakness seems to be developing. There are, however, here and there advances, the result of reaction from low prices. It is generally recognized that a reasonable decline in goods

which are sold at a high level would be advantageous in the long run, and regarded in this light a softening of the market may, indeed, be indicative of a return to a healthful condition of things.

### Chicago.

With the perplexities and doubts incident to a strenuous Presidential campaign—complicated, as it was, by a widespread lethargy of business—now finally settled and out of the way, there seems to be an open course ahead for the active development of plans and policies for the future extension of commercial and industrial activities, which, it is confidentially expected, will have a reviving influence upon all lines of manufacture and trade. Measured by the actual amount of new business placed since November 3, post-election developments have thus far produced no results of stirring importance; and it is indeed well that this is the case, as it affords reassuring evidence of the controlling force of conservative judgment and action, which must of necessity underlie the re-establishment of trade upon a stable basis of permanent prosperity. If not immediately expressed in concrete terms, results beneficial to the market are observed in the more cheerful tone everywhere apparent and in the expressions of renewed confidence heard on every hand. That this feeling will find fuller expression in a larger volume of business a little later on can hardly be doubted, for, taking into consideration the depleted condition of stocks in the hands of manufacturers and dealers, there is now no serious obstacle in the way of a freer movement all along the line as soon as the consumptive demand begins to assert itself more strongly. Trade in Wire Goods is fully up to expectations, and shipments of Wire Nails and Fencing now going forward reflect the general distribution of wealth conferred by bountiful crops upon farmers throughout the West. Prices announced last week on Wire Cloth for the coming season conform to those in force at the opening of last season, with the exception of a slight reduction on Bronze Cloth. These prices to retailers are: For 12-Mesh Black Cloth, $1.30; 12-Mesh Galvanized, $1.90; 14-Mesh Bronze, $6.50. The continuance of mild open weather has favored outdoor building construction, in consequence of which the demand for Builders' Hardware is holding up remarkably well, considering the lateness of the season. Upon application to the court by some of the representative local Hardware dealers and other sellers of Firearms, a temporary injunction against the enforcement of a city ordinance making it unlawful for any person to purchase such weapons without first procuring a license from the city, has been granted. This ordinance was designed to prevent the indiscriminate sale of weapons to the criminal element, but has proved ineffective to this end. Because of its drastic provisions its chief effect was to divert not only this trade, but legitimate buyers as well, to suburban towns, where Arms can be procured without restriction. The case will come up for final hearing upon the question of making the injunction permanent at an early date.

## NOTES ON PRICES.

**Wire Nails.**—The market continues in excellent condition, with an increased activity in purchasing. Specifications on contract orders, are also being received by the mills quite freely. There appears to be an inclination on the part of jobbers to be less conservative in the quantity of Nails they order. According to reports, regular prices are being maintained. Quotations are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

| | |
|---|---|
| Carloads, to jobbers | $1.95 |
| Carload lots to retail merchants | 2.00 |
| Less than carloads to jobbers | 2.00 |
| Less than carloads to retail merchants | 2.10 |

*New York.*—Wire Nails are moving fairly well in the local market, but orders are usually restricted to comparatively small lots. Urgent requests for prompt shipment accompanying most orders show that retailers' stocks are light. Nails are held on the basis of $2.30 per keg in small lots at store, but some sellers are occasionally inclined to shade this figure.

*Chicago.*—A marked increase in new business developed last week, which resulted in raising the daily tonnage average beyond what is generally reckoned a normal average. This is due to a feeling of confidence in the soundness of business conditions and firm belief in a good future demand. Specifications are coming out at a good rate, and the mills are now operating at not far from normal capacity with every prospect of being fully engaged before the end of the year. Prices are reported to be regularly maintained. Quotations are as follows: $2.13 in car lots to jobbers, and $2.18 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

*Pittsburgh.*—So far this month actual orders for Wire Nails booked by the leading mills show an increase over the corresponding period in October, and it is believed that tonnage entered by the mills in November will be considerably heavier than in last month. Specifications against contracts are also coming in freely and general conditions in the Wire Nail trade are referred to by the manufacturers as being quite satisfactory. Jobbers are also showing some disposition to anticipate requirements and are placing more liberal orders. We are advised that regular prices are being absolutely maintained. Quotations for base sizes are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

| | |
|---|---|
| Carloads, to jobbers | $1.95 |
| Carload lots to retail merchants | 2.00 |

Galvanized Nails are quoted at $1 over the price of the regular Nails.

**Cut Nails.**—There is a slight improvement in the condition of the market, shown in the receipt of specifications on contract orders and in new business by the mills. The improvement is moderate, however, and the demand is only for present requirements. The general price for Steel Cut Nails is $1.80, base, per keg, f.o.b. Pittsburgh, for less than carloads, and $1.75 for carloads and larger lots. In the Western market Iron Cut Nails are held at an advance of 10 cents per keg over Steel Cut Nails, but this differential is not observed in the East.

*New York.*—In the local market Steel Cut Nails are in moderate demand. Steel Cut Nails are held on the basis of $2.15 per keg for small lots at store, but this price is not strictly adhered to by all sellers.

*Chicago.*—The rate of improvement in the demand for Cut Nails is by no means rapid, but some encouragement exists in the fact that it is slowly advancing. Orders continue to cover only actual needs, which in some quarters are gradually expanding. Prices are reasonably firm on small lots, but are shaded 5 cents a keg, carloads. We quote Chicago prices as follows: In car lots to jobbers, Iron Cut Nails, $2.08; Steel Cut Nails, $1.98.

*Pittsburgh.*—There is a moderate new demand, and specifications against contracts are coming in fairly well. It is believed that shipments of the Cut Nails by the mills this month will show a fair increase over last month. We are advised that prices are quite firm, concessions having almost entirely disappeared. The general market is $1.80, base, per keg, f.o.b. Pittsburgh, but $1.75 is made, on carloads and over. In the Western market Iron Cut Nails are held at an advance of 10 cents per keg over Steel Cut Nails, but this differential is not observed in the East.

**Barb Wire.**—Fall business is being somewhat prolonged by mild weather, but demand has not been up to manufacturers' anticipations for this season. According to reports regular prices are being maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

| | Painted. | Gal. |
|---|---|---|
| Jobbers, carload lots | $2.10 | $2.40 |
| Retailers, carload lots | 2.15 | 2.45 |
| Retailers, less than carload lots | 2.25 | 2.55 |

*Chicago.*—Although fall buying is usually pretty well over by this time, continued mild weather is bringing out a fair amount of new business. Buying for spring trade will soon begin in Southern territory, when an increased

volume of business is expected. We are advised that regular prices are firmly maintained. Quotations are as follows: Jobbers, Chicago, car lots, Painted, 2.28; Galvanized, $2.58; to retailers, car lots, Painted, $2.33; Galvanized, $2.63; retailers, less than car lots, Painted, $2.45; Galvanized, $2.75; Staples, bright, in car lots, $2.25; Galvanized, $2.55; car lots, to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

*Pittsburgh.*—New orders being entered by the mills are more numerous and for larger quantities, but at the same time conditions are not quite as satisfactory as anticipated by the mills some time ago. The situation is encouraging, and it is believed new orders will soon show a material increase. We are advised that regular prices are being maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

| | Painted. | Gal. |
|---|---|---|
| Jobbers, carload lots | $2.10 | $2.40 |
| Retailers, carload lots | 2.15 | 2.45 |
| Retailers, less than carload lots | 2.25 | 2.55 |

**Plain Wire.**—Conditions in the Plain Wire market are more encouraging than those in the market for Barb Wire, in that present demand is larger and the outlook for the future is better. Manufacturers of Wire Fencing anticipate a good business and are ordering Wire in a moderate way for future requirements. Quotations per 100 lb. to jobbers in carload lots are as follows, on a basis of $1.80 for Plain and $2.10 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the price to retailers being 5 cents additional:

| Nos. | 6 to 9 | 10 | 11 | 12&12½ | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|
| Annealed | $1.80 | 1.85 | 1.90 | 1.95 | 2.05 | 2.15 | 2.25 | 2.35 |
| Galvanized | 2.10 | 2.15 | 2.20 | 2.25 | 2.35 | 2.45 | 2.85 | 2.95 |

*Chicago.*—Specifications against contracts are being furnished without hesitation and more new business is coming out. The Fence manufacturers look forward to an active season, and judging from the purchases reported, they are now disposed to anticipate their wants farther ahead. Mill prices, we are advised, are being firmly held. We quote as follows: Car lots to jobbers, $1.98, f.o.b. Chicago, and to retailers, $2.05.

*Pittsburgh.*—Heavy orders for Plain Wire are now being placed by the Fence manufacturers, who are showing a disposition to anticipate their wants. At the same time there is a disposition not to contract too heavily, but with the election out of the way, the mills confidently anticipate a material increase in new business. The mills advise us they are absolutely maintaining prices. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

| | Painted. | Gal. |
|---|---|---|
| Jobbers, carload lots | $2.10 | $2.40 |
| Retailers, carload lots | 2.15 | 2.45 |
| Retailers, less than carload lots | 2.25 | 2.55 |

**Brass Butts.**—Decided firmness is observed in quotations on Wrought Brass Butts, due in large measure to the advance in raw material. It will be remembered that prices on this line were heavily reduced some time ago, since when no improvement has yet been observed. Some buyers show a disposition to keep their stocks pretty well filled up.

**Solder.**—Solder has steadily maintained a stronger tendency and now rules approximately 1 cent per pound higher than two or three weeks ago. Advances in Tin and Lead have of course been the influential factors in the market.

**Bolts and Nuts.**—The monthly meeting of Bolt, Nut and Rivet manufacturers will be held this week. Some persons seem to believe that prices will be advanced, but the conservative question the wisdom of an upward movement just at this time as likely to impede progress, and suggest the advisability of making haste slowly.

**Brass Cocks, Valves, &c.**—The improvement in the Copper and Brass market is having its effect on Brass Cocks of various kinds, Valves, &c. The prices of most manufacturers have been withdrawn on these lines, and some have made advances of 5 per cent. or so on certain classes of goods.

**Cabinet Locks.**—A reduction of about 10 per cent. in a few styles of flat key Cabinet Locks has recently been made by some manufacturers. The change brings the price of certain numbers of chest, drawer and wardrobe Locks down to the figures prevailing before the advance made the first of the year.

**Wood Screws.**—Announcement is made that prices on Wood Screws have been reaffirmed up to July 1, 1909.

**Sheet Copper.**—Sheet Copper advanced November 10, 1 cent per pound, from 17 cents to 18 cents per pound, base.

**Galvanized Ware.**—Staple articles of Galvanized Ware, such as Pails, Tubs, &c., have for several months been selling at low prices, as a result of the competition of independent producers. While there has been no improvement lately, the tendency seems to be no longer toward a lower level and material advances in Spelter and improved general conditions have had a sentimental effect in steadying the market. It is well known that, at the present level of raw material, current prices on Galvanized Ware show but meager returns to the manufacturers, and some argue that the line would be unlikely to go lower even if there should be a moderate decline in Sheets. Many producers seem not to desire much business at the present level, merely taking the orders offered by their regular trade. With these considerations in mind, good buyers are keeping an eye on this market, and some are showing a disposition to purchase more freely than a while ago.

**Stove Pipe and Elbows.**—As we have already reported this fall, prices on Stove Pipe and Elbows are low and show considerable irregularity. Purchases, even on the part of the larger trade, have been in smaller quantities than usual, based upon immediate requirements. Recently there has been some increase in demand, due to the advancement of the season and to the improved general conditions. The situation may be reflected by the following quotations of a prominent manufacturer:

*Nested Stove Pipe, Standard Gauge, Per 100 Joints.*

| Inch | 4 | 4½ | 5 | 5½ | 6 | 7 |
|---|---|---|---|---|---|---|
| | $5.66 | 6.24 | 6.46 | 7.03 | 7.30 | 8.00 |

*Elbows, Per Dozen.*

| Inch. | 3 | 4 | 4½ | 5 | 5½ | 6 | 7 |
|---|---|---|---|---|---|---|---|
| One-piece | $0.51 | .57 | .63 | .68 | .74 | .78 | 1.13 |
| Four-piece | | .43 | .45 | .48 | .51 | .54 | .80 |

The above quotations are f.o.b. factory. A concession of 10 per cent. or thereabouts beyond these prices is obtainable by the larger trade.

**Copper Products.**—The demand for Copper products is more brisk and there is apparently a disposition on the part of buyers to cover themselves for wants for at least three or four months in some lines. In harmony with the advance in Copper Ingots there have been several additions of ¼ cent per pound to the base of bare Copper Wire for electrical purposes, in car loads, mill shipments, f.o.b., the base being 15¾ cents on November 6. Soldering Coppers, in lots of 300 lb. and over, are 18½ cents per pound base. There are also rumors of expected advances in Brass Material in the near future, as a consequence of the advance in Raw Copper.

**Wire Screen Cloth.**—Prices on Wire Screen Cloth for the coming season were announced the latter part of last week. They represent practically no change from the opening prices of a year ago, except on the Bronze variety, which has been reduced 50 cents per 100 sq. ft. Market conditions remain the same as before, leading makers acting in harmony, and the output of most of the smaller mills being sold through the same selling organization. One new factory has sprung up in the South, but the extent and grade of its probable production are not yet generally known. Following the plan now familiar to the trade, quotations made are only for deliveries prior to February 1. The manufacturers' prices to the retail trade on Wire Screen Cloth are as follows:

| | |
|---|---|
| 12-mesh, painted | $1.30 per 100 sq. ft. |
| 14-mesh, painted | 1.90 per 100 sq. ft. |
| 16-mesh, painted | 2.25 per 100 sq. ft. |
| 12-mesh, galvanized | 1.90 per 100 sq. ft. |
| 14-mesh, galvanized | 2.20 per 100 sq. ft. |
| 16-mesh, galvanized | 2.55 per 100 sq. ft. |
| 12-mesh, bronze | 6.50 per 100 sq. ft. |

The usual concessions in price are made to the large trade.

**Spring Cotters.**—A decided improvement has taken place in the market for Spring Cotters and Keys. Current quotations show advances ranging from 10 to 15 per cent., and it is said that manufacturers are unwilling to take large contracts even at the present prices. The market may be represented in a general way by a discount of 90 and 50 per cent., although this may be shaded somewhat by jobbers who have good stocks purchased before the advance.

**Bright Wire Goods.**—There is ground for again emphasizing the improved tone of the market for Bright Wire Goods, which in the matter of price have so many vicissitudes. It is said that outstanding contracts at low prices are pretty well closed up and that prices approximating 10 per cent. higher are quoted on new business. Retail merchants can obtain a discount of about 90 and 40 per cent.

**Leather Belting, &c.**—The market for Leather Belting, Lace Leather, &c., continues to exhibit a strong tone. Hides stay firm at practically the high point, and on equipment orders for Belting, manufacturers' quotations show a tendency upward. It is admitted that the advanced prices on Lace Leather have not been strictly maintained by all makers, a fact which may militate against a further advance, which some have expected to follow the conference of manufacturers scheduled for next week.

**Jute Goods.**—Handlers of Jute goods, including Wool Twines, Wrapping Twines, India Twines, Rope Packing, &c., continue to meet an advancing tendency in the market. Reports of a short crop of inferior quality have forced up the price of the raw material in London, and American manufacturers are said to be covering their requirements as far ahead as possible.

**Chain.**—The Chain market has again developed decided irregularity, affecting not only proof Coil Chain, but also Trace Chains, Cow Ties, &c. It would appear that manufacturers have not succeeded in the attempt to work in harmony, and are now acting independently. Prices on Coil Chain have fallen back to or below the level prevailing before the recent stiffening of the market, which may now be represented by a quotation on ⅜ in. of $3.25 to $3.35 per 100 lb.

**Window Glass.**—The market is naturally growing weaker as a result of a larger output of Glass and comparatively light demand, the inevitable consequence of which would appear to be still lower prices. The present output is regarded as about one-third larger than the country is absorbing, and yet several additional factories have fire in and are said to be expecting to resume operations about the middle of the month. The committee is still working on the manufacturers' selling organization, which it is understood will be known as the Imperial Glass Company, if the required percentage of productive capacity can be induced to join the movement. Discounts of 90 and 30 per cent. for single strength and 90 and 40 per cent. for double strength Glass, from manufacturers' list, January 1, 1901, are obtainable from manufacturers, and possibly could be shaded in some cases. Minimum prices recommended by the Eastern Jobbers' Association from jobbers' list, October 1, 1903, are as follows: All sizes single and double strength Glass, covering territory east of Chicago, 90 and 20 per cent. discount. Local demand continues light, there being hardly enough business to test the stability of the market, but the above quotations could probably be shaded by the careful buyer for a fair sized order. Jobbers have been urged to hold the market firm in prospect of the formation of the Imperial Glass Company, when, it is expected, that the market would show more regularity and have a better tone.

**Rope.**—There has been no falling off in demand during the past week, nor does there appear to have been much increase, while orders are, for the most part, confined to moderate quantities. General quotations for Rope, 7-16 in. in diameter and larger, are as follows: Pure Manila, 9 cents; Pure Sisal, 7 cents. Mixed grades of both kinds grade down in price according to quality. Jute Rope, ¼-in. and up, No. 1, 5¾ to 6 cents; No. 2, 5¼ to 5⅓ cents.

**Linseed Oil.**—There have been sharp advances in price during the week, following the 1-cent per gallon advance noticed in our report last week. The control of the Seed market appears to be in strong hands, and orders were placed for Oil in anticipation of the prospective advance by buyers who knew of it. Future developments will be awaited with interest. Since the 9th inst. demand has been moderate and confined to current requirements. Quotations for 5-barrel lots are as follows: State and Western Raw, 46 cents per gallon; City Raw, 46 cents per gallon. Boiled Oil is 1 cent advance on Raw.

**Spirits Turpentine.**—The market is stronger than at our last report, reflecting a firmer tone in the South. Local demand is fair, covering near-by requirements. The New York market is represented by the following quotations: Oil Barrels, 41½ to 42 cents; Machine Made Barrels, 42 to 42½ cents per gallon.

## THE MEMPHIS CONVENTIONS.

NEXT week will witness the annual conventions of the American Hardware Manufacturers' Association and the National Hardware Association, which will be held simultaneously on the 18th, 19th, and 20th inst., at Memphis, Tenn. The headquarters of the associations will be at the Peabody and Gayoso Hotels, the manufacturers gathering at the former, and the jobbers at the latter. It is expected that the capacity of both houses will be severely taxed to accommodate the hundreds in the trade who will be in attendance at the meetings. Several parties have been made up to visit the conventions, the largest, of course, making the trip on the New York-Chicago special train, which leaves New York on Sunday morning, reaching the Windy City on Monday, and arriving in Memphis the following day. Interesting programmes of business and entertainment have been prepared, and those who visit the Southern city are pretty certain to enjoy the trip.

C. K. TURNER & SON, 116 Broad street, New York, export commission merchants, who represent a large number of American manufacturers in various lines, have completed arrangements, effective November 1, for handling the foreign trade of several new connections. They are now representing the Wayne Mfg. Company, St. Louis, Mo., making Washboards and Washing Machines, in Australasia, South and Central America, South Africa, Mexico, the Far East, India, Hawaiian and Philippine Islands and the West Indies. They will also cover identically the same territory for Wood, Smith & Co., Chicago Heights, Ill., in Vehicle Axles. Another connection for foreign trade is that of William A. Tottle & Co., 120-124 Hanover street, Baltimore, Md., who manufacture Brushes of various kinds, such as Paint, Varnish, Sweeping, Dusting and Artist Brushes. Still another recent business arrangement for the foreign trade is with the Sun Mfg. Company, Columbus, Ohio, which manufactures Showcases, Coffee Mills, Money Drawers and Woodenware specialties.

S. S. Groner, who for the past 30 years has conducted a general Hardware store and tin shop in Leetonia, Ohio, has lately purchased what is known as the Leetonia Store Company's Block, 60 x 110 ft. Mr. Groner occupies one of the storerooms of the block, a two-story building, 21 x 110 ft., and here he carries a full line of Shelf and Builders' Hardware, House Furnishing Goods, &c., with equipment for tin roofing, spouting and furnace work.

A. W. Luther of the firm of Luther & Jensen, Hardware merchants, Grantsburg, Wis., has sold his interest in the business to S. E. Jensen, by whom it will be continued as heretofore.

The stock of Philpott Hardware Company, Plano, Texas, has been slightly damaged by water as the result of a nearby fire.

## The Continental Company.

IN a circular lately issued the Continental Company, Penobscot Building, Detroit, Mich., calls attention to the line of Screen Doors, Window Screens and Window Screen Frames which it is offering to the trade for the season of 1909. During the past year it is stated the company has employed a factory inspector who has visited each of the different factories regularly, carefully examining all the goods made, so as to keep the line thoroughly standardized as to quality, pattern and finish. As we have already noted, the company has lately concluded negotiations by which the Sherwood Metal Working Company, Syracuse, N. Y., manufacturer of metal frame adjustable Window Screens, has been consolidated with the other manufacturing concerns, whose combined product is sold through the Continental Company. Attention is also called to the company's facilities for prompt and economical service, not only to jobber, but to the jobber's customers, through the distribution car system of direct shipments, the company having nearly 350 distribution points. During the past few months the company has been conducting a general advertising campaign with a view to educating the people to the necessity of using Screens in order to protect themselves from the dangers of the fly. It has also prepared electrotypes for use by jobbers and retail merchants in catalogues, circulars or newspaper advertising, giving reports from various boards of health and short articles on the spread of diseases by the house fly. A large placard has also been prepared, printed in two colors, for hanging in the show window or other conspicuous place in the store, calling attention to the Continental Screens. The companies represented by the Continental Company have just issued their various catalogues of Screen Doors, Window Screens, &c. They include the Philadelphia Screen Mfg. Company, Philadelphia; Porter Screen Mfg. Company, Burlington, Vt.; Wabash Screen Door Company, Minneapolis, Minn., and Memphis, Tenn.; Owosso Mfg. Company, Owosso, Mich.; Queen Anne Screen Company, Burlington, Vt.; A. J. Phillips Company, Fenton, Mich., and Sherwood Metal Working Company, Syracuse, N. Y.

## Retail Merchants' Mail Order Catalogues.

TO stimulate mail order buying on the part of its customers, the People's Hardware Company, Manistee, Mich., has issued a mail order catalogue consisting of 16 large pages in which seasonable Hardware, including Stoves and Ranges, Builders' Hardware, Roofing and General Hardware, are illustrated and priced. It is conspicuously stated on the front cover that the company guarantees "all goods shown in this catalogue to be strictly as represented and will cheerfully refund the purchase price on any article not found satisfactory." Goods, if in stock, will be shipped the same day order is received, and if not in stock the company will advise the customer at once as to when shipment can be made.

A mail order catalogue of entirely different character has been issued by the Spiro Hardware Company, Birmingham, Ala. It consists of nearly 50 pages, is well printed and is of pocket size, its dimensions being about 3¾ by 8¾ in. The catalogue is largely devoted to Stoves, Ranges and Heaters, but also illustrates Furnaces, Kitchen and House Furnishing Hardware. The company makes a specialty of Stoves and Ranges and states that they employ only skilled union mechanics and that every man sent out on a job is instructed "to do it right or not at all." The company carries in stock ready for prompt delivery repairs for a long list of Stoves and Ranges, and has connections through which it can obtain repairs for any Stove or Range made.

Henry Disston & Sons, Philadelphia, Pa., have opened a New York City branch office in the Vincent Building, 302 Broadway, where they will install a full and complete sample line of the Saws and other tools which they manufacture. The office will be under the management of H. C. Ellis, who will make it his business to co-operate with the local trade in every possible way in promoting the sale of Disston goods.

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# Hardware Organizations.

### New England Hardware Dealers' Association.

At a meeting on the 4th inst. of the Board of Directors of the New England Hardware Dealers' Association, Charles L. Underhill, Somerville, Mass., secretary, it was decided to hold the annual convention and Hardware exhibition at Springfield, Mass., on March 10 and 11 next. A bulletin giving full information in regard to the occasion will be mailed to the trade some time during January. At this meeting 20 applications for membership were favorably acted upon.

### Ohio Hardware Association.

As already announced the next convention of the Ohio Hardware Association, Frank A. Bare, secretary, Mansfield, will be held at Columbus, February 23, 24 and 25 next. Some new and novel features in the business and social sessions will be introduced which, it is hoped, will add to the interest and pleasure of the gathering. A very large proportion of the membership of the association is expected to be in attendance, and the convention promises to be an exceptionally successful one. The exhibit of Hardware products by manufacturers and jobbers will be held in Memorial Hall, which is admirably suited to this purpose.

### Pacific Federation of Hardware and Implemen Associations.

The annual meeting of the Pacific Federation of Hardware and Implement Associations, T. M. Shearman, secretary, Monadnock Building, San Francisco, Cal., will be held in Spokane, Wash., probably on January 22 and 23, following the convention of the Inland Empire Association, which will be held in that city January 20 and 21. The Federation, together with the legislative committees of the various State associations embraced in it, are working to secure uniform legislation in the different States relative to chattel mortgages, collections, peddlers, trailers, liens and exemptions, and other matters of vital interest to the Hardware trade in the Pacific section of the country.

### New York State Retail Hardware Association.

Louis J. Ernst, Rochester, chairman of the Convention and Exposition Committee and manager of the exposition, has sent out a circular letter under date, 3d inst., in which attention is called to the seventh annual convention of the New York State Retail Hardware Association, to be held at Rochester, February 16, 17, 18 and 19. A cordial invitation is given to manufacturers and jobbers to attend the meeting and also participate in the Hardware exposition, which will be held in conjunction with it. The headquarters of the association and all the business sessions of the convention will be at the Hotel Seneca, while the new Convention Hall has been secured for the exhibition.

### Wisconsin Retail Hardware Association.

George W. Kornely, 806 Third street, Milwaukee, secretary Exhibit Committee, has issued a circular in which attention is invited to the thirteenth annual convention and Hardware show of the Wisconsin Retail Hardware Association, to be held February 3, 4 and 5, at the Public Service Building, Milwaukee. The circular gives the floor plan of the exhibition hall, indicating the amount of space in booths, nearly 100 in number, and the price charged by the association for exhibiting ranging from $12 to $25. The circular is accompanied by a contract form for space at the exposition.

The directors of the Hardware Dealers' Mutual Fire Insurance Company of Wisconsin, C. A. Peck, secretary, Berlin, held their fourth quarterly meeting on the 4th inst. A report was rendered showing that the insurance written during the past 10 months amounted to $2,442,355, including new business aggregating $945,365, with premiums of $45,381.15. The losses paid during that period amounted to $8962.24. The rebates from January to October, inclusive, amounted to $13,669.03. This statement shows that $600,000 more insurance was written in the 10 months' period covered than during the entire 12 months of 1907. The directors were more than pleased with the condition of the company's affairs and determined to allow a rebate of 50 per cent. on all policies expiring in 1909.

### Minnesota Retail Hardware Association.

As we have already noted, the thirteenth annual convention of the Minnesota Retail Hardware Association, M. S. Mathews, secretary, Minneapolis, will be held at the Armory, Minneapolis, February 23, 24, 25 and 26. In this connection also the second annual Hardware exposition is announced. The National Guard Armory, where the exposition will be held, has a main floor space of 25,000 sq. ft., with broad galleries on all sides of the building. Numerous requests for space at the exhibition have already been received, and with the steady growth in the membership of this large and influential organization it is believed that the attendance at the coming meeting will be larger than at any previous convention. The association is ready to furnish diagram of the exhibition hall, blank contract for space and any other information desired in regard to the exposition; 132 spaces are to be had at a cost ranging from $10 to $25.

## Price-Lists, Circulars, Etc.

*Manufacturers in Hardware and related lines are requested to send us copies of catalogues, price-lists, &c., for our Catalogue Department in New York; and at the same time to call attention to any new goods or additions to their lines, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.*

STEWART IRON WORKS COMPANY, Cincinnati, Ohio: Catalogue No. 35-B, relating to Iron Fences, including Adjustable Iron Foundation Bases, Three-Ribbed Channel Fence Rail, Line Posts, Picket Tops, Iron Fences for various uses, Gates, Fence Posts, Tree Guards, Vases, Park, Lawn and Cemetery Settees and Chairs, Stable Fixtures, Drinking Fountains, Architectural Ironwork, Railings, Guards, Jails, Prisons and Steel Cells.

J. R. DAWSON MFG. COMPANY, 1520-1524 North Palethorp street, Philadelphia, Pa.: Illustrated catalogue No. 18, devoted to Household and Office Wire Goods. Among these are Easels, Plate, Cup and Saucer Hangers, Garment Hangers, Toilet and Bathroom Fixtures, Kitchen Utensils, &c.

HARDIE MFG. COMPANY, Hudson, Mich.: Catalogue of Power and Hand Sprayers, Spraying Tanks, Pumps, Nozzles and Sprayer Engines.

SILVER MFG. COMPANY, Salem, Ohio: Illustrated circular of the company's new model Clover Cutter, designed for cutting clover, alfalfa, vegetable tops, &c., into a fine palatable mass for poultry food in winter.

CLAYTON BROS., W. M. Bowes, sole agent, 127 Duane street, New York: Illustrated catalogue No. 6, showing an enlarged line of Steel Laid and Cast Shears, Scissors and Tinners' Snips.

GRAND RAPIDS REFRIGERATOR COMPANY, Grand Rapids, Mich.: Illustrated catalogue of Leonard Cleanable Refrigerators for 1909. A series of illustrations show the various steps in the preparation of the porcelain linings. The line shown includes in addition to porcelain, zinc and white enamel lined Refrigerators, Sideboard, Grocers' and Florists' Refrigerators, Ice Chests, &c.

SIMONDS MFG. COMPANY, Fitchburg, Mass.: Mailing card referring to the expectation of a post-election business spurt and announcing the company's preparedness for orders for Saws.

S. L. ALLEN & Co., Market and Eleventh streets, Philadelphia, Pa.: Catalogue for 1909, relating to Flexible Flyer Coasters and Planet, Jr., Farm and Garden Tools. New articles include Single and Double Wheel Disc Hoes, Horse Hoe, Cultivator, Furrower and Vine Turner, Beveled Cultivator Steels and Spring Trip Standards for Riding Cultivators. A view of the new five-story fireproof building, lately added to the company's plant, is given.

# HARDWARE FREIGHTS.

## Interstate Commerce Commission Complaints.

THE Hepburn law gives to the Interstate Commerce Commmission the power to award reparation or damages to a shipper in any case where he has suffered a financial wrong or injury in matters growing out of "rates, fares and charges." The portion of the Hepburn law which grants and defines this power of the commission is the most important legislative act of Congress in regulating railroad traffic. It was a mere "incidental" feature of the law, but it may prove in its application the most useful piece of legislation of any kind that has ever been enacted in the United States.

**Railroads Disposed to Yield Gracefully.**

The railroads have shown a surprising disposition to yield gracefully to the decisions and orders of the commission. It has always been their policy to contest stubbornly the decisions of the courts, carrying appeals to the highest tribunals, and taking advantage of every technicality and delay of the law that may tire out any one who sues them, and when the Hepburn law was pending in Congress it was not generally favored by shippers because they had no faith in any remedy that would call for years of litigation and expense in every case that might be presented against a railroad company.

**Few Appeals to the Courts.**

The commission, however, has been so fair and painstaking in its consideration of all the complaints filed and impartial in its decisions that there have been very few appeals to the courts out of the thousands of complaints that have been decided. The "big" men in the railroad world have seen that it would not be good business policy for them to resist the orders of the commission, as it might promote more legislation. And besides the commission has drastic power to enforce its orders.

**Not Necessary to Employ a Lawyer.**

It is very important, therefore, that every shipper, whether manufacturer or merchant, should know the protection which the law affords. In 99 per cent. of the complaints filed with the commission it is not necessary to employ a lawyer. It is easier for the commission to consider and decide a case where the business man has simply presented the facts in a plain, straightforward manner than where a lawyer has ground up a library and thrown up a cloud of dust and technicalities to obscure the real merits of the case. Wherever possible

**The Commission Prefers to Consider a Complaint "Informally,"**

and every complaint should therefore be first presented in this manner. There are no costs to pay, no legal documents to be filled out and sworn, and no technicalities of any kind. The shipper merely writes a letter to Edward A. Moseley, the secretary of the commission, Washington, D. C., stating his complaint in ordinary business language, and accompanying the letter with any documents which substantiate his grievance. It is well for the shipper first to "introduce" himself, by explaining in a brief introductory paragraph in his letter the nature and extent of his business. In due time a reply will be received from the secretary, or from some member of the commission, or possibly from one of the auditors who conduct correspondence and investigate complaints.

**It Rests with the Shipper to Say**

whether the complaint shall be "informal" or "formal." In every case, therefore, it is very important in presenting a complaint to say that it is "informal." The law provides that the commission, if the claim appears well founded, shall transmit a copy of the shipper's statement to the railroad, giving it an opportunity to "satisfy" the complaint before any further proceedings. The railroad usually replies to the commission, and a copy of this reply is sent by the commission to the shipper. In thousands of cases that have been disposed of in the past two years a settlement has been reached by correspondence. In a large proportion of these cases the shippers were wrong or had no case, and the commission merely explained the law which disposed of the matter. In another large proportion of these cases some agent of the railroad or some clerk in the claim department was wrong, and when the commission points out to the railroad officials the proper course the matter is settled promptly. This is an ideal method of settling disputes, and it is unfortunate that there is no tribunal to dispose of other commercial difficulties in the same informal and impartial manner.

**"Formal" Hearings.**

Complaints regarding rates can only be settled in this informal manner where the railroad consents to informal proceedings. Thus far the railroads have pursued a fair and businesslike policy by consenting to this informal "arbitration" in nearly 99 per cent. of the complaints that have been filed with the commission. The carrier, however, has a right under the law to demand a "formal" hearing, and this is done wherever the reasonableness of a regular rate is attacked by the shipper, or wherever an important question is involved which has not been already decided by the commission in "formal" cases.

A formal hearing is about the same as a lawsuit and requires the services of a lawyer. Legal experience in ordinary courts is not of much value in trying cases before the commission excepting in mere technical questions of procedure. There are, however, many lawyers throughout the country who are making a specialty of practice before the commission, and in the course of time they will become familiar with the theories and details of traffic questions and rates. Where the amount involved is small it will not pay the ordinary shipper to pursue a formal hearing. The chief cases of this character involve important questions of rates and are usually prosecuted by associations of shippers.

The commission has followed successfully a plan which increases its efficiency in hearing cases. One member of the commission can hear the evidence and the arguments and the printed record is then considered before the full commission at Washington before the decision is announced. Examiners in the employ of the commission also conduct these hearings. This enables the commission to cover the country by holding its hearings in all the leading cities, so that any case can be tried wherever it is most convenient for the shippers and railroad people to meet with their witnesses.

**Questions the Commission Can Decide.**

The law does not give the Interstate Commerce Commission any authority or jurisdiction to enforce the payment of claims for loss or damage to freight or for delay in transit, or claims for any commercial wrong like wrongful delivery or mistakes or negligence which result in financial loss or injury to the shipper. The commission can do nothing to help any shipper in individual cases of this character. If the railroad will not settle the only recourse is to sue in the ordinary State or Federal court just as though there were no interstate commerce law or commission.

The jurisdiction of the commission is limited to questions regarding "rates, fares and changes," and the "regulations or practices" of the railroads engaged in interstate commerce. On these questions the commission has broad and drastic powers, wherever interstate commerce is involved, but it can seldom take any action where the shipment involved did not cross State lines. It is important to draw the line and spare the commission useless correspondence and investigation, as it can do nothing excepting along the lines defined by Congress in the law.

**Translating Tariffs.**

If a shipper has been charged more than the legal tariff rate and the claim agent will not refund the money a complaint to the commission will bring results without a "formal" hearing. In these cases there is usually a dispute between the shipper and the employees of the railroad regarding the meaning or application of the tariff. The members of the commission are with one exception lawyers, and they have become experts in translating tariffs, and they also have a staff of auditors who are gaining experience in this line. When a complaint of this kind is presented they decide what the tariff means or how it should be applied, and this is usually all that is necessary. The shipper in writing the commission should

send the expense bill and any other documents that will help to show the facts, and should also quote the I. C. C. number and date of the tariff, and the name of the road issuing it. The commission has complete files of all tariffs, and the I. C. C. number and date are necessary in making a complaint, so the auditor who looks it up can verify the tariff.

**Mistakes in Tariff Make Trouble.**

In many cases a railroad will acknowledge that it has overcharged the shipper, or that it charged an unreasonable amount, but will claim that it was compelled to do so because the tariff in effect so provided. The law compels a railroad to enforce its tariff, no matter how unjust or unreasonable it may be in a particular case. The men who compile tariffs make mistakes like other mortals, and a tariff provision often strikes in an unexpected place and makes trouble. The railroad can do nothing in a private settlement through the claim department, but the commission can authorize a settlement if the shipper will file an "informal" complaint. Thousands of cases of this character have been settled since the passage of the Hepburn law. In fact, a large proportion of the informal cases before the commission grow out of these accidents and mistakes in tariffs.

**Commission Can Go Back Two Years.**

The commission has the power to go back two years from the date a complaint is filed in ordering reparation. This power covers any case where the amount paid was technically the legal rate, but for any reason was excessive or unreasonable. If the complaint is against a regular tariff and not merely on account of a mistake or unexpected application of a rate, the railroad usually resists the complaint and demands a "formal" hearing; but in most cases there has been a mistake and the matter can be settled by an informal complaint. In such cases the commission requires that the railroad shall file a new tariff correcting the mistake, within six months after the trouble occurred, or it will not act upon an informal complaint.

**Misrouted Shipments.**

For a time after the Hepburn law went into effect, the commission held that if a shipment had been misrouted or if it went astray, the consignee must pay the legal rate for all the distance that it traveled, and then file a claim with the commission if he wished to recover the overcharge. This rule, however, has been changed. The railroad should not now collect any more than the legal rate the shipment should have paid if there had been no mistake. On shipments that have moved since March 18, 1907, the railroad can settle without any action by the commission, if it has collected any overcharge on "misrouted" shipments. When there is an overcharge of this kind, it is better for the consignee to refuse the shipment until it is corrected. Occasionally, however, the consignee is in a hurry for the goods and the railroad agent takes advantage of him. Most railroads allow their local agents to refund overcharges within the month, and where the money has been paid to the agent he can, therefore, refund before his account for the month is closed. If, however, it is necessary to go to the claim department on a misrouted shipment, there should be no trouble about it, as the law permits a prompt settlement.

On long distance shipments, which pass over several connecting roads, it is the duty of the initial carrier to route freight via the intermediate line which has the lowest legal rate in effect. If a shipment is sent over a route which has a higher tariff, the initial road or the one responsible for the error is required by rulings of the commission to refund the overcharge caused by its mistake. The commission has ruled that the roads cannot prorate or divide the amount to be refunded.

## CORRESPONDENCE.

### Original Bill of Lading Should Be Sent with Invoice.

*To the Editor:* In behalf of the Hardware jobbers far removed from market I want to make an appeal through your estimable journal to the manufacturers and all others who ship us goods. The favor I ask is very reasonable, in fact, is our right, and should not be characterized as a favor. It is that we be furnished with the original bill of lading for the shipment at the same time we are furnished with the invoice. Those who have not experienced the great inconvenience we undergo cannot imagine how annoying it is for one to attempt to verify a freight charge when he has no information as to point of origin.

**Shipments Not Always Sent from Point Where Office Is Located.**

All manufacturers and sellers of Hardware do not make shipment from the point where their office is located, but frequently from some point in another State. The shipment reaches consignee with certain charges assessed that have the appearance of being and frequently are excessive, but he can have no relief until he has written for the original bill of lading. Meanwhile, he must pay the excessive charge, and later file claim for overcharge, whereas if he had the bill of lading in the first instance he could have had correction made.

**Consignee Is Entitled to O. B. L. as Evidence.**

I take the ground that the consignee is entitled to the original bill of lading as an evidence that shipment has been made. An unsigned dray ticket is worthless, as are duplicate bills of lading. No well organized house will pay its freight bills until they have been verified with the tariff under which the shipment moved, and to do so intelligently the point of origin is very necessary. There are carload rates, less than car rates, class rates and commodity rates. They apply from some points and from some they do not apply. The original bill of lading should be at hand, because there can be and frequently is loss from overcharge, loss and damage, all or one.

W. W. WEBBER,

FORT SMITH, ARK.

### A Manufacturer's Method.

*To the Editor:* Your articles on "Hardware Freights" are very interesting. As manufacturers we buy all our goods delivered, so that we do not need to watch our in freights more than to see that the proper amount is deducted from invoices.

On out freights we deliver much of our product. As we sell but one article it is an easy matter to keep track of rates to all points. We deduct freight from our invoices and it is up to the purchaser to see that we deduct the correct amount. If the railroad charges any more, he sends us the expense bill for credit of the excess, whereupon we present to the railroad the expense bill with our bill for refund.

We keep a ledger account with each railroad and make it a business to watch the accounts and see they are paid with a fair degree of promptness. It is seldom we have to make complaint of treatment received from any railroad. As a rule they seem desirous of giving us the advantage of every doubt. ILLINOIS.

TO ADVANCE the interests of the gas industry of the United States the National Commercial Gas Association will, in connection with its annual convention at Chicago, December 8, 9 and 10, hold an extensive exhibition of gas appliances, in which the American Gas Institute cooperates. The Gas Appliance Exposition will be held in the First Regiment Armory during the entire week, beginning December 7. Particulars regarding the exposition, exhibits, space, &c., can be obtained from John C. D. Clark, chairman Committee of Arrangements, 157 Michigan avenue, Chicago.

THE HARDIE MFG. COMPANY, Hudson, Mich., has largely increased its stock, and will devote the additional capital to the erection of new buildings, thus increasing the capacity. During the coming year particular attention will be paid to the manufacture of power Sprayers, for which the demand is increasing rapidly. The company has started a branch of its business in Portland, Ore.

# Here and There in the Hardware Store.

BY SAMUEL MASTERS.

## VIII.—EXTENDING THE FIELD FOR SOLICITATION.

WHEN Mr. Clark, Hartman Brothers' credit man, had checked through the first 300 record cards I submitted to him, I found that a little over 200 were approved for solicitation, and I had finished only the list of names beginning with A. Mr. Martin, the city sales manager, had not seen the cards, and when I took to him the 200 approvals, filled with self-approbation to think I had got such a goodly lot of prospective customers to work with, I was surprised to note that he did not share my pleasure. He had confined his solicitation work to a few large concerns, with the idea that the credit man would not accept smaller accounts, and this sudden thrusting upon him of the responsibility for trade with this list of firms was not at all to his liking.

### Refused to Be Convinced.

"This is all poppycock," said he. "I don't know what Clark means by O. K.'ing cards for solicitation when he won't pass the orders. What is the use of going after business and then having it turned down?"

I told him that I thought that Mr. Clark would be slow to turn down an order if he had initialed the card.

"No, he won't," said Mr. Martin. "It won't make a bit of difference. When the orders come in he will get his suspicions going and N. G. them all. You let me have the cards for a while. I want to look them over."

Later in the day I went into Mr. Clark's office, but beat a hasty retreat when I found Mr. Martin there with my bunch of cards and the two engaged in a heated discussion. Still later I saw Mr. Martin assorting the cards into little piles and looking them over carefully, and when his two city salesmen came in at about 4 o'clock, the three men went with the cards into a little corner office and were still there when the day closed.

### Testing the Credit Rulings.

The next morning, just before noon, one of the salesmen appeared and called for his order book. He wrote in it for a few minutes and showed the book to Mr. Martin, who gave it to a boy and sent him with it to Mr. Clark. When he returned there was an excited conference for a few minutes. Later the other salesman appeared and the performance was repeated, and for the next day or two there were sundry repetitions of the discussions of Mr. Clark's rulings.

When I took the next bunch of cards—the B's—to Mr. Clark he said:

"Well, Sam, you're waking them up, I see."

"Waking who up?" I asked.

"The city salesmen. Have you seen the orders they have been bringing in?"

I told him I had not, and he then informed me that he had had a dozen orders to approve from new firms, and that they had all been among the smallest on the list. It was evident that some experimenting was being done to determine whether Mr. Clark's conditional approval meant anything, and it was found that the approval counted.

### Completing the List.

In a few days the B cards were given Mr. Martin, who was eager to get them, and looked them through with his salesmen as before. Other bunches followed in rapid succession, and in about a month some 2500 cards had been inspected and about 1600 approved. The first step in the reorganization of the sales methods had been taken.

### The Blue Book Distributed.

By this time the Blue Book was finished and I began to send it out. Mr. Martin had said that he wanted his city salesmen to deliver the books to their own customers, and I asked the men for the names, so that I might avoid sending duplicates. I soon found, however, that the men did not wish to hand out the books, and one of them declined with profane emphasis to do so. Upon Mr. Martin's insisting that he do as requested he gave me a list of 12 names, and took 12 books with the ostensible purpose of delivering them. I found them in his desk later and mailed them to the 12 men to whom they should have gone. I think the other man delivered his quota.

### Increased Sales.

It took me a week to get the Blue Books distributed, and before the last were mailed a very perceptible increase in orders was felt. Mr. Martin, who assumed the credit for its issuance, was filled with gratification, and told Hartman, Jr., that it was the best thing that had been done to boom trade. All the clerks had their stories to tell of new trade developed by this means, and within a very short time the book was declared to have paid for itself. This, of course, pleased every one—Mr. Martin, who thought he had created the book; Hartman, Jr., who knew he had given the final impetus to its formation, and I, who had done the work.

### Daily Reports.

As soon as I had finished with the Blue Book I was ready for the next step in the trade expansion movement. It seemed to me that the two city salesmen spent entirely too much time in idleness, and I felt sure that when they were outside their time was not all devoted to Hartman Brothers' work. In order to determine this and that I might have a record of calls to transfer to my record cards, I devised a daily report, which was made of the proper size to slip into a No. 6½ envelope, if necessary.

### A Change in the Force.

I found that Mr. Martin was very willing to put the report into effect. He had been trying to get his men awake to the necessity for greater effort to meet the criticism that was caused by decreased sales. They sulked instead of working, however, and Mr. Martin soon became aware that some of the blame for the unsatisfactory condition lay with his aids. He showed the report form to the men and asked them to fill it out, but considerable argument ensued before they would agree to do so. Only one of the men turned in his reports. The other failed to do so, and upon Mr. Martin's insisting that he fall into line he became abusive and was discharged. His place was filled by the house man who had handled his orders, a slim. wiry young man, with an appetite for work, who was highly gratified at the promotion and anxious to give satisfaction in his new position.

(*To be continued.*)

## A New Tennessee Jobbing House.

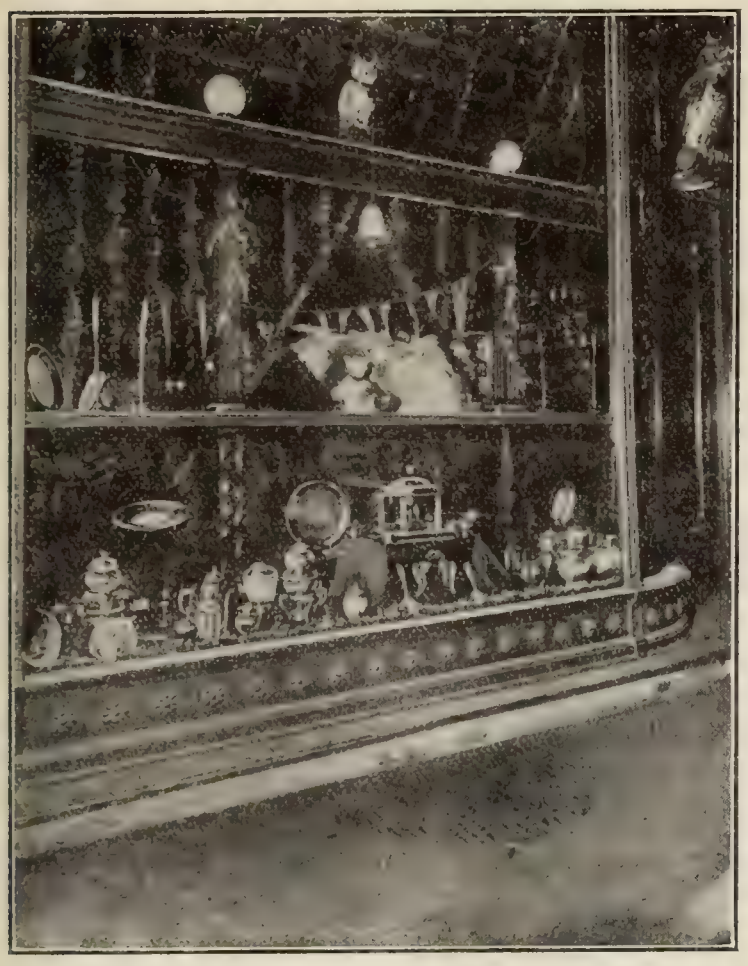
THE Hardware business of W. A. Hutton & Co., Gallatin, Texas, has been sold to C. A. Whiteside and E. P. Dickerson. Mr. Hutton is moving to Nashville, Tenn., and forming the firm of McWhorter, Hutton & Co., which will engage in the jobbing business exclusively, handling Hardware and kindred lines. Mr. McWhorter has been vice-president of the Montgomery, Moore Mfg. Company. The other member of the firm is W. C. Weaver, who has been connected with J. H. Fall & Co., Nashville. The new firm has secured a desirable location at 336 Public Square, Nashville, and will be pleased to receive catalogues, price-lists, &c., from manufacturers.

HIBBARD, SPENCER, BARTLETT & Co., Chicago, are now mailing to the trade lot No. 14 of extra catalogue pages for insertion in their loose leaf catalogue. About 500 new pages are included in the lot, which is intended to bring the catalogue up to date. Obsolete lists, styles and patterns of goods are thus eliminated, making it possible to keep the catalogue up to date without its growing to unwieldy size through the retention of obsolete matter. Because of the reduction in size of electrotypes and their judicious arrangement the 500 new pages sent out will replace about 650 pages now in the catalogue, at the same time the matter descriptive of the various articles shown will be increased rather than diminished. These extra pages are being sent out in a large envelope, which holds them flat without folding.

# Holiday Trade in the Hardware Store.

## Artistic Holiday Windows.

THE Churchill Hardware Company, Galesburg, Ill., has more than a local reputation for the beauty and originality of its window displays. It has 10 ft. windows on either side of its entrance, and considers them the best advertising medium that it has. The results which they bring are especially emphasized at Christmas time,



*Holiday Windows of Churchill Hardware Company.*

since invariably the goods shown in the window are the ones which sell most freely during the holiday season. Some years it has been Nickel-plated Ware, and there has been a big sale of that line of goods; another year it was Sporting Goods, and they took the lead; the next time one window was filled with Lamps and more were sold that Christmas season than the firm ever sold in a year before.

### Variety vs. Emphasis.

For these reasons the company usually tries to show in its windows as large a variety as possible, although this makes it harder to get a good effect than when a single line is used. At the same time, the fact should not be lost sight of that emphasis placed on individual lines and large sales during the holiday season are likely to lead to an increased business all the year round in these lines.

The accompanying illustrations show the windows which the company dressed the week before Christmas last year. The general effect of these windows was exceptionally beautiful, the background being composed of orange leaves and pepper tree blossoms from California. Evergreen strings were also interwoven with the blossoms. Just above the wainscoting in one window a cozy corner was made with pillows of the neighboring colleges and various university pennants. The corner was occupied by two Teddy bears and the balance of the window was tastefully dressed with fancy ware, such as Chafing Dishes, Coffee Machines, Nickel and Copper Ware, &c.

The other window had the same background and general effect, but had a tree in the center on which were perched Teddy bears in all sorts of attitudes, some hanging by their toes on the limbs, one hanging by one hand, one sitting in a swing swinging, and four gathered around a table under the tree eating. This window was filled with fine Cutlery, Fancy Bronze Goods, Smokers' sets, &c.

## Hibbard, Spencer, Bartlett & Co.'s Holiday Advertising.

An advertising circular designed for distribution by retail merchants to their customers, for the purpose of stimulating trade in special lines of holiday goods, has been prepared and is being offered to customers by Hibbard, Spencer, Bartlett & Co., Chicago. The circular is entitled "Christmas Suggestions," and is printed on a 12 x 18 in. sheet, which is so arranged as to fold in convenient form for addressing without an envelope, and

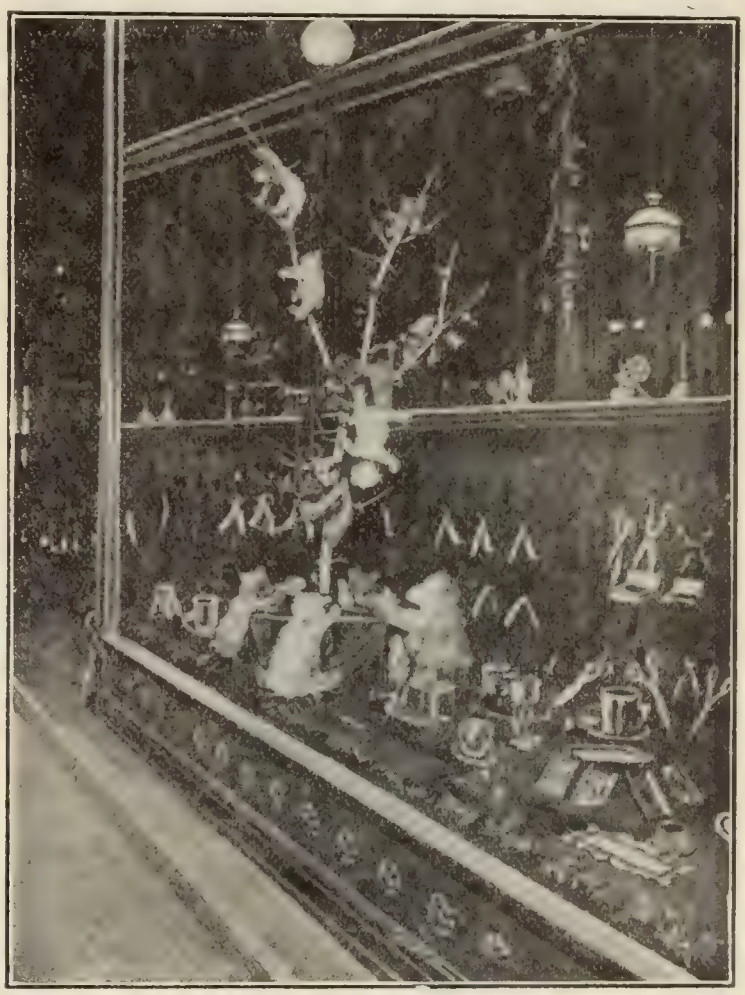





*Fig. 1.—Inside Page of Hibbard, Spencer, Bartlett & Co.'s Christmas Circular, Size 12 x 18 In.*

is illuminated with a holly border and title in red and green. Fig. 1 is a reduced reproduction of the inside page, which carries 16 advertisements, comprising an




*Fig. 2.—Single Advertisement from Circular.*




*Fig. 3.—Front Cover of Christmas Circular.*

assortment of articles suitable for holiday trade, all made up in uniform size about 2½ x 3 in. One of the individual ads. is reproduced separately in Fig. 2. A definite list of articles is furnished from which choice can be made to comprise

**A Selective Assortment,**

composed of any group of 16 required for the sheet. This allows the merchant wide latitude of choice and makes it possible to include only those that are suitable for his purpose, the line of goods comprising the selection having been prepared with the idea of general adaptability to various retail stocks. The articles included are such as are carried by the majority of Hardwaremen. The retail price of each article is printed in plain type, and is figured on a basis that affords a fair margin of profit; these prices are fixed and not subject to alteration. At the bottom of the inside page of the circular a space is provided in which to print the customer's name, town, street and number.

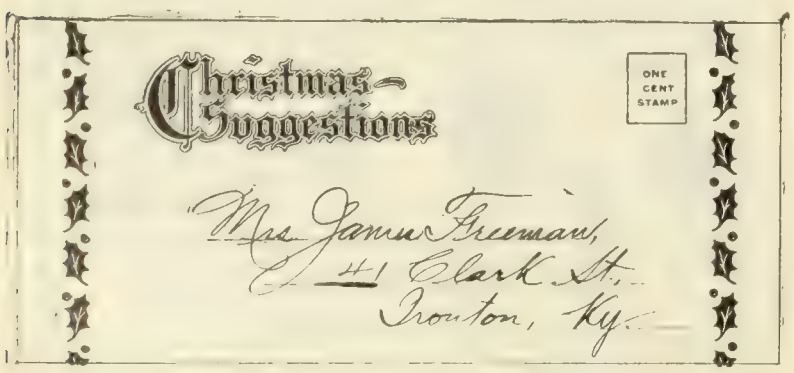



*Fig. 4.—Circular as Folded and Addressed for Mailing.*

The reverse or address side of the sheet is divided into two parts, one being devoted to the display of a half-tone illustration of Silverware, Pocket Knives and Carvers for all of which retail prices are given. The other half of the reverse side forms the front cover, Fig. 3, and carries prominent display lines calling attention to other suitable gift goods not illustrated. When folded for mailing and addressed it presents a neat appearance, as indicated by Fig. 4. The circulars are printed the same day orders are received, and are furnished free of charge with an order for the goods advertised in the 16 spaces. They are bright and attractive in appearance, and include a sufficiently large assortment to appeal successfully to each member of the home to which they are sent. It is believed that these circulars win better attention if mailed than when distributed by other means, and they are only furnished with this understanding.

## SUGGESTION FOR GUN AND AMMUNITION WINDOW.

AT this season of the year Hardware merchants who handle Guns and Sporting Goods usually wish to make a window display of Guns, Ammunition and hunters' supplies. Ingenious window dressers will doubtless have good original ideas to work out in this connection, but one or two suggestions of a practical nature may not be unwelcome, especially to those who are too busy to give these matters the attention which they deserve.

In a recent issue of *The Iron Age* was described an effective window scene, designed by H. D. Thompson & Co., Malone, N. Y. It represented a hunter's camp in the Adirondacks, and, although not unduly complicated or difficult to construct, was so cleverly arranged as to present an illusion calculated to please and hold the attention of any observer, especially one with a taste for shooting and a love for outdoor life.

### A Duck Hunting Window.

A natural duck hunting scene may be prepared without much difficulty in the following manner: Dress the floor of the window to represent marshy ground or the shore of a river, lake or bay. A bit of water may be suggested by a piece of looking glass, either near the middle of the floor or in the background. The balance of the floor should be strewn with dry grass, moss, &c., and the sides filled in with clumps of rushes and cat-o'-nine-tails.

At one side of the window, partially concealed among the rushes, place the figure of the duck hunter. A dummy man may be dressed up in hunting coat, old trousers tucked in rubber boots, leggins or high leather shoes, slouch hat, &c. For the head, a wax head, if obtainable, is, of course, the most lifelike, but otherwise, some substitute can be devised, possibly by shaping a stuffed head and painting a face on it or putting on a false face such as is obtainable in toy shops.

The hunter's Gun should be at his shoulder. It may be suspended in the proper position by wires and the arms of the figure fastened in the right places to aim the Gun. The game may be a flock of stuffed ducks hung in the upper part of the window in the background, with light blue cheese cloth stretched behind them to represent sky. For advertising purposes a few other Guns, with Ammunition, Game Bags and Sportsmen's Supplies and one or two signs may be included in the window, but they should be subordinated to the general effect.

### Adapted to Deer Hunting.

This idea may be used with equally good effect in getting up a deer hunting scene. Of course the back-

ground should be changed to woods, which may be represented by young evergreen trees and leafy branches. A stuffed deer head may be skillfully arranged so that the animal will seem to be emerging from a thicket, and the figure of the hunter may be placed at one side with Gun at shoulder ready to shoot.

## Hardware Window Dressing.

"HARDWARE WINDOW DRESSING" is a book of 256 pages, 8 x 11 in. in size. It is substantially bound in dark colored cloth, printed on heavy coated paper and contains over 200 illustrations relating to this subject, ranging from small diagrams of fixtures, window furniture, &c., to full page plates of double window displays and store fronts. All of the diagrams are accompanied by working descriptions with the aid of which a merchant could duplicate the devices illustrated or easily adapt them to his own use. Most of the complete displays illustrated are described in considerable detail. Special attention is devoted to general suggestion, seasonable displays, window construction, decorative effects, such as backgrounds, draping and festooning, harmony of colors, &c. The book is compiled and edited by Thomas A. Bird and published by the Merchants' Record Company, Chicago.

## A Double Barreled Single Trigger 20-Gauge Gun.

The Hunter Arms Company, Fulton, N. Y., has put on the market a new double-barreled single trigger 20-gauge L. C. Smith Shotgun, described as perfect in balance and correct in its lines, and weighing 5¼ to 6 lb. It will be made in No. 0 and better grades, with barrels 24, 26, 28, 30 and 32 in. in length. Stocks are standard length and drop, and the gun is supplied with or without automatic ejector, and is so constructed that the Hunter one-trigger can be fitted to it. The company emphasizes the fact that the gun is not a 16-gauge frame cut down, but that it is correctly made from the foundation stock, lock and barrels.

## Quride Silent Gears.

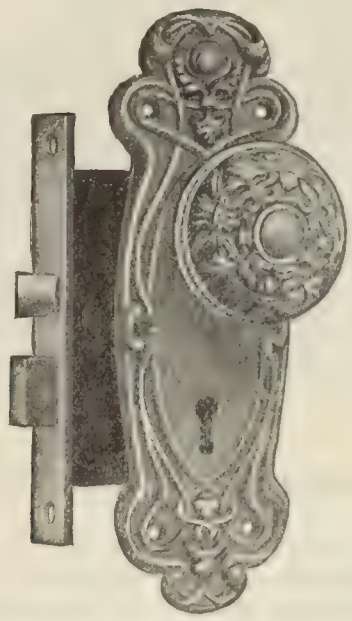
The Picrome Hide Company, 1417-1419 North Salina street, Syracuse, N. Y., has appointed Bettes & Ebsen, 62 Reade street, New York, sole New York agents for the sale of a new material known as Quride, used largely in the manufacture of gears. Quride is produced by treating hides by a patented chemical process, which changes the albuminoids to fibroids. This change, which practically extracts the animal matter, compresses the remaining fiber and fills the pores, renders the hide insoluble and reduces it to a tough, hard, noiseless substance. This material, for use in silent running gears, is said to be nonabsorbent, not affected by oil, grease or moisture and is not injured by ordinary temperatures where gears are used. Gears made of Quride are especially suited for use on printing presses, folding machines, geared power pumps, blowers, automobiles and especially for high speed machinery. A 12-page booklet just issued by the company gives full particulars.

## Electrically Welded Trace Chains.

The Standard Chain Company has just completed a large fireproof building at York, Pa., in which it is installing its electric welding department. The building is 80 x 224 ft., and of steel construction. The company has been working in a modest way with electric welding for the past four years and is now manufacturing by this process not only German machine chain, but a line of trace chains, these trace chains being formed by automatic machinery and each link being absolutely uniform in size. They are all carefully examined, proof tested, and are sold with a guarantee as to quality. We understand this company has recently issued new and reduced prices, and we are told a large number of jobbers are now carrying these goods in stock in preference to the chains made by the ordinary process. The machinery used in their manufacture is patented, and in some cases under patents applied for. One special merit of this chain is that there is no swell at the weld, but the link is of absolutely uniform dimensions in all parts. These trace chains are being made in three sizes, light, medium and heavy; consequently a stock of six barrels, one of each in 6½ ft. as well as 7 ft., will give the entire variety and constitute a complete stock, whereas in the ordinary welded goods some 30 or 40 different sizes are carried in stock, thereby necessitating the jobber carrying a much larger assortment and having a heavier investment in proportion to the value of the goods sold.

## The Erie Design Inside Lock Set.

The Taylor & Boggis Foundry Company, Cleveland, Ohio, is offering the inside lock set herewith illustrated, made of cast iron only and furnished in all finishes. The



*The Erie Design Inside Lock Set.*

company also furnishes this design in front door, sliding door and mortise latch sets, in push plates, push buttons and flush sash lifts.

## The A & J Egg Beater and Cream Whip.

The accompanying illustration represents a beater and whip put on the market by A. & J. Mfg. Company, 50 Leroy street, Binghamton, N. Y. In the hard wood handle is a coil spring, and the wings are made of twisted wire. The nickel plated steel ferrule has a clover leaf hole in it and forces the wings to make six revolutions to each downward stroke of the handle. The beater is operated with one hand, with a short up and down stroke of the handle, and special claims are made for the rapidity and efficiency of its work. It is explained that the device has strength to beat any number of eggs or any ingredient in any quantity and that it is so constructed that it will beat the white of a single egg. The device is recommended for mixing mayonnaise dressing, and leaves one hand free to add ingredients.



*The A. & J. Egg Beater and Cream Whip.*

THE YALE & TOWNE MFG. COMPANY, 9 Murray street, New York, has recently displayed in its show window a No. 853½ Yale Padlock, which has seen over eight years of service and is still in good condition. The Lock has been used on the oil house of the St. Paul & Tacoma Lumber Company, Tacoma, Wash., and a letter from this concern is shown with the Lock, stating that it has been operated upward of 50,000 times.

## Angler's Select Assortment No. 1154.

The accompanying illustration represents an angler's assortment, offered by the E. A. Pflueger Company, Akron, Ohio. The assortment comprises necessary articles for casting, trolling and still fishing, and suitable for black bass, pike, pickerel and other game fish. The as-




*Angler's Select Assortment No. 1154.*

sortment includes the company's most popular lures in finest quality, put up in fancy hinge cover partitioned display box, and is intended to retail for $2.50 per box, complete. At usual retail prices the various articles would bring $3.25. The assortment is made up of one each wooden minnow blended rainbow, double propeller glow spinner, weedless casting spoon, Carlton spinner, original casting spinner nickel convex, original casting spinner white enamel, Hercules cable wire leader, half dozen each of three different kinds of snelled hooks, half dozen connecting links and half dozen casting swivel sinkers.

## Gem Golf Ground Cup Hole Cutter and Plate.

The golf course requirements shown in the accompanying illustrations are manufactured by the Gem Mfg. Company, Pittsburgh, Pa. Fig. 1 shows the cup itself and Fig. 2 the hole cutter and ground plate used in placing the cup in position. As all golf players are aware, a true straight edge hole is necessary for well kept links, and also for good golf playing, and the articles referred to have been designed to supply these requirements. The cylindrical portion of the cup is made of heavy gauge brass tubing; therefore it is not subjected to corrosion like steel or other metals, but will last indefinitely, and it is said does not damage the




*Fig. 1.—Gem Golf Ground Cup.*

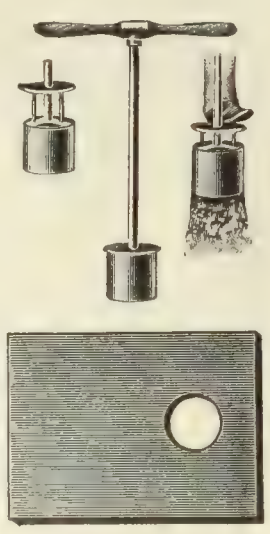


*Fig. 2.—Hole Cutter and Plate.*

greens in changing the location of the hole. The base of the cup is made from a machined casting, and is slightly smaller than the cylinder portion, being provided with a small tube securely screwed into the bottom, which acts as a drain for the cup, and also as a support for the flagstaff. The plate shown in Fig. 2 is for use with the hole cutter. When a hole is to be cut the operator sets the plate immediately over the desired spot, and then forces the cutter into the ground through the hole in the plate. When the cutter is withdrawn the weight of the operator standing on the plate prevents the turf from breaking around the hole. The plate may also be used when withdrawing the cups, if desired, and the company furnishes with each set of cups a tool for pulling them out of the ground.

## The Glow Light.

The Glow light shown herewith is put on the market by the Glow Light Company, 73-75 Pearl street, Boston, Mass. It burns kerosene gas, but without either compression or gas storage. The vaporizing is automatic and instantaneous, and takes place in the burner, Fig. 1, which is made entirely of glass, all in one piece. At the top is a bulb, about 1 in. in diameter; below a tube, the lower end of which should always be submerged in the oil. A small round wick passes up through this tube and through the center of the bulb to a small circular opening in the top of the bulb. This wick should never extend above the burner, but should be adjusted so that the upper end is just even with the top of the burner. When the wick takes fire the flame completely seals the opening through which the wick passes. The heat immediately vaporizes the oil in the wick inside the bulb, and the vapor or gas thus formed is consumed at the top of the wick, burning with a clear steady flame. The company explains that the vaporizing of the oil is automatic and constant so long as the oil covers the lower end of the tube, and that vapor in excess of that required to feed the flame condenses and flows back down the tube, thus insuring perfect combustion. It is also stated that the lamps do not smoke if the wick is properly adjusted, and that they do not consume the oxygen in the air. The statement is made as the result of tests that a single cent's worth of kerosene oil will burn nearly 200 hr. Glow lights are intended to be used when a soft low light is wanted, but are not designed to read or work by. They are said to make a perfect light for bath or toilet



*Fig. 1.—Burner Glow Light.*



*Fig. 2.—Glow Candle.*



*Fig. 3.—Glow Colonial Candlestick.*



*Fig. 4.—Glow Combination Lamp.*

room, bedroom, hall or stairway, and are especially recommended for sick rooms, because they consume no appreciable amount of oxygen. In candle form, Figs. 2 and 3, they are attractive, economical and convenient for table or room decoration. Glow candles are made to fit any candelabra or candlestick, and in appearance are said to resemble a wax candle so closely as to deceive the eye. Fig. 4 shows a combination Glow lamp, which is made entirely of brass, and stands with globe 6 in. high. It may be quickly lifted from the wall fixture and carried from room to room or placed upon a stand or table. It will burn all night long for nearly a week with one filling. Each lamp is packed separately in a strong pasteboard box complete with globe, burner and a brass hook for attaching the fixture to the wall. Illustrated booklets showing many styles of Glow lamps and candles will be sent by the company on application. Wicks, burners and globes are furnished separately as desired.

## The Luther Hand Grinder.

The Luther Bros. Company, Milwaukee, Wis., has added another hand grinder to its already extensive line of such tools. The new machine which is here illustrated

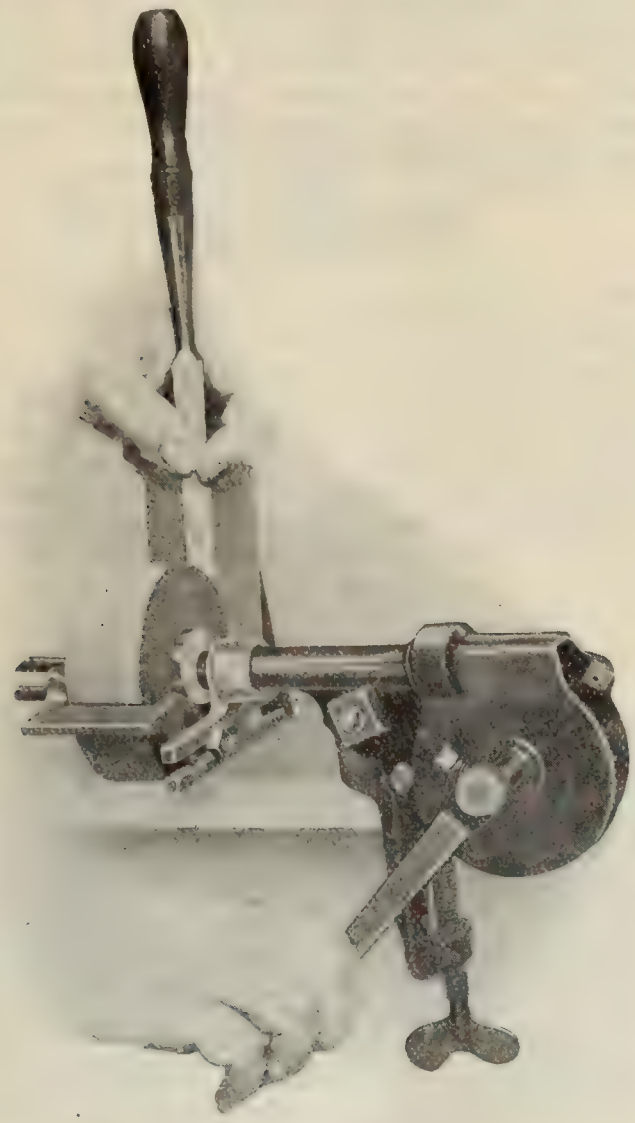


*Fig. 1.—The Luther Hand Grinder.*

is so constructed to permit the grinding wheels to be adjusted to any position desired. The grinding wheel is mounted on a spindle supported by bearings attached to a bench clamp. The wheel may be set to run in a vertical or horizontal position as exigencies of the work demand, and is easily changed from one position to an-

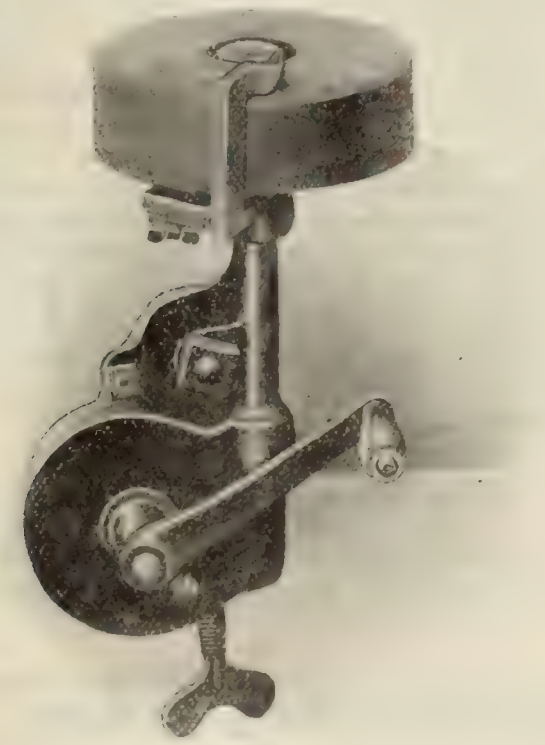


*Fig. 2.—Luther Grinder in Upright Position.*

other. The wheel is driven by a worm gear cut in brass from the solid blank, and is fully protected from dust by a tight casing. Wear on the machine is further lessened by running the working parts in oil, which also contributes to its noiseless operation. Its accuracy and easy motion are enhanced by the ball bearings on which it runs. When used in the upright position the grinder is specially adapted to the sharpening of knives, plates, hair clippers, or other large flat blades. It is especially serviceable in grinding harness knives, and its easy adjustability to any position makes it a great convenience to any user of edged tools. A chisel and plane bit guide shown in Fig. 1 to facilitate the accurate grinding of these tools is furnished with each grinder. In addition to the use of this machine as a grinding tool it is designed for use, as shown in Fig. 3, in connection with a Babcock milk tester. With the wheel removed and the spindle in perpendicular position, the tester can be conveniently attached and the tool made to do double service.

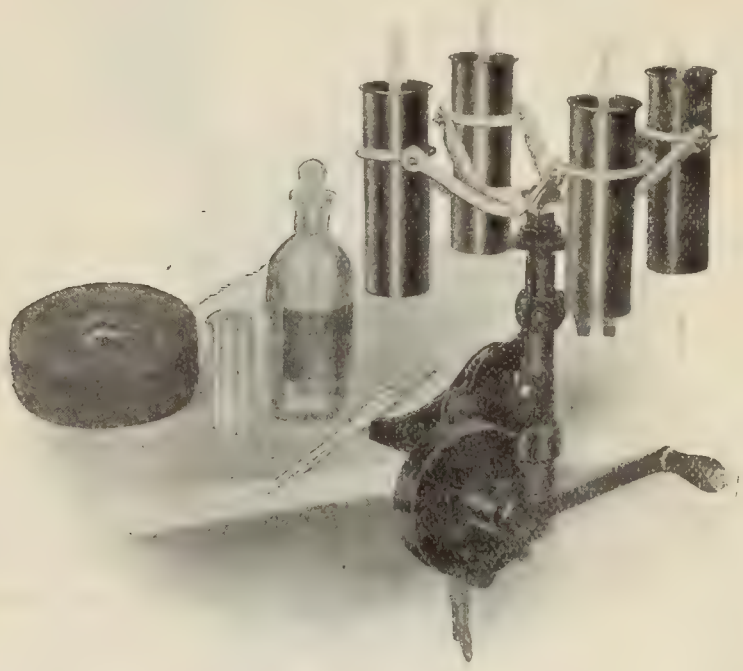


*Fig. 3.—Luther Grinder Used in Connection with a Babcock Milk Tester.*

As a grinder, the outfit consists of one medium grain carborundum wheel, 5 x 1¼ in., chisel guide and tool rest. When packed in a 12-in. case the tool weighs 120 lb. The milk testing attachment is furnished in two and four bottle types for both milk and cream.

## The Swan Folding Handle Drawing Knife.

The handles of the folding drawing knife illustrated herewith can be adjusted to four different positions and are held perfectly rigid when set. This is made possible by a number of small projections on the circular ends of the blade frame and corresponding depressions in the circular ends of the handles. The handles are set in the desired position, with the projections in the depressions



*The Swan Folding Handle Drawing Knife.*

and fastened in this position by the aid of thumb screws. The handles are grooved so as to set over the blades to protect the edges, also making a very compact tool when closed. The knife is referred to as being strongly constructed throughout, and is offered by the James Swan Company, Seymour, Conn.

THE NORVELL-SHAPLEIGH HARDWARE COMPANY, St. Louis, Mo., has recently added to its line the Norleigh Diamond Padlock, which is so designed as to embody the company's diamond trademark device. Another new article is the Norleigh Diamond Boy's Wagon, which is described as an unusually strong and well constructed little cart. To advertise its Armor Clad Whips, which have a center of hippopotamus hide, the company has issued a showcard 9½ x 14 in. in size, describing and illustrating the construction of the Whips and bearing an especially striking illustration of a scantily clad dusky workman stripping the hide from a slain hippopotamus.

## Pyko Grinder and Foot Power Attachment.

In Fig. 1 of the accompanying illustrations is shown one of the line of grinders put on the market by the Pike Mfg. Company, Pike, N. H. The machine is designed for

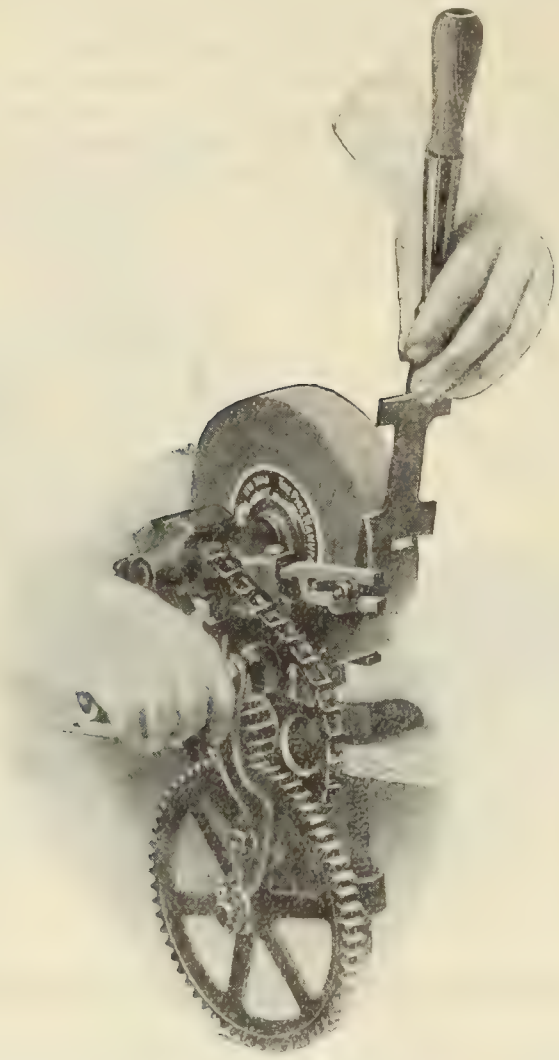


*Fig. 1.—Pyko Grinder No. 3A.*

use in woodworking, machine, blacksmith and wheelwright shops, automobile garages and lumber camps, for farmers and contractors, and for all places where a power driven grinder is not available. The grinder is the same as the company's No. 3, with the addition of the chisel and plane bit grinding attachment and a coarse grit corundum wheel, 6 x 1¼ in. for grinding heavy and nicked tools, castings, &c. The grinder is alluded to as strongly constructed, every part subjected to strain being made of the highest grade malleable castings. All bearings are extra long, and the two principal bearings have overhanging dust caps to make them practically dustproof. The clamp will grasp any table or bench from 1 to 4 in. thick. The foot power attachment shown in Fig. 2 can be attached to the Nos. 2 and 3 Pyko grinders. This leaves both hands free for sharpening tools, cleaning knives, polishing silver ware, jewelry, &c. The attachment is made of malleable iron, nonbreakable, and is adjustable to benches or tables of different hights.



*Fig. 2.—Pyko Foot Power Attachment.*

## The Perfect Cooker.

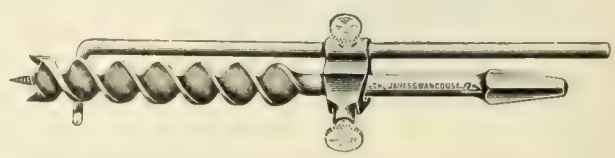
The cooker herewith illustrated and offered by the Republic Metalware Company, Buffalo, N. Y., consists of a deep water pan, a roll rim food pan and a cover inclosing both. The roll rim of the food pan fits snugly over the top edge of the water pan and is perforated with several series of holes for the introduction of steam into the food compartment. The point is made that the food is rapidly cooked because of the perforations, that the food is entirely inclosed and surrounded by heat and that the food pan is wide and shallow, thus presenting a large surface against which to apply the heat. It is further explained that it is impossible to scorch or burn the food; also that no watching is required, that foreign matter is kept out, and cooking odors are kept in, and that the device is adapted to cooking a wide variety of things, including fruits, puddings, cereals, vegetables, soups, &c. The cooker is supplied with side handles and is furnished in two styles—retinned and enameled. It can also be supplied with retinned water pan and cover and enameled food pan. The pans can be used separately if desired. The water pan is 4¼ in. deep and 10 in. in diameter, a suitable size for potatoes, cabbage, &c. The food pan is 3 in. deep and 11 in. in diameter (over rim), and may be found useful for cooking tomatoes, peas and any of the smaller vegetables.



*The Perfect Cooker.*

## The Swan Depth Gauge.

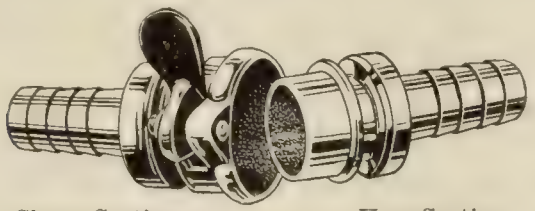
The James Swan Company, Seymour, Conn, is offering the bit gauge shown, in connection with a bit, in the accompanying illustration. The cast clamp is nickel plated and is adjustable on any bit and also on the gauge by means of knurled headed screws. The polished gauge is accurately graduated and can be set for any depth from 1-16 up to 6 in.



*The Swan Depth Gauge.*

## The Time Saving Hose Coupler.

A new hose coupler for which simplicity, rapidity in connection and efficiency are claimed by the manufacturer is illustrated herewith. The device which has been patented is placed on the market by A. W. Findlay Company, Twenty-third and Market streets, Philadelphia, Pa., and is made in different styles to meet the requirements of the usual garden, steam, fire and air hose. That shown in the accompanying illustration is the type used for the ordinary garden hose. The coupler which is made of brass is shown open, the two sections being firmly held together when closed by means of a hinged clamp, the portion engaging the opposite section having a cam or wedge shaped face which enters the groove of the hose section, but very little pressure being required to force it up tight. The end of the section bears on a heavy rubber washer, which is held firmly in position in a recessed portion at the rear of the socket, and makes a perfectly tight joint, which for this class of service has been tested up to 250 lb. pressure. There are no springs, threads or wearing parts in connection with this coupler, the cam will enter the groove at any point, and it is only necessary to put the two sections together and close the cam clamp, which action locks the same. For fire, air and steam hose, where increased pressure is used, the couplers are made with longer shanks and have two cam clamps, one on either side, and so equipped have without difficulty withstood a water pressure of 575 lb. The Time-Saving coupler is made in the usual sizes from ⅜ to 3 in. in diameter, valve and faucet connections, nipples, sockets and special gas heater connections also being made in varying sizes.




*Time Saving Hose Coupler, Open.*

C. L. Waldo has been succeeded in the Hardware business at Colfax, Iowa, by O. R. Tripp & Sons.

## PAINTS, OILS AND COLORS

| Animal, Fish and Vegetable Oils— | ₱ gal bbls. |
|---|---|
| Linseed, Western, Raw | 46 @47 |
| State, Raw | 46 @47 |
| City, Raw | 46 @47 |
| Boiled, 1¢ ₱ gal. advance on Raw. | |
| Raw, Calcutta, in bbls. | 70 @.. |
| Lard, Prime, Winter | 72 @76 |
| Extra No. 1 | 51 @52 |
| No. 1 | 49 @50 |
| Cotton-seed, Crude, f.o.b. mill | 30 @31 |
| Summer Yellow, prime | 38½@39 |
| Summer, White | 40 @41 |
| Yellow Winter | 44 @46 |
| Tallow, Acidless | 58 @59 |
| Menhaden, Brown, Strained | 34 @35 |
| Northern Crude | 27 @30 |
| Southern | 23½@.. |
| Light Strained | 34 @35 |
| Bleached Winter | 36 @38 |
| Ex. Bleached Winter | 38 @39 |
| Cocoanut, Ceylon ₱ lb | 6½@ 6¾ |
| Cochin ₱ lb | 7¼@ 7½ |
| Cod, Domestic, Prime | 38 @40 |
| Newfoundland | 40 @42 |
| Red Elaine | 40 @42 |
| Saponified ₱ lb | 5⅞@ 6 |
| Olive, Yellow | $1.15@$1.25 |
| Neatsfoot, Prime | 55 @58 |
| Palm, Lagos ₱ lb | 6 @ 6¼ |

| Mineral Oils— | ₱ gal. |
|---|---|
| Black, 29 gravity, 25@30 cold test | 13 @13½ |
| 29 gravity, 15 cold test | 13½@14 |
| Summer | 12½@13 |
| Cylinder, light filtered | 20½@21 |
| Dark filtered | 18 @19 |
| Paraffine, 903-907 sp. gravity | 14½@15 |
| 903 sp. gravity | 13½@14 |
| 883 sp. gravity | 11 @11½ |
| Red | 13½@14 |

| Miscellaneous— | |
|---|---|
| Barytes: | |
| White, Foreign ₱ ton | $18.50@20.50 |
| Amer. floated ₱ ton | 17.00@18.00 |
| Off color ₱ ton | 12.50@15.00 |
| Chalk, in bulk ₱ ton | 3.00@ 3.40 |
| China Clay, Imported ₱ ton | 11.50@18.00 |
| Cobalt, Oxide ₱ 100 lb | 1.45@ 2.60 |
| Whiting, Commercial ₱ 100 lb | 42@52 |
| Gilders ₱ 100 lb | .55@ .60 |
| Ex. Gilders ₱ 100 lb | .60@ .65 |

| Putty, Commercial— ₱ 100 lb | |
|---|---|
| In bladders | $1.70 @1.80 |
| In bbls. or tubs | 1.20 @1.45 |
| In 1 lb to 5 lb cans | 2.65 @2.95 |
| In 12½ to 50 lb cans | 1.50 @1.90 |

| Spirits Turpentine— ₱ gal. | |
|---|---|
| In Oil bbls | 40 @40½ |
| In machine bbls | 40½@42 |

| Glue— | ₱ lb |
|---|---|
| Cabinet | 12 @15 |
| Common Bone | 7½@ 9 |
| Extra White | 18 @24 |
| Fish, liquid, 50 gal. bbls., per gallon | 60 @1.20 |
| Foot Stock, White | 12 @14 |
| Foot Stock, Brown | 9 @11 |
| German Common Hide | 10 @12 |
| German Hide | 12 @18 |
| French | 10 @40 |
| Irish | 13 @16 |
| Low Grade | 10 @12 |
| Medium White | 14 @17 |

| Gum Shellac— | ₱ lb |
|---|---|
| Bleached, Commercial | 22 @23 |
| Bone Dry | 26 @27 |
| Button | 30 @40 |
| Diamond I | @40 |
| Fine, Orange | 34 @35 |
| A. C. Garnet | 25 @28 |
| G. A. L. | 20 @21 |
| Kala Button | 18 @19 |
| D. C. | @42 |
| Octagon B | 35 @36 |
| T. N. | 23 @24 |
| V. S. O. | @40 |

| Colors in Oil— | ₱ lb |
|---|---|
| Black, Lampblack | 12 @14 |
| Blue, Chinese | 36 @46 |
| Blue, Prussian | 32 @36 |
| Blue, Ultramarine | 13 @16 |
| Brown, Vandyke | 11 @14 |
| Green, Chrome | 12 @16 |
| Green, Paris | @24 |
| Sienna, Raw | 12 @15 |
| Sienna, Burnt | 12 @15 |
| Umber, Raw | 11 @14 |
| Umber, Burnt | 11 @14 |

| White and Red, Lead &c.— | ₱ lb |
|---|---|
| Lead, English white, in Oil | 10⅛@10⅜ |
| Lead, American White: | |
| Dry and in Oil, 100, 250 and 500 lb kegs | 7 |
| Dry and in Oil, 25 and 50 lb kegs | 7¼ |
| Dry and in Oil, 12½ lb kegs | 7½ |
| In Oil, 25 lb tin pails | 7½ |
| In Oil, 12½ lb tin pails | 8 |
| In Oil, 1, 2, 3 and 5 lb tin cans, ass't | 9 |
| Red Lead and Litharge: | |
| In 100 lb kegs | 7 |
| In 25 and 50 lb kegs | 7¼ |
| In 12½ lb kegs | 7½ |
| In lots of less than 500 lbs, ½¢ ₱ lb advance over above prices of White and Red Lead and Litharge. | |

Lead, American. Terms: On lots of 500 lbs and over, 60 days, or 2% for cash if paid in 15 days from date of invoice.

| Zinc, Dry— | ₱ lb |
|---|---|
| American, dry | 5½@ 5⅝ |
| Red Seal (French process) | 6¾@ 7 |
| Green Seal | 7¼@ 7½ |
| German Red Seal (French process) | 6⅝@ 7 |
| Green Seal | 7¼@ 7⅝ |
| White Seal | 7⅞@ 8¼ |
| French, Red Seal | 8⅜@ 8⅞ |
| Green Seal | 10⅜@10⅝ |

| Dry Colors— | ₱ lb |
|---|---|
| Black, Carbon | 6½@10 |
| Black Drop, American | 3½@ 8 |
| Black Drop, English | 5 @15 |
| Black, Ivory | 16 @20 |
| Lamp, commercial | 4 @ 6 |
| Blue, Celestial | 4 @ 6 |
| Blue, Chinese | 30 @32 |
| Blue, Prussian | 28 @30 |
| Blue, Ultramarine | 3½@15 |
| Brown, Spanish | ½@ 1 |
| Carmine, No. 40 | $3.10@3.25 |
| Green, Chrome, ordinary | 3½@ 5 |
| Green, Chrome, pure | 17 @25 |
| Ocher, American ₱ ton | $8.50@16.00 |
| American Golden | 2½@ 3¼ |
| French | 1¼@ 2 |
| Foreign Golden | 3 @ 4 |
| Orange Mineral, English | 10 @12 |
| French | 12½@13 |
| German | 12 @13 |
| American | 9 @10 |
| Red, Indian, English | 4½@ 6 |
| American | 3 @ 3¼ |
| Red, Turkey, English | 4 @10 |
| Red, Tuscan, English | 7 @10 |
| Red, Venetian, Amer. ₱ 100 lb | $0.50@1.25 |
| English ₱ 100 lb | $1.15@1.60 |
| Sienna, Italian, Burnt and Powdered | 3 @ 9 |
| Italian, Raw, Powdered | 3 @ 7 |
| American, Raw | 1½@ 2 |
| American Burnt and Pow'd | 1½@ 2 |
| Talc, French ₱ ton | $18.00@25.00 |
| American ₱ ton | 15.00@25.00 |
| Terra Alba, French ₱ 100 lb | .90@ 1.00 |
| English ₱ 100 lb | .80@ 1.00 |
| American ₱ 100 lb, No. 1 | .75@ .80 |
| American ₱ 100 lb, No. 2 | .60@ .65 |
| Umber, T'key, Bnt. & Pow. | 2¾@ 3 |
| Turkey, Raw and Powdered | 2¾@ 3 |
| Burnt, American | 1½@ 2 |
| Raw, American | 1½@ 2 |
| Yellow, Chrome, Pure | 12¾@15 |
| Vermilion, American Lead | 7 @25 |
| Quicksilver, bulk | 65 @.. |
| Quicksilver, bags | @66 |
| English, Imported | 65 @75 |
| Chinese | $0.90@1.00 |


# THE IRON AGE

*The oldest paper in the world devoted to the interests of the Hardware, Iron, Machinery and Metal Trades, and a standard authority on all matters relating to those branches of industry.*

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# Current Hardware Prices.

**General Goods.**—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

**Special Goods.**—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

**Range of Prices.**—A range of prices is indicated by means of the symbol @. Thus 33⅓ @ 33⅓ & 10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

**Names of Manufacturers.**—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued annually, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

**Standard Lists.**—"The Iron Age Standard Hardware Lists" contains the list prices of many leading goods.

**Additions and Corrections.**—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

### Adjusters, Blind—
Columbian and Domestic....33⅓%
North's....10%
Upson's Patent, ℔ gro., $29.90....10%
Zimmerman's—See Fasteners, Blind.

### Window Stop—
Ives' Patent....10%
Ives' Stop Bead Screws and Washers....10%
Taplin's Perfection....10%

### Ammunition—See *Caps, Cartridges, Shells, &c.*

### Anti—Rattlers—
Fernald Mfg. Co. Burton Anti-Rattlers, ℔ doz. pairs, Nos. 1, $0.75; 2, $0.60; 4, $1.00; 5, $0.50.
Fernald Quick Shifter, ℔ doz. pairs....$2.00@$3.00

### Anvils—American—
Eagle Anvils....℔ lb @8 ¢
Hay-Budden, Wrought....9½@9¾¢
Trenton....℔ lb 9½@9¾¢

### Imported—
Swedish Solid Steel Sisco, Superior, ℔ lb....10@10½¢
Peter Wright & Sons, ℔ lb, 84 to 349 lb, 11¢; 350 to 600 lb, 11½¢.

### Anvil, Vice and Drill—
Millers Falls Co., $18.00....15&10%

### Apple Parers—See *Parers, Apple, &c.*

### Aprons, Blacksmiths'—
Livingston Nail Co....10%

### Augers and Bits—
*Com. Double Spur....75&10@80%*
*Jennings' Patn., Bright.65&10@70%*
*Black Lip or Blued...65@65&5%*
*Boring Mach. Augers....70%*
*Car Bits, 12-in. twist....40&10%*
Ford's Auger and Car Bits....40&5%
Ft. Washington Auger Co., Conard's....35%
Forstner Pat. Auger Bits....25%
C. E. Jennings & Co.:
No. 10 ext. lip. R. Jennings' list, 25&7½%
No. 30, R. Jennings' list....50%
Russell Jennings'....25&10&2½%
L'Hommedieu Car Bits....15%
Mayhew's Countersink Bits....45%
Pugh's Black....20%
Pugh's Jennings' Pattern....35%
Snell's Auger Bits....60%
Snell's Bell Hangers' Bits....60%
Snell's Car Bits, 12-in. twist....60%
Snell's King Auger Bits....50%
Swan's....65&10@70%
Swan's, Jennings' Pattern....50%
Wright's Jennings' Bits....50%

### Bit Stock Drills—
See *Drills, Twist.*

### Expansive Bits—
Clark's Pattern, No. 1, ℔ doz., $26; No. 2, $18....60&10%
Ford's, Clark's Pattern...60&5@60&10%
C. E. Jennings & Co., Steer's Pat..25%
Lavigne Pat., small size, $18.00; large size, $26.00....60&10%
Swan's....60%

### Gimlet Bits—
*Per gro.*
*Common Dbl. Cut....$3.00@3.25*
*German Pattern, Nos. 1 to 10, $4.75; 11 to 13, $5.75*

### Hollow Augers—
*Bonney Pat., per doz..$5.50@6.00*
Ames....20&10%
Universal....20%

### Ship Augers and Bits—
*Ship Augers....40&10@—%*
Ford's....33⅓&5%
C. E. Jennings & Co.:
L'Hommedieu's....6%
Watrous'....33⅓&7½%
Snell's....48%

### Awl Hafts—See *Handles, Mechanics' Tool.*

### Awls—
*Brad Awls:*
*Handled....gro. $2.75@3.00*
*Unhdld, Shldered...gro.63@66¢*
*Unhandled, Patent..gro.66@70¢*
*Peg Awls*
*Unhandled, Patent..gro. 31@34¢*
*Unhdld, Shldered..gro. 65@70¢*
*Scratch Awls:*
*Handled, Com...gro. $3.50@4.00*
*Handled, Socket.gro.$11.50@12.00*

### Awl and Tool Sets—See *Sets, Awl and Tool.*

### Axes—
*Single Bit, base weights: Per doz.*
*First Quality....$4.75@5.00*
*Second Quality....$4.25@4.50*
*Double Bit, base weights:*
*First Quality....$7.00@7.50*
*Second Quality....$6.50@6.75*

### Axle Grease—
See *Grease, Axle.*

### Axles—Iron or Steel.
*Concord, Loose Collar...4¼@4½¢*
*Concord, Solid Collar....4½@5¢*
*No. 1 Common, Loose...3½@4¢*
*No. 1½ Com., New Style.4¼@4¾¢*
*No. 2 Solid Collar....4¼@4¾¢*
*Half Patent:*
*Nos. 7, 8, 11 and 12....70%*
*Nos. 13 to 14....70%*
*Nos. 15 to 18...70&10@70&10&5%*
*Nos. 19 to 22...70&10@70&10&5%*

### Boxes, Axles—
*Common and Concord, not turned....lb., 5@6¢*
*Common and Concord, turned, lb., 6@7¢*
*Half Patent....lb., 9½@10¢*

### Bait—Fishing—
Hendryx:
A Bait....20%
B Bait....25%
Competitor Bait....20&5%

### Balances—Sash—
Caldwell new list....50&10%
Pullman....50&10%

### Spring—
*Light Spring Balances.60@60&5%*
Chatillon's:
Light Spg. Balances....50@50&10%
Straight Balances....40@40&10%
Circular Balances....50&10%
Large Dial....30%

### Barb Wire—See *Wire, Barb.*

### Bars—Crow—
*Steel Crowbars, 10 to 40 lb.... per lb., 2¼@2½¢*

### Towel—
No. 10 Ideal, Nickel Plate..℔ gro. $8.50

### Beam, Scale—
*Scale Beams....40%*
Chattillon's No. 1....30%
Chatillon's No. 2....40%

### Beaters, Carpet—
Holt-Lyon Co.:
No. 12 Wire Coppered ℔ doz. $0.80; Tinned....$0.85
No. 11 Wire Coppered ℔ doz. $1.15; Tinned....$1.20
No. 10 Wire Tinned....℔ doz. $1.50

### Beaters Egg—
Dover Stamping & Mfg. Co.:
Genuine Dover, per gro., No. 1, Tumbler Size, $7.50; No. 2, Family Size, $7.50; No. 3, Extra Family Size, $24.00; No. 4, Hotel Size, $30.00.
Holt-Lyon Co.:
Holt, per doz., No. 5, Jap'd. $0.80; No. A, Jap'd, $1.15; No. B, Jap'd, $1.85; No. 6, Jap'd, $1.65.
Lyon, Jap'd, per doz., No. 2, $1.35.
Taplin Mfg. Co.:
Improved Dover, per gro., No. 60, $6.00; No. 75, $6.50; No. 100, $7.00; No. 102, Tin'd, $8.50; No. 150, Hotel, $15.00; No. 152, Hotel Tin'd, $17.00; No. 200, Tumbler, $8.50; No. 202, Tumbler Tin'd, $9.50; No. 300, Mammoth, per doz., $25.00.

### Bellows—
*Blacksmith, Standard List:*
*Split Leather....60&10@67½%*
***Grain Leather....50@50&10%***

Hand—

| Inch | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|
| Doz. | $5.00 | 5.50 | 6.00 | 6.50 | 7.50 |

Molders—

| Inch | 10 | 12 | 14 | 16 |
|---|---|---|---|---|
| Doz. | $7.50 | 9.00 | 12.00 | 15.00 |

Net Prices.

### Bells—Cow—
*Wrought Cow Bells....75%*
Jersey....75&10
Texas Star....50%

### Door—
Home, R. & E. Mfg. Co.'s....55&10%

### Hand—
*Polished, Brass....60@60&10%*
*White Metal....60@60&10%*
*Nickel Plated....50&10%*
*Swiss....50&10%*
Cone's Globe Hand Bells....33⅓@35%

### Miscellaneous—
*Farm Bells....lb., 2¼@2½¢*
*Church and School....60@60&10%*

### Belting—Leather—
*First Quality, Ex. Hy., Strictly Short Lap....60&10%*
*Standard....70&10@70&10&5%*
*Light Double....75&10%*
*Cut Leather Lacing....50%*
*Leather Lacing Sides, per sq. ft. 23@24¢*

### Rubber—
*Competition (Low Grade), 70&10@75%*
*Standard....60&10@70%*
*Best Grades....40@50%*

### Bench Stops—
See *Stops, Bench*

### Benders and Upsetters, Tire—
Green River Tire Benders and Upsetters....20%

### Bicycle Goods—
John S. Leng's Son & Co.'s 1908 list:
Chain, Parts, Spokes....50%
Tubes....60%

### Bits—
Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

### Blocks Tackle—
*Common Wooden....75@75&5%*
B. & L. B. Co.:
Boston Wood Snatch, 50%; Eclipse Steel, 75%; Hollow Steel, 50&10%; Star Wire Rope, 50%; Tarbox Metal Snatch, 50%; Tarbox New Style Steel, 50&10%; Wire Rope Snatch, 50%.
Lane's Patent Automatic Lock and Junior....30%
See also Machines, Hoisting.

### Boards, Stove—
*Paper and Wood Lined....55%*
*Embossed....55%*

### Boards, Wash—
See *Washboards.*

### Bobs, Plumb—
Keuffel & Esser Co....33⅓&10%

### Bolts Carriage, Machine, &c,—
*Common Carriage (cut thread):*
*⅜ x 6 and smaller..75&5@—%*
*Larger and longer....70&5@—%*
*Phila. Eagle, $3.00 list...80@—%*
*Bolt Ends....70&10@—%*
*Machine (Cut Thread):*
*⅜ x 4 and smaller..75&10@—%*
*Larger and longer...70&10@—%*

### Door and Shutter—
*Cast Iron Barrel, Japanned, Round Brass Knobs:*

| Inch | 3 | 4 | 5 | 6 | 8 |
|---|---|---|---|---|---|
| Per doz. | $0.30 | .35 | .45 | .60 | .80 |

*Cast Iron Spring Foot, Jap'd:*

| Inch | 6 | 8 | 10 |
|---|---|---|---|
| Per doz. | $1.20 | 1.50 | 2.25 |

*Cast Iron Chain, Flat, Japanned:*

| Inch | 6 | 8 | 10 |
|---|---|---|---|
| Per doz. | $1.00 | 1.40 | 1.65 |

*Cast Iron Flat Shutter, Jap'd, Brass Knobs:*

| Inch | 6 | 8 | 10 |
|---|---|---|---|
| Per doz. | $0.75 | .95 | 1.25 |

*Wrought Barrel Japanned, 80&10@80&10&5%*
*Barrel Bronzed....60&10%*
*Spring....70&10@70&10&10%*
*Shutter....50&5@50&10&5%*
*Square Neck....75@75&10%*
*Square....70&10&10@80%*
Ives' Mortise....10%
Ives' Wrought Metal....10%

### Expansion—
F. H. Evans' Crescent....40@60%
Richards Mfg. Co....55&10%
Star Expansion Bolt Co.:
Star Lag Screw Type..60&10&5&2½%
Star, Wood Screw Type....10%
Star, Machine, Single Wedge....60%
Star, Machine, Double Wedge....60%
Steward & Romain Mfg. Co.:
Style No. 13, Double....60%
Style No. 1, Single....60%
Style No. 100, Dbl. Jaw, Single..55%
Lag Screw....66⅔%

### Plow and Stove—
*Plow....65&5@70%*
*Stove....85@85&5%*

### Tire—
*Common Iron....80%*
*Norway Iron....80%*
American Screw Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84...82½%
Bay State, list Dec. 28, '99....80%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84...82½%
Eclipse, list Dec. 28, '99....80%
Russell, Burdsall & Ward Bolt & Nut Co.:
Empire, list Dec. 28, '99....80%
Norway Phila., list Oct. '84....80%
Eagle....82½%
Shelton Co.:
Tiger Brand, list Dec. 28, '99....80%
Phila., Eagle, list Oct. 16, 1884..82½%
Upson Nut Co.:
Tire Bolts....72½%

### Borers, Bung—
*Borers Bung, Ring, with Handle:*

| Inch | 1¼ | 1½ | 1¾ | 2 |
|---|---|---|---|---|
| Per doz. | $4.80 | 5.60 | 6.40 | 8.00 |
| Inch | 2¼ | 2½ | | |
| Per doz. | $8.65 | 11.50 | | |

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.75; No. 3, $2.50 each....25%

### Boxes, Mitre—
C. E. Jennings & Co....25%
Langdon, New Langdon and Langdon Improved, 20&10%; Langdon Acme....15&10%
Perfection....40%
Seavey....45%

### Braces—
*Comman Ball, American....$1.50*
Barber's....50&10&10@60&10%
Fray's Genuine Spofford's....60%
Fray's No. 61, 166, 206, 614....50%
C. E. Jennings & Co....50&5%
Mayhew's Ratchet....60%
Mayhew's Quick Action Hay Pat...50%
Millers Falls Drill Braces....25&10%
P., S. & W. Co., Peck's Pat....60&10%

### Brackets—
***Wrought Steel....75&10&5@80%***
Bradley Metal Clasp...80&10@80&10&5%
Griffin's Pressed Steel....75@75&10%
Griffin's Folding Brackets....70&10%
Taplin Victor Handy Egg Beater Bracket....℔ doz. $1.50

### Bright Wire Goods—
See *Wire and Wire Goods.*

### Broilers—
Kilbourne Mfg. Co....75&20%
Wire Goods Co....75%

### Buckets, Galvanized—
*M'fr's list, price per gross.*

| Quart.. | 10 | 12 | 14 | |
|---|---|---|---|---|
| *Water, Reg...* | *26.85* | *29.50* | *33.50* | 10&7½&5&5% |
| *Water, Hvy...* | *45.35* | *48.00* | *52.00* | |
| *Fire, Rd. Btm..* | *32.00* | *34.65* | *38.65* | |
| *Well....* | *37.35* | *41.35* | *45.35* | |

### Bull Rings—See *Rings, Bull.*

### Butts—Brass—
*Wrought, High List, Oct. 6, '06.65%*
Cast Brass, Tiebout's....40&10%

### Cast Iron—
*Fast Joint, Broad....40&10@50%*
*Fast Joint, Narrow...40&10@50%*
*Loose Joint....70&10@75%*
*Loose Pin....70&10@75%*
*Mayer's Hinges....70@70&5*
*Parliament Butts....70@70&5*

### Wrought Steel—
*Bright.*
*Light Narrow, Light Reversible....70&5%*
*Reversible and Broad..70&5%*
*Loose Joint, Narrow, Light Inside Blind, &c....70%*
*Back Flaps, Table Chest.65%*
*Japanned.*
*Light Narrow, Loose Pin. 40&5%*
*Light Narrow, Ball Tip..60%*
*Broad....40&5%*
*Steeple Tipped....70%*
*Ball Tipped....70%*

Extra, 10@—

## Cages, Bird—

Hendryx Brass: Series 3000, 5000, 1100, net list; 1200, 15%; 200, 300, 900 ..... 30%
Hendryx Bronze: Series 700, 800.... 30%
Hendryx Enameled..... 35%

## Calipers—See *Compasses.*

## Calks, Toe and Heel—

*Blunt, 1 prong, per 100 lb., $3.50@$3.85*
*Sharp, 1 prong, per 100 lb., $4.00@$4.35*
Burke's, 1 pg. Blunt Toe, 3¾¢; 2 pg. Blunt Toe, 4¼¢; 1 pg. Sharp Toe, 4¼¢; 2 pg. Sharp, 4¾¢; Blunt Heel, 4¼¢; Sharp Heel..... 4¾¢
Lautier, Blunt, 4@4¼¢; Sharp, 4½@4¾¢
Perkins', Blunt, ₱ lb, 3.65¢; Sharp, 4.15¢

## Can Openers—

See *Openers, Can.*

## Caps, Percussion—

*Eley's E. B.....52@55¢*
*G. D.....per M 31@35¢*
*F. L.....per M 40@42*
*G. E.....per M. 48@50¢*
*Musket .....per M 62@63¢*

### Primers—

*Berdan Primers, $2 per M..20&5%*
*Primer Shells and Bullets..15&10%*
*All other primers per M. $1.52@1.60*

## Carpet Stretchers—

See *Stretchers, Carpet.*

## Cartridges—

*Blank Cartridges:*
*32 C. F., $5.50.....10&5%*
*38 C. F., $7.00.....10&5%*
*22 cal. Rim, $1.50.....10&5%*
*32 cal. Rim, $2.75.....10&5%*
*B. B. Caps, Con. Ball, Swgd. $1.90*
*B. B. Caps, Round Ball.....$1.40*
*Central Fire..... 25%*
*Target and Sporting Rifle. 15&5%*
*Primed Shells and Bullets. 15&10%*
*Rim Fire, Sporting..... 50%*
*Rim Fire, Military.....15&5%*

## Casters—

*Bed .....65&10@70%*
*Plate .....60@60&5%*
*Philadelphia .....70&10@75%*
Acme, Ball Bearing..... 35%
Gem (Roller Bearing).....70&10&10&5
Steel Gem (Roller Bearing)..... 70%
Standard Ball Bearing..... 45%
Yale (Double Wheel) low list...40&10%

## Cattle Leaders—

See *Leaders, Cattle.*

## Chain, Proof Coil—

*American Coil, Straight Link:*

| 3-16 | ¼ | 5-16 | ⅜ | ½ | ⅝ |
|---|---|---|---|---|---|
| $7.80 | 5.20 | 4.25 | 3.60 | 3.40 | 3.20 |

¾-⅞-1 1⅛ to 1¼ inch.
$3.10 3.20
*In cask lots, deduct 25¢.*
*German Coil..... 70%*
*German Pattern Coil:*
*6-0 to 1.....70&10&5%*
*2 and 3.....60&10&10@70%*
*4, 5 and 6.....50&10@50&10&5%*

## Halter—

*Halter Chains.....60&5@60&10%*
*German Pattern Halter Chains, list July 24, '97....60&10&5@70%*
Covert Mfg. Co.:
Halter ..... 35&5%

## Cow Ties—

See *Halters and Ties.*

## Trace, Wagon, &c.—

*Traces, Western Standard: 100 pr.*
*6½—6-3, Straight, with ring. $28.00*
*6½—6-2, Straight, with ring. $29.00*
*6½—8-2, Straight, with ring. $32.00*
*6½—10-2, Str'ght, with ring. $37.00*
*NOTE.—Add 2c per pair for Hooks Twist Traces: add per pair for Nos. 2 and 3, 2c: No. 1, 3c; No. 0, 4c to price of Straight Link.*
*Eastern Standard Traces, Wagon Chain, &c...60&10@60&10&5%*

## Miscellaneous—

*Jack Chain, list July 10, '93:*
*Iron .....60&10&5@60&10&10%*
*Brass ..... 65%*
*Safety and Plumbers' Chain. 75%*
*Gal. Pump Chain....lb., 4½@5%*
Bridgeport Chain Co.:
Triumph Halter and Coil. 35&2½@40%
Triumph Dog.....50&10@60%
Brown Halter and Coil....45@50&5%
Covert Mfg. Co.:
Breast, Halter, Heel, Rein, Stallion ..... 40%
Oneida Community:
American Halter, Dog and Kennel Chains ..... 35&2½@40%
Niagara Dog Leads and Kennel Chains ..... 45@50&5%
Wire Goods Co.:
Dog Chain..... 70%
Universal Dbl.-Jointed Chain....70%

## Chain and Ribbon, Sash—

Oneida Community:
Steel Chain..... 60%
Pullman:
Bronze Chain, 60%; Steel Chain, Coppered ..... 60&10%
Sash Chain Attachments, per set..8¢
Aluminoy Sash Ribbon, per 100 ft. .....$2.00@$5.00
Sash Ribbon Attachments, per set..8¢

## Chalk—

*Carpenters' Blue.....gro., 50¢*
*Carpenters' Red.....gro., 50¢*
*Carpenters' White.....gro., 40¢*

## Checks, Door—

Bardsley's ..... 45%
Pullman, per gro.....$54.00
Busswin ..... 33⅓%

## Chests, Tool—

American Tool Chest Co.:
Boys' Chests, with Tools..... 55%
Youths' Chests, with Tools..... 40%
Gentlemen's Chests, with Tools..30%
Farmers', Carpenters, etc., Chests, with Tools ..... 20%
Machinists' and Pipe Fitters' Chests, Empty..... 45%
Tool Cabinets..... 45%
C. E. Jennings & Co.'s Machinists' Tool Chests..... 7½%

## Chisels—Socket Framing and Firmer

*Standard List.....80&10@—%*
Buck Bros..... 30%
C. E. Jennings & Co.:
Socket Firmer No. 10.....25&7½%
Socket Framing No. 15.....25&7½%
Swan's .....66⅔@70%
L. & I. J. White & Co.....30@30&5%

## Tanged—

*Tanged Firmers.....30&5@35%*
Buck Bros..... 30%
C. E. Jennings & Co. Nos. 191, 181..25%
L. & I. J. White Co..... 25&5%

## Cold—

| | lb. |
|---|---|
| *Cold Chisels, good quality* | *13@15¢* |
| *Cold Chisels, fair quality* | *11@12¢* |
| *Cold Chisels, ordinary* | *9@10¢* |

## Chucks—

Almond Drill Chucks..... 35%
Almond Turret Six-Tool Chuck..... 40%
Beach Pat, each $8.00..... 35&5%
Empire ..... 25%
Blacksmiths' ..... 25%
Jacobs' Drill Chucks..... 35%
Pratt's Positive Drive..... 25%
Skinner Lathe Chucks:
Independent ..... 35%
Universal, Reversible Jaws..... 35%
Universal, Com. Style Jaws..... 40%
Combination, Reversible Jaws....35%
Combination, Com. Style Jaws...40%
Round Body or Box Body, 2 Chuck Jaws ..... 25%
Geared Scroll Chucks..... 25%
Drill Chucks:
New Model, 25%; Geared Pattern, 25%; Skinner Patent, ...25%
Positive Drive..... 40%
Planer Chucks..... 20%
Standard ..... 45%
Drill Press Vises..... 30%
Face Plate Jaws..... 35%
Standard Tool Co.:
Improved Drill Chuck,..... 45%
Union Mfg. Co.:
Combination, Nos. 1, 2, 3, 4, 5, 6, 7, 8 and 17, 40%; No. 21..... 35%
Scroll Combinations, Nos. 83 and 84 ..... 30%
Geared Scroll, Nos. 33, 34 and 35..25%
Independent Iron, Nos. 18 and 318.35%
Independent Steel, No. 64..... 25%
Union Drill, Nos. 000, 00, 100, 101, 102, 103, 104..... 35%
Union Czar Drill..... 25%
Universal, 11, 12, 16, 17, 13, 14, 15..40%
Universal No. 42..... 35%
Iron Face Plate Jaws, Nos. 28, 30, 48 and 50..... 35%
Steel Face Plate Jaws, Nos. 70 and 72 ..... 30%
Westcott Patent Chucks:
Lathe Chucks..... 50%
Little Giant Auxiliary Drill..... 50%
Little Giant Double Grip Drill...50%
Little Giant Drill, Improved..... 50%
Oneida Drill..... 50%
Scroll Combination Lathe..... 50%
Whitaker Mfg. Co.:
National Drill..... 25%

## Clamps—

Carriage Makers', Star, P., S. & W. Co. ..... 50%
Besly, Parallel..... 33⅓&10%
Hammer & Co.:
Adjustable ..... 20&5%
Carriage Makers' H. P. Screw. 40&5%
Myers' Hay Rack..... 50%
Lineman's Swedish Neverturn..... 65%
Saw Clamps, see Vises, Saw Filers'.

## Cleaners, Drain,

Iwan's Champion, Adjustable..... 50%
Iwan's Champion, Stationary..... 40%

## Sidewalk—

American Fork & Hoe Co.:
Star, ₱ doz., Socket, $4.00; Shank .....$3.50
Shank, ₱ doz., X 7½, $3.50; Shank, X 8.....$3.75

## Cleavers, Butchers'—

Foster Bros..... 30%
Fayette R. Plumb..... 30%
L. & I. J. White Co..... 30%

## Clippers, Horse and Sheep—

Chicago Flexible Shaft Co.: (20%)
1902 Chicago Horse, each..$10.75
20th Century Horse, each...$5.00
Lightning Belt Horse, each.$15.00
Chicago Belt Horse, each..$20.00
Stewart's Enclosed Gear Roll Bearing Horse, each.....$6.75
Stewart's New Model Sheep Shearing Machine, each.$12.75
Stewart Enclosed Gear Shearing Machine, No. 8, each..$9.75

## Clips, Axle—

*Regular Styles, list July 1, '05. 80&80&10%*

## Cloth and Netting, wire—See *Wire, &c.*

## Cocks, Brass—

*Hardware list:*
*Plain Bibbs, Globe, Kerosene, Racking, Liquor, Bottling, &c ..... 75%*
*Compression Bibbs..... 70%*

## Coffee Mills—

See *Mills, Coffee.*

## Collars, Dog—

Nickel Chain, Walter B. Stevens & Son's list ..... 40%
Leather, Walter B. Stevens & Son's list ..... 40%

## Compasses, Dividers, &c.

*Ordinary Goods.....70&10@75%*

## Conductor Pipe,—

*L. C. L. to Dealers:*

| | Gal. Steel. | Charcoal. | Copper. |
|---|---|---|---|
| *Northeastern:* | | | |
| | 70&10% | 50&10&7½% | 50&10% |
| *Eastern:* | | | |
| | 70&10&5% | 50&10&7½% | 50&10% |
| *Central:* | | | |
| | 75&5% | 60% | 50&10% |
| *Northwestern:* | | | |
| | 75&2½% | 60% | 50&10% |
| *Western:* | | | |
| | 70&7½% | 50&12½% | 50&5% |
| *Tennessee:* | | | |
| | 70&10% | 50&12½% | 50&10% |
| *Southern:* | | | |
| | 70% | 50&12½% | 50&5% |
| *Southwestern:* | | | |
| | 70% | 50&5% | 50&5% |

*Terms, 60 days: 2% cash 10 days. Factory shipments generally delivered.*
See also Eave Troughs.

## Coolers, Water—

L. & G. Mfg. Co.:

| Gal. | 2 | 3 | 4 | 6 | 8 |
|---|---|---|---|---|---|
| Galvanized, ea. | $1.85 | $2.00 | $2.25 | $2.90 | $3.90 |

Galvanized, Lined, side handles,

| Gal. | 2 | 3 | 4 | 6 | 8 |
|---|---|---|---|---|---|
| Each | $1.95 | $2.15 | $2.40 | $3.30 | $4.15 |

White Enameled..... 10%
Agate Lined..... 10%

## Coppers' Tools—

See *Tools, Coopers'.*

## Coppers, Soldering—

*Soldering Coppers, 3 lb. to pair and heavier, 20¢; lighter than 3 lb. to pair.....22¢*

## Cord—Sash—

*Braided, Drab.....lb. 35¢*
*Braided, White, Com., Nos. 8 to 12, 21¢; No. 7, 21½¢; No. 6, 22½¢. In lots of 12 doz. or over, 1 cent less per pound.*
*Cable Laid Italian, lb., No. 18. 37¢*
*Italian, lb., A, No. 18, 25¢; B, 22¢*
*Common India.....lb., 11@11½¢*
*Cotton Sash Cord, Tw'ted. 18@20¢*
*Patent Russia.....lb....20¢*
*Cable Laid Russia.....lb...21¢*
*India Hemp, Br'd'd.....lb...21¢*
*India Hemp, Twisted...lb. 13@14¢*
*Patent India, Twisted..lb...17¢*
Pearl Braided, cotton, No. 6, ₱ lb, 20½¢; No. 7, 19½¢; Nos. 8 to 12, 19½¢, in 12 doz. to 100 doz. lots.
Eddystone, Braided, Nos. 8 to 12, 26¢; 7, 26½; 6, 27½¢.
Harmony Cable Laid Italian, Nos. 7 to 10.....₱ lb 23¢
Pullman:
Wire Sash Cord..... 10%
Sash Cord Attachments, per 100..$2.00
Samson, Nos. 8 to 12: (15%)
Braided, ₱ lb., Drab Cotton, 55¢; Italian Hemp, 40¢@50¢; Linen, 65¢; White Cotton, 50¢; Spot Cord.....50¢
Massachusetts, White...₱ lb 40¢
Massachusetts, Drab....₱ lb 45¢
Phoenix, White, Nos 8 to 12....27¢
Silver Lake, per lb.:
A, Drab, 45¢; A, White, 40¢; B, Drab, 40¢; B, White, 35¢; Italian Hemp, 40¢; Linen....57½¢
See also Chain and Ribbon.

## Wire, Picture—

*Full Length.....90@—%*
*Short Length.....90&20@—%*
Hendryx Standard Wire Picture Cord, old list, 85&10%
Turner & Stanton Co. Wire Picture Cord ..... 90%

## Cradles—

*Grain .....50%*

## Crayons—

*White Round Crayons, Cases, 100 gro., $8.00, $8.50, $9.00 and $10.00 according to grade.*
Zelnicker's Lumber: ₱ gro.
White and Purple, Indelible....$7.50
Blue, Red, Green, Yellow and Terra Cotta, $6.50; Black.....$4.50
Giant Lumber, 5¼ in. x 15-16 in. round, all colors, $12.00; Indelibles, $14.00; Blacks.....$10.00
Genuine Soapstone, Metal Workers', 5 in. x ¼ in. Round, $2.50; 5 in. x ¼ in. Square, $1.75; 5 x ½ x 3-16, $2.50; 5 x 1¼ x 3-16.....$3.00
Suremark, Black, $2.25; Blue, Red and Yellow.....$2.50

## Crooks, Shepperds'—

American Fork & Hoe Co.:
Montana ..... ₱ doz. $4.50

## Crow Bars—See *Bars, Crow.*

## Cultivators—

American Fork & Hoe Co.:
Victor Garden..... 50&10%

## Cutlery, Table—

International Silver Company:
No. 12 M'd'm Knives, 1847. ₱ doz. $3.50
Star, Eagle, Rogers & Hamilton and Anchor..... ₱ doz. $3.00
Wm. Rogers & Son..... ₱ doz. $2.50

## Cutters—Glass—

H. H. Mayhew Co..... 40%
Red Devil ..... 60%
B. Mfg. Co..... 40%
Woodward ..... 50%

## Meat and Food—

American ..... 30%

| Nos. | 101 | 102 | 103 | 104 | 105 | 106 | 107 |
|---|---|---|---|---|---|---|---|
| Each | $5 | $7 | $10 | $12 | $25 | $50 | $60 |

Enterprise:

| Nos. | 5 | 10 | 12 | 22 | 32 |
|---|---|---|---|---|---|
| Each | $2 | $3 | $2.75 | $4.50 | $6 |

25@25&7½
No. 202, $1.50 ..... 40&7½
P. S. & W. Co.:
Ideal ..... 40@40&5%
Hales ..... 60&5%
Little Giant..... ₱ doz. 40@50%

| Nos. | 305 | 310 | 312 | 320 | 322 |
|---|---|---|---|---|---|
| | $35.00 | $18.00 | $44.00 | $72.00 | $68.00 |

New Triumph No. 605, ₱ doz. $24.00, 40%
Russwin Food, No. 1, $24.00; No. 2, $27.00; 3, $42.00.....45&10&10%
$15.00 $18.00
Enterprise Beef Shavers.....25@30%

## Siaw and Kraut—

Henry Disston & Sons:
Slaw and Kraut Cutters..... 35%
Corn Graters..... 30%
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife....₱ doz. $3.00
Combined Slaw Cutter and Corn Grater ..... ₱ doz. $4.00

## Tobacco—

*All Iron, Cheap...doz, $4.25@4.50*
Enterprise ..... 25@30%
National, ₱ doz., No. 1, $21; No. 2, $18 ..... 40%

## Diggers, Post Hole, &c—

Disston's:
Rapid, ₱ doz., $24.00..... 25%
Samson, ₱ doz., $34.00..... 25%
Iwan's Pat. Post Hole and Well Auger ..... 40%
Vaughan Pattern Post Hole Augers, ₱ doz., $7.00
Perfection Post Hole Diggers, ₱ doz. ..... $8.50
Split Handle Post Hole Diggers, ₱ doz., $7.50
Hercules Pattern, ₱ doz.....$9.50
Kohler's, ₱ doz., Universal, $14.00; Little Giant, $12.00; Hercules, $10.00; Invincible, $9.00; Rival, $8.50; Pioneer.....$7.50
Never-Break Crucible Steel Post Hole Diggers ..... 60%

## Dividers—See *Compasses.*

## Drawing Knives—

See *Knives, Drawing.*

## Dressers Emery Wheel—

Sterling Emery Wheel Dressers..... 35%
Sterling Wheel Dresser Cutters..... 35%

## Drills and Drill Stocks—

*Blacksmith's Common Drilling Machines .....$1.50@1.75*
Breast, Millers Falls..... 15&10%
Breast, P., S. & W..... 33⅓%
C. & C. Ratchet..... 25%
Reversible Ratchet Die Stocks....25%
Goodell Automatic Drills. 50&10@60&10%
Millers Falls Automatic Drills, Graves', per doz., Nos. 1, $4.86; 2, $8.16.
Millers Falls Automatic Drills, 33⅓&10%
Ratchet, Curtis & Curtis..... 25%
Ratchet, Parker's..... 40%
Ratchet, Weston's..... 40%
Ratchet, Weston's, Style H Improved ..... 40@40&5%
Ratchet, No. 012..... 40@40&5%
Ratchet, Celebrated..... 40@40&5%
Ratchet, Whitney's, P., S. & W.. 40&10@50%
Whitney's Adjustable, No. 10, $12.00, 33⅓%

## Twist Drills—

*Bit Stock.....70@70&5%*
*Taper and Straight Shank, 60&10@70%*

## Drivers, Screw—

*Screw D'ver Bits, per doz. 45@50¢*
Balsey's Screw Holder and Driver, ₱ doz., 2½-in., $6; 4-in., $7.50; 6-in., $9 ..... 50%
Buck Bros.' Screw Driver Bits..... 30%
Champion ..... 50%
Disston's ..... 70%
Fray's Hol. H'dle Sets, No. 3, $12..50%
Ford's Brace Screw Drivers....40&10%
Gay's Double Action Ratchet..... 35%
Goodell's Auto.....65@65&10%
Mayhew's Black Handle..... 40%
Mayhew's Monarch..... 40%
Millers Falls, ₱ doz., Nos. 11, $9.95; 12, $13.73; 20, $8.17; 21, $8.46; 41, $13.43; 42, $17.21.
Smith & Hemenway Co., Neverturn, 66⅔%; Elmora, 60%; Star, 30&10%
Swan's:
Nos. 7565 to 7568, 60%; No. 7540, 40&10%

## Eave Trough, Galvanized—

| Territory. | Gal. Steel. | Copper. |
|---|---|---|
| *Northeastern* | *75&10&5%* | *50&10%* |
| *Eastern* | *80%* | *50&10%* |
| *Central* | *80&10&5%* | *50&10%* |
| *Northwestern* | *80&10&5%* | *50&10%* |
| *Western* | *80&5%* | *50&5%* |
| *Tennessee* | *80&5%* | *50&10%* |
| *Southern* | *75&10%* | *50&5%* |
| *Southwestern* | *75&10&2½%* | *50&5%* |

*Terms, 2% for cash. Factory shipments generally delivered.*
*Note. Lower prices are made in some sections.*
See also Conductor Pipe and Elbows.

## Elbows and Shoes—

*Factory shipments, all territories: Galv. Steel, Galv. C. I. and Copper.*
*Sizes 2, 3, 4 ..... 80%*
*Sizes 1½, 2½, 3½, 5, 6 ..60&10%*
*No. 26 ..... 50%*
*No. 24 ..... 25%*
*Copper Elbows ..... 50%*

## Elbows, Stove Pipe—

Edwards, Standard Blue.. 10&10&10%
Edwards, Royal Blue..... 10&10&10%
Reeves, Dover Flat Crimp 40&10&5%

## Emery, Turkish—

| | ¼ to ⅛: | ⅝ to 220: | Flour. |
|---|---|---|---|
| *Kegs .....lb.* | *5¢* | *5½¢* | *3½¢* |
| *½ Kegs.....lb.* | *5½¢* | *5¾¢* | *3¾¢* |
| *¼ Kegs.....lb.* | *5½¢* | *6¢* | *4¢* |

*10-lb. cans, 10 in case....6½¢ 7 ¢ 6 ¢*
*10-lb. cans, less than 10.....10 ¢ 10 ¢ 8 ¢*
*Less quantity..10 ¢ 10 ¢ 8 ¢*
*NOTE.—In lots 1 to 3 tons a discount of 10% is given.*

### Extensions, Bit—
Ford's Auger Bit Extensions....40&5%

### Extractors, Lemon Juice—
—See *Squeezers, Lemon.*

## Fasteners, Blind—
Zimmerman's Jap'd and Galv., 50 & 5%; Bronze and Plated.....50%
Walling's .....50%
Upson's Patent.....40%

### Cord and Weight—
Ives, ℔ gro., $1.08.....10%
Titan, ℔ gro., $0.66.....10%

### Corrugated—
Acme Corrugated Fasteners.....70%

### Faucets—
*Cork Lined.....50&10@60%*
*Metallic Key, Leather Lined, .. 60&10@70%*
*Red Cedar.....40&5@40&10&5%*
*Petroleum .....70&10@75%*
B. & L. B. Co.:
Metal Key.....60&10%
Star .....60%
West Lock.....50&10%
John Sommer's Peerless Tin Key....40%
John Sommer's Boss Tin Key.....50%
John Sommer's Victor Mtl. Key.50&10%
John Sommer's Duplex Metal Key..60%
John Sommer's Diamond Lock.....40%
John Sommer's I.X.L. Cork Lined..50%
John Sommer's Reliable Cork Lined.. 50&10%
John Sommer's Chicago Cork Lined.60%
John Sommer's O. K. Cork Lined...50%
John Sommer's No Brand, Cedar....50%
John Sommer's Perfection, Cedar....40%
Self Measuring:
Enterprise, Self Measuring and Pump, ℔ doz., $36.00.....40&10%
Lane's, ℔ doz., $36.00.....40&10%
National Measuring, ℔ doz, $36.40&10%

### Felloe Plates—
See *Plates, Felloe.*

### Files— Domestic—
*List Nov. 1, 1899.*
*Best Brands.....70&10@75&10%*
*Standard Brands.....75&10@80%*
*Lower Grade....75&10&10@80&10%*
Gold Medal.....70%
McCaffrey's American Standard, 60&10&10%

### Imported—
*Stubs' Tapers, Stubs' list, July 24, '97.....33⅓@40%*

### Fixtures, Fire Door—
Richards Mfg. Co.:
Universal, No. 103; Special, No. 104 .....$3.75
Fusible Links, No. 96.....50%
Expansion Bolts, No. 107.....60&10%

### Grindstone—
*Net Prices:*

| | | | | |
|---|---|---|---|---|
| *Inch* | *15* | *17* | *19* | *21* |
| *Per doz* | *$3.60* | *3.85* | *4.15* | *4.65* |

Peck, Stow & Wilcox Co.:

| In | 15 | 17 | 19 | 21 | 24 |
|---|---|---|---|---|---|
| | $4.00 | 4.40 | 4.75 | 5.50 | 6.50....30% |

Reading Hardware Co.....60%

### Fodder Squeezers—
See *Compressors.*

### Forks—
American Fork & Hoe Co.:
Iowa Dig-Ezy Potato.....70&5%
Hay, Regular, 2-tine.....45&20&12½%
Hay, Regular, 4-tine.....60&7½&5%
Champion, Hay.....60&12½%
Acme, Hay.....60&20%
Manure, Regular, 4-tine.....65&5%
Manure, Regular, 5 and 6 tine...70%
Champion, Manure.....65&5%
Columbia, Manure.....70%
Acme, 4-tine.....60&10&5%
Round Shoulder Header, 4-tine..65%
Champion, Header.....65%
Dakota, Header.....65%
Kansas Header.....65%
Wood, Barley.....35&5%
Steel, Barley.....66⅔%
Columbia, Spading.....70&7½&5%

### Frames— Wood Saw—
*White, S'g't Bar, per doz.75@80¢*
*Red, S'g't Bar, per doz.$1.00@1.25*
*Red, Dbl. Brace, per doz.$1.40@1.50*

### Freezers, Ice Cream—

| *Qt.....* | *1* | *2* | *3* | *4* | *6* |
|---|---|---|---|---|---|
| *Each....* | *$1.25* | *$1.60* | *$1.90* | *$2.20* | *$2.80* |

### Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

### Fry Pans—See *Pans, Fry.*

### Fuse— *Per 1000 Feet.*
*Hemp .....$2.75*
*Cotton .....3.20*
*Waterproof Sgl. Taped..3.65*
*Waterproof Dbl. Taped..4.40*
*Waterproof Tpl. Taped..5.15*
10&2½%

## Gates, Molasses and Oil—
*Stebbins' Pattern.....80@80&5%*

### Gauges—
*Marking, Mortise, &c.,50@50&10%*
Chapin-Stephens Co.:
Marking, Mortise, &c.....50&50&10%
Disston's Marking, Mortise, &c..67½%
Wire, Brown & Sharpe's.....33⅓%
Wire, Morse's .....25%
Wire, P. S. & W. Co.....33⅓%

### Gimlets— Single Cut—
*Numbered assortments, per gro.*
*Nail, Metal, No. 1, $2.00; 2, $2.30*
*Spike, Metal, No. 1, $4.00; 2, $4.30*
*Nail, Wood Handled, No. 1, $2.30; 2, $2.60*
*Spike, Wood Handled, No. 1, $4.30; 2, $4.60*

### Glass, American Window
See *Trade Report.*

### Glasses, Level—
Chapin-Stephens Co.....65@65&10%

### Glue, Liquid Fish—
*Bottles or Cans, with Brush, 25&10@50%*
Elwell's .....40%

### Grease, Axle—
*Common Grade...gro.$6.00@$6.50*
Dixon's Everlasting, 10-lb. pails, ea. 85¢; in boxes, ℔ doz., 1 lb, $1.20; 2 lb.....$2.00
Helmet Hard Oil.....25%

### Griddles, Soapstone—
Pike Mfg. Co.....33⅓@33⅓&10%

### Grinders—
Pike Mfg. Co.:
Hand and Foot Power, Pyko Nos. 1, 2, 3; Pyko Primo; Pyko Peerless; Pyko Spiral (foot power).33⅓%
Mower Knife and Tool, $5.00..40&10%
Royal Mfg. Co.:
Alundum Grinding Machines, each, Nos. 01, $1.75; 1A, $2.50; 10, $5.00 .....30%
Alundum Sickle Grinders, each, Nos. 20, $5.00; 20A, $6.00; 20A Combined, $6.50.....30%
Alundum Disc Grinders, each, $2.50 .....30%

### Grindstones—
Pike Mfg. Co.:
Improved Family Grindstones. ℔ inch, ℔ doz., $2.00.....33⅓%
Richards Mfg. Co., Eli and Cycle, Ball Bearing, mounted.....40%

### Grips, Nipple—
Perfect Nipple Grips.....40&10&2%

## Halters and Ties—
*Cow Ties.....65@65&10%*
Bridgeport Chain Co.:
Triumph Coil and Halters.35&2½@40%
Brown Coil and Halters...15@50&5%
Brown Cow Ties.....50&5@50&10&5%
Brown Tie Outs.....70&10@75&5%
Covert Mfg. Co.:
Web .....30&2%
Jute Rope.....35%
Sisal Rope.....20%
Cotton Rope.....45%
Hemp Rope.....45%
Oneida Community:
Am. Coil and Halters.....40@40&5%
Am. Cow Ties.....15@50%
Niagara Coil and Halters...45@50&5%
Niagara Cow Ties.....45&5@50&10&5%

### Hammers—
### Handled Hammers—
Heller's Machinists'....55&10@55&10&5%
Heller's Farriers.....40&5@40&10&5%
Peck, Stow & Wilcox Co.:
Crucible Steel.....40&10@50%
Farriers' .....40&10@50%
Riveting .....40&10@50%
Machinists' .....66⅔@5%
Blacksmiths' .....50%
Fayette R. Plumb:
A. E. Nail.....40&2½@40&12½%
Eng. and B. S. Hand.50&10&5@60&5%
Machinists' Hammers.....60&10&5%
Rivet and Tinners'.40&7½@40&12½&5%
Victor Magnetic Tack, ℔ gro....$7.75

### Heavy Hammers and Sledges—
*Under 3 lb., per lb., 50¢...80&10%*
*3 to 5 lb., per lb., 40¢...80&10&10%*
*Over 5 lb., per lb., 30¢.....*
*Over 5 lb., per lb., 30¢.80&10&10%*

### Handles—
### Agricultural Tool Handles
*Axe, Pick, &c....60&10@60&10&5%*
*Hoe, Rake, &c.....40%*
*Fork, Shovel, Spade, &c.:*
*Long Handles.....40%*
*D Handles.....40%*

### Cross-Cut Saw Handles—
Atkins' .....40%
Champion .....50%
Disston's .....50%

### Mechanics' Tool Handles—
*Auger, assorted...gro.$3.00@$3.50*
*Brad Awl.....gro.$1.65@$1.75*
*Chisel Handles, Ass'd, per gro.:*
*Tanged Firmer, Apple, $2.40@ $2.65; Hickory.....$2.15@2.40*
*Socket Firming, Apple, $1.75@ $1.95; Hickory.....1.60@1.75*
*Socket Framing, Hickory, $1.60@$1.75*
*File, assorted.....gro.$1.30@$1.40*
*Hammer, Hatchet, &c., 60&10@60&10&5%*
*Hand Saw, Varnished, doz., 80& 85¢; Not Varnished.....65@75¢*
*Plane Handles:*
*Jack, doz., 30¢; Fore, doz...45¢*
Chapin-Stephens Co.:
Carving Tool.....30@30&10%
Chisel .....60@60&10%
File and Awl.....60@60&10%
Saw and Plane.....30@30&10%
Screw Driver.....30@30&10%
Millers Falls Adj. and Ratchet Auger Handles .....15&10%
Nicholson Simplicity File Handle.... ℔ gro. $0.85@$1.50
J. L. Osgood:
Indestructible File and Tool, ℔ gro., No. 1, $8.00; No. 2, $8.50; No. 3, $9.00; No. 4, $9.50; No. 5, $10.00.. .....gro. lots 10%
W. A. Zelnicker Supply Co.:
Hammer, ℔ doz., 12 in., $2.00; 14 in., $2.00; 16 in., $2.30; 18 12., $2.50; 20 in., $2.70; 22 in., $3.00; 24 in., $3.30; 26 in., $3.50; 30 in., $3.80.
Sledge, ℔ doz., oval, 30 in., $3.80; octagon, 30 in., $3.80; oval, 36 in., $4.00; octagon, 36 in., $4.00.
Axe, ℔ doz., 28 to 34 in., $5.60; 36 in., $5.80.
Adze, ℔ doz., 36 in., $5.80; 36 in., $7.80.
Pick, ℔ doz., R. R., 36 in., $8.00; coal, 34 in., $5.80.
Hatchet, ℔ doz., 12 to 14 in., $2.00.
50%

### Hangers—
*NOTE.—Barn Door Hangers are generally quoted per pair, without track and Parlor Door Hangers per double set with track, &c.*
Chicago Spring Butt Co.:
Friction .....25%
Oscillating .....25%
Big Twin.....25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door.....50%
Elevator .....30%
Railroad .....50%
Cronk & Carrier Mfg. Co.:
Loose Axle.....60&10%
Roller Bearing.....70%
Griffin Mfg. Co.:
Solid Axle, No. 10, $12.00..60&10%
Roller Bearing, No. 11, $15.00, 60&10%
Roller Bearing, Ex. Hy., No. 22, $18.00.....60&10%
Bull Dog, $24.00.....70%
Lane Bros. Co.:
Parlor, Ball Bearing, $1.00; Standard, $3.15; No. 105, $2.85; New Model, $2.80; New Champion per set of 4 Hangers, complete with track.....$2.25
Barn Door, Standard.....60&10%
Hinged .....net $6.08
Covered .....60&5%
Special .....70&5%
Trolley Hangers and track...50%
Lawrence Bros.:
Cleveland .....70&7½%
Clipper, No. 75.....60%
Crown .....55&10%
Cyclone, No. 40.....net $6 50
Tandem, No. 50.....net $7.50
New York.....55&10%
Trolley, No. 30, ℔ pair.....$1.25
McKinney Mfg. Co.:
Roller Bearing, Nos. 1 and 2..70%
Anti-Friction .....60%
Hinged Hangers, King Charm.60%
Richards Mfg. Co.:
Hangers, Nos. 47, 48, 147, 247, 60&5%
Pioneer Wood Track, No. 3..$2.25
Roller B'r'g St'l Track No. 12.$2.20
Roller B'r'g St'l Track No. 13.$2.50
Roller B'r'g, Nos. 39, 41, 43, 70&7½%
Hero, Adj. Track No. 19..50&10%
Adjustable Track Tandem Trolley Track No. 16.....50&10%
Seal, Steel Track No. 8.....$2.25
Auto Adj. Track No. 22..50&5%
Trolley B. D. No. 17, $1.25; F. D. No. 120, $2.25; No. 121, $2.45; No. 150.....$2.50
Safety Underwriters F. D. No. 101 .....50%
Tandem No. 41..2½ and 3 60&10%
Palace, Adjustable Track No. 132 .....50&5%
Royal, Adjustable Track No. 122 .....50&10%
Ives' Wood Track No. 1.....$2.25
Trolley B. D. No. 20.....50&10%
Trolley B. D. No. 24, $1.30; No. 27, $1.40; No. 28.....$1.60
Roller Bearings, Nos. 37, 38, 39, 41, 43, 44, Sizes 1 and 2.70&7½%
Anti-friction, No. 42; No. 44, sizes 2½ and 3.....60%
Hinged Tandem No. 48....60&5%
Folding Door B. B. Swivel No. 135 .....40%
Taylor & Boggis F'y Co.'s Kidder's Roller Bearing, ℔ doz., 4 in., $12.00; 5 in., $14.00..40&10%
Myers' Stayon Hangers.....60%
Extra 5@10% often given.

### Hangers— Garment—
Pullman Trouser, ℔ gro., No. 1 $9.00; No. 4, $21.00; No. 5, $16.50; No. 8, Black Enamel, $7.50; No. 10, $21.00; No. 12, $8.00; No. 15, Rods, $9.00; No. 18, Loops.....$10.00
Victor Folding.....℔ gro. $9.60

### Gate—
Myers' Patent Gate Hangers, ℔ doz. net .....50%

### Joist and Timber—
Lane Bros. Co.....35%

### Hasps—
Griffin's Security Hasp.....50&10%
McKinney's Perfect Hasp, ℔ doz..60%

### Hatchets—
*Regular list, first qual.40&12½@—*
*Second quality.....50&10&5@—*

### Heaters, Carriage—
Clark, No. 5, $1.25; No. 5B, $1.50; No. 3, $1.75; No. 3D, $2.00; No. 7D, $2.25; No. 3E, $2.50; No. 1, $3.00.....25%
Clark Coal, ℔ doz., $0.75.....20%

### Hinges—
### Blind and Shutter Hinges
*Surface Gravity Locking Blind:*
*Doz. Sets with Fastenings, No. 1, $0.70; No. 3, $1.25; No. 5, $2.65.*
*Mortise Shutter.....80%*
*Mortise Reversible Shutter...80%*
North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%
Charles Parker Co.....70@75%
Parker Wire Goods Co.
Hale & Benjamin Automatic Blind Hinges .....20%
Hale's Blind Awning Hinges No. 110, for wood, $9.00; No. 111, for brick, $9.00.....20%
Reading's Gravity.....60%
Stanley's Steel Gravity Blind Hinges, No. 1617½, ℔ doz. sets, without screws, $0.95; with screws, $1.25.
Wrightsville Hardware Co.:
O. S., Lull & Porter.....75&5%
Acme, Lull & Porter.....75%
Queen City Reversible.....75%
Shepard's Noiseless, Nos. 60, 65, 55 .....75&5%
Niagara, Gravity Locking, Nos. 1, 3 & 5.....75&5%
Clark's O. P., No. 1.....75&10%
Clark's O. P., Nos. 3 and 5....75&5%
Tip Pat'n, No. 1.....75&10%
Clark's No. 3.....75&5%
Buffalo Gravity Locking, Nos. 1, 3 & 5.....70&10&5%
Shepard's Double Locking.....75%
Champion Gravity Locking.....75&5%
Pioneer .....75&10%
Empire .....65%
W. H. Co.'s Mortise Gravity Locking, No. 2.....60&10%

### Gate Hinges—
*Clark's or Shepard's—Doz. sets:*

| *No.* | *1* | *2* | *3* |
|---|---|---|---|
| *Hinges with L't'chs* | *$2.00* | *2.70* | *5.00* |
| *Hinges only* | *1.25* | *1.90* | *3.50* |
| *Latches only* | *.70* | *.75* | *.35* |

*New England:*
*With Latch.....doz..@$2.00*
*Without Latch.....doz..@$1.60*
*Reversible Self-Closing:*
*With Latch.....doz..@$1.75*
*Without Latch...doz. ...@$1.35*
*Western:*
*With Latch.....doz. $1.75*
*Without Latch.....doz..$1.15*
Wrightsville Hardware Co.:
Shepard's or Clark's Hinges and Latches, Hinges only or Latches only, Nos. 1, 2 or 3.....70%

### Miscellaneous—
Griffin Mfg. Co., Fleur de Lis Surface Hinges, ℔ doz. prs.....$1.00

### Pivot Hinges—
Bommer Bros. Pivot, Ball Bearing .....40%
Lawson Mfg. Co. Matchless.....30%

### Spring Hinges—
*Holdback, Cast Iron...$6.75@$7.00*
*Non-Holdback, C'st Iron$6.50@$6.75*
J. Bardsley:
Bardsley's Non-Checking Mortise Floor Hinges.....40%
Bardsley's Patent Checking.33⅓%
Bommer Bros.:
Spring Butt Hinges.....40%
Surface Floor, Ball Bearing .....40%
Mortise Floor, Ball Bearing.40%
Lavatory Hinges.....40%
Non-Holdback Screen Door, Nos. 2000 and 900.....40%
Holdback Screen Door, No. 999.....℔ gro. $9.00
Chicago Spring Butt Co.:
Chicago Spring Hinges.....25%
Triple End Spring Hinges....50%
Chicago (Ball Bearing) Floor.50%
Garden City Engine House...25%
Keene's Saloon Door.....25%
Columbian Hardware Co.:
Acme, Wrought Steel.....30%
Acme, Brass.....25%
American .....30%
Columbia, ℔ gr., No. 14, $9.00; No. 18.....$25.00
Columbia, Adj., No. 7, ℔ gr.$12.00
Gem, new list.....30%
Clover Leaf and Acorn, per gro. .....$12.00
Oxford, new list.....30%
Floor Spring Hinges.....65&10%
Columbian Steel.....65&10%
Lawson Mfg. Co.:
Matchless Spring Hinges.....30%
Matchless Jamb Hinges.....30%
Richards Mfg. Co.:
Superior Double Acting Floor Hinges .....40%
Shelby Spring Hinge Co.:
Buckeye All Steel Holdback Screen Door.....℔ gr. $9.00
Chief Ball Bearings Floor Hinge .....50%
Ball Bearing Door.....25%
No. 777, Sheet Steel Holdb'k, ℔ gr. pr.....$9.00
Standard Mfg. Co.:
Champion Double Acting Door Hinge .....25&10&10%
Standard Double Acting Floor Hinge .....25&10&10%
Superior Spring Hinge Co.:
Superior Floor Hinges.....33⅓%
Spring Hinges.....33⅓%
Extra 10% often given on most of these Hinges.

### Wrought Iron Hinges—
*Strap and T Hinges, &c., list February 10, 1908:*
*Light Strap Hinges..50&10%*
*Heavy Strap Hinges..60&5%*
*Light T Hinges.....50%*
*Heavy T Hinges.....40%*
*Extra Hvy. T Hinges.50&10%*
*Hinge Hasps.....33⅓%*
*Cor. Heavy Strap....60&5%*
*Cor. Ex. Heavy T...50&10%*
Extra 10&7½%.
*Screw Hook and Strap. 6 to 12 in..lb.3½¢ 1½ to 20 in..lb.3¼¢ 22 to 36 in..lb.3 ¢*
*Screw Hook and Eye: ⅜ to 1 inch.....lb.6¼¢ ⅝-inch .....lb.7½¢ ½-inch .....lb.8½¢*

### Hitchers, Stall—
Covert Mfg. Co., Stall Hitchers..30&2%

### Hods— Coal—
*M'f'gr's list, price per gross:*

| *Inch* | *15* | *16* | *17* | *18* |
|---|---|---|---|---|
| *Galv. Open* | *$35* | *$39* | *$42* | *$46* |
| *Jap. Open* | *26* | *28* | *31* | *35* |
| *Galv. Funnel* | *43* | *48* | *52* | *56* |
| *Jap. Funnel* | *33* | *36* | *59* | *43* |

10&7½&5%

### Masons' Etc.
Cleveland Wire Spring Co.:
Steel Brick, No. 162.....each $1.65
Steel Mortar, No. 158.....each $1.35

### Hoes— Eye-

*Scovil and Oval Pattern, 60&10@60&10&10%*
*Grub, list Feb. 23, 1899, 70&10@70&10&10%*
D. & H. Scovil....27½%
Am. Fork & Hoe Co. (Scovil Pattern)....60&5%

### Handled—

Cronk's Weeding, No. 1,$2.00; No. 2,$2.50
Star Double Bit....$2.50
American Fork & Hoe Co.:
Regular, Cotton....75&10&5&2½%
Crescent, Cultivator....75&2½%
Mattock, Senior....70%
Mattock, Junior....70%
Sprouting....50%
Tobacco, Harper's....66⅔&15&10%
Warren....55&10&10&5%
Ivanhoe....65&15&10%
Cultivator, B B 6....70&10&10&5%
Cultivator, B B 6½....70&10&10&5%
Weeding, Acme....72½&10&2½%
Scuffle, Lightning....60&5%

### Hoisting Apparatus—

See *Machines, Hoisting.*

### Holders— Bit—

Angular, ℔ doz. $24.00....45&10%

### Door—

Bardsley's, Iron, 40%; Brass and Bronze....25%
Empire....50%
Pullman....25%
Richards Mfg. Co.: No. 117, Ever-ready, 40%; Nos. 118, 119, Sure Grip....50%
Superior....33⅓%

### File and Tool—

Nicholson File Holders and File Handles....33⅓&40%

### Fruit Jar—

Triumph Fruit Jar Holder, ℔ gross, $18.00; ℔ doz....$2.00

### Trace and Rein—

Fernald Double Trace Holder, ℔ doz. pairs....$1.25
Dash Rein Holder, ℔ doz....$1,25

### Hones—Razor—

Pike Mfg. Co., Belgian and Swaty, 50%; German....33⅓%

### Hooks—Cast Iron—

Bird Cage, Reading....40%
Clothes Line, Reading List....40%
Coat and Hat, Reading....45&20%
Coat and Hat, Wrightsville....60&5%
Harness, Reading List....40%

### Wire—

*Belt, Nos. 1 to 15....75&10@80%*
*Wire C. & H. Hooks..80@80&10%*
Bradley Metal Clasp Wire, Coat and Hat, 75&10@80%; Ceiling..75&10@80%
Columbian Hdw. Co., Gem....75&10%
Parker Wire Goods Co., King..75&10%
Wire Goods Co.:
Acme, 60&10%; Chief, 70&10%; Crown, 75%; Czar, 65&10%; V Brace, 75%; Czar Harness, 50%; Ceiling, 75%.

### Wrought Iron—

*Box, 6 in., per doz., $0.90; 8 in., $1.15.*
*Cotton....doz. $1.25@$1.50*
Wrought Staples, Hooks, &c.—See Wrought Goods.

### Miscellaneous—

*Hooks, Bench,* see *Stops, Bench.*
*Bush, Light, doz., $6.20; Medium, $6.75; Heavy, $7.65*
*Grass, best, all sizes, per doz., $2.75@$3.00*
*Grass, common grades, all sizes, per doz....$1.25@$1.50*
*Whiffletree....lb. 5¼@6¢*
*Hooks and Eyes:*
*Brass....60@60&10%*
*Malleable Iron....70@70&10%*
Covert Mfg. Co. Gate and Scuttle Hooks....40%
Turner & Stanton Co. Cup and Shoulder....85&10%
Bench Hooks—See Bench Stops.
Corn Hooks—See Knives, Corn.

### Horse Nails—

See *Nails, Horse.*

### Horseshoes—

See *Shoes, Horses.*

### Hose, Rubber—

*Garden Hose, ¾-inch:*
*Competition....ft. 6@6½¢*
*3 ply Guaranteed....ft. 8½@9¢*
*4-ply Guaranteed....ft. 9½@12¢*
*Cotton Garden, ¾-in., coupled:*
*Low Grade....ft. 8@ 9c*
*Fair Quality....ft. 10@11¢*

### Irons— Sad—

*From ¼ to 10....lb. 2½@2¾¢*
*B. B. Sad Irons....lb. 3½@3½¢*
*Mrs. Potts', cents per set:*

| | Nos. 50 | 55 | 60 | 65 |
|---|---|---|---|---|
| *Jap'd Cups* | 86 | 93 | 96 | 93 |
| *Tin'd Cups* | 91 | 88 | 1.01 | 98 |

*New England Pressing..lb. 3¼@4¢*

### Bar and Corner—

Richards Mfg. Co., Bar, 60&10%; Corner....60%

### Pinking—

*Pinking Irons....doz. 60@65¢*

### Irons, Soldering

See *Coppers.*

### Jacks, Wagons—

Covert Mfg. Co.:
Auto Screw....30&2%; Steel, 45%
Lockport....50%
Lane's Steel....30&5%
Richards' Tiger Steel, No 130...50&10%
Smith & Hemenway Co.'s....25%

### Ladder—

Richards Mfg. Co. Ladder Jacks..50%

### Jointers—

Pike Mfg. Co., Saw Jointers, $7.00..40%

### Kettles—

*Brass, Spun, Plain....20@25%*
Enameled and Cast Iron—See Ware, Hollow.

### Knives—

### Butcher, Kitchen, &c.—

Foster Bros.' Butcher, &c....30%
Wilkinson Shear & Cutlery Co....60%

### Corn—

Columbian Cutlery Co., Wilcut Brand Knives and Hooks....60%
American Fork & Hoe Co.:
Easy Cut, ℔ doz., No. 10 C H...$2.10
Easy Cut, ℔ doz., No. 10 B C H.$2.20
Acme, ℔ doz....$2.35
Dent, ℔ doz....$2.35
Adjustable, Serrated, ℔ doz....$1.90
Serrated, ℔ doz....$1.85
Yankee, No. 1 C H....$1.35
Yankee, No. 2 C H....$1.15

### Drawing—

*Standard List....80&10@—%*
C. E. Jennings & Co., Nos. 45, 46, 25&7½%
Jennings & Griffin, Nos. 41, 42, 66⅔&7½%
Swan's....66⅔@70%
Watrous....16⅔%
L. & I. J. White....20&5@25%

### Hay and Straw—

*Serrated Edge, per doz. $5.00@5.50*
Iwan's Sickle Edge....℔ doz. $9.50
Iwan's Serrated....℔ doz. $10.00

### Miscellaneous—

*Farriers' ....doz. $2.60@3.55*
Wostenholm's ....℔ doz. $3.00@3.25

### Knobs—

*Base, 2½-inch, Birch or Maple, Rubber Tip....gro. $1.25@1.40*
*Carriage, Jap., Drive, all sizes, gro. 35@40¢*
*Door, Mineral....doz. 65@70¢*
*Door, Por. Jap'd....doz. 70@75¢*
*Door, Por. Nickel..doz. $2.05@2.15*
Bardsley's Wood Door, Shutters, &c. 15%

### Lacing, Leather—

See *Belting, Leather*

### Ladders, Store, &c.—

Lane's Store....25%
Myers' Noiseless Store Ladders....50%
Richards Mfg. Co.:
Improved Noiseless, No. 112....50%
Climax Shelf, No. 113....50%
Trolley, No. 109....50%

### Ladles, Melting—

L. & G. Mfg. Co., Melting and Plumbers'....25%
P., S. & W....40&10%
Reading....60%

### Lamps,—

Hammer's M. I. Hand....45%

### Lanterns—Tubular—

*Regular, No. 0....doz. $4.35@4.50*
*Side Lift, No. 0....doz. $4.60@4.75*
*Hinge Globe, No. 0. doz. $4.60@4.75*
*Other Styles....40@40&10%*

### Bull's Eye Police—

*3-inch....$3.75@4.00*

### Latches— Thumb—

*Roggin's Latches, Jap'd, with Screws....doz. 35@40¢*

### Door—

Cronk & Carrier Mfg. Co., No. 101, ℔ doz. $2.00
Richards' Bull Dog, Heavy, No. 125....50&5%
Richards' Trump, No. 127....$1.50

### Leaders, Cattle—

*Small....doz. 50¢; large, 60¢*
Covert Mfg. Co.:
Cotton, 45%; Hemp, 45%; Jute, 35%; Sisal, 20%.

### Leathers, Pump—

See *Pumps—*

### Lifters, Transom—

R. & E....10%

### Lines—

| *Wire Clothes, Nos.* | *18* | *19* | *20* |
|---|---|---|---|
| *100 feet* | *$2.30* | *1.95* | *1.75* |
| *75 feet* | *$1.95* | *1.65* | *1.50* |

Samson Cordage Works:
Solid Braided Chalk, Nos. 0 to 3..40%
Solid Braided Masons'....30%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50....℔ gr. 20%
Masons' Lines, Shade Cord, &c.; White Cotton, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50; Colors, No. 3½, $1.75; No. 4, $2.25; No. 4½, $2.75; Linen, No. 3½, $2.50; No. 4, $3.50; No. 4½, $4.50....20%
Tent and Awning Lines: No. 5, White Cotton, $7.50; Drab Cotton $8.50....20%
Clothes Lines, White Cotton: 50 ft., $2.75; 60 ft., $3.25; 70 ft., $3.75; 75 ft., $4.00; 80 ft., $4.25; 90 ft., $4.75; 100 ft., $5 25....20%
Turner & Stanton Co.:
Solid Braided Chalk, Masons' and Awning Lines....40%
Clothes Lines, White Cotton....20%
Shade Cord, Cotton or Linen....20%

### Locks— Cabinet—

*Cabinet Locks....33⅓@33⅓@7%*

### Door Locks, Latches, &c.—

*NOTE.—Net Prices are very often made on these goods.*
Reading Hardware Co....40%
R. & E. Mfg. Co....10%

### Padlocks—

R. & E. Mfg. Co. Wrought Steel and Brass....75&10%

### Sash, &c.—

Ives' Patent:
Crescent....10%
Automatic Gravity Metal Sash, ℔ gro., $149.58....10%
Window Ventilating....10%
Pullman Patent Ventilating Lock..25%
Reading Sash Locks....40%
Taylor Mfg. Co., Perfect Ventilating, ℔ doz....$0.75@$1.00

### Machines—Boring—

*Com. Upr't, without Augers, $2.00@2.25*
*Com. Angl'r, without Augers, $2.25@2.50*
Ford Auger Bit Co....$22.00
Jennings', Nos. 1 and 4....25&7½%
Millers' Fails....5.75
Snell's, Upright, $2.65; Angular, $2.90
Swan's Improved....40&10%

### Corking—

Reisinger Invincible Hand Power... ℔ doz. $48.00

### Fence—

Williams' Fence Machines....each. $5.50

### Hoisting—

Moore's Anti-Friction Chain Hoist.30%
Moore's Hand Hoist, with Lock Brake....20%
Moore's Cyclone High Speed Chain Hoist....25%

### Ice Cutting—

Chandler's....12½%

### Washing

| Boss Washing Machine Co.: | Per doz. |
|---|---|
| Boss No. 1 | $57.00 |
| Boss Rotary | $57.00 |
| Champion Rotary Banner No. 1 | $57.00 |
| Standard Champion No. 1 | $50.00 |
| Standard Perfection | $27.00 |
| Cincinnati Square Western | $33.00 |
| Uneeda American, Round | $33.60 |

### Mallets—

*Hickory....45&5@50%*
*Lignumvitæ....45&5@50%*
*Tinners' Hickory and Applewood....doz. 45&5@50%*

### Mangers, Stable—

Swett Iron Works....50%

### Mats, Door—

Acme Flexible Steel....50%
Elastic Steel (W. G. Co.), new list.50%

### Mattocks—

See *Picks and Mattocks.*

### Milk Cans—See *Cans, Milk.*

### Mills, Coffee, &c.—

Enterprise Mfg. Co.:
Coffee....20@25%
Shell and Corn....25&10%
National list Jan. 1, 1902....30%
Parker's Columbia and Victoria..33⅓%
Parker's Box and Side....50&10%
Swift, Lane Bros. Co....30%

### Motors, Water—

Divine's Red Devil....30%

| $2.50 | 3.50 | 10.00 | 15.00 | |
|---|---|---|---|---|
| No. 1. | 2 | 3 | 4 | |
| Lippincott's: | | | | |
| No. | 1 | 2 | 3 | 4 |
| | $2.50 | 3.50 | 10.00 | 15.00..33⅓% |

Pike Mfg. Co., Tool and Knife Grinding....33⅓%

### Mowers, Lawn—

*NOTE.—Net prices are generally quoted*
*Cheapest, 10-in., $2.00; advance 10¢ for each size.*
*Cheap, 10-in., $2.25; advance 15@20¢ for each size.*
*Better Grade, 10-in., $3.00; advance 25¢ for each size.*

| | *12* | *14* | *16* | *18-in.* |
|---|---|---|---|---|
| *High Grade...* | *$4.50* | *4.75* | *5.00* | *5.25* |
| Continental | | | | 60% |
| Great American | | | | 70% |
| Great American Ball B'r'g, new list. | | | | 70% |
| Quaker City | | | | 70% |
| Pennsylvania | | | | 60% |
| Pennsylvania, Jr., Ball Bearing | | | | 50&10&5% |
| Pennsylvania Golf | | | | 50% |
| Pennsylvania Horse | | | | 33⅓&5% |
| Pennsylvania Pony | | | | 40&5% |

### Nails—

*Wire Nails and Brads, Miscellaneous....85&5@85&10%*
*Cut and Wire,* See *Trade Report.*
*Hungarian, Finishing, Upholsterers', &c.* See *Tacks.*

### Horse—

| Nos. | 6 | 7 | 8 | 9 | 10 | |
|---|---|---|---|---|---|---|
| Anchor | 23 | 21 | 20 | 19 | 18 | .. ℔ lb. net, 12¢ |
| Coleman | 13 | 12 | 12 | 11 | 11 | net ℔ lb |
| New Haven | 23 | 21 | 20 | 19 | 18 | .. ℔ lb. net, 12¢ |
| Livingston | 19 | 18 | 17 | 16 | 16 | ....10% |
| Wrenn | | | | | | ℔ lb 8½¢ |

*Jobbers' Special Brands, per lb. 9¢*

### Picture—

| | 1½ | 2 | 2½ | 3 in. |
|---|---|---|---|---|
| *Brass Hd. gro.* | *.45* | *.55* | *.60* | *.70* |
| *Por. Head, gro.* | *1.10* | *1.10* | *1.10* | *1.10* |

### Upholsters—

*Brass....30%*
*Plated....30&10%*

### Nippers—

See *Pliers and Nippers.*

### Nipples—

Standard Nipple Co.:
Wrought Pipe Nipples....80%

### Nuts— *Blank or Tapped.*

| *Cold Punched:* | *Off list* |
|---|---|
| *Square* | *5.60¢* |
| *Hexagon* | *6.20¢* |
| *Square C. T. & R.* | *6.00¢* |
| *Hexagon, C., T. & R.* | *6.80¢* |
| *Hot Pressed:* | |
| *Square* | *6.40¢* |
| *Hexagon* | *6.60¢* |

### Oakum—

*Best....lb. 6½¢*
*U. S. Navy....lb. 6 ¢*
*Navy....lb. 5 ¢*
*Plumbers' Spun Oakum..2¾@3 ¢*

### Oil—

Pike Mfg. Co., Stonoil....40%

### Oil Tanks—See *Tanks, Oil.*

### Oilers—

*Steel, Copper Plated....75%*
*Chase or Paragon:*
*Brass and Copper....50&10%*
*Zinc....65&10@70%*
*Railroad....60&10&10%*
Malleable, Hammers' Improved, Nos. 11, 12 and 13, 10%; Old Pattern, Nos. 1, 2, 3, 4, 50%.
American Tube & Stamping Co.:
Spring Bottom Cans....70@70&10%
Railroad Oilers, &c....60@60&10%
Maple City Mfg. Co.:
Spring Bottom Cans....70@70&10%
Railroad Oilers, &c....60@60&10%

### Openers—Packing Box—

Herculever, ℔ doz., $24....30%

### Can Openers—

| | *Per doz.* |
|---|---|
| *Sprague, Iron Handle* | *30@35¢* |
| *Sprague, Wood Handle* | *40¢* |
| *Sardine Scissors* | *$1.75@3.00* |

Can and Bottle Openers, ℔ doz., net: Yankee, $0.75@$0.85; Little Gem, $0.50@$0.65; Nifty....$0.75

### Egg—

Hartigan Nickel Plate, ℔ doz., $2.00; Silver Plate, $4.00.

### Packing—

*Asbestos Packing, Wick and Rope, any quantity....18@20¢*

### Rubber—

*(Fair quality goods.)*
*Sheet, C. I....11@12¢*
*Sheet, C. O. S....11@12¢*
*Sheet, C. B. S....12@13¢*
*Sheet, Pure Gum....40@45¢*
*Sheet, Red....40@50¢*
Jenkins' '96, ℔ lb, 80¢....25%

### Miscellaneous—

*American Packing....lb. 7@10 ¢*
*Cotton Packing....lb. 16@25 ¢*
*Italian Packing....lb. 9@10¢*
*Jute....lb. 4@4½¢*
*Russia Packing....lb. 9@10¢*

### Pails, Water, Well, &c.—

See *Buckets.*

### Paint—

Dixon's Silica-Graphite, in 1 gal. pails and 5 gal. kegs, 25%; packages of larger size....20%

### Pans— Dripping—

*Standard List....75&10@80%*
Edwards, Royal Blue....75%

### Fry—

*Common Lipped:*

| *Nos.* | *1* | *2* | *3* | *4* | *5* |
|---|---|---|---|---|---|
| *Per doz....* | *$0.75* | *0.85* | *0.95* | *1.15* | *1.30* |

### Refrigerator, Galva.—

| *Inch....* | *12* | *14* | *16* | *18* |
|---|---|---|---|---|
| *Per doz....* | *$1.75* | *2.25* | *2.80* | *3.15* |

### Paper—Building Paper

*Asbestos:* *lb.*
*Roll Board or Building Felt, 6 to 30 lb., per 100 sq. ft...2½¢*
*Roll Board or Building Felt, 3-32 and ⅛ in., 45 to 60 lb., per 100 sq. ft....3½¢*
*Mill Board, Sheet, 40 x 40 in., 1-32 to ½ in....3¢*
*Per roll.*
*Rosin Sized Sheathing: 500 sq. ft. Light weight, 25 lbs. to roll, 48@58¢*
*Medium weight, 30 lbs. to roll, 56@70¢*
*Heavy weight, 40 lbs. to roll, 75@78¢*
*Black Water Proof Sheathing, 500 sq. ft., 1 ply, 65¢; 2 ply, 85¢; 3 ply, $1.10; 4 ply, $1.25*
*Deafening Felt, 9, 6 and 4½ sq. ft. to lb., ton....$54.50*
*Red Rope Roofing, 250 sq. ft per roll....$1.75*

### Tarred Paper—

*1 ply (roll 400 sq. ft.), ton, $34.00@$38.00*
*2 ply, roll 108 sq. ft....65¢*
*3 ply, roll 108 sq. ft....80¢*
*Slater's Felt (roll 500 sq. ft.)....80¢*

### Sand Paper and Cloth—

*Flint and Emery....50&10%*
*Garnet Paper and Cloth....25%*

### Parers—Apple—

Goodell Co.:
Family Bay State....℔ doz. $17.00
Improved Bay State....℔ doz. $9.00
New Lightning....℔ doz. $7.00
Turn Table '98....℔ doz. $6.00
White Mountain....℔ doz. $5.00
Bonanza Improved....each $7.00
Dandy....each $3.00
Eureka Improved....each $4.00
New Century....each $21.00
Ranger....each $30.00

Livingston Nail Co.:
Daisy ..... ℔ doz. $4.00
Little Star..... ℔ doz. $5.00
Rocking Table..... ℔ doz. $6.20
Reading Hardware Co.:
Advance ..... ℔ doz. $4.00
Baldwin ..... ℔ doz. $4.00
Reading 72..... ℔ doz. $3.25
Reading 78..... ℔ doz. $6.25

### Orange—

Goodell Co., Success.....each $20.00

### Potato—

Saratoga ..... ℔ doz. $7.00
White Mountain..... ℔ doz. $6.00

### Picks and Mattocks—

*(List Jan., 1908.)*

*List* .....70&10@70&10&10%
Cronk's Handled Garden Mattock, ℔ doz., $3.00.....33⅓%

### Pinking Irons—

See *Irons, Pinking.*

### Pins, Escutcheon—

*Brass* .....50@50&10%
*Iron, list Nov. 11, '85*..60@60&10%

### Pipe, Cast Iron Soil—

*Standard, 2-6 in*.....70&10%
*Extra Heavy, 2-6 in*..75&10@80%
*Fittings, Standard and Heavy, 80&10@85%*

### Pipe, Merchant—

| | *Consumers, Carloads,* | | | |
|---|---|---|---|---|
| | *Steel.* | | *Iron.* | |
| | *Blk.* | *Galv.* | *Blk.* | *Galv.* |
| | % | % | % | % |
| *⅛ and ¼ in..* | *66* | *50* | *64* | .. |
| *⅜ in*..... | *68* | *54* | *66* | *52* |
| *½ in*..... | *70* | *58* | *68* | *56* |
| *¾ to 6 in*.... | *74* | *64* | *72* | *62* |
| *7 to 12 in*.... | *71* | *56* | *69* | *54* |

### Pipe, Vitrified Sewer—

*Carload lots.*

*Standard Pipe and Fittings, 3 to 24 in., f.o.b. factory:*
*First-class* .....87%
*Second-class* .....90%

### Pipe, Stove—

| Edwards' Nested: | Per 100 joints. C. L. | L. C. L. |
|---|---|---|
| 5 in., Standard Blue.... | $6.25 | $7.25 |
| 6 in., Standard Blue.... | 6.75 | 7.75 |
| 7 in., Standard Blue.... | 7.75 | 8.75 |
| 5 in., Royal Blue..... | 7.00 | 8.00 |
| 6 in., Royal Blue..... | 7.50 | 8.50 |
| 7 in., Royal Blue..... | 8.50 | 9.50 |
| Wheeling Corrugating Co.'s Nested: | | |
| 5 in., Uniform Color.. | $5.90 | $6.90 |
| 6 in., Uniform Color.. | 6.40 | 7.40 |
| 7 in., Uniform Color.. | 7.40 | 8.40 |

### Planes and Plane Irons—

### Wood Planes—

*Bench, first qual*.....30@30&10%
*Bench, second qual*...40@40&10%
*Molding* .....25@25&10%
Chapin-Stephens Co.:
Bench, First Quality.....30%
Bench, Second Quality.....40%
Molding and Miscellaneous.....25%
Toy and German.....30%
Union .....60%

### Iron Planes -

Chaplin's Iron Planes.....60%
Union .....60%

### Plane Irons—

*Wood Bench Plane Irons, list Dec. 12, '06*.....25%
Buck Bros.....30%
Chapin-Stephens Co.....25%
Union .....50%
L. & I. J. White.....20&5@25%

### Planters, Corn, Hand—

Kohler's Eclipse..... ℔ doz. $7.50

### Plates—

*Felloe* .....*lb*. 3¾@4¢
Avery Stamping Co.:
Standard Wrot. Steel Felloe Plates in 100 lb kegs, per 100 lb, ¾-in. to 1¼ in., $4.00 net; 1¼-in. to 2-in., inclusive, $3.75 net.

### Steel Pipe Hook—

Never-Break .....75&10%

### Pliers and Nippers -

*Button Pliers*....75&5@75&10&5%
*Gas Burners, per doz., 5 in., $1.25 @$1.30; 6 in., $1.45, $1.50.*

| *Gas pipe..* | *7* | *8* | *10* | *12-in.* |
|---|---|---|---|---|
| | *$2.00* | *$2.25* | *$2.75* | *$3.50* |

Acme Nippers .....50&5
Cronk & Carrier Mfg. Co.:
American Button.....80%
Improved Button.....75&10%
Cronk's .....60%
No. 80 Linemen's.....50%
Stub's Pattern.....45%
Combination and others.....33⅓%
Heller's Farriers' Nippers, Pincers and Tools.....40&5@40&10&5%
P. S. & W. Tinners' Cutting Nippers .....40%
Swedish Side, End and Diagonal Cutting Pliers.....50%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds....10%

### Plumbs and Levels—

Chapin-Stephens Co.:
Plumbs and Levels.....30@30&10%
Chapin's Imp. Brass Cor..40@40&10%
Pocket Levels.....30@30&10%
Extension Sights.....30@30&10%
Machinists' Levels.....40@40&10%
Disston's Plumbs and Levels....60&10%
Disston's Pocket Levels.....60&10%
Stanley's Dulex.....35%
Woods' Extension..... 33⅓%

### Points, Glaziers'—

*Bulk and 1-lb. papers*....*lb*. 9 ¢
*½-lb. papers*.....*lb*. 9½¢
*¼-lb. papers*.....*lb*.10 ¢

### Police Goods—

*Manufacturers' Lists*...25@25&5%
Tower's .....25%

### Polish—Metal, Etc—

Ladd Co.:
Putzade Liquid, ℔ gro., ½ pts., $12.00; 1 pts., $20.00; 1 qts., $40.00; ℔ doz., ½ gals., $6.35; 1 gals., $12.00.
Prestoline Liquid, No. 1 (½ pt.), ℔ doz., $3.00; No. 2 (1 qu.), $9.00..40%
Prestoline Paste.....40%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, ℔ doz. 50¢; ℔ gro. $4.50; ½ lb boxes, ℔ doz. $1.25; 1 lb boxes, ℔ doz. $2.25.
U. S. Liquid, 8 oz. cans, ℔ doz., $1.25.
Barkeepers' Friend Metal Polish, ℔ doz., $1.75.

### Stove—

Black Eagle Benzine Paste, 5 lb cans, ℔ lb 10¢
Black Eagle, Liquid, ½ pt. cans.. ℔ doz. 75¢
Black Jack Paste, ¾ lb cans, ℔ gr. $9.00
Black Kid Paste, 5 lb can...each, $0.65
Ladd's Black Beauty Liquid, per 100 tins.....$6.75
Joseph Dixon. ℔ gr. $5.75.....10%
Dixon's Plumbago..... ℔ lb 8¢
Fireside ..... ℔ gr. $2.50
Gem, ℔ gr. $4.50.....10%
Japanese ..... ℔ gr. $3.50
Jet Black..... ℔ gr. $3.50
Peerless Iron Enamel, 10 oz. cans.. ℔ doz. $1.50

### Window Polish—

Benj. P. Forbes:
Glasbright, No. 2, gal pails, ℔ doz., $24.00; each, $2.50; 1 lb cans, each .....75¢
Glasbright Powder, bbls., ℔ lb..20¢

### Poppers, Corn—

*1 qt. Square..doz.$0.80; gro.$8.75*
*1 qt. Round..doz.$0.90; gro.$10.00*
*1½ qt. Square..doz.$1.20; gro..$12.00*
*2 qt. Square..doz.$1.50; gro..$15.00*

### Post Hole and Tree Augers and Diggers—

See also *Diggers, Post Hole, &c.*

### Posts, Steel—

Steel Fence Posts, each, 6 ft., 46¢; 6½ ft., 48¢; 7 ft., 50¢.
Steel Hitching Posts.....each $1.30

### Potato Parers—

See *Parers, Potato.*

### Pots, Glue—

*Enameled* .....40%
*Tinned* .....30&10%

### Powder—

*In Canisters:*
*Duck, 1 lb*.....*each 45¢*
*Fine Sporting, 1 lb*....*each 75¢*
*Rifle, ½-lb*.....*each 15¢*
*Rifle, 1 lb*.....*each 25¢*
*In Kegs:*
*12½-lb. kegs*.....*$3.50*
*25-lb. keys*.....*$4.50*
King's Semi-Smokeless:
Keg (25 lb bulk).....$6.50
Half Keg (12½ lb bulk).....$3.50
Quarter Keg (6¼ lb bulk).....$1.90
Case 24 (1 lb cans bulk).....$8.50
Half case (1 lb cans bulk).....$4.50

| King's Smokeless: | Shot Gun. | Rifle. |
|---|---|---|
| Keg (25 lb bulk)..... | $12.00 | $15.00 |
| Half Keg (12½ lb bulk).. | 6.25 | 7.75 |
| Quarter Keg (6¼ lb bulk) | 3.25 | 4.00 |
| Case 24 (1 lb cans bulk).. | 14.00 | 17.00 |
| Half case 12 (1 lb c. bk).. | 7.25 | 8.75 |

### Presses—

### Fruit, Wine and Jelly—

Enterprise Mfg. Co.....20@25%

### Seal Presses—

Morrill's No. 1, ℔ doz., $20.00.....50%

### Pruning Hooks and Shears

See *Shears.*

### Pullers, Nail, Etc.—

Cyclops .....50%
Miller's Falls, No. 3, ℔ doz., $12.00.. 33⅓&10%
Morrill's No. 1, Nail Puller, ℔ doz. $20.00 .....50%
Pearson No. 1, Cyclone Spike Puller, each $30.00.....50%
The Scranton Co. Case Lots:
No. 2B (large).....$5.50
No. 3B (small).....$5.00
Smith & Hemenway Co.:
Diamond B.....70%
Giant .....50%
Staple Pullers, Utica and Davison .....60%
Taylor Mfg. Co., Sampson Tack, ℔ doz.....$0.40

### Pulleys, Single Wheel—

| *Inch* ..... | *1½* | *1¾* | *2* | *3* |
|---|---|---|---|---|
| *Awning or Tackle, doz* | *$0.30* | *.45* | *.60* | *1.05* |
| *Hay Fork, Swivel or Solid Eye, doz., 4 in., $1.25; 5 in., $1.55* | | | | |
| *Inch* ..... | *2* | *2¼* | *2½* | |
| *Hot House, doz...* | *$0.65* | *.85* | *1.20* | |
| *Inch* ..... | *1¼* | *1½* | *1¾* | *2* |
| *Screw, doz....* | *$0.16* | *.19* | *.23* | *.30* |
| *Inch* ..... | *1¾* | *2* | *2¼* | *2½* |
| *Side, doz.....* | *$0.25* | *.40* | *.55* | *.60* |
| *Inch* ..... | *1½* | *1¾* | *2* | *2½* |

### Sash Pulleys—

*Common Frame; Square or Round End, per doz..* 1¾ *and 2 in*.....*17@20¢*
*Auger Mortise, no Face Plate, per doz., 1¾ and 2 in*....*20@21¢*
Acme, No. 35..1¾ in., 19¢; 2 in., 20½¢
American Pulley Co.:
Wrought Steel American Plain Axle .....50&10%
Wrought Steel, Eagle.....17@20¢
Top Notch, Electrically Welded, Nos. 3 and 4.....19¢
Common Sense..... ℔ doz, 20¢
Fox-All-Steel, Nos. 3 and 7, 2 in.... ℔ doz. 50%
Grand Rapids All Steel Noiseless..50%
Niagara, No. 25, 1¾ in., 19¢; 2 in. .....20½¢
No. 26 Trov..1¾ in., 14½¢; 2 in., 16½¢
Star, No. 26....1¾ in., 19¢; 2 in., 20½¢
Tackle Blocks—See Blocks.

### Pumps—

*Cistern* .....60%
*Pitcher Spout*.....75&5@75&10%
*Wood Pumps, Tubing, &c*....50%
Barnes Dbl. Acting (low list).....50%
Barnes Pitcher Spout.....80%
Contractors' Rubber Diaphragm, No. 2. B. & L. Block Co.....$16.00
Daisy Spray Pump..... ℔ doz. $6.50
Flint & Walling's Fast Mail Hand (low list).....50&5%
Flint & Walling's Fast Mail (low list) .....50&5%
Flint & Walling's Tight Top Pitcher .....80%
National Specialty Mfg. Co., Measuring, Nos. 2, $6.00; 3, $5.50.....30%
Myers' Pumps (low list).....
Myers' Power Pumps..... } 50%
Myers' Spray Pumps.....

### Pump Leathers—

*Plunger and Valve Leathers—Per gro.:*

| *No*..... | *1* | *2* | *3* | *4* |
|---|---|---|---|---|
| | *$5.00* | *6.00* | *7.00* | *8.00* |

*Cup Leathers—Per 100:*

| *Inch*.... | *2½* | *3* | *3½* | *4* |
|---|---|---|---|---|
| | *$5.00* | *7.00* | *9.00* | *12.00* |

} 30%

### Punches—

*Saddlers' or Drive, good, doz.50@75¢*
*Spring, single tube, good quality* .....*$1.75*
*Revolving (4 tubes)*....*doz.$3.50*
Bemis & Call Co.'s Cast St'l Drive.50%
Morrill's Nos. 1AA, 1A, 1B, 1C, 1D, $15.00.....50%
Hercules, 1 die, each $5.00.....50%
Niagara Hollow Punches.....40%
Niagara Solid Punches.....55&10%
Tinners' Hollow, P., S. & W. Co..40%
Tinners' Solid, P., S. & W. Co., ℔ doz., $1.44.....40&10%

## Rail—Barn Door, &c.—

*Sliding Door, Painted Iron, 2½@2¾¢*
*Sliding Door, Wrought Brass, 1⅛ in., lb., 36¢*.....30%
Cronk's:
Double Braced Steel Rail..℔ ft. 2¾¢
O. N. T. Rail.....2¾¢
Griffin's:
xxx, ℔ 100 ft., 1 x 3-16 in., $3.25; 1¼ x 3-16 in., $3.75.
Hinged Hanger, ℔ 100 ft., 1 x 3-16 in., $3.50; 1¼ x 3-16 in., $4.00.
Lane's:
Hinged Track, ℔ 100 ft.....$3.45
O. N. T., ℔ 100 ft., 1 in., $3.12½; 1¼ in., $3.45; 1½ in., $4.00.
Standard, 1¼ in.....℔ 100 ft. $4.00
Lawrence Bros.:
1 x 3-16 in., ℔ 100 ft., $7.50; 1¼ x 3-16 in., $8.75.....55&7½%
Trolley, No. 301, ℔ ft.....9¢
McKinney's:
Hinged Hanger Track, ℔ ft., 11¢. 60&5%
1 x 3-16 Track.....55&7½%
Myers' Stayon Track.....60&5%
Richards Mfg. Co.:
Common, 1 x 3-16 in., $3.00; 1¼ x 3-16, $3.25; 1¼ x 3-16, $3.50.
Special Hinged Hanger Rail..60&10%
Lag Screw Rail, No. 65.....50%
Gauge Trolley Track, ℔ ft., No. 31, 9¢; No. 32, 14¢; No. 33, 20¢.
No. 50.....60&10%
Nos. 61, $3.00; 62, $3.25; 63, $3.50; 64, $4.00; 45, $3.25; 46, $3.50; 49, No. 1, $3.25; 49, No. 2, $3.50.

### Rakes—

*NOTE.—Many goods are sold at net prices.*

American Fork & Hoe Co.:
Lawn, ℔ doz., No. 24, $2.50; No. 20 .....$2.25
Cronk's:
Steel Garden: Champion, ℔ doz., 12-tooth, $3.75; 14-tooth, $4.00; 16-tooth, $4.25; Ideal, ℔ doz., 12-tooth, $3.00; 14-tooth, $3.30; 16-tooth, $3.60.
Victor, 12-tooth, $2.25; 14-tooth, $2.50; 16-tooth, $2.75.
Queen City Lawn, ℔ doz., 20 teeth, $2.85; 24, $3.00.....net
Anticlog Lawn, ℔ doz.....$4.00
Malleable Garden.....70&10%
Ideal Steel Garden, ℔ doz., 12 teeth, $15.00; 14, $16.00; 16, $18.00.....80%
Kohler's:
Jumbo Lawn, 36-tooth....℔ doz. $5.00
Lawn Queen, 20-tooth....℔ doz. $2.85
Lawn Queen, 24-tooth....℔ doz. $3.00
Paragon, 20-tooth.....℔ doz. $2.65
Paragon, 24-tooth.....℔ doz. $2.75
Steel Garden, 14-tooth....℔ doz. $2.40
Malleable Garden, 14-tooth, ℔ doz. $1.75@2.00

### Rasps, Horse—

Disston's .....75%
Heller Bros.'.....70&5@70&10&5%
Liveright Bros.' Gold Medal.70&10@75%
McCaffrey's American Standard..... 60&10&5%
New Nicholson.....70&10@75%
See also Files.

### Razors—

John Engstrom Swedish.....65%
Sharp Shaver.....60%
Fox Razors, ℔ doz., No. 42, $24.00; No. 44, $20.00; No. 82, Platina, $36.00. } Disc. 50%

### Reels, Fishing—

Hendryx:
M 6, Q 6, A 6, B 6, M 9¼, M 16, Q 16, A 16, B 16, 4008, Rubber, Populo, Nickeled Populo.....20%
Aluminum, German Silv., Bronze.25%
1210 N, 124 N.....20%
3004 N, 06 N, 6 RM, G 9.....25%
4 N, 6 PN, 24 N, 26 PN.....20%
2904 P., 33⅓%; 2904 PN., 33⅓%; 0924 N., 33⅓%; 02084 N., 33⅓%; 002904 PN., 33⅓%; 802 N., 33⅓%.
986 PN, 2904 N, 974 PN.....25%
5009 PN, 5009 N.....20%
Competitor, 102 P, 102 PN, 202 P, 202 PN, 102 PR, 202 PR.....20%
304 P, 304 PN, 00304 P, 00304 PN.33⅓%

### Registers—*List July 1, 1903.*

*Japanned, Electroplated and Bronzed* .....70%
*White Porcelain Enamel*..50&10%
*Solid Brass or Bronze Metal*.40%

### Revolvers—

*Single Action*.....*95¢@$1.00*
*Double Action, except 44 cal*.*$2.00*
*Double Action, 44 caliber*...*$2.00*
*Automatic* .....*$4.00*
*Hammerless* .....*$4.50*

### Riddles, Hardware Grade

*16 in*.....*per doz.$2.50@$2.75*
*17 in*.....*per doz.$2.75@$3.00*
*18 in*.....*per doz.$3.00@$3.25*

### Rings and Ringers—

### Bull Rings—

| | *2* | *2½* | *3 inch.* |
|---|---|---|---|
| *Steel* ..... | *$0.70* | *0.75* | *0.80 doz.* |
| *Copper* ..... | *$1.10* | *1.25* | *1.65 doz.* |

### Hog Rings and Ringers—

*Hill's Rings, gro. boxes.$4.50@$4.50*
*Hill's Ringers, Gray Iron, doz., 60@75¢*
*Hill's Ringers, Malleable Iron, doz.80@95¢*
*Blair's Rings..per gro.$5.00@$5.50*
*Blair's Ringers...per doz.75@90¢*

### Rivets and Burrs—

*Copper* .....50@50&10%
*Carriage, Coopers', Tinners', &c.:*
*Black* .....70&10%
*Metallic Tinned*.....70%

### Bifurcated and Tubular—

*Assorted in Boxes.*
*Bifurcated, per doz. boxes, pasteboard boxes, 50 count, 23@25¢; Tin boxes, 100 count, 29@32c.*
*Tubular, per doz. boxes, 50 count, 29@32¢; 100 count, 51@58¢.*

### Rollers—

Cronk's Stay, No. 50.....$1.00
Cronk's Brinkerhoff No. 55, $0.60; No. 56, $0.75; No. 60.....$0.75
Lane's Stay.....40%
Richards' Stay:
Handy Adj. and Reversible No. 53.75¢
O. K. Adj. and Reversible No. 58.50¢
Lag Screw, Nos. 55 and 57.....50%
Underwriters', Nos. 59, 60.....50%
Favorite, No. 54.....60%

### Rope—

*Manila, 7-16 in. diam. and larger:*
*Pure* .....*lb*.9¢
*Sisal, 7-16 in. diam. and larger:*
*Pure* .....*lb*.7¢
*Sisal, Hay, Hide and Bale Ropes, Medium and Coarse:*
*Pure* .....*lb*.7½@7¾¢
*Sisal, Tarred, Medium Lath Yarn:*
*Pure* .....*lb*.6½@6¾¢
*Cotton Rope:*
*Best, ¼-in. and larger*.16½@18¢
*Medium, ¼-in. and larger*.15@16¢
*Common, ¼-in. and larger*..7½¢
*In coils, ½¢ advance.*
*Jute Rope:*
*Thread, No. 1, ¼-in. and up. lb.* .....5½¢
*Thread, No. 2, ¼-in. and up, lb.* .....5¢

### Wire Rope—

*Galvanized* .....37½&2½%
*Plain* .....45&2½%

### Ropes, Hammock—

Covert Mfg. Co.:
Jute, 35%; Sisal.....20%

### Rules

*Boxwood* .....60@60&10%
*Ivory* .....35&10@35&10&5%
Chapin-Stephens Co.:
Boxwood .....60%
Flexifold .....40%
Ivory .....25@25&10%
Miscellaneous .....50@50&10%
Stephens' Combination.....55%
Stationers' .....50@50&10%
Keuffel & Esser Co.:
Folding, Wood.....35&10%
Folding, Steel.....33⅓&10%
Lufkin's Steel.....50&10%
Lufkin's Lumber.....50&10%
Upson Nut Co.:
Boxwood .....60@60&10%
Ivory .....35&10@35&10&10%

## Sash Balances—

See *Balance, Sash.*

**Sash Locks**—See *Locks, Sash.*

### Sash Weights—

See *Weights, Sash.*

## Sausage Stuffers or Fillers

See *Stuffers or Fillers, Sausage.*

## Saw Frames—

See *Frames, Saw.*

## Saw Sets—See *Sets, Saw.*

## Saw Tools—See *Tools, Saw.*

## Saws—

Atkins':
- Circular ..... 45%
- Band ..... 50@50&10%
- Butcher Saws ..... 50%
- Cross Cuts ..... 35%
- One-Man Cross Cut ..... 40%
- Narrow Cross Cut ..... 50%
- Hand, Rip and Panel ..... 35&5%
- Miter Box and Compass ..... 40%
- Mulay, Mill and Drag ..... 45%
- Wood Saws ..... 40&10%

Chapin-Stephens Co.:
- Turning Saws and Frames. 30@30&10%

Diamond Saw & Stamping Works:
- Sterling Kitchen Saws....30&10&10%

Disston's:
- Circular, Solid and Ins'ted Tooth. 50%
- Band, 2 to 18 in. wide ..... 60%
- Band, ¾ to 1¾ ..... 60%
- Crosscuts ..... 45%
- Narrow Crosscuts ..... 50%
- Mulay, Mill and Drag ..... 50%
- Framed Woodsaws ..... 25%
- Woodsaw Blades ..... 25%
- Woodsaw Rods, Tinned ..... 15%
- Hand Saws, Nos. 12, 99, 9, 16, d100, D8, 120, 76, 77, 8 ..... 25%
- Hand Saws, Nos. 7, 107, 107½, 3, 1, 0, 00, Combination ..... 30%
- Compass, Key Hole, &c ..... 25%
- Butcher Saws and Blades ..... 30%

C. E. Jennings & Co.'s:
- Back Saws ..... 16⅔%
- Butcher Saws ..... 25&7½%
- Compass and Key Hole Saws, 33⅓&7½%
- Framed Wood Saws ..... 25&7½%
- Hand Saws ..... 12½%
- Wood Saw Blades ..... 33⅓&7½%

Millers Falls:
- Butcher Saws ..... 15&10%
- Star Saw Blades ..... 15&10%

Massachusetts Saw Works:
- Victor Kitchen Saws ..... 40&10&50%
- Butcher Saws Blades ..... 35@40%

Peace & Richardson's Hand Saws. 30%

Simonds':
- Circular Saws ..... 45%
- Crescent Ground Cross Cut Saws. 30%
- One-Man Cross Cuts ..... 40&10%
- Gang Mill, Mulay and Drag Saws. 45%
- Band Saws ..... 50%
- Back Saws ..... 25@25&7½%
- Butcher Saws ..... 35@35&7½%
- Hand Saws ..... 25@25&7½%
- Hand Saws, Bay State Brand.... 45%
- Compass, Key Hole, &c.. 25@25&7½%
- Wood Saws ..... 40&7½%

Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws ..... 50%

## Hack Saw Blades and Frames—

Atkins' Hack Saw Blades A A A.. 25%

Disston's:
- Concave Blades ..... 25%
- Keystone Blades ..... 35%
- Hack Saw Frames ..... 30%

Simonds, 25%; The Best, 35%; Culley ..... 35%

C. E. Jennings & Co.'s:
- Hack Saw Frames, Nos. 175, 180.... 40&7½%
- Hack Saws, Nos. 175, 180, complete, 40&7½%

Goodell's Hack Saw Blades....40&10%

Griffin's Hack Saw Frames..35&5&10%

Griffin's Hack Saw Blades....35&5&10%

Star Hack Saws and Blades....15&10%

Sterling Hack Saw Blades..30&10&5%

Sterling Hack Saw Frames..30&10&10%

Sterling Power Hack Saw Machines, each, No. 1, $25.00; No. 2, $30.00..10%

Victor Hack Saw Blades ..... 20%

Victor Hack Saw Frames ..... 40%

Whitaker Mfg. Co.:
- National Hand Blades, Hand Frames, Power Blades ..... 40%

## Scroll—

Barnes, No. 7, $15 ..... 25%

Barnes' Scroll Saw Blades ..... 40%

Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20 ..... 20%

Lester, complete, $10.00 ..... 15&10%

Rogers, complete, $3.50 and $4.00.. 15&10%

## Scales—

*Union Platform, Plain. $2.10@2.20*

*Union Platform, Stpd. $2.20@2.30*

Chatillon's:
- Eureka ..... 25%
- Favorite ..... 40%
- Grocers' Trip Scales ..... 50%

The Standard Portables ..... 40%

The Standard R. R. and Wagon ..... 50&10%

## Scrapers—

*Box, 1 Handle ..... doz. $1.85@2.10*

*Box, 2 Handle ..... doz. $2.35@2.50*

*Ship...Light, $2.00; Heavy, $4.50*

Chapin-Stephens Co., Box..30@30&10%

Richards Mfg. Co., Foot ..... 60%

## Screws—Bench and Hand

*Bench, Iron, doz., 1 in., $2.50@2.75; 1¼, $3.00@3.25; 1¼, $3.50@3.75*

*Bench, Wood ..... 20@20&10%*

*Hand, Wood....70&10@70&10&10%*

Chapin-Stephens Co., Hand ..... 70@70&10&2½%

## Coach, Lag and Hand Rail—

*Lag, Cone Point. 80&10@80&10&5%*

*Coach, Gimlet Point. . 80@80&10%*

*Hand Rail ..... 70&10@75%*

## Jack Screws—

*Standard List ..... 70&10@75%*

Millers Falls ..... 50&10&10%

Swett Iron Works ..... 70@75%

## Machine—

*Cut Tread, Iron, Brass or Bronze:*
- *Flat Head or Round Head, 50@50&10%*
- *Fillister Head ..... 40@40&10%*

*Rolled Thread, F. H. or R. H., Iron ..... 75&10%*

*F. H. or R. H., Brass, Nos. 8 to 14 ..... 65&10%*

## Set and Cap—

*Set (Iron) ..... 75&10&7½%*

*Set (Steel), net advance over Iron ..... 25%*

*Sq. Hd. Cap ..... 70&10&7½%*

*Hex. Hd. Cap ..... 70&10&7½%*

*Rd. Hd. Cap ..... 50&7½%*

*Fillister Hd. Cap ..... 60&7½%*

## Wood—

*List July 23, 1903.*

*Flat Head, Iron..... 87½&5@..%*

*Round Head, Iron.... 85&5@..%*

*Flat Head, Brass..... 80&5@..%*

*Round Head, Brass.. 77½&5@..%*

*Flat Head, Bronze.... 75&5@..%*

*Round Head, Bronze. 72½&5@..%*

*Drive Screws..... 87½&5@..%*

## Scroll Saws—

See *Saws, Scroll.*

## Scythes— *Per doz.*

*Plain Grass, Cutting Edge Polished ..... $6.25@$6.50*

*Clipper, Bronzed Web. $6.50@$6.75*

*Solid Steel, Web and Backs Polished ..... $7.00@$7.25*

*Bush, Weed and Bramble, Painted ..... $6.50@$6.75*

*Grain, Painted, Cutting Edge Polished ..... $8.25@$8.50*

*Clipper Grain, Bronze Web. $8.50@$8.75*

## Seeders, Raisin—

Enterprise ..... 25@30%

## Sets— Awl and Tool—

Fray's Tool Handles, Nos. 1, $12; 2, $16; 3, $12 ..... 50%

Millers Falls Adj. Tool Handles, No. 1, $12; No. 4, $12; No. 5, $18..20&10%

## Garden Tool Sets—

American Fork & Hoe Co.:
- Rake, Shovel and Hoe, ℔ doz. sets, No. 3 P F ..... $7.25

## Sets, Nail—

*Octagon ..... gro. $3.50@3.75*

Buck Bros. ..... 27½

Mayhew's ..... ℔ gro. $9.00

Snell's Corrugated, Cup Pt..... 40&10%

Snell's Knurled, Cup Pt..... 40&10%

Victor Knurled, Cup Pt....℔ gro. $7.50

## Rivet—

*Regular list ..... 75@75&10%*

## Saw—

Atkin's:
- Criterion ..... 40%
- Adjustable ..... 40%

Disston's Star, Monarch and Triumph ..... 30%

Morrill's No. 1 ..... $15.00
Nos. 3 and 4, Cross Cut.... $20.60
No. 5, Mill ..... $30.00
Nos. 10, 11, 95 ..... $15.60
No. 1 Old Style ..... $10.00
Special ..... $16.25
} 50%

Giant Royal Cross Cut.....℔ doz. $7.50

Royal, Hand ..... ℔ doz. $4.50

Taintor Positive ..... ℔ doz. $6.75

## Shaving—

Fox Shaving Sets, No. 30..... ℔ doz., net, $24.00

Smith & Hemenway Co.'s ..... 75%

## Sharpeners, Knife—

Pike Mfg. Co.:
- Fast Cut Pocket Knife Hones, ℔ doz ..... $1.50
- Mounted Kitchen Sand Stone, ℔ doz ..... $1.50
- Natural Grit Carving Knife Hones, ℔ doz ..... $3.00
- Quick Cut Emery Carving Knife Hones, ℔ doz ..... $1.50
- Quick Edge Pocket Knife Hones, ℔ doz ..... $2.50

} 50%

## Skate—

Smith & Hemenway Co., Eureka..50%

## Shaves, Spoke—

*Iron ..... doz. $1.25*

*Wood ..... doz. $2.00*

Bailey's (Stanley R. & L. Co.)..... 45%

Chapin-Stephens Co..... 30@30&10%

Goodell's, ℔ doz. $9.00..... 15&10%

## Shears—

| *Cast Iron..* | *7* | *8* | *9 in.* |
|---|---|---|---|
| *Best* | *$16.00* | *18.00* | *20.00 gro.* |
| *Good* | *$13.00* | *15.00* | *17.00 gro.* |
| *Cheap* | *$5.00* | *6.00* | *7.00 gro.* |

*Straight Trimmers, &c.:*
- *Best quality Jap ..... 70&10&5%*
- *Best Quality Nickel... 60&10&5%*

*Tailors' Shears ..... 40@40&10*

Acme Cast Shears ..... 40@45&5%

Heinisch's Tailor's Shears ..... 50%

National Cutlery Co.'s Nickel Plated, 60&10%; Japan Handles ..... 70&10%

Columbian Cutlery Co.:
- Sheep, 1900 list ..... 30&10&5%
- Cross ..... 50&10%
- Horse or Mule ..... 50&10%

J. Wiss & Sons Co.:
- Best Quality Jap'd ..... 60&10%
- Best Quality Nickeled ..... 50&10%
- Tailors' ..... 25%

## Tinners' Snips—

*Steel Blades ..... 20&5@20&10%*

*Steel Laid Blades ..... 50&10%*

Acme Cast Snips ..... 40@45&5%

Forged Handles, Steel Blades, Berlin ..... 50%

Heinisch's Snips ..... 40%

Jennings & Griffin Mfg. Co.'s 6½ to 10 in. ..... 33⅓&5%

National Cutlery Co.'s Forged Steel. 50%

Niagara Snips ..... 40%

P., S. & W. Forged Handles, 25%; W. R. W. ..... 50%

J. Wiss & Sons Co.:
- Wiss Forged Steel ..... 25%

## Pruning Shears—

Cronk's Hand Shears ..... 33⅓%

Cronk's Wood Handle Shears.... 33⅓%

Disston's Combined Pruning Hook and Saw, ℔ doz. $18.00 ..... 25%

Disston's Pruning Hook only, ℔ doz., $12.00 ..... 25%

J. T. Henry Mfg. Co.:
- Pruning Shears, all grades ..... 40%

P., S. & W. Co. ..... 40&10%

Columbian Cutlery Co.:
- Hedge, Wilcut Brand ..... 60&10%
- Lawn and Border, Wilcut Brand, 60&10%

## Sheaves—Sliding Door—

Reading ..... 40%

R. & E. list ..... 15%

## Sliding Shutter—

Reading list ..... 40%

R. & E. list ..... 15%

## Shells—Shells, Empty—

Brass Shells, Empty:
- Climax, 10 and 12 gauge ..... 60&5%
- Club, Rival, 65&5%; First Quality, 60&5%

Paper Shells, Empty:
- New Rapid, 10, 12, 16 and 20 gauge, 25&10%
- Climax, 10 and 12 gauge; Acme and Magic, 10, 12, 16 and 20 gauge; Ideal, 10, 12, 16 and 20 gauge; Leader grade ..... 25&5%
- Union, League, 10 and 12 gauge, Rival Grade ..... 25%
- New Climax, Defiance, 10, 12, 14, 16 and 20 gauge; Climax, 14, 16 and 20 gauge ..... 20%
- Challenge, Monarch, 10, 12, 16 and 20 gauge; League, Union, 14, 16 and 20 gauge; Repeater Grade..20%

## Shells, Loaded—

*Loaded with Black Powder..40%*

*Loaded with Smokeless Powder, medium grade ..... 40&5%*

*Loaded with Smokeless Powder, high grade ..... 40&10&10%*

Union Metallic Cartridge Co.:
- New Club, Black Powders ..... 40%
- Nitro Club, Smokeless Powders. 40&5%
- Arrow, Smokeless Powders. 40&10&10%

Winchester:
- Smokeless Repeater Grade ..... 40&5%
- Smokeless Leader Grade... 40&10&10%
- Black Powder ..... 40%

## Shingles, Metal— Per Sq.

Edwards Mfg. Co.:

| | Painted. | Galv. |
|---|---|---|
| 14 x 20 | $4.25 | $6.00 |
| 10 x 14 | 4.50 | 6.25 |
| 7 x 10 | 4.75 | 6.50 |

Wheeling Corrugating Co.:

| | | |
|---|---|---|
| Dixie, 14 x 20 in. | $4.05 | $5.05 |
| Dixie, 10 x 14 in. | 4.25 | 5.45 |
| Dixie, 7 x 10 in. | 5.25 | 6.70 |

## Shoes, Horse, Mule, &c.—

*F.o.b. Pittsburgh:*
- *Iron ..... per keg. $4.10*
- *Steel ..... per keg. $3.85*

Burden's, all sizes..... ℔ keg $3.90

## Shot—

*25-lb. bag.*
- *Drop, up to B ..... $1.80*
- *Drop, B and larger ..... 2.05*
- *Buck ..... 2.05*
- *Chilled ..... 2.05*
- *Dust ..... 2.30*

## Shovels and Spades—

*Association List, Nov. 15, 1902. 40%*

Avery Stamping Co. ..... 40%

## Snow Shovels—

*Long Handle ..... $2.50@$2.75*

*Wood and Mall, D Handle, $2.65@$2.90*

## Sieves and Sifters—

*Hunter's Imitation, gro. .... $9.50*

*Hunter's Genuine, per gro. . $12.00*

## Sifters, Ash—

Acme Ball Bearing Sales Co., Acme Automatic Ash Sifter, each, $2.25. ℔ doz. ..... $27.00

## Sieves, Seamless Metallic

| | *Per dozen.* | | | |
|---|---|---|---|---|
| *Mesh* | *14* | *16* | *18* | *20* |
| *Iron Wire* | *$1.05* | *1.05* | *1.10* | *1.20* |
| *Tinned Wire* | *$1.15* | *1.15* | *1.20* | *1.30* |

## Sieves, Wooden Rim—

*Nested 10, 11 and 12 Inch*

*Mesh 18, Nested... doz. $0.90@1.05*

*Mesh 20, Nested... do. $1.00@1.05*

*Mesh 24, Nested... doz. $1.30@1.40*

## Sinks, Cast Iron—

*Painted. Standard list:*
- *12 x 12 to 22 x 36 in. ..... 60%*
- *20 x 24 to 24 x 50 in. ..... 50%*
- *24 x 60 to 24 x 120 in. ..... 30%*

Boiler low list ..... 60%

*NOTE.—There is not entire uniformity in lists used by jobbers.*

## Skeins, Wagon—

*Cast Iron ..... 70@75&10%*

*Steel ..... 40@45%*

## Slates, School—

*Factory Shipments.*

*"D" Slates ..... 50@50&10%*

*Eureka, Unexcelled Noiseless.. 60&7 tens.*

*Victor A, Noiseless. 60&4 tens &5%*

## Slaw Cutters—See *Cutters.*

## Snaps, Harness—

*German ..... 40@40&10%*

Covert Mfg. Co.:
- Derby, 25%; Yankee, 30&2%; Yankee Roller, 30&2%.
- High Grade, 40%; Trojan ..... 40%
- Jockey ..... 25%

## Snaths—

*Scythe ..... 50&10@60%*

## Snips, Tinners—See *Shears.*

## Spoons and Forks—

### Silver Plated—

*Good Quality ..... 50&10@60&5%*

*Cheap ..... 60@60&10%*

International Silver Co:
- 1847 Rogers Bros. ..... 40&10%
- Rogers & Bro., William Rogers' Eagle Brand ..... 50&10%
- Anchor, Rogers Brand ..... 60%
- Wm. Rogers & Son ..... 60&10%

### Miscellaneous

*German Silver ..... 60@60&5%*

### Tinned Iron—

*Teas ..... per gro. 50@55¢*

*Tables ..... per gro. $0.90@$1.00*

Atlas Mfg. Co.:
- Tea Spoons, ℔ gro. ..... 50¢@55¢
- Table Spoons, ℔ gro. ..... $0.90@$1.00

## Springs— Door—

Bardsley's Spring and Check ..... 40%

Chicago (Coil) ..... 40&10%

Gem (Coil) ..... 20%

Pullman Door and Gate ..... 10%

Reliance (Coil) ..... 40&10%

Star (Coil) ..... 35%

Torrey's Rod, 39 in. ..... ℔ doz. $1.00

## Carriage, Wagon, &c.—

| *1¼ in. and Wider:* | *Per 100 lb.* |
|---|---|
| *Black* | *$4.75@$5.00* |
| *Half Bright* | *$4.75@$5.00* |
| *Bright* | *$5.25@$5.50* |

*Painted Seat Springs:*
- *1½ x 2 x 26....per pair. 45@47¢*
- *1½ x 3 x 28....per pair. 68@71¢*

## Sprinklers, Lawn—

American Foundry & Mfg. Co.:
- Cactus, 65%; Japanese, 70%; National, ℔ doz. ..... $12.00

Enterprise ..... 25@30%

Philadelphia No. 1, ℔ doz. $12; No. 2, $15; No. 3, $20 ..... 30%

## Squares—

*Nickel plated.. } List Jan. 5, 1900.*

*Steel and Iron. } 80&5@80&10%*

*Rosewood Hdl. Try Square and T-Bevels ..... 60&10&10@70%*

*Iron Hdl. Try Squares and T-Bevels ..... 40&10@40&10&10%*

Disston's Try Squares and Bevels, Rosewood Handle, 60 & 10%; Iron Stock and Bevel ..... 15%

## Squeezers, Lemon

*Wood, Porcelain Lined:*
- *Cheap ..... doz. $1.00*
- *Good Grade. ..... doz. $1.25*

*Tinned Iron ..... doz. $0.75@1.00*

*Iron, Porcelain Lined... doz. $1.75*

Victor, ℔ gro. ..... $9.00

## Staples—

*Barbed Blind..... 85&5@85&10%*

*Electricians' ..... 80&10&10@85%*

*Fence Staples, Polished, $2.05; Galvanized ..... $2.35*

*Poultry Netting Staples..... per lb. 3¼@3½¢*

## Steels, Butchers'—

Dick's ..... 30%

Foster Bros. ..... 30%

## Steelyards— .... 30@30&10%

## Stocks and Dies—

*Blacksmiths' ..... 50@50&10%*

Curtis Revible Ratchet Die Stock..25%

Derby Screw Plates ..... 25%

Green River ..... 25%

Lightning Screw Plate ..... 25%

Little Giant ..... 25%

Reece's New Screw Plate ..... 25%

## Stoners, Cherry—

Enterprise ..... 25@30%

## Stones, Axe—

Pike Mfg. Co., Axe Stones (all kinds) ..... 33⅓%

## Glass Cutters' Stones—

Pike Mfg. Co., Glass Cutters' Stones and Supplies ..... 40%

## Stones, Oil, &c.—

Pike Mfg. Co., 1907 list: ℔ ℔

- Arkansas St. No. 1, 3 x 8 ..... $2.80
- Arkansas St. No. 1, 5 x 8 ..... 3.50
- Arkansas Slips No. 1 ..... 3.00
- Lily White Washita ..... 60¢
- Rosy Red Washita ..... 60¢
- Washita St., Extra, 1 x 8 ..... 50¢
- Washita St., No. 1, 1 x 8 ..... 40¢
- Washita St., No. 2, 1 x 8 ..... 25¢
- Lily White Slips ..... 40¢
- Rosy Red Slips ..... 30¢
- Washita Slips, Extra ..... 30¢
- Washita Slips, No. 1 ..... 25¢
- Washita Slips, No. 2 ..... 15¢
- India Oil Stones, Washita Hone ..... 20¢
- Quickcut Emery and Corundum Oil Stone, Double Grit ..... 40¢
- Quickcut Emery and Corundum Axe Stone, Double Grit ..... 20¢
- Quickcut Emery Rubbing Brick ..... 40¢
- Hindostan No. 1 Razor Hone ..... 80¢
- Hindostan No. 1 Slip ..... 10¢
- Turkey Oil Stones, Extra, 5 to 8 in. ..... 30¢
- Queer Creek Stones, 4 to 8 in. ..... 20¢
- Queer Creek Slips ..... 10¢
- Sand Stone ..... 6¢

33⅓%

33⅓&7½%

### Scythe Stones—

Pike Mfg. Co., 1907 list:
Black Diamond S. S. ℔ gro. $12.00
Lamoille S. S. ℔ gro. $11.00
White Mountain S. S. ℔ gro. $9.50
Green Mountain S. S. ℔ gro. $7.00
Extra Indian Pond S. S. ℔ gro. $8.00
No. 1 Indian Pond S. S. ℔ gro. $7.50
No. 2 Indian Pond S. S. ℔ gro. $5.00
Leader Red End S. S. ℔ gro. $5.00
Quick Cut Emery.... ℔ gro. $10.00
Pure Corundum..... ℔ gro. $18.00
Crescent ..... $7.00
Emery Scythe Rifles, 2 Coat. $8.80
Emery Scythe Rifles, 3 Coat. $11.00
Emery Scythe Rifles, 4 Coat. $13.20
Balance of 1907 list 33⅓%.
Lectro (Artificial), ℔ gro., $12.00.33⅓%
$12.00 ..... 33⅓%
Lightning (Artificial), ℔ gro., $8.00 ..... 33⅓%

### Stoppers, Bottle—

Victor Bottle Stoppers..... ℔ gro. $9.00

### Stops— Bench—

Millers Falls.....15&10%
Morrill's, ℔ doz., No. 1, $10.00....50%
Morrill's, No. 2, $12.50.....50%

### Door—

Chapin-Stephens Co.....50@50&10%

### Plane—

Chapin-Stevens Co.....20%

### Straps— Box—

Acme Embossed, case lots..20&10&10%
Cary's Universal, case lots...20&10&10%

### Stretchers, Carpet—

*Cast Iron, Steel Points..doz.55¢*
*All Steel Socket...doz.$2.00@2.25*
Excelsior Stretcher and Tack Hammer Combined, ℔ doz., $6.00....20%

### Stuffers, Sausage—

Enterprise Mfg. Co., Stuffers and Lard Presses.....25@25&7½%
National Specialty Co., list Jan. 1, 1902 .....30&5%
P., S. & W. Co.....40&10&5%

### Sweepers, Carpet—

Per doz.—

Bissell Carpet Sweeper Co.:
Cyco Bearing Superba, $36.00; Triumph, $33.00; Parlor Queen, $30.00; Elite, $29.00; Boudoir, $27.00; American Queen, $27.00; Ideal, $25.00; Gold Medal, $24.00; Primier, $24.00; Prize, $24.00; Welcome, $24.00; Grand Rapids, Nickel, $24.00; Japan, $22.00; Crystal, $36.00; Grand, $36.00; Parlor Grand, $48.00; Club, $54.00; Hall, $60.00; Standard Nickel, $22.00; Standard Japan, $20.00; Crown Jewel, Nickel, $21.00; Crown Jewel, Japan, $19.00; Junior, Nickel, $22.00; Junior, Japan, $20.00.

*NOTE.—Rebates: 50c per dozen on three dozen lots; $1 per dozen on five-dozen lots; $2 per dozen on ten dozen lots*

### Tacks, Finishing Nails, &c.

*American Carpet Tacks.90&5@—%*
*American Cut Tacks..90&25@—%*
*Swedes' Cut Tacks.L..90&30@—%*
*Swedes' Upholsterers'.90&35@—%*
*Gimp Tacks.....90&5@—%*
*Lace Tacks.....90&35@—%*
*Trimmers' Tacks.....90&30@—%*
*Looking Glass Tacks.....65@—%*
*Bill Posters' and Railroad Tacks, 90&40@—%*
*Hungarian Nails.....85@—%*
*Finishing Nails.....70@—%*
*Trunk and Clout Nails.75&5@—%*

*NOTE.—The above prices are for Straight Weights.*

### Miscellaneous—

*Double Pointed Tacks, 90&6 tens@—%*

Se also Nails, Wire.

### Tanks, Oil and Gasoline—

Wilson & Friend Co.:

| Gal. | Gasoline | Oil |
|---|---|---|
| 30 | $2.75 | $3.00 |
| 60 | $3.50 | $4.00 |
| 110 | $5.00 | $5.75 |

### Tapes, Measuring—

*American Asses' Skin....50@—%*
*Patent Leather.....25@30&5%*
*Steel .....33⅓&5%*
*Chesterman's .....25@25&5%*
Keuffel & Esser Co.:
Favorite, Ass Skin.....40&10@50%
Favorite, Duck and Leather..... 25&5@25&10%
Metallic and Steel, lower list, 35@35&5%; Pocket, 35@35&5%.
Lufkins:
Asses' Skin.....40&10@50%
Metallic .....30@30&5%
Patent Bend, Leather...25&5@25&10%
Pocket .....40@40&5%
Steel .....33⅓@35%
Wiebusch & Hilger:
Chesterman's Metallic, No. 34L, etc. .....25%
Chesterman's Steel, No. 1038L, etc. .....35%

### Teeth, Harrow—

*Steel Harrow Teeth, plain or headed, ⅝-inch and larger, per 100 lb.....$2.55@$2.80*

### Thermometers—

*Tin Case, Cabinet, Flange, Dairy, &c.....30@35%*

### Ties, Bale—Steel Wire—

*Single Loop.....82½&10%*
*Monitor, Cross Head, &c.70&2½%*

### Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

### Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

### Tire Benders, Upsetters, &c.

See *Benders and Upsetters, Tire.*

### Tools—Coopers'—

L. & I. J. White.....20@20&5%

### Haying—

Myers' Hay Tools.....50%

### Ice Tools—

Gifford-Wood Co.....15%

### Miniature—

Smith & Hemenway Co.'s, Davidson, ℔ doz., Nickel Plated, $1.50; Gold Plated.....$2.00

### Saw—

Atkins' Cross Cut Saw Tools....35&5%
Simond's Improved.....33⅓%
Simonds' Crescent.....30%

### Ship—

L. & I. J. White.....25%

### Torches—

Hammers, Engine, ℔ doz.....$4.50

### Transom Lifters—

See *Lifters, Transom.*

### Traps—Fly—

*Balloon, Globe or Acme, doz., $1.15@$1.25; gro....$11.50@12.00*
*Harper, Champion or Paragon, doz., $1.25@1.40; gro.$13.00@13.50*

### Game—

*Imitation Oneida.....75@10%*
Newhouse .....50&5%
Hawley & Norton.....65&10%
Victor .....75@75&10%
Oneida Community Jump.....70&5%
Stop Thief.....60%
Tree Trap.....60%
Hector .....75@75&10%

### Mouse and Rat—

*Mouse, Wood, Choker, doz. holes, 12¢*
*Mouse, Round or Square Wire, doz.85@90¢*

Marty French Rat and Mouse Traps (Genuine), ℔ doz.:

| | Crate lots. | Small lots. |
|---|---|---|
| No. 1, Rat..... | $11.50 | $14.50 |
| No. 3, Rat..... | $5.75 | $6.50 |
| No. 3½, Rat..... | $4.70 | $5.25 |
| No. 5, Mouse..... | $2.25 | $3.00 |

Animal Trap Co.:
Out o' Sight, Mouse, ℔ doz.....$0.60
Out o' Sight, Rat, ℔ doz..... 1.20
Easy Set, Mouse, ℔ doz..... .35
Easy Set, Rat, ℔ doz..... .85
Out o' Sight Chockers, ℔ doz. holes ..... .12
Out o' Sight, Tin, 5-hole, ℔ doz. traps ..... .75

### Trowels—

Disston Brick and Pointing.....25%
Disston Plastering.....20%
Disston "Standard Brand" and Garden Trowels.....30%
Kohler's Steel Garden Trowels, ℔ gro., 5 in., $4.80; 6 in., $6.00.
Never-Break, Forged Steel Garden Trowels, in bulk, net ℔ gro. $5.50
In 1 doz. boxes..... ℔ gro. $6.00
Woodrough & McParlin, Plastering.25%

### Trucks, Warehouse, &c.—

B. & L. Block Co.:
New York Pattern.....50&10%
Western Pattern.....60&10%
Handy Trucks..... ℔ doz. $16.00
Grocery ..... ℔ doz $15.00
McKinney Trucks.....each, net $10.00
Model Stove Trucks..... ℔ doz $18.50

### Tubs, Wash—

*M'f'gr's list, price per gross.*

| | No. 0 | 1 | 2 | 3 | |
|---|---|---|---|---|---|
| *Galvanized.* | $67 | $79 | $89 | $99 | 10&7½ &5&5% |

### Twine, Miscellaneous—

*Flax Twine:*
*No. 9, ¼ and ½-lb. Balls.21@23¢*
*No. 12, ¼ and ½-lb. Balls.19@21¢*
*No. 18, ¼ and ½-lb. Balls.16@18¢*
*No. 24, ¼ and ½ -lb. Balls. 15½@17½¢*
*No. 36, ¼ and ½-lb. Balls.15@17¢*
*Chalk Line, Cotton ½-lb. Balls .....24@29¢*
*Cotton Mops, 6, 9, 12 and 15 lb to doz.....8½@19¢*
*Cotton Wrapping, 5 Balls to lb., according to quality..13½@19¢*
*American 2-Ply Hemp, ¼ and ½-lb. Balls.....12½@15¢*
*American 3-Ply Hemp, 1-lb Balls .....13½@16¢*
*India, 2-Ply Hemp, 1½-lb. Balls, Balls (Spring Twine)...7½@9¢*
*India 3-Ply Hemp, 1-lb. Balls 7¼@9¢*
*India 3-Ply Hemp, 1½-lb. Balls, 7@8½¢*
*2, 3, 4 and 5-Ply Jute, 1¼-lb. Balls .....9@11¢*
*Mason Line, Linen, ½-lb. Bls.17¢*
*No. 264 Mattress, ¼ and ½ lb. Balls, according to quality. 30@60¢*
*Wool, 3 to 6 ply....B 6¢; A 7½¢*

### Vises—

*Solid Box.....50&5@50&10&5%*

### Parallel—

Athol Machine Co.:
Simpson's Adjustable.....40%
Standard .....40%
Amateur .....25%
Columbian Hdw. Co., Slide .....40&5%

Fisher & Norris Double Screw, net, each, Nos. 2, $10.50; 3, $16.00; 4, $20.50; 5, $27.00; 6, $32.00.
Fulton Mach. & Vise Co.:
F. & R. Double Swivel Machinists' .....40%
Star, Solid Jaw, Machinists'.....40%
Hollands':
Machinists' .....40@40&5%
Keystone .....65&5@70%
Lewis Tool Co.:
Adjustable Jaw.....30%
Monarch, 50; Solid Jaw.....50%
Massey Vise Co.:
Clincher .....40%
Parallel Bar.....15%
Perfect, 15%; Lightning Grip.....15%
Merrill's .....25%
Millers Falls Oval Slide Pattern.60&10%
Parker's:
Victor, 20@25%; Regulars....20@25%
Vulcan's .....40@45%
Combination Pipe.....55@60%
Prentiss .....20@25%
Rock Island.....25%
Snediker's X. L.....33⅓%
Stephens' .....33⅓%

### Saw Filers

Disston's D 3 Clamp and Guide, ℔ doz., $24.00, 30%; Clamps.....30%
Perfection Saw Clamps, ℔ doz....$4.50
Reading .....60%

### Wood Workers—

Fulton Mach. & Vise Co.:
F. & R. Double Swivel Coachman's .....40%
Star Solid Jaw Woodworkers'....60%
Massey Vise Co.:
Lightning Grip, 15%; Perfect....15%
Wyman & Gordon's Quick Action, 6 in., $6.00; 9 in., $7.00; 14 in., $8.00.

### Miscellaneous—

Fulton Machine & Vise Co., Combination Pipe.....70%
Holland's Combination Pipe..60@60&5%
Massey's Quick Action Pipe.....40%
Parker's Combination Pipe:
87 Series, 60%; 187 Series, 60&5%; No. 870, 40%.
Rock Island Pipe.....25%

### Wads—*Price per M.*

*B. E., 11 up.....60¢*
*B. E., 9 and 10.....70¢*
*B. E., 8.....80¢*
*B. E., 7.....80¢*
*P. E., 11 up.....$1.00*
*P. E., 9 and 10..... 1.25*
*P. E., 8..... 1.50*
*P. E., 7..... 1.50*
*Dis. 15%*
*Ely's B. E.,11 and larger.$1.70@1.75*
*Ely's P. E., 12 to 20....$3.00@3.25*

### Ware, Hollow—

#### Cast Iron, Hollow—

*Stove Hollow Ware:*
*Enameled .....45&10%*
*Ground .....50&5%*
*Plain or Unground.....60%*
*Country Hollow Ware, per 100 lbs .....$2.75@$3.00*
*White Enameled Ware:*
*Maslin Kettles.....65&10%*
*Covered Wares:*
*Tinned and Turned.....35&10%*
*Enameled .....45&10%*

See also *Pots, Glue.*

#### Enameled—

Agate Nickel Steel Ware.....33⅓%
El-an-ge .....60&10%
Iron Clad Ware.....70&10%
Lava and Volcanic, Enameled..40&10%

#### Tea Kettles—

*Galvanized Tea Kettles:*

| *Inch* | 6 | 7 | 8 | 9 |
|---|---|---|---|---|
| *Each* | 45¢ | 50¢ | 55¢ | 65¢ |

#### Steel Hollow Ware—

Avery Stamping Co.:
Never-Break Spiders and Griddles .....65&10%
Steel Kettles, Maslins Scotch Bowls, Tin'd.....60%
Steel Stew Pans, Stew Pots, etc., Porcelained .....50%
Cleveland Stamping & Tool Co.:
Solid Steel Spiders and Griddles .....65&5%
Solid Steel Kettles.....60&5%

### Warmers, Foot—

Pike Mfg. Co., Soapstone....40@40&10%

### Washboards—

| No. | ℔ doz. |
|---|---|
| 800—Brass King, Single Surface, Open Back..... | $2.80 |
| 862—White Hen, Spiral Grimp Glass ..... | $3.35 |
| 964—Royal Blue Enamel, Single Surface, Ventilated Back..... | $3.35 |
| 172—Our Best, Single Zinc, Soap Drainer ..... | $3.35 |
| 722—Soap Saver, Single Zinc, Iron Top ..... | $3.35 |
| 100—Northern Queen, Single Zinc, Perforated, Open Back..... | $3.00 |
| 134—Universal, Single Zinc, Extra Family Size, Ventilated Back.... | $2.80 |
| 760—Banner Globe, Single Zinc, Ventilated Back..... | $2.25 |
| 57—Peerless, Double Zinc, Spring Protector ..... | $3.70 |
| 56—Red Cross, Double Zinc, Swing Protector ..... | $3.60 |
| 17—North Star, Solid Zinc, Swing Protector ..... | $3.60 |
| 797—Jewel, Single Zinc, Pail Size. | $1.25 |

### Washers—Leather, Axle—

*Solid .....90@90&10%*
*Patent .....90@90&5%*
*Coil: ⅞ 1 1⅛ 1¼ inch. 9¢ 10¢ 11¢ 14¢ per box.*

### Iron or Steel—

*Size bolt.... 5-16 ⅜ ½ ⅝ ¾*
*Washers....$4.90 4.00 2.70 2.50 2.30*
*The above prices are based on $6.50 off list*
*In lots less than one keg add 1¢ per lb.; 5-lb. boxes add ½¢ to list.*

Avery Stamping Co.:
Standard, in 200 lb kegs, $6.00 ℔ 100 lb. discl.; in 100 lb kegs add 10¢ net ℔ 100 lb; in 5 or 10 lb boxes, add 50¢ net ℔ 100 lb; in 1 lb boxes, add $1.00 net ℔ 100 lb.

### Cast Washers—

*Over ½-inch, barrel lots. per lb. 1½@1¾¢*

### Wedges—

*Oil Finish.....lb., 2¼@2¾¢*

### Weights—Hitching—

Covert Mfg. Co.....30&2%

### Sash—

*Per net ton, f.o.b. factory:*
*Eastern District.....$20.00@—*
*Western and Central Districts .....$19.00@—*

### Wheels, Corundum and Emery—

Pike Mfg. Co., Corundum, 65%; Emery .....75%

### Well—

*8-in., $2.00; 10-in., $2.30; 12-in., $3.00; 14-in., $4.45.*

### Wire and Wire Goods—

*Bright and Annealed:*
*6 to 9.....72&10&7½%*
*10 to 18.....72½&10&10%*
*19 to 26.....75&10&10&2½%*
*27 to 36.....77½&7½%*
*Galvanized:*
*6 to 9.....72½&10%*
*10 to 14.....72½&10&5%*
*15 to 16.....72½&10&5%*
*17 to 18.....72½%*
*19 to 26.....70&5&2½%*
*27 to 36.....65&10&10%*
*Coppered:*
*6 to 9.....65&10&10%*
*10 to 14.....70&10&5%*
*15 to 18.....65&10&10&10%*
*19 to 26.....70&5&2½%*
*27 to 36.....72½&10&2½%*
*Tinned:*
*6 to 18.....67&10&10%*
*Brass .....15½¢ lb., base*
*Copper .....15¢ lb., base*
*Cast Steel Wire.....50%*

### Spooled Wire—

*Annealed and Tinned.75@75&10%*
*Brass and Copper....70@70&10%*
*Retailers' Assortments, per box, $1.90@$2.10*

Wire Clothes Line, See Lines.
Wire Picture Cord, see Cord.

### Bright Wire Goods—

*Steel Wire Goods.90&40@90&40&10%*
*Brass Wire Goods, 90&40@90&40&10%*
*Brass Cup and Shoulder Hooks, 85&10%*

### Wire Cloth and Netting—

*Galvanized Poultry Netting, 80&10@80&10&5%*
*Painted Screen Cloth, 100 ft., $1.35*
*Standard Galv. Hardware Grade: 100 ft. rolls, 2½ to 48 in. wide, Per 100 sq. ft.*
*Nos. 2, 2½ and 3 Mesh, $2.75@$3.00*
*Nos. 4 and 5 Mesh..$3.00@$3.25*
*No. 6 Mesh.....$3.25@$3.50*
*Nos. 7 and 8 Mesh..$3.75@$4.00*

### Wire, Barb—See *Trade Report*

### Wrenches—

*Agricultural, 80&10&5@80&10&10%*
*Alligator or Crocodile..70&10@75%*
*Baxter Pattern S Wrenches, 70&5@70&10%*
*Drop Forged S.....45@45&5%*
Acme .....60&10%
Alligator Pattern, 70%; Bull Dog..70%
Bemis & Call's:
Adjustable S, 40&5%; Adjustable S Pipe, 40&5%; Briggs Pattern, 40%; Combination Bright, 50%.
Steel Handle Nut.....50&5%
Combination Black.....50&5%
Merrick Pattern.....50&5%
Boardman's .....40%
Coes' Genuine Knife Hdl...40&10&5&5%
Coes' Genuine Steel Hdl...40&10&5&5%
Coes' Genuine Key Model..40&10&5&5%
Coes' Genuine Hammer Handle..... 40&10&5&5%
Coes' "Mechanics'"...40&10&10&5&5%
Donohue's Engineer.....40&10%
Eagle .....70%
Gem Pocket.....30%
Hercules .....70%
W. & B. Machinist:
Case lots.....50&10%
Less than case lots.....50%
W. & B. Railroad Special:
Case lots.....50%
Less than case lots.....40&10&5%
Solid Handles, P., S. & W..50&10%; full cases.....50&10&5%
Standard Nipple Mfg. Co.:
Duplex Chain.....50%
Uwanta Wrench Co.:
Uwanta Special, Iron Handle.... 40&10&5%
Other Wrenches.....50%
Vulcan and Agrippa Chain.....50%
Whitaker Machinists'.....50&10%
Wizard Adjustable Ratchet.....50%

### Fruit Jar—

Benj. P. Forbes, Triumph, ℔ gro., $7.50; per doz.....$0.90

### Wrought Goods—

*Staples, Hooks, &c., list March 17, '92.....90@—%*

### Zinc—(*Cask lots at mill.*)

*Sheet.....per 100 lb., $7.00*

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# THE IRON AGE

New York, Thursday, November 19, 1908.

## A Large Material Handling Plant.

### The Use of Traveling Bridges in Building a River Lock.

Several years ago the Government planned to replace Lock No. 5 on the Monongahela River with a larger structure, and a point was selected at the town of Brownsville, Pa., where a good rock bottom was found.

Traffic could not be interrupted as 8 ft. of water is maintained, for navigation, to Morgantown, and means for handling material had to be such that only that part of the river to be occupied by the lock could be covered. Cableways, derricks, and other means were considered, the former on account of their low first cost, but their adaptability was not as great as the necessity required. A hoisting and conveying machine was needed that would have lateral motion the length of the proposed lock walls, and after considering all plans a traveling bridge with trolley was adopted. The scheme was conceived by John Seaver, engineer for H. E. Talbott & Co., contractors, the design executed by the McGeorge Engineering Company, Cleveland, Ohio, and the contract for building and erecting was awarded to Victor R. Browning & Co. of the same city.

The contract was let in December, 1907, and two bridges were built and erected on tracks set on piling at the location of the lock, and in running order by April, 1908. This time included all drawings, shop work and erection, the piling and tracks having been placed in the meantime. One bridge was set to excavating, and is shown at this work in Fig. 1; the other to laying concrete, and it was estimated that they would displace 500 men. The excavated material was piled on the river side, and at the ends, to form cofferdams, but there was about 17,000 cu. yd. to be dumped in scows to be carried away.

The main features of the machines are two towers, each carried on six flanged wheels with axles in M. C. B. boxes, connected by a bridge with cantilever sections. Each bridge carries one or two trolleys, depending on requirements, which can be transferred by running them off on a trestle on the bank, which may be seen at the left in Fig. 1. An extension of 27 ft. can be bolted to either bridge for operations beyond the reach of the main cantilever on the shore end. The fabricated material of the bridges, trolleys and towers include 450 tons of structural steel, and about 28 tons of cast iron, and 12 tons of steel castings.

The bridges have a span of 150 ft. from center to center of rails, and a hight in the clear of 32 ft., and are propelled by a winding cable attached to each end of the tracks and carried up, and over, to drums on the shore tower. The mechanism consists of two motors of 50 hp. reduced by a train of two gears to a 6-ft. drum, giving a traveling speed of 150 ft. per min., and adding a weight of 20 tons to the shore tower, which is designed somewhat differently from the other one. By placing the propelling mechanism on this tower it afforded an opportunity to construct lighter trusses for the trolley tracks. The bridges are 285 ft. long, which give a trackage of nearly that length for the trolleys, and by adding the temporary section an addition of 27 ft. is gained. The bridges were designed to lift 5½ tons, and the trolleys are equipped with a 50-hp. motor for the hoisting rig, of 5½ tons capacity, and a 30-hp. motor for traveling at a rate of 150 ft. per minute.

One trolley is being used with a 1¼-yd. orange-peel bucket in excavating and has operated at the rate of 50 trips per hour as the fastest time. The operators work in 8-hr. shifts, beginning at 6 a.m. and continuing to 2.45 p.m., with 45 minutes for lunch. The trips with the bucket have varied from 276 to 409 in that time. This trolley is also used to set timbers and do other odd jobs. This leaves the other crane free to set forms and handle concrete.

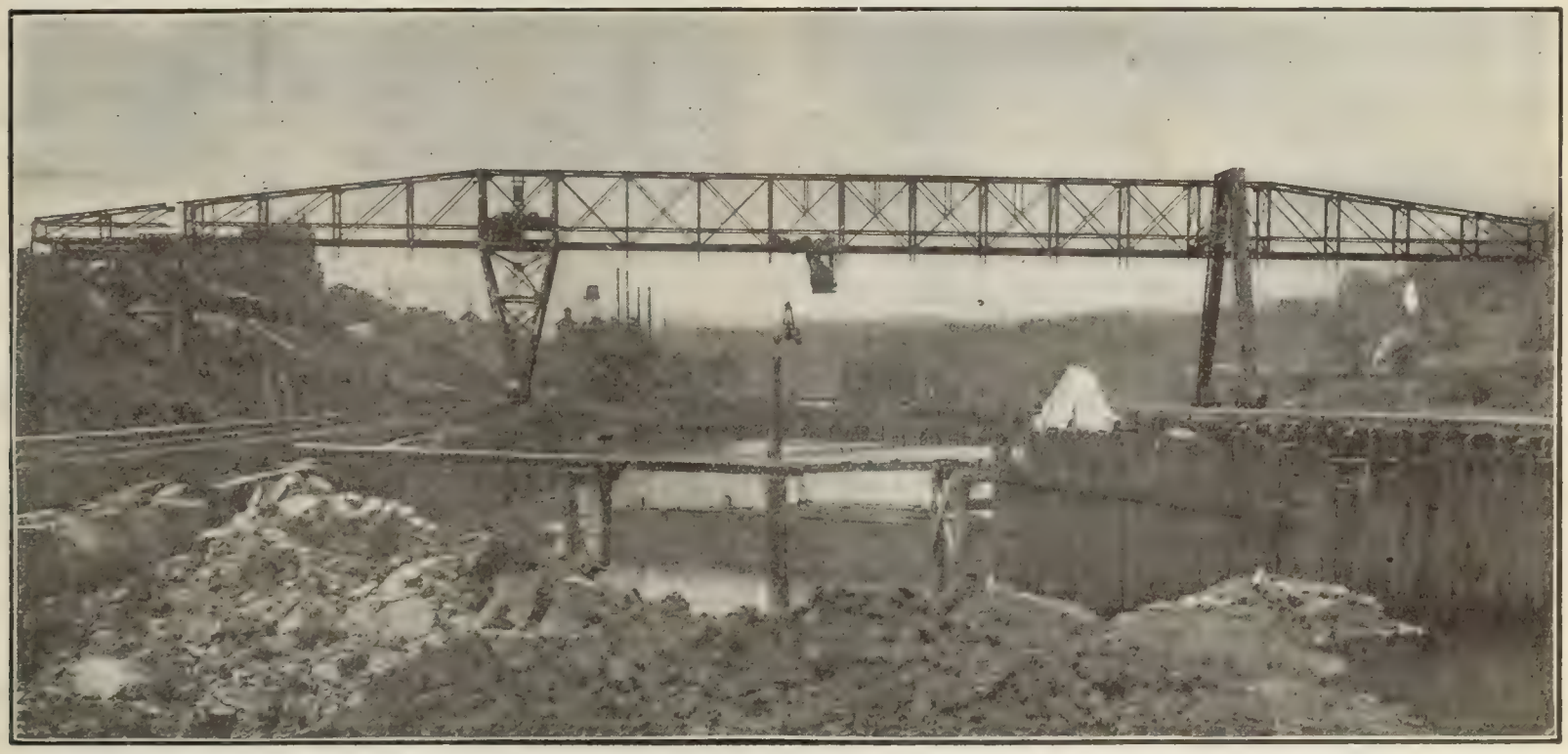


Fig. 1.—A View of the Traveling Bridge Used in Excavating, Showing at the Left the Switch for Transferring Trolleys Between Bridges.

The piling on the river side is arranged to carry three rails for the tracks of the concrete mixing plant, and the car which brings the cement from the storage bins on shore. This car has a capacity of 15 barrels, and is self propelling, having a 5-hp. motor and a speed of 8 miles per hour. Scows of sand and gravel are tied up under the cantilever over the river and one trolley, shown in Fig. 2, operates a grab bucket supplying the mixing plant with material. The capacity of the storage bins at the mixing plant is 15 tons of gravel, the same of sand and 20 barrels of cement. The output when working steadily is 60 cu. yd. of concrete per hour.

One plant, which also may be seen in Fig. 2, consists of a No. 5 Smith mixer, electrically driven, which dumps the batches into a hopper, from which it is dumped into a specially designed bucket, shown in both Figs. 2 and 3, that waits for a second batch before depositing at the



Fig. 2.—A View at the Outer Tower of the Other Bridge, Showing the Concrete Mixing Plant.

required place on the walls. This bucket is carried by a second trolley on the same bridge.

Three walls are being built, the shore one 23 ft. thick at the bottom, and tapering on the bank side to 6 ft. at the top, and 42 ft. high; the middle wall is 20 ft. thick at the bottom, 20 ft. at the top, and is 45 ft. high, while the river wall is 22 ft. at the bottom, 16 ft. at the top, and 47 ft. high. The lengths vary, the shore wall being approximately 1150 ft. long, the center wall 520 ft., and the river wall 650 ft. long, and the three walls give a clearance in each lock of 56 ft. wide. Stone abutments are to be built at four points connecting the shore wall with the bank, and also two heavy concrete wings on a line of the end of the center wall. These wings extend into the river bank, and the material on the cofferdams will be dumped between them. A dam is to be built opposite the lock after the latter is finished, to allow the passing of boats.

The bridges will be used till the fall of 1909, though one may be removed before that time to another job. The structural work is put together with bolts driven in reamed holes, so that the task of dismantling will not be a very great one, and the length of usefulness will be greatly extended.

## The Fitchburg Co-operative Industrial School.

A statement recently sent out from the office of the Superintendent of Schools, Fitchburg, Mass., has the following concerning the progress made with the co-operative industrial course of the Fitchburg High School, which was described in *The Iron Age* of September 24, page 857: The course was started the last week in August, when the boys went to work in the shops. The school course opened September 8, at the beginning of the regular school year. Twenty boys are enrolled, divided as follows: Two pattern making, two drafting, and 16 machinists. The manufacturers have expressed great satisfaction with the plan, some of them saying at this early day that these boys are superior to those formerly employed. They are boys who have their eyes and ears open, who think and ask questions of an intelligent nature. In addition to the regular school work an "industrial society" has been organized for mental and social advancement. This meets once a month and is conducted by the boys themselves. It is planned to have the manufacturers and others give talks of an instructive nature, to be followed with discussion by the members, and from time to time a social affair will be given, to which others than members may be invited.

The gold output of the Transvaal mines in October established a new high record at 617,744 fine ounces, valued at $13,127,000. The previous high record was 587,813 fine ounces, in August. The product of October, 1907, was 553,553 fine ounces, valued at $11,756,000. The value of last month's output was over twice the average of the totals for October, 1904 and 1903, which were $6,915,000 and $6,043,000 respectively.



Fig. 3.—The Shore Tower Ends of Both Bridges, Showing the Trolley Propelling Mechanism and the Concrete Bucket.

## The Marvel Portable Grinding Attachment.

Because of the present importance of grinding machines in metal working shops, and the wide scope of operations in which they are now employed, the No. 1 Marvel portable grinder just brought out by the Armstrong-Blum Mfg. Company, 104 North Francisco avenue, Chicago, Ill., is of timely interest. It was aimed to make it efficient and capable of extending the range of work possible on lathes and planers, to both of which it

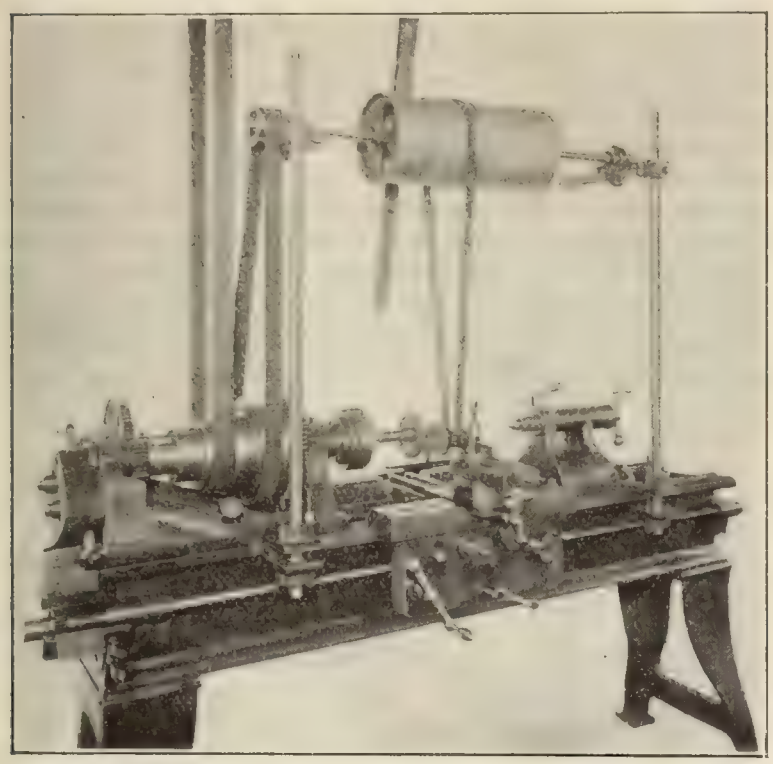


Fig. 1.—The Marvel Grinding Attachment Applied to a Lathe.

may be conveniently attached. The manner of attaching it is plainly shown in Figs. 1 and 2, in the former of which it is mounted on a lathe and in the latter on a planer.

In Fig. 3 parts of the grinder are shown unassembled. Attached to the grinder head A with a clamp bolt is a steel shank, by which it is secured in the tool post of the machine. This shank is 9-16 x 1⅛ in. and of sufficient length to permit of necessary tool post adjustment. The

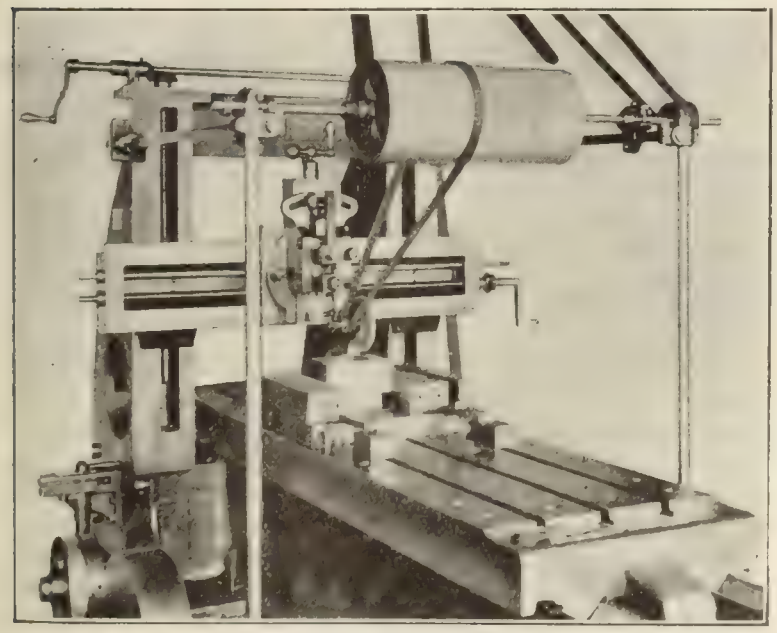


Fig. 2.—The Attachment as Used on a Planer.

wheel and pulley spindle is mounted in bronze dustproof bearings provided with dustproof oil cups, and perfect adjustment of the arbor shaft is maintained by screws set in the head to take up wear. Wheels up to ½ x 6 in. are carried by the spindle and are secured by a ⅜-in. clamp screw in the end of the spindle; the latter is driven by a 1-in. belt over a 1½ x 1 in. pulley. An extra extension spindle, B, is supplied for internal grinding, and an adjustment gauge, C, designed for use in grinding milling cutters and reamers, &c., completes the grinder head fittings. The part D is a section of the frame supporting the drum pulley from which the grinder is driven.

When used with a lathe the upright posts are attached to the outside runway of the lathe bed by bolt clamps. The uprights are 1⅛-in. polished steel rods, 4 ft. long, and are adjustable to any hight by using the thumb screws in the clamps. Horizontal arms 1⅛ in. in diameter by 17 in. long, clamped to the uprights, support the drum shaft bearings. These bearings are ball shaped and are held in hinge clamp sockets, one of which is shown on the horizontal arm of the frame, section D. This form of bearing admits of flexibility that makes close adjustment of the drum shaft, either vertical or horizontal, unnecessary. Swinging the arms to right or left or raising one slightly higher than the other will not destroy the alignment of the shaft bearings. This greatly facilitates the setting up of the attachment and removing it from one tool to another, since careful leveling and adjustment are not required.

As a lathe attachment the grinder is supplied with as

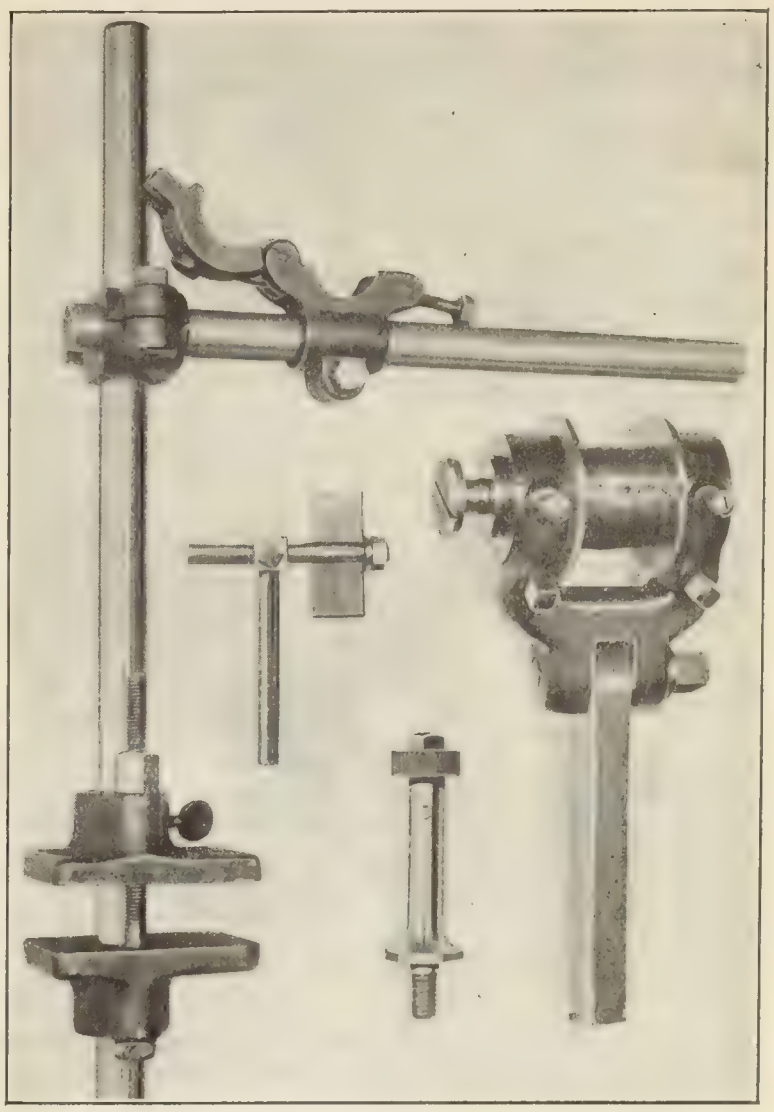


Fig. 3.—Parts of the Marvel Grinding Attachment Made by the Armstrong-Blum Mfg. Company, Chicago.

many speed changes, less one, as there are steps on the lathe cone pulley. The tool is driven from the large step of the cone through a 3 x 2⅛ in. flanged pulley on the end of the drum shaft. Thus, on a five-step cone lathe four speed changes are available for the grinder. The drum pulley, 20 in. long by 9 in. in diameter, is made of galvanized sheet steel, with malleable iron heads, and is secured to the shaft at each end by two large clamp nuts; it may be shifted along the shaft to any point required to accommodate the position of the grinder on the lathe bed.

By referring to Fig. 2 it will be noticed that, when applied to a planer, the position of the frame posts are reversed; that is to say, the uprights are here used as horizontal arms and are clamped to the sides of the planer housings, while the bars rest upon the floor. In this position the drive may be taken from a pulley on the planer countershaft. Being clamp bolted on the shank, the grinder head is readily tilted to accommodate the requirements of service as a planer attachment.

The weight of the entire attachment is about 100 lb.

# The Baillot Heat Recovering Cupola.

The *Proceedings* of the American Foundrymen's Association for the convention of 1908 have just been published. They give in full the discussion had at the Toronto meeting on the Baillot cupola, from which it appears that the melting of iron in this cupola at the meeting created very general interest in the claims made for it, while it left the participants desirous of obtaining further data as to possible economies. The system has been used in a considerable number of foundries in France and Belgium, and has been introduced in Montreal, Canada, but has not yet been put in operation in the United States. The inventor, A. Baillot, a Belgian engineer, set out to utilize as far as possible the waste heats of foundry cupolas, and the claims of fuel economies resulting from the use of the system range from 15 to 30 per cent. The theory on which the construction of the Baillot apparatus is based is embodied in the following statement

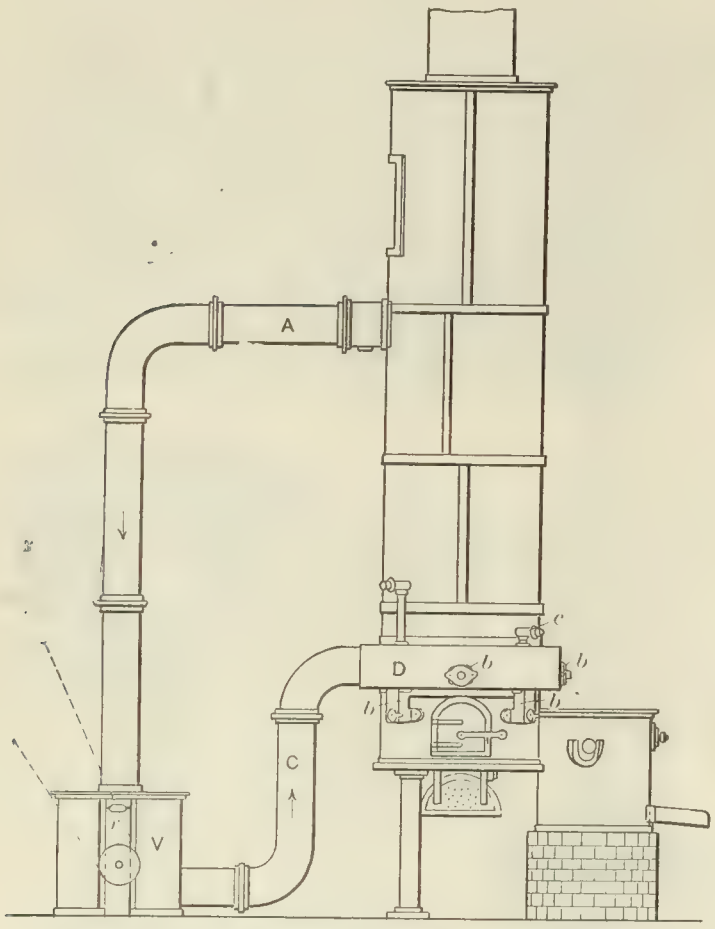



Fig. 1.—The Baillot Heat-Recovering Cupola.

monoxide, carbon-dioxide and steam, by the return to the tuyere zone of gases given off at the top of the cupola. The construction is indicated in Fig. 1, and the arrangement of the tuyeres and the "recuperating ring" is shown in Fig. 2. The method by which heat is utilized that with the ordinary construction would be waste is explained as follows:

"At points where combustible gases are taken off is a circular chamber imbedded in the brickwork. External openings, *d*, are provided here to admit air supply which, upon being circulated in the chamber, is warmed from the heat of the cupola that otherwise would have been lost. Through the pipe A the mixture of hot gases reaches the fan V, where another quantity of air is admitted to insure the necessary blast. This fresh air is supplied through the damper *r*. The blast, which is still very hot, is now delivered to the collecting chamber D by the pipe C. By-passes, *h*, formed by piling suitably shaped castings, R, insure a thorough mixing of air and gases as well as the exchange of temperatures. Obviously such a contrivance entirely avoids back pressure at the furnace top. Below is an analysis of gases taken in the inlet pipe before the additional supply of air is

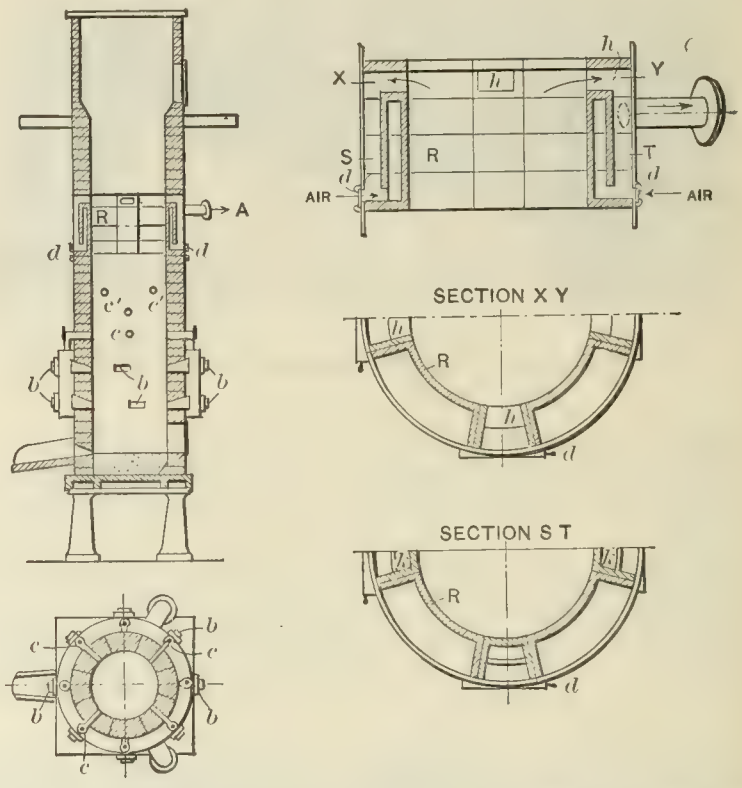



Fig. 2.—Sectional Views Showing the Arrangement of Tuyeres and the "Recuperating Ring."

of the conditions most suitable for the proper operation of a cupola, as submitted at the Toronto convention:

1. Distribute the blast through several rows of tuyeres along the full hight of the bed with a view to securing as complete and perfect a combustion as possible of the fuel and of the combustible gases, taking care to make the cross section of the upper tuyeres much smaller than that of the lower ones, so as to avoid sending an excess of air into the upper strata of the melting zone.

2. See that the position of these tuyeres varies according to the nature of the fuel, according to its degree of average humidity and according to its size, always bearing in mind at the same time that any fuel will always act with regard to the blast in the same manner as if it were all composed of pieces of the smallest size it contains; also, that anthracite and dense cokes will have a deoxidizing power considerably inferior to that of light porous cokes.

3. Mix in with the blast a stated amount of gases subject to being deoxidized by carbon at a high temperature, such as steam or carbonic gas. This will prevent the temperatures becoming excessive at points where the combination is most active, and so preclude the possibility of burning the iron; it will also transfer any excess of heat existing around the lower row of tuyeres to the upper strata of the melting zone, and in particular to that part of the fuel bed immediately in contact with the metal. It will secure also the thorough combustion of the whole mass of fuel.

The suggestions in the first and second paragraphs of the above are more or less familiar, upper tuyeres having been in use for a good many years. The novelty of the Baillot system is represented by the third paragraph, which refers to the introduction with the blast of carbon-

made. The average analysis, as shown, for the mixture is as follows:

| | Per cent. |
|---|---|
| Carbonic acid gas | 8 |
| Oxygen | 11.5 |
| Carbon monoxide | 2.5 |
| Nitrogen. | |

"The inlet draft having a speed of about 14 ft. per second, in a 9 2-3 in. diameter pipe, about 42 lb. of carbon-monoxide pass hourly. That weight of carbon-monoxide when burnt and changed into carbonic acid gas yields 39.064 calories, and it being assumed that a pound of ordinary cast iron requires 131 calories to be melted, the heat recovered in an apparatus dealing with 2400 lb. hourly is sufficient for the melting of 300 lb. of metal without any fuel being spent; the saving amounting to 12 per cent.

"As the production of carbon-monoxide cannot be entirely avoided among the layers above the tuyeres *b*, it was thought advisable to burn as much of it as possible without interfering with any of the other fittings, or with the working of the cupola, and more especially with the ease of management. Accordingly, additional tuyeres, *c* and *c'*, spaced on two superposed rows alternating respectively from one line to the other have been provided for above the so-called 'melting' tuyeres *b*. When delivered by the 'burning,' or upper, tuyeres, the blast burns a part of the carbon-monoxide that is passing in front of them in places where the heat is not great enough to

bring coke to an incandescent state. Considerable care must be taken when choosing a suitable place for the tuyeres in order to fulfill the above condition, though the temperature must still be high enough to allow of an immediate lighting up of the hot carbon-monoxide when it meets free air. The heating and melting tuyeres are supplied with air delivered by the fan, through pipes from the blast collecting pipe D. The generation of fresh carbon-monoxide is thus avoided. The upper row of tuyeres *c'* is only used when the high temperature space extends too high.

"The advantage of the use of 'burning' tuyeres is especially felt when lighting up, enormous quantities of carbon being evolved. The consumption of fuel is then considerably diminished. Further, the burning tuyeres widen the burning space and aid in the melting of metal that takes place lower down, this being much more easily accomplished. It is further hastened through the space where the lower tuyeres are situated, being hotter than usual, as the induced blast is warm. Drops of metal fall warmer in front of the melting tuyeres and quickly leave that part of the cupola, which is at the ordinary temperature. They collect at last in the crucible at a very high temperature, and the metal is much more fluid than is usual, slags are more easily separated and metal more easily cast. Fig. 1 is a general view of an apparatus with a receiver; two rows of melting tuyeres, *b*, and two rows of burning tuyeres being used. All tuyeres and air supplies can be regulated through the openings *d* and the damper. Owing to the blast being hot and the high temperature around them, the nozzles of the melting tuyeres are less liable to get choked."

In the discussion of the Baillot cupola before the American Foundrymen's Association, the point was emphasized that the process does not aim so much at using carbon-monoxide over again as at preventing its production as far as possible by giving more perfect combustion in the melting zone. It was granted that it is possible to obtain good combustion in any ordinary cupola, properly constructed and properly run, by using two rows of tuyeres, but the upper tuyeres are often blocked by the rapid accumulation of slag. The return of the gases to the melting zone is calculated also to prevent the burning out of linings and the consequent obstruction of tuyeres.

There was some disposition on the part of foundrymen taking part in the discussion to question the value of introducing at the tuyeres steam and carbonic gases for the purpose of taking away heat there and increasing it farther up. It was argued that the tuyere region is the place where heat is needed. To this it was replied that the gases returned from the top of the cupola operated to drive some of the heat toward the center of the bed where less air penetrates under ordinary circumstances and thus an equalizing action was secured. Some point has been made also of the oxidizing action at the point where the vapor in the returned gases is separated into oxygen and hydrogen. How far the liability of the molten iron to take up oxygen may detract from the advantages of the process is the question raised in this connection.

## Customs Decisions.

### Iron Ore.

The Board of United States General Appraisers adjudicated, November 7, a customs dispute between the Government and the Prince Mfg. Company and others of New York, regarding the classification of merchandise alleged to be iron ore. The collector of customs took the position that the merchandise should be classified for duty at the rate of 30 per cent. under the tariff provision for "crude hematite ore." The importers, on the other hand, set up the contention that the product must be considered "iron ore," with a tax of 40 cents per ton. There has been a great deal of litigation on this question. General Appraiser McClelland, who writes the decision for the board, says that inasmuch as the United States Circuit Court of Appeals has decided this question in favor of the importer in a test case, it is incumbent upon the board to sustain the protest in the case at bar. The decision of the collector is accordingly reversed.

### Bobbins for Spinning Machines.

It was decided last week by the Board of Appraisers that additional bobbins of wood imported with spinning machines cannot be regarded as integral parts of the machines. M. A. Graser Rothe, Cincinnati, Ohio, was the importer. It appeared that, while the bobbins accompanied the machines, they were packed and invoiced separately. The protest was against the assessment of duty on these bobbins of wood as parts of the machines at the rate of 45 per cent. under the provision in the tariff for "manufactures of metal." The importer claimed that the bobbins, of which there were 1000 to each machine, should be held to be dutiable as "manufactures of wood," with a tax of only 35 per cent. In sustaining the contention of the importer General Appraiser Fischer says it is evident that they (the bobbins) do not constitute with the machine a dutiable entirety and that they should not be classified together with the machines as units.

### Steel Points for Electrical Machines.

Steel points intended for use as conveyors of electricity in an electrical machine, for the treatment of the scalp and skin, have been decided by the board not to be "needles" within the meaning of that word as used in the tariff act. Henry Paulson & Co., Chicago, the importers, opposed the classification of the articles as "manufactures of metal," with a duty of 45 per cent. Instead, the firm alleged that the points should be deemed "needles," for the purposes of leving duty. The merchandise consists of so-called needles measuring 30 mm. in length, and similar in general appearance to the ordinary sewing needles, with the exception that they do not possess an eye to carry a thread. In denying the contention of the importers General Appraiser Fischer has this to say: "The articles are, in fact, steel points. They are not made to carry a thread and are not needles as that term is used in the tariff law, and in the absence of evidence to show that they are articles made from round steel wire, we must overrule the protest on all grounds."

### Rifle Barrels.

The differences between the Government and importers, of forged rifle barrels, rough bored, concerning the classification of these articles, will be brought into court shortly. Several weeks ago the Board of Appraisers, in passing upon the question, decided that the rifle barrels are entitled to enter this country under the tariff provision for "rifles and parts thereof," with duty at 25 per cent. The custom house authorities had assessed the articles at 45 per cent., alleging that the barrels are, in fact, manufactures of metal as specified in the revenue law. The Treasury Department now announces that it will not accept the decision of the board as final, and an appeal is directed to be taken to the courts. It is said that domestic manufacturers of rifle barrels persuaded the Government to take an appeal, in view of the low rate of duty found by the Board of Appraisers to accrue on the foreign products.

Routine decisions have been handed down by the board as follows: Davies, Turner & Co., Boston, steel tubes, protest sustained. Edgar T. Ward and Sons, Boston, steel in strips, protest sustained. Hermann Boker & Co., New York, cold rolled steel, smoothed only, protest upheld.

A patent has been granted to Julius H. Meissner, Pittsburgh, on a blast furnace construction which is offered as a preventive of hanging and slips and the resultant explosions. With a view to preventing choking of the burden and to secure a positive feed at the bosh, the inventor proposes to make this section of the furnace rotatable. The upper portion of the stack is to be carried on columns in the usual way. For the separate support of the bosh a circular structure of I-beams is provided, the beams being carried on brackets projecting from the columns. On this structure it is proposed to mount a heavy circular bedplate with guides for antifriction rollers, the latter carrying brackets which are secured to the bosh. The inventor has not been connected with blast furnace operations, but has patented devices in several other mechanical lines.

# Trade Publications.

**Core Prospecting Drills.**—Birdsboro Steel Foundry & Machine Company, Birdsboro, Pa. Catalogue, 6 x 9 in.; 39 pages. The company's line of diamond pointed drills is described and illustrated in this volume and parts of the machine are shown. Space is given to drills specially adaptable for artesian well boring and diagrams illustrating the performance of the company's core drills are shown.

**Manganese Steel Products.**—Taylor Iron & Steel Company, High Bridge, N. J. Booklet and circulars. The first contains a condensed list of the company's line of steel castings, including car wheels, centrifugal pump parts, jaw crusher parts, &c. The circulars concern special products of the company. One is devoted to a special tooth for steel shovels and another covers manganese steel ball mill and Kominuter plates.

**Spiral Riveted Pipe.**—American Spiral Pipe Works, Chicago, Ill. Catalogue No. 5, 8 x 10½ in.; 78 pages. Numerous illustrations of installations of the company's spiral pipe and flanges are shown in this volume, and some material heretofore issued in pamphlet form is included. An interesting illustration is that of an installation of the company's pipe in a refrigerating plant, showing the pipe, after five years of constant service in carrying brine, in as good condition as when it was installed. Profile maps of pipe installations are included, and some special sheet steel fittings are illustrated. Gaskets, sluice gates, gate valves, foot valves, boiler flanges, &c., are illustrated and price-lists and useful tables are given.

**Horizontal Boring and Milling Machines.**—Fosdick Machine Tool Company, Cincinnati, Ohio. Circular. Gives description and specifications of the No. 0 horizontal boring, drilling and milling machine described in *The Iron Age* January 10, 1908. A half-tone illustration of the machine and sectional drawings are included.

**Metallic Packing.**—C. Lee Cook Mfg. Company, Louisville, Ky Brochure. The company's line of metallic packing is shown and its application to piston rods, valves, &c., is illustrated. A list of users is given.

**Heating Furnaces.**—Model Heating Company, Philadelphia, Pa. Pamphlet. The Model furnaces for heating are shown in several types, including square and round furnaces, and the illustrations include sectional views of the more important types of the company's manufacture.

**Boring and Turning Mills.**—Gisholt Machine Company, Madison, Wis. Loose leaf. Shows the company's standard type of vertical boring and turning mills and describes the machines.

**Generators.**—Northern Electrical Mfg. Company, Madison, Wis. Bulletins and leaflets. No. 55 treats of the type L engine-driven generators and states facts covering the use of the machines. No. 56 describes the company's type B belted motors and generators, which are built in a range of sizes and speed to meet all commercial requirements. Leaflet No. 151 deals with a motor-driven wood-turning lathe; No. 152, with Northern-Davidson ventilating fans; No. 153, Northern motors in furniture making, and No. 154 with Northern electric emery grinders.

**Engine Lathes.**—Hendey Machine Company, Torrington, Conn. Catalogue, 6 x 9 in.; 112 pages. The company's line of lathes is fully described and illustrated, and samples of work done by some of the machines are shown, together with their various attachments. Space is given to lathe and drill chucks, threading tools, &c., and the lathes shown include motor-driven lathes, engine lathes in a number of types, turret lathes, &c.

**Central Station Transformers.**—Wagner Electric Mfg. Company, St. Louis, Mo. Bulletin No. 81. Gives a complete and illustrated exposition of the company's central station transformers.

**Condensers, Air Pumps, Feed Water Heaters, &c.**—Wheeler Condenser & Engineering Company, Carteret, N. J. This is the first of a series of engineering treatises outlining this company's products, and is numbered 101. It refers to the Wheeler admiralty surface condenser, Wheeler jet and barometric condenser, Wheeler-Edwards patent air pump, Wheeler-Volz combined condenser and feed water heaters, vertical engines, centrifugal pumps, dry vacuum pumps, &c. Useful and practical tables on condensing work are given, with other information.

**Machine Tools.**—Manning, Maxwell & Moore, Inc., New York. Catalogue, 10 x 13 in.; 1174 pages. This is a volume 2½ in. thick, embracing the company's full line of machine tools, and can almost be called an encyclopedia of machine tools. Attention is called in the introduction to the fact that the development of high speed steels and the application of motor drive has necessitated a redesigning of the general line of machine tool equipment, and to make the catalogue up to date it has been necessary to use new halftone illustrations throughout. There is a general table of contents in the front, while a complete index in the back of the book makes it easy to find any desired tool quickly. Included are illustrations of 10 of the company's principal branch houses in addition to its headquarters, which are in the Singer Building. The company has evolved particularly complete telegraph and cable codes, making it possible for customers in any part of the world to make complete inquiries covering machinery at but little expense. With these codes are included a code for electric currents and special codes for lengths of beds and tables for lathes and planers. Lathes and planers of especially heavy design are given precedence, and the various lines of machine tools follow. The book is printed on heavy glazed paper and is substantially bound in cloth.

**Ignition Specialties.**—Pettingell-Andrews Company, Boston, Mass. Catalogue, 6 x 9 in.; 16 pages. Illustrates the company's line of ignition specialties, showing coils, switches, vibrators, spark indicators, &c.

**Track Appliances.**—Hayes Track Appliance Company, Geneva, N. Y. Circular. Devoted to the Hayes derail and contains illustrations of the appliance in use. The company also makes target stands and other track appliances.

**Steel Mine Cars.**—Arthur Koppel Company, Pittsburgh, Pa. Circular. Advocates the use of the company's steel mine cars as against wooden cars, and briefly describes the general designs of the company's standard cars.

**Steam and Oil Separators.**—Pittsburgh Gage & Supply Company, Pittsburgh, Pa. Booklet. The Pittsburgh separator (formerly known as the Detroit), for live or exhaust steam, patents on which have recently been secured by the company, is shown and described. It is made in sizes from 18 in. upward.

**Steel Castings.**—Monarch Steel Castings Company, Detroit, Mich. Catalogue, 6½ x 9½ in.; 24 pages. Contains principally illustrations of car couplers and parts, draft rigging and repair knuckles and couplers. The company manufactures knuckles to repair all the known makes of couplers, and these are shown by line drawings.

**Bench Lathes and Automatic Machines.**—Waltham Machine Works, Waltham, Mass. Catalogue, 6 x 9 in.; 21 pages. The company's standard 8-in. bench lathe, described in *The Iron Age* October 29, 1908, is fully covered in this catalogue, including its various attachments, the application of which to the machine is fully explained. A milling machine is illustrated in the same manner and an automatic brass gear cutter and automatic pinion cutter is shown.

**Bolt Cutters.**—Mummert, Wolf & Dixon Company, Hanover, Pa. Folder. Describes the Plurality die bolt cutter, which is furnished with a set of three dies, which it is claimed will take the place of from 48 to 96 pieces required in some machines. The dies are interchangeable and are shown in the folder, together with a full view of the assembled machine.

**Heating and Ventilating Systems.**—Buffalo Forge Company, Buffalo, N. Y. Catalogue 197, 6 x 9 in.; 143 pages. A well compiled treatise on the heating and ventilating of public buildings. The company's fan system for this purpose is described at length. An ideal layout of the company's system in a public school is given, and a number of business buildings where installations have been made are shown, together with diagrams explaining the application of the system in railroad shops, power plants, foundries, &c. Interesting in this connection is the description of the system applied to scattered buildings in the plant of the Warren Featherbone Mfg. Company, Three Oakes, Mich. The fan apparatus is illustrated and fully described, and data is included on heating and ventilating.

**Steel Car, Ties and Rail Joints.**—Carnegie Steel Company, Pittsburgh, Pa. Catalogue, 5½ x 8¼ in.; 61 pages. The advantages claimed for the company's steel ties over wood ties are cited and sectional views of the company's standard ties are shown, together with some excellent illustrations of roads where the ties are in use. Details of concrete construction used in connection with an installation of the tie are illustrated, and there are also views of the company's patented rail joint.

**Bolts, Nuts, Rivets, Wagon Iron Hardware, &c.**—Oliver Iron & Steel Company, Pittsburgh, Pa. Booklet. This is the company's standard price-list No. 54, and besides listing the lines mentioned above illustrations and prices of mattocks, picks, grub hoes, crow bars, pole line equipment and car and general forgings are given.

**Thermit in Foundry Practice.**—Goldschmidt Thermit Company, 90 West street, New York. Pamphlet, 6 x 9 in.; pages, 28. Revision to October, 1908, of literature dealing with thermit reactions. Much space is given to a report on the methods used to avoid piping in steel ingots as applied in the Hungarian Government steel foundries at Diosgyor. The use of a can of thermit fastened to a rod, in the prevention of piping in steel ingots, is illustrated. In foundry practice the can of thermit is thrust into the ladle. Riser thermit cans are also manufactured. The quantity of thermit varies from 1 to 10 per cent., calculated on the contents of the riser. Attention is also given in the pamphlet to the use of calcium silicide as a purifier of steel. By adding calcium silicide to a steel with 0.04 to 0.05 per cent. sulphur the sulphur can be reduced to 0.02 per cent., calcium sulphide being formed, while the silicon is mostly oxidized and combines with bases present to form a highly liquid slag. The introduction of the calcium silicide method was only begun in the early months of 1908.

**Electrical and Steam Machinery.**—MacGovern, Archer & Co., 114 Liberty street, New York. Monthly list, November issue. Gives brief specifications of second-hand alternating and

direct current dynamos and motors, rotary converters, transformers, cars, motors, controllers, engines, boilers, condensers, &c., offered for immediate shipment.

## New Publications.

**Progressive Pennsylvania.** A Record of the Remarkable Industrial Development of the Keystone State, with Some Account of Its Early and Its Later Transportation Systems, Its Early Settlers and Its Prominent Men. By James M. Swank, 261 South Fourth street, Philadelphia. Cloth, 360 pages. Price, $5.

The author of this work needs no introduction to the iron and steel trade. Secretary and general manager of the American Iron and Steel Association for the past 36 years he has won for himself an indelible reputation throughout the world as a gatherer of statistics relating to the iron trade, which are universally accepted as accurate, receiving the high consideration usually given only to official figures bearing Government authorization. His "History of the Manufacture of Iron in All Ages," the first edition of which was published some 24 years ago, was to some extent an outgrowth of his work in recording from year to year the development of the American iron trade, preserving in permanent form the records of the achievements of the pioneers in various branches of the trade and in what are now leading centers of iron production. Mr. Swank's literary talents have been displayed in numerous other publications of a less ambitious character, all of which have shown that he is not a mere compiler of figures, but that he has the power of investing otherwise dry facts with living interest. His latest book is an exemplification of his pride in his native State. Always by inclination a student of history, obliged by his occupation to be a close observer of men, and from his boyhood constantly associated with those engaged in the development of large enterprises, it is not surprising that he has found in the achievements of the citizens of his State a wealth of material to whose exploitation his pen was lovingly if most industriously driven. Those who infer from the title of this book that it contains endless tables of statistics relating to Pennsylvania will need to turn to some other work for such information. It is replete with historical facts, most carefully verified, according to the author's unfailing habit, and much of what is set forth will be new to the general reader or will strike him as being presented in a new manner. Its 34 chapters are practically monographs, each treating of subjects not usually related to those handled in other chapters. All are of more than local interest. The book will undoubtedly attain permanent value as a work of reference.

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**Cyclopedia of Civil Engineering.** A general reference work. Edited by Prof. F. E. Turneaure, Dean of the College of Engineering, University of Wisconsin. 8 volumes. Published by the American School of Correspondence, Chicago, Ill. Price, $24.

Under the leadership of Professor Turneaure a corps of authorities, chiefly educators, has produced a truly monumental general reference work on civil engineering, in eight volumes, well printed, and equipped with a profusion of half-tone and line illustrations. The first volume covers Plane Surveying, by Alfred E. Phillips, and Mechanical Drawing, by Ervin Kenison, examples being worked out in detail in order to show the application of the various methods and principles. Test questions and problems are printed at the close of the volume. Plotting and Topography and Railroad Engineering, both by Walter Loring Webb, fill the second volume, while the Strength of Materials, and Statics, both by Edward R. Maurer; Roof Trusses, by Frank O. Dufour, and Cost Analyses Engineering, by R. J. Dana and H. P. Gillette, are grouped together in the third volume. The latter illustrates how those who have planned the work have embraced in it teaching in some of the most modern branches of engineering effort. The latest practice, too, is presented in the fourth volume, by W. L. Webb and W. H. Gibson, on Masonry and Concreting Materials, Stone Masonry and Plain Concrete Construction, and Reinforced Concrete. E. A. Tucker writes of Steel Construction as applied to buildings, foundations, &c., in volume V, there being also a chapter on Practical problems in Construction, by Sidney T. Strickland and Charles H. Rutan. Bridge Engineering and Highway Construction are taken up in the sixth volume, Frank O. Dufour covering the former and A. T. Byrne and A. E. Phillips the latter. The seventh volume embraces Water Supply, by Frederick E. Turneaure; Irrigation Engineering, by Alfred E. Phillips; Sewers and Drains, by Anson Marston, and Plumbing, by W. B. Gray and C. B. Ball. Professor Turneaure himself is the author of the chapter on Hydraulics. Adolph Black deals with Water Power Development, in the light of the latest great activity in this country, and Charles E. Morrison presents chapters on River Improvement and Harbor Improvement.

A striking feature of the entire series of volumes is the close attention to the latest developments and to modern practice in our own country and the absence of any rehash from old text books.

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**The Chemical Analysis of Iron.** By Andrew Alexander Blair. Seventh edition. Published by the J. B. Lippincott Company, Philadelphia.

The mere announcement that the seventh edition of Blair's work on the Chemical Analysis of Iron has been issued is sufficient, since it is the standard work in English. Mr. Blair has brought the work to date throughout. He has added a method for the separation of vanadium, molybdenum, chromium and nickel in steel and has made some changes in the method for gas analysis. He has also recalculated the table of factors from the values for 1908, as given by the International Committee, in order to meet the changes in atomic weight.

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**The American Machinists' Handbook.** By F. H. Colvin and F. A. Stanley, associate editors of the *American Machinist.* Size, 4 x 6¾ in.; pages, 513. Illustrated. Flexible leather binding. Price, $3. Publisher, the Hill Publishing Company, New York.

Almost all professions have their handbooks. There are those for civil, mechanical, electrical and constructing engineers, doctors, lawyers and even business men, but machinists and machine designers have had only scattered authorities. Probably the first attempt to collect between two covers the information they have need of is the American Machinists' Handbook. The inscription on the title-page describes this book very concisely and exactly: "A reference book of machine shop and drawing room data, methods and definitions." Much of the information has been available before in other sources. There is, of course, nothing new in the tables, and in many of the formulæ. At the same time there is a considerable bit of original matter, and very much that is not familiar to the average user. Naturally some subjects will seem elementary, but a work of this kind cannot be prepared for experts alone, and would be condemned as incomplete without it.

As giving some idea of the contents of the book the following main classification headings are noted: Screw threads, pipe and pipe threads, twist drills and taps, taps, files, work benches, soldering, gearing, milling and milling cutters, grinding and lapping, screw machine tools, speeds and feeds, punch press tools, bolts, nuts and screws, calipering and fitting, tapers and dovetails, shop and drawing room standards, wire gauges and stock weights, belts and shafting, steel and other metals, general reference tables and shop trigonometry.

Not the least useful part of this book is the dictionary of machine shop terms given as an appendix. It is a thing which should prove of value in hastening a standardization of the terms now so at variance. There are some definitions that will be taken exception to, and there are many omissions, but it would be strange were the first attempt to compile such a dictionary complete. It gives, however, a basis for building up an extremely valuable authority, and the authors will doubtless welcome all assistance to bring it to the state of perfection that is much to be desired. In fact they invite criticisms and suggestions on all parts of the book.

# Steel-Hardening Metals Produced in 1907.

The production in 1907 of the minerals comprising the so-called steel hardening metals, tungsten, nickel, titanium, molybdenum, vanadium and uranium and tantalum, is described in the forthcoming annual report of the United States Geological Survey prepared by Frank L. Hess. Several of these minerals are now of much commercial importance and development and prospecting are being actually prosecuted in many regions.

### Tungsten.

The output of tungsten in 1907 nearly doubled, but the supply overtook the demand and a decline in price resulted. During the first nine months of 1907 the business in tungsten ores and products was brisk, prices were high, ranging from $9 to $14 per unit for tungsten ore carrying 60 per cent. or over of tungsten trioxide, and there was a large increase in the production both in this country and abroad. On October 1 one of the large dealers stopped buying, and others followed, though some buying continued at low prices, $5 per unit being an ordinary offering during the latter part of the year.

The demand during the first part of the year was much greater than that of 1906, and was due mostly to the use of tungsten in tool steel. Under the stronger demand, with a consequent rise in prices, prospecting and mining were both actively prosecuted, so that the output of the United States was increased from a total of 928 net tons of concentrates carrying 60 per cent. tungsten trioxide in 1906 to 1640 net tons in 1907, while the value rose from $348,867 to $890,048. Colorado, the tungsten mines of which are all located in Boulder County, again led in production with 1146 tons of wolframite approaching ferberite in composition, valued at $573,642. California was the second State in order of production, while smaller amounts were produced in Montana, Washington, Nevada, Arizona and probably in New Mexico. The output from California and most of that from Montana was in the form of scheelite, of which a total of 414 net tons was mined. No ore is known to have been produced in South Dakota, although much prospecting was carried on.

The tungsten mining industry of Boulder County, Colorado, is largely in the hands of a few companies, several of which work their properties by leasing. Only a few of the companies have concentration plants, and these companies either buy the ores produced by smaller operators or operate their plants as custom mills. The losses in milling are serious, and efforts are being made to reduce them. The ores ordinarily mined are said to require from 20 to 30 tons to produce one ton of concentrates carrying 60 per cent. tungsten trioxide. Richer ores than this are mined, but they are the exception. The larger companies find it impossible as a rule to produce tungsten ore profitably at $5 or less per unit, so that the product for 1908 will undoubtedly be less than for 1907.

The largest individual American producer of tungsten ores, and probably the largest in the world during 1907, was the Cardinal Company at Boulder, Colo. In California by far the largest production was made by the Atolia Mining Company at Atolia, San Bernardino County, 5 miles south of Randsburg.

### Nickel.

A certain amount of nickel, cobalt and copper sulphides occur with the lead ores in southeastern Missouri, and a considerable saving of these concentrates was made by the Hudson Valley Lead Company and the North American Lead Company of Fredericktown. The latter company operates a smelter for reducing the metals. The only other production of these ores was made by the Standard Consolidated Mining Company, Prairie City, in the eastern central Grant County, Oregon. However, like that of tin, the total output of nickel and cobalt in the United States was insignificant when compared with either the world's output or the amount used in the country. Owing to the fact that the total output cannot be given without allowing the individual productions to be known, the figures will not be printed.

As in former years, the principal producing foreign mines were those at Sudbury, Ontario, and in New Caledonia, with mines producing smaller amounts in Norway, Germany, Peru and Mexico.

The production of Ontario, Canada, in 1907, though somewhat less than in 1906, was larger than the combined production of the other deposits of the world. The production of nickel ore and matte in Ontario, since 1905, has been as follows:

| Year. | Ore smelted. | Matte obtained. | Nickel in matte. |
|---|---|---|---|
| 1905 | 257,421 | 17,388 | 9,438 |
| 1906 | 340,059 | 20,364 | 10,745 |
| 1907 | 359,076 | 22,041 | 10,095 |

The matte was practically all shipped to other countries for refining, 1259 tons going to England and 8429 tons coming to the United States.

The imports of nickel into the United States since 1905, inclusive, as reported by the Bureau of Statistics, have been as follows:

| Year. | Nickel, nickel ore and matte, nickel oxide, alloys of nickel with copper, &c. Pounds. | Value. | Value of manufactured articles of nickel. | Total value. |
|---|---|---|---|---|
| 1905 | 31,072,206 | 1,958,840 | 3,291 | 1,962,131 |
| 1906 | 34,082,042 | 1,867,568 | 8,963 | 1,876,531 |
| 1907 | 18,598,638 | 2,233,867 | 9,159 | 2,243,026 |

### Titanium.

The only American production of titanium ore during 1907 was made by the American Rutile Company from their rutile deposits at Roseland, near Arrington, Nelson County, Va. Their output was considerably increased over that of 1906, but as there was but one producer the Survey is unable to state the amount.

Much activity was shown in experimenting with ferrotitanium during the year, and the American Titanium Alloys Company at Niagara Falls, in co-operation with various railroad companies, caused several lots of rails to be made in which ferrotitanium was used. These rails are being tested by actual use, and so far the results are said to be encouraging. The use of titanium in gray iron seems to give much promise, while less effect is seen in white iron. The favorable action of titanium seems to be entirely that of a scavenger, combining with and removing in the slag the oxygen and nitrogen contained in the iron or steel. It is said that this allows the making of steel rails with a much higher carbon content, thus making a harder rail, while retaining the toughness of the mild steel. However, the experiments now under way will go far toward definitely establishing these points. The tendency is to use ferrotitanium with a low titanium content, and 10 per cent. titanium, low in carbon, seems to be called for most often. Only one-tenth of 1 per cent. of titanium is needed to treat steel or iron. The company is also engaged in experiments with cuprotitanium. The Primos Chemical Company, Primos, Pa., is also engaged in experiments with ferrotitanium and other titanium alloys.

### Molybdenum.

The only production of molybdenite reported was a small lot of hand picked ore, mined by the Crown Point Mining Company at Crown Point, near Lake Chelan, Wash., but it was not sold during 1907. The small production is not due to lack of deposits, but to difficulties of concentration and an inactive demand. The use of molybdenum in steel seems to have made no headway in this country during the year, though it is still a matter of interest in Europe. Several mining companies are interested in working the Maine deposits at Cooper, Tunk Pond and near Machias.

### Vanadium.

Vanadium iron oxide, from which ferrovanadium was made, was produced by the Vanadium Alloys Company, Newmire, Colo., and a small amount of sodium vanadate was produced by the Dolores Refining Company, Cedar, Colo. Both companies took steps toward a change in processes during the year.

The Vanadium Alloys Company used roscoelite as an ore, which it obtained from the United States Vanadium Company, Telluride, near Newmire. The Dolores Refining Company obtained its vanadium product as a by-product in the manufacture of uranium salts from carnotite

from ores obtained in the vicinity of the mill. One lot of vanadium ore containing roscoelite was exported by J. C. Simmons from Newmire to England during the year. J. W. Wescott, Cedar, Colo., was also a producer of similar ore. All the ore is practically from surface excavations. Discoveries of vanadinite (lead vanadate) were reported by the Copper Ridge Mining and Development Company at Magdalena, N. M., the Prassinos Copper Mining Company, 23 miles south of Casa Grande, Ariz., and from the Rothschild mine, 27 miles northwest of Dillon, Mont., but no output is known to have been made at either place.

The total quantity of ore sold or used in 1907 was 1042 tons, which probably averaged little over 2 per cent. vanadium, all produced at the places noted in southwestern Colorado, and was probably worth about $6000 at the mines. In the performance of assessment work at various localities some ore was removed, which was left on the dumps.

The American Vanadium Company, Pittsburgh, carried on many experiments with regard to the application of vanadium to steel and cast iron during the year, and test pieces of armor plate were made. The deposits from which it draws its supplies are at Cerro de Pasco, Peru.

**Uranium.**

Little was done with uranium deposits in the United States during 1907. Assessment work was performed on many claims in Colorado, and a small amount of uranium salts was turned out by the Dolores Refining Company, Cedar, Colo., from carnotite obtained from surface excavations in the vicinity.

**Tantalum.**

The price of tantalum dropped very greatly in 1906, and did not recover during 1907. The demand was very light, and prices were a matter of contract. The only production reported was a few hundred pounds in South Dakota, while another lot of unknown weight and value, probably from North Carolina, was shipped to France.

## The National Society for the Promotion of Industrial Education.

The second annual meeting of the above named society is to be held at Atlanta, Ga., November 19, 20 and 21, for which occasion a most attractive programme has been arranged, including a public banquet, at which Governor Hoke Smith will act as toastmaster. State branches are now organized in Alabama, Georgia, Massachusetts, Montana, Ohio, Rhode Island, Virginia and Pennsylvania, with State committees co-operating in 26 other States.

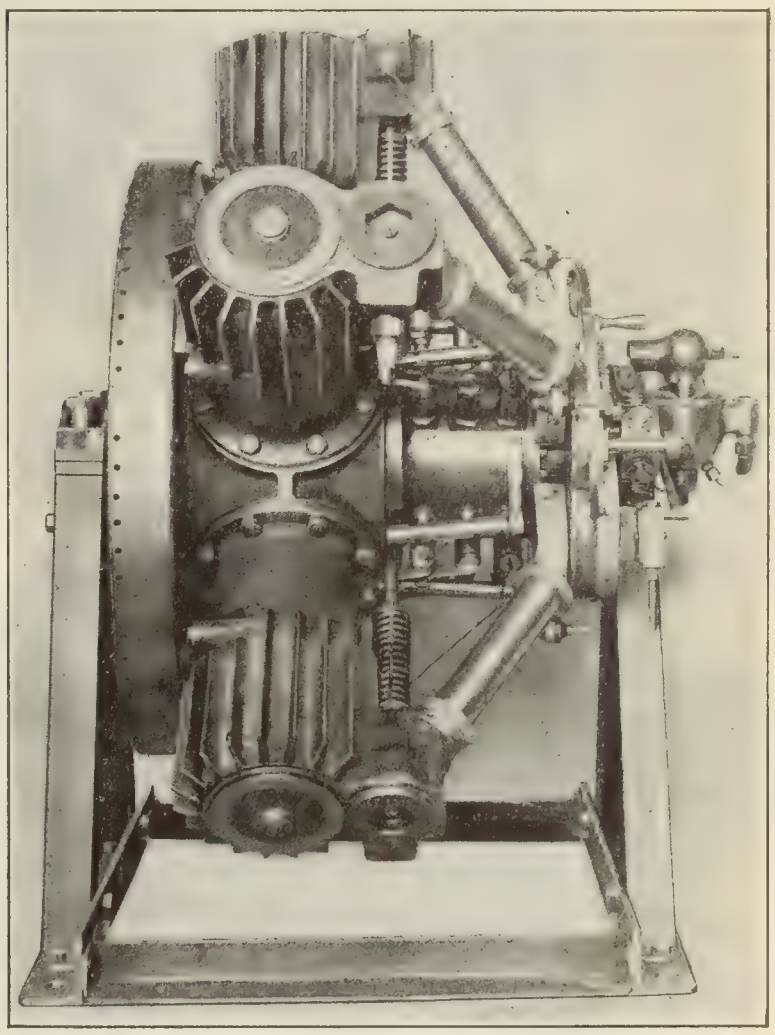
The Pennsylvania branch was organized at a meeting held at the School of Industrial Art, Broad and Pine streets, Philadelphia, October 29. The following officers were elected: President, Leslie W. Miller, Philadelphia; vice-presidents, Arthur A. Hamerschlag, Carnegie Technical Schools, Pittsburgh; John M. Shrigley, Williamson School, Delaware County; H. H. Stoek, editor *Mines and Minerals*, Scranton; Dr. Nathan C. Schaeffer, Harrisburg; Paul Kreutzpointner, Altoona; treasurer, Wm. F. Gray, Central High School, Philadelphia. Board of Directors: Wm. C. Ash, Philadelphia Trades School, Philadelphia; Harry S. Bitting, Williamson School, Delaware County; Thelwell R. Coggeshall, Girard College, Philadelphia; J. Sellers Bancroft, Philadelphia; Laura H. Carnell, Temple College, Philadelphia; Wm. C. Easton, Philadelphia; Wm. A. Mason, Germantown; David Lupton, David Lupton's Sons Company, Philadelphia; W. J. Spencer, Wyndmoor, Philadelphia; Ronald P. Gleason, Scranton; Charles F. Scott, Westinghouse Electric & Mfg. Company, Pittsburgh; W. Lucien Scaife, Scaife Foundry & Machine Company, Pittsburgh.

A monorail street railway will probably be built in New York City. The Interborough Rapid Transit Company has sold the Pelham Park & City Island Railroad Company, which is a short horse car line in the extreme northeastern part of Bronx Borough to the Monoroad Construction Company. Application has been made to the Public Service Commission by the latter company to construct a monorail road on this line. H. B. Reed is chief engineer of the company, and H. H. Tunis is consulting engineer.

## The Los Angeles Rotary Gas Engine.

A new form of revolving gasoline engine, built by the Los Angeles Rotary Gas Engine Company, Los Angeles, Cal., is in daily operation in an automobile in that city. The five cylinders are fixed to a circular muffler that looks like a flywheel, and revolve about the shaft, which is stationary, the piston rods acting on cams on the shaft and the power being taken from a wheel bolted to the revolving cylinders. The cylinders are air cooled, obviously in a more thorough way than is possible with the usual type of air cooled engine.

The rotating cylinders obviate the need of a flywheel, and as their charges are exploded alternately every second revolution, the engine has an extremely even motion, doing away almost altogether with vibration arising from the straight line reciprocation where the cylinders are stationary. This feature alone makes the new engine valuable in pumping plants and for the running of dynamos, although it was originally designed strictly as an automobile motor. Lubrication is by centrifugal force, the oil being introduced through a hole in the shaft, and thence thrown to all parts of the cylinders by the rapid rotation.



A Revolving Gasoline Engine for Automobiles, Built by the Los Angeles Rotary Gas Engine Company, Los Angeles, Cal.

This engine has shown itself unusually well suited for hill climbing since it steps up from low to high speed very quickly, owing to the absence of change speed gears; the engine is capable of being held down to a speed of a man's walk while running on what would be known as the highest gear on the usual form of vertical engines.

The 22-24 hp. engine, the size designed for use in runabouts and small touring cars measures only 23 in. in diameter and 14 in. wide, while its cost is approximately two-thirds that of an engine of the same power built after the usual form. The weight is about 25 lb., but the engine can be made much lighter if desired by the removal of certain parts, which, when added, do away with some of the objectionable features of the vertical reciprocating engines. It is planned to experiment with the lightest of these engines for use in aeroplanes.

## The Gridley Piston Ring Machine.

Principally the semiautomatic machine illustrated in Fig. 1 is intended for forming piston rings ready for grinding on the edge, boring the inside, turning the outside eccentric and cutting off the ring from the casting automatically. The operator has only to fasten the casting on the studs in the faceplate by three nuts, as shown in Fig. 2, and start the machine. As all three of the operations are going on at the same time, and as the operator has to give only a small part of his time to the machine, it will manufacture rings at very small cost. The machine will handle rings up to 6 in. in diameter, either eccentric or concentric, and will produce from 300 to 400 rings per day of 10 hr. The machine is also arranged, as indicated in Fig. 3, for turning and grooving pistons up to 6 in. in diameter, the output being about four per hour, according to size, and 4-in. pistons have been manufactured at the rate of seven per hour. It is built by the Windsor Machine Company, Windsor, Vt., and was designed by George O. Gridley of the company, whose name it bears.

It will be noticed that the machine is of the standard Gridley automatic type, with a special part substituted for the turret. The function of this part is to cut the outside diameter of the ring eccentric and the inside concentric, and to cut off each ring as fast as it has been machined. The eccentric shape is produced by a lateral reciprocation of the tool slide, obtained from an eccentric bushing on the shaft *c*, shown in the line drawings. The shaft is driven from the spindle by gears of equal diameter, and the eccentric rotates in a square block.

The details of the mechanism for eccentric turning are given in Fig. 4, which shows a plan with a partial horizontal section on line A A, an end elevation and a

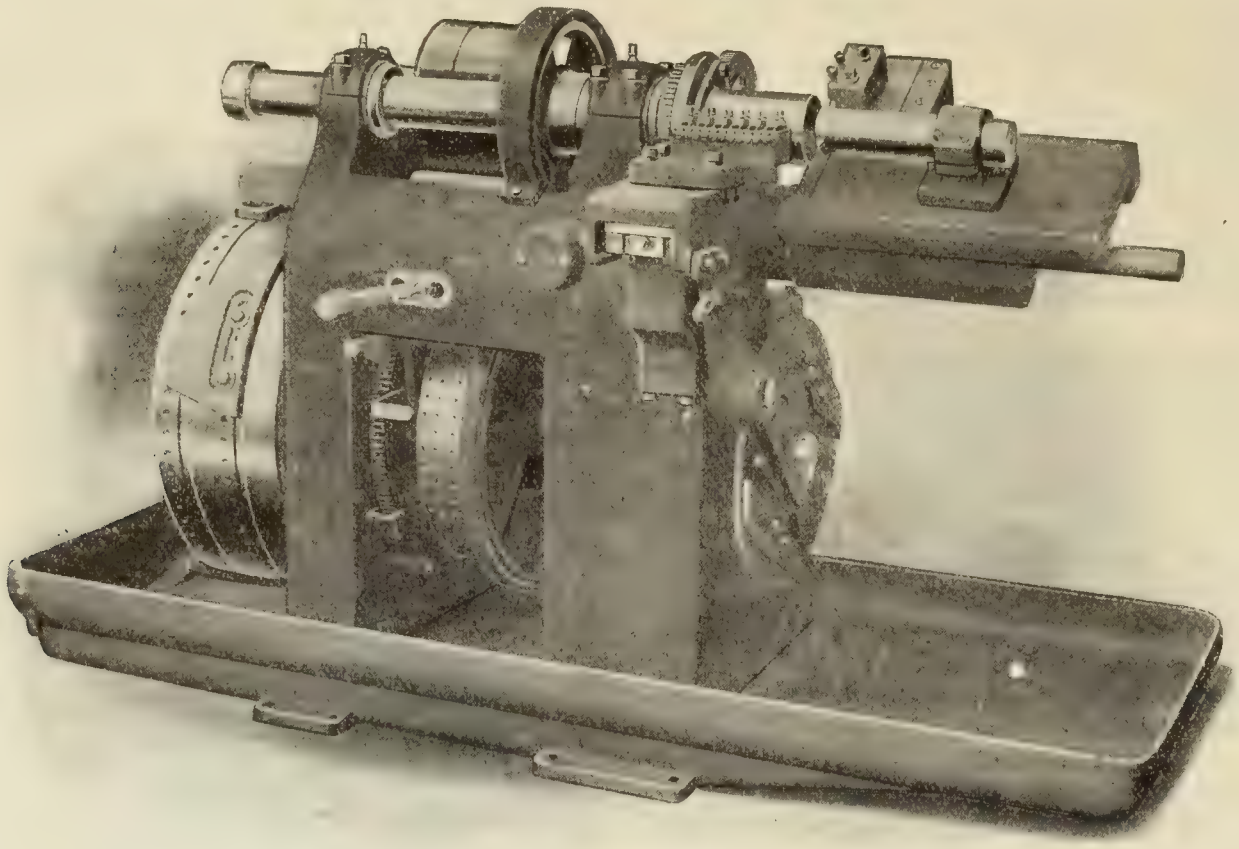


Fig. 1.—The Gridley Semiautomatic Piston Ring Machine Built by the Windsor Machine Company, Windsor, Vt.

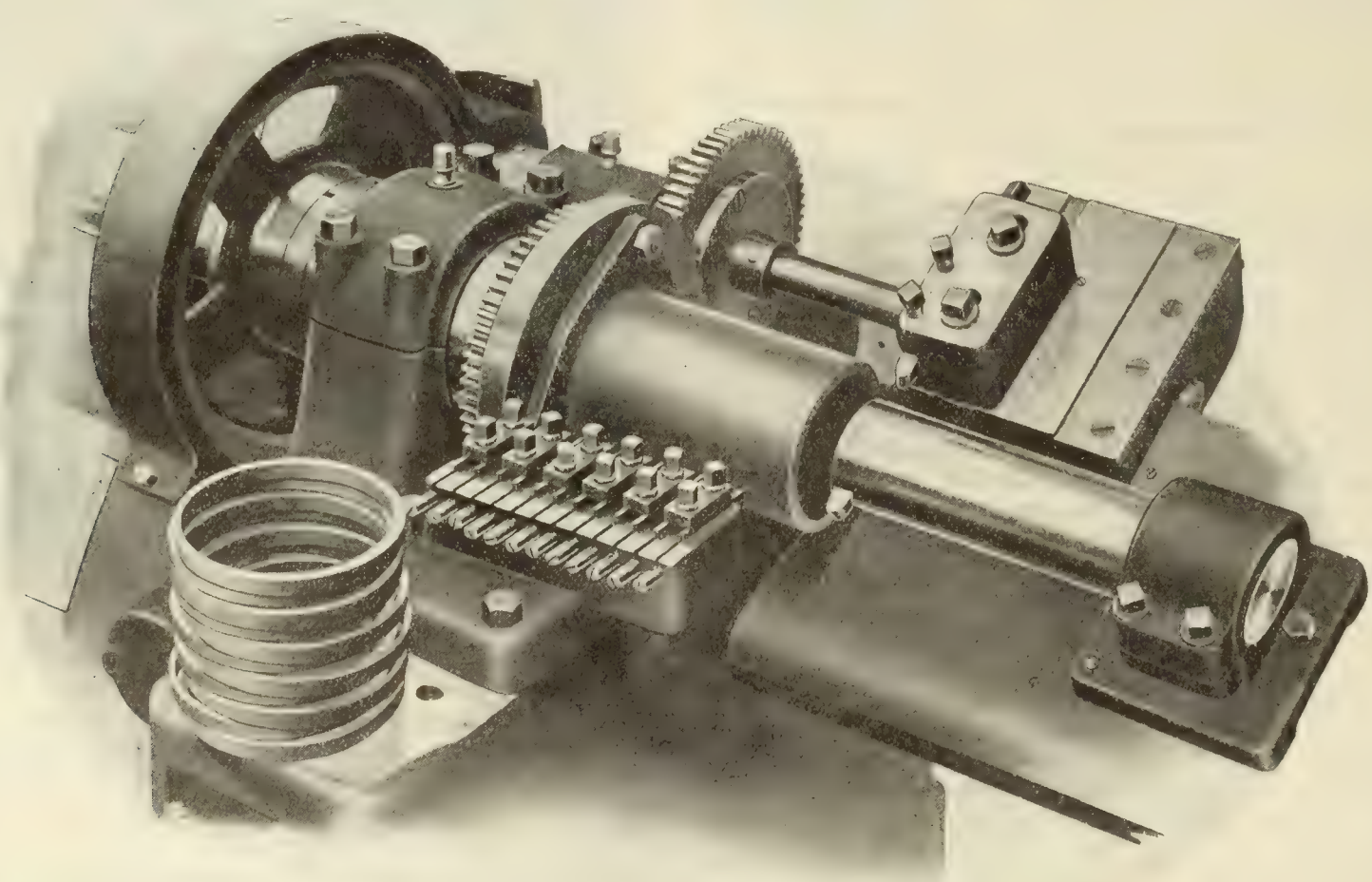


Fig. 2.—Detail of the Working Parts as Set for Forming Piston Rings.

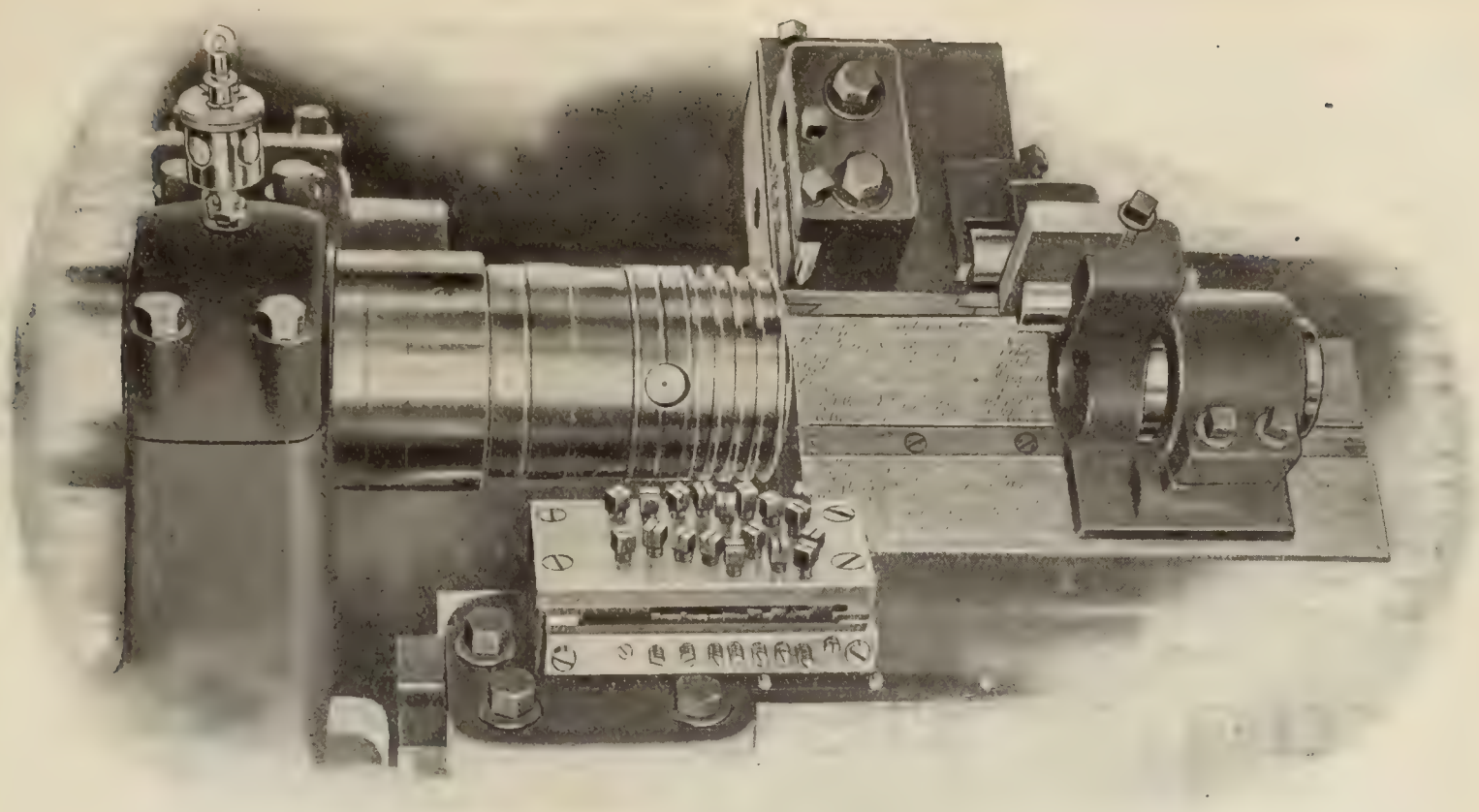


Fig. 3.—Detail of the Working Parts as Set for Grooving a Piston.

partial vertical section on the line B B, and a vertical section on the line C C. In the head of the machine is the spindle to which is attached the faceplate *a*. The faceplate carries a gear, which drives the gear *b*, to which is attached a coupling pinned to the shaft *c*. This shaft is supported in the slide *d* by two bushings and carries the eccentric *e*, which it drives by a key which is free to move endwise in the keyway in the shaft *c*. The eccentric *e* is free to revolve in the square bushing *f*, which is itself free to move vertically in the guideway in the auxiliary slide *g*. This arrangement reciprocates the slide *g*, which carries the tool, once each revolution of the spindle. It will be seen that the construction forms an oil pocket at *h*, which keeps these parts thoroughly lubricated. The gear *b* runs free on a bushing held in the frame of the machine by a cap. The same bushing acts as a bearing for the back gear shaft, which drives the spindle.

The boring of the concentric inner surface and the turning of the eccentric outer surface proceed simultaneously. The cutting off tools are set at intervals to give the correct width of rings, and each succeeding tool from right to left is set nearer the center, so that they act on the work in a predetermined succession, each ring being cut off just behind the boring and turning tools.

When the machine is to be used for turning and grooving pistons the gears are removed and the slide holding the turning tool is fastened down. The piston casting is first beveled, faced and bored, and reamed on the end to fit the plug in the spindle, to a shoulder on which it is held by the fixture plainly shown in Fig. 5. The builder recommends that the casting be machined twice in the machine, the first time roughed out to within about 1-32 in. of the finished size with as coarse a feed as the tools will stand, and then refinished for grinding. While this takes a little more time, it is considered the best practice, as it is impossible to hold and drive some of the modern pistons without springing them, except under a light cut, and it also allows them to season after the roughing cut has been taken. Roller back rests support the end of the piston while it is being grooved. The system of tooling is adaptable to other classes of work in this and other machines.

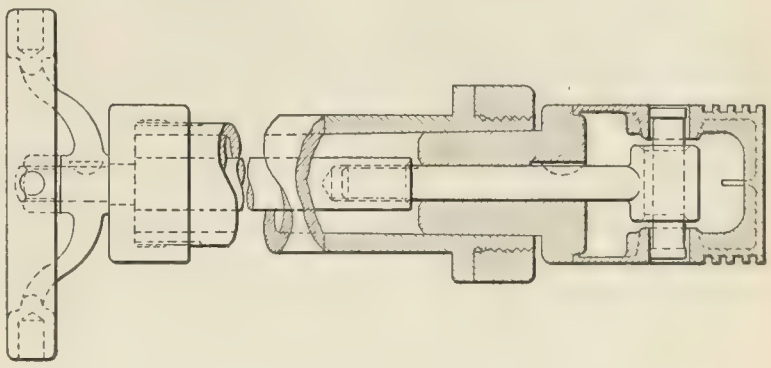


Fig. 5.—Fixture for Holding a Piston to Be Grooved.

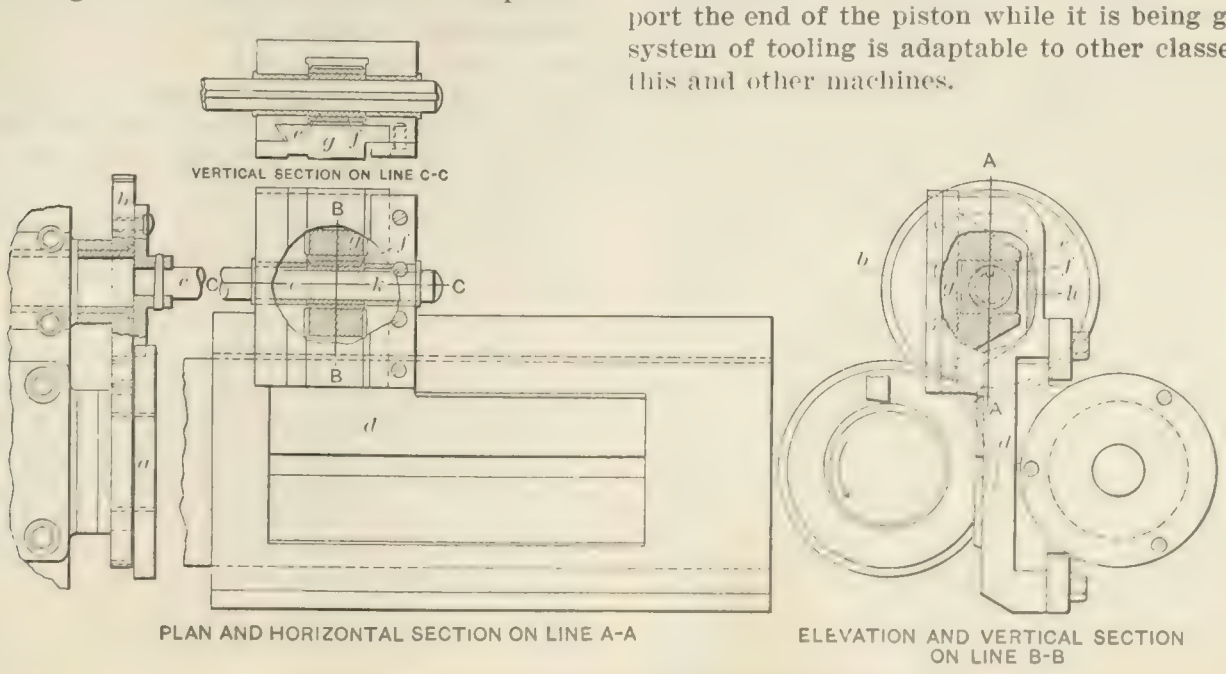



Fig. 4.—The Mechanism for the Eccentric Turning.

## Economy Tests of High-Speed Engines.

In a discussion of a paper on the above subject submitted to the American Society of Mechanical Engineers, C. H. Treat gave some interesting results from tests made at the American Blower Company's plant in Detroit, Mich. In the first part of his paper the author gave complete data on a test made July 9 and 10 of this year on a 7 x 7 in. vertical solf-oiling engine which had been run almost continuously night and day for 10,000 hr., connected to a forced draft fan. The engine cylinder had been badly scored and the mean diameter increased to 7.082 in. The rings had been broken, due to water, and were replaced prior to test. The dotted line on the curve, Fig. 1, shows the results of as low as 41 lb. per indicated horsepower per hour under full load. This performance, it will be noticed, is as good as many new engines in their best condition would show. A further observation indicates that it is quite important from an economical point of view to keep the piston rings on small high speed engines in shape to prevent undue leakage.

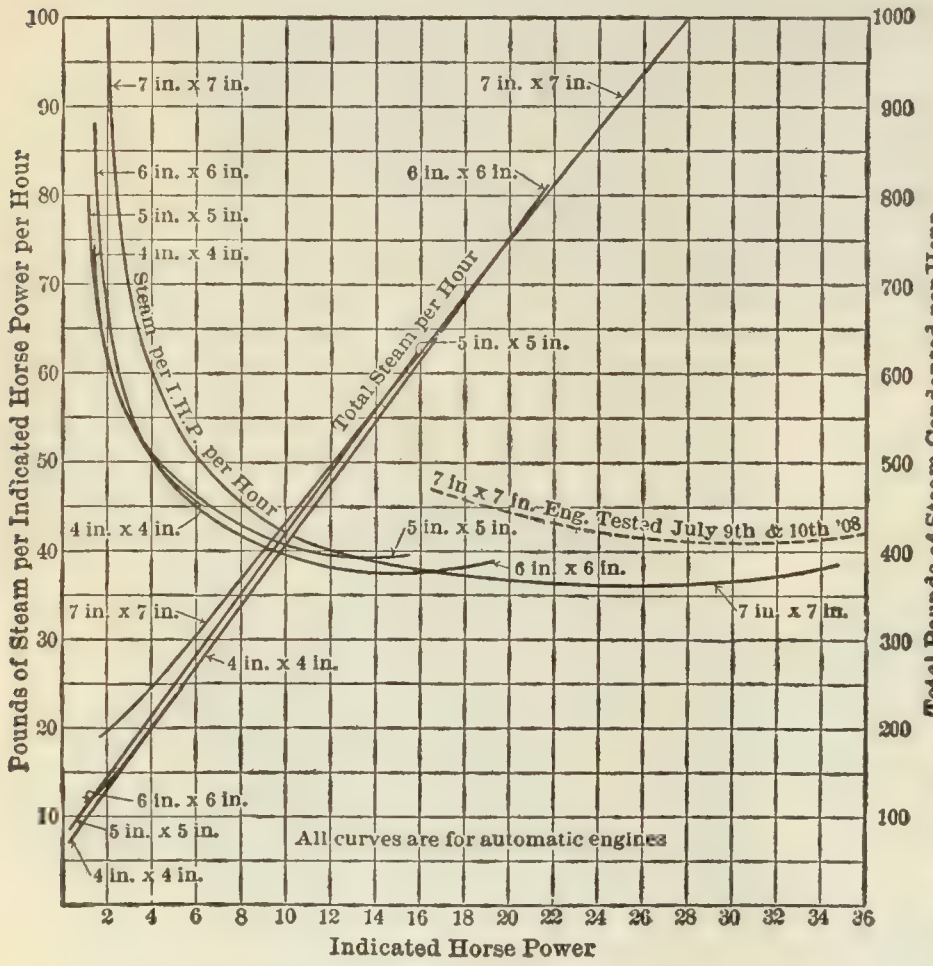



Fig. 1.—Performance Curves of High-Speed Engines.

"The data for the full line curves in Fig. 1, showing results for engines in proper condition, were obtained from tests made in 1905. The test was made by condensing the exhaust steam in a surface condenser consisting of a steam heater suction pipe immersed in a tank, having an overflow and 1 lb. supply from city water. The whole was overhead, so that any drip or leaks could be seen and stopped. That the section itself did not leak at any time was shown by the entire absence of drip, unless steam was entering.

"The condensation being piped down, heater pipes and base were slanted to drain through a water seal to prevent steam blowing into the upper of two barrels having drain valves at the bottom, the lower barrel being on platform scales. For each barrel of water the weight before filling was subtracted from the full weight. The scales used weighed correctly. The indicator spring was calibrated. A long lever reducing motion was used to prevent lost motion. The drum spring was drawn tight, and at the high speeds the cards were short. Runs were made at speeds up to 500 rev. per min., using a Prony brake at high speeds and taking the brake horsepower.

"Readings were taken every 5 min. after conditions had become constant and the engine was well warmed up. No corrections were made for moisture in the steam, but a few determinations showed a quality of 98 to 99 per cent. Data given in Fig. 1 are from tests of a number of engines for most sizes, the speed being 350 to 500 rev. per min., though some were at somewhat lower pressure."

Fig. 2 gives a section of an A B C engine, showing the arrangement of the cylinder and valve chest, also the unique patented oiling system. Mr. Treat's test of the engine used gave the indicated friction horsepower as 1.18, this being only 4 per cent. of the indicated horsepower of the engine. To the oiling system is due credit for the low internal friction.

**Resistance of Nickel Steel to Corrosion.**—In the course of a discussion at the September meeting of the Engineers' Society of Western Pennsylvania, held at Pittsburgh, E. W. Pittman made the following statement:

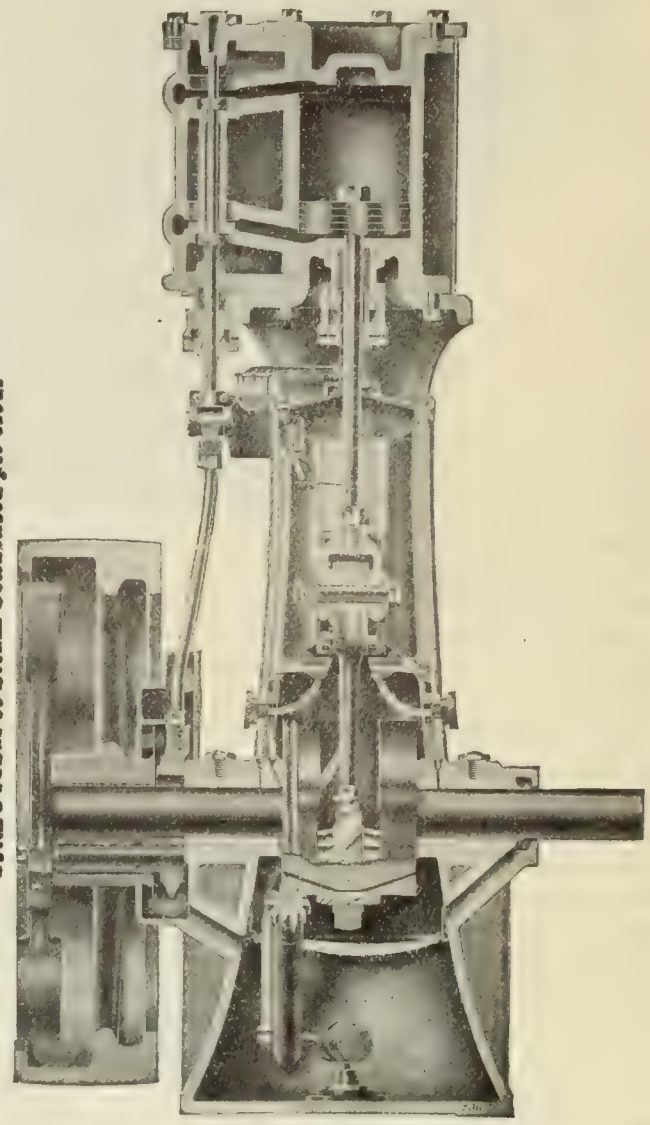


Fig. 2.—Section of A. B. C. Engine Tested.

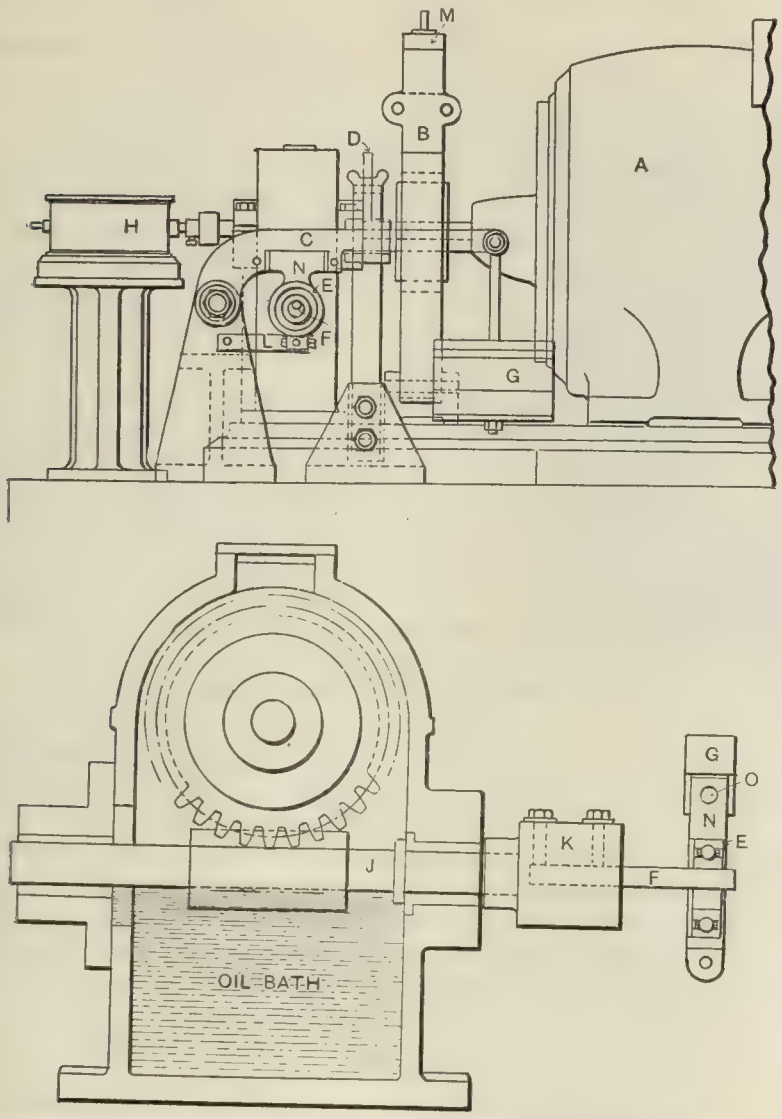
"The Government has had so much trouble with keeping the lock gates painted in the two rivers here at Pittsburgh that it used nickel steel in the last two gates put up, in order to avoid the corrosion, and I understand that, even though the paint comes off, the nickel steel resists the action of the sulphuric acid in the water to such an extent that it practically does not deteriorate at all." It would be interesting to know the percentage of nickel in this steel. While the fact has been demonstrated that nickel in steel resists corrosion, it had been supposed that so large a percentage would be required as to make the use of such steel prohibitory on anything like a large scale.

Germany has been hit hard by the financial depression. Many factories have been closed down. Conditions are so bad that city governments are anxiously considering what means they shall adopt to meet the necessities of those out of work. A comprehensive census of the unemployed will take place in Berlin, November 17, with the view of enabling the municipal authorities to determine how much of an out of work problem thay have to face this winter. There are fears that the total will reach an unprecedented proportion, not only there, but in all the industrial centers of the empire.

## Testing the Wearing Qualities of Steel Rails.

The action to which a rail is subjected in the track is very complex and particularly hard to attempt to reproduce in the testing room. It is, however, known that the wear depends upon certain conditions; hence, by estimating these conditions, a value can be given to the steel. It is for this reason that the various tests for hardness have been applied, prominent among which is the Brinell ball test, but sufficient work has been done to show that the wear does not depend alone upon hardness. By taking rails whose history is known, estimating their hardness, and comparing this with the actual wear in the track, it is seen that the two results are not the same. In the same way it may readily be shown that the wear does not depend alone upon the composition or the microstructure.

A test that would give accurate comparative results would be very valuable, as good wearing qualities are those most desired in the rail. Work along the direction




Apparatus for Testing the Wearing Qualities of Steel Rails.

of securing these qualities is greatly hindered by having to wait for the returns of laying test rails in the track until appreciably worn. A short paper on a suitable test was read at the last meeting of the Iron and Steel Institute by E. H. Saniter, who is actively connected with Steel, Peech & Tozer, Ltd., large manufacturers of rails. He describes the testing machine he has devised and gives some results.

The principle on which the test rests is as follows: A round test piece, revolving a fixed number of revolutions, and rotating by friction the inner ring of a ball bearing loaded with a fixed weight. There the action is very similar to that of a wheel rolling on a rail. The test piece is made sufficiently long to project well through the ball bearing, and thus prevent any material side flow of the metal. A drawing of the machine is shown herewith, and the following description may be given: A is the driving motor. B is a brake which is kept out of action by the electric plug contact M. J is the spindle, which runs in an oil bath and is actuated by a worn gear. It runs at 4000 rev. per min. To it is attached the chuck K, which holds the test piece F, as shown in the lower drawing.

The chuck is one piece of steel with a central hole slightly larger than the test piece. There are three pairs of set screws, with lock nuts, for holding the test piece and also centering it. The lever C holds N, the carrier of the ball bearing, on a pin, O, the carrier being made so that it can move on the pin in any direction and adjust the ball bearing to the test piece independently of the lever. E is the ball bearing, the outer ring of which is gripped by the carrier N, and the inner ring is rotated by the revolving test piece F. The arm L holds a screw with a lock nut, which is set against the bearing carrier to prevent the slight forward thrust of the spindle J from pushing the bearing outward.

D is a hook with a thumb screw, by which the lever and bearing can be raised, while starting the machine, and then gradually lowered on the test piece, thus avoiding straining the test piece by starting with the load on. On the end of the lever C is a hanger for holding the weights G, and H is the revolution counter.

The bearings are of quenched case hardened steel, but in spite of this the inner ring, in contact with the test piece, gradually wears, and a new bearing has to be substituted. It is therefore necessary for comparative tests that a standard steel should be used for testing new or partially worn bearings.

The dimensions of the test piece and the method of conducting the test are as follows: The number of revolutions is 200,000 with a load of 205 lb. on the bearing at the point of contact. The test piece is 5 in. long by ½ in. in diameter. The length of the test piece in contact with the bearing is 11-16 in., and the test occupies 50 min.

The test piece is carefully measured at the part used to the ten-thousandth part of an inch, before and after the test, and the wear test number is the number of ten-thousandths parts of an inch by which the diameter has been reduced. The following tests illustrate comparative results obtained on various steels:

| | Nickel. | Car. | Sil. | Sul. | Phos. | Man. | Wear No. |
|---|---|---|---|---|---|---|---|
| Rail | 3.52 | 0.63 | 0.25 | 0.029 | 0.029 | 0.72 | 28 |
| Rail | Nil. | 0.77 | 0.06 | 0.022 | 0.012 | 0.78 | 45 |
| Rail | Nil. | 0.71 | 0.07 | 0.019 | 0.010 | 0.72 | 48 |
| Trolley | Nil. | 0.59 | 0.28 | 0.026 | 0.031 | 0.82 | 48 |
| Car rail | Nil. | 0.51 | 0.31 | 0.056 | 0.057 | 0.68 | 64 |
| Car rail | Nil. | 0.43 | 0.21 | 0.050 | 0.055 | 1.04 | 65 |
| Car rail | Nil. | 0.40 | 0.09 | 0.056 | 0.058 | 1.08 | 67 |
| Axle | Nil. | 0.30 | 0.11 | 0.028 | 0.027 | 0.69 | 75 |

The smallest wear number is the least wear, and consequently the best wearing steel. The appearance of the worn surface is similar to that of a rail under traffic. The position from which a test piece is taken is, of course, of great importance. In this case it is from the upper corner of the rail head in a longitudinal direction.

A short discussion followed the paper, in which it was pointed out that the test had nothing in common with an alternating stress test. The steels given in the table were tested for hardness by the Brinell method, but the results did not bear any relation to the wear.

G. B. W.

**Vessel Safeguarding.**—An interesting description of the Stone-Lloyd hydraulic system for operating water tight doors on the Cunard steamships, Lusitania and Mauretania, is contained in a paper entitled "Some Recent Inventions as Applied to Modern Steamships," by W. Carlile Wallace, which will be presented at the meeting of the Society of Naval Architects and Marine Engineers, to be held in New York, November 19 and 20.

The Washington Power Company, Spokane, Wash., is constructing a power station on the Spokane River at Little Falls, about 30 miles west of Spokane, which will have a rated capacity of 30,000 hp. Work on this station has been under way for some months, and about 200 men are employed upon it at the present time. The plant will consist of four 5000-kw. General Electric Company generators, direct connected to four I. P. Morris turbine units, each of which is designed to develop 9000 hp. at its maximum load under a head of 66 ft. This station, which is known as the fourth power station of the Washington Water Power Company, will probably be ready by July 1, 1910.

# The G. E. Centrifugal Air Compressors.

Moderate pressure air compressors for industrial air blast and exhauster service of centrifugal type are now being built by the General Electric Company, Schenectady, N. Y. These range in pressure ratings from 0.88 to 4 lb. per sq. in., and in capacities from 750 to 10,000 cu. ft. of free air per minute.

Essentially the compressor consists of a rotating impeller surrounded by a casing with an intake opening at the center and a discharge opening at the circumference. In appearance and in operation it is similar to a centrifugal pump. The efficiency depends largely upon the design of the impeller and casing and on the proper shaping of these parts. These machines are of substantial construction, and it is claimed can be used severely with but little expense for maintenance.

For driving these compressors steam turbines and direct-current and alternating current induction motors may be used. Figs. 1 and 2 show typical turbine and motor driven compressors. The direct-current motors are similar in construction to the generators used in turbo-generator sets. Commutating poles and shrunk ring commutators are used so that sparkless commutation is insured, and a rheostat is supplied so that adjustment of pressure can be made by changing the speed. The turbines used for these sets are of the Curtis type, similar to those now being manufactured for driving generators. Slight speed variations can be readily made so that changes in pressure are easily obtained. Turbine driven sets can be furnished for operating noncondensing, and for sizes above 50 hp. to operate condensing. Steam pressures from 100 to 175 lb. are required. The induction motors furnished have the squirrel cage type of rotor. Since the speed of this type of motor cannot be varied, care must be taken to specify a pressure sufficiently high to cover the operating requirements, because at constant speed the pressure cannot be varied without altering the design of the impeller. In the discharge main a blast gate of butterfly valve type should be located, which prevents the compressor from becoming loaded during the starting period. It also cuts off the discharge main from the opening through the compressor shell to the atmosphere when the set is not in use.

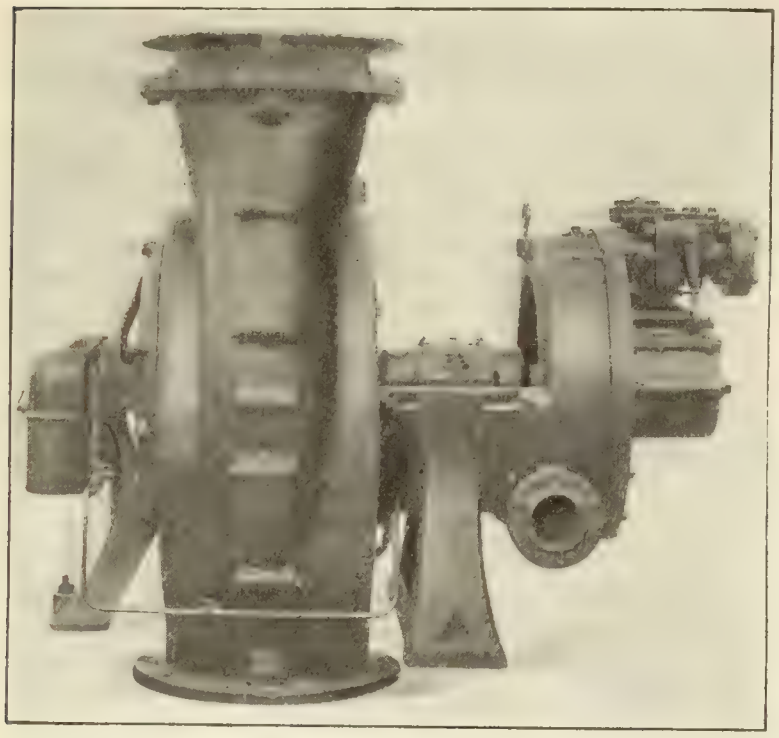


Fig. 1.—A General Electric Centrifugal Air Compressor Directly Connected to a 50-Hp. Curtis Steam Turbine.

As in the case of centrifugal pumps, the pressure depends on the peripheral velocity or rim speed of the impeller. Increased pressure can be obtained by increasing the speed. The volume of free air is, however, limited by the capacity of the driver, and hence must be reduced proportionately to the increase in pressure, otherwise the driver might become overloaded. The pressure in the mains leading from the compressor is free from pulsation and practically constant for all volumes within the rated capacity of the compressor. Unlike positive pressure blowers, the power required to drive centrifugal compressors varies approximately with the volume of air delivered when operating at constant speed. This gives a greater flexibility and improved economy to the centrifugal type where variable loads are required, satisfactory efficiency being obtained between the limits of 25 and 125 per cent. of the rated load.

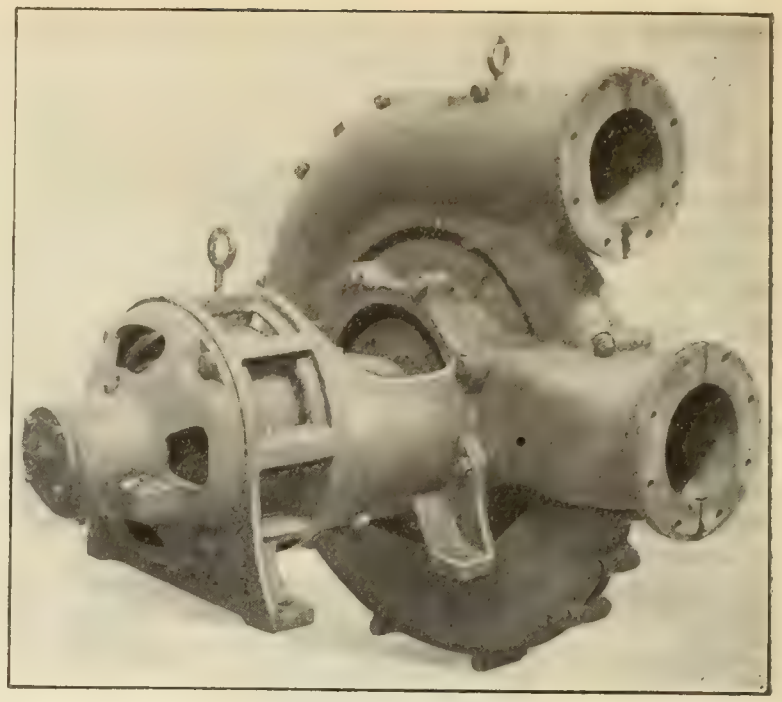


Fig. 2.—A 27-In. Centrifugal Air Compressor Directly Connected to a Three-Phase Alternating Current Motor.

For foundry cupola service the direct-current motors can be compound wound so as to automatically increase the speed should the volume of air delivered decrease, thus increasing the air pressure and preventing undue reduction of flow of air through the cupola when it chokes up. Further adjustments of pressure can be made by changing the speed of the motor by the field rheostat. Similar results are obtained for the turbine driven sets by using a compensating governor.

Since the pressure developed is practically constant from no load to 25 per cent. overload, as is strikingly shown in Fig. 3, these compressors are well adapted for constant pressure work, as in gas or oil furnace service. Preferably one large compressor is installed in a central location with distribution mains running to the different furnaces instead of employing a number of small blowers located in various places. For ordinary gas or oil furnaces a rated pressure of 1.7 lb. should be sufficient, although for furnaces requiring a concentrated or positively directed jet, 2.7 lb. pressure may be desirable. For blast furnace service, this type of compressor promises to be of considerable usefulness.

The centrifugal compressor is claimed to have several advantages over other types—compactness, simple design, high efficiency throughout the working range, no wearing parts, except the bearings, no gearing nor belting required, and there is a peculiar advantage where a variable volume is required at constant pressure, as this is a characteristic which is inherent in a centrifugal compressor, without change of speed or appreciable loss in efficiency. In the displacement type of compressor at

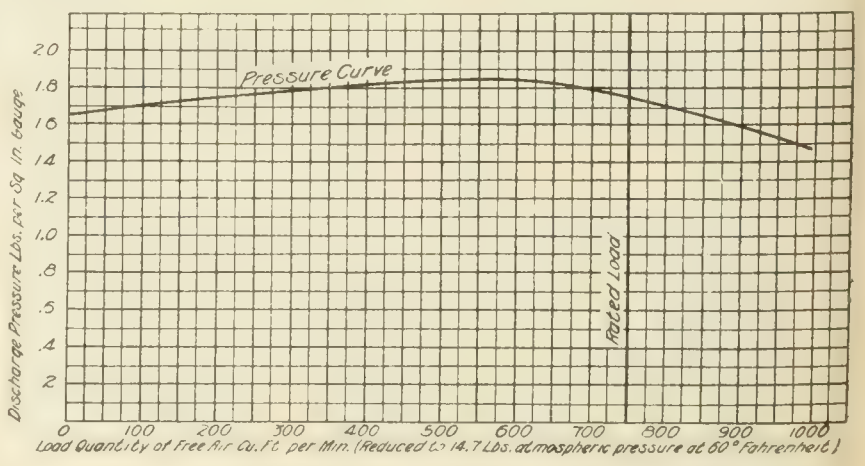



Fig. 3.—Typical Pressure Curve for a G. E. Centrifugal Air Compressor.

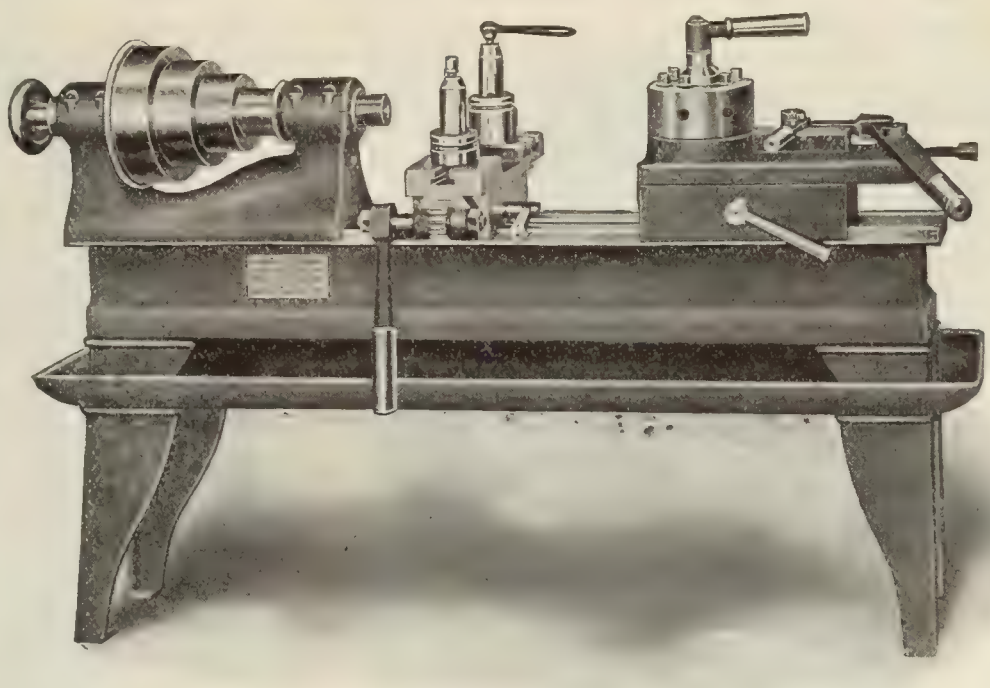
constant speed, however, the pressure drops rapidly with the output above a certain point, and the volume is limited by the size of the cylinder and the speed. A loss of power and efficiency for fractional volumes results with displacement machines, and it is impossible to maintain pressure on overloads. It would also require an exceedingly complicated governing mechanism and a special form of driver to automatically obtain speed variations which would produce results comparable with the centrifugal type of compressor.

These compressors are considered to be admirably adapted for use in smelters. They can also be used to advantage in sulphite pulp mills and in chemical works where a small degree of vacuum is required.

## The Stuyvesant Manual Training Turret Lathe.

An 11 in. by 4 ft. turret lathe, known as the Stuyvesant, and particularly intended for manual training schools, is built by the J. G. Blount Company, Everett, Mass. It is adapted for chucking work and the various operations connected with the manufacture of screws, studs and other small parts manufactured in turret or screw machines. The spindle nose is threaded to receive chucks, and is counterbored and receives a hardened steel bushing, which is afterward ground to size to take the standard sizes of spring collets. The turret is furnished with six holes for holding tools. The locking mechanism consists of a hardened steel ring with tapering cuts across its periphery, and a hardened steel locking bar with means of adjustment to take up wear. The locking bar has a stop screw for use when pieces are to be milled to certain lengths.

The head of the machine is provided with ring oiling bearings lined with Babbitt metal. The cone is turned inside and out, is accurately balanced and is pressed on the spindle. The ways are flat and the cut-off rest and turret are scraped to fit. The binding levers, to hold the cut-off rest and turret in position, are at the top of the bed. The cut-off rest has two tool posts which are adjustable, so that forming tools may be used, and has a rack and pinion feed for quick action. To give strength and rigidity the bed is cross braced, as in engine lathes. It is mounted upon bench legs and can be set in a pan, as shown, or on a bench.



The 11 In. by 4 Ft. Stuyvesant Manual Training School Turret Lathe Built by the J. G. Blount Company, Everett, Mass.

## Fan Facts and Theories.

In the chapter he contributes to the late C. M. Percy's work, soon to be published, on "The Mechanical Equipment of Collieries," George H. Winstanley, F. G. S., says on the subject of centrifugal fans of the Sirocco type:

"The most interesting feature about this fan—the Sirocco—is (if I may use the expression) that it knocks on the head many of the generally accepted theories with regard to centrifugal fans. For instance, it has been held that the velocity with which the air leaves the tips of the blades is, theoretically, the same as the circumferential velocity of the fan itself and in actual practice somewhat less. Actual measurement in the case of the Sirocco fan proves beyond the possibility of doubt that the air leaves the periphery with a velocity almost twice as great as the velocity of the fan itself. What does this mean? It means that a small fan of this type will deal with a much greater volume of air than a larger fan of any other make, while the useful effect is somewhat higher.

"Again, we have been brought to believe that the theoretical water gauge attained by any fan may be calculated by arriving at the vertical hight through which a body would require to fall in order to acquire the same velocity as that of the circumference of the fan. Having calculated this hight in feet we work out the weight of an equal column of air standing upon a base of 1 sq. ft., from which, in turn, we get the water gauge in inches. In the Sirocco fan, remarkable as it may appear, the actual water gauge is greatly in excess of this so-called theoretical or calculated water gauge and to produce a given water gauge this fan has a lower circumferential velocity than any other type of fan in existence.

"The distinctive features of the Sirocco fan are these: It has an absolutely clear inlet of practically the same diameter as the fan itself. (All other fans have the inlet much smaller in diameter than that of the revolving portion.) The blades are very short radially, being only about one-sixteenth of the fan diameter. The width of the blades, however, is greater than usual—about three-fifths of the diameter. There are a larger number of blades than are usually found in centrifugal fans, 64 being the number adopted in the Sirocco. The blades take more the form of scoops, with a forward curvature, and in working there is an entire absence of eddy current. The casing is of the usual form, spiral, with an expanding chimney.

"As an example of what the Sirocco fan can do in actual operation, and in comparison with other mechanical ventilators for colliery purposes, a fan of well-known make at a Lancashire colliery is delivering 233,000 cu. ft. per minute. This fan is 24 ft. in diameter, and the circumferential velocity 7425 ft. per minute. A Sirocco fan has recently been installed at a colliery in the north of England; it is 75 in. in diameter, and is delivering 226,000 cu, ft. per minute, with a circumferential velocity of 5770 ft. per minute."

The Bessemer Coke Company, Lewis Building, Pittsburgh, has placed a contract for the building of 200 new coke ovens at its Millsboro works, located across the Monongahela River from the Klondike coke region in Washington County, Pa. About a year ago the company built 100 ovens at this works, the coal proving to be of high quality and making fine coke. The 200 ovens to be built will replace the Martin Works ovens recently sold to the Republic Iron & Steel Company. It is probable that the development of coal lands near the Millsboro Works will be rapid and that a large number of ovens will be built next year. Julian Kennedy, the well known consulting engineer of Pittsburgh, J. H. Jennings and others own 10,000 acres of coal lands in that district, and it is expected will build a large number of coke ovens in the near future. The Bessemer Coke Company is also firing about 100 additional ovens at its Humphreys Works in the Connellsville region to meet the increasing demand for furnace and foundry coke.

## A Bliss Automatic Double Slide Press.

Two views of an automatic double slide press recently designed and built by the E. W. Bliss Company, 11 Adams street, Brooklyn, N. Y., appear herewith. Rapid accurate production from ribbon stock of small sheet steel or brass articles requiring a series of operations is the purpose of the machine. It will turn out 180 finished blanks per minute, requiring a total of 1460 operations per minute, eight operations being performed at each stroke of the slide and a blank finished at each stroke. The elimination of all intermediate handlings and menace to the hands of the operator and the saving in labor and shoproom are special features of this press.

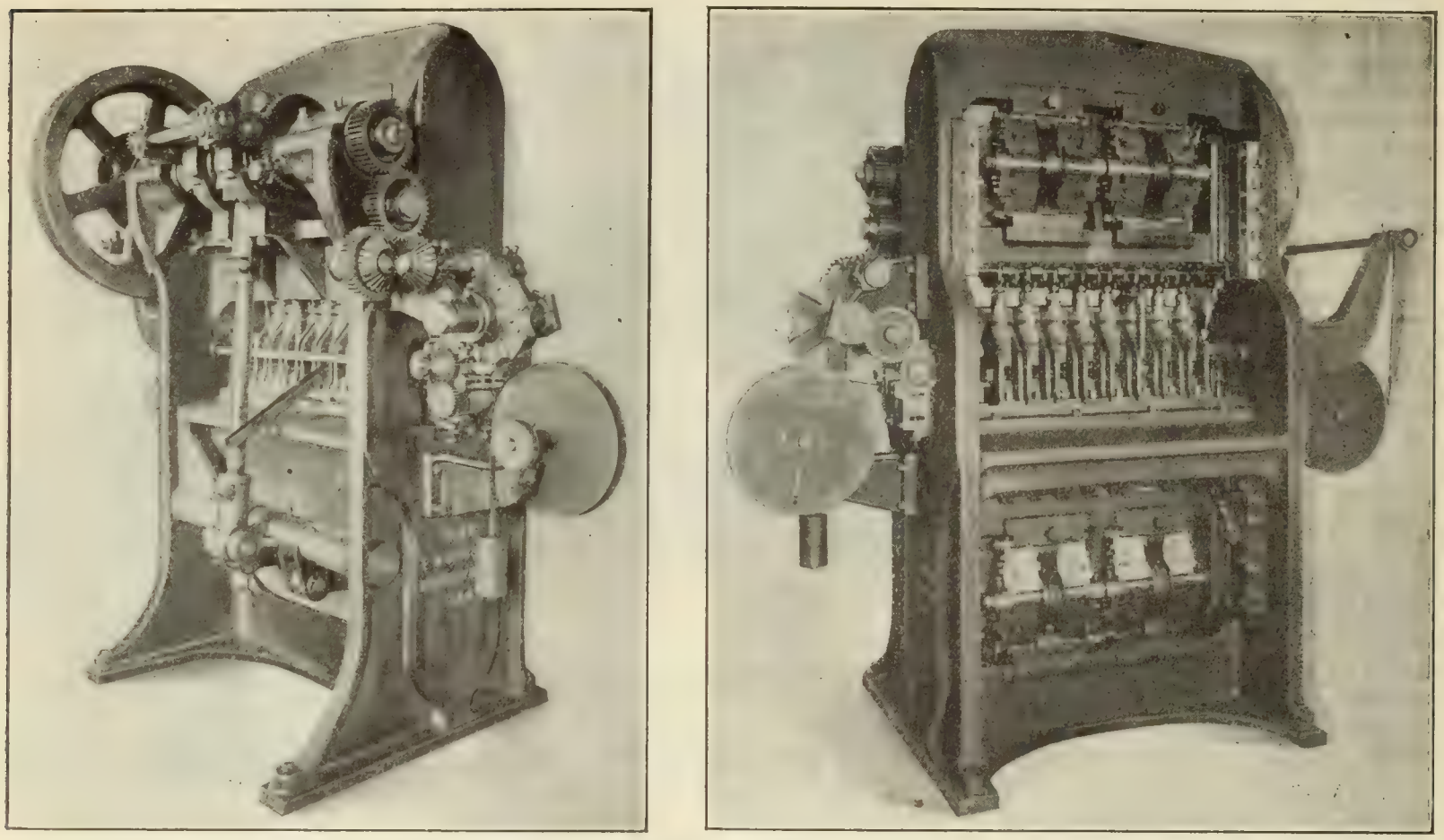
The top and bottom slides are operated by toggles driven by one shaft, controlled by a friction clutch by which the press is under instant control at any point of the stroke. An additional advantage of this type of clutch is that the press can be stopped or started while the feed is on its point of dwell, which is not the case where the conventional positive press clutch is used, due to the fact that presses so equipped stop on the top center while the feed is at its highest speed, and must necessarily stop and start with a certain amount of shock which has a tendency to strain the feed mechanism. In cases where ribbon stock is being fed this also causes some slip of the ribbon with a consequent irregularity in the feeding.

The top and bottom toggle connections are each independently adjustable, enabling the changing of the timing of the operations. In this way the press may be adjusted so that either the top or bottom slide may finish its stroke first and then dwell until the other slide continuing performs the operation, the movement of the slides in relation to each other depending on the nature of the operation to be performed. The feed is actuated by a six-point Geneva stop motion, which feeds 120 degrees and provides an ideal motion for a feed of this class. There is provided for the stock a reel with friction holdback, and for the scrap a reel with geared drive arranged with a compensating device, insuring uniform tension on the stock, regardless of the amount of scrap on the reel. The dies are each in a separate and independent subpress, and can readily be removed and replaced any number of times without danger of shearing the most delicate dies.

The stock used being in ribbons or strips of suitable width is used as a feeding medium, and in this way a very high rate of speed is attained. The stock, while passing from left to right the entire width of the press, is guided by a set of rolls on each side of the press.

When the work requires drawing operations, the drawing is done before the blank is punched out of the ribbon, thus allowing the metal to contract in every direction. To provide for this contraction and the consequent change in centers, the dies are arranged in independent subpresses, which permit of adjusting the distance between the centers of dies, to suit the distorted spacings due to the drawing operations. The blank being cut out of the ribbon after the drawing operations is forced back into the scrap by which it is carried along for the subsequent operations.

With this ribbon feed very accurate work can be produced, and since the work is always under absolute and instant control, the press can be operated at from three to four times the speed possible when the blank is loose and advanced step by step by a finger or carrying feed.



Two Views of an Automatic Double Slide Press with Ribbon Feed, Built by the E. W. Bliss Company, Brooklyn, N. Y.

**Storage Battery Motor Cars.**—In an article in the *Zeitschrift des Vereins Deutscher Ingenieure*, A. Giesler, chief mechanical engineer of the Palatinate Railways in Germany, gives the results of experience with storage battery motor cars on those lines. He says in conclusion: "It may be definitely asserted, on the basis of the experience of a number of years, that an accumulator motor car service can be economically successful in cases where the lines concerned are on the level and not too long, where there are suitably located charging stations at which current is produced cheaply, and where conditions are such that proper supervision of the batteries is possible. A specially favorable result shown by this service, which has been operated a number of years, is the fact that only very rarely did any sudden breakdown in the service occur. This shows that the accumulator cars are very reliable, and in this respect compare favorably with most kinds of gasoline and steam motor cars."

Business is gradually improving with the John A. Roebling's Sons Company, which has placed in operation its old rolling mill at its Trenton, N. J., plant. This mill, which has been shut down for some months, produces rods for the wire mills. The company's other departments at Trenton have been in operation, and its new plant at Kinkora, N. J., has continued in steady operation since it was started.

## The Bristol Electric Time Recorder.

The automatic recording of the occurrence and duration of various operations, such as the starting and stopping of machines, the opening and closing of valves, the duration of runs, the passing of trains, &c., is the function of a new electric time recorder made by the Bristol Company, Waterbury, Conn. With this instrument it is possible to record several different operations on the same chart, and the recorder may be located a long distance from the points at which such operations occur.

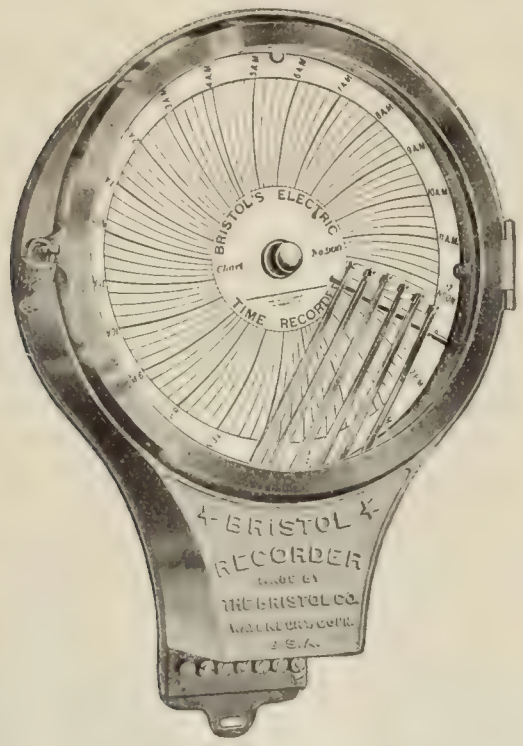



Fig. 1.—A Six-Pen Bristol Electric Time Recorder.

One of these recorders arranged to record operations at six different points is shown in Fig. 1. Each one of the six pens shown on this instrument makes an independent record, continuously and automatically, and in this way six different operations may be recorded on the same chart. Each pen arm is actuated by an independent electro-magnet and battery circuit so arranged that closing the circuit causes the pen to move a certain distance on the chart. Binding posts are provided at the base of the recorder, to which pairs of wires are attached. These wires may be of almost any length, it only being necessary to have the object whose motion is to be recorded open or close the circuit whenever the motion occurs.

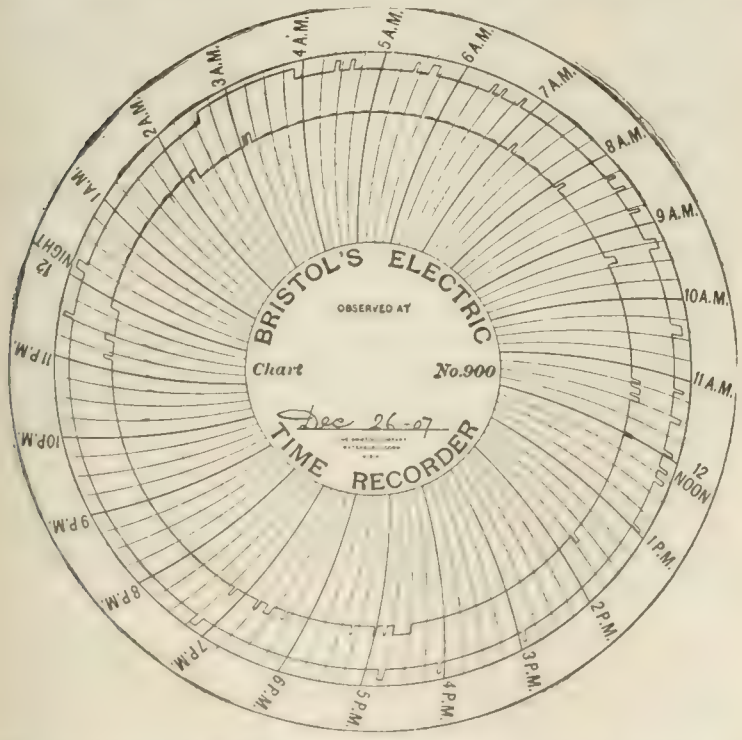



Fig. 2.—Reduced Fac Simile of a Record Chart from a Two-Pen Recorder.

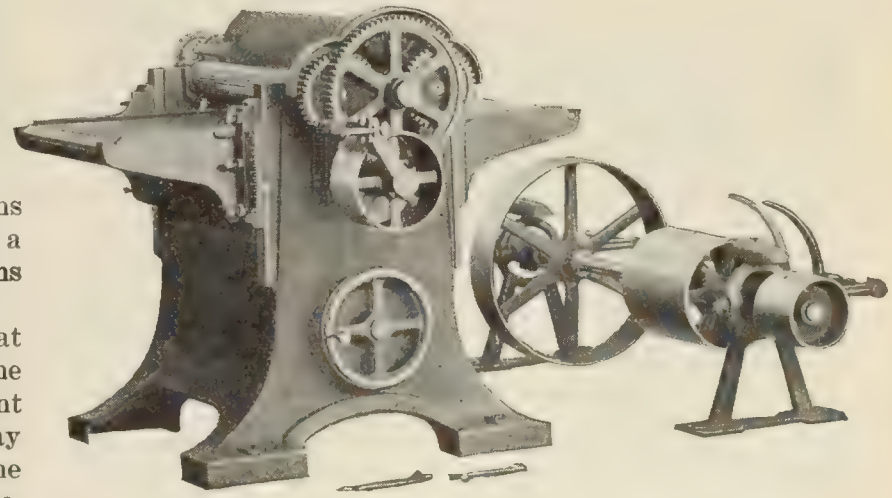
Usually these recorders are operated by a battery circuit, but any convenient circuit may be employed by inserting lamps or other resistance to reduce the voltage across each electro-magnet. The object whose motion is to be recorded is caused to make and break this circuit through any convenient contact.

These recorders have been made with as many as 12 pens. A chart from a two-pen recorder is shown in Fig. 2, which gives complete 24-hr. records of the operation of two paper machines. This record shows the time and duration of each break, and also the time required to wash the felts and put on new wires.

## The New Crescent Wood Planer.

An important feature of the 18 and 24 in. wood planers made by the Crescent Machine Company, Leetonia, Ohio, and shown in the accompanying illustration, is that the frame is cast in one piece, which it is claimed insures a steady running machine and makes it impossible for it to be racked out of alignment. The bed does not slide on ways inside the frame, but is gibbed direct to the body of the frame. This construction is rigid, accessible for adjustment and not liable to clip the ends of the lumber.

The head is milled from a solid bar of steel and is carefully balanced. It is suited for two knives and is driven by a flanged pulley which is securely keyed on. The chip breaker and pressure bar are placed as close to the head as clearance will allow, so that extremely short stock may be worked. The bearings for the head are simple, and permanent alignment is insured by having their lower parts cast solid with the frame. They are lined with high speed Babbitt. To adjust for wear liners are provided, and self-closing oil covers to exclude dust. An oil chamber and capillary felts make the bearings practically self-oiling. Wherever possible the other bearings throughout the machine have self-closing oil covers.



The New Wood Planer Built in 18 and 24 In. Sizes by the Crescent Machine Company, Leetonia, Ohio.

A belt from the countershaft to a pair of tight and loose pulleys on the machine drives the feed, and a convenient belt shifter provides for starting and stopping the feed. Regularly the machine has a feed of 25 ft. per minute, but a larger pulley to give a feed of 30 ft. per minute may be had. All the rolls are made of steel. The upper rolls only are driven; the infeeding roll is corrugated. A graduated brass scale shows accurately the thickness of stock being surfaced. One revolution of the hand wheel will raise the table ⅛ in. The machine may be belted in any direction to a countershaft, above or below, to front or rear. The countershaft has drip cups, shifter fingers and a connection for a lever. The equipment furnished with each machine includes a countershaft, pair of knives and two wrenches.

The machine is made in two sizes, 18 and 24 in. The width and thickness the 18-in. size will plane is 17¾ x 6 in., and the 24-in. size, 23¾ x 6 in. The floor space, exclusive of the countershaft, required by the smaller size is 44 x 45 in. and for the larger 45 x 50 in. The weights are respectively 1200 and 1400 lb.

The United States Geological Survey, in connection with the researches of the Conservation Commission, is going to take a census of the water power of the United States. The census will be proportioned among nine hydrographic district engineers of the Survey.

# THE NEW TARIFF BILL.

## Text of Metal Schedule as Tentatively Revised.

WASHINGTON, D. C., November 17, 1908.—The Ways and Means Committee, as a preliminary step to the enactment of a new tariff law, is preparing a comprehensive tentative revision of the phraseology of the Dingley act for the purpose of eliminating all ambiguities, providing specifically for a large number of articles not mentioned in the present law and which have become of commercial importance since 1897, and forestalling further developments in the leading manufacturing industries of the world. No attempt is made in drafting this revised classification to fix rates, that task being deferred until after the close of the hearings now in progress.

The work of amending the phraseology of the law is not yet completed, but the text of the metal schedule has been finished, and the correspondent of *The Iron Age* is enabled to present such paragraphs thereof as have been revised, together with a brief statement of the reasons for the proposed changes where such reasons are not perfectly obvious. The amendments are indicated in italics. The paragraphs not cited have not been changed from their present form.

### Amended Phraseology Suggested for New Tariff Act.

SCHEDULE C—METALS AND MANUFACTURES OF.

121. Iron ore (*except such as is used chiefly in the production of pigments and colors*), including manganiferous iron ore, and the dross or residuum from burnt pyrites, — cents per ton; Provided, That in levying and collecting the duty on iron ore no deduction shall be made from the weight of the ore on account of moisture, which may be chemically or physically combined therewith; basic slag, ground or unground, — dollar per ton.

COMMENT.—It is suggested that the provision for iron ore herein be amended so as to except iron ore chiefly used in the production of pigments or colors. This would not interfere with iron ore intended for smelting purposes. The iron ore affected is entirely too valuable to be smelted.

122. Iron in pigs, iron kentledge, wrought and cast scrap iron and scrap steel, —dollars per ton; but nothing shall be deemed scrap iron or scrap steel except waste or refuse iron or steel *in physical form as to be* fit only to be remanufactured.

COMMENT.—In view of recent conflicting decisions of the courts regarding scrap iron and steel, it is suggested that the provision be clarified by inserting the words, "in some physical form, &c."

126. Boiler or other plate iron or steel, except crucible plate steel and saw plates hereinafter provided for, not thinner than No. 10 wire gauge, *cut or sheared to shape or otherwise, or unsheared*, and skelp iron or steel sheared or rolled in grooves, valued at 1 cent per pound or less, — of 1 per cent. per pound; valued above 1 cent and not above 2 cents per pound, — of 1 cent per pound; valued above 2 cents and not above 4 cents per pound, — cent per pound; valued at over 4 cents per pound, — percentum ad valorem; Provided, That all sheets or plates of iron or steel thinner than No. 10 wire gauge shall pay duty as iron or steel sheets.

COMMENT.—It is suggested that this paragraph be amended so as to provide for the plate iron or steel whether cut or sheared to shape or otherwise, or unsheared.

127. Iron or steel anchors or parts thereof, — cents per pound; forgings of iron or steel or of combined iron and steel, of whatever shape or whatever degree or stage of manufacture, *but not machined, tooled, or otherwise advanced in condition by any process or operation subsequent to the forging process*, not specially provided for in this act, — percentum ad valorem; antifriction ball forgings of iron or steel, or of combined iron and steel, — percentum ad valorem.

COMMENT.—The change in this paragraph is suggested because of the contention between the Government and the importers as to the interpretation of the phrase, "forgings . . . of whatever shape or whatever degree or stage of manufacture"; the former insisting that this refers only to various steps or stages of heating, pressing or hammering in the process of forging, and that work bestowed on forged articles after the completion of the forging process advances them beyond the class of goods known as forgings. On the other hand, the importers' claim is that this provision includes forged articles that have been turned, or drilled, or punched, or finished, or otherwise machined.

131. Sheets of iron or steel, common or black, of whatever dimensions, and skelp iron or steel, valued at 3 cents per pound or less, thinner than No. 10 and not thinner than No. 20 wire gauge, — of 1 cent per pound; thinner than No. 20 wire gauge and not thinner than No. 25 wire gauge, — of 1 cent per pound; thinner than No. 25 wire gauge and not thinner than No. 32 wire gauge, — cents per pound; thinner than No. 32 wire gauge, — cents per pound; corrugated or crimped, — cents per pound; *all of the foregoing valued at more than 3 cents per pound*, — percentum ad valorem; Provided, That all sheets of common or black iron or steel not thinner than No. 10 wire gauge shall pay duty as plate iron or plate steel.

COMMENT.—It is suggested that sheets of iron or steel, common or black, valued at over 3 cents per pound, be also provided for in this paragraph.

132. All iron or steel sheets or plates, and all hoop, band or scroll iron or steel, excepting what are known commercially as tin plates, terne plates and taggers tin, and hereinafter provided for, when galvanized or coated with zinc, spelter or other metals, or any alloy of those metals, shall pay — of 1 cent per pound more duty than if the same was not so galvanized or coated; *sheets or plates composed of iron, steel, copper, nickel, or other metal with layers of other metal or metals imposed thereon by forging, hammering, rolling or welding*, — percentum ad valorem.

COMMENT.—The difficulty of properly classifying sheets, plates or bars composed of iron or steel in combination with other metals suggests an ad valorem duty thereon.

133. Sheets of iron or steel, polished, planished or glanced, by whatever name designated, — cents per pound; Provided, That plates or sheets of iron or steel, by whatever name designated, other than polished, planished or glanced herein provided for, which have been pickled or cleaned by acid or by any other material or process, or which are cold rolled, smoothed only, not polished, shall pay — of — cent per pound more duty than *common or black sheets of iron or steel of corresponding gauge or value.*

135. Steel ingots, cogged ingots, blooms and slabs, by whatever process made; die blocks or blanks; billets and bars and tapered or beveled bars; mill shafting *material;* pressed, sheared or stamped shapes, *not* advanced in value or condition by any process or operation subsequent to the process of stamping; hammer molds or swaged steel; gun barrel molds not in bars; alloys used as substitutes for steel in the manufacture of tools; all descriptions and shapes of dry sand, loam or iron molded steel castings; all of the above valued at 1 cent per pound or less, — per pound; valued above 1 cent and not above 1.4 cents per pound, — per pound; valued above 1.4 cents and not above 1.8 cents per pound, — per pound; valued above 1.8 cents and not above 2.2 cents per pound, — per pound; valued above 2.2 cents and not above 3 cents per pound, — per pound; valued above 3 cents per pound and not above 4 cents per pound, — per pound; valued above 4 cents and not above 7 cents per pound, — per pound; valued above 7 cents and not above 10 cents per pound, — per pound; valued above 10 cents and not above 13 cents per pound, — per pound; valued above 13 cents and not above 16 cents per pound, — per pound; valued above 16 cents per pound, — *percentum ad valorem.*

(*New paragraph.*)

*Steel wool or steel shavings, if 4/1000 in. thick or thinner, — cents per pound; if over 4/1000 in. thick, — cents per pound; the weight of all bindings, wrappers and coverings other than plain wooden, shall be included in the dutiable weight of the merchandise.*

(*New paragraph.*)

*Diamond steel, steel grit, diamond grit, iron form, iron sand, chilled iron sand and similar articles by whatever name known, — cents per pound.*

(*New paragraph.*)

*Steel saw plates wholly or partially manufactured, crucible plate steel and steel plates or sheets, not specially provided for, steel circular saw plates shall pay — per pound in addition to the rate provided herein for steel saw plates; steel strips, strip steel or steel in strips, 25/1000 in. thick or thinner, whether in long or short lengths and whether drawn through dies or rolls, —. (Compare with rate for flat wire.)*

*(New paragraph to be inserted under the caption of "General Provisions.")*

*The terms iron plates, steel plates, plate iron and plate steel, as used in this act, shall be restricted to such articles having plane surfaces, which may, however, be checkered, corrugated or ribbed, for use as parts of constructions, but not as tools or implements in manufacturing.*

COMMENT.—The changes indicated in the above paragraph appear to be necessary to provide more specifically for numerous articles not specifically mentioned or somewhat ambiguously described in the existing law.

137. Round iron or steel wire, not smaller than No. 13 wire gauge, — cents per pound; smaller than No. 13 and not smaller than No. 16 wire gauge, — cents per pound; smaller than No. 16 wire gauge, — per pound; Provided, That all the foregoing valued at more than 4 cents per pound; *all iron or steel wire covered with cotton, silk or other material;* corset clasps, corset steels, dress steels, and all flat wires, *whether in long or short lengths, in coils or otherwise, and whether drawn through dies or rolls, and all wire not spevially provided for in this act shall pay a duty of not less than* — percentum ad valorem on iron or steel wire coated *by dipping, galvanizing or similar process with zinc, tin or other metal, there shall be paid* — of a cent per pound; in addition to the rate imposed on the wire of which it is made. Provided further, That articles manufactured wholly or in chief value of any wire or wires provided for in this paragraph shall pay the maximum rate of duty imposed upon any wire used in the manufacture of such articles, and in addition thereto — cents per pound, except that wire rope or wire strand shall pay the maximum rate of duty imposed upon any wire used in the manufacture thereof and — cent per pound; and provided further, That no article made wholly or in chief value of wire shall pay a less rate of duty than — percentum ad valorem.

COMMENT.—The changes suggested in this paragraph are intended to meet difficulties in classification of wire and manufactures thereof which have arisen since the enactment of the present law.

141. On all iron or steel bars or rods of whatever shape or section which are cold rolled, cold drawn, cold hammered or polished in any way in addition to the ordinary process of hot rolling or hammering, there shall be paid — per pound in addition to the rates provided in this act on bars or rods of whatever section or shape which are hot rolled; and on all strips, plates or sheets of iron or steel, of whatever shape other than the polished, planished or glanced sheet iron or sheet steel hereinbefore provided for, which are cold rolled, *cold drawn*, cold hammered, blued, brightened, tempered or polished *in any way in addition to the ordinary process of hot rolling or hammering*, there shall be paid — per pound in addition to the rates provided in this act upon strips, plates or sheets of iron or steel of common or black finish *of corresponding gauge or value.*

COMMENT.—The suggested change is designed to carry out the original intention of the existing law to levy an additional duty on strips of steel passed through the rolls so many times as to receive the same surface as would result from a special polishing or brightening process.

146. Card clothing *not actually and permanently fitted to and attached to carding machines or to parts thereof at the time of importation*, manufactured from tempered steel wire, — per square foot; all other, — per square foot.

148. Cast iron andirons, plates, stove plates, sadirons, tailors' irons, hatters' irons and castings and vessels *wholly of cast iron*, — per pound. *All castings of iron or cast iron plates which have been chiseled, drilled, machined or otherwise advanced in condition by processes or operations subsequent to the casting process, but not made up into articles, shall pay — per pound more than the rate imposed upon the castings of iron and cast iron plates hereinbefore provided for.*

152. Lap welded, butt welded, seamed or pointed iron or steel boiler tubes, pipes, flues or stays, not thinner than No. 16 wire gauge, — per pound; *cylindrical or tubular tanks or vessels, for holding gas or liquids, — percentum ad valorem; flexible metal tubing or hose, — percentum ad valorem; covered with wire or other material, — percentum ad valorem; flexible metal tubing or hose with appliances or attachments affixed thereto, — percentum ad valorem;* welded cylindrical furnaces, made from plate metal, — cents per pound; all other iron or steel tubes, finished, not specially provided for in this act, — percentum ad valorem.

(An alternative: Instead of the provision for cylindrical or tubular tanks insert this proviso:) *Provided, That no article shall be dutiable as a tube which is closed at either or both ends.*

COMMENT.—These changes are necessary to properly define tubes and cylinders, which have been the subject of much litiga tion.

153. Penknives, pocketknives, clasp knives, pruning knives, budding knives, erasers, manicure knives, corn knives, corn razors, *and all knives by whatever name known, including such as are denominatively mentioned in this act, which have folding or other than fixed blades or attachments*, valued at not more than 40 cents per dozen, — percentum ad valorem; valued at more than 40 cents per dozen and not exceeding 50 cents per dozen, — per piece and — percentum ad valorem; *all such cutlery, or parts thereof, wholly or partly manufactured*, valued at more than 50 cents per dozen and not exceeding $1.50 per dozen, — per piece and — percentum ad valorem; valued at more than $1.50 per dozen and not exceeding $3 per dozen, — per piece and — percentum ad valorem; valued at more than $3 per dozen, — per piece and — percentum ad valorem; Provided, That blades, handles or other parts of either or any of the foregoing articles imported in any other manner than assembled in finished knives or erasers shall be subject to no less rate of duty than herein provided for *the knives and erasers mentioned herein* valued at more than 50 cents and not more than $1.50 per dozen. Razors and razor blades, finished or unfinished, valued at less than $1.50 per dozen, — per dozen and — percentum ad valorem; valued at $1.50 per dozen and less than $3 per dozen, — per dozen and — percentum ad valorem. Scissors and shears, and blades for the same, finished or unfinished, valued at not more than 50 cents per dozen, — per dozen and — percentum ad valorem; valued at more than 50 cents and not more than $1.75 per dozen, — and — percentum ad valorem; valued at more than $1.75 per dozen, — per dozen and — percentum ad valorem.

COMMENT.—The changes indicated above are suggested by the fact that litigation has demonstrated that the present law does not specify in sufficient detail certain classes of cutlery wholly or partly manufactured now being imported.

154. Sword blades and swords and sidearms *irrespective of quality or use, in part of metal*, — percentum ad valorem.

155. Table, butchers', carving, cooks', hunting, kitchen, bread, butter, vegetable, fruit, cheese, *carpenters' bench, curriers', drawing, farriers', fleshing, hay, tanners'*, plumbers', painters', palette, artists' and shoe knives, forks and steels, finished or unfinished; *if imported without handles, if* with handles of mother-of-pearl, shell or ivory, — cents each; with handles of deer horn, — cents each; with handles of hard rubber, solid bone, celluloid, or any pyroxylin material, — cents each; with handles of any other material than those above mentioned, — cents each, and in addition, on all the above articles, — percentum ad valorem; *Provided, That no cutlery other than that provided for in this act at ad valorem rates of duty shall pay a less rate of duty than — percentum ad valorem.*

156. Files, file blanks, rasps and floats, of all cuts and kinds, 2½ in. in length and under, — cents per dozen; over 2½ in. in length and not over 4½ in., — cents per dozen; over 4½ in. in length and under 7 in., — cents per dozen; 7 in. in length and over, — dollar per dozen; *manicure files, finished or unfinished, — percentum ad valorem.*

158. Double barreled sporting breech-loading shotguns, combination shotguns and rifles, valued at not more than $5, — each, and in addition thereto — percentum ad valorem; valued at more than $5 and not more than $10, — each, and in addition thereto — percentum ad valorem each; valued at more than $10, — each; double barrels for sporting breech-loading shotguns and rifles, further advanced in manufacture than rough bored only, — each; stocks for double barreled sporting breech-loading shotguns and rifles, wholly or partially manufactured, — each; and in addition thereto on all such guns and rifles, valued at more than $10 each, and on such stocks and barrels, — percentum ad valorem; on all other parts of such guns or rifles and fittings for such stocks or barrels, finished or unfinished, — percentum ad valorem; Provided, That all double barrel sporting breech-loading shotguns and rifles imported without a lock or locks or other fittings shall be subject to a duty of — each and — percentum ad valorem; single barreled breech-loading shotguns, or parts thereof, except as otherwise specially provided for in this act, — each and — percentum ad valorem. Revolving pistols or parts thereof, — each and — percentum ad valorem. *Automatic pistols, — each and — percentum ad valorem.*

COMMENT.—Automatic pistols have become an important article in commerce and provision should be made for them.

165. Needles for knitting or sewing machines, including latch needles, — per 1000 and — percentum ad valorem; crochet needles and tape needles, knitting and all other needles, not specially provided for in this act, and bodkins of metal, — percentum ad valorem; *but no articles other than the needles which are specifically named in this act shall be dutiable as needles, unless having an eye and fitted and used for carrying a thread. Needle cases or needle books furnished with assortments of needles or combinations of needles and other articles shall pay duty as entireties according to the component material of chief value therein.*

166. Steel plates engraved, stereotype plates, electrotype plates and plates of other materials, engraved or lithographed, for printing, — percentum ad valorem; *plates of iron or steel engraved or fashioned for use in the production of designs, patterns or impressions on glass in the process of manufacturing* plate or other glass, — *percentum ad valorem.*

170. Umbrella and parasol ribs and stretchers, composed in chief value of iron, steel or other metal, in frames or otherwise, — percentum ad valorem; *tubes for umbrellas, wholly or partially finished, — percentum ad valorem.*

175. Bronze powder *and brocades*, — cents per pound; *flitters, — cents per pound; metallics, — cents per pound;* bronze or Dutch metal or aluminum, in leaf, — per packages of 100 leaves.

182. Lead dross, *including all dross containing lead*, lead bullion or base bullion, lead in pigs and bars, lead in any form not specially provided for in this act, old refuse lead run into blocks and bars, and old scrap lead fit only to be remanufactured, all the foregoing — cents per pound; lead

in sheets, pipe, shot, glaziers' lead and lead wire, — cents per pound.

183. *Metalliferous* mineral substances in a crude state, and metals unwrought, *whether deemed capable of being wrought or not*, not specially provided for in this act, — percentum ad valorem; monazite sand and thorite, — cent per pound.

(*New paragraph.*)

*Chrome metal, chromium metal, ferrochrome, ferromanganese, ferromolybdenum, ferrophosphorus, ferrosilicon, ferrotitanium, ferrotungsten, ferrovanadium, manganese metal, molybdenite, molybdenum, spiegeleisen, tungsten or wolfram metal, — percentum ad valorem.*

COMMENT.—The changes suggested in the above paragraph are intended to provide adequate rates of duty for a large number of valuable ferro alloys which heretofore under the conflicting decisions of the courts have been classified for duty either at 20 per cent. ad valorem or by similitude to ferromanganese at $4 per ton.

184. Mica, unmanufactured or thumb trimmed only, — cents per pound and — percentum ad valorem; mica, cut or trimmed, — cents per pound and — percentum ad valorem; *mica plates or built-up mica, and all manufactures of mica or of which mica is the component material of chief value, — percentum ad valorem.*

(This paragraph should be transferred to Schedule B.)

185. Nickel, nickel oxide, alloy of any kind in which nickel is a component material of chief value, in pigs, ingots, bars, *rods, plates*, sheets *and strips cut from sheets, but not rolled or drawn*, — cents per pound.

186. Pens, metallic, except gold pens, — cents per gross; *with nib and barrel in one piece, — per gross.*

187. Penholder tips, penholders or parts thereof, and gold pens, — percentum ad valorem; *fountain pens, stylographic pens, and ink pencils, — percentum ad valorem. Provided, That pens and penholders shall continue to be classified separately for duty purposes, but so-called combination penholders, comprising besides a penholder, a pencil, rubber eraser, automatic stamp or similar attachments, shall be assessed for duty as entireties according to the component material of chief value therein.*

191. Watch movements, whether imported in cases or not, if having not more than 7 jewels, — each; if having more than 7 jewels and not more than 11 jewels, — each; if having more than 11 jewels and not more than 15 jewels, — each; if having more than 15 jewels and not more than 17 jewels, — each; if having more than 17 jewels, — each, and in addition thereto, on all the foregoing, — percentum ad valorem; watch cases and parts of watches, including watch dials, chronometers, box or ship, and parts thereof, clocks and parts thereof, not otherwise provided for in this act, whether separately packed or otherwise, not composed wholly or in part of china, porcelain, parian, bisque or earthenware, — percentum ad valorem; all jewels for use in the manufacture of watches or clocks, — percentum ad valorem; *mechanisms other than watches, clocks or chronometers, of which watch or clock movements are part, shall pay duty as manufactures of metal.*

192. Zinc in blocks or pigs, — cents per pound; in sheets, — cents per pound; *in sheets coated or plated with nickel or other metal, or solutions, — cents per pound;* old and worn out, fit only to be remanufactured, — cent per pound; *dust or zinc powder, — cent per pound; ore, —.*

COMMENT.—There have been considerable importations of goods intended to be covered by the proposed amendments to the above paragraph, which should be more specifically provided for.

193. Articles or wares not specially provided for in this act, composed wholly or in part of iron, steel, lead, copper, nickel, pewter, zinc, gold, silver, platinum, aluminum or other metal, and whether partly or wholly manufactured, — percentum ad valorem.

(*New paragraph covering alloys.*)

*Alloys and other mixed metals in lumps, pigs, blocks, bars, cakes, sheets or powder, not specially provided for, — percentum ad valorem.*

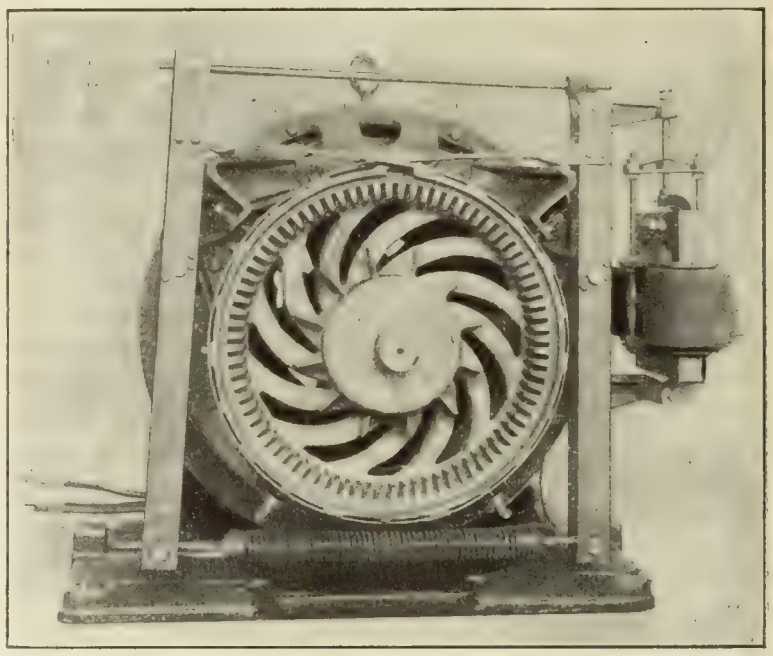
W. L. C.

**A State Employment Bureau Asked in Pennsylvania.**—A movement for the establishment in Pennsylvania of a State Bureau of Labor, to facilitate the employment of men in times of depression and to enable manufacturers to procure workmen in times when hands are needed, has been started by John L. Rockey, chief of the State Bureau of Industrial Statistics. Mr. Rockey will ask the Legislature, which meets January 4, to pass such laws as will enable the bureau to be operated as a branch of his department. Mr. Rockey treats of the subject at length in a report made to the Governor. Similar efforts have been made before, but owing to the experience of State officials in the recent industrial depression when they were importuned to aid in securing work for men and to the promises of support from influential labor leaders, it appears that there is now a chance for such a bureau being created.

## A New Westinghouse A. C. Motor Brake.

There are many magnetically operated direct current motor brakes, but fewer successful ones for alternating current motors. In the latter a considerably greater expenditure of energy through the electro magnets is required for a given breaking effect, and the flywheel effect of the rotor of an alternating current motor is greater than for the same size direct current motor. When alternating current is used the magnet core must be laminated, which increases the cost of construction.

An alternating current brake which is claimed to satisfactorily meet the conditions is being introduced by the Westinghouse Electric & Mfg. Company, East Pittsburgh, Pa. This brake is described as simple and strong in construction and reliable in action; it is self-contained, and is readily applied and easily adjusted. The brake is known as the PB type and is intended for use on Westinghouse two and three phase induction motors of from 5 to 100 hp., 25, 40 and 60 cycles. The braking action depends on the contraction of a coiled steel spring.



The PB Type Alternating Current Motor Brake Made by the Westinghouse Electric & Mfg. Company.

Because of its construction the brake will operate equally well with the motor tilted at a considerable angle from the horizontal position, as on roller lift draw bridges. The cast iron brake shoes are held against the brake wheel by steel bands. The two vertical pivotal brake beams are connected at the top by a tie rod and at the bottom by a coiled steel spring, and a polyphase solenoid operating magnet is attached to the brake beams by a lever. The ends of the brake bands are attached to the beams above the pivots; the spring tends to draw the lower ends of the beams together, thus drawing the band and shoe against the wheel. The friction of the wheel against the shoes tilts the beams through a small angle until they strike against lugs on the frame work. These lugs are above the pivots and are so placed that when the beams press against them the tops are separated and the brakes more firmly set by the motor itself. A very heavy braking action is thus obtained with a comparatively light spring and magnet. When the motor is operating the current passes through the coils, the core is pulled down, the brake is released and the spring elongated. On stopping the motor the brake circuit is opened, allowing the spring to contract and apply the brake.

The Brazil Factory Promoting Club has been organized and incorporated at Brazil, Ind., the purpose being to induce factories to locate in that city. The directors are Daniel H. Davis, Dudley W. Brattin, Thomas P. Jones, Adelbert Stewart, William Leavitt, Sr., William C. Hall and Ray Shattuck.

## The Kelly Adjustable Floating Reamer.

A unique adjustable reamer that may be used either floating or rigid, and in the latter state as a boring tool, has been brought out by the Kelly Tool Company, Cleveland, Ohio. One of the special advantages of the reamer is that with a comparatively few individual tools, 17 to be exact, any hole from 1 in. to 5¼ in. in diameter can be

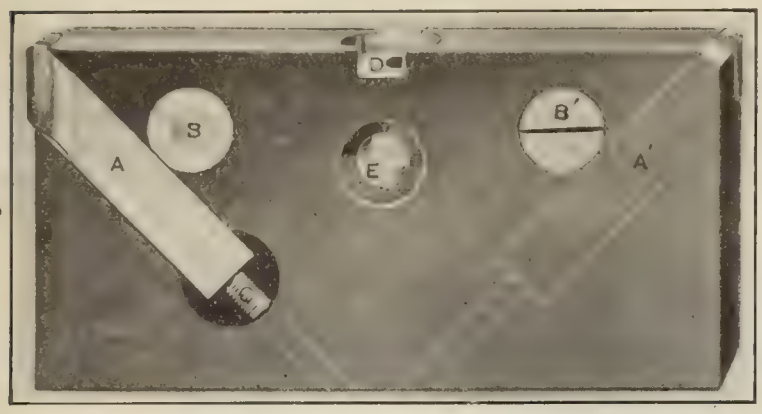



Fig. 1.—The Cutter Holder and Inserted Blades of the Kelly Adjustable Floating Reamer.

reamed, as each one covers a range of ¼ in. Each reamer is adjustable to 1-10,000 in. The cutter, or strictly speaking the cutter holder, is illustrated in Fig. 1, and is a rectangular block with two high speed steel cutters inserted at an angle of 45 deg., and adjusted by screws at their base. The outer ends of these cutters form the working edges of the reamer and by virtue of

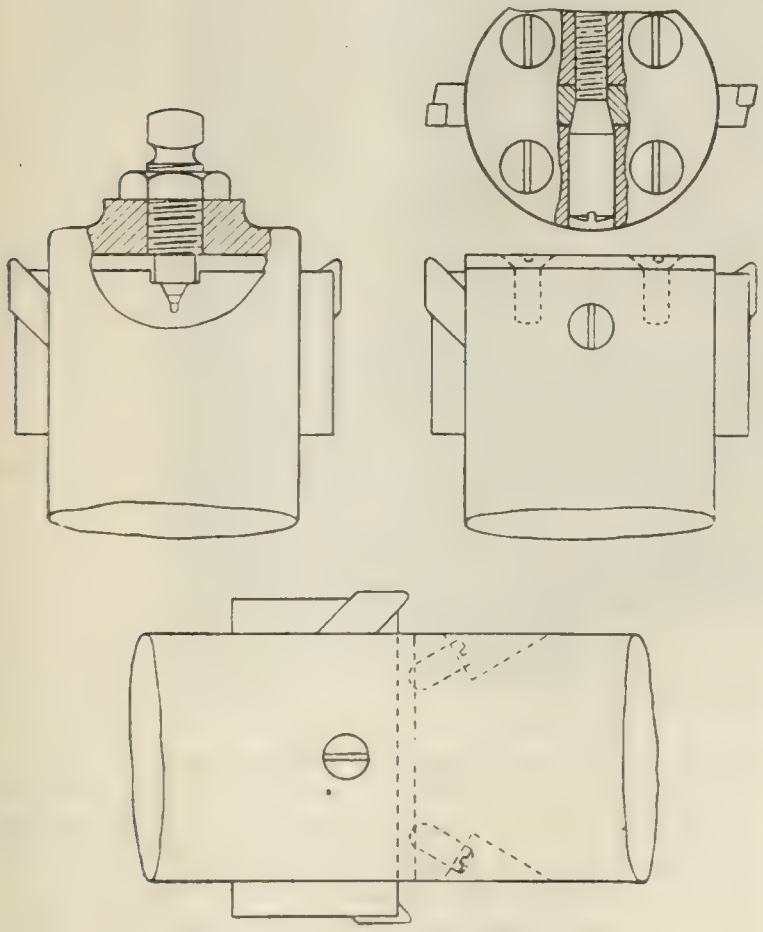


Fig. 2.—Different Ways of Supporting the Kelly Adjustable Reamer.

their material will remain sharp and accurate to size for a considerable length of time, even when in constant use.

Fig. 2 shows three manners in which the cutter holder can be supported. The upper left hand view shows the ordinary arrangement, where the reamer is used either as a floating reamer or a rigid one. In the latter case the set screw in the end of the bar is provided with a point which engages in a countersink in the ends of the cutter holder. Where it is necessary to ream to the bottom of a hole a bar of the form shown in the upper right hand corner of Fig. 2 is used. In this case to make the reamer a rigid one, a set screw with a taper shoulder is passed through the side of the bar and engages a tapered hole through the side of the cutter holder. The cutter holder is similarly supported when the tool is used in a boring bar with the extended end of the bar guided in a bushing. In the latter arrangement the tool is substantially a boring bar.

It is recommended that the reamer be used as a rigid reamer on porous castings or where openings exist, using the pilot bar with the bushing guide. The cutters, when adjusted to the required size, are locked by the clamp screws shown passing transversely through the holder. The tool is applicable to any turret machine, lathe, boring mill or drill press, and will be seen to be of very universal nature, simple construction and easily set and adjusted.

## Indiana Manufacturing Activity.

The passing of the election has given an impetus to manufacturing in Indiana. The Western Motor Works, Logansport, has received an order for motor engines from an Eastern automobile manufacturing company, to cost $100,000. It is completing a large addition to its plant. The Interstate Automobile Company, Muncie, with its buildings only partly completed, and a small amount of its machinery installed, has begun work on its first machines, which it will have completed in time for the auto show in New York in January. The main building is 200 x 440 ft., constructed of steel, iron, brick, cement and glass, the last named in profusion. Thomas F. Hart, manager and chief stockholder said: "We have tried to make it the best-lighted, best-ventilated, and best-heated plant of the kind in the country." It will give employment to 400 men when completed.

The Ontario Silver Company, Muncie, one of the largest silverware manufacturers in the West, has completed a new forging department, and is constructing a finishing factory. The Indiana Bridge Company, Muncie, has begun work on a contract for 1100 tons of structural steel. Kitselman Bros., who have two factories in Muncie, have received orders for 25 carloads of wire. The Arcade File Works, Anderson, subsidiary to the Nicholson File Works, Providence, R. I., resumed operations in full November 9, employing 600 men, after being on short time since the panic. The plants of the American Steel & Wire Company and the Lambert Automobile Company are also on full time again.

The Maxwell-Briscoe Motor Company, Newcastle, has increased its force by 100. Plans are being prepared for enlarging the plant of the American Insulating Material Company, Alexandria. The Beeler Mfg. Company, the first of the new industries brought to Alexandria by the Industrial Club, began operations November 10.

The Light Inspection Car Company, Hagerstown, manufacturer of railroad inspection cars and automobile engines, has received an order for 6000 engines. The Modern Concrete Company, Terre Haute, will establish a plant at Linton to manufacture machines for making concrete blocks.

## The New England Foundrymen's Association.

At the monthly meeting of the New England Foundrymen's Association at the Exchange Club, Boston, November 11, the report of the Committee on Shortages of Pig Iron and Coke was received and discussed, and then laid over until the next meeting. The report has been outlined in full detail in *The Iron Age;* its chief recommendation is the weighing of the materials on railroad scales at point of destination. After dinner Capt. Godfrey L. Carden gave an interesting talk on his observations among the machine shops and foundries of Europe during his investigation for the Department of Commerce and Labor. Vice-President W. A. Viall presented resolutions addressed to Secretary Straus of the Department, thanking him for the presence of Capt. Carden, heartily indorsing the work as performed by him, and recommending its continuance. President Henry F. Arnold was in the chair.

## A Newton Double-Spindle Drill.

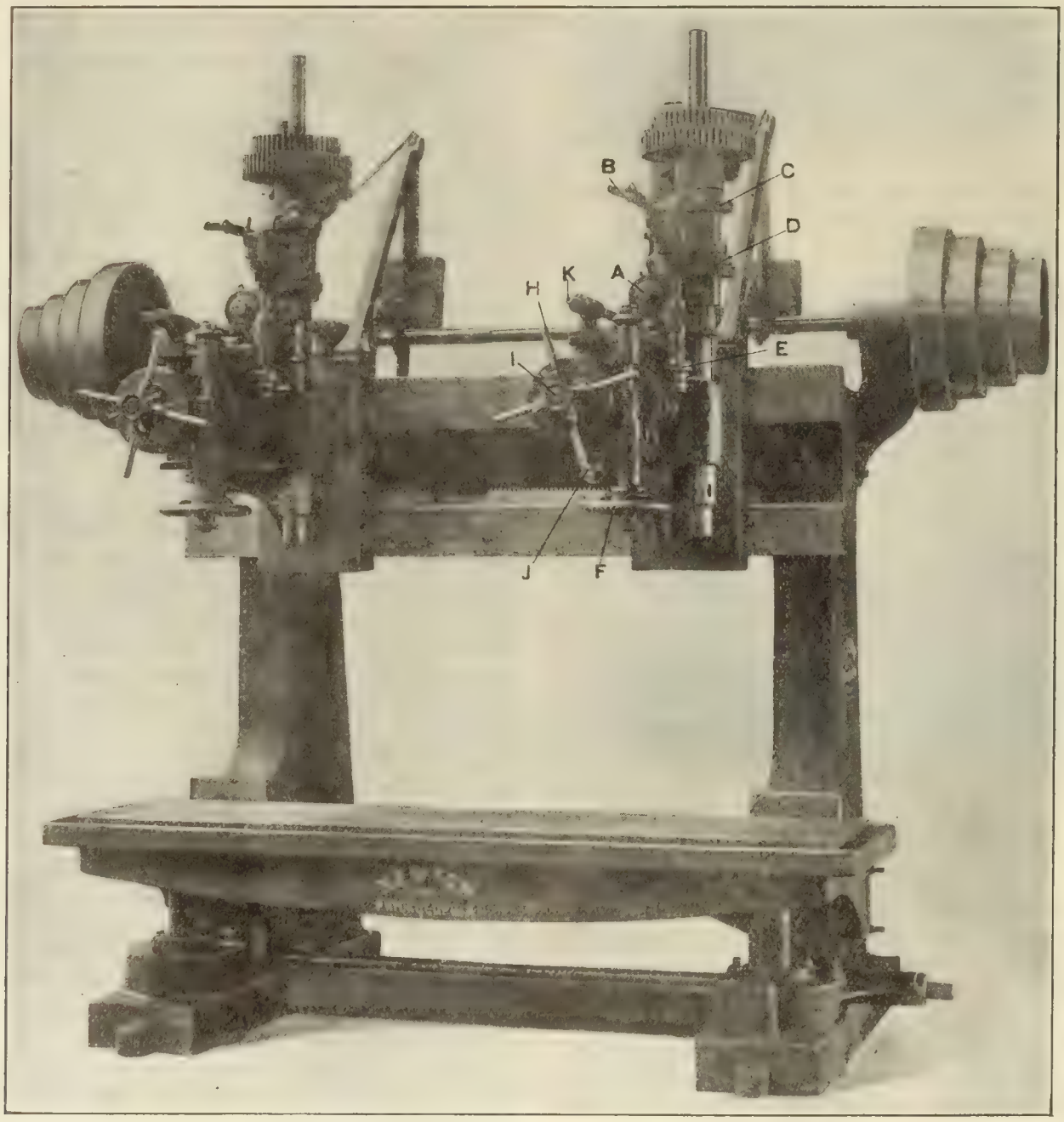
A new double-spindle drilling machine recently designed by the Newton Machine Tool Works, Inc., Philadelphia, Pa., is shown in the accompanying illustration. The spindles of this machine are 2 in. in diameter, are counterweighted, and have a vertical adjustment of 12 in. by hand or power feed. They have three changes of geared feed with adjustable automatic release, and have four changes of belt speed, which are doubled through gearing, giving eight changes in all. The drive for each head is independent, permitting of the operation of one or both spindles as desired.

The horizontal main driving splined shafts, on which the cone pulleys are mounted, are connected by bevel gearing to the saddle splined shafts A, which in turn drive a bevel sleeve gear (mounted on the saddle), through which motion is transmitted to the spindle sleeve gears by an auxiliary shaft. The spindle sleeve gears have ratios of 1 1-3 to 1 and 3.11 to 1, giving two gear changes for each of the belt speeds. The levers B operate the clutches engaging or disengaging either pair of gears.

The feed motion taken from the spindle sleeve C is transmitted through the pull pin gears D, the worm clutch E, the hand worm shaft F and the friction clutch shaft H, from which the rack gear is driven. Clutch E being disengaged, rapid vertical adjustment to the spindle is obtained by the pilot wheel H and slow vertical adjustment by the hand wheel F, when the friction clutch is engaged by the knob I. Release of the feed is obtained by a dog, which can be set for any predetermined length of feed within the capacity of the machine; this is fitted in a groove in the spindle, tripping the lever to disengage the feed clutch E.

The saddles have independent hand adjustment on the rail by means of a pinion operated by the crank hold J, from a minimum distance of 12 in. to a maximum of 60 in., and the spindle saddles can be adjusted on the arms by a screw, with a crank hold, K, from a minimum distance of 8 in. to a maximum of 17 in. from the face of the rail. The work table is 20 in. wide by 6 ft. 5 in. long, and is entirely surrounded by an oil pan. It has a hand elevation of 6 in., giving a maximum distance of 36 in. and a minimum distance of 18 in. from the work table to the bottom of the spindles.

The machine is of very substantial construction, the bearings are bronze bushed where necessary and all feed gears and clutches are of steel. The chief aim in the design of this tool has been the concentration of control and the development of ample power to drive the Celfor and similar high speed drills to their highest efficiency. A machine of this type has recently been furnished the H. K. Porter Company by the builder. The machines can be built with two or more saddles on a rail of any desired length between uprights.




A New Double-Spindle Drilling Machine Built by the Newton Machine Tool Works, Inc., Philadelphia, Pa.

## A Large Whiting Cupola.

The No. 12 cupola built by the Whiting Foundry & Equipment Company, Harvey, Ill., is notable chiefly on account of its size, but it has some modifications in construction, which on this account were required. The shell of the cupola is 108 in. in diameter, with a wind box 130 in. in diameter, and 10½-in. lining. It has a melting capacity of from 27 to 30 tons per hour. The blast is admitted through two rows of tuyeres, eight in each row, which are flaring in shape, and admit the blast through an expanded opening into the cupola. The discharge opening being nearly double that of the intake causes better distribution of the blast, and softening of its force.

The large dimensions of this cupola, and the consequent great weight to be sustained, made necessary some changes in the form of construction of the bottom plate

and platform supports. These are constructed entirely of plates and structural steel, and consist of a heavy steel plate, securely riveted to the shell and wind box sheets. This plate is supported by a bottom frame, formed of heavy steel beams, riveted together, to which it is securely bolted, instead of the usual curved iron supporting columns. It was necessary in this case to substitute straight cast iron columns of circular hollow section, each of which is provided with a large frame, making the separate use of a base plate unnecessary.

A departure from usual construction is noticed in the bottom doors, the hinge plates of which are steel castings, riveted to a structural steel frame. Owing to the hight required for free clearance of the bottom door, the cupola is provided with an operator's platform built of structural shapes and supplied with a checkered plate floor guarded by substantial hand rails. Another feature presented in this construction is the safety tuyere, which is provided with a spout projecting through the shell of the wind box. This spout is lined, and is provided with the usual safety slide, and is so located as to be always under the eye of the cupola tender.

It is claimed that this is the largest standard foundry cupola offered by any manufacturer in this country. Two of this size were recently shipped to the Standard Cast Iron & Pipe Foundry Company, Bristol, Pa.

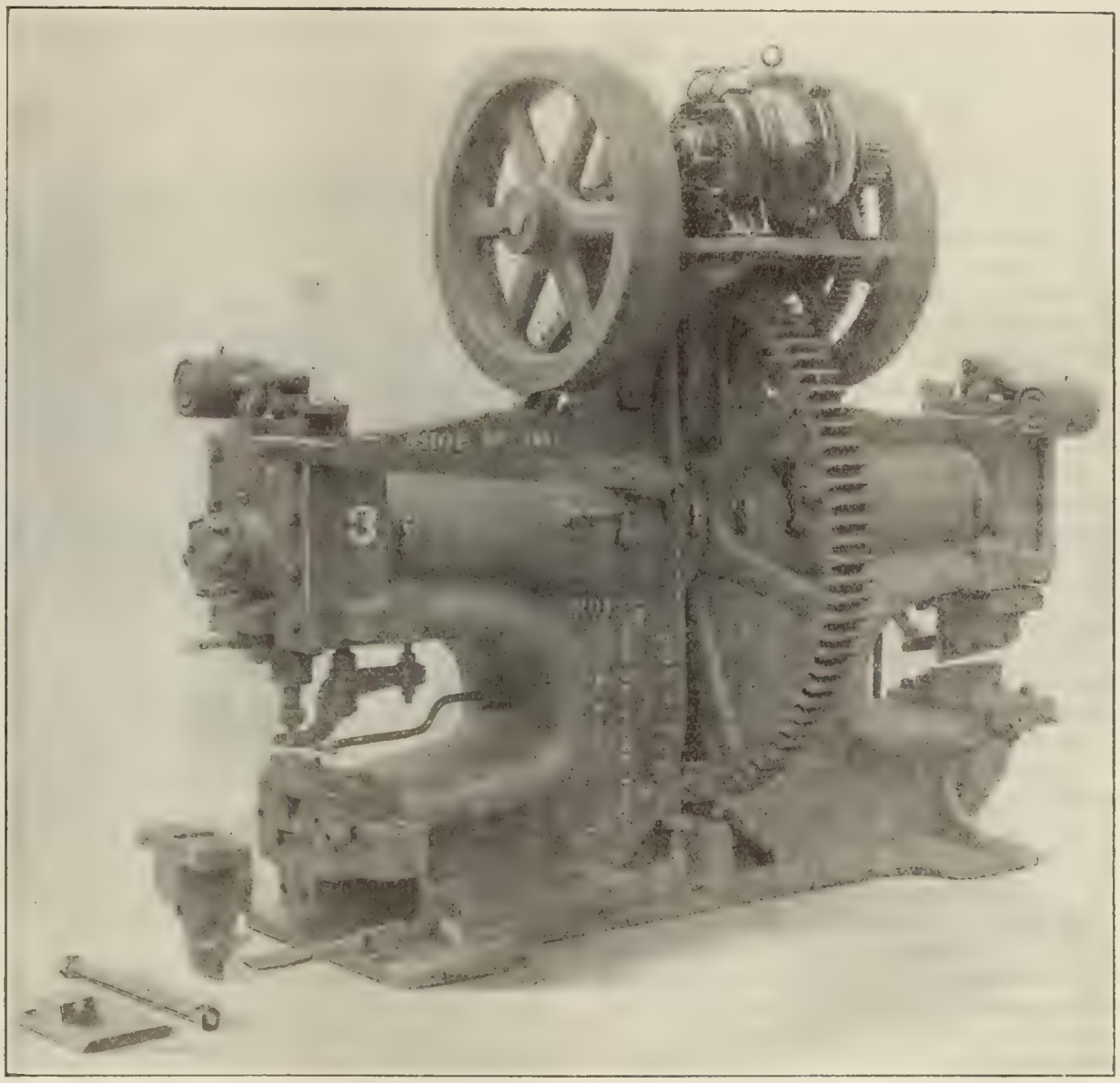
The Chamber of Commerce of Coffeyville, Kan., has completed arrangements with A. Stuart Fenzel of Middletown, Ohio, for the erection of a rolling mill at the former city to employ from 350 to 400 men, with a payroll of $350,000 per year. It is understood that the new company will manufacture structural steel, bridge work and sheet iron.

The Elkhart Motor Car Company, Elkhart, Ind., has completed its plant and is making its 1909 machines. The company was incorporated in April with $100,000 capital stock. The officers are: W. W. Sterling, president; C. L. Monger, vice-president; F. O. Hudson, secretary, and E. C. Crow, treasurer.

## A New Heavy Royersford Punch and Shear.

In the nearly 20 years that the Royersford Foundry & Machine Company, Royersford, Pa., has been building punching and shearing machinery it has never before produced a machine with a deeper throat than 18 in. The demand for machines of a heavier type and greater capacity was the result of the designing and building of the new No. 3 punch and shear herewith illustrated, which can be furnished with 26 or 32 in. throats on both sides, and by means of a 4-in. extension on the punch side, the total depth of throat on that side can be increased to from 30 to 36 in. The machine follows closely the design of the usual type of Royersford punch and shear, but has been made heavier throughout to meet the requirements of increased service.

The machine is motor driven, either direct or alternating current motors being used, of from 5 to 7½ hp., having a speed of 110 rev. per min. Geared direct, such a motor will drive the machine at the rate of 20 to 25 strokes per minute.



The No. 3 Punch and Shear Built by the Royersford Foundry & Machine Company, Royersford, Pa.

The size and weight of the frame of the machine has been increased in proportion to the increased strain, the machine shown in the cut having a shearing capacity 10 x 1 in. flat, and 2 in. round, with a punching capacity up to 1½ in. in 1-in. iron. The machine is compactly built, weighs 18,000 to 21,500 lb., according to the depth of throat, and occupies a floor space of 10 x 5 ft. Each side of the machine can be operated independently of the other or they may be operated together if desired. The removable lower jaw on the punch side makes the machine particularly adaptable to such work as punching I beams and channels. While the machine illustrated is equipped with motor drive, it can be furnished with belt drive if desired.

The American Mining Congress will hold its eleventh annual session at Pittsburgh, Pa., December 2 to 5, inclusive. The attendance will comprise delegates appointed by the President, governors of States, mayors of cities and towns, boards of trades, mining organizations, engineers' associations, &c.

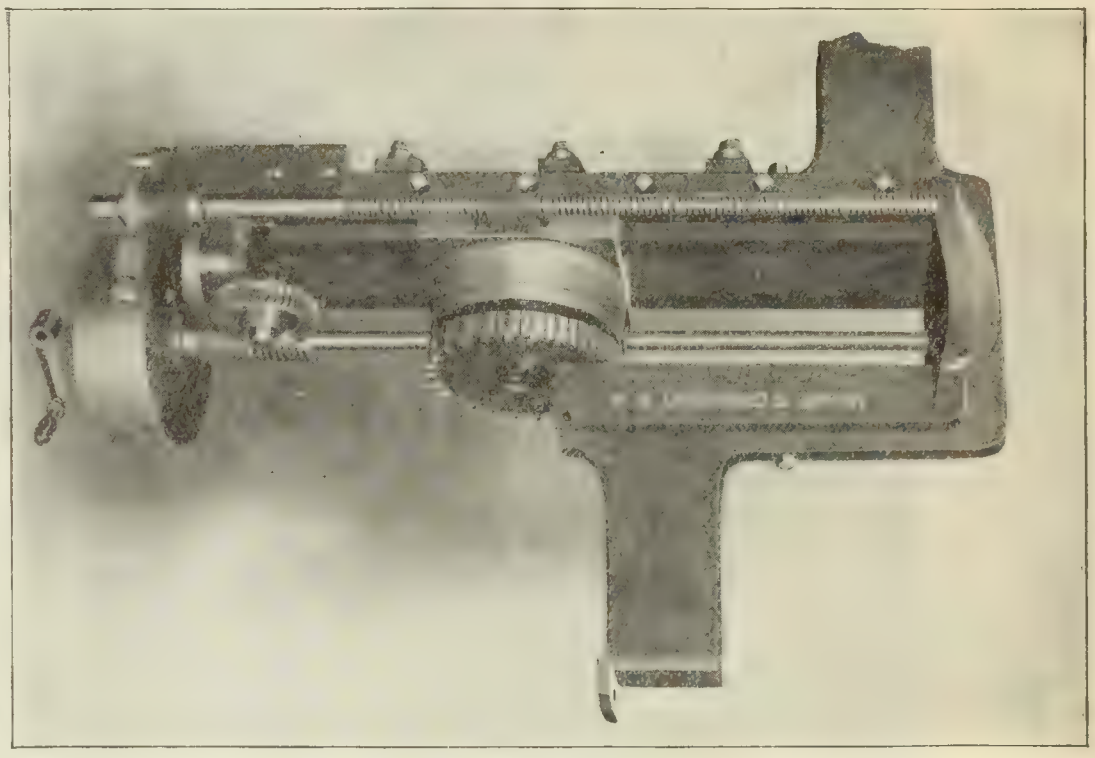
## The Underwood Truck Side Frame Facing Machine.

A portable machine for truing up the pedestal bearings on car truck frames after they have become worn out of true, is a new product of H. B. Underwood & Co., Philadelphia, Pa. The tool is strong and powerful, and uses a milling cutter with inserted high speed steel blades, which can be of various diameters, and has an in-and-out adjustment of 1½ in., allowing for different width jaws and also for the depth of the cut. The driving is through a worm and worm wheel geared 42 to 1, giving great power with the smooth operation peculiar to this type of gearing. The feed is so arranged that a great many different feeds can be used from very fine to very coarse, to suit the conditions.

The bed of the machine carrying the sliding head and milling cutter is in the form of a chuck, as shown in the illustration, with T slots on both the top and bottom edges on the back, in which fit the projections of the clamps that hold the tool rigidly to the pedestal. In the center of these clamps, adjusting screws are fitted that go through and clamp the whole device to the back of the leg without springing the bed or the work to be milled. At the top and bottom edges are six set screws for holding the machines edgeways; these in conjunction with the clamps hold the machine so firmly to the work that it practically becomes one piece.

Either parallel or tapered jaws can be milled with this tool. By placing wedge shaped pieces on the chuck the machine will mill the side having the taper equally as well and accurately as the straight side. Hence it is easy to establish and maintain a standard. In very wide jaws a parallel piece can be used in the same manner, giving the tool a very wide range of work.

The regular cutter is 8¾ in. in diameter, and is capable of taking a deep cut; its large diameter leaves very little circular corner, only about ¼ in. It is adjusted by a socket wrench which fits into and operates a cross feed screw in the center of the cutter, moving it in or out, and still retaining a long bearing for the shaft and driving device. The head has a travel of 20 in. The machine is belt driven ordinarily, but the drive shaft end can be fitted to use an air drill or power from any portable source. Various sizes will be built to meet requirements, and it is believed the machine will be found very useful for other kinds of work than that for which it was originally designed, milling the jaws of car truck pedestals.



A Portable Machine for Facing the Pedestal Bearings of Car Truck Frames, Built by H. B. Underwood & Co., Philadelphia, Pa.

Robert W. Hunt & Co., consulting and inspecting engineers, 1121 The Rookery, Chicago, have been awarded by the Chicago & Northwestern Railway Company the inspection of the structural materials entering into its new Chicago terminal station, of which the steel will amount to about 24,000 tons. The same firm has been given the inspection of the steel to be used in the new Blackstone Hotel, now being erected at the corner of Michigan avenue and Hubbard court, Chicago.

Contracts for the building of 10 vessels at lake shipyards are already on the books and further business is pending. The American Shipbuilding Company has three steel freighters under contract, the Great Lakes Engineering Works has two and the Toledo Shipbuilding Company one. The Great Lakes Engineering Works will build two package freighters and two passenger steamers are under construction, one at Toledo and the other at Manitowoc.

## The Safety of the Queensboro Bridge.

In a review of the reports of the firm of Boller & Hodge and of Prof. Wm. H. Burr of Columbia University on the new Blackwell's Island or Queensboro Bridge, in New York City, the *Engineering News* says that while for over a year the safety of this bridge has been a matter of grave doubt, the publication of the reports "reveals conditions of overstress and consequent weakness in the bridge never before suspected, in addition to the anxieties regarding the compression members." Referring to Professor Burr's recommendation that the Bridge Department should have made and tested to destruction not less than six pairs of structural steel compression members similar in cross section to typical compression members of the Blackwell's Island Bridge and as large as can be tested in the largest testing machine in this country, it asks, "Why go to this trouble and expense if these compression members are so safe?" and adds:

Professor Burr's recommendation for tests is good, as far as it goes, but it does not go far enough. Let us frankly face the fact that neither the public nor the engineering profession can have confidence in the safety of the Blackwell's Island Bridge until some of its full size members are tested, so that it can be known what their margin of strength really is.

The *Engineering Record* comments on the reports as follows:

It would hardly be necessary to print these documents in full, were it not for the fact that by selecting portions from each of them, their authors have been made to state things regarding this bridge which are unwarranted by the sense of the reports in their entirety. Both reports agree that the structure can be made ready for use, except by elevated trains, in a short time, and it is manifestly desirable to have this done. It is more important to let the bridge be put to use, as recommended in both reports, than to fuss around determining what past administration of the Department of Bridges is responsible for the fact that the strain sheets for the maximum theoretical loading prescribed by the specifications show excess strains in a number of members, all of which are discussed in the reports. Just where the responsibility lies for the actual defects of the structure as it stands is a matter of little importance compared with the fact that under the present system of carrying out great undertakings like this it is impossible for one man to be responsible from the beginning to the end of the work.

One of the largest mixers ever installed in a steel plant is being constructed by John Mohr & Sons, Chicago, for the Ensley plant of the Tennessee Coal, Iron & Railroad Company. This mixer will have a capacity of 600 tons and is 43 ft. 1 in. over all across the top, 27 ft. in width and 21 ft. 6 in. high. It is the third vessel of the kind built for this interest by John Mohr & Sons, who have the general contract for construction and erection, the other two already installed being of 300 tons capacity each. Besides this work two mixers for the new Gary plant of the Steel Corporation have just been completed.

# Foundry Cupola Practice.

At the meeting of the Detroit Foundrymen's Association, at Detroit, Mich., October 22, W. E. Riepen of the Detroit Testing Laboratory read a paper on "Cupola Practice." The necessity of dry coke was one of the first points discussed. As there is apt to be a good deal of moisture in the coke, particularly in winter, the necessity of determining these varying amounts and making the proper adjustment of the coke charge was emphasized. The writer suggested weighing out, say, 10 lb. of the wet coke and drying it in a hot oven. The loss in weight represents the amount of water that was present. Extra coke should be charged to take care of the moisture, so that when the coke descends in the cupola to the melting zone there will be the requisite amount to do the work intended. The coke used to form the bed before lighting up should by all means be thoroughly dried.

The question of sulphur in the coke was touched upon and the writer than passed to considering the method of charging. When the coke bed in the melting zone becomes uneven it can be best restored to uniform hight by adding a few hundred pounds of extra coke over the weak spot, when only half the regular iron charge is in the cupola. This insures the coke being placed and retained in proper position. In a short time this extra coke will be down to the melting zone, and will materially rebuild the bed.

### The Use of Limestone.

A complete chemical analysis of limestone was suggested to make sure that the stone contains a minimum of silica. Too much stone is as bad as too little, or worse, since repeated large doses of limestone may cause the cupola to burn through the shell. A case was recalled in which a 100-in. cupola lined to 81 in. at the melting zone was burned through the shell. The hole, which was about 4 in. above the wind box, was stopped with mud and the outside cooled by a stream of water. Then 16 or 18 lining brick were placed in the cupola on the top of the iron charge, over the place where the iron had broken out. These brick descending finally lodged in the depression of the lining, where they were found the next morning. The heat was finished successfully, and the blast had been off but 10 minutes. A new car of limestone had been received that day and it turned out to be a much richer stone than had been used. The liberation of carbon dioxide as the limestone reaches the heated portion of the cupola often causes the stone to "pop." If this popping occurs near the charging door it shows that the heating zone is too high, and that a great deal of heat is going up the stack. To remedy this, it is best to reduce the blast pressure and charge more compactly. The character of the slag depends not only upon the amount of limestone charged but upon the way the cupola is working. If the mixture carries a large percentage of sulphur which requires, say, 100 lb. of stone to produce a low sulphur iron and the amount of stone is dropped to 40 or 50 lb. or less, the iron will be changed from soft to hard or even white iron—reference being had to heats of 10 or 12 hours' duration, where precautions need to be taken to keep the quality of the iron the same.

### Excessive Blast.

With some references to the use of brick for lining and to the care needed in the preparation of clay for patching up, the paper passed to the consideration of the blast. As 150 cu. ft. of air is required for every pound of coke burned to complete combustion, and as in good practice a pound of coke will melt 9 lb. of iron, about 32,000 cu. ft. of air will be required per ton of iron melted.. If the rate of driving puts more air into the cupola than is required for melting, more heat than usual will pass out through the stack, and in such cases additional fuel is of no benefit, since the amount of fuel that can be used is limited to the dimensions of the cupola. The pressure should seldom be higher than 18 ounces per square inch, and less is desirable, say, 14, or even 12, ounces. To determine the proper blast pressure for a given cupola, samples should be taken of the gases about a foot below the charging door and a chemical analysis made. This sampling should be done while the cupola is running normally, and should extend over two or three days. When once the proper maximum pressure is ascertained, it should be a strict rule never to exceed that amount. More uniform iron is secured, and more economical melting. Assuming that for melting 100 tons a day 3,200,000 cu. ft. of air is required, we may suppose that 1,600,000 cu. ft. of air above this amount is forced into the cupola. Putting the temperature at which the air leaves the charge at 325 degrees Fahrenheit, and the temperature of the blast entering the cupola at 25 degrees Fahrenheit, reducing the excess air to pounds, multiplying by specific heat and dividing by 12,000 B.t.u., it is found that it takes 760 lb. of dry coke to supply the heat carried away by this excess blast. In a year, if such a rate were maintained, the fuel waste would amount to 228,000 lb., enough to melt 1026 tons of iron. To avoid fuel waste through excess blast a record of working conditions day by day should be kept and plotted.

### Cupola Mixtures.

Taking up the subject of iron mixtures, the speaker observed that the tendency among foundrymen is to use large percentages of pig iron, some managers going so far as not to allow the use of their own scrap. However, quality can be obtained without confining one's self to pig iron exclusively; in fact, some mixtures are much better without a large amount of pig iron. One of the largest foundries in the country making a high class article seldom has as much as 25 per cent. of pig iron in its charge, yet the product withstands shocks and strains that few castings are required to meet. By chemical analysis many seemingly impossible things are accomplished. At one foundry making car wheels a saving of $80,000 a year was made by carefully watching market prices of material and employing a chemist to calculate the mixtures. If one kind of scrap increased in price the percentage of that kind was decreased, and a low priced scrap substituted. Chemical analyses of the castings were made at once, and any necessary corrections in the mixture were possible.

A few important points in foundry metallurgy were brought out. The carbons are controlled largely by the silicon. Sulphur neutralizes the effect of silicon on the carbon. Manganese is antagonistic to the action of sulphur, and may even neutralize a large proportion of it. Phosphorus is there by right of way, and resists all efforts at elimination. Silicon should be present to some extent, in order that the carbons may become separated. In chilled castings, for frictional wear, sulphur should be fairly high in order to produce a very hard wearing surface. For car wheel work, sulphur may be as high as 0.180 per cent., and not be detrimental, but for soft work the sulphur should be kept quite below 0.10 per cent. Low sulphur permits the silicon to separate the carbons, or strictly speaking, allows more hardening carbon to change to graphitic, which might as well be called softening carbon. Each of these elements has an effect on the shrinkage of the castings. One striking peculiarity in this connection is the great influence of combined carbon on shrinkage. In no other element do we find so great a power over shrinkage. Increasing combined carbon increases shrinkage. Manganese reduces it, as does silicon. Sulphur also increases it, but may be controlled somewhat by manganese. Without going any further into the effects of the elements on the physical qualities of the metal, I would say that to be able to produce good castings, an understanding of these effects should be obtained. It is by this means that the status of grey iron may reach the high standard that cast steel has attained. There are no less possibilities for grey iron than for steel, but it will require the united efforts of intelligent men to raise the standard of iron castings to a point approaching the quality of steel castings. Careful attention to detail work in and around the cupola will very greatly tend to a more uniform product. The time will then not be far distant when the cupola will force steel castings to find new pastures.

# THE IRON AGE

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## The Automobile and the Alloy Steels.

In solving the problems of the automobile builders, notably in getting the requisite combination of strength with limited space and weight, important developments have been accomplished which have a bearing on general machine construction, especially in the possibilities offered for future design. Inventive genius was forced to overcome difficulties which had never been encountered hitherto, except, possibly, in a limited way. One of the latest achievements has been the manufacture, at comparatively moderate prices, of gears which will stand the tremendous strains of a gear drive where the older method of transmission by chain and sprocket has been discarded.

The inability to place entire reliance on materials has been a serious obstacle to automobile design. The best gears were formerly imported from France, at high cost; but American experts have made rapid strides in the development of alloy steels for automobile purposes. Various treatments of the metal have proved successful to a greater or less degree. The case hardening process has been worked out into practical usefulness. The result is the accomplishment of the chief aim of the builder of high power cars—reliability, combined with a concentration into small space of mechanism conveying large units of power.

The chemist is playing an important part in this work. Not only have his services been necessary in discovering the alloys which give the desired results, but in some establishments he is constantly employed in testing the steel that enters into the construction of working parts which have to withstand the severe strains. The automobile must be built to stand. A poor piece of steel may make serious trouble. The reputation of the car may suffer; the user may meet with serious accident. Therefore very exact knowledge of materials is required. With some concerns it is not considered enough to analyze by sample; each individual piece must be tested and rejected if not within the required limits. One prominent manufacturer of automobile parts analyzes not only the surface of each bar, but the core as well, so that the degree of segregation, usually existing to some extent in the alloys, may be known. Parts are also subjected to severe physical tests.

The results of these researches and discoveries are finding their way into machine tools and other mechanisms. There are various uses to which the new alloys can be put in the machine shop. They are already present in the high speed steels. In the majority of cases in machine design strength may be secured by increased size of cheaper materials. But there are occasional instances where it would be a practical advantage to reduce space. Steels similar to those used for like purposes in the automobile are coming into comparatively common use for shafts and spindles of machine tools and other machinery. Little use has yet been made of the new gear steels. In marine work, particularly in the vast amount of machinery which enters into the equipment of warships, there must be many places where greater strength and reliability or equal strength and reduced size are essential factors. The cost is greater as compared with the ordinary steels, but with those who value their reputations this consideration does not offset dependability.

## Pig Iron Supply and Demand.

A question in which producers and consumers of pig iron have the liveliest interest just now is the relation that exists between production and consumption now that 200 coke and anthracite furnaces are in blast. The increase in output from a daily rate of 36,444 tons in June to 50,434 tons in October, or nearly 40 per cent., is a large one for a period of but four months. If consumption has been increasing with equal pace the rapidity with which additional furnaces have been coming into line is only cause for congratulation. The absence of complete data as to stocks, however—a lack which many in the trade consider unfortunate at this particular time—makes it more difficult to determine the status of the industry, though the drift may be known in a general way.

One fact that appears from an examination of the production statistics is that the merchant furnaces have increased their output since June much more rapidly than have the steel works furnaces. It can readily be seen that under all conditions the steel companies are in position to secure a much closer adjustment of their pig iron output to the requirements of their mills than merchant furnace companies can make to the requirements of their customers. Having many furnaces, the large steel company has a flexibility in operation that the isolated furnace plant does not have. It has occurred more than once in the past year that with three furnaces going a steel works group has made more iron in one month than four furnaces of the same group made in the month preceding, the stacks being held down or pushed according to the demand upon them. In the case of a single furnace, if it runs at all it must make at least its average product; when it blows out, it is with the expectation of remaining idle for a matter of weeks or months. We have had in the past two months the blowing in of a good many merchant furnaces, whose owners, after a period of idleness, have decided to get their share of going business. These decisions naturally are made without any exact knowledge of the existing balance between supply and demand and are sometimes dictated by considerations that have no direct relation to supply and demand. To emphasize just what has taken place in the two lines of pig iron production—steel works and merchant—we reprint the figures given in our statistics for October, showing the daily rate of output in the first 10 months of the year:

*Daily Rate of Production.—Gross Tons.*

| | Steel works. | Merchant. | Total. |
|---|---|---|---|
| January | 21,432 | 12,286 | 33,718 |
| February | 25,717 | 11,446 | 37,163 |
| March | 27,145 | 12,474 | 39,619 |
| April | 24,185 | 14,104 | 38,289 |
| May | 24,505 | 13,098 | 37,603 |
| June | 23,923 | 12,521 | 36,444 |
| July | 25,762 | 13,525 | 39,287 |
| August | 28,952 | 14,899 | 43,851 |
| September | 31,117 | 16,183 | 47,300 |
| October | 32,144 | 18,290 | 50,434 |

Measuring from June, from which month there has been a steady increase in both columns, the October figures show a gain of 46 per cent. for merchant furnaces and 34 per cent. for steel works furnaces. The question on which the merchant interests would gladly have light is whether consumption has grown at a rate that will absorb the increased output and the further increase that is promised in the immediate future. For, while the merchant interests produced at the rate of 18,290 tons in October, it is probable that 20,000 tons a day will be exceeded in November.

Heavy buying came in the last 10 days of October, and is still in progress. But a number of large merchant pig iron firms had greater stocks at the end of the month than at the beginning. In other cases, notably in Virginia, stocks declined in October, while with many furnaces the month showed little change. An outstanding fact about the buying of the past four weeks is that many consumers saw that cost had been closely approached if not reached by the prices realized in much of the October business. They were willing, therefore, to buy, even though business was not on their books equal to their purchases. Therefore, while the tonnage taken in this movement seems large, it is to be remembered that for much of it deliveries stretch over a good many months. Doubtless the improvement that has followed the election, difficult as it has been to measure it in the general hurrah of exaggeration and misstatement, has made melters of iron more willing to carry a stock than they have been in months. Thus consumers are likely to share with producers, in the next few months, the accumulations which for a long time have been largely carried by the latter. But a marked expansion in foundry activity is not to be looked for at this season. It will take new enterprises and important extensions of plant, with their requirements of power equipment and machinery of all descriptions, to give a decided impetus to foundry operations. It is a question whether demand of this character has not now been anticipated in part by the blowing in of furnaces.

## Employers' Interest in Apprentices.

While the claims of this or that method of training young men in the metal working trades are being urged, and comparisons are being made between manual training schools, trade schools and industrial courses in public and special schools, one thing stands out in the new apprenticeship movement. It is the interest everywhere being taken in the question by employers. Whatever might have been said a few years ago of the indifference of proprietors to the bringing up of a new supply of mechanics, there are evidences now of a very lively concern. We read, for example, of a series of evening meetings at which in turn manufacturers of machinery in a New England city are to discuss with the boys who are now taking combination shop and high school training in that city practical questions connected with shop operations. In the two important organizations of employers in metal working lines the training of a new supply of workmen is a leading topic at every annual convention, and time has been devoted unsparingly by members to whom this subject has particularly appealed to the working out of the apprenticeship plans originating with these associations. It goes without saying that if the same amount of attention had been given to apprentices 20 years ago, or 10 years ago, the situation would be far better to-day. But that is not to the point, which is that if the intelligent work now being put on the problem by employers is kept up, the next 10 years will tell a very different story from what has been heard of late as to the supply and quality of workmen in machine shop and foundry.

## Workmen's Compensation for Injuries Proves Harmful.

Evidence multiplies to show that laws which hold the employer financially liable for accidents to workmen regardless of where the negligence may lie are working out neither with justice to the employer nor to the moral uplifting of the average employee. In *The Iron Age* for September 3 reference was made to the evils that have developed under the French system of insurance of employees against accident, in which the employer is compelled to pay all premiums and where negligence does not exist as a factor. Under this system it has been found that the progression in the number of accidents is intensified by the constant increase in the average duration of temporary unfitness for work, and consequently in the average compensation due to workmen while they are nonproducers. A similar condition is noted under the British Workmen's Compensation act, especially since the passage of the law of 1906, in which was included a clause, not in the act of 1897, whereby an employer is made liable for an accident caused by serious or willful misconduct, if the result is the death or permanent disablement of a workman. Apart from deliberate attempts to take advantage of this clause, statistics prove that the placing of all responsibility on the employer has had the effect of increasing carelessness on the part of the employee. Care against his own negligence in its relation to himself and his fellow workmen is no longer operative in the same degree that exists under the Employers' Liability acts of the United States and other countries which have not assumed so radical an attitude of paternalism toward the so-called working classes.

Sir John Gray Hall, an eminent English lawyer, in a paper read before the Incorporated Law Society, of which he is a former president, told his experience as a solicitor, with special attention to the newer clause of the act whereby an employer is liable for an accident caused by willful misconduct as already referred to. He argued that this clause is hard on the employer and is a source of temptation to relatives of workmen. He cited the case of a ship's steward, who, contrary to orders, went aboard ship by means of the cargo skid to prevent officers seeing that he was intoxicated, and as a consequence fell down a hatchway and was killed. Continuing, he said: "It does not require a strong imagination to conceive of cases where such a state as this may lead to what may be equivalent to murder. Relations, legitimate or illegitimate, who would be benefited by the sum payable on death or by the allowance for a permanent injury, and who have no love for the man in question, might readily ply him with drink when he is about to proceed to work involving danger to any one the worse for liquor." A Sheffield practitioner, dwelling on the effect upon the morale of the workingman, says: "It is sad to find by painful experience to what an extent unfair advantage is taken of this act by some of those for whose benefit the laws were framed. Instead of honorably trying to get back to work as soon as possible, thus proving their manly independence and retaining their self-respect, the injured workmen, in too many instances, try to persuade themselves and their medical examiners that they are incapacitated for work long after their condition justifies such a contention. The

hope of obtaining a lump sum as compensation (which the law provides for a stated length of disability) no doubt acts in some cases as a strong motive to profess that no improvement is taking place in their condition." The evil of the lump sum payment in many of these cases, the money being quickly squandered, usually for dissipation, is pointed out, and it is suggested as a remedy that the court be given the power to employ a medical assessor whose finding shall be final, and to convert the lump sum into installment payments.

There is a trend of thought in America favoring some law similar to these British and French statutes. In theory, as viewed by those philanthropic persons who advocate them, these laws are wise, in that employers and indirectly the public as a whole stand between the workmen and their families and a poverty which may become pauperism. But it is a grave question whether in practice the system operates to the benefit either of the public or of those whom it is intended to aid. It is not a far cry from the paternalism of the community which provides food and shelter and medical care for the indigent under existing systems and that which compels the employer to pay his working people wages which they do not earn and cannot earn because they were injured through their own negligence. The Employers' Liability acts make the employer financially liable to a workman where the latter is injured through the former's negligence. This law is abused, partly because the sympathy of the average jury is with the injured man seeking to recover from the wealthier individual or corporation who employed him, and partly because of the trickery, even knavery, which exists in certain elements of the legal and medical professions. Under the Employers' Liability act it costs the employer more per individual case decided against him, but the awards of damages are much less frequent than under a system where every accident must be paid for. The system might as well extend to sickness; the principle is the same as in accident cases where the employer is not liable.

Sir John Gray Hall's allusion to the opportunity of relatives of workmen to plot for their injury suggests the danger which accident insurance companies have found of some importance in their d alings with policyholders—that of intentional accident. It is easy to imagine a man desperate or stoical enough to submit voluntarily to an accident. Laziness might be the motive, or in the fear of dismissal the opportunity might be seized to put the employer under liability to support a workman until the healing of an injury. There is a semicriminal class of people in this country, intermixed in the cosmopolitan population, which might prove an expensive burden under a system of workmen's compensation or the French system of insurance, which is similar in its principle.

There is something non-American in the workings of these laws. The independence of the workman is destroyed to an extent; he has the knowledge that he will be looked after during periods of idleness resulting from his own negligence. If he is injured he receives money for which he gives no return, and to which he could never be entitled were it not for the fact that the law says it must be paid him on the general theory that he must not become a charge to his community. There are plenty of American workmen who would decline to receive money under such conditions, or who, if they were compelled by circumstances to accept it, would consider it as a loan. This is the one extreme class. The other, and perhaps it is the larger, justifies every means by which the employer may be made to pay it money. With such legislation proposed in Congress and by some of the States, it would be well first to examine thoroughly the workings of similar laws abroad.

## CORRESPONDENCE.

### Foundry Accounting Methods.

*To the Editor:* We note in your current issue an article on "Foundry Accounting Methods," being the reproduction of a paper read by John Doughton before the Philadelphia Foundrymen's Association. We feel that inasmuch as the system described in this paper was developed in the plant of this company, and that only a meager and garbled description of it is given, an erroneous impression may be obtained of its adaptability to the general foundry business. The system, however, in detail, has been used by us for the last two years, to the great benefit of our customers, and it has insured prompt deliveries as specified in our promises upon receipt of orders. Any parties interested in this matter can obtain such information as they may desire by communicating with this company.

CHESTER STEEL CASTINGS COMPANY.

CHESTER, PA., November 13, 1908.

### The Structure of Titanium-Treated Steel.

*To the Editor:* In your issue of November 5 describing specimens of steel made by the Lash process in the electric furnace and shown at the New York meeting of the American Electrochemical Society, you remark on the "laminations" which appear in a fracture of a sample made from ingots treated with titanium. The curious fibrous structure of steel treated with titanium, even when the steel is far from wrought iron, is very characteristic, and perhaps has some relation to the extraordinary toughness that is combined with a high tensile strength in metal treated in this manner. It is, however, questionable whether the appearance really represents what are usually known as "laminations." My opinion on the subject would be useless because of my rudimentary knowledge of steel; but it may be of interest to note that certain experts deny flatly that this titanium treated steel shows what are known as "laminations." Incidentally, it may be noted that the sample of steel does not contain even a trace of titanium, but was simply "treated" with about 0.1 per cent. of titanium in the ladle. FRANCIS A. J. FITZGERALD.

NIAGARA FALLS, N. Y., November 12, 1908.

The first all-big gun battleship for the United States Navy, the North Dakota, was launched at the works of the Fore River Shipbuilding Company, Quincy, Mass., November 10. This vessel will have a displacement of 20,000 tons, or 2000 tons more than that of the original British Dreadnought. Curtis' turbines of 25,000 hp. will be installed, calculated to drive the ship at a speed of 21 knots. The equipment will include 2 12-in. guns, 14 5-in. rapid fire guns, 4 three-pounders, 4 1-lb. automatic guns, 2 3-in. field pieces, 2 50-caliber machine guns and 2 21-in. submerged torpedo tubes. The armor will be 8 in. thick around the hull. The vessel is now about 60 per cent. completed, and has so far been built in record time, only 282 working days since the laying of the keel on December 16, 1907. The Delaware, now being built at Newport News, Va., will be similar to the North Dakota except the engines.

The Government of Saxony has issued a decree under which the right to search for and to extract minerals containing radium is retained by the State, which may, however, concede these rights to other persons. Reference is made in the decree to a number of springs rich in radium, notably to the waters of Georgenthal, in Vogtland, which yield 58.8 units of radium, as compared with the 47.5 units of the Karlsbad waters, or upwards of one-third of the volume found in the richest springs hitherto discovered—those of St. Joachimsthal. It is not intended to deprive private owners of their rights, but rather to regulate the production of radium, so that the best means of utilization in the national interest may be carried out.

# The American Steel Foundries.

The business of the American Steel Foundries has suffered severely from the cessation of buying by railroad companies. The report for its sixth fiscal year, and the third of the present management, covering operations for the 12 months ending July 31, 1908, presents the following income account as compared with the previous fiscal year:

| | 1908. | 1907. |
|---|---|---|
| Earnings from operation of plants and net income of subsidiary companies after deducting manufacturing, selling, administrative and head and district office expenses | $621,055.94 | $2,893,641.97 |
| Other income: | | |
| Interest, discount and exchange | $40,297.47 | $37,192.08 |
| Income from investments and loans | 52,101.70 | 26,890.99 |
| Sinking fund income and profits | 49,688.86 | ..... |
| Miscellaneous | 5,670.31 | 8,783.22 |
| | 147,758.34 | $72,866.29 |
| Profit on sale of Commonwealth Steel Company stock | | 134,098.44 |
| Total income | $768,814.28 | $3,100,606.70 |
| Deduct: | | |
| Interest on borrowed money | | $39,635.81 |
| Interest on bonds | $232,300.00 | 233,192.33 |
| Interest on debentures | 68,736.00 | ..... |
| Bond sinking fund installment and accretions | 154,688.86 | 105,000.00 |
| Depreciation of buildings, plant and equipment (all properties) | 207,910.64 | 233,681.58 |
| Special patent and other expenses (written off) | 46,733.20 | 110,000.00 |
| | 710,368.70 | $721,509.72 |
| Balance—net income | $58,445.58 | $2,379,096.98 |

The general balance sheet as of July 31, 1908, is as follows:

*Assets.*

| | | |
|---|---|---|
| Real estate, buildings, equipment, patents and goodwill, as per balance sheet of July 31, 1907 | $34,693,795.15 | |
| Less net surplus arising from readjustment of capital, in accordance with stock reduction plan of January 3, 1908 | 14,925,575.53 | |
| | $19,768,219.62 | |
| Add net expenditures on additions and improvements during the year | 144,031.41 | |
| | $19,912,251.03 | |
| Real estate not used for business purposes | 298,630.15 | |
| | $20,210,881.18 | |
| Sinking fund assets (exclusive of bonds purchased and held by trustees): | | |
| Cash and accrued interest | | 14,875.18 |
| Securities: | | |
| Company bonds at cost (in anticipation of sinking fund requirements) | $223,372.36 | |
| Commonwealth Steel Company—Notes secured by first mortgage | 330,000.00 | |
| Miscellaneous securities | 118,326.00 | |
| | $671,698.36 | |
| Inventories | 2,176,049.68 | |
| Accounts and bills receivable (less reserves) | 730,139.79 | |
| Collateral time loans | 1,500,000.00 | |
| Cash | 479,311.74 | |
| | | 5,557,199.57 |
| Insurance premiums, &c., prepaid | | 47,682.46 |
| Total | | $25,830,638.39 |

*Liabilities.*

| | |
|---|---|
| Capital stock (authorized and issued) | $17,184,000.00 |
| Bonds and debentures: | |
| First mortgage 6 per cent. 10-30 year bonds | $3,500,000.00 |
| Less redeemed and held by trustees of sinking fund | 687,000.00 |
| | $2,813,000.00 |
| First mortgage 5 per cent. bonds of American Steel Casting Company (due November 1, 1912) | 446,000.00 |
| Four per cent. debentures | 3,436,800.00 |
| Accounts payable | 570,391.20 |
| Payroll accrued | 48,895.11 |
| Accrued interest on bonds and debentures | 144,311.00 |
| Depreciation and renewal reserves | 974,106.64 |
| Bond sinking fund (accrued since August 1, 1907) | 154,688.86 |
| Net income for the year ending July 31, 1908 | 58,445.58 |
| Total | $25,830,638.39 |

From President Wm. V. Kelley's accompanying statement to the stockholders the following extracts are taken:

The gross sales for the year were $8,964,168.76, as compared with $19,463,521.05 for the preceding year; $15,297,495.89 for the year ended July, 1906, and $9,053,608.85 for the year ended July, 1905.

In considering net earnings ($58,445.58) it should be borne in mind that, while such net earnings are the only amount applicable to surplus or dividends, they do not fully represent the actual earning power of the company as at present constituted, even under such adverse conditions as prevailed during the year, because these figures are the remainder after full provision for interest on bonds and debentures, bond sinking fund, depreciation of properties, &c., amounting to more than $700,000, more than half of which is of direct benefit to the stockholders through the reduction in outstanding bonds and the preservation of buildings and equipment. It may, perhaps, be proper to add that, for the year ended July, 1905, with an almost identical volume of business, the result, without providing for any of the above items, was a loss of several hundred thousand dollars.

The great and sudden decline in business, due entirely to the panic or the causes which led to it, made it impossible to operate the company's plants to more than 15 to 20 per cent. of their capacity for many months. Expenses were reduced wherever possible without destroying the company's organization, but, as shown by the experience of railroads and other corporations, it is impossible by a reduction in expenses to offset such an enormous loss in the volume of business; therefore, however disappointing the showing may be, it is believed stockholders will appreciate that every effort has been made, and that the organization has been maintained at such a point that the company can immediately profit from any resumption of business by being in position to handle it promptly, properly and economically.

In addition to provision for depreciation, proper charges have been made for repairs, renewals and maintenance (including patterns and relining of furnaces), amounting to $576,984.76, and absorbed in manufacturing costs.

During the year $144,031.41 was charged to capital account, on a conservative basis, for additions, new construction, machinery and equipment. In addition, $108,342.73 of the amount heretofore reserved for depreciation was applied to minor additions and improvements.

Aside from the ordinary transactions the principal items of interest are as follows:

Under date of January 3, 1908, a plan for a change in the character and amount of the company's capital stock was submitted to the stockholders and a special meeting called for its consideration. The plan was approved by the stockholders at an adjourned special meeting held June 12, 1908. All of the new stock has been issued and most of the old stock has been exchanged for the new stock, securities and cash to which it is entitled.

The plan adopted provided for the surrender, retirement and cancellation of all the then outstanding stock of the company, both preferred and common, and the issuance in place and lieu thereof of $17,184,000 new stock of one kind and class, without distinction or preference between any of the holders thereof; also the issuance of $3,436,800 of 4 per cent. 15-year debentures, and at the payment of $515,520 cash, distributable as follows:

To the preferred stock, 77 per cent. in new stock, 20 per cent. in debentures and 3 per cent. in cash.

To the common stock, 25 per cent. in new stock.

The plan also provided that any surplus arising from the retirement and cancellation of stock and the accumulated surplus up to August 1, 1907, should be applied (1) against the cash to the preferred stockholders; (2) to provide for the debentures; (3) to reduce the cost of properties account.

After absorbing necessary expenses in connection with the plan, and applying the surplus as provided, the net result is the present capital stock ($17,184,000), an amount which may fairly be considered as representing the value of the company's assets in excess of its bonded indebtedness, and on which under normal business conditions dividends should be earned and paid; a reduction in the property account of substantially $15,000,000 and a permanent working capital sufficient for ordinary conditions; furthermore, owing to the change in the amount of authorized and issued stock, the company is enabled to comply with the requirements of certain States in which it has heretofore had no legal standing.

The reduction in the capital stock of the American Steel Bolster Company, of which this company is the beneficial owner, authorized before the last annual report and balance sheet, has been consummated.

The experience of previous years having shown that

the time between the close of our fiscal year and the date of the stockholders' annual meeting, as previously fixed, was too short for the proper preparation of accounts, reports, &c., the by-laws have been changed, making the annual meeting date, beginning 1908, the first Thursday next preceding the first Friday in December.

Regarding the business outlook, it may be said that, while the volume of business is still small and far from satisfactory, there has been a distinct improvement since August 1. Now that the Presidential election is settled it is believed that progress toward normal conditions will continue more rapidly. Orders not received during any particular year is not business lost, but simply delayed.

## Canada's Steel Rail Duty.

TORONTO, November 14, 1908.—During the Canadian election campaign the attention of the public was so occupied with other issues that the old dividing question of trade policy was scarcely considered. Now that the polling is over, the conflict of opinion on that question recommences. One of the new impulses to it is the sale of 9000 tons of Canadian rails to purchasers in India. This is made the occasion for a fresh attack by the anti-protectionist press on the Dominion Government's arrangement for fostering the iron and steel industry. The *Weekly Sun* takes the lead in this attack, as it formerly took the lead in the agitation against the bounties. It understands that the selling price of the exported rails was much below what the Dominion Iron & Steel Company charged for rails it supplied to Canadian roads. It is contended that if the company can capture business in the world's open market in the face of British and other competing railmakers, it can hold its own in the home market without any assistance from the tariff or the bounty law. Hence it is held that the duty at least should be abolished. It is granted that to cut off the bounties before the end of the four year period for which they are established might be considered a breach of faith, and therefore the *Sun* is now writing that these should be suffered until 1912, when, however, it would have them swept away. But it wants the $7 rail duty ended now. Parliament is advised to repeal the rail duty and ease the cost of railroad building.

The railroad companies, who now feel the cost of construction and operation much more keenly than they did for years prior to the last twelve-month, would raise both hands for the change. The Toronto *Star*, a strong supporter of the Laurier government, likewise calls for the abandonment of the duty. In the rural and Western press the demand for that change is also making itself heard. It is somewhat noteworthy that newspapers that have been conspicuous for their advocacy of protection are not coming forward to the defence of the rail duty as might be expected. Of newspapers of prominence, the Montreal *Gazette* is almost, if not quite, its sole champion. That journal says it would be inequitable to penalize the Sault company, which exported no rails, in order to punish the Sydney company, which was the only offender, if offence it was to export rails at the outside market price. It asks if it be not better that the company sell rails abroad at the price that negatives a profit than that it close down the works and put a stop to wage earning as well as precluded profits.

Unquestionably, the company would prefer to sell all its output in the well protected home market to shipping any part of it to an open market where the whole stress of foreign competition is to be withstood. In the matter of transportation, however, the difference in cost is not in all cases heavily in favor of the home market. To lay down on the Pacific Coast of Canada rails manufactured on the Atlantic Coast cannot be greatly cheaper than to deliver them at Calcutta, Madras or Bombay. Sydney rails have been sent round Cape Horn to British Columbia. It is reported that two steamships of the New York & South American Line will leave New York next month with 5000 tons of tin plate, steel rails and structural steel for Vancouver. If rails can be shipped from New York over that long route and entered into Canada against a duty of $7 a ton, the selling of Sydney rails in free trade India should not seem strangely at variance with regular business. It is a certainty that there would have been no Canadian rails available for India had there been no money stringency to interfere with the plans of railroad building in this country. The stringency affected the government itself, whose surplus was temporarily absorbed on capital account at a time when not advantageous for the floating of new bond issues. Revenue fell away sharply. During the seven months ending with October, the revenue was $10,000,000 less than in the corresponding period of 1907. The railroad companies were affected by the same causes. There ought to have been, and ordinarily would have been, a sufficient demand to keep both the Sault plant and the Sydney plant busy on Canadian account. But as it turned out, the Sault mill had to be shut down for want of home orders, and some of the Sydney mill's output had to be sold abroad. It is expected that the home demand will again become strong enough to take up the output of both mills operated at full capacity. As in the United States, so in Canada, the sparing expenditure of the railroads for some time has only had the effect of putting off their needs.

### Exports of Sydney Rails.

TORONTO, November 16.—The selling of 8000 tons of Sydney rails for shipment to the Punjab appears not to be an exceptional transaction, but the beginning of an active export trade on the part of the Dominion Iron & Steel Company. An order for 16,000 tons for delivery early next year in New South Wales, Australia, is now reported to have been received by the company since the India business was booked. Following that again comes news of an order the company has received from Mexico. It is stated also that the company has export orders for billets and rods. While billets are among the articles whose exportation involves the forfeiture or return of the bounty on the raw material, rails are exportable without conditions affecting the bounty on the constituent pig iron and steel ingots. If the company should succeed in working up a very large external business the bounty money this business would cost the people of Canada in the period the bounties have yet to run would swell proportionately. Naturally, the growth of the company's trade abroad would on that account not cause general enthusiasm. On the contrary, it would rouse a popular feeling against which the government would scarcely dare to renew the bounties at the end of the current five-year period. This must be apparent to the company, whose foreign operations may therefore be undertaken upon the assumption that the bounties are not to be renewed in any case. Very possibly the company has been made to understand that bounties on the product of imported ore shall absolutely terminate when their present period comes to an end. In that case the company would be but sharing worldly wisdom in securing all the foreign business it can while it has the benefit of the bounties.

In defense of the company's foreign dumping, it is pointed out that 3000 hands are thereby kept at work, and that mercantile business is to that extent sustained. Would it be better, asks the Halifax *Chronicle*—a government supporter—that the works should be closed, the hands reduced to idleness and want, and the local trade stopped? That would be undesirable, but such consequences have had to be suffered in localities of which other industries were the life. Scores of woolen mills have been put out of business by the influx of imported woolen fabrics, under the British preference. Yet the government did nothing by bounty payment or otherwise to save the work for the home artisan. The question is asked, Is it for relief purposes and as a provision against the spread of unemployment that the bounties are paid? If the company and the government together are making sacrifices for that purpose then the sacrifice should be as far as possible for the general easing of Canadian depression, and not largely for the benefit of India, Australia and Mexico. Possibly if the company would offer rails to Canadian companies at its export price, it would be able to sell at home all it can make. In that case work would be found not only for the company's hands but also for the men who labor on railroads.

C. A. C. J.

## Iron and Steel Bounties in the Dominion Election.

In the campaign that preceded the Dominion general election there appears to have been something like an agreement between the leaders of the two political parties that neither side should assail the bounties to the iron and steel industries. As a matter of fact, it was not possible for the Conservatives to make any attack on the bounty system which the Liberal governments have developed so extensively since 1897; for it was a Conservative government that established the system in 1883. It was only the independent or the labor candidates who assailed the bounties. In Sydney, however, the Liberals circulated a statement that Mr. Borden, the leader of the Conservatives, would, if he were called upon to form a government, make an end to the bounty system. A repudiation of this statement was promptly made by Mr. Borden. "There is," he telegraphed from Halifax to the Sydney *Post*, "absolutely no intention to disturb existing conditions."

The success of the Liberals at the polls on October 26 makes it pretty certain that a Liberal Government will be in power in 1909, when the bounty legislation will again come before Parliament; and the likelihood is that the system will then be continued for another four or five years. There is not more than a canoe crew of independents in the new House of Commons. They, and the two labor men who have been returned, will scarcely count against the solid group which will support the government, and the equally solid group that will sit on the Opposition benches and follow the lead of Mr. Borden.

One of the significant incidents of the election is the heavy losses which the Laurier Government has sustained in the Province of Nova Scotia. Between 1883 and 1908 of the $11,000,000 paid out in bounties quite two-thirds had gone to companies owning furnaces at Acadia Mines, Ferrona, Sydney and Sydney Mines, all in the Province of Nova Scotia. Yet in spite of all this largesse to the industry in Nova Scotia, and of the fact that except for less than $250,000 it had all been bestowed by the Liberal Government, the Liberals lost six of the 18 seats in the Province. They have five fewer supporters from that Province in the new House of Commons than they had in the Parliament of 1904-'08; and even the member for the electoral district in which the Sydney rail mill is located is among the defeated Liberals.

For the American iron and steel trade the election has one important significance. Mr. Borden and the Conservatives failed of success chiefly because they were committed to the abolition of the British preference and to a tariff which would have been practically prohibitive against imports from the United States. The Conservatives have assailed the British preference ever since it was established in 1897. They continued this policy in spite of the fact that farmers in five of the provinces made it clear to the Tariff Commisssioners in 1905 that they were in favor of the preference, and uncompromisingly hostile to any higher duties than those in the tariff of 1897 on imports from the United States. In spite of these manifestations of the farmers in the three prairie provinces, in Ontario, and in Prince Edward Island, the Conservatives, after the tariff revision of 1906, persisted in their hostility to the British preference; while as regards the tariff against the United States, they took up the cry of the stove manufacturer of Hamilton, who, at the convention of the Canadian Manufacturers' Association at Toronto, in September, 1907, vehemently declared that he was in favor of a tariff as high as Haman's gallows if a tariff so high were necessary to keep American manufactures out of Canada.

It was the Haman's gallows attitude of the Conservatives, and their astonishing inability to see that the British preference was universally popular in Canada, that settled their fate at the general election. They made no gains in rural Canada. The few gains that accrued to them were in cities such as Halifax, Montreal, Hamilton and Winnipeg. Rural Canada put out of sight the well-founded charges of graft and corruption and wasteage of the public domain made by the Conservatives against the Laurier government when the farming population realized that a vote against the Laurier government was a vote against the preference and in favor of a prohibition of manufactured imports from the United States. The Laurier government is now quite conscious that it was this attitude of rural Canada toward the extreme tariff policy of the Conservatives that saved it. The election has brought home once more to the Government the lesson of the public sessions of the Tariff Commission that preceded the revision of the tariff in 1906. This is that rural Canada, which elects the overwhelming majority of the members of the House of Commons, will not stand for any further increase in the tariff on imports from either England or the United States. The lesson has now been so well brought home to the Government that manufacturers in the United States who do any large business with Canada need have no apprehension that their business will again be dislocated by higher duties. Some new taxes will soon have to be levied to meet the large deficit in revenue that now confronts the Dominion Government. There is, however, no likelihood that higher tariff duties will be resorted to to meet the deficiency due to the heavy falling off in Treasury receipts for the last 9 or 10 months. E. P.

## The German Pig Iron Market Weaker.

Berlin cablegrams of the past week refer to the "final failure" of the attempts to extend the four German pig iron syndicates and to organize them into a general syndicate; but so far as two at least of the syndicates are concerned, formal decisions to dissolve on December 31 had previously been announced. As a result of the action of the Rhenish Westphalian syndicate steel making pig iron, which had dropped to $15.50 in the latter part of October, is now at $14.50. The Luxemburg-Lorraine syndicate's scheduled dissolution has brought Luxemburg iron down to a basis of about $12.50 for No. 3 foundry. Of the Siegerland pig iron producers nine have formed a joint sales agency for handling their iron after January 1, and other furnaces may participate in the movement. Stocks of iron have been increasing at furnaces, even though further additions have been made to the list of idle furnaces. Buyers are not attracted by prices quoted for delivery after January 1, believing further reductions may come, though independent furnace interests are now believed to be close to their cost line. The exports of pig iron increased in September as did also the exports of semi-finished steel, though in the past few weeks the export movement has slackened somewhat.

A transfer of properties for purposes of operation has been made between the Carnegie Steel Company and the American Steel & Wire Company, though there is no change in ownership. The American Steel & Wire Company, which has operated the rod and wire mills of the Union Steel Company plant at Donora, now takes over the two blast furnaces, open hearth plant and blooming and billet mills there, heretofore operated by the Carnegie Steel Company. The latter company, in return, takes over for operation the Edith and Neville Island furnaces of the American Steel & Wire Company.

The Follansbee Brothers Company, Pittsburgh, mill at Follansbee, W. Va., manufacturer of sheets and tin plate, has opened an office at 326 Reaper Block, Chicago, which is an addition to its office and warehouse at Milwaukee, Wis., where a large stock of roofing and black plates, solder, &c., are carried. Both offices are in charge of Austin Klawson, whose residence is in Chicago.

The receivership of Milliken Bros., Inc., has been further extended this week to January 2, 1909. The reorganization plan, it is expected, will be worked out mean time, and it is believed by the receivers that it will in due time receive the approval of the court. The plan includes the building of a blast furnace.

## PERSONAL.

J. D. Harris, formerly works manager of the Westinghouse Air Brake Company, Wilmerding, Pa., has been appointed superintendent of motive power of the Baltimore & Ohio Railroad, with headquarters at Baltimore, Md.

James Warren, formerly manager of the Jessop Steel Company at Washington, Pa., has resigned and was presented with a handsome testimonial by the employees. He will spend a brief vacation at his home in Providence, R. I., before assuming another engagement which he has already made.

William S. Douglass, for about 10 years general superintendent of the William Tod Company, Youngstown, Ohio, has resigned.

John J. Jamison, president of the Jamison Coal & Coke Company, Pittsburgh, was chosen State Senator at the recent election, representing Westmoreland County, Pennsylvania.

J. G. Butler, Jr., the well-known pig iron manufacturer of Youngstown, Ohio, and chairman of the Bessemer Furnace Association, is named as a candidate for United States Senator from Ohio, to succeed J. B. Foraker.

Among last week's arrivals from Europe was F. W. A. Joly of Wittenberg, Halle, Germany, president of the Association of German Manufacturers of Fire Brick (Wirtschaftliche Vereinigung deutscher Chamotte Fabrikanten), which he organized, with the object of improveing methods of manufacture. The association has established standards of quality and shape, reducing the number of the latter, and has studied the requirements of customers with reference to tensile strength, refractory qualities and uniformity of product. Mr. Joly is about to spend some weeks in the country to study American conditions, with a view to drawing therefrom applications for the industry in his own country. He is in a position to offer to American manufacturers suggestions growing out of the experience of German makers which may prove of value. He is making the Hotel Astor, New York, his headquarters.

Dr. Ernst Menne of the Coeln-Muesener Bergwerks A. V. of Creuzthal, i. W. Germany, is now in this country, his address being care of Heidelbach, Ickelheimer & Co., bankers, New York. Dr. Menne is the inventor of the oxyhydrogen process for opening the tuyeres and tapping holes of blast furnaces, the apparatus being in use at 108 plants in Europe. A demonstration is being made at Pottstown, Pa., and will probably be conducted at other points.

Walter B. Snow, publicity engineer of Boston, has been appointed by Governor Guild a member of the Massachusetts Commission for the Blind.

M. Yoshino, general superintendent of motive power of the South Manchuria Railway, with headquarters at Dalney, Manchuria, spent November 11 in Dunkirk, N. Y., inspecting the Brooks plant of the American Locomotive Company. He is making a tour of this country in the interest of his railroad and will remain until about the close of the year.

Charles N. Turner, formerly chief of the tariff bureau of the Chicago, Milwaukee & St. Paul Railroad, Chicago, has been appointed traffic manager of the Milwaukee Coke & Gas Company, with headquarters at Milwaukee.

Dr. Richard C. Maclaurin, professor of mathematical physics at Columbia University, has been elected president of Massachusetts Institute of Technology, Boston, Mass.

G. W. Dickie, for 23 years manager of the Union Iron Works, San Francisco, and for about two years at the New York Shipbuilding Company's yard superintending the building of the steamships for the Pacific Coast Company, has opened an office as consulting engineer and naval architect, at 24 California street, San Francisco.

Arthur J. Frith, who has recently had a consulting engineering office at 39 Cortlandt street, New York, has accepted a position as associate professor of experimental engineering at Armour Institute of Technology, Chicago.

John E. Lord, recently connected with the Hooven, Owens, Rentschler Company, Chicago, has been engaged by the Pressed Steel Turbine Company of America, and expects to open headquarters in Cincinnati in the near future.

John Sturgess, who has recently been connected with the Sturgess Governor Engineering Company, Troy, N. Y., as general manager, has accepted a position in the same capacity with the Lombard & Replogle Engineering Company, Akron, Ohio.

Prof. C. C. Thomas has resigned as head of the department of marine engineering, Sibley College, Cornell University, to accept the chair of mechanical engineering at the University of Wisconsin, Madison, Wis.

## OBITUARY.

WILLIAM EDDY RIPLEY, one of the oldest and most esteemed employees of the Brown & Sharpe Mfg. Company, Providence, R. I., died November 10, after a short illness, aged 65 years. For almost all his active business life he was connected with the Browne & Sharpe Company, entering its employ in 1864. From that date until 1902 he was head timekeeper, in charge of the cost keeping department, a position which he filled with ability and faithfulness. Among a group of men who, while holding no official position, have been strong factors in the growth of the business, Mr. Ripley was most prominent and his services were considered valuable. Of late years he has occupied the position of confidential secretary to the treasurer of the company. When the Brown & Sharpe Quarter Century Club was organized he was elected secretary and he never failed of a re-election. He took an active interest in church work and was identified with a number of prominent secret societies. He leaves a widow, one son and one daughter.

JAMES FERGUSON, superintendent of the Safety Insulated Wire & Cable Company, Bayonne, N. J., died November 15, aged 48 years. He was born in Nova Scotia and was an expert on electrical matters.

OLIVER WELDON BARNES, a civil engineer, who had been identified with railroad construction work in various parts of this country for the last 60 years, died of pneumonia November 14 at his home in New York City, aged 88 years. Despite his advanced age he had been actively engaged in his profession up to a few days before his death. He was connected with the Pennsylvania Railroad, and it was he who settled the final location of the Pennsylvania Railroad from the Allegheny Mountains to Pittsburgh. He was a member of the American Society of Civil Engineers, the Union League Club, the New England Society and the Engineers Club of Philadelphia. He was born at Hartford, Conn. He leaves a widow, two daughters and a son.

JOHN W. THOMAS, superintendent of the Chicago Heights plant of the Inland Steel Company, died at his home in Chicago Heights, Ill., November 11. He was born at Niles, Ohio, June 14, 1856, and at an early age began working in the rolling mills of that district. His first connection after going West was with the old Chicago Steel Works, which he left in 1893 to accept the position which he held at the time of his death. He enjoyed the distinction of being a pioneer in the work of rerolling steel rails, and was widely known among mill men, by whom he was held in high esteem, both on account of his rare ability and his engaging personality. He served two terms as mayor of Chicago Heights, was president of the Canedy-Otto Mfg. Company, and also president of the First National Bank of that city. He belonged to the Chicago Athletic Club and several fraternal orders. He leaves a wife and four children.

The Navy Department, November 12, awarded the contract for the building of the battleship Utah to the New York Shipbuilding Company, Camden, N. J., for $3,946,000. As designed, the displacement of the Utah will be about 21,825 tons. The Utah is a sister ship of the Florida, now being constructed at the New York navy yard.

## The National Founders' Association.

The twelfth annual convention of the National Founders' Association began its sessions at the Hotel Astor, New York, Wednesday morning, November 18, with an attendance of about 150 members. Preceding the convention the Administrative Council of the association held a two days' session, at which the association's work in the past year was canvassed and preparations made for the presentation of various matters to the convention. There was also in session on Wednesday a conference of members of the Stove Founders' National Defense Association. On Tuesday meetings were also held by officers of the American Foundrymen's Association and the American Brass Founders' Association, to confer on the relations of these organizations and to prepare for their joint convention at Cincinnati in 1909.

President O. P. Briggs opened the meeting of the National Founders' Association and announced the appointment of the usual committees, as follows:

Finance.—Geo. E. Emmons, General Electric Company, Schenectady, N. Y.; O. P. Letchworth, Pratt & Letchworth Company, Buffalo; E. L. Dawes, Standard Sanitary Mfg. Company, New Brighton, Pa.

Press.—Henry A. Carpenter, General Fire Extinguisher Company, Providence, R. I., and the secretary, F. W. Hutchings.

Resolutions.—F. B. Farnsworth, McLagon Foundry Company, New Haven, Conn.; T. L. Richmond, Buffalo Scale Company, Buffalo, N. Y.

The morning session was given up to the reports of the president, Commissioner McClintock, the treasurer and Secretary Hutchings. President Briggs, who has been so important a figure in the association in the past five years, having been continuously in office in that time either as commissioner or president, indicated in his report that with this convention he retired from the leadership of the work—a decision received with very general regret.

The programme for the remainder of the meeting, which continues through Thursday afternoon, includes the discussion of a number of important subjects. A statement will be made of the work accomplished in the distribution of literature among employees, particularly the circulation of the *Review*, the publication of the association. A decision will be made as to the lines to be followed in this work in the future. There will also be a discussion of the legislative proposals urged upon Congress by labor unions. The work of the branch offices of the association will be considered and members who have availed themselves of these offices will speak on the value of this method of giving assistance to employers involved in labor troubles. The relations of the National Founders' Association and the National Metal Trades Association will be considered in connection with the report of the joint committee of the two associations. Interesting information was brought out at the convention of 1907 relative to the advance in foundry methods resulting from the strike in 1906. Further data in the same line will be presented this year and the question of wages in open shops will come up. The election of officers will take place on Thursday afternoon. At the annual banquet given on Wednesday evening addresses were given by Ex-President Elliott of Harvard University, and others.

**The Acheson Oildag Company.**—Edward G. Acheson, Niagara Falls, N. Y., who in March, 1901, invented carborundum, and at present is the president of the International Acheson Graphite Company, a corporation capitalized at $3,000,000, and manufacturing graphite from coal under a process discovered by Mr. Acheson, has just closed arrangements for the construction of a plant at Dunkirk, N. Y., for the manufacture of his latest invention, a new lubricant, which will be known as Oildag. The plant at first will be largely experimental, but in a short time is expected to be on a par with the other inventions brought out by Mr. Acheson. That Oildag is valued highly by the inventor can be judged by the fact that it is covered by 23 patents, covering the formula and the process of manufacture. The new enterprise will be known as the Acheson Oildag Company, and the present quarters will be at the corner of Second street and Central avenue, Dunkirk. Little has been given out so far regarding the new lubricant, but it is claimed to be more lasting than oil, having a higher efficiency, and being considerably cheaper.

## The West Virginia Board of Trade Meeting.

The fourth annual meeting of the West Virginia Board of Trade took place at Clarksburg, November 10 and 11, and was well attended by business men from every section of the State. The president, ex-Governor A. B. Fleming of Fairmont, delivered an annual address, giving valuable statistics and information regarding every phase of the State's progress and resources. Resolutions were passed in favor of the bulk sales law and against parcel post. A bill framed by a special committee for the creation of forest reserves and the protection of forests was recommended to the careful consideration of the Legislature. The Governor was requested to appoint at once a Good Roads Commission of seven men, who shall review the recommendations of the State Highway Inspector, pass on the legal, financial and engineering questions involved and propose to the Legislature a bill involving the permanent improvement of all the roads of the State.

A recommendation from the proper committee for the creation of a State Bureau of Statistics was approved. Strong resolutions for river improvements were presented by Congressman Wm. P. Hubbard of the First District, chairman of the Board's Waterways Committee, and were unanimously adopted. Action was taken in favor of running a West Virginia trade excursion through the Eastern cities to meet commercial organizations there and advertise the State's resources and advantages. A special committee was appointed to work out the details and enlist public support. Plans to publish weekly, during the sessions of the Legislature, a legislative journal, giving the roster of bills and synopses of important measures, were approved, and action was also taken to push through the legislative programme outlined. The new president is ex-Governor Wm. A. MacCorkle of Charleston. Ex-Senator Henry G. Davis was re-elected vice-president-at-large, and R. B. Naylor and W. Alfred Wilson of Wheeling were re-elected secretary and treasurer, respectively. The Board now embraces 18 commercial organizations in the State, with 150 memberships in the way of firms, individuals and corporations.

The commercial clubs of the various cities of Indiana are holding a meeting in Richmond, Ind., on Wednesday and Thursday of this week, to perfect an organization to be known as the Federation of Indiana Commercial Clubs. The chief address is by Gifford Pinchot of Washington, D. C., on "Conserving Natural Resources." A leading subject for discussion will be "Inland Waterways." For the banquet on Wednesday evening, W. D. Foulke of Richmond, presiding, the programme covered the following toasts: "Indiana's Place in Commerce," John T. Beasley, Terre Haute; "Business Principles in Public Offices," Alfred F. Potts, Indianapolis; "The Interurban's Importance in Commerce," R. B. Hanna, Fort Wayne; "Business Interests and Legislation," C. M. Kimbrough, Muncie; "Publicity As An Aid to Commercial Indiana," by a member of the South Bend Commercial Club; "The New Federation," A. Murray Turner, Hammond, and "Our Business and Our Country," by Judge D. D. Woodmansee, Cincinnati.

The greatest mine disaster in Germany in many years occurred November 12 at the Radboe coal mine, near Hamm, Westphalia. There was a heavy explosion about 4 a.m., and almost immediately the mine took fire. The number of the dead is stated to be 399.

## The Harbison-Walker Refractories Company.

The sixth annual statement of the Harbison-Walker Refractories Company, Pittsburgh, which covers the operations of the fiscal year ending September 30, 1908, presents the following income account:

| | | |
|---|---|---|
| Earnings, after deducting $218,438.53 expenditures for all ordinary repairs and maintenance, which covers depreciation of plants | | $1,148,406.08 |
| Less extraordinary expenditures, being repairs and improvements, increasing the capacity and efficiency of the works | $77,735.10 | |
| Charged off for the depreciation of mining and tram outfits | 38,504.09 | |
| Charged off for depletion of clay, coal and ganister properties | 16,799.17 | |
| | | 133,038.36 |
| Net profit for the year | | $1,015,367.72 |
| Deduct: Interest on bonds | $127,937.50 | |
| Dividend on preferred stock (6 per cent.) | 575,614.50 | |
| | | 703,552.00 |
| Net surplus for the year | | $311,815.72 |
| Surplus account as at October 1, 1907 | | 2,858,146.23 |
| As at September 30, 1908 | | $3,169,961.95 |

The balance sheet is as follows:

*Assets.*

| | | |
|---|---|---|
| Properties and franchises owned and operated by the constituent companies | | $28,755,433.88 |
| Betterments, completed | | 1,118,408.98 |
| Betterments, uncompleted | | 76,299.31 |
| Deferred charges to future operations (includes clay, coal and ganister outfits, advanced royalties, uncompleted extraordinary repairs, &c.) | | 310,907.34 |
| Inventories at cost | $1,335,861.97 | |
| Accounts receivable (accounts of constituent companies against each other omitted) | 891,775.05 | |
| Bills receivable | 36,017.98 | |
| Cash | 703,821.58 | |
| Investment of reserves | 182,000.00 | |
| Own bonds purchased by company and held in treasury | 312,000.00 | |
| Other securities | 61,559.26 | |
| | | 3,523,035.84 |
| Total | | $33,784,085.35 |

*Liabilities.*

| | | |
|---|---|---|
| Preferred stock | $9,600,000.00 | |
| Common stock | 18,000,000.00 | |
| | | $27,600,000.00 |
| Bonds, total issue | $3,500,000.00 | |
| Less purchased and canceled as per sinking fund requirements | 1,060,000.00 | |
| | | 2,440,000.00 |
| Bond interest and tax (accrued but not yet due) | 44,446.25 | |
| Reserve to cover premium at redemption of bonds | 13,019.64 | |
| Clay, coal and ganister properties depletion fund | 111,528.75 | |
| Sundry reserves | 236,162.85 | |
| | | 405,157.49 |
| Accounts payable (liabilities of constituent companies due each other omitted) | 123,443.34 | |
| Pay rolls | 45,522.57 | |
| | | 168,965.91 |
| Surplus | | 3,169,961.95 |
| Total | | $33,784,085.35 |

President H. W. Croft's accompanying statement to the stockholders is in part as follows:

The present depression began with the panic of November, 1907; consequently, this statement covers 11 months of this unusual depression, during which time the company has been fortunate in operating its plants at 57 per cent. of their normal capacity.

In the fifth annual statement, attention was called to the new plants built since the organization of the company, and also to the large amount of money spent at the same time to bring all the old properly located plants up to a point of efficiency equal to the new ones. During the same period, $200,000 to $300,000 was spent in developing the clay, coal and ganister properties, which now exceed 75,000 acres. In regard to the $77,735.10 charged off during the past year for extraordinary repairs, most of this work was for repairs that had been begun but not completed before the period covered by this statement. Apart from this, the extraordinary expenses have been light. The maintenance of the works and mines has been at a minimum and should continue so for some time.

We trust the wisdom of pursuing the above policy for the past five years is fully demonstrated by this statement for the past year, as such a showing, under the unusual conditions, would have been impossible with anything but the best equipment.

It was found necessary to discontinue common dividends. This statement, however, shows that the sinking fund, interest on bonds, and preferred dividends have been more than earned and paid; that there is a good cash balance on hand, and enough bonds in the treasury to take care of the sinking fund requirements for the next two years.

The sales during the past year of the products manufactured by the company have been in the following percentages: Blast furnaces, stoves and piping, 26.1; building brick, 15.6; open hearth plants, Bessemer plants, crucible furnaces, cupolas, malleable iron and rolling mill furnaces, 36.1; coke ovens, boilers, cement plants, copper and lead furnaces, gas plants, glass furnaces, lime kilns, potteries, railroads and various other miscellaneous purposes 22.2.

To meet the growing demand for fire brick in the Southern market, ground will soon be broken for a new plant at Birmingham where all grades of fire clay and silica brick that can be made to advantage at this point, will be manufactured.

## The Leather Belting Manufacturers' Association.

The Leather Belting Manufacturers' Association, at its twenty-first annual meeting, held Tuesday at the Hotel Astor, New York, decided that the price of leather belting should be advanced to meet the constantly increasing price of hides. It was stated at the session that the price of hides has been going up during the last two months, and although leather belting manufacturers as a rule maintained their schedule of prices, it has been something of a hardship to them, and it seemed to be the general opinion of those present that there should be an advance in prices. The association re-elected all of its officers and decided to enlarge its Executive Committee, which has heretofore consisted of seven members, to comprise 20, these to be selected from various sections of the country, so that the governing body of the organization might be in a position to keep in touch with trade conditions.

**Steel Wheels and the Steel Corporation.**—The announcement has been made in the daily press that the United States Steel Corporation had determined to build a plant for the manufacture of steel wheels in the Pittsburgh District, involving an expenditure of $3,000,000, and that improvements would be made at the Schoen steel wheel plant at McKees Rocks, Pa., calling for $1,500,000, while betterments would be made at Homestead involving $1,000,000. The report grew out of the fact that W. E. Corey, president of the United States Steel Corporation, last week visited the works of the Schoen Steel Wheel Company, which was recently acquired by the corporation, and was much impressed by the evident superiority of the new type of wheel over cast wheels. Mr. Corey also inspected the experimental plant which has been in operation for some time at Homestead to test the Slick method of making steel wheels. While no definite plans have been outlined, it will be the policy of the Steel Corporation to extend the facilities for the manufacture of the rolled wheel as fast as the demand warrants.

Spang, Chalfant & Co., Inc., Pittsburgh, have about completed the building of a 16-in. skelp mill and a new puddling department, containing 24 puddling furnaces, all of which are expected to be ready for operation about November 25. Contracts for other material enlargements to the plant, located at Etna, Pa., are shortly to be placed.

The National Railway Company of Mexico, the Government system, is reported to have given an order for 75,000 tons of 85-lb. steel rails to the Monterey Iron & Steel Company for delivery, beginning December 1.

# NEWS OF THE WORKS.

### Iron and Steel.

The plant of the Lake Superior Iron & Chemical Company, Ashland, Wis., which has been shut down since the middle of last May, reopens November 19. The company manufactures pig iron, wood alcohol and pyroligneous acid and has 120 charcoal kilns.

The Youngstown Iron & Steel Roofing Company, whose steel lath department, which is located four blocks from the main plant, was badly damaged by fire October 17, has placed a contract for the erection of several steel buildings and for other equipment, and the burned portion of the plant will be rebuilt on a larger scale than before. The fire did not in any way interfere with shipments from this department, the company filling all orders promptly.

The William B. Pollock Company, Youngstown, Ohio, is making record breaking time on the rebuilding of Tod Furnace of the Youngstown Steel Company. The iron work will be finished about December 1, and the new stack is expected to be ready for blast about January 1.

The plant of the Thomas Furnace Company, at Milwaukee, Wis., was started up November 13 after having been shut down since December, 1907. John M. Thomas, president of the company, says he has many orders on hand and that he anticipates a large increase of business. Extensive improvements and repairs have been made to the plant during the year that it has been shut down. A new furnace has been built and the stock house and machinery throughout have been improved.

Parties who were reported in the daily press to be organizing a company to manufacture steel tires for locomotive and car wheels and other railroad accessories, with a plant at Gary, Ind., deny the statements and declare that the rumor has no foundation.

Hannah Furnace of the Republic Iron & Steel Company, at Youngstown, was blown in last week, and its Atlantic Furnace, at New Castle, Pa., was started up on Monday. All six blast furnaces of the company in the Youngstown and New Castle districts are now in operation, but it is probable that No. 2, at Haselton, will be blown out in a short time for relining and repairs. This company is making all the pig iron it needs for its Bessemer steel plant at Youngstown, which is now running full time.

The Pope Tin Plate Company, Pittsburgh, operating a 12-mill tin plate plant at Steubenville, Ohio, started up its plant in full last week, which had been running only five mills for some time. The company reports a heavy inquiry for bright plate, which it handles exclusively, and has recently entered some large orders from canning interests for delivery prior to April 1 next year.

Steps are being taken by a committee of citizens of Clearfield, Pa., to raise sufficient funds to start the idle plant of the Clearfield Iron & Steel Company. A number of prominent men are interested.

Marshall Furnace, at Newport, Perry County, Pa., is being prepared to start early in December.

The fires have been lighted in No. 1 furnace, the oldest of the plant of the Pennsylvania Steel Company, at Steelton, Pa. The stack has been idle for almost a year. No. 3 furnace is in operation at Steelton.

Owing to the resumption of work at a number of the Central Pennsylvania furnaces, the ore banks in the vicinity of Dillsburg, York County, Pa., are being worked again. These banks have been used for over a century.

The Standard Steel Company has increased the time at some of the departments of its mills at Burnham, Mifflin County, Pa. The Logan Iron & Steel Company has started its 12-in. mill at the same place.

### General Machinery.

On November 12 the original plant of the Silver Mfg. Company, Salem, Ohio, built in 1890, consisting of a three-story building, paint and wood shops, engine, boiler and blacksmith departments, was destroyed by fire. The new office building, foundry, including practically all patterns, complete machine shop fully equipped with power, in which was the majority of iron working tools, and a four-story warehouse with an assortment of finished stock, were not damaged. As soon as the insurance is adjusted the company will rebuild the destroyed structures. Orders in some lines can be filled promptly, but in others there will necessarily be some delay.

The Jenney Electric Company, Anderson, Ind., manufacturer of electrical machinery, which is moving its plant from Indianapolis, has increased its capital stock from $450,000 to $600,000.

The Hammond Iron Works, Warren, Pa., is to enlarge its plant to meet the increased demand for its product. Contracts have been let for the erection of two new buildings, one 43 x 190 ft., and the other 56 x 122 ft. The company, which now employs 100 men, makes a specialty of steel tanks, and when the new shops are completed will have one of the largest plants of its kind in the country.

The Chicago, Milwaukee & St. Paul Railroad has placed an order with the American Locomotive Company, Brooks plant, for 38 locomotives. An evidence of returning prosperity is the schedule of 44 engines for next month's delivery at the Brooks plant, which is nearly double that turned out during any month of the present year.

The Gloversville Garage Company, Gloversville, N. Y., has been incorporated by W. Donald Hyde, Morrel Vroman and John W. Sisson for the purpose of erecting an automobile garage. Construction will be started within the next 60 days on a building 50 x 100 ft. A modern machine and repair shop will be maintained in connection with the garage.

The roundhouse and machine shops of the Southern Pacific Railroad at Beaumont, Texas, which were recently destroyed by fire, are being rebuilt on the same grounds and from the same plans.

Quite a large installation of Northern electric traveling cranes has recently been completed in the plant of the Penn American Plate Glass Company, Alexandria, Ind. There are five three-motor cranes in all, four being of 65 ft. span and one of 30 ft. span. All the cranes were made and installed by the Northern Engineering Works, Detroit, Mich.

The Puget Sound Machinery Depot, Seattle, Wash., is in the market for a lathe with a swing from 30 to 36 in. and 26 to 30 in. between centers.

### Power Plant Equipment.

S. R. Cleveland, 31 Ten Eyck street, Watertown, N. Y., has been granted a franchise to sell electric current and power at Copenhagen and Carthage, N. Y. Temporary steam electric power plants will be erected, but later a hydraulic electric power plant will be erected at High Falls.

Bonds in the sum of $16,500 have been voted for the city of Weiser, Idaho, to provide funds for the improvement of its electric light and water works systems.

Benson & Johnson, Jamestown, N. Y., have been awarded general contract for pumps, power equipment and piping for water works system to be installed for the village of Sherman, N. Y.

The Village Board of Yorkville, Ill., will receive bids until December 1 for the construction of a concrete reservoir, 15-hp. gasoline engine, 250-gal. rotary pump, 5915 ft. of 6-in. cast iron pipe and pump house.

The Commissioners of DeKalb County, meeting at Auburn, Ind., will receive bids until November 23 for furnishing and erecting a complete pumping system for the county asylum. E. A. Shook, county auditor.

J. T. Castle, Pittsburgh representative of the Buckeye Engine Company, Salem, Ohio, has recently made sales of Buckeye engines as follows: Boggs & Buhl, Northside, Pittsburgh, two 500-hp. engines direct connected to 300-kw. generators; Jackson Brothers, Pittsburgh, gas engine direct connected to a 150-kw. generator; Kerr Coal Company, Freeport, Pa., steam engine for connection with a 150-kw. generator; United Fire Brick Company, Uniontown, Pa., 125-hp. steam engine, installed at the company's plant, Fair Hope, Pa.; Dickson Coal Company, Idamar, Pa., steam engine to operate a 150-kw. generator; Rosemont Coal Company, Rosemont, W. Va., steam engine to operate a 100-kw. generator. Recently the company shipped two of eight engines sold to the Capel Fan Company, to be used for operating fans at plants of the H. C. Frick Coke Company, in Fayette County, Pa. The company's plant at Salem, Ohio, is being operated double turn.

The Standard Boiler Plate & Iron Company, Niles, Ohio, is delivering 14 Hyde water tube safety boilers of 120-hp. each, 14 stacks for boilers and 14 puddle furnace stacks to Girard, Ohio, to be used in the new puddle and skelp mills being built at that place by A. M. Byers & Co., Pittsburgh.

### Foundries.

Work on the new plant of the Badger Malleable & Mfg. Company, North Milwaukee, Wis., is well under way, and it is expected that it will be in operation soon after January 1. The largest of the three factory buildings is 80 x 144 ft. The plant will turn out malleable iron castings and specialties.

The Otis Elevator Company, New York and Chicago, has awarded contract to George T. Kelley, Yonkers, for a brick and steel foundry building to be erected at Locust and Atherton streets, Yonkers, N. Y. The new plant will have double the capacity of the present foundry building, and when completed will give employment to about 100 additional workmen. Work on the new building will be started at once and completed about March 1.

The Southern Wisconsin Foundry Company, Madison, Wis., is now installed in its new building, which affords greater capacity and better facilities than were available in the old quarters. The new foundry is of cement blocks, 50 x 145 ft., devoted principally to gray iron and brass castings and job work.

The General Electric Company, Schenectady, N. Y., has closed contracts for the ensuing year for casting and foundry work to be done in excess of the capacity of its Schenectady plant. The company last year purchased a large piece of property at Erie, Pa., and at that time contemplated erecting a

large foundry for the manufacture of all its special castings, but owing to various conditions this project was not consummated, and as yet no announcement has been made as to when it will be taken up. Baker & Shevlin, Saratoga, N. Y., are to make 60 per cent. of the castings, and the Davison-Namack Foundry Company, Lewis street, Ballston, N. Y., is to make 30 per cent. of the castings. The other 10 per cent. will be made by a foundry at Elmira, N. Y.

The Hodge Mfg. Company, Greenville, Pa., manufacturer of steel castings, has closed a contract with the Carnegie Steel Company by which it will furnish all the castings for the Greenville, Sharon, South Sharon, Youngstown and other mills of the Carnegie Steel Company for one year.

A new brass foundry has been established at Superior, Wis., which will be operated in connection with the Triskoo Iron Foundry at 136 Tower avenue and will be known as the Triskoo Iron & Brass Foundry. The company will shortly be ready to do all kinds of brass, aluminum and bronze casting.

### Bridges and Buildings.

The Commissioners of Gibson County, meeting at Princeton, Ind., will receive bids to December 8 for the erection of 33 small bridges in the county. Harry R. Embree, auditor.

### Fires.

The planing mill and machine shop of the Camden Shipbuilding & Repairing Company, Camden, N. J., were burned November 12, the loss being about $30,000.

The foundry of the Gibbes Machinery Company, Columbia, S. C., was destroyed by fire November 9.

The plant of the National Label Press, Bloomfield, N. J., was recently burned, the loss being estimated at $50,000.

The plant of the Shawmut Motor Company, Stoneham, Mass., was damaged $50,000 by fire November 13. It is understood that much valuable machinery was damaged.

The large tannery of the American Hide & Leather Company at Ballston, N. Y., was damaged $50,000 by fire November 12.

### Hardware.

The plant of the Springfield Wire Screen Company, Springfield, Ill., which was destroyed by fire on October 9, is being rebuilt. The new factory will be 40 x 157 ft., of brick with cement floor and iron doors, and will be equipped with machinery suitable for the manufacture of doors and window screens. It is expected that the plant will be completed and running in about 30 days.

The Gibson Refrigerator Company, Greenville, Mich., has been formed and incorporated with a capital stock of $100,000, and has purchased the furniture factory plant of the Skinner & Steenman Company, which will be used for the manufacture of refrigerators. The building secured is three stories and basement, 60 x 360 ft. The new company is now engaged in overhauling the plant and putting it in shape to make refrigerators, some of which, it is expected, will be ready for the market by the first of the year. F. S. Gibson is president of the company. John Lewis, vice-president and general manager, was formerly secretary of the Ranney Refrigerator Company, of which he was one of the organizers.

The Stoughton Wagon Company, Stoughton, Wis., is installing a fire sprinkler equipment throughout its entire plant, and has also put in a large new boiler and dust collecting system.

The Bonney Vise & Tool Works, 3011-3015 Chestnut street, Philadelphia, Pa., has purchased and will occupy within the next 60 days a large new factory in Allentown, Pa. This factory will give the company space to develop its business rapidly, it being the intention to add attractive and staple drop forged machinists' and mechanics' tools and other specialties.

The Strong-Battelle Mfg. Company, Bellaire, Ohio, manufacturer of enameled ware, is completing work on a 60 x 150 ft. building, three stories, of brick and mill type construction, with fireproof doors and windows. When completed it will contain warehouse, packing and shipping departments, the space now occupied by these departments in the old plant to be utilized for manufacturing purposes. This will nearly double the capacity of the plant.

The Ward Fence Company, Decatur, Ind., has completed its fine new plant and it is in full operation, turning out ornamental wire, ornamental steel, picket, farm and poultry fence. The company states that business shows a large increase this year, in spite of the general depression.

### Miscellaneous.

The Milwaukee Woven Wire Company, Milwaukee, Wis., intends to erect a three-story brick building, 102 x 120 ft., of mill construction, to replace the one that was recently destroyed by fire. The company will require a 100-hp. boiler with 125 lb. pressure. None of the other machinery was damaged.

The Norfolk Dock & Terminal Corporation, Norfolk, Va., recently incorporated with a capital stock of $500,000, intends to build docks, railroad terminals and other buildings on a 120-acre site opposite the Norfolk Navy Yard. The property has a frontage of 2000 ft. on deep water and is adjacent to the Belt Line Railroad. The officers and directors are: President, R. E. Griffith, vice-president of the American Cement Company; vice-president, Charles M. Barnett, president and general manager of the Chesapeake & Ohio Coal & Coke Company; secretary and treasurer, J. M. Umstadter, Norfolk representative of M. J. Drummond & Co., manufacturers of iron pipe; R. K. Cassatt, of Cassatt & Co., bankers, Philadelphia, Pa.; R. W. Leslie, president of the American Cement Company; M. J. Drummond, A. P. Page and Walter H. Taylor, Jr.

The Calorific Boiler Company has been incorporated with a capital stock of $100,000, with James Walt of Allentown, Pa., as president. The company has purchased the patterns, fixtures and good-will of the Calorific Heater Company and the Argand Boiler Company, formerly made by the Frederick D. Johnson Company and later by the Colonial Foundry Company of South Norwalk, Conn. The company expects to erect a new plant to manufacture a full line of house heating boilers. Offices will be established in New York.

The Standard Plate Glass Company, Pittsburgh, Pa., awarded last week a contract for a large addition to its plant at Butler, Pa., consisting of a steel building, 123 x 170 ft., the building of two additional furnaces and other equipment. It is the intention of the company to increase its output to 4,000,000 sq. ft. of plate glass per year.

The Pittsburgh White Metal Company, Pittsburgh, which has been in existence for about 20 years as a partnership, has been incorporated under the laws of Pennsylvania, with M. C. Rinehart, president, and E. E. Rinehart, Jr., secretary and treasurer.

The Youngstown Car Mfg. Company, Youngstown, Ohio, has received a second order for 200 all-steel coal mine cars from the Monongahela River Consolidated Coal & Coke Company, Pittsburgh. Complete delivery on the first lot has already been made.

The contract recently secured by the Riter-Conley Mfg. Company, Pittsburgh, from the St. Clair County Gas & Electric Company, East St. Louis, Ill., was for a gas holder of 1,500,000 cu. ft. capacity instead of 1,000,000 cu. ft. capacity, as printed last week.

Reports that the Ohio Iron & Steel Company, operating Mary Furnace at Lowellville, Ohio, would build a large brick manufacturing plant near its limestone quarries at Carbon, Pa., are untrue. The Carbon Limestone Company, which is an identified interest of the Ohio Iron & Steel Company, has large deposits of shale covering its limestone and is considering the erection of a plant to manufacture high grade paving block. A definite decision as to whether the plant will be built will be made in a short time.

The Wilder Metal Coating & Mfg. Company, Connellsville, Pa., manufacturer of steel sheets covered with a composition of aluminum, making the sheets impervious to corrosion, intends to install small pots for the purpose of coating sheets 20 x 28 in., hand dipped. The present capacity is only for large sheets.

The Rochester Railway & Light Company is arranging to erect on the Vincent Flats, Rochester, N. Y., a vertical retort gas plant to be operated under the Dessau system, now extensively used in Germany and England. It is claimed for the Dessau process that its use effects a saving of a large percentage of the ammonia and tar in the coal and creates less smoke. The vertical retorts also permit a more economical handling of the coal and coke in gas manufacture than the horizontal retorts. The first building of the new plant will be 80 x 100 ft., 60 ft. in hight, of brick, concrete and steel construction, and will have a capacity for 100 vertical retorts. It will cost $150,000.

The Nordberg Mfg. Company, Milwaukee, Wis., has been awarded the contract, at $47,515, by the city of Houston, Texas, for the 15,000,000-gal. water plant pump. The company is represented in Houston by H. A. Paine.

The North American Asbestos Company, with general offices in the Bank of the Republic Building, Kansas City, Mo., and asbestos deposits near Casper, Wyo., is making arrangements to put in a mill which will cost between $30,000 and $35,000 for the treatment of the mineral. Plans for the plant and its equipment are being drawn, and it is expected that construction will be begun in the spring.

W. M. Hazelton, Oneonta, N. Y., inventor of a coal burning automobile, run by steam, to be used for delivery and heavy truck work, is organizing a company for the purpose of erecting a factory and manufacturing the machine. Mr. Hazelton hopes to start construction on a new factory after the first of the year.

The Buffalo Drydock Company, Buffalo, N. Y., local branch of the American Shipbuilding Company, has awarded contract to the Great Lakes Dredge & Dock Company, Chicago, for a new dock, to be 615 ft. long and 110 ft. wide. The company also proposes to erect a joiner factory on Ganson street and a pumping station to operate the docks. The two latter items will be in charge of the local superintendent, Edward N. Smith.

The Aluminum Company of America, Niagara Falls, N. Y., has increased the construction gang working on the new rolling mill at plant No. 3, and expects to have the mill ready for operation not later than January 1.

# The Iron and Metal Trades

## Heavy Buying of Basic Pig Iron in Eastern Pennsylvania.

### Asking Prices for Foundry Iron Generally Advanced.

One of the features of interest during the past week has been the heavy buying, on the part of three or four Open Hearth Steel works in eastern Pennsylvania, of Basic Pig Iron, for delivery during the first and second quarters. So far as we can trace the purchases, they aggregate about 80,000 tons, and were made on the basis of $16 delivered for the first quarter, and $16.25 for what little Iron was bought for the second quarter. Some Basic Iron has also been taken in the St. Louis District, and some large inquiries, including one for 10,000 tons, are under negotiation.

The leading distributing markets along the Lakes—Buffalo, Cleveland and Chicago—report large sales of Foundry and Malleable Irons during the past week, and now have generally put up their prices for delivery during the first and second quarters, but the new schedules have not yet been seriously tested. Indeed, the impression is spreading among buyers that the rise has been somewhat too rapid. Practically all the principal melters, large and small, have been covering at least minimum requirements, and many who entered the market before the election have made further purchases since then.

There has been activity, too, in some of the special Irons needed by Steel makers. There have been some further round sales of low phosphorus Pig Iron at $20.75, delivered at Eastern consuming points, and the market is now $21 to $21.50. There have been pretty large sales of Ferromanganese at close to $44, seaboard, but now higher prices are being asked and obtained.

The movement in Finished Iron and Steel is somewhat better in some lines, but on the whole the buying is developing slowly. In some of the staple lines, distributed chiefly by jobbers, the buying has been more confident and in greater volume.

In the semi-finished lines the interest is increasing. Pittsburgh reports that a local interest has contracted for a large quantity of Muck Bar, for the whole of 1909.

In the Rail trade no transactions of any magnitude are reported, but some large business is pending and is expected to shape up soon. The same is true of Structural Material. Fabricators have made little headway toward the conclusion of business pending, but there is a good deal of work in sight. Thus in the Chicago territory there are bids out which call for 77,000 tons of material, while there are plans under consideration which conservatively estimated involve 100,000 tons.

The Snyder interest of Pittsburgh has just awarded the contract for the largest Ore boat yet planned. It will be 605 ft. long and will require for its construction 7200 tons of Plates and Shapes, which are to be rolled by the Jones & Laughlin Steel Company. Another interest has ordered two packet freighters of a lake yard.

We note the placing of the order for a large number of bridges for the Philippine railroads.

There has been heavy buying of Old Material in the Chicago District, one mill alone purchasing in the last two weeks 15,000 tons of Railroad Wrought Scrap. There have been large railroad offerings throughout the country, but they have been easily disposed of. For much of this material consumers were overbid by dealers.

The Cast Iron Pipe industry is moderately active. Among the recent larger contracts was 4000 tons for Milwaukee. In Detroit the bids for 3500 tons were rejected and new bids called for. Amsterdam, N. Y., is in the market for 7300 tons and a Copper company for 4000 tons. The Southern Cast Iron Pipe makers have advanced their asking prices $1 to $2 per ton.

The Copper market has quieted down considerably and prices have receded. Electrolytic Copper is now selling at 14.25c.

## A Comparison of Prices.

**Advances Over the Previous Month in Heavy Type, Declines in Italics.**

At date, one week, one month and one year previous.

| | Nov.18, 1908. | Nov.11, 1908. | Oct.21, 1908. | Nov.20, 1907. |
|---|---|---|---|---|
| **PIG IRON,** Per Gross Ton: | | | | |
| Foundry No. 2, Standard, Philadelphia | **$17.00** | $17.00 | $16.75 | $19.00 |
| Foundry No. 2, Southern, Cincinnati | **16.25** | 15.75 | 15.75 | 19.25 |
| Foundry No. 2, Local, Chicago | **17.00** | 16.50 | 16.50 | 20.00 |
| Basic, delivered Eastern Pa. | **16.25** | 16.00 | 16.00 | 17.75 |
| Basic, Valley Furnace | **15.50** | 14.50 | 13.85 | 18.00 |
| Bessemer, Pittsburgh | **16.90** | 16.40 | 15.65 | 20.90 |
| Gray Forge, Pittsburgh | **15.15** | 14.90 | 14.40 | 18.90 |
| Lake Superior Charcoal, Chicago | 19.50 | 19.50 | 19.50 | 25.00 |
| **BILLETS, &c.,** Per Gross Ton: | | | | |
| Steel Billets, Pittsburgh | 25.00 | 25.00 | 25.00 | 28.00 |
| Forging Billets, Pittsburgh | 27.00 | 27.00 | 27.00 | 30.00 |
| Open Hearth Billets, Phila | 26.20 | 26.20 | 26.20 | 30.00 |
| Wire Rods, Pittsburgh | 33.00 | 33.00 | 33.00 | 34.00 |
| Steel Rails, Heavy, at mill | 28.00 | 28.00 | 28.00 | 28.00 |
| **OLD MATERIAL,** Per Gross Ton: | | | | |
| Steel Rails, Melting, Chicago | **15.25** | 15.00 | 14.75 | 14.50 |
| Steel Rails, Melting, Phila | **16.00** | 15.50 | 15.00 | 12.75 |
| Iron Rails, Chicago | 18.00 | 18.00 | 18.00 | 16.00 |
| Iron Rails, Philadelphia | **20.50** | 20.25 | 19.50 | 19.00 |
| Car Wheels, Chicago | **15.50** | 15.25 | 15.25 | 22.50 |
| Car Wheels, Philadelphia | **16.00** | 15.00 | 15.00 | 19.00 |
| Heavy Steel Scrap, Pittsburgh | **16.00** | 16.00 | 15.25 | 14.50 |
| Heavy Steel Scrap, Chicago | **15.00** | 14.50 | 13.75 | 12.00 |
| Heavy Steel Scrap, Phila | **16.00** | 15.50 | 15.00 | 12.75 |
| **FINISHED IRON AND STEEL,** Per Pound | Cents. | Cents. | Cents. | Cents. |
| Refined Iron Bars, Philadelphia | **1.47** | 1.45 | 1.45 | 1.75 |
| Common Iron Bars, Chicago | 1.50 | 1.50 | 1.50 | 1.75 |
| Common Iron Bars, Pittsburgh | 1.40 | 1.40 | 1.40 | 1.70 |
| Steel Bars, Tidewater, New York | 1.56 | 1.56 | 1.56 | 1.76 |
| Steel Bars, Pittsburgh | 1.40 | 1.40 | 1.40 | 1.60 |
| Tank Plates, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Tank Plates, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Beams, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Beams, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Angles, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Angles, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Skelp, Grooved Steel, Pittsburgh | 1.45 | 1.45 | 1.45 | 1.70 |
| Skelp, Sheared Steel, Pittsburgh | 1.50 | 1.50 | 1.50 | 1.80 |
| **SHEETS, NAILS AND WIRE,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Sheets, Black, No. 28, Pittsburgh | 2.50 | 2.50 | 2.50 | 2.60 |
| Wire Nails, Pittsburgh | 1.95 | 1.95 | 1.95 | 2.05 |
| Cut Nails, Pittsburgh | 1.75 | 1.75 | 1.75 | 2.00 |
| Barb Wire, Galv., Pittsburgh | 2.40 | 2.40 | 2.40 | 2.50 |
| **METALS,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Lake Copper, New York | **14.50** | 14.75 | 13.75 | 13.25 |
| Electrolytic Copper, New York | **14.25** | 14.50 | 13.25 | 13.00 |
| Spelter, New York | **5.05** | 5.05 | 4.77½ | 5.05 |
| Spelter, St. Louis | **4.90** | 4.90 | 4.62½ | 4.85 |
| Lead, New York | **4.42½** | 4.42½ | 4.22½ | 4.40 |
| Lead, St. Louis | **4.30** | 4.30 | 4.07½ | 4.25 |
| Tin, New York | **30.25** | 30.75 | 29.50 | 30.70 |
| Antimony, Hallett, New York | **8.12½** | 8.12½ | 7.75 | 9.50 |
| Nickel, New York | 45.00 | 45.00 | 45.00 | 45.00 |
| Tin Plate, 100 lb., New York | $3.89 | $3.89 | $3.89 | $4.09 |

## Chicago.

FISHER BUILDING, November 18, 1908.—(*By Telegraph.*)

The buying movement which began in a moderate way just prior to election has resulted in the placing of numerous orders aggregating a large tonnage of Pig Iron, mainly for first quarter delivery. This in conjunction with a generally stronger sentiment regarding the development has instilled new vigor and firmness into what had been a weak and irregular price situation. Northern Iron, instead of holding rather insecurely at around $16, Chicago delivery, is now fairly established at $17 for shipment through the first quarter, and Southern makers are now able to enter this market with their price of $13, Birmingham. Most of the forward buying has been of a conservative character, and was evidently designed to cover no abnormal increase in consumption nor to guard speculatively against an unusual inflation of prices. The firming up of Pig Iron prices has not been without its effect in steadying values in finished lines. There is a decidedly stronger tone in Billets and Sheets, and both are now said to be squarely held at regular prices. Axle Billets are in better demand, and machinery builders are beginning to come into the market more liberally for Forging Billets. Inquiry regarding the amount of Structural business in prospect on which plans are well developed establishes the fact that there are 77,000 tons upon which bids are out and estimates are being made by the leading fabricating interest, besides which there is at least 100,000 tons involved in plans now under consideration. Recent railroad orders have furnished no important additions to mill bookings, al-

though there is about 100,000 tons of Rails for Western roads under negotiation. Rumors of impending purchases of great importance by the railroads are plentiful, and developments in this direction are being awaited on every side with great interest. In the Old Material market there is a good demand for Rerolling Rails, Heavy Melting Steel and rolling mill stock. The consuming interests are now able to absorb all that comes out, and prices on the leading grades are extremely firm with some general advances.

**Pig Iron.**—With last week's sales sheets footing up a larger tonnage than the week before, and accumulating inquiries pointing to a considerable volume of unplaced orders for forward requirements, furnacemen are stiffening up and the low prices current prior to the election are no longer obtainable. Northern producers who two weeks ago booked first quarter business at $16, delivered, are now asking $17 at furnace or $17.50, delivered, for shipments covering that period. The recent advance made in the Valley and other Ohio districts, where the minimum price is now reported to be $15.50, has removed a depressing influence that has hung over the local market for some time, the situation being thus cleared of complication by the elimination of competition from unusual sources. There is practically no more Southern Iron to be had at $12.50, Birmingham, even for prompt shipment, but $13 for first quarter is now firmly established and has formed the basis of transactions on nearly all the business placed for this delivery. With Northern Iron at $17, at furnace, and the Southern product at $17.35, Chicago, the spread that for several months has existed between the two is closed up, and they are now virtually on a parity. As a result of this readjustment the Southern interests have secured a fair share of the recent business placed. A prominent electrical concern is asking prices on 1000 to 2000 tons of No. 2 Foundry and 200 tons of High Silicon, and a local machinery manufacturer has an inquiry out for 500 tons of Southern Iron for first half. An order for 1500 tons of Foundry Iron was placed by an implement maker with a local furnace at $17, delivered, Chicago. There seems to be a scarcity of low grade Iron, on which prices are relatively high, and the same condition prevails with respect to off grades. The best price offered on a recent lot of 1000 tons of low grade Iron wanted for November and December delivery was $15.50. Consumers are plainly reluctant to follow the upward tendency of the market, and inquiries are not developing into orders at advanced prices as readily as before the market hardened. On the other hand, producers are not anxious to fill up furnace capacities through the second quarter at present prices, and while most of them are booking through the entire first half they are declining to take orders for exclusive second quarter delivery except at prices which buyers are not disposed to consider. Altogether, the situation shows improvement, both in the demand for and consumption of Iron. The following quotations are for November and December delivery, f.o.b. Chicago:

| | |
|---|---|
| Lake Superior Charcoal | $19.50 to $20.00 |
| Northern Coke Foundry, No. 1 | 17.50 to 18.00 |
| Northern Coke Foundry, No. 2 | 17.00 to 17.50 |
| Northern Coke Foundry, No. 3 | 16.50 to 17.00 |
| Northern Scotch, No. 1 | 18.00 to 18.50 |
| Southern Coke, No. 1 | 17.85 to 18.35 |
| Southern Coke, No. 2 | 17.35 to 17.85 |
| Southern Coke, No. 3 | 16.85 to 17.35 |
| Southern Coke, No. 4 | 16.35 to 16.85 |
| Southern Coke, No. 1 Soft | 17.85 to 18.35 |
| Southern Coke, No. 2 Soft | 17.35 to 17.85 |
| Southern Gray Forge | 15.85 to 16.35 |
| Southern Mottled | 15.60 to 16.10 |
| Malleable Bessemer | 17.00 to 17.50 |
| Standard Bessemer | 17.90 to 18.40 |
| Jackson Co. and Kentucky Silvery, 6 % | 19.90 to 20.40 |
| Jackson Co. and Kentucky Silvery, 8 % | 20.90 to 21.40 |
| Jackson Co and Kentucky Silvery, 10 % | 22.90 to 23.40 |

*(By Mail.)*

**Billets and Rods.**—The demand for Forging Billets is growing more active. Several lots ranging from carloads up to 500 tons have been placed, in addition to which the leading interest secured an order of 1000 tons of Axle Billets from a local forge shop. This renewal of interest in Forging Billets indicates increased activity among the makers of machinery, many of whom have not been in the market for such material for a long time. Another feature of encouragement is noted in the greater firmness of prices, which are now reported to be absolutely maintained at the regular schedule for Forging Billets, of $28.50, Chicago. One sale of 350 tons and another of 400 tons, besides several carload lots, are reported at this figure. The continued demand for Wire products is bringing out specifications for Rods in good volume, along with a fairly satisfactory tonnage of new business. Prices, which are unchanged and firm, are as follows: Bessemer, $33; Basic, $33; Chain, $33, all at Pittsburgh.

**Rails and Track Supplies.**—The railroads are apparently in no haste to contract for their 1909 Rail requirements, and in consequence none of the business noted in last week's report as pending has been closed. In addition to the inquiries for 60,000 tons from Western roads, already reported, there is an inquiry for between 3000 and 4000 tons of Standard Section Rails from the Manistee & Northeastern Railroad. A leading Western road is also understood to be negotiating for 32,000 tons, making the total under consideration at the present time nearly 100,000 tons. Although recent orders for Spikes and Bolts have included no large lots, the amount of inquiry developing seems to indicate the existence of requirements that will soon result in early bookings of good sized tonnage. The continuation of weather favorable to track work is bringing out a fair run of specifications for supplies, among which are reported 2000 kegs of Spikes and 1500 kegs of Bolts entered by the Illinois Steel Company. There is a good demand for Light Rails, and the prospects are that the bookings for the present month will equal, if they do not exceed, the satisfactory record of October. One inquiry from an industrial line calls for 1900 tons, besides which there are several lots of smaller size on which figures are being asked. More or less irregularity exists in Light Rail prices, which are being cut about $1 per ton. We quote as follows: Angle Bars, accompanying Rail orders, 1908 delivery, 1.50c.; car lots, 1.60c.; Spikes, 1.80c. to 1.90c., according to delivery; Track Bolts, 2.15c. to 2.20c., base, Square Nuts, and 2.30c. to 2.35c., base, Hexagon Nuts. The store prices on Track Supplies range from 0.15c. to 0.20c. above mill prices. Light Rails, 25 to 45 lb., $26; 20-lb., $27; 16-lb., $28; 12-lb., $29. Standard Sections, Bessemer, $28; Open Hearth, $30, on lots of 500 tons and over; on smaller lots, $2 a ton extra.

**Structural Material.**—Little headway was made by fabricators last week toward the conclusion of business now pending. The only noteworthy contract closed was one of 1000 tons for a St. Louis insane asylum, taken by the American Bridge Company. Small orders of a miscellaneous character were more numerous, and whatever tardiness there is in the coming out of the more important contracts on which figures have been submitted seems attributable less to financial and market conditions than to the natural delay incident to the final adjustment of engineering details connected with construction plans. No decision respecting the award of the City Hall has yet been announced, though it is expected that this work will be given out in a few days. It is understood that bids on the new Cook County Hospital will go in about the middle of December. There is a large amount of business in sight, most of which seems reasonably sure to find its way into fabricator's shops without prolonged delay. As indicative of the situation in this respect it is shown that the leading interest has bids outstanding on 38,000 tons and is making additional estimates on 39,000 tons. Outside of these there are projects included in plans now in course of preparation, and which are expected to be submitted for estimates soon, which will require not less than 100,000 tons. Figures have been submitted by the American Bridge Company on a little over 90 per cent. as much tonnage in the year ending October 31, 1908, as in the preceding fiscal year; and what is of equal moment, the proportion of business secured by contract is fully as large as that of a year ago. Fabricating prices are still unsatisfactory, but the trade is hopeful of early betterment which, it is believed, will come with an increasing volume of business. The mills are getting more liberal specifications on plain material, and as a result the South Chicago mill is provided for several weeks ahead. Prices from store are 1.95c. to 2c. Mill prices at Chicago are as follows: Beams and Channels, 3 to 15 in., inclusive, 1.78c.; Angles, 3 to 6 in., ¼-in. and heavier, 1.78c.; larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 15 in., 1.88c.; Zees, 3 in. and over, 1.78c.; Tees, 3 in. and over, 1.83c.

**Plates.**—The reviving influences that have stimulated the demand for rolled products in some other lines have been felt in Plates only to a limited extent. Orders are perhaps a little more numerous, but continue to represent immediate shop requirements and stock assorting orders from jobbers. Outside of a little betterment in new car construction, the large consumers of Plates are not actively in the market as yet. Price conditions are somewhat unsatisfactory and concessions of $2 per ton on mill shipments are not uncommon, and in some cases reach even beyond this figure. We quote mill shipments as follows: Tank Plates, ¼-in. and heavier, wider than 6¼ and up to 100 in. wide, inclusive, car lots, Chicago, 1.78c.; 3-16 in., 1.88c.; Nos. 7 and 8 gauge, 1.93c.; No. 9, 2.03c.; Flange quality, in widths up to 100 in., 1.88c., base, for ¼-in. and heavier, with the same advance for lighter weights; Sketch Plates, Tank quality, 1.88c.; Flange quality, 1.98c. Store prices on Plates are as follows: Tank Plates, ¼-in. and heavier, up to 72 in. wide, 2c. to 2.10c.; from 72 to 96 in. wide, 2.10c. to 2.20c.; 3-16 in. up to 60 in. wide, 2.10c. to 2.25c.; 72 in. wide, 2.30c. to 2.40c.; No. 8, up to 60 in. wide, 2.10c. to 2.15c.; Flange and Head quality, 0.25c. extra.

**Sheets.**—Buyers seem to be taking hold in a way that promises considerable betterment in the demand for Sheets. There is less of a disposition with jobbers and manufacturers to restrict their orders to minimum present requirements, as is indicated by the more extended specifications included in recent orders. As a result of improved conditions prices have firmed up and we are advised that the regular schedule is now being generally observed by the mills. We quote mill shipments as follows, Chicago: Blue Annealed,

No. 10, 1.98c.; No. 12, 2.05c.; No. 14, 2.08c.; No. 16, 2.18c.; Box Annealed, Nos. 17 to 21, 2.43c.; Nos. 22 to 24, 2.48c.; Nos. 25 and 26, 2.53c.; No. 27, 2.58c.; No. 28, 2.68c.; No. 29, 2.78c.; No. 30, 2.88c.; Galvanized Sheets, Nos. 10 to 14, 2.63c.; Nos. 15 and 16, 2.83c.; Nos. 17 to 21, 2.98c.; Nos. 22 to 24, 3.13c.; Nos. 25 and 26, 3.33c.; No. 27, 3.53c.; No. 28, 3.73c.; No. 30, 4.23c.; Black Sheets from store: Blue Annealed, No. 10, 2.15c.; No. 12, 2.20c.; No. 14, 2.25c.; No. 16, 2.35c.; Box Annealed, Nos. 18 to 21, 2.60c.; Nos. 22 to 24, 2.65c.; No. 26, 2.70c.; No. 27, 2.75c.; No. 28, 2.85c.; No. 30, 3.25c.; Galvanized from store: Nos. 10 to 16, 3c.; Nos. 18 to 20, 3.15c.; Nos. 22 to 24, 3.30c.; No. 26, 3.50c.; No. 27, 3.70c.; No. 28, 3.90c.; No. 30, 4.40c. to 4.45c.

**Bars.**—There seems to be no diminution in the specifications of Steel Bars coming to the mills. It is especially significant that manufacturers, other than implement makers, are contributing a greater proportion than was the case a few weeks ago. Mills of the leading interest are running practically full. The independent mills are not yet steadily engaged at full capacity. No appreciable change is seen in the Bar Iron situation, there being but little, if any, increase in the aggregate of new business in specifications. It is expected, however, that as the Car shops fill up more new business will develop. Quotations, Chicago, are as follows: Steel Bars, 1.58c., with half extras; Iron Bars, 1.50c.; Hoops, No. 13, and lighter, 1.98c., full extra Hoop card; Bands, No. 12 gauge, and heavier, 1.58c., half extra Steel Bar card; Soft Steel Angles and Shapes, 1.68c., half extras. Store prices are as follows: Bar Iron, 2c. to 2.15c.; Steel Bars, 1.90c. to 2c.; Steel Bands, 1.90c., as per Bar card, half extras; Soft Steel Hoops, 2.25c. to 2.35c., full extras.

**Merchant Pipe.**—The approaching close of lake navigation is expected to hurry forward shipments for points in Northwestern territory; and on this account considerable tonnage will be moved within the next few days. Jobbers in general, however, continue to pursue the policy of placing sorting up orders at frequent intervals, and are not inclined to anticipate a prospective demand by enlarging their stocks. The following mill discounts are quoted: Black Pipe, ¾ to 6 in., 73.2; 7 to 12 in., 70.2; Galvanized, ¾ to 6 in., 63.2. These discounts are subject to one point on the base. From store, in small lots, Chicago jobbers quote 73 per cent. on Black Steel Pipe, ¾ to 6 in. About three points above these prices is asked for Iron Pipe.

**Boiler Tubes.**—The railroads are buying Locomotive Tubes in a moderate way for repair work and are likely to find use for more of them for this purpose as traffic grows. Merchant Tubes are quiet and the demand reflects no decided improvement in boiler building. Mill quotations for future delivery, on the base sizes, are as follows: 2¾ to 4¼ in., inclusive, Steel Tubes, 63.2; Iron, 50.2; Seamless, 50.2; 2½ in. and smaller, and lengths over 18 ft., and 2½ in. and larger, and lengths over 22 ft., 10 per cent. extra. Store prices are as follows:

| | Steel. | Iron. | Seamless. |
|---|---|---|---|
| 1 to 1½ in. | 35 | 35 | 35 |
| 1¾ to 2¼ in. | 50 | 35 | 35 |
| 2½ in. | 52½ | 35 | 35 |
| 2¾ to 3 in. | 60 | 47½ | 47½ |
| 6 in. and larger | 50 | 35 | .. |

**Merchant Steel.**—Little new business is being entered, but a fairly satisfactory volume of specifications for Tires, Bars and miscellaneous Shapes is coming in from implement makers and jobbers. The latter are beginning to stock up in a conservative way, that betokens returning confidence in the stability of the market and future demand. We quote as follows: Planished or Smooth Finished Tire Steel, 1.78c.; Iron Finish, up to 1½ x ½ in., 1.73c., base, Steel card; Iron Finish, 1½ x ½ in. and larger, 1.58c., base, Tire card; Channels for solid Rubber Tires, ¾ to 1 in., 2.08c., and 1⅛ in. and larger, 1.98c.; Smooth Finished Machinery Steel, 2.08c.; Flat Sleigh Shoe, 1.63c.; Concave and Convex Sleigh Shoe, 1.83c.; Cutter Shoe, 2.05c.; Toe Calk Steel, 2.13c.; Railroad Spring, 1.98c.; Crucible Tool Steel, 7¼c. to 8c., and still higher prices are asked on special grades. Cold Rolled Shafting on contracts for 100 tons and over 57 per cent. off; 56 per cent. off in car lots; 52 per cent. in less than car lots, on which carload freight is allowed within base territory.

**Metals.**—Under the influences of a lively buying movement Copper prices advanced early last week to around 15c. for Lake, but lacked the sustained support necessary to carry it forward, or even hold it at that notch. When it began to sag buyers withdrew from the market, and the last few days of the week brought out little business. Before the movement was arrested, however, quite a number of the more important consumers covered their requirements for 60 days. Lead is inactive, while Spelter is in better demand and slightly stronger. Quotations are as follows: Casting Copper, 14¼c.; Lake, 14½c. to 14⅝c., in car lots, for prompt shipment; small lots, ⅛c. to ¾c. higher; Pig Tin, car lots, 32½c.; small lots, 34½c.; Lead, Desilverized, 4.55c. to 4.65c., for 50-ton lots; Corroding, 4.80c. to 4.90c., for 50-ton lots; in car lots, 2¼c. per 100 lb. higher; Spelter, 5c.; Cookson's Antimony, 10½c., and other grades, 9¾c. to 10¼c.; Sheet Zinc is $7, f.o.b. La Salle, in car lots of 600-lb. casks. On Old Metals we quote: Copper Wire, 13¾c.; Heavy Copper, 13½c.; Copper Bottoms, 12¼c.; Copper Clips, 13½c.; Red Brass, 12¾c.; Yellow Brass, 10c.; Light Brass, 7c.; Lead Pipe, 4.35c.; Zinc, 3¾c.; Pewter, No. 1, 21c.; Tin Foil, 24c.; Block Tin Pipe, 26c.

**Cast Iron Pipe.**—All bids submitted last week on the 3500 tons required by the city of Detroit were rejected and new bids were called for on a letting scheduled for November 17. A contract for 4000 tons of 36-in. was awarded by the city of Milwaukee to the United States Cast Iron Pipe & Foundry Company, which also secured 400 tons for St. Marys, Kan. Next year's requirements are coming up for consideration and a good many inquiries concerning forward deliveries are being received. Founders are not willing to apply present prices to shipments much beyond January 1, but insist on a substantial advance on any deliveries extending over the first half. We quote nominally per ton, Chicago, as follows: Water Pipe, 4 in., $27; 6 to 12 in., $26; 16 in. and up, $25, with $1 extra for Gas Pipe.

**Old Material.**—The market has not only held its own but has registered advances on several grades. All the railroad material offered last week brought good prices, and in some cases the figures overtopped the market, as a result of the eagerness of dealers to secure material needed to complete deliveries on short sales. Among the prices realized on material contained in the Sante Fé's list the following are reported: No. 1 Cast, $13.60; Springs, Knuckles and Couplers, $13.80; Rerolling Steel Rails, $17.05; Frogs, Switches and Guards, $14.50. The local rolling mills have been liberal buyers of Railroad Wrought, one of them having taken on about 15,000 tons within the past two weeks. A large portion of this tonnage, including some recent purchases, were secured at a price of $14.50, mill delivery, equivalent to about $14.25, Chicago. There is a better demand for Iron rolling stock, and a local die plate maker is reported to be in the market for a round tonnage of Fish Plates. Heavy Melting Steel continues firm, and there seems to be very little, if any, available under $15, while dealers generally are asking from 25c. to 50c. above this price. The following prices are per gross ton, f.o.b. Chicago:

| | |
|---|---|
| Old Iron Rails | $18.00 to $18.50 |
| Old Steel Rails, rerolling | 17.25 to 17.75 |
| Old Steel Rails, less than 3 ft. | 15.25 to 15.75 |
| Relaying Rails, standard sections, subject to inspection | 22.50 to 23.50 |
| Old Car Wheels | 15.50 to 16.00 |
| Heavy Melting Steel Scrap | 15.00 to 15.50 |
| Frogs, Switches and Guards, cut apart | 14.50 to 15.00 |
| Mixed Steel | 10.25 to 10.75 |

The following quotations are per net ton:

| | |
|---|---|
| Iron Fish Plates | $17.00 to $17.50 |
| Iron Car Axles | 20.00 to 20.50 |
| Steel Car Axles | 17.75 to 18.25 |
| No. 1 Railroad Wrought | 14.25 to 14.75 |
| No. 2 Railroad Wrought | 13.25 to 13.75 |
| Springs, Knuckles and Couplings | 14.50 to 15.00 |
| Locomotive Tires, smooth | 14.75 to 15.25 |
| No. 1 Dealers' Forge | 11.25 to 11.75 |
| Mixed Busheling | 8.50 to 9.00 |
| Iron Axle Turnings | 8.25 to 8.75 |
| Soft Steel Axle Turnings | 8.25 to 8.75 |
| Machine Shop Turnings | 8.25 to 8.75 |
| Cast Borings | 7.25 to 7.75 |
| Mixed Borings, &c | 7.25 to 7.75 |
| No. 1 Mill | 8.50 to 9.00 |
| No. 2 Mill | 7.50 to 8.00 |
| No. 1 Boilers, cut to Sheets and Rings | 10.00 to 10.50 |
| No. 1 Cast Scrap | 13.75 to 14.25 |
| Stove Plate and Light Cast Scrap | 12.25 to 12.75 |
| Railroad Malleable | 13.50 to 14.00 |
| Agricultural Malleable | 11.50 to 12.00 |
| Pipes and Flues | 10.50 to 11.00 |

## Birmingham.

BIRMINGHAM, ALA., November 16, 1908.

**Pig Iron.**—The demand continues active. The buying movement, starting directly after the election, has resulted in orders being taken in this district for 80,000 to 100,000 tons. Practically all of this has been sold for delivery over the remainder of this year and the first quarter of 1909, although in some instances deliveries range over first half. From the producers' standpoint the market is in a most satisfactory condition, the price of $13, Birmingham, being firmly maintained for immediate delivery as well as for first quarter of next year. Producers claim that the sales made the past week have all been at $13, Birmingham, or better, and it is highly improbable that any cheaper price has been made. One sale is reported of 200 tons of 4 per cent. Silicon for immediate shipment to a Cleveland, Ohio, foundryman at $14, Birmingham. The company making this sale seems to be practically out of the market for first quarter Iron, as it has positively refused several *bona fide* offers for small lots at $13, Birmingham. While no sales have been reported other than a few small lots of special Iron at prices higher than quoted, there is a general tendency toward an advance. The fact that railroads are preparing to begin new construction and repair work makes the prospects for sales to this trade very bright. Previous to last week the bulk of the Iron sold was to the Cast Iron Pipe trade, but the

past week inquiries have been coming in from all lines of trade, which would indicate that melters generally have come to the conclusion that the time is ripe to cover for their requirements for first quarter, and while no extraordinary buying movement or advance in price is expected, the outlook for a gradual improvement is good. No new furnaces are reported in operation this week, nor has there been any decrease in production.

**Cast Iron Pipe.**—Southern producers have advanced quotations on Cast Iron Pipe from $1 to $2 per ton, and while it is not probable they are getting the advance as yet, except on small sizes, they confidently expect the market within the very near future to come up to the advance. The principal contracts placed last week were for 1800 tons for the city of Nashville, Tenn., and 1250 tons for Gadsden, Ala. These contracts were awarded to the United States Cast Iron Pipe & Foundry Company. The contract for Seattle, Wash., for 1000 tons, is reported awarded to the American Cast Iron Pipe Company. The principal contracts in sight include a 7300-ton inquiry from New Amsterdam, N. Y., to be let November 24; 4000 tons from a Copper company, and 1500 tons from a water company near San Francisco. The last two inquiries come by wire and actual date of letting is not specified. We quote as follows for Water Pipe, f.o.b. cars here, per net ton: 4 to 6 in., $24; 8 to 12 in., $23; over 12 in., average $22, with $1 per ton extra for Gas Pipe.

**Old Material.**—Dealers report an increased demand for Old Iron Axles and No. 1 Steel, and an advance in price on these grades has resulted. The business done the past week has been considerably more than in the week previous, and the outlook is very encouraging. We quote dealers' asking prices as follows, per gross ton, f.o.b. cars here:

| | |
|---|---|
| Old Iron Rails | $14.50 to $15.00 |
| Old Iron Axles | 16.00 to 17.00 |
| Old Steel Axles | 13.00 to 13.50 |
| No. 1 Railroad Wrought | 13.50 to 14.00 |
| No. 2 Railroad Wrought | 10.50 to 11.00 |
| No. 1 Country Wrought | 11.00 to 11.50 |
| No. 2 Country Wrought | 9.50 to 10.00 |
| No. 1 Machinery | 11.00 to 11.50 |
| No. 1 Steel | 10.00 to 10.50 |
| Stove Plate and Light Cast | 9.50 to 10.00 |
| Cast Borings | 5.00 to 5.50 |

## San Francisco.

SAN FRANCISCO, November 11, 1908.

The volume of business on the Pacific Coast shows no marked increase since last report, but in most lines a slight improvement is reported, and the movement is already much greater than it was two or three months ago. While few inquiries of much magnitude are being received, there are enough small transactions under way to give the local merchants great encouragement. Transactions during October showed a larger volume than for any previous month of the year, and from the present situation it is judged that the two remaining months will bring a further improvement. The demand for machinery and supplies for the mining districts is somewhat larger than it has been, but there is still a noticeable lack of activity in that department. Drill Steel is moving more freely, the Los Angeles Aqueduct Commission having placed orders for several carloads, though the mines are not now in the market for any large quantities. The inquiry for Steel Rails continues to increase, and there is already some movement in this line, with a prospect of a considerable tonnage within the next few months, as numerous large electric railroad projects are now under way. Very little business is developing in the line of oil well supplies, which are likely to remain quiet through the winter, owing to the impossibility of hauling materials during the muddy weather. The situation in regard to Structural Material is more satisfactory, as the large Eastern fabricators have undertaken work on a number of large buildings, and some of the local shops have about all the work they can handle for the present. The movement of Cast Iron Pipe shows some increase, but there are few additional inquiries that will require any large tonnage in the immediate future. Some Pig Iron has been moved at a material reduction, and neither Pig Iron, Coke nor Old Material shows any change for the better.

**Structural Material.**—The tonnage of Structural Steel required for work in San Francisco and Los Angeles during October was large, in comparison with the preceding months, and contracts have recently been let on a few structures of considerable size. The greatest volume of business, however, is still for comparatively small work, and much of this is being taken care of by local fabricators, some of whom have enough work on hand to keep them occupied for a month or two to come. The building record for October, while hardly as good as that for September, shows little decline, the valuation of permits making a total of $3,403,897, in comparison with $3,799,000 for the month preceding, while contracts let for Steel frame buildings amounted to about $1,000,000. Estimates of the population show that the needs of the city are rapidly increasing, and with money becoming available in greater quantities for building purposes, both from local banks and from outside sources, many delayed projects are to be carried out during the next few months. Few new contracts have been placed from prospective builders, and a large volume of business is looked for during the month. The contract for supplying and installing the Iron and Steel work for the Mission Grammar School has been awarded to Dyer Bros. for $30,148. A contract calling for a considerable tonnage has also been let for a large building at the corner of Fifth and Market streets. The Western Iron Works is to supply Steel for a three-story building at Powell and Eddy streets for $9650. Contracts have been let for the Columbia Theater at the corner of Geary and Mason streets, which will cost $265,000. Plans are now under consideration for a new Hall of Justice, though the construction is likely to be delayed for some time. Among the larger local structures now in prospect are the Pacific Union Club, on California street, to cost $500,000, and a six-story structure for D. N. & E. Walter & Co., at Stockton and O'Farrell streets, to cost $225,000. Numerous small projects are under way in the smaller towns of the State, including a Steel tower for water works at Gridley, Cal., bids on which have been called for; a similar tower, to cost about $30,000, for Yuba City, Cal., and municipal buildings and several Steel and reinforced concrete bridges at Santa Cruz, Cal. A fair tonnage of reinforcing Bars for concrete construction is required in the northern coast cities, where this particular class of construction is at present more favored than in San Francisco.

**Pig Iron.**—Local foundry operations are gradually being resumed, though the situation is far from normal, and the work in general is on a small scale. The foundries still have large quantities of Pig Iron on hand, and are not likely to require any additional stock for several months. With occasional lots of foreign Pig Iron coming in the importers and dealers are carrying much heavier stocks than is desirable, and there is considerable pressure to sell on the part of many holders. Prices are accordingly unsettled. There has been some liquidation recently, a large lot of Hang Yang No. 3 being moved as low as $17. Good Continental Pig Iron is still held for about $23, but little has been moved at that price. Some No. 3 Cleveland Pig Iron is offered in this market for about $22.50. The British ship Acamas arrived November 2 with 500 tons of Continental Pig Iron and 2064 tons of Coke, consigned to Meyer, Wilson & Co.

**Cast Iron Pipe.**—More Cast Iron Pipe is moving than for some time, though only one contract of any importance has been let during the last two weeks. The contract for the Los Angeles Aqueduct, amounting to about 3000 tons, was taken by the Crane Company. Aside from this the tonnage now moving is small, but there is an inquiry for 1175 tons for the San Diego city water works, consisting mostly of large sizes, 24 and 26 in. Pipe comprising the bulk of the requirement. Numerous inquiries are also being received for smaller projects. It is now evident that the installation of the new fire protection system in San Francisco is to take several years, and plans are being made for the disposal of the bonds in small amounts, to pay for the Pipe as it is needed. Some fault has been found with the authorities for specifying Cast Iron Pipe for this construction, as it is feared that this material would not stand the strain of a possible earthquake. The city of Oakland has informed the People's Water Company of that city that the municipal water bills will not be paid until the company installs the new mains and fire hydrants that were promised some time ago. The city of Santa Cruz is agitating a proposition to issue bonds for the reconstruction and extension of the municipal water system. The cities of Marin and Sonoma counties are discussing a project for a water distributing system to supply all the most important towns of the two counties. The estimated cost of the Pipe line is about $1,600,000. The town of Gridley, Cal., is in the market for 300 ft. of 8-in. Pipe, 2720 ft. of 6-in. and 1600 ft. of 4-in. The city of Los Angeles has called for bids on Cast Iron Pipe fittings for the ensuing year. The quotations on ordinary lots of Cast Iron Pipe are unchanged, being $36 for 4 to 6 in., $35 for 8 to 12 in., $34 for over 12-in., and $1 extra for Gas Pipe, though some concessions are reported on large lots.

**Merchant Pipe.**—The movement of Merchant Pipe for the California oil wells is small at present, and no orders for round lots have been received recently from any quarter. Numerous small orders are being filled by the coast jobbers, however, and the total tonnage required on the coast, while somewhat less than at the beginning of October, is still very fair. The differential on jobbers' carloads remains unchanged, as follows:

| | Steel. Black. % | Steel. Galv. % |
|---|---|---|
| ⅛ to ¼ in | 56.5 | 40.5 |
| ⅜ in | 58.5 | 44.5 |
| ½ in | 60.5 | 48.5 |
| ¾ to 6 in | 64.5 | 54.5 |
| 7 to 12 in | 61.5 | 46.5 |
| Extra strong, plain ends: | | |
| ⅛ to ¾ in | 49.5 | 37.5 |
| ½ to 4 in | 56.5 | 44.5 |
| 4½ to 8 in | 52.5 | 40.5 |
| Double extra strong, plain ends: | | |
| ½ to 8 in | 45.5 | 34.5 |

**Old Material.**—Stocks of Iron and Steel Scrap in San Francisco are burdensome, and accumulations are increasing rather than diminishing. Prices are still badly demoralized, as there is considerable pressure to sell among the smaller dealers, and no definite quotations are given. The only demand is for heavy Cast Iron machinery Scrap, small lots of which have been moved at about $16. A shipment of 648 tons of Scrap Iron has just arrived from Honolulu.

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The armor plate vault of the first National Bank, made by the Bethlehem Steel Company, and weighing about 300 tons, is now being put in place. The vault is in sections of 23 tons each.

A transaction has just been concluded by which Charles M. Schwab, acting for the Bethlehem Steel Corporation, has purchased the property of the San Francisco Drydock Company, including a site of 10 acres, with two large stone graving docks, at Hunter's Point, San Francisco, and three floating dry docks at the foot of Sixteenth street. The larger dry dock at Hunter's Point, 750 ft. long, with a depth of 30 ft., is considered one of the finest in the world. The smaller one is 490 ft. long and 24 ft. deep. There is also at Hunter's Point a pumping plant with a capacity of 150,000 gal. per minute. Extensive marine repair shops are to be installed at the Hunter's Point site, and the dry docks are to be operated in connection with the Union Iron Works. Mr. Schwab intends to carry out plans for a new dry dock at Hunter's Point, which have been under consideration by the San Francisco Drydock Company for some time, though he has not yet decided when the improvement will be made. The plans are for a dock 1050 ft. long and 34 ft. deep.

The launching of the collier Promethus, which will take place December 5, at the Mare Island Navy Yard, will be largely attended by men engaged in the Iron trade throughout California. The event is regarded as especially notable, as the Promethus is the first steel vessel to be constructed by the United States Government at one of its Pacific Coast navy yards.

The city of Los Angeles is in the market for 4990 ft. of riveted Sheet Steel Pipe. Bids will be opened November 16.

J. M. Judson and others are preparing to erect a car manufacturing plant at Vancouver, Wash., to cost about $150,000.

E. E. Quick, F. B. Prescott, J. C. McGrath and C. Webb have filed articles of incorporation at Portland, Ore., for the Fulton Iron & Steel Works Company, with a capital stock of $3,000,000.

Baker & Hamilton, the large San Francisco hardware merchants, have occupied their new jobbing quarters at 433-481 Brannan street, near the line of the Southern Pacific Railroad. The main building contains 212,850 sq. ft. of floor space, and the Iron warehouse is 95 x 240 ft..

The West Coast Wire & Iron Works has been incorporated in San Francisco, with a capital stock of $10,000, by R. Brownell, E. C. Davis, J. C. W. Svendsen, J. and A. L. Scherling.

The Byron Jackson Iron Works and a number of other local manufacturers have complained that the specifications in the call for bids for steam turbines and pumps for the auxiliary fire protection system have been prepared in such a way as practically to shut out local bidders. The matter was discussed at length last Saturday, and the local manufacturers have been given another week to formulate their requests.

The Surprise Corporation has been organized at San Diego, Cal., for the purpose of manufacturing tools and machinery. The capital stock is $100,000, and the directors are A. G. Riordan, C. F. Meehan and W. G. Peterhans.

The Union Oil Company has completed plans for a pumping plant and a group of large Steel oil tanks at San Diego, Cal., and announces that work will soon be started.

## St. Louis.

ST. LOUIS, MO., November 16, 1908.

From the fact that the transfer of all railroad freight is confined to one company, the report of the Terminal Company covering the freight movement for the past month is a quite reliable index of St. Louis manufacturing and trade conditions. This report shows that the company handled as many cars last month as for the corresponding month in 1907. The leading local reinforced concrete company states that the demand for Steel Bars for the past six months has, in tonnage, been equal to the same period last year. The local agent of a leading fabricator finds that his sales of Structural Material for October equaled in tonnage those of the previous six months. The demand for Wrought Iron Pipe is now within three-fourths of normal. For Steel Wire there is an increasing demand from manufacturers and jobbers. The inquiry for Tool Steel is better, and an increased demand from railroads for engine and car material and Track Supplies is noted. It is estimated that the week's sales of Pig Iron will reach a total of 30,000 tons. The principal stove manufacturers are having a heavy demand from the South and Southwest. The leading producers of Lead, Spelter and Antimony report a pretty good demand. Inquiries for new cars are still coming into the large local company.

**Coke.**—While the attention of consumers has been directed more especially to Pig Iron, there has been quite a good inquiry for Coke, though no large sales are reported. The leading sales agencies find their customers are ordering out very freely on contract and seem disposed to carry larger stocks than was the case earlier in the fall. We hear that one of the largest producers has withdrawn from the market, and while some of the leading Connellsville companies will accept business for shipment over the entire year, most of them are disposed to book contracts for the first half of 1909 only. The St. Louis Blast Furnace Company, not having closed its contract for Coke for next year's requirements, is reported to be negotiating for a supply. Sellers state that most of the inquiries pending are also for shipment over 1909. We quote as follows: 72-hr. Foundry, $2.15 to $2.50, at oven, Connellsville; Furnace, $1.85 to $2.10, at oven, Connellsville. The market for next year's delivery is stronger than for shipment over the balance of 1908.

**Pig Iron.**—All the local sales agencies report an active demand for Pig Iron of all grades. While a portion of the sales was for November-December shipment, the bulk was for shipment over the first quarter of 1909 and a moderate quantity for shipment over the second quarter. Sales for the second quarter were limited, owing to the difficulty in placing them, and in no case were orders booked except as a part of a sale for the first half of 1909. Producers refuse also to authorize contracts to extend beyond June. Among the chief sales made this week were 3000 tons of Southern Foundry to a leading St. Louis stove manufacturer, 4000 tons of Malleable to one of the local foundries and 1000 tons of Ohio Strong Foundry to one of the car manufacturing companies. It is reported that two orders for Malleable Bessemer, aggregating 4000 tons, were placed on Friday for shipment over the first half of 1909. Notwithstanding the quite free buying reported since November 1 the demand is still good, one of the leading sales agencies having inquiries aggregating 10,000 tons, which will probably be placed during the month, and other houses are also in receipt of inquiries, principally for Southern Iron. We understand that some Southern furnaces having stocks on hand and being anxious to move them before the end of the year have authorized some contracts to be made on the basis of $12.50, Birmingham. It is also reported on good authority that a leading Alabama company sold two or three lots, aggregating in the neighborhood of 4000 to 5000 tons, for November-December shipment, at a price equal to $12.30, Birmingham. Ohio Malleable Bessemer has been advanced to $16 for No. 2 Foundry, at Ironton.

**Old Material.**—The market for Scrap Iron shows more activity and, besides liberal transactions on the part of dealers, comprises more inquiries from foundries and rolling mills, in consequence of which there has been a further slight advance on several items. A confident feeling prevails and a gradual increase in the demand from rolling mills and foundries is looked for. The only offering from railroads is one lot of 600 tons of miscellaneous Scrap by the Mobile & Ohio. One large company reports the sale of 5000 tons of Scrap Iron and Steel, rolling mill and foundry grades. Another local company advises of sales aggregating 3500 tons of miscellaneous Scrap, while a third firm's sales comprise 2500 tons, including 1000 tons of Relaying Rails, which continue in good demand and in short supply. We quote as follows, f.o.b. St. Louis, per gross ton:

| | |
|---|---|
| Old Iron Rails | $17.00 to $17.50 |
| Old Steel Rails, rerolling | 15.50 to 16.00 |
| Old Steel Rails, less than 3 ft | 14.25 to 14.75 |
| Relaying Rails, standard sections, subject to inspection | 24.00 to 24.50 |
| Old Car Wheels | 15.50 to 16.00 |
| Heavy Melting Steel Scrap | 14.25 to 14.75 |
| Frogs, Switches and Guards, cut apart | 14.25 to 14.75 |
| Mixed Steel | 10.25 to 10.75 |

The following prices are per net ton:

| | |
|---|---|
| Iron Fish Plates | $16.00 to $16.50 |
| Iron Car Axles | 19.50 to 20.00 |
| No. 1 Railroad Wrought | 14.50 to 15.00 |
| No. 2 Railroad Wrought | 13.50 to 14.00 |
| Railway Springs | 13.00 to 13.50 |
| Locomotive Tires, smooth | 13.50 to 14.00 |
| No. 1 Dealers' Forge | 11.50 to 12.00 |
| Mixed Borings, &c | 6.50 to 7.00 |
| Machine Shop Turnings | 9.00 to 9.50 |
| No. 1 Boilers, cut to Sheets and Rings | 9.50 to 10.00 |
| No. 1 Cast Scrap | 13.50 to 14.00 |
| Railroad Malleable | 11.50 to 12.00 |
| Agricultural Malleable | 10.50 to 11.00 |
| Pipes and Flues | 10.00 to 10.50 |

**Finished Iron and Steel.**—The leading interest in Steel reports an order for 400 tons Structural Material having been placed, together with several smaller lots. The branch office of an independent company is having a good demand from local and outside fabricators. The local agent of a leading fabricating company received orders for more Structural Material tonnage in October than for six months previous. The inquiry from railroads for Bars, Angles, Tees, Plates and Sheets is becoming more general and for larger quantities. Business is better with supply foundries and consumers that have shops than with jobbers. There is

more inquiry from railroads for Standard Rails, and prospective electric lines are also heard from. Light Rails continue in demand from lumber interests. For Track Material there is an urgent call.

**Lead, Spelter, &c.**—There is a fair demand for Pig Lead, but transactions are checked by the views of sellers; 4.30c. is offered and 4.35c. is asked. Lead Ore is in fair demand and held at $28.50 to $30 per 1000 lb., Joplin basis. Spelter is in good demand, with 4.97½c. bid and 5.05c. asked. Zinc Ore is strong at $38 to $39 per ton, Joplin basis, bid. Producers are holding at $40, consequently very little is moving. Stocks are reported to be light at the East and the tendency of the market is upward. The demand from Brass and galvanizing interests continues urgent. Copper is strong and higher.

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Contracts for the erection of the superstructure of the McKinley Bridge over the Mississippi River will be let in the near future. The bridge, buildings and land in St. Louis represent an investment of about $5,000,000.

The Pressed Steel Car Company states that it is now having more inquiry for new cars from various Western railroads.

The Medart Patent Pulley Company reports that the demand for pulleys has increased this month.

Merchant sellers of metal working machinery report an improved demand, part of which is coming from railroads.

## Philadelphia.

PHILADELPHIA, PA., November 17, 1908.

Heavy buying continues to characterize the Iron and Steel markets. The Steel making grades of Pig Iron have been the center of interest, and in the aggregate some 50,000 tons have been sold for delivery in this territory, the greater part for shipment in the first quarter of 1909. Some good buying has also developed in the Foundry grades, while Forge Iron has shown a little more activity. A marked improvement is also to be noted in finished lines, and an increased volume of business is reported in every class except Billets and Sheets. Some of the Plate mills have taken a normal volume of new business the past week, while a satisfactory tonnage has also been taken by some of the Structural mills. Low prices made by some makers of Refined Iron Bars have been withdrawn, and this branch of the trade is in more satisfactory shape. Prices all along the line are decidedly firm, and it would appear that those who have heretofore been inclined to shade quotations are now in line, and an advance ranging from 25c. to 50c. a ton is now being asked for some grades of Iron. Consumers in a number of instances would be willing to anticipate their wants, but are not being encouraged by sellers, who look forward to still further advances in Pig Iron and some finished lines. The market is decidedly stronger, but sellers have the situation well in hand, and any undue advance in prices is not anticipated.

**Pig Iron.**—The market has been decidedly active, and further advances in the prices of some grades are noted. The Steel making grades have been the center of interest. Sales of Basic totaled 45,000 tons, while about 5000 tons of Low Phosphorus Iron was also disposed of. Transactions in Basic included one 20,000 ton and one 10,000 ton lot, at $16, delivered, one 5000 ton lot, at $16.25, and an aggregate of smaller lots totaling 10,000 tons, at prices ranging from $16 to $16.25, practically all of it for first quarter delivery, but in some instances shipments will begin the coming month. Prices for Basic have now been advanced, and there is practically no $16 Iron to be had, buyers in some cases being willing to pay $16.25 for first quarter delivery, but sellers have sold up pretty well, and are not anxious to book more orders. In some instances buyers would take Iron for second quarter delivery, but sellers are not disposed to meet their views regarding prices for such delivery. Several sales of Low Phosphorus Iron have been reported, which reach a total of about 5000 tons. Some of this Iron for early shipment was sold at $20.50, delivered, while for forward delivery $20.50, at furnace, was in instances obtained. Prices on this grade are now much stronger, and it is not believed that $21, delivered, could be bettered. Some fairly good sales of Foundry Iron have been made, the most important being one of some 10,000 tons of Pipe Iron, for nearby delivery. This was understood to include both Northern and Southern low grade Iron, the former being sold at about $16, delivered. Standard Foundry grades have been fairly active, but no very large quantities were sold. Reported sales include lots ranging from 100 up to 1000 tons, with an occasional large lot at prices ranging from $17 to $17.25, delivered, for No. 2 X. Sellers are now pretty firmly maintaining prices on these grades, and the tendency appears to be upward, some few sellers now holding at $17.50, delivered, for No. 2 X Foundry. Virginia Irons are stronger, and while some sellers are out of the market, others have been booking quite fair tonnages, principally No. 2 Plain Iron, at $17, delivered, and are now holding at $17.25 to $17.50, for No. 2 X, delivered in buyers' yards. Southern Foundry Iron appears to be very firm. For delivery extending into the first quarter of next year, $13, Birmingham, for No. 2, appears to be bottom, and some sellers have even higher ideas of prices for such delivery. There has been a more active demand for Forge Iron; sales of 2000 and 1500 ton lots, at $15.75, delivered, an advance of 25c. a ton over recent sales, have been reported, and there is still considerable scattered inquiry before the trade. Generally speaking, buyers seem more anxious to get into the market, not only to cover for their near future requirements, but in some cases are anticipating their needs on the strength of the generally bettered conditions of business, but sellers are not disposed to take forward business at ruling quotations, and in instances refuse absolutely to quote for anything beyond the first quarter of next year. Melters are reported to be taking deliveries of Iron on contracts pretty freely, and there has no doubt been a considerable increase in the melt, particuarly in the Steel making Irons. The situation is very strong. Inquiries still continue numerous on all grades, and the aggregate tonnage sold in this territory has been larger than any for a considerable time. Prices on practically all standard grades show a disposition toward the higher range of quotations, although some Iron is still available at the inside figures. The range for delivery in buyers' yards, eastern Pennsylvania and nearby territory, is about as follows, for shipments extending over the balance of this and through the first quarter of next year:

| | |
|---|---|
| Eastern Pennsylvania, No. 2 X Foundry | $17.00 to $17.50 |
| Eastern Pennsylvania, No. 2 Plain | 16.50 to 17.00 |
| Virginia, No. 2 X Foundry | 17.00 to 17.50 |
| Virginia, No. 2 Plain | 16.75 to 17.00 |
| Gray Forge | 15.75 |
| Basic | 16.25 to 16.50 |
| Low Phosphorus | 21.00 to 21.50 |

**Ferromanganese.**—There has been more inquiry both for prompt and forward deliveries. The most important transaction was for 1000 tons for early delivery at somewhat less than $44, seaboard. Several small lots have also been sold, prices for which range about $1 higher. There is still considerable variation in quotations, which range from $45 to $47, Baltimore, for deliveries in the early portion of next year, although some sellers appear willing to shade these figures for desirable tonnages.

**Plates.**—There has been a material improvement in the demand for Steel Plates. Some mills report a normal volume of new business the past week and have doubled their recent productive capacity. Consumers show more disposition to contract for future requirements, and an increasing volume of business of this character has been taken. Individual tonnages have not been heavy, but a good demand for boiler, locomotive, bridge and boat Steel is reported. Prices are firmly maintained and range as follows for delivery in this territory:

| | Carloads. Cents. | Parts carload. Cents. |
|---|---|---|
| Tank, Bridge and Boat Steel | 1.75 | 1.80 |
| Flange or Boiler Steel | 1.85 | 1.95 |
| Commercial Firebox | 1.95 | 2.00 |
| Marine | 2.15 | 2.20 |
| Locomotive Firebox Steel | 2.25 | 2.30 |

The above are base prices for ¼-in. and heavier. The following extras apply:

| | Extra per 100 lb. |
|---|---|
| 3-16-in. thick | $0.10 |
| Nos. 7 and 8, B. W. G. | .15 |
| No. 9, B. W. G. | .25 |
| Plates over 100 to 110 in. | .05 |
| Plates over 110 to 115 in. | .10 |
| Plates over 115 to 120 in. | .15 |
| Plates over 120 to 125 in. | .25 |
| Plates over 125 to 130 in. | .50 |
| Plates over 130 in. | 1.00 |

**Steel Billets.**—Inquiries are heavier, particularly regarding contracts covering the first half as well as the whole of next year, but sellers are not inclined to consider them seriously, especially for any time beyond the first half. As it is little new busines has developed, and orders taken are mainly small and for prompt shipment. Quotations continue unchanged. For delivery in this territory ordinary Rolling Steel commands $26.20; Forging Steel, $28.20, subject to the usual extras for high carbons and special sizes.

**Structural Material.**—An increased demand for Structural Shapes is noted and some heavy contracts for car work have been placed with Eastern mills, the Bethlehem Steel Company reporting orders for 15,000 tons of special car Shapes in the past two weeks. There has also been a fair volume of small bridge and building work, but large propositions in this direction develop slowly. The outlook, however, is considered much more favorable. Prices are firm and unchanged, and for delivery in this territory 1.75c. to 1.90c., according to specifications, is named.

**Sheets.**—A very fair week to week business continues, but there has been no placing of large orders nor disposition shown by buyers to anticipate their requirements for any lengthy period. Mills continue to run at about full capacity but have little bookings ahead. Quotations remain as recently named, ranging as follows for mill shipments, a tenth extra being added for small lots: Nos. 18 to 20, 2.50c.;

Nos. 22 to 24, 2.60c.; Nos. 25 to 26, 2.70c.; No. 27, 2.80c.; No. 28, 2.90c.

**Bars.**—A somewhat greater volume of business is before the trade, but makers are not inclined to take large orders at ruling prices. Pig Iron shows an advance in price, while Old Material has again been marked up, and is scarce at that. This has resulted in the withdrawal of some of the low prices which have recently prevailed, and Refined Iron Bars are now quoted for delivery in this territory at 1.47c. to 1.55c., with some sellers quoting 1.60c. Steel Bars are quoted at 1.55c., with Rerolled Bars at 1.50c., delivered in this vicinity, but there has been little business transacted.

**Coke.**—The market shows more strength, and while some buyers would contract for future needs at recent quotations, producers are not willing to take the business, and some have practically withdrawn from the market. There has been some transactions in Foundry Coke, but Furnace Coke is rather quiet. Prices are decidedly firmer, and in some cases advances are to be noted. Foundry Coke for delivery extending into the first quarter of next year is quoted at $2.25 to $2.50, at oven, with Furnace Coke $1.65 to $2, at oven, dependent on quantity and delivery. For delivery in this territory the following range of prices about represents the market:

| | |
|---|---|
| Connellsville Furnace Coke | $3.75 to $4.00 |
| Foundry Coke | 4.25 to 4.50 |
| Mountain Furnace Coke | 3.35 to 3.60 |
| Foundry Coke | 3.85 to 4.10 |

**Old Material.**—The market is decidedly stronger, and sharp advances are to be noted in almost every grade. Sales, however, have been light. Buyers are willing, as a rule, to take tonnage, but sellers refuse to sell any considerable quantity even at an advance. The bulk of the business transacted has been in lots ranging from carloads to a few hundred tons, most of which has been done at advances over last week's quotations. For prompt delivery in buyers' yards, eastern Pennsylvania and nearby points, prices, while to some extent nominal, range about as follows:

| | |
|---|---|
| No. 1 Steel Scrap and Crops | $16.00 to $16.50 |
| Low Phosphorus | 18.75 to 19.25 |
| Old Steel Axles | 21.75 to 22.25 |
| Old Iron Axles | 23.50 to 24.00 |
| Old Iron Rails | 20.50 to 21.00 |
| Old Car Wheels | 16.00 to 16.50 |
| Choice No. 1 R. R. Wrought | 19.50 to 20.00 |
| Machinery Cast | 15.25 to 15.75 |
| Railroad Malleable | 15.00 to 15.50 |
| Wrought Iron Pipe | 15.00 to 15.50 |
| New Bundled Sheets | 14.00 to 14.50 |
| No. 1 Forge Fire Scrap | 13.00 to 13.50 |
| No. 2 Light Iron | 10.00 to 10.50 |
| Wrought Turnings | 13.25 to 13.75 |
| Stove Plate | 13.00 to 13.50 |
| Cast Borings | 12.25 to 12.75 |
| Grate Bars | 14.25 to 14.75 |

## Cleveland.

CLEVELAND, OHIO, November 17, 1908.

**Iron Ore.**—Sales aggregating about 40,000 tons, largely Bessemer, were made by one merchant firm the past week. The purchasers were furnace interests that bought Ore earlier in the season but thought that the improvement in the business outlook warranted them in taking on a little more. This perhaps winds up the buying for this season. With weather conditions good for this season of the year, the movement of Ore down the lakes kept up well the first half of November, and it is estimated that the shipments in the first two weeks reached 2,000,000 tons. The cold weather that started in this week, however, has made the handling of Ore difficult owing to its being frozen, and very little will be shipped after this week. The Steel Corporation has notified managers of outside vessels that it would make no more shipments in their boats, and consequently many freighters are being laid up this week. The Corporation will continue to operate some of its own boats till about the end of the mouth. Merchant Ore firms that operate their own boats will keep them running till about the close of navigation, but those that use outside boats will have their shipments about cleaned up at the end of this week. Prices at Lake Erie docks, per gross ton, are as follows: Old Range Bessemer, $4.50; Mesaba Bessemer, $4.25; Old Range Non-Bessemer, $3.70; Mesaba Non-Bessemer, $3.50.

**Pig Iron.**—A good buying movement in Foundry Iron has kept up the past week, although not quite so heavy. The market is firm, and an advance of 50c. to 75c. a ton has been made by local furnaces, a similar advance being noted in the Valley. Valley furnace interests are now holding pretty firmly to $16 for No. 2 Foundry for first quarter and first half delivery. In the local market no lower price is accepted for outside shipment, and about $16.50, at furnace, seems to be the minimum price for local delivery for the first half, some tonnage having been sold at that price. Local furnaces are well sold up for the first quarter, and one interest has advanced its price for the first half to $16.90 for No. 2, delivered, Cleveland, and to $16.50 for outside shipment, the latter price being regarded as prohibitive for the present in competition with Valley furnaces. The same price is being quoted by this interest for Iron for delivery the balance of the year. Sales aggregating about 25,000 tons for the first half and quarter were made by one local furnace interest during the week, and the local selling agency of a Valley furnace reports sales of about 10,000 tons. Sales aggregating about 8000 tons, mostly Foundry Iron, were made from Toledo furnaces during the week, the price being advanced for shipment from that point to about $16, at furnace. The tonnage sold by local interests at Cleveland and Valley furnaces was on the basis of $15 to $15.50 and $16, at furnace, for No. 2, some of the late sales being at the highest price. Founders that have already bought have covered for the first half on about the basis of their present requirements, which are regarded at about 60 to 75 per cent. of the normal melt. A slight increase is noticed in the melt, and if conditions continue to improve as expected in the next few months the consumers who have bought the past three weeks will have to come in the market for more Iron before the end of the first half. Quite a number of consumers who failed to get in the market when lower prices were prevailing now have inquiries out, but some of them are holding off, being unwilling to pay the present prices. Among the inquiries pending are one for 1000 tons of Foundry Iron from a local Foundry and several for 500-ton and smaller lots. A local interest reports large inquiries for Foundry Iron for shipment to Eastern points and Pittsburgh territory, some of the largest consumers being in the market. There is a good demand for Basic Iron. One local interest has received inquiries the past few days aggregating 36,000 tons, but is refusing to quote a price under $16, Valley furnace, and that for only small lots. Among the inquiries is one from St. Louis for 3000 tons. There is little inquiry for Malleable Iron. For the balance of the year, we quote, delivered, Cleveland, as follows:

| | |
|---|---|
| Bessemer | $16.40 to $16.90 |
| Northern Foundry, No. 1 | 16.75 to 17.25 |
| Northern Foundry, No. 2 | 16.25 to 16.75 |
| Northern Foundry, No. 3 | 15.75 to 16.25 |
| Gray Forge | 15.00 to 15.50 |
| Southern Foundry, No. 2 | 17.35 |
| Jackson County Silvery, 8 per cent. Silicon | 20.05 |

**Coke.**—The market is more active, and very firm. Some founders that have bought their Pig Iron for the first half have now turned their attention to Coke for that delivery, and a number of contracts have been closed. We quote Standard Connellsville Furnace Coke at $1.90 to $2, at oven, for the first half, and Connellsville 72-hr. Foundry Coke at $2.35 to $2.50, at oven, for first half delivery, and $2.25, at oven, for balance of the year.

**Finished Iron and Steel.**—A fair improvement has been made in specifications. The demand is by far the best for Bar products, about 75 per cent. of the orders being for that line of material. New business is still rather light, but the outlook is more favorable. An improvement in the lake shipbuilding industry is noticed in the placing during the week of orders for three lake boats that will be built by the Great Lake Engineering Works of Detroit. The Mutual Transit Company, Buffalo, contracted for two 350-ft. package freighters, and W. P. Snyder, Pittsburgh, ordered a 600-ft. freighter. These boats will be built in time for the opening of navigation next year, and will require in the neighborhood of 8000 tons of Plates and Structural Shapes. It is announced that the freighter ordered several weeks ago by the La Belle Iron Works, Steubenville, will be built at the Cleveland yard of the American Shipbuilding Company. The contract for a portion of the material for this boat was placed some time ago, the remainder being furnished by the La Belle plant. Considerable improvement is noticed in the demand for Rails. One inquiry is pending for 10,000 tons of Standard Sections, and another for 2080 tons of Standard Sections for a new Ohio steam railroad. The Wheeling & Lake Erie Railroad has revived an old order for 1650 tons of Standard Sections, having placed specifications for 500 tons, and promising an order for the balance in a short time. The demand for Iron Bars is still light, and mills are refusing to take orders at present prices except for immediate delivery, claiming that there is no profit at present prices, with Scrap as high as it is at present. Some contracts were closed for Boiler Tubes and Sheets, prices on which are slightly firmer. Among the specifications of the week was an order from a local jobber for over 1000 tons of Bars. There is some improvement in the demand for Structural Material in small lots, some specifications that were held up until after election now being placed. The Board of Public Service, Columbus, Ohio, will receive bids December 16 for the Steel superstructure of a viaduct that will require about 300 tons of material. Jobbers report a slight improvement in warehouse orders. We quote Iron Bars, 1.45c., Cleveland, for car lots; Steel Bars, 1.50c., Cleveland, for car lots, half extras; Beams and Channels, 1.70c., Cleveland, and Plates, ¼-in. and heavier, 1.70c., Cleveland. We quote Sheets, mill shipments, car lots, Cleveland, as follows: Blue Annealed, No. 10 1.90c.; Box Annealed, No. 28, 2.60c.; Galvanized, No. 28, 3.65c. Jobbers quote Iron and Steel Bars out of stock at 1.65c. to 1.70c. Beams and Channels from warehouse are 2c., and Plates, ¼-in. and heavier, 1.90c. Warehouse prices on Sheets

are as follows: Blue Annealed, No. 10, 2.10c.; Box Annealed, No. 28, 2.70c.; Galvanized, No. 28, 3.80c. Warehouse prices on Boiler Tubes, 2¾ to 5 in., are 65 per cent. discount, and on Black Merchant Iron Pipe, base sizes, 71 per cent. discount.

**Old Material.**—The market is firmer, an advance of 50c. a ton being noted in nearly all grades of Scrap. Inquiries are quite plentiful, but actual sales are few for the reason that dealers and consumers cannot get together on prices. There is an improved demand for all grades, except possibly Cast Scrap. Out of town inquiries are largely for Borings and Turnings. There is also more inquiry for Old Car Wheels. There was some covering during the week by dealers who sold short. Producers as well as dealers are holding out for higher prices. Local mills are offering $15 for Heavy Melting Steel, which dealers refuse to accept. The Lake Shore Railroad has a list out this week of about 5000 tons, included in which are 3000 tons of Old Rails. Dealers' prices to the trade, per gross ton, f.o.b. Cleveland, are as follows:

| | |
|---|---|
| Old Steel Rails | $14.50 to $15.00 |
| Old Iron Rails | 17.50 to 18.00 |
| Steel Car Axles | 19.00 to 19.50 |
| Old Car Wheels | 15.00 to 15.50 |
| Heavy Melting Steel | 14.50 to 15.00 |
| Relaying Rails, 50 lb. and over | 22.00 to 23.00 |
| Railroad Malleable | 13.75 to 14.25 |
| Agricultural Malleable | 12.50 to 13.00 |
| Light Bundled Sheet Scrap | 9.50 to 10.00 |

The following prices are per net ton, f.o.b. Cleveland:

| | |
|---|---|
| Iron Car Axles | $20.00 to $20.50 |
| Cast Borings | 7.50 to 8.00 |
| Iron and Steel Turnings and Drillings | 8.50 to 9.00 |
| Steel Axle Turnings | 9.00 to 9.50 |
| No. 1 Busheling | 12.00 to 12.50 |
| No. 1 Railroad Wrought | 14.00 to 14.50 |
| No. 1 Cast | 12.50 to 13.00 |
| Stove Plate | 11.25 to 11.75 |
| Bundled Tin Scrap | 9.00 |

## Pittsburgh.

PARK BUILDING, November 18, 1908.—(*By Telegraph.*)

**Pig Iron.**—Inquiries have been less active, but the furnaces and large dealers are very firm in their ideas as to prices. The Westinghouse Electric & Mfg. Company, which just before the election bought a fair quantity of Iron for first quarter, is now in the market for 3000 tons of Nos. 1, 2 and 3 Foundry for second half. Furnaces quote $15.50, at furnace, on Basic for prompt shipment, and $16 for first quarter and first half delivery, and we understand some has been sold at $16, at furnace, for first half. Bessemer is held at about $16, at furnace, for first quarter, and while inquiries are not heavy, the available supply is limited. No. 2 Foundry is generally quoted at $16, Valley furnace, for first quarter, but this might be slightly shaded on a firm offer for prompt delivery. Forge Iron is higher, and is now held at about $14.25, Valley furnace, or $15.15, Pittsburgh. The Pittsburgh Steel Company is reported to have taken the entire output of Basic of a local furnace through first quarter of next year, and this furnace is now out of the market. We note sales of 200 tons of Bessemer, sulphur guaranteed 0.15 or under, to the Crucible Steel Company at $18, at furnace; 500 tons of Basic for first quarter at $15.50, and 500 tons for second quarter, at $16, Valley furnace; 500 tons of Forge at $14, Valley furnace, and about 2000 tons of Forge at prices ranging from $13.60 to $14, and higher.

**Steel.**—We note a sale of 2000 tons of small and large Billets at regular prices for December, January and February delivery. Consumers of Bessemer Billets, Forging Billets and Sheet and Tin Bars are taking out more on their contracts than they have for some time, and the whole Steel market is more active. We quote Bessemer and Open Hearth Billets, 3⅞ in. and larger, up to and including 0.25 carbon, $25; 0.26 to 0.60 carbon, $1 extra; over 0.60 carbon, $2 extra, all f.o.b. Pittsburgh. For Wheeling, Martins Ferry, Follansbee, Newcastle, Sharon, Steubenville and Washington (Pa.) delivery, half the freight, or 50c. additional, is charged. Sheet and Tin Bars in random lengths are $27.50, f.o.b. Pittsburgh. Forging Billets take $2 advance over Rolling Billets.

**Railroad Spikes.**—A number of the leading railroads are now in the market trying to cover on their entire requirements of Spikes for all of next year's delivery, these inquiries aggregating upward of 50,000 kegs. Makers are refusing to sell for delivery beyond first quarter. Railroad Spikes are firmly held at $1.70 per keg, at mill.

**Steel Cars.**—The United States Steel Corporation is in the market for about 3000 all Steel cars, of which 1800 are to be used on its railroads in the Ore regions, and the other 1200 on its Union Railroad and other roads at various plants.

(*By Mail.*)

Following the heavy advances in prices of Pig Iron immediately after the election, the demand has quieted down. One leading consumer of Billets has practically covered his requirements on both large and small Billets through next year, the tonnage being divided between three or four mills and prices guaranteed against decline. In Finished Iron and Steel the past week was not so active, but the general feeling in the whole trade is more optimistic than it has been for some months. The belief is strong that the turn in the Steel trade has come and that we will have a gradual improvement, and that by next April or May normal conditions will again prevail and the mills be able to run to about full capacity.

**Ferromanganese.**—As noted last week, prices on Ferro are decidedly firmer, and we now quote 80 per cent. foreign at $44.50 to $45, seaboard, for forward delivery, with some sellers asking higher prices. The demand has picked up considerably in the last two weeks. One sale of 150 tons of Ferro is reported at about $44.50, seaboard, plus the freight of $1.90 to Pittsburgh.

**Ferrosilicon.**—A leading consumer is in the market for a round tonnage of Ferrosilicon, but as yet it has not been closed. Prices are firmer, and we quote 50 per cent. at $64 to $64.50, Pittsburgh, for prompt shipment. For delivery in first quarter and first half of next year higher prices are quoted.

**Wire Rods.**—Some inquiry for Rods has developed and several lots have been placed, a reported contract involving 1500 to 2000 tons running into first quarter of next year. The market is firm, and we continue to quote Bessemer Rods at $33, Chain Rods $33 and Basic Rods $34, Pittsburgh.

**Muck Bar.**—A local consumer of Muck Bar has recently contracted for a large tonnage with a Mahoning Valley mill, deliveries running through first half of next year. The market on Muck Bar is decidedly firmer, owing largely to the higher prices asked for Forge Iron, and we now quote best grades at $26, Pittsburgh, with some sellers asking higher prices.

**Skelp.**—There is more inquiry than for some time, and the Pipe mills are specifying more freely for Plates against old contracts. Prices are also firmer, and we quote: Grooved Steel Skelp, 1.45c. to 1.50c.; Sheared Steel Skelp, 1.50c. to 1.60c.; Grooved Iron Skelp, 1.60c. to 1.70c., and Sheared Iron Skelp, 1.70c. to 1.75c., f.o.b. Pittsburgh.

**Plates.**—The Shenango Steamship Company, an identified interest of W. P. Snyder & Co., Pittsburgh, has placed an order with the Great Lakes Engineering Works, Detroit, for a 605-ft. Ore boat. This will be the largest Ore boat on the lakes, and the Plates and Shapes, about 7200 tons, will be furnished by the Jones & Laughlin Steel Company. The Carnegie Steel Company is rolling heavy orders for the National Tube Company and the American Bridge Company, and its Plate mills are operating to about 60 per cent. of capacity, which is about the same rate at which the outside mills are running. Prices on Plates are reported firmer, but some shading is still being done on the narrow sizes, not exceeding $1 to $2 a ton. Regular prices on Plates are as follows: Tank Plates, ¾ in. thick, 6¼ in., up to 100 in. wide, 1.60c., base, at mill, Pittsburgh. Extras over this price are as follows:

Tank, Ship and Bridge quality, ¼-in. thick on edges, 100 in. wide, down to but not including 6 in. wide, is taken as base.

Steel Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per square foot, shall be considered ¼-in. Plate. Steel Plates over 72 in. wide must be ordered ¼-in. thick on edge, or not less than 11 lb. per square foot, to take base price. Steel Plates over 72 in. wide ordered less than 11 in. per square foot down to the weight of 3-16-in. shall take the place of 3-16-in.

Percentages as to overweight on Plates, whether ordered to gauge or weight, to be governed by the Association of American Steel Manufacturers' Standard Specifications.

| | |
|---|---|
| Gauges under ¼-in. to and including 3-16-in. Plates on thin edges | $0.10 |
| Gauges under 3-16-in. to and including No. 8 | .15 |
| Gauges under No. 8 to and including No. 9 | .25 |
| All sketches (excepting straight taper Plates varying not more than 4 in. in width at ends, narrowest end being not less than 30 in.) | .10 |
| Complete Circles | .20 |
| Boiler and Flange Steel Plates | .10 |
| "A. B. M. A." and ordinary Firebox Steel Plates | .20 |
| Still Bottom Steel | .30 |
| Marine Steel | .40 |
| Locomotive Firebox Steel | .50 |
| Shell grade of Steel is abandoned. | |
| For widths over 100 in. up to 110 in | .05 |
| For widths over 110 in. up to 115 in | .10 |
| For widths over 115 in. up to 120 in | .15 |
| For widths over 120 in. up to 125 in | .25 |
| For widths over 125 in. up to 130 in | .50 |
| For widths over 130 in | 1.00 |

TERMS.—Net cash 30 days. Pacific Coast base, 1.50c., f.o.b. Pittsburgh.

**Steel Rails.**—As yet none of the leading railroads has come in the market for Rails for next year's delivery, but it is believed that some business will be placed before the end of December. The Carnegie Steel Company has received specifications for 1000 tons for a Southern road, and booked an order for 3000 tons of 70 lb. Rails for an eastern Ohio traction line. It has also sold 1200 to 1500 tons of Light Rails. No. 1 mill at the Edgar Thomson plant, on which the heavier sections are rolled, is in operation, but Nos. 2 and 3 mills are down this week, but may start next Sunday night. Makers of Light Rails rerolled from Old Rails continue to sell at $2 to $3 a ton under Rails rolled from Billets. Prices on new Light Rails, rolled from Billets, are as follows: $25 for 25 to 45 lb. Sections, with $1 advance for 20 lb., $2 advance for 16 lb., and $3 advance for

12 lb. Standard Sections are $28, at mill, and Angle Splice Bars, 1.65c., at mill.

**Structural Material.**—Inquiries are much better and the feeling in the Structural trade is more optimistic than for some time. The American Bridge Company has taken a contract for 96 duplicate spans for a railroad bridge in the Philippines and has also taken 5000 tons for an apartment building in New York City. Other contracts have been placed involving close to 10,000 tons of Structural Steel, and the shops have more actual work on their books than for some time. We quote, f.o.b. mill, Pittsburgh: I-Beams and Channels, 3 to 15 in., inclusive, 1.60c., net; I-Beams over 15 in., 1.70c., net; H-Beams over 8 in., 1.80c.; Angles, 3 to 6 in., inclusive, ¼ in. and up, 1.60c., net; Angles, over 6 in., 1.70c., net; Angles, 3 x 3 in. and up, less than ¼ in., 1.50c., base, half extras, Steel Bar card; Tees, 3 in. and up, 1.65c., net; Zees, 3 in. and up, 1.60c., net; Angles, Channels and Tees under 3 in., 1.50c., base, half extras, Steel Bar card; Deck Beams and Bulb Angles, 1.90c., net; Hand Rail Tees, 3c., net; Checkered and Corrugated Plates, 3c., net.

**Sheets.**—A meeting of the independent Sheet and Tin Plate mills was held in this city last week, which was very fully attended, only two or three of the smaller mills not being represented. James A. Campbell, president of the Youngstown Sheet & Tube Company, presided. The sentiment of all the mills represented was in favor of maintaining absolutely the regular prices. The demand for Sheets is showiug some betterment, and the mills have more actual orders on their books than for some time. Concessions in prices have almost entirely disappeared. For shipment from mill prices are as follows: Blue Annealed Sheets, No. 10 and heavier, 1.80c.; Nos. 11 and 12, 1.85c.; Nos. 13 and 14, 1.90c.; Nos. 15 and 16, 2c.; Box Annealed, Nos. 17 to 21, 2.25c.; Nos. 22 to 24, 2.30c.; Nos. 25 and 26, 2.35c.; No. 27, 2.40c.; No. 28, 2.50c.; No. 29, 2.60c.; No. 30, 2.70c. Galvanized Sheets, Nos. 10 and 11, 2.45c.; Nos. 12 and 14, 2.55c.; Nos. 15 and 16, 2.65c.; Nos. 17 to 21, 2.80c.; Nos. 22 and 24, 2.95c.; Nos. 25 and 26, 3.15c.; No. 27, 3.35c.; No. 28, 3.55c.; No. 29, 3.70c.; No. 30, 3.95c.; No. 28, Painted Roofing Sheets, $1.75 per square, and Galvanized Roofing Sheets, No. 28, $3.10 per square, for 2½-in. corrugations. These prices are subject to a rebate of 5c. per 100 lb. to the large trade under the usual conditions, jobbers charging the usual advances for small lots from store.

**Tin Plate.**—Some additional orders for Bright Plate for the salmon packing interests have been placed for delivery prior to April 1. The Pope Tin Plate Company, the largest independent interest, is now operating its plant, containing 12 hot mills, full time, and has booked some good sized orders. The American Sheet & Tin Plate Company is now operating very close to 50 per cent. of capacity. Prices on Tin Plate, we are advised, are being absolutely maintained. We quote prices on Tin Plate, as follows: $3.70 for 100 lb. Cokes, 14 x 20, f.o.b. Pittsburgh, terms 30 days, less 2 per cent. off for cash in 10 days, this price being subject to the usual rebate of 5c. per base box in large lots.

**Hoops and Bands.**—Contracts placed early in the year have been pretty well cleaned up, and it is expected that within a short time the mills will name prices for next year's delivery. It is said that regular prices are being maintained as follows: Steel Hoops, 1.80c., base, full Hoop card prices; Steel Bands, 1.40c., base, half Steel card extra, all f.o.b. cars, Pittsburgh, in carload lots, for delivery during 1908.

**Iron and Steel Bars.**—Specifications against contracts for Steel Bars continue to come in freely. A favorable feature of the situation is that makers of railroad equipment are now more liberal buyers of Bars than for some time. The implement makers who placed heavy contracts last May and June are also specifying liberally, and the leading manufacturers of Steel Bars are now able to run to fuller capacity than at any time in the past year. The demand for Iron Bars is also reported to be picking up, a good many orders being placed for car repair work. The situation in both Iron and Steel Bars is more favorable than it has been for some months. Prices are firm. We quote Iron Bars at 1.40c., base, for Pittsburgh delivery, and 1.35c., base, for Western points, to which freight is added, except Chicago, the price for which is 1.50c., delivered. We quote Steel Bars at 1.40c., Pittsburgh, for base sizes.

**Railroad Spikes.**—Some fair sized orders are being placed, but as yet the railroads are not heavy buyers. The demand for the smaller sizes continues quite active, and keeps the mills fully employed. Prices are firm, and we quote: Standard sizes, 4½ x 9-16 in., at $1.70, and the smaller sizes at $1.80 per 100 lb. in carload and larger lots, with an advance of 5c. per 100 lb. for less than carload, f.o.b. Pittsburgh.

**Merchant Steel.**—The large trade is buying more freely and the railroads are also placing more orders for Spring Steel, so that this trade is more active than for some time. Specifications from the implement makers are coming in at a fairly satisfactory rate. On large contracts for Shafting regular discounts are being shaded. Regular prices on Cold Rolled Shafting are 57 per cent. off in carloads and 52 per cent. on less than carloads, delivered in base territory. Prices on Merchant Steel are being shaded, regular quotations being as follows: Smooth Finished Machinery Steel, 1.80c. to 1.90c.; Flat Sleigh Shoe, 1.75c. to 1.85c.; Cutter Shoe Steel, 2.15c. to 2.25c.; Toe Calk, 1.90c. to 1.95c.; Railroad Spring Steel, 1.60c. to 1.75c., the higher prices being for Pennsylvania Railroad analysis. Carriage Spring Steel is 1.80c.; Tire Steel, Iron finish, 1½ x ½ in. and heavier, 1.40c.; under 1½ in., 1.55c. Planished Tire Steel is 1.60c., all f.o.b., at mill.

**Spelter.**—The market has shown a sharp advance, and we now quote prime grades of Western Spelter at 4.95c. to 5c., East St. Louis, equal to 5.07½c. and 5.12½c., Pittsburgh. The demand is more active than for some time and still higher prices are predicted.

**Merchant Pipe.**—This and next month are usually the dullest months of the year in the Pipe trade, but so far this month actual orders placed with the mills are about as heavy as in the same period in October. The large trade is buying more freely, believing that present prices on Pipe will not be reduced. Indications are that there will be an enormous demand next year for Line Pipe from the gas and oil companies, as a number of important projects are certain to be put through if money conditions continue favorable. The mills are firmly holding prices on both Iron and Steel Pipe, but occasionally jobbers shade prices to some extent. Discounts on Steel Pipe, ¾ to 6 in., to the large trade, are 76 and 5 per cent. off list. Regular discounts are as follows:

*Merchant Pipe.*

| | Jobbers, carloads. Steel. Black. % | Galv. % |
|---|---|---|
| ⅛ to ¼ in | 67 | 51 |
| ⅜ in | 69 | 55 |
| ½ in | 71 | 59 |
| ¾ to 6 in | 75 | 65 |
| 7 to 12 in | 72 | 57 |
| Extra strong, plain ends: | | |
| ⅛ to ⅜ in | 60 | 48 |
| ½ to 4 in | 67 | 55 |
| 4½ to 8 in | 63 | 51 |
| Double extra strong, plain ends: | | |
| ½ to 8 in | 56 | 45 |

Discounts on Genuine Iron Pipe are as follows:

| | Black. % | Galv. % |
|---|---|---|
| ⅛ to ¼ in | 65 | .. |
| ⅜ in | 67 | 53 |
| ½ in | 69 | 57 |
| ¾ to 6 in | 73 | 63 |
| 7 to 12 in | 70 | 55 |
| Extra strong, plain ends: | | |
| ⅛ to ⅜ in | 58 | 46 |
| ½ to 4 in | 65 | 53 |
| 4½ to 8 in | 61 | 49 |
| Double extra strong, plain ends: | | |
| ½ to 8 in | 54 | 43 |

**Boiler Tubes.**—More orders from the railroads for Boiler Tubes are being placed than for some time. The mills also report an increased demand for Merchant Tubes. The statement is made that the prices on Tubes is also firmer, the cutting in prices which has prevailed for so long having largely disappeared. For Merchant Tubes in small lots, on which an extra 5 per cent. is allowed in carloads, discounts are as follows:

*Boiler Tubes.*

| | Iron. | Steel. |
|---|---|---|
| 1 to 1½ in | 42 | 47 |
| 1¾ to 2¼ in | 42 | 59 |
| 2½ in | 47 | 61 |
| 2¾ to 5 in | 52 | 65 |
| 6 to 13 in | 42 | 59 |

2½ in. and smaller, over 18 ft. long, 10 per cent. net extra.
2¾ in. and larger, over 22 ft. long, 10 per cent. net extra.

**Iron and Steel Scrap.**—While the demand for Scrap has quieted down in the past week, we can report the market as very firm, dealers having paid $16 and $16.25 for Heavy Steel Scrap to fill their own contracts. Large consumers are pretty well covered and are placing no orders they can avoid, for the purpose of keeping the market from going still higher. Dealers quote about as follows: Heavy Steel Scrap, $16 to $16.25; Cast Iron Borings, $10.50 to $10.75; Bundled Sheet Scrap, $12.50 to $13; No. 1 Busheling Scrap, $14.25 to $14.50; No. 2, $10.75 to $11; No. 1 Railroad Wrought Scrap, $16.75 to $17; No. 1 Cast, $14.50 to $14.75; Iron Axles, $22.50 to $23; Sheet Bar Crop Ends, $19.50 to $20; Low Phosphorus Melting Stock, $18.25 to $18.50; Rerolling Rails, $17.50 to $17.75, delivered at Cambridge, Ohio, or Cumberland, Md.; Steel Axles, $19.50 to $20; Grate Bars, $12.50 to $12.75; Old Car Wheels, $16 to $16.25; Machine Shop Turnings, $11 to $11.25; Railroad Malleable Scrap, $14.75 to $15; Iron Rails, $18.75 to $19; Locomotive Tires, $17.25 to $17.50. All above quotations are per gross ton, f.o.b. Pittsburgh, unless otherwise noted.

**Coke.**—We note quite an active demand for both Furnace and Foundry Coke for next year's delivery, and the general Coke market is very much better, both as regards demand and prices than it has been for some months. A good many blast furnaces have recently started, which have

not covered for their Coke. Strictly Connellsville Furnace Coke for prompt shipment is now held at $1.75 to $1.85 per net ton, at oven, and for delivery over next half of the year most makers of Connellsville Coke are asking $2, at oven. Connellsville 72-hr. Foundry Coke, for shipment over first half, is held at $2.25 to $2.50, at oven. Other grades of Furnace and Foundry Coke made outside the Connellsville region can be obtained at slightly lower prices. Out of 37,893 ovens in the Upper and Lower Connellsville regions, 18,570 were active last week, and 19,323 idle. The output was 230,559 tons, an increase over the previous week of nearly 7000 tons.

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Spang, Chalfant & Co., Inc., Union Bank Building, Pittsburgh, operating the Etna Iron & Tube Works, Etna, Pa., have opened a branch office in room 1304 Third National Bank Building, St. Louis, in charge of J. D. Hardcastle, who has been in the sales department of the Pittsburgh office for some years.

## Buffalo.

BUFFALO, N. Y., November 17, 1908.

**Pig Iron.**—The market is increasingly active, with a decided firming of prices throughout the list and slight advances in most grades. Sales since November 4 have far exceeded any similar period during the year. Most of the furnaces are now booked to capacity for balance of year, with considerable business placed for first quarter and half of 1909, shipments going forward from the furnaces at a greatly accelerated rate. We quote as follows, f.o.b. Buffalo:

| | |
|---|---|
| No. 1 X Foundry | $16.00 to $16.50 |
| No. 2 X Foundry | 15.50 to 16.00 |
| No. 2 Plain | 15.25 to 15.75 |
| No. 3 Foundry | 15.00 to 15.50 |
| Gray Forge | 14.75 to 15.25 |
| Basic | 15.50 to 16.00 |
| Malleable Bessemer | 16.00 to 17.00 |
| Charcoal | 20.00 to 20.50 |

**Old Material.**—There is a strong upward tendency and a considerable increase in the volume of transactions, notwithstanding a sharp advance in prices for most lines. Indications point to a continued increase in demand from consumers and a stronger market. We quote dealers' asking prices, per gross ton, f.o.b. Buffalo:

| | |
|---|---|
| Heavy Melting Steel Scrap | $16.00 to $16.50 |
| No. 1 Railroad Wrought | 17.50 to 18.50 |
| No. 1 Railroad and Machinery Cast Scrap | 15.00 to 16.00 |
| Old Steel Axles | 19.00 to 20.00 |
| Old Iron Axles | 23.00 to 24.00 |
| Old Car Wheels | 17.00 to 18.00 |
| Railroad Malleable | 14.50 to 15.00 |
| Boiler Plate | 13.00 to 13.50 |
| Locomotive Grate Bars | 12.50 to 13.00 |
| Pipe | 12.50 to 13.00 |
| Wrought Iron and Soft Steel Turnings | 9.50 to 9.75 |
| Clean Cast Iron Borings | 8.50 to 8.75 |
| No. 1 Busheling Scrap | 14.50 to 15.00 |

**Finished Iron and Steel.**—The week has shown a steady increase in the volume of orders placed for Bars, Billets and Structural Material. The Lackawanna Steel Company has this week started up two additional open hearth furnaces and one additional blast furnace to care for increased business, making seven of its 11 open hearth and five of its seven blast furnaces now in operation. Contracts for Structural Steel for the Arcade Building on the Chautauqua Assembly Grounds, about 150 tons, will be closed this week. Bids for Structural Steel for the Schenectady County Court House, Schenectady, opened last week, showed John Gill & Son, New York, to be low bidders. Contract has not yet been awarded.

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In discussing the function of oxygen in the corrosion of iron, at the recent New York meeting of the American Electro-Chemical Society, Prof. W. H. Walker of Boston, said that internal protection of steam boilers could be provided by merely keeping out the oxygen ordinarily carried by feed water. This could be done by a preheater and a dry vacuum pump. Even an open heater will drive out most of the oxygen and relieve corrosion troubles. Other schemes propose passing the water over finely divided iron or the addition of alkaline sodium tannate.

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The excess of merchandise exports over imports in October was $69,857,977, which compares with $68,340,675 in the same month last year and $69,224,996 in 1906. For the 10 months this excess amounted to $502,109,864, compared with $291,857,072 last year. If the comparison is run back to include November and December, 1907, an excess of exports is shown amounting to $710,509,177, which is unexampled for any 12 months' period on record.

## Cincinnati.

CINCINNATI, OHIO, November 18, 1908.—(*By Telegraph.*)

A feature of the week in Iron and Steel circles has been the attitude of the furnaces in southern Ohio and in the Birmingham and Tennessee districts in withdrawing quotations and mystifying representatives as to prices and deliveries. In finished lines there is an increasingly better feeling, and the trade is satisfied that the close of the year will be all that could be desired. In the rapid advance of prices on Pig Iron good profits are accumulating in the treasury of at least two of the largest selling concerns in the country that were shrewd enough to buy on speculation quantities ranging from 10,000 to 35,000 tons, when Southern Iron was at the $10.50 and $10.75 figures for No. 2, at Birmingham. All local dealers in Scrap are advancing prices on the items most in demand, and announce they will go higher ere the year closes. The machine tool men are all planning to increase time and forces. The executive officers of the Cincinnati branch of the National Metal Trades Association are busy with details of the coming dinner, which, in contrast to the one of last year called "poverty dinner," will this year be denominated a "prosperity dinner." It is to be given at the Business Men's Club December 10. It is not improbable that some important State and national officials will be guests of honor. All the national officers are expected, and acceptances have already been received from tool and machinery manufacturers in St. Louis, Providence, Boston and New York.

**Pig Iron.**—There has been some heavy selling, much of it quietly, and it has been a week of firming up on prices by the Southern furnaces, some of the largest of which have just advised representatives here and elsewhere to withdraw all quotations until further notice. Southern Ohio Irons, too, have stiffened, and the lowest price heard to-day for Northern No. 2 is $15.50, Ironton, with most furnaces offering but a limited quantity for spot delivery at that price. The Sloss-Sheffield Company is asking $13, Birmingham, for No. 2 for first quarter, with a stated disinclination to book business beyond that at that price. It is difficult to get a price on Basic. The largest deal of the week in Basic in this territory was the reported purchase of something like 10,000 or 12,000 tons from a central Ohio furnace interest for delivery to local Steel makers covering the first half of the year, the price about $15.50, at furnace. Basic is reported scarce. A local concern would sell a little at $16, Cleveland. Another Longdale stack was blown in on Basic November 7. The Indiana melter who wanted 2000 tons of Malleable is reported to have secured it, but the price is not available. The Indiana agricultural implement interest that wanted 2000 tons of low grade Iron is reported to have bought 3000 tons at an attractive price. A local house was offered to-day $11.75, Birmingham, for Gray Forge, but $11.50 is freely quoted for prompt shipment. Bessemer is about $16.50 to $17, both at Valley and southern Ohio furnaces. The Republic Iron & Steel Company, which is now blowing all three furnaces at Thomas, Ala., is offering a standard Iron at $13, Birmingham, for first quarter shipment, but will not sell for second quarter alone at that price. Rockwood is reported out of the market. There is a wider range between grades of standard Southern Car Wheel. A central Ohio manufacturer of boilers wants 600 tons of No. 2 and 400 tons of No. 4 Southern Foundry for the second quarter. A southern Ohio manufacturer of special machinery wants 400 tons of Foundry Irons for early delivery. For delivery balance of the year and for the first quarter we quote, based on freight rates of $3.25 from Birmingham and $1.10 from the Hanging Rock District, f.o.b. Cincinnati, as follows:

| | |
|---|---|
| Southern Coke, No. 1 | $16.75 to $17.25 |
| Southern Coke, No. 2 | 16.25 to 16.75 |
| Southern Coke, No. 3 | 15.75 to 16.25 |
| Southern Coke, No. 4 | 15.25 to 15.75 |
| Southern Coke, No. 1 Soft | 16.75 to 17.25 |
| Southern Coke, No. 2 Soft | 16.25 to 16.75 |
| Southern Coke, Gray Forge | 14.75 to 15.25 |
| Southern Mottled | 14.50 to 15.00 |
| Ohio Silvery, 8 per cent. Silicon | 19.60 |
| Lake Superior Coke, No. 1 | 17.10 to 17.60 |
| Lake Superior Coke, No. 2 | 16.60 to 17.10 |
| Lake Superior Coke, No. 3 | 16.10 to 16.60 |
| Standard Southern Car Wheel | 22.25 to 23.25 |
| Lake Superior Car Wheel | 21.75 to 22.75 |

(*By Rail.*)

**Coke.**—A number of producers are so well sold up that they have withdrawn temporarily from the market, which has the tendency to stiffen current prices a bit. A heavy tonnage of Coke has been sold in this market the past week for shipment to Southern furnaces. Dealers are still able to quote $1.85 to $1.90 at oven on Pocahontas Furnace Coke, and $2 on Wise County. The price varies on the Connellsville product, some agencies holding firmly at $2 as a minimum, while others quoting as low as $1.85, with a maximum of $2 for deliveries extending into and as far as the second quarter, the top price, however, prevailing for extended deliveries. There is little change in Foundry Coke. Prices range from $2 to $2.50 at oven and covering all favorite grades.

**Finished Iron and Steel.**—All dealers report an improved tone to the market, and inquiries increasing on almost all lines. Mills are reported to be running on specifications only, and deliveries are, as a rule, quite prompt. The demand for Twisted Steel Bars for concrete construction work, which has been excellent here for several months, shows some signs of abatement with the approach of cold weather, but other items entering into building work all indicate increasing strength. The Licking Rolling Mills, whose product is practically all sold locally, is running on half time, making Iron Bars exclusively. Collections are better with all dealers and jobbers. Dealers are quoting to the trade, f.o.b. Cincinnati, as follows: Iron Bars, carload lots, 1.55c., base, with half extras, small lots from store, 1.85c., base, half extras; Steel Plates, carload lots, 1.75c., base, with half extras; small lots from store, 1.85c.; base, half extras; Base Angles, carload lots, 1.85c., base; small lots from store, 2.10c.; Beams, Channels and Structural Angles, 1.85c., base; small lots from store, 2.10c.; Plates, ¼-in. and heavier, carload lots, 1.85c.; small lots from store, 2c.; Blue Annealed Sheets, heavy, No. 16, carload lots, 2.15c.; small lots from store, 2.50c.; No. 14, carload lots, 2.05c.; small lots from store, 2.40c.; No. 10 and heavier, carload lots, 1.95c.; small lots from store, 2.20c.; No. 12, carload lots, 2c.; small lots from store, 2.30c.; Sheets (Light), Black, No. 28, carload lots, 2.65c.; Galvanized Sheets, No. 28, carload lots, 3.70c.; Steel Tire, 4-in. and heavier, carload lots, 1.95c.; Plates, 3-16 and No. 8, carload lots, 2c.; small lots from store, 2.20c.

**Old Material.**—All dealers report greatly improved conditions. Inquiries are better, and there have been some good sales of Melting Steel, Relayers and Car Wheels. Mills at some distance have been buying heavily of Melting Steel in this market, and considerable rolling mill Scrap has been bought by mills in Indiana. The largest dealers have advanced Relaying Rails $1 a ton, and some good sized shipments have gone into Texas in the vicinity of El Paso. Car Wheels are also stronger, showing $1 advance over last week's quotations. We quote dealers' prices to the trade, f.o.b. Cincinnati, as follows:

| | |
|---|---|
| No. 1 R. R. Wrought, net ton | $12.75 to $13.75 |
| Cast Borings, net ton | 5.25 to 5.75 |
| Heavy Melting Steel Scrap, gross ton | 14.50 to 15.50 |
| Steel Turnings, net ton | 6.00 to 7.00 |
| No. 1 Cast Scrap, net ton | 12.50 to 13.50 |
| Burnt Cast, net ton | 9.00 to 10.00 |
| Old Iron Axles, net ton | 16.75 to 17.75 |
| Old Iron Rails, gross ton | 15.00 to 16.00 |
| Old Steel Rails, short, gross ton | 13.00 to 14.00 |
| Old Steel Rails, long, gross ton | 12.75 to 13.75 |
| Relaying Rails, 56 lb and up, gross ton | 21.50 to 22.50 |
| Old Car Wheels, gross ton | 14.00 to 15.00 |
| Low Phosphorus Scrap, gross ton | 14.00 to 15.00 |

## Metal Market.

NEW YORK, November 18, 1908.

**Pig Tin.**—A steady demand by consumers has taken considerable tonnage, but business has not been large. The principal buying has been of futures, and in this line there has been a fair turn over. Some excitement was occasioned on Monday, when the announcement was made by the Dutch Government that the date of the Banca sale would be changed from November 27 to November 20, a week earlier. This was the occasion for hammering the market, and on that day the lowest price of the week was realized, namely, 30c. In the main, Tin is slightly easier than last week, the quotations being as follows:

| | Cents. |
|---|---|
| November 11 | 30.62½ to 30.75 |
| November 12 | 30.30 |
| November 13 | 30.40 |
| November 16 | 30.00 |
| November 17 | 30.30 |
| November 18 | 30.25 |

The arrivals have been large, aggregating 2474 tons, and there are afloat 1985 tons, of which at least 835 tons will make this month's delivery. This will give supplies of about 3500 tons in addition to the stocks held the first of the month of 1600 tons. The deliveries may be 3000 tons, so it is expected that stocks will increase. The shipments from the Straits will likewise be heavy, and are estimated at between 5500 and 6000 tons. The London market closes to-day at £136 17s. 6d. for spot and £138 15s. for futures. This is about £2 10s. below last week's price.

**Copper.**—Prices are lower than last week, and the heavy buying has subsided. Electrolytic for nearby delivery can be had at about 14.25c., while for January and February delivery 14.37½c. is asked. Lake is obtainable from second hands at 14.50c., and some producers have offered to sell November and December shipment at the same figure. The buying in October and November has been the largest in respect to tonnage in over two years. Consumers have enough metal for their needs for some time to come and producers, having disposed of the bulk of their nearby production, are not anxious to test the market. The course of the London market has been watched with great interest. The decline of about £2 last week from the high figure of £64 17s. 6d. for spot and £65 17s. 6d. for futures, has been largely recovered. The market there closed at £63 15s. for spot and £64 15s. for futures last night, but to-day is lower, at £63 2s. 6d. for spot and £64 2s. 6d. for futures. Abroad, consumers and dealers, the latter especially, continue to buy at the normal rate. No doubt exists that the position of Copper is somewhat better, but still production is in excess of consumption and is likely to continue so for several months. To-day the mines in this country are turning out Copper in excess of 40,000 gross tons a month, a rate never before equaled. Consumption is not over 16,000 to 18,000 tons, and even if exports continue above 20,000 tons, stocks are accumulating in this country, to say nothing of Europe, where in reporting warehouses alone in London they are 40,000 tons in excess of those held January 1, 1908. Manufacturers of Brass Tubes and Sheets have advanced their prices 1c. per pound. The exports so far this month are 11,018 tons. This year to date they are over 260,000 tons.

**Pig Lead.**—The market is very dull. Independent interests are quoting 4.40c. to 4.45c., New York, and 4.25c., St. Louis. The American Smelting & Refining Company continues to take orders on a basis of 4.30c. for shipment Lead in 50-ton lots. The foreign market is steady at £13 10s. 6d. The importation of Lead Ore has fallen off.

**Spelter.**—The market is dull and prices are practically unchanged at 5.05c. to 5.10c., New York, and 4.95c., St. Louis. There has been a sharp decline in the price of Ore in St. Louis, which has had an unfavorable effect.

**Aluminum.**—Prices of Aluminum are unchanged on a basis of 25c. for No. 1 Ingots, 33c. for Rods and Wire and 35c. for Sheets.

**Antimony.**—The broader market for this metal continues, but prices are practically unchanged from last week. There was a little flurry last week, but no business. Hallett's is held at 8.12½c. to 8.25c., Cookson's at 8.37½c. to 8.50c., and outside brands at 8c.

**Nickel.**—This metal is unchanged in price, 45c. being the ruling quotation for 10-ton lots and 50c. to 60c. for smaller quantities.

**Tin Plate.**—Prices continue without change at $3.89, New York, and $3.70, Pittsburgh, for 100-lb. IC Coke Plates.

**Old Metals.**—Business is slightly more active, and buyers are more willing to purchase at these figures than they were a week ago; in other words, they are getting used to a new set of values. Heavy Copper has been sold in the week at 13.75c. and 14c. These were choice lots, still were actual sales, and furnish a good gauge for the broadening market. Pure Copper Scrap is in relatively better demand than Brass Scrap. Dealers' selling prices are unchanged from last week, with the exception of Heavy Brass, which has been reduced one-quarter of a cent, as follows:

| | Cents. |
|---|---|
| Copper, Heavy and Crucible | 13.75 to 14.00 |
| Copper, Heavy and Wire | 13.50 to 13.75 |
| Copper, Light and Bottoms | 12.50 to 12.75 |
| Brass, Heavy | 9.50 to 9.75 |
| Brass, Light | 7.75 to 8.00 |
| Heavy Machine Composition | 12.75 to 13.25 |
| Clean Brass Turnings | 9.00 to 9.50 |
| Composition Turnings | 10.50 to 11.00 |
| Lead, Heavy | 4.25 |
| Lead, Tea | 4.00 |
| Zinc, Scrap | 3.50 |

## New York.

NEW YORK, November 18, 1908.

**Pig Iron.**—Practically all the larger inquiries in the market last week have been closed, one interest buying an aggregate of 15,000 tons, another a total of 10,000 tons of Foundry Iron, both of them being connected with the railroad equipment industry. Several large transactions have also been made with New England founders, and there has been a good deal of buying on the part of the smaller works. The market is firm, with sellers maintaining a reserved attitude as to further commitments, at present prices, for delivery during the first and second quarters of next year. We quote, at tidewater, $17.50 to $17.75, for No. 1 Northern Foundry, $17 to $17.50 for No. 2 Foundry, and $16 to $16.50 for No. 2 Plain. Alabama Irons are quoted $17.50 to $17.75 for No. 1 Foundry, and $17.25 to $17.50 for No. 2 Foundry.

**Steel Rails.**—A few scattering lots are reported sold in the past week, including 500 tons for the Brooklyn Heights Railroad. Several of the heavy users of standard sections are getting together data as to their needs for next year, but there is no promise of immediate orders. By the first of the year, it is thought, a good many roads will be seeking April deliveries on a considerable tonnage.

**Structural Material.**—A lull has come in the placing of local business. About 7000 tons of work was figured on competitively by New York offices in the past week, but none of the projects on which bids went in in previous weeks was let. Bids have not yet been asked by the city on the new pier 53, North River, the Steel for which is variously

estimated at 2500 to 3500 tons. Bids will be opened November 25 for a bridge over the Monongahela River at Monongahela, Pa., to be built jointly by Allegheny and Washington counties, and calling for about 4000 tons. The Detroit-Edison Company's power house at Delray, below Detroit, Mich., 1500 tons, is reported to have been awarded. Dealers' stocks of plain material are generally light, and under the arrangements with the Steel manufacturers, which have been in force in the past six months, it is expected there will be no important accumulation of stocks in dealers' hands, so that any future advance that may come in Structural Shapes will not encounter any irregularity in prices to begin with. We quote at tidewater on shipments from mills as follows: Beams, Channels, Angles and Zees, 1.76c.; Tees, 1.81c. On Beams, 18 to 24 in., and Angles, over 6 in., the extra is 0.10c. Structural Material, cut to lengths, is sold in small lots at 2¼c.

**Bars.**—The improved demand for Bar Iron and the advancing prices of raw materials have caused the Bar Iron manufacturers to advance their prices. The leading makers are now quoting on the basis of 1.40c., Pittsburgh, or 1.56c., tidewater. It is expected that the smaller manufacturers, who have recently been following closely after the larger companies, will speedily get in line. They have been selling at 1.45c. to 1.50c. Steel Bars are quoted at 1.56c., tidewater.

**Plates.**—The demand in this locality is heavier for Universal than for Sheared Plates. Some good contracts have been placed for Universal Plates, deliveries in some cases running over six months. Orders for Sheared Plates are not so numerous as last week, when quite a rush was observed to make purchases by parties who had been waiting to see the result of the election. Inquiries for Sheared Plates are only for small quantities and are not numerous. Some export trade is being done. Prices are firmly held as follows, at tidewater, for standard sized Plates: Sheared Plates, 1.76c. to 1.86c.; Flange Plates, 1.86c. to 1.96c.; Marine Plates, 2.16c. to 2.26c.; Firebox Plates, 2.65c. to 3.50c., according to specifications.

**Cast Iron Pipe.**—The Board of Water Commissioners, Amsterdam, N. Y., is now advertising for bids to be opened November 24 on 3538 net tons of 30-in. and 3844 tons of 24-in., as well as about 100 tons of special castings. Some rush orders have been received on 6-in. Pipe for work necessary to be completed before the winter sets in. Some inquiries are also noted for spring delivery, but these are regarded as feelers rather than as indicating that orders may soon be placed. Carload lots of 6-in. are quoted at $24 per net ton, tidewater.

**Old Material.**—The market has suddenly become decidedly active. The monthly railroad offerings were easily disposed of, although it is estimated that the total quantity was about 150,000 tons. It is understood that consumers were overbid by dealers on much of this material. The fact that stocks are quite light in consumers' yards is shown by the numerous orders placed this week for large quantities. Dealers have found as little difficulty in disposing of 1000 to 5000 ton lots of all grades of Scrap as they had in selling carload lots two or three weeks ago. The sales have covered all kinds of material from Steel Scrap to Borings and Turnings. Prices have shown some advance, and if the buying movement continues a still higher level appears sure to be reached. Dealers are looking forward with confidence to much better prices by the turn of the year. Quotations are as follows, New York and vicinity, per gross ton:

| | |
|---|---|
| Old Girder and T Rails for melting | $12.50 to $13.00 |
| Heavy Melting Steel Scrap | 12.50 to 13.00 |
| Old Steel Rails, rerolling lengths | 15.00 to 15.50 |
| Relaying Rails | 23.50 to 24.00 |
| Old Iron Rails | 18.00 to 18.50 |
| Standard Hammered Iron Car Axles | 20.00 to 20.50 |
| Old Steel Car Axles | 17.00 to 17.50 |
| No. 1 Railroad Wrought | 16.50 to 17.00 |
| Iron Track Scrap | 13.50 to 14.00 |
| No. 1 Yard Wrought, long | 15.50 to 16.00 |
| No. 1 Yard Wrought, short | 14.00 to 14.50 |
| Light Iron | 8.00 to 8.50 |
| Cast Borings | 8.50 to 9.00 |
| Wrought Turnings | 9.50 to 10.00 |
| Wrought Pipe | 12.00 to 12.50 |
| Old Car Wheels | 15.00 to 15.50 |
| No. 1 Heavy Cast, broken up | 14.25 to 14.75 |
| Stove Plate | 12.00 to 12.50 |
| Locomotive Grate Bars | 12.00 to 12.50 |
| Malleable Cast | 13.50 to 14.00 |

**Ferroalloys.**—The market continues quiet, but there is a little broader tendency noted in Ferromanganese, and sales have been made on a basis of $45, seaboard, which is an advance of $2 over the quotation of last week. There is not the activity in 50 per cent. Ferrosilicon that there is in Ferromanganese, but the price is practically unchanged, at $68.

The Electrical Alloy Company, Morristown, N. J., incorporated with a capital stock of $50,000, has leased a plant to manufacture wire from various alloys, the production to be used principally by manufacturers of electrical apparatus. H. P. Reigart is president; W. H. Kissam- vice-president and general manager, and S. F. Reigart, secretary and treasurer.

## Iron and Industrial Stocks.

NEW YORK, November 18, 1908.

Another week of great activity has been witnessed on the Stock Exchange. Many of the iron and industrial shares appeared to be in popular favor, and prices were either advanced to record figures or to a level which had not been reached for a year or more. Prominent among these were United States Steel and American Can stocks. The range of prices on active stocks from Thursday of last week to Tuesday of this week was as follows: United States Steel common 54⅜ to 58¾, preferred 112⅝ to 114⅛; Bethlehem Steel common 24½ to 27¼, preferred 53 to 57; Car & Foundry common 45½ to 47¾, preferred 106½ to 107⅜; Locomotive common 55⅞ to 57¼, preferred 109¾ to 110½; Steel Foundries, new, 39 to 40½; Cambria Steel 38½ to 40; Colorado Fuel 38¾ to 40⅝; Crucible Steel common 8¼ to 8½, preferred 52⅛ to 54; Pressed Steel common 38¾ to 40½, preferred 99 to 99¾; Railway Spring common 44⅜ to 45¼, preferred 100½; Republic common 27¼ to 29, preferred 87 to 89½; Sloss-Sheffield common 78 to 81½; Cast Iron Pipe common 28 to 29, preferred 75¾ to 76; Can common 9 to 10¼, preferred 73½ to 75½. Last transactions up to 1.30 p.m. to-day are reported at the following prices: United States Steel common 57⅜, preferred 113¾, bonds 102¾; Car & Foundry common 46⅝, preferred 107; Locomotive common 56⅛, preferred 109¾; Colorado Fuel 39¾; Pressed Steel common 40½, preferred 99; Railway Spring common 45¼; Republic common 28½, preferred 88⅛; Sloss-Sheffield common 81; Cast Iron Pipe common 27¾, preferred 75; Can common 9½, preferred 74½.

A special meeting of the stockholders of the Westinghouse Electric & Mfg. Company will be held in Pittsburgh, November 24, to provide for the carrying out of the reorganization plan. The stockholders will be asked to make changes in the by-laws required by the plan, and to increase the capital stock by $10,000,000, as well as to adopt the necessary resolutions to make the plan itself effective.

**Dividends.**—The J. A. Fay & Egan Company, Cincinnati, Ohio, has declared quarterly dividends of 1¾ per cent. on the preferred and common stocks.

The General Electric Company has declared the regular quarterly dividend of 2 per cent., payable January 15.

## Leak-No Compound for Repairing Iron and Steel.

Thousands of dollars are spent every year replacing machinery and parts, automobile cylinders, castings, radiators, boilers, firepots, pipes and a thousand and one other things which have become useless because of cracks, spongy spots, sand holes or blow holes. It is not uncommon for defects in castings or cracks to make practically worthless expensive pumps and other machinery. There is hardly a factory of any size that does not contribute something to the scrap heap every year which could be saved were it possible to repair defects in iron and steel. This is now made practicable by the use of a product which the H. W. Johns-Manville Company, New York, is placing on the market under the name Leak-No metallic compound.

Leak-No is a chemical compound resembling powdered iron. When mixed with water and applied like putty to defects in iron or steel articles, the manufacturer claims that it metallizes and becomes a permanent part of the article to which it is applied, stopping any ordinary leak in anything made of iron or steel against any pressure of oil, steam, gas, air, ammonia or water; and to stand any heat or chemicals that iron will stand when applied according to directions. When hard its color resembles that of iron.

The annual convention of the Roadmasters and Maintenance of Way Association of America was held at Milwaukee, Wis., November 10 to 12, and was attended by delegates from the leading railroads in all parts of the country. A feature of the convention was an exhibit of supplies, including wire fencing, rail joints, frogs and appliances used in track laying. The newly elected president is A. E. Hansen, Green Bay, Wis. Walter E. Emory, Chicago, is secretary and treasurer.

A series of important tests were conducted at Portsmouth, England, with the De Forest system of wireless telephony. Messages were sent satisfactorily from vessels to shore, a distance of 40 miles.

## Nickel Steel for Bridges.

In the September number of the *Proceedings* of the American Society of Civil Engineers an exhaustive paper is printed giving a résumé of investigations made by J. A. L. Waddell of the comparative value of nickel steel and carbon steel for bridge building. The work undertaken included: 1. The determination of the proportions of nickel and carbon that will give a steel of the highest ultimate strength and elastic limit consistent with proper working in the shop and with absolute safety in structures. 2. The making of tests of nickel steels adopted as standard and corresponding tests of carbon steel. 3. The preparation of specifications for nickel steel bridges. 4. The making of diagrams of weights of metal per linear foot of span for various types of bridges. 5. The preparation of diagrams giving actual costs per linear foot of span for nickel steel and carbon steel structures.

### The Percentage of Nickel.

It was found that for plates and shapes any materially greater percentage of nickel than 3½ makes the alloy too refractory for shop manipulation, though structures of steel still higher in nickel would be perfectly safe. As to carbon, it was found that the greater the percentage of nickel in the alloy the greater the permissible amount of carbon, and as carbon adds to both ultimate strength and elastic limit it is economical to use as much of it as workability in the shop and safety in operation will permit. The maximum percentage of phosphorus recommended in nickel steel is 0.03; of sulphur, 0.04; of silicon, 0.04. The manganese percentage recommended is 0.75 for plate and shape steel and 0.85 for eye-bar steel. Details are given of the various tension, bending, shearing, impact, hammering, punching, filing and other tests made on nickel steel; also data concerning corrosion tests. As the result of the latter the writer considers that nickel steel may well be used for ocean piers and for bridges located near salt water. Two special 40-ton melts of plate and shape steel were made for the tests, the general averages of analysis being as follows: Nickel, 3.65 per cent; carbon, 0.39 per cent.; manganese, 0.77 per cent.; sulphur, 0.025 per cent.; phosphorus, 0.01 per cent.; silicon, 0.05 per cent.

The average elastic limit was about 62,200 lb. per sq. in., and the average ultimate strength about 107,300 lb. per sq. in. It was found that the average ratio of elastic limits of nickel steel to carbon steel was 1.94, and of ultimate strength 1.79. The minimum elongation in eight inches was about 15 per cent. for nickel steel and 27 per cent. for carbon steel. The minimum reduction of area was about 41 per cent. for nickel steel and about 55 per cent. for carbon steel. Thick plates and angles gave lower elastic limits and ultimate strengths than thin ones. While this was already known for carbon steel, the difference is so marked in nickel steel that standard specifications would need to take into account the thickness of the piece tested.

As the result of his investigations the writer considers it practicable to write specifications for nickel steel bridges which will possess the same strength, rigidity and excellence of design as the best carbon steel bridges that are being built to-day. In bridges of mixed nickel and carbon steel the floor system, the lateral system, and those parts of trusses of minor importance, such as struts having a large excess of section above the theoretical requirements, lacing bars and stay bolts may be made of carbon steel, but the floor system should preferably be of nickel steel.

### The Economy of Nickel Steel.

Elaborate comparisons of costs are made as between nickel steel and carbon steel bridge work. Nickel steel ingots, it is computed, cost about 1 cent per pound more than those of carbon steel when nickel is worth 30 cents a pound. Figuring the difference in cost of rolling and of shop work gives a total excess cost of nickel steel bridge work delivered at site of 1.5 cents per pound.

Diagrams are given comparing the cost of 12 types of bridges of carbon steel and of mixed steel. These are based on the following average pound prices for carbon steel bridges erected in the United States:

| | Cents. |
|---|---|
| Plate girder spans | 4 |
| Riveted truss spans | 4.5 |
| Pin connected Pratt truss spans | 4.5 |
| Pin connected Petit truss spans | 5 |
| Cantilever bridges | 5.5 |

In every case an excess of cost of carbon steel bridges over mixed steel bridges is shown, except for deck, plate girder spans of less than 33 ft., and the longer the spans the greater the economy. A further advantage is in the possibility of building longer spans than are now attainable. If 1800 ft. be assumed as the present practicable span length for carbon steel bridges, the corresponding limit for nickel steel bridges will be about 2300 ft. In general it is calculated that the adoption of nickel steel for bridges would lengthen the practicable span length for cantilevers fully 500 ft. In conclusion the author says:

"Summarizing the results of this entire investigation of nickel steel for bridges, it is evident that nickel steel is in every way fitted for bridge construction in that it is strong, tough, workable and reliable; moreover, its adoption would effect a decided economy. This economy would increase in the future as the cost of nickel decreases and as the shops become more accustomed to the fabrication of the new alloy. That nickel will soon be less expensive is a foregone conclusion, in view of the immense deposits of nickel ore that have been located and surveyed in Canada. It is said upon good authority that there has been found in one deposit in that country ore containing fully 200,000 tons of the metal.

"While the writer has never known nickel to have been sold for less than 30 cents per pound, nevertheless he is of the opinion that, should this material be called for in large tonnages for bridge building, it might be purchased as low as 25 cents. It makes a great difference in the price to the producer whether a metal is sold by the pound or by the ton; and tons of nickel would be required where pounds are bought to-day, were nickel steel used extensively for bridge work. At 25 cents per pound for nickel, the price of rolled nickel steel would be about 0.2 cent per pound lower than it would be with nickel at 30 cents per pound, and it is likely that the cost of manufacture would be reduced in the same proportion, thus making the price of nickel steel bridge metal delivered at site 1.2 cents per pound above that of carbon steel work."

## Seagoing Suction Dredges.

A paper by Thomas M. Cornbrooks, presented at the meeting of the Society of Naval Architects and Marine Engineers in New York, November 19 and 20, refers to a number of seagoing suction dredges which have been built for the United States Government in the past five years. These range in length from 166 to 300 ft., and capacities of bins from 1000 to 3000 cu. yd. The latest dredge is the Galveston, which has just been completed at the works of the Maryland Steel Company, Sparrows Point, Md. In operating, it is kept moving forward, at a speed of six knots per hour, with the suction pumps dragging on the bottom. The material is sucked up by 20-in. centrifugal pumps and discharged through pipes and distributing chutes into the bins. By gates in the bottom and sides of these chutes it is possible to distribute the material evenly. As the bin fills the water is drained off by overflows through the sides. The load is discharged by opening the gates in the bottom, which are operated by a double cylinder vertical engine through worms and fixed nut on vertical rods. The dredge is propelled by two compound engines, steam for which is furnished by four single-ended boilers.

Notices have been posted at the Bessemer steel plant of the Republic Iron & Steel Company, Youngstown, Ohio, that there will be a readjustment of wages on January 1. Wages in the company's steel finishing mills in the Youngstown District will also be readjusted, effective on the same date.

# The Machinery Trade.

NEW YORK, November 18, 1908.

Business with machinery houses is gradually improving, but the increase in demand is only slight as yet. There were a few more orders placed the past week, and inquiries were numerous, but they covered only a few tools each. While no extensive requirements were reported the volume of small orders and inquiries was sufficient to enable merchants to report a better trade than a month or two ago, but the improvement from week to week is not so pronounced. It is believed that the large interests, particularly the railroads, will have to come into the market more freely and for more extensive lists of tools before there will be a very active demand. It is so near the end of the year that it is probable that many purchases will be held off until after January 1, so as to keep expenses for the current year as low as possible. Already some orders have been placed in this market to be billed in January. This tendency is not unusual at this time of the year, and merchants are somewhat encouraged by the prevailing demand, believing that it will be greatly augmented by the releasing of orders at the opening of the new year.

An indication that railroad buying will pick up shortly is contained in the statement made by the representative of a prominent establishment which makes a specialty of jobbing in railroad cars and locomotives, to the effect that the railroads of the country have during the last few weeks weeded out fully 10,000 old cars for replacement. These cars were disposed of to buyers of old material, and the selling in this line during the last month has exceeded all of the old material sold by the railroads during the previous months of the year. When it is considered that railroads send a large number of their cars to their own shops for repairs it is seen that the replacing of all the cars recently put out of commission will mean some considerable expenditures in the machinery line. In the same connection it may be added that a recent large order for cars placed by an Eastern railroad was in contemplation for 11 months, and the fact that action was taken shows that conditions are more encouraging. The Erie Railroad and the New York Central Railroad have a number of inquiries in the market at present for machine tool equipment which is to be used in various repair shops, and although they do not include any particularly large lists they will aggregate a tidy sum in the way of expenditures.

Mining machinery men report a growing demand for general mining equipment in this country as a result of the recent renewal of activity in Western mines. There is now a fairly good demand for mining machinery for Mexico, and it should be added that Mexican trade has been quite steady during the recent depression in this country, and has gone far toward keeping manufacturers of general mining equipment fairly busy.

### Delaware, Lackawanna & Western Scranton Shops.

The trade has been selling considerable equipment of late to the Delaware, Lackawanna & Western Railroad for its car shops at Scranton, Pa., which are now in course of construction, and it is thought probable that still more machinery will soon be required, as it is expected that at least part of the company's locomotive construction plant will be put in commission before another year is over. It will be remembered that the company spent about $75.000 for machinery for its foundry and blacksmith shop several months ago, and now it is stated that the new machine shop is well under way and requirements for this part of the plant may shortly be filled. The shop will be about 346 x 582 ft., and, although it was stated some time ago that the plant would not be put in commission for more than a year, it is stated in the trade now that judging from some inquiries which have been made a big machine tool list, which will include some particularly heavy equipment is being prepared. It has been stated by the chief engineer of the company that during 1909 the company will begin to build some of its own locomotives, and if this plan is carried out the machine shop will have to be put in commission. Most of the contractors at work on the new cut-off between Lake Hopatcong and the Delaware Water Gap, which is being constructed for the company, have full plants in action. There has been a good deal of buying from those sources in the way of supplementary equipment and general supplies for operating purposes, and from time to time scattered orders will undoubtedly be placed for machinery for this work. It is said that the construction of the cut-off and the completion of the Scranton shops will comprise the major part of the improvements contemplated by the Lackawanna for the ensuing year.

A number of inquiries in the market indicate that the Westinghouse Electric & Mfg. Company, Pittsburgh, Pa., will shortly place some good sized contracts for equipment for the proposed terminal of the Pennsylvania Railroad in the vicinity of Harrison, N. J. As has been stated, the initial cost of the terminal will be in the neighborhood of $5,000,000, and about 250,000 hp. will be generated to supply power for the electric zone which the company will establish in the New York territory. In addition to the boiler equipment the Westinghouse Company will probably place contracts for coal handling and conveying machinery, and perhaps some machine shop equipment for repair purposes.

It is understood that orders will shortly be placed for machinery for the new plant of the Georgian Mfg. Company at Binghamton, N. Y. This company has taken over the plant on Glenwood avenue and the Lackawanna Railroad formerly occupied by the Innes-Demarest Stove Company, and it is said that the plant will be completely equipped for the manufacture of valves and other brass and iron goods. Consulting Engineers S. O. & H. A. Lacey, Phelps Bank Building, Binghamton, have been detailed to prepare plans for the rebuilding of the present buildings and for the construction of other new buildings on the additional site of 3 acres which has been acquired. The plans contemplate the ultimate expenditure of about $300,000 and provide for a modern iron foundry, brass foundry, machine and pattern shops. A loan of $75,000 was recently made, to be used in the construction of the new plant. This enterprise is of considerable interest to the trade in this section, in view of the fact that officials of the Fairbanks Company, Broome and Elm streets, New York, have a large interest in it. The president of the new company is J. A. Haddock, vice-president of the Fairbanks Company; secretary, Joseph A. Wells; general manager, William Nelson, and superintendent, C. O. Churchill. Messrs. Wells and Churchill are also connected with the Fairbanks Company.

A small sized list of power press equipment has been sent out by the Singer Mfg. Company for its large plant at Elizabeth, N. J. The equipment will include a number of power presses of different sizes.

The Newark Tube & Metal Works, 51 North Fourth street, Newark, N. J., is buying equipment for a new factory building to be erected at 543 Ferry street. It is understood that the power order has been placed, but there are inquiries in the market for other machinery equipment for metal working and stamping. The Russell-Robinson Company, 109 Frelinghuysen avenue, Newark, has the general contract for the plant, which will consist of four one-story buildings of brick construction. The buildings will be 100 x 190 ft., 30 x 92 ft., 26 x 30 ft. and 18 x 24 ft. respectively, and with the exception of the latter structure, which will be a power house, the buildings will all be used for manufacturing the company's line of metal goods.

Owing to the large demand for Maxwell automobiles and the excessive freight rates from the eastern and central parts of this country to the Pacific Coast, the Maxwell-Briscoe Motor Company, Tarrytown, N. Y., intends to erect a new plant in the vicinity of San Francisco, Cal., to produce cars for the Western trade. No plans for the new plant have been prepared nor has a site been selected, but these details will be settled as quickly as possible, it being the intention to start the erection of the new buildings within the next three or four months. A plant will be erected of sufficient size to produce about 4000 runabouts a year.

The plans for the additions to the plant of the Lozier Motor Company, Plattsburgh, N. Y., manufacturer of automobiles and gas engines, are now completed and bids are being received. The additions, which will give 34.000 sq. ft. of floor space, are to consist of machine shop, 150 x 162 ft.; stock room, 50 x 60 ft., and blacksmith shop and testing building, 50 x 90 ft.

The recently organized Drop Forgings Company of New York has acquired title to an existing plant in Jersey City, at the corner of West Side avenue and Fisk street, and is now purchasing a general line of equipment for the manufacture of drop forgings. It is understood that the power has been arranged for.

Fred A. Phelps, 290 Union Building, Newark, N. J., has inquiries out covering some special machinery for making reinforced concrete metal. The machinery is intended for use in the plant of the Consolidated Expanded Metal Company, Pittsburgh, Pa.

There are inquiries in the market for rolling mill equipment for gold plate rolling from Charles S. Platt & Co., 29 Gold street, New York.

The John R. Keim Mfg. Company, Kensington street and Erie Railroad tracks, Buffalo, N. Y., is about to start construction on a one-story brick and steel addition 95 x 190 ft. The company manufactures drawn and pressed steel products which are used largely in the manufacture of automobiles, axles and other parts where strength of metal is required. The new addition will comprise a large press mill containing five large steel presses of modern construction, also two large annealing furnaces. The addition of the above equipment will result in doubling the capacity of the present plant. In addition to these improvements, the entire plant will be changed over to motor drive and the present power equipment held in reserve for auxiliary purposes and heating. Niagara Falls power will be used, and the company is now in the market and will place orders within the next 30 days

for a total of about 600 hp. of motors. Two propositions are being considered. First, the use of individual motors direct connected to a number of the heavier machines, and second, grouping of the machinery and using one motor to each group of machines. In case the latter proposition is decided on the company will be in the market for a large quantity of shafting, belting, pulleys, hangers, clutches and other transmission accessories.

The Bergman Tool Company, 102 Seneca street, Buffalo, N. Y., will soon start construction on a new factory building for the manufacture of light tools and hardware specialties. The new plant is to be more than double the capacity of the present plant. The machinery and tools of the present plant were installed only a year ago and will be moved into the new plant when completed. The present capacity will be tripled and considerable new machinery added. The only items definitely determined on at the present time is the purchase of one automatic screw machine, two milling machines, two new lathes, pulleys, shafting, hangers, clutches, belting, a quantity of smaller tools, also one 60-hp. gas engine for operating generator and a 40-kw. generator for power and lighting. Preliminary bids can be submitted any time, but orders will probably not be placed until after January 1.

J. L. Osgood, Buffalo, N. Y., dealer in machinery, tools and shop equipment, has purchased the plant, business, patterns, &c., of the Standard Automatic Lubricator Company, manufacturer of automatic sight and force feed lubricators of all sizes and numbers of feeds.

M. S. Friede, who formerly had offices at 71 Broadway, New York, and was a large purchaser of American machinery which was used on the construction of the Trans-Siberian Railroad, sailed November 18 for Russia, where he will represent the Ideal Concrete Machinery Company of South Bend, Ind., and a number of manufacturers of machine tools, railroad specialties, hardware, &c. He will establish offices throughout Russia, with headquarters at St. Petersburg, and will also have connections at Harbin and Vladivostock. Through his acquaintance with the Russian trade Mr. Friede expects to sell considerable American equipment, especially for the new Amur Railroad, which is to be built by the Russian Government paralleling the Trans-Siberian Railroad. It is said that Russia expects to spend fully $400,000,000 on this project, and it is probable that some substantial business will come to this country from that source.

The Prudential Insurance Company, Newark, N. J., is awarding contracts for a large office building to be erected in that city and the requirements include power equipment to generate about 2500 hp. in addition to some other electrical machinery, including 16 passenger elevators.

W. F. Hulse, 30 Church street, New York, has inquiries in the market for power equipment to generate about 400 kw., to be installed at Arden Farm, a country estate of E. H. Harriman.

D. G. Ziegler & Co., Atlanta, Ga., engineers for the Suwanee River Railroad & Power Company, which intends to establish a hydro-electric plant on the Suwanee River about 50 miles from Jacksonville, Fla., where about 25,000 hp. can be developed, expects to be able to place contracts for the work about December 15. Plans and specifications for the construction work will be finished in a few weeks. This enterprise will require the expenditure of about $3,000,000.

Thomas E. Gildea, 517 Grape street, Syracuse, N. Y., has been awarded general contract for the power and heating plant to be installed in the Onondaga County Hospital buildings at his bid of $23,743. Mr. Gildea will handle the installation and piping and will sublet contracts for equipment, consisting of three 150-hp. horizontal tubular boilers, two 100-kw. generating units, two 150-hp. high speed engines, one 35-kw. generating unit, one 52½-hp. high speed engine, engine and generators to be direct connected; pumps, switchboards and other accessories. The above contract was awarded to Mr. Gildea November 5.

The 200-room annex to the Yates Hotel, Syracuse, N. Y., for which plans are now being prepared by Architect A. L. Brockway, 53 Syracuse Savings Bank Building, will include a steam electric generating plant, consisting of two boilers, two direct connected generating units attached to high speed engines, boiler feed and circulating pumps, refrigerating plant and other accessories. Bids will be called for during January.

## New England Machinery Market.

BOSTON, MASS., November 17, 1908.

Some disappointment is expressed because the increase in demand for machinery has not been more strongly felt, but the more conservative element of the trade expresses itself as satisfied with the improvement. More machines have been sold during the week. This applies equally well to the manufacturers and the dealers. Occasionally a machine tool builder states that he has not yet noted a material change in actual orders booked, but there is no exception to the statement that inquiries are more numerous and promising and that the feeling in the trade is very much better. In the enthusiasm which followed the satisfactory outcome of the great political struggle, the natural tendency was to expect an almost revolutionary change in the market. Very naturally this anticipation was followed by disappointment. Conditions were such that the change had to be a gradual one, which has proved to be the case. Outside of the machine tool trade, many lines of manufacturing are experiencing a greater improvement. The rule seems to be increased working hours and gradually enlarged working forces. Of course the degree of improvement varies very much. One extreme is the boiler business, which has not revived to any great extent. The other extreme is certain classes of products which go direct to the retail consumer. Some concerns in these lines are working overtime, and many others are having normal, or nearly normal, business. Various indirect signs indicate the general change in conditions. For example, the express companies have become almost congested during the fortnight just past. A great many hurry orders have been shipped through these channels and will serve to make the Christmas rush more pronounced and difficult to handle. The railroads are hauling an increasing volume of freight, a notable gain in this respect being noted in the Naugatuck Valley, resulting from the betterment in the brass industry.

There is a good deal of discussion as to whether the period of industrial prosperity, which seems to be imminent, will be preceded by a reaction which would follow a spurt due to the rushing in of stock orders. The best opinion seems to be that such will be the case. But it is certain that if there is to be a spurt in the machine tool trade its beginning has hardly been made. Neither are very many large orders being booked by dealers and manufacturers of supplies. There are a great many orders, but on the whole they are small. The number has increased noticeably, and the volume as well, but it is evident that the larger buyers have not entered the market to any great extent. This condition is especially observed in the steel trade. The dealers report a larger business, though the change has not been an important one. The number of their orders is very large, indeed, but the individual quantity is small. Even those of the large plants that are buying are confining their orders to small lots, though in some instances these orders have been frequently repeated. Apparently consumers have not yet reached the point where they wish to replenish their stocks of supplies and materials. But the steel trade, in common with every other metal line, is confident that the situation is improving, and that it will improve still more rapidly a little later, and still more rapidly early in 1909. Reports are coming from the traveling men all over the country of important works which are starting up, after months of utter depression, and which must, in the natural course of events, be buyers as soon as they get under way again. There is no better illustration of the manner in which buying has been curtailed to the last limit than in the steel trade, especially in the tool steel trade. Shops have gone to extreme lengths in their economies in this direction. Supplies of steel have been reduced to such an extent that recourse has even been made to the scrap heap. Wastefulness has resulted; larger sizes than required of expensive steel have been turned down to much smaller dimensions rather than spend cash in granting the requisitions of the shop. The dealers know that their customers will be compelled to buy in large amounts very soon after they begin producing on a large scale. There is now no alternative; makeshift methods have been exhausted.

The Bresnahan Shoe Machinery Company, Lynn, Mass., is preparing to make a substantial increase in manufacturing capacity, and will be in the market for a lot of machine tools, the list of which will soon be out. The company is one of the independent concerns which manufacture shoe machinery, and already has a plant of considerable size. It has recently purchased a few tools.

The wire business in Worcester continues to show a marked improvement, and all of the mills are either running on normal time or are approaching it. This includes the American Steel & Wire Company, Morgan Spring Company, Spencer Wire Company and the Wright Wire Company. The condition extends through all departments, but is naturally more pronounced in some than in others. The American Steel & Wire Company proposes to start up its works at New Haven, formerly operated by the National Wire Corporation, as soon as business reaches the point where this additional capacity will be needed. The works have been put in shape, so that there will be no delay in beginning operations when the decision to operate them is reached.

The Tiley-Pratt Company, Essex, Conn., manufacturer of specialties, is erecting a new factory to replace the old. The plant will consist of one-story buildings, one 40 x 200 ft., the other 30 x 80 ft.

The second annual Industrial Show, which was originally planned for last week at Hartford, Conn., has been postponed to the week of February 1.

A. L. Krouse, Bridgeport, Conn., manufacturer of white metal goods and art novelties, is building a one-story brick factory, 40 x 90 ft.

## Cincinnati Machinery Market.

CINCINNATI, OHIO, November 17, 1908.

Of the various incidents of the week in the machine tool industry none tend to show more clearly and definitely the beginning of an era of reconstruction in trade than several reinstatements of orders that were originally booked early or during the middle of 1907, and canceled in that memorable last quarter of the year. One of these calls for 10 milling machines of the horizontal type. Other business of the week received under the same conditions orders shipment on lathes, planers and sharpers, and all are to domestic points. Some machines are being shipped to Europe also, and manufacturers in this section are watching the foreign pulse with renewed interest. A Government order of the week calls for four planers, medium size, on which it is understood there was considerable competition. The concern which secured the shipment has received a number of nice orders, and is preparing for considerable business in the larger types, for which it is exceptionally well prepared in a new building and equipment designed to handle heavy machines exclusively. Another manufacturer making a specialty of lathes has booked a stock order calling for 22 machines in one shipment, to go to a prominent dealer who is convinced that he will need them very soon.

The Cincinnati Machine Tool Company recently shipped a carload of upright drills for export and will have another this week. This company is preparing for increased activity in every department, and looks forward to a slow but gradual and healthy improvement in all branches of the tool industry. Some manufacturers have increased time a little, so that 40 hr. a week now represents about the average, although a few have reinstated the 55-hr. schedule. As a rule, while all tool manufacturers here regard conditions as showing marked improvement and the outlook good, there is a disposition to deprecate the policy of the sensational newspapers in publishing columns of padded stuff affecting to show a tremendous revival in industrial operations. All machine tool builders in this market view with the greatest satisfaction growing evidences of confidence on the part of the railroad corporations, and the signs which indicate that some belated buying is an early prospect. Representatives of the Pennsylvania Company have been here inspecting tools and buying for the shops at Ft. Wayne and other points. The Wheeling & Lake Erie has already bought a large consignment of woodworking machinery for installation in its Ohio shops, and several large tool manufacturers are hoping to receive orders for machine tools to be installed in its Ironville shops. Rumors of some good pending orders from the New York Central are current here.

In the upper part of the State indications of returning confidence are specially prominent. The announced resumption of operations in full in all departments of the Piqua plant of the American Sheet & Tin Plate Company this week was received with great demonstrations of pleasure by both employees and fellow manufacturers in that district. Superintendent Wuerdeman is exceedingly pleased with the outlook and, beginnig with the replenishment of stock which was necessarily low because of the shut down of the year, hopes to engage the greater part of the force constantly from now on. This plant was closed down October 12, 1907.

There is considerable talk in manufacturing circles of a new Ohio and Eastern concern to manufacture chains and other similar products, with factories in Duluth, Buffalo and Columbus, the Ohio plant to be devoted to the manufacture of light chains, to which may be added departments for making tacks, screws and other small articles. Those familiar with the movements of the promoters say that definite plans may not be announced before spring.

Jobbing foundries are all increasing their melts, some making heats of 10 to 15 tons daily. The larger foundries are getting some orders for heavy castings for planer, lathe and ice machine beds, something unknown to them for a year. One large local foundry will cast next Saturday a 30,000-lb. base for a big special order ice machine, and a number are making bases and castings for various machines ordered since election.

The dealers in second-hand tools are finding some increase in inquiry, with evidences of less disposition to haggle for lower prices. Dealers are beginning to stock up on standard tools in new machinery, and the manufacturers find every mail filled with inquiries that breathe confidence in a gradual restoration of confidence

Particularly optimistic are the heads of departments of the great agricultural implement works in this section, and this is being emphasized by the purchase of large blocks of pig iron for delivery to their various plants. The first of a number of large shipments to Russia was recently made by the Champion division of the International Harvester Company. The new foundry of the division of the American Seeding Machine Company located at Springfield has been completed and all departments are getting busy on orders from Russia and Argentina. All the company's business is now concentrated in the two plants at Richmond, Ind., and Springfield, Ohio, the Hoosier and Superior divisions, respectively.

The Buckeye Steel Castings Company at Columbus is reported to be operating about 50 per cent. of its capacity, with indications promising a steady improvement. Recently a second open hearth furnace was put in blast and work on extensive improvements planned some time ago is being rushed.

### In the Interests of Mechanics.

The Executive Committee of the Cincinnati branch of the National Metal Trades Association, consisting of E. H. Hargrave, Henry Ritter, Emil Von Wyck and E. M. Chase, together with John W. Neil, president; B. B. Quillen, vice-president; J. B. Doan, treasurer; F. E. Le Blond, secretary, and J. M. Manley, assistant secretary, have sent to Mrs. Thomas Emery, widow of the deceased capitalist, who has endowed a $500,000 building for the Ohio Mechanics' Institute, a letter of congratulation and approval. The letter recites that it is the largest single gift ever presented any school in this State for the sole purpose of industrial education, and concludes with a characterization of Mrs. Emery as "Cincinnati's most benevolent and distinguished lady citizen." The new building will be located at Canal and Walnut streets in Cincinnati, and the architects, Samuel Hannaford's Sons, builders of many important structures in this and adjoining cities, and particularly at Columbus, are now busy with the drawings and specifications. It will be constructed principally of reinforced concrete, and is expected to be one of the handsomest structures in the world devoted to mechanical education and development. Bids will be asked for late in January or early in February.

## Chicago Machinery Market.

CHICAGO, ILL., November 17, 1908.

Though no notable gains were observed in any section of the machinery market last week, evidence of a better feeling and disposition to go ahead with greater confidence is quite unmistakable on every hand, and inquiries are not only more plentiful, but are distinctly less tentative in their nature than they were prior to election. There are signs also which are interpreted as indicating an inclination on the part of the railroads to be less restrictive in their purchases. What the railroads may themselves buy in the way of machinery equipment is, perhaps, not of so much importance as the business that will come from allied manufacturing interests whose product is largely consumed by the railroads when orders from this source are plentiful enough to reengage all idle producing capacity. There is already a marked increase in the demand for supplies entering into car repair work, and new car construction is slowly increasing. Many rumors are current which credit the transportation interests with active efforts in negotiating funds to be applied in the purchase of equipment and for other purposes. It is believed that a large number of inquiries for tools and machinery have accumulated in purchasing departments during the last few months, which will doubtless be purchased when necessary financial arrangements have been made to take care of them. Thus far, however, these preparations, whatever they may be, have not resulted in any business of moment, the few orders coming out for indispensable requirements. Two or three inquiries of this character, for machine tools, are being figured on in the local market this week.

There is a better assortment of tools on floors of the leading local houses than has been seen for a long time, and no difficulty is experienced in promptly supplying standard tools from stock. Actuated by a conviction that the hopes of a steady improvement in business will be realized, some of the leading dealers have recently placed fair sized orders with the manufacturers. Within the past two weeks, one house has purchased several carloads of new tools, the orders being distributed among three or four Western factories.

Communications of a late date from machinery makers of various kinds uniformly express satisfaction with the present trend of affairs, and nearly all show gradual improvement in new business and reasonably prompt collections. Among those heard from are the following concerns:

Ransom Mfg. Company, Oshkosh, Wis., says: "A gradual increase in trade commencing in August has continued up to the election. Our confidence in the future is indicated in the fact that we have just placed orders for a considerable amount of material, and look for a gradual healthy improvement in trade." Rock Island Tool Company, Rock Island, Ill.: "Collections are reasonably good, and our business has showed a decided increase for the last three months, the month of November in particular promising to be the best month of our existence. We have well under way the construction of a new machine shop and foundry, which will more than quadruple our capacity, and will be modern, both

in its structure and equipment." Independent Pneumatic Tool Company, Chicago, Ill.: "The sale of Thor pneumatic tools and appliances for the month of October showed an increase of approximately 25 per cent. over any other month of the present year. Besides orders from railroads, foundries, machine shops, &c., we are receiving an unusually large number of inquiries, which we are confident will result in orders before long."

The Campbellsport Wooden Ware Company, Campbellsport, Wis., has been organized to manufacture boxes, crates and other woodenware, for which purpose some motive power and woodworking machinery will be required. A boiler has already been purchased from the Milwaukee Boiler Company, Milwaukee, Wis., but orders for the engine and other woodworking machinery, including a veneer machine and clipper, one heading saw, one circular saw, double surfacer planer, &c., have not been placed. The company was incorporated with a capital stock of $10,000 by E. F. Martin, M. A. T. Hoffman and William Knickel.

The Gardner Machine Company, Beloit, Wis., is occupying in addition to its former shop building the entire plant vacated by the Warner Instrument Company, when the latter moved into its new quarters some months ago. The company reports a very good run of orders, which expanded considerably immediately after election, and still continue at a fair rate. Notwithstanding the increased capacity of the factory it is now running overtime and a night shift will go on next week. Collections are improved, and the general situation looks very good. The company has under construction two entirely new machines, which will be brought out within the next few weeks.

Moran Brothers, Fort Wayne, Ind., have let a contract to the Henry Voght Machine Company for the installation of a 40-ton ice machine, with 50-ton brine tank, which is to be completed about the middle of April next. The plant will be supplied with a storage room of 500-ton capacity.

The Wesco Supply Company, Birmingham, Ala., has been incorporated with a capital of $5000 to manufacture and handle electrical machinery and supplies. This company is closely identified with the Wesco Supply Company of St. Louis, Mo., and will be operated as a branch of that concern, in conjunction with a branch warehouse at Fort Worth, Texas, and sales offices at Denver, Colo.; Salt Lake City and Seattle. The officers of the new company are: Rogers V. Scudder, president; Charles Scudder, Jr., vice-president, and W. W. Moore, secretary and treasurer.

The Ingersoll Milling Machine Company, Rockford, Ill., has for some months past been busy with the preparations of facilities to manufacture its new line of knee type combined horizontal and verticle spindle milling machines, which will be built in two sizes, No. 3 and No. 5. This work requires many fixtures, jigs and new tools, among the latter being a special shop milling machine 6 ft. square and 30 ft. long, carrying 14 milling heads, which have been designed and built for this work. The company is preparing a new catalogue which will be out about February.

The D. O. James Mfg. Company, Chicago, is equipping a new rotary tunneling machine of new design, now being constructed in the shops of the Vilter Mfg. Company, Milwaukee, with the speed reducing transmission gear, which was illustrated and described in *The Iron Age* of July 30. The work required in this service is of an exacting character, and will afford a critical test of the capabilities of this mechanism.

The city of Weatherford, Okla., has authorized a $25,000 bond issue for the installation of an electric light plant and the extension of its present water system. Definite specifications for the machinery equipment have not yet been made, but the requirements in a general way will include one 150-hp. high pressure boiler, two 100-kw. alternating current generators direct connected with Corliss valve type engines, switchboard, lamps and other accessories; also a new fire pump. Complete specifications will soon be ready and bids on this equipment will then be invited.

An expenditure of $40,000 has been authorized by the city of Topeka, Kan., for the installation of a new electric light plant. Bids for the machinery and equipment required for this improvement are now being taken.

Bids are being invited by the Government for furnishing the labor and material required for the construction of an electric plant to supply current for lighting and small motors at Fort Robinson, Neb. This work is in charge of Capt. F. T. Arnold, constructing quartermaster, Fort Robinson, and plans and specifications may be consulted at the office of the chief quartermaster, Chicago, and depot quartermaster, St. Louis, Mo.

The Northern Engineering Works, crane builder, Detroit, Mich., has changed the location of its Chicago branch office from 405 Monadnock Block to 539 Monadnock Block, with B. C. Wolcott in charge as formerly.

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During the year 1907-1908 40 steel cars were added to the car equipment of the Philadelphia Rapid Transit Company for use on the elevated division.

## Cleveland Machinery Market.

CLEVELAND, OHIO, November 17, 1908.

The machine tool market has shown an activity the past week that was even better than dealers who looked for an improvement after election had dared to hope for. Machinery houses report a large increase in sales and inquiries. While the market is expected to continue fairly active for a week or two, dealers look on the present activity as a spurt caused by the placing of orders that had been held up until after election, and while they are optimistic of the future, they do not expect that the pace that has been set the past few days will be kept up during the balance of the year.

The demand for machine tools has come from all classes of manufacturers throughout this territory, some of the orders being for several good sized tools. Some plants are buying new tools to add to their equipment, and others are replaciug old tools with new. To the surprise of the dealers the automobile people, who were thought to have been practically through buying for the season, have again come into the market and a large share of the sales during the week were made to automobile plants. Some of these had not purchased additional machine tool equipment this season, and others that had already bought decided to further increase their equipment, being encouraged by the result of election and the outlook for improvement in general conditions during the coming year. Some machine tool inquiries that were made a few months ago have been revived and are expected to result in the placing of orders. The outlook for business from the railroads is better. The Lake Shore Railroad, which has purchased very little in the machine tool line during the past year, is expected to come into the market next month for some tools for shop equipment. Among the new inquiries of the past week is one from the American Steel & Wire Company for several machine tools. Machinery houses report a decided improvement in the demand for mill supplies, which is now very good.

The Cleveland branch of the National Metal Trades Association has obtained an expression of the views of a large share of its members during the past few days, and they are very optimistic regarding the future. Considerable improvement is noticed in the general manufacturing situation since election. Some manufacturers have put more men to work and others that have been running on short time have increased their working hours to their normal length.

While the local jobbing foundry situation has not improved much as yet, there is an increase in inquiries for both light and heavy iron castings. Low prices are still being quoted, particularly on heavy castings.

The Wheeling & Lake Erie Railroad purchased during the past week several additional woodworking tools, and has a list out for about 15 large iron working tools and other equipment that will be installed in its shops at Ironville and Norwalk. The list includes drills, lathes, planers, a radial drill, punch and shears, bending roll and four or five oil furnaces. This railroad has definitely decided not to rebuild its main machine repair shop at Norwalk. The new shop will probably be located at Justice, Ohio, although the location has not yet been officially announced. Plans are as yet somewhat indefinite regarding the building of the new shops, but when they are built it is expected that some more machine tools will be required.

The Allyne Brass Foundry Company has purchased a factory building adjoining its Detroit plant and will increase the capacity of that plant for the manufacture of plumbers' brass goods which this company began to make there a few months ago. The building is 50 x 150 ft., and an addition will be built to this structure. The company will soon be in the market for equipment for its factory addition. The Allyne Company also maintains plants at Cleveland and Buffalo, and reports that all its plants are filled with work and are running at full capacity. The company makes a specialty of automobile work, of which it has a large amount on hand.

The Atlas Car & Mfg. Company, Cleveland, has secured during the past 10 days two Government contracts in Panama that will aggregate about $200,000. One order is for 12 electric locomotives, 30 special concrete cars and a three-phase three-rail system, including about 5 miles of trackage, switches, &c. The other contract is for 30 double motor cars, of 5 tons capacity each, of all steel construction and with steel tired wheels. These cars will be automatic in operation and propulsion. They will start from a point and make a circuit, taking on a load of concrete and dumping it automatically. The electrical equipment which is a motor while coming up the grade is turned into a generator and develops power. Included in this contract is about 2 miles of trackage. The company has also recently received orders for a number of electric locomotives and electric cars for industrial plants. Owing to the improvement in its orders the company is now running its plant on full time and expects to soon increase its working force.

The Cleveland office of the Waterbury Farrel Foundry

& Machine Company reports a very satisfactory improvement in the volume of its orders and inquiries, the improvement being noted in the demand for all kinds of machinery made by this company. Among orders recently received is one from the F. A. Godcharles Company, Milton, Pa., for an equipment of presses, dies and special machinery for the manufacture of a complete line of heavy hinges. This company has added hinges to its present products, and has built a new plant in which new power equipment has been installed and which is now ready for the installation of the machinery for making hinges.

The Brown Hoisting Machinery Company, Cleveland, during the past few days has secured a contract from the Shenango Furnace Company, Sharpsville, Pa., for coal and coke bins, and furnace hoist and larries. It has also secured an order for a cantilever crane from the Solvay Company, Paris, France, and for a cantilever ship crane, with a 140-ft. span, for the Government navy yard at New York.

The Beeman Lock Company, Cleveland, has been incorporated, with a capitalization of $20,000, by Marcus A. Beeman, Charles F. Laughlin, V. C. Leslie, J. R. Beeman and A. D. Frazer. The company will place on the market a new sash lock. The only plant to be maintained by the company will be for assembling its product.

The Board of Public Affairs, Newton Falls, Ohio, will receive bids until November 24 for the following apparatus for the new municipal water works plant in that place: Pumps for water service, feed water heater, boiler feed pumps, boiler, air compressor, air lifts and piping. Copies of the specifications can be secured from the Reliance Engineering Company, Cincinnati, Ohio.

Ground has been broken for the sheet mill that will be built at Columbia Heights, near Massillon, Ohio, by A. B. Clark and others of Canton, Ohio. It is expected that the plant will be ready for operation early in the spring.

The Cleveland Twist Drill Company reports a satisfactory improvement in orders during the past two weeks, and with the promising outlook the company expects soon to have its plant running at full capacity.

The Cleveland Castings Pattern Company reports considerable improvement in orders and inquiries for machinery patterns, and with a good volume of stove and furnace pattern work on hand the company has more workmen employed now than ever before.

John Kraus, city smoke inspector of Cleveland, gave an interesting talk at the regular monthly meeting of the Metal Trades' Superintendents' and Foremen's Club, which was held at the Hollenden Hotel assembly room, November 14. After going through the various causes, effects and cures of the smoke evil, he illustrated with stereopticon views various smokestacks, showing the stacks before and after adopting equipment for the purpose of abating the smoke.

## Philadelphia Machinery Market.

PHILADELPHIA, PA., November 17, 1908.

A little real improvement is noted in the local machinery market. Both manufacturers and dealers report a better volume of inquiries, and orders have increased. A good share of the purchases may be classed as deferred orders, which have been held in abeyance pending the election, and which, with the returning confidence on the part of buyers, have now developed into actual business. While the volume placed has not been large enough to influence the general trade conditions, it is encouraging in that it shows the disposition of consumers to go ahead with plans which have been under contemplation for some time. The bulk of the business placed has been small individually and confined usually to single tool propositions. Those of larger size, however, are now being referred to again, and it is believed that it will only be a question of time before they will be seriously taken up. The position of the railroads is constantly assuming better shape. Buying in the shape of rolling stock and general equipment is increasing the output of car shops, steel and iron mills and insures the more active employment of these industries, which in turn is expected to develop business in the machinery trade. This, however, cannot be expected until at least the greater part of the recently idle equipment has been put into service. The trade, therefore, looks for little genuine improvement for the remainder of 1908, particularly when it has been the custom of buyers to hold off purchases toward the close of the year.

It is interesting to note a betterment in the demand for tools of the larger type, orders having been booked in several instances for heavy lathes and planers, but the bulk of the business continues to be for tools of the medium and lighter classes. Manufacturers continue to operate at about the same rate of productive capacity recently noted, but in some few instances the output will be increased as soon as orders recently booked reach the point when they become shop work. This is particularly to be noted in the case of electric crane builders, who have recently booked some very satisfactory orders. Special tool manufacturers will also feel the effect of bettered conditions, as the class of equipment produced permits of little preparation in advance of orders. The makers of tools of the standard types will probably show a slower development, inasmuch as stocks of this class of machine tools, both in their own warerooms as well as those of machinery merchants, which, by the way, have been quite large, will have to be absorbed, particularly in the latter case, before fresh stock orders will be given. On the whole, the trade feels decidedly optimistic regarding the outlook for the future, as it is believed that early spring will find the country well on the way toward normal conditions.

A fair volume of business is reported by second hand machinery dealers. As in the general trade, considerable business which was held up pending the election, was released and orders, while still confined largely to wood and metal working tools of the smaller and medium character, show a material improvement. Prices of second-hand equipment are reported good, particularly for modern tools in good order. There has been an improved inquiry for boilers, particularly those of the medium horsepowers. Some good business in large powers is being considered, but this business as a rule develops rather slowly.

The foundry trade continues to note a small improvement, and many foundries, both gray iron and steel, report increased production. There is more business of a prompt nature coming out and some larger contract work is being considered, but as yet it has not developed into orders. This branch of the trade is greatly encouraged with the outlook for future business.

Bascom & Sieger, Allentown, Pa., engineers, have completed plans for the construction of a water works plant to be erected for the town of Catasauqua, Pa., which will issue bonds to the amount of $80,000 to cover the cost.

The Board of Water Commissioners, Wilmington, Del.. will receive bids until noon, November 23, for the construction of a covered, slow sand filtration plant, together with a filtered water reservoir, filter sand washing apparatus and other appurtenances, according to plans and specifications which may be seen at the office of the chief engineer, Sixth and King streets.

Considerable work in retail coal pocket construction of the more extensive type has developed in connection with the elevation of the Philadelphia & Reading Railroad tracks along Ninth street. Among work of this class recently announced has been that for Charles Fleming, Ninth and Berks streets, from plans by Peter Kuhn, architect and engineer, who also has plans on the boards for a coal pocket to be built at Eleventh and Dauphin streets, for N. H. Dougherty.

The Street and Sewer Department, Wilmington, Del., has decided to grant the request of the Harlan & Hollingsworth Corporation to vacate Justison street in that city, which divides a portion of the company's plant and which is required by it to carry out plans for extensive improvements.

One of the leading crane building shops in this territory informs us that the volume of orders taken during the past two weeks fully equalled the total for the best month last year, and a very considerable amount of work is now on its books, a large portion of which has been held in abeyance pending the election. This concern will gradually increase its working forces, as fast as the work in the various departments becomes heavier, but some time will be required until many of the orders in hand are ready for practical shop work.

H. B. Underwood & Co. report an increased volume of business in all departments. They have been operating on about a 65 per cent. basis for some months, but the demand has increased recently, so that the plant has now been put on a 90 per cent. basis. More orders are on the books than for many months past, and the outlook for continued activity is decidedly encouraging. There has been an improvement in buying on the part of the railroads, and work along general engineering lines has increased materially. A slight increase in foreign business is also reported, several portable boring bars and crank pin turning machines having been recently shipped to Japan.

## Government Purchases.

WASHINGTON, D. C., November 17, 1908.

The Isthmian Canal Commission will soon ask bids for a 75-kw. direct connected engine and generator and two 185-hp. water tube boilers.

The Isthmian Canal Commission will receive bids until December 7, Circular No. 479, for 10 narrow gauge locomotives.

The following bids were opened November 10 for machinery for the navy yards:

Class 11.—Two ventilating fans and repair parts—Bidder 43, D'Olier Engineering Company, Philadelphia, Pa., $604.10; 157, B. F. Sturtevant Company, Hyde Park, Mass., $571.10; 210, Harron, Ricard & McCone, San Francisco, Cal., $583.95; 222, Sirocco Engineering Company, Troy, N. Y., $836.45.

Class 71.—One double cylinder reversible link motion hoisting engine—Bidder 6, America Hoist & Derrick Company, St. Paul, Minn., $1614 and $1427; 9, Harold L. Bond Company, Boston, Mass., $2350; 55, Exeter Machine Company, Pittston, Pa., $1175; 67, G. & W. Mfg. Company, New York, $1043; 83, Hoisting Machinery Company, New York, $1000; 103, Lenher Engineering Company, New York, $1125; 184, Vermilye & Power, New York, $1415; 197, Williamson Brothers Company, Philadelphia, Pa., $1325; 214, Lidgerwood Mfg. Company, New York, $2225; 217, Mead-Morrison Mfg. Company, Cambridge, Mass., $1797; 225, J. B. Shannon Company, Philadelphia, Pa., $1080.

Class 123.—One pneumatic piston drill and one improved pneumatic chipping, caulking and beating hammer—Bidder 37, Chicago Pneumatic Tool Company, New York, $85; 59, Fairbanks Company, New York, $129; 89, Independent Pneumatic Tool Company, Chicago, Ill., $65; 91, Ingersoll-Rand Company, New York, $103.50 and $99; 137, Pittsburgh Pneumatic Tool Company, Canton, Ohio, $95; 161, Standard Railway Equipment Company, St. Louis, Mo., $104.

The following bids were opened November 5, Circular No. 467; item 1, four berm cranes, and item 2, four chamber cranes for the Isthmian Canal Commission:

Brown Hoisting Machinery Company, Cleveland, Ohio, item 1, $377,100; item 2, $195,300. Christiana Machine Company, Christiana, Pa., item 1, $226,648.50; item 2, $51,000, own specifications. Cleveland Crane & Car Company, Wickliffe, Ohio, item 1, $219,114; item 2, $120,720. J. M. Dodge Company, Nicetown, Philadelphia, Pa., item 1, $215,240; item 2, $99,296. Modern Steel Construction Company, Waukesha, Wis., item 1, $266,984; item 2, $94,796. Morgan Engineering Company, Alliance, Ohio, item 1, $332,700; item 2, $140,900. Shaw Electric Crane Company, Muskegon, Mich., item 1, $248,502; item 2, $158,340; Wellman-Seaver-Morgan Company, Cleveland, Ohio, item 1, $146,008; item 2, $90,384.

Awards have been made as follows for marine boilers for the Philippines under bids recently opened by the Depot Quartermaster, New York:

Vermilye & Power, New York, two 40-hp. boilers, $469 each; New Jersey Foundry & Machine Company, New York, six 50-hp. boilers, $435 each.

## Ashes Disposal from Ships.

It may seem simpler to get rid of ashes from the power plant of a steamship than from any other plant. There is no question as to where to dump them; except when the vessel is in a shallow harbor or channel there is no objection to dropping the ashes any time. The problem is not where to dump them, but how. The ordinary and older schemes are two in number—hoisting the ashes to the deck and discharging them through chutes, and forcing them above the water line by a jet of water and discharging through a bent pipe. Noise and dirt are objections to the first, which are emphasized on passenger vessels. The second soils the side of the vessel and sometimes injures the cargo by letting in water when in a rolling sea, and in deep ships it requires too much power.

The latest ash removing system discharges the ashes directly through the bottom of the vessel, employing for the purpose what is known as an ash expeller. The ashes are dumped into a hopper leading to a crusher, in which the clinkers are broken up, and below the crusher is a revolving drum in a water tight casing, which at one point of its revolution admits the ashes by gravity, and when revolved a half revolution dumps them into a spout leading through the bottom of the vessel. That the water may not prevent the egress of the ashes, compressed air is admitted to the drum just before it is open for discharging and the ashes are forcibly expelled completely clear of the bottom of the vessel. There is no dirt, noise, danger of leaky joints, damage to cargo, or unpleasantness to the passengers, and, as has already been demonstrated, there is no scoring of the vessel or fouling of the stern bearings or the injection inlet.

Some of the later transatlantic liners have already been equipped with this apparatus, and the new battleships North Dakota and Delaware are to be equipped with it. England is also building three battleships in which ash expellers will be employed. A special advantage in the application of this apparatus to war vessels is that there is no trail of ashes left behind the vessel. When ashes are dumped over the side in calm weather there is evidence of them on the surface as long as 12 hr. after.

The Colonial Steel Company, Pittsburgh, operating a plant at Colona, Pa., manufacturing tool steel, announces that its line of composite brass and copper metal, which it has been making for some time, has been extended to cover the rolling of bars and wire with brass and copper coating, the same as in sheets.

## The American Society of Mechanical Engineers.

The twenty-ninth annual meeting of the American Society of Mechanical Engineers will be held in the Engineering Societies Building, 29 West Thirty-ninth street, New York, December 1 to 4. The following programme is announced:

**Tuesday, December 1.**

Opening session, 8.45 p.m.—The president's address, "The Conservation Idea as Applied to the American Society of Mechanical Engineers," by M. L. Holman.

Social reunion.—The reading of the address will be followed by a social gathering, at which ladies will be especially welcome.

**Wednesday, December 2.**

Professional session, 9.30 a.m.—Annual business meeting. Reports of the Council, Tellers and Standing and Special committees. New business may be presented at this session. Papers: "The Engineer and the People," by Morris Llewellyn Cooke; "Aeronautics," by Major Geo. O. Squier, Acting Chief Signal Officer, U. S. A.

Professional session, 2 p.m.—Steam and power plant papers: "A Method of Obtaining Ratios of Specific Heat of Vapors," by A. R. Dodge; "The Total Heat of Saturated Steam," by Dr. Harvey N. Davis; "Fuel Economy Tests," by C. R. Weymouth; "An Automatic System for Firing Fuel Oil," by C. R. Weymouth.

Lecture on aeronautics at 8.15 p.m., by Lieut. Frank P. Lahm, of the Signal Corps, U. S. A., a member of the Aeronautical Board.

**Thursday, December 3.**

Professional session, 9.30 a.m.—Machine shop practice papers: "Efficiency Tests of Milling Machines and Milling Cutters," by A. L. De Leeuw; "Metal Cutting Tools Without Clearance," by James Hartness; "Interchangeable Involute Gear Tooth Systems," by Ralph E. Flanders; "Durability of Gears in Electric Railway Service," by Norman Litchfield; "Industrial Photography," by S. Ashton Hand.

Professional session, 2 p.m.—Miscellaneous papers: "Articulated Compound Locomotives," by C. J. Mellin; "Liquid Tachometers," by Amasa Trobridge; "Training Workmen," by H. L. Gantt; "An Averaging Instrument for Polar Diagrams," by Prof. W. F. Durand; "Salt Manufacture," by George B. Willcox.

**Thursday, December 3.**

Gas power section.—Simultaneous session, 2 p.m.—Business meeting. "Reminiscences of a Gas Engine Designer," by L. H. Nash; "Possibilities of the Gasoline Turbine," by Prof. F. C. Wagner.

Reception, at 9 p.m., to be held in the Engineering Societies Building. The president and president-elect will receive the members and guests in the auditorium.

**Friday, December 4.**

Professional session, 9.30 a.m.—Experimental data: "Physical Properties of Carbonic Acid and the Conditions of Its Economic Storage for Transportation," by Prof. R. T. Stewart; "The Slipping Point of Rolled Boiler Tube Joints," by O. P. Hood and Prof. G. L. Christensen; "Tests on Friction Clutches for Power Transmission," by Prof. Richard G. Dukes.

The United Sheet Steel Company, which is building a new plant at Mansfield, Ohio, for which Vollkommer & Co., Pittsburgh, are engineers, has awarded the following contracts: One structural steel building, 70 x 160 ft., with a 30-ft. and a 40-ft. leanto, to the Pittsburgh Bridge & Iron Works, Rochester, Pa.; four pairs furnaces, four sheet furnaces and two double annealing furnaces, for a four-mill plant, to Vollkommer & Hagan, furnace engineers and contractors, Pittsburgh. The boiler house will be 45 x 50 ft., and will contain Babcock & Wilcox water tube boilers, aggregating 730 hp., natural gas being used as fuel. Included in the equipment are a 75 kw. direct connected generator, a 20 ton electric traveling crane, heaters, pumps, &c. The plant is expected to be ready for operation about March 15.

The new blast furnace of the Ironton Iron Company, Ironton, Ohio, will be blown in this week.

# HARDWARE

THE organization of the retail Hardware trade is fairly complete in the Central and Western States, where there are large and efficient associations. On the Pacific Coast, too, the movement has been eminently successful, with associations which are thoroughly representative of the best elements of the trade, in which the matter of organization appears to be carried out with remarkable detail and system with a view to the definite advancement of the interests of the trade. In the East, on the other hand, the movement languishes. New England and the Middle States, while constituting a splendid business territory, have not entered into the association movement with anything like the spirit which characterizes the West. In the South, also, there is much to be accomplished, but progress is being made as evidenced by the manner in which merchants are getting together and forming associations which are full of promise.

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The organization of the retail Hardware associations has heretofore proceeded mainly along State lines, and, indeed, the small size of many of the States makes it difficult, if not impracticable, to bring together a sufficient number of Hardware merchants to make an organization which in membership can at all measure up to the great associations of the West. It is obviously inadvisable in such cases to attempt, as yet at least, to form separate State organizations. As the same time there is in the sections still unorganized abundant reason for the Hardware merchants getting together with a view, among other things, to the correction of trade abuses, from some of which their merchants suffer much more than do the merchants of the West. It is to be noted, too, that there is in them abundant material for good associations, as they have many enterprising, successful and up to date Hardwaremen who would give tone and character to the organizations and are capable of directing them along useful lines.

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The need and the opportunity for doing good work in extending the movement have been recognized by the officers of the Pennsylvania Association who have opened the doors of that organization to the Hardware merchants of neighboring States. In taking this action it was held

> that, inasmuch as there were no State Hardware organizations in the adjacent States, nor in the District of Columbia, and inasmuch as these States and District were the immediate neighbors of Pennsylvania on the east and south, and that inasmuch as the vital business interests of every Hardwareman in this territory lay in a powerful, well organized and well developed Hardware Association, and inasmuch as from this field there is the possibility of constructing the greatest retail Hardware Association in the United States; therefore the Hardware trade of New Jersey, Delaware, Maryland, and the District of Columbia be invited to become members in full standing, being entitled to all the privileges, powers and advantages of this organization.

In connection with this invitation, which has already been extended by the secretary, attention is called to the fact that the next convention is to be held in Philadelphia in February, and that measures are now being adopted to make it a memorable occasion with an instructive and inspiring programme. This effort, we understand, has already been received with approval by many representative merchants to whose attention the matter has been brought, and it certainly deserves the active cooperation of the trade. In this way a great organization can be formed under the leadership of the Pennsylvania Association. If, however, there should be, as it is hoped there will be, a large membership from the adjacent States there would probably be no difficulty in changing the name, if this were thought desirable, so as to give it a broader scope and thus cover the entire territory. This, however, is in the future. If any of the States should develop strength enough to have a separate organization there would be no difficulty in subdividing. At the present time these questions do not come up. At this juncture there is opportunity for the merchants of the States named to enter at once into association relationship under peculiarly auspicious circumstances.

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## Condition of Trade.

There is no apparent necessity for important qualification in referring to the continued improvement in the Hardware trade. Some lines which have been weakest in price show a tendency to steady themselves or advance slightly, but, with the possible exception of brass and copper products, it seems unlikely that there will be a general uprush in the immediate future. This is a cause of congratulation, indicating, as it does, the healthfulness of the recovery, and promising that the improvement will be sustained. Belated declines are taking place in certain lines, and a few competitive reductions have manifested themselves here and there, but whereas a few months ago no concessions would stimulate buying, the present irregularities are likely to be seized upon by the larger trade as affording a favorable opportunity for filling up stocks. Not that the market is characterized by a large amount of speculative buying; stocks are merely being brought back to a normal basis—a much more desirable state of affairs. Purchases have so long been confined to immediate requirements that the return to confidence and a more liberal policy is most welcome to manufacturers. Few of them, however, show a disposition to take contracts running beyond January 1. With crops safely harvested, with the political situation cleared, with financial wounds healing and security prices steadily advancing, with capital being released and renewed confidence manifested in reviving activity and enterprise in many quarters, he would, indeed, be farsighted who could discern on the horizon a cloud seriously menacing our prosperity in the coming year. Two great Hardware organizations, national in scope, are holding this week their annual joint conventions. With many who attend, a primary object will be to broaden their view and get in closer touch with general conditions as reflected in other lines than those in which they are directly interested and other localities than their own. Last year at Atlantic City the feature of the meetings was a general discussion of the business outlook. The tone was one of attempted reassurance in the first gust of the storm. The situation was exemplified in the threateniug clouds and turbulent sea; the tide was going out. This year, in contrast, the outlook is to be discussed in a milder climate, on the banks of the lower Mississippi, and who shall say that in the smiling skies of sunny Tennessee and the broad

but placid onward sweep of the Father of Waters may be found a happy augury for our financial and commercial progress in the year to come?

### Chicago.

Owing to the moderate rush of orders, composed in large part of held-up business, which came out immediately after election, the trade of last week was rather less active than that of the week preceding. This result, however, was discounted in pre-election forecasts and has no especial significance touching permanent developments. While rapid strides are not being made in the increase of business in its general volume, the outlook is one that invites a feeling of optimism respecting onward progress strengthened by the assurance that will safely lead to better things. Some lines of manufacture are gaining faster than others, but what deserves especial emphasis is the fact that none is losing ground. There is no disposition among the trade, either large or small, to buy speculatively in anticipation of a suddenly increased demand or higher prices, but there seems to be a little more latitude exercised in placing orders covering nearby requirements; in other words, orders are beginning to reflect the establishment of a greater degree of confidence, in the increased quantities specified. In several sections of the Middle West there is complaint of drought, which has interfered with the growth of winter grains, and is a source of much inconvenience in other respects. As is usually the case such conditions are not wholly without compensating benefits, one of which is seen in this instance in the better movement of drain Shovels and other Ditching Tools. Continued dry weather has made it possible to get into swamps and marshes for draining operations, which ordinarily are inaccessible except at great expense; the opportunities afforded by the drying up of such places are responsible for the considerable improvement noted in demand for Drain Tools. It is believed by the trade that the cheaper price named in the schedule announced for the coming season on Bronze Wire Cloth will result in more attention being given this trade, and consequently larger sales. In this, as in other lines, many customers are inclined to seek better qualities, and even the slight reduction made in Bronze Cloth will, it is thought, contribute to its popularity and increased sale. Dealers seem to favor the 50-ft. rolls in the Bronze and other higher priced cloth, since it enables them to carry an assortment of widths with a minimum investment. According to building statistics the prospects for new business from building operations is quite assuring. Permits for the construction of new buildings issued in the city of Chicago for the month of October represented 980 buildings at a total cost of $6,242,315, which exceeds the record for the corresponding period last year by $1,282,165.

### Cleveland.

W. BINGHAM COMPANY.—Confidence, the keynote of business, is rapidly and rightfully assuming its position in the business world. As soon as the election was over orders that had been placed contingent upon the result, were immediately released. It is reported that the New York Central Lines alone have placed orders to the amount of over $30,000,000, and other railroads throughout the country have done likewise, so in the aggregate it is estimated that in the near future over $240,000,000 will be expended by different railroads in rehabilitating and putting their roads and equipment in shape to take care of the business they now have; also the large amount that they expect to come to them in the near future.

Many factories, mines and mills all over the country that have been idle for the past months are starting up. Really it is a cause of gratification and thankfulness to know that the people of the country have rid themselves of politics and have settled down to good, solid business.

The general Hardware trade in this section has taken on an impetus since the election that is really remarkable in its dimensions in so short a time. Orders for immediate shipment are growing larger every day, better quantities and larger assortments. Holiday goods are being more freely bought, and it looks as though we shall enter the new year with a larger amount of orders for spring shipment than we had last year in some lines, and the future trade looks bright and hopeful.

The prices on general Hardware are low at the present time, and with the demand which is on now and which will increase in the near future, we believe it behooves the trade generally to sort up liberally. There are many kinds of goods that certainly must advance from 10 to 20 per cent. over present prices, and we advise customers to place their orders at once for Poultry Netting, Wire Cloth, Lawn Mowers, Shovels, Spades, Hand Agricultural Tools, Rubber Lawn Hose and Accessories, Screen Doors and Windows and Accessories; in fact, they cannot miss ordering anything in the line of general Hardware.

We feel very optimistic as to our trade the balance of this year, and are very hopeful of the trade that we shall have during the coming year. We are glad that we can write so cheerfully for we feel exactly as we write, and all indications point to a bountiful trade from now on. We feel that we have left the "cross-roads" and are started on the "highway of old Prosperity Road."

### St. Paul.

FARWELL, OZMUN, KIRK & CO.—There has been little of special interest in trade for the past month. Business has been fairly active and has run along in about the same way as it has done throughout the year. In fact, this uniformity in the year's business has been one of its most marked characteristics.

This uniformity during the fall has been kept up by the early marketing of grain, in which both the very favorable weather and also the heavy foreign demand for our surplus have played an important part. Minnesota autumns are generally fine, and the one we have just passed through has been one of the best. Farmers have been able to thresh and market their grain, to plow their land for the spring and to do an unusual amount of repair work in getting ready for winter.

These conditions have helped trade and collections, although doubtless the fact of farmers being so busy has kept them away from their trading centers more than the merchant would prefer to see. We are now up close to winter and trade will doubtless soon begin to fall off.

The country is pleased to have the election over. There has been generally as little excitement as can be expected in any presidential election, but still business was necessarily affected to some extent. There is more sentiment in business than we sometimes think, and none of us would choose a presidential election year as the most favorable time for business. It is over now, and we settle down to another four years' respite.

To the great body of business men the election of Mr. Taft is very satisfactory. He has been elected by the votes of democrats as well as republicans. Viewed from the standpoint of the business man Mr. Taft's election will have a healthy, stimulating effect on business. It insures a general policy of administration that is in accord with much the larger body of business men.

The tariff will be revised and also lowered to such extent as the requirements of the Federal Treasury will permit. In the treatment of corporations justice to all concerned may be expected. To all questions that may come before the country during the coming four years men believe that in so far as the influence of the president can reach them, it will be for good, and that he will bring to the consideration of every public question an equipment of mind and temperament as well as experience, that will insure a square deal for all, and a line of policy in general to be followed that will promote the prosperity of the whole country.

### Baltimore.

CARLIN & FULTON.—The excitement over the election having subsided, the country generally is settling down to business, and the trade shows an inclination to order more frequently, though purchases as yet are not heavy. We look for a cautious hand to mouth policy for at least the balance of the year, until the lumber, mining and manufacturing interests of the country become more generally active.

The agricultural sections have always been, and are

now, in excellent condition, but the entire business of the country cannot depend upon agriculture alone, though it is its mainstay.

From all accounts manufacturers are anticipating a very heavy demand for their products and are making arrangements accordingly, and inasmuch as the railroads are beginning to purchase equipment and rails, all indications point toward a renewal of business activity, which means a steady market for manufactured goods.

## St. Louis.

NORVELL-SHAPLEIGH HARDWARE COMPANY.—We do not indulge in political articles. In business, however, we must deal in facts. We try to give these facts as we see them.

The election is over. Since the election both the numbers and the size of our orders in dollars and cents have increased. We are very busy. Our sales increased over last year in September and we recorded another increase in October. In the first half of November we will make a very large increase over last year. We did not feel the full effects of the panic last year until the last half of November. Therefore these increases have been made over a good business last year.

It is evident many orders were held up pending the election. That is now out of the way and people are buying what they need. There is no doubt that there is a widespread feeling of confidence throughout the country. Wall Street is always the barometer. Stocks have advanced. Notable among these advances has been United States Steel common.

In the meantime, on account of the good feeling all round, also on account of the new era of high prices for farm products—high priced corn, high priced wheat, high priced hogs, &c.—we should, of course, have high priced Nails and Wire. Therefore we count on advances in these goods in the near future.

A good many laugh at our Christian Science friends; but there is, no doubt, good feeling and a feeling of confidence, and that "all is well along the Potomac" is an asset and can be capitalized. When one feels well the size of a dollar bill shrinks. When one feels a little blue the size of a dollar bill increases. The people are feeling well. Their dollar bills look small to them. They will now part with them easily. Presto! Why should prices not go up? Verily, the time of the harvest is here. All that is needed are the reapers.

Laying joking aside, there is a hardening of prices in many directions. A large number of manufacturers who are in position to be very well posted predict an enormous demand for Steel goods the coming spring. The wear and tear and consumption in a country like this are very great. For a year this has been going on without any repairs being made. All sorts of things have been used up. All kinds of makeshifts have been made. Good trucks have been taken from under the worn out box car and the good framework has been taken off the worn out trucks and placed on a good one. One good car has been made of two poor cars. But the cold fact remains that only one car exists where two cars existed before.

The hands of the purchasing agent have been tied by orders from headquarters. Specifications from the stock department have had cobwebs grow over them in the buying department.

Cash has piled up in banks because all were paying off and few were borrowing. This accumulated money has led to offerings at low rates of interest.

Now with no radical changes in sight it is only natural to conclude new enterprises will start. The American nation is too nervous to sit down much longer than one year with folded hands. The possibilities of the country are too great. With plenty of money in bank at low rates, active men with good credit cannot resist the golden opportunities that lie all round them. In the nature of present conditions business is bound to be good.

But how soon we forget the lessons of the past. Is it well to advance prices so rapidly? Is it well to be too greedy? Is it not better to handle the situation with more poise and deliberation? There are many problems to work out. There are many inequalities and unjust conditions to be adjusted. The Republican party has promised a revision of the tariff. Every man who knows anything in the Hardware line knows what unfair conditions are put upon the distributing trade and the consumers of this country by the tariff on many lines of our goods. We will watch with interest to see what is done by the Republican party on these lines and how long it takes to do it.

Next week our sister city of Memphis will entertain the conventions of the National Hardware Association and the American Hardware Manufacturers' Association. There will be a large gathering. Soon special trains will be speeding southward. All the great manufacturers and all the great jobbers in the Hardware line will be represented. We are sure the Hardwaremen of Memphis will do their part in extending royal entertainment to the makers and purveyors of Tin Pans, Padlocks and Rat Traps. Representatives of the National Retail Hardware Association will also be present.

We are sure we can say, without being accused of egotism, that this country has good reason to be proud of her Hardware manufacturers, of her Hardware jobbers and of her Hardware retail merchants.

## Louisville.

BELKNAP HARDWARE & MFG. COMPANY.—After us the Deluge might have been written by all but one of the political parties whose names distended the ballots all over the country. That Deluge has made good its forecast in the rise of the tide of orders rolling in, and in general preparation for business, if not immediate, at least for the early part of the coming year. There is a firm opinion that nothing is going to be cheaper, and the chances are that some advances will be realized even in the staple articles. There is an excellent inquiry for everything made of Wire, Plain Wire, Fencing, Nails, &c.

The minor advances already made in raw materials and scrap, too, have made the mills put a higher appreciation on their holdings, which the knowing ones have been increasing during the time of apathy and dullness. The railroads are busy, not only with a growing tonnage, but by reason of the fact that the long drouth has practically put a stop to navigation and hardly anything bigger than a bar of Ivory soap has been able to float in the Ohio River for a couple of months.

There was a little rain a few nights ago, but hardly enough to induce the farmers to haul their wagons out of the creek beds where they have been standing to keep the tires from dropping off. Still it gave us ocular evidence that rain had not altogether ceased on the face of the earth, and the country was treated as early as yesterday to an appreciable fall of snow as far South as Tennessee. This is very early for cold weather, and will set the coal mines in operation and revive a somewhat languishing industry. They have had a great deal of complaint in Virginia, West Virginia, Kentucky and Tennessee now for several months.

The meeting of the Hardware manufacturers and of the National Hardware Association at Memphis during the coming week is, of course, an important function among Hardwaremen. We are counting on seeing some of our friends who are not seen in Louisville often enough. We have set our gins to catch them "comin' or gwine" as the case may be. This sounds a trifle ambiguous, possibly we had better say traps for bear—the game season is on.

## Nashville.

GRAY & DUDLEY HARDWARE COMPANY.—The election is over, and whether all of us were, or were not for Taft, we are for him now. The Hardwaremen the country over are sitting steady in the boat, and the majority of them are rejoicing at Taft's election.

The manufacturers are happy. They are inspiring their representatives with confidence, and the same confidence will be injected into the jobber, thence to the dealer; in fact, the country over seems to have gotten an inspiration "via wireless."

Stocks are advancing. The cotton growers are asking higher prices, the tobacco growers are asking still higher prices, and they are going to realize some higher prices, too. In fact, the manufacturers are talking advances, and are showing some advances. The orders are

going to pour into them, and they will have still further grounds for advancing their prices.

For the past 60 days dealers while buying conservatively have not been so extremely conservative as during the six or eight months previous. They are assorting their stocks much better, though still buying in smaller quantities than they will naturally do from now on.

Somebody is turning money loose, too. Collections have shown much better during the past few weeks. The facts are, we have some faith, and we are pretty happy in that faith. If we have a howler in our midst, we will shoot him on sight.

### Philadelphia.

SUPPLEE HARDWARE COMPANY.—The Hardware conventions which are being held this week at Memphis will afford a good opportunity to ascertain from the manufacturers and jobbers present what improvement in trade has taken place since the Presidential election. The uneasy waiting disposition which held trade in check quite largely from 30 to 45 days before the election raised an obstacle with not only the consumers of products, but naturally extended to the retail trade, and, of course, wholesale merchants and manufacturers were compelled to conduct business accordingly.

Recent conversation with some manufacturers shows they are now greatly encouraged. Their trade has considerably increased, some saying that their stock on hand was entirely sold and a number of their employees who had been laid off taken back to work. Several manufacturers have reported to the banks in which they make their deposits that orders have wonderfully increased, many of them for goods to be delivered after January 1, and others for immediate requirements. Some of the daily papers have printed interviews had with quite a number of manufacturers, many of whom stated that their trade had increased 20 to 30 per cent., and some have been cleaned out entirely of goods wanted for Christmas sales.

The crisis of the last year has really been less severe than any extending back to 1856. Look back and compare it with 1893. During the first year of the crisis beginning at that date the writer was called upon by a man who desired to have his son taken into our employ. The latter had had no experience in Hardware, but had lost his position with a manufacturer whose trade had decreased. The father said his two daughters, who were stenographers, were also thrown out of employment. Each of the daughters had received $10 a week and the son had received $12 per week. The father's salary had been reduced from $18 to $15 a week. The income of the family had thus been reduced from $50 to $15. Now, nothing like this has occurred during the past year, although we feel that some manufacturers who closed their works had it in mind, and as a result we have suffered more than would have been the case if they had not feared a repetition of former experiences.

Now, why is it that we are so quickly returning to normal conditions? Is it not owing to the wonderful trade throughout the country since 1900, brought about by the large crops harvested in all sections, especially in the West, and the prosperous financial conditions over the entire country as a result of which mortgages have been paid, and large sums of money saved by employees deposited largely with banks, trust companies, and especially savings banks.

The change to colder weather should now bring forward sales of goods required during midwinter.

### Portland, Oregon.

FAILING-MCCALMAN COMPANY.—Since the election our business in this section has gone ahead with an apparent increase in volume, though, of course, it is too soon to be able to determine definitely. We can only say this, that lumbermen look for better prices, and the manufacturing plants are running full time, and, in fact, everything looks particularly "rosy." Whether this is merely temporary or permanent we, of course, cannot say, but to us here it looks permanent as far as the Pacific Northwest is concerned. We can see no symptoms which would indicate anything like a setback in the revival of prosperity. We may not be able to show such a big increase as some other sections of the country, but if this should be true the reason lies in the fact that all through the past year conditions in this territory have probably been better than they have been elsewhere, while for the last month before the election business in this territory was fully as good, if not better, than in the corresponding period of 1907.

## NOTES ON PRICES.

**Wire Nails.**—Increased activity is noticed in the Wire Nail market, orders being placed more freely and specifications are received by the mills in good volume. Indications point to a larger output for November than for the previous month. These conditions result from returning confidence in a revival of trade and in the belief that there will be no reduction in prices. According to reports, regular prices are being maintained. Quotations are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

| | |
|---|---|
| Carloads, to jobbers | $1.95 |
| Carload lots to retail merchants | 2.00 |
| Less than carloads to jobbers | 2.00 |
| Less than carloads to retail merchants | 2.10 |

*New York.*—Lack of activity in the local market is shown by a somewhat smaller distribution among retail merchants. Nails are being sold every day, but the demand is comparatively light. Nails are held on the basis of $2.30 per keg in small lots at store, but some sellers are occasionally inclined to shade this figure.

*Chicago.*—Business in Wire Nails is reported by the leading interest as fully up to normal in volume. All signs point not only to a sustained demand, but even to a gradual increase which is expected to bring the present month out ahead of October. The average daily booking of orders is now about equal to the mill capacity engaged. Prices are reported to be absolutely maintained. Quotations are as follows: $2.13 in car lots to jobbers, and $2.18 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

*Pittsburgh.*—We note an increasing demand for Wire Nails and specifications against contracts are coming in quite freely, so that present conditions in the trade are referred to by the manufacturers as being very satisfactory. The recent revival in the trade has made the impression strong that there will be absolutely no reduction in prices of Wire Nails, but possibly an advance later on should conditions warrant, and this is having the effect of causing buyers to place orders more freely, with the result that shipments by the mills for this month are far in excess of the same period in October. The market is very strong, and the mills advise us they are maintaining prices absolutely. Quotations for base sizes are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

| | |
|---|---|
| Carloads, to jobbers | $1.95 |
| Carload lots to retail merchants | 2.00 |

Galvanized Nails are quoted at $1 over the price of the regular Nails.

**Cut Nails.**—While buying is restricted largely to present requirements, an improvement is reported in the volume of business, including new orders and specifications on contracts. The general price for Steel Cut Nails is $1.80, base, per keg, f.o.b. Pittsburgh, for less than carloads, and $1.75 for carloads and larger lots. In the Western market Iron Cut Nails are held at an advance of 10 cents per keg over Steel Cut Nails, but this differential is not observed in the East.

*New York.*—Demand for Cut Nails is about in the usual proportion to that of Wire Nails in the local market. Steel Cut Nails are held on the basis of $2.15 per keg for small lots at store, but this price is not strictly adhered to by all sellers.

*Chicago.*—There is some improvement noticeable in the demand for Cut Nails, both in the amount of new business offered and volume of specifications. Jobbers are ordering conservatively, though necessarily a little

more liberally than for some months. We quote Chicago prices as follows: In car lots to jobbers, Iron Cut Nails, $2.08; Steel Cut Nails, $1.98.

*Pittsburgh.*—In sympathy with conditions in the general Steel trade, demand for Cut Nails is showing betterment, both in new orders being booked by the mills and also in specifications on contracts. As yet the trade is buying largely for present requirements, but is showing some disposition to place more liberal orders. The general market is $1.80, base, per keg, f.o.b. Pittsburgh, but $1.75 is made on carloads and over. In the Western market Iron Cut Nails are held at an advance of 10 cents per keg over Steel Cut Nails, but this differential is not observed in the East.

**Barb Wire.**—Considering the lateness of the season, demand is fairly good, being stimulated by the continued mild weather. New business received by the mills is comparatively light, but specifications on contract orders are larger in volume. According to reports regular prices are being maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

| | Painted. | Gal. |
|---|---|---|
| Jobbers, carload lots | $2.10 | $2.40 |
| Retailers, carload lots | 2.15 | 2.45 |
| Retailers, less than carload lots | 2.25 | 2.55 |

*Chicago.*—Specifications against contracts are going forward at a good rate, and considering the season a fair amount of new business is being booked. In common with other forms of Fencing, the situation is, all things considered, fairly satisfactory in present results and prospective business. Quotations are as follows: Jobbers, Chicago, car lots, Painted, $2.28; Galvanized, $2.58; to retailers, car lots, Painted, $2.33; Galvanized, $2.63; retailers, less than car lots, Painted, $2.45; Galvanized, $2.75; Staples, bright, in car lots, $2.25; Galvanized, $2.55; car lots, to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

*Pittsburgh.*—The demand has been only fair for some time, but the continued mild weather is having the effect of bringing out some orders that otherwise would have gone over until next spring. The demand for spring trade in the Southern territory is expected to open next month or very early in January, when a material increase in orders is expected. The mills advise us that the market is firm, and that regular prices are being maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

| | Painted. | Gal. |
|---|---|---|
| Jobbers, carload lots | $2.10 | $2.40 |
| Retailers, carload lots | 2.15 | 2.45 |
| Retailers, less than carload lots | 2.25 | 2.55 |

**Plain Wire.**—A marked improvement in demand is evident from the amount of new business received by the mills from manufacturers of Wire Fencing, also in specifications on contracts. Prosperity in agricultural communities gives good ground for anticipating a large demand for Wire Fencing. Quotations per 100 lb. to jobbers in carload lots are as follows, on a basis of $1.80 for Plain and $2.10 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the price to retailers being 5 cents additional:

| Nos. | 6 to 9 | 10 | 11 | 12&12½ | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|
| Annealed | $1.80 | 1.85 | 1.90 | 1.95 | 2.05 | 2.15 | 2.25 | 2.35 |
| Galvanized | 2.10 | 2.15 | 2.20 | 2.25 | 2.35 | 2.45 | 2.85 | 2.95 |

*Chicago.*—Encouraged by the prospects of a good Fence trade, manufacturers are ordering more freely than for some time. In view of the prosperous condition of the agricultural communities there seems to be nothing in the way of a steadily growing demand, and dealers are exhibiting more confidence in anticipating requirements. It is stated that mill prices are being steadily maintained. We quote as follows: Car lots to jobbers, $1.98, f.o.b. Chicago, and to retailers, $2.05.

*Pittsburgh.*—A good deal of new business is being placed, and specifications against contracts are being very freely received by the mills. Fence manufacturers are more disposed to place orders ahead, and are anticipating a fair season. The general improvement in trade is reflected strongly in demand for Fence Wire, which so far this month has been quite active. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

| | Painted. | Gal. |
|---|---|---|
| Jobbers, carload lots | $2.10 | $2.40 |
| Retailers, carload lots | 2.15 | 2.45 |
| Retailers, less than carload lots | 2.25 | 2.55 |

**Bolts, Carriage, Machine, Etc.**—An advance in Bolts approximating 5 per cent. was made last week by leading manufacturers who assert that their goods have been selling on an unreasonably low level, and that a moderately better price is justified by the improved demand. The market on average lots may now be represented by the following quotations:

| | Discount. |
|---|---|
| Common Carriage Bolts, ⅜ x 6, smaller and shorter, cut thread | 75 and 5 % |
| Common Carriage Bolts, ⅜ x 6, smaller and shorter, rolled thread | 75, 10 and 5 % |
| Common Carriage Bolts, longer or larger than ⅜ x 6 | 70 and 5 % |
| Machine Bolts, ⅜ x 4 or shorter and smaller, with H. P. or C. P. Plain Nuts, cut thread | 75 and 10 % |
| Machine Bolts, ⅜ x 4 or shorter and smaller, rolled thread | 75, 10 and 5 % |
| Machine Bolts with H. P. or C. P. Plain Nuts, larger or longer than ⅜ x 4 | 70 and 10 % |
| Machine Bolts, all sizes, with C. & T. Nuts | 70 % |
| Machine Bolt Blanks | 70 and 10 % |
| Bolt Ends, with H. P. or C. T. Plain Nuts | 70 and 10 % |
| Bolt Ends, with C. & T. Nuts | 70 % |
| G. P. Coach Screws | 80 % |
| Cone Point Lag Screws | 80 and 5 % |
| Forged Set Screws | 70 % |
| Tap Bolts | 60 % |

The following new price-list on Gimlet Point Coach Screws was adopted November 13, to take effect at once:

*G. P. Coach Screws, Per 100.*

| Lengths. Inches. | ⅝ in. | ¾ in. | ⅞ in. | 1 in. |
|---|---|---|---|---|
| 2 | $6.00 | .... | .... | .... |
| 2½ | 6.50 | $9.20 | .... | .... |
| 3 | 7.00 | 9.90 | $15.00 | .... |
| 3½ | 7.50 | 10.60 | 16.00 | $22.00 |
| 4 | 8.00 | 11.30 | 17.00 | 23.30 |
| 4½ | 8.50 | 12.00 | 18.00 | 24.60 |
| 5 | 9.00 | 12.70 | 19.00 | 25.90 |
| 5½ | 9.50 | 13.40 | 20.00 | 27.20 |
| 6 | 10.00 | 14.10 | 21.00 | 28.50 |
| 6½ | 10.50 | 14.80 | 22.00 | 29.80 |
| 7 | 11.00 | 15.50 | 23.00 | 31.10 |
| 7½ | 11.50 | 16.20 | 24.00 | 32.40 |
| 8 | 12.00 | 16.90 | 25.00 | 33.70 |
| 9 | 13.00 | 18.30 | 27.00 | 36.30 |
| 10 | 14.00 | 19.70 | 29.00 | 38.90 |
| 11 | 15.00 | 21.10 | 31.00 | 41.50 |
| 12 | 16.00 | 22.50 | 33.00 | 44.10 |

As will be noted in the above quotations, the market on Coach Screws may be represented by a discount from this list of 80 per cent.

**Sash Weights.**—There is a disposition evinced by some manufacturers of Sash Weights to look for an improvement in the market, based on the undoubted facts that raw material shows an upward tendency; that there is a noteworthy increase in projected building operations, leading to a better demand, and finally that larger buyers now show a willingness to increase their stocks. In a general way it may be stated that the extreme quotations of some founders are from 50 cents to $1 a ton higher than a short time ago. In many sections, however, prices are still kept down by the sharpness of competition, especially where one or two new manufacturers have come into the market.

**Wire Screen Cloth.**—In giving the new prices on Wire Screen Cloth in our last issue the price on Bronze Cloth was erroneously applied to 12-mesh. The quotation mentioned, $6.50 per 100 sq. ft., is for 14-mesh, which is the standard grade of Bronze Wire Cloth, and that usually quoted by manufacturers.

**Conductor Pipe.**—Recent advances in Sheet Copper are being reflected in Copper Conductor Pipe and Eaves Trough. Prices on these products are firm and in some cases have been withdrawn altogether, manufacturers quoting only on actual orders. It is believed that a material advance may take place at any time.

**Copper and Brass Goods.**—The market for Copper and Brass goods is much stronger, and further advances have been made in both classes of material. On the 16th inst. Sheet Brass was advanced to 16 cents, base, per pound, Brass Wire to 16¼ cents, base, Brass Rods to

16¼ cents, base, Brazed Brass Tubing to 22½ cents, base, Brass Seamless Tubing to 19 cents, base, and Tobin Bronze to 18 cents, base per pound. On the 13th Seamless Copper Tubing was moved up to 23 cents, base, and Copper Rivets and Burs are now 50 per cent. discount in fair lots.

**Rivets.**—On Structural and Boiler Rivets an advance of 10 cents per 100 lb. has been announced. The manufacturers' price on Structural Rivets is now $1.90 per 100 lb., and on Boiler Rivets $2 per 100 lb. No prices can be named to represent fairly quotations on Tinners' and Miscellaneous Rivets, which continue low and show irregularity approaching demoralization.

**Nuts.**—Simultaneously with the advance in Bolts, &c., an advance was made in Hot Pressed and Cold Punched Nuts, amounting to one-tenth on all varieties. The market may be quoted as follows:

| | Off list. |
|---|---|
| Hot Pressed Square Nuts, blank or tapped | 5.80 |
| Hot Pressed Hexagon Nuts, blank or tapped | 6.30 |
| Cold Punched Plain Square Nuts, blank or tapped | 5.30 |
| Cold Punched Plain Hexagon Nuts, blank or tapped | 5.90 |
| Cold Punched C. T. & R. Square Nuts, blank or tapped | 5.70 |
| Cold Punched C. T. & R. Hexagon Nuts, blank or tapped | 6.50 |

**Window Glass.**—From the manufacturers' viewpoint the situation is regarded as anything but encouraging. The formation of the manufacturers' selling organization is considered practically as good as abandoned, as the committee has failed to secure a large enough percentage of pot capacity to secure the necessary financial backing. It is estimated that there is now working nearly a 1700 pot hand operated capacity, which, with the output of the machine factories is looked upon as about twice the quantity of Glass the country is purchasing. Manufacturers as a rule find it difficult to meet their payrolls without offering inducements in the way of price to move their Glass, and it is believed that is often done at an actual loss. As far as can be seen there is no silver lining to the cloud overhanging the manufacturing part of the Glass business. If relief does not come in some form in the near future it is considered probable that the financially weak factories will have to close down. Manufacturers' quotations, both for hand operated and machine made Glass, from manufacturers' list, January 1, 1901, are 90 and 35 per cent. discount for single and 90 and 40 per cent. discount for double strength Glass. As before intimated, these discounts are not always adhered to by makers of hand made Glass. Minimum prices recommended by the Eastern Jobbers' Association from jobbers' list, October 1, 1903, are as follows: All sizes single and double strength Glass, covering territory east of Chicago, 90 and 20 per cent. discount. These prices are also more or less elastic, according to circumstances.

**Rope.**—A somewhat better feeling is evident in the Rope market, including more liberal orders and less of an inclination on the part of buyers to shop around for low prices. Manufacturers appear to be in a more complacent frame of mind, as most of them have worked off their high priced stock of fiber, the Cordage made from which has in most cases been sold at a loss. This they pocket and have purchased more raw material at the lower present cost. Manufacturers also seem less eager to make concessions in price to secure orders. The market is reasonably strong at the following quotations for Rope, 7-16 in. in diameter and larger, are as follows: Pure Manila, 8¾ to 9 cents; Pure Sisal, 6¾ to 7 cents. Mixed grades of both kinds grade down in price according to quality. Jute Rope, ¼-in. and up, No. 1, 6½ to 6¾ cents; No. 2, 6 to 6¼ cents.

**Linseed Oil.**—Under the stimulant of manipulation the Seed market has advanced 8¾ cents per bushel during the week under review. Prices of Oil have also been advanced, accompanied by a light demand, as is usual in the face of advances. Those who placed contracts for Oil previous to the recent advances are sending in specifications for shipment. Quotations for 5-barrel lots are as follows: State and Western Raw, 47 cents per gallon; City Raw, 48 cents per gallon. Boiled Oil is 1 cent advance on Raw.

**Spirits Turpentine.**—Business at this point during the week under review has been moderate. The market has not been regarded as strong at ruling prices, while some of the manufacturing interests who use Turpentine will close down next month for annual repairs. The New York market is represented by the following quotations: Oil Barrels, 41½ to 42 cents; Machine Made Barrels, 42 to 42½ cents per gallon.

## The Gas Appliance Exposition.

THE exposition to be given in Chicago by the National Commercial Gas Association, with the co-operation of the American Gas Institute, from December 7 to 12, is developing into the most complete and comprehensive exhibit of gas appliance which has been seen in this country. The demand for space on the floor of the exposition has been so great that but little remains. An examination of the list of applicants shows a great diversity, and from the present indications practically every appliance known to gas users and gas companies will be on display.

The plans for illumination are very elaborate, and it is doubtful if any exposition hall has ever been so well lighted as will be the First Regiment Armory during the show. One of the difficult problems which is being solved by the Exposition Committee is that relating to the receipt and handling of exhibits and the placing of these exhibits in the spaces secured by the exhibitors. Arrangements are also being made for the proper pipe connections. This remarkable service, which has been undertaken by the committee for the exhibitor, will relieve him of an enormous amount of detail, but the aggregate responsibility thrown upon the committee is not light.

The most elaborate plans have been made and a contract entered into for the complete decoration of the interior of the armory. These decorations will be most beautiful. In this connection it is interesting to note that the contract provided that all decorations shall be absolutely fireproofed. The stringent rules regarding the decoration of individual booths which are made necessary by the nature of the exhibit, will be enforced, as the proper fireproofing of such decorations would be impossible, and further decorations of the hall and the charming completeness of the sections themselves will be not only sufficient, but as much as can properly be utilized from an artistic point of view.

Those who are considering the desirability of exhibiting are urged to put themselves immediately in touch with John C. D. Clark, chairman, Committee of Arrangements, 157 Michigan avenue, Chicago. The Gas Appliance Exposition is not promoted by outsiders, and is strictly an exposition of Gas Appliance under the jurisdiction and complete control of a committee composed of the two associations above named. The price charged per space is just enough to cover the expense of the exposition, and the committee of the associations is taking a very great burden and carrying it without compensation for the benefit of the industry as a whole.

THE BILLINGS & SPENCER COMPANY, Hartford, Conn., states that for the convenience of its customers in and around New York City, arrangements have been made to carry a large stock of the company's goods with Patterson, Gottfried & Hunter, Ltd., 211 Centre street. The company requests its patrons in the vicinity of New York to send orders direct to this New York house and they will be filled promptly at factory prices. All goods taken from this stock will be invoiced from the factory office in Hartford in the usual way.

IN noticing the establishment of several new connections with American manufacturers by C. K. Turner & Son, 116 Broad street, New York, in our last issue they were inadvertently alluded to as export commission merchants. The fact is that they represent directly American manufacturers and their business is solely with export commission merchants in this country, the firm doing no direct business abroad.

THE firm of Goddard & Owens, Braymer, Mo., Hardware and Tinware, has been succeeded by A. Wells & Son.

# Correspondence.

## Revision of Laws as to Restraint of Trade.

*To the Editor:* In your issue of the 12th inst. you refer to the necessity of some action by the Hardware Merchants and Manufacturers, who will meet in Memphis next week, in revising the laws regarding restraint of trade, so as to "permit such co-operation and agreements as are reasonable and necessary." This is a matter of considerable importance to all the merchants and manufacturers of the country and has been somewhat overlooked, because while the law as it stands, though declaring illegal all such combinations, has not been enforced against agreements that are on their face reasonable and necessary, it is nevertheless better that such agreements should be brought under the protection of the law and made legal. I understand that Seth Low, president of the Civic Federation, has drafted such a law, which has lately been submitted to President Roosevelt and meets his approval. The Hardware associations would do well to look into this proposed legislation, and if found satisfactory to give it their combined support.

It may interest your readers to know that on December 28, 1886, I read before a literary club of this city a paper on "Competition and Monopoly," which was published in the Rochester *Post Express* of April 25, 1887, at the request of the editor. After discussing the advantages and disadvantages of competition and monopoly both from an economic and social point of view, the following conclusion was reached:

> We therefore seem to be reduced to two alternatives for monopoly regulations, carefully guarded franchises or official commissions, and it is obvious that the first requires something in the nature of the second to see that the privileges granted are not overstepped. These commissions are growing in favor and seem to be the most efficient means yet devised for preventing the dangers of monopoly. Now these commissions are simply extensions of our judicial system applied to industrial organization and conditioning the methods of its working. Further, they leave the ownership of property in private hands, and therefore insure its most efficient and economical administration. And lastly, their work is in accord with what all schools recognize as the fundamental function of government, the administration of justice.

I do not wish to be understood as claiming any special originality for this conclusion, for my paper quotes from a number of well-known writers of political economy to sustain the contention that competition cannot be relied upon to regulate all kinds of business under modern conditions, and to prove that competition becomes a destructive force in a number of instances. I was particularly indebted to President (then professor) Arthur T. Hadley's book on "Railroad Transportation, Its History and Its Laws," published the year the paper was written, and to a couple of articles written by Prof. Henry C. Adams about the same time. My own contribution to the discussion consisted chiefly in calling attention to the fact that the beginning of the movement toward business combinations that has ended in the so-called trusts was to be found in the necessity for regulating what is known as "cut throat" competition. Those most vitally interested in the struggle—namely, competitors—were among the first to discern the evils of unregulated competition and to devise means for overcoming them. It is true that all these methods were planned for selfish ends and that consequently they each and all took one shape, monopoly, or attempts to create a monopoly, more or less complete.

Twenty-five years of business experience at that time and over 20 more added since have convinced me that if such trade agreements as I have referred to above had been early brought under the rule of law, instead of being either ignored or considered illegal, many of the evils that we are now trying to control by legislation might have been avoided. ROBERT MATHEWS.

ROCHESTER, N. Y., November 13, 1908.

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SELAH B. STRONG has just been elected president of the Mallory-Wheeler Company, vice Russell Hotchkiss, who has resigned as president and director. Lewis D. Boggs, who has long been connected with the company, is vice-president, and Frank E. Sims, likewise an old employee of the company and its secretary, will assume the management of the factory at New Haven, Conn. Mr. Boggs as heretofore will make his headquarters in New York at 23 Warren street.

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## Price-Lists, Circulars, Etc.

*Manufacturers in Hardware and related lines are requested to send us copies of catalogues, price-lists, &c., for our Catalogue Department in New York; and at the same time to call attention to any new goods or additions to their lines, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.*

G. WHITE AXE COMPANY, INC., Honesdale, Pa.: A folder entitled "Good and Bad Axes, How They Are Made," is devoted to a description of the company's Stub-and-Twist Axes.

WEST HAVEN MFG. COMPANY, New Haven, Conn.: Illustrated catalogue devoted to Hacksaw Blades and Frames, Plumbers' Hollow Mill Saws and two styles of Power Hack Saws.

BUTLER BROS., Chicago: Christmas edition of "Our Drummer" catalogue, referring to seasonable and especially to holiday goods, many of which are of interest to the Hardware trade. Some fancy articles and sets are offered in holly boxes, appropriate for Christmas gifts.

PIKE MFG. COMPANY, Pike, N. H.: Illustrated booklet of Pyko Grinders. These are shown in a number of styles; also a Pyko Foot Power Attachment.

RED JACKET MFG. COMPANY, Davenport, Iowa: Catalogue and price-list No. 37, devoted to Red Jacket Pumps, Cylinders and Supplies. The company's specialties include the Red Jacket So-Easy-to-Fix Pumps, Quick Repair and Never-Fail Cylinders.

GLEN MFG. COMPANY, Elwood City, Pa.: Catalogue No. 26, relating to Hartman Fence and Specialties, including Steel Picket and Crimped Picket Fences, Stockade Woven Wire Fence, with all Gates, Posts, Railings, Fittings, &c.; also Tree Guards, Hitching Posts, Panel Farm Fence and Wire Mats and Matting.

BONNEY VISE & TOOL WORKS, INC., 3011-3015 Chestnut street, Philadelphia, Pa.: 1909 catalogue illustrating Bonney Amateur Bench, Champion, Machinists', Farmers', Coachmakers' Vises; also Pipe, Combination, Adjustable S Nut and Pipe, Engineers', Alligator and Always-Ready Wrenches.

SOUTHINGTON HARDWARE COMPANY, successor to Southington Cutlery Company, Southington, Conn.; New York office, 42 Murray street: Illustrated catalogue relating to Curry Combs. The company has discarded numbers that have had but little sale and added some new patterns, making the whole line sellers in some section.

DREW ELEVATED CARRIER COMPANY, Waterloo, Wis.: Illustrated descriptive catalogue devoted to Automatic Carrier Systems, Manure Loaders, Stanchions, Galvanized Steel Tanks and Feeding Troughs, Barrel Carts, Feed Carriers and Grub Tank Heaters.

OMAR MOTOR COMPANY, Newark, N. Y.: Illustrated catalogue of Browniekar Motor Car for young people, with gasoline engine, the ignition of which is by jump spark from dry cells. The maximum speed is 10 miles an hour.

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WHAT is designed to be one of the finest warehouses in the far West is being constructed at Salt Lake City, Utah, by the Salt Lake Hardware Company. The building will be of brick and concrete construction, 165 x 286 ft., five stories high. It will contain about 6 acres of floor space, and is to be equipped with modern facilities for handling light and heavy goods both in and out. Shipping platforms will accommodate eight carloads of merchandise which can be loaded or unloaded at the same time. In addition to this evidence of expansion the company is working on a large catalogue which it expects to have ready for distribution about March or April of next year.

# Holiday Trade in the Hardware Store.

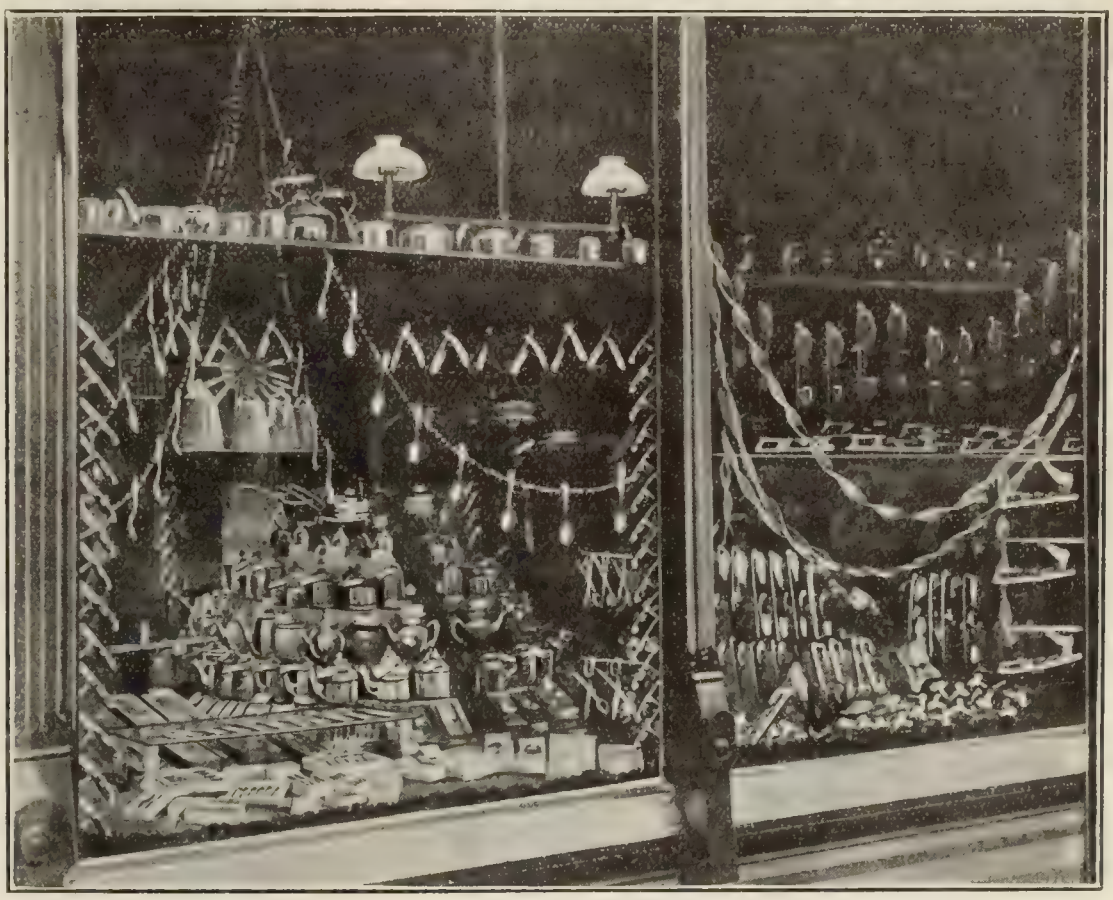
## A Holiday or Fancy Goods Window.

A HOLIDAY WINDOW of fancy goods, installed a year ago by C. Morgan's Sons, Wilkes-Barre, Pa., is illustrated herewith. The scheme of the window was obtained by first arranging a border for the plate glass, so that the main display would be seen through a sort of frame. This was done by sticking Pocket Knives with open blades on both sides of the window frame, stringing a line of open Razors across the top and laying a rope of ground pine in the bottom. The steps shown in the right hand corner at the rear were built up to form a quarter circle, the mirror back and sides completing the illusion and showing a full circle. Brass Safety Chain was hung from the electric drop in the center to the four corners of the window, and on the festoons were fastened Silver Spoons and Knives. Brackets extended out from the window frames and were trimmed with Shears.

The bottom of the window was dressed with fancy silver pieces and sets in display boxes, Nut Picks, Carvers, &c. A plate glass shelf rests on four glass candlesticks, and is used for displaying Razors, Safety Razors, fine Pocket Knives and other small wares. A similar shelf resting on pedestals of mahogany was trimmed with Pearl Handled Table Knives. On the circular steps in the corner, already referred to, are Chafing Dishes, Tea and Coffee Pots, Tea Kettles, &c.

Referring to their window dressing methods, the firm finds that plate glass shelves can be used to good advantage in showing small wares, because they bring them near the line of vision of the passers-by. Another advantage is that they do not hide the rest of the trim, and they also relieve the flat appearance which would spoil the effect unless some elevated stands or false bottoms are used. Whenever possible the firm uses price cards, which it considers invaluable in a good window, making an illustrated price-list of what would otherwise be only a pretty arrangement of goods. People are always interested in prices, and goods are frequently sold by being marked, which otherwise would not even elicit an inquiry.

Summing up the firm acts on the theory that show windows should be as attractive as possible ,should be changed once a week, and should be dressed by that employee who has original and artistic ideas and is patient in their execution.



*A Fancy Goods Window.*

## Inverted Gas Burners.

THE sale of Inverted Gas Burners having incandescent Mantles is steadily increasing, partly owing to the great progress made in perfecting the Burner, but more largely, perhaps, on account of the character of a shadowless light provided for reading and other general purposes.

This is a merchantable article easily handled by Hardwaremen, which can be made a source of profit wherever light is furnished by means of artificial or natural gas, in conjunction with goods more commonly recognized as Hardware stock.

The Inverted Burner is said to have first assumed practical form in Germany some years ago, and it has been widely adopted throughout Europe.

The Alton Mfg. Company, 99 Warren street, New York, claims credit as the pioneer in manufacturing and introducing this form of light in the United States, this company having adopted the German principles with such improvements as its skill and experience have proved desirable. The claims made for the Inverto Burner by its manufacturer are that it gives several times the illumination of the ordinary gas jet with a consumption of less gas and without shadow, flicker or sputter. Burners of this system may be readily attached to standard gas fixtures. They are easily lighted. Ceiling Protectors, Shades and Reflectors are said to be unnecessary, while there is a marked saving in the cost of Mantles.

## The Memphis Conventions.

SPLENDID weather and a good attendance marked the opening of the annual conventions of the American Hardware Manufacturers' Association and National Hardware Association at Memphis, Tenn., on Wednesday morning. The initial session of the jobbers was something of a joint gathering, as the manufacturers on invitation took an active and conspicuous part in it and were present in considerable numbers. Both conventions will bring their deliberations to a close on Friday afternoon.

CHARLES M. GHRISKEY'S SONS, 506-508 Commerce street, Philadelphia, who will shortly celebrate their sixtieth anniversary in the wholesale Hardware business, and who have for a long time represented W. & S. Butcher, Sheffield, England, in the sale of Edge Tools, are now making particular efforts to promote the sale of these goods and will maintain at the above location a full stock of that concern's Plane Irons, Paring, Turning and Firmer Chisels and Gouges.

IN our last issue in referring to the sale of the Hardware business of W. A. Hutton & Co. to C. A. Whiteside and E. P. Dickerson, the address was incorrectly given as Gallatin, Texas, instead of Gallatin, Tenn. Mr. Hutton has removed to Nashville, Tenn., where the firm of McWhorter, Hutton & Co. has been organized for the purpose of engaging in the jobbing business in Hardware and related lines.

HIBBARD, SPENCER, BARTLETT & Co., Chicago, Ill., have issued an attractive cook book to aid their customers in the sale of O. V. B. Food and Meat Choppers. The book illustrates and describes the different sizes of the Chopper, and then supplies numerous receipts for the preparation of food with the Chopper.

## Requests for Catalogues, Etc.

*The trade is given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.*

**REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate:**

FROM THE MORROW-DREW COMPANY, purchasers of the Cox-Barnett Company's stock in Walla Walla, Wash., doing a wholesale and retail business in Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements and Sporting Goods.

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FROM THE WENDELL HARDWARE & FURNITURE COMPANY, incorporated in Wendell, N. C., with a capital stock of $25,000 to do a retail business in Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints, Oils, Sporting Goods and Furniture.

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FROM HOPKINS & SON, Delia, Kan., who carry a general line of Hardware, Stoves, Tinware, Agricultural Implements, Paints, Oils, Sporting Goods.

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FROM F. M. SPEGAL, who is opening a Hardware store in Arnold, Neb.

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FROM MCWHORTER, HUTTON & Co., 336 Public Square, Nashville, Tenn., who are about to embark in the jobbing business in Hardware and kindred lines.

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FROM HOWES-KENDRICK COMPANY, 112 Market street, San Francisco, Cal., which has engaged in business as manufacturer's and purchasing agent. The members of the company are A. T. Kendrick, formerly manager of Kendrick Mercantile Company, Northport, Wash., and Hunter-Kendrick Company, Ltd., Greenwood, Grand Forks, Phœnix and Sandon, B. C., and W. B. Howes, formerly manager of Meisenheimer, Kendrick & Howes, Krupp, Wash. Branches will be opened in Seattle, Portland and Los Angeles.

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FROM NEW STATE HARDWARE & HARNESS COMPANY, which has succeeded Noble Bros. & J. C. Preddy in Ardmore, Okla., in the wholesale and retail business. The company handles Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints, Oils, Sporting Goods. It also manufactures Saddles, Harness, &c.

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FROM GEO. BREHM, who has purchased the business of R. J. Taliaferre, in Talmage, Neb., carrying Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints and Oils.

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FROM REFIOR HARDWARE COMPANY, which will succeed the Refior-Barr Company in Ottawa, Ill., on December 1, and will carry a full line of Builders' Hardware, Mechanics' and Carpenters' Tools, a general line of Hardware, Guns, Ammunition, Factory and Mill Supplies, House Furnishings, Stoves, Farm Machinery, &c.

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FROM J. W. HEFFNER, Barron, Wis., whose stock has been destroyed by fire. The goods included were Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints, Oils, Sporting Goods, Harness and Furniture.

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FROM THOMPSON BROS., who succeed Samuel Barney in business in Washington, Kan., and will carry a stock of Shelf and Heavy Hardware, Stoves, Tinware, Paints and Sporting Goods, and will do furnace work and plumbing.

---

FROM THE KERFOOT-YANDEAU HARDWARE COMPANY, which succeeds the Kerfoot Hardware Company, Pasco, Wash. E. G. Kerfoot is president, Fred P. Yandeau, vice-president, and G. W. Kerfoot, secretary-treasurer. The company handles Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints, Oils and Sporting Goods. The company has put in new store fixtures and is increasing its stock of goods.

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# Rural Parcel Post Offered as a Remedy for Colossal Deficit in Postal Revenues.

FROM OUR SPECIAL CORRESPONDENT.

WASHINGTON, D. C., November 17, 1908.

THE elections being out of the way, the administration of the Post Office Department has abandoned the policy of silence with regard to postal reforms which was maintained throughout the campaign, and the Postmaster-General is once more before the public with the project for a rural parcel post. This time it is offered as a remedy for the most colossal deficit in the postal revenues ever recorded in the history of the service, and it is safe to say that postal experts the world over will be amazed to find the United States Post Office Department seriously urging a parcel post—notoriously the most extravagant form of public expenditure ever authorized in any country—as a method of closing a wide gap between receipts and expenditures.

**How the P. O. Department Would Make Up the Shortage.**

The story of the department's project for bridging a $17,000,000 shortage is best told in the language of the official press bulletin recently issued from the Postmaster-General's office as follows:

Postmaster-General Meyer announced to-day that the postal deficit for the fiscal year ended June 30, 1908, amounted to $16,910,278.99. The receipts were $191,478,633.41 (being $7,893,657.84 greater than the previous year), and the expenditures $208,351,886.15. The deficit is the largest in the history of the Post Office Department. An analysis of the figures shows that $9,891,321.92 represent the advance in the rate of compensation authorized by Congress for employees of the railroad mail service, rural delivery service, city delivery service, and assistant postmasters and clerks in post offices. The normal increase in the revenue for several years was about 9 per cent. and in 1908 4.29 per cent., the falling off in the rate of growth being due to the financial disturbances of the year.

The Postmaster-General said that in his annual report he would call the attention of Congress to the fact that he is firmly convinced that the establishment of a special local post confined to rural routes would tend to wipe out the postal deficit and would finally make the rural delivery self-sustaining, besides being of convenience to the farmer and a boon to the retail country merchant. There are now in operation more than 39,000 rural routes, serving a population of about 18,000,000 people, and should an average of 55 lb. of merchandise be carried by the rural carrier on each trip throughout the year, it is estimated that $15,000,000 would be realized. The rate would be 5 cents for the first pound and 2 cents for each additional pound up to 11 lb., the maximum weight of a package. With the exception of a small percentage paid to postmasters of the fourth class for increased cancellations, all revenue from this parcel post would be clear gain, as there would be no railroad transportation whatever, the service being confined to packages mailed by bona fide merchants and patrons of the rural routes.

**A Sanguine View.**

The scheme for raising revenue through the conveyance of merchandise at reduced rates over the rural routes is not altogether a new one, although even the most sanguine postal official has never before ventured the suggestion that it would be possible to wipe out a $17,000,000 deficit thereby. Some of the fallacies in the arguments put forward in support of this project have heretofore been pointed out in this correspondence, but the comments were based upon the Postmaster-General's estimate, made a month ago, in which he calculated that an additional revenue of $8,652,000 could be obtained from a rural parcel post. As these calculations are all on paper, it is, of course, a simple matter to increase the amount of prospective revenue by multiplying it by two and thus closely approximating the last annual deficit of $17,000,000.

**No Account Taken of Increased Equipment Necessary.**

The most misleading factor in this equation is the assumption that new business on rural routes would automatically distribute itself evenly over all routes and throughout the week or month, thereby enabling the business to be done without increased equipment. This is, of course, preposterous, and when the slightest account is taken of the necessity for employing more horses, wagons and carriers, shortening existing routes and installing mail boxes capable of holding parcels of merchandise, the prospective additional revenue vanishes and leaves a deficit that dwarfs the current $17,000,000 shortage into insignificance.

**National Grange Puts Itself on Record.**

The activity of the National Grange, Patrons of Husbandry, in support of the rural parcel post scheme has been referred to in this correspondence from time to time, and during the past week has been reflected in the proceedings of the annual convention of the organization held in this city. In the course of his annual report to the convention the grand master made the following statement with regard to the bills now pending in Congress and the efforts of the Administration to secure their enactment:

In accordance with the plan of procedure in regard to legislation for the extension of parcel post facilities, outlined in my last annual report, two bills liberalizing the existing postal laws were introduced in Congress at the past session. One of these bills, introduced by Senator Burnham of New Hampshire, provided for a parcel delivery system, limited to the rural routes emanating from each local post office, and to the patrons of such office. The second bill, introduced by Senator Kean of New Jersey, applied to the entire postal service of the country, and provided for a reduction in the rate of postage on parcels sent through the mail from 16 to 12 cents per pound, and for an increase in the weight limit from 4 to 11 lb. Although these bills did not go as far as the Grange desires it was thought wise to accept them as measures tending in the right direction, and your Legislative Committee took action to bring the influence of the local Granges to bear on Congress in favor of their enactment. While the measures failed to become law, it is the opinion of the Senators and Representatives active in their support that the sentiment in their favor is so strong that they will be enacted at the coming session of Congress.

It has been announced by the Postmaster-General that the President has promised to recommend in his forthcoming annual message the authorization of an experimental parcel post on rural routes. Such action by the President will greatly strengthen the movement for this legislation, and from our experience with the rapid growth of the rural free delivery system from the small experimental appropriation of $40,000 in 1897, we can be certain that the establishment of a rural route parcel post will soon be followed by the adoption of a general parcel post law for the entire country.

The widespread opposition of certain selfish interests to legislation for this purpose has only served to bring out more clearly the benefits which it would confer, not only on the farmers, but on the people of the entire country, and the question is now admitted to be the most important, with one exception, of the issues before the National Legislature.

**Postal Savings Banks Also Favored.**

The grange also favors another project, the effect of which would undoubtedly be decidedly injurious to the small community—namely, the establishment of postal savings banks. In this connection the grand master said:

The unusual financial conditions which prevailed during a period of five or six months at the end of 1907 and the beginning of this year, when banks in all sections of the country either failed or suspended cash payments, served to direct public attention to the necessity for reforms in our banking system, and to show the importance of the Grange proposition for postal savings banks. That a method by which the savings of the people can be deposited in the post offices of the country with absolute security, drawing approximately the same rate of interest that can be realized on Government bonds, will be of great advantage to the farmers in districts remote from banking institutions, is self-evident. The enactment of legislation providing for this extension of the post office will be actively urged upon Congress at the coming session by the Postmaster General, and in view of the favorable attitude of prominent Senators and Representatives of both political parties a bill for this purpose will assuredly become law in the near future.

While it is probable that the savings banks of the country would suffer greater loss as the result of the establishment of postal savings banks than would the national banks, yet in small communities the national banks now handle hundreds of millions of dollars annually that it is assumed would be turned over to the proposed postal banks, and the injury to the small community would be vastly greater proportionately than to the big cities where the institutions doing a practically exclusive savings business are located.

**Defeat of Mr. Overstreet a Regrettable Incident.**

The opponents of paternalistic postal schemes have just suffered a great loss in the defeat at the polls of Representative Overstreet of Indiana, chairman of the House Post Office Committee. Mr. Overstreet was one of the first public men to recognize the evils that would un-

questionably result should these fallacious projects be put into force, and he has consistently opposed them on all occasions. His retirement from Congress is in no way due to his attitude regarding these matters, but resulted from a blunder on the part of the election officials in his Congressional District, who placed his name on the same ticket with certain exceedingly unpopular local officials. The voters of the district were determined to bury these local candidates, and would not take the risk of marking their tickets in such a way as to accomplish their purpose and at the same time return Mr. Overstreet to Congress.

Rumors have been current within the past few days to the effect that Mr. Overstreet may be made First Assistant Postmaster-General when the Cabinet is reorganized next March, and the disquieting suggestion has been heard that the tender of this post to the Indiana Congressman is likely to depend upon the attitude shown by him toward the Administration's postal plans during the coming short session. It is inconceivable either that the Administration would attempt to make such a deal with Mr. Overstreet or that he would modify his well-known views in the slightest degree to secure any office in the gift of the President-elect.

# HARDWARE FREIGHTS.

## The New Uniform Bill of Lading.

A NEARER view of the provisions of the new uniform bill of lading shows that in the main it is a very satisfactory document. It has brought to a close a controversy that has been pending for a score of years, growing out of the effort of many of the railroads to evade liability for losses due to their own negligence. The bankers who at first opposed the new uniform document have decided, after careful deliberation, that it is a desirable improvement from their point of view, and it has even been intimated that they will insist upon its use where they advance funds against commodities in transit. Shipping interests which have been offering vigorous objections to the new document may become reconciled in the same manner as they become more familiar with its provisions.

### Is It Binding Upon the Shipper as a Contract?

One perplexing question that has arisen is whether the new bill of lading is binding upon the shipper as a contract. The railroads require that it shall be signed by the shipper, as well as by the agent of the carrier, and it purports to be a mutual agreement or contract. To obtain the signature of the shipper the Eastern roads have adopted a coercive measure by filing with the Interstate Commerce Commission an amendment to the Official Classification, which provides that the rate shall be 10 per cent. higher if the shipper refuses to sign the document and accept all its provisions. There is, however, some question whether it is a contract or anything more than a carrier's receipt for the property, which may be binding in all its provisions on the carrier issuing it but not binding as a contract on the shipper.

### No Legal "Consideration."

There is no legal "consideration" to make it a valid contract. The vital points in the relations between the parties are already settled and determined by law, leaving nothing material to form the basis of a mutual agreement. In an ocean bill of lading there is a valid consideration which makes it a contract between the parties. An ocean carrier may make any rate it pleases on any shipment, or by asking a prohibitory rate may refuse to accept any particular lot of goods. The amount of money which the shipper in an ocean bill of lading agrees to pay for the service to be performed forms a valid consideration.

A railroad, however, is forbidden by law to make any rate in a bill of lading for interstate shipment that differs from the lawful tariff. It is unlawful to accept property for interstate transportation unless a tariff has been filed at Washington for 30 days. The United States Supreme Court has held that on all interstate shipments the legal tariff rate, as shown by tariffs filed with the Interstate Commerce Commission, must be collected, regardless of any lower rate that may be stipulated in a bill of lading. It is evident, therefore, that the rate to be charged cannot form the consideration for a contract between the railroad and the shipper in interstate traffic.

**Must Collect Lawful Tariff.**

The acceptance of the property and the agreement to transport it to the destination desired by the shipper cannot be regarded as a consideration. The laws of the States from which the railroads hold their charters compel them to accept and transport property when offered them without discrimination, and the courts of several States have passed upon the fact that the railroad must forward each shipment in the order that it was received, excepting for the preference in movement which is allowed to perishable freight and live stock. The railroad, therefore, agrees to do only what it is compelled by law to do.

**Railroad's Agreement Is a Compulsory One.**

Nor does the railroad offer any consideration when it agrees to be liable for loss of damage, because the law already fixes this liability upon the carrier. The Hepburn law expressly forbids any contract, rule or regulation that would release the carrier from liability for loss or damage "caused" by it. This provision covers all but a very small and unusual fraction of the losses that occur in transit. Congress has not specifically fixed liability for fire loss, which may arise from an unknown cause, but in the absence of specific national legislation the rulings of the Federal Courts are binding. In many decisions these courts have held the carrier liable for fire loss regardless of contrary provisions in bills of lading.

**Liability for Loss or Damage.**

The common law which is followed by the courts on interstate shipments makes the carrier liable for any loss or damage unless caused by an act of God, the Government, the public enemy, riots, the act or default of the shipper, or an inherent vice or defect of the property. It will be observed that the new bill of lading conforms exactly to the rule of the common law as interpreted by American courts. There is no material point in the new document in which the railroad does not assume its full common law liability. Counsel for shipping interests, after having gone over the question carefully, are unable to see wherein an essay on the legal obligations of a common carrier can be erected into a contract between the carrier and the shipper, however useful the essay or definition of the law may be in general practice.

**Conforms to the Rule of the Common Law.**

There are possibly two miner points in which the carriers assume in the new bill of lading a greater liability than is imposed by the common law. On less than carload shipments going to freight houses and on cars going to team tracks the new bill of lading makes the railroad liable as a common carrier until 48 hr. after notice of arrival has been duly sent or given. Under the common law the liability as a common carrier ceases upon arrival at destination and the carrier becomes a "warehouseman," leaving upon the shipper, after arrival, the risk of fire and certain other losses. This is an important advantage to less than carload and team track shippers or consignees, but it does not affect industrial freight moving between private sidings.

**Freight House and Team Track Shipments.**

It is also stated upon authority of eminent counsel that there are certain remote and unusual fire losses for which the railroad is not liable under the common law, such as in conflagrations or fires originating outside of railroad property and spreading to freight houses or freight in transit. The new bill of lading makes no exceptions in the liability for fire unless the property is stopped in transit on the order of the shipper. There is no mutual consideration in the bill of lading for this liability assumed by the railroads in excess of that required by law. It is true the shipper is required to file

**Liability for Fire Losses.**

claims for loss or damage within four months, while the laws of the States have allowed several years, but a relatively few shippers are interested in this clause or suffer any hardship by it, and they as a rule are not the class of shippers who profit by the additional liability assumed by the carrier. If the status of the bill of lading as a contract rested upon these points, it would amount to Peter offering a consideration for the benefit of Paul.

**A Very Satisfactory Document.**

Whether the new bill of lading is a contract or an essay, it will be found a very satisfactory document, and it reflects honor on the raidroad men and shippers and their counsel who have labored long to harmonize their conflicting views. It will save trouble and confusion by making the law clear to the multitude of smaller shippers who cannot incur legal expense in all the petty controversies that might arise. If the railroads insist upon having the signature of the shipper, there is no serious objection to signing it. The coercive requirement that the rate will be 10 per cent. higher unless it is signed would seem to be superfluous, because any shipper who pays the 10 per cent. may find that the common law liability for which he pay the additional charge is less than the liability assumed by the carrier in the uniform bill of lading. It is difficult to understand why the 10 per cent. rule has been promulgated. If it is intended to create an arbitrary "consideration" between the carrier and the shipper, it would seem to work in the wrong direction.

## A Suggestion as to Shipments with Freight Allowed to Destination.

*To the Editor:* Noting your articles on Hardware freights one thought occurs to me that may be of some use along this line. Many manufacturers ship largely direct to the Hardware trade, and in many cases the goods so shipped are sold with freight allowed to destination, and this freight is deducted from the invoice.

**Manufacturer Must Know.**

In deducting freight the manufacturer shows on his invoice the shipping weight of the shipment, the correct rate per hundredweight and the amount that the merchant should pay for freight. This the manufacturer can do as he must of necessity know all the time the proper classification and rate of the products of his factory, and must keep up to date on all changes, both of classification and rate made by the railroad companies.

**Merchant Should Insist.**

In many cases we find the merchant pays no attention to the amount of freight deducted, but goes ahead and pays any amount the railroad company may present, and then makes a claim on the factory for this overcharge; whereas, if he would insist on the railroads correcting their charges before he paid his freight, so that they would correspond with the freight deducted, he would save a great deal of annoyance to the manufacturer and himself as well.

**Joint Action.**

We are also of the opinion that careful consideration and joint action between the various Hardware associations and the manufacturers, through proper joint freight committees working with the railroad classification committees with a view of adjusting fairly the rates and classifications on Hardware commodities, is a step in the right direction.

OHIO MANUFACTURER.

## E. C. Atkins & Co.'s Canadian Plant.

IN view of the rapidly increasing demand for their Saws from Canada, E. C. Atkins & Co., Indianapolis, Ind., have established a plant at Hamilton, Ont. The property owned by the company comprises more than 15 acres of ground in a desirable location, on which a number of buildings admirably adapted for the manufacture of Saws have been erected.

The plant has been fully equipped with the Atkins' special Saw making machinery, similar to the main factory at Indianapolis. The same processes being used, together with similar formula for the manufacture of steel, assures for the Canadian factory an equally high quality of Saws. The new company will manufacture a complete line of Saws for all purposes, including Band, Circular, Drag, Edger, Barrel, Re-Saw and all types of Milling Saws, together with Hand, Cross Cut and a full assortment of Small Saws. The company is employing at the start about 200 men, and will increase this force as circumstances warrant.

A new company has been formed for the Canadian department, which will be operated as E. C. Atkins & Co., Ltd. All the stock of the new concern will be held by the present owners of E. C. Atkins & Co., Inc., Indianapolis. The officers of the new company are as follows: H. C. Atkins, president; N. A. Gladding, vice-president and secretary; M. A. Potter, treasurer; F. C. Gardner, assistant treasurer; H. P. Hubbard, general manager, and C. D. Ten Eyck, sales manager. Mr. Hubbard, manager of the new concern, is a man of broad experience in Saw manufacture, and was formerly superintendent of the Indianapolis plant. Mr. Ten Eyck has represented the Atkins' company throughout Canada for a number of years and is well known to the trade.

## LARGE CONSUMERS DEMAND PROTECTION IN BUYING PAINT.

A FEATURE of the annual convention of the National Paint, Oil and Varnish Association, held in Boston a few weeks ago, was the address of Charles Van Syckle, president of the International Association of Master House Painters and Decorators of the United States and Canada. Mr. Van Syckle spoke as the representative of the large consumers and referred to several live topics which command the attention of the trade. His principal plea was that lower prices be accorded to the large consumers than are given to the general public, his position being that the present margin of profit allowed to the painter is too small. He plainly suggested that under the conditions now prevailing master painters would be forced to resort to buying in clubs and thus discontinuing purchases through the jobbing trade. Touching on this point, he spoke in part as follows:

I know that there are members of your convention who are to a certain extent dependent upon the master painter for the bulk of their sales. We have heard said, and I think it is true, that the master painter uses perhaps 90 per cent. of the materials which many of you make. Some of you sell direct to the master painter and some to him through the jobber. I think that you all have the interest of the jobber at heart, as well as the interest of the manufacturer, and I want to say to you that the methods that are adopted by many of the manufacturers have this tendency. Within the last year—perhaps we might go a little further back of that; but at any rate I can be safe in saying that within the last year there has been put forward the idea of forming buyers' clubs. The idea has been that if there is no other way of getting a better profit out of the goods which we handle and sell than the present one, the next best thing we can do will be to form ourselves into buyers' clubs.

If that is done, what will become of the middleman, your jobber? I do not think that we have at any time asked anything that was unreasonable or unjust. If we have done so, and anybody, any one of your membership, can point out to us wherein we are wrong in this matter, I am sure we will undertake to modify our ideas and our demands.

**Pure Paint Legislation.**

In regard to pure paint legislation, he took the position that the master painters made no unreasonable demands, but felt that laws could be enacted which would insure the purchaser of paint fair value for his money. He said in part:

Our position in the beginning was simply one in which we wished to be protected against the habit of mislabelling. We simply wanted to be able to buy in a package what was supposed to be there; and we found after meeting with some of the gentlemen of the organization connected with your trade that for reasons best known to themselves would not be satisfactory to them. The argument used was that such certain standard would be taken as denoting pure and anybody who did not use those standards would be compelled to label their goods, while those who used the certain specified standards would be enabled to send out their packages without that objectionable analysis. I do not pretend to say what are the exact ingredients of the best Paint materials that are made. I will leave that to some one else; but, as I said before, I do feel that there will be no injustice whatever done to anybody if by some fair middle ground laws can be enacted which will enable us to buy or to get what we pay for, and nothing else.

## Dillard's Patent Cross Cut Saw Handles.

The W. E. Dillard Mfg. Company, Petersburg, Va., is manufacturing four styles of Cross Cut Saw Handles, three of these having patented features. All the handles are referred to as having irons of the best malleable iron, pins of steel, and Virginia hickory and oak handles. They are reversible and are warranted not to spring open or break. One style of handle has a double clasp which engages both holes of a saw.

## Champion Egg Beater.

The Reid-Edelmuth Mfg. Company, 17-19 Ninth street, Brooklyn, N. Y., J. C. Smart sales manager, Irving Building, 1 and 2 Hudson street, New York, is introducing its line of Champion brand goods, one of which is the Champion egg beater here illustrated. Two views are given, the one at right being cut away to show the interior construction. The parts consist of a heavy tin cylinder, having a conical base. To the lowest end of the dasher is attached a perforated tin cone. By moving the dasher up and down the material to be whipped or beaten is forced through the holes in the cone, thereby beating the material thoroughly and quickly by means of the resulting air suction. The beater is made in 1, 2, 3 and 4 pint sizes, and is recommended by the company for beating, mixing or whipping such materials as eggs, cream, custards, frozen desserts, mayonnaise dressings, batters, egg nogg, omelets, as well as for churning butter or freezing ice cream.




*Two Views of Champion Egg Beater.*

## Stanley's Screen Door Hardware.

The Stanley Works, New Britain, Conn., and 79 Chambers street, New York, has just put on the market two new sets of screen door hardware, as here illustrated. Fig. 1 shows set No. 1750, consisting of one pair of ornamental wrought steel loose pin butts, 3 x 3, to screw on the surface; one wrought steel pull, 5 in. long; one wire spring, and one gate hook and eye. The spring is a No. 3 and of high grade, carefully tested. Fig. 2, set No. 1752, is somewhat lower in price than the No. 1750 and consists of one pair ornamental wrought steel loose pin butts, 2½ x 2½ in.; one wrought steel pull, 3½ in. long; one wire spring, No. 2, and one gate hook and eye. Both sets are Japan finished, packed complete with screws to match in a neat pasteboard box, and 12 sets in a carton. For higher grades of screen work the goods can be supplied in antique copper or brass finishes at a slight advance in price. Doors may be removed at end of season by simply removing butt pin and disconnecting spring.

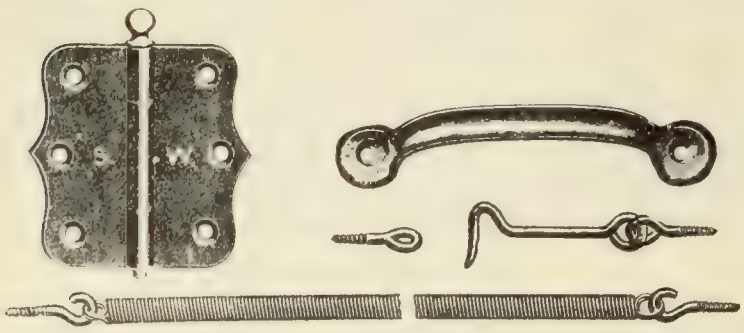


*Fig. 1.—Stanley's Screen Door Hardware Set No. 1750.*

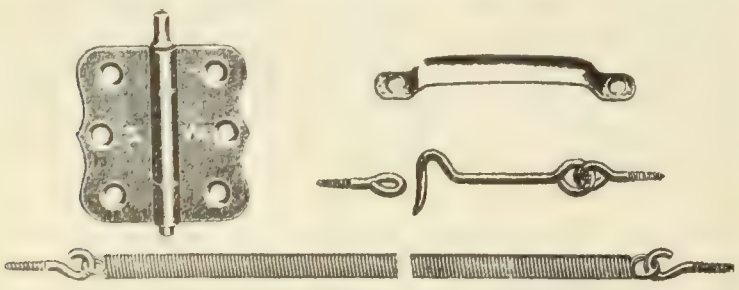


*Fig. 2.—Stanley's Set No. 1752.*

## The Astrophone Razor Stropper.

F. Alfred Reichardt & Co., 63 Barclay street, New York, are putting on the market a novel razor stropper here illustrated. Fig. 1 shows the stropper with the aluminum handle inserted in center of wood block ready for use, there being a similar center slot lengthwise of the block in which to insert handle for compact packing.

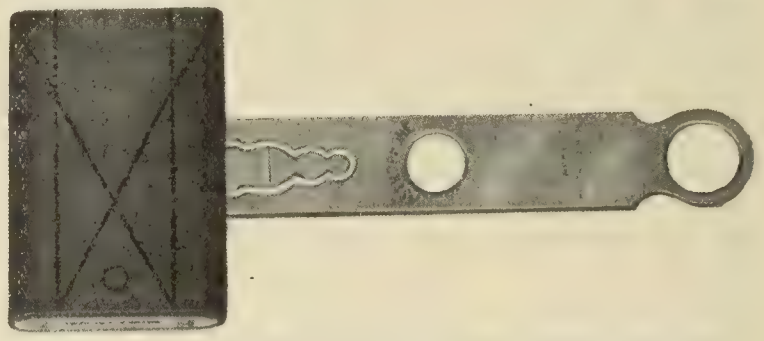


*Fig. 1.—The Astrophone Razor Stropper, Removable Handle.*

The wood block, 3¼ x 2¼ x ⅝ in., is covered on each side and both ends with selected leather of substantial body, each side of which is impregnated with different compounds; black and tan, respectively, in color. The removable aluminum handle is 7 x 1 x 1-16 in., and a tongue is punched near the upper end of handle, which, springlike, serves to hold the block firmly. A circle in it below indicates where the thumb should rest when stropping. The correct method of stropping, as to direction, is made obvious in Figs. 2 and 3, by means of the lines in the first stropping on the black side, placed there more for novices in the art than experts. All sharpening on the stropper should be done from left to right, with the upper stroke downward and opposite stroke upward, each diagonally across the block, as indicated by the slanting lines, detailed directions for which accompany each strop. The first operation is on the black side, placing the back of razor along upper straight line, so that the rounded edge of the block fits in the hollow ground blade, which is then drawn to the right downward along the diagonal line, not changing the position of the razor. A similar operation reversed, Fig. 3, completes the process on that side. The lines are not reproduced on the finishing or tan side of block, although the movement is the same, but of a finishing character. Each stropper is neatly packed in a compact double pasteboard box, 6½ x 2½ x ¾ in. in convenient form for carrying.

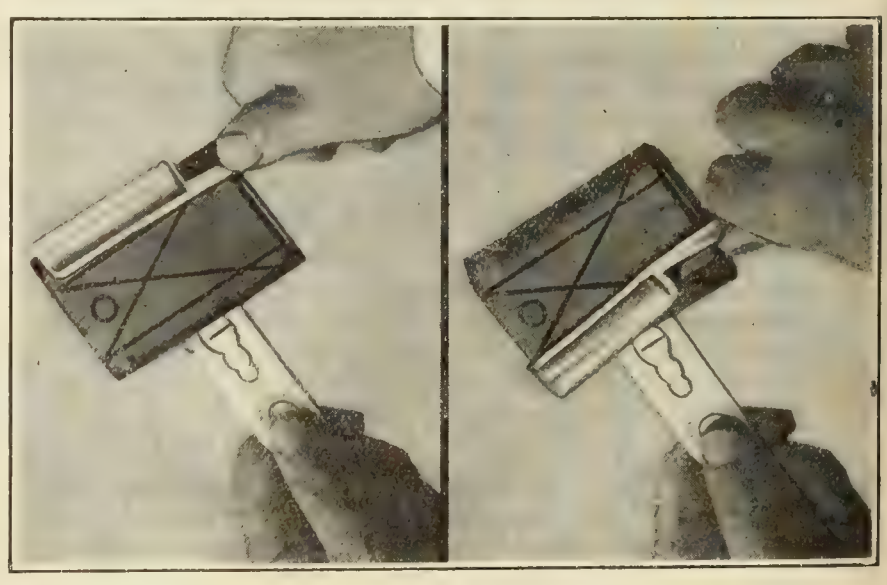


*Fig. 2.—First Stroke in Stropping.* *Fig. 3.—Finishing Stroke on Dark Side.*

## The Crystal Ice Cream Freezer.

The J. B. Foote Foundry Company, Frederickstown, Ohio, is offering the Ice Cream Freezer, shown herewith. The freezer is comparatively small in diameter, and tall, so as to allow a large amount of cream to be exposed to the ice at one time. It is pointed out that the cream thus freeezs quickly and that when packed after it is frozen it remains firm through and through. The can revolves from right to left, the dasher from left to right. As these rapidly revolve the freezing mixture is removed from the sides of the can by the wooden scrapers, and thrown to the center, where it is beaten by the egg-

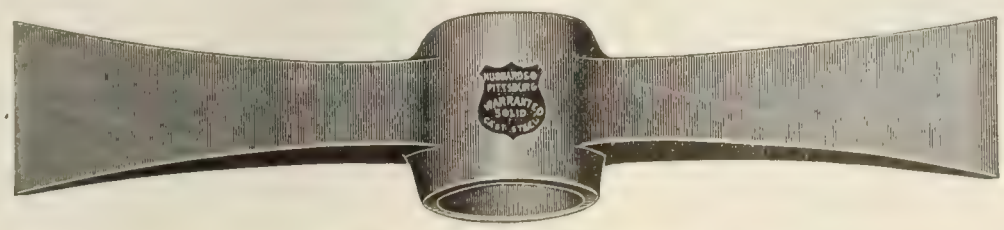



*The Crystal Ice Cream Freezer.*

shaped floats, and the action repeated over and over again, until it is evenly and thoroughly frozen. All gearing is enclosed separate from the freezer, the gear frame being fastened to the tub by a button and tub ear, which permits the frame to be easily removed when desired. The castings are referred to as being carefully machined, all parts that come in contact with the cream are heavily coated with pure block tin, and all outside parts are well galvanized, so as not to rust. It is explained that the tubs are extra heavy, full size, wrapped in black hardware paper and attractively labeled. The freezers are furnished in 1, 2, 3, 4, 6, 8, 10, 12, 15, and 20 quart sizes.

## A Double Eye Asphalt Mattock.

Hubbard & Co., Pittsburgh, Pa., are offering the new double eye Asphalt Mattock, shown herewith. The tool is made from special refined high-grade steel, carefully tempered, and is guaranteed by the manufacturers to cut any asphalt in the coldest weather. In size it is 20 in. long, 3¼ in. bits, and it weighs 11 lb., which is found to be the right weight for all around service. As a result of the double eye construction, should the edges become dull at both ends, the operator simply withdraws




*A Double Eye Asphalt Mattock.*

the handle and inserts it at the other end, the eye being swelled in the center sufficiently to hold the handle rigidly, which doubles the life of the tool.

## The Can't Roll Plumb Bob.

The plumb bob shown herewith has the advantage of not rolling when laid down, and is made in two sizes, Nos. 10 and 20, each 3¾ in. long. Both are made of hexagon steel, with a screw plug in the top, through which the cord passes, being held in place by a knob in the end. No. 10 is made from ⅞-in. steel, and weighs 7 oz., and No. 20 is made from 1⅛-in. steel, and weighs 11 oz. Both are finely finished, polished and nickeled on a heavy copper plate. The plumb bobs are put on the




*The Can't Roll Plumb Bob.*

market by the Dikeman Mfg. Company, South Norwalk, Conn.

## The Savage Automatic Pistol.

The Savage Arms Company, Utica, N. Y., has perfected the .32 caliber 10-shot automatic pistol, herewith



*Fig. 1.—The Savage Automatic Pistol.*

shown. It weighs 19 oz., measuring 6½ in. over all, and fires 10 shots as fast as a man can pull the trigger. Each bullet and its gases, it is explained, have the barrel to



*Fig. 2.—Manner of Disassembling the Savage Automatic Pistol.*

themselves, the bullet automatically locking the breech during the infinitesimal period of time the bullet is in the passage, the full force of all the gases thus being secured for the bullet during discharge, and leaving it again free when out of the barrel. The pistol is constructed to use the recoil of the gases remaining after the bullet leaves the barrel to operate the action—that is, to eject the shell and bring the next cartridge into position to cock the hammer. The pistol is so arranged that a cartridge may be carried in the chamber ready for action, either with the hammer down or at full cock, locked by the safety device. The hammer or cocking lever may be cocked at will, without operating any other part of the mechanism. It is impossible, it is shown, to discharge the pistol except by pulling the trigger; so that a blow on the exposed hammer or cocking lever will not discharge it, and the safety device locks the entire mechanism if

desired. It is referred to as having few parts, and as being simple in construction. The pistol disassembles by hand, without the aid of tools, as shown in Fig. 2. There is not a screw which might work loose, only spiral springs being employed to insure freedom from breakage.

## Schroeter's Power Grater No. 3500.

Exterior and interior views of a machine primarily designed for grating horse-radish, introduced by Schroeter Bros. Hardware Company, 717-719 Washington avenue, St. Louis, Mo., are given herewith. The grater is constructed of wood, except the grating drum, the sides of which are disks of iron bolted together, over which the

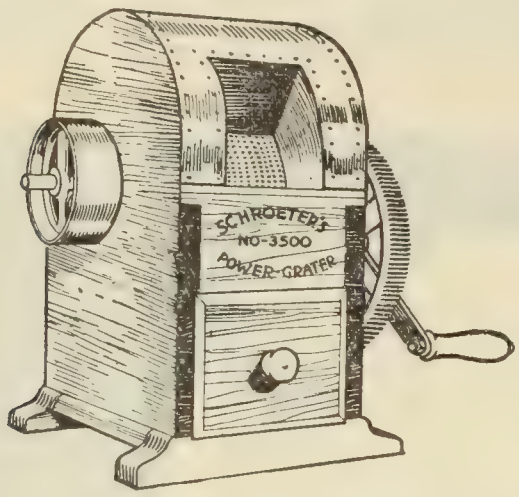



*Fig. 1.—Schroeter's Power Grater No. 3500.*

company's patent double grating drum is riveted. The extra weight in the iron disks causes the drum to act as a flywheel, thereby gaining a high speed when operating. The outside of the double drum is perforated and the inside is not, the object in having the drum double being to prevent the grated material coming through the holes in long, stringy shape. It is explained that horse-radish grated in the machine will be light, short and flaky, and unlike the horse-radish put through a meat chopper. Besides horse-radish, it is pointed out, the machine will grate equally as well cocoanut, potatoes,

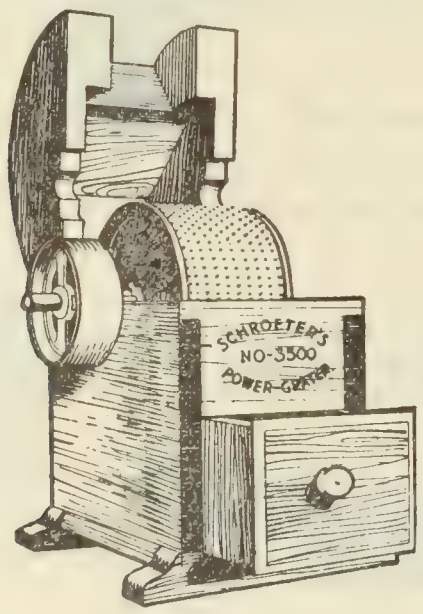



*Fig. 2.—Interior of Schroeter's Grater.*

bread, turnips, carrots and vegetables of all kinds. The grater can be operated by electric motor, steam or gasoline engine or other power, and is designed for use by those making a business of selling grated horse-radish or by hotels and large restaurants. The machine is furnished with gearing for hand power only, with gearing for hand power and pulley for steam or motor power, or with pulley only, for steam or motor power. The grater weighs 52 lb.

## Hart's Pocket Safety Razor.

The Hart Mfg. Company, Unionville, Conn., is putting on the market the pocket safety razor illustrated herewith. Fig. 1 shows the razor with the handle slipped over the blade, to protect it, while Fig. 2 represents the flanged end of the handle fastened in a slot on the back




*Fig. 1.—Hart's Pocket Safety Razor Closed.*

of the blade holder, ready for use. There are but three pieces, the blade holder, the blade, and the handle. When closed, as in Fig. 1, the razor measures ⅞ in. in width and 1¾ in. in length, suitable for carrying in the vest

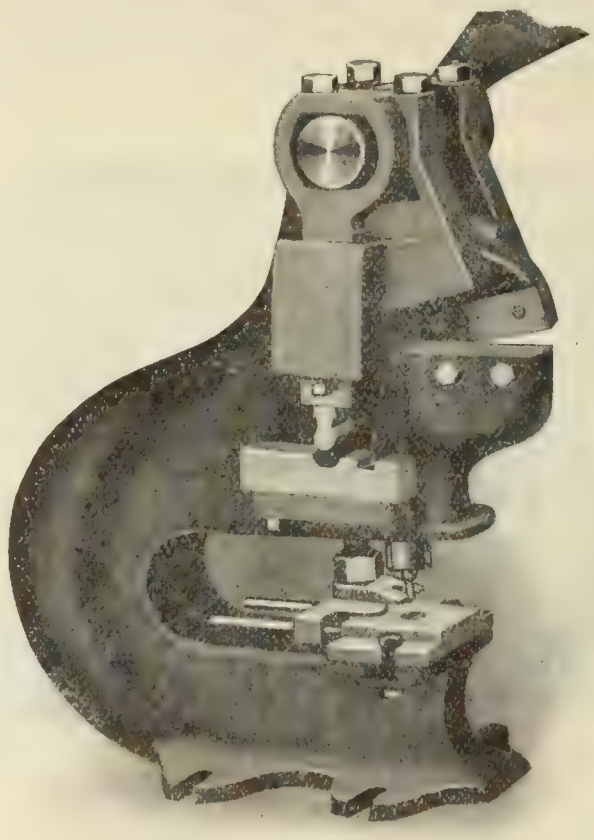



*Fig. 2.—Hart's Pocket Safety Razor Ready for Use.*

pocket. The frame and handle are nickel plated and polished, and with six blades are packed in a small leatherette box.

## Victor No. 3 Punch, Shear and Bender.

A handy tool for all round work in small metal working shops is a new combination hand punch, shear and bending machine made by the Nappanee Iron Works, Nappanee, Ind., and shown in the accompanying illustration. The machine is compact and is constructed with few moving parts. All three operations are controlled by a solid steel eccentric connected to the plunger, with a mortise having a 1½ in. bearing. This design does



*Victor No. 3 Punch, Shear and Bender.*

away with the use of pins, which are liable to become loose through wear. The bending block is attached to the side of the frame, and the hand lever is arranged to permit all work to be done from the front. Gibs are provided to take up the wear on the punch and shearing blades, and the punches are so arranged that worn and broken ones can be replaced at slight expense. The machine has a capacity for cutting wrought iron or soft steel bars ¼ x 1½ in., punches ¼-in. holes in ¼-in. plate, bends bars 3-16 in. thick. The shipping weight is 175 lb.

## Patented Screw Hole for Signs.

The Ingram-Richardson Mfg. Company, Beaver Falls, Pa., manufacturer of porcelain enameled iron signs for all purposes, has introduced the new patented screw hole shown in Fig. 1, which is now used in all its signs. The flanged collar around the hole prevents the screw head coming in contact with the enamel surface. This not alone does away with the washer, but keeps the enamel from chipping around the screw hole. The use of leather washers formerly furnished by the company to prevent screw heads coming in contact with the enamel is shown in Fig. 2. When the washers were not used by the purchasers of signs, as was often the case, the contraction and expansion of the iron would have a tendency to crack the enamel around the screw hole

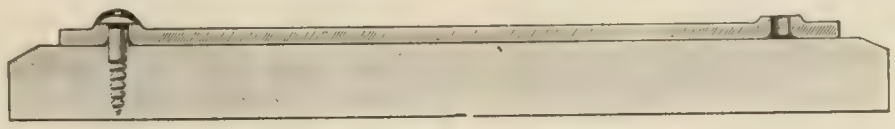


*Fig. 1.—New Screw Hole for Signs.*

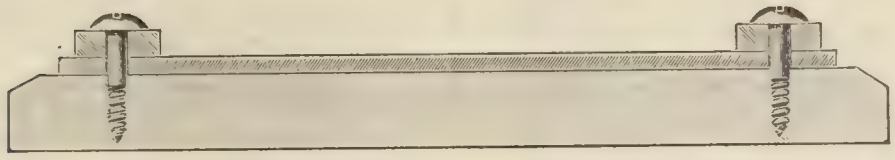


*Fig. 2.—Old Style Screw Hole with Washers.*

# PAINTS, OILS AND COLORS

### Animal, Fish and Vegetable Oils—

| | ℔ gal. bbls. | |
|---|---|---|
| Linseed, Western, Raw | .46 | @47 |
| State, Raw | .46 | @47 |
| City, Raw | .46 | @47 |
| Boiled, 1¢ ℔ gal. advance on Raw. | | |
| Raw, Calcutta, in bbls | .70 | @.. |
| Lard, Prime, Winter | .72 | @76 |
| Extra No. 1 | .51 | @52 |
| No. 1 | .49 | @50 |
| Cotton-seed, Crude, f.o.b. mill | .30 | @31 |
| Summer Yellow, prime | .38½ | @39 |
| Summer, White | .45 | @47 |
| Yellow Winter | .44 | @46 |
| Tallow, Acidless | .58 | @59 |
| Menhaden, Brown, Strained | .34 | @35 |
| Northern Crude | .27 | @30 |
| Southern | .23½ | @.. |
| Light Strained | .34 | @35 |
| Bleached Winter | .36 | @38 |
| Ex. Bleached Winter | .38 | @39 |
| Cocoanut, Ceylon ℔ lb | 6½ | @ 6¾ |
| Cochin ℔ lb | 7¼ | @ 7½ |
| Cod, Domestic, Prime | .38 | @40 |
| Newfoundland | .40 | @42 |
| Red, Elaine | .38 | @41 |
| Saponified ℔ lb | 5⅞ | @ 6 |
| Olive, Yellow | $1.15 | @$1.25 |
| Neatsfoot, Prime | .55 | @58 |
| Palm, Lagos, ℔ lb | 6 | @ 6¼ |

### Mineral Oils—

| | ℔ gal. | |
|---|---|---|
| Black, 29 gravity, 25@30 cold test | .13 | @13½ |
| 29 gravity, 15 cold test | .13½ | @14 |
| Summer | .12½ | @13 |
| Cylinder, light filtered | .20½ | @21 |
| Dark, filtered | .18 | @19 |
| Paraffine, 903-907 sp. gravity | .14½ | @15 |
| 903 sp. gravity | .13½ | @14 |
| 883 sp. gravity | .11 | @11½ |
| Red | .13½ | @14 |

### Miscellaneous—

| | | |
|---|---|---|
| Barytes: | | |
| White, Foreign ℔ ton | $18.50 | @20 50 |
| Amer., floated ℔ ton | 17.00 | @18.00 |
| Off color ℔ ton | 12.50 | @15.00 |
| Chalk, in bulk ℔ ton | 3.00 | @ 3.40 |
| China Clay, Imported ℔ ton | 11.50 | @18.00 |
| Cobalt, Oxide ℔ 100 lb | 1.45 | @ 2.60 |
| Whiting, Commercial ℔ 100 lb | 42 | @52 |
| Gilders ℔ 100 lb | .55 | @ .60 |
| Ex. Gilders ℔ 100 lb | .60 | @ .65 |

### Putty, Commercial—℔ 100 lb

| | | |
|---|---|---|
| In bladders | $1.70 | @1.80 |
| In bbls. or tubs | 1.20 | @1.45 |
| In 1 lb to 5 lb cans | 2.65 | @2.95 |
| In 12½ to 50 lb cans | 1.50 | @1.90 |

### Spirits Turpentine—℔ gal.

| | | |
|---|---|---|
| In Oil bbls | 41½ | @42 |
| In machine bbls | 42 | @42½ |

### Glue—

| | ℔ lb | |
|---|---|---|
| Cabinet | .12 | @15 |
| Common Bone | 7½ | @ 9 |
| Extra White | .18 | @24 |
| Fish, liquid, 50 gal. bbls., per gallon | .60 | @1.20 |
| Foot Stock, White | .12 | @14 |
| Foot Stock, Brown | .9 | @11 |
| German Common Hide | .10 | @12 |
| German Hide | .12 | @18 |
| French | .10 | @40 |
| Irish | .13 | @16 |
| Low Grade | .10 | @12 |
| Medium White | .14 | @17 |

### Gum Shellac—℔ lb

| | | |
|---|---|---|
| Bleached, Commercial | .22 | @23 |
| Bone Dry | .26 | @27 |
| Button | .30 | @40 |
| Diamond I | | @40 |
| Fine, Orange | .34 | @35 |
| A. C. Garnet | .25 | @28 |
| G. A. L | .20 | @21 |
| Kala Button | .18 | @19 |
| D. C | | @42 |
| Octagon B | .35 | @36 |
| T. N | .23 | @24 |
| V. S. O | | @40 |

### Colors in Oil—℔ lb

| | | |
|---|---|---|
| Black, Lampblack | .12 | @14 |
| Blue, Chinese | .36 | @16 |
| Blue, Prussian | .32 | @36 |
| Blue, Ultramarine | .13 | @16 |
| Brown, Vandyke | .11 | @14 |
| Green, Chrome | .12 | @16 |
| Green, Paris | | @24 |
| Sienna, Raw | .12 | @15 |
| Sienna, Burnt | .12 | @15 |
| Umber, Raw | .11 | @14 |
| Umber, Burnt | .11 | @14 |

### White and Red, Lead &c.—

| | ℔ lb | |
|---|---|---|
| Lead, English white, in Oil | 10⅛ | @10⅜ |
| Lead, American White: | | |
| Dry and in Oil, 100, 250 and 500 lb kegs | 7 | |
| Dry and in Oil, 25 and 50 lb kegs | 7¼ | |
| Dry and in Oil 12½ lb kegs | 7⅛ | |
| In Oil, 25 lb tin pails | 7½ | |
| In Oil, 12½ lb tin pails | 8 | |
| In Oil, 1, 2, 3 and 5 lb tin cans, ass't | 9 | |
| Red Lead and Litharge: | | |
| In 100 lb kegs | 7 | |
| In 25 and 50 lb kegs | 7¼ | |
| In 12½ lb kegs | 7½ | |
| In lots of less than 500 lbs, ½¢ ℔ lb advance over above prices of White and Red Lead and Litharge. | | |

Lead, American. Terms: On lots of 500 lbs and over, 60 days, or 2% for cash if paid in 15 days from date of invoice.

### Zinc, Dry—

| | ℔ lb | |
|---|---|---|
| American, dry | 5½ | @ 5⅝ |
| Red Seal (French process) | 6¾ | @ 7 |
| Green Seal | 7¼ | @ 7½ |
| German Red Seal (French process) | 7 | @7¼ |
| Green Seal | 7¼ | @ 7⅝ |
| White Seal | 8¼ | @ 9 |
| French, Red Seal | 8⅜ | @ 8⅞ |
| Green Seal | 10⅜ | @10⅝ |

### Dry Colors—

| | ℔ lb | |
|---|---|---|
| Black, Carbon | 6½ | @10 |
| Black Drop, American | 3½ | @ 8 |
| Black Drop, English | 5 | @15 |
| Black, Ivory | .16 | @20 |
| Lamp, commercial | 4 | @ 6 |
| Blue, Celestial | 4 | @ 6 |
| Blue, Chinese | .30 | @32 |
| Blue, Prussian | .28 | @30 |
| Blue, Ultramarine | 3½ | @15 |
| Brown, Spanish | ½ | @ 1 |
| Carmine, No. 40 | $3 10 | @3 25 |
| Green, Chrome, ordinary | 3½ | @ 5 |
| Green, Chrome, pure | .17 | @25 |
| Ocher, American ℔ ton | $8.50 | @16.00 |
| American Golden | 2½ | @ 3¼ |
| French | 1¼ | @ 2 |
| Foreign Golden | 3 | @ 4 |
| Orange Mineral, English | .10 | @12 |
| French | 12¾ | @13 |
| German | .12 | @13 |
| American | 9 | @10 |
| Red, Indian, English | 4½ | @ 6 |
| American | 3 | @ 3¼ |
| Red, Turkey, English | 4 | @10 |
| Red, Tuscan, English | 7 | @10 |
| Red, Venetian, Amer. ℔ 100 lb | $0.50 | @1.25 |
| English ℔ 100 lb | $1.15 | @1.60 |
| Sienna, Italian, Burnt and Powdered | .3 | @ 9 |
| Italian, Raw, Powdered | .3 | @ 7 |
| American, Raw | 1½ | @ 2 |
| American Burnt and Pow'd | 1½ | @ 2 |
| Talc, French ℔ ton | $18.00 | @25 00 |
| American ℔ ton | 15.00 | @25.00 |
| Terra Alba, French ℔ 100 lb | .90 | @ 1.00 |
| English ℔ 100 lb | .80 | @ 1.00 |
| American ℔ 100 lb, No. 1 | .75 | @ .80 |
| American ℔ 100 lb, No. 2 | .60 | @ .65 |
| Umber, Turkey, Bnt. & Pow. | 2⅜ | @ 3 |
| Turkey, Raw and Powdered | 2¾ | @ 3 |
| Burnt, American | 1½ | @ 2 |
| Raw, American | 1½ | @ 2 |
| Yellow, Chrome, Pure | 12¾ | @15 |
| Vermilion, American Lead | 7 | @25 |
| Quicksilver, bulk | .65 | @.. |
| Quicksilver, bags | | @66 |
| English, Imported | .65 | @70 |
| Chinese | $0.90 | @1.00 |


# THE IRON AGE

*The oldest paper in the world devoted to the interests of the Hardware, Iron, Machinery and Metal Trades, and a standard authority on all matters relating to those branches of industry.*

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# Current Hardware Prices.

**General Goods.**—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

**Special Goods.**—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

**Range of Prices.**—A range of prices is indicated by means of the symbol @. Thus 33⅓ @ 33⅓ & 10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

**Names of Manufacturers.**—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued annually, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

**Standard Lists.**—"The Iron Age Standard Hardware Lists" contains the list prices of many leading goods.

**Additions and Corrections.**—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

### Adjusters, Blind—
Columbian and Domestic.....33⅓%
North's .....10%
Upson's Patent, ₱ gro., $29.90.....10%
Zimmerman's—See Fasteners, Blind.

### Window Stop—
Ives' Patent.....10%
Ives' Stop Bead Screws and Washers .....10%
Taplin's Perfection..... .....10%

### Ammunition—See *Caps, Cartridges, Shells, &c.*

### Anti-Rattlers—
Fernald Mfg. Co. Burton Anti-Rattlers, ₱ doz. pairs, Nos. 1, $0.75; 2, $0.60; 4, $1.00; 5, $0.50.
Fernald Quick Shifter, ₱ doz. pairs .....$2.00@$3.00

### Anvils—American—
Eagle Anvils.....₱ lb @8 ¢
Hay-Budden, Wrought.....9½@9¾ ¢
Trenton .....₱ lb 9½@9¾ ¢

### Imported—
Swedish Solid Steel Sisco, Superior, ₱ lb.....10@10½ ¢
Peter Wright & Sons, ₱ lb, 81 to 349 lb, 11¢; 350 to 600 lb, 11½¢.

### Anvil, Vice and Drill—
Millers Falls Co., $18.00.....15&10%

### Apple Parers—See *Parers, Apple, &c.*

### Aprons, Blacksmiths'—
Livingston Nail Co.....10%

### Augers and Bits—
*Com. Double Spur....75&10@80%*
*Jennings' Patn., Bright.65&10@70%*
*Black Lip or Blued...65@65&5%*
*Boring Mach. Augers.....70%*
*Car Bits, 12-in. twist.....40&10%*
Ford's Auger and Car Bits.....40&5
Ft. Washington Auger Co., Conard's .....35%
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip. R. Jennings' list, 25&7½%
No. 30, R. Jennings' list.....50%
Russell Jennings'.....25&10&2½%
L'Hommedieu Car Bits.....15%
Mayhew's Countersink Bits.....15%
Pugh's Black.....20%
Pugh's Jennings' Pattern.....35%
Snell's Auger Bits.....60
Snell's Bell Hangers' Bits.....60%
Snell's Car Bits, 12-in. twist.....60%
Snell's King Auger Bits.....50%
Swan's .....65&10@70
Swan's, Jennings' Pattern.....50%
Wright's Jennings' Bits.....50%

### Bit Stock Drills—
See *Drills, Twist.*

### Expansive Bits—
Clark's Pattern, No. 1, ₱ doz., $26; No. 2, $18.....60&10%
Ford's, Clark's Pattern...60&5@60&10%
C. E. Jennings & Co., Steer's Pat..25%
Lavigne Pat., small size, $18.00; large size, $26.00.....60&10%
Swan's .....60%

### Gimlet Bits—
*Per gro.*
*Common Dbl. Cut.....$3.00@3.25*
*German Pattern, Nos. 1 to 10, $4.75; 11 to 13, $5.75*

### Hollow Augers—
*Bonney Pat., per doz..$5.50@6.00*
Ames .....20&10%
Universal .....20

### Ship Augers and Bits—
*Ship Augers.....40&10@—%*
Ford's .....33⅓&5%
C. E. Jennings & Co.:
L'Hommedieu's .....60
Watrous' .....33⅓&7½
Snell's .....48%

### Awl Hafts—See *Handles, Mechanics' Tool.*

### Awls—
*Brad Awls:*
*Handled .....gro. $2.75@3.00*
*Unhdled, Shldered...gro.63@66¢*
*Unhandled, Patent..gro.66@70¢*
*Peg Awls:*
*Unhandled, Patent..gro. 31@34¢*
*Unhdled, Shldered..gro. 65@70¢*
*Scratch Awls:*
*Handled, Com...gro. $3.50@4.00*
*Handled, Sq. & t.gro.$11.50@12.00*

### Awl and Tool Sets—See *Sets, Awl and Tool.*

### Axes—
*Single Bit, base weights: Per doz.*
*First Quality.....$4.75@5.00*
*Second Quality.....$4.25@4.50*
*Double Bit, base weights:*
*First Quality.....$7.00@7.50*
*Second Quality.....$6.50@6.75*

### Axle Grease—
See *Grease, Axle.*

### Axles—Iron or Steel.
*Concord, Loose Collar...4¼@4½¢*
*Concord, Solid Collar....4½@5 ¢*
*No. 1 Common, Loose...3½@4 ¢*
*No. 1½ Com., New Style.4¼@4¾¢*
*No. 2 Solid Collar.....4¼@4¾¢*
*Half Patent:*
*Nos. 7, 8, 11 and 12.....70%*
*Nos. 13 to 14.....70%*
*Nos. 15 to 18...70&10@70&10&5%*
*Nos. 19 to 22...70&10@70&10&5%*

### Boxes, Axles—
*Common and Concord, not turned .....lb., 5@6¢*
*Common and Concord, turned, lb., 6@7¢*
*Half Patent.....lb., 9½@10¢*

### Bait—Fishing—
Hendryx:
A Bait.....20%
B Bait.....25%
Competitor Bait.....20&5%

### Balances—Sash—
Caldwell new list.....50&10%
Pullman .....50&10%

### Spring—
*Light Spring Balances.60@60&5%*
Chatillon's:
Light Spg. Balances.....50@50&10%
Straight Balances.....40@40&10%
Circular Balances.....50&10%
Large Dial.....30%

### Barb Wire—See *Wire, Barb.*

### Bars—Crow—
*Steel Crowbars, 10 to 40 lb.... per lb., 2¼@2½¢*

### Towel—
No. 10 Ideal, Nickel Plate..₱ gro. $8.50

### Beam, Scale—
*Scale Beams.....40%*
Chattillon's No. 1.....30%
Chatillon's No. 2.....40%

### Beaters, Carpet—
Holt-Lyon Co.:
No. 12 Wire Coppered ₱ doz. $0.80; Tinned .....$0.85
No. 11 Wire Coppered ₱ doz. $1.15; Tinned .....$1.20
No. 10 Wire Tinned.....₱ doz. $1.50

### Beaters Egg—
Dover Stamping & Mfg. Co.:
Genuine Dover, per gro., No. 1, Tumbler Size, $7.50; No. 2, Family Size, $7.50; No. 3, Extra Family Size, $24.00; No. 4, Hotel Size, $30.00.
Holt-Lyon Co.:
Holt, per doz., No. 5, Jap'd. $0.80; No. A, Jap'd, $1.15; No. B, Jap'd, $1.85. No. 6, Jap'd, $1.65.
Lyon, Jap'd, per doz., No. 2, $1.35.
Taplin Mfg. Co.:
Improved Dover, per gro., No. 60, $6.00; No. 75, $6.50; No. 100, $7.00; No. 102, Tin'd, $8.50; No. 150, Hotel, $15.00; No. 152, Hotel Tin'd, $17.00; No. 200, Tumbler, $8.50; No. 202, Tumbler Tin'd, $9.50; No. 300, Mammoth, per doz., $25.00.

### Bellows—
*Blacksmith, Standard List:*
*Split Leather.....60&10@65%*
*Grain Leather.....50@50&10%*

Net Prices.

Hand—

| *Inch..* | *6* | *7* | *8* | *9* | *10* |
|---|---|---|---|---|---|
| *Doz..* | *$5.00* | *5.50* | *6.00* | *6.50* | *7.50* |

Molders—

| *Inch..* | *10* | *12* | *14* | *16* |
|---|---|---|---|---|
| *Doz..* | *$7.50* | *9.00* | *12.00* | *15.00* |

### Bells—Cow—
*Wrought Cow Bells.....75%*
Jersey .....75&10
Texas Star.....50%

### Door—
Home, R. & E. Mfg. Co.'s.....55&10%

### Hand—
*Polished, Brass.....60@60&10%*
*White Metal.....60@60&10%*
*Nickel Plated.....50&10%*
*Swiss .....50&10%*
Cone's Globe Hand Bells.....33⅓@35%

### Miscellaneous—
*Farm Bells.....lb., 2¼@2½¢*
*Church and School....60@60&10%*

### Belting—Leather—
*First Quality, Ex. Hy., Strictly Short Lap.....60&10%*
*Standard .....70&10@70&10&5%*
*Light Double.....75&10%*
*Cut Leather Lacing.....50%*
*Leather Lacing Sides, per sq. ft. 23@24¢*

### Rubber—
*Competition (Low Grade), 70&10@75%*
*Standard .....60&10@70%*
*Best Grades.....40@50%*

### Bench Stops—
See *Stops, Bench*

### Benders and Upsetters, Tire—
Green River Tire Benders and Upsetters .....20%

### Bicycle Goods—
John S. Leng's Son & Co.'s 1908 list:
Cham. Parts, Spokes.....50%
Tubes .....60%

### Bits—
Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

### Blocks—Tackle—
*Common Wooden.....75@75&5%*
B. & L. B. Co.:
Boston Wood Snatch, 50%; Eclipse Steel, 75%; Hollow Steel, 50&10%; Star Wire Rope, 50%; Tarbox Metal Snatch, 50%; Tarbox New Style Steel, 50&10%; Wire Rope Snatch, 50%.
Lane's Patent Automatic Lock and Junior .....30%
See also Machines, Hoisting.

### Boards, Stove—
*Paper and Wood Lined.....55%*
*Embossed .....55%*

### Boards, Wash—
See *Washboards.*

### Bobs, Plumb—
Keuffel & Esser Co.....33⅓&10%

### Bolts
### Carriage, Machine, &c.—
*Common Carriage (cut thread):*
*¾ x 6 and smaller..75&5@—%*
*Larger and longer....70&5@—%*
*Phila. Eagle, $3.00 list...80@—*
*Bolt Ends.....70&10@—%*
*Machine (Cut Thread):*
*¾ x 4 and smaller..75&10@—%*
*Larger and longer...70&10@—%*

### Door and Shutter—
*Cast Iron Barrel, Japanned, Round Brass Knobs:*

| *Inch* | *3* | *4* | *5* | *6* | *8* |
|---|---|---|---|---|---|
| *Per doz..* | *$0.30* | *.35* | *.45* | *.60* | *.80* |

*Cast Iron Spring Foot, Jap'd:*

| *Inch* | *6* | *8* | *10* |
|---|---|---|---|
| *Per doz.....* | *$1.20* | *1.50* | *2.25* |

*Cast Iron Chain, Flat, Japanned:*

| *Inch* | *6* | *8* | *10* |
|---|---|---|---|
| *Per doz.....* | *$1.00* | *1.40* | *1.65* |

*Cast Iron Flat Shutter, Jap'd, Brass Knobs:*

| *Inch* | *6* | *8* | *10* |
|---|---|---|---|
| *Per doz.....* | *$0.75* | *.95* | *1.25* |

*Wrought Barrel Japanned, 80&10@80&10&5%*
*Barrel Bronzed.....60&10%*
*Spring .....70&10@70&10&10%*
*Shutter .....50&5@50&10&5%*
*Square Neck.....75@75&10%*
*Square .....70&10&10@80%*
Ives' Mortise.....10%
Ives' Wrought Metal.....10%

### Expansion—
F. H. Evans' Crescent.....40@60%
Richards Mfg. Co.....55&10%
Star Expansion Bolt Co.:
Star, Lag Screw Type..60&10&5&2½%
Star, Wood Screw Type.....10%
Star, Machine, Single Wedge....60%
Star, Machine, Double Wedge....60%
Steward & Romain Mfg. Co.:
Style No. 13, Double.....60%
Style No. 1, Single.....60%
Style No. 100, Dbl. Jaw, Single..55%
Lag Screw.....66⅔%

### Plow and Stove—
*Plow .....65&5@70%*
*Stove .....85@85&5%*

### Tire—
*Common Iron.....80%*
*Norway Iron.....80%*
American Screw Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84...82½%
Bay State, list Dec. 28, '99.....80%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84...82½%
Eclipse, list Dec. 28, '99.....80%
Russell, Burdsall & Ward Bolt & Nut Co.:
Empire, list Dec. 28, '99.....80%
Norway Phila., list Oct. '84.....80%
Eagle .....82½%
Shelton Co.:
Tiger Brand, list Dec. 28, '99....80%
Phila., Eagle, list Oct. 16, 1881..82½%
Upson Nut Co.:
Tire Bolts.....72½%

### Borers, Bung—
*Borers Bung, Ring, with Handle:*

| *Inch.....* | *1¼* | *1½* | *1¾* | *2* |
|---|---|---|---|---|
| *Per doz...* | *$4.80* | *5.60* | *6.40* | *8.00* |
| *Inch.....* | | | *2¼* | *2½* |
| *Per doz.....* | | | *$8.65* | *11.50* |

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.75; No. 3, $2.50 each.....25%

### Boxes, Mitre—
C. E. Jennings & Co.....25%
Langdon, New Langdon and Langdon Improved, 20&10%; Langdon Acme .....15&10%
Perfection .....40%
Seavey .....45%

### Braces—
*Comman Ball, American....$1.50*
Barber's .....50&10&10@60&10%
Fray's Genuine Spofford's.....60%
Fray's No. 61, 166, 206, 614.....50%
C. E. Jennings & Co.....50&5%
Mayhew's Ratchet.....60%
Mayhew's Quick Action Hay Pat..50%
Millers Falls Drill Braces.....25&10%
P., S. & W. Co., Peck's Pat....60&10%

### Brackets—
*Wrought Steel.....75&10&5@80%*
Bradley Metal Clasp...80&10@80&10&5%
Griffin's Pressed Steel.....75@75&10%
Griffin's Folding Brackets.....70&10%
Taplin Victor Handy Egg Beater Bracket .....₱ doz. $1.50

### Bright Wire Goods—
See *Wire and Wire Goods.*

### Broilers—
Kilbourne Mfg. Co.....75&20%
Wire Goods Co.....75%

### Buckets, Galvanized—
*M'fr's list, price per gross.*

| | *Quart..* | *10* | *12* | *14* | |
|---|---|---|---|---|---|
| ***Water, Reg...*** | | *26.85* | *29.50* | *33.50* | |
| ***Water, Hvy...*** | | *45.35* | *48.00* | *52.00* | |
| ***Fire, Rd. Btm.*** | | *32.00* | *34.65* | *38.65* | |
| ***Well .....*** | | *37.35* | *41.35* | *45.35* | |

10&7½&5&5%

### Bull Rings—See *Rings, Bull.*

### Butts—Brass—
*Wrought, High List, Oct. 26, '06.65%*
Cast Brass, Tiebout's.....40&10%

### Cast Iron—
*Fast Joint, Broad....40&10@50%*
*Fast Joint, Narrow...40&10@50%*
*Loose Joint.....70&10@75%*
*Loose Pin.....70&10@75%*
*Mayer's Hinges.....70@70&5*
*Parliament Butts.....70@70&5*

### Wrought Steel—
*Bright.*
*Light Narrow, Light Reversible .....70&5%*
*Reversible and Broad..70&5%*
*Loose Joint, Narrow, Light Inside Blind, &c.....70%*
*Back Flaps, Table Chest.65% Japanned.*
*Light Narrow, Loose Pin. 40&5%*
*Light Narrow, Ball Tip..60%*
*Broad .....40&5%*
*Steeple Tipped.....70%*
*Ball Tipped.....70%*

Extra, 10%

## Cages, Bird—

Hendryx Brass: Series 3000, 5000, 1100, net list; 1200, 15%; 200, 300, 900 ..... 30%
Hendryx Bronze: Series 700, 800.... 30%
Hendryx Enameled..... 35%

## Calipers—See *Compasses.*

## Calks, Toe and Heel—

*Blunt, 1 prong, per 100 lb., $3.50@$3.85*
*Sharp, 1 prong, per 100 lb., $4.00@$4.35*
Burke's, 1 pg. Blunt Toe, 3¾¢; 2 pg. Blunt Toe, 4¼¢; 1 pg. Sharp Toe, 4¼¢; 2 pg. Sharp, 4¾¢; Blunt Heel, 4¼¢; Sharp Heel..... 4¾¢
Lautier, Blunt, 4@4¼¢; Sharp, 4½@4¾¢
Perkins', Blunt, ₱ lb, 3.65¢; Sharp, 4.15¢

## Can Openers—

See *Openers, Can.*

## Caps, Percussion—

*Eley's E. B..... 52@55¢*
*G. D..... per M 33@35¢*
*F. L..... per M 40@42¢*
*G. F..... per M. 48@50¢*
*Musket ..... per M 62@63¢*

## Primers—

*Berdan Primers, $2 per M..20&5%*
*Primer Shells and Bullets..15&10%*
*All other primers per M. $1.52@1.60*

## Carpet Stretchers—

See *Stretchers, Carpet.*

## Cartridges—

*Blank Cartridges:*
*32 C. F., $5.50..... 10&5%*
*38 C. F., $7.00..... 10&5%*
*22 cal. Rim, $1.50..... 10&5%*
*32 cal. Rim, $2.75..... 10&5%*
*B. B. Caps, Con. Ball, Swgd. $1.90*
*B. B. Caps, Round Ball.....$1.40*
*Central Fire..... 25%*
*Target and Sporting Rifle. 15&5%*
*Primed Shells and Bullets. 15&10%*
*Rim Fire, Sporting..... 50%*
*Rim Fire, Military..... 15&5%*

## Casters—

*Bed ..... 65&10@70%*
*Plate ..... 60@60&5%*
*Philadelphia ..... 70&10@75%*
Acme, Ball Bearing..... 35%
Gem (Roller Bearing)..... 70&10&10&5%
Steel Gem (Roller Bearing)..... 70%
Standard Ball Bearing..... 45%
Yale (Double Wheel) low list...40&10%

## Cattle Leaders—

See *Leaders, Cattle.*

## Chain, Proof Coil—

*American Coil, Straight Link:*

| 3-16 | ¼ | 5-16 | ⅜ | ½ | ⅝ |
|---|---|---|---|---|---|
| $7.70 | 5.10 | 4.15 | 3.50 | 3.30 | 3.10 |

*⅝ to 1 1⅛ to 1¼ inch.*
*$3.00 $3.10*
*In cask lots, deduct 25¢.*
*German Coil..... 70%*
*German Pattern Coil:*
*6-0 to 1..... 70&10&5%*
*2 and 3..... 60&10&10@70%*
*4, 5 and 6..... 50&10@50&10&5%*

## Halter—

*Halter Chains..... 60&5@60&10%*
*German Pattern Halter Chains, list July 24, '98.... 60&10&5@70%*
Covert Mfg. Co.:
Halter ..... 35&5%

## Cow Ties—

See *Halters and Ties.*

## Trace, Wagon, &c.—

*Traces, Western Standard: 100 pr.*
*6½—6-3, Straight, with ring. $28.00*
*6½—6-2, Straight, with ring. $29.00*
*6½—8-2, Straight, with ring. $32.00*
*6½—10-2, Str'ght, with ring. $37.00*
*NOTE.—Add 2c per pair for Hooks Twist Traces: add per pair for Nos. 2 and 3, 2c; No. 1, 3c; No. 0, 4c to price of Straight Link.*
*Eastern Standard Traces, Wagon Chain, &c...60&10@60&10&5%*

## Miscellaneous—

*Jack Chain, list July 10, '93:*
*Iron ..... 60&10&5@60&10&10%*
*Brass ..... 65%*
*Safety and Plumbers' Chain. 75%*
*Gal. Pump Chain....lb., 4½@5%*
Bridgeport Chain Co.:
Triumph Halter and Coil. 35&2½@40
Triumph Dog..... 5&10@60
Brown Halter and Coil....45@50&5
Covert Mfg. Co.:
Breast, Halter, Heel, Rein, Stallion ..... 40%
Oneida Community:
American Halter, Dog and Kennel Chains ..... 35&2½@40
Niagara Dog Leads and Kennel Chains ..... 45@55&5
Wire Goods Co.:
Dog Chain..... 70
Universal Dbl.-Jointed Chain.... 70

## Chain and Ribbon, Sash—

Oneida Community:
Steel Chain..... 60%
Pullman:
Bronze Chain, 60%; Steel Chain, Coppered ..... 60&10%
Sash Chain Attachments, per set. 8¢
Aluminoy Sash Ribbon, per 100 ft. ..... $2.00@$5.00
Sash Ribbon Attachments, per set. 8¢

## Chalk—

*Carpenters' Blue.....gro., 50¢*
*Carpenters' Red.....gro., 50¢*
*Carpenters' White.....gro., 50¢*

## Checks, Door—

Bardsley's ..... 15%
Pullman, per gro.. ..... 55¢
Russwin ..... 33⅓%

## Chests, Tool—

American Tool Chest Co.:
Boys' Chests, with Tools..... 55%
Youths' Chests, with Tools..... 40%
Gentlemen's Chests, with Tools..... 50%
Farmers', Carpenters, etc., Chests with Tools ..... 20%
Machinists' and Pipe Fitters' Chests, Empty..... 15%
Tool Cabinets..... 45%
C. E. Jennings & Co.'s Machinists' Tool Chests..... 7½%

## Chisels—Socket Framing and Firmer

*Standard List..... 80&10@—%*
Buck Bros..... 30%
C. E. Jennings & Co.:
Socket Firmer No. 10..... 25&7½%
Socket Framing No. 15..... 25&7½%
Swan's ..... 66⅔@70%
L. & I. J. White & Co..... 30@30&5%

## Tanged—

*Tanged Firmers..... 30&5@35%*
Buck Bros..... 30%
C. E. Jennings & Co. Nos. 191, 181..25%
L. & I. J. White Co..... 25&5%

## Cold—

*lb.*
*Cold Chisels, good quality. 13@15¢*
*Cold Chisels, fair quality. 11@12¢*
*Cold Chisels, ordinary.... 9@10¢*

## Chucks—

Almond Drill Chucks..... 35%
Almond Turret Six-Tool Chuck..... 40%
Beach Pat, each $8.00..... 35&5%
Empire ..... 25%
Blacksmiths' ..... 25%
Jacobs' Drill Chucks..... 35%
Pratt's Positive Drive..... 25%
Skinner Lathe Chucks:
Independent ..... 35%
Universal, Reversible Jaws..... 35%
Universal, Com. Style Jaws..... 40%
Combination, Reversible Jaws....35%
Combination, Com. Style Jaws...40%
Round Body or Box Body, 2 Chuck Jaws ..... 25%
Geared Scroll Chucks..... 25%
Drill Chucks:
New Model, 25%; Geared Pattern, 25%; Skinner Patent, ...25%
Positive Drive..... 40%
Planer Chucks..... 20%
Standard ..... 45%
Drill Press Vises..... 30%
Face Plate Jaws..... 35%
Standard Tool Co.:
Improved Drill Chuck..... 45%
Union Mfg. Co.:
Combination, Nos. 1, 2, 3, 4, 5, 6, 7, 8 and 17, 40%; No. 21..... 35%
Scroll Combinations, Nos. 83 and 84 ..... 30%
Geared Scroll, Nos. 33, 34 and 35..25%
Independent Iron, Nos. 18 and 318.35%
Independent Steel, No. 64..... 25%
Union Drill, Nos. 000, 00, 100, 101, 102, 103, 104..... 35%
Union Czar Drill..... 25%
Universal, 11, 12, 16, 17, 13, 14, 15..40%
Universal No. 42..... 35%
Iron Face Plate Jaws, Nos. 28, 30, 48 and 50..... 35%
Steel Face Plate Jaws, Nos. 70 and 72 ..... 30%
Westcott Patent Chucks:
Lathe Chucks..... 50%
Little Giant Auxiliary Drill..... 50%
Little Giant Double Grip Drill...50%
Little Giant Drill, Improved..... 50%
Oneida Drill..... 50%
Scroll Combination Lathe..... 50%
Whitaker Mfg. Co.:
National Drill..... 25%

## Clamps—

Carriage Makers', Star, P., S. & W. Co. ..... 50%
Bosly, Parallel..... 33⅓&10%
Hammer & Co.:
Adjustable ..... 20&5%
Carriage Makers' H. P. Screw.40&5%
Myers' Hay Rack..... 50%
Lineman's Swedish Neverturn..... 65%
Saw Clamps, see Vises, Saw Filers'

## Cleaners, Drain,

Iwan's Champion, Adjustable..... 50%
Iwan's Champion, Stationary..... 40%

## Sidewalk—

American Fork & Hoe Co.:
Star, ₱ doz., Socket, $4.00; Shank ..... $3.50
Shank, ₱ doz., X 7½, $3.50; Shank, X 8..... $3.75

## Cleavers, Butchers'—

Foster Bros..... 30%
Fayette R. Plumb..... 30%
L. & I. J. White Co..... 30%

## Clippers, Horse and Sheep—

Chicago Flexible Shaft Co.: (20%)
1902 Chicago Horse, each..$10.75
20th Century Horse, each...$5.00
Lightning Belt Horse, each.$15.00
Chicago Belt Horse, each. $20.00
Stewart's Enclosed Gear Roll Bearing Horse, each.... $6.75
Stewart's New Model Sheep Shearing Machine each $12.75
Stewart Enclosed Gear Shearing Machine, No. 8, each..$9.75

## Clips, Axle—

*Regular Styles, list July 1, '05. 80&80&10%*

## Cloth and Netting, wire

—See *Wire, &c.*

## Cocks, Brass—

*Hardware list:*
*Plain Bibbs, Globe, Kerosene, Racking, Liquor, Bottling, &c. ..... 75%*
*Compression Bibbs..... 70%*

## Coffee Mills—

See *Mills, Coffee.*

## Collars, Dog—

New ... Co. Walter B. Stevens & Son's list ..... 40%
Leather Walter B. Stevens & Son's list ..... 40%

## Compasses, Dividers, &c.

*Ordinary Goods..... 70&10@75%*

## Conductor Pipe,—

*L. C. L. to Dealers:*

| | Gal. Steel. | Charcoal. | Copper. |
|---|---|---|---|
| *Northeastern:* | | | |
| | 70&10% | 50&10&7½% | 50&10% |
| *Eastern:* | | | |
| | 70&10&5% | 50&10&7½% | 50&10% |
| *Central:* | | | |
| | 75&5% | 60% | 50&10% |
| *Northwestern:* | | | |
| | 75@2½% | 60% | 50&10% |
| *Western:* | | | |
| | 70&7½% | 50&12½% | 50&5% |
| *Tennessee:* | | | |
| | 70&10% | 50&12½% | 50&10% |
| *Southern:* | | | |
| | 70% | 50&12½% | 50&5% |
| *Southwestern:* | | | |
| | 70% | 50&5% | 50&5% |

*Terms, 60 days: 2% cash 10 days. Factory shipments generally delivered.*
See also Eave Troughs.

## Coolers, Water—

L. & G. Mfg. Co.:

| Gal. | 2 | 3 | 4 | 6 | 8 |
|---|---|---|---|---|---|
| Galvanized, ea. | $1.85 | $2.00 | $2.25 | $2.90 | $3.90 |

Galvanized, Lined, side handles,

| Gal. | 2 | 3 | 4 | 6 | 8 |
|---|---|---|---|---|---|
| Each | $1.95 | $2.15 | $2.40 | $3.30 | $4.15 |

White Enameled..... 10%
Agate Lined..... 10%

## Coppers' Tools—

See *Tools, Coopers'.*

## Coppers, Soldering—

*Soldering Coppers, 3 lb. to pair and heavier, 21½¢; lighter than 3 lb. to pair.....23½¢*

## Cord—Sash—

*Braided, Drab.....lb. 35¢*
*Braided, White, Com., Nos. 8 to 12, 21¢; No. 7, 21½¢; No. 6, 22½¢. In lots of 12 doz. or over, 1 cent less per pound.*
*Cable Laid Italian, lb., No. 18. 37¢*
*Italian, lb., A, No. 18, 25¢; B, 22¢*
*Common India.....lb., 11@11½¢*
*Cotton Sash Cord, Tw'ted. 18@20¢*
*Patent Russia.....lb....20¢*
*Cable Laid Russia.....lb...21¢*
*India Hemp, Br'd'd.....lb...21¢*
*India Hemp, Twisted...lb. 13@14¢*
*Patent India, Twisted..lb...17¢*
Pearl Braided, cotton, No. 6, ₱ lb, 20½¢; No. 7, 19½¢; Nos. 8 to 12, 19½¢, in 12 doz. to 100 doz. lots.
Eddystone Braided, Nos. 8 to 12, 26¢; 7, 26½; 6, 27½¢.
Harmony Cable Laid Italian, Nos. 7 to10.....₱ lb 23¢
Pullman:
Wire Sash Cord..... 10%
Sash Cord Attachments, per 100..$2.00
Samson, Nos. 8 to 12: (15%)
Braided, ₱ lb., Drab Cotton, 55¢; Italian Hemp, 40¢@50¢; Linen, 65¢; White Cotton, 50¢; Spot Cord.....50¢
Massachusetts, White...₱ lb 40¢
Massachusetts, Drab....₱ lb 45¢
Phoenix, White, Nos 8 to 12....27¢
Silver Lake, per lb.:
A, Drab, 45¢; A, White, 40¢; B, Drab, 40¢; B, White, 35¢; Italian Hemp, 40¢; Linen....57½¢
See also Chain and Ribbon.

## Wire, Picture—

*Full Length..... 90@—%*
*Short Length..... 90&20@—%*
Hendryx Standard Wire Picture Cord, old list, 85&10
Turner & Stanton Co. Wire Picture Cord ..... 90%

## Cradles—

*Grain ..... 50%*

## Crayons—

*White Round Crayons, Cases, 100 gro., $8.00, $8.50, $9.00 and $10.00 according to grade.*
Zehnicker's Lumber: ₱ gro
White and Purple, Indelible....$7.50
Blue, Red, Green, Yellow and Terra Cotta, $6.50; Black.....$4.50
Giant Lumber, 5¼ in. x 15-16 in. round, all colors, $12.00; Indelibles, $14.00; Blacks..... $10.00
Genuine Soapstone, Metal Workers', 5 in. x ¼ in. Round, $2.50; 5 in. x ¼ in. Square, $1.75; 5 x ½ x 3-16, $2.50; 5 x 1¼ x 3-16 ..... $3.00
Suremark, Black, $2.25; Blue, Red and Yellow..... $2.50

## Crooks, Shepperds'—

American Fork & Hoe Co.:
Montana ..... ₱ doz. $4.50

## Crow Bars—See *Bars, Crow.*

## Cultivators—

American Fork & Hoe Co.:
Victor Garden ..... 50&10

## Cutlery, Table—

International Silver Company:
No. 12 Meat Knives, 1847 Rogers, doz. $3.50
Star, Eagle, Rogers & Hough's and Acorn ..... doz. $2.00
Wm. Rogers & Son..... doz. $2.50

## Cutters—Glass—

H. H. Morse & Co. ..... 40
Red Devil ..... 40
E. Mfg. Co. ..... 20
W. ... ..... 50

## Meat and Food—

American ..... 30%
[illegible]
Enterprise ..... 10&7
P. S. & W. Co.:
Ideal ..... 10@10&7



Hales ..... 60&5%
Little Giant..... ₱ doz. 40@50%
Nos.. 305 310 312 320 322
$35.00 $18.00 $14.00 $72.00 $68.00
New Triumph No. 605, ₱ doz. $21.00, 40%
Russwin Food, No. 1, $24.00; No. 2, $27.00; 3, $12.00..... 45&10&10%
$15.00 $18.00
Enterprise Beef Shavers..... 25@30%

## Siaw and Kraut—

Henry Disston & Sons:
Slaw and Kraut Cutters..... 35%
Corn Graters..... 30%
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife ...₱ doz. $3.00
Combined Slaw Cutter and Corn Grater .....₱ doz. $4.00

## Tobacco—

*All Iron, Cheap...doz, $4.25@4.50*
Enterprise ..... 25@30%
National, ₱ doz., No. 1, $21; No. 2, $18 ..... 40%

## Diggers, Post Hole, &c—

Disston's:
Rapid, ₱ doz., $24.00..... 25%
Samson, ₱ doz., $31.00..... 25%
Iwan's Pat. Post Hole and Well Auger ..... 40%
Vaughan Pattern Post Hole Augers, ₱ doz., $7.00
Perfection Post Hole Diggers, ₱ doz. ..... $8.50
Split Handle Post Hole Diggers, ₱ doz., $7.50
Hercules Pattern, ₱ doz..... $9.50
Kohler's, ₱ doz., Universal, $14.00; Little Giant, $12.00; Hercules, $10.00; Invincible, $9.00; Rival, $8.50; Pioneer..... $7.50
Never-Break Crucible Steel Post Hole Diggers ..... 60%

## Dividers—See *Compasses.*

## Drawing Knives—

See *Knives, Drawing.*

## Dressers Emery Wheel—

Sterling Emery Wheel Dressers..... 35%
Sterling Wheel Dresser Cutters..... 35%

## Drills and Drill Stocks—

*Blacksmith's Common Drilling Machines ..... $1.50@1.75*
Breast, Millers Falls..... 15&10%
Breast, P., S. & W..... 33⅓%
C. & C. Ratchet..... 25%
Reversible Ratchet Die Stocks....25%
Goodell Automatic Drills 50&10@60&10
Millers Falls Automatic Drills, Graves', per doz., Nos. 1, $4.86; 2, $8.16.
Millers Falls Automatic Drills. 33⅓&10%
Ratchet, Curtis & Curtis..... 25%
Ratchet, Parker's..... 40%
Ratchet, Weston's..... 40%
Ratchet, Weston's, Style H Improved ..... 40@40&5%
Ratchet, No. 012..... 40@40&5%
Ratchet, Celebrated..... 40@40&5%
Ratchet, Whitney's, P., S. & W.. 40&10@50%
Whitney's Adjustable, No. 10, $12.00, 33⅓%

## Twist Drills—

*Bit Stock..... 70@70&5%*
*Taper and Straight Shank, 60&10@70%*

## Drivers, Screw—

*Screw D'ver Bits, per doz. 45@50¢*
Balsey's Screw Holder and Driver, ₱ doz., 2½-in., $6; 4-in., $7.50; 6-in., $9 ..... 50%
Buck Bros.' Screw Driver Bits..... 30%
Champion ..... 50%
Disston's ..... 70%
Fray's Hol. H'dle Sets, No. 3, $12..50%
Ford's Brace Screw Drivers....40&10
Gay's Double Action Ratchet..... 35%
Goodell's Auto..... 65@65&10%
Mayhew's Black Handle..... 40%
Mayhew's Monarch..... 40%
Millers Falls, ₱ doz., Nos. 11, $9.95; 12, $13.73; 20, $8.17; 21, $8.46; 41, $13.43; 42, $17.21.
Smith & Hemenway Co. Neverturn, 66⅔; Elmora, 60; Star, 30&10%
Swan's:
Nos. 7565 to 7568, 60%; No. 7540, 40&10%

## Eave Trough, Galvanized—

| Territory. | Gal. Steel. | Copper. |
|---|---|---|
| *Northeastern..* | *75&10&5%* | *50&10%* |
| *Eastern.....* | *80%* | *50&10* |
| *Central.....* | *80&10&5%* | *50&10%* |
| *Northwestern..* | *80&10&5%* | *50&10%* |
| *Western.....* | *80&5* | *50&5%* |
| *Tennessee.....* | *80&5* | *50&10* |
| *Southern.....* | *75&10%* | *50&5%* |
| *Southwestern..* | *75&10&2½%* | *50&5%* |

*Terms, 2% for cash. Factory shipments generally delivered*
*Note.—Lower prices are made in some sections.*
See also Conductor Pipe and Elbows.

## Elbows and Shoes—

*Factory shipments will be from stock's*
*Galv. Steel, Galv. C. I. and Copper*
*Sizes 2, 3, 4 ..... 50%*
*Sizes 1½, 2½, 3½, 5, 6 ..60&10%*
*No. 26 ..... 70%*
*No. 24 ..... 35%*
*Copper Elbows ..... 70%*

## Elbows, Stove Pipe—

[illegible]

## Emery, Turkish—

| | ¼ to ½: | ¾ to 2?: | Flour |
|---|---|---|---|
| *Kegs .....lb.* | *5¢* | *5½¢* | *6½¢* |
| *⅛ Kegs.....lb.* | *5½¢* | *5¾¢* | *6¾¢* |
| *¼ Kegs.....lb.* | *5½¢* | *6¢* | *7¢* |

*10-lb. cans, 10 in case....6½¢ 7 ¢ 6 ¢*
*10-lb. cans, less than 10.....10 ¢ 10 ¢ 8 ¢*
*Less quantity..10 ¢ 10 ¢ 8 ¢*

*NOTE.—In lots 1 to 3 tons a discount of 10% is given.*

### Extensions, Bit—
Ford's Auger Bit Extensions....40&5%

### Extractors, Lemon Juice—
—See *Squeezers, Lemon.*

## Fasteners, Blind—
Zimmerman's Jap'd and Galv., 50 & 5%; Bronze and Plated.....50%
Walling's .....50%
Upson's Patent.....40%

### Cord and Weight—
Ives, ₱ gro., $1.08.....10%
Titan, ₱ gro., $0.66.....10%

### Corrugated—
Acme Corrugated Fasteners.....70%

### Faucets—
*Cork Lined.....50&10@60%*
*Metallic Key, Leather Lined, ..60&10@70%*
*Red Cedar.....40&5@40&10&5%*
*Petroleum .....70&10@75%*
B. & L. B. Co.:
Metal Key.....60&10%
Star .....60%
West Lock.....50&10%
John Sommer's Peerless Tin Key....40%
John Sommer's Boss Tin Key.....50%
John Sommer's Victor Mtl. Key.50&10%
John Sommer's Duplex Metal Key..60%
John Sommer's Diamond Lock.....40%
John Sommer's I.X.L. Cork Lined..50%
John Sommer's Reliable Cork Lined..50&10%
John Sommer's Chicago Cork Lined.60%
John Sommer's O. K. Cork Lined...50%
John Sommer's No Brand, Cedar....50%
John Sommer's Perfection, Cedar....40%
Self Measuring:
Enterprise, Self Measuring and Pump, ₱ doz., $36.00.....40&10%
Lane's, ₱ doz., $36.00.....40&10%
National Measuring, ₱ doz. $36.40&10%

### Felloe Plates—
See *Plates, Felloe.*

### Files— Domestic—
*List Nov. 1, 1899.*
*Best Brands.....70&10@75&10%*
*Standard Brands.....75&10@80%*
*Lower Grade....75&10&10@80&10%*
Gold Medal.....70%
McCaffrey's American Standard, 60&10&10%

### Imported—
*Stubs' Tapers, Stubs' list, July 24, '97.....33⅓@40%*

### Fixtures, Fire Door—
Richards Mfg. Co.:
Universal, No. 103; Special, No. 104 .....$3.75
Fusible Links, No. 96.....50%
Expansion Bolts, No. 107.....60&10%

### Grindstone—
*Net Prices:*

| | | | | |
|---|---|---|---|---|
| *Inch* | *15* | *17* | *19* | *21* |
| *Per doz.* | *$3.60* | *3.85* | *4.15* | *4.65* |

Peck, Stow & Wilcox Co.:

| In. | 15 | 17 | 19 | 21 | 24 |
|---|---|---|---|---|---|
| | $4.00 | 4.40 | 4.75 | 5.50 | 6.50 |

....30%
Reading Hardware Co.....60%

### Fodder Squeezers—
See *Compressors.*

### Forks—
American Fork & Hoe Co.:
Iowa Dig-Ezy Potato.....70&5%
Hay, Regular, 3-tine.....45&20&12½%
Hay, Regular, 4-tine.....60&7½&5
Champion, Hay.....60&12½
Acme, Hay.....60&20
Manure, Regular, 4-tine.....65&5%
Manure, Regular, 5 and 6 tine...70
Champion, Manure.....65&5
Columbia, Manure.....70
Acme, 4-tine.....60&10&5%
Round Shoulder Header, 4-tine..65%
Champion, Header.....65
Dakota, Header.....65
Kansas Header.....65
Wood, Barley.....35&5%
Steel, Barley.....66⅔
Columbia, Spading.....70&7½&5%

### Frames— Wood Saw—
*White, S'g't Bar, per doz.75@80¢*
*Red, S'g't Bar, per doz.$1.00@1.25*
*Red, Dbl. Brace, per doz.$1.40@1.50*

### Freezers, Ice Cream—

| *Qt.....* | *1* | *2* | *3* | *4* | *6* |
|---|---|---|---|---|---|
| *Each....* | *$1.25* | *$1.60* | *$1.90* | *$2.20* | *$2.80* |

### Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

### Fry Pans—See *Pans, Fry.*

### Fuse— *Per 1000 Feet.*
*Hemp .....$2.75*
*Cotton .....3.20*
*Waterproof Sgl. Taped..3.65*
*Waterproof Dbl. Taped..4.40*
*Waterproof Tpl. Taped..5.15*
10&2½%

## Gates, Molasses and Oil—
*Stebbins' Pattern.....80@80&5%*

### Gauges—
*Marking, Mortise, &c..50@50&10%*
Chapin-Stephens Co.:
Marking, Mortise, &c. ...50&50&10%
Disston's Marking, Mortise, &c. 67½%
Wire, Brown & Sharpe's.....33⅓%
Wire, Morse's .....25%
Wire, P., S. & W. Co.....33⅓%

### Gimlets— Single Cut—
*Numbered assortments, per gro.*
*Nail, Metal, No. 1, $2.00; 2, $2.30*
*Spike, Metal, No. 1, $4.00; 2, $4.30*
*Nail, Wood Handled, No. 1, $2.30; 2, $2.60*
*Spike, Wood Handled, No. 1, $4.30; 2, $4.60*

### Glass, American Window
See *Trade Report.*

### Glasses, Level—
Chapin-Stephens Co.....65@65&10%

### Glue, Liquid Fish—
*Bottles or Cans, with Brush, 25&10@50%*
Elwell's .....40%

### Grease, Axle—
*Common Grade...gro. $6.00@$6.50*
Dixon's Everlasting, 10-lb. pails, ea. 85¢; in boxes, ₱ doz., 1 lb, $1.20; 2 lb.....$2.00
Helmet Hard Oil.....25%

### Griddles, Soapstone—
Pike Mfg. Co.....33⅓@33⅓&10%

### Grinders—
Pike Mfg. Co.:
Hand and Foot Power, Pyko Nos. 1, 2, 3; Pyko Primo; Pyko Peerless; Pyko Spiral (foot power).33⅓%
Mower Knife and Tool, $5.00..40&10%
Royal Mfg. Co.:
Alundum Grinding Machines, each, Nos. 01, $1.75; 1A, $2.50; 10, $5.00 .....30%
Alundum Sickle Grinders, each, Nos. 20, $5.00; 20A, $6.00; 20A Combined, $6.50.....30%
Alundum Disc Grinders, each, $2.50 .....30%

### Grindstones—
Pike Mfg. Co.:
Improved Family Grindstones. ₱ inch, ₱ doz., $2.00.....33⅓%
Richards Mfg. Co., Eli and Cycle Ball Bearing, mounted.....40%

### Grips, Nipple—
Perfect Nipple Grips.....40&10&2%

## Halters and Ties—
*Cow Ties.....65@65&10%*
Bridgeport Chain Co.:
Triumph Coil and Halters.35&2½@40%
Brown Coil and Halters...45@50&5%
Brown Cow Ties.....50&5@50&10&5%
Brown Tie Outs.....70&10@75&5%
Covert Mfg. Co.:
Web .....30&2%
Jute Rope.....35%
Sisal Rope.....20%
Cotton Rope.....45%
Hemp Rope.....45%
Oneida Community:
Am. Coil and Halters.....40@40&5%
Am. Cow Ties.....45@50%
Niagara Coil and Halters...45@50&5%
Niagara Cow Ties.....45&5@50&10&5%

### Hammers—
### Handled Hammers—
Heller's Machinists'....55&10@55&10&5%
Heller's Farriers.....40&5@40&10&5%
Peck, Stow & Wilcox Co.:
Crucible Steel.....40&10@50%
Farriers' .....40&10@50%
Riveting .....40&10@50%
Machinists' .....66⅔@5%
Blacksmiths' .....50%
Fayatte R. Plumb:
A. E. Nail.....40&2½@40&12½%
Eng. and B. S. Hand.50&10&5@60&5%
Machinists' Hammers.....60&10&5%
Rivet and Tinners'.40&7½@40&12½&5%
Victor Magnetic Tack, ₱ gro....$7.75

### Heavy Hammers and Sledges—
*Under 3 lb., per lb., 50¢...80&10%*
*3 to 5 lb., per lb., 40¢...80&10&10%*
*Over 5 lb., per lb., 30¢.....*
*Over 5 lb., per lb., 30¢.80&10&10%*

### Handles—
### Agricultural Tool Handles
*Axe, Pick, &c....60&10@60&10&5%*
*Hoe, Rake, &c.....40%*
*Fork, Shovel, Spade, &c.:*
*Long Handles.....40%*
*D Handles.....40%*

### Cross-Cut Saw Handles—
Atkins' .....40%
Champion .....50%
Disston's .....50%

### Mechanics' Tool Handles—
*Auger, assorted...gro. $3.00@$3.50*
*Brad Awl.....gro. $1.65@$1.75*
*Chisel Handles, Ass'd, per gro.:*
*Tanged Firmer, Apple, $2.40@$2.65; Hickory.....$2.15@2.40*
*Socket Firming, Apple, $1.75@$1.95; Hickory.....1.60@1.75*
*Socket Framing, Hickory, $1.60@$1.75*
*File, assorted.....gro. $1.30@$1.40*
*Hammer, Hatchet, &c., 60&10@60&10&5%*
*Hand Saw, Varnished, doz., 80¢ 85¢; Not Varnished.....65@75¢*
*Plane Handles:*
*Jack, doz., 30¢; Fore, doz...45¢*
Chapin-Stephens Co.:
Carving Tool.....30@30&10%
Chisel .....60@60&10%
File and Awl.....60@60&10%
Saw and Plane.....30@30&10%
Screw Driver.....30@30&10%
Millers Falls Adj. and Ratchet Auger Handles .....15&10%
Nicholson Simplicity File Handle.... ₱ gro. $0.85@$1.50
J. L. Osgood:
Indestructible File and Tool, ₱ gro., No. 1, $8.00; No. 2, $8.50; No. 3, $9.00; No. 4, $9.50; No. 5, $10.00.....gro. lots 10%
W. A. Zelnicker Supply Co.:
Hammer, ₱ doz., 12 in. $2.00; 14 in., $2.00; 16 in., $2.30; 18 12., $2.50; 20 in., $2.70; 22 in., $3.00; 24 in., $3.30; 26 in., $3.50; 30 in., $3.80.
Sledge, ₱ doz., oval, 30 in., $3.80; octagon, 30 in., $3.80; oval, 36 in., $4.00; octagon, 36 in.. $4.00.
Axe, ₱ doz., 28 to 34 in., $5.60; 36 in., $5.80.
Adze, ₱ doz., 36 in., $5.80; 36 in., $7.80.
Pick, ₱ doz., R. R., 36 in., $8.00; coal, 34 in., $5.80.
Hatchet, ₱ doz., 12 to 14 in., $2.00.
50%

### Hangers—
*NOTE.—Barn Door Hangers are generally quoted per pair, without track and Parlor Door Hangers per double set with track, &c.*
Chicago Spring Butt Co.:
Friction .....25%
Oscillating .....25%
Big Twin.....25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door.....50%
Elevator .....30%
Railroad .....50%
Cronk & Carrier Mfg. Co.:
Loose Axle.....60&10%
Roller Bearing.....70%
Griffin Mfg. Co.:
Solid Axle, No. 10, $12.00..60&10%
Roller Bearing, No. 11, $15.00, 60&10%
Roller Bearing, Ex. Hy., No. 22, $18.00.....60&10%
Bull Dog, $24.00.....70%
Lane Bros. Co.:
**Parlor, Ball Bearing, $4.00;** Standard, $3.15; No. 105, $2.85; New Model, $2.80; New Champion per set of 4 Hangers, complete with track.....$2.25
Barn Door, Standard.....60&10%
Hinged .....net $6.08
Covered .....60&5%
Special .....70&5%
Trolley Hangers and track...50%
Lawrence Bros.:
Cleveland .....70&7½%
Clipper, No. 75.....60%
Crown .....55&10%
Cyclone, No. 40.....net $6.50
Tandem, No. 50.....net $7.50
New York.....55&10%
Trolley, No. 30, ₱ pair.....$1.25
McKinney Mfg. Co.:
Roller Bearing, Nos. 1 and 2..70%
Anti-Friction .....60%
Hinged Hangers, King Charm.60%
Richards Mfg. Co.:
Hangers, Nos. 47, 48, 147, 247, 60&5%
Pioneer Wood Track, No. 3..$2.25
Roller B'r'g St'l Track No. 12.$2.20
Roller B'r'g St'l Track No. 13.$2.50
Roller B'r'g, Nos. 39, 41, 43, 70&7½%
Hero, Adj. Track No. 19..50&10%
Adjustable Track Tandem Trolley Track No. 16.....50&10%
Seal, Steel Track No. 8.....$2.25
Auto Adj. Track No. 22..50&5%
Trolley B. D. No. 17, $1.25; F. D. No. 120, $2.25; No. 121, $2.45; No. 150.....$2.50
Safety Underwriters F. D. No. 101 .....50%
Tandem No. 41..2½ and 3 60&10%
Palace, Adjustable Track No. 132 .....50&5%
Royal, Adjustable Track No. 122 .....50&10%
Ives' Wood Track No. 1.....$2.25
Trolley B. D. No. 20.....50&10%
Trolley B. D. No. 24, $1.30; No. 27, $1.40; No. 28.....$1.60
Roller Bearings, Nos. 37, 38, 39, 41, 43, 44, Sizes 1 and 2.70&7½%
Anti-friction, No. 42; No. 44, sizes 2½ and 3.....60%
Hinged Tandem No. 48....60&5%
Folding Door B. B. Swivel No. 135 .....40%
Taylor & Boggis F'y Co.'s Kidder's Roller Bearing, ₱ doz., 4 in., $12.00; 5 in., $14.00..40&10%
Myers' Stayon Hangers.....60%
Extra 5@10% often given.

### Hangers— Garment—
Pullman Trouser, ₱ gro., No. 1 $9.00; No. 4, $21.00; No. 5, $16.50; No. 8, Black Enamel, $7.50; No. 10, $21.00; No. 12, $8.00; No. 15, Rods, $9.00; No. 18, Loops.....$10.00
Victor Folding.....₱ gro. $9.60

### Gate—
Myers' Patent Gate Hangers, ₱ doz. net .....50%

### Joist and Timber—
Lane Bros. Co.....35%

### Hasps—
Griffin's Security Hasp.....50&10%
McKinney's Perfect Hasp, ₱ doz..60%

### Hatchets—
*Regular list, first qual.40&12½@—*
*Second quality.....50&10&5@—*

### Heaters, Carriage—
Clark, No. 5, $1.25; No. 5B, $1.50; No. 3, $1.75; No. 3D, $2.00; No. 7D, $2.25; No. 3E, $2.50; No. 1, $3.00.....25%
Clark Coal, ₱ doz., $0.75.....20%

### Hinges—
### Blind and Shutter Hinges
*Surface Gravity Locking Blind: Doz. Sets with Fastenings, No. 1, $0.70; No. 3, $1.25; No. 5, $2.65.*
*Mortise Shutter.....80%*
*Mortise Reversible Shutter...80%*
North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%
Charles Parker Co.....70&75%
Parker Wire Goods Co.
Hale & Benjamin Automatic Blind Hinges .....20%
Hale's Blind Awning Hinges, No. 110, for wood, $9.00; No. 111, for brick, $9.00.....20%
Reading's Gravity.....60%
Stanley's Steel Gravity Blind Hinges, No. 1647½, ₱ doz. sets, without screws, $0.95; with screws, $1.25.
Wrightsville Hardware Co.:
O. S., Lull & Porter.....75&5%
Acme, Lull & Porter.....75%
Queen City Reversible.....75%
Shepard's Noiseless, Nos. 60, 65, 55 .....75&5%
Niagara, Gravity Locking, Nos. 1, 3 & 5.....75&5%
Clark's O. P., No. 1.....75&10%
Clark's O. P., Nos. 3 and 5....75&5%
Tip Pat'n, No. 1.....75&10%
Clark's No. 3.....75&5%
Buffalo Gravity Locking, Nos. 1, 3 & 5.....70&10&5%
Shepard's Double Locking.....75%
Champion Gravity Locking.....75&5%
Pioneer .....75&10%
Empire .....65%
W. H. Co.'s Mortise Gravity Locking, No. 2.....60&10%

### Gate Hinges—
*Clark's or Shepard's—Doz. sets:*

| *No.* | *1* | *2* | *3* |
|---|---|---|---|
| *Hinges with L't'chs.* | *$2.00* | *2.70* | *5.00* |
| *Hinges only.....* | *1.25* | *1.90* | *3.50* |
| *Latches only.....* | *.70* | *.75* | *.35* |

*New England:*
*With Latch.....doz..@$2.00*
*Without Latch.....doz..@$1.60*
*Reversible Self-Closing:*
*With Latch.....doz..@$1.75*
*Without Latch...doz. ...@$1.35*
*Western:*
*With Latch.....doz. $1.75*
*Without Latch.....doz..$1.15*
Wrightsville Hardware Co.:
Shepard's or Clark's Hinges and Latches, Hinges only or Latches only, Nos. 1, 2 or 3.....70%

### Miscellaneous—
Griffin Mfg. Co., Fleur de Lis Surface Hinges, ₱ doz. prs.....$1.00

### Pivot Hinges—
Bommer Bros. Pivot, Ball Bearing .....40%
Lawson Mfg. Co. Matchless.....30%

### Spring Hinges—
*Holdback, Cast Iron...$6.75@$7.00*
*Non-Holdback, C'st Iron$6.50@$6.75*
J. Bardsley:
Bardsley's Non-Checking Mortise Floor Hinges.....40%
Bardsley's Patent Checking.33⅓%
Bommer Bros.:
Spring Butt Hinges.....40%
Surface Floor, Ball Bearing .....40%
Mortise Floor, Ball Bearing.40%
Lavatory Hinges.....40%
Non-Holdback Screen Door, Nos. 2000 and 900.....40%
Holdback Screen Door, No. 999.....₱ gro. $9.00
Chicago Spring Butt Co.:
Chicago Spring Hinges.....25%
Triple End Spring Hinges....50%
Chicago (Ball Bearing) Floor.50%
Garden City Engine House...25%
Keene's Saloon Door.....25%
Columbian Hardware Co.:
Acme, Wrought Steel.....30%
Acme, Brass.....25%
American .....30%
Columbia, ₱ gr., No. 14, $9.00; No. 18.....$25.00
Columbia, Adj., No. 7, ₱ gr.$12.00
Gem, new list.....30%
Clover Leaf and Acorn, per gro. .....$12.00
Oxford, new list.....30%
Floor Spring Hinges.....65&10%
Columbian Steel.....65&10%
Lawson Mfg. Co.:
Matchless Spring Hinges.....30%
Matchless Jamb Hinges.....30%
Richards Mfg. Co.:
Superior Double Acting Floor Hinges .....40%
Shelby Spring Hinge Co.:
Buckeye All Steel Holdback Screen Door.....₱ gr. $9.00
Chief Ball Bearings Floor Hinge .....50%
Ball Bearing Door.....25%
No. 777, Sheet Steel Holdb'k, ₱ gr. pr.....$9.00
Standard Mfg. Co.:
Champion Double Acting Door Hinge .....25&10&10%
Standard Double Acting Floor Hinge .....25&10&10%
Superior Spring Hinge Co.:
Superior Floor Hinges.....33⅓%
Spring Hinges.....33⅓%
Extra 10% often given on most of these Hinges.

### Wrought Iron Hinges—
*Strap and T Hinges, &c., list February 10, 1908:*
*Light Strap Hinges..50&10%*
*Heavy Strap Hinges..60&5%*
*Light T Hinges.....50%*
*Heavy T Hinges.....40%*
*Extra Hvy. T Hinges.50&10%*
*Hinge Hasps.....33⅓%*
*Cor. Heavy Strap....60&5%*
*Cor. Ex. Heavy T...50&10%*
Extra 10&7½%.
*Screw Hook and Strap. 6 to 12 in..lb. 3½¢; 1½ to 20 in..lb. 3¼¢; 22 to 36 in..lb. 3 ¢*
*Screw Hook and Eye: ⅜, to 1 inch.....lb. 6¼¢; ⅝-inch .....lb. 7½¢; ½-inch .....lb. 8½¢*

### Hitchers, Stall—
Covert Mfg. Co., Stall Hitchers..30&2%

### Hods— Coal—
*M'f'gr's list, price per gross:*

| *Inch .....* | *15* | *16* | *17* | *18* |
|---|---|---|---|---|
| *Galv. Open....* | *$35* | *$39* | *$42* | *$46* |
| *Jap. Open... .* | *26* | *28* | *31* | *35* |
| *Galv. Funnel...* | *48* | *48* | *52* | *56* |
| *Jap. Funnel....* | *33* | *36* | *59* | *43* |

10&7½&5%

### Masons' Etc.
Cleveland Wire Spring Co.:
Steel Brick, No. 162.....each $1.05
Steel Mortar, No. 158.....each $1.35

### Hoes— Eye-

*Scovil and Oval Pattern, 60&10@60&10&10%*
*Grub, list Feb. 23, 1899, 70&10@70&10&10%*
D. & H. Scovil....27½%
Am. Fork & Hoe Co. (Scovil Pattern) ....60&5%

### Handled—

Cronk's Weeding, No. 1, $2.00; No. 2, $2.50
Star Double Bit....$2.50
American Fork & Hoe Co.:
Regular, Cotton....75&10&5&2½%
Crescent, Cultivator....75&2½%
Mattock, Senior....70%
Mattock, Junior....70%
Sprouting....50%
Tobacco, Harper's....66⅔&15&10%
Warren....55&10&10&5%
Ivanhoe....65&15&10%
Cultivator, B B 6....70&10&10&5%
Cultivator, B B 6½....70&10&10&5%
Weeding, Acme....72½&10&2½%
Scuffle, Lightning....60&5%

### Hoisting Apparatus—

See *Machines, Hoisting.*

### Holders— Bit—

Angular, ℔ doz. $24.00....45&10%

### Door—

Bardsley's, Iron, 40%; Brass and Bronze....25%
Empire....50%
Pullman....25%
Richards Mfg. Co.: No. 117, Ever-ready, 40%; Nos. 118, 119, Sure Grip....50%
Superior....33⅓%

### File and Tool—

Nicholson File Holders and File Handles....33⅓@40%

### Fruit Jar—

Triumph Fruit Jar Holder, ℔ gross, $18.00; ℔ doz....$2.00

### Trace and Rein—

Fernald Double Trace Holder, ℔ doz. pairs....$1.25
Dash Rein Holder, ℔ doz....$1.25

### Hones—Razor—

Pike Mfg. Co., Belgian and Swaty, 50%; German....33⅓%

### Hooks—Cast Iron—

Bird Cage, Reading....40%
Clothes Line, Reading List....40%
Coat and Hat, Reading....45&20%
Coat and Hat, Wrightsville....60&5%
Harness, Reading List....40%

### Wire—

*Belt, Nos. 1 to 15....75&10@80%*
*Wire C. & H. Hooks..80@80&10%*
Bradley Metal Clasp Wire, Coat and Hat, 75&10@80%; Ceiling..75&10@80
Columbian Hdw. Co., Gem....75&10%
Parker Wire Goods Co., King..75&10%
Wire Goods Co.:
Acme, 60&10%; Chief, 70&10%; Crown, 75%; Czar, 65&10%; V Brace, 75%; Czar Harness, 50%; Ceiling, 75%.

### Wrought Iron—

*Box, 6 in., per doz., $0.90; 8 in., $1.15.*
*Cotton....doz. $1.25@$1.50*
Wrought Staples, Hooks, &c.— See Wrought Goods.

### Miscellaneous—

*Hooks, Bench,* see *Stops, Bench.*
*Bush, Light, doz., $6.20; Medium, $6.75; Heavy, $7.65*
*Grass, best, all sizes, per doz., $2.75@$3.00*
*Grass, common grades, all sizes, per doz....$1.25@$1.50*
*Whiffletree....lb. 5¾@6¢*
*Hooks and Eyes:*
*Brass....60@60&10%*
*Malleable Iron....70@70&10%*
Covert Mfg. Co. Gate and Scuttle Hooks....40%
Turner & Stanton Co. Cup and Shoulder....85&10%
Bench Hooks—See Bench Stops.
Corn Hooks—See Knives, Corn.

### Horse Nails—

See *Nails, Horse.*

### Horseshoes—

See *Shoes, Horses.*

### Hose, Rubber—

*Garden Hose, ¾-inch:*
*Competition....ft. 6@6½¢*
*3-ply Guaranteed....ft. 8½@9¢*
*4-ply Guaranteed....ft. 9½@12¢*
*Cotton Garden, ¾-in., coupled:*
*Low Grade....ft. 8@ 9c*
*Fair Quality....ft. 10@11¢*

### Irons— Sad—

*From 4 to 10....lb. 2½@2¾¢*
*B. B. Sad Irons....lb. 3¼@3½¢*
*Mrs. Potts', cents per set:*

| | Nos. 50 | 55 | 60 | 65 |
|---|---|---|---|---|
| Jap'd Caps | 86 | 93 | 96 | 93 |
| Tin'd Caps | 91 | 88 | 1.01 | 98 |

*New England Pressing..lb. 3¾@4¢*

### Bar and Corner—

Richards Mfg. Co., Bar, 60&10%; Corner....60%

### Pinking—

*Pinking Irons....doz. 60@65¢*

### Irons, Soldering

See *Coppers.*

### Jacks, Wagons—

Covert Mfg. Co.:
Auto Screw....30&2%; Steel, 15%
Lockport....50%
Lasch's Steel....30&5%
Richards' Tiger Steel, No. 130..50&10%
Smith & Hemenway Co.'s....25%

### Ladder—

Richards Mfg. Co., Ladder Jacks..50%

### Jointers—

Pike Mfg. Co., Saw Jointers, $7.00..40%

### Kettles—

*Brass, Spun, Plain....20@25%*
Enameled and Cast Iron—See Ware, Hollow.

### Knives—

### Butcher, Kitchen, &c.—

Foster Bros.' Butcher, &c....30%
Wilkinson Shear & Cutlery Co....60%

### Corn—

Columbian Cutlery Co., Wilcut Brand Knives and Hooks....60%
American Fork & Hoe Co.:
Easy Cut, ℔ doz., No. 10 C H...$2.10
Easy Cut, ℔ doz., No. 10 B C H..$2.20
Acme, ℔ doz....$2.35
Dent, ℔ doz....$2.35
Adjustable, Serrated, ℔ doz....$1.90
Serrated, ℔ doz....$1.85
Yankee, No. 1 C H....$1.35
Yankee, No. 2 C H....$1.15

### Drawing—

*Standard List....80&10@—%*
C. E. Jennings & Co., Nos. 45, 46, 25&7½%
Jennings & Griffin, Nos. 41, 42, 66⅔&7½%
Swan's....66⅔@70%
Watrous....16⅔%
L. & I. J. White....20&5@25%

### Hay and Straw—

*Serrated Edge, per doz. $5.00@5.50*
Iwan's Sickle Edge....℔ doz. $9.50
Iwan's Serrated....℔ doz. $10.00

### Miscellaneous—

*Farriers'....doz. $2.60@3.55*
Wostenholm's....℔ doz. $3.00@3.25

### Knobs—

*Base, 2½-inch, Birch or Maple, Rubber Tip....gro. $1.25@1.40*
*Carriage, Jap., Drive, all sizes, gro. 35@40¢*
*Door, Mineral....doz. 65@70¢*
*Door, Por. Jap'd....doz. 70@75¢*
*Door, Por. Nickel..doz. $2.05@2.15*
Bardsley's Wood Door, Shutters, &c. 15%

### Lacing, Leather—

See *Belting, Leather*

### Ladders, Store, &c.—

Lane's Store....25%
Myers' Noiseless Store Ladders....50%
Richards Mfg. Co.:
Improved Noiseless, No. 112....50%
Climax Shelf, No. 113....50%
Trolley, No. 109....50%

### Ladles, Melting—

L. & G. Mfg. Co., Melting and Plumbers'....25%
P., S. & W....40&10%
Reading....60%

### Lamps,—

Hammer's M. I. Hand....45%

### Lanterns—Tubular—

*Regular, No. 0....doz. $4.35@4.50*
*Side Lift, No. 0....doz. $4.60@4.75*
*Hinge Globe, No. 0. doz. $4.60@4.75*
*Other Styles....40@40&10%*

### Bull's Eye Police—

*3-inch....$3.75@4.00*

### Latches— Thumb—

*Roggin's Latches, Jap'd, with Screws....doz. 35@40¢*

### Door—

Cronk & Carrier Mfg. Co., No. 101, ℔ doz. $2.00
Richards' Bull Dog, Heavy, No. 125....50&5%
Richards' Trump, No. 127....$1.50

### Leaders, Cattle—

*Small....doz. 50¢; large, 60¢*
Covert Mfg. Co.:
Cotton, 45%; Hemp, 45%; Jute, 35%; Sisal, 20%.

### Leathers, Pump—

See *Pumps—*

### Lifters, Transom—

R. & E....10%

### Lines—

| *Wire Clothes, Nos.* | *18* | *19* | *20* |
|---|---|---|---|
| *100 feet* | *$2.30* | *1.95* | *1.75* |
| *75 feet* | *$1.95* | *1.65* | *1.50* |

Samson Cordage Works:
Solid Braided Chalk, Nos. 0 to 3..40%
Solid Braided Masons'....30%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50....℔ gr. 20%
Masons' Lines, Shade Cord, &c.; White Cotton, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50; Colors, No. 3½, $1.75; No. 4, $2.25; No. 4½, $2.75; Linen, No. 3½, $2.50; No. 4, $3.50; No. 4½, $4.50....20%
Tent and Awning Lines: No. 5, White Cotton, $7.50; Drab Cotton, $8.50....20%
Clothes Lines, White Cotton: 50 ft., $2.75; 60 ft., $3.25; 70 ft., $3.75; 75 ft., $4.00; 80 ft., $4.25; 90 ft., $4.75; 100 ft., $5.25....20%
Turner & Stanton Co.:
Solid Braided Chalk, Masons' and Awning Lines....40%
Clothes Lines, White Cotton....20%
Shade Cord, Cotton or Linen....20%

### Locks— Cabinet—

*Cabinet Locks....33⅓@33⅓&7%*

### Door Locks, Latches, &c

*NOTE.—Net Prices are very often made on these goods.*
Reading Hardware Co....40%
R. & E. Mfg. Co....10%

### Padlocks—

R. & E. Mfg. Co. Wrought Steel and Brass....75&10

### Sash, &c.—

Ives' Patent:
Crescent....10%
Automatic Gravity Metal Sash, ℔ gro., $149.58....10%
Window Ventilating....10%
Pullman Patent Ventilating Lock..25%
Reading Sash Locks....40%
Taylor Mfg. Co., Perfect Ventilating, ℔ doz....$0.75@$1.00

### Machines—Boring—

*Com. Upr't, without Augers, $2.00@2.25*
*Com. Angl'r, without Augers, $2.25@2.50*
Ford Auger Bit Co....$22.00
Jennings', Nos. 1 and 4....25&7½%
Millers' Falls....5.75
Snell's, Upright, $2.65; Angular, $2.90
Swan's Improved....40&10%

### Corking—

Reisinger Invincible Hand Power... ℔ doz. $48.00

### Fence—

Williams' Fence Machines....each, $5.50

### Hoisting—

Moore's Anti-Friction Chain Hoist.30%
Moore's Hand Hoist, with Lock Brake....20%
Moore's Cyclone High Speed Chain Hoist....25%

### Ice Cutting—

Chandler's....12½%

### Washing

| Boss Washing Machine Co.: | Per doz. |
|---|---|
| Boss No. 1 | $57.00 |
| Boss Rotary | $57.00 |
| Champion Rotary Banner No. 1 | $57.00 |
| Standard Champion No. 1 | $50.00 |
| Standard Perfection | $27.00 |
| Cincinnati Square Western | $33.00 |
| Uneeda American, Round | $33.60 |

### Mallets—

*Hickory....45&5@50%*
*Lignumvitæ....45&5@50%*
*Tinners' Hickory and Applewood....doz. 45&5@50%*

### Mangers, Stable—

Swett Iron Works....50%

### Mats, Door—

Acme Flexible Steel....50%
Elastic Steel (W. G. Co.), new list.50%

### Mattocks—

See *Picks and Mattocks.*

### Milk Cans—See *Cans, Milk.*

### Mills, Coffee, &c.—

Enterprise Mfg. Co.:
Coffee....20@25%
Shell and Corn....25&10%
National list Jan. 1, 1902....30%
Parker's Columbia and Victoria..33⅓%
Parker's Box and Side....50&10%
Swift, Lane Bros. Co....30%

### Motors, Water—

Divine's Red Devil....30%
$2.50 3.50 10.00 15.00....33⅓%
No. 1. 2 3 4
Lippincott's:
No.... 1 2 3 4
$2.50 3.50 10.00 15.00..33⅓%
Pike Mfg. Co., Tool and Knife Grinding....33⅓%

### Mowers, Lawn—

*NOTE.—Net prices are generally quoted*
*Cheapest, 10-in., $2.00; advance 10¢ for each size.*
*Cheap, 10-in., $2.25; advance 15@20¢ for each size.*
*Better Grade, 10-in., $3.00; advance 25¢ for each size.*

| | *12* | *14* | *16* | *18-in.* |
|---|---|---|---|---|
| *High Grade* | *$4.50* | *4.75* | *5.00* | *5.25* |
| Continental | 60% | | | |
| Great American | 70% | | | |
| Great American Ball B'r'g, new list. | 70% | | | |
| Quaker City | 70% | | | |
| Pennsylvania | 60% | | | |
| Pennsylvania, Jr., Ball Bearing. | 50&10&5% | | | |
| Pennsylvania Golf | 50% | | | |
| Pennsylvania Horse | 33⅓&5% | | | |
| Pennsylvania Pony | 40&5% | | | |

### Nails—

*Wire Nails and Brads, Miscellaneous....85&5@85&10%*
*Cut and Wire,* See *Trade Report.*
*Hungarian, Finishing, Upholsterers', &c.* See *Tacks.*

### Horse—

| Nos. | 6 | 7 | 8 | 9 | 10 | |
|---|---|---|---|---|---|---|
| Anchor | 25 | 21 | 20 | 19 | 18 | ℔ lb. net, 12¢ |
| Coleman | 13 | 12 | 12 | 11 | 11 | net ℔ lb |
| New Haven | 23 | 21 | 20 | 19 | 18 | ℔ lb. net, 12¢ |
| Livingston | 19 | 18 | 17 | 16 | 16 | 10% |
| Western | | | | | | ℔ lb 8½¢ |

*Jobbers' Special Brands, per lb. 9¢*

### Picture—

| | 1½ | 2 | 2½ | 3 in. |
|---|---|---|---|---|
| Brass Hd, gro. | .45 | .55 | .60 | .70 |
| Por. Head, gro. | 1.10 | 1.10 | 1.10 | |

### Upholsters—

*Brass....30%*
*Plated....30&10%*

### Nippers—

See *Pliers and Nippers.*

### Nipples—

Standard Nipple Co.:
Wrought Pipe Nipples....80

### Nuts— *Blank or Tapped.*

| *Cold Punched:* | *Off list* |
|---|---|
| *Square* | *5.60¢* |
| *Hexagon* | *6.20¢* |
| *Square C. T. & R.* | *6.00¢* |
| *Hexagon, C. T. & R.* | *6.80¢* |
| *Hot Pressed:* | |
| *Square* | *6.10¢* |
| *Hexagon* | *6.60¢* |

### Oakum—

*Best....lb. 6½¢*
*U. S. Navy....lb. 6 ¢*
*Navy....lb. 5 ¢*
*Plumbers' Spun Oakum..2¾@3 ¢*

### Oil—

Pike Mfg. Co., Stonoil....40%

### Oil Tanks—See *Tanks, Oil.*

### Oilers—

*Steel, Copper Plated....75%*
*Chase or Paragon:*
*Brass and Copper....50&10%*
***Zinc....65&10@70%***
*Railroad....60&10&10%*
Malleable, Hammers' Improved, Nos. 11, 12 and 13, 10%; Old Pattern, Nos. 1, 2, 3, 4, 50%.
American Tube & Stamping Co.:
Spring Bottom Cans....70@70&10%
Railroad Oilers, &c....60@60&10%
Maple City Mfg. Co.:
Spring Bottom Cans....70@70&10%
Railroad Oilers, &c....60@60&10%

### Openers—Packing Box—

Herculever, ℔ doz., $24....30%

### Can Openers—

*Per doz.*
*Sprague, Iron Handle....30@35¢*
*Sprague, Wood Handle....40¢*
*Sardine Scissors....$1.75@3.00*
Can and Bottle Openers, ℔ doz., net: Yankee, $0.75@$0.85; Little Gem, $0.50@$0.65; Nifty....$0.75

### Egg—

Hartigan Nickel Plate, ℔ doz., $2.00; Silver Plate, $4.00.

### Packing—

*Asbestos Packing, Wick and Rope, any quantity....18@20¢*

### Rubber—

*(Fair quality goods.)*
*Sheet, C. I....11@12¢*
*Sheet, C. O. S....11@12¢*
*Sheet, C. B. S....12@13¢*
*Sheet, Pure Gum....40@45¢*
*Sheet, Red....40@50¢*
Jenkins' '96, ℔ lb, 80¢....25%

### Miscellaneous—

*American Packing....lb. 7@10 ¢*
*Cotton Packing....lb. 16@25 ¢*
*Italian Packing....lb. 9@10¢*
*Jute....lb. 4@4¼¢*
*Russia Packing....lb. 9@10¢*

### Pails, Water, Well, &c.—

See *Buckets.*

### Paint—

Dixon's Silica-Graphite, in 1 gal. pails and 5 gal. kegs, 25%; packages of larger size....20%

### Pans— Dripping—

*Standard List....75&10@80%*
Edwards, Royal Blue....75%

### Fry—

*Common Lipped:*

| *Nos.* | *1* | *2* | *3* | *4* | *5* |
|---|---|---|---|---|---|
| *Per doz.* | *$0.75* | *0.85* | *0.95* | *1.15* | *1.30* |

### Refrigerator, Galva.—

| *Inch* | *12* | *14* | *16* | *18* |
|---|---|---|---|---|
| *Per doz.* | *$1.75* | *2.25* | *2.80* | *3.15* |

### Paper—Building Paper

| *Asbestos:* | *lb.* |
|---|---|
| *Roll Board or Building Felt, 6 to 30 lb., per 100 sq. ft.* | *2½¢* |
| *Roll Board or Building Felt, 3-32 and ⅛ in., 45 to 60 lb., per 100 sq. ft.* | *3½¢* |
| *Mill Board, Sheet, 40 x 40 in., 1-32 to ½ in.* | *3¢* |

*Per roll.*

| *Rosin Sized Sheathing:* | *500 sq. ft.* |
|---|---|
| *Light weight, 25 lbs. to roll,* | *48@58¢* |
| *Medium weight, 30 lbs. to roll,* | *56@70¢* |
| *Heavy weight, 40 lbs. to roll,* | *75@78¢* |

*Black Water Proof Sheathing, 500 sq. ft., 1 ply, 65¢; 2 ply, 85¢; 3 ply, $1.10; 4 ply, $1.25.*
*Deafening Felt, 9, 6 and 4½ sq. ft. to lb., ton....$54.50*
*Red Rope Roofing, 250 sq. ft. per roll....$1.75*

### Tarred Paper—

*1 ply (roll 400 sq. ft.), ton, $34.00@$38.00*
*2 ply, roll 108 sq. ft....65¢*
*3 ply, roll 108 sq. ft....88¢*
*Slater's Felt (roll 500 sq. ft.).80¢*

### Sand Paper and Cloth—

*Flint and Emery....50&10%*
*Garnet Paper and Cloth....25%*

### Parers—Apple—

Goodell Co.:
Family Bay State....℔ doz. $15.00
Improved Bay State....℔ doz. $20.00
New Lightning....℔ doz. $7.00
Turn Table '98....℔ doz. $6.00
White Mountain....℔ doz. $5.00
Bonanza Improved....each $7.50
Dandy....each $10.00
Eureka Improved....each $20.00
New Century....each $20.00
Ranger....each $30.00

Livingston Nail Co.:
Daisy ..... ₱ doz $4.00
Little Star ..... ₱ doz. $5.00
Rocking Table ..... ₱ doz. $6.20
Reading Hardware Co.:
Advance ..... ₱ doz. $1.00
Baldwin ..... ₱ doz. $1.00
Reading 72 ..... ₱ doz $3.25
Reading 78 ..... ₱ doz. $6.25

### Grange—
Goodell Co., Success ..... each $20.00

### Potato—
Saratoga ..... ₱ doz. $7.50
White Mountain ..... ₱ doz. $6.00

### Picks and Mattocks—
*(List Jan., 1908.)*
*List* ..... 75&10%
Cronk's Handled Garden Mattock, ₱ doz., $3.00 ..... 33⅓%

### Pinking Irons—
See *Irons, Pinking.*

### Pins, Escutcheon—
*Brass* ..... 50@50&10%
*Iron, list Nov. 11, '85* .. 60@60&10%

### Pipe, Cast Iron Soil—
*Standard, 2-6 in* ..... 70&10%
*Extra Heavy, 2-6 in* .. 75&10@80%
*Fittings, Standard and Heavy,* 80&10@85%

### Pipe, Merchant—

| | *Consumers, Steel.* | | *Carloads, Iron.* | |
|---|---|---|---|---|
| | *Blk.* % | *Galv.* % | *Blk.* % | *Galv.* % |
| *⅛ and ¼ in.* | 66 | 50 | 64 | . |
| *⅜ in.* | 68 | 54 | 66 | 52 |
| *½ in.* | 70 | 58 | 68 | 56 |
| *¾ to 6 in.* | 74 | 64 | 72 | 62 |
| *7 to 12 in.* | 71 | 56 | 69 | 54 |

### Pipe, Vitrified Sewer—
*Carload lots.*
*Standard Pipe and Fittings, 3 to 24 in., f.o.b. factory:*
*First-class* ..... 87%
*Second-class* ..... 90%

### Pipe, Stove—

| | Per 100 joints. C. L. | L. C. L. |
|---|---|---|
| Edwards' Nested: | | |
| 5 in., Standard Blue | $6.25 | $7.25 |
| 6 in., Standard Blue | 6.75 | 7.75 |
| 7 in., Standard Blue | 7.75 | 8.75 |
| 5 in., Royal Blue | 7.00 | 8.00 |
| 6 in., Royal Blue | 7.50 | 8.50 |
| 7 in., Royal Blue | 8.50 | 9.50 |
| Wheeling Corrugating Co.'s Nested: | | |
| 5 in., Uniform Color | $5.90 | $6.90 |
| 6 in., Uniform Color | 6.40 | 7.40 |
| 7 in., Uniform Color | 7.40 | 8.40 |

### Planes and Plane Irons—
#### Wood Planes—
*Bench, first qual* ..... 30@30&10%
*Bench, second qual* ... 40@40&10%
*Molding* ..... 25@25&10%
Chapin-Stephens Co.:
Bench, First Quality ..... 30%
Bench, Second Quality ..... 40%
Molding and Miscellaneous ..... 25%
Toy and German ..... 30%
Union ..... 60%

#### Iron Planes—
Chaplin's Iron Planes ..... 60%
Union ..... 60%

#### Plane Irons—
*Wood Bench Plane Irons, list Dec. 12, '06* ..... 25%
Buck Bros. ..... 30%
Chapin-Stephens Co. ..... 25%
Union ..... 50%
L. & I. J. White ..... 20&5@25%

### Planters, Corn, Hand—
Kohler's Eclipse ..... ₱ doz. $7.50

### Plates—
*Felloe* ..... *lb.* 3¾@4¢
Avery Stamping Co.:
Standard Wrot. Steel Felloe Plates in 100 lb kegs, per 100 lb, ¾-in. to 1¾-in., $4.00 net; 1¾-in. to 2 in., inclusive, $3.75 net.

### Steel Pipe Hook—
Never-Break ..... 75&10%

### Pliers and Nippers—
*Button Pliers* .... 75&5@75&10&5%
*Gas Burners, per doz., 5 in., $1.25 @$1.30; 6 in., $1.45, $1.50.*
*Gas pipe* .. *7* *8* *10* *12-in.*
$2.00 $2.25 $2.75 $3.50
Acme Nippers ..... 50&5%
Cronk & Carrier Mfg. Co.:
American Button ..... 80%
Improved Button ..... 75&10%
Cronk's ..... 60%
No. 80 Linemen's ..... 50%
Stub's Pattern ..... 45%
Combination and others ..... 33⅓%
Heller's Farriers' Nippers, Pincers and Tools ..... 40&5@40&10&5%
P., S. & W. Tinners' Cutting Nippers ..... 40%
Swedish Side, End and Diagonal Cutting Pliers ..... 50%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds .... 40%

### Plumbs and Levels—
Chapin-Stephens Co.:
Plumbs and Levels ..... 30@30&10%
Open Box Level, Brass Cor. ..... 40&10&10%
Wood Levels ..... 35@30&10%
Extension Slide ..... 70&10&10%
Mechanics' Levels ..... 40@30&10%
Disston's Plumbs and Levels .. 60&10%
Disston's Pocket Levels ..... 60&10%
Stanley's Duplex ..... 35%
Woods' Extension ..... 33⅓%

### Points, Glaziers'—
*Bulk and 1-lb. papers* .... *lb.* 9¢
*½-lb. papers* ..... *lb.* 9½¢
*¼-lb. papers* ..... *lb.* 10¢

### Police Goods—
*Manufacturers' Lists* ... 25@25&5%
Tower's ..... 25%

### Polish—Metal, Etc—
Ladd Co.:
Putzade Liquid, ₱ gro., ½ pts., $12.00; 1 pts., $20.00; 1 qts., $40.00; ₱ doz., ½ gals., $6.35; 1 gals., $12.00.
Prestoline Liquid, No. 1 (½ pt.), ₱ doz., $3.00; No. 2 (1 qu.), $9.00 .. 40%
Prestoline Paste ..... 10%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, ₱ doz. 50¢; ₱ gro. $1.50; ½ lb boxes, ₱ doz. $1.25; 1 lb boxes, ₱ doz. $2.25.
U. S. Liquid, 8 oz. cans, ₱ doz., $1.25.
Barkeepers' Friend Metal Polish, ₱ doz., $1.75.

### Stove—
Black Eagle Benzine Paste, 5 lb cans, ₱ lb 10¢
Black Eagle, Liquid, ½ pt. cans .. ₱ doz. 75¢
Black Jack Paste, ¾ lb cans, ₱ gr. $9.00
Black Kid Paste, 5 lb can ... each, $0.65
Ladd's Black Beauty Liquid, per 100 tins ..... $6.75
Joseph Dixon, ₱ gr. $5.75 ..... 10%
Dixon's Plumbago ..... ₱ lb 8¢
Fireside ..... ₱ gr. $2.50
Gem, ₱ gr. $1.50 ..... 10%
Japanese ..... ₱ gr. $3.50
Jet Black ..... ₱ gr. $3.50
Peerless Iron Enamel, 10 oz. cans .. ₱ doz. $1.50

### Window Polish—
Benj. P. Forbes:
Glasbright, No. 2, gal pails, ₱ doz., $24.00; each, $2.50; 1 lb cans, each ..... 75¢
Glasbright Powder, bbls., ₱ lb .. 20¢

### Poppers, Corn—
*1 qt. Square .. doz. $0.80; gro. $8.75*
*1 qt. Round .. doz. $0.90; gro. $10.00*
*1½ qt. Square . doz. $1.20; gro. $12.00*
*2 qt. Square .. doz. $1.50; gro. $15.00*

### Post Hole and Tree Augers and Diggers—
See also *Diggers, Post Hole, &c.*

### Posts, Steel—
Steel Fence Posts, each, 6 ft., 46¢; 6½ ft., 48¢; 7 ft., 50¢.
Steel Hitching Posts ..... each $1.30

### Potato Parers—
See *Parers, Potato.*

### Pots, Glue—
*Enameled* ..... 40%
*Tinned* ..... 30&10%

### Powder—
*In Canisters:*
*Duck, 1 lb* ..... *each* 45¢
*Fine Sporting, 1 lb* .... *each* 75¢
*Rifle, ½-lb* ..... *each* 15¢
*Rifle, 1 lb* ..... *each* 25¢
*In Kegs:*
*12½-lb. kegs* ..... $3.50
*25-lb. kegs* ..... $4.50
King's Semi-Smokeless:
Keg (25 lb bulk) ..... $6.50
Half Keg (12½ lb bulk) ..... $3.50
Quarter Keg (6¼ lb bulk) ..... $1.90
Case 24 (1 lb cans bulk) ..... $8.50
Half case (1 lb cans bulk) ..... $4.50

| King's Smokeless: | Shot Gun. | Rifle. |
|---|---|---|
| Keg (25 lb bulk) | $12.00 | $15.00 |
| Half Keg (12½ lb bulk) | 6.25 | 7.75 |
| Quarter Keg (6¼ lb bulk) | 3.25 | 4.00 |
| Case 24 (1 lb cans bulk) | 14.00 | 17.00 |
| Half case 12 (1 lb c. bk) | 7.25 | 8.75 |

### Presses—
#### Fruit, Wine and Jelly—
Enterprise Mfg. Co. ..... 20@25%

#### Seal Presses—
Morrill's No. 1, ₱ doz. .. $20.00 ..... 50%

### Pruning Hooks and Shears
See *Shears.*

### Pullers, Nail, Etc.—
Cyclops ..... 50%
Miller's Falls, No. 3, ₱ doz., $12.00 .. 33⅓&10%
Morrill's No. 1, Nail Puller, ₱ doz. $20.00 ..... 50%
Pearson No. 1, Cyclone Spike Puller, each $30.00 ..... 50%
The Scranton Co. Case Lots:
No. 2B (large) ..... $5.50
No. 3B (small) ..... $5.00
Smith & Hemenway Co.:
Diamond B ..... 70%
Giant ..... 50%
Staple Pullers, Utica and Davison ..... 60%
Taylor Mfg. Co., Sampson Tack, ₱ doz ..... $0.40

### Pulleys, Single Wheel—

| *Inch* | *1½* | *1¾* | *2* | *3* |
|---|---|---|---|---|
| *Awning or Tackle, doz* | *$0.80* | *.45* | *.60* | *1.05* |
| *Hay Fork, Swivel or Solid Eye, doz., 4 in., $1.25; 5 in., $1.55* | | | | |
| *Inch* | *2* | *2¼* | *2½* | |
| *Hot House, doz* | *$0.65* | *.85* | *1.20* | |
| *Inch* | *1¼* | *1½* | *1¾* | *2* |
| *Screw, doz* | *$0.16* | *.19* | *.23* | *.30* |
| *Inch* | *1¾* | *2* | *2¼* | *2½* |
| *Side, doz* | *$0.25* | *.40* | *.55* | *.60* |
| *Inch* | *1½* | *1¾* | *2* | *2½* |

### Sash Pulleys—
*Common Frame: Square or Round End, per doz., 1¾ and 2 in* ..... *17@20¢*
*Auger Mortise, no Face Plate, per doz., 1¾ and 2 in* .... *20@21¢*
Acme, No. 35 .. 1⅝ in. 19¢; 2 in., 20¢
American Pulley Co.:
Wrought Steel American Plain Axle ..... 50&10%
Wrought Steel, Eagle ..... 17@20¢
Top Notch, Electrically Welded, Nos. 3 and 1 ..... 19¢
Common Sense ..... ₱ doz. 20¢
Fox-All Steel, Nos. 3 and 7, 2 in. .... ₱ doz. 50%
Grand Rapids All Steel Noiseless .. 50%
Niagara, No. 25, 1¾ in., 19¢; 2 in. ..... 20½¢
No. 26 Troy .. 1¾ in., 14½¢; 2 in., 16½¢
Star, No. 26 .... 1¾ in., 19¢; 2 in., 20½¢
Tackle Blocks—See Blocks.

### Pumps—
*Cistern* ..... 60%
*Pitcher Spout* ..... 75&5@75&10%
*Wood Pumps, Tubing, &c* .... 50%
Barnes Dbl. Acting (low list) ..... 50
Barnes Pitcher Spout ..... 80%
Contractors' Rubber Diaphragm, No. 2, B. & L. Block Co. ..... $16.00
Daisy Spray Pump ..... ₱ doz. $6.50
Flint & Walling's Fast Mail Hand (low list) ..... 50&5%
Flint & Walling's Fast Mail (low list) ..... 50&5%
Flint & Walling's Tight Top Pitcher ..... 80%
National Specialty Mfg. Co., Measuring, Nos. 2, $6.00; 3, $5.50 ..... 30%
Myers' Pumps (low list) ..... } 50%
Myers' Power Pumps ..... }
Myers' Spray Pumps ..... }

### Pump Leathers—
*Plunger and Valve Leathers—Per gro.:*

| *No.* | *1* | *2* | *3* | *4* |
|---|---|---|---|---|
| | *$5.00* | *6.00* | *7.00* | *8.00* |

*Cup Leathers—Per 100:*

| *Inch* | *2½* | *3* | *3½* | *4* |
|---|---|---|---|---|
| | *$5.00* | *7.00* | *9.00* | *12.00* |

30%

### Punches—
*Saddlers' or Drive, good, doz.* 50@75¢
*Spring, single tube, good quality* ..... $1.75
*Revolving (4 tubes)* .... *doz.* $3.50
Bemis & Call Co.'s Cast St'l Drive .. 50%
Morrill's Nos. 1AA, 1A, 1B, 1C, 1D, $15.00 ..... 50%
Hercules, 1 die, each $5.00 ..... 50%
Niagara Hollow Punches ..... 40%
Niagara Solid Punches ..... 55&10%
Tinners' Hollow, P., S. & W. Co. .. 40%
Tinners' Solid, P., S. & W. Co., ₱ doz., $1.44 ..... 40&10%

## Rail—Barn Door, &c.—
*Sliding Door, Painted Iron, 2½@2¾¢*
*Sliding Door, Wrought Brass, 1⅛ in., lb., 36¢* ..... 30%
Cronk's:
Double Braced Steel Rail .. ₱ ft. 2¾¢
O. N. T. Rail ..... 2¾¢
Griffin's:
xxx, ₱ 100 ft., 1 x 3-16 in., $3.25; 1¼ x 3-16 in., $3.75.
Hinged Hanger, ₱ 100 ft., 1 x 3-16 in., $3.50; 1¼ x 3-16 in., $4.00.
Lane's:
Hinged Track, ₱ 100 ft ..... $3.45
O. N. T., ₱ 100 ft., 1 in., $3.12½; 1¼ in., $3.45; 1½ in., $4.00.
Standard, 1¼ in ..... ₱ 100 ft. $4.00
Lawrence Bros.:
1 x 3-16 in., ₱ 100 ft., $7.50; 1¼ x 3-16 in., $8.75 ..... 55&7½%
Trolley, No. 301, ₱ ft. ..... 9¢
McKinney's:
Hinged Hanger Track, ₱ ft., 11¢. 60&5%
1 x 3-16 Track ..... 55&7½%
Myers' Stayon Track ..... 60&5%
Richards Mfg. Co.:
Common, 1 x 3-16 in., $3.00; 1⅛ x 3-16, $3.25; 1¼ x 3-16, $3.50.
Special Hinged Hanger Rail .. 60&10%
Lag Screw Rail, No. 65 ..... 50%
Gauge Trolley Track, ₱ ft., No. 31, 9¢; No. 32, 14¢; No. 33, 20¢.
No. 50 ..... 60&10%
Nos. 61, $3.00; 62, $3.25; 63, $3.50; 64, $4.00; 45, $3.25; 46, $3.50; 49, No. 1, $3.25; 49, No. 2, $3.50.

### Rakes—
*NOTE.—Many goods are sold at net prices.*
American Fork & Hoe Co.:
Lawn, ₱ doz., No. 21, $2.50; No. 20 ..... $2.25
Cronk's:
Steel Garden: Champion, ₱ doz., 12-tooth, $3.75; 14-tooth, $4.00; 16-tooth, $4.25; Ideal, ₱ doz., 12-tooth, $3.00; 14-tooth, $3.30; 16-tooth, $3.60.
Victor, 12-tooth, $2.25; 14-tooth, $2.50; 16-tooth, $2.75.
Queen City Lawn, ₱ doz., 20 teeth, $2.85; 24, $3.00 ..... net
Anticlog Lawn, ₱ doz ..... $4.00
Malleable Garden ..... 70&10%
Ideal Steel Garden, ₱ doz., 12 teeth, $15.00; 14, $16.00; 16, $18.00 ..... 80%
Kohler's:
Jumbo Lawn, 36 tooth .... ₱ doz. $5.00
Lawn Queen, 20 tooth .... ₱ doz. $2.85
Lawn Queen, 24-tooth .... ₱ doz. $3.00
Paragon, 20-tooth ..... ₱ doz. $2.65
Paragon, 24-tooth ..... ₱ doz. $2.75
Steel Garden 14-tooth ... ₱ doz. $2.10
Malleable Garden, 14-tooth, ₱ doz $1.75@2.00

### Rasps, Horse—
Disston's ..... 75%
Heller Bros. ..... 70&5@70&10&5%
Liverpright Bros.' Gold Medal .. 70&10@75%
McCaffrey's American Standard ..... 60&10&5%
New Nicholson ..... 70&10@75%
See also Files.

### Razors—
John Engstrom Swedish ..... 65%
Sharp Shaver ..... 60%
Fox Razors, ₱ doz. No. 42, $24.00; No. 44, $20.00; No. 82, Platina, $36.00. } Disc. 50%

### Reels, Fishing—
Hendryx:
M 6, Q 6, A 6, B 6, M 9¼, M 16, Q 16, A 16, B 16, 4008, Rubber, Populo, Nickeled Populo ..... 20%
Aluminum, German Silv., Bronze .. 25%
1210 N, 124 N ..... 20%
3004 N, 06 N, 6 RM, G 9 ..... 25%
4 N, 6 PN, 24 N, 26 PN ..... 20%
2004 P., 33⅓%; 2004 PN., 33⅓%; 0924 N., 33⅓%; 02084 N., 33⅓%; 002904 PN., 33⅓%; 802 N., 33⅓%
986 PN, 2004 N, 974 PN ..... 25%
5009 PN, 5009 N ..... 20%
Competitor, 102 P, 102 PN, 202 P, 202 PN, 102 PR, 202 PR ..... 20%
304 P, 304 PN, 00304 P, 00304 PN .. 33⅓%

### Registers—*List July 1, 1903.*
*Japanned, Electroplated and Bronzed* ..... 70%
*White Porcelain Enamel* .. 50&10%
*Solid Brass or Bronze Metal* .. 40%

### Revolvers—
*Single Action* ..... $5¢@$1.00
*Double Action, except 44 cal.* $2.00
*Double Action, 44 caliber* ... $2.00
*Automatic* ..... $4.00
*Hammerless* ..... $4.50

### Riddles, Hardware Grade
*16 in.* ..... *per doz.* $2.50@$2.75
*17 in.* ..... *per doz.* $2.75@$3.00
*18 in.* ..... *per doz.* $3.00@$3.25

### Rings and Ringers—
#### Bull Rings—

| | *2* | *2½* | *3 inch.* |
|---|---|---|---|
| *Steel* | *$0.70* | *0.75* | *0.80 doz.* |
| *Copper* | *$1.10* | *1.25* | *1.65 doz.* |

#### Hog Rings and Ringers—
*Hill's Rings, gro. boxes* .. $4.50@$4.50
*Hill's Ringers, Gray Iron, doz.,* 60@75¢
*Hill's Ringers, Malleable Iron, doz.* 80@95¢
*Blair's Rings .. per gro.* $5.00@$5.50
*Blair's Ringers ... per doz.* 75@90¢

### Rivets and Burrs—
*Copper* ..... 50@50&10%
*Carriage, Coopers', Tinners', &c.:*
*Black* ..... 70&10%
*Metallic Tinned* ..... 70%

### Bifurcated and Tubular—
*Assorted in Boxes.*
*Bifurcated, per doz. boxes, pasteboard boxes, 50 count, 23@25¢; Tin boxes, 100 count, 29@32¢.*
*Tubular, per doz. boxes, 50 count, 29@32¢; 100 count, 51@58¢.*

### Rollers—
Cronk's Stay, No. 50 ..... $1.00
Cronk's Brinkerhoff No. 55, $0.60; No. 56, $0.75; No. 60 ..... $0.75
Lane's Stay ..... 40%
Richards' Stay:
Handy Adj. and Reversible No. 53 .. 75¢
O. K. Adj. and Reversible No. 58 .. 50¢
Lag Screw, Nos 55 and 57 ..... 50%
Underwriters', Nos. 59, 60 ..... 50%
Favorite, No. 54 ..... 60%

### Rope—
*Manila, 7-16 in. diam. and larger:*
*Pure* ..... *lb.* 9¢
*Sisal, 7-16 in. diam. and larger:*
*Pure* ..... *lb.* 7¢
*Sisal, Hay, Hide and Bale Ropes, Medium and Coarse:*
*Pure* ..... *lb.* 7½@7¾¢
*Sisal, Tarred, Medium Lath Yarn:*
*Pure* ..... *lb.* 6½@6¾¢
*Cotton Rope:*
*Best, ¼ in. and larger* .. 16½@18¢
*Medium, ¼-in. and larger* .. 15@16¢
*Common, ¼-in. and larger* .. 7½¢
*In coils, ½¢ advance.*
*Jute Rope:*
*Thread, No. 1, ¼-in. and up, lb.* ..... 5½¢
*Thread, No. 2, ¼-in. and up, lb.* ..... 5¢

#### Wire Rope—
*Galvanized* ..... 37½&2½%
*Plain* ..... 45&2½%

### Ropes, Hammock—
Covert Mfg. Co.:
Jute, 35%; Sisal ..... 20%

### Rules
*Boxwood* ..... 60@60&10%
*Ivory* ..... 35&10@35&10&5%
Chapin-Stephens Co.:
Boxwood ..... 60%
Flexifold ..... 40%
Ivory ..... 25@25&10%
Miscellaneous ..... 50@50&10%
Stephens' Combination ..... 55%
Stationers' ..... 50@50&10%
Keuffel & Esser Co.:
Folding, Wood ..... 35&10%
Folding, Steel ..... 33⅓&10%
Lufkin's Steel ..... 50&10%
Lufkin's Lumber ..... 50&10%
Upson Nut Co.:
Boxwood ..... 60@60&10%
Ivory ..... 35&10@35&10&10%

## Sash Balances—
See *Balance, Sash.*

### Sash Locks—See *Locks, Sash.*

### Sash Weights—
See *Weights, Sash.*

### Sausage Stuffers or Fillers
See *Stuffers or Fillers, Sausage.*

### Saw Frames—
See *Frames, Saw.*

### Saw Sets—See *Sets, Saw.*

### Saw Tools—See *Tools, Saw.*

### Saws—
Atkins':
- Circular ..... 45%
- Band ..... 50@50&10%
- Butcher Saws ..... 50%
- Cross Cuts ..... 35%
- One-Man Cross Cut ..... 40%
- Narrow Cross Cut ..... 50%
- Hand, Rip and Panel ..... 35&5%
- Miter Box and Compass ..... 40%
- Mulay, Mill and Drag ..... 45%
- Wood Saws ..... 40&10%

Chapin-Stephens Co.:
- Turning Saws and Frames .30@30&10%

Diamond Saw & Stamping Works:
- Sterling Kitchen Saws ..... 30&10&10%

Disston's:
- Circular, Solid and Ins'ted Tooth .50%
- Band, 2 to 18 in. wide ..... 60%
- Band, ¼ to 1¾ ..... 60%
- Crosscuts ..... 45%
- Narrow Crosseuts ..... 50%
- Mulay, Mill and Drag ..... 50%
- Framed Woodsaws ..... 25%
- Woodsaw Blades ..... 25%
- Woodsaw Rods, Tinned ..... 15%
- Hand Saws, Nos. 12, 99, 9, 16, d100, D8, 120, 76, 77, 8 ..... 25%
- Hand Saws, Nos. 7, 107, 107½, 3, 1, 0, 00, Combination ..... 30%
- Compass, Key Hole, &c ..... 25%
- Butcher Saws and Blades ..... 30%

C. E. Jennings & Co.'s:
- Back Saws ..... 16⅔%
- Butcher Saws ..... 25&7½%
- Compass and Key Hole Saws, 33⅓&7½%
- Framed Wood Saws ..... 25&7½%
- Hand Saws ..... 12½%
- Wood Saw Blades ..... 33⅓&7½%

Millers Falls:
- Butcher Saws ..... 15&10%
- Star Saw Blades ..... 15&10%

Massachusetts Saw Works:
- Victor Kitchen Saws ..... 40&10&50%
- Butcher Saws Blades ..... 35@40%

Peace & Richardson's Hand Saws .30%

Simonds':
- Circular Saws ..... 45%
- Crescent Ground Cross Cut Saws .30%
- One-Man Cross Cuts ..... 40&10%
- Gang Mill, Mulay and Drag Saws .45%
- Band Saws ..... 50%
- Back Saws ..... 25@25&7½%
- Butcher Saws ..... 35@35&7½%
- Hand Saws ..... 25@25&7½%
- Hand Saws, Bay State Brand .... 45%
- Compass, Key Hole, &c .. 25@25&7½%
- Wood Saws ..... 40&7½%

Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws ..... 50%

### Hack Saw Blades and Frames—
Atkins' Hack Saw Blades A A A .. 25%

Disston's:
- Concave Blades ..... 25%
- Keystone Blades ..... 35%
- Hack Saw Frames ..... 30%

Simonds, 25%; The Best, 35%; Culley ..... 35%

C. E. Jennings & Co.'s:
- Hack Saw Frames, Nos. 175, 180 ..... 40&7½%
- Hack Saws, Nos. 175, 180, complete, 40&7½%

Goodell's Hack Saw Blades .... 40&10%
Griffin's Hack Saw Frames .. 35&5&10%
Griffin's Hack Saw Blades .... 35&5&10%
Star Hack Saws and Blades .... 15&10%
Sterling Hack Saw Blades .. 30&10&5%
Sterling Hack Saw Frames .. 30&10&10%
Sterling Power Hack Saw Machines, each, No. 1, $25.00; No. 2, $30.00 .. 10%
Victor Hack Saw Blades ..... 20%
Victor Hack Saw Frames ..... 10%

Whitaker Mfg. Co.:
- National Hand Blades, Hand Frames, Power Blades ..... 40%

### Scroll—
Barnes, No. 7, $15 ..... 25%
Barnes' Scroll Saw Blades ..... 40%
Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20 ..... 20%
Lester, complete, $10.00 ..... 15&10%
Rogers, complete, $3.50 and $4.00 .. 15&10%

### Scales—
*Union Platform, Plain .$2.10@2.20*
*Union Platform, Stpd .$2.20@2.30*

Chatillon's:
- Eureka ..... 25%
- Favorite ..... 40%
- Grocers' Trip Scales ..... 50%

The Standard Portables ..... 40%
The Standard R. R. and Wagon ..... 50&10%

### Scrapers—
*Box, 1 Handle ..... doz. $1.85@2.10*
*Box, 2 Handle ..... doz. $2.35@2.50*
*Ship .. Light, $2.00; Heavy, $4.50*

Chapin-Stephens Co., Box .. 50&5%
Richards Mfg. Co., Foot ..... 60%

### Screws—Bench and Hand
*Bench, Iron, doz., 1 in., $2.50@2.75; 1¼, $4.00@4.25; 1¼ $5.50@5.75*
*Bench, Wood ..... 20@20&10%*
*Hand, Wood .... 70&10@70&10&10%*

Chapin-Stephens Co., Hand 70&7 &10&2%

### Coach, Lag and Hand Rail
*Lag, Cone Point .80&10@80&10&5%*
*Coach, Gimlet Point .. 80@80&10%*
*Hand Rail ..... 70&10@75%*

### Jack Screws—
*Standard List ..... 70&10@75%*

Millers Falls ..... 50&10&5%
Swett Iron Works ..... 70@75%

### Machine—
*Cut Tread, Iron, Brass or Bronze:*
- *Flat Head or Round Head, 50@50&10%*
- *Fillister Head ..... 40@40&10%*

*Rolled Thread, F. H. or R. H., Iron ..... 75&10%*
*F. H. or R. H., Brass, Nos. 8 to 14 ..... 65&10%*

### Set and Cap—
*Set (Iron) ..... 75&10&7½%*
*Set (Steel), net advance over Iron ..... 25%*
*Sq. Hd. Cap ..... 70&10&7½%*
*Hex. Hd. Cap ..... 70&10&7½%*
*Rd. Hd. Cap ..... 50&7½%*
*Fillister Hd. Cap ..... 60&7½%*

### Wood—
*List July 23, 1903.*
*Flat Head, Iron ..... 87½&5@.. %*
*Round Head, Iron .... 85&5@.. %*
*Flat Head, Brass ..... 80&5@.. %*
*Round Head, Brass .. 77½&5@.. %*
*Flat Head, Bronze .... 75&5@.. %*
*Round Head, Bronze . 72½&5@.. %*
*Drive Screws ..... 87½&5@.. %*

### Scroll Saws—
See *Saws, Scroll.*

### Scythes—
*Per doz.*
*Plain Grass, Cutting Edge Polished ..... $6.25@$6.50*
*Clipper, Bronzed Web . $6.50@$6.75*
*Solid Steel, Web and Backs Polished ..... $7.00@$7.25*
*Bush, Weed and Bramble, Painted ..... $6.50@$6.75*
*Grain, Painted, Cutting Edge Polished ..... $8.25@$8.50*
*Clipper Grain, Bronze Web, $8.50@$8.75*

### Seeders, Raisin—
Enterprise ..... 25@30%

### Sets—Awl and Tool—
Fray's Tool Handles, Nos. 1, $12; 2, $16; 3, $12 ..... 50%
Millers Falls Adj. Tool Handles, No. 1, $12; No. 4, $12; No. 5, $18 .. 20&10%

### Garden Tool Sets—
American Fork & Hoe Co.:
- Rake, Shovel and Hoe, ℔ doz. sets, No. 3 P F ..... $7.25

### Sets, Nail—
*Octagon ..... gro. $3.50@3.75*

Buck Bros. ..... 27½%
Mayhew's ..... ℔ gro. $9.00
Snell's Corrugated, Cup Pt. .... 40&10%
Snell's Knurled, Cup Pt. ..... 40&10%
Victor Knurled, Cup Pt. .... ℔ gro. $7.50

### Rivet—
*Regular list ..... 75@75&10%*

### Saw—
Atkin's:
- Criterion ..... 40%
- Adjustable ..... 40%

Disston's Star, Monarch and Triumph ..... 30%

Morrill's No. 1 ..... $15.00
Nos. 3 and 4, Cross Cut .... $20.60
No. 5, Mill ..... $30.00
Nos. 10, 11, 95 ..... $15.60
No. 1 Old Style ..... $10.00
Special ..... $16.25
} 50%

Giant Royal Cross Cut ..... ℔ doz. $7.50
Royal, Hand ..... ℔ doz. $4.50
Taintor Positive ..... ℔ doz. $6.75

### Shaving—
Fox Shaving Sets, No. 30 ..... ℔ doz., net, $24.00
Smith & Hemenway Co.'s ..... 75%

### Sharpeners, Knife—
Pike Mfg. Co.:
- Fast Cut Pocket Knife Hones, ℔ doz ..... $1.50
- Mounted Kitchen Sand Stone, ℔ doz ..... $1.50
- Natural Grit Carving Knife Hones, ℔ doz ..... $3.00
- Quick Cut Emery Carving Knife Hones, ℔ doz ..... $1.50
- Quick Edge Pocket Knife Hones, ℔ doz ..... $2.50

} 50%

### Skate—
Smith & Hemenway Co., Eureka .. 50%

### Shaves, Spoke—
*Iron ..... doz. $1.25*
*Wood ..... doz. $2.00*

Bailey's (Stanley R. & L. Co.) .... 45%
Chapin-Stephens Co. ..... 30@30&10%
Goodell's, ℔ doz. $9.00 ..... 15&10%

### Shears—
| *Cast Iron..* | 7 | 8 | 9 in. |
|---|---|---|---|
| *Best ...* | *$16.00* | *18.00* | *20.00 gro.* |
| *Good ...* | *$13.00* | *15.00* | *17.00 gro.* |
| *Cheap ..* | *$5.00* | *6.00* | *7.00 gro.* |

*Straight Trimmers, &c.:*
- *Best quality Jap ..... 70&10&5%*
- *Best Quality Nickel .. 60&10&5%*

*Tailors' Shears ..... 40@40&10%*

Acme Cast Shears ..... 40@40&5%
Heinisch's Tailor's Shears ..... 10%
National Cutlery Co.'s Nickel Plated, 60&10%; Japan Handles ..... 70&10%
Columbian Cutlery Co.:
- Sheep, 1900 list ..... 30&10&5%
- Grass ..... 50&10%
- Horse or Mule ..... 50&10%

J. Wiss & Sons Co.:
- Best Quality Jap'd ..... 60&10%
- Best Quality Nickeled ..... 50&10%
- Tailors' ..... 25%

### Tinners' Snips—
*Steel Blades ..... 20&5@20&10*
*Steel Laid Blades ..... 50&10%*

Acme Cast Snips ..... 40@45&5%
Forged Handles, Steel Blades, Bevlin ..... 50%
Heinisch's Snips ..... 45%
Jennings & Griffin Mfg. Co.'s 6¾ to 10 in. ..... 33⅓&7%

National Cutlery Co.'s Forged Steel .50%
Niagara Snips ..... 10%
P., S. & W. Forged Handles, 25%; W. R. W. ..... 50%
J. Wiss & Sons Co.:
- Wiss Forged Steel ..... 25%

### Pruning Shears—
Cronk's Hand Shears ..... 33⅓%
Cronk's Wood Handle Shears .... 33⅓%
Disston's Combined Pruning Hook and Saw, ℔ doz. $18.00 ..... 25%
Disston's Pruning Hook only, ℔ doz., $12.00 ..... 25%

J. T. Henry Mfg. Co.:
- Pruning Shears, all grades ..... 40%

P., S. & W. Co. ..... 40&10%

Columbian Cutlery Co.:
- Hedge, Wilcut Brand ..... 60&10%
- Lawn and Border, Wilcut Brand, 60&10%

### Sheaves—Sliding Door—
Reading ..... 40%
R. & E. list ..... 15%

### Sliding Shutter—
Reading list ..... 40%
R. & E. list ..... 15%

### Shells—Shells, Empty—
Brass Shells, Empty:
- Climax, 10 and 12 gauge ..... 60&5%
- Club, Rival, 65&5%; First Quality, 60&5%

Paper Shells, Empty:
- New Rapid, 10, 12, 16 and 20 gauge, 25&10%
- Climax, 10 and 12 gauge; Acme and Magic, 10, 12, 16 and 20 gauge; Ideal, 10, 12, 16 and 20 gauge; Leader grade ..... 25&5%
- Union, League, 10 and 12 gauge, Rival Grade ..... 25%
- New Climax, Defiance, 10, 12, 14, 16 and 20 gauge; Climax, 14, 16 and 20 gauge ..... 20%
- Challenge, Monarch, 10, 12, 16 and 20 gauge; League, Union, 14, 16 and 20 gauge; Repeater Grade .. 20%

### Shells, Loaded—
*Loaded with Black Powder .. 40%*
*Loaded with Smokeless Powder, medium grade ..... 40&5%*
*Loaded with Smokeless Powder, high grade ..... 40&10&10%*

Union Metallic Cartridge Co.:
- New Club, Black Powders ..... 40%
- Nitro Club, Smokeless Powders .40&5%
- Arrow, Smokeless Powders .40&10&10%

Winchester:
- Smokeless Repeater Grade ..... 40&5%
- Smokeless Leader Grade ... 40&10&10%
- Black Powder ..... 40%

### Shingles, Metal—Per Sq.
Edwards Mfg. Co.:

| | Painted. | Galv. |
|---|---|---|
| 14 x 20 | $4.25 | $6.00 |
| 10 x 14 | 4.50 | 6.25 |
| 7 x 10 | 4.75 | 6.50 |

Wheeling Corrugating Co.:

| | | |
|---|---|---|
| Dixie, 14 x 20 in. | $4.05 | $5.05 |
| Dixie, 10 x 14 in. | 4.25 | 5.45 |
| Dixie, 7 x 10 in. | 5.25 | 6.70 |

### Shoes, Horse, Mule, &c.—
*F.o.b. Pittsburgh:*
*Iron ..... per keg. $4.10*
*Steel ..... per keg. $3.85*

Burden's, all sizes ..... ℔ keg $3.90

### Shot—
*25-lb. bag.*
*Drop, up to B ..... $1.80*
*Drop, B and larger ..... 2.05*
*Buck ..... 2.05*
*Chilled ..... 2.05*
*Dust ..... 2.30*

### Shovels and Spades—
*Association List, Nov. 15, 1902 . 40%*
Avery Stamping Co ..... 40%

### Snow Shovels—
*Long Handle ..... $2.50@$2.75*
*Wood and Mall, D Handle, $2.65@$2.90*

### Sieves and Sifters—
*Hunter's Imitation, gro .... $9.50*
*Hunter's Genuine, per gro .. $12.00*

### Sifters, Ash—
Acme Ball Bearing Sales Co., Acme Automatic Ash Sifter, each, $3.25; ℔ doz ..... $39.00

### Sieves, Seamless Metallic
*Per dozen.*

| *Mesh ..... 1¼* | *16* | *18* | *20* |
|---|---|---|---|
| *Iron Wire .. $1.05* | *1.05* | *1.10* | *1.20* |
| *Tinned Wire .. $1.15* | *1.15* | *1.20* | *1.30* |

### Sieves, Wooden Rim—
*Nested, 10, 11 and 12 Inch.*
*Mesh 18, Nested .... doz. $0.90@1.05*
*Mesh 20, Nested .... doz. $1.00@1.05*
*Mesh 24, Nested .... doz. $1.30@1.40*

### Sinks, Cast Iron—
*Painted, Standard list:*
- *12 x 12 to 22 x 36 in ..... 60%*
- *20 x 24 to 24 x 50 in ..... 50%*
- *24 x 60 to 24 x 120 in ..... 30%*

Barnes' low list ..... 60%

*NOTE.—There is not entire uniformity in lists used by jobbers.*

### Skeins, Wagon—
*Cast Iron ..... 70@75&10%*
*Steel ..... 40@45%*

### Slates, School—
*Factory Shipments.*
*"D" Slates ..... 50@50&10%*
*Eureka, Unexcelled Noiseless .. 60&7 tens.*
*Victor A, Noiseless .60&5 tens &5%*

### Slaw Cutters—See *Cutters.*

### Snaps, Harness—
*German ..... 40@40&10%*

Covert Mfg. Co.:
- Derby, 25%; Yankee, 30&2%; Yankee Roller, 30&2%.
- High Grade, 10%; Trojan .... 10
- Jockey ..... 25

### Snaths—
*Scythe ..... 50&10@60%*

### Snips, Tinners—See *Shears.*

### Spoons and Forks—
#### Silver Plated—
*Good Quality ..... 50&10@60&5%*
*Cheap ..... 60@60&10%*

International Silver Co:
- 1847 Rogers Bros. ..... 40&10%
- Rogers & Bro., William Rogers' Eagle Brand ..... 50&10%
- Anchor, Rogers Brand ..... 60%
- Wm. Rogers & Son ..... 60&10%

#### Miscellaneous
*German Silver ..... 60@60&5%*

#### Tinned Iron—
*Teas ..... per gro. 50@55¢*
*Tables ..... per gro. $0.90@$1.00*

Atlas Mfg. Co.:
- Tea Spoons, ℔ gro. ..... 50¢@55¢
- Table Spoons, ℔ gro. ..... $0.90@$1.00

### Springs—Door—
Bardsley's Spring and Check ..... 40%
Chicago (Coil) ..... 40&10%
Gem (Coil) ..... 20%
Pullman Door and Gate ..... 10%
Reliance (Coil) ..... 40&10%
Star (Coil) ..... 35%
Torrey's Rod, 39 in. ..... ℔ doz. $1.00

### Carriage, Wagon, &c.—
| *1¼ in. and Wider:* | *Per 100 lb.* |
|---|---|
| *Black* | *$4.75@$5.00* |
| *Half Bright* | *$4.75@$5.00* |
| *Bright* | *$5.25@$5.50* |

*Painted Seat Springs:*
- *1½ x 2 x 26 .... per pair . 45@47¢*
- *1½ x 3 x 28 .... per pair . 68@71¢*

### Sprinklers, Lawn—
American Foundry & Mfg. Co.:
- Cactus, 65%; Japanese, 70%; National, ℔ doz ..... $12.00

Enterprise ..... 25@30%
Philadelphia No. 1, ℔ doz. $12; No. 2, $15; No. 3, $20 ..... 30%

### Squares—
*Nickel plated .. List Jan. 5, 1900.*
*Steel and Iron . 80&5@80&10%*
*Rosewood Hdl. Try Square and T-Bevels ..... 60&10&10@70%*
*Iron Hdl. Try Squares and T-Bevels ..... 40&10@40&10&10%*
- Disston's Try Squares and Bevels, Rosewood Handle, 60 & 10%; Iron Stock and Bevel ..... 15%

### Squeezers, Lemon
*Wood, Porcelain Lined:*
- *Cheap ..... doz. $1.00*
- *Good Grade ..... doz. $1.25*

*Tinned Iron ..... doz. $0.75@1.00*
*Iron, Porcelain Lined ... doz. $1.75*
Victor, ℔ gro. ..... $9.00

### Staples—
*Barbed Blind ..... 85&5@85&10%*
*Electricians' ..... 80&10&10@85%*
*Fence Staples, Polished, $2.05; Galvanized ..... $2.35*
*Poultry Netting Staples ..... per lb. 3¼@3½¢*

### Steels, Butchers'—
Dick's ..... 30%
Foster Bros.' ..... 30%

### Steelyards—....30@30&10%

### Stocks and Dies—
*Blacksmiths' ..... 50@50&10%*

Curtis Rev'ble Ratchet Die Stock .. 25%
Derby Screw Plates ..... 25%
Green River ..... 25%
Lightning Screw Plate ..... 25%
Little Giant ..... 25%
Reece's New Screw Plate ..... 25%

### Stoners, Cherry—
Enterprise ..... 25@30%

### Stones, Axe—
Pike Mfg. Co., Axe Stones (all kinds) ..... 33⅓%

### Glass Cutters' Stones—
Pike Mfg. Co., Glass Cutters' Stones and Supplies ..... 40%

### Stones, Oil, &c.—
Pike Mfg. Co., 1907 list: ℔ lb. } 33⅓%
- Arkansas St. No. 1, 3 to 5½ in. $2.80
- Arkansas St. No. 1, 5½ to 8 in. $3.50
- Arkansas Slips No. 1 ..... $1.00
- Lily White Washita, 4 to 8 in. 60¢
- Rosy Red Washita, 4 to 8 in. 60¢
- Washita St., Extra, 4 to 8 in. 50¢
- Washita St., No. 1, 4 to 8 in. 40¢
- Washita St., No. 2, 4 to 8 in. 25¢
- Lily White Slips ..... 90¢
- Rosy Red Slips ..... 90¢
- Washita Slips, Extra ..... 80¢
- Washita Slips, No 1 ..... 70¢
- Washita Slips, No. 2 ..... 40¢
- India Oil Stones (genuine list) .. 33⅓%
- Quickcut Emery and Corundum Oil Stone, Double Grit ..... 40%
- Quickcut Emery and Corundum Axe Stone, Double Grit ..... 33⅓%
- Quickcut Emery Rubbing Bricks .. 40%
- Hindostan No. 1, Regular ℔ lb. 8¢ } 33⅓%
- Hindostan No. 1 Small, ℔ lb. 10¢
- Turkey Oil Stones, Extra 5 to 8 in. ..... ℔ lb. 80¢
- Quicr Creek Stones, 4 to 8 in. 20¢
- Quicr Creek Slips ..... 40¢
- Sand Stone ..... 6¢

### Scythe Stones—
Pike Mfg. Co., 1907 list: } 33⅓%
- Black Diamond S. S. ℔ gro. $12.00
- Lamoille S. S. ..... ℔ gro. $11.00
- White Mountain S. S. ℔ gro. $9.50
- Green Mountain S. S. ℔ gro. $7.00
- Extra Indian Pearl S. S. ℔ gro. $8.00
- No. 1 Indian Pearl S. S. ℔ gro. $7.50
- No. 2 Indian Pearl S. S. ℔ gro. $5.00
- Leader Red Peel S. S. ℔ gro. $5.00
- Quick Cut Emery .... ℔ gro. $10.00
- Pure Corundum ..... ℔ gro. $18.00
- Crescent ..... $7.00
- Emery Scythe Rifles, 2 Coat. $8.80
- Emery Scythe Rifles, 3 Coat. $11.00
- Emery Scythe Rifles, 4 Coat. $13.20

Balance of 1907 list 33⅓%.
Lectro (Artificial), ℔ gro., $12.00.33⅓%
$12.00 .....33⅓%
Lightning (Artificial), ℔ gro., $18.00 .....33⅓%

### Stoppers, Bottle—
Victor Bottle Stoppers.....℔ gro. $9.00

### Stops— Bench—
Millers Falls.....15&10%
Morrill's, ℔ doz., No. 1, $10.00....50%
Morrill's, No. 2, $12.50.....50%

### Door—
Chapin-Stephens Co.....50@50&10%

### Plane—
Chapin-Stevens Co.....20%

### Straps— Box—
Acme Embossed, case lots..20&10&10%
Cary's Universal, case lots...20&10&10%

### Stretchers, Carpet—
*Cast Iron, Steel Points..doz.55¢*
*All Steel Socket...doz.$2.00@2.25*
Excelsior Stretcher and Tack Hammer Combined, ℔ doz., $6.00....20%

### Stuffers, Sausage—
Enterprise Mfg. Co., Stuffers and Lard Presses.....25@25&7½%
National Specialty Co., list Jan. 1, 1902 .....30&5%
P., S. & W. Co.....40&10&5%

### Sweepers, Carpet— Per doz.—
Bissell Carpet Sweeper Co.:
Cyco Bearing Superba, $36.00; Triumph, $33.00; Parlor Queen, $30.00; Elite, $29.00; Boudoir, $27.00; American Queen, $27.00; Ideal, $25.00; Gold Medal, $24.00; Primier, $24.00; Prize, $24.00; Welcome, $24.00; Grand Rapids, Nickel, $24.00; Japan, $22.00; Crystal, $36.00; Grand, $36.00; Parlor Grand, $48.00; Club, $54.00; Hall, $60.00; Standard Nickel, $22.00; Standard Japan, $20.00; Crown Jewel, Nickel, $21.00; Crown Jewel, Japan, $19.00; Junior, Nickel, $22.00; Junior, Japan, $20.00.

*NOTE.—Rebates: 50c per dozen on three dozen lots; $1 per dozen on five-dozen lots; $2 per dozen on ten dozen lots.*

### Tacks, Finishing Nails, &c.
*American Carpet Tacks.90&5@—%*
*American Cut Tacks..90&25@—%*
*Swedes' Cut Tacks.L..90&30@—%*
*Swedes' Upholsterers'.90&35@—%*
*Gimp Tacks.....90&35@—%*
*Lace Tacks.....90&35@—%*
*Trimmers' Tacks.....90&30@—%*
*Looking Glass Tacks.....65@—%*
*Bill Posters' and Railroad Tacks, 90&40@—%*
*Hungarian Nails.....80@—%*
*Finishing Nails.....70@—%*
*Trunk and Clout Nails.75&5@—%*

*NOTE.—The above prices are for Straight Weights.*

### Miscellaneous—
*Double Pointed Tacks, 90&6 tens@—%*
Se also Nails, Wire.

### Tanks, Oil and Gasoline—
Wilson & Friend Co.:

| Gal. | Gasoline | Oil |
|---|---|---|
| 30 | $2.75 | $3.00 |
| 60 | $3.50 | $4.00 |
| 110 | $5.00 | $5.75 |

### Tapes, Measuring—
*American Asses' Skin....50@—%*
*Patent Leather.....25@30&5%*
*Steel .....33⅓&5%*
*Chesterman's .....25@25&5%*
Keuffel & Esser Co.:
Favorite, Ass Skin.....40&10@50%
Favorite, Duck and Leather..... 25&5@25&10%
Metallic and Steel, lower list, 35@35&5%; Pocket, 35@35&5%.
Lufkins:
Asses' Skin.....40&10@50%
Metallic .....30@30&5%
Patent Bend, Leather...25&5@25&10%
Pocket .....40@40&5%
Steel .....33⅓@35%
Wiebusch & Hilger:
Chesterman's Metallic, No. 34L, etc. .....25%
Chesterman's Steel, No. 1038L, etc. .....35%

### Teeth, Harrow—
*Steel Harrow Teeth, plain or headed, ⅝-inch and larger, per 100 lb.....$2.55@$2.80*

### Thermometers—
*Tin Case, Cabinet, Flange, Dairy, &c.....30@35%*

### Ties, Bale—Steel Wire—
*Single Loop.....82½&10%*
*Monitor, Cross Head, &c..70&2½%*

### Tinners' Shears, &c.—
See *Shears, Tinners', &c.*

### Tinware—
Stamped, Japanned and Pieced, sold very generally at net prices.

### Tire Benders, Upsetters, &c.
See *Benders and Upsetters, Tire.*

### Tools—Coopers'—
L. & I. J. White.....20@20&5%

### Haying—
Myers' Hay Tools.....50%

### Ice Tools—
Gifford Wood Co.....15%

### Miniature—
Smith & Hemenway Co.'s, Davidson, ℔ doz., Nickel Plated, $1.50; Gold Plated.....$2.00

### Saw—
Atkins' Cross Cut Saw Tools....35&5%
Simond's Improved.....33⅓%
Simonds' Crescent.....30%

### Ship—
L. & I. J. White.....25%

### Torches—
Hammers, Engine, ℔ doz.....$4.50

### Transom Lifters—
See *Lifters, Transom.*

### Traps—Fly—
*Balloon, Globe or Acme, doz., $1.15@$1.25; gro....$11.50@12.00*
*Harper, Champion or Paragon, doz., $1.25@1.40; gro.$13.00@13.50*

### Game—
*Imitation Oneida.....75@10%*
Newhouse .....50&5%
Hawley & Norton.....65&10%
Victor .....75@75&10%
Oneida Community Jump.....70&5%
Stop Thief.....60%
Tree Trap.....60%
Hector .....75@75&10%

### Mouse and Rat—
*Mouse, Wood, Choker, doz. holes, 12¢*
*Mouse, Round or Square Wire, doz.85@90¢*
Marty French Rat and Mouse Traps (Genuine), ℔ doz.:

| | Crate lots. | Small lots. |
|---|---|---|
| No. 1, Rat..... | $11.50 | $14.50 |
| No. 3, Rat..... | $5.75 | $6.50 |
| No. 3½, Rat..... | $4.70 | $5.25 |
| No. 5, Mouse..... | $2.25 | $3.00 |

Animal Trap Co.:
Out o' Sight, Mouse, ℔ doz.....$0.60
Out o' Sight, Rat, ℔ doz..... 1.20
Easy Set, Mouse, ℔ doz..... .35
Easy Set, Rat, ℔ doz..... .85
Out o' Sight Chockers, ℔ doz. holes ..... .12
Out o' Sight, Tin, 5-hole, ℔ doz. traps ..... .75

### Trowels—
Disston Brick and Pointing.....25%
Disston Plastering.....20%
Disston " Standard Brand " and Garden Trowels.....30%
Kohler's Steel Garden Trowels, ℔ gro., 5 in., $4.80; 6 in., $6.00.
Never-Break, Forged Steel Garden Trowels, in bulk, net ℔ gro. $5.50
In 1 doz. boxes.....℔ gro. $6.00
Woodrough & McParlin, Plastering.25%

### Trucks, Warehouse, &c.—
B. & L. Block Co.:
New York Pattern.....50&10%
Western Pattern.....60&10%
Handy Trucks.....℔ doz. $16.00
Grocery .....℔ doz $15.00
McKinney Trucks.....each, net $10.00
Model Stove Trucks.....℔ doz $18.50

### Tubs, Wash—
*M'f'gr's list, price per gross.*

| No. | 0 | 1 | 2 | 3 | |
|---|---|---|---|---|---|
| *Galvanized* | *$67* | *$79* | *$89* | *$99* | *10&7½&5&5%* |

### Twine, Miscellaneous—
*Flax Twine:*
*No. 9, ¼ and ½-lb. Balls .21@23¢*
*No. 12, ¼ and ½-lb. Balls .19@21¢*
*No. 18, ¼ and ½-lb. Balls .16@18¢*
*No. 24, ¼ and ½ -lb. Balls. 15½@17½¢*
*No. 36, ¼ and ½-lb. Balls .15@17¢*
*Chalk Line, Cotton ½-lb Balls .....24@29¢*
*Cotton Mops, 6, 9, 12 and 15 lb. to doz.....8½@19¢*
*Cotton Wrapping, 5 Balls to lb., according to quality..13½@19¢*
*American 3-Ply Hemp, 1-lb. Balls.....12½@15¢*
*American 3-Ply Hemp, 1-lb Balls .....13½@16¢*
*India, 3-Ply Hemp, 1½-lb. Balls. Balls (Spring Twine)...7½@9¢*
*India 3-Ply Hemp, 1-lb. Balls 7½@9¢*
*India 3-Ply Hemp, 1½-lb. Balls, 7@8½¢*
*2, 3, 4 and 5-Ply Jute, 1½-lb. Balls .....9@11¢*
*Mason Line, Linen, ½-lb. Bls.17¢*
*No. 264 Mattress, ¼ and ½ lb. Balls, according to quality. 30@60¢*
*Wool, 3 to 6 ply....B 6¢; A 7½¢*

### Vises—
*Solid Box.....50&5@50&10&5%*

### Parallel—
Athol Machine Co.:
Simpson's Adjustable.....40%
Standard .....40%
Amateur .....25%
Columbian Hdw. Co., 40&5%; Slide .....65%
Fisher & Norris Double Screw, net, each Nos. 2 $10.50; 3 $16.00; 4, $20.50; 5, $27.00; 6 $32.00
Fulton Mach. & Vise Co.:
F. & R. Double Swivel Machinists' .....40%
Star, Solid Jaw, Machinists'.....40%
Hollands':
Machinists' .....40@40&5%
Keystone .....65&5@70%
Lewis Tool Co.:
Adjustable Jaw.....30%
Monarch, 50%; Solid Jaw.....50%
Massey Vise Co.:
Clincher .....40%
Parallel Bar.....15%
Perfect, 15%; Lightning Grip.....15%
Merrill's .....25%
Millers Falls Oval Slide Pattern.60&10%
Parker's:
Victor, 20@25%; Regulars....20@25%
Vulcan's .....40@45%
Combination Pipe.....55@60%
Prentiss .....20@25%
Rock Island.....25%
Snediker's X. L.....33⅓%
Stephens' .....33⅓%

### Saw Filers
Disston's D 3 Clamp and Guide, ℔ doz., $24.00, 30%; Clamps.....30%
Perfection Saw Clamps, ℔ doz....$4.50
Reading .....60%

### Wood Workers—
Fulton Mach. & Vise Co.:
F. & R. Double Swivel Coachman's .....40%
Star Solid Jaw Woodworkers'....60%
Massey Vise Co.:
Lightning Grip, 15%; Perfect....15%
Wyman & Gordon's Quick Action, 6 in., $6.00; 9 in., $7.00; 14 in., $8.00.

### Miscellaneous—
Fulton Machine & Vise Co., Combination Pipe.....70%
Holland's Combination Pipe..60@60&5%
Massey's Quick Action Pipe.....40%
Parker's Combination Pipe:
87 Series, 60%; 187 Series, 60&5%; No. 870, 40%.
Rock Island Pipe.....25%

### Wads— *Price per M.*
*B. E., 11 up.....60¢*
*B. E., 9 and 10.....70¢*
*B. E., 8.....80¢*
*B. E., 7.....80¢*
*P. E., 11 up.....$1.00*
*P. E., 9 and 10..... 1.25*
*P. E., 8..... 1.50*
*P. E., 7..... 1.50*
*Ely's B. E.,11 and larger.$1.70@1.75*
*Ely's P. E., 12 to 20....$3.00@3.25*
*Dis. 15%*

### Ware, Hollow— Cast Iron, Hollow—
*Stove Hollow Ware:*
*Enameled .....45&10%*
*Ground .....50&5%*
*Plain or Unground.....60%*
*Country Hollow Ware, per 100 lbs .....$2.75@$3.00*
*White Enameled Ware:*
*Maslin Kettles.....65&10%*
*Covered Wares:*
*Tinned and Turned.....35&10%*
*Enameled .....45&10%*
See also *Pots, Glue.*

### Enameled—
Agate Nickel Steel Ware.....33⅓%
El-an-ge .....60&10%
Iron Clad Ware.....70&10%
Lava and Volcanic, Enameled..40&10%

### Tea Kettles—
*Galvanized Tea Kettles:*

| *Inch* | *6* | *7* | *8* | *9* |
|---|---|---|---|---|
| *Each* | *45¢* | *50¢* | *65¢* | *65¢* |

### Steel Hollow Ware—
Avery Stamping Co.:
Never-Break Spiders and Griddles .....65&10%
Steel Kettles, Maslins Scotch Bowls, Tin'd.....60%
Steel Stew Pans, Stew Pots, etc., Porcelained .....50%
Cleveland Stamping & Tool Co.:
Solid Steel Spiders and Griddles .....65&5%
Solid Steel Kettles.....60&5%

### Warmers, Foot—
Pike Mfg. Co., Soapstone....40@40&10%

### Washboards—

| No. | ℔ doz. |
|---|---|
| 800 Brass King, Single Surface, Open Back..... | $2.80 |
| 862 White Hen, Spiral Grimp Glass ..... | $3.35 |
| 964—Royal Blue Enamel, Single Surface, Ventilated Back..... | $3.35 |
| 172—Our Best, Single Zinc, Soap Drainer ..... | $3.35 |
| 722—Soap Saver, Single Zinc, Iron Top ..... | $3.35 |
| 100—Northern Queen, Single Zinc, Perforated, Open Back..... | $3.00 |
| 134—Universal, Single Zinc, Extra Family Size, Ventilated Back....$2.80 | |
| 760—Banner Globe, Single Zinc, Ventilated Back..... | $2.25 |
| 57—Peerless, Double Zinc, Spring Protector ..... | $3.70 |
| 56 Red Cross, Double Zinc, Swing Protector ..... | $3 60 |
| 17—North Star, Solid Zinc, Swing Protector ..... | $3.60 |
| 797—Jewel, Single Zinc, Pail Size. | $1.25 |

### Washers—Leather, Axle—
*Solid .....90@90&10%*
*Patent .....90@90&5%*
*Coil:* *⅞ 9¢* *1 10¢* *1⅛ 11¢* *1¼ inch. 14¢ per box.*

### Iron or Steel—
*Size bolt.... 5-16 ⅜ ½ ⅝ ¾*
*Washers....$4.90 4.00 2.70 2.50 2.30*
*The above prices are based on $6.50 off list.*
*In lots less than one keg add ½¢ per lb.; 5 lb. boxes add ½¢ to list.*
Avery Stamping Co.:
Standard, in 200 lb kegs, $6.00 ℔ 100 lb. discl.; in 100 lb kegs add 10¢ net ℔ 100 lb; in 5 or 10 lb boxes, add 50¢ net ℔ 100 lb; in 1 lb boxes, add $1.00 net ℔ 100 lb.

### Cast Washers—
*Over ½-inch, barrel lots. per lb. 1½@1¾¢*

### Wedges—
*Oil Finish.....lb., 2¼@2¾¢*

### Weights—Hitching—
Covert Mfg. Co.....30&2%

### Sash—
*Per net ton, f.o.b. factory:*
*Eastern District.....$20.00@—*
*Western and Central Districts .....$20.00@—*

### Wheels, Corundum and Emery—
Pike Mfg. Co., Corundum, 65%; Emery .....75%

### Well—
*8-in., $2.00; 10-in., $2.30; 12-in., $3.00; 14-in., $4.45.*

### Wire and Wire Goods—
*Bright and Annealed:*
*6 to 9.....72&10&7½%*
*10 to 18.....72½&10&10%*
*19 to 26.....75&10&10&2½%*
*27 to 36.....77½&7½%*
*Galvanized:*
*6 to 9.....72½&10%*
*10 to 14.....72½&10&5%*
*15 to 16.....72½&10&5%*
*17 to 18.....72½%*
*19 to 26.....70&5&2½%*
*27 to 36.....65&10&10%*
*Coppered:*
*6 to 9.....65&10&10%*
*10 to 14.....70&10&5%*
*15 to 18.....65&10&10&10%*
*19 to 26.....70&5&2½%*
*27 to 36.....72½&10&2½%*
*Tinned:*
*6 to 18.....67&10&10%*
*Brass .....15½¢ lb., base*
*Copper .....15¼¢ lb., base*
*Cast Steel Wire.....50%*

### Spooled Wire—
*Annealed and Tinned.75@75&10%*
*Brass and Copper....70@70&10%*
*Retailers' Assortments, per box, $1.90@$2.10*
Wire Clothes Line, See Lines.
Wire Picture Cord, see Cord.

### Bright Wire Goods—
*Steel Wire Goods.....90&40%*
*Brass Wire Goods, 90&40@90&40&10%*
*Brass Cup and Shoulder Hooks, 85&10%*

### Wire Cloth and Netting—
*Galvanized Poultry Netting, 80&10@80&10&5%*
*Screen Cloth, 12 Mesh, Per 100 sq. ft.: Painted, $1.30; Galvanized, $1.90; Bronze, $6.50.*
*Standard Galv. Hardware Grade: 100 ft. rolls, 24 to 48 in. wide, Per 100 sq. ft.*
*Nos. 2, 2½ and 3 Mesh, $2.75@$3.00*
*Nos. 4 and 5 Mesh..$3.00@$3.25*
*No. 6 Mesh.....$3.25@$3.50*
*Nos. 7 and 8 Mesh..$3.75@$4.00*

### Wire, Barb—See *Trade Report*

### Wrenches—
*Agricultural, 80&10&5@80&10&10%*
*Alligator or Crocodile..70&10@75%*
*Baxter Pattern S Wrenches, 70&5@70&10%*
*Drop Forged S.....45@45&5%*
Acme .....60&10%
Alligator Pattern, 70%; Bull Dog..70%
Bemis & Call's:
Adjustable S, 40&5%; Adjustable S Pipe, 40&5%; Briggs Pattern, 40%; Combination Bright, 50%.
Steel Handle Nut.....50&5%
Combination Black.....50&5%
Merrick Pattern.....50&5%
Boardman's .....40%
Coes' Genuine Knife Hdl...40&10&5&5%
Coes' Genuine Steel Hdl...40&10&5&5%
Coes' Genuine Key Model..40&10&5&5%
Coes' Genuine Hammer Handle..... 40&10&5&5%
Coes' " Mechanics' "...40&10&10&5&5%
Donohue's Engineer.....40&10%
Eagle .....70%
Gem Pocket.....30%
Hercules .....70%
W. & B. Machinist:
Case lots.....50&10%
Less than case lots.....50%
W. & B. Railroad Special:
Case lots.....50%
Less than case lots.....40&10&5%
Solid Handles, P., S. & W..50&10%; full cases.....50&10&5%
Standard Nipple Mfg. Co.:
Duplex Chain.....50%
Uwanta Wrench Co.:
Uwanta Special, Iron Handle.... 40&10&5%
Other Wrenches.....50%
Vulcan and Agrippa Chain.....50%
Whitaker Machinists'.....50&10%
Wizard Adjustable Ratchet.....50%

### Fruit Jar—
Beni, P. Forbes, Triumph, ℔ gro., $7.50; per doz.....$0.90

### Wrought Goods—
*Staples, Hooks, &c., list March 17, '02.....90@—%*

### Zinc— *(Cask lots at mill.)*
*Sheet.....per 100 lb., $7.00*

# THE IRON AGE

New York, Thursday, November 26, 1908.

## The Bullard 24-In. Vertical Turret Lathe.

While generally similar to the 36-in. machine described in *The Iron Age* October 3, 1907, the 24-in. rapid production vertical turret lathe of the Bullard Machine Tool Company, Bridgeport, Conn., contains some new features and minor changes. On work within its range the new machine, two views of which are given in Figs. 1 and 2, has proved much faster in operation and consequently an even greater producer. Its new points as compared with the 36-in. machine previously described include an improved type of friction engaging mechanism which permits of individual adjustment; this friction is incorporated in the speed box, side head feed works and power traverse mechanisms. The bed construction is massive; there are narrow guide bearings for all sliding parts; the cross and side rails constitute a unit guided upon one continuous narrow bearing, serving to maintain positive alignment. The rapid traverse attachment is a valuable adjunct of the machine as it saves time and the considerable effort usually required to move a head in which the gibs have been properly adjusted to prevent chatter and vibration of the parts. An important feature is the center stop construction which permits disengaging the center stop, allowing the main head to cut beyond the center and machine surfaces to the left of the center.

The method of locking the side head is an innovation. In the 36-in. machine shown previously, a stud was used having a coarse pitch thread on the end seated in the slide, which was used to raise the turret from its locking seat after the movement of the lever had released the binding pressure of the finer thread at the outer end of the stud. The turret of the 24-in. machine is forced away from its seat by a spring, the binding pressure being applied by the cam on the lever. Very careful attention was given to lubrication in designing the new machine, the gears and bearings being flooded to an even greater extent than in its predecessor.

Details of the new friction mechanism are given in Fig. 3, which shows unassembled speed box parts, and in Fig. 4, which gives a section through the speed box. In the former illustration the four gears mounted on a shaft are the friction gears; the single gear contains the friction spider which is keyed to the shaft, and also the friction and the friction expanding mechanism, which consists of a chrome steel lever. Springs which have previously constituted a part of the friction mechanism have been discarded, because they have not proved entirely satisfactory. The adjustment for each individual friction is shown in Fig. 4. As in the 36-in. machine the driving pulley shaft extends through the machine to the speed box. The continuation of the main driving shaft is shown at *a*. Keyed to it is a nest of five gears in mesh with a cone of five gears loose on the hollow shaft *b*

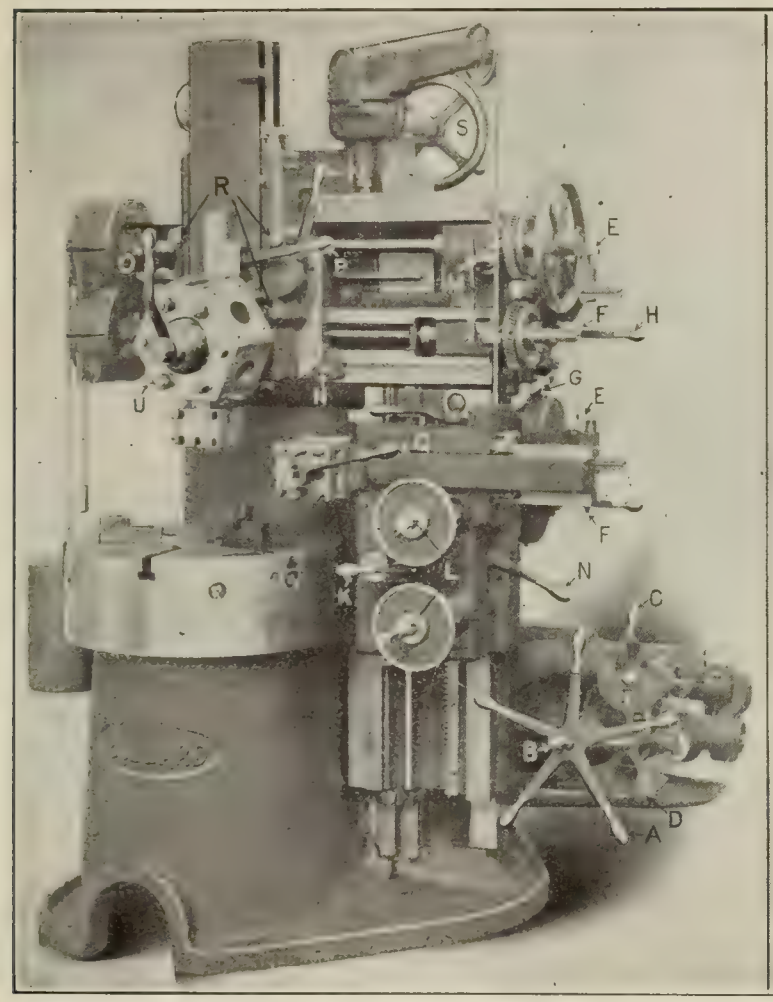



Fig. 1.—Three-Quarter Front View.

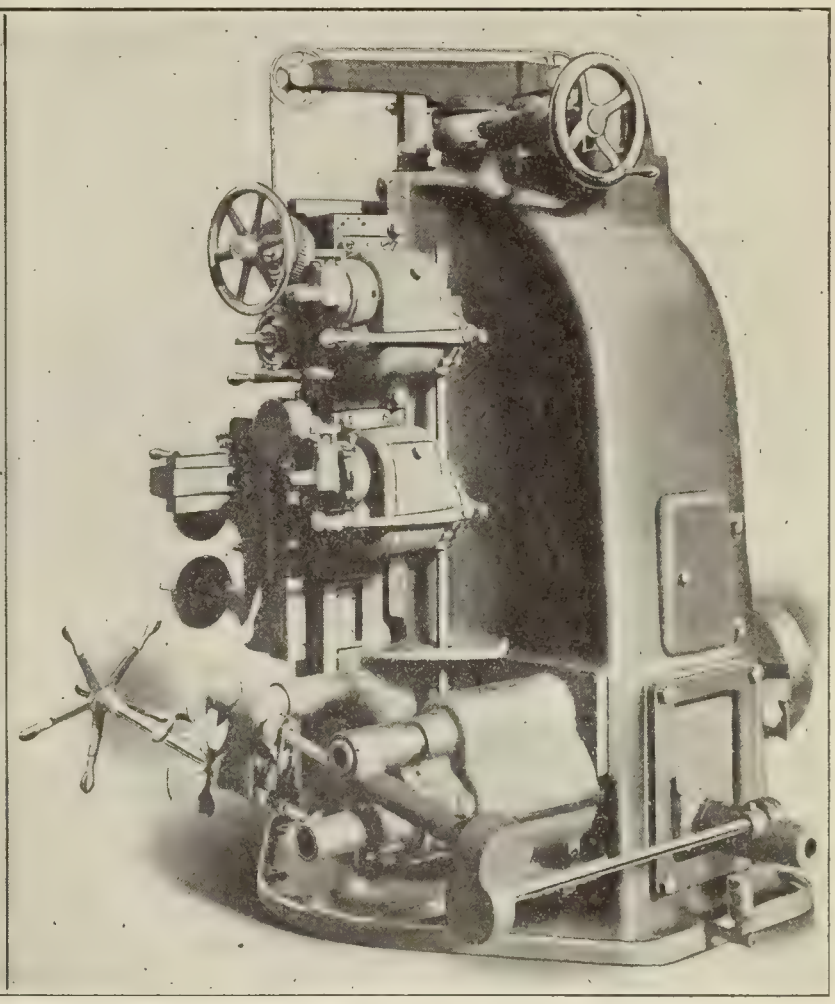


Fig. 2.—Three-Quarter Rear View.

The 24-In. Vertical Turret Lathe Built by the Bullard Machine Tool Company, Bridgeport, Conn.

and engaged by the frictions as required; it is impossible to engage more than one at a time.

The feeds are thrown in by means of the rack rod *c* in the shaft *b*. As in the 36-in. machine the rack rod is reciprocated by a pinion meshing with it and mounted on the rod carrying the pilot wheel. The brake *d* operates when this rod is swung into vertical position, which causes an internal friction ring to expand. Between the ends of the ring is a key with a projecting lug engaging a corresponding projection mounted as a collar on the casting containing the bearings of the clutch operating mechanism. The five changes of speed in the gear box are multiplied to 15 by a cone of three gears in the headstock which are engaged with their shaft by diving keys.

For the benefit of those not already familiar with the operation of the machine, the various levers and handles are lettered in Fig. 1, that their functions may be explained. The 15 changes of speed are divided in the headstock into three series—slow, medium and fast—and each is again divided by the speed box into five speeds, the exact number of table revolutions of each being shown on the indicator. The pilot wheel A controls the changes

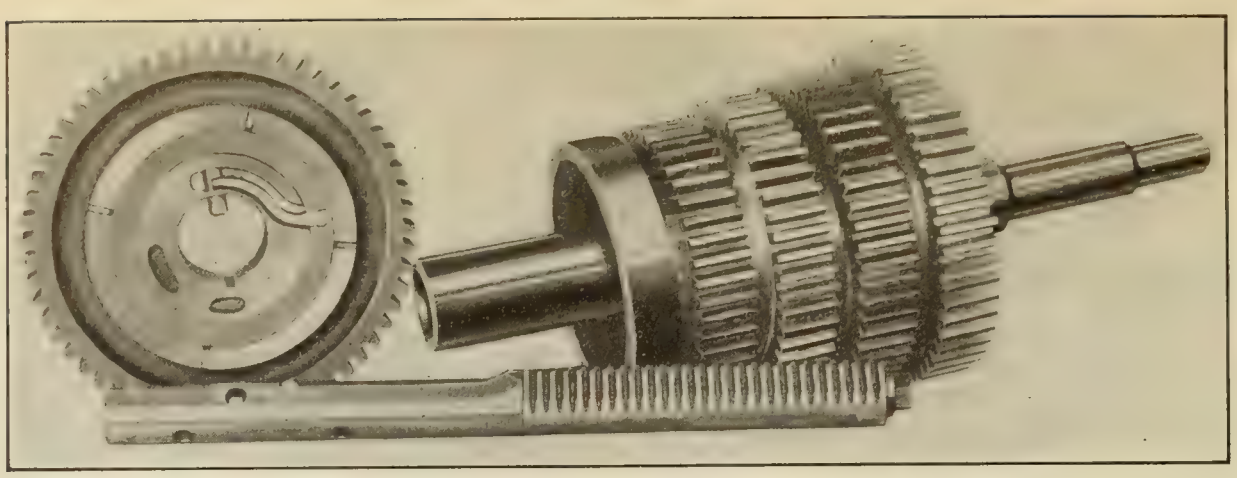


Fig. 3.—Parts of the Speed Box, Showing the New Friction Mechanism.

in the speed box, each spoke indicating one speed which is engaged when that spoke is in the vertical position. The lever B is operated by lifting, and can be used only when the frictions are disengaged and the pilot wheel spokes are in neutral position. The lever C operates the positive clutches in the headstock, and has three positions indicating the series of speeds. It is impossible to change from one series to another unless the speed box is disengaged and the brake is set. The interlocking disk and yoke D prevents moving at one time more than one lever or handle controlling the speed changing, thereby safeguarding the driving mechanism. The number of revolutions of the table per minute is indicated by figures on the arms of the interlocking disk on the speed box hand wheel rod, the speed set being that with which the arrow on the notched disk on the rod controlling the ratios of reduction gearing coincides.

The feed works are independent for each head, the changes being made by turning the knob E until the end of the rack coincides with the mark indicating the desired feed. There are two feeds for each mark on the index, this change being made by the clutch rod F. The feeds are engaged or disengaged by the drop worm lever G and this lever also makes the change from vertical to cross feed and vice versa on the vertical head. The webs of the worm gears are held between two adjustable friction plates keyed to the rod and screw, which forms a safety device in case of accidental collision of the heads. The change in the direction of feed is made by the lever H at the rear of the feed works. The sidehead feeds are identical with those of the vertical head except that they are engaged and disengaged by a horizontal movement of the lever K. When in the extreme inward position the vertical feed is engaged and when moved to an extreme outward position the cross feed is engaged. The neutral position of the lever permits rapid hand movements of the side head and slide by crank handles fitting the squared rods L. Micrometer index dials are adjustably mounted on each feed rod, and indicator clips numbered to correspond with the faces of turrets, may be set to reproduce various diameters and depths of holes. The use of these clips, shown in Fig. 5, results in a considerable saving

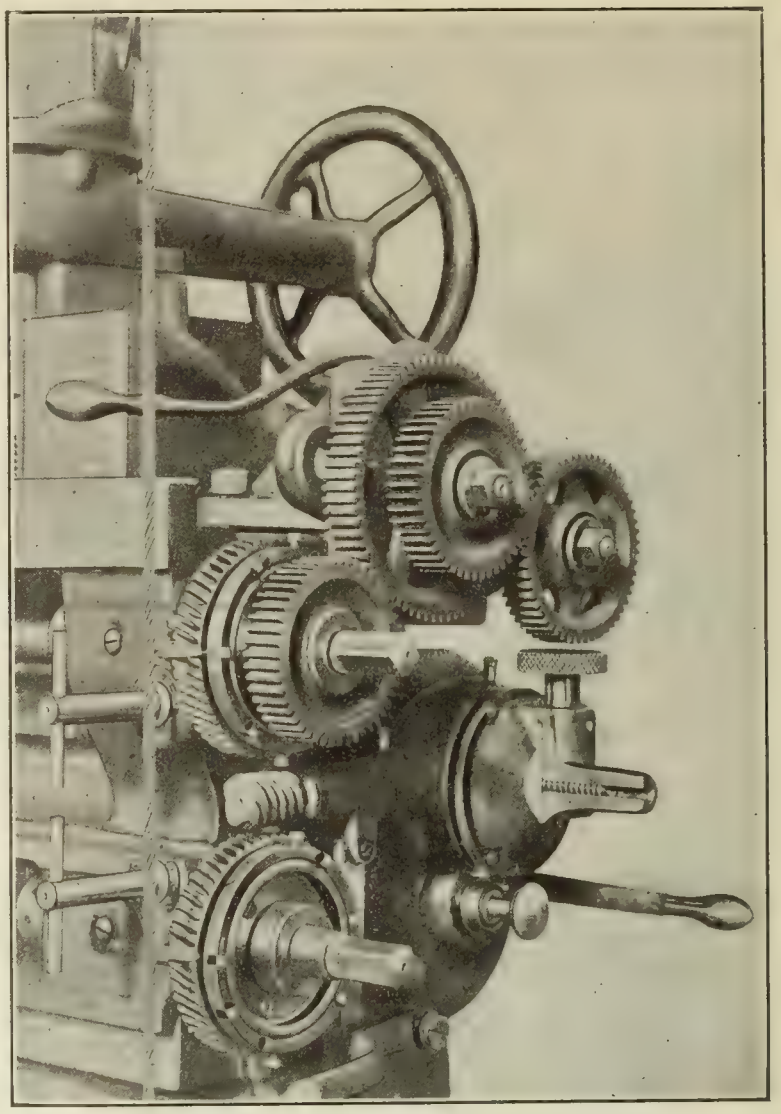


Fig. 5.—Detail of the Thread-Cutting Attachment; Also Shows Indicator Clips.

of time when work of various sizes is to be reproduced.

The vertical head is equipped with power rapid traverse device controlled by key handles M, the upper handle for the vertical slide and the lower handle for the movement of the head on the rail. Indicator plates show the resultant movement for each position of the handles. Binder handles N are set when it is desired to lock the saddle or slide stationary. The turret binder is at O and the lock pin lever at P. For the side head turret the

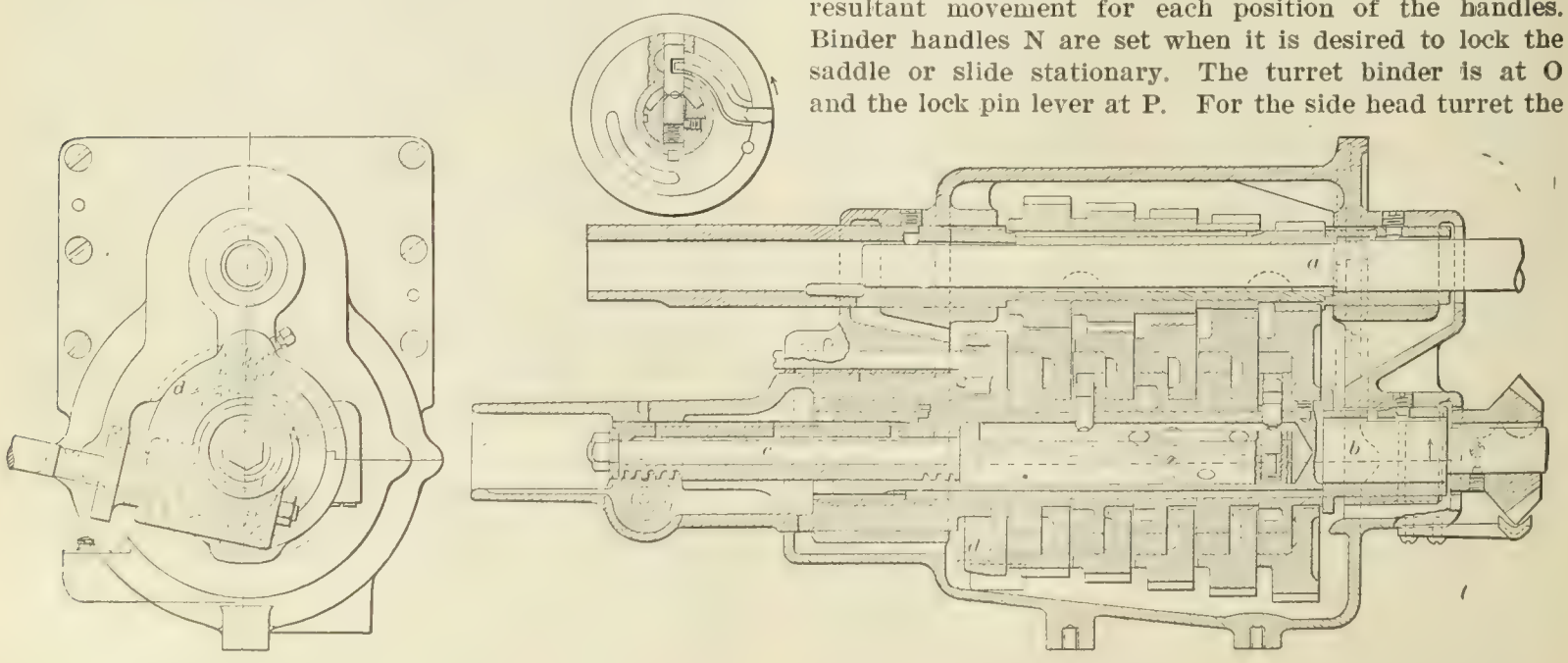



Fig. 4.—End Elevation and Section Through Speed Box, Giving Details of the Brake Friction.

handle Q acts as both binder and lock. The vertical head may be swiveled by first releasing the binder bolts R in the swivel plate and moving the head until the required angle is indicated on the graduations. The cross and side rails constitute a unit that may be raised and lowered by the hand wheel S. Should it be necessary to move the main turret head beyond the center an additional movement may be obtained by revolving the knurled handle U which throws the stop block out of engagement.

The manner of gibbing the vertical slide, with taper gibs back and front, and the solid locks of the saddle serve to maintain the correct alignment of the turret holes and the center of the table spindle. The adjustment of the back taper gibs provides for taking up wear incidental to the use of this slide, which is necessary if the turret is to continue boring accurate holes.

## Autogenous Welding by the Oxy-Acetylene Flame.*

BY EUGENE BOURNONVILLE.†

Autogenous welding is the uniting by fusion of metals of the same nature at high temperature without the intervention of a different metal as is done in soldering or brazing. This welding is accomplished by means of a blow pipe, known as the oxy-acetylene torch. The high temperature of the oxy-acetylene flame was discovered by Le Chatelier in 1895. In a note to the Academy of Sciences he presented his calculations, showing that with an equal volume of oxygen acetylene would give a temperature of about 4000 degrees C., or 7200 degrees F., which is 1000 degrees C. or 1800 degrees F. greater than the temperature of the oxy-hydrogen flame.

The first experiments were greatly impeded by flash back caused by rapid propagation of the flame, and it was not until 1901 that a practical torch was obtained. This torch was developed by Fouche and Picard, both engineers of the French Company, Acetylene Dissous, and their success was due largely to the use of compressed acetylene, but even then they had to carburet the acetylene with gasoline, and still better results were obtained when the acetylene was mixed with ether to prevent the flame flashing back. This apparatus was shown by Edmond Fouche at the Société des Anciens Eleves des Eccles des Arts et Metiers November 3, 1901, then to the French Society of Physics December 6, 1901. On March 2, 1902, Fouche exhibited a high pressure torch to the Professional Syndicate of the Academy, using only pure acetylene mixed with oxygen. It was not until near the close of 1903 that Fouche was able to construct what is known as the low pressure torch.

Since the disclosure of Le Chatelier and the inventions of Fouche and Picard, many attempts have been made to improve upon their designs. The greatest success appears to have been attained by the invention of Camille Rodrigue-Ely and Emile Gauthier of the firm of A. Boas, Rodrigues & Co., Paris, France, the United States patents on which were purchased by the Davis-Bournonville Company.

So far as is known the first oxy-acetylene torch to be used in the United States was sent to the writer by Fouche while he was still experimenting, and with this torch he was successful in welding copper and steel without the use of any flux.

There are three distinct types of oxy-acetylene torches: High, low and medium pressure. The high pressure torch can be used only with both the acetylene and oxygen under pressure, and the apparatus must be provided with positive check valves to prevent the gas of one container going into the other, in case the tip of the torch becomes obstructed by molten metal or otherwise. Because of flash backs in these high pressure torches they have become so heated in several instances that portions of the torch have been melted. Another defect of the high pressure torch is that both the gases being under very high pressure they issue from the tip with great force and it requires an expert to make a weld without blowing away the molten metal. The advantage of the high pressure torch is that both gases being under pressure the operator has perfect control of the mixture for the flame, being able to add to or reduce the volume of either gas as required to obtain a perfect flame.

The low pressure torch is used with the oxygen under pressure while the acetylene is taken from an ordinary lighting generator in which the pressure is slight. In this torch the gas is mixed by injection, the acetylene being drawn from a surrounding chamber into the mixing chamber by the velocity of the oxygen passing through it. As there is no means in this torch to force the acetylene the operator must depend entirely upon injection to secure the mixture. As the proper mixture is 1 part of acetylene to 1.28 parts of oxygen, and the mixture by the injector being uncertain, a perfect flame is difficult to obtain, and almost invariably there is too much oxygen and the weld is oxidized.

The medium pressure torch was devised to remedy so far as is possible the defects of the other two types. This torch is constructed very much on the style of the low pressure torch except that the mixing of the gases is accomplished entirely in the nozzle or tip. This arrangement enables the operator, by simply changing the tip of the torch, to change the whole combination and to obtain the flame best adapted for the thickness of the metal to be welded, without changing the torch itself. An advantage which this torch has over the high pressure torch is that the mixing chamber and the aperture through the torch tip is about six times larger than the injector through which the oxygen is introduced at 15 lb. pressure, and consequently the blowing force of the flame is not half that of the same size high pressure torch. In case of flash back the flame cannot extend beyond the injector tip, therefore there is no injurious effect on the torch itself. The advantage over the low pressure torch, in addition to changing the size of the flame without changing the torch, is that this torch does not depend upon the injector for the proper mixing of acetylene, but both gases being under medium pressure the flame can be adjusted exactly to requirements. The flow of gas for a low pressure torch to give a stable flame must have a velocity of not less than 328 ft. per second. For the reasons stated the medium pressure torch is the ideal one for autogenous welding and the field for its application in metal working is almost unlimited.

The following table converted from metric to English measures from the *Bulletin Technologique*, September, 1907, will be found of value in making comparisons of the various gases which can be used in autogenous welding:

| | Oxygen and acetylene. | Oxygen and hydrogen. | Oxygen and coal gas. |
|---|---|---|---|
| B.t.u. obtained by complete combustion of 1 cu. ft. of gas | 1,572 | 292 | 618 |
| Cubic feet of pure oxygen theoretically required for the perfect combustion of 1 cu. ft. of gas | 2.51 | 0.62 | 0.923 |
| Cubic feet of oxygen required for 1 cu. ft. of gas to obtain the best welding flame (from practical test made) | 1.3 | 0.25 | 0.67 |
| Cu. ft. of gases required to obtain 1000 B.t.u. with a welding torch. | Acetylene. 0.594<br>Oxygen 0.773 | Hydrogen. 3.428<br>Oxygen 0.857 | Gas 1.62<br>Oxygen 1.08 |

The Engineers' Society of Western Pennsylvania made an inspection November 21 of the completed filtration works at Aspinwall, near Pittsburgh, built to supply that city with pure filtered water, and said to be the largest single filtration plant in the world. The pump house is equipped with four centrifugal pumps, having a combined capacity of 220,000 gal. per day, and three D'Auria pumps for cleaning and transporting the filter sand, capacity 13,000,000 gal. The three sedimentation basins have a capacity of 120,000,000 gal. The filtered water reservoir covers 6 acres, capacity 50,000,000 gal. The 46 filter beds are each 1 acre in extent and 10 additional beds are being constructed. This is the only slow sand filter in this country using mechanical means for handling the filter sand. An illustrated description of this plant was printed in *The Iron Age* of September 3.

* A paper read before the Technology Club of Syracuse, N. Y., November 17, 1908.

† Vice-president of the Davis-Bournonville Company, New York.

# The National Founders' Association.

## Proceedings of the Twelfth Annual Convention.

## President Briggs Resigns.

The twelfth annual convention of the National Founders' Association held at the Hotel Astor, New York, November 18 and 19, differed from most of its predecessors in the absence of any protracted discussion of questions of association policy or of shop management. The membership is now well seasoned in its work, and apparently single minded on the questions that have been threshed out in the past 10 years, while any new phases of these questions that come up are committed to the administrative council to be handled as its judgment may dictate. The important development of last week's convention was the resignation of President O. P. Briggs, who as commissioner for two years and then as president for three years, has been so large a constructive and administrative factor in the affairs of the organization. His successor, Henry A. Carpenter, Providence, R. I., has long been a popular and influential officer of the association and is thoroughly representative of its policies.

### President's Report.

The president, O. P. Briggs, in the introductory portion of his report referred to the depression from which the foundry interest, in common with all business, had suffered in the past year. In years past such a depression had always been marked by labor troubles, due to reductions in wages and the enforcement of conditions obnoxious to unions. The entire absence of labor difficulties affecting members of the association in the past season, the president regarded as a phenomenal record. This condition he attributed to the 12 years of association operations which had been most beneficial in broadening the ideas of employers, inspiring confidence in each other, and modifying opinion formerly prevalent which had led to excessive wage reductions in times of slack business. While existing conditions might seem to point to a period of peace in the future, those who had most closely studied the tendencies of the past 12 months could see some danger signals which need to be heeded. The president urged the most thoughtful attention to the questions which would come before the convention, more particularly those relating to legislation.

#### THE CRIMINAL SIDE OF MOLDERS' STRIKES.

Recent developments, the report went on, demand the presentation in the present report of facts concerning lawlessness, coercion and intimidation by the Iron Molders' Union, which had not been emphasized previously. Such a statement is especially called for in view of the activity of the Chief Executive of the United States relative to cases before the judiciary in connection with labor troubles. "The condition at the present time is such as to cause every employer of labor to put forth his very best energies in considering ways and means to be adopted in opposing the antiinjunction demands of the American Federation of Labor in which the Iron Molders' Union is a most important factor."

The officers of the association have prepared a review of the acts of violence, intimidation and murder growing out of strikes in the foundries represented in the association. This is to be put in pamphlet form, and will be distributed in due time. As to the character of this record, the president said:

> This review will be compiled in circular form and may be had upon application to the secretary. It will portray an extended history of riot, bloodshed, violence and murder perpretrated by the Iron Molders' Union, which is second only to the reign of terror in the territory of the Western Federation of Miners, and in proportion to the number of men involved exceeds in magnitude the criminal practices unearthed by the historic Anthracite Coal Strike Commission of 1902.
>
> This review will contain 32 affidavits made by non-union men and others attacked during the Utica molders' strike of 1904, upon which affidavits an injunction was issued in that city. Digests of these affidavits will be reproduced in this circular for the purpose of exhibiting the character of intimidation and insult heaped upon independent workmen or those who did not see fit to join the union. They are fairly characteristic of the actions of this union in all other strikes reported. We could produce an endless chain of evidence of this nature.
>
> This condition continued in the important strikes following that at Utica, notably at Worcester, Cincinnati, St. Louis, Racine, Minneapolis and Philadelphia, culminating in 1906 in a similar reign of terror established in 12 of the principal cities of the United States. This terrorizing by the Iron Molders' Union continued until the establishment of the secret service of our association, by means of which many men schooled in the criminality of this union were landed in jail and injunctions were secured, which were the only possible protection, outside of the militia, for the lives of workmen and the property of our members.
>
> The gigantic strike of the Iron Molders' Union of 1906 for the purpose of forcing the strictly closed shop upon the foundrymen of this country was finally centered in the city of Milwaukee, where the union directed those of its officials most schooled in all the ramifications of its criminal record to leave no stone unturned to bring the proprietors to time.
>
> Even this partial review of the lawlessness of these strikes shows 227 affidavits to various forms of violence, 14 injunctions granted, 48 cases of contempt of court, with 23 convictions, 18 of which came from the city of Milwaukee alone.

#### THE MILWAUKEE INJUNCTION CASES.

President Briggs then passed to a review of the injunction cases growing out of the molders' strike at Milwaukee in 1906. The original injunction issued by Judge Quarles, September 24, 1906, was dissolved upon application of the union. Immediately rioting was renewed and continued until May 20, 1907, when it became imperative to take decisive steps. Extensive hearings were granted the union leaders and the outcome of these hearings President Briggs desired to have emphasized most strongly, since the President of the United States had taken a hand in the case, in opposition to the interests of the foundrymen. The picketing in Milwaukee, as in other cases with which the association has had to deal, could not be construed, the report said, as in any sense peaceful. As Judge McPherson of Iowa, in a recent decision remarked: "There can be no such thing as peaceful picketing any more than there can be chaste vulgarity, peaceful mobbing or lawful lynching." The situation in Milwaukee when the injunction was issued against the molders was like that in the anthracite region, which was thus referred to in the report of the Anthracite Coal Strike Commission: "It is admitted that this disorder and lawlessness was incident to the strike. Its history is stained with a record of riot and bloodshed."

Among the injunctions secured at Milwaukee was one for the protection of the Allis-Chalmers Company. This case was appealed by the union to the United States Circuit Court of Appeals at Chicago. Soon after the appeal was taken information came to the officers of the National Founders' Association "that the President of the United States and his Secretary of War had taken an interest in the case; that they had at the personal solicitation of an officer of the Iron Molders' Union, himself a violator of an injunction, selected an attorney for the purpose of assisting that union in defeating this injunction; that the President and his Secretary of War had committed themselves on an *ex parte* hearing, with no knowledge whatever of the details, to the contention of the union that the injunction was wrong, too far reaching and must be modified. We were informed that these gentlemen both had expressed themselves freely upon this point and volunteered to become actively interested in securing a dissolution of the injunction or its modification."

Continuing, President Briggs said that he discredited the statements when first brought to him, believing that for the President of the United States and his Secretary of War to become parties to such an undertaking was beneath their dignity as well as an insult to the judiciary. The fact was, however, that on October 8, 1908, less than a

month before the national election, the United States Court of Appeals modified the Allis-Chalmers injunction most materially. It was a fact that on October 26 the President of the United States gave to the newspapers a letter of October 19 he had written to P. H. Grace, a member of the Brotherhood of Railroad Trainmen, Binghamton, N. Y. In this letter, which President Briggs's report quotes in full, the President told of a call at the White House in the fall of 1907, of the editor of the *Iron Molders' Journal*, who directed the President's attention to the injunction in the Allis-Chalmers case, representing that it was so sweeping that it practically forbade the union from making any effort, no matter how peaceful and proper, to maintain its position in the strike. At some length the President's letter detailed the summoning of the Secretary of War to the interview, the result of which was that at the Secretary's suggestion the union retained F. N. Judson of St. Louis, the author of the review of the labor decisions of Judge Taft published in the *Review of Reviews* in 1907, to represent it before the United States Court of Appeals at Chicago. Secretary Taft at the interview, the President's letter said, showed indignation that such an injunction had been issued, saying that the position taken by the court was clearly untenable. He added that the decision of the Court of Appeals ought certainly to be in favor of the union. The President's letter to P. H. Grace continued:

The decision of the Court (of Appeals) was handed down in Chicago on the 8th day of this month (October, 1908), and it justifies Judge Taft's wisdom, for it sustains the most important contentions of the labor unions. The Court holds that while under the facts of the case the company was entitled to some injunctive relief, the decree went far beyond the proper limits. It struck out of the decree all of the provisions which prevented peaceful picketing, or the exercise of the right of persuasion in inducing employees to join the strike, and all reference to boycotting, on the ground that there was no boycott, as the members of the union had a right to refuse to handle struck work—that is, the work from a factory where they were on a strike—wherever they found it. The opinion is important, especially as showing that much can now be accomplished in getting the courts to correct abuses against employees in the exercise of the power of injunction if such abuses are in effective form brought to their attention, as, thanks to Judge Taft, they were brought in this case.

### A SERIOUS CONDITION AT MILWAUKEE.

Passing to consider the effect of this modification of the Milwaukee injunction, and the claims which the President of the United States made for Judge Taft, President Briggs referred to the situation in Milwaukee. Up to 1900 that city was considered the best in the Western States for manufacturing interests, both from the standpoint of the manufacturer and the workingman. Millions of dollars were expended in Milwaukee, due to the amicable labor conditions, money which would have been expended in Chicago, but for the deplorable situation there. What has happened in Milwaukee is indicated by the rapid growth of socialism. In 1900 the Socialist vote amounted to less than 5000. In 1902 it was about 10,500. In 1906 the Socialist party polled a vote of over 17,000, and came very near electing men to the most important positions in the municipality.

### A HISTORY OF VIOLENCE.

The record of the Iron Molders' Union in the use of threats, assault and murder in its strikes were considered at some length in the report as indicating the kind of a labor union in behalf of which the Chief Executive and his Secretary of War had interested themselves. Particular attention was called to the Cincinnati strike, with its record of murder and attempts to dynamite molds in the foundries of members of the association. An incident of that strike to which publicity has not been given heretofore was detailed in the report as indicating the control over violence and intimidation by the officers of the Iron Molders' Union. In one instance, in which the union's officers had asked for one more visit from President Briggs, then commissioner of the National Founders' Association, it was insisted by the association that meantime violence should cease and the mob should leave the streets. This was agreed to by the president of the Iron Molders' Union, and the violence did stop and the gatherings of men in the streets ceased—this being brought about within a few hours after the agreement for a truce had been made. In the conference that ensued, in which the president of the Iron Molders' Union refused to recede in any particular from his previous contention, "he spoke most boastfully of his ability to quiet this entire mob, cause the violence to cease, and maintain law and order in Cincinnati during this truce. Now, gentlemen, I ask you, is there a man in this audience in the face of these facts who can claim for one moment that it was not within the power of the Iron Molders' Union through its officers to maintain law and order in Cincinnati if they had been so disposed?"

### NO INJUNCTIONS WITHOUT HEARINGS.

Referring again to the Milwaukee strike in which the union concentrated its efforts and in which there was the greatest violence, the report dwelt particularly upon the following features of the judicial proceedings there following the application for injunctions made by the Allis-Chalmers Company:

That all the demands of the labor agitators in clamoring for hearings before injunctions should be issued, were fully granted them.

That a hearing lasting several days was given them by Judge Quarles before the temporary injunction was issued. Upon a further hearing, the injunction was dissolved with a severe reprimand to the strikers from the judge. Subsequently, the rioting was so intense a renewal of the injunction was asked.

That before renewing this injunction a hearing was given the strikers to the fullest extent they desired.

That the contempt cases resulting from this injunction were not tried before the judge issuing the injunction.

That out of 18 cases in which contempt was charged, 18 men were convicted.

Here we find the judges taking this question into their own hands, and complying with those provisions which Secretary Taft has been recommending in modifying the injunction practices, but notwithstanding this the convictions were made.

In the Milwaukee case there is no provision which Judge Taft had recommended in regard to injunction practices that was not fully complied with upon the initiative of the court, regardless of the enormous loss this delay caused the people of Milwaukee.

### HISTORY OF THE ASSOCIATION.

The recommendation made in the report of the previous year, that a history of the association be compiled, has been carried out in part. The late William H. Phaler undertook the work, but did not complete it. However, it has been carried to a point where others can take it up and finish it. President Briggs then briefly recapitulated the main developments of the past 11 years. He recited the early conferences of the Iron Molders' Union and those that followed—500 national conferences in all; besides 2000 local conferences, in addition to the efforts put forth by individual foundrymen in thousands of interviews designed to bring about equitable relations. "The entire undertaking was a complete failure so far as concerns arriving at any agreement whatever with the Iron Molders' Union—a sad commentary upon the boasted broadmindedness of the union leaders. At the close of these conferences it was plainly evident that instead of meeting the foundrymen in any spirit of conciliation whatever it was the union's sole purpose to force still more unreasonable conditions upon them."

### RELATIONS TO EMPLOYEES.

Coming to the attitude of the National Founders' Association toward unions, the report said that there are good unions and bad unions. The former are represented by the Brotherhood of Locomotive Engineers, the conductors' and trainmen's organizations and the Amalgamated Society of Mechanical Engineers, the latter in England. Unions represented by the American Federation of Labor and adopting its tactics "are bad unions because of their anarchistic and socialistic methods, their disregard for law and order and their attempts to undermine the Constitution of the United States, and are entitled to no respect, no confidence and no hearing until such time as they see fit to reform." On the relations of the members of the association to their employees the report said:

I am more convinced than ever that the great majority of the workingmen of this country, union and nonunion, are honest, fairminded, well meaning people, striving to do that which is right and fair, and that they are doing so insofar as they are given to know, to realize and to understand what is right and fair. The great difficulty arises, not with the workingmen themselves, but with the irresponsible lead-

ers who misrepresent, distort and falsify things to suit their own ends, irrespective of the welfare of the people they represent. And here again, as in years gone by, I wish to emphasize the necessity of giving the workingmen the consid eration they deserve. We have now a well defined policy of dealing direct with them, placing our position before them personally for their consideration, getting their view of the case direct instead of conducting negotiations through the medium of the walking delegate, as was once the case. The beneficial results of this treatment are so pronounced that I again beseech you to have nothing to do in the conduct of your business with the prevailing labor officials, leaders and agitators.

When these leaders, from Samuel Gompers down, will accept the findings of that great tribunal, the Anthracite Coal Strike Commission, when the American Federation of Labor will accept the principles laid down in article 9 of the commission's findings, incorporate them in its constitution and by-laws, and cause them to be put in practice, then, and not until then, should any employer of men consider for one moment any collective trade relations with any union a member of the American Federation of Labor.

The remaining portions of the report were devoted to matters of internal economy, including finances, membership, the *Review* (the monthly publication of the association) and the prosecution of law breakers operating in the interest of the Iron Molders' Union.

**Commissioner's Report.**

Commissioner A. E. McClintock devoted the major part of his report to a discussion of the association's work in extending the use of molding machines, operated for the most part by handy men. Heretofore the commissioner has had much to say about strikes. In the past year strikes have been almost unknown. But four members have called on the association for assistance in combatting strikes in the past year, and 59 molders and coremakers were involved. Men were furnished by the association, molding machines introduced and much of the work formerly requiring skilled molders is now done by handy men and specialists. There was a notable absence of lawlessness in these strikes, apparently the result of the vigorous prosecution of such lawlessness in other strikes. Soon after the convention of 1907 the Iron Molders' Union stopped strike benefits in 22 cities. This was followed by the complete collapse of the strike in seven shops at Dayton, Ohio, formal declaration that the strike was off being made by the union. In April similar action was taken in Philadelphia, and at Milwaukee notice was given by the union that strike benefits would cease. By May 1, 1908, the union had capitulated in 32 cities.

THE INCREASING USE OF MOLDING MACHINES.

Of the large increase in the use of molding machines and the employment of handy men to operate them, the commissioner said:

Since the molders' strike of 1906 the handy man and specialty molder have been a factor of increasing importance in the foundry. The extended use of this class of labor in foundries making high grade machinery castings was at that time brought about more by necessity than by choice. The result was the brains of the pattern shop and drafting departments were turned to the foundry as never before. Every pattern on which the expense of fitting could be saved in a year or less was altered to go on a molding machine. Other jobs were changed in ingenious ways to eliminate so far as possible the skill required in molding. Perhaps the pattern was simply fitted on a board to insure the parting line and assist in drawing the pattern. The effort was toward making it possible quickly to teach green men to produce castings. The management of the various firms, from the highest official down, was giving earnest, constructive thought to the foundry and the result was marked by many surprises. Changes made in patterns and rigging reduced many important jobs to a point where but little molding skill was necessary; the time of molding was cut down and a great saving was made in cost. In fact, some jobs were made almost fool proof against loss by bad castings.

I am glad to be able to report that since our last meeting many of our members have been investigating what others are doing and putting into effect in their own shops the ideas thus gained. The quickest and simplest method of convincing your foundry foreman that improvements can be made in his methods of shop practice is to go with him on a trip of inspection to shops which are using handy men and molding machines on high grade work. . . . It has been my pleasure to discuss this matter with many of our members and to find molding machines recently introduced in a large number of union shops and successfully operated by laborers. With the machine, castings of a more uniform character are produced and in greatly increased quantities. This has been done in shops where two years ago it was thought impossible. Not long ago I visited a shop where they have made wonderful progress the past year in their methods and found they were making on machines gas engine cylinders of all sizes up to 25 in. in diameter, and weighing about 3½ tons each. The flask required was 6 by 7 ft. and 26 in. deep in cope and drag alike. The ramming was done by the machine, the operation requiring less than 5 min. The pattern is drawn by a crane, the match plate being guided by pins. Two laborers operate the machine, while an apprentice boy sets the cores and closes the molds. I was informed that as very few pieces are made off one pattern at a time, the patterns are changed from 4 to 10 times a day. The castings produced were pronounced equal to any ever made by the firm. Much of this work formerly required the most highly skilled molders in the shop. By the use of the machine, the handy man has increased his earnings and is happy, while the management has reduced the cost in a most substantial manner.

In another shop, which is considered a union one, the manager stated that they had introduced 14 machines in the past year and for many months kept four patternmakers doing nothing but fitting patterns for molding machines. Six or seven years ago they tried to introduce molding machines, but on account of opposition from the union the attempt was abandoned. By the use of handy men they are getting fine results. Each machine will do the work of at least three molders, and on all patterns fitted to date, the machine molding has reduced the labor cost fully 50 per cent. In addition to this, they found quite a saving in the machine shop, as the castings being uniform would fit the jigs and could be handled rapidly.

In another instance the management stated they had been working on this molding machine question for about a year and a half and had all the jobs in the shop on machines or special rigs for handy men, with the exception of six floors, on which they still used journeymen molders, as compared with 35 molders previously employed. It was expected that in a few months their entire output would be molded on machines or with special rigs requiring only handy men.

A large number of similar cases could be cited, but the point I wish to press home as strongly as I know how, is to take advantage of this experience of others and profit by it. Investigate carefully what has been accomplished. Classify your own work, eliminate so far as possible the need for molders' skill, and by the use of handy men increase the supply of molders and thereby strengthen your position against interruption by strikes.

APPRENTICES.

The obligation of training a full quota of apprentices was urged by the commissioner, investigation having shown that many foundries do not educate 10 per cent. of the number of apprentices whose employment is practicable in their particular work. The great majority of the shops of the association are now open or nonunion, and the apprentices therein are receiving an education in molding far beyond anything previously available. Not only are foundrymen giving attention to the boys, but the boys are showing more interest than ever in the work. The members were urged to hold fast everything gained in this respect and to oppose vigorously the union limitation of apprentices. Care in the selection of handy men and apprentices was suggested, so that boys and men of good physical and moral fiber might be secured who would elevate the standard of the shop. A case was cited in which the character of the men hired for the foundry was such that the firm, which had a machine shop and pattern shop and regularly had in these departments high grade men of good standing in the community, decided to establish an open foundry. Whereas previously the foundry employees contributed 95 per cent. of the drinking and fighting charged against the employees of the firm, the opening of the foundry and the fixing of another standard than simply the bringing of the union card made it possible to induce a better grade of men and boys to take up foundry work.

CONTRACT MOLDERS.

Referring to the men employed by the association under contract, the report said:

Coincident with our outline of policy we adopted a method of hiring a certain number of molders by yearly contract. This plan has worked out very satisfactorily indeed. During the past year a large number of these contracts have expired, which fact the men have regretted, but nevertheless they have manifested their appreciation of our attitude towards them, and it is with the greatest pleasure I report to you that not one single contract was canceled on account of the depression in business. An item in the

treasurer's report will show you that to carry them over cost us quite a little money, but I believe it is one of the best expenditures the association has ever made. It is most gratifying to note the friendly, co-operative spirit prevailing among these workingmen, together with all other independent workmen—a spirit which I believe never before existed in the foundry industry. We have endeavored to treat them fairly and liberally in all particulars. The results are phenomenal.

As a result of the many strikes, the field from which to draw independent molders has constantly broadened. Through the association's labor bureaus at New York, Detroit, Chicago and Minneapolis, we are able to keep in touch with an ever increasing number of independent workmen who look to us when out of employment. The fear which formerly existed in the mind of the average molder, that to be out of the union was equivalent to being out of work, is rapidly dying away and in many localities the independent workman can more easily obtain employment than the one with the union card.

### Reports of Secretary and Treasurer.

Among the matters touched on in the report of Secretary Hutchings was that of membership. In spite of the depression there had been no decrease in membership, two firms having withdrawn and two having been added in the past year. Thus the number of shops represented in the association is still 467.

The report of the treasurer showed that the reserve fund of the association had been increased, and that there had been no special assessments. This, in view of the limited operations in many foundries in the past year and therefore a decrease in per capita payments into the treasury was considered an excellent showing.

C. S. Bonsall of the Buckeye Engine Company, Salem, Ohio, presented a paper showing the excellent results secured in the foundry of that company by the use of molding machines on large castings. The paper appears elsewhere in this issue.

### Legal Questions.

George F. Monaghan, Detroit, Mich., the attorney of the association, reviewed at length the status of so-called labor legislation at Washington. He took up the several features of the labor union programme for Congressional action, particularly the proposed amendment of the Sherman Antitrust act, the anti-injunction legislation urged by the American Federation of Labor, and in the third place the proposed modification of existing conspiracy laws. Mr. Monaghan also pointed out some lines on which it was desirable for employers to work in urging additional legislation for the curbing of lawlessness in connection with strikes. The inadequacy of present laws was illustrated in the light penalty now imposed for contempt and the requirement of the courts that it must be proved that the person against whom an action in contempt is brought had actual knowledge of the issuance of an injunction. In the opinion of the speaker it should be sufficient in such cases to show circumstances indicating that the defendant had knowledge, to show that he was a member of the union against which the injunction issued, and that publication of the injunction had been made in the press and by placard posted at the works where the strikers were gathered. Referring to the Allis-Chalmers case, in which the United States Circuit Court of Appeals had modified the injunction issued at Milwaukee by allowing picketing, persuasion and the primary boycott, Mr. Monaghan suggested the advisability of getting this case before the Supreme Court of the United States on a writ of *certiorari*. The decision of the Appellate Court at Chicago in this case gave it as the opinion of the court that after an employee leaves his employment there continues a relation to the employer which the employee is bound to protect, pending the adjustment of the issue that has been raised by the strike. This being against all the decisions on this question it was desirable to bring it before the Supreme Court for a final adjudication. A resolution was passed in favor of the carrying of this case to the highest court.

The portion of President Briggs' report referring to the interference of the President of the United States and his Secretary of War in behalf of the striking iron molders who had used violence in the Milwaukee strike came up for consideration. A resolution expressing the sentiments of the association on such interference in pending litigation was referred to the incoming Administrative Council for such action as it deemed proper. It was decided to have President Briggs' report on this matter put in pamphlet form and to send a copy to the President and every member of his Cabinet, to the members of the Supreme Court and to all the members of Congress.

### Wages in Open Shops.

A discussion on wages in open shops and the relation of employer and employee in such shops brought out the statement that the association now has a good standing with foundry employees, and it was urged that the members exert themselves to maintain that footing. In cases where piece prices may have been put too low, possibly through the zeal of superintendent or foreman, it was important that any mistakes made should be rectified. It was urged that the men who had stood by the members of the association should be well paid. One speaker emphasized the fact that the object sought was not reduction of wages but the reduction of costs. This end could best be secured by paying the best wages. One speaker said that his instructions to his superintendent and foreman were not to reduce wages but to keep them higher than the men could get elsewhere, and thus hold together a contented and efficient working force. A report from Philadelphia showed that the average wages of molders and coremakers is now higher than before the strike of 1906, though the minimum wage is somewhat lower. The average cost of castings is lower than before and the percentage of bad work is smaller.

In reply to a question concerning the use of the premium system in the foundry, several members said that they were employing it with success.

At the close of Wednesday afternoon's session the president announced the Nominating Committee as follows: Isaac W. Frank, United Engineering & Foundry Company, Pittsburgh, chairman; A. C. Pessano, Great Lakes Engineering Works, Detroit; C. M. Jarvis, P. & F. Corbin, New Britain, Conn.; Otto Falk, Falk Mfg. Company, Milwaukee; C. Bermingham, Canadian Locomotive Company, Kingston, Ont.

## THURSDAY'S SESSION.

L. L. Anthes of the Toronto Foundry Company, Ltd., Toronto, Ontario, president of the American Foundrymen's Association, was given the floor at the opening of the second day's session. He recalled that the National Founders' Association was really an offshoot of the American Foundrymen's Association, though the two organizations had taken different lines of operation, the latter being concerned entirely with educational work and the improvement of practice. He referred to the advance made in recent years toward greater certainty in foundry results in consequence of the application of scientific methods. The use of pig iron analysis in the making of foundry mixtures was chief of these advances. What remained was to do the same kind of work for sand and coke, and to extend generally the application of science in the foundry. He urged the necessity of establishing a laboratory and bureau for analytical work in foundry lines and the standardization of material, the results of such experimentation to be available generally to associated foundrymen. The American Foundrymen's Association and the American Brass Founders' Association had already conferred about the matter through their Executive Committees. He suggested the appointment of a committee of three by the National Founders' Association to co-operate in the movement.

Dr. Richard Moldenke, secretary of the American Foundrymen's Association, referred to his voluminous mail, containing requests for information about all sorts of problems connected with foundry metallurgy and general practice. He recalled one instance in which great difficulty had been experienced with castings which were to be put under pressure. Whereas losses as high as 80 per cent. had been experienced this was reduced to a loss of but 4 per cent. by a change in the method of charging the cupola. He believed the establishment of a bureau to fix standards of material and practice would greatly reduce the loss of castings.

The motion for a committee of three to co-operate in the movement suggested was carried, and the committee will be appointed in due time by the incoming president of the association.

O. P. Letchworth presented verbally a report on behalf

of the Finance Committee, showing an increase in the reserve fund of the association, and that the finances had been well kept up in spite of the adverse business conditions of the past year.

President Briggs, on behalf of the joint committee of the National Metal Trades Association and the National Founders' Association, reported that four meetings had been held in the past year. The committee had confined its efforts to two subjects, namely, legislation and the dissemination of literature, on both of which lines good progress had been made.

### Extending the Use of Molding Machines.

A resolution was introduced requesting the incoming Administrative Council to make use of the present executive force of the association in the furtherance of the use of molding machines in the foundries of the membership. It was pointed out in the discussion of this resolution that when strikes occur the effort always is to introduce molding machines, and often much time is spent in investigating their possibilities and in experimentation. Instead of losing this time now devoted to these preliminaries it was argued that a good many questions relating to the molding machine could be threshed out by the staff of the association, and data obtained which would be available for the guidance of members contemplating the use of machines. Reference was made by several members to the great advantage of the successful expositions held by foundry equipment firms in connection with the annual meetings of the American Foundrymen's Association. The Toronto exhibition, it was stated, had been visited not only by 1400 to 1500 foundry representatives from the United States and Canada, but by delegations from Germany, France, Belgium and Japan. The exhibit to be held at Cincinnati in May, 1909, it was promised, would be even greater than those at Toronto and Philadelphia. The resolution was adopted, and the matter was left entirely in the hands of the new Administrative Council.

The *Review*, the monthly publication of the association, came up for consideration, and the results secured by its circulation among foundry proprietors and workmen were highly commended. The Administrative Council was authorized to extend its field of operations in any way that might seem best.

It was decided to continue the branch offices of the association, a number of members giving proofs of the efficiency of these offices, derived from their own experience.

### New Officers.

I. W. Frank presented the report of the Nominating Committee. It referred regretfully to the decision of President Briggs to retire from the leadership of the association, and presented Henry A. Carpenter, Providence, R. I., as his successor. Mr. Carpenter's name was received with marked approval, and upon his unanimous election he was escorted to the chair. He paid a high tribute to his predecessor for the energy and fearlessness and the high ability which had marked his administration. Mr. Carpenter is well known to the foundrymen of the country, and has long been active in association work. He was president of the New England Foundrymen's Association for a number of years, and has taken an active part in the councils of the National Founders' Association, of which he has been vice-president for three years. The management of the A. Carpenter & Sons foundry at Providence has been in his hands for a number of years, and since its acquisition by the General Fire Extinguisher Company he has continued in charge.

Saying that the committee believed in rotation in office, Mr. Frank presented the name of O. P. Briggs as vice-president, and Mr. Briggs was unanimously chosen. F. W. Hutchings, Detroit, was re-elected secretary for the third time, and the People's State Bank of Detroit was continued as treasurer. The results of the ballots for district committeemen were then announced, as follows:

*First District:* A. N. Abbe, P. & F. Corbin, New Britain, Conn., chairman; J. D. Hunter, James Hunter Machine Company, North Adams, Mass., vice chairman; F. D. Wanning, Birmingham Iron Foundry, Derby, Conn.; James F. Lanigan, Davis Foundry Company, Lawrence, Mass.; Thomas W. Fry, Sullivan Machinery Company, Claremont, N. H.

*Second District.*—F. E. Wheeler, International Heater Company, Utica, N. Y., chairman; H. D. Miles, Buffalo Foundry & Machine Company, Buffalo, N. Y., vice chairman; G. H. Johnson, Isaac G. Johnson & Co., Spuyten Duyvil, N. Y.; S. L. Moore, Moore Brothers Company, Elizabeth, N. J.; S. S. Gould, Goulds Mfg. Company, Seneca Falls, N. Y.

*Third District.*—Thomas E. Durban, Erie City Iron Works, Erie, Pa.; J. H. Schwacke, William Sellers & Co., Inc., Philadelphia; W. R. McClave, McClave-Brook Company, Scranton, Pa.; Stuart R. Carr, Stuart R. Carr & Co., Baltimore, Md.; Thomas Shipley, York Mfg. Company, York, Pa. Chairman and vice chairman not yet elected.

*Fourth District.*—Irving H. Reynolds, William Tod Company, Youngstown, Ohio, chairman; Omar N. Steele, American Shipbuilding Company, Cleveland, Ohio, vice chairman; Chester M. Culver, Murphy Iron Works, Detroit, Mich.; R. H. Jeffrey, Jeffrey Mfg. Company, Columbus, Ohio; William Gilbert, Buckeye Foundry Company, Cincinnati, Ohio.

*Fifth District.*—H. T. Hornsby, United Iron Works Company, Springfield, Mo.; D. F. O'Neil, Western Foundry Company, Chicago, Ill.; W. O. Bates, Bates Machine Company, Joliet, Ill.; F. C. Caldwell, H. W. Caldwell & Son Company, Chicago, Ill.; Edward H. Dean, Dean Brothers Steam Pump Works, Indianapolis, Ind. Chairman and vice chairman not yet elected.

*Sixth District.*—A. J. Brawley, South Park Foundry & Machine Company, St. Paul, Minn., chairman; Theo. O. Vilter, Vilter Mfg. Company, Milwaukee, Wis., vice chairman; Otto H. Falk, Falk Company, Milwaukee, Wis.; Oliver Crosby, American Hoist & Derrick Company, St. Paul, Minn.; Frederick Robinson, J. I. Case Threshing Machine Company, Racine, Wis.

*Seventh District.*—Edgar McDougall, John McDougall, Caledonian Iron Works Company, Ltd., Montreal, Quebec, chairman; S. H. Chapman, Ontario Wind Engine & Pump Company, Toronto, Ont., vice chairman; R. J. Whyte, Frost & Wood Company, Ltd., Smith's Falls, Ont.; J. A. Milne, Allis-Chalmers-Bullock, Ltd., Montreal, Quebec; L. L. Anthes, Toronto Foundry Company, Ltd., Toronto, Ont.

*Eighth District.*—Exile Burkitt, Southern Engine & Boiler Works, Jackson, Tenn.; D. T. Smith, Continental Gin Company, Birmingham, Ala.; G. T. Thayer, South Side Foundry & Machine Works, Charleston, W. Va.; W. S. Mosher, Mosher Mfg. Company, Dallas, Texas; Wm. J. Oliver, Wm. J. Oliver Mfg. Company, Knoxville, Tenn. Chairman and vice chairman not yet elected.

### A Tribute to President Briggs.

O. P. Letchworth took the floor to express individually and on behalf of the association the general appreciation of the work of Mr. Briggs as commissioner and later as president of the association, covering a period of five years. Taking hold of its affairs at a critical time, Mr. Briggs had with great courage and wisdom developed the policy under which the association is now working. Mr. Letchworth concluded his warm expressions of eulogy with a resolution of gratitude, which was passed by an enthusiastic rising vote and ordered inscribed on the minutes.

With the announcement of the members of the joint committee which has in charge the mattetrs on which the National Founders' Association and National Metal Trades Association co-operate, the twelfth annual convention came to an end. Irving H. Reynolds and Thomas E. Durban, together with President Carpenter, constitute this committee. As alternates the president named O. P. Briggs, W. H. Winslow and J. H. Schwacke.

### The Annual Dinner.

A feature of every convention of the association is the dinner given in the evening of the first day. This year's event, as has been the case in more recent years, was pitched on a high plane, two addresses by men of note taking the place of a miscellaneous programme of toasts. President Eliot of Harvard University was first to be presented after the dinner and the music, and while the

manufacturer and the leader in university work handle widely differing problems, the foundrymen showed unbounded admiration for the veteran educator, who has been to such an extent a man of affairs. President Eliot referred to the strife that so marked the relations of employer and employed, and said that industrial warfare could only be justified when it gained something for human liberty. While many improvements had come, as shown, on the one hand, in organizations of employers, which prevented the step by step attack of organized labor, and, on the other hand, in the collective bargaining of the labor unions, the real attitude of the two forces is still that of combatants. The widespread effort to-day, both among manufacturers and workmen, to prevent competition, he characterized as pernicious. The inevitable accompaniment of the actual attainment of monopoly is regulation, and an important feature of regulation is publicity. But we are far from attaining publicity in these matters. The trade union plans in secret to strike a sudden blow, and the employers' answer is the keeping of men in the unions, who will inform them of what is planned. Expressing his disapproval of the term, captains of industry, the speaker said it implied men in command of so many automata. The real industrial leaders should be prophets, seers, inventors, men of imagination, regarding a great industry as a great social force in which are involved the interests of a multitude. Passing to arbitration, which he considered ineffective, since it meant exaggerated claims on both sides and an ultimate compromise, the speaker came at length to the attainment of a state of good will as the finality of all the struggle.

After President Eliot came James M. Beck of New York, who has been the attorney of the National Association of Manufacturers in the boycott cases against the leaders of the American Federation of Labor. Starting with the proposition that what is needed in this country is not more law but just a little more obedience to law, the speaker made it plain that in his opinion legislative interference with business is the crying evil of the time. What had come upon industrial and financial interests in the past year, he said, was not chiefly due to breaches of trust or to recent mistakes at Washington. It was rather the whirlwind reaping of 30 years of legislation that has hampered and embarrassed business men and interfered with the natural laws of trade. For nearly an hour the speaker held his audience under the spell of his cogent and eloquent discussion of the legislative phases of questions affecting employers and workmen, paying particular attention to the boycott and the fundamentals of law that had been invoked against unions making use of it.

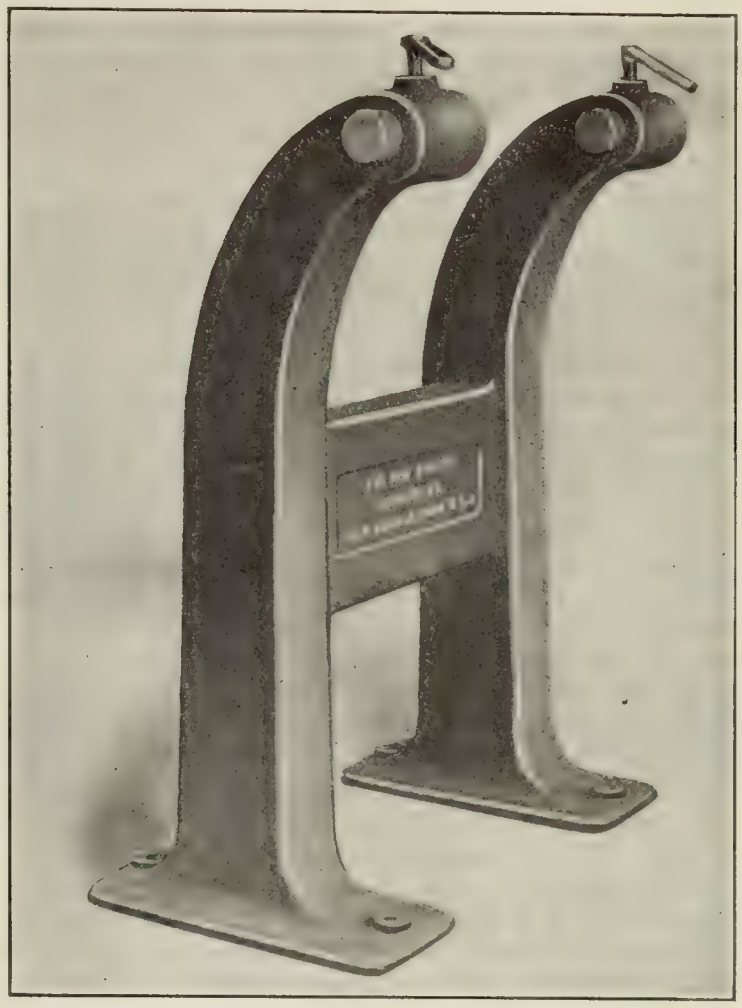
Isaac W. Frank was most efficient as the toastmaster of the evening, prefacing the scheduled addresses with some account of the efforts of the National Founders' Association for seven years to maintain a relation of conference and conciliation with the Iron Molders' Union. The outcome was the absolute refusal of the union to modify in any particular its customs, based on its antiquated constitution of 1856.

**The Mesta Machine Company's Operations.**—The Mesta Machine Company, Pittsburgh, recently made delivery to the La Belle Iron Works, Steubenville, Ohio, of an engine which it rebuilt from an old 40 x 60 in. slide valve to a Corliss engine. The work included finishing the cylinder, valve, gearing, valve wrist pins, piston, &c., in fact, everything except the floor plates, and, while the Mesta Machine Company had promised a four weeks' delivery, it was able, with its complete equipment and shop force, to do better by one week, which it considers a record for work of this kind. The engine is now in successful operation. The company states that the fire which occurred at its pattern shop at West Homestead will not affect its operations in any way. Some time ago it completed a new concrete and steel constructed pattern shop, and, while it had intended delaying using this shop, it will at once install new machinery and tools for pattern making, and will be able to carry on its business without interruption. The company has just received a contract for a 1000-hp. Corliss type engine, for direct connection to a 550-kw. Westinghouse generator, for use in mining operations at the plant of the Pittsburgh-Buffalo Company, Mariana, near Ellsworth, Pa.

## A New Britain Polishing Stand.

For those who prefer a polishing frame in which maple blocks are provided for the arbor to run in, the New Britain Machine Company, New Britain, Conn., has brought out one which possesses some features of novelty. The supporting standards are of box section and give a liberal overhang, curving forward so as to bring the wheel where it can most conveniently be used for polishing tubes, cylinders, hollow ware, or irregular shapes without the interference that a straight frame offers. The frame is amply strong and heavy to preclude chance of vibration, and although the base is large enough to afford a substantial support, it is open and its actual contact with the floor is so small as not to seriously obstruct the floor or hamper sweeping around it.

The end frames are bored to receive 2-in. diameter wood blocks, conveniently adjusted by set screws which



A New Polishing Wheel Frame Made by the New Britain Machine Company, New Britain, Conn.

do not bear directly on the blocks. Each screw is provided with a drop forged binder handle, so that a loose wrench is not necessary. The handles are swung out of the way when not in use and do not interfere with the handling of long work. The frame is regularly furnished without an arbor, but special arbors to suit any requirement can be supplied on order. The arbor may be driven by belt from an overhead countershaft or one at the rear. Ordinarily an arbor 12 in. long is used. The hight of the frame from the floor to the center of the spindle is 32 in. and the weight somewhat less than 250 lb.

The United States now has more wheat in store than a year ago, while Europe has less, the figures for this country being 107,980,000 bushels and 102,481,000 bushels respectively on November 1, 1908 and 1907, while the stores in Europe are 33,130,000 and 47,030,000 bushels respectively. The stores in this country are the largest on November 1 with three exceptions for 10 years. The stores in Europe and elsewhere were 68,266,000 bushels on November 1, against an average of 80,500,000 bushels in the preceding 10 years. Europe must apparently buy heavily from us later.

# Molding Machines for Stove Foundries.

## Committee's Report on Labor Saving Machinery.

At the annual meeting of the Stove Founders' National Defense Association, held in New York, May 12, 1908, a committee was appointed to investigate the question of all machines for foundry use. The committee consisted of five stove manufacturers, Grange Sard of Rathbone, Sard & Co., Albany, N. Y., being chairman, while the other members were Bartlett M. Shaw, Walker & Pratt Mfg. Company, Watertown, Mass.; Philip Will, Sill Stove Works, Rochester, N. Y.; Lazard Kahn, Estate Stove Company, Hamilton, Ohio, and Fred Sattler, Belleville Stove & Range Company, Belleville, Ill. It entered upon its labors at once, with the object of securing for the members of the association such information about labor saving machinery and devices as would enable all to estimate for themselves the possibilities of economies to be thus secured. The committee visited many places and witnessed the operations of machines for stove foundry work, comprising molding machines, polishing machinery, facing machines, stove blacking machinery, and sand cutting, sand mixing and sand milling machinery. The report of the committee, which was submitted to the association at a special meeting held in New York November 17 and 18, gives much valuable information, especially with regard to molding machines.

Besides stove manufacturers, the committee interviewed other foundrymen, including a number of molding machine manufacturers, and visited their plants. On this subject the report says:

"The committee found everywhere courtesy and willingness to co-operate, and takes pleasure in recording herewith thanks to these gentlemen who so kindly assisted it. We are particularly indebted to E. H. Mumford of the E. H. Mumford Company, Philadelphia, whose services to the committee, on account of his long study of and wise acquaintance with molding machine problems, were of the greatest value; to the Henry E. Pridmore Company, Chicago, and the Arcade Mfg. Company, Freeport, Ill., both of whom entertained us at their respective plants and who have given serious and careful thought to the problem before us. The Adams Company, Dubuque, Iowa, the Rathbone Molding Machine Company, Detroit, and the Mitchell-Parks Mfg. Company, St. Louis, also contributed to our knowledge and understanding of the subject. If the above purported to be a list of molding machine manufacturers whose machines might find employment in this field, we should name the Tabor Mfg. Company, Philadelphia; J. W. Paxson Company, Philadelphia; Berkshire Mfg. Company, Cleveland, Ohio; Herman Pneumatic Machine Company, Zelienople, Pa.; E. Killings Molding Machine Works, Davenport, Iowa; A. Buch's Sons Company, Elizabeth, Pa.; Morcross Molding Machine Company, Terre Haute, Ind., and perhaps others."

"A number of stove manufacturers and others who, at their plants and otherwise, gave particularly valuable assistance and information to the committee, should be thanked here. Since, however, a number preferred to have their names omitted from the report it was deemed best not to name any. Reply postal cards were sent to 227 stove manufacturers of the United States asking what kinds of labor saving machinery were in use in their shops, and 121 replies were received and are tabulated herewith:"

| | S. F. N. D. A. members. | Non-members. | Total. |
|---|---|---|---|
| Number addressed | 68 | 159 | 227 |
| Number of replies | 57 | 64 | 121 |
| Number labor-saving machines used | 16 | 58 | 74 |
| Molding machines | 12 | 39 | 51 |
| Polishing machines | 18 | 31 | 49 |
| Polishing mills | 17 | 27 | 34 |
| Stove blacking machines | 13 | 18 | 31 |
| Sand cutting machines | 3 | 3 | 6 |
| Sand mixing machines | 3 | 4 | 7 |
| Sand milling machines | 5 | 5 | 10 |

That part of the committee's report relating to molding machines is as follows:

## Molding Machines.

### Stove Patterns Now Being Successfully Molded.

Our observations lead us to the conclusion that there are few, if any, stove patterns that cannot be made on a machine or some form of device or rig that reduces the requirements for molding skill to the point where a laborer of ordinary intelligence may be taught in a short time to produce castings in equal or increased quantity and of equal or better quality than are now made by the average stove plate molder and nearer to pattern weight. The statement dealing with the education of the machine operator includes consideration of the items of ramming, pattern drawing, finishing and pouring off, and is based on actual experience. It becomes then mainly a question of the choice of apparatus that will do the work successfully. Some of the work being made in this manner in the shops that we visited is as follows:

Gas Stoves.—Circular top racks; straight oven burners; gas stove tops measuring up to 30 x 50 in.; oven doors, &c.

Ranges.—Duplex grates; firebox linings; doors; short center; cut centers; open sides; water backs, &c.

Oak Stoves.—Legs; bases; doors; tops; grate rings; grates; firepots, &c.

Steel Ranges.—Oven door frames; pouch fronts; high closet brackets; oven door spring caps, &c.

These are only a few of the parts recalled at random and only a small part of what we saw and a still smaller part of what is being made.

The usual considerations that will guide in the selection of apparatus are size, weight and depth of pattern; number of castings to be made; adaptability of apparatus to making other patterns; its simplicity, reliability and output. The selection of apparatus must be carefully and wisely made to insure success.

### Work of Small Area.

For such work as is ordinarily made on the bench a choice of widest variety is offered, running from the simple squeezer, costing about $40, to the complicated automatic machines, costing upward of $1500.

*Simple Squeezers.*—In squeezers the inherent time saving operation is the pressing of the mold. The maximum output may be gained by the use of a double faced match plate and pneumatic rapper. This outfit, simple and inexpensive as it is, may effect a saving over bench work of one-fifth to one-third. We are also advised by the manufacturers that stripper jobs may be made on squeezers, and the change from match plate to stripper effected in two minutes. Double face aluminum match plates made of two parts aluminum to one part zinc ought not to average over $10 in cost.

*Squeezer with Duplex Match Plate.*—This machine is an elaboration of the simple squeezer and includes a number of special features entitled to separate notice. The distinctive feature, and the one which mainly accounts for the large output that may be secured from this machine, is the placing side by side of both cope and drag, which are both filled with sand and tucked, while the molder has his shovel in hand and before he lays it down. Examples of large outputs are 250 10 x 19 in. molds in less than 7 hours' molding time, and in the same time 220 molds of 8-in. covers, two in a mold. It is claimed that the attachment of a pneumatic rapper increases the capacity of this machine, and it may be so equipped. The examples of a day's work, named above however, were produced without the pneumatic rapper. The cost of match plates for one set of patterns is from $22 to $60; $22 to $30 is the usual cost when self-made, and $50 is the usual charge made by the manufacturer of the machine. In places where these machines are in use we found it regarded as good practice to match plate for this machine any patterns of which 1000 or more molds per year were to be made.

*Stripping Plate Machine.*—We found some application of small work in this type of machine, but in most

cases it seemed to the committee that a more favorable result could be secured with small work in applying it to the squeezer type just named. The stripping plate machine finds a more logical and profitable application for larger work, with barrel flasks where hand ramming is used. Reference has already been made to stripping plate jobs on squeezers. We observed very few of these machines in use under what seemed to us the most favorable conditions, and hence are unable to state from our own observation what may be expected of them. There appears no reason, however, why, together with the simple squeezer, this machine should not find a more extended introduction into stove shops. They have the advantage that the pattern rigging best adapted to the machines is likewise best adapted to the bench.

*Automatic Machines.*—The full automatic machine in perfect order is probably capable of producing molds at less cost than any other type of machine. It has the advantage of being able to produce in a very short time a very large number of castings from one set of patterns. We had no opportunity of noting carefully the range of work of which such machines are capable, but since the mold is automatically filled with sand and the operator has no opportunity to tuck the mold it is not likely that this machine can be depended upon outside of the range of flat or shallow work. It is, furthermore, more apt to get out of order than the nonautomatic machines, and when it does get out of order it is a more serious matter since it keeps idle a large floor space and several men, while employing one or more machinists to put in running order again. We have found cases where the more elaborate machines were replaced by simpler types. There is, however, a wide field of usefulness for automatic machines, and any lack of reliability or endurance of past machines will no doubt be largely overcome in the future development of this type.

*Multiple Molding Machines.*—The machine used in multiple molding is a power ramming machine. We make no attempt to describe here in detail the process of making, suffice it to say that this method has so far been applied only to heavy work of small area. Since the impress of both the cope and the drag pattern are rammed into the same half-flask at the same time, this forms a very quick method of molding. It has the further advantage of requiring much less floor space, since five complete molds, and sometimes more, rest in the space of one. With an air hoist operating over the molding floor, a bull ladle brought to the floor on a trolley is used to pour off and the molds are shaken out by the hoist. It becomes easy in this manner to handle cheaply and easily a large amount of sand and iron. This method of molding and handling iron, flasks and sand probably reduces molding costs lower than anything else that we saw.

### Work of Large Area.

*Hand Ramming Stripping Plate Machines.*—We observed this type of machine in use on work such as firepots, oven burners for gas ranges, boiler sections, &c. It seems to find its best application on the large work such as boiler sections. It also has its application on deeper work.

*Hand Ramming Rockover Drop Table Machines.*—This type of machine seems to be adapted to any flat work requiring barred flasks. We saw it used for making end shelves, gas stove tops, &c. This machine is also designed for making work of considerable depth. We found firepots being made; the cope on a rockover drop table machine, the drag on a stripping plate machine.

*Gravity Molding Machine.*—This is a patented machine and method, and was under our observation only in demonstration and not seen in operation in any shop. In other lines of work it is said to be giving good satisfaction and giving a large output. It has some of the disadvantages of the automatic machines, being large, cumbersome, expensive, requiring a special equipment of flask and cranes as well as large floor area. It is unique in being the one machine that gives promise of doing away with hand ramming on barrel flasks. We were not able to satisfy ourselves that the ramming under the bars was of a satisfactory and trustworthy quality.

*Match Plate and Hinge Device.*—Two hinge devices of this character came under our observation, one being used in connection with iron flasks, the other being used in connection with the ordinary flask now in use in any foundry. The latter consists of a simple hinge which may be attached to any wooden flask, and it is so constructed that the two parts of the flask with the match plate between them may be rammed up together, or, in the case of large flasks, the match plate supported by a frame during the ramming of the first half, and first the cope rolled off on the hinge, then the match plate rolled off and the cope rolled back on again in the hinge and the flask thus closed. The committee observed that with this latest simple improvement in molding methods laborers were able to do the work formerly done by skilled journeymen. We are informed it requires about a month to teach a green man to produce work equal in quantity and quality to that formerly produced by the journeyman in the old way, and about three months to reach the maximum capacity of about twice the journeyman's output.

### Deep Work.

Both the hand ramming stripping plate and rockover drop machines find applications here as noted previously.

*Power Jar or Jolt Ramming Machines.*—This is the type of machine particularly designed for work in which the ramming is a large factor, such as firepots, &c. It is likewise said to be successfully used for steam and hot water boiler sections.

### Deep Work in Snap Flasks.

*Foot Power Jolt Ramming and Pressing Machine.*—We find one machine which seems to be very well adapted to making deep work of small size in snap flasks. It is similar to the squeezer type with duplex match plates and pattern drawing mechanism above mentioned. In addition to the pressing mechanism, it has a foot jarring mechanism for ramming which makes it possible to ram deep work successfully, and does away with the necessity for tucking. We saw some oven door spring caps made on this machine that had been previously made on the floor. In the machine the use of gaggers which had been used on the floor was done away with and the output more than doubled.

### Remarks.

This concludes a general review of the committee's observations concerning the different classes of molding machines and devices in use on stove plate work and the character of work which they are best designed to handle. It will be observed that the small work, such as can be made in snap flasks up to 400 sq. in. in area, offers the widest range of choice of apparatus, and that the apparatus which may be used for making this class of work reduces the requirements for molding skill and the hand work performed by the molder to a minimum. On work of larger area the demands upon the skill of the molder are greatest, and it would be reasonable to argue that the use of so simple a device as a hinge flash and match plate would be an insufficient substitute for years of apprenticeship to the trade. Theory to the contrary notwithstanding, the results of actual experience are as previously stated; namely, that a laborer may not only be taught with the assistance of this device to turn out good castings, but he may be taught to turn them out in such largely increased quantity that the proportionate saving is almost as great for this large work as for the small work where the ramming, pattern drawing and rolling over of the rammed mold are mechanically done.

It will be borne in mind that the simple match plate devices referred to were invented and developed in the stove shop itself and without the help of molding machine manufacturers. The molding machine manufacturer, however, leaving out of consideration these devices, has expressed himself of the opinion that all stove plate castings may be made upon machines, provided the stove manufacturer will remove all his prejudice and that of his organization and co-operate with him in obtaining this result.

The printing back of stove plate castings has been another stumbling block to the molding machine man, and so far as it may be done away with the introduction of the machine may be made simpler, as in printing back an

absolute perfect alignment of the pattern with its previous position is necessary. This is very difficult where there is the slightest wear upon the guides. This wearing of the guides in the dusty stove plate shop is almost impossible to avoid. The suggestion, therefore, that through a proper preparation and treatment of the molding sand, the necessity for printing back in order to secure a smooth face casting may be done away with, harbors promise of emancipation from this requirement and the removal of a serious obstacle to progress in the use of machines for stove plate. The committee, in fact, before they completed their investigations, found this suggestion carried out to a limited extent in actual practice, castings of a perfectly smooth and satisfactory finish being produced without printing back. In this cast no facing or parting sand was used in the molds, the castings being merely well milled in exhaust mills.

### Economical Considerations.

How many pieces must be made per year to make it pay to use the machine?

In one shop where this question was asked in reference to the patterns of larger area made on hand ramming rockover machines, we were told that it would pay to put a pattern on the machine in the cheapest possible manner when only 200 or 300 castings were to be made. With larger quantities, of 1000 or upward, it pays to use the most perfect and expensive rig. With regard to the duplex matchplate squeezer type, where a set of patterns costs from $22 up to $60, we learn from a number of users that it generally required the making of 800 to 1000 molds to make it pay to rig up the patterns. By comparing patterns and prices of work you propose to rig for machine molding with similar patterns and their molding prices when made by the method proposed, the reduction in molding price may be foretold so that you may with sufficient accuracy forecast the total saving in molding cost in making the required number of castings. In this manner and after giving due consideration to other minor factors, the advisability of match plating patterns may be definitely determined for each separate pattern, and the number required to make it pay. It may be added that when new patterns are being match plated no follow boards are required and the cost of making them may be figured against the cost of the match plates.

The simplest type of hand molding press, without pneumatic rapper, may be purchased for about $40. Other types of hand presses which have the roll-over feature and mechanical hand draft may be purchased for $200 to $300 each. The more elaborate power machines cost from $400 up. The cost of patterns placed on the machines ready for use is from $10 to $60 each, according to the material used, size and shape of patterns and style of pattern plates. Where stripping plate machines are used, this question is best answered for each pattern by the molding machine manufacturer.

The output of any machine will, of course, vary with the type of machine, size, weight and style of patterns and pattern rigging, and the molding price, of course, will vary with the output. The reduction in molding cost will vary from 30 to 50 per cent. This is of course a general statement, and wide variations will be found. We have noted cases in which the reduction from bench prices amounted to little more than 20 per cent., while in other cases the reduction was almost two-thirds of the floor or bench price. In foundries where equipment and methods are poor, well adapted machines and pattern equipment have the opportunity for realizing greater savings than in shops where the floor and bench equipment is first class and the maximum output according to the methods now in use is already secured. The figures above named are meant to be comparative of the best results of both the old floor or bench methods and the new machine methods—*i. e.*, they are meant to represent the labor saving ability inherent in the use of the various forms of molding machinery on the usual run of stove plate work.

Nearly all machines, and certainly all those that would be recommended for use in the stove foundry, are designed to take different patterns, and in many cases a wide range of shapes and sizes. The change from one pattern to another can be effected by those somewhat accustomed to the operation in from a few minutes to an hour. Without doubt, it is economy to run the same pattern for not less than a day at a time and change patterns outside of molding hours. Where the double faced match plate is used, the change is so readily made as to be of itself a matter of no moment. Where changes must be made in molding hours, the cost of molding will of course be higher.

Some of the items of cost offsetting reduced molding prices are the extra help in handling iron, flasks and sand; cost of making changes of patterns; the depreciation of and repairs to machinery. On very large floors, and where the iron is brought to the floor, we find that two hours' help of a laborer in shifting weights, strippers and in shaking out is all the help that is required. The cost of repairs to machines and patterns, we are informed, is very slight. The manner of figuring depreciation on machinery varies so widely that it is deemed sufficient to simply call attention to this item, leaving it to each manufacturer to figure in his own way.

The cost of making patterns for the machine has been discussed elsewhere in this report and may be varied in accordance with the number of pieces to be made and with the type of machine used. The cost of distributing iron to the floors from the cupola is an item for which we are not prepared to give figures. It will vary in accordance with the size, layout and facilities of the shop. We found in some foundries the practice of delivering iron to the molders' floors already established, and in such cases, of course, this would not form an item of additional cost. The use of the trolley system for the carrying iron, where this becomes a separate item of expense to the manufacturer, is recommended.

### The Class of Labor Employed.

The universal testimony of managers, superintendents and foremen is that the best results are undoubtedly secured by drilling green operators in the use of molding machines. Green operators coming from the foundry yard, from the street, from the country, men of no mechanical skill or trade, can be taught everything that is required for them to produce satisfactory work with the aid of a machine. And with a piece price for the work that will enable them when putting forth their best efforts to earn more at this work than they had probably dreamed of being able to earn, their interests are bound up with the success of the machine. Far from having any prejudice against it, they are more apt to be enthusiastically in its favor, since they have never known any other method of molding or any other occupation by means of which they can earn more than half or two-thirds of what they are able to make on the machine. Herein lies the explanation of satisfactory results that are obtained by the use of laboring help on molding machines. These men are able to earn molders' wages and save the manufacturer 30 to 50 per cent. of his molding cost.

The committee came in contact with few manufacturers who have employed journeymen or union molders on the machines with satisfactory results; in fact, it is doubtful if any of which the committee has knowledge have attained the full measure of success. The usual method of installing machines in union shops is to employ apprentices to operate them. In some cases the apprentice refuses to work on machines, maintaining that this requirement of his employer is a violation of the contractural obligations of the indenture. In all cases it is more or less of a continuous struggle to maintain machines in operation and progress toward increase of output, and installation of machines is slow and labored in the face of unseen and insistent opposition. A number finding the effort too wearisome have abandoned the machines altogether.

The reasons for the failure of the journeyman molder to produce a maximum output on the machines are two: first, union affiliation undoubtedly has created in his mind a dislike for and prejudice against the machines; second, he lacks a positive incentive to operate the machines to the best advantage. He anticipates no increase in his earning power; the reward is negative. The

laborer is promised a large increase in his earning capacity if he gets the most out of the machine; the journeyman molder is promised employment at a less remunerative work or no work at all if he does not operate the machine to its full capacity.

For reasons stated above it is doubtful whether a nonunion journeyman would make a better success of the machine than union journeymen. The fundamental problem is one dealing with human nature perhaps as much as with union labor. Any journeyman has through long years become so accustomed to certain fixed standards of a day's work that he finds it difficult to readjust himself, against all inclination and active prejudice, to new standards of output largely exceeding the old. Inquiry in nonunion shops where both floor and machine molders are employed develops the fact that it is difficult even thus, when not encountering union prejudice against the machine, to get a man accustomed to floor or bench work to put up a full day's work on the machine.

### General Conclusions.

The conclusions formed by the committee after the study of molding machines in the stove industry are in brief as folllows:

1. That the stove industry is far behind others in the employment of labor-saving machinery and devices.
2. Molding machines are successfully used in some stove foundries to reduce molding cost.
3. Those institutions that are making the most use of the machines are also those that are most rapidly adding to their equipment.
4. The best results in the use of the machine were observed in open shops.
5. Best results were seen to be obtained from breaking in a green operator.
6. There is at least a reasonable hope that the necessity for printing back may be done away with where exhaust mills are in use. (In this connection we suggest that the stove manufacturer visit his molding shop and find out how much of the work is printed back which he pays the molder to print back.)
7. That all stove patterns can be molded with some form of machine or device already in use.
8. It is merely a question of the cost of patterns for the machine and the number of pieces to be made whether or not it will pay to mold the piece in question by machine. For bench work the number so required to be made to make machine molding profitable is about 1000 molds for the more expensive pattern rig and a correspondingly small number for the less expensive rig.
9. It requires a smaller number of large pieces to be made to pay for new pattern equipment, since the saving per piece is larger in proportion to cost of pattern than in the case of small pieces.
10. Through the use of these practically indestructible pattern plates in place of loose iron patterns, the cost of maintaining patterns in repair is reduced and the necessity of preserving and caring for duplicate sets of patterns in wood or iron is obviated.
11. The best results may be obtained from a system of specialized labor, which allows the machine operator to devote himself exclusively to molding and pouring; that is, allows the machine operator to perform only such work besides actual molding which will still make it possible to hold him responsible for good castings. Carrying iron, shifting weights and strippers, shaking out and, if possible, cutting over sand should be performed by common labor—machine operators to be. This suggests the employment of surface or overhead carriers as labor-saving devices.
12. A saving of about 5 per cent. of iron in machine over hand molded castings seems not unreasonable to expect. An incidental effect on factory economy is suggested by the report of a case where a reduction in the cost of grinding and mounting small cast ranges was secured, after the castings were molded by machinery.
13. The manner, most apt to be successful, of making molding machine installation, is:

First, determine that you have enough patterns of which the necessary number of molds are to be made to keep a number of machines busy.

Second, see that your organization, from manager to machine operator, is prepared to back the machine with intelligence, energy and enthusiasm.

Third, select carefully the make of machine best suited to your work. Start with not less than two machines and let all be of the same make; this simplifies matters, gives an opportunity to make competition between operators, and avoids concentrating on the one man all adverse criticism of influence. Employ every means to shield operators from sight and influence of the rest of the shop. Have a demonstrator put up a day's work for the sake of its influence on your organization and the operator, and to insure apparatus and equipment being in working order for maximum output

Fourth, after having begun right, see that your installation continues to work right.

14. The increased use of molding machinery will result in increased standardization of parts and reduction in the variety of patterns.

## New Publications.

**The Methods of the United States Steel Corporation for the Commercial Sampling and Analysis of Iron Ores.**—By the Chemists' Committee of the United States Steel Corporation. 6 x 9 in.; paper cover; pages, 32.

This publication is the first fruit of the work of the Chemists' Committee appointed to unify the methods of sampling and analysis of materials consumed and produced by the United States Steel Corporation. The committee consists of J. M. Camp, Carnegie Steel Company; William Brady, Illinois Steel Company; W. B. N. Hawk, National Tube Company; A. B. Clemence, American Steel & Wire Company; E. A. Separk, Oliver Iron Mining Company, and G. D. Chamberlain, Carnegie Steel Company. The procedure was to have the chemists of each of the subsidiary companies separately prepare a selected group of methods representing their best practice. The methods now published were produced by adding together the best points of those submitted, and it is expected that those promulgated by the committee will be put in use to the exclusion of all others. Beginning with sampling, eight pages of the report are devoted to this important feature of iron ore determination. Then follow the various methods. For iron the bichromate and permanganate methods are presented; for silica, two methods; for phosphorus, four, the last being used where titanium is present; for alumina, two; for manganese, four; for lime and magnesia, one each; for sulphur, two. The pamphlet is an example of the vast amount of good work that has been done by Steel Corporation committees in the standardization of practice in all lines.

**Practical Methods for the Iron and Steel Works Chemist.** By J. K. Heess, chief chemist for the Carnegie Steel Company, New Castle, Pa. 6 x 9¼ in.; cloth bound, pages, 60. Chemical Publishing Company, Easton, Pa.

The author says that he lays no claim to the methods of analysis presented except in some modifications and details of handling. Credit has been given where it has been found possible to locate the name of the originator, and no methods are given which have not been tried out. With few exceptions but one method is given for each determination, this being the one found best adapted to the work, under the conditions existing at iron and steel works laboratories. Throughout the book chemical formulæ are used instead of names, the idea being to help fix the formulæ in the mind of the chemist. The introductory pages, comprising Part I, are devoted to the laboratory, to miscellaneous directions, to details of the elements used in the work, a table of factors, molecular formulæ and standard solutions and reagents. In Part II nine pages are given to iron ore analysis, two pages to limestone, two pages to blast furnace slag, two pages to iron analysis, 10 pages to steel and 25 pages to slags and cinders, fluorspar, fire brick, boiler water, gases, bearing metals, &c.

**The Buckeye Steel Castings Company.**—At a recent meeting of the Board of Directors of the Buckeye Steel Castings Company, Columbus, Ohio, the construction of two more large steel buildings at the company's plant was authorized. Work on the new buildings will be started about January 1. One will be for the coupler department and will be 245 x 420 ft. The building now used for the car coupler department will be occupied by the car bolster and steel under frame department, which requires more room. The other new structure will be a core building, which will be about the same size as the coupler building. Two of the steel furnaces at the plant will also be rebuilt and their capacity doubled. The new additions will add about 25 per cent. to the capacity of the Buckeye Company's plant.

# Machine Molding for Large Castings.*

## The Experience of an Engine Works with Handy Men.

BY C. S. BONSALL.†

When I first began to attend these meetings and listened to gentlemen telling us how their molders were limiting output and in other ways injuring the business I would say to myself, "There must be something wrong in the method of managing his business." I had a self-satisfied feeling that the company with which I am associated was in no such predicament. Now, I was not trained in close touch with the foundry, although my company has always operated one in connection with its business. I learned the machinist's trade and when finally called upon to manage the manufacturing end of the business gave most of my attention to that part of it with which I was most familiar, relying wholly upon the foundry foreman for results in that department.

Then we built a new and modernly equipped foundry. After it had been in operation a year we found that the thousands of dollars we had spent had not enabled us to reduce the cost of castings from our old foundry practice, where hand manipulated jib cranes and other antiquated methods had been in vogue. We began to wonder what was wrong; thought the trouble must be with the foreman. Yes, a little. He had been the president of a local iron molders' union in one of the larger cities of my State. A change was made which showed some improvement, but not as much as we had reason to expect for the great expenditure, especially when comparing it with the results obtained from a modernly equipped extension of our machine shops, which we built at about the same time. Then we began a more systematic investigation.

About this time I attended our convention of 1905. The molding machine was under discussion. I took but little interest, however, as the consensus of opinion seemed to be that the molding machine was of little value unless there were large numbers of duplicate castings to be made, and we had but a limited number of any one piece to make. I well remember the occasion. The discussion closed and one or two other subjects were taken up, when a recess was proposed for luncheon. Mr. Pessano succeeded in securing the floor and with so much earnestness addressed a few words to us that it impressed me very much. It was really the inspiration which has enabled us to throw off the union millstone which we have since found was around our necks, although we did not realize it at the time. Mr. Pessano said: "I wish to say one more word about the molding machine. Get one or more, put them in, make molds on them. It does not matter whether you actually save money by operating them or not; keep at it and you will soon discover they



Fig. 1.—Gas Engine Bed.—Floor Work Job. Handy Man with Helper, 14 Hr. Skilled Mechanic with Helper, 18 Hr. Weight, 11,800 Lb.

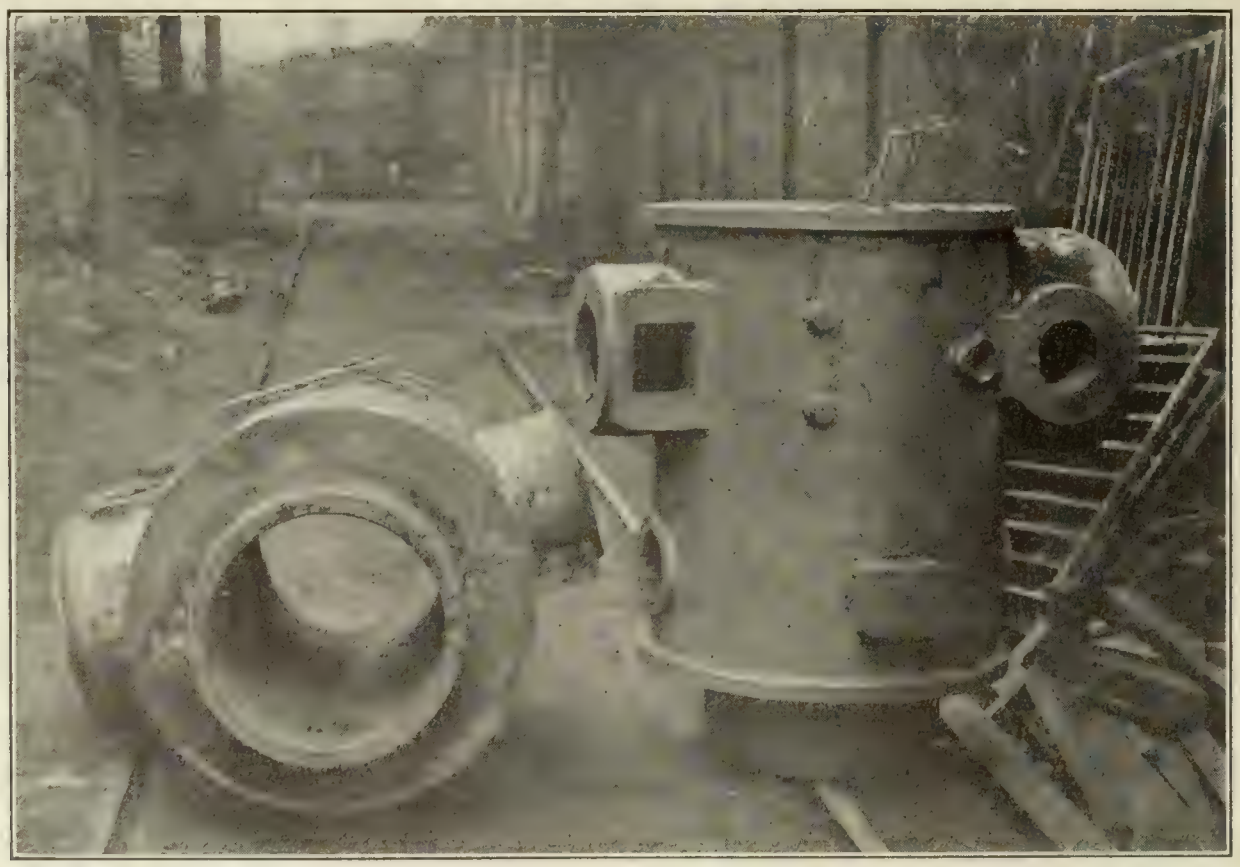


Fig. 2.—Gas Engine Cylinders, 18 In. Bore, 21 In. Stroke.—Molds Made on Machine. Time for Skilled Mechanic with Helper, 9 Hr. Weight, 3650 Lb.

* A paper read at the convention of the National Founders' Association, New York, November 18, 1908.

† Buckeye Engine Company, Salem, Ohio.

will be of great value in the more economical management of your foundry."

Immediately upon my return home we commenced operations upon the lines suggested by him, which have since been worked out by us in a very satisfactory manner. A year later we became convinced that it was impossible to obtain the results sought as long as the Iron Molders' Union had a foothold in our foundry. This was two years ago. A strike was called in our shop June 29 last because we had more than the union ratio of apprentices.

Now comes what I deem of interest to all who still have that millstone about their necks, the union shop: In July, of course, our costs went up and production down. In August our production was back to almost normal, with costs about 50 per cent. greater than the average. In September production was normal and costs not over 10 per cent. above the mean of the previous year. In October we succeeded in increasing our output 40 per cent. above the average of the previous year, and the cost was more than 15 per cent. less. From experience we firmly believe that we could not have secured this output in our foundry with union molders at any cost.

We are unable to give a fair comparison of costs and production for the reason that our old records are based upon steam engine castings alone, while records since the strike are mostly on gas engine castings, as we were just adding that line when the strike was called. All of you are no doubt acquainted with the fact that gas engine castings are more expensive to make than steam engine castings. Now, we have discovered two things: First, that in our core shop we are getting more and better cores with one-third the skilled employees than formerly. This is also true in the foundry, where skilled molders are employed only for drawing patterns, dressing molds and setting cores. Handy men shovel and ram sand. We have a number of skilled molders who have not had a rammer in their hands for over two months. Second, the molding machine has been of benefit to us in reducing cost and enabling us to obtain better castings.

I have photos showing some of the larger castings made since the strike was called. One of these is a photo of a triplex pump housing made by us for a neighbor during the hight of the strike. This was taken to illustrate how many of us have been hoodwinked by the union for many years past. Is it not so that all of you who have not been trained in actual foundry practice have been given to understand that the art of molding is a mysterious one and with few exceptions could not be practiced successfully by an honest, sober and industrious man, but that he must necessarily be privileged to take a few days after each pay to sober up and also carry a bottle into the shop with him in the morning to help him practice his mysterious craft during the day? Well, we have exploded this myth, as the casting referred to was made by a handy man who had not been at the business more than six weeks. It is not a molding machine job, but was made in a drag, cheek and cope flask in the manner in which molds have been made for

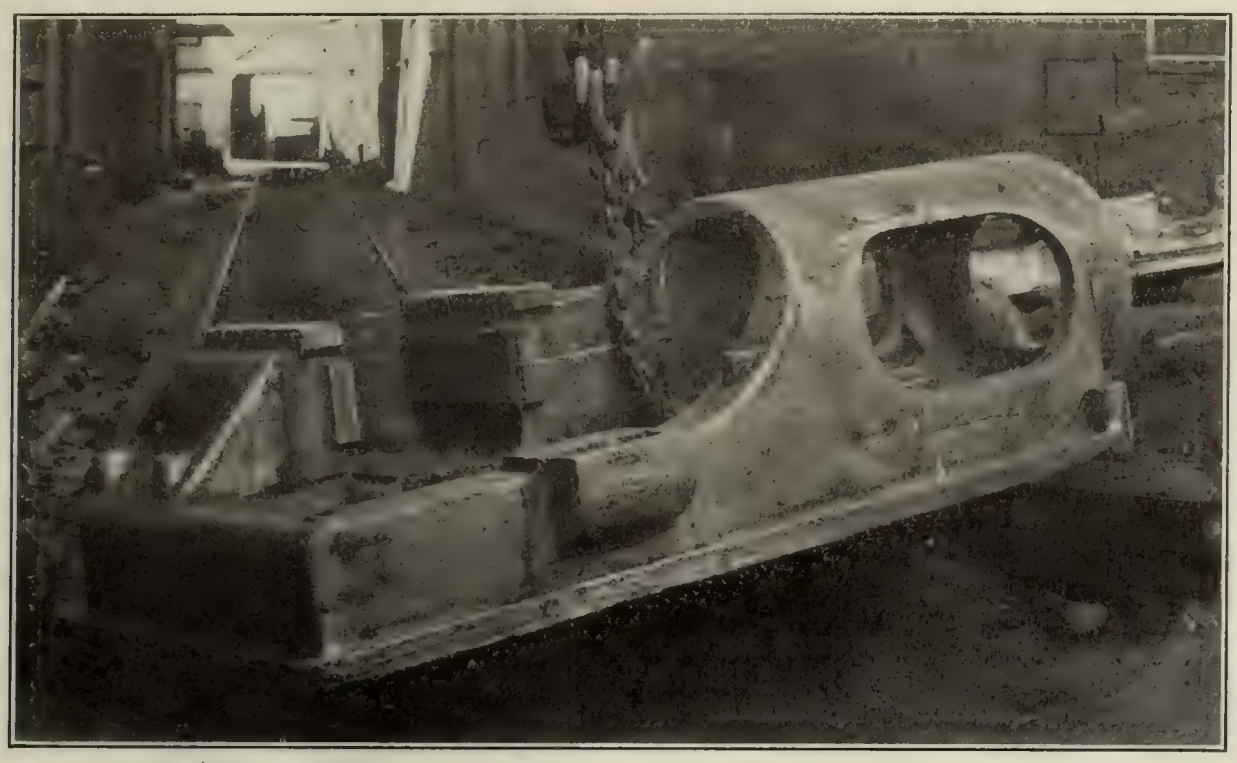


Fig. 3.—Gas Engine Bed Made Partly on Molding Machine and Rammed with Pneumatic Rammer.—Weight, 9300 Lb.

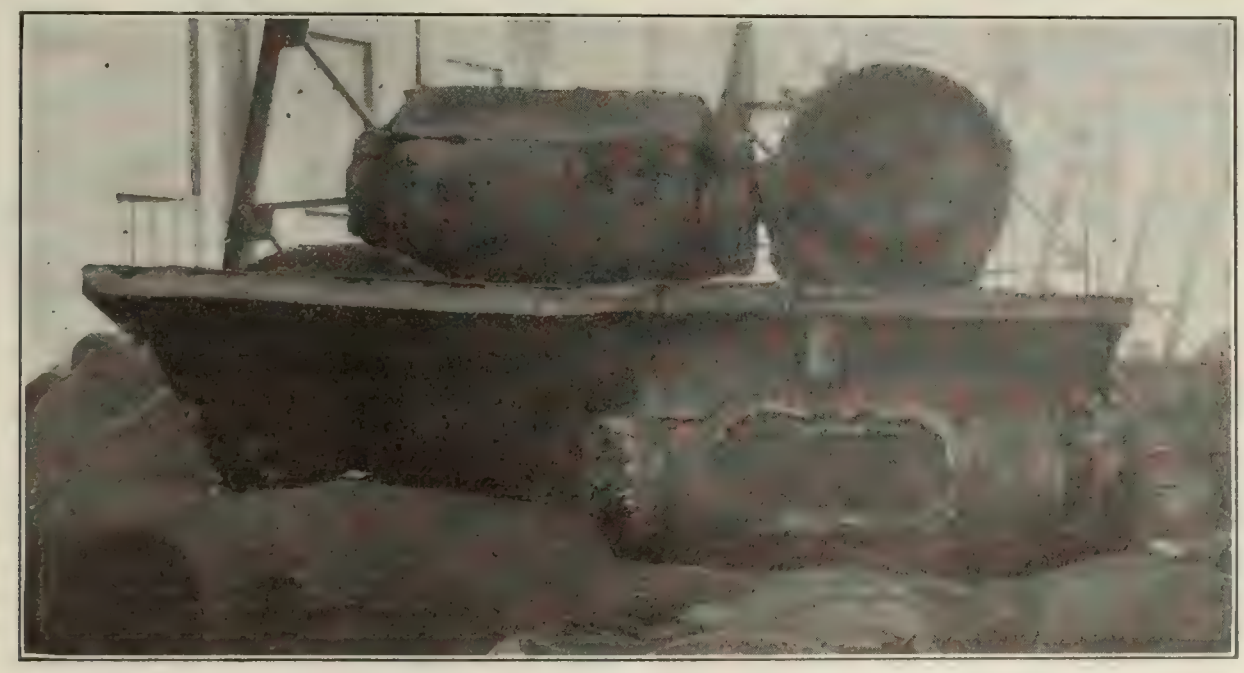


Fig. 4.—Steam Engine Bed Made by Handy Man.—Time with Helper, 30 Hr. Weight, 5600 Lb. Above are two distance pieces for gas engine, molded by handy man on second day he worked on the floor. Time, with helper, for two castings, 9 hr. Weight, 960 lb. each.

many years. The entire mold was put up by this man at a labor cost to us of $13. One year ago we had a union molder, to whom we paid $3.50 per day, who made a mold from the same pattern, in the same way, at a labor cost of $44.20.

Another instance is the bed casting, front and rear views of which are shown, Fig. 1. The weight is 11,800 lb. This mold was bedded in the floor and, including the cope, was rammed by a handy man with a helper in 14 hr. The pattern was drawn, the mold dressed, cores set and the mold closed in 18 hr. by a skilled molder and his helper.

Where we are making our greatest progress, however, is on the molding machine. Referring to the gas engine cylinder of 18-in. bore, 21-in. stroke and weighing 3650 lb., in Fig. 2: This casting was rammed on a machine, the pattern drawn by crane, the mold dressed, cores set and the mold poured the same day. The actual time of the skilled mechanic with his helper was 9 hr.

In another case, a distance piece for a gas engine was made on a molding machine, the pattern drawn by crane, the mold dressed and core set by a skilled molder and his helper in 9 hr. The weight of the cleaned casting was 3800 lb.

You will also note a view, Fig. 3, of a bed casting made partly on a molding machine and partly by hand. The machine was not strong enough to ram the mold when the flask was full of sand, so we put all the sand in the flask that the machine would handle and afterward filled the flask and rammed with a pneumatic rammer. If the machine were strong enough to handle the load we would be able to complete the mold set cores and cast the same day with a skilled molder and his helper—9 hr.—and the help of a handy man for 3 hr. to assist in dressing the mold. The weight of the casting is 9300 lb.

Next you will notice a view of an uncleaned bed with two castings resting on top, Fig. 4. This bed casting is shown just as it comes from the floor and was made by a man who had been working 10 weeks at the business, in 30 hr., with helper. He rammed the mold, drew the pattern, dressed it, set the cores and did all the work. The weight is 5600 lb. The two uncleaned castings on top of the bed referred to above are distance pieces for gas engines, each weighing 960 lb. These were made on the molding machine by another handy man with helper in 9 hr. He drew the pattern, dressed the molds and set the cores. This was done the second day after he was put on the work. He had been helping a skilled molder for about six weeks.

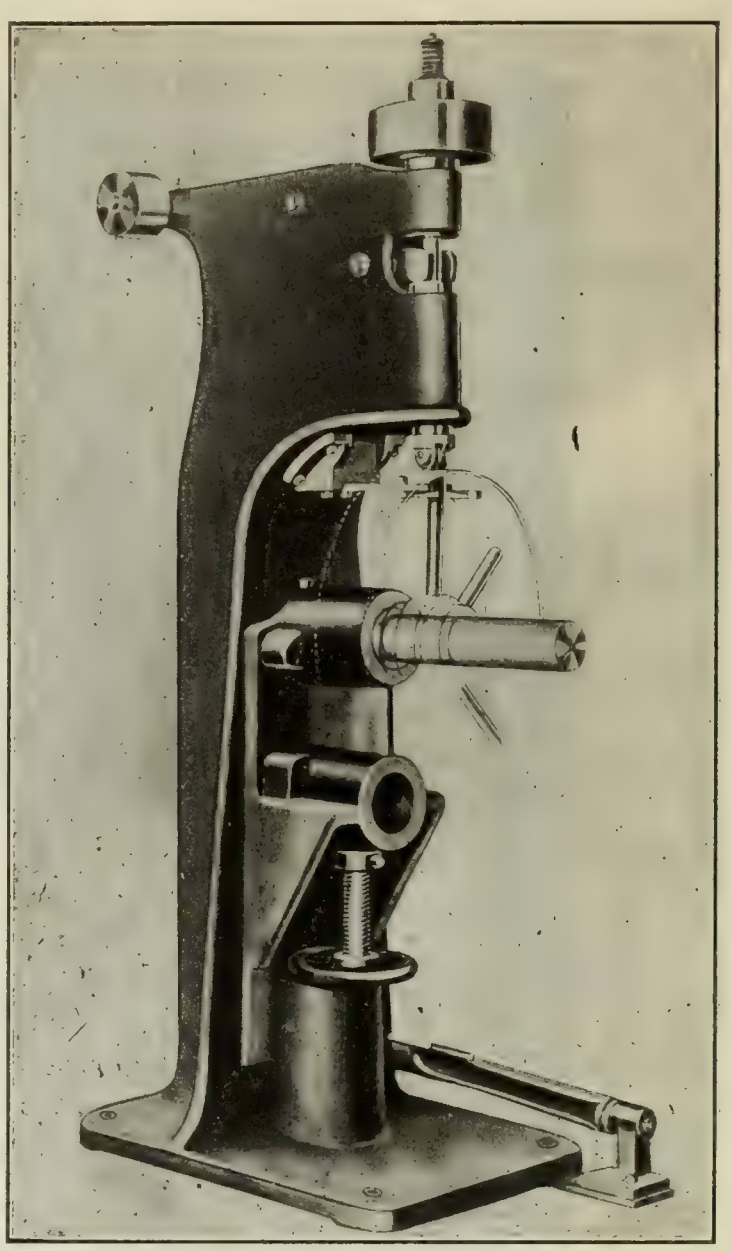
Now this is what has been accomplished in four months after the strike was called. I think you will agree with me that it is fair progress, although I will admit we see many places where economy may yet be practiced which would be impossible if the old conditions existed.

I wish to take this opportunity to thank the officers of this association for the magnificent support given us. We recognize that it would have been impossible to win out in so short a time, if ever, without their help. Commissioner McClintock was untiring in his efforts to get men and his advice was invaluable. The men sent us were on the whole fine mechanics. A very few were undesirable, but they were let out early in the strike. There is one thing I think worth mentioning. Of all the men sent us by the National Founders' Association we were obliged to discharge but one man for drunkenness, and to-day 100 per cent. of our foundry force are sober men who are on duty every day, unless absent on account of legitimate illness. I am satisfied every foundry in this country can obtain the same conditions as at present enjoyed by us if the same methods are pursued. I firmly believe, however, that you cannot succeed with the open shop until the union molder recognizes he must conform to more equitable conditions.

We are now building up a force of men who have not been trained in the bad atmosphere of the union shop, and in a short time when the volume of business throughout the country has increased and molders are in demand, when the old practice of hiring them from your neighbor is again in full swing, we will not be troubled to any extent. We will be able to pay the few skilled molders and coremakers the highest rate of wages and they will not care to change, as they are not called upon to ram or shovel sand or do any heavy labor, which is manifestly the work of the handy man.

## The Grant Pulley Rivet Spinner.

For riveting the spokes in steel rim pulleys, a noiseless rotary rivet spinning machine has recently been made by the Grant Mfg. & Machine Company, Bridgeport, Conn. The spokes used in these pulleys are made of round steel, 1⅛ in. in diameter, having a tenon turned on the end entering the rim ⅞ in. in diameter, thus leaving a ⅛-in. shoulder on which the steel rim rests. After a few trials to obtain the proper length of the tenon it was found that the spokes could be headed so perfectly that scarcely any surplus metal was left on the ends of the spokes to be removed, by grinding or otherwise, to make them flush with the surface of the pulley rim.



A Rivet Spinning Machine for Securing the Spokes in the Rims of Steel Pulleys, Built by the Grant Mfg. & Machine Company, Bridgeport, Conn.

The illustration shows that provision has been made in the adjustable knee or table at two places to receive an arbor. This is to accommodate pulleys ranging in size from 12 to 60 in. in diameter. When the large pulleys are to be riveted the arbor is inserted in the lower hole in the knee and for the small ones in the upper one. Several arbors are provided, ranging in size from 2½ to 4½ in. in diameter, to support the different hubs used in the construction of the pulleys.

The German Steel Syndicate's statement shows deliveries of A products in September, reckoned in ingots, of 404,608 metric tons, as against 419,623 tons in September, 1907, when the decline began, being especially noticeable in shapes. The deliveries in the first nine months of this year, of semifinished steel, railroad material and shapes amounted to 3,649,565 tons, as against 4,362,607 tons to September 30, 1907, a falling off of 713,042 tons.

## The Diamond Self-Closing Die Head.

A new automatic die head made by the Diamond Power Specialty Company, Detroit, Mich., possesses a number of original features. These include the arrangement for discharging the chips from the die head, the manner of overcoming unequal wear on the cutting blades or chasers, the unusual range of diameters of work to each size of head and the very small size of the die head. It is described as of simple but very strong and

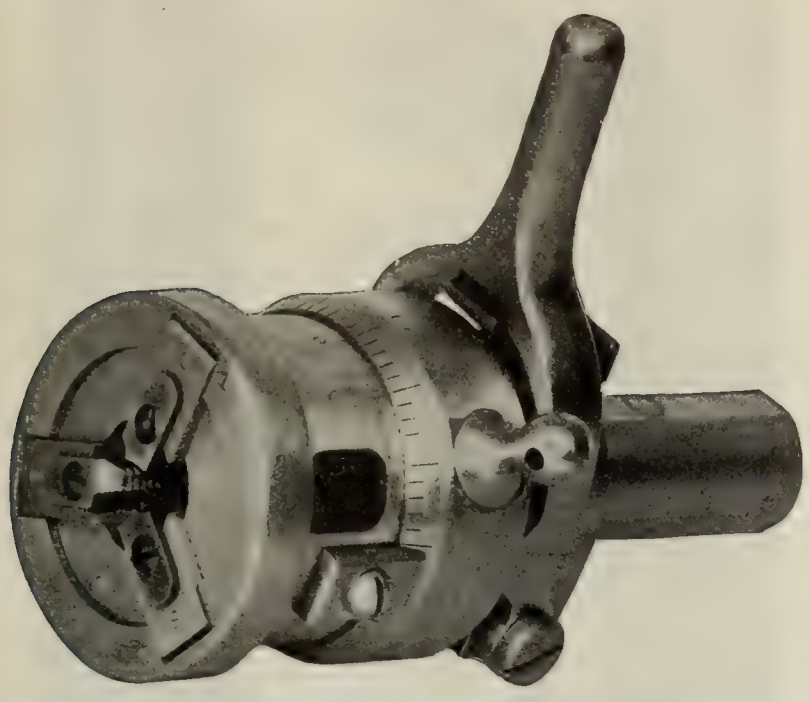


Fig. 1.—The New Automatic Die Head Made by the Diamond Power Specialty Company, Detroit, Mich.

durable construction. Fig. 1 shows a general view of the die head and Fig. 2 details of some of its parts.

With this die head a saving of wear, power and time is made, due to not reversing the motion of machine to unscrew the die after the thread is cut to the length desired, which can be made to uniform distances or lengths, as up to a shoulder, which is impossible with solid dies.

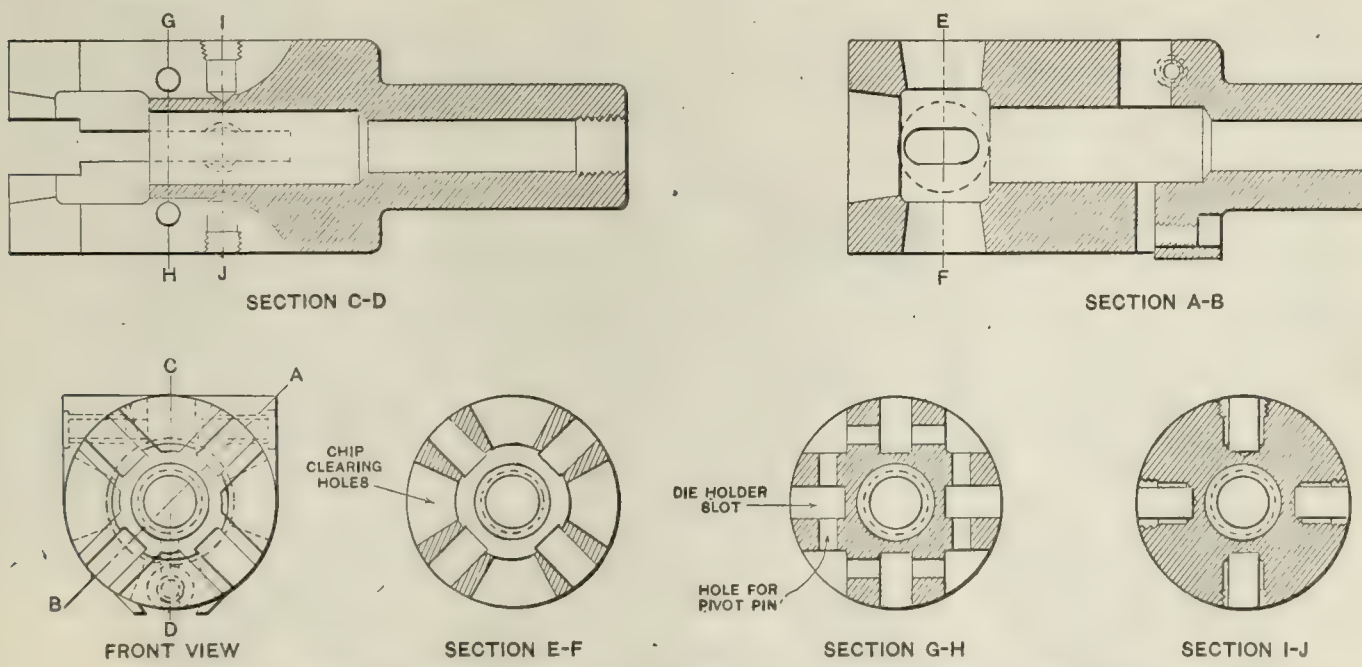



Fig. 2.—Details of Some of the Parts of the Diamond Self-Closing Die Head.

The diameters are also more accurate to standard diameters. By turning a ring on the body of the die head, which has micrometer graduations, an accurate adjustment is always possible, and it is adjustable for wear, while solid dies are not, and dies which are cut through on one side to permit of a small amount of adjustment are likely to warp in hardening and to crack in adjusting, either of which precludes its use for accurate work.

The length of the thread is adjusted to a nicety by an internal stop pin actuated by the work, if so desired, thus enabling it to be used on an ordinary turret machine or an automatic screw machine, or the stop pin can be removed and a thread of any length can be cut. For heavy or rough work a stop can be furnished to move the closing ring, which permits of taking two cuts in producing the thread. It can be closed by fastening a small piece of steel on the turret slide to actuate the closing lever of the die on the backward motion of the turret or it can be closed by hand.

Any thread can be cut with the die head on stock suited to its size, right or left hand, standard, square, acme, Whitworth, pipe or special threads of various pitches, and it can also be used as a forming tool for small articles by using special blades of proper shape.

This method of overcoming the wear on the taper of the dies is unique. This is accomplished by mounting the die blades on pivots in the body of the die, so that in drawing them together with the adjusting ring the outer end, where the heaviest wear comes, closes in faster than the part nearer the pivots, thus compensating for the unequal wear and securing threads of uniform diameter throughout their length. This is considered an important improvement.

The die head is constructed so that it frees itself readily and quickly of chips through amply large openings provided for that purpose and through which the chips are flushed out by the oil used for cutting the thread, hence no chance is given for the chips to bunch and spoil the thread.

This head is claimed to be smaller than any other die head on the market, which should be an advantage; notwithstanding this decrease in size, rigidity is maintained. It is to be noticed that the closing ring is outside of the die blades and has its bearing on the latter immediately over the point where the greatest cutting stress comes, thus giving a very rigid die. Any wear between this closing ring and the die blade holders is taken up in adjusting the die for size, therefore this wear does not accumulate with use.

**Rotterdam Ore Receipts in 1907.**—Gust. H. Mueller, the head of the well-known large shipping firm at Rotterdam, has just issued, as consul general of Roumania at that port, his very handsomely equipped annual report in the French language. Although dealing specifically with the commerce of Rotterdam and of Holland, it contains a number of reviews of all the leading staples, including iron and the base metals. Mr. Mueller's firm is closely allied with iron ore shipping, and the volume contains a series of interesting statistical tables dealing with iron ore imports and exports. Rotterdam is the receiving port for practically all of the Spanish ore which Germany imports, the quantity received being 2,408,877 metric tons in 1907. It receives also a large share of the Swedish ores shipped to Germany—1,814,892 tons out of 2,857,853 tons sent in 1907—the total exports from Sweden to all countries having been 3,467,294 tons. Of manganese ore Rotterdam received 293,651 tons in 1907, of which 246,162 tons came from Russia, 24,130 tons from India and 22,926 tons from Brazil. Antwerp was the receiving port for 318,323 tons of manganese ore, of which 160,200 tons came from India, 72,112 tons from Russia, 37,857 tons from Norway and 31,967 tons from Brazil.

# A New Ferracute Cold Rolling Mill.

A rolling mill recently shipped to a foreign mint by the Ferracute Machine Company, Bridgeton, N. Y., is illustrated in Fig. 1. This machine, while in general appearance and construction not unlike other machines of its class, contains several new features, and was designed by Oberlin Smith, the president and mechanical engineer of the company. As the illustration shows, it is motor driven, a General Electric 50-hp., 220-volt motor being used. The gearing ratio is 19 to 2 and gives 44 rev. per min. to the rolls.

The housings are bolted to a cast iron base, or bedplate, and contain phosphor-bronze boxes for the roll bearings. The rolls are made of a special metal of close texture, and are 10 in. in diameter, and the distance between the roll housings is 9 in. The rolls are adapted for rolling strips of metal of this width and any thickness up to ½ in. The upper roll is supported by four heavy springs at a tension considerably in excess of the weight of the roll, which tension is regulated by the nuts shown at the top of the roll housings. The roll is by this means kept tight against the upper bearing surface, eliminating the film of oil that would otherwise be found between the roll and its bearing, and which would affect the extreme accuracy necessary in rolling strips of metal for coinage purposes.

The roll is adjusted by wedges, which are moved in and out by a screw connected by a train of gears to a dial crank. The dials, of which a detail is given in Fig. 2, indicate the distance between the upper and lower rolls, and consequently the thickness of the rolled strip. The dial at the left reads in hundredths of an inch, and the one at the right in ten-thousandths. One revolution of the crank moves the dial hand at the left one division, or 0.01 in., and each one hundredth indicated on the left hand dial is subdivided into a hundred parts on the right hand dial. If it is desired to roll a strip 0.2506 in. thick, the crank would be turned until the dial hand at the left pointed at 25 and the dial crank at 6.

The gears and roller ends are protected by guards and all working parts of the mill are accessible. Its total length from right to left is 8 ft. 1 in.; its depth, front to back, is 6 ft. 8 in., and its hight, 7 ft. 9 in. The total weight, including the motor, is 25,000 lb.

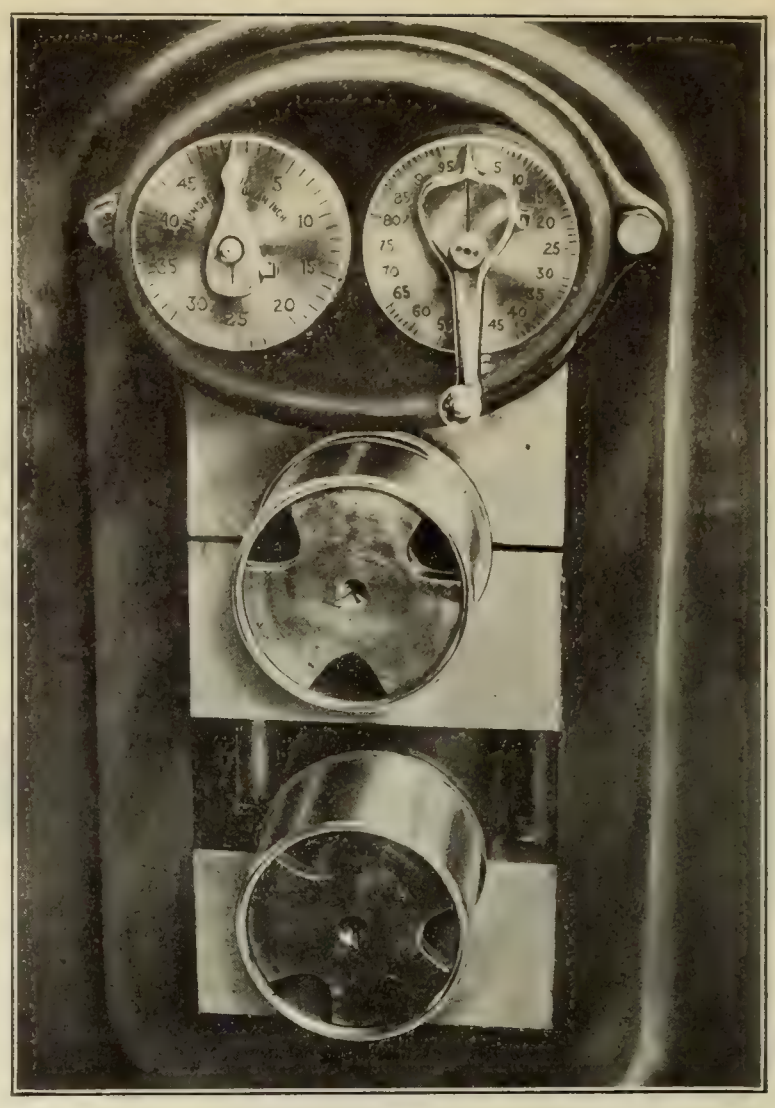


Fig. 2.—Detail of the Roll Ends, Showing the Dials Indicating to 0.0001 In. the Thickness Rolled.

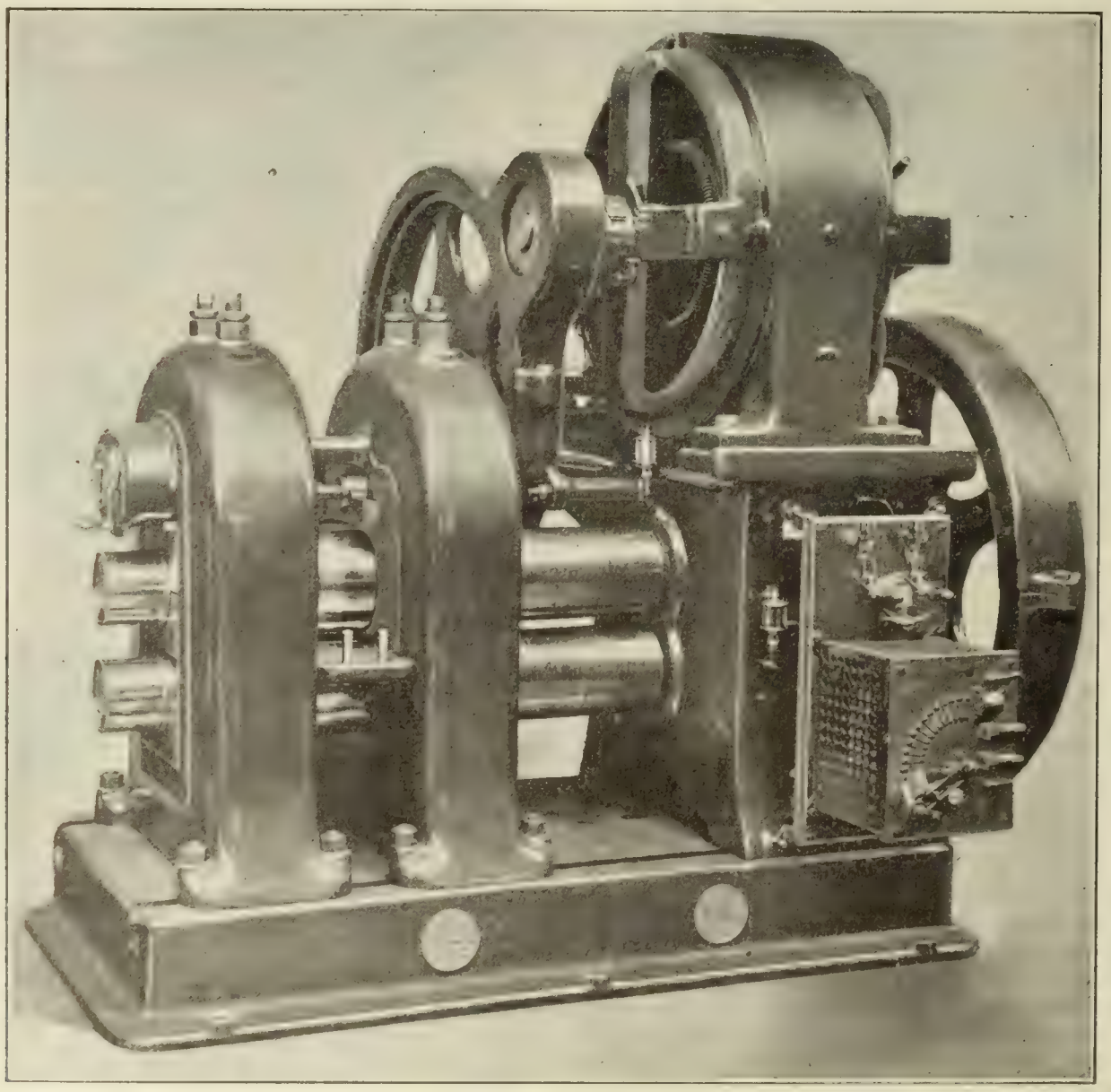


Fig. 1.—A Rolling Mill for Coin Metal Built by the Ferracute Machine Company, Bridgeton, N. J.

# A New Wells Tapper and Threader.

The tapping and threading machine, Fig. 1, is designed for general machine shop use for tapping and threading a large range of special pieces, either in small or large quantities, the capacity being ¾ in. The essential features of the machine, which is built by the F. E. Wells & Son Company, Greenfield, Mass., are a back gear drive with quick reverse mechanism, the tail block and oil pump and pan.

The back gear mechanism consists of an internal gear integral with the cone pulley, the power being transmitted through a rawhide intermediate gear to a gear engaging the spindle by means of a friction. One movement of the handle shown at the top of the machine engages this friction for the tapping and threading. The opposite motion operates the quick reverse, the driving friction being thrown out and another friction thrown in, causing the spindle to reverse, driven direct from the cone pulley. This lever handle thus serves to start, reverse or stop the machine. These same functions may be performed, especially on small work, by pressing up or holding back on the tail block. The machine also has an automatic trip and reverse, which may be set for reversing at any desired point. The action of the trip is to cause a plunger to engage a cam mounted on the back gear friction.

The tail block is furnished with hardened steel jaws for holding round or square work. For odd shaped pieces false jaws may be made and used in place of those regularly provided. The tail block may be set either side of center for tapping work out of center. The small lever at the back of tail block is used for starting the tap or die on larger size work, but under ordinary conditions it is sufficient to press up the tail block by hand. The face of the tail block is planed off square, so that small flat castings, too large to be held between the jaws, can be held in the hands against the jaws for tapping up to 5-16 or ⅜ in. holes. A special positive drive tap chuck is furnished with the machine, which drives the tap by the squared part and at the same time centers it by the round shank.

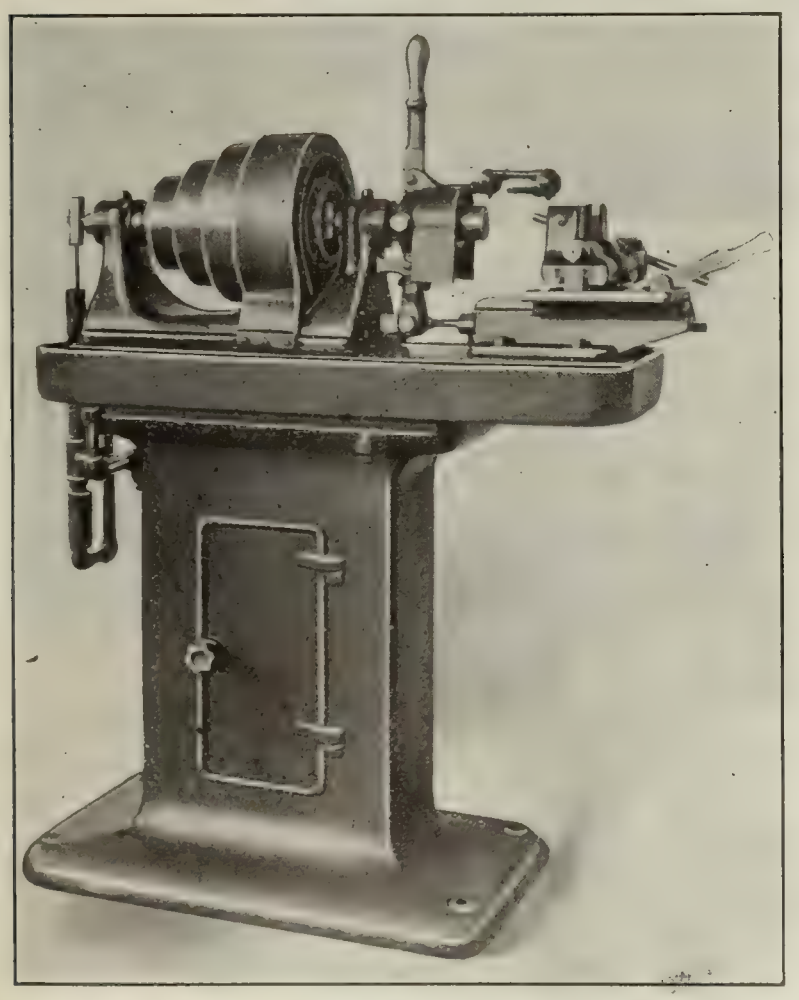


Fig. 1.—The New Tapping and Threading Machine Built by the F. E. Wells & Son Company, Greenfield, Mass.

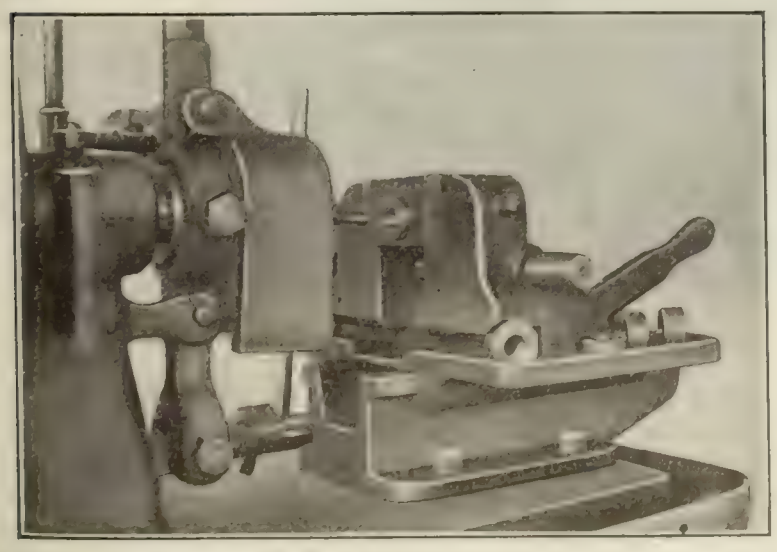


Fig. 2.—The Machine as Used for Tapping Round Nuts Held in Special Jaws.

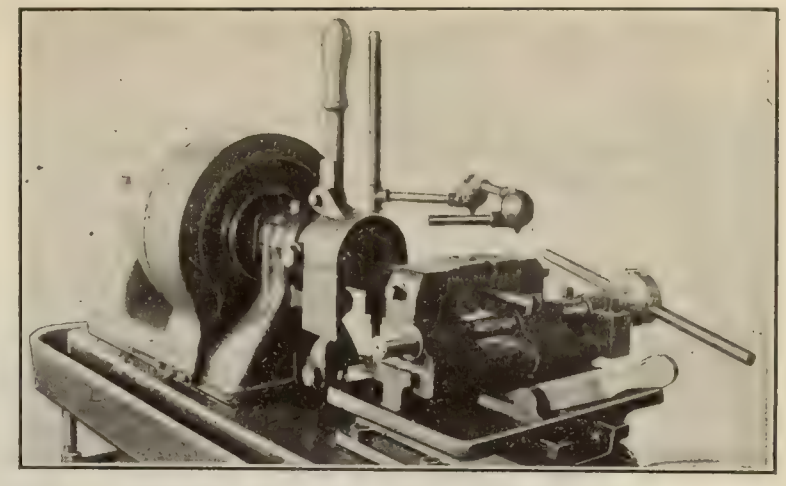


Fig. 3.—Bolt Threading, Using a Die in Place of the Tap Chuck.

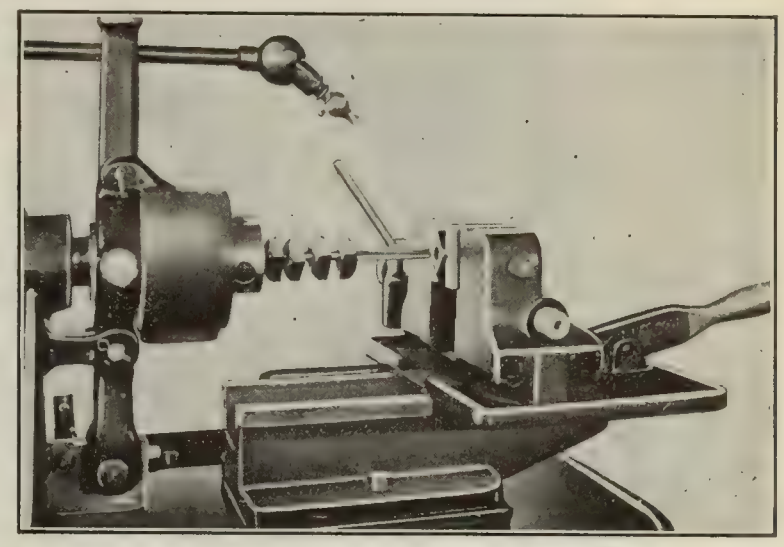


Fig. 4.—The Use of a Long Shank Taper Tap, Tapping Several Nuts in Succession.

The illustrations include those showing special uses of the machine. In Fig. 2 special round nuts are being tapped, held in jaws made to fit the work, as it was important not to mar the outside surface. In Fig. 3 a die is being used in place of the tap chuck for threading a bolt. Fig. 4 shows the use of a long taper tap, used without reversing, the nuts being strung upon the shank; the tail block has sufficient movement to permit of this.

The pump is of the plain plunger type and is driven direct from the spindle. It draws oil from a small tank and gives an even flow of oil which does not spatter; the degree of flow is regulated by a petcock.

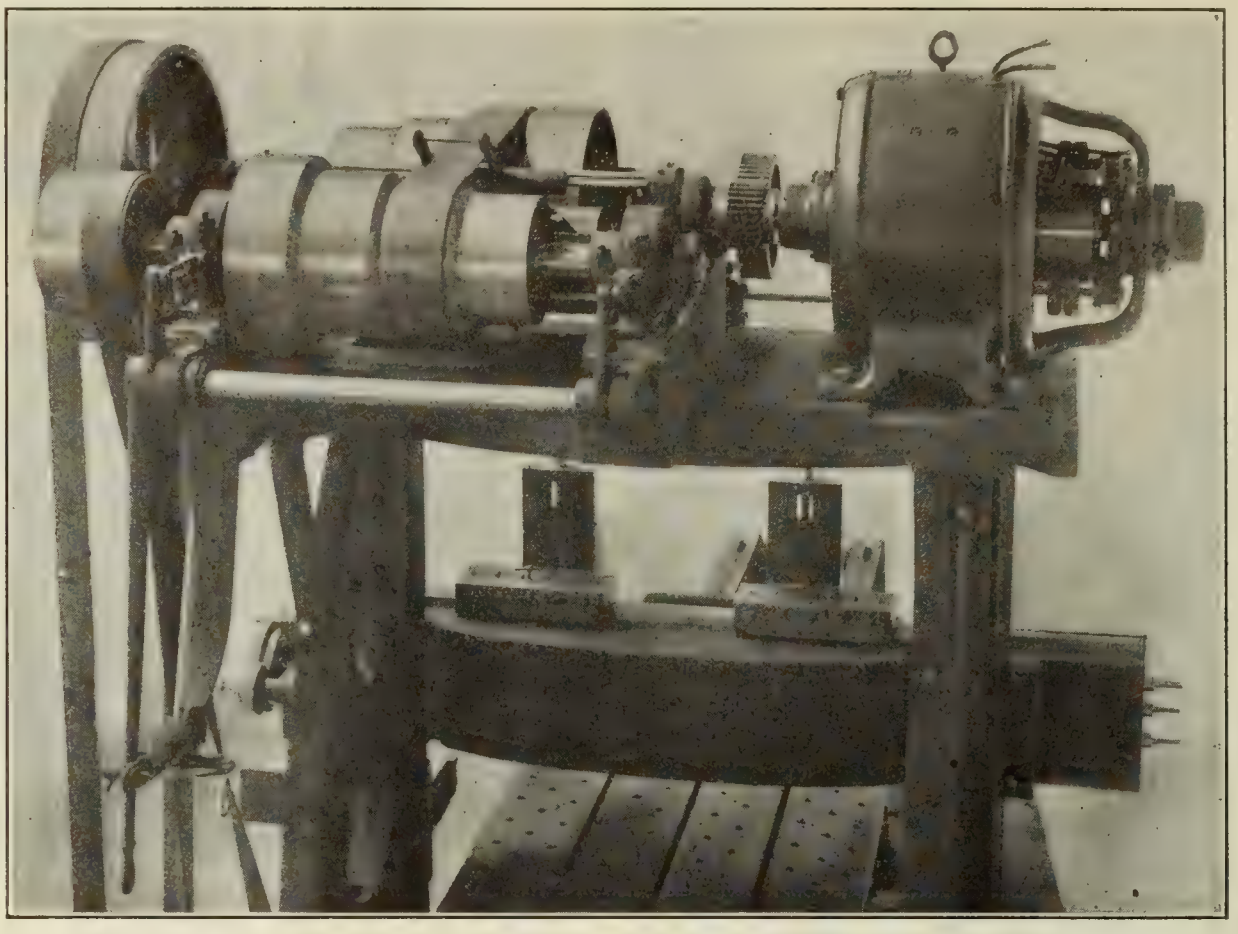
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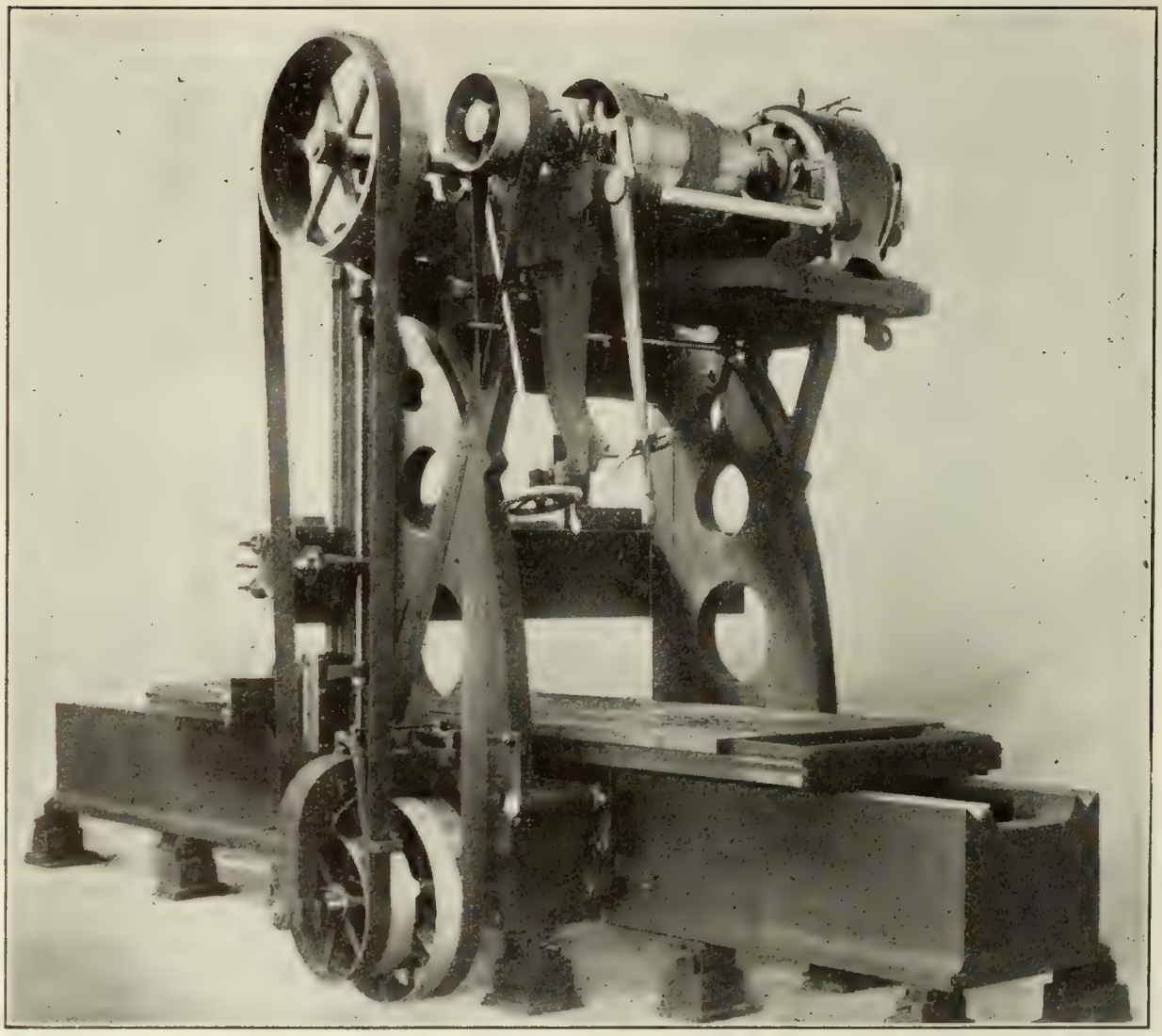
The members of the trades unions employed in the shipbuilding plant of Furness, Withy & Co., Hartlepool, England, voted November 4, at the rate of 10 to 1, to give a year's trial to Sir Christopher Furness' profit-sharing proposition. The thousands of employees in the Hartlepool plant will buy stock in the concern immediately, on which they will receive a 4 per cent. dividend, whether the company has a surplus at the end of the year or not. The stock will be paid for by a 5 per cent. deduction from wages, until the indebtedness is cleared. The venture is said to be the largest profit-sharing scheme ever attempted. In the agreement between Sir Christopher and the unions a pledge by the men against future strikes is exacted. All disputes and differences will be left to a work's council, composed of an equal number of officials and workmen.

## The Gray Planer Speed Variator.

For shops in which the planer work is such as to make different cutting speeds desirable, the speed changing device manufactured by the G. A. Gray Company, Cincinnati, Ohio, is being introduced. It is essentially an arrangement of belted cone pulleys with means for easily shifting the belt and affords four cutting speeds with a constant return speed. One cone is mounted on the constant speed shaft, on the end of which is the pulley that drives the table on its return stroke, and the other is mounted on the variable speed shaft, on the end of which is the pulley that drives the table on its cutting stroke. The constant speed shaft may be driven either by belt directly from a line shaft, through a pair of tight and loose pulleys, or, as shown in the illustration, it may be geared to a motor shaft, thus making an entirely self-contained drive. The variable speed shaft is driven from the constant speed shaft through an endless belt.

A change of speed is effected by turning a hand wheel conveniently located at the side of the housings, and which shifts the belt from step to step of the cones. The variable speed shaft is moved to and from the constant speed shaft by a long lever which loosens the belt while the speed is being changed and at all other times keeps it under the proper driving tension. To further facilitate the shifting of the belt the shoulders of the cone steps





Two Views of the Speed Changing Device for Planers, Made by the G. A. Gray Company, Cincinnati, Ohio.

are beveled off as shown and the shifting mechanism is arranged so as to shift the belt first where it goes to a smaller step and last to a larger step of the other cone. This reduces the wear on the belt due to shifting. The hand wheel operates the duplex belt shifter by means of a cylindrical cam, mounted between the cones.

The large stationary pedestal bearings for the constant speed shafts are fitted with phosphor bronze bushes, automatically lubricated by ring oilers. The sliding pedestals for the variable speed shaft are turned out to form sockets for the large ball shaped cast iron bearing blocks, which are also fitted with ring oiling phosphor bronze bushes. These form swivel bearings and insure perfect alignment of the shaft bearings under all conditions.

The speed is changed without stopping the motor, which saves the time usually wasted in waiting for the armature and pulleys to come to rest. The momentum of the two cones, supplementing that of the heavy flywheel pulley, reduces the shock on the motor at each reversal of the table.

The device is rigidly built, and as can be seen in the illustrations, is quite simple and is devoid of complicated or delicate parts that could get out of adjustment or cause trouble or annoyance. In the elimination of rapid running gears, an almost noiseless drive is secured, but what in the opinion of the manufacturer is more important is the doing away with vibration, which characterizes a self contained geared device, especially after it has been in use for some time and subjected to the severe duty imposed by planer service.

The advantages claimed for the Gray speed variator, are that it has no frictions to wear or require adjustment; no clutches to be injured or broken; no gears running loose on their shafts at all times and likely to stick or cut; no sliding gears to be damaged if carelessly shifted, and no leaky oil reservoirs. In short, it is considered to be practically fool and trouble proof. One of these speed variators has been driving a 56 in. x 27 ft. planer in the maker's shop for two and a half years, is in active service and has withstood the most severe tests. The original endless belt that is still on it appears to be in as good condition as when first put on and has never been shortened.

A special commission which has been investigating the establishment of a technical high school at Hartford, Conn., has reported in favor of such an institution. The recommendation is for a new building adjacent to that occupied by the present manual training school, but there will be no connection between the two institutions in the matter of curriculum.

## The Wizard Quick-Change Drill Chuck and Collets.

With the combination of the Wizard drill chuck and collets as made by the McCrosky Reamer Company, Meadville, Pa., all sizes and shapes of drills, taps, reamers, counterbores or similar special tools can be used in rapid succession without stopping the machine in which they are operated. The chuck shown in Fig. 1 fits in the spindle of the machine, and while the latter is running a light grasping of the outside collar of the chuck overcomes a spiral spring within it and throws the key slot open, so that a collet may be released or another inserted. When the hand is removed from the collar the spring closes the key slot, and if a new collet has been inserted locks it in place. The tool is held rigid and perfectly centered, without any play.

The collets, one of which may be seen in Fig. 2, are provided with a ring or flange to serve as a shoulder for the hand to press against in pushing the collet into the chuck or catching it when it is released. The conical upper end helps to hold the collet rigidly and center it perfectly, and incidentally facilitates starting it into the chuck. The drive is direct and powerful. The chuck is

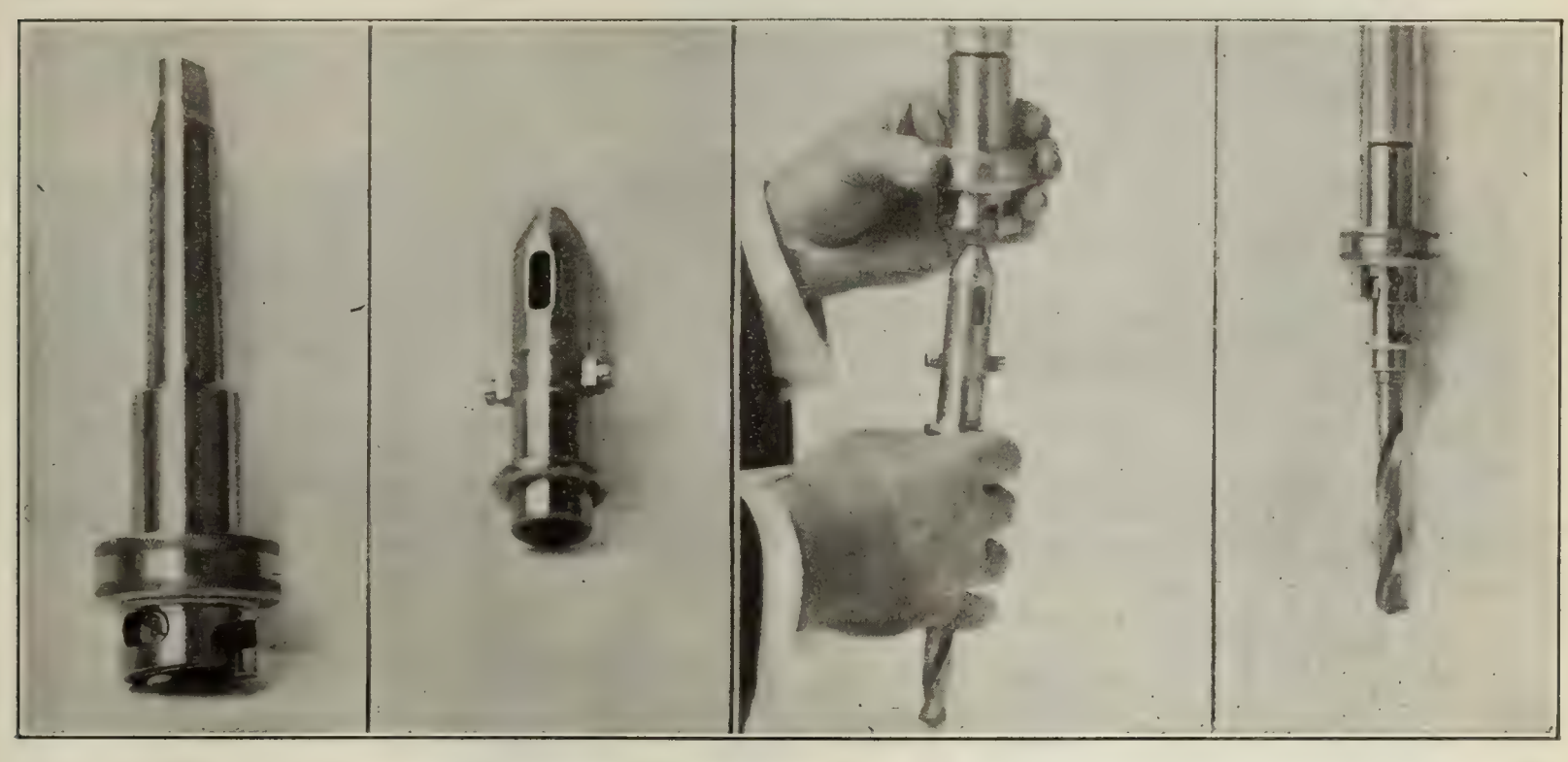


Fig. 1. Fig. 2. Fig. 3. Fig. 4.

The Wizard Quick-Change Drill Chuck and Collets Made by the McCrosky Reamer Company, Meadville, Pa.

machined from steel and is hardened and ground inside and out. The collets are drop forged from steel, and are machined, hardened and ground. The two drive keys for each collet are in one piece with the collet, so that they cannot work loose.

Fig. 3 shows the manner of inserting a collet in which a drill has been fitted, and Fig. 4 the tool in place ready for use. The collets are made with either standard Morse sockets or blank, in which case they are left soft, so that they may easily be bored to receive the straight shanks of drills, taps, reamers, &c. Blank collets may be had 5-1000 in. over size, so that they may be hardened and ground after being fitted to the shank. To hold the tool in the collet a pin may be passed through both the collet and the tool shank, or if it is a small shank it may be flattened on one side to engage the pin. Heavy set screws may also be used or a tang may be ground on the end of the shank.

The Wizard chucks are made in three sizes; the smallest takes a collet 15-16 in. in diameter, the next size 1¼ in. and the largest 1 11-16 in. An outfit consists of a chuck and one collet for each tool in the series of operations. Chucks to be used in the tailstock of a lathe can be furnished with the shank left soft so that it can be turned to fit. The company makes stands providing racks for any size chuck and its collets, on which they are held upright at a convenient hight to facilitate rapid changing of tools, and affording a permanent place for keeping them.

# The Newton No. 7 Horizontal Miller.

In respect to the location of levers and the application of the feeds the latest design of the Newton Machine Tool Works, Inc., Philadelphia, Pa., in plain milling machines is the No. 7 horizontal slab miller. All the movements of the machine can be controlled from the working side. The spindle of this machine is 8¼ in. diameter, having cross adjustment on the rail of 12 in. for convenience in setting the cutters to the work. The spindle is driven by a triple lead-bronze worm wheel of very steep pitch and a hardened steel worm, both of which run continually in oil, through intermediate gearing from a 50-hp. motor, as shown in Fig. 1. The table is spiral gear and rack driven, and has nine changes of geared feed through the speed box shown in Fig. 2.

Hand adjustment to the table is obtained by the hand wheel A mounted on the horizontal feed shaft, on which are also mounted the feed and fast traverse gears, either of these motions being obtained by the lever B operating the positive drive clutch. The drive for the feed, as may be seen in Fig. 1, is taken from the horizontal driving shaft through clutched bevel gears, which permits of feeding the table in either direction regardless of direction of rotation of spindle. This clutch is operated through bevel gearing by the lever C, Fig. 2.

When the drive to the feed is disengaged, engaging the feed clutch by lever B holds the table securely in position, a convenience on any work where it is required to sink the cutter into the work.

The cross rail is counterweighted, has reversing power vertical adjustment operated by the counterweight lever D. The elevating screws have roller thrust bear-

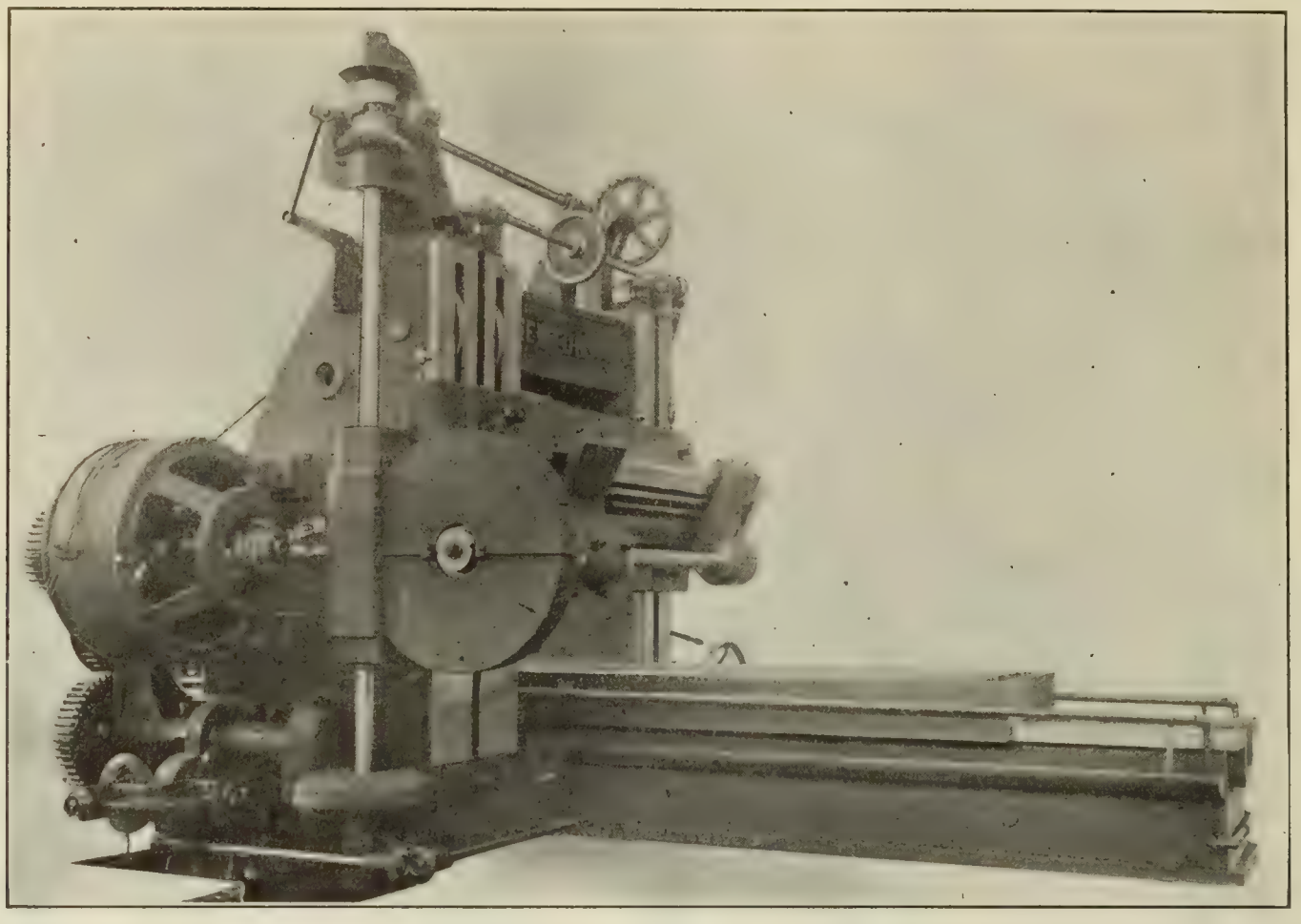


Fig. 1.—The New No. 7 Plain Horizontal Slab Milling Machine Built by the Newton Machine Tool Works, Inc., Philadelphia, Pa.

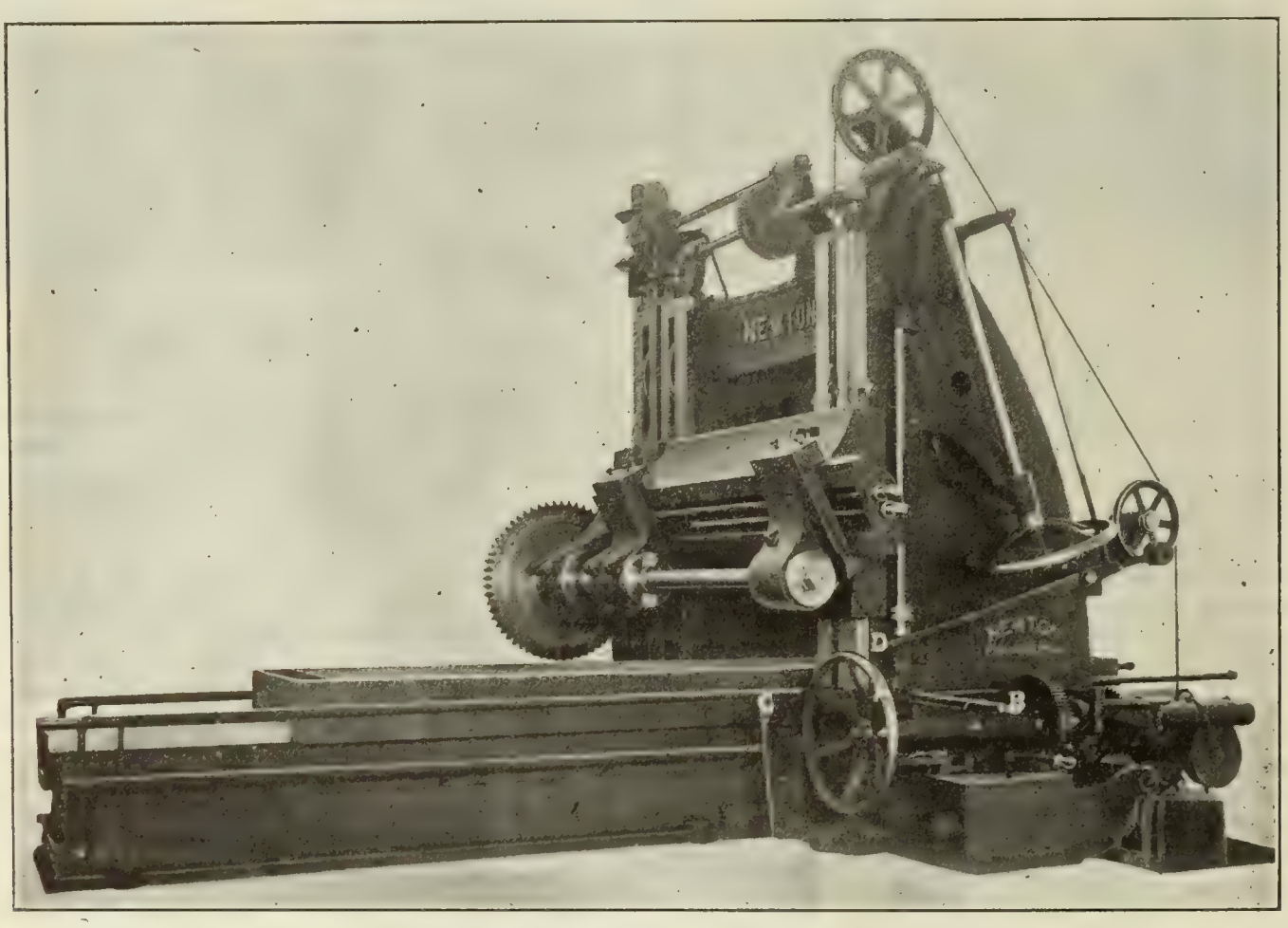



Fig. 2.—View of the Operating Side of the Newton No. 7 Horizontal Miller

ings at the top and bottom bearings. When sinking the cutter into the work, the rail is pulled down, which keeps the screws in tension and eliminates all danger of bending, as would otherwise result from having the screws under compression if the rail were pulled down from the top, as was the former practice without the bottom bearings to the screws. There is also provided a gauge screw upon which are mounted four nuts for adjusting the rail for duplicate depth of cut. The work table of this machine is 42 in. wide and of sufficient length to mill 8 ft. Distance between uprights is 50 in., and distance from center of spindle to top of work table is 50 in. Approximate net weight of machine is 96,000 pounds.

## Kesco Steel Floor Plates.

The Keystone Steel Company, whose central and sales offices are at Warren, Pa., has just completed in its mill at Wilmington, Del., the installation of what is claimed to be the largest and most efficient equipment in the world for the exclusive manufacture of wrought steel floor plates and shapes. The vice-president of the company has had extensive experience in floor plate manufacture and has installed appliances which are entirely new and which are very effective in producing flat plates. In the manufacture of these products the Keystone Steel Company will hereafter be a specialist. The company owns patents which it believes cover the only arrangement of rolls known at the present time whereby the diamond ribbed and checkered patterns of steel floor plates and treads can be rolled absolutely flat and straight. They are also sheared accurately to specified size and form, thereby effecting a saving to the users by avoiding the time consuming and expensive necessity, which has previously existed, of straightening and trimming to proper size by hand, after the plates have been delivered. Realizing the importance of accurate cutting to specified size and shape, the company has installed specially built shears of the most improved type and largest capacity.

Illustrations are herewith given of the three patterns of plates now ready for the market and to be known as Kesco plates. The company has adopted as its trademark this word overlaid on a diamond which in turn is overlaid on a keystone. These plates are made of open hearth steel of boiler plate quality. The high ductility of this steel causes it to sag or bend when overloaded, thus giving ample warning of dangerous conditions. The plates are of such strength, however, that a 5-16-in. plate weighing 13¾ lb. per square foot will carry 222 lb. on a 3-ft. span. Not only do their greater strength and extreme toughness make steel plates much superior to cast iron plates, but the latter have to be drilled, whereas Kesco plates can be punched with an ordinary structural steel punch or cut with a cold chisel. In addition, there is the saving to builders or contractors in the fact that they have 30 per cent. less material to handle, and the further fact as an economical point that the floor and stair supports having to carry so much less load can be lighter. Hardly an article has been brought forward in recent years for building construction which has met with such unqualified approval as wrought steel floor plates for fire escapes, stairways, trench covers in steam heating plants, floors in power houses, &c. Heretofore they have been made by contract, but the demand has grown to such an extent that the Keystone Steel Company has arranged to meet the requirements of this trade for prompt service at attractive prices. It is the intention of this company to make practically immediate shipment of all thicknesses from ⅛ in. to ¾ in., and in larger sized plates than it has heretofore been possible for any other mill to furnish.



Diamond Pattern. Ribbed Pattern. Checkered Pattern.

Kesco Steel Floor Plates.

## Andrew Carnegie Opposes Steel Duties.

The *Century Magazine* for December prints an article by Andrew Carnegie in which he advocates the abolition of the duties on steel and declares in favor of a tariff for revenue. Following is a portion of his argument:

The writer has co-operated in making several reductions as steel manufacturers became able to bear reductions. To-day they need no protection, unless perhaps in some new specialties unknown to the writer, because steel is now produced cheaper here than anywhere else, notwithstanding the higher wages paid per man. Not a ton of steel is produced in the world at as small an outlay for labor as in our own country. Our coke, coal and iron ores are much cheaper, because more easily obtained and transported, and our output per man is so much greater, owing chiefly to the large standardized orders obtainable only upon our continent; the specialized rolling mills; machinery kept weeks upon uniform shapes without change of rolls, and several other advantages. Britain and Germany are the only important steel manufacturing nations other than ourselves. I am assured by one who has recently examined the matter that he found even in Germany to-day that the cost per ton for labor was greater than with us, unusually high as our wages are at present.

Were there free trade in iron and steel between America and Europe, a few orders might go abroad at times when American mills were fully occupied and high prices prevailed, and this would be advantageous to our country; but if these shipments amounted to much, prices would rise in Europe, and prevent further exports to our market. The United States made last year more steel (over 23,000,000 tons) than Germany, Britain, France and Belgium combined. New steel works are under construction which will produce enough to enable her to make more than the whole world besides. This she will do within five years, probably within three. The day has passed when any foreign country can seriously affect our steel manufactures, tariff or no tariff. The republic has become the home of steel, and this is the age of steel.

It may probably be found that there exists the small manufacturer of some specialty in steel which still needs a measure of protection. The writer hopes, if such there be, the committee will give patient attention to all such cases. It is better to err on the side of giving these too much, rather than too little, support. Every enterprise of this kind should be fostered. The writer speaks only of the ordinary articles and forms of steel as being able to stand without protection. He hopes there are to-day pioneers in several new lines requiring protection which will be generously given temporarily. The committee should welcome such special cases.

# Steel Breakages.

## The Study of Failures in Service.

A paper was read before the Engineering Section of the British Association, at the recent Dublin meeting, on "The Study of Breakages of Steel Articles." The author, W. Rosenhain, is in charge of the metallurgical department of the British National Physical Testing Laboratory. The paper deals with the subject in a general way, and then emphasizes the argument by several examples drawn from the records of the department. An abstract of the paper follows:

The chief argument in favor of the study of breakages by modern methods lies in this fact that it opens up a large amount of valuable knowledge of the properties of engineering materials not otherwise obtainable. Ordinary investigations do not and cannot reproduce the conditions of actual practice.

In applying the results of these experiments there is left a certain element of uncertainty which engineers reckon with by means of factors of safety, or by modifications of design resulting from practical experience of how such things behave in practice. These methods usually succeed in avoiding failures, but at the expense of economy or efficiency. Breakages show that factors of safety and the results of experience have been insufficient to prevent failure, and it is just the study of these cases that will enable us to correct our views.

### Three Main Causes of Failure.

The causes of failure may be classed into three large groups:

1. Defects arising from the manufacture of material.
2. Defects arising from incorrect treatment of the material during the process of construction.
3. Defects arising during the life of the structure or machine.

The first of these groups is, of necessity, a wide one. A few typical cases may be mentioned when dealing with steel. Thus the material may be defective on account of the presence in it of undue quantities of impurities. The distribution of impurities through the metal is also of importance, which leads to the subject of segregation and the soundness of steel. The quality of the steel may also have been seriously impaired by burning or overheating. Under group 2 come the various mechanical processes to which the metal is subjected in the workshops. Punching and shearing, if carelessly performed, give rise to more or less unsuspected weaknesses. Cold working applied even to mild steel, especially if applied at all locally, may be an exceedingly dangerous proceeding.

Turning to group 3, we find some cases in which the most careful investigation can find no sign either of inherent defects or injurious treatment during manufacture or construction. In these cases the material has been subjected to undue stresses while in use and has naturally failed. Actual faulty design is probably one of the rarest of these cases. More frequent, and, therefore, more serious, are the operations of forces which do not readily lend themselves to calculation, such as the heat expansion and contraction arising in steam boilers and to a lesser extent in all heat engines.

In illustration of these general considerations four examples of failures, which have been investigated in this manner, will be described:

### Case 1.—A Large Gun Failure.

The first case is that of the inner tube of a large gun which developed internal cracks after an abnormally short life. Mechanical tests were carried out consisting of tensile tests on pieces cut parallel with, and at right angles to, the axis of the tube. Alternating stress tests were performed on pieces cut the same way, and a special test producing the working conditions and consisting of a repeated tensile test. The tests as a whole show that the material is weak as regards elastic limit and ultimate stress, and much below normal material.

The resistance under alternating stress is somewhat low, and the special test shows the material is very weak under repeated shock, being approximately as weak as wrought iron. The greater part of the inner surface was polished with fine emery paper, when a large number of cracks were revealed running in every direction, showing that the failure was not due to any localized flaw or defect. Eight sections were then prepared for microscopic examination, together with two sections from a tube which had given good results. The general structure is quite normal, both as to size of grain and interlocking of constituents. It was found to be impossible to trace the course taken by the main fracture among the constituents. The steel, however, shows in a marked degree two features nearly always seen in commercial steels, namely, (1) minute black holes in the polished surface, and (2) grayish green inclosures of foreign matter. The small holes are very probably connected with the mechanical properties. This view is strengthened by microphotographs, where cracks, ramifying from the main fracture, are seen to run from one to another of these black marks. The grayish green globules are seen in both the normal and broken gun tube, but particularly so in the latter. In some of the specimens from the broken tube it is impossible to find a square millimeter free from them. It is believed that these are particles of slag which have not been able to free themselves from the molten steel.

Tests by heat tinting show the absence of ghosts or phosphorus segregation. The analysis is as follows:

| | Per cent. | | Per cent. |
|---|---|---|---|
| Carbon | 0.41 | Phosphorus | 0.03 |
| Silicon | 0.11 | Manganese | 0.53 |
| Sulphur | 0.05 | | |

This must be accepted as a satisfactory composition.

The microscopic evidence, when correlated with the results of the mechanical tests, leads to the conclusion that, as regards composition, heat treatment, and mechanical treatment, the steel of the fractured gun tube is normal. Its strength, however, is seriously impaired by the presence in its mass of a very large number of slag inclosures. The premature failure of the tube is ascribed to this defect, which is due to the original condition of the ingot.

### Cases 2 and 3.—Boiler Plate and Crank Pin.

The second case is that of a boiler plate, which by local deformation had been so weakened that it subsequently failed in use.

The third case is that of a locomotive crank pin, which broke off in service, with an apparently clean, fairly smooth, fracture. The outer layers of the pin were case hardened, so that it was impossible to subject them to mechanical examination. The analyses show nothing to indicate defective or unsatisfactory material, and the mechanical tests also indicate steel of satisfactory quality. Several sections were cut for microscopic examination, both longitudinally and transversely. The general structure is normal except for two features. One is the great angularity of the ferrite areas, and the other is the sorbitic nature of the pearlite. The first is detrimental, but is counterbalanced by the latter. Both these special features are due to the case hardening and subsequent quenching which the steel has undergone. The structure of the case hardened layer is typically martensite, well defined needles crossing at 120 degrees. It is characteristic of steel which has undergone very vigorous hardening treatment, and is suggestive of quenching from too high a temperature. In the transverse section hardening cracks become apparent at once, extending in many cases through the entire thickness of the hard case. In order to examine the pin from this point of view the surface was polished and examined with a low power microscope. The whole surface was found to be covered with a network of cracks, some of them of considerable size.

The general character of the cracks and their distribution, together with the thermal history of the pin as revealed by the microstructure, lead to the view that they were caused by the hardening process employed. It further appears probable that the fracture of the pin arose from the development of one or more of these cracks under the influence of the working stresses.

### Case 4.—A Large Shaft.

The fourth example is that of a large shaft, intended to run at a high speed and to transmit a large amount

of power. It ran satisfactorily for a time, but ultimately fractured through a portion 12 in. in diameter. The fracture was peculiar in having an outer ring a little over an inch wide, which was very smooth and fine grained. The central portion of the shaft had broken with a very rough coarse grained fracture. The average chemical analysis is as follows:

| | Per cent. | | Per cent. |
|---|---|---|---|
| Carbon | 0.49 | Phosphorus | 0.04 |
| Silicon | 0.13 | Manganese | 0.71 |
| Sulphur | 0.04 | Arsenic | 0.03 |

The outer layer and the bulk of the material show no marked difference in composition.

For microscopical examination a slice of the material was cut, running radially outward from the center of the shaft, and abutting on the fracture. The portion of steel lying near the outside of the steel was found to possess a small regular structure, characteristic of good steel of this grade. At a depth inward, varying from ¼ to 1¼ in., however, the satisfactory structure begins to be interspersed with patches of very large coarse crystals. As the section is followed inward these patches increase rapidly in area, until they occupy all the section. The transition from one structure to the other is very rapid.

Tensile test pieces were cut from the shaft as near the fracture as possible. No. 1 consists in great part of the steel having the fine microstructure, while No. 2 is from the coarse structured interior. The results were as follows:

| | Elastic limit. | Ultimate stress. | Elongation. Per cent. on 2 in. |
|---|---|---|---|
| No. 1 | 46,000 | 93,700 | 14.0 |
| No. 2 | 50,200 | 94,700 | 7.5 |

The figures show that the steel possesses a very low ductility, and they entirely confirm the deductions from the microstructure. The coarse structure of the interior is sufficient to account for the low ductility, and is also particularly weak under shock or alternating stresses.

The smooth outer ring of the fracture is not of uniform width, so that the outer layer of better material is not placed concentric with respect to the axis of the shaft. This fact has probably contributed to the failure of the shaft, since the unsymmetrical distribution of two metals of very different mechanical properties would lead to an unsymmetrical distribution of stresses. Undoubtedly also the unsatisfactory quality of the steel contributed largely to the failure.

The above four examples have been taken from a considerable number and are given to show the extent to which the application of modern methods renders possible the detection of the causes of apparently mysterious failures. G. B. W.

## Slocomb Reference Disks.

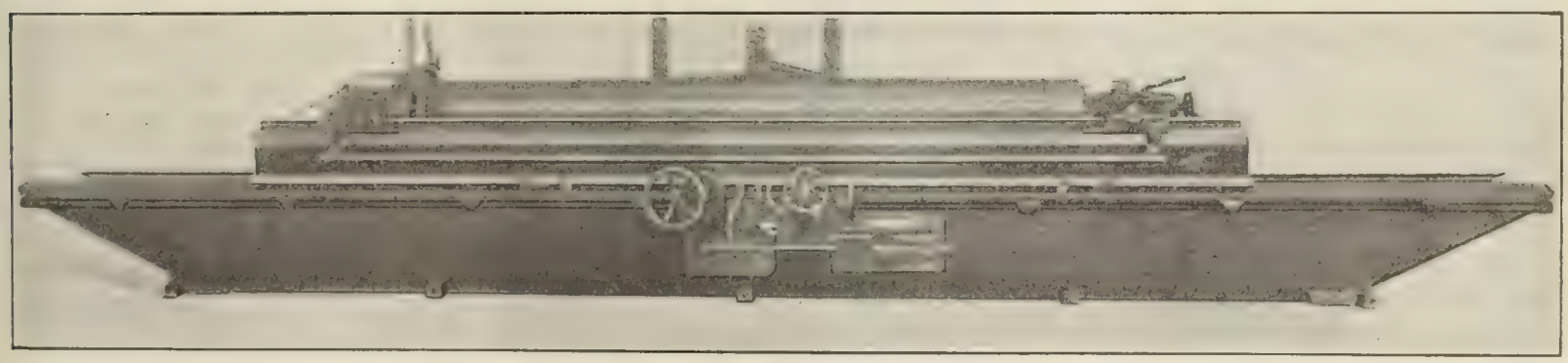
For keeping in accurate adjustment and testing micrometer calipers and other gauges, the J. T. Slocomb Company, Providence, R. I., has brought out a new set of reference disks, as they are called. The disks are made of a good quality of tool steel, made extremely hard, and after becoming properly seasoned they are finished to a very high degree of accuracy. A sufficient thickness is given to these disks to insure their durability. Those ¼ and 5-16 in. in diameter are made in one piece with a handle. Handles to fit the larger disks are included with the set. Each disk is marked with its diameter expressed both in common fraction and decimal equivalent. An unusually heavy bottom is provided in the morocco leather covered containing case, to allow for screwing the supporting plugs firmly into the disks before removing them from the case. The plugs are numbered on top to correspond with the disks which they fit. All of the figures are plainly to be seen when the box is opened, so that the required ones can be easily selected. Where a complete set of reference disks is not desired any of the sizes can be furnished singly.



A Set of Reference Disks for Gauge Testing Made by the J. T. Slocomb Company, Providence, R. I.

## Notable Grinding Work.

In *The Iron Age*, August 27, 1908, there was illustrated and described the 20 x 192 in. plain machine for cylindrical grinding built by the Norton Grinding Company, Worcester, Mass. The view herewith shows one of these machines as it appears in service in a large engine building works. A large engine shaft which has just been ground is shown in the machine in the illustration as it appeared when finished. This shaft weighs 8000 lb., is 13½ ft. long, 17 in. in diameter at the center, and 15, 14 and 13⅞ in. in diameter respectively toward the ends. With the grinding wheel 1-32 in. was removed from each diameter. The limit of error from exact size allowed on all diameters was 0.001 in.



A 20 x 192 In. Norton Cylindrical Grinder Engaged in Finishing a Heavy Engine Shaft.

The grinding time was 6 hr., including the time required for measuring the various diameters. The entire time required for setting up the machine, putting the shaft on centers, grinding the shaft and taking the shaft out of the machine was 8 hr.

A demonstration of the Menne oxygen torch for opening tuyeres took place at Pottstown, Pa., recently at the works of the Warwick Iron & Steel Company. It happened that one of the tuyeres was closed. It was quickly restored. The method has also been shown at the plant of the Lackawanna Steel Company at Buffalo. Since oxygen is now being made on a commercial scale in this country the Menne process is likely to be widely adopted.

# THE IRON AGE

Established in 1855.

New York, Thursday, November 26, 1908.

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## Inducements to Workmen in Open Shops.

In a comment on the work of employers' associations in the metal trades which have committed themselves to the principle of the open shop it was said in these columns one year ago, after the annual convention of the National Founders' Association:

> In the trying time upon which the foundry industry and all industries have entered, the National Founders' Association will have the chance to demonstrate that it is prosecuting no opportunist campaign, and seeking no temporary advantage from untoward conditions. Rather it will have the chance of its career to show that its policy is constructive and permanent and that in seeking the improvement of foundry conditions it contemplates nothing less than the permanent betterment of the condition of the foundry employee.

Evidence was given at the convention of this association last week that efforts to make the open shop a more desirable place in which to work than the closed shop are being practically put forth by many of its members. It was evident that such proprietors are not looking for cheap men or aiming at a low daily wage rate. "It is not a reduction of wages that we seek, but a reduction in cost," as one speaker put it, and his instructions to his superintendent and foremen have been, not to reduce wages, but to make wages and shop conditions better than his employees could get in other shops. No better proof can be given of the honesty of the position assumed by an employer who takes issue with the union than that he maintain the same policy after he has freed his plant from union domination that he was willing to pursue in the intermediate or strike period, when the outcome of the struggle was not so clear. There is wisdom in the counsel now given the members of the National Founders' Association by their officers, which is in effect that future conditions in their shops will depend on the future attitude and performance of the employers.

If anything has been learned by the labor conflicts of the past 10 years in the foundry industry, or in any industry, it is that any advantage secured by either side through sheer superiority of resources or through control of the situation due to temporary favoring conditions will remain with that side for only a time. The employer's title to peaceful relations with his employees and to steady and efficient operation of his plant must rest on the inducements he holds out to his workmen. Similarly the union's hold upon a shop must be something stronger than coercion if it is to continue. The unions, if they could guarantee an employer the best workmen and the largest output of good product, would make such an inducement to him to co-operate with them as could not be strengthened by any closed shop agreement. The weakness on both sides is the effort so frequently seen to hold the whip hand, without regard to mutuality of benefit.

## The Flow of Steel Through Consumption.

The steel industry has in recent years reached such magnitude that the present and prospective movement of some forms of its products can be studied with considerable confidence. Thus there is an aggregate of millions of tons of structural steel involved in office buildings, and a considerable proportion of the total urban population spends a part of each business day in such structures. There is an output of from 500,000 to 600,000 gross tons of tin plate annually, the great bulk of which is absolutely consumed within a twelvemonth or so after production. A very large tonnage of pipe, both steel and cast iron, is buried each year for the conveyance of water and gas. About 35,000 to 40,000 tons of cotton ties are manufactured annually, to pass through a short life in that form. For many years the annual tonnage of steel rails has run into the millions, while of late years the tonnage of light rails has run into the hundreds of thousands.

The conditions surrounding the employment of some of these large tonnages can be studied, in the light of available statistical information, to considerable profit, particularly as a help to forecasting future demands upon the steel manufacturing and reworking industry.

One must avoid the conception, on the one hand, that steel once made and used for the purpose intended is lost from the reckoning through being absolutely consumed. Another extreme view must be avoided, that steel once made and used is put into permanent employment and will not require replacement or renewal. Each product or use must stand by itself. The great bulk of some material, like tin plate and fence wire, is absolutely lost; a large bulk of other material, like fabricated steel in bridges and office and hotel buildings, is destined for a very long life without disturbance; how long, even the engineers with accurate data bearing on some phases of the problem cannot estimate.

Another part of the steel produced undergoes a more or less regular flow through consumption, returning to obtain a fresh lease on life through rerolling or remelting. The tendency toward such a movement on the part of steel rails has long been recognized, but by a passing glance rather than with careful scrutiny of the features. It is said, in a general way, that rails are wearing out and have to be replaced. No such generalization is useful, because there has not been opportunity, through actual contact, for the trade to become familiar with the movement. There has not been such experience, over a period of years, of rails wearing out, as would be any guide whatever to the future. In the first place, the movement of rolling stock over the rails has been undergoing a very rapid increase. The ton mileage of freight moved over the railroads in the fiscal year 1907 was just one-fourth of the ton mileage in the ten years 1890 to 1899, inclusive, so that rails are, roughly speaking, being worn out two and a half times as fast as they were only a few years ago. Then, again, it takes quite a while to wear out a rail, and if the road is not much used, and has been laid with standard rails within a decade or two, it may be long before it wears out any considerable percentage of such rails. The Middle States have a freight ton-mileage per mile of road more than five times that of the Southwestern and Pacific States.

There is no evidence in the mere amount of demand experienced for rails as to what condition caused the demand, or as to what end the rails are to serve. It is not

difficult, however, to take stock and to approximate, roughly, the position. Production, imports and exports, have been as follows since steel rails were first made:

*United States Steel Rail Statistics to January 1, 1908.*

| | Gross tons. |
|---|---|
| Production | 54,300,000 |
| Imports | 1,600,000 |
| Total | 55,900,000 |
| Exports | 3,000,000 |
| Balance | 52,900,000 |

The figures above do not, of course, include iron rails. The use of iron rails is practically a closed incident. Something like 10,000,000 tons of iron rails have been laid in this country and less than 1,000,000 tons survive.

The 52,900,000 tons of steel rails put into use in the United States include a quantity, probably somewhat less than 1,000,000 tons, of rerolled rails, thereby constituting a duplication in the summary. Only in the past 10 years more than 2,000,000 tons of rails lighter than 45 lb. per yard has been rolled, including the major part of the rerolled rails. Light rails, however, have figured largely in the exports. Then there has been a considerable tonnage of rails which has not gone to railroads, but has been used in various industrial operations, so that it seems fair to make deductions from the above total and to proceed on the assumption that there have been furnished to the railroads a round 50,000,000 gross tons of steel rails. Has much of this tonnage worn out, or is it just beginning to wear out, with a freight ton-mileage in 1907 more than double that of 1898?

On December 31, 1907, there was in existence 314,713 miles of standard steam railroad track laid with steel rails, and 38,812 miles of electric, cable, elevated and horse car track, presumably laid with steel rails. It would be very convenient to know the average section of rail in this track, so that the tonnage in existence could be subtracted from the tonnage furnished, leaving a close approximation to the wear, but such information is not available, and it is necessary to proceed in the other direction, and see what would be the section if no steel had been lost. The 100-lb. section is convenient for reference. A mile of track in this section requires 157.13 gross tons of rails. Then we have:

| | Tons rails. |
|---|---|
| 314,713 miles of steam track | 49,455,000 |
| 38,812 miles of electric, &c., track | 6,100,000 |
| Total | 55,555,000 |

Of course it did not require the disclosure of this discrepancy to show that the average section is not 100 lb. There would be involved 5,555,000 tons more than we started with. Reducing the average section by 10 per cent., to 90 lb., would bring us out exactly even. The average section is less than 90 lb., and there has been some wear. The amount of wear of steel rails necessitating replacement, on all the steam and other roads of the United States since steel rails were first laid, is represented by the percentage of 50,000,000 tons by which the average section is below 90 lb. It may be 10 per cent. or 20 per cent., 5,000,000 tons or 10,000,000 tons; it is doubtless within those limits, and leaves between 40,000,000 and 45,000,000 tons in actual service. This includes the electric and other roads not steam roads, while on the other hand, it excludes 9320 miles of steam railroad track which is still in iron rails.

It is obvious, then, that there has been no wear and replacement of steel rails, in the country at large, which would constitute any guide to the future. Some index may be found, however, in the case of an individual operation where the conditions may be scrutinized. The Pennsylvania system, embracing 11,176 miles of road, with a ton-mileage in the calendar year 1907 of 37,674,511,903, nearly one-sixth that of the entire country, furnishes some interesting data. Railroads in general have been replacing light rails with heavier rails; the rail taken up may not be worn out, but merely too light, while if worn out the new and heavier rail will not wear out so quickly. The Pennsylvania has more nearly passed out of that stage than have most roads, most of its replacements being of rails which were worn out and were not too light. It gives annual statistics of the rails used for replacement, these averaging, in the four years ending December 31, 1907, 138,085 tons a year, while the freight ton-mileage in the same years averaged 31,307,000,000. The Pennsylvania, then, has laid a ton of rails for every 226,720 ton-miles of freight traffic. It may be wearing out rails faster now than it did a few years ago; but, on the other hand, it did replace some lighter rails with heavier rails, and got its tracks in such shape that this year it has had to do very little replacing. Dividing the freight ton-mileage of the entire country in the year of heaviest traffic yet experienced, 233,138,000,000 in the fiscal year 1907, by the factor just found, the quotient 1,028,300 is obtained. Rail wear, then, has some fairly close relation to 1,000,000 tons a year, with the heaviest traffic yet experienced.

If the quality of rails is greatly improved, the wear may be less, while if traffic increases much the wear will be more. There is a prospective flow of steel through consumption as rails of something like 1,000,000 tons a year. The rails as taken up will weigh, perhaps, 15 per cent. less than when laid, representing the actual dispersion of something like 150,000 tons of steel a year. That steel will never be regained. The remainder will be available for rerolling into light rails, reinforcing concrete bars, bedstead, windmill and other sections, &c., and for remelting.

As this case of rail wear is one of coacting surfaces, it may be interesting to note that while the car wheels, having a very hard tread, lose relatively little metal, they do wear out from the rolling friction and the braking, and as they can spare very little metal, probably less than 3 per cent., or less than 25 lb. for a 700-lb. wheel, they come back rather quickly. Freight car mileage statistics for the entire country are not available, but dividing the ton-mileage mentioned above for 1907 by an approximation of the average load, loaded and empty, it appears that the freight car mileage was about 16,000,000,000, and multiplying this by the number of wheels per car and dividing by 70,000, an estimate of the life of a wheel which wears out gives 1,830,000 as the number of wheels which would wear out normally under such traffic. To this should be added an estimate for breakages, indicating that with the continuance of such traffic more than 600,000 gross tons of car wheels annually would be rendered unfit for service. The flow has been large right along, but has attracted little general attention, as it is almost wholly from railroad to wheel foundry and back again. If steel wheels should be generally adopted more of the flow would likely be through the general market, as there would not be the same incentive for a steel wheel manufacturer to use old steel wheels as exists in the case of the cast iron wheel foundry.

The iron and steel trade has but lately arrived at a point involving these large tonnages. The pig iron production of 1907 was more than double that of 1898, only nine years earlier; the steel production of 1907 was much more than double that of 1900, only seven years earlier, while the doubling of the open hearth steel output required only five years. The output of structural material doubled in seven years to 1907, while the doubling

in wire took 10 years. These varying movements place the industry continually in new aspects. It is evident that one of the great movements of the future will be the flow of steel through a form of consumption and back into the rolling mill or furnace.

## The Buying of Battleship Machinery.

Should the Navy Department decide to construct the machinery for the battleship Florida at the New York Navy Yard, as reported to be the probable outcome, there will be good ground for criticism. Under the provisions of the act authorizing the construction of two first-class battleships, it is required that one of the vessels be built at a Government yard, but it is understood that the authorities have the option of awarding the machinery contract to private manufacturers. If this alternative exists, and the Department persists in excluding the private bidder, few engineers would maintain that there can be any outcome but waste of money and probable delay in time of completion. There can never be any advantage in the manufacture of highly specialized equipment in shops which are not specially fitted for the purpose and by men who have not had the experience necessary to become experts in the work.

The engines which will propel this battleship will be of the turbine type. It is not to be presumed that the navy yard engineers have the knowledge of the newer types of marine motors that is possessed by those men who have developed them to the point of practical usefulness in large units. The expense of costly machinery with which to fashion them is a factor, and so is the matter of patent rights. The additional cost of labor resulting from the eight-hour rule for Government employees and their lack of experience on special classes of work are by no means negligible quantities. Ultimate results are very important; machinery must be perfect in detail, else one of the four splendid ships of the new class already provided for will be seriously handicapped in active service. And, as already mentioned, time of construction is considered by naval men a very essential consideration. The Government has built one battleship at Brooklyn, the Connecticut, a much smaller vessel than the Florida, with reciprocating engines of considerably smaller power. The time of construction closely approximated that of a contemporaneous ship built by private enterprise. But a new record of building has been established under the contract system. The recent accomplishment of the Fore River Ship Building Company with the North Dakota, of 282 working days from laying of keel to launching, has demonstrated what may be looked for in the future in American yards. Experience and specialized effort have made possible these strides toward records now commonly made in the building of British ships. It is hardly to be expected that the navy yard will do as well; probably the most ardent advocate of Government construction of warships will feel little confidence that the naval engineer will be able to overcome the handicaps with which they must be surrounded in the work.

There is really small argument for the building of machinery for battleships in a navy yard. If the logic of the contention were sound, to be consistent the Government should continue the scope of its work through the specialized products, even to the machine tools which go into the battleship's repair shop, and the electrical apparatus and the hundreds of minor details of the equipment which are always purchased. The engineers of the great private works which build engines are, as a matter of course, better able to handle large problems of manufacture than the engineers of the navy, whose training must be somewhat that of jack-of-all-trades rather than of the specialist, as the word is understood nowadays.

Then again there is the persistent consideration, which is a strong one, that the Government is under obligation to the private concerns which have built up great establishments for the building of warships, just as it is under obligation to the manufacturers of armor plate. The present condition of the shipbuilding industry in this country, due to the existence of ship subsidies and lower wages in other maritime countries, and the absence of Government assistance to the merchant marine of the United States, makes it almost imperative that the Government give its business to the private yards, if they are to continue in the business. They are important adjuncts of the country's naval establishment. In time of war their absence would be a very serious matter. They are the bidders for the Florida's engines. On the other hand, it has not been shown that the nation saves money or gains in any other way in building its own ships. Even if it were true that it is a good policy once in a while to demonstrate or improve the efficiency of a naval station by the construction of a warship, the work should be rather one of assembling than the undertaking of the work complete, as it is included in the contract to a private yard. Where Government works are established on a scale sufficient to supply the greater part of the demand, as is the case with the gun factories, arsenals, the anchor and chain and the rope works, private capital is not needed to help out excepting with certain appurtenances or under somewhat exceptional conditions. But there would appear to be no necessity for the Government to enter into competition with its established manufacturers for its marine engines and other machinery which it cannot undertake to build on a large scale for all of its requirements. The naval engineer must borrow ideas; they cannot hope to originate much that the experts in the various branches of machine design have not already accomplished. If such is the case, the logical conclusion is that private establishments should be permitted to reap the rewards of their initiatory labors and investment, and the workmen they have trained as specialists be allowed to earn the wages which Government contracts would bring to them.

The C. & G. Cooper Company, Mt. Vernon, Ohio, is installing two tandem compound steam engines of 3000 hp. each in the plant of the American Steel & Wire Company at Braddock, Pa., and is also installing two 4000 hp. and one 2500 hp. tandem compound engines in the rail mill of the Edgar Thomson Works of the Carnegie Steel Company at Bessemer, Pa.

The Watertown Engine Company, Watertown, N. Y., has been reorganized under the name of the New York Engine Company and will be operated as an adjunct to the New York Air Brake Company, and under the same management. It is understood that a little later its plant will be equipped for the manufacture of electrical apparatus used in connection with the airbrake business.

The Northwestern Equipment Company, St. Paul, Minn., is establishing a branch office at Minneapolis where, in addition to electric supplies, engines, boilers and electrical machinery of all kinds will be handled.

The Erie City Iron Works, Erie, Pa., manufacturer of steam engines, boilers and feed water heaters, has received since the election orders for 244 boilers of various sizes and styles.

# TARIFF HEARINGS AT WASHINGTON.

## Written and Oral Statements on the Metal Schedule.

After preliminary meetings at Cleveland, Pittsburgh, Philadelphia and other leading producing centers during the past week, there were more general conferences of iron and steel manufacturers in New York on Monday and in Washington on Tuesday, Willis L. King of Pittsburgh guiding the deliberations. The object was to select the representative producers who were to place before the Ways and Means Committee the arguments bearing upon the different branches of the industry. It will be observed from the following list that experienced iron and steel makers were chosen, but that there are not included in it any of the officers connected with any of the different subsidiary companies of the United States Steel Corporation:

WILLIS L. KING, vice-president Jones & Laughlin Steel Company, Pittsburgh, for steel shapes, plates and bars.

F. S. WITHERBEE of Witherbee, Sherman & Co., New York, for the Eastern ore producers.

WILLIAM MATHER of Pickands, Mather & Co., Cleveland, Ohio, for the Western iron ore producers.

JOSEPH G. BUTLER, JR., of Brier Hill Iron & Coal Company, Youngstown, Ohio, for pig metal, scrap and ferroalloys.

JOHN A. TOPPING, chairman Republic Iron & Steel Company, Pittsburgh, for billets, blooms, slabs and sheet bars.

E. C. FELTON, president Pennsylvania Steel Company, Harrisburg, Pa., for steel rails.

EDWARD BAILEY, president Central Iron & Steel Company, Harrisburg, Pa., for steel sheets and plates.

ISAAC M. SCOTT, president La Belle Iron Works, Steubenville, Ohio, for steel sheets.

W. J. FOLLANSBEE of Follansbee Bros. Company, Pittsburgh, Pa., for tin and terne plate.

J. A. CAMPBELL, president Youngstown Sheet & Tube Company, Youngstown, Ohio, for pipe and tubular products.

CHARLES ROEBLING, president John A. Roebling's Sons Company, Trenton, N. J., for wire and wire products.

WILLIAM G. PARK, chairman Crucible Steel Company, Pittsburgh, Pa., for crucible steel.

WALLACE H. ROWE, president Pittsburgh Steel Company, Pittsburgh, Pa., for hoops and cotton ties.

JAMES LORD, president American Iron & Steel Mfg. Company, Lebanon, Pa., for iron bars.

WM. L. WARD of Russell, Burdsall & Ward Bolt & Nut Company, Port Chester, N. Y., for bolts and nuts.

It is understood that the Ways and Means Committee is desirous particularly to obtain data bearing on costs, but since only a short notice was available to the producers, it is likely that briefs more formal in their character will be submitted later on. These may be filed until December 4, to be included in the printed record of the committee.

The steel schedule is attracting a good deal of attention, and the situation has been very much complicated by the publication of abstracts of an article to appear in the *Century Magazine* from the pen of Andrew Carnegie. The report was current that Mr. Carnegie had come to Washington at the invitation of the committee and for a while the steel manufacturers were on the tiptoe of expectation. It is idle to deny that Mr. Carnegie's article has had a very serious effect upon the popular mind as bearing upon the question of just rates of duty and that no amount of expert testimony is likely to efface the conviction that Mr. Carnegie is justified in his statement that steel can be produced in this country as cheaply or more cheaply than anywhere in the world. Mr. Carnegie has not been connected with the industry for years and has not kept pace with developments which have been most striking in Germany. It is pretty well understood by those who are familiar with conditions on both sides of the Atlantic that the fighting cost, adding freight to tidewater shipping port, to supply the world's neutral markets is lower in certain districts both in England and in Germany.

C. K.

### MR. CARNEGIE DECLINES TO APPEAR.

WASHINGTON, D. C., November 25, 1908. (*By Telegraph.*)—At the opening of the hearing on Schedule C, Metals and Manufactures Thereof, before the Ways and Means Committee this morning, Chairman Payne made public the following correspondence:

NEW YORK, November 24, 1908.

Hon. Sereno Payne, chairman Tariff Committee, House of Representatives, Washington.

DEAR SIR: Thanks for your kind invitation to appear before your committee upon the pending tariff changes. I have served my full time in Washington upon tariff matters and beg to be excused from further service in that direction. I am no longer in business, and in my *Century* article, companion to that of "My Experience with Railway Rates and Rebates," I have said all that I have to say upon the subject. Manufacturers will appear before you from whom you can obtain required details. Reading the comments upon my article by various distinguished gentlemen in Washington, as published in yesterday's *Tribune*, I see they have not yet read the article itself, but only a few striking extracts separated from the context. When you read it you will discover that my faith in protection, wherever it is proved to be necessary, is as strong as ever, and that I continue also to believe that the surest way to secure needed protection is to reduce protective duties from time to time and finally abolish them when no longer needed. Pursuing this policy, our party has already reduced the duty upon steel rails from $28 to $7, and other duties in greater or less degree. The McKinley tariff, which made great reductions, is a case in point. It would prove false to its history and its pledges if it failed now. In the most critical times the protective policy has received indispensable aid from patriotic Democrats in Congress, as I have shown. This is as it should be. Duties upon imports should cease to be a party question. Only what is best for our common country should be thought of. I attach supreme importance to the maintenance of present duties upon luxuries used chiefly by the rich, not from the protective, but from the revenue point. Special attention is required to the revenue needs of the country these days to meet increased expenditures, and as far as I know none can be obtained with so little pressure upon the people as the two hundred and odd millions now flowing into the treasury from such articles.

Yours, as a true protectionist,

(Signed) ANDREW CARNEGIE.

TO MR. ANDREW CARNEGIE:

DEAR SIR: Your letter of the 24th inst. received. I regret that you decline to come before the committee, as we are anxious to get all the information possible upon this schedule, as upon all other schedules of the tariff. You were invited because we thought you could give, in answer to questions, further information than that contained in your article. We are seeking all the information possible from every intelligent source and welcome the attendance of any citizen, whatever his views may be upon the question of tariff rates. Of course the committee in adjusting rates must be governed by the facts presented. As I shall give out your letter for publication to-day, I may also give out a copy of this letter to be published with it, as I wish the widest publicity given to the fact that this committee is anxious to get all the information possible upon any phase of the tariff question. Yours very truly, SERENO PAYNE.

The first witness on the iron and steel schedule was Willis L. King of the Jones & Laughlin Steel Company, Pittsburgh. His statement was followed closely by the members of the Ways and Means Committee, of whom there were present Messrs. Payne, of New York, chairman; Dalzell of Pennsylvania, Boutell of Illinois, Hill of Connecticut, Calderhead of Kansas, Needham of California, Gaines of West Virginia, and Longworth of Ohio, Republicans, and Clark of Missouri, Cockran of New York, Underwood of Alabama, Griggs of Georgia, Pou of North Carolina, and Randall of Texas, Democrats.

### STATEMENT OF WILLIS L. KING.

The statement of Mr. King is as follows:

"As I am the first of the iron and steel manufacturers to appear, I would like to say that it was only possible to get a rather full meeting of the steel manufacturers, and the different interests connected therewith, in New York yesterday, and it was decided to accept the invitation of the committee to come down here and give them what information we could in the formation of another tariff schedule. Bearing in mind the request of the committee that a large delegation be not sent, one man was selected from about each of 12 or 15 different branches that will appear here to-day.

"For myself I represent the corporation of Jones & Laughlin Steel Company of Pittsburgh, which manufactures largely steel bars, plates, &c. I would like to talk with your permission on these articles. For some reason which

does not appear to me, the tariff of 1897 placed steel bars, a finished product, in the paragraph with blooms and billets and other semifinished products, taking a duty of three-tenths of a cent a pound when valued at 1 cent per pound or less, and four-tenths of a cent per pound when valued above 1 cent and not above 1 4-10 cents per pound. There is no good or valid reason at present for the difference between the duty on steel and iron bars, and I would ask, on behalf of our company and the other manufacturers whom I have consulted, that the minimum duty on steel bars be advanced to four-tenths of a cent per pound instead of three-tenths of a cent.

"I would say, however, that I am a little unfortunate in asking for an advance on the first article in the schedule that I am talking about, but I want to assure the committee that I heard the discussion among the other manufacturers in New York yesterday, and they came here prepared to make recommendations for large, and in some cases radical, reductions in the present tariffs in their lines. So I do not want you to feel that all the steel manufacturers here ask for increase in duty.

"I am advised by recent cable quotations that steel bars can be purchased within a few days at at least 1 cent per pound f.o.b. vessel, at Antwerp. The freight is practically 8 shillings or $2 a ton, which would lay them down at New York at 1 1-10 cents per pound, and adding the duty at present of three-tenths of a cent per pound would make the price of Belgian bars in New York, duty paid, 1 4-10 cents per pound, which is less than the low price of the American or domestic product to-day. That is the reason why I think the duty on these should be advanced. Another reason for the advance asked for is the danger of foreign makers dumping this product at prices much less than their home market at times when we most need the tonnage to keep our mills running and our labor employed. Before going to plate and structural iron, perhaps it would be better for you to ask me any question that may occur to you and which I will try to answer."

Mr. Dalzell: "This is an improper classification in the present tariff?"

Mr. King: "I think so. I think that a finished product ought to be taken out of the unfinished class and put in the finished products class. In fact, it ought to be in with iron bars, although iron bars, I think, require a larger proportion of labor. And while I do not speak for the manufacturers of iron bars, it may be possible that they think that reducing the duty from six-tenths of a cent, as it is now, to four-tenths of a cent would be too much of a reduction. I think they perhaps would be justified in asking a larger duty on iron bars on account of the larger amount of labor that is spent upon them than upon steel."

The Chairman: "Then there are inequalities in the iron and steel bar schedules?"

Mr. King: "At the present time yes."

The Chairman: "They are not properly classified, and you suggest that it be classified with what?"

Mr. King: "With iron bars; that steel bars should be put in the same paragraph with iron bars, they both being finished articles."

The Chairman: "Would that lower or raise the duty?"

Mr. King: "I am asking for four-tenths of a cent on steel bars. If iron bars were put at the same price, that would lower the iron bar duty two-tenths of a cent a pound, or $4 a ton. But I qualified that statement by saying that I hardly thought it was fair to reduce the iron bar schedule to that point, because there is more labor expended in the manufacture of iron bars than of steel."

Mr. Boutell: "The present duty of three-tenths of a cent a pound on steel bars under the Dingley law is the same exactly that it was on the preceding law, the Wilson law."

Mr. King: "I did not happen to know that."

Mr. Boutell: "It is therefore the same duty that has been in existence now for 14 years."

Mr. Underwood: "As a matter of fact, therefore, the iron and steel schedule is the same to-day as it was under the Wilson bill, is it not?"

Mr. King: "Well, I happen to know of some articles that were in the same schedule, but I really have not compared them all."

Mr. Boutell: "Girders are less and cast iron pipes are less than under the Wilson bill."

Mr. Underwood: "I want to ask you this question in reference to a comparison with the steel industry. I want to know what is the production of steel bars in the United States."

Mr. King: "It is the largest single article produced in the United States, and I presume that that holds true over the world; that is, that there are more bars made than any other single thing. I would say that the combined product of steel and iron bars would be 5,500,000 to 6,000,000 tons. I am speaking now of normal times."

Mr. Underwood: "I will ask you some questions with reference to the year 1907, because of course we all recognize that the panic condition prevailing in this country now is not a condition upon which to base an estimate. So I will consider the question that I ask as relating to the year 1907. The total production of bars in this country amounts to 5,500,000 to 6,000,000 tons. What is the amount of total importation into the country?"

Mr. King: "Comparatively small. I have not the exact figures."

Mr. Underwood: "I see here, in this compilation that I have before me, that the importations are given, under the total heading for billets, blooms and bars, as 41,000,000 lb., which would only amount to 20,000 tons. That includes billets as well as bars, so that the total importation of billets under the present tariff is very slight, is it not?"

Mr. King: "Yes, sir."

Mr. Underwood: "So that the present tariff is practically prohibitive."

Mr. King: "Only at times."

Mr. Underwood: "Of course, but at most of the time it is practically prohibitive. When you compare 20,000 tons imported with 5,500,000 tons manufactured here, it is practically prohibitive, is it not?"

Mr. King: "It was in that year, of course, because the foreign makers had all they could do to attend to their home markets, just as we had here. They could get better prices there than by sending to this country."

Mr. Underwood: "As to whether, in theory, this was placed in a tariff for revenue or placed in the tariff for protection, I will ask you: The iron and steel interests of this country believe in a prohibitive tariff?"

Mr. King: "They believe in a protective tariff."

Mr. Underwood: "Well, I know, but do they believe that a protective tariff is a prohibitive tariff?"

Mr. King: "Not necessarily, I think."

Mr. Underwood: "The year we have been figuring on, 1907, was the year of the highest prices in iron, and the year that would most likely invite importation."

Mr. King: "Not when their home market was equally as high."

Mr. Underwood: "The price of iron has greatly dropped since that time."

Mr. King: "It has, yes."

Mr. Underwood: "And the price of iron being so much lower, it would not invite importation as readily as on a high priced market."

Mr. King: "No, it would not invite it."

Mr. Underwood: "In other words, the principle has always been followed in all trades that when the home market is high the price for the imported product is high, and the imports are larger than when there are hard times and the home market is dull. That is the universal rule, is it not?"

Mr. King: "To some extent, unless there are some other circumstances. The point that I am trying to make plain is that they have practically the same provisions that we have."

Mr. Underwood: "Do they believe it stands on the same basis of true protection at all if it is a prohibitive tariff?"

Mr. King: "Yes; I think they do."

Mr. Underwood: "Don't you think that, when the tariff question comes up that question of revenue to the Government should be considered as well as the industry?"

Mr. King: "I think that there is something more important than that to consider: the rate of wages we could give to our workingmen here, labor being something like 90 per cent. of our costs. I think it is generally believed and recognized that labor is 90 per cent. of everything produced at a profit when the cost of material is taken out."

Mr. Underwood: "Is that so in the production of steel?"

Mr. King: "I think so."

Mr. Underwood: "Is not the cost of machinery a very much larger factor in the production of Bessemer steel than wages? When you bring the raw iron from the furnace to the bar in the Bessemer converter, is not the cost of labor a very small item in comparison to the cost of your investment, your capital and your interest on the investment?"

Mr. King: "Very small at that point, but I am taking labor at the mines, transportation and everything that labor is into, coal, coke and everything of that sort."

Mr. Underwood: "You recognize that when you plant a grain of cotton seed that from that time on down to the finished fabric it is all labor. Now, taking our basic material in each industry and considering the cost of the basic material in each country, and from the raw material or basic material the cost of labor added, what is the difference in the cost of labor between this country and that of English or Belgian producer, as well as the German producer?"

Mr. King: "I am very sorry, sir, that we have not that information, but we expect to give it to you later. But you probably appreciate that that is rather a difficult thing to get accurately, and we have not got it and have not had the time to get it since we had the call for this meeting. If you will permit me to say, we expect to get that information and give it to you in writing."

Mr. Dalzell: "You will file a brief hereafter?"

Mr. King: "Yes, sir."

Mr. Underwood: "The committee desires to have the brief, and all information it can get; but I wanted to make a comparison with you on these questions. I certainly wish to be correct."

Mr. King: "I will be glad to do what I can in that direction."

Mr. Underwood: "You say that you are entitled to this protection not from the question of revenue, but from the question of labor. Therefore, of course, the cost of labor here and abroad is a material question. Now, to figure it so that we can carry it easily, what is the cost of a ton of this bar steel, the run of the mill in 1907?"

Mr. King: "I would say, roughly, about a cent a pound."

Mr. Underwood: "That would be $20 a ton?"

Mr. King: "A net ton of 2000 lb., and that would relate to 1907, when we were running full and under the most favorable conditions."

Mr. Underwood: "That is the cost price, or the selling price?"

Mr. King "That is as near the cost as I can give."

Mr. Underwood: "Do you know of any of this bar iron being laid down in New York for sale at all, or at any other Eastern port in 1907?"

Mr. King: "I think so, but I could not give you instances. During the great demand for materials, there was some—I know—structural material, plates, coming into the country, and I believe there was some imported into Boston."

Mr. Underwood: "Do you know what the selling price in Boston was, with the duty added at that time, 1907?"

Mr. King: "Well, it would probably have been—the English and the German prices were higher then, of course—but I would say, it would be 1¼ cents over there now instead of 1 cent; $5 a ton more."

Mr. Underwood: "You have given me the American cost of production as $20 a ton, and I would like to get the foreign selling prices in Boston or New York, with duty added."

Mr. King: "Well, as near as I can get to it, I think it would have been $30 a ton in 1907; I think about that."

Mr. Underwood: "Now, how much of that foreign selling price was freight, how much duty, how much profit and how much labor; or, in other words, how much labor was there in a ton of that foreign selling price, of that $30 a ton?"

Mr. King: "I cannot give you that; I haven't the figures with me—the figures of foreign labor."

Mr. Underwood: "Well, how much was labor in the $20 ton of home production, at cost; the labor at your factory; and how much in the raw material or basic material at your factory?"

Mr. King: "Well, I would like to give this to you subject to correction, because only from memory. I would say $5 or $6 a ton, with labor restricted as you have named it."

Mr. Underwood: "Now, if you added the labor on the raw material that come from the mines, how much additional would that add to it? Upon a ton of pig iron that would mean about a ton and a third of coke and about two tons of ore at the outside, about that. How much would that labor amount to?"

Mr. King: "I have a memorandum here of the labor cost on 1 ton of finished material, including the ore and coal labor, of $8.25."

Mr. Underwood: "That gives the entire labor cost $8.25?"

Mr. King: "I want to make my position plain, that this is going into the labor of the mining of the ore and coal, making the coke, putting through the blast furnace and the finishing mills: but I cannot go back of those."

Mr. Underwood: "That is all labor up to the point of production, and that includes every bit of it—$8.25."

Mr. King: "Yes."

Mr. Underwood: "Have you any idea in this business as to what is the difference in the cost of labor abroad and at home? You state that you do not know the exact amount, but do you know the percentage of the difference?"

Mr. King: "Well, you can arrive at that, I think, by the selling prices, to some extent. I would say, generally speaking, that their labor on a ton of steel did not amount to more than 60 per cent. of ours."

Mr. Underwood: "That would make their labor about $4.35 on a ton, or make a difference of $3.90 in labor between the entire cost of European production and the American production?"

Mr. King: "Yes."

Mr. Underwood: "The duty on a ton of this is $6. The difference between the cost of American labor and foreign labor is $3.90; therefore it would be $2.10 under the present scale of protective tariff over and above the labor price."

Mr. King: "That seems to be about right."

Mr. Underwood: "The present tariff is prohibitive, practically prohibitive, because there is only 20,000 tons imported, as compared with 5,500,000 or 6,000,000 tons manufactured. Now I want to ask you if under these circumstances you think the committee would be justified in increasing this duty?"

Mr. King: "I certainly think so. You could not get along on $2 difference in labor. You certainly ought to give us some profit."

Mr. Underwood: "Of course you ought to have some profit, but you wanted the duty based upon the labor cost. You have only 40 per cent. of duty in excess of the labor cost, with a very small importation of this bar into this country, 20,000 tons, and which could not seriously affect a market producing 5,500,000 or 6,000,000 tons, could it?"

Mr. King: "There is a reason for that small—no, I do not think it could—but there is a reason for that small importation. One reason is that it is not very profitable to order abroad, for, in the first place, the buyer must put up his money first; he must take his chances of getting the class of material that he orders, or the sizes being right, and the quality; and if they come here wrong, there is no redress; he has got to take it, for he has paid his money. Then, of course, we must take into consideration the time it takes to get the material into this country, which is an important factor. That, I think, is the principal reason why a great deal more material has not been imported; the trouble in doing it, and the risks involved."

Mr. Underwood: "As a matter of fact, there are no importations coming in at all now, are there, of the English bars?"

Mr. King: "A few."

Mr. Underwood: "So, as a matter of fact, you practically had no competition from abroad, and you had largely an excess of protection already on your labor cost, and yet you say that the market is dull. I want to ask you if it is not due to the fact that there is overproduction in the United States in the home market and not competition?"

Mr. King: "Not in normal times. There is this year, certainly."

Mr. Underwood: "That is true in normal times, however. In 1907 you made a fair profit on steel bars, did you not?"

Mr. King: "Yes, sir."

Mr. Underwood: "And you could do it again in normal times?"

Mr. King: "I think so."

Mr. Underwood: "And you cannot do it now because there is overproduction in the home market?"

Mr. King: "Yes, sir.

Mr. Underwood: "Then, if you have any reason to give why you, under those conditions, have asked this committee to raise this tariff, I would be glad to hear from you."

Mr. Cockran: "One moment, please, before coming to that. Your firm of Jones & Laughlin is practically in the steel combination, the United States Steel Company, is it not?"

Mr. King: "Not at all, sir. We are entirely independent."

Mr. Cockran: "It is a competing company?"

Mr. King: "A competing company; yes, sir, entirely."

Mr. Cockran: "Now you stated a moment ago that some structural steel came in at Boston during the last year."

Mr. King: "Yes, sir; and more recently two cargoes at San Francisco, within a week."

Mr. Cockran: "I was about to ask with reference to that. There was a special demand for steel at San Francisco following the fire, was there not?"

Mr. King: "Not as much as you would suppose there was."

Mr. Cockran: "Of course, everything is exaggerated, but there was a large demand, was there not?"

Mr. King: "Yes, sir."

Mr. Cockran: "Did that demand operate to bring in much foreign steel?"

Mr. King: "Yes, quite a good deal."

Mr. Cockran: "How much was brought in?"

Mr. King: "I think possibly a third of what was used there—a quarter to a third."

Mr. Cockran: "How much was there in tons?"

Mr. King: "I could not, from memory, give you the exact figures, but I do happen to know that there are dealers out there who keep a stock of foreign steel, and it is coming in all the time."

Mr. Cockran: "Can you tell us whether these steel bars imported to meet the San Francisco demand were landed in San Francisco or were they landed in New York and transported by rail to San Francisco?"

Mr. King: "They were landed in San Francisco, and that is a point I am glad you mentioned, because we need a great deal more protection in San Francisco, on the Pacific Coast, than we do on the Eastern coast. There is a very low rate there; they get their product on vessels, and I am informed that they can ship from Antwerp to San Francisco at 35 cents per 100 lb., which would be, say $7 a net ton. Our rate out there, from Pittsburgh or New York, via rail, would be $15. Therefore, that is a favored place for the importation of steel, the Pacific Coast, on account of the great difference in freight rate."

Mr. Cockran: "Your idea is to balance that favor by a corresponding inflation of the tariff?"

Mr. King: "I think we ought to be protected there, just as well as in the Eastern part of the country."

Mr. Cockran: "Your idea is that where there is an inequality in railroad rates, the rates for transportation, that it should be balanced by tariff imposition?"

Mr. King: "I think so."

Mr. Cockran: "Now, did you say that you could furnish us with the gross amount that was received at San Francisco during that period?"

Mr. King: "I think we can get that; I will try to."

Mr. Cockran: "And you think it must have been a third of the total consumption?"

Mr. King: "A quarter to a third, I would say."

Mr. Cockran: "We will be glad to know the probable amount of importation; but is there any means of ascertaining what the consumption of domestic steel was in San Francisco immediately following the fire?"

Mr. King: "I have no statistics on that."

Mr. Cockran: "Well, when you say a quarter or a third, you are not basing that upon calculation, but it is purely a guess?"

Mr. King: "That is really all."

Mr. Pou: "Do you export any of your product?"

Mr. King: "No, sir, excepting that I may make an exception in some highly finished—one little special cold roll shafting. We export a little to England, but with that exception we do nothing in the export line at all."

Mr. Hill: "You stated that there was a total production in the United States of about 6,000,000 tons of iron and steel. What was the proportion of iron to steel?"

Mr. King: "I would think that the iron was 1,250,000 to 1,500,000 tons, and the steel was the balance."

Mr. Hill: "That would make 4,750,000 tons of steel, and 1,250,000 tons of iron?"

Mr. King: "Yes, sir."

Mr. Hill: "What was the statement that you made in regard to the reduction upon iron and increase upon steel?"

Mr. King: "I made the statement that the present paragraph covering steel bars, where there was put in semi-finished material, was wrong, and that they ought to be in a class with finished material, such as iron bars."

Mr. Hill: "Did you not propose to ask for an increase to equalize it with the iron? It would then be unequal, would it not? The iron would still be two-tenths of a cent higher than the steel, would it not?"

Mr. King: "But I think it is entitled to a greatly higher duty on account of the greater amount of labor required in making a ton of iron than of steel."

Mr. Hill: "The only point I want get at was this; that you leave steel at six-tenths of a cent a pound. It makes no reduction on the iron, but does make an increase of one-tenth of a cent upon steel. That really what you come here and ask for is a net increase of one-tenth of a cent upon steel bars."

Mr. King: "Yes, sir."

Mr. Hill: "And that would be about $9,000,000 additional to the duty that is now charged on the entire product, which would be an increase of price of about $9,000,000 upon $130,000,000 of product. Is that what you ask for?"

Mr. King: "I do not believe that I have made myself plain. In the first place, we do not make iron bars, and do not want to speak for these people. The iron manufacturers will be heard later. I am only speaking for an increase on steel bars, because we make those, and we think that the present duty is too low."

Mr. Longworth: "I understood you to say at first that it was rather embarrassing to you to advocate increases."

Mr. King: "Yes; to advocate an advance on the first article that I mention."

Mr. Longworth: "But you propose to advocate others?"

Mr. King: "I do not propose to ask any advance on the balance."

Mr. Longworth: "That is all I wanted to know."

Mr. Clark: "You say you need more protection on the Pacific Coast than on the Atlantic Coast?"

Mr. King: "Yes, sir; on account of the freight rate."

Mr. Clark: "Do you know of any way of devising a scheme for one tariff on the Pacific Coast and another on the Atlantic Coast?"

Mr. King: "I do not. I think you will have to decide it."

Mr. Clark: "What you really want to do is to bring the Atlantic Coast up so that it will make you all right on the Pacific Coast. Isn't that what you want?"

Mr. King: "No, sir. There is more steel used in the Eastern part of the country than in the Western part."

Mr. Cockran: "You do not really care where it comes from, so long as you get the $9,000,000, do you?"

Mr. King: "We do not say that we should get it, but we think our workingmen should get it."

Mr. Cockran: "I understand. You are speaking now as a philanthropist on behalf of the workingmen, and you do not care who contributes the $9,000,000, so long as it is levied and collected?"

Mr. King: "I would rather the foreigners would contribute it than our home people."

Mr. Cockran: "I have no doubt that you have a philanthropic preference, but what you are after is the $9,000,000 additional duty?"

Mr. King: "Yes, sir. We think we ought to keep that."

Mr. Cockran: "That is what you want this committee to give you?"

Mr. King: "Yes, sir. We are also large manufacturers of structural material and plates, of steel, and these carry a duty."

Mr. Underwood: "Please give us the paragraph."

Mr. King: "Paragraph 125—beams, girders, joists, &c. They carry a duty at present of five-tenths of 1 cent per pound, and I propose to ask the committee, on behalf of our company and the other companies in this same line of business, that the duty be retained as it is, believing as we do that it is no more than an intelligent and proper duty for the protection of the American manufacturers and the workingmen."

Mr. Underwood: "Is that all you have to say on that particular schedule?"

Mr. King: "Yes, sir."

Mr. Underwood: "I would like to ask you what was the production in this country of beams, girders and joists in 1907."

Mr. King: "About 2,250,000 tons."

Mr. Underwood: "What did that production cost?"

Mr. King: "Well, they cost something more than bars on account of some extra work that has to be done on them in the way of straightening them, the extra cost of rolling and waste."

Mr. Underwood: "What would you assume that to be?"

Mr. King: "I would say $23 or $24 a net ton, under the most favorable conditions in 1907."

Mr. Underwood: "How much additional labor cost on this structural material over that of bars?"

Mr. King: "There is an extra labor in handling large and heavy bodies, straightening and shearing."

Mr. Underwood: "You gave the labor cost of the other at $8.25. What do you give the cost of labor upon this?"

Mr. King: "That labor cost that I gave of $8.25 was an average labor cost."

Mr. Underwood: "Now you say the production in this country is 2,250,000 tons."

Mr. King: "That is structural iron."

Mr. Underwood: "I notice that there are no importations given here in the statistics that I have."

Mr. Dalzell: "Yes, page 541, you will find that there was imported in 1906 98,588,475 pounds at a value of $1,085,230 and in 1907 there was imported 34,359,371 pounds at a value of $467,466."

Mr. Underwood: "Thirty-four million pounds were imported in 1907, which would amount to 17,000 tons, so there are imported 17,000 tons, against a production of 2,500,000 tons in this country?"

Mr. King: "The only reason why more was not imported was that they had more at home than they could do at better prices."

Mr. Underwood: "Then that schedule, as is the other schedule, is practically prohibitive, and it gives you over 90 per cent. of the business of the country. I notice that in the same year 1907 you exported $6,954,000 worth, and a large portion of that, so their statistics state, went to Canada."

Mr. King: "Yes, sir. I think that is right."

Mr. Cockran: "The duty is levied upon that product?"

Mr. King: "Yes."

Mr. Cockran: "And that difference is higher than the duty levied upon a similar product coming from England?"

Mr. King: "Yes, sir."

Mr. Cockran: "It is 33 1-3 per cent. higher?"

Mr. King: "Yes, sir."

Mr. Cockran: "And yet with these disadvantages, you are able to maintain successful competition in Canada?"

Mr. King: "Not at all times."

Mr. Cockran: "Of course, there are exceptions, but you can, generally speaking?"

Mr. King: "Yes, sir."

Mr. Cockran: "If you maintain competition with a foreign producer in Canada under these advantageous conditions, why can you not maintain competition near at home where you have the advantage in transportation to the market and where there is no duty levied against you as there is in Canada?"

Mr. King: "The duty in Canada is about as high as ours in this country; that is the American duty."

Mr. Cockran: "I understand that, and that is precisely what gives the point to my questions. You are able to maintain competition in Canada under the disadvantages of a differential tariff, a tariff that discriminates against you, amounting to one-third of the total amount of tax that is levied here, and yet I ask you why you cannot maintain competition in this country where there is no discrimination against you and where you have the advantage of being relieved from the cost of transportation altogether?"

Mr. King: "Well, it is a fact that we do sell cheaper in Canada, and I think all over the world, as a rule, than we do at home, for the purpose of keeping our mills going. There are times when it is an advantage to keep our mills going and our workingmen employed."

Mr. Cockran: "Did you not say a moment ago that you got exactly the same rates?"

Mr. King: "Not exactly, but practically."

Mr. Cockran: "Yes, the difference is between 'practical'

and 'exact,' would you just define that? What do you mean by 'practically the same' and 'exactly the same,' if the meaning is not identical?"

Mr. King: "I mean that they have in Canada what is called a dumping clause, to prevent material being sold in there, and we cannot sell in there. We cannot declare below 5 per cent. below the prices current in this country; in other words, they take our domestic price, and we cannot declare for a duty there at less than 5 per cent., or else the customer is subject to a large penalty for dumping. That 5 per cent., I think, would represent about the difference—I am trying to get at practically what I told you—that is, as to what I meant by 'practically'—that would represent the difference between the Canadian price and ours."

Mr. Cockran: "That 5 per cent. would not even equalize the discrimination in the tariff, would it?"

Mr. King: "To that extent that would."

Mr. Cockran: "It would only reduce it; it would not extinguish it. Now, to return to my question. In Canada you are able to meet competition successfully under conditions which impose upon you a discriminating tariff. In this country, where you have no such disadvantage of having to transport your goods across the sea, why can you not maintain competition equally well and even better?"

Mr. King: "Well, we cannot do it."

Mr. Cockran: "You mean to say that you do not want to do it, do you not?"

Mr. King: "We cannot, because the amount sold there is so small."

Mr. Cockran: "But that would increase it."

Mr. King: "I do not think it would."

Mr. Cockran: "Do you mean to tell us that it is cheaper to dispose of a larger amount than a smaller amount?"

Mr. King: "I mean if you sell a small volume at a lower price it does not affect you so much as if you had sold a larger volume at a small price."

Mr. Cockran: "You have stated that you sold practically all at the same price. The difference is simply 5 per cent., and that is your explanation. Surely it is not difficult to see that unless you can make a further explanation?"

Mr. King: "I cannot add anything different."

Mr. Cockran: "Then you can give us no reason beyond that, why production could not be maintained against foreign producers as successfully as it has been in Canada?"

Mr. King: "I would not want it to be put down just that way."

Mr. Cockran: "We do not want it to be put down unless it is the fact. Will you give us an additional explanation?"

Mr. King: "I come here after a long experience in the steel business, and I want to state that I believe in a protective duty for America, principally on account of the fact that it increases the wages of the workmen of America. I know that we cannot successfully compete with them on account of the handicap of high wages, large freight cost, &c. We cannot compete with the world in this home market unless we are protected."

Mr. Cockran: "Is there any other one on which you propose an increase?"

Mr. King: "I think not. I think they are all in line of reductions, or else retaining the present tariff."

Mr. Cockran: "Upon this particular schedule you wish to leave the rates as they are?"

Mr. King: "Yes, on beams, girders and plates."

Mr. Cockran: "What is called structural steel?"

Mr. King: "Yes; there are two schedules, paragraphs 125 and 126: one being for structural materials and the other for plates. I have grouped them together, and ask for the same duty on both."

Mr. Cockran: "Are there any others upon which you wish a reduction?"

Mr. King: "That is all I desire to talk about."

Mr. Cockran: "And upon the balance of the schedules you go into reductions?"

Mr. King: "Others are coming to represent them. I am only speaking for the material that we manufacture. There are a great many other lines that we do not go into. These gentlemen are here and ready to be heard."

Mr. Cockran: "I thought we were going to get the benefit of your views upon the reductions?"

Mr. King: "No; I do not think we ought to speak of that if we do not manufacture them."

Mr. Cockran: "That is, you do not want any reductions on anything that you produce?"

Mr. King: "No, sir; I ask for an advance of one-tenth cent on bars, and that the present schedule on plates and structural materials should remain as it is."

Mr. Cockran: "Oh, I see. When you were talking about your embarrassment at the beginning you were speaking of the order of presentation and not to the subject of presentation."

Mr. King: "I felt embarrassment that I should start off before this committee by asking an advance."

Mr. Cockran: "Now as to the condition of this industry. At present you can produce steel as cheap as anywhere in the world."

Mr. King: "No, sir; that is not a fact."

Mr. Cockran: "Where can they produce it cheaper than you?"

Mr. King: "I would say in England, Belgium and Germany."

Mr. Cockran: "What particular articles are there that can be produced cheaper, and what is the difference in the rates?"

Mr. King: "I speak more particularly of what we come in competition with—bars, plates and structural material."

Mr. Cockran: "Well, take the steel bars. You are selling them at what rate?"

Mr. King: "To-day, at the market price, between $1.35 and $1.40 per 100 lb."

Mr. Cockran: "How much per ton?"

Mr. King: "At $1.40 per 100 lb. would be $28 a net ton, and $1.35 per 100 lb. would be $17 a net ton; that is, $27 and $28."

Mr. Cockran: "What is the cost of the production there?"

Mr. King: "The way we are running now, I believe it is costing all we get for them."

Mr. Cockran: "Then it costs $27 and $28 a ton to produce?"

Mr. King: "That is what I believe to-day, and running under the conditions that we are."

Mr. Cockran: "At what rate did you sell this production of yours in Canada?"

Mr. King: "At practically the same price."

Mr. Cockran: "What did it cost you to produce?"

Mr. King: "Just as much as the domestic product."

Mr. Cockran: "How are you able to lay those down in Canada and sell them, and pay a duty when cost of production at home is $28?"

Mr. King: "We do not pay the duty. The consumer over there pays it."

Mr. Cockran: "At what rate were these sold in Canada?"

Mr. King: "They were sold within something like $1 a ton of the domestic price."

Mr. Cockran: "And the duty was much higher; the duty was how much in Canada?"

Mr. King: "I really do not know the rate of duty, excepting that we paid more duty than England. I know that England has a preferential duty."

Mr. Cockran: "What was the return to you for that proportion of your product that you sold in Canada?"

Mr. King: "Practically as much as we sold it for in this country."

Mr. Cockran: "Then, at that rate, it must have sold in Canada for $33 or $34 a ton?"

Mr. King: "Certainly; higher there on account of duty they have to pay."

Mr. Cockran: "Was English steel selling at that rate also?"

Mr. Underwood: "When you exported this structural material to Canada, you had to pay duty to the Canadian Government, did you not?"

Mr. King: "Yes, sir."

Mr. Underwood: "And you had to compete with the English product that came in at a less rate of duty than your product?"

Mr. King: "Yes, sir."

Mr. Underwood: "So that you were competing in a foreign market on this product at a higher rate of duty in the most prosperous year that you had for many years?"

Mr. King: "Yes, sir. As I said before, that is all a question of their ability to sell at a better price at home."

Mr. Underwood: "Under those circumstances, don't you think that you can compete with your foreign competitor on your home soil at the present rate of duty, when you can compete with him abroad at a higher rate of duty?"

Mr. King: "I would state that the reason that we didn't export largely was that the duty is not the same to Canada, but those are all economic questions that are determined by the condition of things in the two countries. It is true that England has a preferential tariff into Canada."

Mr. Underwood: "How much does that preferential tariff amount to?"

Mr. King: "One-third less than the tariff into Canada on American goods."

Mr. Underwood: "If that is the case, and you can compete there at a third less, do you not think you can afford to lessen this duty a third, and get some revenue for the Government, considering the fact that the Government is running under a deficit?"

Mr. King: "We cannot sell unless we sell in competition with them."

Mr. Cockran: "So that the English steel was selling in Canada at the rate of $34 a ton to compete with you."

Mr. King: "We sell practically at the same price. Unless we meet the conditions over there we cannot sell."

Mr. Cockran: "And you can do that. If you can compete with them in Canada, though at a disadvantage, why cannot you compete with them here, where you have the advantage of transportation, even at the present rates of duty?"

Mr. King: "Well, they bring that a great distance, and

as I said before, there are some disadvantages in buying abroad on account of the fact of having to pay in advance and taking the risk on quality. They would rather pay us a little more money and have recourse on us if it is not right."

Mr. Cockran: "But surely you must see that in selling in Canada you have to pay the cost of transportation to Canada and you have to pay the duty?"

Mr. King: "Understand, we do not have to pay the duty; the buyers pay that. I would like to say to the committee that in my opinion it would never be possible in the United States to manufacture as cheaply as those foreign countries do for two reasons, one being the great distance and the great cost of transporting material to the mill from the largely scattered places that we have to bring it. For instance, we bring our ore 1100 miles. I do not believe that it would be ever possible for that reason, for the large freight cost in assembling those materials, against the English and the Belgians, who have the material right around them. They have the coal, the ore and the limestone within a stone's throw, and they are relieved of that heavy freight. I went to the trouble to bring here the cost of freight per ton in Pittsburgh on the materials necessary to make a ton of finished material."

Mr. Underwood: "Assembling the raw material?"

Mr. King: "Yes."

Mr. Underwood: "How much does it amount to?"

Mr. King: "It amounts to $6.65."

Mr. Cockran: "In spite of all these disadvantages, you actually have sold it and do sell it in competition with England and Canada. If you are able to do it there, I ask you why you cannot do it here?"

Mr. King: "No, sir. I do not think we could consider putting that down a bit, after we are to have what I consider intelligent and proper protection for American manufacturers and labor."

Mr. Underwood: "Intelligent and proper protection? What do you mean by that? Do you think that a proper protection is one that gives you the absolute control of the home market, or one that gives you a fair chance to fight for the home market with your competitors?"

Mr. King: "I should say a little more than a fair chance for the home market."

Mr. Cockran: "A little more than a fair chance is foul, is it not?"

Mr. King: "Not altogether, I think. There is a distinction there. I believe we ought to keep the American market to ourselves."

Mr. Underwood: "In other words, what you believe in is a prohibitive tariff practically?"

Mr. King: "I think that probably is right."

Mr. Underwood: "I would like to ask you if you, as a business man, want us to amend the constitution and raise our revenue from an income tax, or from an inheritance tax, or do you believe in raising revenue from tariff taxes?"

Mr. King: "I believe that you ought to raise it on luxuries; put more on."

Mr. Underwood: "You believe that we should put a prohibitive duty on iron and steel and things of that kind and raise the revenue on coffee and tea?"

Mr. King: "They are not luxuries, they are necessities."

Mr. Underwood: "What are luxuries?"

Mr. King: "I would say silks, jewelry, diamonds, wines, tobaccos, anything in the line of luxuries that a man could get along without, that he does not need."

Mr. Underwood: "As a matter of fact, of course, on these items that you have named, we are receiving practically all of the duty that we can. We cannot raise the price on tobacco, but on silks we might raise more duty by reducing it some, but the silk men say that they ought to have a prohibitive tariff there too. But as a matter of fact, it looks like we had to either lower some of these duties to raise enough revenue to support the Government, or else take in some new items like coffee and tea that have never been taxed before. Now, as a business proposition, and you come before this committee to advise us, and we are glad to have your advice, I would like to know whether or not the people in the iron and steel business are not willing, under the circumstances, when the Government is needing money, to make a responsible reduction, as long as they have a fair chance to control the market."

Mr. King: "I say that we are able, under an intelligent and protective tariff to pay our men such wages as I would like to pay them. I do not believe that they would object to a tax on coffee and tea and sugar and what not, that they could afford it."

Mr. Boutell: "You say 'intelligent and protective tariff.' Those terms are synonymous, are they not?"

Mr. King: "With me?"

Mr. Cockran: "You have several other schedules to discuss, have you not?"

Mr. King: "Yes, sir; quite a number."

The Chairman: "I have before me Mr. Carnegie's article in the *Century*, and I am going to read about a column or so of it on this question, for the benefit of committee and the gentleman present, and after that I will ask you some questions in reference to it." The chairman then read an extract from the article, and said:

"I will have the whole article inserted in the record in connection with the correspondence between the chairman of this committee and Mr. Carnegie in which he was asked to appear here. I wish to ask you some questions in regard to this. He says that he was assured by one who has recently examined the matter that the cost per ton for labor was greater than with us, unusually high as our wages are at present. Have you any information or statistics that will aid this committee in an examination of the question, so as to enable us to come to a correct conclusion. I understand that you deny this statement. What we want is evidence upon the subject in order to satisfy the minds of the members of the committee as to whether or not what Mr. Carnegie states is true. Have you any such statistics?"

Mr. King: "I have."

The Chairman: "Will you prepare them and give them to the committee?"

Mr. King: "I can do so. I do not know what the other gentlemen have."

The Chairman: "The object of this committee is to get the facts in these matters so as to enable it to come to a just conclusion. That is all the people expect of us in reporting this bill. We have endeavored to get people before this committee, people of every kind who could give us facts and figures and information in regard to the changing of rates, in order that we may come to a just conclusion, but unfortunately up to this time most of the steel men have not been able to come. Only one man in the steel industry, I believe, has indicated his determination to come. The other gentlemen do not seem to have the time nor the disposition to come before the committee. What we want are the facts, and we would like to have you give the important facts on this subject."

Mr. King: "In regard to that I want to say, as I stated in the beginning of my testimony, that we have not been able to get all the facts on account of the short time which was allowed. We propose to secure and give that information at as early a moment as possible."

STATEMENT OF FRANK WITHERBEE OF WITHERBEE, SHERMAN & CO., PORT HENRY, N. Y.

"I am here to represent the Lake Champlain ore producers of this country. It is fair for me to say to you that I only returned from Europe on Saturday, and I have had no opportunity of talking this matter over with my associates in business, nor have I had any time to group together some facts and figures which may be of interest to you all. But if it meets with your wishes I will be very glad to give you some figures, showing the cost data of ore produced in the Eastern part of this country, and so far as it lies in my power to give you the corresponding cost in Europe. I visited a great many of the iron ore centers of Europe and became acquainted with the cost of their labor, &c., and anything I have in my knowledge you are quite welcome to. I feel certainly that there is a widespread demand for tariff revision, and there is reason for it. Undoubtedly there are a great many articles which can properly be reduced; there are other articles that cannot be reduced, and I think there are a few articles that perhaps ought to be increased.

"Confining myself to the iron ore industry, with which I am more familiar, I would say that in any revision you might make of the present schedule I think due consideration should be given to these facts. In the first place, the labor that the iron ore manufacturer has to compete with is almost the cheapest in the world, that of Spain and Lapland and Cuba, where the ordinary manufacturer of iron and steel has to compete with the labor of France and Germany and Great Britain, which is much better paid. There is also another fact, that while a great many branches of the iron trade have but little competition in the way of imports, iron ore has always had a very great competition. There have at all times been large amounts of iron ore brought into this country from Europe, and that should be given some, I think, consideration also. At times it does not affect the domestic iron ore producers as much as it has, for instance, during this past season, when, for a period of quite a number of months so far as my own company goes, we were simply not able to make any sales whatever of certain grades of ore as against foreign ores that were being landed in this country. Another thing is, you should lend encouragement to the mines in the eastern part of our country. There are several large mining districts that are about to be developed, and to develop an iron mine of any size costs from $500,000 to $2,000,000 or $3,000,000. The investment at best is an uncertain one One may open up on a vein that seems large for a year or two years, but the quality is likely to vary, and the amount one has before one is always uncertain, and therefore you cannot, as in other investments, look upon a small return in interest as fair. You have got to have a return on your capital which will correspond to the amount of the principal that you are absorbing and disposing of from time to time, and also then give due regard to the uncertainties of the trade. I

do not know that there is anything else that I am prepared to say to you to-day. I am sorry that I have not had more time to study this matter, but if hereafter there is anything else I can give you in the way of information, I will be glad to do it. Or if to-day there are any questions you wish to ask me, I will do my best to answer them. I am afraid it must be in a very general way, however. I could not carry in my mind all the details of the cost."

Mr. Clark: "Do you want the tariff increased or held as it is, or cut down?"

Mr. Witherbee: "I think if there is going to be a general revision of the tariff, iron ore should stand its share of reduction. There are times like this summer when the competition would probably stop the production of many grades of domestic ore. In other years they could stand competition."

Mr. Clark: "This year is not a fair illustration?"

Mr. Witherbee: "No; I think, perhaps, three years in 10."

Mr. Clark: "As a matter of fact, in the Minnesota iron beds iron can be mined cheaper than anywhere else on the globe, can it not?"

Mr. Witherbee: "No, sir; I doubt that. I think the magneto ore of Germany is much more cheaply mined."

Mr. Clark: "Why they scoop this up with a shovel, do they not?"

Mr. Witherbee: "Yes, but it lies in beds, whereas in this magneto district in Germany and France it covers areas miles in extent."

Mr. Clark: "You do not know any device by which it is cheaper to handle that sort of material than a cheap shovel, do you?"

Mr. Witherbee: "No, sir. But that is true abroad also as it is in Minnesota. I am not very familiar with the Lake Superior conditions. I am just giving you my personal opinion. I do not think the Mesaba ore region is as cheap a producer as it was 10 years ago, and the production must increase in cost very materially. After they get to a certain depth they have a soft body of ore which cannot be held up by pillars of rock, but must be held up by timbers, and their cost will increase. If you will investigate, I think you will find that the costs of the Mesaba region are higher than they were eight or ten years ago."

Mr. Clark: "Everybody knows that it costs more to get ore out of the ground than it does to scoop it off of the top."

Mr. Witherbee: "They cannot do that in many mines."

Mr. Clark: "They have the cheapest transportation rates on earth, too, have they not?"

Mr. Witherbee: "No, sir. They do not compare with the rates on the foreign ores to a point."

Mr. Clark: "I say that the steel trust, which owns the Mesaba range, has the lowest freight rates to the centers of manufactures of any mines in the United States, have they not?"

Mr. Witherbee: "No, sir; I do not agree with you. In the first place there is Alabam ."

Mr. Clark: "Where is there one cheaper?"

Mr. Witherbee: "Alabama is cheaper by very much more because the average rate from the Lake Superior region to points of consumption is, I think, somewhere from $2 to $2.50. The average rate of transportation of iron ore from the Alabama and Tennessee fields to the points of consumption will vary anywhere from 25 to 60 cents. Now, I will go a step further and I will say that in the East we can get to points of consumption cheaper than in the West."

Mr. Clark: "Do you say they can ship ore from the Alabama points to St. Louis, Pittsburgh, Chicago and Minneapolis and New York cheaper than they can ship it from the Mesaba range to Pittsburgh?"

Mr. Witherbee: "No, sir; but I understood your question to be to iron centers. I consider Birmingham and Chattanooga iron centers."

Mr. Clark: "How much of a cut do you think you could stand on iron ore and still live and flourish?"

Mr. Witherbee: "In the long run, a reduction of possibly 15 or 20 per cent."

Mr. Dalzell: "A reduction of 15 or 20 per cent.?"

Mr. Witherbee: "I am only speaking for my own interests."

The Chairman: "You are standing a reduction of 20 per cent. on Cuban ores?"

Mr. Witherbee: "I was not thinking of that."

The Chairman: "And the importations have not increased from Cuba under that cut?"

Mr. Witherbee: "Yes."

The Chairman: "They have been a little over 1,000,000 tons a year. They were a little over 1,000,000 tons in 1903 and 1904, and about 1,000,000 tons a year since, half of which comes from Cuba."

Mr. Witherbee: "Cuba is going to import very much more than in the past. There are fields there that are being developed now that are going to ship into this country at a much lower rate than it has ever been delivered for from Cuba.

STATEMENT OF WILLIAM MATHER OF PICKANDS, MATHER & CO., CLEVELAND, OHIO.

"I represent the Lake Superior iron ore industry—that is, I am interested in Lake Superior iron ore—and I have come down to appear before the committee in reference to that industry. What Mr. Witherbee has said practically echoes my own sentiments in reference to the general situation with regard to iron ore. We do not ask for any increase in duty, but I think Mr. Witherbee is fair. I think, perhaps, the Lake Superior iron ore men outside of myself would be willing to subscribe to his opinion, that the iron ore industry could stand a reduction of 20 per cent. on the present rate of duty, which would make it 8 cents less, or 32 cents a ton. The Lake Superior iron ore industry has developed to very large proportions, as of course you all know. Something like 42,000,000 tons was shipped from there last year, and in the development of that industry, which has come up under the laws, the revenue laws which prevail, of course, the conditions have grown consistently with that. The costs of labor are high. The conditions of the laboring population are correspondingly good. We have had practically very few labor troubles or strikes in connection with the industry for a great many years, and I should say in a general way it is difficult to say what would happen under certain conditions of reduction of tariff, but I should say that such a reduction as Mr. Witherbee stated would not affect, materially, at any rate, the conditions of the mining industry up there. Now, if you should attempt to reduce it further, or take it off entirely, naturally the tendency would be to disarrange those conditions under which the mining industry has grown, and make the operators try to bring about lower costs. Therefore, I should say that it would be unwise for the industry, as a whole, to make any further reduction in the tariff on iron ore than that which has been suggested by Mr. Witherbee. I have no brief, Mr. Chairman, I am coming down here somewhat unexpectedly for several reasons. I shall be quite ready and willing to make a brief before your committee at the time that you should suggest. I shall be glad to answer questions to the best of my ability, which may come to you."

Mr. Hill: "Do you know about what proportion of the iron ore supplies in the United States are under one control?"

Mr. Mather: "No, sir; I do not."

Mr. Hill: "That is in the control of United States Steel Company?"

Mr. Mather: "I do not think anybody could answer that question intelligently, because we do not know just how much iron ore there is in the country. It is rather difficult to answer. I should say 40 or 50 per cent."

Mr. Hill: "Under one control?"

Mr. Mather: "Yes."

Mr. Hill: "The result of that situation is that it is bound to result in a constantly increasing cost of iron in this country, is it not? One-half of the entire production is under one control, and that half is subject to a continually annually increasing charge. It is bound to result in a constantly increasing cost of iron—practically the same situation that the lumber industry is in to-day, with a constantly increasing cost of the product."

Mr. Mather: "From the mines that are now being operated, the cost is gradually increasing. In the case of the present known supply, the cost is increasing on account of the greater depth of the ore."

Mr. Hill: "And it looks to a constantly increasing cost of iron and steel, does it not?"

Mr. Mather: "If we find new deposits, it would keep the price down."

Mr. Hill: "I am speaking about the known supply."

Mr. Mather: "There would be a slight gradual increase in the cost on account of, perhaps, greater depth of the mines."

Mr. Hill: "Do you not think that it is somewhat the duty of the United States to conserve that product, and look out for the future as well as for the immediate present?"

Mr. Mather: "I should think it would be wise for the United States to increase its output and production of iron ore and encourage the development of iron ore bodies."

Mr. Hill: "Do you not think it would not be more for the interest of the United States to conserve its own product and draw ore at cheaper prices from other countries?"

Mr. Mather: "If we knew just how much we have, yes; but we have no idea how much we have. I think we have infinitely more than we can now see, and I think it is bound to increase."

Mr. Needham: "There is no danger of immediate exhaustion of the supply?"

Mr. Mather: "No, sir; I do not think so."

Mr. Clark: "Is it not true that the trust, and perhaps other large manufacturers of iron, are buying up low grade ore fields now that they do not expect to work for 25, 30, 40 or 50 years, just to have it in stock?"

Mr. Mather: "That I do not know."

Mr. Clark: "And so that nobody else can get it in the meantime?"

Mr. Mather: "I do not know whether they are or not. That would not be, however, an unnatural investment for persons to make who are operating in iron ore."

Mr. Clark: "I know; but it would be a very unpleasant thing for the mills that have to use iron ore."

The Chairman: "Mr. Mather, have you noticed any more competition in the sale of your ores for the last five years on account of the foreign import? Have you had to reduce the price at all on account of foreign importation for the last five years, up to, of course, October 1 a year ago?"

Mr. Mather: "It has not been what I should call an appreciable factor. It has had an influence, but I should not say it was a marked influence."

STATEMENT OF JOSEPH G. BUTLER, JR., OF YOUNGSTOWN, OHIO.

"I represent a large percentage of the merchant blast furnaces of the United States. The product of these furnaces is used in the malleable works, foundries, cast iron pipe works, and the independent steel works, in the form of basic iron. I get my authority for this representation, first, by letters that I have from perhaps 30 or more of the independent furnaces, and, second, as the result of a meeting which was held in Cleveland on last Wednesday, which was largely attended, and at that meeting a committee was appointed to meet with the Eastern producers in New York on Monday. We met with them on Monday, and again on Tuesday, and the matter was then placed in my hands. I may say that I think perhaps there are one or two others that may want to be heard on this question. I want to say that this matter was placed practically in my hands yesterday, and I am not prepared to give you the information that it seems to me you should have. I judge from the questions that have been asked here this morning that what you want is information and not opinions. I intend to go home and prepare and file as quickly as I can get it ready a brief showing the cost of making iron in the different localities, showing the labor, and showing the transportation rates, and I intend, further, to get some information from abroad with reference to the same matter. I have already sent off two long cable messages, and when I get through I intend to do it conscientiously and fairly, and I will file my brief with the committee. At the third meeting, which was held in New York yesterday, there was official action taken which I will read, and I want to file this as a preliminary paper: At a meeting of the pig iron producers, held in New York, on November 24, the following resolution was unanimously adopted:

We recommend that ferromanganese be placed on the free list, but that no change be made in the balance of the pig iron schedule, believing that any reduction will be to the detriment of the manufacturing interests, the transportation companies, and the labor employed in the production of pig iron, coke and iron ore.

"I am going to file a brief and, as I have said, I am going to make it complete, and I am going to try to give you the information that it seems to me you ought to have in order to formulate this bill."

Mr. Cockran: "We shall be very glad to have you. Let me ask you this question? Suppose there was a reduction in the duty on iron ore to, say, 25 cents. Would that have any influence upon the rate that should be exacted for pig iron?"

Mr. Butler: "Very likely it might, but I think that if there was very much of a reduction made on iron ore it would increase the demand for it in the East, and it would perhaps raise the price of the iron ore."

Mr. Cockran: "That would be a pretty good protection in itself, would it not?"

Mr. Butler: "That would help some."

Mr. Griggs: "Then you would be willing to see a reduction in the duty on pig iron?"

Mr. Butler: "I think not."

STATEMENT OF J. B. WILKINSON.

J. B. Wilkinson, attorney for certain New York steel importers, presented the following statement:

"I appear before your honorable committee on behalf of George Nash Company, J. Wilckes Company and Herman Boker & Co., all of them New York importers of steel. My clients are practical business men. They do not ask to have steel put on the free list, and they are not clamoring for much lower duties, but they do ask that what business they have left be not killed by higher duties, levied either directly or indirectly.

"Most of the paragraphs of the metal schedule are not prohibitive. Out of the $332,000,000 of tariff revenue for the year 1907 only $12,000,000, or 3.7 per cent., came from iron, steel and manufactures thereof. The importation of bars, railroad iron or steel, was only $133,936, against $8,600,000 exported; hoop, band or scroll iron, $129,100 as against $267,939; sheets, plates and taggers, iron or steel, $315,000, as against $6,630,000; wire, $1,000,000 imported, $8,000,000 exported; structural shapes, $328,000 imported, $6,900,000 exported. In 1905 the domestic production of structural shapes was over $90,000,000. In 1906 the pig iron produced amounted to $505,000,000, and that imported to $7,000,000. All of these figures are taken from the last United States Statistical Abstract. Comparisons made today would be even more striking. It does not seem unreasonable, therefore, to ask for importers the preservation of some remnants of the metal schedule, and to call attention to the efforts that may be made to make the schedule absolutely prohibitive.

"I shall take as the basis for my remarks what is said to be your committee's draft of a revised text of the metal schedule, the rates being left blank. This text was published in *The Iron Age* of November 19, pages 1444 and 1445. I shall confine myself strictly to the paragraphs in regard to which I am commissioned to appear.

"Paragraph 135.—The most important of these is paragraph 135, one of the few paragraphs not prohibitive. The material covered by this paragraph is iron and steel to be manufactured in this country into products ready for consumption. The rate of duty ranges, except on the cheaper grades, from about 25 to 30 per cent. An effort by the Treasury Department was made on certain forms of this steel to levy a duty of 45 per cent., but after a contest of 10 years in the courts, it was decisively held that the steel should come under the specific rates of the paragraph. Various provisions of the paragraph have been fought through the courts, and the phraseology has, therefore, a well settled meaning. Rather than to have further controversies, the importers are prepared to accept this paragraph as it now stands, except on grades valued at less than 4 cents, which should be assessed on a plane with grades valued at more than 4 cents.

"Paragraph 141.—It was the purpose of this paragraph to levy an additional duty upon all strips, plates or sheets that had received a further process, to give a temper or a blued, brightened or polished surface finish. Such further process of manufacture requires additional labor, and importers admit the justice of a corresponding additional duty.

"But the new text would exact the additional duty on cold rolled material. Much of the steel covered by paragraph 135 is cold rolled, and the more it is rolled the higher its value and the greater the duty under said paragraph. The thinner the gauge required, the oftener the metal has to pass through the rolls. Going through the rolls gives it a certain brightness, but this brightness is simply incidental, adds no value and is not a surface finish, because it is entirely destroyed in the further course of manufacture. In being tempered or otherwise treated in the factories of this country, it becomes blackened and is subsequently brightened if a surface finish is required. There would be no justice in exacting this additional duty, which would range as high as 40 per cent. on an incidental and valueless brightness which is destroyed as soon as the steel reaches this country. The words 'cold rolled, cold drawn,' should be omitted from the paragraph.

"It is proposed in this text of a tentative draft to make a new paragraph for 'steel strips, strip steel or steel in strips twenty-five one thousandths inch thick or thinner,' and a comparison is made with the rate for flat steel wire. These strips are now dutiable under paragraph 135, and the thinner they are the more duty they pay. They are not drawn as wire is, but are rolled, and making them dutiable as wire would stop their importation. I am informed that no corset steel is imported since its inclusion in the wire paragraph.

"Regarding paragraph 132, I am informed that no iron or steel sheets or wire plated with copper or nickel are produced in this country, and that none is likely to be, as the quantity required is too small. The present 45 per cent. duty is prohibitive and forces the use of substitutes, just as high duty on Chinese matting forces the use of domestic rugs. A duty of 20 per cent. is all that the article would stand.

"Paragraph 185.—The following is suggested: Nickel, nickel oxide, alloy of any kind in which nickel is component material of chief value, in pigs, ingots, bars, rods, plates, sheets, and strips, 6 cents per pound, and all other forms 40 per centum ad valorem. There is practically no crude nickel imported. The world seems divided between a European combination and a combination composed of Americans and Canadians. The Europeans will not sell here and the Americans do not sell in Europe.

"The irrepressible conflict that has been so long waged between domestic manufacturer and importer is rapidly drawing to a close. The importer has got the worst of it. But the Government will probably need revenue from duties for some time to come, and our gigantic iron and steel industries are likely to be slightly affected by the trifling competition they have to meet under the paragraphs which I have enumerated."

### The Zinc Duties.

Representatives of the zinc ore producers of Kansas and Missouri were heard by the committee on the proposition that the new tariff laws should provide specifically for a duty on these ores. The principal argument was presented by F. W. Mitchell, of Joplin, Mo., and was, in part, as follows:

The zinc ore producers of the United States ask for a duty of 1½ cents per pound on the metallic contents of all

zinc ores, and in doing so, feel that they need and should have this duty to protect them against foreign importations. Mexican ore can be laid down at the Kansas smelters at $11.82 per ton, actual cost for 40 per cent. ore. This would make the cost of 60 per cent. ore, which is the standard grade for the Joplin District, $17.73 per ton. A duty of 1½ cents per pound, as proposed on 60 per cent. ore, would be $18 per ton, or a total of $35.73 per ton for Mexican ore at Kansas smelters, while the ore in the Joplin District, under normal conditions, costs $37.78 per ton, which includes royalty and amortization charges. The Mexicans have practically comparatively no capital invested in equipment and development at most of the mines. It is simply a quarrying proposition and hauling the ore to the railroads, and loading on cars for shipment, while in the Missouri-Kansas District the average investment is about $37,000 per plant. Labor cost in Mexico is about $2 per ton. Labor cost in the Missouri-Kansas District is $17.02 per ton, or a difference of $15.02 per ton in favor of the Mexican ore. Total average cost, including supplies and loading on cars at Mexico, is $4.91 per ton; in Missouri-Kansas District the average cost, including supplies, is $28.62 per ton, or a difference in favor of Mexican ore of about $23.71 per ton. On the other hand, the freight on Mexican ore is $6.91 per ton, while loading and freight on Joplin ore are about $1.20 per ton. The difference in favor of the Joplin ore is $5.71, which makes $18 per ton in favor of the Mexican ore. But since it takes 1½ tons of Mexican ore to equal one ton of Joplin ore, there should be deducted from the $18, one-half of the total cost of laying Mexican ore down at the smelter which is $5.91, leaving $12.09 in favor of the Mexican ore, to which should be added royalty and amortization cost of $9.16 per ton, or a total of $21.25, difference in the cost of the production of a ton of Missouri-Kansas and Mexican ore. Against this difference we ask for at least a tariff duty of 1½ cents per pound on metallic contents, which would be $18 per ton on 60 per cent. ore. In accordance with these views we ask that calamine, paragraph 514 of the Dingley act, be stricken from the free list and paragraph 181 of said act be changed to read as follows:

Lead bearing ore of all kinds, 1½ cents per pound on the lead contained therein. Zinc bearing ore of all kinds, 1½ cents per pound on the zinc contained therein. Provided, that all ores imported which contain both lead and zinc shall pay 1½ cents per pound on the lead contained therein, and also 1½ cents per pound on the zinc contained therein, and provided further that on all importations of lead bearing ores and of zinc bearing ores the duties shall be estimated at the port of entry, and a bond given in double the amount of such estimated duties for the transportation of the ores, by common carriers, bonded for the transportation of appraised or unappraised merchandise, to properly equipped sampling or smelting establishments, whether designated as bonded warehouses or otherwise. On the arrival of the ores at such establishments, they shall be sampled according to commercial methods under the supervision of Government officers, who shall be stationed at such establishments, and who shall submit the samples thus obtained to a Government assayer, designated by the Secretary of the Treasury, who shall make a proper assay of the sample, and report the results to the proper customs officers, and the import entries shall be liquidated thereon, except in case of ores that shall be removed to a bonded warehouse to be refined for exportation as provided by law, and the Secretary of the Treasury is authorized to make all necessary regulations to enforce the provisions of this paragraph.

Including the mines of Kansas, Oklahoma and Arkansas, it is safe to say that there are in the entire Missouri-Kansas mining district over 600 mines equipped with power concentrating plants. These mines are not controlled or operated by a pool, trust or combination. Probably over 90 per cent. of them are owned by individual operators and distinct corporations. Within 30 years this district has grown and developed through individual pluck and energy. It has always been essentially a poor man's country. There is no labor union among the miners of this district nor is foreign labor employed. The miners and laborers of the entire district are strictly American, and live according to American ideals. Many of them own their own homes. A church is in every mining camp. The children attend the public school. Electric railroad and telephone service reach all the camps and connect them with distant points. Daily mail service is supplied. In fine, the average miner knows something about politics and the world wide events of the day. Many former miners, who found good prospects by the sweat of their brows, have sold them at a good profit and have attained positions of responsibility and affluence in the district. And to their credit, be it said, they remain with us, and support the district with their money and their influence.

With the immense growth of this district within the last 30 years have come metropolitan cities, aggregating over 100,000 inhabitants, containing light, heat and power plants; have streets, sewerage and water systems; in fine, all the modern conveniences, which make life worth living. Joplin contains one of the finely equipped hotels of the country, and Jasper County, with more than 100,000 people in 1907 shipped $20,250,000 of surplus product, more than half of which came from mines and quarries.

Mr. Mitchell was sharply cross-examined by Representative Clark of Missouri, Democrat, who insisted that the zinc producers were able to make money under existing conditions, and that, if the demand for a duty on zinc ore were in any way based on the fact that lead ore is dutiable, the best solution would be to repeal the lead duty rather than to impose a duty on zinc.

Alex. O. Ihlsing, of Oronoco, Mo., followed, in an argument along a line similar to that pursued by Mr. Mitchell.

### Ferro-Alloys.

The Primos Chemical Company, Primos, Pa., presented the following statement:

This statement is made on behalf of the industry manufacturing ferrotungsten, tungsten metal, tungstic acid, tungstate of soda, tungstate of ammonia, ferromolybdenum, molybdenum metal, molybdic acid, molybdate of ammonia, ferrovanadium and similar metals and alloys; the industry of mining tungsten ore, molybdenum ore and vanadium ore, and the industry of manufacturing high-grade steel and steel alloys by the use of these metals.

That it is essential to the growth and very existence of these industries in the United States that they be protected by fair and reasonable tariff legislation against the ruinous competition of the cheaper products and cheaper labor of foreign lands, and that with such just protection they can thrive and develop without hardship or injustice to the consumers of such products, the facts will show.

In the act of 1897 and former tariff acts, tungsten, molybdenum and vanadium have not been provided for by name, but have been placed in paragraph 183 of schedule C. "metallic mineral substances in a crude state and metals unwrought, not specially provided for in this act, 20 per cent. ad valorem." On several occasions in the past importers of these valuable products have tried to have them classed "by similitude" with ferromanganese under paragraph 122, which provides that "iron in pigs, iron kentledge, spiegeleisen, ferromanganese, ferrosilicon, wrought and cast scrap iron, and scrap steel, $4 per ton; but nothing shall be deemed scrap iron or scrap steel except waste or refuse iron or steel fit only to be remanufactured." During such periods the American manufacturers have been compelled practically to shut down their works, as they could not continue to exist under such conditions. Even the 20 per cent. ad valorem duty on "metals unwrought" does not allow a fair or just margin of profit.

It is manifest that the classification—even the possibility or fear of classification—of products such as these under such vastly different rates of tariff can only serve to unsettle and ruin the industries of mining and manufacturing them. These industries not only need a reasonable protection against cheap foreign competition, but they have a right to expect certainty and stability in the classification of their products for duty. This can be best accomplished by naming them in the act and clearly defining what duty they shall pay.

The ferromanganese and ferrosilicon, upon which a duty of $4 is placed by paragraph 122, have nothing in common with the valuable metals referred to. Ferromanganese and ferrosilicon are cheap products made in large quantities like pig iron (named in the same sentence), ferromanganese being made direct from the ore in the blast furnaces the same as pig iron and from an ore that is abundant, found in masses and cheaply mined at a cost of from $6 to $8 per ton. Ferrosilicon is made from waste iron and sand, and the cost of the raw materials is small. The market price of ferromanganese is from $42 to $60 per ton and of ferrosilicon $70 to $100 per ton. The market price of tungsten, however, is from $1200 to $2000 per ton, depending on the prices of ore.

The manufacture of tungsten and molybdenum metals and of ferrotungsten, ferromolybdenum and ferrovanadium entails a great deal of care and requires a combined chemical-metallurgical plant, as the finished products must be in such shape that they can be used by the steel works in the finest grades of steel, and the cost of the chemicals used and the large amount of manual as well as trained scientific labor involved makes the cost of manufacture high, as the ore as received from the mines requires very complicated treatment before it can be reduced to a metal or alloy.

Tungsten, molybdenum and vanadium are principally used in high grade and high class steels, as for instance, high speed tool steels, magnet steels, &c. The business of manufacturing such steels was in its infancy at the time of the last tariff legislation, and the industry has therefore not received sufficient protection against foreign competition and the manufacturers of high grade steels are at a great disadvantage against European competition. The present tariff has provided only for steel worth 16 cents per pound on which the duty is 4.7 cents per pound, and there the schedule stops; whereas the special steels in which the above named metals and alloys are used cost from 16 cents to $1 per pound and have no further protection than the 4.7 cents per pound. About 6000 tons of these expensive steels are made in the United States while about 12,000 tons are imported, principally from England, showing plainly the lack of protection. If these steels were made entirely in this country, as they should be, the manufacture of tungsten, molybdenum, &c., would treble in the United States, as would also the manufacture of ferrosteels.

About $6,000,000 is invested in the United States in the manufacture of tungsten, molybdenum, vanadium and the metals and alloys mentioned herein, and about $5,000,000 in tungsten mining property in the United States. The cost of production of tungsten ore in this country amounts to $8 minimum per unit of tungstic acid per ton of ore (2000 lb.). Ore sold on a basis of 60 per cent. at $8 per unit would cost $480 per ton.

Ore mining has not been profitable on account of foreign ore usually coming in at a lower price, and whenever business is poor in Europe the foreign ore is shipped to this country at a price much below the cost of production, and on this account the American mines are forced to shut down at such periods. The ore conditions are similar all over the world and the cost of production depends entirely upon the cost of labor at the mines—*i. e.*, wages.

About 2½ tons of tungsten ore are required to make 1 ton of tungsten metal, or 1 ton of tungsten contained in the ferro.

There are six manufacturers of ferrotungsten, tungsten metal, ferrovanadium, molybdenum metal, &c., in the United States. In Great Britain there are three. In France there are two which make ferrotungsten, ferromolybdenum, ferrochrome, ferrovanadium and ferrotitanium. The two French companies have works located in Southern France, Savoie, where they have the additional advantage of cheap water power. They also have additional works in Switzerland and in Norway.

In Germany there are 15 establishments, for Germany is the principal seat for the manufacture of tungsten and molybdenum metals and their products. Two works are located at Berlin, and one of these has a tungsten and molybdenum manufactory near the Saxon border in the southern part of the province of Brandenburg. Saxony has four manufacturers, one at Altherzberg, one at Rosswein, one near Dresden, one at Zwikau. There are two manufacturers near Hanover and one at Annaburg in Thuringia. There is one manufacturer at Barmen, one at Siegen, two at Hamburg, one near Cologne and one near Brunswick.

The chief advantages which the manufacturers in Europe have over the manufacturers in the United States are, 1, cheaper chemicals used in the reduction of ores; 2, low cost of labor, and, 3, cheaper ores. The principal chemical used is muriatic acid, the cost of which is 25 cents per 100 lb. in Europe, against $1.35 per 100 lb. in the United States. About 5 lb. of this are used to every pound of tungsten metal produced, showing at a glance the advantage in this one chemical alone. Nitric acid is also one of the acids used, and is proportionately much cheaper in Europe than in this country. Ammonia is used largely in the manufacture of molybdenum products and also for some tungsten products, and this is considerably cheaper in Europe.

The wages paid to labor employed in the manufacture of alloys at the various points in Germany vary from 45 cents per day for youthful labor under 21 years old to 70 cents per day for good adult day laborers. For the same class of labor we have to pay $1.25 to $2 per day at our manufacturing centers. The difference in skilled labor is still greater. The proportionately large number of chemists required in the manufacture of metals and alloys is also an important item, as an equally good chemist can be had in Europe for one-half the salary paid in this country. Labor in France costs about 70 to 80 cents per day.

About 85 per cent. of the cost of tungsten, molybdenum and vanadium is represented by labor. Ore mining, 60 to 65 per cent; chemicals, 15 per cent; fuel and supplies, 5 per cent.; converting cost at chemical works, 20 per cent.

We would respectfully ask you to consider, in providing new tariff provisions, a duty on ferrotungsten, ferromolybdenum, ferrovanadium, tungsten metal, molybdenum metal and their salts, a just duty, which should be not less than 35 per cent. ad valorem.

As to tungsten ores, on account of the difference in the cost of labor in the United States and in foreign countries, it would be but fair and reasonable to place a duty of 20 per cent. ad valorem on tungsten ore, which is now on the free list.

Molybdenum and vanadium ores could also be produced in large quantities in the United States if they were protected by a duty of 10 to 20 per cent. to induce their production in the United States.

As the manufacture of high grade steels is so closely dependent upon the alloys and metals in question they should also be considered, and either an ad valorem duty provided for steel valued at above 16 cents per pound or such other provision as would protect this new industry.

The consumer of the finished product will not be prejudiced by the placing of a reasonable duty on the chemical-metallurgical products for which we ask a duty, nor by a duty upon ore or an increased duty on the high grade steels which are used for such high class work that an increase of a few cents in the cost will be no hardship to any one.

### Corrugated Boiler Furnaces.

The Continental Iron Works, New York City, submitted the following statement:

As the manufacturer of corrugated boiler furnaces for land and marine boilers, we desire to place ourselves on record, first, as protesting against any reduction in the existing tariff on this product, and, second, to ask for a redrawing of paragraph 152 of the tariff law for reasons hereinafter set forth. The necessary machinery for the production of corrugated boiler furnaces has been produced at large expense, but the market in this country for this article is exceedingly limited, and during the best of times the demand is not sufficiently great to approximately reach the producing capacity of our manufacturing plant. The present tariff rate is a specific duty of 2½ cents per pound, and this rate we respectfully suggest be maintained in any revision of the tariff which may be made or contemplated.

At the present rate of duty we are able to just about meet the German and English prices for corrugated furnaces, but should the duty be any less we would not be able to ward off foreign competition, as the cost of material and labor entering into the construction of corrugated furnaces in Europe is roundly one-third less than what we pay in this country, and therefore we would be obliged to discontinue this portion of our business.

Even at the present rate of duty some corrugated furnaces are brought into this country from abroad, showing that any reduction in the present tariff would open the door to foreign manufacturers and the consequent injury to this company and the workmen in its employ. We respectfully suggest that section 152 of schedule C be redrawn in any future revision of the tariff schedule, in order to remove the ambiguity which at present exists in it and prevent any evasion of the payment of a duty of 2½ cents per pound on corrugated boiler furnaces, which is clearly the intention of this clause.

We believe that, because of the uncertainty of its language, corrugated boiler furnaces have been brought into this country under the name of tubes or flues upon the payment of a duty of 2 cents per pound instead of 2½ cents per pound. It is true that a corrugated furnace is cylindrical in form, but when the distinctive use to which it is applied in the construction of a steam boiler is considered, there is no process of reasoning which can be applied to bring it under the classification of a tube or flue; hence our request for an altering of this particular clause of this schedule. As it stands at present, it is possible to evade the prescribed tariff to the extent of 20 per cent., which is a serious detriment to our business and one which it is not possible for us to successfully meet should it be allowed to remain in force. In view of the foregoing, we suggest that clause 152 of schedule C, metals and manufactures of, be altered to read as follows:

> Lap welded, butt welded, seamed or jointed iron or steel boiler tubes, pipes, flues or stays, not thinner than No. 16 wire gauge, 2 cents per pound; *welded cylindrical furnaces made from rolled plate, metal corrugated, wrapped or otherwise reinforced against collapsing pressure, 2½ cents per pound;* all other iron or steel tubes, finished, not specially provided for in this act, 35 per centum ad valorem.

### Pocket Cutlery.

The Holley Mfg. Company, Lakeville, Conn., presented the following statement:

Regarding the contemplated revision of the tariff as affecting the duties on pocket knives, clasp knives, pruning and budding knives, &c., we beg to say that we would be very glad to see the present duties increased. The present situation is sufficiently unfavorable, and in the event of any reduction in the tariff on cutlery would be disastrous to us.

The manufacture of pocket cutlery in the United States is one of the infant industries that has never been sufficiently protected. As a result there are comparatively few producers in this country and not above a half dozen of any size. Instead of large fortunes having been made in the business, there have been many failures.

Knives equal in quality to any made abroad are made in this country, and many more and in greater variety would be made if they could be marketed to advantage in competition with foreign goods. Working under patents affects this business very little, as the mechanical principle applied to pocket knives is in the main the same as it has been for centuries. The question is chiefly one of placing the product of plentiful cheap foreign skilled labor against the product of scarce, high priced skilled labor here. To meet the resultant competition American manufacturers have had their profits reduced to practically the vanishing point, whereas if a sufficiently high tariff prevented thousands of dealers from handling foreign made knives they would have to be sufficiently patriotic to use domestic goods.

We presume that letters of this general character will have less weight with the revisers of the tariff than exact schedules of comparative costs, &c. These latter will doubtless be supplied by the American Pocket Cutlery Manufacturers' Association, and we trust they will be given full consideration in arranging the details of the revision, but it seems to us that the uncontrovertible facts in thic case are:

1. That the pocket cutlery industry in this country is relatively weak, composed of widely scattered units which it has been impossible, so far at least, to combine.

2. That foreign made knives are marketed in great quantities and are marketed to advantage, to the detriment of American products.

3. That the only persons affected favorably by the present schedule, and who would be further favorably affected by a reduction of duties, are a number of importers (usually of foreign extraction) in New York City and several other ports of entry.

4. That there is probably considerable opportunity for undervaluation of imports and other devious methods of evading the duties. We make no specific charges, but such conditions have existed in times past, possibly exist now, and if not properly guarded against will surely exist in the future.

**Firearms and Ammunition.**

An argument in favor of a reduction in the duty on shotgun and rifle ammunition, guns, rifles and revolvers was presented by Von Lengerke & Detmold, New York City, dealers in sportsmen's supplies, in which they call attention to what they consider excessive duties on empty shotgun and loaded rifle ammunition and also on guns, rifles and revolvers in general.

## The Tariff Revision Programme.

WASHINGTON, D. C., November 24, 1908.—The tariff leaders of the House have practically completed their plans for the revision of the Dingley act, and the work will be pushed forward rapidly, with a view to insuring the taking effect of the new law on or before the first of the new fiscal year, beginning July 1 next. The correspondent of *The Iron Age* is in position to outline the plans and expectations of the Ways and Means Committee as carefully revised to date.

**Framing of the Bill.**

No steps looking to the framing of the new bill beyond the gathering of material will be taken by the committee until the conclusion of the hearings which began on the 10th inst. and will continue until December 4. It is improbable that any hearings will be held after the latter date, although private conferences with members of the Ways and Means Committee will doubtless be granted where the matter is of sufficient importance. Soon after the convening of the coming session of Congress, on December 7, the practical work of making the new tariff bill will be begun, and this task will be exclusively in the hands of the Republican members of the committee. The McKinley, Wilson and Dingley acts were framed in the first instance by subcommittees having charge of special schedules, and this plan will probably be followed in this case. After the schedules have been prepared and approced in their entirety by the Republican majority of the committee, the administrative provisions of the bill (sections 3 to 34) will be taken up and carefully revised.

This preliminary work will probably occupy the committee until some time in February, and when it is completed the bill will be submitted to the Democratic members of the committee, who will probably frame a measure of their own which they will offer as a substitute. President-elect Taft has announced that he will call a special session of Congress about the middle of March, and as soon as it convenes the majority and minority bills will be introduced and referred back to the Ways and Means Committee for formal consideration and report. Inasmuch as the membership of the committee in the new Congress will be practically identical with the present membership, it will not be necessary to give more than a few days' consideration to the bill, and a report can easily be made by April 1. It will be the policy of the House leaders to permit full and free discussion of the bill on the floor, and debate may proceed for two or three or even four weeks, but it will probably be passed by May 1. How long the bill will remain before the Senate Finance Committee cannot be accurately foreshadowed, but from the present outlook it seems probable that it will become a law about July 1.

**The Date the New Law Becomes Effective.**

Much interest attaches to the exact text of the enacting clause of the bill, which determines the date upon which the new law will go into force. In the case of the last three tariff acts there has been much controversy on this point because of the ambiguous language employed, and it is but recently that the United States Supreme Court decided the last case involving these contentions. With a view to obviating all uncertainty in the case of the new law, the Ways and Means Committee has drafted a tentative enacting clause which provides as follows:

> Be it enacted, &c., That on and after the day following the passage of this act, unless otherwise specially provided for in this act, there shall be levied, collected and paid upon all articles imported from foreign countries, and mentioned in the schedules herein contained, the rates of duty which are, by the schedules and paragraphs, respectively prescribed—namely:

The language adopted in the above section is intended to cut off all opportunity for the importation of merchandise after the bill is passed and before it goes into force. It should be stated in this connection, however, that a law passed by both houses of Congress and agreed to in conference may not go into force for 10 days thereafter, as it cannot become effective without the President's signature, which may not be attached until the expiration of that period. It will be remembered that the Wilson Tariff bill became a law without the President's signature 10 days after its certification to the White House. Inasmuch as the Wilson bill reduced duties, however, there was little incentive to make anticipatory importations, but the pending bill will embrace numerous increased rates, as, for example, the important class of ferroalloys now held by the courts to be dutiable at $4 per ton by similitude to ferromanganese, will be advanced to at least 20 per cent., and enterprising importers would undoubtedly take advantage of any opportunity to bring in goods after the new rates are known and before they take effect.

**Basket Clause Rates May Be Raised.**

The necessity for raising additional revenue under the new tariff act has attracted the attention of members of the Ways and Means Committee to the fact that the so-called basket clause of the Dingley law provides for very low rates of duty as compared with the average ad valorem of the act, which is estimated at 47 per cent. The basket clause, which is found in section 6, provides a rate of 20 per cent. on unenumerated manufactured articles and of but 10 per cent. on unenumerated unmanufactured articles. In classifying merchandise every effort is made by the appraising officers to put it into a category specially provided for by law, but when this effort fails it is frequently necessary to resort to the provisions of section 6. The result is that large quantities of highly manufactured merchandise are annually brought in at 20 per cent., or only about two-fifths of the average rate of duty assessed under the Dingley act as a whole. It has been suggested to the committee that the rate on unenumerated manufactured articles should be increased to 40 per cent., and that on unenumerated unmanufactured articles to 20 per cent., and it is estimated that should these changes be made several million dollars additional revenue would be secured. It goes without saying that many articles heretofore unspecified, which have paid duty under the basket clause, will be removed therefrom in the course of the revision now in progress, and rates of duty ranging from 25 to 50 per cent. fixed thereon. It may be assumed, however, that a considerable number of commodities will still be classable under the basket clause, and this category will naturally increase with advances in the manufacturing industries hereafter.

The attention of the tariff leaders has been drawn to the apparent conflict between sections 6 and 7 of the Dingley act, and the suggestion has been made that the text of both sections be clarified in connection with the prospective revision. Section 6, which is known as the basket clause, provides rates of duty on unenumerated products, both manufactured and unmanufactured. Section 7, however, provides that "each and every imported article not enumerated in this act which is similar either in material, quality, texture or the use to which it may be applied, to any article enumerated in this act, is chargeable with duty, shall pay the same rate of duty which is levied on the enumerated article which it most resembles in any of the particulars before mentioned, &c." The point is made in this connection that both these sections impose duties on unenumerated products, and it is a well-known fact that there has been much litigation based upon the question as to whether certain

unenumerated goods were dutiable under the basket clause or by similitude to some enumerated article. It is suggested that the text of section 6 be so amended that no product shall be classified thereunder provided it can be classified under section 7 at a higher rate of duty.

**Maximum and Minimum Schedules.**

While the form of the new tariff bill with respect to the maximum and minimum schedules has not yet been definitely determined, it is confidently predicted here that the German system will be adopted with two rates for each enumerated item. In the case of American industries requiring the largest measure of protection, and which might be injured by any concession, no matter how small, the maximum and minimum rates will be identical. In cases where high protection is not necessary for the welfare of the domestic industry and where no great amount of foreign competition is to be feared, the difference between the maximum and minimum duties will be relatively large, it being the purpose of Congress to use this margin for trading purposes to secure reciprocal concessions in foreign tariffs on American products. As heretofore intimated, it is the general impression that the average margin between the maximum and minimum rates of the entire tariff will be about 20 per cent.

Under the proposed plan treaties negotiated by the State Department would be promulgated immediately and would not require ratification by the Senate or subsequent legislation by Congress. Such conventions would go into force upon the President's proclamation, as has been the case with the limited treaties negotiated under section 3 of the Dingley act, which authorizes reciprocal trade agreements in which the United States concedes certain percentages in the duties on argols (crude tartar), brandies, champagnes, still wines and works of art.

Many members of the House are receiving communications urging the retention in the proposed new tariff law of section 11 of the Dingley act, which is intended to prevent the importation of goods bearing trademarks simulating those of domestic products. The section, which it is probable the committee will recommend for re-enactment, provides as follows:

Sec. 11. That no article of imported merchandise which shall copy or simulate the name or trademark of any domestic manufacture or manufacturer, or which shall bear a name or mark which is calculated to induce the public to believe that the article is manufactured in the United States, shall be admitted to entry at any custom house of the United States. And in order to aid the officers of the customs in enforcing this prohibition, any domestic manufacturer who has adopted trademarks may require his name and residence and a description of his trademarks to be recorded in books which shall be kept for that purpose in the Department of the Treasury, under such regulations as the Secretary of the Treasury shall prescribe, and may furnish to the department facsimiles of such trademark; and thereupon the Secretary of the Treasury shall cause one or more copies of the same to be transmitted to each collector or other proper officer of the customs.

There is no doubt that Congress will re-enact the above provision, possibly with slight verbal changes to increase its efficiency.

**To Liberalize the Drawback Law.**

The Ways and Means Committee is in receipt of inquiries as to the opportunity that will be given to those interested in the amendment of the existing drawback law, as found in section 30 of the Dingley act, to present arguments in behalf of a more liberal provision. In reply it is stated on behalf of the committee that the drawback section will be considered on Friday, December 4, when the administrative features of the Dingley act as embraced in sections 3 to 34 are taken up. In view of the importance of these sections and the great variety of subjects embraced therein the committee has set aside December 4 and 5 and will devote the two days entirely to hearings thereon. A strong disposition is manifested by members of the committee to go into the question of the liberalization of the drawback law very thoroughly and to investigate every phase of it with a view to providing as liberal a statute as the proper protection of the revenues will permit. To this end it is understood that considerable information is now being obtained regarding the practical operation of the exceedingly liberal drawback law of France, under which certificates of importation obtained from collectors on the withdrawal of imported raw materials at any port may be used as the basis of drawback claims on the exportation at other ports of goods made from similar materials, whether of foreign or domestic origin.

The committee has been urged to adopt the substitution principle involved in the French law, and it has been asserted with much emphasis that no possible loss to the revenues could occur, while, on the other hand, the export business of the country would develop rapidly under such a system. It is significant that Speaker Cannon, in the course of a speech delivered since the election, has come out squarely for a more liberal drawback law, and it is believed that he will exert his influence with the committee for the thorough revision of section 30. The tariff leaders of both houses anticipate the overproduction of merchandise in many lines before the tariff is again revised, and, therefore, they are strongly disposed to do anything in reason to stimulate the export trade. W. L. C.

## Mineral Products of the United States in 1907.

The value of the mineral products of the United States in 1907 reached the enormous total of $2,069,289,196, surpassing the value of the same products in 1906 by $165,282,162, or 8.68 per cent., that of 1905 by 27.33 per cent., and of 1904 by 58.81 per cent. Both metallic and nonmetallic products contributed to the gain.

Two minerals—coal and iron—are credited with approximately 55 per cent. of the total for the country, and three more—copper, clay products and petroleum—furnish about 22 per cent., the five contributing about 77 per cent. of the whole. The minerals whose output in 1907 was valued at more than $5,000,000 are listed in the following table:

*Value of More Important Minerals Produced in the United States in 1907.*

| | | | |
|---|---|---|---|
| Coal | $614,798,898 | Silver | $37,299,700 |
| Iron | 529,958,000 | Zinc | 26,401,910 |
| Copper | 173,799,300 | Sand, gravel, &c. | 13,242,002 |
| Clay products | 158,942,369 | Lime | 12,640,512 |
| Petroleum | 120,106,749 | Phosphate rock | 10,653,558 |
| Gold | 90,435,700 | Salt | 7,439,551 |
| Stone | 71,105,805 | Mineral waters | 7,331,503 |
| Cement | 55,903,851 | Zinc white | 6,490,660 |
| Natural gas | 52,866,835 | Slate | 6,019,220 |
| Lead | 38,707,576 | Sulphur | 5,142,850 |

Products whose output exceeded $1,000,000 in value were gypsum, valued at $4,942,264; aluminum, $4,926,948; mineral paints, $2,979,158; asphalt, $2,826,489; glass sand, $1,250,067; sand-lime brick, $1,225,769, and borax (crude), $1,121,520.

The total value of the metallic products in 1907 was $903,024,005; of the nonmetallic products, $1,166,165,191; $100,000, estimated as the value of such mineral products as molybdenum, nickel, titanium, not reported in detail, brings the total to the amount stated.

Pennsylvania, reporting mineral products valued at $657,783,345, has no close rival for first place among the States, for Ohio, which is second, reports products valued at $207,657,339, while the mineral products of Illinois, the State ranking third, were valued in 1907 at $145,768,464. The figures presented in the foregoing paragraphs are taken from a summary of the mineral production of the United States in 1907, compiled by W. T. Thom of the United States Geological Survey, and published by the Survey as an advance chapter from "Mineral Resources of the United States, Calendar Year 1907." This chapter is now ready for distribution and may be obtained by applying to the Director of the Survey at Washington, D. C.

The Weatherly Foundry & Machine Company, Weatherly, Pa., has purchased the machinery, patents, &c., of the H. A. Frantz Mfg. Company, Cherryville, Pa., manufacturer of kerosene, oil and gas engines. The equipment will be moved to Weatherly, where the manufacture of gas engines will be started as soon as the machinery can be placed.

## The Canadian Government's Steel Policy.

TORONTO, November 21, 1908.—Adherence to a defensive trade policy is so much the rule of governments that no particular case of it is regarded as a provocation. An aggressive trade policy on the part of governments is likewise accepted outside as a matter of the Government's own domestic business. It is seldom, however, that the defensive and the aggressive are joined in so striking a way as in the case of the Dominion Government's fostering of the steel industry. Heavy protective duties are levied on imports of steel, and large bounties are granted exports of staple products of steel. Steel rails produced in other countries cannot get into Canada except on payment of duties ranging from $4.50 to $9.33 1-3 per ton, according as they come from Great Britain, from countries entitled to the intermediate tariff rates, from countries against which the general tariff rates stand, or from Germany. Canadian steel rail makers, fortified by Government help in the home market, are also generously aided by the Government to overcome competitors in the export markets. With a bounty of $2.10 per ton on the pig iron form of their material, and one of $1.65 per ton on the crude steel form, they draw $3.75 per ton of Government money. Thus with Government money they hold the domestic market against outside competitors, and with Government money they win trade from outside competitors in the external markets.

In the opinion of a British manufacturer who is now in Canada, and who spoke with the belief that he expressed the sense of his colleagues, this interest of the Canadian Government in the mercantile business of private corporation goes beyond the generally recognized limits. It makes a bad impression, he considers, and is especially displeasing to the British people. It would hardly be a cruder form of selfishness for the Government to go into rail making itself, exclude foreign rails by prohibitive duties and compete at low sacrifice prices against foreign rail makers in the outside markets. To the British steel makers, it was pointed out, the German steel syndicate export bounties were peculiarly odious. But if the associated German makers choose to tax themselves to pay the bounties, that is their affair and is not chargeable to the German Government, except insofar as the duty on rails permits the syndicate to recoup itself by keeping prices high at home. In the case of Canada's steel trade, however, it is the Government that enables the price cutting to be practiced. Besides being offensive, the Government's part in the business is inconsistent with its own professed tariff principles. If dumping is so bad a thing that it is finable under the Canadian tariff, is it any better when it is done in other countries with the aid of the Dominion Government itself?

How, it is asked, can it be expected that on foodstuffs imported from non-British countries the United Kingdom will impose customs duties in order to waive them on a large percentage thereof in favor of Canada? To speak of this rail business alone, Canada handicaps British competitors in its domestic market and subsidizes opposition to them in the external markets. Canadian policy takes but does not give, and there can be no further favors for Britain except on a *quid pro quo* basis. It would not be illogical, and would be rather human, were Britain to impose countervailing duties on rails whose production was assisted by a bounty. That would be in accordance with the existing treaty provision for dealing with imports of bounty fostered sugar.

Newfoundland is one of the self-governing communities of the British Empire, as Canada itself is. Were Newfoundland to decide in its own interest to put a prohibitory export duty on iron ore its conduct would be regarded as harsh toward a sister State of the empire, and as at variance with the new spirit of imperial fellowship. But it would be more defensible than the Government bonusing of Canadian products to be dumped on markets which British traders depend on for business. Certainly the exporters of Canadian rails are much dependent on Government favor. The withdrawal of the bounties and the duties they owe to the Canadian Government; the high taxing of their ore supply by the Newfoundland Government; the raising of the rail duties by the governments of rail importing countries, or the refusal of orders by governments owning railroad systems—any of these things would have a very adverse effect upon the Canadian rail export trade. C. A. C. J.

## PERSONAL.

Frank S. Witherbee of Witherbee, Sherman & Co., Port Henry, N. Y., has returned from Europe.

W. Funcke of Funcke-Hueck, Hagen, Westphalia, one of the leading iron and hardware manufacturers of Germany, sailed for home this week, after having traveled extensively in this country.

Paul J. Kalman, 805 Pioneer Press Building, St. Paul, Minn., Northwestern railroad representative for the Detroit Seamless Steel Tubes Company, Detroit, Mich., is, in addition to the railroad business, now handling in St. Paul and Minneapolis the full line of seamless steel tubing manufactured by that company, including stationary boiler flues and mechanical tubing for automobile construction and other purposes.

Fred Herbert, of the Birtley Iron Works, Newcastle, England, accompanied by his son, is now in this country for the purpose of making arrangements to erect the new cast iron pipe foundry for J. B. Clow & Son, Coshocton, Ohio. This will be the introduction in America of Mr. Herbert's system of casting pipe which is in successful operation abroad.

Emil Swensson, consulting engineer, Pittsburgh, returned last week from a European trip devoted in part to a study of methods of preventing destructive river floods and of protection against them.

William Barry, an American engineer, has been chosen by Finance Minister Kokovsoff of Russia, to be president of the Nevsky Shipbuilding Company, St. Petersburg, which gets a large share of Russian naval construction work.

James Gayley has resigned as first vice-president of the United States Steel Corporation and has also retired from the Board of Directors. No successor has thus far been elected to fill the vacated office, but on Tuesday Alfred Clifford, St. Louis, was elected a director to take Mr. Gayley's place on the board.

A. H. Carpenter has resigned his position with the United States Steel Corporation as Chicago manager of pig iron sales for the Tennessee Coal, Iron & Railroad Company's furnaces, to take the active management of the Birmingham Car & Mfg. Company, of which he is vice-president and general manager.

## The Fabricated Steel Situation.

During the recent annual meeting of the officers of the American Bridge Company of New York at Buffalo, N. Y., November 17 and 18, the data presented showed some rather curious figures, not at all complimentary to the fabricators of steel throughout the United States. It is well known that the price of fabricated steel has in the last year declined out of all proportion to the price of plain material. To one who sees only the prices quoted the inference would naturally be that the volume of business was totally inadequate, and that the low prices were justified by fear on the part of the fabricators that they would have to shut down their plants unless they secured each individual order that came in the market. The figures compiled from records of the American Bridge Company's different offices throughout the country (foreign orders not included) show up as follows for the year ending October 31:

| | 1907.—Tons. | 1908. Tons. |
|---|---|---|
| Bid on | 1,406,669 | 1,588,131 |
| Not built | 503,879 | 362,004 |
| Built | 902,790 | 1,226,127 |

Of the above work, in 1907 the American Bridge Company secured over one-half that went ahead. In 1908 it secured less than one-fifth. These figures would indicate, beyond chance of a doubt, that the average purchaser of fabricated steel got the best of the average seller of that commodity.

# OBITUARY.

GEORGE A. FAIRFIELD.

George A. Fairfield, Hartford, Conn., who died suddenly November 9, was very prominently identified with the building up of the manufacturing industry of that city, and especially with the development of the Hartford Machine Screw Company. He was born in Lansingburg, N. Y., March 20, 1834, and as a child went with his parents to western Massachusetts where he lived on a farm and attended school until he was 17 years old, when he entered upon an apprenticeship as a machinist at Northampton, Mass. He worked at his trade at the Holyoke Machine Works, Holyoke, Mass., and later with Wilcox & Gwyne, Urbana, Ohio, and Entwhistle & Moore, Richmond, Va. During the Crimean war he was with Robins & Lawrence, Windsor, Vt., working on a contract for guns for the British Government, and afterward went to Springfield, Mass., where he was active in developing special machinery for the Government armory. He continued this class of work at the Colt's firearms factory at Hartford in 1857, on a contract for gun manufacturing machinery for the Russian Government. Later he took a contract at the Colt's shops, becoming the largest contractor in the establishment.

In 1858 Mr. Fairfield opened the first school for mechanical drawing in Hartford; its members included men who afterward became prominent as engineers and mechanics. In 1865 he became identified with the Weed Sewing Machine Company, and built up the business to one of much importance. At the time when the sewing machine business had become overdone he met Col. Albert L. Pope and arranged with him to manufacture the first modern bicycle, which constituted the beginning of one of Hartford's most conspicuous industries. In 1876 C. M. Spencer, the inventor of a famous rifle, took floor space in the Weed shops for the manufacture of screws with automatic machinery, which he had invented. Mr. Fairfield took an interest in the business, and under his management it grew to be the great Hartford Machine Screw Company, now a constituent part of the Standard Screw Company. He was a director of the Hartford Steam Boiler Inspection & Insurance Company, Hartford County Mutual Fire Insurance Company, Mechanics' Savings Bank, Hartford National Bank and the Hartford County Fire Insurance Company, and at his death had been for several years the secretary of the Hartford Board of Trade. He leaves a widow, a son and daughter.

ELMER G. EBERHARDT.

Elmer G. Eberhardt, vice-president of the Newark Gear Cutting Machine Company, Newark, N. J., died November 21, after an illness of nearly a year, aged 27 years. He was born in Newark, was graduated from the High School in 1896 at the age of 15 years, and at once entered Stevens' Institute, Hoboken, N. J. He was soon at the head of his class, but decided, in his second year, to take up machine shop work with his father, Henry E. Eberhardt. He accordingly discontinued his course and began the work of designing and constructing automatic gear cutting machines and crank shapers. He took out a number of patents on original inventions relating to these machines and on general machine tools. After several years at this work he decided to finish his technical education, and therefore entered Sibley College of Cornell University in February, 1901, and was graduated in June, 1904, with the degree of mechanical engineer. In his senior year he was elected president of the Cornell Institute of Electrical Engineers and vice-president of the Cornell Society of Mechanical Engineers. At the close of his course he was awarded the honorary key of the Sigma Xi for high scholarship in the engineering studies. Upon his graduation he formed, with his father and brothers, the machine tool building firm of Eberhardt Brothers Machine Company, which is now the Newark Gear Cutting Machine Company. He was engaged in the designing and construction of its automatic gear cutting machines and crank shapers. Mr. Eberhardt was well known among the mechanical people by reason of his work. He was a contributor to the columns of the technical and mechanical papers, and had a wide reputation as a consulting engineer upon matters especially relating to gears and gear cutting. He was an associate member of both the American Society of Mechanical Engineers and the American Institute of Electrical Engineers. He is survived by both his parents, and one sister and four brothers. His father and three of the brothers are engaged in the business with which he was identified.

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The recent death of GEN. JOHN E. MULFORD, at his home in Montour Falls, N. Y., in his eightieth year, has called out many expressions in the daily press both South and North, growing out of his prominence as Federal commissioner for the exchange of prisoners of war in the 60's, and indicating the affection and honor in which he was held. It was a delicate duty requiring the exercise of special tact and resourcefulness to manage wisely this exchange of prisoners, and the way in which it was performed is still affectionately remembered by many. In 1877 General Mulford founded the Prentiss Vise Company, Watertown, N. Y., of which he was president for 31 years, the New York house being in charge of his son, Edwin H. Mulford.

JOSEPH BRYAN, owner of the *Times-Dispatch*, Richmond, Va., died November 20, aged 63 years. He was a native of Virginia, and for a long time managed the Richmond Locomotive Works, continuing in that capacity after its absorption by the American Locomotive Company. He was a director in the Sloss-Sheffield Steel & Iron Company, the Birmingham Land Company and the Southern Railway Company.

MICHAEL HIGGINS, SR., president of the Higgins Spring & Axle Company, Racine, Wis., died November 17, aged 74 years. He was born in Ireland and came to America when a child, locating first in New York. In 1889 he went to Racine and became associated with his son, Michael Higgins, Jr., in the manufacture of springs and axles for carriages and wagons.

W. S. MCKINNON, State Treasurer of Ohio, died November 17, at his home in Ashtabula, Ohio, aged 56 years. He established the McKinnon Iron Works in Ashtabula in 1880 and was connected with the concern until his death.

ALFRED MARSH, who is claimed to have invented the gas meter, died November 17 at Kalamazoo, Mich., aged 90 years. He was born in England, but for many years was employed by a gas company of New York City.

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**The Fitzsimons Company.**—The business of Fitzsimons & Co., Cleveland, Ohio, a partnership concern, and of the Finished Steel Company, Youngstown, Ohio, a corporation, both manufacturers of shafting and special shapes for various purposes, has been reorganized and succeeded by the Fitzsimons Company, a corporation. The new company will continue to manufacture the same lines, which comprise polished shafting and special shapes, piston screw and pump rods, bridge pins, round, square and hexagon shapes, &c.

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**The Gary Plant.**—It is probable that two of the blast furnaces of the Indiana Steel Company, at Gary, Ind., will be started before the beginning of the new year. It is not likely that any steel will be made, the furnaces being blown in merely to tune up the plant, and particularly the engines to be driven with waste blast furnace gas.

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The Indiana Rolling Mill Company, New Castle, Ind., whose shovel plant, located about 1 mile distant from the mill, was partially destroyed by fire last summer, is now engaged in restoring this department. The new building for the accommodation of the shovel plant will not be located on the old site, but for convenience in the handling of material is being erected near the rolling mill, where the steel can be transferred to the factory without hauling. It is expected that the new quarters will be ready for occupancy about the first of the year.

# NEWS OF THE WORKS.

### Iron and Steel.

Vollkommer & Hagan, Pittsburgh, are rebuilding an open hearth furnace at the plant of the American Steel & Iron Company, Norwalk, Ohio. The furnace is being enlarged from 20 to 30 tons capacity. This is the second furnace contract the firm has had at the plant named.

The Williamsport Iron & Nail Company, Williamsport, Pa., is rebuilding its plant which was recently destroyed by fire.

The Superior Steel Company, Carnegie, Pa., near Pittsburgh, manufacturer of hot and cold rolled strip steel, is making important improvements to its plant. The McClintic-Marshall Construction Company, Pittsburgh, has the contract for the erection of a 70 x 150 ft. steel runway on which an Alfred Box & Co. electric traveling crane will be operated for carrying billets, &c., from the stockyards to the furnaces. The Penn Bridge Company, Beaver Falls, Pa., has the contract for a 70 x 88 ft. structural steel addition, to be made to the present boiler house, on which work will be commenced at once, and the Erie City Iron Works, Erie, Pa., is furnishing six 400-hp. water tube boilers, which will be equipped with Jones underfed stokers. The Superior Steel Company reports business good and it expects to be operating its plant to a larger capacity before long, due to the improvement in orders.

Hamilton Furnace, at Hanging Rock, Ohio, blew out November 15 for relining and repairs, and will blow in about January 1.

### General Machinery.

The Cutler-Hammer Company, Milwaukee, Wis., manufacturer of electric controlling devices, will make two large additions to its plant, involving the expenditures of more than $75,000. An addition to the main plant, extending for half a block along the railroad tracks, 75 ft. in width, three stories, and a new warehouse, 160 ft., two stories, will be completed in the spring.

The Garwood Electric Company, Garwood, N. J., has been incorporated to manufacture electric apparatus. E. A. Keegan is interested.

The American Electrical Heater Company, Detroit, Mich., has not yet decided upon the additional machinery it will require for equipping the new building it is constructing. It will be 136 x 200 ft., and cost about $60,000.

The Davis Mfg. Company, Milwaukee, Wis., which has a new shop, 100 x 150 ft., under construction, is arranging to run the machinery equipment with individual automobile engines of its own design and construction attached to each line shaft. The same results are expected as are secured from electric motor group driven systems. A complete heating and ventilating system is being installed in the shop.

The Wasatch Electric Service Company, Salt Lake City, Utah, recently incorporated with a capital stock of $20,000, will deal in dynamos, motors, electric supplies, and will also act in the capacity of hydro-electric engineer for the construction of water power plants. The officers of the company are: Tony Jacobson, president; Sam S. Porter, vice-president; Robert D. McCreery, secretary and treasurer.

The Champion Shoe Machine Company, St. Louis, Mo., has purchased a site, 170 x 182 ft., on Forest Park boulevard, near Spring avenue, which will be immediately improved by the erection of a factory building comprising about 40,000 sq. ft. of floor surface. The new plant will afford about four times the capacity of the present shop.

The Grafton Machine & Iron Works Company, Grafton, Wis., has been incorporated with a capital stock of $10,000 and expects to be in operation about December 10. The company's officers are as follows: Albert Kath, president; Charles Thiermann, vice-president, and Edward Mueller, secretary and treasurer.

The Schatz Mfg. Company, Chappaqua, N. Y., recently incorporated, has taken over the plants of the Schatz Hardware Mfg. Company, Acme Ball Bearing Company and the Acme Ball Bearing Sales Company, and will continue to manufacture the Acme castor, hardware specialties, mechanics' tools, sheet metal stampings and all other lines made by the acquired companies. The new company will also deal in hardware and machinery, acting as manufacturers' agent. It is now selling and manufacturing a line of lever and power shears and punches for cutting plates, bars, squares, rounds, angles, beams, &c., and is prepared to furnish any tool for this work, from the smallest up to the largest requirements. The factories are located at Chappaqua, N. Y., and at Weingarten, Wurttemberg, Germany. The New York office is at 56 Warren street. George D. Mackey is president; J. W. Schatz, vice-president; H. A. Schatz, secretary and treasurer; Donald Mackey, assistant treasurer; Adolph Schatz, general manager manufacturing departments, and S. A. Cosgrave, sales manager.

The Jamestown Shoe Machinery Company, Jamestown, N. Y., has been incorporated by Arthur H. Hitchcock, James E. Toscan and William M. Rohn, to manufacture shoe making and shoe repairing machinery.

The Central City Refrigerating Company, Syracuse, N. Y., has been organized by Howard G. Case, Horace H. Harriman, Richard S. M. Mitchell, George B. Case and Charles E. Spencer for the purpose of erecting a large cold storage warehouse. A large steam power plant and ice making machinery will be installed.

### Power Plant Equipment.

The Babcock & Wilcox Company, Farmers' Bank Building, Pittsburgh, has received an order from the Pennsylvania Coal & Coke Company, Cresson, Pa., for 250 hp. of Stirling water tube boilers.

The Crocker-Wheeler Company, Ampere, N. J., has secured contract to equip the textile mill of the Windham Mfg. Company, Willimantic, Conn., with electric drive, and has just shipped a complete electric power system, including motors, transformers and switchboards, to the plant. The equipment consists of nine 550-volt induction motors, aggregating about 500 hp., to be used to drive the machinery in the mill. The generating equipment includes two 500-kw. generators. The motors are all arranged for ceiling suspension.

The Board of Commissioners of Covington, Ga., will receive bids until December 2 for the construction of water and sewerage systems, the work to include about 400 tons of 6 to 10-in. cast iron pipe, stand pipe, two compound pumping engines, one turbine pump and motor, brick pumping station, &c.

The Pend d'Oreille Electric Company, Sandpoint, Idaho, will erect a large hydraulic plant, the requirements to include water wheels, dynamos, switchboard, transformers, &c.

The Borough Council of Haddonsfield, N. J., will receive bids until December 1 for two 1,000,000-gal. pump units, steam, gas producer or gasoline, power house and foundations, stand pipe 110 ft. high, about 11 miles of cast iron or other approved pipe, and other accessories, for the construction of a municipal water works.

The Public Service Commission has authorized the Broadalbin Electric Light & Power Company, Broadalbin, N. Y., to issue capital stock to the amount of $42,500, and $10,000 in bonds, the proceeds to be used to pay the present obligations of the company, amounting to about $13,000, and the remainder to be used for the construction of a dam, power house, equipment and transmission lines.

The town of Waverly, Iowa, has authorized a bond issue of $30,000 for the purpose of rebuilding the electric light and water plant recently destroyed by fire.

S. T. Benson & Co., Falconer, N. Y., were awarded general contract for pumps, power equipment and piping for the water works system to be installed at Sherman. The contract was erroneously reported to have been given to Benson & Johnson, Jamestown, N. Y., in our last issue.

The Hornberger Transformer Company, La Fayette, Ind., has secured the factory building formerly occupied by the Polar Creamery Company, which it is now equipping with machinery for the manufacture of its product. The Hornberger transformers, which were formerly made by the La Fayette Electrical Mfg. Company, will now be made in this plant.

T. E. McGarr, secretary of the State Commission in Lunacy, Capital Building, Albany, N. Y., will receive sealed bids until December 2 for the installation of engine and dynamo and underground feeders at the Gowanda State Hospital, Gowanda, N. Y. Plans and specifications can be had by application to the State Architect, Franklin B. Ware, Capital Building, Albany.

Consulting Engineer A. S. Crocker, Mechanics' Institute, Rochester, N. Y., is preparing plans for municipal lighting plant to be erected at Bergen, N. Y., for the Board of Village Trustees. Details of equipment have not yet been fully determined, but plant will consist of two horizontal tubular boilers and two direct connected steam engine driven generators. Bids will be called for in a few weeks by the Electric Light Committee of the Village Council.

Consulting Engineer J. J. O'Leary, 63 Niagara street, Buffalo, N. Y., has completed plans for the electric generating plant to be installed in the City and County Building for the City Council and the Board of Supervisors at an estimated cost of $75,000. Plans have been submitted to the Council and Board of Supervisors for approval, and contracts will then be awarded. Boiler plant is already installed. Generating units are to be direct connected to high speed engines.

### Foundries.

The Malleable Iron Company, Beaver Dam, Wis., now has its entire plant in operation, employing 800 men, and is working day and night. The company has in course of construction a new $20,000 office building.

The old Marinette Iron Works foundry, Marinette, Wis., recently operated by the Marinette Iron Mfg. Company, has been taken over by a new concern organized by James Stanton, formerly of the Prescott Company of that city.

The Northern Engineering Works, Detroit, Mich., has recently installed a complete foundry equipment in the plant of the Auburn Foundry Company, Auburn, Ind., consisting of elevators, Newton cupola, tumblers, trucks, &c., and has recently sold to the Smith Mfg. Company, Bessemer, Ala., a Newton cupola of from 5 to 6 tons hourly capacity.

The American Malleable Company, Lancaster, N. Y., will double the capacity of its plant by the erection of two wings to the present main building, each to be about 200 ft. long and containing eight annealing ovens. The company has also purchased additional land adjoining, upon which a pattern shop will be built and later a new office building.

The Traylor-Watson Brass & Iron Works, Memphis, Tenn., is erecting a new plant which will be used as a foundry and machine shop, special attention being made to the making of brass, bell metal, bronze and gray iron castings. Orders have been placed for the present machinery requirements, but the firm will likely be in the market for other tools later on. L. E. Traylor and H. W. Watson compose the firm.

The Ohio Steel Foundry Company, Lima, Ohio, states that plans for the extension of its main building, 200 ft., are under way, and that it is now running full capacity.

**Bridges and Buildings.**

The Milwaukee Bridge Company, Milwaukee, Wis., will build a $30,000 addition to its shops at Thirty-fourth street and Concordia avenue.

The contract for the steelwork to be erected for the Lozier Motor Company, Plattsburgh, N. Y., consisting of about 250 tons of structural steel, has been awarded to the Berlin Construction Company, at its bid of $9915.

F. C. Stevens, Superintendent of Public Works, Capital Building, Albany, N. Y., will receive sealed bids until December 3 for constructing a lift bridge over the Erie Canal at Allen street, and a lift bridge over the Erie Canal at Lyell avenue, Rochester, N. Y.

**Fires.**

The foundry and the enameling, tumbling and grinding rooms of the Indiana Mfg. Company, maker of hollow ware, at the Indiana Reformatory, Jeffersonville, Ind., were totally destroyed by fire November 15, with loss estimated at $125,000 to $150,000, which is covered by two-thirds insurance. The foundry was a one-story brick building, 140 x 320 ft.

Winter Brothers' ice factory and Nelson Morris & Co.'s packing plant at Cairo, Ill., were burned November 16, with $150,000 loss.

The plant of the Florence Pump & Lumber Company, Mobile, Ala., was damaged by fire November 17.

The factory building occupied by the Skalen Steel Casket Company and the Syracuse Aluminum & Bronze Company, at 523 Leavenworth avenue, Syracuse, N. Y., was recently damaged $10,000 by fire.

The plant of the Snyder & Baker Stove Company, Belleville, Ill., was damaged $7000 by fire November 23.

The plant of the Mobile Stove Works, Mobile, Ala., was damaged $10,000 by fire November 19.

**Hardware.**

The Crosby Company, Buffalo, N. Y., is planning to erect an extensive addition to its plant on Pratt street for the manufacture of stamped sheet metal goods. The company has purchased the Curtiss malt house, having a frontage of 189 ft., and will remodel it into a three-story factory and will after the first of the year erect a four-story addition of brick and structural steel, giving a total frontage of 400 ft. on Pratt street.

The Petoskey Block & Mfg. Company, Petoskey, Mich., whose plant was recently partially destroyed by fire, has decided to resume business, and is reconstructing the burned buildings. The new portion of the factory will be equipped with new machinery, including a power plant which, together with other improvements, will require an expenditure of about $30,000.

The John Rauschenberger Company, Milwaukee, Wis., manufacturer of rope, twine and cordage, is erecting a new building, 70 x 160 ft., two stories in hight, which will cost about $25,000, and will be used partly for storage and partly for the manufacture of cordage and hair goods.

**Miscellaneous.**

The Erie City Iron Works, Erie, Pa., will erect a large warehouse in Houston, Texas, for which a site, 100 x 250 ft., has been acquired. H. A. Paine is representative in Houston.

The C. J. Tagliabue Mfg. Company, New York, is making arrangements for the erecting of a factory at Cleveland, Oswego County, N. Y., for the manufacture of thermometers.

The United States Radiator Company, Dunkirk, N. Y., is about to start construction on a warehouse building, 72 x 224 ft., to be erected on Wright street adjoining the present plant.

The Buffalo Expanded Metal Company, Morgan Building, Buffalo, N. Y., has reduced its capital from $50,000 to $30,000.

The Dain Mfg. Company, Ottumwa, Iowa, which has had under consideration several Canadian cities as the location for a branch Canadian factory for the manufacture of haying machinery, has purchased property at Welland, Ontario, and will soon start construction of a large factory.

William I. Schaffer has been appointed receiver for the Delaware River Shipbuilding & Engine Company, Chester, Pa. The works, which are better known as the Roach Shipyards, shut down a few weeks ago.

The addition to be constructed to the plant of the German-American Car Company, Warren, Ohio, will be 100 x 125 ft. The new building will double the present shop space and permit of a considerable increased output of tank cars.

The Ford & Kendig Company, Philadelphia, Pa., is to erect a two-story factory building, 35 x 110 ft., with a wing 40 x 100 ft.

The Nashville Saddlery Company, Nashville, Tenn., whose plant was recently destroyed by fire, will rebuild as quickly as possible. The machinery that will be required is nearly all special.

The Champion Saw & Gas Engine Company, Beaver Falls, Pa., which for the past two months has been operated by S. C. Dally, receiver, Sewickley, Pa., will on December 7, at 2 p.m., be offered at public sale to satisfy a lien. It includes 2 acres of ground, a 46 x 150 ft. frame building, a 24 x 50 ft. tempering room, and a small office building. A sale of the stock of saws and gas engine parts will follow on December 17, at 2 p.m. It is possible that a reorganization may be effected.

The Clear Lake Boat Shop Company, Clear Lake, Iowa, has been organized to build motor boats and other forms of pleasure craft. Plans are now prepared for three boats which will require engines and other fixtures.

The Ogdensburg Soda Pulp Company, Ogdensburg, N. Y., recently organized, is preparing to erect a large pulp mill with a daily capacity of 25 tons. Construction work will be started next spring. The product of the mill is to be a bleached soda pulp used in the manufacture of high grade stationery. A large steam power plant will be installed.

A new factory building, the estimated cost of which is $50,000, is being erected by the East Portland Mill & Fixture Company and the Portland Pulley Company at East Portland, Ore.

The Bendix Automobile Company has been incorporated at Logansport, Ind., with $200,000 capital stock. The company has agreed to move its plant from Chicago to Logansport, the latter city through its business men having subscribed for $75,000 of stock in the company. The directors are H. Clay Calhoun, V. Bendix and F. W. Patterson. The company at present employs 200 men, and it is proposed to increase the number to 500.

The works of the Reo Motor Car Company, Lansing, Mich., have been enlarged by the addition of three modern buildings which are now completed and occupied. All of the machinery required for the equipment of these additions has been installed and is now in use.

Edward H. Perry, superintendent of the State Reservation, Niagara Falls, N. Y., will receive sealed bids until December 4 for elevators, hoists and motor equipment, steel cable, &c., the equipment to be installed in the Cave of the Winds to take the place of the present incline railroad. The estimated cost is $90,000. Complete plans and specifications will be furnished prospective bidders on application to the State Architect, Franklin B. Ware, Capitol Building, Albany.

The Bingham-Jordan Automobile Company, Minneapolis, Minn., has been organized with a capital stock of $50,000, of which $20,000 is paid in. The incorporators are George Bingham, Eva Bingham and T. C. Jordan.

The Boone Automobile Company, Boone, Iowa, recently organized to build and sell automobiles, is erecting a one-story and basement brick building, 50 x 75 ft., for the accommodation of its work.

Vollkommer & Co., Empire Building, Pittsburgh, manufacturers of supplies for enameling factories, report that the construction of their new plant is progressing rapidly. Contracts have been made for the necessary equipment, including gas engine, mills, transmission, furnaces, &c., and the plant is expected to be operating about December 10.

The recent purchase of a 400-acre tract of land at Cape May, N. J., by Henry Ford and James Couzens of the Ford Motor Company, has led to the erroneous report that they intended to erect an automobile plant on the property. The Ford Motor Company, Detroit, Mich., has no connection with the transaction and there is no intention on the part of the owners to use the property for a plant.

The Faeth Iron Company, Kansas City, Mo., has purchased a plot of ground, 111 x 250 ft., upon which it will erect in the spring buildings for its wholesale iron and steel and heavy hardware business. The investment, including ground, will be about $150,000.

The Empire Shipbuilding Company, Buffalo, N. Y., has closed contract with the Empire Engineering Corporation, New York, for the construction of a large steel drill boat which the owner will equip with five air compression drills, to be used for blasting in connection with river and harbor improvement work.

The Youngstown Car Mfg. Company, Youngstown, Ohio, has secured a second order from the West Leechburg Steel Company, West Leechburg, Pa., for a large 100,000-lb. capacity billet car, and also a contract for the ash handling cars and track layout for the naval training station, United States Government, at North Chicago, Ill. The company is also building three large steel gable bottom mining cars for the Industrial Securities Company, New York, for use in its pyrites mines in Wisconsin.

# The Iron and Metal Trades

## Pig Iron Activity Subsiding.

### Higher Prices in All Markets—Structural Business in November.

The Iron and Steel markets are quieting down. The season of the year does not favor such an expansion as seems to have been expected in some quarters and there has come in the influence of the tariff hearings, with the questions they raise as to the effect upon industrial undertakings of several months' discussion of new schedules.

Pig Iron, on which the activity of the past month has centered, is stronger in all markets, and a number of sellers have withdrawn from the market so far as concerns the second quarter of next year. The higher prices recently asked have also led some buyers to defer further purchases, and both sides seem willing to let events show the way, as more definite data come out on the adjustment of production to consumption. In the East further sales of Basic Pig Iron are reported, about 20,000 tons having been taken, for the most part at $16.50 delivered in eastern Pennsylvania. Some sellers are now holding for $17.

Foundry Iron has been less active, both East and West, with Northern Irons now held at from $1 to $1.50 a ton above the low point touched in the early fall buying. Foundries generally are carrying larger stocks, and some have increased their melt, notably the Malleable foundries. These have had a spurt of business from the car repair work which assumed large proportions last month.

In finished material the developments since the election have been rather meager in comparison with Pig Iron. Interest centers in Rails as the time approaches for placing next year's requirements. Several inquiries are up, but the railroads are moving slowly. In the past week a sale of 6500 tons has been made to the Soo Line, and it is expected that 31,000 tons needed by the Chicago & Northwestern will be placed at Chicago. A fanciful report concerning a 65,000-ton order placed abroad by the Louisville & Nashville after the rejection of domestic bids, has come out this week. No inquiry has yet been received from this road. Good buying of track supplies is reported at Pittsburgh and Chicago.

Structural contracts placed in November will exceed 100,000 tons, of which about 50 per cent. goes to the American Bridge Company, though in the year ending with October this company took only about 20 per cent. of the total business. Some surprise is caused by statistics showing more Steel structural work placed in the 12 months ending October 31 than in the preceding year. The largest contract of the past week was the People's Gas Light & Coke Company building in Chicago, 9500 tons. Boston awards amounted to 4200 tons and there has been a renewal of buying on the Pacific Coast, where imported Shapes have figured to some extent. Plates have shown some improvement, contributed to in the East by shipyard and car work.

There is increased activity at Tin Plate works and the Pacific canning interests have bought for the early months of 1909.

Cast Iron Pipe inquiry includes 12,000 tons for Havana, 10,000 tons for Chicago and 11 miles of Pipe for Haddonfield, N. J. Low priced Pipe contracts and the recent rise in Pig Iron are an occasion of discomfort in some quarters.

The Old Material market is under close scrutiny. The covering of short sales has been the cause of some advances, and there is little disposition on the part of the interests controlling the large accumulations of Scrap to sell freely on the present level.

## A Comparison of Prices.

**Advances Over the Previous Month in Heavy Type, Declines in Italics.**

At date, one week, one month and one year previous.

| | Nov.25, 1908. | Nov.18, 1908. | Oct.28, 1908. | Nov.27, 1907. |
|---|---|---|---|---|
| **PIG IRON,** Per Gross Ton: | | | | |
| Foundry No. 2, Standard, Philadelphia | **$17.25** | $17.00 | $16.75 | $18.75 |
| Foundry No. 2, Southern, Cincinnati | **16.25** | 16.25 | 15.75 | 18.75 |
| Foundry No. 2, Local, Chicago | **17.00** | 17.00 | 16.50 | 19.25 |
| Basic, delivered Eastern Pa. | **16.50** | 16.25 | 16.00 | 17.00 |
| Basic, Valley Furnace | **15.50** | 15.50 | 13.85 | 17.50 |
| Bessemer, Pittsburgh | **17.40** | 16.90 | 15.40 | 19.90 |
| Gray Forge, Pittsburgh | **15.15** | 15.15 | 14.40 | 18.90 |
| Lake Superior Charcoal, Chicago | 19.50 | 19.50 | 19.50 | 25.00 |
| **BILLETS, &c.,** Per Gross Ton: | | | | |
| Steel Billets, Pittsburgh | 25.00 | 25.00 | 25.00 | 28.00 |
| Forging Billets, Pittsburgh | 27.00 | 27.00 | 27.00 | 30.00 |
| Open Hearth Billets, Phila. | 26.20 | 26.20 | 26.20 | 30.00 |
| Wire Rods, Pittsburgh | 33.00 | 33.00 | 33.00 | 34.00 |
| Steel Rails, Heavy, at mill | 28.00 | 28.00 | 28.00 | 28.00 |
| **OLD MATERIAL,** Per Gross Ton: | | | | |
| Steel Rails, Melting, Chicago | **15.50** | 15.25 | 14.50 | 13.75 |
| Steel Rails, Melting, Phila. | **16.25** | 16.00 | 15.00 | 12.00 |
| Iron Rails, Chicago | **19.50** | 18.00 | 18.00 | 16.00 |
| Iron Rails, Philadelphia | **20.50** | 20.50 | 19.50 | 17.50 |
| Car Wheels, Chicago | **16.00** | 15.50 | 15.25 | 22.00 |
| Car Wheels, Philadelphia | **16.50** | 16.00 | 15.00 | 19.00 |
| Heavy Steel Scrap, Pittsburgh | **16.75** | 16.00 | 15.50 | 14.50 |
| Heavy Steel Scrap, Chicago | **15.00** | 15.00 | 14.00 | 12.00 |
| Heavy Steel Scrap, Philadelphia | **16.25** | 16.00 | 15.00 | 12.00 |
| **FINISHED IRON AND STEEL,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Refined Iron Bars, Philadelphia. | **1.50** | 1.47 | 1.45 | 1.75 |
| Common Iron Bars, Chicago | 1.50 | 1.50 | 1.50 | 1.75 |
| Common Iron Bars, Pittsburgh. | **1.50** | 1.40 | 1.40 | 1.60 |
| Steel Bars, Tidewater, New York | 1.56 | 1.56 | 1.56 | 1.76 |
| Steel Bars, Pittsburgh | 1.40 | 1.40 | 1.40 | 1.60 |
| Tank Plates, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Tank Plates, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Beams, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Beams, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Angles, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Angles, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Skelp, Grooved Steel, Pittsburgh | 1.45 | 1.45 | 1.45 | 1.70 |
| Skelp, Sheared Steel, Pittsburgh. | 1.50 | 1.50 | 1.50 | 1.80 |
| **SHEETS, NAILS AND WIRE,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Sheets, Black, No. 28, Pittsburgh. | 2.50 | 2.50 | 2.50 | 2.60 |
| Wire Nails, Pittsburgh | 1.95 | 1.95 | 1.95 | 2.05 |
| Cut Nails, Pittsburgh | 1.75 | 1.75 | 1.75 | 2.00 |
| Barb Wire, Galv., Pittsburgh | 2.40 | 2.40 | 2.40 | 2.50 |
| **METALS,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Lake Copper, New York | **14.50** | 14.50 | 14.00 | 13.75 |
| Electrolytic Copper, New York | **14.12½** | 14.25 | 13.50 | 13.62½ |
| Spelter, New York | **5.10** | 5.05 | 4.85 | 4.70 |
| Spelter, St. Louis | **4.95** | 4.90 | 4.70 | 4.60 |
| Lead, New York | **4.37½** | 4.42½ | 4.35 | 4.25 |
| Lead, St. Louis | **4.22½** | 4 30 | 4.20 | 4.10 |
| Tin, New York | **30.35** | 30.25 | 29.50 | 31.20 |
| Antimony, Hallett, New York | **8.12½** | 8.12½ | 8.00 | 9.00 |
| Nickel, New York | 45.00 | 45.00 | 45.00 | 45.00 |
| Tin Plate, 100 lb., New York | $3.89 | $3.89 | $3.89 | $4.09 |

## Chicago.

FISHER BUILDING, November 25, 1908.—(*By Telegraph.*)

As respects the Iron and Steel and allied industries, the situation is brightening as activities continue to expand. Last week brought out a good line of orders for Track Supplies from the railroads, in which were included 32,000 kegs of Spikes and Bolts, and to which have been added by a later sale 20,000 kegs of Spikes and 5000 kegs of Bolts, and there is a further large tonnage pending. No final closure of pending Heavy Rail contracts are reported, but the general volume of railroad business is increasing through gradual extension of new car orders, car repair work and material for general betterment. An aggregate of about 12,000 tons of Structural Material was included in contracts last week by fabricators, the principal lot being 9500 tons required by the People's Gas Light & Coke Company's Building. Having secured two orders for Car Axles aggregating 7500 tons, the American Bridge Company has started the forge department of its Chicago plant at full capacity. Both Iron and Steel Axles are included in the principal portion of this tonnage, conforming to the specifications of a road favoring Iron Axles. With the exception of the Light Rail mills, all of the finishing plants at the Illinois Steel Company's South Works are going this week. With 12 of the 26 Open Hearth furnaces in operation, preparations are being made for an early increase in Steel making capacity, and it is expected that all of the Open Hearth furnaces will be in service before long. Merchant Pipe and Tubes are lagging in demand, while Plates and Sheets exhibit more

activity with more regular maintenance of prices. The limited outcome of Old Material, coupled with the resolute holding of a large accumulation of stock in the hands of dealers, keeps prices moving upward as the demand increases. Scarcity in Melting Steel, Borings and Turnings enables sellers to command top prices.

**Pig Iron.**—Last week practically marked the termination of an active buying movement in Pig Iron, which had its beginning in the closing weeks of last month and reached its culmination in the week or 10 days following the election. Buying of Foundry Iron during this period became quite general and included mainly purchases covering first quarter requirements, with a fair proportion extending through the entire first half of next year. Most of the furnaces, both Northern and Southern, have entered orders for enough tonnage to carry them through the first three months of the coming year and are not disposed just now to extend commitments beyond that time. The prevailing sentiment among producers seems to be that prices will not recede below the level established by recent sales, and that there is a reasonable probability of securing higher prices later on for second quarter business. As a result of these conditions three of the leading Alabama interests have practically withdrawn from the market, either for the full first half or second quarter. These include the Alabama Consolidated Coal & Iron Company, which is not quoting on anything except November and December shipments, for which $13, Birmingham, is asked; the Woodward Iron Company, which is not quoting on any forward tonnage, and the Sloss-Sheffield Steel & Iron Company, on whose Iron only deliveries through to the end of first quarter at a price of $13, Birmingham, are being offered. The Tennessee Coal, Iron & Railroad Company is also out of the market, temporarily at least. The Republic Iron & Steel Company is still booking business through the entire second quarter at $13, Birmingham. Local Northern furnaces are declining to quote on second quarter business except at unacceptable prices, and are asking $17.50, at furnace, for first quarter. A good deal of tonnage was transferred last week in lots of 500 to 2000 tons, the transactions generally representing the closure of pending business at figures ruling prior to the advance. One lot of 2000 tons of Northern Iron was taken by a northern Indiana manufacturer at $16.50, delivered; a Michigan threshing machine concern purchased 2000 tons on a basis of about $16.50, Chicago, and another lot of 2000 tons, half Northern and half Southern, was placed with a Michigan stove company. The largest transaction in the local market was for 2500 tons, taken by the Western Electric Company, which included some special analysis Iron, the order being divided between Northern and Southern sellers. A Milwaukee machinery builder is out with an inquiry for 5000 to 10,000 tons, on which deliveries for a year ahead are wanted, and for this reason it is receiving scant attention. Apparently the market has passed into a waiting stage, and the future level of values will depend upon the increase of consumption, as compared with production. The following quotations are for November and December delivery, f.o.b. Chicago:

| | |
|---|---|
| Lake Superior Charcoal | $19.50 to $20.00 |
| Northern Coke Foundry, No. 1 | 17.50 to 18.00 |
| Northern Coke Foundry, No. 2 | 17.00 to 17.50 |
| Northern Coke Foundry, No. 3 | 16.50 to 17.00 |
| Northern Scotch, No. 1 | 18.00 to 18.50 |
| Southern Coke, No. 1 | 17.85 to 18.35 |
| Southern Coke, No. 2 | 17.35 to 17.85 |
| Southern Coke, No. 3 | 16.85 to 17.35 |
| Southern Coke, No. 4 | 16.35 to 16.85 |
| Southern Coke, No. 1 Soft | 17.85 to 18.35 |
| Southern Coke, No. 2 Soft | 17.35 to 17.85 |
| Southern Gray Forge | 15.85 to 16.35 |
| Southern Mottled | 15.60 to 16.10 |
| Malleable Bessemer | 17.00 to 17.50 |
| Standard Bessemer | 17.90 to 18.40 |
| Jackson Co. and Kentucky Silvery, 6 % | 19.90 to 20.40 |
| Jackson Co. and Kentucky Silvery, 8 % | 20.90 to 21.40 |
| Jackson Co. and Kentucky Silvery, 10 % | 22.90 to 23.40 |

*(By Mail.)*

**Billets and Rods.**—Though no lots of exceptionally large tonnage were included in last week's orders for Forging Billets, the demand seems to be growing more general. The principal transaction reported was a lot of 500 tons placed by a Milwaukee machinery builder. Some smaller lots were included in the week's sales, the aggregate of which, though small, shows some improvement. Business in Axle Billets continues to grow at a moderate pace, corresponding with the advance in carbuilding. Orders from carbuilders entered by the American Bridge Company aggregate 6800 tons of both Iron and Steel Axles. The regular price of $28.50, Chicago, for Forging Billets is, we are advised, being maintained. Wire Rod specifications are coming forward at a good rate, together with a fair amount of new business. Prices are firm and unchanged, as follows: Bessemer, $33; Basic, $34; Chain, $33, all at Pittsburgh.

**Rails and Track Supplies.**—Negotiations concerning specifications have retarded the closure of some of the Rail tonnage now pending. About 31,000 tons required by the Chicago & Northwestern will probably be supplied by the leading interest, which has also closed with the Manistee & Northeastern Railroad for its requirements, the amount of which is not definitely stated, also 6000 tons for the Soo Line. Some heavy contracts for Spikes and Bolts have been placed by Western lines, and some of even larger tonnage will probably be entered by the mills within a few days. Included in last week's business were 21,000 kegs of Spikes and 8000 kegs of Bolts, from a leading Western system, which were secured by the Illinois Steel Company, together with 3000 kegs from the Wisconsin Central. This business will probably be supplemented the present week with a contract from another road for 150,000 kegs. The Joliet Bolt mills are now running full, though specifications for Spikes are, as yet, insufficient to occupy the full capacity of this department; betterment in this respect will depend upon how quickly specifications follow the recent contracts placed. The general outlook in Track Supplies is distinctly encouraging as to future business. Business in Light Rails is gradually increasing. An order of 1900 tons entered last week by the Illinois Steel Company brings the total sales for November, up to this time, to 6000 tons. Track Bolt prices have firmed up slightly, while Light Rails are unchanged, the regular price being shaded about $1 a ton. We quote as follows: Angle Bars, accompanying Rail orders, 1908 delivery, 1.50c.; car lots, 1.60c.; Spikes, 1.80c. to 1.90c., according to delivery; Track Bolts, 2.15c. to 2.25c., base, Square Nuts, and 2.30c. to 2.40c., base, Hexagon Nuts. The store prices on Track Supplies range from 0.15c. to 0.20c., above mill prices. Light Rails, 25 to 45 lb., $26; 20-lb., $27; 16-lb., $28; 12-lb., $29. Standard Sections, Bessemer, $28; Open Hearth, $30, on lots of 500 tons and over; on smaller lots, $2 a ton extra.

**Structural Material.**—Of the Structural Material included in the several local projects of importance now pending, a contract for the fabrication of 9500 tons for the People's Gas Light & Coke Company was the only one awarded; this went to the Morava Construction Company, and the plain material will be furnished by the Bethlehem Steel Company. Respecting the tonnage required for the City Hall, the Hart Shaffner & Marx Building, the Denver Viaduct and others heretofore noted, no final action has been taken. The 950 tons for the St. Paul Bridge & Terminal Company, St. Paul, Minn., will be fabricated by the American Bridge Company, which also booked a number of small orders of 100 tons and under, aggregating a little over 1000 tons. The Stewart Building, San Francisco, calling for 300 tons was awarded to the Schroeder Iron Works of that city, and 500 tons for the *Call* Building was taken by the Ralston Iron Works. The railroads are beginning to manifest interest in their bridge material requirements for the coming year, and as a result there are several inquiries of this kind in the market which altogether amount to 15,000 tons or more; one of these, 8500 tons, is from the Northern Pacific. Prices from store are 1.95c. to 2c. Mill prices at Chicago are as follows: Beams and Channels, 3 to 15 in., inclusive, 1.78c.; Angles, 3 to 6 in., ¼-in. and heavier, 1.78c.; larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 15 in., 1.88c.; Zees, 3 in. and over, 1.78c.; Tees, 3 in. and over, 1.83c.

**Plates.**—Plate business is gradually increasing, though progress in this direction is slow, the principal gain being in Universal Plates required for building and other structural work. The general run of orders for Sheared Plates is slightly better, though jobbers and consumers are not buying in greater quantities than are required for immediate needs. Both the Universal and Sheared Plate mills at the South Works are this week in operation. We quote mill shipments as follows: Tank Plates, ¼-in. and heavier, wider than 6¼ and up to 100 in. wide, inclusive, car lots, Chicago, 1.78c.; 3-16 in., 1.88c.; Nos. 7 and 8 gauge, 1.93c.; No. 9, 2.03c.; Flange quality, in widths up to 100 in., 1.88c., base, for ¼-in. and heavier, with the same advance for lighter weights; Sketch Plates, Tank quality, 1.88c.; Flange quality, 1.98c. Store prices on Plates are as follows: Tank Plates, ¼-in. and heavier, up to 72 in. wide, 2c. to 2.10c.; from 72 to 96 in. wide, 2.10c. to 2.20c.; 3-16 in. up to 60 in. wide, 2.10c. to 2.25c.; 72 in. wide, 2.30c. to 2.40c.; No. 8, up to 60 in. wide, 2.10c. to 2.15c.; Flange and Head quality, 0.25c. extra.

**Sheets.**—The market exhibits no features of special interest, save that in a general way the situation is gradually improving. Both jobbers and manufacturers are inclined to expand their orders to cover prospective needs a little further ahead, but this movement is still controlled by a safe degree of conservatism. Galvanized Sheets hold the lead in activity, with a fair demand for Light Black Sheets; the heavier gauges in Blue Annealed, reflecting the prevailing dullness in heavy construction, are less active. Prices are firmer, and it is reported there is little, if any, deviation from the regular schedule. The Sheet department of the Inland Steel Company is now operating at between 75 and 80 per cent. of its capacity. Jobbers report a fair movement from stock, with prices fairly steady at current quotations. We quote mill shipments as follows, Chicago: Blue Annealed, No. 10, 1.98c.; No. 12, 2.05c.; No. 14, 2.08c.; No. 16,

2.18c.; Box Annealed, Nos. 17 to 21, 2.43c.; Nos. 22 to 24, 2.48c.; Nos. 25 and 26, 2.53c.; No. 27, 2.58c.; No. 28, 2.68c.; No. 29, 2.78c.; No. 30, 2.88c.; Galvanized Sheets, Nos. 10 to 14, 2.63c.; Nos. 15 and 16, 2.83c.; Nos. 17 to 21, 2.98c.; Nos. 22 to 24, 3.13c.; Nos. 25 and 26, 3.33c.; No. 27, 3.53c.; No. 28, 3.73c.; No. 30, 4.23c.; Black Sheets from store: Blue Annealed, No. 10, 2.15c.; No. 12, 2.20c.; No. 14, 2.25c.; No. 16, 2.35c.; Box Annealed, Nos. 18 to 21, 2.60c.; Nos. 22 to 24, 2.65c.; No. 26, 2.70c.; No. 27, 2.75c.; No. 28, 2.85c.; No. 30, 3.25c.; Galvanized from store: Nos. 10 to 16, 3c.; Nos. 18 to 20, 3.15c.; Nos. 22 to 24, 3.30c.; No. 26, 3.50c.; No. 27, 3.70c.; No. 28, 3.90c.; No. 30, 4.40c. to 4.45c.

**Bars.**—Business in Steel Bars continues quite satisfactory, the principal producer being in receipt of specifications sufficient to keep its mills running practically full. The greater part of consumers' requirements is covered by contracts placed some time ago, and the proportion of new business being entered is, therefore, small. Owing to the advance in Scrap, Hard Steel Angles and Bars rolled from Steel Scrap and old Steel Rails have firmed up, and this material is now quoted at 1.50c. for Bars, with the usual extra for Angles and Shapes. Due to the same cause, Iron Bars are firm at the regular prices, with some talk of an advance. Local interests are of the opinion, however, that such a step will not be taken unless a further increase in the value of Old Material should make it absolutely necessary. Three Western mills of the Republic Iron & Steel Company are going this week—the Sylvan, at Moline, running full; the Tudor Works, at East St. Louis, with three mills on, and the Chicago Heights plant, with two mills on. Quotations, Chicago, are as follows: Steel Bars, 1.58c., with half extras; Iron Bars, 1.50c.; Hoops, No. 13, and lighter, 1.98c., full extra, Hoop card; Bands, No. 12 gauge and heavier, 1.58c., half extra, Steel Bar card; Soft Steel Angles and Shapes, 1.68c., half extras. Store prices are as follows: Bar Iron, 2c. to 2.15c.; Steel Bars, 1.90c. to 2c.; Steel Bands, 1.90c., as per Bar card, half extras; Soft Steel Hoops, 2.25c. to 2.35c., full extras.

**Merchant Pipe.**—In view of the near approach of cold weather, which will interfere with outside work, the prospect of an increased consumption of Merchant Pipe is, for the time being, naturally unpromising. Under the circumstances, there is no special inducement for jobbers to increase their stocks, and they are consequently ordering only what is needed to supply the current demand. There is, in fact, no material change in the situation, the movement being governed by the conditions that have ruled the market for some time. The following mill discounts are quoted: Black Pipe, ¾ to 6 in., 73.2; 7 to 12 in., 70.2; Galvanized, ¾ to 6 in., 63.2. These discounts are subject to one point on the base. From store, in small lots, Chicago jobbers quote 73 per cent. on Black Steel Pipe, ¾ to 6 in. About three points above these prices is asked for Iron Pipe.

**Boiler Tubes.**—The demand for Locomotive Tubes is sustained by the moderate buying of railroads for repair work. Occasional carload orders for Merchant Tubes represent the extent of activities in this line as far as the mills are concerned. Jobbers are supplying the immediate needs of the boiler shops by shipments from stock. Mill quotations for future delivery, on the base sizes, are as follows: 2¾ to 4¼ in., inclusive, Steel Tubes, 63.2; Iron, 50.2; Seamless, 50.2; 2½ in. and smaller, and lengths over 18 ft., and 2½ in. and larger, and lengths over 22 ft., 10 per cent. extra. Store prices are as follows:

| | Steel. | Iron. | Seamless. |
|---|---|---|---|
| 1 to 1¼ in. | 35 | 35 | 35 |
| 1¼ to 2¼ in. | 50 | 35 | 35 |
| 2½ in. | 52½ | 35 | 35 |
| 2¾ to 5 in. | 60 | 47½ | 47½ |
| 6 in. and larger | 50 | 35 | .. |

**Merchant Steel.**—Some improvement is noted in the demand for Shafting, together with less irregularity in prices. The regular discount of 57 per cent. heretofore applicable to lots of 100 tons and over is now made to include car lots or over. Specifications for Merchant Steel are coming to the mills in good volume, and jobbers are finding it necessary to stock up a little further ahead in order to supply promptly the needs of their customers. We quote as follows: Planished or Smooth Finished Tire Steel, 1.78c.; Iron Finish, up to 1½ x ½ in., 1.73c., base, Steel card; Iron Finish, 1½ x ½ in. and larger, 1.58c., base, Tire card; Channels for solid Rubber Tires, ¾ to 1 in., 2.08c., and 1⅛ in. and larger, 1.98c.; Smooth Finished Machinery Steel, 2.08c.; Flat Sleigh Shoe, 1.63c.; Concave and Convex Sleigh Shoe, 1.83c.; Cutter Shoe, 2.05c.; Toe Calk Steel, 2.13c.; Railroad Spring, 1.98c.; Crucible Tool Steel, 7¼c. to 8c., and still higher prices are asked on special grades. Cold Rolled Shafting in car lots and over, 57 per cent off; in less than car lots, 52 per cent. off, with carload freight allowed within base territory.

**Metals.**—The failure of Copper to hold the gains made in the recent advance has reassured consumers, who hesitated to contract ahead during that movement, and, as a result, what buying there is now is uninfluenced by speculative tendencies. Consumption has increased somewhat and there are more carload buyers in the market for Metal to provide for actual present needs. There were inquiries for one to two car lots of Copper last week from several manufacturers. Spelter has firmed up a point or two under a growing demand, but Lead is only fairly active. Old Metals have declined from ¼c. to ½c., in sympathy with the yielding of values in Ingot Metal. Quotations are as follows: Casting Copper, 14¼c.; Lake, 14½c. to 14¾c., in car lots, for prompt shipment; small lots, ¼c. to ⅜c. higher; Pig Tin, car lots, 32½c.; small lots, 34½c.; Lead, Desilverized, 4.55c. to 4.65c., for 50-ton lots; Corroding, 4.80c. to 4.90c., for 50-ton lots; in car lots, 2¼c. per 100 lb. higher; Spelter, 5.10c.; Cookson's Antimony, 10½c., and other grades, 9¾c. to 10¼c.; Sheet Zinc is $7, f.o.b. La Salle, in car lots of 600-lb. casks. On Old Metals we quote: Copper Wire, 13¼c.; Heavy Copper, 13c.; Copper Bottoms, 11¾c.; Copper Clips, 13c.; Red Brass, 12c.; Yellow Brass, 9½c.; Light Brass, 6¼c.; Lead Pipe, 4.35c.; Zinc, 3¾c.; Pewter, No. 1, 21c.; Tin Foil, 23c.; Block Tin Pipe, 26c.

**Cast Iron Pipe.**—The letting of the 3500 tons advertised by Detroit for last week was postponed until this week, when it is expected the contract will be awarded. Bids will be taken by this city on another lot of 10,000 tons, which is scheduled for award on December 21. The general demand is rather light, and the majority of inquiries concerning deliveries beyond the first of the year are seemingly put out as feelers to test the trend of prices. We quote nominally per ton, Chicago, as follows: Water Pipe, 4 in., $27; 6 to 12 in., $26; 16 in. and up, $25, with $1 extra for Gas Pipe.

**Old Material.**—Prices continue to advance, and nearly all grades have moved up this week from 50c. to $1.50 a ton. The peculiar feature of the situation is the marked difference that exists between the prices of material on track and those of tonnage for contract delivery. Dealers are holding resolutely to stock in yards, and but little stuff is coming out from this source. Thus, while No. 1 Railroad Wrought was bought on track last week at $14.50, no lots of considerable size, not subject to immediate transfer, are being offered by dealers at better than $14.75 to $15, even $15.25 was paid by a dealer for 500 tons on a railroad list. Steel Scrap holds especially strong, and its position is not weakened by the fact that indications point to the impending purchase of 5000 to 10,000 tons by a heavy user of Melting Steel. Heavy drafts on this market for a large amount of Borings and Turnings for the Pittsburgh District has put prices on these grades up 75c. a ton; and no great tonnage seems to be available at this advance. Rerolling Rails on the Great Northern list went for $17.75, and sales of Old Car Wheels in lots of 250 to 300 tons were made at $16.25. The only list thus far reported for closure this week is one of 3000 tons from the Chicago, Burlington & Quincy Railroad, in which there are 900 tons of Wrought. The following prices are per gross ton, f.o.b. Chicago:

| | |
|---|---|
| Old Iron Rails | $19.50 to $20.00 |
| Old Steel Rails, rerolling | 17.25 to 17.75 |
| Old Steel Rails, less than 3 ft | 15.50 to 16.00 |
| Relaying Rails, standard sections, subject to inspection | 22.50 to 23.50 |
| Old Car Wheels | 16.00 to 16.50 |
| Heavy Melting Steel Scrap | 15.00 to 15.50 |
| Frogs, Switches and Guards, cut apart | 15.00 to 15.50 |
| Mixed Steel | 12.25 to 12.75 |

The following quotations are per net ton:

| | |
|---|---|
| Iron Fish Plates | $17.50 to $18.00 |
| Iron Car Axles | 20.50 to 21.00 |
| Steel Car Axles | 18.50 to 19.00 |
| No. 1 Railroad Wrought | 15.00 to 15.50 |
| No. 2 Railroad Wrought | 14.00 to 14.50 |
| Springs, Knuckles and Couplings | 14.50 to 15.00 |
| Locomotive Tires, smooth | 14.75 to 15.25 |
| No. 1 Dealers' Forge | 11.75 to 12.25 |
| Mixed Busheling | 9.50 to 10.00 |
| Iron Axle Turnings | 9.00 to 9.50 |
| Soft Steel Axle Turnings | 9.00 to 9.50 |
| Machine Shop Turnings | 9.00 to 9.50 |
| Cast Borings | 8.00 to 8.50 |
| Mixed Borings, &c | 8.00 to 8.50 |
| No. 1 Mill | 9.00 to 9.50 |
| No. 2 Mill | 8.00 to 8.50 |
| No. 1 Boilers, cut to Sheets and Rings | 10.50 to 11.00 |
| No. 1 Cast Scrap | 14.00 to 14.50 |
| Stove Plate and Light Cast Scrap | 12.25 to 12.75 |
| Railroad Malleable | 14.00 to 14.50 |
| Agricultural Malleable | 11.75 to 12.25 |
| Pipes and Flues | 11.00 to 11.50 |

## Birmingham.

BIRMINGHAM, ALA., November 23, 1908.

**Pig Iron.**—The brisk demand, the limited tonnage unsold for first quarter delivery, and the tendency toward an advance beyond that time warrant the assertion that at no time since the panic has the market been in better condition. Two interests here are now asking $13.50, Birmingham, for first quarter Iron, and while no important sales have been reported at this price, there have been quite a few nice sales of special analysis Iron at $13.50 and $14, Birmingham. The producers other than the two mentioned are still asking $13, Birmingham, for their first quarter Iron, and sales at this price are still being made; yet there is considerable caution being exercised in these sales, for most of the producers are beginning to figure on their probable make during the first quarter and do not seem at all anxious to sell. The demand for Charcoal Iron continues brisk and pro-

ducers anticipate an advance in price. This Iron can still be bought, however, at $19.50, at furnace, for Nos. 1 and 2, and $20 for the chilling grades. There has been no lack of inquiries during the week, and the fact that a large number of these inquiries are for Iron to be delivered over the year 1909 is very significant. So far as known, however, no quotations are being made for this delivery, producers showing a decided disinclination to do so. This feature presages well for the market next year, as both producer and consumer seem to expect an advance. The prospects for a steady and conservative advance in the market are also good. The action of leading producers in maintaining the price of $13, Birmingham, for first quarter delivery, instead of advancing—with the evident intention of keeping the market steady—is expected to be productive of good results. The considerable tonnage of Iron in the hands of speculators has had little effect on the market. Some of this Iron is being sold, but in no instance are sales reported below the market price.

**Cast Iron Pipe.**—No contracts of any importance have been reported placed this week. Small orders continue to come in, however, and the market is considered fairly active. The outlook for new business is good, one of the most encouraging features being the inquiries received from small towns, which have been figuring on new work for some time, but have been unable to close contracts owing to inability to float bonds. Recent telegraphic advices to local manufacturers indicate that more success is being met with now; consequently prospects for business from these towns are good. The report made some time ago of the rumored contract for 40,000 tons to be let by the city of San Francisco, Cal., has been verified, but it seems the tonnage is to be divided into several small lots of a few thousand tons each and ordered out as needed. We quote as follows for Water Pipe, f.o.b. cars here, per net ton: 4 to 6 in., $24; 8 to 12 in., $23; over 12 in., average $22, with $1 per ton extra for Gas Pipe.

**Old Material.**—There has been some increase in consumption, and the market is considered stronger. The demand continues fairly active, Light Cast being especially asked for. Owing to the expected resumption of operations by most of the mills of the district the feeling among dealers is very optimistic. We quote dealers' asking prices as follows, per gross ton, f.o.b. cars here:

| | |
|---|---|
| Old Iron Rails | $14.50 to $15.00 |
| Old Iron Axles | 16.00 to 17.00 |
| Old Steel Axles | 13.00 to 13.50 |
| No. 1 Railroad Wrought | 13.50 to 14.00 |
| No. 2 Railroad Wrought | 10.50 to 11.00 |
| No. 1 Country Wrought | 11.00 to 11.50 |
| No. 2 Country Wrought | 9.50 to 10.00 |
| No. 1 Machinery | 11.00 to 11.50 |
| No. 1 Steel | 10.00 to 10.50 |
| Stove Plates and Light Cast | 9.50 to 10.00 |
| Cast Borings | 5.00 to 5.50 |

## St. Louis.

ST. LOUIS, November 23, 1908.

Inquiry among the leading houses in various lines of business indicates that the volume of trade is gradually expanding. That the improvement has been slow is conceded, but this is regarded as a favorable feature, especially as the prospect warrants the belief that there will be a further expansion, except where a temporary seasonable dullness occurs in certain lines. As before noted, there is a revival of buying of all kinds of material on a more liberal scale on the part of railroads and this is growing more pronounced. Interest in the Pig Iron market continues unabated, though the volume of sales is not as large as for the previous week.

**Coke.**—In addition to the diversion of attention to the Pig Iron situation, there has been to some extent a readjustment of contracts which has helped make a quiet market so far as actual buying is concerned, but the leading sales agencies report a fair volume of inquiry. One house reports that an offer of $2.25 at oven, Connellsville, for a round lot of 72-hr. standard Foundry, shipment over first half of 1909, was declined. The same house states that one of its producers has advanced the price to $2.40 on delivery after January 1. There is a good inquiry for Furnace Coke. We quote as follows: 72-hr. Foundry, $2.25 to $2.50, at oven, Connellsville; Furnace, $1.85 to $2.10, at oven, Connellsville.

**Pig Iron.**—With most of the sales agencies the feature of the week consists in hearing from a large number of buyers for medium to small lots of Pig Iron, and in many cases they are inquiring for shipment over the first quarter of 1909, though most of these buyers usually purchase only for immediate shipment. Some of the Southern furnaces have advanced their price 50c. per ton and several have withdrawn from the market. One of the leading sellers states that only two furnaces of those he represents will take business. This house reports the sale of a round lot of No. 2 Foundry at $13.50, Birmingham, for shipment over first half of 1909. Total sales for the week were 1400 tons. Another house reports sales of 5000 tons at $13, Birmingham, for shipment over first quarter of 1909, with inquiries pending for about the same quantity. There is some inquiry for 1909 shipment indicating a disposition for speculative buying. The sale of 400 tons of No. 1 Foundry at $13.75, Birmingham, for shipment over the first quarter of 1909, is reported. De Camp Bros. & Yule report a sale of 4500 tons of Basic Iron for shipment over the first quarter of 1909, also the sale this week of 3000 tons Basic Iron for same shipment. Both lots are for delivery into St. Louis territory for local consumption. We quote No. 2 Foundry for shipment over the first quarter at $13, and for first half of 1909 at $13.50, Birmingham. Ohio Malleable Bessemer is held at $16. Ironton Northern Silvery, 8 per cent. silicon, is offered at $18.50 to $19, Jackson.

**Finished Iron and Steel.**—The principal sellers of Structural Material report a fair demand from fabricators and state there are some inquiries coming in which indicate that large deals are pending. The inquiry for Standard Rails is more general and is coming from the South and Southwest. Light Rails are in increased demand. The leading seller reports the sale of 1000 tons, mainly to lumber interests. Bolts and Nuts have advanced and are in demand. Bar Iron is higher. Bar Steel shows some improvement in inquiry. For Track Material the demand is very good. The general inquiry for Bars and Bar products indicates increasing interest.

**Old Material.**—While inquiries from rolling mills and foundries for Steel grades are quite numerous, the sales for the week to these interests fall under those of last week. The demand from dealers continues and it would appear they expect the market to do better. The only railroad offering this week is the Chicago, Burlington & Quincy, which is out with a list of 3300 tons. One of the leading houses reports sales for the week, 2000 tons. Another dealer placed 1500 tons and a third marketed 500 tons. Relaying Rails continued in good demand and the price is firm. Offerings by the railroads are very light, while stocks are moderate and in strong hands. We quote as follows, f.o.b. St. Louis, per gross ton:

| | |
|---|---|
| Old Iron Rails | $17.00 to $17.50 |
| Old Steel Rails, rerolling | 15.50 to 16.00 |
| Old Steel Rails, less than 3 ft | 14.25 to 14.75 |
| Relaying Rails, standard sections, subject to inspection | 24.00 to 24.50 |
| Old Car Wheels | 15.50 to 16.00 |
| Heavy Melting Steel Scrap | 14.25 to 14.75 |
| Frogs, Switches and Guards, cut apart | 14.25 to 14.75 |
| Mixed Steel | 10.25 to 10.75 |

The following prices are per net ton:

| | |
|---|---|
| Iron Fish Plates | $16.00 to $16.50 |
| Iron Car Axles | 19.50 to 20.00 |
| No. 1 Railroad Wrought | 14.50 to 15.00 |
| No. 2 Railroad Wrought | 13.50 to 14.00 |
| Railway Springs | 13.00 to 13.50 |
| Locomotive Tires, smooth | 13.50 to 14.00 |
| No. 1 Dealers' Forge | 11.50 to 12.00 |
| Mixed Borings, &c | 6.50 to 7.00 |
| Machine Shop Turnings | 9.00 to 9.50 |
| No. 1 Boilers cut to Sheets and Rings | 9.50 to 10.00 |
| No. 1 Cast Scrap | 13.50 to 14.00 |
| Railroad Malleable | 12.00 to 12.50 |
| Agricultural Malleable | 10.50 to 11.00 |
| Pipes and Flues | 10.00 to 10.50 |
| Railroad Sheet Scrap | 10.50 to 11.00 |

**Lead, Spelter, Etc.**—While there is some speculative demand, the market for Pig Lead is quiet at 4.30c. bid and 4.35c. asked. No sales are reported. As there is a steady demand for Pipe and White Lead, holders are firm in their views for Pig Lead. Lead Ore is lower and dull at $27.50 per 1000 lb., Joplin basis. Spelter continues in good demand at 5c. bid, but no sales are reported. Zinc Ore is strong and in demand. We quote $40 per ton Joplin basis. The surplus that has been carried is rapidly growing less and if the demand continues there will likely be nothing of consequence carried over into the new year. Indications are for a further advance next week. More mills are starting up and the demand from Brass and Galvanizing interests is still quite satisfactory. Tin is higher and demand better. Antimony shows no change for the week; demand fair. Copper is about steady, with good demand.

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Architect Theo. C. Link announces that the plans for the new warehouse for the Roberts, Johnson & Rand Shoe Company will be ready next week. The structure will be 10 stories, and will completely cover a lot 107 x 133 ft. The outside material will be light limestone relieved by massive granite trimmings. Skeleton steel framework will be used and about 700 tons will be required.

The American Car & Foundry Company has been awarded the contract for building 300 ventilated fruit cars and 200 stock cars for the San Antonio & Aransas Pass Railroad.

The St. Louis Car Wheel Company states that there has been a marked improvement in the demand since November 1. The past week has shown a larger gain than at any time during the year. The demand for Car Wheels is coming from both steam and electric roads.

The St. Louis Screw Company finds a moderate increase in the demand for Screws, Bolts, &c.

The Standard Railway Equipment Company reports the demand for railroad repair work holding well, and it is also

in receipt of an order this week for roofs for 700 new cars.

The More-Jones Brass & Metal Company reports a better demand from railroads and the general trade. The improvement, though slow, has been steady.

The St. Louis Rail & Equipment Company finds a good demand for Relaying Rails from both steam and electric railroads—principally from the Southwest. There is also a good demand for track material.

The Buda Foundry & Mfg. Company states that the demand for its products by the southwestern railroads is steadily developing in volume.

## Philadelphia.

PHILADELPHIA, PA., November 24, 1908.

While buying in the Iron and Steel markets continues active, the tonnage taken has not been as large as that booked the previous week or two. The heavy consumers have covered to some extent and further buying has been retarded by the fact that a number of producers have withdrawn from the market, refusing to quote for extended forward delivery, or, as in the case of some sellers of Pig Iron, named higher prices, and buyers hold off, waiting to see what will develop in the near future. The business taken during the week has been of a more natural character, the speculative appearance which the market had for a long time being less in evidence. Pig Iron sales again reach a good aggregate. One fair lot of Basic Iron was taken, but in the Foundry grades the individual tonnages were not heavy, although the total was generally satisfactory to sellers, who are not anxious to book large orders for forward deliveries. Finished materials on the whole show increasing activity; the quantities booked were not as large as those taken the previous week, but the volume is steadily and slowly increasing. The business under consideration is large, some fair boat and car specifications are being figured on and more activity is shown by locomotive builders. The railroads are also reported to be placing business with a trifle more freedom. Old Material is stronger, and prices on the leading grades again show an advance, but transactions have been largely between dealers.

**Pig Iron.**—The market has quieted down, there being less disposition shown on the part of buyers to get under cover. This condition has, no doubt, been brought about by the sellers, who practically control the situation in this territory, and who are maintaining a very strong front. A number of producers have withdrawn from the market as far as business for the next three or four months is concerned, having sold their output for that time, and are not anxious to quote for further extended deliveries. Stocks on furnace banks are very low and producers are not anxious to put in additional producing capacity at the present level, although several are getting very close to the point when they will have to do so to meet the demands of their customers. Prices show an advancing tendency, sales being made, in many instances, at the top of the market, and there seems to be very little cheap Iron about. Those who were low priced sellers are in some cases the high priced sellers to-day. While the bulk of the orders taken are still confined to prompt and first quarter of next year delivery, some little business for the first half and second quarter has been done. One of the Steel mills in this district bought during the week 13,500 tons of Basic for second quarter shipment, the delivered price ranging from $16.50 to $16.60. Sellers of Basic, however, are now very firm, some holding flatly at $17 for second quarter, and $16.75 to $17, delivered, for the first half. A comparatively large volume of business has been done in the Foundry grades, but the individual tonnages have not been large, in a few instances only having exceeded 1000 tons, the bulk of the business being from regular customers, who buy for monthly requirements. From 50 to 500 tons represent the average run of business, and while No. 2 X Foundry in some few instances has been sold at $17, delivered, the greater share was done at 25c. to 50c. advance, and at this time there is practically no $17 Standard No. 2 X Foundry to be had, except it might be to a favored customer. Virginia Foundry Irons continue strong. Several producers are sold up for the next 90 days, but others have been taking a comparatively good tonnage, the most important sale being one of 1200 tons of high grade Iron to a local consumer. For strictly first quarter delivery prices are a shade higher, $17.25 to $17.50 being named for Virginia No. 2 X Foundry delivered in this territory. A sale of 1500 tons of Virginia Basic at $13.50, at furnace, equal to $16.50, delivered, for second quarter, to an Eastern Steel mill, is also to be noted. Southern Iron has not been very active, but prices are firm at $13, Birmingham, for No. 2 Foundry, and some sellers will not accept business for the first quarter on this basis, asking an advance of 50c. a ton for that grade. There has been little done in Forge Iron, which is scarce. Prices for this grade are strong, and it is not believed that $15.75 can be bettered in this territory, while in some few cases the equivalent of $16, delivered, has been done by local sellers. There is a small demand for Low Phosphorus Iron, but no sales have been reported. Sellers are now maintaining prices on this grade more strongly, and $21, delivered, is pretty close to the bottom. We learn of no shading of current quotations, which for delivery in buyers' yards, eastern Pennsylvania and nearby territory, range about as follows either for prompt deliveries or extending through the first quarter of next year:

| | |
|---|---|
| Eastern Pennsylvania, No. 2 X Foundry | $17.25 to $17.50 |
| Eastern Pennsylvania, No. 2 Plain | 16.75 to 17.00 |
| Virginia, No. 2 X Foundry | 17.25 to 17.50 |
| Virginia, No. 2 Plain | 17.00 to 17.25 |
| Gray Forge | 15.75 to 16.00 |
| Basic | 16.50 to 17.00 |
| Low Phosphorus | 21.00 to 21.50 |

**Ferromanganese.**—The market is a rather difficult one to quote. There is still apparently a wide range in prices. Some sellers hold firmly at about $46, Baltimore, for deliveries during the first half of next year and get no business; others, however, are willing to sell at lower figures. One lot of 600 tons was sold yesterday, we understand, at something under $44, Baltimore, and quotations have been made on small lots for fairly prompt shipment at $44.50 to $45, Baltimore. Some fair inquiry for next year's delivery is reported, but few sales were made during the week.

**Plates.**—A fair volume of business continues to come out, but the aggregate has not been as large as that taken the previous week. The business before the trade, however, is quite large, including some 2000 tons of Plates for cars for the Delaware, Lackawanna & Western Railroad. Bids for boats for the Isthmian Canal, requiring some 3000 tons of Plates, will be opened to-day, while the New York Central Railroad has placed orders for four large car floats with one of the local shipyards. General orders are reported to be increasing in size, and the outlook is considered favorable. Prices are being fully maintained, and for delivery in this territory range as follows:

| | Carloads. Cents. | Parts carload. Cents. |
|---|---|---|
| Tank, Bridge and Boat Steel | 1.75 | 1.80 |
| Flange or Boiler Steel | 1.85 | 1.95 |
| Commercial Firebox | 1.95 | 2.00 |
| Marine | 2.15 | 2.20 |
| Locomotive Firebox Steel | 2.25 | 2.30 |

The above are base prices for ¼-in. and heavier. The following extras apply:

| | Extra per 100 lb. |
|---|---|
| 3-16-in. thick | $0.10 |
| Nos. 7 and 8, B. W. G. | .15 |
| No. 9, B. W. G. | .25 |
| Plates over 100 to 110 in. | .05 |
| Plates over 110 to 115 in. | .10 |
| Plates over 115 to 120 in. | .15 |
| Plates over 120 to 125 in. | .25 |
| Plates over 125 to 130 in. | .50 |
| Plates over 130 in. | 1.00 |

**Steel Billets.**—A moderate volume of orders continues to be received by local mills. Individual tonnages, however, are still small, and although there is considerable inquiry for Steel to cover future requirements, no business of any size has been placed. Orders are largely for prompt shipment, the aggregate enabling mills to keep about on an even basis. For delivery in this territory Ordinary Rolling Billets are quoted at $26.20, with Forging Billets $28.20, subject to the usual extras for high carbons and special sizes.

**Structural Material.**—No heavy contracts have been placed, the business transacted being of a rather miscellaneous character. The trade is encouraged, however, by the volume of work now under consideration from car and ship builders, as well as from the building trades, although not much heavy business of the latter class of work has developed. Prices are firm and unchanged, and for delivery in this territory range from 1.75c. to 1.90c., according to specification.

**Sheets.**—But little increase in the volume of business is to be noted. Buyers still hesitate when it comes to placing contracts, notwithstanding the fact that there has been considerable inquiry in this respect. Current orders, however, which are largely for prompt shipment, enable mills to operate at about full capacity, although but few have much booked ahead. Quotations are unchanged, the following range being named for mill shipment, a tenth extra being added for small lots: Nos. 18 to 20, 2.50c.; Nos. 22 to 24, 2.60c.; Nos. 25 to 26, 2.70c.; No. 27, 2.80c.; No. 28, 2.90c.

**Bars.**—An upward tendency in the price of Refined Iron Bars is to be noted. With the steadily advancing price of crude materials, makers have found it necessary to advance their prices, and in some cases they are now on a parity with Steel Bars. There is a fair volume of orders coming out, made up mostly of small business, and some sellers who have been holding at 1.40c. have advanced to 1.45c., at Eastern mill. For deliveries in this territory 1.50c. to 1.55c. is named for Refined Iron Bars, 1.55c. for Steel Bars and 1.50c. for Rerolled Bars.

**Coke.**—The market continues strong, and a fair volume of business has been transacted. Some sellers, particularly those handling the better grades of Coke, are very firm on prices for forward delivery, and several are practically out of the market. Foundry Coke for delivery extending into the first quarter of next year is quoted at $2.25 to $2.50, at

oven, with Furnace Coke $1.65 to $2, at oven, dependent on quantity and delivery. For delivery in this territory quotations range about as follows:

| | |
|---|---|
| Connellsville Furnace Coke | $3.75 to $4.00 |
| Foundry Coke | 4.25 to 4.50 |
| Mountain Furnace Coke | 3.35 to 3.60 |
| Foundry Coke | 3.85 to 4.10 |

**Old Material.**—The market continues strong, and a moderate amount of business has been done, but transactions have been largely between dealers, who will pay more than the mills for some grades, particularly Heavy Melting Steel. The mills are taking tonnage only when they can get material comparatively cheap. In one instance a lot of 1000 tons of Heavy Melting Steel was taken at $16, delivered, full 50c. under what dealers will pay to-day. Steel Scrap is in pretty strong hands, and will likely go higher unless some one is forced to sell. Light sales have advanced prices of nearly all the leading grades of Old Material, and quotations for delivery in buyers' yards in eastern Pennsylvania and nearby territory, while to a large extent nominal, range about as follows:

| | |
|---|---|
| No. 1 Steel Scrap and Crops | $16.25 to $17.00 |
| Low Phosphorus | 18.75 to 19.25 |
| Old Steel Axles | 21.75 to 22.25 |
| Old Iron Axles | 23.50 to 24.00 |
| Old Iron Rails | 20.50 to 21.00 |
| Old Car Wheels | 16.50 to 17.00 |
| Choice No. 1 R. R. Wrought | 19.75 to 20.25 |
| Machinery Cast | 16.00 to 16.50 |
| Railroad Malleable | 15.75 to 16.25 |
| Wrought Iron Pipe | 15.25 to 15.75 |
| New Bundled Sheets | 14.50 to 15.00 |
| No. 1 Forge Fire Scrap | 13.50 to 14.00 |
| No. 2 Light Iron | 10.00 to 10.50 |
| Wrought Turnings | 13.25 to 13.75 |
| Stove Plate | 13.25 to 13.75 |
| Cast Borings | 12.25 to 12.75 |
| Grate Bars | 14.25 to 14.75 |

## Pittsburgh.

PARK BUILDING, November 25, 1908.—(*By Telegraph.*)

**Pig Iron.**—Some fairly large inquiries are in the market, but consumers are showing less anxiety to cover future requirements than they did immediately after the election. Some pretty heavy stocks of Pig Iron are piled up in the furnace yards, and, with the recent heavy output, it would seem that it will take an extraordinary demand to cause prices to advance any further, especially during the winter months. At the same time the market is firm, and prices are probably as strong as a week ago. There is very little inquiry for Bessemer Iron, but the market is firm for delivery through first quarter on the basis of about $16.50, Valley furnace, or $17.40, Pittsburgh. Malleable Bessemer is about $16 for delivery through first quarter, and Basic $15.50 for first quarter, both at Valley furnace. The Westinghouse Electric & Mfg. Company has bought some No. 2 Foundry Iron for second quarter delivery at a price reported to be slightly under $15.50, Valley furnace. We quote No. 2 Foundry for first quarter delivery at $15.50, Valley furnace, or $16.40, Pittsburgh. Forge Iron is held at about $14.25, Valley furnace, or $15.15, Pittsburgh, but on a firm offer $15, Pittsburgh, would probably be done.

**Steel.**—Billets and Sheet and Tin Bars are moving out more freely from mills on specifications against contracts, but very few new orders are being placed, consumers being covered by special contracts. We quote Bessemer and Open Hearth Billets, 3⅞ in. and larger, up to and including 0.25 carbon, $25; 0.26 to 0.60 carbon, $1 extra; over 0.60 carbon, $2 extra, all f.o.b. Pittsburgh. For Wheeling, Martins Ferry, Follansbee, Newcastle, Sharon, Steubenville and Washington (Pa.) delivery, half the freight, or 50c. additional, is charged. Sheet and Tin Bars in random lengths are $27.50, f.o.b. Pittsburgh. Forging Billets take $2 advance over Rolling Billets.

(*By Mail.*)

The tariff hearings before the Ways and Means Committee at Washington have had the effect of unsettling conditions in the Steel trade, the belief being that some radical changes will be made in existing duties. The demand for Pig Iron is not quite so active as it was a week or two ago, but this lull was expected in view of the heavy buying that has been a feature of the market since the election. However, prices remain firm, and furnaces are refusing to sell at present rates for delivery beyond first quarter, believing that early in the new year they will be able to get more. Specifications against contracts for Steel Billets and Sheet and Tin Bars are coming in freely, and shipments by the mills are heavier.

**Ferromanganese.**—While the tone of the market is firm, inquiries for Ferro in the past week or two have been light, and no large tonnage has been sold. A local consumer was in the market recently for about 250 tons, but has not yet bought. We quote 80 per cent. foreign Ferro at $44.50 to $45, seaboard, the rate to Pittsburgh being $1.90 a ton.

**Ferrosilicon.**—Prices seem to be somewhat weaker, and we quote 50 per cent. Ferrosilicon at $63, Pittsburgh. A recent sale of about 50 tons was made for delivery to a point outside of Pittsburgh at slightly less than the above price.

**Wire Rods.**—Some fairly large inquiries for both Bessemer and Basic Rods are in the market for first quarter delivery, and prices are firm. We quote Bessemer Rods at $33; Chain Rods, $33, and Basic Rods, $35, Pittsburgh.

**Muck Bar.**—The sharp advance in the price of Northern Forge Iron, which has sold recently above $15, Pittsburgh, has brought about higher prices for Muck Bar. We now quote best grades of Muck Bar, made from all Pig Iron, at $27, Pittsburgh, and note a sale of about 300 tons at that price. A prominent local maker of Muck Bar having a high reputation in the trade is quoting $27.50, Pittsburgh.

**Skelp.**—Prices of Iron Plates have advanced from $2 to $4 a ton, the latter advance being on Charcoal Iron Plates. As yet prices of Steel Skelp have not been changed, but are very firm. We quote Grooved Steel Skelp at 1.45c. to 1.50c.; Sheared Steel Skelp, 1.50c. to 1.60c.; Grooved Iron Skelp, 1.75c., and Sheared Iron Skelp, 1.85c., f.o.b. Pittsburgh. A sale is reported of about 500 tons of Sheared Iron Skelp at 1.85c., Pittsburgh.

**Steel Rails.**—Three or four of the leading trunk lines are in the market with inquiries for upward of 200,000 tons of Steel Rails, and most of this business is expected to be placed between now and January 1. There is still some hitch between the Rail mills and the railroads over specifications, but this is not serious. The Carnegie Steel Company has a nice rolling schedule for this week, having all three Rail mills at Edgar Thomson in operation to about 35 per cent. of capacity, with fair prospects for next week. The demand for Light Rails is fair, the same company having booked about 1200 tons in the past week. Makers of Light Rails rerolled from Old Rails continue to sell at $2 to $3 a ton under Rails rolled from Billets. Prices on new Light Rails, rolled from Billets, are as follows: $25 for 25 to 45 lb. Sections, with $1 advance for 20 lb., $2 advance for 16 lb., and $3 advance for 12 lb. Standard Sections are $28, at mill, and Angle Splice Bars, 1.65c., at mill.

**Structural Material.**—The Carnegie Steel Company has received from the American Bridge Company specifications for the 25,000 tons of Structural Steel to be used in the construction of the new station of the Chicago & Northwestern Railway at Chicago. No large local contracts were placed the past week, but Structural concerns report heavy inquiries, likely to develop into orders in the near future. The market is firm, and the mills are able to make prompt deliveries. We quote, f.o.b. mill, Pittsburgh: I-Beams and Channels, 3 to 15 in., inclusive, 1.60c., net; I-Beams over 15 in., 1.70c., net; H-Beams over 8 in., 1.80c.; Angles, 3 to 6 in., inclusive, ¼ in. and up 1.60c., net; Angles, over 6 in., 1.70c., net; Angles, 3 x 3 in. and up, less than ¼ in., 1.50c., base, half extras, Steel Bar card; Tees, 3 in. and up, 1.65c., net; Zees, 3 in. and up 1.60c., net; Angles, Channels and Tees under 3 in., 1.50c., base, half extras, Steel Bar card; Deck Beams and Bulb Angles, 1.90c., net; Hand Rail Tees, 3c., net; Checkered and Corrugated Plates, 3c., net.

**Plates.**—The demand for Plates continues somewhat slow, none of the specifications for the Plate and Shapes needed for the Steel cars recently placed having yet been received by local mills. A good deal of tonnage is in prospect, and reports are that the Grand Trunk Railway has placed an order with the Pressed Steel Car Company for 1000 Steel cars, in addition to its previous order for 2000. The market on Plates is firmer, and concessions are more infrequent than they were some time ago, most of the orders being placed with the mills at the full regular prices, which are as follows: Tank Plates, ¾ in. thick, 6¼ in. up to 100 in. wide, 1.60c., base, at mill, Pittsburgh. Extras over this price are as follows:

Tank, Ship and Bridge quality, ¼-in. thick on edges, 100 in. wide, down to but not including 6 in. wide, is taken as base.

Steel Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per square foot, shall be considered ¼-in. Plate. Steel Plates over 72 in. wide must be ordered ¼-in. thick on edge, or not less than 11 lb. per square foot, to take base price. Steel Plates over 72 in. wide ordered less than 11 lb. per square foot down to the weight of 3-16-in. shall take the place of 3-16-in.

Percentages as to overweight on Plates, whether ordered to gauge or weight, to be governed by the Association of American Steel Manufacturers' Standard Specifications.

| | |
|---|---|
| Gauges under ¼-in. to and including 3-16-in. Plates on thin edges | $0.10 |
| Gauges under 3-16-in. to and including No. 8 | .15 |
| Gauges under No. 8 to and including No. 9 | .25 |
| All sketches (excepting straight taper Plates varying not more than 4 in. in width at ends, narrowest end being not less than 30 in.) | .10 |
| Complete Circles | .20 |
| Boiler and Flange Steel Plates | .10 |
| "A. B. M. A." and ordinary Firebox Steel Plates | .20 |
| Still Bottom Steel | .30 |
| Marine Steel | .40 |
| Locomotive Firebox Steel | .50 |
| Shell grade of Steel is abandoned. | |
| For widths over 100 in. up to 110 in | .05 |
| For widths over 110 in. up to 115 in | .10 |
| For widths over 115 in. up to 120 in | .15 |
| For widths over 120 in. up to 125 in | .25 |
| For widths over 125 in. up to 130 in | .50 |
| For widths over 130 in | 1.00 |

TERMS.—Net cash 30 days. Pacific Coast base, 1.50c., f.o.b. Pittsburgh.

**Sheets.**—The demand for both Black and Galvanized

Sheets continues fairly active, and we are advised that prices are being better held than for some time, nearly all the new orders entered being at full regular prices. The American Sheet & Tin Plate Company is now operating to 56 per cent. of its Sheet mill capacity, and as soon as orders warrant its mill at Sharon will be started up, using the Bray continuous process for rolling Sheets, a decision favorable to the company in the suit of P. E. Donner having just been handed down at Philadelphia. For shipment from mill prices are as follows: Blue Annealed Sheets, No. 10 and heavier, 1.80c.; Nos. 11 and 12, 1.85c.; Nos. 13 and 14, 1.90c.; Nos. 15 and 16, 2c.; Box Annealed, Nos. 17 to 21, 2.25c.; Nos. 22 to 24, 2.30c.; Nos. 25 and 26, 2.35c.; No. 27, 2.40c.; No. 28, 2.50c.; No. 29, 2.60c.; No. 30, 2.70c. Galvanized Sheets, Nos. 10 and 11, 2.45c.; Nos. 12 and 14, 2.55c.; Nos. 15 and 16, 2.65c.; Nos. 17 to 21, 2.80c.; Nos. 22 and 24, 2.95c.; Nos. 25 and 26, 3.15c.; No. 27, 3.35c.; No. 28, 3.55c.; No. 29, 3.70c.; No. 30, 3.95c.; No. 28, Painted Roofing Sheets, $1.75 per square, and Galvanized Roofing Sheets, No. 28, $3.10 per square, for 2½-in. corrugations. These prices are subject to a rebate of 5c. per 100 lb. to the large trade under the usual conditions, jobbers charging the usual advances for small lots from store.

**Tin Plate.**—On Monday, November 30, the South Sharon works of the American Sheet & Tin Plate Company will be started. This plant contains 20 hot mills and has been idle for about five months. The company also expects to start in the near future its Greer works, at New Castle, which has been idle for some months, and which contains 20 hot mills. The Shenango works, at New Castle, containing 30 hot mills, the largest single Tin Plate plant owned by the company, has been running full for some time. At the Greer works some new tinning pots are being added in order to make this plant self-contained, a portion of its Black Plate output having heretofore been sold in the open market. Heavy contracts for Tin Plate have been placed by the salmon packers, and other canning interests are now giving out large orders for delivery in the first three or four months of next year. The outlook is that the Tin Plate mills will be quite busy during the winter months. We are advised that regular prices on Tin Plate are being maintained, as follows: $3.70 for 100-lb. Cokes, 14 x 20, f.o.b. Pittsburgh, terms 30 days, less 2 per cent. off for cash in 10 days, this price being subject to the usual rebate of 5c. per base box in large lots.

**Hoops and Bands.**—Consumers are now getting ready to place their season contracts for 1909, but the outlook is that the consumption of Hoops will be materially lessened by reason of the wave of prohibition which is sweeping over the country. It is said that regular prices are being maintained as follows: Steel Hoops, 1.80c., base, full Hoop card prices; Steel Bands, 1.40c., base, half Steel card extra, all f.o.b. cars, Pittsburgh, in carload lots, for delivery during 1908.

**Iron and Steel Bars.**—Specifications against contracts for Steel Bars are being received by the mills in a steady stream, and shipments are correspondingly heavy. Some of the leading Steel Bar interests are now running nearly full, being the first time this has been the case in some months. The makers of Iron Bars have advanced prices and now quote 1.42c. f.o.b., Pittsburgh, for Western shipment, or 1.60c., Chicago. For delivery in the Pittsburgh District the price is 1.50c. It is stated that these new prices are being maintained. We quote Steel Bars at 1.40c., Pittsburgh, for base sizes.

**Railroad Spikes.**—As noted by wire in this report last week, a number of the leading railroads have inquiries out for 40,000 to 50,000 kegs of Spikes, but desire to buy for delivery through all of next year at present prices, but the mills are not willing to accept them on this basis, preferring to take contracts only through first quarter or not beyond first half. Prices on Spikes are relatively low, and the Spike makers believe that if general conditions improve they can get higher rates. We quote: Standard sizes, 4½ x 9-16 in., at $1.70, and the smaller sizes at $1.80 per 100 lb. in carload and larger lots, with an advance of 5c. per 100 lb. for less than carload, f.o.b. Pittsburgh.

**Merchant Steel.**—We note quite an active demand for Shafting, and are advised that prices are being more firmly held than for some time. A fair amount of new business is being entered for Tire and Spring Steel, while implement makers and jobbers are specifying fairly well against contracts. On contracts for Shafting regular discounts are slightly shaded, but most of the new business being placed is at official discounts, which are 57 per cent. off in carloads and 52 per cent. on less than carloads delivered in base territory. Prices on Merchant Steel are being shaded, regular quotations being as follows: Smooth Finished Machinery Steel, 1.80c. to 1.90c.; Flat Sleigh Shoe, 1.75c. to 1.85c.; Cutter Shoe Steel, 2.15c. to 2.25c.; Toe Calk, 1.90c. to 1.95c.; Railroad Spring Steel, 1.60c. to 1.75c., the higher prices being for Pennsylvania Railroad analysis. Carriage Spring Steel is 1.80c.; Tire Steel, Iron finish, 1½ x ½ in. and heavier, 1.40c.; under 1½ in., 1.55c. Planished Tire Steel is 1.60c., all f.o.b., at mill.

**Spelter.**—The market has quieted down again, and prices are only fairly strong. We quote prime grades of Western Spelter at 4.90c. to 4.95c., East St. Louis, equal to 5.02½c. to 5.07½c., Pittsburgh.

**Merchant Pipe.**—The season for placing orders for line Pipe is pretty well over, but the demand for merchant sizes continues quite active, and so far this month has shown an increase over October. Some very large projects in line Pipe are under way, and the mills look for orders involving a heavy tonnage to be placed early next year. The mills are absolutely maintaining prices on both Iron and Steel Pipe. Discounts on Steel Pipe, ¾ to 6 in., to the large trade, are 76 and 5 per cent. off list. Regular discounts are as follows:

*Merchant Pipe.*

| | Jobbers, carloads, Steel. Black. % | Galv. % |
|---|---|---|
| ⅛ to ¼ in | 67 | 51 |
| ⅜ in | 69 | 55 |
| ½ in | 71 | 59 |
| ¾ to 6 in | 75 | 65 |
| 7 to 12 in | 72 | 57 |
| Extra strong, plain ends: | | |
| ⅛ to ⅜ in | 60 | 48 |
| ½ to 4 in | 67 | 55 |
| 4½ to 8 in | 63 | 51 |
| Double extra strong, plain ends: | | |
| ½ to 8 in | 56 | 45 |

Discounts on Genuine Iron Pipe are as follows:

| | Black. % | Galv. % |
|---|---|---|
| ⅛ to ¼ in | 65 | .. |
| ⅜ in | 67 | 53 |
| ½ in | 69 | 57 |
| ¾ to 6 in | 73 | 63 |
| 7 to 12 in | 70 | 55 |
| Extra strong, plain ends: | | |
| ⅛ to ⅜ in | 58 | 46 |
| ½ to 4 in | 65 | 53 |
| 4½ to 8 in | 61 | 49 |
| Double extra strong, plain ends: | | |
| ½ to 8 in | 54 | 43 |

**Boiler Tubes.**—Some fairly large contracts for Boiler Tubes have been made by railroads for delivery in first quarter and first half of next year, but as yet these orders represent only what is absolutely needed. The demand for Merchant Tubes is reported better, and prices on both Locomotive and Merchant Tubes are firmer than for some time. For Merchant Tubes in small lots, on which an extra 5 per cent. is allowed in carloads, discounts are as follows:

*Boiler Tubes.*

| | Iron. | Steel. |
|---|---|---|
| 1 to 1½ in | 42 | 47 |
| 1¾ to 2¼ in | 42 | 59 |
| 2½ in | 47 | 61 |
| 2¾ to 5 in | 52 | 65 |
| 6 to 13 in | 42 | 59 |

2½ in. and smaller, over 18 ft. long, 10 per cent. net extra.
2¾ in. and larger, over 22 ft. long, 10 per cent. net extra.

**Iron and Steel Scrap.**—Consumers of Steel Scrap are not buying very freely at present, being pretty well covered, but there is a good deal of activity between dealers, and the market is very firm. There was some heavy buying of Steel Scrap three or four weeks ago by the Pittsburgh Steel Company, the Allegheny Steel Company and other large consumers, and some of the dealers who sold Scrap to these interests sold short, and have been compelled to cover their sales at prices that in some cases are $1 a ton higher than they obtained. Dealers quote about as follows: Heavy Steel Scrap, $16.75 to $17, for Pittsburgh, Sharon, Steubenville or Leechburg, Pa., delivery; for delivery at Monessen, Pa., which takes a higher freight rate, $17 has been quoted. Cast Iron Borings are $11 to $11.25; Bundled Sheet Scrap, $13.50 to $13.75; No. 1 Busheling Scrap, $14.75 to $15; No. 2, $10.75 to $11; No. 1 Cast Scrap, $14.75 to $15; Iron Axles, $24 to $24.50; Sheet Bar Crop Ends, $18.50 to $18.75; Rerolling Rails, $18.50, delivered Cambridge, Ohio, and $19 to $19.50, delivered Cumberland, Md.; Low Phosphorus Melting Stock, $18 to $18.25; Steel Axles, $19.50 to $20; Scrap Bars, $13 to $13.25; Machine Shop Turnings, $12.25 to $12.50; Railroad Wrought Scrap, $16.75 to $17; Railroad Malleable Scrap, $15 to $15.50; Iron Rails, $18.75 to $19, and Locomotive Tires, $17 to $17.25, all per gross ton f.o.b. Pittsburgh, unless otherwise stated. We note sales as follows: 1000 tons Heavy Steel Scrap at $16.75; 500 tons at $16.85; 300 tons of Bundled Sheet Scrap at $13.75; 2000 tons of Cast Iron Borings at $11.50 to $12, delivered; 700 tons of Railroad Malleable Scrap at $15.75; 1000 tons of Turnings at $12.50 and $13, and 500 tons of Old Car Wheels at $15, Baltimore, equal to $17.30, Pittsburgh.

**Coke.**—Conditions in the Coke trade are showing betterment, strictly Connellsville Furnace Coke for prompt delivery now being held at $1.80 to $1.85 per net ton, at oven, while on contracts for first half $2 and higher is being quoted. Connellsville 72-hr. Foundry Coke on contracts for first half of the year is held at $2.25 up to $2.50 a ton, at oven. Out of 37,893 ovens in the Connellsville regions, 18,389 were active last week, and 19,504 were idle, the output having been 228,190 tons, a slight decrease over the previous week.

## Cincinnati.

CINCINNATI, OHIO, November 25, 1908.—(*By Telegraph.*)

Conditions in this market are unquestionably improving all the time. As usual in a rising market, the tool trade is the last to feel the effect, and in machinery lines, therefore, the improvement is mainly in sentiment, but hours are being increased, and some additional men being employed. All local tool manufacturers are feeling the improved conditions at this time in the tone of their correspondence, which is strongly optimistic. In finished lines, the same feeling obtains. The most independent attitude is manifested in Pig Iron circles, and to-day not 50 per cent. of the leading interests will quote for the second quarter, and none for the last half, with a number declared out of the market for spot business or first quarter. Rumors also of rehabilitation of idle furnaces and the establishment of new ones are heard. Parties are figuring on building a furnace in one of the largest Indiana cities, and the rehabilitation of the Bird Furnace in Ironton is also announced by a firm of Columbus capitalists and selling agents, the date approximately the first of the year. Encouraging reports come from the manufacturing concerns in the upper end of the State. The jobbing foundries are gradually increasing their melts.

**Pig Iron.**—Some heavy buying characterised the market the past week, somewhat lessened this week because of the rapidly increasing independence of furnacemen. For instance, the most closely contested inquiry of the week for 1000 tons of analysis Iron for the first half for a large car manufacturing concern in Central Ohio, expected to go through to-day on a basis of $13, Birmingham, for the Southern, and $15.50, at furnace, for the Northern, did not materialise. Local financial interests strongly interested in the company felt that inasmuch as it has enough Iron on its yards to last through three-quarters of the year, and as the upset price for next year's deliveries contemplated nothing beyond the first half, they had better wait, and particularly as they are using advantageously some Scrap picked up at attractive prices. The best price heard for Northern Iron to-day is $15.50, Ironton, and a number of furnaces are asking $16 for deliveries extending into the second quarter. On Southern Iron furnaces are firm on $13, Birmingham, for No. 2, which is interpreted as spot business, much extended deliveries bringing out a 50c. advance. There is a scarcity of low grades, the inquiry of the large Indiana melter who wanted 5000 to 8000 tons of Southern Forge, having, it is understood, been abandoned, the company buying Scrap. It is difficult to get a line on Basic, representatives of Southern furnaces, as a rule, announcing that they are sold up for the first quarter. Ohio Silveries are still quotable at $18.50, at furnace, for 8 per cent. Southern Silicon Irons, showing a little advance when the delivered prices into territory north from Cincinnati are compared. A considerable part of the requirements of the large Indiana agricultural interest which wanted about 3000 tons of Bessemer, 9000 tons of Charcoal and 2400 tons of Foundry is understood to be still pending. A stove manufacturer in southern Indiana wants 1000 tons of Southern No. 2 for the first half; a Pittsburgh manufacturer of Plumbers' Supplies is in the market for 3000 tons, which will probably all go to Northern furnaces, save some Southern Soft for phosphorus; a central Indiana foundry is asking for 2500 tons of No. 1 Soft and No. 2 Foundry for the first half; a northern Indiana foundry and machine concern wants 5000 to 6000 tons of No. 2 Soft and No. 3 Foundry for first half; Michigan Stove foundries are in the market for considerable Iron; one asking for 3000 tons for first half, another 5000 tons for the same delivery, which is expected to be placed with Detroit or Toledo furnaces. A Hamilton, Ohio, foundry, which negotiated for 500 to 800 tons, and which was closely contested, is reported to have bought in Ironton, and the local furnace is said to have such well filled order books as to warrant withdrawal to-day of the $15.50, Ironton, quotation, and the substitution of a $16 price for deliveries running through the first half. For delivery balance of the year and for the first quarter we quote, based on freight rates of $3.25 from Birmingham and $1.10 from the Hanging Rock District, f.o.b. Cincinnati, as follows:

| | |
|---|---|
| Southern Coke, No. 1 | $16.75 to $17.25 |
| Southern Coke, No. 2 | 16.25 to 16.75 |
| Southern Coke, No. 3 | 15.75 to 16.25 |
| Southern Coke, No. 4 | 15.25 to 15.75 |
| Southern Coke, No. 1 Soft | 16.75 to 17.25 |
| Southern Coke, No. 2 Soft | 16.25 to 16.75 |
| Southern Coke, Gray Forge | 14.75 to 15.25 |
| Southern Mottled | 14.50 to 15.00 |
| Ohio Silvery, 8 per cent. Silicon | 19.60 |
| Lake Superior Coke, No. 1 | 17.10 to 17.60 |
| Lake Superior Coke, No. 2 | 16.60 to 17.10 |
| Lake Superior Coke, No. 3 | 16.10 to 16.60 |
| Standard Southern Car Wheel | 22.25 to 23.25 |
| Lake Superior Car Wheel | 21.75 to 22.75 |

(*By Mail.*)

**Coke.**—The market is active in Furnace brands and prices are firm. Some of the largest contracting of the year has been done within the past week or 10 days, but almost exclusively in Furnace Coke. Five large furnace companies in the South are reported to have bought their first half supply within the past few days, and through this market. These contracts alone will involve shipments of about 18,000 tons per month. This Coke is reported to have been contracted at something like $1.85, and comes from the Connellsville and Wise County fields. The best price heard to-day for Connellsville Furnace Coke is $2, at oven, for the first half, which might be shaded a little for spot deliveries. It is difficult to get a price for the Wise County product, for the reason that the heavy selling of the past few days has reduced the buyers, nearly all of whom are now supplied to the minimum, and nearly all ovens are exceedingly busy getting out shipments on contract. Pocahontas Furnace Coke is selling at $1.80 to $1.85, at oven, for the first half. Dealers are agreed that the sale of Foundry Coke is not yet at all commensurate with the heavy selling of Pig Iron, which suggests that these Iron sales have been largely speculative and the melt is still light. Connellsville Foundry for the first half can be bought for from $2.35 to $2.50, and Wise County about $2.25.

**Finished Iron and Steel.**—All lines are feeling the stimulus of business expansion; inquiries are better, and the prospects seem good for a strong opening of the new year. The report of the $2 advance in Bar Iron has reached here, but does not affect local dealers as yet, as Western mills are making the old price. Shafting seems to be the strongest item in the local selling market, some excellent sales for shipment to the South and Southwest having been made. Structural Material is still in demand, but somewhat lessened because of the encroachments of cold weather. Dealers report collections slower, although bank deposits are piling up at a remarkable rate. Prices to the trade, f.o.b. Cincinnati, are as follows: Iron Bars, carload lots, 1.55c., base, with half extras; small lots from store, 1.85c., base, half extras; Steel Plates, carload lots, 1.75c., base, with half extras; small lots from store, 1.85c., base, half extras; Base Angles, carload lots, 1.85c., base; small lots from store, 2.10c.; Beams, Channels and Structural Angles, 1.85c., base; small lots from store, 2.10c.; Plates, ¼-in. and heavier, carload lots, 1.85c.; small lots from store, 2c.; Blue Annealed Sheets, heavy, No. 16, carload lots, 2.15c.; small lots from store, 2.50c.; No. 14, carload lots, 2.05c.; small lots from store, 2.40c.; No. 10 and heavier, carload lots, 1.95c.; small lots from store, 2.20c.; No. 12, carload lots, 2c.; small lots from store, 2.30c.; Sheets (Light), Black, No. 28, carload lots, 2.65c.; Galvanized Sheets, No. 28, carload lots, 3.70c.; Steel Tire, 4-in. and heavier, carload lots, 1.95c.; Plates, 3-16 and No. 8, carload lots, 2c.; small lots from store, 2.20c.

**Old Material.**—There is a strong disposition manifest on the part of the large dealers in this territory to force prices, some quoting $1 advance over last week, although others more modestly have compromised at 25c. to 50c. All yards are full, and some good-sized shipments of Melting Steel have been made to Eastern mills. Although $15 is today indicated as the minimum asking price for Heavy Melting Steel, some late purchases are said to have been made at $14.50, Cincinnati. On account of the rapid rise in Scrap and so nearly the present price of Pig Iron, interest is veering to the raw furnace product, and some good sales have been made to melters who nominally use Old Material. Dealers' prices to the trade, as nearly as they can be determined from different authorities, whose figures vary considerably, are as follows, f.o.b. Cincinnati:

| | |
|---|---|
| No. 1 R. R. Wrought, net ton | $13.50 to $14.50 |
| Cast Borings, net ton | 5.50 to 6.00 |
| Heavy Melting Steel Scrap, gross ton | 15.00 to 15.50 |
| Steel Turnings, net ton | 6.00 to 7.00 |
| No. 1 Cast Scrap, net ton | 13.00 to 14.00 |
| Burnt Cast, net ton | 9.00 to 10.00 |
| Old Iron Axles, net ton | 16.75 to 17.75 |
| Old Iron Rails, gross ton | 15.00 to 16.00 |
| Old Steel Rails, short, gross ton | 13.00 to 14.00 |
| Old Steel Rails, long, gross ton | 12.75 to 13.75 |
| Relaying Rails, 56 lb. and up, gross ton | 21.50 to 22.50 |
| Old Car Wheels, gross ton | 15.00 to 16.00 |
| Low Phosphorus Scrap, gross ton | 14.00 to 15.00 |

## Buffalo.

BUFFALO, N. Y., November 24, 1908.

**Pig Iron.**—The demand has been well maintained in all lines, with improved inquiry for most grades and a good volume of business placed, principally for first quarter and half of next year. Considerable Malleable has been bought recently for Eastern territory, and there is also quite a heavy demand for Iron from Pipe manufacturers, one inquiry being for 3000 to 5000 tons and two others for 1000 and 800 tons, respectively. We quote as follows, f.o.b. Buffalo:

| | |
|---|---|
| No. 1 X Foundry | $16.00 to $16.50 |
| No. 2 X Foundry | 15.50 to 16.00 |
| No. 2 Plain | 15.25 to 15.75 |
| No. 3 Foundry | 15.00 to 15.50 |
| Gray Forge | 14.75 to 15.25 |
| Basic | 15.75 to 16.25 |
| Malleable Bessemer | 16.00 to 17.00 |
| Charcoal | 20.00 to 20.50 |

**Old Material.**—Transactions have not been large, as dealers' and consumers' ideas of values in most lines have

been widely at variance, dealers holding strongly for higher prices than consumers will concede, with no indications of weakening on the part of the former. We quote dealers' asking prices, per gross ton, f.o.b. Buffalo, as follows:

| | |
|---|---|
| Heavy Melting Steel Scrap | $15.50 to $16.25 |
| No. 1 Railroad Wrought | 16.75 to 18.00 |
| No. 1 Railroad and Machinery Cast Scrap | 14.75 to 15.75 |
| Old Steel Axles | 18.50 to 20.00 |
| Old Iron Axles | 22.50 to 24.00 |
| Old Car Wheels | 17.00 to 18.00 |
| Railroad Malleable | 14.50 to 15.00 |
| Boiler Plate | 13.00 to 13.50 |
| Locomotive Grate Bars | 12.50 to 13.00 |
| Pipe | 12.50 to 13.00 |
| Wrought Iron and Soft Steel Turnings | 9.25 to 9.75 |
| Clean Cast Iron Borings | 8.25 to 8.75 |
| No. 1 Busheling Scrap | 14.50 to 15.00 |

**Finished Iron and Steel.**—The volume of orders is equally as good as for last week in Billets, Bars and general lines, mostly in small lots. In Structural Material there has been a falling off, with little new business of any magnitude in sight, although there are a few Structural propositions in the preliminary stages. The James Stewart Company, Chicago, which has the contract for the entire work on the large new flouring mill that the Washburn-Crosley Company is to erect here, duplicating its present mill, will soon sublet contract for the Structural Steel required.

## Cleveland.

CLEVELAND, OHIO, November 24, 1908.

**Iron Ore.**—With a total movement of about 25,000,000 tons, which is 3,000,000 tons more than predicted early in the year, the shipping season is being rapidly wound up and little Ore will be forwarded from upper lake ports after this week. The last cargoes will leave the upper lake ports before noon of December 5, when the insurance expires. Owing to the unusually mild weather of the past few days the boats have secured good dispatch at the head of the lakes, loading not being delayed by frozen Ore. There has been much improvement in shipping orders from Lake Erie docks in the past 10 days, due largely to the fact that more furnaces have gone into blast, and shipments are now quite good. The Ore that is being sent forward to the furnaces is mostly Ore that was brought down in 1907. Prices at Lake Erie docks per gross ton are as follows: Old Range Bessemer, $4.50; Mesaba Bessemer, $4.25; Old Range Non-Bessemer, $3.70; Mesaba Non-Bessemer, $3.50

**Pig Iron.**—Following the heavy buying movement in Foundry Iron, the market has settled down, and the tonnage sold the past week was very small, as compared with the previous two or three weeks. A local foundry interest purchased considerable for the first half delivery, but with this exception sales have all been in quite small lots. Nearly all the consumers in this territory have covered for their minimum requirements for the first quarter, and a large share of them for the first half. The price has settled down to a basis of $16, Valley furnace, for No. 2, for the first quarter and half, and it does not appear that this is being shaded to any extent. A local interest has sold some No. 2 at $16.50, at furnace, and has rejected a number of offers at $16 from consumers whose freight rate is the same from the Valley as from Cleveland. This interest has again advanced its price, and is quoting $17, at furnace, as the minimum price for No. 2, for Cleveland and immediate territory. Furnace interests are now so well sold up for the first quarter that they are holding the market firmly, and expect that by holding off they will be able later to get higher prices. A local interest reports sales aggregating 4500 tons of Foundry Iron from its furnace in the Pittsburgh District during the week to consumers in that territory. This was sold in eight lots, the largest being one of 1000 tons. Two furnaces operated by local interests have gone out of blast for repairs, for the reason that they had been working badly for some time. Ella Furnace of Pickands, Mather & Co., at West Middlesex, Pa., which has been on Bessemer Iron, was blown out November 20, and the stack of the Struthers Furnace Company, Struthers, Ohio, which has been on Basic Iron, was blown out November 23. Both will be blown in again as soon as the necessary repairs are made. Inquiries for Basic Iron continue fairly good. A local interest is holding firmly to $16, Valley furnace, but reports no sales. There is little inquiry for Malleable Iron, the large consumers not yet having come into the market. Foundry Iron for the balance of the year is firmer, producers now asking about the same prices as for the first quarter. For the balance of the year we quote, delivered, Cleveland, as follows:

| | |
|---|---|
| Bessemer | $16.90 |
| Northern Foundry, No. 1 | $17.25 to 17.75 |
| Northern Foundry, No. 2 | 16.75 to 17.25 |
| Northern Foundry, No. 3 | 16.25 to 16.75 |
| Gray Forge | 15.00 to 16.00 |
| Southern Foundry, No. 2 | 17.35 |
| Jackson County Silvery, 8 per cent. Silicon | 20.05 |

**Coke.**—The market is firm and fairly active in both grades. A number of foundry interests covered during the week for their requirements of Foundry Coke for the first half. We quote Standard Connellsville Furnace Coke at $1.90 to $2, at oven, for delivery during the first half, and Connellsville 72-hr. Foundry at $2.25, at oven, for balance of the year, and $2.25 to $2.40 for the first half of next year.

**Finished Iron and Steel.**—Specifications continue fairly good, and there is an improvement in the volume of new business in some lines of material, particularly Structural. The principal producers have decided that they will make contracts for Structural Shapes and Plates at present prices for delivery during all of 1909 instead of only to July 1, and this action has stimulated the placing of contracts. One contract for 2500 tons of Structural Shapes has been closed by a local fabricator, and several smaller orders have been taken for extended delivery, and another contract for 3000 tons is pending. Bids will be received soon for the new building to be erected in Cleveland by the Brotherhood of Locomotive Engineers, which will require 2100 tons for delivery about March 1. Specifications are still light, being mostly for small lots. The Carnegie Steel Company booked an order during the week for 3080 tons of Standard Section Rails for a new Ohio railroad, the Port Clinton Short Line, and other inquiries are pending, aggregating about 4000 tons, including 3500 tons for the Wheeling & Lake Erie, which road is also taking about 1600 tons of Standard Sections on an old contract. The lake shipbuilding industry continues to improve. During the week the American Shipbuilding Company took a contract for a 400-ft. freighter for delivery next spring, making four large freight boats this company now has under contract for next season's delivery, and the Great Lakes Engineering Works, Detroit, closed a contract for a 150-ft. passenger boat. It is understood that contracts for two other freight boats will be placed very soon. An improvement is noted in orders from railroads for Iron Bars, Bolts and Nuts for repair work. Although some of the mills have advanced the price of Iron Bars $2 per ton, local mills and jobbers continue to take orders for early delivery at 1.35c., Pittsburgh, the price that has been prevailing for some time. The demand for Plates continues light, and smaller mills are still shading prices from $1 to $2 a ton. The price of Sheets is being more firmly maintained. Steel Bars are firm, and specifications continue good. Jobbers report a fairly good volume of specifications, but new business with them which took a spurt after election is rather light. There is an inquiry from a local manufacturer for about 250 tons of Light Rails for a Government contract in Panama. We quote Iron Bars, 1.45c., Cleveland, for car lots; Steel Bars, 1.50c., Cleveland, for car lots, half extras; Beams and Channels, 1.70c., Cleveland, and Plates, ¼-in. and heavier, 1.70c., Cleveland. We quote Sheets, mill shipments, car lots, Cleveland, as follows: Blue Annealed, No. 10, 1.90c.; Box Annealed, No. 28, 2.60c.; Galvanized, No. 28, 3.65c. Jobbers quote Iron and Steel Bars out of stock at 1.65c. to 1.70c. Beams and Channels from warehouse are 2c., and Plates, ¼-in. and heavier, 1.90c. Warehouse prices on Sheets are as follows: Blue Annealed, No. 10, 2.10c.; Box Annealed, No. 28, 2.70c.; Galvanized, No. 28, 3.80c. Warehouse prices on Boiler Tubes, 2¾ to 5 in., are 65 per cent. discount, and on Black Merchant Iron Pipe, base sizes, 71 per cent. discount.

**Old Material.**—The market has been very active as the result of considerable speculative buying and the covering by dealers who had sold short. When delivery was called for by the mills dealers who had sold short had to pay the prices demanded, which in some cases were at least $2 a ton higher than the prices paid by the consumers. The activity has caused another advance in prices on several grades, particularly Borings, Turnings, Drillings, Wrought Scrap and Heavy Melting Steel, and the market is very firm. Producers who had been holding their Scrap for some time for better prices have sold quite heavily. No. 1 Busheling has sold at high as $15, Turnings at $11, and dealers are offering $16 for Heavy Melting Steel. Inquiries from consumers are scarce. The present market is almost wholly a dealers' market, consumers are staying out of it as much as possible. Among the railroad offerings this week is a lot of about 500 tons by the Cincinnati, Hamilton & Dayton. Dealers' prices to the trade, per gross ton, f.o.b. Cleveland, are as follows:

| | |
|---|---|
| Old Steel Rails | $15.00 to $15.50 |
| Old Iron Rails | 17.50 to 18.50 |
| Steel Car Axles | 19.00 to 19.50 |
| Old Car Wheels | 15.00 to 15.50 |
| Heavy Melting Steel | 16.00 to 16.50 |
| Relaying Rails, 50 lb. and over | 22.00 to 23.00 |
| Railroad Malleable | 13.75 to 14.25 |
| Agricultural Malleable | 12.50 to 13.00 |
| Light Bundled Sheet Scrap | 9.50 to 10.00 |

The following prices are per net ton, f.o.b. Cleveland:

| | |
|---|---|
| Iron Car Axles | $20.50 to $21.00 |
| Cast Borings | 8.50 to 9.00 |
| Iron and Steel Turnings and Drillings | 9.50 to 10.00 |
| Steel Axle Turnings | 10.50 to 11.00 |
| No. 1 Busheling | 14.00 to 14.50 |
| No. 1 Railroad Wrought | 15.50 to 16.00 |
| No. 1 Cast | 13.00 to 13.50 |
| Stove Plate | 12.00 to 12.50 |
| Bundled Tin Scrap | 9.00 |

# Metal Market.

NEW YORK, November 25, 1908.

**Pig Tin.**—Trade has been very quiet. Prices have trended downward, but have later recovered. The announcement last week regarding the Banca sale was untrue, and later advices are to the effect that this sale will be held in Amsterdam, Holland, Thursday. This has further served to increase the dullness. On Tuesday there was a good business. Price changes have been as follows:

| | Cents. |
|---|---|
| November 18 | 30.20 to 30.25 |
| November 19 | 30.20 |
| November 20 | 30.15 |
| November 23 | 29.95 |
| November 24 | 29.95 |
| November 25 | 30.35 |

The arrivals are 3284 tons and the afloats 1380 tons. The London market closes firm at £137 10s. for spot and £139 for futures.

**Copper.**—A further contraction in the volume of business has resulted in somewhat lower quotations, both here and abroad. The market is uneven, and speculative lots of Electrolytic might be picked up at 14c., but producers are asking 14.12½c. to 14.25c. It is the same way with Lake, some outside lots being obtainable at 14.37½c., but producers are asking 14.50c. to 14.62½c. In spite of the falling off in the volume of business, the melting of Copper goes forward in larger volume than any time this year. Consumers of Brass and Copper goods are stocking up, but not in any great amount. It is hardly to be expected that there will be another large buying movement very soon, yet good judges of the situation confidently expect that before January 1 another may come. It is also freely expressed in the trade that should prices decline much further there will be fairly heavy buying from the large dealers who operate in a semi-speculative way. The London market has maintained more or less of an even keel and closes firm to-day, after a large volume of business, at £64 for spot, and £64 18s. 9d. for futures. The exports so far this month amount to 16,325 tons.

**Pig Lead.**—The market continues unusually dull, with the price of the smelting company below that of independent producers, shipment Lead being offered in 50-ton lots at 4.30c. The independent producers are asking 4.37½c., New York, and 4.22½c., St. Louis.

**Spelter.**—While the volume of business has not increased, prices have advanced, and Spelter in New York now commands 5.10c. to 5.15c. In St. Louis it is 4.95c. to 5c.

**Aluminum.**—Prices of Aluminum have again been cut 1c. per pound. No. 1 Ingots are quoted at 24c., Rods and Wire on a basis of 32c., and the base price for Sheets is 34c.

**Antimony.**—No new business has developed in this metal. Hallett's is held at 8.12½c. to 8.25c., Cookson's at 8.37½c. to 8.50c., and Outside Brands at 8c.

**Nickel.**—Prices are unchanged, at 45c. for 10-ton lots and 50c. to 60c. for smaller lots.

**Tin Plate.**—An effort to stimulate the foreign consumption of American Tin Plates is being aggressively pushed and some orders are now being taken for shipment to China. Some business of this same nature was effected about two years ago, and there have been spasmodic revivals of it since. Domestic prices are without change, at $3.89, New York, and $3.70, Pittsburgh, for 100-lb. I. C. Coke Plates.

**Old Metals.**—A rather radical revision of the price of Old Metals has occurred, many holders apparently being frightened by the sudden slump in the price of Ingot Copper. Quite a little Metal is coming on the market, and buyers are reluctant to pick it up except on concessions. Dealers' selling prices are, therefore, considerably lower than last week, as follows:

| | Cents. |
|---|---|
| Copper, Heavy and Crucible | 13.25 to 13.75 |
| Copper, Heavy and Wire | 13.25 to 13.50 |
| Copper, Light and Bottoms | 12.00 to 12.25 |
| Brass, Heavy | 9.50 to 9.75 |
| Brass, Light | 7.50 to 7.75 |
| Heavy Machine Composition | 12.50 to 13.00 |
| Clean Brass Turnings | 8.50 to 8.75 |
| Composition Turnings | 10.50 to 11.00 |
| Lead, Heavy | 4.25 |
| Lead, Tea | 4.00 |
| Zinc Scrap | 3.50 |

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L. Vogelstein & Co. announce the removal of their offices to 42 Broadway, New York City.

The production of Quicksilver in the United States in 1907 amounted to 21,567 flasks of 75 lb. each. In 1906 the production was 26,238 flasks.

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The National Supply and Machinery Dealers' Association announces through its secretary-treasurer, A. T. Anderson, that the mid-year meeting of the Executive Committee will be held December 2, at 10 o'clock a.m., at the Hollenden Hotel, Cleveland, Ohio.

# New York.

NEW YORK, November 25, 1908.

**Pig Iron.**—The purchases of the week in this market have approximated 20,000 tons, Pipe works and machinery foundries taking the bulk of it. Further sales by Buffalo furnaces in New England are reported, a portion of the Iron going to Malleable foundries, and Buffalo furnaces have advanced their prices for both first and second quarters of 1909. Eastern furnaces are not disposed to sell freely at the present level. At the same time buying has evidently been checked by the advances. We quote, at tidewater, $17.50 to $17.75 for No. 1 Northern Foundry, $17 to $17.50 for No. 2 Foundry, and $16 to $16.50 for No. 2 Plain. Alabama Irons are quoted $17.50 to $17.75 for No. 1 Foundry, and $17.25 to $17.50 for No. 2 Foundry.

**Steel Rails.**—Orders of the past week include 6500 tons from the Minneapolis, St. Paul & Sault Ste. Marie, 1000 tons for the Joliet & Southern, a traction line, and 1600 tons for an unnamed steam road. Inquiries for next year are coming slowly, though it is believed some contracts may be reported within the next fortnight.

**Structural Material.**—November promises to show the largest volume of orders for fabricated Steel that has been entered for a number of months. The American Bridge Company, out of a total of about 100,000 tons placed thus far in November, has taken 45,000 tons, or a larger proportion than has come to it in any month for a year. In addition, this company has booked 7000 tons of axles and its axle plant, idle for more than a year, is about to start up. Conditions regarding prices are not uniform, some contracts being taken on a basis indicating that cutting is less severe, while other instances are reported of successful bids which were plainly based on $4 to $6 less than the prices at which plain material is ordinarily sold. The American Bridge Company's total for November includes the 24,000 tons previously reported for the Chicago & Northwestern train sheds and approaches at Chicago, and this week this amount has been increased by 4000 tons for the station building for the same road. The company has also booked in the past week 1000 tons for an insane asylum at St. Louis, 1000 tons for the stock yards bridge at St. Paul for the St. Paul Terminal Railroad, 600 tons for a high school at Philadelphia, and 5000 tons for car barns for the Metropolitan Street Railway Company, New York, the erecting contract for which was taken by Post & McCord some time ago. The Cunard pier, for the Boston & Albany, at Boston, 2000 tons, was taken by the Boston Bridge Works, and the new Trust Company Building at Boston, 2200 tons, was awarded to the New England Structural Company. The International Car Company, which has secured a 38-acre site at New Orleans, will receive bids for a number of Steel buildings, including two sheds, 600 ft. long. At San Francisco, Dyer Brothers, local fabricators, have taken considerable work lately, including 2800 tons in the past two weeks, and it is reported foreign shapes will be used on these contracts. We continue to quote, on mill shipments, tidewater deliveries, as follows: Beams, Channels, Angles and Zees, 1.76c.; Tees, 1.81c. On Beams, 18 to 24 in., and Angles, over 6 in., the extra is 0.10c. Structural Material, cut to lengths, is sold in small lots at 2¼c.

**Bars.**—Quotations on Bar Iron now range from 1.51c. to 1.56c., tidewater, with sellers at the inside rate steadily growing fewer. Raw materials continue to advance, and consequently Bar Iron manufacturers are stiffening in their views. The demand is fair, but it is felt that the closing of the gap between the prices of Iron and Steel Bars will probably cause an increasing part of the trade to turn to Steel. The quotation of Steel Bars continues at 1.56c., tidewater.

**Plates.**—Manufacturers of Sheared Plates report business decidedly limited in this locality. Some demand from the Structural trade for Universal Plates is noted. Prices are continued as follows at tidewater for standard sized Plates: Sheared Plates, 1.76c. to 1.86c.; Flange Plates, 1.86c. to 1.96c.; Marine Plates, 2.16c. to 2.26c.; Firebox Plates, 2.65c. to 3.50c., according to specifications.

**Ferroalloys.**—Business in Ferromanganese has been about normal, and the price is fairly steady at $45, Baltimore. Some exceedingly low prices have been made for 50 per cent. Ferrosilicon, and sales have been effected in and around Pittsburgh at $66 there and even lower.

**Cast Iron Pipe.**—An inquiry is in the market for 12,000 tons for Havana. Business for this year is pretty well closed, the current demand calling for carload lots only, which when ordered are desired as speedily as possible for the purpose of completing work before freezing weather. Haddonfield, N. J., will open bids December 1 on about 11 miles of Pipe. Inquiries for next year have been quite promising, and in some cases it is believed that buyers are at the point of closing. Manufacturers are asking about $1 per ton more for delivery in the early spring than ruling figures. The interesting report is in circulation that some of the Pipe founders who took contracts at extremely low prices, expecting to cover their Pig Iron requirements so as

to realize a handsome profit, are in a somewhat uncomfortable position on account of the advancing prices in raw material. Carload lots of 6 in. for immediate shipment are quoted at $24 per net ton, at tidewater.

**Old Material.**—While the market is possibly not quite so active as was reported last week, the demand is sufficiently strong to absorb easily such offerings of Old Material as holders are willing to part with. The buying covers all classes and grades, and includes some good quantities of Heavy Melting Steel Scrap. Prices are again somewhat higher, and dealers are confident of a further advance in the near future. Quotations are as follows, New York and vicinity, per gross ton:

| | |
|---|---|
| Old Girder and T Rails for melting | $13.00 to $13.50 |
| Heavy Melting Steel Scrap | 13.00 to 13.50 |
| Old Steel Rails, rerolling lengths | 15.00 to 15.50 |
| Relaying Rails | 23.50 to 24.00 |
| Old Iron Rails | 18.00 to 18.50 |
| Standard Hammered Iron Car Axles | 20.50 to 21.00 |
| Old Steel Car Axles | 17.50 to 18.00 |
| No. 1 Railroad Wrought | 17.00 to 17.50 |
| Iron Track Scrap | 14.00 to 14.50 |
| No. 1 Yard Wrought, long | 16.00 to 16.50 |
| No. 1 Yard Wrought, short | 14.00 to 14.50 |
| Light Iron | 8.50 to 9.00 |
| Cast Borings | 9.00 to 9.50 |
| Wrought Turnings | 10.00 to 10.50 |
| Wrought Pipe | 12.50 to 13.00 |
| Old Car Wheels | 15.00 to 15.50 |
| No. 1 Heavy Cast, broken up | 14.50 to 15.00 |
| Stove Plate | 12.50 to 13.00 |
| Locomotive Grate Bars | 12.50 to 13.00 |
| Malleable Cast | 13.50 to 14.00 |

## Iron and Industrial Stocks.

NEW YORK, November 25, 1908.

After quite a protracted upward movement the security market experienced a reaction after the report published in last week's issue and prices declined, in some instances quite sharply, the downward movement continuing until Monday of this week, when a turn for the better took place. The fluctuations from Thursday of last week to Tuesday of this week are shown by the following range of prices on the active iron and steel stocks: United States Steel common 54½ to 57¼, preferred 112½ to 113¼; Bethlehem Steel common 23 to 25, preferred 52 to 54¾; Car and Foundry common 45¼ to 46½, preferred 106½ to 107½; Locomotive common 54¼ to 55¾, preferred 108½ to 109⅛; Steel Foundries 38 to 40; Cambria Steel 38¾ to 39⅞; Colorado Fuel 37¾ to 39½; Crucible Steel common 8 to 8¾, preferred 52½ to 53¾; Pressed Steel common 38⅛ to 39¾, preferred 98 to 98¾; Railway Spring common 43⅞, preferred 101; Republic common 27 to 27⅞, preferred 86½ to 88½; Sloss Sheffield common 77½, ex div. to 80⅜; Cast Iron Pipe common 26¾ to 27⅛; Can common 8⅜ to 9¾, preferred 73 to 76. Last transactions up to 1.30 p.m. to-day are reported at the following prices: United States Steel common 56, preferred 112⅞, bonds 102½; Car & Foundry common 46⅛, preferred 107½; Locomotive common 55¾, preferred 109; Colorado Fuel 39¼; Pressed Steel common 39, preferred 98; Railway Spring common 43⅞; Republic common 27¾, preferred 88; Sloss-Sheffield common 80; Cast Iron Pipe common 26¾, preferred 75; Can common 9¾, preferred 75.

**Dividends.**—The American Brake Shoe & Foundry Company has declared the regular quarterly dividend of 1¼ per cent. on the preferred stock and 1 per cent. on the common stock, payable December 21.

**Ashes Disposal from Ships.**—The Exeter Machine Works, Pittston, Pa., with branch offices in New York and Philadelphia, advises us that it is the exclusive American manufacturer of the stone, ash and clinker expellers described on page 1481 of *The Iron Age* of November 19. While intended for handling ashes on board ships and yachts of all descriptions, the apparatus is well adapted for many other purposes. In addition to the battleships North Dakota and Delaware this expeller will also be placed on the new battleship Utah, which is being constructed by the New York Shipbuilding Company, Camden, N. J. The British Admiralty has adopted this expeller as the standard on all ships afloat; likewise the Japanese Government. The Mauretania of the Cunard Line has recently been equipped with the device. These expellers are capable of handling 5 to 8 tons of ashes per hour, and there is scarcely any wear or tear on the apparatus, avoiding many of the annoyances which are usually had with handling ashes by other means on board steamships.

Early in January the Shenango Furnace Company, Frick Building, Pittsburgh, will blow out its No. 3 stack at Sharpsville, Pa., to be rebuilt and have some modern equipment added. This will include a Brown skip hoist, to be supplied by the Brown Hoisting Machinery Company, Cleveland, Ohio.

## The Leather Belting Manufacturers' Association.

The question of removing the duty on hides was discussed and strongly advocated at the twenty-first annual convention of the Leather Belting Manufacturers' Association, which was held November 17, at the Hotel Astor, New York. A number of prominent members of the association spoke in favor of sending a committee to Washington to urge their cause. As was stated in *The Iron Age* last week, it was decided that it would be necessary for leather belting manufacturers to demand higher prices because of the advance in the price of hides. It was declared that the tanners are in sympathy with the movement to have the duty on hides removed. The matter was to have been brought up formally by Charles A. Schieren of the Charles A. Schieren Company, who was to have addressed the association on "The Tariff, Its Effect on the Price of Hides and Leather," but Mr. Schieren was unable to attend the meeting, so it was brought up by other members in an informal discussion.

With a view to keeping in better touch with the trade conditions throughout the country, it was decided to increase the Executive Committee of the organization to 20 members, this movement to include the officers of the association. In that connection the annual election resulted in the re-election of all of the officers, as follows: President, Edward P. Alexander, Alexander Bros., Philadelphia, Pa.; vice-presidents, Frank H. Croul, Detroit Oak Belting Company, Detroit, Mich.; Milton H. Cook, H. N. Cook Belting Company, San Francisco, Cal.; Geo. B. Rowbotham, Bay State Belting Company, Boston, Mass.; secretary and treasurer, Geo. H. Blake, New York City.

The members of the Executive Committee besides the officers are: Chas. T. Page, chairman, Page Belting Company, Concord, N. H.; C. E. Aaron, New York Leather Belting Company, New York; E. H. Ball, Chicago Belting Company, Chicago; F. A. M. Burrell, Charles A. Schieren Company, New York; J. F. Dickinson, Southern Belting Company, Atlanta, Ga.; H. H. Gallup, Norwich Belt Mfg. Company, Norwich, Conn.; R. N. Hathaway, Union Belt Company, Fall River, Mass.; James Moloney, Moloney Belting Company, Chicago; C. G. Neff, Bradford Belting Company, Cincinnati; C. E. Newton, Jewell Belting Company, Hartford, Conn.; W. A. Nicholson, Hartley-Rose Belting Company, Pittsburgh, Pa.; A. B. Rinehart, Akron Belting Company, Akron, Ohio; J. A. J. Shultz, Shultz Belting Company, St. Louis, Mo.; A. H. Sleigh, Estate of E. R. Ladew, New York; W. M. Spaulding, Graton & Knight Mfg. Company, Worcester, Mass.; Frank B. Williams, I. B. Williams & Sons, Dover, N. H.

During the session of the association a paper was presented by Harrington Emerson, the subject being "Leather Belting Compared with Rope Drives," and John T. Fisk, commissioner of the National Association of Gas Appliance Manufacturers, addressed the organization. The Executive Committee held a meeting after the Tuesday afternoon session, and met again on Wednesday morning to complete its organization. The Jewell Belting Company, Hartford, Conn., and W. S. Nott, Minneapolis, Minn., were elected to membership.

At the recent annual meeting of stockholders of the United Engineering & Foundry Company, Pittsburgh, all the former officers and directors were re-elected. Isaac W. Frank is president; Charles E. Satler, secretary; Edward Kneeland, treasurer; R. W. Tener, auditor, and H. A. Grusch, purchasing agent.

Arrangements have been made to start up Bird Furnace, near Ironton, Ohio. Since it was blown out in December, 1907, the furnace has been thoroughly repaired. Fieser & Bentley, Columbus, Ohio, have been appointed exclusive sales agents for the product, which will be foundry and malleable Bessemer pig iron.

# Trade Publications.

**Tool Steel.**—C. W. Leavitt & Co., 220 Broadway, New York. Pamphlet, 5½ x 9 in.; pages, 14. Originally issued by the Societe Anonyme Electrometallurgique, Ugine, France, and devoted to Paul Girod's electric steel as manufactured at Ugine. The characteristics of the various steels manufactured in the electric furnace are given. The structural steels have an elastic limit closely approaching the breaking stress. Case hardening steels are especially an electric furnace product, since the action of the air is avoided. After case hardening, the central portion remains fibrous and the hard surface has no tendency to splinter. Results of physical tests on various carbon steels are given, also on silico-manganese, nickel, chrome-nickel and special "K. N. A." steel, the last named being used for machine parts requiring great tenacity and durability and resistance to sudden shock. In November the new works at Ugine are to be started, steel being supplied by two electric furnaces of 8 to 10 tons and two of 2 tons.

**Barium Chloride Hardening Process.**—Firth-Sterling Steel Company, E. S. Jackman & Co., agents, Chicago, Ill. Pocket size leaflet; pages, 16. Describes and illustrates the barium chloride process for treating Blue Chip high speed steel. The object is to treat tools at a high heat and have them come out unchanged, bright surfaces. sharp edges and points intact, and at the same time no loss in size. Details of the process as employed by Wheelock, Lovejoy & Co., New York agents of the Firth-Sterling Steel Company, were given in *The Iron Age* of October 29, page 1216.

**Spring Steel.**—Patriarche & Bell, 215 Pearl street, New York. Leaflet giving a new list of sizes of spring steel carried in stock for railroad, automobile, gun spring and general mechanical uses—rounds, squares and flats.

**Nuts, Bolts and Rivets.**—American Iron and Steel Mfg. Company, Lebanon, Pa. Catalogue, 6 x 9 in.; pages, 103; flexible binding. Illustrates, with full details of sizes, the bolts, nuts, rivets, spikes, forgings and bar iron manufactured by this company. Its mills have been enlarged and improved and much new equipment added in the past six years. Stock ready for shipment amounts to 16,000 tons. The capacity for producing iron and steel bars now provided at Reading and Lebanon, Pa., amounts to 160,000 tons a year. Illustrations are given of the two plants at Lebanon and one at Reading.

**Ice Harvesting Machinery.**—A. L. Schultz & Son, 570 Elston avenue, Chicago. Catalogue No. 10, 15 pages. Devoted principally to the installation and description of machinery and equipment for handling ice in and out of ice storage houses. Several different systems, including the side feed elevator incline, undershot elevator, elevator conveyor, perpendicular elevator, double gig elevator and the endless chain lowering machine, are shown. A machine for planing the ice to even thickness as it travels up any of the various inclines is illustrated; it is an attachment of particular utility, since it removes any slush or impurities on the surface of the blocks. A line of ice plow saws and other cutting and handling tools is shown. The catalogue ends with illustrations of a friction clutch pulley, one of the company's latest products.

**Transformers.**—The Hornberger Transformer Company, La Fayette, Ind. Folder. Treats of the line of transformers made by the company, including floor, pole and subway types, the construction and special features of which are described. Also contains a tabular statement of the electrical characteristics, prices and weights of these transformers.

**Hardening High Speed Steel.**—Chicago Flexible Shaft Company, La Salle avenue and Ontario street, Chicago, Ill. Pamphlet. Deals with the barium chloride process of hardening high speed steel lathe, planer, boring and cutting tools, and illustrates the Stewart No. 60 crucible furnace of this purpose. The construction of the furnace and its method of operation are described. The Stewart No. 1 oven furnace for pre-heating and the Hoskins pyrometer for indicating temperatures up to 1400 degrees C. or 2550 degrees F. are also shown.

**Generators and Panels.**—Crocker-Wheeler Company, Ampere, N. J. Bulletins. No. 95, supplement 1, refers to belt type alternating current generators; No. 106 is devoted to type 3, 125-250 volt, direct current switchboard panels, giving illustrations of standard switchboard panels, which can be assembled together to form a switchboard of any size and capacity, and suggestions as to the instruments and apparatus necessary on switchboards; No. 107, superseding No. 80, describes a line of direct current lighting and power generators of large sizes and illustrates complete installations; No. 108, superseding No. 74, shows installations and describes the design of the company's engine-type alternating current generators for central stations and industrial plants. and No. 109, superseding No. 71, refers to Crocker-Wheeler direct current 2 to 19 kw. generating sets with type D vertical, two-cylinder, single-acting engines made by the U. S. Rapid Fire Gun & Power Company, Derby, Conn.

**Pumps and Engines.**—Blake & Knowles Steam Pump Works, 115 Broadway, New York City. Bulletins. No. K-813 deals with several sizes and types of Knowles mine sinking pumps of the outside center-packed plunger pattern, and telescopic extension joints, and suction condensers; No. K-814 gives illustrations, dimensions and specifications of Knowles single and duplex boiler feed and tank pumps; No. B-815 treats similarly of the Blake single and duplex boiler feed and tank pumps; No. B-817 pertains to the Blake vertical high speed engines, which are built in four styles—the single open frame type, single inclosed frame type, double type and cross compound type, and No. K-818 deals with Knowles type M single horizontal piston pumps for 200 lb. maximum working water pressure.

**Lathes.**—Gisholt Machine Company, Madison, Wis. Pages 13 and 14, for insertion in binder. These describe the first and second operations of finishing locomotive piston centers in the Gisholt 34-in. lathe.

**Spring Bedding and Pottery Machinery.**—William H. Ivens' Sons Company, Trenton, N. J. Circular. One contains illustrations and brief descriptions of spring bedding machinery, including a power clip closing machine, improved S clip machine, and power bowing machine. The other circular shows potters' machines for bowls, nappies, cups, plates, saucers, dishes, jugs, &c.

**Sand Drier.**—Indiana Foundry Company, Ltd., Indiana, Pa. Pamphlet. Deals with the Sutton sand drier, which is stated to be simple in design, massive and to stand hard usage. This drier requires no attention, and the stove may be fed with hard or soft coal, coke or wood.

**Truing Devices.**—S. A. Woods Machine Company, Boston, Mass. Catalogue. Size, 6 x 9 in.; pages, 23. Devoted to Woods truing devices for grinding planer knives while in motion, thereby truing them so that the several knives will follow one exact path, each doing its full share of work. Illustrations are given of the top, side head and bottom truing devices, and of planers equipped with these. Complete descriptions and instructions for using the devices are included. An illustrated description of the Woods truing devices appeared in *The Iron Age* November 5, 1908.

**Motors and Fans.**—Emerson Electric Mfg. Company, St. Louis, Mo. Four bulletins. These illustrate and describe the following products: No. 3136 (superseding Nos. 3123, 3124, 3126, 3128 and 3129), single phase induction motors of the full load automatic start type, in sizes from 1-20 to ½ hp.; No. 3214 (superseding No. 3200), direct current spherical type bipolar inclosed motors, in sizes from 1-20 to 1-6 hp.; No. 3125 (superseding Nos. 3207, 3208 and 3212), direct current bipolar inclosed motors of from ⅛ to ½ hp. sizes, in compound, shunt and series wound types, and No. 3505 (superseding No. 3504), 12, 18 and 24 in. direct connected electric exhaust fans for alternating and direct currents.

**Core Machines.**—Brown Specialty Machinery Company, Jackson boulevard and Clinton street, Chicago, Ill. Pamphlet. Gives points of merit of the screw machine for making cores and objections to the plunger core machine. Reference is made to the company's hammer core machine, which is claimed to make perfect cores.

**Drill Sockets.**—American Specialty Company, 1440 Monadnock Building, Chicago, Ill. Circular. Pertains to the Use-Em-Up drill sockets of the sleeve and fitted or socket types, and gives tables of sizes, specifications and prices. An illustrated description of the drill sockets appeared in *The Iron Age* July 2, 1908.

**Ore Crushers.**—Sturtevant Mill Company, Boston, Mass. Catalogue 1116, 6 x 9 in., 16 pages. Shows a number of types of the Sturtevant crusher both in standard and special designs. Stress is laid on the fact that the crushers are of plate steel, and arguments are used to demonstrate their advantage over those of cast iron. The machines shown include a crusher capable of being set to ½ in., with a maximum output of 20 tons an hour. The Newaygo separator for wet or dry screening is given some space, and two types of the machine are illustrated. This separator was described in *The Iron Age*, October 10, 1907.

**Separators.**—Liberty Mfg. Company, 6910 Susquehanna street, Pittsburgh, Pa. Bulletin No. 50. The Liberty-Greenaway separators for separating the condensation and oil from live steam or from ammonia or other gases is illustrated and described in this bulletin. The company makes both vertical and horizontal separators and also makes a special ammonia separator.

**Fire Door and Back Combustion Chamber Arches.**—Mayville Specialty Mfg. Company, Mayville, Wis. Booklet. Describes arches specially designed for supporting the brick work about the fire doors and back combustion chambers of boilers. The arch consists of a circular casting lined with firebrick and can be so adjusted that a boiler can be removed or replaced without disturbing the brick work. The arch is shown as applied to a fire door and the back combustion chamber of a boiler.

**Feeder Regulators and Tantalum Lamps.**—General Electric Company, Schenectady, N. Y. Two circulars. No. 3702 describes the new type CR feeder regulator, for use in connection with alternating current lighting systems. The regulator is designed for operation on single-phase 220-volt 60-cycle circuits, and may be used with either hand or sprocket control. No. 3705 refers to a new small high efficiency tantalum filament lamp giving 12½ cp. on 25 watts.

# The Machinery Trade.

NEW YORK, November 25, 1908.

Business is gradually improving in practically all branches of mechanical equipment, and while the demand is light as yet, there are unmistakable signs of a growing volume that is very encouraging. Particularly is this so in the machine tool trade where both the orders and inquiries increased perceptibly the past week, and though they covered only a few tools each, they were sufficient in number to go around. Not for some time has business been of great enough volume to permit of all reporting a better demand in the same week, and in this machinery houses see the beginning of a permanent improvement. Houses are much encouraged by the increased number of inquiries received, believing that soon after the turn of the new year they will develop into orders. Manufacturers of electrical generating apparatus report a better demand than for any time the past year. The leading builder has received more inquiries for apparatus since our last report than for a long time, many of which are for heavy equipment, such as is used by the railroads and large power plants and industrial works. Another manufacturer reports that its orders for motors, especially, have greatly increased since the first of the month.

Walter L. Clark, vice-president of the Niles-Bement-Pond Company, who keeps as closely in touch with the entire machine tool situation as any man in the trade, speaks very encouragingly. He states that every one of the plants of the company is experiencing a decided business revival. He points out, furthermore, that the nature of the business is such as to indicate that the resumption is coming along most healthy and sound lines. This, he says, is because the new business is coming in the shape of small and medium size orders from many concerns in all lines of industry. Everybody seems to be feeling better and is proceeding cautiously, but they have commenced buying. The railroads and large corporations are purchasing a tool here and there, but have not come in with any orders of individual magnitude. The Pratt & Whitney plant at Hartford, which produces machine tools of the smaller sizes and which are of types more generally in use in the average machine shop, seems to be filling with work more rapidly than the shops producing the heavier and special types of machine tools. Mr. Clark expresses the opinion that the present business movement bears all the earmarks of an active return of prosperity to the machine tool industry which should last for a considerable length of time and soon assume large proportions.

It is possible that the orders for machinery for export from the larger houses that invariably keep on hand at least a good assortment of machine tools will fall off during the next few weeks, but that should not be taken as an indication that there is a general falling off in business, as it is the custom of most of the export houses that maintain storage facilities for machinery to weed out their surplus stock shortly before the first of the year with a view to taking their annual inventory of their holdings. This, of course, will apply only to the export men who keep standard machines on hand in order to enable them to make quick deliveries, and it will not affect the general export trade where orders are placed only after receiving a demand from a customer. It is possible that the question of stock taking will influence domestic buyers also, as it is the custom in many manufacturing plants throughout the country, especially when business is slack, to close down their plants and take an inventory of their assets. It is deemed advisable in many cases to defer the buying of needed equipment until the annual stock taking, and in consequence some buying will necessarily be held over until after the first of the year.

### International Car Company's New Plant.

Bids are now being received by the International Car Company, Maison Blanche Building, New Orleans, La., for the necessary machinery to completely equip its new car building and repair plant. It is the intention to equip this plant with modern machinery throughout and as several buildings are to be erected, the trade should shortly receive some substantial orders for metal working and wood working machinery, power plant equipment, &c. Bids have been received and contracts are about to be let for the buildings to comprise the plant, which will include a planing mill, 60 x 100 ft.; blacksmith shop, 60 x 75 ft.; machine shop, 60 x 60 ft.; powerhouse, 60 x 110 ft.; two open work sheds, 80 x 600 ft., and office building, 60 x 100 ft. The plant will be constructed on a tract of 38 acres purchased from the New Orleans Terminal Company and which is very desirable for an enterprise of this nature. The land has been surveyed and six miles of track have been laid to facilitate the construction of the buildings and manufacture after the plant is placed in operation. The buildings will be of structural steel. The company has been assured of about all the work it can handle in its plant for the next two or three years. C. A. Ralston of Ralston & Le Baron, Chicago, Ill., has resigned as president of the company because of his inability to give the business the attention which it will require, and W. H. Bofinger of New Orleans has been elected president. C. K. Barnes of Louisville, Ky., has been elected secretary, with headquarters at the general offices in New Orleans. A. T. Le Baron is vice-president and general manager, and A. Wagatha, treasurer.

A number of enterprises which were held up during the last year because of the business depression, it is thought in the trade, will shortly come forward again as important factors in the machinery market, and it is said among these will be the project of the New York Edison Company to erect a new central station at 201st street, New York. It will be remembered that last April the company had inquiries out for about 12,000 tons of structural steel for the building and afterward decided to postpone the construction of the plant. There are some indications that the company is again looking into the question of building this plant, and it is probable that this will be one of the big enterprises carried out in the Manhattan territory before long.

A large steam power plant is to be erected by the Montreal Light, Heat & Power Company, Montreal, Canada, which is expected eventually to produce 100,000 hp. It is the intention to build only in units as necessity demands, the plant to be used as a relay plant. The plans for the new plant have not yet been completed.

The Reading Power Company, Reading, Pa., which is to construct a large power plant, is receiving bids for the excavation work and building the foundations for the new plant. It is said that the equipment will include seven 3200-kw. steam turbines and that the plant will be constructed at a cost of about $1,500,000. The plant will furnish electricity for operating the railway system throughout the Schuylkill and Lebanon valleys, and the old power plants of the company will be used as transformer stations.

Alexander & Baldwin, 82 Wall street, New York, exporters, are in the market for a two-ton ice machine, for export to the Hawaiian Islands, either of the ammonia, absorption, or compression system, the engine to be operated by crude oil. This plant is to be somewhat of an experiment, and if found to operate successfully it is likely that a much larger plant will be installed.

The Department of Public Charities of New York will receive bids on December 2, at its offices at the foot of East Twenty-sixth street, for material for a complete electric lighting and power system for several buildings and grounds under the jurisdiction of the department on Blackwell's Island. The surety required is $10,000.

The old project to build a tunnel under the Delaware River, connecting Camden, N. J., and Philadelphia, Pa., has again been brought forth by the incorporation of the Camden Tunnel Company, to operate a railroad connecting the two cities under the river. Those connected with the company include William A. Stern, Isaac Silverman of Stern & Silverman, Benjamin and Edward Wolf of the firm of Wolf Brothers & Co., bankers, Philadelphia, Pa.

Bids for Barge Canal contracts aggregating nearly $7,000,000 were opened in the office of the State Superintendent of Public Works, Albany, N. Y., November 17 and 18. For contract No. 40, covering the improvement of the Erie Canal from Lockport to Sulphur Springs, a distance of 4 miles, that of the United Engineering & Contracting Company, New York, for $2,166.298 was the lowest. The bid was about $350,000 under the engineers' estimate. Of the seven bids submitted for contract No. 46, for the construction of the canal from Fox Ridge to Galen, about 9 miles, that of the Kinser Construction Company, Chicago, Ill., and Fort Edward, N. Y., for $1,212,833 was the lowest, being $154,750 under the engineers' estimate. Nineteen bids were received for contract No. 41, for building embankments on Irondequoit Creek, the lowest being that of the Butler Brothers-Hoff Company, New York, which agrees to do the work for $281,330. The Crowell-Sherman Company, Cleveland, Ohio, was the lowest bidder for contract No. 47, for constructing the canal from Galen to Lyons, at $1,262,638. Shanley & Morrissey, New York, were the lowest bidders on contract No. 68, at $1,018,323, for the construction of the locks at Mechanicsville, Stillwater, and Northumberland, as against the engineers' estimate of $1,175,623. The above contractors have been awarded contracts for the work on which they were the lowest bidders. Several thousand tons of structural steel and castings, and large quantities of other material will be required for carrying out the contracts.

# Chicago Machinery Market.

CHICAGO, ILL., November 24, 1908.

The machinery market is beginning to feel the effects of the gradual spread in industrial activity in an increasing number of actual orders and in the extending range and volume of inquiries. One of the leading machine tool houses reports its November business thus far not only ex-

ceeds that of any other month this year, but equals the combined totals of any two or three months of this period. The demands of the railroads are yet light, but it is understood that several of the leading lines have issued orders to the mechanical departments to prepare requisitions for tool requirements. Some of the lists comprising these requisitions may be submitted to the trade within the next 30 days, though it is believed that general action along this line will probably be deferred until the first of the year or soon thereafter. While the general character of buying is not markedly changed, and is still to a great extent restricted to orders of limited size, the inquiries coming out indicate more extended requirements to supply which more important orders are expected to develop soon.

Business in electrical machinery and equipment is picking up in a way that affords much encouragement. The rate of progress in this industry is rather more rapid than in other lines. This in Western territory is doubtless due in some measure, at least, to the growing interest that is being manifested in water power development, and to the extending application of electricity as a motive power. New hydro-electric projects are quite numerous, especially in the Northwest, many of them being of important size and of a practical nature that appeals to and enlists the necessary capital to carry them through.

The Holms Machine Mfg. Company, Sparta, Mich., incorporated with a capital stock of $100,000, is constructing a new plant for the manufacture of gasoline engines, automobile engines and concrete machinery. The buildings, which will be of concrete, with floors of the same material, will include a foundry 100 x 204 ft., and a pattern shop, 50 x 100 ft. The machinery equipment for the plant has not yet been purchased. It is expected that the new works will be in operation by July, 1909, employing 250 men. The officers of the company are: P. J. Holm, president, and J. E. Replogle, secretary.

The increased number of inquiries recently received by the Chicago Pneumatic Tool Company indicate a greater degree of interest in pneumatic and electric tools and equipment than has been manifested by the larger manufacturing concerns for months past. No marked increase in the general volume of orders is yet observed, but the outlook for a gradual growth in demand is distinctly better. Among recent orders entered by the company are two large Corliss compressors of 2000 ft. free air per minute capacity, one of which was purchased by Corrigan, McKinney & Co., for installation in the mines of the Colby Iron Mining Company at Bessemer, Mich.; the other going to the Haskal, Barker Car Company, Michigan City, Mich.

The Coast Lighting Company, Seattle, Wash., has been incorporated, with a capital of $25,000, to manufacture gasoline gas machines and handle gasoline lamps and supplies. For the completion of its shop equipment the company will be in the market a little later on for sheet metal working tools. W. May is the secretary and manager.

Among the many plans for active development of water power now in progress and under construction in the States of Michigan and Wisconsin, is that of the Menominee & Marinette Light & Traction Company, Menominee, Mich. Power for the operation of a traction and lighting system, serving the manufacturing towns of Menominee, Mich., and Marinette, Wis., and controlled by this company, is now generated by a steam plant, which will be supplanted by a new hydro-electric power plant, under construction on the Menominee River, at a point 19 miles north of the city. The ultimate plans of the company contemplate the development of 6000 hp. The initial installation will provide 4000 hp., for the generation of which orders have been placed with the Westinghouse Electric & Mfg. Company, for two 1100-kw. a. c. generators, and two 100-kw. d. c. generators, together with transformers, switchboards and other electrical appliances; and two 1900-hp. and two 225-hp. water turbines, with four Lombard governors, which will be furnished by the Dayton Globe Iron Works Company, Dayton, Ohio. Additional equipment required to complete the plant will be installed as the needs of service demands.

Plans are being prepared for an electric light plant to be built by the Council Grove Ice Company, Council Grove, Kan., which will be operated in connection with its ice plant. The system will consist of two units for night and day current, and the generators will be of the direct connected type. None of the material for this installation has yet been purchased.

The Citizens' Light & Power Company, Claremont, Cal., is arranging to enlarge its water plant, and the improvements contemplated will call for the installation of some additional machinery. Whether gas engine or electricity will be used for motive power in the pumping plant has not been determined.

Plans are now under consideration by the Albert Lea Light & Power Company, Albert Lea, Minn., which provide for the installation of an engine, generator and boiler in the power plant, together with some other auxiliary apparatus; also the laying of about six miles of gas mains and the building of about 5 miles more of pole line.

The Northwestern Electric Equipment Company, St. Paul, Minn., has secured the contract for the engine, generator and electric equipment for a new municipal light plant to be installed at Buffalo, Minn.

Plans have been completed, and construction will be begun at once on a new plant for the Featherstone Foundry & Machine Company, Chicago, to be located at Ninety-fifth street and Cottage Grove avenue. The buildings comprising this plant will consist of a one-story foundry, 130 x 360 ft., and a three-story fireproof storage warehouse, 75 x 133 ft. The capital stock of the company was recently increased from $400,000 to $700,000. Some improvements are also contemplated at the present North Side plant. Considerable machinery equipment will be required for the new works, the motive power for which will be furnished by electric current, taken from outside. Contracts call for the completion of the buildings in 60 days, and the machinery will be purchased in the meantime.

## Cleveland Machinery Market.

CLEVELAND, OHIO, November 24, 1908.

The local machinery market has been quite satisfactory during the past week, although not quite as active as during the previous week, when there was a spurt of buying, a large share of which was by the automobile builders. Taken as a whole, the outlook is improving, and the feeling among machinery dealers and builders of machine tools is fairly good. Some inquiries that were made months ago have been revived, and are expected to result in the placing of orders early next year if not sooner. A good volume of new inquiries is coming in from manufacturers of various lines who have been waiting until conditions improved before placing orders for needed equipment. The end of the year is so near at hand, however, that it is expected that the placing of some of these prospective orders will be deferred until January.

The tools most in demand at present are lathes, milling machines and gear cutters in medium sizes. The demand for wood working machinery is fairly good, and a little more activity is noticed in the second-hand machine tool market. The demand for mill supplies shows a further improvement, and is now very good, and this is one of the most encouraging features of the situation. Machinery houses are now securing contracts from manufacturing plants for mill supplies for delivery during the coming year, and consumers of these supplies are placing good-sized orders.

Among the tool builders the makers of automatic machines report an improvement in orders and inquiries. Some good orders are coming from builders of textile machinery in the east. The demand for electrical equipment for industrial plants is growing better. Builders of heavy machinery report considerable improvement in the outlook. There is an increase in the demand for cranes for industrial plants, and for large hoists and other machinery for mines, and for hydro-electric equipment.

Reports received by the local branch of the National Metal Trades' Association indicate that more men are gradually being added to the working forces of various manufacturing plants, the increase in the number of men employed being more noticeable among manufacturers of automobiles and automobile parts than in other lines. Many manufacturing plants that have not increased the number of their workmen during the past two weeks have increased the working hours in their plants to their normal length.

Engineering firms report a decided improvement in the outlook for industrial plant construction work. In response to inquiries local engineers are now figuring on considerable proposed work in the line of plant additions and the erection of new plants.

The Pneumatic Nut Machine Company, Cleveland, has been incorporated with a capitalization of $25,000, to place on the market a new pneumatic machine for the manufacture of nuts. The machine will be made at present at the plant of Mather & Waechter, tool makers, High avenue, this concern having secured control of the new machine. In order to provide room for the manufacture of the nut machine and to accommodate their growing business, Mather & Waechter have secured a site on which they expect to erect a new plant in the spring, and at that time they will probably be in the market for some additional machine tool equipment. The incorporators of the nut machine company are John Boma, W. H. H. Mather, Victor L. Waechter, R. B. Washburn, and C. E. Bullock.

The Wellman-Seaver-Morgan Company, Cleveland, reports much improvement in inquiries for large hoists and other equipment for Western copper and lead mines, and for Pennsylvania coal mines. Inquiries received for hydro-electric equipment also show an improvement. The company is gradually increasing the working force in its plant, and regards the outlook for a good volume of business during the coming year as very satisfactory.

The Cleveland Automatic Machine Company reports an improvement in the volume of orders and inquiries, having

recently taken a number of orders for from two to eight machines. This company reports a good demand at present for automatic machines from Eastern manufacturers of textile machinery.

The Ohio Gas Heated Flatiron Company, Canton, Ohio, has been incorporated, with a capitalization of $25,000. The company's product is now being made by outside manufacturers, but it is the intention to erect a suitable manufacturing plant. The incorporators are C. A. Dougherty, Alfred H. Davies, Frank J. Groth, Charles J. Loichot, Julius A. Balm, J. J. McCall, H. J. Sammon, S. F. Bowman and Louis E. Deuble.

The Nagle Engine & Boiler Works, Erie, Pa., has placed an order with a local machinery house for five electric cranes, of from 5 to 10 tons capacity, for equipment for a new shop built by that company some time ago.

F. Bissell & Co., Toledo, are looking for a site on which they announce that they will build a large plant for the manufacture of electrical machinery, switchboards and power motors for sewing machines.

Alliance capitalists are negotiating with Receiver Wade A. Taylor for the purchase of the plant of the Niles Boiler Company, Niles, Ohio, with the view of converting it into a foundry and machine shop.

The Roberts Motor Company, Clyde, Ohio, has completed arrangements for the purchase of the plant of the National Valve Company, Sandusky, Ohio, and the work of removing the Roberts plant to its new location will be started at once. The products of the Roberts Motor Company consist of marine, stationary and automobile motors and motor air compressors.

The C. O. Bartlett & Snow Company, Cleveland, reports a gradual improvement in the demand for its line of mill machinery for grinding grain, sales of this class of machinery in Mexico and South America showing considerable increase. The company is running its plant on full time, and expects that the volume of its business during the present year will fall but little below that of 1907.

## Philadelphia Machinery Market.

PHILADELPHIA, PA., November 24, 1908.

Interviews with a number of manufacturers of machine tools would indicate that they have not yet experienced any particular increase in the volume of business. Inquiries have been better, but it is hardly expected that they will develop into orders of any consequence until after the turn of the year. There are of course some exceptions, where quite a fair run of business, largely in the nature of orders held in abeyance previous to election, has come out, but stocks on builders' hands are large and tools ordered have to a large extent been supplied from stocks, so that as far as any immediate increase in production is concerned but little is to be noted.

Some few plants are now being operated on a 75 to 80 per cent. basis, but usually these are such as manufacture specialties to a large extent. Until the industrial plants, steel mills and manufacturing establishments generally become better occupied, no particular buying movement in tools is expected, but it must be said that activity in that direction is much more pronounced. The railroads have been somewhat more liberal buyers of equipment, locomotive builders report better orders, and as the already increased business comes to the railroads, for transportation, more will likely be needed. As far as machine tool buying on the part of the railroads in this territory is concerned, however, no great volume of business is expected in the near future. More activity is shown by the shipyards, and in many of the general lines so that with business slowly moving forward the trade looks with increasing encouragement on the prospects for future business.

Dealers report a shade more business. Consumers come into the market irregularly, and their requirements are small, but the total is fairly good, and gradually increasing. Some few larger propositions are being considered, but the bulk of the trade done is still confined to individual propositions which to a large extent are supplied from stocks on dealers' floors and in warehouse, so that but a comparatively small share of the business taken by the dealers finds its way to actual manufacturers.

The demand for second-hand machinery holds up fairly well, and improves slowly, but steadily. The volume of business is still far below normal. Inquiries cover quite a wide range, but tools of the better grades find the most ready sale. Transactions are still confined to equipment of the medium and smaller character. The boiler and engine trade shows practically no change. Some business has been done in new work of medium capacity, while second-hand equipment sold has been largely confined to the engines and boilers of the smaller horsepower.

The foundry trade is a shade more active, but the demand which comes from the railroad trade in normal times is still missing and retards more activity in both iron and steel casting plants. In some few cases buyers are placing more liberal orders, but the improvement coming from machine tool builders' requirements is not extensive.

Ballenger & Perrot, architects and engineers, have awarded the contract for building the addition to the manufacturing plant of George P. Pilling & Son to the Roydhouse-Aray Company of this city.

The Reading Power Company, Reading, Pa., has decided to erect its new power plant on the west bank of the Schuylkill River, near that city. The proposed structure is to be one story high and the machinery to be installed will generate 20,000 hp. Seven turbines will be used, each having a capacity of 3200 kw.

The Energy Elevator Company reports an increased volume of business. Orders have come out more freely, both from local and out of town customers, and the outlook for the future is considered decidedly better. Recently orders for electric and hand elevators have been numerous, as also for special dumbwaiters, and the plant is now running on full time.

There will in all probability be considerable work of interest to the trade develop in the near future in connection with the Philadelphia Navy Yard. Appropriations have been asked for amounting to $721,000, which carries the approval of the Chief of the Bureau of Yards and Docks. The appropriation includes an item of $172,600 for central power plant extension; $430,000 for dredging and $23,000 for crane extensions. Water system extension is also included in the proposed work.

It is now announced that Edgar V. Seeler, architect for the Curtis Publishing Company, will be ready in about four weeks for estimates for the new building to be erected for that company on Sixth, Walnut and Sansom streets.

Authorization is expected at an early date by the city of York, Pa., for a loan of $425,000 for the completion of a sewer system and erection of a sewage disposal plant. Hering & Fuller, New York, have prepared the plans for both the disposal plant and sewerage system.

The Baldwin Locomotive Works notes a material improvement in the demand for locomotives. It has recently taken orders for 25 for the St. Louis & Southwestern Railway, 12 for the Lehigh & Hudson River, 4 for the Spanish-American Iron Company, 13 for the Northern Pacific and several smaller orders from different railroads and industrial plants. Some good business is also pending, particularly 30 engines for the Chicago & Alton Railroad. No particular addition in the working forces has been necessitated by the increased volume of business, there still being from 4600 to 4800 employees on the roll, but it is expected that orders will come out more freely after the turn of the year, the booking of which would make it necessary to increase both the working forces and hours.

## New England Machinery Market.

BOSTON, MASS., November 24, 1908.

No important change is noticeable in the machine tool market. The dealers are selling about the same amount of machinery. In exceptional cases streaks of very good business are reported, but these are regarded rather as spurts than indicative of a marked improvement. There is a good feeling everywhere among buyers. The larger concerns have not entered the market for anything more than scattering purchases, this important factor in the trade being little, no more conspicuous than it was a month ago. The railroads are yet to be heard from as large customers. A prominent Boston dealer, who has just returned from a Western trip, including Chicago and Cincinnati, reports finding much the same condition everywhere as in Boston. In Cincinnati the machine tool builders are receiving more orders than they were, but there is no radical improvement, according to his observations. In Worcester the large shops make about the same report of their own business, and throughout New England the demand upon the machine tool people does not vary much from this general rule, excepting in a few shops, which have felt the influence of foreign buying in an increasing degree, usually for more or less special equipment.

The supply trade is running along about level with machinery. Customers whose works have been idle or nearly so are now buying in a small way, but those who have been more or less constant purchasers are not increasing the size of their orders to an appreciable extent, excepting in isolated instances.

However, every one in the metal industry is cheerfully watching the advance in the staple products, notably pig iron, and those who have not already experienced a return to better business are deducing a sharper turn for the better in their own lines as the rising market exerts a stronger influence upon buyers.

Manning, Maxwell & Moore, Inc., have taken a lease of the large store at the corner of Oliver and Franklin streets,

Boston, numbered 45 on Oliver and 238 on Franklin, and by January 1 will have moved from the present store, 128 Oliver street. The new quarters will give largely increased accommodations as compared with the existing store. There is 3800 sq. ft. of floor space in addition to the spacious basement. The location is an exceptionally good one, in the heart of the machinery district, and near the post office. The store is already equipped with elevator, and there are three entrances.

The Bixby Turbine Company, Hartford, Conn., has been incorporated in Connecticut, with authorized capital stock of $50,000, to manufacture suction turbines for cleaning purposes. The company states that it will establish no works, but will have its machines built by outside parties. Jesse W. Bixby is the president, James W. Knox, secretary, and Alfred J. Estlow, treasurer.

The Windsor Machine Company, Windsor, Vt., has sent out invitations to a "Prosperity Ball," which will be held Thanksgiving evening in the addition to the company's works which has just been completed. The invitation announces that Charles A. Moore of Manning, Maxwell & Moore, Inc., will lead the grand march.

W. & B. Douglas, Middletown, Conn., pump manufacturers, are building a one-story addition to their shops, 35 x 53 ft., which will be devoted to storage and shipping.

There is greater activity among the textile mills in increasing manufacturing capacity. One of the greatest enlargements, just announced, is that of the Royal Webbing Company, Providence, R. I., which will erect two new buildings, one 175 x 500 ft., two stories, which will require 1008 looms, the other 100 x 500 ft., two stories, for warpers and spoolers. The Farr Alpaca Company, Holyoke, is to rebuild a mill, one story, 72 x 325 ft. The Woonsocket Spinning Company, Woonsocket, R. I., proposes to build an entirely new plant. Other projects are under way, including additions to equipment for existing buildings. Textile machinery builders are busier, and the prospect is that they will be running at normal capacity in the comparatively near future.

The Hartford Elevator Company, Hartford, Conn., has been incorporated under Connecticut laws, with authorized capital stock of $50,000, of which $40,000 will be paid in. Lewis D. Parker, Frank H. Turner and Harris Parker are the incorporators. The company is not ready to make announcement of its manufacturing plans.

The Baker Mfg. Company, Hartford, Conn., has incorporated with $5000 capital, to manufacture spark plugs. Otto L. Hemming, Gustave F. Hemming, and Max L. Baker are the incorporators.

Barden & Hull, Attleboro, Mass., manufacturing jewelers, report that their machinery was not damaged in the recent fire that caused a loss of $8000 to their factory.

A street railroad project which when carried out will mean large expenditures for supplies and materials is that of the Norwich, Colchester & Hartford Traction Company. At a recent meeting it was voted to proceed with the initial steps of the work with a view to proceeding with the actual construction of the line when business has returned to normal again. Costello Lippitt is president; Lucius Brown, secretary, and Henry W. Tibbits, treasurer.

The Boston Elevated Railway Company has voted to authorize the issuance of new capital stock not exceeding $6,650,000, the proceeds of which will be used for the construction of the subway connecting Boston with the city of Cambridge. The undertaking is a large one and will mean the purchase of large amounts of structural and other materials, as well as the usual purchases of equipment.

The consolidation has been effected of the North Adams Gaslight Company, North Adams, Mass., and its affiliated companies into the Massachusetts Lighting Companies, which already controls the lighting and power plants of a number of Massachusetts cities and towns. The properties affected by this latest transfer light the towns of Adams and Williamstown, Mass., and Stamford, Vt., as well as North Adams.

## Cincinnati Machinery Market.

CINCINNATI, OHIO, November 24, 1908.

Impressed with the urgent necessity for the exercise of a special conservatism at this time in reflecting conditions in the tool industry, in order to get at the exact conditions, the utterances of manufacturers are weighed with more than ordinary care by writers on machinery matters. Confronted as we are with columns of "boom material" and exaggerated trade interviews filling the daily press, it would seem to be a timely precaution. A careful ante-election estimate, based on a conservative view formed from talks with the representative tool manufacturers in this territory reflects an improved condition at all establishments in the sense of hopefulness; a larger scope to inquiries and an occasional release of some tied-up tool specifications from car and general repair shops and automobile manufacturing concerns.

Aside from this there is little to say about the tool manufacturers as a class. Manufacturers of portable electric tools, small electrical power units, ice manufacturing machines and street cars in this field are all rushed with new work and adding men daily.

A feature of very recent transactions among local tool makers has been the consummation of pending or new exchange propositions. Makers of lathes, planers, shapers, drills, grinders, and similar tools, in all of which this field is particularly active, caught up on the wave of ante-election excitement, phenomenal rise of stocks, and general expansion in business, have taken up the subject of mutual shop needs, and many trades have been effected, to the mutual advantage in time saved and other items, of the various parties thereto. Thus a planer manufacturer and a lathe maker have each quickly filled weak spots in the tool room with the product of the other.

In the machine and boiler departments of locomotive and agricultural manufacturers activity is most pronounced and men are being added daily. Word from the Lima Locomotive & Machine Company's big plant at Lima, Ohio, indicates that the establishment is running very nearly its normal equipment of 1200 men.

Replying to an inquiry, President J. S. Ralston of the Ralston Steel Car Company, at Columbus, Ohio, says: "We fully expect to be operating our plant to its fullest capacity not later than the middle of January." Mr. Ralston states that the plant is now running about 70 per cent.

At a meeting last week of the directors of the Buckeye Steel Castings Company at Columbus a plan of construction was indorsed insuring two large steel buildings to be added to the plant equipment in Parsons avenue, work to be commenced the first of the year. One of these structures, designed for the coupler department, is to be 245 x 420 ft., and to correspond in hight and general architecture with the others of the group. On the removal of the coupler department from its present location that division will be given over to an extension of the car bolster and steel underframe department. The other new building, of steel construction also, will be known as the core building, and will be about the same size as the new coupler building. Present plans, it is reported, contemplate the rebuilding of two of the furnaces so that their capacity will be doubled. The four large steel buildings constructed during the year are now about ready for occupancy. There is a mutual feeling of satisfaction among the officers and directors that their added facilities are so coincident with the rapidly improving trade conditions.

The plant of the Lodge & Shipley Machine Tool Company, Cincinnati, offers a good example of the potency of these changing conditions at the larger tool making establishments, which exactly a year ago were experiencing the depressing effects of hold-ups and cancellations of orders while a few weeks or months previously they were going at the highest tension possible. The company has experienced to a remarkable degree the improved tone that began with the election of its fellow-townsman to the Presidency of the United States. On Saturday evening, the 21st, the several hundred employees of the company were tendered a banquet, tables being spread in the lofty new addition of the main building, 90 x 200 ft., which is known as the erecting shop, and which has just been completed. The affair was in honor of the recently formed Lodge & Shipley Mutual Relief Association, and also to celebrate the completion of the new wing; all expenses were borne by the company. Both President Wm. Lodge and Vice-President Murray Shipley were present, and took a conspicuous part in the celebration.

The local manufacturing colony is interested in the presence here of A. W. Cooley and R. B. Campbell of the Tubular Pole & Shaft Company of Wichita, Kan. They have been here several days seeking a location for their concern, which makes poles and shafts of cold drawn seamless steel. They were entertained at the dinner of the Cincinnati Carriage Makers' Club on Friday evening, and both spoke on topics of interest to the trade.

W. B. Ruggles, a member of the Panama Canal engineering staff, spoke before the meeting of the Cincinnati Engineers' Club on Thursday night, the 19th. A paper by Eberhard Mueller on "Photographic Topography in Alaska" was read.

Reports from the Indianapolis plant of the American Car & Foundry Company say that the establishment is now employing a large number of men. The chief work at this time is the repair work on equipment for the Vanderbilt lines, which is being rushed.

The Roots Company, at Connersville, is one of the concerns in this territory which has felt the good results of the times, and the announcement is made that the foundry is now on a five-day per week, 9-hr. schedule. During the fall the establishment worked on a three-day per week schedule.

Extensive banking and iron manufacturing interests are represented in the newly organized Bell Coal & Iron Company of Cincinnati. The following directors were chosen at a meeting held last week: D. E. Richards, Reamy E. Field, George B. Longstreth, Arthur H. Richards and George W. Platt. D. E. Richards was elected president and general manager; George B. Longstreth, vice-president; A. H. Richards, secretary and treasurer, and George W. Platt, counsel.

Mr. Field is the organizer and one of the chief officials of the Hamilton Iron & Steel Company, the new furnace interests at Hamilton, Ohio; Mr. Longstreth is a member of the firm of Field & Longstreth, brokers. The output of four West Virginia and Kentucky mines will be marketed by the new company, which will build extensive yards and terminal facilities this winter.

## Government Purchases.

WASHINGTON, D. C., November 23, 1908.

The Isthmian Canal Commission will receive bids until December 14, Circular No. 481, for boilers, with stack and breaching, surface condenser, generator and engine and other supplies.

The Isthmian Canal Commission will soon ask bids for seven Scotch marine boilers.

The Isthmian Canal Commission has postponed the opening of bids for three rapid unloading cranes, under Circular No. 475, from November 24 to December 4.

The following bids were opened November 17 for machinery for the navy yards:

Class 15.—Dynamos—Bidder 61, Crocker-Wheeler Company, Ampere, N. J., $2102; 89, Diehl Mfg. Company, Elizabethport, N. J., $1966; 96, Eck Dynamo & Engine Company, Bayonne, N. J., $2095.86; 118, General Electric Company, Schenectady, N. Y., $2017; 142, Holtzer-Cabot Electric Company, Brookline, Mass., $2575; 210, National Electrical Supply Company, Washington, D. C., $2398; 291, Western Electric Company, New York, $2178; 315, B. F. Sturtevant Company, Hyde Park, Mass., $1210.

Class 16.—Ventilating sets—Bidder 89, Diehl Mfg. Company, Elizabethport, N. J., $5007; 90, D'Olier Engineering Company, Philadelphia, Pa., $5692; 96, Eck Dynamo & Engine Company, Bayonne, N. J., $5135.08; 118, General Electric Company, Schenectady, N. Y., $6069; 142, Holtzer-Cabot Electric Company, Brookline, Mass., $5132.60; 210, National Electrical Supply Company, Washington, D. C., $4817.80; 212, Northern Electrical Mfg. Company, Madison, Wis., $5117; 315, B. F. Sturtevant Company, Hyde Park, Mass., $4590.

Class 121.—One power feed drill press—Bidder 106, Fairbanks Company, New York, $625 and $540; 109, Frevert Machinery Company, New York, $496; 129, Garvin Machine Company, New York, $455; 139, Handlan-Buck Mfg. Company, St. Louis, Mo., $400; 191, Manning, Maxwell & Moore, New York, $440; 198, Niles-Bement-Pond Company, New York, $499 and $443; 34, Baird Machinery Company, Pittsburgh, Pa., $436 and $525.

Class 122.—One motor driven hack saw—Bidder 72, James Clark, Jr., Electric Company, Louisville, Ky., $152; 106, Fairbanks Company, New York, $104 and $152.

Class 123.—One universal milling machine—Bidder 20, Brown & Sharpe Mfg. Company, Providence, R. I., $2357.45, $2312.45, $2287.45; 106, Fairbanks Company, New York, $1750; 191, Manning, Maxwell & Moore, New York, $2125; 198, Niles-Bement-Pond Company, New York, $2135 and $2060.

Class 124.—One No. 2 universal milling machine—Bidder 20, Brown & Sharpe Mfg. Company, Providence, R. I., $1293.65, $1269.65 and $1239.65; 106, Fairbanks Company, New York, $1345; 191, Manning, Maxwell & Moore, New York, $1280; 198, Niles-Bement-Pond Company, New York, $1223.

Class 125.—One motor driven planer—Bidder 106, Fairbanks Company, New York, $2100; 129, Garvin Machine Company, New York, $1680; 188, Mark Flather Planer Company, Nashua, N. H., $1665; 191, Manning, Maxwell & Moore, New York, $1325; 198, Niles-Bement-Pond Company, New York, $1535 and $1685; 280, Vandyck-Churchill Company, New York, $1510.

Class 126.—One shaper—Bidder 106, Fairbanks Company, New York, $996 and $1110; 109, Frevert Machinery Company, New York, $974; 129, Garvin Machine Company, New York, $875 and $920; 188, Mark Flather Planer Company, Nashua, N. H., $705;; 189, Motley, Green & Co., New York, $683.55; 191, Manning, Maxwell & Moore, New York, $915 and $810; 198, Niles-Bement-Pond Company, New York, $890; 231, Queen City Machine Tool Company, Cincinnati, Ohio, $825; 280, Vandyck-Churchill Company, New York, $715.

Class 127.—One motor driven shaper—Bidder 106, Fairbanks Company, New York, $768 and $868; 129, Garvin Machine Company, New York, $765 and $805; 188, Mark Flather Planer Company, Nashua, N. H., $640; 189, Motley, Green & Co., New York, $624.75; 191, Manning, Maxwell & Moore, New York, $550; 198, Niles-Bement-Pond Company, New York, $712; 231, Queen City Machine Tool Company, Cincinnati, Ohio, $750; 280, Vandyck-Churchill Company, New York, $490.

Class 128.—One radial drill press—Bidder 106, Fairbanks Company, New York, $904 and $1000; 109, Frevert Machinery Company, New York, $764; 191, Manning, Maxwell & Moore, New York, $920; 198, Niles-Bement-Pond Company, New York, $923 and $867; 280, Vandyck-Churchill Company, New York, $835.

Class 131.—One guillotine frame shear—Bidder 63, Cleveland Punch & Shear Works, Cleveland, Ohio, $2945; 149, Hilles & Jones Company, Wilmington, Del., $2634; 198, Niles-Bement Pond Company, New York, $3053; 211, New Doty Mfg. Company, Janesville, Wis., $2146.

Class 132.—Two polishing machines and one exhaust fan—Bidder 109, Frevert Machinery Company, New York, $460.

Class 151.—One surface condensing plant—Bidder 281, Vermilye & Power Company, New York, $3770; 286, Wheeler Condenser & Engineering Company, Carteret, N. J., $3370.

Class 161.—Exhaust system—Bidder 10, Allington & Curtiss Mfg. Company, Saginaw, Mich., $2000; 83, Dixie Mfg. Company, Baltimore, Md., $1982; 252, Sterling Blower & Pipe Mfg. Company, $2295.

Class 265.—Pneumatic hammers and drills—Bidder 58, Columbus Pneumatic Tool Company, Columbus, Ohio, $389.40; 59, Cleveland Pneumatic Tool Company, Cleveland, Ohio, $371.40; 70, Chicago Pneumatic Tool Company, New York, $450; 151, Ingersoll Rand Company, New York, $389.40; 152, Independent Pneumatic Tool Company, Chicago, Ill., $450.60.

The following bids were opened November 14 for installling a coal and ash plant at the central power plant, navy yard, Charleston, S. C.:

Item 1, price for coal handling apparatus in accordance with plans and specifications; 2, price for ash handling apparatus.

Penn Bridge Company, Washington, D. C., item 1, $19,574; 2, $7950; combined plants, $25,956 and $21,988.

Guaranty Construction Company, New York, bid A, item 2, $16,970 for 200 tons capacity and $25,230 for combined coal and ash handling plant; bid B, item 2, $19,590 for 250 tons capacity and $27,848 for combined coal and ash handling plant; bid C, item 2, $21,930 for 350 tons capacity and $30,188 for combined ash and coal handling plant of 250 tons capacity.

Conveying Machine Company, New York, item 1, $19,934, alternate $18,116; 2, $5860, alternate $5780; for combined coal and ash handling plant, $23,184, alternates $24,748 and $19,650.

G. & W. Mfg. Company, New York, item 1, $20,887, alternate $20,453; 2, $7900.

George W. McCaslin, New York, item 1, $17,539.

Belmont Iron Works, Philadelphia, Pa., item 1, $20,895; 2, $7990.

Darley Engineering Company, New York, item 2, $7500.

Link-Belt Company, Nicetown, Philadelphia, Pa., item 1, $16,215; 2, $8195.

Interstate Engineering Company, Bedford, Ohio, item 1, $14,420.

Wm J. Haskins, New York, item 1, $16,000; 2, $7000.

Exeter Machine Works, Pittston, Pa., item 1, $22,000; 2, $7975.

C. O. Bartlett & Snow Company, Cleveland, Ohio, item 1, $20,100; 2, $4870, alternate $8823.

The following bids were opened on November 12 for machinery for the Marine Hospital Service, Washington, D. C.:

Item 1, one 5-hp. motor and belting; 2, one lathe; 3, drill; 4, one pipe machine.

M. Du Perow, Washington, D. C., item 1, $268.46; 2, $195; 3, $108.

National Electrical Supply Company, Washington, D. C., item 1, $319.90.

Fairbanks Company, Baltimore, Md., item 1, $298.15; 2, $235; 3, $148.50; 4, $588.

Bagnall-Keener Mfg. Company, Edwardsville, Ill., item 4, $430.50.

D. Saunders & Son, Yonkers, N. Y., item 4, $579, alternate $413.

Crane Company, New York, item 4, $462.50, alternate $600.50.

Thomas Somerville Company, Washington, D. C., item 4, $505.96.

Bids for machinery for new lamp shop at the lighthouse, Tompkinsville, N. Y., were opened November 10, as follows:

Hemphill Engineering Company, New York, $9686, accepted; Lewis H. Woods, New York, $9770; Edwin Burnham, New York, $10,770, $11,330 and $11,720; Griscom-Spencer Company, New York, $11,768; F. D. Smith Company, New York, $11,950; Westinghouse, Church, Kerr & Co., New York, $11,997; Watson, Flagg Engineering Company, New York, $12,500 and $14,088; Chas. F. Brown, New York, $12,734.

The following bids were opened on November 4 by the engineer of the twelfth lighthouse district, San Francisco, Cal., for a gasoline hoisting engine:

Union Gas Engine Company, San Francisco, Cal., $585, accepted; Western Gas Engine Company, San Francisco, Cal., $734; Fairbanks, Morse & Co., San Francisco, Cal., $745; Harron, Ricard & McCone, San Francisco, Cal., $750; Corliss Gas Engine Company, San Francisco, Cal., $725; Compressed Air Machinery Company, San Francisco, Cal., $760; Fairbanks, Morse & Co., San Francisco, Cal., $655; Standard Gas Engine Company, Oakland, Cal., $691.75.

Under bids opened September 1 for machinery for the navy yards, Manning, Maxwell & Moore, New York, have been awarded class 19, one planing machine, $1640.

Under bids opened September 29 for machinery for the navy yards, Henshaw, Bulkley & Co., San Francisco, Cal. have been awarded class 11, one shaper, $1030.

Under bids opened October 26, Circular No. 472, for machinery for the Isthmian Canal Commission, Fox Brothers & Co., New York, have been awarded class 2, one plate straightening machine, $986.32.

The following awards have been made for machinery for the Isthmian Canal Commission, bids for which were opened November 2, Circular No. 473:

Detroit Hoist & Machine Company, Detroit, Mich., class 14, five pneumatic geared hoists, $1014.

Handlan, Buck Mfg. Company, St. Louis, Mo., class 16, one combined hand and power pipe threading and cutting machine, $792.75.

Motley, Green & Co., New York, class 17, one geared shaper, $458.

Cincinnati Electric Tool Company, Cincinnati, Ohio, class 18, one motor driven grinder, $29.80.

United States Electrical Tool Company, Cincinnati, Ohio, class 19, eight electric drills, $640.

Under bids opened November 10 for machinery for the navy yards, the B. F. Sturtevant Company, Hyde Park, Mass., has been awarded class 11, two ventilating fans and repair parts, $571.10.

**The Bray Continuous Sheet Process.**—The United States Circuit Court of Appeals for the third circuit, sitting at Philadelphia, has handed down a decision, written by Judge Buffington, reversing the decision of Judge Archibald in the Circuit Court of the United States for the Western District of Pennsylvania, in the suit of P. E. Donner against the American Sheet & Tin Plate Company, for infringement on a patented continuous sheet mill. By this decision, the continuous sheet mills operated by the American Sheet & Tin Plate Company, at its Sharon and Monongahela works, do not infringe the Donner patent, the claim of the Donner patent in the suit being held invalid by the higher court.

# HARDWARE

THE decadence of the smaller towns and villages is a substantial loss to the country as a whole, and to the sections which are thus deprived of the advantage of having live, prosperous and up to date commercial and social centers within easy reach, this consideration makes it the part of wisdom to cultivate a local spirit in all the smaller communities, so that whatever can be done in the way of increasing their attractiveness, business importance and general welfare should be taken hold of with intelligent and united effort. How this can best be accomplished, the lines on which such efforts can most effectively be directed, are matters well worthy of the earnest attention of all who have the best interests of rural communities at heart.

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In this connection it will be well to remember the bearing of this problem on the question of the advisability of establishing a merchandise or parcel post. There are many arguments against the project, but the one to which there is no answer is the fact that it would be directly and seriously in opposition to the welfare of the retail merchants of the country, excepting only the department stores and catalogue houses of the large cities. The establishment of a parcel post in general and on the rural routes in particular would be a severe blow to retail merchants generally. This is recognized by them usually in a timid, inactive way. They should speak out and let their opposition be known. They should let it be understood that a merchandise or parcel post, as it was successful as a transportation scheme for the carriage of merchandise, would in precisely the same measure be disastrous to retail interests, and that it would in the same degree militate against the welfare of the towns and villages. They should see to it that this view of the case is presented in their local papers and through the press at large. They should bring out the fact that the parcel post is directly in the interest of the trade of the great cities and directly against the trade of the towns and villages. They should make clear that while the farmer might for a time save a little on his purchases in the far off city, he would in the long run be the loser. For the dwindling trade of the rural communities would mean their gradual deterioration and, perhaps, their ultimate disappearance. The farmer who is surrounded by dead or decadent towns is a partner in their misfortune.

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The indications are becoming more and more clear that the form of merchandise post which will be urged upon Congress at the next session will be that on the rural routes, limiting the service, as well as may be, to packages mailed on such routes, or at the post office from which they start. The less energetic pressure for the time being for a general parcel post measure may be regarded as a recognition of the force of the objections which hold against it, in view of which there seems to be little probability that the scheme will have sufficient supporters in Congress to encourage the expectation that it can be enacted into law at the coming short session. Very earnest efforts, however, will doubtless be made to secure the passage of a law establishing a merchandise service on the rural routes under the specious plea that this form of parcel post will be to the interest of the retail merchants throughout the country, because giving to them facilities for the carriage of merchandise on the rural routes emanating from their towns, while such facilities are denied to merchandise in the mails at large. It is therefore argued that such a form of parcel post would be advantageous to the smaller communities.

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The opponents of the scheme should lose no time and spare no effort in combating this insidious attempt to establish a parcel post, even on a limited scale. The objections to the proposal should be emphasized and enforced:

*That it is contrary to public policy for the Government to go into the business of transporting merchandise.*

*That a large expenditure would be required to furnish the rural carriers with the necessary outfit and conveniences for the carrying of merchandise on their routes.*

*That it would be impracticable to limit the service as proposed to merchandise originating at the offices from which the rural routes start.*

*That it is not unlikely that the proposed law would be pronounced unconstitutional as class legislation.*

*That there is great danger that there would be a gradual enlargement of the service so that a parcel post on the rural routes would be an entering wedge, and prepare the way for a general merchandise post.*

*That the carriage of merchandise in the mails would tend to build up the trade of the catalogue houses, and to extend mail order business with the large cities to the injury of merchants generally throughout the country.*

*That the present arrangement by which carriers deliver packages without charge, or at a nominal charge, is more advantageous to the retail merchants than would be the proposed change in the law which would require a regular postal charge in all cases.*

*That the proposed service* IS NOT DESIRED BY THE RETAIL MERCHANTS OF THE COUNTRY, *who regard it as dangerous, and diminishing instead of increasing their present facilities.*

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The important matter at this juncture is to have brought to the attention of the Post Office Department and to Congress, as well as to the public at large, the fact that THE RETAIL MERCHANTS THROUGHOUT THE COUNTRY DO NOT DESIRE THE RURAL PARCEL POST, and do not regard it as in their interest, but with large substantial unanimity are opposed to it. If the retail associations in Hardware and other lines desire to be useful in a practical way in combating the parcel post they can do no more effective work than find means to bring out, and to bring out, without delay, an emphatic expression of the opinion of local retail merchants on this point. If the retailers generally desire a rural parcel post they are likely to have an opportunity to enjoy it. If, on the other hand, they do not want it there should be no loss of time in making it plain. Resolutions in convention are

not sufficient. There should be protests from merchants in every town and village. In this work the Hardware associations may take a leading part. If they do not do this it will be to miss a great opportunity. BUT WHAT THEY DO SHOULD BE DONE IMMEDIATELY.

# Condition of Trade.

While there has been during the past two or three weeks an increase in the confidence which has been gradually growing and in the volume of current business, there is no material change in the general features of the situation either in the matter of price or in the movement of merchandise. Among the general indications which are significant of an improved condition throughout the country at large are the increase in the volume of bank clearings which approach those of two years ago; greater activity on the railroads with hints that a car shortage may possibly be encountered; and a heavier movement in export trade, which in dollars and cents aggregates a higher figure than any recent month, while had it not been for the low price of cotton, the valuation would have made a new record for the month of October. With this there has been a marked confidence that better times are at hand, which in the Iron and Hardware line has resulted in more liberal placing of orders for the raw material and for the finished goods. There is also a more general employment of labor, and Hardware manufacturers agree substantially in reporting a much improved state of things in their factories, not a few of them running again on full time. During the past week the changes in price were few, but there is a good deal of revision of prices going on, resulting sometimes in the making of lower quotations. It is not unlikely too, that the increasing probability that there will be a real revision of the tariff will tend to make merchants and manufacturers cautious, not knowing how much effect this will have on the movement of current business. The general tone, however, is confident and the end of the year is approaching with conditions which are full of promise.

## Chicago.

A steady, healthy, but not over rapid growth, is a characteristic feature of the present situation, in so far as it relates to the development of trade in Hardware lines. True, the movement is rather too slow to wholly satisfy the more impatient, but it seemingly has back of it forces strong enough to carry it forward in a safe conservative way that makes for permanency rather than uncertain haste. Manufacturers of Hardware goods are generally busier, and factories are more fully engaged than they have been at any time within a year. This is particularly true of those making Builders' Hardware, the demand for which continues to increase. Distributers are finding it necessary to adopt a little more forehanded policy in ordering for stock assortments, not only because of present demand, but to provide for prospective requirements somewhat more liberally than they have been doing. Within the last week or two, orders for Sheets have been coming out more freely, as a result of which jobbers have been recently obliged to place orders for hurried shipments for both Black and Galvanized Sheets. No notable changes have taken place in existing price schedules, which are, however, not being maintained in all lines with satisfactory regularity. Conditions in this respect are on the whole somewhat improved, and as the volume of business increases greater steadiness in values will doubtless prevail. Actual advances are few, though manufacturers of some of the less highly finished lines complain of inadequate profits on the basis of present prices. While it may be found advisable to make some readjustments before long, indications do not point to any radical revisions in the immediate future. Wire products still maintain the lead in the movement of heavy staples, and the steady flow of orders for Wire Nails and Fencing demonstrates the existence of a practically normal consumption. Even Cut Nails, which all through the year have been extremely dull, are beginning to show signs of greater activity and firmness. Jobbers report a fairly satisfactory trade in Holiday Goods, a feature that is each year becoming more prominent in the Hardware trade. As a result of special efforts directed to this end, the advantages of special displays of such goods, and the profits derived therefrom, are getting to be better appreciated, as is evidenced by the show windows and the advertisements of retail stores.

# NOTES ON PRICES.

**Wire Nails.**—Demand upon the mills is showing an increase, both in the way of new business and specifications on contract orders. While near-by requirements are being covered at the present time it is with increased confidence in the stability of the market, so that shipments aggregate more than at any time within a year. According to reports, regular prices are being maintained. Quotations are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

| | |
|---|---|
| Carloads to jobbers | $1.95 |
| Carload lots to retail merchants | 2.00 |
| Less than carloads to jobbers | 2.00 |
| Less than carloads to retail merchants | 2.10 |

*New York.*—Demand in the local market continues comparatively light and only for near-by needs. Nails are held on the basis of $2.30 per keg in small lots at store, but some sellers are occasionally inclined to shade this figure.

*Chicago.*—The mills report a satisfactory condition in the demand for Wire Nails, with every prospect of a steady though gradual increase in volume. Buyers are placing orders with more confidence in the general stability of conditions, both as respects sustained consumption and steadiness of prices. Indications are not lacking which point to the beginning of a stock buying movement; a good many orders, in fact, are already being placed with a view to fortifying depleted stocks against future demands. Prices, we are advised, are being absolutely maintained. Quotations are as follows: $2.13 in car lots to jobbers, and $2.18 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

*Pittsburgh.*—New orders placed for Wire Nails are reported as being more plentiful and larger in volume, while specifications against contracts are also coming in very freely. Output and shipments of Wire Nails by the mills this month will show a material increase over October, and the belief is growing stronger in the trade that there will be no reduction in prices. It is said that orders being entered by the Wire Nail mills are now very close to actual capacity. This is the first time that this condition has prevailed in more than a year, and the general Wire Nail trade is referred to by the manufacturers as being quite satisfactory. It is stated that regular prices are being absolutely maintained. Quotations for base sizes are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

| | |
|---|---|
| Carloads, to jobbers | $1.95 |
| Carload lots to retail merchants | 2.00 |

Galvanized Nails are quoted at $1 over the price of the regular Nails.

**Cut Nails.**—At a meeting of the Eastern Cut Nail Association, held on November 18, the former price of Cut Nails was reaffirmed. Manufacturers reported an increasing demand, some having booked enough business to keep them busy until the first of the year. The market, which has shown some weakness, is reported as being stronger under present conditions. The general price for Steel Cut Nails is $1.80, base, per keg, f.o.b. Pittsburgh, for less than carloads, and $1.75 for carloads and larger lots, with occasional concessions of 5 cents from this figure. In the Western market Iron Cut Nails are held at

an advance of 10 cents per keg over Steel Cut Nails, but this differential is not observed in the East.

*New York.*—The local demand for Cut Nails continues moderate, orders being for small quantities. Steel Cut Nails are held on the basis of $2.15 per keg for small lots at store, but this price is not strictly adhered to by all sellers.

*Chicago.*—The general tendency of the demand for Cut Nails is of a broadening character, and orders are gradually increasing, both in size and number. Along with these signs of betterment are noticed greater firmness of prices, which are now held fairly even. While more liberalty is shown in purchases for stock, buyers are not going far ahead of current needs. We quote Chicago prices as follows: In car lots to jobbers, Iron Cut Nails, $2.08; Steel Cut Nails, $1.98.

*Pittsburgh.*—New orders being placed for Cut Nails are a little more plentiful and slightly larger in volume, but, as a rule, consumers are placing orders mostly for small lots and actual requirements. We are advised that the tone of the market is strong, and regular prices are being maintained. The general market is $1.80, base, per keg, f.o.b. Pittsburgh, but $1.75 is made on carloads and over. In the Western market Iron Cut Nails are held at an advance of 10 cents per keg over Steel Cut Nails, but this differential is not observed in the East.

**Barb Wire.**—A larger amount of business is being received at the mills than usual at this season, the prolonged mild weather stimulating demand, which includes new orders and specifications on contracts. According to reports regular prices are being maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

| | Painted. | Gal. |
|---|---|---|
| Jobbers, carload lots | $2.10 | $2.40 |
| Retailers, carload lots | 2.15 | 2.45 |
| Retailers, less than carload lots | 2.25 | 2.55 |

*Chicago.*—The volume of business coming out is more generous and is being prolonged later in the season than was anticipated a few weeks ago. It is now but a short time until trade opens in the South, which will give fresh impetus to the movement. The outlook for spring business is regarded as quite encouraging. Prices are being maintained without deviation. Quotations are as follows: Jobbers, Chicago, car lots, Painted, $2.28; Galvanized, $2.58; to retailers, car lots, Painted, $2.33; Galvanized, $2.63; retailers, less than car lots, Painted, $2.45; Galvanized, $2.75; Staples, bright, in car lots, $2.25; Galvanized, $2.55; car lots, to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

*Pittsburgh.*—The continued mild weather has had the effect of stimulating demand for Barb Wire, a fair amount of new orders still being received by the mills, while specifications on contracts are reported as coming in quite freely. This is the off season in the Barb Wire trade, and more new business is being placed than ordinarily is the case. The mills advise us that regular prices are being maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

| | Painted. | Gal. |
|---|---|---|
| Jobbers, carload lots | $2.10 | $2.40 |
| Retailers, carload lots | 2.15 | 2.45 |
| Retailers, less than carload lots | 2.25 | 2.55 |

**Plain Wire.**—Considerable activity is noted arising from orders and specifications on contracts received from Wire Fence manufacturers, and new business placed by merchants. Quotations per 100 lb. to jobbers in carload lots are as follows, on a basis of $1.80 for Plain and $2.10 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the price to retailers being 5 cents additional:

| Nos. | 6 to 9 | 10 | 11 | 12&12½ | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|
| Annealed | $1.80 | 1.85 | 1.90 | 1.95 | 2.05 | 2.15 | 2.25 | 2.35 |
| Galvanized | 2.10 | 2.15 | 2.20 | 2.25 | 2.35 | 2.45 | 2.85 | 2.95 |

*Chicago.*—Both new orders and specifications against old ones are being placed in fair volume. Manufacturers, especially the Fence makers, are ordering anead in a way that indicates confidence in good demand for their products and a maintenance of values. Prices are reported as unyieldingly firm. We quote as follows: Car lots to jobbers, $1.98, f.o.b. Chicago, and to retailers, $2.05.

*Pittsburgh.*—Manufacturers of Wire Fencing are placing quite liberal orders for Fence Wire and specifications against contracts are being received by the mills in good volume. Manufactures of Plain Wire expect a steadily growing demand and dealers are placing orders in larger volume than for some time in the belief that prices will be maintained. Quotations per 100 lb. to jobbers in carload lots are as follows, on a basis of $1.80 for Plain and $2.10 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the price to retailers being 5 cents additional:

| Nos. | 6 to 9 | 10 | 11 | 12&12½ | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|
| Annealed | $1.80 | 1.85 | 1.90 | 1.95 | 2.05 | 2.15 | 2.25 | 2.35 |
| Galvanized | 2.10 | 2.15 | 2.20 | 2.25 | 2.35 | 2.45 | 2.85 | 2.95 |

**Shovels.**—Notice was sent out by a number of leading Shovel manufacturers a few days ago announcing a withdrawal of prices. Although the Shovel market has not been in particularly good shape, some members of the trade supposed that as usual the withdrawal of quotations presaged an advance. The houses referred to, including the members of the Ames Shovel & Tool Company, are announcing readjustments representing an irregular but general decline on all grades of Shovels.

**Galvanized Ware.**—An advance of 5 per cent. on light Galvanized Pails and Tubs has been made by leading manufacturers to take effect at once. There is an equal advance on Coal Hods, effective on new business, which, however, because of existing contracts is not likely to be felt in the market until the first of the year. Pails and Tubs may now be quoted at a discount of 10, 7½, 5 and 5 per cent.

**Picks and Mattocks.**—While leading manufacturers have made no positive change in their general quotations on Picks and Mattocks it is reported that some extreme concessions to the largest trade have been withdrawn. These lines, together with other heavy tools, may be referred to as firm.

**Auger Bits.**—Many manufacturers of Auger Bits express a desire to advance prices on this line, asserting that it has long sold on an unreasonably low basis. This disposition is reflected by increased firmness in quotations, although as yet few if any actual advances have been made.

**Wrenches.**—An improvement most welcome to the manufacturers has at last taken place in the market for Agricultural Wrenches, which have been selling at prices generally agreed to be as low as cost of production, if not a shade lower. Leading manufacturers have advanced their extreme quotations from 10 to 10 and 5 per cent., and the discount of 80 and 10 per cent. may be mentioned as representing the market on case lots.

**Leather Belting, Lace Leather, &c.**—Attention has recently been called in these columns to the strong tone of the Leather market and the upward tendency in prices on Leather Belting and Lace Leather. Last week a conference was held, attended by a number of prominent manufacturers, who while they made no concerted advance, expressed the belief that their prices on standard grades of Belting must be advanced fully 10 per cent. to compensate them for the increased cost of hides. Such advances, varying somewhat according to the grade of goods bought and the price previously paid, are shown in recent quotations to the larger trade. An equally strong tone is observed in Lace Leather, Cut Lace now showing a further advance of close to 10 per cent., and Sides being about 2 cents higher. The market on Cut Lace may be represented by a discount of 45 to 50 per cent., and on Sides by a quotation of 25 cents per square foot.

**Sash Weights.**—Several Sash Weight manufacturers report an increasingly satisfactory condition of things in their line and the situation is regarded as more favorable than for some time. The moderate advances in price recently made are on the whole well maintained and in some sections at least there has been a further strengthening, reflected in further slightly advanced quotations. In view of the general condition of the Iron market manufacturers are conservative about making future contracts and are anticipating an excellent demand in the spring.

**Brass Cocks, &c.**—Responding to the advance in Cop-

per higher prices are being announced by some manufacturers for such goods as Brass Valves, Cocks, Compression Bibs, &c. Sheets, Wire and Rods remain without change.

**Window Glass.**—The past week is regarded as an uneventful one in the Glass market. Demand from factory has not materially fallen off, but hand to mouth buying is more in evidence than the placing of good sized orders. The question of the manufacturers' organization is still hanging fire, and, it is said, with about equal chances of success and failure. A meeting of the Window Glass manufacturers who were appointed as a committee on organization was held last week, and if considered advisable it is expected that a general meeting of the manufacturers will be called within two weeks to decide whether an organization can be formed, or whether the work will have to be dropped. The American Window Glass Company's prices are 90 and 35 per cent. discount on Single and 90 and 40 per cent. discount on Double Strength Glass. Hand plants are following these prices fairly well, but it is learned that sales from 2½ to 5 per cent. below these prices have been made. Window Glass has been quoted in the West as low as 90 and 40 per cent. discount for Single, and 90 and 45 per cent. discount. for Double Strength. Should the forming of the organization fail, it will mean lower prices until enough factories are forced out of blast to curtail production until it is somewhere near the demand.

**Rope.**—There is perhaps not quite as much activity in the Cordage market as for the past two weeks, and buyers are confining their purchases to present necessities. Manufacturers are using the mails liberally in sending out circulars quoting prices, which rather indicates that they are not entirely confident as to the future of the market. Considerable competition is in evidence when a good-sized prospective order is in the market. The market is reasonably strong at the following quotations for Rope, 7-16 in. in diameter and larger: Pure Manila, 8¾ to 9 cents; Pure Sisal, 6¾ to 7 cents. Mixed grades of both kinds grade down in price according to quality. Jute Rope, ¼-in. and up, No. 1, 6½ to 6¾ cents; No. 2, 6 to 6¼ cents.

**Linseed Oil.**—The price of Flax Seed has fluctuated during the week, but not enough to change the price of Oil. The crushers are reported as having comparatively little Seed on hand, and as the time for the close of navigation is not far distant crushers, particularly Eastern ones, are anxious to increase their stock of Seed. This, with the market under strong control, is set down as the cause of high priced Seed and Oil. A fair call for deliveries on contract orders and new business covering present requirements, are reported in this market. Quotations for 5-barrel lots are as follows: State and Western Raw, 47 cents per gallon; City Raw, 48 cents per gallon. Boiled Oil is 1 cent advance on Raw.

**Spirits Turpentine.**—Owing to increased activity in buying in the Savannah market prices at this point have advanced 1 cent per gallon. Local buying has been light at the advance. The New York market is represented by the following quotations: Oil Barrels, 42½ to 43 cents; Machine Made Barrels, 43 to 43½ cents per gallon.

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S. J. GUN, C. W. SPROULL AND T. W. SHANDS have bought the business of the S. J. Thomas Company, Gainesville, Fla., and will continue it under the name of Gainesville Hardware Company. The officers are as follows: S. J. Gun, president; C. W. Sproull, vice-president; T. W. Shands, secretary and treasurer. Mr. Gun is president of the Gainesville National Bank and Mr. Sproull was formerly of the Anniston Hardware Company, Anniston, Ala. The new company will engage in the jobbing business and cover the State of Florida.

George A. Miller has bought out the business of the Giles-Montgomery Hardware Company, Reidsville, N. C. Mr. Miller will continue the business in the old store building which has been leased for a term of years.

W. M. Tilley & Co., Berkley, Va., were recently damaged by fire in their Sash, Door, Blind, Hardware and Glass department. The loss was about $8000, on which there was $6000 insurance. The fire did not affect the firm's Planing Mill and Lumber stock.

# Hardware Organizations.

### Idaho Retail Hardware and Implement Association.

The fifth annual convention of the Idaho Hardware and Implement Dealers' Association, J. F. Cook, secretary, Boise, will be held in that city on Friday and Saturday, December 11 and 12. An interesting programme has been prepared, and the meeting promises to be very well attended.

### Texas Retail Hardware and Implement Association

Owing to the unusual number of important questions affecting the welfare of Hardware and Implement men which will come up for discussion and action at the next convention of the Retail Dealers' Hardware and Implement Association of Texas, to be held at Dallas, January 19, 20 and 21, the gathering promises to surpass in interest and attendance any previous convention of the association. During the period since the last meeting the membership of the body has also largely increased, indicating that the merchants of the State are alive to the desirability of actively supporting the organization which has been built up in their behalf. In connection with the convention there will be an exhibition by manufacturers and jobbers in Hardware, Implements, Vehicles and kindred lines, and J. W. McManus, Dallas, the secretary, will be pleased to hear from any who desire to be advised as to spaces and terms. It is stated that the exhibit at the last meeting was such a marked success that those displaying goods were very much impressed with the value of this method of bringing their offerings to the attention of the trade. It is possible that the privileges of the association and its insurance exchange may be extended to the merchants of Louisiana, Arkansas, Oklahoma and New Mexico, and this matter will be decided at the January convention. If the plan is carried out it is not unlikely that the name of the association will be changed, probably to the Southwestern Retail Dealers' Hardware and Implement Association.

### Ontario Retail Hardware Association.

The fourth annual convention of the Ontario Retail Hardware Association, Weston Wrigley, Toronto, secretary, will be held at Hamilton, on February 9, 10 and 11 next. The Waldorf Hotel will be the headquarters. At previous conventions no encouragement has been given to manufacturers to make exhibits, but this time they will be invited to do so. The meeting at Hamilton promises to be the best in the history of the association. The Wood-Vallance Company, wholesale Hardware, will entertain the visitors at a banquet, and perhaps also at a theatre party, while the manufacturers of Hamilton, which is the leading Hardware manufacturing city of Canada, will throw their factories open to the visitors.

### Nebraska Retail Hardware Association.

In a circular issued by J. Frank Barr, secretary, Lincoln, Neb., particulars are given concerning the Hardware exhibition which will be held in connection with the annual meeting of the Nebraska Retail Hardware Association at Omaha, February 16, 17, 18 and 19. The Omaha Auditorium has been secured for the exposition. It is stated that two years ago spaces were sold without any framework or booth construction and that last year the association erected the framework and charged extra for the decorations. This expense has now been eliminated, for in order to make the booths of uniform height and appearance, thus adding to the attractiveness of the exhibition, the association has this year decided to erect and decorate the booths complete, for which no extra charge will be made. The circular issued by Mr. Barr also presents a diagram of the main floor of the auditorium, showing the location of nearly 100 spaces, which are priced at from $15 to $40, according to dimensions and situation.

## The Griswold Company.

THE DILLON-GRISWOLD WIRE COMPANY, Sterling, Ill., has reorganized under the name of the Griswold Company. All of the bonds and stock of the old company has been retired, and $400,000 new stock has been issued in lieu thereof. The new stock is divided into $275,000 preferred and $125,000 common. The Board of Directors now consists of Henry Burden, II, Sanborn G. Tenney, E. D. Worster, Robert McCosh and Chester Griswold. The officers are: Chester Griswold, president and treasurer; Henry Burden, II, vice-president, and Robert McCosh, secretary. The output of the plant has been doubled. The company contemplates enlarging its line and will place several new articles on the market in the near future.

## Requests for Catalogues, Etc.

*The trade is given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.*

**REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate:**

FROM REA & HART, who have purchased the business of W. W. Kinser, Promise City, Iowa, covering Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints, Oils, Sporting Goods, Buggies and Wagons.

FROM HAMBURG SUPPLY HOUSE, J. L. Balthaser, proprietor, Hamburg, Pa., who is starting in the Hardware, Farm Implement, Oil, Paint, Glass, Cement and Lime business.

FROM DEWANE BROTHERS, who will open a new Hardware store in Maribel, Wis.

FROM F. R. TILLOTSON, Wyoming, N. Y., who has just completed a new store building, 30 x 60 ft. Mr. Tillotson was burned out several months since. He carries a line of Hardware, Stoves and Furnaces.

AN INTERESTING VISITOR to the Vehicle plant of the Studebaker Bros. Mfg. Company, South Bend, Ind., recently, was George Myers of Ashland, Ohio, who more than half a century ago worked with J. M. Studebaker in the crossroads wagon shop six miles out in the country from Ashland. Mr. Myers did the woodwork and Mr. Studebaker the ironwork on the original Studebaker wagons. In 1854, when the Studebakers decided to move to Indiana, they urged Mr. Myers to accompany them. Had he done so, one of the largest pump and hay tool industries in the world might not have been located at Ashland, Mr. Myers being the father of Frank E. and Philip A. Myers, who constitute the firm of F. E. Myers & Bro. Mr. Myers is in his eighty-sixth year, and hale and hearty though he is, it would be no easy task for him to walk through the different departments of the great Studebaker plant, but this was not necessary, as Mr. Studebaker showed him everything from an electric runabout which was run through the center aisle of every floor and from one floor to another on the elevators, being finally run out on the roof of one of the structures, from which a fine view of South Bend and the surrounding territory was obtained.

THE INSTANTANEOUS GLUE CONVERTER COMPANY, Cincinnati, Ohio, has just been incorporated with a capital of $40,000 by Albert Kleybolte, C. M. Zimmerman, T. L. Drimmie and F. X. Lang, to manufacture a new glue converter, patents for which have been applied for by C. M. Zimmerman, the inventor. The device is intended to supplant entirely the use of the old fashioned glue kettles. The converter process consists in soaking the proper proportions of dry glue and water and placing the jelly thus formed in the converter, where the direct action of live steam reduces the jelly to liquid glue ready for use at the rate of a gallon every five minutes. The special advantages claimed are saving in glue from evaporation and increasing its strength through avoidance of boiling. The glue is filtered in the process, which insures its cleanliness.

## Trade Items.

THE FAETH IRON COMPANY, Kansas City, Mo., has purchased a site at 1065 West Eighth street upon which, early next spring, it will erect three large buildings which will include a six-story and basement warehouse 100 x 111 ft.; a one-story steel warehouse 100 x 100 ft., and an additional three-story building for manufacturing purposes 50 x 80 ft. Present plans contemplate the use of reinforced concrete and fireproof construction for these buildings.

AFTER a career of 38 years as manufacturers and jobbers of Household Utilities, Wiester & Co., 2981-2989 Folsom street, San Francisco, have sold their business and retired. The purchaser, Herbst Mfg. Company, will continue it in connection with their production of Sheet Metal and Copper Specialties at 1939 Mission street, San Francisco.

THE MARYLAND OILED CLOTHING COMPANY, 2405-2411 Eastern avenue, Baltimore, Md., whose foreign representatives are C. K. Turner & Son, 116 Broad street, New York, is manufacturing a full line of Oiled Clothing in black, yellow and brown, in slickers and long coats, pommel slickers, motormen's coats, medium and frock coats and jackets, overalls, apron and string pants, bats in numerous styles, wagon boots, horse covers, &c. The goods are branded Terrapin Special, Terrapin Maryland and Neptune, according to quality, the Terrapin Special being the highest grade which in khaki and black are in use in the Philippine and other services by the United States army.

C. H. SPOTTS, formerly manager of the Paint department, and Walter Ferris Swearer, formerly assistant at the general offices of the Joseph Dixon Crucible Company, Jersey City, N. J., have become associated with the Protectus Company, manufacturer of Paint, Mr. Spotts as secretary and Mr. Swearer as New York manager, with offices in the Hudson Terminal Building. The Philadelphia headquarters are located in the North American Building.

AMIOT, LECOURS & LARIVIERE, INC., Montreal, Que., have been succeeded by Lariviere, Inc. This change in name does not involve any change in the direction or administration of the company's affairs, Fred. C. Lariviere continuing as president. This business was established in 1889 and has been exceptionally successful.

G. C. Farnsworth, Denver, Iowa, is disposing of his stock of Hardware by retail, preparatory to retiring from business.

J. H. Shelden, Burlington, Kan., has moved his Hardware, Stove, Tinware, Paint, Oil and Sporting Goods stock into new quarters.

W. T. Jones, Woodstock, Iowa, suffered a loss of $7000, partly covered by insurance, by the burning of his Hardware stock and store.

Henry W. Luetkemeyer, one of the most prominent Hardware merchants in Cleveland, Ohio, and head of the firm of H. W. Luetkemeyer & Sons, died November 23, aged 79 years. Death was due to old age. Mr. Luetkemeyer was born in Prussia in 1830 and came to this country with his parents when 12 years old. At the age of 19 he came to Cleveland and had been engaged in the Hardware business since that time. He served as a member of the City Council and was quite prominent in banking circles, being one of the founders of the Citizens' Savings & Loan Company and its vice-president until its consolidation with the Savings & Trust Company. At the time of his death he was a member of the Advisory Board of the combined institution, the Citizens' Savings & Trust Company.

# Holiday Trade in the Hardware Store.

## CHINAWARE DISPLAY ON STORE TABLES.

THE accompanying illustration represents part of a table arranged with Christmas goods at holiday time by the Marion Hardware Company, Marion, S. C. The company carries regularly in connection with its Hardware stock a nice line of domestic and imported China and Ornaments. During the last Christmas season three tables were arranged down the center of the store, one table being given up entirely to the display of China, as shown in the illustration, another to a display of Toilet Articles, and the third to an exhibit of Nickel and



*Christmas Table Display in Marion Hardware Company's Store.*

plated Ware, such as Chafing Dishes, Five O'Clock Teas, Baking Dishes, Tea and Coffee Pots, Soup Tureens, Ladles, &c.

The counters and showcases on either side of the store were cleared of everything, not likely to be called for during the holiday season, and these were used for the display of Razors and Razor Goods, Pocket Cutlery, Carving Sets and other goods having extensive sale at this time of the year. In conspicuous places around the tables were shown Brass and Wrought Iron Andirons, Fireplace Sets, Fenders, &c.

## INCREASING THE HOLIDAY TRADE.

BY FAR WEST.

IT is a dull store indeed into which additional life is not put by the gift-giving spirit that hovers around Christmas. The Hardwareman naturally wishes to avail himself of every opportunity to get all he can out of the holiday business, yet finds himself in doubt just what to do to increase his trade and not carry over a lot of goods that will be unsalable until the next Christmas. He will hardly consider this to be the year to add new lines to any great extent, but will feel more like putting all his energy into stocking those lines that have been tried and found true. Beginning with yourself and your clerks, cultivate cheerfulness assiduously. Don't put any one in the front of the store that cannot smile and have a hearty welcome for the customers. The next step is to make your store smile and have a festive look. This is the time for you to get out your paint pot and go over the shelving and rough stands. It is doubtful if the influence of surroundings is appreciated by all Hardwaremen. They are too apt to think their homes the only places to be made attractive and neglect the appearance of their stores. This is a good time to reverse conditions and make the store as bright as the home, as it is in the store you spend six days of the week and as many evenings. Bring from your seventh day stopping place some of your potted plants in fancy jardineres, and if you have anything in the musical line, if only a music box, bring that also.

**Cultivate Cheerfulness.**

**Make the Store Smile.**

If you gather together all the signs and posters the manufacturers have sent, they can be fastened on frames, which can be roughly made of lath, and then trimmed with holly. These framed posters, if suspended from the ceiling over the showcases, change the appearance of the store and add greatly to its appearance. By using Stove Pipe Wire and running it from the center to the shelving, on each side of the store, an effective arch is attained. The Wire should be stretched at intervals of about 8 ft. and covered with holly, then hang from these arches all sorts of articles high enough to be out of reach of customers. One section can be used for hanging Enameled Ware, another for Nickel Plated Ware, another for Aluminum Ware. In fact, this arrangement is just like trimming a Christmas tree. Being out of the conventional it attracts attention and assists your trade in making their selections.

**Manufacturers' Signs and Posters.**

**Arch Effect.**

Cutlery will be a line in strong demand, and should be arranged to facilitate selections, at the same time avoid any mixing of stock. For this reason all Pocket Knives should be gathered under uniform prices. One assortment 25 cents, another 50 cents, another 75 cents, and so on through the stock. In displaying Pocket Knives the number should be counted. Following this plan lessens the chance of a customer getting $1 Knives at a 50-cent price, especially as at holiday times when extra help is usually employed. The plan of gathering together, under uniform prices various goods facilitates sales, but in any arrangement prices should be marked in plain figures.

**Arranging Cutlery.**

Especial attention should be given to the arrangement and display of practical presents. It may be thought that everything in a Hardware store is practical, but there are quantities of stuff that are got up especially for gifts. These should be avoided, therefore, in addition to articles above mentioned. Waffle Irons, Meat Cutters, Electric and other Sad Irons should be given a prominent place, instead of being pushed under a shelf. Sleds and boys' Wagons should be displayed so a pile need not be taken down to get at any particular size. If arranged in piles each size should be kept separate. From 7 to 9 o'clock in the morning is usually the quiet time, when the displayed stock should be rearranged and replenished.

**Practical Presents.**

**Sleds and Wagons.**

One of the amusements of the people is to go downtown to look at the windows. So the Hardware man who aims to get the most out of the holiday trade will look to his windows. The conventional arrangement is to have the articles arranged so that they rise toward the back or corner of the windows. Getting away from the conventional, a striking arrangement can be made by using a central form rising several feet, which can be easily made in the store. For Cutlery a low packing box serves for a base. On this place a box about 8 or 10 in. square by about 3 ft. high, such as Axes or Iron Miter Boxes come in. Cover these with black or crimson —velvet is the richest, but cloth answers very well. Fasten or hang Scizzors or Razors on cup hooks. Cover the base with Pocket Knives and in front and around the stand on bottom of the window display Carvers in sets. The top of the stand may be used for Carvers not in cases. The points should rest on the top and the handles extend out and rest on stove pipe wire. A wooden Skate about 3 ft. long may be made at a carpenter shop at small expense and painted in the store with aluminum paint. Hang this in the center of another window display and suspend from it a line of Skates, using as a background for the window plenty of color, mistletoe and holly.

**Window Dressing.**

**Monster Skate.**

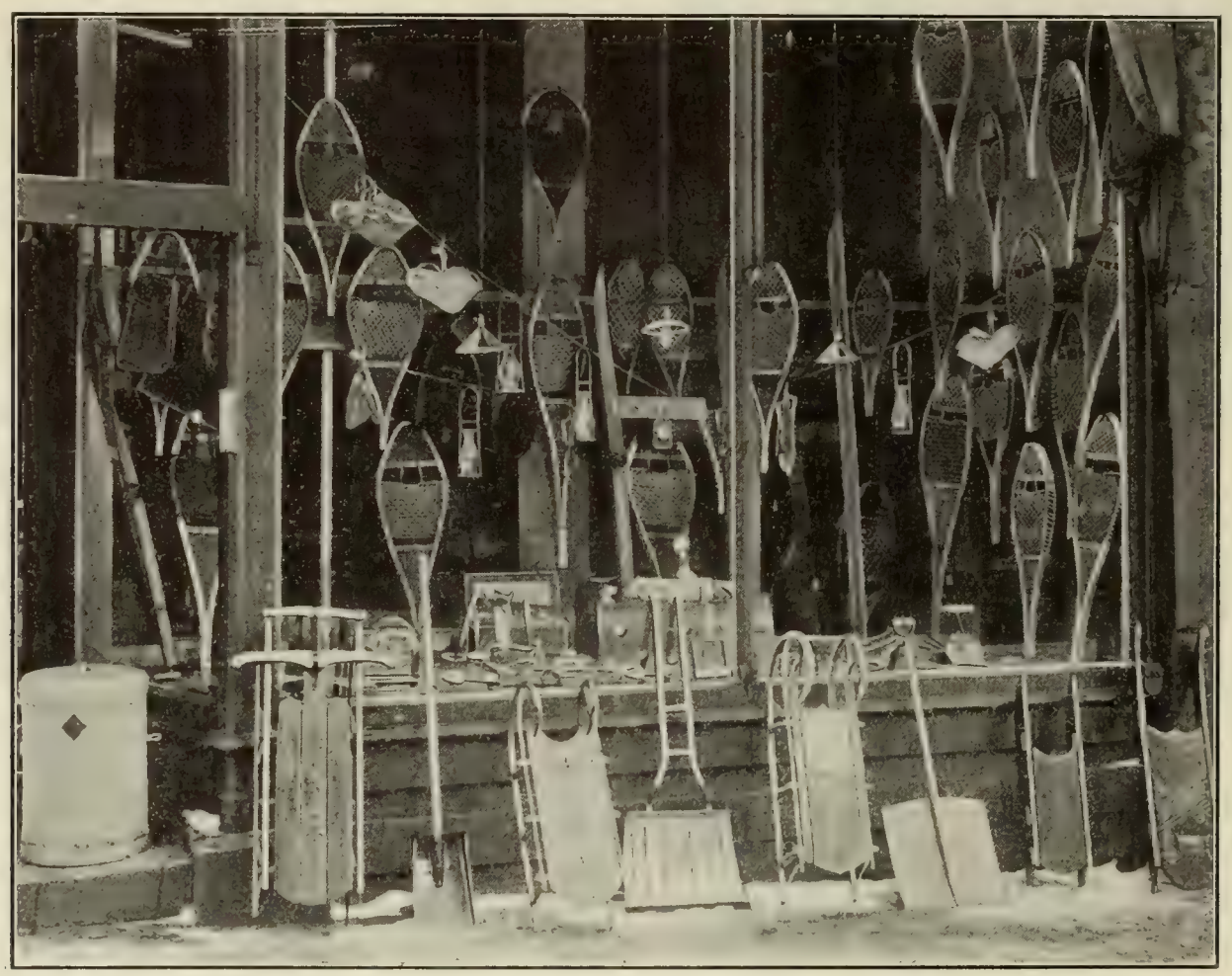
Particular attention should be given to the handling of the cash. All clerks are presumed to be honest and the endeavor should be made to keep them so by not putting temptations in their way. A record system showing the sales of each clerk and the knowledge that every sale they make can be accounted for helps to make them careful.

**Taking Care of the Cash.**

## WINTER GOODS WINDOW DISPLAY.

THE window exhibit reproduced herewith was arranged by M. R. Manhard & Son, Marquette, Mich., during the holiday period last year. The window is 14 ft. long and 6½ ft. deep. Among the articles displayed Snow Shoes were in the largest proportion. The firm manufactures Snow Shoes, for which a ready sale is found, many being shipped into the Northwest Territory. In addition Moccasins and Straps for use with Snow Shoes were shown. There were also Skis, which are handled in connection with the Snow Shoes as sking is a great pastime in that section of the country.

Other articles which were given a place in the window were Ice Skates, Ankle Straps, Tool Chests, &c. Sleds and Snow Shovels were lined up on the sidewalk outside the window, the whole making a striking and effective display. At the same time the firm used its window on the other side of the entrance for an attractive display of Nickel Plated Goods, Carpet Sweepers, Fancy Teapots, Granite Ware and Kitchen Utensils generally.



*Winter Goods Window Display of M. R. Manhard & Son.*

## Baker & Hamilton's New Quarters.

POSSESSION has lately been taken by Baker & Hamilton, San Francisco, Cal., of their new establishment, located at 433 to 481 Brannan street, between Third and Fourth. It is believed that with the splendid facilities now enjoyed by the house for the economical handling of Iron Pipe, Hardware, Implements and Vehicles the position of San Francisco as a distributing center will be materially strengthened. The new building is within one block of the Southern Pacific, four blocks of the Santa Fé, four blocks of the Western Pacific freight sheds and three blocks of the Channel and Pacific Mail docks, so that the location is an ideal one from a wholesale standpoint. Spur tracks run directly to the receiving floor of the building, and will accommodate the unloading of eight cars at one time. A private driveway through and between the buildings insures the rapid and economical receipt and dispatch of merchandise. There are eight doors from the shipping room for outgoing freight. The main building is 258 x 275 ft., containing 212,850 sq. ft., and the iron warehouse is 95 x 240 ft., containing 22,800 sq. ft. The main structure contains a sprinkler system of about 3000 sprinkler heads, with about six miles of pipe line. It is also equipped with a private telephone exchange, which is said to be the largest in the city.

## Price-Lists, Circulars, Etc.

*Manufacturers in Hardware and related lines are requested to send us copies of catalogues, price-lists, &c., for our Catalogue Department in New York; and at the same time to call attention to any new goods or additions to their lines, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.*

BERGER MFG. COMPANY, Canton, Ohio: 12-page catalogue, envelope size, illustrating a variety of Steel Clothing Lockers; also folder relative to Berger Steel Office Equipment.

POTTER MFG. COMPANY, Geneva, Ohio: Descriptive circular of Garden and Floral Tools.

LAMSON & SESSIONS COMPANY, Cleveland, Ohio: Illustrated descriptive price-list of Bolts, Nuts, Rivets, Wrenches, Washers, &c., in great variety, with cutout marginal index for quick reference.

MARTIN METAL MFG. COMPANY, Wichita, Kan.: Illustrated catalogue of 90 pages of Tanks, Culverts, Eave Trough, Conductor Pipe, Crestings, Gutters, Roofing, Siding, &c.

ROBERT H. INGERSOLL & BRO., 45-49 John street, New York: Illustrated booklet describing Ingersoll Watches, including Yankee, Junior Midget for ladies, Eclipse and Auto, together with Chains, signs and display fixtures.

OHIO IMPROVEMENT COMPANY, Bowling Green, Ohio: Illustrated implement catalogue, No. 7, 32 pages, containing Farm Implements, Garden Tools, Burton Bob Sleds, Rollers, Pulverizers, Hay Loaders, Single Trees and Feed Cutters.

KELLEY-HOW-THOMSON COMPANY, Duluth, Minn.: Twelve-page illustrated catalogue of winter goods, including Horse Blankets, Robes in both plush and fur, &c.

KILBOURNE & JACOBS MFG. COMPANY, Columbus, Ohio: Folder illustrating and describing Steel Factory Pans of various kinds, Seamless Watering Troughs, Feed Boxes, Ore Baskets, Ladle Bowls, Cuspidors, Stacking and Taper Boxes, Barrel and Truck, &c.

G. W. Wendell has been succeeded in the Hardware business at Spencer, Wis., by C. M. Varney.

# Here and There in the Hardware Store.

BY SAMUEL MASTERS.

## IX.—SALES METHODS.

THERE seems to have arisen in the land within the past year or two a new sect, which worships at the shrine of a fetish which its priests call Salesmanship, and whose ritual is a mixture of mental science, buncombe, assertiveness and artful address, leavened with enough of the essential qualities of sales making to give it some value to those who are ignorant of the first principles of business.

### Puller-In-ism Reduced to a Science.

The magazines devoted to commercial practice contain articles which deal with special features of the creed; books have been written expounding it, and some of its features have been reduced to formulæ and form a portion of lectures and instructive essays by its seers. It would seem that to be a successful salesman it is necessary to use other means of influencing a buyer than cool reason—that the seller must lead him away from a dispassionate consideration of the article vended, its price and its suitability to his needs, and by working upon his feelings or his subjective mind to induce him to purchase when his reason would, perhaps, counsel a refusal. Personal magnetism is one of the forces enlisted in its cause, and a personal ascendency over the buyer's will is to be sought as a prime factor in the deal.

"First, secure his undivided attention," cry the teachers of the new cult; "then arouse his interest in your wares; then create in him the desire to possess, which will stimulate him into a determination to buy. Give him no chance for cool reflection. Show up the excellencies of your goods in such fashion that the buyer will, in contemplation of them, be influenced by your presentation, and (unconsciously), by the working of your subconscious intelligence upon his, forget any deterrent facts and be moved, independently of his judgment, to purchase."

### The Art of the Single Deal.

A book agent, a nurseryman, a gold brick artist, an insurance solicitor, a promoter or other vendors who expect to make but a single sale might find such a creed of value, but in Hardware I don't believe that anything can take the place of hard plugging on the part of the salesman, working strictly within the field of reason, and depending upon quality, price and delivery for his argument. I have yet to find an instance in which any permanently favorable relations were ever established upon any other footing.

### Even Good Buyers Go Wrong.

I presume that every buyer has been influenced by his personal feelings to disregard the promptings of his judgment and buy goods of doubtful merit. There are times when the personality of the salesman so dominates the situation that the buyer yields to its influence. I have known Hartman, Junior, whose superior ability as a buyer was recognized, to give a salesman an order and cancel it by wire when he had time to give the subject a dispassionate review. I knew him in one instance to put in a stock of unsalable Wire Ties in defiance of the sales manager's protest, and frankly acknowledge later that the salesman had got the better of him against his own judgment. But the salesman had a scant hearing when he next called and never made another sale to Hartman, Junior.

### Dealing in Futures.

A winning personality, a good carriage, a cheerful, optimistic manner, and the "gift of gab" are surely great aids in making sales. But the real test of a salesman is not the taking of a single order through his personal qualities, but the lasting satisfaction resulting from the trade relations established, which make subsequent orders come in when the first supply is exhausted, and proves that the salesman has the customer's interest at heart as well as his own. A good line, right prices, prompt deliveries, a study of the customer's needs and a refusal to supply material not in consonance therewith are more potent factors in building up a clientele than any succession of appeals to the personality of the buyer.

### Distrust the Over-Friendly Salesman.

In my experience as a buyer—and I have bought several millions of dollars' worth of merchandise of various kinds—I have learned to distrust the salesman who endeavors to thrust his personality upon me or to establish himself upon a friendly footing at the time a purchase is contemplated. I have also learned to try to avoid any bias in judgment because of faulty tactics on the part of the salesman and to keep strictly in view the article tendered and its merits regardless of the salesman's inducements. While I like as a class the men on the road I personally prefer to place orders for new lines without any solicitation on their part, or after they have presented their arguments and gone upon their way.

### The Social Bribers.

I prefer not to do any business with salesmen of one type—the fellows who become familiar upon short notice and preface their story with the presentation of a cigar. Hartman, Junior's, treatment of such gentry always occurs to me when I deal with them. It was an inflexible rule with him never to accept a present or a personal favor from the men who called upon him, and the only exception I ever knew him to make was to accept the salesman's proffered cigars with brief thanks, and place them in a corner of his desk where the stockman could find them. It was easier to do this than to refuse. I have known him to become quite impatient with tactless salesmen who insisted upon taking him to lunch, and, if the offender was a stranger, whose slight acquaintance made it very evident that the invitation was a salesman's ruse and not caused by any friendly feeling, his refusal was at times quite brusque. He was generally classed as a "cold proposition" by salesmen, and did his business in an atmosphere calculated to make the salesman get down to the bottom discount, and tell his story plainly and fairly at the first recital.

### Good Fellowship at a Discount.

It can be understood that a man of his ideas and temperament would not be in sympathy with Mr. Martin's ideas of handling sales of factory supplies upon a basis of good fellowship cultivated by the city salesmen. Mr. Martin, on the other hand, thought that Hartman, Junior, was too arbitrary in his methods, and made much of the stories of disappointed salesmen who occasionally stopped in the city store on the way out to tell of their chilly reception. Hartman, Junior, believed that other buyers liked to be approached as he did, and that the best basis for business was industrious solicitation and plain facts. He was therefore heartily in sympathy with any plan which could be devised which would enable him to check up the city salesmen's work and arrive definitely at the results attained.

*(To be continued.)*

## Salem Iron & Steel Company, Inc.

THE SALEM IRON & STEEL COMPANY, INC., lately organized, has taken over the stock of the Salem Nail Company, and will continue the business at 279 Pearl street, New York, the old location. C. A. Miller of Miller & Brewer, 83 Maiden lane, is president of the company, and Frederick Connell, for the last 11 years connected with the sales department of the American Steel & Wire Company and its predecessors, is secretary and treasurer. The company will carry in stock Wire and Cut Nails, Railroad and Boat Spikes, Cement Coated Nails, Tacks, Staples, Bar Iron and kindred products, and will make a specialty of galvanized and tinned materials. The company will also give attention to iron and steel products for export.

The Hardware business of Meecham & Fuller, Fenville, Mich., has been purchased by Henry Lamb, who will also handle a line of Gas Engines, Implements and Buggies.

## LETTERS FROM THE TRADE.

*Our readers are invited to discuss in these columns questions of trade interest connected with the manufacture or sale of Hardware. We shall be pleased to have a free expression of opinion on subjects deserving the attention of Hardware merchants and manufacturers.*

### Patent Infringement Suits.

*From a Kansas Manufacturer:* We note in a recent issue of *The Iron Age* correspondence signed "Ohio" regarding patent infringment suits, and as we have had a little experience along this line we give you the benefit of same.

There are two different manufacturers sending out warnings to our customers, advising them that they are liable for damages on account of handling some articles of our manufacture which these parties claim infringe on patents held by them. We are sending out a letter to all our customers regarding the matter, inclosing a reprint of decision by Justice Allen, as follows:

*An Infringement Decision.*

Concerning the right of the owner of a patent to sue the purchasers of the goods claimed to have been patented, our courts invariably hold that the suit should be filed against the manufacturer of the alleged patented goods, and that the purchasers should be protected, and if several suits are filed against the purchasers, the courts will enjoin their prosecution and compel prosecution against the manufacturer.

The case of Ide vs. Ball Engine Company, 31 Federal, 901, was one where the Ball Engine Company claimed that Ide was infringing upon its patent, and brought suit against several of the purchasers from Ide for damages,—an injunction was issued, enjoining such prosecution. In the decision Justice Allen says:

> "Public policy would seem to favor the rule that litigation for the purpose of ascertaining and sustaining the validity of the patent, should be between the patentee and the alleged infringing manufacturers."

And in that case the Ball Engine Company was enjoined from suing the various purchasers of the goods manufactured, on that point the Court saying:

> "To the extent of restraining complainant from prosecuting suits against the purchasers or users of the Ball Engine Company patent, until the pending litigation involving the litigation of the several patents terminates, an injunction will be granted."

You will note from this decision that an infringing manufacturer should be looked to for damages before suit is brought against the purchasers.

### His Wife's Purchase and the Moral.

*To the Editor:* Touching on the value of attractive and complete displays of goods in Hardware stores so as to remind customers of goods other than those for the purchase of which they visit the store, the following incident may be of some interest:

The other day among my wife's purchases I observed a Nail Hammer, which she had bought in one of the 5 and 10 cent stores of our city. Naturally my curiosity was aroused to know why on such an article she had not come to my store where goods are retailed as well as wholesaled.

"Why," she said, "I never saw a Hammer of that kind in your place. Your Hammers are of the grade sold to carpenters and mechanics at a very much higher price, and the cheaper one answers my purpose just as well."

When I had recovered my equanimity I told her that the Hammer she had thus purchased was originally obtained from my stock by the 5 and 10 cent store people. The revelation was almost as disturbing to her as the news of her investment had been to me.

This incident affords an additional object lesson that goods well sampled and conveniently and attractively displayed and arranged create a desire on the part of the beholder to buy, and influence business that might otherwise be lost. Doubtless many unnecessary purchases are made as a result of such displays, but that is the buyer's concern, not the seller's. ATLANTIC COAST.

# THE CONVENTIONS AT MEMPHIS.

## American Hardware Manufacturers' Association—National Hardware Association.

THE annual conventions of the American Hardware Manufacturers' Association and the National Hardware Association, held last week at Memphis, Tenn., constituted a notable occasion and one well worthy of the two great organizations. The attendance was gratifying, both associations being largely represented and all sections of the country covered. Very marked was the hospitality of this fine Southern city, and this contributed much to the success of the gathering. The Gayoso and Peabody hotels were the headquarters of the associations, the jobbers largely occupying the former and the manufacturers the latter, the business sessions of both conventions being held in the Gayoso.

### Attendance.

It is a noteworthy fact evidencing emphatically the importance of the conventions in the estimation of the trade that the attendance in both associations seemed to be fully up to the average of former years. This was especially remarked because the convention was held so far from the manufacturing and financial centers of the East and a little off the beaten tracks of travel. It may be that the number of Eastern jobbers present was slightly reduced on this account, but it would seem that Eastern manufacturers were glad of the opportunity to visit territory not fully known and customers seldom if ever before met upon their home ground. The attendance of Central, Western and Northwestern jobbers was quite as good as usual, while in the case of Southern and Southwestern jobbers it was of course particularly large. Many ladies were present from all parts of the country enjoying to the full the numerous social features of the programme and the graceful, whole-hearted hospitality of their charming hostesses.

### Accommodations.

There is no doubt that the many who were visiting Memphis for the first time were much impressed with the qualifications which it presented as a convention city and the excellent accommodations afforded. The Gayoso Hotel, which was made the headquarters and meeting place for both conventions, and the Peabody, where most of the manufacturers were lodged, are spacious, modern houses, affording all the comforts required by the most luxurious traveler. The management of the two houses did everything in their power to promote the convenience of their guests, and much appreciation was expressed for their hospitable attentions.

### The Opening Session.

The usual opening session of the National Hardware Association participated in by the manufacturers and other guests was held on Wednesday morning, and was well attended. President W. S. Wright called the gathering to order with a few remarks in his most happy vein, after which "America" was sung, and Rev. J. R. Winchester of Memphis offered prayer. President Wright then introduced J. H. Malone, Mayor of Memphis, whose eloquent address of welcome was greatly enjoyed. The annual address of the president and secretary were then delivered, after which came a general discussion of

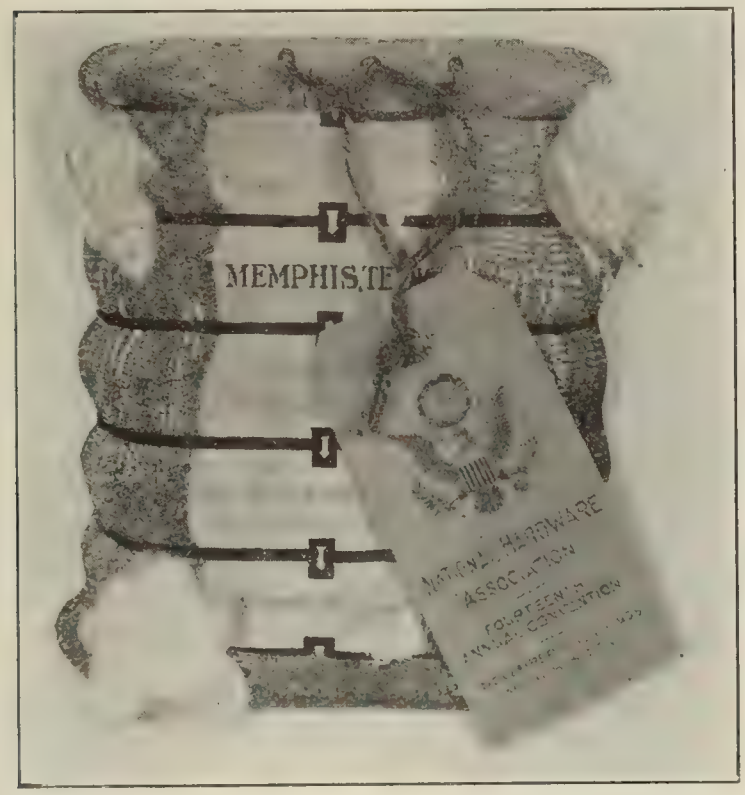
### The Business Outlook.

It will be remembered that in the period of financial crisis, during which the convention met at Atlantic City a year ago a discussion of the outlook was perhaps a feature of the occasion. The tone was one of reassurance, neither manufacturers nor jobbers showing any disposition to be stampeded by the dangers threatening them. Nevertheless it was a period of anxiety, the justification for which has been seen only too clearly in subsequent events. This year the belief was unanimously expressed that the outlook is marked by clearer skies and a bright sun of promise. Chastened perhaps by the recollection of some errors of a year ago, many were

inclined to be conservative in their expressions, but an unmistakable atmosphere of confidence and hopefulness prevailed.

Among those who gave their fellow Hardwaremen the benefit of their ideas were D. H. Goodell, Goodell Company, Antrim, N. H.; Robert Garland, Garland Nut & Rivet Company, Pittsburgh; J. D. Moore, Moore & Handley Hardware Company, Birmingham, Ala.; C. D. Clark, Clark, Quien & Morse, Peoria, Ill.; A. L. Scott, Pacific Hardware & Steel Company, San Francisco; W. T. Johnson, American Axe & Tool Company, Glassport, Pa.; R. A. Kirk, Farwell, Ozmun, Kirk & Co., St. Paul, Minn.; Dr. J. Hutchinson Hall, William Schollhorn Company, New Haven, Conn., and R. R. Williams, Hardware editor of *The Iron Age*.

Perhaps the most important point brought out by the discussion was the fact that the jobbers do not favor a material advance in Hardware prices in general at the present time, believing that such a movement is not warranted by conditions and would tend to retard progress, if not check it altogether. Many of the manu-




facturers present stated that they were fully in sympathy with the jobbers' attitude and expressed some surprise that they were understood to contemplate such action. Prices, it was declared, have in the main been well maintained in spite of adverse conditions, and therefore an advance at the first sign of improving business would certainly be regarded with suspicion.

The meeting closed with the introductions of several old friends who were present as representatives of other associations, including William Starke, president of the Canadian Wholesale Hardware Association; J. Hardy, secretary of that association; President A. T. Stebbins of the National Retail Hardware Association, and others.

### American Exporters' and Importers' Association.

Recognizing the need of increased intelligence in the handling of export trade and the value of co-operation among manufacturers and merchants in handling this business, the following resolution was adopted by the manufacturers:

*Whereas,* The export trade in articles of Hardware has grown to be of large proportions and is an important factor with many of our members; and

*Whereas,* The exporters' association of New York City, a body composed of the principal exporters located there, has signified through its officers a willingness to co-operate with this association with a view to extending the sale of American Hardware in foreign countries, and has expressed a desire to render all possibjle assistance to any of our membership who may be interested; therefore be it

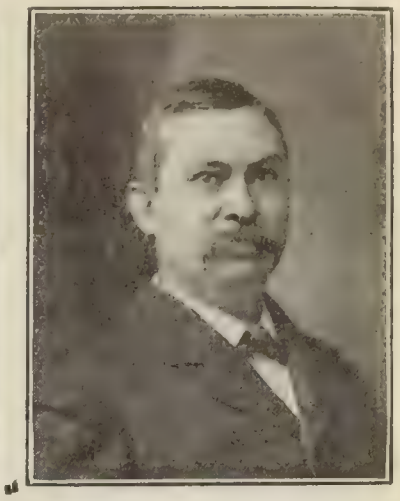
*Resolved,* That the American Hardware Manufacturers' Association, in convention assembled, gladly extends to the exporters' association the right hand of fellowship, and hereby expresses the wish to co-operate with their association insofar as the diversified make-up of our membership make it possible to do so.

### Local Jobbing Associations.

An unusual amount of attention was devoted to the matter of local jobbing associations. Reports from several sections indicated the existence of such associations in effective operation and tended to show that they were regarded as most beneficial to the jobbing trade in those districts. Jobbers from some localities not organized showed a decided interest in the methods employed by their brother jobbers, and it is not unlikely that as a



ROBERT GARLAND.



R. M. DUDLEY.

result one or two new local jobbing associations will be organized.

### Sherman Anti-Trust Law.

No organized action was taken on the Sherman anti-trust law, although it was frequently a subject of informal discussion. It is now generally recognized that this statute should be modified or repeated at the next session of Congress, as it is too drastic and sweeping in its operation and scope and pernicious in its effect.

### Protection of Patent Rights.

President Asbury in his annual address called attention to the fact that whereas the United States issues patents affording protection to foreign inventors without stipulation that the goods must be made in this country, the principal European countries have laws governing patents issued to American inventors which require the working of such patents in the countries granting them. This obviously decreases the commercial value of patents issued to American inventors and entails upon American



CHAS. W. ASBURY.



W. S. WRIGHT.

manufacturers owning such patents great hardship and expense. The subject was referred to the Committee on Resolutions, and the following resolutions reported by them were adopted:

*Whereas,* United States patents issued to foreign inventors give protection to the inventors thereof for 17 years, without a tax of any character or any provision for working said patents in this country, thus giving the foreign owners unlimited time to dispose of such patents without having their value decreased by compulsory working or the payment of any fees or taxes; and

*Whereas,* The principal European countries, especially Great Britain, France and Germany, have now in effect laws governing patents issued to American inventors which require the working of such patents by said American owners in the coun-

tries granting same, which entails a hardship and great expense, thus decreasing the commercial value of patents issued to American inventors; now, therefore, be it

*Resolved*, That the American Hardware Manufacturers' Association, which has enrolled in its membership a majority of the large Hardware manufacturing interests in the United States, requests that the proper authorities at Washington give consideration to this important subject, so that our interests will be given adequate protection; be it further

*Resolved*, That copies of this resolution as adopted be forwarded through the secretary-treasurer of our association to all members, asking that they in their turn take the matter up through their various representatives in Congress, so that prompt action may be had.

### Cost Keeping.

In President Asbury's annual address of a year ago the need of adequate cost keeping systems in manufacturing plants was brought up and it was promised that steps would be taken by the manufacturers' association to investigate this matter and place at the disposal of the

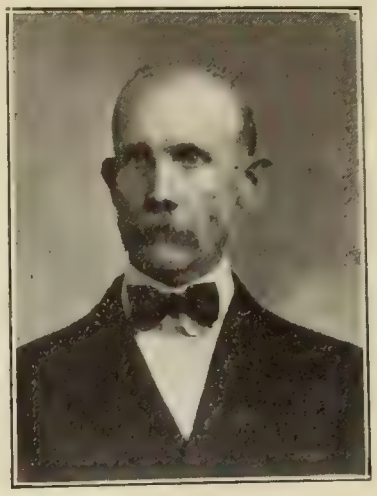


E. M. KEMP.



C. A. EARL.

members the information secured. It was brought out that the subject was a matter for association action since a clear knowledge of costs on the part of every manufacturer would make for a stable market and prevent a reduction of prices through competition to a ruinous basis. As will be noted from President Asbury's annual address, given in another column, a good deal has been accomplished during the year along this line, one result being an address delivered before the association by B. A.



J. D. MOORE.



H. C. ATKINS.

Franklin, Miller & Franklin Company, Boston, on the subject of cost keeping systems. The address was an able exposition of the subject profusely illustrated by diagrams and aroused much interest on the part of those who heard it.

### Cash Discount.

Considerable progress has been made during the past year in establishing 2 per cent., 10 days, as the general terms of cash discount. A year ago there was a movement among the manufacturers to reduce the discount to 1 per cent., but owing to the importunity of the jobbers, and also perhaps to the untoward business conditions, some of those who attempted to establish this rate, were unable to maintain it. The contention of the manufacturers has all along been that whatever the amount of discount the 10-day term should be strictly respected by the jobbers in making remittances, and the promise of a

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closer adherence to this rule doubtless had much influence in inducing the manufacturers to maintain the old rate instead of making it 1 per cent.

### The National Retail Hardware Association.

As has been the case for a number of years, the National Retail Hardware Association was represented by an able and dignified delegation, including its president, A. T. Stebbins, Rochester, Minn.; Secretary M. L. Corey, Argos, Ind.; W. P. Bogardus, Mt. Vernon, Ohio;



F. D. MITCHELL.



BRACE HAYDEN.

S. R. Miles, Mason City, Iowa; E. M. Bush, Evansville, Ind., and A. H. Abbe, New Britain, Conn.—all gentlemen high in the councils of their State and national organizations. Beside the thoughtful address delivered by President Stebbins before the Manufacturers' Association, and given in another column, the retailers were heard from at the joint opening session, and also at executive meetings of both the jobbers and the manufacturers. The intelligence, moderation and clear sightedness of their suggestions and views were a subject of favorable comment, although both manufacturers and jobbers have learned to expect nothing less.

### Syndicate Buying.

One of the prominent subjects before the jobbers was syndicate buying. It will be remembered that for several years the National Hardware Association through its secretary has exercised a supervision of the lists of houses represented by the New York Syndicate Buyers, so that only jobbing houses deemed of suitable size might be given the advantage of this representation. The principal syndicate buyers have pretty loyally submitted to this supervision and have been in the habit of submitting their lists for approval, refusing from time to time to serve such houses as were not regarded by Mr. Fernley as entitled to the advantages of this method of keeping in touch with the market and in purchasing goods.

One of these firms of syndicate buyers, W. B. Fox & Brother, an old and generally considered conservative house in this field, has, however, recently refused to be subject to individual control in this matter, while expressing their willingness to act in harmony with the desires of the association and in accordance with the spirit of the understanding originally had in regard to syndicate buying. In the present condition of things this house is accordingly carrying on the business without the approval of the National Hardware Association, such approval being impliedly, at least, given to the other syndicate buyers. They, however, state that they are not in any case representing merely retail houses or smaller houses than the other syndicate buyers are permitted to have on their lists. In view of the fact that there are in this country hundreds of smaller jobbers who under present conditions are denied the opportunities afforded by syndicate buying, it is generally recognized that an interesting question is brought before the trade, who will await further developments with interest.

### Parcel Post Legislation.

Considerable attention was paid by both associations to the Parcel Post question, which has been a prominent topic at several recent conventions. The question is still recognized as a live one, demanding all possible activity and alertness on the part of those who oppose legislation favorable to Parcel Post, which is certain to be offered at the coming session of Congress. The position of these two associations is well known, and their labors and influence have had much to do with defeating such legislation in the past. In view of the suggestion that President Roosevelt might incorporate some expression favorable to Parcel Post in his forthcoming message, telegrams were sent to him by both associations urging him to use his influence against the adoption of such measures. The telegram of the Manufacturers' Association, which was signed by Robert Garland, its president, was as follows:

The American Hardware Manufacturers' Association in convention assembled, unanimously passed a resolution disapproving any legislation looking toward the adoption of a parcel post measure; this in the interest of a large number of citizens throughout the country. We earnestly solicit your influence.

Following is the text of the jobbers' telegram:

In the interest of a large proportion of the citizens of this country we urgently request you to use your influence against the adoption of any parcel post measure.

The following resolutions relative to the parcel post question were adopted by the National Hardware Association:

*Whereas,* The Postmaster-General has become an active, ardent advocate of a parcel post, going to the extent of requesting the postmasters of the country to address our public school children on the subject; and

*Whereas,* We, after having given much consideration to the results of the operation in this country of such a system; and,

*Whereas,* We have come to the conclusion that it is no part of the function of the United States Government to enter into the merchandise carrying business; and,

*Whereas,* We believe that the present large deficit of the postal department would be enormously increased if any character of parcel post was put into operation;

*Resolved,* That we urgently request our Senators and Representatives to vote against any measure looking to the establishment of such a system, and that we urge the members of the association to do their utmost to prevent the passage of a measure which would to such an extent revolutionize business and cause the financial ruin of hundreds of thousands of small merchants throughout the rural communities, thus causing serious loss and great inconvenience to the farming communities;

*Resolved further,* That inasmuch as the Government is charging almost three times the amount of cost for carrying such mail, we urge in the interest of the entire population without regard to any class distinction the adoption of a one cent letter rate.



T. JAS. FERNLEY.



A. T. STEBBINS.

### Officers of the American Hardware Manufacturers' Association.

The election of officers for the ensuing year resulted as follows:

PRESIDENT, Robert Garland, Garland Nut & Rivet Company, Pittsburgh, Pa.

VICE-PRESIDENTS: C. A. Earl, Corbin Screw Corporation, New Britain, Conn.; E. M. Kemp, Wabash Screen Door Company, Chicago, Ill.; H. C. Atkins, E. C. Atkins & Co., Inc., Indianapolis, Ind.

SECRETARY-TREASURER, F. D. Mitchell, New York.

EXECUTIVE COMMITTEE: G. H. Jantz, American Wringer Company, New York; George T. Bailey, Oliver Iron & Steel Company, Pittsburgh, Pa.; W. H. Bennett, Lawson Mfg. Company, Chicago, Ill.; W. C. Kelly, Kelly Axe Mfg. Company, Charleston, W. Va.; Frederick S. Merrick, Standard Horse Nail Company, New Brighton, Pa.; R. N. Peck, Stanley Rule & Level Company, New Britain, Conn.; Fayette R. Plumb, Fayette R. Plumb, Inc., Philadelphia, Pa.; T. H. Taylor, American Steel & Wire Company, New York.

C. W. Asbury retires from the presidency after two terms of service. His administration has been marked by unusual dignity, justice and effective concentrated effort under which the association has made notable progress. Although alert and decided in acting in the interest of his association, Mr. Asbury has shown marked fairness and consideration in his relations with the jobbing trade, while the retailers have found in him a friend, able and willing, to take their point of view and imbued with the earnest desire to promote their interests.

Robert Garland, president-elect of the Manufacturers' Association, has been identified with the organization since its inception, being indeed chairman of the organization meeting held at Cleveland eight years ago. For two years he was chairman of the Executive Committee, and has recently held the office of vice-president. He has been in the iron and steel business in Pittsburgh 30 years, and is a member of the Chamber of Commerce of that city, and several prominent local clubs; also of the Engineers' Club of New York. In addition to the presidency of the Garland Nut & Rivet Company he holds the vice-presidency of the Standard Chain Company, Pittsburgh.

### Officers of the National Hardware Association.

The following officers for the ensuing year were chosen:

PRESIDENT, Robert M. Dudley, Gray & Dudley Hardware Company, Nashville, Tenn.

FIRST VICE-PRESIDENT, Brace Hayden, Dunham, Carrigan & Hayden Company, San Francisco, Cal.

SECOND VICE-PRESIDENT, J. D. Moore, Moore & Handley Hardware Company, Birmingham, Ala.

SECRETARY-TREASURER, T. James Fernley, Philadelphia, Pa.

EXECUTIVE COMMITTEE: H. L. Doten, Austin & Doten, Boston, Mass.; W. D. Taylor, George Worthington Company, Cleveland, Ohio. For the unexpired term of Mr. Dudley, C. A. Knapp, Knapp & Spencer Company, Sioux City, Iowa. For the unexpired term of J. D. Moore, Major T. G. Walther, Hackett-Walther-Gates Hardware Company, St. Paul, Minn.

With the retirement of W. S. Wright from the chair, which he has occupied for the unusual period of three years, the National Hardware Association loses an executive and presiding officer of rare personal qualities from whose ability, tact and unselfish exertions it has profited to a remarkable degree. He lays down the gavel enjoying the personal friendship of probably as large a number of jobbers, manufacturers and retailers as any man in the country. His successor, R. M. Dudley of the Gray & Dudley Hardware Company, Nashville, Tenn., is a man of large calibre and universal popularity, under whose direction the association is sure to progress and prosper. His election was not only a well deserved personal honor, but a graceful compliment to the South, and especially to Tennesseeans, to whom the association is so much indebted for the success of its convention. The office of first vice-president, made vacant by the death of the lamented John C. Koch, was filled by Brace Hayden of the Dunham, Carrigan & Hayden Company, San Francisco, a man whom the association delights to honor. J. D. Moore, Moore and Handley Hardware Company, Birmingham, Ala., a member of the Executive Committee, was elected second vice-president. Mr. Moore is a man whose wisdom and farsighted judgment have long been appreciated by his colleagues in the association.

### Tariff Revision.

Many of the manufacturers are vitally interested in the imminent revision of the tariff, and thoughtful reference to the subject will be found in the address of President Asbury. Whether it is believed that revision cannot be avoided or that it is indeed to be desired from an economic standpoint, both of which views are held by persons of unquestioned wisdom, it is obviously desirable that the schedules should be approached with intelligence, and that due attention should be given to the views of American producers, and the expert testimony which can only be obtained from them. The conditions under which manufacturers are producing the great variety of goods they make are so diverse that it is obviously impossible for the association to look after the interests of the various manufacturers, on whom rests the responsibility of making such representation to the Ways and Means Committee as may be called for.

### Mail Order Competition.

The subject of catalogue house competition came in for some attention in view of the argument advanced by the representatives of the retail trade. They took the position that if, as is generally acknowledged, there are three recognized classes in the trade—manufacturer, jobber and retailer—the only class to which the catalogue house can possibly belong is that of retailer. As such they argued the catalogue house is not entitled to receive better prices than other retailers and to quote them such prices is distinctly unfair in that it favors one group of retailers at the expense of another.



H. R. MILLER. W. G. THOMAS. GEO. D. KIRKHAM. IRBY BENNETT.

*Prominent Members of the Entertainment Committee.*

### Manufacturers' Convention Committees.

The following manufacturers' committees served during the convention:

ENTERTAINMENT: N. A. Gladding, Indianapolis, Ind.; Irby Bennett, Memphis, Tenn.; E. M. Kemp, Chicago; Geo. D. Kirkham, Memphis, Tenn.; H. B. Lupton, Pittsburgh, Pa.; C. H. Windt, Memphis, Tenn.; Joseph M. Hottel, Philadelphia, Pa.

RECEPTION: George T. Bailey, Pittsburgh; W. H. Bennett, Chicago; Arthur B. Birge, St. Louis; A. W. Bowman, Hartford, Conn.; Harry C. Disston, Philadelphia; Frank G. Drew, Philadelphia; Roland Gerry, Pittsburgh; George H. Harper, Baltimore, Md.; Walter P. Hudson, New York; R. B. Jones, Clyde, Ohio; Geo. T. Price, Charleston, W. Va.; G. K. Simonds, Fitchburg, Mass.; G. R. Stafford, Atlanta, Ga.; Jas. N. Stanley, New Britain, Conn.; Daniel K. Stucki, Buffalo, N. Y.; J. J. Teeple, Philadelphia.

PRESS: W. W. Birge, Philadelphia; E. E. Kelley, Little Valley, N. Y.; G. V. Willson, Pittsburgh.

NOMINATIONS: Geo. V. Willson, Pittsburgh; B. A. Hawley, New Britain, Conn.; H. W. Caldwell, Cleveland, Ohio; I. H. Page, Chicopee Falls, Mass.; D. A. Merriman, Chicago; Frederick A. Searle, New Britain, Conn.; S. G. Gilfillan, Ironton, Ohio; Walter W. Birge, Philadelphia; Geo. E. Holton, Catasauqua, Pa.

CREDENTIALS: F. Herbert Smith, Providence, R. I.; George H. Harper, Baltimore, Md.; R. B. Jones, Clyde, Ohio; J. H. Towne, New York; J. H. Van Newkirk, New Britain, Conn.

F. Herbert Smith, Nicholson File Company, Providence, R. I., acted as sergeant-at-arms.

RESOLUTIONS: C. A. Earl, New Britain, Conn.; H. B. Lupton, Pittsburgh; J. C. Birge, St. Louis, Mo.; D. H. Goodell, Antrim, N. H.; William H. Pratt, Greenfield, Mass.; C. B. Lee, Norwich, Conn.; E. M. Kemp, Chicago.

### Jobbers' Convention Committees.

The jobbers' convention committees were as follows:

ENTERTAINMENT: T. James Fernley, Philadelphia; H. R. Miller, Memphis, Tenn.; Frederick Orgill, Memphis, Tenn.; Hobart Weed, Buffalo, N. Y.; John R. Griffith, Philadelphia; Robert Biddle, 2d, Philadelphia; S. Spencer Scott, Philadelphia.

PRESS: J. R. Nutting, Davenport, Iowa; Geo. W. Herrick, Boston, Mass.; J. B. Silliman, Atchison, Kan.; C. B. Lockwood, Cleveland, Ohio; O. B. Barker, Lynchburg, Va.; H. L. Thompson, Toledo, Ohio; James J. Mandlebaum, Little Rock, Ark.

RESOLUTIONS: J. R. Loder, New York; W. Chamberlain, Portland, Maine.

NOMINATIONS: W. W. Supplee, Philadelphia; A. L. Scott, San Francisco; T. G. Walther, St. Paul; George T. McIntosh, Cleveland; H. G. Lipscomb, Nashville; A. H. Decatur, Boston.

### Address of J. A. Emery.

An eloquent address on the subject, "Class Legislation and Business," was delivered at an open session of the manufacturers by J. A. Emery, Washington, D. C., counsel for the National Association of Manufacturers. He referred mainly to labor problems, and particularly to attempted legislation by which labor unions are protected in actions not legal for corporations or individuals. The address was listened to with close attention and much enjoyment, and Mr. Emery was tendered a unanimous vote of thanks.

### The Old Guard Southern Salesmen.

Many of the prominent Southern salesmen were in attendance on the conventions, and held a meeting at which they completed their organization under the title of the Old Guard Southern Hardware Salesmen's Association, adopting a constitution and taking steps for the active carrying on of the association work.

### In Memoriam.

Two prominent members of the Manufacturers' Association have died since the last convention, Samuel Disston, Henry Disston & Sons, Philadelphia, and Edwin B. Pike, Pike Mfg. Company, Pike, N. H. Both were men of unusual prominence, were loyal members of the association and were beloved by countless friends in the trade. In recognition of their loss, the Manufacturers' Association adopted the following expressions of sentiment:

*Whereas,* Since our last annual meeting it has pleased our Heavenly Father to remove from the scenes of his earthly labors Samuel Disston, one of our strongest and best known members; be it

*Resolved,* That in the death of Mr. Disston the manufacturing and commercial interests of the country, as well as his city, have suffered a great loss. Mr. Disston was universally recognized by the manufacturing and mercantile community as a man of unimpeachable integrity and honesty and rare ability, with a thorough knowledge of every detail of the successful industry over which for many years, and until the close of his life, he had such complete control. Desiring to leave some affectionate tribute to his memory, be it further

*Resolved,* That these resolutions be spread on the records of this association and a copy forwarded to Mrs. Disston.

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E. B. Pike, president of the Pike Mfg. Company of Pike, N. H., died suddenly August 24, 1908. Mr. Pike was a great business man. He increased his business fully fivefold in ten years. He was a man of the highest moral character. His Christian life had a tremendous influence upon his friends everywhere, and especially in his own village and State. Surely a great man has fallen, and we deeply mourn his loss. The American Hardware Manufacturers' Association wishes to extend its sympathy to Mrs. Pike and all other members of his family in their days of sorrow, and ask that this sentiment be recorded on our books and copy sent to Mrs. Pike.

Death has also removed two members from the National Hardware Association within the year: John C. Koch, John Pritzlaff Hardware Company, Milwaukee, Wis., and H. W. Cortes, Bering & Cortes Hardware Company, Houston, Texas. Appropriate recognition of their death will be found in the annual address of President Wright, given elsewhere.

### Manufacturers Selling Retailers.

The matter of manufacturers selling direct to retailers was agitated at some length in the executive sessions of the jobbers, many of whom expressed the believe that they had a grievance on this score. There was a pretty frank discussion as to what attitude the jobbers individually and collectively should assume toward manufacturers who persisted in this practice. Several expressed the conviction that they were strong enough in their national and local associations to dictate to the manufacturers, and at least prevent an increase in activity along this line. When the matter was brought to their attention, the retailers present expressed the belief that when the retailers go direct to the manufacturer it is the jobber's fault, and that they will continue to patronize the jobber as long as he carries the goods the retailers want and gives them right prices and satisfactory service.

### Atlantic City Next Year.

There was no little interest in the discussion of the next place of meeting, several places being prominently mentioned. Active work was done by the Chicago contingent, who distributed badges inscribed, "Chicago, 1909." Columbus was also mentioned, and booklets were distributed setting forth the advantages of that manufacturing center as a convention point. Invitations were also received from several other cities. Considerable sentiment developed in favor of New York, but the preference of the jobbers was very decided in favor of going back to Atlantic City, its ample hotel accommodations, bringing the two associations under one roof, being one of the strong points urged in its favor. Another well recognized advantage is the fact that it is near the metropolis, which most prominent Hardwaremen have occasion to visit several times during the year.

Committees to confer on the subject were appointed by both associations, the manufacturers' representatives being J. C. Birge, H. B. Lupton and N. A. Gladding, and the jobbers' Brace Hayden, R. M. Dudley and Secretary Fernley. At a meeting of this joint committee it was decided that Atlantic City was the most favorable place for holding the conventions next year, provided satisfactory arrangements could be made for hotel accommodations where both associations could be equally well served. It was further decided that a permanent committee consisting of the president, secretary and one other member of each association should hereafter assume the authority to make final arrangements. In case the committee was unable to make satisfactory arrangements at Atlantic City, it was vested with full power to make other provisions as to time and place.

### Local Entertainers.

Among the many to whom the associations were indebted for their entertainment, special mention should be made of the able leaders upon whom devolved the bulk of the labor and responsibility. Unstinted praise was due and was universally accorded to H. R. Miller of the General Committee of Arrangements, W. G. Thomas, chairman of the Local Entertainment Committee; G. D. Kirkham, whose tireless efforts had much to do with the success of the various functions, and Irby Bennett, Memphis, to whom more than any one else may be attributed the credit for the notable banquet. N. A. Gladding, the efficient chairman of the Manufacturers' Convention Committee, was ably supported by his assistants and faithful work was also done by the Association Reception Committee headed by G. T. Bailey. Among the Memphis ladies who contributed to the entertainment of the visitors were Mrs. Earl Harris, Mrs. F. Orgill, Mrs. J. Orgill, Mrs. H. R. Miller, Mrs. W. E. Barnes, Mrs. J. W. Gladding and Mrs. B. M. Gladding. Following is the complete list of the local committees:

RECEPTION COMMITTEE: Fred Orgill, Jos. Orgill, H. R. Miller, J. W. Gladding, Earl A. Harris, D. C. Fenness, R. A. Reed, Hugh Wynne, H. Wetter, J. A. Riechman.

ENTERTAINMENT COMMITTEE: W. G. Thomas, Geo. D. Kirkham, W. R. Peete, H. L. Taylor, C. H. Windt, B. G. Lee, B. M. Gladding, Wm. Orgill, N. Benedict, W. F. Stephenson, W. E. Barnes.

### Entertainment.

From the ladies' point of view and indeed from that of many of the gentlemen, whose convention duties left ample time for social enjoyment, a city like Memphis presents much greater attractions than a resort which can hardly be taken as representative of any particular section of the country. At Memphis every local Hardwareman and indeed the trade for a radius of 200 miles around felt a personal pride and responsibility in the entertainment of the visitors from other sections of the country. The city abounds, moreover, in local color, the value of which was appreciated and made the most of by the leading entertainers in arranging novel pleasures for their

guests. For the ladies there was something arranged by every day and evening during their stay. Wednesday afternoon they were given an automobile ride through the city and its environs. Thursday a delightful card party and luncheon were arranged at the Memphis Country Club by G. T. Bailey and the local committee, which was referred to by all who participated as one of the best managed and most enjoyable affairs of the kind which they ever attended. The party proceeded to the beautiful grounds of the club in special cars, and play was immediately begun under the direction of W. H. Bennett, assisted by an able corps of aides from among the gentlemen. The cards were given by E. C. Atkins & Co., Indianapolis, Ind. There were nearly 200 players, and through the liberality of the manufacturers who donated prizes every one was able to take away some souvenir of the occasion. Many of the prizes were of much value, representing the finest product of houses manufacturing Silver Ware, Fancy Metal Ware, &c. After the game an elaborate luncheon was served. The prizes were contributed by the following houses:

E. C. Atkins & Co.
American Screw Co.
American Wringer Co.
American Iron & Steel Mfg. Co.
American Steel & Wire Co.
American Can Co.
Ames Shovel & Tool Co.
American Sheet & Tin Plate Co.
Bissell Carpet Sweeper Co.
Baeder-Adamson Co.
Belfont Iron Works Co.
Bullard Automatic Wrench Co.
Bryden Horseshoe Co.
Geo. H. Bishop & Co.
P. & F. Corbin.
Clinton Wire Cloth Co.
Corbin Cabinet Lock Co.
Daisy Mfg. Co.
Henry Disston & Sons.
E. I. Du Pont de Nemours Powder Co.
Eagle Lock Co.
Frictionless Metal Co.
Garland Nut & Rivet Co.
Goodell-Pratt Co.
Heller Bros. Co.
C. T. Ham Mfg. Co.
Hunter Arms Co.
Iron City Tool Works.
Keasbey & Mattison Co.
Keuffel & Esser Co.
Lalance & Grosjean Mfg. Co.
Lake Erie Iron Co.
Lovell Mfg. Co.
Landers, Frary & Clark.
McCaffrey File Co.
McKinney Mfg. Co.
James H. Mann.
Millers Falls Co.
Meriden Cutlery Co.
Mack & Co.
Chas. Morrill.
National Cutlery Co.
National Enameling & Stamping Co.
North Bros. Mfg. Co.
New York Leather Belting Co.
Owensboro Shovel & Tool Co.
Oneida Community.
Pike Mfg. Co.
Pullman Mfg. Co.
Richmond Cedar Works.
Russell & Erwin Mfg. Co.
Rome Mfg. Co.
Simonds Mfg. Co.
Schatt & Morgan Cutlery Co.
Standard Chain Co.
Standard Horseshoe Co.
Tubular Rivet & Stud Co.
C. C. & E. P. Townsend Co.
Stanley Works.
L. & I. J. White Co.
Enterprise Mfg. Co.
Clyde Cutlery Co.
H. D. Smith & Co.
Lamson & Sessions Co.
Stanley Rule & Level Co.
Caldwell Mfg. Co.
Corbin Screw Corporation.
Markham Air Rifle Co.
American Axe & Tool Co.
Dana Mfg. Co.
Lufkin Rule Co.
Avery Stamping Co.
Philadelphia Lawn Mower Co.
Wyoming Shovel Works.
Atha Tool Co.
American Pulley Co.
Wood Shovel & Tool Co.
Charles Parker Co.
Union Fork & Hoe Co.
United States Stamping Co.
United States Horseshoe Co.
Challenge Cutlery Co.
Wabash Screen Door Co.
Evansville Tool Works.
Payton Mfg. Co.
Carnegie Steel Co.
Reading Hardware Co.
J. C. Pearson Co.
Steinfeldt Brothers.
Supplee Hardware Co.
S. R. Droescher.
American Fork & Hoe Co.
Consolidated Fruit Jar Co.
St. Louis Shovel Co.

### Reception.

Thursday evening a formal reception followed by a ball was tendered by the manufacturers. It was a most brilliant affair, excellently handled in every particular, and was thoroughly enjoyed by all. Those who received included the presidents, ex-presidents and other officers of both associations, representatives of the Canadian Wholesale Hardware Association, and also the National Retail Hardware Association. A delicious supper was served in the dining room of the hotel, adjoining the ballroom.

### The Banquet.

The annual banquet, it is safe to say, will long be remembered with pleasure by every one who was so fortunate as to attend. By a departure from previous custom this affair was scheduled for Thursday evening, the second day of the convention, instead of the evening of the concluding day, as in former years. This arrangement was most successful in increasing the general interest in this function and adding to the attendance and is not unlikely to be followed in succeeding years. Although seats were provided for 400 people, there were a few who were unable to attend the banquet because the accommodations were exhausted. The greatest credit for the success of the affair is due to Irby Bennett, who had almost entire charge of the arrangements. The beautiful and lavish decorations of the banquet hall, the excellence of the music and the wit and eloquence of the speakers left nothing to be desired, and the evening passed all too quickly. Either the delightful surroundings or the irresistible rhythm of the Southern melodies put everybody in a singing mood, and at times the strains of the willing orchestra were almost drowned by the swelling choruses of "Dixie," "My Maryland," "America," &c.

After an invocation by R. R. Williams, Caruthers Ewing of Memphis made a brief address, marked by both eloquence and humor, in which he bade the associations welcome to the South, and introduced the toastmaster, H. B. Lupton of Pittsburgh. Mr. Lupton's remarks were particularly pleasing and appropriate, and he conducted the remainder of the programme in his usual courtly manner. After brief responses by President Asbury and President Wright on behalf of their respective associations, Gov. M. L. Patterson of Tennessee was introduced and responded to "Our Southland."

The Governor's address was carefully prepared, and was an utterance of no little import, dealing as it did not only with national affairs, the reuniting of the Blue and the Gray and the industrial development of the South, but referring also with fearless frankness to the serious problems now confronting the administration of the law in Tennessee. The effect of this address upon the audience was electrical. Immediately at its conclusion J. C. Birge, ex-president of the Manufacturers' Association, was on his feet, and offered the following resolution:

*Whereas,* The honored Governor of the State of Tennessee is endeavoring to uphold the honor and dignity of this Commonwealth, the peace and honor of which has been greatly disturbed by lawless bandits and assassins; therefore be it

*Resolved,* That we, the members of the National Hardware Association of the United States and of the American Hardware Manufacturers' Association, both in convention assembled in this city of Memphis, and embracing representatives coming from every State in the Union, desire to express our profound interest in the critical situation which confronts this Chief Executive; and we hereby convey the assurance that we share with the law abiding people of this our sister State, the hope that his hands may be sustained in the fearless and proper discharge of the duty which at this time rests upon him.

The resolution was greeted with applause and was passed with enthusiastic acclamation after being warmly seconded by President Asbury.

Thomas F. Gailor, Bishop of Tennessee, responded to "Our Church" and his lofty and inspiring address, calling for higher ideals and standards among all our citizenship, will not soon be forgotten by those who heard it. In conclusion "Private" John Allen of Tupelo, Miss., spoke to "Our Homes," his remarks being characterized by the spontaneous wit for which he is so widely known. The exercises were brought to a close by the hearty singing of "Auld Lang Syne."

### The Boat Ride.

A steamboat ride on the Mississippi River arranged for Friday afternoon was a most enjoyable outing. By special effort the business sessions of both associations were concluded at noon so that the excursion could start at an early hour, luncheon being served aboard the boat. Music was furnished by a band on the upper deck and an orchestra played for dancing in the saloon. After a short sail a number of darkies, men and women, were taken aboard, who entertained by characteristic songs and dances, and finally held a competitive cake walk on the shore for prizes which were awarded by dignified and distinguished judges, concluding with a realistic crap game. Later the boat touched on the Arkansas side of the river and many of the party went ashore and picked cotton, which was taken home as a souvenir. The affair was most informal and was thoroughly enjoyed. Messrs. Kirkham, Miller, Thomas and their assistants receiving the cordial thanks of their guests one and all.

### Traveling in Company.

The advantages of traveling in company on extended convention trips have long been appreciated by the Hardware fraternity. This year at least three parties were made up which not only added pleasure to the long journey, but afforded considerable opportunity for sightseeing and entertainment en route. As usual, the popular W. H. Bennett arranged for a "Hardware special," which was patronized by the majority of those coming from New York, Chicago and intermediate points. The train left New York on the morning of Sunday, the 15th, reaching Chicago Monday morning, where the travelers were at once made the guests of the local Hardwaremen for the entire day. The features of entertainment included an automobile ride about the city and a trip over the great establishment of Hibbard, Spencer, Bartlett & Co. Monday night the party, augmented by a large contingent from Chicago, re-embarked for Memphis, enjoying a delightful banquet served in the two dining cars attached to the train.

Another important party was made up in the Hardware city of New Britain and came down in special cars by way of Indianapolis, where they were entertained by the local Hardwaremen, enjoying an automobile ride about the city, visiting the local Hardware houses and being tendered a banquet and smoker Monday evening. Tuesday a similar stop was made in Louisville and a banquet was given by the Belknap Hardware & Mfg. Company. The return route was by way of Cincinnati.

A third party was made up to go by way of Washington, Knoxville and Chattanooga, and included many from Philadelphia and other Eastern points.

### Souvenirs.

Quite a number of souvenirs, some of considerable value, were distributed by various manufacturers. Among them we note the following:

SIMONDS MFG. COMPANY, Chicago. Saw.
E. C. ATKINS & Co., Indianapolis, Ind. Saw.
CONSOLIDATED FRUIT JAR COMPANY, New Brunswick, N. J. Copper Oiler.
SMITH & HEMENWAY COMPANY, 110 Duane street, New York. Shrp Shavr Razor.
EVANSVILLE TOOL WORKS, Evansville, Ind. Hammer.
FERDINAND DIECKMANN COMPANY, Cincinnati, Ohio. Lead Pencil.
S. R. DROESCHER, 79 Warren street, New York. Pocket Knife Sharpener.
E. I. DUPONT DE NEMOURS POWDER COMPANY, Wilmington, Del. Paper Cutter.
AMERICAN SHEET & TIN PLATE COMPANY, New York. Steel Tape.
OWENSBORO SHOVEL & TOOL COMPANY, Owensboro, Ky. Pocket Flask.
DAISY MFG. COMPANY, Plymouth, Mich. Pop Gun.
AMERICAN SALES COMPANY, Chicago. Cork Screw.
DANA MFG. COMPANY, Cincinnati, Ohio. Match Box Holder.
C. T. HAM MFG. COMPANY, Rochester, N. Y. Thermometer.
NICHOLSON FILE COMPANY, Providence, R. I. Key Chain.
SAVAGE ARMS COMPANY, Utica, N. Y. Stick Pin.
LUFKIN RULE COMPANY, Saginaw, Mich. Ruler.
MERIDEN CUTLERY COMPANY, Meriden, Conn. Paring Knife.
GOODELL COMPANY, Antrim, N. H. Stag Fountain Pen Holder.
LAKE ERIE IRON COMPANY, Cleveland, Ohio. Pocket Book.
COLUMBIAN ENAMELING & STAMPING COMPANY, Terre Haute, Ind. Chafing Dish.

### Convention Notes.

At the closing meeting of the National Hardware Association after the election of officers was concluded, the meeting was thrown open to manufacturers and others. After the installation and remarks from the new officers, A. L. Scott, San Francisco, acting for the association, presented retiring President Wright with a beautiful silver fruit dish as a slight token of appreciation and a memento of his term of office.

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A number of faithful convention workers filled their usual positions of trust and responsibility, among whom may be mentioned Col. J. R. Nutting, Davenport, Iowa, chairman of the Jobbers' Press Committee; J. R. Loder, New York, who acted as journal secretary for the jobbers; F. Herbert Smith, the manufacturers' faithful and courteous sergeant-at-arms, and W. W. Birge, who acted as chairman of the manufacturers' Press Committee.

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E. C. Atkins & Co. distributed to the delegates cards of invitation inviting them to visit the concern's new Memphis branch store, where they gave out their souvenir, a Compass Saw in an attractive fancy box. Invitations were also issued by Benedict, Warren & Davidson Company to visit their offices and salesrooms. The handsome establishment of the Barnes & Miller Hardware Company, with windows handsomely dressed for the occasion, was only a door or two from the Gayoso Hotel, and was visited by many Hardwaremen who were most cordially received.

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Both the Western Union and Postal Telegraph companies offered the free use of their lines during the week to the members of the associations for personal and social messages. This courtesy was much appreciated, and was taken advantage of by many.

### PRESIDENT ASBURY'S ADDRESS.

The annual address of President C. W. Asbury of the American Hardware Manufacturers' Association was substantially as follows:

#### Abuse of Cash Discount Terms.

Following the plan set forth in detail in the last annual report of your officers, there have been few complaints of abuses of cash discount terms. From the fact that the number of these complaints was greatly reduced as compared with the previous year, we think we are justified in concluding that the worst instances of such abuses have been corrected. There is only one feature of this subject remaining undetermined, and that is the request which was submitted to your convention in June last at Hot Springs, Ark., from the American Exporters' and Importers' Association, that a certain resolution then submitted should be approved by you. Action upon this resolution was deferred until this convention in order that the membership might be fully informed as to the meaning and intent of the resolution in question. This resolution will be submitted to you under the head of unfinished business.

It seems to your officers that the very submission of this resolution is evidence that not only the members of this association, but other manufacturers generally, are adhering very strictly to the 10 day period in which cash discounts are allowed. It is hoped that you will give to the request of the American Exporters' and Importers' Association thoughtful consideration.

#### Cost Keeping Systems.

In the matter of promoting modern cost keeping systems among the members, we have to report excellent progress. The instructions given by you to your officers have been followed with good results. The plan adopted was to secure good, reliable business economists, thoroughly familiar with manufacturing conditions and cost keeping systems, especially in Hardware and affiliated lines. Some of our members reported having had very satisfactory experiences, and based upon these experiences your officers felt warranted in issuing a series of circular letters to the members, advising them that the association was in position to be of very material assistance along those lines, expressing particularly the reasons why such a course would be found profitable. To those who expressed an interest in the subject assistance was given, and in a number of instances the business economists succeeded in providing plans of management which included cost keeping systems, with a large degree of satisfaction to the members taking the step. We have heard no complaints, but, on the other hand, there has been commendation to a considerable degree. We feel that the expressions in our last annual report as to the desirability of this step should be emphasized and reiterated, and we suggest continued activity along those lines. This seems to be a subject of great importance, and one which will bring very profitable returns to those who take advantage of the association's work, which, of course, is open to all members.

#### Watching Federal Legislation.

Another line of activity suggested at the convention in June last has received the attention of your officers, and upon which it is a pleasure to report at this time. It was then pointed out that Federal legislation should be watched and the membership advised of the introduction of such bills as might affect their interests favorably or unfavorably. Your officers have taken such steps as were necessary to provide that this information be sent promptly and currently to our New York office, and from there disseminated among our members. You of course appreciate that there has been no session of Congress since our last convention, hence the activities on this line of work have not as yet begun; although the plan is provided by which it may be done. I recommend that this receive the careful consideration of your incoming officers.

#### At the Last Session of Congress

quite a number of bills were introduced and seriously considered in committee which bills if they became law would

involve a very long, stubborn and bitter fight before a decision could be reached by the Supreme Court as to their constitutionality. In the meantime the business of every large industry would either suffer a large loss directly or would be subjected to the danger of incurring such loss at any time. As reported to the June convention, your officers at that time assumed the responsibility of using the influence of this association for or against such proposed legislation as the interests of the Hardware manufacturers appeared. This action was approved and your officers were instructed to continue the work in a proper way. The general plan provided for carrying into effect the wishes of the membership appears to be sufficient along general lines, but there is a special line upon which such authority could not be assumed.

**Proposed New Tariff Bill.**

The special line referred to is the likelihood of an early consideration of tariff schedules in the preparation of a new tariff bill. We believe that the calling of Congress in special session in March next is being considered, the object being to make an early start in the work of revising the tariff.

General work might well be done by this association in joining others for the reasonable protection of industries in general, but we, as a body, are hardly in position to advise upon specific schedules. In theory these schedules should be arranged to provide a duty which shall be equal to the difference in costs of production at home and abroad, and if the tariff is to be a protective one there should be added a reasonable margin to cover contingencies and possible differences in these costs. It would seem to be obvious that definite work upon schedules cannot be done by this association, as each line of goods would have to be technically considered in order to arrive at the cost.

Attention is called to this matter, as it may be and probably will be necessary for individual members to watch carefully the progress of the making of the tariff bill. Of course it is clearly obvious that the influence of such an important body of manufacturers as this can well be directed in the line of providing protection to a reasonable degree, as a general proposition. I am sure your officers are ready and willing to use this influence whenever it can be shown that the interest of the membership will be served by it.

**Permanent Tariff Commission.**

This association has been asked to lend its influence to and join forces with other organizations which are urging the selection of a permanent commission to advise Congress in tariff matters; but so far it has been deemed unwise to join in that activity, for the reason that the making of a tariff bill is such an exceedingly complicated matter it would seem to be almost impossible to consider fairly and judiciously every separate item of costs. The kinds and varieties are so very numerous, and many of them are wholly unimportant. It would, therefore, seem that the work of such a proposed commission would be enormous. This information is given to you with the thought that you might desire to give to your officers definite instructions thereon.

**Co-operation.**

In the report submitted to your convention in June last will be found a detailed reference to the co-operation sought to be had with similar organizations as well as with the organizations of our customers in Hardware. It is a pleasure to be able to report that our relations with associations of retailers and associations of jobbers in the Hardware trade are most cordial and that we enjoy the confidence of these corelative interests.

**Jobbers' Special Brands.**

There continues to be, however, one subject about which it is but natural that there should be honest differences of opinion existing, and that is the continued use of jobbers' special brands in place of the manufacturers' own brands. The differences of opinion referred to are naturally dictated by self-interest. An impartial view of the matter from undisputed evidence justifies the conclusion that the same measure of reliance upon quality cannot be placed upon goods bearing any other brand than that of the originating manufacturer. It seems to be obvious that the manufacturer would be jealous of his reputation, and would see to it that his own brand was placed on goods of the highest merit; whereas, when making similar goods under contract, which goods do not bear his name, it is but natural that he should practice every economy in manufacture, especially when he realizes a comparatively low price for the contract goods. It would seem as though he was not properly open to criticism for such a course, because it must be remembered he is driven by the purchaser into the keenest possible competition and is forced to economize in the manufacture.

It is not my purpose to discuss this subject at great length because it was very ably and exhaustively treated by my predecessor. Attention is called to it, however, in the hope that our members may yet see the unwisdom of a complete loss of their identity with special brand goods, and a proportionate loss of the good will value of the respective businesses. If the members desire to use the influence and prestige of this association for the protection of manufacturers' names and brands I am confident that your officers will be willing to vigorously pursue any suggested plan by which this may be accomplished.

**Amendment of Our Patent Laws.**

One other subject which is attracting considerable attention is the question of the amendment of our patent laws. Very recently an amendment to the English patent laws was put into effect and it is still too early to have experienced the definite result of the enactment. Foreign inventors obtaining United States patents are treated in precisely the same way as American inventors; the same fees are charged, without subsequent taxes of any kind, and there is no discriminating provision which requires the manufacture of the invention within our own borders in any specified quantity or within any specified time.

An American inventor, on the other hand, applying for and obtaining patents from some foreign countries, among which are the principal industrial competitors of the United States, are subjected to conditions which require the manufacture of the invention within the foreign territory within a specified time, and in quantities sufficient to supply the maximum of their own demands. He is also subjected in some instances to an annual tax, a refusal or neglect to pay which will invalidate the invention.

In view of these conditions the question which has become quite prominent is as to whether or not the patent laws of the United States should not be amended to include some such conditions against foreign inventors as apply to American inventors in foreign countries. This question is submitted for your consideration, and any line of precedure you may desire taken will be followed.

## ADDRESS OF PRESIDENT WRIGHT.

In his annual address President W. S. Wright of the National Hardware Association touched on many live topics of national importance. He said in part:

The conditions prevailing since our last meeting have been exceptional. At that time dark clouds were lowering and doubt and anxiety were in the air. Looking backward we can see that it was an hysterical financial colic, which has been notwithstanding the embarrassment it created a benefit rather than the reverse. Those who kept their nerve and their help have suffered least. Those who lost one and dismissed the other have paid the penalty, but we hope the experience was worth the price.

**Looking Forward,**

we can see nothing to cloud a bright and prosperous future. During the past year the surplus stocks of jobbers and retailers alike have been reduced to a lower point than for many years past. The results of the election have swept from financial and business circles all clouds of doubt and fear that have retarded complete restoration of business activity.

With a crop that is in excess of the average, with price in nearly all farm products greater than ever before in the history of the country, and with the assurance of a safe, conservative but progressive administration, that as shown by the election returns commands the confidence and support of all classes alike it would be a rank pessimist indeed who did not look forward for the next four years to establish a new record in all lines of business activity and development.

The wheat has been separated from the chaff. The financial situation is strong, and those who have the goods—manufacturer, jobber or retailer—can move them at a fair margin of profit. The time is ripe for pessimists to move to the rear, optimists to the front.

**Market Strength During a Critical Period.**

The condition that has impressed itself on the trade during the past year is the strength of the market in view of the marked depression in manufacturing lines. The credit for this has been largely and justly claimed by the Iron and Steel manufacturers, but without detracting in the slightest degree from the credit due them and many other manufacturers for their wise and conservative policy in maintaining the market due credit should be given to this organization, which has not only supported and encouraged this policy with the Iron and Steel manufacturers, but have suggested, supported and made possible the same advantage to many other lines that without this co-operation and support would have been unable to maintain their position.

**Jobbers' Support.**

While this has benefitted the jobber it has been of greater advantage to the manufacturer, and if ever the corner stone of this association, namely, "The promotion of more friendly business relations and mutual confidence and good will with each other and with manufacturers," has been tested as by fire and has justified its advantage to its members and to its friends, the manufacturers, it has been during the past year.

**The Work of the Association**

since our last meeting has been energetic, forceful and progressive. The members have shown a stronger and broader

spirit of active co-operation and support than ever before. This has been appreciated and our sincere hope is that it will be continued and increased. Do not fail to bear in mind that this association is yours. It belongs not to the officers but to the members. The officers neglect their own business in order to forward the best interests of the trade, and it certainly is not asking too much of each individual member to give the same attention and support to the work of the association that they give to other details of their business.

Only by persistent, united, associated effort and by the active assistance of each individual member may we hope to accomplish the best results, but with this no fair reasonable proposition is impossible or would have serious consideration without it.

**Passage of a Parcel Post Bill Would Be a National Crime.**

The next Congress will without doubt be again urged to favorably consider the question of establishing a parcel post. This subject is one I believe that should have more active, aggressive support and action from jobbers and manufacturers alike than has been given in the past. It is a national question that bears as strongly on future prosperity and development as the tariff.

The passage of a parcel post bill in my judgment would be neither more or less than a national crime, resulting in a moral, physical and mercantile paralysis over a large section of the country whose future development and prosperity must rest not on centralization and congestion of population, but on the development of the country town, village and hamlet, where the interests of the farmer and the village residents are united to the development and advantage of both.

**A Broad View Necessary.**

It should not be opposed from the narrow standpoint of its effect on any line of business, because if it were an economic question for the benefit of the many to the detriment of the few, opposition would be useless, but it is an important fad that has no part in American development.

The Government may decide to carry 11 lb. of merchandise from the Atlantic Coast to the remote regions of the Pacific for 25 cents, but that will not reduce the cost of the service, but only place the burden of the difference between the cost and the charge on other shoulders and favor one class at the expense of another.

It is class legislation and it is inconsistent with the policy of our Government to father paternal legislation or to engage in freight transportation, and a partnership between the Government and the mail order houses, the one furnishing the capital and the other the experience, would unquestionably result as in mercantile life, where under similar circumstances capital and experience invariably change hands.

**In Memoriam.**

The Grim Reaper has not spared us during the past year, but has taken from among us those whom we loved and honored, and I will ask you to kindly rise while their names are read:

Henry W. Cortes, president, Bering & Cortes Hardware Company, died October 4, 1908. Mr. Cortes was one of the most prominent business men of Texas, esteemed and respected by his associates and friends and active in the commercial and religious life of his city.

John C. Koch, president, John Pritzlaff Hardware Company, Milwaukee, Wis. Mr. Koch was first vice-president of the association for many years. Quiet, but alert and thoughtful, his genial disposition combined with his sound judgment, made him a valued counselor as well as an esteemed friend and associate. His presence and counsel will be missed by the officers and members of this association.

## REPORT OF SECRETARY FERNLEY.

Following are extracts from the annual report of Secretary-Treasurer T. James Fernley of the National Hardware Association:

We do not await the annual convention of this association to render reports; as you know, it is our plan to report to you almost daily. At the risk of having the unknowing ones or those who forget smile at our modesty we would state that we have addressed you during the past year 178 times. We know of no organization which keeps its membership more fully advised concerning its work, and it is due in part to this fact that our association is generally considered to be the strongest trade organization in this country.

We are pleased to state that our membership has increased; last year we reported 189 and now we have 201 members. It has been the policy of our membership committee to be very conservative, and only to admit to the organization such jobbers of Hardware as would add strength to the association.

Our finances are in good condition, the expenses being practically within our income and we have a substantial balance on hand for future work.

We have in all the activities of the year had before us the resolutions of previous conventions, and have done nothing which we did not consider our duty in carrying the same into effect.

**Mail Order and Catalogue House Competition.**

At our last convention the subject of reproducing prices made by various classes of dealers in printed form was very thoroughly discussed, and the convention expressed the opinion that the information which had been sent out during the previous year was of value, and if it was consistent with proper observance of existing laws, the secretary-treasurer should arrange to advise the membership concerning net prices issued in printed form that were on a basis which prevented the obtaining of a proper margin of profit.

We immediately consulted eminent legal authority as to how we could work under this resolution and strictly maintain existing laws. We sent you a copy of the opinion of John G. Johnson, our attorney. You will recall that this authority advised us that we had a legal right to reproduce prices quoted by these parties, and that it was certainly the privilege of our members to attempt to purchase goods at prices which would enable us to meet such competition.

**Jobbers' Position as to Prices.**

We have taken the position that if manufacturers permit catalogue houses to quote their goods to consumers at a price which makes it impossible for the retail merchant to compete, that it is the privilege of the jobber to take such price as the basis for the retailer, and insist on obtaining a price which will enable him to sell the retailer so that the catalogue house price can be met and a proper profit reserved for retailer and jobber.

We have requested the manufacturers to take prices made by mail order houses as a basis of the proper price to the trade and to give the jobbers a price which will permit them to meet such competition. It has been admitted that our position is sound, reasonable and equitable.

**An Examination of the Catalogues**

issued by the leading concerns engaged in soliciting the trade of the consumer, through the medium of a catalogue, will disclose a marked change. Standard brands of goods have given way to special brands which are unknown to the consuming community, and which in most instances are of a quality which will not lead to a large duplication of orders. We ascribe this result very largely to the work of this organization begun several years ago, and more vigorously pushed forward by the Wholesale and Retail Hardware Joint Committee.

We recommend that the members of our association obtain copies of the catalogues in question and see for themselves what has been done, and also keep advised as to the lines of goods of some few prominent manufacturers still being shown in these catalogues.

**Syndicate Buyers.**

During the year we have reproduced the prices issued by several concerns engaged in syndicate buying, but who had as clients certain parties whose competition was annoying to the mass of retail merchants. We find that in many cases the manufacturers had no relations with such syndicate buyers, and prices were made without any responsibility of furnishing goods in the event of orders being offered. Most of our manufacturing friends show an earnest desire to protect the jobbing and retail trade from the demoralization caused by these parties. Three syndicate buyers have submitted their lists of clients to your secretary-treasurer and are refusing to operate for any of whom he does not approve.

Our association has never taken any action approving or disapproving of the syndicate buying system. You have simply instructed your secretary-treasurer to endeavor to keep the lists of these buyers free from any who are not entitled to be called jobbers. One of the syndicate buyers who was a party to the New Orleans understanding, withdrew from the same, and members of our association are aware of the present policy of this particular buyer.

**Manufacturers' Competition.**

We find that a few manufacturers still endeavor to sell all kinds and classes of trade. It is interesting to note that the same manufacturer who ignores the jobber is in the habit of infringing the rights of the retailer, selling the consumer direct at extreme prices. We recommend that our association obtain all such prices quoted the consumer and keep the jobbers and retailers informed of the prices that confront them.

**Selling Policy.**

During the year we have conferred with some manufacturers' associations, but owing to a desire on the part of many to respect the Sherman Anti-Trust law there are not existing at the present time as many combinations as in former years. We have, however, been consulted by a very large number of manufacturers concerning the policy which it was thought would be most pleasing to the jobbing trade, and it will doubtless be with much satisfaction that you learn of an increasing number of manufacturers who use this organization as a medium through which to obtain information concerning a proper selling policy.

**Jobbing List.**

We are also being consulted with great frequency by individual manufacturers concerning the personnel of their jobbing list; at all times we endeavor to decide these questions in a way which will convince the manufacturer of our desire to be equitable and just, both to our membership and those who are not connected with us.

**Parcel Post Opposition.**

The Hardwaremen of the country are still the leaders in opposing the adoption by the Government of any character of a parcel post. It is very pleasing indeed to be able to report that during the past year quite a number of other trade organizations have followed our lead, so that to-day many thousands of merchants who had an idea that a parcel post might be advantageous to their interests are now convinced that the establishment of such a system simply would mean the building up of the great mail order houses of the country and the impoverishment of the great mass of retailers scattered throughout the length and breadth of our land. The advocates of the parcel post are vigorously at work and it will require great activity on our part during the approaching year to prevent their meeting with success.

**Cash Discount.**

In carrying out your resolution expressing the opinion that a discount of 2 per cent. for cash in 10 days was a rule of the trade, which should be respected by all from whom you purchase, we have since our last convention addressed all those who were not allowing this discount. Early in the year the Bolt manufacturers yielded to our request and returned to the 2 per cent. A very large number of manufacturers have recognized that our request was a proper one, so that at the present time a very few are insisting on less favorable terms. We have not requested manufacturers to lower prices, but simply to readjust them so that this discount could be allowed.

The statement has been made, and we fear not without truth, that some jobbers have ignored the time limit and insisted on the discount. We hope that our members will always respect the time and not ask for the premium unless they give the manufacturers that for which it is offered.

It is very pleasant to report that practically all goods handled by the Hardware jobbers are now on a basis of 2 per cent. for cash, 10 days, the exceptions being Bar Iron, Steel, Brass and Copper.

## ADDRESS OF A. T. STEBBINS.

At an open meeting of the manufacturers an able address was delivered by A. T. Stebbins, Rochester, Minn., president of the National Retail Hardware Association. We give the following extracts from Mr. Stebbins' address:

There is no field of human activity in which ideals are applied of more value than business. To be sure we may not hope to attain the ideal, but we can by co-operation make the real nearer the ideal. There have been wonderful advancements and changes in business methods during the last few decades. I often think of the conditions that existed at the time I first entered a Hardware store as a clerk. This was in 1866.

**Forty Years Ago**

the building and fixtures compared favorably with our competitors, but compare them to modern stores, with their plate glass windows and attractive displays, Steel ceilings and modern show cases and fixtures, then note the change. Methods of buying, selling and paying for goods have worked even a far greater change. Traveling men were unknown in those days; goods were ordered by mail in large quantities, thus requiring larger stocks to be carried by the dealer. The popular brands of those days are practically unknown to the clerk of to-day: Wostenholm's Pockets, wrapped in paper; Wade & Butcher Razors; mechanics' tools, made in Sheffield; Screws from England, wrapped in paper, instead of boxes, with a sample Screw tied on the outside to indicate the size; Tin plate from Wales; Sheet Iron from Russia; Tin ware made in local shops; Nail Rods, from which the blacksmiths made their Horse Nails.

There were few trade papers and no Hardware association. There were no 60 days, 2 per cent. off 10 days, but a running account pay as you can method. Who would care to go back to such a condition in the business world, and who will say that this world is not growing better day by day?

**A Hint as to Packages.**

Speaking of packages, while I do not wish to presume to tell you gentlemen how to put up your goods yet I sometimes wish I could have you in my store for a year. I am sure you would endeavor to make the retail merchant's life a little more pleasant by using stronger and neater packages with attractive labels, with plain characters and letters, with a space for cost and selling price. You would also mark the boxes so that the contents could be read without the use of a magnifying glass; you would not put labels on the top of packages so they could not be seen when on the shelves.

You would put Nuts on the Bolts as of yore, so that the retailer would not have to spend his time in doing this before he can effect a sale. You would strive to improve the quality and appearance of your goods rather than allow some of them to deteriorate.

**Why Should Prices Advance?**

One word in regard to prices, and I am done telling you how to run your business. Mention is often made of late that prices are going to advance. This sets the retail merchant to wondering how it is that with raw material reduced, of which the consumer has a definite knowledge, the manufacturer can offer a good reason for this position. Is it from a desire to gather in a goodly portion of this wave of prosperity which is predicted? You may arrange prices with the jobber to his satisfaction, but have you considered the consumer and have you taken the retailer into your confidence? Kindly consult the Farmer's Bible, which adorns his center table, entitled "The Great Price Maker." Put yourself in the retailer's place if you can and we leave the question to you to answer.

**Vehicles of Commerce.**

There are four distinct elements that enter into all trade relations: the manufacturer, the jobber, the retailer and the consumer. They may be likened unto the sturdy, reliable four-wheel vehicle. There is an element in the business world that would eliminate two of these wheels—the jobber and retailer—and substitute in place thereof the catalogue house. Would this three-wheel vehicle take the place of the reliable four-wheel one in moving the commerce of the world? Might not the three-wheel affair become easily upset when meeting obstacles that the four-wheel could successfully overcome? Occasionally there crops out a desire to eliminate the third wheel and leave but two—manufacturer and consumer. This commercial vehicle would, like the unsteady Bicycle, be subject to all sorts of difficulties and land the country in the mire of turmoil. The proposition is not an economic one, hence not to be so considered.

**Recollections and Hopes.**

In contemplating this subject recollections and hopes crowd upon us. The past and the future are brought close together, and the question arises how can the time honored four-wheel vehicle maintain all its splendid prestige? Our answer is by an economic distribution and a square deal to all. If our Government deems it an injustice for railroads to discriminate in favor of a certain few shippers as against the many why is it that it should be right for retail merchants, who do not issue catalogues, to be discriminated against and in favor of those that do?

**Equal Footing as to Prices.**

We ask no special favors, but we do ask that we be put on an equal footing regarding prices with our retail competitor, the catalogue house, when we will be enabled to fight our own battles successfully. Too much importance cannot be attached to this proposition. It is a matter of deep concern to manufacturers, jobbers and retailers alike. If the retailer cannot maintain his existence certainly the jobber cannot. If the retailer finds so much of his business gone as to make it unprofitable, the brightest and most progressive of them will seek other occupations, leaving the shopkeeper to do the business, who not being as progressive will not create the demand for your goods. It is the everlasting push of the retailers organized as they are to-day which constitutes the greatest selling force every known. They create the demand for your product. Remove this element and the output would be materially decreased.

**United Effort.**

Why then is it not for the interest of all three organizations to join in a strong endeavor to put the retailer on the same basis as to prices with the catalogue house? Did you ever think that there are 25,000 retail merchants working for you from early morn until late at night creating a desire and subsequent purchase by the consumer of the goods you manufacture, and thus it is that the retail merchant makes it possible for you and the jobber as well to do business.

**Parcel Post Detrimental to the Nation's Welfare.**

It would not be the popular or proper thing these days in addressing a trade convention not to refer to the parcel post proposition, which question seems far from being settled. While this subject has been discussed by able writers and debaters it cannot be too often brought to our attention. Your position upon this question is well known. We all believe that the introduction of the parcel post in this country would have a decidedly damaging effect upon the future of American progress and civilization. But are we doing what we should to head off this proposed legislation? We do not place our opposition to this measure upon any selfish ground but upon the broad ground of its being detrimental to the nation's welfare.

We all know what interests are back of this movement.

Some may say the farmers want it. Most of the farmers that say they do get their ideas from the farm papers, who are the recipients of catalogue house advertisements; hence, the more prosperous the catalogue house, the larger their bank account. It is argued that the now proposed parcel post scheme only contemplates the service being put in operation on rural routes from local post offices.

**Its Introduction Dangerous in Any Form.**

The honorable Postmaster-General has, we know, cut his proposition from a general domestic system to a local one to meet the objections that have been raised to the former, but he tells his sympathizers to be satisfied with this in order to get a start, when it will be easy to extend it. Some years ago a gentleman in Australia imported a pair of Belgian hares, thinking they would be a fine asset to the community. Now the Australian Government is spending thousands of dollars in an effort to exterminate them. A man in Boston, out of idle curiosity, presumably, housed some imported moths of a certain variety in a box in his back yard. A windstorm blew the box over, the moths escaped, and now Massachusetts and other New England States are spending vast sums to rid the country of these pests. So it will be with the parcel post. It will be far easier to keep it out of the country than to stop its progress after once introduced.

**Conditions Different in Parcel Post Countries.**

The Postmaster-General tells of its introduction in foreign countries, but he does not tell us of the different conditions that exist there, the difference in the length of the haul being but 40 miles, while in this country it would be more than 19 times that distance. In some of the countries he refers to, the Government owns the railroads, and in others there are no express companies and transportation is slow and unsatisfactory at best. Neither does he tell us of the dissatisfaction and unrest that exist, and when the law makers are appealed to the answer comes back, "you are too late, gentlemen."

**A Socialistic Step.**

Again, it is not in accordance with the principles of our American institutions for the Government to engage in the transportation business. The proposition from this standpoint is a dangerous one and a step towards socialism. The Government might, with equal propriety, engage in the manufacture of Hardware or any other article of commerce.

**Wiping Out the Postal Deficit ?**

It is inexpedient also from a financial standpoint. The Postmaster-General has but recently announced that the deficit in his department for the fiscal year ending June 30, 1908, amounts to $16,910,279. He also in this connection makes the statement that in his annual report he will call the attention of Congress to the fact that he is firmly convinced that the establishment of a special local parcel post would tend to wipe out the postal deficit, besides being of convenience to the farmer and a boon to the retail country merchant. That sounds plausible, does it not? To a politician it might look like a good scheme to trap the unthinking and catch votes. Let us examine these propositions briefly, first, as to the parcel post being the means of wiping out the deficit.

According to the statistics published by the Chicago Post Office for the fourth class matter during October, 1907, the profit to the Government was $9.79 a ton, or practically ½ cent a pound. In other words, it cost the Government 15½ cents a pound to carry fourth class mail matter, according to the weighing of the Chicago Post Office. Supposing the Postmaster-General's proposition to reduce from 16 to 12 cents per pound the charges on this class of merchandise, it would create a deficiency of $7 a ton. In view of these statistics, does any sane man believe that the Government could carry merchandise for 2¼ cents a pound and not increase very largely the deficit? H. A. Castle of Minnesota, formerly auditor in the Post Office Department at Washington, a man whom I know very well, estimates that on the 11 lb. for 25 cents rate, the annual deficit would be $100,000,000 for transportation alone.

**The Farmer's Convenience.**

How about the convenience to the farmer? I have personally talked with rural carriers, nine of whom leave my city every week day morning, and they tell me that while they are permitted to carry merchandise exceeding 4 lb. in weight they seldom make a charge unless it be for heavy packages. Sometimes the patrons along their routes will about holiday time throw a turkey or a sack of oats in their rig, but while they do all the errands asked of them the remuneration is comparatively small. What convenience then does the now proposed parcel post offer the farmer that is not granted them now? Absolutely none.

**A Serious Situation.**

As for the boon to the retail country merchants, do you know of any one who clamors for it? I do not, but on the contrary they are opposed to it and on broad, patriotic grounds. As these arguments of the Postmaster-General fall to the ground kindly tell me if you can the real motive that prompts his activity? Many more points might be raised against the parcel post scheme, but I have already wearied your patience. The situation demands our earnest and active attention. Every one interested should write his member of Congress on the subject. It is not enough that you think your members are right on this question. Letters by the thousand are pouring into the hands of Congressmen, mostly stereotype petitions, furnished by the farm papers and signed by farmers. A Congressman informed me that the opposition to the parcel post needed to get busy and let their protest be known, else Congress, judging by the correspondence just alluded to, would think the people demanded it.

**The President's Influence.**

We would very much like to have your organization discuss the propriety of sending a delegation to Washington to interview the President. The retailers I am sure will join you in such a movement. It is rumored that the President in his message to Congress will indorse the recommendation of the Postmaster-General. In a previous message he did recommend it, but with a proviso that if it could be shown that it would injure the retail merchants and the rural communities he would not favor such a proposition. While various trade organizations have written the President declaring their objections to the measure personal interviews are much more convincing.

## THE ATTENDANCE.

### Manufacturers.

AMERICAN AXE & TOOL COMPANY, Glassport, Pa.: C. W. Hubbard, Jr., W. T. Johnson.

AMERICAN CAN COMPANY, New York: E. R. Philip.

AMERICAN FORK & HOE COMPANY, Cleveland, Ohio: P. H. Withington, T. H. Russell, F. S. Kretsinger, H. L. Durell, T. T. Hitch, Cyrus Reimer, C. H. Windt, A. E. Huntley.

AMERICAN IRON & STEEL MFG. COMPANY, Lebanon, Pa.: Chas. P. King.

AMERICAN PULLEY COMPANY, Philadelphia: H. P. Chenoweth.

AMERICAN SALES COMPANY, Chicago, Ill.: C. K. Anderson, Frank Low.

AMERICAN SCREW COMPANY, Providence, R. I.: W. G. Smythe, Henry A. Taylor.

AMERICAN SHEAR & KNIFE COMPANY, Hotchkissville, Conn.: J. H. Keating.

AMERICAN SHEET & TIN PLATE COMPANY, New York: W. J. Wetstein, W. H. Eaton, W. T. Shannon, T. A. Gessler, J. I. Andrews.

AMERICAN STEEL & WIRE COMPANY, Chicago: F. Baackes, D. A. Merriman, T. H. Taylor, T. B. Coles, George D. Kirkham, W. H. Foege.

AMERICAN WRINGER COMPANY, New York: G. H. Jantz, S. Bradley.

AMES SHOVEL & TOOL COMPANY, Boston, Mass.: Julius C. Birge, Arthur B. Birge, Hobart Ames, C. H. Myers, S. S. Early, Lynford Rowland, C. S. Hubbard, H. M. Myers, H. A. Urban, J. P. Tabb.

ATHA TOOL COMPANY, Newark, N. J.: Edward S. Ross, Henry G. Atha, Edward Ingalls.

E. C. ATKINS & CO., Indianapolis, Ind.: N. A. Gladding, W. L. Sanford, J. F. Carey, G. R. Stafford, W. P. Brown.

ATLANTIC SCREW WORKS, Hartford, Conn.: F. N. Tilton, A. W. Bowman.

ATLANTA STEEL COMPANY, Atlanta, Ga.: J. T. Rose, T. B. Davies.

AVERY STAMPING COMPANY, Cleveland, Ohio: Henry W. Avery.

BAKER-MCMILLEN COMPANY, Akron, Ohio: E. H. James.

BALDWIN FORGING & TOOL COMPANY, Columbus, Ohio: Frank M. Baldwin.

G. & H. BARNETT COMPANY, Philadelphia: Alfred W. Barnett.

BELFONT IRON WORKS, Ironton, Ohio: S. G. Gilfillan.

BOSS WASHING MACHINE COMPANY, Cincinnati, Ohio: Louis E. Dietz, Wm. C. F. Dietz.

BRYDEN HORSE SHOE COMPANY, Catasauqua, Pa.: W. M. Brezette, Geo. E. Holton.

CARNEGIE STEEL COMPANY, Pittsburgh, Pa.: W. G. Clyde, I. W. Jenks, W. F. Hickey.

CARVER FILE COMPANY, Philadelphia: Joseph M. Hottel, Edward M. Kemp.

CHALLENGE CUTLERY CORPORATION, New York; W. M. Taussig, F. S. Seeley.

JOHN CHATILLON & SONS, New York: D. P. Hale.

CLEVELAND STONE COMPANY, Cleveland, Ohio: H. W. Caldwell, A. W. Curtis.

CLEVELAND TACK WORKS, Cleveland, Ohio: W. G. Ross.

CLEVELAND TWIST DRILL COMPANY, Cleveland, Ohio: J. G. Pasco.

CLYDE CUTLERY COMPANY, Clyde, Ohio: R. B. Jones.

COLUMBIAN ENAMELING & STAMPING COMPANY, Terre Haute, Ind.: G. W. Jeffords, W. H. Pipp.

COLUMBIAN ROPE COMPANY, Auburn, N. Y.: F. M. Everett, W. V. Hawkins.

P. & F. CORBIN, New Britain, Conn.: Charles M. Jarvis, Charles H. Parsons, Charles B. Parsons, W. E. Bartholomew, Geo. L. Haven.

CORBIN CABINET LOCK COMPANY, New Britain, Conn.: C. H. Baldwin, W. H. Booth, D. O. Macquarrie, J. T. Dowell.

CORBIN SCREW CORPORATION, New Britain, Conn.: Charles Glover, Wm. E. Diehl, C. A. Earl.

CONSOLIDATED FRUIT JAR COMPANY, New Brunswick, N. J.: Thos. J. Buckley, E. M. Gilmore, L. Frank Clark.

CRONK & CARRIER MFG. COMPANY, Elmira, N. Y.: C. F. Carrier.
DAISY MFG. COMPANY, Plymouth, Mich.: C. H. Bennett, A. W. Chaffee.
DANA MFG. COMPANY, Cincinnati, Ohio: George F. Dana, Frank M. Snook.
DELTA FILE WORKS, Philadelphia: J. M. Hottel.
HENRY DISSTON & SONS, Philadelphia: Harry C. Disston, Robert J. Johnson, S. Horace Disston, Frank Gould, D. W. Jenkins.
E. I. DUPONT DENEMOURS POWDER COMPANY, Wilmington, Del.: T. E. Doremus, J. T. Skelly, W. F. Quimby, Geo. S. Parkes, J. F. VanLear, Levi Joy, Eugene duPont, J. N. Riley.
EAGLE LOCK COMPANY, Terryville, Conn.: G. W. Carter, H. B. Plumb, F. D. Ford.
EMPIRE KNIFE COMPANY, Winsted, Conn.: S. L. Alvord.
ENTERPRISE MFG. COMPANY, Philadelphia: Charles W. Asbury.
EVANSVILLE TOOL WORKS, Evansville, Ind.: F. Lohoff.
FERROSTEEL COMPANY, Cleveland, Ohio: A. E. Menke.
FOSTER BROS. & CHATILLON COMPANY, New York: C. E. Foster.
GLOBE-TAUNTON NAIL COMPANY, Taunton, Mass.: J. A. Welsh, J. C. Lullman.
GOODELL COMPANY, Antrim, N. H.: D. H. Goodell, R. C. Goodell, G. W. Hodges.
GOODELL-PRATT COMPANY, Greenfield, Mass.: Wm. M. Pratt.
GRAFTON STONE COMPANY, Elyria, Ohio: F. S. Miller.
GRAHAM NUT COMPANY, Pittsburgh: Chas. J. Graham, Chas. W. Gray.
GARLAND NUT & RIVET COMPANY, Pittsburgh: Robert Garland, W. C. Winterhalter.
GILBERT & BENNETT MFG. COMPANY, Georgetown, Conn.: Charles J. Miller, David H. Miller, Jr.
GREENLEE BROS. & Co., Chicago: W. H. Bowers.
GRIFFIN MFG. COMPANY, Erie, Pa.: R. M. Lee.
C. T. HAM MFG. COMPANY, Rochester, N. Y.: James Barnes.
HARRINGTON & RICHARDSON ARMS COMPANY, Worcester, Mass.: Geo. F. Brooks, F. B. Park, Wm. Camier.
M. HARTLEY COMPANY, New York: E. E. Drake, J. M. Gaines.
HART & COOLEY COMPANY, New Britain, Conn.: Howard S. Hart, Norman P. Cooley, James H. Robinson.
HEMP & Co., St. Louis, Mo.: J. L. Hemp.
HERO FRUIT JAR COMPANY, Philadelphia: Hutton Kennedy, Howard G. Pinney.
HUSSEY-BINNS SHOVEL COMPANY, Pittsburgh: George V. Willson.
IRON CITY TOOL WORKS, Ltd., Pittsburgh: William H. Hays.
IRWIN AUGER BIT COMPANY, Wilmington, Ohio: F. S. Colvin.
IVER JOHNSON'S ARMS & CYCLE WORKS, Fitchburg, Mass.: Fred I. Johnson, Geo. F. Salisbury, Frank I. Clark.
JONES & LAUGHLIN STEEL COMPANY, Pittsburgh: Roland Gerry.
KELLY AXE MFG. COMPANY, Charleston, W. Va.: William C. Kelly, James P. Kelly, William B. Lockett, George T. Price.
KOKOMO STEEL & WIRE COMPANY, Kokomo, Ind.: J. G. Bowers.
LABELLE IRON WORKS, Steubenville, Ohio: D. M. Montgomery.
LAKE ERIE IRON COMPANY, Cleveland, Ohio: Frank W. Davis.
LALANCE & GROSJEAN MFG. COMPANY, New York: Palmer W. Holmes, James D. Fleming.
LAMB-FISH LUMBER COMPANY, Memphis, Tenn.: J. V. Hill, W. B. Burk, A. G. Fritchey, E. B. McCullough.
LANDERS, FRARY & CLARK, New Britain, Conn.: George M. Landers, Frederick A. Searle, James N. Stanley, Arthur G. Kimball, Fred M. Huggins.
LAWSON MFG. COMPANY, Chicago: W. H. Bennett.
LIVERIGHT BROS., Philadelphia: Arthur K. Liveright, P. C. Abbott.
LOCKWOOD MFG. COMPANY, South Norwalk, Conn.: George E. Eddy.
LOUISVILLE AXE & TOOL COMPANY, Highland Park, Ky.: B. F. Fitch.
LOVELL MFG. COMPANY, Erie, Pa.: A. M. Doll, J. M. Webber, Chas. S. Meacham.
LUDLOW-SAYLOR WIRE COMPANY, St. Louis, Mo.: Frank Low.
LUFKIN RULE COMPANY, Saginaw, Mich.: Robert G. Thompson, S. B. McGee.
LAMSON & SESSIONS COMPANY, Cleveland, Ohio: Geo. M. North, Roy Boffenmyer.
MARKHAM AIR RIFLE COMPANY, Plymouth, Mich.: Edward H. Lewis.
MCCAFFREY FILE COMPANY, Philadelphia: Joseph J. McCaffrey.
MCKINNEY MFG. COMPANY, Pittsburgh: W. S. McKinney, J. P. McKinney, C. M. King, F. A. Smith.
MERIDEN CUTLERY COMPANY, Meriden, Conn.: J. R. Payne.
MILLER LOCK COMPANY, Philadelphia: J. T. Rader, Edward S. Jackson.
MILWAUKEE CORRUGATING COMPANY, Milwaukee, Wis.: L. Kuehn.
MUNDORF CHAIN WORKS, York, Pa.: Geo. W. Mundorf.
NATIONAL ENAMELING & STAMPING COMPANY, New York: Geo. W. Niedringhaus, John J. Mapp, Geo. H. Harper, A. D. McBryde, J. H. Hisgen.
NEW ENGLAND ENAMELING COMPANY, Middletown, Conn.: O. Nelson, H. Ginsburg.
NEY MFG. COMPANY, Canton, Ohio: Frank W. Miller, J. W. Mobley.
NEW YORK LEATHER BELTING COMPANY, New York: George W. Bancroft.
NIAGARA MACHINE & TOOL WORKS, Buffalo, N. Y.: William Schweigert.
NICHOLSON FILE COMPANY, Providence, R. I.: Wallace L. Pond, F. Herbert Smith.
NORTH BROS. MFG. COMPANY, Philadelphia: A. C. Albrecht, Don McMillan, C. W. Domine, R. P. Boyd.
JAMES OLLIS & SONS SAW MFG. COMPANY, Columbus, Ohio: L. W. Seymour.
OLIVER CHILLED PLOW WORKS, South Bend, Ind.: R. A. Reed, W. A. Wood.
OLIVER IRON & STEEL COMPANY, Pittsburgh: Henry B. Lupton, George T. Bailey.
ONEIDA COMMUNITY, Ltd., Oneida, N. Y.: Alfred Clark, L. A. MacKown, A. M. Kinsley, P. B. Noyes.
OWENSBORO SHOVEL & TOOL COMPANY, Owensboro, Ky.: W. R. Libhart, M. W. Libhart, W. K. McCulloch, Jean W. McCulloch.
CHARLES PARKER COMPANY, Meriden, Conn.: Wilbur F. Parker, William H. Lyon, Frederick Pease, A. W. Proudman.
PAYSON MFG. COMPANY, Chicago: E. T. Harris.
J. C. PEARSON COMPANY, Boston, Mass.: F. C. Ayres, H. A. Jones, R. L Foster, W. G. Aborn.
PECK, STOW & WILCOX COMPANY, New York: T. H. Gossett.
PEERLESS FOUNDRY COMPANY, Cincinnati, Ohio: George F. Dana, Frank M. Snook.
PENNSYLVANIA RUBBER COMPANY, Jeannette, Pa.: E. D. Girardot.
PETERS CARTRIDGE COMPANY, Cincinnati, Ohio: W. E. Keplinger, F. C. Tuttle, Paul R. Litzke, J. W. Osborne, H. C. Hirschy.
PIKE MFG. COMPANY, Pike, N. H.: E. Warren Smith.
PITTSBURGH STEEL COMPANY, Pittsburgh: William Taylor, W. C. Reitz, R. D. Carver, T. T. Johnson.
PHOENIX HORSE SHOE COMPANY, Poughkeepsie, N. Y.: J. W. Kiser, S. H. Roberts, W. J. Kelly.
FAYETTE R. PLUMB, Inc., Philadelphia: Walter W. Birge, Joseph H. Plumb, J. J. Teeple.
READING HARDWARE COMPANY, Reading, Pa.: J. O. Beneke, W. F. Goodrich, T. B. Hendrickson.
REYNOLDS WIRE COMPANY, Dixon, Ill.: H. G. Reynolds, W. B. Merriman.
RICHMOND CEDAR WORKS, Richmond, Va.: J. Scott Parrish, S. P. Parrish.
ROANOKE STAMPING & ENAMELING COMPANY, Roanoke, Va.:
RUSSELL & ERWIN MFG. COMPANY, New Britain, Conn.: B. A. Hawley, R. R. Leeds, T. J. Usher, A. R. Sisson, W. P. Hudson.
SAFETY DOOR HANGER COMPANY, Ashland, Ohio: E. W. Topping.
SARGENT & Co., New York: Geo. F. Wiepert, Edward P. Dunning.
SAVAGE ARMS COMPANY, Utica, N. Y.: Carleton L. Wood, H. E. Haynes, F. P. Kelley.
WM. SCHOLLHORN COMPANY, New Haven, Conn.: Dr. J. Hutchinson Hall.
O. P. SCHRIVER & Co., Cincinnati, Ohio: O. P. Schriver.
SENECA CHAIN COMPANY, Kent, Ohio: C. M. Power.
SIMONDS MFG. COMPANY, Fitchburg, Mass.: C. F. Braffett, A. T. Simonds, H. K. Simonds, G. K. Simonds, J. E. Kelley, Geo. T. Curtis.
STANDARD ARMS COMPANY, Wilmington, Del.: F. E. Muzzy.
STANDARD CHAIN COMPANY, Pittsburgh: W. R. Dawson, A. E. Crockett.
STANDARD HORSE NAIL COMPANY, New Brighton, Pa.: Fred S. Merrick.
STANDARD HORSE SHOE COMPANY, Boston, Mass.: George S. Boutwell.
STANDARD TOOL COMPANY, Cleveland, Ohio: R. T. Lane.
STANLEY RULE & LEVEL COMPANY, New Britain, Conn.: Alix W. Stanley, Robert N. Peck, Robert M. Parsons.
J. STEVENS ARMS & TOOL COMPANY, Chicopee Falls, Mass.: A. H. Griffin, J. H. Page, C. E. Roberts.
STANLEY WORKS, New Britain, Conn.: L. H. Pease, A. C. McKinnie, George P. Hart, A. I. Grocock, James Hutchinson, E. R. Swift.
TREDEGAR COMPANY, Richmond, Va.: G. B. Hobson.
TUBULAR RIVET & STUD COMPANY, Boston, Mass.: T. Cavert.
TURNER, DAY & WOOLWORTH HANDLE COMPANY, Louisville, Ky.: C. D. Gates.
UTICA DROP FORGE & TOOL COMPANY, Utica, N. Y.: L. P. Smith.
UNION FORK & HOE COMPANY, Columbus, Ohio: G. B. Durell.
UNION MFG. COMPANY, New Britain, Conn.: M. L. Bailey.
U. S. HORSE SHOE COMPANY, Erie, Pa.: B. S. Fletcher.
UNION METALLIC CARTRIDGE COMPANY, Bridgeport, Conn.: J. M. Gaines, J. E. Avery, A. H. Meyerhoff, J. S. Sanders, E. E. Drake.
UNION MFG. COMPANY, New Britain, Conn.: M. L. Bailey.
UNITED STATES CARTRIDGE COMPANY, New York: C. W. Dimick, C. H. Dimick, F. B. Smith.
UNITED STATES HAME COMPANY, Buffalo, N. Y.: H. W. Crandall, H. J. Turner.
UNITED STATES STAMPING COMPANY, Moundsville, W. Va.: J. W. Sleight.
U. S. STAMPING COMPANY, Moundsville, W. Va.: J. M. Sanders.
WABASH SCREEN DOOR COMPANY, Chicago: W. B. Biggers, E. M. Kemp.
WALLINGFORD MFG. COMPANY, Wallingford, Vt.: W. A. Graham, W. D. Batting.
WARD-DICKEY STEEL COMPANY, Indiana Harbor, Ind.: W. C. Dickey.
J. D. WARREN MFG. COMPANY, Chicago: J. D. Warren, B. W. Haverfield.
L. & I. J. WHITE COMPANY, Buffalo, N. Y.: John G. H. Marvin.
WHITE MOUNTAIN FREEZER COMPANY, Nashua, N. H.: Lester F. Thurber, K. I. Stucke.
WINCHESTER REPEATING ARMS COMPANY, New Haven, Conn.: Irby Bennett, Frank G. Drew, Geo. H. Hillman, E. W. Lee.
WOODHOUSE CHAIN WORKS, Trenton, N. J.: John H. Woodhouse.
WOOD SHOVEL & TOOL COMPANY, Piqua, Ohio: James P. Curd, S. S. Gould, C. M. Avery.
WRIGHT WIRE COMPANY, Worcester, Mass.: Geo. M. Wright, J. F. Searle, J. J. Collins, A. B. Peavey.

WYOMING SHOVEL WORKS, Wyoming, Pa.: N. G. Robertson.
YALE & TOWNE MFG. COMPANY, New York: A. W. Clark, W. R. Hill, A. T. Babcock.

### Jobbers.

MOORE & HANDLEY HARDWARE COMPANY, Birmingham, Ala.: J. D. Moore.
WIMBERLY & THOMAS HARDWARE COMPANY, Birmingham, Ala.: F. R. Simpson.
SPEER HARDWARE COMPANY, Fort Smith, Ark.: C. E. Speer, F. B. Dunlop.
FONES BROS. HARDWARE COMPANY, Little Rock, Ark.: Jas. J. Mandlebaum, J. Van Dokkum.
WEBBER-AYERS HARDWARE COMPANY, Fort Smith, Ark.: W. W. Webber.
DUNHAM, CARRIGAN & HAYDEN COMPANY, San Francisco, Cal.: Brace Hayden.
PACIFIC HARDWARE & STEEL COMPANY, San Francisco, Cal.: A. L. Scott, H. L. Arnold.
GEO. TRITCH HARDWARE COMPANY, Denver, Colo.: Geo. Tritch, E. G. Konshern.
KING HARDWARE COMPANY, Atlanta, Ga.: Geo. E. King.
DINKINS-DAVIDSON HARDWARE COMPANY, Atlanta, Ga.: S. C. Dinkins.
BECK & GREGG HARDWARE COMPANY, Atlanta, Ga.: W. A. Parker.
ANDERSON HARDWARE COMPANY, Atlanta, Ga.: Harvey L. Anderson.
J. D. WEED & Co., Savannah, Ga.: W. D. Krenson.
CLARK, QUIEN & MORSE, Peoria, Ill.: Chas. D. Clark.
ISAAC WALKER HARDWARE COMPANY, Peoria, Ill.: J. T. Neilson.
TENK HARDWARE COMPANY, Quincy, Ill.: R. Tenk.
VAN CAMP HARDWARE & IRON COMPANY, Indianapolis, Ind.: Cortlandt Van Camp, Samuel G. Van Camp.
BOETTICHER, KELLOGG & Co., Evansville, Ind.: Oscar Boetticher.
KNAPP & SPENCER COMPANY, Sioux City, Iowa: C. A. Knapp.
SICKLES, PRESTON & NUTTING COMPANY, Davenport, Iowa: Col. J. R. Nutting, Theo. Newhaus.
CUTLER HARDWARE COMPANY, Waterloo, Iowa: F. E. Cutler.
LUTHE HARDWARE COMPANY, Des Moines, Iowa: F. H. Luthe.
HUBER & KALBACH COMPANY, Oskaloosa, Iowa: J. S. Hayes.
BROWN-HURLEY HARDWARE COMPANY, Des Moines, Iowa: W. S. Brown.
W. A. L. THOMPSON HARDWARE COMPANY, Topeka, Kan.: J. G. Bauer.
A. J. HARWI HARDWARE COMPANY, Atchison, Kan.: W. H. Harwi.
BLISH, MIZE & SILLIMAN HARDWARE COMPANY, Atchison, Kan.: J. B. Silliman
FRANK COLLADAY HARDWARE COMPANY, Hutchinson, Kan.: Frank Colladay, T. F. Claffey.
LEE HARDWARE COMPANY, Salina, Kan.: H. D. Lee, Charles L. Schwartz.
OWENSBORO HARDWARE & IRON COMPANY, Owensboro, Ky.: Edward W. Leete.
STAUFFER, ESHLEMAN & Co., New Orleans, La.: Col. B. F. Eshleman, S. St. J. Eshleman.
EMERY-WATERHOUSE COMPANY, Portland, Maine: William Chamberlain.
N. H. BRAGG & SONS, Bangor, Maine: F. E. Bragg.
DUKE, PETERSON HARDWARE COMPANY, Baltimore, Md.: J. W. Peterson.
W. C. NIMMO COMPANY, Baltimore, Md.: W. C. Nimmo.
BIGELOW & DOWSE COMPANY, Boston, Mass.: Samuel A. Bigelow.
BALDWIN & ROBBINS COMPANY, Boston, Mass.: A. H. Decatur.
E. P. SANDERSON COMPANY, Boston, Mass.: E. P. Sanderson.
STANDART BROTHERS, Detroit, Mich.: Geo. G. Bogue.
MORLEY BROTHERS, Saginaw, Mich.: Edward W. Morley, Geo. W. Morley, P. F. H. Morley.
FOSTER, STEVENS & Co., Grand Rapids, Mich.: Chas. C. Philbrick.
CLARK-RUTKA-WEAVER COMPANY, Grand Rapids, Mich.: C. A Benjamin.
MARSHALL-WELLS HARDWARE COMPANY, Duluth, Minn.: H. C. Marshall.
KELLEY-HOW-THOMSON COMPANY, Duluth, Minn.: Geo. W. Welles.
HACKETT, WALTHER & GATES HARDWARE COMPANY, St. Paul, Minn.: T. G. Walther.
FARWELL, OZMUN, KIRK & Co., St. Paul, Minn.: R. A. Kirk, Frank B. Platt, Everett B. Kirk.
WYETH HARDWARE & MFG. COMPANY, St. Joseph, Mo.: J. A. Warner.
NORVELL-SHAPLEIGH HARDWARE COMPANY, St. Louis, Mo.: W. G. Yantis, R. W. Shapleigh.
GELLER, WARD & HASNER HARDWARE COMPANY, St. Louis, Mo.: Ira W. Love.
MCGREGOR-NOE HARDWARE COMPANY, Springfield, Mo.: D. M. Noe, Arch McGregor
RICHARDS & CONOVER HARDWARE COMPANY, Kansas City, Mo.: W. B. Richards, J. E. O'Neil.
TOWNLEY METAL & HARDWARE COMPANY, Kansas City, Mo.: Geo. E. Garland.
WRIGHT & WILHELMY COMPANY, Omaha, Neb.: W. S. Wright.
LEE-GLASS-ANDRESSEN HARDWARE COMPANY, Omaha, Neb.: H. J. Lee, W. M. Glass
HENKLE & JOYCE HARDWARE COMPANY, Lincoln, Neb.: R. M Joyce.
ALBANY HARDWARE & IRON COMPANY, Albany, N. Y.: Chas H Turner.
WEED & Co., Buffalo, N. Y.: Hobart Weed, L. C. Davenport.
BEALS & Co., Buffalo, N. Y.: Chas. P. Rogers.
BARKER, ROSE & CLINTON COMPANY, Elmira, N. Y.: Capt. Frederick Barker.
IRVING D. BOOTH, Elmira, N. Y.
SICKELS & NUTTING COMPANY, New York: J. R. Loder.
STEINFELDT BROS., New York: I. Kornfeld.
MATHEWS & BOUCHER, Rochester, N. Y.: James H. Boucher.
WEAVER, PALMER & RICHMOND, Rochester, N. Y.: Griff D. Palmer.
BURHANS & BLACK COMPANY, Syracuse, N. Y.: J. W. Black.
TRUMAN, KING & Co., Ithaca, N. Y.: F. L. Hawes.
MCINTOSH HARDWARE CORPORATION, Cleveland, Ohio: Geo. T. McIntosh, J. S. Harris.
GEO. WORTHINGTON COMPANY, Cleveland, Ohio: W. D. Taylor, C. A. Jewett.
SMITH BROS.-HARDWARE COMPANY, Columbus, Ohio: Thos. F. Smith.
CANTON HARDWARE COMPANY, Canton, Ohio: J. B. Brothers, C. A. Barnett.
BOSTWICK-BRAUN COMPANY, Toledo, Ohio: E. H. Refior, F. Lohmann.
OKLAHOMA CITY HARDWARE COMPANY, Oklahoma City, Okla.: S. E. Clarkson.
SUPPLEE HARDWARE COMPANY, Philadelphia: William W. Supplee, James S. Bonbright.
BIDDLE HARDWARE COMPANY, Philadelphia: David H. Reddie.
MERCHANT & EVANS COMPANY, Philadelphia: J. A. McKee.
E. K. TRYON, JR., COMPANY, Philadelphia: E. G. Chandlee.
LOGAN-GREGG HARDWARE COMPANY, Pittsburgh: P. L. Logan, Robt. M. Repp.
JAMES C. LINDSAY HARDWARE COMPANY, Pittsburgh: A. J. Bihler.
BELCHER & LOOMIS HARDWARE COMPANY, Providence, R. I.: W. B. Ayer.
BENEDICT, WARREN & DAVIDSON COMPANY, Memphis: J. D. Warren, N. Benedict, M. M. Cross, R. L. Davidson, J. T. Ambrose, L. J. Warren, E. Y. Kelly, P. M. Warren.
ORGILL BROS. & Co., Memphis: Frederick Orgill, Joseph Orgill, William Orgill, W. I. Moody, John S. Speed, Frederick Orgill, Jr.
BARNES & MILLER HARDWARE COMPANY, Memphis: H. R. Miller, W. E. Barnes, W. F. Stephenson.
PIDGEON-THOMAS IRON COMPANY, Memphis: P. Pidgeon, W. G. Thomas, J. B. Hutchinson.
GRAY-DUDLEY HARDWARE COMPANY, Nashville, Tenn.: R. M. Dudley, J. M. Gray, Jr., W. C. Pollard.
HOUSE-HASSON HARDWARE COMPANY, Knoxville, Tenn.: Samuel C. House.
C. M. MCCLUNG & Co., Knoxville, Tenn.: Bruce Keener, Bruce Keener, Jr.
J. H. FALL & Co., Nashville, Tenn.: J. H. Fall, J. H. Fall, Jr.
H. G. LIPSCOMB & Co., Nashville, Tenn.: H. G. Lipscomb.
KEITH-SIMMONS COMPANY, Nashville, Tenn.: W. Keith.
F. W. HEITMANN COMPANY, Houston, Texas: F. A. Heitmann.
MORROW-THOMAS HARDWARE COMPANY, Amarillo, Texas: James Walsh.
ROBERTS, SANFORD & TAYLOR, Sherman, Texas: W. L. Sanford, Zed Sanford.
NASH HARDWARE COMPANY, Fort Worth, Texas: A. D. Hodgson, W. R. Duffey.
PENICK-HUGHES COMPANY, Stamford, Texas: R. L. Penick.
SAN ANTONIO HARDWARE COMPANY, San Antonio, Texas: S. Jeffers.
W. S. DONNAN HARDWARE COMPANY, Richmond, Va.: John Donnan.
RICHMOND HARDWARE COMPANY, Richmond, Va.: W. D. Stuart.
WATKINS-COTTRELL COMPANY, Richmond, Va.: Charles H. Watkins.
WESTERN HARDWARE & METAL COMPANY, Seattle, Wash.: George Boole.
WHEELING CORRUGATING COMPANY, Wheeling, W. Va.: J. K. Boyd, H. J. Morgan, A. W. Crotsly, Andrew Glass.
WM. FRANKFURTH HARDWARE COMPANY, Milwaukee, Wis.: L. Maschauer.

### Other Visitors.

A. T. STEBBINS, Rochester, Minn.
M. L. COREY, Argos, Ind.
W. P. BOGARDUS, Mt. Vernon, Ohio.
E. M. BUSH, Evansville, Ind.
S. R. MILES, Mason City, Iowa.
A. H. ABBE, New Britain, Conn.
S. R. DROESCHER, New York.
GEO. J. ADAMS, Chicago.
A. T. ANDERSON, Cleveland, Ohio.
C. M. AVERY, Chicago.
B. A. FRANKLIN, Boston, Mass.
W. P. SMITH, Mead & Smith, Louisville, Ky.
GEO. REITER, Mutual Trading Company, New York.
CHAS. H. WIER, Wier & Wilson, Baltimore, Md.
JAMES B. SURPLESS, JR., Surpless, Dunn & Co., New York.
OLIVER B. SURPLESS, Surpless, Dunn & Co., New York.
W. H. BOWERS, Surpless, Dunn & Co., New York.
ALFRED C. GREENING, R. K. Carter & Co., New York.
S. H. GROSER, R. K. Carter & Co., New York.
THOMAS E. OLIVER, Oliver Bros. Purchasing Company, New York.
H. H. BEERS, Beers & Mitchell, Richmond, Va.
CLEMENT M. BIDDLE, Biddle Purchasing Company, New York.
R. L. BIRCH, *Southern Hardware and Store Dealer*, Nashville, Tenn.
C. W. WEAVER, *Southern Hardware and Store Dealer*, Nashville, Tenn.
HAROLD S. BUTTENHEIM, *Hardware*, New York.
E. R. COGLEDGE, *Southern Lumberman*, Nashville, Tenn

HARTWELL STAFFORD, *Southern Lumberman*, Nashville, Tenn.
H. T. HUNTER, *Hardware and Metal*, Toronto, Can.
JAMES H. KENNEDY, *Hardware Dealers' Magazine*, New York.
DANIEL STERN, the *American Artisan*, Chicago.
W. K. PRATT, the *American Artisan*, Chicago.
HARRY WISE, the *Tradesmen*, Chattanooga, Tenn.
J. W. PENTZ, *Hardware Review*, New York.
R. R. WILLIAMS, *The Iron Age*, New York.
A. H. CHAMBERLAIN, *The Iron Age*, New York.

## The Cary Steel Mat.

The Cary Mfg. Company, 19-21 Roosevelt street, New York, is making the Cary steel mat, two views of which are presented herewith. A prime result of this construction is that a scraping surface always exists in every direction. Another marked feature is the noncorroding, rustless character of the galvanizing which differs from

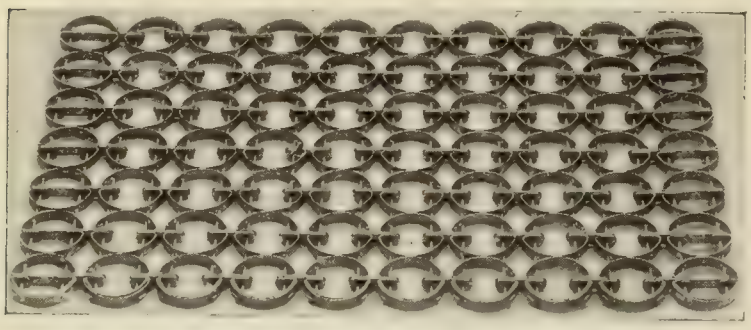


*Fig. 1.—Cary Cold Rolled Galvanized Steel Mat.*

the better known methods of such finish, accomplished before assembling the parts and which leaves all surfaces smooth. Mats so manufactured have a flexibility that greatly increases their life, enables them to adjust themselves to possible inequalities and permits of compact rolling for shipment or storage. The rustless finish prevents any discoloration of cement, tiled, marble or kindred flooring. The mat is made of high grade cold rolled steel No. 17 gauge. The round corners and the circular, arch-like outlines of the units on every edge or selvedge, while ornamental in appearance, greatly increase the strength and produce a glancing effect should the foot strike the edge first. The unit character of the mat makes it

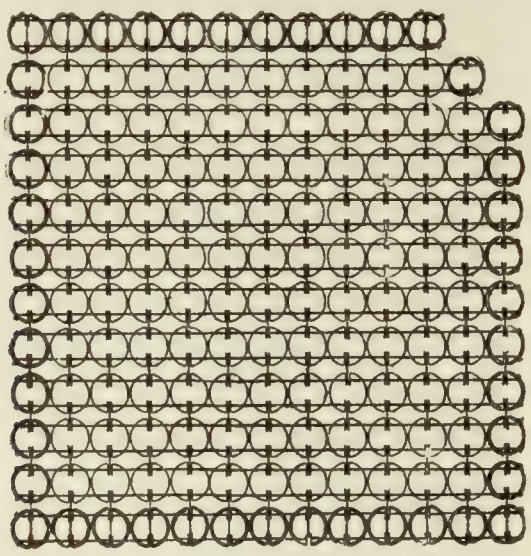
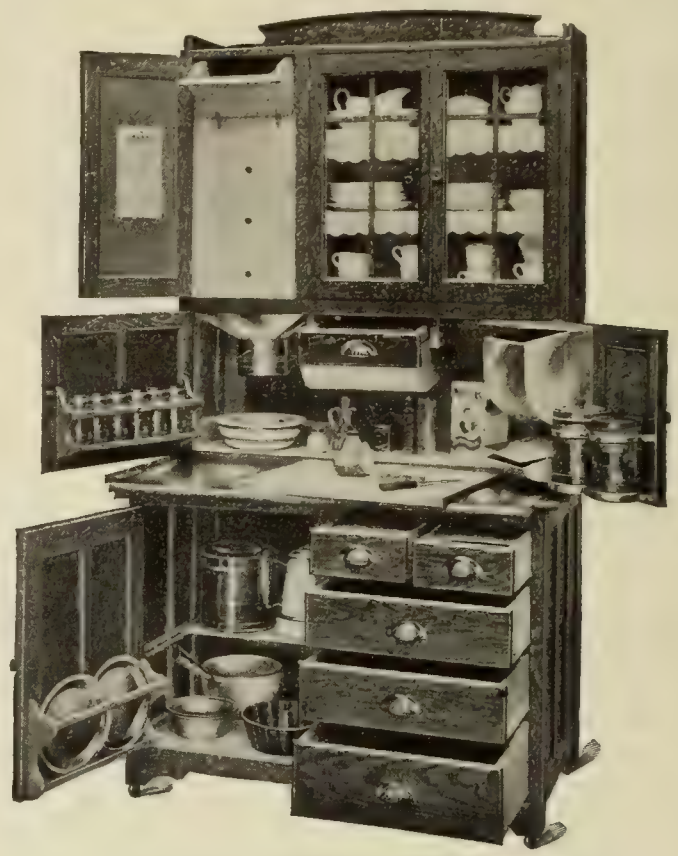


*Fig. 2.—Quarter Section of Elevator Mat.*

adaptable for introduction into irregular spaces to specification, such as entrances to buildings, private or public, elevators, &c., all parts of the fabric being equally strong and durable. The edges are reinforced by double thicknesses of metal. The units are 1¾ in. circles, ⅜ in. high on edge and are formed in half sections, the rows of semicircles being joined by short flat links which work in between the half sections, with the wires running at right angles, clinched at each end. The mats are made regularly in six standard sizes, ranging approximately from 12 x 21 in. to 24 x 39 in. dimensions, and in rolls of 18, 24 and 36 in. widths, 50 to 100 ft. long, although from the nature of the units it is obvious that mats of any dimensions may be made. Fig. 2 is a reproduction of a quarter section of the same style of mat, so made to adapt it to elevator flooring for instant removal when cleaning.

## The Jap Cabinet No. 255.

The kitchen cabinet represented in the accompanying illustration is the latest of a line of these goods manufactured by the Cincinnati Screen Company, Gest and Evans streets, Cincinnati, Ohio. The cabinet is constructed throughout of thoroughly seasoned, kiln dried solid oak. It is remarked that every inch of space has been put to the best possible service, and every accessory has been designed for utility and convenience. The aluminoid extension counter shelf is made from an alloy

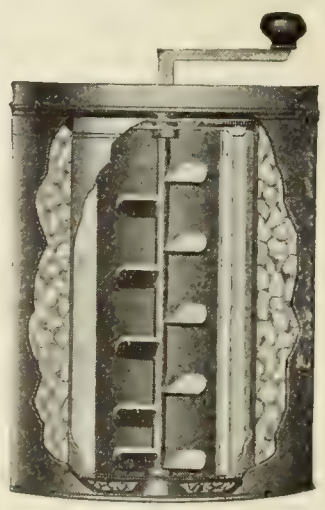


*The Jap Cabinet No. 255.*

which is acid proof and consequently does not corrode and tarnish. The sliding feature almost doubles the table space. The flour bin has a capacity of 60 lb., and is provided with a hopper top, removable sifter and glass flour gauge. The cabinet is furnished with a self-feeding sugar bin and a tilting meal bin. The two upper drawers have automatic sliding lids to prevent the entrance of dust or insects. Included in the equipment are six air tight spice canisters and one each for tea and coffee, removable cutting board, large pot cupboard, handy racks and a roomy china case. The entire cabinet, except the drawers, is inclosed with doors. The cabinet is 44 in. wide, 80 in. high, finished dull golden oak; crated weight, 250 lb.

## Champion Ice Cream Freezer.

The Reid-Edelmuth Mfg. Company, 17-19 Ninth street, Brooklyn, N. Y., New York office 1 and 2 Hudson street, has just brought out the Champion triple action ice cream freezer, here illustrated. It is made in four sizes, the capacities of which are 1, 2, 3 and 4 quarts respectively. The tub or outer receptacle, in which is put the cracked ice and salt freezing mixture, is of heavy galvanized iron, the cylinder of block tin retinned, and the dasher of malleable iron, tinned. The dasher has a wood scraper, which with each turn scrapes the freezing cream from inner side of cylinder and prevents its adherence to the inside walls. This freezer is designed for household use and is listed at $1, $1.25, $1.50 and $1.75 each, and crated three, two, two and one dozen respectively.



*Champion Triple Action Ice Cream Freezer.*

## Steel Doubletrees and Singletrees.

The accompanying illustrations relate to a line of ribbed single and double trees and tubular singletrees and neck yokes offered by the Youngstown Pressed Steel Company, Youngstown, Ohio. The doubletree shown in Fig. 1, the cross section of which is illustrated in Fig. 2, is designed for plow sets and implement use or for lead teams. Doubletrees are made of the same pattern with steel clevis, instead of D center, for wagon and truck use. The center rub iron fits around both sides, with heavy bushing through the center. The body is well braced and riveted, and the point is made that it is unbreakable with any load that can be hauled by teams. Singletrees are also made in the U ribbed pattern. The tubular trussed pattern singletree is shown in Fig. 3 and an enlarged view of the construction is given in Fig. 4, with back pull hooks. It is also made with front pull hooks and neck yokes constructed the same as the singletree are also made. The body of the tube is made from one piece of high grade steel, tapering from center toward both ends, with a truss running the full length and all the way across the tube, with a T shaped head on one side, as shown in Fig. 4. The outer portion of the tube is formed round, with fitting joints or ends coming together and up against the T shaped head to secure a perfect joint. The U draw bolt is forged steel and




*Fig. 1.—U Ribbed Doubletree No. 164.*

passes through the center of the truss in a manner to stiffen it at this point. It can be replaced in the same way as on a wooden singletree when necessary. End hooks and ferrules are standard sizes and patterns. The

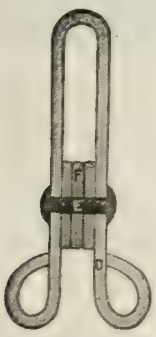


*Fig. 2.—Cross Section of U Ribbed Doubletree.*

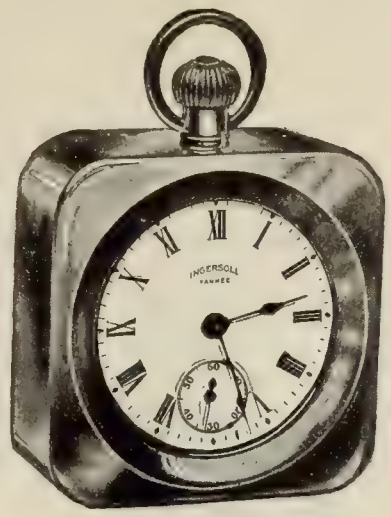


*Fig. 4.—Enlarged View of Tubular Trussed Singletree.*

lightness and strength of these goods is especially referred to by the manufacturer.

## Ingersoll Universal Watch.

Robert H. Ingersoll & Bro., 45-49 John street, New York, have just put on the market the Ingersoll Universal watch, here illustrated. It may be used on desk, table or mantel as a timepiece and paper weight, in the form shown, or by removing the two-piece telescoping sheet metal case it becomes the Yankee pattern 16-size watch, nickel case. It is both stem wind and stem set, and the styles of finish on outer case are nickel, polished copper, old brass and gun metal. The outer case is 2⅛ in. square and 13-16 in. thick, on which patent has been applied




*Ingersoll Universal Watch.*

for. The watch is equally serviceable for home or office use as well as for tourists and travelers.

## The Icy-Hot Bottle.

The Icy-Hot Bottle Company, 216 Post square, Cincinnati, Ohio, is manufacturing the bottle shown here-




*Fig. 3.—Tubular Trussed Singletree No. 125.*

with, for keeping hot liquid steaming hot or cold liquids cold for days without the use of fire, ice or chemicals. The device consists of two glass bottles, one within the other, made of one piece of glass, connected only at the neck, where the inner bottle is hermetically sealed to the outer. The space between the walls of the two



*The Icy Hot Bottle.*

bottles is exhausted of air, causing a vacuum and making it impossible for the heat from a hot liquid to be radiated or a cold liquid to absorb the heat of the surrounding

atmosphere. The glass bottle is encased in a nickel plated metal case. In use the bottle is filled with liquid and corked, where, it is stated, it will remain at approximately the temperature at which it was placed in the bottle for days, regardless of the temperature of the surrounding atmosphere. To prevent the cork being forced out by the steam of a hot liquid, a metal cap is screwed over the cork, which also serves for use as a drinking cup.

## The New Leader Washing Machine.

The J. B. Foote Foundry Company, Fredericktown, Ohio, is making the washing machine shown in the accompanying illustrations. The stand and the spider—the base upon which the tub rests—are made of tubing provided with a device making it adjustable to various sized tubs. The auxiliary bench is also made of tubing, and is so arranged that it will swing around under the tub out of the way when not in use, or it can be brought out to either side of the tub desired or directly behind the wringer. When not in use the bench can be folded and easily disposed of, thus occupying little space. The tub rotates upon 21 hardened steel balls to make it easy of operation. For the recoil action a torsion spring is provided, inclosed in the center column directly under the tub, firmly held in position but easily removed if desired. A fiber tub is used which is said to last a lifetime, as there are no hoops which might drop off allowing the staves to drop to pieces. The point is made that the tub is 2 in. higher than those ordinarily used for washing machines, and much lighter and more easily handled than a wooden tub. The method of securing the tub to the spider or base, it is shown, does not in any way injure it and it can be instantly removed. The wringer board is detachable from the tub and the washer can be used in any position without removing the wringer from the board. In Fig. 2 the interior of the tub and the disks are shown. The disks can be quickly removed from the tub for cleaning and the tub may be used for other purposes if desired. The rubbing disk adjusts itself to the quantity of clothes in the wringer, will wash one or a dozen pieces equally as well, and will not injure the most delicate fabrics. The lid is steam tight.

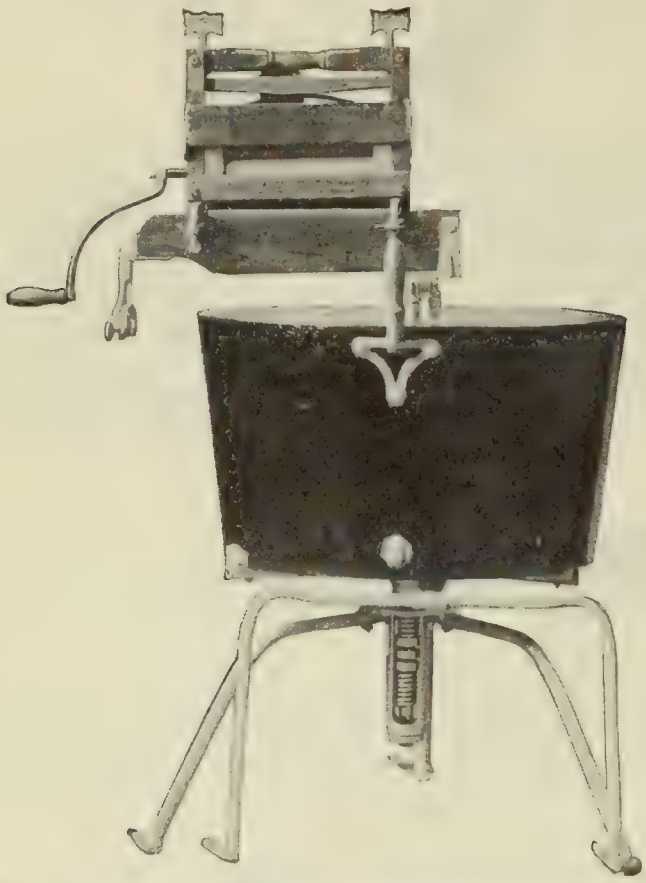


*Fig. 1.—The New Leader Washing Machine.*

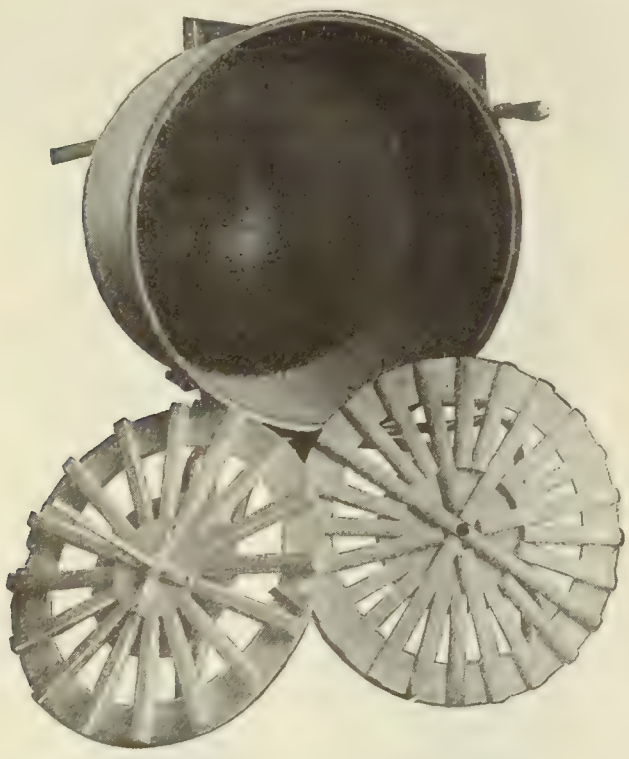
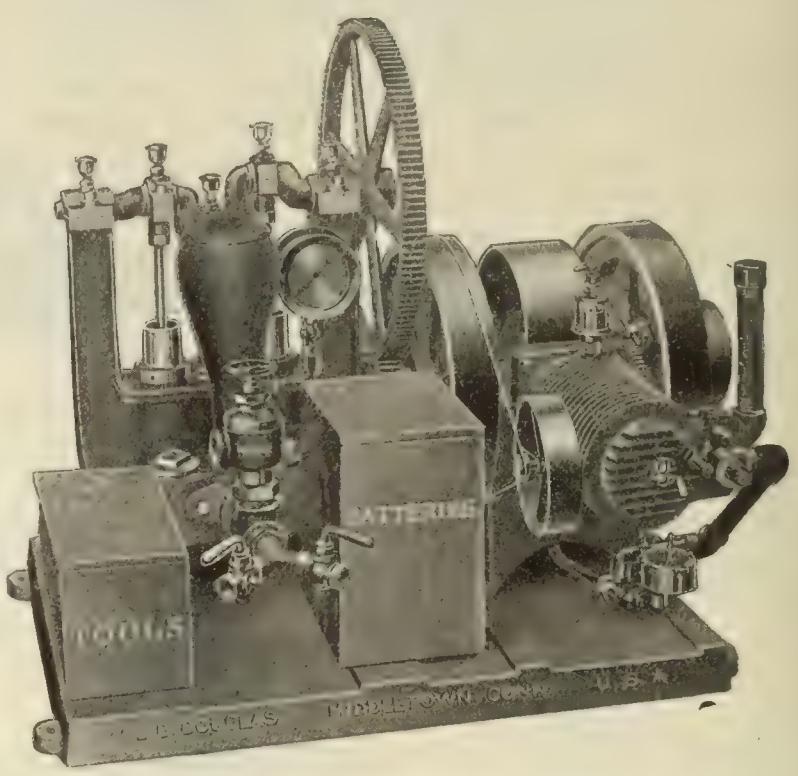


*Fig. 2.—Special Features of the New Leader Washer.*

## Granger Outfit for Orchard Spraying.

W. & B. Douglas, Middletown, Conn., and 83 John street, New York, have brought out the Granger outfit for spraying orchards, complete with gasoline engine and tools, as here reproduced. The apparatus, while especially suitable for installation in a vehicle to be transported to and through orchards, is also servicable for such work as suburban duty in raising water from, say, 15-ft. wells, to tanks located 150 to 160 ft. above ground. The two sizes have a capacity of 400 and 1000 gal. per hour, respectively. The specifications of the 2 x 3 in. size, unit style, vertical, outside packed triplex power pump, with brass plungers and brass glands, are as follows: The pump is geared to a 4 x 4½ in. horizontal four-cycle gasoline engine, especially designed for this service. There is a hit or miss governor and float feed carburetor, and gasoline tank in base of engine of sufficient capacity to run 10 hr. The pumps may be operated by an air cooled engine, as illustrated, with fan, or a water cooled engine with open hopper, as ordered. The entire outfit is mounted on a substantial cast iron base, 23 x 33 in., together with protected box containing six dry batteries and spark coil, and tool box containing necessary wrenches and lubricating oil. The ratio of gearing is as 7 1-3 to 1, and the normal speed of engine is 500 rev. per min. The pump is fitted with a Y on discharge with two shut offs, as shown, with spring relief valve set at 60 lb. pressure, and pressure gauge and drip plugs. Two 10-ft. extension rods and Bordeaux or Vermorel nozzle are furnished with each spraying outfit. The 3 x 4 in. size outfit is very similar in construction to that here described with water cooled engine and all fittings, except that the discharge has four shut offs, and four extension rods with nozzles are furnished with each outfit. The engine can also be used to run a separator or for other moderate duty, for which purposes is furnished a 6 x 3 in. pulley, on which a belt can be run.



*Granger Outfit for Orchard Spraying.*

## Fly Foot Belt Dressing.

The Charles A. Schieren Company, 37 Ferry street, New York, tanner and manufacturer of high grade leather belting, has put on the market the Fly Foot belt dressing, the style of package and trademark being here reproduced. The origination of this formula was suggested by the necessity for a special belt preparation for a high duty belt supplying power from a racing engine in a rolling mill where the requirements are very exacting as the first bite of a billet suddenly increases many fold the strain on a belt. The purpose has been, by an expert chemist, to formulate a compound chemically correct that will stick until time to yield somewhat to save the belt; that will not injure the leather, and, as the trademark implies, hold the belt to pulley by suction, as a fly walks on a ceiling, at the same time permitting the belt to lift off without adhesion as the pulley revolves, not only in rolling mills, but wherever belts are used. Fly Foot is guaranteed by the company to exert no chemical effect on the leather other than to close the pores and prevent drying out, thus acting as a preservative and lengthening the life of the belt. It is put up regularly in 5-lb. tin cans with red decoration.




*Fig. 1.—Fly Foot Belt Dressing Package.*




*Fig. 2.—Fly Foot Trademark.*

# PAINTS, OILS AND COLORS

### Animal, Fish and Vegetable Oils—

| | ₱ gal |
|---|---|
| | bbls. |
| Linseed, Western, Raw | .47 @48 |
| State, Raw | .47 @48 |
| City, Raw | .48 @49 |
| Boiled, 1¢ ₱ gal. advance on Raw. | |
| Raw, Calcutta, in bbls | .70 @.. |
| Lard, Prime, Winter | .73 @76 |
| Extra No. 1 | .51 @52 |
| No. 1 | .49 @50 |
| Cotton-seed, Crude, f.o.b. mill | .30½@31 |
| Summer Yellow, prime | .39 @39¼ |
| Summer, White | .41½@42 |
| Yellow Winter | .46 @47 |
| Tallow, Acidless | .58 @59 |
| Menhaden, Brown, Strained | .34 @35 |
| Northern Crude | .27 @30 |
| Southern | .23½@.. |
| Light Strained | .34 @35 |
| Bleached Winter | .36 @38 |
| Ex. Bleached Winter | .38 @39 |
| Cocoanut, Ceylon | ₱ lb 6½@6¾ |
| Cochin | ₱ lb 7¼@7½ |
| Cod, Domestic, Prime | .38 @40 |
| Newfoundland | .40 @42 |
| Red, Elaine | .39 @42 |
| Saponified | ₱ lb 6 @6½ |
| Olive, Yellow | $1.15@$1.25 |
| Neatsfoot, Prime | .55 @58 |
| Palm, Lagos | ₱ lb 6 @6¼ |

### Mineral Oils—

| | ₱ gal. |
|---|---|
| Black, 29 gravity, 25@30 cold test | .13 @13½ |
| 29 gravity, 15 cold test | .13½@14 |
| Summer | .12½@13 |
| Cylinder, light filtered | .20½@21 |
| Dark, filtered | .18 @19 |
| Paraffine, 903-907 sp. gravity | .14½@15 |
| 903 sp. gravity | .13½@14 |
| 883 sp. gravity | .11 @11½ |
| Red | .13½@14 |

### Miscellaneous—

| | |
|---|---|
| Barytes: | |
| White, Foreign | ₱ ton $18.50@20.50 |
| Amer. floated | ₱ ton 17.00@18.00 |
| Off color | ₱ ton 12.50@15.00 |
| Chalk, in bulk | ₱ ton 3.00@3.40 |

| | ₱ gal. |
|---|---|
| China Clay, Imported | ₱ ton 11.50@18.00 |
| Cobalt, Oxide | ₱ 100 lb 1.45@2.60 |
| Whiting, Commercial | ₱ 100 lb 42@52 |
| Gilders | ₱ 100 lb .55@.60 |
| Ex. Gilders | ₱ 100 lb .60@.65 |

### Putty, Commercial—₱ 100 lb

| | |
|---|---|
| In bladders | $1.70 @1.80 |
| In bbls. or tubs | 1.20 @1.45 |
| In 1 lb to 5 lb cans | 2.65 @2.95 |
| In 12½ to 50 lb cans | 1.50 @1.90 |

### Spirits Turpentine—₱ gal.

| | |
|---|---|
| In Oil bbls | 42½@43 |
| In machine bbls | .43 @43½ |

### Glue—

| | ₱ lb |
|---|---|
| Cabinet | .12 @15 |
| Common Bone | .7½@9 |
| Extra White | .18 @24 |
| Fish, liquid, 50 gal. bbls., per gallon | .60 @1.20 |
| Foot Stock, White | .12 @14 |
| Foot Stock, Brown | .9 @11 |
| German Common Hide | .10 @12 |
| German Hide | .12 @18 |
| French | .10 @40 |
| Irish | .13 @16 |
| Low Grade | .10 @12 |
| Medium White | .14 @17 |

### Gum Shellac—

| | ₱ lb |
|---|---|
| Bleached, Commercial | .22 @23 |
| Bone Dry | .26 @27 |
| Button | .30 @40 |
| Diamond I | @40 |
| Fine, Orange | .30 @35 |
| A. C. Garnet | .24 @25 |
| G. A. L | .20 @21 |
| Kala Button | .17 @18 |
| D. C | @42 |
| Octagon B | .35 @36 |
| T. N | .22 @23 |
| V. S. O | @40 |

### Colors in Oil—

| | ₱ lb |
|---|---|
| Black, Lampblack | .12 @14 |
| Blue, Chinese | .36 @46 |
| Blue, Prussian | .32 @36 |
| Blue, Ultramarine | .13 @16 |
| Brown, Vandyke | .11 @14 |
| Green, Chrome | .12 @16 |
| Green, Paris | @24 |
| Sienna, Raw | .12 @15 |
| Sienna, Burnt | .12 @15 |
| Umber, Raw | .11 @14 |
| Umber, Burnt | .11 @14 |

### White and Red, Lead &c.—

| | ₱ lb |
|---|---|
| Lead, English white, in Oil | .10⅛@10⅜ |
| Lead, American White: | |
| Dry and in Oil, 100, 250 and 500 lb kegs | 7 |
| Dry and in Oil, 25 and 50 lb kegs | 7¼ |
| Dry and in Oil, 12½ lb kegs | 7½ |
| In Oil, 25 lb tin pails | 7½ |
| In Oil, 12½ lb tin pails | 8 |
| In Oil, 1, 2, 3 and 5 lb tin cans, ass't | 9 |
| Red Lead and Litharge: | |
| In 100 lb kegs | 7 |
| In 25 and 50 lb kegs | 7¼ |
| In 12½ lb kegs | 7½ |
| In lots of less than 500 lbs, ½¢ ₱ lb advance over above prices of White and Red Lead and Litharge. | |

Lead, American. Terms: On lots of 500 lbs and over, 60 days, or 2% for cash if paid in 15 days from date of invoice.

### Zinc, Dry—

| | ₱ lb |
|---|---|
| American, dry | 5⅛@5⅝ |
| Red Seal (French process) | .6¾@7 |
| Green Seal | 7¼@7½ |
| German Red Seal (French process) | 7 @7¼ |
| Green Seal | 7½@7⅞ |
| White Seal | 8¼@9 |
| French, Red Seal | 8⅜@8⅞ |
| Green Seal | 10⅜@10½ |

### Dry Colors—

| | ₱ lb |
|---|---|
| Black, Carbon | 6½@10 |
| Black Drop, American | 3½@8 |
| Black Drop, English | .5 @15 |
| Black, Ivory | .16 @20 |
| Lamp, commercial | .4 @6 |
| Blue, Celestial | .4 @6 |
| Blue, Chinese | .30 @32 |
| Blue, Prussian | .28 @30 |
| Blue, Ultramarine | .3½@15 |
| Brown, Spanish | ½@1 |
| Carmine, No. 40 | $3.10@3.25 |
| Green, Chrome, ordinary | .3½@5 |
| Green, Chrome, pure | .17 @25 |
| Ocher, American | ₱ ton $8.50@16.00 |
| American Golden | 2½@3¼ |
| French | 1¼@2 |
| Foreign Golden | 3 @4 |
| Orange Mineral, English | .10 @12 |
| French | .12¾@13 |
| German | .12 @13 |
| American | 9 @10 |
| Red, Indian, English | 4½@6 |
| American | 3 @3¼ |
| Red, Turkey, English | 4 @10 |
| Red, Tuscan, English | 7 @10 |
| Red, Venetian, Amer. | ₱ 100 lb $0.50@1.25 |
| English | ₱ 100 lb $1.15@1.60 |
| Sienna, Italian, Burnt and Powdered | .3 @9 |
| Italian, Raw, Powdered | .3 @7 |
| American, Raw | .1½@2 |
| American Burnt and Pow'd | .1½@2 |
| Talc, French | ₱ ton $18.00@25.00 |
| American | ₱ ton 15.00@25.00 |
| Terra Alba, French | ₱ 100 lb .90@1.00 |
| English | ₱ 100 lb .80@1.00 |
| American ... | ₱ 100 lb, No. 1, .75@.80 |
| American ... | ₱ 100 lb, No. 2, .60@.65 |
| Umber, T'key, Bnt, & Pow | .2¾@3 |
| Turkey, Raw and Powdered | .2¾@3 |
| Burnt, American | 1½@2 |
| Raw, American | 1½@2 |
| Yellow, Chrome, Pure | .12¾@15 |
| Vermilion, American Lead | .7 @25 |
| Quicksilver, bulk | .65 @.. |
| Quicksilver, bags | @66 |
| English, Imported | @70 |
| Chinese | $0.90@1.00 |


# THE IRON AGE

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# Current Hardware Prices.

**General Goods.**—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

**Special Goods.**—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

**Range of Prices.**—A range of prices is indicated by means of the symbol @. Thus 33⅓ @ 33⅓ & 10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

**Names of Manufacturers.**—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued annually, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

**Standard Lists.**—"The Iron Age Standard Hardware Lists" contains the list prices of many leading goods.

**Additions and Corrections.**—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

## Adjusters, Blind—

Columbian and Domestic.....33⅓%
North's .....10%
Upson's Patent, ₱ gro., $29.90.....10%
Zimmerman's—See Fasteners, Blind.

### Window Stop—

Ives' Patent.....10%
Ives' Stop Bead Screws and Washers .....10%
Taplin's Perfection.....10%

## Ammunition—See *Caps, Cartridges, Shells, &c.*

## Anti—Rattlers—

Fernald Mfg. Co. Burton Anti-Rattlers, ₱ doz. pairs, Nos. 1, $0.75; 2, $0.60; 4, $1.00; 5, $0.50.
Fernald Quick Shifter, ₱ doz. pairs .....$2.00@$3.00

## Anvils—American—

Eagle Anvils.....₱ lb @8 ¢
Hay-Budden, Wrought.....9½@9¾ ¢
Trenton .....₱ lb 9½@9¾ ¢

### Imported—

Swedish Solid Steel Paragon, ₱ lb .....10@10½ ¢
Swedish Solid Steel Sisco, Superior, ₱ lb.....10@10½ ¢
Peter Wright & Sons, ₱ lb, 84 to 349 lb, 11 ¢; 350 to 600 lb, 11½ ¢.

## Anvil, Vice and Drill—

Millers Falls Co., $18.00.....15&10%

## Apple Parers—See *Parers, Apple, &c.*

## Aprons, Blacksmiths'—

Livingston Nail Co.....10%

## Augers and Bits—

*Com. Double Spur....75&10@80%*
*Jennings' Patn., Bright.65&10@70%*
*Black Lip or Blued...65@65&5%*
*Boring Mach. Augers.....70%*
*Car Bits, 12-in. twist.....40&10%*
Ford's Auger and Car Bits.....40&5%
Ft. Washington Auger Co., Conard's .....35%
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip. R. Jennings' list, 25&7½%
No. 30, R. Jennings' list.....50%
Russell Jennings'.....25&10&2½%
L'Hommedieu Car Bits.....15%
Mayhew's Countersink Bits.....45%
Pugh's Black.....20%
Pugh's Jennings' Pattern.....35%
Snell's Auger Bits.....60%
Snell's Bell Hangers' Bits.....60%
Snell's Car Bits, 12-in. twist.....60%
Snell's King Auger Bits.....50%
Swan's .....65&10@70
Swan's, Jennings' Pattern.....50%
Wright's Jennings' Bits.....50%

## Bit Stock Drills—See *Drills, Twist.*

## Expansive Bits—

Clark's Pattern, No. 1, ₱ doz., $26; No. 2, $18.....60&10%
Ford's, Clark's Pattern...60&5@60&10%
C. E. Jennings & Co., Steer's Pat..25%
Lavigne Pat., small size, $18.00; large size, $26.00.....60&10%
Swan's .....60%

## Gimlet Bits—

*Per gro.*
*Common Dbl. Cut.....$3.00@3.25*
*German Pattern, Nos. 1 to 10, $4.75; 11 to 13, $5.75*

## Hollow Augers—

*Bonney Pat., per doz..$5.50@6.00*
Ames .....20&10%
Universal .....20

## Ship Augers and Bits—

*Ship Augers.....40&10@—%*
Ford's .....33⅓&5%
C. E. Jennings & Co.:
L'Hommedieu's .....6?
Watrous' .....33⅓&7?
Snell's .....48%

## Awl Hafts—See *Handles, Mechanics' Tool.*

## Awls—

*Brad Awls:*
*Handled .....gro. $2.75@3.00*
*Unhdld. Shldered...gro.63@66¢*
*Unhandled, Patent..gro.66@70¢*
*Peg Awls:*
*Unhandled, Patent..gro. 31@34¢*
*Unhdld. Shldered..gro. 65@70¢*
*Scratch Awls:*
*Handled, Com...gro. $3.50@4.00*
*Handled, Socket..gro.$11.50@12.00*

## Awl and Tool Sets—See *Sets, Awl and Tool.*

## Axes—

*Single Bit, base weights: Per doz.*
*First Quality.....$4.75@5.00*
*Second Quality.....$4.25@4.50*
*Double Bit, base weights:*
*First Quality.....$7.00@7.50*
*Second Quality.....$6.50@6.75*

## Axle Grease—See *Grease, Axle.*

## Axles—Iron or Steel.

*Concord, Loose Collar...4¼@4½¢*
*Concord, Solid Collar....4½@5 ¢*
*No. 1 Common, Loose...3½@4 ¢*
*No. 1½ Com., New Style.4¼@4¾¢*
*No. 2 Solid Collar.....4¼@4¾¢*
*Half Patent:*
*Nos. 7, 8, 11 and 12.....70%*
*Nos. 13 to 14.....70%*
*Nos. 15 to 18...70&10@70&10&5%*
*Nos. 19 to 22...70&10@70&10&5%*

## Boxes, Axles—

*Common and Concord, not turned .....lb., 5@6¢*
*Common and Concord, turned, lb., 6@7¢*
*Half Patent.....lb., 9½@10¢*

## Bait—Fishing—

Hendryx:
A Bait.....20%
B Bait.....25%
Competitor Bait.....20&5%

## Balances—Sash—

Caldwell new list.....50&10%
Pullman .....50&10%

### Spring—

*Light Spring Balances.60@60&5%*
Chatillon's:
Light Spg. Balances.....50@50&10%
Straight Balances.....40@40&10%
Circular Balances.....50&10%
Large Dial.....30%

## Barb Wire—See *Wire, Barb.*

## Bars—Crow—

*Steel Crowbars, 10 to 40 lb.... per lb., 2¼@2½¢*

### Towel—

No. 10 Ideal, Nickel Plate..₱ gro. $8.50

## Beam, Scale—

*Scale Beams.....40%*
Chattillon's No. 1.....30%
Chatillon's No. 2.....40%

## Beaters, Carpet—

Holt-Lyon Co.:
No. 12 Wire Coppered ₱ doz. $0 80; Tinned .....$0.85
No. 11 Wire Coppered ₱ doz. $1.15; Tinned .....$1.20
No. 10 Wire Tinned.....₱ doz. $1.50

## Beaters Egg—

Dover Stamping & Mfg. Co.:
Genuine Dover, per gro., No. 1, Tumbler Size, $7.50; No. 2, Family Size, $7.50; No. 3, Extra Family Size, $24.00; No. 4, Hotel Size, $30.00.
Holt-Lyon Co.:
Holt, per doz., No. 5, Jap'd $0 80; No. A, Jap'd, $1.15; No. B, Jap'd, $1.85; No. 6, Jap'd, $1.65.
Lyon, Jap'd, per doz., No. 2, $1.35.
Taplin Mfg. Co.:
Improved Dover, per gro., No. 60, $6.00; No. 75, $6.50; No. 100, $7.00; No. 102, Tin'd, $8.50; No. 150, Hotel, $15.00; No. 152, Hotel Tin'd, $17.00; No. 200, Tumbler, $8.50; No. 202, Tumbler Tin'd, $9.50; No. 300, Mammoth, per doz., $25.00.

## Bellows—

*Blacksmith, Standard List:*
*Split Leather.....60&10&5%*
*Grain Leather.....50@50&10%*

### Hand—

| *Inch..* | *6* | *7* | *8* | *9* | *10* |
|---|---|---|---|---|---|
| *Doz..* | *$5.00* | *5.50* | *6.00* | *6.50* | *7.50* |

### Molders—

| *Inch..* | *10* | *12* | *14* | *16* |
|---|---|---|---|---|
| *Doz..* | *$7.50* | *9.00* | *12.00* | *15.00* |

Net Prices.

## Bells—Cow—

*Wrought Cow Bells.....75%*
Jersey .....75&10%
Texas Star.....50%

### Door—

Home, R. & E. Mfg. Co.'s.....55&10%

### Hand—

*Polished, Brass.....60@60&10%*
*White Metal.....60@60&10%*
*Nickel Plated.....50&10%*
*Swiss .....50&10%*
Cone's Globe Hand Bells.....33⅓@35%

### Miscellaneous—

*Farm Bells.....lb., 2¼@2½¢*
*Church and School....60@60&10%*

## Belting—Leather—

*First Quality, Ex. Hy., Strictly Short Lap.....60&10%*
*Standard .....70&10@70&10&5%*
*Light Double.....75&10%*
*Cut Leather Lacing.....50%*
*Leather Lacing Sides, per sq. ft. 23@24¢*

### Rubber—

*Competition (Low Grade), 70&10@75%*
*Standard .....60&10@70%*
*Best Grades.....40@50%*

## Bench Stops—See *Stops, Bench*

## Benders and Upsetters, Tire—

Green River Tire Benders and Upsetters .....20%

## Bicycle Goods—

John S. Leng's Son & Co.'s 1908 list:
Chain, Parts, Spokes.....50%
Tubes .....60%

## Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

## Blocks Tackle—

*Common Wooden.....75@75&5%*
B. & L. B. Co.:
Boston Wood Snatch, 50%; Eclipse Steel, 75%; Hollow Steel, 50&10%; Star Wire Rope, 50%; Tarbox Metal Snatch, 50%; Tarbox New Style Steel, 50&10%; Wire Rope Snatch, 50%.
Lane's Patent Automatic Lock and Junior .....30%
See also Machines, Hoisting.

## Boards, Stove—

*Paper and Wood Lined.....55%*
*Embossed .....55%*

## Boards, Wash—

See *Washboards.*

## Bobs, Plumb—

Keuffel & Esser Co.....33⅓&10%

## Bolts Carriage, Machine, &c,—

*Common Carriage (cut thread): ⅜ x 6 and smaller.....75&5%*
*Larger and longer.....70&5%*
*Phila. Eagle, $3.00 list...80@— %*
*Bolt Ends, with C. & T. Nuts, 70&10%*
*Machine (Cut Thread): ⅜ x 4 and smaller.....75&10%*
*Larger and longer.....70&10%*

### Door and Shutter—

*Cast Iron Barrel, Japanned, Round Brass Knobs:*

| *Inch ...* | *3* | *4* | *5* | *6* | *8* |
|---|---|---|---|---|---|
| *Per doz..* | *$0.30* | *.35* | *.45* | *.60* | *.80* |

*Cast Iron Spring Foot, Jap'd:*

| *Inch .....* | *6* | *8* | *10* |
|---|---|---|---|
| *Per doz.....* | *$1.20* | *1.50* | *2.25* |

*Cast Iron Chain, Flat, Japanned:*

| *Inch .....* | *6* | *8* | *10* |
|---|---|---|---|
| *Per doz.....* | *$1.00* | *1.40* | *1.65* |

*Cast Iron Flat Shutter, Jap'd, Brass Knobs:*

| *Inch .....* | *6* | *8* | *10* |
|---|---|---|---|
| *Per doz.....* | *$0.75* | *.95* | *1.25* |

*Wrought Barrel Japanned. 80&10@80&10&5%*
*Barrel Bronzed.....60&10%*
*Spring .....70&10@70&10&10%*
*Shutter .....50&5@50&10&5%*
*Square Neck.....75@75&10%*
*Square .....70&10&10@80%*
Ives' Mortise.....10%
Ives' Wrought Metal.....10%

### Expansion—

F. H. Evans' Crescent.....40@60%
Richards Mfg. Co .....55&10%
Star Expansion Bolt Co.:
Star, Lag Screw Type..60&10&5&2½%
Star, Wood Screw Type.....40%
Star, Machine, Single Wedge....60%
Star, Machine, Double Wedge....60%
Steward & Romain Mfg. Co.:
Style No. 13, Double.....60%
Style No. 1, Single.....60%
Style No. 100, Dbl. Jaw, Single..55%
Lag Screw.....66⅔%

### Plow and Stove—

*Plow .....65&5@70%*
*Stove .....85@85&5%*

### Tire—

*Common Iron.....80%*
*Norway Iron.....80%*
American Screw Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84 82½%
Bay State, list Dec. 28, '99.....80%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84...82½%
Eclipse, list Dec. 28, '99.....80%
Russell, Burdsall & Ward Bolt & Nut Co.:
Empire, list Dec. 28, '99.....80%
Norway Phila., list Oct. '84.....80%
Eagle .....82½%
Shelton Co.:
Tiger Brand, list Dec. 28, '99....80%
Phila., Eagle, list Oct. 16, 1884..82½%
Upson Nut Co.:
Tire Bolts.....72½%

## Borers, Bung—

*Borers Bung, Ring, with Handle:*

| *Inch.....* | *1¼* | *1½* | *1¾* | *2* |
|---|---|---|---|---|
| *Per doz...* | *$4.80* | *5.60* | *6.40* | *8.00* |
| *Inch.....* | | *2¼* | | *2½* |
| *Per doz.....* | | *$8.65* | | *11.50* |

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.75; No. 3, $2.50 each.....25%

## Boxes, Mitre—

C. E. Jennings & Co.....25%
Langdon, New Langdon and Langdon Improved. 20&10%; Langdon Acme .....15&10%
Perfection .....40%
Seavey .....45%

## Braces—

*Comman Ball, American....$1.50*
Barber's .....50&10&10@50&10%
Fray's Genuine Spofford's.....60%
Fray's No. 61, 166, 206, 614.....50%
C. E. Jennings & Co.....50&5%
Mayhew's Ratchet.....60%
Mayhew's Quick Action Hay Pat...50%
Millers Falls Drill Braces.....25&10%
P., S. & W. Co., Peck's Pat....60&10%

## Brackets—

*Wrought Steel.....75&10&5@80%*
Bradley Metal (Clasp...80&10@50&10&—%
Griffin's Pressed Steel.....75@75&10%
Griffin's Folding Brackets.....70&10%
Taplin Victor Handy Egg Beater Bracket .....₱ doz. $1.50

## Bright Wire Goods—See *Wire and Wire Goods.*

## Broilers—

Kilbourne Mfg. Co.....75&20%
Wire Goods Co.....75%

## Buckets, Galvanized—

| *M'fr's list, price per gross. Quart..* | *10* | *12* | *14* | |
|---|---|---|---|---|
| *Water, Reg...* | *26.85* | *29.50* | *33.50* | 10@14&65% |
| *Water, Hvy...* | *41.35* | *48.00* | *52.00* | |
| *Fire, Rd. Btm.* | *32.00* | *34.65* | *38.65* | |
| *Well .....* | *37.35* | *41.35* | *45.35* | |

## Pull Rings—See *Rings, Bull.*

## Butts—Brass—

*Wrought, High List, Oct..6.'06.65%*
Cast Brass, Tiebout's.....40&10%

### Cast Iron—

*Fast Joint, Broad....40&10@50%*
*Fast Joint, Narrow...40&10@50%*
*Loose Joint.....70&10@75%*
*Loose Pin.....70&10@75%*
*Mayer's Hinges.....70@70&5*
*Parliament Butts.....70@70&5*

### Wrought Steel—

*Bright.*
*Light Narrow, Light Reversible .....70&5%*
*Reversible and Broad..70&5%*
*Loose Joint, Narrow, Light Inside Blind, &c.....70%*
*Back Flaps, Table Chest.65%*
*Japanned.*
*Light Narrow, Loose Pin, 40&5%*
*Light Narrow, Ball Tip..60%*
*Broad .....40&5%*
*Steeple Tipped.....70%*
*Ball Tipped.....70%*

Extra, 10—

## Cages, Bird—

Hendryx Brass: Series 3000, 5000, 1100, net list; 1200, 15%; 200, 300, 900 ..... 30%
Hendryx Bronze: Series 700, 800....30%
Hendryx Enameled.....35%

## Calipers—See *Compasses.*

## Calks, Toe and Heel—

*Blunt, 1 prong, per 100 lb., $3.50@$3.85*
*Sharp, 1 prong, per 100 lb., $4.06@$4.35*
Burke's, 1 pg. Blunt Toe, 3¾¢; 2 pg. Blunt Toe, 4¼¢; 1 pg. Sharp Toe, 4¼¢; 2 pg. Sharp, 4¾¢; Blunt Heel, 4¼¢; Sharp Heel.....4¾¢
Lautier, Blunt, 4@4¼¢; Sharp, 4½@4¾¢
Perkins', Blunt, ℔ lb, 3.65¢; Sharp, 4.15¢

## Can Openers—

See *Openers, Can.*

## Caps, Percussion—

*Eley's E. B.....52@55¢*
*G. D.....per M 35¢*
*F. L.....per M 40@42¢*
*G. E.....per M. 48@50¢*
*Musket .....per M 62@63¢*

### Primers—

*Berdan Primers, $2 per M..20&5%*
*Primer Shells and Bullets..15&10%*
*All other primers per M. $1.52@1.60*

## Carpet Stretchers—

See *Stretchers, Carpet.*

## Cartridges—

*Blank Cartridges:*
*32 C. F., $5.50.....10&5%*
*38 C. F., $7.00.....10&5%*
*22 cal. Rim, $1.50.....10&5%*
*32 cal. Rim, $2.75.....10&5%*
*B. B. Caps, Con. Ball, Swgd. $1.90*
*B. B. Caps, Round Ball.....$1.40*
*Central Fire.....25%*
*Target and Sporting Rifle.15&5%*
*Primed Shells and Bullets.15&10%*
*Rim Fire, Sporting.....50%*
*Rim Fire, Military.....15&5%*

## Casters—

*Bed .....65&10@70%*
*Plate .....60@60&5%*
*Philadelphia .....70&10@75%*
Acme, Ball Bearing.....35%
Gem (Roller Bearing).....70&10&10&5%
Steel Gem (Roller Bearing).....70%
Standard Ball Bearing.....45%
Yale (Double Wheel) low list...40&10%

## Cattle Leaders—

See *Leaders, Cattle.*

## Chain, Proof Coil—

*American Coil, Straight Link:*

| 3-16 | ¼ | 5-16 | ⅜ | ½ | ⅝ |
|---|---|---|---|---|---|
| $7.70 | 5.10 | 4.15 | 3.50 | 3.30 | 3.10 |

⅝-1 1⅛ to 1¼ inch.
$3.00 3.10
*In cask lots, deduct 25¢.*
*German Coil.....70%*
*German Pattern Coil:*
*6-0 to 1.....70&10&5%*
*2 and 3.....60&10&10@70%*
*4, 5 and 6.....50&10@50&10&5%*

## Halter—

*Halter Chains.....60&5@60&10%*
*German Pattern Halter Chains, list July 24, '97....60&10&5@70%*
Covert Mfg. Co.:
Halter .....35&5%

## Cow Ties—

See *Halters and Ties.*

## Trace, Wagon, &c.—

*Traces, Western Standard: 100 pr.*
*6½—6-3, Straight, with ring. $28.00*
*6½—6-2, Straight, with ring. $29.00*
*6½—8-2, Straight, with ring. $32.00*
*6½—10-2, Str'ght, with ring. $37.00*
*NOTE.—Add 2c per pair for Hooks Twist Traces: add per pair for Nos. 2 and 3, 2c: No. 1, 3c; No. 0, 4c to price of Straight Link.*
*Eastern Standard Traces, Wagon Chain, &c...60&10&10@60&10&5%*

## Miscellaneous—

*Jack Chain, list July 10, '93:*
*Iron .....60&10&5@60&10&10%*
*Brass .....65%*
*Safety and Plumbers' Chain.75%*
*Gal. Pump Chain....lb., 4½@5%*
Bridgeport Chain Co.:
Triumph Halter and Coil.35&2½@40
Triumph Dog.....50&10@60
Brown Halter and Coil....45@50&5
Covert Mfg. Co.:
Breast, Halter, Heel, Rein, Stallion .....40%
Oneida Community:
American Halter, Dog and Kennel Chains .....55&2½@60
Niagara Dog Leads and Kennel Chains .....45@50&5
Wire Goods Co.:
Dog Chain.....70
Universal Ddl.-Jointed Chain..70

## Chain and Ribbon, Sash—

Oneida Community:
Steel Chain.....60%
Pullman:
Bronze Chain, 60%; Steel Chain, Copperd .....60&10%
Sash Chain Attachments, per set 8¢
Aluminoy Sash Ribbon, per 100 ft.....$2.00@$5.00
Sash Ribbon Attachments, per set .8¢

## Chalk—

*Carpenters' Blue.....gro., 50¢*
*Carpenters' Red.....gro., 50¢*
*Carpenters' White.....gro., 40¢*

## Checks, Door—

Bardsley's .....45%
Pullman, per gro.....$54.00
Russwin .....33⅓%

## Chests, Tool—

American Tool Chest Co.:
Boys' Chests, with Tools.....55%
Youths' Chests, with Tools.....40%
Gentlemen's Chests, with Tools..30%
Farmers', Carpenters, etc., Chests, with Tools .....20%
Machinists' and Pipe Fitters' Chests, Empty.....45%
Tool Cabinets.....45%
C. E. Jennings & Co.'s Machinists' Tool Chests.....7½%

## Chisels—Socket Framing and Firmer

*Standard List.....80&10@—%*
Buck Bros.....30%
C. E. Jennings & Co.:
Socket Firmer No. 10.....25&7½%
Socket Framing No. 15.....25&7½%
Swan's .....66⅔@70%
L. & I. J. White & Co.....30@30&5%

## Tanged—

*Tanged Firmers.....30&5@35%*
Buck Bros.....30
C. E. Jennings & Co. Nos. 191, 181..25%
L. & I. J. White Co.....25&5%

## Cold—

*lb.*
*Cold Chisels, good quality. 13@15¢*
*Cold Chisels, fair quality. 11@12¢*
*Cold Chisels, ordinary.... 9@10¢*

## Chucks—

Almond Drill Chucks.....35%
Almond Turret Six-Tool Chuck.....40
Beach Pat each $8.00.....35&5%
Empire .....25%
Blacksmiths' .....25%
Jacobs' Drill Chucks.....35%
Pratt's Positive Drive.....25%
Skinner Lathe Chucks:
Independent .....35%
Universal, Reversible Jaws.....35%
Universal, Com. Style Jaws.....40
Combination, Reversible Jaws....35%
Combination, Com. Style Jaws...40%
Round Body or Box Body, 2 Chuck Jaws .....25%
Geared Scroll Chucks.....25%
Drill Chucks:
New Model, 25%; Geared Pattern, 25%; Skinner Patent, ...25%
Positive Drive.....40%
Planer Chucks.....20%
Standard .....45%
Drill Press Vises.....30%
Face Plate Jaws.....35%
Standard Tool Co.:
Improved Drill Chuck.....45%
Union Mfg. Co.:
Combination, Nos. 1, 2, 3, 4, 5, 6, 7, 8 and 17, 40%; No. 21.....35%
Scroll Combinations, Nos. 83 and 84 .....30%
Geared Scroll, Nos. 33, 34 and 35..25%
Independent Iron, Nos. 18 and 318.35%
Independent Steel, No. 64.....25%
Union Drill, Nos. 000, 00, 100, 101, 102, 103, 104.....35%
Union Czar Drill.....25%
Universal, 11, 12, 16, 17, 13, 14, 15..40%
Universal No. 42.....35%
Iron Face Plate Jaws, Nos. 28, 30, 48 and 50.....35%
Steel Face Plate Jaws, Nos. 70 and 72 .....30%
Westcott Patent Chucks:
Lathe Chucks.....50%
Little Giant Auxiliary Drill.....50%
Little Giant Double Grip Drill...50%
Little Giant Drill, Improved.....50%
Oneida Drill.....50%
Scroll Combination Lathe.....50%
Whitaker Mfg. Co.:
National Drill.....25%

## Clamps—

Carriage Makers', Star, P., S. & W. Co. .....50%
Besly, Parallel.....33⅓&10%
Hammer & Co.:
Adjustable .....20&5%
Carriage Makers' H. P. Screw.40&5%
Myers' Hay Rack.....50%
Lineman's Swedish Neverturn.....65%
Saw Clamps, see Vises, Saw Filers'

## Cleaners, Drain,

Iwan's Champion, Adjustable.....50%
Iwan's Champion, Stationary.....40%

## Sidewalk—

American Fork & Hoe Co.:
Star, ℔ doz., Socket, $4.00; Shank .....$3.50
Shank, ℔ doz., X 7½, $3.50; Shank, X 8.....$3.75

## Cleavers, Butchers'—

Foster Bros.....30%
Fayette R. Plumb.....30
L. & I. J. White Co.....30%

## Clippers, Horse and Sheep—

Chicago Flexible Shaft Co.:
1902 Chicago Horse, each..$10.75
20th Century Horse, each...$5.00
Lightning Belt Horse, each.$15.00
Chicago Belt Horse, each..$20.00
Stewart's Enclosed Gear Roll Bearing Horse, each....$6.75
Stewart's New Model Sheep Shearing Machine, each.$12.75
Stewart Enclosed Gear Shearing Machine, No. 8, each..$9.75
} 20%

## Clips, Axle—

*Regular Styles, list July 1, '05, 80&80&10%*

## Cloth and Netting, wire

See *Wire, &c.*

## Cocks, Brass—

*Hardware list:*
*Plain Bibbs, Globe, Kerosene, Racking, Liquor, Bottling, &c .....75%*
*Compression Bibbs.....70%*

## Coffee Mills—

See *Mills, Coffee.*

## Collars, Dog—

Nickel Chain, Walter B. Stevens & Son's list .....40%
Leather, Walter B. Stevens & Son's list .....

## Compasses, Dividers, &c.

*Ordinary Goods.....70&10@75%*

## Conductor Pipe,—

*L. C. L. to Dealers:*

| | Gal. Steel. | Charcoal. | Copper. |
|---|---|---|---|
| *Northeastern:* | | | |
| | 70&10% | 50&10&7½% | 50&10% |
| *Eastern:* | | | |
| | 70&10&5% | 50&10&7½% | 50&10% |
| *Central:* | | | |
| | 75&5% | 60% | 50&10% |
| *Northwestern:* | | | |
| | 75&2½% | 60% | 50&10% |
| *Western:* | | | |
| | 70&7½% | 50&12½% | 50&5% |
| *Tennessee:* | | | |
| | 70&10% | 50&12½% | 50&10% |
| *Southern:* | | | |
| | 70% | 50&12½% | 50&5% |
| *Southwestern:* | | | |
| | 70% | 50&5% | 50&5% |

*Terms, 60 days: 2% cash 10 days. Factory shipments generally delivered.*
See also Eave Troughs.

## Coolers, Water—

L. & G. Mfg. Co.:

| Gal. | 2 | 3 | 4 | 6 | 8 |
|---|---|---|---|---|---|
| Galvanized, ea. | $1.85 | $2.00 | $2.25 | $2.90 | $3.90 |

Galvanized, Lined, side handles,

| Gal. | 2 | 3 | 4 | 6 | 8 |
|---|---|---|---|---|---|
| Each | $1.95 | $2.15 | $2.40 | $3.30 | $4.15 |

White Enameled.....10%
Agate Lined.....10%

## Coppers' Tools—

See *Tools, Coopers'.*

## Coppers, Soldering—

*Soldering Coppers, 3 lb. to pair and heavier, 21½¢; lighter than 3 lb. to pair.....23½¢*

## Cord—Sash—

*Braided, Drab.....lb. 35¢*
*Braided, White, Com., Nos. 8 to 12, 21¢; No. 7, 21½¢; No. 6, 22½¢. In lots of 12 doz. or over, 1 cent less per pound.*
*Cable Laid Italian, lb., No. 18. 37¢*
*Italian, lb., A, No. 18, 25¢; B, 22¢*
*Common India.....lb., 11@11½¢*
*Cotton Sash Cord, Tw'ted. 18@20¢*
*Patent Russia.....lb....20¢*
*Cable Laid Russia.....lb...21¢*
*India Hemp, Br'd'd.....lb...21¢*
*India Hemp, Twisted...lb. 13@14¢*
*Patent India, Twisted..lb...17¢*
Pearl Braided, cotton, No. 6, ℔ lb. 20½¢; No. 7, 19½¢; Nos. 8 to 12, 19½¢, in 12 doz. to 100 doz. lots.
Eddystone, Braided, Nos. 8 to 12, 26¢; 7, 26½; 6, 27½¢.
Harmony Cable Laid Italian, Nos. 7 to10.....℔ lb 23¢
Pullman:
Wire Sash Cord.....10%
Sash Cord Attachments, per 100..$2.00
Samson, Nos. 8 to 12:
Braided, ℔ lb., Drab Cotton, 55¢; Italian Hemp, 40¢@50¢; Linen, 65¢; White Cotton, 50¢; Spot Cord.....50¢
Massachusetts, White...℔ lb 40¢
Massachusetts, Drab...℔ lb 45¢
Phoenix, White, Nos 8 to 12....27¢
} 15%
Silver Lake, per lb.:
A, Drab, 45¢; A, White, 40¢; B, Drab, 40¢; B, White, 35¢; Italian Hemp, 40¢; Linen....57½¢
See also Chain and Ribbon.

## Wire, Picture—

*Full Length.....90@—%*
*Short Length.....90&20@—%*
Hendryx Standard Wire Picture Cord, old list, 85&10%
Turner & Stanton Co. Wire Picture Cord .....90%

## Cradles—

*Grain .....50%*

## Crayons—

*White Round Crayons, Cases, 100 gro., $8.00, $8.50, $9.00 and $10.00 according to grade.*
Zelnicker's Lumber: ℔ gro.
White and Purple, Indelible....$7.50
Blue, Red, Green, Yellow and Terra Cotta, $6.50; Black.....$4.50
Giant Lumber, 5¼ in. x 15-16 in. round, all colors, $12.00; Indelibles, $14.00; Blacks.....$10.00
Genuine Soapstone, Metal Workers', 5 in. x ¼ in. Round, $2.50; 5 in. x ¼ in. Square, $1.75; 5 x ½ x 3-16, $2.50; 5 x 1¼ x 3-16.....$3.00
Suremark, Black, $2.25; Blue, Red and Yellow.....$2.50

## Crooks, Shepperds'—

American Fork & Hoe Co.:
Montana .....℔ doz. $1.50

## Crow Bars—See *Bars, Crow.*

## Cultivators—

American Fork & Hoe Co.:
Victor Garden.....50&10%

## Cutlery, Table—

International Silver Company:
No. 12 Medium Knives, 1847 ℔ doz. $3.50
Star, Eagle, Rogers & Hamilton and Anchor..... ℔ doz. $2.00
Wm. Rogers & Son.... ℔ doz. $2.50

## Cutters—Glass—

H. H. Mathew Co.....40%
Red Devil .....60
P. Mfg. Co.....40
Woodward .....50

## Meat and Food—

Enterprise:

| No. | 1 | 2 | 3 | 4 | 4½ | 4½ | 4½ |
|---|---|---|---|---|---|---|---|
| Each | $5 | $7 | $1 | $1.2 | $2.5 | $5.0 | $6 |

Enterprise:

| No. | 7 | 10 | 12 | 22 | 32 | |
|---|---|---|---|---|---|---|
| Each | $2.25 | $2.75 | $4.50 | $6 | 25&25&7½% | |
| No. | 202 | $3.50 | | | .....40&7½% | |

P. S. & W. Co.:
Ideal .....40@40&5%

Hales .....60&5%
Little Giant.....℔ doz. 40@50%

| Nos. | 305 | 310 | 312 | 320 | 322 |
|---|---|---|---|---|---|
| | $35.00 | $48.00 | $44.00 | $72.00 | $68.00 |

New Triumph No. 605, ℔ doz. $24.00, 40%
Russwin Food, No. 1, $24.00; No. 2, $27.00; 3, $42.00.....45&10&10%
$15.00 $18.00
Enterprise Beef Shavers.....25@30%

## Slaw and Kraut—

Henry Disston & Sons:
Slaw and Kraut Cutters.....35%
Corn Graters.....30%
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife....℔ doz. $3.00
Combined Slaw Cutter and Corn Grater .....℔ doz. $4.00

## Tobacco—

*All Iron, Cheap...doz, $4.25@4.50*
Enterprise .....25@30%
National, ℔ doz., No. 1, $21; No. 2, $18 .....40%

## Diggers, Post Hole, &c—

Disston's:
Rapid, ℔ doz., $24.00.....25%
Samson, ℔ doz., $31.00.....25%
Iwan's Pat. Post Hole and Well Auger .....40%
Vaughan Pattern Post Hole Augers, ℔ doz., $7.00
Perfection Post Hole Diggers, ℔ doz. .....$8.50
Split Handle Post Hole Diggers, ℔ doz., $7.50
Hercules Pattern, ℔ doz.....$9.50
Kohler's, ℔ doz., Universal, $14.00; Little Giant, $12.00; Hercules, $10.00; Invincible, $9.00; Rival, $8.50; Pioneer.....$7.50
Never-Break Crucible Steel Post Hole Diggers .....60%

## Dividers—See *Compasses.*

## Drawing Knives—

See *Knives, Drawing.*

## Dressers Emery Wheel—

Sterling Emery Wheel Dressers.....35%
Sterling Wheel Dresser Cutters.....35%

## Drills and Drill Stock—

*Blacksmith's Common Drilling Machines .....$1.50@1.75*
Breast, Millers Falls.....15&10%
Breast, P., S. & W.....33⅓%
C. & C. Ratchet.....25%
Reversible Ratchet Die Stocks....25%
Goodell Automatic Drills.50&10@60&10%
Millers Falls Automatic Drills, Graves', per doz., Nos. 1, $4.86; 2, $8.16.
Millers Falls Automatic Drills.33⅓&10%
Ratchet, Curtis & Curtis.....25%
Ratchet, Parker's.....40%
Ratchet, Weston's.....40%
Ratchet, Weston's, Style H Improved .....40@40&5%
Ratchet, No. 012.....40@40&5%
Ratchet, Celebrated.....40@40&5%
Ratchet, Whitney's, P., S. & W.. 40&10@50%
Whitney's Adjustable, No. 10, $12.00, 33⅓%

## Twist Drills—

*Bit Stock.....70@70&5%*
*Taper and Straight Shank. 60&10@70%*

## Drivers, Screw—

*Screw Driver Bits, per doz. 45@50¢*
Balsey's Screw Holder and Driver, ℔ doz., 2½-in., $6; 4-in., $7.50; 6-in., $9 .....50%
Buck Bros.' Screw Driver Bits.....30%
Champion .....50%
Disston's .....70%
Fray's Hol. H'dle Sets, No. 3, $12..50%
Ford's Brace Screw Drivers....40&10%
Gay's Double Action Ratchet.....35%
Goodell's Auto.....65@65&10%
Mayhew's Black Handle.....40%
Mayhew's Monarch.....40%
Millers Falls, ℔ doz., Nos. 11, $9.95; 12, $13.73; 20, $8.17; 21, $8.46; 41, $13.43; 42, $17.21.
Smith & Hemenway Co., Neverturn, 66⅔%; Elmora, 60%; Star, 30&10%
Swan's:
Nos. 7565 to 7568, 60%; No. 7540, 40&10%.

## Eave Trough, Galvanized—

| *Territory.* | *Gal. Steel.* | *Copper.* |
|---|---|---|
| *Northeastern* | *75&10&5%* | *50&10%* |
| *Eastern* | *80%* | *50&10%* |
| *Central* | *80&10&5%* | *50&10%* |
| *Northwestern* | *80&10&5%* | *50&10%* |
| *Western* | *80&5%* | *50&5%* |
| *Tennessee* | *80&5* | *50&10%* |
| *Southern* | *75&10%* | *50&5%* |
| *Southwestern* | *75&10&2½%* | *50&5%* |

*Terms, 2% for cash. Factory shipments generally delivered.*
*Note. Lower prices are made in some sections.*
See also Conductor Pipe and Elbows.

## Elbows and Shoes—

*Factory shipments, all territories: Galv. Steel, Galv. C. I. and Copper.*
*Sizes 2, 3, 4 .....80%*
*Sizes 1½, 2½, 3½, 5, 6...60&10%*
*No. 26 .....50%*
*No. 24 .....25%*
*Copper Elbows.....50%*

## Elbows, Stove Pipe—

Edwards, Standard Blue...40&10&10%
Edwards, Royal Blue .....40&10&10%
Reeves, Dover Flat Crimp..40&10&5

## Emery, Turkish—

| | ¼ to ½: | ⅝ to 2: | Flour. |
|---|---|---|---|
| *Kegs* ....lb. | 5 ¢ | 5½¢ | 3½¢ |
| *½ Kegs*....lb. | 5½¢ | 5¾¢ | 3¾¢ |
| *¼ Kegs*....lb. | 5½¢ | 6 ¢ | 4 ¢ |

*10-lb. cans, 10 in case....6½¢ 7 ¢ 6 ¢*
*10-lb. cans, less than 10.....10 ¢ 10 ¢ 8 ¢*
*Less quantity..10 ¢ 10 ¢ 8 ¢*
*NOTE.—In lots 1 to 3 tons a discount of 10% is given.*

### Extensions, Bit—
Ford's Auger Bit Extensions....40&5%

### Ext.actors, emon Juice—
—See *Squeezers, Lemon.*

## Fasteners, Blind—
Zimmerman's Jap'd and Galv., 50 & 5%; Bronze and Plated.....50%
Walling's .....50%
Upson's Patent.....40%

### Cord and Weight—
Ives, ₱ gro., $1.08.....10%
Titan, ₱ gro., $0.66.....10%

### Corrugated—
Acme Corrugated Fasteners.....70%

### Faucets—
*Cork Lined.....50&10@60%*
*Metallic Key, Leather Lined, ..60&10@70%*
*Red Cedar.....40&5@40&10&5%*
*Petroleum .....70&10@75%*
B. & L. B. Co.:
Metal Key.....60&10%
Star .....60%
West Lock.....50&10%
John Sommer's Peerless Tin Key....40%
John Sommer's Boss Tin Key.....50%
John Sommer's Victor Mtl. Key.50&10%
John Sommer's Duplex Metal Key..60%
John Sommer's Diamond Lock.....40%
John Sommer's I.X.L. Cork Lined..50%
John Sommer's Reliable Cork Lined..50&10%
John Sommer's Chicago Cork Lined.60%
John Sommer's O. K. Cork Lined...50%
John Sommer's No Brand, Cedar....50%
John Sommer's Perfection, Cedar....40%
Self Measuring:
Enterprise, Self Measuring and Pump, ₱ doz., $36.00.....40&10%
Lane's, ₱ doz., $36.00.....40&10%
National Measuring, ₱ doz. $36.40&10%

### Felloe Plates—
See *Plates, Felloe.*

### Files— Domestic—
*List Nov. 1, 1899.*
*Best Brands.....70&10@75&10%*
*Standard Brands.....75&10@80%*
*Lower Grade....75&10&10@80&10%*
Gold Medal.....70%
McCaffrey's American Standard, 60&10&10%

### Imported—
*Stubs' Tapers, Stubs' list, July 24, '97.....33⅓@40%*

### Fixtures, Fire Door—
Richards Mfg. Co.:
Universal, No. 103; Special, No. 104 .....$3.75
Fusible Links, No. 96.....50%
Expansion Bolts, No. 107.....60&10%

### Grindstone—
*Net Prices:*

| *Inch* | *15* | *17* | *19* | *21* |
|---|---|---|---|---|
| *Per doz* | *$3.60* | *3.85* | *4.15* | *4.65* |

Peck, Stow & Wilcox Co.:

| In | 15 | 17 | 19 | 21 | 24 | |
|---|---|---|---|---|---|---|
| | $4.00 | 4.40 | 4.75 | 5.50 | 6.50 | 30% |

Reading Hardware Co.....60%

### Fodder Squeezers—
See *Compressors.*

### Forks—
American Fork & Hoe Co.:
Iowa Dig-Ezy Potato.....70&5%
Hay, Regular, 3-tine....45&20&12½%
Hay, Regular, 4-tine.....60&7½&5%
Champion, Hay.....60&12½
Acme, Hay.....60&20
Manure, Regular, 4-tine.....65&5%
Manure, Regular, 5 and 6 tine...70
Champion, Manure.....65&5
Columbia, Manure.....70%
Acme, 4-tine.....60&10&5
Round Shoulder Header, 4-tine..65%
Champion, Header.....65
Dakota, Header.....65%
Kansas Header.....65
Wood, Barley.....35&5
Steel, Barley.....66⅔
Columbia, Spading.....70&7½&5%

### Frames— Wood Saw—
*White, S'g't Bar, per doz.75@80¢*
*Red, S'g't Bar, per doz.$1.00@1.25*
*Red, Dbl. Brace, per doz.$1.40@1.50*

### Freezers, Ice Cream—

| *Qt* | *1* | *2* | *3* | *4* | *6* |
|---|---|---|---|---|---|
| *Each* | *$1.25* | *$1.60* | *$1.90* | *$2.20* | *$2.80* |

### Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

### Fry Pans—See *Pans, Fry.*

### Fuse— *Per 1000 Feet.*
*Hemp .....$2.75*
*Cotton .....3.20*
*Waterproof Sgl. Taped..3.65*
*Waterproof Dbl. Taped..4.40*
*Waterproof Tpl. Taped..5.15*
10&2½%

## Gates, Molasses and Oil—
*Stebbins' Pattern.....80@80&5%*

### Gauges—
*Marking, Mortise, &c. .50@50&10%*
Corner Stylus Co.
Marking, Mortise, &c.....50&50&10%
Disston's Marking, Mortise, &c. 67½%
Wire, Brown & Sharpe's.....33⅓%
Wire, Morse's.....25%
**Wire, P., S. & W. Co.....33⅓%**

### Gimlets— Single Cut—
*Numbered assortments, per gro.*
*Nail, Metal, No. 1, $2.00; 2, $2.30*
*Spike, Metal, No. 1, $4.00; 2, $4.30*
*Nail, Wood Handled, No. 1, $2.30; 2, $2.60*
*Spike, Wood Handled, No. 1, $4.30; 2, $4.60*

### Glass, American Window
See *Trade Report.*

### Glasses, Level—
Chapin-Stephens Co.....65@65&10%

### Glue, Liquid Fish—
*Bottles or Cans, with Brush, 25&10@50%*
Elwell's .....40%

### Grease, Axle—
*Common Grade...gro.$6.00@$6.50*
Dixon's Everlasting, 10-lb. pails, ea. 85¢; in boxes, ₱ doz., 1 lb, $1.20; 2 lb.....$2.00
Helmet Hard Oil.....25%

### Griddles, Soapstone—
Pike Mfg. Co.....33⅓@33⅓&10%

### Grinders—
Pike Mfg. Co.:
Hand and Foot Power, Pyko Nos. 1, 2, 3; Pyko Primo; Pyko Peerless; Pyko Spiral (foot power).33⅓%
Mower Knife and Tool, $5.00..40&10%
Royal Mfg. Co.:
Alundum Grinding Machines, each, Nos. 01, $1.75; 1A, $2.50; 10, $5.00 .....30%
Alundum Sickle Grinders, each, Nos. 20, $5.00; 20A, $6.00; 20A Combined, $6.50.....30%
Alundum Disc Grinders, each, $2.50 .....30%

### Grindstones—
Pike Mfg. Co.:
Improved Family Grindstones, ₱ inch, ₱ doz., $2.00.....33⅓%
Richards Mfg. Co., Eli and Cycle, Ball Bearing, mounted.....40%

### Grips, Nipple—
Perfect Nipple Grips.....40&10&2%

## Halters and Ties—
*Cow Ties.....65@65&10%*
Bridgeport Chain Co.:
Triumph Coil and Halters.35&2½@40%
Brown Coil and Halters...45@50&5
Brown Cow Ties.....50&5@50&10&5
Brown Tie Outs.....70&10@75&5
Covert Mfg. Co.:
Web .....30&2%
Jute Rope.....35
Sisal Rope.....20%
Cotton Rope.....45%
Hemp Rope.....45%
Oneida Community:
Am. Coil and Halters.....40@40&5%
Am. Cow Ties.....45@50%
Niagara Coil and Halters...45@50&5%
Niagara Cow Ties.....45&5@50&10&5%

### Hammers—
### Handled Hammers—
Heller's Machinists'....55&10@55&10&5%
Heller's Farriers.....40&5@40&10&5%
Peck, Stow & Wilcox Co.:
Crucible Steel.....40&10@50%
Farriers' .....40&10@50%
Riveting .....40&10@50%
Machinists' .....66⅔@5%
Blacksmiths' .....50%
Fayatte R. Plumb:
A. E. Nail.....40&2½@40&12½%
Eng. and B. S. Hand.50&10&5@60&5%
Machinists' Hammers.....60&10&5%
Rivet and Tinners'.40&7½@40&12½&5%
Victor Magnetic Tack, ₱ gro....$7.75

### Heavy Hammers and Sledges—
*Under 3 lb., per lb., 50¢...80&10%*
*3 to 5 lb., per lb., 40¢...80&10&10%*
*Over 5 lb., per lb., 30¢.....*
*Over 5 lb., per lb., 30¢.80&10&10%*

### Handles—
### Agricultural Tool Handles
*Axe, Pick, &c....60&10@60&10&5%*
*Hoe, Rake, &c.....40%*
*Fork, Shovel, Spade, &c.:*
*Long Handles.....40%*
*D Handles.....40%*

### Cross-Cut Saw Handles—
Atkins' .....40
Champion .....50%
Disston's .....50%

### Mechanics' Tool Handles—
*Auger, assorted...gro.$3.00@$3.50*
*Brad Awl.....gro.$1.65@$1.75*
*Chisel Handles, Ass'd, per gro.:*
*Tanged Firmer, Apple, $2.40@$2.65; Hickory.....$2.15@2.40*
*Socket Firming, Apple, $1.75@$1.95; Hickory.....1.60@1.75*
*Socket Framing, Hickory, $1.60@$1.75*
*File, assorted.....gro.$1.30@$1.40*
*Hammer, Hatchet, &c., 60&10@60&10&5%*
*Hand Saw, Varnished, doz., 80¢ 85¢; Not Varnished.....65@75¢*
*Plane Handles:*
*Jack, doz., 30¢; Fore, doz...45¢*
Chapin-Stephens Co.:
Carving Tool.....30@30&10%
Chisel .....60@60&10%
File and Awl.....60@60&10%
Saw and Plane.....30@30&10%
Screw Driver.....30@30&10%
Millers Falls Adj. and Ratchet Auger Handles .....15&10%
Nicholson Simplicity File Handle.... ₱ gro. $0.85@$1.50
J. L. Osgood:
Indestructible File and Tool, ₱ gro., No. 1, $8.00; No. 2, $8.50; No. 3, $9.00; No. 4, $9.50; No. 5, $10.00.....gro. lots 10%
W. A. Zelnicker Supply Co.:
Hammer, ₱ doz., 12 in., $2.00; 14 in., $2.00; 16 in., $2.30; 18 12., $2.50; 20 in., $2.70; 22 in., $3.00; 24 in., $3.30; 26 in., $3.50; 30 in., $3.80.
Sledge, ₱ doz., oval, 30 in., $3.80; octagon, 30 in., $3.80; oval, 36 in., $4.00; octagon, 36 in., $4.00.
Axe, ₱ doz., 28 to 34 in., $5.60; 36 in., $5.80.
Adze, ₱ doz., 36 in., $5.80; 36 in., $7.80.
Pick, ₱ doz., R. R., 36 in., $8.00; coal, 34 in., $5.80.
Hatchet, ₱ doz., 12 to 14 in., $2.00.
50%

### Hangers—
*NOTE.—Barn Door Hangers are generally quoted per pair, without track and Parlor Door Hangers per double set with track, &c.*
Chicago Spring Butt Co.:
Friction .....25%
Oscillating .....25%
Big Twin.....25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door.....50%
Elevator .....30%
Railroad .....50%
Cronk & Carrier Mfg. Co.:
Loose Axle.....60&10%
Roller Bearing.....70%
Griffin Mfg. Co.:
Solid Axle, No. 10, $12.00..60&10%
Roller Bearing, No. 11, $15.00, 60&10%
Roller Bearing, Ex. Hy., No. 22, $18.00.....60&10%
Bull Dog, $24.00.....70%
Lane Bros. Co.:
**Parlor, Ball Bearing, $1.00;** Standard, $3.15; No. 105, $2.85; New Model, $2.80; New Champion per set of 4 Hangers, complete with track.....$2.25
Barn Door, Standard.....60&10%
Hinged .....net $6.08
Covered .....60&5%
Special .....70&5%
Trolley Hangers and track...50%
Lawrence Bros.:
Cleveland .....70&7½%
Clipper, No. 75.....60%
Crown .....55&10%
Cyclone, No. 40.....net $6.50
Tandem, No. 50.....net $7.50
New York.....55&10%
Trolley, No. 30, ₱ pair.....$1.25
McKinney Mfg. Co.:
Roller Bearing, Nos. 1 and 2..70%
Anti-Friction .....60%
Hinged Hangers, King Charm.60%
Richards Mfg. Co.:
Hangers, Nos. 47, 48, 147, 247, 60&5%
Pioneer Wood Track, No. 3..$2.25
Roller B'r'g St'l Track No. 12.$2.20
Roller B'r'g St'l Track No. 13.$2.50
Roller B'r'g, Nos. 39, 41, 43. 70&7½%
Hero, Adj. Track No. 19..50&10%
Adjustable Track Tandem Trolley Track No. 16.....50&10%
Seal, Steel Track No. 8.....$2.25
Auto Adj. Track No. 22..50&5%
Trolley B. D. No. 17, $1.25; F. D. No. 120, $2.25; No. 121, $2.45; No. 150.....$2.50
Safety Underwriters F. D. No. 101 .....50%
Tandem No. 44..2½ and 3 60&10%
Palace, Adjustable Track No. 132 .....50&5%
Royal, Adjustable Track No. 122 .....50&10%
Ives' Wood Track No. 1.....$2.25
Trolley B. D. No. 20.....50&10%
Trolley B. D. No. 24, $1.30; No. 27, $1.40; No. 28.....$1.60
Roller Bearings, Nos. 37, 38, 39, 41, 43, 44, Sizes 1 and 2.70&7½%
Anti-friction, No. 42; No. 44, sizes 2½ and 3.....60%
Hinged Tandem No. 48....60&5%
Folding Door B. B. Swivel No. 135 .....40%
Taylor & Boggis F'y Co.'s Kidder's Roller Bearing, ₱ doz., 4 in., $12.00; 5 in., $14.00..40&10%
Myers' Stayon Hangers.....60%
Extra 5@10% often given.

### Hangers— Garment—
Pullman Trouser, ₱ gro., No. 1 $9.00; No. 4, $24.00; No. 5, $16.50; No. 8, Black Enamel, $7.50; No. 10, $21.00; No. 12, $8.00; No. 15, Rods, $9.00; No. 18, Loops.....$10.00
Victor Folding.....₱ gro. $9.60

### Gate—
Myers' Patent Gate Hangers, ₱ doz. net .....50%

### Joist and Timber—
Lane Bros. Co.....35%

### Hasps—
Griffin's Security Hasp.....50&10%
McKinney's Perfect Hasp, ₱ doz..60%

### Hatchets—
*Regular list, first qual.40&12½@—*
*Second quality.....50&10&5@—*

### Heaters, Carriage—
Clark, No. 5, $1.25; No. 5B, $1.50; No. 3, $1.75; No. 3D, $2.00; No. 7D, $2.25; No. 3E, $2.50; No. 1, $3.00.....25%
Clark Coal, ₱ doz., $0.75.....20%

### Hinges—
### Blind and Shutter Hinges
*Surface Gravity Locking Blind:*
*Doz. Sets with Fastenings, No. 1, $0.70; No. 3, $1.25; No. 5, $2.65.*
*Mortise Shutter.....80%*
*Mortise Reversible Shutter...80%*
North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%
Charles Parker Co.....70@75%
Parker Wire Goods Co.
Hale & Benjamin Automatic Blind Hinges .....20%
Hale's Blind Awning Hinges, No. 110, for wood, $9.00; No. 111, for brick, $9.00.....20%
Reading's Gravity.....60%
Stanley's Steel Gravity Blind Hinges, No. 1647½, ₱ doz. sets, without screws, $0.95; with screws, $1.25.
Wrightsville Hardware Co.:
O. S., Lull & Porter.....75&5%
Acme, Lull & Porter.....75%
Queen City Reversible.....75%
Shepard's Noiseless, Nos. 60, 65, 55 .....75&5%
Niagara, Gravity Locking, Nos. 1, 3 & 5.....75&5%
Clark's O. P., No. 1.....75&10%
Clark's O. P., Nos. 3 and 5....75&5%
Tip Pat'n, No. 1.....75&10%
Clark's No. 3.....75&5%
Buffalo Gravity Locking, Nos. 1, 3 & 5.....70&10&5%
Shepard's Double Locking.....75%
Champion Gravity Locking.....75&5%
Pioneer .....75&10%
Empire .....65%
W. H. Co.'s Mortise Gravity Locking, No. 2.....60&10%

### Gate Hinges—
*Clark's or Shepard's—Doz. sets:*

| *No.* | *1* | *2* | *3* |
|---|---|---|---|
| *Hinges with L't'chs.* | *$2.00* | *2.70* | *5.00* |
| *Hinges only.....* | *1.25* | *1.90* | *3.50* |
| *Latches only.....* | *.70* | *.75* | *.35* |

*New England:*
*With Latch.....doz..@$2.00*
*Without Latch.....doz..@$1.60*
*Reversible Self-Closing:*
*With Latch.....doz..@$1.75*
*Without Latch...doz. ...@$1.35*
*Western:*
*With Latch.....doz. $1.75*
*Without Latch.....doz..$1.15*
Wrightsville Hardware Co.:
Shepard's or Clark's Hinges and Latches, Hinges only or Latches only, Nos. 1, 2 or 3.....70%

### Miscellaneous—
Griffin Mfg. Co., Fleur de Lis Surface Hinges, ₱ doz. prs.....$1.00

### Pivot Hinges—
Bommer Bros. Pivot, Ball Bearing .....40%
Lawson Mfg. Co. Matchless.....30%

### Spring Hinges—
*Holdback, Cast Iron...$6.75@$7.00*
*Non-Holdback, C'st Iron$6.50@$6.75*
J. Bardsley:
Bardsley's Non-Checking Mortise Floor Hinges.....40%
Bardsley's Patent Checking.33⅓%
Bommer Bros.:
Spring Butt Hinges.....40%
Surface Floor, Ball Bearing .....40%
Mortise Floor, Ball Bearing.40%
Lavatory Hinges.....40%
Non-Holdback Screen Door, Nos. 2000 and 900.....40%
Holdback Screen Door, No. 999.....₱ gro. $9.00
Chicago Spring Butt Co.:
Chicago Spring Hinges.....25%
Triple End Spring Hinges....50%
Chicago (Ball Bearing) Floor.50%
Garden City Engine House...25%
Keene's Saloon Door.....25%
Columbian Hardware Co.:
Acme, Wrought Steel.....30%
Acme, Brass.....25%
American .....30%
Columbia, ₱ gr., No. 14, $9.00; No. 18.....$25.00
Columbia, Adj., No. 7, ₱ gr.$12.00
Gem, new list.....30%
Clover Leaf and Acorn, per gro. .....$12.00
Oxford, new list.....30%
Floor Spring Hinges.....65&10%
Columbian Steel.....65&10%
Lawson Mfg. Co.:
Matchless Spring Hinges.....30%
Matchless Jamb Hinges.....30%
Richards Mfg. Co.:
Superior Double Acting Floor Hinges .....40%
Shelby Spring Hinge Co.:
Buckeye All Steel Holdback Screen Door.....₱ gr. $9.00
Chief Ball Bearings Floor Hinge .....50%
Ball Bearing Door.....25%
No. 777, Sheet Steel Holdb'k, ₱ gr. pr.....$9.00
Standard Mfg. Co.:
Champion Double Acting Door Hinge .....25&10&10%
Standard Double Acting Floor Hinge .....25&10&10%
Superior Spring Hinge Co.:
Superior Floor Hinges.....33⅓%
Spring Hinges.....33⅓%
Extra 10% often given on most of these Hinges.

### Wrought Iron Hinges—
*Strap and T Hinges, &c., list February 10, 1908:*
*Light Strap Hinges..50&10%*
*Heavy Strap Hinges..60&5%*
*Light T Hinges.....50%*
*Heavy T Hinges.....40%*
*Extra Hvy. T Hinges.50&10%*
*Hinge Hasps.....33⅓%*
*Cor. Heavy Strap....60&5%*
*Cor. Ex. Heavy T...50&10%*
Extra 10&7½%.
*Screw Hook and Strap.* *6 to 12 in..lb.3½¢* *1¼ to 20 in..lb.3¼¢* *22 to 36 in..lb.3 ¢*
*Screw Hook and Eye:*
*⅜ to 1 inch.....lb.6¼¢*
*⅝-inch .....lb.7½¢*
*½-inch .....lb.8½¢*

### Hitchers, Stall—
Covert Mfg. Co., Stall Hitchers..30&2%

### Hods— Coal—
*M'f'gr's list, price per gross:*

| *Inch* | *15* | *16* | *17* | *18* |
|---|---|---|---|---|
| *Galv. Open....* | *$35* | *$39* | *$42* | *$46* |
| *Jap. Open...* | *26* | *28* | *31* | *35* |
| *Galv. Funnel...* | *43* | *48* | *52* | *56* |
| *Jap. Funnel....* | *33* | *36* | *59* | *43* |

10&7½&5%

### Masons' Etc.
Cleveland Wire Spring Co.:
Steel Brick, No. 162.....each $1.05
Steel Mortar, No. 158.....each $1.35

### Hoes— Eye—
*Scovil and Oval Pattern, 60&10@60&10&10%*
*Grub, list Feb. 23, 1899, 70&10@70&10&10%*
D. & H. Scovil....27½%
Am. Fork & Hoe Co. (Scovil Pattern)....60&5%

### Handled—
Cronk's Weeding, No. 1, $2.00; No. 2, $2.50
Star Double Bit....$2.50
American Fork & Hoe Co.:
Regular, Cotton....75&10&5&2½%
Crescent, Cultivator....75&2½%
Mattock, Senior....70
Mattock, Junior....70%
Sprouting....50%
Tobacco, Harper's....66⅔&15&10
Warren....55&10&10&5%
Ivanhoe....65&15&10%
Cultivator, B B 6....70&10&10&5%
Cultivator, B B 6½....70&10&10&5%
Weeding, Acme....72½&10&2½%
Scuffle, Lightning....60&5%

### Hoisting Apparatus—
See *Machines, Hoisting.*

### Holders— Bit—
Angular, ℔ doz. $24.00....45&10%

### Door—
Bardsley's, Iron, 40%; Brass and Bronze....25%
Empire....50%
Pullman....25%
Richards Mfg. Co.: No. 117, Ever-ready, 40%; Nos. 118, 119, Sure Grip....50%
Superior....33⅓%

### File and Tool—
Nicholson File Holders and File Handles....33⅓@40%

### Fruit Jar—
Triumph Fruit Jar Holder, ℔ gross, $18.00; ℔ doz....$2.00

### Trace and Rein—
Fernald Double Trace Holder, ℔ doz. pairs....$1.25
Dash Rein Holder, ℔ doz....$1.25

### Hones—Razor—
Pike Mfg. Co., Belgian and Swaty, 50%; German....33⅓%

### Hooks—Cast Iron—
Bird Cage, Reading....40%
Clothes Line, Reading List....40%
Coat and Hat, Reading....45&20%
Coat and Hat, Wrightsville....60&5%
Harness, Reading List....40%

### Wire—
*Belt, Nos. 1 to 15....75&10@80%*
*Wire C. & H. Hooks..80@80&10%*
Bradley Metal Clasp Wire, Coat and Hat, 75&10@80%; Ceiling..75&10@80%
Columbian Hdw. Co., Gem....75&10%
Parker Wire Goods Co., King..75&10%
Wire Goods Co.:
Acme, 60&10%; Chief, 70&10%; Crown, 75%; Czar, 65&10%; V Brace, 75%; Czar Harness, 50%; Ceiling, 75%.

### Wrought Iron—
*Box, 6 in., per doz., $0.90; 8 in., $1.15.*
*Cotton....doz. $1.25@$1.50*
Wrought Staples, Hooks, &c.—See Wrought Goods.

### Miscellaneous—
*Hooks, Bench,* see *Stops, Bench.*
*Bush, Light, doz., $6.20; Medium, $6.75; Heavy, $7.65*
*Grass, best, all sizes, per doz., $2.75@$3.00*
*Grass, common grades, all sizes, per doz....$1.25@$1.50*
*Whiffletree....lb. 5¼@6¢*
*Hooks and Eyes:*
*Brass....60@60&10%*
*Malleable Iron....70@70&10%*
Covert Mfg. Co. Gate and Scuttle Hooks....40%
Turner & Stanton Co. Cup and Shoulder....85&10%
Bench Hooks—See Bench Stops.
Corn Hooks—See Knives, Corn.

### Horse Nails—
See *Nails, Horse.*

### Horseshoes—
See *Shoes, Horses.*

### Hose, Rubber—
*Garden Hose, ¾-inch:*
*Competition....ft. 6@6½¢*
*3-ply Guaranteed....ft. 8½@9¢*
*4-ply Guaranteed....ft. 9½@12¢*
*Cotton Garden, ¾-in., coupled:*
*Low Grade....ft. 8@ 9c*
*Fair Quality....ft. 10@11¢*

### Irons— Sad—
*From 4 to 10....lb. 2½@2¾¢*
*B. B. Sad Irons....lb. 3¼@3½¢*
*Mrs. Potts', cents per set:*

| | Nos. 50 | 55 | 60 | 65 |
|---|---|---|---|---|
| *Jap'd Cups* | .86 | 93 | 96 | 93 |
| *Tin'd Cups* | .91 | 88 | 1.01 | 98 |

*New England Pressing..lb. 3¾@4¼¢*

### Bar and Corner—
Richards Mfg. Co., Bar, 60&10%; Corner....60%

### Pinking—
*Pinking Irons....doz. 80@85¢*

### Irons, Soldering—
See *Coppers.*

### Jacks, Wagons—
Covert Mfg. Co.:
Auto Screw....30&2%; Steel, 45%
Lockport....50%
Lane's Steel....30&5%
Richards' Tiger Steel No. 130...50&10%
Smith & Hemenway Co.'s....25%

### Ladder—
Richards Mfg. Co., Ladder Jacks..50%

### Jointers—
Pike Mfg. Co., Saw Jointers, $7.00..40%

### Kettles—
*Brass, Spun, Plain....20@25%*
Enameled and Cast Iron—See Ware, Hollow.

### Knives—

### Butcher, Kitchen, &c.—
Foster Bros.' Butcher, &c....30%
Wilkinson Shear & Cutlery Co....60%

### Corn—
Columbian Cutlery Co., Wilcut Brand Knives and Hooks....60%
American Fork & Hoe Co.:
Easy Cut, ℔ doz., No. 10 C H...$2.10
Easy Cut, ℔ doz., No. 10 B C H..$2.20
Acme, ℔ doz....$2.35
Dent, ℔ doz....$2.35
Adjustable, Serrated, ℔ doz....$1.90
Serrated, ℔ doz....$1.85
Yankee, No. 1 C H....$1.35
Yankee, No. 2 C H....$1.15

### Drawing—
*Standard List....80&10@—%*
C. E. Jennings & Co., Nos. 45, 46, 25&7½%
Jennings & Griffin, Nos. 41, 42, 66⅔&7½%
Swan's....66⅔@70%
Watrous....16⅔%
L. & I. J. White....20&5@25%

### Hay and Straw—
*Serrated Edge, per doz. $5.00@5.50*
Iwan's Sickle Edge....℔ doz. $9.50
Iwan's Serrated....℔ doz. $10.00

### Miscellaneous—
*Farriers'....doz. $2.60@3.55*
Wostenholm's....℔ doz. $3.00@3.25

### Knobs—
*Base, 2½-inch, Birch or Maple, Rubber Tip....gro. $1.25@1.40*
*Carriage, Jap., Drive, all sizes, gro. 35@40¢*
*Door, Mineral....doz. 65@70¢*
*Door, Por. Jap'd....doz. 70@75¢*
*Door, Por. Nickel..doz. $2.05@2.15*
Bardsley's Wood Door, Shutters, &c. 15%

### Lacing, Leather—
See *Belting, Leather*

### Ladders, Store, &c.
Lane's Store....25%
Myers' Noiseless Store Ladders....50%
Richards Mfg. Co.:
Improved Noiseless, No. 112....50%
Climax Shelf, No. 113....50%
Trolley, No. 109....50%

### Ladles, Melting—
L. & G. Mfg. Co., Melting and Plumbers'....25%
P., S. & W....40&10%
Reading....60%

### Lamps,—
Hammer's M. I. Hand....45%

### Lanterns—Tubular—
*Regular, No. 0....doz. $4.35@4.50*
*Side Lift, No. 0....doz. $4.60@4.75*
*Hinge Globe, No. 0. doz. $4.60@4.75*
*Other Styles....40@40&10%*

### Bull's Eye Police—
*3-inch....$3.75@4.00*

### Latches— Thumb—
*Roggin's Latches, Jap'd, with Screws....doz. 35@40¢*

### Door—
Cronk & Carrier Mfg. Co., No. 101, ℔ doz. $2.00
Richards' Bull Dog, Heavy, No. 125....50&5%
Richards' Trump, No. 127....$1.50

### Leaders, Cattle—
*Small....doz. 50¢; large, 60¢*
Covert Mfg. Co.:
Cotton, 45%; Hemp, 45%; Jute, 35%; Sisal, 20%.

### Leathers, Pump—
See *Pumps—*

### Lifters, Transom—
R. & E....10%

### Lines—
*Wire Clothes, Nos.* 18 19 20
*100 feet....$2.30 1.95 1.75*
*75 feet....$1.95 1.65 1.50*
Samson Cordage Works:
Solid Braided Chalk, Nos. 0 to 3..40%
Solid Braided Masons'....30%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50....℔ gr. 20%
Masons' Lines, Shade Cord, &c.; White Cotton, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50; Colors, No. 3½, $1.75; No. 4, $2.25; No. 4½, $2.75; Linen, No. 3½, $2.50; No. 4, $3.50; No. 4½, $4.50....20%
Tent and Awning Lines: No. 5, White Cotton, $7.50; Drab Cotton, $8.50....20%
Clothes Lines, White Cotton: 50 ft., $2.75; 60 ft., $3.25; 70 ft., $3.75; 75 ft., $4.00; 80 ft., $4.25; 90 ft., $4.75; 100 ft. $5.25....20%
Turner & Stanton Co.:
Solid Braided Chalk, Masons' and Awning Lines....40%
Clothes Lines, White Cotton....20
Shade Cord, Cotton or Linen....20

### Locks— Cabinet—
*Cabinet Locks....33⅓@33⅓@7%*

### Door Locks, Latches, &c.—
*NOTE.—Net Prices are very often made on these goods.*
Reading Hardware Co....40%
R. & E. Mfg. Co....10%

### Padlocks—
R. & E. Mfg. Co. Wrought Steel and Brass....75&10%

### Sash, &c.—
Ives' Patent:
Crescent....10%
Automatic Gravity Metal Sash, ℔ gro., $149.58....10
Window Ventilating....10%
Pullman Patent Ventilating Lock..25%
Reading Sash Locks....40%
Taylor Mfg. Co., Perfect Ventilating, ℔ doz....$0.75@$1.00

### Machines—Boring—
*Com. Upr't, without Augers, $2.00@2.25*
*Com. Angl'r, without Augers, $2.25@2.50*
Ford Auger Bit Co....$22.00
Jennings', Nos. 1 and 4....25&7½%
Millers' Falls....5.75
Snell's, Upright, $2.65; Angular, $2.90
Swan's Improved....40&10%

### Corking—
Reisinger Invincible Hand Power... ℔ doz. $48.00

### Fence—
Williams' Fence Machines....each, $5.50

### Hoisting—
Moore's Anti-Friction Chain Hoist.30%
Moore's Hand Hoist, with Lock Brake....20%
Moore's Cyclone High Speed Chain Hoist....25%

### Ice Cutting—
Chandler's....12½%

### Washing
Boss Washing Machine Co.: Per doz.
Boss No. 1....$57.00
Boss Rotary....$57.00
Champion Rotary Banner No. 1..$57.00
Standard Champion No. 1....$50.00
Standard Perfection....$27.00
Cincinnati Square Western....$33.00
Uneeda American, Round....$33.60

### Mallets—
*Hickory....45&5@50%*
*Lignumvitæ....45&5@50%*
*Tinners' Hickory and Apple-wood....doz. 45&5@50%*

### Mangers, Stable—
Swett Iron Works....50%

### Mats, Door—
Acme Flexible Steel....50%
Elastic Steel (W. G. Co.), new list.50%

### Mattocks—
See *Picks and Mattocks.*

### Milk Cans—See *Cans, Milk.*

### Mills, Coffee, &c.—
Enterprise Mfg. Co.:
Coffee....20@25%
Shell and Corn....25&10
National list Jan. 1, 1902....30%
Parker's Columbia and Victoria..33⅓
Parker's Box and Side....50&10%
Swift, Lane Bros. Co....30%

### Motors, Water—
Divine's Red Devil....30%

| $2.50 | 3.50 | 10.00 | 15.00....33⅓% |
|---|---|---|---|
| No. 1 | 2 | 3 | 4 |

Lippincott's:

| No.... | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| | $2.50 | 3.50 | 10.00 | 15.00..33⅓% |

Pike Mfg. Co., Tool and Knife Grinding....33⅓%

### Mowers, Lawn—
*NOTE.—Net prices are generally quoted*
*Cheapest, 10-in., $2.00; advance 10¢ for each size.*
*Cheap, 10-in., $2.25; advance 15@20¢ for each size.*
*Better Grade, 10-in., $3.00; advance 25¢ for each size.*

| | 12 | 14 | 16 | 18-in. |
|---|---|---|---|---|
| *High Grade...* | *$4.50* | *4.75* | *5.00* | *5.25* |

Continental....60%
Great American....70%
Great American Ball B'r'g, new list.70%
Quaker City....70%
Pennsylvania....60%
Pennsylvania, Jr., Ball Bearing....50&10&5%
Pennsylvania Golf....50%
Pennsylvania Horse....33⅓&5%
Pennsylvania Pony....40&5%

### Nails—
*Wire Nails and Brads. Miscellaneous....85&5@85&10%*
*Cut and Wire.* See *Trade Report.*
*Hungarian, Finishing, Upholsterers', &c.* See *Tacks.*

### Horse—

| Nos. | 6 | 7 | 8 | 9 | 10 | |
|---|---|---|---|---|---|---|
| Anchor | 23 | 21 | 20 | 19 | 18 | ..℔ lb. net, 12¢ |
| Coleman | 13 | 12 | 12 | 11 | 11 | net ℔ lb |
| New Haven.. | 23 | 21 | 20 | 19 | 18 | ..℔ lb. net, 12¢ |
| Livingston | 19 | 18 | 17 | 16 | 16 | ....10% |
| Western | | | | | | ℔ lb 8½¢ |

*Jobbers' Special Brands. per lb. 9¢*

### Picture—

| | 1½ | 2 | 2½ | 3 in. |
|---|---|---|---|---|
| *Brass Hd. gro.* | .45 | .55 | .60 | .70 |
| *Por. Head. gro.* | 1.10 | 1.10 | 1.10 | |

### Upholsters—
*Brass....30%*
*Plated....30&10%*

### Nippers—
See *Pliers and Nippers.*

### Nipples—
Standard Nipple Co.:
Wrought Pipe Nipples....80

### Nuts— *Blank or Tapped.*
*Cold Punched:* *Off List*
*Square....5.30¢*
*Hexagon....5.30¢*
*Square, C. T. & D....5.70¢*
*Hexagon, C., T. & D....6.50¢*
*Hot Pressed:* Off list.
*Square....5.80¢*
*Hexagon....6.30¢*

### Oakum—
*Best....lb. 6½¢*
*U. S. Navy....lb. 6 ¢*
*Navy....lb. 5 ¢*
*Plumbers' Spun Oakum..2¾@3 ¢*

### Oil—
Pike Mfg. Co., Stonoil....40%

### Oil Tanks—See *Tanks, Oil.*

### Oilers—
*Steel, Copper Plated....75%*
*Chase or Paragon:*
*Brass and Copper....50&10%*
*Zinc....65&10@70%*
*Railroad....60&10&10%*
Malleable, Hammers' Improved, Nos. 11, 12 and 13, 10%; Old Pattern, Nos. 1, 2, 3, 4, 50%.
American Tube & Stamping Co.:
Spring Bottom Cans....70@70&10%
Railroad Oilers, &c....60@60&10%
Maple City Mfg. Co.:
Spring Bottom Cans....70@70&10%
Railroad Oilers, &c....60@60&10%

### Openers—Packing Box—
Herculever, ℔ doz., $24....30%

### Can Openers—
*Per doz.*
*Sprague, Iron Handle....30@35¢*
*Sprague, Wood Handle....40¢*
*Sardine Scissors....$1.75@3.00*
Can and Bottle Openers, ℔ doz., net: Yankee, $0.75@$0.85; Little Gem, $0.50@$0.65; Nifty....$0.75

### Egg—
Hartigan Nickel Plate, ℔ doz., $2.00; Silver Plate, $4.00.

### Packing—
*Asbestos Packing. Wick and Rope, any quantity....18@20¢*

### Rubber—
*(Fair quality goods.)*
*Sheet, C. I....11@12¢*
*Sheet, C. O. S....11@12¢*
*Sheet, C. B. S....12@13¢*
*Sheet, Pure Gum....40@45¢*
*Sheet, Red....40@50¢*
Jenkins' '96, ℔ lb, 80¢....25%

### Miscellaneous—
*American Packing....lb. 7@10 ¢*
*Cotton Packing....lb. 16@25 ¢*
*Italian Packing....lb. 9@10¢*
*Jute....lb. 4@4¼¢*
*Russia Packing....lb. 9@10¢*

### Pails, Water, Well, &c.—
See *Buckets.*

### Paint—
Dixon's Silica-Graphite, in 1 gal. pails and 5 gal. kegs, 25%; packages of larger size....20%

### Pans— Dripping—
*Standard List....75&10@80%*
Edwards, Royal Blue....75%

### Fry—
*Common Lipped:*

| *Nos....* | *1* | *2* | *3* | *4* | *5* |
|---|---|---|---|---|---|
| *Per doz....* | *$0.75* | *0.85* | *0.95* | *1.15* | *1.30* |

### Refrigerator, Galva.—

| *Inch....* | *12* | *14* | *16* | *18* |
|---|---|---|---|---|
| *Per doz....* | *$1.75* | *2.25* | *2.80* | *3.15* |

### Paper—Building Paper
*Asbestos:* *lb.*
*Roll Board or Building Felt, 6 to 30 lb., per 100 sq. ft...2½¢*
*Roll Board or Building Felt, 3-32 and ⅛ in., 45 to 60 lb., per 100 sq. ft....3½¢*
*Mill Board, Sheet, 40 x 40 in., 1-32 to ½ in....3¢*
*Per roll.*
*Rosin Sized Sheathing: 500 sq. ft.*
*Light weight, 25 lbs. to roll, 48@58¢*
*Medium weight, 30 lbs. to roll. 56@70¢*
*Heavy weight, 40 lbs. to roll. 75@78¢*
*Black Water Proof Sheathing, 500 sq. ft., 1 ply, 65¢; 2 ply, 85¢; 3 ply, $1.10; 4 ply, $1.25.*
*Deafening Felt, 9, 6 and 3 sq. ft. to lb., ton....$54.50*
*Red Rope Roofing, 250 sq. ft. per roll....$1.75*

### Tarred Paper—
*1 ply (roll 400 sq. ft.), ton. $34.00@$38.00*
*2 ply roll 108 sq. ft....65¢*
*3 ply, roll 108 sq. ft....88¢*
*Slater's Felt (roll 500 sq. ft.)....80¢*

### Sand Paper and Cloth—
*Flint and Emery....50&10%*
*Garnet Paper and Cloth....25*

### Parers—Apple—
Goodell Co.:
Family Bay State....℔ doz. $15.00
Improved Bay State....℔ doz. $26.00
New Lightning....℔ doz. $7.00
Turn Table '98....℔ doz. $6.00
White Mountain....℔ doz. $5.00
Pocanoza Improved....each $7.50
Dandy....each $10.00
Eureka Improved....each $20.00
New Century....each $20.00
Ranger....each $30.00

Livingston Nail Co.:
Daisy ..... ℔ doz. $4.00
Little Star..... ℔ doz. $5.00
Rocking Table..... ℔ doz. $6.20
Reading Hardware Co.:
Advance ..... ℔ doz. $4.00
Baldwin ..... ℔ doz. $4.00
Reading 72..... ℔ doz. $3.25
Reading 78..... ℔ doz. $6.25

### Orange—
Goodell Co., Success.....each $20.00

### Potato—
Saratoga ..... ℔ doz. $7.00
White Mountain..... ℔ doz. $6.00

## Picks and Mattocks—
*(List Jan., 1908.)*
*List* ..... *75&10%*
Cronk's Handled Garden Mattock, ℔ doz., $3.00.....33⅓%

## Pinking Irons—
See *Irons, Pinking.*

## Pins, Escutcheon—
*Brass* ..... *50@50&10%*
*Iron, list Nov. 11, '85..60@60&10%*

## Pipe, Cast Iron Soil—
*Standard, 2-6 in.....70&10%*
*Extra Heavy, 2-6 in..75&10@80%*
*Fittings, Standard and Heavy, 80&10@85%*

## Pipe, Merchant—

| | Consumers, Steel. Blk. | Galv. | Carloads, Iron. Blk. | Galv. |
|---|---|---|---|---|
| | % | % | % | % |
| ⅛ and ¼ in. | 66 | 50 | 64 | .. |
| ⅜ in. | 68 | 54 | 66 | 52 |
| ½ in. | 70 | 58 | 68 | 56 |
| ¾ to 6 in. | 74 | 64 | 72 | 62 |
| 7 to 12 in. | 71 | 56 | 69 | 54 |

## Pipe, Vitrified Sewer—
*Carload lots.*
*Standard Pipe and Fittings, 8 to 24 in., f.o.b. factory:*
*First-class* ..... 87%
*Second-class* ..... 90%

## Pipe, Stove—

| Edwards' Nested: | Per 100 joints. C. L. | L. C. L. |
|---|---|---|
| 5 in., Standard Blue | $6.25 | $7.25 |
| 6 in., Standard Blue | 6.75 | 7.75 |
| 7 in., Standard Blue | 7.75 | 8.75 |
| 5 in., Royal Blue | 7.00 | 8.00 |
| 6 in., Royal Blue | 7.50 | 8.50 |
| 7 in., Royal Blue | 8.50 | 9.50 |
| Wheeling Corrugating Co.'s Nested: | | |
| 5 in., Uniform Color | $5.90 | $6.90 |
| 6 in., Uniform Color | 6.40 | 7.40 |
| 7 in., Uniform Color | 7.40 | 8.40 |

## Planes and Plane Irons—
### Wood Planes—
*Bench, first qual.....30@30&10%*
*Bench, second qual...40@40&10%*
*Molding* ..... *25@25&10%*
Chapin-Stephens Co.:
Bench, First Quality.....30%
Bench, Second Quality.....40%
Molding and Miscellaneous.....25%
Toy and German.....30%
Union ..... 60%

### Iron Planes -
Chaplin's Iron Planes.....60%
Union ..... 60%

### Plane Irons—
*Wood Bench Plane Irons, list Dec. 12, '06* ..... 25%
Buck Bros.....30%
Chapin-Stephens Co.....25%
Union .....50%
L. & I. J. White.....20&5@25%

## Planters, Corn, Hand—
Kohler's Eclipse..... ℔ doz. $7.50

## Plates—
*Felloe* ..... *lb. 3¾@4¼¢*
Avery Stamping Co.:
Standard Wrot. Steel Felloe Plates in 100 lb kegs, per 100 lb, ¾-in. to 1⅛-in., $4.00 net; 1¼-in. to 2-in., inclusive, $3.75 net.

## Steel Pipe Hook—
Never-Break ..... 75&10%

## Pliers and Nippers -
*Button Pliers....75&5@75&10&5%*
*Gas Burners, per doz., 5 in., $1.25 @$1.30; 6 in., $1.45, $1.50.*

| *Gas pipe..* | 7 | 8 | 10 | 12-in. |
|---|---|---|---|---|
| | *$2.00* | *$2.25* | *$2.75* | *$3.50* |

Acme Nippers.....50&5%
Cronk & Carrier Mfg. Co.:
American Button.....80%
Improved Button.....75&10%
Cronk's .....60%
No. 89 Linemen's.....50%
Stub's Pattern.....45
Combination and others.....33⅓%
Heller's Farriers' Nippers, Pincers and Tools.....40&5@40&10&5%
P., S. & W. Tinners' Cutting Nippers .....40%
Swedish Side End and Diagonal Cutting Pliers.....50%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds....10%

## Plumbs and Levels—
Chapin-Stephens Co.:
Plumbs and Levels.....30@30&10%
Chapin's Imp. Brass Cor..40@40&10%
Pocket Levels.....30@30&10%
Extension Slide .....30@30&10%
Machinists' Levels .....40@40&10%
Disston's Plumbs and Levels..60&10%
Disston's Pocket Levels .....60&10%
Stanley's Duplex .....35%
Woods' Extension.....33⅓%

## Points, Glaziers'—
*Bulk and 1-lb. papers....lb. 9 ¢*
*½-lb. papers.....lb. 9½¢*
*¼-lb. papers.....lb. 10 ¢*

## Police Goods—
*Manufacturers' Lists...25@25&5%*
Tower's .....25%

## Polish—Metal, Etc—
Ladd Co.:
Putzade Liquid, ℔ gro., ½ pts., $12.00; 1 pts., $20.00; 1 qts., $40.00; ℔ doz., ½ gals., $6.35; 1 gals., $12.00.
Prestoline Liquid, No. 1 (½ pt.), ℔ doz., $3.00; No. 2 (1 qu.), $9.00..40%
Prestoline Paste.....40%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, ℔ doz. 50¢; ℔ gro. $4.50; ½ lb boxes, ℔ doz. $1.25; 1 lb boxes, ℔ doz. $2.25.
U. S. Liquid, 8 oz. cans, ℔ doz., $1.25.
Barkeepers' Friend Metal Polish, ℔ doz., $1.75.

### Stove—
Black Eagle Benzine Paste, 5 lb cans, ℔ lb 10¢
Black Eagle, Liquid, ½ pt. cans.. ℔ doz. 75¢
Black Jack Paste, ¾ lb cans, ℔ gr. $9.00
Black Kid Paste, 5 lb can...each, $0.65
Ladd's Black Beauty Liquid, per 100 tins.....$6.75
Joseph Dixon, ℔ gr. $5.75.....10%
Dixon's Plumbago..... ℔ lb 8¢
Fireside ..... ℔ gr. $2.50
Gem, ℔ gr. $4.50.....10%
Japanese ..... ℔ gr. $3.50
Jet Black..... ℔ gr. $3.50
Peerless Iron Enamel, 10 oz. cans.. ℔ doz. $1.50

### Window Polish—
Benj. P. Forbes:
Glasbright, No. 2, gal pails, ℔ doz., $24.00; each, $2.50; 1 lb cans, each .....75¢
Glasbright Powder, bbls., ℔ lb..20¢

## Poppers, Corn—
*1 qt. Square..doz.$0.80; gro.$8.75*
*1 qt. Round..doz.$0.90; gro.$10.00*
*1½ qt. Square.doz.$1.20; gro..$12.00*
*2 qt. Square..doz.$1.50; gro..$15.00*

## Post Hole and Tree Augers and Diggers—
See also *Diggers, Post Hole, &c.*

## Posts, Steel—
Steel Fence Posts, each, 6 ft., 46¢; 6½ ft., 48¢; 7 ft., 50¢.
Steel Hitching Posts.....each $1.30

## Potato Parers—
See *Parers, Potato.*

## Pots, Glue—
*Enameled* ..... *40%*
*Tinned* ..... *30&10%*

## Powder—
*In Canisters:*
*Duck, 1 lb.....each 45¢*
*Fine Sporting, 1 lb....each 75¢*
*Rifle, ½-lb.....each 15¢*
*Rifle, 1 lb.....each 25¢*
*In Kegs:*
*12½-lb. kegs.....$3.50*
*25 lb. kegs.....$4.50*
King's Semi-Smokeless:
Keg (25 lb bulk).....$6.50
Half Keg (12½ lb bulk).....$3.50
Quarter Keg (6¼ lb bulk).....$1.90
Case 24 (1 lb cans bulk).....$8.50
Half case (1 lb cans bulk).....$4.50

| King's Smokeless: | Shot Gun. | Rifle. |
|---|---|---|
| Keg (25 lb bulk) | $12.00 | $15.00 |
| Half Keg (12½ lb bulk) | 6.25 | 7.75 |
| Quarter Keg (6¼ lb bulk) | 3.25 | 4.00 |
| Case 24 (1 lb cans bulk) | 14.00 | 17.00 |
| Half case 12 (1 lb c. bk) | 7.25 | 8.75 |

## Presses—
### Fruit, Wine and Jelly—
Enterprise Mfg. Co.....20@25%

### Seal Presses—
Morrill's No. 1, ℔ doz., $20.00.....50%

## Pruning Hooks and Shears
See *Shears.*

## Pullers, Nail, Etc.—
Cyclops .....50%
Miller's Falls, No. 3, ℔ doz., $12.00.. 33⅓&10%
Morrill's No. 1, Nail Puller, ℔ doz. $20.00 .....50%
Pearson No. 1, Cyclone Spike Puller, each $30.00.....50%
The Scranton Co. Case Lots:
No. 2B (large).....$5.50
No. 3B (small).....$5.00
Smith & Hemenway Co.:
Diamond B.....70%
Giant .....50%
Staple Pullers, Utica and Davison .....60%
Taylor Mfg. Co., Sampson Tack, ℔ doz.....$0.40

## Pulleys, Single Wheel—

| *Inch* | *1½* | *1¾* | *2* | *3* |
|---|---|---|---|---|
| *Turning or Tackle, doz* | *$0.30* | *.45* | *.60* | *1.05* |

*Hay Fork, Swivel or Solid Eye. doz., ½ in., $1.25; 5 in., $1.55*

| *Inch* | *2* | *2¼* | *2½* |
|---|---|---|---|
| *Hot House, doz...* | *$0.65* | *.85* | *1.20* |
| *Inch* | *1¼* | *1½* | *1¾* | *2* |
| *Screw, doz....* | *$0.16* | *.19* | *.23* | *.30* |
| *Inch* | *1¾* | *2* | *2¼* | *2½* |
| *Side, doz.....* | *$0.25* | *.40* | *.55* | *.60* |
| *Inch* | *1½* | *1¾* | *2* | *2½* |

### Sash Pulleys—
*Common Frame: Square or Round End, per doz., 1¾ and 2 in* ..... *17@20¢*
*Auger Mortise, no Face Plate, per doz., 1¾ and 2 in....20@21¢*
Acme, No. 35..1¾ in., 19¢; 2 in., 20½¢
American Pulley Co.:
Wrought Steel American Plain Axle .....50&10%
Wrought Steel, Eagle.....17@20¢
Top Notch, Electrically Welded, Nos. 3 and 4.....19¢
Common Sense..... ℔ doz. 20¢
Fox-All-Steel, Nos. 3 and 7, 2 in.... ℔ doz. 50%
Grand Rapids All Steel Noiseless..50%
Niagara, No. 25, 1¾ in., 19¢; 2 in. .....20½¢
No. 26 Troy..1¾ in., 14½¢; 2 in., 16½¢
Star, No. 26...1¾ in., 19¢; 2 in., 20½¢
Tackle Blocks—See Blocks.

## Pumps—
*Cistern* ..... *60%*
*Pitcher Spout.....75&5@75&10%*
*Wood Pumps, Tubing, &c....50%*
Barnes Dbl. Acting (low list).....50%
Barnes Pitcher Spout.....80%
Contractors' Rubber Diaphragm, No. 2, B. & L. Block Co.....$16.00
Daisy Spray Pump..... ℔ doz. $6.50
Flint & Walling's Fast Mail Hand (low list).....50&5%
Flint & Walling's Fast Mail (low list) .....50&5%
Flint & Walling's Tight Top Pitcher .....80%
National Specialty Mfg. Co., Measuring, Nos. 2, $6.00; 3, $5.50.....30%
Myers' Pumps (low list).....
Myers' Power Pumps.....
Myers' Spray Pumps..... } 50%

### Pump Leathers—
*Plunger and Valve Leathers—Per gro.:*

| *No* | *1* | *2* | *3* | *4* |
|---|---|---|---|---|
| | *$5.00* | *6.00* | *7.00* | *8.00* |

*Cup Leathers—Per 100:*

| *Inch....* | *2½* | *3* | *3½* | *4* |
|---|---|---|---|---|
| | *$5.00* | *7.00* | *9.00* | *12.00* |

} 30@30&10%

## Punches—
*Saddlers' or Drive, good, doz.50@75¢*
*Spring, single tube, good quality* ..... *$1.75*
*Revolving (4 tubes)....doz.$3.50*
Bemis & Call Co.'s Cast St'l Drive.50%
Morrill's Nos. 1AA, 1A, 1B, 1C, 1D, $15.00.....50%
Hercules, 1 die, each $5.00.....50%
Niagara Hollow Punches.....40%
Niagara Solid Punches.....55&10%
Tinners' Hollow, P., S. & W. Co..40%
Tinners' Solid, P., S. & W. Co., ℔ doz., $1.44.....40&10%

## Rail—Barn Door, &c.—
*Sliding Door, Painted Iron, 2½@2¾¢*
*Sliding Door, Wrought Brass, 1⅛ in., lb., 36¢.....30%*
Cronk's:
Double Braced Steel Rail..℔ ft. 2¾¢
O. N. T. Rail.....2¾¢
Griffin's:
xxx, ℔ 100 ft., 1 x 3-16 in., $3.25; 1¼ x 3-16 in., $3.75.
Hinged Hanger, ℔ 100 ft., 1 x 3-16 in., $3.50; 1¼ x 3-16 in., $4.00.
Lane's:
Hinged Track, ℔ 100 ft.....$3.45
O. N. T., ℔ 100 ft., 1 in., $3.12½; 1¼ in., $3.45; 1½ in., $4.00.
Standard, 1¼ in.....℔ 100 ft. $4.00
Lawrence Bros.:
1 x 3-16 in., ℔ 100 ft., $7.50; 1¼ x 3-16 in., $8.75.....55&7½%
Trolley, No. 301, ℔ ft.....9¢
McKinney's:
Hinged Hanger Track, ℔ ft., 11¢ 60&5%
1 x 3-16 Track.....55&7½%
Myers' Stayon Track.....60&5%
Richards Mfg. Co.:
Common, 1 x 3-16 in., $3.00; 1¼ x 3-16, $3.25; 1¼ x 3-16, $3.50.
Special Hinged Hanger Rail..60&10%
Lag Screw Rail, No. 65.....50%
Gauge Trol'ey Track, ℔ ft., No. 31, 9¢; No. 32, 14¢; No. 33, 20¢.
No. 50.....60&10%
Nos. 61, $3.00; 62, $3.25; 63, $3.50; 64, $4.00; 15, $3.25; 46, $3.50; 49, No. 1, $3.25; 49, No. 2, $3.50.

## Rakes—
*NOTE.—Many goods are sold at net prices.*
American Fork & Hoe Co.:
Lawn, ℔ doz., No. 24, $2.50; No. 20 .....$2.25
Cronk's:
Steel Garden: Champion, ℔ doz., 12-tooth, $3.75; 14-tooth, $4.00; 16-tooth, $4.25; Ideal, ℔ doz., 12-tooth, $3.00; 14-tooth, $3.30; 16-tooth, $3.60.
Victor, 12-tooth, $2.25; 14-tooth, $2.50; 16 tooth, $2.75.
Queen City Lawn, ℔ doz., 20 teeth, $2.85; 24, $3.00.....net
Antielog Lawn ℔ doz.....$4.00
Malleable Garden.....70&10%
Ideal Steel Garden, ℔ doz., 12 teeth, $15.00; 14, $16.00; 16, $18.00.....80%
Kohler's:
Jumbo Lawn, 36-tooth....℔ doz. $5.00
Lawn Queen, 20 tooth....℔ doz. $2.85
Lawn Queen, 24-tooth....℔ doz. $3.00
Paragon, 20 tooth.....℔ doz. $2.65
Paragon, 24-tooth.....℔ doz. $2.75
Steel Garden, 14-tooth....℔ doz. $2.10
Malleable Garden, 14-tooth, ℔ doz. $1.75@2.00

## Rasps, Horse—
Disston's .....75%
Heller Bros.'.....70&5@70&10&5%
Liveright Bros.' Gold Medal.70&10@75%
McCaffrey's American Standard.... 60&10&5%
New Nicholson.....70&10@75%
See also Files.

## Razors—
John Engstrom Swedish.....65%
Sharp Shaver.....60%
Fox Razors, ℔ doz., No. 42, $24.00; No. 44, $20.00; No. 82, Platina, $36.00. } Dis. 50%

## Reels, Fishing—
Hendryx:
M 6, Q 6, A 6, B 6, M 9¼, M 16, Q 16, A 16, B 16, 1008, Rubber, Populo Nickeled Populo.....20%
Aluminum, German Silv., Bronze.25%
1210 N, 124 N.....20%
3004 N, 06 N, 6 RM, G 9.....25%
4 N, 6 PN, 24 N, 26 PN.....20%
2904 P., 33⅓%; 2904 PN., 33⅓%; 0924 N., 33⅓%; 02084 N., 33⅓%; 002904 PN., 33⅓%; 802 N., 33⅓%.
986 PN, 2904 N, 974 PN.....25%
5009 PN, 5009 N.....20%
Competitor, 102 P, 102 PN, 202 P, 202 PN, 102 PR, 202 PR.....20%
304 P, 304 PN, 00304 P, 00304 PN.33⅓%

## Registers—*List July 1, 1903.*
*Japanned, Electroplated and Bronzed* ..... *70%*
*White Porcelain Enamel..50&10%*
*Solid Brass or Bronze Metal..40%*

## Revolvers—
*Single Action..... 75¢@$1.00*
*Double Action, except 44 cal..$2.00*
*Double Action, 44 caliber...$2.00*
*Automatic* ..... *$4.00*
*Hammerless* ..... *$4.50*

## Riddles, Hardware Grade
*16 in.....per doz.$2.50@$2.75*
*17 in.....per doz.$2.75@$3.00*
*18 in.....per doz.$3.00@$3.25*

## Rings and Ringers—
### Bull Rings—

| | *2* | *2¼* | *3 inch.* |
|---|---|---|---|
| *Steel* | *$0.70* | *0.75* | *0.80 doz.* |
| *Copper* | *$1.10* | *1.25* | *1.65 doz.* |

### Hog Rings and Ringers—
*Hill's Rings, gro. boxes.$4.50@$4.50*
*Hill's Ringers, Gray Iron, doz., 60@75¢*
*Hill's Ringers, Malleable Iron, doz.80@95¢*
*Blair's Rings..per gro.$5.00@$5.50*
*Blair's Ringers...per doz.75@90¢*

## Rivets and Burrs—
*Copper* ..... *50%*
*Carriage, Coopers', Tinners', &c.:*
*Black* ..... *70&10%*
*Metallic Tinned*..... *70%*

### Bifurcated and Tubular—
*Assorted in Boxes.*
*Bifurcated, per doz. boxes, pasteboard boxes, 50 count, 23@25¢; Tin boxes, 100 count, 29@32¢.*
*Tubular, per doz. boxes, 50 count, 29@32¢; 100 count, 51@58¢.*

## Rollers—
Cronk's Stay, No. 50.....$1.00
Cronk's Brinkerhoff No. 55, $0.60; No. 56, $0.75; No. 60.....$0.75
Lane's Stay.....40%
Richards' Stay:
Handy Adj. and Reversible No. 53.75¢
O. K. Adj. and Reversible No. 58.50¢
Lag Screw, Nos. 55 and 57.....50%
Underwriters', Nos. 59, 60.....50%
Favorite, No. 54.....60%

## Rope—
*Manila, 7-16 in. diam. and larger:*
*Pure* ..... *lb. 9¢*
*Sisal, 7-16 in. diam. and larger:*
*Pure* ..... *lb. 7¢*
*Sisal, Hay, Hide and Bale Ropes, Medium and Coarse:*
*Pure* ..... *lb. 7½@7¾¢*
*Sisal, Tarred, Medium Lath Yarn:*
*Pure* ..... *lb. 6½@6¾¢*
*Cotton Rope:*
*Best, ¼-in. and larger. 16½@18¢*
*Medium, ¼-in. and larger.15@16¢*
*Common, ¼-in. and larger..7½¢*
*In coils, ½¢ advance.*
*Jute Rope:*
*Thread, No. 1, ¼-in. and up, lb.* ..... *5½¢*
*Thread, No. 2, ¼-in. and up, lb.* ..... *5¢*

### Wire Rope—
*Galvanized* ..... *37½&2½%*
*Plain* ..... *45&2½%*

## Ropes, Hammock—
Covert Mfg. Co.:
Jute, 35%; Sisal.....20%

## Rules
*Boxwood* ..... *60@60&10%*
*Ivory* ..... *35&10@35&10&5%*
Chapin-Stephens Co.:
Boxwood .....60%
Flexifold .....40%
Ivory .....25@25&10%
Miscellaneous .....50@50&10%
Stephens' Combination.....55%
Stationers' .....50@50&10%
Keuffel & Esser Co.:
Folding, Wood.....35&10%
Folding, Steel.....33⅓&10%
Lufkin's Steel.....50&10%
Lufkin's Lumber.....50&10%
Upson Nut Co.:
Boxwood .....60@60&10%
Ivory .....35&10@35&10&10%

## Sash Balances—
See *Balance, Sash.*

## Sash Locks—See *Locks, Sash.*

## Sash Weights—
See *Weights, Sash.*

### Sausage Stuffers or Fillers
See *Stuffers or Fillers, Sausage.*

### Saw Frames—
See *Frames, Saw.*

### Saw Sets—See *Sets, Saw.*

### Saw Tools—See *Tools, Saw.*

### Saws—
Atkins':
- Circular ..... 45%
- Band ..... 50@50&10%
- Butcher Saws ..... 50%
- Cross Cuts ..... 35%
- One-Man Cross Cut ..... 40%
- Narrow Cross Cut ..... 50%
- Hand, Rip and Panel ..... 35&5
- Miter Box and Compass ..... 40%
- Mulay, Mill and Drag ..... 45%
- Wood Saws ..... 40&10%

Chapin-Stephens Co.:
- Turning Saws and Frames. 30@30&10%

Diamond Saw & Stamping Works:
- Sterling Kitchen Saws ... 30&10&10%

Disston's:
- Circular, Solid and Ins'ted Tooth. 50%
- Band, 2 to 18 in. wide ..... 60%
- Band, ¼ to 1¾ ..... 60%
- Crosscuts ..... 45%
- Narrow Crosscuts ..... 50%
- Mulay, Mill and Drag ..... 50%
- Framed Woodsaws ..... 25%
- Woodsaw Blades ..... 25%
- Woodsaw Rods, Tinned ..... 15%
- Hand Saws, Nos. 12, 99, 9, 16, d100, D8, 120, 76, 77, 8 ..... 25%
- Hand Saws, Nos. 7, 107, 107½, 3, 1, 0, 00, Combination ..... 30%
- Compass, Key Hole, &c ..... 25%
- Butcher Saws and Blades ..... 30%

C. E. Jennings & Co.'s:
- Back Saws ..... 16⅔%
- Butcher Saws ..... 25&7½%
- Compass and Key Hole Saws, 33⅓&7½%
- Framed Wood Saws ..... 25&7½%
- Hand Saws ..... 12½%
- Wood Saw Blades ..... 33⅓&7½%

Millers Falls:
- Butcher Saws ..... 15&10%
- Star Saw Blades ..... 15&10%

Massachusetts Saw Works:
- Victor Kitchen Saws ..... 40&10&50%
- Butcher Saws Blades ..... 35@40%

Peace & Richardson's Hand Saws. 30%

Simonds':
- Circular Saws ..... 45%
- Crescent Ground Cross Cut Saws. 30%
- One-Man Cross Cuts ..... 40&10%
- Gang Mill, Mulay and Drag Saws. 45%
- Band Saws ..... 50%
- Back Saws ..... 25@25&7½%
- Butcher Saws ..... 35@35&7½%
- Hand Saws ..... 25@25&7½%
- Hand Saws, Bay State Brand .... 45%
- Compass, Key Hole, &c .. 25@25&7½%
- Wood Saws ..... 40&7½%

Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws ..... 50%

### Hack Saw Blades and Frames—
Atkins' Hack Saw Blades A A A .. 25%

Disston's:
- Concave Blades ..... 25%
- Keystone Blades ..... 35%
- Hack Saw Frames ..... 30%

Simonds, 25%; The Best, 35%; Culley ..... 35%

C. E. Jennings & Co.'s:
- Hack Saw Frames, Nos. 175, 180 .... 40&7½%
- Hack Saws, Nos. 175, 180, complete, 40&7½%

Goodell's Hack Saw Blades .... 40&10%
Griffin's Hack Saw Frames .. 35&5&10%
Griffin's Hack Saw Blades .... 35&5&10%
Star Hack Saws and Blades .... 15&10%
Sterling Hack Saw Blades .. 30&10&5%
Sterling Hack Saw Frames .. 30&10&10%
Sterling Power Hack Saw Machines, each, No. 1, $25.00; No. 2, $30.00 .. 10%
Victor Hack Saw Blades ..... 20%
Victor Hack Saw Frames ..... 40%

Whitaker Mfg. Co.:
- National Hand Blades, Hand Frames, Power Blades ..... 40%

### Scroll—
Barnes, No. 7, $15 ..... 25%
Barnes' Scroll Saw Blades ..... 40%
Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20 ..... 20%
Lester, complete, $10.00 ..... 15&10%
Rogers, complete, $3.50 and $4.00 .. 15&10%

### Scales—
*Union Platform, Plain .$2.10@2.20*
*Union Platform, Stpd .$2.20@2.30*
Chatillon's:
- Eureka ..... 25%
- Favorite ..... 40%
- Grocers' Trip Scales ..... 50%

The Standard Portables ..... 40%
The Standard R. R. and Wagon ..... 50&10%

### Scrapers—
*Box, 1 Handle ..... doz. $1.85@2.10*
*Box, 2 Handle ..... doz. $2.35@2.50*
*Ship ... Light, $2.00; Heavy, $4.50*
Chapin-Stephens Co., Box .. 30&10&10%
Richards Mfg. Co., Foot ..... 60

### Screws—Bench and Hand
*Bench, Iron, doz., 1 in., $2.50@2.75; 1¼ $3.00@3.25; 1¼ $3.50@3.75*
*Bench, Wood ..... 20@20&10%*
*Hand, Wood .... 70&10@70&10&10%*
Chapin-Stephens Co., Hand ..... 70@70&10&2½%

### Coach, Lag and Hand Rail—
*Lag, Cone Point ..... 80&5%*
*Coach, Gimlet Point ..... 80%*
*Lag Rail ..... 70&10@75%*

### Jack Screws—
*Standard List ..... 70&10@75%*
Millers Falls ..... 50&10&10%
Swett Iron Works ..... 70@75%

### Machine—
*Cut Tread, Iron, Brass or Bronze:*
*Flat Head or Round Head, 50@50&10%*
*Fillister Head ..... 40@40&10%*
*Rolled Thread, F. H. or R. H., Iron ..... 75&10%*
*F. H. or R. H., Brass, Nos. 8 to 14 ..... 65&10%*

### Set and Cap—
*Set (Iron) ..... 75&10&7½%*
*Set (Steel), not advance over Iron ..... 25%*
*Sq. Hd. Cap ..... 70&10&7½%*
*Hex. Hd. Cap ..... 70&10&7½%*
*Rd. Hd. Cap ..... 50&7½%*
*Fillister Hd. Cap ..... 60&7½%*

### Wood—
*List July 23, 1903.*
*Flat Head, Iron ..... 87½&5@.. %*
*Round Head, Iron .... 85&5@.. %*
*Flat Head, Brass ..... 80&5@.. %*
*Round Head, Brass .. 77½&5@.. %*
*Flat Head, Bronze .... 75&5@.. %*
*Round Head, Bronze . 72½&5@.. %*
*Drive Screws ..... 87½&5@.. %*

### Scroll Saws—
See *Saws, Scroll.*

### Scythes—
| | Per doz. |
|---|---|
| *Plain Grass, Cutting Edge Polished* | $6.25@$6.50 |
| *Clipper, Bronzed Web* | $6.50@$6.75 |
| *Solid Steel, Web and Backs Polished* | $7.00@$7.25 |
| *Bush, Weed and Bramble, Painted* | $6.50@$6.75 |
| *Grain, Painted, Cutting Edge Polished* | $8.25@$8.50 |
| *Clipper Grain, Bronze Web* | $8.50@$8.75 |

### Seeders, Raisin—
Enterprise ..... 25@30%

### Sets— Awl and Tool—
Fray's Tool Handles, Nos. 1, $12; 2, $16; 3, $12 ..... 50%
Millers Falls Adj. Tool Handles, No. 1, $12; No. 4, $12; No. 5, $18 .. 20&10%

### Garden Tool Sets—
American Fork & Hoe Co.:
- Rake, Shovel and Hoe, ₱ doz. sets, No. 3 P F ..... $7.25

### Sets, Nail—
*Octagon ..... gro. $3.50@3.75*
Buck Bros. ..... 27½%
Mayhew's ..... ₱ gro. $9.00
Snell's Corrugated, Cup Pt. .... 40&10%
Snell's Knurled, Cup Pt. ..... 40&10%
Victor Knurled, Cup Pt. .... ₱ gro. $7.50

### Rivet—
*Regular list ..... 75@75&10%*

### Saw—
Atkin's:
- Criterion ..... 40%
- Adjustable ..... 40%

Disston's Star, Monarch and Triumph ..... 30%

Morrill's No. 1 ..... $15.00
Nos. 3 and 4, Cross Cut .... $20.60
No. 5, Mill ..... $30.00
Nos. 10, 11, 95 ..... $15.60
No 1 Old Style ..... $10.00
Special ..... $16.25
} 50%

Giant Royal Cross Cut ..... ₱ doz. $7.50
Royal, Hand ..... ₱ doz. $4.50
Tamtor Positive ..... ₱ doz. $6.75

### Shaving—
Fox Shaving Sets, No. 30 ..... ₱ doz., net, $24.00
Smith & Hemenway Co.'s ..... 75%

### Sharpeners, Knife—
Pike Mfg. Co.:
- Fast Cut Pocket Knife Hones, ₱ doz. ..... $1.50
- Mounted Kitchen Sand Stone, ₱ doz. ..... $1.50
- Natural Grit Carving Knife Hones, ₱ doz. ..... $3.00
- Quick Cut Emery Carving Knife Hones, ₱ doz. ..... $1.50
- Quick Edge Pocket Knife Hones, ₱ doz. ..... $2.50

} 50%

### Skate—
Smith & Hemenway Co., Eureka .. 50%

### Shaves, Spoke—
*Iron ..... doz. $1.25*
*Wood ..... doz. $2.00*
Bailey's (Stanley R. & L. Co.) ..... 45%
Chapin-Stephens Co. ..... 30@30&10%
Goodell's, ₱ doz. $9.00 ..... 15&10%

### Shears—
| *Cast Iron* | 7 | 8 | 9 in. |
|---|---|---|---|
| *Best* | $16.00 | 18.00 | 20.00 gro. |
| *Good* | $13.00 | 15.00 | 17.00 gro. |
| *Cheap* | $5.00 | 6.00 | 7.00 gro. |

*Straight Trimmers, &c.:*
- *Best quality Jap ..... 70&10&5%*
- *Best Quality Nickel .. 60&10&5%*

*Tailors' Shears ..... 40@40&10%*
Acme Cast Shears ..... 10@40&5%
Heinisch's Tailor's Shears ..... 10%
National Cutlery Co.'s Nickel Plated, 60&10%; Japan Handles ..... 70&10%
Columbian Cutlery Co.:
- Sheep, 1900 list ..... 30&10&5
- Grass ..... 50&10
- Horse or Mule ..... 50&10%

J. Wiss & Sons Co.:
- Best Quality Jap'd ..... 60&10%
- Best Quality Nickeled ..... 50&10%
- Tailors' ..... 25%

### Tinners' Snips—
*Steel Blades ..... 20&5@20&10%*
*Steel Laid Blades ..... 50&10%*
Acme Cast Snips ..... 40@45&5%
Forged Handles, Steel Blades, Berlin ..... 50%
Heinisch's Snips ..... 40%
Jennings & Griffin Mfg. Co.'s 6½ to 10 in. ..... 33⅓&7½%
National Cutlery Co.'s Forged Steel. 50%
Niagara Snips ..... 40%
P., S. & W. Forged Handles, 25%; W. R. W. ..... 50%
J. Wiss & Sons Co.:
- Wiss Forged Steel ..... 25%

### Pruning Shears—
Cronk's Hand Shears ..... 33⅓%
Cronk's Wood Handle Shears .... 33⅓%
Disston's Combined Pruning Hook and Saw, ₱ doz., $18.00 ..... 25%
Disston's Pruning Hook only, ₱ doz., $12.00 ..... 25%

J. T. Henry Mfg. Co.:
- Pruning Shears, all grades ..... 40%

P., S. & W. Co. ..... 40&10%

Columbian Cutlery Co.:
- Hedge, Wilcut Brand ..... 60&10%
- Lawn and Border, Wilcut Brand, 60&10%

### Sheaves—Sliding Door—
Reading ..... 40%
R. & E. list ..... 15%

### Sliding Shutter—
Reading list ..... 40%
R. & E. list ..... 15%

### Shells—Shells, Empty—
Brass Shells, Empty:
- Climax, 10 and 12 gauge ..... 60&5%
- Club, Rival, 65&5%; First Quality, 60&5%

Paper Shells, Empty:
- New Rapid, 10, 12, 16 and 20 gauge, 25&10%
- Climax, 10 and 12 gauge; Acme and Magic, 10, 12, 16 and 20 gauge; Ideal, 10, 12, 16 and 20 gauge; Leader grade ..... 25&5%
- Union, League, 10 and 12 gauge, Rival Grade ..... 25%
- New Climax, Defiance, 10, 12, 14, 16 and 20 gauge; Climax, 14, 16 and 20 gauge ..... 20%
- Challenge, Monarch, 10, 12, 16 and 20 gauge; League, Union, 14, 16 and 20 gauge; Repeater Grade .. 20%

### Shells, Loaded—
*Loaded with Black Powder .. 40%*
*Loaded with Smokeless Powder, medium grade ..... 40&5%*
*Loaded with Smokeless Powder, high grade ..... 40&10&10%*

Union Metallic Cartridge Co.:
- New Club, Black Powders ..... 40%
- Nitro Club, Smokeless Powders. 40&5%
- Arrow, Smokeless Powders. 40&10&10%

Winchester:
- Smokeless Repeater Grade ..... 40&5%
- Smokeless Leader Grade ... 40&10&10%
- Black Powder ..... 40%

### Shingles, Metal— Per Sq.
Edwards Mfg. Co.:

| | Painted. | Galv. |
|---|---|---|
| 14 x 20 | $4.25 | $6.00 |
| 10 x 14 | 4.50 | 6.25 |
| 7 x 10 | 4.75 | 6.50 |

Wheeling Corrugating Co.:

| | | |
|---|---|---|
| Dixie, 14 x 20 in. | $4.05 | $5.05 |
| Dixie, 10 x 14 in. | 4.25 | 5 45 |
| Dixie, 7 x 10 in. | 5.25 | 6 70 |

### Shoes, Horse, Mule, &c.—
*F.o.b. Pittsburgh:*
*Iron ..... per keg. $4.10*
*Steel ..... per keg. $3.85*
Burden's, all sizes .. ₱ keg $3 90

### Shot—
| | 25-lb. bag. |
|---|---|
| *Drop, up to B* | $1 80 |
| *Drop, B and larger* | 2.05 |
| *Buck* | 2.05 |
| *Chilled* | 2.05 |
| *Dust* | 2.30 |

### Shovels and Spades—
*Association List, Nov. 15, 1902 .40%*
Avery Stamping Co. ..... 40%

### Snow Shovels—
*Long Handle ..... $2.50@$2.75*
*Wood and Mall, D Handle, $2.65@$2.90*

### Sieves and Sifters—
*Hunter's Imitation, gro. .... $9.50*
*Hunter's Genuine, per gro. .$12.00*

### Sifters, Ash—
Acme Ball Bearing Sales Co., Acme Automatic Ash Sifter, each, $3 25; ₱ doz. ..... $39.00

### Sieves, Seamless Metallic
| | Per dozen. | | | |
|---|---|---|---|---|
| *Mesh* | 14 | 16 | 18 | 20 |
| *Iron Wire* | $1.05 | 1.05 | 1.10 | 1 20 |
| *Tinned Wire* | $1.15 | 1.15 | 1.20 | 1.30 |

### Sieves, Wooden Rim—
*Nested, 10, 11 and 12 Inch.*
*Mesh 18, Nested .... doz. $0.90@0.95*
*Mesh 20, Nested .... doz. $1.00@1 05*
*Mesh 24, Nested .... doz. $1.30@1.40*

### Sinks, Cast Iron—
*Painted, Standard list:*
- *12 x 12 to 22 x 36 in ..... 60%*
- *20 x 24 to 24 x 50 in ..... 50%*
- *24 x 60 to 24 x 120 in ..... 30%*

Barnes' low list ..... 60%

*NOTE.—There is not entire uniformity in lists used by jobbers.*

### Skeins, Wagon—
*Cast Iron ..... 70@75&10%*
*Steel ..... 40@45%*

### Slates, School—
*Factory Shipments.*
*"D" Slates ..... 50@50&10%*
*Eureka, Unexcelled Noiseless .. 60&7 tens.*
*Victor A. Noiseless .60&4 tens &5%*

### Slaw Cutters—See *Cutters.*

### Snaps, Harness—
*German ..... 40@40&10%*
Covert Mfg. Co.:
- Derby, 25%; Yankee, 30&2%; Yankee Roller 30&2%
- High Grade, 40%; Trojan ..... 40%
- Jockey ..... 25%

### Snaths—
*Scythe ..... 50&10@60%*

### Snips, Tinners—See *Shears.*

### Spoons and Forks—
#### Silver Plated—
*Good Quality ..... 50&10@60&5%*
*Cheap ..... 60@60&10%*

International Silver Co:
- 1847 Rogers Bros. ..... 10&10%
- Rogers & Bro., William Rogers' Eagle Brand ..... 50&10%
- Anchor, Rogers Brand ..... 60%
- Wm. Rogers & Son ..... 60&10%

#### Miscellaneous
*German Silver ..... 60@60&5%*

#### Tinned Iron—
*Teas ..... per gro. 50@55¢*
*Tables ..... per gro. $0.90@$1.00*

Atlas Mfg. Co.:
- Tea Spoons, ₱ gro. ..... 50¢@55¢
- Table Spoons, ₱ gro. ..... $0.90@$1.00

### Springs— Door—
Bardsley's Spring and Check ..... 40%
Chicago (Coil) ..... 40&10%
Gem (Coil) ..... 20%
Pullman Door and Gate ..... 10%
Reliance (Coil) ..... 40&10%
Star (Coil) ..... 35%
Torrey's Rod, 39 in. ..... ₱ doz. $1,00

### Carriage, Wagon, &c.—
| *1¼ in. and Wider:* | Per 100 lb. |
|---|---|
| *Black* | $4.75@$5.00 |
| *Half Bright* | $4.75@$5.00 |
| *Bright* | $5.25@$5.50 |

*Painted Seat Springs:*
- *1½ x 2 x 26 .... per pair .45@47¢*
- *1½ x 3 x 28 .... per pair .68@71¢*

### Sprinklers, Lawn—
American Foundry & Mfg. Co.:
- Cactus, 65%; Japanese, 70%; National, ₱ doz. ..... $12.00

Enterprise ..... 25@30%
Philadelphia No. 1, ₱ doz. $12; No. 2, $15; No. 3, $20 ..... 30%

### Squares—
*Nickel plated .. } List Jan. 5, 1900.*
*Steel and Iron . } 80&5@80&10%*
*Rosewood Hdl. Try Square and T-Bevels ..... 60&10&10@70%*
*Iron Hdl. Try Squares and T-Bevels ..... 40&10@40&10&10%*
Disston's Try Squares and Bevels, Rosewood Handle, 60 & 10%; Iron Stock and Bevel ..... 15%

### Squeezers, Lemon
*Wood, Porcelain Lined:*
- *Cheap ..... doz. $1.00*
- *Good Grade ..... doz. $1.25*

*Tinned Iron ..... doz. $0.75@1.00*
*Iron, Porcelain Lined ... doz. $1.75*
Victor, ₱ gro. ..... $9,00

### Staples—
*Barbed Blind ..... 85&5@85&10%*
*Electricians' ..... 80&10&10@85%*
*Fence Staples, Polished, $2.05; Galvanized ..... $2.35*
*Poultry Netting Staples ..... per lb. 3¼@3½¢*

### Steels, Butchers'—
Dick's ..... 30%
Foster Bros.' ..... 30%

### Steelyards— .... 30@30&10%

### Stocks and Dies—
*Blacksmiths' ..... 50@50&10%*
Curtis Rev'ble Ratchet Die Stock .. 25%
Derby Screw Plates ..... 25%
Green River ..... 25%
Lightning Screw Plate ..... 25%
Little Giant ..... 25%
Reece's New Screw Plate ..... 25%

### Stoners, Cherry—
Enterprise ..... 25@30%

### Stones, Axe—
Pike Mfg. Co., Axe Stones (all kinds) ..... 33⅓%

### Glass Cutters' Stones—
Pike Mfg. Co., Glass Cutters' Stones and Supplies ..... 40%

### Stones, Oil, &c.—
Pike Mfg. Co., 1907 list: ₱ lb.
- Arkansas St. No. 1, 3 to 5½ in. $2.80
- Arkansas St. No. 1, 5½ to 8 in. $3.50
- Arkansas Slips No. 1 ..... $4.00
- Lily White Washita, 4 to 8 in. 60¢
- Rosy Red Washita, 4 to 8 in. 60¢
- Washita St., Extra, 4 to 8 in. 50¢
- Washita St., No. 1, 4 to 8 in. 40¢
- Washita St., No. 2, 4 to 8 in. 25¢
- Lily White Slips ..... 90¢
- Rosy Red Slips ..... 90¢
- Washita Slips, Extra ..... 80¢
- Washita Slips, No. 1 ..... 70¢
- Washita Slips, No. 2 ..... 40¢

} 33⅓%

- India Oil Stones (entire list) .. 33⅓%
- Quickcut Emery and Corundum Oil Stone, Double Grit ..... 40%
- Quickcut Emery and Corundum Axe Stone, Double Grit ..... 33⅓%
- Quickcut Emery Rubbing Bricks. 40%
- Hindostan No. 1, R'g'lar, ₱ lb. 8¢
- Hindostan No. 1 Small .. ₱ lb. 10¢
- Turkey Oil Stones, Extra, 5 to 8 in. ..... ₱ lb. 80¢
- Queer Creek Stones, 4 to 8 in. 20¢
- Queer Creek Slips ..... 40¢
- Sand Stone ..... 6¢

} 33⅓%

#### Scythe Stones—
Pike Mfg. Co., 1907 list:
- Black Diamond S. S. .. ₱ gro. $12.00
- Lamoille S. S. ..... ₱ gro. $11.00
- White Mountain S. S. ₱ gro. $9.50
- Green Mountain S. S. ₱ gro. $7.00
- Extra Indian Pond S.S. ₱ gro. $8.00
- No. 1 Indian Pond S.S. ₱ gro. $7.50
- No. 2 Indian Pond S.S. ₱ gro. $5.00
- Leader Red End S. S. ₱ gro. $5.00
- Quick Cut Emery .... ₱ gro $10 00
- Pure Corundum ..... ₱ gro. $18.00
- Crescent ..... $7 00
- Emery Scythe Rifles 2 Coat. $8.80
- Emery Scythe Rifles, 3 Coat $11.00
- Emery Scythe Rifles, 4 Coat. $13 20

} 33⅓%

Balance of 1907 list 33⅓%.
Lectro (Artificial), ₱ gro., $12.00@$18.00 ..... 33⅓%
Lightning (Artificial), ₱ gro., $12.00 ..... 33⅓%

### Stoppers, Bottle—
Victor Bottle Stoppers.....₱ gro. $9.00

### Stops— Bench—
Millers Falls.....15&10%
Morrill's, ₱ doz., No 1, $19.00....5%
Morrill's, No. 2, $12.50.....50%

### Door—
Chapin-Stephens Co.....50@50&10%

### Plane—
Chapin-Stevens Co.....20%

### Straps— Box—
Acme Embossed, case lots..20&10&10%
Cary's Universal, case lots...20&10&10%

### Stretchers, Carpet—
*Cast Iron, Steel Points..doz.55¢*
*All Steel Socket...doz.$2.00@2.25*
Excelsior Stretcher and Tack Hammer Combined, ₱ doz., $6.00....20%

### Stuffers, Sausage—
Enterprise Mfg. Co., Stuffers and Lard Presses.....25@25&7½%
National Specialty Co., list Jan. 1, 1902 .....30&5%
P., S. & W. Co.....40&10&5%

### Sweepers, Carpet— Per doz.—
Bissell Carpet Sweeper Co.:
Cyco Bearing Superba, $36.00; Triumph, $33.00; Parlor Queen, $30.00; Elite, $29.00; Boudoir, $27.00; American Queen, $27.00; Ideal, $25.00; Gold Medal, $24.00; Primier, $24.00; Prize, $24.00; Welcome, $24.00; Grand Rapids, Nickel, $24.00; Japan, $22.00; Crystal, $36.00; Grand, $36.00; Parlor Grand, $48.00; Club, $54.00; Hall, $60.00; Standard Nickel, $22.00; Standard Japan, $20.00; Crown Jewel, Nickel, $21.00; Crown Jewel, Japan, $19.00; Junior, Nickel, $22.00; Junior, Japan, $20.00.

*NOTE.—Rebates: 50c per dozen on three dozen lots; $1 per dozen on five-dozen lots; $2 per dozen on ten dozen lots.*

## Tacks, Finishing Nails, &c.
*American Carpet Tacks.90&5@—%*
*American Cut Tacks..90&25@—%*
*Swedes' Cut Tacks.L..90&30@—%*
*Swedes' Upholsterers'.90&35@—%*
*Gimp Tacks.....90&5@—%*
*Lace Tacks.....90&35@—%*
*Trimmers' Tacks.....90&30@—%*
*Looking Glass Tacks.....65@—%*
*Bill Posters' and Railroad Tacks, 90&40@—%*
*Hungarian Nails.....8@—%*
*Finishing Nails.....70@—%*
*Trunk and Clout Nails.75&5@—%*

*NOTE.—The above prices are for Straight Weights.*

### Miscellaneous—
*Double Pointed Tacks, 90&6 tens@—%*
Se also Nails, Wire.

### Tanks, Oil and Gasoline—
Wilson & Friend Co.:

| Gal. | Gasoline | Oil |
|---|---|---|
| 30 | $2.75 | $3.00 |
| 60 | $3.50 | $4.00 |
| 110 | $5.00 | $5.75 |

### Tapes, Measuring—
*American Asses' Skin....50@—%*
*Patent Leather.....25@30&5%*
*Steel .....33⅓&5%*
*Chesterman's .....25@25&5%*
Keuffel & Esser Co.:
Favorite, Ass Skin.....40&10@50%
Favorite, Duck and Leather..... 25&5@25&10%
Metallic and Steel, lower list, 35@35&5%; Pocket, 35@35&5%.
Lufkins:
Asses' Skin.....40&10@50%
Metallic .....30@30&5%
Patent Bend, Leather...25&5@25&10%
Pocket .....40@40&5%
Steel .....33⅓@35%
Wiebusch & Hilger:
Chesterman's Metallic, No. 34L, etc. ..... 25%
Chesterman's Steel, No. 1038L, etc. .....35%

### Teeth, Harrow—
*Steel Harrow Teeth, plain or headed, ⅝-inch and larger, per 100 lb.....$2.55@$2.80*

### Thermometers—
*Tin Case, Cabinet, Flange, Dairy, &c.....30@35%*

### Ties, Bale—Steel Wire—
*Single Loop.....82½&10%*
*Monitor, Cross Head, &c..70&2½%*

### Tinners' Shears, &c.—
*See Shears, Tinners', &c.*

### Tinware—
Stamped, Japanned and Pieced, sold very generally at net prices.

### Tire Benders, Upsetters, &c.
*See Benders and Upsetters, Tire.*

### Tools—Coopers'—
L. & I. J. White.....20@20&5%

### Haying—
[illegible].....50%

### Ice Tools—
Gifford-Wood Co.....15%

### Miniature—
Smith & Hemenway Co.'s, Davidson, ₱ doz., Nickel Plated, $1.50; Gold Plated.....$2.00

### Saw—
Atkins' Cross Cut Saw Tools....35&5%
Simond's Improved.....33⅓%
Simonds' Crescent.....50%

### Ship—
L. & I. J. White.....25%

### Torches—
Hammers, Engine, ₱ doz.....$4.50

### Transom Lifters—
See *Lifters, Transom.*

### Traps—Fly—
*Balloon, Globe or Acme, doz., $1.15@$1.25; gro.....$11.50@12.00*
*Harper, Champion or Paragon, doz., $1.25@1.40; gro.$13.00@13.50*

### Game—
*Imitation Oneida.....75@10%*
Newhouse .....50&5%
Hawley & Norton.....65&10%
Victor .....75@75&10%
Oneida Community Jump.....70&5%
Stop Thief.....60%
Tree Trap.....60%
Hector .....75@75&10%

### Mouse and Rat—
*Mouse, Wood, Choker, doz. holes, 12¢*
*Mouse, Round or Square Wire, doz.85@90¢*
Marty French Rat and Mouse Traps (Genuine), ₱ doz.:

| | Crate lots. | Small lots. |
|---|---|---|
| No. 1, Rat..... | $11.50 | $14.50 |
| No. 3, Rat..... | $5.75 | $6.50 |
| No. 3½, Rat..... | $4.70 | $5.25 |
| No. 5, Mouse..... | $2.25 | $3.00 |

Animal Trap Co.:
Out o' Sight, Mouse, ₱ doz.....$0.60
Out o' Sight, Rat, ₱ doz..... 1.20
Easy Set, Mouse, ₱ doz..... .35
Easy Set, Rat, ₱ doz..... .85
Out o' Sight Chockers, ₱ doz. holes ..... .12
Out o' Sight, Tin, 5-hole, ₱ doz. traps ..... .75

### Trowels—
Disston Brick and Pointing.....25%
Disston Plastering.....20%
Disston " Standard Brand " and Garden Trowels.....30%
Kohler's Steel Garden Trowels, ₱ gro., 5 in., $4.80; 6 in., $6.00.
Never-Break, Forged Steel Garden Trowels, in bulk, net ₱ gro. $5.50
In 1 doz. boxes.....₱ gro. $6.00
Woodrough & McParlin, Plastering.25%

### Trucks, Warehouse, &c.—
B. & L. Block Co.:
New York Pattern.....50&10%
Western Pattern.....60&10%
Handy Trucks.....₱ doz. $16.00
Grocery .....₱ doz $15.00
McKinney Trucks.....each, net $10.00
Model Stove Trucks.....₱ doz $18.50

### Tubs, Wash—
*M'f'gr's list, price per gross.*

| No. | 0 | 1 | 2 | 3 |
|---|---|---|---|---|
| *Galvanized* | $67 | $79 | $89 | $99 |

*10&7½&5&5%*

### Twine, Miscellaneous—
*Flax Twine:*
*No. 9, ¼ and ½-lb. Balls.21@23¢*
*No. 12, ¼ and ½-lb. Balls.19@21¢*
*No. 18, ¼ and ½-lb. Balls.16@18¢*
*No. 24, ¼ and ½ -lb. Balls. 15½@17½¢*
*No. 36, ¼ and ½-lb. Balls.15@17¢*
*Chalk Line, Cotton ½-lb. Balls .....24@29¢*
*Cotton Mops, 6, 9, 12 and 15 lb to doz.....8½@19¢*
*Cotton Wrapping, 5 Balls to lb., according to quality..13½@19¢*
*American 3-Ply Hemp, 1 and ½-lb. Balls.....12½@15¢*
*American 3-Ply Hemp, 1-lb Balls .....13¼@16¢*
*India, 3-Ply Hemp, 1½-lb. Balls, Balls (Spring Twine)...7½@9¢*
*India 3-Ply Hemp, 1-lb. Balls 7¼@9¢*
*India 3-Ply Hemp, 1½-lb. Balls, 7@8½¢*
*2, 3, 4 and 5-Ply Jute, 1½-lb. Balls .....9@11¢*
*Mason Line, Linen, ½-lb. Bls.17¢*
*No. 264 Mattress, ¼ and ¼ lb. Balls, according to quality. 30@60¢*
*Wool, 3 to 6 ply....B 6¢; A 7½¢*

## Vises—
*Solid Box.....50&5@50&10&5%*

### Parallel—
Athol Machine Co.:
Simpson's Adjustable.....40%
Standard .....40%
Amateur .....25%
Columbian Hdw. Co., 40&5%; Slide .....65%
Fisher & Norris Double Screw, net, each. Nos. 2, $10.50; 3, $16.00; 4, $20.50; 5, $27.00; 6, $32.00
Fulton Mach. & Vise Co.:
F. & R. Double Swivel Machinists' .....40%
Star, Solid Jaw, Machinists'.....40%
Hollands':
Machinists' .....40@40&5%
Keystone .....65&5@70%
Lewis Tool Co.:
Adjustable Jaw.....30%
Monarch, 50%; Solid Jaw.....50%
Massey Vise Co.:
Clincher .....40%
Parallel Bar.....15%
Perfect, 15%; Lightning Grip.....5%
Merrill's .....25%
Millers Falls Oval Slide Pattern.60&10%
Parker's:
Victor, 20@25%; Regulars... 20@25%
Vulcan's .....10@15%
Combination Pipe.....55@60%
Prentiss .....20@25%
Rock Island.....25%
Snediker's X. L.....33⅓%
Stephens' .....33⅓%

### Saw Filers
Disston's D 3 Clamp and Guide, ₱ doz., $24.00, 30%; Clamps.....30%
Perfection Saw Clamps, ₱ doz....$4.50
Reading .....60%

### Wood Workers—
Fulton Mach. & Vise Co.:
F. & R. Double Swivel Coachman's .....40%
Star Solid Jaw Woodworkers'....60%
Massey Vise Co.:
Lightning Grip, 15%; Perfect....15%
Wyman & Gordon's Quick Action, 6 in., $6.00; 9 in $7.00; 14 in., $8.00.

### Miscellaneous—
Fulton Machine & Vise Co., Combination Pipe.....70%
Holland's Combination Pipe..65@60&5%
Massey's Quick Action Pipe.....40%
Parker's Combination Pipe:
87 Series, 60%; 187 Series, 60&5%; No. 870, 40%.
Rock Island Pipe.....25%

## Wads— *Price per M.*
*B. E., 11 up.....60¢*
*B. E., 9 and 10.....70¢*
*B. E., 8.....80¢*
*B. E., 7.....80¢*
*P. E., 11 up.....$1.00*
*P. E., 9 and 10..... 1.25*
*P. E., 8..... 1.50*
*P. E., 7..... 1.50*
*Dis. 15%*
*Ely's B. E.,11 and larger.$1.70@1.75*
*Ely's P. E., 12 to 20....$3.00@3.25*

### Ware, Hollow—
### Cast Iron, Hollow—
*Stove Hollow Ware:*
*Enameled .....45&10%*
*Ground .....50&5%*
*Plain or Unground.....60%*
*Country Hollow Ware, per 100 lbs .....$2.75@$3.00*
*White Enameled Ware:*
*Maslin Kettles.....65&10%*
*Covered Wares:*
*Tinned and Turned.....35&10%*
*Enameled .....45&10%*
See also *Pots, Glue.*

### Enameled—
Agate Nickel Steel Ware.....33⅓%
Elkange .....60&10%
Iron Clad Ware.....70&10%
Lava and Volcanic, Enameled..40&10%

### Tea Kettles—
*Galvanized Tea Kettles:*

| *Inch* | 6 | 7 | 8 | 9 |
|---|---|---|---|---|
| *Each* | 45¢ | 50¢ | 55¢ | 65¢ |

### Steel Hollow Ware—
Avery Stamping Co.:
Never-Break Spiders and Griddles .....65&10%
Steel Kettles, Maslins Scotch Bowls, Tin'd.....60%
Steel Stew Pans, Stew Pots, etc., Porcelained .....50%
Cleveland Stamping & Tool Co.:
Solid Steel Spiders and Griddles .....65&5%
Solid Steel Kettles.....60&5%

### Warmers, Foot—
Pike Mfg. Co., Soapstone....40@40&10%

### Washboards—

| No. | ₱ doz. |
|---|---|
| 800—Brass King, Single Surface, Open Back..... | $2.80 |
| 862—White Hen, Spiral Grimp Glass ..... | $3.35 |
| 964—Royal Blue Enamel, Single Surface, Ventilated Back..... | $3.35 |
| 172 Our Best, Single Zinc, Soap Drainer ..... | $3.35 |
| 722—Soap Saver, Single Zinc, Iron Top ..... | $3.35 |
| 100—Northern Queen, Single Zinc, Perforated, Open Back..... | $3.00 |
| 134—Universal, Single Zinc, Extra Family Size, Ventilated Back....$2.80 | |
| 760—Banner Globe, Single Zinc, Ventilated Back..... | $2.25 |
| 57 Peerless, Double Zinc, Spring Protector ..... | $3.70 |
| 56—Red Cross, Double Zinc, Swing Protector ..... | $3.60 |
| 17—North Star, Solid Zinc, Swing Protector ..... | $3.60 |
| 797 Jewel, Single Zinc, Pail Size. | $1.25 |

### Washers—Leather, Axle—
*Solid .....90@90&10%*
*Patent .....90@90&5%*
*Coil: ⅞ 1 1⅛ 1¼ inch. 9¢ 10¢ 11¢ 15¢ per box.*

### Iron or Steel—
*Size bolt.... 5-16 ⅜ ½ ⅝ ¾*
*Washers....$4.90 4.60 2.70 2.50 2.30*
*The above prices are based on $6.50 off list*
*In lots less than one keg add ½¢ per lb.; 5-lb. boxes add ½¢ to list.*
Avery Stamping Co.:
Standard, in 200 lb kegs, $6.00 ₱ 100 lb. discts.; in 100 lb kegs add 10¢ net ₱ 100 lb; in 5 or 10 lb boxes, add 50¢ net ₱ 100 lb; in 1 lb boxes, add $1.00 net ₱ 100 lb.

### Cast Washers—
*Over ½-inch, barrel lots, per lb. 1½@1¾¢*

### Wedges—
*Oil Finish.....lb., 2¼@2¾¢*

### Weights—Hitching—
Covert Mfg. Co.....30&2½%

### Sash—
*Per net ton, f.o.b. factory: Eastern District....$20.00@— Western and Central Districts .....$20.00@—*

### Wheels, Corundum and Emery—
Pike Mfg. Co., Corundum, 65%; Emery .....75%

### Well—
*8-in., $2.00; 10-in., $2.30; 12-in., $3.00; 14-in., $4.45.*

### Wire and Wire Goods—
*Bright and Annealed:*
*6 to 9.....72&10&7½%*
*10 to 18.....72½&10&10%*
*19 to 26.....75&10&10&2½%*
*27 to 36.....77½&7½%*
*Galvanized:*
*6 to 9.....72½&10%*
*10 to 14.....72½&10&5%*
*15 to 16.....72½&10&5%*
*17 to 18.....72½%*
*19 to 26.....70&5&2½%*
*27 to 36.....65&10&10%*
*Coppered:*
*6 to 9.....65&10&10%*
*10 to 14.....70&10&5%*
*15 to 18.....65&10&10&10%*
*19 to 26.....70&5&2½%*
*27 to 36.....72½&10&2½%*
*Tinned:*
*6 to 18.....67&10&10%*
*Brass .....16¼¢ lb., base*
*Copper .....15¾¢ lb., base*
*Cast Steel Wire.....50%*

### Spooled Wire—
*Annealed and Tinned.75@75&10%*
*Brass and Copper....70@70&10%*
*Retailers' Assortments, per box, $1.90@$2.10*
Wire Clothes Line, See Lines.
Wire Picture Cord, see Cord.

### Bright Wire Goods—
*Steel Wire Goods.....90&10%*
*Brass Wire Goods, 90&10@90&10&10%*
*Brass Cup and Shoulder Hooks, 85&10%*

### Wire Cloth and Netting—
*Galvanized Poultry Netting, 80&10@80&10&5%*
*Screen Cloth, 12 Mesh, Per 100 sq. ft.: Painted, $1.30; Galvanized, $1.90; 14 Mesh, Bronze $6.50*
*Standard Galv. Hardware Grade: 100 ft. rolls, 2½ to 48 in. wide, Per 100 sq. ft.*
*Nos. 2, 2½ and 3 Mesh....$2.75*
*Nos. 4 and 5 Mesh.....$3.00*
*No. 6 Mesh.....$3.25*
*Nos. 7 and 8 Mesh.....$3.75*

### Wire, Barb—See *Trade Report*

### Wrenches—
*Agricultural, 80&10&5@80&10&10%*
*Alligator or Crocodile..70&10@75%*
*Baxter Pattern S Wrenches, 70&5@70&10%*
*Drop Forged S.....45@45&5%*
Acme .....60&10%
Alligator Pattern, 70%; Bull Dog..70%
Bemis & Call's:
Adjustable S, 40&5%; Adjustable S Pipe, 40&5%; Briggs Pattern, 40%; Combination Bright, 50%.
Steel Handle Nut.....50&5%
Combination Black.....50&5%
Merrick Pattern.....50&5%
Boardman's .....40%
Coes' Genuine Knife Hdl...40&10&5&5%
Coes' Genuine Steel Hdl...40&10&5&5%
Coes' Genuine Key Model..40&10&5&5%
Coes' Genuine Hammer Handle..... 40&10&5&5%
Coes' " Mechanics' "...40&10&10&5&5%
Donohue's Engineer.....40&10%
Eagle .....70%
Gem Pocket.....30%
Hercules .....70%
W. & B. Machinist:
Case lots.....50&10%
Less than case lots.....50%
W. & B. Railroad Special:
Case lots.....50%
Less than case lots.....40&10&5%
Solid Handles, P., S. & W..50&10%; full cases.....50&10&5%
Standard Nipple Mfg. Co.:
Duplex Chain.....50%
Uwanta Wrench Co.:
Uwanta Special, Iron Handle.... 40&10&5%
Other Wrenches.....50%
Vulcan and Agrippa Chain.....50%
Whitaker Machinists'.....50&10%
Wizard Adjustable Ratchet.....50%

### Fruit Jar—
Beni, P. Forbes, Triumph, ₱ gro.. $7.50; per doz.....$0.90

### Wrought Goods—
*Staples, Hooks, &c., list March 17, '02.....90@—%*

## Zinc— *(Cask lots at mill.)*
*Sheet.....per 100 lb., $7.00*

# THE IRON AGE

New York, Thursday, December 3, 1908.

## The Steel Car Plant of the Bettendorf Axle Company.

The expansion of the Bettendorf Axle Company's operations in the past few years has involved important construction at Bettendorf, a suburb of Davenport, Iowa. Here the company has 70 acres of land which is being rapidly utilized for manufacturing purposes, the building of steel freight cars having been begun this year. Steel car construction calls for the handling of a large tonnage each day of various forms of steel, and a modern plant like that at Bettendorf involves the provision of plenty of room for the placing of bulky parts while in process and pending their assembling, while at the same time there must be the closest connection between each department and the one involving the next operation, so that no time be lost in the progress of material toward the final product. A feature of the Bettendorf plant which deserves particular mention is the unusual outfit of hydraulic presses, more than 60 being in use, varying in capacity from 50 tons to 1800 tons. An idea of the power developed is obtained from the statement that in the largest of these presses 24-in. I beams are shaped cold, the ends being reduced and the beams otherwise shaped besides being punched in various places. All the smaller car parts except castings are shaped and prepared for use in the same way. The special hydraulic machinery was designed and built by the company.



Fig. 1.—Main Bay of Bettendorf Axle Company's Steel Car Works.—Assembling and Finishing Department.

The main shop, of which a view in the main bay is given in Fig. 1 is 240 x 700 ft. Its relation to the auxiliary buildings and to the complete track system is shown in the plan view, Fig. 2, which takes in a stretch of about one-quarter mile from east to west. As the progress of material is from east to west, or from right to left in the ground plan, the hydraulic presses are located in the east end where bolster and car parts are shaped and punched. The car and bolster riveting department are in the west end of the shop. Castings are brought from the storehouse on the south into the center of the main shop where they are riveted to the steel bolster and car parts. In the west end the body and truck bolsters, steel under frames and all steel cars are assembled, painted and shipped. In the main bay, where steel cars are assembled and finished, the heavy parts are handled by overhead cranes. There are six of these, ranging from 5 to 15 tons capacity.

Fig. 3 shows a line of mounted wheels in the assembling department with a pile of Bettendorf cast steel side frames at the right. The parts of the track, including bolsters, brake beams, springs, wedges and brasses, are placed at intervals along the track within easy reach of the assemblers. A pair of mounted wheels is run upon a track elevated sufficiently to make handling most convenient for the workmen and one side frame is put in position. The wedges and brasses are then inserted in the journal boxes and the truck bolster set in place. Then the second side frame, together with its brasses and wedges, is added. Next the bolster is raised up against the top arch bar and the spring plank and springs are slipped into position. Then after the brake beam is hung and the brake rigging attached, the truck is completely assembled and ready to be placed under a car. It requires about 8 min. to assemble this truck and 9 min. to dismantle it after it has been placed under a car. Figs. 4 and 5 show assembled trucks with cast steel side frames having journal boxes cast integral. Aside from dispensing with the numerous bolts and nuts used in the arch bar truck a considerable decrease in weight is secured by this design. The arrangements for assembling have proved excellently adapted to the requirements; in several particulars the plant is unique in the economies thus provided.

Representing the exceptional equipment of hydraulic machinery, Figs. 6 and 7 are interesting. In the former one of the largest hydraulic presses in the shop is shown. It has a capacity of 1500 tons and is used exclusively for punching and shaping large 24-in. I beam center sills and side sheets and for shearing and shaping steel gondola drop bottoms and other portions of steel cars. Punching

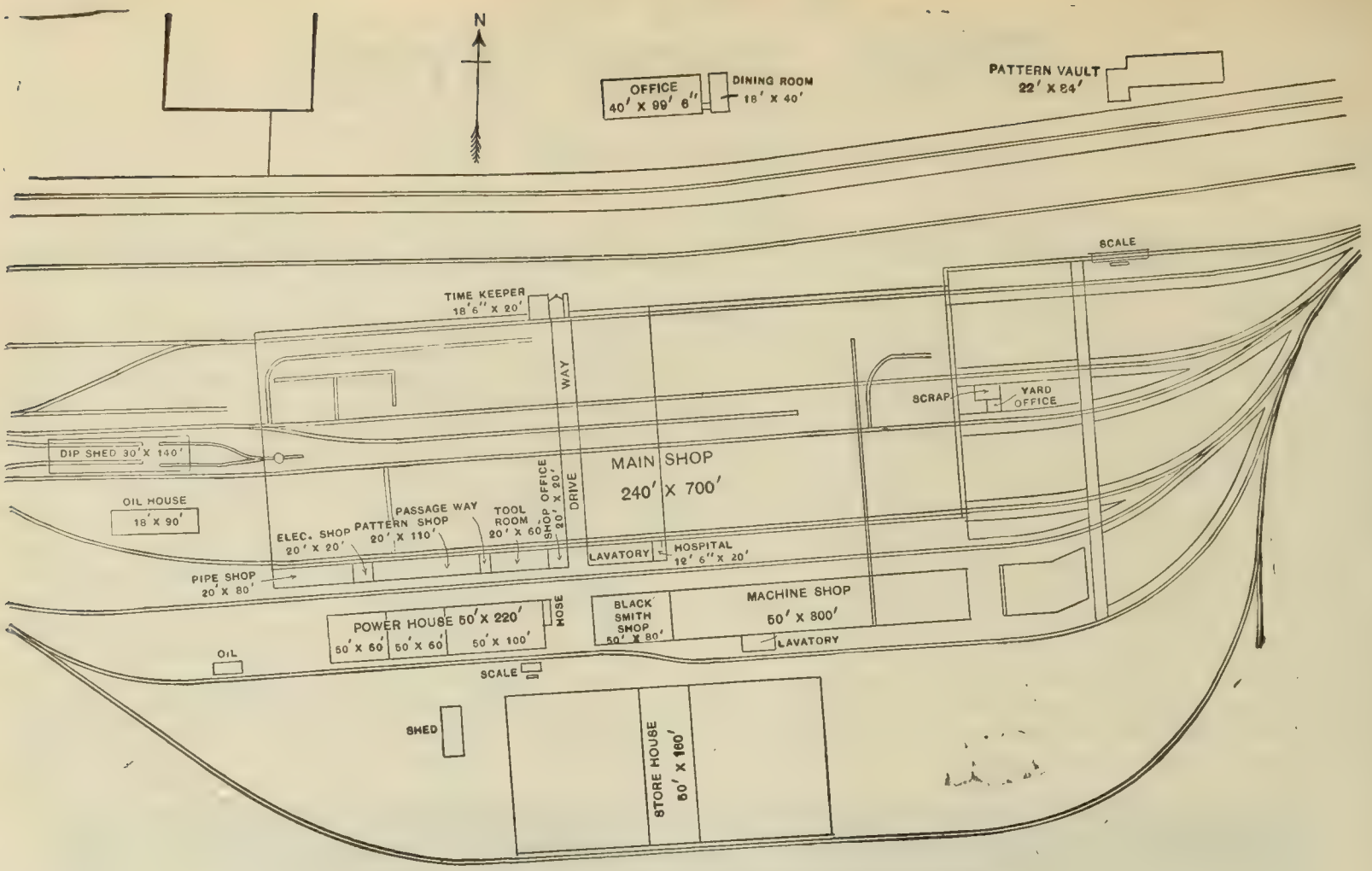



Fig. 2.—Plan of Main Shop and Auxiliary Plant at Bettendorf.

and shaping are done at one operation. The view of the main bolster department, Fig. 7, shows at the left four hydraulic presses of 1200 tons capacity, used for punching, squaring and shaping the I beams and plates used in the construction of the Bettendorf I beam bolsters. Assembling, riveting and inspection in the bolster department are represented in Fig. 8.

In addition to the hydraulic machinery the plant is well equipped with machines operated by electricity or compressed air. There are 11 electric traveling cranes, furnished by Pawling & Harnischfeger, Milwaukee, Wis., and the Cleveland Crane & Car Company, Wickliffe, Ohio. Much of the riveting, particularly of sheets, is done by compressed air, which is also made use of in the chipping

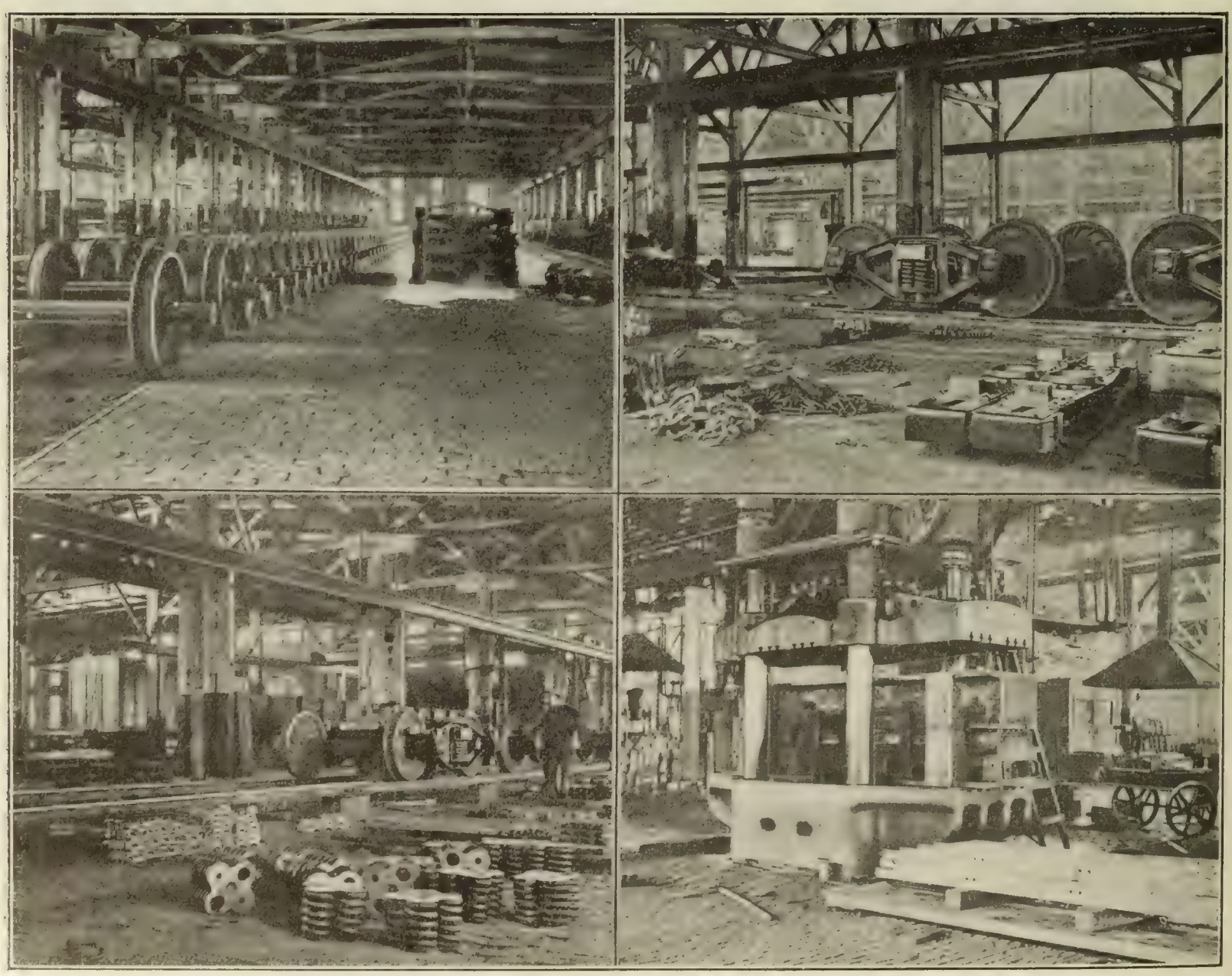


Fig. 3.—Mounted Wheels in Assembling Department.—Cast Steel Side Frames at the Right.

Fig. 5.—Another View in Assembling Department, Showing Elevation of Track.

Fig. 4.—Assembled Trucks with Steel Side Frames, Journal Boxes Being Cast Integral.

Fig. 6.—1500-Ton Hydraulic Press.

and finishing of castings. Air is used for the sand blast employed to clean sheets, plates and other parts preparatory to painting. There is a complete electric light plant which supplies light for the shops and offices.

The machine shop was at first in the power building, but the space proved quite inadequate. A large new machine shop was finished this year, standing east of the power house and south of the main shop. The building is 50 x 380 ft., the machine shop occupying 300 ft. of the length, while 80 ft. at the west end is utilized for the blacksmith shop.

The power house is 80 x 220 ft. Six horizontal boilers with an aggregate capacity of about 1000 hp. are in the west end of the building, and the engine room adjoining contains the pumps and machinery.

South of the power house and machine shop are extensive storehouses for material, and to the west are the paint shop and other minor buildings in a group by themselves. The Davenport, Rock Island & Northwestern, the Chicago, Milwaukee & St. Paul and the Chicago, Burlington & Quincy Railroads run through the manufacturing tract, and excellent switching and yard facilities, including four tracks running through the main buildings, have been obtained. Locomotive cranes are used for loading and unloading materials in the yards and shops.

Beginning about 10 years ago with the manufacture of I beam bolsters in its old Davenport plant, the Bettendorf Axle Company has added successively the Bettendorf steel car underframe, the cast steel truck with integral journal boxes and finally complete tank and freight cars. Of the bolsters there are now over 500,000 in service and the car truck with the one-piece frame has been making rapid progress. Tank cars of the Bettendorf type have been furnished to 40 private car lines. Recently an order for 1000 gondola cars was completed for the Chicago, Burlington & Quincy and for some time an order for 2500 steel underframes for the St. Paul has been going through the works at the rate of 25 a day. The plant has a daily capacity of 25 complete cars or 40 steel under frames.



Fig. 7.—View of Main Bolster Department, Showing Presses Used for Punching and Shaping Beams and Plates.



Fig. 8.—Portion of Bolster Department Devoted to Assembling, Riveting and Inspection

# Efficiency Tests of Milling Machines and Milling Cutters.*

BY A. L. DE LEEUW, CINCINNATI, OHIO.

When the author conducted the speed and feed tests of milling machines herein described at the works of the Cincinnati Milling Machine Company the main points to be settled were: How much metal shall a machine of given size be capable of removing? How much power is required for this work on existing machines? Is it possible to improve on the efficiency of present machines and still produce a commercially successful machine? How much power is required for the feed? What is the efficiency of the feed mechanism? The first question is largely a matter of competition. Usually in the design of a new line of machines the desired capacity is placed somewhat higher than that of other makes of similar machines. The customary method is to increase the size of driving pulleys or belt, or the gear ratio, or any combination of these elements. This is not advisable, for two reasons. There is nothing to prevent competitors from going still further and so securing a seeming advantage in the sale of their machines without sacrificing anything but a few pounds of cast iron, and the purchaser of the machine is not interested in the amount of power which he can feed into the machine, but in the power of the spindle end. It is better if he can take a given cut with less power, for the power saved would otherwise be used to wear or destroy the machine.

To determine how much power was required to remove a given amount of metal, tests were made on various machines. The metal to be cut was in all cases, both in these tests and in those to be described later, steel of the following specifications:

| | |
|---|---|
| Combined carbon | 0.16 per cent. |
| Silicon | 0.008 per cent. |
| Manganese | 0.51 per cent. |
| Phosphorus | 0.086 per cent. |
| Sulphur | 0.041 per cent. |
| Tensile strength per square inch | 52,378 lb. |
| Limit of elasticity | 30,313 |
| Elongation, per cent. of length | 50 per cent. |
| Per cent. reduction of area | 54 per cent. |

* Abstract of a paper printed in the November *Journal* of the American Society of Mechanical Engineers and to be presented at the New York meeting, December 3, 1908.

The test blocks were 18 x 5½ x 5½ in., with the ends milled in to provide for holding the block on the table of the milling machine. In all tests a high speed steel spiral cutter with nicked teeth was used, 3½ in. in diameter, 6 in. face. The driving was by an electric motor, belted to the machine. All conditions were as near as possible those under which most milling machines have to run. The power consumed was ascertained by reading an ammeter and a voltmeter, and the metal removed by measuring width and depth of cut and the feed per minute. The amount of feed, as indicated on the index plate of a milling machine, is an approximation, not close enough for a test. The actual amount of feed was therefore computed from the gearing. If the feed is expressed in thousands of an inch per revolution, the feed per minute depends on the spindle speed. The exact number of revolutions of the spindle at normal motor speed was determined by computing the gear ratio and pulley ratio. The speed of the first driving shaft of the machine was determined by a tachometer. All readings were taken simultaneously. The spindle speed and the feed per minute were corrected according to the tachometer reading. Where the feed of the machine was independent of the spindle speed—that is, taken from a constant speed shaft and therefore expressed in inches per minute—the same correction was made, as the amount of feed and therefore the amount of metal removed was again a function of the speed of the first driving shaft.

These preliminary tests showed considerable differences in the efficiency of different machines; one would cut considerably more material than another for a given horsepower supplied by the motor. They also showed that the efficiency of all machines was relatively low as compared to a lathe. As the main problem in a machine shop is not to save power, but to get the greatest possible output, this lack of efficiency cannot be held against the milling machine as a type, for its other peculiarities make it highly efficient as a producer of work. The fact that one machine is so much more efficient than another is of great importance, however. It shows that the less efficient machines use a needlessly large amount of power, have less capacity than they might have for removing metal, and use a large amount of power constantly for the purpose of breaking down the machine.

More complete tests were made after a line of high power millers based on the results of the preliminary

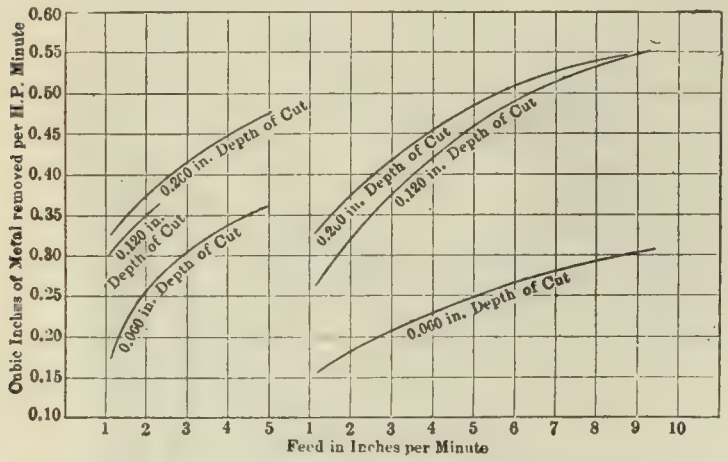



Fig. 1.—Cutting Speed 12 Ft. Per Minute.




Fig. 2.—Cutting Speed 32 Ft. Per Minute.

Work of 1 Hp. Min. Measured in Cubic Inches of Metal Removed, Feed Increasing.

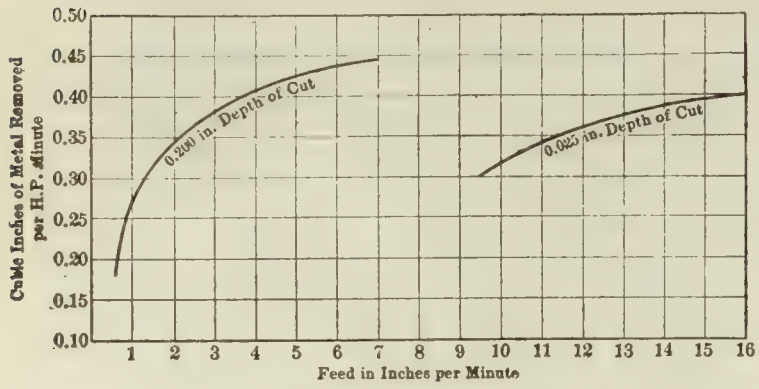



Fig. 3.—Work of 1 Hp. Min. Measured in Cubic Inches of Metal Removed, Cutting Speed 45 Ft. Per Minute, Feed Increasing.

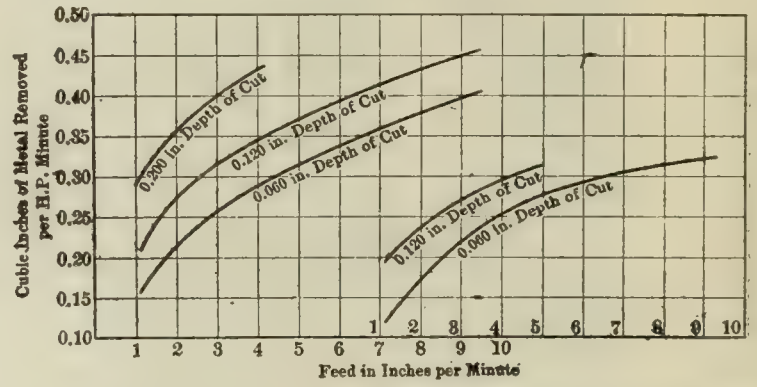



Fig. 4.—Cutting Speed 67 Ft. Per Minute.

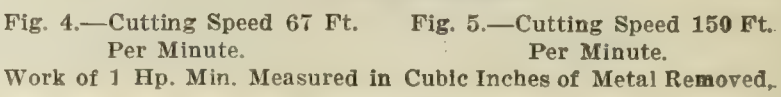



Fig. 5.—Cutting Speed 150 Ft. Per Minute.

Work of 1 Hp. Min. Measured in Cubic Inches of Metal Removed, Feed Increasing.

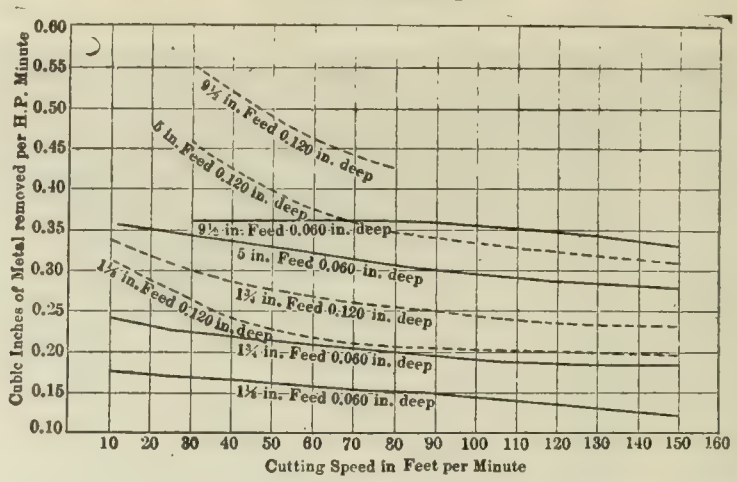



Fig. 6.—Work of 1 Hp. Min. Measured in Cubic Inches of Metal Removed, Cutting Speed Increasing.

tests was developed and completed. These tests were of three kinds—determining the amount of metal removed per horsepower, the efficiency of the feed mechanism and the efficiency of the driving mechanism.

**Power Required to Remove Metal.**

The same motor and belt were used for all cutting tests. Series of tests were made with a 1-16-in. depth of cut, ⅛, 3-16, ¼ and ⅜ in. Each complete test was repeated four times. The cutter was sharpened in the ordinary way before starting a complete series, and not resharpened during test. The same cutter, resharpened, was then used for the next machine. For each depth of cut a number of different feeds were used, every alternate one from the next to the lowest up to the highest. It was impossible to go through the entire series with the deeper cuts, as the belt would slip before the last feed was reached. Readings were taken, when the belt slipped, but these readings were not used in plotting curves. They served as a check on the belt tension. It was found that the ammeter readings gradually increased from the first to the fourth series. This was probably due to the gradual dulling of the cutter.

In plotting the curves, the test readings were first corrected; the power readings by means of the efficiency chart of the motor; the amount of metal for loss of speed of the machine. The curve as plotted is the curve of the average value of powers. Where the curve shows an amount of metal removed of, say, 5½ cu. in. per minute, this amount may be due to 1-16-in. depth of cut and a 16-in. feed, ⅛-in. depth of cut and 8-in. feed, or ¼-in. depth of cut and 4-in. feed. The power required to remove a given amount of metal varied with the speed, depth of cut and feed per minute, and seems to have a tendency to the minimum when the section of the chip removed per tooth approaches most nearly a perfect square. Figs. 1, 2, 3, 4, 5 and 6 show curves giving relation between power required and metal removed under different conditions of speed, feed and depth of cut. They are partly derived from the tests described, and partly from tests made for the special purpose of ascertaining these relations. The fact that the power required changes with these conditions of feed, speed and depth of cut made it impossible to plot a single curve giving relation between power and metal removed. Besides, the same speeds and feeds obtainable on one machine were not obtainable on another. And again, the amount of slippage or slowing down of the machine was not always the same for the same amount of metal removed. For this reason the averages have been plotted, and these averages were obtainable for the various machines in substantially the same manner. The curves were extended to the zero point, but the high point of all curves is the actual highest average obtained, so that the curves also compare maximum capacities of these machines. This should be taken as significant, however, only when remembering the conditions under which the machines were tested, and then only as a measure for the maximum driving power.

**Power Required for Feed Mechanism.**

Tests made by the Cincinnati Milling Machine Company and other milling machine manufacturers had shown that considerable power is required for the feed drive of a column and knee type of machine. As much as 40 per cent. of the total power applied might be used for the feed alone, and this could amount to as much as 3½ hp. on a No. 4 machine.

To determine the efficiency of the feed mechanism the power used was measured, as well as the work done by the table. As the power required varied widely, and it would be impossible, therefore, to obtain an efficiency chart for some small motor covering the entire range of powers used, the idea of using an individual motor for the feed alone was abandoned. Instead, the same motor was used as had been used for other tests. The efficiency of this motor was not known below one-quarter load. It was then necessary to provide an artificial and constant load for the motor. For this purpose the square box shown in Fig. 7 was mounted on the spindle arbor. It had a paddle inside and a number of obstructions which made the required resistance for the water in the box. By varying the water in the box and the paddle speed any load could be produced within the range of the apparatus, and this load was constant. The box was kept from rotating by the over arm of the machine. The dead load was adjusted until it came within the efficiency curve of the motor. The part of the apparatus used for measuring the work done by the table consisted of a dynamometer, graduated and calibrated up to 8000 lb.

One end of this dynamometer was attached to the table of the milling machine. A chain at the other end was wrapped around a drum mounted on a Weston type

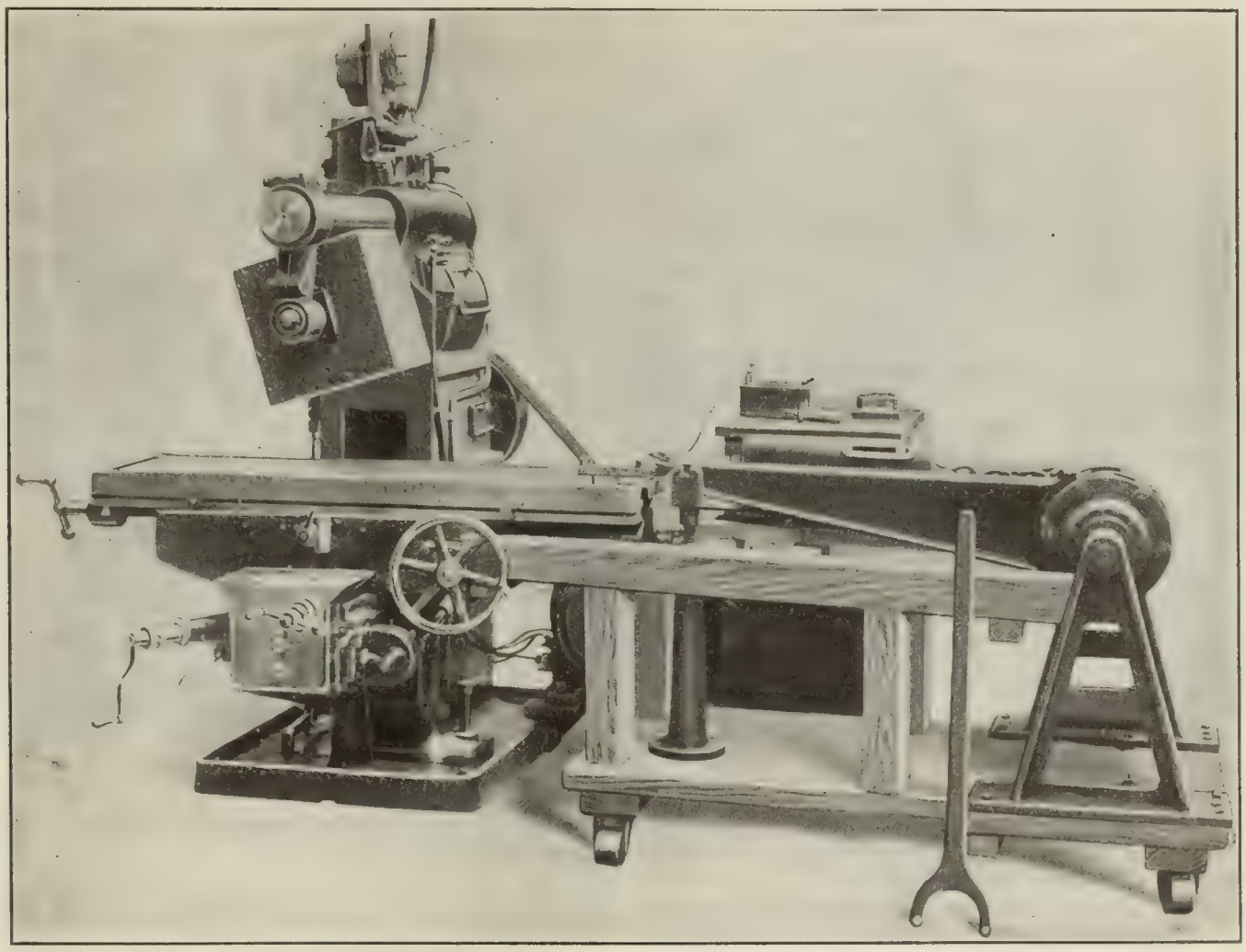


Fig. 7.—Apparatus for Testing the Feed Efficiency of a Milling Machine.

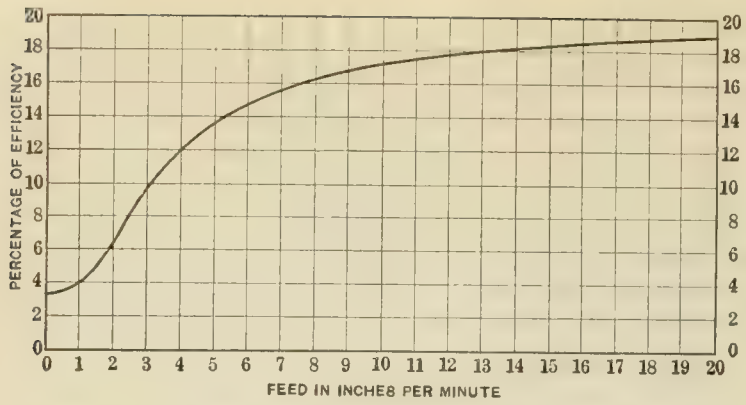



Fig. 8.—Feed Efficiency Curve for a No. 4 Plain Miller.

brake. An arm, mounted on the brake casing and visible in the drawing, had been used to determine the efficiency of the driving mechanism, but was not used in this experiment, except to form an abutment for the brake. The brake itself was used only as a safety device, being set at sufficient pressure for the test, but not enough to wreck the machine. The test was carried out as follows: All even feeds were taken from the second lowest to the highest. For each feed the following pressures were selected: 1000, 2000, 3000, 4500 and 6000 lb. The entire series was repeated once. If something happened to disturb the proceedings, or if something had to be readjusted, the test was dropped and no curve was plotted until two complete series of tests were made without interruption. A sensitive ammeter reading 1-10 amperes was used. The tachometer served again to take the speed of the first driving shaft, and all corrections were made as in the previous test. With a given feed an entire series of pressures was gone through, after which the amount of feed was changed for the new series, &c.

Before and after each series of readings at the different pressures used for a single feed, the feed mechanism was disconnected to get the reading of the dead load. One observer read the tachometer; another the ammeter; a third the dynamometer, and a fourth was stationed at the feed starting lever. The dynamometer observer would call out sharply when the pointer reached the proper figure. At this moment all readings were taken and the feed disconnected. It was found easy to duplicate the readings in this fashion. The rise in the ammeter readings was gradual, and allowed the observer to take the correct reading every time within 0.1 ampere. Any drop in the speed of the machine was also very gradual, permitting the tachometer readings to be easily duplicated. The only point not so easily duplicated was the reading of the dynamometer, especially at the faster feeds. It often happened that the feed pressure would go somewhat beyond the pressure intended, but the dynamometer did not change its position when the feed was thrown out, so that the observer could take his reading at leisure. Fig. 8 shows the curve of average values plotted from the readings of the test on a No. 4 plain miller. Each ordinate is the average of the ordinates corresponding to a certain amount of feed.

### Tests Upon Efficiency of Driving Mechanism.

The third series of tests relates to the efficiency of milling machines as power transmitting devices—that is, the ratio of input and output of power. Some preliminary tests were made by observing the power at the spindle by means of a Weston type brake, the one illustrated in Fig. 7. This gave fairly good results at the higher speeds, the torque being small; but at the lower speeds and with greater torque the action of the brake became jerky and it was practically impossible to obtain reliable readings. For this reason the tests were carried on with the apparatus shown in Fig. 9.

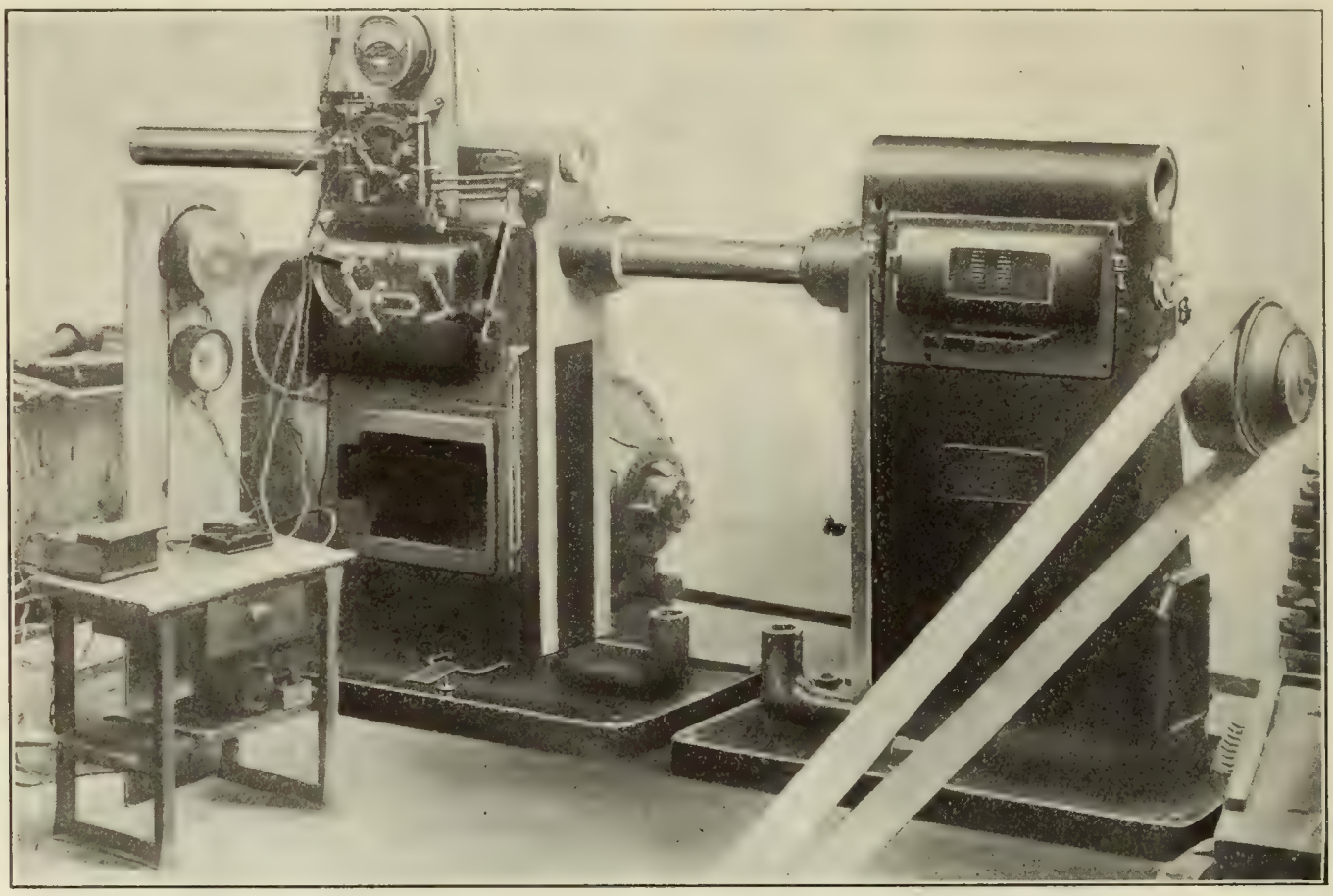


Fig. 9.—Apparatus for Testing the Efficiency of Milling Machine Drives.

This consisted of two No. 4 high power millers, placed opposite each other and connected by a stout shaft. The feed works, knee, saddle and table were removed, leaving the bare frames and driving works. The machines were placed with the spindles approximately in line. A flange was screwed to the nose of each spindle; each flange was provided with a tongue engaging the groove in the similar flange opposing it, and keyed to the connecting shaft. There was plenty of clearance between tongue and groove and also endwise, so that the connec-

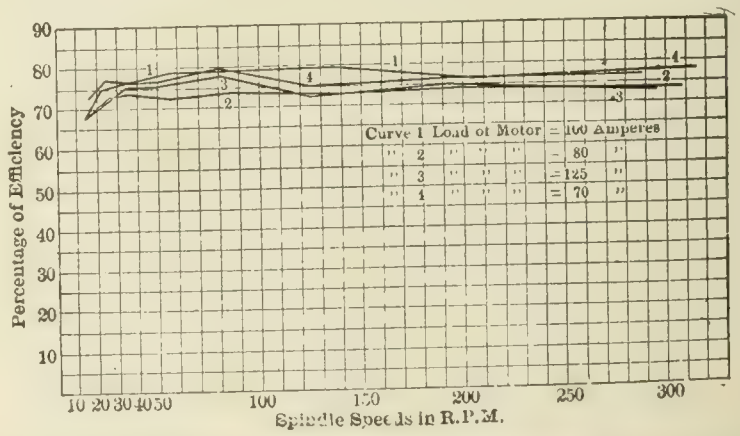



Fig. 10.—Efficiency Curves of a No. 4 Cincinnati High Power Miller.

tion could behave as a universal joint shaft if the spindles were not exactly in line. Flat pieces of steel bolted to the one flange prevented the connection from coming apart. One of the machines was driven by a motor, while the other drove a generator. The current thus generated was dissipated in a water rheostat, by which the current could be closely regulated. There was a set of electric instruments for motor and generator each, so that all readings could be taken simultaneously. Both machines were driven by belts. A tachometer was used to determine if one of the belts slipped excessively.

The speed controlling levers of both machines were always set for the same speed, so that both driving pulleys were always running at the same speed. Different sets of readings were taken. In one set the current consumed was kept at as near 125 amperes as possible; in another at 100 amperes; in another, 80, and in the fourth, 70. Each set of tests was carried out over a number of speeds—namely, the lowest, third, fifth, &c., up to the highest but one. After correcting for motor and generator efficiency, the quotient of the corrected

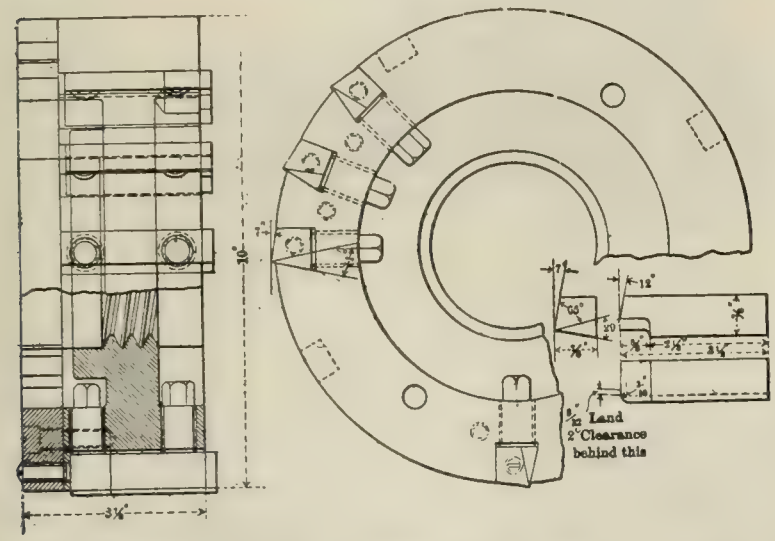



Fig. 11.—Details of a 10-In. 16-Blade Cutter Used in the Tests.

readings gives the product of the efficiencies of the two machines. It would be proper to consider the two machines as of equal efficiency if the conditions of load were the same, for these tests did not attempt to establish the efficiency of an individual machine, but of a type of machines; but the conditions of the load were not the same for both machines. The load was the same only at the spindle noses. From there on and up to the driving pulley the load increased in the first and diminished in the second machine. The efficiency of the first machine is made up of the efficiencies of its bearings, shafts, sets of mating gears, &c. These efficiencies may be called $e$ 1, $e$ 2, $e$ 3, &c. The total efficiency of the first machine being $E$, then $E = e\,1 \times e\,2 \times e\,3$, &c. Similarly, taking $F$ as the symbol of the efficiency of the second machine, then $F = f\,1 \times f\,2 \times f\,3$, &c. The $f$'s may be assumed to differ from the $e$'s on account of the difference in load. It was found, however, on taking the readings that there was such a small difference in efficiency, whatever the load, that it seems to be allowable to consider the efficiency as practically constant, in which case the efficiency of each machine equals the square root of output divided by input. The curves presented in Fig. 10 are based on this assumption. It will be seen that the efficiency of the machine varies from 67 up to 79.7. Various tests made at other times have shown repeatedly efficiencies above those plotted in the curves.

### Efficiency of Cutters of Different Types.

The milling machine is not essentially less efficient as a power transmitter than any other machine tool, but the amount of metal removed per horsepower per minute is low; much lower, in fact, than for the lathe or planer. Were it not for other properties the milling machine could not compete with either of these two machines. Still the milling machine would be esteemed higher if its power consumption could be brought down to the level of the lathe. It is obvious that this cannot be done by increasing the efficiency of the mechanism, as the margin is not enough to allow of any material improvement. Any substantial increase of efficiency must be found in improvements of the cutting tool. With this in mind, tests were made of the power required to remove a given amount of metal with different styles of cutters. These tests have not been carried out over a long enough period or with a large enough variety of cutters to give absolutely reliable results; yet, incomplete as they were, they bring out in a startling way the amount of improvement that may be made in this direction.

Cuts made with a spiral cutter with nicked teeth showed a best efficiency of 0.48 cu. in. of metal per net horsepower per minute, and this efficiency was obtained only in a few isolated cuts and with a very sharp cutter. Cuts made with a 14-in. face cutter with inserted teeth and on a No. 4 Cincinnati high power miller showed a production of 0.64 cu. in. per net horsepower per minute, an increase of 33 1-3 per cent. over the spiral cutter. This result confirms the general belief that a face cutter cuts freer than a spiral cutter. The teeth of this face cutter were radial, as it is customary to make them. Tests made with the cutter shown in Fig. 11 showed an efficiency of 0.96 cu. in. of metal per net horsepower per minute, and a few isolated cuts even higher. This is an improvement of 100 per cent. over the spiral cutter and 50 per cent. over the face cutter with radial teeth. The cutter shown in Fig. 12 showed the same efficiency. Both cutters have the blade set tangent to a circle concentric with the cutter, thus giving them a rake angle of 15 degrees. The clearance was 7 degrees. The points of the cutting blades were rounded to prevent injury by burning or chipping, and this reduced the effective rake near the horizontal tangent to this curve. It was for this reason that the blades were set leaning backward as in Fig. 12. But for this curvature at the point of the blades, the simpler construction of Fig. 11 would be perfectly satisfactory. The leaning back of the blades is rather a refinement than a necessary improvement.

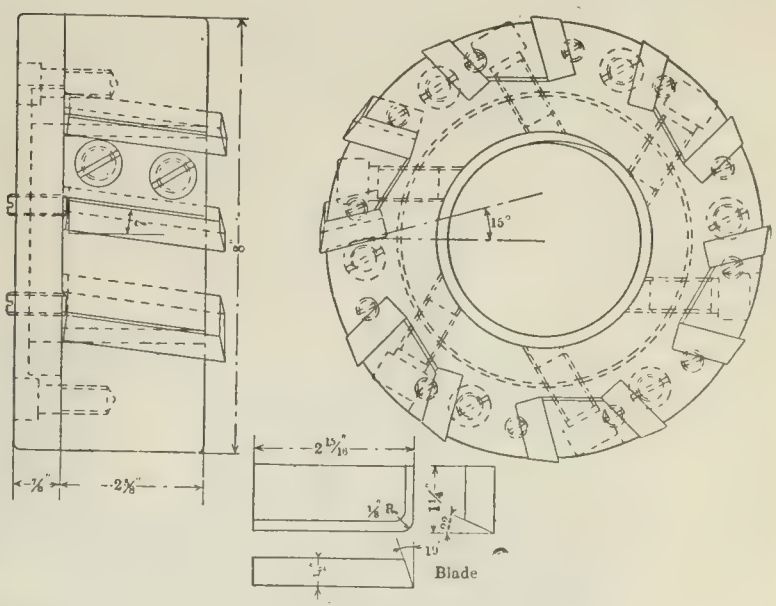



Fig. 12.—Details of an 8-In. Inserted Tooth Cutter Used in the Tests.

The tests of these cutters were made on a vertical machine, which had the same driving parts as a horizontal machine of the same size, and besides an additional two shafts and four gears, so that it is safe to say that its mechanical efficiency must be less than that of the No. 4 horizontal machine used with the spiral cutter with nicked teeth. The action of the feed on a machine using this cutter may be somewhat different from that on a machine using spiral cutters. Whether there is such a difference and what it amounts to has not been ascertained by tests. The fact that, generally speaking, the face cutter with rake removes double the amount of metal with the same amount of power as compared to the spiral mill is significant and places the vertical machine in the front rank for slabbing work wherever it is possible to use this type. Equally significant is the fact that a cutter with rake removes 50 per cent. more metal than a cutter without rake.

The Pittsburgh office of the Ernst Wiener Company, New York, will in the future be located in the Union Bank Building, with John T. Cawley in charge.

# Recent Improvements in Lifting Magnets.

## The Electric Controller & Mfg. Company's Type S. A. Magnet.

The first commercial lifting magnet was placed in service in this country about 13 years ago. This magnet was designed by S. T. Wellman for handling plates and slabs, and proved fairly satisfactory for such service. The design was later improved by E. B. Clark, then electrical engineer for the South Works of the Illinois Steel Company. The manufacture of lifting magnets of both the Wellman and Clark types was taken up by the Electric Controller & Mfg. Company (then the Electric Controller & Supply Company), Cleveland, Ohio, more than 10 years ago. A special magnet testing machine was designed and installed and much valuable data bearing on the design of lifting magnets was secured.

Magnets of the Clark type used with excellent results in the handling of smooth homogeneous material such as plates, blooms and slabs, however, were useless for handling rough and detached material such as pig iron, crop ends and scrap. A magnet which would readily lift a steel ingot weighing 10,000 lb. would not lift a single pig of iron weighing 100 lb. The large amounts of pig iron and scrap handled by tedious hand methods at all steel and iron works and foundries offered a tremendous field for the saving of labor, providing a practical lifting magnet could be developed for the purpose. Perhaps the first experiments in this direction which gave promise of commercial results were made at the West Seneca plant of the Lackawanna Steel Company under the direction of E. D. Edmondson and L. R. Palmer, a lifting magnet being constructed which actually lifted pig iron, though in rather small quantity taking into consideration the weight of the magnet and its current consumption.

A commercially successful lifting magnet for handling pig iron, scrap and miscellaneous material was placed on the market by the Electric Controller & Mfg. Company in March, 1905. This magnet was built in two sizes, commercially known as No. 1 and No. 2 Type S Magnets. Over 150 of these magnets have since been placed in service. This type of magnet has also been introduced in Germany and England. Recently improvements have been made in these magnets, making them more dependable and efficient in the handling of material. A successful lifting magnet must withstand severe abuse and rough handling. It must operate under all weather conditions, and its insulation must withstand a voltage much higher than line voltage due to the inductive kick which occurs when the circuit of the magnet is opened. Its winding must not be injured by the heat necessarily generated within it, nor by external heat when the magnet is called upon to handle hot material.

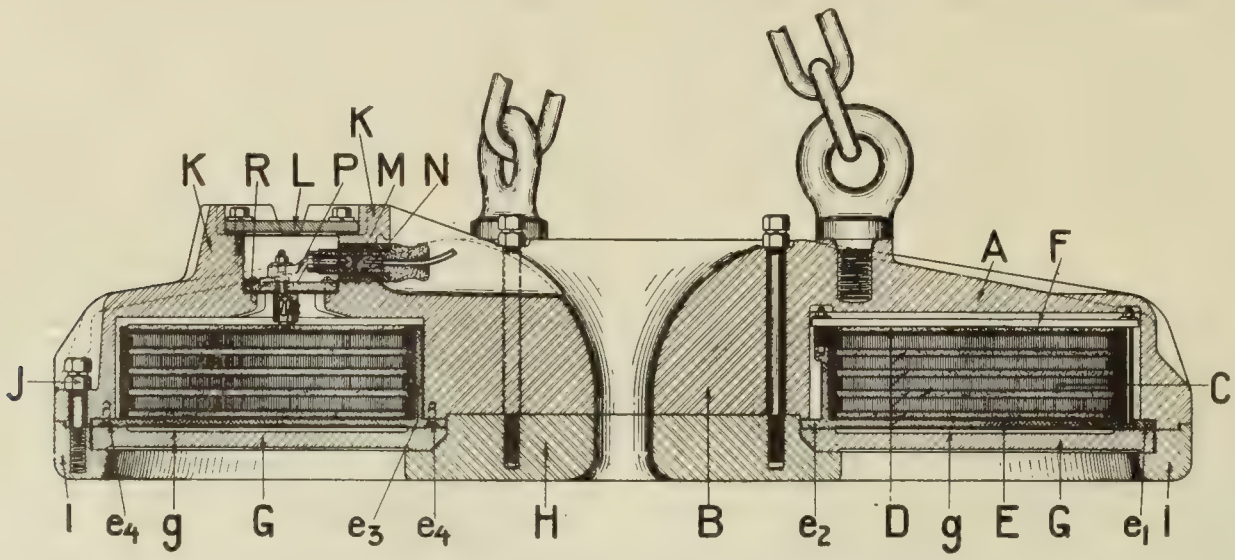



Fig. 1.—Section of the Type S. A. Lifting Magnet Made by the Electric Controller & Mfg. Company, Cleveland, Ohio.

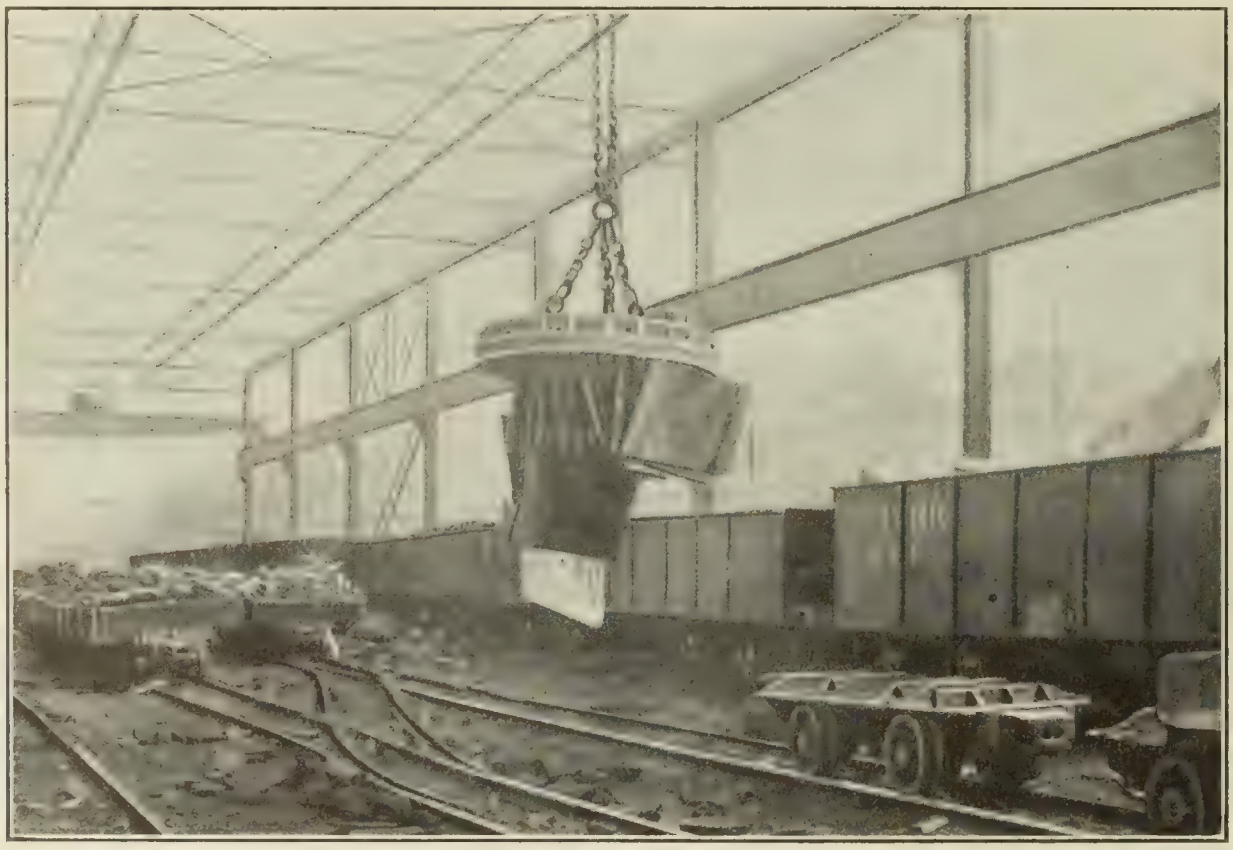


Fig. 2.—A No. 6 Type S. A. Magnet Lifting Plate Scrap Weighing 1800 Lb. at the Homestead Works of the Carnegie Steel Company.

Among the accompanying engravings Fig. 1 is a typical cross section of a type S. A. magnet, and shows the arrangement of parts. A is the body or frame of the magnet which is an annular casting of special electrical steel heavily ribbed on both its upper and outer surfaces. The ribs add surface for dissipating heat, stiffen the case and increase the cross section of the magnetic circuit. B is the core of the magnet surrounded by the winding

C. This winding is a series of coils of flat copper strips, the turns of which are insulated with asbestos. Neighboring coils are mechanically separated and electrically insulated by noncombustible insulating disks D. The coils are wound upon a heavy brass form E, which supports the coils during the winding and insures their uniform shape since there is no danger of springing or otherwise distorting the winding. After the coil is wound and the outer insulating disk in place, the entire winding is rigidly clamped to the form by radial straps F, which are bolted and locked in place, making the winding and the brass form which carries it a rigid unit. The completed winding is then dried in a steam heated chamber under a vacuum, next impregnated with a plastic insulating compound, first under a vacuum and then under air pressure, and finally is again dried under a vacuum. The completed winding, thoroughly fire and water proof, is then placed in the magnet case.

The form E has an outer flange, $e_1$, an inner flange, $e_2$, and the central vertical flange $e_3$, which centrally supports the winding. The inner and outer flanges are finished and engage with finished surfaces on the inner and outer pole faces of the magnet case, thus completely sealing the lower face of the winding chamber, a water tight joint being insured by clamping the flanges in place with screws $e_4$ $e_4$, spaced 4 in. apart entirely around the flanges $e_1$ and $e_2$. When the winding is thus assembled in the magnet case the lower face of the coil form E is covered by a heavy annular plate of nonmagnetic manganese steel, G, which in turn is held in place by pole shoes H and I, bolted respectively to the inner and outer poles of the magnet case. Both of the pole shoes have shoulders which protect the clamping bolts from shearing strains. The heads of the outer clamping bolts J are located between adjacent ribs on the outer surface of the magnet case, where they are protected from abrasion.

The manganese steel plate G carries raised shoulders around its inner and outer peripheries, by which the plate is made to seat against the magnet poles, and an air space or cushion is left under the winding at *g*. This causes shocks taken by the outer plate G to be transmitted directly to the magnet frame instead of to the winding, as would be the case if only a single bottom plate were used. The pole shoes are so disposed with respect to the outer plate G that none of the clamping surfaces can become battered over, and, therefore, the plate G may always be readily renewed. The entire lower or wearing face of the magnet is renewable, and

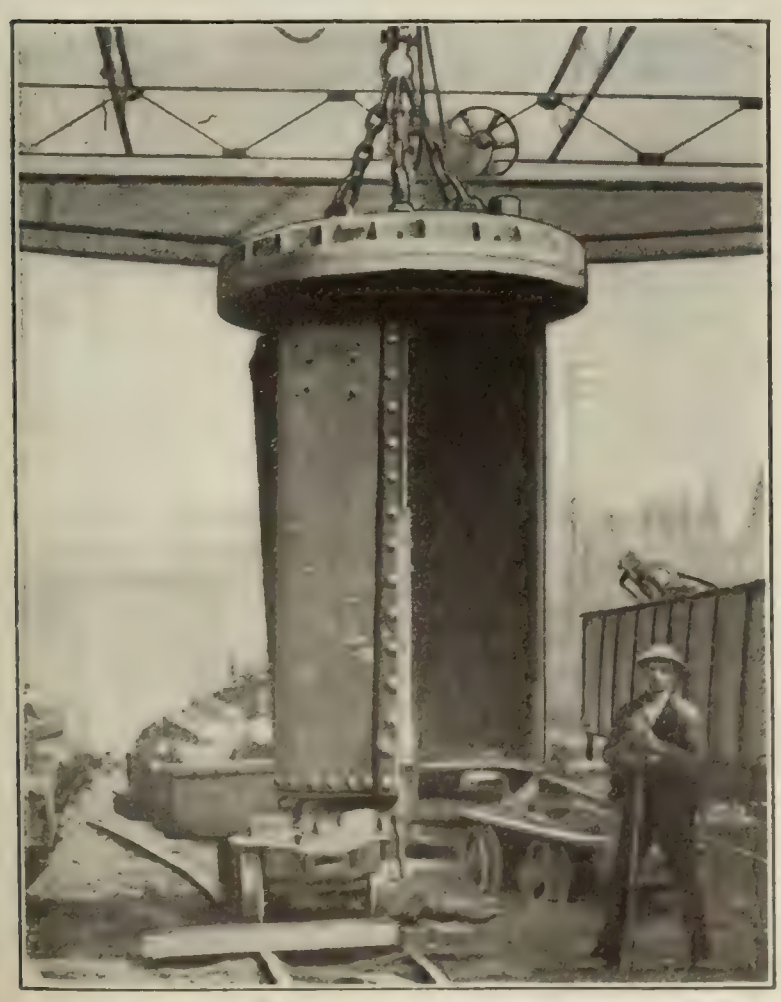


Fig. 3.—A No. 6 Type S. A. Magnet Lifting Three Charging Boxes.



Fig. 4.—A No. 6 Type S. A. Magnet Lifting Two Ingot Butts.

renewals can be readily effected in the field, there being no occasion to expose or disturb the winding or break the water tight joint between the coil form E and the frame of the magnet.

The terminal cavity is surrounded by raised walls, K, K, cast integral with the magnet case, and thick enough to be as strong as the magnet case itself. The cavity is closed at the top with a heavy steel cover, L, which seats against a gasket to form a water tight joint, and is firmly bolted in place, the heads of the bolts being protected from abrasion by the walls of the cavity. The terminals themselves are of plug type, permiting quick attaching and detaching of the service wires. The female members M of the terminal are inclosed in an insulating tube, so that a ground or short circuit cannot result even if the service wires are left hanging from the crane with current on. The insulating tubes are each incased in a steel tube to prevent abrasion, and these steel tubes fit closely in babbitted openings, N, in the side of the terminal chamber. The male members P of the plug connectors are mounted upon a heavy plate, R, of fireproof insulating material, which closes the entrance to the winding chamber, and is seated upon a gasket to effect a water tight joint. The plugs proper are separable from the terminals by removing the nuts which hold them in place. The plugs and also the plate R may, therefore, be removed without throwing any strain on the connections to the winding, the connections consisting of loops of very flexible copper ribbon inserted in the boxlike ends of the terminal studs.

The No. 4 type S. A. magnet, 40 in. diameter, lifts substantially as much as older forms of magnets 50 in. diameter, with substantially the same current consumption, but weighs 2000 lb. less. Comparing the two magnets on a 5-ton crane having a 25-hp. hoist motor, with equal lifts, the No. 4 S. A. magnet has the advantage of 2000 lb. in total load to be lifted, or 20 per cent. of the total hoisting capacity of the crane. This will mean a saving in current consumption of 20 amperes on the part of the hoist motor, and by virtue of this lower current consumption and lighter load the hoisting speed will be higher and the amount of material handled in a given time materially increased. Proportional increases in efficiency are shown by the Nos. 5 and 6 type S. A. magnets. The No. 6 magnet is declared to be the most powful commercial lifting magnet which has ever been constructed. Figs. 2, 3 and 4 show a magnet of this size in use lifting a variety of loads.

**A Feat in Furnishing a Power Unit.**—A remarkable record for completion, shipment, and installation of a

steam turbine and generator was recently made by the Allis-Chalmers Company in response to an emergency order from the city of Frankfort, Ind., whose municipal light plant was damaged October 28 by a bursting flywheel. The order for a new unit to replace the wrecked engine and generator, specifying shipment in six days, was given the following day and delivered in Milwaukee on the afternoon of October 30. There was a nearly completed turbine in the shops, but no turbo-generator of the required frequency, phase and voltage was available, and a new one had to be entirely wound. Notwithstanding this fact, the generating unit, complete in every detail, was finished November 3 and was forwarded by a special express car designed for the shipment of automobiles, to Frankfort, where it arrived November 4, four days later, and by Sunday morning, November 8, the unit had been completely installed and connected to its auxiliaries. During that day the coils were baked out, and just 13 days from the time the original engine was wrecked the new unit was in regular operation, carrying the station load.

## Effect of the Purity of Water on Its Industrial Use.

In connection with an investigation of the quality of surface and underground waters in different parts of the United States, R. B. Dole of the United States Geological Survey, has made an estimate of the saving that may be accomplished in the production cost of steam by the use of a plant for softening hard water. Mr. Dole says:

Analyses of Maumee River water, selected as a typical hard water, show that it contains incrusting solids amounting to 360 parts per million, 105 parts of which are suspended mud, &c., and the rest carbonate and sulphate of calcium with some magnesium, a combination which inevitably forms a hard scale in boilers. If this water were used in a 1000 hp. boiler, 100.000 gal. daily would be required. In six working days 1800 lb. of scale would be deposited in the boiler. In the following figures, the first set estimates the probable excess cost due to the use of bad water, while the second estimates the probable cost after purifying the water. The inference to be drawn from the difference in dollars and cents is obvious:

*Cost with Use of Hard Water.*

| | |
|---|---|
| Average coal consumption for 1,000-hp. boiler, 48 tons a day; 48 tons of coal at $1.50 is $72. Estimated saving in fuel on this water due to use of treated water is 5 per cent. Five per cent. of $72 is $3.60 per day, or, for 300 working days | $1.080 |
| Cleaning boiler, at $8 per week | 416 |
| Repairs for tubes, &c | 200 |
| Boiler compounds | 250 |
| Coal for raising steam after cleaning, 104 tons at $1.50 | 156 |
| 7½ per cent. depreciation on boiler plant costing $15,000 | 1,125 |
| Total | $3,227 |

*Cost with Use of Softened Water.*

| | |
|---|---|
| 10 per cent. interest and depreciation on softening plant costing $3,500 | $350 |
| Boiler repairs | 50 |
| Chemicals at 1 cent per 1,000 gal | 300 |
| Coal for raising steam after cleaning, 16 tons at $1.50. | 24 |
| 5 per cent. depreciation on boiler plant costing $15,000 | 750 |
| Total | $1,474 |

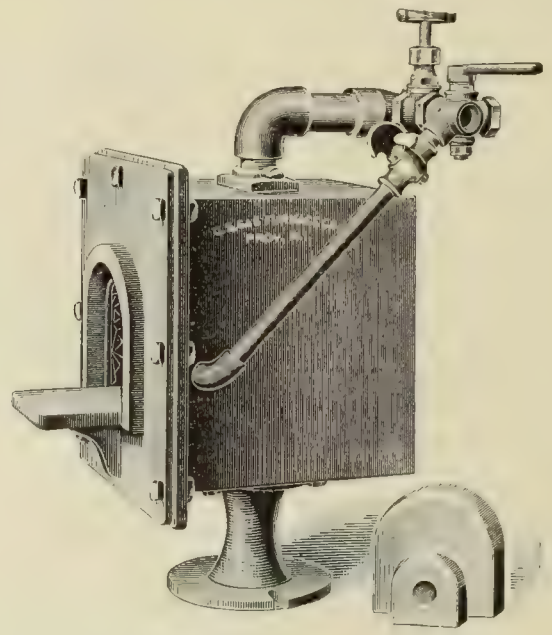
The total saving in a single year is, therefore, $1753, which is practically half the cost of installing a softening plant.

A bronze and tile memorial tablet in honor of the great French scientist, Andre-Marie Ampere, has been set up in the Lackawanna Railroad station at Ampere, N. J., by Dr. Schuyler Skaats Wheeler. This memorial will be unveiled by Monsieur Jusserand, the French Ambassador, who will come from Washington expressly for the occasion, at 3 p. m., Dec. 3. M. Ampere, who founded the science of electrodynamics, and whose name is used throughout the world to designate the unit of electric current, was born at Lyons in 1775 and died at Marseilles in 1836. Ampere, N. J., is the only place in the world named after this distinguished Frenchman, and the tablet is probably the only memorial raised to his honor in America.

## The New United States Bench Forge.

The United States Gas Furnace Company, Providence, R. I., has brought out a new bench forge which is designed to meet the requirements of the tool room or machine shop. Work to which it is adapted includes drawing, forging or tempering tools, brazing, welding, heating stock for bending by passing the piece through the back entrance of the furnace, heating ends of rods for forging or stamping, and for hardening high speed steel tool holder bits. A ladle of babbitt can be melted if held on the front shelf, letting the flame circle around the pot.

The burner is so arranged that the flame heats the forge to a carbon steel or cherry-red heat in 3 min. The lining consists of a single piece of heavy firebrick, which



A Forge for Bench Mounting Made by the United States Gas Furnace Company, Providence, R. I.

can be easily and cheaply replaced. The parts are interchangeable. The equipment includes valves for gas and air. The forge may rest on a bench or on the floor, as desired. It has a heating space 3 in. wide and 6 in. long. The entrance is 3 by 3 in. It consumes 30 cu. ft. of gas per hour, and requires an air pressure of 1 lb. The bench or floor space is 9 by 9 in., and the weight, 50 lb.

## Statistics of Rail Failures.

In a circular issued November 13, 1908, Secretary W. F. Allen of the American Railway Association, 24 Park place, New York, announces that the association's Committee on Standard Rail and Wheel Sections will co-operate with the Committee on Rail of the American Railway Engineering and Maintenance of Way Association in collecting statistics concerning rail failures, rail wear and service of special rail material. The statistics are to be gathered for periods of six months, the first period ending October 31, 1908, for which data are already in the hands of the railroads. By this division of the year a comparative study of rail failures in winter and summer months will be possible. Three blanks have been prepared for these statistics. The first will contain a summary of steel rail failures for six months, compared with the same period of the previous year. The failures are reduced to percentage of tons of rails laid, in preference to the number of rails per 1000 tons of rails laid, since the latter method does not take care of different lengths of rails. This blank will record also the specified chemical analysis of the particular lot of rails from which the failed rail came. Another blank contains data as to the position in the ingot of steel rails which failed. A third blank gives the record of comparative wear of special rails, and summarizes the information given in the other two blanks. Rails broken or injured by wrecks, broken wheels or similar causes are not to be included in the reports.

## A Newton Horizontal Boring, Drilling and Milling Machine.

A new design of boring, drilling and milling machine recently furnished the Japanese Government by the Newton Machine Tool Works, Inc., Philadelphia, Pa., is shown in the views herewith. The spindle of this machine is 4½ in. in diameter and has three changes of geared feed, with a movement of 32 in. The spindle is fitted with a No. 6 Morse taper. The drive is from a 7½-hp. three-to-one variable speed motor, through an intermediate rawhide pinion and bevel gearing to the vertical driving shaft from which are driven the clutch bevel gears shown in Fig. 2, which gives the reversing motion to the spindle. This clutch is operated by the lever A. From these reversing bevel gears motion is transmitted to the sliding shaft B by the sleeve spur gear shown. The face plate pinion is cut from the solid shaft B and the pinion for the rapid motion to the spindle for drilling is a shrink fit; engagement or disengagement of the face plate or direct spindle drives is obtained by sliding the entire shaft by means of the lever C.

With the high speed gear engaged any speed is available from 33¾ to 101¼ rev. per min., and feeds of from 0.0178 to 0.124 in. per revolution. With the face plate pinion in mesh there is available a speed range from 10.44 to 31.44 rev. per min. and feeds from 0.005 to 0.038 in. per revolution. The feed is taken from the sleeve spur driving gear through the feed pull pin gears shown, changes of feed being obtained by the levers D. The feed is further transmitted by the clutch miter gears shown in Fig. 2, giving reverse motion to the feeds; this clutch is operated by the lever E. The connecting gear of this nest is fitted to a vertical shaft on which is mounted a worm meshing with the worm wheel on the horizontal trolley shaft shown. This permits of feeding the bar in either direction regardless of the direction of rotation of the spindle, or using the hand power feed or operating by hand power through the hand wheel E, or the hand wheel F, which gives rapid hand adjustment. From this worm wheel shaft the motion is further transmitted through the swinging worm wheel box which permits of engaging the worm with either the worm wheel on the elevating screw or the vertical spline shaft from which the vertical feeds and the feeds to the column are obtained, respectively.

With the face plate gear in mesh vertical feeds are available of from 0.3768 to 2.727 in. per revolution, and with the spindle gear in mesh feeds of from 1.13 to 8.182 in. per revolution of the spindle, and a fast vertical traverse of 69 in. at the highest speed of the motor and 23 in. with the slowest speed, and feeds to the column from 1.4 in. to 10 in. at the highest speed of the motor and from 0.16 in. to 3.33 in. at the slowest speed of the motor per minute, and quick movements of 24 and 8 in. per minute, respectively. This swinging worm is engaged by the lever F.

Fast movement for elevating the saddle, which is counterweighted, and to the column are transmitted from the horizontal driving shaft shown in Fig. 2 to the back of the column by a second horizontal shaft on which is mounted a double throw Carlyle-Johnson clutch. It is so arranged that the fast traverse to the column and the fast vertical traverse to the saddle can be operated from the lever H. The feeds and fast traverse to the column are obtained by means of a rack and spiral gear mounted on the back of the column.

This design gives a very compact rigid machine with reversing motions to all operations, and with this style of horn the length of feed to the bar can be increased at any time should it be desired. On lever I is mounted a small vertical rod shown in Fig. 1, which prevents the slow traverse to the column and the fast traverse to the column, operated by lever H, being engaged at the same time. It will be noticed that on the elevating screw it is not necessary to clutch two drives, as it is immaterial whether the nut or the screw is revolved. The spindle can be adjusted from a minimum distance from the center of the spindle to the floor plate of 20 in. to a maximum distance of 68 in., and the column has 4 ft. of horizontal movement, although this can be made of any length desired. The face plate of this machine is 28 in. in diameter over all.

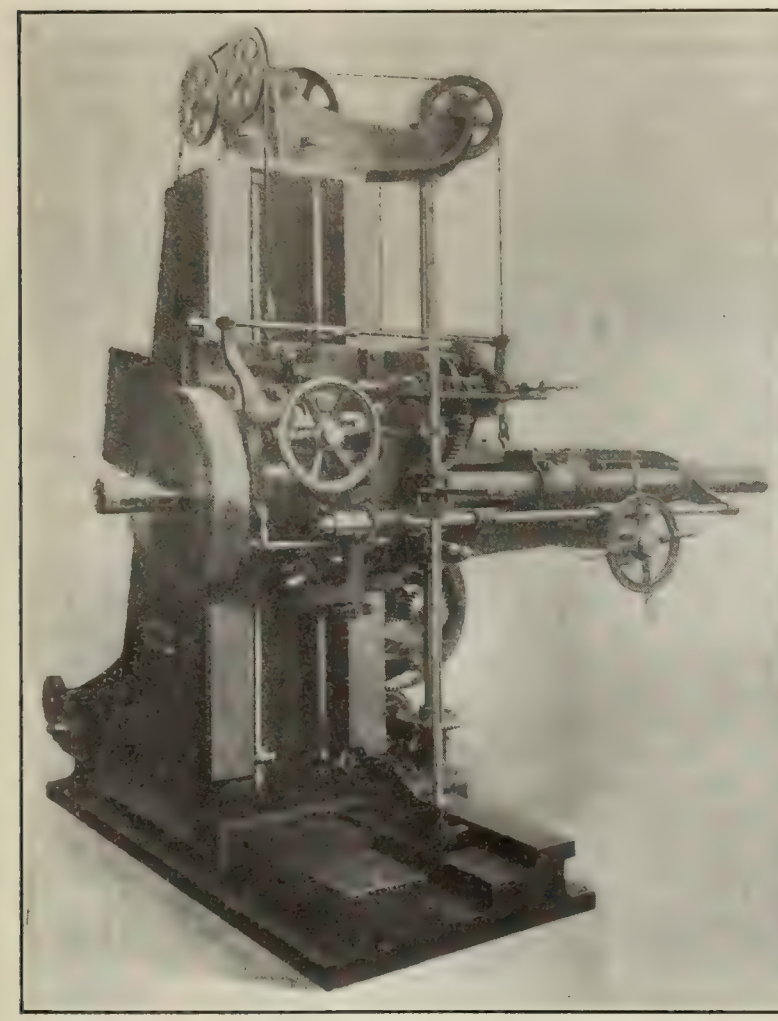


Fig. 1.

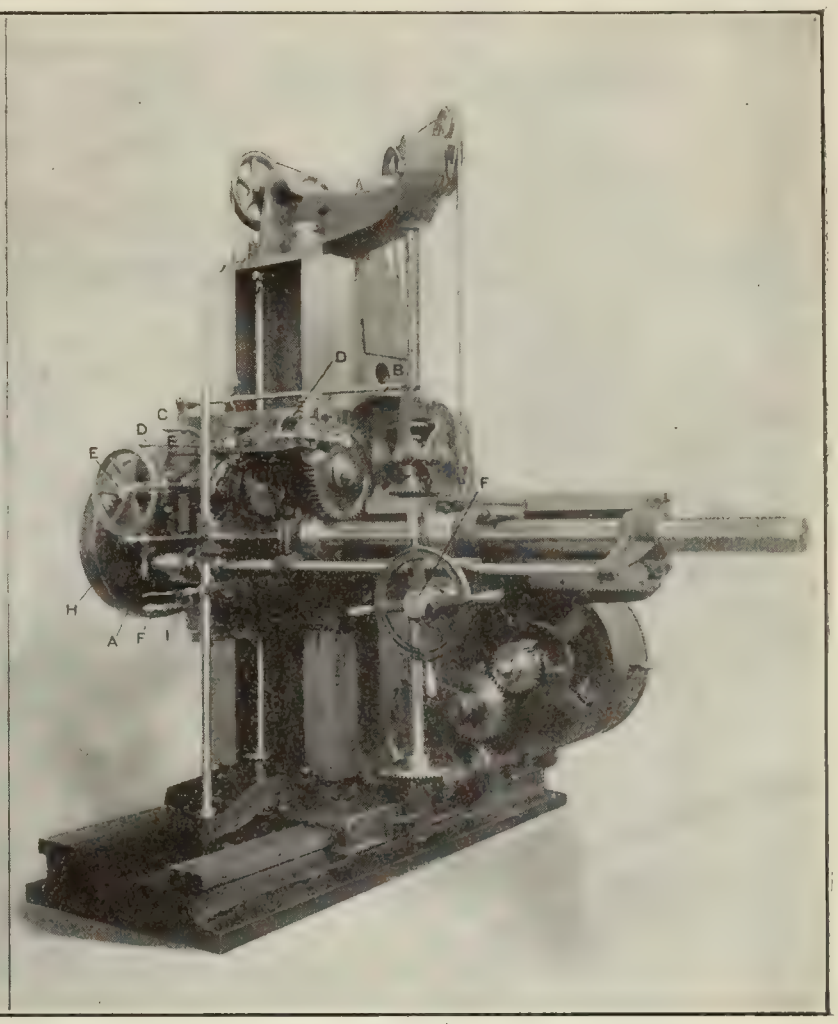



Fig. 2.

Two Views of a New Horizontal Boring, Drilling and Milling Machine Built by the Newton Machine Tool Works, Inc., Philadelphia, Pa.

The Teton River Light & Power Company, St. Anthony, Idaho, has filed articles of incorporation with a capital stock of $1,000,000, the purpose being to install a hydro-electric plant on the Teton River in Fremont County, Idaho, to supply current for light and power to a number of towns within a radius of 20 miles. It is estimated that 16,900 hp. will be developed. John Donaldson is president of the new company.

## New Ridgway Side Crank Engines.

A line of side crank engines is the latest addition to the product of the Ridgway Dynamo & Engine Company, Ridgway, Pa. For some purposes the side crank construction is most satisfactory, although it lacks certain advantages of the center crank engine. Like the center crank type which this company has built for some time, this engine has been designed for simplicity, strength and quality, rather than for cheapness. All parts are made to gauge and wherever possible are interchangeable. Each completed engine is tested for from 10 to 24 hr. under full and over load conditions.

The bed is of heavy design. The main part is of box section and has large bored guides. The guides and end for the cylinder are bored and turned at one setting, on a special machine, insuring perfect alignment. The nuts on the studs holding the cylinder are placed outside in recesses in the end of the bed and are covered by a polished steel band. At the cylinder end of the bed is a removable partition provided with sectional packing around the piston rod to prevent oil from being thrown against the end of the cylinder. Between the cylinder and the partition is a well in which the drip from the stuffing box is caught. The water is removed by a separator and the oil flows back to the crank pit. Ample openings are provided for packing the piston rod stuffing box, and other openings, closed by light cast iron doors, give easy access to the cross head and pin. The crank disk is covered with an oiltight guard of light sheet steel, hinged at the top, so that it may be turned back over the bed, giving access to the connecting rod and crank pin. A small opening in the side of the guard has a swinging cover, allowing inspecting the crank pin while the engine is in motion.

The main bearing on all sizes is of the quarter box type, with babbitt lined shells. Horizontal adjustment is secured by a wedge and vertical adjustment by drawing down the cap. The top and bottom shells are interchangeable and all shells may be quickly and easily removed without taking the shaft out of the bed.

The connecting rod is an open hearth steel forging. The straps at both ends are slotted from solid forgings. The wrist pin box is of solid phosphor-bronze, and the crank pin box is lined with babbitt. Both ends are adjusted by the wedge and bolt method.

The cross head body is cast steel, and the shoes are cast iron, faced with babbitt. The upper shoe is bolted solidly to the body and the lower one is adjustable. Four hollow bolts pass through the cross head body, inside of which are the cap bolts, which hold the shoe firmly. Both the top and bottom shoes can be adjusted by the use of shims. The wrist pin is 0.5 per cent. carbon steel, tapered to fit seats in each side of the cross head body and provided with keys, so that it may be turned 90 degrees as it wears.

The main shaft is a single open hearth steel forging, extra large in the bearings and governor wheel hub. The crank disk is a semisteel casting, very tough, close grained and hard. Because of the large size of the crank pin and the shaft at the crank fit the crank pin is cast solid with the disk. After the pin is turned and the shaft fit bored the crank is forced on the shaft under hydraulic pressure and secured by a heavy key.

The outboard bearing pedestal is heavy and broad at the base to insure stiffness. The bearing is self-oiling and self-aligning and has babbitt lined shells. Vertical adjustment is accomplished by a special device applied to the four holding down bolts at the base of the pedestal. Horizontal adjustment is made by ordinary set screws in lugs on the pedestal subbase.

The cylinder and valve are the same as those used on the company's center crank engines. The piston is a single hollow casting, strong but light, and has cast iron snap rings of a special design, which effectually prevent leakage without appreciable wear on the cylinder walls. The piston rod is large and of machinery steel. The rod and piston are joined by a force taper fit, supplemented by a jamb nut. The rod screws into the cross head with a long, fine thread and is prevented from turning by a jamb nut. This jamb nut is further held by a set screw in the cross head body.

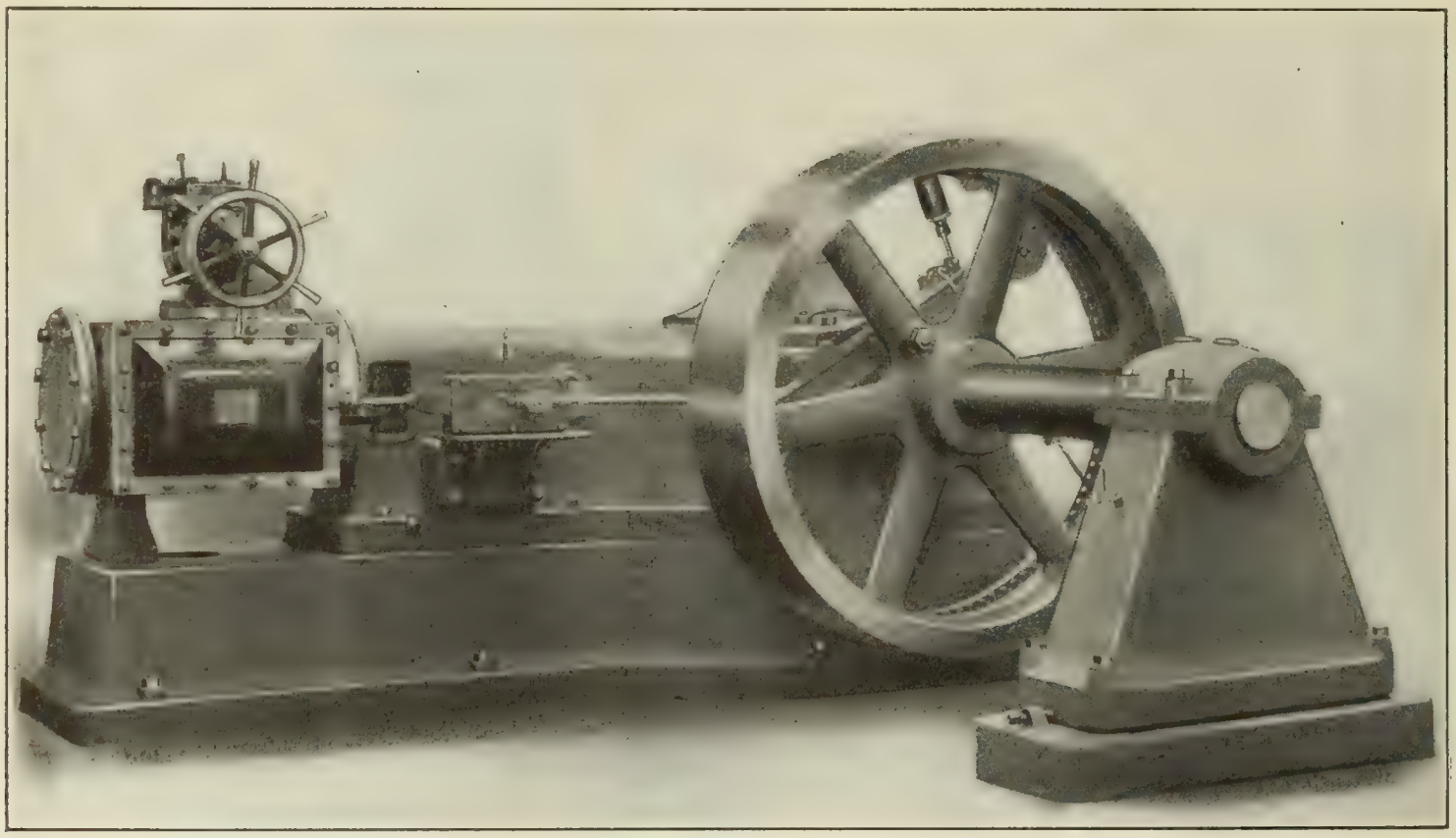


Fig. 1.— An Example of the New Side Crank Engines Built by the Ridgway Dynamo & Engine Company, Ridgway, Pa.

The most important part is the governor. Perfect regulation is very essential, especially in engines for driving electrical machinery. The Ridgway governor was formerly known as the Begtrup and is of the inertia type. A long bar, called the inertia bar, having weights at each end, is pivoted at the center on a roller bearing. The main pin is large and heavy and of steel, hardened and ground. The inertia bar is lined with hardened steel bushings and the space between the pin and bushings is filled with hardened steel rollers. This insures a minimum of friction, and the bearing is subject to very little wear. This is the only bearing requiring lubrication, although it will go without attention for several weeks. To the hub of this bearing is clamped the eccentric, which is keyed in place and is also held by set screws. The eccentric and eccentric strap being split, are removable without disturbing the governor or the setting of the valve. A heavy coil spring is secured to the middle of one end of the bar. Opposite the spring is an oil dash pot, consisting of a cylinder with a loose fitting

piston and a connecting rod bolted to the inertia bar. A by-pass with an adjustable opening allows the oil to circulate from one side of the piston to the other. The governor is perfectly reversible without the use of any extra parts.

Referring to the accompanying illustration of the governor the action is as follows: Rotation is from right to left; the welght in the spring end of the bar being the greater, centrifugal force tends to swing it outward and backward toward the lower stop. This tendency to move backward is balanced by the spring, the tension of which is such as to hold the inertia bar in equilibrium when the engine is at its desired speed. When starting up, the position of the governor parts are as shown. In this position the eccentric travels in its greatest path, giving the valve its widest opening and latest cut-off. As the speed increases centrifugal force, acting on the weighted end of the inertia bar, moves it backward toward the lower stop, thereby reducing the travel of the valve and cutting off steam earlier. This backward movement of the bar is continued until the travel of the valve reduces the cut-off to just the amount necessary to keep the engine rotating at its proper speed to give even balance between centrifugal force acting on the inertia bar and the opposing tension of the spring. When load is applied to the engine there is a check to the speed of the governor wheel, while the inertia bar, by reason of its momentum, rotates forward sufficiently to increase the valve travel and give late enough cut-off to carry the load. Should the load be thrown off, the governor wheel tends to increase its speed, thus causing the inertia bar to swing backward and reduce valve travel and cut-off until equilibrium is established as before. From this it will be seen that the speed of rotation under a steady load depends entirely upon the equilibrium between centrifugal force acting on the inertia bar and the tension of the governor spring, while the actual movement of the governor parts is effected by the inertia of the weighted end of the bar.

If the weight in the inertia bar and the tension of the spring are so adjusted that the centrifugal force increases faster than the tension of the spring, then the engine will speed up under load. In this condition the engine is liable to race, and it is to prevent racing that the dash pot is used. It is thus possible to adjust any engine so that it will run faster under load than when running light, and still have it regulate perfectly with no tendency to race. Contrariwise, the governor may be

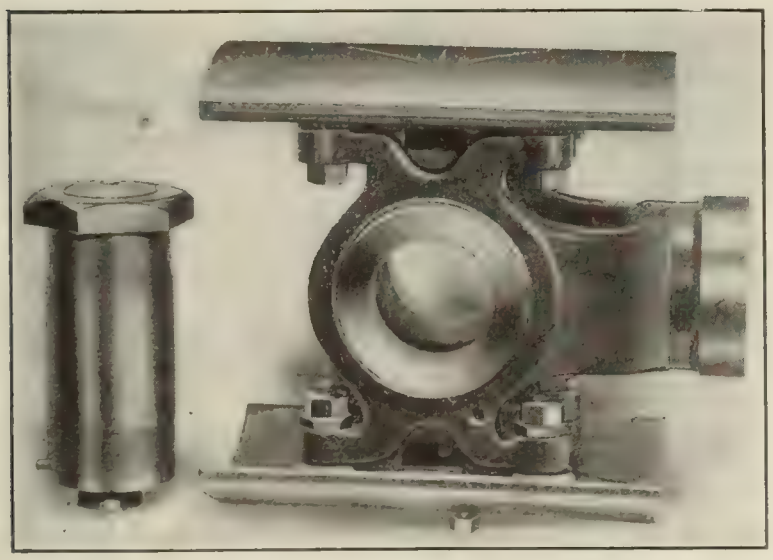


Fig. 2.—The Cross Head and Wrist Pin.

adjusted to run slower under load than with no load. Dash pots are used on all engines, as by their use perfect stability is obtained, and at the same time they increase the ease with which adjustments may be made. No difficulty, it is claimed, is experienced in adjusting this engine to govern within a limit of one revolution, and the instantaneous variation of speed when the entire load is thrown on or off is less than 2 per cent., while the action of the governor is unusually quick, the engine returning to its normal speed with a single vibration and within a space of 2 sec.

The valve gear, which may be seen in the illustrations, is simple and strong. The ram slide has a long bearing and is provided with horizontal and vertical adjustments. All pins and rods are of machinery steel. The eccentric strap is lined with babbitt and the bearing at the slide is lined with a replaceable bronze bushing having a screw adjustment.

Two standard methods of lubricating are provided. In the first, the splash system, the crank pit is filled with oil, which the disk throws over the cross head and guides. Oil from the upper guide is wiped off by the top cross head shoe and flows through passages and pipes to the cross head pin. Pockets on the inside of the crank

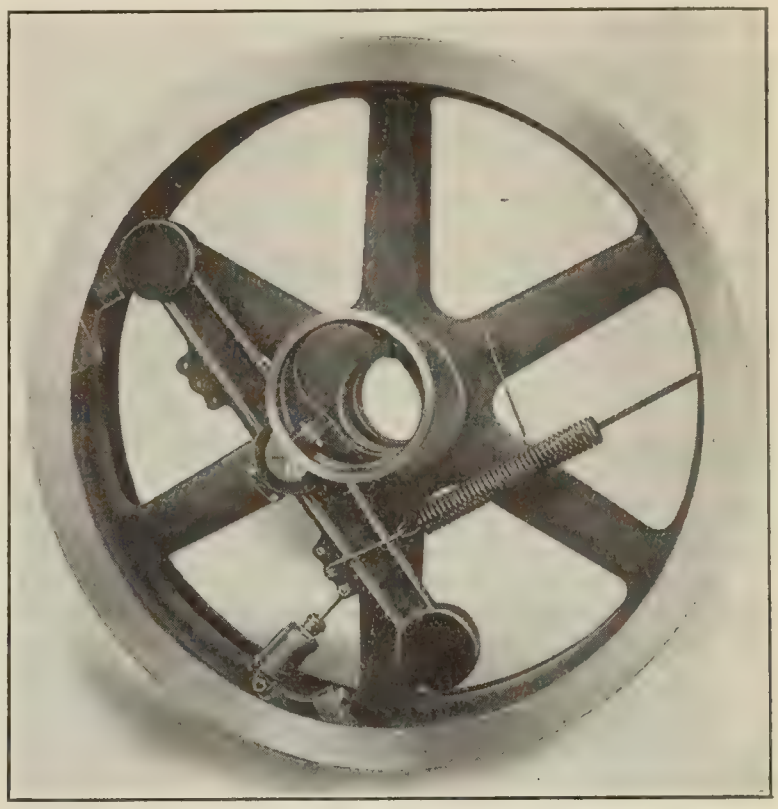


Fig. 3.—The Flywheel and Governor.

guard collect oil, which is led through passages to the main bearing and to the crank pin. All bearings are, therefore, practically flooded at all times. The second system uses a small filter placed in one side of a tank, which is mounted on the subbase below the slide bracket. In the other side of the tank is a valveless pump driven by a cam on the valve gear ram. This cam gives a full stroke regardless of the travel of the ram. All oil from the bearings flows to the crank pit, from which it is piped to the filter; then passes to the pump chamber, where it is pumped to a large tank on top of the bed. From this tank the oil flows through nickeled piping to each bearing. Sight feed valves in each pipe near the tank regulate the supply. As the engine is fully inclosed, no oil can be thrown on the floor or into the governor wheel. With either system the valve gear is supplied with grease cups.

This engine is built in the simple, tandem and cross compound types. In the compound types the low pressure valve is of the balanced type. On tandem engines both valves are driven by the governor, the low pressure directly and the high pressure by a tail rod on the low pressure valve. On cross compound engines the high pressure valve is driven by the governor and the low pressure by a fixed eccentric on the main shaft; otherwise the valve gear is identical for each cylinder. Simple and tandem compound engines from 50 to 800 hp. and cross compound up to 1500 hp. can be furnished.

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The records for November are not available, but indications are that the net result of the movement of aliens to and from the United States in now in favor of this country. In October there was a net influx of 6249. In November the departures showed a lessening tendency, while the arrivals increased. The arrivals through all ports in October were 40,994, against 111,513 in October, 1907, and 99,974 and 86,758 for that month in 1906 and 1905 respectively. For the first 10 months of this year the arrivals were 327,240, against 1,150,116 and 1,035,602 for the like periods in 1907 and 1906 respectively.

## Notes on the Use of High Speed Steel.

A pamphlet has been issued recently reprinting a paper on "Tool Steel," read by Fred. M. Osborn, Sheffield, England, before the Leeds Association of Engineers. Mr. Osborn is of the firm of Samuel M. Osborn & Co., Ltd., who are represented in the United States by B. M. Jones & Co., Boston. The paper takes up first the history of the early manufacture of tool steel and then reviews at some length the Bessemer, open hearth and crucible processes of steel making. Coming to the manufacture of crucible cast and high speed steels, the operations of crucible steel works are described, and the final pages of the paper are devoted to information on the treatment of high speed tools. Some of the ground covered is familiar, but other portions are drawn from the comparatively recent experience of the writer, so that some extracts will be found of interest:

However good the steel may be, if the tools are of bad shape or improperly treated, good results cannot be expected. As a rule, the steel is supplied in bars; in order to cut these into tool lengths they should be slowly heated to a good yellow and nickel hot. If necessary, the required pieces may be cut right off while hot; but it is a good plan to nick hot and allow the bar to go cold. Then a tap will break off the piece. By this means the beautiful silky grain of the steel is seen, and confidence and interest given to the manipulators. Forging the tool to shape should be done at a good yellow heat. "Avoid working too cold" is a common warning of the steel maker to the steel user, and frequent reheating of the steel makes the work easier for the men, and obviates any "bursting" of the steel.

Although high speed steel should be worked at a good yellow, this initial heat should be applied gradually, so that it "soaks" right to the center of the bar. The heat hardening process consists in bringing the nose of the tool to a white blistering heat, and then immediately blowing cold in a blast of air. The appearance of the end of the tool usually shows by the scale if the hardening has been properly done; that is to say, if enough heat has been applied. Although the air blast as a cooling medium is desirable, it is not absolutely necessary. Oil for many purposes is as effective, and even without either, good high speed steel hardens naturally after being raised to a high temperature.

High speed tools should be well ground before use, in order to remove the outer burnt skin, plenty of water being allowed to flow over the nose to keep it from becoming blue with the heat and thereafter probably cracking. Sandstone is generally recommended, though emery wheels are being specially made for high speed steels and sold by makers of grinding machines.

A plan which is recommended, in order to save some hard work, is to forge and grind the tool to shape before hardening, then apply the heat treatment and give a second grinding to the hardened nose. By this means the work done on the wheel is mostly applied to the unhardened steel.

Tools of intricate shapes, after being forged, should be annealed before the heat hardening process, which should be applied to the point of the tool only. This annealing could be done by leaving the tools in a smith's hearth over night. The design of turning tools of high speed steel is most important. The points to remember are strength, support, section and suitable cutting angles.

With regard to the cutting angles for ordinary roughing work, Dr. Nicholson recommends *Engineering*, November 24, 1905, for cast iron, 80 degrees; for soft steel, 70 degrees.

Perhaps data recorded by the writer (by observation) while experimenting on a 16-in. high speed lathe may be of interest. The following were found to be the best angles:

| | | |
|---|---|---|
| For soft steel (C. 0.20) | 65° ; front clearance | 5° |
| For moderately hard steel (C. 0.50) | 70° ; front clearance | 5° |
| For hard steel (1 per cent.) | 75° ; front clearance | 3° |
| For hard cast iron | 80° ; front clearance | 10° |

### Results in Turning Tires.

An instance of the use of high speed steel for turning may be of interest: At the New York Central shops, with high speed tools 3 x 1½ in. in section, Midvale tires, 6 ft. in diameter, were turned up at 14 ft. per minute, ½ in. feed, 7-16 in. depth of cut. A pair of tires was turned in 43 min. The tools when taken out were found in good condition.

It should be emphasized that high speed steel is very suitable for use in automatic lathes, and also for forming tools, provided the hardening is suitably done.

Before leaving the question of power, it should be remembered that a badly ground tool, or a tool ground to incorrect angles, will absorb much more power than correctly ground tools. In the former case the heat generated has been much greater, and this proves clearly that more driving power has been required. A clean and smooth chip indicates that a minimum of driving power has been absorbed.

Visitors to Clyde Works during the meetings of the Iron and Steel Institute in Sheffield saw a Mushet high-speed tool, 1¼ in. square, turning a Siemen's Martin forging at 66 ft. per minute, ¼ in. feed, ⅝ in. depth of cut. The points of tools which have become actually red hot and continued to work in this condition show the wonderful property high-speed steel has of retaining its cutting qualities, even when intense heat is generated.

### The Proper Position of the Tool.

The correct position of a turning tool varies, according to the job operated upon. For light work, the cutting point should be about on a level with the center; for heavy work, the point should be above the center, anything from ⅛ in. upward, the amount increasing with the diameter of the work. The writer has demonstrated that as much as ¾ in. over the center is not too much on a good stiff job. If the tool is below the center, even if ground to an apparently suitable angle, there is a danger of "digging" and pulling the nose of the tool off, or even fetching the work out of the centers.

Steels suitable for use in tool holders can be supplied in high-speed steel, either in the bar for forging in the usual way, or ready hardened in the bar for cutting off with an emery wheel and grinding to shape without any heat treatment. A good quantity of the old type of self-hardening steel is sold for use in this way.

With regard to finishing cuts, it may be said that by taking a fine feed a smooth finish can be left, even when turning at high speeds, but generally a superior quality of oil or water hardening steel is recommended for a finishing cut, such as is required on a piston rod.

The heat treatment of high-speed steel is most important. The fact that bars and blanks can be softened so that they can be filed and tooled to any shape without difficulty has undoubtedly extended its utility enormously. Should users wish to soften the steel, there is no difficulty about it. The bars, pieces or blanks, should be heated very gradually, in a closed furnace or muffle, until they are raised to a bright red, exceeding 700 degrees C. The entrance of all cold air into the furnace should then be provided against, and the furnace allowed to cool as slowly as possible until the bars are quite cold. The slower the cooling the softer the bars will be.

### Twist Drills and Milling Cutters.

There are no less than 21 operations in making a twist drill, from the annealed stock to the finished article. The quality of the product mainly depends upon the steel from which it is made. Fluting may be done with formed milling cutters of high-speed steel, both grooves simultaneously at one operation. After the backing off, the drills are hardened, sand blasted and ground. The hardening of high-speed twist drills is a most important operation. It is obviously not desirable to heat the drills so that they scale, as one may a turning tool. It is therefore necessary in some way either to protect the drill from the flame or exclude the air from contact with the drill.

An excellent arrangement, and one applicable in any works, is to use a "bath." A graphite pot may be placed in an ordinary smith's hearth, and lead or certain salts melted therein to the desired temperature (say, 1300 degrees C). The article to be hardened should be warmed through, then finally heated in the bath; it is cooled by immediately dashing in oil, removed from that when black red-hot, and blown cold in an air blast. Another method is to use a cyclone gas blast furnace. The writer recently had an electric hardening furnace at his disposal, in which the bath of salts—barium chloride—melted at 950 degrees C., was kept at the required temperature by means of an electric current passing through it. In this bath, which was easily raised to 1300 degrees C., the steel articles were quickly brought to the hardening heat, which was read off by an optical pyrometer. The temperature of the furnace could be easily controlled by means of an external resistance. Turning tools, twist drills and milling cutters were all hardened with satisfactory results.

The cutting angles and clearance of high-speed twist drills are most important features. Should the points of a drill be unevenly ground (and it does not break in work), it will be found to bore an eccentric hole, one lip having done all the duty. The lips must be of equal length and at the same angle. The angle of the cutting point should be 59 degrees for steel, but for cast iron it may be much more pointed. At Clyde Works an angle of 45 degrees has been adopted for experimental work on cast iron.

With regard to the relative merits of high-speed and carbon steel drills in the test, one high-speed drill (which cost 7s. 2d.) did the work which it is estimated it would have taken 24 cast steel drills (costing £3 9s. 0d.) to do. The drill only wore 1 3-16 in., that is, 4161 ft. of steel were drilled per inch of drill worn away. Taking the rate of feed to be 3 1-3 in. per minute for the high-speed and ½ in. for the cast steel drills, the hours actually taken in drilling would be 85 for the high-speed, as against 580 for the cast steel; that is, one-eleventh of the first cost and one-seventh of the time in favor of high-speed drilling. The use of high-

speed steel for reamers is finding favor, as the life is greater and the accuracy of the tool is longer preserved. It is important that they, too, should be correctly ground.

What has been said regarding high-speed twist drills and reamers largely applies to high-speed milling cutters. Having secured some reliable, well annealed steel, the operator may start with confidence. In large plain milling cutters it is a good plan to have notched teeth, as by that means the chips get broken up and are less liable to clog the teeth. As in the cases of twist drills and reamers, great care must be taken in hardening not to burn the teeth, and proper appliances should be obtained. The use of high-speed milling cutters has produced some astounding results. Better will still be obtained as those responsible for the design of millers adapt their construction to withstand the greater strains caused by working at high speeds, and as the workmen get the confidence to put on the speed and feed.

## A New G. E. Electric Furnace.

To secure the best results in annealing and hardening it is important to have a constant temperature in the furnace, and it is often desirable to adjust the temperature of the furnace. In the new type of electric furnace now being manufactured by the General Electric Company, Schenectady, N. Y., for operation on alternating current circuits, metallic salts are reduced to a liquid state by means of an electric current. As soon as these salts reach a liquid condition the temperature can be easily regulated by varying the amount of current passing through the bath. By this method of regulation any temperature will remain uniform throughout the bath except at the surface, where it is slightly lower, due to radiation. This applies, however, to a depth of only 0.6 to 0.75 in.

In Fig. 1 is shown an electric furnace outfit installed in the die department of the Schenectady works of the above company. The outfit, as can be seen, consists of the furnace, with its hood suspended from above; the regulating transformer, with regulating switch; the switchboard, with ammeter and voltmeter, and the incoming line with fuses. The regulating switch has a sufficient number of contact points to give almost any temperature between 250 and 1350 degrees C.

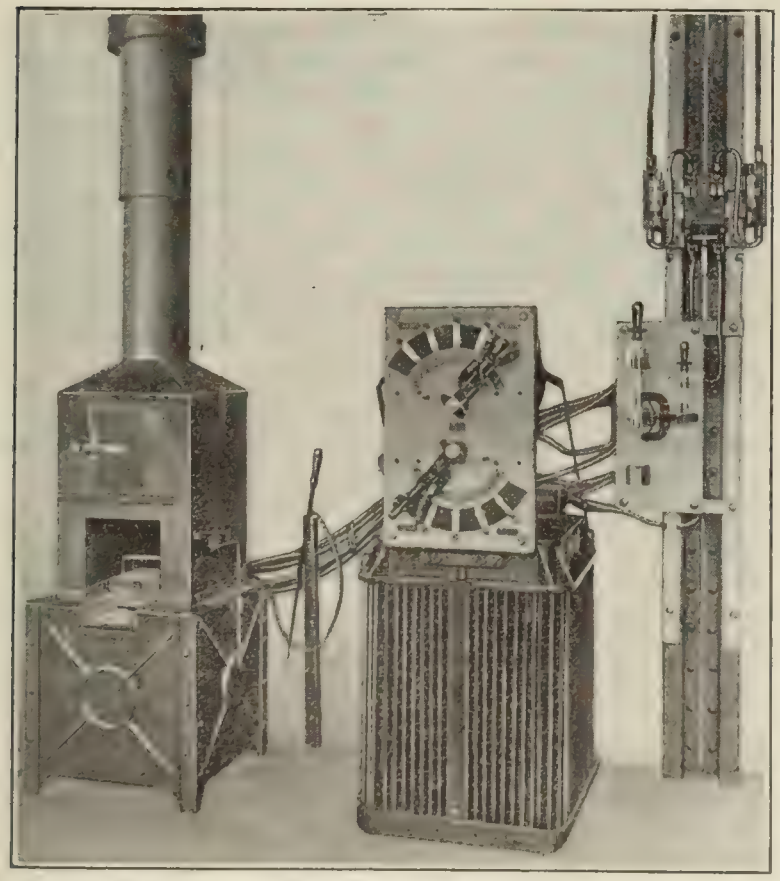


Fig. 1.—One of the New Electric Furnaces Installed in the Schenectady Works of the General Electric Company.

The furnace, a sectional view of which is shown in Fig. 2, consists of a fire clay crucible, surrounded by insulating material, usually asbestos, which rests in a fire clay box; all being supported by an inclosing case of iron. Two electrodes, connected to the low tension side of the transformer, are placed on each side of the crucible and are in direct contact with the bath at all times. To start up the furnace an arc is started across the broken flux by means of an auxiliary electrode, and in a very short time the solid mass is in a molten condition. After the bath has reachel its proper temperature that portion of the material to be hardened is placed entirely in the liquid bath, and is allowed to remain there until it attains the same color as the bath,

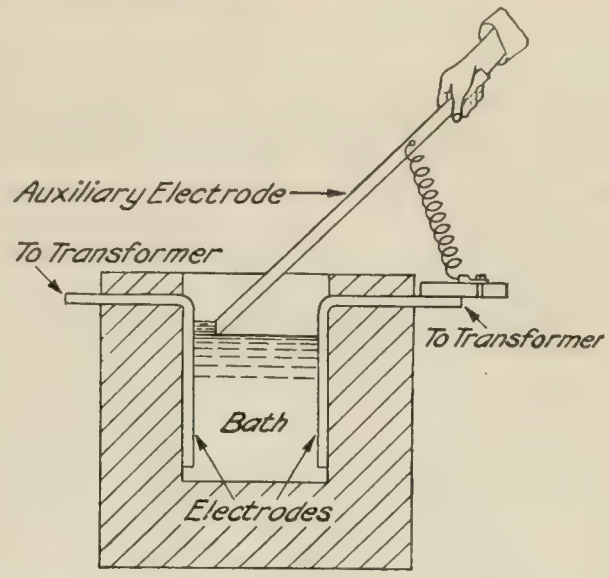



Fig. 2.—Sectional Diagram of the Furnace.

when it is removed and tempered in water or oil, as the case may be.

The bath for hardening or annealing completely fills the crucible, and in this case consists of equal portions of barium and potassium chloride. The ultimate temperature depends on the relative proportions of the two chlorides, the higher the percentage of barium chloride the higher the temperature may be carried. In addition to hardening, the furnace may be used for softening tempered steel, the bath being maintained at a temperature of about 250 degrees C. for this work.

Advantages of this type of electric furnace are: No chance for oxidation, for the material while being heated does not come in contact with the air; all parts of the tool subjected to the same degree of heat at all times, thus preventing any possibility of strains or overheating; high efficiency and low cost of operation, and practically no danger from fire, as the outer walls of the furnace are never hot (when the bath has a temperature of 1300 degrees C. the hand can be held on the outside of the furnace). The furnace is so simple and requires so little care and attention that it can be operated by an ordinary workman. The metallic salts have no effect on the composition of the steel, and the operator never comes in contact with dangerous fumes as in the cyanide bath.

In the manufacture of machine tools, automobiles, razors, knives, firearms, jewelry, fine instruments, &c., where accurate tempering is required, this electric furnace, it is believed, will prove especially serviceable.

**An Idaho Hydro-Electric Power Proposition.**—An important water power development is about to be undertaken by the Slate Creek Electric Light & Power Company, Wallace, Idaho, which was recently organized and capitalized with a capital stock of $3,000,000. The company is the owner of two rights for the diversion of the waters of Slate Creek, a tributary of the St. Joe River, in Shoshone County. The power site is situated about 20 miles southeast of Wallace in the Cœur d'Alene mining district. The power plant will be located within 1500 ft. of the Chicago, Milwaukee & St. Paul Railroad Company, now being constructed along the St. Joe River. According to the estimates of engineers the amount of power available from the water rights of the corporation is not less than 2500 hp. A transmission line will carry current from the generating plant to the city of Wallace, to be used for light, heat and power, which will also be distributed to other towns and villages in the Cœur d'Alene District. It is expected that construction of the work will be begun at an early date. Contracts for the erection of the power plant have not yet been let, nor has any machinery been purchased. The officers of the company are: Thomas McGowan, president; H. J. Rogers, vice-president; F. M. Buckingham, secretary; Jesse Freeman, treasurer.

# TARIFF HEARINGS AT WASHINGTON.

## Written and Oral Statements on the Metal Schedule.

## Manufacturers Suggest Some Reductions.

WASHINGTON, D. C., December 1, 1908.—The Ways and Means Committee on the 27th ult. completed the hearings on the metal schedule, and on the 4th inst. the entire series will close, after which the work of drafting the new bill will be expedited as much as possible. The winessses heard after the close of the report in last week's issue of *The Iron Age* included some of the most prominent men in a dozen branches of the iron and steel industry, embracing domestic manufacturers, importers and dealers whose statements are summarized below.

A backward glance at the hearings since they were inaugurated November 10 furnishes all the evidence necessary to convince even the most skeptical that the Ways and Means Committee intends to make a thorough revision of the tariff, whatever the Senate Finance Committee may ultimately do with the House bill. That the House will cut many rates is guaranteed by the acquiesence of manufacturers in important lines, who have already appeared at the hearings and agreed to accept reductions. Several important items of the chemical schedule bearing duties above 25 per cent. will be cut to that figure, and there will be substantial decreases in the rates on crude minerals included in Schedule B. The plate glass rates are marked for reduction, and the domestic manufacturers are prepared to concede it. In the metal schedule the iron ore producers have agreed to take a cut of 20 per cent., and will probably have to stand a heavier reduction, if, indeed, iron ore is not placed on the free list; the producers of bars, blooms, billets, &c., have recommended a 10 per cent. reduction in their own products and the committee is likely to double this cut. Other items of the iron and steel schedule will be reduced in proportion to the reduction on the cruder forms of metal, as the rates on advanced manufactures of all kinds include a compensatory factor to offset the duties on the so-called raw materials.

The lumber schedule will go under the knife among the first, and the present rate of $2 per thousand feet on rough lumber will certainly be reduced to $1 and possibly will be wiped out altogether. There is much pressure for free rough lumber, and even American mill owners believe that the Canadian Government could be induced to rescind certain decrees imposing restrictions on the exportation of logs if the existing $2 tariff rate could be wiped out or materially reduced. Taking all these points into consideration, it is clear that the reductions now practically guaranteed will be sufficient to render the new bill a bone fide tariff reduction measure if not a decidedly radical proposition.

Complaints have recently been made by many witnesses concerning the attitude of apparent hostility on the part of the members of the Ways and Means Committee, both Republicans and Democrats, toward the representatives of the leading industries of the country who have appeared before them during the past week, and a word of explanation may not be out of place. Members of the committee are much fatigued, both physically and mentally by their arduous labors, having been in almost constant attendance upon the hearings for three weeks, from 9.30 a.m. until midnight, with only an hour's intermission at noon and another hour from 7 to 8 p.m. The result is that several members of the committee have grown exceedingly petulant and have shown much asperity in their cross-examination. While much of the harshness exhibited toward witnesses, and apparently reflecting the purpose of the committee to slash the tariff heavily, is due to nervous tension, it is only fair to state that it is also in a measure attributable to the great disappointment felt by the majority leaders at the attitude of the iron and steel men. The representatives of these interests were expected to bring to Washington specific recommendations for moderate reductions in many leading items of the metal schedule, but, on the contrary, the majority of them have advocated a standpat policy, at which Chairman Payne and his Republican colleagues have become greatly exasperated. The metal schedule has been marked for notable reductions, and the Republican members of the committee had anticipated making an excellent showing for the new tariff bill in its entirety by taking off an average of at least one-fifth the protection afforded by this schedule in the Dingley act. This plan may be carried through, notwithstanding the protests of the producers. Of course it should be borne in mind that the Ways and Means Commitee is engaged in making the House bill only, and that past experience indicates that the Senate Finance Committee will have the last word regarding the new tariff law as it goes on the statute books. W. L. C.

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The first witness to address the committee on November 25, after the close of the report of the hearing in *The Iron Age* of last week, was Evart Brown of New York City, attorney for the Electro-Metallurgical Company, who spoke in behalf of adequate protective duties on the more costly ferroalloys. Mr. Brown said in part:

### Statement of Evart Brown, Representing the Electro-Metallurgical Company.

The Electro-Metallurgical Company, whom I represent here, has interests in common with other manufacturers in the United States, and I am empowered to say that their interests jump together in this matter. The subjects which they wish to discuss are ferrosilicon, which is enumerated in paragraph 122 of the tariff act, and several other ferroalloys, some of which have rather curious names to the ordinary individual, such as ferromelybdenum, ferrotitanium and ferrovanadium, and some of which have names that perhaps have become a little more current by reason of their being seen in the newspapers, such as ferrochromium and ferrotungsten.

In the present tariff act I see that ferrosilicon is the only one of these which is enumerated by name, and it bears a duty of $4 a ton. At the time the present act was passed, in 1897, almost all, if not quite all, of the ferrosilicon was produced by what is called the blast furnace process. Since that time there has been a remarkable development, as I have no doubt the committee knows, in the production of alloys by an electrical process in electrical furnaces, which are exemplified in the works at Niagara especially, whereby in electric furnaces an enormous degree of heat is obtained, that results in producing certain articles in a purer state than could be produced under the old-fashioned blast furnace processes.

The chief element of value in all of these ferros about which I speak particularly is not the ferro, which is the iron, but several other elements, named secondly but of primary importance, such as the chromium, the tungsten, the silicon, &c. The value of these alloys varies with the contained amount of that secondary element. A ferrosilicon which contains only 10 or 12 per cent. of silicon is naturally worth very much less than a ferrosilicon which contains 60, 80 or 95 per cent. of silicon. The kind of ferrosilicon which contains 10, 12 or 15 per cent. is the kind which was produced by the blast furnace, and the possibilities of that furnace were exhausted in producing ferrosilicon of about that percentage of silicon; whereas, the electrical processes and also other nonelectrical but chemical processes, have resulted in producing ferrosilicon that has as high a degree of silicon as 95 per cent.; and, of course, the price varies accordingly. The same is true of these other ferros—ferrochromium, ferrotungsten, &c.

As these other ferros (other than ferrosilicon and ferromanganese, which are enumerated in paragraph 122) were not being imported into this country, there was no place for them in the tariff act by name. They had to seek such classification as they could under general language. It was claimed, on behalf of the Government and the Treasury Department, that the logical place for them was in paragraph 183, which provided for "metals unwrought"; and it seemed to the Government that that clearly covered them, and that a duty of 20 per cent. ad valorem should be put upon them accordingly. The importers, however, claimed that that expression, "metals unwrought" did not cover these articles; that, therefore, there was no niche for them in the tariff act, and that consequently they became nonenumerated articles, and in so becoming nonenumerated articles they became subject to what is called the "similitude clause." That is section 7 of the present tariff act, which

provides that when an article is not enumerated in the tariff act it shall be classified and take duty according to the article which it most resembles in material, quality, texture and use. They claimed that while these articles were not enumerated they did assimilate to articles which were enumerated, to wit, ferrosilicon and ferromanganese, in paragraph 122, and that, therefore, they took a duty of $4 per ton.

It happens that some of these ferros are extremely valuable. Ferrovanadium, for instance, runs as high as over $4000 per ton in foreign value, and a duty of $4 a ton, it was thought in many circles, was an infinitesimal duty, and one which was not in accordance with any intention which anybody in Congress might have had.

The case went into court in New York, and it was there held by the Circuit Court of Appeals for the Second Circuit that the expression "metals unwrought" covered only metals capable of being wrought, and that it must be such a metal as could be made in and by itself into utensils or definite, particular objects; and that the use of a metal to melt up with other things to make a compound to perfect the compound or for some similar purpose was not such a purpose as could enable an article to be called a "metal unwrought."

That distinction was temporarily accepted by the Treasury Department, and all these ferroalloys came in at a rate of duty of $4 a ton, which was practically nothing on many of them. But subsequently the Circuit Court of Appeals in Philadelphia in the Third Circuit, in another class of goods somewhat similar, to wit, tungsten metal (not ferrotungsten, but tungsten alloyed with iron), held differently on the proposition of what the term "metals unwrought" meant; and the Treasury Department determined to try a new case on the subject to secure what it thought was a reasonable rate of duty. In the trial of that case it sought special counsel, and it is because of my connection with the case that these people have asked me to appear here for them to make this explanation to the committee.

What we desire is that these ferroalloys shall receive a reasonable rate of duty, for the manufacturers assert that 20 per cent. is hardly enough to enable them to develop their industry here. If you consider giving 20 per cent. or 30 per cent. that will be agreeable to us.

**Statement of John A. Topping of the Republic Iron & Steel Company.**

John A. Topping of the Republic Iron & Steel Company, Pittsburgh, Pa., stated that he appeared before the committee as the representative of his own company and other independent manufacturers of iron and steel, not to advocate any change in the existing duties, but to ask sufficient time to investigate the subject properly. If these manufacturers found upon investigation that they could make any recommendations in the way of reductions they would be perfectly willing to do so if it could be done without abandoning the protective system. He admitted that a brief would be filed at a later date. Mr. Topping was briefly examined by several members of the committee, as follows:

Mr. Underwood: Do you ship any of your product to the Canadian market?

Mr. Topping: No, sir; we do not. I might say, in fuller reply to that question, that shortly after the first of the year I tried in every way to find a Canadian market for some of our bars, both iron and steel, but after an effort on the part of our sales department, who spent a week or 10 days investigating the conditions, they returned home with reports that were unfavorable to the effort and we abandoned it.

Mr. Underwood: Will you also state in the brief what your views are and what information you have as to the exportation? There was testimony here this morning as to exportations into the Canadian market. I would like to have your views with respect to exportations to the Canadian market.

Mr. Topping: I cannot explain the exportation to Canada, except on the ground that at the point of production—Pittsburgh, Cleveland or the Mahoning Valley, where we largely operate, or Chicago—with the advantages of quick service and special considerations of quality, the necessities of the buyers for quick deliveries might have justified purchasing on this side at a higher price than they could have bought on the other side of the water.

Mr. Underwood: I suppose, then, it is a conceded fact that the American manufacturer can compete in the Canadian market with the English manufacturer?

Mr. Topping: He cannot, in my opinion.

Mr. Underwood: But it is conceded that if he can he is producing on equal terms, because he goes into the Canadian market under a disadvantage.

Mr. Topping: If he had the same conditions of duty and the same cost of course he could.

Mr. Underwood: I want to ask you to address yourself to that question when you file your brief, if you will.

Mr. Topping: Yes, sir.

Mr. Cockran: Have you exported any steel to any foreign country?

Mr. Topping: No, sir; we have not.

Mr. Cockran: Have you any idea where the steel that is used in Mexico comes from?

Mr. Topping: I think that most of it, or a large part of it, or I will say the greater part of it, comes from continental Europe.

Mr. Cockran: A large part of it comes from America, does it not?

Mr. Topping: I think that a substantial tonnage comes from America.

Mr. Cockran: Mexico gives no advantage to American steel over that coming from abroad, does it?

Mr. Topping: No; but oftentimes sales are stimulated by sales of American machinery that call for the construction of a mill or a mine equipment, and that carries with it the suggestion of some steel bars or iron bars, and it saves time in transportation to have them all go in one parcel. For that reason, the saving of time being essential, they will pay frequently more for the American product in near-by countries like Mexico and Canada, rather than wait on a ship from England or Germany.

Mr. Cockran: Do you know anything about the sale of steel rails in Mexico?

Mr. Topping: I do not.

Mr. Hill: I want to know about this ferromanganese. We collected in duty last year from ferromanganese $378,000. Mr. Butler, one of the gentlemen who preceded you, said that it was only a question of changing the verbiage of paragraph 122, and that all that was requested was that it be put on the free list, and to leave pig iron and the other products on that list unchanged. What would be the effect of that?

Mr. Topping: The pig iron would not be affected, because the ferromanganese is used in the manufacture of steel as an alloy.

Mr. Hill: Would it reduce the cost of steel appreciably?

Mr. Topping: It would depend on the character of the steel you were making, as to the degree of carbon that you are trying to secure.

Mr. Hill: Would it reduce it 10 cents a ton?

Mr. Topping: I would not like to make any statement as to the average.

Mr. Hill: It would reduce it somewhat?

Mr. Topping: It would have that influence, naturally.

## STEEL RAILS.

**Statement of E. C. Felton of the Pennsylvania Steel Company.**

E. C. Felton, president of the Pennsylvania Steel Company, who was the next witness, stated that he appeared in behalf of the steel rail manufacturers of the United States to say that the present rates in the Dingley tariff are fair, and that if any considerable reduction should be made it would work a hardship to the American producers, and would necessitate a reduction in wages, which is about the only element of cost which can now be changed. Mr. Felton's examination was conducted by several members of the committee, and was followed with the liveliest interest. It was in part as follows:

Mr. Felton: I am president of the Pennsylvania Steel Company. I represent that company directly, which has works in central Pennsylvania, and also on the Chesapeake Bay, near Baltimore. We are the only large producer of steel located on tidewater. Therefore, any change in the rates on steel rails and other steel products would affect us to a greater extent than it would any other manufacturer of steel in the United States. Now, I might take up half an hour, but I do not think I could state what I came here to say any more elaborately than that. We feel that the present duty is a proper duty, and we wish to ask that the committee allow the duty on steel rails to remain where it is to-day.

The Chairman: This committee will want a good deal more information than that on this question.

Mr. Felton: Well, I am here to give it to you, and I will give you detailed information as well as I can.

The Chairman: In 1907 we exported nearly $8,500,000 worth of steel rails, and we imported $133,000 worth. Nearly all of this came from Germany. We are exporting steel rails all the time. Mr. Carnegie, in the article which I quoted, says you can make them cheaper here than they can be made anywhere else in the world. Now we want a very full statement of every element of the cost of steel rails abroad, all stages of it; and every element of the cost in this country.

Mr. Felton: If you will tell me how I can get a statement of the cost abroad I would like to have it. It is impossible to get such a statement.

The Chairman: If you cannot get it, we shall get part of it.

Mr. Felton: I hope you can, and I want to assure you that any information we can give we are ready to give.

The Chairman: You can give a very full and complete statement of the cost here.

Mr. Felton: We can give you an absolute statement of the cost here. I do not know whether the committee know it, but the agents of the Bureau of Commerce and Labor

have spent more than a year and a half in going over our books. They have our detailed costs for 1902, 1903, 1904, 1905 and 1906—five years. They have those costs under a pledge of secrecy.

The Chairman: We want that reduced to the cost per ton of steel rails—the hours of labor, the cost of labor of different kinds, and all that sort of thing. We want to get the cost per ton of the labor and of the materials. Does your firm export any rails?

Mr. Felton: We have exported rails; yes.

The Chairman: In 1907 did you export rails?

Mr. Felton: Yes, sir.

The Chairman: Did you export rails at a profit when you exported them?

Mr. Felton: We exported rails at a profit in 1907, but not in some of the years previous.

The Chairman: When you exported rails did you have to pay a duty in the foreign country?

Mr. Felton: We have not exported rails into any country which levies a duty on steel rails except, possibly, Mexico.

The Chairman: What countries did you export to?

Mr. Felton: We have exported to Argentina and to Cuba. There is a duty in Cuba. We have exported to Mexico, and we previously exported to Siberia. We furnished a very large order to the Russian Government for laying the Trans-Siberian Railway. We have exported rails to Japan and to British India.

The Chairman: Did you export any to Canada?

Mr. Felton: Not within recent years. We have not exported any since the tariff regulations went into force in Canada.

The Chairman: Their tariff regulations are the same as ours, are they not?

Mr. Felton: I do not know just what the Canadian tariff is, because we have not been interested in sending anything in there. We were absolutely shut out by the duty.

The Chairman: As to these rails that you exported, of course you came into direct competition with Germany, England, &c.?

Mr. Felton: Yes, sir.

The Chairman: And you were able to meet them and sell the rails, and sell them at a profit?

Mr. Felton: I did not say that we always sold them at a profit.

The Chairman: You did in 1907 sell at a profit?

Mr. Felton: Yes, sir.

The Chairman: And in 1907 you met the same competition. What prices did you get for them in this country in 1907?

Mr. Felton: In 1907, for the rails which we sold in this country we obtained $28. For the rails which we sold in foreign countries we obtained $27.52. That was our price f.o.b. at the works at Sparrows Point, on the Chesapeake Bay, in both cases.

The Chairman: At that price you were able to meet the competition in the Argentine Republic and these other countries of Germany and Great Britain?

Mr. Felton: You must remember that 1905, 1906 and 1907, but especially 1907, were years when the foreign rails mills were exceedingly busy supplying their own home markets. Therefore, the price of rails naturally in their home markets was high, and the price of rails in the foreign markets in which we met them was exceedingly high. That is the reason we were able to obtain that price.

The Chairman: During the rest of that time how did the price in the foreign market compare with yours—during those years when that situation did not exist?

Mr. Felton: The price in the foreign producing countries was in every case, I think, higher than our price here—that is, the average price in England was over $28 a ton and the average price in Germany was up to $31 and $32 a ton.

The Chairman: I was speaking of those two or three years prior to that, when you did not export any.

Mr. Felton: We have exported in every year since back in the nineties. There was only one year, 1903, when we did not export.

The Chairman: During those years has the market abroad been lower than your price?

Mr. Felton: The market price in the countries to which we exported has been lower than our price. In 1900 there was a difference of $3.70. In 1901 there was a difference of $3.40. In 1902 there was a difference of $5.55. In 1903 we did not export any. In 1904 we only exported one order, where we got badly fooled by the wily Turk. We exported some rails to the Hejaz Railway. In that year the price was about $9 less than it was in this country. But that was an accident and a piece of bad management on the part of our agent in Constantinople. In 1905 the difference was $6.80, or something like that. In 1906 the difference was $4.50, and in 1907 (which, as I say, was an exceptional year, when the foreign mills were occupied with the demands of their own countries) the price rose in neutral markets so that we were able to obtain there $27—within 50 cents of the home price.

Mr. Cockran: Did any of these sales represent a loss to you?

Mr. Felton: Those sales represented in some years a book loss, but not an actual loss, for this reason: We can manufacture rails for export more cheaply than we can manufacture rails for delivery in the United States, because we use very largely imported iron ores, on which we obtain a rebate of the duty which we pay when the iron ore comes into this country. We also use very largely imported spiegeleisen, which is dutiable at $4 a ton. We obtain a rebate amounting to 99 per cent. of the duty paid when that comes into the country. So we are able really to produce rails for export more cheaply than we can produce rails for delivery in the United States. In a rough way, it takes off from $1 to $1.25 a ton. Then we also obtain an advantage by means of these orders—filling up our order books at times when we could not otherwise run steadily. We are enabled then to run our mills continuously, which in the manufacture of steel rails is a very considerable advantage. That is, in the manufacture of steel we take our our pig iron in the molten state directly from the blast furnace and it goes into the converting works, and so on through to the finished rail without ever losing its heat. If we slacken up and stop our converting mills then that pig iron, which would otherwise go through continuously in this operation, must be piled up cold. Then when we start up again it must be remelted at very considerable expense. That probably adds from 80 to 90 cents a ton to do that. So you can see that, if by acquiring these orders for rails in foreign markets we can run our works continuously, it incidentally means a cheaper cost of production for our whole product.

Mr, Cockran: You belong to the Maryland Steel Company, do you not?

Mr. Felton: We own the Maryland Steel Company.

Mr. Cockran: You are still exporting steel rails?

Mr. Felton: We are still exporting steel rails when we get a chance to do it.

Mr. Cockran: There is no competition that you are afraid of in a neutral market? If you are able to deliver rails in Argentina and in Siberia, that pretty nearly covers the whole extent of the globe.

Mr. Felton: Those rail deliveries in Siberia were made many years ago, when the cost of steel rails to us was very much less than it is to-day. In the 10 years for which I have figures the cost of steel rails to us has risen enormously. It has increased $7 or $8 a ton. That may seem extraordinary to you, but I think it perhaps explains some of the things in Mr. Carnegie's magazine article, which I have not seen. Mr. Carnegie was familiar with the steel trade in the United States in the late nineties. I do not think he has had anything to do directly with the steel trade of the United States since 1896 or 1897. In making his statement I think he was figuring on the cost of rails at that time. If he knew the increased cost, at least as shown by our cost books, he would not, I am sure, have made the statement he did.

Mr. Cockran: The increasing cost is largely due to the increase in the cost of the raw material, is it not?

Mr. Felton: Raw materials, freight and labor. If you will let me state it, I will tell you just what those costs are. Iron ores, which in 1898 cost us $2.15 to $2.25 a ton at lower lake ports, in 1907 cost us $4.75. The unit price which, after all, is the thing which determines the cost of ore going into a ton of the pig iron, cost us in 1898 $5.75—that is, the amount of iron ore necessary to make a ton of pig iron cost $5.75, and in 1907 it cost us $11.25. Then there have been advances in freight rates and on coke, and there have been advances in labor, so that the cost of steel rails has advanced during those years some $7.50 a ton, probably.

Mr. Cockran: The cost has not advanced any more in this country than in England and Germany, has it?

Mr. Felton: I wish I knew. I do not know. The only thing we have to guide us as to the cost of rails in foreign countries is their selling price. In Germany, as you know, the Government places a bounty on export rails. Now how much that bounty decreases their cost, and whether the price at which they sell in the foreign markets is anything like a legitimate price, I do not know. German rails are selling now f.o.b. Antwerp at something like $23 a ton, I think.

Mr. Griggs: Did you say Antwerp?

Mr. Felton: Yes, sir; that is that "Belgian nightmare." These are the latest advices I have. These came over to us from London.

Mr. Cockran: Surely you can tell us what the price of iron ore is in Germany, can you not?

Mr. Felton: I have not the slightest idea.

Mr. Cockran: You would not undertake to say that the price of iron ore or pig iron has advanced in this country in larger proportion than it has in Germany, would you?

Mr. Felton: Well, I should think it extremely likely the contrary was true, because I know from the price at which these rails are selling now that the home market has slackened up, and these foreign mills are now pushing their products out into the markets of the world.

Mr. Cockran: But notwithstanding all the advantages which the Germans have, you have been able up to this year

to maintain competition against them in neutral markets, have you not?

Mr. Felton: We have by making great sacrifices.

Mr. Cockran: These sacrifices did not involve a positive loss, I understand you to say?

Mr. Felton: In the 10 years our total export business showed a book loss of $1.49 per ton.

Mr. Cockran: Will you tell me in cash? Did that represent an actual payment by you for the privilege of selling your product, or did it result in a profit to you in cash?

Mr. Felton: I should say that we just about came out even on it.

Mr. Cockran: Now, can we rely on that?

Mr. Felton: I think you can. I have said it.

Mr. Cockran: That there was no positive loss. Very good. We can accept that as a definite and final statement that in competition with Germany, where they have this bounty, as you say, and in competition with England, Belgium, and all the rest of the world, in neutral markets, you were able to hold your own, without loss?

Mr. Felton: I think that is true; yes.

Mr. Cockran: You do not think you would have great trouble in holding your own in this country, where all the advantages are in your favor and where you have no freight to pay?

Mr. Felton: Of course we would when the demand in these producing countries slackens up. Remember these conditions in the last two or three years have been exceptional. We have all been so busy that we did not know what to do. Those conditions have changed. The Germans, the English and these Belgians also are now sending their rails out into the markets of the world. They send them out at a much lower price than they are willing to sell for in their own countries. That is especially true of Germany, where, as I say, the export of rails is encouraged by the Government by an indirect bounty.

Mr. Clark: Have you any connection with the Steel Trust? The United States Steel Corporation is the technical name for it, I understand.

Mr. Felton: Not at all.

Mr. Clark: You do not own any stock in it?

Mr. Felton: No, sir.

Mr. Clark: Do they fix prices in the United States or not?

Mr. Felton: They do not.

Mr. Clark: You are sure of that? Do you sell at the same price that they sell at?

Mr. Felton: We sell generally at the same price that they do. Let me explain to you exactly what is done in the rail business of the United States: The presidents of the rail mills have frequent conferences at which they discuss the question of a fair price to charge for steel rails. After that discussion we each one act as we think is best for our company. That has resulted largely in a price of $28, the price of steel rails having been quoted in a general way at $28. It does not mean that we sell all our rails at $28. That is, perhaps, what you want to know, is it?

Mr. Clark: You fix the jump, but you don't jump together—that is about it, is it not? You do everything now at one of these meetings that you can think of to do to try to avoid the law, and at the same time to come to an agreement?

Mr. Felton: We have nothing in the nature of an agreement at all.

Mr. Clark: You do all sell at the same price?

Mr. Felton: I don't know what the other mills sell at. I think they sell at $28.

Mr. Clark: You never inquire what the other people sell at?

Mr. Felton: I never inquired; it would not do any good.

Mr. Clark: You do not care what the other people sell for, I suppose?

Mr. Felton: I think they sell at that price, because I would find out when I come to quote prices to railroads if that price were cut to any considerable extent; that would develop.

Mr. Clark: You would be very much surprised, then, to find one of them getting $30 a ton, when you are only getting $28 a ton for your product?

Mr. Felton: I would be surprised, and I would think that our selling department was very lax if that was the case.

Mr. Clark: You would be very much surprised and chagrined—not chagrined, but surprised—if you found out that they were selling at $27 a ton and that you were selling for $28 a ton?

Mr. Felton: I would think in such a case, also, that we ought to find that out.

Mr. Clark: And yet they all sell, by accident, at the same price.

Mr. Felton: It is not by accident. I told you just exactly what was done in the steel rail trade.

Mr. Clark: How much is the company capitalized for?

Mr. Felton: The capital invested in works and in the business is just about $50.000,000.

Mr. Clark: How much dividend did you pay in 1907?

Mr. Felton: In 1907 we paid $1,155,000. Understand, that is not the capital stock of the company; that is the amount of money which is invested in the business. There is no water in it.

Mr. Clark: And you only got $1,000,000 profit in 1907?

Mr. Felton: I said we paid that to our stockholders. I did not say that was our profit. It was a poor year for us on account of the high prices for materials. Our income was $5,420,000. Deducting our bonded interest or interest on bonds, amounting to $748,000, left net earnings of $4,671,000, from which we charged off, depreciation, $1,572,000, leaving our net income $3,099,000. Out of that dividends of $1,155,000 were paid to our stockholders.

Mr. Clark: How much does the president of your company get for salary?

Mr. Felton: I do not believe I am called on to answer that question.

Mr. Clark: That is exactly what we want, whether you answer it or not. We want to arrive at how much profit you are making. Are you paying anybody any such price as president as the steel trust is paying Corey, $1,000,000 a year?

Mr. Felton: We are not; no.

Mr. Clark: The only fair way to find out what the profits are is to find out whether the salaries paid to those men do not swell up the expenses to such an extent that you make a poor showing as to your profits, when, as a matter of fact, there are a lot of fellows in the company who are becoming millionaires and multimillionaires.

Mr. Felton: Will you allow me to show you that? [Handing a memorandum on a slip of paper to Mr. Clark.] That is what the president is getting.

Mr. Cockran: I would like to see that, too.

Mr. Felton: Pass it around.

Mr. Clark (after examination of memorandum): Whew!

Mr. Longworth: Can you state what your net profits per ton were for the year 1907?

Mr. Felton: I have that right here, I think. Remember, I am speaking now simply of rails.

Mr. Longworth: The reason I ask that is that I saw in a copy of the *Wall Street Journal* for this year that the net earnings of the Steel Corporation for the year 1907 were $15.50 a ton. Were your earnings approximately the same?

Mr. Felton: We made a profit on rails. We have this one plant running on rails, you understand, and the percentage of profit on that one works is about the same as the general percentage of profit on all the works, but on rails our profits per net ton, before any depreciation is charged off, was $1.66 per ton. That was in 1907. In 1906 our profits were $3.28 a ton. In 1905 our profit was $3.71 a ton. You have heard all sorts of talk about the cost of steel rails. It is all based on figures that were made up in the late nineties when we were paying our men 10 cents an hour, and they were not working nine hours a day; when our rates on the railroad did not scarcely pay the cost, and when everybody that was selling us any supplies—iron ore or anything like that—was not getting back a new dollar for an old one. On that basis we made the steel awfully cheap. We were then able to make steel a great deal cheaper than anybody else in the world, we think. Since then prices have gone up, as I have tried to show you, until to-day—last year—those were the actual profits per ton which we made on steel rails at our Sparrows Point plant. When you compare the earnings of the United States Steel Corporation with the earnings of these smaller corporations, you must remember that the corporation owns all its raw material; you must remember that it owns the means of transporting those raw materials to its mills; that it owns the steamships and the cars; that it owns its supplies of fuel, and everything from the ground up that goes to make a ton of steel. Now, it is entitled to a profit on each one of those things; its money is invested in each and it ought to have a profit on it.

Mr. Hill: As I understood you at the beginning of your remarks, you stated that you came here to represent the entire steel industry?

Mr. Felton: I was asked to come here by the steel rail producers to say that they did not feel that under present conditions the duty of $7.84 a ton on steel rails is an excessive one.

Mr. Hill: The United States Steel Corporation, then, will not appear; is that it?

Mr. Felton: I do not know. I am pretty sure that it will not, because you know that your committee asked to have special individuals appointed to come here and talk to you on these separate schedules, and meetings were held at the offices of the American Iron and Steel Association, at which all the interests we could get together in the short time were represented.

Mr. Hill: Then, speaking for the whole trade, Mr. Felton, I would ask whether there is any international agreement between England, France, Germany, Belgium and the United States as to a distribution of the world's territory in the steel rail trade?

Mr. Felton: There is nothing that we are a party to.

Mr. Hill: Is there any to your knowledge?

Mr. Felton: To my belief there is a hard and fast association between the German, English, French and Belgian mills.

Mr. Hill: Not with the United States?

Mr. Felton: No, sir.

Mr. Hill: Pardon me if I read you just a sentence. I think it is from the *Wall Street Journal* of July 14, 1908, if I am not mistaken: "It is understood that some sort of an agreement bearing upon exports of steel has existed for several years between the United States and the lading iron producing countries of Europe. This agreement, it is said, has done a great deal to stimulate the foreign branch of the steel business and has resulted in great benefits to the companies concerned. There is also an understanding regarding the armor plate trade." To your knowledge, is there any truth whatever in that statement?

Mr. Felton: I know that that arrangement is in force, and I do know that we would like very much to be put in a position where we could join it.

Mr. Hill: Why?

Mr. Felton: Because it would protect the entire steel rail market of the world. We would get better prices. We would not cut one another's throats. We would save liabilities which exist now. You understand there is nothing to prevent the German or the English mills from subsidizing any one of their mills which is well located to simply flood this country with cheap steel rails and make up the difference in cost between them. We cannot oppose that sort of thing.

Mr. Griggs: We have been all theorizing over this question for about three hours. Do you know Mr. Andrew Carnegie?

Mr. Felton: Yes, sir.

Mr. Griggs: Pretty rich, is he not?

Mr. Felton: He is said to be.

Mr. Griggs: Do you know Judge Gary?

Mr. Felton: I do.

Mr. Griggs: He is pretty well off, is he not?

Mr. Felton: I do not know.

Mr. Griggs: Do you know Mr. Schwab?

Mr. Felton: Yes, sir.

Mr. Griggs: He is pretty well off?

Mr. Felton: I do not think he is as well off as he was at one time.

Mr. Griggs: Do you know Mr. King, who was here this morning?

Mr. Felton: Yes, sir.

Mr. Griggs: He is pretty well off?

Mr. Felton: I do not know.

Mr. Griggs: Do you know of a poor man in the steel business?

Mr. Felton: I do.

Mr. Griggs: Where is he?

Mr. Felton: Right here—I am he.

Mr. Griggs: That is why they sent you. You are the only one.

Mr. Felton: I do not think I am the only one.

Mr. Griggs: Do you know of any more.

Mr. Felton: I do not think that has much to do with this question before the committee at this time.

Mr. Griggs: Are you the gentleman drawing this modest salary you handed up here to the committee this afternoon?

Mr. Felton: I handed Mr. Clark a memorandum of what my salary was.

Mr. Griggs: And you began in the chemical office of the steel mills and you went up through the mills to the presidency of this Pennsylvania Steel Company?

Mr. Felton: I did.

Mr. Griggs: You own no stock in it?

Mr. Felton: I own 550 shares.

Mr. Longworth: How many other corporations make the same product you do, outside the United States Steel Corporation?

Mr. Felton: Rails? There are the Colorado Fuel & Iron Company, the Lackawanna Company, the Cambria Steel Company, the Bethlehem Steel Company. Mr. Topping's company also makes rails.

Mr. Longworth: Generally, with whom are you in competition?

Mr. Felton: In construction steel, with the Lackawanna—that is, the Lackawanna, ourselves, the Cambria Steel Company, the Bethlehem Steel Company, and some mills in Chicago are in competition. There are quite a number of mills in all lines. Jones & Laughlin are the largest manufacturers of structural steel outside of the United States Steel Corporation, and there are others.

Mr. Longworth: In your opinion, does your average yearly profit substantially approximate the average yearly profit of other corporations outside of the United States Steel Corporation?

Mr. Felton: I think so. The concerns in the Pittsburgh District have a great advantage over us in the cost of fuel. They also have advantage over us in the cost of iron ores from the lakes, but we have the advantage of foreign imported ore, and I do not think they can vary very widely. Of course, they do vary some. The situation has a great deal to do with it.

Mr. Longworth: You think, then, that the United States Steel Corporation's average profit per ton is greater than that of the independent companies?

Mr. Felton: As shown by its annual reports it certainly is; but remember that all these figures are due to its owning its ore and transporting ore by water and rail, and the production of coke, and limestone, and everything going into the manufacture of steel, on which it gets profit all the way up.

In reply to other questions by members of the committee, Mr. Felton presented some figures taken from recent annual reports of his company, figures with which the readers of *The Iron Age* are already familiar. Mr. Felton emphasized the fact that in the organization of his company the only "water" injected therein was a relatively small proportion of common stock upon which no dividends have ever been paid.

## TIN PLATE AND SHEETS.

**Statement of William U Follansbee, of the Follansbee Brothers Company, Pittsburgh, Pa.**

Mr. Follansbee: I am to speak on paragraph 134, tin plate, and incidentally 131 and 132 as being a kindred product made by the same plant. I am glad, in speaking of the tin plate proposition, we can say it is not now an infant industry. It is, however, the youngest of all the iron or steel products. It is also important to bear in mind that tin plate is an item that has by far the largest labor cost. I am here to-day representing 12 independent tin plate plants that are located in several different States, widely scattered. I believe I am entirely justified in saying these independent plants, while they are making tin plate, are also making money.

Mr. Fordney: Good.

Mr. Follansbee: We are capitalized in an aggregate of $10,000,000. These tin plants have an aggregate of about 103 mills. These tin plants have an annual capacity of about 300,000 tons, which is equivalent to about 6,000,000 base boxes. They employ in the aggregate about 7000 hands. Their annual pay roll is about $5,000,000. Taking the tin plate industry in an entirety, the entire production in this country is about 600,000 tons, equivalent to 12,000,000 base boxes of coated product. These same mills turn out a large tonnage of the same material, which, however, is not coated. The industry of itself, tin plate manufacturing, employs about 20,000 hands and pays annually in wages about $13,000,000.

In speaking of the tin plate industry itself, it is only proper to remind you of the fact that tin plate has been the football of the tariff. The act of 1871 undoubtedly was intended to be highly protective. In that act was written a duty of 2½ cents per pound. Under it two mills started the manufacture of tin plate. After the establishment of those two mills and after they became operative, the foreign manufacturers, through the New York importers, very greatly reduced the prices. The competition was very severe, and in some way which I can hardly understand a decision or interpretation or construction of the law was rendered by Secretary Fessenden whereby he inserted in the act a comma which did not belong there. The act read, "Tin plate or iron, galvanized, shall pay 2½ cents per pound duty." The comma was inserted by Secretary Fessenden, which made it read in effect, "Tin plate galvanized, or iron galvanized." On the face of it, it was an insertion. It was ridiculous, putting two coatings on one black sheet. Nevertheless, under that ruling, instead of 2½ cents per pound, they were assessed at 15 per cent. ad valorem, with the result that one of these mills that was in operation went into bankruptcy and the other struggled along for a few years and eventually turned to another line of business.

The act of 1883 called for a revenue tariff of 1 cent a pound, under which no tin plate was made in this country, except that one of the plants which I mentioned made a desperate effort for a short time, but had to give it up as entirely unsuccessful.

The McKinley Tariff in 1891 called for a duty of 2.2 cents per pound. That was sufficiently protective to justify capital entering into the business and learning. The industry was getting on its feet when the Wilson bill came along in 1894, with a duty of 1.2 cents, and knocked the industry to its knees. The result was that the mills closed for a considerable period and a most bitter labor conflict ensued. That lasted for a period of about six months, and finally, to get work and start the mills the laboring men took a very severe reduction. That condition existed practically until 1897, when the Dingley bill put on a new tariff of 1½ cents a pound. That was sufficient at the time. The mills which started following the passage of the McKinley law had received lower wages. They had gained in experience. Some of them, true, had failed and had been purchased at sacrifice prices by others, but nevertheless the industry continued satisfactorily up to the present time under the Dingley tariff of 1½ cents per pound.

When the McKinley bill was passed Wales was sending to this country, in round numbers, 300,000 tons of tin plate. The industry to-day, as I have already said, totals about 600,000 tons, having doubled. To this can be added fully an additional 100,000 tons of black product, made by the same mills. To produce the 600,000 tons of coated products, the following is necessary: 1,400,000 tons of ore, 850,000 tons of coke, 400,000 tons of limestone, 750,000 tons of pig iron, 700,000 tons of steel, paying to American wage earners approximately $20,500,000 in wages. Of this very large sum is directly paid in the tin plate line, which is protected, $13,000,000, in round numbers—I figure it at $12,800,000—out of the $20,500,000.

I am glad, so far as the tin plate industry at least is concerned, that the tariff does not advance the price. The average price of tin plate under the 15 per cent. ad valorem duty of the act of 1871, from the years 1872 to 1878, in United States currency, was $6.35, f.o.b. Swansea, Wales. Irrespective of the freight and other small charges, add simply the 15 per cent. ad valorem duty, and that means for the seven years from 1872 to 1878, America was paying an average of $7.30 for its tin plate.

During the period of 1879 to 1891, when the McKinley bill became effective, under which we had a revenue duty of 1 cent per pound, the average price f.o.b. Swansea, Wales, in United States currency, was $3.81 plus the duty, making a total of $4.81, which America was paying for its tin plate during that period.

For the last five years the average price in this country has been $3.48, showing conclusively that the whole competition has tremendously reduced the cost to the American consumer.

As regards the present duty and prospective duty, the American tin plate manufacturer is only 17 years old. He is the youngest in all the iron or steel industries. The price to-day of Welsh plates is 12 shillings per box, f.o.b. Swansea, Wales. That is an open quotation, but I believe I can buy them for less; but we will use that for an illustration. At the rate of $4.86 per pound sterling, that is equivalent to $2.92, from which there is a discount given by the Welsh manufacturer of 4 per cent., making the price to-day of the Welsh plate $2.84, f.o.b. Swansea, Wales.

Without going into details, you can easily see that a freight of 9 shillings 6 pence or 10 shillings, plus a commission for selling, $2.80, f.o.b. Swansea, Wales, will very readily place the plate at the American seaboard at a cost of $3 without duty.

A peculiarity of the tin plate business is the fact that fully two-thirds of it is consumed at the seaboard—New York, Philadelphia, Baltimore, New Orleans and San Francisco. As regards the consumption in San Francisco or on the coast—not limited entirely to San Francisco, but the other coast cities—the consumption is seasonable. It is not regular throughout the year. It is easy enough for the consumers to anticipate by months their requirements. The American manufacturer must sell his goods delivered at the seaboard. From the mills in the Pittsburgh District a freight rate of 18 cents and a shipping rate of 106 lb. exist, the railroads exacting a tariff on the package as well as the contents, making the cost to deliver in New York City 19 cents per box or per 100 lb. To deliver it to New Orleans costs 34 cents. To deliver it to San Francisco costs 70 cents, so far as the American manufacturer is concerned. The facts are, as regards the Welsh manufacturer, selling even to the more distant point of San Francisco for seasonable trade, his plates can be loaded at Swansea, Wales, and carried as ballast, and be delivered at practically as low cost as in New York City. We accordingly have the proposition that the Welsh manufacturer, exclusive of duty, can lay his plates down at the seaboard at $3 per box. If we deduct our 70 cents freight to the coast, the American manufacturer, exclusive of duty, would be compelled to sell his plates f.o.b. the mills at $2.30 per box of 100 pounds.

The market quotation to-day for this character of tin plate is $3.65, or a difference of $1.35. The duty is $1.50. It protects.

The independent tin plate manufacturers, in considering this question of tariff, felt if any were justified in standing pat they would be. They have, however, endeavored to look at this in rather a broader light and have recognized a sentiment in the country toward tariff revision downward; and in giving this most earnest consideration, the tin plate manufacturers are willing to say to you gentlemen of the committee that we will struggle along, and we believe we will continue to make some money, if the tariff is revised by reducing it 20 per cent., which will take it from $1.50 to $1.20. It will then be identical with the Wilson bill of 1894; and the only difficulty about the Wilson bill was that it was 14 years ahead of time. That is the recommendation we are prepared to make, and I think we will put that in our brief, which we will give to you at some later date.

I had no intention of speaking on sheets, but the tin mill products are influenced. The tariff on sheets reads as follows: "Sheets of iron or steel, common or black, of whatever dimensions."

Tin plate is steel sheet coated with tin. The mills make thn sheets of many dimensions. It was not intended to look this matter up and I have not gone into the statistics as I have for the coated products, but I can say this, that as regards the lighter gauges the tin plate manufacturer will accept and, I believe, will continue to run his mill by taking the same number of tenths reduced duty. I think, however, to make a very decided distinction, the matter of heavy gauges should be looked into. I have not looked into heavy gauges, and it may be possible that would not be applicable there.

Mr. Clark: Do you represent all of the tin factories in the United States?

Mr. Follansbee: I am representing to-day the 12 independents. We call ourselves independent because we are not mmbers of the United States Steel Corporation.

Mr. Clark: That is what I wanted to get at. There is no use asking any questions about the United States Steel Corporation?

Mr. Follansbee: I do not know.

Mr. Clark: Nobody else does, so it seems. What I want to know is this: On this $10,000,000 of capital, which I understand you to say you have, what per cent. of profit did you make in 1907, for instance?

Mr. Follansbee: I can say that I believe the independent tin plate plants of this country during the last three and four years have been making profits running from about 8 to 12 per cent.

Mr. Clark: Now, you think if it is cut down to the basis of the Wilson bill you can still work and live and flourish?

Mr. Follansbee: I am saying so.

Mr. Clark: Suppose we cut it down to 1 cent, in the exigencies of having to get some money to run the Government, do you suppose you could still make a profit?

Mr. Follansbee: Under certain circumstances, by reducing labor.

Mr. Clark: That is the only way, is it?

Mr. Follansbee: Provided other conditions remain as they are. You know that was exactly the situation when the Wilson bill passed. It is a question of history. Mr. Dalzell knows that.

Mr. Clark: Mr. Dalzell was very largely engaged in making the Wilson bill, and I was not. He was one of the architects of that bill, and I was not.

Mr. Follansbee: It was only 14 years ahead of time.

Mr. Clark: That is the way with most good things. If the price of steel should go down, that of course would help you?

Mr. Follansbee: Naturally.

Mr. Clark: Do we make as good tin in the United States as they make in Wales?

Mr. Follansbee: I do.

Mr. Clark: I am glad to hear it, because it is frequently stated and currently believed that the American tin is not as good as the foreign tin. Of course I do not pretend to know a thing about it, but if it is as good I am really glad to hear it.

Mr. Follansbee: You can tell them now you know better. I have heard it so often, just as Mr. Clark stated, that I want to state here before all the gentlemen of this committee that if any of you want to put on a tin roof, Follansbee Brothers Company will sell that plate and will back it by their capital of $1,000,000 and guarantee it on your house for 15 years. Did you ever know a Welshman to do that?

## PIG IRON.

### Statement of J. A. Shimer of the Dunbar Furnace Company, Philadelphia, Pa.

J. A. Shimer of the Dunbar Furnace Company, Philadelphia, Pa., addressed the committee on behalf of Eastern pig iron producers, stating that he believed the industry should still have the protection of $4 per ton on pig iron provided by the Dingley act. Mr. Shimer's examination was in part as follows:

Mr. Shimer: I represent the oldest furnace and the first furnace to make pig iron in the United States west of the Allegheny Mountains. It is located at Dunbar, Pa. At the time of the last change in the tariff under the Dingley act I represented the Eastern Pig Iron Association. I said at that time, with regard to the duty of $4 a ton that was imposed under great opposition from the pig iron people under the Wilson act, that we ought to have some protection at that time, because really $4 a ton protection does less under the Dingley act than it did under the Wilson act, and that is the case only to a greater extent to-day than it was then. In other words, $4 is less protection to the trade to-day than it was when the Dingley act was passed, for the reason that all ores or practically all ores that came to the furnace for the past 14 years have been gradually receding in metallic contents, and if you want to protect it $4 a ton on pig iron, with an ore worth 40 cents a ton duty with less metallic contents than it was before, you would be giving less protection to the manufacturer, and what I wish and what I claim is that we still should have the protection of $4 on pig iron. If parties in Phila-

delphia, New York, Boston or Baltimore want to take advantage of the export it is all free to them, excepting the cost of weighing the iron—1 per cent.—just as free as it could be if there was no duty on it. Such concerns as R. D. Wood & Co. and the Maryland Steel Company and others situated on the seaboard pay no duty on any iron ore production on the iron they want to ship abroad, and if they do pay it they only pay it temporarily, and they get 99 per cent. of it back. If the German Rhine iron, costing to-day or costing last year in the neighborhood of $13.46 per ton, f.o.b. on the upper Rhine, and with a German subsidy of a freight rate on the Mercantile Steamship Company of something like $1.50 a ton to New York or Philadelphia, making $13.36 plus $1.50, or about $16 plus the duty, put it on the wharves at Philadelphia—that is, a No. 2 iron—why should we in eastern Pennsylvania worry about the importation of pig iron when that is the case? We ought not to be worried with it. We do not make much money on the pig iron that is made—that is, much profit, very little profit. It is very seldom that you can make much profit. To-day you cannot make a cent. Last year you could not run at a profit; you could run, but you did not know whether you were going to get a profit or not.

Mr. Boutell: If we should repeal the duty on iron ore, would that make any difference in the duty?

Mr. Shimer: We would not change the duty on pig iron. The benefits that have accrued on iron ore and on the iron here have been by the sale of the material out of this country, and we do not want to repeal it if it is used here.

Mr. Clark: Then what do you want the tariff retained on iron ore for?

Mr. Shimer: Simply for the benefit of the trade in general it should be retained.

Mr. Clark: Do you think you would have plenty to do to look out for your own particular phase of the trade?

Mr. Shimer: The Pennsylvania iron ores we used up until the discovery of the ore up in the lakes. We have some 8000 acres of ore land carrying 33, 34 and 35 per cent. iron that it is impossible to-day to smelt.

Mr. Clark: Now, really, when Mr. Boutell asked you if we should take the duty off of iron ore if it would not help you to manufacture the pig iron, you harked back then in your mind to the fact that you also own iron lands?

Mr. Shimer: Not available at the present time.

Mr. Clark: I know; but you ought to make them available.

Mr. Shimer: No, sir; they would not be available with $1 a ton duty on them.

Mr. Clark: Then why do you want the tariff on iron ore kept on?

Mr. Shimer: Because they would be less available if it was taken off.

Mr. Clark: How much have you got invested in this business, if I may inquire?

Mr. Shimer: Something like $4,000,000.

Mr. Clark: How long have you been at it?

Mr. Shimer: Something like 35 years.

Mr. Clark: Did you make $4,000,000 out of the iron business?

Mr. Shimer: No, sir.

Mr. Clark: Did you inherit it?

Mr. Shimer: No, sir.

Mr. Clark: Where did you get it?

Mr. Shimer: I made part of it out of farming.

Mr. Clark: I will withdraw that question. Do you know anybody who is farming who is worth $4,000,000?

Mr. Shimer: No, sir. I am not worth $4,000,000 either.

Mr. Clark: As a matter of fact, do you know that there is only one farmer in the United States who is worth $1,000,000, and he lives in Missouri?

Mr. Shimer: It does not make any difference. I am worth a part of a million dollars, and I have farmed and I have made part of a million out of farms.

Mr. Clark: Now, how much profit in a year did you make out of the iron business.

Mr. Shimer: About $150,000 net on $4,000,000 of value.

Mr. Clark: That is all the iron business pays, is it?

Mr. Shimer: That is all the independent iron business pays at the present time. When you buy your lake ore and make your coke, it takes every solitary cent that you can possibly save to pay the current present rate of labor and keep running.

Mr. Clark: How much do they pay the president of your company?

Mr. Shimer: I think he gets something like $100 a month. We pay the manager a little more than that. He receives $6000 a year.

Mr. Clark: Is that the highest priced officer in the company?

Mr. Shimer: That is the highest priced officer in the bunch.

Mr. Clark: Now, these steel men expect people to believe statements that none of them are making over 3 or 4 or 5 per cent.?

Mr. Shimer: I think you ought to believe them from what they think.

Mr. Clark: But there is such a thing as appearances, and the reputed fortunes that they have and the acknowledged fortunes that they have do not correspond.

Mr. Shimer: But it is largely on paper.

Mr. Clark: Andrew Carnegie could not have made $500,000,000 if he had lived until he was as old as Methuselah?

Mr. Shimer: Unless he had sold out.

Mr. Clark: He did not have to sell out to have two or three millions?

Mr. Shimer: I do not know whether he did or not; I cannot tell you about that, but unless he had sold out he would never had made anything in the steel or iron business. You can never make anything in the iron business until you sell out.

Mr. Clark: How did Frick make his money, did he sell out?

Mr. Shimer: Yes, sir.

Mr. Clark: How did Carnegie happen to get $1,000,000 in salary?

Mr. Shimer: They gave it to him.

Mr. Clark: And Schwab?

Mr. Shimer: That is another matter.

Mr. Clark: If they can afford to pay such salaries they are making money?

Mr. Shimer: Undoubtedly they are.

Mr. Clark: You cannot afford to pay it out of dividends of 3 or 4 per cent.

Mr. Shimer: No, sir; but they can buy ore lands, which is a sort of unearned increment.

The Chairman: That is the way you get at it?

Mr. Shimer: Yes, sir.

The Chairman: And that is the way you got the $4,000,000 invested?

Mr. Shimer: Yes, sir.

The Chairman: And the money you invested in the business brought it up to $4,000,000, did it not?

Mr. Shimer: Yes, sir.

## TUBES AND WIRE.

### Statement of J. A. Campbell, of the Youngstown Sheet & Tube Company.

Mr. Campbell: I was called to a meeting in New York day before yesterday and was selected to come here and represent the pipe interests, the wrought iron pipe intersts.

Mr. Underwood: Will you please give us the number on the schedule?

Mr. Campbell: It is 152. The schedule calls for 2 cents per pound on "lap welded, butt welded, seamed or jointed iron or steel boiler tubes, pipes, flues, or stays, not thinner than No. 16 wire gauge." That, I would take it, was $40 a ton, and I suppose I will occupy the unique position of being the one fellow who says that this tariff is too high. I am a tariff reformer, I presume, but I am a protectionist.

Mr. Griggs: I am glad to see that you are honest with respect to that.

Mr. Campbell: And I have argued to all these people, as a good many others have, that we ought to come here and be honest and say what we think, and that when the tariff is too high that we ought to be willing to accept a reduction, and when it is too low we ought to ask for an advance. I understand there is to be a reduction of the tariff, but there have been a great many inaccuracies that have crept into the tariff because it probably has been a matter of grace. You gentlement are Congressmen representing different districts, and they all do not think alike, but their districts generally think as they do or as some other district thinks.

The Chairman: What do you think this duty ought to be, as an honest, square duty?

Mr. Campbell: It ought not to be half what it is in this bill. It is, say, $40 a ton; it ought not to be over $20. That is a cent a pound, which would be ample duty to protect us. Now, I cannot speak for every other manufacturer.

The Chairman: How would $10 do in your business?

Mr. Campbell: Well, $10 would not do ordinarily; but we possibly could get along with a dollar or two less than somebody else. I think our costs are as low as anybody else's costs, outside of the United States Steel Corporation.

The Chairman: What could you get along with?

Mr. Campbell: We could possibly get along with $18 instead of $20 a ton.

Mr. Griggs: Let us compromise on $15 now and quit.

Mr. Campbell: No, sir. We want you to remember now, speaking seriously, that you are legislating for a lot of people. I know of a number of mills throughout the East and throughout the Middle West that make pipe and that cannot make pipe within $4 or $5 a ton as cheap as we can, and if you put this tariff so low you will either force them to put their men to a small wage or put them out of the business. In 1906 two of the largest and best mills in this country went out of business on account of the prices, and we lost money on all the small sizes of pipe which we made during that year.

Mr. Underwood: When we get a witness before us who is candid and square, as you are, I think the committee can very well rely upon his judgment. I would like to ask

you if you will give the information for the committee, ascertain the cost of this pipe in the competitive markets abroad, what it is selling for there, and ascertain the freight rates to New York City?

Mr. Campbell: I expect to do that.

Mr. Griggs: If you will refer to paragraph 152, you will notice that it says 2 cents a pound on "lap welded, butt welded, seamed, or jointed iron or steel boiler tubes, pipes, flues, or staye, not thinner than No. 16 wire gauge, 2 cents per pound; welded cylindrical furnaces, made from plate metal, 2½ cents per pound."

Mr. Campbell: I do not know anything about that; we do not make that and I cannot speak as to it, but I do not think you ought to treat that in the same way that you have treated the pipe, from my general knowledge of it, but I really do not know anything about it—that is, I do not think it would be fair to cut that in two because it was in paragraph 152.

Mr. Griggs: But you think we ought to go in for a general tariff revision, do you not?

Mr. Campbell: Yes, sir; but bear in mind all the time that this duty ought to be a protective duty, not so high, however, at any time that no material can come into this country, because if you do that it would permit us as manufacturers to get together, if it was legal for us to get together—which it is not—in some way when the demand was greater than the supply, which was true last year, when we could have put the pipe up $4 or $6 or $8 a ton, and the people would have had to pay. It would not have been fair. We could have done that under this tariff, but it would not have been fair. It did not occur, but it might occur at some time, and I do not think that it ought to occur. There is one other item that I want to speak of, and that is with reference to a subject that another gentleman was billed to speak on, Mr. Roebling, on wire. Mr. Roebling is not here. It is 137, "Round iron or steel wire, not smaller than No. 13 wire gauge, 1¼ cents per pound." I have recently gone into the wire business—that is, the 16th of last March I bought a wire plant.

I have not been in the business long enough to know from my own personal knowledge what this tariff ought to be. From my own personal experience in the last few months it does not cut any figure and should have no weight with you. I should say that this tariff was not ample, but when I come to compare it with other things I would say that it was too high. Our business does not show, in the wire end of it, or has not shown a justifiable profit. Our other business has been a profitable business. That is another thing; you have accused everybody of saying that they have not made any money. We have made money for the past four years; our business has been very prosperous, and I believe in talking with these people about this wire, that they will be perfectly satisfied if this is reduced the same. Perhaps wire requires about as much labor as any or perhaps more than any other one item, being in about the same class as pipe. Now, with reference to wire nails, wire nails have only ½ cent a pound. and I know that we cannot afford to have that reduced. We are selling wire nails now very cheap, and in looking this matter up on the train coming here yesterday we found that they could lay nails down cheaper in New York than we could make them. That protection, I think, is ample, but I do not think it is too much. I think that you can afford to take off three-tenths of a cent a pound without hurting either labor or capital invested in the wire business, and I believe it would be perfectly satisfactory.

But in all these things you want to remember that there are hundreds and hundreds of small concerns that are making sheets and buy their bars, and do not produce them as we produce them and as the corporation produces them. There are hundreds of concerns that are buying the rods and putting them into wire, and then into the other forms of production. Some go back farther and buy the billets and have their own rod mill. We produce this stuff from the ore to the finished product, and what might be satisfactory to us and what we might live under, might put them out of business. So that you want to be careful in framing all these bills, in my opinion, and take into consideration the vast number of smaller manufacturers who have the same right to live as the larger ones have. For instance, the Steel Corporation could put us out of business if it saw fit at any time because we are not doing a powerful business, while we have a vast advantage over a number of other people because our firm is new and our facilities are first class. We can manufacture the stuff as cheap after we get a start as anybody, we believe, not even excepting the corporation, but we cannot bring ore down, we cannot mine it and bring it down because we have no transportation facilities to handle it in that way nearly as cheap as the corporation can.

The Chairman: You suggest a reduction, as I understand you, of 3-10 cent a pound?

Mr. Campbell: Yes, sir.

The Chairman: Now, "Round iron or steel wire, not more than No. 13 wire gauge, 1¼ cents per pound." You make that ninety-five one-hundredths, do you?

Mr. Campbell: I would make that about 1 cent a pound and the other about 1.20.

The Chairman: "Smaller than No. 13 and not smaller than No. 16 wire gauge, 1½ cents a pound?"

Mr. Campbell: That ought to be about 1.20.

The Chairman: Smaller than No. 16 wire gauge, 2 cents a pound?"

Mr. Campbell: That could be safely three-tenths off; in my opinion that could be reduced that much.

Mr. Randall: If the tariff was taken off of steel products entirely in this country, would that not very much reduce the price of building, building material and railroad building and everything of that sort?

Mr. Campbell: I do not think it would much.

Mr. Randall: It would not reduce the price?

Mr. Campbell: It might some.

Mr. Randall: If it would not reduce the price, you could go ahead and manufacture and sell the same as you are now?

Mr. Campbell: If all those things are going to be on a lower basis they have all got to come together—labor and material and transportation and everything that enters into cost.

Mr. Randall: Would that not make the material cheaper?

Mr. Campbell: It might possibly. I think it would have a good effect on the whole country if you did it on all the different things. If you took it off of barbed wire, however, it would not, because there would be enough other things to employ labor and the laborer would say he would not work in the barbed wire business but would go into some other line of business.

Mr. Randall: You think it would be better, then, if the tariff was reduced so as to let the stilted business down on a natural level?

Mr. Campbell: Yes, sir, everything that is stilted; but I do not want you to understand that I say that it is. There is no instance that I know of where the prices are higher now than they would be if the tariff was reduced, except in this general leveling down of everything that would come if the tariff was taken off.

## CRUCIBLE STEEL.

### Statement of William G. Park of the Crucible Steel Company of America, Pittsburgh, Pa.

William G. Park, who was the next witness, said that he was prepared to recommend a reduction in the duty on certain articles embraced in paragraph 135, covering steel ingots, cogged ingots, blooms and slabs.

Mr. Park: The volume of this business in which I am interested, as covered in this clause, is about 300,000 or 400,000 tons a year, and it is a class of steel that is higher in price and superior in quality to the ordinary steel, called bar steel. We think that the duty permits of pretty large importations at the time; there is a great deal of it imported, and I do not think we can stand a very large reduction in the tariff without having the importations increased. But recognizing the fact that a reduction perhaps is in order, we would ask the committee to make it as light as possible. We feel prepared to stand something of a reduction in respect to it. I have talked to several manufacturers in this line of business and they think that about 10 per cent. from the present duty would be something that would be acceptable. Then there is a great deal of steel that is made—that has only been made about five years—called high speed steel, for which there is no protection in this Dingley Tariff act. We propose a scale. The highest here is 16-cent steel, bearing 4.7 cents a pound duty. We propose 20-cent steel, steel 20 cents a pound and not over 25 cents, 7 cents a pound; 25 cents and not over 30 cents, 10 cents; 30 cents and 36 cents, 15 cents; 36 cents a pound and over, 20 cents. The article that enters into the manufacture of that steel largely is metallic tungsten, which sells for 75 cents a pound, so you can readily see that we have a good reason for asking this.

Mr. Bonynge: Where do you get that tungsten from?

Mr. Park: We get it from a manufacturing concern in York, Pa.

Mr. Bonynge: Where does the tungsten ore come from?

Mr. Park: The tungsten ore comes from Spain, Chile and Germany.

Mr. Bonynge: Don't you use any from Colorado?

Mr. Park: From Colorado, yes, sir; I suppose that probably from one-fifth to one-tenth of all that is mined is from Colorado, and some from Spain.

Mr. Griggs: How much of this did you manufacture in the last year.

Mr. Park: I do not suppose the amount manufactured by our company was more than a half million dollars' worth of steel.

Mr. Griggs: What is the name of the steel?

Mr. Park: It is tool steel, called high speed tool steel.

Mr. Griggs: Do you know what the importations were last year?

Mr. Park: I do not know what the importations were, but I think the importations of all of this class of steel that we manufacture is about $4,000,000 or $5,000,000.

Mr. Underwood: I want to ask you this question: I see that there is considerable importations of ingots, blooms, and slabs and steel bars. I suppose the cheapest point where this can be imported by this country would be New York, because the freight rates are cheaper there from foreign ports.

Mr. Park: Yes, sir; almost all in New York.

Mr. Underwood: What is the importing price of blooms after the duty is added, or without the duty, if you can give it to me in that way?

Mr. Park: What grade of blooms do you mean? If you mean the cheap grade of blooms, such as the steel rail quality, I suppose it would be about $18 a ton.

Mr. Bonynge: Let me ask you a question for information. Can you get tungsten here from Spain and Chile cheaper than the Colorado tungsten?

Mr. Park: We have never tried to buy tungsten.

Mr. Bonynge: Tungsten ore, I mean. Can you get the ore from Spain and Chile cheaper than you can from Colorado here?

Mr. Park: I think it would be about the same.

## BARS AND BAR PRODUCTS.

**Statement of James Lord, of the American Iron & Steel Mfg. Company, Lebanon, Pa.**

James Lord told the committee that he had discussed the subject of the tariff on bars with the principal Western interests and with some of the Eastern interests, and that he was authorized to say that they would be content with a reduction of one-tenth the present duty on bars. His examination was in part as follows:

Mr. Lord: I was authorized to say for the interests that I have consulted, being the principal Western interests and some of the Eastern interests, that they are willing to have a reduction in the price of iron bars of 1-10 cent. That would make it five-tenths.

Mr. Underwood: There is no bar iron being imported into this country at all now, is there?

Mr. Lord: The only bar iron that I know of being imported is a very high grade of staybolt iron.

Mr. Underwood: That is not really in competition.

Mr. Lord: That is not competitive.

Mr. Underwood: How much is the production of this bar iron in the United States at this time?

Mr. Lord: As near as I can ascertain, it is about 1,250,000 tons.

Mr. Underwood: What is the cost of producing this bar in this country?

Mr. Lord: Well, the present profit on bar iron is about $1 a ton; sometimes it is not that.

Mr. Underwood: What is the selling price?

Mr. Lord: The selling price at the present time is about $28 a net ton.

Mr. Underwood: Twenty-eight dollars, and the cost is $27?

Mr. Lord: It costs about $27, the ordinary machine bar iron.

Mr. Underwood: What is the principal market abroad in which this iron is produced, the principal foreign market, England?

Mr. Lord: England and Germany.

Mr. Underwood: What is the selling price in the markets of England to-day?

Mr. Lord: I am not acquainted with those prices.

Mr. Underwood: Can you get those prices and furnish them to the committee?

Mr. Lord: They are in the trade papers, and I could get them.

Mr. Underwood: It may save us some trouble. In other words, we have access to that information ourselves and we will probably look it up, but we may come to a different conclusion from yourself as to foreign iron, and it will be well for you to file your conclusions as to what is the price of the foreign market and the freight rates of this country. I suggest that you give us your view as to what is the selling price.

Mr. Lord: I will be very glad to do so. I will obtain the figures.

Mr. Hill: The reduction of 1-10 cent a pound, which you say will be satisfactory, I suppose is based on the same continued duty on ore, &c., beforehand. If the proposed reductions were made, you would not object to a corresponding reduction?

Mr. Lord: That was considered in coming to this conclusion. I also wish to speak with reference to paragraph 145, and with respect to that portion of the paragraph that refers to bolts and not to hinges, and also to paragraph 163 and that portion of it which refers to spikes, nuts and washers, and not to horse or mule shoes; also, with respect to paragraph 167, on the subject of rivets.

On bolts, the present tariff is 1½ cents a pound; on spikes, nuts and washers, 1 cent a pound; on rivets, 2 cents a pound. I wish to call the attention of the committee to the fact that there is some class of finished case hardened nuts that sell for 50 cents a pound, while the ordinary nut of standard size sells for 2 cents a pound, and yet the duty is the same—1 cent a pound on both classes. In the Canadian tariff they recognize that feature by making on all of these items that I have mentioned a tariff of 75 cents specific and 25 per cent. ad valorem.

Mr. Underwood: Do you suggest that to the committee as an amendment?

Mr. Lord: I would suggest that as a proper method of applying the tariff.

## CORRUGATED BOILER FURNACES.

**Statement of F. P. Cullen, of the Fitzgibbons Boiler Company, Oswego, N. Y.**

Mr. Cullen: I represent boiler manufacturers who are compelled to buy the welded cylindrical furnace. It is an English invention. It is manufactured by a single concern in this country. There are German and Belgian and French types which are satisfactory for the same purposes, and in many instances preferable, which, however, cannot be obtained in this country because of the duty.

There are two patents, one called the Fox and one the Morrison. The present duty on these furnaces is 2½ cents per pound. At that price the importations as compared with the amount used in this country are very inconsiderable, the amount of importation being 7100 lb. last year. There are 250 boiler manufacturers in this country called upon to equip their product with the cylindrical welded furnace, which if they purchase at all they must purchase from the Continental Iron Works of Brooklyn. I am informed that the labor cost in the production of this furnace is about 2½ cents per pound. There is, therefore, a 100 per cent. protection upon the labor cost. It seems to be perfectly evident from the line of discussion here to-day that the steel plate used in the manufacture of this cylindrical furnace can be purchased at least as cheaply in America as in Europe, and that the only question, therefore, as a basis for a duty is the labor. It seems to the several boiler manufacturers whom I represent here that a tariff of about 80 per cent. upon the labor cost of the production would amply protect the American labor, and permit the German and Belgian types of cylindrical furnace to come into America in competition with the single type that is available here to-day, and that absolutely controlled by one concern, and also permit the advantages of this competition to go not only to the manufacturers of boilers, but also to the workmen employed, they employing a very much larger number of workmen than the single plant manufacturing the cylindrical furnace. The information is also given me that the men employed in the Continental Iron Works in the manufacture of cylindrical furnaces are imported labor, skilled labor, brought here from the manufacturing centers of Europe where they learned this work; so that the protection is not only prohibitive, 100 per cent. on the labor cost of the article, but it is also the protection of British-American labor rather than distinctly American labor. The boiler manufacturers believe that this tariff should be either abolished or so reduced as to equal only the difference between the labor cost in Europe and the labor cost in America, and they believe that this duty at its highest figure would be 1 cent per pound.

The Chairman: We will be very much obliged to you for the information showing the difference between the labor cost abroad and here, as far as you can give it, and if you can show the price at which the foreign article is laid down in the report of New York and the price charged for it New York, where you say it is manufactured, or in Brooklyn, for the American trade, we will be glad to have that.

Mr. Cullen: There is so little of it laid down there that its price is going to be very difficult to get.

The Chairman: There is once in a while an importation?

Mr. Cullen: Less than 4 tons were imported last year.

Mr. Dalzell: Can these foreign articles come in without infringing the American patent?

Mr. Cullen: Yes; I think there is no trouble about that. The patents are all right. The German type in particular has been adopted by the United States Government inspectors, and is used in a very large percentage of the ocean steamships.

The Chairman: I understood you to say that you represented some American boiler companies.

Mr. Cullen: All of them.

The Chairman: How are they interested in it?

Mr. Cullen: Because they purchase these cylindrical furnaces to put into their boilers. The cylindrical furnace is simply a tube in which is placed the grate and the firebox. It is an internal furnace as distinct from the external furnace, which is of brick.

The Chairman: The tubes are patented, are they not?

Mr. Cullen: Yes; but there are half a dozen patents.

This tube which is now being manufactured in this country is under an English patent, first patented by one named Fox, and subsequently by one named Morrison. Both of these are English patents. There is a German and a Belgian, and also, I think, a French type, all of which are equally acceptable, and of which, if this duty were not prohibitive, would come into competition with these two English types.

## MANGANESE STEEL PRODUCTS.

**Statement of George H. Large, of the Taylor Iron & Steel Company, High Bridge, N. J.**

George H. Large of the Taylor Iron & Steel Company urged the adoption of a duty that would adequately protect certain products in the manufacture of which considerable quantities of manganese are used. His statement was, in part, as follows:

Mr. Large: I appear before the committee as a practical iron man. This concern, for which I wish to say but a word or two, is an absolutely independent iron manufacturer, located in the village of High Bridge, in Central New Jersey, and it is a concern which for the past 10 or 11 years has been engaged more specifically in the manufacture of new articles in which this element of manganese is the principal factor, creating products which are especially hard, and many of which have been in use but a comparatively few years. They are the wearing parts of all kinds of machines used for crushing and grinding ores, rock, coal, coke, matte, slag, and so forth; screens and grates for sizing such material before and after crushing; sprocket wheels, detachable link belting, and so on; a whole lot of things; for instance, the teeth on a steam shovel bucket, things on which the wear is very great, and which require a very hard substance. Our company thought that in contemplation of this revision of the tariff the language of the act of 1897 was so crude and so imperfect, not meeting the requirements of these new products, that it was incumbent upon it to call the attention of the committee especially to that fact, and ask that in its recommendation to Congress it should give the products which we produce due consideration. There are two or three of these points. In the first place, paragraph 130 reads:

> 130. Railway bars, made of iron or steel, and railway bars made in part of steel, T-rails and punched iron or steel flat rails, seven-twentieths of 1 cent per pound; railway fish plates or splice bars, made of iron or steel, four-tenths of 1 cent per pound.

Of course that section did not contemplate these manganese steel rails, and therefore we suggest that that section, if that same classification is to be maintained, be amended so as to read as follows:

> Railway bars made of iron or steel and railway bars made in part of steel, T-rails, punched iron or steel flat rails, and girder rails, frogs, switches and parts thereof which when completed shall contain at least 7 per cent. of manganese, 30 per cent. ad valorem.

That is what we conceive a fair and equitable duty to be placed upon those manganese steel rails.

In the second place, as to castings, under paragraph 135, we would ask that that section should be amended as to all descriptions and shapes of dry sand, loam, or iron molded steel castings; sheets and plates and steel in all forms and shapes not specially provided for in this act which shall contain at least 7 per cent. of manganese, and that, as I take it, leaves it practically as it is now, because that section says at its close, "valued above 16 cents per pound, 4.7 cents per pound." That would be equivalent—that 4.7 cents would be equivalent—to 30 per cent. ad valorem; so that if that section contains that which I have read, that would be satisfactory to us.

Now, we are in grave doubts as to just where we stand, because of the inadequacy of this act of 1897. We do not know just what duties are to be imposed upon the various products which we have made, none of which were in existence at the time of the passage of that act, and there has not been any experience upon it whereby we may know just where we stand as to the duties.

The Chairman: Are you having any competition from abroad now?

Mr. Large: It has just commenced. It has not developed yet to any serious extent. We do not know whether these articles which we are making come under that article 193, which reads:

> 193. Articles or wares not specially provided for in this act, composed wholly or in part of iron, steel, lead, copper, nickel, pewter, zinc, gold, silver, platinum, aluminum or other metal, and whether partly or wholly manufactured, 45 per cent. ad valorem.

If that general dragnet clause applies, that makes a greater duty than we think we could stand under. In other words, we would be perfectly content, if these various articles come in under that section 193, when they do come in in any considerable volume, that an ad valorem duty of 30 per cent. instead of 45 per cent. should be imposed, as it is in that section.

## WIRE GOODS.

**Statement of F. W. Collier of the National Mfg. Company, Worcester, Mass.**

Mr. Collier: For 40 years there has existed in New England, particularly, and principally in or near Worcester, Mass., an industry in which are manufactured articles known as wire goods—one of the small New England industries, insignificant in a way, and yet employing from 800 to 1000 hands. I am representing the National Mfg. Company, of which I am president; H. & R. Parker Wire Goods Company, Worcester, and the Woods Strainer Company, Lowell.

The articles manufactured are mostly household utensils. About one-quarter of the product has been of the class of goods known as wire strainers. They are of almost universal use, and still, possibly on account of the small price at which they sell, and possibly on account of lack of alertness on the part of the manufacturers, they have attracted no attention whatever in the previous tariff schedules. They are simply included in that almost infinite classification as goods made of wire, "but not otherwise specified," and as such have taken a duty of 40 per cent. ad valorem, plus 1¼ cents per pound plus 0.2 of 1 cent per pound. We are asking for 60 per cent. ad valorem, plus 20 cents per pound.

Now, while this present duty has proved satisfactory on other lines of our manufacture, on the strainer line it is of no protection whatever, by reason of the low cost to produce abroad, affecting the ad valorem and the light weight of the goods themselves.

They are made of wire cloth of fine mesh and very fine wire, generally No. 30, and bound with a narrow strip of tin plate, so that they weigh, ready for the market, only from 5 to 22 pounds per gross. On most of the other lines of our manufacture the selling price is from 6 to 10 cents per pound, and the specific duty amounts to something, while on the strainers, which are so light, and on which labor is the principal item, the selling price has to be from 40 to 50 cents per pound, and the present specific duty amounts to nothing at all. And, of course, this same lightness in weight, together with the fact that they are shipped nested, operates to keep the freight rate so small that it is not a factor.

Now, until recently, the normal importation has not been harmful to our normal production, because of the former inferiority of the foreign goods. But in the past two years the Germans have acquired the necessary skill and are now sending over goods that are equally as good as ours, and at about one-half of what we must get, and actually less than our stock and labor. Of course, this has increased their business at our expense, and I would like to say right here that it is this encroachment that we are objecting to, rather than to what I would call a normal importation.

The best estimate that I have been able to make is that this normal importation has been about equal to domestic production, confined, however, to a very few houses, as will later appear. And now, lest any one should say that this increased importation has no doubt increased our revenue, I must point out that it has not increased it nearly as much as the higher duty asked for would increase it on a normal importation, for we ourselves would not care to have the duty large enough to prohibit this normal importation, and we do not ask it. By that I mean that the very large buyers, if they could make any saving at all, would continue to import, while the ordinary jobbing trade who find difficulty in ordering in importing quantities would naturally come back to us from convenience even at a little advance over the importation cost. And I would further say that the advanced duty asked for would not be borne by the consuming public, for the goods are sold uniformly at either 5 or 10 cents, mostly 10 cents. Under the normal importation the principal importers are the 5 and 10 cent syndicates, who could not make a different price if they wanted to, but who are the only ones who would care to order in importing quantities, unless there was a very great saving to be effected, as now.

Now, in asking for this increased rate, we have not followed the plan of asking for a good deal more than we expect or need, in the hope that when the "scaling down" comes we will get what we want; but we have figured it out as best we can so that the industry will be put back on the basis it has been on for the past 20 years, and where the normal importation at slightly less costs then would yield us a profit will yield to the Treasury an even greater revenue than now. And we have done this because we believe that "he is thrice armed who hath his quarrel just."

I might also say that in making our prices we try to make them on a basis of 20 per cent. above our total cost. This applies to our entire line, but still we always find at the end of the year that we have made only one-fourth of that percentage on our total sales, from which I believe we are now selling as low as we could possibly sell at a profit.

As to the labor side of the question, I would say that there are probably about 200 hands employed in this branch of the industry, all more or less skilled, and the imminent falling off of the business will work hardship to them. On the other hand, the rate that we propose would keep them employed at fair wages. It would easily increase the rev-

enue, and would be borne entirely by a few large importers, who would still be as well off as they were until very recently.

## STEEL FORGINGS AND OTHER STEEL PRODUCTS.

**Statement of Thomas Prosser of Thomas Prosser & Son, New York City, Importers.**

Thomas Prosser made a number of important recommendations with regard to the reductions in the existing rates of several paragraphs of the metal schedule, as follows:

Steel forgings are now dutiable, under paragraph 127, which reads:

> Forgings of iron or steel, or of combined iron and steel, of whatever shape, or whatever degree or stage of manufacture, not specially provided for in this act, 35 per centum ad valorem.

Under the act of 1864, the duty on this article was 45 per cent. ad valorem. By the act of 1890, paragraph 139, a specific duty of 2 3-10 cents per pound was made, with the proviso "that no forgings of iron or steel, or forgings of iron and steel combined, by whatever process made, shall pay a less rate of duty than 45 per cent. ad valorem." By the act of 1894 the specific duty thereon was reduced to 1½ cents per pound, with like provision that such duty should not be less "than 35 per cent. ad valorem." The act of 1897, paragraph 127, as quoted above, fixes the duty at 35 per cent. ad valorem. We urge a reduction in this duty to 20 per cent. ad valorem.

Steel wire (nickel, alloy) and machinery (grinding and crushing mills) are now dutiable under paragraph 193, of 1897, which reads:

> Articles or wares not specifically provided for in this act, composed wholly or in part of iron, steel, lead, copper, nickel, pewter, zinc, gold, silver, platinum, aluminum or other material, and whether partly or wholly manufactured, 45 per centum ad valorem.

With the exception of the years 1894-1897, under the Wilson act, this rate of 45 per cent. has been in force since 1864. The Wilson act of 1894, paragraph 177, made the duty 35 per cent. ad valorem. We earnestly urge that the duty be reduced to 30 per cent. ad valorem on these articles. No change is asked in the language or wording of the present tariff act, but only in the rate of duty imposed. It is important, in our view, that language which has stood in successive tariff acts, and become the subject of departmental and judicial interpretation and decision, should not be changed. The Government officials and all persons interested have come to understand thoroughly the meaning of such classifications and what they cover, and a mere change in language would be sure to bring confusion and much litigation. The suggestions we submit, upon all the paragraphs on which we desire to be heard, involve only the change of rate, and not change in language for the reasons just stated.

Locomotive and car tires and wheels are dutiable under paragraph 171 of the act of 1877, which provides:

> Wheels for railway purposes, or parts thereof, made of iron or steel, and steel-tired wheels for railway purposes, whether wholly or partly finished, and iron or steel locomotive, car or other railway tires or parts thereof, wholly or partly manufactured, 1½ cents per pound. . . .

By the act of 1870 this duty was made 3 cents per pound; by the act of 1890, paragraph 185, 2½ cents per pound; by the act of 1894, paragraph 156, 1¼ cents per pound. But in 1894 the selling price of tires in this country was 5 cents per pound, and the duty of 1¼ cents was reasonable. Now, the price is 2 cents per pound for tires, and under the new process whereby the entire wheel is made in one piece will approximate 2½ cents per pound. With such large reductions in the value and price of the article, it is manifest a duty of ¾ of a cent per pound is most ample. Indeed, under such circumstances the duty should be put for revenue only.

Boiler and other tubes are dutiable under paragraph 152 of the act of 1897, which reads:

> Lap welded, butt welded, seamed or jointed iron or steel boiler tubes, pipes, flues, or stays, not thinner than No. 16 wire gauge, 2 cents per pound; welded cylindrical furnaces, made from plate metal, 2½ cents per pound; all other iron or steel tubes, finished, not specially provided for in this act, 35 per centum ad valorem.

By the tariff act of 1865 the duty was made 3½ cents per pound; by the act of 1890, paragraph 157, 2½ cents per pound; by the act of 1894, paragraph 130, 25 per cent. ad valorem.

The lap welded process is competitive with the new process of seamless tubes. It would seem that no duty, save wholly for revenue, should be required, inasmuch as the American manufacturers are able to compete with the foreign seamless tubes when sold abroad, and the American article is quoted at lower prices. As an instance, tubes were recently sold in Mexico, of American manufacture, at a price less than could be quoted by the European competitors. It is hence obvious that no duty is required here except for purposes of revenue, and hence it is submitted that a reduction to 20 per cent. from the present rate of 35 per cent. ad valorem is both just and reasonable, for while it could not possibly injure any American manufacturer, it would give opportunity to benefit the public revenue.

The act of 1864 imposes upon bar steel valued from 7 to 11 cents per pound, a duty of 3 cents per pound; and all above 11 cents per pound in value, a duty of 3½ cents per pound and 10 per cent. ad valorem. The act of 1890 made 11 distinct classifications of bar steel on value bases beginning at 1 cent value and less, with a duty of 4-10 per cent., and extending thence through successive increases in value up to 16 cents per pound, with a duty of 7 cents per pound. The act of 1894 maintained the same classifications as to values, but reduced the duty. The act of 1897 maintained the same classifications as to values, but reduced the duty. The act of 1897 maintained the same classifications (paragraph 135), and precisely the same duties imposed thereon by the act of 1894, thus recognizing the propriety of reduction of duties on this article in fair relation to the increase and progress of the manufacture. Upon precisely like reasoning, it is hence now plain that further reductions would be both sound and logical. Thus, in the first three classes a reduction of 1-10 cent per pound; in the next two values of 9-10 cent per pound; in respect of bar steel, valued at 3 to 4 cents per pound, a duty of 6-10 cent per pound; valued at 4 to 7 cents, a duty of 8-10 cent per pound; valued at 7 to 10 cents per pound, a duty of 1 1-10 cents per pound; valued at 10 to 13 cents per pound, a duty of 1 7-10 cents per pound; valued at 13 to 16 cents per pound, a duty of 2 2-10 cents per pound, and valued at 16 cents and above per pound, a duty of 4 cents per pound.

Bar steel, imported as such, is, of course, brought here to be manufactured into useful articles; it is, in a large sense, raw material, and a duty based upon revenue thereon would, in effect, encourage and not retard domestic manufacture here of countless articles wherein bar steel is the basic element. Indeed, in such view, and in aid of American manufacturers, bar steel could well be placed upon the free list.

## WIRE AND WIRE ROPE.

**Statement of H. J. Bailey, of the Broderick & Bascom Wire Rope Company, St. Louis.**

Mr. Bailey: In order to equalize to some extent the vast difference between the duty on raw material (wire) and the duty on wire rope, we respectfully submit that schedule C, paragraph 137, should be amended and revised so as to read as follows:

> 137. Round iron or steel wire, not smaller than No. 13 wire gauge, six-tenths of 1 cent per pound; smaller than No. 13 and not smaller than No. 16 wire gauge, 1 cent per pound; Provided, that all the foregoing valued at more than 6 cents per pound shall pay 30 per cent. ad valorem. Iron or steel or other wire not specially provided for in this act, including such as is commonly known as hat wire, or bonnet wire, crinoline wire, corset wire, needle wire, piano wire, clock wire, and watch wire, whether flat or otherwise, and corset clasps, corset steels and dress steels, and sheet steel in strips, 0.025 in. thick or thinner, any of the foregoing, whether uncovered or covered with cotton, silk, metal or other material, valued at more than 4 cents per pound, 45 per cent. ad valorem; Provided, that articles manufactured from iron, steel or copper wire shall pay the rate of duty imposed upon the wire used in the manufacture of such articles, and in addition thereto 1¼ cents per pound, except that wire rope and wire strand shall pay the maximum rate of duty which would be imposed upon any wire used in the manufacture thereof, and in addition thereto 1 cent per pound; and on iron or steel wire coated with zinc, tin or any other metal no additional duty shall be imposed in addition to the rate imposed on the wire from which it is made.

As reasons for the foregoing changes, we submit the following facts:

Wire is the principal raw material entering into the manufacture of wire rope. We are not manufacturers of wire, but are manufacturers of wire rope, exclusively, which is an independent industry of itself, and approximately 40 per cent. to 50 per cent. of all wire rope made in this country is made by factories that do not manufacture wire. At the present time we import approximately one-third of the total amount of rope wire brought into the United States, as shown by the United States Government statistics. The rope wire required by us for the manufacture of high-grade steel wire ropes is necessarily drawn from rods of Swedish ore stock not produced in the United States, and must, therefore, be imported from abroad.

It is generally admitted that wire can be drawn in this country as cheaply as anywhere. The ordinary grades are not imported into the United States at all, and the higher grades could be successfully drawn here from imported rods of Swedish ore stock; still, as independent wire-rope manufacturers, we ought not to be compelled to buy this high grade wire from American mills, who manufacture wire rope as well as wire, and are, therefore, competitors of ours.

Furthermore, the schedule of prices of various sizes, as published by the American mills, shows no such variance in prices as is shown by the present tariff for various sizes, and the present tariff is, therefore, impliedly, at least, too high to meet any requirements for protection to the wire industry in this country. Furthermore, if any further protection is demanded for wire, we believe that the present duty on wire rods could be eliminated altogether, as it is admitted by most manufacturers of wire that no duty is needed on the rods.

The wire manufacturing industry being among the most

prosperous of any industry in the United States, we are quite sure that 20 to 25 per cent. protective tariff is more than sufficient to meet all justice and fairness.

## FERROALLOYS.

**Statement of John L. Cox, of the Midvale Steel Company, Philadelphia, Pa.**

Mr. Cox: The Midvale Steel Company, which I represent here, is not engaged in the manufacture of what might be called tonnage steel. That is to say, it does not make large quantities of low-priced material. Its output is altogether high-class, and really in the line of specialties. To get the special qualities required in its products, it is necessary that it should use special and elaborate manufacturing methods, and also employ a large number of the ferroalloys, such as ferrochromium, ferrovanadium, and ferrotitanium, as well as the ordinary alloys, such as ferromanganese, spiegeleisen, silico-spiegel, and ferrosilicate. The effect of all these alloys is roughly, in the same direction—to increase the toughness or the hardness, or both, of the steel to which they are added, at either normal temperature or sensibly elevated temperatures. At the present time ferrotungsten, which is the thing of which I wish to speak particularly to-day, is not specifically mentioned on the list. Under a decision by the New York Circuit Court of Appeals, applying to section 7 (the "similitude" section) of the present tariff law, ferrotungsten has been held as dutiable under paragraph 122.

Under the decision of the New York court, the ferrotungsten that we employ was imported at a duty of $4 per ton, being held similar to ferromanganese. On importations which were made for us in 1906 and 1907, the General Board of Appraisers held that ferrotungsten should be taxed under paragraph 183 as "metals unwrought," holding as controlling a decision made by the Philadelphia court in a case which they held to be analogous, though, as a matter of fact, it did not treat of tungsten nor of ferrotungsten, nor of tungsten metal, but of an alloy of iron, tin, and manganese.

My company holds that this addition (which is at present being collected from us under protest) from $4 a ton, the standard rate which it has been for years, to 20 per cent. ad valorem should not be collected. We hold that the material should be specifically mentioned under paragraph 122, or else admitted entirely free of duty. Our reasons are, roughly, as follows:

In the first place, as Mr. Brown explained, the material in every way resembles ferromanganese. It is a pure melting stock. It has no practical application as ferrotungsten, except to steel as a melting stock, and its action on the metal is similar to that of manganese in many respects. Both of them are added to the charge either at the first or in the fluid state. Both of them produce hardness and toughness. Both of them improve the quality.

Second, we believe that it is very inadvisable to tax materials entering into the production of what Mr. Brown very properly termed "high-speed steel," which is simply another name for the more modern varieties of tungsten steel; for by doing so it simply increases their cost to the consumer or limits their use. The advantages which have been gained to the machinists of this country by the introduction of these high-speed steels are very great. They have enabled an enormous increase in the amount of work done by a tool, or a lathe, or a planer; and anything that tends to oblige the machinists to lock up more money in their machine equipment is not to their advantage in any way.

Then we think that there is a great disparity between the industry which is either protected or might be protected by anyhing like the 20 per cent. duty, and the cost to the general public of that duty. The high price of ferrotungsten, which varied from 63½ cents a pound in 1903 for ferrotungsten made in America, to $1 a pound in 1907 for ferrotungsten imported, is not at all due to the cost of manufacture. It is entirely due to the rarity of the ore, and the great and increasing demand for it.

Furthermore, a very large proportion of the tungsten ore at present used is produced in the United States, and an exceedingly small proportion, if any, of the ferrotungsten is made here.

Mr. Clark: Do you want the tariff on this material put down or up?

Mr. Cox: We want it maintained where it has been before this (as we consider) mistaken decision by the Board of Appraisers, which matter is at present under litigation, or else removed entirely.

Mr. Clark: You want it cleared up or removed?

Mr. Cox: Cleared up or removed.

Mr. Clark: Which would you rather have?

Mr. Cox: We would rather have it removed. We would rather have all the tariff removed. We believe that any increase or any tax placed upon ferrotungsten is simply a tax upon the American manufacturer, because it obliges him to pay that much more than is paid by his foreign competitor; and to that extent it is a protection of the foreigner and a disadvantage to the American.

Mr. Clark: Is there any tariff on your finished product?

Mr. Cox: There is.

Mr. Clark: You want to get all of it, then? That is the whole tale, is it not?

Mr. Cox: Not at all; not at all.

Mr. Bonynge: Do you want the tariff reduced on your finished product?

Mr. Cox: We would be very glad to have it done. We are quite willing.

Mr. Clark: On the finished product?

Mr. Cox: We are entirely willing to have it done.

Mr. Clark: As far as I am concerned, you can have it done.

Mr. Cox: If you take the tariff off of our raw material, we shall be most glad to have it taken off the finished product.

## HORSE SHOE CALKS.

**Statement of Warren R. Chase of the Sterling Mfg. Company, Hartford, Conn.**

Warren R. Chase, general manager of the Sterling Mfg. Company, Hartford, Conn., maker of detachable horseshoe calks, made a plea for a specific duty on this product exceeding that now assessed under the basket clause of the metal schedule.

Mr. Chase: I represent the detachable horseshoe calk manufacturers of the country. I have here two boxes—one of the finished product of the factory, and one of the product with the hardened steel core. These calks are a comparatively new product in this country. They are manufactured with a hard center of tool steel and a soft exterior, and are screwed into horseshoes in the winter season. They are used in the snow and ice belt of the United States. The idea is that by having a hard center and a soft exterior they will continually wear sharp wherever they can penetrate the surface upon which the horse's shoes strike. In this connection there are certain points which I wish to outline. In the first place, we are one of these highly specialized Carnegie industries that needs protection, for the very reason that the industry in this country is small, and we are producing not more than 3 per cent. of the total product that can be marketed in the snow belt of the United States. We do not ask for anything additional in the way of a tariff, we might say, nor do we ask for the maintenance of anything in particular at the present time. When the Dingley bill became a law these goods were so little known in this country, there were so few of them manufactured, they were not classified, and until within a year or two there has been no import whatever.

Now, the granting of our request, which is that we have at least $10 a thousand duty, will not in any way affect the price to the consumer. All that we want is to have the present conditions maintained, so that we can maintain our present prices, which are substantially $26 a thousand. These calks are sold to the horse owner in boxes of 50 or in sets of 16. The price usually includes the services performed by the horseshoer at the time they are sold; and the tariff on each calk would be so small that it would not in any way figure in the ultimate price. For instance, these calks that are now being sold at $15 a thousand to the horseshoer are sold to the horse owner at identically the same price as the calks which we put out at $26 a thousand. It is simply a case of life and death between the American manufacturer and the German manufacturer.

## FIREARMS.

**Statement of Joseph Gales of New York, Importer.**

Mr. Gales: If you want a moderate increase of the revenue, we desire to submit the following brief referring to paragraph 158 of the present tariff:

This paragraph presents the principal items of import in firearms at the present time. The items stated in other paragraphs, except those on the free list, are of small importance. We find by inquiry that the total imports at the port of New York have been constantly decreasing, so that in the year ending June 30, 1907, they were less than 30 per cent. of the imports of the year ending June 30, 1900. In the whole United States the total decrease is over 60 per cent. This valuation includes all imports of firearms, including gun barrels and gun stocks, which are on the free list, and make up a large part, perhaps, the larger part of the total, therefore reducing the value of guns imported under this paragraph to even a smaller proportion than the stated figures would indicate. The facts then for your committee to determine are:

1. Does the committee desire to obtain any revenue from the importation of guns?

2. Does your committee feel that the importers of, dealers in, and consumers of imported shotguns are entitled to any consideration under the tariff legislation, or, if the whole matter is to be left in the control of the American manufacturers, to suggest such rates as would make the tariff practically and actually exclusive, and enable them to make combinations and maintain prices at monopolistic figures?

The present import business in breechloading double guns is limited almost entirely to two classes: 1, Of cheaper quality guns than those made by any of the American manufacturers; and, 2, to high priced, exceedingly fine quality guns, which are imported because of their superior workmanship or of the desire which customers have for guns of such style and finish as the American manufacturers are not able to produce.

The cheaper guns are lower than the manufacturers find it worth while to turn out, as they apparently have sufficient demand upon their plants in turning out medium and high-priced guns, for which they find a ready market. On the other hand, the better quality guns are not directly competitive with the American, and pay much less profit to the importer than do the American guns (which sell at 20 to 50 per cent. lower) pay to the manufacturers of same. This statement is based upon the best information that we can get, having been for a great many years extensive dealers in both lines.

**Statement of Jesse F. Orton, Secretary Tariff Reform Committee, Reform Club, New York City.**

Jesse F. Orton, secretary of the Tariff Reform Committee of the Reform Club, New York City, addressed the committee at great length regarding the desirability of reducing the tariff all along the line and the rates of the metal schedule in particular. Mr. Orton was cross-examined by several members of the committee as to whether any special effort had been made to obtain facts which would be of interest in connection with the pending inquiry, but stated that data in the possession of the Reform Club were only such as was available to the Ways and Means Committee.

## TIN PLATE AND THE DRAWBACK.

**Statement of William J. Williams, Pittsburgh, Representing the Amalgamated Association of Iron, Steel and Tin Workers.**

William J. Williams, on behalf of the Almagamated Association of Iron, Steel and Tin Workers, appeared before the committee to discuss the tin plate paragraph of the metal schedule, and incidentally to protest against the retention in the law of the drawback provision as found in section 30. The result of the drawback provision, he said, was to permit large quantities of tin plate to be imported, used in the manufacture of cans, filled with American products, and exported with benefit of rebate of the duty paid on the plate, thereby preventing the American industry from supplying the plate. The only possible justification for continuing the application of the drawback clause to tin plate, he said, was that the concession enabled American packers and can manufacturers to obtain foreign business which otherwise they would lose. In his opinion, however, the American producers would get the business in any event, and the effect of the drawback clause was simply to increase their profits at the expense of the domestic tin plate producers.

Continuing, Mr. Williams laid before the committee the comparative wage scale in the United States and Wales, and insisted that the tariff should be maintained at a point that would fully offset the differential. It subsequently developed that Mr. Williams' figures regarding wages were compiled in 1892 by an American Consul in Great Britain, a fact that appeared to detract somewhat from their impressiveness in the minds of the committee.

## BAR IRON.

**Statement of J. H. Nutt, Youngstown, Ohio, Representing the Western Bar Iron Association.**

John H. Nutt, on behalf of the Western Bar Iron Association, described that organization which he said had plants in Indiana, Ohio and Illinois, and was organized for the sole purpose of adjusting wage scales for employees through the officers of the Amalgamated Association.

Mr. Nutt: I would respectfully ask that in the adjustment of clause 123 of Schedule C you give due consideration to the difference in wages paid in this country and Europe. Unfortunately, I am only able to obtain the wages paid for similar labor in England, while on the Continent we believe wages to be considerably less. British statistics do not give the price per ton on mill men's wages, but they appear to be based upon the price of puddling, advancing and declining with the same. In the year 1907 the wages paid for puddling in Great Britain was:

| | Per ton. |
|---|---|
| In the Northumberland District | $2.25 |
| In the West of Scotland District | 2.43 |
| In the Midlands District | 2.31 |
| Average price | $2.33 |

While during the same year, 1907, the price per ton paid by the members of this association to its employees for the same class of work was from $6.50 to $6.62½ per ton, or, in other words, the English puddler received from 35 to 40 per cent. of what was paid to the puddlers in the mills of your petitioners; and it is fair to assume that there is substantially the same proportion of difference in all other classes of labor.

Our agreement with the Amalgamated Association provides that whenever the selling price of bar iron advances $1 per ton above the base rate, the labor shall advance from 1 to 2½ per cent., according to the scale of each particular department. That at the present time is 6 per cent. above base rates. So that if by any undue reduction in the tariff rates you should bring about lower prices for bar iron, the labor employed in its manufacture must suffer its proportion of the lower prices.

The mills making iron bars are in no way interested in the manufacture of steel, but as steel bars can in a large number of places be used to take the place of iron bars the price of steel largely influences the selling price of iron bars. The manufacture of steel bars being largely a mechanical proposition, while the manufacture of iron bars must necessarily remain one of skilled manual labor, the cost of producing the latter is considerably higher, and at the present time at least $3.50 per ton above the cost of steel bars. Therefore, we ask that the same differential be maintained as in the present tariff bill.

The mills making iron bars are scattered all over this country, from Maine to California, and are, for the most part, what are considered small mills, whose tonnage is not large, but who supply a certain locality with its merchant bars largely made from the scrap made in its own market, which is considered greatly to the advantage of those producing scrap in those sections, and should be considered in making up this schedule. For the above reasons we ask that in fixing the tariff on iron bars you give due consideration:

First. To the difference in wages paid to the labor in this country, and that paid in other countries engaged in manufacturing the same product.

Second. That on account of the largely increased cost of producing iron bars over steel, whatever may be the rate agreed upon, you will maintain a corresponding differential between steel and iron bars as in the present tariff measure.

Third. That on account of the mills making iron bars being scattered through so many localities the people in so many States of this Union are interested in the preservation of this industry.

**Statement of John W. Walton of Cleveland, Ohio, Dealer in Wire Rope.**

John W. Walton, a wire rope dealer of Cleveland, Ohio, urged the committee to reduce the tariff somewhat on wire rope in the interest of the consumer, and he also suggested that the compound duties be simplified so that importers could calculate in advance the tax they would be obliged to pay upon the foreign product.

**Statement of Nelson Lyon of the Holt-Lyon Company, Tarrytown, N. Y.**

Nelson Lyon, secretary and treasurer of the Holt-Lyon Company, Tarrytown, N. Y., told the committee that while the tariff had certainly built up the iron industry and cheapened production, its present schedules were not in the interest of small manufacturers or consumers. The concern he represented manufactures large quantities of wire goods, making specialties of carpet beaters, egg beaters, &c., and has been called upon to pay constantly increasing prices for wire, especially since the organization of the American Steel & Wire Company. He thought a reasonable reduction in the present tariff would be to the advantage of the consumer without injuring the producers.

## RAZORS.

**Statement of Hon. E. B. Vreeland, Representative from New York.**

Representative Edward B. Vreeland of Salamanca, N. Y., addressed the committee in the interest of Geo. W. Korn, a manufacturer of razors in his Congressional District.

Mr. Vreeland: I assume that it is the purpose of this committee in revising the tariff not only to provide adequate protection, but to maintain the existence of industries which we now have, and if there is opportunity it will put on duties sufficient to create new industries in this country, as the tin plate industry was created by the last tariff. I want to say that in this country when the Dingley bill was adopted there was practically no manufacturing of razors in this country. There was only one man trying to make razors. He was making a specialty and selling it not generally on the market. So no one appeared before the committee asking for protective duties or furnishing information upon which proper schedules could be made up. Therefore, this is really creating an industry, the industry of making razors, which I suppose would employ something like 1000 or 1200 skilled workmen if they had the right to fill the American market. Under the existing tariff 10 factories in this country, many of which made cutlery, have endeavored to make razors. Five of them have made a failure of it, and discontinued entirely. There are only at present two firms making razors exclusively in the United States. One is the factory which I represent, and the other is located in Geneva, N. Y.

Last year the total amount of value, in dollars, of razors made in the United States was very close to $176,000. The

value of imported razors was $830,566. That is, we are importing now more than five times the amount in value of razors which we produce in this country. Two hundred and fifty-five thousand dozen were imported from abroad during the past year. Therefore I say that I am asking the committee to put on a tariff duty which will in effect create a new industry which will give employment to a large number of men, and which I do not think will increase the price to the consumer—I mean the actual consumer, the man who buys the razor for his own use.

## BALL AND ROLLER BEARINGS.

**Statement of Samuel S. Eveland, Philadelphia, Pa.**

Samuel S. Eveland, Philadelphia, said that he was a manufacturer of steel balls, ball bearings, roller bearings, &c., and used a large amount of raw steel. He appeared for the purpose of stating that, although he was a large consumer of steel, he thought the tariff ought to remain on for the general prosperity of the country.

Mr. Eveland: I think that any benefit that the manufacturer or the consumer of steel would receive by reason of a reduction would be more than offset by the injury to the business as a whole. In my case I use about $500,000 worth of steel and about $100,000 worth of pig iron a year, and I do not believe that any material benefit would result from the reduction of the duties whatever. It would not be a benefit, and would possibly be an injury to the country as a whole. I am aware of the fact—at least, I infer it from what I have heard from steel men—that they are in favor of a reduction, or at least would be willing to have a reduction made.

Mr. Clark: If you simply buy the steel and work it up, what is the reason you do not want to get the steel as cheaply as you can get it?

Mr. Eveland: In my case I do not think there would be any benefit in it.

Mr. Clark: If it was cheaper it would be a benefit to you?

Mr. Eveland: Yes; it would reduce the first cost of the steel to me, but I think the country as a whole would suffer to such an extent that the consumption of my product as well as the product in many other lines would be reduced. I do not think you can possibly reduce the cost of steel to the consumer here without reducing the wages of the workingman. I base that upon investigations that I made about six months ago in Europe.

## POCKET CUTLERY.

**Statement of Dwight Divine, Ellenville, N. Y., Representing American Pocket Cutlery Manufacturers.**

Mr. Divine: In protesting against any changes in the schedules relating to penknives or pocketknives or parts thereof, or erasers or parts thereof, the undersigned committee, representing practically 100 per cent. of the manufacturers of American pocket cutlery, respectfully submit the following facts for your consideration:

That the pocket-cutlery industry in the United States is controlled by no trust, combination, or agreement.

That there are in existence and in operation at the present time about 35 factories (located in New York, Connecticut, Massachusetts, New Jersey, Pennsylvania, and Ohio) engaged in the manufacture of pocket cutlery, each absolutely distinct from all others as to ownership, interest, or control, and in active competition with each other.

That the average proportion of labor to cost of all merchandise imported is about 30 per cent. The actual proportion of labor to cost of American pocket cutlery is 80 per cent.

That it has been proved that cutlery operatives' wages are three times greater in this country than in Germany, and more than double those paid in England.

That the American manufacturers were rapidly losing their business from 1894 until 1897, under the Wilson act. The shrinkage of sales for the fiscal year ending June 30, 1896, alone figured 25 per cent. as compared with the sales of the previous year.

That since the operation of the present schedules the total amount of pocket cutlery produced in the United States has increased from approximately $1,000,000 to $3,000,000; in dozens produced, from 325,000 to approximately 1,000,000.

That more than 4000 operatives are now employed in the manufacture of pocket cutlery in this country, at wages ranging from $3 to $4.50 per day for skilled workmen.

That despite the advanced rates of duty under the Dingley act and the increased American production, the importation of foreign pocket cutlery has steadily increased, both in quantity and value, with a corresponding increase in revenue to the Government, while at the same time affording that protection that insures to the American workman a just return for his labor and to the manufacturer a fair margin of profit

## CHAIN.

**Statement of H. F. Mattern of the Lebanon Chain Works, Lebanon, Pa.**

H. F. Mattern, vice-president of the Lebanon Chain Works, Lebanon, Pa., urged a revision of the chain schedule by increasing certain rates and reducing others.

Mr. Mattern: The chain manufacturers desire to ask the committee to make a revision of the chain schedule by subdividing the schedule into a greater number of classes than at present. The tariff on large sizes of chains we would have reduced, and on the small sizes we ask for an advance, so as to equalize and give us an opportunity to compete with foreign manufacturers of chains. The principal thing we want to ask is an opportunity to compete. We do not ask for a prohibitive tariff, but a competing tariff. On small sizes of chains like ¼-in. and 5-16 in., there is a great deal more imported than is manufactured in this country, for the reason we are not able to compete with foreign manufacturers under the present duty.

We would propose that on sizes 2 in. and larger, which are principally anchor chains, the tariff shall be reduced. I cannot make any proposition or suggestion as to what it should be reduced to, because I have been unable to obtain the prices at which that class of chains is sold in foreign markets. I might make an effort to get that information, and I hope to have it inside of a week, and we will then be able to make a few suggestions along the lines of those sizes.

Thomas T. Woodhouse of the Woodhouse Chain Works, Trenton, N. J., made a statement along the same lines as that of Mr. Mattern, emphasizing the necessity for the protection of the domestic industry against the competition of German producers on certain sizes.

## AUTOMOBILES.

**Statement of Charles H. Sherrill, Attorney for Automobile Importers.**

Charles H. Sherrill, counsel for a number of importers of automobiles, urged a reduction in the duty thereon, basing his argument chiefly upon the fact that foreign cars are brought into the United States in an unfinished condition and require the expenditure of a large amount of domestic labor before they can be placed on the market.

Mr. Sherrill: This association is not an association formed for the purpose of maintaining prices. It is an association consisting of about a dozen of the leading importers of foreign-made automobiles. In almost every instance when foreign-made articles (whether furniture, woolen goods, &c.) are imported into this country this act of protection is fully justified, because directly after the arrival here of the imported article and the payment of its customs duty it is at once offered for sale without adding in any way to the wealth of our people by any payments to American manufacturers or workmen. It immediately enters into competition with the American-made article, which looks to the tariff to prevent being undersold by the foreign article. The case of an imported automobile is an entirely different one, for it not only contributes largely to the American manufacturer and workman after its arrival in this country, and before its sale, but even during the period of its manufacture in the foreign country the large proportion of American-made machinery used in its manufacture contributes handsomely to the foreign sales of American-made machinery and tools.

An extremely small percentage of foreign made automobiles arrives in this country in a finished condition, considerably over 90 per cent. being landed here either in an unfinished condition which necessitates for their completion the addition of machinery parts made in America, or else they arrive here as naked chassis; that is to say, nothing but the wheels with the mechanical running gear, and without the body built upon them. Therefore not only does the foreign automobile contribute to the United States by paying the tariff duties, but immediately upon its arrival here it begins to contribute to the wealth of our nation by purchasing American machinery, employing American labor, and generally contributing to a wide range of our business interests by paying insurance, rent, &c. Of how great an advantage this is to the manufacturer and the workmen of the United States can be seen from the fact that the importers composing the importers' automobile salon have paid American carriage builders over $1,000,000, and also an equal sum to American manufacturers for mechanical parts, tires, &c. Before leaving this point it should be remarked that as the average American made automobile has its carriage body built in its own shops, it is to the foreign made automobile that the carriage builders of this country owe the fact that they have not been severely embarrassed financially by the fact that carriages are being rapidly driven out of the field by automobiles. The carriage building industry in New York City owes a great debt in this regard to the enormous orders it has secured from the importers of foreign made automobile chassis. How beneficial this trade is to the American carriage builder may be judged from the fact that foreign made chassis during the four years ending June 30, 1908, are reported by the New York Custom House to have

aggregated in value $16,896,983.71, and for over 90 per cent. of these chassis carriage bodies were built by American carriage builders.

Another service rendered to American manufacturers by foreign automobile factories is the splendid manner in which they have assisted to introduce the use abroad of American machinery. In many foreign countries it has proved difficult to persuade them to accept our machines, and therefore it has proved most beneficial to our manufacturers that foreign automobile makers have taken the lead in purchasing American machinery. The valuable reports compiled for our Department of Commerce and Labor by Capt. Godfrey L. Garden, after his examination of foreign automobile factories, are most instructive in showing what a large outlet they provide for American machinery. The plant of the Fiat Company contains $200,000 worth of American machinery, that of the Hotchkiss Company $175,000, &c.

We have shown how valuable to the American manufacturer is the foreign-made automobile, not only after its arrival here, but in the purchase for its manufacture abroad of American machinery, and, further, how great are the sums that it pays to various branches of American business in this country before it is sold. Now, let us consider the infant industry, for which strenuous efforts are now being made to maintain the tariff at its present rate or to raise it. Instead of an infant industry which is seeking protection at the hands of your committee, it could more properly be called a trust. The American manufacturers of automobiles are divided into two large groups, one the Association of Licensed Automobile Manufacturers, which is organized about the so-called "Selden patents," and the other the American Motor Car Manufacturers' Association, which does not own allegiance to the Selden patents. The Selden patent is an ingenious device to maintain a high price for automobiles among the manufacturers using the patent. Up till now all attempts to break this trust have failed, because its foundation is a United States patent, which is a monopoly granted by the Government.

We believe that a reduction in the tariff on automobiles would result in a corresponding reduction in the selling price of all automobiles, whether of home or foreign manufacture; that a reduction in the selling price would mean an increase of cars sold, whether home-made or foreign; that an increase in the number of automobiles sold would mean an increase in the number of men employed in manufacturing, manipulating, finishing, and driving, which would result in a marked increase of prosperity to the manufacturers and the laboring classes.

## ALUMINUM.

### Statement of Arthur B. Davis, Representing the Aluminum Company of America, Pittsburgh.

Mr. Davis: I appear before you to ask for a retention of the duty and to explain the fact that the competition which we are now meeting from foreign producers is of a different character from that which we have met before, and is not of a temporary nature due to the depression which exists at the present time. During the last four or five years the producing capacity of aluminum abroad was confined to five companies, and these companies were hardly able to supply the Continental demand and the demand in South America, the demand, in fact, outside of the United States; but in the fall of 1907 and in the spring of this year, 1908, seven more companies started almost simultaneously, and at the same time the five old companies finished large additions to their plants. The consumption of aluminum abroad in 1907 was about 7000 tons. I do not know what it is this year, but naturally substantially less on account of the depression.

The manufacturing capacity by means of these additions and these new plans is about six times the normal consumption of the Continent, and these foreign manufacturing companies are looking to this market in order to get rid of their surplus product, and so far as we can see there will be no let up to their invasion of this market, and every sale that we make, every quotation that we make, is now made in direct competition with the foreign producers.

## LEAD.

A large delegation appeared before the committee to advocate the retention of the duties on lead both in the ore, pig and finished product. Among those members of the delegation who addressed the committee were C. E. Allen, representing the Commercial Club of Salt Lake City, Utah, and Edward A. Rozier of Farmington, Mo., who described the condition of the industry as so precarious that the Dingley duties were necessary to its continuance.

Milton L. Lissberger of Marks, Lissberger & Son, Long Island City, N. Y., also appeared as the representative of 51 manufacturers of lead goods of various kinds, and urged the repeal of the existing duties on the ground that they are solely in the interest of certain large smelting combinations, and that they place a high tax on many important lines of manufacture, notably plumbing, which, because of the necessity for good sanitation, should be encouraged in every reasonable manner.

## The American Institute of Chemical Engineers.

A meeting of the American Institute of Chemical Engineers is to be held in Pittsburgh, December 28 and 29, in the buildings of the Carnegie Technical Schools. Papers of general chemical engineering interest are to be presented. Notably among these will be the first technical statement by the inventor, James Gayley, regarding the process for dehydrating air, to be used in blast furnaces, and other metallurgical apparatus. Other papers on the use of fuels and power production are to be presented. The measurement of high temperatures and dryer calculations and dryer design are the subjects of two other important papers.

One interesting feature of the Pittsburgh meeting will be the exhibition by manufacturers of novel plants and machinery, partly by drawing and partly by the actual installation for tests in the presence of the Institute. These exhibitions and tests are in no way official in that the Institute does not undertake to pass official judgment upon any of the exhibits, and are no more sanctioned or indorsed by the Institute than technical papers presented to it would be, but are offered by the manufacturers as a method of acquainting those in charge of manufacturing operations with the latest and best machinery in the various lines. Such an exhibit, however, should be an increasing source of breadth and education to the members, and the tests and discussions which will inevitably result from the special installation of machinery for this purpose, should do much to unify the judgment of chemical engineers on the question of certain classes of apparatus which have hitherto been largely matters of individual opinions.

This meeting will be the first annual meeting of the American Institute of Chemical Engineers, organized last spring in Philadelphia for the purpose of bringing together all those who are particularly interested in the combined application of chemistry and engineering to technical problems. The organizers of the Institute, after considerable investigation as to the need of such a society, have made the qualifications for active membership extremely rigid, believing that a very important object of an organization of chemists and engineers (besides meeting for purely social purposes) should be the raising of professional standards among its members. To this end a careful and serious effort is being made to so limit membership that admission to the Institute will be in itself an evidence of the standing and reliability (both business and professional) of its members.

That there was need for some such movement is sufficiently evident by the extent to which fake processes have at times been offered in this particular field. Hitherto chemistry has, by the very nature of the phenomena studied, the transformation of matter, presented that element of the mysterious which seems to be important to the successful exploitation of fraud. Numerous patents, which never worked and never could work, have been taken out and sold or made the basis of wildcat companies. Numerous manufacturers have been victimized, and it is hoped that in time the Institute of Chemical Engineers may be able to do for the chemical engineering profession what the Society of Civil Engineers has so ably accomplished in its field.

All communications from those desiring to attend the Pittsburgh meeting, or from manufacturers who desire to exhibit, should be addressed to the secretary, Dr. J. C. Olsen, Polytechnic Institute, Brooklyn, N. Y.

## Electric Smelting.

TORONTO, November 28, 1908.—Dr. Eugene Haanel, Director of the Mines Branch of the Mines Department at Ottawa, has left for Sweden to be present at the opening of a furnace for the electric smelting of iron at Domnarfvet. This furnace is the outcome of experiments that have been in progress in Sweden since the completion of the experiments at Sault Ste. Marie. The Swedish investigations were carried on by three commissioners appointed not by the government but by a firm of ironmasters, who appropriated for the work a sum equal

to about $56,000 in our currency. The commissioners in question were an electrical expert, a metallurgical expert and a mechanical expert. In the two years of their labors they operated with various furnaces that they had constructed in the course of the work, and finally evolved that at Domnarfvet. Dr. Haanel has been invited to observe its working and report thereon. He is advised that this furnace marks a great advance on former successes in the same line. It will use 800 hp. instead of the 250 hp. of the Sault experimental plant. A furnace of 3000 hp. could be constructed on the same plan and would have a capacity of 10,000 tons of pig iron a year. In Sweden the cost will be $12.03 per ton. C. A. C. J.

## The Red Iron Ores of Alabama.

Probably the most complete and satisfactory discussion of the occurrence, character, extent and origin of the Clinton iron ore deposits in Alabama is contained in a paper presented at the Chattanooga meeting of the American Institute of Mining Engineers by Ernest F. Burchard of the United States Geological Survey, Washington, D. C. It covers 59 pages in the November *Bulletin* of the Institute and accompanying it is the statement that a detailed report on the Birmingham District, with maps, will be published as a bulletin of the Survey this year. The title will be "The Iron Ores, Fuels and Fluxes of the Birmingham District, Alabama," and the authors are Edwin C. Eckel, E. F. Burchard and Charles Butts.

Mr. Burchard's paper is a thoroughgoing presentation of the methods employed in making estimates of the ore reserves of northern Alabama. These represent a most painstaking study of the structure and composition of the various seams and of their continuities as well as irregularities. We have room for two quotations from the paper, one referring to actual mining development on Red Mountain in the Birmingham District, and the other summarizing the results of the computation of red ore reserves.

### Mining Operations on Red Mountain.

There have been three stages in the development of the mines in the Birmingham District. The first stage consists of trenching the ore beds along the outcrop on the crest or on the northwest slope of Red Mountain and of mining the ore from open cuts on the southeast slope. The ore obtained in this way is mostly soft. This method of mining has been possible only where the overlying beds are not too thick to be stripped profitably. Most of the mines have passed beyond this stage, but at the Helen-Bess and the Green Spring workings this very profitable type of mining may still be seen.

The second stage of development combines the open cut and incline with underground work. A very fortunate relation between the structure of the "Big" and "Ironside" seams and the topography of Red Mountain exists in many places, particularly in the northern half of the district, wherever the dip of the Clinton strata is approximately the same as the southeast face of the mountain. This face is cut by narrow V-shaped ravines at intervals of 0.5 to 0.75 mile, and on both sides of many of these hollows the two seams are exposed from the crest to the foot of the ridge. Inclined tramways are built on the flanks of the ravine, and when the outcropping ore has been surface worked entries are driven in on the strike of the ore beds from each side of the ravine and the ore is mined from the upper side of the entries. A cable tramway may be operated by gravity or by power, depending on the side of the mountain on which the ore is to be delivered. At the Sloss-Sheffield Ruffner mine No. 1 the tracks of the railroad which transports the ore to the furnaces are on the southeast side of the mountain, making it possible for cars loaded with ore going down the mountain to pull up the empties, but at the Valley View mine of the Birmingham Ore & Mining Company the ore is hauled up over the mountain and loaded into railroad cars on the opposite side. At mines of this type soft, semihard and hard ores are obtained, depending on the thickness and character of the cover overlying the ore bed.

The third stage of mining, the one to which the majority of the workings in the Birmingham District have now attained, involves systematic underground work entirely. The general plan is very simple, comprising a main or central slope, driven on the dip, from which right and left headings are turned off at regular intervals of from 60 to 70 ft. The ore, which is mainly hard, is mined from the upper side of the entry, about 30 ft. being left between the entries until robbing is begun. Mules haul the trams to the mouths of the entries, whence the ore is moved up the slope by cable to a tipple, below which it is crushed and loaded directly into cars bound for the furnace. A manway is usually provided at one side of the slope for safety. Comparatively little water is encountered even in the deepest workings of this type, so that a 3 to 4 in. pump usually suffices to drain the mine.

A fourth stage, which some of the workings may reach in the near future, will likely be shaft mining in the basin east of Red Mountain. The working face of the ore bed can be reached more directly by a vertical shaft from 300 to 500 ft. in depth than by a slope five to six times that length.

In the summer of 1906 there were 33 mines actively producing red ore in the district, besides seven or eight workings which have been inactive since the soft ore was exhausted from them. Of the 33 mines in operation 30 are on Red Mountain, within a distance of about 25 miles between Pilot Knob on the northeast and Sparks Gap on the southwest. In places in the middle of the district the underground workings are practically continuous for 3 or 4 miles, and the old surface workings on the outcrop of the ore may be traced without break for 15 miles or more.

### The Amount of Red Ore Reserves.

Summarizing the results of the computation there are estimated red ore reserves:

| | Gross tons. |
|---|---|
| For main portion of Birmingham District | 351,149,500 |
| For district south of Dudley | 6,929,600 |
| For Lookout Mountain District | 125,651,100 |
| Total | 483,730,200 |

This brings the total fairly well toward 500,000,000 gross tons of ore, and it is probable that that amount would be exceeded by any estimate that considered carefully the portions of the field not included within the present estimate. The preliminary estimate made by Mr. Eckel of 1,000,000,000 gross tons of red ore in Alabama, including as it did much ore probably carrying 25 to 30 per cent. of metallic iron, and occurring in beds at present regarded as too thin to be profitably worked, but of possible future value, appears to be consistently supported by the present estimate of ore reserves probably workable under present conditions.

It should be repeated that the present estimate is based on the belief that the hard ore beds are the result of a single concentration of iron oxide sediments that took place when the beds were deposited; that they occur as fragments of what were originally rather uniform lens-shaped bodies; that, as a consequence of their supposed method of origin, the content of metallic iron does not greatly diminish from the point where the hard ore is first encountered in the mine slopes to the point where the bed has thinned to a minimum workable thickness, and, finally, that the structure remains fairly constant, as indicated in the foregoing discussions. This last element, it should be remembered, is one of the most uncertain with which the miner has to deal and can be rendered more certain only by thorough and systematic prospecting with the core drill in places where there are no definite mine data or reliable geologic indications available. Unexpected structural complications and "horses" of barren rock may, of course, greatly reduce the quantity of recoverable ore counted on in this estimate.

The production of pig iron in Germany in September was 928,729 metric tons, as compared with 1,091,020 tons in September, 1907. The total production of pig iron in the first nine months of the year was 8,924,665 tons, against 9,688,484 tons in the first nine months of 1907, a falling off of 763,819 tons.

# The Present Status of Military Aëronautics.—I*

BY MAJOR GEORGE O. SQUIER, U. S. A.

On December 23, 1907, the Signal Corps of the Army issued a public advertisement and specification calling for bids for furnishing the Government with a heavier than air flying machine capable of carrying one passenger besides the aviator, and remain in the air on an endurance test for 1 hr. without landing, and over a measured course of more than 5 miles, against and with the wind, attain a minimum speed of 36 miles per hour. The machine must, in addition, carry fuel for a continuous flight of not less than 125 miles. Contracts were awarded to the Wright brothers of Dayton, Ohio, for the sum of $25,000 for a 40-mile speed, and also to A. M. Herring of New York for the sum of $20,000. The result of issuing this specification, as well as a similar one for supplying a small dirigible balloon for the preliminary training of the men of the Signal Corps, was an awakening of interest in this subject throughout the country to such an extent that the Signal Office continues to receive daily a large number of letters, plans, and models proposing manifold schemes for navigating the air. The Aëronautical Division of the Office of the Chief Signal Officer of the Army was organized on July 1, 1907, and the Aëronautical Board of the Signal Corps was appointed in July of the current year for conducting tests of dirigible balloons and aëroplanes under existing contracts.



Fig. 1.—The French Dirigible Balloon Patrie.

There are two general classes of vehicles of the air, those which depend for their support upon the buoyancy of some gas lighter than air, and those which depend for such support upon the dynamic reaction of the air itself. These classes are designated lighter than air types: free balloons, dirigible balloons or airships; heavier than air types: aëroplanes, orthopters, helicopters, &c. These two general classes exhibit a growing tendency to overlap each other; the latest dirigible balloons are partly operated by aëroplane surfaces, and are also often balanced so as to be slightly heavier than the air in which they move, employing the propeller thrust and rudder surfaces to control the altitude.

## AËROSTATION.

### Successful Military Dirigible Balloons.

Two types of dirigible balloons have been used in the French army: the Patrie and the Ville de Paris.

**The Patrie,**

the third of its type, was developed by Julliot and was first operated in 1906. The gas bag of the Patrie was 197 ft. long with a maximum diameter of 33 ft. 9 in., about two-fifths of the length from the front; volume 111,250 cu. ft.; length approximately six diameters. Pointed at the rear is generally admitted to be the proper shape for least resistance, but to maintain stability it was necessary to put a horizontal and vertical plane there, so that it had to be made an ellipsoid of revolution to give attachment for these planes. The ballonet for air had a capacity of 22,958 cu. ft. or about one-fifth of the total volume. This is calculated to permit reaching a hight of about 1 mile and to be able to return to the earth, keeping the gas bag always rigid. To descend from a hight of 1 mile, gas would be released by the valve, then air pumped into the ballonet to keep the gas bag rigid, these two operations being carried on alternately. On reaching the ground from the hight of 1 mile the air would be at the middle of the lower part of the gas bag and would not entirely fill the ballonet. To prevent the air from rolling from one end to the other when the airship pitches, thus producing instability, the ballonet was divided into three compartments by impermeable cloth partitions. Numerous small holes were pierced in these partitions through which the air finally reached the two end compartments.

In September, 1907, the Patrie was enlarged by 17,660 cu. ft. by adding a cylindrical section at the maximum diameter, increasing the length but not the maximum diameter.

The gas bag is cut in panels; the material is a rubber cloth consisting of four layers: An outer layer of cotton cloth covered with lead chromate; layer of vulcanized rubber; layer of cotton cloth, and an inner layer of vulcanized rubber. Its total weight is 9.71 oz. per square yard. A strip of this cloth 1 ft. wide tears at a tension of about 934 lb. A pressure of about 1 in. of water can be maintained in the gas bag without danger. The lead chromate on the outside is to prevent the entrance of the actinic rays of the sun which would cause the rubber to deteriorate. The heavy layer of rubber is to prevent the leaking of the gas. The inner layer of rubber is merely to prevent deterioration of the cloth by impurities in the gas. This material has the warp of the two layers of cotton cloth running in the same direction and is called straight thread. The material in the ballonet weighs only about 7¾ oz. per square yard and has a strength of about 336 lb. per running foot. When the Patrie was enlarged the specifications for the material allowed a maximum weight of 10 oz. per square yard, a minimum

* From a paper presented December 2, 1908, at the New York meeting of the American Society of Mechanical Engineers.

strength of 907 lb. per running foot, and a loss of 5.1 cu. in. of hydrogen per square yard in 24 hr. at a pressure of 1.18 in. of water. Bands of cloth are pasted over the seams inside and out with a solution of rubber to prevent leaking through the stitches.

One of the characteristics of the Patrie is the short suspension. The weight of the car is distributed over only about 70 ft. of the length of the gas bag. To do this, an elliptical shaped frame of nickel steel tubes is attached to the bottom of the gas bag; steel cables run from this down to the car. A small hemp net is attached to the gas bag by short wooden cross pieces or toggles which are let into holes in a strong canvas band which is sewed directly on the gas bag. The metal frame, or platform, is attached to this net by toggles, so that it can be quickly removed in dismounting the airship for transportation. The frame can also be taken apart. Twenty-eight steel cables about 0.2 in. in diameter run from the frame down to the car, and are arranged in triangles. Due to the impossibility of deforming a triangle, rigidity is maintained between the car and gas bag. The objection to the short suspension of the Patrie is the deformation of the gas bag. A distinct curve can be seen in the middle.

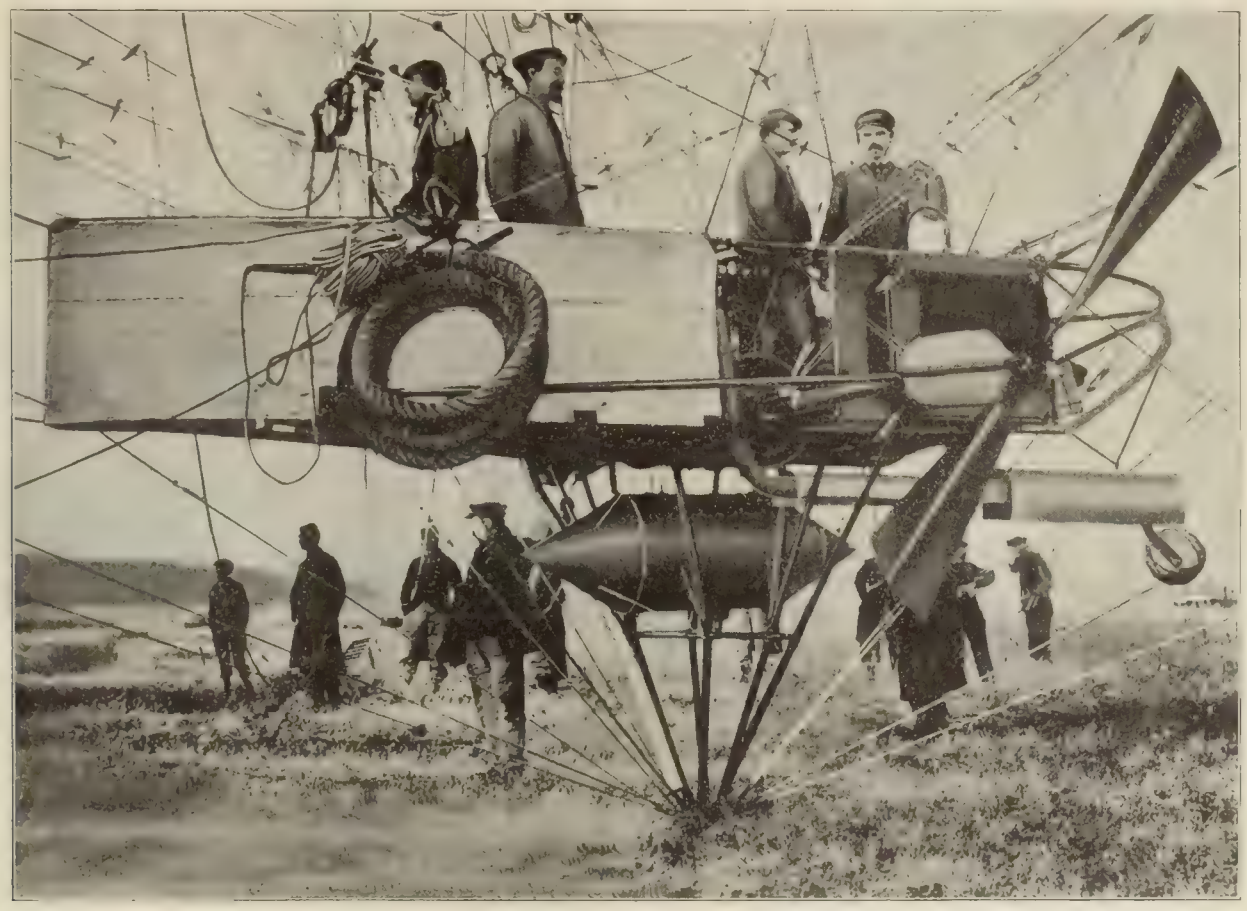


Fig. 2.—A Nearer View of the Car of the Patrie.

The car is made of nickel steel tubes (12 per cent. nickel). This metal gives the greatest strength for minimum weight. The car is boat shaped, about 16 ft. long, about 5 ft. wide, and 2½ ft. high. About 11 ft. separate the car from the gas bag. To prevent any chance of fire from the engine communicating with the hydrogen, the steel framework under the gas bag is covered with a noncombustible material. The pilot stands at the front of the car, the engine is in the middle, the engineer at the rear. Provision is made for mounting a telephotographic apparatus, and for a 100-cp. acetylene searchlight. A strong pyramidal structure of steel is built under the car, pointing downward. In landing the point comes to the ground first, and this protects the car, and especially the propellers, from being damaged. The car is covered to reduce air resistance. It is so low, however, that part of the equipment and most of the bodies of those inside are exposed, so that the total resistance of the car is large.

The Patrie was driven by a 60 to 70 hp., four-cylinder Panhard & Levassor benzine motor, making 1000 rev. per min. There are two steel propellers, 8½ ft. in diameter (two blades each), placed at each side of the engine, thus giving the shortest and most economical transmission. To avoid any tendency to twist the car the propellers turn in opposite directions. They are high speed, making 1000 to 1200 rev. per min. The gasoline tank is placed under the car inside the pyramidal frame. The gasoline is forced up to the motor by air compression. The exhaust is under the rear of the car pointing down and is covered with a metal gauze to prevent flames coming out. The fan which drives the air into the ballonet is run by the motor, but a dynamo is also provided so that the fan can always be kept running even if the motor stops. This is very essential, as the pressure must be maintained inside the gas bag so that the latter will remain rigid and keep its form. There are five valves in all, part automatic and part both automatic and also controlled from the car with cords. The valves in the ballonet open automatically at less pressure than the gas valves, so that when the gas expands all the air is driven out of the ballonet before there is any loss of gas. The ballonet valves open at a pressure of about 0.78 in. of water; the gas valves at about 2 in.

Vertical stability is maintained by fixed horizontal planes. One having a surface of 150 sq. ft. is attached at the rear of the gas bag, and due to its distance from the center of gravity is very efficient. The elliptical frame attached under the gas bag has an area of 1055 sq. ft., but due to its proximity to the center of gravity has little effect on the stability. Just behind the elliptical frame is a horizontal plane of 150 sq. ft., and a vertical plane of 113 sq. ft. To maintain horizontal stability—that is, to enable the airship to move forward in a straight line without veering to the sides—fixed vertical planes are used. One runs from the center to the rear of the elliptical frame and has an area of 108 sq. ft. In addition to the vertical surface of 113 sq. ft. at the rear of the elliptical frame, there is a fixed plane of 150 sq. ft. at the rear of the gas bag. To fasten the two perpendicular planes at the rear of the gas bag cloth flaps are sewed directly on the gas bag. Nickel steel tubes are placed in the flaps, which are then laced over the tubes. With these tubes as a base, a light tube and wire framework is attached and waterproof cloth laced on this framework. Additional braces run from one surface to the other and from each surface to the gas bag. The rudder is at the rear under the gas bag, has about 150 sq. ft., and is balanced. A movable horizontal plane near the center of gravity, above the car, is used to produce rising or descending motion, or to prevent an involuntary rising or falling of the airship, due to expansion or contraction of the gas or to other causes. After adopting this movable horizontal plane the loss of gas and ballast was reduced to a minimum. Ballast is carried in 10 and 20 lb. sand bags. A pipe runs through

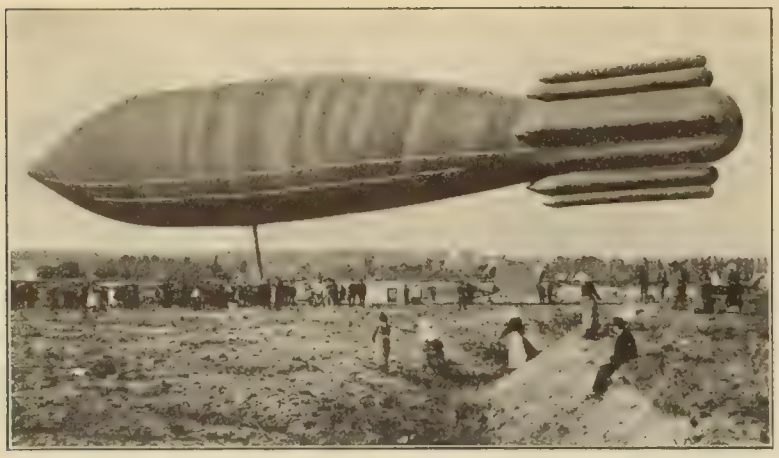


Fig. 3.—Another French Airship, the Ville de Paris.

the bottom of the car, from which the ballast is thrown.

There are two long guide ropes, one attached at the front of the elliptical frame and the other on the car. On landing, the one in front is seized first so as to hold the airship with the head to the wind. The motor may then be stopped and the descent made by pulling down on both guide ropes. A heavy rope, 22 ft. long, weighing 110 lb., is attached on the end of a 164-ft. guide rope. This can be dropped out on landing to prevent coming to the ground too rapidly. The equipment of the car includes a siren, speaking trumpet, carrier pigeons, iron pins and a rope for anchoring the airship, reserve supply of fuel and water, and fire extinguisher.

After being enlarged the Patrie made a number of long trips at an altitude of 2500 to 3000 ft. In November, 1907, she went from Paris to Verdun, near the German frontier, a distance of about 175 miles, in about 7 hr., carrying four persons. This trip was made in a light wind blowing from the northeast. Her course was east, so that the wind was unfavorable. On Friday, November 29, 1907, during a flight near Verdun, the motor stopped, due to difficulty with the carburetter. The airship drifted with the wind to a village about 10 miles away, where she was safely landed. The carburetter was repaired on the 30th. Soon after a strong wind came up and tore loose some of the iron pickets with which the airship was anchored, allowing it to swing broadside to the wind; it then tilted over on the side far enough to let some of the ballast bags fall out. The 150 or 200 soldiers who were holding the ropes were pulled along the ground until directed by the officer in charge to let go. After being released it rose and was carried by the wind across the north of France, the English Channel, and into the north of Ireland. It struck the earth there, breaking off one of the propellers, and then drifted out to sea.

**The Republique.**

is the latest of the French military dirigible balloons and differs but slightly from the Patrie. The volume has been increased by about 2000 cu. ft. The length has been reduced to 200 ft. and the maximum diameter increased to 35½ ft. The shape of the gas bag accounts for the 2000 additional cubic feet of volume. The motor and propellers are as in the Patrie. The total lifting capacity is 9000 lb., of which 2700 lb. is available for passengers, fuel, ballast, instruments, &c. Its best performance was a 125-mile flight made in 6½ hr. against an unfavorable wind. The material for the gas bag is made up as follows: Outer yellow cotton layer, layer of vulcanized rubber, layer of cotton cloth, and inner layer of rubber. Total weight, 10.48 oz. per square yard.

It is interesting to note the changes which this type has undergone since the first one was built. The Jaune, constructed in 1902-03, was pointed at the rear and had no stability plane there; later it was rounded off at the rear and a fixed horizontal plane attached. Finally a fixed vertical plane was added. The gas bag has been increased in capacity from 80,670 cu. ft. to about 131,000 cu. ft. The manufacturers have been able to increase the strength of the material of which the gas bag is made, without materially increasing the weight. The rudder has been altered somewhat in form. It was first pivoted on its front edge, but later on a vertical axis, somewhat to the rear of this edge. With the increase in size, has come an increase in carrying capacity and consequently a greater speed and more widely extended field of action.

**The Ville de Paris.**

was constructed for Deutsch de la Meurthe of Paris, who has done a great deal to encourage aerial navigation.

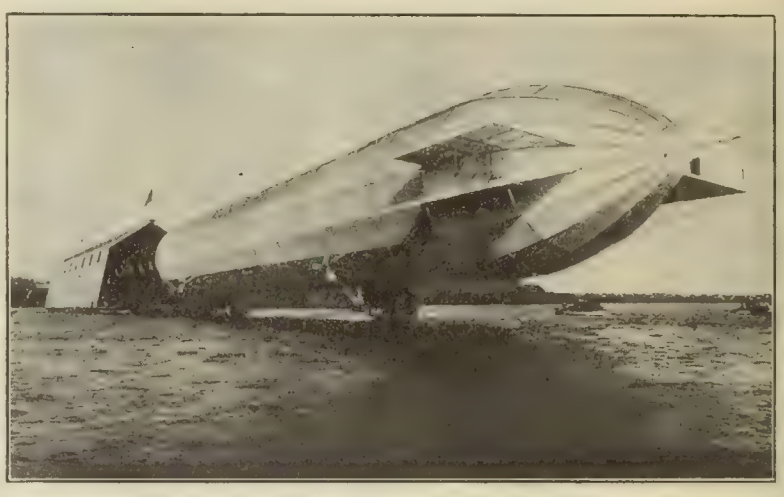


Fig. 4.—The German Airship Zeppelin with Its Floating Hanger.

The first Ville de Paris, built in 1902, was not a success. Its successor was built in 1906, on plans of Surcouf, an aeronautical engineer and balloon builder, based on the France, built in 1884, which the Ville de Paris resembles in many particulars. In September, 1907, Mr. Deutsch offered the use of his airship to the French Government. The offer was accepted, but delivery was not to be made except in case of war or emergency. When the Patrie was lost in November, 1907, the military authorities immediately took over the Deutsch airship.

The gas bag is 200 ft. long, has a maximum diameter of 34½ ft., about three-eighths from the front, and a volume of 112,847 cu. ft. The middle section is cylindrical with conical sections front and rear. At the extreme rear is a cylindrical section with eight smaller cylinders



Fig. 5.—One of the Cars of the Zeppelin.



Fig. 6.—The United States Signal Corps Dirigible No. 1.

attached to it. The ballonet has a volume of 21,192 cu. ft., or about one-fifth of the whole volume, and is divided into three compartments, front to rear. The division walls are permeable cloth, and are not fastened to the bottom, so that when the middle compartment fills with air, and the ballonet rises, the division walls are lifted up from the bottom of the gas bag, and there is free communication between the three compartments. The gas bag is made up of a series of strips perpendicular to a meridian line. These strips run around the bag, their ends meeting on the under meridian. This is known as the brachistode method of cutting out the material, and has the advantage of bringing the seams parallel to the line of greatest tension. They are therefore more likely to remain tight and not allow the escape of gas. The disadvantage lies in the fact that there is a loss of 33 1-3 per cent. of material in cutting. The material has approximately the same tensile strength and weight as that used in the Patrie. It differs from the other in one important feature—it is diagonal-thread, that is, the warp of the outer layer of cotton cloth makes an angle of 45 degrees with the warp of the inner layer of cotton cloth. The result is to localize a rip or tear in the material. A tear in the straight thread material will continue along the warp, or the weave, until it reaches a seam.

There are five valves in all, made of steel, about 14 in. diameter; one on the top connected to the car by a cord, operated by hand only; two near the rear underneath. These are automatic, but can be operated by hand from the car. Two ballonet valves directly under the middle are automatic and are also operated from the car by hand. The ballonet valves open automatically at a pressure of 2-3 in. of water; the gas valves open at a higher pressure.

This airship has the long suspension—that is, the weight is distributed along practically the entire length of the gas bag. A doubled band of heavy canvas is sewn with six rows of stitches along the side of the gas bag. Hemp ropes running into steel cables transmit most of the weight of the car to these two canvas bands and thus to the gas bag. On both sides and below these first bands are two more. Lines run from these to points half way between the gas bag and the car, then radiate from these points to different points of attachment on the car. This gives the triangular or nondeformable system of suspension, which is necessary to have the car and gas bag rigidly attached to each other. With this long suspension the Ville de Paris does not have the deformation so noticeable in the gas bag of the Patrie. The car is in the form of a trestle, and is built of wood, with aluminum joints and 0.12 in. wire tension members. It is 115 ft. long, nearly 7 ft. high at the middle, and a little over 5½ ft. wide at the middle. It weighs 660 lb., and is considered unnecessarily large and heavy. The engine and engineer are well to the front; the aëronaut with steering wheels is about at the center of gravity.

The motor is a 70 to 75 hp. Argus, and is exceptionally heavy. The propeller is placed at the front of the car, having the advantage of working in undisturbed air; the disadvantage is the long transmision and difficulty in attaching the propeller rigidly. It has two blades, and is 19.68 ft. long, with a pitch of 26.24 ft. The blades are of cedar, with a steel arm. The propeller makes a maximum of 250 rev. per min. when the engine is making 900 revolutions. Its great diameter and width compensate for its small speed.

Stability is maintained entirely by the cylinders at the rear, four horizontal and four vertical. The volume of the small cylinders is so calculated that the gas in them is just sufficient to lift their weight, so they neither increase or decrease the ascensional force of the whole. The horizontal projection of these cylinders is 1076 sq. ft. The center of this projection is 72 ft. from the center of gravity of the gas. The great objection to this method of obtaining stability is the air resistance due to these cylinders, and consequent loss of speed. The stability of the Ville de Paris in a vertical plane is said to be superior to that of the Patrie because the stability planes of the latter do not always remain rigid. The independent velocity of the Ville de Paris probably never exceeded 25 miles an hour. The rudder has a double surface of 150 sq. ft. placed at the rear end of the car, 72 ft. from the center of gravity. It is not balanced, but is inclined slightly to the rear, so that its weight would make it point directly to the rear if the steering gear should break. Two pairs of movable horizontal planes,

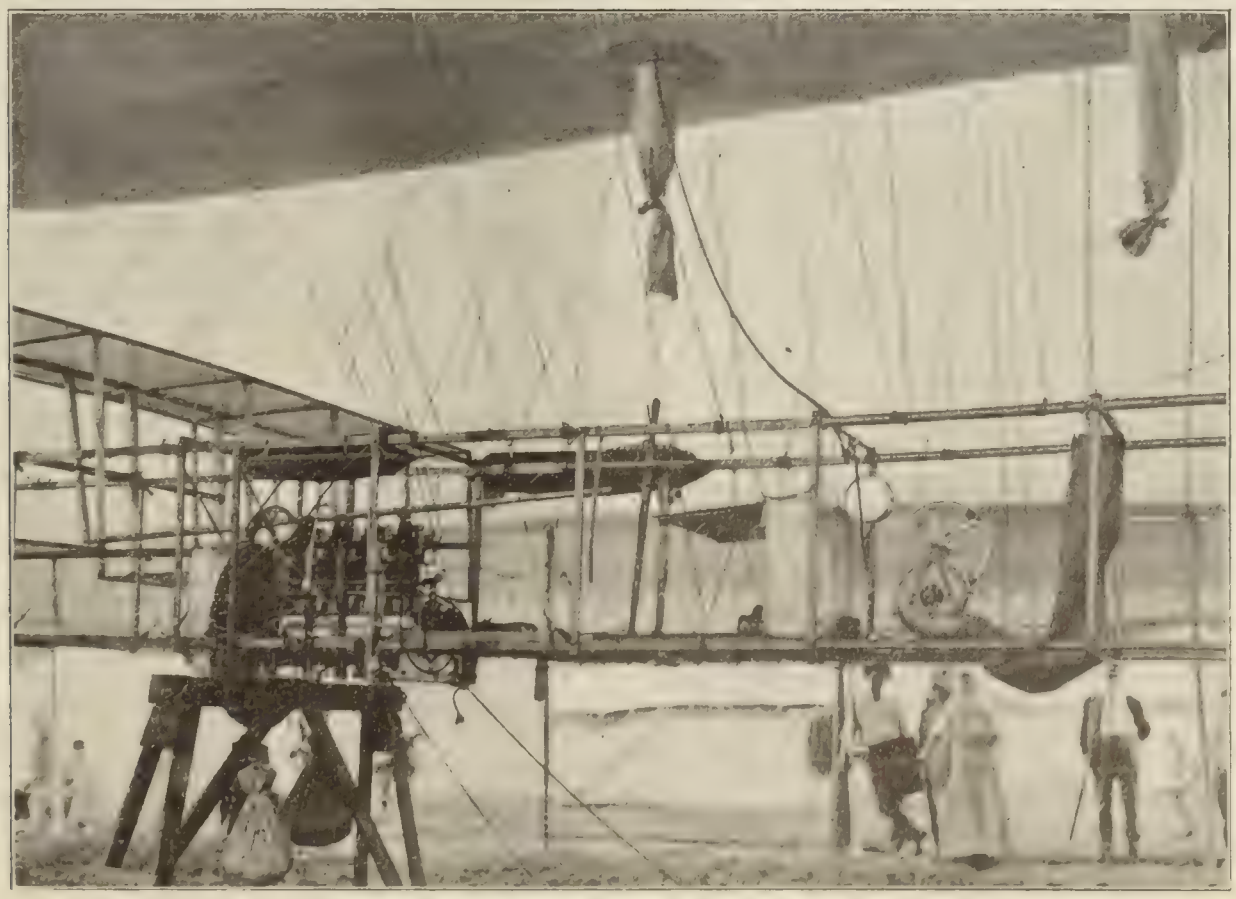


Fig. 7.—Details of the Car of the Signal Corps Dirigible

one at the rear of the car having 43 sq. ft., and one at the center of gravity having 86 sq. ft., serve to drive the airship up or down without losing gas or ballast. A 400-ft. guide rope is attached at the front end of the car and a 230-ft. guide rope at the center of gravity.

About 30 men are required to maneuver the Ville de Paris on the ground. The pilot has three steering wheels, one for the rudder and two for the movable horizontal planes. The instruments used are an aneroid barometer, a registering barometer giving hights up to 1600 ft. and an ordinary dynamometer, which can be connected either with the gas bag or ballonet by turning a valve. A double column of water is also connected to the tube to act as a check on the dynamometer. Due to the vibration of the car caused by the motor, these instruments are suspended by rubber attachments. Even with this arrangement it is necessary to steady the aneroid barometer with the hand to read it. The vibration prevents the use of the statoscope.

**England's Military Dirigible No. 1.**

The gas bag of this airship is made of eight layers of gold beater's skin, is cylindrical in shape with spherical ends and has a volume of 84,768 cu. ft., length of 111½ ft., and maximum diameter of 31½ ft. There is no ballonet, but due to the toughness of the gold beater's skin a much higner pressure can safely be maintained than in gas bags of rubber cloth. Without a ballonet, however, it would not be safe to rise to the hights reached by the Patrie. The valves are made of aluminum and are about 12 in. diameter.

This airship has a long suspension with a short boat-shaped car, a combination much to be desired, as it distributes the weight over the entire length of the gas bag and gives the best form of car for purposes of observation and for maneuvering on the ground. To obtain this combination they had to construct a heavy steel framework, which cuts down the carrying capacity, and adds greatly to the air resistance. This is the only airship in Europe having a network to support the car. In addition, four silk bands are passed over the gas bag, and wires run from their extremities to the steel frame. This steel frame is in two tiers; the upper is rectangular in cross section and supports the rudder and planes, the lower part is triangular in cross section and supports the car. The joints are aluminum. The car is of steel, is about 30 ft. long, and to reduce air resistance is covered with cloth.

A 40 to 50 hp. eight-cylinder Antoinette motor is used, set up on top of the car. The benzine tanks are supported above in the framework. Gravity feed is used. There are two aluminum propellers, one on each side, with two blades each, 10 ft. diameter, and making 700 rev. per min. The transmission is by belt.

Stability is maintained by planes. At the extreme rear is a large fixed horizontal plane; in front of this a pair of hinged horizontal planes, and under this the hexagonal shaped balanced rudder. Two pairs of movable horizontal planes, 8 x 4 ft. each, at the front serve to guide the airship up and down. These planes have additional inclined surfaces intended to increase the stability in a vertical plane. All planes, both fixed and movable, are of silk stretched on bamboo frames. The speed attained is about 16 miles per hour. This airship with a few improvements added has been in operation the past few months. The steel framework connecting the gas bag to the car is now entirely covered with canvas, which must reduce the resistance of the air very materially. The canvas covering inclosing the entire bag serves as a reinforcement to the latter, and at the same time gives attachment to the suspension underneath. It is reported that a speed of 20 miles an hour has been attained with the reconstructed airship. A pyramidal construction similar to that on the Patrie has been built under the center of the car to protect the car and propellers on landing. A single movable horizontal plane, placed at the front end of the car and operated by the pilot, controls the vertical motion.

Three different types of airships are being developed in Germany. The Gross is the design of Major Von Gross, who commands the Balloon Battalion at Tegel, near Berlin. The Parseval is being developed by Major Von Parseval, a retired German officer, and the Zeppelin is the design of Count Zeppelin, also a retired officer of the German Army.

**The Gross.**

The first airship of this type made its first ascension July 23, 1907. The gas bag is made of rubber cloth, similar to that used in the Ville de Paris. It is diagonal-thread, but there is no inner layer of rubber. The length is 131¼ ft.; maximum diameter, about 39 1-3 ft., and volume 63,576 cu. ft. The form is cylindrical with spherical cones at the ends, the whole being symmetrical.

The suspension is practically the same as that of the Patrie. A steel and aluminum frame is attached to the lower part of the gas bag, and the car is suspended on this by steel cables. The objection to this system is even more apparent in the Gross than in the Patrie; a marked dip along the upper meridian of the gas bag shows plainly the deformation. The car is boat shaped and is suspended 13 ft. below the gas bag.

The motor is a 20 to 24 hp. 4-cylinder Daimler-Mercedes. There are two two-blade propellers 8.2 ft. diameter, placed one on each side, but well up under the gas bag near the center of resistance. The transmission is by belt. The propellers make 800 rev. per min. At the rear of the rigid frame attached to the gas bag, are two fixed horizontal planes, one on each side. A fixed vertical plane runs down from between these horizontal planes, and is terminated at the rear by the rudder. A fixed horizontal plane is attached on the rear of the gas bag. The stability in a vertical plane is reported to be very good, but it is said to veer considerably in attempting to steer a straight course.

As first built, the Gross had a volume of 14,128 cu. ft. less than at present, and there was no horizontal plane at the rear of the gas bag. Its maximum speed is probably 15 miles per hour. As a result of his experiments of 1907, Major Von Gross has this year produced a perfected airship built on the same lines, but with greatly increased volume and dimensions. The latest one has a volume of 176,000 cu. ft., is driven by two 75-hp. Daimler motors, and has a speed of 27 miles per hour. On September 11 of this year, this airship left Berlin at 10.25 p. m., carrying four passengers, and returned the next day at 11.30 a. m., having covered 176 miles in the period of a little over 13 hr. This is the longest trip, both in point of time and distance ever made by any airship returning to the starting point.

**The Parseval.**

The Parseval has a gas bag similar in construction to that of the Drachen balloon, used by the army for captive work. Its volume is 113,000 cu. ft., length 190 ft., and maximum diameter 30½ ft. It is cylindrical in shape, rounded at the front end and pointed at the rear. The material is diagonal thread, weighing about 11.2 oz. per square yard and having a strength of about 940 lb. per running foot. Its inner surface is covered with a layer of rubber. There are two ballonets, one at each end, each having a capacity of 10,596 cu. ft. The material in the ballonet weighs about 8¼ oz. per square yard, the cotton layers being lighter than in the material for the gas bag. Air is pumped into the rear ballonet before leaving the ground, so that the airship operates with the front end inclined upward. The air striking underneath, exerts an upward pressure, as on an aeroplane, and thus adds to its lifting capacity. Air is pumped into the ballonets from a fan operated by the motor. A complex valve just under the middle of the gas bag enables the engineer to drive air into either or both ballonets. The valves also act automatically and release air from the ballonets at a pressure of about 0.9 in. of water. In the middle of the top of the gas bag is a valve for releasing the gas. It can be operated from the car and opens automatically at a pressure of about 2 in. of water. Near the two ends and on opposite sides are two rip strips controlled from the car by cords.

The suspension is one of the characteristics of the airship and is patented. The car has four trolleys, two on each side, which run on two steel cables. The car can run backward and forward on these cables, thus

changing its position with relation to the gas bag. This is called loose suspension. Its object is to allow the car to take up, automatically, variations in thrust, due to the motor, and variations in resistance, due to the air. Ramifications of hemp rope from these steel cables are sewn to a canvas strip, which in turn is sewn to the gas bag. This part of the suspension is the same as in the Drachen balloon. The weight is distributed over the entire length of the gas bag.

The car is 16.4 ft. long and is built of steel tubes and wire. It is large enough to hold the motor and three men, though four or five may be taken. The motor is a 110-hp. Daimler-Mercedes. Sufficient gasolene is carried for a run of 12 hr. The propeller, like the suspension, is peculiar to this airship and is protected by patents. It has four cloth blades which hang limp when not turning. When the motor is running these blades, which are carefully weighted with lead at certain points, assume the proper position due to the various forces acting. The diameter is 13¾ ft. The propeller is placed above the rear of the car near the center of resistance. Shaft transmission is used. The propeller makes 500 rev. per min. to 1000 of the motor. There is a space of 6½ ft. from the propeller blades to the gas bag, the bottom of the car being about 30 ft. from the gas bag. This propeller has the advantage of being very light. Its position, so far from the engine, necessarily incurs a great loss of power in transmission. The steering wheel at the front of the car has a spring device for locking it in any position.

### The Zeppelin.

The Zeppelin airship, of which there have been four, differs from all others in that the envelope is rigid. Sixteen separate gas bags are contained in an aluminum alloy framework having 16 sides, covered with a cotton and rubber fabric. The pressure of the air is taken up by this framework instead of by the gas bags. The gas bags are not entirely filled, thus leaving room for expansion. The rigid frame is 446 ft. long, 42½ ft. in diameter, and has ogival-shaped ends. It is braced about every 45 ft. by a number of rods crossing near the center. Vertical braces are placed at intervals the entire length of the frame. The 16 gas bags are completely separated from each other by partitions of sheet aluminum. Under the framework is a triangular truss running nearly the entire length, the sides of the triangle being about 8 ft. The total volume of the gas bags is 460,000 cu. ft. which gives a gross lift of about 32,000 lb.

The two cars are built like boats and are rigidly attached directly to the frame of the envelope, and a very short distance below it. They are about 20 ft. long, 6 ft. wide, 3½ ft. high, are placed about 100 ft. from each end and are made of the same aluminum alloy. To land the airship, it is lowered until the cars float on the water, when it can be towed like a ship. A third car is built into the keel directly under the center of the framework, and is for passengers only.

The power is furnished by two 110-hp. Daimler-Mercedes motors, one on each car. Each weighs about 550 lb.; sufficient fuel for a 60-hr. run can be carried. A pair of three-bladed metal propellers about 15 ft. in diameter is placed opposite each car, firmly attached to the frame of the envelope at the hight of the center of resistance where they are most efficient. In addition to the long V-shaped keel under the rigid frame, on each side at the rear of the frame are two nearly horizontal planes, while above and below the rear end are vertical fins. A large vertical rudder is attached at the end of the rigid frame, and an additional one is placed between each set of horizontal planes on the sides. For vertical steering, there are four sets of movable horizontal planes placed near the ends of the rigid frame, about the hight of the propellers. Each set consists of four horizontal planes placed one above the other and connected with rods, so that they work on the principle of a shutter. These horizontal rudders serve another very important purpose, due to the reaction of the air. When these planes are set at an angle of 15 degrees and the airship is making a speed of 35 miles per hour, an upward pressure of over 1700 lb. is exerted, and consequently all the gas in one compartment could escape and yet by the manipulation of these planes, the airship could return safely to its starting point.

Its best performances were two long trips made during the past summer. The first, July 4, lasted exactly 12 hr., during which time it covered a distance of 235 miles, crossing the mountains to Lucerne and Zurich, and returning to the balloon house at Friedrichshafen on Lake Constance. The average speed on this trip was 32 miles per hour. On August 4 this airship attempted a 24-hr. flight, which was one of the requirements made for its acceptance by the government. It left Friedrichshafen in the morning with the intention of following the Rhine as far as Mainz, and then returning to its starting point straight across the country. A stop of 4 hr. and 30 min. was made in the afternoon of the first day on the Rhine, to repair the engine. On the return, a second stop was found necessary near Stuttgart, due to difficulties with the motors and the loss of gas. While anchored to the ground a storm came up, and broke loose the anchorages; and as the balloon rose in the air it exploded and took fire, due to causes which have never been actually determined and published, and fell to the ground, resulting in its complete destruction. On this journey, which lasted in all 31 hr. and 15 min., the airship was in the air 20 hr. and 45 min., and covered a total distance of 378 miles.

The patriotism of the German nation was aroused. Subscriptions were immediately opened and in a short time $1,000,000 had been raised. A Zeppelin Society was formed to direct the expenditure of this fund; $85,000 has been expended for land near Friedrichshafen; shops are being constructed and it has been announced that within one year, the construction of eight airships of the Zeppelin type will be completed. The German Association for an Aerial Fleet has been organized in sections throughout the country, which announces its intention of building 50 garages (hangars) for housing airships.

### United States Signal Corps Dirigible No. 1.

Due to lack of funds, the United States Government has not been able to undertake the construction of an airship sufficiently large and powerful to compete with those of European nations. However, specifications were sent out last January for an airship not over 120 ft. long and capable of making 20 miles per hour. Contract was awarded to Capt. Thomas S. Baldwin, who delivered an airship last August to the Signal Corps. The gas bag is spindle shaped, 96 ft. long, maximum diameter 19 ft. 6 in., with a volume of 20,000 cu. ft. A ballonet for air is provided inside the gas bag, and has a volume of 2800 cu. ft. The material for the gas bag is made of two layers of Japanese silk, with a layer of vulcanized rubber between. The car is of spruce, and is 66 ft. long, 2½ ft. wide and 2½ ft. high. The position of the car very near to the gas bag, is one of the features of the Government dirigible. This reduces the length and consequently the resistance of the suspension, and places the propeller thrust near the center of resistance.

The motor is a 20-hp. water-cooled Curtiss make. The propeller is at the front end of the car, and is connected to the engine by a steel shaft. It is built up of spruce, has a diameter of 10 ft. 8 in., with a pitch of 11 ft., and turns at the rate of 450 rev. per min. A fixed vertical surface is provided at the rear end of the car to minimize veering, and a horizontal surface attached to the vertical rudder at the rear tends to minimize pitching. A double horizontal surface controlled by a lever and attached to the car in front of the engine, serves to control the vertical motion and also to minimize pitching.

The total lifting power of this airship is 1350 lb., of which 500 lb. is available for passengers, ballast, fuel, &c. At its official trials a speed of 19.61 miles per hour was attained over a measured course, and an endurance run lasting 2 hr., during which 70 per cent. of the maximum speed was maintained. Dirigible No. 1, as this airship has been named, has already served a very important purpose in initiating officers of the Signal Corps in the construction and operation of a dirigible balloon. With the experience now acquired, the United States Government is in a position to proceed with the construction and operation of an airship worthy of comparison with any now in existence, but any efforts in this direc-

tion must await the action of Congress in providing the necessary funds.

In anticipation of taking up the subject of aeronautics on a scale commensurate with its importance, a complete plant has been constructed at the Signal Corps post at Fort Omaha, Nebraska. This plant comprises a steel balloon house 200 ft. long, 84 ft. wide and 75 ft. high; that is, large enough to house a dirigible balloon of the size of the new French Military airship Le Republique. For furnishing hydrogen gas, an electrolytic plant has been installed capable of furnishing 3000 cu. ft. of gas per hour. A gasometer of 50,000 cu. ft. capacity has been provided to store a sufficient supply of gas for emergencies. In connection with the hydrogen plant, is a compressor for charging under pressure the steel tubes in which the gas is transported. A hydraulic pump for testing steel tubes at high pressure is a part of this equipment. A steel wireless telegraph tower 200 ft. high has been completed, and probably will be used in connection with wireless experiments with dirigible balloons.

*(To be continued.)*

## Canadian Opinion Against Bounties.

TORONTO, November 28, 1908.—At the annual meeting of the Dominion Grange, held in Toronto this week, resolutions were passed in favor of tariff reduction and of abandonment of the iron and steel bounties. It was recommended that the tariff be lowered gradually and by a certain definite annual percentage. Satisfaction was expressed that, in spite of the efforts of the Canadian Manufacturers' Association, there had been no increase in the duties during the year. Apparently the fact was overlooked that the dumping duty was applied to tin plate within the year. Previously Canadian makers of this commodity had not the benefit of the dumping duty, the Government taking the ground that the home output of tin plate was not sufficient to supply the home demand. It is contended even now by consumers that the home supply is inadequate in the matter of quantity. The Grange further recommends that any advances on the part of the United States for freer trade relations be met in a friendly spirit. On the subject of bounties and bonuses the Grange puts its views on record in the following words:

> We believe that this practice has a strong tendency to corrupt not only the management and organization of the companies interested, but the political life of the nation. In this regard we would particularly urge that the bounties on iron and steel be discontinued entirely at the end of the term they are granted for, and that no further additions should be made in future to the list of bounty-fed industries. We would also condemn the using of the people's money in the bonusing of an all-red line of fast passenger steamships. We do not believe this project would be of any material advantage to the nation at large.

### Bounties on Imports.

In this country as well as in Great Britain, opponents of the rail dumping business are arguing that the public aiding of that business is contrary to the intention of the law. In the Customs act amendment of last year it is provided as follows:

> Every person who desires to export any article manufactured in Canada which is subject to a bounty from the Government of Canada when for home consumption and not for exportation, including steel blooms and steel billets made in Canada, shall file his written application with the collector at the nearest custom house for permission to export the same. Such application shall be accompanied by the affidavit of a person having a knowledge of the facts, setting forth and describing the articles proposed to be exported and establishing to the satisfaction of the collector that bounty has not been paid and will not be claimed on or in respect of the said described articles, or if bounty has been paid thereon or in respect thereof, that the sum has been refunded to the Government. The collector may then grant his permission for the exportation of the said described articles. If any such articles be laden in any railroad carriage or other vehicle or vessel for the purpose of being exported, without the permission of the collector of customs as aforesaid, the same shall be seized and forfeited.

It is held that the words "any article manufactured in Canada when for home consumption and not for exportation, including steel blooms and steel billets made in Canada," are all inclusive so far as articles subject to bounty are concerned. The substance of the steel blooms and steel billets, it is maintained, acquires no rights or immunities in the finished rail state that it did not have in the bloom or billet state. At all events, it is contended, the framers of this amendment intended that exportation of rails should involve forfeiture of bounties to which the constituent steel in a cruder stage was otherwise entitled. If this view of the intention of the framers of the law is right, it is to be expected that in the next session of Parliament verbal changes to give more accurate expression to that intention will be made in the law. Some years ago, it will be remembered, through looseness of language, the bounty law so overran the intention of Parliament as to provide for a bounty on steel rails. When tested in the courts it was found that the "rolled structural prices" of the act was broad enough to include rails. In the session following the Exchequer Court's decision the law was amended so as to exclude rails. It is thought not improbable that the bounty act may be amended in a purely definitive way to bar the payment of bounties on exported articles or the constituent material in them.

Another class of articles which is regarded as on the same footing as rails is that of agricultural implements. These, it is declared, have in their composition iron and steel in which bounties have been paid. They should therefore, it is held, be used in Canada and not exported, or, if exported, the bounty on the material in them should be handed back to the Government. Sight is apparently lost of the fact that for harvesters, binders, reapers and mowers made in Canada, iron and steel are practically free of duty, as all but 1 per cent. of the duty is refunded. Hence the manufacturers of these articles get their iron and steel at prices that are free of the bounty charge.

It has been stated by the president of the Dominion Iron & Steel Company that the export business of his company is profitable irrespective of the bounties. If so, the fact will count as a formidable argument for the reduction of the rail duty as well as the removal of the bounties. There are hints that the reason for the company's aggressiveness in export markets is the desire to be admitted to the international rail pool. C. A C. J.

## Hardness and Wear of Steel Rails.

In discussing the relative hardness and wear of open hearth and Bessemer rails and of manganese steel rails the *Railroad Age Gazette* says that experience with open hearth rails having as low as 0.04 per cent. phosphorus with low carbon shows that, while these rails are very tough and easily meet the drop test, they do not wear well, especially on curves. It suggests that specifications for open hearth rails should therefore provide for a higher carbon content than that used in Bessemer rail specifications. Experiment has indicated, it is said, that such rails may have 0.8 or 0.9 carbon and yet be used with safety. The desideratum is a rail with such a relation between phosphorus and carbon as will give both toughness and hardness. It should be said, however, that the data on this subject are not sufficient for definite deduction. The position taken by the manufacturers in their conferences last year with the railroad engineers was that present knowledge is not sufficient to warrant such high carbons as are indicated above, and that the railroads should advance cautiously in requirements designed to secure both maximum resistance to wear and minimum liability to breakage from brittleness. As suggested by the *Railroad Age Gazette*, the use of some alloy that would result in the maximum of wearing quality and at the same time the maximum toughness has been considered, but the high cost of such rails has been the chief obstacle. Our contemporary in referring to the necessity of a careful study of the relation between hardness and wear in steel rails describes the well-known methods for measuring hardness as well as some of the apparatus that has been devised for measuring wear. Reference is made to the extraordinary wear shown in the experience of the Boston Elevated Railroad, where low carbon Bessemer rails on an 82-ft. curve were worn out in 44 days, while hard manganese

cast steel rails have been in service over six years on the same curve with a reduction in hight of but 0.46 in. and are still in use.

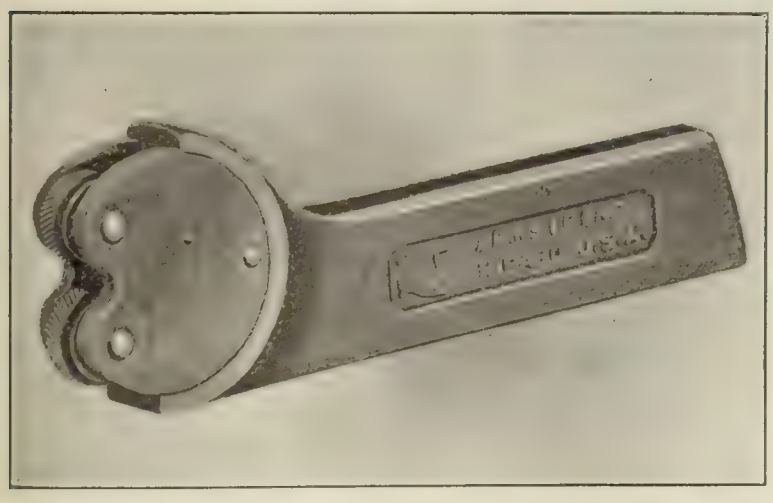
Our contemporary gives the following description of the Pennsylvania Steel Company's machine, recently exhibited at Atlantic City, designed for testing the wearing qualities of rails on sharp curves and for measuring accurately the values of different grades of steel in resisting wear:

A circular track 20 ft. in diameter is composed of three equal lengths of rail, 100-lb. section, connected by standard fastenings, each length of rail being a different grade of steel. Two 33-in. car wheels having independent axles mounted in bearings on a heavy revolving beam are supported by the test rails. A large center pin is used to transmit power to the revolving arm through bevel gearing directly connected to a 50-hp. electric motor. A compression spring on top of the arm exerts a vertical pressure up to 60,000 lb. through each car wheel. Lateral pressure of the wheel flange against the rail up to 15,000 lb. is produced by means of compression springs mounted on the axle of each wheel. The maximum speed is 85 rev. per min., corresponding to about 60 miles per hour. By the use of the machine wear equivalent to one week's service on the Pennsylvania Horse Shoe curve can be obtained in one day. The principal use of the machine has been to show the remarkable wear of very hard manganese steel rolled rails made by the Manard process. These rails are so tough that a 100-lb. section 33 ft. long can be given two complete twists so that the rail head is wrapped around the flange. They will stand repeated drop tests until bent into a V shape without fracture, and their great ductility its indicated by a tensile strength of 150,000 lb. and an elongation of 50 per cent. in 8 in. The tests of the wearing qualities of these very hard and tough rails on the machine above described indicate that a service equal to six times that of ordinary Bessemer rails may be expected.

From the information thus far obtained as to the behavior of open hearth steel rails it is probable that there may be some disappointments due to their rapid wear, especially on curves, and where the carbon content is too low, and the next complaint to be made to the rail maker will relate to soft rails and low service. It is also reasonably certain that open hearth rails containing low phosphorus can be used with safety when they contain as high as 0.9 carbon and that the service obtained from them on sharp curves will be at least double that rendered by much of the low carbon open hearth steel which has been rolled this year. If these conclusions are correct it would seem that the interest of the railroads should not be confined to the mere price of rails per ton, but they should be more concerned in obtaining such intelligent specifications and inspection for open hearth rails as will secure the largest amount of service from a dollar's worth of steel.

## The Armstrong Knurling Tool.

Exclusive of the knurls and pins there are only two pieces in the knurling tool recently brought out by the Armstrong Bros. Tool Company, 104 North Francisco avenue, Chicago. The tool is described as self-centering,



The New Knurling Tool Made by the Armstrong Bros. Company, Chicago.

strong, convenient and efficient, and has an extra large bearing surface to take both the end and the side thrust.

It is regarded as essential to the long life of a knurling tool and uniform work produced by it that the self-centering arrangement shall have as little lost motion as possible. Another necessary point is that the knuckle or joint must have ample bearing to resist the severe strains which are due to end and side thrust. It is in both of these particulars that the tool is considered to be noteworthy. At the same time its general design, quality of material and workmanship are declared to be of the best. The knurls and pins are of tool steel, tempered, and all other parts are drop forged, or are of bar steel hardened.

The No. 1-K size, of which an illustration is given, has a shank ½ x 1⅛ in., and can be furnished with either coarse, medium or fine knurls.

## The Peerless Multiple Spindle Automatic Lathe.

Front and rear views of the multiple spindle automatic lathe, which is being brought out by the Peerless Automatic Machine Company, Cleveland, Ohio, are shown in Figs. 1 and 2. The headstock carrying the spindle head and the bed frame is cast as one piece to secure rigidity. This bed frame rests at three points upon a pan, which catches the cutting lubricant, chips and product, and from it the lubricant is strained and drained into the pedestal which supports the spindle end of the machine and forms a reservoir.

Power is supplied to the stock carrying spindles and the thread cutting spindles by the pulley shown at the left in Fig. 2 through the central power shaft. The operating and regulating cams are driven by the high speed pulley perpendicular to the cam shafts. All means of adjustment are on the outside of the machine where they are readily accessible.

The wire feed adjusting bar carrying the adjusting screw is shown at the left in Fig. 1. Next in order proceeding toward the right are the spindle head locking bolt, with its tension spring and adjusting nut, the adjusting screw and stop screw for the front traverse tool slide, the stock length gauge with the adjusting screw at the right end of the longitudinal tool slide, and the squared end of the driving worm shaft to receive a crank handle, by which the machine may be operated by hand while setting the tool.

The disk next to the bed frame at the right of Fig. 1 carries the cams which regulate the thread cutting spindles. Next to it are the speed regulating dogs which control the slow cutting speeds and the rapid return feeds and other intervening movements. In Fig. 2 the thread cutting spindles are shown in front of the horizontal tool slide with all adjustable parts conveniently placed. The adjusting screw and the stop screw for the rear transverse tool slide and the adjustable operating cam for both transverse tool slides appear near the middle of Fig. 2. Further attention to accessibility is shown by the unobstructed space reserved for the tools to be secured to the longitudinal and transverse tool slides. The oil pump shown to be belt driven is now gear connected to the worm driving shaft.

The spindle head carries five spindles made of crucible steel which run in phosphor-bronze bearings; the front bearings have the standard taper form, with means of compensating for wear. Oil is supplied to the spindle bearings by a double system of lubrication. The oil chambers, *a* and *b*, Fig. 3, between the front and rear bearings are provided with means for filling independent of the glass oilers shown in Figs. 1 and 2, although the oil from these oilers drains into the oil chambers after passing through the bearings and helps to keep them filled.

The stock chucking and feeding mechanism are very similar to those that have now become standard for machines of this class. The adjustment of the stock feed operates through the adjusting bar and the adjusting screw shown in Fig. 1. This adjusting bar introduces a greater or less amount of lost motion between the feeding lever shown at the right of Fig. 2 and the cam roll lever directly to its left, so that the feeding cam need never be removed or adjusted. Since the stock feeding is effected while the cutting tools are operating, no time is lost because of this lost motion.

The locking of the spindle head into position after each partial revolution is effected by a novel and improved locking bolt. Unlike the locking bolts previously used, the accurate positioning of the spindle does not depend upon the nicety of the fit that the cylindrical part

of the locking bolt has in the locking bushing *c*. The tapered end of the locking bolt engages a conical recess divided on the longitudinal axis. One-half of this divided recess is integral with the locking bushing *e;* the other half is formed by the plugs *d* carried by the spindle head and brought successively into juxtaposition with the locking bushing *e* at the end of each partial revolution of the spindle head. It will be seen that the locking bolt will lock the spindle head accurately and effectively even though it should fit quite loosely into the cylindrical part of the locking bushing *e*. It is kept in place by the tension spring and withdrawn by means of the lever and cam shown in Fig. 3.

The intermittent rotation of the spindle head is accomplished by a sprocket wheel integral with the spindle head connected by a chain with a sprocket wheel carried by the cam drum at the extreme right in Fig. 2, which is started and stopped through the agency of a clutch pawl carried by the cam drum and a cam secured to the bed frame to operate the pawl. The operation of this mechanism is clearly shown in Fig. 3. The idle position of the pawl is shown at *f* and the operating position at *g*.

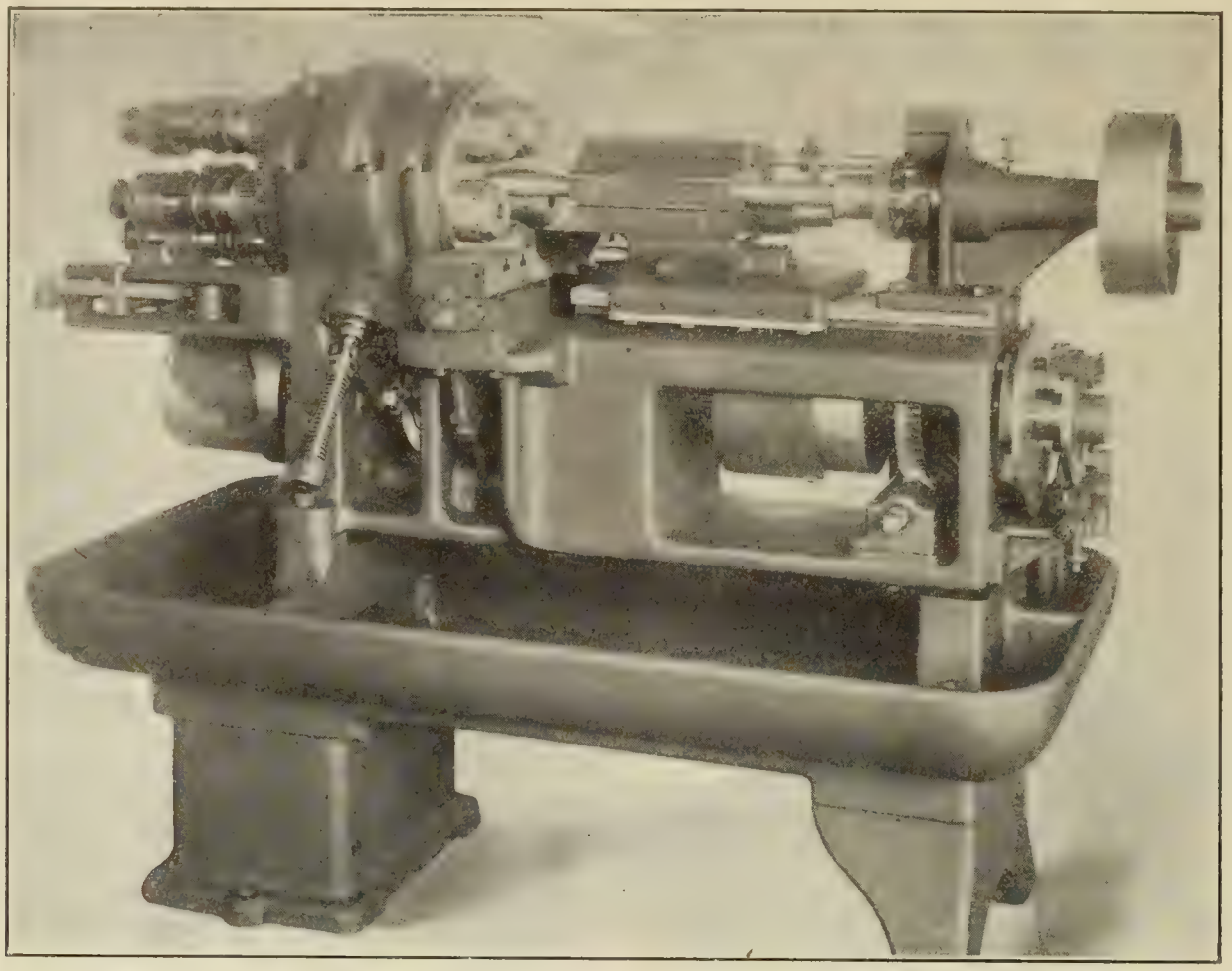


Fig. 1.

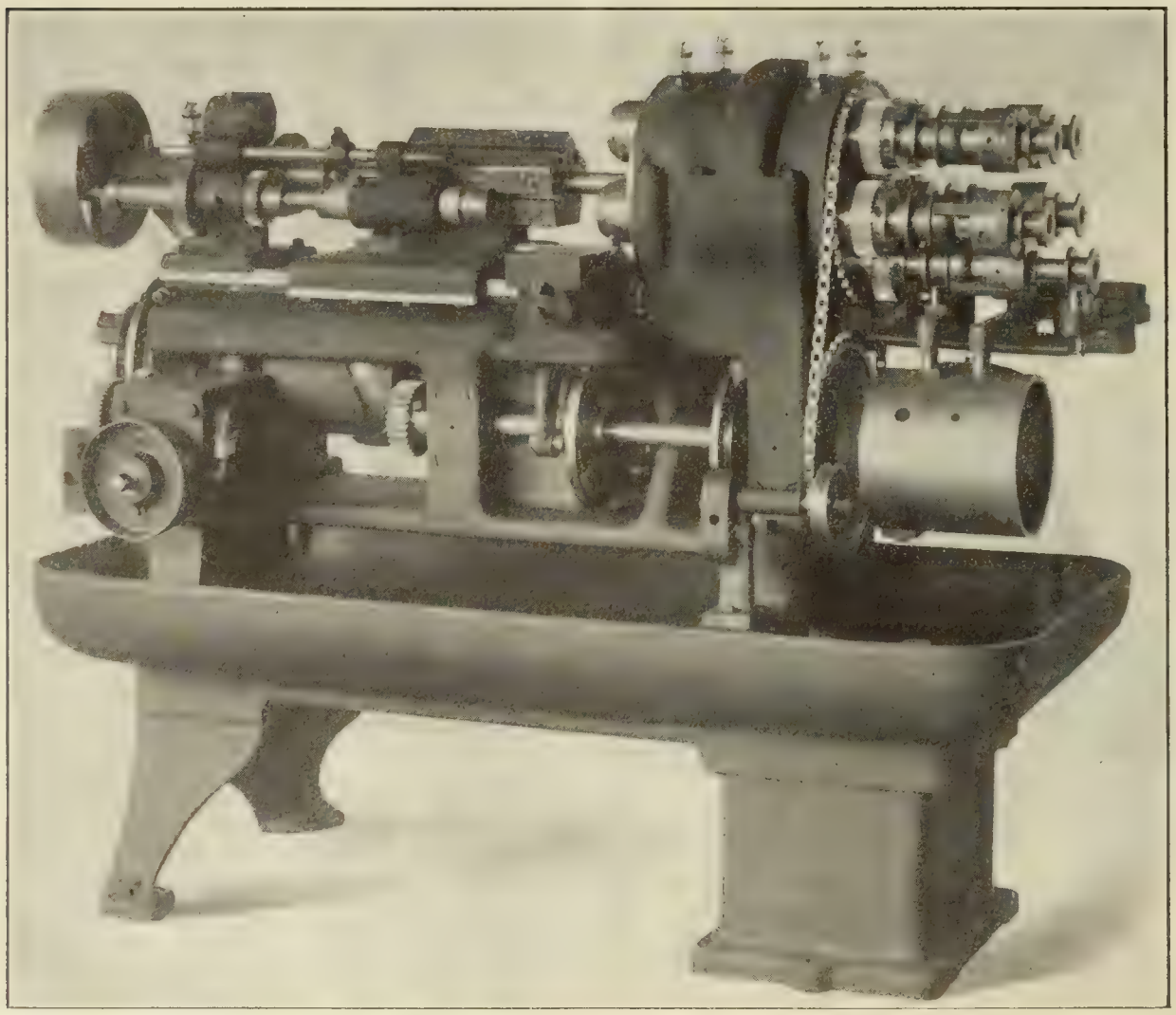


Fig. 2.

The New Multiple Spindle Automatic Lathe Built by the Peerless Automatic Machine Company, Cleveland, Ohio.

This pawl has easy and smooth engaging and disengaging action and locks the sprocket to the cam drum while it travels over the concentric part of cam *h* and through the chain revolves the spindle head.

The transverse tool slides are operated by racks, segment gear levers and the cams carried by the cam disk. The racks are adjusted by the adjusting screws previously referred to. The operation of the longitudinal tool slide is self-explanatory as shown in Figs. 1 and 2, and the method of securing the cutting tools thereto is plainly shown in Fig. 4. One or more tools can be secured to each tool carrying face of the tool slide, and may be adjusted backward or forward to suit requirements. It will be noticed that the familiar form of overhanging box tools, &c., have been dispensed with.

The cutting of threads, either male or female, is accomplished by revolving the threading spindles in the same direction as the stock, but at a slower speed. The threading tools are released or backed off by rotating them in the same direction as the stock, but at a greater speed. This arrangement makes it possible to cut threads at about one-third of the peripheral speed used for the cutting tools, and does not necessitate the stopping and starting of any of the revolving parts.

Facilities for using two threading spindles are provided, although but one is shown in Fig. 2. The second

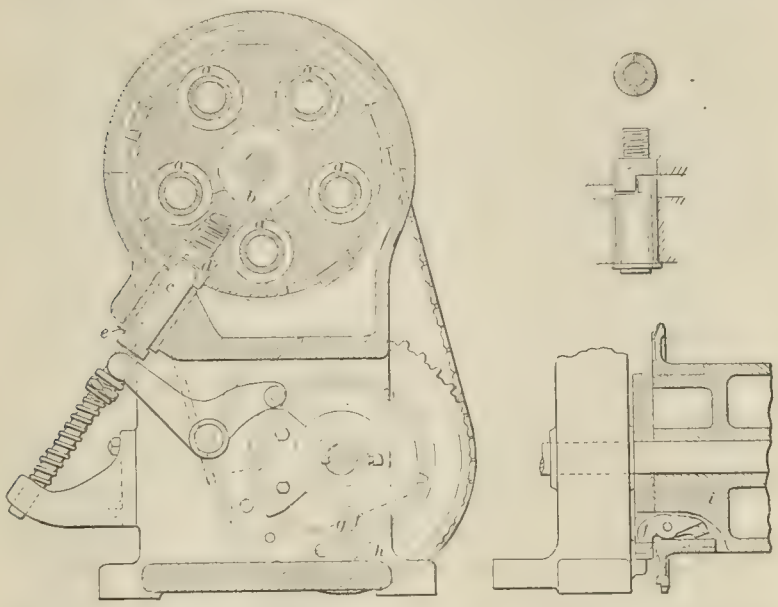


Fig. 3.—Details of the Spindle Head and Locking Mechanism.

or auxiliary threading spindle is placed directly above the one shown and operates in the same manner, so that two dies, two taps, or a tap and a die may be used. Both threading spindles can be independently adjusted and timed to cut any length of thread within the capacity of the machine and are withdrawn from the work without reference to the position of the tool slides.

Change gears which supply 10 different rates of feed to the cutting tools varying from 0.004 to 0.026 in. per revolution of the stock spindle are provided, but the fast

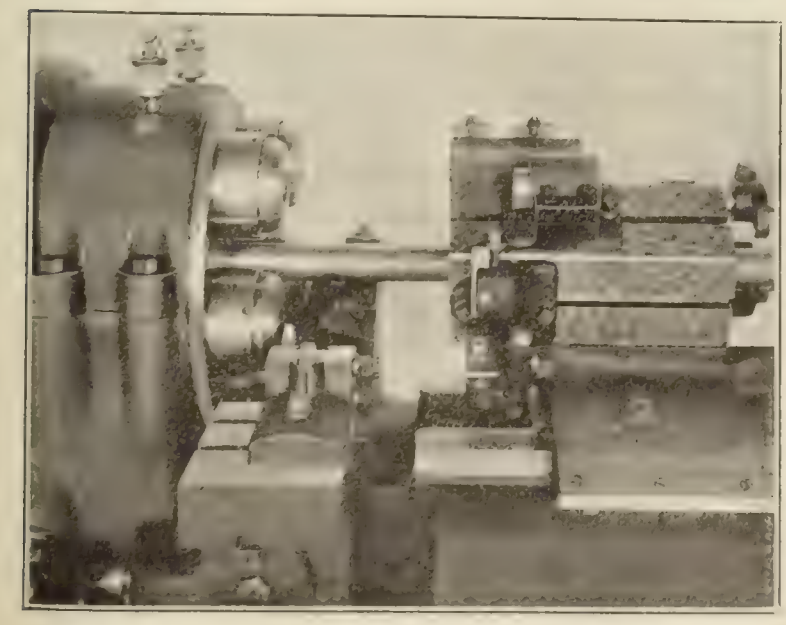


Fig. 4.—The Longitudinal Tool Slide, Showing Manner of Securing the Cutting Tools.



Fig. 5.—Group of Standard Tool Holders.

motion for returning the tools and indexing and locking the spindle head is constant, irrespective of the cutting feeds. The feed can at any time be instantly thrown out of operation and securely locked in this position, so that the machine may be hand operated without danger of having the feed accidentally engaged.

Fig. 5 shows a group of standard tool holders, including a holder for round tools such as drills, countersinks, centering tools, reamers, hollow mills, &c., a circular tool holder, a single rough turner, a compound finishing turner and a forming tool holder. The machine illustrated has a capacity of 1 in. diameter by 5 in. long. Machines of less or greater capacity can be furnished.

## The Inland Steel Company's Bonds.

Eversz & Co., Chicago, having sold $2,000,000 of the bonds to investors, including the largest banks in Chicago, offer the unsold portion of $3,000,000 first mortgage 6 per cent. gold bonds of the Inland Steel Company, Chicago, dated April 1, 1908, maturing serially $150,000 per annum to April 1, 1928. The interest is payable April 1 and October 1. The First Trust & Savings Bank, Chicago, is trustee. A circular issued by the bankers says in substance:

"The bonds are a first and closed lien on all the properties of the company, consisting of iron ore properties on the Mesaba range, Minnesota, blast furnaces, harbor, docks, real estate, steel works, sheet and finishing mills, &c., at Indiana Harbor, Ind., on Lake Michigan, near Chicago, and at Chicago Heights, Ill., representing a cash investment of $7,184,752.

"The net cash and quick assets of the company, in addition to above assets, amount to $2,126,621, the total security under this mortgage, therefore, aggregating $9,311,373. The trust deed securing the mortgage provides that the net cash and quick assets of the company over and above its liabilities, other than the aggregate amount of the bonds outstanding, shall not be less than $1,500,000 until the issue is reduced to $1,500,000, and thereafter never less than the amount of unmatured bonds.

"Surplus earnings from the beginning of operations have been satisfactory and increasing each year—except for the year ending June 30, 1908, that period covering the recent depression, when earnings, even under the adverse conditions then obtaining, were three and one-half times the interest charges. These surplus earnings for the last three years, after payment of all charges, including interest on bonds, as officially reported, were as follows:

"Year ending June 30, 1906, $860,766; in 1906-1907, $984,323; in 1907-1908, $651,842. Net earnings for the current fiscal year, on the basis of earnings reported for the first quarter, will be larger than any previous year. The products of the company, being of a diversified and stable character, earnings are assured, even in periods of greatest business depression, more than sufficient to meet fixed charges and sinking fund requirements."

# THE IRON AGE

Established in 1855.

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We conclude in this issue of *The Iron Age* what is practically a verbatim report of the statements made before the Ways and Means Committee of the House of Representatives by the iron and steel manufacturers. The publication last week on the day after the hearing of a telegraphic report covering eight pages and a half, or about 14,000 words, is a feat in trade journalism never before accomplished in this country. It was possible only by securing a direct Western Union wire, the services of four operators at the receiving end, and by keeping the pages open until midnight. The operations of printing, binding, trimming and mailing had to follow before the "book," as it is often called, was ready to begin its journey to the subscribers of *The Iron Age*.

## "Normal" Cost of Iron and Steel.

To get a basing point is one of the chief difficulties encountered in any discussion of cost and profits of manufacturing iron and steel in the United States. If the particular time at which the reckoning is made finds all the plants in the country working at high pressure, with labor scarce and deliveries of rolling mill products far behind, it is customary to say that the conditions are abnormal; that if times were "normal," tonnage and profits would be scaled down, even though costs might be reduced at the same time. Conversely, in a year like 1904, as demand shrinks and overhead charges per ton run up while market prices of product fall, there comes a serious diminution of profits. Again the conditions are called abnormal, both as regards costs and selling prices. This time "normal" may be taken to mean increased output, higher market prices and better profits, presumably with some increase in cost of raw materials and labor.

In all such comparisons it is assumed that there is a definite cost line to which the mutations of the market are referable and which if it could be found might be known as the country's competitive index number in iron and steel. The history of the iron trade shows, however, that not only are there variables in the general situation from year to year—the mutations in crops, in the supply of money, the production of gold, the supply of confidence, the number of uses for iron and steel, and a score of other things—but that costs vary greatly as between different producers and different sections. The discussions in other years were more voluminous than of late (the lines of the industry being now more settled) as to the most economical situs for the assembling of the raw materials of pig iron manufacture in the United States. But the ground is still traversed whenever an important new plant is built and each time comparisons must be made with the facts, so far as they are available in a general way, relative to the possibilities at conspicuous established plants.

It is the common belief that much more is known by the general public to-day than at any other time about the costs and profits of steel making in the United States, since so many thousands of investors own shares in the steel companies. Yet a study of the statements of these companies shows wide divergence in profits per ton of product. One company manufactures a great variety of products, running through the gradations of profit per ton from the slab or billet as the marketed product, to the planished sheet, drawn tube or fine wire. One owns ore, railroads, vessels, coal mines; another may own ore, but pays land and water freights and buys a part of its coke in the market; a third is dependent in part on the ore market, buys much of its coke and is a considerable buyer of pig iron. One might take an export order and make a profit, while another at the same price would lose dollars on every ton. And even to the so-called integrated concern, supposedly controlling every element of supply, there are fluctuations in wages, in certain of its royalties, in transportation, in efficiency of labor and of railroad service. While there could be no absolute "normal" cost for even such a company, it can be understood that each subsidiary would be entitled to a profit on its separate product, and that only the occasional exigencies of international competition would be regarded as a justification for falling back upon a "fighting cost" derived by the elimination of inter-company profits.

A factor that has never been constant enough to allow of taking its measure is provision for the growth of the industry, for the supercession of plant or processes by better. The demand for money to add to or replace old capacity is almost as insatiate in the steel industry as in that of transportation. The difference has been that the steel companies often do not capitalize these additions, while railroad capitalization mounts higher and higher with each improvement. It may be claimed that these additions of furnaces and mills by the large steel companies really represent undistributed surplus and are not to be regarded at all as a charge against manufacture. It is only necessary to observe what happens to a company which fails to make these lavish provisions for new construction and for minerals, to decide whether they inevitably accompany a successful prosecution of the business as the lines are now drawn in this country.

It is conceivable that a time may come when heavy outlays as a protection for the future may not figure so prominently. As ore and coal lands are more thoroughly taken up there will be less to scramble for, and the steel industry may then reap the reward of the rigor of its present policy. Then, perhaps, the conditions will remain stable long enough to permit some approximation to "normal" cost.

## The Increasing Demand for Heavy Melting Steel Scrap.

The long expected scarcity of scrap as raw material for the basic open hearth steel furnace is just coming to be realized. A much larger increase in scrap consuming capacity is in prospect than has been seen in any equal period in the past, yet a scarcity has already been noticed, due in part to recent increases in consumption and in part to provision being made against the prospective increase in consumption. Heavy melting steel has advanced to the unusual position of commanding a higher

price in the Pittsburgh market than basic pig iron, while the Chicago market for melting steel has risen beyond its usual relation to the Pittsburgh price, which has frequently permitted shipments from Chicago to the western limits of the Pittsburgh District. A great deal of old material can be used either in the open hearth steel furnace or in the iron mill, and so large a proportion of this has of late been diverted to the steel furnace that rolling mill scrap has made an undue advance as compared with selling prices of bar iron, forcing manufacturers to quote an advance in this product in market circumstances which would not usually dictate an advance.

The present scarcity of steel melting scrap may be interpreted as reflecting consumption which is to occur rather than consumption which has lately occurred, if reports are trustworthy as to the accumulations that have been made against the starting of the Gary plant.

Most of the present new erection of basic open hearth steel furnaces is accompanied by the creation of such blast furnace capacity as will leave a large gap between blast furnace and steel ingot capacity, which gap must be filled chiefly by the drawing of scrap from outside sources. In the early part of the expansion in the open hearth industry the gap was filled largely by the shipment of scrap from detached Bessemer steel plants to open hearth works under identical ownership. As long ago as May 22, 1902, we called attention to this modification in practice, whereby some Bessemer steel departments were deprived of scrap from their works which they had previously used to cool their heats, and the closer silicon limits to which their blast furnaces had to run in consequence.

As a rule, the present open hearth furnaces are expected to do 4000 tons of ingots a month. Thus 56 furnaces are being erected at Gary, and the official estimate for the plant is 225,000 tons of ingots a month. Allowing three weeks' idleness in the year, the annual output per furnace would be 45,000 tons, but as a rule six or seven open hearth furnaces are being allotted to one 150,000-ton blast furnace, so that barely 50 per cent. of pig iron is involved in the open hearth charge. At Lorain, six open hearth furnaces are being built, against one blast furnace; at Youngstown, 12 open hearth furnaces, against two blast furnaces; at Duquesne, 18 open hearth furnaces are being built, with two blast furnaces somewhat larger than the others, and rated at 325,000 tons a year between them; but as the Bessemer plant at Duquesne has been abandoned, there is not really as large an excess of steel capacity as in the other instance; while finally at Gary there are 56 open hearth furnaces against eight blast furnaces. Omitting the case of Duquesne altogether, we have here a total of 74 open hearth furnaces, ratable at 45,000 tons per furnace, at 3,330,000 tons of ingots annually, against 11 blast furnaces, ratable at 150,000 tons per furnace, at 1,650,000 tons annually. This is practically 50 per cent. pig iron. It figures out slightly less, and there is in addition the loss of metalloids in the pig iron, and of iron in the slag, but against all these losses there is the gain through ore, so that it is safe to assert that approximately 50 per cent. pig iron is provided.

Through the absorption of the floating supply of new Bessemer steel scrap by previous open hearth erection there is little left to draw upon except the scrap to be made in these new plants, and scrap available in the open market. Scrap will rise to the extent of at least 25 per cent. of the 3,330,000 tons of ingot capacity just figured, there being some scrap made which does not get into the ingot at all. That would provide one-half, leaving some 800,000 to 850,000 tons to come from the outside.

The bulk of requirements being considered is of course at Gary. The eight Gary blast furnaces are rated at 1,200,000 tons annually; the 56 open hearth furnaces, at 225,000 tons monthly, may be taken at somewhat over 2,500,000 tons annually, leaving outside of scrap originating in the plant some 600,000 or 650,000 tons annually to be found from the outside.

It is not to be supposed, of course, that such scrap will be bought to any great extent in the market, as it can be taken out of the market without being bought in the market. Arrangements are sometimes made now in the sale of finished steel, for an exchange of the scrap arising in its use, a convenient arrangement for each party, as it makes each both a producer and a consumer.

The change in conditions will be felt by the detached open hearth steel works, which have been buying scrap freely in the open market at a material spread below pig iron. Such operations not producing pig iron would as a rule buy little pig, and even those producing pig iron have found the purchase of scrap economical even when all prices were so high that there was a handsome profit in the pig iron alone, because the use of scrap increased the steel making capacity. Such operations will have to make their cost computations and determine their scrap percentage on a new basis if, as seems probable, the relatively higher price of scrap will be maintained.

It may be argued that these influences will not be felt so much when the trade is running slack as when all capacities are being taxed, but this would hardly be the case. The new plants will be operated, if only to try them out. Besides this, there is the influence that the Bessemer process is decadent, relative to open hearth, a clear instance of this being the abandonment not so long ago of the Bessemer department at Duquesne to make way for the additional open hearth capacity. It will be interesting to observe this preference for open hearth operations working out in this year's statistics. Last year the open hearth ingot production fell just 1 per cent. short of the Bessemer ingot production. There is every reason to expect that this year it will show a preponderance.

The position of the United States Steel Corporation is undergoing a remarkable shift as regards new and old scrap. Earlier in its history it was bent chiefly upon converting its ore into finished material as rapidly as possible, but with its growth it is able to pay attention to the reworking of scrap, and that on quite a large scale. At times there has been some uncomfortable competition from rerolled and otherwise reworked material. The tendency of these developments is decidedly to clear up this situation.

## British Steel Imports Increase in Hard Times.

The stress of depression has had a noteworthy effect upon the foreign trade of Great Britain in iron and steel. From 4,606,875 gross tons in the first 10 months of 1907, British exports of iron and steel fell to 3,567,876 tons in the same period this year, and values declined from £40,272,351 to £31,786,544, or nearly 22 per cent. Accompanying this important decrease in exports was an increase in imports, the total from January 1 to October 31, this year, being 927,888 gross tons valued at £6,356,742, against 767,117 tons valued at £5,854,276 to October 31, last year. The pig iron exports furnish nearly 60 per cent. of the falling off in tonnage, the pig iron totals being 1,716,776 tons and 1,109,195 tons, respectively. The depression in the United States cut down British pig iron

shipments to this country about 90 per cent., or from 415,667 tons to 46,604 tons. Germany was also less of a customer for British pig iron, the exports to that country falling from 364,189 tons to 250,474 tons. Steel rail exports were practically identical in the two periods, at 356,428 tons and 356,432 tons, respectively.

The increase in imports of iron and steel to Great Britain is due to the selling of low priced semifinished steel, presumably from Germany and the United States, though the statistics do not separate the imports of "steel ingots, blooms, &c.," according to countries. Such imports in the 10 months this year were 446,500 tons, against 251,448 tons to October 31 last year, or an increase of about 80 per cent. The one matter of surprise is that British steel manufacturers, at a time when employment for their works is so urgent a need, should permit so large an influx of foreign steel, unless their costs are much farther above a competitive basis than has been commonly supposed.

## CORRESPONDENCE.

### Vanadium and Its Estimation.

*To the Editor:* I have read with interest the article by George Auchy on Vanadium, which appears in *The Iron Age* of November 12. As my name is mentioned therein, I venture to address you upon the subject. When a contribution is prefaced by its writer with the remark that he has little information on the subject and that he does not feel competent to pass any judgment upon it, intelligent criticism is rendered almost impossible, owing to the difficulty of finding a logical plane for discussion; therefore I must content myself by merely making assertions on one or two of the points raised.

PROOFS ACCUMULATED DURING MANY YEARS.

That there has been a wealth of assertion in connection with vanadium steels is perfectly true; I myself have made many claims for the recognition of their unique attributes; that there is a poverty of proof for any assertions I have personally made, however, I emphatically deny, such proofs having been laboriously accumulated as the result of practical as well as of laboratory observation of the vanadium steels during many years.

The instance which I put forward to the Institute of Mining Engineers was a typical one of many scores observed. Putting matters on the lowest grounds, your contributor will allow that it would be a most dangerous thing for a metallurgist with any shred of reputation to make a sweeping assertion before a body of technical and scientific men were that assertion merely based upon one lonely "snap" instance. But the popularity of vanadium among many steel makers, its daily increasing use by them, and the records of many service trials in widely differing service, serve perhaps better than anything as proofs that the assertions made rest on good foundations.

It is interesting to note that the quoted original experiments of Professor Arnold, which were made many years ago, and which in consideration of the rate at which the science of siderurgy has moved during the last few years may now be regarded as of historical interest, have been amply corroborated by the work of many investigators in showing that for all practical purposes of construction the useful upper limit of the vanadium addition to suitably compounded and properly prepared steel lies, generally speaking, in the neighborhood of 0.25 per cent., though in isolated instances, notably in high speed tool steels, the limit may be increased to 0.35 per cent.

Though I am not in agreement with Dr. Guillet as to the advisability of such a minute addition of vanadium as 0.05 per cent. in all cases, I can readily see that it is not necessarily illogical to deduce the great value of any substance if its use be confined to small doses. Such an analogy, taken from the realms of medicine, has been frequently cited by me. Strychnine, in minute doses, is admittedly a most valuable therapeutic in certain circumstances, but it is unnecessary to dwell upon the physiological effect of large doses.

THE ACTION OF VANADIUM ON STEEL.

My own idea, as I have so often publicly put on record, is that the action of vanadium on steel may be roughly subdivided under three heads:

1. Its undoubted scavenging action (which point I deal with more fully later) and its consequent indirect toughening action.

2. Its possible direct toughening action through its solid solution in ferrite. (Incidentally, it is possible that it is the resistance of this vanadiferous ferrite to the passage of carbides through it that gives to the vanadium steels their extreme readiness to "temper.")

3. Its strengthening action on steel due to the formation of complex carbides, which carbides are comparatively immobile. From this would be inferred the increased static effect of vanadium when it has more pearlite forming elements to work through, which deduction experience has fully borne out.

To insure these processes being properly performed, it will thus be seen that the alloy used must contain enough free vanadium to carry out No. 1, while the vanadium necessary to take care successfully of No. 2 must be either free or combined with an element which also goes into solid solution in ferrite under normal conditions; the balance of the vanadium can exist in any combination pleased, though naturally it is safer to have it in a free state or merely alloyed. Thus it will be seen that the quality of vanadium alloy used is by no means a factor to be neglected when consistent results are desired.

The question of the "possibility" of oxygen in the bath merely calls for the passing remark that, unfortunately, the problems of steel metallurgy do not confine themselves to simple arithmetic, the questions of equilibrium and of reversible reactions in certain zones of temperament confronting the investigator at every turn.

THE SCAVENGING ACTION OF VANADIUM.

It is suggested that titanium would be a better deoxidizer than vanadium, as the former is a denitrogenizer in addition. But it is claimed for vanadium that it also removes nitrogen. It is true that to date our proofs of this are more or less negative, being made up of the following observations:

1. That so far well made vanadium steels have never been found to contain any nitrogen.

2. That vanadium is known as one of the elements which form stable nitrides.

3. That metallic vanadium unites avidly with nitrogen at a high heat.

It is a moot point whether nitrogen in steel exists as nitride of iron or simply in solution; even in the former case the compound is of very feeble stability. But such evidence is certainly far from unsatisfactory proof. Furthermore, vanadium has the great advantage over titanium that the products of its scavenging are very fusible and easily slagged away, while in the latter case they are very refractory. And last, when scavenging is complete, we have the all important fact that vanadium begins another stage of useful work, while titanium has reached its limits.

Under the most favorable conditions, when the addition has been made with most refined care, 0.05 per cent. of vanadium (reckoned on the steel) has been required for scavenging; under carefully watched open hearth conditions, 0.07 to 0.08 per cent. would be a nearer estimate; while 0.01 per cent. is a common requirement even in open hearth steels which have been well deoxidized by the ordinary means. From these figures it would appear that something more than oxygen is purged away.

SHOCK TESTS.

Your contributor lays great stress upon the value of a series of shock tests. Much work to my own knowledge has been done in this direction. In fact, with Capt. H. Riall Sankey, I contributed to a portion of it in my observations on certain correlations of microstructure and impact resistance. It is perhaps unfortunate that much work, done in works' laboratories, is not published,

but the fact is easily understandable while our present code of works ethics prevails. No regular concurrence of the ability of metal to resist (1) shock, and (2) repetition of stress or fatigue has been observed, however.

It will universally be admitted that the great majority of service failures are of the progressive or detail fracture type, and are produced through molecular disintegration rather than through any want of static strength, ductility, or even shock resisting power in the original metal. It is allowed (1) that all metals deteriorate more or less under the action of repeated strains and stresses even though such strains and stresses be comparatively small, (2) that the rate of deterioration advances rapidly as the strains or stresses individually approach the elastic limit of the metal stressed, and (3) that the rate of fundamental deterioration is different in different steels.

As No. 3 represents our true factor of safety consideration, I respectfully submit that No. 2 should be eliminated in testing by always making a fatigue test just above the elastic limit—*i. e.*, making use of the alternating impact test rather than of the rotary test usually practiced—in which latter form of test the true fact to be ascertained is almost invariably obscured, hopelessly due to nonsimilarity of No. 2 conditions in comparative tests.

In resisting fatigue I assert that the proof of thousands of laboratory tests, backed up by countless service demonstrations, have proved boyond all doubt the preeminence of the vanadium steels as fatigue resisters.

DISCORDANCE ACCOUNTED FOR.

It is alleged that much of the published work concerning the effect of vanadium on steel is contradictory. Such discordance may be accounted for at least partially by the following facts:

1. The vanadium must and will do its scavenging first; if therefore the metal to be scavenged is very "dirty," as this scavenging is done at the expense of vanadium due to its simultaneous removal to slag, the addition of an equal amount of vanadium to two steels does not necessarily imply that these steels, unless they be equally well made, contain the same amount of vanadium. But some vanadium is required to remain dissolved in or admixed with the different components of the steel in order to exert its maximum effect.

2. That two different alloys prepared in different ways may possibly act differently owing to their different constitutional compositions, as previously explained.

3. That at the calescence and recalescence points great rearrangements of static and dynamic qualifications are observed, especially in vanadium steels. Thus, as many of the recorded results are set down without any reference whatever to the heat at which the bar has been finished, or the temperature at which it has been annealed, if annealed tests are recorded, the results are necessarily contradictory, as most recorded tests are purely of a static nature.

4. The matter of personal equation must not be entirely neglected, both on the part of the steel manufacturer and of the steel fabricator, and possibly to a small extent even of the test manipulator.

Your contributor bemoans the fact that thousands of dollars are annually spent on the determination of sulphur and phosphorous in steel without any attempt having been made, as far as he knows, to fix once and for all the undesirable maximum in each case. Such a statement is scarcely complimentary to the circulation attained by the copious investigations of Stead, Arnold, Ridsdale, Harbord, and many others in this direction. I might be permitted to point out that the fixation of any particular figure for all circumstances is, in my opinion, absolutely impossible, for the respective percentages of the elements must naturally be taken with regard not only to the attributes of the particular quality of the steel desired but also with what, in my opinion, has an all-important bearing on the subject, and that is their mutual coexistence with certain other elements. For instance, the amount of sulphur required to make steel red short must be enormously influenced by the quantity present, or absent, of manganese, oxygen and copper, while the permissible amount of sulphur is affected largely by the silicon content, arsenic content and carbon content of the steel.

With regard to the determination of vanadium in the laboratory, I cannot see the necessity of many of the laboratory methods that have been proposed by some writers. For myself, I have made use of the very obvious method which is to be founded upon the selective oxidizing action of permanganate and bichromate on solutions of chromium and vanadium salts which have been reduced by such a reagent as ferrous sulphate, which reagent is constant and certain in its action. This method is in very general use in the laboratories of the United States and of Europe to-day; in a few quarters complaints have been made that the "end point" of the one reaction is not sufficiently marked, but its exact recognition merely depends upon a small amount of observation in practice, such practice being easily attained by means of solutions of vanadium free steels to which synthetic amounts of vanadium solutions have been added.

There can be no possible question but that the commercial application of the element vanadium has marked a new epoch in steel manufacture.

J. KENT SMITH,
Chief Metallurgist, American Vanadium Company.
PITTSBURGH, November 18, 1908.

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*To the Editor:* A criticism I beg to make of Mr. Smith's notice of my remarks on vanadium is that his communication leaves the subject just about where it was before. Instead of shooting at the mark I set up, he keeps resolutely banging away at the same old target, and pays no attention whatever to my target. In other words, he entirely disregards my plaintive appeal for more and stronger practical proofs, and goes on repeating the arguments and assertions that he and others have already made in the *Iron Trade Review* and elsewhere, and which we are by this time pretty familiar with. I have nothing against vanadium. On the contrary, when I see Mr. Smith so sure and so confident that vanadium is the best thing for steel that ever was, I am disposed to feel profoundly impressed, and think there must surely be something in it. But I must still ask, as I asked in my first remarks, Why do the vanadiumites display such an insuperable aversion to producing proofs? To be sure, Mr. Smith darkly intimates that he has lots of them on hand besides the one he quotes in the American Institute of Mining Engineers, if only he wanted to give them. Why this modest diffidence in quoting tests? It is unlike Mr. Smith's treatment of the subject in other respects. In conclusion, I must strongly insist that I am not taking the stand that Mr. Smith is wrong in his estimate of vanadium. As I explained in my article, I have no opportunity to investigate this matter for myself and am therefore not competent to form an opinion one way or the other. I am simply asking others to throw a little stronger illumination on the subject than they have so far done. Mr. Smith says it is hard to argue with a self-confessed ignoramus, and then he proceeds to argue, the same argument we have heard before. We are not hungering for argument. We have had enough. We want facts. And we will not be thrown into confusion if we get them. For we are not taking any stand or making any fight against vanadium whatever. GEORGE AUCHY.

PHILADELPHIA, November 24, 1908.

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**The Clinton Ores of New York State.**

*To the Editor:* The review of the report on "Iron Ores of the Clinton Formation in New York State," published in *The Iron Age* for November 12, has just been called to my attention. As one of the writers of the report, on whom the responsibility rests for the accuracy of its information, I ask the privilege of entering a protest to the unfair and evidently prejudiced treatment which it has received. The fact that the review appears in your columns without signature, thus stamping it as an expression of editorial opinion, ought to assure some consideration, at least for a reply to the criticisms.

To state the matter at issue briefly, the review attacks the conclusions of the report on two main points: the availability of the Clinton ores for furnace uses and the estimates of the writers in regard to the tonnage repre-

sented in the deposits. In the matter of the availability of the ores, the reviewer has this to say:

> The thinness of the seams, the relatively high expense of mining and the low grade of the ore clearly preclude an extensive use of the Clinton hematites under present conditions of the iron trade or conditions likely to exist in this generation or the next. The fact that furnace after furnace located on the Clinton formation passed out of existence in the last century, while centers of iron making have been built up elsewhere and have grown steadily greater, tells the story.

Is it safe to draw upon the past of a rapidly changing industry like that of iron for data with which to forecast the future? It is scarcely a decade since similar opinions were current regarding the iron mines of the Adirondacks. The entire industry which had existed there for a century was suspended, mining plants and furnaces were dismantled, railroads torn up and the mining communities practically deserted—a result of the opening of the rich deposits in the Mesaba District. Yet there are now two furnaces in the region supplied by the local mines and more ore is being produced than ever before, with an assured activity for a long time to come.

COMPARISON WITH OTHER ORES.

The Clinton ores cannot certainly be mined as cheaply in New York as in Alabama, but there is no competition existing or likely to exist between the two districts. The local ores are finding and will find their application in New York and Pennsylvania, where the prices are practically fixed by the quotations for Lake Superior hematites. At a mining cost of from $1.25 to $1.75 a ton, which is a fair average in New York, the ores are a relatively cheap material for furnaces within easy shipping distance as a brief comparison will show. In 1907 the base prices for Lake Superior non-Bessemer ores with 51.5 per cent. iron were $4 to $4.20 a ton delivered at lower lake ports. This is about 8 cents a unit for ores containing in most cases an excess of silica as well as a considerable percentage of alumina. The Clinton hematites, with an average of say 35 to 40 per cent. iron and 10 to 15 per cent. of fluxing ingredients, can be mined and placed on the cars for from 4 to 5 cents per unit of iron. Surely the advantage, if anywhere, is on the side of the Clinton ores. The difference between an ore of 51.5 per cent. iron and no flux and an ore of 40 per cent. iron with 10 per cent. flux, for furnace uses, is not of paramount importance considering the contrast in regard to costs.

That the writers of the report are not alone in sharing the hopeful view of the situation with regard to these ores is amply witnessed by the recent developments which have taken place along the Clinton belt. Within the last year or so over 2000 acres of ore lands in this region have been acquired by option or purchase by individuals and companies for the purpose of active mining. Moreover, systematic operations have been carried on continuously by the Furnaceville Iron Company for the last 25 years, and it is hardly credible that a company of its reputation for able management is mining at a loss, seeing that it has very recently added to its properties. These facts assuredly do justify some promise for the future importance of the district.

DEPOSITS OF RICH LAKE SUPERIOR ORE DEPLETED.

Notwithstanding the inexhaustible resources of the Lake Superior ranges, of which the writer is well aware, it will be generally admitted, I believe, that the very rich ores, which were the cause of the closing down of the mines in New York, New Jersey and other Eastern States in the last decade, have been rapidly depleted, and that the average grade of the shipments from those ranges is more likely to show a further falling off, though perhaps not to the same extent as in the past few years, than to remain at the present standard.

As to the estimate of 600,000,000 tons, to which the reviewer takes exception, it seems only fair that you should give the writers of the report who made a thorough investigation of every part of the district, some credit for knowledge in the matter. This estimate is not based, as the reviewer intimates, upon the results obtained from eight holes 10 miles apart, which, in fact, were put down simply to test the intervals between the outcrops and the continuity of the ore on the dip, but upon a large amount of data, including field observations in tracing the outcrop of the ore beds, records of previous drill holes and test pits and drilling of the companies operative at the time. That this estimate is exaggerated or is "bound to excite expectations that will be disappointed," your reviewer perhaps may be qualified to pronounce, but if so, he should have indicated a few of the data upon which his judgment is based rather than indulge in seemingly gratuitous criticism. The opinions of competent mining men who have examined the district with care have been in conformity with this estimate and until evidence of its error is forthcoming, of which I can find none in the review, there is no apparent reason for qualifying or changing it.

If the writers of the report have committed errors of fact or of judgment they will cheerfully acknowledge them, but until further information is given by your reviewer they can hardly be expected to accept his bald statements as final.

D. H. NEWLAND,
Assistant State Geologist.

ALBANY, N. Y., November 17, 1908.

[The data on which to base the estimate of 600,000,000 tons are still unsupplied. This estimate, too, is said to be "conservative," which implies that the method of computation adopted, of which nothing is given in the report, showed a total actually exceeding 600,000,000 tons. The official letters transmiting the report, moreover, say that it "conclusively indicates that in the region of central New York there exists a commercial asset in iron of great magnitude and vast importance to the public of this State," and, further, that "if this estimate is warranted New York might yet easily become the leading iron State in the Union." (A State with no metallurgical fuel of its own and with a long haul from coke districts to its Clinton ore field!) We search in vain for the foundation of these large claims. The point made in *The Iron Age* was that the Clinton ores in New York have long been known for what they are worth. With that knowledge, so much of the New York iron industry as was based on these ores dwindled to small proportions before the Mesaba range even became a factor. The very fact that these ores have been mined for three-quarters of a century, and for the past 25 years by the one company named, and from all openings have made so small a contribution to the total iron ore production of the country—an average of 75,000 tons a year, or fifteen-one-hundredths of 1 per cent. for several years past, in a period in which at times there has been well nigh an ore famine—is sufficient indication of their limitations. The ore found in the eight test holes put down in 120 miles was generally of lower grade, in fact, than that taken from the few well-known surface workings to which the really serviceable mining information of the report relates.

The comparison made above with Lake Superior ores on the basis of price per unit of metallic iron is quite misleading. Furnacemen know that a 40 per cent. ore may be dear at half the unit price of a 60 per cent. ore. The excess coke and flux required for the leaner ore and the higher cost of labor, power, furnace linings and fixed charges per ton of pig iron, make the comparison cited in the above communication only half the story. Moreover, Lake Superior non-Bessemer ores do not contain "in most cases an excess of silica." Most Mesaba ores are low in silica and the lower priced silicious ores of a few properties on other ranges are shipped to supply the deficiency.

The admitted mining cost of the Clinton ores of New York is high, and the report grants that this may go to $2 as lower depths are reached. It may even go higher, if the costs of surface mining are correctly given. This is too high a cost for any extensive present or early future use of an ore of which from 2 2-3 to 3 tons is required for a ton of pig iron, as against 1¾ to 2 tons of Lake Superior non-Bessemer ores. The high price of lake ores in the past few years is no criterion for the average of a term of years. There is no guaranty that lean years will not bring a substantial decline in ore values.

Admirable as is the work of the New York State Geologist's office on the geology of the Clinton formation, so far as it has been investigated, and on the structure and origin of these ores, it will hardly be claimed that a

$5000 State appropriation would go far toward determining with an approximation to accuracy the amount and character of ore in a stretch of 120 miles by any methods approved by the practice so long in vogue in the Lake Superior District.—EDITOR.]

# Gayley's Invention of the Dry Blast.*

BY R. W. RAYMOND, NEW YORK.

The immense commercial value of the Gayley dry blast process has been established beyond controversy. The testimonial of practical blast furnace managers, on both sides of the Atlantic, agrees that it reduces the cost of pig iron about $1 per ton; but from the same testimony it appears that this direct economy does not by any means cover its commercial advantages; in fact, that under conditions frequently encountered in practice it presents other benefits, of even greater immediate financial importance. To this point I shall recur in a later part of the present paper.

The history of the reception given to this invention, especially on the other side of the Atlantic, has repeated an experience familiar to American engineers. First, the reports of our practice were rejected as theoretically impossible, according to generally accepted notions and formulas; then the figures were reluctantly accepted; and finally the attempt has been made to explain theoretically how they could have been obtained. As to the Gayley dry blast, we Americans have been for several years in the last stage of this discussion, and the rest of the professional world is rapidly coming to it.

Meanwhile, the remark has been repeatedly made that, whatever Mr. Gayley's process may turn out to be worth, it was not an invention on his part, but simply the energetic and persevering execution of a procedure already proposed by others. This question I wish to discuss first in the present paper—What did Mr. Gayley invent?

### The Nature of the Invention.

Realizing that this is not the place for a detailed argument on an issue of patent law, I shall not undertake to quote and criticise the publications prior to Mr. Gayley's first patents. It may be admitted, without such critical analysis, that the possible advantages of removing moisture from the air forced into an iron blast furnace were recognized and talked about 100 years ago, and again 50 years ago; that methods and apparatus for cooling air (and incidentally precipitating moisture from it) were known before Mr. Gayley's invention; and that, in one case at least, a system of cooling the blast for a converter had been actually patented. All these prior prophecies and proposals might be shown in detail to be impracticable, defective or visionary; but it is not my present purpose to discuss them. The fact remains that after they had all died out to the last echo, and after the object they sought had been pronounced by high scientific authorities, with the general consent of technical experts, economically unattainable, Mr. Gayley went ahead and did the thing.

This alone might not be conclusive as to his claims, since mere energy and perseverance, however meritorious, do not constitute invention. But this is not all. The significant fact must be added that, after beginning, with all the light that previous investigation and invention could give him, his attempt to carry out the "well-known" operation, Mr. Gayley spent six years in costly experiments before he found out how to do it. This certainly raises a strong presumption that, during those six years, Mr. Gayley discovered something not previously known; and it is that discovery which I wish to define.

All previous plans or suggestions for removing moisture from the blast by reducing its temperature have two features in common:

1. Following the analogy furnished by the natural precipitation of dew, they assume that moisture can be effectively removed from the blast in proportion to the reduction of its temperature to successively lower dew points.

2. They assume that this operation would be metallurgically advantageous in proportion to the extent to which moisture was thus removed. Considering the objectionable effect of such moisture to be a direct function of its amount, they all infer that removing part of the moisture would to that extent remove part of the evil, and that the benefit thus realized would be positive, even if it were but partial.

The first of these assumptions is based upon an incomplete conception of the analogy of nature. Closer observation should have shown these theoretical inventors that the lowering of the temperature of the atmosphere below its dew point does not produce the deposition of dew, except in a quiet atmosphere, because wind prevents the fall of dew and drives it away as fog. Moreover, all the inventions for taking moisture out of air by cooling it deal with bodies of air practically at rest. Nobody before Mr. Gayley had attacked the problem of taking the moisture out of a hurricane in that way; and everybody who had talked, however vaguely, of doing something of the kind with the blast for a furnace had overlooked the circumstance that simply segregating the moisture, by such means, as a mist, and then letting the mist be blown into the furnace, would secure no metallurgical benefit whatever.

### What Mr. Gayley Discovered.

By years of patient experiment Mr. Gayley discovered, and was the first to declare, that if the reduction of temperature were carried to or below the freezing point of water, the ice or snow thus formed could be precipitated as well as segregated; that (with proper proportions of apparatus) it could be practically caught and held, so as to permit a blast free from suspended mist or fog to go forward into the furnace. The amount of aqueous vapor still held in the air would depend, of course, upon its temperature. There would be less of it at 10 degrees below freezing point than at that point. But this small difference has little practical significance. The main point is, that unless the moisture be not only segregated by cooling, but actually solidified, its approximately complete deposition from a rapidly moving current cannot be effected. Practically, therefore, the effect of going below the freezing point is to make sure that that point has been effectively reached in all parts of the current.

With regard to the second assumption above stated, it follows from what has been said already that no reliable metallurgical advantage can be secured by cooling the blast to any temperature short of the freezing point. For under such circumstances, not only might moisture thus segregated be carried onward as mist, but the possible precipitation of a part of it as rain, en route, would introduce a new and serious evil—the evil of uncertainty. This point deserves special discussion.

### Certainty a Necessary Element of an Art.

The significance of certainty as a necessary element of any real industrial art has been often overlooked. To such loose logic we owe much fascinating but misleading rhetorical celebration of the "lost arts" of the ancients. In spite of the eloquence with which these "lost arts" have been extolled by orators and amateurs, I have been brought by much patient study to the conviction that (as a general rule, at least) no real arts have been lost. For an art is a process which arrives with reasonable certainty, by the intelligent use of definite means, at a desired and foreseen result. This proposition may be made clearer by illustrations. For instance:

Certain ancient tribes are said to have heated iron ore and wood or charcoal together in rude hearths, with the aid of the wind blowing across a mountain top, or of a primitive bellows, supplying an artificial wind, producing thus a half fused conglomerate, out of which could be selected pieces of true steel—indeed, of tool steel or razor steel—of exceptionally high quality. But the assertion that these ancient experimenters had the art of making steel is not justified by any such stories, however authentic. To combine blindly the materials and forces furnished by nature, and then to overhaul the result, seeking for fortunately valuable products, is not to practice an art. Such vague experimenting may

* A paper read at the meeting of the American Institute of Mining Engineers, at Chattanooga, Tenn., October 2, 1908.

be the beginning, out of which, with greater knowledge and the growth of conscious skill, an art may come; but an art it is not. For an art demands the intelligent use of definite means for a definite end.

On the other hand, it is not easy to say at what point a primitive and empirical procedure attains the rank of an art; and it is not necessary for my present purpose to fix that point. The much more important proposition which I wish to emphasize is this—that every industrial process involves the two elements of ignorant dependence upon natural conditions and intelligent control of such conditions, and that the degree of perfection attained by a given art is the degree in which the former element has been superseded by the latter. In practice we try to make a specified product by a given process; yet often, in spite of all our scientific or traditional precautions, a part of our output fails to meet the specifications imposed upon us, and must be rejected; so that, in a general way, it is fair to say that the perfection of an art is measured in inverse ratio to the proportion of such "rejections."

### Chemical Analysis Has Revolutionized Furnace Practice.

The progress of our metallurgical arts toward perfection in this respect has been largely due to the exact determination of the composition of our raw materials. We can all remember when American iron and steel works began to employ chemists of their own, and to determine by chemical analysis not only the character of their products, but also the nature of their ores and fluxes. The result has been a revolutionary transformation of our blast furnace practice. The old "founder," who diagnosed his slag and dosed his furnace accordingly, has disappeared. The superstitious reliance upon this or that brand of ore as a material for this or that brand of iron has gone with him. The chemist dictates the charges and tests the product.

Yet, with all this increase of analytical control, the blast furnace has continued to be, as a great authority once described it, at once the crudest and the most delicate of metallurgical apparatus, subject to inexplicable irregularities, and seemingly obeying whims of its own, beyond the provision or regulation of the most scientific manager.

One reason (and, in my judgment, the chief reason) is that, while we have analyzed ores, fuels and fluxes to the second or third place of decimals, we have practically ignored the composition of the blast which goes into the furnace, although this material constitutes more than half the total weight of the materials charged. This defect in our control of the furnace process has not escaped notice. The effect of varying moisture in the blast has been recognized for 100 years past, especially as between summer and winter, and furnace managers have adjusted burden and blast in a rude way to meet the conditions thus created. But I do not think that the significance of diurnal and even hourly variations of the moisture in the blast was ever fully recognized until Mr. Gayley called attention to it. At all events, he was the first to propose a practical remedy for the evils resulting from such frequent changes.

The nature of these evils deserves here a preliminary word, especially because it affects profoundly the validity of all our theoretical calculations of heat economy, &c.

### The Influence of Moisture in the Blast.

The influence of moisture in the blast may be summarized, with sufficient accuracy for my present purpose, as consisting of two elements: (1) The effect of a useless constituent, diluting the effective oxygen of the air and absorbing heat in acquiring the temperature of other materials, and (2) the effect of a constituent which, by its dissociation, absorbs heat in the hearth (where heat is most needed), and either, by the recombination of its elements, restores that heat in another part of the furnace (where it is neither needed nor desired), or else, through incomplete recombination (evidenced by the presence of free hydrogen in the furnace gas), fails to restore a part of the heat it has absorbed.

We are accustomed to determine the economy of the blast furnace process by means of thermo-chemical equations and heat balances, in which we take account of the composition, temperature, specific heat, heat of combination or separation, &c., of the materials entering the furnace, and the composition and temperature of the materials escaping from it. With due allowance for the incidental loss of heat by conduction and radiation, this method should be accurate, if the data upon which it rests are accurately determined. That it fails to give us a perfect criterion of our practice is due, in my judgment, to the circumstances that it is necessarily based on averages, and assumes these averages to represent uniform conditions; such and such a quantity, pressure and temperature of blast, composition of ore and flux, and quantity and grade of pig iron produced. These data are usually averaged from considerable periods; in fact, the longer the period taken, the stronger the assumption of the trustworthy character of the calculation—an excellent rule for most purposes, since averages eliminate incidental variations. But when incidental variations are directly influential upon technical and commercial economy, it is not to be hastily assumed that they can counteract one another, so that the average result is equivalent to that of uniform conditions. Suppose, for instance, that a certain temporary change in one factor of the process would have an injurious technical or economical effect, and that a subsequent equal change in the contrary direction would likewise have an injurious effect. Evidently the net result would not be fairly represented by calculations based upon the average conditions of the period embracing both changes, and upon the assumption that they canceled and neutralized each other.

### The "Heat Balance" of the Blast Furnace.

That this supposed case is not imaginary I shall try to show. But first I would point out another defect in our usual method of stating the "heat balance" of the blast furnace. Our estimates of the utilization and the waste of heat may be practically fair enough, so far as the heat requirements of reduction and fusion, and the loss of heat in slag and gases are concerned; but they are seldom based on accurate data as to the grade of the pig iron actually produced. At least, so far as I now recall, the highest degree of accuracy in that respect does not go beyond a recognition of the general distinction between different grades, from foundry to white iron, or of the special heat requirements of pig iron of peculiar chemical composition (as to silicon, sulphur, manganese, &c.).

The statement that a given furnace is "running on" this or that grade of iron, and the use in calculation of the figures appropriate to that grade, seems to be the best that has been achieved in this regard. But a furnace "running on" a particular kind or grade of iron not only may, but in present practice invariably does, produce more or less iron of other grades (sometimes colloquially called "off iron"), the amount of which, sometimes even exceeding 50 per cent. of the total product, may seriously affect the value of our technical calculations of heat economy, if these do not include it as a factor. I offer this suggestion as a partial explanation of the fact that such theoretical calculations do not always furnish a safe criterion of alleged or possible technical economies. The method is scientifically sound, but it is applied to data too roughly determined for such precise mathematical discussion. Many of us have heard of the distinguished engineer, of whom it was said that in "duty trials" of engines he "would carry out to the third decimal place the determination of the weight of the ashes, while he guessed at the amount of coal shoveled into the fireplace." Possibly some such inconsistency may explain the hasty conclusions of some foreign experts that the reported technical economy of Mr. Gayley's process was "simply impossible."

### The Commercial Economy o the Process.

As regards commercial economy, on the other hand, there is no room for doubt or contradiction. If a blast furnace is "running on" (*i.e.*, managed with the purpose of producing) a particular kind of pig iron, and if Mr. Gayley's process will deliver it altogether, or to an unprecedented degree, from the risk of producing incidentally another kind, not called for, and probably not de-

sired or not readily salable at a profit, the commercial value of this insurance is beyond measurement by any technical formula that has been, or could be, constructed. The case presented in Mr. Cook's paper on "Experience with the Gayley Dry Blast at the Warwick Furnaces,"* furnishes a striking illustration of this proposition.

As already observed, the testimony from iron works both in the United States and abroad agrees in declaring that the Gayley process reduces the cost of pig iron about $1 per ton; but this saving, though important, is trivial, compared with the commercial advantage of a more effective control of the operation and product of the furnace. To state the case roughly, the Warwick Iron & Steel Company was caught, with innumerable others, in the financial revulsion of 1907, which stopped for a time the market for pig iron. The company had a profitable contract with solvent customers for iron of a special grade; but the old and almost dilapidated furnace which it had kept in blast for the purposes of that contract was running so irregularly that only half—or less—of its product could be delivered under the contract, and the rest would have to be stored as not immediately salable, and, indeed, as never likely to be salable at a price covering the special expenses incurred for the purpose of producing the special, and more costly, grade of product for which the furnace had been burdened and operated.

Under these circumstances, the interest on the capital represented by the "off iron" would have exceeded the profits on the proportion of special iron delivered under the specifications of the contract; and a prudent manager would have been obliged to accept the unwelcome alternative (adopted, in fact, by most of our American merchant furnaces) of sacrificing his pending contract, blowing out his furnace, and submitting to the loss in general expenses, interest, &c., and the even greater damage caused by the scattering of skilled and trusted workmen and the inability to take immediate advantage of a general revival of business, or of a sudden special opportunity for a local resumption of work. These disastrous effects of a suspension of operations are, as I need scarcely say, those most dreaded by technical managers, since, besides their direct financial results, they involve the immeasurable anxiety and responsibility of efficient reorganization.

Fortunately for the Warwick Company it had just completed the installation of an expensive plant for the Gayley process; and the operation of this plant, under all the disadvantages of new and untried apparatus, inexperience of both manager and workmen, and dilapidated condition of the furnace then in blast, enabled the company to raise the proportion of its immediately and profitably marketable product from below 50 to above 80 per cent.; to fill its pending contract; and to realize, instead of industrial demoralization and financial loss, a substantial profit from continued operations. Indeed, it is no secret that, through the total gains of this campaign, the entire cost of the installaion of the Gayley system, including the sum paid for the patent right, was repaid in a few months, though the certified saving of $1 per ton in the average cost of pig iron would not by any means have accomplished that result in so short a time.

The situation above described is one which any manager of a "merchant" blast furnace (*i.e.*, a furnace selling its product to outside customers) may at any time encounter. But it carries a meaning also for establishments like the works connected with the United States Steel Corporation and other great concerns, which have a use for the "off iron" produced by their blast furnaces. For such "off iron" could be manufactured at smaller expense than when it is turned out as an unwelcome by-product from a furnace charged and operated, at extra cost, to yield a more valuable product. In short, every blast furnace manager knows that both technical and commercial economy, as well as relief from personal anxiety, would be secured if he could only be sure of making what he is trying to make.

**Adds a Final Element of Certainty to Blast Furnace Control.**

This brings us back to the inquiry: What is the bearing of Mr. Gayley's invention upon this desirable element of certainty, through complete and intelligent control, in the operation of the blast furnace?

As I have already observed, we have sought to secure such certainty through minute analyses of all the raw materials, &c., except the air of the blast, which weighs more than all the rest put together. But when we come to consider this element, we perceive at once that it cannot be usefully analyzed like ore, flux or fuel. We cannot determine its composition and then store it until we wish to use it; and if we could analyze it as it enters our blowing engines our knowledge would come too late to permit any effective action on our part, based upon such information. If we would attain that certainty of control which constitutes the perfection of an art, we cannot treat the air of the blast as we do all the other elements of the charge, which we regard as variables to the character of which we adjust our practice. The air, most variable of all, cannot be thus dealt with. We must make it practically a constant. Mr. Gayley has shown us that the only way to do this is to freeze the moisture out of it. No attempts at vague amelioration by partial measures will meet the case. What we want is, first, to know just what we are putting into the furnace through the blast, and, second, how we can continue to do that particular thing practically without variation.

Mr. Gayley, after years of costly experiment, has shown us for the first time how to attain this object; and I am not surprised that leading ironmasters in this country and abroad have recognized his invention as the greatest advance in blast furnace practice since the introduction of the hot blast by Neilson. It is scarcely too much to say that this invention, completing our mastery of conditions previously uncontrollable, has elevated the manufacture of pig iron from the category of processes which are partly art and partly accident to that of the true arts, which may be practiced with approximate scientific certainty.

* *Bi-Monthly Bulletin*, No. 24, November, 1908, p. 917. Also *The Iron Age*, October 1, 1908, p. 906.

**The Connecticut Valley Metal Trades Association.**—This organization held its annual meeting and banquet at the Nayasset Club, Springfield, Mass., November 30, with a large attendance, including President F. K. Copeland and Commissioner Robert Wuest of the National Metal Trades Association. L. P. Breckenridge, director of the Engineering Experimental Station of the University of Illinois, gave an interesting talk on the need of industrial education. Frank H. Page of the Confectioners' Machinery & Mfg. Company, Springfield, was chosen president; C. P. Fay, J. Stevens Arms & Tool Company, Chicopee Falls, Mass., vice-president; F. C. Breakspear, A. G. Spalding & Bros. Company, Chicopee, Mass., secretary; together with an Executive Committee consisting of R. D. Reed, H. B. Smith Company, Westfield, Mass.; F. C. Feiker, Northampton Cutlery Company, Northampton, Mass., and F. E. Holman, Otis Elevator Company, Springfield, Mass., the last named gentleman taking the place made vacant by the resignation of M. W. Bushnell, Bushnell Press Company, Thompsonville, Conn.

**The Lake Superior Corporation.**—The Philadelphia banks which took title in July to certain collateral, consisting of securities of the Lake Superior Corporation, owner of the steel plant at Sault Ste. Marie, Ontario, sold them last week to "new and responsible interests." It has been reported that the purchasers include E. J. Berwind, John T. Terry and others identified with the Canadian Improvement Company, which originally gave the securities as collateral. The statement that H. C. Frick is interested in the deal is denied. The securities acquired consist of $4,320,000 stock (out of $40,000,000), $2,123,000 first mortgage 5s and $243,000 5 per cent. income bonds. It is believed the new interests will take control of the company. The floating debt is said to be smaller now than at any time, the bank indebtedness being $660,000, with liquid assets of subsidiary companies amounting to nearly $2,000,000, besides $1,000,000 first mortgage bonds of the Lake Superior Corporation owned by that company. In early 1906 the bank indebtedness was $2,200,000.

## PERSONAL.

Grant W. Spear, who for many years has been vice-president of the Dearborn Drug & Chemical Works at Chicago, took charge November 1 of the general Eastern offices of the company, at 299 Broadway, New York City, as vice-president and Eastern manager, Mr. McVicker being no longer connected with the Dearborn Company

E. C. Felton, president, and John W. Dougherty, general superintendent of the Pennsylvania Steel Company; Quincy Bent, the company's furnace superintendent at Lebanon, Pa., and Charles F. Rand, president of the Spanish-American Iron Company, sailed for Cuba last Saturday.

Andrew Carnegie celebrated his seventy-first birthday November 25.

Howard S. Hart has resigned as president of the Corbin Motor Vehicle Company, New Britain, Conn., and has severed his connection with the company. He is succeeded as president by President Charles Glover of the Corbin Screw Corporation and of the American Hardware Corporation.

E. F. Hauserman, assistant city purchasing agent of Cleveland, has resigned to become on December 15 assistant secretary and treasurer and general sales manager of the Union Metal Post Company, Canton, Ohio. This company has recently commenced the manufacture of ornamental lighting posts, and it is the intention to extend this branch of the business and probably add additional lines.

George A. Yule of Kenosha, Wis., has been elected a director and the general manager of the Racine-Sattley Company, Racine, and has assumed full charge of the business. The company is a very large manufacturer of wagons and carriages, and it is said will soon commence the manufacture of light automobiles. Mr. Yule will retain his interest in the Bain Wagon Company and the Badger Brass Company, both of Kenosha.

L. A. Carlisle, who has been connected with the Central Foundry Company, New York, for a number of years in the capacity of manager at plant at Bessemer, Ala., has resigned his position to take charge of the affairs of the Smith Foundry Company, at Bessemer, in which he is interested. C. W. Nixon has been appointed to succeed him.

Joseph A. MacLennan has resigned his position at the Philadelphia works of the Link-Belt Company to accept the presidency of the Wilmot Machinery Company, New Orleans. He had been associated with the Link-Belt companies for over 12 years. During part of this time he was chief engineer of Woodward, Wight & Co., New Orleans agents of the Link-Belt Company, and through them made many friends in the Southwest.

H. L. Brinker, chief chemist at the Ohio Works of the Carnegie Steel Company, Youngstown, Ohio, will deliver a series of 18 lectures before the Y. M. C. A. of that city, the first being "A Historical Sketch of the Iron and Steel Industry; Refractory Material."

J. B. Pauley, formerly connected with the purchasing department of the International Harvester Company, Chicago, has been detailed to take charge of the company's affairs abroad, especially with reference to its interests in France and Germany. He will have his headquarters at Lille, France. He will be succeeded in his former position by W. B. Edgar, who, prior to the merger of the harvester interests, was with Warder, Bushnell & Glessner Company, and since that time has occupied important positions with the present organization.

W. A. Gordon, formerly of the Pittsburgh Gage & Supply Company, has recently become associated with the Ohio Brass Company, Mansfield, Ohio, and will sell Ohio radiator valves to the trade in the central territory.

Robert G. Wells, general manager of the Tata Iron & Steel Company, Ltd., sailed for India December 2.

Henry Gardner of Henry R. Merton & Co., metal and iron merchants, London, sails for home this week, after a prolonged tour, which included visits to the Nacosari and Cananea districts in Mexico, the Bisbee camp, Salt Lake, Butte and the Boundary District.

## OBITUARY.

ANTHONY FRANCIS KEATING, Pittsburgh, died November 27, aged 68 years. He was a native of Pittsburgh and his first employment was as assistant bookkeeper for John Dunlap, a tin and sheet iron manufacturer and dealer in tinners' supplies. A few years later Mr. Keating became bookkeeper for Zug & Co., and subsequently rose to the position of manager of the important rolling mills of that firm, which he held until his retirement from active business due to ill health about 14 years ago. He was not only prominent in Pittsburgh manufacturing circles, but also in local political affairs. He was a member of the Select Council of the city from the early 70s until 1891, when he retired. He framed the city appropriation bills for many years. He was the first councilman to move for the acceptance by the city of the Carnegie Library, and was one of the trustees of the library for a considerable time. He was also for many years a director and treasurer of the Morganza Reform School and served on the directorate of the Western Pennsylvania Exposition Society, being for years its manager. He leaves a widow and seven children. Thomas F. Keating, vice-president of the Hardware Club, New York, is a brother.

WILLIAM H. JACKSON, New York, died suddenly November 24, aged 79 years. He was president of the Jackson Architectural Iron Works and the head of the old firm of William H. Jackson & Co. of Union Square, which business was founded in 1827 by his father, Nathan H. Jackson. He was a member of the New York Chamber of Commerce, vice-president of the New York Savings Bank, president of the General Synod of the Reformed Church in America, a member of the Union League and Republican clubs, Sons of the Revolution, New England Society, Metropolitan Museum of Art, Natural History Museum, the General Society of Mechanics and Tradesmen of New York, and a trustee of the Presbyterian Hospital. He leaves a widow and four daughters.

**The Westinghouse Receivership to Terminate.**—Final action was taken November 30 for the termination of the receivership of the Westinghouse Electric & Mfg. Company, at the meeting of the stockholders in East Pittsburgh. Resolutions were passed amending the by-laws of the company, increasing the directorate to 16, to be classified into one, two, three and four year terms, and to provide for the election of a proxy committee. The directors elected were: One year, Richard Delafield, E. C. Converse, Anthony N. Brady and J. D. Callery; two years, A. C. Becker, George N. Verity, William McConway and Charles A. Moore; three years, Charles F. Brooker, James F. Kuhn, E. F. Atkins and E. M. Kerr; four years, George Westinghouse, Neil Rantoul, Joseph W. Marsh and Albert H. Wiggin. The proxy committee will consist of James N. Jarvie, Jacob H. Schiff, Charles F. Adams, Robert S. Smith and E. W. Roebling. Application has been made to the United States Court in Pittsburgh for the discharge of the receivers not later than December 15, and return of the property to the stockholders.

The Bickford Fire Brick Company, which recently purchased the Curwensville Fire Brick Company's plant, Curwensville, Pa., has had the plant remodeled and enlarged, and it is now being operated at capacity. The company manufactures the Crescent fire brick exclusively, a high grade hand made brick for furnace linings. The company has opened an office at 1122 Farmers' Bank Building, Pittsburgh, in charge of J. A. Bickford, treasurer and general manager, and S. M. Bickford, secretary and sales manager of the company.

No. 2 stack of the Youngstown Sheet & Tube Company, Youngstown, Ohio, was blown in November 23. The company is now operating two new blast furnaces with a daily capacity of about 800 tons, but when operating its Bessemer steel plant full time it will still be a buyer of a considerable quantity of Bessemer iron in the open market.

# NEWS OF THE WORKS.

### Iron and Steel.

James W. Arnold, South Charlestown, W. Va., is negotiating with the Commercial Club of Ennis, Texas, with the view of establishing a rolling mill in that place, to have a capacity of 20 tons of finished iron a day. While it has not been definitely decided to locate at Ennis, a plant will be built somewhere in the Southwest.

John W. Wortham and associates, Dallas, Texas, are negotiating with the Penitentiary Board for a lease of the iron plant at Rusk, Texas, with the intention of placing it in operation.

The Ward-Dickey Steel Company, Indiana Harbor, Ind., has increased its capital stock from $50,000 to $100,000.

A company capitalized at $250,000, said to be represented by R. Jenkins of Wales, will build a plant for the manufacture of tin plate at Welland, Ont. The plant will have a frontage on the Grand Trunk Railroad and the buildings will be of steel. About 250 men will be employed.

The furnace of the Sheffield Coal & Iron Company, at Sheffield, Ala., is being repaired and will probably be in blast within 30 days.

It is announced that the plant recently leased by the R. C Foster Company, known as the Weller Rolling Mill, at Gadsden, Ala., will be put in operation within a week or 10 days.

### General Machinery.

The Fink-Anderson Engineering Company, South Bend, Ind., has been incorporated with $30,000 capital stock, to manufacture gas power plants, build special machinery and do all classes of die work, jig work and jobbing machine work. The company is the builder of the Mecklenburg engine and at present is running full force 13 hr. a day. W. C. Anderson is president; R. A. Fink, secretary; H. A. Fink, treasurer.

The new building being erected on Forest Park Boulevard by the Champion Shoe Machinery Company, St. Louis, Mo., will be 155 x 182 ft., of brick construction, and so arranged that a second story can be added at any time. When the new building is completed the company will have over three times its present floor space.

The Automatic Roller Bearing Company, Chicago, Ill., has contracted with the city of Goshen, Ind., for a site on which to build a large plant, capable of giving employment to 2500 men. The officers of the company are: Thomas R. Butchart, president; Thomas W. Reilly, secretary; Isaac A. George, treasurer. The Crescent Motor Car Company, Detroit, has also closed a deal with the city of Goshen whereby it will move into the plant vacated by the Cosmo Buttermilk Soap Company.

J. S. Smalley of Muscatine, Iowa, is preparing to build a garage and machine shop for the building and repair of automobile and marine gas engines.

The Racine Electrical Mfg. Company has been incorporated at Racine, Wis., with a capital stock of $25,000, by Chas. A. Kraynik, Chas. M. Dietrich and Albert E. Anderson.

The Curtin-Hebart-Anthony Company, Gloversville, N. Y., is making plans for a new manufacturing plant it will erect during the coming year for the manufacture of a special sewing machine for heavy leather sewing, emery wheel dressers and cutters, glove and leather cutting dies and presses. The plant will consist of machine shop, foundry, pattern shop and office building, with a total of 30,000 to 40,000 sq. ft. of floor space. A large part of the machinery for equipping the new plant will be of special design and built by the company. The plant will be equipped with a steam power plant and all modern equipment. Present machinery will be moved to the new building. Mr. Curtin states that the purchase of additional machinery and equipment will not be considered until after May 1 of next year.

The Herath & Hultman Mfg. & Equipment Company has been incorporated at Schenectady, N. Y., capitalized at $100,000, to manufacture machinery. The directors are Augustus Herath, Iver Hultman, Daniel Cary, Wm. Bushnell and N. A. Schwitz, all of Schenectady.

### Foundries.

The Lynchburg Foundry Company, New York, is to spend about $50,000 in making improvements to its plant at Radford, Va. Plans have been completed and contract for the steel work has been awarded to the Virginia Bridge & Iron Company, Roanoke, Va., for an addition to the special foundry, to be 50 x 125 ft. This building will be equipped with an electric traveling crane and pits for the vertical casting of flanged pipe ranging from 30 to 60 in. in diameter and 2 to 20 ft. in length.

The Gibbes Machinery Company, Columbia, S. C., is rebuilding its foundry, which was recently destroyed by fire, and has purchased practically all the equipment it will require.

Contracts have been let by the Board of Trustees of the Jeffersonville Reformatory, Jeffersonville, Ind., for the rebuilding of the foundry, recently burned. The iron and structural work was awarded to the Brown-Ketcham Iron Works, Indianapolis, Ind., at $7600.

The Iron City Sanitary Mfg. Company, Zelienople, Pa., has completed foundations for an addition to its plant, 100 x 300 ft., which will be used as a foundry and core room. The building will be of concrete and steel construction and will cost about $55,000. Modern equipment will be installed, and when the addition is completed the foundry capacity of the plant will be increased about 50 per cent.

The new foundry of the Atkinson Foundry & Car Shops, St. Albans, W. Va., has been largely equipped with Northern equipment, including a No. 48 Newten cupola, blower, ladles and a Northern crane, all furnished by the Northern Engineering Works, Detroit, Mich. The Atkinson Company will make car wheels, cars, &c., in a modern plant.

John B. Lee and associates of Anniston, Ala., have incorporated the Lee Foundry Corporation, with a capital stock of $20,000, for the manufacture of gray iron castings. The company has purchased the plant of the Wilson Stove & Mfg. Company and will operate the foundry, producing about 25 tons per day.

Herman J. Eberman and James A. Bailey, formerly connected with the designing department of the Art Metal Construction Company, Jamestown, N. Y., have resigned and will erect a brass foundry on Institute and Harrison streets, Jamestown, and engage in the business under the name of Eberman-Bailey Brass Works Company. Construction of the new foundry building will start at once.

Contracts have been awarded to Rafferty & O'Hara for the construction of a brass foundry on East Water street, Syracuse, N. Y., for the M. L. Oberdorfer Brass Company. A pattern shop and office building are to be erected at a later date.

### Power Plant Equipment.

The Yolande Coal & Coke Company, Yolande, Ala., has under consideration the construction of a power plant to supply light to North Birmingham and adjacent cities, but plans for this improvement have not yet been completed.

A private company, of which A. R. Scott is manager, is erecting a new electric light plant at McCook, Neb., which will be housed in a building of brick and steel construction and equipped with a steam turbine unit. The cost of this improvement is estimated at $35,000.

Consulting Engineer Charles A. Alexander is to have charge of preparing the layout of the power plant to be installed in the new four-story factory building to be erected for L. Adler Brothers Company, 92 St. Paul street, Rochester, N. Y. The boiler plant will be from 800 to 1000 hp. and will supply both heating and power. The building will be 200 x 272 ft. and devoted to the manufacture of clothing. All the larger machines will be direct motor driven, and the smaller machines will be grouped to motor driven line shaft. The generating plant will consist of two or three direct connected generating units with total capacity of about 200 hp. Max Adler will receive bids on machinery and building after December 15.

John C. Thompson, William N. Shaw and Charles J. Starbuck of New York, who recently purchased the plant of the Watertown Engine Company and reorganized the company under the name of the New York Engine Company, are now having plans prepared for a large addition to the machine shop and foundry at Watertown, N. Y. In connection with the manufacture of steam engines the company will engage in the manufacture of a gas engine of an improved type. Work on the patterns for the new engine is already under way, but some time will be devoted to tests, &c., before placing the new engine on the market.

### Bridges and Buildings.

The Metropolitan Bridge Company, Syracuse, N. Y., with a capital stock of $30,000, has been incorporated by A. H. Mallery, A. M. Mallery and G. H. Welch, to engage in general steel erecting and fabricating work.

### Fires.

The foundry of the Freyberg Iron Company, Brooklyn, N. Y., was burned November 20, the loss being about $5000.

The passenger car shop of the Rhodes-Curry Company, Amherst, N. S., was destroyed by fire November 25, the loss being about $100,000.

The car plant of the J. G. Brill Company, Philadelphia, Pa., was partly burned November 29. In addition to a section of the works a large amount of car material was destroyed, the entire loss being estimated at $150,000.

The pattern shop of the Mesta Machine Company, Pittsburgh, Pa., was burned November 23, the loss being about $25,000. The building was 60 x 125 ft.

### Hardware.

Since the fire in the shovel plant of the Indiana Rolling Mill Company, New Castle, Ind., last summer, the company has decided to combine its rolling mill and shovel plant at one point. A new shovel factory is in course of erection on a site adjacent to the rolling mill, and it is expected the new plant will be in operation about January 1.

On January 1 the Blakesley-Tuttle Stove Company, manufacturer of Security stoves and ranges, and the Hoover Stove & Casting Company, both of Kansas City, Mo., will be merged into a new organization, known as the Security Stove & Mfg. Company, with a paid up capital of $60,000. The Hoover Stove & Casting Company has successfully operated a foundry in

Kansas City and is well known to the trade as headquarters for stove repairs. Contracts have been let for a line of patterns which will be ready for the spring trade. The officers of the new company will be A. M. Blakesley, formerly of the Rock Island Stove Company, president; John K. Hoover, vice-president; G. W. Blakesley, manager; Charles R. Hoover, secretary and treasurer.

The Elwood Lawn Mower Mfg. Company, Elwood, Ind., has increased its capital stock from $10,000 to $25,000.

The Home & Office Novelty Company, Princeton, Ind., has been organized with $25,000 capital stock to manufacture novelties, especially an improved cuspidor, so constructed that it cannot spill. It is the invention of C. L. Snyder, president of the company. C. K. King is secretary of the company.

The New Haven Machine Screw Company, New Haven, Conn., has taken the building formerly occupied by the Jenser Smelting Company, adjoining its original plant, and has installed additional machinery. This gives the company 75 per cent. more floor space and provides ample facilities to take care of its growing business. The plant has been run to its full capacity during the past 12 months.

The controlling interest in the Standard Whip Company, Westfield, Mass., has been acquired by James P. McCarthy, Timothy S. Conway and Charles J. Rooney, who have taken the stock held by Edward H. Pratt. Messrs. Conway and Rooney are experienced whip men, having been connected with the New England Whip Company, Westfield, for a number of years. The new owners will assume immediate charge of the plant.

The Spargo Wire Cloth Company has been incorporated at Rome, N. Y., with a capital of $50,000, to manufacture copper, brass, and bronze, wire cloth of all kinds, and will erect a factory for the purpose, 100 x 200 ft., of steel and concrete. The company will use in the manufacture of its products wire made by the James A. Spargo Wire Company, which has an extensive plant at Rome. One of the specialties of the new company will be wire mosquito netting, which will not rust, for the use of the Government on Panama Canal work, for the protection of employees from mosquitoes.

**Miscellaneous.**

The Commissioner of Public Works, Yonkers, N. Y., has had specifications prepared and will take bids on an industrial railroad and equipment to be installed at the water works pumping station.

The San Diego Woods Products Company, San Diego, Cal., has begun work on a new electric plant designed to develop 500 hp., from which current will be supplied for the operations of the South Park & East Side Railroad street cars. Additional improvements planned include the erection of buildings and the installation of machinery for the manufacture of by-products, such as wool alcohol and other liquids. This portion of the work will probably be taken up about the first of the year.

The Tirrill Mfg. Company has been incorporated at Schenectady, N. Y., with a capital stock of $100,000, to manufacture electrical switches and other specialties under the patents of Allan A. Tirrill, electrical engineer, and electrical machinery and apparatus. The new company acquired the patents by purchasing the assests of the Schenectady Mfg. Company, which formerly controlled them. A small factory building acquired with the latter company's assets will be disposed of, not being adequate to the new company's requirements, and manufacturing space will be leased and equipped either in the Adriance, Platt & Co. building on Dock street, or in the Roy Building on South Church street. Allan A. Tirrill is president; Frank McClellan, vice-president, and Everett E. Lucas, secretary-treasurer.

Charles R. Hanscom, president of the Eastern Shipbuilding Company, New London, Conn., announces that the plant at Groton, where the Minnesota and Dakota and other vessels were built, will be sold at auction and the yard dismantled. The property will be sold within the next few weeks.

The Susquehanna Smelting Company, Lockport, N. Y., manufacturer of ferroalloys, announce that it will have plans prepared for doubling the present capacity. Herbert C. Harrison is vice-president and general manager.

Bartz, Wygant & Brown, Hornell, N. Y., manufacturers of electrical specialties, are considering consolidating with the A. J. Deer Company of Buffalo, and will erect a large three-story addition to their factory.

The Flint Cement Company, Central Building, Rochester, N. Y., has been organized by Lyman J. Baskin and others for the purpose of erecting a cement plant at Gorham, N. Y., with a capacity of 2000 bbl. daily. Mr. Baskin states that the organization is now being perfected and that the construction of the plant, purchase of machinery, equipment, &c., will not be taken up until next April.

The New York Central Railroad, New York, has given an order to the T. S. Marvel Shipbuilding Company, Newburgh, N. Y., for two steel tugboats. The tugs will be 105 ft. in length. Contracts have also been awarded to the New York Shipbuilding Company for four steel car floats, and to Harry Cossey of Tottenville, N. Y., for six grain boats for delivery during the coming year.

## The Mechanical Engineers.

If there was one thing more than another that impressed those who attended the opening of the twenty-ninth annual meeting of the American Society of Mechanical Engineers in New York Tuesday evening, it was the more than ever systematic handling of affairs. The attendance at these meetings grows steadily larger, having considerably more than doubled in the last five years. Were it not for the superior facilities afforded by the Engineering Societies' Building, overcrowding and confusion would be unavoidable. The registering of members was accomplished with greater dispatch than ever by the improved arrangement, and this was but one instance of the foresight of the committee in making adequate provision for entertaining a large number.

According to custom, the initial event was the president's address. M. L. Holman of St. Louis, having been one of the participants in the conference of State Governors and others in Washington last May to consider the conservation of our natural resources, appropriately selected as his subject, "The Conservation Idea as Applied to the American Society of Mechanical Engineers." After reciting briefly the circumstances connected with the calling of this conference, the papers presented and the resolutions adopted, he gave an exhaustive and statistical discussion of the various phases of the problem—safeguarding of health, including prevention of disease, sanitation, protection of water supply and attention to the purity of foods; care of the land; preservation of the forests; utilization of water resources for irrigation and power; reclamation of swamp lands, and elimination of waste in the consumption of fuels and minerals. In connection with the last mentioned item, President Holman declared:

> Of our mineral resources, iron stands at the head as the distinct feature in our past development along mechanical lines, notwithstanding that electricity is trying to relegate us to the copper age. An unlimited supply of metal is not needed. We require simply sufficient metal for a working capital and to keep the stock good by supplying for wear and tear. At the present time an immense amount of iron is lying in the wrecks and scrap iron piles all over the country because it does not pay to work it over. . . .
>
> The conservation of iron must be by reducing waste to a minimum. As the supply of iron decreases the price will increase and the scrap iron merchant will become an important factor. The mathematical limit appears to point to the control of the old iron market as the ultimate function of the Steel Trust of the future.

Concluding, the speaker pointed out the responsibilities of the engineer in the field of conservation and gave advice to the society in applying the conservation idea to its own conduct, incidentally paying tribute to Secretary Calvin W. Rice and his associates for the improved methods of handling the society's affairs. He also urged "that the American Society of Mechanical Engineers make an effort to conserve both the time and the funds of future members by issuing a note book which shall gradually become the standard mechanical note book."

The conferring of honorary membership on Prof. John A. Brashear, which followed the president's address, was no more gratifying to the recipient than to those bestowing the honor, who are familiar with the great work which the professor has done, not only in astronomical research, but what is more important, through the wonderful instruments he has designed, in opening up possibilities for extending astronomical knowledge. Professor Brashear was escorted to the rostrum and presented to the president by W. R. Warner of the Warner & Swasey Company, which has executed many of the professor's designs. Mr. Warner briefly recounted the distinctions which justified the award of honorary membership and President Holman announced the election and presented the certificate.

Professor Brashear responded with evident appreciation, and, as he had been requested, gave a lecture, illustrated with lantern slide views, on "Photography of the Stars." It is safe to say that the remarkable facts and figures of which the speaker has an inexhaustible fund were hardly more impressive to those who heard them for the first time than to those who had the privilege of hearing some of them in the similar lecture given by Professor Brashear at the meeting in Detroit last summer.

# The Iron and Metal Trades

The markets have quieted down considerably. In the case of Pig Iron this is due to the fact that melters have bought, the majority of them in a conservative manner, as to quantity, for delivery over the first quarter, and partly into the second quarter. They began toward the middle of October, new sets of buyers following the rising market, and in many instances returning later for additional quantities. The furnace interests advanced prices until now buyers being fairly supplied await developments and sellers show a good deal of indifference. In the Pittsburgh District some merchants are reselling Bessemer and Basic Irons at concessions from the furnace prices.

In the finished trades the new orders, generally speaking, have been falling off and some hesitation is developing which is attributed by some authorities to the feeling among buyers that reductions in the duty on Steel may bring an enforced lowering in prices. However little there may be in such anticipations, the fact does exist that it is shaping the policy of consuming interests, and is being felt in the trade. It has had its effect in counteracting to some extent the more buoyant sentiment which was spreading immediately before the election and gained a good deal of strength after it.

The Steel Rail trade is still lagging. The aggregate of sales is moderate and no really large quantities have been placed. Among the orders received were about 6000 tons from the Central Railroad of New Jersey and 3000 tons from the Wheeling & Lake Erie. Car builders are getting additional work, but their orders do not call for a large tonnage.

It is estimated that during the week ending last Saturday there were placed contracts for Structural Material aggregating 57,000 tons, of which the American Bridge Company booked 28,000 tons. These include contracts specifically noted last week. The American Bridge Company has booked the order for 10,500 tons of material for another open hearth building at Gary, which is to be followed later on by two Bar mills. The Northern Pacific Railroad has called for bids on 8500 tons of bridge work. Cleveland shipbuilding interests are to build two additional freighters, for which the material, about 2700 tons, has been placed with Pittsburgh mills. The Carnegie Steel Company is to furnish the 8000 tons of Plates and Shapes for the battleship Utah, which is to be built at the yards of the New York Shipbuilding Company.

The Tin Plate mills are assured of a fair run of work for the winter, having closed with salmon packers and can makers for round lots for delivery mostly prior to April 1. The active capacity is being increased by the starting of additional mills.

In some sections of the country the trade in Old Material continues active, with dealers outbidding the consumers. It is claimed that in a considerable number of instances this was due to the covering of shorts.

Heavy imports, due to the resumption of the Mexican mines, light exports and a record domestic production have been the recent features of the Copper market. The mills in the Naugatuck Valley have been busy lately, but the Wire trade is not doing relatively as well. First hands are maintaining prices, but Electrolytic is available at 14½c., net, 10 days.

## A Comparison of Prices.

**Advances Over the Previous Month in Heavy Type, Declines in Italics.**

At date, one week, one month and one year previous.

| | Dec. 2, 1908. | Nov. 25, 1908. | Nov. 4, 1908. | Dec. 4, 1907. |
|---|---|---|---|---|
| **PIG IRON,** Per Gross Ton: | | | | |
| Foundry No. 2, Standard, Philadelphia | **$17.25** | $17.25 | $16.75 | $18.75 |
| Foundry No. 2, Southern, Cincinnati | **16.25** | 16.25 | 15.75 | 18.00 |
| Foundry No. 2, Local, Chicago | **17.00** | 17.00 | 16.50 | 19.00 |
| Basic, delivered Eastern Pa. | **16.50** | 16.50 | 16.00 | 17.50 |
| Basic, Valley Furnace | **15.50** | 15.50 | 13.90 | 17.50 |
| Bessemer, Pittsburgh | **17.40** | 17.40 | 15.65 | 19.90 |
| Gray Forge, Pittsburgh | **15.15** | 15.15 | 14.40 | 18.90 |
| Lake Superior Charcoal, Chicago | 19.50 | 19.50 | 19.50 | 25.00 |
| **BILLETS, &c.,** Per Gross Ton: | | | | |
| Steel Billets, Pittsburgh | 25.00 | 25.00 | 25.00 | 28.00 |
| Forging Billets, Pittsburgh | 27.00 | 27.00 | 27.00 | 30.00 |
| Open Hearth Billets, Phila | 26.20 | 26.20 | 26.20 | 30.00 |
| Wire Rods, Pittsburgh | 33.00 | 33.00 | 33.00 | 34.00 |
| Steel Rails, Heavy, at mill | 28.00 | 28.00 | 28.00 | 28.00 |
| **OLD MATERIAL,** Per Gross Ton: | | | | |
| Steel Rails, Melting, Chicago | **15.50** | 15.50 | 14.50 | 13.75 |
| Steel Rails, Melting, Phila | **16.25** | 16.25 | 15.25 | 11.50 |
| Iron Rails, Chicago | **19.50** | 19.50 | 18.00 | 15.50 |
| Iron Rails, Philadelphia | **20.50** | 20.50 | 19.75 | 17.50 |
| Car Wheels, Chicago | **16.00** | 16.00 | 15.25 | 22.00 |
| Car Wheels, Philadelphia | **16.00** | 16.50 | 15.00 | 19.00 |
| Heavy Steel Scrap, Pittsburgh | **16.50** | 16.75 | 15.50 | 13.50 |
| Heavy Steel Scrap, Chicago | **15.25** | 15.00 | 15.00 | 12.00 |
| Heavy Steel Scrap, Philadelphia | **16.25** | 16.25 | 15.25 | 11.50 |
| **FINISHED IRON AND STEEL,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Refined Iron Bars, Philadelphia. | **1.50** | 1.50 | 1.45 | 1.75 |
| Common Iron Bars, Chicago | 1.50 | 1.50 | 1.50 | 1.75 |
| Common Iron Bars, Pittsburgh. | **1.50** | 1.50 | 1.40 | 1.60 |
| Steel Bars, Tidewater, New York | 1.56 | 1.56 | 1.56 | 1.76 |
| Steel Bars, Pittsburgh | 1.40 | 1.40 | 1.40 | 1.60 |
| Tank Plates, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Tank Plates, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Beams, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Beams, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Angles, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Angles, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Skelp, Grooved Steel, Pittsburgh | 1.45 | 1.45 | 1.45 | 1.70 |
| Skelp, Sheared Steel, Pittsburgh. | 1.50 | 1.50 | 1.50 | 1.80 |
| **SHEETS, NAILS AND WIRE,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Sheets, Black, No. 28, Pittsburgh. | 2.50 | 2.50 | 2.50 | 2.60 |
| Wire Nails, Pittsburgh | 1.95 | 1.95 | 1.95 | 2.05 |
| Cut Nails, Pittsburgh | 1.75 | 1.75 | 1.75 | 2.00 |
| Barb Wire, Galv., Pittsburgh | 2.40 | 2.40 | 2.40 | 2.50 |
| **METALS,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Lake Copper, New York | **14.50** | 14.50 | 14.00 | 13.75 |
| Electrolytic Copper, New York. | **14.25** | 14.12½ | 13.75 | 13.62½ |
| Spelter, New York | **5.20** | 5.10 | 4.90 | 4.60 |
| Spelter, St. Louis | **5.05** | 4.95 | 4.80 | 4.45 |
| Lead, New York | 4.35 | 4.37½ | 4.35 | 4.12½ |
| Lead, St. Louis | *4.20* | 4.22½ | 4.30 | 4.00 |
| Tin, New York | *29.40* | 30.35 | 30.37½ | 30.10 |
| Antimony, Hallett, New York | **8.12½** | 8.12½ | 8.00 | 8.75 |
| Nickel, New York | 45.00 | 45.00 | 45.00 | 45.00 |
| Tin Plate, 100 lb., New York | $3.89 | $3.89 | $3.89 | $4.09 |

## Chicago.

FISHER BUILDING, December 2, 1908.—(*By Telegraph.*)

While the tonnage record of November contracts has not been swelled by any Rail purchases of notable importance, orders for other railroad material for car and track repair work have steadily increased. The general demand from other Iron and Steel consuming industries has held up well, so that on the whole the totals for the month just ended will equal, if not slightly exceed, those of October. The Steel finishing mills are running fuller, and more Open Hearth furnaces are being started to supply them with Steel. Seven more Open Hearths in the South Works of the Illinois Steel Company were lighted Monday, making 19 out of the total of 24 now in operation. The five remaining furnaces are being put in readiness for service when needed. Five of the six Open Hearths in the Inland Steel Company's plant are going and the finishing departments are all fairly well engaged. Specifications for Steel Bars and Structural Material are coming out quite freely, but shipments of material for warehouse stocks are expected to slack up somewhat during the present month, on account of the taking of inventories at the close of the year. The aggregate of Spike and Bolt orders entered by the principal interest last week amounted to 39,000 kegs, besides which there is prospect of further orders of even greater volume. The gradual extension of new car construction is reflected in a more active demand for Axle Billets. The recent orders entered by the Illinois Steel Company were last week increased by the purchase of 1000 tons, taken by a local forge shop. Pig Iron has slowed up, and the moderate business now moving con-

cerns chiefly first quarter requirements, though some new orders are being booked through the first half. No section of the market displays more strength and firmness than Old Material. It is strongly supported by conditions, which at present are operating to equalize the supply and demand, and dealers are not disposed to disturb the balance by making offerings from their reserve stocks.

**Pig Iron.**—After a period of active buying which began in the latter part of October, and was maintained with considerable vigor until the close of November, the Pig Iron market has settled down to a state of comparative quiet and inactivity. Quite a number of contracts representing the deferred purchases of first quarter requirements were, however, included in last week's transactions, but most of them were for small lots. On all of this business recent advances are reported to have been steadily held, the price in the local market being $17.50, delivered, for Northern Iron, and $13, Birmingham, or $17.35, delivered, for Southern. On all second quarter business the Northern furnaces are asking $18, while at least two of the leading Southern producers are entering orders through the second half at $13, Birmingham. Several fair sized inquiries are out for first half which have not as yet been closed. A few of these comprise amounts ranging from 1000 to 3000 tons, and are regarded as likely to result in orders. Some interest of a tentative character, at least on the part of consumers, is beginning to develop in third or fourth quarter deliveries, regarding which a number of new inquiries have come into the market within the past few days. As far as can be learned, none of the furnaces, either Northern or Southern, is willing to contract so far ahead, and no quotations are being made for second half. Present indications point to a quiet market during December. In fact, a good many melters are requesting changes in the schedules that will put the deliveries of all Iron not required for immediate use over into January. This action is prompted by the desire to reduce stocks as low as possible in the inventory season. From the viewpoint of both producers and consumers, the situation affords encouragement, being marked by elements of strength, which promise well for the future. The following quotations are for December delivery, f.o.b. Chicago:

| | |
|---|---|
| Lake Superior Charcoal | $19.50 to $20.00 |
| Northern Coke Foundry, No. 1 | 17.50 to 18.00 |
| Northern Coke Foundry, No. 2 | 17.00 to 17.50 |
| Northern Coke Foundry, No. 3 | 16.50 to 17.00 |
| Northern Scotch, No. 1 | 18.00 to 18.50 |
| Southern Coke, No. 1 | 17.85 to 18.35 |
| Southern Coke, No. 2 | 17.35 to 17.85 |
| Southern Coke, No. 3 | 16.85 to 17.35 |
| Southern Coke, No. 4 | 16.35 to 16.85 |
| Southern Coke, No. 1 Soft | 17.85 to 18.35 |
| Southern Coke, No. 2 Soft | 17.35 to 17.85 |
| Southern Gray Forge | 15.85 to 16.35 |
| Southern Mottled | 15.60 to 16.10 |
| Malleable Bessemer | 17.00 to 17.50 |
| Standard Bessemer | 17.90 to 18.40 |
| Jackson Co. and Kentucky Silvery, 6 % | 19.90 to 20.40 |
| Jackson Co. and Kentucky Silvery, 8 % | 20.90 to 21.40 |
| Jackson Co. and Kentucky Silvery, 10 % | 22.90 to 23.40 |

(*By Mail.*)

**Billets and Rods.**—Business in Forging Billets, though light, shows some improvement. Aside from an order of 1000 tons of Axle Billets taken by the leading interest, the demand is comprised of scattering orders for small lots. Practically all such orders for Forging Billets are reported to have been placed at the regular base price of $28.50, Chicago. Wire Rod specifications are coming out quite satisfactorily, and a considerable tonnage of new contracts are being placed, particularly with Eastern manufacturers. Prices hold firm and are unchanged, as follows: Bessemer, $33; Basic, $34; Chain, $33, all at Pittsburgh.

**Rails and Track Supplies.**—No contracts for any of the important standard Rail tonnage now pending are reported to have been closed this week, though it is expected that one of the lots representing the requirements of a Western line, amounting to about 40,000 tons, will be closed within a few days. A few small Rail orders have been placed, among which was one for 1200 tons of Open Hearth Rails, which will be rolled at the South Works of the Illinois Steel Company; an order of 1100 tons from the financial agent of the State of Texas will be supplied by the same interest. To the liberal volume of Spike and Bolt orders recently entered by the Illinois Steel Company there were added last week 25,000 kegs of Spikes and 10,000 kegs of Bolts from a leading Western line, and 4000 kegs of Spikes for the new Harriman line being built on the western coast of Mexico. Business in Light Rails is gradually increasing, a fact that indicates the continued expansion of activities in the larger industrial enterprises, particularly in the mines and saw mills. We are advised that full prices have been obtained on some recent orders, and except in extreme Southern territory, where keen competition is met, concessions exceeding $1 are infrequent. We quote as follows: Angle Bars, accompanying Rail orders, 1908 delivery, 1.50c.; car lots, 1.60c.; Spikes, 1.80c. to 1.90c., according to delivery; Track Bolts, 2.15c. to 2.25c., base, Square Nuts, and 2.30c. to 2.40c., base, Hexagon Nuts. The store prices on Track Supplies range from 0.15c. to 0.20c. above mill prices. Light Rails, 25 to 45 lb., $26; 20-lb., $27; 16-lb., $28; 12-lb., $29. Standard Sections, Bessemer, $28; Open Hearth, $30, on lots of 500 tons and over; on smaller lots, $2 a ton extra.

**Structural Material.**—The question of the award of contract on bids recently submitted for the construction of the new Chicago City Hall has been referred by the city engineer to the City Council. Owing to the alleged irregularity in submission of bids, it is questionable if the contract will go to any one of the three lowest bidders, and it is not improbable that before final settlement of the matter is reached, litigation may ensue with the result of delaying the letting of the work. Last week brought little new business to fabricators, but few of the pending contracts having been closed. Among these were 1000 tons for the office building of the La Salle Investment Company, Broadway and Olive street, St. Louis, taken by the Richards-Noelke Iron Works, Indianapolis; 270 tons for the Wisconsin Steel Company's plant, secured by the Pittsburgh Steel Construction Company, and 1500 tons of additional material required for the channel spans of the McKinley Bridge at St. Louis, which is being fabricated by the Pennsylvania Steel Company. The American Bridge Company entered an order from the Santa Fe Railroad for 500 tons of bridge material; the same company has placed an order for 10,500 tons of plain material, which it will fabricate for the construction of another open hearth building at Gary. The Northern Pacific Railroad is taking figures on 8000 tons, besides which there are a number of similar inquiries in the market for lots ranging from 1000 to 3000 tons. The Missouri Valley Bridge Company secured the contract for the erection of a highway bridge at Missoula, Mont., requiring 1000 tons on a bid of $143,500. The Board of Sanitary Commissioners, Chicago, is taking figures on a bridge for the St. Paul crossing over the North Branch, which calls for 172 tons. Specifications for plain material are coming in at a good rate, and the structural mill at the South Works is now running practically full on a double turn. Prices from store are 1.95c. to 2c. Mill prices at Chicago are as follows: Beams and Channels, 3 to 15 in., inclusive, 1.78c.; Angles, 3 to 6 in., ¼-in. and heavier, 1.78c.; larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 15 in., 1.88c.; Zees, 3 in. and over, 1.78c.; Tees, 3 in. and over, 1.83c.

**Plates.**—Though not concentrated in large lots, Plate orders are more numerous, and the rolling schedules of the mills are better filled than for some time. A good portion of the business coming out is derived from structural work in buildings, bridges and new car construction. Jobbers report a moderate demand from store, although nothing beyond actual present requirements is considered in the general run of orders. Mill prices are a little firmer, and departures from the regular schedule are growing less frequent, though they have not entirely disappeared. We quote mill shipments as follows: Tank Plates, ¼-in. and heavier, wider than 6¼ and up to 100 in. wide, inclusive, car lots, Chicago, 1.78c.; 3-16 in., 1.88c.; Nos. 7 and 8 gauge, 1.93c.; No. 9, 2.03c.; Flange quality, in widths up to 100 in., 1.88c., base, for ¼-in. and heavier, with the same advance for lighter weights; Sketch Plates, Tank quality, 1.88c.; Flange quality, 1.98c. Store prices on Plates are as follows: Tank Plates, ¼-in. and heavier, up to 72 in. wide, 2c. to 2.10c.; from 72 to 96 in. wide, 2.10c. to 2.20c.; 3-16 in. up to 60 in. wide, 2.10c. to 2.25c.; 72 in. wide, 2.30c. to 2.40c.; No. 8, up to 60 in. wide, 2.10c. to 2.15c.; Flange and Head quality, 0.25c. extra.

**Sheets.**—Business in Sheets continues to hold fairly even. Jobbers are buying and specifying conservatively, not desiring to increase stocks more than is necessary prior to the taking of inventories. Heavier gauges are not so much in demand as the lighter Sheets, which in both Black and Galvanized are moving in fair volume. Mill prices have steadied up considerably of late, and it is stated that as a rule they are regularly maintained. There continues, however, to be some deviation from the regular schedule of store prices. We quote mill shipments as follows, Chicago: Blue Annealed, No. 10, 1.98c.; No. 12, 2.05c.; No. 14, 2.08c.; No. 16, 2.18c.; Box Annealed, Nos. 17 to 21, 2.43c.; Nos. 22 to 24, 2.48c.; Nos. 25 and 26, 2.53c.; No. 27, 2.58c.; No. 28, 2.68c.; No. 29, 2.78c.; No. 30, 2.88c.; Galvanized Sheets, Nos. 10 to 14, 2.63c.; Nos. 15 and 16, 2.83c.; Nos. 17 to 21, 2.98c.; Nos. 22 to 24, 3.13c.; Nos. 25 and 26, 3.33c.; No. 27, 3.53c.; No. 28, 3.73c.; No. 30, 4.23c.; Black Sheets from store: Blue Annealed, No. 10, 2.15c.; No. 12, 2.20c.; No. 14, 2.25c.; No. 16, 2.35c.; Box Annealed, Nos. 18 to 21, 2.60c.; Nos. 22 to 24, 2.65c.; No. 26, 2.70c.; No. 27, 2.75c.; No. 28, 2.85c.; No. 30, 3.25c.; Galvanized from store: Nos. 10 to 16, 3c.; Nos. 18 to 20, 3.15c.; Nos. 22 to 24, 3.30c.; No. 26, 3.50c.; No. 27, 3.70c.; No. 28, 3.90c.; No. 30, 4.40c. to 4.45c.

**Bars.**—Steel Bars have been conspicuously active since specifications against the July contracts begun to come in, and continue to maintain their leading position. Specifications amounting to 15,000 tons have been booked this month by the leading producer. The situation in Iron Bars is without material change as respects price or demand. Orders generally include only such amounts as are required for immediate use, though perhaps they are a little more numerous.

Quotations, Chicago, are as follows: Steel Bars, 1.58c., with half extras; Iron Bars, 1.50c.; Hoops, No. 13, and lighter, 1.98c., full extra, Hoop card; Bands, No. 12 gauge and heavier, 1.58c., half extra, Steel Bar card; Soft Steel Angles and Shapes, 1.68c., half extras. Store prices are as follows: Bar Iron, 2c. to 2.15c.; Steel Bars, 1.90c. to 2c.; Steel Bands, 1.90c., as per Bar card, half extras; Soft Steel Hoops, 2.25c. to 2.35c., full extras.

**Merchant Pipe.**—Jobbers' orders are being carefully limited in amount to meet only current requirements. The near approach of the inventory season makes it desirable to reduce stocks as low as possible, and this, it is held, accounts for some slowing up in demand. Under ordinary conditions, however, trade is usually light through the winter months, and no large movement is looked for in the immediate future. The following mill discounts are quoted: Black Pipe, ¾ to 6 in., 73.2; 7 to 12 in., 70.2; Galvanized, ¾ to 6 in., 63.2. These discounts are subject to one point on the base. From store, in small lots, Chicago jobbers quote 73 per cent. on Black Steel Pipe, ¾ to 6 in. About three points above these prices is asked for Iron Pipe.

**Boiler Tubes.**—The necessity for increased motive power is bringing out a moderately increased demand for Locomotive Tubes for repair work, and some new orders of fair size are being placed. Merchant Tubes continue quiet, with no movement of special interest. Mill quotations for future delivery, on the base sizes, are as follows: 2¾ to 4¼ in., inclusive, Steel Tubes, 63.2; Iron, 50.2; Seamless, 50.2; 2½ in. and smaller, and lengths over 18 ft., and 2½ in. and larger, and lengths over 22 ft., 10 per cent. extra. Store prices are as follows:

| | Steel. | Iron. | Seamless. |
|---|---|---|---|
| 1 to 1½ in. | 35 | 35 | 35 |
| 1¾ to 2¼ in. | 50 | 35 | 35 |
| 2½ in. | 52½ | 35 | 35 |
| 2¾ to 5 in. | 60 | 47½ | 47½ |
| 6 in. and larger | 50 | 35 | .. |

**Merchant Steel.**—An order for 150 tons of Shafting reported to have been placed at regular discounts indicates a better degree of firmness than has characterized Shafting prices for some time. There are few new orders for Merchant Steel coming in, but specifications are being furnished freely by manufacturers; jobbers, however, are holding back a little, not wishing to increase stocks before the first of the year or until after stock taking is over. We quote as follows: Planished or Smooth Finished Tire Steel, 1.78c.; Iron Finish, up to 1½ x ½ in., 1.73c., base, Steel card; Iron Finish, 1½ x ½ in. and larger, 1.58c., base, Tire card; Channels for solid Rubber Tires, ¾ to 1 in., 2.08c., and 1⅛ in. and larger, 1.98c.; Smooth Finished Machinery Steel, 2.08c.; Flat Sleigh Shoe, 1.63c.; Concave and Convex Sleigh Shoe, 1.83c.; Cutter Shoe, 2.05c.; Toe Calk Steel, 2.13c.; Railroad Spring, 1.98c.; Crucible Tool Steel, 7¼c. to 8c., and still higher prices are asked on special grades. Cold Rolled Shafting in car lots and over, 57 per cent. off; in less than car lots, 52 per cent. off, with carload freight allowed within base territory.

**Metals.**—While there is little future buying, stock orders are fairly plentiful. The railroads are purchasing more liberally for the replenishment of storehouse stocks, and the consumption of the smaller manufacturing concerns is gradually increasing. Copper prices hold steady in spite of repeated efforts on the part of speculative interests to advance them. Lead is easier and quiet, but Spelter is in better demand. Quotations are as follows: Casting Copper, 14¼c.; Lake, 14½c. to 14¾c., in car lots, for prompt shipment; small lots, ¼c. to ⅜c. higher; Pig Tin, car lots, 32½c.; small lots, 34½c.; Lead, Desilverized, 4.45c. to 4.55c., for 50-ton lots; Corroding, 4.70c. to 4.80c., for 50-ton lots, in car lots, 2¼c. per 100 lb. higher; Spelter, 5.10c. to 5.25c.; Cookson's Antimony, 10½c., and other grades, 9¾c. to 10¼c.; Sheet Zinc is $7, f.o.b. La Salle, in car lots of 600-lb. casks. On Old Metals we quote: Copper Wire, 13¼c.; Heavy Copper, 13c.; Copper Bottoms, 11¾c.; Copper Clips, 13c.; Red Brass, 12c.; Yellow Brass, 9½c.; Light Brass, 6¼c.; Lead Pipe, 4.35c.; Zinc, 3¾c.; Pewter, No. 1, 21c.; Tin Foil, 23c.; Block Tin Pipe, 26c.

**Cast Iron Pipe.**—A good many inquiries for Pipe on deliveries into next year are coming into the market. They seem to be inspired by the belief that the advancing tendency of Pig Iron may mean a raise in Pipe prices later on. Foundries, however, when quoting at all on forward business, are asking a material advance over present values. At the second letting of the 3500 tons of Pipe required by the city of Detroit, all bids were again rejected and the letting will be re-advertised. In the meantime, the city is taking bids on 10,000 tons of 42 in. and 48 in., principally the latter size, to be let December 1. This tonnage was mentioned in last week's report, in a phrase that was interpreted as crediting it to Chicago instead of Detroit. We quote nominally per ton, Chicago, as follows: Water Pipe, 4 in., $27; 6 to 12 in., $26; 16 in. and up, $25, with $1 extra for Gas Pipe.

**Old Material.**—There are two distinct sets of prices now effective on Scrap; the one governing the sale of material on track and small lots for current consumption, and the other applying to the transactions of dealers on railroad offerings and tonnage from stock piles. In deals of the former character, inside prices are not infrequently shaded, while on trading of the latter kind outside figures are generally realized and occasionally overreached. Good prices were secured by the Chicago, Burlington & Quincy on its list of 3000 tons, which was the only one offered last week. The No. 1 Wrought brought $15.15; Iron Rails, $19.40; Frogs, Switches and Guards, $15.25; Rail Ends, $16; Angle Bars, $17.25, and Borings, $9.60. No heavy purchases by consumers were reported, though the general run of orders from this source is equal in volume to that of Old Material coming out. Holders of the majority of Scrap in stock piles are not letting go of it at present prices. Under these conditions the market is naturally firm and any material increase of consumption would probably be reflected in higher prices. The lists out for closure this week include the Chicago & Northwestern, 3690 tons, in which there are 500 tons of Wrought, 300 tons of Iron Rails and 1000 tons of Rerolling Steel Rails, and 600 tons from the Illinois Central. The following prices are per gross ton, f.o.b. Chicago:

| | |
|---|---|
| Old Iron Rails | $19.50 to $20.00 |
| Old Steel Rails, rerolling | 17.25 to 17.75 |
| Old Steel Rails, less than 3 ft. | 15.50 to 16.00 |
| Relaying Rails, standard sections, subject to inspection | 22.50 to 23.50 |
| Old Car Wheels | 16.00 to 16.50 |
| Heavy Melting Steel Scrap | 15.25 to 15.75 |
| Frogs, Switches and Guards, cut apart | 15.25 to 15.75 |
| Mixed Steel | 12.25 to 12.75 |

The following quotations are per net ton:

| | |
|---|---|
| Iron Fish Plates | $17.50 to $18.00 |
| Iron Car Axles | 21.00 to 21.50 |
| Steel Car Axles | 18.50 to 19.00 |
| No. 1 Railroad Wrought | 15.00 to 15.50 |
| No. 2 Railroad Wrought | 14.00 to 14.50 |
| Springs, Knuckles and Couplers | 14.50 to 15.00 |
| Locomotive Tires, smooth | 14.75 to 15.25 |
| No. 1 Dealers' Forge | 11.75 to 12.25 |
| Mixed Busheling | 9.25 to 9.75 |
| Iron Axle Turnings | 9.00 to 9.50 |
| Soft Steel Axle Turnings | 9.00 to 9.50 |
| Machine Shop Turnings | 9.00 to 9.50 |
| Cast Borings | 8.00 to 8.50 |
| Mixed Borings, &c. | 8.00 to 8.50 |
| No. 1 Mill | 9.00 to 9.50 |
| No. 2 Mill | 8.00 to 8.50 |
| No. 1 Boilers, cut to Sheets and Rings | 10.50 to 11.00 |
| No. 1 Cast Scrap | 14.00 to 14.50 |
| Stove Plate and Light Cast Scrap | 12.25 to 12.75 |
| Railroad Malleable | 14.00 to 14.50 |
| Agricultural Malleable | 11.75 to 12.25 |
| Pipes and Flues | 11.00 to 11.50 |

Theodore Geissmann & Co., Chicago, direct mill representatives for iron, steel and wire products, have been incorporated in Illinois, with a capital of $20,000.

## St. Louis.

ST. LOUIS, MO., November 30, 1908.

The returns made by the financial institutions of St. Louis showing their condition indicate a gratifying increase in deposits over the previous six months. The deposits of 16 banks aggregated $51,308,811.20, in which summary the deposits of the trust companies are not included. This financial statement not only indicates fairly prosperous business conditions, but also shows that there is no lack of funds for legitimate enterprises. Bank clearings continue quite large, and are greater than those for the same period last year. The reports of the total tonnage handled, both inbound and outbound, by the two score or more railroads having terminals here, show a substantial improvement over the first and second quarters of the year, thereby offsetting a large portion of the loss sustained the first half of the year. The observance of Thanksgiving Day brought about a suspension of business, and as is apt to be the case with wholesale interests tended to postpone closing transactions which were pending.

**Coke.**—An increase in the inquiry for Coke indicates that a more active market may be looked for next month. A leading house reports inquiry for between 2000 and 3000 tons of 72-hr. Foundry, shipment over first half of 1909. The De Camp Bros. & Yule Iron, Coal and Coke Company reports closing contract with the St. Louis Blast Furnace Company for its requirements of Coke for the year 1909. In quoting prices the range for Standard 72-hr. Foundry may be given as $2.35 to $2.50, at oven, Connellsville, shipment over first half of 1909. We hear of some contracts for Standard Coke at $2.20 for prompt shipment, and as low as $2.35 for shipment over the first half of 1909. At the close of the week the market indicated a firmer feeling, and the recent advance is likely to be maintained. Virginia is held at $2.50, at oven. The inquiry is quite good.

**Pig Iron.**—With most of the principal sales agencies there has been a slacking up in inquiries from large consumers, but all of them report hearing from numerous small buyers. A leading Alabama producer's office states that inquiries are coming in well, sales continue fair, but being small lots do not aggregate a large tonnage. They will take orders only for first quarter of 1909, and not over 150 tons will be booked on each contract. For larger quantities the

offer must be submitted to the company for confirmation. One of the principal sales agencies states that some producers are not offering at all, not that they are sold up, but look for an advance in the near future. Another house states that in the aggregate during the week it has had inquiries for 3000 tons, mostly for forward shipment. With all the houses the inquiry is confined to Southern Iron. We quote the market as follows: No. 2 Foundry, prompt shipment, $13, Birmingham; for shipment over the first quarter of 1909, $13 to $13.50. Ohio Malleable Bessemer is unchanged at $16, Ironton. The market is very firm, and offerings are light. Northern Silvery, 8 per cent. Silicon, is selling at $18.50, Jackson, Ohio. The market for Basic is quiet and unchanged.

**Finished Iron and Steel.**—For Structural Material the demand is quiet, except for small lots from fabricators for local and country contracts. For Standard Rails the inquiry is better, and it is reported the leading sellers are about closing a deal with a local railroad for 2800 tons. The demand for Light Rails is increasing beyond expectations, and is coming from lumber interests principally, with some inquiry from mining companies. A large business is being done in Bolts, Spikes, Angle Bars, and all kinds of Track Material, with the prospect, it is reported, of an advance in prices. The demand referred to is coming from the railroads and railroad supply houses. While jobbers are having a fair trade, they are not buying freely of Bar Iron and Bar Steel and their products.

**Old Material.**—Interest in the market for Old Material is indicated by a fairly good number of inquiries from consumers, but the sales, which are of moderate volume, for the current week have been mainly confined to dealers. The demand is principally for Steel grades, though foundries are in the market for Cast Scrap. There are no offerings of miscellaneous Scrap by the railroads. Relaying Rails, Standard Sections, are in short supply and wanted at full market price. There has been a slight advance made in the price at which certain kinds of material is being held. The tone of the market is strong, and an improvement in the volume of sales is looked for next week. We quote as follows, f.o.b. St. Louis, per gross ton:

| | |
|---|---|
| Old Iron Rails | $17.00 to $17.50 |
| Old Steel Rails, rerolling | 15.50 to 16.00 |
| Old Steel Rails, less than 3 ft | 14.25 to 14.75 |
| Relaying Rails, standard sections, subject to inspection | 24.00 to 24.50 |
| Old Car Wheels | 16.00 to 16.50 |
| Heavy Melting Steel Scrap | 14.75 to 15.25 |
| Frogs, Switches and Guards, cut apart | 14.75 to 15.25 |
| Mixed Steel | 10.25 to 10.75 |

The following prices are per net ton:

| | |
|---|---|
| Iron Fish Plates | $16.00 to $16.50 |
| Iron Car Axles | 20.00 to 20.50 |
| No. 1 Railroad Wrought | 14.50 to 15.00 |
| No. 2 Railroad Wrought | 13.50 to 14.00 |
| Railway Springs | 13.00 to 13.50 |
| Locomotive Tires, smooth | 13.50 to 14.00 |
| No. 1 Dealers' Forge | 11.50 to 12.00 |
| Mixed Borings, &c | 7.00 to 7.50 |
| Machine Shop Turnings | 9.50 to 10.00 |
| No. 1 Boilers, cut to Sheets and Rings | 10.00 to 10.50 |
| No. 1 Cast Scrap | 13.50 to 14.00 |
| Railroad Malleable | 12.00 to 12.50 |
| Agricultural Malleable | 10.50 to 11.00 |
| Pipes and Flues | 10.50 to 11.00 |
| Railroad Sheet Scrap | 10.50 to 11.00 |

**Lead, Spelter, Etc.**—The market for Pig Lead is quiet but strong, with sales at 4.25c. to 4.30c. No further reduction, it is said, is looked for by the best informed parties in the trade. The price of Lead Ore is unchanged at $27.50 per 1000 lb., Joplin basis. Spelter is strong at 5.05c. to 5.10c. Very few sales have been made mostly small lots. Producers are holding for higher prices. Zinc Ore is firm at $41 to $42 per ton, Joplin basis. Leading sellers state that at the price at which Ore is held, Spelter at current market quotations is below the cost of production. In the mining district the surplus is practically cleared up, and it is reported that nearly all the mines that closed down on account of low prices earlier in the season will resume production not later than January 1. Tin is off, 10c. per 100 lb.; Copper is ⅛c. up; Antimony is off 10c. per 100 lb. All three metals are in good demand this week.

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The Otis Elevator Company reports that it is now quite busy. Among other jobs it is putting six elevators into the new St. Regis' Apartment House, and has the contract from Planters Hotel Company for placing traction elevators in place of the old ones.

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The incorporation of the Delaware Tunnel Railroad Company in Pennsylvania and of the Camden Tunnel Railroad Company are the first steps in a project for the driving of two tubes under the Delaware River connecting Philadelphia and Camden. The cost is estimated at $10,000,000. Richard I. D. Ashbridge is to be chief engineer. The principal backers of the project are William A. Stern of Stern & Silverman; Benjamin Wolf and Edwin Wolf of Wolf Bros. & Co., Philadelphia and New York, bankers and brokers.

## San Francisco.

SAN FRANCISCO, November 25, 1908.

The condition of the Pacific Coast market on Iron and Steel products has not altered materially in the last two weeks, business in nearly all lines being confined to comparatively small orders. Although the local merchants express a belief that a gradual improvement is taking place, the present month has brought less improvement than was generally looked for, and the total business transacted will probably be no greater than in October. Foundry business is still quiet, and there is no movement of any consequence in either Pig Iron or Scrap. The total tonnage of Merchant Pipe sold is probably a little less than a month ago, though some of the jobbers report more inquiry. The movement of Merchant Steel, Sheets, Plates, and Bars shows some increase, orders being still limited to small lots, but increasing in number. There has been some ordering of Hoop Steel during the wine season, but little more business is expected in this line. No large amounts of Drill Steel have been moved, though more of the mines are coming into the market for small quantities, and larger orders are expected after the first of the year. There is somewhat more inquiry for Boiler Tubes for marine construction and repair work, but the demand is still below normal, although not large on the Coast at any time. There is a more active and stronger market for Cast Iron Pipe, for which numerous small inquiries are being received.

**Structural Material.**—New contracts for local Structural Steel work since the end of October have not been as numerous as was expected, as the increase in building operations which was looked for after the election has not yet taken place, though figures are being taken on a large amount of work on which contracts may be let at any time. A fair number of small transactions have been closed, besides a few of more importance which, altogether, will bring the tonnage about up to that of last month. The movement of concrete reinforcing material is somewhat larger than it has been of late, both in San Francisco and in other parts of California. Plans have been completed for the new six-story building of Goldberg, Bowen & Co., on Sutter street, near Kearny, which will cost about $135,000. The Berkeley Steel Company has taken a number of contracts for Structural Steel for the stations of the San Francisco Gas & Electric Company. Plans have been completed for a 20-story addition to the St. Francis Hotel. This addition will give the hotel a frontage of an entire block on Powell street. It will probably be some time, however, before work is commenced on this structure. A contract has been let for reinforcing material for the Dunne Investment Company's six-story concrete building, at the corner of Stockton and Ellis streets. Plans are about ready for a 10-story building, at the corner of O'Farrell street and Bagley place, and the structure is to be started as soon as possible. The Law Brothers have secured Eastern capital to the extent of $1,000,000 for the reconstruction of two large buildings. A contract will be awarded shortly for the six-story office building of the San Francisco Gas & Electric Company, on Sutter street, near Powell, the estimated cost of which will be $75,000. The Iron and Steel contract for the Mary Grant Building, on Mission street, near Third, has been awarded to Fennell Bros. The Ralston Iron Works has taken a contract for Structural Steel work on a building at the corner of Market street and Marshall square, for $15,702. The manager of the Pacific Lumber Company, at Scotia, Cal., announces that a new Steel saw mill, a duplicate of the present plant, will soon be built. F. Howe will soon begin the erection of a nine-story Steel frame building in Los Angeles. A new Masonic temple is planned at Sacramento, Cal., to cost about $500,000. The plans, drawn by D. H. Burnham & Co., call for a Class A structure of six stories. The Mortenson Construction Company has taken a contract for the Steel work on a small Steel frame building in Oakland. The Pacific Construction Company is about to begin work on a large jail for Sacramento County, which will cost $161,827. Bids have been submitted for Steel cells, that of the Stewart Jail Company, $31,890 for two tiers and $41,340 for three tiers, being by far the lowest. No award has yet been made.

**Rails and Track Supplies.**—Rails for mining and logging roads are especially quiet, and the promoters of a number of railroad projects in the interior are still working on preliminary financial arrangements. Some improvements and extensions are to be made in the larger railroad lines, but little business is expected from that source in the Coast market. Considerably more ordering, however, is being done on miscellaneous track supplies for repair work.

**Pig Iron.**—There is a steady but very slow increase in the amount of foundry work in San Francisco. The ornamental Iron works are busier than they have been for a long time, but this class of work requires very little Pig Iron. Some of the foundries, however, are also getting more work on machinery and other heavy articles, and the market is in a little more promising condition than at last report, as the stocks held by the foundries are gradually decreasing. There is practically no demand for Eastern Pig Iron, as the market is still overloaded with Continental Iron of similar

grade, which is selling at low prices. There is little movement of any grade, and no new quotations have been established on Chinese Pig Iron. No. 1 Eastern Foundry Pig Iron is quoted nominally at $27 to $27.50, but no sales have been made at these prices for some time. Some improvement is looked for after the first of the year.

**Cast Iron Pipe.**—No transactions of much magnitude have been reported during the last two weeks, but a good number of small orders have been placed for water works for interior towns, amounting in the aggregate to about 300 tons. A large number of inquiries have been received, however, amounting to a very fair tonnage, and the outlook is for an increased tonnage in the near future. The largest inquiry is for the city water plant of Seattle, Wash. In response to the Eastern market prices have advanced considerably. Quotations have been withdrawn for the present, and the new range of prices has not yet been established. Arrangements are being made for a new water system for the town of Placerville, Cal. At the recent local bond election the vote in favor of acquiring the Tuolumne source for the city's water supply was six to one. It now seems likely that the Cast Iron Pipe for the salt water auxiliary fire protection system will be purchased in small amounts as needed. No negotiations have been opened for the Pipe, as none of the cisterns have yet been completed. A project for a high pressure fire protection system is being agitated in Pomona, Cal. I. L. Hamilton has secured the contract for Pipe to convey water from Fish Lake to the town of Medford, Ore.

**Merchant Pipe.**—No orders of any consequence for Merchant Pipe have been received since last report, and the total tonnage sold this month is not likely to exceed that of October, though some of the jobbers report an increased movement in small lots. While stocks in jobbers' hands are rather small, and some large orders are likely to be placed within a short time, the movement from the manufacturers is rather small at present. Prices are unchanged, the usual differential being quoted on jobbers' carloads, as follows:

| | Steel. | |
|---|---|---|
| | Black. | Galv. |
| | % | % |
| ⅛ to ¼ in. | 56.5 | 40.5 |
| ⅜ in. | 58.5 | 44.5 |
| ½ in. | 60.5 | 48.5 |
| ¾ to 6 in. | 64.5 | 54.5 |
| 7 to 12 in. | 61.5 | 46.5 |
| Extra strong, plain ends: | | |
| ⅛ to ⅜ in. | 49.5 | 37.5 |
| ½ to 4 in. | 56.5 | 44.5 |
| 4½ to 8 in. | 52.5 | 40.5 |
| Double extra strong, plain ends: | | |
| ½ to 8 in. | 45.5 | 34.5 |

A contract has been let for the laying of the 6-in. water pine line of the Sante Fé oil interests in the Midway district, at a figure approximating $100,000. The line will be 21 miles in length and will be in operation within four months.

Edward J. Schneider, contracting manager in San Francisco for the American Bridge Company, is expected back from the East in a few days.

Sydney J. Robinson, managing director of the Jessop Steel Works of Sheffield, England, made a visit to San Francisco recently, accompanied by Charles L. Bailey, Canadian manager.

The Stockton Iron Works of Stockton, Cal., contemplates the erection of a business structure on the site now occupied by the machine shops.

The Willamette Iron & Steel Works of Portland, Ore., has received a contract for machinery and boilers for a light draft steamer for the Northern Navigation Company of Alaska. Negotiations are about concluded with this company for three other steamers of the same type.

The Heffernan Engine Works, Seattle, Wash., has secured a contract to convert the Boston Steamship Company's freighter Hyades to an oil burner.

The Craig Foundry Company has been organized in Long Beach, Cal. It is affiliated with the Craig Shipbuilding Company of that place.

The Pacific Gas Engine Works, Eureka, Cal., is making arrangements to rebuild its plant.

The Empire Foundry Company, which recently sold out its lease in Oakland, Cal., to the Western Pacific Railroad, has bought another site and is preparing to erect a new foundry.

Waterhouse & Lester, carriage material and heavy hardware, who recently moved into their new building in San Francisco, are preparing to erect a building for their Sacramento branch.

The Folger Locomotive Company has filed articles of incorporation in Tacoma, Wash., with a capital stock of $1,000,000. The incorporators are W. B. Jones, T. B. Egan, J. A. Van Osel, W. F. Schaffer, J. Loomis and L. W. Pratt.

Professor Maiorana, according to a dispatch from Rome, has succeeded in his tests of wireless telephony between Rome and Magdalena Island, Sardinia, a distance of 250 miles.

## Philadelphia.

PHILADELPHIA, PA., December 1, 1908.

Transactions have been on a smaller scale. The large buyers have about covered for the time, and while there are still some few, particularly the Cast Iron Pipe interests, who would place orders for considerable quantities, if their views regarding prices were met, the bulk of the business recently has been done by the smaller buyers, who usually purchase for near future requirements only. Notwithstanding the decreased buying, the Pig Iron market is very strong, prices on all grades being fully maintained, and some producers name prohibitive prices for first quarter delivery. Considerable interest is now being manifested in the matter of tariff revision, and no doubt the discussions before the Ways and Means Committee, in Washington, are having a retarding effect on some buyers. The finished material market has been rather quiet, the holiday having broken up business to some extent, and the aggregate tonnage of orders taken will hardly equal that of the previous week.

**Pig Iron.**—The market has been bare of any heavy transactions. Consumers who have taken large tonnages during the past month, both for prompt and forward shipment, are practically out of the market. In a number of cases Iron was purchased in anticipation of orders, and at the present level of prices, which have advanced considerably during the past month, buyers prefer to mark time pending further developments. The situation is decidedly strong and, notwithstanding the decrease in buying, prices are being firmly maintained. A number of sellers are still out of the market; others are pretty well sold up, and while there has undoubtedly been an increase in production, the stocks on furnace banks in this territory are reported to be steadily decreasing. Producers are not inclined to increase production until it is seen that the market will absorb the increased output, but idle furnaces are being put into shape so that they could be blown in, if so desired, with practically no delay. The bulk of the business has been confined to Foundry grades. Some few inquiries for deliveries extending over the first half of the year have developed, but little consideration is given by sellers to business of this character. Prices of No. 2 X and No. 2 Plain, standard eastern Pennsylvania Foundry Iron, are very firm. If there is any of the former grade to be had under $17.25, delivered, in this territory, it goes only to favored customers, the bulk of the business being done at $17.25 to $17.50. Some few sellers are holding at an advance of 25c. to 50c. above this for second quarter delivery, but practically nothing is being sold at the higher level. There has been some moderate business in Virginia Foundry Irons, in some cases at top prices, for shipment in the next 60 days, but little tonnage has come into this territory, the bulk going West. Forge Iron has been sold in moderate lots for early delivery at $16.75, delivered, but not a great deal is available for prompt shipment, and neither buyers nor sellers are inclined to do business in large lots for forward delivery. The Steel making grades have been rather quiet, although reports creep out of round tonnages of Basic Iron having been quietly bought in addition to those mentioned in the past few weeks. The only contract which came out during the week was one of 1500 tons for January delivery at a full price. Quotations on this grade appear to be holding very firm, with sellers not over anxious for business. Inquiries for nearly all the various grades are quite large, buyers testing the market in a small way on forward deliveries, but sellers maintaining a strong front, and not encouraging such buying. For delivery in buyers' yards, eastern Pennsylvania and nearby territory, prices range as follows for shipment in December and the first quarter of next year:

| | |
|---|---|
| Eastern Pennsylvania, No. 2 X Foundry | $17.25 to $17.50 |
| Eastern Pennsylvania, No. 2 Plain | 16.75 to 17.00 |
| Virginia, No. 2 X Foundry | 17.25 to 17.50 |
| Virginia, No. 2 Plain | 17.00 to 17.25 |
| Gray Forge | 15.75 to 16.00 |
| Basic | 16.50 to 17.00 |
| Low Phosphorus | 21.00 to 21.50 |

**Ferromanganese.**—Business has been rather dull, the few sales made being of small lots, for rather early delivery. Asking prices are somewhat higher, but not enough business has come out to test the market. For early delivery, quotations range from $45 to $46, Baltimore, with $47, seaboard, named for the first half of next year, but the latter quotation could no doubt be shaded.

**Steel Billets.**—Sales are still confined to small lots for prompt shipment, although consumers are willing in a number of cases to contract for next year's requirements at the ruling prices, but sellers refuse to accept such business at the time. Prices are firm, ordinary Rolling Steel for delivery in this territory being quoted at $26.20, with Forging Steel at $28.20, subject to the usual extras for high carbons and special sizes.

**Plates.**—The demand for Plates has not been as large as in the previous week, but a comparatively fair business was placed with some of the mills in this territory. Plates for structural work have been in the best demand, although some moderate quantities of boat Steel were also taken. While the immediate demand has been lighter, there is a

very satisfactory volume of business under consideration, a good portion of which is expected to develop into orders in the near future. Current business enables mills to maintain their recently increased rate of production. Prices are firmly held, and for delivery in this territory range as follows:

| | Carloads. Cents. | Parts carload. Cents. |
|---|---|---|
| Tank, Bridge and Boat Steel | 1.75 | 1.80 |
| Flange or Boiler Steel | 1.85 | 1.95 |
| Commercial Firebox | 1.95 | 2.00 |
| Marine | 2.15 | 2.20 |
| Locomotive Firebox Steel | 2.25 | 2.30 |

The above are base prices for ¼-in. and heavier. The following extras apply:

| | Extra per 100 lb. |
|---|---|
| 3-16-in. thick | $0.10 |
| Nos. 7 and 8, B. W. G | .15 |
| No. 9, B. W. G | .25 |
| Plates over 100 to 110 in | .05 |
| Plates over 110 to 115 in | .10 |
| Plates over 115 to 120 in | .15 |
| Plates over 120 to 125 in | .25 |
| Plates over 125 to 130 in | .50 |
| Plates over 130 in | 1.00 |

**Structural Material.**—Business continues largely of a miscellaneous character, but some pretty good sized propositions are pending. Mills in this territory have, however, been taking some good business from other sections, the Bethlehem Steel Company particularly having booked several heavy orders recently from the West. Quotations are unchanged, for delivery in this territory, 1.75c. to 1.90c. being named, according to specifications.

**Sheets.**—Little change is to be noted in the demand for Sheets. Consumers still order in small quantities, sufficient to meet their immediate and near future requirements, but show little disposition to contract for heavy tonnages. The volume of business continues on a fairly even basis, however, and mills are about able to maintain their full capacity in operation. The following range of prices is quoted for mill shipment, a tenth extra being added for small lots. Nos. 18 to 20, 2.50c.; Nos. 22 to 24, 2.60c.; Nos. 25 to 26, 2.70c.; No. 27, 2.80c.; No. 28, 2.90c.

**Bars.**—The demand continues of a more or less irregular nature. The bulk of the business placed has been in small lots, and while some mills have increased their output others continue in irregular operation. Prices are firmer and fewer low price Bars are to be had, while some makers hold their product at prices higher than the market. For delivery in this territory Refined Iron Bars range from 1.50c. to 1.55c., Steel Bars 1.55c., Rerolled Bars 1.50c.

**Coke.**—While no great tonnage of business has been placed, prices for both Foundry and Furnace Coke are decidedly firmer, and in some instances show an advance. Some few contracts have been made for moderate lots, but the demand is not very active. Foundry Coke is quoted at $2.30 to $2.60, at oven, with Furnace Coke $1.85 to $2.10, at oven. For delivery in this territory prices range about as follows:

| | |
|---|---|
| Connellsville Furnace Coke | $3.85 to $4.10 |
| Foundry Coke | 4.20 to 4.50 |
| Mountain Furnace Coke | 3.45 to 3.70 |
| Foundry Coke | 3.80 to 4.10 |

**Old Material.**—The market has a rather quiet appearance, but fully maintains its strength. Steel scrap has not been active, transactions being mostly in small lots. The Baldwin Locomotive Works is understood to have purchased between 2000 and 3000 tons of Machinery Cast, in small lots, at prices close to $16, delivered. Rolling mills are taking small quantities, but the bulk of the business transacted has been between dealers. Prices are practically unchanged, and while to a large extent nominal, range about as follows, for deliveries in buyers' yards, eastern Pennsylvania and nearby territory:

| | |
|---|---|
| No. 1 Steel Scrap and Crops | $16.25 to $17.00 |
| Low Phosphorus | 18.75 to 19.25 |
| Old Steel Axles | 21.75 to 22.25 |
| Old Iron Axles | 23.50 to 24.00 |
| Old Iron Rails | 20.50 to 21.00 |
| Old Car Wheels | 16.00 to 17.00 |
| Choice No. 1 R. R. Wrought | 19.75 to 20.25 |
| Machinery Cast | 16.00 to 16.50 |
| Railroad Malleable | 15.75 to 16.25 |
| Wrought Iron Pipe | 15.25 to 15.75 |
| New Bundled Sheets | 14.50 to 15.00 |
| No. 1 Forge Fire Scrap | 13.75 to 14.25 |
| No. 2 Light Iron | 10.00 to 10.50 |
| Wrought Turnings | 13.50 to 14.00 |
| Stove Plate | 13.25 to 13.75 |
| Cast Borings | 12.25 to 12.75 |
| Grate Bars | 14.25 to 14.75 |

The Steel Car Forge Company, Ellwood City, Pa., has purchased the property of the Pennsylvania Stove Company at receiver's sale. The site contains 4¼ acres, on which are a number of buildings. J. W. Humphrey, the receiver, sold the patterns and machinery to the Youngstown Foundry & Machine Company some time ago, and these have been removed. The property lies close to that of the Steel Car Forge Company and will be used for extensions.

## Pittsburgh.

PARK BUILDING, December 2, 1908.—(*By Telegraph.*)

**Pig Iron.**—Inquiries have fallen off considerably, but furnaces have sold a good deal of Iron and are firm in their ideas as to prices. A Cleveland Steel company has bought 5000 to 6000 tons of Basic Iron for delivery over first half of next year, part of the Iron being sold by a Cleveland furnace interest at a price netting slightly less than $15.50, Valley furnace, some of the Iron being furnished by another maker on the basis of $15.35, Valley furnace, or $16.25, Cleveland. Another Cleveland buyer has taken 1000 tons of Basic at a price very close to $15.50, Valley furnace. There is not much inquiry for Bessemer, but the market is firm. A sale of 1000 tons of Malleable Bessemer has been made at $16, Valley furnace. We quote Basic Iron at $15.50, Bessemer at $16.50, Malleable Bessemer at $16, all at Valley furnace. The inquiry for Foundry Iron is quiet and we quote No. 2 at $15.50, at Valley furnace, or $16.40, Pittsburgh. We quote Forge Iron at $14.25, Valley furnace, or $15.15, Pittsburgh. Struthers Furnace has gone out of blast for relining and repairs.

**Steel.**—Sheet and Tin Bars and Forging Billets are moving out more freely on specifications against contracts, and the whole Steel market is firm. We quote Bessemer and Open Hearth Billets, 3⅞ in. and larger, up to and including 0.25 carbon, $25; 0.26 to 0.60 carbon, $1 extra; over 0.60 carbon, $2 extra, all f.o.b. Pittsburgh. For Wheeling, Martins Ferry, Follansbee, Newcastle, Sharon, Steubenville and Washington (Pa.) delivery, half the freight, or 50c. additional, is charged. Sheet and Tin Bars in random lengths are $27.50, f.o.b. Pittsburgh. Forging Billets take $2 advance over Rolling Billets.

(*By Mail.*)

Having entered the last month of the year, with the taking of inventories and closing up the year's business, it is probable that new orders and shipments by the mills will not show up as favorably as in November. A great deal of large work is in sight, but it is not expected that much of this will be placed before the new year. The tariff hearings now going on in Washington have unsettled matters to some extent, some in the trade believing that radical reductions in existing tariff rates are going to be made. The demand for Pig Iron has quieted down to some extent, consumers who have not bought for next year being content to wait, believing the market will not be any higher when they are ready to buy. Some of the dealers have fair sized lots of both Bessemer and Basic Iron which they bought at low prices and which they are offering at lower prices than the furnaces are quoting. Consumers are taking out a fair tonnage on Billets, Sheet and Tin Bars against contracts, and shipments by the mills in November showed a material increase over October The demand for finished Iron and Steel is only fair. There is some inquiry for Coke for next year's delivery, and a few contracts have been placed. The Scrap trade is quiet, but prices are fairly strong.

**Ferromanganese.**—Although no large sales are reported, the market is firm. We quote 80 per cent. foreign Ferro at $44 to $44.50, seaboard, plus the freight rate of $1.90 a ton, for Pittsburgh delivery.

**Ferrosilicon.**—The low prices ruling for some time have stirred up consumers, and heavy sales have been made. Upward of 500 tons of 50 per cent. Ferrosilicon has been disposed of at about $62.50, Pittsburgh. Some sellers are quoting $63 to $64, and refuse to sell at lower figures.

**Wire Rods.**—An inquiry is in the market from a prominent Chain manufacturer for 2500 tons of Basic Rods for delivery next year. Shipments of Rods by the mills on specifications against contracts are fairly heavy. Prices are firm, and we continue to quote Bessemer Rods at $33, Chain Rods $33, and Basic Rods $34, Pittsburgh.

**Muck Bar.**—There is some inquiry for Muck Bar, and we note a sale of about 250 tons of best grade at $27, Pittsburgh. We quote Muck Bar, made from all Pig Iron, at $27 to $27.50, Pittsburgh.

**Skelp.**—Prices on Iron Skelp are very firm, at the recent advance, and a good deal of new business has been placed in the past two or three weeks. We quote Grooved Steel Skelp at 1.45c. to 1.50c.; Sheared Steel Skelp, 1.50c. to 1.60c.; Grooved Iron Skelp, 1.75c., and Sheared Iron Skelp, 1.85c., f.o.b. Pittsburgh. A sale is reported of about 500 tons of Sheared Iron Skelp, at 1.85c., Pittsburgh.

**Steel Rails.**—The Carnegie Steel Company has received new orders and specifications against contracts from two or three of the smaller railroads and several of the traction lines for about 6000 tons of Standard Sections, and has also entered some orders for export. The company has also received new orders and specifications for about 1400 tons of Light Rails, and the three Edgar Thomson mills are on this week but at reduced capacity. As yet none of the trunk lines has placed contracts for Rails for next year, but negotiations have reached the point that indicates some heavy

tonnage will be placed this month. Makers of Light Rails rerolled from Old Rails continue to sell at $2 to $3 a ton under Rails rolled from Billets. Prices on new Light Rails, rolled from Billets, are as follows: $25 for 25 to 45 lb. Sections, with $1 advance for 20 lb., $2 advance for 16 lb., and $3 advance for 12 lb. Standard Sections are $28, at mill, and Angle Splice Bars, 1.65c., at mill.

**Structural Material.**—Bids went in about a week ago on a viaduct at Denver, about 4000 tons, but the contract has not yet been placed. The Duquesne Light, Heat & Power Company, a local concern, has asked bids on a new Steel building of about 750 tons, while the Fort Pitt Bridge Works is again the lowest bidder on the proposed Steel bridge to cross the Monongahela River at Monongahela City, Pa., about 4000 tons. Bids were asked on the structure several months ago, but for some reason the job was held up and new bids were invited. The Eichleay Company has taken about 150 tons for a hospital at Marshalsea. A good deal of large work is in sight, on part of which bids have gone in. We quote, f.o.b. mill, Pittsburgh: I-Beams and Channels, 3 to 15 in., inclusive, 1.60c., net; I-Beams over 15 in., 1.70c., net; H-Beams over 8 in., 1.80c.; Angles, 3 to 6 in., inclusive, ¼ in. and up, 1.60c., net; Angles, over 6 in., 1.70c., net; Angles, 3 x 3 in. and up, less than ¼ in., 1.50c., base, half extras, Steel Bar card; Tees, 3 in. and up, 1.65c., net; Zees, 3 in. and up, 1.60c., net; Angles, Channels and Tees under 3 in., 1.50c., base, half extras, Steel Bar card; Deck Beams and Bulb Angles, 1.90c., net; Hand Rail Tees, 3c., net; Checkered and Corrugated Plates, 3c., net.

**Plates.**—The Carnegie Steel Company has taken the contract for all the Plates, Shapes and other material for the battleship Utah, to be built by the New York Shipbuilding Company, requiring about 8000 tons, and has also received the signed contract from the T. A. Gillespie Company for the Brooklyn Water Works Steel Pipe job, which will take about 22,000 tons of Plates. Specifications for these Plates will be given in a short time, and they will be rolled at the Homestead Works. The Cambria Steel Company has received an order from the Western Maryland Railroad for 500 all Steel cars, which will be built at its shops, at Johnstown, Pa., and which will require 6000 tons or more of Plates and Shapes. New orders from general consumers, such as Boiler shops and others, are showing some betterment, and prices are firmer, concessions having almost entirely disappeared. Regular prices are as follows: Tank Plates, ¾ in. thick, 6¼ in. up to 100 in. wide, 1.60c., base, at mill, Pittsburgh. Extras over this price are as follows:

Tank, Ship and Bridge quality, ¼-in. thick on edges, 100 in. wide, down to but not including 6 in. wide, is taken as base.

Steel Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per square foot, shall be considered ¼-in. Plate. Steel Plates over 72 in. wide must be ordered ¼-in. thick on edge, or not less than 11 lb. per square foot, to take base price. Steel Plates over 72 in. wide ordered less than 11 lb. per square foot down to the weight of 3-16-in. shall take the place of 3-16-in.

Percentages as to overweight on Plates, whether ordered to gauge or weight, to be governed by the Association of American Steel Manufacturers' Standard Specifications.

| | |
|---|---|
| Gauges under ¼-in. to and including 3-16-in. Plates on thin edges | $0.10 |
| Gauges under 3-16-in. to and including No. 8 | .15 |
| Gauges under No. 8 to and including No. 9 | .25 |
| All sketches (excepting straight taper Plates varying not more than 4 in. in width at ends, narrowest end being not less than 30 in.) | .10 |
| Complete Circles | .20 |
| Boiler and Flange Steel Plates | .10 |
| "A. B. M. A." and ordinary Firebox Steel Plates | .20 |
| Still Bottom Steel | .30 |
| Marine Steel | .40 |
| Locomotive Firebox Steel | .50 |
| Shell grade of Steel is abandoned. | |
| For widths over 100 in. up to 110 in | .05 |
| For widths over 110 in. up to 115 in | .10 |
| For widths over 115 in. up to 120 in | .15 |
| For widths over 120 in. up to 125 in | .25 |
| For widths over 125 in. up to 130 in | .50 |
| For widths over 130 in | 1.00 |

TERMS.—Net cash 30 days. Pacific Coast base, 1.50c., f.o.b. Pittsburgh.

**Sheets.**—Orders for Black and Galvanized Sheets are being received by the mills in fairly large volume, the actual new tonnage placed in November showing an increase over the previous month. The leading interest is operating to about 60 per cent. of Sheet capacity, and the outside mills are running at about the same rate. The American Rolling Mill Company is operating its Sheet mills at Middletown, Ohio, to full capacity, and four out of five hot mills at its Zanesville Works. Prices are firmer, and cutting has almost entirely disappeared. For shipment from mill regular prices are as follows: Blue Annealed Sheets, No. 10 and heavier, 1.80c.; Nos. 11 and 12, 1.85c.; Nos. 13 and 14, 1.90c.; Nos. 15 and 16, 2c.; Box Annealed, Nos. 17 to 21, 2.25c.; Nos. 22 to 24, 2.30c.; Nos. 25 and 26, 2.35c.; No. 27, 2.40c.; No. 28, 2.50c.; No. 29, 2.60c.; No. 30, 2.70c. Galvanized Sheets, Nos. 10 and 11, 2.45c.; Nos. 12 and 14, 2.55c.; Nos. 15 and 16, 2.65c.; Nos. 17 to 21, 2.80c.; Nos. 22 and 24, 2.95c.; Nos. 25 and 26, 3.15c.; No. 27, 3.35c.; No. 28, 3.55c.; No. 29, 3.70c.; No. 30, 3.95c.; No. 28, Painted Roofing Sheets, $1.75 per square, and Galvanized Roofing Sheets, No. 28, $3.10 per square, for 2½-in. corrugations. These prices are subject to a rebate of 5c. per 100 lb. to the large trade under the usual conditions, jobbers charging the usual advances for small lots from store.

**Tin Plate.**—The American Sheet & Tin Plate Company is steadily increasing its active capacity, having started this week the South Sharon, Pa., plant, containing 20 hot mills, and will probably start this month the Greer Works, at New Castle, also containing 20 hot mills, lying idle for some months. Leading Tin Plate makers have received large contracts for Bright Plates from the salmon packers and canning interests, most of them for delivery prior to April 1, and indications are that the mills will be fairly busy the next three or four months. Regular prices on Tin Plate are being well maintained, concessions having practically disappeared. We quote: $3.70 for 100-lb. Cokes, 14 x 20, f.o.b. Pittsburgh, terms 30 days, less 2 per cent. off for cash in 10 days, this price being subject to the usual rebate of 5c. per base box in large lots.

**Hoops and Bands.**—Early in January the manufacturers of Hoops and Bands will likely establish prices for 1909 delivery. The Clark Steel Hoop Company, now building a Hoop mill at Punxsutawney, Pa., will be a factor in next year's trade. Occasionally a stray order is placed, but contracts given to the mills early this year have been pretty well cleaned up. It is said that regular prices are being maintained, as follows: Steel Hoops, 1.80c., base, full Hoop card prices; Steel Bands, 1.40c., base, half Steel card extra, all f.o.b. cars, Pittsburgh, in carload lots, for delivery during 1908.

**Iron and Steel Bars.**—New orders for both Iron and Steel Bars are relatively small, nearly all consumers having placed their contracts some time ago, and on which they are now specifying quite freely. The three leading producers of Steel Bars are operating at present to larger capacity than at any time this year. The recent sharp advance in prices of Iron Scrap has had the effect of strengthening the market on Iron Bars, which is firmer now than for some time. We are advised that regular prices on both Iron and Steel Bars are being maintained. We quote Iron Bars at 1.42c., Pittsburgh, for Western shipment, or 1.60c., Chicago, while the price for delivery in the Pittsburgh District is 1.50c. Steel Bars are firm, at 1.40c., Pittsburgh, for base sizes.

**Railroad Spikes.**—As yet the railroads and the makers of Spikes have not been able to get together on contracts for delivery over all of 1909 on Spikes at present prices. The makers of Spikes are willing to sell through first half at to-day's prices, but are unwilling to take business for second half. The demand for the smaller sizes continues quite active, and the mills are pretty well filled up. Prices are firm, and we quote: Standard sizes, 4½ x 9-16 in., at $1.70, and the smaller sizes at $1.80 per 100 lb. in carload and larger lots, with an advance of 5c. per 100 lb. for less than carload, f.o.b. Pittsburgh.

**Merchant Steel.**—Specifications on Merchant Steel are being received by the mills in fairly large volume, but the number of new orders being placed is relatively light and mostly for small lots. The demand for Shafting is fairly active, and prices are being better maintained than for some time. We quote Cold Rolled Shafting at 57 per cent. off in carloads and 52 per cent. in less than carloads, delivered in base territory. Regular prices on Merchant Steel, which are being shaded to some extent, are as follows: Smooth Finished Machinery Steel, 1.80c. to 1.90c.; Flat Sleigh Shoe, 1.75c. to 1.85c.; Cutter Shoe Steel, 2.15c. to 2.25c.; Toe Calk, 1.90c. to 1.95c.; Railroad Spring Steel, 1.60c. to 1.75c., the higher prices being for Pennsylvania Railroad analysis. Carriage Spring Steel is 1.80c.; Tire Steel, Iron finish, 1½ x ½ in. and heavier, 1.40c.; under 1½ in., 1.55c. Planished Tire Steel is 1.60c., all f.o.b., at mill.

**Spelter.**—The inquiry for Spelter is a little better and prices are strong. We quote prime grades of Western Spelter at 4.90c. to 4.95c., East St. Louis, equal to 5.02½c. and 5.07½c., Pittsburgh.

**Boiler Tubes.**—Some fairly large new orders for Boiler Tubes are coming in from the railroads, mostly for repair work, and it is believed that after the first of the year the demand will materially improve. The demand for Merchant Tubes is slightly better. As a whole, the trade in Tubes this year has been very disappointing. The demand has been dull nearly all the year, and prices have been more or less shaded. For Merchant Tubes in small lots, on which an extra 5 per cent. is allowed in carloads, discounts are as follows:

*Boiler Tubes.*

| | Iron. | Steel. |
|---|---|---|
| 1 to 1¼ in. | 42 | 47 |
| 1¾ to 2¼ in. | 42 | 59 |
| 2½ in. | 47 | 61 |
| 2¾ to 5 in. | 52 | 65 |
| 6 to 13 in. | 42 | 59 |

2¼ in. and smaller, over 18 ft. long, 10 per cent. net extra.
2¾ in. and larger, over 22 ft. long, 10 per cent. net extra.

**Merchant Pipe.**—The demand for the merchant sizes of Pipe is holding up fairly well. The Pipe mills expect a large trade next year, as some important projects are under way, which, if put through, will require a very heavy tonnage of the larger sizes. The mills are absolutely maintain-

ing prices on both Iron and Steel Pipe. Discounts on Steel Pipe, ¾ to 6 in., to the large trade, are 76 and 5 per cent. off list. Regular discounts are as follows:

*Merchant Pipe.*

| | Jobbers, carloads, Steel. Black. % | Galv. % |
|---|---|---|
| ⅛ to ¼ in. | 67 | 51 |
| ⅜ in. | 69 | 55 |
| ½ in. | 71 | 59 |
| ¾ to 6 in. | 75 | 65 |
| 7 to 12 in. | 72 | 57 |
| Extra strong, plain ends: | | |
| ⅛ to ⅜ in. | 60 | 48 |
| ½ to 4 in. | 67 | 55 |
| 4½ to 8 in. | 63 | 51 |
| Double extra strong, plain ends: | | |
| ½ to 8 in. | 56 | 45 |

Discounts on Genuine Iron Pipe are as follows:

| | Black. % | Galv. % |
|---|---|---|
| ⅛ to ¼ in. | 65 | .. |
| ⅜ in. | 67 | 53 |
| ½ in. | 69 | 57 |
| ¾ to 6 in. | 73 | 63 |
| 7 to 12 in. | 70 | 55 |
| Extra strong, plain ends: | | |
| ⅛ to ⅜ in. | 58 | 46 |
| ½ to 4 in. | 65 | 53 |
| 4½ to 8 in. | 61 | 49 |
| Double extra strong, plain ends: | | |
| ½ to 8 in. | 54 | 43 |

**Iron and Steel Scrap.**—The week has been quiet, and it is likely this condition will continue during this month, as leading consumers will be taking inventory, and will take in as little Scrap as possible. An embargo has been placed by the railroads on Scrap for delivery to the Allegheny Steel Company, which has recently been a large buyer of Borings and Turnings, and this embargo may have the effect of slightly weakening prices in these two products. The tone of the Scrap market is not quite as firm as it was a week or two ago, but as yet there is little disposition on the part of dealers to shade prices. Heavy Steel Scrap, $16.50 to $16.75, for Pittsburgh, Sharon, Steubenville or Leechburg, Pa., delivery; for delivery at Monessen, Pa., which takes a higher freight rate, $17 has been quoted. Cast Iron Borings are $11 to $11.25; Bundled Sheet Scrap, $13.50 to $13.75; No. 1 Busheling Scrap, $14.75 to $15; No. 2, $10.75 to $11; No. 1 Cast Scrap, $14.75 to $15; Iron Axles, $24 to $24.50; Sheet Bar Crop Ends, $18.50 to $18.75; Rerolling Rails, $18.50, delivered Cambridge, Ohio, and $19 to $19.50, delivered Cumberland, Md.; Low Phosphorus Melting Stock, $18 to $18.25; Steel Axles, $19.50 to $20; Scrap Bars, $13 to $13.25; Machine Shop Turnings, $12.25 to $12.50; Railroad Wrought Scrap, $16.75 to $17; Railroad Malleable Scrap, $15 to $15.50; Iron Rails, $18.75 to $19, and Locomotive Tires, $17 to $17.25, all per gross ton, f.o.b. Pittsburgh, unless otherwise stated.

**Coke.**—Some inquiries for Furnace Coke are in the market for delivery through first half of next year, one consumer asking for 4000 tons a month and another consumer 5000 to 10,000 tons a month. One leading Coke concern has sold a heavy tonnage of Furnace Coke for delivery in first half at $2, at oven, and we quote strictly Connellsville Furnace Coke for first half delivery at $2 to $2.15, per net ton, at oven. Connellsville 72-hr. Foundry Coke for first half delivery is held at $2.25 to $2.40, most makers asking the higher price. Connellsville Furnace Coke for prompt delivery is very firm, at $1.85 to $1.90, and we quote a sale of about 2000 tons at $1.90. The output of Coke last week was 220,145 tons, a decrease over the previous week of about 8000 tons. A good many Coke plants are still crippled by lack of water.

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The W. R. Beatty Machinery & Equipment Company, manufacturers' agent and dealer in new and second-hand machinery, making a specialty of forging plant equipment, has moved its offices from 613 to 410 House Building, Pittsburgh. Larger offices have there been secured to take care of the growing business.

## Birmingham.

BIRMINGHAM, ALA., November 30, 1908.

**Pig Iron.**—Since last report three leading producing interests in this territory have practically withdrawn from the market, but values are apparently unaffected. The demand for prompt shipments and for delivery during the first quarter is being met with prices on a basis of $13, Birmingham, for No. 2 Foundry, although those concerns that immediately after the election adopted a higher basis are unwilling to make concessions, and report some sales at the figures asked. There is no established quotation on deliveries further advanced than the first quarter, by reason of the fact that the demand for such deliveries has taken no definite form, but it is understood that in a number of cases recent engagements on the $13 basis are subject to an extension of deliveries into the second quarter. Among the latest sales reported is 600 tons for the first quarter at $13.50, Birmingham. A lot of 1000 tons of Gray Forge for first quarter delivery sold at $11.50 per ton, Birmingham; 600 tons of No. 3 Foundry, for delivery during the next three months, sold at $12.50, and 850 tons of No. 2 Soft brought $13. Comparatively small lots of Clifton High Manganese Iron recently sold at $14 per ton for No. 2, and chilling grades of Charcoal Iron are firm, at $20 per ton, at furnace. A leading Water Pipe manufacturer is in the market for a round tonnage of Foundry grades, and the aggregate of comparatively small orders for spot delivery in sight is fairly attractive. The fact that two new foundries will commence operations during the month of December is a significant one, and the enlargements to others that are under consideration can but indicate a period of greater activity when inventories have been taken, and the general status of individual affairs more definitely determined.

**Cast Iron Pipe.**—The principal letting reported during the week just ended was 1000 tons of Water Pipe for the city of Spokane, Wash. This tonnage was awarded the American Cast Iron Pipe Company, Birmingham, Ala., and will be furnished during the early months of next year. Orders for small municipalities have recently come forward in greater volume, and the proportions of each form a consideration more significant with prices fairly satisfactory. It is believed that published quotations more nearly represent the market price for large contracts than at any time for many months. The increased cost of raw material is no doubt the prime factor in the amelioration of market conditions, and in view of the fact that indications are favorable for the maintenance of prices now being asked for such material, Pipe manufacturers manifest indifference as to increased proportions of order book requirements under the existing conditions. We quote Water Pipe as follows, carload lots, per net ton, f.o.b. cars here: 4 to 6 in., $24; 8 to 12 in., $23; over 12-in., average $22, with $1 per ton extra for Gas Pipe.

**Old Material.**—Stock accumulations are being increased wherever practicable and asking prices are not revised. The actual movement from dealers' yards shows little improvement, but the consumption is known to be gradually increasing, and additional announcements to those previously published are made of the resumption of operations at idle mills. We quote dealers' asking prices as follows, which are believed to be firm, per gross ton, f.o.b. cars here:

| | |
|---|---|
| Old Iron Rails | $14.50 to $15.00 |
| Old Iron Axles | 16.00 to 17.00 |
| Old Steel Axles | 13.00 to 13.50 |
| No. 1 Railroad Wrought | 13.50 to 14.00 |
| No. 2 Railroad Wrought | 10.50 to 11.00 |
| No. 1 Country Wrought | 11.00 to 11.50 |
| No. 2 Country Wrought | 9.50 to 10.00 |
| No. 1 Machinery | 11.00 to 11.50 |
| No. 1 Steel | 10.00 to 10.50 |
| Stove Plate and Light Cast | 9.50 to 10.00 |
| Cast Borings | 5.00 to 5.50 |

## Buffalo.

BUFFALO, N. Y., December 1, 1908.

**Pig Iron.**—The bulk of the business placed for the past week has been in larger lots than for the preceding two or three weeks, ranging from 500 to 10,000 tons. The demand continues strong for all grades; but the dropping off in the smaller orders tends to give the market a quieter aspect, notwithstanding the aggregate sales are larger. There is considerable tonnage under inquiry which is not yet placed owing to the fact that prices have stiffened slightly. One of the largest of the local furnaces has withdrawn from the market until after the first half of next year, being booked to capacity until that time. Prices are fairly represented by the following quotations, f.o.b. Buffalo:

| | |
|---|---|
| No. 1 X Foundry | $16.25 to $16.75 |
| No. 2 X Foundry | 15.75 to 16.25 |
| No. 2 Plain | 15.50 to 15.75 |
| No. 3 Foundry | 15.25 to 15.50 |
| Gray Forge | 15.00 to 15.25 |
| Basic | 16.00 to 16.50 |
| Malleable Bessemer | 17.00 to 17.50 |
| Charcoal | 20.25 to 20.75 |

**Old Material.**—The market is about the same as last week, with a continuance of the wide variance of opinion as to present values between dealers and consumers, with the result that very little business is being transacted. Most dealers are holding until after the first of the year, when they expect to realize higher prices. The week has developed a demand for Borings which have advanced slightly. We quote dealers' prices as follows, per gross ton, f.o.b. Buffalo:

| | |
|---|---|
| Heavy Melting Steel Scrap | $15.50 to $16.00 |
| No. 1 Railroad Wrought | 17.00 to 17.75 |
| No. 1 Railroad and Machinery Cast Scrap | 14.75 to 15.50 |
| Old Steel Axles | 19.00 to 20.00 |
| Old Iron Axles | 23.00 to 24.00 |
| Old Car Wheels | 17.00 to 18.00 |
| Railroad Malleable | 14.50 to 15.00 |
| Boiler Plate | 13.00 to 13.50 |
| Locomotive Grate Bars | 12.50 to 13.00 |
| Pipe | 12.50 to 13.00 |
| Wrought Iron and Soft Steel Turnings | 9.50 to 10.00 |
| Clean Cast Iron Borings | 8.50 to 9.00 |
| No. 1 Busheling Scrap | 14.50 to 15.00 |

**Finished Iron and Steel.**—There is continued improve-

ment in inquiry, and a good line of orders coming in for Bars, railroad material and other finished products, with a fair volume of specifications on contracts. Plans and specifications are being prepared for a four-story factory addition to the Crosby Company's metal stamping plant here, requiring about 250 tons of Structural Material, which will be ready to be figured on after the first of the year. All bids on the Schenectady County Court House, at Schenectady, have been rejected, and new plans are to be drawn and the work readvertised.

## Cincinnati.

CINCINNATI, OHIO, December 2, 1908.—(*By Telegraph.*)

November furnished the banner record of the year in business activity, although in the finished lines it was more of future promise than in actual sales. Local Pig Iron sellers report their November business as the greatest for many years, one large agency announcing it as its most important month in its 13 years' existence; another that its order books showed the best sales since August, 1906, which was a record breaker. This week business has slumped off somewhat, and inquiries are fewer for Pig Iron, but in machinery there have been some splendid orders placed, notably in the ice machine line. There is talk among representative furnacemen of the South of a revival of the commissioner plan for Pig Iron sales, and an elimination of the commission men, but as this has been up a number of times before without result not much attention is given it. Scrap dealers are not so united in the matter of prices as heretofore, although the majority of them are still forcing prices upward, particularly on Heavy Melting Steel.

**Pig Iron.**—The most interesting bit of gossip here today is the reported purchase quietly by the largest Pipe interest of between 30,000 and 40,000 tons of Southern Iron for delivery to its Southern plants. Otherwise the market is quiet, and a number of inquiries mentioned in last week's report are understood to be still pending. There is considerable inquiry for third and fourth quarter delivery, but furnaces, for the most part, are very chary of quoting for the last half, although $14, Birmingham, can be done on Southern, and $13.50 on second quarter alone and extending into third quarter. The price of $13 is firm for first quarter, and the best heard for deliveries extending into the second quarter is $13.25. Northern Irons are firm at $15.50, at furnace, and a number of makers are asking $16 for spot business and extending through first quarter. For the first half it is reasonably certain that $15.75 can be done. Rumors of some Southern resale Iron at $12.50 to $12.75 are heard, but the quantity is said to be so limited as to cut no figure in the market. Ohio Silveries, 8 per cent. Silicon, are still quotable at $18.50, at furnace. Malleable Iron is quite dull, which suggests to sellers that the railroads are still withholding business. While dealers agree that December has opened very quietly, the feeling is that consumers who have not covered for the second quarter and beyond must come into the field within the next two weeks and before the holiday lethargy sets in. Southern Indiana and Louisville stove manufacturers have bought considerable Iron during the week, most of the orders going to Southern furnaces. The inquiry from a central Indiana foundry interest for No. 1 Soft and No. 2 Foundry is said to be still in abeyance, as is also that from a large northern Indiana agricultural implement manufacturer who wanted Standard Bessemer, Charcoal Iron and Foundry aggregating something like 15,000 or 20,000 tons. Northern Indiana foundry and machine interests are also said to be negotiating. A local foundry is asking for prices on 500 tons of Foundry Iron. The local melt is improving but slowly, and most large melters have considerable Iron on their yards. There is a scarcity of low grades in the South, and Forge is firm at $11.50, Birmingham. There is said to be an accumulation of White Iron, which is held at about $10.50 to $11. For delivery balance of the year and for the first quarter we quote, based on freight rates of $3.25 from Birmingham and $1.10 from the Hanging Rock District, f.o.b. Cincinnati, as follows:

| | |
|---|---|
| Southern Coke, No. 1 | $16.75 to $17.25 |
| Southern Coke No. 2 | 16.25 to 16.75 |
| Southern Coke, No. 3 | 15.75 to 16.25 |
| Southern Coke, No. 4 | 15.25 to 15.75 |
| Southern Coke, No. 1 Soft | 16.75 to 17.25 |
| Southern Coke, No. 2 Soft | 16.25 to 16.75 |
| Southern Coke, Gray Forge | 14.75 to 15.25 |
| Southern Mottled | 14.50 to 15.00 |
| Ohio Silvery, 8 per cent. Silicon | 19.60 |
| Lake Superior Coke, No. 1 | 17.10 to 17.60 |
| Lake Superior Coke, No. 2 | 16.60 to 17.10 |
| Lake Superior Coke, No. 3 | 16.10 to 16.60 |
| Standard Southern Car Wheel | 22.25 to 23.25 |
| Lake Superior Car Wheel | 21.75 to 22.75 |

(*By Mail.*)

**Coke.**—The most noteworthy incident of the late week is probably the lighting up of some 1500 or 2000 ovens in the Pocahontas region, in the Norfolk & Western territory. Four furnaces going into blast in that section made this possible. In other fields there is no special activity, the needs of most Southern furnaces having been already supplied for the first half. Pocahontas Furnace Coke is quotable in this market at $1.85 to $1.90, at oven, for first half delivery, and Wise County about the same; Connellsville, from $1.75 to $2.25, dependent on brands and deliveries. There is still a lamentable lack of interest in Foundry brands, and the price remains at an attractive figure, namely, $2 to $2.40, according to brands and deliveries. Pocahontas Foundry is obtainable at $2.15 to $2.25; Wise County about the same; Connellsville 72-hr., $2 to $2.40, all at oven. The drought continues to prevail in important producing sections.

**Finished Iron and Steel.**—Dealers are not enthusiastic over current conditions, but very hopeful for the future, the tenor of correspondence indicating a revival early in the coming year. Collections are not good, and many promising specifications that came out directly after election seem to be temporarily shelved. There is considerable talk of the advance in Bar Iron of $2, but dealers do not expect it to have any effect on present prices to the trade. There will be several large Structural jobs for specifications early in the year, but new things in this line for the balance of the year are scarce. Prices, f.o.b. Cincinnati, are as follows: Iron Bars, carload lots, 1.55c., base, with half extras; small lots from store, 1.85c., base, half extras; Steel Plates, carload lots, 1.75c., base with half extras; small lots from store, 1.85c., base, half extras; Base Angles, carload lots, 1.85c., base; small lots from store, 2.10c.; Beams, Channels and Structural Angles, 1.85c., base; small lots from store, 2.10c.; Plates, ¼-in. and heavier, carload lots, 1.85c.; small lots from store, 2c.; Blue Annealed Sheets, heavy, No. 16, carload lots, 2.15c.; small lots from store, 2.50c.; No. 14, carload lots, 2.05c.; small lots from store, 2.40c.; No. 10 and heavier, carload lots, 1.95c.; small lots from store, 2.20c.; No. 12, carload lots, 2c.; small lots from store, 2.30c.; Sheets (Light), Black, No. 28, carload lots, 2.65c.; Galvanized Sheets, No. 28, carload lots, 3.70c.; Steel Tire, 4-in. and heavier, carload lots, 1.95c.; Plates 3-16 and No. 8, carload lots, 2c.; small lots from store, 2.20c.

**Old Material.**—The present week finds dealers not quite so united on the price question, and on some items the spread is as much as $1 to $2 a ton. There have been some heavy sales of Melting Steel, one large concern announcing that it alone since election has disposed of 35,000 tons. Most other lines of Scrap are quiet, and not much is expected until after the holiday season. Consumers are not much in evidence, and the post-election activity has been furnished largely by the dealers who were trying to cover before the market had steadied to firm proportions. There has been considerable interest manifested in Rerolling Rails, and in Old Iron Rails the greatest difference of opinion exists between certain large dealers; one quoting $14 to $15, another $16 to $17, and in lesser degree the same difference between them on long and short Old Steel Rails. As nearly as the market can be gauged in the light of this difference of opinion dealers' prices to the trade are as follows, which are f.o.b. Cincinnati:

| | |
|---|---|
| No. 1 R. R. Wrought, net ton | $13.50 to $14.50 |
| Cast Borings, net ton | 5.50 to 6.00 |
| Heavy Melting Steel Scrap, gross ton | 15.50 to 16.00 |
| Steel Turnings, net ton | 6.00 to 7.00 |
| No. 1 Cast Scrap, net ton | 13.00 to 14.00 |
| Burnt Cast, net ton | 9.00 to 10.00 |
| Old Iron Axles, net ton | 16.75 to 17.75 |
| Old Iron Rails, gross ton | 15.00 to 16.00 |
| Old Steel Rails, short, gross ton | 13.00 to 14.00 |
| Old Steel Rails, long, gross ton | 13.00 to 14.00 |
| Relaying Rails, 56 lb. and up, gross ton | 21.50 to 22.50 |
| Old Car Wheels, gross ton | 15.00 to 16.00 |
| Low Phosphorus Scrap, gross ton | 14.00 to 15.00 |

## Cleveland.

CLEVELAND, OHIO, December 1, 1908.

**Iron Ore.**—The shipping season is practically at an end. The December movement will be very light, probably not over a dozen cargoes. The last boats will leave the upper lake ports not later than Saturday noon, when the insurance expires. There is some speculation among Ore men as to when the buying movement for next year will begin. This year it was well along in the summer before it got fairly started, but the heavy buying for shipment in 1906 and 1907 took place in November of the year before. Ore men do not expect that there will be any activity for the coming year before the latter part of January and perhaps it may be later. The question of next year's prices has as yet been given no consideration by the Ore men. The tonnage on the docks is somewhat larger than on December 1 last year. Ore is moving fairly well from docks to furnace yards. Prices at Lake Erie docks per gross ton are as follows: Old Range Bessemer, $4.50; Mesaba Bessemer, $4.25; Old Range Non-Bessemer, $3.70; Mesaba Non-Bessemer, $3.50.

**Pig Iron.**—The local market has quieted down. The market in the Toledo territory, however, has continued fairly active, and several sales of Foundry Iron for first half delivery are reported. The largest sale was a 5000-ton lot, with one of 3000 tons, and some of smaller quantities. Although the names of the large purchasers are withheld, it is known that Michigan stove foundries have been in the market during the past few days for considerable Foundry

Iron. The sales have been made at $16, Toledo, furnace, for No. 2 Foundry, for first half delivery. We also note the sale of 900 tons, half No. 2 Foundry, and half Malleable, for December delivery, at $15.75, Toledo furnace. Inquiries in this immediate territory are all for small lots, 500 tons and less, the inquiries coming from some of the smaller foundries that did not buy during the recent active market. The price generally quoted for No. 2 Foundry Iron is $16, Valley furnace, for first half delivery. Furnaces that are well sold up for the first quarter are holding firmly to this price, but it is understood that one or two furnace interests that are still actively seeking business are shading this price to about $15.50, for shipment to some points where competition is sharp. A local interest is staying practically out of the market by quoting $17, at furnace, for No. 2. Shipping orders on contracts show improvement. The stocks in local furnace yards have been largely reduced. The River Furnace of the Upson Nut Company, which has been out of blast for relining, will probably be blown in early this month. There is still considerable inquiry for Basic Iron, and a local interest reports the sale of about 1000 tons at $16, Valley furnace, for December delivery. There is a slight improvement in inquiries for Malleable Iron. Foundry Iron interests expect the market to remain quiet for the balance of the year, and that there will not be another active buying movement until well along in January. For the balance of the year we quote, delivered, Cleveland, as follows:

| | |
|---|---|
| Bessemer | $17.40 to $17.90 |
| Northern Foundry, No. 1 | 17.25 to 17.75 |
| Northern Foundry, No. 2 | 16.75 to 17.25 |
| Northern Foundry, No. 3 | 16.25 to 16.75 |
| Gray Forge | 15.00 to 16.00 |
| Southern Foundry, No. 2 | 17.35 |
| Jackson County Silvery, 8 per cent. Silicon | 20.05 |

**Coke.**—The market is firm and the demand is fairly good. Foundrymen continue to cover for their requirements for the first half. We quote Standard Connellsville Furnace Coke at $1.80, at oven, for spot shipment. For the first half the price is firm at $2, at oven. For delivery the first half of next year we quote Connellsville 72-hr. Foundry Coke at $2.25 to $2.40, at oven.

**Finished Iron and Steel.**—Considerable new business has developed and specifications are holding up fairly well, although the tonnage ordered was not quite as large as during the previous week. Mill agents, however, seem to be quite well satisfied with the amount that is being taken on contracts. While jobbers are taking very little for mill shipment, their warehouse business is quite good, having improved considerably during the past month, and they are specifying quite freely for stock. The lake shipbuilding industry shows further improvement. During the week the American Shipbuilding Company closed contracts for two new freight boats for 1909 delivery. One will be a 376-ft. boat, to be built at the Wyandotte plant for the Michigan Alkali Company, and the other will be a 524-ft. freighter that will be built for a furnace interest east of Buffalo. This makes six freight boats that the company has under contract for 1909 delivery. These orders have resulted in the placing of contracts for a portion of the material required for their construction. The Jones & Laughlin Steel Company has been given a contract for 1000 tons of Plates and 1000 tons of Shapes for one of the boats, specifications for which are to be furnished at once, and a contract for 1700 tons of Plates and Shapes has been given to the Carnegie Steel Company. Another contract for 1300 tons of Plates for the shipbuilding company is pending. The Structural market is somewhat more active as a result of the action of the mills in allowing contracts to be made for delivery until the end of the coming year. The largest contract closed is one with a bridge company in Ohio for 2500 tons. Some inquiries are coming from the railroads for Structural Plates and Shapes for repair work. Mills are getting good specifications for special Shapes, which come under the Steel Bar classification, from implement makers and automobile builders. Local jobbers have withdrawn their quotation of 1.35c., Pittsburgh, for Iron Bars, and local mills have advanced their price and are now quoting on the basis of 1.50c., Pittsburgh. Another interest is quoting Iron Bars on the basis of 1.40c., Pittsburgh, for Cleveland delivery. The demand for Iron Bars is still light. One of the local Bar mills is running, but the other will probably be shut down for some time. The demand for Plates shows a slight improvement, some specifications now coming in from consumers of Tank Plates. There is also an improvement in the demand for Black and Galvanized Sheets in small lots. Prices on both Plates and Sheets are firmer, the regular prices now being fairly well maintained. The Wheeling & Lake Erie Railroad, which had an inquiry out for 3000 tons of Standard Section Rails last week, has placed its contract. We quote Iron Bars, 1.50c., Cleveland, for car lots; Steel Bars, 1.50c., Cleveland, for car lots, half extras; Beams and Channels, 1.70c., Cleveland, and Plates, ¼-in. and heavier, 1.70c., Cleveland. We quote Sheets, mill shipments, car lots, Cleveland, as follows: Blue Annealed, No. 10, 1.90c.; Box Annealed, No. 28, 2.60c.; Galvanized, No. 28, 3.65c. Jobbers quote Iron and Steel Bars out of stock at 1.65c. to 1.70c. Beams and Channels from warehouse are 2c., and Plates, ¼-in. and heavier, 1.90c. Warehouse prices on Sheets are as follows: Blue Annealed, No. 10, 2.10c.; Box Annealed, No. 28, 2.70c.; Galvanized, No. 28, 3.80c. Warehouse prices on Boiler Tubes, 2¾ to 5 in., are 65 per cent. discount, and on Black Merchant Iron Pipe, base sizes, 71 per cent. discount.

**Old Material.**—The market continues very firm, and a further advance in the price of several grades is noted. Business is fairly active, but the transactions are mainly among dealers. More inquiries are coming from consumers, but few actual sales to the mills are reported. Dealers are looking for still higher prices, and are not anxious to make sales of accumulated stocks at present prices. The flurry of short covering which caused a sharp advance in prices a week ago has subsided, dealers succeeding in covering on contracts. Dealers' prices to the trade, per gross ton, f.o.b. Cleveland, are as follows:

| | |
|---|---|
| Old Steel Rails | $17.00 to $17.50 |
| Old Iron Rails | 19.50 to 20.00 |
| Steel Car Axles | 20.50 to 21.00 |
| Old Car Wheels | 16.00 to 16.50 |
| Heavy Melting Steel | 15.50 to 16.00 |
| Relaying Rails, 50 lb. and over | 22.00 to 23.00 |
| Railroad Malleable | 14.50 to 15.00 |
| Agricultural Malleable | 13.50 to 14.00 |
| Light Bundled Sheet Scrap | 9.50 to 10.00 |

The following prices are per net ton, f.o.b. Cleveland:

| | |
|---|---|
| Iron Car Axles | $20.50 to $21.00 |
| Cast Borings | 9.00 to 9.50 |
| Iron and Steel Turnings and Drillings | 10.00 to 10.50 |
| Steel Axle Turnings | 11.00 to 11.50 |
| No. 1 Busheling | 14.00 to 14.50 |
| No. 1 Railroad Wrought | 15.50 to 16.00 |
| No. 1 Cast | 14.00 to 14.50 |
| Stove Plate | 12.00 to 12.50 |
| Bundled Tin Scrap | 9.00 |

## Metal Market.

NEW YORK, December 2, 1908.

**Pig Tin.**—The statistics of the Tin trade as compiled by C. Mayer were unfavorable to holders of the metal. The visible supply increased 2429 tons, the total visible supply at the end of November being 19,953 tons, the largest since the end of May, 1899, when it was 20,485 tons. This was somewhat of a surprise to the trade, and was followed by a sharp decline in price. Consumption was larger than in previous months, deliveries in the United States being 3300 tons, but what made the great difference was the shipment from the Straits, which were nearly 6000 tons. The stock in the United States now amounts to 2193 tons, which is larger than for several months past, and is sufficient for all needs. The visible supply has increased by working both ends against the middle. Production this year has increased and consumption decreased, shipments from the Straits being over 6600 tons larger than last year, and the deliveries in the United States 3200 tons smaller the first 11 months this year than the same period last year. One of the reasons for the present dullness in the Tin trade is the fact that much Tin sold in October and last month was for late November and early December delivery. As this Tin is now being delivered, there is no necessity for consumers buying any more. Some interest is manifest in future Tin, but it is not heavy, and the entire trade is quiet. Price changes during the week show a steady decline, the daily range being as follows:

| | Cents. |
|---|---|
| November 25 | 30.30 to 30.35 |
| November 27 | 29.85 |
| November 30 | 29.70 |
| December 1 | 29.60 |
| December 2 | 29.40 |

There are afloat for American ports 2837 tons. The London market is again lower, closing to-day at £133 15s. for spot and £135 15s. for futures.

**Copper.**—Trade has been very quiet, although consumers of Lake Copper are working steadily at approximately full time. The Wire trade, however, which consumes the bulk of the Electrolytic Copper, is still quiet. The successful flotation of a loan for the telephone companies this week may mean some Wire business in the future. The lack of success when this company was in the market for money about two years ago was the signal for the collapse of the Copper market. Prices of Lake are steady, at 14.50c. to 14.62½c. Electrolytic is obtainable at 14.50c., delivery 30 days, or 14.25c., net cash, f.o.b. New York, exporters' terms. The exports of Copper for the month of November amounted to 19,146 gross tons. The total exports for the first 11 months of this year amounted to 268,153 tons. In the same period last year the exports were 191,151 tons. The imports of Copper Ore and Matte for October reduced to Copper Contents were 12,700 tons, the largest month on record. The total for the first 10 months of this year was 74,400 tons, compared with 106,200 tons for the same 10 months last year. This shows that the import movement has definitely turned. Viewed another way, the net exports for the month were less than 7000 tons. The London market closes to-day at £63 for spot and £64 for futures.

**Pig Lead.**—The market is dull, but prices are practically

unchanged, the leading interest offering shipment Lead in 50-ton lots at the unchanged price of 4.30c., New York. Independent producers are asking 4.35c. to 4.37½c., New York, and 4.20c. to 4.22½c., St. Louis.

**Spelter.**—Prices on Spelter are again higher, and 5.20c., New York, seems to be the ruling quotation. This corresponds to 5.05c., St. Louis. Some January Spelter is offered at 5.17½c., New York, or 5c., St. Louis. The activity in Spelter is not very pronounced.

**Aluminum.**—The prices of Aluminum are unchanged at 24c. for No. 1 Ingots, 32c. for Rods and Wire and 34c. for Sheets. There is quite a stock of Aluminum here, which nets the holders between 25c. and 27c. This was bought abroad in anticipation of undercutting the producers here, but the importers are sick of their bargain.

**Nickel.**—Prices are unchanged at 45c. for 10-ton lots and 50c. to 60c. for smaller quantities.

**Antimony.**—No business has developed and prices continue without change. Hallett's is held at 8.12½c. to 8.25c., Cookson's at 8.37½c. to 8.50c. and outside brands at 8c.

**Tin Plates.**—The market is quiet and prices are unchanged, at $3.70, Pittsburgh, and $3.89, New York. In Swansea, Welsh Plates are unchanged, at 12s. 3d.

**Old Metals.**—Consumers are buying only sparingly, and the only activity in the market is the buying by dealers who are anticipating better business after January 1. Selling prices are as follows:

| | Cents. |
|---|---|
| Copper, Heavy and Crucible | 13.50 to 13.75 |
| Copper, Heavy and Wire | 13.25 to 13.50 |
| Copper, Light and Bottoms | 12.00 to 12.25 |
| Brass, Heavy | 9.50 to 9.75 |
| Brass, Light | 7.50 to 7.75 |
| Heavy Machine Composition | 12.50 to 13.00 |
| Clean Brass Turnings | 8.50 to 9.00 |
| Composition Turnings | 10.50 to 11.00 |
| Lead, Heavy | 4.25 |
| Lead, Tea | 4.00 |
| Zinc Scrap | 3.75 |

## New York.

NEW YORK, December 2, 1908.

**Pig Iron.**—The market is quieter, but is firm. There have been some sales of round blocks of Foundry Iron in New England and in this district, including several lots of 2000 and 3000 tons. New England interests have purchased about 7000 tons of Malleable Iron, and an inquiry for 6000 tons for the Philadelphia District is in the market. There is still some unsatisfied demand from Pipe makers. We quote, at tidewater, $17.50 to $17.75 for No. 1 Northern Foundry; $17 to $17.50 for No. 2 Foundry, and $16.15 to $16.50 for No. 2 Plain. Alabama Irons are quoted $17.50 to $17.75 for No. 1 Foundry and $17.25 to $17.50 for No. 2 Foundry.

**Steel Rails.**—An occasional order for a few thousand tons comes up. The Central of New Jersey is understood to have taken about 6000 tons of Open Hearth Rails, and at Pittsburgh orders for 7000 to 8000 tons of Bessemer Rails were placed last week, including 3000 tons for the Wheeling & Lake Erie. We quote $28, at mill, for Bessemer, and $30 for Open Hearth Rails. A recent inquiry from one road presented alternative specifications which it was the evident expectation of the road's engineers would be responded to by varying quotations. It appears, however, that the mills make no distinctions except those provided for in their sliding scale of charges for high percentage cropping.

**Structural Material.**—Following a record of more than 100,000 tons of fabricated Steel placed in November, December has made a good start, and from what is known of the business pending a total of fully 100,000 tons is looked for for this month. Last week made a remarkable record, with 29,000 tons taken by outside companies and 28,000 tons by the American Bridge Company. Of work that has been bid on, at least half of which is counted on to come on the books this month, there is 100,000 tons. Some of this is public work, and therefore uncertain. In addition are inquiries amounting to about 70,000 tons, on which bids have not been made, and practically none of this is subject to political contingencies. The American Bridge Company has received the order for 10,000 tons of Steel for the second Open Hearth building at Gary, Ind., and two Bar mills will come along later for the same plant. The Northern Pacific receives bids this week on 8500 tons of Steel for bridges, this representing its calculated requirements for 1909. The Chesapeake & Ohio and the Baltimore & Ohio are each in the market for about 500 tons of bridges, and the Lackawanna has placed 900 tons, which is presumed to represent its requirements for 1909. The Cambria Steel Company has taken three contracts recently, one being for a cement works at Alsen, N. Y., requiring about 1100 tons. The Steel for the Hudson County Highway Bridge over the Hackensack River in New Jersey, 500 tons, goes to the American Bridge Company. On plain material contracts with dealers are now made for the first quarter of 1909, while sales to manufacturers are made with deliveries covering the first half, and in some cases the entire year. We quote, as follows, for tidewater deliveries, mill shipments: Beams, Channels, Angles and Zees, 1.76c.; Tees, 1.81c. On Beams, 18 to 24 in., and Angles, over 6 in., the extra is 0.10c. Structural Material, cut to lengths, is sold in small lots at 2¼c.

**Ferroalloys.**—The market for Ferromanganese is broader, and, strange as it may seem, some inquiries have been made for the last half of 1909 delivery. The price is steady at $45, seaboard. The demand for 50 per cent. Ferrosilicon has lagged considerably and prices are uneven, ruling around $64 to $65, at makers' works.

**Bars.**—The Bar Iron market is quiet, but firm, with quotations ruling from 1.51c. to 1.56c., tidewater. Steel Bars are unchanged, at 1.56c., tidewater.

**Plates.**—The local market is without any special movement, the demand being confined to small lots. Prices on standard sized Plates are firmly held as follows: Sheared Plates, 1.76c. to 1.86c.; Flange Plates, 1.86c. to 1.96c.; Marine Plates, 2.16c. to 2.26c.; Firebox Plates, 2.65c. to 3.50c., according to specifications.

**Cast Iron Pipe.**—Current business consists of small lots ordered for quick shipment for immediate use. Several inquiries consisting of a few hundred tons each have been received for spring delivery, on which manufacturers are quoting about $1 per ton advance. On carload lots of 6 in. for immediate shipment, the price is unchanged, at $24 per net ton, at tidewater.

**Old Material.**—Dealers are manifesting greater interest in the market than consumers. The latter are buying some Steel Scrap and some rolling mill stock, but otherwise are doing little. Dealers, however, appear to have sold quite freely some time ago, and are now actively endeavoring to fill their contracts, and in notable instances have been obliged to pay considerably more than they will receive. Probably due to this character of buying, prices are stronger, although the general impression prevails that the Iron market will steadily improve and that a higher level of prices is justified. A special transaction was a sale on private terms of 7000 tons of Relayers by a leading railroad, the buyer expecting to hold them for more favorable conditions in the market. Quotations are as follows, New York and vicinity, per gross ton:

| | |
|---|---|
| Old Girder and T Rails for melting | $13.50 to $14.00 |
| Heavy Melting Steel Scrap | 13.50 to 14.00 |
| Old Steel Rails, rerolling lengths | 15.50 to 16.00 |
| Relaying Rails | 23.50 to 24.00 |
| Old Iron Rails | 18.50 to 19.00 |
| Standard Hammered Iron Car Axles | 21.00 to 21.50 |
| Old Steel Car Axles | 18.00 to 18.50 |
| No. 1 Railroad Wrought | 17.00 to 17.50 |
| Iron Track Scrap | 14.50 to 15.00 |
| No. 1 Yard Wrought, long | 16.00 to 16.50 |
| No. 1 Yard Wrought, short | 14.50 to 15.00 |
| Light Iron | 8.50 to 9.00 |
| Cast Borings | 9.50 to 10.00 |
| Wrought Turnings | 10.50 to 11.00 |
| Wrought Pipe | 12.50 to 13.00 |
| Old Car Wheels | 15.00 to 15.50 |
| No. 1 Heavy Cast, broken up | 14.50 to 15.00 |
| Stove Plate | 12.50 to 13.00 |
| Locomotive Grate Bars | 12.50 to 13.00 |
| Malleable Cast | 13.50 to 14.00 |

William M. Hoffman, formerly with the Tennessee Coal, Iron & Railroad Company, in the Philadelphia territory, has lately become associated with Crocker Brothers, 99 John street, New York. He will represent them in the New York territory in the sale of Pig Iron.

Nash, Isham & Co., Beaver Building, New York, have been appointed Eastern sales agents of the Juniata Furnace & Foundry Company, Newport, Perry County, Pa., maker of the Marshall brand of Pig Iron.

## Iron and Industrial Stocks.

NEW YORK, December 2, 1908.

Interest in the stock market has abated considerably and transactions are, therefore, in much less volume. Fluctuations are narrow, indicating that no special influences are operative to move prices up or down to any great extent. Even the tariff hearings at Washington have failed to affect the iron and steel stocks materially. The range of prices on active stocks from Thursday of last week to Tuesday of this week was as follows: United States Steel common 54⅝ to 57, preferred 112¾ to 113⅛; Bethlehem Steel common 23¼ to 24; Car & Foundry common 46⅛ to 47⅝, preferred 108; Locomotive common 55¾ to 56¾, preferred 109⅝ to 110; Steel Foundries 39⅞ to 40; Cambria Steel 38 to 39; Colorado Fuel 38 to 39⅜; Crucible Steel common 8, preferred 53 to 53¼; Pressed Steel common 39⅛ to 39⅞; Railway Spring common 43 to 43½; Republic common 27 to 27⅞, preferred 87 to 88; Sloss-Sheffield common 78¾ to 80; Cast Iron Pipe common 27 to 28, preferred 75; Can common 9½ to 9⅞, preferred 75⅛ to 76⅞. Last transactions up to 1.30 p.m. to-day are reported at the following prices: United States Steel common 54¾, preferred 112⅝, bonds 102⅜; Car & Foundry common 46¼, preferred 108; Locomotive common 56, preferred 110; Colorado Fuel 38;

Pressed Steel common 39⅝, preferred 97½; Railway Spring common 43; Republic common 27, preferred 86⅞; Sloss-Sheffield common 79½; Cast Iron Pipe common 29¾, preferred 74⅞; Can common 9⅞, preferred 76⅞.

**Dividends.**—The American Car & Foundry Company has declared the regular quarterly dividend of 1¾ per cent. on the preferred stock and ½ per cent. on the common stock, payable January 1.

The International Silver Company has declared the regular quarterly dividend of 1 per cent. on the preferred stock, payable January 1.

The Boston Belting Company has declared the regular quarterly dividend of 2 per cent., payable January 1.

The Landis Tool Company, Waynesboro, Pa., has declared an annual dividend of 7 per cent., payable January 1.

## Great Britain as a Structural Steel Exporter.

In a recent discussion of the duty on structural steel before the Ways and Means Committee, the point was brought up that American manufacturers sell beams, angles, &c., in Canada in competition with shapes made in Great Britain, although the latter country has the advantage of a preferential rate of duty.

The fact is that for many years Great Britain depended very largely for its beams, which are called "joists" in England, upon the Belgian and German mills, and that particularly Belgium supplied the colonies, among them Canada. The situation has changed somewhat in recent years by the building of modern structural mills in England, but the chief source of the shapes used in the Dominion, outside of our own country, has been Belgium and Germany. The present position of the British structural trade is clearly stated as follows in a paper read before the Staffordshire Iron and Steel Institute, entitled "The World's Export Trade in Iron and Steel, and Its Regulation," by Harold Jeans, editor of the *Iron and Coal Trades Review*, at a meeting at Dudley, November 21, 1908:

For several years foreign steel joists were invariably sold in Great Britain, delivered at important centers of distribution, at prices below the British makers. Especially in the eighties, the imports of joists into this country increased rapidly. This, however, was largely due to foreign engineers, and to architects specifying the use of girders in building work much more largely than was formerly the case in this country. The increased demand led to modern girder mills being erected abroad, which, coupled with large stocks, gave our rivals many advantages. While these still are largely the controlling factors of the situation, the British makers are now fully abreast of Continental ones, and the point has been reached where we are sending considerable quantities abroad. It is not possible to state the quantities exported by different countries, except as estimates, but the following table shows the position so far as Great Britain and Belgium are concerned:

| | British imports. Tons. | British exports. Tons. | Total Belgian exports to all countries. Tons. |
|---|---|---|---|
| 1904 | 123,000 | 50,000 | 61,000 |
| 1905 | 123,000 | 64,000 | 83,000 |
| 1906 | 138,888 | 107,000 | 101,000 |
| 1907 | 89,000 | 106,000 | 89,000 |

It will be seen that last year, for the first time, our exports exceeded our imports. Our imports are almost entirely supplied by Belgium and Germany, with increasing quantities from the latter country. Our exports are entirely to markets outside of Europe. Roughly, 60 per cent. go to India and the Colonies and the remainder to foreign countries. Joists have been for some time sold under agreement on the Continent, and the same remark applies to this country. There are comparatively few makers of the larger sections, and the trade should not be difficult to regulate.

The Allegheny Steel Company, Farmers' Bank Building, Pittsburgh, Pa., with open hearth steel plant and sheet mills at Brackenridge, Pa., states that it is not connected in any way with the Western Pennsylvania Steel Corporation, recently granted a charter under the laws of the State of New Jersey, with a capital stock of $700,000. It is reported that the latter proposes to build large sheet and plate mills at Tarentum, Pa., but nothing official has been given out.

## New Publications.

**Guide Practique du Chimiste Metallurgiste et de l'Essayeur (Practical Guide for the Metallurgical Chemist and Assayer).** By L. Campredon. Published by Ch. Beranger, Paris, France, and Liege, Belgium.

The second edition of Campredon's work, for France the classic, has just been issued, the first having been published in 1907. During that time, of course, enormous progress has been made in all the principal industrial countries, and the demands upon the chemist have multiplied and have been diversified greatly. M. Campredon, who is himself at the head of a large commercial laboratory at Saint-Nazaire-sur-Loire, France, has kept close track of the literature of France, Germany, England and this country, and is thoroughly abreast of the times. His presentation of methods is clear and concise, and we like particularly his frequent introductory paragraphs and specific methods in which he explains the chemical principles upon which each is based. Of the whole book of over 800 pages, close to 200 pages are devoted to iron and steel.

**The Philadelphia Foundry Foremen.**—The regular monthly meeting of the Associated Foundry Foremen of Philadelphia and vicinity was held in that city November 17. Officers for the ensuing year were elected as follows: W. A. Perrine, Abram Cox Stove Company, Philadelphia, president; E. H. McCoy, Stanley G. Flagg & Co., Philadelphia, vice-president; D. M. Kittinger, American Bridge Company, Pencoyd, Pa., secretary; G. M. Benkert, Fairmount Foundry Company, Philadelphia, treasurer. Six new applications to active membership were received and accepted. A paper on "Semisteel" was read by W. P. Cunningham, member, describing the process of making semisteel, the effect of the silicon, sulphur, phosphorus, manganese and carbon in the metal and the importance of having chemical analyses form the basis of procedure in mixing the contents. A discussion followed, in which the results obtained in several experiments were given. At the regular meeting in December, it is the expectation to have Dr. Richard Moldenke present, who will address the association on the subject of "Cupola Practice."

The American Locomotive Company is finding a heavier demand for its products. Several of the leading systems of the country have placed orders in the past 30 days for 10 to 50 locomotives each. Among these are 12 freight oil burning engines of the Mogul type for the Panama Railroad, at $11,950 each. These engines will be turned out at the Brooks plant at Dunkirk, N. Y. The Schenectady plant is now engaged in the manufacture of 55 locomotives for the Chicago & Northwestern, and with the completion of this order it is expected to start on an order for 16 10-wheel passenger engines for the Missouri, Kansas & Texas. A large order for pig iron for 1909 delivery has just been placed by the purchasing department, consisting of 13,500 tons, all of No. 2 foundry, of which 8000 tons will be divided between the Dunkirk and Schenectady plant, and the balance goes to the Paterson, Pittsburgh and Richmond plants. The company has just announced the appointment of W. S. Seamons, Jr., as assistant manager and to be in charge of the Schenectady plant. The position of superintendent of the Schenectady plant has been abolished and the duties will also be assumed by Mr. Seamons.

The New York Central and West Shore railroads will establish, effective December 24, a regulation fixing the minimum carload weight on shipments of scrap at 20 gross tons, except in cases where the marked capacity of the car is less, in which case the minimum carload weight shall not be less than 15 gross tons.

# The Machinery Trade.

NEW YORK, December 2, 1908.

The strong feeling of optimism still prevails among machinery merchants, despite the fact that since our last report there has been no further increase in the demand, nor have the larger interests come into the market for important requirements. With the great majority of machinery houses, however, trade is holding up well to the level of the previous few weeks, but there are some who note a falling off in the demand for their products. General conditions appear to be sound, and a gradual resumption to normal business is confidently looked for in the near future by practically all. Of the business received, which is made up principally of small orders, the greater portion is stated to have come from points west of New York. One company whose trade was formerly centered in the city is now shipping most of its products to other points. This is due to some extent to the inactivity of the larger corporations, including the railroads, many of whose purchasing departments are located here. Aside from the New York Central Railroad, which has been a steady customer in the market for some time and which placed a few orders the past week, the Eastern railroads have purchased but little. In the West houses are figuring on a fair sized list of machine tools for the Union Pacific Railroad, whose director of purchases is located in New York.

The plans of several of the important railroad systems entering New York to electrify part of their systems is of considerable interest to the machinery trade, as the work will necessitate the purchase of a great deal of mechanical equipment. This is one of the new developments which will be of much benefit to manufacturers of electrical equipment especially. It will be remembered that the Pennsylvania Railroad recently placed an order with the Westinghouse Electric & Mfg. Company for $5,000,000, for electrification work, and that the Erie Railroad announced its intention to electrifying part of its system. The New York, New Haven & Hartford Railroad has made application to the Public Service Commission for permission to electrify its main line from New York to Stamford, Conn.

The New York Central & Hudson River Railroad is preparing to buy machinery for its new power house at West Albany, N. Y., and inquiries which the trade has been expecting for a long time are now in the market. The list covers power equipment which will include two 900-hp. engines, boilers to match, and a general line of coal handling and other power machinery needed for a power house of that size. It is understood that an appropriation covering the expenditure has been made, and shortly after the bids are figured up it is thought that the contracts will be awarded.

It has been decided by the Carolina, Clinchfield & Ohio Railroad, Johnson City, Tenn, to locate its general shops at Erwin, about 16 miles from Johnson City. Contract for the grading work has been let and from this it is evident that the company is to go ahead with the work which it has had under consideration for many months. As these are to be the main shops of the road they will likely be of considerable size, and will necessitate the purchase of a great deal of mechanical equipment.

The Hammond Iron Works, Warren, Pa., which is to enlarge its plant to meet the increased demand for its products, expects to purchase rolls, rotary beveler, shears, punches, &c., to equip the new additions. Considerable of the required equipment, including three overhead traveling cranes, has been purchased. The company has let contracts for the erection of two new buildings, one 43 x 190 ft., and the other, 56 x 122 ft., and when these are completed it will have one of the largest plants in the country devoted exclusively to steel tank and steel plate construction.

The Crosby Company, Buffalo, N. Y., which is planning to erect an extensive addition to its plant on Pratt street for the manufacture of stamped sheet metal goods, will purchase six to eight motors with the necessary transformers, shafting, pulleys, belting, &c., three elevators, several large presses and patterns. The company has purchased the Curtiss malt house, having a frontage of 189 ft., which it will remodel into a three-story factory, and after the first of the year will erect a four-story addition of brick and structural steel, giving a total frontage of 400 ft. on Pratt street.

About $65,000 worth of iron working machinery, consisting of screw machines, lathes, milling machines, &c., was destroyed in the recent fire at the plant of the National Mfg. Company, Pembroke, Ont., and most of this machinery will have to be replaced inside of eight months. The company, which has a second plant at Ottawa, which can take care of its work for a few months, has not yet decided upon plans for rebuilding the burned structures. The plant was equipped with a steam plant of 125-hp., and two years ago a large water power near the plant was developed, and the company installed a complete electrical equipment. As soon as plans are in shape it is likely that the company will ask bids for the required machinery.

Bids have been sent in for two traveling cranes to be used in the shops to be constructed at Plattsburgh, N. Y., by the Lozier Motor Company, which recently placed contracts for the construction of the new structures. It is understood that the company is not yet ready to take bids on the machine tool equipment, but it is likely that this matter will be taken up shortly. The additions, which will consist of a machine shop, 150 x 162 ft., blacksmith and testing building, 50 x 90 ft., and store room, 50 x 90 ft., will necessitate the purchase of considerable new machinery.

To increase the capacity of its plant and to extend its trade, the W. Eddy Plow Company, Greenwich, N. Y., has incorporated under the same name, with a capital stock of $100,000. The company has received some large orders for its plows, and to supply the demand will use a portion of the increased capital for installing new machinery of modern type, to bring its plant to the highest efficiency. The company has considered the possibility of making extensive changes to its plant next year, although no definite plans have been formed, and it is thought that new and larger buildings will be erected to take the place of the present plant. The development of electric power from the present water power for running the machinery is also being considered. The officers of the new company are O. H. Eddy, president and general manager; J. W. Wallace, vice-president; W. T. Liddell, treasurer; I. V. H. Gill, secretary; T. A. Eddy, assistant manager, who with H. C. Gray, C. C. Van Kirk, I. C. Blandy, Leroy Thompson, F. W. Eddy and J. R. Skinner constitute the Board of Directors.

The Onondaga Litholite Company, Syracuse, N. Y., is open for bids on one 7½-ton electric traveler, 25 ft. span; sand molding machines, pattern making machines, woodworking machines, planers for planing stone, general foundry equipment, belt conveying machinery, shafting, belting, clutches, and hangers.

J. W. Sisson, Gloversville, N. Y., is ready for bids on the following machinery, to be used in connection with his automobile repair shop: One lathe, one drill press, one milling machine, one motor driven air compressor, and various small machines.

The Perine Machinery Company, 902-908 First avenue, South, Seattle, Wash., is in the market for a machine to face columns, both round and square, 20 in. in diameter and 20 ft. long. The company desires a machine for doing this work without using a lathe.

There are some inquiries in the market for machinery to be installed in the plant of the General Roofing Company, East St. Louis, Ill., whose factory buildings were burned down several months ago. The company at that time had one of the largest roofing paper plants in the country, its production being about 30 tons every 24 hr., and it is understood that the plant was practically destroyed. The company has planned to rebuild on the same scale as before, and this will mean the purchasing of a large amount of power equipment, in addition to the general line of paper machinery.

The Felt Paper Company, Rowlandville, Md., is doubling the size of its plant, and is now buying machinery equipment to install in its addition. The company has been producing about 12 tons of roofing felt a day, and expects with its new equipment to produce 24 tons a day. It now has about 400 hp., and will need power equipment of about the same capacity, in addition to pulp beaters and other paper producing equipment.

Considerable machinery will be required for the Belnord Apartments, to be erected at Broadway and Eighty-sixth streets, New York, which is to be the largest apartment building in the world. The George A. Fuller Company, which has offices on the site of the proposed building, is now letting contracts for equipment, and L. K. Comstock & Co., 50 Church street, have acquired the electrical contract, and now have inquiries out for two 200-kw. units and one 100-kw. unit. The Comstock Company, it is understood, will only do the electrical work, so it is probable that the Fuller Company will be in the market for engines and boilers to match this amount of power equipment. Pumping apparatus and power supplies, as well as electric passenger elevators, freight elevators, &c., will also be required.

Another building that will require considerable machinery is the new Emigrant Bank Building, at 51 Chambers street, for which L. K. Comstock & Co. also have the electrical contract. The inquiries include two 150-kw., one 100-kw. and one 50-kw. unit. There will also be a good sized order in the way of pumps, boilers, &c., for this structure.

Bids will be received until December 10 by the Department of Parks of the City of New York, at its offices in the Arsenal Building, Fifth avenue and Sixty-fourth street, for furnishing seven electric motors for use in the American Museum of Natural History. The amount of security required is $500.

Recent sales by the Hooven-Owen-Rentschler Company, through its New York office at 39 Cortlandt street, include a 400-hp. heavy duty reversing engine, for the Lehigh & Wilkes-Barre Coal Company, for an addition to its power equipment at Wilkes-Barre, Pa.; 300-hp. heavy duty engine,

Miller Fertilizer Company, Baltimore, Md.; 200-hp. engine for an addition which is being made to the plant of the American Paper Company, Bogota, N. J.; 175-hp. engine, W. S. Russell, who is installing a clay refining plant at Mt. Holly Springs, Pa.; 300-hp. belted heavy duty engine, Rochester Box & Lumber Company, Rochester, N. Y., and a 150-hp. engine for an addition to the plant of the Riter Dental Company, Rochester, N. Y.

## Chicago Machinery Market.

CHICAGO, ILL., December 1, 1908.

Business for the past week in machine tools has not been noticeably different in character or appreciably greater in volume, than in the preceding weeks of the present month. It is quite evident, however, that in the forward view of things a decidedly hopeful feeling exists. This, to some extent, is based upon inquiries concerning anticipated wants, but is perhaps more generally founded upon an abiding faith in a gradual recuperation of industrial activities. The demand for tools has not thus far broadened into the larger requirements of the more important manufacturing interests, but continues to be characterized by purchases of single tools or small groups by miscellaneous interests. One dealer has on his floor 20 machines tagged for immediate shipment as a result of last week's sales. Most of them were small sizes, but there were included in the number a heavy engine lathe, a radial drill and a planer, the aggregate of all amounting to around $15,000. Among the inquiries in the market, the one of first importance is a list of tools from the Union Pacific Railroad, on which figures are being taken. Besides this, however, there are two or three other small inquiries, each embracing a half dozen or more tools, some of which are for wood working shops. Whether these represent actual orders to be placed at once, or are put out for the purpose of securing data and estimates for making up more extended lists to be submitted later on, is not definitely known. It is understood that work on the shops of the 'Frisco system at Springfield, Mo., has been resumed, but nothing is heard of a renewal of negotiations for the large amount of tools and machinery that will be required to equip this plant. It will be recalled that bids were submitted last year on this equipment, but owing to the development of adverse financial conditions, no orders were placed, and since that time the whole matter has been held in abeyance.

Naturally, trade in machinery lines will follow rather than lead the movement toward general recovery, and for this reason, machinery builders are watching developments in other manufacturing industries with keen interest. While it is true that no phenomenal gains are being made in any direction, and in the most active lines the improvement realized is but moderate, there is nevertheless an undercurrent of strength due to a larger degree of confidence in the outcome that was far less pronounced some months ago.

Growing out of the more prevalent use of automobiles, which is rapidly extending to every part of the country, there is growing up a new demand for machine tools. This is coming from new garages that are being established in cities and towns in an increasing number. In some of these, tools required for extensive repair work, including the rebuilding of cars, are installed, while others are, of course, less fully provided; but there is need of a few tools, at least, in every such establishment. Though individually of small importance, it can readily be seen that the total requirements of the garages of the country will ere long be a factor of no insignificant importance in the machine tool trade.

**Machinery Requirements of Union Pacific Railroad.**

The following list of machine tools, sent out by J. W Griffith, purchasing agent, Omaha, Neb., is in the hands of the machine tool trade for figures. The purchase of this equipment has been in contemplation for some time, but the list has only recently been presented to the trade generally:

Three 36-in. heavy pattern upright drills, arranged for geared motor drive; one 21-in. heavy pattern upright drill, geared for motor drive; one sensitive friction disc drill, 10-in. swing, capacity 5-16 in. holes, arranged for motor drive; one 36 in. by 16 ft. head screw cutting engine lathe, motor drive; one 42 x 12 in. variable speed planer, with two rail and two side heads, motor drive; one 2¼ x 7 in. four-spindle automatic turret lathe, motor drive; one power gap shear, 10-in. knives, 18-in. throat, capacity to cut 10 in. by 3-16 in. plate, motor drive; one set, power plate bending rolls, 6 ft. clearance between housings, capacity, to roll ¼-in. plates, 6 ft. wide, to 3 ft. 6 in. radius, motor drive; one 3 x 42 in. double back geared slip roll formers, on iron legs, to roll No. 14 sheet steel; one moulder and carver, complete, with cutters, countershafts and chucks; one 3½-in. vertical power mortising and boring machine, with chisels and augurs ⅜ in. to 1 in.; one 150-ton hydraulic wheel press for wheels 42-in. diameter on tread, complete, with pumps and appliances and motor drive; one vertical single punch, 16-in. throat, capacity, 13-16 in. through ⅝ in., equipped with architectural jaw and cast steel die block and motor drive; one horizontal flange punch, capacity ⅞ in. through ¾ in., with steel stake and offset punch holder, motor drive; one double angle shear, capacity 6 x 6 x ⅝ in. angles, and channels up to 8 in., motor drive; one single punch and shear, 25 in. throat, to be used either as punch or shear, motor drive; one 3¼ x 8 in. automatic turret lathe, motor drive; one No. 4 plain milling machine, power feed, motor drive; two arbor presses No. 5; one 18-in. No. 3 universal brass turret lathe, motor drive; one 16 in. by 8 ft. engine lathe, with quick change gear and feed device, motor drive; one three-spindle boring machine, capacity to bore three cylinders 10-in. bore by 22 in. long with spread of 13 in., motor drive; one cabinet makers' double trim saw bench, capacity to operate saws up to 16-in. diameter, motor drive; one solid universal wood worker, size 8 in., motor drive; one band saw, 42-in. wheels, with iron tilting table, motor drive; one 24-in. surface planing machine; one 20-in. self feed rip saw, motor drive; one No. 2 tenoning machine, motor drive.

A new company with a capital of $50,000 has been organized at Billings, Mont., to construct and operate a machine shop, foundry and vehicle factory. The buildings to be erected include one of one-story, 40 x 130 ft., and one of two stories, 40 x 150 ft. It is expected that the new plant will be built, and its machinery equipment will be secured and installed in time to begin operation about April or May of next year. J. C. O'Donnell of Deadwood, S. D., is at the head of this enterprise.

The Warner Arc Lamp Company, Muncie, Ind., is building a modern reinforced concrete fireproof factory building for the manufacture of its product at Wilton Junction, Iowa. The building is 42 x 200 ft., and its machinery equipment will consist of tools suitable for the manufacture of arc lamps. This factory will be operated as a branch of the company's plant at Muncie.

The Missouri Southern Railroad was in the market last week with an inquiry for a 64 or 70 in. driving wheel lathe for its shops at Leeper, Mo. It was wanted for quick delivery. J. F. Fredericks is superintendent.

The city of Grand Ledge, Mich., has decided to sell the equipment of its municipal electric light plant, consisting of dynamo, transformers, meters, engine, and other apparatus, and will take current for its lighting system from the Commonwealth Light & Power Company, Jackson, Mich. The city will probably install two centrifugal electrically driven, direct connected pumps for furnishing the water supply.

Plans are being prepared by the Tri-City Railway, People's Power & People's Light companies of Rock Island and Moline, Ill., and Davenport, Iowa, for the expenditure of about $500,000 in the betterment of these properties. Of this sum approximately one-half will go into the railroad properties in trackage and overhead work, and the other half will be devoted to gas main extensions and electric equipment. Appropriations covering the work have, however, not yet been made.

The White Bluffs Irrigation Company, White Bluffs, Wash., is preparing to install a 150-hp. producer gas engine for pumping service. The new engine will replace a twin tandem Jacobson engine, which was recently damaged by fire, and will be supplied with gas from a Smith producer.

The boiler equipment for the new La Salle Hotel, Chicago, now under construction, will consist of four 400-hp. units of the Bonson combined tubular and water tube type, built by the Lyons Brothers' Boiler Company, Chicago, which will be equipped with McKenzie chain grate stokers

The Engineers' Society of Milwaukee will meet on the evening of December 9, at the Builders' Club, when E. J. Kearney, secretary-treasurer of the Kearney & Trecker Company, will give a lecture on the construction and use of milling machines, illustrated with stereopticon slides.

Bids will be taken up to December 7 on the machinery equipment required for the new Cook County Court House to be built at Oak Forest, located 20 miles south of Chicago, at a crossing of the Chicago, Rock Island & Pacific Railroad, now known as Dupont. The specifications call for six water tube boilers, equipped with mechanical stokers, coal and ash conveyors, motor driven; one compound general service pump, one horizontal fire pump, one hand pump, one triplex tank pump, and several other small pumps for auxiliary service; a refrigerating system with compressor of 30 tons capacity, four engines, either full Corliss releasing gear type, semi-Corliss nonreleasing gear or for four-valve engines of an aggregate capacity of 1200 hp., three generators of 400-kw., 250-kw. and 150-kw., respectively, together with switchboards and all other supplementary electrical equipment.

## Cincinnati Machinery Market.

CINCINNATI, OHIO, December 1, 1908.

From present indications the advent of the last month of the year will inaugurate the beginning of a new one commercially; the new life that has been infused into the crude markets showing unmistakably in finished lines, and creat-

ing in tool manufacturing circles a feeling of optimism that has not been in evidence for many months. On the 10th of the month the sentiment of improvement manifest in the tool producing and kindred lines will find expression in what some of the more enthusiastic ones have denominated, in contradistinction to last year's humorously named "poverty" dinner, a "prosperity spread." This is the quarterly meeting and dinner of the Cincinnati Metal Trades Association, to be given at the Business Men's Club, on the date named, and Ohio's Governor-elect Judson Harmon, will head the guest list, with Prof. Frederick C. Hicks of the University of Cincinnati, H. W. Hoyt of the Great Lakes Engineering Works, Detroit, and W. A. Layman of the Wagner Electric Company, St. Louis, as other guests of honor. The invitations that go out to-day will reflect typographically and otherwise the improved conditions and will bear in the honor division the following names, under the head, "Our Presidents": Walter Laidlaw, 1900-1903; William Lodge, 1903-1905; P. G. March, 1905-1907; S. P. Egan; 1907-1908; John W. Neil, 1908. One of the special things that will be discussed and considered at this dinner will be the achievements of the year, and since its promulgation by the local tool men in connection with Dean Schneider of the University of Cincinnati, of the co-operative engineering course. Some figures will be furnished in this connection that will be surprising even to the rank and file of manufacturers, it is said, showing the tremendous success of the idea, and its rapid spread all over the world. Tool manufacturers from all over the country, members of other metal trades associations and of the national organization will be in attendance.

Returns from a wide range of manufacturing territory in this section show that the marked improvement in sentiment is general, and that there are none which find absolutely nothing upon which to base a feeling that a change for the better is imminent. Tool manufacturers in this immediate vicinity all report better inquiries, with an improved outlook in every direction; and some are filling up blank pages in the order book.

One of the best signs to the close observer of conditions in the iron and steel manufacturing trade is the rapidly improving horizon of the steel manufacturer and foundryman. These concerns, particularly the latter, suffered greatly during the year. A number, especially the foundrymen, were shut down much or all of the time. Now something promising seems the portion of every one in this district. The Steel Foundry Company, Cincinnati, which has been idle more than a year, which represents a cost of something like $220,000, and which entered the field at a most inopportune time bids fair to be rehabilitated very soon, and if not reorganized as a steel manufacturing concern, may be converted into a gray iron foundry. Bids to be opened to-day will be referred to the Insolvency Court for computation and settlement. It is understood that there are two bidders. A syndicate which is bidding has made plans if it secures the property to convert it into a gray iron foundry, and reserve a portion with its machinery, &c., for steel making on a moderate scale if it should be desirable. The total appraisement on the plant was $169,000.

The Lima Locomotive & Machine Works, Lima, Ohio, reports conditions considerably brighter, with more orders for the past 30 days than any month in the past 10. This company is running full time, also night force in some departments.

The American Rolling Mill Company, at Middletown, Ohio, is running on full time, and reports conditions for the past 30 days as good. Its American ingot iron is meeting with popular approval.

The Ohio Machine Tool Company, Kenton, Ohio, reports a slight improvement in business for the month of November. The company has installed a new boiler with increased capacity for power, and has been busy with plans for a new shaper and perfecting standard types.

The Henry Vogt Company, Louisville, Ky., announces business conditions as much improved, and states that it expects to be operating full time beginning December 1.

The American Machine Company, Louisville, Ky., reports business as gradually improving; large contracts are few, although general work has been good, and inquiries the past 30 days have been quite numerous. This company is operating on about 70 per cent. basis.

The Atlas Machine Company, Louisville, reports the elevator business good, with a special run of repair work. The plant is on a 64-hr. per week basis. Replying to a query, the company writes: "Business has been good with us not only the last 30, but for the past 90 days."

The Ironton Malleable Iron Company, Ironton, Oho, expects to start up early in December, with prospects for running full time, according to a report which says: "Business is greatly improved; inquiries are coming in nicely."

The Belfonte Iron Works Company, Ironton, Ohio, reports conditions for the past 30 days as very good. This company has recently installed two new engines, two new hammers, a galvanizing plant for nails, and has made extensive repairs in its plant.

Optimistic reports come from the mills of the West Virginia Rail Company, at Huntington, which is owned by Columbus capital. It is stated that the plant is being operated to its full capacity, and on double turn. The company converts standard rails by rerolling into light steel rails for which the demand is steadily increasing.

The Defiance Machine Works, Defiance, Ohio, which enjoys the distinction of being one of the pioneers in the woodworking machinery manufacturing class, and will within a year or so celebrate its sixtieth anniversary, has announced the inauguration of a steady six-day schedule.

## Cleveland Machinery Market.

CLEVELAND, OHIO, December 1, 1908.

Business with machinery houses and machine tool builders is gradually improving. While large inquiries are scarce most of the dealers report a fair volume of orders during the past week, and the outlook good for the balance of the year. New inquiries are quite plentiful. The demand is coming from about every kind of manufacturing establishment that uses machine tools. A large percentage of manufacturing plants has installed practically no new machinery during the past 12 months, orders for new equipment, except what was absolutely necessary, having been held up until general conditions had improved. With the encouraging business outlook, manufacturers feel warranted now in being prepared for the future by adding to the capacity of their plants, and making them more efficient by the installation of up-to-date tools. Inquiries for machinery that were in the market in the fall of 1907 are being revived, and will soon result in the placing of some business. The demand for milling machines seems to be better at present than for any other kind of machine tools. There is considerable improvement in the demand for cranes for industrial plants. The second-hand machine tool market is fairly active. Some used tools are being placed in the hands of dealers by manufacturers who are installing more modern equipment but the available supply is not large.

Inquiries for heavy handling machinery for mining operations and other purposes are more plentiful, and some inquiries are beginning to come from the railroads for machinery of this character. Builders of industrial cars report a gradual improvement in orders and inquiries.

The general manufacturing situation continues to improve slowly in most lines, and nearly all plants are being operated with a larger force of men or on longer hours than a month ago. Automobile plants are about all working near their full capacity on their 1908 output, and makers of automobile parts have a good volume of work on hand.

While the jobbing foundry situation is not yet satisfactory, it has improved somewhat.

Machinery builders and dealers in Cleveland have received a large volume of orders during the past two months from automobile plants in Detroit and other points in Michigan. Nearly all of the Michigan automobile builders are preparing to increase their output during the coming season by the erection of additions or the purchase of additional machinery. In addition to other building operations by some of the large Michigan automobile interests which have previously been mentioned, the following are noted: The Reliance Motor Truck Company, now in Detroit, is building a large plant in Owosso. The Motor Car Company, formerly in Detroit, has been reorganized with a large increase in capitalization under the name of the Carter Car Company, and has moved its plant to Pontiac. The Rapids Motor Vehicle Company has added a large addition to its plant in Pontiac.

The American Steel & Wire Company has a number of inquiries out for machinery equipment for several of its plants, for which the company expects to make purchases soon after the first of the year. The last inquiry of the company during the past few days is for two turret lathes, two radial drills, two 20-in. lathes and one 42-in. lathe.

The McMyler Mfg. Cmpany, Cleveland, builder of car dumpers, locomotive cranes, buckets, &c., reports an improvement in orders and considerable increase in inquiries, some of which are now coming from the railroads. The past week the company took an order for a 20-ton locomotive crane for delivery in Detroit. The company has been able to add considerably to its working force during the past few weeks.

J. O. Brown has been given an option on the plant of the Brown-Cochran Company, Lorain, Ohio, manufacturer of gas engines and refrigerating machinery. The option is for $125,000, and includes the plant and equipment. The option has been approved by the creditors of the company. Mr. Brown is now engaged in financing the deal, and hopes to be able to take the plant over and have it in operation by December 15. The reorganized company will probably be known as the Brown Engine & Mfg. Company.

Hill, Clarke & Co., Inc., have leased an adjoining room, doubling the floor space of their Cleveland sales and demonstration room at 711 St. Clair avenue. The Cleveland

office is now carrying a line of second-hand, as well as new, tools.

L. H. Mesker, who has been representing a Cleveland machinery houses in Cincinnati, became connected on December 1 with the Cleveland office of Manning, Maxwell & Moore, Inc.

The Ohio Ceramic Engineering Company, Cleveland, reports considerable improvement in the industrial outlook. Inquiries for industrial cars and other products of the company have become quite plentiful, and the actual orders on hand have enabled the company to materially increase its working force.

A new company is being formed which it is expected will soon take over the property of the D. D. Flanner Company, Toledo, Ohio, manufacturer of water tube boilers, which has been operated by W. F. McGuire as receiver since last May. A number of prominent business men will probably be interested in the concern.

The Twentieth Century Pipe Wrench Company, Lancaster, Ohio, has been incorporated with a capitalization of $25,000 by G. M. Gealy, James Henderson, F. P. Barr, J. C. Dallow and L. G. Sillbaugh.

The Doe Battery & Mfg. Company, recently organized in Kent, Ohio, for the manufacture of a new dry battery, is now installing its machinery equipment in a plant in that place. The company has taken out incorporation papers with a capitalization of $100,000. Officers have been elected as follows: John F. Babcock, president; Walter S. Doe, vice-president; Frank D. Pitkin, secretary and treasurer.

The J. D. Smith Foundry Supply Company, Cleveland, reports a satisfactory increase in orders and inquiries for foundry supplies and equipment.

Owing to the increase in its business, the Safety Door Hanger Company, Ashland, Ohio, has been compelled to provide a larger plant, and has commenced the erection of an addition that will greatly increase the present capacity.

The Service Pump Company, which was recently formed in Canton, Ohio, has increased its capitalization from $25,000 to $125,000.

## Philadelphia Machinery Market.

PHILADELPHIA, PA., December 1, 1908.

While it is too early to obtain actual data regarding the volume of business transacted by local machinery manufacturers and merchants in the month of November, what information there is obtainable would indicate that it exceeded the previous month materially. Dealers particularly report improved sales, mostly confined to small propositions, but there is no doubt that considerable business has been released since the election. Stocks in merchants' warehouses and on display floors are approaching more normal conditions, and in some few cases orders have gone forward to manufacturers to replenish the decreased stocks in dealers' hands. There has not been enough business of this character to absorb all the stocks which have accumulated in builders' warerooms during the year, and it will require considerably more buying to reduce them to the point where an increase in the present production will be necessary. This applies particularly to standard tools, but in the special lines manufacturers report a somewhat larger volume of business, which from its nature means an almost immediate increase in production, but even in this class of work there has not yet developed enough business to bring the production up to anything like normal.

The trade is much encouraged with the outlook, as the volume of business pending is large, although no extensive buying is expected to come out during the month of December, as it is customarily a dull month, and with the closing of the year's business buying usually subsides, to open up again more actively about the middle of January. Railroad buying has not improved to any extent, and little business is expected from this source until after the turn of the year. Industrial plants are taking a somewhat better volume of business; the shipyards have recently booked further orders, and more business is pending, but it will require time until the new orders reach the point where they will be of material benefit to the machine tool trade.

There has been practically no change in the foreign demand. Little business has developed in the standard lines of tools, although there have been some scattered orders for special equipment. Manufacturers who have an established trade abroad in power transmission specialties report practically unchanged conditions, orders being fair, but small in size.

Second-hand machinery dealers continue to transact a fairly satisfactory volume of business. Sales are somewhat irregular, but in the aggregate show a pretty good total. The demand has been confined to no particular class of tools, but those of the better class and modern types find the most ready sale. Several of the local merchants, who do not regularly handle second-hand tools, but who have recently purchased equipment of this character, report a ready sale in such second-hand tools, and in one or two instances have pretty well cleaned up their stocks. The boiler and engine trade moves rather slowly, with some scattered buying of moderate size equipment, both new and second hand. Several propositions requiring power equipment of the larger size are before the trade.

A trifle more activity is to be noted in the foundry trade. The steel and malleable foundries have been helped to some extent by railroad business, developing largely from increased repair work on the part of the railroads as well as from car builders and shipyards. The gray iron foundries have also shown a somewhat greater output, and while they have been benefited to some little extent by orders for machinery castings, the bulk of the business has been of a more general character.

The Screw Cutting Company of America, now located at Wayne Junction, will erect a new plant from plans by Milton B. Medary, Jr., at Seventeenth street and Sedgely avenue, Philadelphia. The structure will be of brick 60 x 90 ft., two story front and one story back building. Some little equipment has already been purchased for the new plant, but more in the way of general equipment will be required as soon as it is completed. A number of special screw cutting machines are now being built for the company, but the nature of the power plant to be installed has not yet been decided.

The American Ice Company has decided to go ahead with the erection of its proposed new plant at Glenwood street and Montgomery avenue, Philadelphia. This will be one of the largest ice manufacturing plants in this city, the plans including a freezing building 60 x 170 ft., an ice storage building 60 x 120 ft., a distributing house 43 x 69 ft., and a power house 51 x 130 ft. All the buildings are to be of the slow burning construction type.

The Gregg Carriage Company, northeast corner of Twelfth and Arch streets, has had plans prepared by Henry E. De Hoff, architect and engineer, for a four-story brick and terra cotta factory building and display room at 1926-32 Arch street. The building is to be 52 x 120 ft., four stories.

The Department of Public Works, Bureau of Supplies, will receive proposals for bridge work, including ornamental lamp posts, interior fittings, for the Spring Garden Laboratory, and branch sewer work, until noon, December 8. Specifications may be obtained upon application to the Chief Engineer, Room 416, City Hall.

The Standard Pressed Steel Company reports business to have shown a slow but steady gain during the month of November. The domestic demand for wrought steel shaft hangers has shown a better improvement than has the foreign demand, and a very fair volume of business has developed from customers in this country. The export trade continues on about an even basis, the bulk of the recent orders coming from Continental Europe and the far East. Orders on the whole are more numerous, and show a slight improvement in size, individually.

The Becker, Smith & Page Company, Water street, Snyder avenue and Swanson street, will make additions to its plant which will double its present capacity. Plans are being prepared by Ballenger & Perrot, engineers, for a three story brick addition of slow burning construction, 84 x 306 ft.; a four-story reinforced concrete building, 48 x 50 ft.; a one-story power house, and a third story addition to its present two-story building. Estimates for the building work are now being taken by the engineers.

## New England Machinery Market.

BOSTON, MASS., December 1, 1908.

Some condition which the trade is unable to understand is holding back the market for machine tools, there having been little of the expected quick response to the settlement of the national election. Orders booked for the past week are not so numerous nor so formidable in money totals as they were just previous to the election. The month of November as a whole has not been entirely unsatisfactory, everything considered, but the market at the present time has little life. The general impression is that the usual holiday let-up has arrived, having as an important factor the desire of those concerns that are taking inventory previous to the closing of their fiscal years, or the issuing of semi-annual statements, to make as good a showing as possible under the adverse conditions which have confronted them during 1908. Some good judges, however, believe that the remainder of the year will show a more pronounced improvement, while it is the opinion of others that the new year will have passed before any material change is noted. All agree that conditions among customers, as evidenced by their inquiries and comments, are such as to indicate the beginning of another era of great prosperity before next year has ceased to be young. While the standard lines of machine tools have not felt more than a mild improvement, certain more special classes of machines are doing much

better, a notable example of this being the shops of Connecticut which supply manufactures of hardware and other special products, and the brass industry of the Naugatuck Valley. Builders of mining machinery report an increase in interest on the part of their customers, with but few orders.

The machine tool builders are beginning to receive stock orders, made necessary partly by the depletion of stocks due to recent increase in sales by dealers who have done no buying excepting on orders for customers for a long time, and partly by the anticipation of a better business in the not far distant future. There is a gradual lengthening of working hours in the shops, and men are being taken back, though in the majority of cases very gradually.

The dealers in steel report that their customers are closing contracts for next year's supplies, but are placing few specifications against those contracts. The tendency in the trade is to provide for a considerable tonnage in anticipation of a good business in 1909, under the usual system of maximum and minimum limits. The trade has been rather lenient to its customers during the depression, not always insisting upon the fulfilment of the contract where the minimum amount named was in excess of the steel required in business. It is not feared that any concessions of the sort will be necessary under next year's contract, because of the promise of improved demand as indicated by the iron and steel market.

The works of the Becker Milling Machine Company, Hyde Park, Mass., have gone on full time, and are approaching a normal working force.

In connection with proceedings in the United States Circuit Court at Trenton, N. J., concerning the receivership of the Electric Vehicle Company, Hartford, Conn., it was brought out that considerable headway has been made in carrying out a plan of reorganization on the part of the bondholders and secured creditors. If the project works out the future of the concern as a going industry is assured. The court has granted the receivers the right to continue operating the shop until July 1, 1909, an extension of six months.

The Navy Department's estimates for improvements to navy yards include additional crane service for the Charlestown Navy Yard, and a more extensive list for the Portsmouth Yard, including something like $100,000 for equipment of the new boiler shop, an extension of the machine shop, a pattern shop, and other buildings which, if erected, will require the purchase of large amounts of machine equipment.

The business of Boynton & Plummer, Worcester, Mass., manufacturers of blacksmiths' tools, has been purchased by William H. Wilder, Gardner, Mass., of the Central Oil & Gas Stove Company of that town. It is Mr. Wilder's intention to organize a corporation in the near future to take over the Boynton & Plummer business. It will remain in Worcester, at the present shop, on Hermon street, and will be conducted along the same general lines as formerly as regards its product. It is an old established business.

Additional contemplated enlargements reported from the textile mills include a large plant for the Sagamore Mfg. Company, Fall River, Mass. The company proposes to issue $300,000 of new stock, the proceeds of which, together with a surplus of about equal amount, will be expended for the new mill. The land is already available. The Hartford Carpet Corporation, Thompsonville, Conn., will build a new mill, 110 x 270 ft., and three stories.

The Brown Cotton Gin Company, New London, Conn., manufacturer of cotton ginning machinery and general machine shop and foundry products, has begun the manufacture of automobiles, having taken a contract from the Cameron Automobile Company, Beverly, Mass., for 300 complete cars. The entire work will be done in the Brown shops, including machinery and trimmings. The shop equipment is such that little new machinery will be required.

The Westmacott Gas Furnace Company, Providence, R. I., manufacturer of gas blast furnaces, will move its factory to the plant of the Builders Iron Foundry, 9 Codding street. A downtown office will be established at 68 Clifford street, in the heart of the manufacturing district of the city and easy of access. W. C. Buell is the president and treasurer of the company; A. I. Westmacott, vice-president, and W. C. Buell, Jr., secretary and general manager.

It is stated in Middletown, Conn., that the Parker Machine Company, Buffalo, N. Y., is negotiating for the plant of the Eisenhuth Horseless Vehicle Company, with a view of establishing the Parker business in Middletown. If the plan goes through, a new typewriting machine will be manufactured there.

The New England railroads are preparing enlarged facilities for taking care of a growing traffic, which promises to pass all records with returning industrial and commercial prosperity. The Boston & Albany Division of the New York Central is to make important changes at its West Springfield yards, involving the expenditure of $1,000,000, and including a new roundhouse of 21 stalls, and an annex building, 110 ft. square. Facilities in the way of cranes and tools will be provided to take care of what are known as round house repairs in distinction from repair shop work. There will be a boiler house containing five boilers, and an oil house. In addition, a mechanical coaling plant will be installed, the contract for which has been let to Fairbanks, Morse & Co., Chicago. The apparatus will have a capacity of elevating 2400 tons in 24 hours. The Boston & Maine Railroad is spending about $3,000,000 for new locomotives and cars, contracts for which were placed some time ago, as mentioned. The addition of this rolling stock will make still more imperative the building of the new repair shops, a project which has been under way a long time. It is believed that the control of the system by the New York, New Haven & Hartford Railroad has brought the fulfilment of the great works close at hand, though the engineers of the system have no knowledge of any immediate steps in that direction, it is stated. The new equipment includes 1000 box cars, 1000 drop end cars, 40 locomotives, and some passenger and combination coaches.

The Sanitary & Specialty Company, South Norwalk, Conn., has established a shop on Water street for the manufacture of plumbing specialties. The owner of the business is J. B. Burr, formerly of the Burr Mfg. & Supply Company, Brooklyn, N. Y.

The Stockbridge Machine Company, Worcester, Mass., manufacturer of shapers, returned to a full time basis Monday.

The Oxy-Carbi Company, New Haven, Conn., has begun the manufacture of a new type of apparatus for the autogenous welding and cutting of metals by the oxy-acetylene process. Both stationary and portable plants will be included in the product.

## Government Purchases.

WASHINGTON, D. C., December 1, 1908.

The estimates submitted by the Chief of the Bureau of Yards and Docks for improvements for the various navy yards the coming year include naval station, Guantanamo, Cuba, dry dock to cost $2,500,000, $400,000; Portsmouth Navy Yard, foundry to cost $250,000, $50,000; Philadelphia Navy Yard, power plant extension, $172,000, crane runways and cranes, $13,900; naval station, Pearl Harbor, Hawaii, dry dock to cost $2,000,000, $200,000; machine shops to cost $300,000, $200,000; Norfolk Navy Yard, electric plant extensions, $20,000, locomotive crane, $50,000; New York Navy Yard, central power plant, $116,000; Mare Island Navy Yard, central power plant, $255,000, locomotive crane, $55,000; Boston Navy Yard, power plant extension, $145,000; Puget Sound Navy Yard, pattern shop, $40,000.

The Isthmian Canal Commission will receive bids until December 21, Circular No. 482, for marine boilers, pipe cutters and other supplies.

Bids will be received until December 21 at the office of the Engineer, United States Army, New Orleans, La., for ice machine and refrigerating and distilling plant in the machine shop building at Burrwood, La.

The Isthmian Canal Commission will soon ask bids for a quantity of journal and ball bearing jacks.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until December 22 for one tool and cutter grinder, two grinding and shaping machines, four milling machines, and until December 29 for one locomotive crane, drills, cutters, &c.

The following bids were opened November 24 for machinery for the navy yards:

Class 1, one vertical automatic steam engine—Bidder 46, D'Olier Engineering Company, Philadelphia, Pa., $305; 68, A. D. Granger Company, New York, $260; 76, Harron, Ricard & McCone, San Francisco, Cal., $280.80; 78, Henshaw, Bulkley & Co., San Francisco, Cal., $206 and $296; 132, Ohmen Engineering Works, San Francisco, Cal., $395; 135, Pacific Tool & Supply Company, San Francisco, Cal., $395; 163, Sheppard Engineering Company, Waynesboro, Pa., $342.50.

Class 2, one patent head engine lathe—Bidder 31, Compressed Air Machinery Company, San Francisco, Cal., $962; 76, Harron, Ricard & McCone, San Francisco, Cal., $957.30; 78, Henshaw, Bulkley & Co., San Francisco, Cal., $857 and $954; 135, Pacific Tool & Supply Company, San Francisco, Cal., $1050.

Class 3, one sliding upright drilling machine—Bidder 31, Compressed Air Machinery Company, San Francisco, Cal., $400; 62, Frevert Machinery Company, New York, $334; 74, Handlan, Buck Mfg. Company, St. Louis, Mo., $410.50; 76, Harron, Ricard & McCone, San Francisco, Cal., $376.70; 78, Henshaw, Bulkley & Co., San Francisco, Cal., $378; 126, Niles-Bement-Pond Company, New York, $380; 135, Pacific Tool & Supply Company, San Francisco, Cal., $325.

Class 4, one crank shaping machine—Bidder 31, Compressed Air Machinery Company, San Francisco, Cal., $767; 57, Ecles & Smith, San Francisco, Cal., $666; 74, Handlan, Buck Mfg. Company, St. Louis, Mo., $626 and $662; 76, Harron, Ricard & McCone, San Francisco, Cal., $565.80; 78, Henshaw, Bulkley & Co., San Francisco, Cal., $568 and $687; 135, Pacific Tool & Supply Company, San Francisco, Cal., $725.

Class 5, one grinder head—Bidder 62, Frevert Machinery Company, New York, $98; 76, Harron, Ricard & McCone, San Francisco, Cal., $99.65; 135, Pacific Tool & Supply Company, San Francisco, Cal., $90.

Class 11, one engine lathe—Bidder 31, Compressed Air Machinery Company, San Francisco, Cal., $1275; 76, Harron, Ricard & McCone, San Francisco, Cal., $1273.83, $1314.33 and $1279.63; 88, Hamilton Machine Tool Company, Hamilton, Ohio, $1220; 103, R. K. Le Blond Machine Tool Company, Cincinnati, Ohio, $1132.82; 116, Manning, Maxwell & Moore, New York, $1345; 155, Springfield Machine Tool Company, Springfield, Ohio, $1158.

Class 12, one 14 in. engine lathe—Bidder 31, Compressed

Air Machinery Company, San Francisco, Cal., $1145; 76, Harron, Ricard & McCone, San Francisco, Cal., $1063.65, $1100, $1017.35 and $1086.65; 78, Henshaw, Bulkley & Co., San Francisco, Cal., $1070; 88, Hamilton Machine Tool Company, Hamilton, Ohio, $1018; 103, R. K. Le Blond Machine Tool Company, Cincinnati, Ohio, $952.55; 135, Pacific Tool & Supply Company, San Francisco, Cal., $1150; 137, Pratt & Whitney Company, Hartford, Conn., $1509; 155, Springfield Machine Tool Company, Springfield, Ohio, $987.

Class 13, one 14-in. engine lathe—Bidder 31, Compressed Air Machinery Company, San Francisco, Cal., $1095; 76, Harron, Ricard & McCone, San Francisco, Cal., $951.20, $988.38, $904.90, $974.20; 78, Henshaw, Bulkley & Co., San Francisco, Cal., $955; 88, Hamilton Machine Tool Company, Hamilton, Ohio, $846; 103, R. K. Le Blond Machine Tool Company, Cincinnati, Ohio, $824.54; 135, Pacific Tool & Supply Company, San Francisco, Cal., $1025; 137, Pratt & Whitney Company, Hartford, Conn., $1309; 155, Springfield Machine Tool Company, Springfield, Ohio, $857.

Class 14, one 18-in. engine lathe—Bidder 31, Compressed Air Machinery Company, San Francisco, Cal., $1431; 76, Harron, Ricard & McCone, San Francisco, Cal., $2545.45, $2636.15 and $2576.45; 78, Henshaw, Bulkley & Co., San Francisco, Cal., $2446, $2655, $2346 and $2555; 88, Hamilton Machine Tool Company, Hamilton, Ohio, $2356; 103, R. K. Le Blond Machine Tool Company, Cincinnati, Ohio, $2272; 116, Manning, Maxwell & Moore, New York, $3270; 135, Pacific Tool & Supply Company, San Francisco, Cal., $2745; 155, Springfield Machine Tool Company, Springfield, Ohio, $2305.

Class 15, two 20-in. engine lathes—Bidder 31, Compressed Air Machinery Company, San Francisco, Cal., $1624; 76, Harron, Ricard & McCone, San Francisco, Cal., $1537.26, $1446.66 and $1380.61; 78, Henshaw, Bulkley & Co., San Francisco, Cal., $1442, $1652, $1392 and $1592; 88, Hamilton Machine Tool Company, Hamilton, Ohio, $1770; 103, R. K. Le Blond Machine Tool Company, Cincinnati, Ohio, $1397.95; 116, Manning, Maxwell & Moore, New York, $2300; 135, Pacific Tool & Supply Company, San Francisco, Cal., $1725; 155, Springfield Machine Tool Company, Springfield, Ohio, $1335.

Class 16, one No. 3 Pratt & Whitney die sinking machine—Bidder 137, Pratt & Whitney Company, Hartford, Conn., $1203.

Class 17, one hydraulic beam bending press—Bidder 78, Henshaw, Bulkley & Co., San Francisco, Cal., $850; 165, William Sellers Company, Philadelphia, Pa., $1235; 199, Camden Iron Works, Camden, N. J., $890.

Class 18, one file sharpening machine—Bidder 2, American File Sharpener Company, New York, $375; 78, Henshaw, Bulkley & Co., San Francisco, Cal., $385; 96, Jandus Electric Company, Cleveland, Ohio, $298.

Class 19, one tempering and one hardening furnace—Bidder 76, Harron, Ricard & McCone, San Francisco, Cal., $1479; 78, Henshaw, Bulkley & Co., San Francisco, Cal., $1485; 102, Kenworthy Engineering Company, Waterbury, Conn., 1865; 107, Merck Fuel Oil Equipment Company, Norfolk, Va., $1988.

Class 21, one lightning pole and manhole punch—Bidder 26, Camden Iron Works, Camden, N. J., $2480; 41, Cleveland Punch & Shear Works, Cleveland, Ohio, $5765; 78, Henshaw, Bulkley & Co., San Francisco, Cal., $2245 and $2340; 109, Morgan Engineering Company, Alliance, Ohio, $3460; 116, Manning, Maxwell & Moore, New York, $4850.

Class 31, one power facing press—Bidder 76, Harron, Ricard & McCone, San Francisco, Cal., $405; 78, Henshaw, Bulkley & Co., San Francisco, Cal., $155; 135, Pacific Tool & Supply Company, San Francisco, Cal., $375; 203, Drew Machinery Agency, Manchester, N. H., $675.

Class 51, one universal tool grinding and sharpening machine—Bidder 165, William Sellers Company, Philadelphia, Pa., $1000; 172, Tabor Mfg. Company, Philadelphia, Pa., $1013.75.

Class 61, six Pratt & Whitney engine lathes—Bidder 62, Frevert Machinery Company, New York, $730; 85, Hendey Machine Company, Torrington, Conn., $915; 116, Manning, Maxwell & Moore, New York, $915; 137, Pratt & Whitney Company, Hartford, Conn., $869.

Class 62, two engine lathes—Bidder 85, Hendey Machine Company, Torrington, Conn., $1130; 116, Manning, Maxwell & Moore, New York, $1130; 137, Pratt & Whitney Company, Hartford, Conn., $1472.

Class 71, one motor driven triplex hydraulic accumulator pump—Bidder 47, Deane Steam Pump Company, New York, $9321; 79, T. H. Hayes Machinery Company, Boston, Mass., $10,750, $10,350 and $10,075; 184, Watson-Stillman Company, New York, $6300.

Class 135, two motor generator sets—Bidder 63, General Electric Company, Schenectady, N. Y., $3686.50; 118, McCay Engineering Company, Baltimore, Md., $3773.50; 195, Westinghouse Electric & Mfg. Company, Pittsburgh, Pa., $3844.50.

Class 144, two motor driven centrifugal pumps—Bidder 9, Balckall & Baldwin Company, New York, $1180; 45, Dravo, Doyle & Co., Philadelphia, Pa., $1050; 46, D'Olier Engineering Company, Philadelphia, Pa., $1265; 116, Manning, Maxwell & Moore, New York, $1295; 127, National Electrical Supply Company, Washington, D. C., $1500; 131, J. Edward Ogden, New York, $1220.79; 194, Watson-Stillman Company, New York, $925.

The following bids were opened on November 21 for air compressors with accessories for the navy yards, Boston and Mare Island:

Item 1. Price for two air compressors complete with equipment and accessories. 2. Work complete with bidder's modification of methods and details.

Nordberg Mfg. Company, Milwaukee, Wis., item 1, $58,260; 2, $50,000.

Chicago Pneumatic Tool Company, Chicago, Ill., item 1, $63,500.

Providence Engineering Works, Providence, R. I., item 1, $52,900.

Ingersoll-Rand Company, New York, $59,071.

Laidlaw-Dunn-Gordon Company, New York, item 1, $50,892.

The Electro Metallurgical Company, 79 Wall street, New York, has issued a small pamphlet quoting the opinions of a number of firms of patent lawyers on a series of patents relating to ferrosilicon, owned by the company. Conspicuous among them are those taken out by Dr. G. De Chalmot when connected with the electrometallurgical plant of the Willson Aluminum Company at Leaksville, N. C. They are dated April 26, 1898; April 26, 1898, and September 7, 1897, which it is claimed control the manufacture and sale of high-grade ferrosilicon as produced in the electric furnace, being both product and process patents.

## Prayer for the Zinc Ore Duty.

BY FITZ NIGEL.

JOPLIN, Mo., November 26.—Prayers that Congress will be moved in the proposed revision of the tariff to increase the duty on zinc ore were offered to-day in their Thanksgiving petitions by the ministers of all the churches here, in the 25 towns in Jasper County and throughout the Kansas-Missouri mining district.

To-day, good Lord, we give Thee thanks
For melons cut, with more to come,
And other fruit from native trees,
The fat and juicy tariff plum.
And now we humbly ask Thine aid
To raise the tax on zinc,
Because our infant trade now stands
Close on to ruin's brink.
We know the prayer of righteous men
With Thee availeth much,
And with all modesty we say
That we are really "such."

Oft times, good Lord, you give good gifts
Before of Thee we ask,
Therefore with Thee just now to plead
Would seem ungrateful task.
But, Lord, we're in deep water now,
Please help us ere we sink,
And raise the tariff, gracious Lord,
And raise it high, on zinc.

We do not ask Thee mountains move
And cast into the sea,
To help the poor, to heal the sick,
And cause the blind to see.
For things like these we have no use,
We need substantial "chink."
We must have help, and have it now,
Good Lord, remember zinc.

Although Thou'rt asked by selfish men
To make our metal free,
If Thou art for us, gracious Lord,
Who can against us be?
And if Thou'lt grant our fervent prayer
We'll scatter Bibles 'round,
Will homes and schools and churches build
And foreign missions found;
Will pray that free trade men repent,
That scoffers Thee will praise,
If Thou wilt help us in distress
And tax on zinc will raise.
We know 'twill raise the price of paint,
Of mats and tub and sink;
But other people pay the bill;
Good Lord, protect our zinc.

When Congress meets, and Uncle Jo
Appoints committees there,
Good Lord, direct their minds and hearts
To give us extra share.
If they revise the list on iron,
And copper, tin and lead,
So that the workingman can have
More cash for meat and bread,
We'll not object to acts like that,
In fact, we'll slyly wink,
If they'll but help our infant trade
And raise the tax on zinc.

When we shall reach the heavenly land
And view its shining shore,
Its pearly gates and golden throne,
As told in Bible lore,
And hear the music of the spheres
And sweet angelic choir,
With cherubim and seraphim,
With trumpet, harp and lyre—
Good Lord, we shall not be surprised,
Because we really think
We'll find the streets and alleys there
All paved with Western zinc.

M. A. Hanna & Co., Cleveland, Ohio, have closed the purchase of the 52 acres of land with 3000 ft. of frontage on the Niagara River just north of Buffalo, upon which they held contract of sale, and it is expected that construction work on two blast furnaces will be commenced early the coming year. Test holes are now being sunk to determine the distance to bedrock, upon which the foundations of the furnaces will be built, estimated to be about 40 ft. below the surface.

# HARDWARE

ONE of the disadvantages connected with the existence of strong Hardware associations is that the merchant is apt to rely upon his association to look after the interests of the trade, and he thus neglects to put forth individual effort for his own protection and the advancement of trade interests. If in convention assembled an organization passes a resolution expressive of the judgment of the trade on a certain measure the merchants are likely to look upon that subject as covered, and to consider that they have nothing to do in the premises. The fact is that resolutions of this character have proportionately less weight than would the expression of the individual opinions of the members. Resolutions are at best somewhat formal and impersonal, and it is well known that they are often passed in a perfunctory manner without mature consideration. They lack the personal note; they have not the direct and forcible appeal of an individual expression. A resolution passed by an association very frequently of unknown strength and perhaps but inadequately representing the interests with which it is identified, is very easily pigeonholed or waste-basketed by the official to whom it is sent. A personal letter or a united protest from the merchants of a country village with their signatures, will in most cases make a deeper impression on the recipient than would the impersonal resolution of an organization, representing perhaps ten or one hundred times as many merchants. The danger, however, is that the individual merchants will excuse themselves on the ground that their association has acted on the subject and that their attitude is thus formally and officially declared. This is a disadvantage and a peril, perhaps inseparably connected with association activity. It is sometimes a brake on personal initiative and effort. It keeps merchants from doing things which it is up to them to do and which without the association they would do.

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All this has immediate application to the merchandise parcel post problem. Every Hardware organization, we believe, has put itself on record in opposition to the project. These organizations include the National Hardware Association, representing nearly all of the largest jobbing houses; the American Hardware Manufacturers' Association, representing manufacturers, the vastness of whose interests is indicated by the fact that their invested capital is more than a thousand millions; the National Retail Hardware Association, which is a delegated body representing the various associations of about two-thirds of the State, all of which in formal convention have taken similar action, disapproving of the merchandise post project in any form as contrary to public policy and sure to be injurious to the merchants of the country. While these resolutions have undoubtedly had weight with the legislators to whom they have been sent, it is safe to say that their full significance as expressions of the judgment of the trade has not been appreciated. Meanwhile, some letters have gone from business men to their Senators and Representatives in Congress, and these letters very likely had more influence than the formal utterances of the conventions, above referred to. The trouble has been that so few such personal advices have been sent to the lawmakers. The individual merchants in most cases did nothing. Having voted for the resolution they have since been silent, so far as the making of a protest against the legislation in question is concerned. It is time that a different course be pursued. Merchants must speak out and let their attitude on the governmental carriage of merchandise in the mails be known.

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The special danger at this time is in connection with the establishment in a nominally experimental way of a merchandise post over the rural routes. Against this insidious measure there should be a prompt protest from every branch of trade. Petitions in opposition to it should be circulated among all the merchants in every town and village. A good example of what may be done in this direction is given in another column, where we reproduce a petition from the merchants of a thriving Wisconsin city in which grocers, druggists, Hardwaremen, dry goods merchants, tailors, jewelers, real estate and insurance agents, and dealers in other lines unite in condemning the establishment of a parcel post on the rural routes or at large as a menace to their interests. This petition, which was gotten up by the able and energetic secretary of the State Association, at the suggestion of the editorial in the last issue of *The Iron Age*, will serve as a model for similar activity on the part of merchants in every section of the country. Such petitions if sent to the Congressman of the district cannot fail to have great influence.

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The plausible argument of the Postmaster-General that a merchandise parcel post on the rural routes would help the local merchants must be distinctly met by bringing out emphatically these facts:

*That local merchants do not regard this rural parcel post with favor;*

*That they deem it hostile to their interests;*

*That it would diminish instead of increasing their present facilities,*

AND THAT THEY DO NOT WANT IT.

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HARDWARE merchants in some sections are profiting largely at present from business developing through the picture puzzle fad. Jig Saws for the manufacture of the puzzles are being sold by the hundreds in some of the larger centers, and in corresponding volume in smaller places. A picture is glued to a thin sheet of wood, and the Saw cuts it into small pieces of constantly varying shapes, the puzzle being to put them together again. Recourse is had to the Hardware merchant for the Jig Sawing Machine, the Saw Blades and the wood. One Boston house has sold 150 machines in a little more than a month, and the demand continues unabated. It is not difficult to see how this fad will naturally evolve into others where the thin bladed Saw will be required in shaping wood. A generation ago the Jig Saw had a great vogue for the manufacture of what was generally called fret saw work, consisting of brackets, book shelves and the like. The merchants of the day disposed of great quantities of wood of suitable varieties, and machines and Saws constituted a somewhat important item of trade. Many men in middle life to-day remember their enthusiasm for the work. Their children have sought out the old machines from garret and storeroom, and are using them in the gratification of the new fad for the picture puzzle. But most enthusiasts must buy new machines. Women as well as men are doing the work, and some of them are making money from it, for they

find a ready market for well made puzzles, the retail price of which is 1 cent per individual piece, and some puzzles contain hundreds of the little sections.

Another fad which seems to be equally fascinating is that of making metallic lampshades. They are fashioned from thin sheet brass or copper, the designs being worked out in little holes pricked through the metal with a long, fine pointed awl. The decorative effect is effectively brought out when the light of the illuminant shines through. The completed shade is often fringed with beading and suspended by fine jack chain. The demand for the required materials is very large in those places where the fad has obtained a foothold. One merchant has placed orders within a fortnight for 350 dozen of the chain, and sales keep pace with the supply. His purchases of sheet metal, awls, beading, patterns and other accessories are correspondingly large.

The foregoing instances are cited merely to illustrate special or temporary avenues of activity, which may be followed with profit by many Hardware merchants. Such fads come under the general head of arts and crafts, in which amateur workmen and workwomen amuse and often assist themselves financially by the fashioning of articles useful or artistic, generally both. Philanthropic persons often make use of such means in helping deserving people, who would be hurt by an offer of charity undisguised. The work requires tools and materials for which the Hardware store is perhaps the most natural source of supply. The merchant who cultivates this field of profit will not only reap direct benefit, but will attract to his store customers who will return for other classes of purchases. He will make friends. Where fads have not been established in his community he has the opportunity to encourage them by advertising and window display. They come and go, but there is always something that is fashionable, requiring the labor of those who would indulge in it and necessitating the purchase of tools and materials. Interest can be stimulated by the merchant. No doubt a record of customers for one fad would bring happy results when circularizing for another, for the faddist is apt to drift from one hobby to another, entering into each with enthusiasm and diligence.

# Condition of Trade.

The trade while taking a cheerful view of the prospects for next year, are well occupied in taking care of present business. The coming of winter and the approach of the holidays has a stimulating effect on the minor movement of seasonable goods and of articles which are made prominent in the business which develops about Christmas and New Year's. The better tone which has gradually been coming over the market, as the unsettled conditions of a year ago are being left farther behind and commercial and financial matters are righting themselves, is inspiring confidence and causing a more liberal purchasing of goods. At the same time the approach of inventory is not lost sight of, and this annual task, accompanied as it is with a searching analysis of the success of the year's efforts, tends to curtail purchases for the time being. The fact that the tariff is sure to be discussed and probably revised, possibly on more radical lines than many anticipated even a few weeks ago, will doubtless have some influence on business—how much remains to be seen. For these and other reasons the demand for Hardware and related lines, although fairly good under the circumstances, is with some manufacturers at least not as active as a few weeks ago, while the prospect for next year's business is promising. Prices remain without substantial change, there being, however, some revisions of quotations and shadings here and there, with occasional minor advances. On the whole the market is a steady one and radical changes in quotation are not expected in the near future. Reports from local merchants throughout the country are generally encouraging and many of them are doing a good business, especially those who are in the agricultural sections where labor is well employed and the people generally prosperous.

## Chicago.

While presenting no new features of significant interest, either in the development of business or in the trend of prices, the Hardware market continues fairly active, considering the season and surrounding circumstances. As the end of the year draws near and the time for taking inventories of stock approaches, both retailers and jobbers are naturally gauging and limiting their incoming shipments to facilitate the dispatch of this work. It is advantageous, as a matter of economy in the rehandling of goods which this operation necessitates, and also desirable from other points of view, that stocks shall not be enlarged beyond the limits required to meet current demands between now and January 1. This is especially true at the present time, since there are no signs apparent of an immediate general rise in values that might induce buying of a speculative nature. If any doubt, indeed, exists touching the stability of prices, it would seem, in view of tariff revision prospects, it would be the other way about. As a factor in the situation marketwise, however, this influence has thus far had no visible effect upon the Hardware trade, though the possibilities involved in the final disposition of the question are, none the less, not being lost sight of by manufacturers and distributers. The present month has been one of decided progress in some lines, while others have drifted along without much evidence of added stimulus. Wire products have been and still are the leaders in firmness and activity. Nails and Fencing keep moving in a way that betokens a healthy power of assimilation among consumers, when it is reflected that in face of the comparatively heavy shipments of these commodities that have been going forward, stocks are still said to be on all hands abnormally low. Although prices on Woven Wire were announced over two weeks ago, the volume of orders so far entered for spring shipments is relatively light; but this offers no ground for discouragement, as a rush of early buying was not expected. The relatively high prices now ruling in Scrap Material and the advancing tendency in Pig Iron has toned up the rougher finished Cast Iron goods, and while there has been no general marking up of prices in such lines, the market is firmer and less susceptible to pressure for concessions. Melting Scrap suitable for Sash Weights is now practically on a level with new Iron of the lower grades, so that the margin between cost of production and unadvanced selling prices is correspondingly shortened. Sash Weights are being held by jobbers at around $20 to $21. The recent bulge in Copper Metal did not last long enough to seriously affect values in finished goods, which are holding fairly steady. Prolonged building weather has greatly helped outside construction work, which up to this time has gone on with but little hindrance, except in extreme Northern territory.

## Louisville.

BELKNAP HARDWARE & MFG. COMPANY.—The market continues steady and strong, without any excitement whatever, but with intimations here and there that if something happens or does not happen, as the case may be, there will be an advance, and, therefore, it is advantageous for buyers to lay in their supplies for the coming year. The time has come when we can no longer neglect 1909 for the sake of one that is drifting into the irrevocable past. Certain it is, however, that nobody seems alarmed about values. There is no great effort to

sell, at any rate not at a sacrifice, although some of the manufacturers complain that the present prices afford a very narrow margin. The fact is they are not running full enough to put a layer of cream on top of the milk. It is in the excess production that the profit comes. The short time, partial operation, is when the expense mounts up unduly.

We were here in Louisville, as we desired to be, beneficiaries of the Memphis meeting, in getting a good many of our friends to stop en route. Brains by the carload went through here without any fear of molestation on the part of the Interstate Commerce Commission. By its recent rulings, be it said, on Ammunition and other inflammables and explosives, it is increasing our cost of packing and doing business generally. Are not our friends in the Hardware business likewise suffering?

Now every one's face is turned toward the Christmas time, and while in a certain way Christmas shopping may not be as vigorous as in some years past, or at least not on the same extravagant scale, there is a manifest willingness to discount the future a bit on the part of nearly everybody, and when you say everybody you mean that the retailer and the shopkeeper are going to reap the harvest.

The settlement of the tobacco war which has been carried on between the National Tobacco Association and the planters' combine has been finally effected. This offers a great financial relief to this part of the country, but it would seem as though the criminal courts may have more or less to say on the subject before the results of ambushing, night riding and white capping shall be forgotten. There was much dissatisfaction toward the close, as the restraint seemed very onerous. Possibly another year things will be managed better.

## Nashville.

GRAY & DUDLEY HARDWARE COMPANY.—Since our last report there has been no material change in the business conditions in this section. The Hardware trade has not been satisfactory this fall to the jobber or retailer, as the volume of business has been rather light. There are several reasons which have encouraged the spirit of conservatism among the buyers. The section of Tennessee and Kentucky which raises tobacco has been unable to make ready sales at satisfactory prices, and in addition to this, business in this section has been greatly disturbed by the night riders. The lumber and timber business of the South has been dull for 12 months. This necessarily reduced greatly the volume of Hardware business. The phosphate industry, which is no small one and which for several years has been on a boom, has been almost paralyzed for the past 12 months. The agricultural districts are in good financial condition, are making money and seem to need but few things. When the spirit moves them again to trade, they will be in better condition to do so than they have been for years. We believe business will be much better after January 1, but our prophecies haven't always panned out 100 cents on the dollar.

## Cleveland.

W. BINGHAM COMPANY.—The advance agent of prosperity is on the road again and the orders he is daily sending to the jobbers in this market indicate that he is showing up his samples and his prices are so good that the trade cannot resist him. Truly, we are enjoying a splendid good trade for this time of the year, not only selling a large volume of holiday goods, but a lot of goods in the general Hardware line.

Production on many lines has been curtailed for nearly a year and it is also true there has been a curtailment of consumption, but it looks very much from now on that consumption would exceed production, and will press hard upon any reserve stock that the manufacturers and jobbers may have on hand. Conditions throughout the nation warrant the manufacturers of our country in speedily increasing the output.

Just stop and think! Our Bureau of Agriculture at Washington informs us that the income from United States farms will amount to $8,000,000,000 this year. Really, now, when we stop and think what an immense amount of money this is, to be distributed in all quarters of our country for different commodities, it goes to prove that we are the greatest consumers of all kinds of goods of any people on the face of the earth. Why? Because we have the wherewithal to pay for them.

The exports in foodstuffs are also remarkable. It is reported one of the large Cunard liners steamed out of New York Harbor last week with the largest cargo from that port this year; one item was 170,000 bushels of wheat and another item 7000 barrels of apples. This would indicate that the people on the other side of the water understand and appreciate one of the great American favorite deserts—viz., apple dumplings.

The general Hardware orders are getting longer and longer and larger and larger in quantity, and we believe that the last 60 days of this year will help to round up old 1908 so that 1909 will have to pick up briskly to show what it can do in the way of trade and traffic. We advise our friends to sort up their stocks on all Hardware, especially house trimmings, for there will be a large demand for them, we think, early next year. A lot of buildings are being contracted for, and the remarkable open fall weather we have had has enabled contractors to start in early on many buildings and they will want Builders' Hardware in good volume soon to complete jobs.

A lot of inquiry for Steel and Iron Merchant Pipe and Malleable, Cast and Brass Fittings show that the factories are starting up, and contracts for Drills and Files are being placed.

Shovels, Spades and Scoops are a good purchase at present prices. A number of weak Shovel manufacturers have dropped out, but the stable manufacturers are not going to take advantage of this and are holding the market on these goods firm and steady.

We say place your orders now for Refrigerators; they are a good thing to buy early. The leading manufacturers of these goods have put on a lot of improvements this year, and, considering the price of lumber, metals, also wages, we consider them a good purchase at the present time.

Corrugated and Crimped, Painted and Galvanized Roofing, Plain Black and Galvanized Sheets, Roofing and Bright Tin Plates, Galvanized Spouting and Eave Trough are a good purchase at present prices for immediate shipment or shipment up to April 1 next. We do not recall any previous year at this time when there was so much call for building material of all kinds as at present, showing that many are interested and are doing or expect to do a lot of business in this line and are preparing for it.

Thanksgiving Day this year was probably the most thankful day that many of our people have enjoyed for some time past. Why? Peace and plenty reign within all our borders, for which millions of hearts and voices went out in song and praise for the many and great benefits we are enjoying all over our beloved land, and we are looking forward with high hopes to a splendid business in the days to come.

## Philadelphia.

SUPPLEE HARDWARE COMPANY.—The apparent happiness of many persons in our city during the last few weeks is something wonderful. As an illustration, the new Philadelphia Opera House, which was opened November 1, has been filled to its capacity every performance, notwithstanding the high prices for admission, and the fact that it accommodates over 1000 persons more than the Academy. The grand opera at the rival Academy of Music has also been remarkably well patronized, while the theaters have been crowded to the doors. The football game at Franklin Field, between Pennsylvania and Cornell on Thanksgiving Day, was attended by some 30,000 people, and before all the tickets were sold the price had been materially advanced by those who had probably bought at the regular prices to sell again. Again Saturday all the persons who were anxious to see the game between the Army and Navy could not get in. Very many persons came from other cities and many of the tickets which had been distributed were sold at $5 and upward. Now all this is wonderful although we don't know but we are sorry to see this spending of so

much money. However, several million of red cross Christmas stamps have been sold for distribution.

Regarding general business, it is reported that the exports of certain kinds of goods have largely increased not only in New York but in Philadelphia, and including the last two months exports are far in excess of what they have been for some few years past.

Since our last letter the trade of many manufacturers has largely increased and they have largely increased the number of employees. Christmas trade in the department stores has begun, and it is expected to far exceed the business of 1907. It would be well if the retail Hardware trade throughout the country would realize the improvement in the situation and energetically push the sale of goods in their stock suitable for the holidays.

Hardware manufacturers report improved trade and the jobbers of the country are reporting better conditions. Many in the retail trade have enlarged their orders and report themselves encouraged for December and early in January.

The banks, trust companies and savings fund societies state that their deposits are still very large. What we mean by this is that the calls on banks for loaning money are not so great as anticipated with improved trade, but they look for larger requirements after January 1 as trade increases.

## Portland, Oregon.

FAILING-MCCALMAN COMPANY.—At this Thanksgiving season, looking back over the past year, it would seem that really we out West have a great deal to be thankful for. Our business in this territory has been very close to last year's in all lines and has now revived so that it is even better than last year. Our crops have been wonderfully good, and prices in all lines even more than good.

The development of the country out here has not been delayed by the recent stringency to anything like the extent we feared. New people have been coming in; our small towns are growing; our large ranches and farms are being subdivided, and there is more of a field to sell Hardware in every day.

One special cause for Thanksgiving to us who do business in Portland is the fact that the Northern Pacific and Great Northern railroads have built a water grade railroad line down the north bank of the Columbia, thereby opening up to us a large country which has hitherto been more or less exclusively Tacoma and Seattle territory. This piece of road, we may mention, is supposed to be the best and most expensive piece of original construction in the United States.

But thankful as we are this year, and many things as we have to be thankful for, as we look forward to 1909, we really expect that we will have more things to be thankful for next year than ever before, for as nearly as one can see we have before us here the most prosperous and busiest year in the history of the Pacific Northwest, and we certainly hope that this will hold true over the rest of the country.

## Omaha.

LEE-GLASS-ANDREESEN HARDWARE COMPANY.—The month of November closes with trade conditions in the trans-Missouri region in a very favorable position. Business in all lines continues satisfactory, and the volume of goods going into consumption daily progresses with a steady regularity. While the people of this section of the West suffered least from the industrial depression of last year, and therefore had less ground to regain to get back to the high record mark of business prosperity, the gradual restoration of normal conditions in the East is already producing a reflex stimulus throughout the West.

While not predicting a repetition of the old boom days with their accompaniment of wild speculation, the consensus of opinion of careful observers hereabouts forecasts a steady and unprecedented growth throughout this entire territory. All this activity will undoubtedly beget for us new population, and this army of consumers furnishes the life blood to the arteries of trade.

Unless all signs fail the growth and prosperity of this section of the country is looked forward to with general confidence.

## St. Louis.

NORVELL-SHAPLEIGH HARDWARE COMPANY.—General business is running along in satisfactory volume. This time last year we were in the throes of the panic, and, therefore, a comparison of sales with last year shows a very gratifying increase.

The large number of applications we are receiving, both from salesmen and from house employees of other jobbers, indicates a spirit of dissatisfaction and unrest. No doubt all jobbers have noticed this increase in such applications. We have passed through a hard year. Salesmen and house men have worked just as hard or harder than in other years. No advances in salaries are in sight. On their commission and profit sharing arrangements salesmen will suffer in this year's settlement. All such things are a natural finish to a year following a panic.

The proprietors and stockholders of the various manufacturers and jobbers in the Hardware line have already discounted the year's statement. They expect and are prepared for a shrinkage in results. They do not anticipate large dividends or an overfed surplus. They have decided it is the part of wisdom to accept the situation cheerfully and to be thankful conditions have been no worse.

It is only fair that salesmen and employees should take the same attitude. "The fields are always greener just a little further on," but when you get into the other green field you see the grass is no thicker than in the old field you left. Therefore, employees who are indulging in this spirit of unrest should be careful that in "jumping from the frying pan they do not land in the fire."

Many retail merchants also feel they do not receive returns from their business commensurate with the efforts they put forth. Competition is increasing and profits are being cut down. Many feel they do not receive their share of the distribution of profits.

All these things come to us at the finish of the year's business when we take our annual inventory and then look over the figures. The only advantage to be derived from studying the figures of a year of decreased sales and decreased profits comes from the plans which, as a result, may be laid for the future. To be up against the real thing occasionally brings our thinking down to earth and the realities of business.

To our way of thinking, the paramount duty before the jobbers of this country is to see that trade is held closer in the proper channels. The ever-smiling manufacturer who brings down his cost of manufacturing on jobbers' large orders and then goes out and adds to his profit account by selling the retailer—the legitimate customer of the jobber—should have his attention brought to the fact that the jobbing trade are on to his curves. This can be done in a properly deliberate, grave and judicial manner.

While many manufacturers have found from experience the expense of going direct to the retail trade makes this class of business unprofitable, still there are others who have one salesman who visits the large jobbers while another salesman cultivates even the small retailers. Of course the salesman who visits the large jobbers truthfully states he calls only on the jobbing trade, and the other salesman for this factory, who calls on the retail trade, crosses his heart, rolls his eyes heavenward, and declares he sells the retail trade at the same price at which the large jobbers buy.

The small retail merchant feels much complimented at a visit from the man direct from the factory. He makes up his mind he is cutting out the profits of the middle man and he places an order for enough goods in that line to last him two or three years. And strange to say, he does this frequently when he could buy the same goods at the same prices in small lots from his jobber.

Recently the writer employed a special Cutlery salesman who had been traveling for a Cutlery manufacturer. This man went over our line and afterwards showed me a list of a number of our customers to whom he formerly sold the manufacturer's line, and he laughingly

remarked that with the exception of a few staple patterns he used as order starters, he obtained a better profit for the manufacturer than we price the same line of Pocket Knives. He used the argument with the retail dealer he would call only twice a year and therefore on each visit they bought what they thought was a six months' stock.

This salesman, when he traveled for the manufacturer, sold nothing but Pocket Cutlery. He showed me his salary and traveling expenses were just a little less than 20 per cent. of his total sales. To be exact, his sales were $20,000 per annum, his salary was $1800, and his expenses were $1800. It cost the manufacturer $3600 to sell $20,000 worth of Pocket Knives to the retail trade. Still the retail dealers who bought from this salesman flattered themselves they were cutting out the jobbers' profit. Jes so! Jes so!

It seems to me one of the main things for the retailer to consider the coming year is whether he is not allowing other dealers in town in other lines to take away a lot of profitable business from him. I mean allowing these other dealers to take the business because he does not carry the assortment, does not display the goods properly and does not push their sale. Let me illustrate by one little item:

As we all know, as a result of the Safety Razor, there has been a tremendous increase in the number of men who shave themselves. Except for hair cutting the barber shop is gradually becoming extinct. Every retail Hardware dealer knows thousands and thousands of Safety Razors are being sold. He may also know the sale of Safety Razors is actually increasing the sale of old fashioned Razors. Many men form the habit of shaving daily with a Safety Razor and finally go back to the old fashioned Razor because it is less troublesome. We are all creatures of habit. A man who forms the habit of shaving every day feels, if he does not shave, just as if he had failed to wash his face. On account of the Safety Razor we have become a well shaved nation.

But here is the point: Every man who buys a Safety Razor must have shaving soap and a shaving brush. He may not have a Strop, but he must have soap and brush. Has this idea permeated the retail Hardware dealers?

Recently the writer in taking a horseback ride visited a suburban town near St. Louis. He entered a Hardware store. In the showcase were a few Shaving Brushes that looked as if they were suffering with a severe attack of the mange. No shaving soap was in sight. There were several Safety Razors. But in the drug store at the corner was a fine display of Shaving Brushes hanging up on strings in the show window. A corner of the show case was filled with shaving soap. They also carried Safety Razors. The drug store was fresh, clean and attractive. The Hardwareman did a Cornice and Tin business and his store looked more like a factory than a place in which to sell goods.

Have the retail Hardware trade sold the Shaving Brushes and the shaving soap and the Safety Razors? Have they made displays? Do they take advantage of the changing conditions in their line of goods, or do they allow their competitors in other lines in the same town to get the best of them simply because they are better and more up to date merchants?

Of course if the jobber's salesman happened to go to that town where the drug store was selling the Shaving Brushes, and if he happened to sell the drug store, there would be a howl from the galvanized iron manufacturer who calls himself a Hardware dealer. Therefore, the Hardware salesman sticks to the Cornice maker, and the wholesale drug, dry goods and stationery houses sell the Shaving Brushes and the shaving soap, which it seems to me belong to the Hardware trade. And the Hardware salesman and the Cornice maker shake their heads at each other and say, "it has been a bad year and we hope next year will be better."

JOHN L. WALKER, formerly auditor for the Buda Foundry & Mfg. Company, has resigned to accept the position of manager of the socket department of the American Specialty Company, 1440 Monadnock Building, Chicago, Ill.

## NOTES ON PRICES.

**Wire Nails.**—Specifications on contracts are being received in good volume, while new orders are not so frequent owing to the approach of stock taking time, during which ordeal minimum stocks are desirable. Business for November has been satisfactory, insofar as it has shown an increase over the month previous. The market is firm and it is understood that regular prices are being maintained. Quotations are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

| | |
|---|---|
| Carloads to jobbers | $1.95 |
| Carload lots to retail merchants | 2.00 |
| Less than carloads to jobbers | 2.00 |
| Less than carloads to retail merchants | 2.10 |

Galvanized Nails are quoted at $1 over the price of the regular Nails.

*New York.*—Local demand is of a spasmodic character, being fair for a day or two and then dropping off. In some sections of Greater New York considerable building is projected, which promises business later, when Nails are required. Nails are held on the basis of $2.30 per keg in small lots at store, but some sellers are occasionally inclined to shade this figure.

*Chicago.*—There are no signs of wavering apparent in the steady flow of orders for Wire Nails. Not only are specifications coming out in satisfactory volume, but new orders are being placed quite freely. The business for November will show a slight increase over October, and specifications, the principal interest for November, will be practically double those of the same month last year. A few buyers are asking that shipments be deferred until the latter part of December, in order to facilitate the taking of inventories. Prices are firm and regular. Quotations are as follows: $2.13 in car lots to jobbers, and $2.18 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

*Pittsburgh.*—It is getting close to the end of the year when the jobbers and dealers will soon commence to take inventory, and this to some extent is holding back new orders for Wire Nails. Only a fair amount of new business is being placed, and manufacturers believe that after January 1, new demand will materially improve, and all anticipate a very good business in Wire Nails next year. We are advised that specifications against contracts are coming in fairly well, and prices are reported as being absolutely maintained. Quotations for base sizes are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

| | |
|---|---|
| Carloads, to jobbers | $1.95 |
| Carload lots to retail merchants | 2.00 |

Galvanized Nails are quoted at $1 over the price of the regular Nails.

**Cut Nails.**—Business at the mills is more in the line of specifications on contract orders than in new orders. Buying is still restricted to actual requirements and to small lots. In sympathy with general business conditions the Cut Nail market is showing more stability. The price for Steel Cut Nails is $1.80, base, per keg, f.o.b. Pittsburgh, for less than carloads, and $1.75 for carloads and larger lots. In the Western market Iron Cut Nails are held at an advance of 10 cents per keg over Steel Cut Nails, but this differential is not observed in the East.

*New York.*—There is a comparatively fair demand for Cut Nails in this market, but this is restricted to actual requirements which are moderate. Steel Cut Nails are held on the basis of $2.15 per keg for small lots at store, but this price is not strictly adhered to by all sellers.

*Chicago.*—Considerable improvement is observed, both in the general run of orders and a firmer tone in the market. The mills are as a rule adhering pretty closely to regular prices, which are now reported as being evenly maintained. Buying, however, is restricted in most cases to immediate or nearby requirements. We quote Chicago prices as follows: In car lots to jobbers, Iron Cut Nails, $2.08; Steel Cut Nails, $1.98.

*Pittsburgh.*—The manufacturers of Cut Nails have re-

affirmed prices which we are advised are being well maintained, concessions having practically entirely disappeared. Demand is rather light, being confined mostly to small lots for actual needs, but the trade is specifying fairly well against contracts. The season for stock taking will soon be here, and orders will be held up as much as possible until after the first of the new year. The market on Cut Nails is reported as in fairly satisfactory condition, and a larger volume of business is anticipated after January 1. The market is $1.80, base, per keg, f.o.b. Pittsburgh, but $1.75 is made on carloads and over. In the Western market Iron Cut Nails are held at an advance of 10 cents per keg over Steel Cut Nails, but this differential is not observed in the East.

**Barb Wire.**—The continuance of mild weather is having the effect of extending the season in which Fence building is practicable, so that demand, while moderate, is somewhat in excess of the usual volume for this time of the year. According to reports regular prices are being maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

| | Painted. | Gal. |
|---|---|---|
| Jobbers, carload lots | $2.10 | $2 40 |
| Retailers, carload lots | 2.15 | 2.45 |
| Retailers, less than carload lots | 2.25 | 2.55 |

*Chicago.*—The prolonged open weather which still makes outdoor construction possible, even in Northern territory, bids fair to merge the fall and spring buying season without the usual interim. A fair amount of new business is being placed, and shipments are going forward more briskly than is usual at this season. We are advised that prices are being rigidly maintained by the mills. Quotations are as follows: Jobbers, Chicago, car lots, Painted, $2.28; Galvanized, $2.58; to retailers, car lots, Painted, $2.33; Galvanized, $2.63; retailers, less than car lots, Painted, $2.45; Galvanized, $2.75; Staples, bright, in car lots, $2.25; Galvanized, $2.55; car lots, to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

*Pittsburgh.*—Only a small amount of new business is being placed with the mills, but it is somewhat larger than usual at this season of the year, this being due to the very favorable weather we have had for some time. Manufacturers believe that after the period of inventory is over and plans outlined for the new year, demand for Barb Wire will show some betterment. The tone of the market is firm, and the mills advise us that regular prices are being well maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

| | Painted. | Gal. |
|---|---|---|
| Jobbers, carload lots | $2.10 | $2.40 |
| Retailers, carload lots | 2.15 | 2.45 |
| Retailers, less than carload lots | 2.25 | 2.55 |

**Plain Wire.**—A fairly good demand includes new orders and specifications on contract orders. The mild weather doubtless contributes largely to the condition of trade for this season. It is understood that regular prices are being maintained. Quotations per 100 lb. to jobbers in carload lots are as follows, on a basis of $1.80 for Plain and $2.10 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the price to retailers being 5 cents additional:

| Nos. | 6 to 9 | 10 | 11 | 12&12½ | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|
| Annealed | $1.80 | 1.85 | 1.90 | 1.95 | 2.05 | 2.15 | 2.25 | 2.35 |
| Galvanized | 2.10 | 2.15 | 2.20 | 2.25 | 2.35 | 2.45 | 2.85 | 2.95 |

*Chicago.*—The promising outlook for spring trade in Fencing and the continuance of a fair fall demand, which as yet has not been cut off by severe winter weather, is responsible in a large degree for the good movement in Plain Wire. Fence and other manufacturers are ordering in more liberal quantities than for some time and shipments against contracts are going forward in fair volume. Prices, we are advised, are being steadily maintained. We quote as follows: Car lots to jobbers, $1.98, f.o.b. Chicago, and to retailers, $2.05.

*Pittsburgh.*—A fairly large amount of new business is being placed, particularly from Wire Fence manufacturers, and specifications against contracts are also being received in fairly good volume. Consumers of Plain Wire will soon be taking stock and cleaning up this year's business, but it is believed that shortly after January 1 demand for Fence Wire will be materially larger. The outlook for next year is regarded as quite satisfactory, the farmers having had good crops this year and received high prices for their products. We are advised that regular prices are being well maintained. Quotations per 100 lb. to jobbers in carload lots are as follows, on a basis of $1.80 for Plain and $2.10 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the price to retailers being 5 cents additional:

| Nos. | 6 to 9 | 10 | 11 | 12&12½ | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|
| Annealed | $1.80 | 1.85 | 1.90 | 1.95 | 2.05 | 2.15 | 2.25 | 2.35 |
| Galvanized | 2.10 | 2.15 | 2.20 | 2.25 | 2.35 | 2.45 | 2.85 | 2.95 |

**Sash Cord.**—The tone of the Sash Cord market is unmistakably strong, although no general advance has taken place. Some manufacturers have withdrawn extreme prices, and one or two are quoting Cord a cent or so higher than a short time ago. It is reported that manufacturers are endeavoring to effect a concerted advance, although it is by no means certain that this can be accomplished under present conditions.

**Cast Iron Hardware.**—Some lines of Cast Iron Hardware, such as Blind Hinges, Gate Hinges and Latches, &c., have for some time been selling at a low level, due largely to new competition in the market. Declines have recently occurred in Well Wheels, Hay Fork Pulleys, Shoe Lasts and Stands, &c., and the market presents a decidedly irregular appearance at the present time.

**Coat and Hat Hooks.**—Low prices continue to prevail on Wire Coat and Hat Hooks, competition being keen as usual, and leading to a considerable irregularity in quotations, although the lowest prices have not been met by some manufacturers. The market may be represented in a general way by a discount of from 80, to 80 and 10 per cent.

**Chain.**—A noteworthy feature of the Chain market is that the irregularity which has long prevailed in Coil Chain has been communicated to Trace Chain, Cow Ties, &c., which are now quoted at unusually low prices. German Pattern Coil Chain is also weak, especially as regards the larger sizes.

**Shovels.**—As stated in our last issue, the revision of prices which has been made by the houses constituting the Ames Shovel & Tool Company, represents a reduction on all classes of Shovels. On third and fourth grade goods the decline is about 7½ per cent., and on better grades about 5 per cent. For some time the Shovel market has shown considerable irregularity, especially as regards the quotations of independent manufacturers, and the present movement is believed to be in recognition of the situation.

**Rope.**—The demand for Cordage lacks steadiness. Another feature of the situation is the receipt of urgent requests for prompt shipments, showing that buyers are carrying light stocks. Some manufacturers have shown a willingness to contract with jobbers for their next season's supply at quite a reduction on present quotations. The market is reasonably strong for small quantities of Rope at the following quotations: 7-16 in. in diameter and larger: Pure Manila, 8¾ to 9 cents; Pure Sisal, 6¾ to 7 cents. Mixed grades of both kinds grade down in price according to quality. Jute Rope, ¼-in. and up, No. 1, 6½ to 6¾ cents; No. 2, 6 to 6¼ cents.

**Window Glass.**—Jobbers have been carrying comparatively light stocks of Glass for some time, but in anticipation of a larger demand at the approach of colder weather they have been making more liberal purchases. The prospect of the formation of the Imperial Glass Company is becoming more remote, and according to reports the outlook for a consummation of the project is anything but encouraging. A meeting of the Eastern Window Glass Jobbers' Association is scheduled for this week, and the Western Window Glass Jobbers' Association will also meet early in the month. General market conditions will be discussed at both of these meetings. A great deal of uncertainty as to the future market conditions has been forced into the situation by doubt as to the probability of an agreement among manufacturers. No official change in prices has become public and as heretofore the American Window Glass Company's prices of 90 and 35 per cent. discount on Single and 90 and 40

per cent. discount on Double Strength Glass, have been a basis for hand operated factory quotations. These quotations have, without doubt, been shaded in some instances, at least to the extent of 5 per cent., while Glass in second hands has been quoted still lower. Minimum prices recommended by the Eastern Jobbers' Association from jobbers' list, October 1, 1903, are as follows: All sizes single and double strength Glass, covering territory east of Chicago, 90 and 20 per cent. discount. These prices are more or less elastic, according to circumstances.

**Poultry Netting.**—An appearance of irregularity, not to say weakness, has been imparted to the market for Poultry Netting because of price cutting which is being carried on by jobbers in some sections. The situation has indeed become so acute as to command the attention of the manufacturers who are taking the matter up with their jobbing customers and urging them to co-operate in maintaining the uniform selling price which the producers have endeavored to establish. Manufacturers' prices to the jobbing trade are, it is declared, satisfactorily adhered to.

**Spool Wire.**—Some manufacturers have just made an advance of about 5 per cent. in their quotations on Spool Wire.

**White Lead in Oil.**—The market is steady and prices are being maintained. The demand, while moderate, is considered satisfactory for the season. Quotations for best brands are as follows: Lots of 500 lb. and over, in 100-lb. kegs and upward, 7 cents per pound; in lots of less than 500 lb., ½ cent. per pound advance.

**Linseed Oil.**—The upward tendency in the price of Seed has not affected the price of Oil, neither has it quickened the demand. Some of the large buyers covered their requirements for some time ahead before the recent advances, but are not specifying very liberally on their contracts. Others who did not are buying just enough for their requirements from time to time. The trade are pursuing a hand to mouth policy in buying. Taking it all in all it is a very dull market. Quotations in 5-barrel lots are as follows: State and Western Raw, 47 cents per gallon; City Raw, 48 cents per gallon. Boiled Oil is 1 cent advance on Raw.

**Spirits Turpentine.**—The market is steady and the demand moderate. While the receipts of Turpentine at Savannah and Jacksonville are beginning to fall off the demand is likely to show some slackening, as usual about this season. The market at this point has held steady during the week, and former prices are still in force. The New York market is represented by the following quotations: Oil Barrels, 42½ to 43 cents; Machine Made Barrels, 43 to 43½ cents per gallon.

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MILES A. HOFFMAN of Miles A. Hoffman & Co., importers of and manufacturers' representatives in Builders' Hardware, Wire Nails, Rivets, Staples, Engineers' Supplies, Motor Sundries, Silver and Electroplated Goods, Pressed and Stamped Metal, Electrical Supplies, &c., 43-45 Great Tower street, London, E. C., England, is now in this country. Mr. Hoffman will be in and around New York and Philadelphia during the month of December and a part of January. His address is care of Union League Club, Philadelphia, and he will be pleased to hear from manufacturers, especially of Hardware articles, who are desirous of placing their goods on the English market.

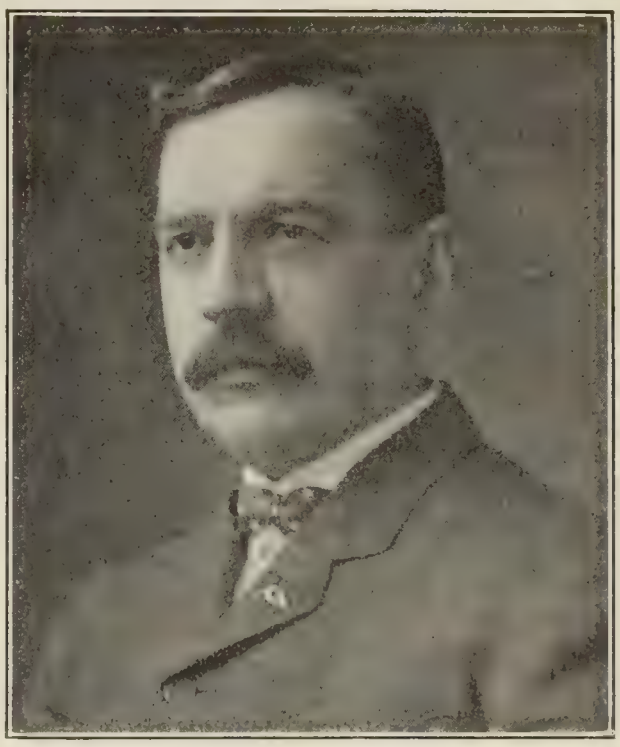
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THE READING HARDWARE COMPANY, 96-98 Reade street, New York, will on or before February 1 be in possession of new quarters at 50-52 Franklin street, near Broadway. The space area will exceed that now occupied, the prospective accommodations including a street floor and basement, each 46 x 92 ft. The plans now under consideration contemplate general offices, sample room and a room with suitable facilities for the preparation of estimates on contracts and other important specifications requiring expert treatment. There will also be a much more adequate stock carried of Builders' and other Hardware than heretofore.

## DEATH OF GEORGE W. CORBIN.

GEORGE WALDO CORBIN died Monday night, November 30, at his home in New Britain, Conn. He had suffered from an ailment that had given himself and friends concern for a year or more, but until recently he had believed that his condition was improved. He was a man known for his singularly cheerful and sunny disposition, his strong mentality and his marked business ability. He had not only won distinction as a successful manager of established enterprises, but was of the quality that creates and organizes new industries, two of which he had started in New Britain in the past year, known as the Corbin Bros. Company, the Dean Steel Die Company and the Corbin-Church Company.

George W. Corbin was born in New Britain March 4, 1859, being the son of Waldo and Emily M. Corbin, and was a nephew of Philip Corbin, president of the American Hardware Corporation. He had lived in New Britain all his life, except the interval spent at Wilbraham, Mass., continuing the course of his education begun in the grammar and high schools of New Britain. From school he entered the employ of P. & F. Corbin, with the purpose of mastering the business from the bottom, seeking no favors because of the close connection by birth



GEO. W. CORBIN.

with the founders of the house of Corbin. He began his career as a timekeeper and remained with the firm until 1880. He then became identified with the Corbin Cabinet Lock Company, which was started as a department of P. & F. Corbin, being first an invoice clerk. When the growing enterprise occupied its own premises opposite the main factory, he went with it, and soon rose to the position of secretary, becoming successively treasurer and president. He was the active manager of the Corbin Cabinet Lock Company for years and covered the entire country in the company's interest, visiting, it is said, every State. His relations with the company were terminated last May. Mr. Corbin had previously bought a large block of stock in the Union Mfg. Company and in the reorganization which immediately followed he was elected president. He exerted the same energy and business foresight in the affairs of the Union Company that he had in the Lock Company, making it, it is stated, one of the most prosperous of the local manufacturing plants.

His creative ambition also led him to start the Corbin Bros. Company, which produces a line of Trunk, Suit Case, Wardrobe, Chest and Drawer Locks, Padlocks, &c. He was, likewise, instrumental in establishing The Corbin-Church Company and Dean Steel Die Company, having been president of both. He was prominent in founding the People's Savings Bank, becoming its president; was a trustee in the New Britain Trust Company, and

a director of the Sovereign Trading Company, besides having other financial interests.

Politically he served the city as Councilman and was elected Mayor of New Britain in 1894, on what was known as the reform ticket, working for the first two years under a new charter which was adopted at that time. He was a member of the School Board and especially active on its Finance Committee. A man of great personal popularity, Mr. Corbin was often in demand to preside at banquets and kindred occasions, partially perhaps as the possessor of a keen wit and practically inexhaustible fund of stories. He was a thirty-third degree Mason and belonged to various lodges and chapters in that order, was an Odd Fellow, Elk and member of other fraternal and patriotic organizations. Among the clubs he belonged to are the Kenilworth, Maple Hill Golf, Seneca and New Britain Clubs and the Machinery Club of New York.

Mr. Corbin was exceedingly democratic in demeanor, always approachable, of an attractive personality and high character and possessed of a pleasing and winning manner that constantly won and retained hosts of friends. He is survived by a widow and four daughters.

## AMONG THE HARDWARE TRADE.

The Bandon Hardware Company has purchased the business of T. W. Robinson, Bandon, Ore., and will handle Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints, Oils and Sporting Goods.

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The corporate title of the King Hardware & Stove Company, Salt Lake City, Utah, has been changed to Scott Hardware Company. The management and interests will be the same as heretofore.

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The Hardware business of J. A. Hollenbeck, Rockford, Ill., has recently been incorporated under the title of J. A. Hollenbeck Hardware Company, and now occupies the first floor and basement of the new Hollenbeck-Bennett Block, 44 x 76 ft. The new storerooms are equipped with the Warren cabinet shelving. The stock carried comprises a full line of Shelf and Heavy Hardware.

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Charles W. Simon will establish a Hardware store at Burchard, Neb., which will be operated as a branch of the Hardware business conducted by Mr. Simon at Pawnee City. Emmett McCreary will be the manager in charge of the Burchard store.

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Fred. W. Barris and G. Albert Kenyon have purchased the business of the Hardware & Mill Supply Company, Inc., Pittsfield, Mass. Mr. Barris has been associated with the company for many years, and Mr. Kenyon has had a wide experience in the sale of steam supplies and kindred lines. The business will be continued under the same style as heretofore, Mr. Barris being the president of the company and Mr. Kenyon the treasurer.

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H. P. Frantz has purchased the Hardware and Implement business of A. A. Marchel in Hartford, Kan., and has moved the entire stock to Orianta, Okla.

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E. Parker & Sons, Jesup, Iowa, recently suffered loss by fire amounting to between $1500 and $2000, fully covered by insurance.

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The Hardware store belonging to J. L. Nessly, Mulvane, Kan., was recently damaged by fire to the extent of $4000, the loss being fully covered by insurance.

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The business formerly carried on by A. A. Shuford, Jr., under the name of Shuford Hardware Company, Hickory, N. C., has been sold to Lyerly Brothers of Hickory, who will continue under the same name. They will increase the stock of general Hardware in both wholesale and retail departments.

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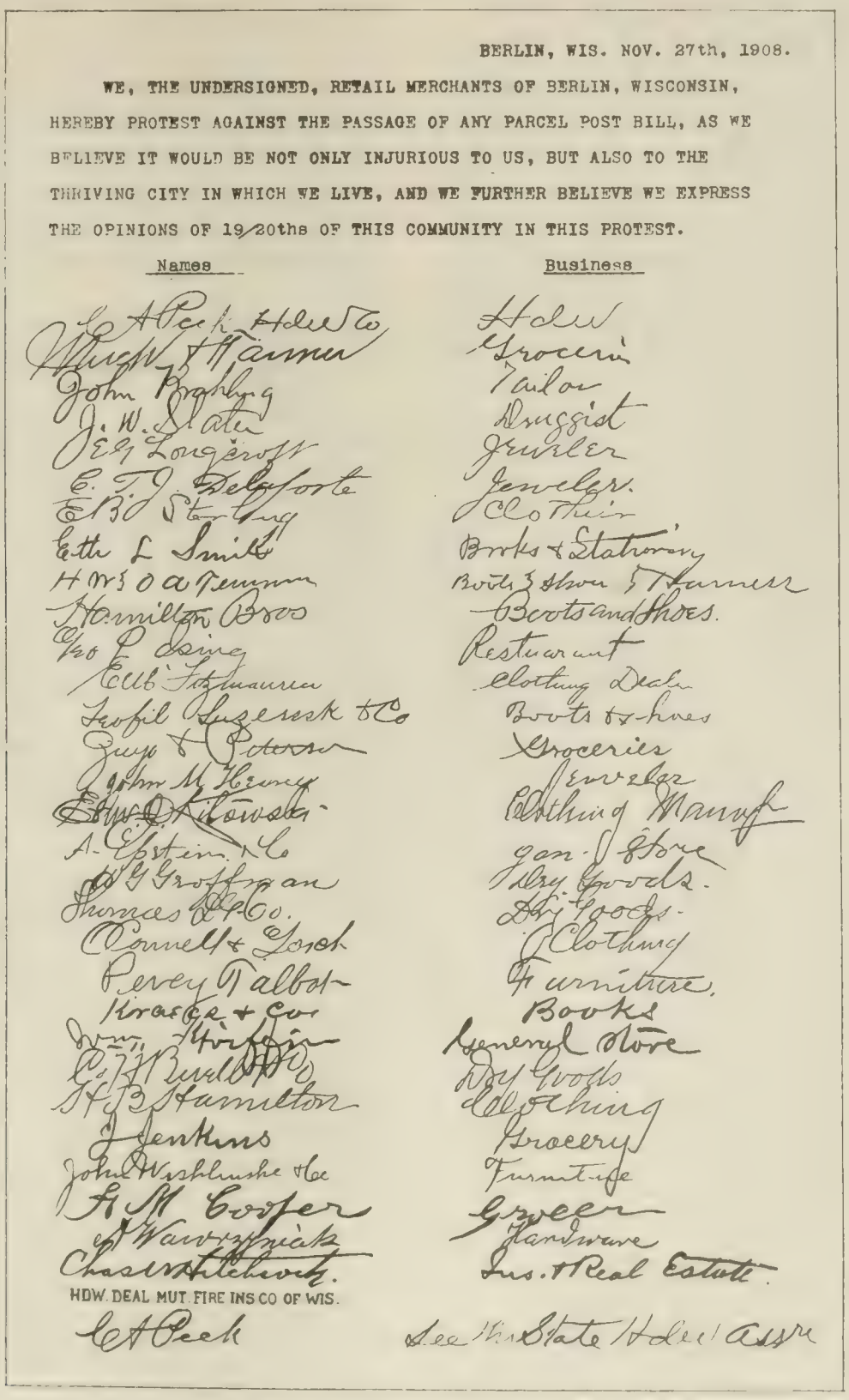
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# A MERCHANDISE PARCEL POST?

## A PETITION FROM WISCONSIN.

We reproduce herewith in facsimile a petition from Berlin, Wis., which was prepared as a result of the suggestion of the editorial in last week's issue of *The Iron Age*. C. A. Peck of that city, secretary-treasurer of the Wisconsin Retail Hardware Association, is to be credited with the inauguration and circulation of the petition, which, it will be observed, expresses the opinion in regard to parcel post legislation of nineteen-twentieths of the business community of the town. It will be noted that practically every line of business is covered by the signers of the petition, including Hardware, groceries, drugs, clothing, books and stationery, tailoring, boots and shoes, dry goods, furniture, insurance and real estate, restaurant, &c. Mr. Peck, as secretary of the State Retail Association, has also mailed a request to the members of the association urging them to get in touch with their Representatives in Congress and endeavor to secure their support of the view taken by the retail interests of the country of the blighting effects of a parcel post.

In view of other advices we feel confident that the example of Berlin will be followed by many other communities, and in this way the national legislators will have brought home to them the country-wide extent and scope of the opposition to parcel post legislation



BERLIN, WIS. NOV. 27th, 1908.

WE, THE UNDERSIGNED, RETAIL MERCHANTS OF BERLIN, WISCONSIN, HEREBY PROTEST AGAINST THE PASSAGE OF ANY PARCEL POST BILL, AS WE BELIEVE IT WOULD BE NOT ONLY INJURIOUS TO US, BUT ALSO TO THE THRIVING CITY IN WHICH WE LIVE, AND WE FURTHER BELIEVE WE EXPRESS THE OPINIONS OF 19/20ths OF THIS COMMUNITY IN THIS PROTEST.

Names — Business

C. A. Peck — Hdw. & Tin
Hugh & Hanner — Grocers
John Bagley — Tailor
J. W. Slater — Druggist
E. G. Longsdorff — Jeweler
E. T. Delaporte — Jeweler
E. B. Starling — Clothier
Estella L. Smith — Books & Stationery
H. W. & O. A. Penman — Boots & Shoes & Harness
Hamilton Bros. — Boots and Shoes.
Geo. L. Laing — Restaurant
Elk's Fraternity — Clothing Deal.
Leopold Lazarus & Co. — Boots & Shoes
Guyo & Peterson — Groceries
John M. Heney — Jewelry
Edward Kilowski — Clothing & Mens. Furn.
A. Epstein & Co. — Gen. Store
W. G. Groffman — Dry Goods.
Thomas & Co. — Dry Goods.
Connell & Losch — Clothing
Percy Talbot — Furniture.
Hirasek & Co. — Books
Wm. Hinkfuss — General Store
C. J. Buddenhagen — Dry Goods
H. B. Hamilton — Clothing
Jenkins — Grocery
John Washlushe & Co. — Furniture
F. M. Cooper — Grocery
J. Warzynski — Hardware
Chas. Schlewitz — Ins. & Real Estate.
HDW. DEAL MUT. FIRE INS CO OF WIS.
C. A. Peck — Sec. Wis. State Hdw. Ass'n

*Petition in Opposition to Parcel Post from the Business Interests of Berlin, Wis.*

## POSTMASTER-GENERAL'S PLEA FOR RURAL ROUTE PARCEL POST.

FROM OUR SPECIAL CORRESPONDENT.

WASHINGTON, D. C., December 1, 1908.

THE correspondent of *The Iron Age* is enabled to present below the text of that chapter of the Postmaster-General's forthcoming annual report dealing with the proposed parcel post for rural routes and the authorization of a post check currency. The report will be read with interest throughout the Hardware trade, for although the Postmaster-General advocated a similar project a year ago, he has never before undertaken to state in the course of an official report how he would prevent the catalogue houses from utilizing the proposed limited parcel post.

The limitation upon the use of the projected facilities, excluding all but merchants who are "bona fide residents of the towns in which the distributing offices are located," and barring "any person acting as agent for a concern located outside of the limits of the rural routes" is so preposterous that it will undoubtedly cause much amusement. The proposition is none the less serious, however, for the real danger is that Congress will adopt the scheme without any such absurd and wholly unconstitutional restriction as is suggested

As recently predicted in this correspondence, the Postmaster-General, after discussing the rural parcel post at some length, proposes the "entering wedge" of an experiment limited to four counties, the results to be reported to Congress. It is this suggestion that it is understood the President will endorse in his forthcoming message to the House and Senate.

### Extracts from the Postmaster-General's Annual Report.

The chapter of the report dealing with the local parcel post scheme is as follows:

The rural delivery system continues to grow, and on November 10, 1908, there were in operation 39,516 routes, with a patronage of more than 18,000,000 people. In many States practically the entire area available for rural delivery is now covered with a network of rural routes. There was, however, a great increase during the past year in the number of petitions for rural service in different parts of the country.

Rural delivery is now established on nearly 1,000,000 miles of roads throughout the country. During the current fiscal year the rural carriers will be required to travel more than 200,000,000 miles. Thus the necessity for good roads becomes more apparent. The policy of the department in insisting that all roads covered by rural delivery shall be maintained in traversable condition throughout the seasons has resulted in greater advances toward universal good roads than ever before in the history of rural delivery. The legislatures of several of the States have enacted progressive road laws and made liberal appropriations for road building and improvement.

An evidence of the growing usefulness of rural delivery is the increased quantity of mail delivered and collected. While no exact figures are now available giving the amount of mail handled by rural carriers, it is estimated to be nearly 2,000,000,000 pieces for the last fiscal year.

The expenditure for the fiscal year ended June 30, 1897, was $14,840, while for 1908 it was $34,361,463. What the expenditure will be 10 years from now it is startling to consider.

#### Rural Parcel Express.

Should the Congress grant the department authority to utilize rural routes still further by the establishment of a limited parcel post confined entirely to rural delivery routes, it would then be possible to earn additional revenue amounting to millions of dollars, and at the same time benefit the farmer by enabling him to have merchandise delivered when ordered by telephone or postal card, which would otherwise not be purchased. Frequently consumption is reduced owing to inability to secure articles at the time they are wanted. The reason for increased consumption in cities is that goods are accessible and are invariably delivered to the purchaser. This "rural parcel express" is to be confined entirely to rural routes, and there would be no cost to the Government for railroad transportation.

No merchant or dealer not a bona fide resident of the town in which the distributing post office is located or on the rural route would be permitted to have goods delivered at the proposed special rate, and packages would not be accepted from any person acting as agent for a concern located outside of the delivery limits of the rural routes. The result would be to increase the business of local merchants and country stores by facilitating consumption and the delivery of goods. It is of incalculable importance that these small dealers throughout the United States should not be driven to the wall. It has been estimated that if every rural carrier delivered 55 lb. each trip an income of $15,000,000 would be earned in one year. Were the Post Office Department a modern business corporation its Board of Directors would not hesitate 48 hr. to utilize the present machinery and establish a limited local parcel post on rural routes. With such an additional income as has been estimated the department could well afford to increase the equipment where the business demanded it.

In my last annual report the establishment of such a system was recommended for packages originating on rural delivery routes, such packages not to exceed 11 lb. in weight or 3 ft. 6 in. in length, the special rate of postage to be 5 cents for the first pound and 2 cents for each additional pound or fractional part thereof, and as follows when the weight is less than 1 lb.: Two ounces or less, 1 cent; over 2 oz. and not exceeding 4 oz., 2 cents; over 4 oz. and not exceeding 8 oz., 3 cents; over 8 oz. and not exceeding 12 oz., 4 cents, and over 12 oz. and not exceeding 1 lb., 5 cents.

The rural delivery routes will cost this year $35,500,000, and the service should be thoroughly utilized, especially where it would be to the benefit of 18,000,000 patrons. The special local parcel service will enable the farmers to have small parcels delivered at their gates, to live better, and to obtain easily the necessaries of life. The increased consumption will in turn increase the business of the local merchant, and benefit the jobber by the additional orders transmitted through the drummer.

#### Demonstration Asked For.

In order to demonstrate that this recommendation is a valuable one and to ascertain its practicability on the rural routes throughout the United States, I urge that the Postmaster-General be authorized and directed to establish experimentally a limited local parcel post, confined entirely to rural delivery routes in not to exceed four counties in the United States, for packages of fourth-class matter originating on a rural route or at its distributing post office for delivery by rural carriers to patrons thereof at such special rates of postage and under such regulations as the Postmaster-General may deem advisable, and that no parcel shall be accepted from any person acting as representative for any person or company not a resident on such rural delivery routes or in the town from which they emanate, and that only such parcels shall be received for delivery at the special rates of postage as are offered by bona fide merchants or dealers whose regular places of business are on such rural delivery routes, in the ordinary and regular course of their business, and in their individual capacity by residents on such routes. The result of the experiment to be reported to Congress at the beginning of the Sixty-first Congress.

#### Cheap Postal Note.

Concerning the time worn project for a cheap postal note, which the department has urged for several years in spite of the fact that the public appears to be totally indifferent on the subject, and to be very satisfactorily served by the present money order system, the Postmaster-General says:

The unceasing demand for the introduction of a postal note such as would enable the public more cheaply and conveniently to transmit through the mails sums of money not exceeding $2.50 impels me to renew my recommendation of last year that a postal-note bill be enacted into law at the coming session of Congress.

The bill referred to by the Postmaster-General has already been drafted, and is now before the House Post Office Committee.

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## TRANS-MISSISSIPPI COMMERCIAL CONGRESS STRONGLY AGAINST PARCEL POST.

At the annual convention of the Trans-Mississippi Commercial Congress recently held in San Francisco, a resolution was offered relative to parcel post and approving a proposition for a reduction of rates and an increase in the limit of weight of packages carried. This resolution was referred to the Sub-Committee on Postal Laws and Transportation, which recommended the disapproval of the resolution, and its view of the matter was sustained by the convention by the significant vote of 140 to 60. The grounds upon which the convention based its disapproval were as follows:

At present every part of the United States and its possessions are provided with just and reasonable parcel post facilities sufficient to meet all reasonable requirements.

There is no limit to the number of 4-lb. packages that may be sent by mail.

The rates of postage established are low, barely covering cost calculated on the most favorable basis for the sender.

A COMPARISON WITH FOREIGN COUNTRIES.

When distance and area are considered, the present rates are but a fraction of those charged by Great Britain, Germany and Belgium. Distances in these countries are so limited they are not to be logically compared with those of the United States.

The average parcel post distance on business originating in London is 45 miles, while the average of that originating in Chicago is 869 miles.

When population is considered the United States Government at this moment is infinitely more liberal than the countries mentioned, for they serve a congested population of 550 persons per square mile in England, 300 in Germany and 600 in Belgium, against 25 per square mile in the United States.

That congested population can be served at strikingly less cost than widely spread population cannot be for one instant disputed.

In these limited area countries destinations are reached in very short periods of time, usually a very few hours, while the parcel post of the United States reaches to five or six days within its own mainland borders, and four to six weeks to its outlying areas.

REGULAR MAIL TRAFFIC WOULD BE INTERFERED WITH.

These small countries are able to conduct their parcel post business at acceptable speed to the receivers by use of freight vans moved in slow class trains.

In America mails take precedence and must be carried on the speediest express passenger trains.

These American trains have about reached the limit as to cars that can be handled in one train at the speed the public demands.

To greatly increase the parcel post traffic would mean the delay and discomfort of travel and less speed on trains for mail traffic.

MAIL ORDER HOUSE BUSINESS WOULD BE ENORMOUSLY INCREASED.

There can be no question but the allowance of a parcel within a trifle of three times the present limit of weight and a reduction of rates will vastly increase the range of commodities

transported by mail, in fact increase of mail order business could hardly fail to be beyond present comprehension.

One single Chicago mail order house did a business last year of $53,285,000. To pay them would require the total realizations of the State of California from its citrus, deciduous vine and nut products. California calls the world to wonder, but looks rather small when she could thus support but one mail order house.

All this on the present parcel post 4-lb. limit and a 16-cent rate.

What will be the result with an 11-lb. limit and a 25-cent rate?

GOVERNMENT WOULD CONSPIRE AGAINST THE SMALL TOWN.

The moment the Government of the United States promotes such a vast increase it will not only have gone into unlimited merchandise transportation but will have formed an alliance with the great centralization of merchandising capital located in a very few metropolitan cities.

It will use its enormous power to aid a few overshadowing mail order houses against the local merchant and against the prosperity of little cities, towns and villages.

Reliable authorities state in nine European parcel post countries the rural villages have been practically ruined for trade.

CREATING A COLOSSAL POSTAL DEFICIT.

Not only will the Government use its irresistible power to advance the interests of these great houses, but under the proposed conditions and rates it will be obliged to draw from the public treasury vast sums for equipment and to make up an enormous deficit which represents no saving for patrons of these houses, but the profits to these houses the Government sees fit to extract from the people at large for the special benefit of those who are not logically or justly entitled to it.

This is back action paternalism, of which we already have had enough.

AN AUDACIOUS FALLACY INTENDED TO MISLEAD.

The statements that certain reductions proposed in behalf of a local dealer would aid him are certainly a most audacious fallacy to mislead opposition to these measures.

The territory supplied by a local dealer is limited.

Wherever a rural United States mail delivery exists carriers are permitted to serve both the inhabitants and dealers on their route at no charge if he sees fit, or such a charge as may be agreed upon, all provided the package exceeds 4 lb. in weight.

No local merchant or his patrons will find any inducement in a postal package rate equaling $56 per long ton.

The local dealer, in his relations with his customers, is passably all right now, and all he asks is to be let alone and that the Government cease discriminating against him.

LOCAL MAN COULD NOT COMPETE.

Again, the local dealer could in no conceivable way get his imprint on a catalogue that would compete with those sent out by these mail order houses.

It may be claimed simply the law of competition to the greatest degree possible that is sought; elimination not by fair competition, but by invoking Government aid at the risk and expense of the American people at large.

It is the local merchant who sustains the local newspaper, and in the larger cities the great daily and Sunday papers.

These mail order houses support in no degree the public press; they advertise to no extent. They catalogue. Who may be their printer we do not know; possibly they may own their own presses.

A ONE-SIDED PARTNERSHIP.

It seems to this committee that the promoters of this scheme, whether they realize it or not, will find in the end, if they are successful, that they have forced a one-sided partnership between the Government of the United States and the mail order houses in which the Government takes all the chances.

The ultimate effect must be that of injuring the villages and the village merchant—the town and the town merchant—the nearby city and the nearby city merchant, and even the merchant of important cities.

FOR THE FARMER TO CONSIDER.

The agriculturist and others who look only to small sums saved by greater patronage of mail order houses in great centers, may find himself the loser in the end in the absence of his merchant friends and decay of his villages, the center of his social, educational and religious privileges, all tending to the disadvantage of his children, to depreciation of his property and general lowering of country life.

While this subcommittee believes in free and equal competition, it does not believe the Government of the United States has a right to extend its favors, legitimate in a limited degree, to a point and magnitude that are destructive to vast numbers, if not the majority, of its citizens.

# LETTERS FROM THE TRADE ON PARCEL POST.

## Signed Petitions from All Parts of the Country Recommended.

*To the Editor:* Your editorial in the last issue of *The Iron Age* is an admirable presentation of the principal objections to the proposed rural route parcel post, or any other sort for that matter. It also points out the real seriousness of the situation and the necessity of prompt and energetic action by the retail interests of the smaller cities and towns and villages of the country with a view to making clear to the authorities and legislators at Washington their unequivocal antagonism to the projected measure and parcel post legislation generally.

It is up to the hundreds of thousands of merchants in every State of the country to rise in a mighty protest against this monstrous imposition, which would at first cripple and eventually wipe out the business of the smaller places and centralize the trading of the country in a few great cities.

It is, indeed, as you so eloquently point out, time to get busy.

It is time to strike, and strike hard, for the welfare of the home town and against the complete commercial domination of the great centers.

Our retail Hardware associations will, of course, voice their opposition, and embracing, as they do, many thousands of merchants in all parts of the country, this will carry weight.

But I fear this sort of official procedure by itself will hardly avail in view of the very powerful and astute interests, Government and otherwise, which are arrayed in favor of a parcel post.

More effective than any other action, I think, would be the preparation of protests in the form of petitions in every small city, every town and every village of the country, signed by every business interest of these places—every man or woman running a store or catering to the public in any way, for they will all be injuriously affected by parcel post if it becomes a reality. Every one in the town should unite in this effort—the Hardwareman, the grocer, the butcher, the druggist, the dry goods man, the hotelkeeper, the livery man, the doctor, the dentist, the barber, the candy man, the blacksmith, the tinsmith—yes, and the dressmaker and the milliner.

Let a Hardwareman or two in every place get to work and line up their brethren in every branch of business, and put them on official records in opposition, and then forward the document without delay to their Congressman.

Various forms of petition will occur to your readers, but the following is offered in the way of suggestion:

[Town, State], December .., 1908.

To ..... [Your Representative in Congress.]

We, the undersigned, in business in ..... [town, State], enter our earnest and emphatic protest against the establishment of a parcel post on the rural routes and against parcel post legislation in any form.

We regard the carriage of merchandise in the mails on the rural routes as not only open to many serious objections on the ground of expense and public policy, but desire to emphasize the fact that while it would be greatly to the advantage of the catalogue houses and the department stores of the cities it would be detrimental to our interests and to the business welfare of the smaller communities.

| NAME. | BUSINESS. |
|---|---|
| ..... | ..... |
| ..... | ..... |
| ..... | ..... |
| ..... | ..... |

This form can, of course, be improved, but it will answer the purpose for which it is respectfully submitted by

HOME TOWN.

## Importance of Individual Action.

*To the Editor:* Your editorial utterance in the current number of *The Iron Age*, referring to the live topic of parcel post, deserves the thoughtful attention, not only of the Hardware trade, but also of retail merchants in every line of business, and of all students of economic problems. It is to be regretted that so clear, convincing and compact a discussion of the question must be confined in its circulation largely to one class in the business world.

The point I wish to emphasize is that the situation calls for immediate action on the part of individual members of the retail trade. Organized effort is of course effective; the various associations through their able and faithful officers are doing splendid work, the results of which may be clearly seen in the past history of the agitation for a merchandise post, but the strongest and most telling arguments which can be laid before our na-

tional legislators are the individual expressions of the substantial retail merchants throughout the country, who do not want even a rural parcel post, and regard it as inimical to their interests.

Your editorial will doubtless prove effective in stimulating many Hardwaremen to take the steps that you suggest. They in turn should be quick to pass on the call to local merchants in other lines of business whose jeopardy from legislation favorable to parcel post is quite as great as that of the Hardwaremen themselves.

NEW ENGLAND.

### Lining Up the Crossroads Merchants, and Even the Mail Carriers, Against Parcel Post.

*To the Editor:* I heartily indorse what you say on parcel post in this week's issue of *The Iron Age*, and am very glad to see you taking the matter up in this manner. I think there are two classes of people that we can interest if they are reached with the proper class of literature. First is the merchant in the very small country towns and at the cross roads. These men would be entirely put out of business should the parcel post be established, and I do not think it would take very much argument to put them to work against it. They are generally influential men in the settlements, and if we can get them lined up with us they would exert quite a lot of influence for us.

The second class is the mail carriers themselves. There was a convention of these men in my town yesterday, and on my presenting the case to them and showing them where the parcel post would turn them into express deliverers and also use an immense amount of Government money, thereby making it less probable that the Government will go into the road building business, in which they are most interested, I had them almost unanimously with me before the adjournment of their meeting, and I believe if it was properly presented to all of them throughout the country we could get them with us in opposition to the parcel post.

SOUTH CAROLINA.

### Merchants as Individuals Should Act.

*To the Editor:* Your suggestion that the retail merchants of the country should immediately express themselves on the parcel post question is very timely. I believe that one of the most effective ways this can be done is for the individual merchant to write directly to his Congressman and to the Postmaster-General. I am in touch with several local associations of merchants and shall endeavor to have them take this matter up at once. and not only send copies of resolutions to the department, but also urge their members to write individually.

Within the past year I have met in conventions business men from 28 States, representing thousands of retail merchants, and without an exception they have passed strong resolutions against parcel post. They oppose these measures not only because such laws would seriously injure the retail merchant in all the towns and villages of the country, but because anything that will tend to take business from the rural communities and concentrate it in the large cities is detrimental to the future welfare of the nation as a whole. This fact is so patent that it is not necessary to dwell on it for a moment. You have made this clear in your editorial in *The Iron Age* of November 26. It has been shown over and over how such a parcel post law would hasten the downfall of the villages, help to depopulate the country towns, destroy the home market of the farmers and deprive them of the pleasant, wholesome society of village life.

There is no demand for even a local parcel post, which if once inaugurated would, through the subtle influences of the great catalogue houses, soon be extended to cover the entire country. The farmer does not want it. He does not want to be shut in on the farm and have everything brought to him, so he will have no need to go to town. He and his family need a live, prosperous village near them and they want to go to town frequently for the recreation and for the educational and social advantages they derive from keeping in close touch with village life. No greater injury could possibly be done the farmer than to destroy these country villages. He and his family need the society, the churches and the schools of these prosperous country towns, wherein are born and reared the very highest type of American citizenship. You have truly said in your editorial that "the farmer surrounded by decadent towns is a partner in their misfortunes."

If our government is so solicitous for the welfare of the farmer let it build better roads, so he can get to and from the farm with less time and expense; but if a parcel post is put in operation it will ultimately result in defeating the very object sought to be obtained.

PENNSYLVANIA.

### Passage of Bill Would Nullify All That Has Been Won in Fight Against Catalogue Houses.

*Extract from letter from a North Carolina Hardwareman:* The passage of this bill would undo at one stroke all that has been accomplished in our fight against catalogue houses, which, as every one knows, have done more to demoralize business, without any corresponding benefit to consumers, than any other one thing that can be mentioned. They are a constant drain upon our resources and pay no taxes in support of our schools, churches or county and State government.

I would like to see your editorial widely distributed, and I should be glad if I could place a copy of it in the hands of every merchant in my State.

[NOTE.—*In view of numerous requests from merchants for copies of the editorial which appeared in our last issue giving a summary of the principal objections to a merchandise parcel post, we have prepared reprints for distribution, which we shall be pleased to furnish to those who desire to make use of them.*]

THE AMERICAN IRON & STEEL MFG. COMPANY, with plants at Lebanon and Reading, Pa., has recently issued an elegantly printed catalogue of more than 100 pages in which the principal lines of its manufacture are described. The company gives special attention to the production of refined Bar Iron, Bolts, Nuts, Rivets, Spikes and Forgings for railroad, telegraph and telephone work, of which they carry a stock ready for shipment approximating 16,000 tons. The early pages of the catalogue are embellished with views of the general offices, of the central, west and east works at Lebanon and of the Reading works at Reading. Eighteen pages at the back are devoted to a very comprehensive telegraph code.

THE long established and successful Hardware business of Acer & Whedon, Medina, N. Y., has lately been purchased by Henry Curtis of Springville, N. Y., and D. W. Wilson of Buffalo, who will continue at the old stand under the style of Curtis & Wilson. For the past few years the business has been confined to Shelf Hardware, Stoves, plumbing and heating. It is the intention of the new proprietors to extend the business to its former basis, carrying a full line of Shelf and Builders' Hardware, Tinware and Stoves. It is also contemplated to add a staple line of Agricultural Implements.

THE TWICHELL IRON COMPANY, Kansas City, Mo., has lately issued a folder in which merchants are cautioned against the purchase of light weight Metal Roofing and Siding Materials, Eave Trough and Conductor Pipe. The company suggests that it will pay the trade to look carefully into the matter and weigh and measure materials of this character.

Anderson & Co., Colton, S. D., recently suffered an entire loss by fire of their $12,000 stock of Hardware, Stoves, Sporting Goods, Furniture, &c., upon which there was insurance of $9000. The firm will not start in business again for some time.

A. R. Titus has purchased the stock of the Blairsburg (Iowa) Hardware Company, which will be removed to Olathe, Colo., where the owner will engage in business.

# Holiday Trade in the Hardware Store.

## HOLIDAY POLICY OF THE FOWLER & SELLARS COMPANY.

As the result of several years' cultivation the Fowler & Sellars Company, White Plains, N. Y., has built up a large and profitable business in holiday lines. The company's policy has been to emphasize the desirability of practical every day articles as holiday presents, goods that sell all the year around, the stock of which is greatly increased for the Christmas season. No Toys or goods which are merely ornamental in character enter into the stock purchased by the company for the holidays.

**Christmas Goods to the Front.**

An effort is made to get the most attractive goods well to the front of the store at Christmas time, arranged so as to show off to the best advantage. They are given sufficient space on stands or counters so as not to appear crowded and to permit customers to examine them critically.

**Newspaper and Other Advertising.**

To remind the public that a large, select and varied stock of holiday goods is carried by the company more advertising space is taken in the local papers, and attractive circulars are mailed and otherwise distributed to customers and the public in general. But this advertising is ably seconded by the

**Attractive Show Windows.**

In Fig. 1 is shown the arrangement of the company's window for the holiday season of 1907, before moving into a new building. The background of the right hand window was formed of a large "Merry Christmas" banner, above which were festoons of holly and four green wreaths with red bells in the center. There was also a large red bell in the center of the window. In arranging the window a space was left under the banner and above the partition or panel dividing the window from the salesroom, which was 30 in. high. This opening was left so that a clear view of the interior of the store could be had from the sidewalk, while the street could be seen from the inside of the store. Skates were sampled at the top of the panel. Elevated and back of the banner was a line of Sleds, arranged to show the bright painted tops. On the right side of the window was a toboggan. In front of the panel were Fire Sets, Lamps, Electric and Gas Portables, and on steps were placed Chafing Dishes, Five o'Clock Teas, Cutlery, Silverware, Candelabra, Manicure Sets, &c.

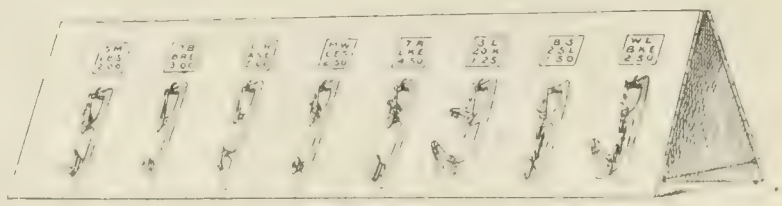



*Christmas Window Display of Fowler & Sellars Company.*

**Facilitating the Sale of Skates.**

Skates were displayed at the top of the panel by a simple and effective arrangement on boards, hinged at the top and spread at the bottom, as shown in Fig. 2. The boards were 16 in. wide and about 10 ft. long. Each kind of Skate in stock was sampled on both sides of the boards, one each on a brass cup hook, and the boards were stood on a set of shelves located in the store, just back of the panel, which were high enough so that the Skates on one side of the boards could be seen from the sidewalk and the other side from the salesroom. Above each Skate was a label marked with the number, cost and selling price, the selling price figures on the street side of the boards being large enough to be easily read from the sidewalk.

Beginning at the left end of the board will be seen three styles of Hockey Skates, followed by three kinds of Rink Skates, and next to these two styles of women's Skates. As a result of this grouping of various styles of Skates purchasers were enabled to see the same Skates sampled and priced on the boards inside the store as they had seen from the sidewalk. The samples could easily be examined by the customer and a selection made, after which a box containing the right size could be taken from the shelves below, where the stock was kept. This arrangement obviates the necessity of opening a number of Skate boxes to satisfy the curiosity of the customer, and does away with an indiscriminate handling of the stock.



*Method of Sampling and Displaying Skates.*

The left hand window was also enlivened by decorations of greens, and featured Guns, Hunting Clothing, Football Goods, Safety Razors, Revolvers, Thermometers, Leather Novelties, Cigarette and Cigar Cases, Pocket Mirrors, Change Purses, &c.

**Goods Featured During the Holidays.**

The following is a list of articles which the company has found profitable to include in the stock of goods for the holiday trade:

FANCY ARTICLES.
Leather Novelties.
Brass Smoking Sets.
Manicure and Toilet Sets.
Thermometers, &c.

FIREPLACE GOODS.
Andirons.
Fireplace Screens.
Fire Sets.
Grate Bellows.
Grates.

HOUSEHOLD GOODS.
Bird Cages.
Carpet Sweepers.
Call Bells.
Carvers.
Table and Pocket Cutlery.
Crockery Jardinieres.
Urns.
Umbrella Stands.
Feather and Fancy Dusters.
Brown and White Stone Ware.
Lamps.
Gas and Electric Portables and Electroliers.
Chafing Dishes.
Five o'Clock Teas.
Coffee Percolators.
Tea and Coffee Pots.
Baking and Fern Dishes.
Glass and Ornamental Candlesticks and Shades.
Candelabra.
Cut Glass.
Sterling Silver and Silver Plated Ware, flat and hollow.

KITCHEN ARTICLES.
Bread Boxes.
Cake Boxes.
Clothes Wringers.
Coffee Mills.
Denatured Alcohol Cooking Stoves and Smoothing Irons.
Family Scales.
Gas Heaters, Ranges and Hot Plates.
Oil Heaters and Ranges.
Flour Bins.
Meat Choppers and Presses.
Roasting Pans.
Aluminum and Enameled Ware.

SPORTING GOODS.
American Flags.
Automobile Lunch Basket Sets for two, four and six persons.
Fishing Rods and Reels.
Fishing Tackle.
Football Goods.
Foot Warmers.
Game Bags.
Gun Cases.
Guns.
Hockey Goods.
Hunting Axes and Knives.
Hunting Clothing.
Revolvers.
Childs' and Bob Sleds.
Sleigh Bells and Chimes.
Skates.
Skis.
Snow Shoes.
Toboggans.

**The Delivery of Christmas Gifts**

was arranged for by storing purchases on the second floor, to be sent out on Christmas eve or at any previous time that the buyers might designate. On the evening before Christmas of last year two wagons were kept busy up to 11 p.m. delivering presents.

## CHRISTMAS SHOPPING SCENE IN THE SHOW WINDOW.

BY F. B. M.

AN animated Christmas shopping scene may be arranged in a store window in the following manner: Two boxes are made of light lumber, about 6 in. deep and 15 in. wide, 3 ft. in length, or as long as the window will permit. Set window glass in the openings of the boxes about ¼ in. back of the edge, either by grooving out a narrow channel or by driving wire brads in the wood to hold the glass in place. Two panes of glass may be set end to end, if glass in stock is not long enough to reach the entire length of each box. The two boxes, with the glass fronts facing each other, are designed to represent buildings on either side of a street, in perspective.

**Painting the Glass.**

Paint the glass with transparent paint in imitation of the fronts of buildings. The paint may be either water colors or colored inks, mixed with sufficient gum arabic to make it adhere to the glass. The outline of the show windows, doors and the window sash in the second and third stories of the buildings should be outlined in black only, thus leaving clear panes of glass through which electric lights, dropped through holes in the tops of the boxes, will shine. Red ink mixed with gum arabic will answer to represent brick walls surrounding the small windows above the first story. The bricks should be outlined with white ink, with a fine brush, over the red ink, in imitation of mortar, as the brickwork will also be transparent and will show off to advantage with the light showing through. A snow sky effect should appear above the buildings.

**The Perspective Effect.**

The buildings should be painted in perspective, making the stores nearest the front the largest and gradually diminishing in size toward the rear, where the end of the boxes will come quite near together. The windows of the largest stores on each side of the street may have the word "Hardware" painted on them. Granulated sugar may be sprinkled on the floor of the window to represent snow.

**Other Accessories.**

Christmas shoppers can be represented by dressed dolls, many appearing on the sidewalks giving life to the scene, the electric lights in the boxes helping to show them off. On the widening street, near the plate glass window, a show card reading as follows may be laid down:

THIS IS THE PLACE
FOR
HOLIDAY SHOPPING

A snowstorm can be represented by cutting white tissue paper in pieces about ¾ in. square. These are crumpled up and coated with a little paste and a sprinkling of "Snow Sparkle," to imitate snow flakes. These are strung with needle on black silk thread about 1½ in. apart. The strings of snow flakes are suspended from the top frame of the plate glass window, in front of the scene, and should be hung so that the flakes will alternate, the strings being close together and reaching from the top to the bottom of the window. The strings will then be free to blow against the plate glass, motion being imparted to the sparkling flakes by an electric fan placed back of the exhibit, so that the air will act gently upon the suspended flakes, giving the appearance of a driving storm, causing each flake to sparkle in the sun or electric light.

The average window dresser is probably enough of an artist to carry out this idea, with the information already given of materials and methods employed, and could probably elaborate features which will increase the attractiveness, according to the size and extent of the show window at his command.

## HOLIDAY GOODS, ESPECIALLY TOYS.

BY A TEXAS MERCHANT.

MANY regular goods need but little argument to bring them in line for holidays. Cutlery, Nickel and Silver Plated Ware, both Hollow and Flat, Aluminum and Enameled Ware, Plain, Fancy and Fine China, besides a great many household novelties, should be borne in mind and judiciously displayed. Tools of all kinds, Boys' Wagons, Velocipedes and Tricycles are also in order.

**Toys an Attractive and Profitable Line.**

In addition Toys are an attractive line. Many Hardwaremen hesitate about putting in a line of Toys. Some think it takes away from the dignity of the store, while others think that the accompanying work and worry are too great. For those who consider it too much work I suggest that they do not tackle Toys.

If you are one of push, buy liberally in the Toy line. Display the goods well and marked in plain figures. You are going to have a busy store, and time given to answering questions about prices can be saved by the use of price cards.

To my mind there is no one line that will add as much to the popularity of a store as a line of Toys judiciously bought, priced and displayed.

**Transformation in the Store.**

For the holiday trade a complete change of the store is desirable. This can be accomplished by rearranging the displays in the showcases and on the racks and shelving, bringing all sorts of articles suitable for gifts into prominence at the expense of the regular line of goods. A good idea is to make the interior of the store reflect as much as possible the holiday cheer.

**Change Window Displays as Often as Possible.**

The best advertisement of what you have to offer in the holiday line is your show windows. Trim them so they can be changed often, if possible every 48 hr., and by all means couple the articles shown with price cards.

Remember, no matter whether times are prosperous

or otherwise, people always manage to have a few pennies laid aside for the holidays.

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THE J. STEVENS ARMS & TOOL COMPANY, Chicopee Falls, Mass., is, as usual, offering the trade who handle its line an assortment of newspaper electrotypes for Christmas advertising. The cuts are mortised to allow space for merchant's name, &c., and are of the same designs as the company's magazine advertisements, a fact which serves to link the merchant's announcement with the manufacturer's general publicity campaign. An attractive booklet has been sent out referring to special features of the Stevens line, especially in connection with the holiday trade, and illustrating a number of the electrotypes furnished on application.

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THE NORVELL-SHAPLEIGH HARDWARE COMPANY, St. Louis, Mo., is prepared to furnish circulars, 24 x 36 in. in size, printed on both sides, showing more than 100 items of Christmas specialties that should find ready sale for the Hardware trade. This circular has been got up with a view to encouraging the Hardware merchant to go after holiday business energetically. The company suggests that two of these large circulars might be put in a show window with a sign to the effect that the merchant can supply any of the goods named on the circular at the prices given. The prices in the circular are so arranged that the merchant gets a 50 per cent. discount, which secures for him a nice profit and one that would justify him in ordering the goods by express if necessary. The articles illustrated in the circular embrace Lamps, Clocks, Lap Robes, Watches, Tool Cabinets, Pocket Knives, Carvers, Bicycles, Morris Chairs, Rocking Chairs, Toy Banks, Sewing Machines, Roller and Ice Skates, Air Rifles, Guns, Sleds, Coasters, &c.

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THE November number of *Hardware Hints*, issued by the Logan-Gregg Hardware Company, Pittsburgh, Pa., is appropriately a holiday number, and in its pages many of the goods which are popular and salable during the holiday season are illustrated and listed. These include Razors and Safety Razors, Scissors, Childs' Sets, Clocks, Watches, Ice and Roller Skates, Watch Fobs, Boxing Gloves, Indian Clubs and Dumbbells, Express Wagons, Coasters, Velocipedes, Suit Cases and Traveling Bags, Carriage Heaters, Household Hardware, Tool Chests and Cabinets, &c. The list prices in the catalogue are the company's own and the discount from them to merchants is 50 per cent. The company also offers to send without charge with every order for holiday goods of reasonable amount, say. $25 or more, some special holiday advertising matter, consisting of a display banner for the outside of store, and one each of two different kinds of interior or window display posters.

# Here and There in the Hardware Store.

BY SAMUEL MASTERS.

## X.—ATTITUDE OF THE HARTMANS.

I HAVEN'T said much about Hartman, Jr.'s interest in my work or his help in it. I kept in very close touch with him, however, or rather he kept closely in touch with me. It was his practice to make a daily trip through the store after disposing of the morning mail and he made my desk one of the stations of his round. I tried to have something to show him as an indication of progress, and there were very few details that escaped him. He seemed to be particularly interested in the list of accredited firms, and as fast as I had a bunch completed and any sales shown upon the ledger transferred to the back of the cards he looked them through, commenting upon the absence of orders or the amount of trade secured. It soon became evident to him that two salesmen were not sufficient to cover the ground, and he and I made a careful canvass of the force for good sales timber when Mr. Martin should awake to the fact that he must cover the ground more thoroughly.

### A Commanding View.

My desk was on a dais at the rear of the store. At one time the city manager had had his desk there, but upon his advent Mr. Martin decided that he ought to be upon the floor among his clerks and customers and had his desk placed in the front of the store near one of the windows, with a railing around it to keep at a proper distance the Refrigerators, Lawn Mowers, Ranges and other large articles set out for display. From my desk a clear view of the floor below could be gained, and Hartman, Jr., and I looked down upon the men at their work and tried to determine their fitness for outside work.

### Disabilities.

One man lacked initiative. He worked well under definite instructions, but seemed to have no power to reason out matters or go an inch beyond the course laid down. Another was too argumentative. A third took little interest in his work. A fourth was untidy in appearance. A fifth murdered the English language every time he spoke. The Builders' Hardware man and the Cutlery clerk had experience in their own lines only. One clerk was an old man who helped Peter Hartman take down the wooden shutters on the first morning the store opened, and was now virtually a pensioner of his sons. In most cases there was some disabling condition.

I told Hartman Junior that I had not realized what a lot of ineligibles the city store contained. He looked at me in some surprise.

"They're a pretty good set, Sam," said he. "They were not hired for their ability as trade solicitors, and have their limitations just as you and I have. It isn't everybody who can go out and buck up against a lot of buyers with success. It is one thing to sell goods over the counter to men who come in with the intention of buying and a very different one to go to a man who is thinking of something else and endeavor to interest him in what you have to offer."

### Selections Made.

In the end we decided that three of the men on the force would do. They had had no experience in selling, even in the store, but they knew the stock thoroughly, had a pretty fair idea of the prices to charge and were industrious. One was Morgan, a stock clerk; one was Kelly, the cellarman, who had charge of the orders for fittings for out of town customers, and the other was the houseman, who cared for the orders for one of the city salesmen. The man last named was the one first chosen, replacing one of Mr. Martin's two men, who objected to furnishing reports of his daily movements.

### Hartman Senior's Visits.

Hartman Senior had a disconcerting fashion of dropping in upon me occasionally. Upon his first visit I told him as little as possible about my work, wishing to avoid any possible complication of Hartman Junior's plans; but Junior told me to be as frank as possible with his brother and to tell him all he would hear about the work in hand. His second visit came at the time when the Blue Book was at the hight of its popularity, and he listened with seeming interest when I told him of the lining up of the stock when the book was compiled and of some of the new business that could be traced to this source. Later when Mr. Clark told him of the card list of prospective customers he came again to my desk and spent some time in looking the list over. He found therein the names of a number of firms who had been his personal customers in the early days of his service and noted that they bought nothing now. He took a drawer of the cards down to the desk of the city manager, Mr. Martin, and from my elevated dais I could see that an animated discussion of the condition as shown by the cards resulted. When Mr. Martin returned the cards he told me that Hartman Senior had exhorted him to make all possible use of the data for the extension of business, and had offered to see personally two or three of his old customers and attempt to regain their trade.

*(To be continued.)*

## AUSTRALIAN NOTES.

MELBOURNE, October 19, 1908.

THE spring season is with us and trade is fairly good. Country accounts have been a little backward of late, but magnificent spring rains, which have fallen especially over our wheat belts, have dispelled any anxiety on the part of the wholesalers. A good harvest is assured, and indeed a record one is quite probable. From the above you will gather that speculative business is entirely absent, yet the year will compare more than favorably with the corresponding period of 1907. Standard lines of Australian requirements are in steady and ever-increasing demand, and the commercial community as a whole has never been in a more thoroughly satisfactory position than it is to-day.

Harrold Colton & Co., Ltd., Adelaide, have taken possession of the new building erected by them in place of the one destroyed by fire some 18 months ago. The new building has been specially designed to meet the requirements of their business as general merchants. It has a frontage of 94 ft. on Currie street, with a depth of 212 ft.

Alfred Shaw, one of the fathers of the Victorian Hardware trade, died at Perth, Westralia, quite recently. He founded the firms now k own as Harvey Shaw & Co., of Melbourne, and Alfred Shaw & Co. of Brisbane. He was a heavy loser in the Melbourne land boom, and latterly had been in the land agency line in Westralia.

The Australian Hollowware Company is the title of a new firm with works at Williamstown, near Melbourne. Britain has so far supplied this country with the bulk of its hollowware requirements, although during the last decade Germany has made a strong bid for and captured a fair share of the trade.

Australian traders are making a strong and persistent effort to educate the public to purchase Australian made goods and so support local industry. This effort has met with a fair measure of success, and the patriotic spirit has now to be reckoned with, though not in any great degree as yet. Still, it is a factor to aid Australian industry, and every new departure and each new factory are sure of sympathetic consideration so long as the goods are well made.

## Requests for Catalogues, Etc.

*The trade is given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.*

**REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate:**

FROM T. A. PADEN, who has engaged in the wholesale and retail business in Carr, Colo., handling Hardware and Lumber.

FROM J. V. A. FRATES, Sebastopol, Cal., who has added Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Sporting and Athletic Goods to his plumbing business.

E. C. ATKINS & Co., Indianapolis, Ind., are issuing a series of talks on salesmanship addressed to "Salesmen Who Want More Salary." The talks are issued in convenient circular form and are attractively gotten up and brightly written. Although of course their main object is to increase the salesman's interest and effort in the sale of Atkins Saws, they are also calculated to inculcate many interesting and suggestive ideas regarding the fundamental principles of salesmanship and business success.

## Price-Lists, Circulars, Etc.

*Manufacturers in Hardware and related lines are requested to send us copies of catalogues, price-lists, &c., for our Catalogue Department in New York; and at the same time to call attention to any new goods or additions to their lines, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.*

WM. E. PRATT MFG. COMPANY, 91 Lake street, Chicago, Ill.: Catalogue relating to Clevises, Felloe Oilers, Malleable Iron Wrenches, Malleable Fifth Wheels, Oar Locks, Automobile and Lifting Jacks, Belt Hooks, Wire Mats, Garment Hangers, Cow Bells, Hog Rings and Ringers, &c.

CENTRAL STAMPING COMPANY, New York: Catalogue No. 25, illustrating a full line of Sterling-Aluminum Enameled Ware. In addition the company manufactures Pressed, Stamped, Pieced and Japanned Tinware and Galvanized Ware.

CHAMPION SAFETY LOCK COMPANY, Geneva, Ohio: Catalogue No. 11, showing Floor Hinges, Kick Plates, Door Holders, Mortise Door Bolts, Door Stops, Sash Locks, Sash Lifts, Drawer Pulls, Cupboard Turns, Casement Window Adjusters, Spring Hinges, &c.

CLARK-HORROCKS COMPANY, Utica, N. Y.: Catalogue covering the company's complete line of Fishing Rods and Tackle, including Reels, Baits, Spoons, Lines, Leaders, Flies, Hooks, Nets, Fishermen's Accessories, &c.

KNAPP ELECTRIC & NOVELTY COMPANY, 511-513 West Fifty-first street, New York: Catalogue relating to Fans, Motors, Electrohits, Electrical Questioner, Electric Trains, Trolleys and Tracks, &c.

BEST REGISTER COMPANY, Milwaukee, Wis.: Catalogue describing Registers and Ventilators, with faces of cast iron and boxes of sheet steel.

WASHINGTON CUTLERY COMPANY, Milwaukee, Wis.: Pamphlets illustrating the Village Blacksmith Hand-made Butcher Knives and Tools.

JOHNSTON HARVESTER COMPANY, Batavia, N. Y.: Catalogue relating to Binders, Mowers, Reapers, Hay Tedders, Steel Rakes, Corn Binders and Disk Harrows.

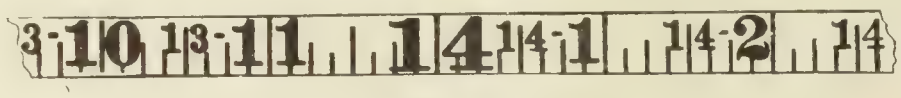
BUTLER BROTHERS, Chicago, New York, Minneapolis and St. Louis: "Our Drummer" catalogue for December, containing holiday goods, as well as a large variety of other goods suitable for the Hardware trade.

## The Luther Hand Grinder.

In an illustrated description printed in these columns in the issue of November 12 of the new grinder put out by the Luther Brothers Company, Milwaukee, an error was made which has led to misapprehension as to the size of the tool. It was stated that when packed in a 12-in. case the tool weighs 120 lb. The statement should read when packed 12 in a case the weight is 120 lb., or, in other words, the gross weight of each machine is 10 lb. instead of 120 lb., as was indicated in the article.

## Steel Tapes That May Be Instantly Read.

The Lufkin Rule Company, Saginaw, Mich., and 280 Broadway, New York, has notably improved its line of steel measuring tapes by the adoption of a new system of marking for instantaneous reading. A part of the tape thus offered is reproduced herewith somewhat reduced in size. Commencing with the 2-ft. section of the tape, the foot number of the preceding section is repeated in smaller but plain numerals in every inch interval but the last of each foot for the entire length of the tape, or a total of 539 times on a 50-ft. tape. This innovation not only saves time but markedly reduces the chance of error. It is the intention of the company to mark all of its steel measuring tapes according to this method in the near future.




*New System of Marking Steel Measuring Tapes.*

## The Bartell Vest Pocket Safety Razor.

The Cora B. Bartell Vest Pocket Safety Razor Company, 406 World Building, New York, N. Y., is offering the vest pocket safety razor shown in the accompanying illustrations. The razor, which was designed by Mrs.

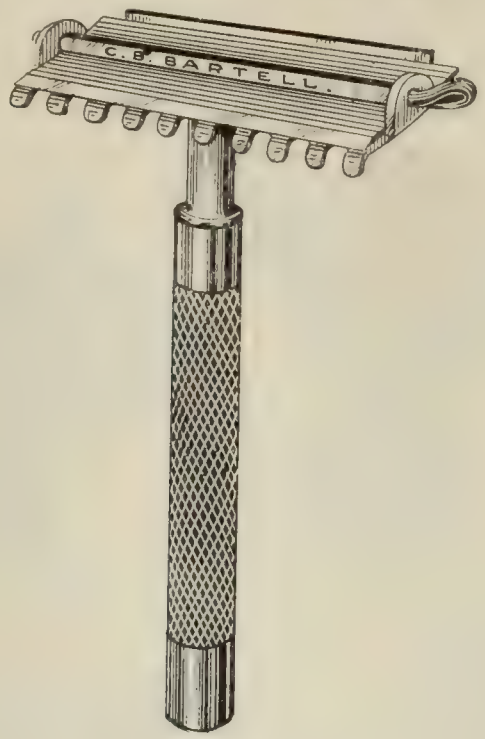



*Fig. 1.—The Bartell Vest Pocket Safety Razor.*

Bartell, is so constructed that the blade is secured by a bar holding it viselike to avoid flopping. When the blade is put in place the pressure exerted by the bar gives a natural concave to the blade. The full use of the blade

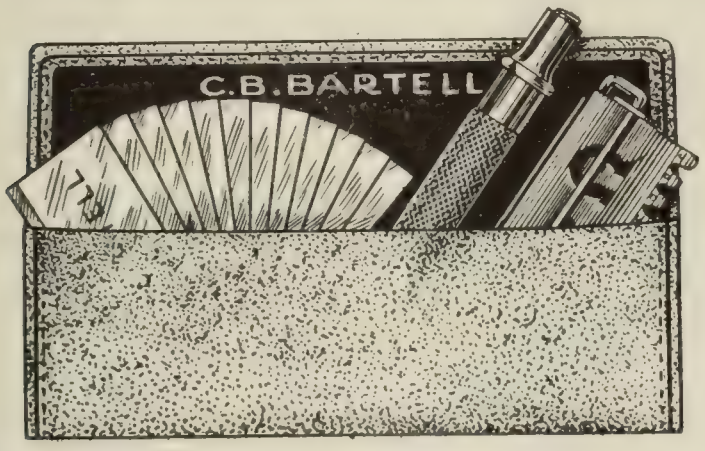
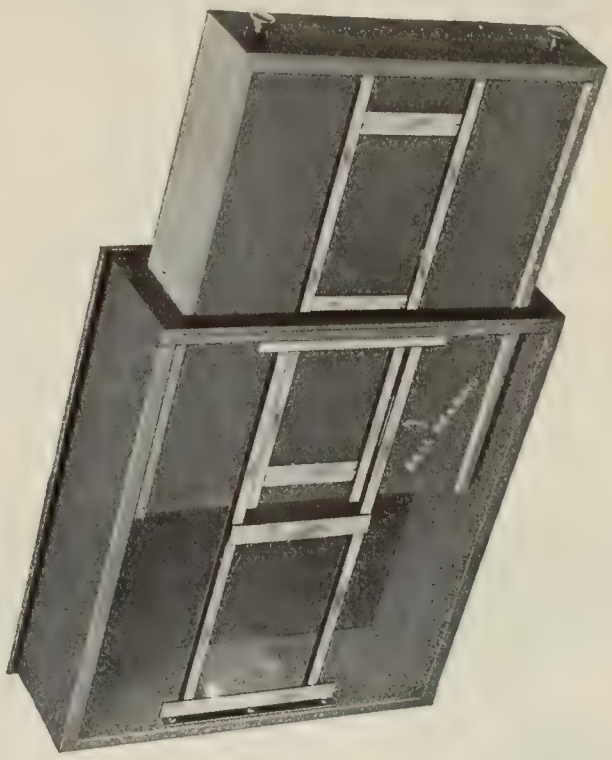



*Fig. 2.—The Bartell Safety Razor with Twelve Blades in Leather Vest Pocket Case.*

is thus given, so as to shave in the corners of the mouth and across the face. The blade is placed in position backward, avoiding injury to the edge. The handle screws to the back of the blade holder when in use. No stropping or honing is required.

## Reliance Ball Bearing Drawer Slide.

The Reliance Ball Bearing Door Hanger Company, 1 Madison avenue, New York, has just put on the market the patented ball bearing drawer slide one view of which is given herewith, and which is in addition to a somewhat similar device for installation on sides of drawers for the same service. Both styles of slides embody the same mechanical principles that have been the feature of the Reliance ball bearing door hangers. The slide under consideration consists of four grooved steel bars, two stationary, while the other two move between them on steel balls fitted into the grooves, there being a thin intervening steel plate with holes that keep the steel balls on each side always in proper position and at the same uniform distance apart. The slide mechanism is screwed to the bottom of the drawer in such manner as to require but little room to accommodate it, and the slide can be readily attached to drawers not made especially for it. This construction allows the

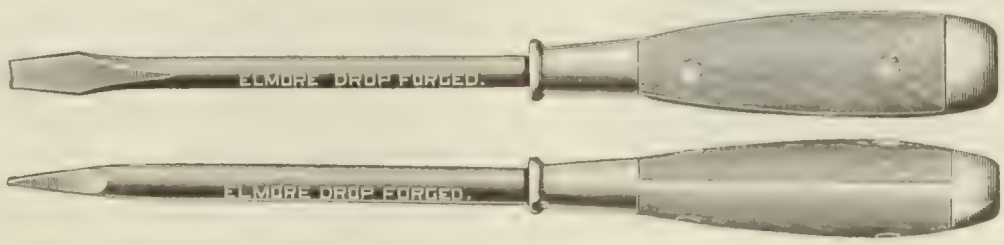


*Reliance Ball Bearing Drawer Slide, Partly Open.*

drawer to be opened four-fifths of its length and the drawer will not pinch or bind, empty or full, at any point, a slight push at any place on front end easily closing it. It is out of sight and makes possible the carrying of any reasonably heavy load with an easy movement. It is especially commended to the trade, architects, contractors and builders making a specialty of the interior fittings, including bank and office furniture and fittings, store and merchandise showrooms and high grade cabinet work, fine residential and public buildings, &c., where many easy running and durable drawer slides are required.

## The Elmore Solid Drop Forged Screw Driver.

The Elmore Tool Mfg. Company, Hartford, Conn., is putting on the market a screw driver of which two views are presented herewith. The entire handle and ferrule are drop forged from the best quality of steel. On all sides of the handle are ribbed edges, designed to overcome large cracks caused by shrinkage of the hardwood scales. The handle is shaped to fit the hand and give a secure grip. The end of the handle is made heavy and flat to permit of hammering and other rough work, the style of both the butt and ferrule end being such as to prevent splitting or cracking the wood scales from rough usage. It is explained that great care is taken in the forging, tempering and polishing of the tool. The driver is made in different styles and lengths of blade, in several sizes of drop forged handles, with both round and square shanks, designed for all kinds of work. The same construction is also carried out in a complete line of solid steel drop forged handled ice picks and chisels.




*The Elmore Drop Forged Screw Driver.*

## The Wizard Adjustable Ratchet Wrench.

The Richards Mfg. Company, Aurora, Ill., is offering the ratchet wrench here shown, Fig. 1 representing the wrench complete and Fig. 2 the various parts. The wrench is adjustable and can be operated like an ordi-

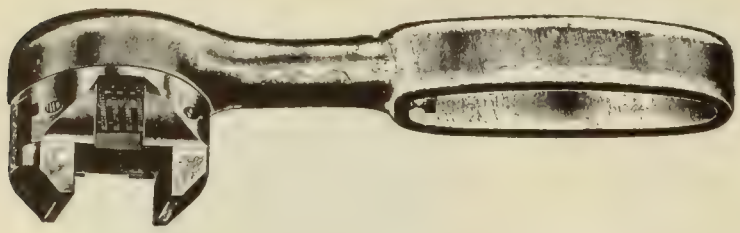


*Fig. 1.—The Wizard Adjustable Ratchet Wrench.*

nary wrench, or can be made to ratchet with right or left action by giving the knob in the handle a half turn, which reverses the pawl. It is pointed out that the wrench is especially adapted for use in close quarters and an excellent tool for use in connection with automobiles, engines and machinery of all kinds, and as especially convenient for work around pulleys. When applied to a nut

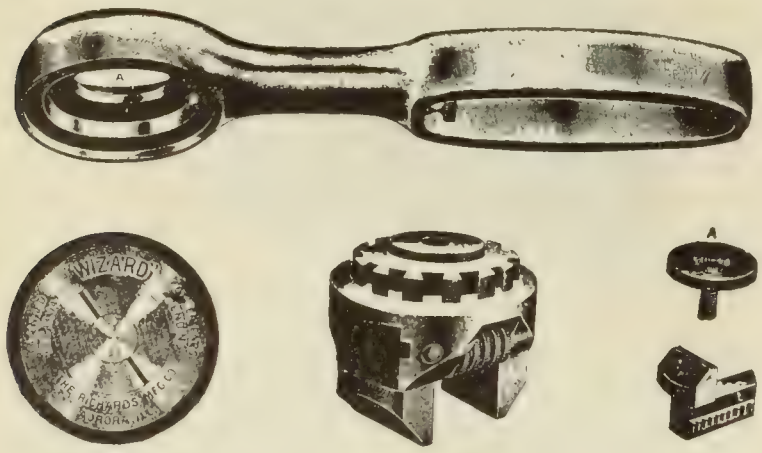



*Fig. 2.—Parts of Wizard Adjustable Ratchet Wrench.*

the wrench need not be lifted until the nut is turned as much as desired, so that plated nuts are not marred. The wrench can be operated with one hand. It is made of the best quality drop forgings throughout, surface polished and hardened, and has a mottled finish. All parts are interchangeable. The wrench is 7¼ in. over all and the jaws open 1 in. Other sizes will be added to meet the demand. The wrenches are packed one in a box, one dozen boxes in a case.

## Planet, Jr., Disk Hoes.

S. L. Allen & Co., Market and Eleventh streets, Philadelphia, Pa., manufacturers of Planet, Jr., agricultural implements, have added to their line disk plows shown herewith. The single wheel disk hoe illustrated in Fig. 1 is identical with the firm's single wheel hoe, except that

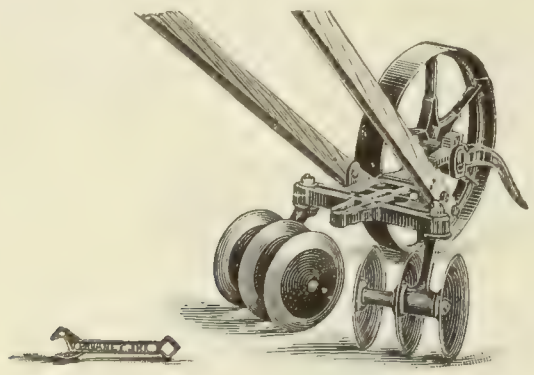


*Fig. 1.—Planet, Jr., Single Wheel Disk Hoe No. 18½.*

two sets of oil tempered disks, three each, take the place of the pair of hoes, and it has a leaf lifter. All the disks may be used at once or two on a side, as preferred. They are adjustable for depth, and to throw to or from the row, as desired. With the leaf lifters the work can be done without danger of cutting off the leaves, obviating injury to the plants. The double wheel hoe, shown in

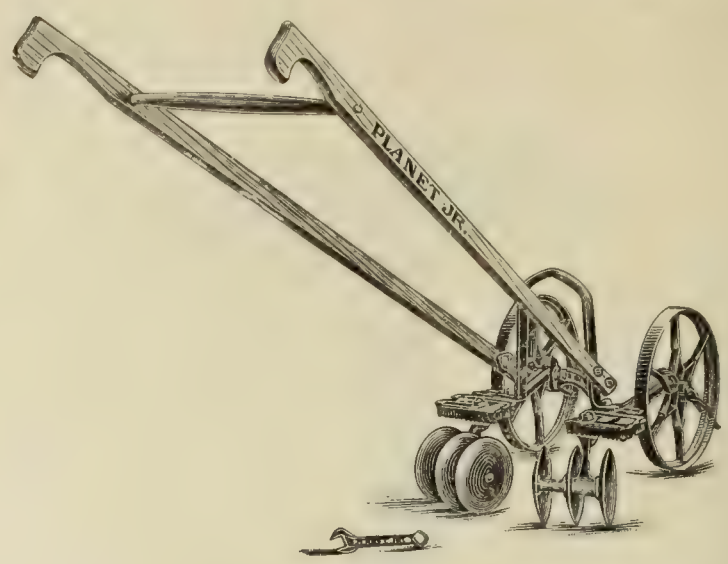
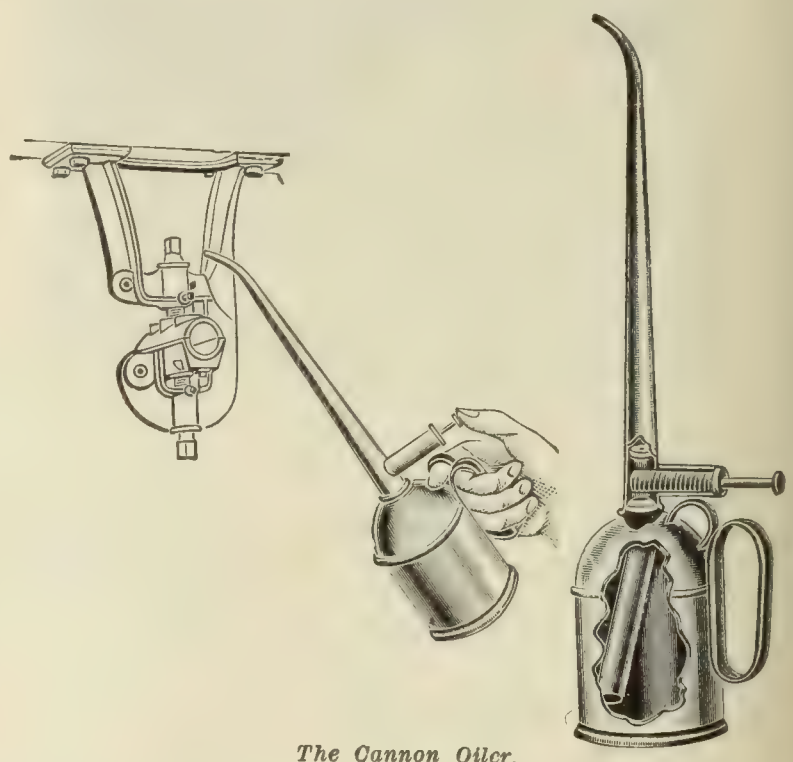



*Fig. 2.—Planet, Jr., Double Wheel Disk Hoe No. 13½.*

Fig. 2, has all the advantages of the single wheel, and in addition the steel arch permits working crops until the plants are 20 in. high or even higher.

## The Cannon Oiler.

The oiler here illustrated is designed to combine convenience, quickness and economy in the distribution of oil to bearings, and is manufactured by R. E. Bloomer, Keithsburg, Ill. The device is supplied with a force pump attachment which affords positive control of the flow of oil through a pump attachment, the mechanism of which is clearly shown in the cut away view. Oil is forced out by an easy pressure of the thumb on the plunger, and since the flow ceases when pressure on the



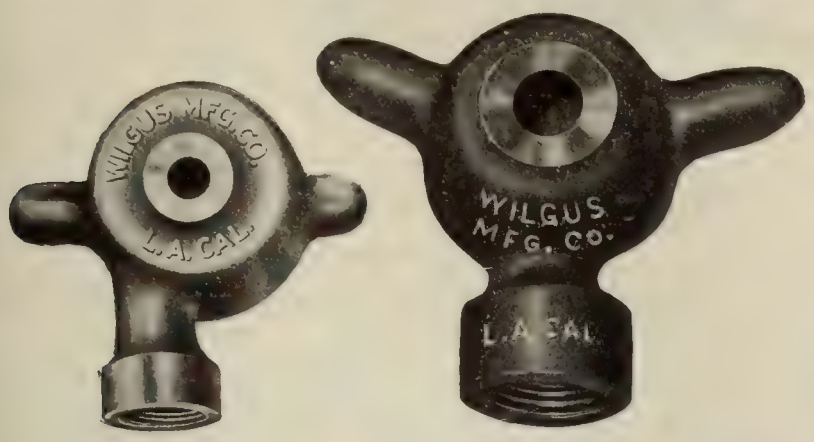
*The Cannon Oiler.*

plunger is arrested no oil need be wasted. The force pump is constructed without the use of packing nuts, both valves being separate from the plunger, which is packed with leather, which working in oil, is subject to little wear; however, should occasion require it, the packing may be easily replaced. Should the spout become clogged through use in cleaning out oil cups, presure of the pump will remove such obstacle and start the oil. The cans are made in sizes ranging in capacity from ½ pint to 1 quart, with extreme hight of 9¼ to 26 in. and spouts 6 to 20 in. in length, and are finished in tin or brass.

The stock and business of the Weber Hardware Company, Minot, N. D., has been purchased by E. C. Fritz & Co.

## The Wilgus Lawn Sprinklers.

The accompanying illustrations represent a portion of the line of lawn sprinklers offered by L. C. Pond Company, 322 East Third street, Los Angeles, Cal. The No. 1 sprinkler for ¾-in. hose will throw a circular spray with 35 or 40 lb. pressure, distributing the water equally over a circle 35 ft. in diameter. A No. 3 sprinkler of the same construction is made for 1-in. hose. Sprinkler No. 2 for ¾-in. hose, throws a circular spray of water with a center stream to secure a fountain effect. The spray is referred to as being absolutely circular, having two openings to the chamber in the sprinkler. Sprinkler No. 4, for ¾-in. pipe—a No. 5 being made for ½-in. pipe—produces the same fountain effect as No. 2 with center stream. These two sprinklers are designed to be screwed on pipes in fountains, or to be placed on uprights flush with the lawn on a line of pipe. The Lawn Twin sprinkler, No. 7, for ¾-in. hose, throws a circular spray, well blended, making it impossible to have a dry center in the area covered. Sprinklers No. 8 for ¾-in. hose and No. 9 for 1-in. hose, are known as the Fan sprinklers. This style is exceptionally well adapted for a narrow strip of lawn or to sprinkle up to a straight edge or square side. The entire line of sprinklers is made of noncorrosive white metal and all threads are tapped out instead of being cast.

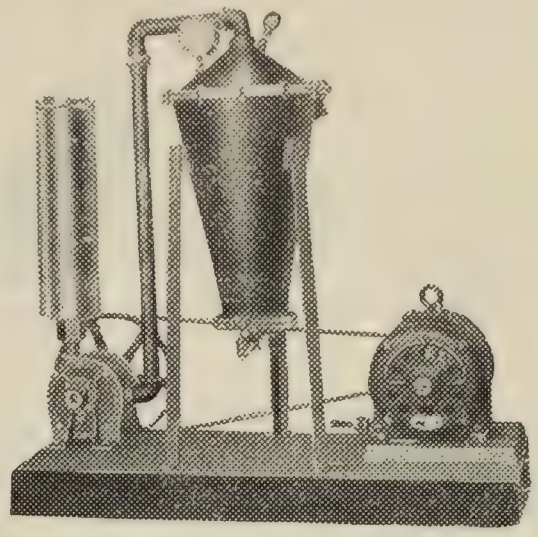



No. 1. No. 2. No. 4. No. 7. No. 8.

*The Wilgus Lawn Sprinklers.*

## The Connersville Vacuum Cleaner.

A recent addition to the line of rotary pressure blowers made by the Connersville Blower Company, Connersville, Ind., is the vacuum cleaner here illustrated. This machine is compactly built and simply constructed, so that it may be easily operated by any person where electric current is available. It is driven by a small electric motor mounted on a common base with the dust separator and pump. The efficiency of the entire equipment rests chiefly with the pump, which is of the sliding vane rotary type and has capacity for maintaining a vacuum of 10 to 15 in. mercury. The pump is provided with an oil separator and muffler which deadens the sound of the machine and strains and returns the oil to the pump to be used again. Dust is drawn by vacuum into a conical cast iron dust collector occupying a central position between the pump and motor. A screen within the collector prevents the passage of dust and dirt into the pump, this receptacle being so arranged as to be easy of access for the removal of dust and cleaning of the screen. Light pliable noncollapsible hose is used for the attachment of the operating handle which carries the various tools and appliances necessary for sweeping and cleaning; this handle is fitted with an observation glass through which the passage of dust particles may be viewed. The machine is made in four sizes, A, B, C and D, whose displacement capacity of air per minute

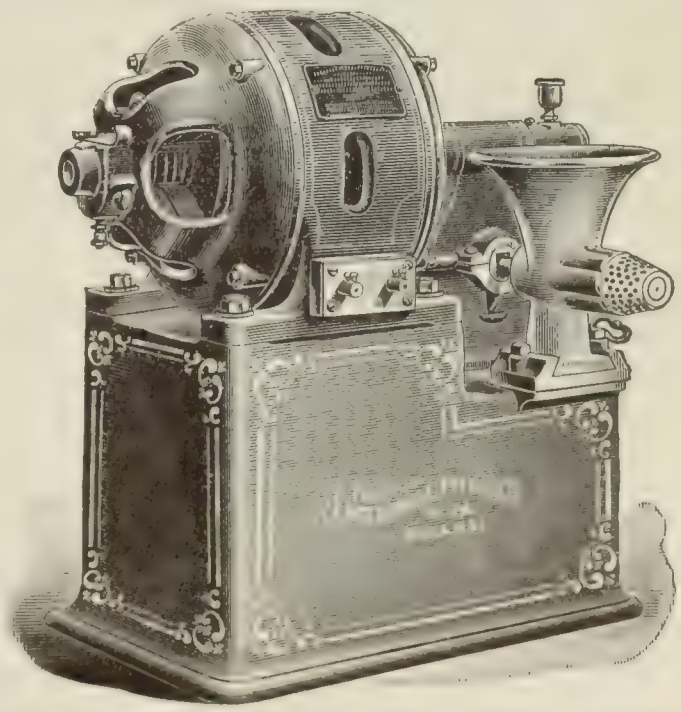


*The Connersville Vacuum Cleaner.*

ranges from 30 to 200 cu. ft., and is driven by motors of 1, 2½, 4 and 7½ hp. respectively. These motors are finished in standard type for any current, and when so desired the machine can be equipped with gasoline engine motive power.

## Enterprise Electrically Driven Special Cutting or Chopping Machine.

The electrically driven cutting or chopping machine illustrated here, made by the Enterprise Mfg. Company of Pennsylvania, Philadelphia, Pa., is especially adapted

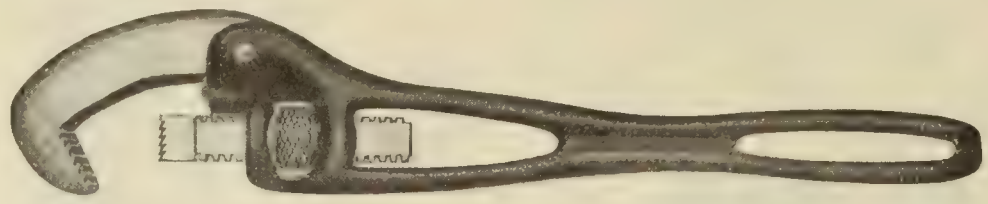


*Enterprise Electrically Driven Special Cutting or Chopping Machine.*

for cutting tough and fibrous substances, such as vanilla beans, &c. It can be furnished with ½ or ¾ hp. direct current motor or ½-hp. alternating current motor. The chopper is detachable, which allows easy access to the working parts for cleaning, &c.

## The Leader Pipe Wrench.

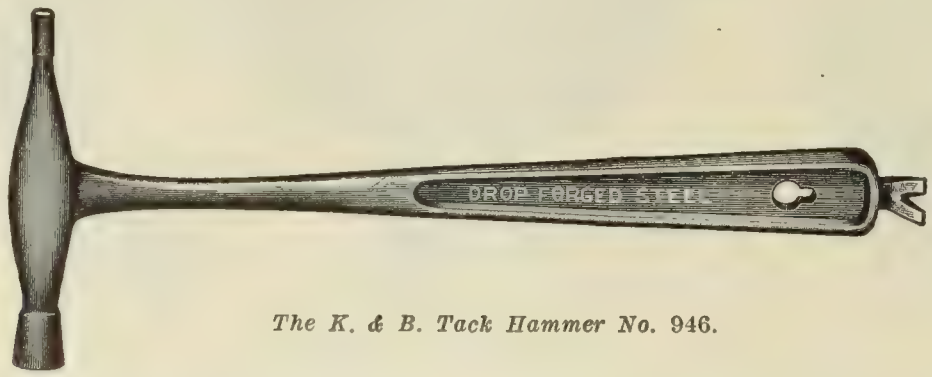
The Ripley Pipe Wrench Company, Ripley, N. Y., J. A. Jochum Hardware Company, 105-107 Chambers street, New York, sole representative for domestic and export trade, is manufacturing the Leader pipe wrench, here illustrated. It is made in No. 1, 7½ in.; No. 2, 9 in., and No. 4, 15 in., lengths, the gripping capacities of which are ⅛ to ¾, ⅛ to 1 and ¼ to 2 in., respectively. Patterns are being made for 10, 18 and 24 in. sizes, which it is the intention to market in the near future. Some of the features of this wrench, as referred to by the manufacturer, are as follows: Simplicity and few parts; ability to grip material firmly without lost motion; releasing immediately when pressure is removed without locking; threads on movable jaw guaranteed not to strip or burr, and readily replaced when dull or worn; hooks and jaws made of best quality of carbon steel, drop forged, case hardened and polished and so designed and constructed that the object is gripped with equal force, irrespective of the diameter of pipe. The handles are malleable iron, both nickel and japan finished, and especially proportioned for strength and durability, one of the results being to maintain the line of resistance constantly through the center of handle, thereby increasing the leverage and preventing side strain. The manufacturer suggests that a 4-ft. length of pipe can even be safely slipped over the handle of the 15-in. wrench for additional leverage. The stock or handle is formed with shoulders and provides a support for the swinging jaw pivoted between the two parts by riveting. Within the aperture the operating knurled nut is supported and it engages the threaded extension, thus employing to full capacity the jaw distention. Each wrench is put up in a neat double pasteboard box.



*The Leader Pipe Wrench.*

## The K. & B. Tack Hammer No. 946.

The tack hammer shown herewith, drop forged in one piece, is being put on the market by the Kilborn & Bishop Company, New Haven, Conn. The hammer is made solid and adapted to any light work for which a light, strong tool of this character is required. Small nails can be started with the claw and then caught in the keyhole shaped slot in the handle to be drawn out straight. The slot also provides an opening for hanging the hammer up. The goods are finished in a new ebonized dull black, with the ends of the heads polished. The hammers are 10 in. in length, weigh 8 oz. each, packed one-half dozen in a box, and are designed to retail at 25 cents.




*The K. & B. Tack Hammer No. 946.*

# PAINTS, OILS AND COLORS

### Animal, Fish and Vegetable Oils—

| | ₱ gal. bbls. |
|---|---|
| Linseed, Western, Raw | 47 @48 |
| State Raw | 47 @48 |
| City, Raw | 48 @49 |
| Boiled, 1¢ ₱ gal. advance on Raw. | |
| Raw, Calcutta, in bbls | 70 @.. |
| Lard, Prime, Winter | 73 @76 |
| Extra No. 1 | 51 @52 |
| No. 1 | 49 @50 |
| Cotton-seed, Crude, f.o.b. mill | 30 @30½ |
| Summer Yellow, prime | 38½@38¾ |
| Summer, White | 41½@42 |
| Yellow Winter | 47 @48 |
| Tallow, Acidless | 58 @59 |
| Menhaden, Brown, Strained | 34 @35 |
| Northern Crude | 27 @30 |
| Southern | 23½@.. |
| Light Strained | 34 @35 |
| Bleached Winter | 36 @38 |
| Ex. Bleached Winter | 38 @39 |
| Cocoanut, Ceylon ₱ lb | 6½@ 6¾ |
| Cochin ₱ lb | 7¼@ 7½ |
| Cod, Domestic, Prime | 38 @40 |
| Newfoundland | 40 @42 |
| Red, Elaine | 39 @42 |
| Saponified ₱ lb | 6 @ 6¼ |
| Olive Yellow | $1 15@$1 35 |
| Neatsfoot, Prime | 55 @58 |
| Palm, Lagos ₱ lb | 5⅞@ 6 |

### Mineral Oils—

| | ₱ gal. |
|---|---|
| Black, 29 gravity, 25@30 cold test | 13 @13½ |
| 29 gravity, 15 cold test | 13½@14 |
| Summer | 12½@13 |
| Lard, light filtered | 20 @21 |
| Dark red | 18 @19 |
| Paraffine, 903 p. gravity | 11¼@15 |
| 903 p. gravity | 13½@14 |
| 884 p. gravity | 11 @11½ |
| Red | 13½@14 |

### Miscellaneous—

| | |
|---|---|
| Barytes: | |
| White, Foreign ₱ ton | $18 50@20.50 |
| Amer. floated ₱ ton | 17 00@18.00 |
| Off color ₱ ton | 12 50@15 00 |
| Chalk, in bulk ₱ ton | 3 00@ 3.10 |
| China Clay, Imported. ₱ ton | 11.50@18.00 |
| Cobalt, Oxide ₱ 100 lb | 1.45@ 2.60 |
| Whiting, Commercial ₱ 100 lb | 42@52 |
| Gilders ₱ 100 lb | .55@ .60 |
| Ex. Gilders ₱ 100 lb | .60@ .65 |

### Putty, Commercial— ₱ 100 lb

| | |
|---|---|
| In bladders | $1.70 @1.80 |
| In bbls. or tubs | 1 20 @1.45 |
| In 1 lb to 5 lb cans | 2.65 @2.95 |
| In 12½ to 50 lb cans | 1.50 @1.90 |

### Spirits Turpentine— ₱ gal.

| | |
|---|---|
| In Oil bbls | 42½@43 |
| In machine bbls | 43 @43½ |

### Glue— ₱ lb

| | |
|---|---|
| Cabinet | 12 @15 |
| Common Bone | 7½@ 9 |
| Extra White | 18 @24 |
| Fish, liquid, 50 gal. bbls., per gallon | 60 @1.20 |
| Foot Stock, White | 12 @14 |
| Foot Stock, Brown | 9 @11 |
| German Common Hide | 10 @12 |
| German Hide | 12 @18 |
| French | 10 @40 |
| Irish | 13 @16 |
| Low Grade | 10 @12 |
| Medium White | 14 @17 |

### Gum Shellac— ₱ lb

| | |
|---|---|
| Bleached, Commercial | 22 @23 |
| Bone Dry | 26 @27 |
| Button | 30 @40 |
| Diamond I | @39 |
| Fine, Orange | 30 @35 |
| N. C. Garnet | 23 @24 |
| G. A. L. | 20 @21 |
| Kula Button | 15½@16 |
| D. C. | @41 |
| Octagon B | 34½@35 |
| T. N. | 22 @23 |
| V. S. O. | @39 |

### Colors in Oil— ₱ lb

| | |
|---|---|
| Black, Lampblack | 12 @14 |
| Blue, Chinese | 36 @16 |
| Blue, Prussian | 32 @36 |
| Blue, Ultramarine | 13 @16 |
| Brown, Vandyke | 11 @14 |
| Green, Chrome | 12 @16 |
| Green, Paris | @24 |
| Sienna, Raw | 12 @15 |
| Sienna, Burnt | 12 @15 |
| Umber, Raw | 11 @14 |
| Umber, Burnt | 11 @14 |

### White and Red, Lead &c.— ₱ lb

| | |
|---|---|
| Lead, English white, in Oil | 10⅛@10⅜ |
| Lead, American White: | |
| Dry and in Oil, 100, 250 and 500 lb kegs | 7 |
| Dry and in Oil, 25 and 50 lb kegs | 7¼ |
| Dry and in Oil 12½ lb kegs | 7½ |
| In Oil, 25 lb tin pails | 7½ |
| In Oil, 12½ lb tin pails | 8 |
| In Oil, 1, 2, 3 and 5 lb tin cans, ass't | 9 |
| Red Lead and Litharge: | |
| In 100 lb kegs | 7 |
| In 25 and 50 lb kegs | 7¼ |
| In 12½ lb kegs | 7½ |
| In lots of less than 500 lbs, ½¢ ₱ lb advance over above prices of White and Red Lead and Litharge. | |
| Lead, American. Terms: On lots of 500 lbs and over, 60 days, or 2% for cash if paid in 15 days from date of invoice. | |

### Zinc, Dry— ₱ lb

| | |
|---|---|
| American, dry | 5⅛@ 5⅝ |
| Red Seal (French process) | 6¾@ 7 |
| Green Seal | 7¼@ 7½ |
| German Red Seal (French process) | 7 @7¼ |
| Green Seal | 7½@ 7⅞ |
| White Seal | 8¼@ 9 |
| French, Red Seal | 8¾@ 8⅞ |
| Green Seal | 10⅜@10½ |

### Dry Colors— ₱ lb

| | |
|---|---|
| Black Carbon | 6½@10 |
| Black Drop, American | 3½@ 8 |
| Black Drop, English | 5 @15 |
| Black, Ivory | 16 @20 |
| Lamp, commercial | 4 @ 6 |
| Blue, Celestial | 4 @ 6 |
| Blue, Chinese | 30 @32 |
| Blue, Prussian | 28 @30 |
| Blue, Ultramarine | 3½@15 |
| Brown, Spanish | ½@ 1 |
| Carmine, No. 40 | $3 10@3 25 |
| Green, Chrome, ordinary | 3½@ 5 |
| Green, Chrome, pure | 17 @25 |
| Ocher, American ₱ ton | $8 50@16.00 |
| American Golden | 2½@ 3¼ |
| French | 1¼@ 2 |
| Foreign Golden | 3 @ 4 |
| Orange Mineral, English | 10 @12 |
| French | 12¾@13 |
| German | 12 @13 |
| American | 9 @10 |
| Red, Indian, English | 4½@ 6 |
| American | 3 @ 3¼ |
| Red, Turkey, English | 4 @10 |
| Red, Tuscan, English | 7 @10 |
| Red, Venetian, Amer. ₱ 100 lb | $0.50@1.25 |
| English ₱ 100 lb | $1.15@1.60 |
| Sienna, Italian, Burnt and Powdered | 3 @ 9 |
| Italian, Raw, Powdered | 3 @ 7 |
| American, Raw | 1½@ 2 |
| American Burnt and Pow'd | 1½@ 2 |
| Talc, French ₱ ton | $18.00@25.00 |
| American ₱ ton | 15.00@25.00 |
| Terra Alba, French ₱ 100 lb | .90@ 1.00 |
| English ₱ 100 lb | .80@ 1.00 |
| American ₱ 100 lb, No. 1. | .75@ .80 |
| American ₱ 100 lb, No. 2. | .60@ .65 |
| Umber, T'key, Bnt. & Pow. | 2⅜@ 3 |
| Turkey, Raw and Powdered | 2¾@ 3 |
| Burnt, American | 1½@ 2 |
| Raw, American | 1½@ 2 |
| Yellow, Chrome, Pure | 12¾@15 |
| Vermilion, American Lead | 7 @25 |
| Quicksilver, bulk | 65 @.. |
| Quicksilver, bags | @66 |
| English, Imported | @70 |
| Chinese | $0.90@1.00 |

# Current Hardware Prices.

**General Goods.**—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

**Special Goods.**—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

**Range of Prices.**—A range of prices is indicated by means of the symbol @. Thus 33⅓ @ 33⅓ & 10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

**Names of Manufacturers.**—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued annually, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

**Standard Lists.**—"The Iron Age Standard Hardware Lists" contains the list prices of many leading goods.

**Additions and Corrections.**—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

## Adjusters, Blind—

Columbian and Domestic.....33⅓%
North's .....10%
Upson's Patent, ℔ gro., $29.90.....10%
Zimmerman's—See Fasteners, Blind.

### Window Stop—

Ives' Patent.....10%
Ives' Stop Bead Screws and Washers .....10%
Taplin's Perfection.....10%

## Ammunition—See *Caps, Cartridges, Shells, &c.*

## Anti—Rattlers—

Fernald Mfg. Co. Burton Anti-Rattlers, ℔ doz. pairs, Nos. 1, $0.75; 2, $0.60; 4, $1.00; 5, $0.50.
Fernald Quick Shifter, ℔ doz. pairs .....$2.00@$3.00

## Anvils—American—

Eagle Anvils.....℔ lb @8 ¢
Hay-Budden, Wrought.....9½@9¾ ¢
Trenton .....℔ lb 9½@9¾ ¢

### Imported—

Swedish Solid Steel Paragon, ℔ lb .....10@10½ ¢
Swedish Solid Steel Sisco, Superior, ℔ lb.....10@10½ ¢
Peter Wright & Sons, ℔ lb, 84 to 349 lb, 11¢; 350 to 600 lb, 11½ ¢.

### Anvil, Vice and Drill—

Millers Falls Co., $18.00.....15&10%

## Apple Parers—See *Parers, Apple, &c.*

## Aprons, Blacksmiths'—

Livingston Nail Co.....10%

## Augers and Bits—

*Com. Double Spur....75&10@80%*
*Jennings' Patn., Bright.65&10@70%*
*Black Lip or Blued...65@65&5%*
*Boring Mach. Augers.....70%*
*Car Bits, 12 in. twist.....40&10%*
Ford's Auger and Car Bits.....40&5%
Ft. Washington Auger Co., Conard's .....35%
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip. R. Jennings' list, 25&7½%
No. 30, R. Jennings' list.....50%
Russell Jennings'.....25&10&2½%
L'Hommedieu Car Bits.....15%
Mayhew's Countersink Bits.....45%
Pugh's Black.....20%
Pugh's Jennings' Pattern.....35%
Snell's Auger Bits.....60%
Snell's Bell Hangers' Bits.....60%
Snell's Car Bits, 12-in. twist.....60%
Snell's King Auger Bits.....50%
Swan's .....65&10@7½
Swan's, Jennings' Pattern.....50%
Wright's Jennings' Bits.....50%

### Bit Stock Drills—

See *Drills, Twist.*

### Expansive Bits—

Clark's Pattern, No. 1, ℔ doz., $26; No. 2, $18 .....60&10%
Ford's, Clark's Pattern...60&5@60&10%
C. E. Jennings & Co., Stor's Pat. .25%
Lavigne Pat., small size, $18.00; large size, $26.00.....60&10%
Swan's .....60%

### Gimlet Bits—

*Per gro.*
*Common Dbl. Cut.....$3.00@3.25*
*German Pattern, Nos. 1 to 10, $4.75; 11 to 13, $5.75*

### Hollow Augers—

*Bonney Pat., per doz..$5.50@6.00*
Ames .....20&10%
Universal .....20%

### Ship Augers and Bits—

*Ship Augers.....40&10@—%*
Ford's .....33⅓&5%
C. E. Jennings & Co.:
L. Hemmelein's .....6%
Warrens' .....33⅓&7½
Snell's .....48%

## Awl Hafts—See *Handles, Mechanics' Tool.*

## Awls—

*Brad Awls:*
*Handled .....gro. $2.75@3.00*
*Unhdld, Shldered...gro.63@66¢*
*Unhandled, Patent..gro.66@70¢*
*Peg Awls:*
*Unhandled, Patent..gro. 31@34¢*
*Unhdld, Shldered..gro. 65@70¢*
*Scratch Awls:*
*Handled, Com...gro. $1.50@1.00*
*Handled, Socket..gro.$11.50@12.00*

## Awl and Tool Sets—See *Sets, Awl and Tool.*

## Axes—

*Single Bit, base weights: Per doz.*
*First Quality.....$4.75@5.00*
*Second Quality.....$4.25@4.50*
*Double Bit, base weights:*
*First Quality.....$7.00@7.50*
*Second Quality.....$6.50@6.75*

## Axle Grease—

See *Grease, Axle.*

## Axles— Iron or Steel.

*Concord, Loose Collar...4¼@4½¢*
*Concord, Solid Collar....4½&5 ¢*
*No. 1 Common, Loose...3½@4 ¢*
*No. 1½ Com., New Style.4¼@4¾¢*
*No. 2 Solid Collar.....4¼@4¾¢*
*Half Patent:*
*Nos. 7, 8, 11 and 12.....70%*
*Nos. 13 to 14.....70%*
*Nos. 15 to 18...70&10@70&10&5%*
*Nos. 19 to 22...70&10@70&10&5%*

### Boxes, Axles—

*Common and Concord, not turned .....lb., 5@6¢*
*Common and Concord, turned, lb., 6@7¢*
*Half Patent.....lb., 9½@10¢*

## Bait— Fishing—

Hendryx:
A Bait.....20%
B Bait.....25%
Competitor Bait.....20&5%

## Balances— Sash—

Caldwell new list.....50&10%
Pullman .....50&10%

### Spring—

*Light Spring Balances.60@60&5%*
Chatillon's:
Light Spg. Balances.....50@50&10%
Straight Balances.....40@40&10%
Circular Balances.....50&10%
Large Dial.....30%

## Barb Wire—See *Wire, Barb.*

## Bars— Crow—

*Steel Crowbars, 10 to 40 lb.... per lb., 2¼@2½¢*

### Towel—

No. 10 Ideal, Nickel Plate..℔ gro. $8.50

## Beam, Scale—

*Scale Beams.....40%*
Chattillon's No. 1.....30%
Chatillon's No. 2.....40%

## Beaters, Carpet—

Holt-Lyon Co.:
No. 12 Wire Coppered ℔ doz. $0.80; Tinned .....$0.85
No. 11 Wire Coppered ℔ doz. $1.15; Tinned .....$1.20
No. 10 Wire Tinned.....℔ doz. $1.50

### Beaters, Egg—

Dover Stamping & Mfg. Co.:
Genuine Dover, per gro., No. 1, Tumbler Size, $7.50; No. 2, Family Size, $7.50; No. 3, Extra Family Size, $24.00; No. 4, Hotel Size, $30.00.
Holt-Lyon Co.:
Holt, per doz., No. 5, Jap'd, $0.80; No. A, Jap'd, $1.15; No. B, Jap'd, $1.85; No. 6, Jap'd, $1.65.
Lyon, Jap'd, per doz., No. 2, $1.35.
Taplin Mfg. Co.:
Improved Dover, per gro., No. 60, $6.00; No. 75, $6.50; No. 100, $7.00; No. 102, Tin'd, $8.50; No. 150, Hotel, $15.00; No. 152, Hotel Tin'd, $17.00; No. 200, Tumbler, $8.50; No. 202, Tumbler Tin'd, $9.50; No. 300, Mammoth, per doz., $25.00.

## Bellows—

*Blacksmith, Standard List:*
*Split Leather.....60&10@65%*
*Grain Leather.....50@50&10%*

### Hand—

| *Inch..* | *6* | *7* | *8* | *9* | *10* |
|---|---|---|---|---|---|
| *Doz..* | *$5.00* | *5.50* | *6.00* | *6.50* | *7.50* |

### Molders—

| *Inch..* | *10* | *12* | *14* | *16* |
|---|---|---|---|---|
| *Doz..* | *$7.50* | *9.00* | *12.00* | *15.00* |

Net Prices.

## Bells— Cow—

*Wrought Cow Bells.....75%*
Jersey .....75&10%
Texas Star .....50%

### Door—

Home, R. & E. Mfg. Co.'s.....55&10%

### Hand—

*Polished, Brass.....60@60&10%*
*White Metal.....60@60&10%*
*Nickel Plated.....50&10%*
*Swiss .....50&10%*
Cone's Globe Hand Bells.....33⅓@35%

### Miscellaneous—

*Farm Bells.....lb., 2¼@2½¢*
*Church and School....60@60&10%*

## Belting— Leather—

*First Quality, Ex. Hy., Strictly Short Lap.....60&10%*
*Standard .....70&10@70&10&5%*
*Light Double.....75&10%*
*Cut Leather Lacing.....45@50%*
*Leather Lacing Sides, per sq. ft.25¢*

### Rubber—

*Competition (Low Grade), 70&10@75%*
*Standard .....60&10@70%*
*Best Grades.....40@50%*

## Bench Stops—

See *Stops, Bench*

## Benders and Upsetters, Tire—

Green River Tire Benders and Upsetters .....20%

## Bicycle Goods—

John S. Leng's Son & Co.'s 1908 list:
Chain, Parts, Spokes.....50%
Tubes .....60%

## Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

## Blocks Tackle—

*Common Wooden.....75@75&5%*
B. & L. B. Co.:
Boston Wood Snatch, 50%; Eclipse Steel, 75%; Hollow Steel, 50&10%; Star Wire Rope, 50%; Tarbox Metal Snatch, 50%; Tarbox New Style Steel, 50&10%; Wire Rope Snatch, 50%.
Lane's Patent Automatic Lock and Junior .....30%
See also Machines, Hoisting.

## Boards, Stove—

*Paper and Wood Lined.....55%*
*Embossed .....55%*

## Boards, Wash—

See *Washboards.*

## Bobs, Plumb—

Keuffel & Esser Co.....33⅓&10%

## Bolts Carriage, Machine, &c,—

*Common Carriage (cut thread):*
*⅜ x 6 and smaller.....75&5%*
*Larger and longer.....70&5%*
*Phila. Eagle, $3.00 list...80@—%*
*Bolt Ends, with C. & T. Nuts, 70&10%*
*Machine (Cut Thread):*
*⅜ x 4 and smaller.....75&10%*
*Larger and longer.....70&10%*

### Door and Shutter—

*Cast Iron Barrel, Japanned, Round Brass Knobs:*

| *Inch ...* | *3* | *4* | *5* | *6* | *8* |
|---|---|---|---|---|---|
| *Per doz..* | *$0.30* | *.35* | *.45* | *.60* | *.80* |

*Cast Iron Spring Foot, Jap'd:*

| *Inch .....* | *6* | *8* | *10* |
|---|---|---|---|
| *Per doz.....* | *$1.20* | *1.50* | *2.25* |

*Cast Iron Chain, Flat, Japanned:*

| *Inch .....* | *6* | *8* | *10* |
|---|---|---|---|
| *Per doz.....* | *$1.00* | *1.40* | *1.65* |

*Cast Iron Flat Shutter, Jap'd, Brass Knobs:*

| *Inch .....* | *6* | *8* | *10* |
|---|---|---|---|
| *Per doz.....* | *$0.75* | *.95* | *1.25* |

*Wrought Barrel Japanned, 80&10@80&10&5%*
*Barrel Bronzed .....60&10%*
*Spring .....70&10@70&10&10%*
*Shutter .....50&5@50&10&5%*
*Square Neck.....75@75&10%*
*Square .....70&10&10@80%*
Ives' Mortise.....10
Ives' Wrought Metal.....10

### Expansion—

F. H. Evans' Crescent.....40@60%
Richards Mfg. Co.....5&10
Star Expansion Bolt Co.:
Star Lag Screw Type..60&10&5&2½%
Star, Wood Screw Type.....40%
Star, Machine, Single Wedge....60%
Star, Machine, Double Wedge....60%
Steward & Romain Mfg. Co.:
Style No. 13, Double.....60%
Style No. 1, Single.....60%
Style No. 100, Dbl. Jaw, Single..55%
Lag Screw.....66⅔%

### Plow and Stove—

*Plow .....65&5@70%*
*Stove .....85@85&5%*

### Tire—

*Common Iron.....80%*
*Norway Iron.....80%*
American Screw Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84..82½%
Bay State, list Dec. 28, '99.....80%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84...82½%
Eclipse, list Dec. 28, '99.....80%
Russell, Burdsall & Ward Bolt & Nut Co.:
Empire, list Dec. 28, '99.....80%
Norway Phila., list Oct. '84.....80%
Eagle .....82½%
Shelton Co.:
Tiger Brand, list Dec. 28, '99....80%
Phila., Eagle, list Oct. 16, 1884..82½%
Upson Nut Co.:
Tire Bolts.....72½%

## Borers, Bung—

*Borers Bung, Ring, with Handle:*

| *Inch.....* | *1¼* | *1½* | *1¾* | *2* |
|---|---|---|---|---|
| *Per doz...* | *$4.80* | *5.60* | *6.40* | *8.00* |
| *Inch.....* | | | *2¼* | *2½* |
| *Per doz.....* | | | *$8.65* | *11.50* |

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.75; No. 3, $2.50 each.....25%

## Boxes, Mitre—

C. E. Jennings & Co.....25%
Langdon, New Langdon and Langdon Improved, 20&10%; Langdon Acme .....15&10%
Perfection .....40%
Seavey .....45%

## Braces—

*Comman Ball, American....$1.50*
Barber's .....50&10%@60&10%
Fray's Genuine Spofford's.....60%
Fray's No. 61, 166, 206, 614.....50%
C. E. Jennings & Co.....50&5%
Mayhew's Ratchet.....60%
Mayhew's Quick Action Hay Pat..50%
Millers Falls Drill Braces.....25&10%
P., S. & W. Co., Peck's Pat....60&10%

## Brackets—

*Wrought Steel.....75&10&5@80%*
Bradley Metal Clasp...80&10@80&10&5
Griffin's Pressed Steel.....75@75&10%
Griffin's Folding Brackets.....70&10%
Taplin Victor Handy Egg Beater Bracket .....℔ doz. $1.50

## Bright Wire Goods—

See *Wire and Wire Goods.*

## Broilers—

Kilbourne Mfg. Co.....75&20%
Wire Goods Co.....75%

## Buckets, Galvanized—

*M'fr's list, price per gross.*

| *Quart..* | *10* | *12* | *14* |
|---|---|---|---|
| *Water, Reg...* | *26.85* | *29.50* | *33.50* |
| *Water, Hvy...* | *45.35* | *48.00* | *52.00* |
| *Fire, Rd. Btm.* | *32.00* | *34.65* | *38.65* |
| *Well .....* | *37.35* | *41.35* | *45.35* |

10&7½&5&5%

## Bull Rings—See *Rings, Bull.*

## Butts— Brass

*Wrought, High List, Oct. 6, '06.65%*
Cast Brass, Tiebout's.....40&10%

### Cast Iron—

*Fast Joint, Broad....40&10&10%*
*Fast Joint, Narrow...40&10&10%*
*Loose Joint.....70&10&5%*
*Loose Pin.....70&10&5%*
*Mauer's Hinges.....70&10&5*
*Parliament Butts.....70&10&5*

### Wrought Steel—

*Bright.*
*Light Narrow, Light Reversible .....70&5*
*Reversible and Broad..70&5%*
*Loose Joint, Narrow, Light Inside Blind, &c.....70%*
*Back Flaps, Table Chest..65%*
*Japanned.*
*Light Narrow, Loose Pin, 40&5%*
*Light Narrow, Ball Tip..60%*
*Broad .....40&5%*
*Steeple Tipped.....70%*
*Ball Tipped.....70%*

Extra, 10—

## Cages, Bird—
Hendryx Brass: Series 3000, 5000, 1100, net list; 1200, 15%; 200, 300, 900 ..... 30%
Hendryx Bronze: Series 700, 800....30%
Hendryx Enameled..... 35%

## Calipers—See *Compasses.*

## Calks, Toe and Heel—
*Blunt, 1 prong, per 100 lb., $3.50@$3.85*
*Sharp, 1 prong, per 100 lb., $4.00@$4.35*
Burke's, 1 pg. Blunt Toe, 3¾¢; 2 pg. Blunt Toe, 4¼¢; 1 pg. Sharp Toe, 4¼¢; 2 pg. Sharp, 4¾¢; Blunt Heel, 4¼¢; Sharp Heel.....4¾¢
Lautier, Blunt, 4@4¼¢; Sharp, 4½@4¾¢
Perkins', Blunt, ℔ lb, 3.65¢; Sharp, 4.15¢

## Can Openers—
See *Openers, Can.*

## Caps, Percussion—
*Eley's E. B.....52@55¢*
*G. D.....per M 34@35¢*
*F. L.....per M 40@42¢*
*G. E.....per M. 48@50¢*
*Musket .....per M 62@63¢*

## Primers—
*Berdan Primers, $2 per M..20&5%*
*Primer Shells and Bullets..15&10%*
*All other primers per M. $1.52@1.60*

## Carpet Stretchers—
See *Stretchers, Carpet.*

## Cartridges—
*Blank Cartridges:*
*32 C. F., $5.50.....10&5%*
*38 C. F., $7.00.....10&5%*
*22 cal. Rim, $1.50.....10&5%*
*32 cal. Rim, $2.75.....10&5%*
*B. B. Caps, Con. Ball, Swgd. $.190*
*B. B. Caps, Round Ball.....$1.49*
*Central Fire.....25%*
*Target and Sporting Rifle.15&5%*
*Primed Shells and Bullets.15&10%*
*Rim Fire, Sporting.....50%*
*Rim Fire, Military.....15&5%*

## Casters—
*Bed .....65&10@70%*
*Plate .....60@60&5%*
*Philadelphia .....70&10@75%*
Acme, Ball Bearing.....35%
Gem (Roller Bearing).....70&10&10&5%
Steel Gem (Roller Bearing).....70%
Standard Ball Bearing.....45%
Yale (Double Wheel) low list...40&10%

## Cattle Leaders—
See *Leaders, Cattle.*

## Chain, Proof Coil—
*American Coil, Straight Link:*

| 3-16 | ¼ | 5-16 | ⅜ | ½ | ⅝ |
|---|---|---|---|---|---|
| $7.70 | 5.10 | 4.15 | 3.50 | 3.30 | 3.10 |

¾-⅞-1 1⅛ to 1¼ inch.
$3.00 3.10
*In cask lots, deduct 25¢.*
*German Coil.....70%*
*German Pattern Coil:*
*6-0 to 1.....70&10&5%*
*2 and 3.....60&10&10@70%*
*4, 5 and 6.....50&10@50&10&5%*

## Halter—
*Halter Chains.....60&5@60&10%*
*German Pattern Halter Chains, list July 24, '97....60&10&5@70%*
Covert Mfg. Co.:
Halter .....35&5%

## Cow Ties—
See *Halters and Ties.*

## Trace, Wagon, &c.—
*Traces, Western Standard: 100 pr.*
*6½—6-3, Straight, with ring. $28.00*
*6½—6-2, Straight, with ring. $29.00*
*6½—8-2, Straight, with ring. $32.00*
*6½—10-2, Str'ght, with ring. $37.00*
*NOTE.—Add 2c per pair for Hooks Twist Traces: add per pair for Nos. 2 and 3, 2c: No. 1, 3c; No. 0, 4c to price of Straight Link.*
*Eastern Standard Traces, Wagon Chain, &c...60&10@60&10&5%*

## Miscellaneous—
*Jack Chain, list July 10, '93:*
*Iron .....60&10&5@60&10&10%*
*Brass .....65%*
*Safety and Plumbers' Chain.75%*
*Gal. Pump Chain....lb., 4½@5%*
Bridgeport Chain Co.:
Triumph Halter and Coil.35&2½@40%
Triumph Dog.....50&10@60%
Brown Halter and Coil....45@50&5%
Covert Mfg. Co.:
Breast, Halter, Heel, Rein, Stallion .....40%
Oneida Community:
American Halter, Dog and Kennel Chains .....35&2½@40%
Niagara Dog Leads and Kennel Chains .....45@50&5%
Wire Goods Co.:
Dog Chain.....70%
Universal Dbl.-Jointed Chain....70%

## Chain and Ribbon, Sash—
Oneida Community:
Steel Chain.....60%
Pullman:
Bronze Chain, 60%; Steel Chain, Coppered .....60&10%
Sash Chain Attachments, per set..8¢
Aluminoy Sash Ribbon, per 100 ft. .....$2.00@$5.00
Sash Ribbon Attachments, per set..8¢

## Chalk—
*Carpenters' Blue.....gro., 50¢*
*Carpenters' Red.....gro., 50¢*
*Carpenters' White.....gro., 40¢*

## Checks, Door—
Bardsley's .....45%
Pullman, per gro.....$54.00
Russwin .....33⅓%

## Chests, Tool—
American Tool Chest Co.:
Boys' Chests, with Tools.....55%
Youths' Chests, with Tools.....40%
Gentlemen's Chests, with Tools..30%
Farmers', Carpenters, etc., Chests, with Tools .....20%
Machinists' and Pipe Fitters' Chests, Empty.....45%
Tool Cabinets.....45%
C. E. Jennings & Co.'s Machinists' Tool Chests.....7½%

## Chisels—Socket Framing and Firmer
*Standard List.....80&10@—%*
Buck Bros.....30%
C. E. Jennings & Co.:
Socket Firmer No. 10.....25&7½%
Socket Framing No. 15.....25&7½%
Swan's .....66⅔&@70%
L. & I. J. White & Co.....30@30&5%

## Tanged—
*Tanged Firmers.....30&5@35%*
Buck Bros.....30%
C. E. Jennings & Co. Nos. 191, 181..25%
L. & I. J. White Co.....25&5%

## Cold—

| | lb. |
|---|---|
| *Cold Chisels, good quality* | *.13@15¢* |
| *Cold Chisels, fair quality* | *.11@12¢* |
| *Cold Chisels, ordinary* | *.... 9@10¢* |

## Chucks—
Almond Drill Chucks.....35%
Almond Turret Six-Tool Chuck.....40%
Beach Pat, each $8.00.....35&5%
Empire .....25%
Blacksmiths' .....25%
Jacobs' Drill Chucks.....35%
Pratt's Positive Drive.....25%
Skinner Lathe Chucks:
Independent .....35%
Universal, Reversible Jaws.....35%
Universal, Com. Style Jaws.....40%
Combination, Reversible Jaws....35%
Combination, Com. Style Jaws...40%
Round Body or Box Body, 2 Chuck Jaws .....25%
Geared Scroll Chucks.....25%
Drill Chucks:
New Model, 25%; Geared Pattern, 25%; Skinner Patent, ...25%
Positive Drive.....40%
Planer Chucks.....20%
Standard .....45%
Drill Press Vises.....30%
Face Plate Jaws.....35%
Standard Tool Co.:
Improved Drill Chuck.....45%
Union Mfg. Co.:
Combination, Nos. 1, 2, 3, 4, 5, 6, 7, 8 and 17, 40%; No. 21.....35%
Scroll Combinations, Nos. 83 and 84 .....30%
Geared Scroll, Nos. 33, 34 and 35..25%
Independent Iron, Nos. 18 and 318.35%
Independent Steel, No. 64.....25%
Union Drill, Nos. 000, 00, 100, 101, 102, 103, 104.....35%
Union Czar Drill.....25%
Universal, 11, 12, 16, 17, 13, 14, 15..40%
Universal No. 42.....35%
Iron Face Plate Jaws, Nos. 28, 30, 48 and 50.....35%
Steel Face Plate Jaws, Nos. 70 and 72 .....30%
Westcott Patent Chucks:
Lathe Chucks.....50%
Little Giant Auxiliary Drill.....50%
Little Giant Double Grip Drill...50%
Little Giant Drill, Improved.....50%
Oneida Drill.....50%
Scroll Combination Lathe.....50%
Whitaker Mfg. Co.:
National Drill.....25%

## Clamps—
Carriage Makers', Star, P., S. & W. Co. .....50%
Besly, Parallel.....33⅓&10%
Hammer & Co.:
Adjustable .....20&5%
Carriage Makers' H. P. Screw.40&5%
Myers' Hay Rack.....50%
Lineman's Swedish Neverturn.....65%
Saw Clamps, see Vises, Saw Filers'.

## Cleaners, Drain,
Iwan's Champion, Adjustable.....50%
Iwan's Champion, Stationary.....40%

## Sidewalk—
American Fork & Hoe Co.:
Star, ℔ doz., Socket, $4.00; Shank .....$3.50
Shank, ℔ doz., X 7½, $3.50; Shank, X 8.....$3.75

## Cleavers, Butchers'—
Foster Bros.....30%
Fayette R. Plumb.....30%
L. & I. J. White Co.....30%

## Clippers, Horse and Sheep—
Chicago Flexible Shaft Co.: (20%)
1902 Chicago Horse, each..$10.75
20th Century Horse, each...$5.00
Lightning Belt Horse, each.$15.00
Chicago Belt Horse, each..$20.00
Stewart's Enclosed Gear Roll Bearing Horse, each.....$6.75
Stewart's New Model Sheep Shearing Machine, each.$12.75
Stewart Enclosed Gear Shearing Machine, No. 8, each..$9.75

## Clips, Axle—
*Regular Styles, list July 1, '05, 80&80&10%*

## Cloth and Netting, wire—See *Wire, &c.*

## Cocks, Brass—
*Hardware list:*
*Plain Bibbs, Globe, Kerosene, Racking, Liquor, Bottling, &c .....75%*
*Compression Bibbs.....70%*

## Coffee Mills—
See *Mills, Coffee.*

## Collars, Dog—
Nickel Chain, Walter B. Stevens & Son's list.....40%
Leather, Walter B. Stevens & Son's list .....40%

## Compasses, Dividers, &c.
*Ordinary Goods.....70&10@75%*

## Conductor Pipe,—

| | L. C. L. to Dealers: Gal. Steel. | Charcoal. | Copper. |
|---|---|---|---|
| *Northeastern:* | | | |
| | *70&10%* | *50&10&7½%* | *50&10%* |
| *Eastern:* | | | |
| | *70&10&5%* | *50&10&7½%* | *50&10%* |
| *Central:* | | | |
| | *75&5%* | *60%* | *50&10%* |
| *Northwestern:* | | | |
| | *75&2½%* | *60%* | *50&10%* |
| *Western:* | | | |
| | *70&7½%* | *50&12½%* | *50&5%* |
| *Tennessee:* | | | |
| | *70&10%* | *50&12½%* | *50&10%* |
| *Southern:* | | | |
| | *70%* | *50&12½%* | *50&5%* |
| *Southwestern:* | | | |
| | *70%* | *50&5%* | *50&5%* |

*Terms, 60 days: 2% cash 10 days. Factory shipments generally delivered.*
See also Eave Troughs.

## Coolers, Water—
L. & G. Mfg. Co.:

| Gal. | 2 | 3 | 4 | 6 | 8 |
|---|---|---|---|---|---|
| Galvanized, ea. | $1.85 | $2.00 | $2.25 | $2.90 | $3.90 |

Galvanized, Lined, side handles,

| Gal. | 2 | 3 | 4 | 6 | 8 |
|---|---|---|---|---|---|
| Each | $1.95 | $2.15 | $2.40 | $3.30 | $4.15 |

White Enameled.....10%
Agate Lined.....10%

## Coppers' Tools—
See *Tools, Coopers'.*

## Coppers, Soldering—
*Soldering Coppers, 3 lb. to pair and heavier, 21½¢; lighter than 3 lb. to pair.....23½¢*

## Cord—Sash—
*Braided, Drab.....lb. 35¢*
*Braided, White, Com., Nos. 8 to 12, 21¢; No. 7, 21½¢; No. 6, 22½¢. In lots of 12 doz. or over, 1 cent less per pound.*
*Cable Laid Italian, lb., No. 18. 37¢*
*Italian, lb., A, No. 18, 25¢; B, 22¢*
*Common India.....lb., 11@11½¢*
*Cotton Sash Cord, Tw'ted. 18@20¢*
*Patent Russia.....lb....20¢*
*Cable Laid Russia.....lb...21¢*
*India Hemp, Br'd'd.....lb...21¢*
*India Hemp, Twisted...lb. 13@14¢*
*Patent India, Twisted..lb...17¢*
Pearl Braided, cotton, No. 6, ℔ lb, 20½¢; No. 7, 19½¢; Nos. 8 to 12, 19½¢, in 12 doz. to 100 doz. lots.
Eddystone. Braided, Nos. 8 to 12, 26¢; 7, 26½; 6, 27½¢.
Harmony Cable Laid Italian, Nos. 7 to10.....℔ lb 23¢
Pullman:
Wire Sash Cord.....10%
Sash Cord Attachments, per 100..$2.00
Samson, Nos. 8 to 12: (15%)
Braided, ℔ lb., Drab Cotton, 55¢; Italian Hemp, 40¢@50¢; Linen, 65¢; White Cotton, 50¢; Spot Cord.....50¢
Massachusetts, White...℔ lb 40¢
Massachusetts, Drab....℔ lb 45¢
Phoenix, White, Nos 8 to 12....27¢
Silver Lake, per lb.:
A, Drab, 45¢; A, White, 40¢; B, Drab, 40¢; B, White, 35¢; Italian Hemp, 40¢; Linen....57½¢
See also Chain and Ribbon.

## Wire, Picture—
*Full Length.....90@—%*
*Short Length.....90&20@—%*
Hendryx Standard Wire Picture Cord, old list. 85&10%
Turner & Stanton Co. Wire Picture Cord .....90%

## Cradles—
*Grain .....50%*

## Crayons—
*White Round Crayons, Cases, 100 gro., $8.00, $8.50, $9.00 and $10.00 according to grade.*
Zelnicker's Lumber: ℔ gro.
White and Purple, Indelible....$7.50
Blue, Red, Green, Yellow and Terra Cotta, $6.50; Black.....$4.50
Giant Lumber, 5¼ in. x 15-16 in. round, all colors, $12.00; Indelibles, $14.00; Blacks.....$10.00
Genuine Soapstone, Metal Workers', 5 in. x ¼ in. Round, $2.50; 5 in. x ¼ in. Square, $1.75; 5 x ½ x 3-16, $2.50; 5 x 1¼ x 3-16.....$3.00
Suremark, Black, $2.25; Blue, Red and Yellow.....$2.50

## Crooks, Shepperds'—
American Fork & Hoe Co.:
Montana .....℔ doz. $4.50

## Crow Bars—See *Bars, Crow.*

## Cultivators—
American Fork & Hoe Co.:
Victor Garden.....50&10%

## Cutlery, Table—
International Silver Company:
No. 12 M'd'm Knives, 1847.℔ doz. $3.50
Star, Eagle, Rogers & Hamilton and Anchor.....℔ doz. $3.00
Wm. Rogers & Son.....℔ doz. $2.50

## Cutters—Glass—
H. H. Mayhew Co.....40%
Red Devil.....60%
B. Mfg. Co.....40%
Woodward .....50%

## Meat and Food—
American .....30%

| Nos. | 401 | 402 | 403 | 404 | 405 | 406 | 407 |
|---|---|---|---|---|---|---|---|
| Each | $5 | $7 | $10 | $12 | $25 | $50 | $60 |

Enterprise:

| Nos. | 5 | 10 | 12 | 22 | 32 | |
|---|---|---|---|---|---|---|
| Each | $2 | $3 | $2.75 | $4.50 | $6 | 25@25&7½% |

No. 202, $1.50.....10&7½%
P., S. & W. Co.:
Ideal .....40@40&5%
Hales .....60&5%
Little Giant.....℔ doz. 40@50%

| Nos.. | 305 | 310 | 312 | 320 | 322 |
|---|---|---|---|---|---|
| | $35.00 | $18.00 | $44.00 | $72.00 | $68.00 |

New Triumph No. 605, ℔ doz. $24.00, 40%
Russwin Food, No. 1, $24.00; No. 2, $27.00; 3, $42.00.....45&10&10%

| | $15.00 | $18.00 |
|---|---|---|

Enterprise Beef Shavers.....25@30%

## Slaw and Kraut—
Henry Disston & Sons:
Slaw and Kraut Cutters.....35%
Corn Graters.....30%
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife....℔ doz. $3.00
Combined Slaw Cutter and Corn Grater .....℔ doz. $4.00

## Tobacco—
*All Iron, Cheap...doz, $4.25@4.50*
Enterprise .....25@30%
National, ℔ doz., No. 1, $21; No. 2, $18 .....10%

## Diggers, Post Hole, &c—
Disston's:
Rapid, ℔ doz., $24.00.....25%
Samson, ℔ doz., $34.00.....25%
Iwan's Pat. Post Hole and Well Auger .....40%
Vaughan Pattern Post Hole Augers, ℔ doz., $7.00
Perfection Post Hole Diggers, ℔ doz. .....$8.50
Split Handle Post Hole Diggers, ℔ doz., $7.50
Hercules Pattern, ℔ doz.....$9.50
Kohler's, ℔ doz., Universal, $14.00; Little Giant, $12.00; Hercules, $10.00; Invincible, $9.00; Rival, $8.50; Pioneer.....$7.50
Never-Break Crucible Steel Post Hole Diggers .....60%

## Dividers—See *Compasses.*

## Drawing Knives—
See *Knives, Drawing.*

## Dressers Emery Wheel—
Sterling Emery Wheel Dressers.....35%
Sterling Wheel Dresser Cutters.....35%

## Drills and Drill Stocks—
*Blacksmith's Common Drilling Machines .....$1.50@1.75*
Breast, Millers Falls.....15&10%
Breast, P., S. & W.....33⅓%
C. & C. Ratchet.....25%
Reversible Ratchet Die Stocks....25%
Goodell Automatic Drills.50&10@60&10%
Millers Falls Automatic Drills, Graves', per doz., Nos. 1, $4.86; 2, $8.16.
Millers Falls Automatic Drills,33⅓&10%
Ratchet, Curtis & Curtis.....25%
Ratchet, Parker's.....40%
Ratchet, Weston's.....40%
Ratchet, Weston's, Style H Improved .....40@40&5%
Ratchet, No. 012.....40@40&5%
Ratchet, Celebrated.....40@40&5%
Ratchet, Whitney's, P., S. & W., 40&10@50%
Whitney's Adjustable, No. 10, $12.00, 33⅓%

## Twist Drills—
*Bit Stock.....70@70&5%*
*Taper and Straight Shank, 60&10@70%*

## Drivers, Screw—
*Screw D'ver Bits, per doz. 45@50¢*
Balsey's Screw Holder and Driver, ℔ doz., 2½-in., $6; 4-in., $7.50; 6-in., $9 .....50%
Buck Bros.' Screw Driver Bits.....30%
Champion .....50%
Disston's .....70%
Fray's Hol. H'dle Sets, No. 3, $12..50%
Ford's Brace Screw Drivers....40&10%
Gay's Double Action Ratchet.....35%
Goodell's Auto.....65@65&10%
Mayhew's Black Handle.....40%
Mayhew's Monarch.....40%
Millers Falls, ℔ doz., Nos. 11, $9.95; 12, $13.73; 20, $8.17; 21, $8.46; 41, $13.43; 42, $17.21.
Smith & Hemenway Co., Neverturn, 66⅔%; Elmora, 60%; Star, 30&10%
Swan's:
Nos. 7565 to 7568, 60%; No. 7540, 40&10%

## Eave Trough, Galvanized—

| Territory. | Gal. Steel. | Copper. |
|---|---|---|
| *Northeastern..* | *75&10&5%* | *50&10%* |
| *Eastern.....* | *80%* | *50&10%* |
| *Central.....* | *80&10&5%* | *50&10%* |
| *Northwestern..* | *80&10&5%* | *50&10%* |
| *Western .....* | *80&5%* | *50&5%* |
| *Tennessee.....* | *80&5%* | *50&10%* |
| *Southern.....* | *75&10%* | *50&5%* |
| *Southwestern..* | *75&10&2½%* | *50&5%* |

*Terms.—2% for cash. Factory shipmeets generally delivered.*
*Note.—Lower prices are made in some sections.*
See also Conductor Pipe and Elbows.

## Elbows and Shoes—
*Factory shipments, all territories: Galv. Steel, Galv. C. I. and Copper.*
*Sizes 2, 3, 4.....80%*
*Sizes 1½, 2½, 3½, 5, 6...60&10%*
*No. 26.....50%*
*No. 24.....25%*
*Copper Elbows.....50%*

## Elbows, Stove Pipe—
Edwards, Standard Blue....40&10&10%
Edwards, Royal Blue.....40&10&10%
Reeves, Dover, Flat Crimp..40&10&5%

## Emery, Turkish—

| | 4 to 46: | 5 to 220: | 4 to Flour. |
|---|---|---|---|
| *Kegs .....lb.* | *5 ¢* | *5½¢* | *3½¢* |
| *½ Kegs.....lb.* | *5¼¢* | *5¾¢* | *3¾¢* |
| *¼ Kegs.....lb.* | *5½¢* | *6 ¢* | *4 ¢* |

*10-lb. cans, 10 in case....6½¢ 7 ¢ 6 ¢*
*10-lb. cans, less than 10.....10 ¢ 10 ¢ 8 ¢*
*Less quantity..10 ¢ 10 ¢ 8 ¢*

*NOTE.—In lots 1 to 3 tons a discount of 10% is given.*

### Extensions, Bit—
Ford's Auger Bit Extensions....40&5%

### Extractors, Lemon Juice—
—See *Squeezers, Lemon.*

### Fasteners, Blind—
Zimmerman's Jap'd and Galv., 50 & 5%; Bronze and Plated.....50%
Walling's .....50%
Upson's Patent.....40%

### Cord and Weight—
Ives, ₩ gro., $1.08.....10%
Titan, ₩ gro., $0.66.....10%

### Corrugated—
Acme Corrugated Fasteners.....70%

### Faucets—
*Cork Lined.....50&10@60%*
*Metallic Key, Leather Lined, ..60&10@70%*
*Red Cedar.....40&5@40&10&5%*
*Petroleum .....70&10@75%*
B. & L. B. Co.:
Metal Key.....60&10%
Star .....60%
West Lock.....50&10%
John Sommer's Peerless Tin Key....40%
John Sommer's Boss Tin Key.....50%
John Sommer's Victor Mtl. Key.50&10%
John Sommer's Duplex Metal Key..60%
John Sommer's Diamond Lock.....40%
John Sommer's I.X.L. Cork Lined..50%
John Sommer's Reliable Cork Lined..50&10%
John Sommer's Chicago Cork Lined.60%
John Sommer's O. K. Cork Lined...50%
John Sommer's No Brand, Cedar....50%
John Sommer's Perfection, Cedar....40%
Self Measuring:
Enterprise, Self Measuring and Pump, ₩ doz., $36.00.....40&10%
Lane's, ₩ doz., $36.00.....40&10%
National Measuring, ₩ doz. $36.40&10%

### Felloe Plates—
See *Plates, Felloe.*

### Files— Domestic—
*List Nov. 1, 1899*
*Best Brands.....70&10@75&10%*
*Standard Brands.....75&10@80%*
*Lower Grade....75&10&10@80&10%*
Gold Medal.....70%
McCaffrey's American Standard, 60&10&10%

### Imported—
*Stubs' Tapers, Stubs' list, July 24, '97.....33⅓@40%*

### Fixtures, Fire Door—
Richards Mfg. Co.:
Universal, No. 103; Special, No. 104 .....$3.75
Fusible Links, No. 96.....50%
Expansion Bolts, No. 107.....60&10%

### Grindstone—
*Net Prices:*

| *Inch* | *15* | *17* | *19* | *21* |
|---|---|---|---|---|
| *Per doz.* | *$3.60* | *3.85* | *4.15* | *4.65* |

Peck, Stow & Wilcox Co.:

| In. | 15 | 17 | 19 | 21 | 24 |
|---|---|---|---|---|---|
| | $4.00 | 4.40 | 4.75 | 5.50 | 6.50 |

....30%
Reading Hardware Co.....60%

### Fodder Squeezers—
See *Compressors.*

### Forks—
American Fork & Hoe Co.:
Iowa Dig-Ezy Potato.....70&5%
Hay, Regular, 3-tine.....45&20&12½%
Hay, Regular, 4-tine.....60&7½&5%
Champion, Hay.....60&12½%
Acme, Hay.....60&20%
Manure, Regular, 4-tine.....65&5%
Manure, Regular, 5 and 6 tine...70%
Champion, Manure.....65&5%
Columbia, Manure.....70%
Acme, 4-tine.....60&10&5%
Round Shoulder Header, 4-tine..65%
Champion, Header.....65%
Dakota, Header.....65%
Kansas Header.....65%
Wood, Barley.....35&5
Steel, Barley.....66⅔%
Columbia, Spading.....70&7½&5%

### Frames— Wood Saw—
*White, S'g't Bar, per doz.75@80¢*
*Red, S'g't Bar, per doz.$1.00@1.25*
*Red, Dbl. Brace, per doz.$1.40@1.50*

### Freezers, Ice Cream—

| *Qt.....* | *1* | *2* | *3* | *4* | *6* |
|---|---|---|---|---|---|
| *Each....* | *$1.25* | *$1.60* | *$1.90* | *$2.20* | *$2.80* |

### Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

### Fry Pans—See *Pans, Fry.*

### Fuse— *Per 1000 Feet.*
*Hemp .....$2.75*
*Cotton .....3.20*
*Waterproof Sgl. Taped..3.65*
*Waterproof Dbl. Taped..4.40*
*Waterproof Tpl. Taped..5.15*
} Extra 25%

### Gates, Molasses and Oil—
*Stebbins' Pattern.....80@80&5%*

### Gauges—
*Marking, Mortise, &c..50@50&10%*
Chapin-Stephens Co.:
Marking, Mortise, &c.....50&50&10%
Disston's Marking, Mortise, &c..67½%
Wire, Brown & Sharpe's.....33⅓%
Wire, Morse's.....25%
Wire, P. S. & W. Co.....33⅓%

### Gimlets— Single Cut—
*Numbered assortments, per gro.*
*Nail, Metal, No. 1, $2.00; 2, $2.30*
*Spike, Metal, No. 1, $4.00; 2, $4.30*
*Nail, Wood Handled, No. 1, $2.30; 2, $2.60*
*Spike, Wood Handled, No. 1, $4.30; 2, $4.60*

### Glass, American Window
See *Trade Report.*

### Glasses, Level—
Chapin-Stephens Co.....65@65&10%

### Glue, Liquid Fish—
*Bottles or Cans, with Brush, 25&10@50%*
Elwell's .....40%

### Grease, Axle—
*Common Grade...gro.$6.00@$6.50*
Dixon's Everlasting, 10-lb. pails, ea. 85¢; in boxes, ₩ doz., 1 lb, $1.20; 2 lb.....$2.00
Helmet Hard Oil.....25%

### Griddles, Soapstone—
Pike Mfg. Co.....33⅓@33⅓&10%

### Grinders—
Pike Mfg. Co.:
Hand and Foot Power, Pyko Nos. 1, 2, 3; Pyko Primo; Pyko Peerless; Pyko Spiral (foot power).33⅓%
Mower Knife and Tool, $5.00..40&10%
Royal Mfg. Co.:
Alundum Grinding Machines, each, Nos. 01, $1.75; 1A, $2.50; 10, $5.00 .....30%
Alundum Sickle Grinders, each, Nos. 20, $5.00; 20A, $6.00; 20A Combined, $6.50.....30%
Alundum Disc Grinders, each, $2 50 .....30%

### Grindstones—
Pike Mfg. Co.:
Improved Family Grindstones, ₩ inch, ₩ doz., $2.00.....33⅓%
Richards Mfg. Co., Eli and Cycle, Ball Bearing, mounted.....40%

### Grips, Nipple—
Perfect Nipple Grips.....40&10&2%

### Halters and Ties—
*Cow Ties.....65@65&10%*
Bridgeport Chain Co.:
Triumph Coil and Halters.35&2½@40%
Brown Coil and Halters...45@50&5%
Brown Cow Ties.....50&5@50&10&5%
Brown Tie Outs.....70&10@75&5%
Covert Mfg. Co.:
Web .....30&2%
Jute Rope.....35%
Sisal Rope.....20%
Cotton Rope.....45%
Hemp Rope.....45%
Oneida Community:
Am. Coil and Halters.....40@40&5%
Am. Cow Ties.....45@50%
Niagara Coil and Halters...45@50&5%
Niagara Cow Ties.....45&5@50&10&5%

### Hammers—
### Handled Hammers—
Heller's Machinists'....55&10@55&10&5%
Heller's Farriers.....40&5@40&10&5%
Peck, Stow & Wilcox Co.:
Crucible Steel.....40&10@50%
Farriers' .....40&10@50%
Riveting .....40&10@50%
Machinists' .....66⅔@5%
Blacksmiths' .....50%
Fayatte R. Plumb:
A. E. Nail.....40&2½@40&12½%
Eng. and B. S. Hand.50&10&5@60&5%
Machinists' Hammers.....60&10&5%
Rivet and Tinners'.40&7½@40&12½&5%
Victor Magnetic Tack, ₩ gro....$7.75

### Heavy Hammers and Sledges—
*Under 3 lb., per lb., 50¢...80&10%*
*3 to 5 lb., per lb., 40¢...80&10&10%*
*Over 5 lb., per lb., 30¢.....*
*Over 5 lb., per lb., 30¢.80&10&10%*

### Handles—
### Agricultural Tool Handles
*Axe, Pick, &c....60&10@60&10&5%*
*Hoe, Rake, &c.....40%*
*Fork, Shovel, Spade, &c.:*
*Long Handles.....40%*
*D Handles.....40%*

### Cross-Cut Saw Handles—
Adams' .....40%
Champion .....50%
Disston's .....50%

### Mechanics' Tool Handles—
*Auger, assorted...gro.$3.00@$3.50*
*Brad Awl.....gro.$1.65@$1.75*
*Chisel Handles, Ass'd, per gro.:*
*Tanged Firmer, Apple, $2.40@$2.65; Hickory.....$2.15@2.40*
*Socket Firming, Apple, $1.75@$1.95; Hickory.....1.60@1.75*
*Socket Framing, Hickory, $1.60@$1.75*
*File, assorted.....gro.$1.30@$1.40*
*Hammer, Hatchet, &c., 60&10@60&10&5%*
*Hand Saw, Varnished, doz., 80&85¢; Not Varnished.....65@75¢*
*Plane Handles:*
*Jack, doz., 30¢; Fore, doz...45¢*
Chapin-Stephens Co.:
Carving Tool.....30@30&10%
Chisel .....60@60&10
File and Awl.....60@60&10
Saw and Plane.....30@30&10
Screw Driver.....30@30&10
Millers Falls Adj. and Ratchet Auger Handles .....15&10%
Nicholson Simplicity File Handle.... ₩ gro. $0.85@$1.50
J. L. Osgood:
Indestructible File and Tool, ₩ gro., No. 1, $8.00; No. 2, $8.50; No. 3, $9.00; No. 4, $9.50; No. 5, $10.00.....gro. lots 10%

W. A. Zelnicker Supply Co.:
Hammer, ₩ doz., 12 in., $2.00; 14 in., $2.00; 16 in., $2.30; 18 12., $2.50; 20 in., $2.70; 22 in., $3.00; 24 in., $3.30; 26 in., $3.50; 30 in., $3.80.
Sledge, ₩ doz., oval, 30 in., $3.80; octagon, 30 in., $3.80; oval, 36 in., $4.00; octagon, 36 in., $4.00.
Axe, ₩ doz., 28 to 34 in., $5.60; 36 in., $5.80.
Adze, ₩ doz., 36 in., $5,80; 36 in., $7.80.
Pick, ₩ doz., R. R., 36 in., $8.00; coal, 34 in., $5.80.
Hatchet, ₩ doz., 12 to 14 in., $2.00.
} 50%

### Hangers—
*NOTE.—Barn Door Hangers are generally quoted per pair, without track and Parlor Door Hangers per double set with track, &c.*
Chicago Spring Butt Co.:
Friction .....25%
Oscillating .....25%
Big Twin.....25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door.....50%
Elevator .....30%
Railroad .....50%
Cronk & Carrier Mfg. Co.:
Loose Axle.....60&10%
Roller Bearing.....70%
Griffin Mfg. Co.:
Solid Axle, No. 10, $12.00..60&10%
Roller Bearing, No. 11, $15.00, 60&10%
Roller Bearing, Ex. Hy., No. 22, $18.00.....60&10%
Bull Dog, $24.00.....70%
Lane Bros. Co.:
Parlor, Ball Bearing, $4.00; Standard, $3.15; No. 105, $2.85; New Model, $2.80; New Champion per set of 4 Hangers, complete with track.....$2.25
Barn Door, Standard.....60&10%
Hinged .....net $6.08
Covered .....60&5%
Special .....70&5%
Trolley Hangers and track...50%
Lawrence Bros.:
Cleveland .....70&7½%
Clipper, No. 75.....60%
Crown .....55&10%
Cyclone, No. 40.....net $6 50
Tandem, No. 50.....net $7.50
New York.....55&10%
Trolley, No. 30, ₩ pair.....$1.25
McKinney Mfg. Co.:
Roller Bearing, Nos. 1 and 2..70%
Anti-Friction .....60%
Hinged Hangers, King Charm.60%
Richards Mfg. Co.:
Hangers, Nos. 47, 48, 147, 247, 60&5%
Pioneer Wood Track, No. 3..$2.25
Roller B'r'g St'l Track No. 12.$2.20
Roller B'r'g St'l Track No. 13.$2.50
Roller B'r'g, Nos. 39, 41, 43, 70&7½%
Hero, Adj. Track No. 19..50&10%
Adjustable Track Tandem Trolley Track No. 16.....50&10%
Seal, Steel Track No. 8.....$2.25
Auto Adj. Track No. 22..50&5%
Trolley B. D. No. 17, $1.25; F. D. No. 120, $2.25; No. 121, $2.45; No. 150.....$2.50
Safety Underwriters F. D. No. 101 .....50%
Tandem No. 41..2½ and 3 60&10%
Palace, Adjustable Track No. 132 .....50&5%
Royal, Adjustable Track No. 122 .....50&10%
Ives' Wood Track No. 1.....$2.25
Trolley B. D. No. 20.....50&10%
Trolley B. D. No. 24, $1.30; No. 27, $1 40; No. 28.....$1.60
Roller Bearings, Nos. 37, 38, 39, 41, 43, 44, Sizes 1 and 2.70&7½%
Anti-friction, No. 42; No. 44, sizes 2½ and 3.....60%
Hinged Tandem No. 48....60&5%
Folding Door B. B. Swivel No. 135 .....40%
Taylor & Boggis F'y Co.'s Kidder's Roller Bearing, ₩ doz., 4 in., $12.00; 5 in., $14.00..40&10%
Myers' Stayon Hangers.....60%
} Extra 5@10% often given.

### Hangers— Garment—
Pullman Trouser, ₩ gro., No. 1 $9.00; No. 4, $21.00; No. 5, $16.50; No. 8, Black Enamel, $7.50; No. 10, $21.00; No. 12, $8.00; No. 15, Rods, $9.00; No. 18, Loops.....$10.00
Victor Folding.....₩ gro. $9.60

### Gate—
Myers' Patent Gate Hangers, ₩ doz. net .....50%

### Joist and Timber—
Lane Bros. Co.....35%

### Hasps—
Griffin's Security Hasp.....50&10%
McKinney's Perfect Hasp, ₩ doz..60%

### Hatchets—
*Regular list, first qual.40&12½@—*
*Second quality.....50&10&5@—*

### Heaters, Carriage—
Clark, No. 5, $1 25; No. 5B, $1 50; No. 3, $1.75; No. 3D, $2.00; No. 7D, $2.25; No. 3E, $2.50; No. 1, $3.00.....25%
Clark Coal, ₩ doz., $0.75.....20%

### Hinges—
### Blind and Shutter Hinges
*Surface Gravity Locking Blind:*
*Doz. Sets with Fastenings, No. 1, $0.70; No. 3, $1.25; No. 5, $2.65.*
*Mortise Shutter.....80%*
*Mortise Reversible Shutter...80%*
North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3 for Brick, $11.50.....10%
Charles Parker Co.....70&75
Parker Wire Goods Co.
Hale & Benjamin Automatic Blind Hinges .....20%
Hale's Blind Awning Hinges, No. 110, for wood, $9.00; No. 111, for brick, $9.00.....20%

Reading's Gravity.....60%
Stanley's Steel Gravity Blind Hinges, No. 1617½, ₩ doz. sets, without screws, $0.95; with screws, $1.25.
Wrightsville Hardware Co.:
O. S., Lull & Porter.....75&5%
Acme, Lull & Porter.....75%
Queen City Reversible.....75%
Shepard's Noiseless, Nos. 60, 65, 55 .....75&5%
Niagara, Gravity Locking, Nos. 1, 3 & 5.....75&5%
Clark's O. P., No. 1.....75&10%
Clark's O. P., Nos. 3 and 5....75&5%
Tip Pat'n, No. 1.....75&10%
Clark's No. 3.....75&5%
Buffalo Gravity Locking, Nos. 1, 3 & 5.....70&10&5%
Shepard's Double Locking.....75%
Champion Gravity Locking.....75&5%
Pioneer .....75&10%
Empire .....65%
W. H. Co.'s Mortise Gravity Locking, No. 2.....60&10%

### Gate Hinges—
*Clark's or Shepard's—Doz. sets:*

| *No.* | *1* | *2* | *3* |
|---|---|---|---|
| *Hinges with L't'chs.* | *$2.00* | *2.70* | *5.00* |
| *Hinges only.....* | *1.25* | *1.90* | *3.50* |
| *Latches only.....* | *.70* | *.75* | *.35* |

*New England:*
*With Latch.....doz..@$2.00*
*Without Latch.....doz..@$1.60*
*Reversible Self-Closing:*
*With Latch.....doz..@$1.75*
*Without Latch...doz. ...@$1.35*
*Western:*
*With Latch.....doz. $1.75*
*Without Latch.....doz..$1.15*
Wrightsville Hardware Co.:
Shepard's or Clark's Hinges and Latches, Hinges only or Latches only, Nos. 1, 2 or 3.....70%

### Miscellaneous—
Griffin Mfg. Co., Fleur de Lis Surface Hinges, ₩ doz. prs.....$1.00

### Pivot Hinges—
Bommer Bros. Pivot, Ball Bearing .....40%
Lawson Mfg. Co. Matchless.....30%

### Spring Hinges—
*Holdback, Cast Iron...$6.75@$7.00*
*Non-Holdback, C'st Iron$6.50@$6.75*
J. Bardsley:
Bardsley's Non-Checking Mortise Floor Hinges.....40%
Bardsley's Patent Checking.33⅓%
Bommer Bros.:
Spring Butt Hinges.....40%
Surface Floor, Ball Bearing .....40%
Mortise Floor, Ball Bearing.40%
Lavatory Hinges.....40%
Non-Holdback Screen Door, Nos. 2000 and 900.....40%
Holdback Screen Door, No. 999.....₩ gro. $9.00
Chicago Spring Butt Co.:
Chicago Spring Hinges.....25%
Triple End Spring Hinges....50%
Chicago (Ball Bearing) Floor.50%
Garden City Engine House....25%
Keene's Saloon Door.....25%
Columbian Hardware Co.:
Acme, Wrought Steel.....30%
Acme, Brass.....25%
American .....30%
Columbia, ₩ gr., No. 14, $9.00; No. 18.....$25.00
Columbia, Adj., No. 7, ₩ gr.$12.00
Gem, new list.....30%
Clover Leaf and Acorn, per gro. .....$12.00
Oxford, new list.....30%
Floor Spring Hinges.....65&10%
**Columbian Steel.....65&10%**
Lawson Mfg. Co.:
Matchless Spring Hinges.....30%
Matchless Jamb Hinges.....30%
Richards Mfg. Co.:
Superior Double Acting Floor Hinges .....10%
Shelby Spring Hinge Co.:
Buckeye All Steel Holdback Screen Door.....₩ gr. $9.00
Chief Ball Bearings Floor Hinge .....50%
Ball Bearing Door.....25%
No. 777, Sheet Steel Holdb'k, ₩ gr. pr.....$9.00
Standard Mfg. Co.:
Champion Double Acting Door Hinge .....25&10&10%
Standard Double Acting Floor Hinge .....25&10&10%
Superior Spring Hinge Co.:
Superior Floor Hinges.....33⅓%
Spring Hinges.....33⅓%
} Extra 10% often given on most of these Hinges.

### Wrought Iron Hinges—
*Strap and T Hinges, &c., list February 10, 1908:*
*Light Strap Hinges..50&10%*
*Heavy Strap Hinges..60&5%*
*Light T Hinges.....50%*
*Heavy T Hinges.....40%*
*Extra Hvy. T Hinges 50&10%*
*Hinge Hasps.....33⅓%*
*Cor. Heavy Strap....60&5%*
*Cor. Ex. Heavy T...50&10%*
} Extra 10&7½%.

*Screw Hook and Strap.* { *6 to 12 in..lb. 3½¢* / *1½ to 20 in..lb. 3½¢* / *22 to 36 in..lb. 3 ¢* }

*Screw Hook and Eye:*
*⅜ to 1 inch.....lb 6½¢*
*⅝ inch.....lb. 7½¢*
*½ inch.....lb. 8½¢*
} Extra 10&7½%.

### Hitchers, Stall—
Covert Mfg. Co., Stall Hitchers .50&2

### Hods— Coal—
*M'f'gr's list, price per gross:*

| *Inch* | *15* | *16* | *17* | *18* |
|---|---|---|---|---|
| *Galv. Open* | *$35* | *$39* | *$42* | *$46* |
| *Jap. Open* | *26* | *28* | *31* | *35* |
| *Galv. Funnel* | *43* | *48* | *52* | *56* |
| *Jap. Funnel* | *33* | *36* | *39* | *43* |

Add 12½&5%

### Masons' Etc.
Cleveland Wire Spring Co.:
Steel Brick, No. 162 .....each $1 05
Steel Mortar, No 158.....each $1.35

### Hoes— Eye-

*Scovil and Oval Pattern, 60&10@60&10&10%*
*Grub, list Feb. 23, 1899, 70&10@70&10&10%*
D. & H. Scovil....27½%
Am. Fork & Hoe Co. (Scovil Pattern)....60&5%

### Handled—

Cronk's Weeding, No. 1,$2.00; No. 2,$2.50
Star Double Bit....$2.50
American Fork & Hoe Co.:
Regular, Cotton....75&10&5&2½%
Crescent, Cultivator....75&2½%
Mattock, Senior....70%
Mattock, Junior....70%
Sprouting....50%
Tobacco, Harper's....66⅔&15&10%
Warren....55&10&10&5
Ivanhoe....65&15&10%
Cultivator, B B 6....70&10&10&5%
Cultivator, B B 6½....70&10&10&5%
Weeding, Acme....72½&10&2½%
Scuffle, Lightning....60&5%

### Hoisting Apparatus—

See *Machines, Hoisting.*

### Holders— Bit—

Angular, ℔ doz. $21.00....45&10%

### Door—

Bardsley's, Iron, 40%; Brass and Bronze....25%
Empire....50%
Pullman....25%
Richards Mfg. Co.: No. 117, Ever-ready, 40%; Nos. 118, 119, Sure Grip....50%
Superior....33⅓%

### File and Tool—

Nicholson File Holders and File Handles....33⅓&40%

### Fruit Jar—

Triumph Fruit Jar Holder, ℔ gross, $18.00; ℔ doz....$2.00

### Trace and Rein—

Fernald Double Trace Holder, ℔ doz. pairs....$1.25
Dash Rein Holder, ℔ doz....$1.25

### Hones—Razor—

Pike Mfg. Co., Belgian and Swaty, 50%; German....33⅓%

### Hooks—Cast Iron—

Bird Cage, Reading....40%
Clothes Line, Reading List....40%
Coat and Hat, Reading....45&20%
Coat and Hat, Wrightsville....60&5%
Harness, Reading List....40%

### Wire—

*Belt, Nos. 1 to 15....75&10@80%*
*Wire C. & H. Hooks..80@80&10%*
Bradley Metal Clasp Wire, Coat and Hat, 75&10@80%; Ceiling..75&10@80%
Columbian Hdw. Co., Gem....75&10%
Parker Wire Goods Co., King..75&10%
Wire Goods Co.:
Acme, 60&10%; Chief, 70&10%; Crown, 75%; Czar, 65&10%; V Brace, 75%; Czar Harness, 50%; Ceiling, 75%.

### Wrought Iron—

*Box, 6 in., per doz., $0.90; 8 in., $1.15.*
*Cotton....doz. $1.25@$1.50*
Wrought Staples, Hooks, &c.— See Wrought Goods.

### Miscellaneous—

*Hooks, Bench,* see *Stops, Bench.*
*Bush, Light, doz., $6.20; Medium, $6.75; Heavy, $7.65*
*Grass, best, all sizes, per doz., $2.75@$3.00*
*Grass, common grades, all sizes, per doz....$1.25@$1.50*
*Whiffletree....lb. 5¾@6¢*
*Hooks and Eyes:*
*Brass....60@60&10%*
*Malleable Iron....70@70&10%*
Covert Mfg. Co. Gate and Scuttle Hooks....40%
Turner & Stanton Co. Cup and Shoulder....85&10%
Bench Hooks—See Bench Stops.
Corn Hooks—See Knives, Corn.

### Horse Nails—

See *Nails, Horse.*

### Horseshoes—

See *Shoes, Horses.*

### Hose, Rubber—

*Garden Hose, ¾-inch:*
*Competition....ft. 6@6½¢*
*3-ply Guaranteed....ft. 8½@9¢*
*4-ply Guaranteed....ft. 9½@12¢*
*Cotton Garden, ¾-in., coupled:*
*Low Grade....ft. 8@ 9¢*
*Fair Quality....ft. 10@11¢*

### Irons— Sad—

*From 4 to 10....lb. 2½@2¾¢*
*B. B. Sad Irons....lb. 3¼@3½¢*
*Mrs. Potts', cents per set:*

| | Nos. 50 | 55 | 60 | 65 |
|---|---|---|---|---|
| Jap'd Cups | 86 | 93 | 96 | 93 |
| Tin'd Cups | 91 | 88 | 1.01 | 98 |

*New England Pressing..lb. 3¾@4¢*

### Bar and Corner—

Richards Mfg. Co., Bar, 60&10%; Corner....60%

### Pinking—

*Pinking Irons....doz. 50@65¢*

### Irons, Soldering

See *Coppers.*

### Jacks, Wagons—

Covert Mfg. Co.:
Axle Screw....30&2%; Steel, 45%
Lockport....50%
Lasher Steel....30&5%
Richards' Tiger Steel, No. 130...50&10%
Smith & Hemenway Co.'s....25%

### Ladder—

Richards Mfg. Co., Ladder Jacks..50%

### Jointers—

Pike Mfg. Co., Saw Jointers, $7.00..40%

### Kettles—

*Brass, Spun, Plain....20@25%*
Enameled and Cast Iron—See Ware, Hollow.

### Knives—

### Butcher, Kitchen, &c.—

Foster Bros.' Butcher, &c....30%
Wilkinson Shear & Cutlery Co....60%

### Corn—

Columbian Cutlery Co., Wilcut Brand Knives and Hooks....60%
American Fork & Hoe Co.:
Easy Cut, ℔ doz., No. 10 C H...$2.10
Easy Cut, ℔ doz., No. 10 B C H.$2.20
Acme, ℔ doz....$2.35
Dent, ℔ doz....$2.35
Adjustable, Serrated, ℔ doz....$1.90
Serrated, ℔ doz....$1.85
Yankee, No. 1 C H....$1.35
Yankee, No. 2 C H....$1.15

### Drawing—

*Standard List....80&10@—%*
C. E. Jennings & Co., Nos. 45, 46, 25&7½%
Jennings & Griffin, Nos. 41, 42, 66⅔&7½%
Swan's....66⅔@70%
Watrous....16⅔%
L. & I. J. White....20&5@25%

### Hay and Straw—

*Serrated Edge, per doz. $5.00@5.50*
Iwan's Sickle Edge....℔ doz. $9.50
Iwan's Serrated....℔ doz. $10.00

### Miscellaneous—

*Farriers' ....doz. $2.60@3.55*
Wostenholm's ....℔ doz. $3.00@3.25

### Knobs—

*Base, 2½-inch, Birch or Maple, Rubber Tip....gro. $1.25@1.40*
*Carriage, Jap., Drive, all sizes, gro. 35@40¢*
*Door, Mineral....doz. 65@70¢*
*Door, Por. Jap'd....doz. 70@75¢*
*Door, Por. Nickel..doz. $2.05@2.15*
Bardsley's Wood Door, Shutters, &c. 15%

### Lacing, Leather—

See *Belting, Leather*

### Ladders, Store, &c.—

Lane's Store....25%
Myers' Noiseless Store Ladders....50%
Richards Mfg. Co.:
Improved Noiseless, No. 112....50%
Climax Shelf, No. 113....50%
Trolley, No. 109....50%

### Ladles, Melting—

L. & G. Mfg. Co., Melting and Plumbers'....25%
P., S. & W....40&10%
Reading....60%

### Lamps,—

Hammer's M. I. Hand....45%

### Lanterns—Tubular—

*Regular, No. 0....doz. $4.35@4.50*
*Side Lift, No. 0....doz. $4.60@4.75*
*Hinge Globe, No. 0. doz. $4.60@4.75*
*Other Styles....40@40&10%*

### Bull's Eye Police—

*3-inch....$3.75@4.00*

### Latches— Thumb—

*Roggin's Latches, Jap'd, with Screws....doz. 35@40¢*

### Door—

Cronk & Carrier Mfg. Co., No. 101, ℔ doz. $2.00
Richards' Bull Dog, Heavy, No. 125....50&5%
Richards' Trump, No. 127....$1.50

### Leaders, Cattle—

*Small....doz. 50¢; large, 60¢*
Covert Mfg. Co.:
Cotton, 45%; Hemp, 45%; Jute, 35%; Sisal, 20%.

### Leathers, Pump—

See *Pumps—*

### Lifters, Transom—

R. & E....10%

### Lines—

| | Wire Clothes, Nos. 18 | 19 | 20 |
|---|---|---|---|
| 100 feet | $2.30 | 1.95 | 1.75 |
| 75 feet | $1.95 | 1.65 | 1.50 |

Samson Cordage Works:
Solid Braided Chalk, Nos. 0 to 3..40%
Solid Braided Masons'....30%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50....℔ gr. 20%
Masons' Lines, Shade Cord, &c.; White Cotton, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50; Colors, No. 3½, $1.75; No. 4, $2.25; No. 4½, $2.75; Linen, No. 3½, $2.50; No. 4, $3.50; No. 4½, $4.50....20%
Tent and Awning Lines: No. 5, White Cotton, $7.50; Drab Cotton, $8.50....20%
Clothes Lines, White Cotton: 50 ft., $2.75; 60 ft., $3.25; 70 ft., $3.75; 75 ft., $4.00; 80 ft., $4.25; 90 ft., $4.75; 100 ft., $5 25....20%
Turner & Stanton Co.:
Solid Braided Chalk, Masons' and Awning Lines....40%
Clothes Lines, White Cotton....20%
Shade Cord, Cotton or Linen....20%

### Locks— Cabinet—

*Cabinet Locks....33⅓@33⅓@5%*

### Door Locks, Latches, &c.—

*NOTE.—Net Prices are very often made on these goods.*
Reading Hardware Co....40%
R. & E. Mfg. Co....10%

### Padlocks—

R. & E. Mfg. Co. Wrought Steel and Brass....75&10%

### Sash, &c.—

Ives' Patent:
Crescent....10%
Automatic Gravity Metal Sash, ℔ gro., $149.58....10%
Window Ventilating....10%
Pullman Patent Ventilating Lock..25%
Reading Sash Locks....40%
Taylor Mfg. Co., Perfect Ventilating, ℔ doz....$0.75@$1.00

### Machines—Boring—

*Com. Upr't, without Augers, $2.00@2.25*
*Com. Angl'r, without Augers, $2.25@2.50*
Ford Auger Bit Co....$22.00
Jennings', Nos. 1 and 4....25&7½%
Millers' Falls....5.75
Snell's, Upright, $2.65; Angular, $2.90
Swan's Improved....40&10%

### Corking—

Reisinger Invincible Hand Power... ℔ doz. $18.00

### Fence—

Williams' Fence Machines....each, $5.50

### Hoisting—

Moore's Anti-Friction Chain Hoist.30%
Moore's Hand Hoist, with Lock Brake....20%
Moore's Cyclone High Speed Chain Hoist....25%

### Ice Cutting—

Chandler's....12½%

### Washing

| Boss Washing Machine Co.: | Per doz. |
|---|---|
| Boss No. 1 | $57.00 |
| Boss Rotary | $57.00 |
| Champion Rotary Banner No. 1 | $57.00 |
| Standard Champion No. 1 | $50.00 |
| Standard Perfection | $27.00 |
| Cincinnati Square Western | $33.00 |
| Uneeda American, Round | $33.60 |

### Mallets—

*Hickory....45&5@50%*
*Lignumvitæ....45&5@50%*
*Tinners' Hickory and Applewood....doz. 45&5@50%*

### Mangers, Stable—

Swett Iron Works....50%

### Mats, Door—

Acme Flexible Steel....50%
Elastic Steel (W. G. Co.), new list.50%

### Mattocks—

See *Picks and Mattocks.*

### Milk Cans—See *Cans, Milk.*

### Mills, Coffee, &c.—

Enterprise Mfg. Co.:
Coffee....20@25%
Shell and Corn....25&10%
National list Jan. 1, 1902....30%
Parker's Columbia and Victoria..33⅓%
Parker's Box and Side....50&10%
Swift, Lane Bros. Co....30%

### Motors, Water—

Divine's Red Devil....30%

| $2.50 | 3.50 | 10.00 | 15.00....33⅓% |
|---|---|---|---|
| No. 1. | 2 | 3 | 4 |

Lippincott's:

| No.... | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| | $2.50 | 3.50 | 10.00 | 15.00..33⅓% |

Pike Mfg. Co., Tool and Knife Grinding....33⅓%

### Mowers, Lawn—

*NOTE.—Net prices are generally quoted*
*Cheapest, 10-in., $2.00; advance 10¢ for each size.*
*Cheap, 10-in., $2.25; advance 15@20¢ for each size.*
*Better Grade, 10-in., $3.00; advance 25¢ for each size.*

| | 12 | 14 | 16 | 18-in. |
|---|---|---|---|---|
| High Grade | $4.50 | 4.75 | 5.00 | 5.25 |

Continental....60%
Great American....70%
Great American Ball B'r'g, new list.70%
Quaker City....70%
Pennsylvania....60%
Pennsylvania, Jr., Ball Bearing, 50&10&5%
Pennsylvania Golf....50%
Pennsylvania Horse....33⅓&5%
Pennsylvania Pony....40&5%

### Nails—

*Wire Nails and Brads, Miscellaneous....85&5@85&10%*
*Cut and Wire.* See *Trade Report.*
*Hungarian, Finishing, Upholsterers', &c.* See *Tacks.*

### Horse—

| Nos. | 6 | 7 | 8 | 9 | 10 | |
|---|---|---|---|---|---|---|
| Anchor | 23 | 21 | 20 | 19 | 18 | ℔ lb, net, 12¢ |
| Coleman | 13 | 12 | 12 | 11 | 11 | net ℔ lb |
| New Haven | 23 | 21 | 20 | 19 | 18 | ℔ lb, net, 12¢ |
| Livingston | 19 | 18 | 17 | 16 | 16 | 10% |
| Western | | | | | | ℔ lb 8½¢ |

*Jobbers' Special Brands, per lb. 9¢*

### Picture—

| | 1½ | 2 | 2½ | 3 in. |
|---|---|---|---|---|
| Brass Hd. gro. | .45 | .55 | .60 | .70 |
| Por. Head, gro. | 1.10 | 1.10 | 1.10 | |

### Upholsters—

*Brass....30%*
*Plated....30&10%*

### Nippers—

See *Pliers and Nippers.*

### Nipples—

Standard Nipple Co.:
Wrought Pipe Nipples....80%

### Nuts— *Blank or Tapped.*

*Cold Punched: Off list.*
*Square....5.30¢*
*Hexagon....5.90¢*
*Square, C., T. & R....5.70¢*
*Hexagon, C., T. & R....6.50¢*
*Hot Pressed: Off list.*
*Square....5.80¢*
*Hexagon....6.30¢*

### Oakum—

*Best....lb. 6½¢*
*U. S. Navy....lb. 6 ¢*
*Navy....lb. 5 ¢*
*Plumbers' Spun Oakum..2¾@3 ¢*

### Oil—

Pike Mfg. Co., Stonoil....40%

### Oil Tanks—See *Tanks, Oil.*

### Oilers—

*Steel, Copper Plated....75%*
*Chase or Paragon:*
*Brass and Copper....50&10%*
*Zinc....65&10@70%*
*Railroad....60&10&10%*
Malleable, Hammers' Improved, Nos. 11, 12 and 13, 10%; Old Pattern, Nos. 1, 2, 3, 4, 50%.
American Tube & Stamping Co.:
Spring Bottom Cans....70&70&10%
Railroad Oilers, &c....60@60&10%
Maple City Mfg. Co.:
Spring Bottom Cans....70&70&10%
Railroad Oilers, &c....60@60&10%

### Openers—Packing Box—

Herculever, ℔ doz., $24....30%

### Can Openers—

*Per doz.*
*Sprague, Iron Handle....30@35¢*
*Sprague, Wood Handle....40¢*
*Sardine Scissors....$1.75@3.00*
Can and Bottle Openers, ℔ doz., net: Yankee, $0.75@$0.85; Little Gem, $0.50@$0.65; Nifty....$0.75

### Egg—

Hartigan Nickel Plate, ℔ doz., $2.00; Silver Plate, $4.00.

### Packing—

*Asbestos Packing, Wick and Rope, any quantity....18@20¢*

### Rubber—

*(Fair quality goods.)*
*Sheet, C. I....11@12¢*
*Sheet, C. O. S....11@12¢*
*Sheet, C. B. S....12@13¢*
*Sheet, Pure Gum....40@45¢*
*Sheet, Red....40@50¢*
Jenkins' '96, ℔ lb, 80¢....25%

### Miscellaneous—

*American Packing....lb. 7@10 ¢*
*Cotton Packing....lb. 16@25 ¢*
*Italian Packing....lb. 9@10¢*
*Jute....lb. 4@4¼¢*
*Russia Packing....lb. 9@10¢*

### Pails, Water, Well, &c.—

See *Buckets.*

### Paint—

Dixon's Silica-Graphite, in 1 gal. pails and 5 gal. kegs, 25%; packages of larger size....20%

### Pans— Dripping—

*Standard List....75&10@80%*
Edwards, Royal Blue....75%

### Fry—

*Common Lipped:*

| *Nos.* | *1* | *2* | *3* | *4* | *5* |
|---|---|---|---|---|---|
| *Per doz.* | *$0.75* | *0.85* | *0.95* | *1.15* | *1.30* |

### Refrigerator, Galva.—

| *Inch* | *12* | *14* | *16* | *18* |
|---|---|---|---|---|
| *Per doz.* | *$1.75* | *2.25* | *2.80* | *3.15* |

### Paper—Building Paper

*Asbestos: lb.*
*Roll Board or Building Felt, 6 to 30 lb., per 100 sq. ft..2½¢*
*Roll Board or Building Felt, 3-32 and ⅛ in., 45 to 60 lb., per 100 sq. ft....3½¢*
*Mill Board, Sheet, 40 x 40 in., 1-32 to ½ in....3¢*
*Per roll.*
*Rosin Sized Sheathing: 500 sq. ft.*
*Light weight, 25 lbs. to roll, 48@58¢*
*Medium weight, 30 lbs. to roll, 56@70¢*
*Heavy weight, 40 lbs. to roll. 75@78¢*
*Black Water Proof Sheathing, 500 sq. ft., 1 ply, 65¢; 2 ply, 85¢; 3 ply, $1.10; 4 ply, $1.25.*
*Deafening Felt, 9, 6 and 4½ sq. ft. to lb., ton....$54.50*
*Red Rope Roofing, 250 sq. ft. per roll....$1.75*

### Tarred Paper—

*1 ply (roll 400 sq. ft.), ton. $34.00@$38.00*
*2 ply, roll 108 sq. ft....65¢*
*3 ply, roll 108 sq. ft....88¢*
*Slater's Felt (roll 500 sq. ft.).80¢*

### Sand Paper and Cloth—

*Flint and Emery....50&10%*
*Garnet Paper and Cloth....25%*

### Parers—Apple—

Goodell Co.:
Family Bay State....℔ doz. $15.00
Improved Bay State....℔ doz. $36.00
New Lightning....℔ doz. $7.00
Turn Table '98....℔ doz. $6.00
White Mountain....℔ doz. $5.00
Bonanza Improved....each $7.50
Dandy....each $10.00
Eureka Improved....each $20.00
New Century....each $20.00
Ranger....each $30.00

Livingston Nail Co.:
Daisy ..... ℔ doz. $4.00
Little Star ..... ℔ doz. $5.00
Rocking Table ..... ℔ doz. $6.20
Reading Hardware Co.:
Advance ..... ℔ doz. $4.00
Baldwin ..... ℔ doz. $4.00
Reading 72 ..... ℔ doz. $3.25
Reading 78 ..... ℔ doz. $6.25

### Orange—
Goodell Co., Success ..... each $20.00

### Potato—
Saratoga ..... ℔ doz. $7.00
White Mountain ..... ℔ doz. $6.00

### Picks and Mattocks—
*(List Jan., 1908.)*
*List* ..... 75&10%
Cronk's Handled Garden Mattock, ℔ doz., $3.00 ..... 33⅓%

### Pinking Irons—
See *Irons, Pinking.*

### Pins, Escutcheon—
*Brass* ..... 50@50&10%
*Iron, list Nov. 11, '85* ..60@60&10%

### Pipe, Cast Iron Soil—
*Standard, 2-6 in* ..... 70&10%
*Extra Heavy, 2-6 in* ..75&10@80%
*Fittings, Standard and Heavy,* 80&10@85%

### Pipe, Merchant—

| | Consumers, Steel. Blk. % | Galv. % | Carloads, Iron. Blk. % | Galv. % |
|---|---|---|---|---|
| ⅛ and ¼ in. | 66 | 50 | 64 | .. |
| ⅜ in. | 68 | 54 | 66 | 52 |
| ½ in. | 70 | 58 | 68 | 56 |
| ¾ to 6 in. | 74 | 64 | 72 | 62 |
| 7 to 12 in. | 71 | 56 | 69 | 54 |

### Pipe, Vitrified Sewer—
*Carload lots.*
*Standard Pipe and Fittings, 3 to 24 in., f.o.b. factory:*
*First-class* ..... 87%
*Second-class* ..... 90%

### Pipe, Stove—

| | Per 100 joints. C. L. | L. C. L. |
|---|---|---|
| Edwards' Nested: | | |
| 5 in., Standard Blue | $6.25 | $7.25 |
| 6 in., Standard Blue | 6.75 | 7.75 |
| 7 in., Standard Blue | 7.75 | 8.75 |
| 5 in., Royal Blue | 7.00 | 8.00 |
| 6 in., Royal Blue | 7.50 | 8.50 |
| 7 in., Royal Blue | 8.50 | 9.50 |
| Wheeling Corrugating Co.'s Nested: | | |
| 5 in., Uniform Color | $5.90 | $6.90 |
| 6 in., Uniform Color | 6.40 | 7.40 |
| 7 in., Uniform Color | 7.40 | 8.40 |

### Planes and Plane Irons—
### Wood Planes—
*Bench, first qual* ..... 30@30&10%
*Bench, second qual* ...40@40&10%
*Molding* ..... 25@25&10%
Chapin-Stephens Co.:
Bench, First Quality ..... 30%
Bench, Second Quality ..... 40%
Molding and Miscellaneous ..... 25%
Toy and German ..... 30%
Union ..... 60%

### Iron Planes -
Chaplin's Iron Planes ..... 60%
Union ..... 60%

### Plane Irons—
*Wood Bench Plane Irons, list Dec. 12, '06* ..... 25%
Buck Bros. ..... 30%
Chapin-Stephens Co. ..... 25%
Union ..... 50%
L. & I. J. White ..... 20&5@25%

### Planters, Corn, Hand—
Kohler's Eclipse ..... ℔ doz. $7.50

### Plates—
*Felloe* ..... *lb.* 3¾@4¢
Avery Stamping Co.:
Standard Wrot. Steel Felloe Plates in 100 lb kegs, per 100 lb, ¾-in. to 1⅛-in., $4.00 net; 1¼-in. to 2-in., inclusive, $3.75 net.

### Steel Pipe Hook—
Never-Break ..... 75&10%

### Pliers and Nippers -
*Button Pliers* .... 75&5@75&10&5%
*Gas Burners, per doz., 5 in., $1.25 @$1.30; 6 in., $1.45, $1.50.*

| *Gas pipe* | 7 | 8 | 10 | 12-in. |
|---|---|---|---|---|
| | $2.00 | $2.25 | $2.75 | $3.50 |

Acme Nippers ..... 50&5%
Cronk & Carrier Mfg. Co.:
American Button ..... 80%
Improved Button ..... 75&10%
Cronk's ..... 60%
No. 89 Linemen's ..... 50%
Stub's Pattern ..... 45%
Combination and others ..... 33⅓%
Heller's Farriers' Nippers, Pincers and Tools ..... 40&5@40&10&5%
P., S. & W. Tinners' Cutting Nippers ..... 40%
Swedish Side, End and Diagonal Cutting Pliers ..... 50%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds ....40%

### Plumbs and Levels—
Chapin-Stephens Co.:
Plumbs and Levels ..... 30@30&10%
Chapin's Imp. Brass Cor..40@40&10%
Pocket Levels ..... 30@30&10%
Extension Sights ..... 30@30&10%
Machinists' Levels ..... 40@40&10%
Disston's Plumbs and Levels ....60&10%
Disston's Pocket Levels ..... 60&10%
Stanley's Dulex ..... 35%
Woods' Extension ..... 33⅓%

### Points, Glaziers'—
*Bulk and 1-lb. papers* .... *lb.* 9 ¢
*½-lb. papers* ..... *lb.* 9½¢
*¼-lb. papers* ..... *lb.* 10 ¢

### Police Goods—
*Manufacturers' Lists* ...25@25&5%
Tower's ..... 25%

### Polish—Metal, Etc—
Ladd Co.:
Putzade Liquid, ℔ gro., ½ pts., $12.00; 1 pts., $20.00; 1 qts., $40.00; ℔ doz., ½ gals., $6.35; 1 gals., $12.00.
Prestoline Liquid, No. 1 (½ pt.), ℔ doz., $3.00; No. 2 (1 qu.), $9.00..40%
Prestoline Paste ..... 10%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, ℔ doz. 50¢; ℔ gro. $4.50; ½ lb boxes, ℔ doz. $1.25; 1 lb boxes, ℔ doz. $2.25.
U. S. Liquid, 8 oz. cans, ℔ doz., $1.25.
Barkeepers' Friend Metal Polish, ℔ doz., $1.75.

### Stove—
Black Eagle Benzine Paste, 5 lb cans, ℔ lb 10¢
Black Eagle, Liquid, ½ pt. cans.. ℔ doz. 75¢
Black Jack Paste, ¾ lb cans, ℔ gr. $9.00
Black Kid Paste, 5 lb can...each, $0.65
Ladd's Black Beauty Liquid, per 100 tins ..... $6.75
Joseph Dixon, ℔ gr. $5.75 ..... 10%
Dixon's Plumbago ..... ℔ lb 8¢
Fireside ..... ℔ gr. $2.50
Gem, ℔ gr. $4.50 ..... 10%
Japanese ..... ℔ gr. $3.50
Jet Black ..... ℔ gr. $3.50
Peerless Iron Enamel, 10 oz. cans.. ℔ doz. $1.50

### Window Polish—
Benj. P. Forbes:
Glasbright, No. 2, gal pails, ℔ doz., $24.00; each, $2.50; 1 lb cans, each ..... 75¢
Glasbright Powder, bbls., ℔ lb..20¢

### Poppers, Corn—
*1 qt. Square..doz. $0.80; gro. $8.75*
*1 qt. Round..doz. $0.90; gro. $10.00*
*1½ qt. Square. doz. $1.20; gro..$12.00*
*2 qt. Square..doz. $1.50; gro..$15.00*

### Post Hole and Tree Augers and Diggers—
See also *Diggers, Post Hole, &c.*

### Posts, Steel—
Steel Fence Posts, each, 6 ft., 46¢; 6½ ft., 48¢; 7 ft., 50¢.
Steel Hitching Posts ..... each $1.30

### Potato Parers—
See *Parers, Potato.*

### Pots, Glue—
*Enameled* ..... 40%
*Tinned* ..... 30&10%

### Powder—
*In Canisters:*
*Duck, 1 lb* ..... *each* 45¢
*Fine Sporting, 1 lb* .... *each* 75¢
*Rifle, ½-lb* ..... *each* 15¢
*Rifle, 1 lb* ..... *each* 25¢
*In Kegs:*
*12½-lb. kegs* ..... $3.50
*25 lb. kegs* ..... $4.50
King's Semi-Smokeless:
Keg (25 lb bulk) ..... $6.50
Half Keg (12½ lb bulk) ..... $3.50
Quarter Keg (6¼ lb bulk) ..... $1.90
Case 24 (1 lb cans bulk) ..... $8.50
Half case (1 lb cans bulk) ..... $4.50

| King's Smokeless: | Shot Gun. | Rifle. |
|---|---|---|
| Keg (25 lb bulk) | $12.00 | $15.00 |
| Half Keg (12½ lb bulk) | 6.25 | 7.75 |
| Quarter Keg (6¼ lb bulk) | 3.25 | 4.00 |
| Case 24 (1 lb cans bulk) | 14.00 | 17.00 |
| Half case 12 (1 lb c. bk) | 7.25 | 8.75 |

### Presses—
### Fruit, Wine and Jelly—
Enterprise Mfg. Co. ..... 20@25%

### Seal Presses—
Morrill's No. 1, ℔ doz., $20.00 ..... 50%

### Pruning Hooks and Shears
See *Shears.*

### Pullers, Nail, Etc.—
Cyclops ..... 50%
Miller's Falls, No. 3, ℔ doz., $12.00.. 33⅓&10%
Morrill's No. 1, Nail Puller, ℔ doz. $20.00 ..... 50%
Pearson No. 1, Cyclone Spike Puller, each $30.00 ..... 50%
The Scranton Co. Case Lots:
No. 2B (large) ..... $5.50
No. 3B (small) ..... $5.00
Smith & Hemenway Co.:
Diamond B ..... 70%
Giant ..... 50%
Staple Pullers, Utica and Davison ..... 60%
Taylor Mfg. Co., Sampson Tack, ℔ doz. ..... $0.40

### Pulleys, Single Wheel—

| *Inch* | 1½ | 1¾ | 2 | 3 |
|---|---|---|---|---|
| *Awning or Tackle, doz* | $0.30 | .45 | .60 | 1.05 |
| *Hay Fork, Swivel or Solid Eye, doz., ¼ in., $1.25; 5 in., $1.55* | | | | |
| *Inch* | 2 | 2¼ | 2½ | |
| *Hot House, doz* | $0.65 | .85 | 1.20 | |
| *Inch* | 1¼ | 1½ | 1¾ | 2 |
| *Screw, doz* | $0.16 | .19 | .23 | .30 |
| *Inch* | 1¾ | 2 | 2¼ | 2½ |
| *Side, doz* | $0.25 | .40 | .55 | .60 |
| *Inch* | 1¼ | 1¾ | 2 | 2½ |

### Sash Pulleys—
*Common Frame; Square or Round End, per doz., 1¾ and 2 in* ..... 17@20¢
*Auger Mortise, no Face Plate, per doz., 1¾ and 2 in* .... 20@21¢
Acme, No. 35..1⅜ in., 19¢; 2 in., 20½¢
American Pulley Co.:
Wrought Steel American Plain Axle ..... 50&10%
Wrought Steel, Eagle ..... 17@20¢
Top Notch, Electrically Welded, Nos. 3 and 4 ..... 19¢
Common Sense ..... ℔ doz. 20¢
Fox-All-Steel, Nos. 3 and 7, 2 in.... ℔ doz. 50%
Grand Rapids All Steel Noiseless..50%
Niagara, No. 25, 1¾ in., 19¢; 2 in. ..... 20½¢
No. 26 Troy..1¾ in., 14½¢; 2 in., 16½¢
Star, No. 26....1¾ in., 19¢; 2 in., 20½¢
Tackle Blocks—See Blocks.

### Pumps—
*Cistern* ..... 60%
*Pitcher Spout* ..... 75&5@75&10%
*Wood Pumps, Tubing, &c* .... 50%
Barnes Dbl. Acting (low list) ..... 50%
Barnes Pitcher Spout ..... 80%
Contractors' Rubber Diaphragm, No. 2, B. & L. Block Co. ..... $16.00
Daisy Spray Pump ..... ℔ doz. $6.50
Flint & Walling's Fast Mail Hand (low list) ..... 50&5%
Flint & Walling's Fast Mail (low list) ..... 50&5%
Flint & Walling's Tight Top Pitcher ..... 80%
National Specialty Mfg. Co., Measuring, Nos. 2, $6.00; 3, $5.50 ..... 30%
Myers' Pumps (low list) }
Myers' Power Pumps } 50%
Myers' Spray Pumps }

### Pump Leathers—
*Plunger and Valve Leathers—Per gro.:*

| *No.* | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| | $5.00 | 6.00 | 7.00 | 8.00 |

*Cup Leathers—Per 100:*

| *Inch* | 2½ | 3 | 3½ | 4 |
|---|---|---|---|---|
| | $5.00 | 7.00 | 9.00 | 12.00 |

*80@80&10%*

### Punches—
*Saddlers' or Drive, good, doz.* 50@75¢
*Spring, single tube, good quality* ..... $1.75
*Revolving (4 tubes)* .... *doz.* $3.50
Bemis & Call Co.'s Cast St'l Drive.50%
Morrill's Nos. 1AA, 1A, 1B, 1C, 1D, $15.00 ..... 50%
Hercules, 1 die, each $5.00 ..... 50%
Niagara Hollow Punches ..... 40%
Niagara Solid Punches ..... 55&10%
Tinners' Hollow, P., S. & W. Co..40%
Tinners' Solid, P., S. & W. Co., ℔ doz., $1.44 ..... 40&10%

## Rail—Barn Door, &c.—
*Sliding Door, Painted Iron, 2½@2¾¢*
*Sliding Door, Wrought Brass, 1⅛ in., lb., 36¢* ..... 30%
Cronk's:
Double Braced Steel Rail..℔ ft. 2¾¢
O. N. T. Rail ..... 2¾¢
Griffin's:
xxx, ℔ 100 ft., 1 x 3-16 in., $3.25; 1¼ x 3-16 in., $3.75.
Hinged Hanger, ℔ 100 ft., 1 x 3-16 in., $3.50; 1¼ x 3-16 in., $4.00.
Lane's:
Hinged Track, ℔ 100 ft. ..... $3.45
O. N. T., ℔ 100 ft., 1 in., $3.12½; 1¼ in., $3.45; 1½ in., $4.00.
Standard, 1¼ in. ..... ℔ 100 ft. $4.00
Lawrence Bros.:
1 x 3-16 in., ℔ 100 ft., $7.50; 1¼ x 3-16 in., $8.75 ..... 55&7½%
Trolley, No. 301, ℔ ft. ..... 9¢
McKinney's:
Hinged Hanger Track, ℔ ft., 11¢. 60&5%
1 x 3-16 Track ..... 55&7½%
Myers' Stayon Track ..... 60&5%
Richards Mfg. Co.:
Common, 1 x 3-16 in., $3.00; 1⅛ x 3-16, $3.25; 1¼ x 3-16, $3.50.
Special Hinged Hanger Rail..60&10%
Lag Screw Rail, No. 65 ..... 50%
Gauge Trolley Track, ℔ ft., No. 31, 9¢; No. 32, 14¢; No. 33, 20¢.
No. 50 ..... 60&10%
Nos. 61, $3.00; 62, $3.25; 63, $3.50; 64, $4.00; 45, $3.25; 46, $3.50; 49, No. 1, $3.25; 49, No. 2, $3.50.

### Rakes—
*NOTE.—Many goods are sold at net prices.*
American Fork & Hoe Co.:
Lawn, ℔ doz., No. 24, $2.50; No. 20 ..... $2.25
Cronk's:
Steel Garden: Champion, ℔ doz., 12-tooth, $3.75; 14-tooth, $4.00; 16-tooth, $4.25; Ideal ℔ doz., 12-tooth, $3.00; 14-tooth, $3.30; 16-tooth, $3.60.
Victor, 12-tooth, $2.25; 14-tooth, $2.50; 16-tooth, $2.75.
Queen City Lawn, ℔ doz., 20 teeth, $2.85; 24, $3.00 ..... net
Anticlog Lawn ℔ doz. ..... $4.00
Malleable Garden ..... 70&10%
Ideal Steel Garden, ℔ doz., 12 teeth, $15.00; 14, $16.00; 16, $18.00 ..... 80%
Kohler's:
Jumbo Lawn, 36 tooth ....℔ doz. $5.00
Lawn Queen, 20 tooth ....℔ doz. $2.85
Lawn Queen, 24 tooth ....℔ doz. $3.00
Paragon, 20 tooth ..... ℔ doz. $2.65
Paragon, 24 tooth ..... ℔ doz. $2.75
Steel Garden, 14-tooth.. ℔ doz. $2.10
Malleable Garden, 14-tooth, ℔ doz. $1.75@2.00

### Rasps, Horse—
Disston's ..... 75%
Heller Bros.' ..... 70&5@70&10&5%
Liveright Bros.' Gold Medal.70&10@75%
McCaffrey's American Standard .... 60&10&5%
New Nicholson ..... 70&10@75%
See also Files.

### Razors—
John Engstrom Swedish ..... 65%
Sharp Shaver ..... 60%
Fox Razors, ℔ doz., No. 42, $24.00; No. 44, $20.00; No. 82, Platina, $36.00. } Dis. 50%

### Reels, Fishing—
Hendryx:
M 6, Q 6, A 6, B 6, M 9¼, M 16, Q 16, A 16, B 16, 4008, Rubber, Populo, Nickeled Populo ..... 20%
Aluminum, German Silv., Bronze.25%
1240 N, 124 N ..... 20%
3004 N, 06 N, 6 RM, G 9 ..... 25%
4 N, 6 PN, 24 N, 26 PN ..... 20%
2904 P., 33⅓%; 2904 PN., 33⅓%, 0924 N., 33⅓%; 92084 N., 33⅓%; 002904 PN., 33⅓%; 802 N., 33⅓%.
986 PN, 2904 N, 974 PN ..... 25%
5009 PN, 5009 N ..... 20%
Competitor, 102 P, 102 PN, 202 P, 202 PN, 102 PR, 202 PR ..... 20%
304 P, 304 PN, 00304 P, 00304 PN.33⅓%

### Registers—*List July 1, 1903.*
*Japanned, Electroplated and Bronzed* ..... 70%
*White Porcelain Enamel..50&10%*
*Solid Brass or Bronze Metal.40%*

### Revolvers—
*Single Action* ..... *95¢@$1.00*
*Double Action, except 44 cal.$2.00*
*Double Action, 44 caliber...$2.00*
*Automatic* ..... *$4.00*
*Hammerless* ..... *$4.50*

### Riddles, Hardware Grade
*16 in.....per doz.$2.50@$2.75*
*17 in.....per doz.$2.75@$3.00*
*18 in.....per doz.$3.00@$3.25*

### Rings and Ringers—
### Bull Rings—

| | 2 | 2½ | 3 inch. |
|---|---|---|---|
| *Steel* | $0.70 | 0.75 | 0.80 doz. |
| *Copper* | $1.10 | 1.25 | 1.65 doz. |

### Hog Rings and Ringers—
*Hill's Rings, gro. boxes, $4.60@ $4.75; per doz. boxes, 40@45¢.*
*Hill's Ringers, Gray Iron, doz., 55@65¢*
*Hill's Ringers, Malleable Iron, doz. 85@95¢*
*Blair's Rings..per gro. $5.00@$5.50*
*Blair's Ringers...per doz. 75@90¢*

### Rivets and Burrs—
*Copper* ..... 50%
*Carriage, Coopers', Tinners', &c.:*
*Black* ..... 70&10%
*Metallic Tinned* ..... 70%

### Bifurcated and Tubular—
*Assorted in Boxes.*
*Bifurcated, per doz. boxes, pasteboard boxes, 50 count, 23@25¢; Tin boxes, 100 count, 29@32¢.*
*Tubular, per doz. boxes, 50 count, 29@32¢; 100 count, 51@58¢.*

### Rollers—
Cronk's Stay, No. 50 ..... $1.00
Cronk's Brinkerhoff No. 55, $0.60; No. 56, $0.75; No. 60 ..... $0.75
Lane's Stay ..... 40%
Richards' Stay:
Handy Adj. and Reversible No. 53.75¢
O. K. Adj. and Reversible No. 58.50¢
Lag Screw, Nos. 55 and 57 ..... 50%
Underwriters', Nos. 59, 60 ..... 50%
Favorite, No. 54 ..... 60%

### Rope—
*Manila, 7-16 in. diam. and larger: Pure* ..... *lb.* 9¢
*Sisal, 7-16 in. diam. and larger: Pure* ..... *lb.* 7¢
*Sisal, Hay, Hide and Bale Ropes, Medium and Coarse: Pure* ..... *lb.* 7½@7¾¢
*Sisal, Tarred, Medium Lath Yarn: Pure* ..... *lb.* 6½@6¾¢
*Cotton Rope:*
*Best, ¼-in. and larger.16½@18¢*
*Medium, ¼-in. and larger.15@16¢*
*Common, ¼-in. and larger..7½¢*
*In coils, ½¢ advance.*
*Jute Rope:*
*Thread, No. 1, ¼-in. and up, lb.* ..... 5½¢
*Thread, No. 2, ¼-in. and up, lb.* ..... 5¢

### Wire Rope—
*Galvanized* ..... 37½&2½%
*Plain* ..... 45&2½%

### Ropes, Hammock—
Covert Mfg. Co.:
Jute, 35%; Sisal ..... 20%

### Rules
*Boxwood* ..... 60@60&10%
*Ivory* ..... 35&10@35&10&5%
Chapin-Stephens Co.:
Boxwood ..... 60%
Flexifold ..... 10%
Ivory ..... 25@25&10%
Miscellaneous ..... 50@50&10%
Stephens' Combination ..... 55%
Stationers' ..... 50@50&10%
Keuffel & Esser Co.:
Folding, Wood ..... 35&10%
Folding, Steel ..... 33⅓&10%
Lufkin's Steel ..... 50&10%
Lufkin's Lumber ..... 50&10%
Upson Nut Co.:
Boxwood ..... 60@60&10%
Ivory ..... 35&10@35&10&10%

## Sash Balances—
See *Balance, Sash.*

**Sash Locks**—See *Locks, Sash.*

**Sash Weights**—
See *Weights, Sash.*

## Sausage Stuffers or Fillers

See *Stuffers or Fillers, Sausage.*

## Saw Frames—

See *Frames, Saw.*

## Saw Sets—See *Sets, Saw.*

## Saw Tools—See *Tools, Saw.*

## Saws—

Atkins':
- Circular ..... 45%
- Band ..... 50@50&10%
- Butcher Saws ..... 50%
- Cross Cuts ..... 35%
- One-Man Cross Cut ..... 40%
- Narrow Cross Cut ..... 50%
- Hand, Rip and Panel ..... 35&5%
- Miter Box and Compass ..... 40%
- Mulay, Mill and Drag ..... 45%
- Wood Saws ..... 40&10%

Chapin-Stephens Co.:
- Turning Saws and Frames 30@30&10%

Diamond Saw & Stamping Works:
- Sterling Kitchen Saws ..... 30&10&10%

Disston's:
- Circular, Solid and Ins'ted Tooth 50%
- Band, 2 to 18 in. wide ..... 60%
- Band, ¼ to 1¾ ..... 60%
- Crosscuts ..... 45%
- Narrow Crosscuts ..... 50%
- Mulay, Mill and Drag ..... 50%
- Framed Woodsaws ..... 25%
- Woodsaw Blades ..... 25%
- Woodsaw Rods, Tinned ..... 15%
- Hand Saws, Nos. 12, 99, 9, 16, d100, D8, 120, 76, 77, 8 ..... 25%
- Hand Saws, Nos. 7, 107, 107½, 3, 1, 0, 00, Combination ..... 30%
- Compass, Key Hole, &c. ..... 25%
- Butcher Saws and Blades ..... 30%

C. E. Jennings & Co.'s:
- Back Saws ..... 16⅔%
- Butcher Saws ..... 25&7½%
- Compass and Key Hole Saws, 33⅓&7½%
- Framed Wood Saws ..... 25&7½%
- Hand Saws ..... 12½%
- Wood Saw Blades ..... 33⅓&7½%

Millers Falls:
- Butcher Saws ..... 15&10%
- Star Saw Blades ..... 15&10%

Massachusetts Saw Works:
- Victor Kitchen Saws ..... 40&10&50%
- Butcher Saws Blades ..... 35@40

Peace & Richardson's Hand Saws 30%

Simonds':
- Circular Saws ..... 45%
- Crescent Ground Cross Cut Saws 30
- One-Man Cross Cuts ..... 40&10
- Gang Mill, Mulay and Drag Saws 45%
- Band Saws ..... 50
- Back Saws ..... 25@25&7½
- Butcher Saws ..... 35@35&7½%
- Hand Saws ..... 25@25&7½%
- Hand Saws, Bay State Brand ..... 45%
- Compass, Key Hole, &c. 25@25&7½%
- Wood Saws ..... 40&7½%

Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws ..... 50%

## Hack Saw Blades and Frames—

Atkins' Hack Saw Blades A A A 25%

Disston's:
- Concave Blades ..... 25%
- Keystone Blades ..... 35%
- Hack Saw Frames ..... 30%

Simonds, 25%; The Best, 35%; Culley ..... 35%

C. E. Jennings & Co.'s:
- Hack Saw Frames, Nos. 175, 180 .... 40&7½%
- Hack Saws, Nos. 175, 180, complete, 40&7½%

Goodell's Hack Saw Blades ..... 40&10%

Griffin's Hack Saw Frames 35&5&10%

Griffin's Hack Saw Blades ..... 35&5&10%

Star Hack Saws and Blades ..... 15&10%

Sterling Hack Saw Blades 30&10&5%

Sterling Hack Saw Frames 30&10&10%

Sterling Power Hack Saw Machines, each, No. 1, $25.00; No. 2, $30.00 10%

Victor Hack Saw Blades ..... 20%

Victor Hack Saw Frames ..... 40%

Whitaker Mfg. Co.:
- National Hand Blades, Hand Frames, Power Blades ..... 10%

## Scroll—

Barnes, No. 7, $15 ..... 25%

Barnes' Scroll Saw Blades ..... 40%

Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20 ..... 20%

Lester, complete, $10.00 ..... 15&10%

Rogers, complete, $3.50 and $4.00 .. 15&10%

## Scales—

*Union Platform, Plain* ..... $2.10@2.20

*Union Platform, Stpd* ..... $2.20@2.30

Chatillon's:
- Eureka ..... 25%
- Favorite ..... 40%
- Grocers' Trip Scales ..... 50

The Standard Portables ..... 40%

The Standard R. R. and Wagon ..... 50&10%

## Scrapers—

*Box, 1 Handle ..... doz. $1.85@2.10*

*Box, 2 Handle ..... doz. $2.35@2.50*

*Ship ... Light, $2.00; Heavy, $4.50*

Chapin-Stephens Co., Box 30@30&10

Richards Mfg. Co., Foot ..... 60%

## Screws—Bench and Hand

*Bench, Iron, doz., 1 in., $2.50@2.75; 1¼, $3.00@3.25; 1¼ $3.50@3.75*

*Bench, Wood ..... 20@20&10%*

*Hand, Wood ... 70&10@70&10&10%*

Chapin-Stephens Co., Hand ..... 70@70&10&2½%

## Coach, Lag and Hand Rail—

*Lag, Cone Point ..... 80&5%*

*Coach, Gimlet Point ..... 80%*

*Hand Rail ..... 70&10@75%*

## Jack Screws—

*Standard List ..... 70&10@75%*

Miller Falls ..... 50&10&10%

Swett Iron Works ..... 70@75%

## Machine—

*Cut Tread, Iron, Brass or Bronze:*

*Flat Head or Round Head, 50@50&10%*

*Fillister Head ..... 40@40&10%*

*Rolled Thread, F. H. or R. H., Iron ..... 75&10%*

*F. H. or R. H., Brass, Nos. 8 to 14 ..... 65&10%*

## Set and Cap—

*Set (Iron) ..... 75&10&7½%*

*Set (Steel), net advance over Iron ..... 25%*

*Sq. Hd. Cap ..... 70&10&7½%*

*Hex. Hd. Cap ..... 70&10&7½%*

*Rd. Hd. Cap ..... 50&7½%*

*Fillister Hd. Cap ..... 60&7½%*

## Wood—

*List July 23, 1903.*

*Flat Head, Iron ..... 87½&5@.. %*

*Round Head, Iron ..... 85&5@.. %*

*Flat Head, Brass ..... 80&5@.. %*

*Round Head, Brass ..... 77½&5@.. %*

*Flat Head, Bronze ..... 75&5@.. %*

*Round Head, Bronze. 72½&5@.. %*

*Drive Screws ..... 87½&5@.. %*

## Scroll Saws—

See *Saws, Scroll.*

## Scythes—

*Per doz.*

*Plain Grass, Cutting Edge Polished ..... $6.25@$6.50*

*Clipper, Bronzed Web. $6.50@$6.75*

*Solid Steel, Web and Backs Polished ..... $7.00@$7.25*

*Bush, Weed and Bramble, Painted ..... $6.50@$6.75*

*Grain, Painted, Cutting Edge Polished ..... $8.25@$8.50*

*Clipper Grain, Bronze Web. $8.50@$8.75*

## Seeders, Raisin—

Enterprise ..... 25@30%

## Sets— Awl and Tool—

Fray's Tool Handles, Nos. 1, $12; 2, $16; 3, $12 ..... 50%

Millers Falls Adj. Tool Handles, No. 1, $12; No. 4, $12, No. 5, $18 .20&10%

## Garden Tool Sets—

American Fork & Hoe Co.:
- Rake, Shovel and Hoe, ℔ doz. sets, No. 3 P F ..... $7.25

## Sets, Nail—

*Octagon ..... gro. $3.50@3.75*

Buck Bros. ..... 27½%

Mayhew's ..... ℔ gro. $9.00

Snell's Corrugated, Cup Pt. ..... 40&10

Snell's Knurled, Cup Pt. ..... 40&10

Victor Knurled, Cup Pt. ... ℔ gro. $7.50

## Rivet—

*Regular list ..... 75@75&10%*

## Saw—

Atkin's:
- Criterion ..... 40%
- Adjustable ..... 40%

Disston's Star, Monarch and Triumph ..... 30%

Morrill's No. 1 ..... $15.00
Nos. 3 and 4, Cross Cut .... $20.60
No. 5, Mill ..... $30.00
Nos. 10, 11, 95 ..... $15.60
No. 1 Old Style ..... $10.00
Special ..... $16.25
} 50%

Giant Royal Cross Cut ..... ℔ doz. $7.50

Royal, Hand ..... ℔ doz. $4.50

Taintor Positive ..... ℔ doz. $6.75

## Shaving—

Fox Shaving Sets, No. 30 ..... ℔ doz., net, $24.00

Smith & Hemenway Co.'s ..... 75%

## Sharpeners, Knife—

Pike Mfg. Co.:
- Fast Cut Pocket Knife Hones, ℔ doz. ..... $1.50.
- Mounted Kitchen Sand Stone, ℔ doz. ..... $1.50
- Natural Grit Carving Knife Hones, ℔ doz. ..... $3.00
- Quick Cut Emery Carving Knife Hones, ℔ doz. ..... $1.50
- Quick Edge Pocket Knife Hones, ℔ doz. ..... $2.50

} 50%

## Skate—

Smith & Hemenway Co., Eureka .. 50%

## Shaves, Spoke—

*Iron ..... doz. $1.25*

*Wood ..... doz. $2.00*

Barley's (Stanley R. & L. Co.) .... 45

Chapin-Stephens Co. ..... 30@30&10

Goodell's, ℔ doz. $9.00 ..... 15&10%

## Shears—

| | 7 | 8 | 9 in. |
|---|---|---|---|
| *Cast Iron* | | | |
| *Best* | $16.00 | 18.00 | 20.00 gro. |
| *Good* | $13.00 | 15.00 | 17.00 gro. |
| *Cheap* | $5.00 | 6.00 | 7.00 gro. |

*Straight Trimmers, &c.:*

*Best quality Jap ..... 70&10&5%*

*Best Quality Nickel .. 60&10&5%*

*Tailors' Shears ..... 40@40&10%*

Acme Cast Shears ..... 40@40&5%

Heinisch's Tailor's Shears ..... 10%

National Cutlery Co.'s Nickel Plated, 60&10%; Japan Handles ..... 70&10%

Columbian Cutlery Co.:
- Sheep, 1900 list ..... 30&10&5%
- Grass ..... 50&10%
- Horse or Mule ..... 50&10%

J. Wiss & Sons Co.:
- Best Quality Jap'd ..... 60&10%
- Best Quality Nickeled ..... 50&10%
- Tailors' ..... 25%

## Tinners' Snips—

*Steel Blades ..... 20&5@20&10%*

*Steel Laid Blades ..... 50&10%*

Acme Cast Snips ..... 40@45&5%

Forged Handles, Steel Blades, Berlin ..... 50%

Heinisch's Snips ..... 40%

Jennings & Griffin Mfg. Co.'s 6½ to 10 in. ..... 33⅓&7½%

National Cutlery Co.'s Forged Steel 50%

Niagara Snips ..... 40%

P., S. & W. Forged Handles, 25%; W. R. W. ..... 50%

J. Wiss & Sons Co.:
- Wiss Forged Steel ..... 25%

## Pruning Shears—

Cronk's Hand Shears ..... 33⅓%

Cronk's Wood Handle Shears .... 33⅓%

Disston's Combined Pruning Hook and Saw, ℔ doz., $18.00 ..... 25%

Disston's Pruning Hook only, ℔ doz., $12.00 ..... 25%

J. T. Henry Mfg. Co.:
- Pruning Shears, all grades ..... 40%

P., S. & W. Co. ..... 40&10%

Columbian Cutlery Co.:
- Hedge, Wilcut Brand ..... 60&10%
- Lawn and Border, Wilcut Brand, 60&10%

## Sheaves—Sliding Door—

Reading ..... 40%

R. & E. list ..... 15%

## Sliding Shutter—

Reading list ..... 40%

R. & E. list ..... 15%

## Shells—Shells, Empty—

Brass Shells, Empty:
- Climax, 10 and 12 gauge ..... 60&5%
- Club, Rival, 65&5%; First Quality, 60&5%

Paper Shells, Empty:
- New Rapid, 10, 12, 16 and 20 gauge, 25&10%
- Climax, 10 and 12 gauge; Acme and Magic, 10, 12, 16 and 20 gauge; Ideal, 10, 12, 16 and 20 gauge; Leader grade ..... 25&5%
- Union, League, 10 and 12 gauge, Rival Grade ..... 25%
- New Climax, Defiance, 10, 12, 11, 16 and 20 gauge; Climax, 14, 16 and 20 gauge ..... 20%
- Challenge, Monarch, 10, 12, 16 and 20 gauge; League, Union, 14, 16 and 20 gauge; Repeater Grade .. 20%

## Shells, Loaded—

*Loaded with Black Powder .. 40%*

*Loaded with Smokeless Powder, medium grade ..... 40&5%*

*Loaded with Smokeless Powder, high grade ..... 40&10&10%*

Union Metallic Cartridge Co.:
- New Club, Black Powders ..... 40%
- Nitro Club, Smokeless Powders 40&5%
- Arrow, Smokeless Powders, 40&10&10%

Winchester:
- Smokeless Repeater Grade ..... 40&5%
- Smokeless Leader Grade ... 40&10&10%
- Black Powder ..... 40%

## Shingles, Metal— Per Sq.

Edwards Mfg. Co.:

| | Painted. | Galv. |
|---|---|---|
| 14 x 20 | $4.25 | $6.00 |
| 10 x 14 | 4.50 | 6.25 |
| 7 x 10 | 4.75 | 6.50 |

Wheeling Corrugating Co.:

| | | |
|---|---|---|
| Dixie, 14 x 20 in. | $4.05 | $5.05 |
| Dixie, 10 x 14 in. | 4.25 | 5.45 |
| Dixie, 7 x 10 in. | 5.25 | 6.70 |

## Shoes, Horse, Mule, &c.—

*F.o.b. Pittsburgh:*

*Iron ..... per keg. $4.10*

*Steel ..... per keg. $3.85*

Burden's, all sizes ..... ℔ keg $3.90

## Shot—

| | 25-lb. bag. |
|---|---|
| *Drop, up to B* | $1.80 |
| *Drop, B and larger* | 2.05 |
| *Buck* | 2.05 |
| *Chilled* | 2.05 |
| *Dust* | 2.30 |

## Shovels and Spades—

*Association List, Nov. 15, 1902 .. 40%*

Avery Stamping Co. ..... 40%

## Snow Shovels—

*Long Handle ..... $2.50@$2.75*

*Wood and Mall, D Handle, $2.65@$2.90*

## Sieves and Sifters—

*Hunter's Imitation, gro .... $9.50*

*Hunter's Genuine, per gro .. $12.00*

## Sifters, Ash—

Acme Ball Bearing Sales Co., Acme Automatic Ash Sifter, each, $3.25; ℔ doz. ..... $39.00

## Sieves, Seamless Metallic

| Per dozen. | | | | |
|---|---|---|---|---|
| *Mesh* | 1¼ | 16 | 18 | 20 |
| *Iron Wire* | $1.05 | 1.05 | 1.10 | 1.20 |
| *Tinned Wire* | $1.15 | 1.15 | 1.20 | 1.30 |

## Sieves, Wooden Rim—

*Nested, 10, 11 and 12 Inch.*

*Mesh 18, Nested .... doz. $0.90@0.95*

*Mesh 20, Nested .... doz. $1.00@1.05*

*Mesh 24, Nested .... doz. $1.30@1.40*

## Sinks, Cast Iron—

*Painted, Standard list:*

*12 x 12 to 22 x 36 in ..... 60%*

*20 x 24 to 24 x 50 in ..... 50%*

*24 x 60 to 24 x 120 in ..... 30%*

Barnes' low list ..... 60%

*NOTE.—There is not entire uniformity in lists used by jobbers.*

## Skeins, Wagon—

*Cast Iron ..... 70@75&10%*

*Steel ..... 40@45%*

## Slates, School—

*Factory Shipments.*

*"D" Slates ..... 50@50&10%*

*Eureka, Unexcelled Noiseless .. 60&7 tens.*

*Victor A, Noiseless .60&4 tens &5%*

## Slaw Cutters—See *Cutters.*

## Snaps, Harness—

*German ..... 40@40&10%*

Covert Mfg. Co.:
- Derby, 25%; Yankee, 30&2%; Yankee Roller, 30&2%
- High Grade, 40%; Trojan ..... 40%
- Jockey ..... 25%

## Snaths—

*Grass Scythe ..... 50&10@—%*

## Snips, Tinners—See *Shears.*

## Spoons and Forks—

### Silver Plated—

*Good Quality ..... 50&10@60&5%*

*Cheap ..... 60@60&10%*

International Silver Co:
- 1847 Rogers Bros. ..... 40&10
- Rogers & Bro., William Rogers, Eagle Brand ..... 50&10%
- Anchor, Rogers Brand ..... 60
- Wm. Rogers & Son ..... 60&10

### Miscellaneous

*German Silver ..... 60@60&5%*

### Tinned Iron—

*Teas ..... per gro. 50@55¢*

*Tables ..... per gro. $0.90@$1.00*

Atlas Mfg. Co.:
- Tea Spoons, ℔ gro. ..... 50¢@55¢
- Table Spoons, ℔ gro. ..... $0.90@$1.00

## Springs— Door—

Bardsley's Spring and Check ..... 40%

Chicago (Coil) ..... 40&10%

Gem (Coil) ..... 20%

Pullman Door and Gate ..... 10%

Reliance (Coil) ..... 40&10%

Star (Coil) ..... 35%

Torrey's Rod, 39 in. ..... ℔ doz. $1.00

## Carriage, Wagon, &c.—

*1¼ in. and Wider: Per 100 lb.*

*Black ..... $4.75@$5.00*

*Half Bright ..... $4.75@$5.00*

*Bright ..... $5.25@$5.50*

*Painted Seat Springs:*

*1½ x 2 x 26 .... per pair. 45@47¢*

*1½ x 3 x 28 .... per pair. 68@71¢*

## Sprinklers, Lawn—

American Foundry & Mfg. Co.:
- Cactus, 65%; Japanese, 70%; National, ℔ doz. ..... $12.00

Enterprise ..... 25@30%

Philadelphia No. 1, ℔ doz. $12; No. 2, $15; No. 3, $20 ..... 30%

## Squares—

*Nickel plated .. } List Jan. 5, 1900.*
*Steel and Iron . } 80&5@80&10%*

*Rosewood Hdl. Try Square and T-Bevels ..... 60&10&10@70%*

*Iron Hdl. Try Squares and T-Bevels ..... 40&10@40&10&10%*

Disston's Try Squares and Bevels, Rosewood Handle, 60 & 10%; Iron Stock and Bevel ..... 15%

## Squeezers, Lemon

*Wood, Porcelain Lined:*

*Cheap ..... doz. $1.00*

*Good Grade ..... doz. $1.25*

*Tinned Iron ..... doz. $0.75@1.00*

*Iron, Porcelain Lined ... doz. $1.75*

Victor, ℔ gro. ..... $9.00

## Staples—

*Barbed Blind ..... 85&5@85&10%*

*Electricians' ..... 80&10&10@85%*

*Fence Staples, Polished, $2.05; Galvanized ..... $2.35*

*Poultry Netting Staples ..... per lb. 3¼@3½¢*

## Steels, Butchers'—

Dick's ..... 30%

Foster Bros.' ..... 30%

## Steelyards — .... 30@30&10%

## Stocks and Dies—

*Blacksmiths' ..... 50@50&10%*

Curtis Rev'ble Ratchet Die Stock .. 25%

Derby Screw Plates ..... 25%

Green River ..... 25%

Lightning Screw Plate ..... 25%

Little Giant ..... 25%

Reece's New Screw Plate ..... 25%

## Stoners, Cherry—

Enterprise ..... 25@30%

## Stones, Axe—

Pike Mfg. Co., Axe Stones (all kinds) ..... 33⅓%

## Glass Cutters' Stones—

Pike Mfg. Co., Glass Cutters' Stones and Supplies ..... 40%

## Stones, Oil, &c.—

Pike Mfg. Co., 1907 list: ℔ lb
- Arkansas St. No. 1, 3 to 5½ in. $2.80
- Arkansas St. No. 1, 5½ to 8 in. $3.50
- Arkansas Slips No. 1 ..... $4.00
- Lily White Washita, 4 to 8 in. 60¢
- Rosy Red Washita, 4 to 8 in. 60¢
- Washita St., Extra, 4 to 8 in. 50¢
- Washita St., No. 1, 4 to 8 in. 40¢
- Washita St., No. 2, 4 to 8 in. 25¢
- Lily White Slips ..... 90¢
- Rosy Red Slips ..... 90¢
- Washita Slips, Extra ..... 80¢
- Washita Slips, No. 1 ..... 70¢
- Washita Slips, No. 2 ..... 40¢

} 33⅓%

- India Oil Stones (entire list) .. 33⅓%
- Quickcut Emery and Corundum Oil Stone, Double Grit ..... 40%
- Quickcut Emery and Corundum Axe Stone, Double Grit ..... 33⅓%
- Quickcut Emery Rubbing Bricks .. 40%

- Hindostan No. 1, R'g'lar. ℔ lb 8¢
- Hindostan No. 1, Small .. ℔ lb 10¢
- Turkey Oil Stones, Extra, 5 to 8 in. ..... ℔ lb 80¢
- Queer Creek Stones, 4 to 8 in. 20¢
- Queer Creek Slips ..... 10¢
- Sand Stone ..... 6¢

} 33⅓%

### Scythe Stones—

Pike Mfg. Co., 1907 list:
Black Diamond S. S. ℔ gro. $12.00
Lamoille S. S. ℔ gro. $11.00
White Mountain S. S. ℔ gro. $9.50
Green Mountain S. S. ℔ gro. $7.00
Extra Indian Pond S. S. ℔ gro. $8.00
No. 1 Indian Pond S. S. ℔ gro. $7.50
No. 2 Indian Pond S. S. ℔ gro. $5.00
Leader Red End S. S. ℔ gro. $5.00
Quick Cut Emery.... ℔ gro. $10.00
Pure Corundum..... ℔ gro. $18.00
Crescent ..... $7.00
Emery Scythe Rifles, 2 Coat. $8.80
Emery Scythe Rifles, 3 Coat. $11.00
Emery Scythe Rifles, 4 Coat. $13.20
} 33⅓%
Balance of 1907 list 33⅓%.
Lectro (Artificial), ℔ gro., $12.00. 33⅓%
$12.00 ..... 33⅓%
Lightning (Artificial), ℔ gro., $18.00 ..... 33⅓%

### Stoppers, Bottle—

Victor Bottle Stoppers..... ℔ gro. $9.00

### Stops— Bench—

Millers Falls..... 15&10%
Morrill's, ℔ doz., No. 1, $10.00.... 50%
Morrill's, No. 2, $12.50..... 50%

### Door—

Chapin-Stephens Co..... 50@50&10%

### Plane—

Chapin-Stevens Co..... 20%

### Straps— Box—

Acme Embossed, case lots..20&10&10%
Cary's Universal, case lots...20&10&10%

### Stretchers, Carpet—

*Cast Iron, Steel Points..doz. 55¢*
*All Steel Socket...doz. $2.00@2.25*
Excelsior Stretcher and Tack Hammer Combined, ℔ doz., $6.00 ..... 20%

### Stuffers, Sausage—

Enterprise Mfg. Co., Stuffers and Lard Presses..... 25@25&7½%
National Specialty Co., list Jan. 1, 1902 ..... 30&5%
P., S. & W. Co..... 40&10&5%

### Sweepers, Carpet—

*NOTE.—Leading Manufacturers give the following rebates from list prices: 50c per dozen on three-dozen lots; $1 per dozen on five-dozen lots; $2 per dozen on ten dozen lots.*

### Tacks, Finishing Nails, &c.

*American Carpet Tacks. 90&35@—%*
*American Cut Tacks..90&35@—%*
*Swedes' Cut Tacks. L..90&30@—%*
*Swedes' Upholsterers'. 90&35@—%*
*Gimp Tacks..... 90&35@—%*
*Lace Tacks..... 90&35@—%*
*Trimmers' Tacks.....90&30@—%*
*Looking Glass Tacks.....65@—%*
*Bill Posters' and Railroad Tacks, 90&40@—%*
*Hungarian Nails..... 80@—%*
*Finishing Nails..... 70@—%*
*Trunk and Clout Nails. 75&5@—%*
*NOTE.—The above prices are for Straight Weights.*

### Miscellaneous—

*Double Pointed Tacks, 90&6 tens@—%*
Se also Nails, Wire.

### Tanks, Oil and Gasoline—

Wilson & Friend Co.:

| Gal. | Gasoline | Oil |
|---|---|---|
| 30 | $2.75 | $3.00 |
| 60 | $3.50 | $4.00 |
| 110 | $5.00 | $5.75 |

### Tapes, Measuring—

*American Asses' Skin....50@—%*
*Patent Leather.....25@30&5%*
*Steel ..... 33⅓&5%*
*Chesterman's ..... 25@25&5%*
Keuffel & Esser Co.:
Favorite, Ass Skin.....40&10@50%
Favorite, Duck and Leather..... 25&5@25&10%
Metallic and Steel, lower list, 35@35&5...; Pocket, 35@35&5%.
Lufkins:
Asses' Skin..... 40&10@50%
Metallic ..... 30@30&5%
Patent Bend, Leather...25&5@25&10%
Pocket ..... 40@40&5%
Steel ..... 33⅓@35%
Wiebusch & Hilger:
Chesterman's Metallic, No. 34L. etc. ..... 25%
Chesterman's Steel, No. 1038L. etc. ..... 35%

### Teeth, Harrow—

*Steel Harrow Teeth, plain or headed, 5/8-inch and larger, per 100 lb.....$2.55@$2.80*

### Thermometers—

*Tin Case, Cabinet, Flange, Dairy, &c..... 30@35%*

### Ties, Bale—Steel Wire—

*Single Loop..... 82½&10%*
*Monitor, Cross Head, &c. 70&2½%*

### Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

### Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

### Tire Benders, Upsetters, &c.

See *Benders and Upsetters, Tire.*

### Tools—Coopers'—

L. & I. J. White..... 20@20&5%

### Haying—

Myers' Hay Tools..... 50%

### Ice Tools—

Gifford-Wood Co..... 15%

### Miniature—

Smith & Hemenway Co.'s, Davidson, ℔ doz., Nickel Plated, $1.50; Gold Plated..... $2.00

### Saw—

Atkins' Cross Cut Saw Tools....35&5%
Simond's Improved..... 33⅓%
Simonds' Crescent..... 30%

### Ship—

L. & I. J. White..... 25%

### Torches—

Hammers, Engine, ℔ doz..... $4.50

### Transom Lifters—

See *Lifters, Transom.*

### Traps—Fly—

*Balloon, Globe or Acme, doz., $1.15@$1.25; gro.....$11.50@12.00*
*Harper, Champion or Paragon, doz., $1.25@1.40; gro. $13.00@13.50*

### Game—

*Imitation Oneida.....75@10%*
Newhouse ..... 50&5%
Hawley & Norton..... 65&10%
Victor ..... 75@75&10%
Oneida Community Jump..... 70&5%
Stop Thief..... 60%
Tree Trap..... 60%
Hector ..... 75@75&10%

### Mouse and Rat—

*Mouse, Wood, Choker, doz. holes, 12¢*
*Mouse, Round or Square Wire, doz. 85@90¢*
Marty French Rat and Mouse Traps (Genuine), ℔ doz.:

| | Crate lots. | Small lots. |
|---|---|---|
| No. 1, Rat..... | $11.50 | $14.50 |
| No. 3, Rat..... | $5.75 | $6.50 |
| No. 3½, Rat..... | $4.70 | $5.25 |
| No. 5, Mouse..... | $2.25 | $3.00 |

Animal Trap Co.:
Out o' Sight, Mouse, ℔ doz.....$0.60
Out o' Sight, Rat, ℔ doz..... 1.20
Easy Set, Mouse, ℔ doz..... .35
Easy Set, Rat, ℔ doz..... .85
Out o' Sight Checkers, ℔ doz. holes ..... .12
Out o' Sight, Tin, 5-hole, ℔ doz. traps ..... .75

### Trowels—

Disston Brick and Pointing..... 25%
Disston Plastering..... 20%
Disston "Standard Brand" and Garden Trowels..... 30%
Kohler's Steel Garden Trowels, ℔ gro., 5 in., $4.80; 6 in., $6.00.
Never-Break, Forged Steel Garden Trowels, in bulk, net ℔ gro. $5.50
In 1 doz. boxes..... ℔ gro. $6.00
Woodrough & McParlin, Plastering. 25%

### Trucks, Warehouse, &c.—

B. & L. Block Co.:
New York Pattern..... 50&10%
Western Pattern..... 60&10%
Handy Trucks..... ℔ doz. $16.00
Grocery ..... ℔ doz $15.00
McKinney Trucks..... each, net $10.00
Model Stove Trucks..... ℔ doz $18.50

### Tubs, Wash—

*M'f'gr's list, price per gross.*

| No. | 0 | 1 | 2 | 3 | |
|---|---|---|---|---|---|
| *Galvanized* | $67 | $79 | $89 | $99 | *10&7½&5&5%* |

### Twine, Miscellaneous—

*Flax Twine:*
*No. 9, ¼ and ½-lb. Balls. 21@23¢*
*No. 12, ¼ and ½-lb. Balls. 19@21¢*
*No. 18, ¼ and ½-lb. Balls. 16@18¢*
*No. 24, ¼ and ½ -lb. Balls. 15½@17½¢*
*No. 36, ¼ and ½-lb. Balls. 15@17¢*
*Chalk Line, Cotton ½-lb. Balls ..... 24@29¢*
*Cotton Mops, 6, 9, 12 and 15 lb to doz..... 8½@19¢*
*Cotton Wrapping, 5 Balls to lb., according to quality..13½@19¢*
*American 2-Ply Hemp, ¼ and ½-lb. Balls..... 12½@15¢*
*American 3-Ply Hemp, 1-lb Balls ..... 13½@16¢*
*India 2-Ply Hemp, 1¼-lb. Balls, Balls (Spring Twine)...7½@9¢*
*India 3-Ply Hemp, 1-lb. Balls 7½@9¢*
*India 2-Ply Hemp, 1½-lb. Balls, 7@8½¢*
*2, 3, 4 and 5-Ply Jute, 1½-lb. Balls ..... 9@11¢*
*Mason Line, Linen, ½-lb. Bls. 17¢*
*No. 264 Mattress, ¼ and ½ lb. Balls, according to quality, 30@60¢*
*Wool, 3 to 6 ply....B 6¢; A 7½¢*

### Vises—

*Solid Box.....50&5@50&10&5%*

### Parallel—

Athol Machine Co.:
Simpson's Adjustable..... 40%
Standard ..... 40%
Amateur ..... 25%
Columbian Hdw. Co., 40&5%:
Slide ..... 65%
Fisher & Norris Double Screw net, each: Nos. 2, $10.50; 3, $16.00; 4, $20.50; 5, $27.00; 6, $32.00.
Fulton Mach. & Vise Co.:
F. & R. Double Swivel Machinists' ..... 40%
Star, Solid Jaw, Machinists'..... 40
Hollands':
Machinists' ..... 40@40&5%
Keystone ..... 65&5@70%
Lewis Tool Co.:
Adjustable Jaw..... 30%
Monarch, 50%; Solid Jaw..... 50%
Massey Vise Co.:
Clincher ..... 40%
Parallel Bar..... 15%
Perfect, 15%; Lightning Grip..... 15%
Merrill's ..... 25%
Millers Falls Oval Slide Pattern. 60&10%
Parker's:
Victor, 20@25%; Regulars....20@25%
Vulcan's ..... 40@45%
Combination Pipe..... 55@60%
Prentiss ..... 20@25%
Rock Island..... 25%
Snediker's X. L..... 33⅓%
Stephens' ..... 33⅓%

### Saw Filers

Disston's D 3 Clamp and Guide, ℔ doz., $24.00, 30%; Clamps..... 30%
Perfection Saw Clamps, ℔ doz....$1.50
Reading ..... 60%

### Wood Workers—

Fulton Mach. & Vise Co.:
F. & R. Double Swivel Coachman's ..... 40%
Star Solid Jaw Woodworkers'....60%
Massey Vise Co.:
Lightning Grip, 15%; Perfect....15%
Wyman & Gordon's Quick Action, 6 in., $6.00; 9 in., $7.00; 14 in., $8.00.

### Miscellaneous—

Fulton Machine & Vise Co., Combination Pipe..... 70%
Holland's Combination Pipe..60@60&5%
Massey's Quick Action Pipe..... 40%
Parker's Combination Pipe:
87 Series, 60%; 187 Series, 60&5%; No. 870, 40%.
Rock Island Pipe..... 25%

### Wads— *Price per M.*

*B. E., 11 up.....60¢*
*B. E., 9 and 10.....70¢*
*B. E., 8.....80¢*
*B. E., 7.....80¢*
*P. E., 11 up.....$1.00*
*P. E., 9 and 10..... 1.25*
*P. E., 8..... 1.50*
*P. E., 7..... 1.50*
*Dis. 15%*
*Ely's B. E., 11 and larger. $1.70@1.75*
*Ely's P. E., 12 to 20....$3.00@3.25*

### Ware, Hollow—Cast Iron, Hollow—

*Stove Hollow Ware:*
*Enameled ..... 45&10%*
*Ground ..... 50&5%*
*Plain or Unground..... 60%*
*Country Hollow Ware, per 100 lbs ..... $2.75@$3.00*
*White Enameled Ware:*
*Maslin Kettles..... 65&10%*
*Covered Wares:*
*Tinned and Turned.....35&10%*
*Enameled ..... 45&10%*
See also *Pots, Glue.*

### Enameled—

Agate Nickel Steel Ware..... 33⅓%
El-an-ge ..... 60&10%
Iron Clad Ware..... 70&10%
Lava and Volcanic, Enameled..40&10%

### Tea Kettles—

*Galvanized Tea Kettles:*

| *Inch* | 6 | 7 | 8 | 9 |
|---|---|---|---|---|
| *Each* | 45¢ | 50¢ | 55¢ | 65¢ |

### Steel Hollow Ware—

Avery Stamping Co.:
Never-Break Spiders and Griddles ..... 65&10%
Steel Kettles, Maslins Scotch Bowls, Tin'd..... 60%
Steel Stew Pans, Stew Pots, etc., Porcelained ..... 50%
Cleveland Stamping & Tool Co.:
Solid Steel Spiders and Griddles ..... 65&5%
Solid Steel Kettles..... 60&5%

### Warmers, Foot—

Pike Mfg. Co., Soapstone....40@40&10%

### Washboards—

| No. | | ℔ doz. |
|---|---|---|
| 800 | Brass King, Single Surface, Open Back..... | $2.80 |
| 862 | White Hen, Spiral Grimp Glass ..... | $3.35 |
| 964 | Royal Blue Enamel, Single Surface, Ventilated Back..... | $3.35 |
| 172 | Our Best, Single Zinc, Soap Drainer ..... | $3.35 |
| 722 | Soap Saver, Single Zinc, Iron Top ..... | $3.35 |
| 100 | Northern Queen, Single Zinc, Perforated, Open Back..... | $3.00 |
| 134 | Universal, Single Zinc, Extra Family Size Ventilated Back.... | $2.80 |
| 760 | Banner Globe, Single Zinc, Ventilated Back..... | $2.25 |
| 57 | Peerless, Double Zinc, Spring Protector ..... | $3.70 |
| 56 | Red Cross, Double Zinc, Swing Protector ..... | $3.60 |
| 17 | North Star, Solid Zinc, Swing Protector ..... | $3.60 |
| 79 | Jewel, Single Zinc Pail Size | $1.25 |

### Washers—Leather, Axle—

*Solid ..... 90@90&10%*
*Patent ..... 90@90&5%*
*Coil: ¾ 1 1¼ 1¼ inch.*
*9¢ 10¢ 11¢ 14¢ per box.*

### Iron or Steel—

*Size bolt.... 5/16 ⅜ ½ ⅝ ¾*
*Washers....$4.00 4.50 2.50 2.50 2.50*
*The above prices are based on $6.50 off list.*
*In lots less than one keg add 1½¢ per lb.; 5 lb. boxes add 1½¢ to list.*
Avery Stamping Co.:
Standard in 200 lb kegs, $6.00 ℔ 100 lb discl., in 100 lb kegs add 10¢ net ℔ 100 lb; in 5 or 10 lb boxes, add 50¢ net ℔ 100 lb; in 1 lb boxes, add $1.00 net ℔ 100 lb.

### Cast Washers—

*Over ½-inch, barrel lots. per lb. 1½@1¾¢*

### Wedges—

*Oil Finish..... lb., 2¼@2¾¢*

### Weights—Hitching—

Covert Mfg. Co..... 30&2%

### Sash—

*Per net ton, f.o.b. factory:*
*Eastern District.....$20.00@—*
*Western and Central Districts .....$20.00@—*

### Wheels, Corundum and Emery—

Pike Mfg. Co., Corundum, 65%; Emery ..... 75%

### Well—

*8-in., $2.00; 10-in., $2.30; 12-in., $3.00; 14-in., $4.45.*

### Wire and Wire Goods—

*Bright and Annealed:*
*6 to 9.....72&10&7½%*
*10 to 18.....72½&10&10%*
*19 to 26.....75&10&10&2½%*
*27 to 36.....77½&7½%*
*Galvanized:*
*6 to 9.....72½&10%*
*10 to 14.....72½&10&5%*
*15 to 16.....72½&10&5%*
*17 to 18.....72½%*
*19 to 26.....70&5&2½%*
*27 to 36.....65&10&10%*
*Coppered:*
*6 to 9.....65&10&10%*
*10 to 14.....70&10&5%*
*15 to 18.....65&10&10&10%*
*19 to 26.....70&5&2½%*
*27 to 36.....72½&10&2½%*
*Tinned:*
*6 to 18.....67&10&10%*
*Brass ..... 16¼¢ lb., base*
*Copper ..... 15¼¢ lb., base*
*Cast Steel Wire..... 50%*

### Spooled Wire—

*Annealed and Tinned. 75@75&10%*
*Brass and Copper....70@70&10%*
*Retailers' Assortments, per box, $1.90@$2.10*
Wire Clothes Line, See Lines.
Wire Picture Cord, see Cord.

### Bright Wire Goods—

*Steel Wire Goods..... 90&40%*
*Brass Wire Goods, 90&40@90&40&10%*
*Brass Cup and Shoulder Hooks, 85&10%*

### Wire Cloth and Netting—

*Galvanized Poultry Netting, 80&10@80&10&5%*
*Screen Cloth, 12 Mesh, Per 100 sq. ft.: Painted, $1.30; Galvanized, $1.90; 14 Mesh, Bronze $6.50*
*Standard Galv. Hardware Grade: 100 ft. rolls, 24 to 48 in. wide, Per 100 sq. ft.*
*Nos. 2, 2½ and 3 Mesh....$2.75*
*Nos. 4 and 5 Mesh.....$3.00*
*No. 6 Mesh.....$3.25*
*Nos. 7 and 8 Mesh.....$3.75*

### Wire, Barb—See *Trade Report*

### Wrenches—

*Agricultural .....80&5@80&10%*
*Alligator or Crocodile..70&10@75%*
*Baxter Pattern S Wrenches, 70&5@70&10%*
*Drop Forged S.....45@45&5%*
Acme ..... 60&10%
Alligator Pattern, 70%; Bull Dog..70%
Bemis & Call's:
Adjustable S, 40&5%; Adjustable S Pipe, 40&5%; Briggs Pattern, 40%; Combination Bright, 50%.
Steel Handle Nut..... 50&5%
Combination Black..... 50&5%
Merrick Pattern..... 50&5%
Boardman's ..... 40%
Coes' Genuine Knife Hdl...40&10&5&5%
Coes' Genuine Steel Hdl...40&10&5&5%
Coes' Genuine Key Model..40&10&5&5%
Coes' Genuine Hammer Handle..... 40&10&5&5%
Coes' "Mechanics'"...40&10&10&5&5%
Donohue's Engineer..... 40&10%
Eagle ..... 70%
Gem Pocket..... 30%
Hercules ..... 70%
W. & B. Machinist:
Case lots ..... 50&10%
Less than case lots..... 50%
W. & B. Railroad Special:
Case lots..... 50%
Less than case lots..... 40&10&5
Solid Handles, P., S. & W. 50&10; full cases ..... 50&10&5%
Standard Nipple Mfg. Co.:
Duplex Chain..... 50%
Uwanta Wrench Co.:
Uwanta Special, Iron Handle... 40&10&5
Other Wrenches ..... 50%
Yukon and Acme Chain..... 50%
Whitaker Machinists' ..... 50&10%
Wizard Adjustable Ratchet ..... 50%

### Fruit Jar—

Beed, P. Forbes Triumph, ℔ gro., $7.50; per doz ..... $0.90

### Wrought Goods—

*Staples, Hooks, &c., list March 17, '92..... 90@—%*

### Zinc— *(Cask lots at mill.)*

*Sheet..... per 100 lb., $7.00*

# CURRENT METAL PRICES.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

## IRON AND STEEL—

### Bar Iron from store—

Refined Iron:

1 to 1⅞ in. round and square } ₩ lb 1.80¢
1½ to 4 in. x ⅛ to 1 in. }
1½ to 4 in. x ¼ to 5-16 ₩ lb 2.00¢
Rods—⅝ and 11-16 round and square ₩ lb 2.00¢

Angles: Cts ₩ lb

3 in. x ¼ in. and larger 2.25¢
3 in. x 3 16 in. and ⅛ in. 2.30¢
1½ to 2½ in. x ⅛ in. 2.10¢
1½ to 2¾ in. x 3-16 in. and thicker 2.05¢
1 to 1¼ in. x 3-16 in. 2.10¢
1 to 1¼ x ⅛ in. 2.15¢
⅞ x ⅛ in. 2.30¢
¾ x ⅛ in. 2.40¢
⅝ x ⅛ in. 3.45¢
½ x 3-32 in. 3.55¢

Tees:

1 in 2.40¢
1¼ in. 2.20¢
1½ to 2½ in. 2.10¢
3 in. and larger 2.35¢

Beams 2.25¢
Channels, 3 in. and larger 2.25¢
Bands—1½ to 6 x 3-16 to No. 8 2.25¢
"Burden's Best" Iron, base price 3.15¢
Burden's "H. B. & S." Iron, base price 2.95¢
Norway Bars 3.30¢

### Merchant Steel from Store—

per lb

Bessemer Machinery 1.90¢
Toe Calk, Tire and Sleigh Shoe 2.50@3.00¢
Best Cast Steel, base price in small lots 7¢

### Sheets from Store—

#### Black

| | One Pass, C.R Soft Steel. | R. G. Cleaned. |
|---|---|---|
| No. 16 | ₩ lb 2.60 | 3.00¢ |
| Nos. 18 to 21 | ₩ lb 2.95 | 3.10¢ |
| Nos. 22 and 24 | ₩ 3 00 | 3 45¢ |
| No. 26 | ₩ lb 3.05 | 3.45¢ |
| No. 28 | ₩ lb 3.20 | 3.50¢ |

#### Russia, Planished, &c.

Genuine Russia, according to assortment, W. Dewees wood ₩ lb 11¾@14½
Patent Planished ₩ lb A, 10¢; B, 9¢, net.

#### Galvanized.

Nos. 14 to 16 ₩ lb, 3.15¢
Nos. 22 to 24 ₩ lb, 3.55¢
No. 26 ₩ lb, 3.75¢
No. 28 ₩ lb, 4.25¢
No. 20 and lighter 36 inches wide, 25¢ higher.

### Genuine Iron Sheets—Galvanized.

Nos. 22 and 24 ₩ lb 5 75¢
No. 26 ₩ lb 6.25¢
No. 28 ₩ lb 7 25¢

### Tin Plates—

#### American Charcoal Plates (per box.)

"A.A.A." Charcoal:
IC, 14 x 20 $6.40
IX, 14 x 20 7.65

A. Charcoal:
IC, 14 x 20 $5.45
IX, 14 x 20 6.55

#### American Coke Plates—Bessemer-

IC, 14 x 20 107 lb $4.45
IX, 14 x 20 5.45

#### American Terne Plates—

IC, 20 x 28 with an 8 lb. coating $8 60
IX, 20 x 28 with an 8 lb. coating 10.60

### Seamless Brass Tubes—

List December 4, 1905. Base price 19¢

### Brass Tubes, Iron Pipe Sizes—

List December 4, 1905. Base price 19¢

### Copper Tubes—

List December 4, 1905. Base price 23¢

### Brazed Brass Tubes—

List August 1, 1908. 22½¢ ₩ lb

### High Brass Rods—

List August 1, 1908. 16¼¢ ₩ lb

### Roll and Sheet Brass—

List August 1, 1908. 16¢ ₩ lb

## METALS—

### Tin—

Straits Pig ₩ lb 33 @33⅛¢

### Copper—

Lake Ingot ₩ lb 14¾@15 ¢
Electrolytic ₩ lb 14⅝@14¾¢
Casting ₩ lb 14¼@14⅜¢

Sheet Copper Hot Rolled, 16 oz ₩ lb 18 ..¢
" " 14 " " " 19 ..¢
Sheet Copper Cold Rolled, 1¢ ₩ lb advance over Hot Rolled.
Sheet Copper Polished 20 in. wide and under, 1¢ advance over Cold Rolled.
Sheet Copper Polished over 20 in. wide, 2¢ advance over Cold Rolled.
Bottoms, Pits and Flats ₩ lb 21¢ basis
Planished Copper, 1¢ ₩ lb more than Polished.

### Spelter—

Western ₩ lb 5¾@6¢

### Zinc.

No 9, base, casks, ₩ lb 7.50¢ | Open ₩ lb 8.00¢

### Lead.

American Pig ₩ lb 5 @5⅛¢
Bar ₩ lb 6 @6⅛¢

### Solder.

½ & ½, guaranteed ₩ lb 21 @21¼¢
No. 1 ₩ lb 18¼@18½¢
Refined ₩ lb 16 @16¼¢
Prices of Solder indicated by private brand vary according to composition.

### Antimony—

Cookson ₩ lb @10¢
Halletts @9½¢
Other Brands @9 ¢

### Bismuth—

Per lb $1.90@$2.00

### Aluminum—

No. 1 Aluminum (guaranteed over 99% pure), in ingot for remelting:
Small lots 24¢
Rods & Wire Base Price 33¢
Sheets Base Price 34¢

### Old Metals.

*Dealers' Purchasing Prices Paid in New York*

| | Cents |
|---|---|
| Copper, Heavy and Wire ₩ lb | 10.75@11.00¢ |
| Copper, Light and Bottoms ₩ lb | 10.00@10.50¢ |
| Brass, Heavy ₩ lb | 7.75@ 8.00¢ |
| Heavy Machine Composition ₩ lb | 10 25@10.50¢ |
| Clean Brass Turnings ₩ lb | 7.50@ 7.75¢ |
| Composition Turnings ₩ lb | 8.00@ 8.25¢ |
| Lead, Heavy ₩ lb | ....@ 3.50¢ |
| Tea Lead ₩ lb | ....@ 3.25¢ |
| Zinc Scrap ₩ lb | ....@ 3.00¢ |


# THE IRON AGE

*The oldest paper in the world devoted to the interests of the Hardware, Iron, Machinery and Metal Trades, and a standard authority on all matters relating to those branches of industry.*

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# THE IRON AGE

New York, Thursday, December 10, 1908.


# The Present Status of Military Aëronautics.—II*

BY MAJOR GEORGE O. SQUIER, U. S. A.

## AVIATION.

This division comprises all those forms of heavier than air flying machines which depend for their support upon the dynamic reaction of the atmosphere. There are several subdivisions of this class dependent upon the particular principle of operation. Among these may be mentioned the aëroplane, orthopter, helicopter, &c. The only one of these that has been sufficiently developed at present to carry a man in practical flight is the aëroplane. There have been a large number of types of aëroplanes tested with more or less success and of these the following are selected for illustration.

### Representative Aëroplanes of Various Types.

#### The Wright Brothers' Aëroplane.

The general conditions under which the Wright machine was built for the Government were, that it should develop a speed of at least 36 miles per hour, and in its trial flights remain continuously in the air for at least 1 hr. It was designed to carry two persons having a combined weight of 350 lb. and also sufficient fuel for a flight of 125 miles. The trials at Fort Myer, Va., in September, 1908, indicated that the machine was able to fulfill the requirements of the Government specifications.

The aëroplane has two superposed main surfaces 6 ft. apart with a spread of 40 ft. and a distance of 6½ ft. from front to rear. The area of this double supporting surface is about 500 sq. ft. The surfaces are so constructed that their extremities may be warped at the will of the operator. A horizontal rudder of two superposed plane surfaces about 15 ft. long and 3 ft. wide is placed in front of the main surfaces. Behind the main planes is a vertical rudder formed of two surfaces trussed together about 5½ ft. long and 1 ft. wide. The auxiliary surfaces, and the mechanism controlling the warping of the main surfaces, are operated by three levers. The motor, which was designed by the Wright brothers, has four cylinders and is water cooled. It develops about 25 hp. at 1400 rev. per min. There are two wooden propellers 8½ ft. diameter which are designed to run at about 400 rev. per min. The machine is supported on two runners and weighs about 800 lb. A monorail is used in starting.

The Wright machine has attained an estimated maximum speed of about 40 miles per hour. On September 12, a few days before the accident which wrecked the machine, a record flight of 1 hr. 14 min. 20 sec. was made at Fort Myer, Virginia. Since that date Wilbur Wright, at Le Mans, France, has made better records; on one occasion remaining in the air for more than an hour and a half with a passenger. The illustrations show its details, its method of starting and its appearance in flight.

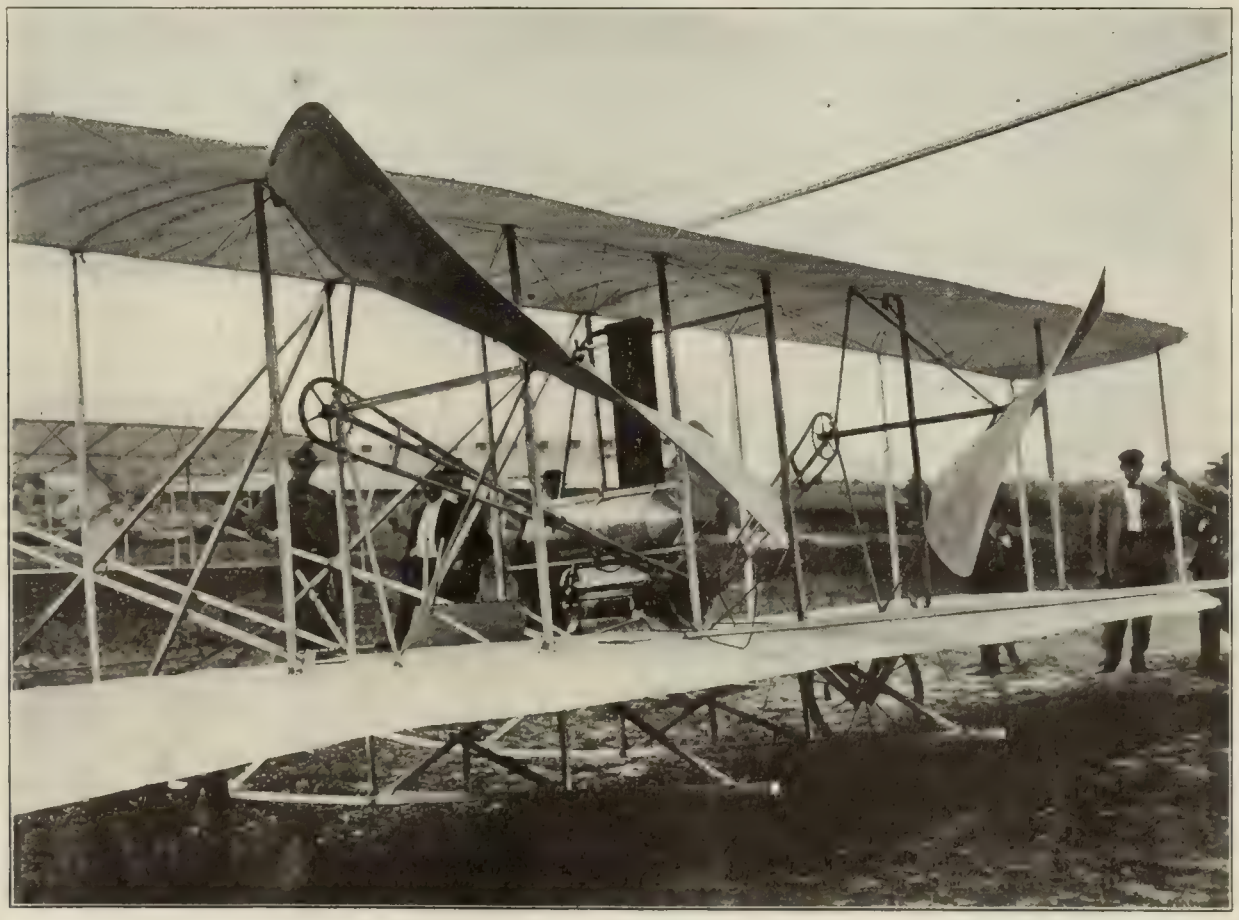


Fig. 8.—A Detail of the Wright Aëroplane as Viewed from the Rear.

#### The Herring Aëroplane.

The Signal Corps of the Army has contracted with A. M. Herring of New York to furnish an aëroplane under the conditions enumerated in the specification already referred to. Mr. Herring made technical delivery of his machine at the aëronautical testing ground at Fort Myer, Virginia, on October 13. In compliance with the request of Mr. Herring the details of this machine will not be made public at present, but the official tests required under the contract will be conducted in public as has been the case with other aëronautical devices. Opportunity will be afforded any one to observe the machine in operation. This machine embodies new features for automatic control and contains an engine of remarkable lightness per horsepower.

#### The Farman Aëroplane.

The Farman flying machine has two superposed aëro-surfaces 4 ft. 11 in. apart with a spread of 42 ft. 9 in. and 6 ft. 7 in. from front to rear. The total sustaining

* From a paper presented December 2, 1908, at the New York meeting of the American Society of Mechanical Engineers.

surface is about 560 sq. ft. A box tail 6 ft. 7 in. wide and 9 ft. 10 in. long in rear of the main surfaces is used to balance the machine. The vertical sides of the tail are pivoted along the front edges, and serve as a vertical rudder for steering in a horizontal plane. There are two parallel, vertical partitions near the middle of the main supporting surfaces, and one vertical partition in the middle of the box tail. A horizontal rudder in front of the machine is used to elevate or depress it in flight.

The motor is an eight cylinder Antoinette of 50 hp. weighing 176 lb., and developing about 38 hp. at 1050 rev. per min. The propeller is a built-up steel frame covered with aluminum sheeting, 7½ ft. in diameter, with a pitch of 4 ft. 7 in. It is mounted directly on the motor shaft immediately in rear of the middle of the main surfaces. The framework is of wood, covered with canvas. A chassis steel tubing carries two pneumatic-tired bicycle wheels. Two smaller wheels are placed under the tail. The total weight of the machine is 1166 lb. The main surfaces support a little over 2 lb. per square foot. The machine has shown a speed of about 28 miles per hour, and no starting apparatus is used.

On January 13, 1908, Farman won the Grand Prix of the Aëro Club of France in a flight of 1 min. and 28 sec., in which he covered more than a kilometer. It is reported that on October 30, 1908, a flight of 20 miles, from Mourmelon to Rheims, was made with this machine.

**The Bleriot Aëroplane.**

Following Farman's first flight from town to town, M. Bleriot with his monoplane aëroplane made a flight from Toury to the neighborhood of Artenay and back, a total distance of about 28 kilometers. He landed twice during these flights and covered 14 kilometers of his journey in about 10 min., or attained a speed of 52 miles an hour.

**The June Bug.**

The June Bug was designed by the Aërial Experiment Association, of which Alexander Graham Bell is president. It has two main superposed aërosurfaces with a spread of 42 ft. 6 in., including wing tips, with a total supporting surface of 370 sq. ft. The tail is of the box type. The vertical rudder above the rear edge of the tail is 30 in. square. The horizontal rudder in front of the main surfaces is 30 in. wide by 8 ft. long. There are four triangular wing tips pivoted along their front edges for maintaining transverse equilibrium. The vertical rudder is operated by a steering wheel, and the movable tips by cords attached to the body of the aviator. The motor is a 25-hp. eight cylinder air cooled Curtiss engine. The single wooden propeller immediately behind the main surfaces is 6 ft. 2 in. diameter and mounted directly on the motor shaft. It has a pitch angle of about 17 degrees, and is designed to run at about 1200 rev. per min. The total weight of the machine, with aviator, is 650 lb. It has a load of about 1¾ lb. per square foot of supporting surface. Two pneumatic-tired bicycle wheels are attached to the lower part of the frame.

With this machine G. H. Curtiss, on July 4, 1908, won the *Scientific American* trophy by covering the distance of over a mile in 1 min. and 42 2-5 sec. at a speed of about 39 miles per hour.

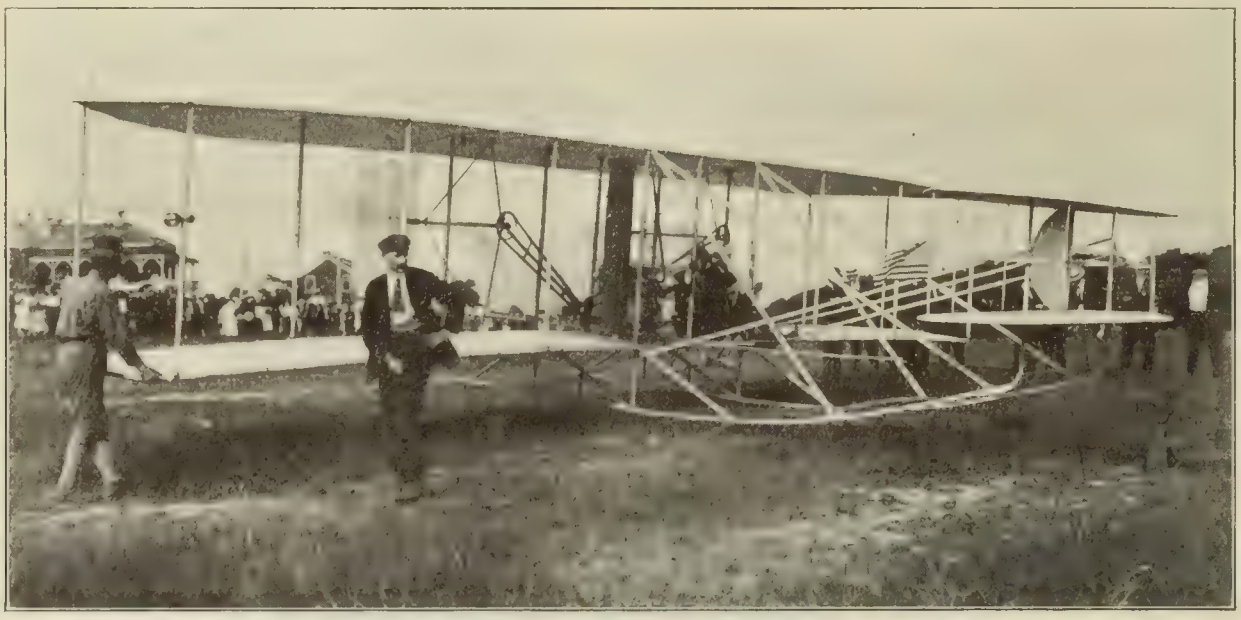


Fig. 9.—The Wright Aëroplane Ready to Start on a Flight.

## HYDROMECHANIC RELATIONS.

### Some General Relations Between Ships in Air and Water.

At present so many are engaged upon the general problem of aërial navigation that any method by which a broad forecast of the subject can be made is particularly desirable. Each branch of the subject has its advocates, each believing implicitly in the superiority of his method. The adherents of the dirigible balloon have little confidence in the future of the aëroplane, while another class have no energy to devote to the dirigible balloon, and still others prefer to work on the pure helicopter principle. As a matter of fact, each of these types is probably of permanent importance, and each particularly adapted to certain needs. Fortunately for the development of each type, the experiments made with one class are of value to the other classes, and those in turn bear close analogy to the types of boats used in marine navigation. The dynamical properties of water and air are very much alike, and the equations of motion are similar for the two fluids, so that the data obtained from experiments in water, which are very extensive, may with slight modifications be applied to computations for aërial navigation.

Von Helmholz, a physicist of Germany, has fortunately considered this subject, in a paper written in 1873, "On a Theorem Relative to Movements That Are Geometrically Similar in Fluid Bodies, Together with an Application to the Problem of Steering Balloons." In this paper Helmholz affirms that, although the differential equations of hydro-mechanics may be an exact expression of the laws controlling the motions of fluids, still it is only for relatively few and simple experimental cases that we can obtain integrals appropriate to the given conditions, particularly if the cases involve viscosity and surfaces of discontinuity. Hence, in dealing practically with the motion of fluids, we must depend upon experiment almost entirely, often being able to predict very little from theory, and that usually with uncertainty. Without integrating, however, he applies the hydrodynamic equations to transfer the observations made on any one fluid with given models and speeds, over to a geometrically similar mass of another fluid involving other speeds, and models of different magnitudes. By this means he is able to compute the size, velocity, resistance power, &c., of aërial craft from given, or observed, values for marine craft. He also deduces laws that must inevitably place a limit upon the possible size and velocity of aërial craft without, however, indicating what that limit may be with artificial power. Applying this mode of reasoning to large birds, he concludes by saying that, "It therefore appears probable that in the model of the great vulture nature has already reached the limit that can be attained with the muscles as work-

ing organs, and under the most favorable conditions of subsistence, for the magnitude of a creature that shall raise itself by its wings and remain a long time in the air. In comparing the behavior of models in water and air, he takes account of the density and viscosity of the media, as these were well known at the date of his writing, 1873; but he could not take account of the sliding, or skin friction, because in his day neither the magnitude of such friction for air, nor the law of its variation with velocity had been determined.

**Skin-Friction in Air.**

Even as late as Langley's experiments, skin friction in air was regarded as a negligible quantity, but due to the

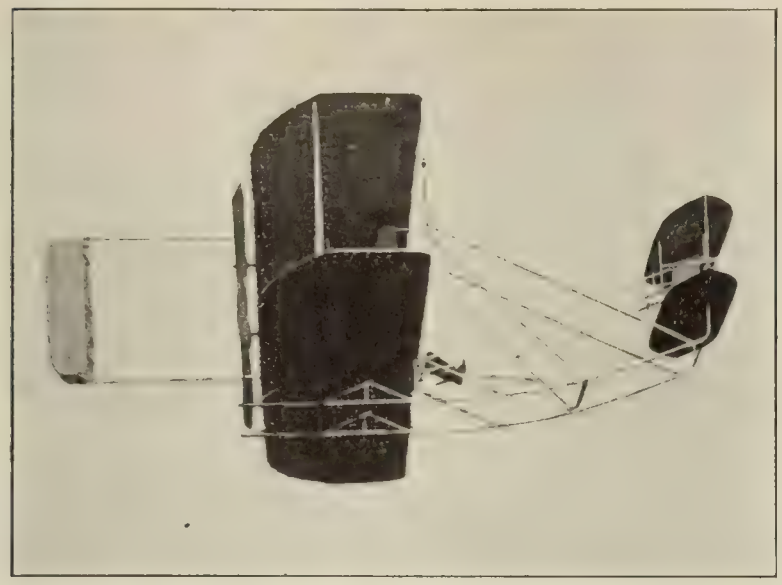


Fig. 10.—The Wright Aëroplane in Flight.

work of Dr. Zahm who was the first to make any really extensive and reliable experiments on skin friction in air, we now can estimate the magnitude of this quantity. His research shows that "the frictional resistance is at least as great for air as water, in proportion to their densities. In other words, it amounts to a decided obstacle in high speed transportation. In aëronautics it is one of the chief elements of resistance both to hull shaped bodies and to aëro-surfaces gliding at small angles of flight."

Peter Cooper-Hewitt has given careful study to the relative behavior of ships in air and in water. He has made a special study of hydroplanes, and has prepared graphic representations of his results which furnish a valuable forecast of the problem of flight. Without knowing of Helmholz's theorem, Cooper-Hewitt has independently computed curves for ships and hydroplanes from actual data in water, and has employed these curves to solve analogous problems in air, using the relative densities of the two media, approximately 800 to 1, to determine the relative values of support by dynamic reaction and by displacement for various weights and speeds.

An analysis of these curves leads to conclusions of importance, some of which are as follows:

The power consumed in propelling a displacement vessel at any constant speed, supported by air or water, is considered as being two-thirds consumed by skin resistance, or surface resistance, and one-third consumed by head resistance. Such a vessel will be about 10 diameters in length, or should be of such shape that the sum of the power consumed in surface friction and in head resistance will be a minimum (torpedo shape). The power required to overcome friction due to forward movement will be about one-eighth as much for a vessel in air as for a vessel of the same weight in water. Leaving other things out of consideration, higher speeds can be obtained in craft of small tonnage by the dynamic reaction type than by the displacement type, for large tonnages the advantages of the displacement type are manifest. A dirigible balloon carrying the same weight, other things being equal, may be made to travel about twice as fast as a boat for the same power; or be made to travel at the same speed with the expenditure of about one-eighth of the power. As there are practically always currents in the air reaching at times, a velocity of many miles per hour, a dirigible balloon should be constructed with sufficient power to be able to travel at a speed of about 50 miles per hour, in order that it may be available under practical conditions of weather. In other words, it should have substantially as much power as would drive a boat, carrying the same weight, 25 miles an hour, or should have the same ratio of power to size as the Lusitania.

It is the general opinion that any one of several types of internal combustion motors at present available is suitable for use with dirigible balloons. With this type lightness need not be obtained at the sacrifice of efficiency. In the aëroplane, however, lightness per output is a prime consideration, and certainty and reliability of action is demanded, since if by chance the motor stops, the machine must immediately glide to the earth.

The fundamental principles of propellers are the same for air as for water. In both elements, the thrust is directly proportional to the mass of fluid set in motion per second. A great variety of types of propellers have been devised, but, thus far only the screw propeller has proved to be of practical value in air. The theory of the screw propeller in air is substantially the same as for the deeply submerged screw propeller in water.

It appears that both fundamental forms of aërial craft will likely be developed, and that the lighter than air type will be the burden bearing machine, whereas the heavier than air type will be limited to comparatively low tonnage, operating at relatively high velocity. The helicopter type of macine may be considered as the limit of the aëroplane, when by constantly increasing the speed, the area of the supporting surfaces is continuously reduced until it practically disappears. We may then picture a racing aëroplane propelled by great power, supported largely by the pressure against its body, and with its wings reduced to mere fins which serve to guide and steady its motion. In other words, starting with the aëroplane type; we have the dirigible balloon on the one hand as the tonnage increases, and the helicopter type on the other extreme as the speed increases. Apparently, therefore, no one of these forms will be exclusively used, but each will have its place for the particular work required.

## AËRIAL LOCOMOTION IN WARFARE.

Whatever may be the influence of aërial navigation upon the art of war, the fact which must be considered at present is, that each of the principal military powers is

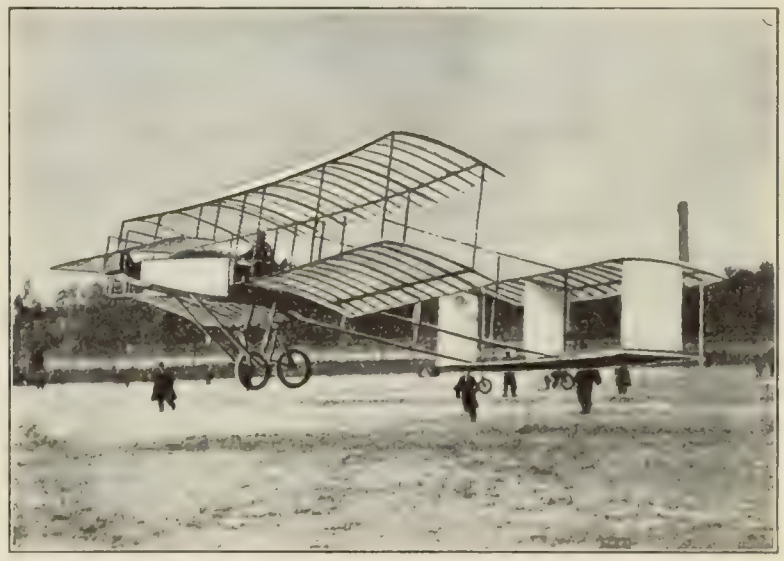


Fig. 11.—The Farman Aëroplane Leaving the Ground.

displaying activity in developing this auxiliary as an adjunct to the military establishment. If each of the great powers of the world would agree that aërial warfare should not be carried on, the subject would be of no great interest to this country as far as our military policy is concerned, but until such an agreement is made this country is forced to an immediate and serious consideration of this subject in order to be prepared for any eventuality. The identical reasoning which has led to the adoption of a policy of providing for increasing our navy year by year to maintain our relative supremacy on the sea, is immediately applicable to the military control of the air. If the policy in respect to the navy is ad-

mitted, there is no escape from the deduction that we should proceed in the development of ships of the air on a scale commensurate with the position of the nation. The question as to whether or not the powers will ultimately permit the use of aërial ships in war is not at present the practical one, because in case such use is authorized it will be too late adequately to equip ourselves after war has been declared.

**Action of the Hague Peace Conference.**

The following is the declaration signed by the delegates of the United States to the Second International Peace Conference, held at The Hague, June 15 to October 19, 1907, prohibiting the discharge of projectiles and explosives from balloons, ratified March 10, 1908:

"The contracting powers agree to prohibit, for a period extending to the close of the Third Peace Conference, the discharge of projectiles and explosives from balloons or by other new methods of a similar nature."

The delegates of the United States signed this declaration. The countries which did not sign the declaration forbidding the launching of projectiles and explosives from balloons were: Germany, Austria-Hungary, China, Denmark, Ecuador, Spain, France, Great Britain, Guatemala, Italy, Japan, Mexico, Montenegro, Nicaragua, Paraguay, Roumania, Russia, Servia, Sweden, Switzerland, Turkey and Venezuela. It appears that the United States is the only first class power who signed this agreement, and an analysis of the text of the agreement itself shows that no serious attempt was made to settle the question finally. For instance, while the war balloon may not discharge projectiles or explosives from above, yet no reciprocal provision is made preventing such war balloon from being fired upon from the earth below, yet the law of self-defense evidently obtains. Furthermore, naval experts will tell you that they fear no enemy quite as much as a submarine mine, whose location is unknown and which gives no warning when it is approached. Our own experience shows that the battleship Maine could be completely destroyed in time of peace without any one detecting the preparations for its accomplishment. If, then, a nation can submerge a mine for the destruction of ships from underneath the water, why can it not drop an aërial mine upon a ship from above? And if it should be allowed to drop an aërial mine upon an enemy's fortified ship at sea, it certainly should be allowed to drop such an aërial mine upon a fortified place on land.

**Influence on the Military Art.**

The military art up to the present time has been practically conducted in a plane where the armies concerned have been limited in their movements in time and place by the physical character of the terrane. A large army, for instance, cannot move faster than about 12 miles a day by marching, and the use of railroads as applied to the art of war was first recognized in the Franco-Prussian war. By their use the mobilization of the great Prussian army, and its accurate assembling in the theatre of operations within ten days, contributed an initial advantage not before possible. The very essence of strategy is surprise, and there never were better opportunities than at present for a constructive general to achieve great victories. But these victories to be really great must be founded upon some new development or use of power not heretofore known in war. They must also tend to produce results with the minimum loss of human life; the sentiment of the world demands that the military art shall aim to capture, not destroy. It may be said that the consummation of military art is found in maneuvering the enemy into untenable situations, thereby forcing a decisive result with a minimum loss of life and treasure.

As to the technical use of dirigible balloons and aëroplanes in warfare we have nothing but theory at present to guide us. It would appear in the case of dirigible balloons that two different classes should be developed. One a comparatively small dirigible type with a capacity of from 50,000 to 100,000 cu. ft., to be used principally for scouting purposes and to a limited extent for carrying explosives for demolition or for incendiary purposes, such as destroying bridges and supply depots close to the mobile army or coast defense fortress. In reconnoitering, dirigibles of this class, to be safe during daytime will have to maneuver at an altitude of about a mile, but experiments show that telephotographic apparatus will operate from this hight to give much detail. At night, such dirigibles may descend to within a few hundred feet of the ground with safety and thus obtain much valuable information. Equipped with wireless telegraph or telephone apparatus, military data could be obtained and transmitted without undue risk. Due to the small carrying capacity of such sizes, the radius of action would probably be limited at present to about 200 miles.

A second type of dirigible may be developed for burden bearing purposes. The larger the airship the greater the speed it may be given, and the greater its radius of action. There is no reason to doubt that airships of capacity, from 500,000 to 1,000,000 cu. ft. may be ultimately developed to attain speeds of 50 to 75 miles per hour. With a capacity for such speed, the aërial craft becomes a powerful practical engine of war which may be used in all ordinary weather. By keeping high in the air in day time, and descending at night, they may launch high explosives, producing great damage. Being able to pass over armies and proceed at great speeds, their objectives would not usually be the enemy's armies, but their efforts would be directed against his base of supplies; to destroy his dry docks, arsenals, ammunition depots, principal railroad centers, storehouses, and indeed the enemy's navy itself.

It is thought that there will be little difficulty in launching explosives with accuracy, provided good maps and plans are available. Due to the small cost of such ships, as compared with naval vessels, the risk of loss would be readily taken. The element of time has always been a controlling factor in warfare. It is often a military necessity to conduct a reconnoissance in force to develop the enemy's dispositions. This requires at times a detachment of several thousand men from the main army, for a considerable period of time to accomplish this end. With efficient military airships, these results may be attained with a very few men in a small fraction of the time heretofore required.

The realization of aërial navigation for military purposes, brings forward new questions regarding the limitation of frontiers. As long as military operations are confined to the surface of the earth, it has been the custom to protect the geographical limits of a country by ample preparations in time of peace, such as a line of fortresses properly garrisoned. At the outbreak of war these boundaries represent real and definite limits to military operations. Excursions into the enemy's territory usually require the backing of a strong military force. Under the new conditions, however, these geographic boundaries no longer offer the same definite limits to military movements. With a third dimension added to the theater of operations, it will be possible to pass over this boundary on rapid raids for obtaining information, accomplishing demolitions, &c., returning to safe harbors in a minimum time. We may, therefore, regard the advent of military ships of the air as in a measure obliterating present national frontiers in conducting military operations.

One of the military objectives in warfare is usually the enemy's capital city, his ministers, and his chief executive. This objective has heretofore been protected by large armies of soldiers, who, in themselves are not so important to the result. In order to attain the objective it has been frequently necessary to subdue large numbers of soldiers needlessly. With the advent of efficient ships of the air, however, small parties may pass over these protective armies on expeditions aimed at the seat of government itself, where reside the body of particular individuals most responsible, so that the ultimate result will be to deter a rash entrance into war for personal ends; since now for the first time responsible individuals of state may be in immediate and personal danger after the declaration of war, which heretofore has not been usually the case.

**Interior Harbors.**

In the development of these larger types of dirigible balloons the main difficulty will be in providing suitable harbors or places of safety, for replenishing supplies and

for seeking shelter in times of stress. As long as the dirigible balloon remains in the air it may be regarded as tolerably safe, both in itself and as a conveyance for observers. If its engines are disabled, it is at least a free balloon and may be operated as such. When brought in contact with the ground, however, it is in considerable danger from high winds. The momentum of such an enormous airship is great, and the comparatively fragile structure of the craft makes it an easy prey to the pounding which it is likely to receive when landing. Just as marine ships must seek a sheltered harbor or put to the open sea in times of storm, so with ships of the air it is much more necessary either to brave the storm in the open or to seek some sheltered harbor on land. Fortunately certain suitable harbors for very large ships may be provided at small expense, by using narrows and deep valleys and ravines, surrounded by forests or other protection, or prepared railroad cuts, &c., where the airship may descend and be reasonable safe from the winds above. These harbors should be known to the pilot, and carefully plotted on his maps beforehand. The compass bearings of each harbor from prominent points on land must be known and plotted to assist, as far as possible, in navigating the airship in thick weather; and such harbors may be indicated to the pilot at night by vertical searchlight beams, or by suitable rockets, &c.

The aëroplane, as has been pointed out, is likely to prove a flying machine of comparatively low tonnage and high speed. It is not likely to become a burden bearing ship, at least in single units, but will be extremely useful for reconnoitering purposes, for dispatching important orders and instructions at high speed, for reaching inaccsible points, or for carrying individuals of high rank and command to points where their personality is needed.

One of the bloodiest contests the world has ever seen was the Japanese attack on 203 Meter Hill, yet the sole object of this great slaughter was to place two or three men at its summit to direct the fire of the Japanese siege guns upon the Russian fleet in the harbor at Port Arthur.

If the United States had possessed in 1898 a single dirigible balloon, even of the size of the one now at Fort Meyer, Va., which cost less than $10,000, the American army and navy would not have long remained in doubt of the presence of Cervera's fleet in Santiago Harbor.

The world is undoubtedly growing more humane year by year. We have arrived at a conception of the principle of an efficient army and navy, not to provoke war, but to preserve peace, and it is believed that, following this principle, the perfection of ships of the air for military purposes will materially contribute on the whole to make war less likely in the future than in the past.

## Customs Decisions.

### The United States Circuit Court to Pass on German Agreement.

It is not unlikely that Judge Martin of the United States Circuit Court within a short time will pass upon the legality of the construction put upon section 19 of the Customs Administrative act in the commercial agreement between the United States and Germany entered into last year. This section of the law defines what value is to be taken in the assessment of ad valorem duties. Since the enactment of the German agreement the United States Government has extended the concessions made to Germany to practically all other nations having commercial intercourse with this country. It thus happens that while the present case before the court concerns importations from France, the question at issue is identical with a similar issue which might be raised from Germany.

In a case tried before the United States Supreme Court a number of years ago it was held that when goods are sold for domestic consumption in the foreign country at one price and for export to the United States at another price, duty must be based on the home price and not on the export price. Since that decision the Government has been taking duty based on the home market price, regardless of whether the particular articles were sold for home consumption or not, it being the practice to take the home value of similar goods when none identical in character were sold for home consumption. In the agreement with Germany the United States Government pledged itself not to take the home market price unless when goods of the same character were sold for home consumption in usual wholesale quantities, it being agreed that this was the proper construction of section 19, the decision of the Supreme Court applying only when identical goods were sold in the home markets in usual wholesale quantities.

The question as to whether this is the proper construction is now before Judge Martin in the case of United States vs. Haviland & Co., which was tried before him last week. In this case the Board of General Appraisers found the value of Haviland's goods to be considerably above the entered value. The importers, however, filed a protest against the assessment of duty by the collector on this basis, claiming that the Reappraisement Board's decision was illegal, not only on the ground that there was no evidence before them to support their finding, but also on the ground that under the construction put upon section 19 by the German agreement, the export price must be taken, because Haviland's goods are not sold in the French market in usual wholesale quantities. The Board of Classification of General Appraisers sustained the protest on the first ground, but did not pass upon the second question. The Government appealed to the United States Circuit Court in an attempt to secure a reversal of the protest board's decision. As that board did not base its decision on the construction of section 19, but on the other ground, the German agreement question will probably not be considered by the court unless Judge Martin is of the opinion that the ground of the board's decision was erroneous, in which case he will have to consider the other claim of the importers. When the case came up its was argued by D. Frank Lloyd, assistant district attorney, for the Government, and by B. A. Levett, for the importers. The hearing occupied all day November 17 and the next morning. Judge Martin took the case under advisement and a decision is expected within two or three weeks.

### Wire Drawing Plates.

Subboard No. 2 of the United States General Appraisers, consisting of Marion De Vries, William B. Howell and I. F. Fischer, recently heard testimony in a new case brought before the lower customs tribunal to determine the classification of merchandise claimed by the Charles Newman Wire Company to be entitled to enter this country as "steel plates not specially provided for," at the rates according to their value per pound. According to the custom house authorities, the articles should be classified as "steel draw plates or wire drawing plates, including wortles." Under this classification the merchandise was assessed for duty at the rate of 45 per cent. under the appropriate provision in the tariff act. Most of the decisions before the Board of Appraisers, the Circuit Court and the Circuit Court of Appeals went against the importers. Everit Brown, counsel for the importers, made the discovery of error before the Appellate tribunal, and the new trial of the issue before the Board of Appraisers results. At the conclusion of the hearing the board took the papers in the case and withheld decision.

### Needles.

The Board of United States General Appraisers has sustained a protest filed by Dieckerhoff, Raffloer & Co., New York, it being held that needles imported in cases are not to be regarded for the purposes of duty as "manufactures of metal," at 45 per cent., but instead must be admitted either free of duty or at lower rates. All of the contentions are sustained by the board. The importers made a number of claims, as follows: That the needles are entitled to free entry under paragraph 620; that as to needles or bodkins of metal, which are provided for under paragraph 165, the duty should be as provided therein, and that as to the cases or coverings they should be classified at appropriate rates, according to the component material of chief value.

# THE MECHANICAL ENGINEERS' CONVENTION.

## Twenty-Ninth Annual Meeting, New York, December 1 to 4, 1908.

The steadily increasing attendance at the annual meetings in New York of the American Society of Mechanical Engineers indicates not alone a growth of the society, but that which is responsible for the growth, the increasing interest which the meetings hold for the profession at large. It was predicted and the prediction verified that this would be the most successful meeting of the society to date. In the selection of papers was evident the more recent policy to include such as will appeal to the largest possible number of the members, and so to group them that those unable to attend the entire meeting could in one session hear the papers they would be especially interested in. At the same time it has been realized that the monthly *Journal* bringing the discussions of the papers to the members earlier than the yearly volume of *Transactions* has still further removed the need of attending the meetings for the sake of the discussions, and the excursion part of the programme has been made more important and attractive. At this meeting no attempt was made to separate the two features, professional sessions and excursions being in progress simultaneously throughout the meeting. Printed programmes of each helped the individual to dispose his time to best advantage. A very thorough preparation was made for an unusually large number of excursions and time was available for one more professional session than before.

Most prominent as features of this meeting were the systematic provision for expediting routine, registration included, of which mention was made last week in the report of the opening night, December 1; the consideration for the first time before a national society of the subject of aerial navigation; a section dealing exclusively with machine shop practice, and the first steps taken to organize a section of the society to deal with such matters. This is in accordance with an amendment to the constitution adopted one year ago to provide for sections within the society to confine themselves to special phases of engineering, of which the gas power section formed at that time was the first.

The Engineering Societies' Building as headquarters and accommodation for all the meetings, collations and the reception again showed its exceptional advantages for the purposes of a convention. By the separating of members from guests in the registration and the registering as guests only those participating in the social features, the professional sessions being open to the public without registration, it was possible to obtain a better idea of how large a representation of the society was actually in attendance. The total registration, 1048, while not so large as that of a year ago, meant more because of that number 738 were members, the largest attendance of members in the history of the society.

## SECOND SESSION.

The first professional session convened Wednesday morning in the auditorium and as customary dispensed first with business. The report of tellers on the election of new members announced the acquisition since the last meeting of 191 in all grades, and the report of tellers on the election of officers the following: President, Jesse M. Smith; vice-presidents, George M. Bond, R. C. Carpenter and F. M. Whyte; managers, H. L. Gantt, I. E. Moultrop and W. J. Sando, and treasurer, William H. Wiley. President-elect Smith was then conducted to the platform and introduced to the society and made a brief response. As the term of office of the new president begins with the close of the annual meeting, President Holman continued in the chair. This was the end of the business part of the meeting, and the first of the papers was next taken up.

### The Engineer and the People.

BY MORRIS L. COOKE, PHILADELPHIA, PA.

This paper dealt with an ethical question, the relation of the engineering profession to the public, and was a plea for more consideration for the community at large in the activities of this profession. In proposing a plan for greater co-operation between the society and the public, the author recommended the appointing of a standing committee to be known as the Committee on Relations with the Public. Among its duties would be providing courses of popular lectures on engineering, and the general dissemination of knowledge that conduces to public welfare; the inviting of the confidence of the people to the end that the society might be freely consulted on questions which it would be capable of giving expert advice upon, and generally to increase the usefulness of the society to the country which involves a broadening of the object of the society as at present laid down.

Written discussion of this paper were read by Honorary Secretary Hutton from President Arthur T. Hadley, Yale University; Talcott Williams, editor of the Philadelphia *Press*, and Frank M. Day, past-president of the American Institute of Architects. President Hadley declared: "I believe that the engineering profession will not reach the highest position of influence which lies open to it until it has appreciated more fully than it now does the line of opportunity indicated therein." Talcott Williams decried the lack of credit given engineers by the world at large for the big works done. The engineer fails to get credit because his profession is not comprehended by the masses. He declared there is no body of men knowing so much which influences public opinion so little and urged that engineering societies exert their influence in accomplishing legislation that the country needs, but upon which only engineers are capable of giving expert advice. Even as medical societies concern themselves with laws effecting the public health, he considered it the duty of the engineer to educate the public in the matters which mean so much to civilization and can come with authority from no one but him. Frank M. Day declared that the professional society owes as much to the public as to its members. This has long been appreciated by the architects, as indicated by instances cited of such work as has been done by the American Institute of Architects. He also discussed the relation of technical, artistic and learned societies to each other, believing they should be closer. Architects and mechanical engineers especially have much in common and to their advantage have been brought into closer touch than formerly. He inquired if the institute and the society cannot be of service to one another. Oral discussions were also offered by F. J. Miller, A. W. Moseley, F. W. Taylor and J. M. Dodge. The latter wondered how the objects of the paper could be carried out, but thought that any difficulties that might arise would adjust themselves. Ambrose Swasey spoke appreciatively of the paper and offered a resolution that the society recommend to the Council the appointing of a professional committee to investigate, consider and report on matters of public concern, this being the style of committee mentioned in the paper. The motion was seconded by F. W. Taylor and C. W. Hunt, and the resolution was adopted.

The next was a paper much looked forward to.

### The Present Status of Military Aeronautics.

BY MAJOR GEORGE O. SQUIER, U.S.A.

No abstract of this paper is necessary, as it has been quite completely given in the installment which appeared in last week's issue and the concluding one in this number.

Dr. W. J. Humphreys discussed the importance of studying winds and rainfalls in connection with aerial navigation. Within a short distance from the surface of the earth the direction and velocity of the wind may change greatly. Air near the surface of the earth is turbulant after the manner of a choppy sea. The speaker believed that weather maps will be very important to navigators of the air. Dr. Brashear, who was associated with Langley for three years, paid a tribute to his work in connection with aëroplanes and believed that credit should be given to Langley as a pioneer in such investigations. G. L. Thornton outlined Langley's work, which included experiments with all types of aëroplanes.

## THIRD SESSION.

Wednesday afternoon, again in the auditorium, the society assembled for the consideration of a series of papers connected with steam and power plants. The first,

### A Method of Obtaining Ratios of Specific Heat of Vapors.

BY A. R. DODGE, SCHENECTADY, N. Y.,

was in a measure a supplement to the paper presented by the author at the Indianapolis meeting, May 28, 1907. In it was given a method of obtaining ratios of specific heat which does not involve the use of available steam tables, which are considered to be too inaccurate for such investigations, nor a condition in which the steam is presumed to be without moisture or superheat. The method is based upon the expansion of initially superheated fluid in a throttling calorimeter, and tables are included giving data for steam.

Dr. H. N. Davis of Harvard University considered Dodge's method of using the throttling calorimeter for measuring superheat of steam very important. He had had the privilege of examining the author's data before the paper was presented in connection with work of his own and together they had discovered inexplicable low temperatures at the low pressure side of the calorimeter, and felt impelled therefore to caution those who may have occasion to use the author's data. There being no further discussion of this paper, the speaker proceeded with the presentation of his own paper on

### The Total Heat of Saturated Steam.

BY DR. HARVEY N. DAVIS, CAMBRIDGE, MASS.

It has for some time been suspected that Regnault's formula for the total heat of saturated steam.

$$H = 1091.7 + 0.305\,(t - 32)\ \text{B.t.u.},$$

is considerably in error. This conclusion is confirmed by computing $H$ above 212 degrees, in terms of $H_{212}$, from the throttling experiments of Grindley, Griessmann and Peake, and the direct specific heat determinations of Knoblauch and Jakob. The result is

$$H = H_{212} + 0.3745\,(t - 212) - 0.000550\,(t - 212)^2.$$

The best value of $H_{212}$ seems to be 1150.3 B.t.u. The range of the new formula is from 212 degrees to about 400 degrees. The greatest error in Regnault's formula in this range is 6 B.t.u. at 275 degrees, but if extrapolated to higher temperatures the error in it increases very rapidly.

Below 212 degrees the observations of Dieterici, Smith, Griffiths, Henning and Joly show a thoroughly satisfactory agreement among themselves and prove that Regnault's formula runs high, the error reaching 18 B.t.u. at 32 degrees. There are corresponding errors on the specific volume values ordinarily used.

Discussing this paper, Prof. C. H. Peabody, well known as the compiler of steam tables, admitted that the author had made it evident that it would be necessary to reconstruct our steam tables, and further discussed some of the phases of the subject. He declared that the error in the practical ranges of the steam tables is not over one-half of 1 per cent., so that it is not very serious for ordinary work. Prof. R. C. H. Heck, Lehigh University, believed that with the throttling method as used by Davis and also in the work by Professor Thomas, of which an account was given in a paper presented at the December, 1907, meeting, the fact that the steam may not be homogeneous throughout is likely to have introduced an appreciable error. Prof. L. S. Marks, Harvard University, had submitted a discussion which was presented for him by Professor Hollis. It referred to curves that will be published in the *Transactions*.

There followed two papers by the same author.

### Fuel Economy Tests.

BY C. R. WEYMOUTH, SAN FRANCISCO, CAL.

It reported tests of a 15,000-kw. electric generating station having steam engine prime movers, installed at the plant of the Pacific Light & Power Company, Redondo, Cal., and with which crude oil was used as fuel for the boilers. The plant was described, the tests outlined, the conditions under which the tests were made explained and data given in the form of tables and load curves. The results indicated a remarkable economy of the plant as a whole under conditions of commercial operation, and a marked uniformity in fuel economies for all fractional loads from about one-half to the maximum load tested. It was the author's belief that these results warrant a careful investigation of the possibilities pertaining to superior plant fuel economy when using the more modern types of steam engines as prime movers.

### Unnecessary Losses in Firing Fuel Oil and an Automatic System for Eliminating Them.

BY C. R. WEYMOUTH, SAN FRANCISCO, CAL.

In this paper the author presents as a solution of the problem of automatic firing of steam boilers in plants burning liquid fuel an automatic system of regulation. Its development and the details of its construction are explained as applied in the Redondo plant of the Pacific Light & Power Company. The apparatus involves an oil pump governor affected by variations in the boiler pressure so that it regulates the oil pressure in the main, varying simultaneously in all boilers the quantity of fuel burned so that a practically uniform steam pressure is maintained. This variation of pressure in the oil main is the secondary means for controlling the steam supplied to the burners to atomize the oil, and also controls the amount of damper opening and thereby the air supply for combustion. The arrangement has been in successful operation and has been the means for considerably increasing the boiler economy in several ways.

These papers were read for the author by Prof. D. S. Jacobus, Stevens Institute, and were discussed together.

Prof. William Kent thought unfair the paper's detracting from the credit of the steam turbine because it employs a higher vacuum than the reciprocating engine can take advantage of. He did not consider that the paper showed anything in favor of reciprocating engines. He said that there were too many variables in the calculation, and to deduce comparable conclusions it would be necessary to test steam turbines under the same conditions. W. D. Ennis wanted to know in what respect, if any, this is a very efficient plant. J. R. Bibbins did not agree that the test shows such exceptional economy for reciprocating engines and believed that better results would be obtained with steam turbines under the same conditions. This seemed to be the trend of all the discussions. There was, however, no question as to the accuracy of the test reported by the author. I. E. Moultrop thought that the author was to be congratulated for having built a very excellent station. Closing for the author, Professor Jacobus explained that the test was not simply one of engines, boilers or generators, but a total plant efficiency.

## WEDNESDAY EVENING LECTURE.

A popular lecture on the same subject as that of the paper by Major Squier presented at the morning meeting was given in the evening in the auditorium by Lieut. Frank P. Lahm of the United States Signal Corps and a member of the Aëronautical Board. For many years Lieutenant Lahm has experimented with dirigible balloons for war purposes and has participated in several of the international balloon races, winning in 1906 the James Gordon Bennett cup. He has also taken part in the experiments at St. Louis, and in the recent ascensions at Fort Meyer, Va., with Orville Wright. A large number of lantern views of various types of dirigible balloons and aëroplanes and moving pictures of the Wright machine in flight made the lecture particularly entertaining and instructive.

## FOURTH SESSION.

A collection of papers on the subject of machine shop practice was considered at the session Thursday morning in the auditorium. The first of this number was

### Efficiency Tests of Milling Machines and Milling Cutters,

BY A. L. DE LEEUW, CINCINNATI, OHIO,

of which a somewhat extended abstract was given in *The Iron Age* December 3.

F. J. Miller discussed the power required by machine tools, stating that while it varies widely, this is to be expected. He questioned the correctness of making high power millers of the knee and column type, believing that for very heavy work the familiar planer type is better. He wished that a drawing might have been included in the paper to show the drive of the machine tested. Wilfred Lewis, president of the Tabor Mfg. Company, reported on tests along similar lines with which he was familiar. In these tests 1½ cu. in. of metal per horsepower had been removed, and for the work a cutter which had given excellent results was used, which he described. F. W. Taylor wanted more put in the paper about the train of gearing to show why the efficiency of the machine described by Mr. De Leeuw was so high. Prof.

J. J. Flather believed that efficiency should be secondary to output. As averages of the capabilities of various types of machine tools, he stated that a lathe will remove about 1 lb. of metal in a minute at an expenditure of 0.4 hp., a planer the same amount in the same time for 2.5 hp. and a milling machine the same for 10 hp. Regarding the author's declaring a lack of data on the horsepower required for machine tools, he referred to experiments by Hartig in Germany, made several years ago, which were exceedingly complete. He believed that since the advent of high speed steel tools more of these problems should be investigated.

Mr. De Leeuw in closing stated that there seemed to be a tendency to use the knee and column type of milling machine now for heavy rough shop work as well as toolroom work, and said that his tests were not claimed to be complete. In reply to the criticism that there was a lack of detail, he explained that he tested only a few machines, otherwise he should have believed in giving all details. It was not meant to claim one machine the most efficient in the world. The next paper,

**Development of the High Speed Milling Cutter, with Inserted Blades for High Powered Milling Machines,**

BY WILFRED LEWIS AND WILLIAM H. TAYLOR, PHILADELPHIA, PA.,

described a milling cutter in which were used inserted helical blades of high speed steel, mounted in a steel holder to give a solid backing of the blades on the driving side, while a soft metal filler was used on the opposite side to give uniform support. The blades are held securely and are easily removed by the method adopted, and the cutter has been found to be one of a capacity probably in excess of any machine now on the market, a phenomenal endurance of these cutters having been witnessed in the experiments so far made.

Written discussion of this paper was presented by F. J. Miller, who spoke of forming cutters nearly always being made with radial faces to the teeth The cutter described in the paper was one having a lip angle or forward inclination at the cutting edges. Oberlin Smith wanted to know what lubricant should be used in cutting steel and brass, and desired to know the experience which has been had with casting inserted teeth in boring and other tools, also what rake is proper. Replying to the first question, F. W. Taylor said it is a question if it is possible to get lubricant between the tool and the work. Cooling is the only thing accomplished by the lubricant, and cold water is as good as anything else. Soap or soda in the water simply serves to prevent rusting. A. L. De Leeuw told of using jets of air focusing upon the tool to accomplish the cooling. In this way cast iron was turned at 165 ft. per minute and steel 200 ft. per minute cutting speed. This was years before the Taylor-White steels were brought out. Oberlin Smith spoke again describing experiments in which liquid air was used to cool tools, but did not prove commercially successful. He also wanted his question answered as to what is the best rake of the teeth for milling tools for cutting steel, brass, cast iron, &c., and his other question with regard to lubricants. He disagreed that oil has no other value than that of simply cooling.

Questioning the statement by Mr. Taylor that the lubricant cannot be retained between the cutting edges of tools and the work, Prof. R. T. Stewart cited the drawing of wire and tubing when the lubricant does play a part, for all drawing must have a lubricant and according to the per cent. reduction different lubricants must be used. For a 33 1-3 per cent. reduction it is found necessary to use a lubricant, and as molecular flow occurs the pressure between the die and the stock must be as great as that between a tool and its work. To show the difference between the cases cited as analogous, Mr. Taylor drew sketches on the board, still maintaining that the lubricant cannot get between the work and the tool. This was a lathe tool, however, and it was pointed out that milling cutters were under discussion and that with them the lubricant is poured on the cutter and not on the work.

Answering another question raised by Mr. Smith, Mr. Taylor stated that high speed steel would be spoiled by casting in a cast iron holder. Mushet steel would be all right, or self-hardening steel. In other words, red hardness is lost at a temperature of about 1250 degrees. The author gave angles for cutting different metals which have been found proper in shop practice. In closing his paper Mr. Lewis stated that their lip angle was about 15 degrees.

**Metal Cutting Tools Without Clearances.**

BY JAMES HARTNESS, SPRINGFIELD, VT.

This paper described a turning tool that is intended to cut without clearance, and consists of a cutter and holder so constructed as to allow the cutter a slight oscillatory freedom on the holder. This oscillation about the center line does not affect the position of the edge, but does allow the face of the cutter to swing around to conform to the face of the metal from which the chip is being removed. The purpose is to make possible using more acute cutting edges to reduce the cutting stresses; to equalize wholly or partly the unbalanced side pressure on the cutting edge, and to obtain a rubbing contact to prevent lateral quivering. The author's conclusions were: The no-clearance cutter relieves the edge from the one-sided pressure; prolongs the life of the cutter by allowing abrasion on its face without producing negative clearance; prevents lateral quivering; converts the lip angle into cutting angle, which for a tool of given form constitutes a gain of from 5 to 10 degrees in cutting angle; has extended the working range of the side tool which gives the minimum separating stress; and has made possible the use of acute angled tools which reduce the cutting stress, thereby increasing the output of machines which have been limited by lack of pulling power. The reduction of the cutting and separating stresses has increased the accuracy (or output, which is generally interconvertible with accuracy) on nearly all lathe work. This reduction also increases the output which has been limited mostly by the frailness or the slenderness of the work.

H. H. Suplee called attention to the fact that a number of years ago wood cutting tools were used without clearance.

**Interchangeable Involute Gear Tooth Systems.**

BY RALPH E. FLANDERS, NEW YORK.

Following a description of standard gear teeth, this paper proceeded with a mathematical treatment on the effect of varying the pressure angle and the addendum with reference to interference, number of teeth in continuous action, side pressure on journals, strength, efficiency, durability, permanence of form, quietness and smoothness of action, suitability for practical cutting processes and miscellaneous practical considerations. Typical involute tooth systems were compared with respect to these considerations, and in conclusion the author suggested the need of an alternative gear tooth standard of shorter addendum and increased pressure angle for heavy slow speed gearing.

In presenting the paper the author also left the question with the society as to the advisability of appointing a committee to determine upon such a standard.

W. Lewis, discussing the paper, told of the time when cycloidal teeth used to be the standard. They had tried to approximate the size of the tooth with circles in place of cycloids, but never with very much success. He proposed that a committee be appointed to consider standard systems of interchangeable gearing. L. D. Burlingame quoted Frank Burgess of the Boston Gear Works as saying that a long tooth gear has less vibration and runs smoother than a short tooth gear. Written discussions were presented by B. F. Nesbit and C. W. Hunt. The latter offered a written discussion which was read by the secretary. It gave what he considered to be the best dimensions for teeth, and included the Hunt tooth formula. He indorsed a cutter having wings on the ends to trim the ends of the teeth so that out-of-roundness may not affect the accuracy of the completed gear. Oberlin Smith indorsed standardizing, and also stated his desire to see experiments performed to determine what proportions are necessary for various kinds of service. He wanted the committee instructed to make investigations of the shapes and dimensions of gearing. At this point it was necessary to adjourn and the meeting was continued in the afternoon, simultaneously with the sessions of the gas power section and the miscellaneous section, later referred to.

Prof. F. DeR. Furman, Stevens Institute, began the afternoon's discussion. He expressed the belief that easy running gearing is not to be expected with a system comprising a range from the 12-tooth pinion to the rack. He considered there was as much reason for a stand-

ard crank pin as for a definite standard system of gearing. E. R. Fellows of the Fellows Gear Shaper Company suggested that the author's deductions were based apparently on an attempt to determine the form of the gear cutter itself, a matter which is considered more or less a manufacturing secret. He showed a chart comparing the performances of involute gearing with stub tooth gearing, the curves showing the relation between the efficiency of operation and what he called the running conditions, such as degree of noiselessness and the like. At 70 per cent. efficiency, which he referred to as the condition likely to be met in average practice, the running conditions with the involute gearing was placed at 73 and the running conditions with the stub teeth at 83. A. L. De Leeuw felt that the paper raised the question about the propriety of an investigation as to whether or not the proper shape of gear teeth is now available, and Willis H. Diefendorf of the New Process Raw-Hide Company argued the need of a special line of gearing, desirable particularly in the automobile industry, where the field is in process of development and the conditions are trying and noiselessness in running is paramount. He believes the distortion that is brought about in gearing through hardening and annealing processes tends very much to bring about inaccuracies in the shape of the teeth. F. J. Miller described an experience of the Pratt & Whitney Company some years ago in which a number of gears were all mounted side by side in the cutting, and while to all intents and purposes were exactly alike, some were noiseless in the working tests, while others were much the reverse. The discussion came to a close with the adoption of a resolution that the council be requested to look into the advisability of appointing a committee to investigate the question of interchangeable involute gearing.

### Spur Gearing on Heavy Railway Motor Equipments.

BY NORMAN LITCHFIELD, NEW YORK.

This paper dealt with the breakage of gearing in heavy electric railroad service, as typified by the equipments of the Interborough Rapid Transit Company, New York, which operates the Elevated and Subway lines. A resumé was given of the methods employed to overcome the breakage, and the strains in the teeth as calculated by the Lewis Formula were shown. Attention was called to the fact that this formula is not entirely applicable on account of the difficulty in maintaining alignment of gear and pinion.

The burden of a discussion by F. V. Henshaw was that the conditions outlined in the paper were really worse than stated. Professor Furman presented an analysis of the form of tooth suggested by the author, showing that the stresses developed at the root of the tooth in the case of the special form were considerably less that those reached with the standard form. He brought out also that involute teeth made with 14½ degree pressure angle are stronger in the proposed form than teeth designed with the 20-degree pressure angle, although the reverse is true in the case of standard forms. The addenda of the teeth are not equal. He added that in referring to standard teeth he meant the teeth as designed according to the known data available in print, as given in Kent's Mechanical Engineers' Pocket-Book. George L. Fowler regarded the paper as an important one from the practical standpoint and emphasized that the problem of geared wheels is not so much the shape of the gear tooth as it is the material of which the tooth is made. Some buyers of railroad equipment emphasize hardness, although experience has sometimes shown that hardness does not necessarily mean wearing qualities. He pointed out that another difficulty in railroad motor operation is the annoyance and loss caused through a purchasing agent not buying the desired kind of grease for lubrication, the high pressure developed between the teeth requiring a grease that will not allow the teeth to wear dry, but will remain sticky and adhere to the teeth. Mr. Diefendorf spoke of the satisfactory results in the use of 3½ per cent. nickel steel in automobile gears, obtaining a material showing a tensile strength over 200,000 lb. and an elongation of 15.6 per cent. The point brought out is that while alloys have shown up well in gear work, such are not commercially possible with street railroad motor equipments.

## FIFTH SESSION.
## General Section.

The main session of Thursday afternoon, which was held in the auditorium, took up first the following paper:

### Liquid Tachometers.

BY PROF. AMASA TROWBRIDGE, HARTFORD, CONN.

The Veeder liquid tachometer* was shown by the author and described. The principle on which it acts is that the pressure developed by the centrifugal force of the liquid when the instrument is running at a certain speed is a definite quantity. This pressure forces liquid up the indicating tube, and is balanced by the pressure due to the hight of the column of liquid in the tube. This hight depends on the centrifugal force, which varies with the square of the speed of the pump; hence, the graduations are more open at the top of the scale for the high speeds than at the bottom, where the low speeds are measured. The sensitiveness of the instrument is such that at the maximum speed for which it has been made commercially, namely 2500 rev. per min., a difference of one or two revolutions is very noticeable. This tachometer has been used for laboratory service in testing dynamos, engines and other machines, also as a speed indicator for automobile and locomotive service.

The second paper was on

### Training Workmen in Habits of Industry and Cooperation.

BY H. L. GANTT, PAWTUCKET, R. I.

Repeating the explanation of the bonus system of rewarding labor, which was given in a paper he read before the society in December, 1901, the writer says:

> Under this system each man has his work assigned to him in the form of a task to be done by a prescribed method with definite appliances and to be completed within a certain time. The task is based on a detailed investigation by a trained expert of the best methods of doing the work; and the task setter, or his assistant, acts as an instructor to teach the workmen to do the work in the manner and time specified. If the work is done within the time allowed by the expert, and is up to the standard for quality, the workman receives extra compensation in addition to his day's pay. If it is not done in the time set, or is not up to the standard for quality, the workman receives his day's pay only.

With the advent of the scientifically educated engineer, capable of substituting a scientific solution of shop problems for the empirical solution of the mechanic, the responsibility of training workers shifts to the shoulders of the former. Unskilled workmen, who, under the régime of an instructor, a task and a bonus, have become skilled in one kind of work, readily learn another, and soon begin to realize that in a measure at least they can make up for their loss in not having learned a trade. As they become more skilled they form better habits of work, lose less time, and become more reliable. Habits of work in a mechanic are comparable with habits of thought in an engineer, and our industrial schools should make proper habits of work the basis on which to build their training in manual dexterity. Under the task system the workman is taught how and trained to do at the same time, and it is found that the habit of doing efficiently what is laid out for him becomes so fixed that he performs without hesitation tasks at which a man not trained to follow instructions would absolutely fail. Many capable men who were impatient of restraint when they should have learned a trade find themselves at the age of 25 or less in the class of unskilled workmen. These men, when they come to realize the difference between a skilled workman and one not skilled, often furnish some of the best task workers. Under this system, where each man has his task, a gang boss usually tends a group of workmen, supplying them with work and appliances and removing their work when finished. Such a man is paid a bonus for each workman who earns a bonus and an extra bonus if all of his group earn their bonuses. Thus the gang boss is sure to help the poor workman all he can.

In the past few years, while there has been so much talk about the growing inefficiency of labor, the author has repeatedly proved the value of this method in increasing efficiency. As the workmen are ever ready to help disclose and remove the obstacles that prevent their earning their bonus the managing problem is greatly simplified. Not only does the careless worker whose bad work prevents some other from earning his bonus fall into disfavor, but the foreman and superintendent who is lax in his duty finds his shortcomings constantly brought before him by the man whose duty it is to investigate all cases of lost bonus.

Dr. Rudolph Roesler said that in Europe great interest is being taken in the new method of workshop management, as it was recognized that for one thing it weakens the contention of the social democrats in giving increased opportunity to shop workmen. He referred to the fact that the German engineering press is giving attention to the system described and similar ones; to the experience of the Ludwig Loew shops at Berlin, with

* Described in *The Iron Age*, May 31, 1906.

the premium and bonus system, and to the further fact that the technical universities in Germany are devoting special study to these methods. A discussion by Charles Piez, president of the Link Belt Company, Chicago, was read by J. M. Dodge, chairman of the same company. It called attention to the distinctly human element in the system described. It recognizes that men are willing to work at any reasonable speed in a reasonable way if properly trained and suitably rewarded. A good deal of system idolatry exists to-day, and it needs to be remembered that system does not produce output, but indicates the lines on which output may be secured. Direct lines are not always the most resultful in connection with such a system. Great care and tact are necessary, lest the element of discord come in.

Lewis Sanders had found that the great benefit of the task and bonus system is that skillful men are always devising new methods of reducing costs, which can then be employed with untrained men. A case was cited in which one man was expected to read each of 12 thermometers once in 2 min. He was only able to read eight, but a way was found which enabled him to read the 12 thermometers in 1 min. and 50 sec. A workman took 1 min. 40 sec. to set a piece in a jig. A way was found to do this in 20 sec., and with less work. Once established, the task system will produce good results if faith is kept with the men. It is very essential that accurate investigation precede the setting of a task.

Contributions to the discussion made by H. K. Hathaway, C. N. Lauer and T. Kelly were read. One point brought out was that under the Taylor system it is possible to turn out apprentices in about half the time required under the old system, since now the planning department does so much for them. An instance was cited of a workman trained in a month to run a drill press. A milling machine was mastered in the same time. The further points were made that while the manager who depends on his ability to drive his employees is bound to fail, the Gantt system has the spirit of helpfulness as one of its principal features; that since the workmen find that poor work in other departments cuts down their earnings a feeling of pride in the character of work turned out is stimulated and the "good enough" workman cannot hold a place.

J. C. Jurgensen described an application of the task and bonus system to the power and heating plant at the St. Regis Hotel. In the fireroom a 10 per cent. cash bonus goes to the firemen for securing certain results from coal with a specified percentage of ash. The coal passers are also in the arrangement. Harrington Emerson had found in his experience in standardizing shop operations that training workmen in habits of industry was the easiest end of it. The great desideratum is to train managers in habits of logical thought and cooperation. Illustrating the wide disparity often found in costs, due to the lack of proper system and study of operations by some managers, he cited the cost of locomotive repairs per mile on four trunk lines leading out of New York. On one road it costs 44 mills per mile traveled to maintain locomotives in first-class condition. For the other three roads this cost is 7 cents, 12 cents and 16 cents per mile respectively. The road with the highest cost has a total locomotive travel of 30,000,000 miles in a year, so that its waste on locomotive repairs may be reckoned at $3,600,000. A waste like that does not lie with the workmen, but with the management. In reply to a question whether the high cost road referred to did not have a good deal of hill climbing, Mr. Emerson said that the high cost road had the best grades, while the low cost road had the hardest grades.

Further interesting discussion of the paper was given by M. P. Higgins, William Kent and J. M. Dodge. Mr. Higgins considered the setting of the task and the giving of the bonus as important disciplinary measures, developing both mental power and manual skill. He considered that training a body of skilled workmen meant training the superintendents and managers of the future. Mr. Kent found one of the beauties of the Taylor and Gantt systems in the fact that they harmonize with the humanitarian idea of benefiting the workmen. Mental inertia is often a difficulty with managers. So many men in authority consider their time so valuable that they fail to see the $10,000 saving they might make by devoting a half hour to the study of a proposed departure. Mr. Dodge, answering the inquiry occasionally made whether the Link Belt Company had abandoned the Taylor system, said that it was in continuous and successful operation at Philadelphia and would be more generally introduced at Chicago and Indianapolis. He recalled that Mr. Taylor had said that the best results would be secured in hard times, and this had proved true. In response to his question as to the effect upon earnings at the company's plants of a 50 per cent. reduction in volume of business, he was told by the local managements that several thousand dollars a month would be lost at each, but under the test of the past year of slack business a profit had been made every month.

An abstract was read of a paper on

**Salt Manufacture,**

BY GEORGE B. WILLCOX, SAGINAW, MICH.

The paper recited the more recent development in mechanical methods and appliances at some of the large salt plants operated by what is known as the steam grainer system, as distinguished from the vacuum pan system and the solar or open air system. The design of evaporating grainers of reinforced concrete was illustrated and explained, together with details of the rakers which remove the salt from the grainer bottom as fast as it is formed and deliver it up an incline at one end of the grainer. The conveyor system and the device for loading salt barrels into box cars were also described in detail.

The paper on

**Industrial Photography,**

BY S. ASHTON HAND, CLEVELAND, OHIO,

is given nearly in full elsewhere in this issue. The discussion was participated in by C. H. Woodbury, C. W. Hunt, H. H. Suplee and Ambrose Swasey. Referring to Mr. Hand's recommendation that polished parts of machinery be rubbed with putty to dull the brightness, it was stated that in photographing silver ware this result was obtained by dusting white powder in the air around the object, some of the particles settling on the ware. Painting with salmon pink was recommended instead of drab, as the latter makes the parts "flat," and the warmer color is better. Mr. Hunt's communication contained a table showing the length of exposure which yields the best printing negative for every hour of the day and every day in the year. Mr. Suplee referred to the serviceableness of the moving picture machine in presenting a series of pictures of an operation of very short duration. By slowing down the speed in the machine the elements of the operation might be studied at leisure. Another use of photography to which he referred is the reproduction on a much reduced scale of important drawings; the photographs thus secured can be put away for safe keeping in comparatively small space.

The last paper of the afternoon was on the

**Articulated Compound Locomotives,**

BY C. J. MELLIN, SCHENECTADY, N. Y.

Mr. Mellin, who is consulting engineer of the American Locomotive Company, gave an account in a paper covering 30 pages, of the adaptation of the Mallet locomotive to heavy service in the United States. In 1902 the American Locomotive Company decided to work out a design of a powerful locomotive for the Baltimore & Ohio railroad. It provided for two sets of engines under one boiler, capable of adjusting themselves independently to the alignment of roads with curvatures up to 30 degrees, on the principle developed by Mallet. This B. & O. locomotive was exhibited at the St. Louis Exposition in 1904. A great number of locomotives of this type have since been built for other roads, and the writer considered them to be forerunners of the most powerful and efficient type of the freight engine of the future. The Mallet articulated arrangement presents the advantages of great tractive power with practically no increase in the individual weights of the moving and wearing parts over those of ordinary type engines; double expansion of the steam; simplicity and ease in operation, and a short, rigid wheel base with the weight distributed over a long total wheel base, resulting in the greatest flexibility and ease on track and bridges. Opinions on the use of a truck in the use of an articulated engine are divided. The author considered a front truck in freight service objectionable in view of first cost, maintenance, dead weight, and unfavorable distribution of machinery. A more serious matter is backing with a front truck, as this necessitates a rear truck, or the curing of one evil with another. Over 100 locomotives of

the Mallet type have been built in the United States, ranging in weight on drivers from 106,000 lb. to 410,000 lb., and from 20,000 lb. to 125,000 lb. in tractive power. The largest of these is taking the place of three ordinary sized locomotives.

F. L. Cole, Schenectady, N. Y., emphasized flexibility and uniform distribution of load as advantages of the Mallet locomotive. It was first built in 1887 and there are now about 500 in use in Europe. While intended for light, narrow gauge service originally, the designs developed in this country for heavy service have a number of conspicuous advantages, which the speaker detailed, laying stress on the adaptation of the heavy type to hill climbing and to sharp curves, also on the refinement secured in the equalization of load. Harrington Emerson spoke of two things which had occurred in recent time tending to postpone the electrification of steam roads. One was the panic, which emphasized the extravagance of making so large a part of railroad equipment obsolete; the other was the heavy locomotive of the Mallet type.

L. R. Pomeroy emphasized the commercial consideration in comparing the electric and steam locomotives. On mountain roads the chief claim for electric haulage is that the tonnage per train can be nearly doubled without a corresponding increase in crew expense. Figuring this out for one particular railroad division having 2.2 per cent. grades, there was a saving of $65,000 a year. Roundly this may be capitalized at $1,000,000. The speaker figured that Mallet locomotives would cost about one-third as much as electric locomotives to give the same service.

S. M. Vauclain, superintendent of the Baldwin Locomotive Works, presented a written discussion of the paper, illustrating it with lantern slides. These traced the evolution of the Mallet type for heavy service in the hands of the Baldwin Works and showed the various modifications made to meet the demands of the officers of prominent lines, particularly the Great Northern, the Santa Fé and the Southern Pacific. The speaker took square issue with the writer of the paper on the matter of leading and trailing trucks. While the Baldwin Works designers at first eliminated these trucks, they were demanded by the railroads and are provided for in all late designs.

## Gas Power Section.

Thursday afternoon, in another of the smaller meeting rooms, the gas power section assembled, with Chairman C. E. Lucke presiding. Business matters first disposed of included a report of the Membership Committee by its chairman, G. A. Orrok, which announced the election of 36 members and 17 affiliate members. The Meetings Committee had no report. The Standardization Committee has reached no definite conclusions to date and could simply report progress. Discussing the subject of standardization in the methods of rating gas power apparatus, L. S. Marks presented through Professor Hollis a written discussion, which gave a rapid method of obtaining accurately the hydrogen content in the volatile matter of any fuel, such as coal, lignite or peat. The discussion favored the use of what is known as the lower heat value in computations for the heating value of the fuel, which is the theoretical heating value and is based on the chemical analysis, being the heat due to the contained carbon and hydrogen. There was also given a curve from which the British thermal units corresponding to a given content of hydrogen can be at once obtained. Professor Kent disagreed with the foregoing, arguing that the higher heat value should be used, this being that actually found by coal calorimeter tests. It is what the speaker had used in fuel calculations in his book on Steam Boiler Economy. He discussed the curve given by Professor Marks and showed curves of his own for heating values of coal in terms of their analyses. J. R. Bibbins called attention to the excellent work on calorimetry done by the American Gas Institute. He believed that it will be of considerable value. Chairman Lucke indorsed this work as the best on gas calorimetry that has ever been done.

The Committee for the Revision of the Code for Testing Gas Engines has just recently been formed, and had no report to give at this meeting. This committee consists of C. E. Lucke, chairman; Prof. D. S. Jacobus, G. H. Barrus, E. T. Adams and Arthur West. The Executive Committee reported the election of officers, as follows: Chairman of the section, F. R. Low; secretary, G. A. Orrok; Executive Committee, F. H. Stillman, G. I. Rockwood, Prof. R. H. Fernald, Prof. F. R. Hutton and H. H. Suplee; chairman of the Membership Committee, R. T. Lozier, and chairman of the Meetings Committee, C. P. Poole.

The Executive Committee recommended appointment of the following committees: Nominating Committee, 9 members; Tellers Committee, 3 members; Library Committee, 15 members; Installations Committee, 3 members (the duties of which will be the listing of installation of gas power); Committee on Plant Operations, Committee on Accidents, and Committee on Question Box, 5 members.

The introduction of the new officers of the section, Chairman Low and Secretary Orrok, was followed by the first paper,

### Reminiscences of a Gas Engine Designer,

BY L. H. NASH, BROOKLYN, N. Y.

This gave a brief outline of experimental work conducted in the past by the author, and aimed to stimulate thought along the line it covered. Some of the author's inventions described were failures, commercially, and others have taken their place as steps in the development of gas engine construction. Of interest was the fact that the two-cycle type of engine now built so largely by various gas engine manufacturers was originally designed by Mr. Nash and branded as of not sufficient commercial value. Brief mention was also made of a method of operation for marine purposes, many of the chief features of which are in more or less active use to-day, although there are others which seem to possess value enough to warrant their being brought to the attention of the engineering profession.

Prof. S. A. Reeve was particularly interested in two methods of outside compression in the author's paper. Clark in 1880 tried one of them. The speaker also put on the board diagrams of a cycle in which the charge is compressed before explosion on the explosion stroke and the extent of this compression or the length of time before cut-off occurs gives opportunity of governing on the immediate stroke instead of 180 degrees later. This variable cut-off style of engine also has the advantage of a characteristic in which the maximum efficiency is at some fraction of the maximum load. In all other engines the maximum efficiency is at maximum load. The speaker mentioned difficulties which had killed this type of engine and also discussed other peculiar types of engines and their features, one of them a type spoken of in the author's paper.

### Possibilities of the Gasoline Turbine,

BY PROF. FRANK C. WAGNER, TERRE HAUTE, IND.

An abstract of this paper was presented in the absence of the author, by Secretary Suplee. In it it was stated that to reduce the temperature of gases at the turbine wheel either an excess of air or water ignition may be used. The relative efficiency of the two methods was shown to depend upon the amount of compression used, and the efficiencies of the turbine and the air compressor. The work required to compress the air may be materially reduced by using two-stage or three-stage compressors with intercoolers. It appears that with high compression a gasoline turbine may be expected to give efficiency comparing favorably with reciprocating gasoline engines.

A written discussion of this paper was submitted by Sanford A. Moss.

C. E. Lucke spoke of investigations of nozzles, which are the means of transforming heat into work in a turbine. He sees no possibility for a gas turbine until a nozzle can be found that will give material cooling of the gas under expansion. He has never succeeded in doing this yet. Chairman-elect Low then took the chair and declared the meeting adjourned.

## Proposed Machine Shop Section.

In the afternoon, Thursday, those interested were invited to attend a conference regarding the formation of a section of the society on the order of the gas power section to consider particularly subjects of machine shop interest. F. W. Taylor was elected temporary chairman and L. G. French temporary secretary, and

following a discussion of the scope which the section should include and its appropriate title, a resolution was adopted that the chair appoint a committee of three to formulate definite plans for a machine shop section and submit them to the council for consideration and approval, and that the committee report the results at a meeting of this body at the Spring meeting of the society. This committee was appointed. There is every evidence that such a section will meet with enthusiastic support on the part of the members of the society, a large proportion of which are directly or indirectly interested in subjects pertaining to machine tools and machinery.

## RECEPTION.

Thursday evening, in the society's rooms on the eleventh floor of the Engineering Societies' Building, was held the one distinctively social feature of the meeting—the annual reception to the retiring and newly elected officers. The members and their guests were received by President M. L. Holman, President-elect Jesse M. Smith and Mrs. Smith, Secretary Calvin W. Rice and Prof. and Mrs. F. R. Hutton. Dancing on the fifth floor and a collation on the sixth occupied the remainder of the evening.

## SIXTH SESSION.

The last professional session of the meeting was held in the auditorium Friday morning to consider a group of papers on experimental data. The first was

**Physical Properties of Carbonic Acid and the Conditions of Its Economic Storage for Transportation,**

BY PROF. R. T. STEWART, PITTSBURGH, PA.

This paper gave the results of recent investigations into the physical properties of carbonic acid, necessary in investigating the strength and safety of existing carbonic acid cylinders and in the design of new cylinders on a safe and economic basis. The results of this investigation have made it possible for the first time to state the conditions under which the weight of the containing cylinder will be a minimum for the customary conditions of storage and transportation of carbonic acid. The paper was accompanied by very complete tables, covering, it is believed, a range of conditions sufficient for the solution of any problems apt to arise regarding the physical properties of carbonic acid in connection with its storage and transportation. There was also an addendum showing the necessity of a further investigation of the carbonic acid cylinder problem, especially as regards the most suitable steel for cylinder construction and the safety of cylinders now in use.

On the above paper John C. Minor, Jr., presented a written discussion. H. F. Durkee also presented a discussion. The speaker from the standpoint of a manufacturer of carbonic acid gas welcomed the paper, but did not accept its conclusions. With regard to the hazard attending the present method of handling and storing carbonic acid gas, he stated that only about one cylinder explodes in three years, or about one cylinder in about 5,000,000 cylinders filled. A written discussion from Graham Clarke was presented in abstract by the secretary, and H. E. Stürcke also presented a written discussion. Col. E. D. Meier spoke on the subject from a boiler manufacturer's standpoint and as the conditions in a boiler are somewhat the same as those in a cylinder containing gas under pressure, the requirements in the metal are, or should be, somewhat similar. He does not believe that phosphorus in any steel, acid or basic, should be allowed; that failures are due in all instances to the phosphorus contained.

In closing his paper Professor Stewart considered that it had been misinterpreted; he had intended it to be a monograph on the physical properties of carbonic acid gas in their bearing on cylinder design, and the addendum was simply to bring out discussion. It stated present practices, did not intend any originality, and was purposed principally to instigate investigations.

**The Slipping Point of Rolled Boiler Tube Joints,**

BY PROF. O. P. HOOD AND G. L. CHRISTENSEN, HOUGHTON, MICH.

The object of this paper was to supply data regarding the behavior of joints made by the familiar process of rolling boiler tubes into containing holes. Attention was called to the fact that the stress at which the tube slips is as important as the ultimate strength of the joint. The results of experiments on tube holes of various forms and with various degrees of rolling was shown by plotted curves, and a simple method was indicated whereby the slipping point of the usual joint may be raised so high as to bring the full elastic strength of the tube into use.

This paper was presented in abstract by F. W. O'Neil and passed without discussion. The next paper was presented by its author.

**Tests on Friction Clutches for Power Transmission.**

BY PROF. R. T. DUKES, CLEVELAND, OHIO.

This paper gave the results of tests on friction clutch couplings to determine their maximum capacity. The tests were made for the Hill Clutch Company, Cleveland, O., in connection with the development of their positive action type of clutch. Five examples of the best known types of clutches were purchased in the open market. These clutch couplings were all of the same nominal size, 24 in. in diameter, and were all tested under similar conditions. Each clutch was subjected to a series of cone pressures, gradually increasing in amount, the maximum load which the clutches would pick up and carry being determined for each cone pressure. The power was absorbed in the ordinary way on a prony brake.

G. N. Vanderhoef presented a written discussion of the paper, in which he gave it as his opinion that in all clutches where wood and metal are used in contact it is better to expose the end grain of the wood to the rubbing. P. E. Welton of the Falls Rivet & Machine Company read correspondence from and to that company, in which it was brought out that one of the company's clutches was not sent for testing in connection with the test reported, but that the company would be glad to have a test made by any disinterested party. Professor Dukes in closing his paper gave a little more concerning the circumstances under which the test had been made and the purpose of the test. The last paper of the meeting,

**An Averaging Instrument for Polar Diagrams,**

BY PROF. W. F. DURAND, LELAND STANFORD UNIVERSITY, CAL.

The familiar planimeter for areas cannot be used to determine the average ordinate of a diagram plotted in polar co-ordinates. In recent years the use of dial recording gauges of various kinds has greatly increased, such instruments commonly tracing a polar diagram with a curvilinear path of the tracing point. This paper dealt with the application to such diagrams of an instrument proposed by the author some fifteen years ago, and at that time considered only with reference to polar diagrams plotted with linear radial ordinates. It was shown that a simple form of integrating element consisting of a plain, straight arm sliding radially through a smooth pivoted sleeve or socket, such arm carrying an integrating wheel, similar to that of the planimeter, may be so used as to derive from diagrams drawn by modern forms of recording gauge and extending over any angular interval, a time average of the radial ordinate, and hence of the engineering quantity under measure.

This paper passed without discussion.

The usual resolution of thanks to all who had contributed to the entertainment of the society and its guests was offered by Prof. L. P. Breckenridge and was adopted, following which the meeting adjourned.

## EXCURSIONS.

### Wednesday Morning.

THE AMERICAN MFG. COMPANY through its president, Anderson Gratz, extended an invitation to visit its rope and twine manufacturing plant at Greenpoint, L. I. The process of manufacture, from the opening of the bale on the wharf to the finished product in the storeroom, was demonstrated.

THE SINGER BUILDING TOWER was visited by invitation from E. P. Coleman, secretary of the Singer Mfg. Company. The Singer tower, being the highest completed structure in New York, is the best vantage point for viewing the city and bay and was particularly enjoyed by those from out of town. The modern power plant of the building was open for inspection.

SWIFT & Co. invited the society to visit their plant at 152d street and Brooks avenue, Bronx, through the courtesy of M. F. Mallon, chief engineer. The feature of this plant was the producer gas power plant, containing Smith gas producers, and four Rathbun engines of 100 hp. each, running refrigerating machinery and dynamos.

### Wednesday Afternoon.

THE GOLDSCHMIDT THERMIT COMPANY, through the courtesy of W. R. Hulbert, invited the members and

guests to its plant at Jersey City, N. J. The welding of a lug on a motor casing by the Thermit process was witnessed, and also the welding of a boss on a plate, a pipe weld and a rail weld. Some specimens were exhibited, including a piece of welded pipe that had been flattened by hammering, welded rails, bent welded pipe, &c. The various welding processes were described and explained by E. Stütz, vice-president and general manager of the company. After refreshments were served a group picture was taken and the party returned in the automobiles that had been provided by the company to bring them to the plant. Scarf pins representing a crucible discharging Thermit metal into a mold were distributed as souvenirs.

THE J. H. WILLIAMS COMPANY'S drop forge plant in Brooklyn, N. Y., was visited, and the heating, forging, trimming, case hardening and finishing processes were shown and explained.

THE QUEENSBORO BRIDGE and approaches were visited through an invitation extended by Commissioner J. W. Stevenson. The visitors were permitted to walk half way across from the Manhattan end to inspect the connecting joint, and were shown the method of adjusting the spans to the same level, and also the pins on which the cantilever rests.

THE MANHATTAN RUBBER MFG. COMPANY, through its president, A. F. Townsend, invited the members to its plant at Passaic, N. J. The trip proved very interesting on account of the diversified line of mechanical rubber goods shown in the process of manufacture. Special transportation was arranged by the company over the Delaware, Lackawanna & Western Railroad, and a light lunch was served en route.

### Thursday Morning.

THE PENNSYLVANIA RAILROAD'S DEEP WATER TERMINAL at Greenville, N. J., was visited, the invitation being extended by F. L. Du Bosque, assistant engineer of floating equipment of the Pennsylvania Railroad. The docks, electric cargo cranes, yards and modern electrical machinery were examined. An opportunity was afforded to see the mechanism of a 10-ton gantry cantilever crane during the operation of unloading structural material and machinery from a railroad car into a barge. A novel method of transferring cars from a float to the docks was witnessed. This is done by adjusting the apron of the dock to the level of the car float, and the latter brought in place by two flexible electric winches. Four 6-in. square iron bolts are placed in position from the apron to the float, which brings the track connections into alignment, and the cars are drawn from the float by a locomotive and dummy car. The dummy car is used to keep the weight of the heavy engine off the adjustable apron. The operator's room, the counterweights and operating mechanism were inspected. The Pennsylvania Railroad furnished a special boat for the trip.

THE NEW YORK FIRE DEPARTMENT'S PUMPING STATION at West and Gansevoort streets, having a pumping capacity of 18,000 gal. per min. at 300 lb. pressure, proved very interesting. By the courtesy of I. M. de Varona, chief engineer of the Department of Water Supply, Gas and Electricity, the party was permitted to go through the several stations, and was conducted to and from them in four taxicabs. The pumps used are of the six-stage centrifugal type, and the motors are of the 800-hp. induction type, operating on a 6600-volt system. Either salt or fresh water may be pumped. A fire was reported while the visitors were present, which afforded them the pleasure of seeing the station operate while doing actual service.

THE JOSEPH DIXON CRUCIBLE COMPANY was open for the inspection of the members and guests by invitation from G. E. Long, treasurer. The various departments of the plant and the manufacture of Dixon's graphite specialties were shown.

THE METROPOLITAN TOWER AND POWER PLANT, by the courtesy of the Metropolitan Life Insurance Company, was visited by several parties. The tower is now under construction and when completed will be the highest structure in New York.

### Thursday Afternoon.

THE NEW YORK EDISON COMPANY'S WATER SIDE STATIONS Nos. 1 and 2 were open to inspection, where 142,500 kw. is distributed between Westinghouse and General Electric turbines and steam engines. Taylor gravity underfeed stokers, Roney mechanical stokers and Babcock & Wilcox boilers are installed in these stations. This is the largest turbo-electric plant in the United States.

THE BROOKLYN NAVY YARD trip, the invitation for which was extended by Admiral Casper F. Goodrich, commandant, was attended by members of the society, who were conducted through the commandant's office, the ordnance and pattern stores, the boats, the foundry and the machine shop.

THE QUEENSBORO BRIDGE trip was repeated.

### Friday Morning.

THE PENNSYLVANIA TUNNEL & TERMINAL RAILROAD COMPANY, through Alfred Noble, chief engineer, invited the society's members and guests to the East River tunnels. The sinking of the shafts, the construction and placing of the tunnels, and materials used were described in a pamphlet distributed at the head of the shaft. A walk was taken through the tunnel to Long Island City, a distance of 4000 ft. The large party which made this excursion was conducted in groups by engineers of the Pennsylvania Tunnel Company.

THE JOHN THOMSON PRESS COMPANY, at Nott and East avenues, Long Island City, L. I., was inspected through the invitation of John Thomson. The gas power plant at the company's factory contains a 200-hp. Taylor suction producer operating two Nash gas engines.

THE CROCKER-WHEELER COMPANY, at Ampere, N. J., received visitors at its works and showed them through the various departments, explaining the manufacture of motors and generators. The party was conducted by Gano S. Dunn, vice-president and chief engineer of the company, from whom the invitation was received.

Other invitations which had been extended to the members and guests of the society were as follows: The New York Central & Hudson River Railroad's Port Morris power station, Atha Tool Company's plant, Trenton Iron Company's gas power plant, Interborough Rapid Transit Company's power plant, exhibit of original manuscripts at Columbia University, and an organ recital by Mr. Baldwin at the College of the City of New York. The latter, with special trips to department stores, points of general interest and luncheons, were provided for the entertainment of the ladies in attendance.

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**Buffalo's Industrial Exhibition.**—The Manufacturers' Club of Buffalo, N. Y., has made arrangements for an industrial exhibition to be held in Convention Hall, December 14 to 19, to be participated in by all the local manufacturers, to demonstrate the varied and extensive lines of industrial productions in Buffalo and to increase the patriotic interest of its citizens in the consumption of goods "made in Buffalo." Almost every inch of space in the large hall has been allotted to exhibitors, who are arranging to install working exhibits. The decorations are designed to be a prophecy and illustration of Buffalo—busy, but smokeless—and aim to show that a city can be busy without polluting the air, and that this condition is especially possible in Buffalo by electric power. The booths will be equipped with large brick chimneys, and the general effect will be of the representative industries of the city run at full blast, but with not a particle of smoke from the chimney stacks. The Manufacturers' Club aims to help bring about an era of cheaper electricity.

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The returns of the American Railway Association show that the number of idle freight cars increased from 109,515 on November 11 to 123,619 on November 25. The high mark was reached on April 29 at 413,338. The low point was 100,073 on October 28.

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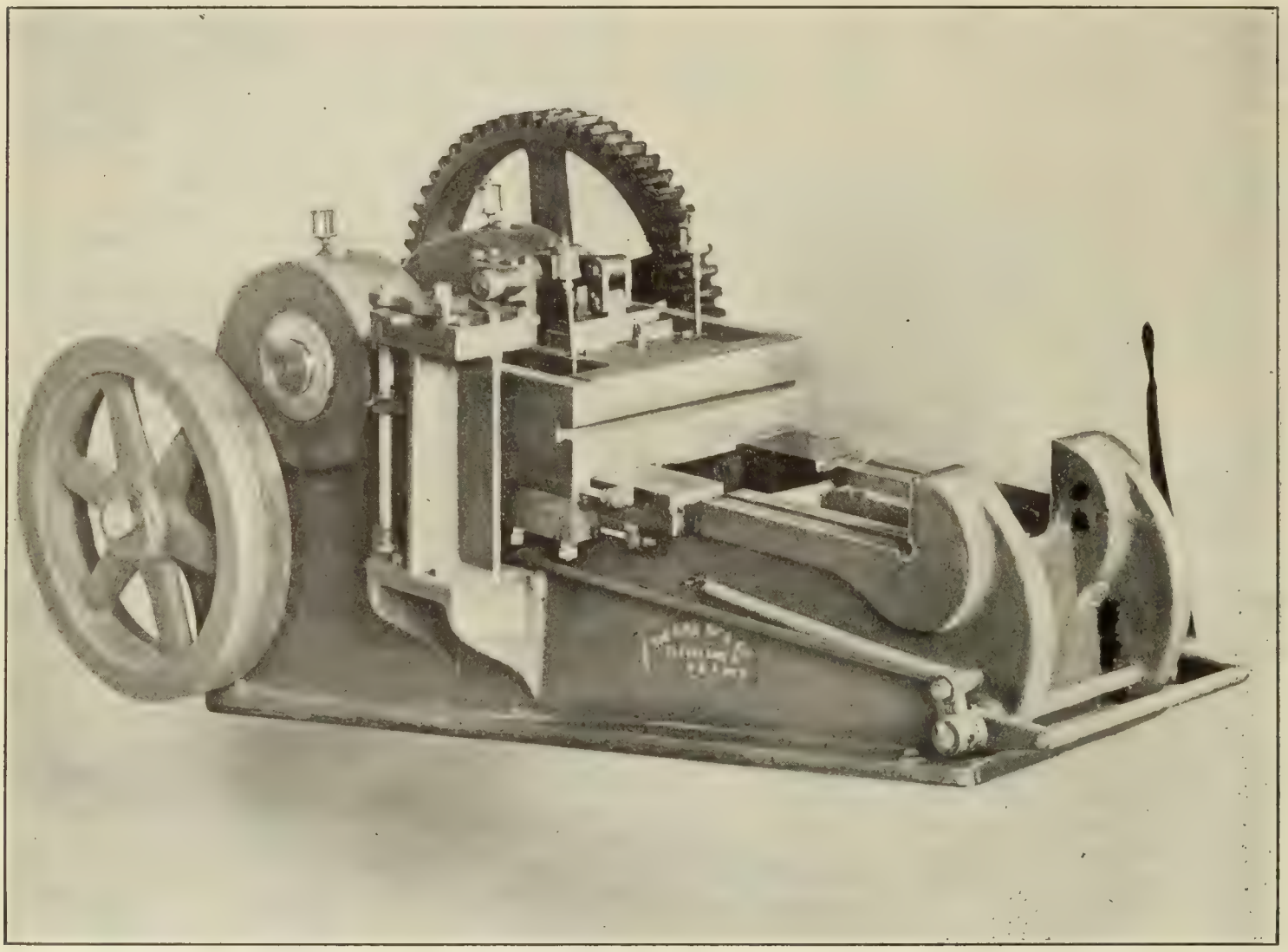
Of the 58,739 shareholders of the Pennsylvania Railroad Company about 28,000 are women. The average holdings of all the stockholders are 107 shares.

## A New Ajax Bulldozer.

As distinguished from the usual slow speed bulldozer the new machine of the Ajax Mfg. Company, Cleveland, Ohio, is designated as a high speed, stop motion bulldozer. It is claimed to embody a number of improvements over the older pattern. Rapid movement, as just suggested, is the principal and distinguishing feature of the machine, the cross head on the No. 1 machine making 60 forward and back movements or cycles per minute, and the No. 6 machine 45 cycles. In spite of this high speed the operator has perfect control of the machine at all times through a foot treadle or hand lever, either of which throws the mechanism into or out of operation, causing the cross head to make one complete cycle and then stop, wide open.

The bed is a steel casting with an inclined surface, which facilitates placing the stock in the dies. The gears are machine cut and all wearing parts are lined, and all bearings are bushed with bronze. The cross head has a long bearing surface and is equipped with adjustable gibs to take up wear and keep the cross head in alignment. Principally the machine is intended for doing work cold, and while it is primarily a bending machine, it can also be used as a press or shear. On account of the high speed of the cross head a greatly increased output is possible as compared with that obtained on the ordinary machines. If the stock is of a material that will stand cold bending a considerable saving of fuel is accomplished.

Following are the principal dimensions and weights of the smallest, intermediate and largest sizes, known as Nos. 1, 3 and 6. No. 1 occupies a floor space of 5 ft. x 2 ft. 2 in., has a cross head 16 x 4 in., with a travel from 5 to 8 in., the standard being 5 in., and weighs approximately 2200 lb. The No. 3 size occupies 10 x 3½ ft. of floor space, has a cross head with working surface of 28 x 8 in., traveling from 5 to 10 in., the standard being 8 in., and weighs approximately 9500 lb. The No. 6 size occupies a floor space of 16 x 7½ ft., has a cross head face of 60 x 10 in., cross head stroke of from 5 to 14 in., the standard being 10 in., and weighs about 24,000 lb. A No. 3 size of this machine recently sold to the Diamond Mfg. Company, Detroit, Mich., was given a rather rigid test recently before it was shipped. An arch bar ⅝ x 3 in. was bent cold with a pocket 8 in. deep, and the four corners were bent at a single operation, with no evidence of labor.



The High Speed Stop Motion Bulldozer Built by the Ajax Mfg. Company, Cleveland, Ohio.

**The Brighton Car Company Expanding.**—The Brighton Car Company, operating a car repair plant at Chicago, has purchased a site comprising 50 acres of land at St. Louis Park, a suburb of Minneapolis, Minn., where it will establish a branch plant. Present plans of the company contemplate the erection of car building and car repair shops upon this site, but these will not be put into execution until some time next spring. In the meantime a building 90 x 150 ft., formerly occupied by the Minnesota Sugar Company, will be equipped with machinery for car repair work and run through the winter. During this time only repair work will be undertaken, but when the new factory is completed operations will be extended to include the building of new cars. Motive power will be supplied by electrical current furnished from an outside source, and the tools will be operated as far as possible with individual motors. Practically all of the equipment for the temporary plant has been arranged for, but a considerable amount of new machinery will be required to equip the new plant when it is completed.

**The Cincinnati Foundry Foremen.**—On the evening of November 28, the Cincinnati section of Associated Foundry Foremen enjoyed a dinner at its new quarters in the Grand Hotel and listened to a number of interesting topics of a technical nature. The principal addresses were made by F. O. Clements, chemist, Dayton, Ohio, and E. H. Schwartz, Chicago.

Fourteen-inch guns for the United States Navy have been designed and will be manufactured for future battleships in the Washington gun factory as soon as Congress authorizes the small appropriation necessary for the enlargement of the factory building to accommodate this additional product. The facilities of the factory are not at present adequate to assembling a gun of the length required.

## Caskey Hydraulic Valves.

A new valve for hydraulic, steam and air service, for which special merit is claimed, is being introduced by the Caskey Valve Company, 422 Arcade Building, Philadelphia, Pa. A particular feature of the valve is that it becomes more effective as the pressure under which it is used increases.

In the construction of this valve, as will be seen from Figs. 1 and 2, which show a valve for operating single ram hydraulic presses, the taper plug as well as all pockets where scale or grit might lodge have been done away with. There is also a change from the usual flow

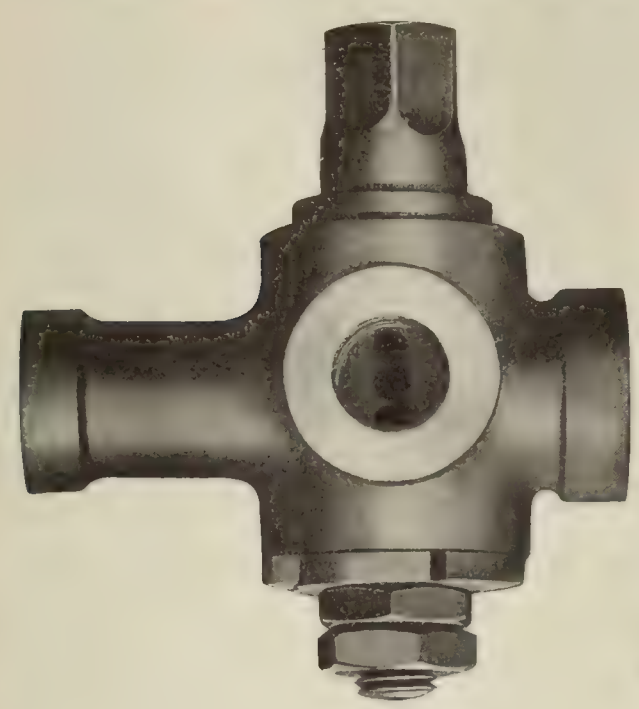


Fig. 1

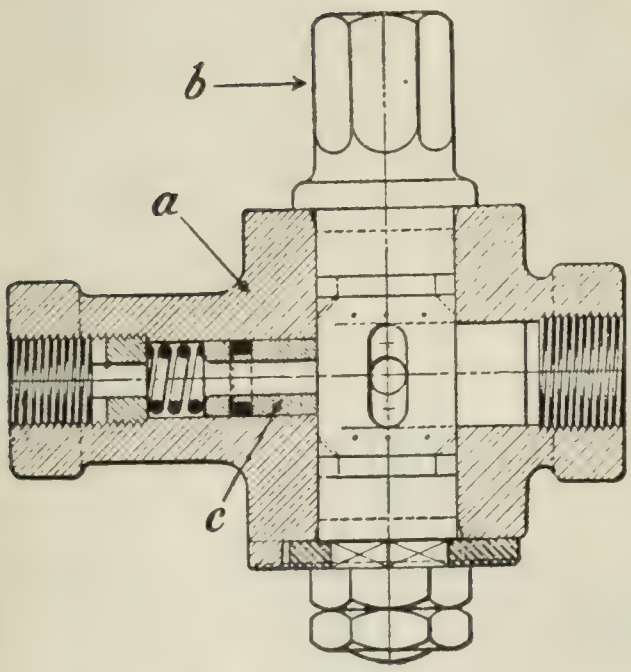



Fig. 2.

Exterior and Sectional Views of the Caskey Valve for Operating Single Ram Hydraulic Presses.

passages and a general reduction in area. As shown in Fig. 2 the valve comprises the body *a*, straight plug *b* and bushing *c*, the latter being ground to fit the plug. To insure perfect contact between the plug and bushing a spring is provided, as shown. The bushing is recessed and this space filled with a washer, the latter having small port holes at the back, so that pressure may be admitted at the back of the washer, which forces it out, thereby making a tight joint, which increases in effectiveness as the pressure increases. There is no exposed seat in this valve, and, the plug being straight, makes it evenly balanced throughout. The construction on the whole is simple, no stuffing boxes nor valve seats being required, and fluttering is entirely eliminated. After service trials, under exacting conditions, satisfactory results are reported under working pressures ranging from 250 lb. per square inch, with 5-in. valves, up to 10,000 lb. with the ¼-in. valves.

The same constructive principle has been adopted in the manufacture of a large number of valves for different purposes, particularly where quick, accurate control with a maximum efficiency in maintenance is desired. Figs. 3 and 4 illustrate the straight-through blow-off valve of this type, in which ease of operation and positive action are the features claimed. Hydraulic valves of the two or three pressure type for long stroke presses, where the maximum pressure is not used throughout the stroke, but which are made to automatically throw on the heavy pressure at any part of the stroke, are made on the same general principles as those of the simpler type.

These valves are being made in brass, steel or iron, in a varying range of sizes, according to the purpose intended, but in general range from ¼ to 5 in. in size; special sizes are also made for particular purposes.




Fig. 3.

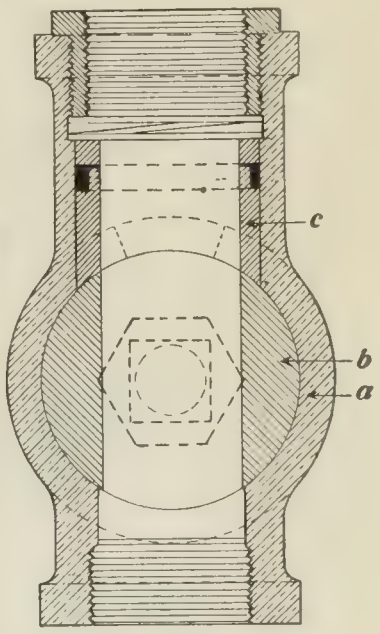



Fig. 4.

The Caskey Blow-off Valve for Locomotive Use.

## Drawback Regulations.

The Treasury Department's regulation of February 19, 1906, providing for an allowance of drawback on rails, billetts, plates and other steel products manufactured by the United States Steel Products Export Company in part from imported iron ore, have been extended, so far as applicable, to cover the exportation of steel rails manufactured by the Bethlehem Steel Company, South Bethlehem, Pa., with the use of imported iron ore. In liquidation, the quantity of imported iron ore which may be taken as the basis for the allowance of drawback may equal that claimed in the drawback entry after official verification of exported quantities, and such verification of the quantity so claimed by examination of the manufacturing records, as the chief officer of customs may direct, but in no case shall such amount exceed 1.8 tons of imported ore for each ton of steel rails exported.

Benefits of drawback have also been granted to cover rotary snow plows manufactured by the American Locomotive Company with the use of imported tires, boiler tubes, copper plates and other parts. The same requirements now prescribed with respect to the payment of drawback on locomotives manufactured with the use of similar imported parts will be applied to exportations of snow plows

The North German Lloyd steamship George Washington was launched October 31 at Bredow, Germany. This vessel is the largest German built and owned steamship afloat. It is 722 ft. 5 in. long, 78 ft. beam, 54 ft. deep from the upper saloon deck, 80 ft. deep from the awning deck, and has a displacement of 36,000 tons at a draft of 33 ft. It will carry 2941 passengers and has a cargo capacity of 13,000 tons. A speed of not less than 18.5 knots will be obtained by two four-cylinder quadruple expansion engines of 20,000 i.h.p.

# Industrial Photography.*

BY S. ASHTON HAND, CLEVELAND, OHIO.

Photographs of machinery, interiors of shops, products of machines, processes of manufacture, &c., are generally made to aid the selling department of an establishment in disposing of its product. Sometimes the photographs themselves are used as an advertising medium, but in the majority of cases half-tones are made from them for use in catalogues, or for illustrations in trade journals. Catalogues have of late years developed into veritable works of art, and their preparation calls for photographic work of the highest order. To this end it should be the aim of the photographer to produce prints that will require the least retouching when used for making half-tones, and this for two reasons: First, the retouching of prints for half-tone work is quite expensive; second, the print that requires the least retouching gives much the best results in the finished half-tone. A print which requires very little retouching to produce a first class half-tone is a good one for all other purposes, but a print good enough for all other purposes may be a very poor one from which to produce a first class half-tone.†

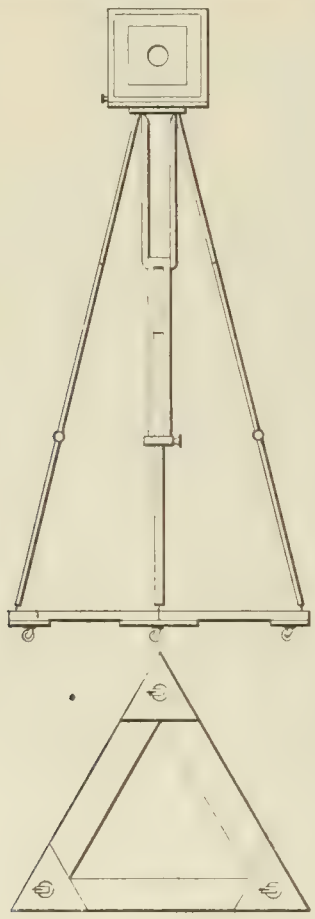


Fig. 1.—Tripod with Triangular Base.

Nearly all industrial establishments are equipped with a photographic outfit of some kind, and in some instances an experienced photographer is in charge; but in the majority of cases one of the draftsmen must take care of all the photographic work of the establishment, and it is in the hope of aiding some of the latter that this paper has been prepared

### Apparatus.

The camera should be a strong and serviceable one having a long bellows with very little cone. In fact, one with a perfectly straight bellows is best, as it allows greater adjustment of the lens board without danger of the bellows folds cutting off any of the object. The vertical and side swings should be ample. The camera need not be larger than 6½ x 8½ in., and should not be larger than 8 x 10 in., as anything over this size is cumbersome to handle, and requires a very expensive lens and a great deal of skill to operate. If large prints are wanted, bromide enlargements can be made up to any reasonable size, and if for any reason large direct or contact prints are wanted, a slightly enlarged positive can be made from the negative, and a negative as large as wanted can be made from the positive. This procedure has its advantages, as it is often possible to correct in a great measure any errors in exposure or development, and many errors in lighting and position. The writer never uses a camera larger than 6½ x 8½ in., and has produced many excellent enlarged negatives up to 24 x 36 in., by the method above mentioned.

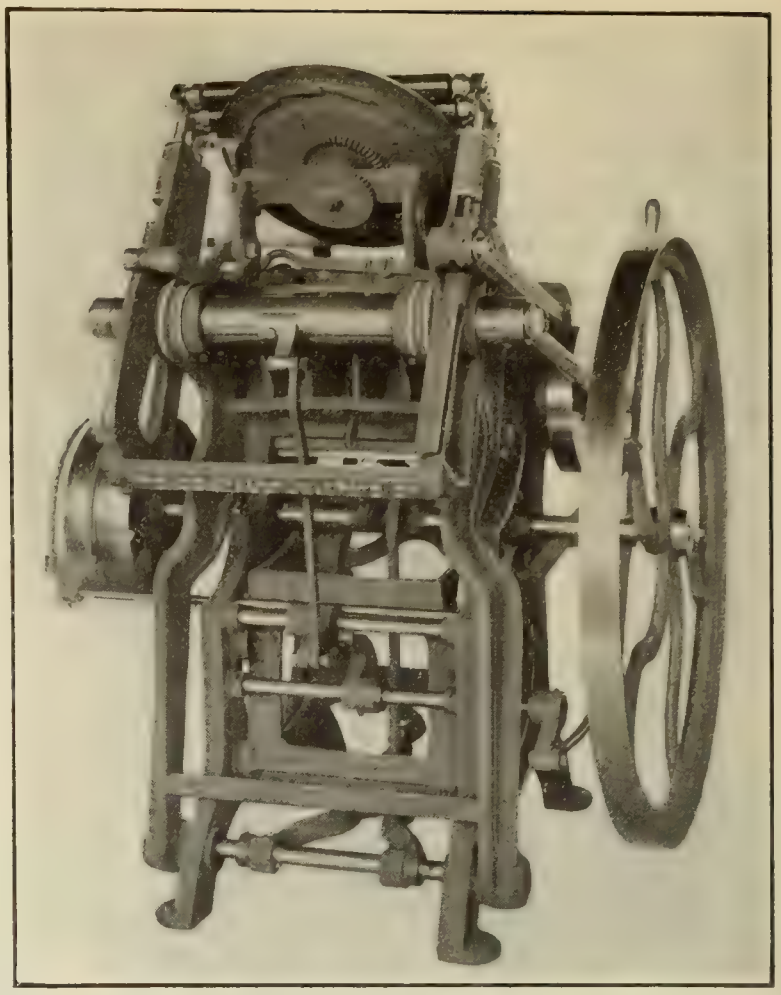


Fig. 2.—Details Brought Out and Shadows Avoided by Preparation of Machine Parts.

The tripod should be solid and stiff with the fewest possible joints. An excellent thing for use with it is a triangle with sides about 36 in. long, and with a roller or caster under each point as shown in Fig. 1. With the tripod mounted on this arrangement, the camera can be moved any distance or in any direction without material change in level. The lens should be the best obtain-

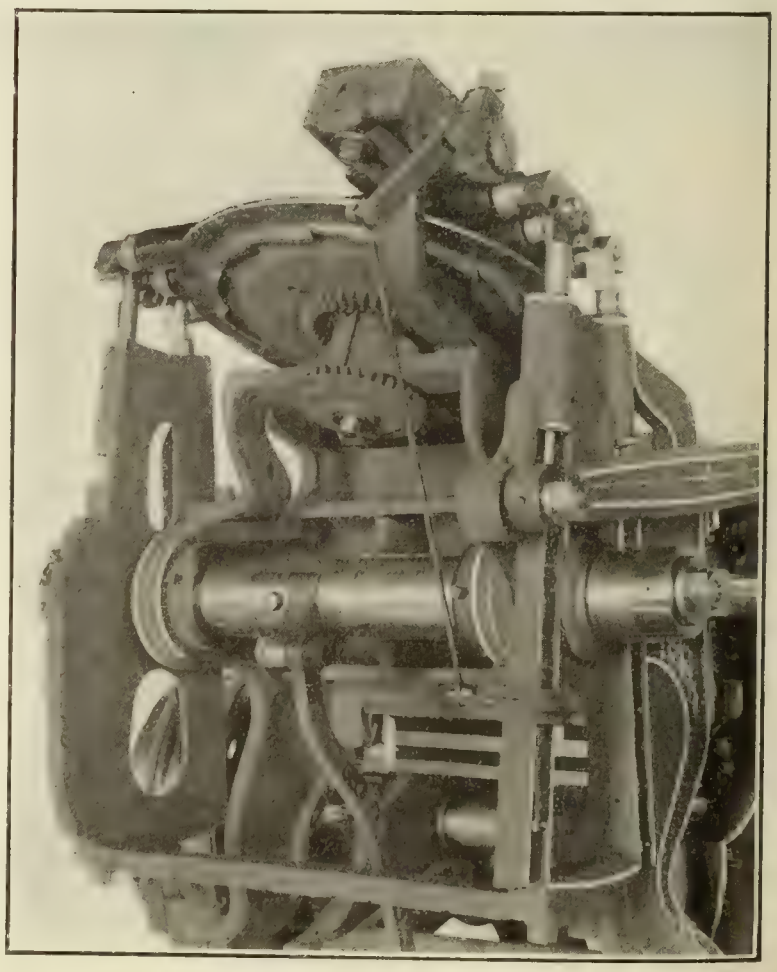


Fig 3.—A Detail of Fig. 2.

* A paper read before the American Society of Mechanical Engineers, New York, December 3, 1908. Mr. Hand is superintendent of the Chandler & Price Company, Cleveland.

† The accompanying illustrations were made from photographs on which there was no retouching.

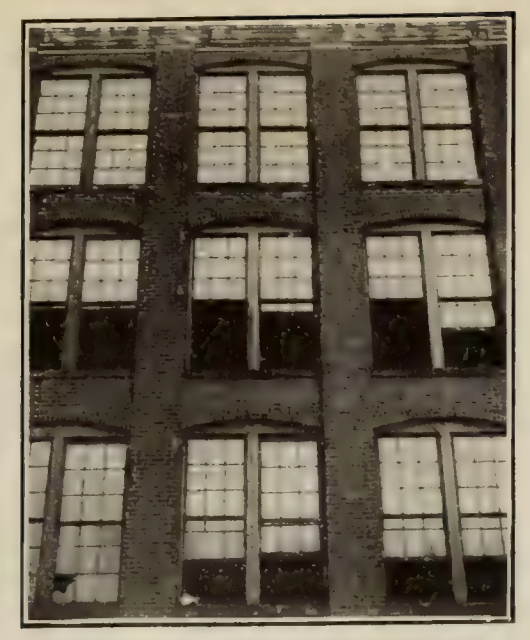


Fig. 4.—Distorted View Made by Pointing the Camera Upward.

able, and too great emphasis cannot be placed on its being of long focus. Never under any circumstances should its focus be shorter than the diagonal of the largest plate with which it is to be used. It should be capable of rendering sharp definition from corner to corner of the plate when using a comparatively large diaphragm. A lens of this character will render the focusing much easier, and will enable the exposure to be made in the shortest possible time. The plates should not be the most rapid made, as the emulsion with which these are coated is not generally rich enough in silver to give printing density for anything but portrait work, and also because the timing of the exposure must be very exact. Unless both exposure and development are just right, the negative will not be "snappy" enough to produce a good, bright print. Very slow plates take long exposures, and unless skillfully handled in development will produce prints with entirely too much contrast. Plates of medium speed are the best and should be of the kind known as "double coated" or "non-halation." Plates of this kind are first coated with a slow emulsion, and after drying are again coated with a somewhat faster emulsion. Plates so coated allow of very great latitude in time of exposure.

If interior views are to be made where windows and other openings to the light have to be faced, then the plates should be coated on the back with a compound known as "backing." This will prevent to a great extent halation or blurring of the high lights caused by reflection of light from the surfaces of the plate under the emulsion. This "backing" should be washed off with a damp sponge before development.

### Preparation of Machinery.

If a machine is to be photographed, it should be painted with a finishing coat of drab paint, which may be designated as "mouse color," and the paint should be so mixed as to dry absolutely "flat," that is, without any gloss whatever. If parts underneath the machine or in shadow are wanted to be shown, they should be painted a lighter shade than the more prominent parts, and the deeper they are in shadow the lighter they should be painted, even in extreme cases blending the color gradually into a white. All brightly polished parts should be daubed or rubbed over with a handful of soft putty to dull the brightness.

Unless these precautions are taken, the parts in shadow will show very dark in the photograph, and if very close together will be seen only as one shapeless mass, and the bright spots will show chalky white with very black lines and little or no detail. If letters or figures cast on any part of the machine are to be shown, daub them with white paint from the end of a finger. Rubbing with chalk will give them a very rough appearance. It must be borne in mind that all high lights and shadows are greatly intensified in photography, and that a sensitive plate that will register all the gradation of tone as seen by the human eye has yet to be made. Figs. 2 and 3 are illustrations of machines that were properly prepared for being photographed.



Fig. 6.—Method of Correcting Distortion.

If possible, it is best to photograph a machine before it has been run; otherwise oil from the bearings will seep out on the paint and leave dark and glossy spots which will look bad in the photograph. If the machine is to be run before being photographed, then it should not have its finishing coat until after the run or test is over. Before the finishing coat is put on, all the bearings should be thoroughly flushed with gasoline and the whole exterior cleaned with the same stuff to remove all oil.



Fig. 5.—Distortion of Fig. 4 Corrected in Reproduction.

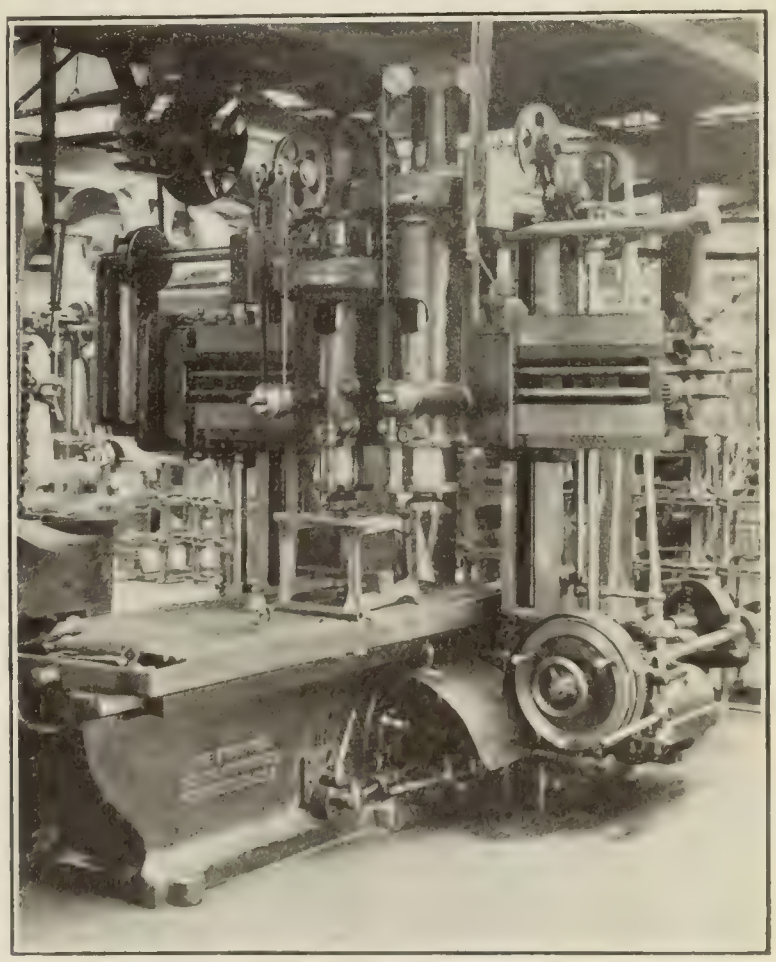


Fig. 7.—Details of a Dark Shop Brought Out by Long Exposure.

### Lighting and Position.

Machinery should never be photographed out of doors or under a skylight, as there is too strong a top light



Fig. 8.—View Taken Without Special Precautions Against Strong Light.—Strongest Light at Far End.

which causes deep shadows. The light should preferably come from the north, and should fall on the machine at a downward angle of about 20 degrees from the horizontal. Cross lights from other windows should be avoided by pulling down the shades or tacking up heavy paper. Cross lights make a confusion of shadows and obliterate certain lines, giving the machine anything but a natural appearance. If necessary to photograph the machine by other than northern lighting, then make the exposure when the sun is overhead. If the exposure must be made when the sun is shining through the windows at any considerable slant, tack cheese cloth over the windows to diffuse the light.

A machine should never be photographed directly from the front; this will make it appear too flat. For depth, the camera should be placed enough out of center to show a little of one side of the machine and high enough to show a little of the top. Heavy drilling, either white or very light in color, should be hung not less than 6 ft. back of the machine. It should be of ample size—large enough so that the camera can be moved where wanted and still show the background behind every part of the machine. If there are folds or wrinkles in the background, have a man at each side take hold of the edges and shake the curtain slowly and gently during the whole time of the exposure. This will prevent the folds or wrinkles from showing in the photograph.

Shop floors are dark in color, and if a machine is photographed directly on the floor it is often puzzling to know where the lower part of the machine ends and the floor begins. Therefore a floor cloth of the same color and width as the background should be used. It should be deep enough to extend from 4 to 6 ft. in front of the machine and under it and to the background. This will define the lower parts of the machine, and also reflect the light upwards, softening the shadows. Instead of a floor cloth, sheets or strips of light colored paper can be used, but be sure there is no pronounced red or yellow, as such colors are non-actinic and will show black in the photograph.



Fig. 9.—Same Conditions as in Fig. 8, but with Strong Light in Foreground.

### Focusing.

Never focus on the center of the ground glass, as this will give you the point of sharpest focus of the lens and what is wanted is the average focus; therefore focus at a position midway between the center and the edges of the ground glass. Get the nearest parts of the machine in focus. Small diaphragms will sharpen up the distant parts. Sometimes a better effect can be obtained by pointing the camera slightly downward, but if at any time the camera is used in any other than a level position, the ground glass should be brought to a vertical position, otherwise the result will be distorted lines.

Fig. 4 shows a distorted view of a part of the side of a building, made by pointing the camera upward. If the photograph of a machine shows such distortion, and for any reason it cannot be photographed again, a negative can be reproduced eliminating the distortion, by placing the negative in a frame tilted at such an angle that the narrowest lines are nearest the lens, and making a positive in the camera, tilting the ground glass at an equal angle, but in the opposite direction. A negative can be made from this positive, as shown in Fig. 5, which was actually made from a negative reproduced in the above manner from that used for Fig. 4. Notice how much the top of the negative had to be enlarged to bring the lines parallel. Fig. 6 shows a camera and negative holder in the proper position for this operation.

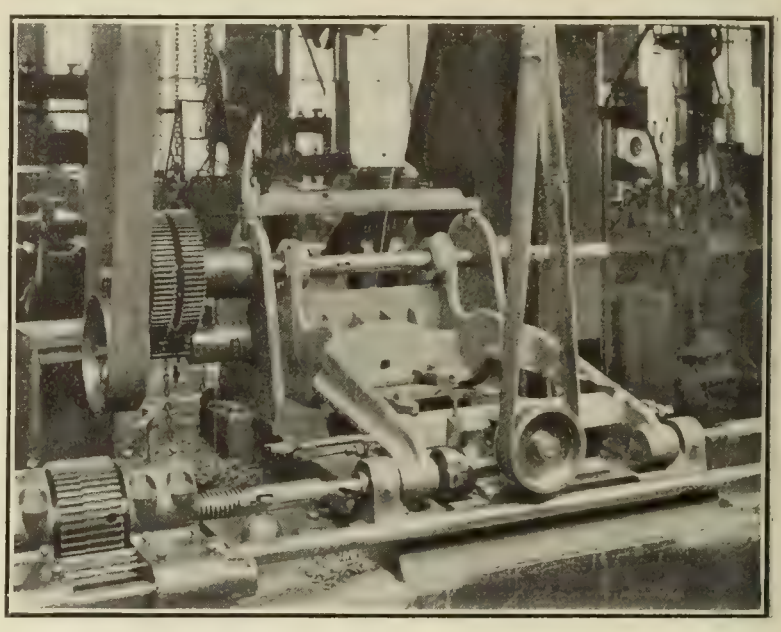


Fig. 10.—Taken with Camera Pointed Toward the Light on Same Day as Figs. 8 and 9.

If the machine to be photographed is a long one, requiring a raking view, use the horizontal swing to bring that part of the ground glass on which the image of the farthest part of the machine appears, farthest away from the lens. This will even up the focus and make it possible to use a larger diaphragm, shortening the time of exposure, and also extend the vanishing point to a greater distance, giving it a more normal perspective. If there are perceptible vibrations to the floor on which the photographing is done, get three pieces of harness felt ½ in. thick, and 2 or 3 in. square. Place one of these on the floor under each leg of the tripod, and they will absorb all ordinary vibrations and keep the camera steady.

### Exposure.

Exposures should always be ample, as an under exposed plate can never be made to show that which the light has not impressed upon it (although it can be greatly helped by skillful development), but a moderately overexposed plate can easily be treated in development, or even afterward, so as to yield a first-class print. Fig. 7 is an illustration of details brought out by long exposure in the dark part of a shop. If in doubt as to the correct time of exposure, make a guess as near as possible. Suppose your guess to be 4 min., then put a loaded plate holder in the camera and draw the slide so as to expose 2 in. of the plate and make an exposure of 2 min.; cap the lens, draw the slide out 2 in. more, and make another

exposure of 2 min. Repeat this, drawing the slide 2 in. at a time, until the whole plate has been exposed.

If the plate is an 8 x 10, there will be five parts having respective exposures of 10, 8, 6, 4 and 2 min. each. Develop this plate, and it will be easy to tell which part has had the proper exposure, and from the position of this part the time can readily be found.

**Interiors.**

In photographing interiors, avoid pointing the camera toward windows if possible; but if this cannot be avoided then cover the windows with heavy drilling or thick wrapping paper, fastening it well around the edges, so that no bright margins of light are visible. After the exposure has been made, the window coverings can be removed and an additional exposure of a fraction of a second can be given. This will give the windows a natural appearance and will often show objects on the outside. Interiors can be photographed without these precautions, but skillful work will be required to make good negatives. Figs. 8 and 9 were made on a very bright day when snow was on the ground, and the light coming in the windows was intensely white. As the negatives were wanted in a hurry, no precautions were taken to soften or stop out the light at the windows. The far end of Fig. 8 was a south-

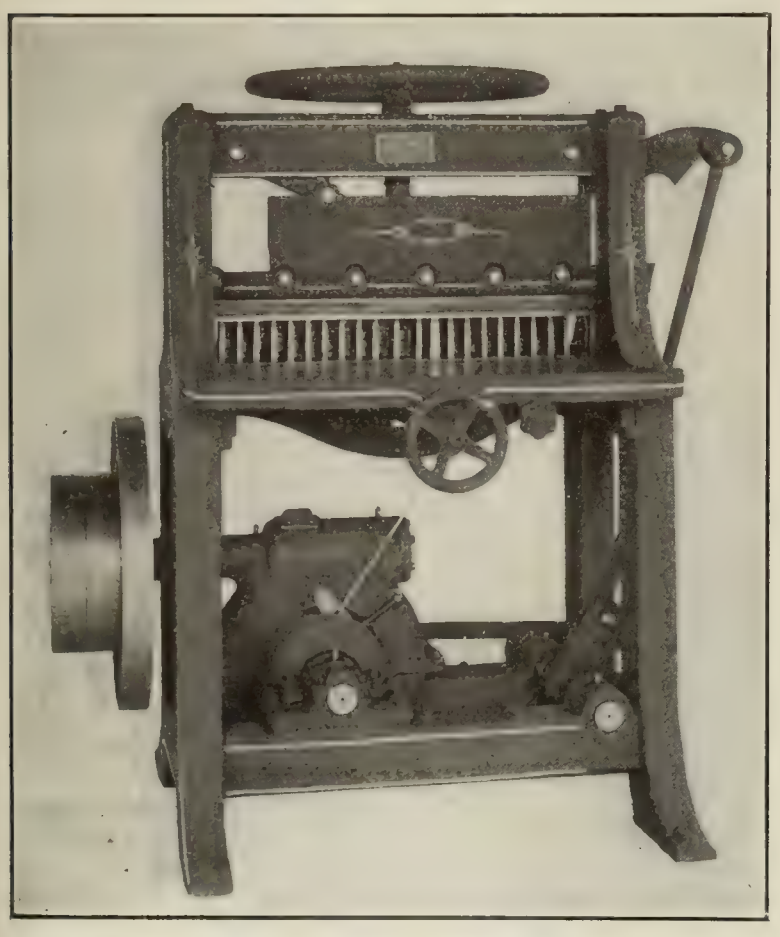


Fig. 11.—Paper Cutting Machine, Showing Clutch Mechanism of Which Detail Is Wanted.

ern exposure, and the sunlight was streaming in at the windows. Fig. 9 is a view in the same room taken from the south end, where the light was so intense that the milling machine in the foreground appears light in color, although it was painted a dark steel color.

Fig. 10 shows work in process in a special machine. This was made on the same day as Figs. 8 and 9, and with the camera pointed directly at the light. To work successfully under such conditions, the photographer must know to a nicety just how long a certain kind of plate may be exposed before halation takes place, and just how to get the best results in development from the shortest permissible exposure.

**Copying.**

In copying drawings or other subjects in black and white, it is necessary to use a very slow plate, give the shortest possible exposure, and to use a concentrated and well restrained developer. Unless this is done the lines of the drawing will not be clear and sharp. If a copy is to be made from a blue print, it will be necessary to bleach the print in a weak solution of ammonia and water, and after a thorough washing to immerse it in a weak solution of tannic acid. The part that was formerly blue will now be a rich purplish brown. The necessity for this treat-

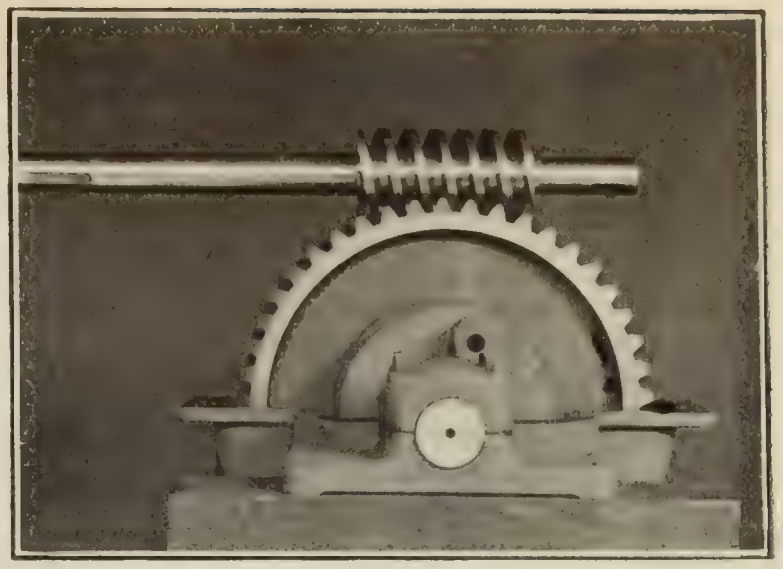


Fig. 12.—View of Worm and Gear with Upper Part of Case Removed.

ment is that blue is an actinic color, and a negative made from such a print will have very little contrast, while brown is a nonactinic color and a negative made from a print of that color will have plenty of contrast.

A negative can be reproduced in a larger size by first making a positive in the copying camera, and then making a large negative from the positive by the use of the same instrument. If a negative is enlarged to many times its original size, a granular effect will be noticed. This is caused by magnification of the emulsion structure which is made up of countless thousands of hills and valleys. This granular effect can be eliminated by slightly overexposing and greatly overdeveloping the original negative, and then reducing it to the proper density. The positive should have the same treatment.

Reduction does three things:

1. It reduces or clears the shadows faster than the high lights. Therefore overexposure is resorted to in order to increase the density of the shadows in proportion to the high lights, so that they shall bear proper relation to each other after reduction.

2. It thins the density of the negative or positive. Therefore overdeveloping is resorted to in order to have resulting density after reduction.

3. It cuts down the hills to the level of the valleys, so that very little if any granular effect is noticeable when the emulsion is magnified.

In reproducing negatives either in the original or a larger size, there is a splendid chance for what may be termed "jockeying." A brilliant negative may be made from a very flat one and vice versa. Errors in perspective can be corrected by the method shown in Fig. 5. Unequal lighting can be corrected by judicious shading during exposure, and various other manipulations will suggest themselves to the ingenious mind.

**X-Ray or Ghost Photographs.**

When an illustration is wanted to show clearly some hidden interior part of a machine in relation to and more distinctly than other parts, the usual procedure is to have a wash drawing made in India ink, from which the half-

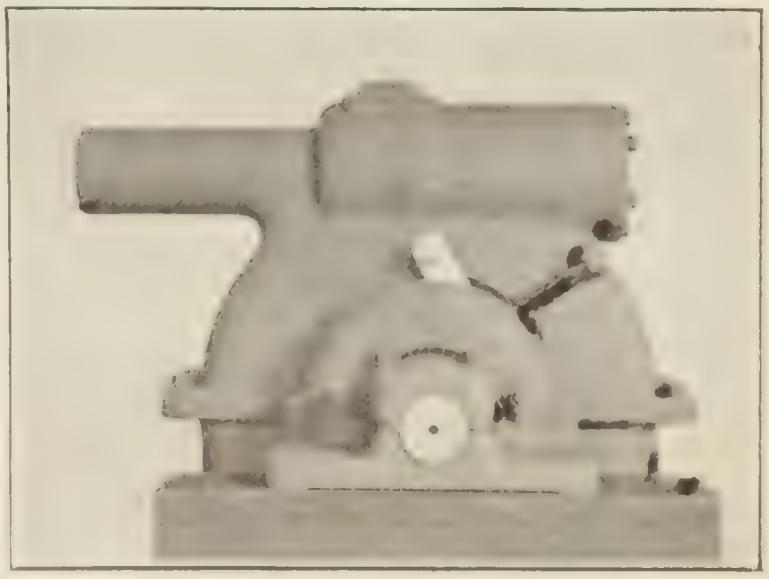


Fig. 13.—Exterior of Case to Be Shown on Same Plate as Fig. 12.

tone is produced. This method is always expensive, and the results are often very unsatisfactory.

Fig. 11 shows a power driven machine for cutting paper, in which the power is transmitted through worm gearing and a positive clutch, all of which is inclosed in an oil tight case, as shown at the lower left hand part of the machine. An illustration showing the worm and worm wheel in mesh was wanted. An engraver was called in, who said he could do the job in a satisfactory manner. Blue prints showing both details and construction were furnished him as a guide to size and shape of the various parts and their appearance when assembled. After repeated attempts his results were not satisfactory, and it was decided to rely entirely upon photographic methods for the illustration.

The case and its contents were removed from the machine and mounted on a box. The upper part of the case was taken off, leaving the worm wheel and the clutch collar exposed to view. The worm and shaft were removed from the upper part of the case and placed in their proper position in relation to the worm wheel, as shown in Fig. 12. A dark background was placed in the rear and an exposure was made. After the exposure the cap was put on the lens, the worm and shaft taken away, and the upper part of the case put in position as in Fig. 13. A light background was substituted for the dark one,

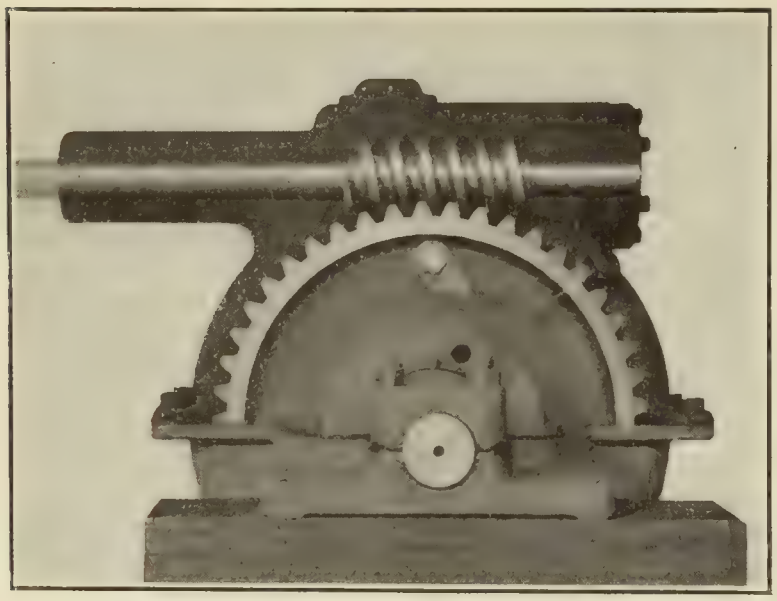


Fig. 14.—Result of Exposures Figs. 12 and 13 on Same Plate.

and another exposure made on the same plate, the result of which is shown in Fig. 14.

**Developing and Printing.**

In the art of development the only adequate teacher is experience. After many years of experience, the writer would hesitate to attempt to tell in writing how to handle a sensitive plate in development. A few hints, however, concerning the behavior of certain mixtures of developer may be of service.

Too weak a developer makes a flat, thin negative.

Too concentrated a developer makes a negative with too much contrast.

Under developing makes a negative lacking in printing density.

Overdeveloping makes a thick, dense negative requiring a very long time to print.

An under exposure should be developed with a diluted developer.

An overexposure should be developed with a concentrated developer well restrained with bromide of potash.

Developers, like artists' colors, should be mixed with brains.

Better choose a moderately slow developer, learn how to use it and don't let any one persuade you to change it.

Printing can be done in so many ways and on such a variety of papers, and the solutions necessary for developing and toning require such care in compounding and handling, that it can in most instances be better and more cheaply done by a professional.

On December 1 the plant of the Wilkes Rolling Mill Company, Sharon, Pa., manufacturer of muck bar, bar iron and iron and steel sheets, was put in operation after being idle for some months.

## The Manly Hydraulic Variable Speed Transmission.

A device for transmitting power at variable speeds from a constant speed source is considered ideal if it has a continuous range of speeds from zero to maximum in both directions, and transmits the motion positively—*i. e.*, without slip. Most forms of friction speed variators fulfill the first condition, but not the second, while with change gear devices it is just the reverse. Thus with all purely mechanical contrivances it seems to be difficult to affect more than a compromise. Electricity or compressed air as media of transmission possess advantages which have led experimenters into those fields, but they, too, have been confronted with the difficulty of obtaining absolutely positive drive. Those who have worked on the scheme of employing a hydraulic medium have recognized that the incompressibility of such a medium, assuming all packings to be tight, insures positiveness, and several such variable speed drives have been developed. In general they consist fundamentally of a pump driven by the constant speed power source, and in turn driving a motor, and all of them with the exception of the one about to be described depend for the variation of the motor speed on by-passing more or less of the fluid pumped, which means a correspondingly great or small waste of power—*i. e.*, their efficiencies markedly decrease in going from the maximum to the minimum transmitted speeds.

The Manly hydraulic variable speed gear, known by the briefer name of the Manly drive, in the form as herewith illustrated, is the invention of Charles M. Manly, for many years connected with the Smithsonian Institution in Washington, and is controlled by the Manly Drive Company, Whitehall Building, New York. Like other hydraulic drives it employs a pump and one or more motors, driven by the pump, but it employs a new principle in the variation of speeds. Instead of by-passing the medium, a means of altering the throw of the pump is provided, so that while the pump runs at constant speed its delivery may be varied from nothing at all to its maximum capacity. The means of varying the throw is the familiar one of a double eccentric, one within the other, by adjusting the relations of which the crank pin may be moved from coincidence with the axis of the shaft to any distance from it up to the combined throws of the eccentrics. Except for the variable throw in the pump, the pump and the motor are practically identical and consist, in the form as usually built, of five cylinders radially disposed about a single crank, with the necessary valves and their operating mechanism similar to those of an ordinary engine or pump. As in the more familiar constructions, the action of the valves is in quadrature with the piston movement, therefore it follows that when the pump throw is altered from some throw on one side of the zero position to some throw on the other side, the functions of the inlet and discharge valves are reversed and the fluid is circulated in the opposite direction. Thus the direction of the engine is reversed, the fluid taking the opposite course through the motor.

It has been common to employ hydraulic media for slow and heavy work, but its application in connection with high and variable speeds is somewhat of a departure. Obviously any liquid could be used, but in the Manly drive oil is employed because it has two characteristic advantages: It lubricates and it does not freeze.

One of the important advantages of the Manly drive is that the torque is inversely proportional to the speed within the limits of the device, which limits may be made almost anything desired by proper design. When the pump stroke is adjusted to something less than maximum, since the same amount of power is put into it as before, the liquid is delivered at a higher pressure to the motor, which, being of fixed stroke, is revolved more slowly, but with a force increased in direct proportion to the increase in pressure. There is obtained then the desirable result that in starting, when the load is the greatest and the speed slow, a powerful torque is applied, decreasing as the speed increases and the load likewise. It can

readily be appreciated that with a very small throw of the pump crank a tremendous pressure can be obtained limited only by the strength of the parts. To avoid damage from any excess of force a safety valve is inserted in the oil piping system, which opens before a dangerous pressure is reached, and the oil thus escaping is returned to the suction side of the pump, so that nothing is lost from the system. It is found in practice that it is perfectly possible to make all joints so tight that no make-up is necessary from leakage in the oil supply. This drive when combined with either a gas engine or an electric motor enables the power to be delivered with a greater degree of flexibility than is possible even with a steam engine, for while with steam the torque can be increased at low speeds only by changing the point of cutoff of the engine, and at most to twice its normal value, with the Manly drive the torque increases directly as the speed decreases up to the safe limit of the strength of the driven shaft.

In the experimental machines of this type which have been constructed in the last few years the principle has remained unchanged, but the details of construction and in particular the methods of operating the control have been developed until now they are considered to be commercially perfect. Principally the experimental work has been in connection with an automobile transmission for two reasons: that a simpler means of car control is greatly needed especially in motor trucks to enable them to be driven by unskilled help, and that if the device proves its worth in this field, which is one of its most difficult applications, its adaptability to any other field of variable speed driving is practically assured. Probably the next step taken by the company will be to work out details of a drive applicable to machine tools, and, in fact, all machinery requiring variable speed where the power is furnished at a practically constant speed.

Fig. 1 shows an Oldsmobile rebuilt to incorporate the



Fig. 1.—A Motor Truck Equipped with the Manly Drive for Testing Purposes.

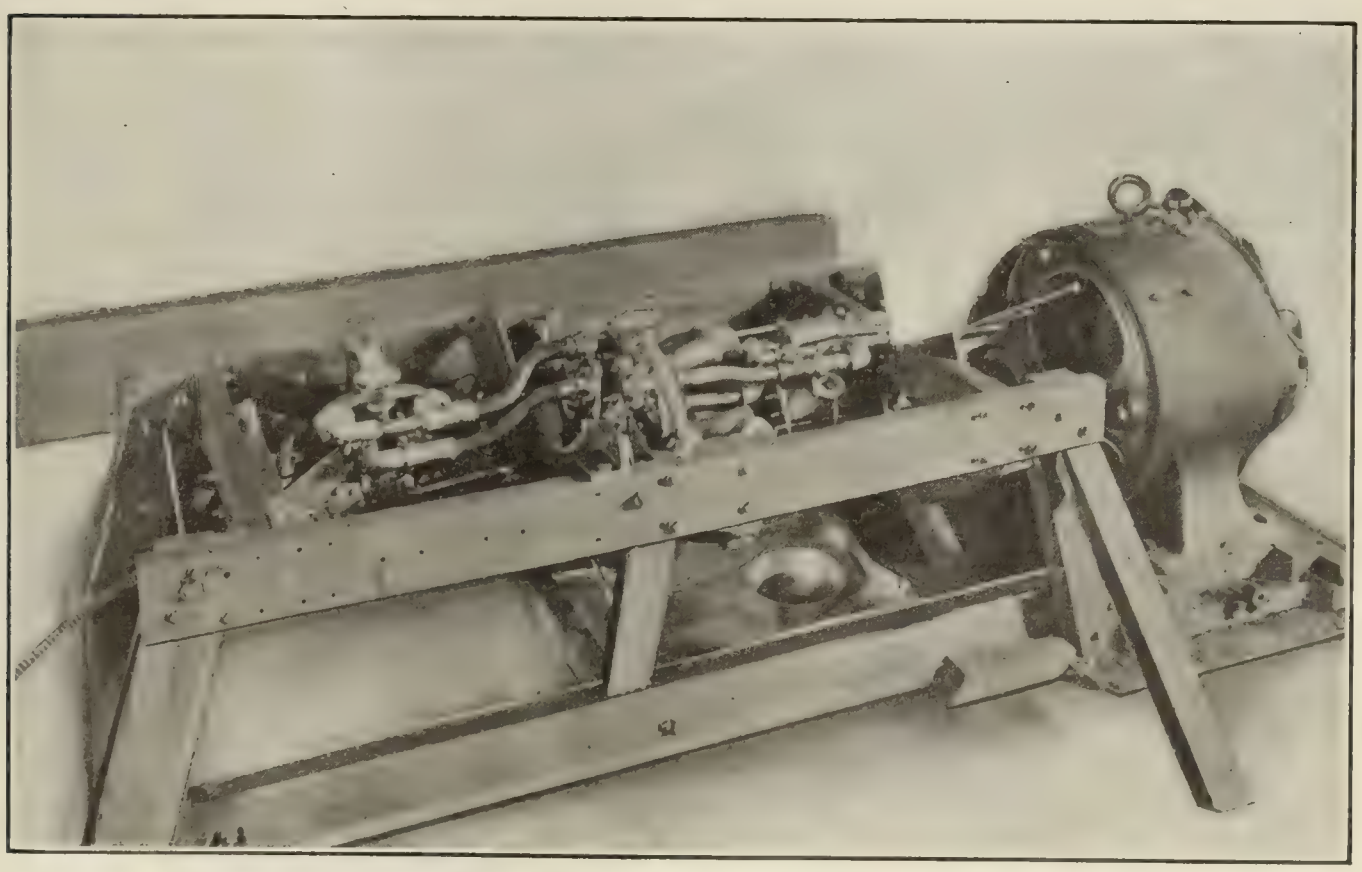


Fig. 2.—The Manly Drive Set Up for Testing.

Manly drive. One pump directly connected to the engine and two motors, one applied to each rear wheel, take the place of the ordinary speed change gear mechanism, brake and differential gear. When the machine is turning a corner one wheel must run slower than the other, the faster running motor will automatically take more and the other less of the oil pumped, which eliminates the need of a differential. When the pump is adjusted to no-stroke the system is locked and becomes a very effective brake. Therefore a single controlling lever the sole function of which is to vary the throw of the pump crank, affords entire control of the automobile except the steering. The machine illustrated, for test purposes is loaded with a ton of stone and gravel, and has been in operation for months to provide a severe test of endurance

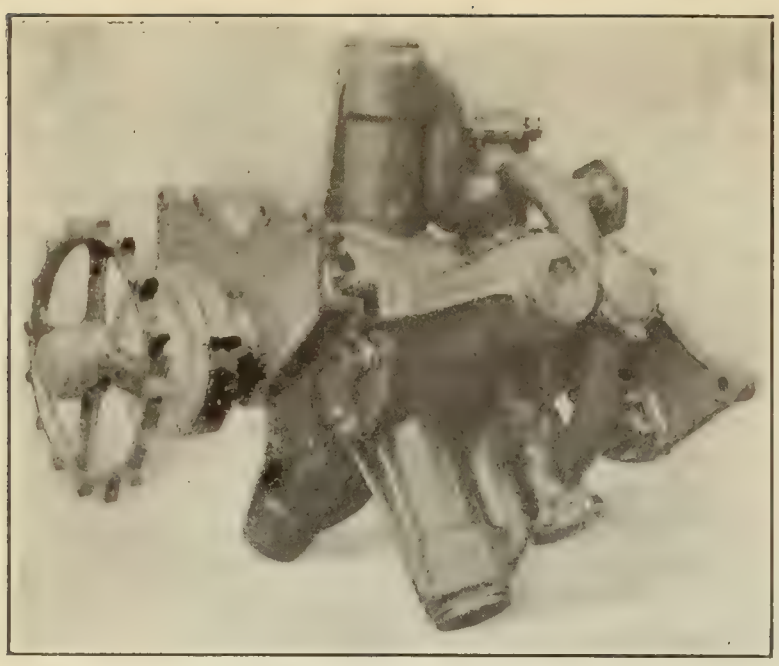


Fig. 3.—One of the Motors of the Manly Drive.

Fig. 2 shows an entirely similar apparatus set up on a stationary mounting for testing its efficiency. As it was impracticable to operate both motors in the test on account of the inability to adjust the braking action between the two sides so that either would remain constant, the motor for one side of the axle was removed and its pipe connections blank flanged. This was entirely allowable for purposes of a test, the other motor being compelled to take all of the discharge of the pump and affording an opportunity of making a much more accurate test. The pump was driven by an electric motor, the efficiency of which at various loads was known. The power imput to the motor was obtained by reading a voltmeter and ammeter on the current supply, and the power delivered by the hydraulic motor was measured by the familiar Prony brake dynamometer. In these tests efficiencies were obtained ranging from 85½ to 91½ per cent., depending upon the ratio of speed change. Fig. 3 is a view of the removed motor and Fig. 4 a plan and elevation of a typical assemblage of parts on a motor truck chassis, in which *a* indicates the pump; *b* and *b* the motors; *c*, the pipe connections; *d*, *e* and *f*, respectively, the shaft, lever and controlling handle operating the change in the pump stroke, and *g* suggests the addition of a winch which may be driven by a third motor and used in loading the truck.

In designing this drive economy of manufacture has been considered. No hand work or expensive finishing is required. All of the machined parts are finished in a lathe, and can be cheaply made in large quantities on turret machines. The assembling involves only putting together accurately machined parts. Compensation for wear was originally provided in all wearing parts, but the wear after a year's use has been found so slight that later machines have not been provided with wear adjustments.

In drives other than those for automobiles it will be usual to employ only one motor. A particular advantage in the transmission is the entire flexibility in the location of the motor with respect to the pump. It may be at any angle thereto, or at any distance from it within which it would be feasible to run the oil circulating main. In all of these applications as in the automobile, a single lever will furnish the entire control. This will be attached to the pump and so arranged that in its central position the motor will be stationary, the pump running idly with no stroke and discharging no oil, and moving the lever to either side of the center will give a constantly increasing speed in the corresponding direction up to the maximum. Where rapid changes of speed are necessary the control may be as rapid as desired; where accurate and minute changes of speed are necessary the adjustment of the control may be effected through a hand wheel, and where both minute and rapid changes are required at different times, the control may be effected by a hand wheel so mounted that slow adjustments will be made by turning it, and rapid adjustments by bodily moving it forward or backward. It is claimed that changes in speed may be made so rapidly from the extreme in one direction to that in the other and without shock, that a lathe can be reversed with perfect control while cutting screw threads to a shoulder.

In most cases the variation of the length of the stroke of the crank of the pump, especially if it is transmitting considerable power, would require excessive manual exertion on the part of the operator. Therefore, instead of having the operator do the actual work of adjusting the crank he merely has to move a control lever which is connected to a pilot valve. This controls the passage of a small amount of fluid from the main circuit of the pump into adjusting chambers, the pistons of which are connected to the pump adjusting mechanism. When the adjusting mechanism has been moved to the position indicated by the operator's control lever the pilot valve is automatically closed, thus blocking further changes in the position of the adjusting mechanism until the lever is again moved.

Labor leaders in England are attacking the copartnership scheme of Sir Christopher Furness, by which employees of a shipbuilding company are given an active share in the profits of the institution. They are of the opinion that the trade union rate of wages would disappear if there were many such schemes.

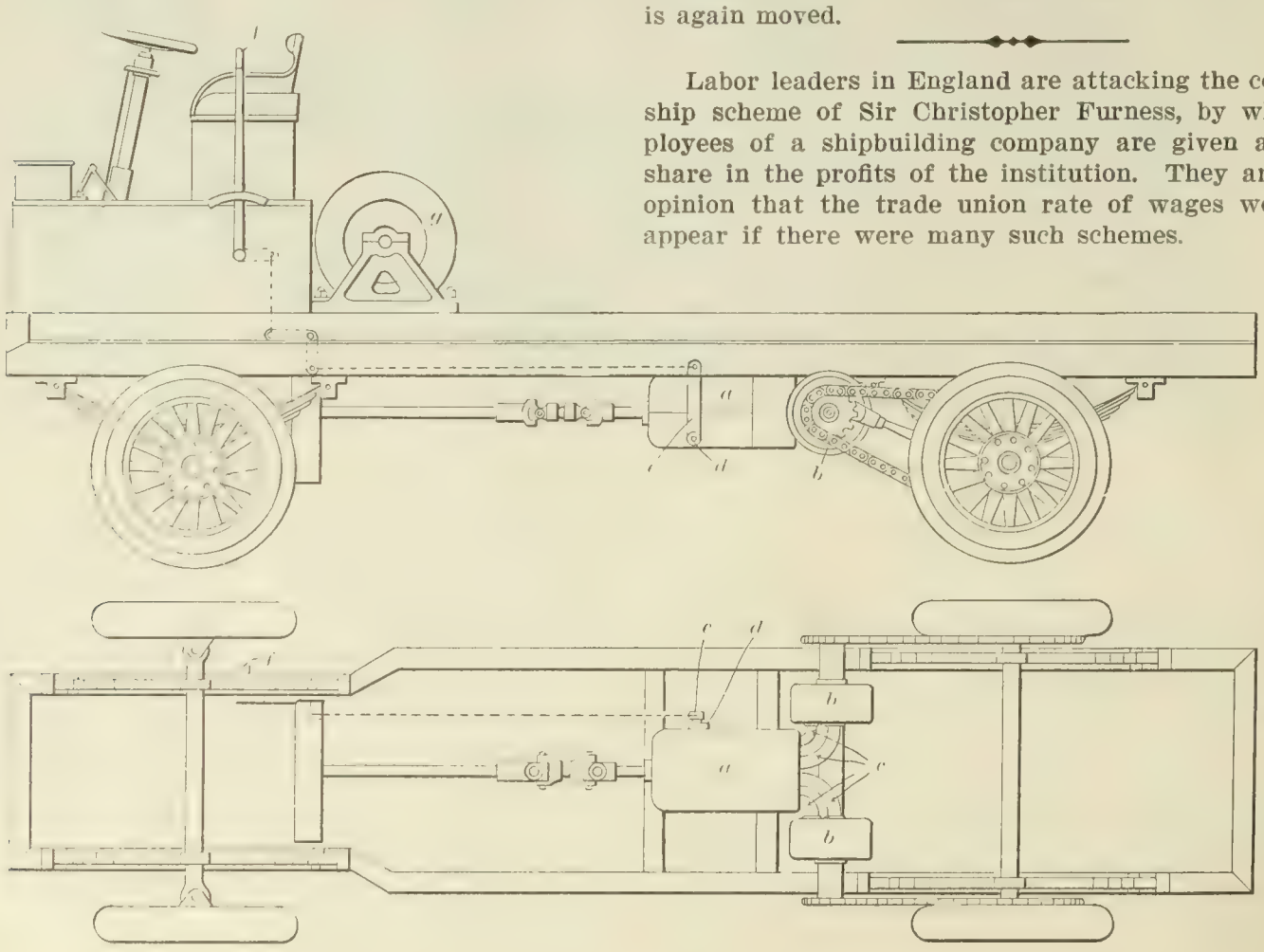


Fig. 4.—Elevation and Plan of the Plant for a Motor Truck Equipped with the Manly Drive.

# TARIFF HEARINGS AT WASHINGTON.

## Statements on the Metal Schedule.

WASHINGTON, D. C., December 8, 1908.—The Ways and Means Committee has taken action of much importance in connection with the pending hearings on the new tariff bill. It has been decided to extend the hearings until the 19th inst., and with a view to obtaining information which does not appear to be voluntarily forthcoming, Chariman Payne has secured the adoption by the House of a resolution clothing the committee with power to send for persons and papers, adminster oaths and compel the testimony of reluctant witnesses.

This drastic action is the result of the failure of the leading industrial combinations to send representatives to Washington, and the inability of the committee to secure their attendance by invitation. The readers of *The Iron Age* are familiar with the attempt made by Mr. Payne to bring Mr. Carnegie before the committee, and with the correspondence given to the press in that connection at the time of the hearing on the metal schedule a fortnight ago. With the exception of the glass and paper industries, all the big combinations have either failed or refused to supply the committee with information either oral or written, and the members of the committee are smarting under the insinuations in the daily press to the effect that the so-called trusts are indifferent regarding the pending hearings for the reason that they expect later to bring influence to bear upon individual members of the committee through various underground channels. As a member of the committee has expressed it, "We will not sit quiet under the imputation that the smaller producer must come before our committee openly, while we provide a back door through which the trusts can conduct their negotiations." No programme has yet been arranged for the summoning of reluctant witnesses, and it may be that it will not be necessary to resort to extreme measures to secure desired information, but the committee is determined to obtain it. There are ample precedents for the punishing of recalcitrant witnesses by Congressional committees, and the developments promise to be exceedingly interesting if those who are summoned refuse to testify.

W. L. C.

### Statement of H. E. Miles.

Interest in the metal schedule was revived before the committee on the 5th inst., when H. E. Miles, Racine, Wis., chairman of the Tariff Committee of the National Association of Manufacturers, appeared upon the committee's invitation, and attacked the methods of the United States Steel Corporation and of the large steel producers in general, declaring that the so-called trust was the creature of the Dingley tariff law, and that protection beyond a possible 15 per cent. ad valorem to prevent dumping in some lines was unnecessary. Inasmuch as the committee intends to use Mr. Miles' statement as the basis of inquiries which may embrace an effort to compel representatives of the big steel combination to testify, a brief extract from his evidence will doubtless be read with interest as follows:

Mr. Miles: Steel is produced as cheaply in the United States as anywhere in the world. I have figured costs for 25 years; I have figured with competitors by the dozen. If I know anything, I know how men can differ with one another about costs, and I know how impossible it is for any two men, seemingly, to arrive at the same conclusion as to costs unless they work together; and when one manufacturer denies another man's statement of costs, the denial may be right. because there may be an error; but even when both are right it is easy for them to some extent to question one another and to deny. But underneath all possible differences as to cost of production there is cost, and when you reach that general and fundamental proposition steel costs as little in this country as anywhere on earth. Judge Gray, appearing before the Committee on Merchant Marine, said he thought it cost a little less somewhere, and he made a guess as to the place. He is at the head of the United States Steel Corporation. Mr. Carnegie says it costs less. Mr. Carnegie's utterance of a few days ago was not merely a personal utterance. I have word from New York that it is the expression of the judgment of many steel producers. I cannot doubt it.

The Chairman: Will you give us the names of some of those steel producers, right there?

Mr. Miles: I expect to give you the names privately, if you wish them, but I would sooner not give them in public.

The Chairman: All right.

Mr. Miles: I do not know whether or not I should go back and tell what steel costs to produce, and what the price was to people like myself, intermediate consumers, when the Dingley law was formed, and how the Dingley law is in more or less degree responsible for an increase in the price to me of 100 per cent.

Mr. Underwood: If you do not give us that information, how do you expect us to be benefited by your talk? I hope you will give it.

Mr. Miles: Then I will go back and give you this about the United States Steel Corporation. I mentioned trusts, and just happened to pick this up first. Said Mr. Carnegie in 1884: "We are creatures of the tariff (meaning the steel people), and if ever the steel manufacturers here attempt to control or have any general understanding among them the tariff would not exist one session of Congress. The theory of protection is that home competition will soon reduce the price of the product, so that it will yield only the usual profit. Any understanding among us would simply attempt to defeat this. There never has been and never will be such an understanding."

Mr. Dalzell: Will you not give us the time and place where that declaration was made?

Mr. Miles: Andrew Carnegie, in the *American Manufacturer*, July 25, 1885. He was a poor guesser. Now as to the cost of ore, and kindly remember that I speak as a consumer, I do not wish to have to prove a perfect case that entitles me to keep my own money in my own pocket as against the steel trust. The burden of proof is upon the man who wants my money, under the ruling that he is entitled to it, to a certain exact and precise extent, being the excess in his cost of production over foreign cost. To that extent I hand him my money, and feel that I am well paid in doing it. I have a statement here from the man who consolidated the great ore properties in the Lake Superior District in behalf of the steel trust. Mining in that district is done mostly with a steam shovel. He said to H. C. Frick, of the Carnegie Company, July 25, 1897:

"As to the low cost of mining, although we are mining ore at present for less than 5 cents per ton for labor, we must look to the future when we will have to go deeper, pump water and lift the ore. Three steam shovels mined from its natural bed 915,000 tons of ore during the season of 1900, working 10 hr. a day only. Eight men with one shovel mined and laid into cars in one month, working 10 hr. only, 164,000 tons. A 25-ton car can be filled in 2½ min., being at the rate of 600 tons an hour. Water transportation is proverbially cheap, the cheapest in the world. From Lake Erie to Pittsburgh is the most efficient railroad in the world from a freight standpoint. It carries ore at the lowest possible cost, and with such connections with the ships that a train of 35 to 40 cars of ore can be loaded in an hour, and a 40-ton car of coal can be unloaded and partly trimmed in the ship in 36 seconds. All efficiencies from the ore in the dirt to the finished product at the mill are in line with this statement."

The great efficiency and low cost were well indicated by a letter of May 15, 1899, from Mr. Schwab, president of the Carnegie Company, to Mr. Frick, in which Mr. Schwab declared that rails were being made at $12 per ton, as against $19 cost in England. Said Mr. Schwab, "We can sell at this price and ship abroad so as to net us $16 at works for foreign business, nearly as good as home business has been." What is true of rails is equally true of other steel products. With this cost they sold rails that year at $16 to $17 a ton and made $20,000,000.

Mr. Dalzell: With whose authority do you state that there was ever such a letter?

Mr. Miles: Bankers and acquaintances in Pittsburgh, steel men everywhere, as far as I talked with them.

Mr. Dalzell: Suppose you name some of them.

Mr. Miles: I will give you the names privately, if you want them.

Mr. Dalzell: All right.

Mr. Miles: This letter has been public property for 10 years, and never denied. It is addressed to Mr. Frick, and a friend of Mr. Frick's told me it was all right in the particulars. All the statistics that can be gathered on the subject, so far as I know—and I have been at it for three years, and I will say nothing to you except as I got it from the most accredited experts of the United States on figures—the official valuation of all the steel property put into the United States Steel Corporation was $400,000,000. They were thought to be worth $600,000,000, or half as much

again, as soon as the consolidation was completed, because a trust can earn more money than competing institutions. That $400,000,000, increased to $600,000,000, was capitalized at $1,450,000,000. It is fair to say just a round billion dollars of water, but that was all on the basis of competing conditions upon the various industries—various factories and mines—being worth what, for instance, my factory is worth, which is on a competitive basis; but the minute you added a monopoly control they were worth whatever the owners thought they were worth. To-day upon a close valuation, thanks largely to the Dingley act, not only has the water disappeared, but the property is estimated by Moody—and I think officers of the steel companies have published statements to the same effect—at net well above a billion and a half, notwithstanding hundreds of millions of dividends that have been paid out, as I remember; over half a billion of dividends and investments in the way of enlargements, and so forth. In those days, when we were all upon a competitive basis, I was buying steel at 80 cents per 100 lb. My stuff last year was made of steel that cost me $1.60, or exactly double. *The Iron Age* about two years ago declared that the cost to the great steel companies was no more than when the trust was formed. That seems an impossible statement, but the truth about the steel companies surprises everyone. The steel people have gone over to England year in and year out for 10 or 15 years, and simply astonished the English producers with the record of their accomplishments. There is no question but the most remarkable accomplishments ever brought about in the manufacturing industry upon this round world of ours, the greatest of them all, is the accomplishment of the American steel producer; and, instead of speaking against the steel producer, we cannot speak highly enough of him, the greatness of character, and his intelligence and his accomplishment in his own industry. No Englishman who has listened to the stories that they have been glad to give them over there could think of competing with them.

Now, as to ore duties. The duty on ore is 17 per cent. I cannot say what ore is worth. It is as easily mined in this country as anywhere in the world, substantially.

Coming to pig iron, the wage cost at the furnace of making hot metal pig has been held up but recently, so far as I know, as high as 90 cents. The tariff is $4. The wage cost in America is less than anywhere else I know. There may be pennies, 5 cents difference, something of that kind, but substantially nothing else, so far as I know. I get the cost from a producer who owns his mines, owns his furnace, owns his rolling mills, has the whole thing. He tells me that is full high. I get it from another man who builds furnaces and operates them. He tells me that is the generally accepted price in Pittsburgh. I have a statement, which I implicitly believe, to this effect, and I think it is a matter of general public record. Mr. Schwab, when called upon by Mr. Jenks and a committee of English steel producers in this country, took his cost books off the shelf and read as the entire wage cost at the blast furnace, hot metal, 41.1 cents per ton produced.

Mr. Underwood: If this only refers to the man in the stockhouse, where, as you say, the cost has been very greatly reduced by automatic lifts, I can see where the cost of labor in the stockhouse can be only 90 cents, but if you include in that the cost of transportation about the yards, the handling of the ore, the engine force and the great force of men around the yards, I cannot see where you can hold it at 90 cents, and all I want is information; I would like you to give me your authority for that statement.

Mr. Miles: I guess that would be included, sir. The total wage cost at the furnace is what a man who is worth $50,000,000 and owns furnaces tells me.

The Chairman: In dealing with these subjects, the committee is dealing with important interests, and it wants to get at the bottom facts. It wants to know the whole business. It wants something that is at first hand, as far as it can get it. Whatever information you may give on this subject is not first hand. If you give us the source of that information, the committee may be able to find out just what the facts are, but the anxiety of the committee is to get the exact facts, the truth, and undoubtedly you state it just as it appears to you from all your information. If you will give us your sources of information, it will enable us to further investigate, perhaps.

Mr. Miles: I will do that. As a general proposition, with 90 cents or a little more, or, as Mr. Schwab would indicate, a good deal less, and with Mr. Carnegie's statement, and the statements of many other experts, many of whom I consulted, that it costs no less to make metal in this country than abroad, I hold $4 to be a very excessive rate on pig. From the best figures I can get from producers—I have a letter not four days old wherein a producer checked my costs and said they were substantially right—I figure the cost of rails at $14 to $15. And to show how the trust operates, the trust makes the foreign price, if we can accept statements from the trade papers, of $22 against the foreigner and $28 against the home buyer. But to go on with my trust proposition. You have 40 per cent. tariff on pig, with a total of 28 per cent. on bars, 29 per cent. on rails, 14 to 35 per cent. on steel ingots, 8 to 65 per cent. on sheet iron, and the wage cost averages on all those 15 per cent., according to the United States census.

Mr. Dalzell: Will you not give us the figures that the great producer checked off, and tell us who the great producer is?

Mr. Miles: Ten dollars on hot pig. Three dollars to the ingot; that is $13. And $2 as a full price to the rail. That is $15.

Mr. Dalzell: Who was the producer who checked off those figures of yours and verified them?

Mr. Miles: Those are the names I will have to give you privately. I go to Mr. Schwab's letter as a check on the cost of rails—$12 some 15 years ago, when they were sold for $16—and my check gives the cost on bars as 80 cents, which, I think, recently cost me $1.60. These things are all checked back and forth. Now, as to the need of protection. With a total wage cost on pigs, bars, rails, and ingots of 15 per cent., and a tariff which averages twice that, I cite the fact that they ship abroad $46,000,000 of these cruder forms of steel, selling them in the open markets of the world, where there is no Dingley law to help them at all, but where, if tariffs are paid, they must be paid by the producer. I cannot imagine that it can be thought by any one that $46,000,000 would be shipped out of this country into the open markets of the world by any producer who needed a protective tariff, and whose costs were excessive and above the costs in other countries.

The committee is in receipt of a number of briefs and informal written statements from prominent concerns in the iron and steel and allied trades regarding classification and rates of duty under the proposed new law. Some of the more important of these statements are presented below.

## STEEL HARDENING METALS.

**Statement of Susquehanna Smelting Company, Lockport, N. Y.**

In presenting our application to you for amendment to paragraphs 122 and 183 of the act of July 24, 1897, we wish to briefly outline the history of the manufacture of ferrosilicon, upon which commodity we ask, in place of the present tariff of $4 per ton, adequate protection to enable a manufacturer in this country to compete upon fair terms with the foreign imported material.

Ferrosilicon is a ferroalloy (an alloy of silicon and iron made in an electric furnace) upon which the tariff has been expressly fixed by Congress, act July 24, 1897, paragraph 122, together with ferromanganese, at $4 per ton, whereas every other ferroalloy, such as ferrochromium, is at present appraised in the class of "metals unwrought," act July 24, 1897, paragraph 183, carrying a 20 per cent. ad valorem duty.

The use of both of these alloys by the steel makers is now large and increasing. We are not ourselves interested in the question of the duty upon ferromanganese and wish to submit no data for arguments upon this commodity. In the case of ferrosilicon, however, we wish to point out that the present conditions are essentially different from those that existed at the time that Congress passed the act of July 24, 1897. At that time it was represented that this commodity was a necessity to the steel makers, and there being no domestic industry involved, no injustice was done to a domestic industry by admitting this commodity practically untaxed. Since the fixing of this nominal tariff upon ferrosilicon, up to a comparative recent date, nearly all of the ferrosilicon consumed in this country has been imported from abroad, a fact that is clearly shown by the customs returns. During this period no serious attempt was made in this country to supply the domestic needs. Within the last two years, however, several manufacturers have turned their attention to the establishing of a domestic industry with a view to supplying the demand for ferrosilicon in this country, and, in addition to this, some works have been erected on the Canadian side, using Niagara power, in order to save the freight and transportation charges from Europe and be in close touch with the American market.

The points we wish to put before you relevant to Canadian competition are that our principal raw materials, namely, iron and charcoal, enjoy, respectively, a protection of $4 per ton and approximately $2 per ton, which means that to make one ton of finished product of ferrosilicon indirectly we pay $3 duty on our raw materials and enjoy ourselves only $4 per ton protection. To realize what this means it must be remembered that our chief competitor in Canada buys charcoal at two-thirds the price at which we can obtain it, and, using Government bounty fed power, obtains power, the principal item of cost in the manufacture, actually from the same company that supplies us, at a price fully 25 per cent. cheaper than we, with a most advantageous power contract, can buy it in this country. The additional points we wish to put before you relevant to competition from Europe are as follows:

It is well known that Norway, Sweden, and the Austrian

Tyrol are all abundantly supplied with potential water power developments, which, owing to the local conditions, are capable of extremely cheap development. It is claimed that in Norway and Sweden together there is easily 30,000,000 to 40,000,000 hp. which can be cheaply developed if required, and already some very big factories have been erected in both of these countries, where the cost of power is so low that processes can be carried on there commercially which it would be difficult to carry on even with Niagara power. It is claimed that horsepower in these two countries can be bought at $6 to $7 per horsepower year, and there seems nothing unreasonable in this assertion.

With reference to the Austrian Tyrol, from which district principally the ferrosilicon which has been imported into this country has come, we submit the following information in greater detail. In this district, without pretending to compile a complete list, we instance seven separate water-power companies, as below, of which the total horsepower capacity is in the neighborhood of 33,000.

| | Horsepower. | | Horsepower. |
|---|---|---|---|
| Innspruck | 6,500-13,000 | Kardaum | 2,000 |
| Landecher Carbide | 6,000 | Etschwerke, Bozen and Meran | 6,000 |
| Brennerwerke Matred | 6,000 | Trient | 1,000 |
| Brixen | 2,700 | | |

In these works we have definite information that the cost of horsepower to the customer is between $7 and $8 per horsepower year, and that the customer pays for this power by contract upon terms which are more beneficial to him than the terms of power contracts common in this country. In addition to these concerns actually noted there is some 36,000 hp. generated in the Austrian Tyrol by plants of 1000 hp. and over. In Bosnia, too, one large works employs great quantities of power, probably as much as 20,000 hp. All of this power is available for the manufacture of electric furnace products, and will, when steel trade is busy, be largely employed upon the manufacture of ferrosilicon.

It is obvious that the European market will not absorb all the material so made, and the necessary result follows that in times of prosperity is this country the foreigner will dump his surplus make into this country, which to all intents and purposes, so far as this commodity goes, is an open market. It is well known that the surplus production of any industry tends to be dumped at an artificially low price in any free trade center of industry, and it is this unfair competition against which we ask adequate protection.

In addition to the extremely cheap power which these Continental countries enjoy, it must be remembered that the material so made is made by labor which is paid approximately upon less than one-third the scale of wages existing in similar industries in America. For instance, common labor in the Tyrol is paid at the rate of 5 cents per hour, superior labor at approximately 6 cents per hour, furnace men working on the furnace at 7 cents per hour, and competent foremen in charge at 10 cents per hour, whereas the scale of wages for men conducting similar operations in this country will be, respectively, 17¼ cents, 20 cents, 25 cents and 30 cents. This is a direct consequence of the principle of protection, the benefits of which we do not ourselves yet enjoy.

To put the matter in a nutshell, it is certain from these two considerations alone that the foreigner is able to produce fully 25 per cent. cheaper than a manufacturer in this country.

We suggest that this is a case where a new American industry is in grave danger of being killed by foreign competition, and unfair competition at that, and it seems hard that American capital should be lost in an honest endeavor to establish an American industry to manufacture a product the use of which is now large and increasing and which is closely connected with one of the great industries of the country.

## SILICON PIG IRON.

**Statement of Colne & Co., New York.**

We wish to place before your committee a few facts concerning the duty upon a certain quality of pig iron upon which, like all other pig iron, an import duty of $4 per ton is imposed. This pig iron is used in making steel witth the surface-blown converter, and analyzes as follows: Silicon, 2.25 to 3.50 per cent.; manganese, 0.50 to 0.90 per cent.; carbon, 3 to 4.50 per cent.; sulphur, 0.03 to 0.04 per cent.; phosphorous, 0.03 to 0.04 per cent. This iron is very scarce in the United States, the production small, the price high, and is confined principally in the hands of one house. This quality of iron could be imported from England at a reasonable price, lower than the American quality even with the addition of freight charges.

For the last 12 years we have been engaged in the business of putting up plants for making steel by the converter process, and though we have been able to develop it successfully to a certain degree, yet its wider extension has been very much hindered by the high price of the required pig iron. We have made efforts with several furnacemen to make this so-called silicon iron, but the demand for iron used in the open hearth process is so great that no one cares to divert from his regular work.

The surface-blown converter has proved its usefulness at the present time. It has been introduced with much success and advantage as an adjunct to cast iron foundries, malleable iron works and open hearth steel foundries. It fills a field not reached by the open hearth process for making small and medium perfectly sound castings of high tensile strength, free from blow holes. Steel is rapidly being substituted for cast or malleable iron. There is much demand for good castings from the machinery trade, steam fittings, electrical business, &c. The industries interested in such castings represent a vast amount of money interest, and anything that can be done to promote their success would be quite welcome. The surface-blown converter being now free, the patent having expired, it is to be presumed that its use will be largely extended, provided the duties now paid on the quality of iron needed will be lowered.

It has always been the policy of our Government to put on a very low duty or to enter free materials used by our manufacturers when they can not be procured at home. We bespeak, therefore, in the name of the machinery trade, the electrical business, growing so rapidly, the steel casting interests, and many other allied industries, a consideration at your hands, for lowering or taking away the duty on pig iron of the quality mentioned.

The thriving industry around and about Sheffield, England, is a striking exhibition of what can be done with the proper kind of iron where such is extensively used. By lowering or suppressing the duty on this high silicon iron you will not hurt any existing furnaces, as they do not make this brand of iron, and you will benefit all the industries mentioned. The iron could be imported upon analyses made on the other side and certified before our consuls.

## ANTIFRICTION BEARINGS.

**Statement of the Standard Roller Bearing Company Philadelphia.**

Antifriction bearings are divided into three classes, comprising steel balls, ball bearings and roller bearings, and each item will be treated separately in the following, but the three classes of products are so closely allied that they are manufactured in this country very largely in the same factories, so that general remarks on the subject apply to all three of the products named.

There are engaged in the United States, in the manufacture of steel balls, ball bearings and roller bearings, several thousand employees, which number will be greatly reduced if the tariff is lowered. Heavy importations are made into the United States from foreign countries of steel balls and ball bearings, which are manufactured in foreign countries by the same classes of machines as are used in the United States, the machine being almost exclusively the product of American inventors and copied by the foreign users, and the use of which it has been found impossible to prevent through our patent laws. Owing to the very low labor costs in those countries, the cost of manufacture is much below what it costs to manufacture the same article in the United States.

I have made a personal investigation of the matter, visiting England and Germany during the present year, at which time I made a thorough investigation of the subject and found that labor, which is paid from 50 cents to $1.20 per day in those countries, is the same class as is paid from $2.25 to $3.50 per day in the United States. The raw material from which their products are made costs approximately the same as with us, and as the machines used are the same and produce the same amount in a given time, they have a great advantage over the manufacturer in the United States because of their greatly reduced labor cost.

### BALL BEARINGS.

At the present time there is very keen competition in the United States with ball bearings which are being imported into this country from England and Germany. The following list gives the prices at which the bearings are being sold in England and Germany and at which they are being sold in the United States, the article in each case being identically the same shape, size, weight, design, material used and construction, and alike in every particular:

| England. | Germany. | United States. |
|---|---|---|
| $1.44 | $1.50 | $2.25 |
| 1.38 | 1.44 | 2.13 |
| 1.62 | 1.68 | 2.49 |
| 2.04 | 1.96 | 2.92 |
| 3.84 | 3.84 | 5.76 |

The list I have given shows but five sizes, but there are approximately over 100 sizes, all showing the same relative difference. If the tariff is reduced it will be possible for the foreign manufacturer to send ball bearings into this country to such an extent that it will be unprofitable and impossible to manufacture here in competition with them, and the manufacture of these products in America will be discontinued.

The manufacture of ball bearings, referred to, is a new industry in the United States, having been established only three or four years, during which period a great increase has been made in the output, which, however, will cease entirely if the foreign bearings are brought into more active

competition than at present, as the margin of profit is not sufficient to admit a reduction in their selling price.

STEEL BALLS.

The foreign ball makers are securing some trade in America which would be greatly enlarged if the tariff on such products is not increased. The selling price in England, Germany and the United States for the same article, consisting of steel balls used on bicycles, sewing machines, &c., is as follows per thousand:

| Size. | England. | Germany. | United States. |
|---|---|---|---|
| ⅛-in. | $0.35 | $0.35 | $0.50 |
| 3/16-in. | .59 | .60 | .90 |
| ¼-in. | 1.08 | 1.03 | 1.35 |
| 5/16-in. | 1.89 | 1.80 | 2.50 |
| ½-in. | 10.08 | 9.00 | 15.00 |

The greater portion of the cost of manufacturing steel balls and antifriction bearings is in the cost of the labor, a very small proportion of it representing the raw material used in the manufacture of the product. In the ball bearings above referred to the raw material, consumed in the manufacture of the product of the five sizes named is, respectively, as follows:

| Size. | Cost of material. | United States selling price. |
|---|---|---|
| ⅛-in. | Each $0.27 | $2.25 |
| 3/16-in. | Each .16 | 2.13 |
| ¼-in. | Each .26 | 2.49 |
| 5/16-in. | Each .29 | 2.92 |
| ½-in. | Each .71 | 5.76 |

For steel balls of the size referred to above the raw material or steel consumed in their manufacture is as follows:

| Size. | Cost of material. | United States selling price. |
|---|---|---|
| ⅛-in. | Each $0.02 | $0.50 |
| 3/16-in. | Each .06 | .90 |
| ¼-in. | Each .15 | 1.35 |
| 5/16-in. | Each .30 | 2.50 |
| ½-in. | Each 1.30 | 15.00 |

It will be noted from the above lists that an average of less than 8 per cent. of the selling price of the ball bearings and steel balls is represented by the cost of the raw material used, the remainder being the labor cost, which is due to the fact that the product is one exceedingly difficult to manufacture, requiring great accuracy, in which highly skilled labor is employed, which results in the greatest portion of the cost of manufacture being for labor.

If the duty on the foreign product is reduced it will be impossible for the American manufacturer to remain in business in competition with the foreign product. The fact that the machinery and methods of making are identically the same in the foreign countries and in America shows conclusively that the higher wages paid the American workman adds so much to the cost that it would be impossible for us to manufacture in competition if the duty is reduced.

ROLLER BEARINGS.

The same general remarks apply to roller bearings as are made in reference to steel balls and ball bearings. The foreign makers have some slight advantage over those of the United States in the cost of their raw material, but because its value per unit of manufacture is very low, as is shown in the above lists, it is not a sufficiently large item to enable the American manufacturer to produce his product, if the tariff on steel was reduced to compete with the imported steel balls, ball bearings and roller bearings if a reduction was made in the tariff on steel.

If a reduction in the tariff was made and a corresponding reduction was made in the selling price of the products above enumerated, there would be no corresponding advantage to the individual consumer, while all cost of the change would have to be borne by the American laborer, who would be unable to secure employment at the present existing wages.

The difference to the consumer if the tariff was entirely removed would be exceedingly light. Steel balls, for instance, ⅛ in. size, sell in the United States at 50 cents per thousand, or 5 cents per hundred; the foreign prices are 35 cents and 3½ cents, respectively, or a difference of 15 cents per thousand and 1½ cents per hundred between the foreign and domestic prices. Such balls are used on bicycles, sewing machines, &c., in which from 10 to 25 balls are used in each article. Therefore, if the tariff was removed entirely the difference in the cost of the finished article to the American manufacturer of bicycles and sewing machines would amount to from 2 mills to 4½ mills, or less than 1 cent on the finished article.

For ¼-in. balls the differences in prices is 33 cents per thousand, or 3 3-10 cents per hundred, making a difference to the consumer between the foreign and domestic prices of ¾ cent to 1½ cents for each bicycle, sewing machine, &c., on which they are used.

For ball bearings the difference in price for the average size is from 75 cents to $2 each. These bearings are used on automobiles, &c., where the difference in the cost of an automobile to the consumer would be from 75 cents to $8 each if the tariff was entirely removed.

Analysis of the above shows that the saving that would result, even if the duty was entirely removed, is as follows: On sewing machines, bicycles, &c., according to the size used, 2 mills to 1½ cents each; automobiles, 75 cents to $8 for each automobile.

The same remarks apply to steel balls, ball bearings and roller bearings used on various other products, as in no case is the value large of the balls or bearings so used, and a reduction in price, which would result from a reduction in the tariff, would give no material or compensating benefit to the consumer; while, on the contrary, labor now receiving high rates of wages from the American manufacturers, amounting to $1,500,000 to $2,000,000 per annum in the total wages paid would be very largely out of employment in this particular business or would be forced to accept greatly reduced wages in order to permit the American manufacturer to continue manufacturing his product.

Freight rates have very little bearing upon the subject, as they amount to but little and do not exceed 5 per cent. and usually less on a majority of products referred to above.

As in all other products, the use and consumption of steel balls, ball bearings and roller bearings is limited, and if the tariff is reduced the foreign product will be imported at no benefit to American industry. On the contrary, the foreign manufacturers will be able to increase their force of employees in order to supply the demand for their products in the United States, and for which they will give no corresponding benefit. It will foster and develop the business of sponding benefit. It will foster and develop the business of the foreign manufacturer at the expense of the American manufacturer and laborer and enable them to send their product into this country, thereby reducing the number of employees now engaged in the business in the United States, in addition to which it will draw from this country a large sum which will be paid to the foreign manufacturers for their product, covering their cost and their profit, all of which would be expended by the foreign manufacturers in their own countries in the purchase of raw materials and supplies, also the payment for their cheap labor, producing no corresponding advantage to the consumer in the United States.

## CUTLERY, SAWS AND TOOLS.

### Statement of the Harrington Cutlery Company, Southbridge, Mass.

Concerning the Harrington Cutlery Company, Southbridge, Mass.: Capital stock, $30,000; number of hands, 50; wages and salaries, $30,000; sales at home, $60,000; sales abroad, $4000; originally established in 1818; continued by individuals and partnerships (in Harrington name) in a small way until 1902, when present company was incorporated; growth at present being very rapid.

Schedule C, paragraph 155, interests us, and we very strongly urge that the present rate be maintained in order that we may continue the present standard of wages. Some grades of cutlery manufactured by us would be entirely eliminated should the rates on them be reduced.

### Statement of E. C. Atkins & Co., Indianapolis, Ind.

English manufacturers are to-day underselling us in export markets, and they will continue to do so owing to the large difference in the cost of manufacture abroad and in our own country. If the tariff should be revised in our business the foreign manufacturer would then enter our own market, and between the two evils, namely, our inability to compete with them in foreign markets on the one hand, and their ability to compete with us in our own market on the other hand, we would much prefer the present state of affairs.

In the second place, there are large saw manufacturers in Canada, and the duty on our goods into Canada is 30 per cent. ad valorem on the whole line. If the tariff should be changed it would allow Canadian manufacturers to come into our markets and undersell us right away. This we would not consider advisable. Such a condition of affairs would mean material reduction in cost of manufacture, which would mean reduction in wages and the earning power of our workingmen.

In the third place, Sweden is now sending in crosscut saws notwithstanding our duty of 6 cents per foot, proving beyond question that our duty on saws is not prohibitive as it now stands.

In the fourth place, we want to call your attention to the difference in the cost of labor here and abroad as it applies to our own business. Saw smiths are earning to-day in the United States from 40 to 50 cents an hour, abroad from 20 to 25 cents, other labor in proportion.

We also want to say that a comparison between the Dingley tariff and the Wilson tariff shows no change in the charges on products of our factory. The Wilson tariff was supposed to be a tariff for revenue and not, in the strictest sense of the word, a protective tariff, and in no respect is the tariff on saws prohibitive.

### Statement of the L. S. Starrett Company, Athol, Mass.

We are manufacturers of fine tools and are exporting them now, having a warehouse and office in London. In our experience, the Germans are our worst competitors. They have imitated our improved tools that we have gotten up and patented in this country and would have patented in

foreign countries but for unfavorable discriminations existing against us in the foreign patent laws. The Germans are duplicating tools that we originated, making them more cheaply, sending them into this country and underselling us. The English are also now copying and manufacturing our tools. One of our agents a few weeks since, finding imitations of certain of our tools among the hardware trade, inquired why they did not patronize home production rather than pay duty and sell the German make. The reply was that they could pay the duty and make more on the imported goods than on the home production. For this reason you will see the advisability of keeping up the tariff on goods in our line. We are at present employing between 600 and 700 hands, and are hoping later on to employ twice as many, and shall be able to if we have suitable protection. Therefore we would advise that the present tariff be maintained on goods in our line, but on raw material, such as we use in steel tapes, hack saw blades, &c., we should hope that the duty might be reduced.

We are going to say that the recent change in the patent laws in England discriminates against us more than ever heretofore. As it is now we are not only required to pay exorbitant rates for protection in taking out a patent, while we get none, but are obliged to have the article manufactured in England, as well as France and Germany, in order to maintain the validity of the same. This is a matter, however, that should be brought before those interested in amending the patent laws.

## ENAMELED WARE.

**Statement of the Stewart Company, Moundsville, W. Va**

We wish to speak with reference to the duty on enameled ware included in article 159, under Schedule C.

We are not manufacturing the so-called "American granite and agateware," but are confined exclusively to white lined or porcelain lined enameled iron and steelware. Our competition comes directly from German manufacturers. The brands against which we have to contend are known to the trade as "Stransky steelware," "Pyrolite enamelware," "Elite enamelware," and other well-known brands, all of which are manufactured in Germany and at least one of which is found in almost every good department store and retail hardware store in the country.

We have invested in the business here in West Virginia $450,000, and are doing a business in this city alone of $800,000 per annum. We claim and believe that we are manufacturing ware equal in quality to that made in Germany, but we are not holding our own with the foreign ware, importations of which are steadily increasing. It is not because we do not understand the business in which we are engaged, nor do we think that a higher rate of duty than 40 per cent. is necessary, but we attribute our difficulties:

1. To a distinctive finish that comes of a superior technique or a delicacy of workmanship that has been acquired by the Germans through generations of experience.

2. A disposition on the part of the American consumers to give the preference, at equal prices, to any class of goods that bears the magic word "imported" or "made in Germany."

3. And most serious of all is the unfair advantage taken by the importers of German goods whereby the duty of 40 per cent. is in effect greatly reduced on all articles, and on some articles it is cut in two. We refer to the fact that an importing house in New York, owning its own enamelware factory in Germany and manufacturing exclusively for itself, can and does consign its product of the German factory to its distributing house in New York at valuations that have no reference to cost of production and bear no relation to the price at which the goods are to be sold in this country. The mere fact that their values are not sworn to and are not open to correction by the customs officials at the port of entry is an invitation to perpetrate a fraud on the Government, and the growth of the importations is an evidence that the importers are taking advantage of this weakness in the administration of customs.

4. Again, taking advantage of that clause referring to unfinished goods, the importer has certain goods consigned to him as unfinished goods, admitted under a lower rate of duty, certain articles such as coffee pots in one shipment, unfinished because without covers, and covers in another shipment, unfinished because without pots ,both of which articles become finished when the cover is put on the pot after passing the custom house. Other articles requiring bails continue to be unfinished goods until after the bails are affixed in this country.

5. We submit that this mode of procedure defeats the will of Congress, deprives the Government of its fair revenue and brings to us unfair competition. Whatever may be said of the grosser forms of steel manufactures, this line of business is emphatically an infant industry that needs and must have protection.

As stated, 40 per cent. ad valorem properly administered is sufficient, but we would like to see the frauds perpetrated through the unfinished clause done away with by abolishing that clause, and we would like to see 40 per cent. duty assessed upon valuations that bear some relation to the price for which the goods are going to be sold in this country, since it is impossible to ascertain the true market value of goods in Germany of which 90 per cent. is manufactured for export. The insignificant 10 per cent. can be and is sold at a very low price in Germany to fix a valuation for the 90 per cent. that is exported, and even the 10 per cent. would not be selected goods.

We suggest that a lower rate of duty than 40 per cent. would be more real protection if based upon values in New York than in Germany.

We are convinced that, unless these abuses that have grown up quite recently are not remedied now, the outlook for the American manufacturer of enameled ware is very dark indeed.

## FIREARMS.

**Statement of the Hunter Arms Company, Fulton, N. Y.; Ithaca Gun Company, Ithaca, N. Y.; Parker Bros., Meriden, Conn.; Lefever Arms Company, Syracuse, N. Y.; J. Stevens Arms & Tool Company, Chicopee Falls, Mass.; N. R. Davis & Son, Assonet, Mass.; and Baker Gun & Forging Company, Batavia, N. Y.**

In reference to the hearings now being held before your honorable committee upon the subject of tariff revision, we, manufacturers of double-barreled breech-loading sporting shotguns, representing a large majority of those actively engaged in such industry in the United States, do urgently petition that the present Dingley tariff, act of July 24, 1897, in so far as it affects such arms and parts thereof, be maintained without change for the following reasons:

1. Notwithstanding the protection afforded this industry by the Dingley schedule there have been imported into this country during the 10 years since it went into effect until June, 1908, 1,144,361 double-barreled breech-loading shotguns, which come directly in competition with those manufactured in the United States.

2. By reason of the protection afforded under the present schedule we were encouraged to increase our capital investment, enlarge our facilities, increase the volume of our output, and thereby reduce the selling prices to the consumer.

3. Our cost of labor has been increased 20 to 25 per cent. on account of the general prosperity and increased demand for labor in the metal working industries generally under the present tariff.

4. We desire also that the present tariff on component parts of such guns, as well as on the finished guns, be maintained lest, as in former years under a previous schedule, such guns be imported in parts and assembled after passing the customs free, thus evading the duty, which defect and abuse of the principle of the law has been corrected by the present tariff act.

5. A manufactured gun is more than 80 per cent. labor. In this industry our labor costs three times that of the same class in foreign countries.

6. We further request that shotgun barrels in single tubes forged rough bored and gun blocks for gunstocks rough hewn or sawed or planed on one side, be continued on the free list as at present, because their manufacture or production can not be economically undertaken in this country.

7. While the protection afforded under the present schedule has enabled us to partly hold our home market we have not been able to meet foreign competition in any neutral territory.

8. A double-barreled breech-loading shotgun is a luxury, and every argument to be urged in favor of a protective tariff applies with the greatest force to an industry of this character.

9. The manufacturers of double-barreled breech-loading shotguns are not in any trust, combination or agreement, either expressed, implied, secretly understood or otherwise, for any purpose and never have been. The purchaser, therefore, receives the benefit of the lowest price at which our product can be manufactured and sold in open competition.

In reference to the testimony of Joseph Gales, importer, introduced at this hearing, we beg to state:

That the said importer is of the firm or company of Schoverling, Daly & Gales of the city of New York, engaged in the business of importing and interested in the production of certain foreign made double-barreled breech-loading shotguns known as the Sauer, Daly and Stake guns, and others.

The reduction of imports according to the figures submitted by him are misleading as to arms of this class, included as they are in the totals of all classes of arms and parts thereof in said figures.

Statistics from the Government reports show the total importations of double-barrel shotguns during the first year of the operation of the present tariff act to have been 49,733, and in 1907 (ten years later) 44,185, a comparative decrease of only 11 per cent.

The fact that American double-barrel shotguns are sold at prices ranging from $8 to $500 further refutes the statement of said importer that they do not compete with all grades of foreign made guns.

The importer states that four new factories have been

started for the purpose of manufacturing firearms in this country. If this is true, it is also true that foreign and domestic competition have resulted in the lowering of prices of double-barreled shotguns to such extent that a larger number of such factiries have discontinued.

Without increased cost to the consumer, the American manufacturers of double-barrel guns are now furnishing guns better in quality than ever before. To meet the demand for medium and low priced guns, new grades have been established at prices 35 to 50 per cent. lower than the average prices prevailing when the present schedule went into effect.

While we have not asked for an increase, we assert that the maintenance of the present tariff rates on double-barrel sporting breech-loading shotguns is absolutely necessary to the existence of this industry.

## GUN SHELLS.

**Statement of Fred Biffar, Chicago, Ill.**

I would like to call the attention of your committee to the fact that paper shotgun shells, sometimes known as "paper shotgun cartridge cases," are not specified in the Dingley bill, consequently they come in as manufactured articles. The component part is chiefly brass and carries a duty of 45 per cent. ad valorem, and if you will have the records looked up you will find there has been scarcely any of these goods imported for the reason that 45 per cent. is a prohibitive tariff.

I am sending you under separate cover a sample of imported paper shotgun shells, and will state that I would like to import these goods and load them here with powder, wads and shot, but under the present rate of duty I cannot do so, and I must lepend on American manufacturers for supplies of these goods, and the same manufacturers may cut off my supply at any moment leaving me with machinery for doing this work that will be useless.

I would be glad to go to Washington and present this case to you in person, but the amount involved would be trivial as compared with subjects you are now handling, for as a matter of fact I think I could import about 2,000,000 of those shells per year, and the average price per thousand shells should be approximately $4 per thousand or a gross sum, say, of $8000 per year, and I would recommend that these shells be put either on free list or if the Government could reap a benefit from this business I should recommend 10 per cent. ad valorem, not to exceed 20 per cent. ad valorem, or a flat rate of, say, $1 per thousand if you prefer to put it that way.

The shells are described "primed empty shotgun shells" or "primed empty shotgun cartridge cases." The latter is the term used in Europe more frequently and the former is the term used in this country most frequently.

The above items could consistently be added to paragraph 424 under the title of explosive substances of the Dingley bill.

I think you will find the only shells now imported are pin fire—not made in this country.

## TEXTILE MACHINERY.

**Statement of Robert F. Herrick and Others.**

As president of the Lowell Machine Shop, and on behalf of a committee representing the principal manufacturers of textile machinery in this country, I desire to submit to you a brief statement showing why the duty on imports of this character should be maintained at at least the present rate.

Machinery of this description is now and has been in the past included in the general paragraph at the end of Schedule C—in the present tariff paragraph 193, "Articles or wares not specially provided for in this act, composed wholly or in part of iron, steel, lead, copper, nickel, &c.," on which is imposed a duty of 45 per cent. ad valorem.

We do not ask to have this rate increased on textile machinery, but we submit that the rate should remain unchanged in the new tariff. We understand that the platform of the Republican party as adopted in Chicago and as interpreted in the speeches of the President-elect in respect to revision of the tariff, contemplates that the new tariff shall impose "such duties as will equal the difference between the costs of production at home and abroad, together with a reasonable profit to American industries."

If the rate of duty on textile machinery is reduced from the present rate, it will be in violation of this portion of the Republican platform. The only foreign country engaged in the manufacture of this form of machinery to any appreciable extent is England. England does more than three times as much textile manufacturing as the United States, and manufactures much more than three times as much textile machinery as the United States. The shops for the manufacture of textile machinery in England have been established for generations, and several of them are many times larger than any of the American shops. They are abundantly supplied with capital, and the cost of their plants is probably not greater than 60 per cent. of the cost of the plants in America. Competition with this country in the manufacture of textile machinery always has been and still is keen, and while the large proportion of the cotton machinery used in this country is made here, a substantial amount of it is still imported. Most of the worsted machinery used in this country is imported from England, though the American shops are making year by year a better product and are gradually gaining in this branch of the business.

The capital employed in the manufacture of textile machinery may be roughly estimated at approximately $40,000,000, and the number of men employed at, say, 20,000.

Prior to the Wilson tariff the rate of duty was the same as it is now—45 per cent. The Wilson tariff reduced the duty to 35 per cent., and the present tariff restored the rate to 45 per cent. in 1897.

The reports of the Bureau of Statistics show a steady gain in importations of machinery from the United Kingdom during the present tariff. In 1897 such importations amounted to only $945,380, whereas in 1907 they amounted to $2,845,357. Our own ivestigations at the port of Boston tend to show a similar increase. Our estimate of the importations of textile machinery in Boston alone show a gain from $850,850 in the year 1898 to $2,113,528 in the year 1907.

There have been no exports of American made textile machinery except in isolated cases where the foreign manufacturer was anxious to try the higher priced American machinery on account of certain special or patented features. There is absolutely no such thing as competition abroad between American made machinery and English made machinery. This is not because of superior quality in the English machinery, but simply because the English manufacturers can afford to sell and do sell and make a profit at prices which would not repay the American cost.

## PLATINUM.

**Statement of J. Bishop & Co., Malvern, Pa.**

The undersigned respectfully petition and invite your attention to paragraphs 641 and 642 of the tariff law of 1897, admitting platinum, either manufactured or unmanufactured, duty free.

Ws ask that part of paragraph of 641, relating to platinum in sheet and wire and all of paragraph of 642 be stricken from the free list, and that a duty be placed on these items of at least 25 per cent. Our claims for asking this duty are based on the following:

1. That owing to the cheaper labor cost European manufacturers are enabled to sell platinum for chemical purposes, such as vases, retorts, crucibles, dishes, wire, foil, &c., at a lower price than they can be made for in this country.

2. We ask that as manufacturers of such apparatus we be given a certain amount of protection, the same as other manufacturers of chemical and scientific apparatus, thereby giving a larger field of employment for skilled American labor, and enable us to pay higher wages than can now be done.

3. Our ability to meet the demands of the users of this material is unquestioned. The first platinum works in the United States was established by the founder of these works. Joaquin Bishop, in 1842, and the process first used by and original with him in melting and manufacturing platinum for chemical, dental, jewelry and other purposes was adopted by European manufacturers.

4. That the only other works in the United States claiming to manufacture a line of platinum for chemical purposes besides ourselves is controlled by a European company, which in turn is associated with what is commonly known as the "platinum syndicate," composed of English, German and French manufacturers, whose product is sold largely in the United States. Under the existing tariff it is possible for this company to import platinum chemical apparatus, either wholly or partly manufactured, and sell it as of American manufacture.

The only way we can meet this competition is by having a duty placed on manufactured platinum for chemical purposes consisting of crucibles, dishes, retorts, wire, foil, sheet, &c., thereby giving larger employment to American labor and encouraging manufacturers in this country independent of European control.

5. That the United States Government in its various departments purchases platinum in manufactured form, much of which is of foreign manufacture, and all of which could be made in this country of as fine quality and workmanship if given moderate protection.

6. Your attention is called to paragraph 193 of the tariff law of 1897, which places a duty of 45 per cent. on all articles made wholly or in part of platinum not otherwise provided for in this act, and we claim that there should be no distinction made in platinum for chemical purposes.

7. Platina or platinum unmanufactured, consisting of ore or in bars or ingots not less than ⅛ in. thick, we ask be admitted free of duty, as under the existing law, as the domestic supply of crude platinum is so small as to be a negligible quantity, the Russian mines furnishing the principal supply.

Platinum ingots as imported into the United States are approximately 5-16 in. thick by 2 to 4 in. wide, and weigh about 100 troy ounces each.

## MACHINE TOOLS.

A very influential representation of the machinery trade, including prominent members of the National Machine Tool Builders' Association, has presented a brief recommending the establishment of a maximum and minimum tariff on machinery, which would be in effect a reduction. The retention of the present duty of 45 per cent. ad valorem is advocated as the maximum rate, in combination with a minimum rate of 30 per cent. for those countries which come under the favored nation clause.

The original brief was prepared and signed by the committee of 12 appointed by the National Association to appear before Secretary Straus of the Department of Commerce and Labor to urge the continuation of the investigation of conditions abroad in their relations to the machinery industry, as begun by Capt. Godfrey L. Carden. The committee was in Washington last week, and it was suggested that advantage be taken of the gathering to present the views of the industry to the Ways and Means Committee. The time allotted to the tariff on machinery had passed, but it was arranged that Chairman Payne would give the members a private hearing at the close of one of the day's sessions. It happened, however, that adjournment on the day in question was not until a very late hour, and consequently, upon the suggestion of Congressman Hill of Connecticut, it was decided to submit the views of the trade in the form of a brief. The document does not go into details and statistics of the machinery business, but is a comparatively short recommendation of the establishment of the minimum rate, as stated. It was signed by 10 of the 12 members of the committee, as follows: Fred L. Eberhardt, Gould & Eberhardt, Newark, N. J., president of the National Machine Tool Builders' Association; Murray Shipley, Lodge & Shipley Machine Tool Company, Cincinnati, Ohio; H. L. Flather, Flather & Co., Inc., Nashua, N. H.; C. H. Alvord, Hendey Machine Company, Torrington, Conn.; F. A. Geier, Cincinnati Milling Machine Company, Cincinnati, Ohio; A. T. Barnes, W. F. & John Barnes Company, Rockford, Ill.; J. B. Doan, American Tool Works Company, Cincinnati, Ohio; P. E. Montanus, Springfield Machine Tool Company, Springfield, Ohio; C. A. Johnson, Gisholt Machine Company, Madison, Wis., and W. P. Davis, Davis Machine Company, Rochester, N. Y. Of the two other members of the committee, W. R. Warner, Warner & Swasey Company, Cleveland, Ohio, favors the ideas set forth in the brief, but was compelled to leave Washington before it was completed, and E. M. Woodward, Woodward & Powell Planer Company, Worcester, Mass., while strongly in favor of the change as suggested, preferred to wait until the matter could be brought before the manufacturers of the Worcester District and act with them. A meeting was called at Worcester later in the week and a brief containing practically identical views was prepared and signed by a large majority of the trade of Worcester and Fitchburg and forwarded to Washington.

The argument of the machine tool builders is that it is only just to foreign builders and customers that the American machinery industry be placed in a position of reciprocal tariff relations under the favored nation clause. There is at present little demand for foreign built machinery of the standard types in the United States, though certain special tools are imported to some extent. The American industry feels that it should recommend a maximum and minimum rate that it may participate in the reduction which goes with reciprocal tariff relations. Under existing treaties, practically the entire foreign machine tool industry is included in this class. Naturally the effect of such a decrease should be felt abroad in the way of an increase of friendly feeling not only on the part of machinery builders but of buyers as well.

The committee of 12 was given a hearing by Secretary Straus and urged the continuing of the investigations begun by Captain Carden. The members pointed out that this work could not be accomplished so satisfactorily by a representative of the Machine Tool Builders' Association as by an official representing the United States, who would be given greater freedom of access to works and records, and consequently would be able to get at a much more intelligent and comprehensive idea of the kind of facts that would be of advantage to the American industry. Secretary Straus took the matter under advisement.

## BAR IRON.

James Lord, president American Iron & Steel Mfg. Company, Lebanon, Pa., has filed the following supplementary statement with the Ways and Means Committee:

On the 25th ultimo I addressed your committee in reference to paragraph 123 of metal schedule of Dingley tariff, which states the duty on bar iron as 6-10 cent per pound.

As the events of the year have clearly indicated that we are to have a new tariff law, revised along lower rates of duty, a meeting of iron and steel manufacturers was held in New York on the 23d ultimo to consider the situation and present their views before your committee. I was designated by them to speak on the above item. The suggestion of reduction of the tariff on bar iron from 6-10 to 5-10 cent per pound was made after consultation with as many bar iron interests as the limited time permitted. I have since written to all the manufacturers whose addresses could be procured, except those on the Pacific Coast, and have received 30 replies, representing the great majority of the tonnage produced in the United States.

While the preference of an overwhelming number would be to make no change, and thus avoid the disturbance to business consequent upon tariff revision, 25 of the 30 recognize the inevitable by indorsing the suggested reduction as above stated; five wish to be counted as greatly opposed to any reduction whatever.

In comparing the duty on iron bars with steel bars, it should be remembered that the former carry a much higher labor cost, as steel bars are rolled with automatic mechanism which cannot be applied to iron. And it should be remembered that during this period of great depression wages have to a remarkable extent been maintained and in no case have I heard of any considerable reduction of wages in this industry.

The brief submitted by James H. Nutt shows that the wages paid for puddling in Great Britain is less than half the American rates. It is in order to continue the wage of labor at the present remunerative rates that manufacturers are so interested in not reducing the duty below 5-10 cent. I believe that amount is needed as a tariff on labor.

If bar iron was put on the free list, it would still be manufactured in this country, but it would be at the expense of labor whose wages would necessarily fall to the level of the competing countries—Great Britain, Germany and Belgium.

The ordinary refined iron of commerce (when partially made from scrap material) is now sold at from $1.35 to $1.50 per 100 lb., the quality determining the difference between these rates. The average profit to the manufacturer at present is about $1 per ton or less. The labor cost in making iron bars is about one-third of the total cost where scrap is largely used; if all muck bar is used the labor is greatly increased. The price of refined iron bars in England November 1 was $29.84 per gross ton, on cars at the mill, equivalent to 1.33¼ cents per pound

A number of manufacturers have requested me in presenting this brief, to advocate much lower duties on iron and steel scrap. I will, however, merely state conditions. The demand for this scrap material has been greater than the visible supply, due in part because it has been largely held by speculative dealers. Canada puts a practically prohibitive duty on iron and steel bars, but only a nominal duty on scrap. Consequently that country can feed her mills with our scrap, while our mills cannot sell them manufactured bars.

**The Largest Chimney in the World.**—A chimney of unprecedented size, built at the smelter plant of the Boston & Montana Consolidated Copper & Silver Mining Company, near Great Falls, Montana, is described by the *Engineering News*. It is 506 ft. high above the top of the foundation ring and 50 ft. in interior diameter at the top. It is the highest in the world by about 40 ft. and the highest in the United States by 140 ft., the Eastman Kodak chimney being 366 ft. high, and the Orford Copper Company's chimney 365 ft. The weight of the stack is between 17,000 and 18,000 tons. Its discharge capacity is 4,000,000 cu. ft. of gases per minute, with a draft of 3¾ in. water expected with gases at 600 degrees F. average. The hight was governed solely by the draft requirements and not by the desideratum of discharging high enough in the air to prevent creation of a nuisance. This latter requirement is met by the existing stack, which is but 186 ft. high., the city of Great Falls being 500 ft. lower than the tableland and the valley bottom 250 to 300 ft. lower.

The first Schlick gyroscopic apparatus made in England for preventing ships from rolling at sea has been constructed at the Neptune Works of Swan, Hunter & Wigham Richardson, Ltd., Newcastle, and has been fitted in the steamship Lochiel. The apparatus can be thrown in or out of action at will. When out of action the Lochiel rolled to angles of 16 degrees on each side—that is, the total angle of roll was no less than 32 degrees—and when the apparatus was put into action the rolling was decreased to a total angle of roll of from 2 to 4 degrees. The gyroscope on the Lochiel is driven electrically and needs little attention. It requires but little space in the steamer, as the design has been simplified and is now very compact.

# THE IRON AGE

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## Regulation of the World's Export Trade in Iron and Steel.

The effort now being made at Washington, with no close approach to success, to grasp some of the main facts concerning international competition in iron and steel makes timely a paper recently prepared by Harold Jeans, editor of the *Iron and Coal Trades Review*, London, England, for the Staffordshire Iron and Steel Institute. It is entitled "The World's Export Trade in Iron and Steel and Its Regulation." While dealing chiefly with the first part of his subject, Mr. Jeans has developed it all with reference to its bearing on the possibility of international regulation. Indeed, on the second page of his pamphlet of more than 30 closely printed pages he introduces a part of the address made in London in September last by Judge Gary, chairman of the United States Steel Corporation, before prominent representatives of the steel trades of Great Britain, Germany and France. The keynote of that address was contained in the sentence, "The manufacturers of iron and steel in all countries should be working together with and for one another." Judge Gary's proposal that in connection with the export iron and steel trade of the leading iron producing countries there should be "a committee composed of men whose advice should always be followed" is taken by the writer of the paper to point to "a board of directors, the members of which are to be elected as representing the various countries concerned, the majority of which shall be able to fix the prices at which each buyer shall obtain his material and from whom he shall buy it." Whether the very definite construction contained in these last two lines was intended by the maker of the London address may be questioned; but there can be no mistaking its general tenor or its advocacy of measures of practical co-operation to do away with the profitless selling of iron and steel in markets far distant from the point of manufacture and naturally tributary to the plants of other manufacturers.

Two lines of inquiry are followed in the paper, in considering the possibility of international regulation; the first deals with internal conditions in the iron trade of each country, and the second with the nature and extent of the export trade in iron and steel. The facts involved are by no means few or simple. Yet the writer finds that conditions have been shaping themselves in various countries so that an international understanding is more easily possible than ever. Since production must be on a large scale to pay, capital cannot be had for iron works in remote parts of the world. The export trade, therefore, has been largely carried on by four countries—Great Britain, Germany, the United States and Belgium. France has a smaller trade, but it is mainly just across her borders or with her colonies. Sweden has a small trade in specialties, and Austria, Russia and Spain appear but spasmodically in international competition.

Passing to consider the status of the domestic iron trade in each country, the paper takes up the United States first. It is argued that overcapitalization of large producers will not prevent the export of American steel at low prices, but public opinion in the United States is regarded as the most powerful deterrent of a policy of dumping abroad, accompanied by such price maintenance at home as has marked the past year of depression. The interesting statement is repeated from the report of the United States Steel Corporation for 1907 that "the average mill price per ton received for all exported materials in 1907 was [but] 7½ per cent. less than the average price for the home trade." How little the export trade amounts to for American works, in comparison with their home trade, has been a matter of frequent comment. The paper puts it well by saying that the falling off in our home trade in iron and steel this year, from either 1907 or 1906, represents a larger tonnage than a year's iron and steel exports of all countries. It is intimated that future competition from this country in international markets may come from the Atlantic seaboard, where the price of Cuban ore, supposing the duty on ore removed, is put at $1 a ton, a figure well below anything possible now, even with the duty counted out. Then taking up Germany, the paper describes the syndicate operations there, which are now quite familiar. It points out how the British market has acted to an extent as a safety valve to German trade, having contributed to the stability of the syndicates, which are partly able to compete in oversea markets by low fixed charges on large outputs. The Belgian steel syndicate is next referred to—modeled after those of Germany. While not in the sound position of steel companies of the United States, Germany and England, which control their own supplies of pig iron, while Belgium imports considerable pig iron and makes only one-thirteenth of its pig iron from native ore, the Belgians are strong competitors in rails, shapes, merchant iron and steel and wire nails, and half their exports are to countries which themselves produce iron and steel. France the writer considers to have been underestimated as a factor in international trade. Her per capita consumption is small, but her production has been increasing, having nearly doubled since 1891, and there are several successful syndicates. With a passing reference to Russia, Austria and Spain, the latter two of which have syndicates, while in the south of Russia is a recently formed syndicate controlling more than half the pig iron output, Mr. Jeans takes up finally Great Britain. It is pointed out that while there are no such powerful combinations as exist in the United States and Germany, most iron and steel products are represented by associations and the disposition to regulate competition has been more marked in recent years.

> Many of the [British] districts producing pig iron have their local association, and the same applies to the bar iron trade. Plates, angles, rails, joists, tubes, galvanized sheets, wire, castings and forgings are some of the descriptions of iron and steel in which there are associations of makers, formed with a view of influencing if not controlling the home market. Some agreements embrace exports, but the difficulties of co-operation have resulted in international agreements being limited to products where the trade is in a very few hands, such as rails, or to go to an extreme in finished articles, like large gas engines.

This review of the conditions in the various countries brings the writer to the point that in view of the general existence of syndicates in the iron trade it is no

violent assumption that, with the exception of Great Britain, a scheme might be drawn up by the conference of a half dozen individuals representing the various syndicated countries. The question then presents itself, What products in the main and what tonnage would come under the operation of an international agreement? Pig iron is practically ruled out as too low priced a product to be diverted from natural channels to artificial ones, and as being too largely, so far as export trade is concerned, in the hands of merchants. Great Britain is chief in pig iron exports, and the figures present the anomaly of large British exports to Germany, while bounty fed German pig iron is at times sold in considerable quantities in Great Britain. In setting down the statistics of export iron and steel trade the first impression will probably be that they are not enormously large. Home or nearby demand is after all the dependence of iron and steel works in all countries. The paper goes back to 1894 in its general presentation of the export movement from the five leading countries, because in the next 10 years these exports practically doubled, while in three years more the figures of 1894 were nearly trebled. For 1894, 1904 and 1907 the showing is as follows in gross tons:

*Exports of Pig Iron and Finished Iron and Steel.*

| | 1894. | | 1904. | | 1907. | |
|---|---|---|---|---|---|---|
| | Tons. | Per cent. | Tons. | Per cent. | Tons. | Per cent. |
| Great Britain | 2,656,000 | 65.6 | 3,266,000 | 38.0 | 5,166,000 | 44.5 |
| Germany | 752,000 | 18.6 | 2,770,000 | 32.3 | 3,452,000 | 29.7 |
| United States | 82,000 | 2.0 | 1,167,000 | 13.6 | 1,301,000 | 11.2 |
| Belgium | 402,000 | 9.9 | 912,000 | 10.7 | 1,129,000 | 9.7 |
| France | 154,000 | 3.8 | 461,000 | 5.3 | 555,000 | 4.9 |
| Totals | 4,046,000 | | 8,576,000 | | 11,603,000 | |

The pig iron export movement of the five countries for 1904 and 1907 is put at 1,311,000 and 2,628,000 metric tons respectively, and the finished iron and steel trade for the two years at 7,279,000 and 9,033,000 tons respectively. Great Britain shipped 76 per cent. of the export of pig iron last year, Germany 10.4 per cent., the United States 2.9 per cent., Belgium 0.9 per cent. and France 9.7 per cent. Of export finished material Great Britain sent out 35.7 per cent. last year, Germany 35.2 per cent., the United States 13.6 per cent., Belgium 12.2 per cent. and France 3.3 per cent.

Referring to semifinished steel, it is shown that Great Britain is the chief importer and that Germany and the United States have been the chief exporters. The fluctuations in the movement have been notable. Great Britain has imported 3,000,000 tons since 1900, and the average imports and exports in the past four years have been as follows:

*Average of Four Years' Imports and Exports of Semifinished Steel.—Gross Tons.*

| | Imports. | Exports. |
|---|---|---|
| Great Britain | 484,000 | 9,500 |
| Germany | 6,000 | 460,000 |
| United States | 19,000 | 206,000 |
| Belgium | 130,000 | 23,000 |
| France | 3,000 | 164,000 |
| | 642,000 | 862,500 |

International regulation here would meet some diversities of interest. The British sheet and tin plate makers buying German and American sheet bars would be hurt by a uniformly higher price for sheet bars, and would be driven to build steel works or make an arrangement with British steel works—something they might well consider even now.

The exports of rails from the leading countries have not fluctuated greatly in the past few years. From 1903 to 1907 they have been respectively 1,328,000 tons, 1,386,000 tons, 1,313,000 tons, 1,386,000 tons and 1,405,000 tons. Of the last total, that for 1907, Great Britain exported 30.6 per cent., Germany 29.7 per cent., United States 24.1 per cent., France 4.6 per cent. and Belgium 10.9 per cent. It is noted in the paper that the present International Rail Association embraces all the principal rail exporting countries, and the writer ventures the estimate that an additional $5 a ton is secured on an export to neutral markets of roundly 1,400,000 tons a year.

In wire and wire nails the supremacy of Germany in the export trade is conspicuous. Out of a total of 748,000 tons of these products exported last year Great Britain shipped 13.5 per cent., Germany 52.6 per cent., United States 27.1 per cent., Belgium 6 per cent. and France 0.8 per cent. On the heavier gauges of wire British trade is dwindling, though the demand is largely from British markets. One difficulty in dealing with the British wire trade is that it is in so many hands, perhaps not less than 100 firms.

Of sheets and plates (not including tin plates and black plates for tinning) Great Britain is the chief exporter. Out of a total of 1,306,000 tons exported last year that country is credited with 58.7 per cent., Germany with 23 per cent., United States with 9.3 per cent., Belgium with 8.3 per cent. and France with 0.6 per cent. Of 418,275 tons of tin plates exported in 1907 Great Britain furnished 96.8 per cent. and the United States about three-fourths of the small balance.

Summing up, the regulation of prices and production in one country alone is naturally far easier than international regulation. The possibility of protecting each country's home market from competition by a general agreement is suggested, but it is also observed that for the most part the material now supplied each country is either not at present obtainable in that country or is manufactured on an insufficient scale. Great Britain, for example, needs semifinished steel. The lines, therefore, on which an international agreement would make its first advances would seem to be in the elimination of dumping and in maintaining in neutral markets substantially uniform prices on heavier products, like rails and structural material, of which almost the entire production is in the hands of large steel companies.

## The Increase of Amateur Mechanics.

A growing demand is observed for what is known in the trade as amateur machinery. More tools are finding their way into the homes or little shops of men, old and young. Dealers who specialize in this class of equipment hardly know how to account for the increase, unless it is a result of the manual training and trade schools. Probably the owners of amateur machinery may be divided into two classes, those with hobbies which require some machine work in their construction, and those who are seriously at work on ideas which they hope to develop into commercial usefulness and financial profit. Professional men—lawyers, physicians and even clergymen—are numbered among the amateurs who buy machinery. The usual tool called for is a foot power lathe, back geared to give the power to reduce metal and cut threads. More ambitious or more well-to-do amateurs buy tools of the manual training type and drive with electric motor.

There has always been a scattering lot of mechanics, men who work at their trades regularly, who are developing inventions during their leisure hours. They need machinery at times. They may get in a few minutes in the shop occasionally, either by paying for the privilege or through the indulgence of foreman or superintendent. In these cases they require no machinery of their own.

In some shops such privileges would not be permitted, and the inventor is forced to do his work at home. Or he may wish to keep secret the fact that he is doing work outside and may, therefore, refrain from taking it to the shop. He is no amateur. A good mechanic can obtain first rate results from a lathe that requires foot-power to operate it. His planer work and, perhaps, some heavier operations, may have to be done outside. The real amateur may have to consider other things than cost. A lawyer who recently purchased a lathe made the important factor of his inquiry that the machine should take little space and make little noise in his household. The automobile has not had a great influence on this branch of the machinery business, few owners having shops of their own, except where they are rich enough to have an equipment of regular machine tools, and these cases are rare. Few automobile owners have the skill or desire to attempt to do repair work, and there are few places so small as not to possess an automobile repair shop.

It is entirely natural that the training of young men under manual training or trade school conditions should develop a mechanical taste which may be gratified later, even if the man enters a field of labor foreign to the shop. He is the possessor of a knowledge which would suggest hobbies or more useful ideas that would not otherwise come to him, and in gratifying them he would naturally desire to do his own work, and the amateur lathe or other mechanical tool enables him to do so. Possibly in a small percentage of such cases results may be obtained which will be practically useful. Ideas may be developed which will be worth while. Where the amateur in any trade seriously sets about a work from pure enthusiasm for it he may accomplish results which rival the efforts of the professional. At any rate it is a harmless and doubtless fascinating form of amusement.

## CORRESPONDENCE.

### Heat Equalization and Oxidation in the Baillot Cupola.

*To the Editor:* Referring to the report on the Baillot cupola, as it was seen and discussed at the Toronto convention of the American Foundrymen's Association in June last, the article in *The Iron Age* of November 19 says that in the discussion it was argued that the "tuyere region was where the heat was needed." This leaves in the reader's mind the impression that the Baillot system takes the heat upwards and away from that region, which is just the reverse of what it does and is intended to do. By their action the steam and the carbonic gas reduce the excessive temperatures in the immediate neighborhood of the tuyeres and raise that of the inner regions of the tuyere area, toward the center of the bed and thereby equalize these temperatures throughout the whole mass of the bed, and not upwards and away from it, as implied in the words used in the article.

Further on it is said: "Some point has been made also of the oxidizing action at the point where the vapor in the returned gases is separated into hydrogen and oxygen," and, it is added, "how far the liability of the molten iron to take up oxygen may detract from the advantages of the process, is the question raised in this connection." On these points permit me to say:

1. That the volume of the blast per pound of iron is smaller in the case of the Baillot cupola than in that of any other and that, in consequence, the quantity of oxygen brought into contact with the iron on that head alone is smaller in that case and the liability to oxidation correspondingly reduced.

2. That aside from the volume of the blast being smaller, it is further reduced by the presence of the inert gases and vapors drawn into it through the recuperator and out of the cupola. The greater portion of these gases, by the way, are deoxidizing agents and therefore not at all liable to oxidize the iron. With steam, for instance, the reaction in the presence of red hot carbon is:

$$H_2O + C = CO + 2H$$

and with carbonic gas:

$$CO_2 + C = 2CO.$$

Both of these reactions are reductive in their effect, or the very reverse of oxidizing.

3. That these reactions lower the temperature of the medium in which they take place and so further reduce the chances of the molten iron encountering high temperatures at which it would be liable to burn or oxidize.

LOUIS H. BACQUE.

WESTMOUNT, near Montreal, Canada, December 1, 1908.

### Vanadium.

*To the Editor:* With reference to the letters of Mr. Auchy and myself, which appeared in your issue of December 3, I would take this opportunity of sending to you many detailed experiments published with records of tests on various vanadium steels made in America, unfortunately their publication *in extenso* would probably not be considered practicable to you. In addition to these, the records of numerous English societies of 1904, 1905 and 1906 will bear evidence that the investigations of vanadium steel have not been confined to two or three laboratory researches. In view of the above, I venture to think that Mr. Auchy's accusation of "modest diffidence" on my part is not quite deserved. But as practical demonstration has always been, and always will be, considered of more value than laboratory proofs, I cannot do better than recall to Mr. Auchy's attention the comprehensive exhibit of vanadium steels presented at the annual convention of master mechanics and master car builders at Atlantic City in June of this year, when commercial applications and many service results (which results be it noted had been developed from the laboratory investigations of years) were shown in most varied detail.

The above quoted furnish the "facts" desired by Mr. Auchy. It may be permissible for me to draw your attention to the obvious printer's error contained in that portion of my letter of November 18 dealing with the scavenging action of vanadium, the correct reading being that "0.1 per cent. is a common requirement even in open hearth steels which have been well deoxidized by the ordinary means." J. KENT SMITH.

PITTSBURGH, December 4, 1908.

## The Ohio Seamless Tube Company.

The new works of the Ohio Seamless Tube Company, at Shelby, Ohio, now being erected on the site of the plant of the Shelby Seamless Tube Company that was destroyed by fire last June, is rapidly nearing completion. The main building, for cold drawing and finishing shops, will be 100 x 360 ft. The annealing and pickling shop will be 85 x 320 ft. The hot work piercing and rolling shop will be 130 x 220 ft. Other buildings are the gas producer plant, 25 x 40 ft., and annealing furnaces, 30 x 80 ft. All are of steel frame work construction. For facilitating the handling of material and product, tracks are laid through the center of each of the principal buildings. The entire plant will be equipped with the latest appliances for the production of seamless tubing of all sizes and gauges, and every effort is being put forth to make it the best of its kind in the world. The company will be managed by men long and favorably known as having been connected with the old Shelby tube plant, and will employ former operatives of the old works, who have made seamless tube production a study. It is expected that the new plant will be ready to start up by February 1, and the company has already booked a very satisfactory volume of business for delivery during the coming year.

**A By-Product Coke Plant at Indianapolis.**—The Citizens Gas Company, Indianapolis, Ind., is building a plant of 50 by-product coke ovens on the United-Otto system. The plant is to be fitted with all accessory ap-

paratus for the production of illuminating gas by the separation method and recovery of by-products. Construction is being actively prosecuted under four contractors, as follows: The United Coke & Gas Company, which has the contract for construction of the ovens, the cooling and ammonia plants, the power plant and some other important parts of the work; the Western Gas Construction Company, which has the contract for the purifiers; the Kerr-Murray Mfg. Company, which has the contract for the two gas holders, and the Henry Pratt Boiler & Machine Company, which has the contract for the greater part of the water gas plant. The main building is one of the largest in that section of the country, and is strongly constructed so that it can carry a huge traveling crane and the hoisting machinery used in the erection of the ovens. In the construction of this plant the design contemplates the best materials and most modern processes. The plate work is much heavier than that commonly used. The character of the work being done by the United Coke & Gas Company is the object of particularly favorable comment. The coke produced will be used in part for metallurgical purposes or will be crushed and sized for domestic service.

## October Iron and Steel Exports and Imports.

As compared with the previous month, not much change is noted in either the export or import trade in iron and steel and manufactures thereof for October by the Bureau of Statistics of the Department of Commerce and Labor. The total value of the October exports, not including ore, was $11,505,063, against $11,074,653 in September. The figures for commodities for which quantities are published show a slight increase, being 85,667 gross tons, against 76,727 tons in September. The following table gives these exports for each month of the current year:

| Month. | Gross tons. | Month. | Gross tons. |
|---|---|---|---|
| January | 74,352 | June | 69,778 |
| February | 81,755 | July | 86,806 |
| March | 96,437 | August | 87,198 |
| April | 93,522 | September | 76,727 |
| May | 64,020 | October | 85,667 |

The details of the exports of the same commodities for October and for the 10 months ending with October, as compared with the corresponding periods of 1907, are as follows:

*Exports of Iron and Steel.*

| | October. | | Ten months. | |
|---|---|---|---|---|
| | 1908. | 1907. | 1908. | 1907. |
| | Gross tons. | Gross tons. | Gross tons. | Gross tons. |
| Pig iron | 6,521 | 4,306 | 37,089 | 64,415 |
| Scrap | 992 | 1,545 | 18,083 | 24,298 |
| Bar iron | 661 | 2,007 | 6,352 | 21,316 |
| Wire rods | 1,199 | 396 | 5,662 | 10,256 |
| Steel Bars | 3,711 | 7,500 | 36,272 | 63,351 |
| Billets, blooms, &c | 10,437 | 5,840 | 96,752 | 66,133 |
| Hoop, band, &c | 215 | 375 | 3,672 | 6,231 |
| Steel rails | 19,364 | 34,753 | 175,462 | 288,002 |
| Iron sheets and plates | 4,180 | 3,565 | 36,309 | 32,074 |
| Steel sheets and plates | 5,155 | 6,549 | 48,749 | 70.490 |
| Tin and terne plates | 72 | 430 | 11,473 | 9,387 |
| Structural iron and steel | 9,079 | 15,587 | 100,527 | 117,774 |
| Barb wire* | 7,099 | 15,973 | 20,321 | 132,298 |
| Wire | 4,396 | | 90,720 | |
| Cut nails | 415 | 675 | 5,944 | 5,692 |
| Wire nails | 1,276 | 2,874 | 21,568 | 37,695 |
| All other nails, including tacks | 669 | 822 | 4,205 | 6,632 |
| Pipes and fittings | 10,226 | 19,976 | 96,197 | 143,608 |
| Totals | 85,667 | 123,173 | 815,357 | 1,099,652 |

* Not separately stated prior to July 1, 1908.

The total value of the imports of iron and steel, not including ore, for October was $1,466,436, against $1,515,584 in September. The imports of commodities for which quantities are given are still quite insignificant, being only 13,214 gross tons, against 13.122 tons in September. The imports of this character for each month of the current year are shown in the following table:

| Month. | Gross tons. | Month. | Gross tons. |
|---|---|---|---|
| January | 28,008 | June | 21,109 |
| February | 19,054 | July | 18,320 |
| March | 15,885 | August | 13,186 |
| April | 12,342 | September | 13,122 |
| May | 13,584 | October | 13,214 |

The details of the imports of the same commodities for October and for the 10 months ending with October, as compared with the corresponding periods of 1907, are as follows:

*Imports of Iron and Steel.*

| | October. | | Ten months. | |
|---|---|---|---|---|
| | 1908. | 1907. | 1908. | 1907. |
| | Gross tons. | Gross tons. | Gross tons. | Gross tons. |
| Pig iron | 8,103 | 9,893 | 73,383 | 459,040 |
| Scrap | 82 | 650 | 3,748 | 25,619 |
| Bar iron | 766 | 2,420 | 15,801 | 32,761 |
| Rails | 197 | 155 | 1,321 | 3,444 |
| Hoop, band, &c | 203 | 52 | 697 | 1,427 |
| Billets, bars and steel in forms n.e.s | 568 | 1,579 | 7,762 | 13,044 |
| Sheets and plates | 191 | 206 | 1,976 | 3,204 |
| Tin and terne plates | 1,656 | 5,140 | 51,368 | 51,846 |
| Wire rods | 933 | 996 | 9,503 | 14,295 |
| Structural iron and steel | 515 | 132 | 2,299 | 2,159 |
| Totals | 13,214 | 21,223 | 167,858 | 606,839 |

The imports of iron ore in October were 77,932 gross tons, against 57,945 tons in September. The total iron ore imports for the 10 months ending with October were 560,840 tons, against 1,055,701 tons in the corresponding period of 1907.

The total value of all kinds of exports of iron and steel, not including ore, was $127,985,824 in the 10 months ending with October, against $165,017,157 in the corresponding period of 1907. Similar imports were, respectively, $16,389,631 and $34,116,740. The decline in the imports was thus over 53 per cent., while the decline in the exports was only about 22 per cent.

## The Westinghouse Receivers Discharged.

The receivers of the Westinghouse Electric & Mfg. Company and the Securities Investment Company were discharged in the United States Circuit Court at Pittsburgh, December 5. No accounts of the receivers are required to be filed by the order of the court.

The companies were represented as being in sound financial condition, the court being told that the debts of the Westinghouse Electric & Mfg. Company had been arranged for with the exception of unassenting creditors with claims to the amount of about $700,000, who will at once be paid in cash. The company has cash on hand amounting to about $15,000,000. The cash of the Securities Investment Company now on hand is about $17,000,000, with unassenting creditors representing only about $15,000.

The new Board of Directors of the electric company met December 7 and elected George Westinghouse, president; E. M. Herr, first vice-president; L. A. Osborne, second vice-president; George W. Hebard and Walter M. McFarland, acting vice-presidents; Charles A. Terry, secretary; T. A. Siemon, treasurer; E. St. John and H. F. Baltz, assistant treasurer; J. C. Bennett, auditor; F. E. Craig and W. B. Covil, Jr., assistant auditors. E. C. Converse, a director of the United States Steel Corporation, was elected chairman of the board.

**A Large Government Valve Order.**—Last June the Isthmian Canal Commission invited bids for a large quantity of bronze globe and angle valves fitted with seats and discs that were capable of being renewed. Considerable competition resulted, and after the authorities at both the Isthmus and Washington had carefully considered the bids submitted by a number of manufacturers, they decided, a few days ago, to place the order comprising upward of 7000 valves, in sizes ranging from ¼ to 3 in., for the Lunkenheimer Renewo renewable seat and disk regrinding valve. This is considered quite a tribute to the efficiency of design of this article, especially in view of the fact that it has not been upon the market quite as long as some other well-known makes. This valve is practically indestructible, inasmuch as every part that is subjected to any possible wear can be easily, quickly and cheaply renewed, which is a most desirable feature. These valves are guaranteed for 200 lb. working pressure and are manufactured by the Lunkenheimer Company, Cincinnati, Ohio, having branches at New York, Chicago, and London, England.

## The National Supply and Machinery Dealers' Association.

The annual meeting of the National Supply and Machinery Dealers' Association will be held in Pittsburgh May 12, 13 and 14, 1909. This was decided on at the midyear meeting of the Executive Committee, held at the Hollenden Hotel, Cleveland, December 2. During the session of the committee a conference was held with J. C. Miller, president of the Southern Supply and Machinery Manufacturers' Association, and Charles F. Aarons and F. D. Mitchell, president and secretary-treasurer, respectively, of the American Supply and Machinery Manufacturers' Association, regarding the place at which the next annual meeting of the three associations should be held. While definite action was not taken as to the place of the annual meeting of the Southern machinery men and the supply and machinery manufacturers, these two organizations will probably decide to meet in Pittsburgh on the same date.

President George Puchta of the National Supply and Machinery Dealers' Association discussed some of the advantages and disadvantages of joint sessions, reflecting the views of the members of his association, as far as they had been ascertained. A number of dealers do not believe that the joint sessions afford sufficient time for the careful consideration of the business that calls them together; that too much time is given in the joint sessions to addresses and discussions of a general character, and that more effective work can be done by giving more time to the consideration of important questions in small committees and in separate executive sessions of the three organizations. He said that many, however, acknowledged the advantage of the joint sessions in bringing together a larger number of dealers, thus affording a much greater opportunity to extend acquaintanceship and for the interchange of opinion regarding conditions of trade. It was pointed out that if joint sessions were held the selection of the place of meeting should be made with reference to the wishes of the other organizations, and this is likely to result in the future, as it has in at least one instance in the past, in the selection of a place so remote from the majority of the members of the National Supply and Machinery Dealers' Association as to reduce seriously the number in attendance. Mr. Puchta said that owing to the large area of the country some of the members of his organization believed that the interests of each association would be better served if each should select its own place of meeting with reference to its own membership. It was admitted that the friendly relations which have grown out of the joint sessions are valuable to the work of each association, and that should it be decided to hold separate meetings many of the friendly and co-operative benefits might be retained by joint meetings of the executive committees of the three associations during the year.

President Miller of the Southern Supply and Machinery Dealers' Association said that many of the members of his association thought the joint sessions were very beneficial, although a number admitted that the division of time was such that many important questions did not receive proper consideration. Their desire, he said, seemed to be to retain the benefits of the joint sessions, but to make such changes as would bring about the most good. Mr. Miller said that an informal expression had been taken among the members of the Southern Dealers' Association, and Chattanooga was strongly favored as the next place of meeting, but he had become satisfied that that city would not be acceptable to the other two associations. He could not say definitely whether his members would be satisfied with Pittsburgh as the place of meeting.

President Aarons of the American Supply and Machinery Manufacturers' Association said he believed the interests of all the associations would be much better served by a joint meeting, and he suggested Pittsburgh or Louisville. He thought the attendance of manufacturers would probably be small if the annual meetings of the dealers' associations were held at different times and places. The fact that the joint meeting afforded an opportunity for manufacturers and dealers to mingle together was a great stimulus in securing members.

After further discussion a resolution was unanimously adopted declaring that it was the sense of the conference that the annual meetings of the three associations be held in Pittsburgh on the days named. The presidents of the Southern Dealers' and the Manufacturers' associations will take up the matter of the meeting place at once with their respective organizations, and it is believed that they will agree to a joint meeting in Pittsburgh. It is probable that a joint committee of one from each organization will be chosen to make the necessary arrangements.

The Executive Committee of the National Supply and Machinery Dealers' Association considered a number of matters that will be brought up at the annual meeting. Among other things the committee reaffirmed its former action opposing parcel post, and opposing the policy of the Federal Government in inviting manufacturers to bid direct on Government specifications, against which resolutions have been adopted by the association at previous annual meetings.

A report was received from Henry Prentiss, first vice-president, and P. M. Brotherhood, chairman of the Machinery Committee, on the recent annual meeting of the National Machine Tool Builders' Association, which they attended as delegates of the Dealers' Association.

## The Philadelphia Foundrymen's Association.

The regular monthly meeting of the Philadelphia Foundrymen's Association was held on the evening of December 2, at the Manufacturers' Club. Thomas Devlin president, as ex officio member of the committee representing the association at the Atlantic Deeper Waterways convention, held in Baltimore last week, reported that he was well pleased with the work of that convention, and he believed that the construction of such inland waterways would be of great benefit to manufacturers generally.

The nomination of officers to serve for the ensuing year, whose election takes place at the January meeting, was referred to a Nominating Committee, the president naming the following: A. A. Miller, *The Iron Age*, Philadelphia; Arthur Simonson, Tropenas Steel Company, New Castle, Del., and Walter T. MacDonald, Schaum & Uhlinger, Philadelphia.

The paper for the evening was on "Chemical Specifications for Pig Iron," by George C. Davis, chemist, Philadelphia. It caused a most animated discussion on the question of pig iron specifications.

Walter Wood, chairman of the Pig Iron Specification Committee of the American Society for Testing Materials, said that the paper had brought out, among other things, two very essential points in the matter of pig iron specifications, "fussiness" and "hair splitting" in the drawing, as well as following the letter and spirit of such specifications. First of all, he said, we must get away absolutely from the old time fracture grading method. It is obsolete, and irons from different producing sections show wide variance in fracture. Buying should be based on analysis exclusively, and a sufficient leeway established to permit producers of pig iron to meet such specifications under reasonable working conditions of their furnaces. What this leeway should be has not been determined. Some allow ¼ and others ½ per cent. of silicon content; others specify such a small margin that it is practically impossible to meet the requirements, as the analyses of different pigs in the same cast of iron frequently show a greater variance in silicon and sulphur than is allowed by some of the so-called "freak specifications."

Dr. Richard Moldenke did not favor the mixture of irons with widely varied analyses, uncertainty of the mixture in practice being too great. In his experience the best practice has been to get iron approaching as nearly as possible in general composition to that desired for the work to be done.

A. E. Outerbridge, Jr., Wm. Sellers & Co., referred to the increasing silicon content and decreasing sulphur

content to be noted in pig iron when compared with the practice of 25 years ago. That very marked strides had been made in furnace practice since the value of the various elements in the iron had been determined was unquestioned. The mechanical casting of pig iron, he said, has deposed fracture grading entirely, and he had determined by actual practice that a marked reduction of fuel consumption was to be noted when such sandless pig was used in the cupola. Different classes of work permit of the use of iron showing some variation in composition and furnaces, therefore should not be held down by too rigid specifications.

H. L. Haldeman, Pulaski Iron Company, said that he had experienced more or less difficulty with specifications drawn by inexperienced parties, and that, when such as were considered too rigid were offered, it was his custom to refuse to quote on them. Chemists vary greatly, even on identical samples, and there should be a reasonable variation allowed and a universal system of sampling adopted, as the analysis obtained, not only from different pigs in the same cast, but also in some elements, sulphur particularly, dependent on the portion of the pig from which the sample is taken, shows a variation in sample drillings taken from the top, bottom or center of the pig.

Dr. E E. Brown, W. S. Shennan, Geo. C. Davies, A. Simonson and E. C. Spencer also took part in the discussion, as a result of which the following resolution was offered and unanimously adopted: "It is the sense of this meeting that the grading of pig iron by fracture be abandoned and that purchases made should be based on the chemical analysis."

After further general discussion on what should be a reasonable range in specifications on silicon, manganese, sulphur and phosphorus content, both for the purpose of establishing a price basis, as well as for the different uses of pig iron, it was moved that the matter be referred to a committee of five, whose recommendations be reported at the January meeting of the association. The motion passed unanimously and President Devlin appointed the following committee: Walter Wood, R. D. Wood & Co.; A. E. Outerbridge, Jr., Wm. Sellers & Co.; Dr. Richard Moldenke, secretary American Foundrymen's Association; George C. Davies, Pilling & Crane, and Geo. C. Davis, chemist. H. L. Haldeman, Pulaski Iron Company, was appointed as an alternate for Mr. Davis.

## British Trade Unions Against Working Overtime.

The Management Committee of the General Federation of Trade Unions in Great Britain has issued a manifesto which says:

Board of Trade statistics, trade union returns, and processions of the workless alike testify to the fact of unemployment and to the grave nature of the situation. Engineering trade unions, with a membership of 153,363, report an unemployed percentage of 12, while shipbuilding unions, with a membership of 60,631, have 25.2 per cent. of their members out of work. The average percentage of totally or partially unemployed among skilled workers is little short of 10 per cent.

For every skilled workman out of employment two unskilled men are workless. Every worker represents a family of five. Skilled workers unemployed, 500,000; unskilled, 1,000,000; their families, 6,000,000; total, 7,500,000. In the hope of mitigating the evils of these depressions we recommend that all public bodies supervise their own direct and indirect employment; that they stipulate in their contracts for the total abolition of overtime, and distribute their work so as to meet the periods of depression and the worst conditions of unemployment. We also advise trade unions to issue executive instructions to their members to refuse to work overtime. We urge the immediate employment of surplus labor by the reclamation of waste lands, the provision of additional recreation grounds, the protection of foreshores and riversides from the encroachment of sea or stream, the development of harbor facilities, afforestation, the acquirement of land, and the building or rebuilding of houses for the workers on improved sanitary principles; the encouragement of municipal and co-operative farms, the systematic co-ordination of municipal and governmental regulations and machinery for unemployment, the acquisition by the State of the canal and railroad systems throughout the United Kingdom, and the full development of the small-holdings act, with the State as proprietor.

It is also recommended that a national department of labor be established, presided over by a minister with a seat in the cabinet, charged with the direction of that labor which has not been absorbed in the ordinary course, and that a permanent unemployed board be created.

## A Basic Pig Iron Contract.

Herewith is given a copy of a contract which has been adopted by the sellers of basic pig iron in the Philadelphia territory, and has received the approval of the buyers:

# CONTRACT.

NO. IN DUPLICATE.

AGREES TO SELL AND SHIP, AND
AGREES TO BUY AND RECEIVE,

DESCRIPTION OF GOODS:

QUANTITY: Tons of 2240 lbs.

SPECIFICATION:

| | | |
|---|---|---|
| Phosphorus | not to exceed | 1.00% |
| Silicon | " " " | 1.00% |
| Sulphur | " " " | .05% |

TIME OF SHIPMENT:

PLACE OF DELIVERY: F. o. b. cars

PRICE:

TERMS:

Each month's shipments to be treated as a separate and independent contract, but if buyer fails to fulfill terms of payment under any of these separate contracts, or other contracts with seller, seller may defer performance of all the remaining contracts of shipment until payment is made, or may rescind such remaining contracts at its option. Waiver by the seller of the terms of payment in any instance shall not be construed as an abandonment of its said rights.

Strikes, differences with workmen, accidents to machinery, fires, floods, wars, interruption to transportation or car supply, or to sources of supply of raw materials, or other contingencies beyond the reasonable control of the seller, to be sufficient excuse for any delay traceable to such causes. Similar conditions affecting the works of the buyer shall be sufficient excuse for any delay in accepting shipments, traceable to such causes. In the event of such delays, shipments will be made pro-rata as nearly as practicable on all contracts then uncompleted.

Buyer shall have the privilege of canceling any shortage of any month's deliveries by giving notice in writing of such cancellation to the seller during the succeeding month, but seller shall have 10 days after receipt of said notice within which to make up said shortage; any shortage not shipped during said 10 days shall be canceled. In case of failure to receive by buyer, seller shall have privilege of cancellation upon the same conditions as above. In case neither party shall exercise this right of cancellation, it is understood and agreed that no cancellation can thereafter be made, and the amount of said shortage shall be delivered and received, the period of deliveries under the contract being proportionately extended, unless time of deliveries shall be otherwise agreed upon in writing. Unless otherwise arranged, any shortage not canceled as above shall be postponed and delivered after completion of the regular deliveries stipulated under the contract. Notice of cancellation of any month's quota shall not affect the deliveries of any other month.

REMARKS:

This form of contract became effective about the middle of November. Its special feature is its reference to the privilege on the part of both buyer and seller to cancel shortages of any month's deliveries.

The Board of Public Works of the city of Milwaukee, Wis., has awarded the contract for the building of a new bascule bridge, at East Water street, to Arthur H. Vogel, president of the Starke Dredge & Dock Company, for $139,785. The structure is to be completed before September 1, 1909. The bids on the structure were lower than the original estimates, which amounted to $150,000. It will be the largest bridge in Milwaukee. The bascule will have a span of 130 ft., and the total length of the bridge will be 270 ft., with a roadway 37 ft. 8 in. wide, two sidewalks 12 ft. wide, and counterweights which will weigh 500 tons.

## PERSONAL.

G. L. Bollinger, president of the Bollinger-Andrews Construction Company, Empire Building, Pittsburgh, Pa., has returned from a trip to Europe.

Albert P. Saxer, formerly in the machine department of the Fort Wayne shops of the Pennsylvania Railroad Company, Pittsburgh, is now attached to the sales department of the Brown & Zortman Machinery Company, Pittsburgh, dealer in new and second-hand machinery.

Fred W. Payne has sold his half interest in the Auburn Foundry Company, Auburn, Ind., to a partner, Frank A. Borst, and will go to Chicago to take the management of the National Trade Show Company, of which he is vice-president.

L. B. Powell, who has for a number of years been actively connected with the sales department of the Hayden-Corbett Chain Company, Columbus, Ohio, has tendered his resignation, effective December 24, to accept the position of general sales agent of the Climax Chain Company, St. Louis, Mo. Mr. Powell has made a careful study of the history and the development of the chain industry, and is the author of several technical papers relating to the manufacture of this commodity, one of which appeared in *The Iron Age* of January 5, 1905, entitled "The Manufacture of Chain."

Joseph G. Butler, Jr., who has been mentioned as among the candidates for the office of United States Senator from Ohio, announces that he is not a candidate for that or any other political position.

J. N. Richards, for the last 14 years general sales manager for the Standard Paint Company, is now associated with the Ernst Wiener Company, railroad specialist for all industries. He will make his headquarters for the present at the company's main office, 50 Church street, New York.

Meldon H. Merrill, who, as salesman for the Westinghouse Electric & Mfg. Company has been active for some years in promoting the introduction of electric drive among the textile mills in New England, recently resigned his position with that company and has taken up similar work in connection with the Boston office of the Allis-Chalmers Company.

E. F. Axner, formerly local sales manager of the Chicago office of Matthew Addy & Co., has been appointed sales agent at Chicago for the pig iron product of the Tennessee Coal, Iron & Railroad Company under George Baker, manager of sales.

Some changes have gone into effect among officials at the Homestead Works of the Carnegie Steel Company. J. S. Unger has retired as assistant general manager to become head of the new department of scientific research of the United States Steel Corporation. He is succeeded by A. A. Corey, Jr., superintendent of the Donora Works. R. H. Watson, chief metallurgist, became second assistant superintendent, and he was succeeded by P. P. Reese.

Samuel Morton has been made superintendent of the open hearth department of the Duquesne Works of the Carnegie Steel Company, succeeding J. H. Lewis, who has been made general superintendent of the open hearth department at the Donora Works of the American Steel & Wire Company.

## OBITUARY.

EDWARD F. C. YOUNG, Jersey City, N. J., died December 6, aged 73 years. He was born near Morristown, N. J., started his business life as a messenger in Jersey City, and at the time of his death had an official connection with 24 financial and industrial enterprises. Among other important business connections, he was president of the Joseph Dixon Crucible Company, American Graphite Company, Hudson County Gas Company, North Jersey Land Company and Consolidated Traction Company. Besides being president of the First National Bank of Jersey City, he was head of the Pavonia Trust Company and a director in eight other financial institutions. During the years of his greatest activity he is said to have been connected with more enterprises than any other individual in New Jersey, and his name became foremost in the financial and commercial affairs of the State. He leaves a widow, one son and one daughter.

EDWIN H. JONES, president of the Vulcan Iron Works, Wilkes-Barre, Pa., died December 2, aged 64 years.

HENRY P. COBURN, vice-president and general manager of the Sawyer & Massey Company, Ltd., manufacturer of agricultural implements, Hamilton, Canada, died November 25, aged 73 years. He was born at Dracut, Mass., and spent his early manhood at Stamford, Conn. In 1864 he entered the service of L. D. Sawyer & Co., Hamilton, as a clerk, advancing through every department of the business until the reorganization of the company, which took place in the year 1889, under the present name when he was chosen by the directors as its vice-president and general manager, which office he held and filled so satisfactorily until the time of his death. He had thus been associated with the business for 44 years. He leaves a widow.

HENRY N. BURHANS, Syracuse, N. Y., died December 2, aged 69 years. He was born at DeWitt, N. Y., and served in the Union army during the Civil War, entering as first lieutenant, and being mustered out as colonel by brevet. After the war he located at Fayetteville, N. Y., and became a member of the firm of Burhans, Blanchard & Co., in which his father was senior partner. In 1874 he purchased the firm's builders' supply house in Syracuse, which in 1876 was merged in the firm of Burhans & Black, later becoming the Burhans & Black Company, which has taken a prominent place among the jobbing houses of the State. About three years ago he was elected department commander of the Grand Army of the Republic for the State of New York. He was a trustee of the Soldiers' Home at Bath, N. Y. He leaves a daughter and two sons.

JOHN CARNES, Lima, Ohio, founder of the Lima Locomotive Works, died November 28, aged 80 years. His son, Ira P. Carnes, continues his interests in the plant.

JAMES KINDRED, Worcester, Mass., head of the firm of Boynton & Plummer, manufacturers of blacksmiths' tools, died December 7, aged 57 years. He was a native of St. Johns, New Brunswick, and went to Worcester when 18 years old and learned the machinist's trade in the shops of the Prentice Bros. Company. From there he went to the works of Boynton & Plummer where he remained, first as an employee and later as the owner, until a month ago, when he retired on account of ill health. He leaves a widow and one daughter.

EDWARD A. HUMMELL, chief salesman of Rogers, Brown & Co., Buffalo, died at his home near Buffalo, December 7, from typhoid fever, aged 28 years. He had been associated with the firm for the past 14 years, entering its service as office boy, and rapidly working upward. For the past few years he represented the firm on the road, principally in the State of New York.

HENRY AIKEN, the well-known consulting engineer, died suddenly of heart failure at his home in Pittsburgh December 8. He had been at his office the previous day. He was born in Ireland 66 years ago. Coming to America about 30 years ago, he first located in Philadelphia. He then removed to Pittsburgh and in 1889 took up mechanical engineering and was soon recognized as one of the foremost engineers in the country. He was the inventor of a large number of labor saving appliances now in use in operating blast furnaces and steel plants. He was president of the Hydraulic Machine Company and a director of the Real Estate Trust Company, Pittsburgh. He leaves a widow and one daughter.

LOYAL LEVI MUNN, Freeport, Ill., died November 23, aged 79 years. Beginning life in New York State as a poor boy, he rose by his own efforts to an influential position as citizen, business man and capitalist. Although identified with many local enterprises, he was best known for his connection with the Arcade Mfg. Company of Freeport, of which he had been president since 1893. He was one of the most prominent Masons in the West, having held some of the highest positions in the order.

## Chemical Specifications for Foundry Iron.*

BY GEORGE C. DAVIS, PHILADELPHIA.

Recently my attention has been called to so many complaints of the pig iron specifications drawn up by purchasers that I thought it worth while to collect what facts I could and find if possible where the trouble lay. It is generally agreed that chemical specifications for iron are superior to the old method of grading by fracture. That being the case, it remains to draw up some scheme that is generally recognized. The blast furnace representatives have attempted to do this, but unfortunately many large purchasers of iron ignore it and have drawn their own; in some cases with such restrictions that they are practically unworkable or apparently without much regard to the iron available in their locality.

There certainly is a wide variety to choose from in this locality, for we have a number of different kinds which can be roughly classified as follows: Those made from magnetite, those made mainly from lake ores, Virginia irons made from brown ore, Alabama irons made largely from the red ores, various foreign makes, chiefly English and Scotch, and lastly two brands of local cinder iron. Where one considers the possible combinations by which a mixture can be made it seems to me to be unwise to draw up such specifications for manganese and phosphorus that would exclude many furnaces from bidding when by combining several brands the mixture wanted can be obtained.

I think my point can best be made clear by an illustration taken from actual practice.

One railroad specifies for No. 1 iron, silicon, 2.75 to 4.50 per cent.; phosphorus, 0.40 to 0.70 per cent.

The silicon limits are wide enough. Presumably the iron is intended for light section castings, and then the question arises, Why so low phosphorus? It so happens that there are a number of furnaces near the lines of this road making a high grade foundry iron usually running 0.70 to 0.90 phosphorus. Why should they be shut out from competing when by mixing with the lower phosphorus lake ore irons, which are also available, the desired result could be obtained.

Two other railroad companies specify, for No. 1 iron, 0.02 per cent. sulphur or less. Now, can this small amount be determined with such accuracy that the buyer would be justified in rejecting it if it ran slightly higher? The United States Bureau of Standards prepares standardized samples of iron, and in so doing employs the best chemists. One of its pig iron samples shows a range from 0.032 to 0.036 per cent. sulphur in the results of five chemists; not a great difference, it is true, but suppose there was a like variation on 0.02 iron, who could say which result was correct and whether the iron should be rejected or not? The blast furnace specifications for No. 1 iron call for 0.03 per cent. sulphur or less in the Eastern and 0.05 or less in the other districts. This is a grade that can be easily made enough below the maximum limit to allow for such variations. As a matter of actual foundry practice, how can such small variations be detected in the casting? This iron is melted with coke, from which it gains from 0.03 to 0.05 per cent. sulphur. An iron containing 0.02 sulphur would then contain from 0.05 to 0.07 in the casting. Under these conditions a variation of a few thousandths of a per cent. in the sulphur contents of the pig doesn't seem to be of much importance.

Another case that came to my notice was a large lot of iron rejected for being 0.001 per cent. below the limit in manganese. Now, this element cannot be determined with such accuracy. In sample C of the Bureau of Standards the manganese reported by five chemists ranges from 0.62 to 0.68. In a standard steel the results by six chemists range from 0.385 to 0.43. If the results of three other chemists who also worked on the sample were included, the variation would be much greater. It so happened that the transaction referred to took place on a rising market, and the iron rejected had to be removed by the seller when the railroad purchased other iron at an increased price. If the purchaser had bought an additional carload of high manganese iron the whole matter could have been adjusted without loss or delay. In short, too much fussiness about specifications is often costly to the foundry. Other similar disputes have come to my notice, but I think those given illustrate the points made.

In closing, a word as to the blast furnace specifications. As they now stand, five districts are named: Southern, Eastern, Central West and Lake Points, Chicago and Buffalo. The last three named all use lake ores, and it seems to me highly desirable for the sake of simplicity that their silicon and sulphur specifications be made uniform. The differences that now exist are trifling. What seems to me to be needed on the part of consumers is a knowledge of what can reasonably be demanded of the producers and specifications so drawn (more especially for phosphorus and manganese) that as many furnaces as possible can compete.

* Read before the Philadelphia Foundrymen's Association, December 2.

## The Cement Users' Convention.

The National Association of Cement Users is making elaborate preparations for its fifth annual convention, to be held in the Hotel Hollenden, Cleveland, Ohio, January 11 to 16, 1909. In connection with this meeting a very complete exhibition of cement products and appliances will be held. For this exhibition the Central Armory has been secured. The applications for space already exceed 95 per cent. of the space available, so that the exhibit bids fair to exceed by far any that has been previously held. Through the efforts of a Committee of Publicity the attendance is expected to exceed greatly that at the convention at Buffalo, N. Y., last year. In this connection it may be well to note that the use of cement is becoming greater every year. Its wide and varied uses, especially as regards the small consumer, make it of prime interest to every one. Notwithstanding its general use, its properties are not yet thoroughly understood, so that the coming convention and exhibit will be of special interest, not only to the users of cement, but the general public as well. Those attending will get an excellent opportunity to study the many ways in which it can be applied, as well as the advances which have been made during the past year. The foremost cement experts of the country will be brought together, and papers will be read and discussed concerning the proper use of this material.

**Railroad Legislation and Business Interests.**—The Railway Business Association, Geo. A. Post, president, 2 Rector street, New York, has taken up the work of urging that all who are interested in the speedy return to activity of transportation interests, and a resumption on the part of the railroads of purchases of material and equipment, will at once address demands upon their legislative representatives in State and national capitals for reasonable enactments, and for a favorable attitude toward a fair adjustment of rates. That the campaign is to be an aggressive one is indicated by the selection of G. M. Basford, assistant to the president of the American Locomotive Company, as acting secretary. Mr. Basford will give assiduous attention for several months to the effort which the association is making to show the public that anything hurting railroads also hurts whole communities of people directly and hosts of others indirectly, and that there is immediate necessity for a change toward moderation and calmness in railroad legislation.

The steel collier Prometheus was launched December 5 at the Mare Island Navy Yard, San Francisco. The ship has a displacement of 12,500 tons and is the largest of its kind so far launched. The length over all is 465 ft. 9 in.; breadth molded, 60 ft.; depth molded, 36 ft. 6 in.; cargo capacity, 6000 tons; speed, 16 knots; armament, four 3-in. rapid fire guns. The keel was laid in October, 1907, and the vessel can be ready for service by January 1 if necessary.

# Pig Iron in November.

## An Output of 1,577,854 Gross Tons.

### A 4 Per Cent. Increase Over the October Daily Rate, with a Gain of 10 Active Furnaces.

November, a short month, shows a slightly greater production of coke and anthracite pig iron than October with 31 days. The number of furnaces in blast was 210 on December 1, a net gain of 10, and December is entered upon with an estimated daily capacity, based largely on the product in November, of 54,443 tons. In November the output was 1,577,854 gross tons, a daily average of 52,595 tons, against 50,554 tons in October. Thus the gain in the daily rate was about 4 per cent. in November and about that rate of gain over November is indicated for December. The merchant furnaces gained about 1500 tons a day last month over October, and the steel works furnaces about 500 tons. The weekly active capacity is put at 381,102 tons December 1, against 362,685 tons November 1. Among furnaces blown in last month were three new ones—the two stacks of the Youngstown Sheet & Tube Company in the Mahoning Valley and the new Ironton Furnace in the Hanging Rock District of Ohio. The daily rate of production by months for this year is as follows:

*Daily Rate of Production.—Gross Tons.*

| | Steel works. | Merchant. | Total. |
|---|---|---|---|
| January | 21,432 | 12,286 | 33,718 |
| February | 25,717 | 11,446 | 37,163 |
| March | 27,145 | 12,474 | 39,619 |
| April | 24,185 | 14,104 | 38,289 |
| May | 24,505 | 13,098 | 37,603 |
| June | 23,923 | 12,521 | 36,444 |
| July | 25,762 | 13,525 | 39,287 |
| August | 28,952 | 14,899 | 43,851 |
| September | 31,117 | 16,183 | 47,300 |
| October | 32,217 | 18,337 | 50,554 |
| November | 32,705 | 19,890 | 52,595 |

**November Product by Districts.**

The table below gives the production of coke and anthracite furnaces in November and the four months preceding:

*Monthly Pig Iron Production.—Gross Tons.*

| | July. (31 days) | August. (31 days) | Sept. (30 days) | Oct. (31 days) | Nov. (30 days) |
|---|---|---|---|---|---|
| New York | 66,498 | 83,004 | 108,453 | 120,191 | 123,640 |
| New Jersey | 14,830 | 16,866 | 16,544 | 17,036 | 16,273 |
| Lehigh Valley | 28,028 | 36,701 | 42,184 | 41,775 | 45,763 |
| Schuylkill Val. | 25,115 | 24,586 | 23,918 | 47,210 | 51,397 |
| Lower Susquehanna and Lebanon Val. | 26,204 | 23,632 | 24,170 | 31,304 | 32,800 |
| Pittsburgh Dis. | 303,645 | 362,417 | 359,132 | 387,207 | 398,314 |
| Shenango Val. | 82,978 | 91,534 | 93,372 | 103,393 | 92,187 |
| West. Penn. | 63,433 | 73,207 | 72,633 | 97,052 | 89,094 |
| Md., Va. and Kentucky | 46,635 | 47,492 | 50,150 | 51,691 | 51,110 |
| Wheeling Dis. | 19,405 | 24,368 | 23,409 | 27,273 | 24,593 |
| Mahoning Val. | 93,635 | 103,021 | 102,606 | 113,533 | 123,122 |
| Central and North. Ohio. | 92,737 | 117,016 | 119,163 | 118,620 | 113,281 |
| Hocking Valley, Hanging Rock and S. W. Ohio | 20,187 | 19,909 | 22,376 | 23,151 | 29,660 |
| Mich., Minn., Mo., Wis., Colo. | 40,029 | 35,542 | 39,408 | 43,673 | 57,952 |
| Chicago Dist. | 152,981 | 156,537 | 167,896 | 171,732 | 159,395 |
| Alabama | 123,301 | 122,840 | 126,137 | 138,929 | 139,013 |
| Tennessee, Georgia and Texas | 18,488 | 21,159 | 27,447 | 33,428 | 30,260 |
| Totals | 1,218,129 | 1,359,831 | 1,418,998 | 1,567,198 | 1,577,854 |

Among furnaces blown in in November were one Lackawanna at South Buffalo, one Bethlehem, one Crane and one Thomas Iron Company in the Lehigh Valley, Adrian in western Pennsylvania, Atlantic in the Shenango Valley, one Steelton in the Susquehanna Valley, No. 2 Longdale in Virginia, Dover in Ohio, Belfont, Bird and Ironton (new) in the Hanging Rock Region, Thomas at Milwaukee, Mattie, No. 2 Ohio, Hannah and two Youngstown Sheet & Tube Company (new) in the Mahoning Valley and Johnson City in Tennessee.

The list of furnaces blown out in November includes one Edgar Thomson in the Pittsburgh District, Ella and Fannie in the Shenango Valley, one Cambria in western Pennsylvania, Bristol in Virginia, Hamilton in the Hanging Rock Region, Struthers in the Mahoning Valley, and Embree in Tennessee.

**Production of Steel Companies.**

Returns from all the plants of the United States Steel Corporation, the Cambria, Pennsylvania, Maryland, Lackawanna, Wheeling, Republic, Youngstown Sheet & Tube, Jones & Laughlin, La Belle, Bethlehem, Calumet, Inland, Colorado and Tennessee (Ensley) companies show the following totals of product month by month. We give separately a statement of the output of spiegeleisen and ferromanganese, which is included for each month in the total production:

*Production of Steel Companies.—Gross Tons.*

| | Pig.—Total production. | | | Spiegeleisen and ferromanganese. | |
|---|---|---|---|---|---|
| | 1906. | 1907. | 1908. | 1907. | 1908. |
| January | 1,358,015 | 1,406,397 | 664,415 | 21,477 | 20,254 |
| February | 1,226,760 | 1,317,923 | 745,802 | 19,444 | 9,402 |
| March | 1,400,395 | 1,424,827 | 841,502 | 31,091 | 13,750 |
| April | 1,333,591 | 1,446,788 | 725,548 | 26,527 | 12,363 |
| May | 1,372,423 | 1,470,080 | 759,674 | 28,822 | 17,823 |
| June | 1,293,437 | 1,457,230 | 717,689 | 30,942 | 15,958 |
| July | 1,323,391 | 1,452,557 | 798,639 | 25,343 | 10,250 |
| August | 1,237,485 | 1,445,685 | 897,052 | 23,696 | 14,932 |
| September | 1,264,380 | 1,417,153 | 933,514 | 30,270 | 8,938 |
| October | 1,452,200 | 1,514,521 | 996,481 | 35,105 | 12,174 |
| November | 1,411,350 | 1,084,114 | 981,167 | 21,861 | 15,882 |
| December | 1,445,528 | 659,459 | ..... | 19,480 | ..... |

**Capacity in Blast December 1 and November 1.**

In the following table is given the weekly capacity of coke and anthracite furnaces in blast November 1 and October 1, based largely on their performance in the preceding month in each case:

*Coke and Anthracite Furnaces in Blast.*

| Location of furnaces. | Total number of stacks. | December 1. Number in blast. | December 1. Capacity per week. | November 1. Number in blast. | November 1. Capacity per week. |
|---|---|---|---|---|---|
| New York: | | | | | |
| Buffalo | 15 | 12 | 26,395 | 11 | 24,550 |
| Other New York. | 7 | 3 | 3,816 | 3 | 3,822 |
| New Jersey | 8 | 2 | 3,797 | 2 | 3,724 |
| Spiegel | 2 | 0 | 0 | 0 | 0 |
| Pennsylvania: | | | | | |
| Lehigh Valley | 25 | 10 | 11,892 | 7 | 8,483 |
| Spiegel | 3 | 2 | 558 | 2 | 535 |
| Schuylkill Valley. | 15 | 7 | 12,039 | 7 | 10,661 |
| Low. Susquehanna | 7 | 3 | 5,210 | 2 | 3,614 |
| Spiegel | 1 | 0 | 0 | 0 | 0 |
| Lebanon Valley | 10 | 4 | 3,986 | 4 | 3,495 |
| Pittsburgh Dist. | 45 | 31 | 89,650 | 32 | 87,599 |
| Spiegel | 3 | 2 | 1,810 | 2 | 2,555 |
| Shenango Valley. | 20 | 11 | 21,687 | 12 | 23,247 |
| W. Pennsylvania. | 27 | 15 | 21,571 | 15 | 23,044 |
| Maryland | 4 | 2 | 3,937 | 2 | 4,235 |
| Wheeling District | 14 | 3 | 6,251 | 3 | 5,698 |
| Ohio: | | | | | |
| Mahoning Valley. | 20 | 14 | 32,492 | 10 | 26,045 |
| Central and North. and Michigan. | 22 | 12 | 29,851 | 11 | 28,980 |
| Hocking Valley, Hang. Rock and S. W. Ohio | 15 | 9 | 8,463 | 8 | 6,590 |
| Illinois and Indiana | 24 | 14 | 35,844 | 15 | 38,780 |
| Spiegel | 2 | 1 | 1,347 | 0 | 0 |
| Minnesota and Wisconsin | 7 | 4 | 5,197 | 3 | 4,180 |
| Missouri & Colorado. | 7 | 4 | 7,118 | 4 | 6,216 |
| The South: | | | | | |
| Virginia | 23 | 10 | 6,927 | 10 | 6,571 |
| Kentucky | 5 | 1 | 1,044 | 1 | 1,106 |
| Alabama | 46 | 23 | 32,438 | 23 | 31,388 |
| Tennessee | 18 | 10 | 7,292 | 10 | 7,077 |
| Georgia & Texas. | 3 | 1 | 490 | 1 | 490 |
| Totals | 398 | 210 | 381,102 | 200 | 362,685 |

**A Record of Active Capacity.**

The active weekly capacity in coke and anthracite iron has shown the following fluctuations since January 1, 1904:

| | Capacity per week. | | Capacity per week. |
|---|---|---|---|
| December 1, 1908 | 381,102 | June 1 | 472,622 |
| November 1 | 362,685 | May 1 | 484,031 |
| October 1 | 337,925 | April 1 | 484,240 |
| September 1 | 313,112 | March 1 | 479,737 |
| August 1 | 284,590 | February 1 | 482,156 |
| July 1 | 264,452 | January 1, 1906 | 463,673 |
| June 1 | 259,284 | December 1, 1905 | 475,814 |
| May 1 | 268,674 | November 1 | 460,449 |
| April 1 | 264,890 | October 1 | 445,468 |
| March 1 | 267,437 | September 1 | 412,563 |
| February 1 | 241,925 | August 1 | 410,088 |
| January 1, 1908 | 235,152 | July 1 | 408,617 |
| December 1, 1907 | 347,372 | June 1 | 443,092 |
| November 1 | 491,436 | May 1 | 452,031 |
| October 1 | 511,397 | April 1 | 439,564 |
| September 1 | 507,768 | March 1 | 403,157 |
| August 1 | 513,471 | February 1 | 405,792 |
| July 1 | 528,170 | January 1, 1905 | 377,879 |
| June 1 | 523,220 | December 1, 1904 | 357,846 |
| May 1 | 524,538 | November 1 | 334,249 |
| April 1 | 496,456 | October 1 | 319,249 |
| March 1 | 511,035 | September 1 | 291,573 |
| February 1 | 492,359 | August 1 | 246,092 |
| January 1, 1907 | 507,397 | July 1 | 272,301 |
| December 1, 1906 | 513,860 | June 1 | 336,107 |
| November 1 | 500,580 | May 1 | 368,244 |
| October 1 | 469,665 | April 1 | 337,257 |
| September 1 | 441,426 | March 1 | 308,751 |
| August 1 | 449,908 | February 1 | 273,692 |
| July 1 | 460,570 | January 1, 1904 | 185,636 |

The Austro-Hungarian warship Franz Ferdinand has recently been launched at Trieste. It has a displacement of 14,500 tons, and will carry 32 guns and two submarine lance torpedo tubes. The engines are to work up to 24,000 hp., and the prescribed speed is 20 knots per hour.

# NEWS OF THE WORKS.

### Iron and Steel.

The Lackawanna Steel Company had five out of its seven furnaces in blast at South Buffalo, N. Y., December 1, as against four in blast November 1.

The Bethlehem Steel Company now has four furnaces in blast at South Bethlehem, Pa., a gain of one in November.

The Pennsylvania Steel Company had two out of its four furnaces at Steelton, Pa., in blast December 1, the No. 1 furnace having been blown in November 13.

The Virginia Iron, Coal & Coke Company expects to put one of its Watts furnaces at Middlesbrough, Ky., in blast in a few days. The Bristol, Va., furnace of this company was blown out November 15.

The new Furnace A of the Youngstown Sheet & Tube Company, Youngstown, Ohio, was blown in November 2 and the new Furnace B November 22.

### General Machinery.

The Prescott Mfg. Company, Menominee, Mich., reports much new activity and is now employing its usual number of operatives.

The Sumner Iron Works, Everett, Wash., is improving its plant by the erection of additional buildings, which will increase the available floor space 8300 sq. ft. Considerable machinery has been purchased for the equipment of the new building.

The plant, patents, patterns and assets of the Transit Thresher Company, located at Twenty-eighth street and University avenue, Minneapolis, Minn., have been purchased by the Gas Traction Company, Minneapolis, recently incorporated with a capital stock of $300,000. The new company will operate the plant as a factory for the building of four-cylinder gasoline engines for threshing and farm traction purposes. The officers of the new company are: P. J. Lyons, president and treasurer; J. W. Muir, vice-president; Chas. T. Thompson, secretary; Fred Glover, general manager.

The Safford-Day Iron Works, Knoxville, Tenn.. contemplates moving its present plant to another site where it can have larger facilities, the present location being too small for its growing business. It is understood that negotiations are under way for a tract of 10 acres a short distance from the present plant, and if this property is purchased the company will probably begin building shortly after the first of the year.

A number of companies in the West are either building or preparing to build additions to their plants, among which are the Eagle Iron Works and the Variety Iron Works, Seattle, Wash.; Columbia Steel Company, Pacific Iron Works, Portland Elevator Company, Smith & Watson Iron Works and John Woods Iron Works, Portland, Ore.

The Monon Railroad will rebuild the roundhouse recently burned at Bloomington, Ind., at an estimated cost of $30,000. W. A. Wallace, Chicago, is chief civil engineer.

The Raber & Lang Mfg. Company has been incorporated at Kendalville, Ind., with $50,000 capital stock, to manufacture machinery. The incorporators are Oliver P. and Ralph L. Raber and John E. Lang.

### Power Plant Equipment.

The American Power Company, Seattle, Wash., incorporated with a capital of $1,000,000, has been formed for the purpose of generating power for irrigation, electric light and other uses, and will also devote its attention to the acquisition of coal and iron properties in the West.

Arrangements are being made for the construction of an interurban road to be built by the Fresno, Hanford & Summit Lake Interurban Railway Company, Fresno, Cal. The projected line is about 40 miles in length, and will tap seven cities and towns ranging in population from 500 to 40,000. Present plans contemplate the erection of the power plant at Kingsburg, which is about the center of the line.

Preparations are being made by the Husum Power Company, Husum, Wash., to install a hydro-electric plant near the falls of the White Salmon River, to develop about 300 hp. The intention of the company is to supply the city of White Salmon, eight miles away, with current for lighting, and also to supply current to the surrounding ranches for irrigating purposes.

Work on the reconstruction of the Lake Superior Power Company's plant at Sault Ste. Marie, Ont., which was almost destroyed by fire last spring, has been begun, and when restored will provide capacity for the generation of 6300 hp. The foundation, walls and penstocks of the former power building will be utilized in rebuilding, and will be covered by a new roof of reinforced concrete supported by a steel frame. The old turbines will be used, with the exception of one unit, and the water wheel governors and generators are being rebuilt, but new switchboards will be installed. The engineer in charge of this work is L. H. Davis.

The New York & Ontario Power Company, Waddington, St. Lawrence County, N. Y., local representative in charge, George O. Van Kennen, Ogdensburg, N. Y., is planning to develop 30,000 hp. from the rapids in the St. Lawrence River near Ogdensburg. The company proposes to make a first installation of 17,200 hp. and has already secured property rights and permission to use water. It has made application to the Public Service Commission for permission to issue $1,850,000 bonds and $664,741 in stock. As soon as permission is granted covering the issuing of stock and bonds the company will proceed to place orders for machinery and equipment. Beverly B. Tucker is consulting engineer and will be in charge of equipment.

### Foundries.

The foundry of the Cedarburg Foundry Company, Cedarburg, Wis., was recently completely destroyed by fire. The plant will be rebuilt at once, and efforts will be made to have it ready to resume business about January 15.

The M. L. Oberdorfer Brass Company, Syracuse, N. Y., has let contract for the erection of a one-story brick foundry building, 40 x 100 ft., on East Water street.

The Cascade Foundry Company, Erie, Pa., is having plans prepared for an addition to its foundry at Plum and Nineteenth streets. The building will be 80 x 100 ft., of brick and steel construction, and will be equipped with a 10-ton electric traveling crane, molding machinery and general foundry equipment.

The American Casting Company, Birmingham, Ala., has suspended operations for a week or 10 days for repairs.

### Bridges and Buildings.

The W. J. Burns Company, Syracuse, N. Y., has been awarded the contract to construct the steel bascule bridge over the Erie Canal at Lyell avenue, Rochester, N. Y., at a contract price of $30,970.40. M. Fitzgerald, Hoosick Falls, N. Y., was awarded contract for the construction of a bascule type steel bridge over the Erie Canal at Allen street, Rochester, at his bid of $29,589.50.

### Fires.

The plant of the Wood & Vale Mfg. Company, St. Catharine, Ont., Canada, manufacturer of hoes, rakes, spades and other hardware specialties, was completely destroyed by fire on December 4. The loss is about $50,000.

### Hardware.

The Hubert A. Myers Mfg. Company, Warsaw, Ind., reports that it has a large number of orders for the coming season and that the outlook is promising. The company manufactures lawn swings, ladders, hay cars, &c.

### Miscellaneous.

Charles E. Shiveley, Richmond, Ind., representing E. F. Claypool and other Indianapolis capitalists, has purchased the plant of the Indiana Mfg. Company, at Richmond, at receiver's sale, for $97,000. The plant will continue in operation. Its chief product is brass beds. The reincorporated company has $50,000 capital.

Extensive additions are being made to the shops of the Packard Motor Car Company, Detroit, Mich., which will still further increase the capacity of the plant, now covering nearly 15 acres. The new buildings will be of reinforced concrete, quadrangular in form, with ample open space on all sides. Beginning with a factory floor space of 100,000 sq. ft. in 1903, the plant has by successive additions been enlarged to six times its original size.

Sparling & Holland, Brooklyn, N. Y., who have for some time been conducting a high grade millwright business, have incorporated and have decided to manufacture many of the products that they have handled in connection with their millwright work, including pulleys, hangers, couplings, gears and other elevating and conveying machinery, as well as leather belting and lace leather. They will occupy a plant of their own some time next year. The officers of the company are Philip R. F. Sparling, president and treasurer; Laura Sparling, vice-president, and William J. Holland, secretary and manager.

Incorporated with a capital stock of $30,000, of which $15,000 is paid in, the Caldwell Mfg. Company of St. Louis, Mich., has been organized to manufacture the Caldwell elevator platform truck, and expects to begin business within the next 30 days. The officers of the company are James K. Wright, president; A. F. Wright, secretary; W. H. Caldwell, vice-president; Geo. Davidson, treasurer.

Edgar M. Cain & Co., Wilmington, Del., patentees of an automatic train stop and whistle signal, have incorporated with the following officers: President, U. G. Glick, Wilmington, Del.; vice-president, H. A. Cain, Philadelphia, Pa.; general manager, E. L. Cain, Wilmington; treasurer, James Scarlett, Philadelphia, and secretary, Edward W. Scarlett, Philadelphia.

J. B. Fowler of Los Angeles, Cal., and J. R. Fowler of Anderson, Ind., are organizing the Fowler Railway Car Company, with offices at Chicago and Anderson. The plant will probably be established in Anderson. The inventors say it will be possible to drive the Fowler car at 70 to 90 miles an hour.

The City Council of Connersville, Ind., will receive bids until January 12 for the construction of a waterworks system, with a capacity of 3,000,000 gal. a day, and if a filter is used it must be a mechanical filter with a capacity of 4,000,000 gal. a day. The owners of the plant must lease it to the city for 10 to 25

years as agreed upon and give a bond of $100,000 guaranteeing the plant to do the work required.

The Oswald Motor Company, Goshen, Ind., manufacturer of gasoline motors and transmission, which has been in rented quarters since its organization almost two years ago, has moved into its own cement fireproof building, 30 x 160 ft., with a testing room 20 x 36 ft. The company is adding $2000 worth of new machinery. The capacity of the plant is sold to July 1, 1909. Its contracts are with automobile manufacturers exclusively.

The Colonial Wood Products Company has been incorporated in Ontario by Henry B. Eshelman of the Pettebone-Cataract Paper Company, Niagara Falls, and others, and will build a plant at Thorold, Ont., for the manufacture of wood pulp products.

The Queen's Run Fire Brick Company, Lock Haven, Pa., has been running since January 1, 1908, at 75 per cent. of capacity, but before that time was running to full capacity night and day turn. About October 1 the company had some fair sized orders and figured that with improvement in business which it expected after the election it could run for a good period to capacity. Night and day turn was put on at that time, but as a matter of fact its business fell off after November 1 and has not been as good since that time as it was in the summer.

The Mica Insulator Company, Dock street and Villa road, Schenectady, N. Y., has retained Consulting Engineer and Architect W. L. Stoddard, Union square, New York, to prepare plans for construction of new factory building to be erected at Schenectady. The building will be four stories, of reinforced construction and will cost approximately $140,000. Bids for building and equipment will be called for the coming year.

The Auto Parts Mfg. Company, Muncie, Ind., has been incorporated, with $15,000 capital stock, to buy and sell automobile parts and supplies in connection with the manufacture of automobiles. The incorporators are F. M. Boyer, A. Boyer, J. P. Kendel and A. W. Tyler.

The Leather Tire Company, Niagara Falls, N. Y., recently incorporated, will erect a two-story brick factory building, 50 x 100 ft., on Whirlpool street, north of the New York Central Railroal tracks. The company will engage in the manufacture of a combination metal and leather tire for the protection of rubber automobile tires.

The Pittsford Metal Ware Company, Pittsford, N. Y., has been incorporated, with $25,000 capital stock, to manufacture metal ware specialties. The incorporators are Henry H. Hilfiker, Thomas Sheehan and John A. Agate of Pittsford, Joseph E. Byrnes, Charles H. Rich and David N. Salisbury of Rochester, and J. D. Smith of Buffalo.

The American Engineering Company, Terminal-Traction Building, Indianapolis, Ind., has secured the contract for building a 196-mile electric railroad from Des Moines to Sioux City, Iowa.

The DeKleist Musical Instrument Mfg. Company, North Tonawanda, N. Y., and the Rudolph Wurlitzer Company, Cincinnati, Ohio, have consolidated under the name of the Rudolph Wurlitzer Mfg. Company, with a capital stock of $1,000,000. The company proposes to erect a large three-story brick addition to the North Tonawanda plant. Construction will be started early in the coming year.

Letters patent were issued at Montreal, Canada, December 2, to A. J. Estes, G. S. Hart, F. H. Mackey, R. C. Grant and W. G. Pugsley of Montreal to organize under the name of the Canadian Palace Car Company, with capital of $1,300,000, to manufacture parlor, dining and sleeping cars in Canada, under rights obtained from the American Parlor Car Company of New York.

Rhodes-Curry & Co., Amherst, N. S., are rebuilding their passenger car erecting shop which was recently destroyed by fire. None of the buildings containing machinery were damaged and no new machinery will be required, the burned building being equipped with only two or three small machines operated by electricity. Work at the plant is proceeding as usual, and it is expected that the new shop will be completed inside of four weeks.

The Green Bay Cornice & Corrugating Company, Green Bay, Wis., will build a new plant, 159 x 198 ft., one story.

The National Boiler Works, Superior, Wis., reports much activity in its line. The company has the contract for the erection of large grain tanks at the Marsden Feed Company's plant at Superior, and is also working on a large order for coal buckets for the Pittsburgh Coal Company.

The Pneumatic Oven Company has been organized at Milwaukee, Wis., with a capital stock of $100,000, by A. Edward Koch, Henry J. Gamm and Charles C. Mayhew.

Contracts have been let by the Santa Fé System for the rebuilding of a roundhouse, coal chutes, sand house and water service at Amarillo, Texas.

The recent fire at the plant of the Snyder & Baker Stove Works, Belleville, Ill., destroyed only the polishing and plating departments. The loss was not very large, and a satisfactory settlement having been made with the insurance company, these departments are being rebuilt and will be ready for operation in a few weeks.

The C. J. Tagliabue Mfg. Company, New York, has started a factory at Cleveland, Oswego County, N. Y., for the manufacture of thermometers.

The Gandy Belting Company, Baltimore, Md., will build an additional factory, 90 x 100 ft., of mill construction, to be equipped with exhaust steam heating plant, electric light plant, elevators, belt stretching and other machinery.

Practically no machinery was destroyed in the recent fire at the plant of the J. G. Brill Company, Philadelphia, Pa., only a part of the lumber department being damaged.

A company is being organized at Carmel, Ind., to build a packing plant, to include an ice and cold storage plant, to cost $100,000. Among the stockholders are Myers & Myers, C. Y. Foster, Dr. K. C. Hershey, Henry A. Roberts, George Bowen and F. W. Johnson.

The City Ice Company has been organized at Ft. Wayne, Ind., with $30,000 capital stock and will build an artificial ice plant. Edward Marquis will be manager. R. J. Spencer, Marion, Ind., is at the head of the company.

Press reports to the effect that the Pittsburgh-Westmoreland Coal Company would after January 1 commence the erection of a large new coke plant, to cost $500,000, adjacent to its Acme works near Monongahela City, Pa., are greatly exaggerated. The company will shortly place a contract for the grading for the location of a new coke works, but the erection of the ovens has not been definitely decided upon and will not be for some time yet.

The Pressed Steel Car Company, Pittsburgh, is substituting electricity for steam power in its steel car works at McKee's Rocks. A new electric power house has been completed and a large amount of electrical equipment has been installed. Already over 30 punching machines formerly run by steam power are operated by electricity.

**Russian Iron and Steel Production.**—The production of iron ore in Russia in 1907 was 4,227,419 metric tons, as against 3,873,356 tons in 1906, 4,942,182 tons in 1905 and 5,160,990 tons in 1904. In addition to the above the exports of manganese ore from Poti amounted to 881,322 tons in 1907, against 464,016 tons in 1906. The exports of iron ore from South Russia to Germany in 1907 were 1,613,000 metric tons, compared with 535,000 tons in 1906 and 373,000 tons in 1905. The pig iron production in Russia last year was 2,820,604 metric tons, as compared with 2,691,606 tons in 1906. The production of steel ingots and castings was 2,823,028 metric tons, of which 524,786 tons was by the Bessemer and Thomas processes, 2,129,503 tons by the Siemens-Martin process and 168,739 tons by the crucible and other processes. In 1906 the total by all processes was 2,643,027 tons. From 1904 to 1907 the decrease was 211,883 tons. The production of steel rails in 1907 was 311,806 metric tons, against 271,739 tons in 1906. Russia's production of coal in 1907 was 26,023,344 metric tons.

The Standard Tool Company, Cleveland, Ohio, will greatly enlarge the capacity of its plant about January 1 by occupying several adjoining buildings owned by this company in which the plant of the Standard Welding Company was formerly located. The buildings are being overhauled and fitted up with the most modern appliances for a manufacturing plant. An electric freight elevator is being installed, and some additional power equipment is being added. Some new special machinery will be installed, but this will be built by the company. The enlargement of the plant will give the company 60,000 sq. ft. additional floor space. The company reports a gradual improvement in orders, and additional men are being added to its working force.

The Empire Meter & Engine Company of Canada, Ltd., Winnipeg, Canada, has been incorporated with a capital stock of $125,000, under the Manitoba Joint Stock Companies act. The organization of the company has not yet been completed by the election of officers, but plans are being prepared for the erection of a manufacturing plant at Winnipeg, whose product will be water meters and water works supplies. Owing to the lateness of the season active construction work will not be undertaken until next spring. The incorporators of the company are: Geo. L. Rice, Geo. Irving and Geo. Goodfellow of Chicago, Fred J. Darch, London, Ont.; W. R. K. Magill, Winnipeg.

# The Iron and Metal Trades

## Pig Iron Production Increased 4 Per Cent. in November.

November production of Pig Iron, according to the returns furnished to *The Iron Age*, footed up to 1,577,854 gross tons, compared with 1,567,198 tons in October and 1,218,129 tons in July. We are producing now at the rate of 52,595 tons per day, of Coke and Anthracite Iron, against 50,554 tons in October and 36,444 tons in June. Thus the gain in the daily rate was about 4 per cent. in November, over October, and about that rate of gain over November is indicated for December, according to the furnaces active on the first of this month.

It is somewhat difficult to judge whether the melt is increasing at this rate. The only indication is that generally speaking consumers are quite urgent for deliveries, and are frequently adding to former purchases.

Buying by larger interests has been somewhat sporadic, but there are indications that some who have fought the advance all along are surrendering.

During the past 10 days some heavy purchases have been made in the Birmingham District. One interest has contracted for 30,000 to 40,000 tons of low grade Irons on the $13 basis, and one sale of No. 2 Foundry Iron, involving 10,000 tons, was made. The number of makers who are willing to sell for forward delivery on the $13 basis is narrowing and a more general adherence to a higher level is foreshadowed.

In eastern Pennsylvania an accident to one of the local furnaces has led to a flurry in Basic Pig and some round sales have followed.

The Rail makers and the Pennsylvania Railroad have come so close together in the matter of specifications that an early placing of the orders for an aggregate of about 160,000 tons is expected within the next 10 days. The placing of the Pennsylvania order is usually the signal for similar action on the part of many other roads, and the movement is therefore watched with unusual interest. It is stated that the question still at issue is in regard to the rejection of Rails which have failed to pass the new drop tests. The railroad engineers first demanded that the whole batch represented by the Rail showing weakness be rejected, and when that was refused offered to accept them provided that each rail of such batch be specially marked. It is this proposition which is now being considered.

As indicating how the views of railroad engineers are undergoing a change, we may note that the New Haven road is now in the market for a lot of Open Hearth Rails for which the specifications call for carbon up to 1 per cent. and phosphorus down to 0.02 per cent.

Quite a large business has been done in Track Material. Chicago reports purchases made by a number of leading roads there of Spikes and Bolts which aggregate 150,000 kegs.

With the approach of the new year more interest is developing in Wire Rods. Some good business has been done in the Chicago District, and there are some large inquiries in the Pittsburgh market for delivery during the first half of next year.

In Steel Billets and Sheet Bars some interesting contracts have also been closed. Among them is one, made in the Wheeling District, involving 6000 tons per month over a period of six months.

Pittsburgh is to furnish the material for an additional lot of 1300 Steel cars just ordered by the Canadian Pacific road.

Comparatively only a small part of the large contracts for Structural Material which have been pending has been alloted. The contractor for the Chicago City Hall, which requires 11,000 tons, has been selected, and it is expected that the material will be promptly awarded.

The American Bridge Company is to build the 12-span bridge in Alaska, calling for 3500 tons, which the Guggenheim interest needs for its road.

The markets for Old Material are firm and in some sections display a rising tendency. One eastern Pennsylvania open hearth interest has purchased during the past week upward of 25,000 tons of melting scrap and some other negotiations of magnitude are pending.

The activity in the Brass and Copper rolling mills is reflected in an unusual spread between Lake and Electrolytic Copper, the former selling at 14½ cents, while the latter is available at 14⅛ cents. A larger difference would of course lead to a diversion from the former to the latter, particularly since the Wire trade is not yet what it should be, even relatively.

## A Comparison of Prices.

**Advances Over the Previous Month in Heavy Type, Declines in Italics.**

At date, one week, one month and one year previous.

| | Dec. 9, 1908. | Dec. 2, 1908. | Nov. 11, 1908. | Dec. 11, 1907. |
|---|---|---|---|---|
| **PIG IRON,** Per Gross Ton: | | | | |
| Foundry No. 2, Standard, Philadelphia | **$17.25** | $17.25 | $17.00 | $18.50 |
| Foundry No. 2, Southern, Cincinnati | **16.25** | 16.25 | 15.75 | 17.50 |
| Foundry No. 2, Local, Chicago | **17.00** | 17.00 | 16.50 | 19.00 |
| Basic, delivered Eastern Pa | **16.75** | 16.50 | 16.00 | .... |
| Basic, Valley Furnace | **15.50** | 15.50 | 14.50 | .... |
| Bessemer, Pittsburgh | **17.40** | 17.40 | 16.40 | 19.90 |
| Gray Forge, Pittsburgh | **15.15** | 15.15 | 14.90 | 18.40 |
| Lake Superior Charcoal, Chicago | 19.50 | 19.50 | 19.50 | 25.00 |
| **BILLETS, &c.,** Per Gross Ton: | | | | |
| Steel Billets, Pittsburgh | 25.00 | 25.00 | 25.00 | 28.00 |
| Forging Bilets, Pittsburgh | 27.00 | 27.00 | 27.00 | 30.00 |
| Open Hearth Billets, Phila | 26.20 | 26.20 | 26.20 | 30.00 |
| Wire Rods, Pittsburgh | 33.00 | 33.00 | 33.00 | 34.00 |
| Steel Rails, Heavy, at mill | 28.00 | 28.00 | 28.00 | 28.00 |
| **OLD MATERIAL,** Per Gross Ton: | | | | |
| Steel Rails, Melting, Chicago | **15.50** | 15.50 | 15.00 | 13.00 |
| Steel Rails, Melting, Phila | **16.75** | 16.25 | 15.50 | 11.50 |
| Iron Rails, Chicago | **19.50** | 19.50 | 18.00 | 15.50 |
| Iron Rails, Philadelphia | **21.00** | 20.50 | 20.25 | 17.50 |
| Car Wheels, Chicago | **16.00** | 16.00 | 15.25 | 22.00 |
| Car Wheels, Philadelphia | **16.00** | 16.00 | 15.00 | 19.00 |
| Heavy Steel Scrap, Pittsburgh | **16.50** | 16.50 | 16.00 | 13.50 |
| Heavy Steel Scrap, Chicago | **15.25** | 15.25 | 14.50 | 11.50 |
| Heavy Steel Scrap, Philadelphia | **16.75** | 16.25 | 15.50 | 11.50 |
| **FINISHED IRON AND STEEL,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Refined Iron Bars, Philadelphia | **1.50** | 1.50 | 1.45 | 1.75 |
| Common Iron Bars, Chicago | 1.50 | 1.50 | 1.50 | 1.75 |
| Common Iron Bars, Pittsburgh | **1.50** | 1.50 | 1.40 | 1.60 |
| Steel Bars, Tidewater, New York | 1.56 | 1.56 | 1.56 | 1.76 |
| Steel Bars, Pittsburgh | 1.40 | 1.40 | 1.40 | 1.60 |
| Tank Plates, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Tank Plates, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Beams, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Beams, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Angles, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Angles, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Skelp, Grooved Steel, Pittsburgh | 1.45 | 1.45 | 1.45 | 1.70 |
| Skelp, Sheared Steel, Pittsburgh | 1.50 | 1.50 | 1.50 | 1.80 |
| **SHEETS, NAILS AND WIRE,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Sheets, Black, No. 28, Pittsburgh | 2.50 | 2.50 | 2.50 | 2.60 |
| Wire Nails, Pittsburgh | 1.95 | 1.95 | 1.95 | 2.05 |
| Cut Nails, Pittsburgh | 1.75 | 1.75 | 1.75 | 2.00 |
| Barb Wire, Galv., Pittsburgh | 2.40 | 2.40 | 2.40 | 2.50 |
| **METALS,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Lake Copper, New York | *14.50* | 14.50 | 14.75 | 13.62½ |
| Electrolytic Copper, New York | *14.12½* | 14.25 | 14.50 | 13.50 |
| Spelter, New York | **5.15** | 5.20 | 5.05 | 4.50 |
| Spelter, St. Louis | **5.00** | 5.05 | 4.90 | 4.35 |
| Lead, New York | *4.27½* | 4.35 | 4.42½ | 4.00 |
| Lead, St. Louis | *4.15* | 4.20 | 4.30 | 3.75 |
| Tin, New York | *29.40* | 29.40 | 30.75 | 28.40 |
| Antimony, Hallett, New York | 8.12½ | 8.12½ | 8.12½ | 8.75 |
| Nickel, New York | 45.00 | 45.00 | 45.00 | 45.00 |
| Tin Plate, 100 lb., New York | $3.89 | $3.89 | $3.89 | $4.09 |

## Chicago.

FISHER BUILDING, December 9, 1908.—(*By Telegraph.*)

The new orders for finished Iron and Steel entered last week include few transactions involving important quantities, but no halt is observed in specifications, which on Steel Bars are exceptionally good, and on all other lines are coming out fairly well. Of leading interest were the contracts for Spikes and Bolts placed by five of the Western roads with the Illinois Steel Company. Three of these amounted in the aggregate to 112,000 kegs, and while the amounts were not specified for the remaining two the total of all would probably be around 150,000 kegs. The business taken by fabricators was made up of small jobs, none of the larger projects under consideration having been closed. By a vote of the Chicago City Council, the general contract for the construction of the new City Hall, requiring 11,000 tons of Structural Material, has been awarded to the Noel Construction Company, Baltimore.

**Pig Iron.**—It is evident from the light business booked last week by local selling agencies that consumers of Foundry Iron generally have withdrawn from the market. Whatever first and second quarter requirements are yet uncovered will hardly be considered until after the turn of the year. Only scattered lots of small size were included in the week's business, the most of them for shipment through the first half. Inquiries have dropped off considerably and no lots of important size are concerned in those now coming out. The situation has again resolved itself into a waiting game,

in which buyers and sellers seem equally content to defer action pending future developments. A good many consumers would doubtless come into the market for second half requirements at current prices, if Iron was available for that period. There are, in fact, several inquiries of this character floating about, but the furnace interests either decline to quote or else name figures materially higher than consumers will consider. As matters now stand, there is no prospect of the immediate establishment of a mutually acceptable price basis for second half bookings. There is no change in the prices held by either Northern or Southern producers. At least two of the leading Southern interests are selling through the first half at $13, Birmingham, while others are naming this price only for first quarter shipments, and are asking $13.50, Birmingham, for second quarter. The local Northern furnaces are selling first quarter Iron at $17, at furnace, but for exclusively second quarter business are quoting $18. The indications are that there will be some falling off in the foundry melt between now and the first of the year, and requests to hold up deliveries until after that time are more numerous. Altogether, market conditions are about what might naturally be expected in view of the late buying movement, and the usual slack up that comes with the holiday season. The following quotations are for December delivery, f.o.b. Chicago:

| | |
|---|---|
| Lake Superior Charcoal | $19.50 to $20.00 |
| Northern Coke Foundry, No. 1 | 17.50 to 18.00 |
| Northern Coke Foundry, No. 2 | 17.00 to 17.50 |
| Northern Coke Foundry, No. 3 | 16.50 to 17.00 |
| Northern Scotch, No. 1 | 18.00 to 18.50 |
| Southern Coke, No. 1 | 17.85 to 18.35 |
| Southern Coke, No. 2 | 17.35 to 17.85 |
| Southern Coke, No. 3 | 16.85 to 17.35 |
| Southern Coke, No. 4 | 16.35 to 16.85 |
| Southern Coke, No. 1 Soft | 17.85 to 18.35 |
| Southern Coke, No 2 Soft | 17.35 to 17.85 |
| Southern Gray Forge | 15.85 to 16.35 |
| Southern Mottled | 15.60 to 16.10 |
| Malleable Bessemer | 17.00 to 17.50 |
| Standard Bessemer | 17.90 to 18.40 |
| Jackson Co. and Kentucky Silvery, 6 % | 19.90 to 20.40 |
| Jackson Co. and Kentucky Silvery, 8 % | 20.90 to 21.40 |
| Jackson Co. and Kentucky Silvery, 10 % | 22.90 to 23.40 |

(*By Mail.*)

**Billets and Rods.**—While no lots of importance were included in last week's transactions for Forging Billets, slight improvement is noted in the number of small orders coming into the market. These are comprised principally of carload lots representing the requirements of machinery builders of various kinds. We are advised that prices are now being regularly maintained at the base price of $28.50, Chicago. Backed by a vigorous demand for Wire products, Wire Rods are moving in fairly good volume. Several new contracts ranging from 1000 to 2000 tons, together with one of 5000 tons, were included in the entries made last week by the principal interest. Prices continue firm, and we quote as follows: Bessemer, $33; Basic, $34; Chain, $33, all at Pittsburgh.

**Rails and Track Supplies.**—The various lots of new rail tonnage under consideration are still hanging fire, and no closures are reported. A few small orders, from miscellaneous sources, for Heavy Rails, constitute the full measure of activities in this line as far as new business is concerned. More interest is being displayed by the railroads in track supplies, with the result that the Spike and Bolt departments of the Joliet plant are well supplied with orders, the bookings of the past few weeks being sufficient to provide the Spike mill for a run of three or four months, and the Bolt mill for six months. Besides a liberal amount of specifications, which were entered last week by the Illinois Steel Company, several new Spike and Bolt orders were taken, the most notable of which was one from the Missouri Pacific Railroad for 35,000 kegs of Bolts and 35,000 kegs of Spikes; also 25,000 kegs of Spikes and Bolts from the Northern Pacific and 7000 kegs from the Wisconsin Central. Contracts were also closed with the Great Northern Railroad and the Soo Line, but the tonnages in these instances were not specified. Angle Bars are not sharing the activity with the other fastenings, and orders for them are coming in slowly. Business in Light Rails is holding up, orders for 2000 tons having been booked in the first week of the present month for rolling at the South Works. The advances in the price of Rerolling Steel Rails is reflected in the firming up of Light Rails, prices which in this territory are rarely shaded beyond $1 a ton. We quote as follows: Angle Bars, accompanying Rail orders, 1908 delivery, 1.50c.; car lots, 1.60c.; Spikes, 1.80c. to 1.90c., according to delivery; Track Bolts, 2.15c. to 2.25c., base, Square Nuts, and 2.30c. to 2.40c., base, Hexagon Nuts. The store prices on Track Supplies range from 0.15c. to 0.20c. above mill prices. Light Rails, 25 to 45 lb., $26; 20-lb., $27; 16-lb., $28; 12-lb., $29. Standard Sections, Bessemer, $28; Open Hearth, $30, on lots of 500 tons and over; on smaller lots, $2 a ton extra.

**Structural Material.**—None of the projects now under consideration involving large tonnages of Structural Material was included in the contracts closed last week. Quite a number of small jobs, however, were secured by fabricators. Those reported aggregate about 3200 tons, and were compiled as follows: For the Ordway Hotel, St. Paul, 1500 tons, to be erected by A. Bolter & Son, Bethlehem Shapes being specified; for the new Featherstone Foundry plant, Chicago, 800 tons, taken by the Kenwood Bridge Company; for the First National Bank Building, Houston, Texas, 373 tons, placed by James Stewart, general contractor, with the Virginia Bridge Company; 200 tons for a bridge over the Tensas River in Arkansas, secured by the Pennsylvania Steel Company; 150 tons for a grand stand to be erected in the American League Ball Park, St. Louis, and 100 tons for a gravel handling plant at Baton Rouge, to be fabricated by the American Bridge Company; 194 tons for a new factory building to be erected in Omaha by the Loose-Wiles Cracker & Candy Company, taken by the A. E. Shorthill Company, Marshalltown, Iowa; 400 tons for a Pueblo, Colo., Court House, was awarded to the Des Moines Bridge & Iron Company, and 268 tons for the Vermont Building, Salt Lake City, was taken by the Minneapolis Steel & Machinery Company. No action was taken by the City Council at its last meeting regarding the award of the contract for the construction of the new Chicago City Hall, but it is understood that the question will again be taken up this week. Specifications for plain material are coming in fairly well, especially from the car shops. Prices from store are 1.95c. to 2c. Mill prices at Chicago are as follows: Beams and Channels, 3 to 15 in., inclusive, 1.78c.; Angles, 3 to 6 in., ¼-in. and heavier, 1.78c.; larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 15 in., 1.88c.; Zees, 3 in. and over, 1.78c.; Tees, 3 in. and over, 1.83c.

**Plates.**—As compared with other mill products, the demand for Plates is lagging. The industries depended upon to supply Plate orders are not, as yet, going ahead fast enough to warrant their placing large orders for Plates. Business has, however, improved somewhat in the past few weeks, and some of the smaller mills have secured a fair amount of business, but the situation as a whole is not marked by a degree of improvement that promises the employment of full mill capacities in the immediate future. Prices have firmed up considerably, and but little complaint is heard of irregularities, which some time ago were a conspicuous feature of the market. We quote mill shipments as follows: Tank Plates, ¼-in. and heavier, wider than 6¼ and up to 100 in. wide, inclusive, car lots, Chicago, 1.78c.; 3-16 in., 1.88c.; Nos. 7 and 8 gauge, 1.93c.; No. 9, 2.03c.; Flange quality, in widths up to 100 in., 1.88c., base, for ¼-in. and heavier, with the same advance for lighter weights; Sketch Plates, Tank quality, 1.88c.; Flange quality, 1.98c. Store prices on Plates are as follows: Tank Plates, ¼-in. and heavier, up to 72 in. wide, 2c. to 2.10c.; from 72 to 96 in. wide, 2.10c. to 2.20c.; 3-16 in. up to 60 in. wide, 2.10c. to 2.25c.; 72 in. wide, 2.30c. to 2.40c.; No. 8, up to 60 in. wide, 2.10c. to 2.15c.; Flange and Head quality, 0.25c. extra.

**Sheets.**—A fairly good movement in Sheets is reported, although signs are not wanting which point to some slowing up through the approaching holiday season. All of the orders for immediate shipment of Galvanized and Light Black Sheets are being held pretty closely to actual present requirements, and no change in this respect is looked for until after the first of the year. Store business is effected to some extent by the same influences, and shipments from jobbers' stocks are moving in moderate volume. Mill prices are being maintained with more regularity and we are advised that no concessions of consequence are being made from established schedules. We quote mill shipments as follows, Chicago: Blue Annealed, No. 10, 1.98c.; No. 12, 2.05c.; No. 14, 2.08c.; No. 16, 2.18c.; Box Annealed, Nos. 17 to 21, 2.43c.; Nos. 22 to 24, 2.48c.; Nos. 25 and 26, 2.53c.; No. 27, 2.58c.; No. 28, 2.68c.; No. 29, 2.78c.; No. 30, 2.88c.; Galvanized Sheets, Nos. 10 to 14, 2.63c.; Nos. 15 and 16, 2.83c.; Nos. 17 to 21, 2.98c.; Nos. 22 to 24, 3.13c.; Nos. 25 and 26, 3.33c.; No. 27, 3.53c.; No. 28, 3.73c.; No. 30, 4.23c.; Black Sheets from store: Blue Annealed, No. 10, 2.15c.; No. 12, 2.20c.; No. 14, 2.25c.; No. 16, 2.35c.; Box Annealed, Nos. 18 to 21, 2.60c.; Nos. 22 to 24, 2.65c.; No. 26, 2.70c.; No. 27, 2.75c.; No. 28, 2.85c.; No. 30, 3.25c.; Galvanized from store: Nos. 10 to 16, 3c.; Nos. 18 to 20, 3.15c.; Nos. 22 to 24, 3.30c.; No. 26, 3.50c.; No. 27, 3.70c.; No. 28, 3.90c.; No. 30, 4.40c. to 4.45c.

**Bars.**—Very little new business in Steel Bars is coming into the market, owing to the fact that the requirements of the consumers are generally well covered by contracts placed sometime ago. Specifications against these contracts, however, continue to come out in satisfactory volume, in consequence of which, the mills of the leading interest are running practically full. But little, if any, improvement is noted in the demand for Iron Bars, which is confined principally to orders for immediate consumption. All of the Iron Bar and rerolling Steel mills in this district are going this week. Of the Republic Steel & Iron Company's mills, the Tudor Works at St. Louis has three trains on, with the Sylvan, at Moline, and the East Chicago plant each operating two trains. The Interstate Steel & Iron Company's mill is scheduled for a full week's run, though not to full capacity. Notwithstanding the higher level of values in mill Scrap, no advances have been made by the Western mills on Bar Iron, prices on which, however, are being firmly maintained. Quo-

tations. Chicago, are as follows: Steel Bars, 1.58c., with half extras; Iron Bars, 1.50c.; Hoops, No. 13 and lighter, 1.98c, full extra Hoop card; Bands, No. 12 gauge and heavier, 1.58c., half extra, Steel Bar card; Soft Steel Angles and Shapes, 1.68c., half extras. Store prices are as follows: Bar Iron, 2c. to 2.15c.; Steel Bars, 1.90c. to 2c.; Steel Bands, 1.90c., as per Bar card, half extras; Soft Steel Hoops, 2.25c. to 2.35c., full extras.

**Merchant Pipe.**—There is nothing in present conditions to warrant the expectation of an accelerated movement of Merchant Pipe, since there is no incentive at present for jobbers to increase their stocks. Much of the outside work calling for the use of Pipe is suspended on account of cold weather, and will not be pushed again until spring opens. In the meantime buying will probably be of a hand to mouth character, with no features of special interest. The following mill discounts are quoted: Black Pipe, ¾ to 6 in., 73.2; 7 to 12 in., 70.2; Galvanized, ¾ to 6 in., 63.2. These discounts are subject to one point on the base. From store, in small lots, Chicago jobbers quote 73 per cent. on Black Steel Pipe, ¾ to 6 in. About three points above these prices is asked for Iron Pipe.

**Boiler Tubes.**—Some fair sized orders for Locomotive Tubes have been entered within the past few days, and while not notably large, the demand is better at present than it has been at any time in the past eight months. This is due chiefly to the greater amount of repair work being done by the railroads. New business in Merchant Tubes is light, but it is expected that after the first of the year the situation will be improved by more liberal stock orders from jobbers. Mill quotations for future delivery, on the base sizes, are as follows: 2¾ to 4¼ in., inclusive, Steel Tubes, 63.2; Iron, 50.2; Seamless, 50.2; 2½ in. and smaller, and lengths over 18 ft., and 2½ in. and larger, and lengths over 22 ft., 10 per cent. extra. Store prices are as follows:

| | Steel. | Iron. | Seamless. |
|---|---|---|---|
| 1 to 1¼ in. | 35 | 35 | 35 |
| 1¾ to 2¼ in. | 50 | 35 | 35 |
| 2½ in. | 52½ | 35 | 35 |
| 2¾ to 5 in. | 60 | 47½ | 47½ |
| 6 in. and larger | 50 | 35 | .. |

**Merchant Steel.**—While no new business of any consequence is being placed, specifications against contracts are being received by the mills in fair volume. The usual lethargy incident to the holiday season is being felt to some extent, chiefly with respect to the demand from jobbers who are generally preparing for the taking of inventories. We quote as follows: Planished or Smooth Finished Tire Steel, 1.78c.; Iron Finish, up to 1½ x ½ in., 1.73c., base, Steel card; Iron Finish, 1½ x ½ in. and larger, 1.58c., base, Tire card; Channels for solid Rubber Tires, ¾ to 1 in., 2.08c., and 1⅛ in. and larger, 1.98c.; Smooth Finished Machinery Steel, 2.08c.; Flat Sleigh Shoe, 1.63c.; Concave and Convex Sleigh Shoe, 1.83c.; Cutter Shoe, 2.05c.; Toe Calk Steel, 2.13c.; Railroad Spring, 1.98c.; Crucible Tool Steel, 7¼c. to 8c., and still higher prices are asked on special grades. Cold Rolled Shafting in car lots and over, 57 per cent. off; in less than car lots, 52 per cent. off, with carload freight allowed within base territory.

**Metals.**—The larger consumers of Copper are, as a rule, pretty well covered by contracts placed some weeks ago, against which they are specifying freely. Buying of this and other Metals by the smaller interests is limited to small lots for present use, so that there is comparatively little new business coming out. The strong statistical showing of the available supply of Pig Tin has had a weakening effect on prices which are about 1c. below last week's quotations. Old Metals reflect in a general way the movement of Ingot Metals, and the market is steady as to price, but only fairly active. Quotations are as follows: Casting Copper, 14¼c.; Lake, 14½c. to 14¾c., in car lots, for prompt shipment; small lots, ¼c. to ⅜c. higher; Pig Tin, car lots, 31½c.; small lots, 34½c.; Lead, Desilverized, 4.45c. to 4.55c., for 50-ton lots; Corroding, 4.70c. to 4.80c., for 50-ton lots, in car lots, 2¼c. per 100 lb. higher; Spelter, 5.10c. to 5.25c.; Cookson's Antimony, 10½c., and other grades, 9¾c. to 10¼c.; Sheet Zinc is $7, f.o.b. La Salle, in car lots of 600-lb. casks. On Old Metals we quote: Copper Wire, 13¼c.; Heavy Copper, 13c.; Copper Bottoms, 11¾c.; Copper Clips, 13c.; Red Brass, 12c.; Yellow Brass, 9½c.; Light Brass, 6¼c.; Lead Pipe, 4.35c.; Zinc, 3¾c.; Pewter, No. 1, 21c.; Tin Foil, 23c.; Block Tin Pipe, 26c.

**Cast Iron Pipe.**—Beyond the usual routine of small orders, there was but little tonnage booked by the foundries in the past week. No awards of the city of Detroit's requirements have thus far been made. Lettings are advertised by the city of St. Paul for 2000 tons on December 14, and by Indianapolis for 1500 tons on December 15. The general trend of inquiries indicate the development of a more active demand soon after the opening of the new year. We quote nominally per ton, Chicago, as follows: Water Pipe, 4 in., $27; 6 to 12 in., $26; 16 in. and up, $25, with $1 extra for Gas Pipe.

**Old Material.**—In spite of a limited demand from consumers through the past week, the market as a whole holds firm, and the small amount of material offered by the railroads has commanded good prices. In the two lists closed there was a little more than 4000 tons, and the Melting Steel grades and Rerolling Rails were bid up to top prices by dealers, although a fair portion of it is understood to have been sold direct to consumers. Borings and Turnings are the only grades on which there is any evidence of reaction. These were advanced out of line with other material by the recent demand from the Pittsburgh District, which has now subsided, and they will likely recede to their relative level. About 18,500 tons are included in the railroad offerings out for disposal this week, which are as follows: The Santa Fe, 2500 tons; Chicago, Milwaukee & St. Paul, 2500 tons; Wisconsin Central, 500 tons, and the Baltimore & Ohio, 8500 tons. In the latter list is a lot of 2500 tons of Rerolling Steel Rails. The following prices are per gross ton, f.o.b. Chicago:

| | |
|---|---|
| Old Iron Rails | $19.50 to $20.00 |
| Old Steel Rails, rerolling | 17.25 to 17.75 |
| Old Steel Rails, less than 3 ft. | 15.50 to 16.00 |
| Relaying Rails, standard sections, subject to inspection | 22.50 to 23.50 |
| Old Car Wheels | 16.00 to 16.50 |
| Heavy Melting Steel Scrap | 15.25 to 15.75 |
| Frogs, Switches and Guards, cut apart | 15.25 to 15.75 |
| Mixed Steel | 12.25 to 12.75 |

The following quotations are per net ton:

| | |
|---|---|
| Iron Fish Plates | $17.50 to $18.00 |
| Iron Car Axles | 21.00 to 21.50 |
| Steel Car Axles | 18.50 to 19.00 |
| No. 1 Railroad Wrought | 15.00 to 15.50 |
| No. 2 Railroad Wrought | 14.00 to 14.50 |
| Springs, Knuckles and Couplers | 14.50 to 15.00 |
| Locomotive Tires, smooth | 14.75 to 15.25 |
| No. 1 Dealers' Forge | 11.75 to 12.25 |
| Mixed Busheling | 9.25 to 9.75 |
| Iron Axle Turnings | 9.00 to 9.50 |
| Soft Steel Axle Turnings | 9.00 to 9.50 |
| Machine Shop Turnings | 9.00 to 9.50 |
| Cast Borings | 7.75 to 8.25 |
| Mixed Borings, &c. | 7.75 to 8.25 |
| No. 1 Mill | 9.00 to 9.50 |
| No. 2 Mill | 8.00 to 8.50 |
| No. 1 Boilers, cut to Sheets and Rings | 10.50 to 11.00 |
| No. 1 Cast Scrap | 14.00 to 14.50 |
| Stove Plate and Light Cast Scrap | 12.25 to 12.75 |
| Railroad Malleable | 14.00 to 14.50 |
| Agricultural Malleable | 11.75 to 12.25 |
| Pipes and Flues | 11.00 to 11.50 |

## Buffalo.

BUFFALO, N. Y., December 8, 1908.

**Pig Iron.**—Although the tonnage sold the past week is fully up to the average of the preceding few weeks, there has been a slackening in general buying due undoubtedly to the fact that some furnaces are so heavily sold that they have advanced their prices to a point which consumers consider prohibitive under present conditions. The demand for the lower grades of Foundry Iron is increasing, however, on account of the high price at which Scrap Iron is held. No. 3 Foundry and Gray Forge are becoming scarce and prices have advanced sharply, although these grades can probably be placed at something less than the prices shown in the appended quotations. The following prices fairly represent the market:

| | |
|---|---|
| No. 1 X Foundry | $16.25 to $16.75 |
| No. 2 X Foundry | 15.75 to 16.25 |
| No. 2 Plain | 15.50 to 15.75 |
| No. 3 Foundry | 15.50 to 15.75 |
| Gray Forge | 15.25 to 15.75 |
| Basic | 16.00 to 16.50 |
| Malleable Bessemer | 17.00 to 17.50 |
| Charcoal | 20.75 to 21.25 |

**Old Material.**—The market is dull, with but little demand from consumers who consider the schedule of prices adhered to by the dealers to be prohibitive. In most instances dealers are holding strongly for the higher range of the schedule, and but little tonnage is changing hands. We quote dealers' prices per gross ton, f.o.b. Buffalo, as follows:

| | |
|---|---|
| Heavy Melting Steel Scrap | $15.50 to $16.00 |
| No. 1 Railroad Wrought | 17.00 to 17.75 |
| No. 1 Railroad and Machinery Cast Scrap | 14.75 to 15.50 |
| Old Steel Axles | 19.00 to 20.00 |
| Old Iron Axles | 22.50 to 23.50 |
| Old Car Wheels | 16.75 to 17.75 |
| Railroad Malleable | 14.50 to 15.00 |
| Boiler Plate | 13.00 to 13.50 |
| Locomotive Grate Bars | 12.50 to 13.00 |
| Pipe | 12.50 to 13.00 |
| Wrought Iron and Soft Steel Turnings | 9.00 to 9.50 |
| Clean Cast Iron Borings | 8.50 to 9.00 |
| No. 1 Busheling Scrap | 14.25 to 14.75 |

**Finished Iron and Steel.**—Business is quiet, with some improvement in orders for Bar products for immediate deliveries, and with orders for small Shapes and railroad materials running about the same as for the past three weeks. Very little business is developing for Structural Material for the current month, and no activity is looked for until after the first of the year.

## Pittsburgh.

PARK BUILDING, December 9, 1908.—(*By Telegraph.*)

**Pig Iron.**—While inquiries have fallen off, and little new buying is being done, the market is firm, and furnaces are not disposed to shade prices to get business. Most of the Valley furnaces have a good deal of Iron sold ahead, which consumers are taking out at a fairly satisfactory rate, and little Iron is pressing the market. We quote Basic Iron at $15.50, Valley furnace, for first quarter delivery, and $15.75 to $16 for first half. Standard Bessemer Iron is quiet, but is held firmly at about $16.50, at furnace, while Malleable Bessemer is about $16 at furnace. We quote No. 2 Foundry at $15.50, and Forge at $14.25, Valley furnace, or $15.15, Pittsburgh. We note a sale of 500 tons of Basic for first quarter at $15.50, Valley furnace, and 500 tons of Malleable Bessemer at $16, Valley furnace.

**Steel.**—Makers of Steel state that consumers are specifying more freely against contracts for Billets, Forging Billets and Sheet Bars and shipments of Steel by the mills to consumers are heavier than for some time. We quote Bessemer and Open Hearth Billets, 3⅞ in. and larger, up to and including 0.25 carbon, $25; 0.26 to 0.60 carbon, $1 extra; over 0.60 carbon, $2 extra, all f.o.b. Pittsburgh. For Wheeling, Martins Ferry, Follansbee, Newcastle, Sharon, Steubenville and Washington (Pa.) delivery, half the freight, or 50c. additional, is charged. Sheet and Tin Bars in random lengths are $27.50, f.o.b. Pittsburgh. Forging Billets take $2 advance over Rolling Billets.

(*By Mail.*)

While general conditions continue quiet, a material betterment in the demand for all kinds of Iron and Steel products is expected after January comes in. The Pig Iron output is now larger than at any time in the past year, the Mahoning and Shenango valleys showing a large increase. Only four stacks in the Youngstown District are idle—Tod Furnace of the Youngstown Steel Company, Struthers Furnace, one Andrews & Hitchcock stack, and the No. 4 at the Ohio works of the Carnegie Steel Company. It is believed that the present output of Pig Iron is fully as heavy as the consumption, if not larger, and with a number of stacks ready to blow in higher prices are not likely in the near future. The large Steel interests report that Billets and Slabs and Sheet Bars are moving out more freely on specifications against contracts. Structural Steel has fallen off, but Sheets and Tin Plate are more active. While actual orders this month may show a decrease as compared with November, this will be due entirely to the fact that this month is the inventory period.

**Ferromanganese.**—The market is quiet, but prices are firm. We quote 80 per cent. foreign Ferro at $44 to $44.50, seaboard, plus the freight rate of $1.90 a ton, for Pittsburgh delivery.

**Ferrosilicon.**—We note sales of some 250 tons of 50 per cent. Ferrosilicon on the basis of about $62.50, Pittsburgh. We quote the market at $62.50 to $63, Pittsburgh.

**Wire Rods.**—Some fairly large inquiries for Rods for delivery over first half of the year are in the market, and some business of this character has already been closed. Consumers continue to specify quite freely against contracts. The market is firm, and we quote Bessemer Rods at $33, Chain Rods at $33, and Basic Rods at $34, Pittsburgh.

**Muck Bar.**—Owing to the higher prices ruling for Forge Iron, Muck Bar has further advanced, and we now quote best grades of Muck Bar, made strictly from all Pig Iron, at $28 to $28.50, Pittsburgh. A sale of about 250 tons of high grade Bar is reported at the higher price.

**Skelp.**—Mills rolling Grooved and Sheared Iron Plates are reported to be well filled up, some fairly large contracts having been placed in the last month against which consumers are specifying freely. We quote Grooved Steel Skelp at 1.45c. to 1.50c.; Sheared Steel Skelp, 1.50c. to 1.60c.; Grooved Iron Skelp, 1.75c., and Sheared Iron Skelp, 1.85c., f.o.b. Pittsburgh. A sale is reported of about 500 tons of Sheared Iron Skelp, at 1.85c., Pittsburgh.

**Steel Rails.**—Within a few days it is likely that definite announcement will be made of the placing of a contract by the Pennsylvania Railroad for 150,000 tons or more of Steel Rails for 1909 delivery. An agreement has been reached between this road and the Rail makers, and the closing of the contract may be expected to be followed by large orders from other roads. The Wabash Terminal has placed 500 tons with the Carnegie Steel Company, and the Pittsburgh Railways Company about the same amount. The Carnegie Steel Company has also booked about 1300 tons of Light Rails. The Nos. 1 and 3 mills at Edgar Thomson Works are running to possibly 40 per cent. of capacity. A good tonnage in both Light Rails and Standard Sections for export is being placed, the Carnegie Steel Company having recently secured some good orders. Makers of Light Rails rerolled from Old Rails continue to sell at $2 to $3 a ton under Rails rolled from Billets. Prices on new Light Rails, rolled from Billets, are as follows: $25 for 25 to 45 lb. Sections, with $1 advance for 20 lb., $2 advance for 16 lb., and $3 advance for 12 lb. Standard Sections are $28, at mill, and Angle Splice Bars, 1.65c., at mill.

**Structural Material.**—At a meeting held in this city late in November the National Association of Structural Steel Fabricators was formed, at which Horace E. Horton was elected chairman and B. L. Worden secretary. This organization is composed of practically all the leading Structural Steel fabricators, and has been organized to bring about better conditions in their trade. Business in this line continues quiet, orders booked in November showing a marked falling off as compared with October. It is believed, however, that contracts for a good quantity of Shapes will be closed early in the new year, as bids have gone in on a large amount of new work. We quote, f.o.b. mill, Pittsburgh: I-Beams and Channels, 3 to 15 in., inclusive, 1.60c., net; I-Beams over 15 in., 1.70c., net; H-Beams over 8 in., 1.80c.; Angles, 3 to 6 in., inclusive, ¼ in. and up, 1.60c., net; Angles, over 6 in., 1.70c., net; Angles, 3 x 3 in. and up, less than ¼ in., 1.50c., base, half extras, Steel Bar card; Tees, 3 in. and up, 1.65c., net; Zees, 3 in. and up, 1.60c., net; Angles, Channels and Tees under 3 in., 1.50c., base, half extras, Steel Bar card; Deck Beams and Bulb Angles, 1.90c., net; Hand Rail Tees, 3c., net; Checkered and Corrugated Plates, 3c., net.

**Plates.**—The demand is showing distinct betterment, orders being placed with the large makers of Plates being heavier now than at any time in the past year. The Canadian Pacific Railroad has given another order to the American Car & Foundry Company for about 1300 Steel cars, the Plates and Shapes for which will be rolled by the Jones & Laughlin Steel Company. The market is firmer, practically all the new business being taken at regular prices, which are as follows: Tank Plates, ¾ in. thick, 6¼ in. up to 100 in. wide, 1.60c., base, at mill, Pittsburgh. Extras over this price are as follows:

Tank, Ship and Bridge quality, ¼-in. thick on edges, 100 in. wide, down to but not including 6 in. wide, is taken as base.

Steel Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per square foot, shall be considered ¼-in. Plate. Steel Plates over 72 in. wide must be ordered ¼-in. thick on edge, or not less than 11 lb. per square foot, to take base price. Steel Plates over 72 in. wide ordered less than 11 lb. per square foot down to the weight of 3-16-in. shall take the place of 3-16-in.

Percentages as to overweight on Plates, whether ordered to gauge or weight, to be governed by the Association of American Steel Manufacturers' Standard Specifications.

| | |
|---|---|
| Gauges under ¼-in. to and including 3-16-in. Plates on thin edges | $0.10 |
| Gauges under 3-16-in. to and including No. 8 | .15 |
| Gauges under No. 8 to and including No. 9 | .25 |
| All sketches (excepting straight taper Plates varying not more than 4 in. in width at ends, narrowest end being not less than 30 in.) | .10 |
| Complete Circles | .20 |
| Boiler and Flange Steel Plates | .10 |
| "A. B. M. A." and ordinary Firebox Steel Plates | .20 |
| Still Bottom Steel | .30 |
| Marine Steel | .40 |
| Locomotive Firebox Steel | .50 |
| Shell grade of Steel is abandoned. | |
| For widths over 100 in. up to 110 in | .05 |
| For widths over 110 in. up to 115 in | .10 |
| For widths over 115 in. up to 120 in | .15 |
| For widths over 120 in. up to 125 in | .25 |
| For widths over 125 in. up to 130 in | .50 |
| For widths over 130 in | 1.00 |

TERMS.—Net cash 30 days. Pacific Coast base, 1.50c., f.o.b. Pittsburgh.

**Sheets.**—A distinctly better demand is observed for both Galvanized and Black Sheets and more new orders are being placed with the mills than probably at any other time this year. The American Sheet & Tin Plate Company is now operating to about 65 per cent. of capacity, and the leading outside Sheet mills are running to larger capacity than for some months, two or three concerns advising us they are operating practically full. Prices are much firmer and very little if any cutting is being done. For shipment from mill regular prices are as follows: Blue Annealed Sheets, No. 10 and heavier, 1.80c.; Nos. 11 and 12, 1.85c.; Nos. 13 and 14, 1.90c.; Nos. 15 and 16, 2c.; Box Annealed, Nos. 17 to 21, 2.25c.; Nos. 22 to 24, 2.30c.; Nos. 25 and 26, 2.35c.; No. 27, 2.40c.; No. 28, 2.50c.; No. 29, 2.60c.; No. 30, 2.70c. Galvanized Sheets, Nos. 10 and 11, 2.45c.; Nos. 12 and 14, 2.55c.; Nos. 15 and 16, 2.65c.; Nos. 17 to 21, 2.80c.; Nos. 22 and 24, 2.95c.; Nos. 25 and 26, 3.15c.; No. 27, 3.35c.; No. 28, 3.55c.; No. 29, 3.70c.; No. 30, 3.95c.; No. 28, Painted Roofing Sheets, $1.75 per square, and Galvanized Roofing Sheets, No. 28, $3.10 per square, for 2½-in. corrugations. These prices are subject to a rebate of 5c. per 100 lb. to the large trade under the usual conditions, jobbers charging the usual advances for small lots from store.

**Tin Plate.**—The demand continues unusually heavy for this season of the year. The leading mills are booking a good many large orders, and, it is claimed, at full prices. The American Sheet & Tin Plate Company and the leading outside Tin Plate makers are steadily increasing their active

capacity. The outlook for the next three or four months is decidedly good. Regular prices are being absolutely maintained. We quote: $3.70 for 100-lb. Cokes, 14 x 20, f.o.b. Pittsburgh, terms 30 days, less 2 per cent. off for cash in 10 days, this price being subject to the usual rebate of 5c. per base box in large lots.

**Iron and Steel Bars.**—Specifications against contracts for Steel Bars continue to come into the mills very freely, and shipments are correspondingly heavier. The Steel Bar trade is fast getting back into normal conditions, the leading makers now operating to 75 per cent. or more of capacity. The situation in Iron Bars is fairly active, some fair sized orders coming in, which, with specifications against contracts, keep the mills operating to about 50 per cent. of capacity. We quote Iron Bars at 1.42c., Pittsburgh, for Western shipment, or 1.60c., Chicago, while the price for delivery in the Pittsburgh District is 1.50c. Steel Bars are firm, at 1.40c., Pittsburgh, for base sizes.

**Hoops and Bands.**—This is the fag end of the season in this trade, but as soon as the mills have announced their prices on Hoops and Bands for 1909 delivery it is expected that some very heavy contracts will be placed by the leading consumers. Regular prices are reported as being maintained as follows: Steel Hoops, 1.80c., base, full Hoop card prices; Steel Bands, 1.40c., base, half Steel card extra, all f.o.b. cars, Pittsburgh, in carload lots, for delivery during 1908.

**Railroad Spikes.**—Reports are that heavy orders for Railroad Spikes have been placed by two or three of the leading roads, and that some very large additional business is pending. The demand for the smaller sizes continues active, and the mills are filled up for three or four weeks. Prices are firm, and we quote: Standard sizes, 4½ x 9-16 in., at $1.70, and the smaller sizes at $1.80 per 100 lb., in carload and larger lots, with an advance of 5c. per 100 lb. for less than carload, f.o.b. Pittsburgh.

**Merchant Steel.**—Few new orders are coming in, but specifications against contracts are being received by the mills quite freely. However, jobbers are holding back to some extent, not wishing to increase stocks until after the first of the year. Several large orders for Shafting for delivery over first quarter and first half of the year have been placed, and we are advised at full prices. We quote Cold Rolled Shafting at 57 per cent. off in carloads and 52 per cent. in less than carloads, delivered in base territory. Regular prices on Merchant Steel, which are being shaded to some extent, are as follows: Smooth Finished Machinery Steel, 1.80c. to 1.90c.; Flat Sleigh Shoe, 1.75c. to 1.85c.; Cutter Shoe Steel, 2.15c. to 2.25c.; Toe Calk, 1.90c. to 1.95c.; Railroad Spring Steel, 1.60c. to 1.75c., the higher prices being for Pennsylvania Railroad analysis. Carriage Spring Steel is 1.80c.; Tire Steel, Iron finish, 1½ x ½ in. and heavier, 1.40c.; under 1½ in., 1.55c. Planished Tire Steel is 1.60c., all f.o.b., at mill.

**Spelter.**—Prices have again advanced, and prime grades of Western Spelter are held at about 5c., East St. Louis, equal to 5.12½c., Pittsburgh.

**Merchant Pipe.**—Reports that inquiries are in the market for 100 miles of line Pipe for one interest and 30 miles of 6-in. and 8-in. for another are probably untrue. Leading mills say they have no such inquiries and have not heard of them. The Gulf Refining Company recently bought about four miles of 3 to 10 in. Pipe, and is in the market for about four miles of 2-in. 4-lb. The general demand for Pipe in merchant sizes is fairly active when it is considered that this is the off season of the year. It is estimated that about 70 per cent. of the mill capacity is active at present. The mills are strictly maintaining prices on both Iron and Steel Pipe. Discounts on Steel Pipe, ¾ to 6 in., to the large trade, are 76 and 5 per cent. off list. Regular discounts are as follows:

*Merchant Pipe.*

| | Jobbers, carloads, Steel. | |
|---|---|---|
| | Black. | Galv. |
| | % | % |
| ⅛ to ¼ in | 67 | 51 |
| ⅜ in | 69 | 55 |
| ½ in | 71 | 59 |
| ¾ to 6 in | 75 | 65 |
| 7 to 12 in | 72 | 57 |
| Extra strong, plain ends: | | |
| ⅛ to ⅜ in | 60 | 48 |
| ½ to 4 in | 67 | 55 |
| 4½ to 8 in | 63 | 51 |
| Double extra strong, plain ends: | | |
| ½ to 8 in | 56 | 45 |

Discounts on Genuine Iron Pipe are as follows:

| | Black. | Galv. |
|---|---|---|
| | % | % |
| ⅛ to ¼ in | 65 | ... |
| ⅜ in | 67 | 53 |
| ½ in | 69 | 57 |
| ¾ to 6 in | 73 | 63 |
| 7 to 12 in | 70 | 55 |
| Extra strong, plain ends: | | |
| ⅛ to ⅜ in | 58 | 46 |
| ½ to 4 in | 65 | 53 |
| 4½ to 8 in | 61 | 49 |
| Double extra strong, plain ends: | | |
| ½ to 8 in | 54 | 43 |

**Boiler Tubes.**—Several of the railroads are placing some fairly large orders for Tubes for repair work, but as yet little new business has been closed for delivery into next year. The demand for Merchant Tubes continues quiet and shipments by the mills are light. Prices are reported to be somewhat firmer. For Merchant Tubes in small lots, on which an extra 5 per cent. is allowed in carloads, discounts are as follows:

*Boiler Tubes.*

| | Iron. | Steel. |
|---|---|---|
| 1 to 1½ in | 42 | 47 |
| 1¾ to 2¼ in | 42 | 59 |
| 2½ in | 47 | 61 |
| 2¾ to 5 in | 52 | 65 |
| 6 to 13 in | 42 | 59 |

2½ in. and smaller, over 18 ft. long, 10 per cent. net extra.
2¾ in. and larger, over 22 ft. long, 10 per cent. net extra.

**Iron and Steel Scrap.**—Several dealers state that consumers have asked them to defer shipments on Scrap already sold, and other negotiations have been held up until after the first of the year. This is due to the fact that consumers of Scrap are pretty well covered, and do not want to take in any more material this month than they can avoid. The general condition of the trade is sound, there apparently being places to put all the Scrap available, and dealers are very firm as to prices. The embargo on Scrap destined for the Allegheny Steel Company, at Brackenridge, Pa., has not yet been lifted, and this has caused a slight weakness in prices of Borings and Turnings. The company was a heavy buyer some time ago, and several dealers are now compelled to find other places to put the material intended for such shipment. A large consumer of Heavy Steel Scrap in the Wheeling District is reported to have bought 4000 to 5000 tons at about $16.75, delivered. Prices on Rerolling Rails are slightly weaker. No sales of moment have been made during the week, and dealers quote about as follows: Heavy Steel Scrap, $16.50 to $16.75, for Pittsburgh, Sharon, Steubenville or Leechburg, Pa., delivery; for delivery at Bonessen, Pa., which takes a higher freight rate, $17 has been quoted. Cast Iron Borings are $11 to $11.25; Bundled Sheet Scrap, $13.50 to $13.75; No. 1 Busheling Scrap, $14.75 to $15; No. 2, $10.75 to $11; No. 1 Cast Scrap, $14.75 to $15; Iron Axles, $24 to $24.50; Sheet Bar Crop Ends, $18.50 to $18.75; Rerolling Rails, $18, delivered Cambridge, Ohio, and $18.50 to $19, delivered Cumberland, Md.; Low Phosphorus Melting Stock, $18 to $18.25; Steel Axles, $19.50 to $20; Scrap Bars, $13 to $13.25; Machine Shop Turnings, $12.25 to $12.50; Railroad Wrought Scrap, $16.75 to $17; Railroad Malleable Scrap, $15 to $15.50; Iron Rails, $18.75 to $19, and Locomotive Tires, $17 to $17.25, all per gross ton, f.o.b. Pittsburgh, unless otherwise stated.

**Coke.**—The tone of the Coke market is decidedly firm. There is a good deal of inquiry for Furnace Coke for first half of the year shipment. One leading interest that recently came into the market as a large consumer of Coke has closed with a prominent Connellsville operator for upward of 16,000 tons a month for first half of next year. The price is said to have been about $1.90 a ton at oven. The seller of this Coke closed with the same buyer some time ago for part of its requirements, and, desiring to have its entire tonnage, made a lower price than otherwise would have been made. Operators are adhering pretty closely to $2 per net ton for Connellsville Furnace Coke for first half delivery, while for prompt shipment $1.85 to $1.90 is being paid. We note a sale of about 4000 tons for December and January shipment at $1.90, at oven. Connellsville 72-hr. Foundry Coke is very firm and is held at $2.25 to $2.40, at oven. The Coke makers outside of the Connellsville region are making slightly lower prices for their Furnace and Foundry Coke. Last week there were 19,829 ovens in the two Connellsville regions in blast, and 18,191 were idle. The output was 229,199 tons, an increase over the previous week of about 10,000 tons. It would not be surprising if a shortage of Coke would come during this winter, as many plants are crippled for lack of water and besides a shortage in labor may develop.

## Birmingham.

BIRMINGHAM, ALA., December 7, 1908.

**Pig Iron.**—The sales reported in this market in the week just ended aggregate approximately 30,000 tons. With the exception of 5000 tons for spot delivery, shipments specified against engagements recorded cover the first quarter, but in one or more round tonnage considerations there is probably a provision whereby deliveries can be extended to cover the entire first half if so desired. By reason of the fact that but one of the leading producing interests has been solicitous of orders for a week or 10 days, the recent activity has resulted in practically no shading of established quotations. Among the sales reported, a lot of 10,000 tons on a basis of $13 per ton, Birmingham, for No. 2 Foundry is notable. A lot of 5000 tons, for spot delivery, referred to above, is understood to have been placed at figures slightly above the $13 schedule. This order is known to have been refused by the largest producer quoting on a basis of $13. Comparatively small lots of Clifton High Manganese Iron are reported sold at $14, Birmingham. The producer accredited with the majority of recent engagements reports a favorable comparison of order-book requirements with the probable

output for such a period that an advance from the $13 schedule within the coming week is not improbable. With such action quotations would be established on a basis of $13.50, although the tonnage offered for early shipment would probably increase materially. There are no available figures as to the extent the output of present active producing capacity has been taken care of, but of the four additional furnaces now ready for operation it is not anticipated that any will be blown in before January 1. The indications are favorable, however. for a continuance to some extent of the activity just experienced and significant additions to order-book requirements.

**Cast Iron Pipe.**—The business transacted in this market the past week was composed of minor orders, hardly sufficient to test the strength of quotations, but the manifested attitude of Southern producers is indicative of a more satisfactory condition. There has been no addition to the list of important lettings actually in sight, although a number of extensions and improvements are under consideration by gas and water companies, and the market for municipal bonds is such that considerable activity is anticipated soon after the inception of the new year. There has been an advance of $1 to $2 per ton in quotations on Cast Iron Soil Pipe, with indications favorable for the maintenance of values thus established. The accumulation of this material on yards of producers has been considerably reduced without an increase in the rate of production. We quote Water Pipe as follows, per net ton, carload lots, f.o.b. cars here: 2 to 6 in., $24; 8 to 12 in., $23; over 12 in., average $22, with $1 per ton extra for Gas Pipe.

**Old Material.**—The buying of carload lots for prompt shipment is the feature of this market, but the aggregate movement is fairly satisfactory. An improvement in the demand for Light Cast is noted, and consumers of Steel and Wrought manifest more interest as to future requirements. Dealers are in some cases indifferent of commitments and contemplate an advance in asking prices. We quote as follows, per gross ton, f.o.b. cars here:

| | |
|---|---|
| Old Iron Rails | $14.50 to $15.00 |
| Old Iron Axles | 16.00 to 17.00 |
| Old Steel Axles | 13.00 to 13.50 |
| No. 1 Railroad Wrought | 13.50 to 14.00 |
| No. 2 Railroad Wrought | 10.50 to 11.00 |
| No. 1 Country Wrought | 11.00 to 11.50 |
| No. 2 Country Wrought | 9.50 to 10.00 |
| No. 1 Machinery | 11.00 to 11.50 |
| No. 1 Steel | 10.00 to 10.50 |
| Stove Plate and Light Cast | 9.50 to 10.00 |
| Cast Borings | 5.00 to 5.50 |

## Cleveland.

CLEVELAND, OHIO, December 8, 1908.

**Iron Ore.**—There is more Ore on the docks than at this time a year ago, and as furnace yards are well filled it is expected that the shipments from the docks during the winter will be light. At a meeting of the Executive Committee of the Lake Carriers' Association, held in Detroit December 3, resolutions were adopted declaring that the depression in the lake trade during the past season was but a temporary condition, and the committee declared that it had such confidence in the recovery of business in 1909 that the rate of wages paid the present season should be maintained the coming season. They have been the same as in the prosperous year 1907. The committee also announced that it had decided to adopt the plan the association had in contemplation in 1901 to better the condition of officers and seamen. The open shop policy will be carried out, and in planning for the welfare of its employees the association will establish club rooms at the principal lake ports, provide a system of certificates of recommendation for employees, provide better protection of life and property afloat, provide death expense relief in case of death while on duty and furnish funds for transportation and for lost effects in case of shipwreck. Ore prices at Lake Erie ports are as follows: Old Range Bessemer, $4.50; Mesaba Bessemer, $4.25; Old Range non-Bessemer, $3.70; Mesaba non-Bessemer, $3.50.

**Pig Iron.**—Sales of Foundry Iron have been limited to a few small lots, the largest being about 500 tons. There are scarcely any inquiries. The majority of the furnaces are well sold up for the first quarter and are holding quite firmly to $16, Valley furnace, for No. 2 Foundry. Resale Iron has been offered by dealers at somewhat lower prices. A lot of No. 2 Foundry for December and January delivery is being offered by a Pittsburgh broker at $15.50, Valley furnace. Among the sales of the week were several small lots of No. 2 strong, at $16, local furnace, for first quarter and half, for shipment outside of this territory. A small tonnage of No. 2 was sold by a local furnace at $16.75, furnace, for Cleveland delivery in the first half. This interest is holding No. 2 at $16.50, at furnace for No. 2 for outside shipments, and $17.25, delivered Cleveland, for the second quarter. Shipping orders for Foundry Iron on contracts continue to come in fairly well, and a local interest reports that several consumers have asked shipments anticipated this month of Iron bought for January delivery. Inquiries for Basic Iron continue fairly good, and the price seems to be quite firm at $16, Valley furnace. A local interest reports that it rejected an offer at that price of 2000 tons per month for delivery during the first quarter. For December delivery we quote, delivered, Cleveland, as follows:

| | |
|---|---|
| Bessemer | $17.40 to $17.90 |
| Northern Foundry, No. 1 | 17.25 to 17.50 |
| Northern Foundry, No. 2 | 16.75 to 17.00 |
| Northern Foundry, No. 3 | 16.25 to 16.50 |
| Gray Forge | 15.00 to 16.00 |
| Southern Foundry, No. 2 | 17.35 |
| Jackson County Silvery, 8 per cent. Silicon | 20.05 |

**Coke.**—The market is quieter, but prices continue firm. We quote Standard Connellsville Furnace Coke at $1.90, at oven, for spot shipment, and $2 to $2.10 for first half delivery. For prompt shipment we quote Connellsville 72-hr. Foundry Coke at $2.15 to $2.25, at oven. For first half delivery this grade is held at $2.25 to $2.50, at oven.

**Finished Iron and Steel.**—Business is somewhat quieter. Inventory time is at hand, and consumers are holding off as much as possible in placing orders. A contract for another lake freighter was closed during the week, the Great Lakes Engineering Works of Detroit getting an order from the Inland Navigation Company of Hamilton, Ont., for a 500-ft. freighter for delivery next spring. The American Shipbuilding Company closed an additional contract for 1300 tons of Plates for a boat previously under contract. The leading interest closed a contract with a jobber during the week for 6500 tons of Bars, and reports other contracts for 1000 tons of Bars and Hoop Skelp and 500 tons of Shapes, Plates and Bars. The demand for Iron Bars shows a little improvement, owing to the receipt of specifications on some low priced contracts that expire the first of the year. Local mills and jobbers are now quoting Iron Bars at 1.40c., Pittsburgh, for Cleveland delivery. The demand for Plates is very light, but the price is now being fairly well maintained. Sheets are firmer, and there is very little price cutting. Jobbers report a fair demand for Blue Annealed Sheets. There is an improvement in the demand for Light Rails on contracts, and some new orders are being taken for car lots. Owing to the higher prices that the rerolling mills are forced to ask as the result of the increased cost of their material, the most of the orders are now for new Rails. The demand for Structural Material is very light, but a number of building projects are coming up that indicate considerable improvement early in the spring. Jobbers are getting a fair volume of orders from stock. We quote: Iron Bars, 1.50c., Cleveland, for car lots; Steel Bars, 1.60c., Cleveland, for car lots, half extras; Beams and Channels, 1.70c., base, Cleveland, and Plates, ¼-in. and heavier, 1.70c., Cleveland. We quote Sheets, mill shipments, car lots, Cleveland, as follows: Blue Annealed, No. 10, 1.90c.; Box Annealed, No. 28, 2.60c.; Galvanized, No. 28, 3.65c. Jobbers quote Iron Bars out of stock at 1.55c. to 1.60c., and Steel Bars at 1.60c. to 1.70c. Beams and Channels from warehouse are 2c., and Plates, ¼-in. and heavier, 1.90c. Warehouse prices on Sheets are as follows: Blue Annealed, No. 10, 2.10c.; Box Annealed, No. 28, 2.70c.; Galvanized, No. 28, 3.80c. Warehouse prices on Boiler Tubes, 2¾ to 5 in., are 65 per cent. discount, and on Black Merchant Iron Pipe, base sizes, 71 per cent. discount.

**Old Material.**—The market is rather quiet, and prices show a weakening tendency. The disappearance of the firmness that had prevailed for some time is attributed partly to the fact that dealers who had sold short have covered, and this supporting tendency is now absent, and partly because consumers are now taking inventories. The embargo placed on Borings and Turnings for shipment to the Pittsburgh District has helped to weaken prices, and those grades have declined about 50c. a ton. Local mills have good sized stocks on hand, and the few inquiries that are coming in are for small lots. The railroad lists this week include about 6000 tons to be sold by the Baltimore & Ohio, in which are 3000 tons of Rails and 750 tons of Wrought. Dealers' prices to the trade, per gross ton, f.o.b. Cleveland, are as follows:

| | |
|---|---|
| Old Steel Rails | $17.00 to $17.50 |
| Old Iron Rails | 19.50 to 20.00 |
| Steel Car Axles | 20.50 to 21.00 |
| Old Car Wheels | 16.00 to 16.50 |
| Heavy Melting Steel | 15.50 to 16.00 |
| Relaying Rails, 50 lb. and over | 22.00 to 23.00 |
| Railroad Malleable | 14.50 to 15.00 |
| Agricultural Malleable | 13.50 to 14.00 |
| Light Bundled Sheet Scrap | 9.50 to 10.00 |

The following prices are per net ton, f.o.b. Cleveland:

| | |
|---|---|
| Iron Car Axles | $20.00 to $20.50 |
| Cast Borings | 8.50 to 9.00 |
| Iron and Steel Turnings and Drillings | 9.50 to 10.00 |
| Steel Axle Turnings | 11.00 to 11.50 |
| No. 1 Busheling | 13.50 to 14.00 |
| No. 1 Railroad Wrought | 15.50 to 16.00 |
| No. 1 Cast | 14.00 to 14.50 |
| Stove Plate | 12.00 to 12.50 |
| Bundled Tin Scrap | 9.00 |

Peter A. Frasse & Co., 94 Fulton street, New York, have opened a branch office and warehouse at 50 and 52 Exchange street, Buffalo, N. Y. The warehouse has 10,400 sq. ft. of floor surface, and will be used for carrying a full line of steel tubing, tool steel and other steel specialties.

## Cincinnati.

CINCINNATI, OHIO, December 9, 1908.—(*By Telegraph.*)

All eyes are turned to the new year, and for the remainder of the month little is expected, even in the Pig Iron trade, as requirements for the first half are now about satisfied, and it is generally admitted that there is no spot demand. For the first time in many months evidences begin to accumulate of an improvement in the foundry melt, which means in turn that industries using castings are beginning to order. Optimistic reports of tool manufacturers are based on inquiries that suggest some important deliveries early next year. Structural Steel and car orders are coming out and a demand for railroad equipment is in evidence. Dealers in finished Iron and Steel generally report business very quiet, and not expected to improve during December, while collections are slow. Scrap dealers are holding well together and still forcing prices upward, with little or no business from the consumer. The outlook for plenty of domestic and established foreign business after the first of the year has been a factor in declaring off the contemplated invasion of South America by local tool and machinery men, most of them electing to remain at home to take care of it.

**Pig Iron.**—More difference of opinion, apparently, exists among the Iron manufacturers of the South than at any time since the election, particularly in the matter of prices on next year's deliveries. While some interests announce that they are sold up for the first half, save enough to take care of regular customers sparingly at $13.50, Birmingham, others are willing to book business through the entire half year at $13. One of the largest interests in the South advised its local agents to withdraw all quotations on everything from No. 3 Foundry down to low grades. The largest Pipe interest is credited with having taken an immense tonnage of low grades from Southern furnaces within the past week or so. Word comes also from the East from representatives of a large selling interest that its furnaces have sold up clean on low grades for the first half. Northern Irons are firm, at $15.50, at furnace, for No. 2, for deliveries through the first quarter, and some for the first half with $16 asked. It appears that $15.75 is the minimum for the first half alone. On a firm offer it is believed that $15.50 can be shaded a little for No. 2 on spot business. High silicons, Ohio Silveries, are still quotable at $18.50, at furnace, for 8 per cent., with some furnaces asking $19 for the second quarter. The reluctance of furnaces to quote on second half business is general on all grades, there apparently being but one interest in evidence willing to name a price of $14.50, which is said to have been turned down by the consumer. There is some demand for Charcoal Irons, which are still quotable as indicated in the table below, although one Southern manufacturer who uses a large part of his furnace output in his business announces a raise of $1, making his price at furnace $21 instead of $20. Other selling agents announce prices unchanged, but firm. The foundry melt is increasing slowly, one agency announcing sales to foundries here aggregating 1000 tons on Monday. The largest inquiry heard here to-day is for 1000 tons to analyze 1 to 1.50 in silicon; manganese, 0.30 and over; phosphorus 1 and less, and sulphur 0.075 and under, which would rank about No. 4 Foundry in the South and Forge in the North, for delivery first half, to a Dayton manufacturer. A Southern Indiana manufacturer wants 1000 tons of Nos. 2 and 3, Southern Foundry, for the first half. For prompt delivery, and extending through the first quarter we quote, f.o.b. Cincinnati, based on freight rates of $3.25 from Birmingham, and $1.10 from the Hanging Rock District, as follows:

| | |
|---|---|
| Southern Coke, No. 1 | $16.75 to $17.25 |
| Southern Coke, No. 2 | 16.25 to 16.75 |
| Southern Coke, No. 3 | 15.75 to 16.25 |
| Southern Coke, No. 4 | 15.25 to 15.75 |
| Southern Coke, No. 1 Soft | 16.75 to 17.25 |
| Southern Coke, No. 2 Soft | 16.25 to 16.75 |
| Southern Coke, Gray Forge | 14.75 to 15.25 |
| Southern Mottled | 14.50 to 15.00 |
| Ohio Silvery, 8 per cent. Silicon | 19.60 |
| Lake Superior Coke, No. 1 | 17.10 to 17.60 |
| Lake Superior Coke, No. 2 | 16.60 to 17.10 |
| Lake Superior Coke, No. 3 | 16.10 to 16.60 |
| Standard Southern Car Wheel | 22.25 to 23.25 |
| Lake Superior Car Wheel | 21.75 to 22.75 |

(*By Mail.*)

**Coke.**—There is still considerable contracting going on, the feature of the week being probably the small hurry shipments ordered to take care of the holiday season of a week or 10 days, when workmen will be off in the districts which feed the Southern furnaces. Such deliveries must be made prior to December 22. One order of 5000 to 6000 tons was placed this way during the week. The Hamilton Iron & Steel Company is buying about 15,000 tons for December and January delivery to its furnace at Hamilton, Ohio. For early delivery, Virginia Coke is quotable at $1.85 to $1.90, at oven, the latter price for the first quarter and $2 firm for the first half. Pocahontas manufacturers are asking $1.90 to $2 for the first half, with some dealers shading the first named price a trifle for spot business on Furnace grades, and for Foundry business $2.25 is the price on forward shipments. Prices on Connellsville grades vary considerably: on Furnace from $1.85 to $2 for the first half, and Foundry $2.15 to $2.50, depending on brands and shipments.

**Finished Iron and Steel.**—The market is exceedingly dull, and not much improvement is expected before the middle of January. Some fairly good sales of Bars and blacksmith and wagon makers' materials are noted, but the demand for twisted Steel Bars for concrete work and Structural Material in general is very light. Collections are slow. No change is to be noted in prices on any item. Bids will be received within a few days by the Reliance Engineering Company for 300 hp. boiler, motors, feeding systems, piping, &c., for the new plant of the Cincinnati Soap Company, just completed on Spring Grove avenue. Prices, f.o.b. Cincinnati, are as follows: Iron Bars, carload lots, 1.55c., base, with half extras; small lots from store, 1.85c., base, half extras; Steel Plates carload lots, 1.75c., base, with half extras; small lots from store, 1.85c., base, half extras; Base Angles, carload lots, 1.85c. base; small lots from store, 2.10c.; Beams, Channels and Structural Angles, 1.85c., base; small lots from store, 2.10c.; Plates, ¼-in. and heavier, carload lots, 1.85c.; small lots from store, 2c.; Blue Annealed Sheets, heavy, No. 16, carload lots, 2.15c.; small lots from store, 2.50c.; No. 14, carload lots 2.05c.; small lots from store, 2.40c.; No. 10 and heavier, carload lots, 1.95c.; small lots from store, 2.20c.; No. 12, carload lots, 2c.; small lots from store, 2.30c.; Sheets (Light), Black, No. 28, carload lots, 2.65c.; Galvanized Sheets, No. 28, carload lots, 3.70c.; Steel Tire 4-in. and heavier, carload lots, 1.95c.; Plates, 3-16 and No. 8, carload lots, 2c.; small lots from store, 2.20c.

**Old Material.**—Dealers are holding firm to advanced prices on all items, with consumers taking little interest, the latter maintaining that prices are entirely too high, considering conditions in the trade. A local dealer shipped to points in this State over 4000 tons of Heavy Melting Steel during the past week. An inventory taken by one of the large dealers December 1 showed between 75,000 and 80,000 tons of Scrap in his yards, and another is credited with 100,000 tons and over. There is some interest in sidetrack Rails at $21, while Rails graded as No. 1 Relayers under Hunt's inspection are quoted at $24. We quote as follows, f.o.b. Cincinnati:

| | |
|---|---|
| No. 1 R. R. Wrought, net ton | $13.50 to $14.50 |
| Cast Borings, net ton | 5.50 to 6.00 |
| Heavy Melting Steel Scrap, gross ton | 15.50 to 16.00 |
| Steel Turnings, net ton | 6.60 to 7.00 |
| No. 1 Cast Scrap, net ton | 13.00 to 14.00 |
| Burnt Cast, net ton | 9.00 to 10.00 |
| Old Iron Axles, net ton | 16.75 to 17.75 |
| Old Iron Rails, gross ton | 15.00 to 16.00 |
| Old Steel Rails, short, gross ton | 13.00 to 14.00 |
| Old Steel Rails, long, gross ton | 13.00 to 14.00 |
| Relaying Rails, 56 lb. and up, gross ton | 21.50 to 22.50 |
| Old Car Wheels, gross ton | 15.00 to 16.00 |
| Low Phosphorus Scrap, gross ton | 14.00 to 15.00 |

## St. Louis.

ST. LOUIS, December 7, 1908.

**Pig Iron.**—The current demand for Pig Iron is coming mainly from small consumers in the country. One house reports sales as follows: 200 tons, shipment over second quarter of 1909; 300 tons, shipment over first half, and 300 tons, shipment over second quarter, all Northern Iron. Another house reports inquiries pending for 2000 to 2500 tons from contract buyers, shipment over first half of 1909, and is experiencing difficulty in securing offerings, as many Southern producers are unwilling to book orders for the second quarter. In the case of small buyers, immediate shipment is generally required, though some are desirous of buying for shipment over the first quarter. Notwithstanding the falling off in the demand, there are no indications of weakness, and we quote Southern No. 2 Foundry, f.o.b. Birmingham, as follows: Immediate shipment and first quarter, $13; second quarter, $13.50. Ohio Iron is strong at $15.50 to $16 for No. 2, f.o.b. Ironton; Northern Silvery, 8 per cent. Silicon, $18.50 to $19, f.o.b. Jackson County furnaces.

**Coke.** There is an undercurrent of strength and a very general belief that with the turn of the year the price of Coke will be somewhat higher. While interest in the market is manifest through a fairly large number of inquiries, none of the leading sales agencies reports any large sales. Business seems to be confined to small transactions, which, while fairly numerous, do not aggregate more than a moderate tonnage. The customers of the various houses are taking Coke on contract in good shape and in some cases are desirous of anticipating time of shipment. It would appear that all the low sellers have withdrawn from the market and it is noted that with some of the principal producers there is a disposition to hold from contracting at present. We quote, f.o.b. Connellsville, 72-hr., $2.25 to $2.75, for immediate and future shipment up to July, 1909—the lower price for early, and the higher price for later shipment.

**Finished Iron and Steel.**—The call for Structural Iron continues fairly good both from local and country territory, but the sales are in small lots. The principal new structure coming up is the Shepley Building, to be erected at once at 703-11 Locust street. The building is to occupy

a lot 109 x 120 ft., and it will be two stories high. Mauren, Russell & Garden are the architects. Plans are being prepared by the same architects for a five-story apartment house to be erected on Von Verson and Hamilton avenues, to be known as Elizabeth Court, and will cost about $200,000. The Singer & Halbohr Real Estate Investment Company will invite bids from contractors as soon as the architects have completed the plans. There is a fair inquiry for Bars from jobbers and manufacturers. In railroad track material, Bolts, Spikes, Tees, Angles, Channels, &c., there is quite a liberal inquiry. Standard Rails are being inquired for. The leading Steel interest has closed a contract with the Terminal Railroad Association of St. Louis for 2800 tons. The lumber interests are still in the market for Light Rails.

**Old Material.**—Dealers express disappointment with the week's business, the demand from consumers having been lighter than was expected. Some of the trade attribute this to a disinclination to pay the prices asked, while others advance the belief that foundrymen and rolling mill operators are not at present in urgent need of supplies. Dealers, however, are trading to a considerable extent among themselves. While there are no large sales to report, the market is moving along and prices for all kinds of Old Material are fairly firm. None of the railroads is making offerings, but it is reported that one of the principal local trunk lines will be out with a list next week. We quote as follows, f.o.b. St. Louis, per gross ton:

| | |
|---|---|
| Old Iron Rails | $17.00 to $17.50 |
| Old Steel Rails, rerolling | 15.50 to 16.00 |
| Old Steel Rails, less than 3 ft | 14.25 to 14.75 |
| Relaying Rails, standard sections, subject to inspection | 24.00 to 24.50 |
| Old Car Wheels | 16.00 to 16.50 |
| Heavy Melting Steel Scrap | 14.75 to 15.25 |
| Frogs, Switches and Guards, cut apart | 14.75 to 15.25 |
| Mixed Steel | 10.25 to 10.75 |

The following prices are per net ton:

| | |
|---|---|
| Iron Fish Plates | $16.00 to $16.50 |
| Iron Car Axles | 20.00 to 20.50 |
| No. 1 Railroad Wrought | 14.50 to 15.00 |
| No. 2 Railroad Wrought | 13.50 to 14.00 |
| Railway Springs | 13.00 to 13.50 |
| Locomotive Tires, smooth | 13.50 to 14.00 |
| No. 1 Dealers' Forge | 11.50 to 12.00 |
| Mixed Borings, &c | 7.00 to 7.50 |
| Machine Shop Turnings | 9.50 to 10.00 |
| No. 1 Boilers, cut to Sheets and Rings | 10.00 to 10.50 |
| No. 1 Cast Scrap | 13.50 to 14.00 |
| Railroad Malleable | 12.00 to 12.50 |
| Agricultural Malleable | 10.50 to 11.00 |
| Pipes and Flues | 10.50 to 11.00 |
| Railroad Sheet Scrap | 10.50 to 11.00 |
| Railroad Grate Bars | 12.50 to 12.75 |

**Lead, Spelter, Etc.**—Pig Lead is quiet, but there is considerable demand from small consumers at 4.15c. to 4.17½c., East St. Louis. Lead Ore is lower and held at $26 to $26.50 per 1000 lb., Joplin basis. Spelter is ruling strong at 5.05c. to 5.10c. for prime Western galvanizing and 5.30c. to 5.40c. for Brass trade stock. The demand from Brass producers would seem to indicate that no stocks of consequence are being carried and that purchases are being made to take care of current orders. The market for Zinc Ore is firm at $42 to $43 per ton, Joplin basis, and practically all production is being cleaned up. Tin is ¼c. off; Antimony, ⅛c. off; Copper, unchanged. The demand is not so active as last week.

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The plant and good will of the Acme Metal Company has been sold to the Great Western Smelting & Refining Company of Chicago. The plant is located at Broadway and Branch street. The Great Western Company, it is said, will make extensive improvements in the property.

The Scullin-Gallagher Iron & Steel Company reports having the contract to furnish Cast Steel body bolsters for 500 box cars and 200 stock cars for the San Antonio & Aransas Pass Railroad Company.

## Philadelphia.

PHILADELPHIA, PA., December 8, 1908.

The market begins to take on the usual year end appearance. Buying has diminished in nearly all lines and little of importance is expected to develop until after the turn of the year. How rapid the forward movement will be at that time will depend to a considerable extent, no doubt, on the influence the tariff revision hearings have on the trade, and it is expected that a certain amount of hesitancy will be shown until something of a definite nature in that respect becomes available. The volume of business transacted during the week in the various branches of the trade in this territory was hardly as large as that of the previous one, and in but few instances was any increase to be noted. Confidence in a material betterment early next year is general, as there is a large amount of business pending, some of which comes out comparatively freely.

**Pig Iron.**—The market has been gradually slowing down, and recent transactions have been on a rather small scale. This is not unusual at this season, when melters in many cases defer buying owing to the closing of the year's business. The large consumers, except some of the Cast Iron Pipe makers, several of whom are still anxious to cover for early 1909 requirements, have taken about all the Iron they want, and are practically out of the market. The bulk of the business done, therefore, has been confined to such buyers who come into the market from month to month for current needs. Sellers have pretty well cleaned up their production, in some cases that for the first quarter of next year being already sold. While a number of furnaces are in shape to go in blast on short notice, producers are not likely to increase production largely until the market takes on a more active appearance. Sales have been confined almost entirely to Foundry grades, but the individual quantities have been small, 500-ton lots being the maximum. Prices for these grades continue firm, as nothing better apparently than $17.25, delivered, can be done for Standard eastern Pennsylvania No. 2 X Iron, and in many cases sellers are holding firmly at $17.50, delivered, at which moderate sales have been reported. While there has been some inquiry for second quarter Iron, sellers are not anxious for such business and frequently refuse to quote or name prohibitive prices for deliveries of that character. Virginia Foundry Iron are firmly held, and no sales of consequence have been recently made in this territory. Some sellers are practically out of the market, and refuse to quote on deliveries beyond the next month or two. Southern Irons are quiet, although some fair tonnage has been offered the Cast Iron Pipe foundries on a $13, Birmingham, basis for No. 2, but the price is not attractive enough to result in business. Several sellers refuse to quote on that basis, even for first quarter deliveries, for which they want 50c. advance. Forge Iron has been rather inactive, but this grade is scarce and prices are being firmly maintained. Somewhat more active conditions are to be noted in the Basic market, and upward of 10,000 tons has been sold for first quarter deliveries at somewhat less than $17, delivered, although the same sellers now hold firmly at that figure. Some little demand for Low Phosphorus Iron has developed, and while no business of consequence has been closed prices for this grade are firmer. Notwithstanding the fact that buying has been lighter in all grades, prices are decidedly strong, and for forward shipment show an advancing tendency. For delivery in buyers' yards, eastern Pennsylvania and nearby territory, the following range of prices is quoted for shipments extending over the first quarter of next year:

| | |
|---|---|
| Eastern Pennsylvania, No. 2 X Foundry | $17.25 to $17.50 |
| Eastern Pennsylvania, No. 2 Plain | 16.75 to 17.00 |
| Virginia, No. 2 X Foundry | 17.25 to 17.50 |
| Virginia, No. 2 Plain | 17.00 to 17.25 |
| Gray Forge | 15.75 to 16.00 |
| Basic | 16.75 to 17.00 |
| Low Phosphorus | 21.50 |

**Ferromanganese.**—Several small lots have been before the trade during the week, but no business of importance has developed. Sellers appear to be getting a little closer regarding quotations, which range from $45 to $45.50, Baltimore, for spot shipment, with $46 to $47 named for deliveries in the first half of next year.

**Steel Billets.**—Sales are still confined to small lots for fairly prompt shipment. While there has been some inquiry for delivery the coming year, no business of that character has been closed. Quotations show no change. Ordinary Rolling Steel for delivery in this territory commands $26.20, with Forging Steel $28.20, subject to the usual extras for high carbons and special sizes.

**Plates.**—A comparatively fair volume of business has been transacted, which in the aggregate compares favorably with that of the previous week. Orders for a considerable tonnage of Plates from shipbuilders in this vicinity have gone to Western mills, although one for some 6000 tons is still before the trade. Some moderate orders for Plates for Structural work have been booked, but the bulk of the business is of a miscellaneous character. Prices are being firmly maintained and range as follows for delivery in this vicinity:

| | Carloads. Cents. | Parts carload. Cents. |
|---|---|---|
| Tank, Bridge and Boat Steel | 1.75 | 1.80 |
| Flange or Boiler Steel | 1.85 | 1.95 |
| Commercial Firebox | 1.95 | 2.00 |
| Marine | 2.15 | 2.20 |
| Locomotive Firebox Steel | 2.25 | 2.30 |

The above are base prices for ¼-in. and heavier. The following extras apply:

| | Extra per 100 lb. |
|---|---|
| 3-16-in. thick | $0.10 |
| Nos. 7 and 8, B. W. G | .15 |
| No. 9, B. W. G | .25 |
| Plates over 100 to 110 in | .05 |
| Plates over 110 to 115 in | .10 |
| Plates over 115 to 120 in | .15 |
| Plates over 120 to 125 in | .25 |
| Plates over 125 to 130 in | .50 |
| Plates over 130 in | 1.00 |

**Structural Material.**—Orders have not developed so rapidly recently, although there is a good tonnage of both large and small work pending. The Pencoyd plant of the American Bridge Company is operating at about 60 per cent. of its capacity, and other mills are doing a trifle better, while the Structural department of the Bethlehem Steel Company is running full time. Although immediate busi-

ness is largely of a miscellaneous character, the outlook is considered favorable. Prices for delivery in this territory show no change, 1.75c. to 1.90c. being named, according to specification.

**Sheets.**—The demand shows a little improvement, particularly in that buyers have contracted for forward requirements to some extent. In this connection, however, sellers have for the most part not been willing to accept such business for deliveries extending beyond the first half of the year. A comparatively good day to day demand for prompt Sheets continues to be noted. The following range of prices is named for mill shipment, a tenth extra being added for small lots: Nos. 18 to 20, 2.50c.; Nos. 22 to 24, 2.60c.; Nos. 25 to 26, 2.70c.; No. 27, 2.80c.; No. 28, 2.90c.

**Bars.**—A trifle more business is being done, but mills are far from busy. Orders coming out are not large, but makers show greater firmness in quotations, owing to increased cost of raw materials. Prices for Refined Iron Bars range from 1.50c. to 1.55c., delivered in this territory. Steel Bars are unchanged, at 1.55c., delivered, with Rerolled Bars at 1.50c.

**Coke.**—The movement in Coke has been rather slow. Makers have been handicapped in production to some extent by the shortage of water at the ovens, and prices show increased firmness. No business of importance has been done during the week, and prices are unchanged. Foundry Coke is quoted at $2.30 to $2.60, at oven, with Furnace Coke $1.85 to $2.10, at oven. For delivery in this territory, prices range about as follows:

| | |
|---|---|
| Connellsville Furnace Coke | $3.85 to $4.10 |
| Foundry Coke | 4.20 to 4.50 |
| Mountain Furnace Coke | 3.45 to 3.70 |
| Foundry Coke | 3.80 to 4.10 |

**Old Material.**—The market shows increasing strength. The usual monthly railroad lists are now being bid on by both melters and dealers, and current business is therefore small. Transactions recently have been largely between dealers, although small tonnages of both Heavy Melting Steel and Rolling Mill Scrap have been taken by consumers at advanced prices. Holders of Steel Scrap are holding very firmly, and it looks like higher prices for this grade. For delivery in buyers' yards, eastern Pennsylvania and nearby territory, quotations, while to a large extent nominal, range about as follows:

| | |
|---|---|
| No. 1 Steel Scrap and Crops | $16.75 to $17.25 |
| Low Phosphorus | 18.75 to 19.25 |
| Old Steel Axles | 21.75 to 22.25 |
| Old Iron Axles | 23.50 to 24.00 |
| Old Iron Rails | 21.00 to 21.50 |
| Old Car Wheels | 16.00 to 17.00 |
| Choice No. 1 R. R. Wrought | 20.00 to 20.50 |
| Machinery Cast | 16.00 to 16.50 |
| Railroad Malleable | 15.75 to 16.25 |
| Wrought Iron Pipe | 15.25 to 15.75 |
| New Bundled Sheets | 14.50 to 15.00 |
| No. 1 Forge Fire Scrap | 13.75 to 14.25 |
| No. 2 Light Iron | 10.00 to 10.50 |
| Wrought Turnings | 14.00 to 14.50 |
| Stove Plate | 13.75 to 14.25 |
| Cast Borings | 12.50 to 13.00 |
| Grate Bars | 14.25 to 14.75 |

# The German Iron Market.

BERLIN, November 26, 1908.

The situation that has come about in the German Iron industry during the past few months is a most interesting and complicated one. While the trade reports generally teem with statements that business is in an extremely depressed condition, the statistics of production do not indicate this. In October the make of Pig Iron amounted to 941,580 metric tons. This was about 98,000 tons less than in October, 1907, but it denotes a gain of about 12,000 tons over September. The October shipments of the Steel Syndicate in semifinished material, structural forms and Rails, too, show no indication that the Steel trade is in a state of prostration. Thus the shipment of Steel for purposes of further manufacture reached 142,673 tons, which was the largest movement since last November. The shipments of structural shapes aggregated 110,597 tons, which was about 19,300 tons less than in the corresponding month of last year, but it was about up to the average of the past 12 months. In Steel Rails, &c., the total was 161,374 tons, which is about the average movement for the past half year, but 17,600 tons less than in September, 1907.

### Prices Have Suffered.

But when we turn to the question of prices a wholly different picture of existing conditions is found. Here, indeed, is the weak spot in the situation. The relatively satisfactory shipments of semifinished Steel, for example, were only rendered possible by forcing exports at very low prices. The preliminary foreign trade statistics for October show an outgo in this specialty of 54,793 tons, against 18,258 tons last year.

The same thing is still more true in the case of Pig Iron. It is here that prices have been cut most heavily; and this has occurred particularly within the past month, owing to the breakdown of the efforts to reorganize the Duesseldorf Pig Iron Syndicate. This organization, indeed, continues its existence to the end of the year; but the furnaces belonging to it have been free since October 1 to make contracts for 1909 delivery at their own prices. This has been going on with great activity since that date; and under sharp competition to get orders prices have been cut frightfully in this short period. In the Rhenish-Westphalian District the price of Hematite dropped 10 marks, or from 75 to 65 marks, at one clip, just after the final breakdown of the negotiations for the renewal of the syndicate was announced. By the end of October a further cut to 60 marks was registered, and since then prices ranging several marks lower than that have been mentioned. It is added that the low price now reached is in many cases below the cost of production; and for this reason it is believed that the bottom figure has been touched. In the Luxemburg-Lorraine District the price of ordinary foundry grades has for some time been 50 marks.

### Low Prices Stimulate Trade.

At the low price of Hematite mentioned above sales have been occurring in unusual volume, and it is reported that some of the great producers of the Lower Rhine and Westphalia have orders enough to keep their furnaces running to the end of next June. The price-cutting in Pig Iron, curiously enough, has been chiefly carried on most recklessly by the very greatest concerns, like Gelsenkirchen, Krupp, Thyssen, and others. These are all among the most important members of the Steel Syndicate, and it is a highly significant fact that this war of prices should have been raging precisely among them. It only goes to show that the bond of friendship existing among the Syndicate concerns is strictly limited to the fully syndicated products (semifinished and structural shapes, and Steel Rails). Even in Steel products not syndicated these great works have been competing in prices most vigorously, particularly in Bars of all grades, for many months.

The effect of the rapid shrinkage of Pig Iron prices has been not only to shut out English competition, but it is even said that German Hematite is now being offered in England itself. This has occurred chiefly within a fortnight; but even the trade statistics for October show what a striking change had already taken place by that month. The imports of Pig Iron dropped to 19,577 tons, against 48,193 tons in October, 1907; and exports rose to 22,884 tons, as compared with 18,735 a year ago.

### Pessimistic Trade Reports.

The general character of reports from the trade has been quite unsatisfactory, and even pessimistic. Prices of the A Group of Steel products already mentioned, indeed, are strictly maintained by the Syndicate, except in the case of export goods; but in the B Group (*i. e.*, all other Steel products than semifinished material, Structural Shapes and Steel Rails) prices are very unsteady. The great mixed mills are bidding sharply for orders in Plates and Bars, the prices of which have reached such a low level as has not been known for years. The big Syndicate works are pressing outside makers of these specialties so sharply that the latter are mostly no longer able keep in the race; but even those big works are selling these products at a loss, and it is claimed that their next year's balance sheets will show the bad effects of this policy. Under the circumstances it is said that unattached rollers of Plates and Bars can do nothing better for themselves than to shut down. Their situation is all the harder owing to the high prices of Coal, whereas the big producers in the Syndicate have their own Coal mines, and their fuel only stands to them at the cost of production.

From the Luxemburg-Lorraine District it is reported that nearly all of the big Steel mills there are shutting down on Mondays, and not running at their full capacity on other days. They have managed to avoid dismissing their employees by putting the latter at other work. Much new construction work has been undertaken in this dull period. In a number of cases furnaces have been blown out, and are being replaced with much larger ones. In the Rhenish-Westphalian District work of this kind is going on; and there, too, the steel mills are not running to their full capacity.

The association controlling Steel Castings met a fortnight ago, and reduced prices by 10 per cent. At the same time, it was reported that business in this specialty had not grown worse, but that the demand was a bit brisker. The reduction was evidently voted to take account of the price cutting that had been going on, and with the hope of stopping it.

### Wire Rods Better Than Other Lines.

One section of the Steel trade seems to be doing a much better business than most others, namely, the Wire Rod business. It is mentioned that the mills have as much work as they can do, and that shipments are called for at a brisk pace. Foreign markets are sending in good orders, but at low prices. In band iron, too, business appears to be somewhat better, but there is considerable price cutting.

On the whole, it may said that the Iron industry is looking forward to next year with hopes of an improvement in business. It is believed that the building trade will revive next spring, under the influence of the present extraordinary

ease of money rates, together with the fact that there are many unemployed masons and carpenters now ready to work at considerably reduced wages. More activity in building must bring much work to the rolling mills, as well as to some branches of the hardware trade.

The market also expects that the German Iron trade will soon begin to feel the effect of the improving situation in the United States. People on the stock exchanges are watching the news from America with great eagerness; and the weekly summary of *The Iron Age*, an abstract of which is regularly cabled over here, is watched for as a valuable pointer for operators in German Iron shares. The extraordinary rise of the common stock of the United States Steel Corporation has also made a big impression on the German exchanges; and home Iron shares are consequently tending pretty strongly upward at a time when the business situation leaves so much to be desired.

Just now the trade is considerably excited over a bill which has been introduced into the Reichstag for taxing electricity at 5 per cent. of the cost of production, but not in excess of 0.4 pfennig per kilowatt hour. This tax will bear very heavily upon the great Iron and Steel mills, most of which have put in electricity for almost every application of power in their establishments; and they necessarily consume electricity on an enormous scale. One Steel manufacturer has recently given an example of how the proposed tax will effect his company, which will soon complete its great electrical equipment, and will then produce and consume not less than 35,000,000 kw.-hr. annually. The tax on this and on incandescent lamps and electrodes, says this manufacturer, will amount to nearly $13,000 a year for his company, which is considerably more than 1 per cent. on its capital stock. In this case the company will regret that it threw out its steam plant and adopted electricity. The Iron trade will make a strenuous effort to defeat this absurd tax, and will find strong support for its efforts in the Reichstag. It is probable that the bill will fail when its gross absurdity has been fully shown up.

## New York.

NEW YORK, December 9, 1908.

**Pig Iron.**—In the Foundry trade the feature is that there is a continued urgency on the part of melters to crowd deliveries on old contracts. There have been some good sales of the different grades, including Basic and Malleable, and the market is steady. We quote $17.50 to $17.75 for No. 1 Northern Foundry, $17 to $17.50 for No. 2 Foundry, and $16.25 to $16.50 for No. 2 Plain. Alabama Irons are quoted $17.50 to $17.75 for No. 1 Foundry, and $17.25 to $17.50 for No. 2 Foundry.

**Steel Rails.**—The Pennsylvania Railroad order, which will be for 160,000 is expected to be given out in the next 10 days. The Steel Corporation, as heretofore, will probably receive something less than 60 per cent. of it, while most of the balance will be divided between the Cambria and Pennsylvania Steel companies. The delay over this business has been over the adjustment of a part of the specifications relating to rejections, due to failure under drop test of Rail rolled from the top bloom of the ingot. The railroad has now made a counter proposition which involves the acceptance of other Rails from the same ingot, at $28 a ton, but their separate marking so that they may be properly placed in service. The New Haven Road is expected to contract for 1908 Rails in the next few weeks, and will probably take Open Hearth Rails exclusively, with unusually low phosphorus and very high carbon. In the past week the Pittsburgh Rail mill has entered 3100 tons from the Fort Clinton Short Line, and 3500 tons from scattering sources.

**Structural Material.**—No great amount of the business recently pending was placed in the past week. The largest bridge order was for 3300 tons, for the Copper River & Northwestern Railroad in Alaska, taken by the American Bridge Company. The same company has the contract for a Fels & Co. Building in Philadelphia—400 tons—and for a Spreckels Building, 300 tons, and the Columbia Theatre, 600 tons, in San Francisco. In New York J. B. & J. M. Cornell will furnish 1000 tons of Steel for a brewery extension, and the Eastern Steel Company has the contract for an apartment house in Gramercy Park, 600 tons. The Equitable Building project, much talked of some time ago, is taking on more life recently, and there is a prospect that a definite move will be made soon. The plans discussed call for 50,000 tons of Steel. Several roads are receiving bids on bridge work, several hundred tons each in the case of the B. & O. and C. & O. and the Erie and New Haven have plans for a number of small bridges. The Milliken Bros. receivers took orders for about 3200 tons of fabricated Steel in November, as against what are considered normal bookings of 4000 to 5000 tons. We quote, tidewater delivery, shipments from mill, as follows: Beams, Channels, Angles and Zees, 1.76c.; Tees, 1.81c. On Beams, 18 to 24 in., and Angles, over 6 in., the extra is 0.10c. Structural Material, cut to lengths, is sold in small lots at 2¼c.

**Ferroalloys.**—The Ferromanganese market is strong, at $45, seaboard, which is firmly maintained, and inquiries for next year's delivery continue. Much lower prices are prevailing for 50 per cent. Ferrosilicon, and some sales have been made at $64, Pittsburgh, and it is possible that even lower quotations have been named. These, however, are for special lots, and perhaps large quantities could not be had at the above figures.

**Bars.**—The approach of the inventory period is undoubtedly affecting purchases, the volume of business now being quite light. Prices are steady, with Bar Iron quoted at 1.51c. to 1.56c., and Steel Bars at 1.56c., tidewater.

**Plates.**—Transactions are confined to small lots, and prices on Standard Sized Plates are firmly held as follows: Sheared Plates, 1.76c. to 1.86c.; Flange Plates, 1.86c. to 1.96c.; Marine Plates, 2.16c. to 2.26c.; Firebox Plates, 2.65c. to 3.50c., according to specifications.

**Cast Iron Pipe.**—Conditions in this branch of trade are distinctly better. Purchases for early delivery consist of carload lots only, but a great deal of figuring is proceeding on considerable quantities for spring delivery. The gas companies are especially prominent in this respect, as they are unlike municipalities operating water works, being unhampered by waiting for authority to proceed with extensions of mains. The contracts already closed for spring delivery undoubtedly aggregate a good tonnage, while negotiations are proceeding for much more. Manufacturers are confident of good business in 1909. The contracts for spring delivery are generally made on the basis of $1 per ton advance over present prices. Carload lots of 6-in. for immediate shipment are selling at $24 per net ton at tidewater.

**Old Material.**—The market shows a pronounced upward tendency on all classes of Scrap except Foundry stock. Steel Scrap is probably strongest, as inquiries are out for quite large quantities and dealers are quite frequently overbidding consumers in taking material offered by holders. An effort is being made by consumers of Steel Scrap to hold prices down, but as the supply is not plentiful it is a question whether the dealers will not come out victors in the contest. Some buying is noted by rolling mills, but the demand is not large. Foundries are buying quite sparingly. Relaying Rails are more plentiful, and with heavier offerings prices are easier. Quotations are as follows, New York and vicinity, per gross ton:

| | |
|---|---|
| Old Girder and T Rails for melting | $14.00 to $14.50 |
| Heavy Melting Steel Scrap | 14.00 to 14.50 |
| Old Steel Rails, rerolling lengths | 16.00 to 16.50 |
| Relaying Rails | 22.50 to 23.00 |
| Old Iron Rails | 19.00 to 19.50 |
| Standard Hammered Iron Car Axles | 21.50 to 22.00 |
| Old Steel Car Axles | 18.50 to 19.00 |
| No. 1 Railroad Wrought | 17.50 to 18.00 |
| Iron Track Scrap | 15.00 to 15.50 |
| No. 1 Yard Wrought, long | 16.50 to 17.00 |
| No. 1 Yard Wrought, short | 15.00 to 15.50 |
| Light Iron | 8.50 to 9.00 |
| Cast Borings | 10.00 to 10.50 |
| Wrought Turnings | 11.00 to 11.50 |
| Wrought Pipe | 13.00 to 13.50 |
| Old Car Wheels | 15.00 to 15.50 |
| No. 1 Heavy Cast, broken up | 14.50 to 15.00 |
| Stove Plate | 12.50 to 13.00 |
| Locomotive Grate Bars | 12.50 to 13.00 |
| Malleable Cast | 13.50 to 14.00 |

## Metal Market.

NEW YORK, December 9, 1908.

**Pig Tin.**—Tin prices continue to sag, due, in part, to the unfavorable statistical position caused by an increase in supplies and a decrease in consumption, and, more especially, at this time, to manipulation. One of the leading operators in London gave out the tip that the market was due for a £10 break. As usual on such gratuitous information everybody believed Tin was a purchase, but strange to say the market did drop. On Monday there was sharp hammering, which carried the price in New York down over ½c. per pound. This has been partially recovered, but not all, and the following is the daily range of quotations:

| | Cents. |
|---|---|
| December 2 | 29.40 to 29.45 |
| December 3 | 29.55 |
| December 4 | 29.50 |
| December 7 | 28.87½ |
| December 8 | 28.80 to 28.85 |
| December 9 | 29.10 |

One reason for the present stagnation of the market is the supply of Tin in consumers' hands, they having bought fully 1000 to 1500 tons in November for future delivery. Supplies are ample for all needs, arrivals since the first of the month being 1339 tons, and there are afloat for American ports 2100 tons. The London market is slightly higher than yesterday, closing at £132 for spot, and £134 for futures. The spot market is £2 under that of a week ago, while the market for futures is practically unchanged from last week.

**Copper.**—Trade is exceedingly quiet, and the market is ragged. No sales of any consequence have been made and quotations are largely nominal. Electrolytic can be had at 14.12½c., net cash, and it is reported that even lower quo-

tations have been made by second hands. It is a fact that lower prices have been named for European delivery, but this is no new thing in the Copper trade. Lake Copper is firmly held by producers at 14.50c., and it is doubtful if there are any large outside lots obtainable under this figure. Evidences are increasing that the prices of Electrolytic and Lake are breaking away from one another. The Lake producers are in a comfortable position, having sold most of their product for December and January. Not only this but the conditions of the trades into which Lake goes are such that there is a firm belief, well founded, that business will again develop in January. This grade is used in the Brass and Sheet Copper trades, which are now running at least 90 per cent. of normal. Should the market for Electrolytic, however, break far away from that of Lake, so that there would be a difference of 1c. per pound, it is easily conceivable that Electrolytic would be largely substituted for Lake Copper. The exports so far this month amount to 5715 tons. The London market is about £1 10s. lower than last week, closing to-day at £62 12s. 6d. for spot and £63 12s. 6d. for futures.

**Pig Lead.**—Dullness continues to rule in this market, the leading interest offering shipment Lead in 50 ton lots at the unchanged price of 4.30c., New York. Independent producers are selling as low as 4.27½c., New York. A bid of 4.25c. has been refused by an outside producer, despite assertions to the contrary. In St. Louis, the price is about 4.15c.

**Spelter.**—The Spelter market is not as strong as last week, and 5.15c., New York, is apparently the ruling quotation. In St. Louis the market is quoted at 5c. to 5.05c.

**Aluminum.**—Considerable unevenness in price between importers and the domestic producer is in evidence. The prices of the leading interest are 24c. for No. 1 Ingots, 32c. for Rods and Wire and 34c. for Sheets.

**Antimony.**—Prices are without change from last week, Hallett's being held at 8.12½c. to 8.25c., Cookson's at 8.37½c. to 8.50c. and outside brands at 8c.

**Tin Plates.**—Orders are in a little larger volume, and the mills are more actively engaged than for some weeks. Prices are unchanged, at $3.70, Pittsburgh, and $3.89, New York, for 100 lb. IC Coke Plates. In Swansea, Welsh Plates are 1½d. lower, at 12s. 1½d.

**Old Metals.**—The market is very dull, and prices, although unchanged from last week, are largely nominal. Dealers' selling prices are as follows:

| | Cents. |
|---|---|
| Copper, Heavy and Crucible | 13.50 to 13.75 |
| Copper, Heavy and Wire | 13.25 to 13.50 |
| Copper, Light and Bottoms | 12.00 to 12.25 |
| Brass, Heavy | 9.50 to 9.75 |
| Brass, Light | 7.50 to 7.75 |
| Heavy Machine Composition | 12.50 to 13.00 |
| Clean Brass Turnings | 8.50 to 9.00 |
| Composition Turnings | 10.50 to 11.00 |
| Lead, Heavy | 4.25 |
| Lead, Tea | 4.00 |
| Zinc Scrap | 3.75 |

## Iron and Industrial Stocks.

NEW YORK, December 9, 1908.

Merely a trading market has been experienced on the Stock Exchange the past week. Fluctuations have not been wide, as no special influences have developed to move prices in either direction. The range of prices on active industrial stocks from Thursday of last week to Tuesday of this week has been as follows: United States Steel common 53⅞ to 55⅝, preferred 112¼ to 113; Bethlehem Steel common 22 to 22½, preferred 52; Car & Foundry common 46 to 46⅞, preferred 108 to 108½; Locomotive common 55⅛ to 56½, preferred 109½ to 109¾; Steel Foundries 39; Cambria Steel 37½ to 39⅛; Colorado Fuel 37½ to 42; Crucible Steel common 8 to 8¼, preferred 53 to 54⅞; Pressed Steel common 38¼ to 39, preferred 98¾; Railway Spring common 42¾ to 43¼, preferred 101 to 102½; Republic common 26⅛ to 26¾, preferred 86 to 87; Sloss-Sheffield common 78 to 79½, preferred 110 to 110¼; Cast Iron Pipe common 28¾ to 30, preferred 74¾ to 75¼; Can common 9¼ to 9½, preferred 75¼ to 76¾. Last transactions up to 1.30 p.m. to-day are reported at the following prices: United States Steel common 56, preferred 113, bonds 102¼; Car & Foundry common 46⅜, preferred 109; Locomotive common 56, preferred 109⅝; Colorado Fuel 40¾; Pressed Steel common 39½, preferred 98¾; Railway Spring common 42¾; Republic common 27, preferred 86½; Sloss-Sheffield common 79; Cast Iron Pipe common 29¾, preferred 77; Can common 9¼, preferred 76.

The financial report of the American Steel Foundries and subsidiary companies for the quarter ending October 31, 1908, shows a falling off in net earnings of $645,985, as compared with the corresponding period a year ago. There was a deficit after total deductions of $112,500. Following are the figures:

| | 1908. | Changes. |
|---|---|---|
| Net earnings | $11,548 | Dec. $645,985 |
| Other income | 36,057 | Inc. 24,526 |
| Total income | $47,605 | Dec. $621,459 |
| Deductions: | | |
| Interest on bonds | $81,398 | Inc. $23,323 |
| Sinking funds on bonds | 59,616 | Inc. 33,366 |
| Depreciation | 19,181 | Dec. 36,569 |
| Total deductions | $160,195 | Inc. $20,120 |
| Deficit | 112,590 | Inc. 641,579 |

The foregoing net earnings are after the deduction of manufacturing, selling, administrative and head and district office expenses and before deducting depreciation.

The detailed income account of the American Car & Foundry Company for the quarter ended October 31 shows the following, as compared with the same period a year ago:

| August 1 to October 31: | 1908. | 1907. |
|---|---|---|
| Net earnings | $694,664 | $2,775,643 |
| Preferred dividend | 525,000 | 525,000 |
| Balance | $169,664 | $2,250,643 |
| Common dividend | 150,000 | 300,000 |
| Surplus | $19,664 | $1,950,643 |
| Total surplus | $22,395,953 | $23,271,251 |

**Dividends.**—The American Can Company has declared the regular quarterly dividend of 1¼ per cent. on the preferred stock, payable January 2.

The American Smelting & Refining Company has declared a quarterly dividend of 1¾ per cent. on the preferred stock, payable January 2.

The Ingersoll-Rand Company has declared the regular semiannual dividend of 3 per cent. on the preferred stock, payable January 2.

The Sloss-Sheffield Steel & Iron Company has declared the regular quarterly dividend of 1¾ per cent. on the preferred stock, payable January 1.

The Canadian Westinghouse Company has declared the regular quarterly dividend of 1½ per cent., payable January 1.

The Otis Elevator Company has declared a quarterly dividend of 1½ per cent. on the preferred stock, payable January 15.

**The Mingo Plant Started.**—Two of the blast furnaces of the Mingo plant of the United States Steel Corporation have been blown in this week, and the steel works are to be started next week on billets and steel bars. The plant will run on the basis of between 50 and 60 per cent. of its full capacity.

The La Belle Iron Works, Steubenville, Ohio, will place a contract soon for the building of a 250 or 300 ton metal mixer. The steel building for the mixer house will be erected by the McClintic-Marshall Construction Company, Pittsburgh. The ore boat for which a contract was recently awarded to the American Shipbuilding Company by the Pitt Iron Mining Company, a subsidiary of the La Belle Iron Works, is to be named the La Belle. All the plates for this boat will be rolled in the La Belle mills except the widest sizes, which will be furnished by the Jones & Laughlin Steel Company. This boat will be in service next season, and will hold 10,000 to 12,000 tons of ore.

The Scott Iron & Steel Company, recently formed in Pittsburgh, has taken over the plant formerly operated by the Carnegie Tube Company, at Carnegie, Pa., and will begin the manufacture of steel castings and later on will make horseshoes. The company is incorporated under the laws of Pennsylvania with a capitalization of $725,000. George P. Steele is president and J. C. Stauffer, of Carnegie, is secretary and treasurer.

This week the sales agents of the La Belle Iron Works, Steubenville, Ohio, are holding their annual gathering. They met in Steubenville on Tuesday and in Pittsburgh on Wednesday evening and all day Thursday. The company entertained them with a banquet and a theatre party.

The Fawcus Machine Company, Pittsburgh, manufacturer of cut gears, pinions, &c., has installed in its plant a new motor driven machine of special design, containing some distinct and new features, for use in cutting gears up to and over 20 ft. in diameter and to 42-in. face.

## Canadian Industrial News.

TORONTO, December 7, 1908.—The furnace of the Deseronto Iron Company, at Deseronto, Ont., is being rebuilt and is expected to be ready for operation by next April. The company's former stack was destroyed by lightning in September.

Negotiations for the construction of steel rolling mills at Cobourg, Ont., are in a forward state. A company has been formed to build and operate the works. Joint meetings of the Town Council and Board of Trade have been held to consider the company's proposals, which seem in a fair way of being agreed upon. The town is asked to grant exemption from municipal taxes and to limit the assessment for school taxes to $10,000; to give the use of certain streets for the purposes of an electric railroad line to be operated in connection with the plant. The electric line would run to the harbor and be used as a coal carrier inward and a conveyor of finished product outward. There are to be four buildings erected, the dimensions of the largest being 80 x 350 ft. If the negotiations end in agreement a by-law to validate the contract will be submitted to the rate payers in January.

A project for putting up large smelting works in the Cobalt District is being considered by Toronto and Montreal capitalists interested in that mining field. The output of the mines is now so large that the treatment of the ore begins to press upon the plants in existence.

On the first of December the Quebec Bridge Company went out of business, and the work of building the bridge as an integral part of the National Transcontinental Railway will be taken over by the Dominion Government. Construction is to be begun as soon as the plans have been finished by the board of engineering experts to which their preparation has been intrusted. In the new superstructure much heavier frame work is to be used than that called for by the design of the old.

C. P. Sandberg is to leave London shortly for Sydney, Nova Scotia, where he will inspect the rails which the Dominion Iron & Steel Company has contracted to make for New South Wales. The rails for this order, 16,000 tons of 80-lb. are to be rolled some time this month. Assisting Mr. Sandberg will be E. Lee, who went to Sydney as inspecting expert about five years ago. Mr. Sandberg's company is understood to have placed a large order for fish plates with the Nova Scotia Steel & Coal Company, the work to be done before the end of the year. Mr. Sandberg inspected the first order of rails rolled at the Sydney steel plant, 25,000 tons, for the Intercolonial Railway.

A meeting of the Atikokan Iron Company was held at Port Arthur a few days ago. The president, Hugh Sutherland, stated in a newspaper interview that the plant will be opened as soon as the price of pig iron advances sufficiently to warrant the recommencement of operations. His visit was to clear off the liabilities of the company. He does not expect that the furnace will be lighted before spring.

The Dain Mfg. Company, Ottumwa, Iowa, has entered into an arrangement with the municipality of Welland to establish a Canadian branch of its works in that town. It will manufacture stackers, loaders, presses, rakes, mowers and possibly other agricultural implements at its Canadian plant. For the purpose a Canadian company, capital $200,000, has been organized, the provisional directors being Joseph Dain, Paul Arbenz, F. M. Hunter, all of Ottumwa; B. J. McCormick and Col. L. C. Raymond, K. C., of Welland. For some years the company has been meeting the demands of its Canadian trade by assembling parts at Preston.

The Angus shops of the Canadian Pacific Railway Company, at Montreal, are now turning out 20 freight cars a day, and it is expected that this rate of operation will be maintained for six months at least. The works have locomotive building to do as well, $500,000 having been appropriated for this purpose by the company. Further, $2,000,000 is to be expended on passenger car equipment before the end of June.

After finishing its first car order for the Grand Trunk Pacific, the Canada Car Company has now entered upon another large one. C. A. C. J.

## The American Brass Company.

A recent issue of the Boston *News Bureau* gives some interesting information relative to the operations of the American Brass Company, whose headquarters are at Waterbury, Conn. Charles F. Brooker is president of this great company, which is reputed to be the largest individual consumer of copper in the world, its requirements in some years totaling above 100,000,000 lb. of copper. For three years the net earnings of the subsidiary properties of the American Brass Company have been as follows, the 1907 profits naturally reflecting the disturbed business conditions of the second half of the year:

| Year ended December 31: | Net earnings. |
|---|---|
| 1907 | $1,303,249 |
| 1906 | 2,265.798 |
| 1905 | 1,335,976 |

The balance sheet of the American Brass Company as of January 1, 1908 and 1907, is presented hereunder:

*Assets.*

| | 1908. | 1907. |
|---|---|---|
| Cash | $60,664 | $47,503 |
| Due from subsidiary companies | 2,533,756 | 2,807,750 |
| Accounts receivable | 18,174 | 13,121 |
| Birmingham Brass investment | 171,414 | 168,940 |
| Capital stock subsidiary companies | 12,500,080 | 10,000,000 |
| Totals | $15,284,088 | $13,037,314 |

*Liabilities.*

| | | |
|---|---|---|
| Capital stock | $15,000,000 | $10,000,000 |
| Debentures | *225,000 | 850,000 |
| Accrued interest | 9,833 | 32,173 |
| Paid on subscription new stock | ..... | 2,148,240 |
| Surplus | 49,255 | 6,901 |
| Totals | $15,284,088 | $13,037,314 |

* Paid off since January 1, 1908.

The American Brass Company was formed early in 1903, and it owns the entire capital stock of the Ansonia Brass & Copper Company, the Benedict & Burnham Mfg. Company, the Coe Brass Mfg. Company and the Waterbury Brass Company. It also owns, through subsidiaries, the Ansonia Land & Water Power Company, Birmingham Brass Company, Chicago Brass Company and Waterbury Brass Goods Corporation. The combined trial balance of the subsidiary properties in the American Brass Company as of January 1, 1908 and 1907, is as follows:

*Assets.*

| | 1908. | 1907. |
|---|---|---|
| Real estate, machinery and tools | $8,169,909 | $7,855,776 |
| Permanent improvements spent | 783,239 | *314,133 |
| Cash | 857,422 | 1,056,173 |
| Accounts and bills receivable | 3,812,335 | 5,552,807 |
| Stocks owned in other companies | 2,303,876 | 2,091,618 |
| Patents | 1,000 | 1,000 |
| Merchandise, raw, wrought and in process | 4,582,467 | 4,228,005 |
| Totals | $20,510,248 | $21,009,512 |

*Liabilities.*

| | | |
|---|---|---|
| Capital stock | $5,550,000 | $5,110,000 |
| Current accounts and bills payable | 945,633 | 1,227,067 |
| Loans from parent company | 2,533,756 | 2,807,750 |
| Surplus | 10,632,702 | 10,824,459 |
| Reserve for contingencies | 848,157 | 1,130,236 |
| Totals | $20,510,248 | $21,099,512 |

* After deducting $400,000 charged off each year for depreciation.

There has been marked improvement in the brass industry since election, and many of the wire factories and rolling mills in the Naugatuck Valley of Connecticut are operating on longer time than for the past 12 or 15 months.

At the meeting of the German Stahlwerks Verband, held at the close of last month, the books were opened for the sale of billets for the first quarter of 1909 at the present prices and terms. The sales of beams and shapes for the first half of 1909 were authorized at a reduction of 5 marks per metric ton. Besides this authority was given to deliver to buyers a minimum quantity of 200,000 tons of shapes at a further reduction of 5 marks for winter delivery. The details of the terms for the sale of shapes will not be determined until a decision has been reached concerning the re-establishment of the Dealers' Beam Association.

## Seattle Railroad and Trade Notes.

SEATTLE, WASH., November 30, 1908.—E. C. Hawkins, chief engineer of the Copper River Railway, being built by the Guggenheim interests from Cordova to the interior of Alsaka, has just returned from the north with the announcement that 55 miles of "as good road as any transcontinental line ever constructed" have been completed to the head of Abercrombie Rapids, on the Copper River. In addition to Mr. Hawkins, M. J. Heney, the contractor, and other officials have returned. Mr. Heney says the line thus far has the heaviest steel rails and a roadbed that would do credit to any system. No trains will be run over the line this winter, but a service is to begin in March. Steamers will operate on the river above the rapids, and in addition to giving regular service will handle the materials for the 25-mile railroad which will be built from the Chitina to the Bonanza mine.

Work on the Pacific Coast extension of the Chicago, Milwaukee & St. Paul Railroad continues to be rushed. The remaining gaps for the rails represent a total of only about 35 miles in the State of Washington, from the Idaho line to the Sound, and outside of this State, about 135 miles of steel must be laid before the eastern connections are complete. The entire line will be ready for freight traffic by the first of next July. The Union Pacific (Oregon & Washington Railroad) is rapidly closing up its franchise and right of way affairs for the extension from Portland to Puget Sound. Eastern contractors are figuring on the tunnel, considerably more than half a mile long, to be built under Tacoma.

The report of the Northern Pacific, filed at Olympia, the State capital, shows that that road had advanced to the Spokane Portland & Seattle (the new line recently completed down the north bank of the Columbia River from Pasco to Vancouver, Wash.), $26,514,893 up to June 30, last. The completion of the extension down the Columbia was the occasion for the recent visit to the Coast of James J. Hill, his son, Louis Hill, president of the Great Northern; Howard Elliott, president of the Northern Pacific, and Mr. Harris, president of the Burlington. In his speech at the banquet given by the Seattle Chamber of Commerce and Alaska-Yukon-Pacific Exposition trustees, Mr. Hill declared that no more transcontinental roads would be built north of the Platt River, although the existing systems would construct many branches to develop the country and the maximum traffic.

A few days ago, the North Coast Railway, which has a right-of-way across this State and is supposed to have affiliations with some transcontinental line, not yet revealed, let the contract for grading 20 miles of right-of-way near Kennewick. Eighteen miles, from Grand View to Granger, is now ready for rails, and the construction work is approaching North Yakima.

The improvements made during the past year by the Great Northern within the State of Washington are commended by the State Railroad Commission, a representative of which reports as follows: "On my first inspection of the track of the Great Northern from the Idaho line to Seattle, about a year and a half ago, this track was found in a defective and dangerous condition, owing to bad ties. Wrecks were of frequent occurrence. After the Milan wreck the company immediately put on a large force of men, 800 being employed on 300 miles of railroad. Many thousand new ties were placed, miles and miles of heavy steel laid, and many ballast trains have been engaged in hauling gravel, until now comparison with other lines in the State is inviting." Among other features, the Great Northern has substituted 3232 tons of steel for 3700 lineal feet of timber bridges in the State. The work of electrifying the Cascade tunnel, costing $1,250,000, is under way.

Farmers of Walla Walla County have decided to take over the stock and the right-of-way of the Columbia & Walla Walla Traction Company, with right-of-way from Dayton, Prescott, Waitsburg and Walla Walla to the Columbia River, 72 miles in all, and build the road in time to handle the wheat crop next fall. Stock is being placed with the business interests as well as with the wheat growers.

The Seattle Car Mfg. Company, recently reorganized, increasing its paid up capital by $100,000 and issuing $100,000 10-year bonds, drawings 6 per cent. interest. Added to the original paid up capital of $150,000, this makes $350,000 invested in the business. The company has a modern, first-class plant, fully equipped, on the shores of Lake Washington at Renton, 10 miles from Seattle. The company recently shipped 28 cars to the Sun Ning Railroad Company in China.

The postponed meeting of the foremen of the iron-working plants at Portland, Ore., took place there November 25.

The Seattle Electric Company, operating all the street railroads in this city but one, will add 100 new cars to its equipment before the first of next May, in anticipation of heavy traffic during the exposition.

The Moran Company of this city expects to build two of the new torpedo boat destroyers for the Government, representing about $500,000 in cost. The company will soon lay the keel for a 2000-ton oil burning steamer, but withholds, for the present, the name of the purchaser.

Report comes from the Skagit Valley that engineers are working on a plan for developing the power of that stream, and that 300,000 hp. could be attained with proper harnessing of the forces. W. T. P.

## Lake Ore Shipments, 25,430,543 Tons.

Returns from the nine Lake Superior docks show that the shipments of iron ore by water in the season of 1908 were 25,430,543 tons, an estimate being made of two cargoes which were still to be loaded at Escanaba, Mich., when the figures were wired from that port on Tuesday, December 8. The shipments after November 1 were somewhat larger than had been counted on, reaching 3,700,471 tons. In the following table the shipments from the various ports in 1908 are given, with corresponding figures for the three preceding years:

*Iron Ore Shipments from Upper Lake Ports.—Gross Tons.*

| | 1908. | 1907. | 1906. | 1905. |
|---|---|---|---|---|
| Escanaba | 3,354,952 | 5,761,988 | 5,851,095 | 5,307,938 |
| Marquette | 1,487,487 | 3,013,826 | 2,791,033 | 2,977,828 |
| Ashland | 2,513,670 | 3,437,672 | 3,388,111 | 3,485,344 |
| Two Harbors | 5,702,237 | 8,188,906 | 8,180,128 | 7,779,850 |
| Superior | 3,564,030 | 7,440,386 | 6,083,057 | 5,118,385 |
| Duluth | 8,808,168 | 13,445,977 | 11,220,218 | 8,807,559 |
| Total by lake | 25,430,544 | 41,288,755 | 37,513,642 | 33,476,904 |
| Total by rail | | 956,315 | 1,008,597 | 876,552 |
| Total shipments | | 42,245,070 | 38,522,239 | 34,353,456 |

The all-rail shipments for the year, which will not be accurately known until after January 1, may reach 500,000 tons, but in this exceptional year may have fallen off more, in proportion, than the water shipments. They include ore shipped from the Mesaba range to the Duluth furnace and shipments from various ranges to the charcoal furnaces of Michigan and Wisconsin, as well as the ore mined on the Baraboo range and at Iron Ridge, Wis., and shipped by rail to South Chicago. The total shipments for the Lake Superior region in 1908 may thus prove to be between 25,900,000 and 26,000,000 tons, or something over 60 per cent. of the total for 1907. The United States Steel Corporation's water shipments this year were 14,252,911 tons, against 22,553,642 tons in 1907. Its percentage of the movement by lake this year is 56, as against 53 per cent. last year. The all-rail figures will change these percentages somewhat. The Mesaba range has increased its proportion of the shipments this year as compared with 1907, its percentage of the water shipments being 68, while last year it sent out 66.5 per cent. The Mesaba total shipped in vessels this year was 17,232,891 tons, and that of the Vermillion range, 841,544 tons.

The Canton-Hankow Railroad, Canton, China, which is having six standard gauge mogul freight locomotives built by the American Locomotive Company, has engaged Gulick, Henderson & Co., Pittsburgh, to do the inspecting for it. This firm makes a specialty of inspecting equipment and solid steel wheels for traction roads.

# Trade Publications.

**Perforated Metal.** — Manhattan Perforated Metal Company, 237 Centre street, New York. Circular. Illustrates the principal styles of perforated metal made by the company, showing a wide variety in patterns and designs, and listing the various equipment the metal can be applied to.

**Multiple Luminous Arc Lamps.**—General Electric Company, Schenectady, N. Y. Bulletin 4621. Luminous arc lamps for multiple circuits are illustrated and described here, and special attention is paid to the form 2 lamp, which is intended primarily for use in foundries and machine shops, &c., where a large unit is desired. The lamp is made for 110 and 220 volt direct current circuits.

**Metal Lath.**—Northwestern Expanded Metal Company, 920-950 Old Colony Building, Chicago, Ill. Booklet. Prices of the company's metal lath are given, together with directions for specifying its use in buildings and for applying it. Some interesting data regarding finish for walls, together with tables for making mortar mixtures, are included.

**Railroad Inspection Cars.**—Light Inspection Car Company, Hagerstown, Ind. Booklet. Shows several types of light railroad inspection cars, from a single seat bicycle frame pedal propelled machine to a gasoline car operated by a 3-hp. motor.

**Surface Condensers.**—Wheeler Condenser & Engineering Company, Carteret, N. J. Bulletin No. 102. The Wheeler rectangular surface condenser is shown connected with steam turbines, and a treatise on the economy of condensing is given, together with descriptions of a number of types of the company's condensers. Several installations are illustrated and descriptions for installing condensers are given.

**Antifriction Metals.**—A. Allan & Son, 486 Greenwich street, New York. Bulletin No. 2, 6 x 9 in., 32 pages. This is the second of a series of bulletins which are to form a descriptive catalogue of the Allan metal, and is devoted chiefly to its application to heavy power apparatus.

**General Railroad and Mill Supplies.**—Consolidated Supply Company, 34 Dearborn street, Chicago, Ill. Catalogue No. 15, 6½ x 9½ in., 24 pages. This is a manufacturers agents' catalogue, listing a number of specialties sold by the company, including some compressed air equipment, track appliances, special drills, riveting and chipping hammers, electric grinders, &c. Attention is called to the company's general line, which includes mining supplies and contractors' equipment.

**Gas Producers.**—The Gas Machinery Company, Cleveland, Ohio. Booklet 261. This is in bulletin form arranged for loose leaf binder, and shows the Wile gas producer for nonbituminous fuels. The advantages of producer gas for power or fuel are discussed, and the machine is illustrated by showing several installations with the aid of sectional views.

**Reinforced Concrete Buildings.**—Turner Construction Company, 11 Broadway, New York. Bulletin No. 5. One of a series of bulletins describing plants erected by this company. Shows the building of the Keuffel & Esser Company at Hoboken, N. J. Views of the exterior and interior of the completed structure are given, together with a general plan. Attention is called to the present price of material and diagrams show the fluctuations during the last six years.

**Economizers.**—B. F. Sturtevant Company, Hyde Park, Mass. Circular. Shows parts of the Sturtevant economizers and calls attention to the metal to metal joints used in this device, which requires no gaskets. The joint is formed by a tapered cylinder entering a tapered hole, which places the machined surfaces in close contact.

**Metal Lath, Expanded Metal, Concrete Reinforcing and Steel Furniture.**—The General Fire Proofing Company, Youngstown, Ohio. Booklet. A condensed catalogue of the company's product, including herringbone expanded steel lath and other types of expanded metal lath. Concrete reinforcing material and several examples of metal furniture, file cabinets and lockers are illustrated.

**Solenoid Brakes.**—Whiting Foundry Equipment Company, Harvey, Ill. Catalogue No. 48 for loose leaf binder. Shows the company's direct current electric solenoid brake and briefly describes its parts. These brakes are used on all of the company's traveling cranes and they can also be purchased separately.

**Ice Harvesting Machinery.**—A. L. Schultz & Son, Chicago, Ill. Special Catalogue No. 10, 6 x 9 in.; 15 pages. Illustrates a general line of ice harvesting machinery, including various types of ice harvesters, plows, saws, &c.

**Roller Bearings.**—Standard Roller Bearing Company, Philadelphia, Pa. Circular. Describes briefly the company's manufacturing equipment and mentions that its line includes anti-friction bearings in the shape of steel, brass and bronze balls, thrust bearings and roller bearings for all mechanical purposes.

**Remote Control Switches.** — Pettingell-Andrews Company, Boston, Mass. Bulletin entitled "Economy, Convenience, Safety." Describes in detail the company's P M remote controller switch. Diagrams illustrate different types and their connections and they are described in full.

**Gas; Gasoline and Distillate Engines.**—The Reeves Engineering Company, Mt. Vernon, Ohio. Booklet. Announces the merging of the firm of Reeves Brothers, Columbus, Ohio, with the Reeves Engineering Company, Mt. Vernon, Ohio, and describes the company's line of engines, which are made principally in the vertical type, of four-cycle, in both single and multiple cylinders. The construction of the engines which are built in sizes from 17 to 18 hp. is briefly described, and lists of other sizes given of single, double or triple cylinder vertical type from 2 to 125 hp.

**Chain Hoists and Trolleys, Malleable Iron Castings, &c.**—Chisholm & Moore Mfg. Company, Cleveland, Ohio. Catalogue, 6 x 9 in.; 56 pages. High speed chain hoists and particularly the Cyclone hoist are shown and their parts. Differential pulley blocks and hoists, trolleys and hoists, and hand power traveling cranes are also illustrated, and some space is given to door hangers and malleable iron castings.

**Crushers, Magnetic Separators, &c.**—Pennsylvania Crusher Company, Philadelphia, Pa. Catalogue No. 11, 6 x 9 in.; 42 pages. Shows hammer crushers and rock crushers, both portable and stationary, in a number of types. The standard hammer crusher made by the company is for six or eight rows of hammers and can be adjusted to particularly fine grinding. Sectional views of the machine are given, in addition to illustrations of the assembled equipment. Coal cleaners, magnetic separators and rotary crushers are shown with appropriate descriptive matter.

**Vacuum Cleaning Systems.**—Vacuum Engineering Company, 114-118 Liberty street, New York. Catalogue, 6¼ x 9¼ in.; 30 pages. A new type of the vacuum producing apparatus, consisting of a suction, valveless, reciprocating pump, which may be steam, belt or motor driven, is described. With it the dust is drawn into a saturating chamber, in which a very small flow of water is maintained; the dust and the mixture is carried through the pump and discharged to the sewer. The machine is made in horizontal and vertical types, and plants specially designed for residences are shown. A number of large buildings where the system is in use are illustrated.

**Beveled Rail Joints.**—Duncan Bond, Exchange Building, Denver, Colo. Catalogue A. Shows the Jones beveled rail joint with the aid of line drawings. A number of views of the joint in use on the tracks of the Denver City Tramway Company, Denver, Colo., are given, including a picture of a joint after four years' service which shows it to be in excellent condition.

**Foundry Equipment.**—S. Obermayer Company, Cleveland, Ohio. General Catalogue No. 40, 6 x 9 in.; 370 pages, and booklet. The catalogue comprises an inventory of everything needed in foundries, in addition to a line of materials for special foundry purposes. It is completely indexed and contains an interesting history of the growth of the company, with views of its main branch houses. Some space is given to describing the work of the company's experimental department and its foundry equipment experts. Illustrations range from the more important lines of foundry equipment down to numerous styles of foundry brushes, and a specially complete line of foundry sundries is listed. Line drawings illustrating installations of brass furnace plants and other ideal layouts are shown. Information for foundrymen, including formulas and recipes, and suggestions for lining a cupola are included. Of particular interest is a number of illustrations of modern molding machines and viwes of foundry crane installations of the latest type. The booklet is entitled "Money Making Hints for the Core Room," and advertises the company's line of cores and explains proper methods of core making.

**Traveling Cranes, Hoisting Engines, Contractors' Equipment, &c.**—Victor R. Browning & Co., Cleveland, Ohio. Bulletins Nos. 2, 3, 4 and 5. No. 2 shows overhead electric traveling cranes and describes the general design of this company's line. No. 3 shows a number of types of the Armington hoist, including the type F Armington power hoist and drive. Line drawings illustrating the standard hoist are given. No. 4 illustrates the company's standard double cylinder and double drum hoisting engine by a view of a complete machine and sectional views. No. 5 describes the standard double drum hoisting engine.

**Steel Boxes, Pails, Barrels, &c.**—The Geauga Mfg. Company, Painesville, Ohio. Booklet. Describes steel boxes for various uses in shops and cites their advantages over wooden boxes. Attention is called to the fact that a wooden box cannot be cleaned when soaked with oil, is not as durable and is inflammable. Steel hand barrows, steel tote pails with perforated bottoms for use when it is desired to clean articles by dipping, steel shop kegs, lathe pans, annealing pans and barrel trucks are illustrated.

**Condensers.**—Mesta Machine Company, Pittsburgh, Pa. Booklet. The Helander barometric condenser, which is particularly adapted for large plants, is shown. It is built entirely of cast iron, and among its advantages are that it contains no rivet holes to become leaky nor movable parts, and requires no interval adjustments for varying conditions of operation. A cross section of the condenser vessel is shown, together with some standard types. The economy of condensation is treated briefly and a list of users is given.

# The Machinery Trade.

NEW YORK, December 9, 1908.

In view of the gradual increase in business of the past two months, trade last week was unsatisfactory with many of the machinery houses. In October a betterment was noticeable and November closed with still a large number of orders booked, but thus far this month neither orders nor inquiries have been quite so plentiful. The slight lull in the demand is attributed by many to the close of the year, which is usually a quiet period as it is the time of stock taking and it is the general desire to have purchases charged in next year's account. While the temporary falling off is regretted, merchants feel sanguine as to the opening of the new year. General conditions appear to be sound, the inquiries received are of a more substantial character, though still covering only a few tools each, and many manufacturers are preparing to add to their equipment after the first of the year. Salesmen who have recently come in from the road all report bright prospects. Very little has as yet been heard from the railroads and larger industrial corporations, the business in view being nearly all from the smaller establishments. It is believed, however, that the railroads must soon come into the market for round lots of tools and houses are keeping in close touch with the large systems, particularly the Delaware, Lackawanna & Western Railroad, which is expected to issue its list of requirements for its new machine shop at Scranton, Pa., at an early date, and the New York Central lines. In this connection some interesting facts became known this week which show why one of the greatest railroads made so few purchases the past year. When the depression came this road took an inventory and found that it had $14,000,000 worth of material stored at different points. From this supply the road has been able to fill the greater part of its requirements and still has a considerable amount of material on hand.

From all accounts the New York, New Haven & Hartford Railroad is going ahead with its plans to electrify a six-line track from 129th street, New York, to New Rochelle, and it is reported that the Bradley-Gaffney-Steers Company, 1 Madison avenue, New York, has been given the general contract. The expenditures for the improvement, it is said, will amount to fully $30,000,000, and will entail the construction of tunnels under the East River to Astoria and the erection of a large passenger station on the block bounded by Fourth and Lexington avenues at Thirty-second and Thirty-third streets to be connected with the Pennsylvania tracks. Considerable subway work will be included in the contract, and in addition to the power equipment necessary to the electrification and the general electrical equipment the project will be one of the largest carried out in this vicinity during the next few years in the way of railroad construction. It may be some time before the matter will come before the trade in the way of machinery requirements, but when it does it can be seen that with the equipment necessary to carry out the tunneling and subway end of the work the general trade will be materially benefited. In this connection it is interesting to learn that the New York Central Railroad is arranging to extend its electrical zone by putting electric trains on its Harlem Division from Wakefield to White Plains, a distance of about 12 miles. It will give the company a through third-rail system from the Grand Central Station to White Plains. The company has started excavating for a new power house at Tuckahoe, N. Y., to supply electricity for the line. The structure will be of brick and concrete and will be 60 x 200 ft.

It is reported in the trade that a list covering an extensive line of machine tools will shortly be prepared by the Delaware, Lackawanna & Western Railroad for the large shops which are in course of construction at Scranton, Pa. As has been stated, the foundry has been provided for, but the machine shop equipment has not been purchased as yet. This shop, which will shortly be put under roof, is about 346 x 582 ft., and it can be seen that the list will necessarily be a large one.

The Washington, Alexandria & Mt. Vernon Railroad, Washington, D. C., which leased the Falls Church Railroad, is erecting a 600-kw. substation at Lacey, Va., where in the near future it will erect car shops and a car barn. The company recently installed a 1000-kw. turbine in its power plant to furnish power for the Falls Church division.

In its application to the Public Service Commission for permission to issue $30,000,000 of new bonds the Erie Railroad summarizes the cost of the improvements contemplated, the money to pay for which is to be secured by the sale of the bonds. The large improvements to be provided for include terminals, repair shops, additional tracks, &c.

The Champion Shoe Machinery Company, St. Louis, Mo., will not require a large amount of new machinery for its new plant, as it will move its present equipment into the new building as soon as it is completed. The company will, however, be in the market for an engine, lathes, milling machines, &c. The new plant which the company is erecting will be 170 x 182 ft., two stories.

The Onondago Litholite Company, Syracuse, N. Y., which, as noted in these columns last week, is open for bids on a 7½-ton electric traveling crane, 25-ft. span; sand molding machines, patternmaking machines, woodworking machines, general foundry equipment, belt conveying machinery, &c., has sold its plant on the Erie Canal, at Northwest and Tracy streets, and will build a complete new plant on another site. A main building, 50 x 250 ft.; pattern shop and power plant, 50 x 75 ft., two stories, of steel and concrete, will be erected.

Considerable machinery has been purchased from time to time by the contractors who are building the Erie Barge Canal, several contracts for important parts of which were awarded a week or two ago. The Kinser Construction Company, Chicago, Ill., with a branch office at Fort Edward, N. Y., which was awarded contract No. 46, for the construction of the canal from Fox Ridge to Galena, about 9 miles, will use $75,000 worth of hydraulic dredging machinery in completing this contract. It will do the work for $1,212,833.

The opposition to the building of the Fourth avenue subway in Brooklyn has been withdrawn, and it is probable that contracts will be let within the next few months for the construction of the first two sections. Bids were taken on the work some time ago, and it is thought that contracts can be let without getting additional bids.

### Business Changes.

The National Acme Mfg. Company, Cleveland, Ohio, whose Eastern offices, of which L. M. Waite is manager, were recently removed to 77 White street, has leased the basement of that building for a storage warehouse and showrooms and will carry a full line of cap screws, set screws, nuts and mill supplies. The company previously carried a good sized stock, but its new storage facilities will admit the laying in of sufficient supplies to meet all demands.

The Spooner-Matthewson Company, 90 West street, New York, has assumed the Eastern sales agency for the Hadsel non-tilting concrete batch mixer, which is made by the Keystone Engineering Company, Wilkes-Barre, Pa.

Henry Pels & Co., New York, manufacturers of punching and shearing machines, have moved their offices to the West Street Building, 90 West street.

# Chicago Machinery Market.

CHICAGO, ILL., December 8, 1908.

Reports from the leading machinery houses covering transactions of the past week indicate a fair degree of improvement in actual sales, as well as brighter prospects ahead. Inquiries are not only more numerous, but it is noticed that they are beginning to come from the more important manufacturing concerns, and are covering requirements of greater magnitude. Speaking of recent business closed, a prominent machinery house refers to it as quite satisfactory, and says that included in it are several lots of machine tools of considerable size. The fact that tool orders are being placed for additional equipment in plants which are yet running light, bespeaks the existence of a hopeful sentiment respecting future developments. There is, in truth, very little doubt expressed on any hand as to the progressive betterment of conditions, and the consensus of opinion in the machinery trade, seems to be that the new year will mark the beginning of a better movement, which will steadily lead onward to a full normal volume of business. It is conceded, however, that the acceleration will depend in a large measure upon the expansion of railroad activities. If these interests come into the market without prolonged delay for what they will actually need to carry forward their necessary operations in a vigorous manner, the stimulus of such buying will greatly quicken the demand for tools, not only for railroad shops, but for those of others engaged in the manufacture of railroad supplies of one kind or another. Usually the closing month of the year is devoted more to the closing up and balancing of accounts than to the negotiating of new commitments, and while a good deal of preliminary figuring may be done on pending requirements between now and the first of January, the actual closures for this period are hardly expected to assume unusual proportions.

The demand for electrical machinery is gradually extending. The growing use of independent motor drives for machine tools and other machinery, is reflected in increased sales of such equipment. The constantly widening field for the application of electricity as a motive power, that is being opened up by the reduced cost of generating current through improvements made in generating machinery, and

the economic distribution of energy, is bound to result in still greater expansion in all branches of this industry.

The Apperson Brothers Automobile Company, Kokomo, Ind., a copartnership, has been incorporated with a paid-up capital of $400,000, without change of name. In order to take care of its increased business, greater factory space became necessary, and to provide it, the company has purchased an adjacent site upon which it will erect a three story addition to its present plant. Foundations will be put in at once for the new building, and work on the superstructure will be commenced early in the spring and pushed to completion in time to have the new quarters ready for occupancy by May 1. This improvement will increase the present available floor space about 50 per cent. For the equipment of the building, the purchase of a number of machine tools will probably be made. The company is officered as follows: Elmer Apperson, president; Edgar Apperson, vice-president; A. G. Seiberling, secretary and treasurer.

The Enamel Concrete Company, Des Moines, Iowa, is under the necessity of materially increasing the capacity of its plant, and expects in the near future to purchase a considerable amount of new tools and machinery of a character required for the manufacture of its product.

The Vesper Safety Clevis & Malleable Iron Company, Vesper, Wis., is about to begin the erection of a new factory plant, which will include two main buildings of brick, one 60 x 100 ft., and the other 60 x 200 ft., with an engine room 35 x 45 ft. It is expected that the plant will be completed and its machinery equipment installed about May 1. It will be supplied with tools and machinery for the manufacture of punches, shears, clevises, &c.

The Bakersfield Auto Supply Company, Bakersfield, Cal., is arranging to build a two-story brick garage 20 x 122 ft., for the accommodation of a stock of automobile supplies. In addition to this building, there will be erected in the rear a machine shop 115 x 122 ft., which will be supplied with a complete equipment of machinery and tools for the repair of automobiles, including a complete vulcanizing plant.

The Bertschy Motor Company, Council Bluffs, Iowa, recently incorporated with a capital stock of $50,000, of which $20,000 is already paid in, will engage in general machine work and the manufacture of several specialties under patents controlled by the company. A department will also be established for the construction of new and the rebuilding and repair of old automobiles. In addition to passenger machines, a specialty will be made of motor trucks for farm use, designed for hauling gang plows in the field and drawing grain to market. The company also has under consideration the building of an automobile fire engine for fire department service. Ground has been broken at Sixth street and Eleventh avenue, near the Union Pacific freight house, for a plant to accommodate this industry, which will be equipped with modern machinery adapted to the work described. The installation will include some special tools for automobile work. The officers of the company are: T. R. Children, president; A. J. P. Bertschy, vice-president and general manager; Geo. S. Wright, secretary; Ernest E. Hart, treasurer.

With a view to supplying additional power to meet the growing demands of service, the Home Electric Light & Power Company, Greeley, Col., has in contemplation the expenditure of about $35,000 for the enlargement of its capacity. Plans now under construction include the installation of two gas engine units of 125 hp. each, one 125 kw. three phase, 900 rev. per min. generator, together with extension of lines and other facilities for handling its increased volume of business.

Arrangements are being made by A. C. Burmeister, Redwood Falls, Minn., for the construction of a hydro-electric plant, for which two 100 kw. generators and water wheels will be required. The cost of this installation, including line material, is estimated at between $20,000 to $30,000.

## Cincinnati Machinery Market.

CINCINNATI, OHIO, December 8, 1908.

Conditions satisfactory to the shop superintendent prevail generally at the machine tool manufacturing establishments in this field, for he is gradually adding men and increasing the productive efficiency of his plant, but there is still something to be desired viewed from the office standpoint. Practically all the larger establishments belonging strictly to the machine tool division were interviewed since our last letter, and this condition is indicated. There has been a falling off in inquiries, although on the other hand some concerns have had their first stock order for many months. Machine tool builders in this field regard this feature (the awakening of the dealers) an important item in the matter of trade reconstruction. Scattering sales of tools, one or two at a time, have been a feature of the last two or three months, these going to the Government, to municipalities for their toolrooms, and to automobile manufacturing concerns, but dealers, as a rule, have remained silent. Now that the selling agents have become inspired with confidence the feeling is that a trade revival is imminent, and the approximate period for its introduction is fixed at about the middle of January. There is no increase in demand from foreign countries. Dealers in second-hand machinery have had but a nominal business since election.

Locally, the manufacturers of ice machines and medium sized electric power equipment have had a fair business since the first of December. A local manufacturing establishment which is soon to be housed in a splendid plant in the new colony at Oakley has in process of making five large ice machines, orders for the most part received since election, and the electric power department of the company is gradually improving time and forces.

The American Tool Works Company, which maintains four special departments—lathes, planers, shapers and radial drills—has been gradually improving its working time and forces until 40 and 50 hr. per week represent the present working capacity, and men have been added from time to time until the establishment is working now fully three-fifths of the large force on its payrolls early in 1907.

A report that a large local establishment had reduced wages 20 per cent. was found to be incorrect. As a rule the expert men have been kept on throughout the months of depression and at their old salaries, which has been greatly appreciated by these men. Some cuts were made during the spring and summer in the woodworking machinery plants, manufactories of miscellaneous machinery and some foundries, but as a rule the tool makers stood by their expert help nobly.

The Steptoe Shaper Company started on full time immediately after election and has added men since. An order from a dealer calls for two 14-in. single gear, two 16-in. single and back gear and two 20-in. back gear for early shipment. This company recently shipped two shapers to Australia. The East seems to have had the first trade awakening according to this company. An order recently received from a dealer in San Francisco was followed within a couple of weeks by a duplicate order, which suggests that the West is beginning to experience the beneficial results of the better times also.

A feature of the current correspondence from dealers throughout the country seems to be the general holding up of orders for equipment on which bids have been asked until after the first of the year. An explanation of this is that shops generally want to present the best possible balance sheet of the year's work and are busy with the details of inventories, &c.

Tool making and machinery manufacturing generally are having great vogue in this locality just now through the splendid prospects opening up for the adherents of co-operative education, as is shown by the aid given the University of Cincinnati idea for co-operative study and work in the shops. This will be strongly brought out at the annual dinner of the Cincinnati Metal Trades Association at the Business Mens' Club on Thursday evening. The idea has spread to the Young Men's Christian Association and that institution now has a large class in sheet metal cutting. Eleven young men constituted the original class, which is growing rapidly. The course of instruction covers cutting of cornice and blowpipe systems, including T and Y joints and elbows.

The Bass Foundry & Machine Company, Ft. Wayne, Ind., is working on a duplicate set of machines recently shipped for use on Panama Canal work which went down in the wreck of the steamer Finance several days ago. The company has shipped to Ft. Worth, Texas, a 500-hp. Corliss engine for operating the plant of the Texas Rolling Mill Company.

On or about January 1 the Union Foundry & Machine Company, recently incorporated, will take over the business of the Union Foundry at Mansfield, Ohio. Most of the stock is held in Pittsburgh. The incorporators are N. O. Fleming, W. B. Martin, Harry Deyarman, C. W. Deyarman and L. H. Beam.

It is reported through local pig iron sales agencies that the Hoosier drill branch of the American Seeding Machine Company at Richmond, Ind., now has the largest pay roll in its history, over 700 men.

The Bucyrus Steel Castings Company, Bucyrus, Ohio, is rapidly getting in shape to resume normal conditions at its plant and conditions are announced as improving.

Reports from the American Steel & Iron Company at Norwalk, Ohio, indicate that conditions are gradually improving in every department under the efficient general direction of General Manager H. E. Frazier, formerly of Cincinnati, and the special influence of President Charles R. Brown.

The Cincinnati Car Mfg. Company has enjoyed a moderate run of orders, the last calling for $250,000 worth of cars for Washington, D. C., deliveries on which are being made from time to time.

## Cleveland Machinery Market.

CLEVELAND, OHIO, December 8, 1908.

Business in the local machine tool market the past week as a whole has been quite satisfactory. The improvement which started soon after election has kept up and an optimistic feeling prevails both among the machinery manufacturers and the dealers. Salesmen for local machinery houses who travel through Ohio and some of the adjoining territory report a fair volume of orders from almost all kinds of manufacturing industries. While sales are mostly small, orders being for from one to three or four tools, these orders have been sufficient in number to make a fair volume of business. Industrial activity continues to show improvement and many of the smaller manufacturing plants are adding sowemhat to their equipment. The orders that are being placed now are in many cases for tools, the purchase of which had been under consideration for several months, but had been delayed until general conditions had improved. The Wheeling & Lake Erie Railroad made its purchase during the week of the iron working tools for which it has had an inquiry out for several weeks. The list includes a miscellaneous lot of 15 or 20, mostly large tools, all amounting to about $30,000. Other railroads are expected to come into the market soon for some new tools for shop requirements in this territory.

Inquiries are coming in quite plentiful, so that the outlook for further improvement in the machine tool market is quite encouraging. Among the new inquiries is one from a steel plant for several tools. During the past year very few new industrial plants have been started in this territory, but now that general conditions have improved the outlook for a fair demand for machine tool equipment for new concerns that are planning the establishment of plants is considerable better. Although the automobile manufacturers are about through buying new machine tool equipment for the coming season, some business is still coming from this source. Orders for heavy handling machinery are not plentiful as yet, but inquiries are considerable better. An improvement is noted in the demand for gas engines.

The jobbing foundry situation, while as yet not satisfactory, shows a slight improvement from week to week.

The local manufacturing situation is growing better slowly. Few plants are as yet running at their normal capacity, but nearly all report an improvement in orders and are able to slowly increase their working forces. Some of the manufacturers of automobile parts, of which there are a number in this city, report that they have about all the work on hand that they can do.

The Cleveland Crane & Engineering Company, Wickliffe, Ohio, is finding considerable improvement in business, shipments for some time past having been steadily improving. Among recent shipments are two 10-ton three-motor 40-ft. span alternating current cranes to the Puget Sound Navy Yard; one 10-ton three-motor 40-ft. span crane, New Orleans Navy Yard; one 75-ft. 15-ton crane, Dallas, Texas; two 20-ton three-motor cranes, Isthmian Canal Commission for the Panama power houses; one 15-ton three-motor 50-ft. span crane, Erie Foundry Company, Erie, Pa. Among the cranes now under construction are three 10-ton two-trolley five-motor alternating current cranes for the Scully Steel & Iron Company, Chicago, Ill.; 10 three-motor 48-ft. span high speed cranes and two 10-ton three-motor special trolleys, Isthmian Canal Commission; one 10-ton three-motor crane. Chicago Railways Company, and one 20-ton 50-ft. span crane for export to Cuba. Inquiries have improved and the present outlook is bright for an increased and profitable business for 1909.

The Wellman-Seaver-Morgan Company, Cleveland, reports a continued improvement in the outlook and a greater volume of inquiries for heavy machinery. Inquiries from Western mines for hoists and other equipment have become more plentiful. The past week the company received an order from the El Oro Mining & Railway Company of Mexico for an electric geared mine hoist with two 84 x 48 in. drums, a duplicate of one that it delivered to the same company about a month ago.

The Electric Welding Products Company, Cleveland, finds its capacity entirely too small for its increasing business and has had plans prepared for a large addition to its plant which will double its present capacity. It is expected that the addition will be built during the coming spring. The company now has a large amount of work on hand, largely from automobile makers for parts, and it was found necessary to operate the plant night and day for several weeks to catch up on orders. The plant is now being run until 9 p.m. with its full force of workmen.

The plant of the Royal Motor Company, Cleveland, which has been operated by a receiver during the past year, has been turned over to a new company, known as the Royal Tourist Car Company, which will continue to manufacture the Royal automobiles. The officers of the new company are George J. Dunham, Boston, president; H. S. Calhoun, Cleveland, vice-president and treasurer, and Clifford W. Fuller, Cleveland, secretary.

The A. D. Milner Seating Company, Canal Dover, Ohio, has been organized, with a capitalization of $100,000, to manufacture opera chairs, school desks and a post office assorting rack. The company expects to build a plant, including a foundry, at Canal Dover. The officers are A. R. Milner of Canal Dover, president; George W. Williams, vice-president; Thomas Rodgers, treasurer; C. O. Waltz of Alliance, secretary. The officers and W. E. Seibert of New Philadelphia and James Rees of Canal Dover are the directors.

The Farmobile Company, Columbus, Ohio, has been incorporated, with a capitalization of $200,000, to manufacture rope driven farm traction machinery. The company will occupy a large factory building on Dublin avenue that was erected a year ago for the Ohio Mfg. Company of Upper Sandusky, which afterward decided not to move to Columbus. The incorporators are C. J. Eastman, James Stewart, M. W. Kouns, W. J. Miller and D. W. Jones.

The Board of Public Service, Cleveland, will receive bids until December 17 for two 60-hp. boilers with stokers for the heating plant at the city Zoo at Brookside Park.

George E. Neale, machinery dealer, has moved his office from 249 Arcade to 710 New England Building, Cleveland.

## Philadelphia Machinery Market.

PHILADELPHIA, PA., December 8, 1908.

The undertone of the local machinery market is decidedly optimistic, notwithstanding the fact that little change is to be noted in the volume of business transacted from week to week. Under the usual conditions trade is hardly expected to increase materially the next month or six weeks, although it is confidently expected that early next year buying will become more active, leading gradually toward the normal. In the week past no sales of importance have been reported, manufacturers and dealers both reporting about the average volume of business, made up principally of single tool propositions and confined closely to the medium and smaller class of tools. The demand for special machinery is somewhat smaller, the rush of trade of this character which developed shortly after election having by this time been pretty well cleaned up. Builders of the heavier machine tools report a somewhat better demand, a number of good inquiries are being figured on, which if only one-half developed into orders would soon put some plants on a normal basis, but developments are slow—a condition not unusual in this class of trade.

As far as any material increase in the output of machine tool builders in this vicinity is concerned, little of importance is reported. The large majority still continue to operate on a restricted basis, in many cases not exceeding 50 per cent. of their normal capacity, and which is not likely to be increased greatly until stocks on hand have been considerably diminished. In some of the industrial lines more activity is to be noted which should have a favorable influence on the trade. There is a noted betterment in the shipbuilding trade, several of the shipyards having booked some fair orders. There is a better demand for locomotives, and the local manufacturer has booked further orders, but will require a larger increase to enable the plant to be operated on any materially larger scale. The outlook, however, is said to be much more encouraging, and more active conditions are expected after the turn of the year. More business of a municipal character will likely develop early in 1909. Considerable dock work is expected, and it now looks as if the project to tunnel under the Delaware River, a proposition which has been under consideration for several years, might develop into a reality. The railroads show no increased interest in machine tools, although some equipment orders have been placed, but the amount of business derived from this source has been excedingly small.

There is practically no change to be noted in the foreign demand for machine tools. Very little business is before the trade and orders are much scattered.

A fair volume of trade is reported in second-hand machinery. Transactions are of a day to day character, and are confined to single tools for both wood and metal working purposes. There has been a moderate demand for second-hand engines and boilers, particularly medium horsepowers. In new power equipment several quite satisfactory propositions are under consideration, and there is a moderate amount of business of a smaller character before the trade.

The foundry trade continues on about an even basis. Moderate railroad business in the way of cars and locomotives has helped the steel casting trade to some extent, but plants are still far from busy. Some few Gray Iron foundries report a slight betterment, but on the whole the situation shows little change.

The Ensminger Lumber Company, Harrisburg, Pa., will receive prospective plans with estimated cost for the erection of a planing mill, 68 x 200 ft., for sash, frame and stair work. Boilers and engine rooms with equipment will be required, as well as exhaust steam dry rooms to accommodate

200,000 ft. of lumber. The proposed buildings are to be brick or concrete with structural iron roof.

Frederick C. Momeyer, secretary of the Board of Directors of the Poor, Penn Building, Erie, Pa., will receive bids until December 10 for furnishing and installing two steam engines and piping, two electro-generators and switchboards; also materials and labor for wiring the buildings and grounds of the Erie County Almshouse.

Councils of Pine Grove, Schuylkill County, Pa., have under consideration the installation of a municipal lighting plant.

An ordinance has been passed by councils of this city appropriating $1,500,000 for the use of the Department of Wharves, Docks and Ferries. Specifications for a large amount of general work, which have been prepared by the department, will shortly be released for bids, but contracts will not be made until the necessary funds for the work are available, which is expected to be early next year.

The Espen Lucas Machine Works booked a good number of orders during November, but somewhat less active conditions are to be noted so far this month. A fair number of stock tools were moved, particularly cold saw cutting off machines and boring machines. This company's plant is still operating under unchanged conditions, but an improvement is looked for early next year.

Considerable interest is being shown in the proposed building of tunnels under the Delaware River to connect this city and Camden, N. J. Ordinances are now being prepared for introduction in councils of both cities, which will include both tunnels and an elevated railroad system. Surveys are now being made, and those back of the enterprise announce that the matter will now be pushed to a conclusion. This proposition has been agitated for a number of years, but heretofore has not developed beyond that of the formation of the Delaware Tunnel Railroad Company in Pennsylvania and the Camden Tunnel Railroad Company in Camden, which succeed the original company that obtained a number of rights in connection with the proposed undertaking.

The Link-Belt Company reports a further slight increase in orders, but not yet sufficient to make any marked increase in output. The outlook is somewhat more cheerful, the estimating department figuring on a fairly large amount of work. Orders recently booked include car unloading machinery for export to Cuba; a gravity discharge elevator, apron feeder and car haul for a West Virginia coal company; bucket elevator and chain chip conveyor for shipment to Newfoundland; phosphate rock conveyors for Southern parties, and a number of elevators, freight conveyors, apron, belt and screw conveyors, &c., for coal handling and conveyors for clinkers for various concerns in this State.

## New England Machinery Market.

BOSTON, MASS., December 8, 1908.

The experience of the machine tool dealers in November was a varied one. Several of them did slightly less business than in October, while with others there was a small increase in sales. But business for the month was much better than it was in September, the volume of orders having probably more than doubled. December starts out better than November, and dealers look for a very good month considering that it is the closing period of the year. It is not expected, however, that large buyers will enter the market for some little time, at any rate not before the New Year. They are not making active inquiries indicating immediate business, and their preliminary investigations with a view to adding to their equipment were completed some time since. Of course there are exceptions to this; some very good orders are looked for soon from large concerns. But the bulk of the business which will come with a return of normal business conditions is not ready for placing. The machine tool builders report the receipt of some orders, but there is no great improvement over the last two months. The maximum of working hours and forces has been reached for the time being. Not many skilled mechanics are now out of employment, many of those who had been idle having been hired by the shops. When a further impetus of business is felt there will be greater difficulty in securing the right kind of help.

General manufacturing continues to improve. A good instance of this is the abrasive wheel industry, which has felt a very decided betterment that seems to accelerate as the weeks pass by. The industrial situation taken as a whole outside of machinery lines is constantly getting nearer to normal conditions.

The machine tool interests of New England are not a unit in the matter of tariff revision, as it affects the industry. The action of the Committee of Twelve of the National Machine Tool Builders' Association in advocating the establishment of a maximum and minimum rate, retaining the present duty of 45 per cent. as the maximum and establishing 30 per cent. as the minimum, is unanimously believed to be a step in the right direction, but some of the manufacturers, notably those building higher priced tools, think that the decrease will not be sufficient. However, it is agreed that the tariff is required to protect the American industry from some of the cheaper makes of foreign tools, which if admitted duty free might become formidable competitors of the manufacturers of similar lines here. There is no disposition to interfere with the recommendation of the briefs already submitted to the Ways and Means Committee, unless some way could be devised of a sliding scale that would make the tariff higher on the cheaper machines than on the more expensive makes, which is believed to be impracticable.

The tool steel dealers report that the month of November showed little gain in the volume of new business, but that thus far December has developed a better condition. Few large orders are being booked, but the number of smaller purchases has increased, and the outlook appears to be more favorable.

The Fitchburg Machine Works, Fitchburg, Mass., have been operating on a 59-hr. schedule since September 1, with about three-quarter force, manufacturing exclusively the low swing lathe, for which there has been an active demand.

The City Council of Norwich, Conn., has voted to dispose of a tract of land at Central Wharf, to be used as a site for the plant of the John T. Young Boiler Company. It is understood that the company plans to erect new buildings, including a main structure, 60 x 200 ft., and foundry, 60 x 75 ft., both of concrete. The city of Norwich charged the company only a nominal sum for this land, the purpose being to induce the location of the business in that city, where it had its inception, but from which it moved to Torrington, Conn.

Another great engineering undertaking is planned in connection with the rapid transit facilities of the city of Boston. It is proposed to build a second tunnel under Boston harbor, from East Boston to Post Office square, an enterprise as formidable as was the present East Boston tunnel. The Boston & Eastern Electric Railroad Company has the encouragement of the Railroad Commission in the matter, as evidenced at a recent hearing, and has filed the necessary petition to the Legislature asking permission to undertake the work. The tunnel will give an entrance for the company's cars to the heart of the city.

Announcement is made that the Amoskeag Corporation, Manchester, N. H., which operates the largest cotton mills in the country, is to make very large additions to its plant, increasing its gingham mills 25 per cent. While details of the new buildings are not available, it is given out that they will provide for the employment of 3500 additional hands, which means new construction of large importance. The mills will be located on the west side of the Merrimac River. The large textile mills are substantial customers in the machinery market when they build on a large scale; and are very important factors in the supply business. The Totokett Mfg. Company, Norwich, Conn., is planning to spend $100,000 in improvements to its mills, and the Warren Mfg. Company, Warren, R. I., another textile concern, is preparing plans for a new mill building to be used as a drawing-in room.

The United States Envelope Company has let the contract for its new factory at Springfield, Mass., which will consist of a five-story building, 100 x 265 ft., with an ell 65 x 80 ft.

The Lozier bicycle manufacturing plant at Thompsonville, Conn., will cease to exist as a machine shop, buildings and equipment having been sold by the Pope Mfg. Company to the Hartford Carpet Corporation.

## Government Purchases.

WASHINGTON, D. C., December 8, 1908.

Bids will be received until December 26 at the office of the engineer of the United States Army, New Orleans, La., for machinery and engine for the shop at Burrwood, La.

The following bids were opened November 30, Circular No. 478, for machinery for the Isthmian Canal Commission:

Class 1.—Three Scotch marine boilers—Bidder 4, Atlantic Equipment Company, New York, $8775; 18, Casey-Hedges Company, Chattanooga, Tenn., $7899; 24, Connelly Boiler Company, Cleveland, Ohio, $13,140; 28, P. Delany Company, Newburgh, N. Y., $8700; 49, Harlan & Hollingsworth Company, Wilmington, Del., $6343; 61, Kingsford Foundry & Machine Works, Oswego, N. Y., $7425; 63, Lake Erie Boiler Works, Buffalo, N. Y., $7140; 69, Manning, Maxwell & Moore, New York, $7677; 70, Maryland Steel Company, Sparrow's Point, Md., $8175; 74, I. P. Morris Company, Philadelphia, Pa., $7670; 77, National Electrical Supply Company, Washington, D. C., $7359.30 and $6984.30; 79, Newport News Ship Building & Dry Dock Company, Newport News, Va., $8100; 81, New York Ship Building Company, Camden, N. J., $7465; 89, Pusey & Jones Company, Wilmington, Del., $8400; 105, Springfield Boiler & Mfg. Company, Springfield, Ill., $8526; 115, Vermilye & Power, New York, $7140; 128, Marine Boiler Works Company, Toledo, Ohio, $7326.

Class 2.—Three Scotch marine boilers—Bidder 4, Atlantic Equipment Company, New York, $11,805; 24, Connelly Boiler Company, Cleveland, Ohio, $16,200; 28, P. Delany Company, Newburgh, N. Y., $11,610 and $11,450; 40, G. & W. Mfg. Company, New York, $9891; 49, Harlan & Hollingsworth Company, Wilmington, Del., $9688; 61, Kingsford Foundry & Machine Works, Oswego, N. Y., $11,490; 63, Lake Erie Boiler Works, Buffalo, N. Y., $9675; 69, Manning, Maxwell & Moore, New York, $11,451; 70, Maryland Steel Company, Sparrow's Point,

Md., $10,125; 74, I. P. Morris Company, Philadelphia, Pa., $10,450; 77, National Electrical Supply Company, Washington, D. C., $10,198.50 and $9601.50; 79, Newport News Ship Building & Dry Dock Company, Newport News, Va., $11,310; 81, New York Ship Building Company, Camden, N. J., $9985; 89, Pusey & Jones Company, Wilmington, Del., $10,800; 105, Springfield Boiler & Mfg. Company, Springfield, Ill., $10,560; 115, Vermilye & Power, New York, $9975; 128, Marine Boiler Works Company, Toledo, Ohio, $9678.

Class 5.—Two air cooled electric drills—Bidder 20, Chicago Pneumatic Tool Company, New York, $90; 21, Cincinnati Electrical Tool Company, Cincinnati, Ohio, $107.96; 43, General Electric Company, Schenectady, N. Y., $69, accepted; 54, Hisey-Wolf Machine Company, Cincinnati, Ohio, $130; 101, James K. Shaw, New York, $96.80; 111, United States Electric Tool Company, Cincinnati, Ohio, $90 and $117.

Class 6.—One wood boring machine—Bidder 20, Chicago Pneumatic Tool Company, New York, $50, accepted; 58, Ingersoll-Rand Company, New York, $72; 125, Independent Pneumatic Tool Company, Chicago, Ill., $50.

The following bids were opened December 1 for machinery for the navy yards:

Class 11.—One multiple screw machine—Bidder 184, National Acme Mfg. Company, Cleveland, Ohio, $2875.50.

Class 12.—One grinding and shaping machine—Bidder 223, William Sellers Company, Philadelphia, Pa., $1000; 250, Tabor Mfg. Company, Philadelphia, Pa., $1013.75.

Class 21.—Two superheaters—Bidder 201, Power Specialty Company, New York, $2408.

Class 31.—One back geared crank pillar shaper—Bidder 86, Fairbanks Company, New York, $525 and $398; 96, Frevert Machinery Company, New York, $564; 99, Garvin Machine Company, New York, $520; 121, Hendey Machine Company, Torrington, Conn., $395; 166, Manning, Maxwell & Moore, New York, $475; 188, Niles-Bement-Pond Company, New York, $490; 209, Queen City Machine Tool Company, Cincinnati, Ohio, $500.

Class 32.—One single head back geared traverse shaper—Bidder 121 Hendey Machine Company, Torrington, Conn., $1690; 166, Manning, Maxwell & Moore, New York, $1660; 188, Niles-Bement-Pond Company, New York, $1624 and $2188.

Class 33.—One universal shaping machine—Bidder 86, Fairbanks Company, New York, $470; 90, Walter H. Foster Company, New York, $504.50; 188, Niles-Bement-Pond Company, New York, $497; 204, Potter & Johnston Machine Company, Pawtucket, R. I., $508; 209, Queen City Machine Tool Company, Cincinnati, Ohio, $600.

Class 41.—One oxygen acetylene welding plant—Bidder 67, Davis, Bournonville & Co., New York, $4500; 153, Linde Air Products Company, Buffalo, N. Y., $3523.

Class 51.—One band sawing machine—Bidder 1, American Wood Working Machinery Company, Rochester, N. Y., $250; 94, J. A. Fay & Egan Company, Cincinnati, Ohio, $255; 96, Garvin Machine Company, New York, $339; 195, Oliver Machinery Company, New York, $338 and $238; 271, White Tool & Supply Company, Cleveland, Ohio, $377; 289, Fox Machine Company, Grand Rapids, Mich., $344.

Class 52.—One patternmakers' lathe—Bidder 1, American Wood Working Machinery Company, Rochester, N. Y., $255; 88, Fairbanks Company, New York, $331; 94, J. A. Fay & Egan Company, Cincinnati, Ohio, $310; 195, Oliver Machinery Company, New York, $289 and $324; 289, Fox Machine Company, Grand Rapids, Mich., $283.

Class 53.—One swing cut-off sawing machine—Bidder 1, American Wood Working Machinery Company, Rochester, N. Y., $80; 94, J. A. Fay & Egan Company, Cincinnati, Ohio, $97; 195, Oliver Machinery Company, New York, $105; 289, Fox Machine Company, Grand Rapids, Mich., $85.

Class 54.—One patternmakers' extension bed gap lathe—Bidder 195, Oliver Machinery Company, New York, $1342; 289, Fox Machine Company, Grand Rapids, Mich., $868.

The following bids were opened November 30 for one 25-hp. electric motor and material for the Atlanta penitentiary:

Ridgeway Dynamo & Engine Company, Ridgeway, Pa., $480; Holtzer-Cabot Electric Company, Brookline, Mass., $545; Richmond Electric Company, Richmond, Va., $532; B. F. Sturtevant Company, Hyde Park, Mass., $650; National Electrical Supply Company, Washington, D. C., $508; Burke Electric Company, Erie, Pa., $474; Lincoln Motor Works Company, Cleveland, Ohio, $551; General Electric Company, Schenectady, N. Y., $454.25; Northern Electrical Mfg. Company, Madison, Wis., $427; Peerless Electric Company, Warren, Ohio, $552.70; Diehl Mfg. Company, Elizabethport, N. J., $433.58; Crocker-Wheeler Company, Ampere, N. J., $485 and alternate $440; G. & W. Mfg. Company, New York City, $773; Sprague Electric Company, New York, $616.59; Electric Dynamic Company, Bayonne, N. J., $625; Fred W. Walter, Norfolk, Va., $490; Central Electric Company, Chicago, Ill., item 1, $309; 2, $22.50; 3, $1.55; 4, $15.80; 5, $15; International Electric & Engineering Company, $377.50 and $438.91; Western Electric Company, New York, $425.

Bids for ice making and refrigerating machinery for the United States naval station, Culebra, P. R., were opened on November 24, as follows:

Item 1. Refrigerating, ice making and cold storage plant operated on the ammonia compression system using an oil engine for motive power.

Item 2. Refrigerating, ice making and cold storage plant operated on the carbon-dioxide compression system using an oil engine for motive power.

Item 3. Refrigerating, ice making and cold storage plant operated on the ammonia compression system using a gasoline engine for motive power.

Item 4. Refrigerating, ice making and cold storage plant operated on the carbon-dioxide compression system using a gasoline engine for motive power.

Item 5. Under this item bidders may submit proposals for the complete work in accordance with the spirit of the specification, but with such modification of the methods and details as they desire.

Creamery Package Mfg. Company, Chicago, Ill., item 1, $4400; 3, $4270.

McCay Engineering Company, Baltimore, Md., item 1, $3545; 2, $2475.

Frick Company, Waynesboro, Pa., item 1, $6660; 3, $6500; 5, add $270.

Pennsylvania Engineering Company, Philadelphia, Pa., item 1, $7800.

Remington Machinery Company, Wilmington, Del., item 1, $4715; 3, $4262.

Kraeschell Bros. Ice Machine Company, Chicago, Ill., item 2, $4728; 4, $4378.

Under bids opened November 10 for machinery for the navy yards, the Independent Pneumatic Tool Company, Chicago, Ill., has been awarded class 123, one pneumatic piston drill and one improved pneumatic chipping, caulking and beating hammer, $65.

Under bids opened November 3 for machinery for the navy yards, the Frevert Machinery Company, New York, has been awarded class 61, one improved tool and cutter grinder, $360.

The following awards have been made for machinery for the navy yards, bids for which were opened October 27:

Niles-Bement-Pond Company, New York, class 111, one single traveling head shaping machine, $2475.

Landis Machine Company, Waynesboro, Pa., class 112, one single head motor driven bolt cutter, $760.

S. M. Price Machinery Company, Norfolk, Va., class 113, one floor grinder, $138.

Vulcan Iron Works, Wilkes-Barre, Pa., class 1, one four-wheeled locomotive, $4100.

The following awards have been made for machinery for the Isthmian Canal Commission, bids for which were opened October 12, Circular No. 468:

Manning, Maxwell & Moore, New York, class 2, one steam hammer, $2040.

Brown & Sharpe Mfg. Company, Providence, R. I., class 3, one universal grinding machine, $790.55.

Tucker Tool & Machine Company, New York, class 4, two upright drills, $351.50.

Fox Brothers & Co., New York, class 5, one 36 in. by 24 ft. engine lathe, $2840.

Garvin Machine Company, New York, class 6, one 14 in. by 6 ft. engine lathe, $463.

Fairbanks Company, New York, class 7, one 14-in. engine lathe, $609.

The following awards have been made for machinery for the navy yards, bids for which were opened November 17:

B. F. Sturtevant Company, Hyde Park, Mass., class 16, ventilating sets, $4590.

Diehl Mfg. Company, Elizabethport, N. J., class 15, dynamos, $1966.

Under bids opened November 23, Circular No. 476, for machinery for the Isthmian Canal Commission, the H. Mueller Mfg. Company, New York, has been awarded class 41, one water tapping machine, $77.60, and Fox Brothers & Co., New York, class 42, one ratchet pipe cutter, $43.94.

**Warning.**—When a stranger, holding no credentials from a known and responsible concern, offers to take subscriptions for any periodical at less than the regular advertised price, he should be recognized at once as a swindler. Every little while it is necessary to warn the public on this point. Men go round the country soliciting subscriptions and offering to give them for cut rates if they cannot get the regular price. With the offer of several high-class publications at a greatly reduced rate as his bait, a traveling solicitor giving his name as Bert L. Brown, has been victimizing residents of southern Indiana. He has no connection with the David Williams Company's publications and attention is called to the fact that our solicitors carry a receipt book of the company with credentials authorizing them to collect, signed by Benj. F. Stower, office manager.

The Great Lakes Engineering Works, Detroit, Mich., has closed a contract with the Inland Navigation Company, Hamilton, Ont., for a 500-ft. bulk carrier for delivery June 1. This vessel, which will bring ore from upper lake ports to Point Edward, just above Sarnia, Ont., and will also carry grain from Fort William to Buffalo, is said to be the first vessel built for a Canadian company for the lake trade at an American ship yard. The ore is to be used by the Hamilton Steel & Iron Company, which needs about 200,000 tons a year. With this order the Great Lakes Engineering Works has contracts for the construction of seven hulls for next year's delivery, four of which are bulk freighters, including a 600-ft. freighter for W. P. Snyder, Pittsburgh, two package freight steamers and one passenger steamer. Four steel scows have been booked for a dredging company.

All of the patents and the plant of the Rust Boiler Company, located in Midland, Pa., have been purchased by the Babcock & Wilcox Company. The latter company will continue to manufacture the Rust water tube boilers in the Midland plant, and will market them direct through its sales department.

# HARDWARE

THE present session of Congress will certainly be very much crowded with business. It is likely that this fact will count against the passage of anything revolutionary in the line of parcel post legislation, but it is not safe for the merchants to remit or postpone their efforts. They cannot afford to take the chances. The pressure on the time of Congress for matters which must have consideration is attended, indeed, with a certain increased peril in regard to the establishment of a parcel post on the rural routes as recommended by the Postmaster-General. The peril is that the subject may not be maturely considered, and that to get rid of the matter for the time being a bill establishing an "experimental" parcel post, in connection with the rural free delivery, will be put through hastily, without full discussion and without giving the merchants an opportunity to martial their forces in opposition. The only safe course to pursue is for the conservative business men to move at once in the matter, and let the Representatives in Congress and the public generally understand the serious objections which hold against the plan. There certainly should be an emphatic expression from the commercial classes to set over against recommendations of the President and of the Postmaster-General, so that the lawmakers may understand how the subject is regarded by the business men, and especially by the retail merchants of the country.

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In this connection it is gratifying to observe the energy with which the secretaries and other officials of the various State associations are taking hold of the matter, circulating petitions among the merchants generally of the towns and villages, on the lines suggested in our columns and so admirably carried out in the petition from the merchants of Berlin, Wis., which was reproduced in our last issue. It is safe to say that if the retail merchants of the country in the various branches of trade should voice their opposition in petitions addressed to their representatives at Washington, it would settle the matter. The trouble is that while the merchants in conversation and in convention condemn the scheme, they fail to make their opposition known to the law makers. It is safe to say that not one in a hundred of the towns and villages throughout the country—probably not one in a thousand—has made clear, emphatic and united protest against this legislation. When this is done parcel post on the rural routes will be dead as a door nail.

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With the complete understanding of a law which aims to protect the public interests there must always come the knowledge by which the dishonest and criminal person can best take advantage of its workings. Such is the case with the Federal bankruptcy act to-day. It has been operative long enough to be thoroughly understood in this aspect of its operation, as well as in its beneficent side. The insolvent debtor of the class which formerly understood how to serve best his own interests under the insolvency laws of the various States, has now found where he can make the Federal act serve his purposes in defrauding his creditors. The recognition of this condition is not to be regarded as a disparagement of the excellent bankruptcy act, which has placed creditors on a parity, regardless of their places of residence in the United States, and which protects the debtor against subsequent proceedings from creditors in other States after he has been discharged purged of his obligations. But the evil exists, and quite as a natural outcome of the condition organized effort to circumvent crooked practices has begun.

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A notable instance of this exists in the crusade which a Business Men's Association has begun against the fraudulent bankrupt. Convinced that various persons of the city have taken advantage of the law to work fraud and injustice to their creditors, inflicting losses on business interests, the association has directed its attorney to investigate all cases of bankruptcy brought in the city and to bring to the attention of the association any case in which evidence of fraud or hindrance appears to exist, the purpose being to prosecute in all such instances. Apparently there is room for this work. The Federal courts are stern in their efforts to enforce the law, but in the routine of its operation the greater part of the judicial contact with the bankrupt is through referees and trustees in bankruptcy, to whom the evidences of fraud may not become evident. The courts are prompt to take up all recommendations for investigations of alleged criminal act or attempt. The attorney for an association such as this would be listened to with interest, and his work would be appreciated by the United States district judges. The moral effect in a community should be a strong one. The dishonest business man or private individual would hesitate longer before attempting a fraudulent bankruptcy, or the concealment of assets should he be petitioned into bankruptcy.

## Condition of Trade.

A diminished volume of business naturally characterizes the closing days of the year. With many retail merchants the holiday and winter trade is important and keeps the force in the store well occupied. Only occasional sorting-up orders are being placed for this class of goods, and as a rule the buying departments of the well ordered retail establishments are not placing many orders at present, except in lines for later delivery. Preparations are being made in most houses, large and small, for the annual inventory, which has so much significance in the balancing of the books when the results of the year's business are ascertained. This, too, has a repressing effect on purchases, as it is not desirable to add to the stock at this time. The fact that there is little in the condition of the market to indicate any general advance in prices in the near future, with, indeed, some uncertainties as to the effect of tariff legislation on business and values, removes almost entirely the inducement for speculative buying, so that purchases are as a rule limited conservatively to goods which will pretty surely be required soon in the regular course of business. With the replenishing of broken stocks, the belated buying of which there is always a good deal by merchants who unwisely deferred their purchases, and the placing of future orders, there is on the whole a reasonable volume of business going from the retail merchants to the manufacturers and the jobbers. Most manufacturers are still enjoying the opportunity of adding to their stocks on hand, and will probably enter upon the spring business with warehouses better filled than has been the case

during recent years. There continues to be a hopeful tone in the market, and a renewed activity during the early months of the new year is anticipated.

### Chicago.

So far as the retail distribution of Hardware goods is concerned, business is beginning to reflect the drift toward concentration upon holiday lines. In the local trade there is a good deal of such buying already under way, and the outlook is promising for a very successful season. The anticipated slowing up of orders for immediate shipment is to some extent being realized by jobbers, but this has no further significance than that dealers desire to add no more to their stock than is necessary prior to the first of the year; whatever shortening of sales there may be on this account is offset by more liberal buying for forward requirements. Within the past few days Wire Cloth orders for spring delivery have been coming in quite freely; and it may be observed in this connection that the movement has started under favorable conditions as respects the maintenance of prices, a disregard of which has, at times in the past, undermined the confidence of buyers and retarded trade. Prices generally are unchanged, and while more or less irregularity exists in some lines, there is less disposition to make extreme concessions. Owing to the hopeful view of things generally entertained, it is safe to say that a better degree of firmness characterizes the entire market. While its effects are not yet apparent, the past few days of freezing weather, accompanied by snowfalls in some parts of the West, are expected to bring out belated orders for Sleds, Skates and other goods whose movement is dependent on seasonable weather. Notwithstanding the delayed appearance of ice and snow, the forward trade in Skates has been fairly good. It is interesting to note, however, that prolonged dry weather is likely to decrease the demand for Skates more perhaps than other causes; this results from the drying up of ponds and water courses which usually afford the common skating grounds throughout the country. Several large contracts for Builders' Hardware for Chicago buildings will probably be placed in the near future. The largest of these are the La Salle Hotel, the City Hall and the Blackstone Hotel. The former of these will require between $60,000 and $70,000 worth of such goods, while the specifications for the City Hall will amount to somewhere near $50,000.

## NOTES ON PRICES.

**Wire Nails.**—The diminution in the volume of business received by the mills in view of the proximity of stocking time is an annual occurrence, and is not now regarded as signifying any change in general business conditions. The Nail market appears to be in a satisfactory condition, and a healthy demand after the first of the year is looked for. The market is firm, with the regular prices steadily maintained. Quotations are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

| | |
|---|---|
| Carloads to jobbers | $1.95 |
| Carload lots to retail merchants | 2.00 |
| Less than carloads to jobbers | 2.00 |
| Less than carloads to retail merchants | 2.10 |

*New York.*—There is a lack of regularity in demand in this market, shown by the varying amount of business transacted on different days. Nails are held on the basis of $2.30 per keg in small lots at store, but some sellers are occasionally inclined to shade this figure.

*Chicago.*—The influences which usually retard trade to some extent toward the close of the year, are not materially affecting the movement of Wire Nails except in the timing of shipments for arrival after January first, when inventories will be taken. New business is quite satisfactory in volume, and everything seems favorable for further expansion after the first of the year, when the Southern trade is expected to open up with a good demand. The aggregate tonnage of Wire products entered by the leading interest last month was the largest for any previous November, except in the same period of 1906. Prices are unchanged, and are reported as being absolutely maintained. Quotations are as follows: $2.13 in car lots to jobbers, and $2.18 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

*Pittsburgh.*—As we get closer to the end of the year, new orders in Wire Nails are growing smaller, due to the fact that jobbers and consumers alike desire to have as low stocks as possible before taking inventory and closing up business for the year. For the same reasons, specifications against contracts this month will no doubt show a falling off, as compared with November. The general condition of the Wire Nail market is healthy, prices are firm, and consumption is large. Based on present prices of Steel Billets, prices on Wire Nails are reasonably low, and with all these conditions existing, the manufacturers firmly believe that trade will open up actively very early in the new year, and that 1909 will be a very prosperous year in this trade. Quotations are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

| | |
|---|---|
| Carloads, to jobbers | $1.95 |
| Carload lots to retail merchants | 2.00 |

Galvanized Nails are quoted at $1 over the price of the regular Nails.

**Cut Nails.**—Requirements are light at this season, and stocks beyond present needs are not being accumulated by jobbers, as no trouble is experienced in getting prompt shipments from mill. New business and specifications on contract orders are consequently not coming in as liberally as in November. In sympathy with general business conditions the Cut Nail market is showing more stability. The price for Steel Cut Nails is $1.80, base, per keg, f.o.b. Pittsburgh, for less than carloads, and $1.75 for carloads and larger lots. In the Western market Iron Cut Nails are held at an advance of 10 cents per keg over Steel Cut Nails, but this differential is not observed in the East.

*New York.*—Cut Nails are moving in a moderate way, orders being confined to actual requirements, which are light. Steel Cut Nails are held on the basis of $2.15 per keg for small lots at store, but this price is not strictly adhered to by all sellers.

*Chicago.*—Although purchases include only what is required for present needs, the general volume of business is slowly improving. Orders for prompt shipment are likely to be a little backward during the remaining weeks of the year, owing to the desire of jobbers to hold stocks down to a minimum until after inventories are taken. Prices are firmer, and but few, if any, concessions are being offered by the mills. We quote Chicago prices as follows: In car lots to jobbers, Iron Cut Nails, $2.08; Steel Cut Nails, $1.98.

*Pittsburgh.*—New orders are showing a falling off, due to the lateness of the season and also to the inventory period, while specifications against contracts are not coming in as freely as last month. A fair volume of new orders is being placed, but they are for small lots and actual needs. The condition of the market is firm, and we are advised prices are more stable than for some time. It is confidently believed that demand for Cut Nails will show a material increase very soon after the first of the year. The market is $1.80, base, per keg, f.o.b. Pittsburgh, but $1.75 is made on carloads and over. In the Western market Iron Cut Nails are held at an advance of 10 cents per keg over Steel Cut Nails, but this differential is not observed in the East.

**Barb Wire.**—To the continued mild weather is attributed the fair demand for Barb Wire which characterizes the present month. Some new orders are being placed with the mills, also specifications on contracts are received. While the volume of business is not large it is somewhat in excess of what is expected at this season. According to reports regular prices are being maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

| | Painted. | Gal. |
|---|---|---|
| Jobbers, carload lots | $2.10 | $2.40 |
| Retailers, carload lots | 2.15 | 2.45 |
| Retailers, less than carload lots | 2.25 | 2.55 |

*Chicago.*—The demand for Barb Wire while not comparable to what is expected at the hight of the season, is unusually good for this time of the year. When buying for the spring trade begins after the first of the year, an active business is looked for. Mill stocks are said to be exhausted, but with the present rate of incoming business orders are being promptly executed and shipped. It is stated that prices are being rigidly maintained by the mills. Quotations are as follows: Jobbers, Chicago, car lots, Painted, $2.28; Galvanized, $2.58; to retailers, car lots, Painted, $2.33; Galvanized, $2.63; retailers, less than car lots, Painted, $2.45; Galvanized, $2.75; Staples, bright, in car lots, $2.25; Galvanized, $2.55; car lots, to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

*Pittsburgh.*—The continued mild weather is no doubt the cause of some orders being placed for Barb Wire, which while not large, call for more tonnage than is usually placed at this season. Specifications against contracts are coming in fairly well, but it is probable demand for Barb Wire and shipments by the mills will show a falling off until spring demand opens up. The mills advise us that prices are being maintained and the tone of the market is firm. The Youngstown Sheet & Tube Company has completed the work of enlarging the plant at Struthers, Ohio, formerly operated by the Morgan Spring Company, and is now prepared to fill orders for Staples and Galvanized Barb Wire. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

| | Painted. | Gal. |
|---|---|---|
| Jobbers, carload lots | $2.10 | $2.40 |
| Retailers, carload lots | 2.15 | 2.45 |
| Retailers, less than carload lots | 2.25 | 2.55 |

**Plain Wire.**—Business is restricted to present needs, both in new orders and specifications on contracts received by the mills; regular prices are well maintained. Quotations per 100 lb. to jobbers in carload lots are as follows, on a basis of $1.80 for Plain and $2.10 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the price to retailers being 5 cents additional:

| Nos. | 6 to 9 | 10 | 11 | 12&12½ | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|
| Annealed | $1.80 | 1.85 | 1.90 | 1.95 | 2.05 | 2.15 | 2.25 | 2.35 |
| Galvanized | 2.10 | 2.15 | 2.20 | 2.25 | 2.35 | 2.45 | 2.85 | 2.95 |

*Chicago.*—Consumers of Plain Wire are ordering liberally for current needs, but are not anticipating wants far in advance. There is a fairly good tonnage of new business coming out, of which the Fence manufacturers are contributing the larger part. The prospects ahead indicate the beginning of a more active demand soon after the first of the year. Prices, it is stated, are being firmly maintained. We quote as follows: Car lots to jobbers, $1.98, f.o.b. Chicago, and to retailers, $2.05.

*Pittsburgh.*—A fair number of new orders are being placed for small lots, but the large buying is pretty well over for this season. Specifications against contracts continue to come in a fairly good volume, but it is probable that business in Plain Wire will show a falling off until new demand sets in for the spring trade. This year has been a fairly satisfactory one in the Fence Wire trade, but, of course, was not as large as last year. The outlook for 1909 is good, the farmers having had heavy crops and have plenty of money with which to make improvements, such as the building of Fences and doing other work in which Plain Wire is used. We are advised that the tone of the market is firm and that prices are being maintained. Quotations per 100 lb. to jobbers in carload lots are as follows, on a basis of $1.80 for Plain and $2.10 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the price to retailers being 5 cents additional:

| Nos. | 6 to 9 | 10 | 11 | 12&12½ | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|
| Annealed | $1.80 | 1.85 | 1.90 | 1.95 | 2.05 | 2.15 | 2.25 | 2.35 |
| Galvanized | 2.10 | 2.15 | 2.20 | 2.25 | 2.35 | 2.45 | 2.85 | 2.95 |

**Twist Drills.**—For some time past, the increasing irregularity of the Twist Drill market has commanded the attention of the larger trade. With business still in small volume as, indeed, it has been for several months, competition has grown keener and has led to important concessions even on the part of leading manufacturers, although some of the latter have pursued a most conservative course. Several complications have entered into the situation, however, which seems to be coming to a head, as figures which have been regarded as *sub rosa* become more and more widely quoted.

**Coes Wrenches.**—For some time the jobbing trade have complained of a narrow margin of profit in handling the genuine Coes Wrenches, which on account of their recognized position are often used as leaders, causing active competition which has resulted in a frequent cutting of the jobbing prices to the retail merchants. This matter has been carefully considered by the manufacturers who are intending to do what they can to secure greater uniformity in the prices at which the wholesale houses sell the goods to the retail merchants, making it to the interest of the jobbers to avoid unreasonable cutting. The plan which has been decided upon to accomplish this will go into effect with the opening of the new year.

**Dripping Pans.**—Open competition continues to hold down prices on Dripping Pans, which may be quoted in a general way at a discount of 75 per cent. Additional concessions may be obtained by the jobbing trade.

**Chisels and Auger Bits.**—Conferences of both Chisel and Auger Bit manufacturers are scheduled for the near future. Business in both lines is said to show discernible improvement, and some makers express the hope that a little better prices can soon be secured.

**Sash Cord.**—A general advance of 1 cent per pound has been made by leading manufacturers of Sash Cord. The demand is good, and some makers of standard brands are unable to take care of all the business offered them. The market may be represented by a quotation on Nos. 8 to 12 of 22 cents per pound.

**Oilers.**—Prices on Oilers are not firm, especially on the copper plated goods. Discounts considerably below 75 and 10 per cent. are quoted to the largest retail trade.

**Rope.**—Cordage is moving in somewhat moderate quantities, as has been the case for a week or more. This is a natural condition for the time of the year, but contrary to the hopes of manufacturers. There is consequently considerable competition in obtaining orders and more or less irregularity in prices quoted on the lower grades of both Manila and Sisal Rope. The market is reasonably strong for small quantities of Rope at the following quotations: 7-16 in. in diameter and larger: Pure Manila, 8¾ to 9 cents; Pure Sisal, 6¾ to 7 cents. Mixed grades of both kinds grade down in price according to quality. Jute Rope, ¼-in. and up, No. 1, 6½ to 6¾ cents; No. 2, 6 to 6¼ cents.

**Window Glass.**—The committee on organization of the Imperial Glass Company has made public the fact that it has done about all the work possible, having secured either leases or operating contracts from all hand plants except 300 or 400 pots, and have promises of one kind or another from fully one-half of the latter plants. The signing of the preliminary papers required that practically every hand plant should sign similar documents before the signatures were binding. It is understood that one or two interests have positively declined to become identified with the proposed company, and that without their membership the committee can proceed no further. It is stated that buyers are showing less confidence in the market, and that prices are steadily working lower. On the sliding scale of wages, which is still in force, the average selling price for Glass is made the basis of wages paid. According to published reports the average selling price of Glass on the November settlement was as follows: Single strength, 90 and 31.75 per cent. discount; double strength, 90 and 36.05 per cent. discount. It is understood that Window Glass workers are dissatisfied with the small amount of wages they are receiving under the sliding scale plan and are talking of insisting upon a flat scale. Fifty or more hand operated factories are supposed to be in operation, and in the competition to dispose of their output prices have suffered. No official change in prices has become public in the American Window Glass Company's prices, for machine made Glass, of 90 and 35 per cent. discount on single and 90 and 40 per cent. discount on double strength Glass. At a meeting of the Eastern Window Glass Jobbers' Association, held

last week, no change was made in price, all sizes single and double strength Glass, covering territory east of Chicago, being 90 and 20 per cent. discount from jobbers' list, October 1, 1903. This price is more or less elastic, according to circumstances.

**Linseed Oil.**—The demand in this market is confined to actual requirements, which are light. Large consuming buyers are also supplying their wants in this conservative manner, so that the movement of Oil is restricted to limited quantities. Quotations in 5-barrel lots are unchanged, as follows: State and Western Raw, 47 cents per gallon; City Raw, 48 cents per gallon. Boiled Oil is 1 cent advance on Raw.

**Spirits Turpentine.**—The local price has fallen off ½ cent per gallon during the week, owing to a comparatively light demand. Manufacturing consumers will close their plants within a few days for annual repairs and stock taking, and are therefore temporarily out of the market. The demand is confined to jobbing lots. The New York market is represented by the following quotations: Oil Barrels, 42 to 42½ cents; Machine Made Barrels, 42½ to 43 cents per gallon.

# Holiday Trade in the Hardware Store.

## THE CONSTRUCTION OF A CHRISTMAS WINDOW DISPLAY.

THE window display methods employed by Nelson S. Haskell, Lynn, Mass., are worthy of study and will doubtless prove suggestive to many Hardware merchants. The firm has two large windows and makes it a rule to trim one on Thursday of each week. The plan followed is always to show goods that the public requires immediately or will want soon, and it has been found that an effective display of some one line is to be preferred to a jumbled assortment. Displays are adapted to special seasons or occasions as they come around.

### Displays Roughly Sketched.

Perhaps the most interesting of the methods employed by I. J. Haskell, who handles this department, is his system of making out in advance a plan of a display, so that when the time comes to put it in, the window dressers may go ahead rapidly with the work without wasting time in studying the general arrangement or wondering what they are going to put in next. Mr. Haskell usually takes pieces of wrapping paper and jots down the larger and more important articles or lines to be included in his display, sketching the idea out roughly and adding details as they come to mind. Sometimes, of course, the sketch is drawn over a number of times. He then takes up the matter of signs, noting what will be required, and also makes a note of and has constructed any boxes,

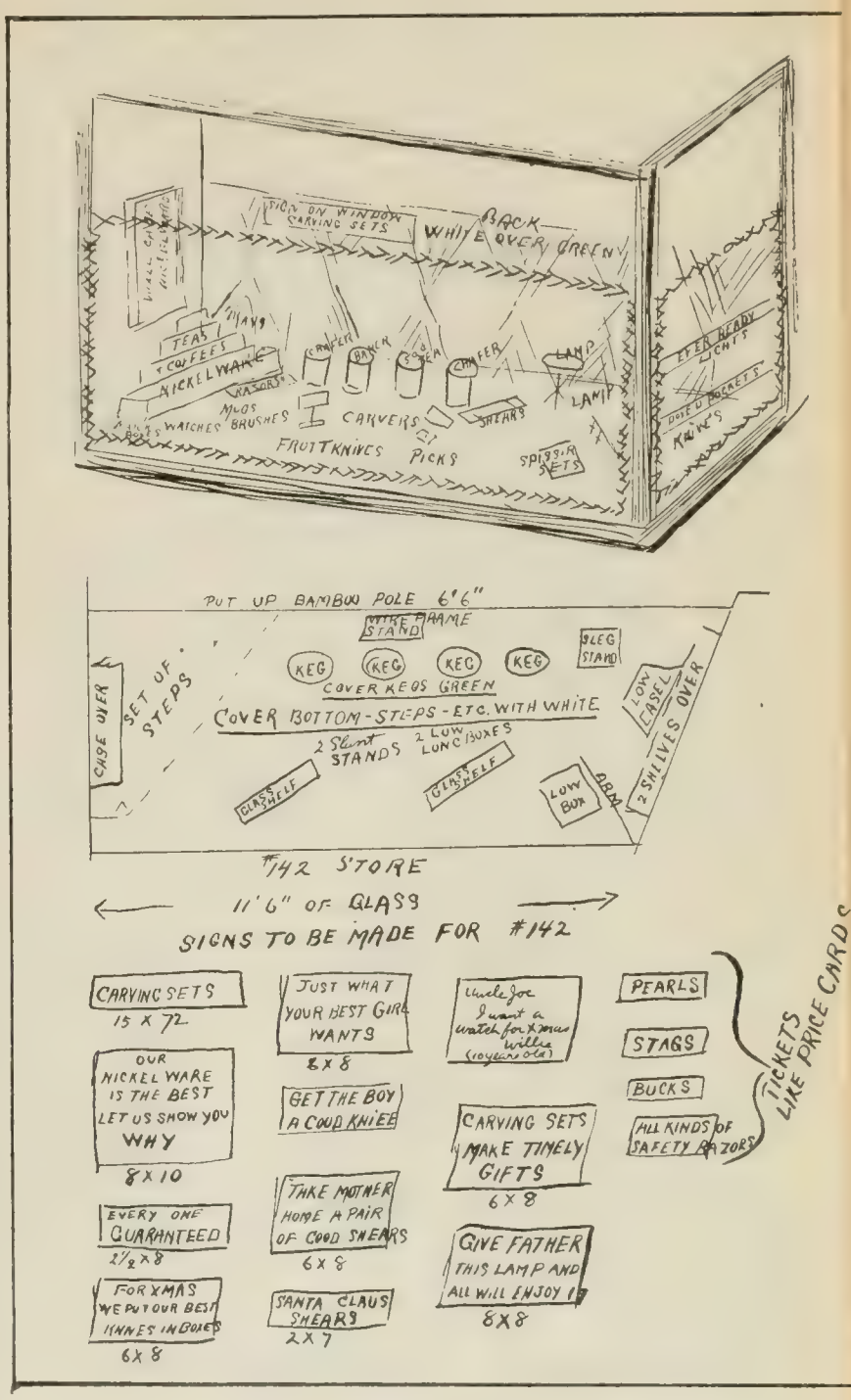



*Fig. 1.—Rough Sketch Used as Basis for Holiday Window Display.*




*Fig. 2.—Finished Holiday Window Display Based on Sketch Shown in Fig. 1.*

stands or steps of special shape. In the store is a large stock of such stuff on hand, for everything is saved that promises to be of future use. There is a place reserved in the cellar for these supplies and in a closet are two racks, one for home made signs and one for display cards furnished by factories.

**A Saving of Time and Labor.**

The practical features of this method are obvious. The drawing does not need to be carefully done, and always saves much cogitating and considerable time and labor on "window day." The boy has the window cleaned out and washed by 10 o'clock in the morning, and usually noon sees it fully dressed if two men are detailed to work on it. Mr. Haskell has found that after a little experience his employees can dress the windows and carry out his ideas satisfactorily.

**Making a Holiday Window.**

Perhaps the most distinct and helpful information regarding Mr. Haskell's practical methods may be gained by the reproduction of one of his rough plans and the window display constructed therefrom. Such a plan of a holiday display used last year at this time is reproduced in Fig. 1, the final appearance of which is shown in Fig. 2. A comparative study of these two illustrations will indicate very readily the method of work. In addition to the rough plan and list of signs to be made, shown in the sketch, a list of the price cards required was also made up, which was as follows:

PRICE CARDS.

*Red —Black Outline.*

| | | | |
|---|---|---|---|
| $0.05..... 1 | $0.70..... 1 | $1.50.....5 | $4.75.....1 |
| .10..... 4 | .75.....10 | 1.75.....1 | 5.00.....3 |
| .15..... 2 | .80..... 1 | 2.00.....4 | 5.75.....1 |
| .20..... 2 | .85..... 1 | 2.25.....1 | 6.50.....1 |
| .25.....15 | .90..... 2 | 2.50.....5 | 8.00.....1 |
| .40..... 1 | 1.00.....15 | 3.00.....3 | 8.50.....1 |
| .50.....12 | 1.10..... 1 | 3.50.....3 | 10.00.....1 |
| .60..... 2 | 1.15..... 1 | 4.00.....2 | 12.00.....1 |
| .65..... 1 | 1.25..... 5 | 4.50.....2 | 16.00.....1 |

A great deal of stress is laid on the matter of signs and price cards, which are carefully prepared, freely used and are found to be very valuable in increasing the selling power of the display.

# Hardware Organizations.

### North Dakota Retail Hardware Association.

Through an error on the part of the association, the dates of the next annual meeting of the North Dakota Retail Hardware Association were announced as January 28, 29 and 30. The time selected, however, is Tuesday, Wednesday and Thursday of the last week of that month, making the dates January 26, 27 and 28. As already noted, the convention will be held in the Commercial Club rooms in Bismarck, and the official headquarters, where Hardware exhibits will be accommodated, will be at the Grand Pacific Hotel. C. N. Barnes, secretary, Grand Forks, will be pleased to furnish any information desired in regard to the meeting.

### British Columbia Retail Hardware Association.

One of the most successful meetings ever held by the British Columbia Retail Hardware Association was that at New Westminster, on November 26, being second in point of attendance and interest manifested only to the annual convention held last April. There were present at the gathering delegates from Vancouver, Westminster and surrounding districts, and some important business was brought up.

Perhaps the most interesting subject discussed was that introduced in a paper by Mr. Owens of the J. A. Flett Company, on the British Columbia lien law, recently passed. This measure is in direct opposition to the interest of the Hardware and supply trade. One very objectionable feature is that the merchant must notify the owner of the property 15 days before the expiration of the time allowed for filing liens. This leaves the matter open so that unscrupulous contractors and others can get off without paying for their goods. The association appointed a committee to deal with this matter and to confer with sister associations with a view to obtaining their support in having a more equitable lien law placed upon the statute books. The committee was given full power to draw up a suitable bill and secure legal advice upon the subject, making report at a special meeting to be called during December.

Another important subject dealt with was the matter of extended credits, and in this connection a committee was also appointed to secure data from other trade bodies, and ascertain the steps taken by them in the handling of long credits.

### Inland Empire Implement and Hardware Association.

The recent completion of a splendid State Armory at Spokane, Wash., has made it possible for the Inland Empire Implement and Hardware Association to secure for its use a building admirably adapted to the needs of the Hardware, Implement and Vehicle exposition, which will be held in connection with the annual convention on January 20, 21 and 22, as already announced. The armory has a main floor space of 14,500 sq. ft., has broad galleries on three sides, is well lighted and heated, and conveniently located. This exposition is the first one of its kind ever attempted on the Pacific Coast. A diagram of the exhibition hall has been issued by E. W. Evenson, secretary, Spokane, indicating that 76 spaces are available, ranging in price from $10 to $30, according to size and location. Following the meeting of the Inland Empire Association will come the second annual convention of the Pacific Federation of Implement and Hardware Associations, embracing Montana, Idaho, Washington, Oregon and California, which will be held in the armory on January 22 and 23. The two conventions, it is believed, will insure a large attendance of retail merchants from the Pacific States, especially Washington, Idaho and Oregon.

### South Dakota Retail Hardware Association.

The South Dakota Retail Hardware Association, H. E. Johnson, Redfield, secretary, has issued a circular in regard to the Hardware exhibition which will be held in conjunction with the annual meeting at the Auditorium in Huron, March 2, 3 and 4. A diagram of the hall is presented and prices ranging from $11 to $18 are given on the 49 spaces which are available. The prices mentioned include the furnishing of framework for the booths. It is suggested that reservations for space will be made in the order of their receipt and that applicants make first, second and third choices. Any information desired in regard to the exhibition will be cheerfully furnished by Mr. Johnson. The business sessions of the convention will be held in an adjoining hall between the hours of 1.30 and 6 in the afternoon. The exhibition in the auditorium will be open from 8 a.m. to 1 p.m. and from 6.30 to 10 p.m.

### Pennsylvania Retail Hardware Association.

Extensive plans are being made by a committee, consisting of prominent Hardware merchants, jobbers and manufacturers, for the annual convention of the Pennsylvania Retail Hardware Association, which also extends its membership into New Jersey, Delaware and Maryland, which will be held in Philadelphia on February 10, 11 and 12. At a meeting last week arrangements were partially completed for the convention. The headquarters will be at the Bellevue-Stratford Hotel and at the First Regiment Armory an exhibition of Hardware and related lines will be made by manufacturers and jobbers. The committee having the arrangements in charge consists of F. C. Goodwin, chairman; J. A. Supplee, J. H. Bonbright, H. J. Fueller, Charles Asbury, Robert L. Sheppard, C. B. Lowber, Mark B. Taylor, William B. Parker, George Holmes, John R. Griffith, William B. Charlton of Philadelphia, and W. P. Lewis of Huntingdon, secretary of the association.

THE COES WRENCH COMPANY, Worcester, Mass., has issued an attractive cardboard hanger made up of three parts attached by fine chain. The words Coes Wrenches are in red and white cut out letters, and between them is hung a cut out Wrench 12 in. long in natural color. The sign is unusually original and striking, and will doubtless be used by the trade with good effect.

# THE PARCEL POST QUESTION.

## PETITION FROM DAYTON MERCHANTS.

IN our last issue we presented a fac simile of the petition in opposition to parcel post legislation got up by C. A. Peck, Berlin, Wis., in accordance with the suggestion of the editorial in *The Iron Age*, November 26. This petition bore the signatures of practically all the business interests of the town, and has attracted much favorable comment. The example of Berlin has been followed by a number of other communities, and it looks as if many other petitions of this sort will be prepared and forwarded to members of Congress.

A. L. Shearer of Dayton, Ohio, president of the State Hardware Association, called a meeting of the Hardware merchants of Dayton on Tuesday, 1st inst., at which it was decided that a vigorous protest should be made against legislation in the interest of parcel post. The following resolutions were adopted:

*Resolved, That it is our unanimous conviction that the establishment of parcel post routes by the Government will seriously interfere with the proficient transmission and delivery of our first-class mail matter, the postage upon which we believe should be reduced. We believe also this measure will largely increase the already large Post Office deficit, and will eventually produce very material injury to the great retail business of our nation, which has been and is at present a most important factor in promoting the commercial and educational life of the various commonwealths wherever situated. We therefore further,*

*Resolve, That our next Congress and Government officials be strongly urged not to enact any laws which shall produce such harmful results to so large a class of our most enterprising and respected citizens who have in the commercial activities of our nation proven themselves to be benefactors.*

These resolutions, which will be sent to the representative of the Dayton district in Congress, were signed by the Hardware merchants of Dayton as follows:

| | |
|---|---|
| Kramer, Viot & Co. | Geo. W. Tischer. |
| H. E. Emrick. | John F. Baker. |
| Roney & Shearer. | C. L. Kimmel. |
| H. H. Bodey & Co. | Geo. Grabedinkel. |
| W. L. Banker. | Frank Hamburger. |
| P. E. Coffman. | Mahlmeister Bros. |
| Hunter & Reynolds. | Rice Bros. |
| Chas. J. Sherer. | Adam Bretch. |
| Longanecker Bros. | |

Mr. Shearer advises us that the Hardwaremen of the city have the assurance of officials connected with the grocers, druggist and shoe and clothing men's associations that they will join in this protest, and it is expected that united action on the part of nearly all the business men of the city will be taken in the near future.

## A PETITION FROM IDAHO.

THE Hardware and implement merchants of Idaho have also been moving energetically in the matter and we are advised by J. F. Cook of Boise, secretary of the association of that State, that the following petition is being circulated:

*To the Members of the Idaho Delegation in Congress:*

*The Idaho Retail Hardware and Implement Dealers' Association, comprising in its membership many of the leading business men of southern Idaho, have had under consideration and for more than a year past have made extended effort to combat the views of the Postmaster-General of the United States, Mr. Von Meyer, in his seeming determination to put into effect a parcel post law similar to those in operation in some foreign countries.*

*We take the position that this proposed parcel post is but an entering wedge in favor of catalogue house competition with the country merchant, and that this class of business concerns will in time be the real beneficiaries of such a law—and this to the detriment of all rural business houses and to the country store keeper—and that all the people of Idaho and every other Western State will in the end be injured instead of benefited should such a law be put in effect.*

*Our now growing and prosperous village communities would in time cease to expand and the country store would not long be needed to supply the wants of the people in its vicinity, the wants of the farmer and producer. Should the United States Government become a cheap, common carrier, it would only be a matter of time until the buying of a large proportion of the merchandise needed by our citizens would gravitate to the great department stores and catalogue houses of the large cities located in the great Eastern commercial centers.*

*Believing that the best interest, not only of Idaho business men, but the real business welfare of all our citizens, rests in the defeat of parcel post, we therefore pray that you use every honorable effort to defeat the enactment of such proposed parcel post law.*

This petition contains columns for the entry of the name, business and address of the signers. Not only are the Hardware, Implement and Vehicle merchants asked to join in this protest, but merchants in all lines and other influential persons are being canvassed for signatures. The petitions when ready will be forwarded to the Idaho Congressional delegation.

## PETITION FROM NEW YORK STATE.

UNDER date of the 7th inst., John B. Foley, Syracuse, secretary of the New York State Retail Hardware Association, has sent out a circular accompanied by the form of petition suggested in the last issue of *The Iron Age*, as follows:

———————, *N. Y., December —, 1908.*

*To— — ———————, Member of Congress:*

*We, the undersigned, in business in ————, N. Y., enter our earnest and emphatic protest against the establishment of a parcel post on the rural routes and against parcel post legislation in any form.*

*We regard the carriage of merchandise in the mails on the rural routes as not only open to many serious objections on the ground of expense and public policy, but desire to emphasize the fact that, while it would be greatly to the advantage of the catalogue houses and the department stores of the large cities, it would be detrimental to our interests and to the business welfare of the smaller communities.*

A stub at the top of the petition form suggests that the recipient sign the petition and then circulate it among other merchants, getting as many signatures as possible and mailing the petition promptly to the district Congressman.

The circular is also accompanied by a reprint of the editorial on parcel post objections which appeared in our issue 26th ult. Following is an extract from that portion of the circular relating to the subject of parcel post:

I inclose herewith a reprint of an editorial in *The Iron Age* of November 26, on the subject of parcel post.

I think it proper to say at this time that while the Hardware trade were first to recognize the gravity of any such legislation, we are not alone in opposition to this pet scheme of the Postmaster-General; the National Grocery and Drug associations, as well as the Commercial Travelers' associations, have recently expressed their disapproval of the plan, and are using their combined influence to accomplish its defeat.

I would suggest that you interest the merchants in all lines in your community and endeavor to organize a united opposition to the Postmaster-General's request for permission to establish an experimental rural parcel post.

An excellent plan would be to write your Congressman at once and have your neighbors do likewise, expressing your opposition to the plan, and urge him to use his influence against such a measure.

# RURAL FREE DELIVERY AND RURAL ROUTE PARCEL POST.

FROM OUR SPECIAL CORRESPONDENT.

WASHINGTON, D. C., December 8, 1908.

THE annual report of the Fourth Assistant Postmaster-General, which has just been made public here, contains some exceedingly interesting details regarding the rural free delivery service and the department's project for the establishment of a limited parcel post on rural routes. Mr. De Graw, the head of this branch of the postal service, has become an enthusiast in advocacy of the Postmaster-General's plan, but it is significant that he excludes from his report the optimistic estimates of the alleged revenues that would be derived from the handling of merchandise in the rural service, which form so conspicuous a feature of the Postmaster-General's annual report.

### Growth of Rural Delivery During Twelve Years.

Mr. De Graw states that on June 30, 1908, the rural service was in operation on 39,277 routes and 39,143 carriers were employed. During the year 1672 new routes were established, which was a smaller increase than in any recent year. In this connection Mr. De Graw submits the following table showing graphically the growth of rural delivery during the 12 years of its existence:

| Fiscal year. | No. of carriers. | Appropriation. | Expenditures. | Inc. in expenditures. |
|---|---|---|---|---|
| 1897 | 83 | $40,000 | $14,840 | ..... |
| 1898 | 148 | 50,250 | 50,241 | $35,401 |
| 1899 | 391 | 150,032 | 150,012 | 99,771 |
| 1900 | 1,276 | 450,000 | 420,433 | 270,421 |
| 1901 | 4,301 | 1,750,796 | 1,750,321 | 1,329,888 |
| 1902 | 8,466 | 4,089,075 | 4,089,041 | 2,338,720 |
| 1903 | 15,119 | 8,580,364 | 8,051,599 | 3,962,558 |
| 1904 | 24,566 | 12,926,905 | 12,645,275 | 4,593,676 |
| 1905 | 32,055 | 21,116,600 | 20,864,885 | 8,219,610 |
| 1906 | 35,666 | 25,828,300 | 25,011,625 | 4,146,740 |
| 1907 | 37,582 | 28,350,000 | 26,747,000 | 1,735,375 |
| 1908 | 39,143 | 34,900,000 | ..... | ..... |

### Rural Route Parcel Post.

Concerning the department's project for the delivery of packages on rural routes, Mr. De Graw says:

In the early days of rural delivery the carriers were encouraged to engage in carrying express matter for hire and were permitted to act as agents for newspapers, the purpose being to augment the then small compensation allowed. There was little restriction of this privilege, and from July 1, 1902, until July 1, 1904, the law expressly provided for it. Thus it was possible for the public to secure the transmission of matter outside the mails by rural carriers at a low rate because of their employment by the Government. Complaints followed to the effect that if allowed to act as agents for newspapers it was only fair that carriers also be allowed to accept other soliciting agencies. It was urged, therefore, that rural carriers be prohibited from doing an express package business; be restricted while on duty to their official work, and be allowed a compensation commensurate with the service performed. Congress consequently provided for increased salaries for rural carriers, prohibiting them from acting as agents, and provided that rural carriers

shall not, during their hours of employment, carry any merchandise for hire: Provided, That said carriers may carry merchandise for hire for and upon the request of patrons residing upon their respective routes whenever it shall not interfere with the proper discharge of their official duties and under such regulations as the Postmaster-General may prescribe.

Believing that commissions performed by virtue of this provision of law should not include anything which might be transmitted by mail, the regulations promulgated so provided; and rural carriers are not permitted to carry for hire any matter or package that is mailable. Since the above restrictions have been enforced the Congress has, in line with the recommendations of this department, again increased the salaries of rural carriers. This increase was allowed in view of the enhanced cost of horse feed and to make the compensation adequate to the service performed.

The demand for a package service by rural carriers, which was fostered in the first years of rural delivery, still exists. It presents an opportunity to increase the usefulness of the postal service to a large class of its patrons, and should be met, not in the old way, which permitted the use of the Government's agency for private gain, but by the establishment of a system for the carriage of merchandise by rural carriers at such rates as will be a fair compensation for the service performed, the revenues to be credited to the postal receipts. The present fourth-class rate is prohibitive as applied to the transmission of merchandise on rural routes. Patrons and merchants desire to have small packages of merchandise delivered by rural carriers, but will not pay the fourth-class rate.

Such a service would be beneficial alike to the patrons of rural delivery and local merchants, without injuring or competing with any other service. It can be given with the facilities now employed and would materially increase the revenues of the department. A special reduced rate of postage for merchandise carried only by rural carriers, such as you have recommended, would unquestionably be of material value to the retail merchants on rural routes and at rural delivery distributing centers, as well as enhance the influence of the rural service in making life in the country more attractive.

### Rural Service Expenditure.

That the conservative estimates of the department for the increase of the rural service are not very reliable is shown by the Fourth Assistant's figures for the coming fiscal year, for which Congress will make appropriations this winter. The amount appropriated by Congress for the current year was $35,873,000, or an increase of $973,000 over the amount allotted for the fiscal year 1908, but $300,000 less than the estimates. During the past few months, however, petitions for new service have been pouring in at a materially increased rate and in addition the cost of maintaining the service has risen as the result of the department's practice of increasing the salaries of carriers in proportion to the current increase in the patronage of their routes. For the coming fiscal year it is estimated that the average salary of rural carriers of all classes will be not less than $867, as compared with a possible maximum of $900, and on this basis Mr. De Graw asks for $36,246,000, although he states that to meet all approved demands for service the amount should be not less than $37,599,000.

# A LETTER TO THE PRESIDENT.

THE letter given below was recently sent to President Roosevelt by a Pennsylvanian who is known throughout his State from his success as a merchant and his prominent identification with business and commercial bodies. We take pleasure in giving it a place in our columns as an interesting and forcible presentation of some of the more formidable objections to parcel post legislation.

If press reports are to be relied upon extraordinary pressure is being brought to bear upon you to induce you to strongly urge the Postmaster-General's cherished parcel post measures, and this is why I take the liberty of saying to you that as a native American, Pennsylvania born, one who loves his country and is proud of his native State, one who followed the flag at 16, and who would do so again at 62, should like contingencies arise, and now from the standpoint of plain American citizenship, and one who was a member of the Republican national conventions that nominated McKinley and Roosevelt, I, by your leave, call your attention to the following facts:

### Postmaster-General Looks at One Side of the Question.

I believe, as do the large majority of all good Americans, that you as Chief Executive of the Republic desire to be fair to all the people, for all of your official life has been a living evidence of that fact, and, while I have no reason to doubt the sincerity of the present Postmaster-General in his belief that he is entirely right in advocating and at all times persistently urging parcel post legislation, yet I very much fear that he sees but one side of the question, and that he is overzealous in the matter, and fails to see the great wrongs that could and would accompany its adoption, and in the language of the first Postmaster-General of the Republic seems not to realize that the country might be paying too dear for the whistle. For surely all that you as President or the Postmaster-General need to do to convince yourselves that domestic parcel post would work great injury to our general prosperity is to carefully study the proposed methods and the logical results. For there would follow evils in its train, great evils, that would be to the direct damage of millions of the very best citizens of the Republic, and this injury would surely come, not

only to the mercantile interests of the country, but to the home and property interests of every inland town, village and hamlet, and the surrounding country adjacent thereto (we cannot help but believe that the unbiased farmer will agree that good roads are to be preferred before cheap mail order transportation of merchandise), for surely the purpose of the great postal service is to facilitate communication among the people in their social, business and political relations, and not to transport commodities at the public expense. The purpose of the merchandise rate for small packages is to enable the people to send these to each other readily and cheaply and not to afford to manufacturers and traders a cheaper method of distributing their wares to customers.

**Privileged Class Benefited.**

The adoption of parcel post would certainly benefit a privileged class in the larger cities. The smaller merchants, farmers and mechanics and their families would suffer the most, for with the United States Mail Service acting as a delivery route for merchandise from the large cities, we will most likely have a repetition all over the land of the ruin and decay as described in Goldsmith's "Deserted Village." Parcel post once thoroughly established means the substitution of a few monstrous business houses in the large commercial centers instead of the many thousands of independent business ventures that encourage industry, promote business training, spread prosperity and create property values all over the Republic.

**Means Concentration of Capital in Large Centers.**

Parcel post means more concentration of capital in the large cities, where the home life is not so pure, not so sturdy, not so thoroughly Americanized, as the home life of the smaller towns and villages—for there live the common people, the bulwark of the nation and of all the nations of the past; from the common people came Jesus of Nazareth and Abraham Lincoln. This concentration in the large cities of course means more monopoly of trade, and all the adjacent evils belonging to such conditions, and will sooner or later give these selfish interests the power to gradually undermine and practically ruin the present merchandise distributing system, that through all the years of the life of the Republic has brought progress, enterprise and prosperity to the country at large, representing many millions of invested capital, which in these years has been and still is an incentive to every self-respecting young man or young woman, for them to avail themselves of the open door of business opportunity in their own community, and which door would be closed to them and our widespread inland mercantile interests reduced to the level of the inactive and poor mercantile conditions which now exist in the towns and villages in about all European countries that have had the parcel post for any number of years.

I am sincere in saying and believing that you, as the Chief Executive, will hesitate to recommend it after you have investigated this matter of vital importance in the impartial and fearless manner in which you usually investigate all matters of public interest and public good. Your administration has won the confidence, the respect and the admiration of millions, in your fidelity to duty, in contending against the control of industry and trade by great combinations that tend to monopoly and the extinction of competitive effort, and, while there is a general depreciation of the tendency to draw population from rural and village life and mass it in congested centers, it seems like a poor policy to lend the service of the Government to both these tendencies, as the parcel post certainly would do.

**Powerful Interests at Work.**

Powerful interests are now without doubt systematically working on petitions from all over the Republic to be mailed to Senators and Representatives urging their support of the Postmaster-General's innovation, which, I fear, is viewed purely from an administrative standpoint, and the head of this great department in his laudable desire to increase what he no doubt sincerely believes is the usefulness of his department gives little or no consideration to the important economic questions involved, and which appeal so strongly to many thousands of our very best citizens, who are opposed to paternalistic legislation in any form, for it is obvious that what might appear to be a success from an administrative standpoint would be an abject failure, and in a sense a tragedy from the standpoint of an important class of deeply wronged citizens.

In the coming session of Congress members of the House and Senate will be importuned as never before to favor parcel post. Some of the older members who have been active in opposing this measure in the past have failed of re-election, Chairman Overstreet of the House Committee on Post Offices and Post Roads among them. You no doubt will satisfy yourself as to the cause. There are also other facts which you can prove upon investigation, among which is the fact that commercial interests that would be benefited are many and powerful. They include the large catalogue houses and about all the large department stores. These interests are found nowhere else but in the large cities, and many manufacturers and publishers who are deeply interested in the passage are all actively working for its adoption. Surely the United States Government mail service was never intended as a common carrier of merchandise.

Hoping you will receive this communication in the same spirit in which it is sent—namely, free from selfish motives of any kind, and from one who would shrink from notoriety in the matter, yet from one who is thoroughly in earnest and thoroughly sincere in saying and believing that more harm would come from its adoption than good, and while I believe that Postmaster-General Meyer is one of the best Postmasters-General this country has ever had, I also believe that his recommendations as to parcel post require the fullest investigation at the hands of the Chief Executive and the national legislators as well.

## LETTERS FROM THE TRADE.

**Farmers Should Be Enlightened.**

*To the Editor:* Your editorial on parcel post objections is right to the point. I believe if the proper sentiment could be worked up throughout the land that the farmers would be able to see that it would be against public policy to have a parcel post on the lines proposed by the Postmaster-General. There is no doubt that it would injure retail merchants, and it would certainly injure the farmers to nearly the same extent in the depreciation of the values of their property.

PACIFIC COAST.

**Small Retailers Would Have to Consolidate.**

*To the Editor:* We were reading in your paper an argument that the revenue from parcel post from the rural route offices would not wipe out the deficit in the Post Office Department. Now we take the position that it will and more, too. Not the postage on the goods sent the farmer, but on the catalogues, circulars, letters and all that is necessary to make a catalogue house of every retail store that might want to exist.

And we retailers are not in a position to stand the extra expense. So the first thing that would happen would be the necessity of consolidating a number of retail stores into one large department store at each post office, to be run on the latest improved plan for the making of money for the corporation.

Now this may be for the best for the community at large, so may Socialism, which parcel post will hasten.

I think the Postmaster-General has seen the possibilities of the added income from this source from a different standpoint than most of us. It would be well to look at it from all sides.

OHIO.

**P. O. Deficit Will Not Be Wiped Out Very Rapidly.**

*To the Editor:* We do not see how the rural route parcel post is going to wipe out the deficit in the Postal Department as the rural carriers will undoubtedly demand and receive more pay than they now get, as they will be obliged to equip themselves with heavier rigs and be obliged to have more horses. The pay the carriers now get hardly leaves them fair wages after buying horses

and feeding them. If they carry more mail matter than they do now they must have heavier wagons and more horses, and if they do not carry more the deficit will not wipe out very rapidly.

At the suggestion of the secretary of the State retail Hardware association we have written the Representative from this district and have obtained his promise to oppose parcel post in any form. If merchants generally will do this in every district we need have no fear of the outcome. ILLINOIS.

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### Retail Merchants Would Have to Prepay Transportation.

*To the Editor:* Now that the final session of the Sixty-first Congress is assembling, the Postmaster-General will no doubt renew his activity for the enactment of his pet scheme, parcel post. Why would it not be more proper to call it a freight or merchandise post, for that is what it would eventually lead to? The only difference would be that instead of the receiver paying the freight, as is done in most cases, the sender would be compelled to do it, and in the present measure before Congress applying to rural routes only the retail merchant would have to be the "Jones, he pays the freight," in every instance.

Do you think for a moment that when the country merchant charges the cost of postage to the consumer the latter will often stand for it? Will not his competitor, who may be better able to stand it, advertise to deliver free on rural routes? Uncle Sam does not do a credit business in postage stamps, and the postage that is put on all goods ordered over telephone from some farmer customer 6 or 8 miles from the village store, to be sent by the rural carrier and charged to his account, is not paid sometimes for from three to six months.

#### Parcel Post Will Require Increased Equipment.

The $16,000,000 deficiency in the Post Office Department the past year was largely occasioned by the expenditures of the rural free delivery department. The Postmaster-General figures that the increased income from a rural parcel post will largely overcome this deficiency. Does he think for a moment that the rural carriers will be able to equip themselves at their present small stipend sufficiently to run a dray line in connection with their present facilities? Will not the present cost of delivery be more than doubled? Is not the present arrangement by which carriers are permitted to deliver packages in excess of 4 lb. without postage, and at a nominal charge, more advantageous to the retail merchant?

I trust that every retail merchant will put these questions to his Congressman and have him answer them by his negative action when it comes to a vote before Congress.

Last of all, will not the large mail order houses and other similar concerns make a plea that this is class legislation and should be applied to the universal postage system? In all probability the Supreme Court would sustain a contention of this kind. We say let well enough alone. NEBRASKA.

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THE WISCONSIN LEGISLATURE at its coming session will be asked to make an appropriation for operating the twine factory in connection with the State Prison at Waupun, which is rapidly nearing completion. The appropriation will be necessary to purchase raw material for starting the plant as soon as the machinery is installed. The factory will employ from 80 to 90 prisoners. The machinery will be installed by the Watson Machine Company, Paterson, N. J. It is planned to interest the farmers of Wisconsin in the growing of hemp, so that the entire material manufactured will not have to be purchased in Central America. The operation of the plant will be under the direction of the State Board of Control. At the regular March meeting each year the price of the product will be fixed, and prior to the first of June twine will be sold only to farmers or actual consumers.

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JOHN SHEAR & SON, Bloomfield, Ind., have purchased the Hardware business heretofore owned and operated by Gordon E. McCracken.

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# Correspondence.

## The Cash System vs. the Credit System—Which Is the More Profitable to Hardware Merchants?

*To the Editor:* For the past 10 years the trade journals have contained columns explaining the benefits of selling for cash only, and hardly a week passes without some one explaining the pleasure and beauty and the certain prosperity to be derived therefrom. I have often wondered why some one did not try to prove that greater net profits can be realized from the credit system in retail Hardware stores.

### Good Credit Man Necessary.

In the first place, no business firm, wholesale or retail has any right to extend credit, unless it has a good credit man, and by "good" I mean in a retail store one who knows the customers fully, who can refuse credit without offending, and who must be able to collect promptly without driving away trade. We all know of merchants who do not have the "knack" or faculty of collecting past due accounts without giving offense and thereby driving customers to their competitors.

### Making Collections.

Jobbers sometimes make the same mistake. A few years ago I was in a retail merchant's store while the proprietor was opening the morning mail, when he shortly said, "Well, here are two letters from the two jobbers I buy most from, and they both want money. One letter states that they are not bankers and are not loaning money; that the bill is now past due and they must be paid at once. The other letter says that they appreciate my trade and other nice things about me, but explain that they have some heavy bills to meet on the 10th of the month and would appreciate my paying this past due account, as per statement. If I cannot pay it all they ask me to at least make a liberal remittance. I owe each one about the the same amount, but one is so mean about the demand, and the other so gentlemanly, I will pay the latter, and hereafter they will get the bulk of my trade." In watching this merchant I found that he lived strictly up to his promise.

**The Wrong Way.**

**The Right Way.**

I know a Hardware retailer who rarely made a collection that he did not offend his customer, and it resulted in practical failure for him, as he started in the retail Hardware and lumber trade in a small Western town with $20,000 cash capital; he was not extravagant in any way; he was not speculative, and neither did he have expensive habits, but when last I heard from him two years ago his property was nearly all gone and he was clerking in a retail grocery store.

**The Road to Failure.**

### Greater Profits in a Credit Business.

Such people should do an absolutely cash business, but with a "good" credit man and collector, if the capital will permit to adopt the credit system, far greater profits can be realized therefrom. Credits should not be given to such an extent as to prevent discounting bills, for it pays to borrow money at the bank, paying even 7 per cent. or more, to get the discount, and no up to date merchant will loose this profit. It is better for a clerk to do the collecting for a retail store rather than the proprietor, if this can be arranged and the clerk is diplomatic. When a customer opens an account it is always best to have some understanding as to when settlement is to be made. If a farmer opens an account in the spring, and upon inquiry as to approximately when payment will be made, say, September 1 is agreed upon, it gives a good excuse to take the matter up nicely at that time and either get cash or a note. I believe prompt settlements to be the essence of good business.

**Take the Discount.**

**Have Understanding About Settlement.**

### More Goods and Better Quality.

Twenty-five per cent. more goods can be sold under similar conditions with the credit system than by the cash system, and at an average of 5 per cent. better profit and generally of a better quality. Estimates made in regard to the amount of purchases made by the women vary from 50 to 75 per cent. of the household goods, and usually they are not the ones who carry the pocketbooks, and with quite a few of them it is not agreeable to get the cash from the husband, even for small purchases, much less for a stove or refrigerator, and yet they are invariably the ones who make the selections. But how easy it is for them to make the choice and say, "Please charge this to Mr. Jones." A short time since I saw two young misses go into a dry goods store and look over some goods for one of the girls. They inquired, "Is this the best you have?" and receiving an affirmative reply, selected what they wanted without the price even being mentioned, simply saying, "Send this out to the house and charge to papa, please." Had this been a cash transaction, would not these young ladies have scrutinized the prices as carefully as they did the goods? Would they buy half as much if they had to pay cash?

**Women Don't Have the Cash.**

**Charge to Papa.**

Last fall an acquaintance told me on moving from his late place of residence that he went to a large department store to "settle up," and when the bill was rendered it fairly took his breath away. He had a large family of girls who had unlimited credit, and "run up" during two years a bill of over $5000. This "papa" and "husband" was easy. The wife and daughters were liberal buyers, and the department store manager was delighted. How much less, do you imagine, these purchases would have been had it been a "cash as you go" transaction?

**A Case in Point.**

Nearly all the large stores, such as John Wanamaker and Marshall Field, extend almost unlimited credit to those known to be worthy of credit, and it is quite common for the clerks to inquire of a lady purchaser "do you want this charged?" and if an affirmative answer is given the clerk sends the check to the office for approval, and if the check is returned O. K.'d the sale is made and no cash is paid. We will buy more and usually better goods when we "run a bill" than when we count out the money every time we make a purchase.

**Policy of Great Merchants.**

### Mail Order Business Not Parallel.

The argument against credit systems which has been much used in the past is that the mail order houses sold for cash, but their case is not a parallel one. From every section we hear that the catalogue houses are not causing the Hardware trade the annoyance they formerly did, and in some places the trouble has entirely disappeared. Resorting to cash did not bring about this change, but the retail Hardware associations have done more than all else in showing the catalogue houses' methods, and devising methods and means to meet them, especially cautioning the retailers against asking 200 and 300 per cent. profit on small items, as many were accustomed to do. For instance, I have before me a bill from a retail "dealer" charging 35 cents for a 6-in. common four-piece elbow, and 25 cents each for common 6-in. dampers, either of which can be bought by the smallest buyers for 60 cents per dozen. Such prices will drive even the retailer's friends to buy of the catalogue houses.

**Changes in Retail Methods.**

### Uncalled-for Liberality.

Another practice quite common among country retailers is absurd—that is, "carrying" the farmers from spring until fall, and when Mr. Farmer "pays up" make him a present. He has not done the retailers any favor, but rather the retailer should receive the tribute for carrying the account *without* interest for six months. A "good" collector will impress upon the customer in a nice way so as to cause no offense that the customer is the favored one, and make him so appreciate it that he will continue trading there. If any one is to have presents it should be the cash customers. I have known Hardware retailers to buy half a gross or more of good quality Pocketknives for the farmers, to give out when

they "pay up" in the fall, thus paying a premium in the fall for carrying the account without interest, to show how the "carrying of the account" is appreciated, instead of the farmer showing his appreciation for having the account "carried" and for favors extended.

All in all, I thoroughly believe the credit system, properly handled, is far more profitable to the retail merchant than any cash system religiously adhered to.

ED. FORD.

## White, Van Glahn & Co.

IN view of the demands incident to the rapid growth of their business, the old established firm of White, Van Glahn & Co. has been incorporated under the laws of the State of New York. This concern which, with its predecessors, has been in the Hardware business since 1816, is one of the best known Hardware houses in the city, its main place of business being at 37 Barclay street, in a large new building, which is fitted up with every modern convenience. The old stand at Chatham Square, where the business commenced nearly a century ago, is still maintained, and it has a thriving trade.

Edward C. Van Glahn, the president of the new corporation, has been the managing partner of the house for 20 years. He is a well-known and prominent business man of ability and character, and is fully equipped with a practical knowledge of Hardware, and is familiar also with the broader questions of policy and finance. The treasurer, Otto C. Schiffmann, has been with the house for 13 years, first as junior clerk and gradually working his way up to general manager of the office. Louis M. French, the secretary, has been with the firm 11 years, for the past few years in charge of the mail order department, to the development of which much attention has recently been given. The directors of the new corporation are: H. Kirke White of Detroit, Mich., who is widely known by reason of his connection with large business affairs; E. C. Van Glahn, A. B. Haulenbeek, O. C. Schiffmann and L. M. French, the last four having been long identified with the concern, and having built it up to its present gratifying proportions. The new corporation starts in business with a capital stock of $400,000, of which $150,000 will be 7 per cent. preferred stock and the remaining $250,000 will be common stock. All the common stock has been subscribed for in advance, as well as a large part of the preferred stock.

## Mid-Winter Fair at Tampa, Fla.

WE are advised by W. K. Jackson, Lakeland, Fla., secretary of the recently organized Florida Retail Hardware Association, that he is authorized by the Florida State Mid-Winter Fair Association to announce to manufacturers, merchants and distributing agents in Hardware and related lines that they are invited to occupy space, for which no charge will be made, at the fair which opens at Tampa February 3, and continues until February 27. This fair will, it is said, attract thousands of tourists and winter sojourners as well as Hardwaremen, farmers, fruit growers, truckers, naval stores operators, mill men, phosphate mine operators and others. It is suggested that those who are desirous of securing space should communicate at once with Col. Thomas J. L. Brown, president, Tampa, Fla. The semi-annual meeting of the Florida Retail Hardware Association will be held during the period covered by the fair.

THE BILLINGS HARDWARE COMPANY, Billings, Mont., doing a wholesale and retail Hardware business, has under construction a new four-story and basement building 75 x 125 ft., for the exclusive use of its jobbing Hardware department. The building, which has track connections with three roads, will be equipped with elevators and a fire sprinkler system. It is expected to be ready for occupancy about June 1 next. When the increased space it will afford is available the company expects to enlarge all of its lines, and will in addition to a complete stock of Hardware, carry Pipe, Fittings, Bar Iron and Wagon Wood stock. The territory covered by its salesmen includes a large part of Montana and northern Wyoming.

## Traveling Cutlery Displays.

THE traveling window display is now used by many manufacturers as furnishing merchants with convenient and effective means of calling attention to the manufacturer's lines and stimulating sales. Experiments with this form of advertising are being made this fall by the Bigelow & Dowse Company, Boston, in pushing the Pocket Cutlery of the New York Knife Company, Walden, N. Y., for which the house is New England agent. Considerable territory has been covered, and good reports have come from every display, indicating that customers have been interested in new patterns and in the possibilities of increasing their Pocket Knife business. Not only is there an immediate increase in sales, but an interest is created which may be expected to exert a continued favorable influence for the future.

In getting up the display the aim of Bigelow & Dowse Company has been to prepare something that could be adapted to any window of whatever size. A back and fore ground of red and green velour are provided with simple fixtures, enabling the decorator to arrange the Knives in various designs. About 650 Knives are furnished of all patterns, handles and prices. Every Knife is marked with a number, and in case a sale is made from the window, reference can be made to a price-list for the retail price.

## The Bullard & Gormley Company's New and Enlarged Quarters.

A MOVE toward expansion of its business has been made by the Bullard & Gormley Company, Chicago, which for many years has occupied a prominent position in the local retail trade, having also in the meantime built up a growing jobbing business. Under a long term lease the company has secured a five-story building at 53-55 East Lake street, 45 x 169 ft., and a six-story building at 41-45 State street, 60 x 68 ft. These buildings adjoin at the rear, and on the State street side will be located the retail store, while the jobbing business will occupy the five-story building on Lake street. Some additional lines will be added to the retail stock, including a House Furnishings department, which will be installed in the basement, and a full line of Paints and Oils will also be carried. Particular attention will be given to the jobbing end of the business, which, owing to the increased space provided in the new quarters, will be strengthened by a fuller stock and more complete assortment than could be accommodated in the present store. The company expects to occupy the new site about May 1 next.

## McLean Bros. & Rigg.

A. B. SEWELL AND J. W. MOLDEN, formerly managing directors of the well-known house of McLean Bros. & Rigg, Melbourne, Victoria, Australia, have lately severed their connection with the house. The financial position of this company was materially strengthened some 12 months since by the introduction of further capital by Thomas Luxton, who with his sons holds practically all the stock of the company. The business in future will be conducted on a cash basis, indents going through London or American commission houses of established reputation or direct to manufacturers. Several new department managers have been appointed, and the different stocks are being overhauled and brought up to date. The company will be glad to receive copies of catalogues and information as to quotations from all concerns handling goods in its varied lines.

THE STEWART IRON WORKS COMPANY, Cincinnati, Ohio, manufacturer of Iron Fence and Gates, Park and Lawn Furniture, and a general line of ornamental iron and wire work, has just issued its illustrated catalogue, No. 1, referring to stable fittings. The company has made this line for a number of years, but has made a specialty of large contract work, and the publication of this catalogue, which is its first devoted exclusively to this line, indicates a policy to expand its business in this direction.

# Here and There in the Hardware Store.

BY SAMUEL MASTERS.

## XI.—NEW SALESMEN AND THEIR CLIENTELE.

FROM the beginning care had been taken to make Mr. Martin feel that I was working under his direction, although in nearly every detail the outline was planned by Hartman Junior and myself before it was undertaken. After a scheme had been pronounced good and it had been thought best to adopt it Hartman Junior would pave the way for it in one of his morning talks with Mr. Martin, or I would suggest it to Mr. Martin, as seemed best, and in every instance it was adopted. Mr. Martin was anxious to have his sales increase and eager to adopt any plan which promised to achieve the end desired. He had a charming personality and was liked by every one who knew him—an exceptionally good salesman, but an indifferent manager. He liked to be given credit for all that was good in his department and seized upon and made his own any plan for improvement that was presented. My work was therefore considered by him with favor and had his hearty indorsement.

### Mr. Martin's Move.

When I had finished the list of names of prospective customers and had secured a credit rating upon each, I turned the cards over to Mr. Martin for his further action. Hartman Junior found them upon his desk and asked Martin how he intended to cover the field thus opened.

"I don't know," said Mr. Martin. "I only have two men, and they can't cover one-third of the list. Besides, one of them is new and not yet up to the work. I've given Henderson (the old salesman) the biggest firms on the two lists and Grueby the balance; but neither can take on any appreciable number of the other concerns Clark has indorsed."

"You will have to put on more men," said Junior. "Better get at it quickly, Martin, for Senior is in the mood now to give you anything in reason to help your factory trade. He has seen the list and Clark has told him of the new customers you have got already, and he is anxious to see the thing pushed. Who have you got that you can put on this work?"

### New Salesmen Selected.

Martin didn't know of any one. "The only good man on the whole force was Grueby," he said, "and he has already been made a city salesman. There isn't another house salesman who would do at all for outside work."

"There goes a likely chap," said Junior. "Why not give him a trial?"

"Who? Morgan?" asked Mr. Martin. "He never made a sale in his life. He spends a lot of time in getting out orders, though, and knows what we've got and the prices. He might do for the smaller and entirely new trade."

"Have you any more like him?" asked Junior. "It seems to me that a bright man with a knowledge of the goods ought to be easy to train as a salesman. Who runs the cellar stock?"

"Kelly," said Mr. Martin. "He would make good, too, I am sure, among the machine shops and little factories. We have practically no business with them now and Kelly is just the kind of a man to get in with them."

"Who else?" asked Hartman. "Why not give Masters a whirl at it?"

"No! No!" said Martin. "I've got other work for Sam." And he unfolded to Hartman a plan which Hartman and I had discussed and I had suggested to Mr. Martin.

"All right," said Hartman. "That sounds good to me. Aren't there some of the fellows who come in here to buy who would make good salesmen?"

Martin named one or two whom he thought would do, and Junior suggested that he sound them and approach Hartman, Sr., with a request for the additional men. In a few days Mr. Martin had found a really good salesman outside his force, and Hartman, Sr., had authorized him to put on the additional city salesmen desired, giving him five in all.

### Assignment of Territory.

Now came the question of apportionment of the list among the salesmen. Mr. Martin and his five salesmen came back after supper one night and the work was done. The firms visited by Henderson and Grueby were first removed from the list. Then the balance was further reduced by eliminating a number of stores, wholesale houses, hotels and office buildings, whose requirements would be small, and, as Mr. Martin averred, "not worth thinking about." An animated discussion ensued as to the firms and classes of trade to be allotted to each of the three new men. Mr. Martin finally settled the matter by taking a map of Ironville and dividing it into three portions with a ruler. Morgan was given the river front, with the fringe of large factories lying along the railroads which paralleled the river; Kelly drew the central portion, with the lighter manufactories and machine shops, and Williams, the new man, was given the north side, with the steel and iron works and a scattered lot of factories which followed the railroads into the environs. Each of the salesmen was pleased with the arrangement and all went home satisfied.

It had been Mr. Martin's intention to give the different salesmen specific classes of trade, regardless of location, but it was found that the arrangement made upon the spur of the moment as a compromise was a happy one, as each of the men was given a more varied experience and fitted for a wider field.

### Division of List.

The next morning Mr. Martin gave me the cards and instructions for their handling. "This bunch," said he, "is Henderson's list, and this is Grueby's. Both stay as they are. This bunch is no good and you might as well throw them away. The balance you will divide according to location, as indicated on this map. And that will end the card business."

"No!" said I to myself. "It only begins it."

*(To be continued.)*

## Pearl Trolling Spoon Bait.

The Clark-Horrocks Company, Utica, N. Y., has recently added to its line of fishing tackle the new Pearl trolling spoon bait. It is referred to as very alluring, and spinning perfectly as the blades are convex shaped. The glint of the pearl attracts game fish, and serves as an effective lure. The spoon is made in five sizes of blades from 1¼ to 2¼ in. long, single, and in two sizes, 1½ and 2 in., double. There is also the Pearl Colorado Spinner for trout, and one that is called the New Dolly Varden Spinner, fancy spotted and striped for big trout.

## Steel Shop Chair.

To the line of shop furniture made by the Angle Steel Sled Company, Kalamazoo, Mich., has been added the shop chair here illustrated. It is, with the exception of the seat, made entirely of steel, and is built to withstand hard service, and at the same time present a good appearance. The frames and legs are of ¾ in. x ⅛ in. angle steel, with leg braces of flat steel bars ⅝ in. x 3-16 in. and curved back rests of flat steel ⅞ in. x ⅛ in. firmly secured by rivets. The seat is made of solid wood 1¼ in. thick with dish of ⅜ in., 14 in. in diameter. The chairs are furnished in three sizes, Nos. 10, 20 and 30, with seats, respectively, 18, 20 and 22 in. from the floor, and range in weight from 150 to 170 lb. per dozen. The frame is finished in olive green and the seat is stained and varnished.



*Steel Shop Chair.*

## Chinese Canary Cage and Cage Stand.

O. Lindemann & Co., 35-37 Wooster street, New York, have added to their extensive line of bird cages and allied specialties a series of brass cages in a new design, styled Chinese because of features resembling Chinese architecture. One of these, No. 2373, shown herewith, is 10¾ x 7¾ in. in size, and is listed with or without the wire guard; also with or without molding bottom and zinc drawer. The roof of the cage is slanting and is made of perforated sheet brass in four pieces. On top is a sort of cupola, around which the edges of the metal are turned down in a convex curve. Around the eaves of the roof proper the edges turn up in a concave curve and a small bell is hung at each corner. This cage has five perches. A cage of similar but not identical design is offered, which is 9 in. square, has three perches, and also comes with or without wire guard and drawer bottom. The cage stand, Fig. 2, is referred to as an improvement on those formerly made by the firm, which had round bases or square bases, with claw feet. The new stand is 6 ft. 2 in, high, and has ornamental wrought brass legs, forming a tripod with a spread of 20 in., making it steady and unlikely to be upset by accident. The balance of the stand is made of brass tubing. A feature especially emphasized by the manufacturers is the fact that the stand may be entirely taken down for shipment, thus effecting a great saving in transportation charges.

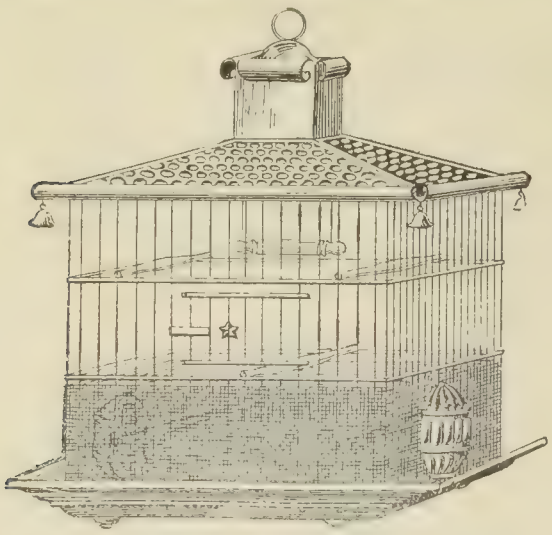


*Fig. 1.—Chinese Canary Cage, No. 2373.*



*Fig. 2.—Cage Stand.*

## The Rowell Railway Car Mover.

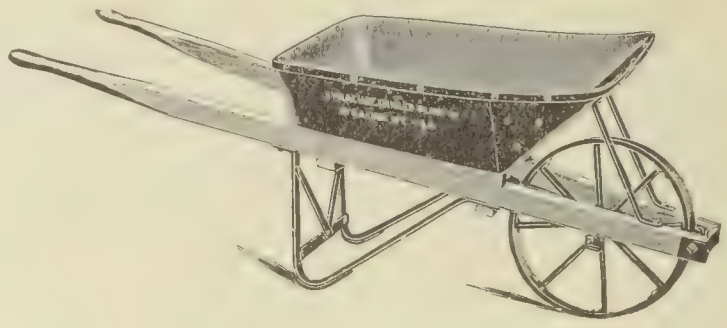
The car mover here illustrated is one of new design that is being offered by C. D. Rowell & Son, Appleton, Wis. Among the several features introduced in the interest of power and efficiency is a compound leverage combined with a patent rocking cam (25), which imparts a revolving motion to the wheel without exerting a perpendicular lift, tending to raise it from the track. The rocking cam has an important relation to the speed and power developed and is adjustable to either requirement. Thus, when the cam is rocked back toward the handle, as represented in the illustration, it is in position to move the heaviest loaded car; when thrown forward, however, its power capacity is reduced, and the propulsive speed at which it will move light loaded or empty cars is increased almost 50 per cent. The rail grip consists of two steel spurs (23), which are inserted in the under side of the malleable iron shoe (19) in angular alignment, so that they have two sharp contact points upon the face of the rail. The spurs are held in position by a malleable iron clamp (21), which can be readily slipped in and out of place for the removal and turning of the spurs as the edges are dulled by wear. All the parts composing the head of the mover are malleable iron, with the exception of the steel spurs; the lever handle is of wood. This tool, it is claimed, will work under any brake and in all positions under car wheels where it is possible to operate any other mover.




*The Rowell Railway Car Mover.*

## Syracuse Contractors' Barrow.

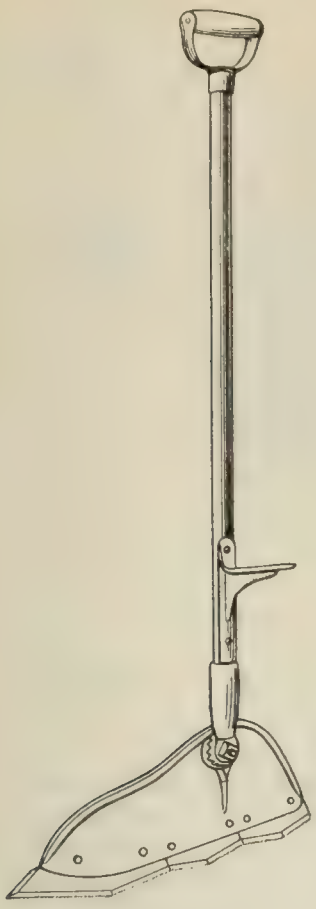
The Syracuse Chilled Plow Company, Syracuse, N. Y., has added to its line a new contractors' barrow, listed as No. 75A, which is illustrated herewith. It is designed to supply the need for a strong, serviceable, but light weight barrow, and is said to be especially adapted for forward dumping and plank riding. It has a protected wheel and renewable shoes on legs, and is provided with cross bar between legs for plank riding. The company states that the barrow carries the load level and well over the wheel, and has an extra strong strapped tray smooth on the inside and made from a single sheet of 16 gauge annealed steel pressed cold, lapped and riveted at the corners, thus giving extra strength where strength is needed. Spokes and tires are made from special steel of exact carbon, and spokes are cast in the hub, preventing any loosening. Hubs are broad and machine bored. The wheel is 17 in. in diameter, and revolves on a 9-16 bolt or axle clipped in patent iron bearings bolted underneath the handles. Each leg is made by bending a single piece of 1⅛ x ⅜ in. stiff steel in the form of a V with rounded base. The capacity of the barrow is 4 cu. ft., and its weight is 72 lb. The dimensions of the tray are: Length on top, 32½ in.; width on top, 28 in.; depth in front, 10 in.; depth in rear, 7 in.



*Syracuse Contractors' Barrow.*

H. A. STILES & Co., Boston, Mass., manufacturers of the Ottoman brand emery and grinding wheels, have issued a convenient folder calling attention to certain facts about emery which may not be known by all buyers and users of this product. The subjects treated include quality, shape of grains, packing, &c.

## Adjustable Foot Power Hay Knife No. 305.

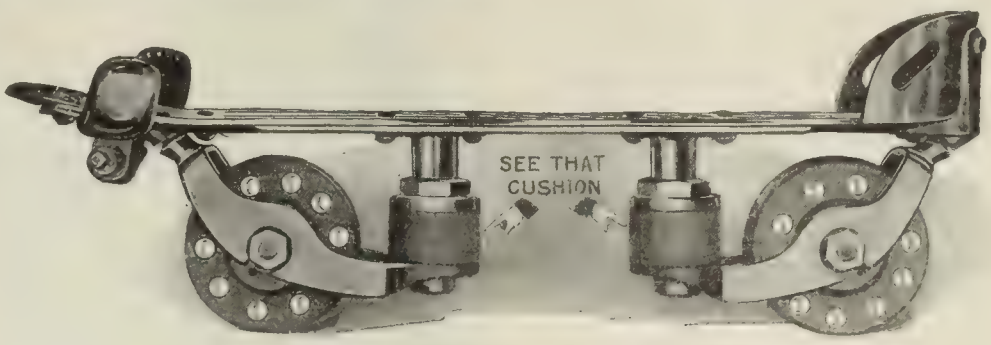


*Adjustable Foot Power Hay Knife.*

The hand and foot power hay knife shown herewith comprises, it is claimed, all the advantages of any other hay knife, together with an adjustable back made of the best malleable iron, to which are riveted two scalloped serrated edge sections and one point section made of high grade tool steel, all sharpened and ready for use. The sections are standard and can be replaced at a small cost, thus making a durable tool. The handle is bolted at the ratchet to the blade, and can be easily and quickly adjusted to any angle to suit the operator. The handle is strong, made from best hard maple or ash, well sanded and nicely varnished. The back as well as the step and socket are finished in bright red baked enamel, and the plates are finished in gold bronze to give an attractive appearance. The knives are offered by the G. A. Swineford Company, Canton, Ohio, and are packed one-half dozen in a strong box.

## Single Track Sidewalk and Street Skate.

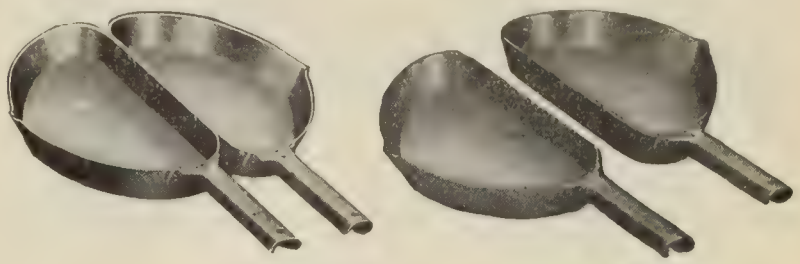
The new roller skate catalogued as the Expert Single Track Ball Bearing Sidewalk and Street Skate, herewith shown, is being placed on the market by the Richardson Ball Bearing Skate Company, 501 Wells street, Chicago. It is claimed that the same movements can be made upon this two-wheel skate as are possible with high grade four-roller skates. This is due chiefly to the oscillating action permitted by the construction and adjustment of the roller carrier. This particular feature may be observed in the accompanying illustration. One end of the roller carrier rests on a large rubber cushion, while the other is held in a pocket attached to the foot plate. The wheels, which are of cold rolled steel, are 2 in. in diameter, 1¼ in. face, with case hardened steel bushings, and their axles are supported in the carrier frame. The skate is designed for flexibility and ease of movement, and at the same time to have the necessary strength and rigidity to provide security and wear. In order to make them low priced enough to meet the popular demand for sidewalk and street skates simplicity of construction was necessary, and as a result the skate is composed of but few and simple parts. The company also manufactures a large line of four-wheel skates for general rink skating.




*Single Track Sidewalk and Street Skate.*

## Hudson's Double or Divided Skillet.

The utensil of which top and bottom views are given in the accompanying illustrations is a fry pan composed of two separable parts and is designed to economize stove space by permitting the cooking of two articles over one hole or burner at the same time. Each part of the divided skillet, which is made by the Northwestern Consolidated Iron & Steel Mfg. Company, Burlington, Iowa, is of pressed steel and seamless and is fitted with non-heating hollow handles firmly riveted to the body. Each half is 6 x 12 in. in size and of standard depth. The handles are so placed as to maintain an even balance and, being pressed with rounded corners, the inside of the



*Hudson's Double or Divided Skillet.*

vessels is easily cleaned. One section of the skillet has two hooks projecting outward from the top of the inner flange far enough to catch the corresponding side of the other section; by this means both sides can be lifted with one handle when it is convenient to do so. The advantages of the divided form offered in this skillet are obvious enough where it is necessary to cook several different articles at the same time upon a small stove.

## The Pierce Removable Garden Hoe.

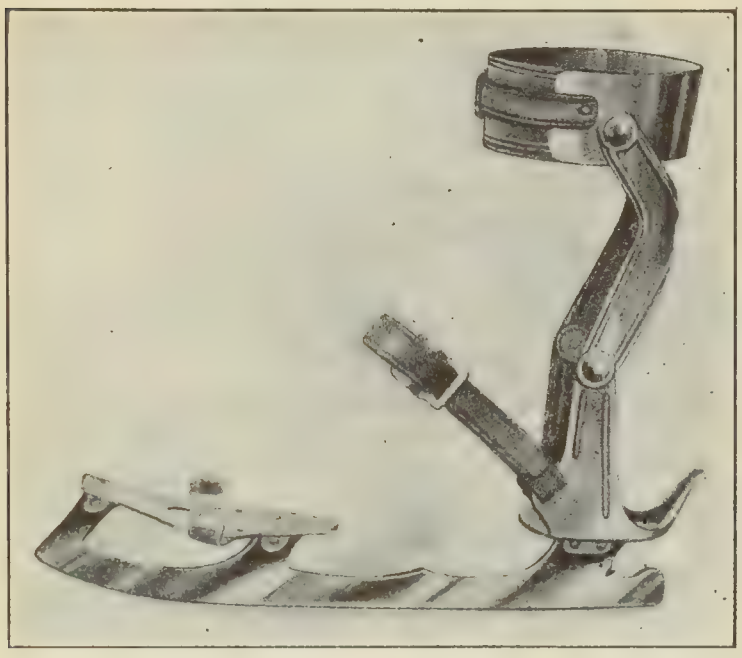
The new garden hoe here illustrated is made by the Pierce Mfg. Company, Morgan Park, Ill. It is constructed with a detachable steel blade, which is regularly 2 in. wide by 6 in. long, attached to a malleable iron skeleton head frame by brass screws. If blades of greater length are desired for special work they can be substituted by simply removing the screws. This provision also facilitates the sharpening of the hoe blade when grinding is required, thus making it easy to maintain a keen cutting edge. The hoe, it is claimed, works well in either dry or wet soil, as the surface against which soil and weeds might clog is reduced to a minimum. It is adaptable to any sort of service, and to meet varying conditions of work special sized blades are furnished on request.



*The Pierce Removable Garden Hoe.*

## The 20th Century Skate.

The Kennedy Skate Company, 2 South Franklin street, Chicago, is offering the skate here shown. Perfect rigid support for the ankle, easily adjusted fastenings and a blade curved to provide accurate balance in all positions, are the leading points made by the manufacturer on behalf of the skate. The lower part of the ankle brace is made of steel in one piece with the heel plate, and is attached to the upper cross braced part by rivet hinges. The ankle band, also of steel, is secured to the brace arms in a similar manner, allowing a free flexible forward and backward movement of the ankle while holding it firmly against side strain. The whole brace being made of cold rolled steel, stiffened with ribs, is both light



*The 20th Century Skate.*

and strong. A notable feature of the skate is that no key is required to fasten it to the shoe. The clamps being adjustable are set to fit the shoe, and pressure of the heel on the slanting heel plate forces the shoe forward, thus effecting a tight wedge fastening in a simple and convenient manner. Easily operated buckles of new design provided for the straps complete the means of attachment. The blades, it is claimed, are curved enough to turn easily, yet are flat enough to give substantial footing on the ice; the curve is more pronounced just in front of the ball of the foot. The skate is made in two styles, C and B, the difference being chiefly in the finish. Both are nickeled, style B being the more highly polished.

## Ideal Coffee Percolator.

The New England Enameling Company, Middletown, Conn., H. Ginsburg, 736 Broadway, New York, sales agent, is putting on the market the coffee percolator here illustrated. The bowl and spout are made of enameled




*Fig. 1.—Ideal Coffee Percolator.*

ware said to be especially hygienic, durable and easy to keep clean. Handles are electrically welded, no rivets being used. The top is of glass to permit watching the operation of the pump, and the working parts are pure aluminum. All parts can be replaced. In a general way it may be said that the percolator operates on familiar principles, although it has no pump valve. The parts are shown by the sectional view, Fig. 2, in which A represents the pump, B the tube, C the filtered coffee, D ground coffee in the basket E, and F the glass top. The

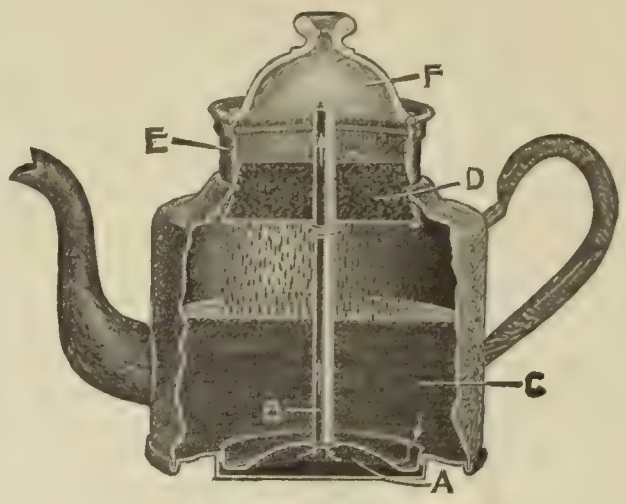
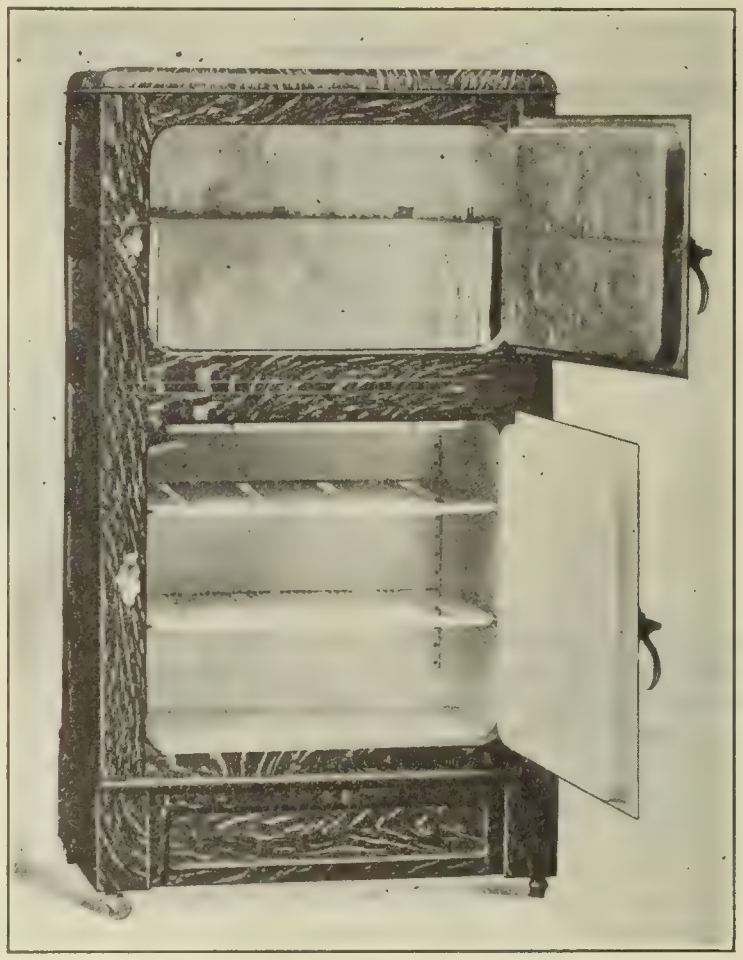



*Fig. 2.—Ideal Percolator, Interior View.*

device is referred to as economical in that it will furnish a delicious drink with a minimum amount of coffee.

## The Gurney All Steel White Enameled Refrigerator.

The Gurney Refrigerator Company, Fond-du-Lac, Wis., is putting on the market the all steel white enameled refrigerator shown herewith. It is made of pressed steel, oak finish on the outside and pure white enameled inside. The dimensions are 47 in. high, 31 in. wide and 21 in. deep, and the ice capacity is 100 lb. Being made alto-



*The Gurney All-Steel White Enameled Refrigerator.*

gether of steel, it is especially adapted for use in very damp and very dry climates, as it can neither warp nor swell. The refrigerator is packed with mineral wool, and has, it is pointed out, all the good points of the company's regular line. The ice compartments, shelves of the food chamber and drip pipe can be taken out at any time for cleaning. The walls of the ice chamber are galvanized. The refrigerator is also made with a hinged cover on top of the ice chamber, instead of a door as shown in the illustration.

## The Rainbow Rink Roller Skate.

The new model roller skate here illustrated is being offered by the Rainbow Amusement Company, 192-200 Washington boulevard, Chicago, Ill., by which it is manufactured. It is especially designed to withstand the

rough usage incident to general rink service and at the same time to secure that degree of lightness necessary to free action and comfort. The foot plates are said to be

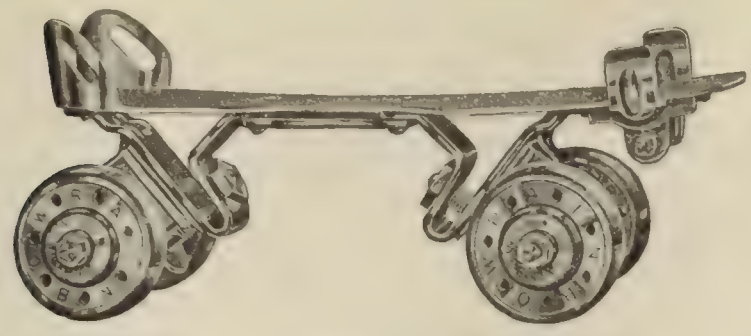


*Fig. 1.—The Rainbow Rink Roller Skate.*

of exceptional strength, being truss braced by the roller hangers and reinforced to a connecting strip riveted in the under side of the plates which holds the skate in true alignment. Large rubber cushions inserted between the roller carriers and the hangers contribute to the ease of movement and are succeptible of adjustment by means of screws to any desired tension. Either fiber steel or aluminum rollers are supplied as required, both being fitted with suitable dust caps. The use of pumice stone, chalk or whiting on floors is, it is stated, unnecessary when fiber rollers are employed, and the sanitary conditions of the rink are thus improved by the elimination of unnecessary dust. The rollers are guaranteed by the

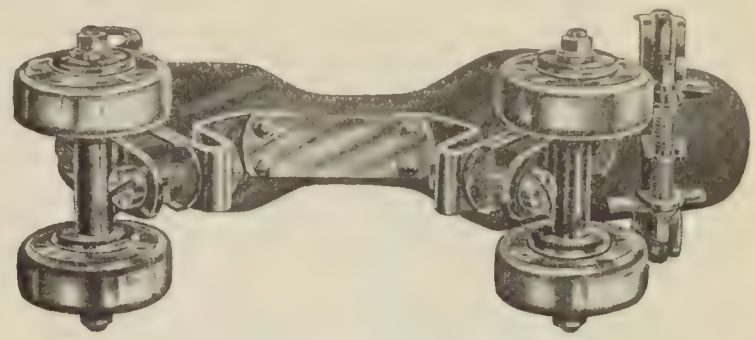


*Fig. 2.—Bottom View of Rainbow Rink Roller Skate.*

company not to chip, crack or loosen the bushings. The skate can be furnished in any finish and with regular rollers, but for general rink use the three-point bearing steel or fiber rollers are recommended.

## PAINTS, OILS AND COLORS

| Animal, Fish and Vegetable Oils— | ℔ gal. bbls. |
|---|---|
| Linseed, Western, Raw | .47 @48 |
| State, Raw | .47 @48 |
| City, Raw | .48 @49 |
| Boiled, 1¢ ℔ gal. advance on Raw. | |
| Raw, Calcutta, in bbls | .70 @.. |
| Lard, Prime, Winter | .74 @77 |
| Extra No. 1 | .51 @52 |
| No. 1 | .49 @50 |
| Cotton-seed, Crude, f.o.b. mill | .30 @30½ |
| Summer Yellow, prime | .38¼@38¾ |
| Summer, White | .41½@42 |
| Yellow Winter | .47 @48 |
| Tallow, Acidless | .58 @59 |
| Menhaden, Brown, Strained | .34 @35 |
| Northern Crude | .27 @30 |
| Southern | .23½@.. |
| Light Strained | .34 @35 |
| Bleached Winter | .36 @38 |
| Ex. Bleached Winter | .38 @39 |
| Cocoanut, Ceylon | ℔ lb 6¾@.. |
| Cochin | ℔ lb 7¼@ 7½ |
| Cod, Domestic, Prime | .38 @40 |
| Newfoundland | .40 @42 |
| Red, Elaine | .39 @42 |
| Saponified | ℔ lb 6 @ 6⅛ |
| Olive, Yellow | $1.15@$1.35 |
| Neatsfoot, Prime | .55 @58 |
| Palm, Lagos | ℔ lb 5⅞@ 6 |

| Mineral Oils— | ℔ gal. |
|---|---|
| Black, 29 gravity, 25@30 cold test | .13 @13½ |
| 29 gravity, 15 cold test | .13½@14 |
| Summer | .12½ @13 |
| Cylinder, light, filtered | .20½@21 |
| Dark, filtered | .18 @19 |
| Paraffine, 903-907 sp. gravity | .14½@15 |
| 903 sp. gravity | .13½@14 |
| 883 sp. gravity | .11 @11½ |
| Red | .13½@14 |

| Miscellaneous— | |
|---|---|
| Barytes: | |
| White, Foreign | ℔ ton $18.50@20.50 |
| Amer., floated | ℔ ton 17.00@18.00 |
| Off color | ℔ ton 12.50@15.00 |
| Chalk, in bulk | ℔ ton 3.00@ 3.40 |
| China Clay, Imported | ℔ ton 11.50@18.00 |
| Cobalt, Oxide | ℔ 100 lb 1.45@ 2.60 |
| Whiting, Commercial | ℔ 100 lb 42@52 |
| Gilders | ℔ 100 lb .55@ .60 |
| Ex. Gilders | ℔ 100 lb .60@ .65 |

| Putty, Commercial— | ℔ 100 lb |
|---|---|
| In bladders | $1.70 @1.80 |
| In bbls. or tubs | 1.20 @1.45 |
| In 1 lb to 5 lb cans | 2.65 @2.95 |
| In 12½ to 50 lb cans | 1.50 @1.90 |

| Spirits Turpentine— | ℔ gal. |
|---|---|
| In Oil bbls | .42½@43 |
| In machine bbls | .43 @43½ |

| Glue— | ℔ lb |
|---|---|
| Cabinet | .12 @15 |
| Common Bone | .7½@ 9 |
| Extra White | .18 @24 |
| Fish, liquid, 50 gal. bbls., per gallon | .60 @1.20 |
| Foot Stock, White | .12 @14 |
| Foot Stock, Brown | .9 @11 |
| German Common Hide | .10 @12 |
| German Hide | .12 @18 |
| French | .10 @40 |
| Irish | .13 @16 |
| Low Grade | .10 @12 |
| Medium White | .14 @17 |

| Gum Shellac— | ℔ lb |
|---|---|
| Bleached, Commercial | .21 @22 |
| Bone Dry | .26 @27 |
| Button | .30 @40 |
| Diamond I | @39 |
| Fine, Orange | .30 @35 |
| A. C. Garnet | .23 @24 |
| G. A. L. | .20 @21 |
| Kala Button | .15½@16 |
| D. O. | @41 |
| Octagon B | .34½@35 |
| T. N. | .22 @23 |
| V. S. O. | @39 |

| Colors in Oil— | ℔ lb |
|---|---|
| Black, Lampblack | .12 @14 |
| Blue, Chinese | .36 @46 |
| Blue, Prussian | .32 @36 |
| Blue, Ultramarine | .13 @16 |
| Brown, Vandyke | .11 @14 |
| Green, Chrome | .12 @16 |
| Green, Paris | @24 |
| Sienna, Raw | .12 @15 |
| Sienna, Burnt | .12 @15 |
| Umber, Raw | .11 @14 |
| Umber, Burnt | .11 @14 |

| White and Red, Lead &c.— | ℔ lb |
|---|---|
| Lead, English white, in Oil | .10⅛@10⅜ |
| Lead, American White: | |
| Dry and in Oil, 100, 250 and 500 lb kegs | 7 |
| Dry and in Oil, 25 and 50 lb kegs | 7¼ |
| Dry and in Oil, 12½ lb kegs | 7½ |
| In Oil, 25 lb tin pails | 7½ |
| In Oil, 12½ lb tin pails | 8 |
| In Oil, 1, 2, 3 and 5 lb tin cans, ass't | 9 |
| Red Lead and Litharge: | |
| In 100 lb kegs | 7 |
| In 25 and 50 lb kegs | 7¼ |
| In 12½ lb kegs | 7½ |
| In lots of less than 500 lbs, ½¢ ℔ lb advance over above prices of White and Red Lead and Litharge. | |
| Lead, American. Terms: On lots of 500 lbs and over, 60 days, or 2% for cash if paid in 15 days from date of invoice. | |

| Zinc, Dry— | ℔ lb |
|---|---|
| American, dry | 5⅛@ 5⅝ |
| Red Seal (French process) | 6¾@ 7 |
| Green Seal | 7¼@ 7½ |
| German Red Seal (French process) | 7 @7¼ |
| Green Seal | 7½@ 7⅞ |
| White Seal | 8¼@ 9 |
| French, Red Seal | 8¾@ 8⅞ |
| Green Seal | 10⅜@10⅝ |

| Dry Colors— | ℔ lb |
|---|---|
| Black, Carbon | 6½@10 |
| Black Drop, American | 3½@ 8 |
| Black Drop, English | 5 @15 |
| Black, Ivory | .16 @20 |
| Lamp, commercial | 4 @ 6 |
| Blue, Celestial | 4 @ 6 |
| Blue, Chinese | .30 @32 |
| Blue, Prussian | .28 @30 |
| Blue, Ultramarine | 3½@15 |
| Brown, Spanish | ½@ 1 |
| Carmine, No. 40 | $3 10@3 25 |
| Green, Chrome, ordinary | 3½@ 5 |
| Green, Chrome, pure | .17 @25 |
| Ocher, American | ℔ ton $8.50@16.00 |
| American Golden | 2½@ 3¼ |
| French | 1¼@ 2 |
| Foreign Golden | 3 @ 4 |
| Orange Mineral, English | .10 @12 |
| French | .12¾@13 |
| German | .12 @13 |
| American | 9 @10 |
| Red, Indian, English | 4½@ 6 |
| American | 3 @ 3¼ |
| Red, Turkey, English | 4 @10 |
| Red, Tuscan, English | 7 @10 |
| Red, Venetian, Amer. | ℔ 100 lb $0.50@1.25 |
| English | ℔ 100 lb $1.15@1.60 |
| Sienna, Italian, Burnt and Powdered | .3 @ 9 |
| Italian, Raw, Powdered | .3 @ 7 |
| American, Raw | 1½@ 2 |
| American Burnt and Pow'd | 1½@ 2 |
| Talc, French | ℔ ton $18.00@25.00 |
| American | ℔ ton 15.00@25.00 |
| Terra Alba, French | ℔ 100 lb .90@ 1.00 |
| English | ℔ 100 lb .80@ 1.00 |
| American | ℔ 100 lb, No. 1. .75@ .80 |
| American | ℔ 100 lb, No. 2. .60@ .65 |
| Umber, T'key, Bnt, & Pow. | 2⅜@ 3 |
| Turkey, Raw and Powdered | 2¾@ 3 |
| Burnt, American | 1½@ 2 |
| Raw, American | 1½@ 2 |
| Yellow, Chrome, Pure | .12¾@15 |
| Vermilion, American Lead | .7 @25 |
| Quicksilver, bulk | .65 @.. |
| Quicksilver, bags | @66 |
| English, Imported | @70 |
| Chinese | $0.90@1.00 |


# THE IRON AGE

*The oldest paper in the world devoted to the interests of the Hardware, Iron, Machinery and Metal Trades, and a standard authority on all matters relating to those branches of industry.*

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# Current Hardware Prices.

**General Goods.**—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

**Special Goods.**—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

**Range of Prices.**—A range of prices is indicated by means of the symbol @. Thus 33⅓ @ 33⅓ & 10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

**Names of Manufacturers.**—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued annually, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

**Standard Lists.**—"The Iron Age Standard Hardware Lists" contains the list prices of many leading goods.

**Additions and Corrections.**—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

### Adjusters, Blind—
Columbian and Domestic.....33⅓%
North's .....10%
Upson's Patent, ₱ gro., $29.90.....10%
Zimmerman's—See Fasteners, Blind.

### Window Stop—
Ives' Patent.....10%
Ives' Stop Bead Screws and Washers .....10%
Taplin's Perfection.....10%

### Ammunition—See *Caps, Cartridges, Shells, &c.*

### Anti-Rattlers—
Fernald Mfg. Co. Burton Anti-Rattlers, ₱ doz. pairs, Nos. 1, $0.75; 2, $0.60; 4, $1.00; 5, $0.50.
Fernald Quick Shifter, ₱ doz. pairs .....$2.00@$3.00

### Anvils—American—
Eagle Anvils.....₰ lb @8 ¢
Hay-Budden, Wrought.....9½@9¾¢
Trenton .....₰ lb 9½@9¾¢

### Imported—
Swedish Solid Steel Paragon, ₱ lb .....10@10½¢
Swedish Solid Steel Sisco, Superior, ₱ lb.....10@10½¢
Peter Wright & Sons, ₱ lb. 84 to 349 lb, 11¢; 350 to 600 lb, 11½¢.

### Anvil, Vice and Drill—
Millers Falls Co., $18.00.....15&10%

### Apple Parers—See *Parers, Apple, &c.*

### Aprons, Blacksmiths'—
Livingston Nail Co.....10%

### Augers and Bits—
*Com. Double Spur....75&10@80%*
*Jennings' Patn., Bright.65&10@70%*
*Black Lip or Blued...65@65&5%*
*Boring Mach. Augers.....70%*
*Car Bits, 12-in. twist.....40&10%*
Ford's Auger and Car Bits.....40&5%
Ft. Washington Auger Co., Conard's .....35%
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip. R. Jennings' list 25&7½
No. 30, R. Jennings' list.....50
Russell Jennings'.....25&10&2½
L'Hommedieu Car Bits.....15%
Mayhew's Countersink Bits.....15
Pugh's Black.....20%
Pugh's Jennings' Pattern.....35
Snell's Auger Bits.....60
Snell's Bell Hangers' Bits.....60
Snell's Car Bits, 12-in. twist.....60%
Snell's King Auger Bits.....50
Swan's .....65&10&5%
Swan's, Jennings' Pattern.....50%
Wright's Jennings' Bits.....50%

### Bit Stock Drills—See *Drills, Twist.*

### Expansive Bits—
Clark's Pattern, No. 1, ₱ doz., $26; No. 2, $18.....60&10%
Ford's, Clark's Pattern...60&5@60&10
C. E. Jennings & Co., Steer's Pat.....25%
Lavigne Pat., small size, $18.00; large size, $26.00.....60&10%
Swan's .....60%

### Gimlet Bits—
*Per gro.*
*Common Dbl. Cut.....$3.00@3.25*
*German Pattern, Nos. 1 to 10, $4.75; 11 to 13, $5.75*

### Hollow Augers—
*Bonney Pat., per doz..$5.50@6.00*
Ames .....20&10%
Universal .....20

### Ship Augers and Bits—
*Ship Augers.....40&10@—%*
Ford's .....33⅓&5%
C. E. Jennings & Co.:
L'Hommedieu's .....6
Watrous' .....33⅓&7½
Snell's .....48%

### Awl Hafts—See *Handles, Mechanics' Tool.*

### Awls—
*Brad Awls:*
*Handled .....gro. $2.75@3.00*
*Unhdld., Shldered...gro.63@66¢*
*Unhandled, Patent..gro.66@70¢*
*Peg Awls:*
*Unhandled, Patent..gro. 31@3½¢*
*Unhdld. Shldered..gro. 65@70¢*
*Scratch Awls:*
*Handled, Com...gro. $3.50@4.00*
*Handled, Socket.gro.$11.50@12.00*

### Awl and Tool Sets—See *Sets, Awl and Tool.*

### Axes—
*Single Bit, base weights: Per doz.*
*First Quality.....$4.75@5.00*
*Second Quality.....$4.25@4.50*
*Double Bit, base weights:*
*First Quality.....$7.00@7.50*
*Second Quality.....$6.50@6.75*

### Axle Grease—See *Grease, Axle.*

### Axles—Iron or Steel.
*Concord, Loose Collar...4¼@4½¢*
*Concord, Solid Collar....4½@5¢*
*No. 1 Common, Loose...3½@4¢*
*No. 1½ Com., New Style.4¼@4¾¢*
*No. 2 Solid Collar.....4¼@4¾¢*
*Half Patent:*
*Nos. 7, 8, 11 and 12.....70%*
*Nos. 13 to 14.....70%*
*Nos. 15 to 18...70&10@70&10&5%*
*Nos. 19 to 22...70&10@70&10&5%*

### Boxes, Axles—
*Common and Concord, not turned .....lb., 5@6¢*
*Common and Concord, turned, lb., 6@7¢*
*Half Patent.....lb., 9½@10¢*

### Bait—Fishing—
Hendryx:
A Bait.....20%
B Bait.....25%
Competitor Bait.....20&5%

### Balances—Sash—
Caldwell new list.....50&10%
Pullman .....50&10%

### Spring—
*Light Spring Balances.60@60&5%*
Chatillon's:
Light Spg. Balances.....50@50&10
Straight Balances.....40@40&10
Circular Balances.....50&10%
Large Dial.....30%

### Barb Wire—See *Wire, Barb.*

### Bars—Crow—
*Steel Crowbars, 10 to 40 lb.... per lb., 2¼@2½¢*

### Towel—
No. 10 Ideal, Nickel Plate..₱ gro. $8.50

### Beam, Scale—
*Scale Beams.....40%*
Chatillon's No. 1.....30%
Chatillon's No. 2.....40%

### Beaters, Carpet—
Holt-Lyon Co.:
No. 12 Wire Coppered ₱ doz. $0.80; Tinned .....$0.85
No. 11 Wire Coppered ₱ doz. $1.15; Tinned .....$1.20
No. 10 Wire Tinned....₱ doz. $1.50

### Beaters Egg—
Dover Stamping & Mfg. Co.:
Genuine Dover, per gro., No. 1, Tumbler Size, $7.50; No. 2, Family Size, $7.50; No. 3, Extra Family Size, $24.00; No. 4, Hotel Size, $30.00.
Holt-Lyon Co.:
Holt, per doz., No. 5, Jap'd $0.80; No. A, Jap'd, $1.15; No. B, Jap'd, $1.85; No. 6, Jap'd, $1.65.
Lyon, Jap'd, per doz., No. 2, $1.35.
Taplin Mfg. Co.:
Improved Dover, per gro., No. 60 $6.00; No. 75, $6.50; No. 100, $7.00; No. 102, Tin'd, $8.50; No. 150, Hotel, $15.00; No. 152, Hotel Tin'd, $17.00; No. 200, Tumbler, $8.50; No. 202, Tumbler Tin'd, $9.50; No. 300, Mammoth, per doz., $25.00.

### Bellows—
*Blacksmith, Standard List:*
*Split Leather.....60@60@65%*
*Grain Leather.....50@50&10%*

Hand—Net Prices.

| | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|
| *Inch* | | | | | |
| *Doz.* | *$5.00* | *5.50* | *6.00* | *6.50* | *7.50* |

Molders—Net Prices.

| | 10 | 12 | 14 | 16 |
|---|---|---|---|---|
| *Inch* | | | | |
| *Doz.* | *$7.50* | *9.00* | *12.00* | *15.00* |

### Bells—Cow—
*Wrought Cow Bells.....75%*
Jersey .....75&10%
Texas Star.....50%

### Door—
Home, R. & E. Mfg. Co.'s.....55&10%

### Hand—
*Polished, Brass.....60@60&10%*
*White Metal.....60@60&10%*
*Nickel Plated.....50&10%*
*Swiss .....50&10%*
Cone's Globe Hand Bells.....33⅓@33⅓%

### Miscellaneous—
*Farm Bells.....lb., 2¼@2½¢*
*Church and School....60@60&10%*

### Belting—Leather—
*First Quality, Ex. Hy., Strictly Short Lap.....60&10%*
*Standard .....70&10@70&10&5%*
*Light Double.....75&10%*
*Cut Leather Lacing.....45@50%*
*Leather Lacing Sides, per sq. ft.25¢*

### Rubber—
*Competition (Low Grade), 70&10@75%*
*Standard .....60&10@70%*
*Best Grades.....40@50%*

### Bench Stops—See *Stops, Bench*

### Benders and Upsetters, Tire—
Green River Tire Benders and Upsetters .....20%

### Bicycle Goods—
John S. Leng's Son & Co.'s 1908 list:
Chain, Parts, Spokes.....50%
Tubes .....60%

### Bits—
Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

### Blocks—Tackle—
*Common Wooden.....75@75&5%*
B. & L. B. Co.:
Boston Wood Snatch, 50%; Eclipse Steel, 75%; Hollow Steel, 50&10%; Star Wire Rope, 50%; Tarbox Metal Snatch, 50%; Tarbox New Style Steel, 50&10%; Wire Rope Snatch, 50%.
Lane's Patent Automatic Lock and Junior .....30%
See also Machines, Hoisting.

### Boards, Stove—
*Paper and Wood Lined.....55%*
*Embossed .....55%*

### Boards, Wash—
See *Washboards.*

### Bobs, Plumb—
Kenffel & Esser Co.....33⅓&10%

### Bolts
### Carriage, Machine, &c,—
*Common Carriage (cut thread):*
*⅜ x 6 and smaller.....75&5%*
*Larger and longer.....70&5%*
*Common Carriage (rolled thread):*
*⅜ x 6, smaller and shorter, 75&10&5%*
*Phila. Eagle, $3.00 list...80@—%*
*Bolt Ends, with C. & T. Nuts, 70&10%*
*Machine (Cut Thread):*
*⅜ x 4 and smaller.....75&10%*
*Larger and longer.....70&10%*

### Door and Shutter—
*Cast Iron Barrel, Japanned, Round Brass Knobs:*

| | 3 | 4 | 5 | 6 | 8 |
|---|---|---|---|---|---|
| *Inch* | | | | | |
| *Per doz.* | *$0.30* | *.35* | *.45* | *.60* | *.80* |

*Cast Iron Spring Foot, Jap'd:*

| | 6 | 8 | 10 |
|---|---|---|---|
| *Inch* | | | |
| *Per doz.* | *$1.20* | *1.50* | *2.25* |

*Cast Iron Chain, Flat, Japanned:*

| | 6 | 8 | 10 |
|---|---|---|---|
| *Inch* | | | |
| *Per doz.* | *$1.00* | *1.40* | *1.65* |

*Cast Iron Flat Shutter, Jap'd, Brass Knobs:*

| | 6 | 8 | 10 |
|---|---|---|---|
| *Inch* | | | |
| *Per doz.* | *$0.75* | *.95* | *1.25* |

*Wrought Barrel Japanned, 80&10@80&10&5%*
*Barrel Bronzed.....60&10%*
*Spring .....70&10@70&10&10%*
*Shutter .....50&5@50&10&5%*
*Square Neck.....75@75&10%*
*Square .....70&10&10@80%*
Ives' Mortise.....10%
Ives' Wrought Metal.....10%

### Expansion—
F. H. Evans' Crescent.....40@60%
Richards Mfg. Co.....55&10%
Star Expansion Bolt Co.:
Star Lag Screw Type..60&10&5&2½%
Star, Wood Screw Type.....40%
Star, Machine, Single Wedge....60%
Star, Machine, Double Wedge....60%
Steward & Romain Mfg. Co.:
Style No. 13, Double.....60%
Style No. 1, Single.....60%
Style No. 100, Dbl. Jaw, Single..55%
Lag Screw.....66⅔%

### Plow and Stove—
*Plow .....65&5@70%*
*Stove .....85@85&5%*

### Tire—
*Common Iron.....80%*
*Norway Iron.....80%*
American Screw Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84 82½%
Bay State, list Dec. 28, '99.....80%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84...82½%
Eclipse, list Dec. 28, '99.....80%
Russell, Burdsall & Ward Bolt & Nut Co.:
Empire, list Dec. 28, '99.....80%
Norway Phila., list Oct. '84.....80%
Eagle .....82½%
Shelton Co.:
Tiger Brand, list Dec. 28, '99...80%
Phila., Eagle, list Oct. 16, 1884..82½%
Upson Nut Co.:
Tire Bolts.....72½%

### Borers, Bung—
*Borers Bung, Ring, with Handle:*

| | 1¼ | 1½ | 1¾ | 2 |
|---|---|---|---|---|
| *Inch* | | | | |
| *Per doz.* | *$4.80* | *5.60* | *6.40* | *8.00* |
| *Inch* | | 2¼ | | 2½ |
| *Per doz* | | *$8.65* | | *11.50* |

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.75; No. 3, $2.50 each.....25%

### Boxes, Mitre—
C. E. Jennings & Co.....25%
Langdon, New Langdon and Langdon Improved, 20&10%; Langdon Acme .....15&10%
Perfection .....40%
Seavey .....45%

### Braces—
*Comman Ball, American....$1.50*
Barber's .....50&10&10@60&10%
Fray's Genuine Spofford's.....60%
Fray's No. 61, 166, 206, 614.....50%
C. E. Jennings & Co.....50&5
Mayhew's Ratchet.....60%
Mayhew's Quick Action Hay Pat...50%
Millers Falls Drill Braces.....25&10%
P., S. & W. Co., Peck's Pat....60&10%

### Brackets—
*Wrought Steel.....75&10&5@80%*
Bradley Metal Clasp...80&10@80&10&5
Griffin's Pressed Steel.....75@75&10%
Griffin's Folding Brackets.....70&10%
Taplin Victor Handy Egg Beater Bracket .....₱ doz. $1.50

### Bright Wire Goods—See *Wire and Wire Goods.*

### Broilers—
Kilbourne Mfg. Co.....75&20%
Wire Goods Co.....75%

### Buckets, Galvanized—
*M'fr's list, price per gross.*

| | Quart. | 10 | 12 | 14 |
|---|---|---|---|---|
| *Water, Reg.* | | *26.85* | *29.50* | *33.50* |
| *Water, Hvy.* | | *45.35* | *48.00* | *52.00* |
| *Fire, Rd. Btm.* | | *32.00* | *34.65* | *38.65* |
| *Well* | | *37.35* | *41.35* | *45.35* |

10@15&5%

### Bull Rings—See *Rings, Bull.*

### Butts—Brass—
*Wrought, High List, Oct.26,'06.65%*
Cast Brass, Tiebout's.....40&10%

### Cast Iron—
*Fast Joint, Broad....40&10@50%*
*Fast Joint, Narrow...40&10@50%*
*Loose Joint.....70&10@75%*
*Loose Pin.....70&10@75%*
*Mayer's Hinges.....70@70&5*
*Parliament Butts.....70@70&5*

### Wrought Steel—Bright.
*Light Narrow, Light Reversible .....70&5%*
*Reversible and Broad..70&5%*
*Loose Joint, Narrow, Light Inside Blind, &c.....70%*
*Back Flaps, Table Chest.65%*
*Japanned.*
*Light Narrow, Loose Pin, 40&5%*
*Light Narrow, Ball Tip..60%*
*Broad .....40&5%*
*Steeple Tipped.....70%*
*Ball Tipped.....70%*

Extra, 10

## Cages, Bird—

Hendryx Brass: Series 3000, 5000, 1100, net list; 1200, 15%; 200, 300, 900 ..... 30%
Hendryx Bronze: Series 700, 800.... 30%
Hendryx Enameled..... 35%

## Calipers—See *Compasses.*

## Calks, Toe and Heel—

*Blunt, 1 prong, per 100 lb., $3.50@$3.85*
*Sharp, 1 prong, per 100 lb., $4.00@$4.35*
Burke's, 1 pg. Blunt Toe, 3¾¢; 2 pg. Blunt Toe, 4¼¢; 1 pg. Sharp Toe, 4¼¢; 2 pg. Sharp, 4¾¢; Blunt Heel, 4¼¢; Sharp Heel..... 4¾¢
Lautier, Blunt, 4@4¼¢; Sharp, 4½@4¾¢
Perkins', Blunt, ₱ lb, 3.65¢; Sharp, 4.15¢

## Can Openers—

See *Openers, Can.*

## Caps, Percussion—

*Eley's E. B..... 52@55¢*
*G. D..... per M*
*F. L..... per M 40@42¢*
*G. E..... per M. 48@50¢*
*Musket ..... per M 62@63¢*

### Primers—

*Berdan Primers, $2 per M..20&5%*
*Primer Shells and Bullets..15&10%*
*All other primers per M. $1.52@1.60*

## Carpet Stretchers—

See *Stretchers, Carpet.*

## Cartridges—

*Blank Cartridges:*
*32 C. F., $5.50..... 10&5%*
*38 C. F., $7.00..... 10&5%*
*22 cal. Rim, $1.50..... 10&5%*
*32 cal. Rim, $2.75..... 10&5%*
*B. B. Caps, Con. Ball, Swgd. $1.90*
*B. B. Caps, Round Ball..... $1.40*
*Central Fire..... 25%*
*Target and Sporting Rifle. 15&5%*
*Primed Shells and Bullets. 15&10%*
*Rim Fire, Sporting..... 50%*
*Rim Fire, Military..... 15&5%*

## Casters—

*Bed ..... 65&10@70%*
*Plate ..... 60@60&5%*
*Philadelphia ..... 70&10@75%*
Acme, Ball Bearing..... 35%
Gem (Roller Bearing)..... 70&10&10&5%
Steel Gem (Roller Bearing)..... 70%
Standard Ball Bearing..... 45%
Yale (Double Wheel) low list... 40&10%

## Cattle Leaders—

See *Leaders, Cattle.*

## Chain, Proof Coil—

*American Coil, Straight Link:*

| 3-16 | ¼ | 5-16 | ⅜ | ½ | ⅝ |
|---|---|---|---|---|---|
| $7.70 | 5.10 | 4.15 | 3.50 | 3.30 | 3.10 |

¾-⅞-1 1⅛ to 1¼ inch.
$3.00 3.10
*In cask lots, deduct 25¢.*
*German Coil..... 70%*
*German Pattern Coil:*
*6-0 to 1..... 70&10&5%*
*2 and 3..... 60&10&10@70%*
*4, 5 and 6..... 50&10@50&10&5%*

## Halter—

*Halter Chains..... 60&5@60&10%*
*German Pattern Halter Chains, list July 24, '97.... 60&10&5@70%*
Covert Mfg. Co.:
Halter ..... 35&5%

### Cow Ties—

See *Halters and Ties.*

## Trace, Wagon, &c.—

*Traces, Western Standard: 100 pr.*
*6½—6-3, Straight, with ring. $28.00*
*6½—6-2, Straight, with ring. $29.00*
*6½—8-2, Straight, with ring. $32.00*
*6½—10-2, Str'ght, with ring. $37.00*
*NOTE.—Add 2c per pair for Hooks Twist Traces: add per pair for Nos. 2 and 3, 2c: No. 1, 3c; No. 0, 4c to price of Straight Link.*
*Eastern Standard Traces, Wagon Chain, &c... 60&10@60&10&5%*

## Miscellaneous—

*Jack Chain, list July 10, '93:*
*Iron ..... 60&10&5@60&10&10%*
*Brass ..... 65%*
*Safety and Plumbers' Chain. 75%*
*Gal. Pump Chain....lb., 4½@5%*
Bridgeport Chain Co.:
Triumph Halter and Coil. 35&2½@40
Triumph Dog..... 50&10@60
Brown Halter and Coil....45@50&5
Covert Mfg. Co.:
Breast, Halter, Heel, Rein, Stallion ..... 40%
Oneida Community:
American Halter, Dog and Kennel Chains ..... 35&2½@40
Niagara Dog Leads and Kennel Chains ..... 45@50&5
Wire Goods Co.:
Dog Chain..... 70%
Universal Dbl.-Jointed Chain.... 70%

## Chain and Ribbon, Sash—

Oneida Community:
Steel Chain..... 60%
Pullman:
Bronze Chain, 60%; Steel Chain, Coppered ..... 60&10
Sash Chain Attachments, per set 8¢
Aluminoy Sash Ribbon, per 100 ft..... $2.00@$5.00
Sash Ribbon Attachments, per set..8¢

## Chalk—

*Carpenters' Blue.....gro., 50¢*
*Carpenters' Red.....gro., 50¢*
*Carpenters' White.....gro., 40¢*

## Checks, Door—

Bardsley's ..... 45%
Pullman, per gro..... $51.00
Russwin ..... 33⅓%

## Chests, Tool—

American Tool Chest Co.:
Boys' Chests, with Tools..... 55%
Youths' Chests, with Tools..... 40%
Gentlemen's Chests, with Tools.. 30%
Farmers', Carpenters, etc., Chests, with Tools ..... 20%
Machinists' and Pipe Fitters' Chests, Empty..... 15%
Tool Cabinets..... 15%
C. E. Jennings & Co.'s Machinists' Tool Chests..... 7½%

## Chisels—Socket Framing and Firmer

*Standard List..... 80&10@—%*
Buck Bros..... 30%
C. E. Jennings & Co.:
Socket Firmer No. 10..... 25&7½%
Socket Framing No. 15..... 25&7½%
Swan's ..... 66⅔@70%
L. & I. J. White & Co..... 30@30&5%

### Tanged—

*Tanged Firmers..... 30&5@35%*
Buck Bros..... 30%
C. E. Jennings & Co. Nos. 191, 181.. 25%
L. & I. J. White Co..... 25&5%

### Cold—

*lb.*
*Cold Chisels, good quality. 13@15¢*
*Cold Chisels, fair quality. 11@12¢*
*Cold Chisels, ordinary.... 9@10¢*

## Chucks—

Almond Drill Chucks..... 35%
Almond Turret Six-Tool Chuck..... 40%
Beach Pat, each $8.00..... 35&5%
Empire ..... 25%
Blacksmiths' ..... 25%
Jacobs' Drill Chucks..... 35%
Pratt's Positive Drive..... 25%
Skinner Lathe Chucks:
Independent ..... 35%
Universal, Reversible Jaws..... 35%
Universal, Com. Style Jaws..... 40%
Combination, Reversible Jaws.... 35%
Combination, Com. Style Jaws... 40%
Round Body or Box Body, 2 Chuck Jaws ..... 25%
Geared Scroll Chucks..... 25%
Drill Chucks:
New Model, 25%; Geared Pattern, 25%; Skinner Patent, ... 25%
Positive Drive..... 40%
Planer Chucks..... 20%
Standard ..... 45%
Drill Press Vises..... 30%
Face Plate Jaws..... 35%
Standard Tool Co.:
Improved Drill Chuck..... 45%
Union Mfg. Co.:
Combination, Nos. 1, 2, 3, 4, 5, 6, 7, 8 and 17, 40%; No. 21..... 35%
Scroll Combinations, Nos. 83 and 84 ..... 30%
Geared Scroll, Nos. 33, 34 and 35.. 25%
Independent Iron, Nos. 18 and 318. 35%
Independent Steel, No. 64..... 25%
Union Drill, Nos. 000, 00, 100, 101, 102, 103, 104..... 35%
Union Czar Drill..... 25%
Universal, 11, 12, 16, 17, 13, 14, 15.. 40%
Universal No. 42..... 35%
Iron Face Plate Jaws, Nos. 28, 30, 18 and 50..... 35%
Steel Face Plate Jaws, Nos. 70 and 72 ..... 30%
Westcott Patent Chucks:
Lathe Chucks..... 50%
Little Giant Auxiliary Drill..... 50%
Little Giant Double Grip Drill... 50%
Little Giant Drill, Improved..... 50%
Oneida Drill..... 50%
Scroll Combination Lathe..... 50%
Whitaker Mfg. Co.:
National Drill..... 25%

## Clamps—

Carriage Makers', Star, P., S. & W. Co. ..... 50%
Resly, Parallel..... 33⅓&10%
Hammer & Co.:
Adjustable ..... 20&5%
Carriage Makers' H. P. Screw. 40&5%
Myers' Hay Rack..... 50%
Lineman's Swedish Neverturn..... 65%
Saw Clamps, see Vises, Saw Filers'

## Cleaners, Drain,

Iwan's Champion, Adjustable..... 50%
Iwan's Champion, Stationary..... 40%

## Sidewalk—

American Fork & Hoe Co.:
Star, ₱ doz., Socket, $4.00; Shank ..... $3.50
Shank, ₱ doz., X 7½, $3.50; Shank, X 8..... $3.75

## Cleavers, Butchers'—

Foster Bros..... 30%
Fayette R. Plumb..... 30%
L. & I. J. White Co..... 30%

## Clippers, Horse and Sheep—

Chicago Flexible Shaft Co.: 20%
1902 Chicago Horse, each.. $10.75
20th Century Horse, each... $5.00
Lightning Belt Horse, each. $15.00
Chicago Belt Horse, each.. $25.00
Stewart's Enclosed Gear Roll Bearing Horse, each..... $6.75
Stewart's New Model Sheep Shearing Machine, each. $12.75
Stewart Enclosed Gear Shearing Machine, No. 8, each.. $7.75

## Clips, Axle—

*Regular Styles, list July 1 '05. 80&80&10%*

## Cloth and Netting, wire

See *Wire, &c.*

## Cocks, Brass—

*Hardware list:*
*Plain Bibbs, Globe, Kerosene, Racking, Liquor, Bottling, &c. ..... 75%*
*Compression Bibbs..... 70%*

## Coffee Mills—

See *Mills, Coffee.*

## Collars, Dog—

Nickel Chain, Walter B. Stevens & Son's list ..... 40%
Leather, Walter B. Stevens & Son's list ..... 40%

## Compasses, Dividers, &c.

*Ordinary Goods..... 70&10@75%*

## Conductor Pipe,—

*L. C. L. to Dealers:*

| | Gal. Steel. | Charcoal. | Copper. |
|---|---|---|---|
| *Northeastern:* | | | |
| 70&10% | 50&10&7½% | 50&10% | |
| *Eastern:* | | | |
| 70&10&5% | 50&10&7½% | 50&10% | |
| *Central:* | | | |
| 75&5% | 60% | 50&10% | |
| *Northwestern:* | | | |
| 75&2½% | 60% | 50&10% | |
| *Western:* | | | |
| 70&7½% | 50&12½% | 50&5% | |
| *Tennessee:* | | | |
| 70&10% | 50&12½% | 50&10% | |
| *Southern:* | | | |
| 70% | 50&12½% | 50&5% | |
| *Southwestern:* | | | |
| 70% | 50&5% | 50&5% | |

*Terms, 60 days: 2% cash 10 days. Factory shipments generally delivered.*
See also Eave Troughs.

## Coolers, Water—

L. & G. Mfg. Co.:

| Gal. | 2 | 3 | 4 | 6 | 8 |
|---|---|---|---|---|---|
| Galvanized, ea. | $1.85 | $2.00 | $2.25 | $2.90 | $3.90 |

Galvanized, Lined, side handles,

| Gal. | 2 | 3 | 4 | 6 | 8 |
|---|---|---|---|---|---|
| Each | $1.95 | $2.15 | $2.40 | $3.30 | $4.15 |

White Enameled..... 10%
Agate Lined..... 10%

## Coppers' Tools—

See *Tools, Coopers'.*

## Coppers, Soldering—

*Soldering Coppers, 3 lb. to pair and heavier, 21½¢; lighter than 3 lb. to pair..... 23½¢*

## Cord—Sash—

*Braided, Drab.....lb. 35¢*
*Braided, White, Com., Nos. 8 to 12, 21¢; No. 7, 21½¢; No. 6, 22½¢. In lots of 12 doz. or over, 1 cent less per pound.*
*Cable Laid Italian, lb., No. 18. 37¢*
*Italian, lb., A, No. 18, 25¢; B, 22¢*
*Common India.....lb., 11@11½¢*
*Cotton Sash Cord, Tw'ted. 18@20¢*
*Patent Russia.....lb....20¢*
*Cable Laid Russia.....lb...21¢*
*India Hemp, Br'd'd.....lb...21¢*
*India Hemp, Twisted...lb. 13@14¢*
*Patent India, Twisted..lb...17¢*
Pearl Braided, cotton, No. 6, ₱ lb. 20½¢; No. 7, 19½¢; Nos. 8 to 12, 19½¢, in 12 doz. to 100 doz. lots.
Eddystone Braided, Nos. 8 to 12, 26¢; 7, 26½; 6, 27½¢.
Harmony Cable Laid Italian, Nos. 7 to10..... ₱ lb 23¢
Pullman:
Wire Sash Cord..... 10%
Sash Cord Attachments, per 100.. $2.00
Samson, Nos. 8 to 12: 15%
Braided, ₱ lb., Drab Cotton, 55¢; Italian Hemp, 40¢@50¢; Linen, 65¢; White Cotton, 50¢; Spot Cord..... 50¢
Massachusetts, White... ₱ lb 40¢
Massachusetts, Drab.... ₱ lb 45¢
Phoenix, White, Nos 8 to 12....27¢
Silver Lake, per lb.:
A, Drab, 45¢; A, White, 40¢; B, Drab, 40¢; B, White, 35¢; Italian Hemp, 40¢; Linen....57½¢
See also Chain and Ribbon.

## Wire, Picture—

*Full Length..... 90@—%*
*Short Length..... 90&20@—%*
Hendryx Standard Wire Picture Cord, old list, 85&10%
Turner & Stanton Co. Wire Picture Cord ..... 90%

## Cradles—

*Grain ..... 50%*

## Crayons—

*White Round Crayons, Cases, 100 gro., $8.00, $8.50, $9.00 and $10.00 according to grade.*
Zelnicker's Lumber: ₱ gro.
White and Purple, Indelible....$7.50
Blue, Red, Green, Yellow and Terra Cotta, $6.50; Black.....$4.50
Giant Lumber, 5¼ in. x 15-16 in. round, all colors, $12.00; Indelibles, $14.00; Blacks..... $10.00
Genuine Soapstone, Metal Workers', 5 in. x ¼ in. Round, $2.50; 5 in. x ¼ in. Square, $1.75; 5 x ½ x 3-16, $2.50; 5 x 1¼ x 3-16..... $3.00
Suremark, Black, $2.25; Blue, Red and Yellow..... $2.50

## Crooks, Shepperds'—

American Fork & Hoe Co.:
Montana ..... ₱ doz. $4.50

## Crow Bars—See *Bars, Crow.*

## Cultivators—

American Fork & Hoe Co.:
Victor Garden..... 50&10%

## Cutlery, Table—

International Silver Company:
No 12 M'd'm Knives, 1847, ₱ doz. $3.50
Star, Eagle, Rogers & Hamilton and Anchor... ₱ doz. $2.10
Wm. Rogers & Son..... ₱ doz. $2.50

## Cutters—Glass—

H. H. Mathew Co..... 40
Red Devil ..... 60
E. Mfg. Co..... 40
Woodward ..... 50%

## Meat and Food—

American ..... 30%

| No. | 41 | 42 | 43 | 44 | 45 | 46 | 47 |
|---|---|---|---|---|---|---|---|
| Each | $5 | $7 | $8 | $9 | $25 | $50 | $90 |

Enterprise:

| Nos. | 5 | 10 | 12 | 22 | 32 | | |
|---|---|---|---|---|---|---|---|
| Each | $2 | $2 | $2.75 | $4.50 | $6 | 25@25&7½ | |
| Nos. | 202 | 8 | 50 | | | 10&7½ | |

P. S. & W. Co.:
Ideal ..... 40@40&5%
Hales ..... 60&5%
Little Giant..... ₱ doz. 40@50%

| Nos.. | 305 | 310 | 312 | 320 | 322 |
|---|---|---|---|---|---|
| | $35.00 | $18.00 | $11.00 | $7.00 | $68.00 |

New Triumph No. 605, ₱ doz. $24.00, 40%
Russwin Food, No. 1, $24.00; No. 2, $27.00; 3, $12.00..... 15&10&10

| | | |
|---|---|---|
| | $15.00 | $18.00 |

Enterprise Beef Shavers..... 25@30%

## Slaw and Kraut—

Henry Disston & Sons:
Slaw and Kraut Cutters..... 35%
Corn Graters..... 30%
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife.... ₱ doz. $3.00
Combined Slaw Cutter and Corn Grater ..... ₱ doz. $4.00

## Tobacco—

*All Iron, Cheap...doz. $4.25@4.50*
Enterprise ..... 25@30%
National, ₱ doz., No. 1, $21; No. 2, $18 ..... 40%

## Diggers, Post Hole, &c—

Disston's:
Rapid, ₱ doz., $24.00..... 25%
Samson, ₱ doz., $34.00..... 25%
Iwan's Pat. Post Hole and Well Auger ..... 40%
Vaughan Pattern Post Hole Augers, ₱ doz., $7.00
Perfection Post Hole Diggers, ₱ doz. ..... $8.50
Split Handle Post Hole Diggers, ₱ doz., $7.50
Hercules Pattern, ₱ doz..... $9.50
Kohler's, ₱ doz., Universal, $14.00; Little Giant, $12.00; Hercules, $10.00; Invincible, $9.00; Rival, $8.50; Pioneer..... $7.50
Never-Break Crucible Steel Post Hole Diggers ..... 60%

## Dividers—See *Compasses.*

## Drawing Knives—

See *Knives, Drawing.*

## Dressers Emery Wheel—

Sterling Emery Wheel Dressers..... 35%
Sterling Wheel Dresser Cutters..... 35%

## Drills and Drill Stocks—

*Blacksmith's Common Drilling Machines ..... $1.50@1.75*
Breast, Millers Falls..... 15&10%
Breast, P., S. & W..... 33⅓%
C. & C. Ratchet..... 25%
Reversible Ratchet Die Stocks.... 25%
Goodell Automatic Drills. 50&10@60&10
Millers Falls Automatic Drills, Graves', per doz., Nos. 1, $4.86; 2, $8.16.
Millers Falls Automatic Drills, 33⅓&10%
Ratchet, Curtis & Curtis..... 25%
Ratchet, Parker's..... 40%
Ratchet, Weston's..... 40%
Ratchet, Weston's, Style H Improved ..... 40@40&5%
Ratchet, No. 012..... 40@40&5%
Ratchet, Celebrated..... 40@40&5%
Ratchet, Whitney's, P., S. & W.., 40&10@50%
Whitney's Adjustable, No. 10, $12.00, 33⅓%

## Twist Drills—

*Bit Stock..... 70@70&5%*
*Taper and Straight Shank, 60&10@70%*

## Drivers, Screw—

*Screw D'ver Bits, per doz. 45@50¢*
Balsey's Screw Holder and Driver, ₱ doz., 2½-in., $6; 4-in., $7.50; 6-in., $9 ..... 50%
Buck Bros.' Screw Driver Bits..... 30%
Champion ..... 50%
Disston's ..... 70%
Fray's Hol. H'dle Sets, No. 3, $12.. 50%
Ford's Brace Screw Drivers.... 40&10
Gay's Double Action Ratchet..... 35%
Goodell's Auto..... 65@65&10
Mayhew's Black Handle..... 40%
Mayhew's Monarch..... 40%
Millers Falls, ₱ doz., Nos. 11, $9.95; 12, $13.73; 20, $8.17; 21, $8.46; 41, $13.43; 42, $17.21.
Smith & Hemenway Co. Neverturn, 66⅔%; Elmora, 60%; Star, 30&10%
Swan's:
Nos. 7565 to 7568, 60%; No. 7540 40&10

## Eave Trough, Galvanized—

| Territory. | Gal. Steel. | Copper. |
|---|---|---|
| *Northeastern..* | *75&10&5%* | *50&10%* |
| *Eastern.....* | *80%* | *50&10%* |
| *Central.....* | *80&10&5%* | *50&10%* |
| *Northwestern..* | *80&10&5%* | *50&10%* |
| *Western.....* | *80&5%* | *50&5%* |
| *Tennessee.....* | *80&5%* | *50&10%* |
| *Southern.....* | *75&10%* | *50&5%* |
| *Southwestern..* | *75&10&2½%* | *50&5%* |

*Terms, 2% for cash. Factory shipments generally delivered.*
*Note. Lower prices are made in some sections.*
See also Conductor Pipe and Elbows.

## Elbows and Shoes—

*Factory shipments, all territories: Galv. Steel, Galv. C. I. and Copper.*
*Sizes 2, 3, 4..... 80%*
*Sizes 1½, 2½, 3½, 5, 6...60&10%*
*No. 26..... 50%*
*No. 24..... 25%*
*Copper Elbows ..... 50%*

## Elbows, Stove Pipe—

Edward Standard Blue 10&10&10%
Edwards Royal Blue 10&10&10%
Reeves, Dover Flat Crimp 10&10&5%

## Emery, Turkish—

| | ¼ to ⅜: | ½ to 220: | Flour. |
|---|---|---|---|
| *Kegs.....lb.* | *5¢* | *5½¢* | *8½¢* |
| *½ Kegs.....lb.* | *5½¢* | *5¾¢* | *8¾¢* |
| *¼ Kegs.....lb.* | *5½¢* | *6¢* | *4¢* |

*10-lb. cans, 10 in case....6½¢ 7 ¢ 6 ¢*
*10-lb. cans, less than 10.....10 ¢ 10 ¢ 8 ¢*
*Less quantity..10 ¢ 10 ¢ 8 ¢*
*NOTE.—In lots 1 to 3 tons a discount of 10% is given.*

### Extensions, Bit—
Ford's Auger Bit Extensions....40&5%

### Ext. actors, emon Juice—
—See *Squeezers, Lemon.*

### Fasteners, Blind—
Zimmerman's Jap'd and Galv., 50 & 5%; Bronze and Plated.....50%
Walling's .....50%
Upson's Patent.....40%

### Cord and Weight—
Ives, ℔ gro., $1.08.....10%
Titan, ℔ gro., $0.66.....10%

### Corrugated—
Acme Corrugated Fasteners.....70%

### Faucets—
*Cork Lined.....50&10@60%*
*Metallic Key, Leather Lined, ..60&10@70%*
*Red Cedar.....40&5@40&10&5%*
*Petroleum .....70&10@75%*
B. & L. B. Co.:
Metal Key.....60&10%
Star .....60%
West Lock.....50&10%
John Sommer's Peerless Tin Key....40%
John Sommer's Boss Tin Key.....50%
John Sommer's Victor Mtl. Key.50&10%
John Sommer's Duplex Metal Key..60%
John Sommer's Diamond Lock.....40%
John Sommer's I.X.L. Cork Lined..50%
John Sommer's Reliable Cork Lined..50&10%
John Sommer's Chicago Cork Lined.60%
John Sommer's O. K. Cork Lined...50%
John Sommer's No Brand, Cedar....50%
John Sommer's Perfection, Cedar....40%
Self Measuring:
Enterprise, Self Measuring and Pump, ℔ doz., $36.00.....40&10%
Lane's, ℔ doz., $36.00.....40&10%
National Measuring, ℔ doz. $36.40&10%

### Felloe Plates—
See *Plates, Felloe.*

### Files— Domestic—
*List Nov. 1, 1899.*
*Best Brands.....70&10@75&10%*
*Standard Brands.....75&10@80&10%*
*Lower Grade....75&10&10@80&10%*
Gold Medal.....70%
McCaffrey's American Standard, 60&10&10
Imported—
*Stubs' Tapers, Stubs' list, July 24, '97.....33⅓@40%*

### Fixtures, Fire Door—
Richards Mfg. Co.:
Universal, No. 103; Special, No. 104 .....$3.75
Fusible Links, No. 96.....50
Expansion Bolts, No. 107.....60&10%

### Grindstone—
*Net Prices:*

| | | | | |
|---|---|---|---|---|
| *Inch* | *.15* | *.17* | *.19* | *.21* |
| *Per doz.* | *$3.60* | *3.85* | *4.15* | *4.65* |

Peck, Stow & Wilcox Co.:

| In..... | 15 | 17 | 19 | 21 | 24 | |
|---|---|---|---|---|---|---|
| | $4.00 | 4.40 | 4.75 | 5.50 | 6.50 | ....30% |

Reading Hardware Co.....60%

### Fodder Squeezers—
See *Compressors.*

### Forks—
American Fork & Hoe Co.:
Iowa Dig-Ezy Potato.....70&5%
Hay, Regular, 3-tine.....45&20&12½%
Hay, Regular, 4-tine.....60&7½&5
Champion, Hay.....60&12½
Acme, Hay.....60&20
Manure, Regular, 4-tine.....65&5
Manure, Regular, 5 and 6 tine...70%
Champion, Manure.....65&5%
Columbia, Manure.....70
Acme, 4-tine.....60&10&5%
Round Shoulder Header, 4-tine..65
Champion, Header.....65
Dakota, Header.....65
Kansas Header.....65
Wood, Barley.....35&5%
Steel, Barley.....66⅔
Columbia, Spading.....70&7½&5

### Frames— Wood Saw—
*White, S'g't Bar, per doz.75@80¢*
*Red, S'g't Bar, per doz.$1.00@1.25*
*Red, Dbl. Brace, per doz.$1.40@1.50*

### Freezers, Ice Cream—

| *Qt.....* | *1* | *2* | *3* | *4* | *6* |
|---|---|---|---|---|---|
| *Each....* | *$1.25* | *$1.60* | *$1.90* | *$2.20* | *$2 80* |

### Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

### Fry Pans—See *Pans, Fry.*

### Fuse— *Per 1000 Feet.*
*Hemp .....$2.75*
*Cotton .....3.20*
*Waterproof Sgl. Taped..3.65*
*Waterproof Dbl. Taped..4.40*
*Waterproof Tpl. Taped..5.15*
} 10&2½%

### Gates, Molasses and Oil—
*Stebbins' Pattern.....80@80&5%*

### Gauges—
*Marking, Mortise, &c..50@50&10%*
Chapin-Stephens Co.:
Marking, Mortise, &c. ....50&50&10%
Lever, Mortise, & Sharpe's.....67½%
Lever, Panel & Sharpe's.....33⅓%
Wire Marking .....25%
Wire, P., S. & W. Co.....33⅓%

### Gimlets— Single Cut—
*Numbered assortments, per gro.*
*Nail, Metal, No. 1, $2.00; 2, $2.30*
*Spike, Metal, No. 1, $4.00; 2, $4.30*
*Nail, Wood Handled, No. 1, $2.30; 2, $2.60*
*Spike, Wood Handled, No. 1, $4.30; 2, $4.60*

### Glass, American Window
See *Trade Report.*

### Glasses, Level—
Chapin-Stephens Co.....65@65&10%

### Glue, Liquid Fish—
*Bottles or Cans, with Brush, 25&10@50%*
Elwell's .....40%

### Grease, Axle—
*Common Grade...gro.$6.00@$6.50*
Dixon's Everlasting, 10-lb. pails, ea. 85¢; in boxes, ℔ doz., 1 lb, $1.20; 2 lb.....$2.00
Helmet Hard Oil.....25%

### Griddles, Soapstone—
Pike Mfg. Co.....33⅓@33⅓&10%

### Grinders—
Pike Mfg. Co.:
Hand and Foot Power, Pyko Nos. 1, 2, 3; Pyko Primo; Pyko Peerless; Pyko Spiral (foot power)..33⅓%
Mower Knife and Tool, $5.00..40&10%
Royal Mfg. Co.:
Alundum Grinding Machines, each, Nos. 01, $1.75; 1A, $2.50; 10, $5.00 .....30%
Alundum Sickle Grinders, each, Nos. 20, $5.00; 20A, $6.00; 20A Combined, $6.50.....30%
Alundum Disc Grinders, each, $2.50 .....30%

### Grindstones—
Pike Mfg. Co.:
Improved Family Grindstones, ℔ inch, ℔ doz., $2.00.....33⅓%
Richards Mfg. Co., Eli and Cycle, Ball Bearing, mounted.....40%

### Grips, Nipple—
Perfect Nipple Grips.....40&10&2%

### Halters and Ties—
*Cow Ties.....65@65&10%*
Bridgeport Chain Co.:
Triumph Coil and Halters.35&2½@40%
Brown Coil and Halters...45@50&5%
Brown Cow Ties.....50&5@50&10&5%
Brown Tie Outs.....70&10@75&5%
Covert Mfg. Co.:
Web .....30&2%
Jute Rope.....35%
Sisal Rope.....20%
Cotton Rope.....45%
Hemp Rope.....45%
Oneida Community:
Am. Coil and Halters.....40@40&5%
Am. Cow Ties.....45@50%
Niagara Coil and Halters...45@50&5%
Niagara Cow Ties.....45&5@50&10&5%

### Hammers—
### Handled Hammers—
Heller's Machinists'....55&10@55&10&5%
Heller's Farriers.....40&5@40&10&5%
Peck, Stow & Wilcox Co.:
Crucible Steel.....40&10@50%
Farriers' .....40&10@50%
Riveting .....40&10@50%
Machinists' .....66⅔@5%
Blacksmiths' .....50%
Fayatte R. Plumb:
A. E. Nail.....40&2½@40&12½%
Eng. and B. S. Hand.50&10&5@60&5%
Machinists' Hammers.....60&10&5%
Rivet and Tinners'.40&7½@40&12½&5%
Victor Magnetic Tack, ℔ gro....$7.75

### Heavy Hammers and Sledges—
*Under 3 lb., per lb., 50¢...80&10%*
*3 to 5 lb., per lb., 40¢...80&10&10%*
*Over 5 lb., per lb., 30¢.....*
*Over 5 lb., per lb., 30¢.80&10&10%*

### Handles—
### Agricultural Tool Handles
*Axe, Pick, &c....60&10@60&10&5%*
*Hoe, Rake, &c.....40%*
*Fork, Shovel, Spade, &c.:*
*Long Handles.....40%*
*D Handles.....40%*

### Cross-Cut Saw Handles—
Atkins' .....40%
Champion .....50%
Disston's .....50%

### Mechanics' Tool Handles—
*Auger, assorted...gro.$3.00@$3.50*
*Brad Awl.....gro.$1.65@$1.75*
*Chisel Handles, Ass'd, per gro.:*
*Tanged Firmer, Apple, $2.40@$2.65; Hickory.....$2.15@2.40*
*Socket Firming, Apple, $1.75@$1.95; Hickory.....1.60@1.75*
*Socket Framing, Hickory, $1.60@$1.75*
*File, assorted.....gro.$1.30@$1.40*
*Hammer, Hatchet, &c., 60&10@60&10&5%*
*Hand Saw, Varnished, doz., 80¢ 85¢; Not Varnished.....65@75¢*
*Plane Handles:*
*Jack, doz., 30¢; Fore, doz...45¢*
Chapin-Stephens Co.:
Carving Tool.....30@30&10%
Chisel .....60@60&10%
File and Awl.....60@60&10%
Saw and Plane.....30@30&10%
Screw Driver.....30@30&10%
Millers Falls Adj. and Ratchet Auger Handles .....15&10%
Nicholson Simplicity File Handle.... ℔ gro. $0.85@$1.50
J. L. Osgood:
Indestructible File and Tool, ℔ gro., No. 1, $8.00; No. 2, $8.50; No. 3, $9.00; No. 4, $9.50; No. 5, $10.00.....gro. lots 10%
W. A. Zelnicker Supply Co.:
Hammer, ℔ doz., 12 in. $2.00; 14 in., $2.00; 16 in., $2.30; 18 12., $2.50; 20 in., $2.70; 22 in., $3.00; 24 in., $3.30; 26 in., $3.50; 30 in., $3.80.
Sledge, ℔ doz., oval, 30 in., $3.80; octagon, 30 in., $3.80; oval, 36 in., $4.00; octagon, 36 in., $4.00.
Axe, ℔ doz., 28 to 34 in., $5.60; 36 in., $5.80.
Adze, ℔ doz., 36 in., $5.80; 36 in., $7.80.
Pick, ℔ doz., R. R., 36 in., $8.00; coal, 34 in., $5.80.
Hatchet, ℔ doz., 12 to 14 in., $2.00.
} 50%

### Hangers—
*NOTE.—Barn Door Hangers are generally quoted per pair, without track and Parlor Door Hangers per double set with track, &c.*
Chicago Spring Butt Co.:
Friction .....25%
Oscillating .....25%
Big Twin.....25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door.....50%
Elevator .....30%
Railroad .....50%
Cronk & Carrier Mfg. Co.:
Loose Axle.....60&10%
Roller Bearing.....70%
Griffin Mfg. Co.:
Solid Axle, No. 10, $12.00..60&10%
Roller Bearing, No. 11, $15.00, 60&10%
Roller Bearing, Ex. Hy., No. 22, $18.00.....60&10%
Bull Dog, $24.00.....70%
Lane Bros. Co.:
Parlor, Ball Bearing, $4.00; Standard, $3.15; No. 105, $2.85; New Model, $2.80; New Champion per set of 4 Hangers, complete with track.....$2.25
Barn Door, Standard.....60&10%
Hinged .....net $6.08
Covered .....60&5%
Special .....70&5%
Trolley Hangers and track...50%
Lawrence Bros.:
Cleveland .....70&7½%
Clipper, No. 75.....60%
Crown .....55&10%
Cyclone, No. 40.....net $6 50
Tandem, No. 50.....net $7.50
New York.....55&10%
Trolley, No. 30, ℔ pair.....$1.25
McKinney Mfg. Co.:
Roller Bearing, Nos. 1 and 2..70%
Anti-Friction .....60%
Hinged Hangers, King Charm.60%
Richards Mfg. Co.:
Hangers, Nos. 47, 48, 147, 247, 60&5%
Pioneer Wood Track, No. 3..$2.25
Roller B'r'g St'l Track No. 12.$2.20
Roller B'r'g St'l Track No. 13.$2.50
Roller B'r'g, Nos. 39, 41, 43, 70&7½%
Hero, Adj. Track No. 19..50&10%
Adjustable Track Tandem Trolley Track No. 16.....50&10%
Seal, Steel Track No. 8.....$2.25
Auto Adj. Track No. 22..50&5%
Trolley B. D. No. 17, $1.25; F. D. No. 120, $2.25; No. 121, $2.45; No. 150.....$2.50
Safety Underwriters F. D. No. 101 .....50%
Tandem No. 44..2½ and 3 60&10%
Palace, Adjustable Track No. 132 .....50&5%
Royal, Adjustable Track No. 122 .....50&10%
Ives' Wood Track No. 1.....$2.25
Trolley B. D. No. 20.....50&10%
Trolley B. D. No. 24, $1.30; No. 27, $1.40; No. 28.....$1.60
Roller Bearings, Nos. 37, 38, 39, 41, 43, 44. Sizes 1 and 2.70&7½%
Anti friction, No. 42; No. 44, sizes 2½ and 3.....60%
Hinged Tandem No. 48....60&5%
Folding Door B. B. Swivel No. 135 .....10%
Taylor & Boggis Fty Co.'s Kidder's Roller Bearing, ℔ doz., 4 in., $12.00; 5 in., $14.00..40&10%
Myers' Stayon Hangers.....60%
} Extra 5@10% often given.

### Hangers— Garment—
Pullman Trouser, ℔ gro., No. 1 $9.00; No. 4, $24.00; No. 5, $16.50; No. 8, Black Enamel, $7.50; No. 10, $21.00; No. 12, $8.00; No. 15, Rods, $9.00; No. 18, Loops.....$10.00
Victor Folding.....℔ gro. $9.60

### Gate—
Myers' Patent Gate Hangers, ℔ doz. net .....50%

### Joist and Timber—
Lane Bros. Co.....35%

### Hasps—
Griffin's Security Hasp.....50&10%
McKinney's Perfect Hasp, ℔ doz..60%

### Hatchets—
*Regular list, first qual.40&12½@—*
*Second quality.....50&10&5@—*

### Heaters, Carriage—
Clark, No. 5, $1.25; No. 5B, $1.50; No. 3, $1.75; No. 3D, $2.00; No. 7D, $2.25; No. 3E, $2.50; No. 1, $3.00.....25%
Clark Coal, ℔ doz., $0.75.....20%

### Hinges—
### Blind and Shutter Hinges
*Surface Gravity Locking Blind:*
*Doz. Sets with Fastenings, No. 1, $0.70; No. 3, $1.25; No. 5, $2.65.*
*Mortise Shutter.....80%*
*Mortise Reversible Shutter...80%*
North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%
Charles Parker Co.....70@75%
Parker Wire Goods Co.
Hale & Benjamin Automatic Blind Hinges .....20%
Hale's Blind Awning Hinges, No. 110, for wood, $9.00; No. 111, for brick, $9.00.....20%
Reading's Gravity.....60%
Stanley's Steel Gravity Blind Hinges, No. 1647½, ℔ doz. sets, without screws, $0.95; with screws, $1.25.
Wrightsville Hardware Co.:
O. S., Lull & Porter.....75&5%
Acme, Lull & Porter.....75%
Queen City Reversible.....75%
Shepard's Noiseless, Nos. 60, 65, 55 .....75&5%
Niagara, Gravity Locking, Nos. 1, 3 & 5.....75&5%
Clark's O. P., No. 1.....75&10%
Clark's O. P., Nos. 3 and 5....75&5%
Tip Pat'n, No. 1.....75&10%
Clark's No. 3.....75&5%
Buffalo Gravity Locking, Nos. 1, 3 & 5.....70&10&5%
Shepard's Double Locking.....75%
Champion Gravity Locking.....75&5
Pioneer .....75&10%
Empire .....65%
W. H. Co.'s Mortise Gravity Locking, No. 2.....60&10%

### Gate Hinges—
*Clark's or Shepard's—Doz. sets:*

| *No.* | *1* | *2* | *3* |
|---|---|---|---|
| *Hinges with L't'chs.* | *$2.00* | *2.70* | *5.00* |
| *Hinges only.....* | *1.25* | *1.90* | *3.50* |
| *Latches only.....* | *.70* | *.75* | *.35* |

*New England:*
*With Latch.....doz..@$2.00*
*Without Latch.....doz..@$1.60*
*Reversible Self-Closing:*
*With Latch.....doz..@$1.75*
*Without Latch...doz. ...@$1.35*
*Western:*
*With Latch.....doz. $1.75*
*Without Latch.....doz..$1.15*
Wrightsville Hardware Co.:
Shepard's or Clark's Hinges and Latches, Hinges only or Latches only, Nos. 1, 2 or 3.....70%

### Miscellaneous—
Griffin Mfg. Co., Fleur de Lis Surface Hinges, ℔ doz. prs.....$1.00

### Pivot Hinges—
Bommer Bros. Pivot, Ball Bearing .....40%
Lawson Mfg. Co. Matchless.....30%

### Spring Hinges—
*Holdback, Cast Iron...$6.75@$7.00*
*Non-Holdback, C'st Iron$6.50@$6.75*
J. Bardsley:
Bardsley's Non-Checking Mortise Floor Hinges.....40%
Bardsley's Patent Checking.33⅓%
Bommer Bros.:
Spring Butt Hinges.....40%
Surface Floor, Ball Bearing .....40%
Mortise Floor, Ball Bearing.40%
Lavatory Hinges.....40%
Non-Holdback Screen Door, Nos. 2000 and 900.....40%
Holdback Screen Door, No. 999.....℔ gro. $9.00
Chicago Spring Butt Co.:
Chicago Spring Hinges.....25%
Triple End Spring Hinges....50%
Chicago (Ball Bearing) Floor.50%
Garden City Engine House...25%
Keene's Saloon Door.....25%
Columbian Hardware Co.:
Acme, Wrought Steel.....30%
Acme, Brass.....25%
American .....30%
Columbia, ℔ gr., No. 14, $9.00; No. 18.....$25.00
Columbia, Adj., No. 7, ℔ gr.$12.00
Gem, new list.....30%
Clover Leaf and Acorn, per gro. .....$12.00
Oxford, new list.....30%
Floor Spring Hinges.....65&10%
Columbian Steel.....65&10%
Lawson Mfg. Co.:
Matchless Spring Hinges.....30%
Matchless Jamb Hinges.....30%
Richards Mfg. Co.:
Superior Double Acting Floor Hinges .....40%
Shelby Spring Hinge Co.:
Buckeye All Steel Holdback Screen Door.....℔ gr. $9.00
Chief Ball Bearings Floor Hinge .....50%
Ball Bearing Door.....25%
No. 777, Sheet Steel Holdb'k, ℔ gr. pr.....$9.00
Standard Mfg. Co.:
Champion Double Acting Door Hinge .....25&10&10%
Standard Double Acting Floor Hinge .....25&10&10%
Superior Spring Hinge Co.:
Superior Floor Hinges.....33⅓%
Spring Hinges.....33⅓%
} Extra 10% often given on most of these Hinges.

### Wrought Iron Hinges—
*Strap and T Hinges, &c., list February 10, 1908:*
*Light Strap Hinges..50&10%*
*Heavy Strap Hinges..60&5%*
*Light T Hinges.....50%*
*Heavy T Hinges.....40%*
*Extra Hvy. T Hinges.50&10%*
*Hinge Hasps.....33⅓%*
*Cor. Heavy Strap....60&5%*
*Cor. Ex. Heavy T...50&10%*
} Extra 10&7½%.

*Screw Hook and Strap.* { *6 to 12 in..lb.3½¢* / *1¼ to 20 in..lb.3¼¢* / *22 to 36 in..lb.3 ¢* }

*Screw Hook and Eye:*
*3, to 4 inch.....lb.6½¢*
*⅝-inch .....lb.7½¢*
*½-inch .....lb.8½¢*

### Hitchers, Stall—
Covert Mfg. Co., Stall Hitchers..30&2%

### Hods— Coal—
*M'f'gr's list, price per gross:*

| *Inch .....* | *15* | *16* | *17* | *18* |
|---|---|---|---|---|
| *Galv. Open....* | *$35* | *$39* | *$42* | *$46* |
| *Jap. Open...* | *26* | *28* | *31* | *35* |
| *Galv. Funnel...* | *43* | *48* | *52* | *56* |
| *Jap. Funnel....* | *33* | *36* | *59* | *43* |

} 10&7½&5%

### Masons' Etc.
Cleveland Wire Spring Co.:
Steel Brick, No. 162 .....each $1.05
Steel Mortar, No. 158.....each $1.35

### Hoes— Eye-
*Scovil and Oval Pattern, 60&10@60&10&10%*
*Grub, list Feb. 23, 1899, 70&10@70&10&10%*
D. & H. Scovil....27½%
Am. Fork & Hoe Co. (Scovil Pattern) ....60&5%

### Handled—
Cronk's Weeding, No. 1,$2.00; No. 2,$2.50
Star Double Bit....$2.50
American Fork & Hoe Co.:
Regular, Cotton....75&10&5&2½%
Crescent, Cultivator....75&2½%
Mattock, Senior....70%
Mattock, Junior....70%
Sprouting....50%
Tobacco, Harper's....66⅔&15&10%
Warren....55&10&10&5%
Ivanhoe....65&15&10%
Cultivator, B B 6....70&10&10&5%
Cultivator, B B 6½....70&10&10&5%
Weeding, Acme....72½&10&2½%
Scuffle, Lightning....60&5%

### Hoisting Apparatus—
See *Machines, Hoisting.*

### Holders— Bit—
Angular, ₱ doz. $24.00....45&10%

### Door—
Bardsley's, Iron, 40%; Brass and Bronze....25%
Empire....50%
Pullman....25%
Richards Mfg. Co.: No. 117, Ever-ready, 40%; Nos. 118, 119, Sure Grip....50%
Superior....33⅓%

### File and Tool—
Nicholson File Holders and File Handles....33⅓@40%

### Fruit Jar—
Triumph Fruit Jar Holder, ₱ gross, $18.00; ₱ doz....$2.00

### Trace and Rein—
Fernald Double Trace Holder, ₱ doz. pairs....$1.25
Dash Rein Holder, ₱ doz....$1.25

### Hones—Razor—
Pike Mfg. Co., Belgian and Swaty, 50%; German....33⅓%

### Hooks—Cast Iron—
Bird Cage, Reading....40%
Clothes Line, Reading List....40%
Coat and Hat, Reading....45&20%
Coat and Hat, Wrightsville....60&5%
Harness, Reading List....40%

### Wire—
*Belt, Nos. 1 to 15....75&10@80%*
*Wire C. & H. Hooks..80@80&10%*
Bradley Metal Clasp Wire, Coat and Hat, 75&10@80%; Ceiling..75&10@80%
Columbian Hdw. Co., Gem....75&10%
Parker Wire Goods Co., King..75&10%
Wire Goods Co.:
Acme, 60&10%; Chief, 70&10%; Crown, 75%; Czar, 65&10%; V Brace, 75%; Czar Harness, 50%; Ceiling, 75%.

### Wrought Iron—
*Box, 6 in., per doz., $0.90; 8 in., $1.15.*
*Cotton....doz.$1.25@$1.50*
Wrought Staples, Hooks, &c. See Wrought Goods.

### Miscellaneous—
*Hooks, Bench,* see *Stops, Bench.*
*Bush, Light, doz., $6.20; Medium, $6.75; Heavy, $7.65*
*Grass, best, all sizes, per doz., $2.75@$3.00*
*Grass, common grades, all sizes, per doz....$1.25@$1.50*
*Whiffletree....lb.5¼@6¢*
*Hooks and Eyes:*
*Brass....60@60&10%*
*Malleable Iron....70@70&10%*
Covert Mfg. Co. Gate and Scuttle Hooks....40%
Turner & Stanton Co. Cup and Shoulder....85&10%
Bench Hooks—See Bench Stops.
Corn Hooks—See Knives, Corn.

### Horse Nails—
See *Nails, Horse.*

### Horseshoes—
See *Shoes, Horses.*

### Hose, Rubber—
*Garden Hose, ¾-inch:*
*Competition....ft. 6@6½¢*
*3-ply Guaranteed....ft. 8½@9¢*
*4-ply Guaranteed....ft. 9½@12¢*
*Cotton Garden, ¾-in., coupled:*
*Low Grade....ft. 8@ 9c*
*Fair Quality....ft.10@11¢*

### Irons— Sad—
*From 4 to 10....lb.2½@2¾¢*
*B. B. Sad Irons....lb.3¼@3½¢*
*Mrs. Potts', cents per set:*

| | Nos. 50 | 55 | 60 | 65 |
|---|---|---|---|---|
| *Jap'd Caps* | .86 | .93 | .96 | .93 |
| *Tin'd Caps* | .91 | .88 | 1.01 | .98 |

*New England Pressing..lb.3¾@4¢*

### Bar and Corner—
Richards Mfg. Co., Bar, 60&10%; Corner....60%

### Pinking—
*Pinking Irons....doz.60@85¢*

### Irons, Soldering
See *Coppers.*

### Jacks, Wagons—
Covert Mfg. Co.:
Auto Screw....30&2%; Steel, 15%
Lockport....50%
Lane's Steel....30&5%
Richards' Tiger Steel, No. 130...50&10%
Smith & Hemenway Co.'s....25%

### Ladder—
Richards Mfg. Co. Ladder Jacks 50%

### Jointers—
Pike Mfg. Co., Saw Jointers, $7.00..40%

### Kettles—
*Brass, Spun, Plain....20@25%*
Enameled and Cast Iron—See Ware, Hollow.

### Knives—
### Butcher, Kitchen, &c.—
Foster Bros.' Butcher, &c....30%
Wilkinson Shear & Cutlery Co....60%

### Corn—
Columbian Cutlery Co., Wilcut Brand Knives and Hooks....60%
American Fork & Hoe Co.:
Easy Cut, ₱ doz., No. 10 C H...$2.10
Easy Cut, ₱ doz., No. 10 B C H.$2.20
Acme, ₱ doz....$2.35
Dent, ₱ doz....$2.35
Adjustable, Serrated, ₱ doz....$1.90
Serrated, ₱ doz....$1.85
Yankee, No. 1 C H....$1.35
Yankee, No. 2 C H....$1.15

### Drawing—
*Standard List....80&10@—%*
C. E. Jennings & Co., Nos. 45, 46, 25&7½%
Jennings & Griffin, Nos. 41, 42, 66⅔&7½%
Swan's....66⅔@70%
Watrous....16⅔%
L. & I. J. White....20&5@25%

### Hay and Straw—
*Serrated Edge, per doz.$5.00@5.50*
Iwan's Sickle Edge....₱ doz. $9.50
Iwan's Serrated....₱ doz. $10.00

### Miscellaneous—
*Farriers' ....doz.$2.60@3.55*
Wostenholm's ....₱ doz. $5.00@5.25

### Knobs—
*Base, 2½-inch, Birch or Maple, Rubber Tip....gro.$1.25@1.40*
*Carriage, Jap., Drive, all sizes, gro.35@40¢*
*Door, Mineral....doz.65@70¢*
*Door, Por. Jap'd....doz.70@75¢*
*Door, Por. Nickel..doz.$2.05@2.15*
Bardsley's Wood Door, Shutters, &c.15%

### Lacing, Leather—
See *Belting, Leather*

### Ladders, Store, &c.—
Lane's Store....25%
Myers' Noiseless Store Ladders....50%
Richards Mfg. Co.:
Improved Noiseless, No. 112....50%
Climax Shelf, No. 113....50%
Trolley, No. 109....50%

### Ladles, Melting—
L. & G. Mfg. Co., Melting and Plumbers'....25%
P., S. & W....40&10%
Reading....60%

### Lamps,—
Hammer's M. I. Hand....45%

### Lanterns—Tubular—
*Regular, No. 0....doz.$4.35@4.50*
*Side Lift, No. 0....doz.$4.60@4.75*
*Hinge Globe, No. 0.doz.$4.60@4.75*
*Other Styles....40@40&10%*

### Bull's Eye Police—
*3-inch....$3.75@4.00*

### Latches— Thumb—
*Roggin's Latches, Jap'd, with Screws....doz.35@40¢*

### Door—
Cronk & Carrier Mfg. Co., No. 101, ₱ doz. $2.00
Richards' Bull Dog, Heavy, No. 125....50&5%
Richards' Trump, No. 127....$1.50

### Leaders, Cattle—
*Small....doz.50¢; large, 60¢*
Covert Mfg. Co.:
Cotton, 45%; Hemp, 45%; Jute, 35%; Sisal, 20%.

### Leathers, Pump—
See *Pumps—*

### Lifters, Transom—
R. & E....10%

### Lines—

| *Wire Clothes, Nos.* | *18* | *19* | *20* |
|---|---|---|---|
| *100 feet* | *$2.30* | *1.95* | *1.75* |
| *75 feet* | *$1.95* | *1.65* | *1.50* |

Samson Cordage Works:
Solid Braided Chalk, Nos. 0 to 3..40%
Solid Braided Masons'....30%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50....₱ gr. 20%
Masons' Lines, Shade Cord, &c.; White Cotton, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50; Colors, No. 3½, $1.75; No. 4, $2.25; No. 4½, $2.75; Linen, No. 3½, $2.50; No. 4, $3.50; No. 4½, $4.50....20%
Tent and Awning Lines: No. 5, White Cotton, $7.50; Drab Cotton, $8.50....20%
Clothes Lines, White Cotton: 50 ft., $2.75; 60 ft., $3.25; 70 ft., $3.75; 75 ft., $4.00; 80 ft., $4.25; 90 ft., $4.75; 100 ft. $5.25....20%
Turner & Stanton Co.:
Solid Braided Chalk, Masons' and Awning Lines....40%
Clothes Lines, White Cotton....20%
Shade Cord, Cotton or Linen....20%

### Locks— Cabinet—
*Cabinet Locks....33⅓@33⅓@7%*

### Door Locks, Latches, &c
*NOTE.—Net Prices are very often made on these goods.*
Reading Hardware Co....10%
R. & E. Mfg. Co....10%

### Padlocks—
R. & E. Mfg. Co. Wrought Steel and Brass....75&10%

### Sash, &c.—
Ives' Patent:
Crescent....10%
Automatic Gravity Metal Sash, ₱ gro., $149.58....10
Window Ventilating....10%
Pullman Patent Ventilating Lock..25%
Reading Sash Locks....40%
Taylor Mfg. Co., Perfect Ventilating, ₱ doz....$0.75@$1.00

### Machines—Boring—
*Com. Upr't, without Augers, $2.00@2.25*
*Com. Angl'r, without Augers, $2.35@2.50*
Ford Auger Bit Co....$22.00
Jennings', Nos. 1 and 4....25&7½%
Millers' Falls....5.75
Snell's, Upright, $2.65; Angular, $2.90
Swan's Improved....10&10%

### Corking—
Reisinger Invincible Hand Power... ₱ doz. $48.00

### Fence—
Williams' Fence Machines....each, $5.50

### Hoisting—
Moore's Anti-Friction Chain Hoist,30%
Moore's Hand Hoist, with Lock Brake....20%
Moore's Cyclone High Speed Chain Hoist....25%

### Ice Cutting—
Chandler's....12½%

### Washing
Boss Washing Machine Co.: Per doz.
Boss No. 1....$57.00
Boss Rotary....$57.00
Champion Rotary Banner No. 1.$57.00
Standard Champion No. 1....$50.00
Standard Perfection....$27.00
Cincinnati Square Western....$33.00
Uneeda American, Round....$33.60

### Mallets—
*Hickory....45&5@50%*
*Lignumvitæ....45&5@50%*
*Tinners' Hickory and Applewood....doz.45&5@50%*

### Mangers, Stable—
Swett Iron Works....50%

### Mats, Door—
Acme Flexible Steel....50
Elastic Steel (W. G. Co.), new list,50%

### Mattocks—
See *Picks and Mattocks.*

### Milk Cans—See *Cans, Milk.*

### Mills, Coffee, &c.—
Enterprise Mfg. Co.:
Coffee....20@25%
Shell and Corn....25&10
National list Jan. 1, 1902....30
Parker's Columbia and Victoria..33⅓
Parker's Box and Side....50&10%
Swift, Lane Bros. Co....30%

### Motors, Water—
Divine's Red Devil....30
$2.50 3.50 10.00 15.00....33⅓
No. 1. 2 3 4
Lippincott's:
No.... 1 2 3 4
$2.50 3.50 10.00 15.00 .33⅓
Pike Mfg. Co., Tool and Knife Grinding....33⅓

### Mowers, Lawn—
*NOTE.—Net prices are generally quoted*
*Cheapest, 10-in., $2.90; advance 10¢ for each size.*
*Cheap, 10-in., $2.25; advance 15@20¢ for each size.*
*Better Grade, 10-in., $3.00; advance 25¢ for each size.*

| | *12* | *14* | *16* | *18 in.* |
|---|---|---|---|---|
| *High Grade* | *$4.50* | *4.75* | *5.00* | *5.25* |

Continental....60%
Great American....70
Great American Ball B'r'g, new list.70%
Quaker City....70%
Pennsylvania....60%
Pennsylvania, Jr., Ball Bearing. 50&10&5%
Pennsylvania Golf....50
Pennsylvania Horse....33⅓&5%
Pennsylvania Pony....40&5%

### Nails—
*Wire Nails and Brads. Miscellaneous....85&5@85&10%*
*Cut and Wire.* See *Trade Report.*
*Hungarian, Finishing, Upholsters', &c.* See *Tacks.*

### Horse—

| Nos. | 6 | 7 | 8 | 9 | 10 | |
|---|---|---|---|---|---|---|
| Anchor | 23 | 21 | 20 | 19 | 18 | .. ₱ lb. net, 12¢ |
| Coleman | 13 | 12 | 12 | 11 | 11 | net ₱ lb |
| New Haven | 23 | 21 | 20 | 19 | 18 | .. ₱ lb. net, 12¢ |
| Livingston | 19 | 18 | 17 | 16 | 16 | ....10% |
| Western | | | | | | ₱ lb 8½¢ |

*Jobbers' Special Brands, per lb.9¢*

### Picture—

| | 1½ | 2 | 2½ | 3 in. |
|---|---|---|---|---|
| *Brass Hd, gro.* | *.45* | *.55* | *.60* | *.70* |
| *Por. Head, gro.* | *1.10* | *1.10* | *1.10* | |

### Upholsters—
*Brass....30%*
*Plated....30&10%*

### Nippers—
See *Pliers and Nippers.*

### Nipples—
Standard Nipple Co.:
Wrought Pipe Nipples....80

### Nuts— *Blank or Tapped.*
*Cold Punched: Off list*
*Square....7.30¢*
*Hexagon....7.90¢*
*Square, C., T. & R....5.70¢*
*Hexagon, C., T. & R....6.50¢*
*Hot Pressed:* Off list.
*Square....5.80¢*
*Hexagon....6.30¢*

### Oakum—
*Best....lb.6½¢*
*U. S. Navy....lb.6 ¢*
*Navy....lb.5 ¢*
*Plumbers' Spun Oakum..2¾@3 ¢*

### Oil—
Pike Mfg. Co., Stonoil....40%

### Oil Tanks—See *Tanks, Oil.*

### Oilers—
*Steel, Copper Plated....75%*
*Chase or Paragon:*
*Brass and Copper....50&10%*
*Zinc....65&10@70%*
*Railroad....60&10&10%*
Malleable, Hammers' Improved, Nos. 11, 12 and 13, 10%; Old Pattern, Nos. 1, 2, 3, 4, 50%.
American Tube & Stamping Co.:
Spring Bottom Cans....70@70&10%
Railroad Oilers, &c....60@60&10%
Maple City Mfg. Co.:
Spring Bottom Cans....70@70&10%
Railroad Oilers, &c....60@60&10%

### Openers—Packing Box—
Herculever, ₱ doz., $24....30%

### Can Openers—
*Per doz.*
*Sprague, Iron Handle....30@35¢*
*Sprague, Wood Handle....40¢*
*Sardine Scissors....$1.75@3.00*
Can and Bottle Openers, ₱ doz., net: Yankee, $0.75@$0.85; Little Gem, $0.50@$0.65; Nifty....$0.75

### Egg—
Hartigan Nickel Plate, ₱ doz., $2.00; Silver Plate, $4.00.

### Packing—
*Asbestos Packing, Wick and Rope, any quantity....18@20¢*

### Rubber—
*(Fair quality goods.)*
*Sheet, C. I....11@12¢*
*Sheet, C. O. S....11@12¢*
*Sheet, C. B. S....12@13¢*
*Sheet, Pure Gum....40@45¢*
*Sheet, Red....40@50¢*
Jenkins' '96, ₱ lb, 80¢....25%

### Miscellaneous—
*American Packing....lb. 7@10 ¢*
*Cotton Packing....lb.16@25 ¢*
*Italian Packing....lb. 9@10¢*
*Jute....lb. 4@4½¢*
*Russia Packing....lb. 9@10¢*

### Pails, Water, Well, &c.—
See *Buckets.*

### Paint—
Dixon's Silica-Graphite, in 1 gal. pails and 5 gal. kegs, 25%; packages of larger size....20%

### Pans— Dripping—
*Standard List....75&10@80%*
Edwards, Royal Blue....75%

### Fry—
*Common Lipped:*

| *Nos.* | *1* | *2* | *3* | *4* | *5* |
|---|---|---|---|---|---|
| *Per doz.* | *$0.75* | *0.85* | *0.95* | *1.15* | *1.30* |

### Refrigerator, Galva.—

| *Inch* | *12* | *14* | *16* | *18* |
|---|---|---|---|---|
| *Per doz.* | *$1.75* | *2.25* | *2.80* | *3.15* |

### Paper—Building Paper

| *Asbestos:* | *lb.* |
|---|---|
| *Roll Board or Building Felt, 6 to 30 lb., per 100 sq. ft.* | *2½¢* |
| *Roll Board or Building Felt, 3-32 and ⅛ in., 45 to 60 lb., per 100 sq. ft.* | *3½¢* |
| *Mill Board, Sheet, 40 x 40 in., 1-32 to ½ in.* | *3¢* |
| | *Per roll.* |
| *Rosin Sized Sheathing: 500 sq. ft. Light weight, 25 lbs. to roll,* | *48@58¢* |
| *Medium weight, 30 lbs. to roll.* | *56@70¢* |
| *Heavy weight, 40 lbs. to roll.* | *75@78¢* |
| *Black Water Proof Sheathing, 500 sq. ft., 1 ply, 65c; 2 ply, 85¢; 3 ply, $1.10; 4 ply, $1.25.* | |
| *Deafening Felt, 9, 6 and 4½ sq. ft. to lb., ton....* | *$54.50* |
| *Red Rope Roofing, 250 sq. ft. per roll....* | *$1.75* |

### Tarred Paper—
*1 ply (roll 400 sq. ft.), ton.* *$34.00@$38.00*
*2 ply, roll 108 sq. ft....65¢*
*3 ply, roll 108 sq. ft....88¢*
*Slater's Felt (roll 500 sq. ft.)..80¢*

### Sand Paper and Cloth—
*Flint and Emery....50&10%*
*Garnet Paper and Cloth....25%*

### Parers—Apple—
Goodell Co.:
Family Bay State....₱ doz. $15.00
Improved Bay State....₱ doz. $36.00
New Lightning....₱ doz. $7.00
Turn Table '98....₱ doz. $6.00
White Mountain....₱ doz. $5.00
Peerless Improved....each $7.50
Dandy....each $10.00
Eureka Improved....each $20.00
New Century....each $20.00
Ranger....each $30.00

Livingston Nail Co.:
Daisy ..... ℔ doz. $4.00
Little Star ..... ℔ doz. $5.00
Rocking Table..... ℔ doz. $6.20
Reading Hardware Co.:
Advance ..... ℔ doz. $4.00
Baldwin ..... ℔ doz. $4.00
Reading 72..... ℔ doz. $3.25
Reading 78..... ℔ doz. $6.25

### Orange—
Goodell Co., Success.....each $20.00

### Potato—
Saratoga ..... ℔ doz. $7.00
White Mountain..... ℔ doz. $6.00

## Picks and Mattocks—
*(List Jan., 1908.)*
*List* .....75&10%
Cronk's Handled Garden Mattock, ℔ doz., $3.00.....33⅓%

## Pinking Irons—
See *Irons, Pinking.*

## Pins, Escutcheon—
*Brass* .....50@50&10%
*Iron, list Nov. 11, '85*..60@60&10%

## Pipe, Cast Iron Soil—
*Standard, 2-6 in*.....70&10%
*Extra Heavy, 2-6 in*..75&10@80%
*Fittings, Standard and Heavy,* 80&10@85%

## Pipe, Merchant—
*Carloads to Consumers:*

| | Steel. Blk. | Steel. Galv. | Iron. Blk. | Iron. Galv. |
|---|---|---|---|---|
| | % | % | % | % |
| ⅛ and ¼ in. | 66 | 50 | 64 | .. |
| ⅜ in. | 68 | 54 | 66 | 52 |
| ½ in. | 70 | 58 | 68 | 56 |
| ¾ to 6 in. | 74 | 64 | 72 | 62 |
| 7 to 12 in. | 71 | 56 | 69 | 54 |

## Pipe, Vitrified Sewer—
*Carload lots.*
*Standard Pipe and Fittings, 3 to 24 in., f.o.b. factory:*
*First-class* .....87%
*Second-class* .....90%

## Pipe, Stove—

| Edwards' Nested: | Per 100 joints. C. L. | L. C. L. |
|---|---|---|
| 5 in., Standard Blue | $6.25 | $7.25 |
| 6 in., Standard Blue | 6.75 | 7.75 |
| 7 in., Standard Blue | 7.75 | 8.75 |
| 5 in., Royal Blue | 7.00 | 8.00 |
| 6 in., Royal Blue | 7.50 | 8.50 |
| 7 in., Royal Blue | 8.50 | 9.50 |
| Wheeling Corrugating Co.'s Nested: | | |
| 5 in., Uniform Color | $5.90 | $6.90 |
| 6 in., Uniform Color | 6.40 | 7.40 |
| 7 in., Uniform Color | 7.40 | 8.40 |

## Planes and Plane Irons—
### Wood Planes—
*Bench, first qual*.....30@30&10%
*Bench, second qual*...40@40&10%
*Molding* .....25@25&10%
Chapin-Stephens Co.:
Bench, First Quality.....30%
Bench, Second Quality.....40%
Molding and Miscellaneous.....25%
Toy and German.....30%
Union .....60%

### Iron Planes -
Chaplin's Iron Planes.....60%
Union .....60%

### Plane Irons—
*Wood Bench Plane Irons, list Dec. 12, '06*.....25%
Buck Bros.....30%
Chapin-Stephens Co.....25%
Union .....50%
L. & I. J. White.....20&5@25%

## Planters, Corn, Hand—
Kohler's Eclipse..... ℔ doz. $7.50

## Plates—
*Felloe* .....lb. 3¾@4¼¢
Avery Stamping Co.:
Standard Wrot. Steel Felloe Plates in 100 lb kegs, per 100 lb, ¾-in. to 1½-in., $4.00 net; 1¼-in. to 2-in., inclusive, $3.75 net.

## Steel Pipe Hook—
Never-Break .....75&10%

## Pliers and Nippers -
*Button Pliers*....75&5@75&10&5%
*Gas Burners, per doz., 5 in., $1.25 @$1.30; 6 in., $1.45, $1.50.*

| *Gas pipe*.. | 7 | 8 | 10 | 12-in. |
|---|---|---|---|---|
| | $2.00 | $2.25 | $2.75 | $3.50 |

Acme Nippers.....5&10%
Cronk & Carrier Mfg. Co.:
American Button.....80%
Improved Button.....75&10%
Cronk's .....60%
No. 80 Linemen's.....50%
Stub's Pattern.....45%
Combination and others.....33⅓%
Heller's Farriers' Nippers, Pincers and Tools.....40&5@40&10&5%
P., S. & W. Tinners' Cutting Nippers .....40%
Swedish Side, End and Diagonal Cutting Pliers.....50%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds ...40%

## Plumbs and Levels—
Chapin-Stephens Co.:
Plumbs and Levels.....30@30&10%
Chapin's Imp. Brass Cor. ....10@10&10%
Pocket Levels .....30@30&10%
Extension Sights.....30@30&10%
Master Mason's Levels.....10@10&10%
Disston's Plumbs and Levels ...60&10%
Disston's Pocket Levels.....60&10%
Stanley's Duplex.....35%
Wood's Extension.....33⅓%

## Points, Glaziers'—
*Bulk and 1-lb. papers*....*lb. 9 ¢*
*½-lb. papers*.....*lb. 9½¢*
*¼-lb. papers*.....*lb. 10 ¢*

## Police Goods—
*Manufacturers' Lists*...25@25&5%
Tower's .....25%

## Polish—Metal, Etc—
Ladd Co.:
Putzade Liquid, ℔ gro., ½ pts., $12.00; 1 pts., $20.00; 1 qts., $40.00; ℔ doz., ½ gals., $6.35; 1 gals., $12.00.
Prestoline Liquid, No. 1 (½ pt.), ℔ doz., $3.00; No. 2 (1 qu.), $9.00..40%
Prestoline Paste.....40%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, ℔ doz. 50¢; ℔ gro, $1.50; ½ lb boxes, ℔ doz. $1.25; 1 lb boxes, ℔ doz. $2.25.
U. S. Liquid, 8 oz. cans, ℔ doz., $1.25.
Barkeepers' Friend Metal Polish, ℔ doz., $1.75.

### Stove—
Black Eagle Benzine Paste, 5 lb cans, ℔ lb 10¢
Black Eagle, Liquid, ½ pt. cans.. ℔ doz. 75¢
Black Jack Paste, ¾ lb cans, ℔ gr. $9.00
Black Kid Paste, 5 lb can...each, $0.65
Ladd's Black Beauty Liquid, per 100 tins.....$6.75
Joseph Dixon, ℔ gr. $5.75.....10%
Dixon's Plumbago..... ℔ lb 8¢
Fireside ..... ℔ gr. $2.50
Gem, ℔ gr. $1.50.....10%
Japanese ..... ℔ gr. $3.50
Jet Black..... ℔ gr. $3.50
Peerless Iron Enamel, 10 oz. cans.. ℔ doz. $1.50

### Window Polish—
Benj. P. Forbes:
Glasbright, No. 2, gal pails, ℔ doz., $24.00; each, $2.50; 1 lb cans, each .....75¢
Glasbright Powder, bbls., ℔ lb..20¢

## Poppers, Corn—
*1 qt. Square..doz.$0.80; gro.$8.75*
*1 qt. Round..doz.$0.90; gro.$10.00*
*1½ qt. Square.doz.$1.20; gro..$12.00*
*2 qt. Square..doz.$1.50; gro..$15.00*

## Post Hole and Tree Augers and Diggers—
See also *Diggers, Post Hole, &c.*

## Posts, Steel—
Steel Fence Posts, each, 6 ft., 46¢; 6½ ft., 48¢; 7 ft., 50¢.
Steel Hitching Posts.....each $1.30

## Potato Parers—
See *Parers, Potato.*

## Pots, Glue—
*Enameled* .....40%
*Tinned* .....30&10%

## Powder—
*In Canisters:*
*Duck, 1 lb*.....*each 45¢*
*Fine Sporting, 1 lb*....*each 75¢*
*Rifle, ½-lb*.....*each 15¢*
*Rifle, 1 lb*.....*each 25¢*
*In Kegs:*
*12½-lb. kegs*.....*$3.50*
*25-lb. kegs*.....*$4.60*
King's Semi-Smokeless:
Keg (25 lb bulk).....$6.50
Half Keg (12½ lb bulk).....$3.50
Quarter Keg (6¼ lb bulk).....$1.90
Case 24 (1 lb cans bulk).....$8.50
Half case (1 lb cans bulk).....$4.50

| King's Smokeless: | Shot Gun. | Rifle. |
|---|---|---|
| Keg (25 lb bulk) | $12.00 | $15.00 |
| Half Keg (12½ lb bulk) | 6.25 | 7.75 |
| Quarter Keg (6¼ lb bulk) | 3.25 | 4.00 |
| Case 24 (1 lb cans bulk) | 14.00 | 17.00 |
| Half case 12 (1 lb c. bk) | 7.25 | 8.75 |

## Presses—
### Fruit, Wine and Jelly—
Enterprise Mfg. Co.....20@25%

### Seal Presses—
Morrill's No. 1, ℔ doz., $20.00.....50%

## Pruning Hooks and Shears
See *Shears.*

## Pullers, Nail, Etc.—
Cyclops .....50%
Miller's Falls, No. 3, ℔ doz., $12.00.. 33⅓&10%
Morrill's No. 1, Nail Puller, ℔ doz. $20.00 .....50%
Pearson No. 1, Cyclone Spike Puller, each $30.00.....50%
The Scranton Co. Case Lots:
No. 2B (large).....$5.50
No. 3B (small).....$5.00
Smith & Hemenway Co.:
Diamond B.....70%
Giant .....50%
Staple Pullers, Utica and Davison .....60%
Taylor Mfg. Co., Sampson Tack, ℔ doz.....$0.40

## Pulleys, Single Wheel—

| *Inch* | 1½ | 1¾ | 2 | 3 |
|---|---|---|---|---|
| *Awning or Tackle, doz* | $0.30 | .45 | .60 | 1.05 |

| *Hay Fork, Swivel or Solid Eye, doz., 4 in., $1.25; 5 in., $1.55* | | | |
|---|---|---|---|
| *Inch* | 2 | 2¼ | 2½ |
| *Hot House, doz*... | $0.65 | .85 | 1.20 |
| *Inch* | 1¼ | 1½ | 1¾ | 2 |
| *Screw, doz*.... | $0.16 | .19 | .23 | .30 |
| *Inch* | 1¾ | 2 | 2¼ | 2½ |
| *Side, doz*..... | $0.25 | .40 | .55 | .60 |
| *Inch* | 1½ | 1¾ | 2 | 2½ |

### Sash Pulleys—
*Common Frame; Square or Round End, per doz.. 1¾ and 2 in*.....*17@20¢*
*Auger Mortise, no Face Plate, per doz., 1¾ and 2 in*....*20@21¢*
Acme, No. 35..1¾ in., 19¢; 2 in., 20½¢
American Pulley Co.:
Wrought Steel American Plain Axle .....50&10%
Wrought Steel, Eagle.....17@20¢
Top Notch, Electrically Welded, Nos. 3 and 4.....19¢
Common Sense..... ℔ doz. 20¢
Fox-All-Steel, Nos. 3 and 7, 2 in.... ℔ doz. 50%
Grand Rapids All Steel Noiseless..50%
Niagara, No., 25, 1¾ in., 19¢; 2 in. .....20½¢
No. 26 Trov..1¾ in., 14½¢; 2 in., 16½¢
Star, No. 26....1¾ in., 19¢; 2 in., 20½¢
Tackle Blocks—See Blocks.

## Pumps—
*Cistern* .....60%
*Pitcher Spout*.....75&5@75&10%
*Wood Pumps, Tubing, &s*....50%
Barnes Dbl. Acting (low list).....50%
Barnes Pitcher Spout.....80%
Contractors' Rubber Diaphragm, No. 2. B. & L. Block Co.....$16.00
Daisy Spray Pump..... ℔ doz. $6.50
Flint & Walling's Fast Mail Hand (low list).....50&5%
Flint & Walling's Fast Mail (low list) .....50&5%
Flint & Walling's Tight Top Pitcher .....80%
National Specialty Mfg. Co., Measuring, Nos. 2, $6.00; 3, $5.50.....30%
Myers' Pumps (low list).....
Myers' Power Pumps.....
Myers' Spray Pumps..... } 50%

### Pump Leathers—
*Plunger and Valve Leathers—Per gro.:*

| *No*..... | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| | $5.00 | 6.00 | 7.00 | 8.00 |

| *Cup Leathers—Per 100:* | | | | |
|---|---|---|---|---|
| *Inch*.... | 2½ | 3 | 3½ | 4 |
| | $5.00 | 7.00 | 9.00 | 12.00 |

} 30@30&10%

## Punches—
*Saddlers' or Drive, good, doz.50@75¢*
*Spring, single tube, good quality* .....*$1.75*
*Revolving (4 tubes)*....*doz.$3.50*
Bemis & Call Co.'s Cast St'l Drive.50%
Morrill's Nos. 1AA, 1A, 1B, 1C, 1D, $15.00.....50%
Hercules, 1 die, each $5.00.....50%
Niagara Hollow Punches.....40%
Niagara Solid Punches.....55&10%
Tinners' Hollow, P., S. & W. Co..40%
Tinners' Solid, P., S. & W. Co., ℔ doz., $1.44.....40&10%

## Rail—Barn Door, &c.—
*Sliding Door, Painted Iron, 2½@2¾¢*
*Sliding Door, Wrought Brass, 1⅛ in., lb., 36¢*.....30%
Cronk's:
Double Braced Steel Rail..℔ ft. 2¾¢
O. N. T. Rail.....2¾¢
Griffin's:
xxx, ℔ 100 ft., 1 x 3-16 in., $3.25; 1¼ x 3-16 in., $3.75.
Hinged Hanger, ℔ 100 ft., 1 x 3-16 in., $3.50; 1¼ x 3-16 in., $4.00.
Lane's:
Hinged Track, ℔ 100 ft.....$3.45
O. N. T., ℔ 100 ft., 1 in., $3.12½; 1¼ in., $3.45; 1½ in., $4.00.
Standard, 1¼ in.....℔ 100 ft. $4.00
Lawrence Bros.:
1 x 3-16 in., ℔ 100 ft., $7.50; 1¼ x 3-16 in., $8.75.....55&7½%
Trolley, No. 301, ℔ ft.....9¢
McKinney's:
Hinged Hanger Track, ℔ ft., 11¢. 60&5%
1 x 3-16 Track.....55&7½%
Myers' Stayon Track.....60&5%
Richards Mfg. Co.:
Common, 1 x 3-16 in., $3.00; 1⅛ x 3-16, $3.25; 1¼ x 3-16, $3.50.
Special Hinged Hanger Rail..60&10%
Lag Screw Rail, No. 65.....50%
Gauge Trolley Track, ℔ ft., No. 31, 9¢; No. 32, 14¢; No. 33, 20¢.
No. 50.....60&10%
Nos. 61, $3.00; 62, $3.25; 63, $3.50; 64, $4.00; 45, $3.25; 46, $3.50; 49, No. 1, $3.25; 49, No. 2, $3.50.

## Rakes—
*NOTE.—Many goods are sold at net prices.*
American Fork & Hoe Co.:
Lawn, ℔ doz., No. 24, $2.50; No. 20 .....$2.25
Cronk's:
Steel Garden: Champion, ℔ doz., 12-tooth, $3.75; 14-tooth, $4.00; 16-tooth, $4.25; Ideal, ℔ doz., 12-tooth, $3.00; 14-tooth, $3.30; 16-tooth, $3.60.
Victor, 12-tooth, $2.25; 14-tooth, $2.50; 16-tooth, $2.75.
Queen City Lawn, ℔ doz., 20 teeth, $2.85; 24, $3.00.....net
Anticlog Lawn ℔ doz.....$4.00
Malleable Garden.....70&10%
Ideal Steel Garden, ℔ doz., 12 teeth, $15.00; 14, $16.00; 16, $18.00.....80%
Kohler's:
Jumbo Lawn, 36-tooth....℔ doz. $5.00
Lawn Queen, 20-tooth....℔ doz. $2.85
Lawn Queen, 24 tooth....℔ doz. $3.00
Paragon, 20-tooth.....℔ doz. $2.65
Paragon, 24-tooth.....℔ doz $2.75
Steel Garden, 14 tooth....℔ doz. $2.10
Malleable Garden, 14 tooth, ℔ doz $1.75@2.00

## Rasps, Horse—
Disston's .....75%
Heller Bros.'.....70&5@70&10&5%
Liveright Bros.' Gold Medal.70&10@75%
McCaffrey's American Standard..... 60&10&5%
New Nicholson.....70&10@75%
See also Files.

## Razors—
John Engstrom Swedish.....65%
Sharp Shaver.....60%
Fox Razors, ℔ doz., No. 42, $24.00; No. 44, $20.00; No. 82, Platina, $36.00. } Less 50%

## Reels, Fishing—
Hendryx:
M 6, Q 6, A 6, B 6, M 9¼, M 16, Q 16, A 16, B 16, 4008, Rubber, Populo, Nickeled Populo.....20%
Aluminum, German Silv., Bronze.25%
1210 N, 124 N.....20%
3004 N, 06 N, 6 RM, G 9.....25%
4 N, 6 PN, 24 N, 26 PN.....20%
2904 P., 33⅓%; 2904 PN., 33⅓%. 0924 N., 33⅓%; 92081 N., 33⅓%; 002904 PN., 33⅓%; 802 N., 33⅓%.
986 PN, 2904 N, 974 PN.....25%
5009 PN, 5009 N.....20%
Competitor, 102 P, 102 PN, 202 P, 202 PN, 102 PR, 202 PR.....20%
304 P, 304 PN, 00304 P, 00304 PN.33⅓

## Registers—*List July 1, 1903*
*Japanned, Electroplated and Bronzed* .....70%
*White Porcelain Enamel*..50&10%
*Solid Brass or Bronze Metal*.40%

## Revolvers—
*Single Action*.....*95¢@$1.00*
*Double Action, except 44 cal.$2.00*
*Double Action, 44 caliber*...*$2.00*
*Automatic* .....*$4.00*
*Hammerless* .....*$4.50*

## Riddles, Hardware Grade
*16 in*.....*per doz.$2.50@$2.75*
*17 in*.....*per doz.$2.75@$3.00*
*18 in*.....*per doz.$3.00@$3.25*

## Rings and Ringers—
### Bull Rings—

| | 2 | 2½ | 3 inch. |
|---|---|---|---|
| *Steel* | $0.70 | 0.75 | 0.80 doz. |
| *Copper* | $1.10 | 1.25 | 1.65 doz. |

### Hog Rings and Ringers—
*Hill's Rings, per gro. boxes, $4.60@$4.75; per doz. boxes, 40@45¢*
*Hill's Ringers, Gray Iron, doz., 55@65¢*
*Hill's Ringers, Malleable Iron, doz.85@95¢*
*Blair's Rings..per gro.$5.50@$6.00*
*Blair's Ringers..per doz.65@70¢*

## Rivets and Burrs—
*Copper* .....50%
*Carriage, Coopers', Tinners', &c.:*
*Black* .....70&10%
*Metallic Tinned*.....70%

### Bifurcated and Tubular—
*Assorted in Boxes.*
*Bifurcated, per doz. boxes, pasteboard boxes, 50 count, 23@25¢; Tin boxes, 100 count, 29@32¢.*
*Tubular, per doz. boxes, 50 count, 29@32¢; 100 count, 51@58¢.*

## Rollers—
Cronk's Stay, No. 50.....$1.00
Cronk's Brinkerhoff No. 55, $0.60; No. 56, $0.75; No. 60.....$0.75
Lane's Stay.....40%
Richards' Stay:
Handy Adj. and Reversible No. 53.75¢
O. K. Adj. and Reversible No. 58.50¢
Lag Screw, Nos. 55 and 57.....50%
Underwriters', Nos. 59, 60.....50
Favorite, No. 54.....60

## Rope—
*Manila, 7-16 in. diam. and larger: Pure* .....*lb.9¢*
*Sisal, 7-16 in. diam. and larger: Pure* .....*lb.7¢*
*Sisal, Hay, Hide and Bale Ropes, Medium and Coarse: Pure* .....*lb.7½@7¾¢*
*Sisal, Tarred, Medium Lath Yarn: Pure* .....*lb.6½@6¾¢*
*Cotton Rope: Best, ¼-in. and larger.16½@18¢ Medium, ¼-in. and larger.15@16¢ Common, ¼-in. and larger..7½¢ In coils, ½¢ advance.*
*Jute Rope: Thread, No. 1, ¼-in. and up, lb.* .....*5½¢ Thread, No. 2, ¼-in. and up, lb.* .....*5¢*

### Wire Rope—
*Galvanized* .....*37½&2½%*
*Plain* .....*45&2½%*

## Ropes, Hammock—
Covert Mfg. Co.:
Jute, 35%; Sisal.....20%

## Rules
*Boxwood* .....*60@60&10%*
*Ivory* .....*35&10@35&10&5%*
Chapin-Stephens Co.:
Boxwood .....60%
Flexifold .....40%
Ivory .....25@25&10%
Miscellaneous .....50@50&10%
Stephens' Combination.....55%
Stationers' .....50@50&10%
Keuffel & Esser Co.:
Folding, Wood.....35&10%
Folding, Steel.....33⅓&10%
Lufkin's Steel.....50&10%
Lufkin's Lumber.....50&10%
Upson Nut Co.:
Boxwood .....60@60&10%
Ivory .....35&10@35&10&10%

## Sash Balances—
See *Balance, Sash.*

## Sash Locks—See *Locks, Sash.*

## Sash Weights—
See *Weights, Sash.*

## Sausage Stuffers or Fillers
See *Stuffers or Fillers, Sausage.*

## Saw Frames—
See *Frames, Saw.*

## Saw Sets—See *Sets, Saw.*

## Saw Tools—See *Tools, Saw.*

## Saws—
Atkins':
- Circular ..... 45%
- Band ..... 50@50&10%
- Butcher Saws ..... 50%
- Cross Cuts ..... 35%
- One-Man Cross Cut ..... 40%
- Narrow Cross Cut ..... 50%
- Hand, Rip and Panel ..... 35&5%
- Miter Box and Compass ..... 40%
- Mulay, Mill and Drag ..... 45%
- Wood Saws ..... 40&10%

Chapin-Stephens Co.:
- Turning Saws and Frames. 30@30&10%

Diamond Saw & Stamping Works:
- Sterling Kitchen Saws ..... 30&10&10%

Disston's:
- Circular, Solid and Ins'ted Tooth. 50%
- Band, 2 to 18 in. wide ..... 60%
- Band, ¼ to 1¾ ..... 60%
- Crosscuts ..... 45%
- Narrow Crosscuts ..... 50%
- Mulay, Mill and Drag ..... 50%
- Framed Woodsaws ..... 25%
- Woodsaw Blades ..... 25%
- Woodsaw Rods, Tinned ..... 15%
- Hand Saws, Nos. 12, 99, 9, 16, d100, D8, 120, 76, 77, 8 ..... 25%
- Hand Saws, Nos. 7, 107, 107½, 3, 1, 0, 00, Combination ..... 30%
- Compass, Key Hole, &c ..... 25%
- Butcher Saws and Blades ..... 30%

C. E. Jennings & Co.'s:
- Back Saws ..... 16⅔%
- Butcher Saws ..... 25&7½%
- Compass and Key Hole Saws. 33⅓&7½%
- Framed Wood Saws ..... 25&7½%
- Hand Saws ..... 12½%
- Wood Saw Blades ..... 33⅓&7½%

Millers Falls:
- Butcher Saws ..... 15&10%
- Star Saw Blades ..... 15&10%

Massachusetts Saw Works:
- Victor Kitchen Saws ..... 40&10&50%
- Butcher Saws Blades ..... 35@40

Peace & Richardson's Hand Saws. 30%

Simonds':
- Circular Saws ..... 45%
- Crescent Ground Cross Cut Saws. 30%
- One-Man Cross Cuts ..... 40&10%
- Gang Mill, Mulay and Drag Saws. 45%
- Band Saws ..... 50%
- Back Saws ..... 25@25&7½%
- Butcher Saws ..... 35@35&7½%
- Hand Saws ..... 25@25&7½%
- Hand Saws, Bay State Brand .... 45%
- Compass, Key Hole, &c. 25@25&7½%
- Wood Saws ..... 40&7½%

Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws ..... 50%

## Hack Saw Blades and Frames—
Atkins' Hack Saw Blades A A A. .25%

Disston's:
- Concave Blades ..... 25%
- Keystone Blades ..... 35%
- Hack Saw Frames ..... 30%

Simonds, 25; The Best, 35%; Culley ..... 35%

C. E. Jennings & Co.'s:
- Hack Saw Frames, Nos. 175, 180 .... 40&7½%
- Hack Saws, Nos. 175, 180, complete, 40&7½%

Goodell's Hack Saw Blades .... 40&10%

Griffin's Hack Saw Frames. .35&5&10%

Griffin's Hack Saw Blades .... 35&5&10%

Star Hack Saws and Blades .... 15&10

Sterling Hack Saw Blades. .30&10&5%

Sterling Hack Saw Frames. .30&10&10%

Sterling Power Hack Saw Machines, each, No. 1, $25.00; No. 2, $30.00. .10%

Victor Hack Saw Blades ..... 20%

Victor Hack Saw Frames ..... 40%

Whitaker Mfg. Co.:
- National Hand Blades, Hand Frames, Power Blades ..... 40%

## Scroll—
Barnes, No. 7, $15 ..... 25%

Barnes' Scroll Saw Blades ..... 40%

Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20 ..... 20%

Lester, complete, $10.00 ..... 15&10%

Rogers, complete, $3.50 and $4.00 .. 15&10%

## Scales—
*Union Platform, Plain. $2.10@2.20*

*Union Platform, Stpd. $2.20@2.30*

Chatillon's:
- Eureka ..... 25%
- Favorite ..... 40
- Grocers' Trip Scales ..... 50%

The Standard Portables ..... 40%

The Standard R. R. and Wagon ..... 50&10%

## Scrapers—
*Box, 1 Handle ..... doz. $1.85@2.10*

*Box, 2 Handle ..... doz. $2.35@2.50*

*Ship ... Light, $2.00; Heavy, $4.50*

Chapin-Stephens Co., Box .. 35@30&10%

Richards Mfg. Co., Foot ..... 60%

## Screws—Bench and Hand
*Bench, Iron, doz., 1 in., $2.50@2.75; 1⅛, $3.00@3.25; 1¼, $3.50@3.75*

*Bench, Wood ..... 20@20&10%*

*Hand, Wood .... 70&10@70&10&10%*

Chapin-Stephens Co., Hand ..... 70@70&10&2½%

## Coach, Lag and Hand Rail—
*Lag, Cone Point ..... 80&5%*

*Coach, Gimlet Point ..... 80%*

*Hand Rail ..... 70&10@75%*

## Jack Screws—
*Standard List ..... 70&10@75%*

Millers Falls ..... 50&10&1

Swett Iron Works ..... 70@75%

## Machine—
*Cut Tread, Iron, Brass or Bronze:*
- *Flat Head or Round Head, 50@50&10%*
- *Fillister Head ..... 40@40&10%*
- *Rolled Thread, F. H. or R. H., Iron ..... 75&10%*
- *F. H. or R. H., Brass, Nos. 8 to 14 ..... 65&10%*

## Set and Cap—
*Set (Iron) ..... 75&10&7½%*

*Set (Steel), net advance over Iron ..... 25%*

*Sq. Hd. Cap ..... 70&10&7½%*

*Hex. Hd. Cap ..... 70&10&7½%*

*Rd. Hd. Cap ..... 50&7½%*

*Fillister Hd. Cap ..... 60&7½%*

## Wood—
*List July 23, 1903.*

*Flat Head, Iron ..... 87½&5@..%*

*Round Head, Iron ..... 85&5@..%*

*Flat Head, Brass ..... 80&5@..%*

*Round Head, Brass .. 77½&5@..%*

*Flat Head, Bronze ..... 75&5@..%*

*Round Head, Bronze. 72½&5@..%*

*Drive Screws ..... 87½&5@..%*

## Scroll Saws—
See *Saws, Scroll.*

## Scythes— *Per doz.*
*Plain Grass, Cutting Edge Polished ..... $6.25@$6.50*

*Clipper, Bronzed Web. $6.50@$6.75*

*Solid Steel, Web and Bucks Polished ..... $7.00@$7.25*

*Bush, Weed and Bramble, Painted ..... $6.50@$6.75*

*Grain, Painted, Cutting Edge Polished ..... $8.25@$8.50*

*Clipper Grain, Bronze Web, $8.50@$8.75*

## Seeders, Raisin—
Enterprise ..... 25@30%

## Sets— Awl and Tool—
Fray's Tool Handles, Nos. 1, $12; 2, $16; 3, $12 ..... 50%

Millers Falls Adj. Tool Handles, No. 1, $12; No. 4, $12; No. 5, $18. .20&10%

## Garden Tool Sets—
American Fork & Hoe Co.:
- Rake, Shovel and Hoe, ₱ doz. sets, No. 3 P F ..... $7.25

## Sets, Nail—
*Octagon ..... gro. $3.50@3.75*

Buck Bros ..... 27½

Mayhew's ..... ₱ gro $9.00

Snell's Corrugated, Cup Pt. .... 40&10%

Snell's Knurled, Cup Pt. ..... 40&10%

Victor Knurled, Cup Pt. ... ₱ gro. $7.50

## Rivet—
*Regular list ..... 75@75&10%*

## Saw—
Atkin's:
- Criterion ..... 40%
- Adjustable ..... 40%

Disston's Star, Monarch and Triumph ..... 30%

Morrill's No. 1 ..... $15.00
Nos. 3 and 4, Cross Cut .... $20.60
No. 5, Mill ..... $30.00
Nos. 10, 11, 95 ..... $15.60
No. 1 Old Style ..... $10.00
Special ..... $16.25
} 50%

Giant Royal Cross Cut ..... ₱ doz. $7.50

Royal, Hand ..... ₱ doz. $4.50

Taintor Positive ..... ₱ doz. $6.75

## Shaving—
Fox Shaving Sets, No. 30 ..... ₱ doz., net, $24.00

Smith & Hemenway Co.'s ..... 75%

## Sharpeners, Knife—
Pike Mfg. Co.:
- Fast Cut Pocket Knife Hones, ₱ doz ..... $1.50
- Mounted Kitchen Sand Stone, ₱ doz ..... $1.50
- Natural Grit Carving Knife Hones, ₱ doz ..... $3.00
- Quick Cut Emery Carving Knife Hones, ₱ doz ..... $1.50
- Quick Edge Pocket Knife Hones, ₱ doz ..... $2.50

} 50%

## Skate—
Smith & Hemenway Co., Eureka. .50%

## Shaves, Spoke—
*Iron ..... doz. $1.25*

*Wood ..... doz. $2.00*

Bailey's (Stanley R. & L. Co.) .... 45%

Chapin-Stephens Co. ..... 30@30&10%

Goodell's, ₱ doz. $9.00 ..... 15&10%

## Shears—
| *Cast Iron..* | *7* | *8* | *9 in.* |
|---|---|---|---|
| *Best ...* | *$16.00.* | *18.00* | *20.00 gro.* |
| *Good ...* | *$13.00* | *15.00* | *17.00 gro.* |
| *Cheap ..* | *$5.00* | *6.00* | *7.00 gro.* |

*Straight Trimmers, &c.:*
- *Best quality Jap ..... 70&10&5%*
- *Best Quality Nickel. .60&10&5%*

*Tailors' Shears ..... 40@40&10%*

Acme Cast Shears ..... 40@40&5%

Heinisch's Tailor's Shears ..... 10%

National Cutlery Co.'s Nickel Plated, 60&10%; Japan Handles ..... 70&10%

Columbian Cutlery Co.:
- Sheep, 1900 list ..... 30&10&5%
- Grass ..... 50&10%
- Horse or Mule ..... 50&10%

J. Wiss & Sons Co.:
- Best Quality Jap'd ..... 60&10%
- Best Quality Nickeled ..... 50&10%
- Tailors' ..... 25%

## Tinners' Snips—
*Steel Blades ..... 20&5@20&10%*

*Steel Laid Blades ..... 50&10%*

Acme Cast Snips ..... 40@45&5%

Forged Handles, Steel Blades, Berlin ..... 50%

Heinisch's Snips ..... 40%

Jennings & Griffin Mfg. Co.'s 6½ to 10 in ..... 33⅓&7½%

National Cutlery Co.'s Forged Steel. 50%

Niagara Snips ..... 10%

P., S. & W. Forged Handles, 25%; W. R. W ..... 50%

J. Wiss & Sons Co.:
- Wiss Forged Steel ..... 25%

## Pruning Shears—
Cronk's Hand Shears ..... 33⅓%

Cronk's Wood Handle Shears .... 33⅓%

Disston's Combined Pruning Hook and Saw, ₱ doz. $18.00 ..... 25%

Disston's Pruning Hook only, ₱ doz. $12.00 ..... 25%

J. T. Henry Mfg. Co.:
- Pruning Shears, all grades ..... 40%
- P., S. & W. Co ..... 40&10%

Columbian Cutlery Co.:
- Hedge, Wilcut Brand ..... 60&10%
- Lawn and Border, Wilcut Brand, 60&10%

## Sheaves—Sliding Door—
Reading ..... 40%

R. & E. list ..... 15%

## Sliding Shutter—
Reading list ..... 40%

R. & E. list ..... 15%

## Shells—Shells, Empty—
Brass Shells, Empty:
- Climax, 10 and 12 gauge ..... 60&5%
- Club, Rival, 65&5%; First Quality, 60&5%

Paper Shells, Empty:
- New Rapid, 10, 12, 16 and 20 gauge, 25&10%
- Climax, 10 and 12 gauge; Acme and Magic, 10, 12, 16 and 20 gauge; Ideal, 10, 12, 16 and 20 gauge; Leader grade ..... 25&5%
- Union, League, 10 and 12 gauge, Rival Grade ..... 25%
- New Climax, Defiance, 10, 12, 14, 16 and 20 gauge; Climax, 14, 16 and 20 gauge ..... 20%
- Challenge, Monarch, 10, 12, 16 and 20 gauge; League, Union, 14, 16 and 20 gauge; Repeater Grade. .20%

## Shells, Loaded—
*Loaded with Black Powder. .40%*

*Loaded with Smokeless Powder, medium grade ..... 40&5%*

*Loaded with Smokeless Powder, high grade ..... 40&10&10%*

Union Metallic Cartridge Co.:
- New Club, Black Powders ..... 40%
- Nitro Club, Smokeless Powders. 40&5%
- Arrow, Smokeless Powders. 40&10&10%

Winchester:
- Smokeless Repeater Grade ..... 40&5%
- Smokeless Leader Grade ... 40&10&10%
- Black Powder ..... 40%

## Shingles, Metal— Per Sq.
Edwards Mfg. Co.:

| | Painted. | Galv. |
|---|---|---|
| 14 x 20 | $4.25 | $6.00 |
| 10 x 14 | 4.50 | 6.25 |
| 7 x 10 | 4.75 | 6.50 |

Wheeling Corrugating Co.:

| | | |
|---|---|---|
| Dixie, 14 x 20 in. | $4.05 | $5.05 |
| Dixie, 10 x 14 in. | 4.25 | 5.45 |
| Dixie, 7 x 10 in. | 5.25 | 6.70 |

## Shoes, Horse, Mule, &c.—
*F.o.b. Pittsburgh:*
- *Iron ..... per keg. $4.10*
- *Steel ..... per keg. $3.85*

Burden's, all sizes ..... ₱ keg $3.90

## Shot—
| | *25-lb. bag.* |
|---|---|
| *Drop, up to B* | *$1.80* |
| *Drop, B and larger* | *2.05* |
| *Buck* | *2.05* |
| *Chilled* | *2.05* |
| *Dust* | *2.30* |

## Shovels and Spades—
*Association List. .40&7½@40&10%*

Avery Stamping Co ..... 40%

## Snow Shovels—
*Long Handle ..... $2.50@$2.75*

*Wood and Mall, D Handle, $2.65@$2.90*

## Sieves and Sifters—
*Hunter's Imitation, gro .... $9.50*

*Hunter's Genuine, per gro. .$12.00*

## Sifters, Ash—
Acme Ball Bearing Sales Co., Acme Automatic Ash Sifter, each, $3.25; ₱ doz ..... $39.00

## Sieves, Seamless Metallic
| | *Per dozen.* | | | |
|---|---|---|---|---|
| *Mesh ....* | *1½* | *16* | *18* | *20* |
| *Iron Wire...* | *$1.05* | *1.05* | *1.10* | *1.20* |
| *Tinned Wire..* | *$1.15* | *1.15* | *1.20* | *1.30* |

## Sieves, Wooden Rim—
*Nested, 10, 11 and 12 Inch.*

*Mesh 18, Nested .... doz. $0.90@0.95*

*Mesh 20, Nested .... doz. $1.00@1.05*

*Mesh 24, Nested .... doz. $1.30@1.40*

## Sinks, Cast Iron—
*Painted, Standard List:*
- *12 x 12 to 22 x 36 in ..... 60%*
- *20 x 24 to 24 x 50 in ..... 50%*
- *24 x 60 to 24 x 120 in ..... 30%*

Barnes' low list ..... 60%

*NOTE.—There is not entire uniformity in lists used by jobbers.*

## Skeins, Wagon—
*Cast Iron ..... 70@75&10%*

*Steel ..... 40@45%*

## Slates, School—
*Factory Shipments.*

*"D" Slates ..... 50@50&10%*

*Eureka, Unexcelled Noiseless .. 60&7 tens.*

*Victor A, Noiseless .60&4 tens &5%*

## Slaw Cutters—See *Cutters.*

## Snaps, Harness—
*German ..... 40@40&10%*

Covert Mfg. Co.:
- Derby, 25%; Yankee, 30&2%; Yankee Roller, 30&2%.
- High Grade, 40%; Trojan ..... 40%
- Jockey ..... 25%

## Snaths—
*Grass Scythe ..... 50@50&5%*

## Snips, Tinners—See *Shears.*

## Spoons and Forks—
### Silver Plated—
*Good Quality ..... 50&10@60&5%*

*Cheap ..... 60@60&10%*

International Silver Co:
- 1847 Rogers Bros. ..... 40&10%
- Rogers & Bro., William Rogers' Eagle Brand ..... 50&10%
- Anchor, Rogers Brand ..... 60%
- Wm. Rogers & Son ..... 60&10%

### Miscellaneous
*German Silver ..... 60@60&5%*

### Tinned Iron—
*Teas ..... per gro. 50@55¢*

*Tables ..... per gro. $0.90@$1.00*

Atlas Mfg. Co.:
- Tea Spoons, ₱ gro ..... 50¢@55¢
- Table Spoons, ₱ gro ..... $0.90@$1.00

## Springs— Door—
Bardsley's Spring and Check ..... 40%

Chicago (Coil) ..... 40&10%

Gem (Coil) ..... 20%

Pullman Door and Gate ..... 10%

Reliance (Coil) ..... 40&10%

Star (Coil) ..... 35%

Torrey's Rod, 39 in ..... ₱ doz. $1.00

## Carriage, Wagon, &c.—
| *1¼ in. and Wider:* | *Per 100 lb.* |
|---|---|
| *Black* | *$4.75@$5.00* |
| *Half Bright* | *$4.75@$5.00* |
| *Bright* | *$5.25@$5.50* |

*Painted Seat Springs:*
- *1½ x 2 x 26 .... per pair. 45@47¢*
- *1½ x 3 x 28 .... per pair. 68@71¢*

## Sprinklers, Lawn—
American Foundry & Mfg. Co.:
- Cactus, 65%; Japanese, 70%; National, ₱ doz ..... $12.00

Enterprise ..... 25@30%

Philadelphia No. 1, ₱ doz. $12; No. 2, $15; No. 3, $20 ..... 30%

## Squares—
*Nickel plated.. } List Jan. 5, 1900.*
*Steel and Iron. } 80&5@80&10%*

*Rosewood Hdl. Try Square and T-Bevels ..... 60&10&10@70%*

*Iron Hdl. Try Squares and T-Bevels ..... 40&10@40&10&10%*

Disston's Try Squares and Bevels, Rosewood Handle, 60 & 10%; Iron Stock and Bevel ..... 15%

## Squeezers, Lemon
*Wood, Porcelain Lined:*
- *Cheap ..... doz. $1.00*
- *Good Grade ..... doz. $1.25*

*Tinned Iron ..... doz. $0.75@1.00*

*Iron, Porcelain Lined ... doz. $1.75*

Victor, ₱ gro ..... $9.00

## Staples—
*Barbed Blind ..... 85&5@85&10%*

*Electricians' ..... 80&10&10@85%*

*Fence Staples, Polished, $2.05; Galvanized ..... $2.35*

*Poultry Netting Staples ..... per lb. 3¼@3½¢*

## Steels, Butchers'—
Dick's ..... 30%

Foster Bros.' ..... 30%

## Steelyards— .... 30@30&10%

## Stocks and Dies—
*Blacksmiths' ..... 50@50&10%*

Curtis Rev'ble Ratchet Die Stock. .25%

Derby Screw Plates ..... 25%

Green River ..... 25%

Lightning Screw Plate ..... 25%

Little Giant ..... 25%

Reece's New Screw Plate ..... 25%

## Stoners, Cherry—
Enterprise ..... 25@30%

## Stones, Axe—
Pike Mfg. Co., Axe Stones (all kinds) ..... 35⅓%

## Glass Cutters' Stones—
Pike Mfg. Co., Glass Cutters' Stones and Supplies ..... 40%

## Stones, Oil, &c.—
Pike Mfg. Co., 1907 list: ₱ lb
- Arkansas St. No. 1, 3 to 5½ in. $2.80
- Arkansas St. No. 1, 5½ to 8 in. $3.50
- Arkansas Slips No. 1 ..... $1.90
- Lily White Washita, 4 to 8 in. 60¢
- Rosy Red Washita, 4 to 8 in. .60¢
- Washita St., Extra, 4 to 8 in. .50¢
- Washita St., No. 1, 4 to 8 in. .40¢
- Washita St., No. 2, 4 to 8 in. .25¢
- Lily White Slips ..... 90¢
- Rosy Red Slips ..... 90¢
- Washita Slips, Extra ..... 80¢
- Washita Slips, No. 1 ..... 70¢
- Washita Slips, No. 2 ..... 40¢
- India Oil Stones (entire list) .. 33⅓%
- Quickcut Emery and Corundum Oil Stone, Double Grit ..... 40%
- Quickcut Emery and Corundum Axe Stone, Double Grit ..... 33⅓%
- Quickcut Emery Rubbing Bricks 40%
- Hindostan No. 1, R'g'lar ₱ lb. 8¢
- Hindostan No. 1 Small ₱ lb. 10¢
- Turkey Oil Stones, Extra, 5 to 8 in. ₱ lb. 80¢
- Queer Creek Stones, 4 to 8 in. 20¢
- Queer Creek Slips ..... 10¢
- Sand Stone ..... 6¢

} 33⅓%

} 33⅓%

### Scythe Stones—

Pike Mfg. Co., 1907 list:
Black Diamond S. S. ₩ gro. $12.00
Lamoille S. S. ₩ gro. $11.00
White Mountain S. S. ₩ gro. $9.50
Green Mountain S. S. ₩ gro. $7.00
Extra Indian Pond S. S. ₩ gro. $8.00
No. 1 Indian Pond S. S. ₩ gro. $7.50
No. 2 Indian Pond S. S. ₩ gro. $5.00
Leader Red End S. S. ₩ gro. $5.00
Quick Cut Emery.... ₩ gro. $10.00
Pure Corundum..... ₩ gro. $18.00
Crescent ..... $7.00
Emery Scythe Rifles, 2 Coat. $8.80
Emery Scythe Rifles, 3 Coat. $11.00
Emery Scythe Rifles, 4 Coat. $13.20
} 33⅓%
Balance of 1907 list 33⅓%.
Lectro (Artificial), ₩ gro., $12.00 ..... 33⅓%
$12.00 ..... 33⅓%
Lightning (Artificial), ₩ gro., $18.00 ..... 33⅓%

### Stoppers, Bottle—

Victor Bottle Stoppers..... ₩ gro. $9.00

### Stops— Bench—

Millers Falls..... 15&10%
Morrill's, ₩ doz., No. 1, $10.00.... 50%
Morrill's, No. 2, $12.50..... 50%

### Door—

Chapin-Stephens Co..... 50@50&10%

### Plane—

Chapin-Stevens Co..... 20%

### Straps— Box—

Acme Embossed, case lots.. 20&10&10%
Cary's Universal, case lots... 20&10&10%

### Stretchers, Carpet—

*Cast Iron, Steel Points..doz. 55¢*
*All Steel Socket...doz. $2.00@2.25*
Excelsior Stretcher and Tack Hammer Combined, ₩ doz., $6.00.... 20%

### Stuffers, Sausage—

Enterprise Mfg. Co., Stuffers and Lard Presses..... 25@25&7½%
National Specialty Co., list Jan. 1, 1902 ..... 30&5%
P., S. & W. Co..... 40&10&5%

### Sweepers, Carpet—

*NOTE.—Leading Manufacturers give the following rebates from list prices: 50c per dozen on three-dozen lots: $1 per dozen on five-dozen lots; $2 per dozen on ten-dozen lots.*

### Tacks, Finishing Nails, &c.

*American Carpet Tacks. 90&25@—%*
*American Cut Tacks..90&25@—%*
*Swedes' Cut Tacks. l.. 90&30@—%*
*Swedes' Upholsterers'. 90&35@—%*
*Gimp Tacks..... 90&35@—%*
*Lace Tacks..... 90&35@—%*
*Trimmers' Tacks..... 90&30@—%*
*Looking Glass Tacks..... 65@—%*
*Bill Posters' and Railroad Tacks, 90&40@—%*
*Hungarian Nails..... 80@—%*
*Finishing Nails..... 70@—%*
*Trunk and Clout Nails. 75&5@—%*

*NOTE.—The above prices are for Straight Weights.*

### Miscellaneous—

*Double Pointed Tacks, 90&6 tens@—%*

Se also Nails, Wire.

### Tanks, Oil and Gasoline—

| Wilson & Friend Co.: Gal. | Gasoline | Oil |
|---|---|---|
| 30 | $2.75 | $3.00 |
| 60 | $3.50 | $4.00 |
| 110 | $5.00 | $5.75 |

### Tapes, Measuring—

*American Asses' Skin....50@—%*
*Patent Leather..... 25@30&5%*
*Steel ..... 33⅓&5%*
*Chesterman's ..... 25@25&5%*
Kraffel & Esser Co.:
Favorite, Ass Skin..... 10&10@50%
Favorite, Duck and Leather..... 25&5@25&10%
Metallic and Steel, lower list, 35@35&5%; Pocket, 35@35&5%.
Lufkins:
Asses' Skin..... 40&10@50%
Metallic ..... 50@50&5%
Patent Bend, Leather... 25&5@25&10%
Pocket ..... 40@40&5%
Steel ..... 33⅓@35%
Wichmsch & Hilger:
Chesterman's Metallic, No. 34L, etc. ..... 25%
Chesterman's Steel, No. 1038L, etc. ..... 35%

### Teeth, Harrow—

*Steel Harrow Teeth, plain or headed, 5¼-inch and larger, per 100 lb..... $2.55@$2.80*

### Thermometers—

*Tin Case, Cabinet, Flange, Dairy, &c..... 30@35%*

### Ties, Bale—Steel Wire—

*Single Loop..... 82½&10%*
*Monitor, Cross Head, &c. 70&2½%*

### Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

### Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

### Tire Benders, Upsetters, &c.

See *Benders and Upsetters, Tire.*

### Tools—Coopers'—

L. & J. White..... 20@20&5%

### Haying—

Myers' Hay Tools..... 50%

### Ice Tools—

Ford Wood Co..... 15%

### Miniature—

Smith & Hemenway Co.'s, Davidson, ₩ doz., Nickel Plated, $1.50; Gold Plated..... $2.00

### Saw—

Atkins' Cross Cut Saw Tools....35&5%
Simond's Improved..... 33⅓%
Simonds' Crescent..... 30%

### Ship—

L. & I. J. White..... 25%

### Torches—

Hammers, Engine, ₩ doz..... $1.50

### Transom Lifters—

See *Lifters, Transom.*

### Traps—Fly—

*Balloon, Globe or Acme, doz., $1.15@$1.25; gro.....$11.50@12.00*
*Harper, Champion or Paragon, doz., $1.25@1.40; gro. $13.00@13.50*

### Game—

*Imitation Oneida.....75@10%*
Newhouse ..... 50&5%
Hawley & Norton..... 65&10%
Victor ..... 75@75&10%
Oneida Community Jump..... 70&5%
Stop Thief..... 60
Tree Trap..... 60%
Hector ..... 75@75&10%

### Mouse and Rat—

*Mouse, Wood, Choker, doz. holes, 12¢*
*Mouse, Round or Square Wire, doz. 85@90¢*
Marty French Rat and Mouse Traps (Genuine), ₩ doz.:

| | Crate lots. | Small lots. |
|---|---|---|
| No. 1, Rat..... | $11.50 | $14.50 |
| No. 3, Rat..... | $5.75 | $6.50 |
| No. 3½, Rat..... | $4.70 | $5.25 |
| No. 5, Mouse..... | $2.25 | $3.00 |

Animal Trap Co.:
Out o' Sight, Mouse, ₩ doz..... $0.60
Out o' Sight, Rat, ₩ doz..... 1.20
Easy Set, Mouse, ₩ doz..... .35
Easy Set, Rat, ₩ doz..... .85
Out o' Sight Checkers, ₩ doz. holes ..... .12
Out o' Sight, Tin, 5-hole, ₩ doz. traps ..... .75

### Trowels—

Disston Brick and Pointing..... 25%
Disston Plastering..... 20%
Disston "Standard Brand" and Garden Trowels..... 30%
Kohler's Steel Garden Trowels, ₩ gro., 5 in., $4.80; 6 in., $6.00.
Never-Break, Forged Steel Garden Trowels, in bulk, net ₩ gro. $5.50
In 1 doz. boxes..... ₩ gro. $6.00
Woodrough & McPartlin, Plastering 25%

### Trucks, Warehouse, &c.—

B. & L. Block Co.:
New York Pattern..... 50&10%
Western Pattern..... 6&10%
Handy Trucks..... ₩ doz. $16.00
Grocery ..... ₩ doz $15.00
McKinney Trucks..... each, net $10.00
Model Stove Trucks..... ₩ doz $18.50

### Tubs, Wash—

*M'f'gr's list, price per gross.*

| No. | 0 | 1 | 2 | 3 |
|---|---|---|---|---|
| Galvanized. | $67 | $79 | $89 | $99 |

*10&7½&5&5%*

### Twine, Miscellaneous—

*Flax Twine:*
*No. 9, ¼ and ½-lb. Balls. 21@23¢*
*No. 12, ¼ and ½-lb. Balls. 19@21¢*
*No. 18, ¼ and ½-lb. Balls. 16@18¢*
*No. 24, ¼ and ½ -lb. Balls. 15½@17½¢*
*No. 36, ¼ and ½-lb. Balls. 15@17¢*
*Chalk Line, Cotton ½ lb. Balls ..... 24@29¢*
*Cotton Mops, 6, 9, 12 and 15 lb to doz..... 8½@19¢*
*Cotton Wrapping, 5 Balls to lb. according to quality..13½@19¢*
*American 3-Ply Hemp, ¼-lb. Balls..... 12½@15¢*
*American 3-Ply Hemp, 1-lb Balls ..... 13¼@16¢*
*India, 3-Ply Hemp, 1¼-lb. Balls, Balls (Spring Twine)...7½@9¢*
*India 3-Ply Hemp, 1 lb. Balls 7¼@9¢*
*India 3-Ply Hemp, 1½-lb. Balls, 7@8½¢*
*2, 3, 4 and 5-Ply Jute, 1¼-lb. Balls ..... 9@11¢*
*Mason Line, Linen, ½-lb. Bls. 17¢*
*No. 20½ Mattress, ¼ and ½ lb. Balls, according to quality. 30@60¢*
*Wool, 3 to 6 ply....B 6¢; A 7½¢*

### Vises—

*Solid Box.....50&5@50&10&5%*

### Parallel—

Athol Machine Co.:
Simpson's Adjustable..... 40%
Standard ..... 40%
Amateur ..... 25%
Columbian Hdw. Co., 40&5%; Slide ..... 65%
Fisher & Norris Double Screw, net, each Nos. 2 $10.50; 3, $16.00; 4, $20.50; 5, $27.00; 6, $32.00.
Fulton Mach. & Vise Co.:
F. & R. Double Swivel Machinists' ..... 40%
Star, Solid Jaw, Machinists'..... 40%
Hollands':
Machinists' ..... 40@40&5%
Keystone ..... 65&5@70%
Lewis Tool Co.:
Adjustable Jaw..... 30%
Monarch, 50%; Solid Jaw..... 50%
Massey Vise Co.:
Clincher ..... 40%
Parallel Bar..... 15%
Perfect, 15%, Lightning Grip..... 15
Merrill's ..... 25
Millers Falls Oval Slide Pattern. 60&10%
Parker's:
Victor, 20@25%; Regulars....20@25%
Vulcan's ..... 40@45
Combination Pipe..... 55@60%
Prentiss ..... 20@25%
Rock Island..... 25%
Snediker's X. L..... 33⅓%
Stephens' ..... 33⅓%

### Saw Filers

Disston's D 3 Clamp and Guide, ₩ doz., $24.00, 30%; Clamps..... 30%
Perfection Saw Clamps, ₩ doz.... $4.50
Reading ..... 60%

### Wood Workers—

Fulton Mach. & Vise Co.:
F. & R. Double Swivel Coachman's ..... 40%
Star Solid Jaw Woodworkers'.... 60%
Massey Vise Co.:
Lightning Grip, 15%; Perfect.... 15%
Wyman & Gordon's Quick Action, 6 in., $6.00; 9 in., $7.00; 14 in., $8.00.

### Miscellaneous—

Fulton Machine & Vise Co., Combination Pipe..... 70%
Holland's Combination Pipe..60@60&5%
Massey's Quick Action Pipe..... 40%
Parker's Combination Pipe:
87 Series, 60%; 187 Series, 60&5%; No. 870, 40%.
Rock Island Pipe..... 25%

### Wads— *Price per M.*

*B. E., 11 up..... 60¢*
*B. E., 9 and 10..... 70¢*
*B. E., 8..... 80¢*
*B. E., 7..... 80¢*
*P. E., 11 up..... $1.00*
*P. E., 9 and 10..... 1.25*
*P. E., 8..... 1.50*
*P. E., 7..... 1.50*
*Ely's B. E., 11 and larger. $1.70@1.75*
*Ely's P. E., 12 to 20....$3.00@3.25*

*Dis. 15%*

### Ware, Hollow—Cast Iron, Hollow—

*Stove Hollow Ware:*
*Enameled ..... 45&10%*
*Ground ..... 50&5%*
*Plain or Unground..... 60%*
*Country Hollow Ware, per 100 lbs ..... $2.75@$3.00*
*White Enameled Ware:*
*Maslin Kettles..... 65&10%*
*Covered Wares:*
*Tinned and Turned..... 35&10%*
*Enameled ..... 45&10%*
See also *Pots, Glue.*

### Enameled—

Agate Nickel Steel Ware..... 33⅓%
El-an-ge ..... 60&10%
Iron Clad Ware..... 70&10%
Lava and Volcanic, Enameled..40&10%

### Tea Kettles—

*Galvanized Tea Kettles:*

| *Inch* | 6 | 7 | 8 | 9 |
|---|---|---|---|---|
| *Each* | *45¢* | *50¢* | *55¢* | *65¢* |

### Steel Hollow Ware—

Avery Stamping Co.:
Never-Break Spiders and Griddles ..... 65&10%
Steel Kettles, Maslins Scotch Bowls, Tin'd..... 60%
Steel Stew Pans, Stew Pots, etc., Porcelained ..... 50%
Cleveland Stamping & Tool Co.:
Solid Steel Spiders and Griddles ..... 65&5%
Solid Steel Kettles..... 60&5%

### Warmers, Foot—

Pike Mfg. Co., Soapstone....40@40&10%

### Washboards—

| No. | ₩ doz. |
|---|---|
| 800—Brass King, Single Surface, Open Back..... | $2.80 |
| 862—White Hen, Spiral Grimp Glass ..... | $3.35 |
| 964—Royal Blue Enamel, Single Surface, Ventilated Back..... | $3.35 |
| 172—Our Best, Single Zinc, Soap Drainer ..... | $3.35 |
| 722—Soap Saver, Single Zinc, Iron Top ..... | $3.35 |
| 100—Northern Queen, Single Zinc, Perforated, Open Back..... | $3.00 |
| 131—Universal, Single Zinc, Extra Family Size, Ventilated Back.... | $2.80 |
| 760—Banner Globe, Single Zinc, Ventilated Back..... | $2.25 |
| 57—Peerless, Double Zinc, Spring Protector ..... | $3.70 |
| 56—Red Cross, Double Zinc, Swing Protector ..... | $3.60 |
| 17—North Star, Solid Zinc, Swing Protector ..... | $3.60 |
| 797—Jewel, Single Zinc, Pail Size. | $1.25 |

### Washers—Leather, Axle—

*Solid ..... 90@90&10%*
*Patent ..... 90@90&5%*
*Coil: ⅞ 1 1⅛ 1¼ inch. 9¢ 10¢ 11¢ 14¢ per box.*

### Iron or Steel—

*Size bolt.... 5-16 ⅜ ½ ⅝ ¾*
*Washers.... $4.00 4.00 2.70 2.50 2.30*

*The above prices are based on $6.50 off list.*

*In lots less than one keg add ½¢ per lb.; 5-lb. boxes add ½¢ to list.*

Avery Stamping Co.:
Standard, in 200 lb kegs, $6.00 ₩ 100 lb. disct.; in 100 lb kegs, add 10¢ net ₩ 100 lb; in 5 or 10 lb boxes, add 50¢ net ₩ 100 lb; in 1 lb boxes, add $1.00 net ₩ 100 lb.

### Cast Washers—

*Over ½-inch, barrel lots. per lb. 1½@1¾¢*

### Wedges—

*Oil Finish..... lb., 2¼@2¾¢*

### Weights—Hitching—

Covert Mfg. Co..... 30&2%

### Sash—

*Per net ton, f.o.b. factory:*
*Eastern District.....$20.00@—*
*Western and Central Districts .....$20.50@—*

### Wheels, Corundum and Emery—

Pike Mfg. Co., Corundum, 65%; Emery ..... 75%

### Well—

*8-in., $2.00; 10-in., $2.30; 12-in., $3.00; 14-in., $4.45.*

### Wire and Wire Goods—

*Bright and Annealed:*
*6 to 9..... 72&10&7½%*
*10 to 18..... 72½&10&10%*
*19 to 26..... 75&10&10&2½%*
*27 to 36..... 77½&7½%*
*Galvanized:*
*6 to 9..... 72½&10%*
*10 to 14..... 72½&10&5%*
*15 to 16..... 72½&10&5%*
*17 to 18..... 72½%*
*19 to 26..... 70&5&2½%*
*27 to 36..... 65&10&10%*
*Coppered:*
*6 to 9..... 65&10&10%*
*10 to 14..... 70&10&5%*
*15 to 18..... 65&10&10&10%*
*19 to 26..... 70&5&2½%*
*27 to 36..... 72½&10&2½%*
*Tinned:*
*6 to 18..... 67&10&10%*
*Brass ..... 16¼¢ lb., base*
*Copper ..... 15¾¢ lb., base*
*Cast Steel Wire..... 50%*

### Spooled Wire—

*Annealed and Tinned. 75@75&10%*
*Brass and Copper....70@70&10%*
*Retailers' Assortments, per box, $1.90@$2.10*
Wire Clothes Line, See Lines.
Wire Picture Cord, see Cord.

### Bright Wire Goods—

*Steel Wire Goods..... 90&40%*
*Brass Wire Goods, 90&40@90&40&10%*
*Brass Cup and Shoulder Hooks, 85&10%*

### Wire Cloth and Netting—

*Galvanized Poultry, Netting, 80&10@80&10&5%*
*Screen Cloth, 12 Mesh, Per 100 sq. ft.: Painted, $1.30; Galvanized, $1.90; 14 Mesh, Bronze $6.50*
*Standard Galv. Hardware Grade: 100 ft. rolls, 2¼ to 48 in. wide, Per 100 sq. ft.*
*Nos. 2, 2½ and 3 Mesh....$2.75*
*Nos. 4 and 5 Mesh.....$3.00*
*No. 6 Mesh.....$3.25*
*Nos. 7 and 8 Mesh.....$3.75*

### Wire, Barb—See *Trade Report*

### Wrenches—

*Agricultural .....80&5@80&10%*
*Alligator or Crocodile..70&10@75%*
*Baxter Pattern S Wrenches, 70&5@70&10%*
*Drop Forged S.....45@45&5%*
Acme ..... 60&10%
Alligator Pattern, 70%; Bull Dog..70%
Bemis & Call's:
Adjustable S, 40&5%; Adjustable S Pipe, 40&5%; Briggs Pattern, 40%; Combination Bright, 50%.
Steel Handle Nut..... 50&5%
Combination Black..... 50&5%
Merrick Pattern..... 50&5%
Boardman's ..... 40%
Coes' Genuine Knife Hdl...40&10&5&5
Coes' Genuine Steel Hdl...40&10&5&5%
Coes' Genuine Key Model..40&10&5&5%
Coes' Genuine Hammer Handle..... 40&10&5&5%
Coes' "Mechanics'"...40&10&10&5&5%
Donohue's Engineer..... 40&10%
Eagle ..... 70%
Gem Pocket..... 30%
Hercules ..... 70%
W. & B. Machinist:
Case lots..... 50&10%
Less than case lots..... 50%
W. & B. Railroad Special:
Case lots..... 50%
Less than case lots..... 40&10&5%
Solid Handles, P., S. & W..50&10%; full cases..... 50&10&5%
Standard Nipple Mfg. Co.:
Duplex Chain..... 50%
Uwanta Wrench Co.:
Uwanta Special, Iron Handle.... 40&10&5%
Other Wrenches..... 50%
Vulcan and Agrippa Chain..... 50%
Whitaker Machinists'..... 50&10%
Wizard Adjustable Ratchet..... 50%

### Fruit Jar—

Beni, P. Forbes, Triumph, ₩ gro., $7.50; per doz..... $0.90

### Wrought Goods—

*Staples, Hooks, &c., list March 17, '02.....90@—%*

### Zinc— *(Cask lots at mill.)*

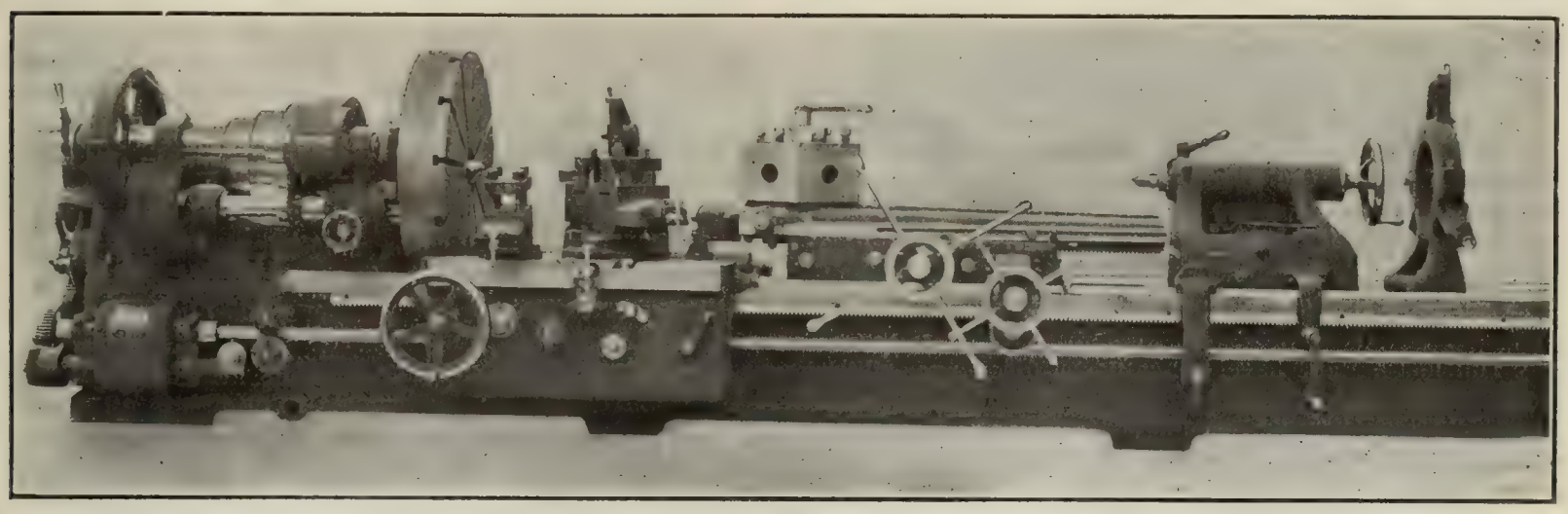
*Sheet.....per 100 lb., $7.00*

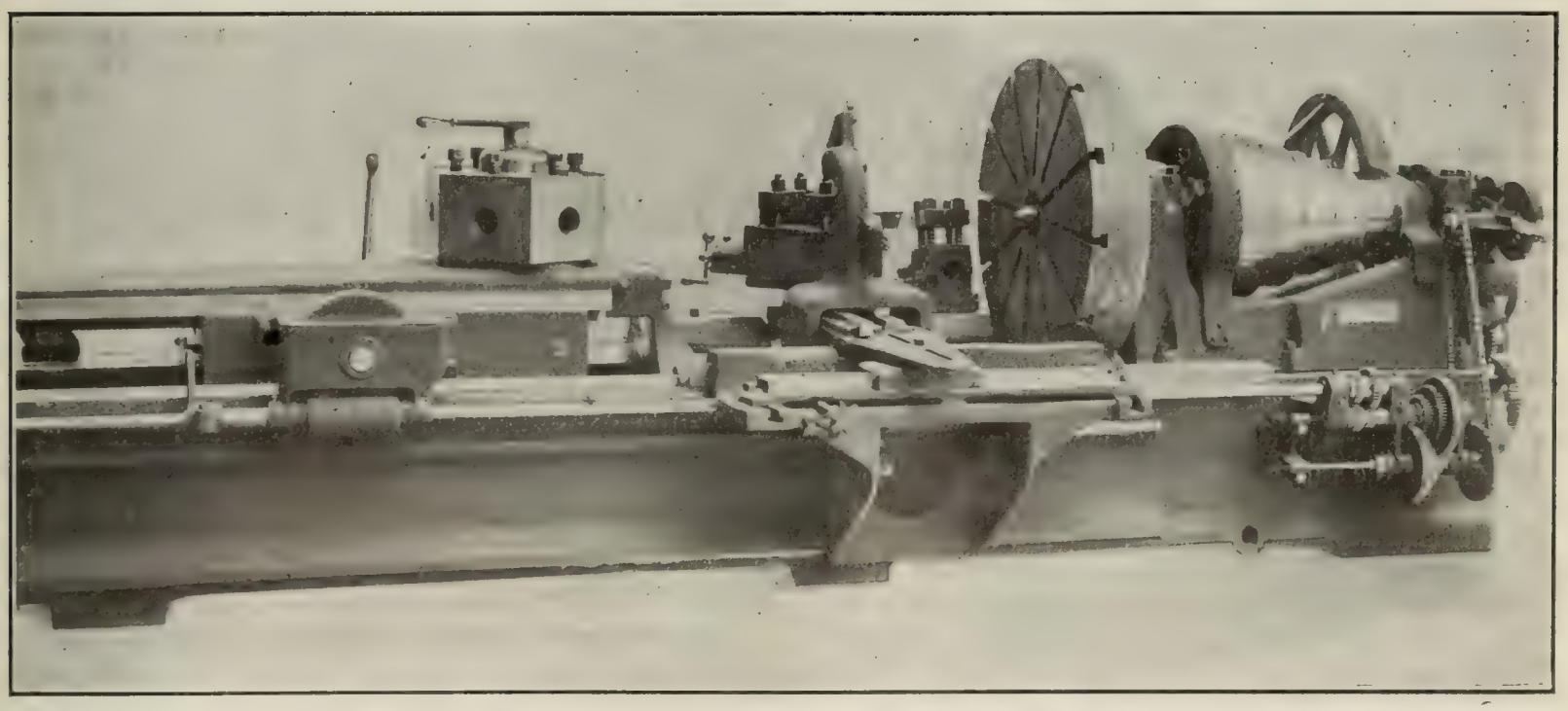
# THE IRON AGE

New York, Thursday, December 24, 1908.

## A Heavy 36-In. American Lathe.

What is described as the largest lathe of its type and equipment that has ever gone out of Cincinnati is the 36-in. heavy pattern triple geared lathe, with turret on the shears, of which front and rear views appear herewith. This tool is considered by the American Tool Works Company, Cincinnati, Ohio, to be one of the finest examples of design and workmanship which it has produced. The alignments are declared to be perfect, and the design such as to facilitate its operation. Being steel geared throughout and of very heavy construction, it is capable of doing extremely heavy work with a high degree of accuracy.





Front and Rear Views of the 36-In. Heavy Pattern Lathe, with Triple-Geared Head and Turret on Shears, Built by the American Tool Works Company, Cincinnati, Ohio.

This 36-in. lathe swings 38 in. over the V's and 26 in. over the carriage, and is built in even lengths of bed, from 12 ft. to any desired length. The standard length is 12 ft., a bed of which length takes between centers 4 ft. 9 in. The bed is of deep and exceptionally heavy section and of the company's drop pattern, which gives 2 in. additional swing. Cross box girders at short intervals the length of the bed contribute to its stiffness, and the rack cast in the center for engaging the pawl of the tailstock further supplies strength.

The headstock is equipped with triple gears and is firmly bolted to the bed. The cone has five steps, of which the largest is 20 in. in diameter by 4¼-in. face. The spindle is of high carbon special steel, ground, and has a 2⅝-in. hole through it. The bearings are of phosphor bronze and have improved oiling facilities and means of adjusting. The triple gears are of the slip gear type and are shifted by rack and pinion at the front of the head. The back gear is automatically disengaged when the pinion is slipped into engagement with the internal gear on the face plate. The internal gear is planed integral with the face plate, and the pinion is cut from the solid in one piece with the shaft. All of the gears involved are of coarse pitch and wide face. The 15 speeds obtained are in geometrical progression, and the ratio of gearing is high and of great power.

The tailstock is of massive proportions and has a large continuous bearing on the ways. It is moved along the bed by a crank and gear engaging a rack under the front V. For turning tapers it is adapted to be set off center. Its base is clamped to the bed and further secured against displacement by a pawl engaging the rack in the center of the bed. The spindle of the tailstock has exceptionally long travel and is actuated by a hand wheel screw.

The improved quick change gear mechanism provides 32 changes for feeding and thread cutting, which can be made while the machine is running. The feed box on the front of the machine beneath the headstock supplies three changes for each change of gears on the quadrant on the head end of the lathe. The gears are inclosed

wherever possible, and all loose running gears are bronze bushed. The range of threads is from 1 in 4 in. to 16 threads per inch, including the 11½ to the inch pipe thread. The feeding range is 6.4 to 92 cuts per inch. The device is operated by a revolving nut at the right of the gear box beneath the head, which moves a sliding key engaging two opposed gears, each being one of a cone of gears contained in the gear box. The feed or screw pitches thus obtained are multipled through the compound gears on the quadrant at the end of the head, so that it is necessary to change only one gear on the quadrant for each additional thread. By this arrangement flexibility is secured, making it possible to cut practically an unlimited range of special worms or threads either finer or coarser than the range indicated above, by providing the necessary gears.

The apron is tongued and grooved and firmly bolted to the carriage, extending its entire length. It is double, giving all shafts a double bearing. The longitudinal feed of the carriage is controlled by a friction, and the cross feed by a saw tooth clutch operated from the star wheel handle on the apron, which is cam actuated. The rack pinion in the apron can be withdrawn while the threads are being cut. Both the longitudinal and cross feeds are reversed through a tumber plate from the front of the apron, not at the headstock. On long bed lathes this feature is of value, since the operator does not have to leave his work. The half nuts are also controlled by a lever on the front of the apron. All of the gears and pinions are of steel, of wide face, coarse pitch and cut from the solid, and bronze bushed where they run loose. The bevel gears never disengage, which avoids trouble from breakage, and all studs are of crucible steel hardened and ground. Means for thoroughly lubricating the internal parts are provided on the front of the apron. The top slide is provided with a power angular cross feed with 13½ in. of travel. The miter gears are steel, planed from the solid. The swivel is graduated, and the top slide and cross feed screws have micrometer dials. The compound rest has taper gibs fitted to it, so that no amount of strain will disturb them. It is fitted with a four-stud tool holder, in which the tool rests on a serrated steel base. The tool is clamped by four nuts and two straps which may be placed in either direction. The compound rest may also be fitted with a double T slotted top slide and equipped with regular posts set in tandem, which prevents slipping of the cutting tool under heavy strains.

The turret on the shears is of a new design, possessing several novel and important features. It is equipped with the company's new indexing mechanism, which is self-compensating for wear. This mechanism is located at the top of the turret top slide, which brings the locking pin very near to the tool. This construction is regarded as superior to that in which the indexing mechanism is located at the back in a position where slight wear is multiplied with the increased distance from the cutting tool. The turret can be tripped or revolved automatically or by hand, which is claimed to be an original feature with this company. The mechanism can be set so as to be inoperative when it is desired to run the slide back to its extreme limit without withdrawing the lock pin or revolving the turret. This action is accomplished by the small lever shown near the large pilot wheel in the front view. The turret top slide is supported on its outer end by a bracket attached to the front of the slide which travels along the V's of the bed and through its support eliminates all tendency to spring under a long reach, which is another feature claimed to be original with the company. The bracket can be removed should the work require the turret slide to pass over the carriage of the lathe. The bottom slide of the turret is moved along the bed by a pilot wheel shown at the rear end. It is clamped to the bed by two eccentrics, one at the front and the other at the rear. It is further secured from slipping due to severe end thrust by a pawl dropping from the turret which engages a ratchet toothed rack cast in the center of the lathe bed.

Eight feeds are provided for the turret, ranging from 0.005 to 0.162 in. per revolution of the spindle. These feeds are entirely independent of the regular carriage and apron feeds. The turret feeds are controlled by the star knobs carrying index dials which are shown one directly above the other on the front of the bed near the speed box. The dials and pointers thereon indicate at once the feed in inches and less, and all changes can be made while the lathe is running. The star knobs operate through shafts extending through the bed to the quick change turret feed box at the rear of the headstock, which is provided with a cover. Provision is made on the compound rest slide to quickly attach the turret top slide. This is valuable when wishing to impart to the turret the feeds of the carriage such as might be desirable in large tapping operations. In such a case the tap gets a positive lead, since the screw cutting mechanism can be engaged in the apron and the proper lead thereby transmitted to the turret slide carrying the tap. In this manner the tap is relieved of all dragging at the start and the positive lead prevents the reaming tendency of the tap on the hole when it enters. In ordinary jobs of chasing internal threads with the turret tool this feature is also of advantage. The feeds of the turret can be reversed when it is desired to back face or counterbore. This reversal of the feeds is controlled by a lever located on the driving sprocket of the quick change turret feed box.

The regular equipment of the lathe includes steady, follow and full swing rests, and countershaft having tight and loose pulleys 24 in. in diameter for a 5-in. belt and intended to run at 150 rev. per min., and all of the necessary wrenches. An improved taper attachment is an extra supplied when ordered. This attachment is of heavy construction and is designed to eliminate all binding tendency on the parts, thereby insuring smooth and uniform action. It is supported on the bed and is supplied with a vernier attachment to facilitate very fine adjustment. It is graduated and the entire attachment bolts to and travels with the carriage. Without disturbing the degree of taper to which it is set, it may be quickly engaged or disengaged at will. Other alternatives are an all geared headstock, electric motor application and double or triple friction countershaft.

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The *Iron Molders' Journal* describes the pouring of "the largest piece of bronze ever cast in a single piece in this country if not in the world," at the bronze foundry of the Gorham Mfg. Company at Elmwood, R. I. The casting is of the horse which forms part of the equestrian statue of Gen. Phil Sheridan at Washington, D. C. The bronze was melted in more than a dozen large crucibles and was poured from each of these in turn into a ladle which finally contained 6000 lb. The metal was first poured into a feeding basin in the top of the flask, and when this was filled two plugs were withdrawn and the molten bronze allowed to flow into the mold. The flask was 12 ft. long, 6½ ft. high and 8 ft. wide, and weighed between 70 and 75 tons before the metal was poured into it. Heretofore it has been customary to cast the head and neck of a bronze horse in one piece, the tail in another, the body in two parts and each leg separately, riveting the parts and then brazing them together.

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The Lewis Foundry & Machine Company, Pittsburgh, works at Groveton, Pa., is building two No. 3 motor driven roll lathes for the Cambria Steel Company, Johnstown, Pa.; a No. 3 motor driven lever shear for the Joseph Iron Company, Aurora, Ill.; a 14-in. mill with pinions and two 16-in. mills with the necessary bed plate and other equipment, including a No. 4 lever shear, for the Lebanon Valley Iron Company, Lebanon, Pa., and a No. 5 lever shear for the American Horse Shoe Company, Phillipsburg, N. J.

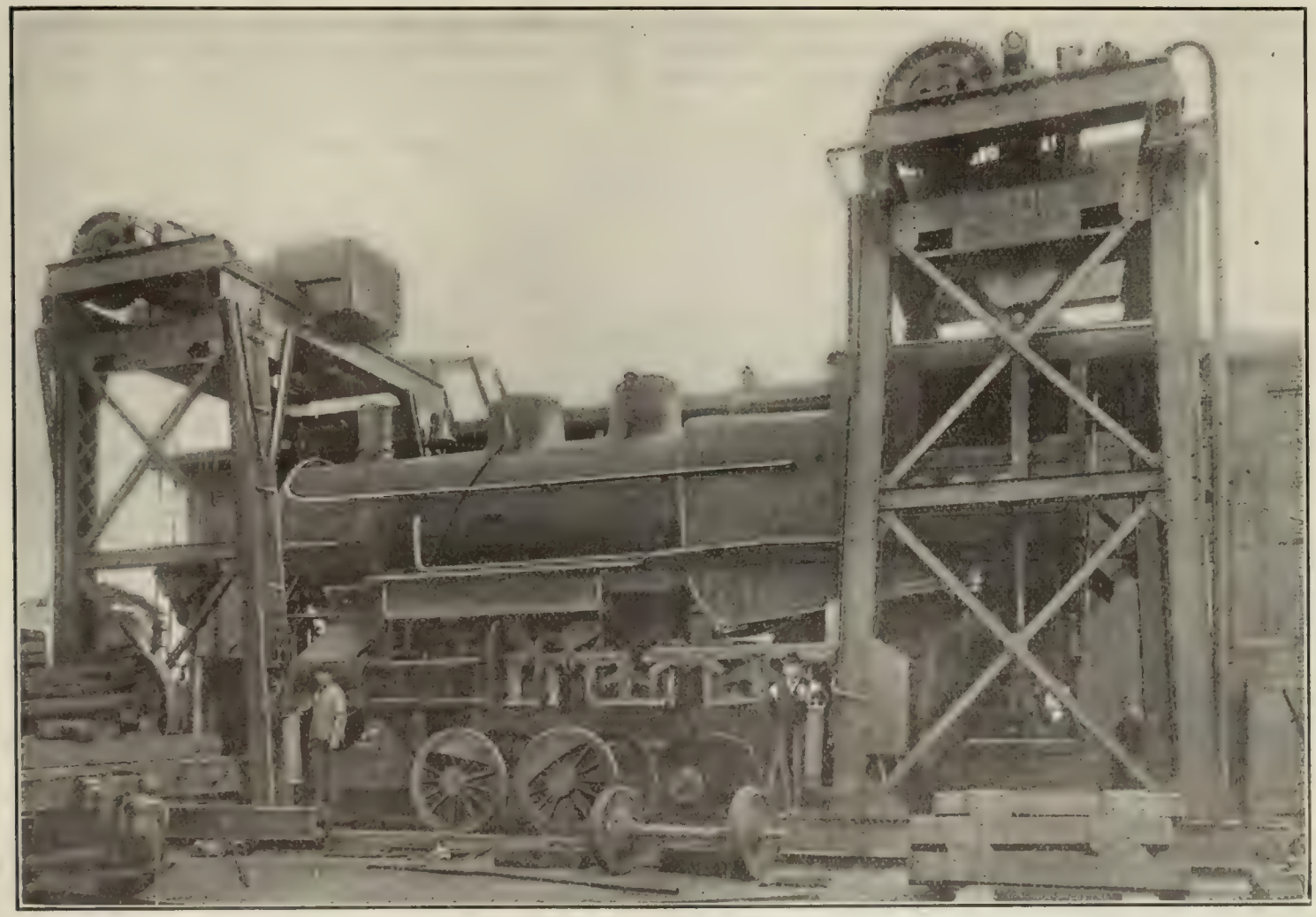
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The weekly letter of the United Metal Trades Association of the Pacific Coast reports wages in Japanese shipyards as follows for 10 hours' work a day: Boiler makers, 98 cents; Calkers, 49 cents; punchers, 46 cents; screw makers, 47 cents; finishers, $1; molders, 87 cents; electricians, 57 cents, lathe workers, 90 cents; coppersmiths, 96 cents; machinists, 51 cents; blacksmiths, $1.23; ironworkers, $1.32, and iron molders, $1.02.

## Whiting Special Gantry Cranes.

A special gantry crane equipment adapted for lifting and unwheeling locomotives is shown in the accompanying illustration. Six of these cranes were recently furnished the Great Northern Railway, St. Paul, Minn., by the Whiting Foundry Equipment Company, Harvey, Ill. The only work of installing required by the purchaser was the laying of rails for the gantry cranes to run upon. The load is hoisted by steel wire hoisting rope winding on drums driven through a system of spur and worm gearing by an electric motor. Although each of these cranes has a capacity of 100 tons its hoisting motor is of comparatively small size, as only a low speed is required. The adjustment of the cranes is by hand.

The following dimensions give some idea of the size of the equipment: From center to center of the runway rails the span is 14½ ft.; the clearance inside of the legs of the gantry is 13 ft.; from the top of the rail to the under side of the girders the hight is 20 ft.; the distance from center to center of the hooks is 11 ft.; the lift or travel of the hook is 14½ ft.



Whiting Gantry Cranes as Used by the Great Northern Railway for Unwheeling Locomotives.

The trucks consist of structural steel members, provided with bearings for the main axles, to which are fitted double flanged cast iron wheels. The hoisting gearing is supported on the bridge girders by structural framing. The drums are of a design which insures equal distribution of the load upon the girders. Throughout the design a factor of safety of 5 has been maintained. All parts are easily accessible for oiling and repairing, and the electrical work is in conformity to the Underwriter's standards. The motor is fitted with an improved automatic electric brake, which is operated by an electric solenoid in circuit with the hoisting motor. When the electric current is cut off the brake is automatically applied by springs, and is released automatically when current flows through the circuit to the hoisting motor.

The New Castle Forge & Bolt Company, New Castle, Pa., manufacturer of car forgings, chains, bolts, nuts, rivets and wrought washers, intends to increase its preferred capital stock $150,000 to allow of additional working capital. The stockholders will meet on January 26, 1909, to act upon the proposed increase. No important additions to the plant are contemplated at present.

## Westinghouse Machine Company Officials.

A number of changes have been made among directors of the Westinghouse Machine Company, Pittsburgh. The new board as elected consists of H. C. Bughman, J. D. Callery, I. W. Frank, H. S. A. Stewart, William McConway, Horace E. Smith, John F. Wallace, H. H. Westinghouse and George Westinghouse. The election removes from the board Wilson A. Shaw of the Bank of Pittsburgh, Robert Wardrop of the People's Nationad Bank, J. C. Chaplin of the Colonial Trust Company and W. H. Donner. It is understood that the bankers who were elected to the board immediately after the company was taken out of the hands of the receiver find they are unable to give the time required for the conduct of the business. Mr. Donner was elected vice-president and general manager of the company, and it is stated that, since he is no longer a member of the board, his place will be filled by a director.

The directors organized by electing the following: George Westinghouse, president; H. H. Westinghouse, vice-president; Herbert T. Herr, general manager; T. L. Brown, treasurer and assistant secretary; C. V. Holmes, assistant treasurer; T. S. Grubbs, secretary and auditor; J. G. McCall, assistant auditor; J. D. Callery, H. C. Bughman, William McConway and H. H. Westinghouse, Executive Committee. It is understood that H. H. Westinghouse, brother of the president, will devote a large part of his time to the management of the affairs of the company. This will probably necessitate his removal from New York to Pittsburgh.

The Westinghouse Machine Company is one of the best of the Westinghouse concerns. It is capitalized at $10,000,000, and its embarrassment about a year ago was only of a temporary character. It was in the hands of receivers only a short time, but W. H. Donner, one of the directors and who also had been a receiver, continued in charge of the plant for a time. E. E. Keller, another of the receivers, who was the vice-president of the company, has been succeeded in that position by H. H. Westinghouse.

# Steel by the Direct Process.

## A Method of Charging Carbon Below the Surface of the Molten Bath.

BY OSCAR STROMBORG.*

Direct steel making (apart from attempts with the electric furnace) can be subdivided into two distinct lines, of which the Catalan forge is the oldest. The idea of this process is to heat a mixture of ore and coal in an open fire or hearth. It has lived time and again under different names and modifications. W. N. Clay (1837), Sir C. W. Siemens (1873) and Mr. Eams are a few of the men who have worked on this principle. The second line is commonly named after its originator, Mr. Chenot. His idea was to heat a mixture of ore and carbon in a closed vessel, getting a spongy steel of varying composition that can be directly worked. Generally it is charged in an open hearth furnace for remelting. Several other persons have tried to make this process a commercial success, notably T. S. Blair (1870) and Mr. Adams.

For some years I have been working to obtain a third line, and have tried to build my theories on two well-known facts in latter day steel making: First, the decarburizing of the open hearth heat by charging ore, when the ore is reduced to steel, and second, the recarburizing of soft steel by charging carbon in the ladle when tapping.

### Ore and Carbon Additions.

Iron ore is used to some extent in almost every open hearth furnace, both in this country and in Europe. It is used in large quantities in the so-called Siemens "ore process," which was the original "all pig" open hearth process, and to a yet larger extent in its successors, the Bertrand-Thiel process and the Talbot process. The charged ore is the reason for the all-pig processes yielding more steel in ingots than the total amount of metal charged, the two last mentioned having recorded as high as 105 and 108 lb. of ingots to 100 lb. of pig iron charged (the pig iron holding about 95 per cent. of pure iron).

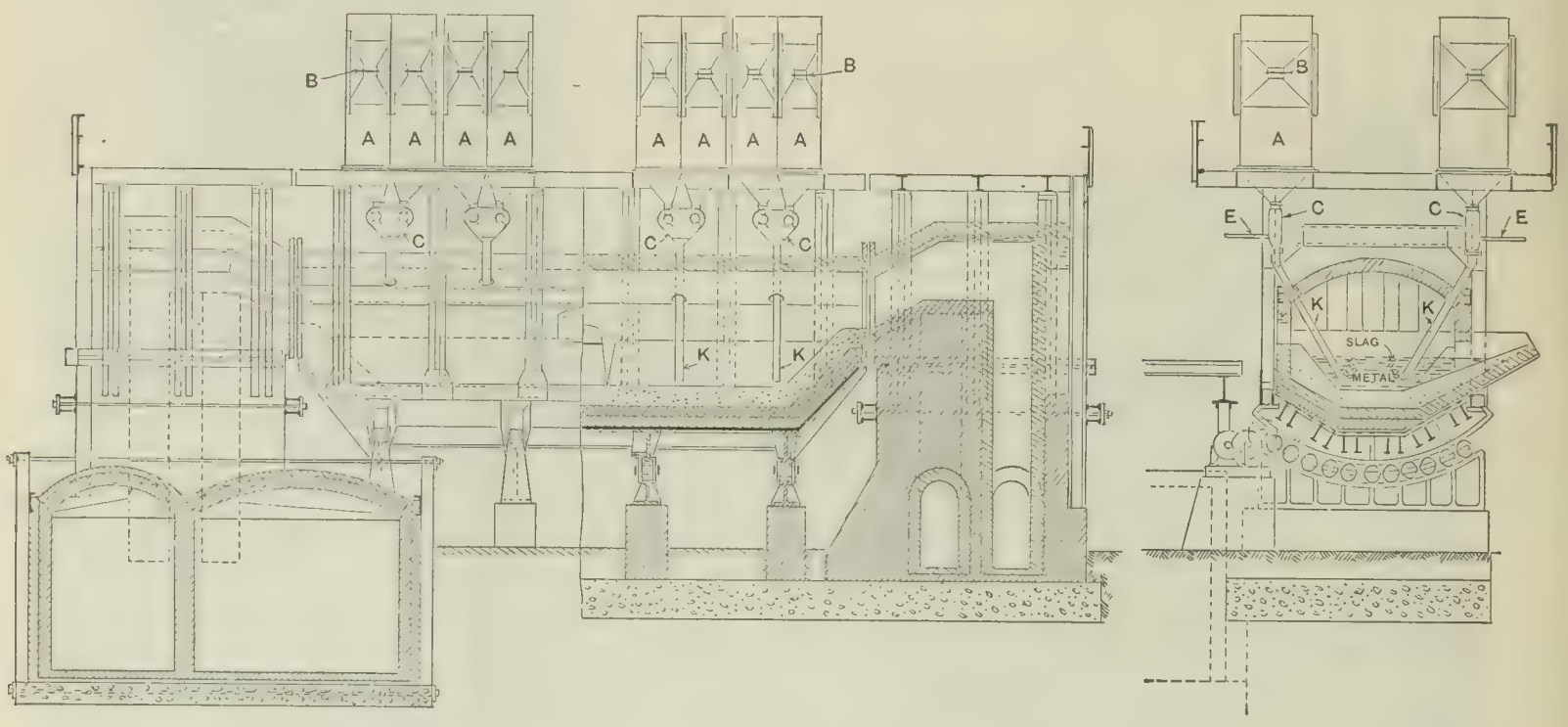
Recarburizing with crushed coke or similar material is practiced extensively in almost every basic open hearth plant, both in this country and in Europe. It is mentioned in most works on metallurgy. J. A. Phillips, F. R. S., F. G. S., refers to it in his "Elements of Metallurgy" as "Darby's recarburizing process." He says:

> Recarburizing of overblown metal, both in the converter and open hearth furnaces, is now very successfully accomplished by a method due to Mr. J. D. Darby, Brymbo, England, who replaces the spiegel or other kinds of cast iron by finely ground coke, charcoal or graphite, which is allowed to run into the molten metal at the mouth of the converter, when it is in the act of flowing into the ladles. At first the metal was strained in a series of fine streams, through a filter of carbonaceous material, but this was found to be unnecessary, as, when the molten iron is brought into contact with carbon, the latter is instantly absorbed and diffused, so that the composition of the ingots is extremely regular. At Brymbo steel with carbon up to 0.9 per cent. is made in this way in the open hearth furnace.

These two phenomena are the foundation for my process. I saw that in order to be successful I had to charge at least the carbon below the surface of the metal bath inside the furnace. The ore can just as well be charged through furnace doors, as at present, but it should be advantageous in several ways to charge the finely divided ores below the surface.

### The Apparatus for Charging Carbon.

The mechanism needed for the process, as shown in Figs. 1 and 2, consists of a reservoir for material, A, with the blast gate B. This part is connected with the feed box C, which is shown on a larger scale in Figs. 3 and 4. The box C contains the air operated feeding mechanism D and has a main connection, E, to a pipe line for compressed air. The connection piece F is bolted to the feed box, and here are provided the temporary air inlet G, the blast gate H and the poke and peep hole I.




Figs. 1 and 2.—Sections of Open Hearth Furnaces Equipped for Charging Carbon Below the Surface of the Bath.

The feed pipe K is built up in a manner similar to a ladle stopper, with the stopper rod replaced by a pipe. It is covered with a good clay tile and the point J is preferably made out of graphite and shaped so as to gather a bubble of suitable size for the material charged. When this mechanism is in working condition the reservoirs are filled with coal and other materials to be charged. The gate B is shut; H is open, and sufficient air is flowing through E to cause from one to four bubbles per second to leave the point J. The object of the flow of air is to prevent the tube K from freezing up. Material should be delivered at the rate of about 3 cu. in. for each bubble.

The helper's work is to watch the feed pipes through the peep holes I and if a pipe is frozen he stops the wheel D, opens the peep hole (that is built about the same as a peep hole on a blast furnace tuyere stock) and tries to cut the pipe open. If unsuccessful, he loosens the connecting piece F, removes the charging tube and sends it over to the repair shop. A new connecting piece with the charging tube has its temporary inlet G connected with the blast main by a hose or other flexible means, the gate H is closed, the pipe is introduced into the bath and F is bolted to the box C. The main inlet E is then opened and as soon as the pressure in the reservoir is high enough the gate H is opened, the temporary connection G cut off and this unit is ready for charging in the usual way. Thus it is possible to change any unit at any time.

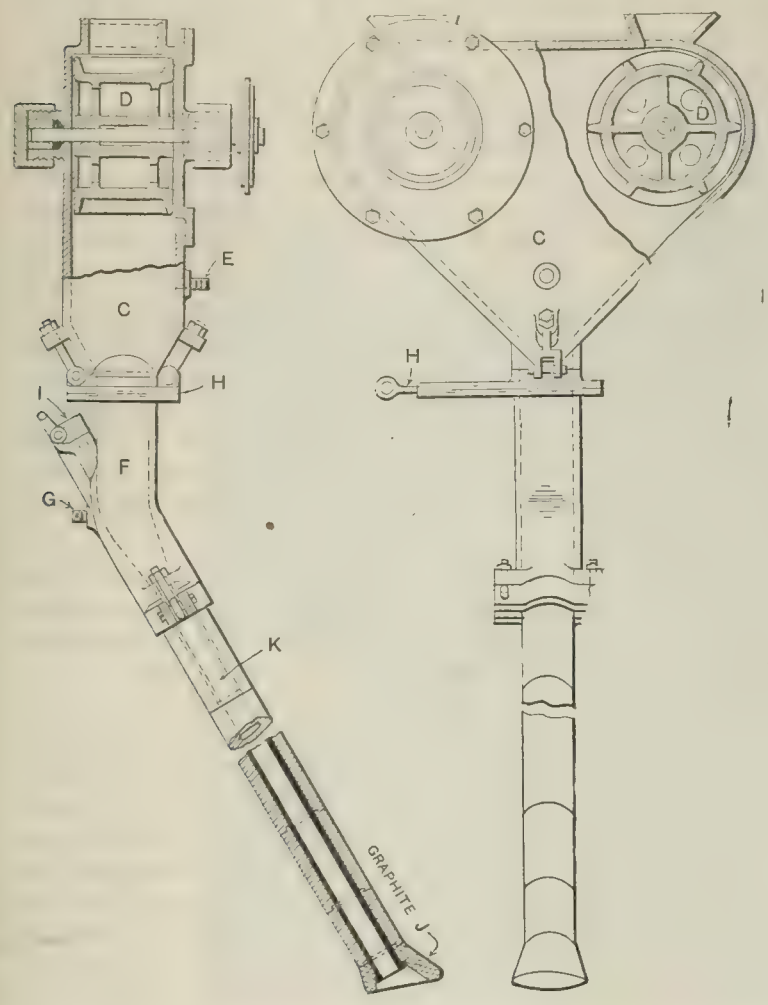
* Of Western Engineers, Seattle, Wash.

### Details of Furnace Operation.

A furnace for this process can be started by charging cold metal or cinder and melting a bath with producer gas, but in a larger plant it would be more convenient to keep one furnace out of every six in operation over temporary stops and draw metal from that one to start another. As soon as we have a bath high enough to cover the points of the charging tubes, we are at liberty to start the charging of material.

If the charged steel is low in carbon, the operations are started by charging coal, and as the percentage of carbon increases in the metal bath the charging of ore is begun. The carbon should be charged through tubes continuously, and in such quantities as to satisfy the capacity of the metal to absorb it, and allow carbon particles to float up in the fused mass of iron ore that serves as a slag cover and there get thoroughly mixed in it.

The percentage of carbon and ore in the bath should be kept high and the temperature fairly low all through the charging operations, thereby giving larger production and better economy. The slag bath should be mixed so




Figs. 3 and 4.—Sections Through Air Operated Feed Mechanism.

as to be easily fused, and the heating of the metal bath should be done by the combustion of dissolved carbon inside the bath, as in the Bessemer converter. Thus if a test shows that the metal is getting dangerously cold I stop the charging of carbon in half the number of charging tubes and use them for blowing air through the bath. Under the rest of the heat the charging tubes are divided, so that some are used for charging carbon and some for combustion air for heating the metal. They should be divided so as to keep the percentage of carbon and temperature of bath uniform all through the operations. Firing with producer gas is used only for counteracting radiation, for supplying part of the heat carried away with the off going gases and to aid in case of a sudden drop in temperature. In practical runs a certain amount of combustible gases will rise out of the bath and they will partly replace the use of producer gas. The quantity of such gases will naturaly increase if a fuel is charged that is high in volatiles.

The charging of fresh ore is stopped when the slag bath has reached high level, but charging of carbon is kept up in order to reduce the ores in the slag as much as possible. When this reduction has reached a point where the speed of reduction is no longer proportioned to the time consumed, the coal charging is stopped and the slag drawn off. A new slag bath is charged that is rich in lime, &c., in order to remove the impurities, and all charging tubes are used for air in order to burn the carbon in the metal, oxidize the phosphorus and aid in removing the sulphur. When the bath is cleaned out, and at suitable tapping temperature, the slag with impurities is drawn off and four-fifths of the metal is tapped into ingots or castings. The rest of the charge must be kept for starting the operation anew. If the ore is high in gangue it might be necessary to draw the slag two or three times in the course of the operation.

### An Estimate of Production.

The production will result partly from reduction in the contact surface between the slag and metal baths, partly from reduction in the slag cover itself, where the carbon that floats up through the metal bath will reduce a certain amount of ore, and partly from reduction in the bubbles from the tubes if ore and carbon are charged in mixture. The production from contact surfaces can be somewhat estimated from the results obtained in the all-pig process. The Talbot process, for instance, seems to have a production of about 1 ton of steel directly from ore per 30 sq. ft. hearth area in 24 hr.

This production results from the contact between a slag cover of about 25 per cent. iron and a metal bath that never goes above 0.70 per cent. carbon. In the "direct process" the slag cover will hold about 50 per cent. iron and the metal bath 3 to 5 per cent. carbon; and as the increase of production can be considered to be directly proportional to the increase of ore and carbon present, we will find that the production from this source is about 1 ton from 2.6 sq. ft. hearth area in 24 hr.

If the slag cover is kept thick and sufficient carbons are charged it can be expected that the production from reactions in slag will be of considerable importance. This can be judged from the Twynam process, referred to as follows in Harbord's "Metallurgy of Steel":

> In some early experiments carried out at Brymbo some years back Mr. Twynam found that the reduction of iron from iron ore and carbon briquettes thrown into the bath of metal in a basic lined open hearth furnace was very rapid and complete. Thus in one experiment in which 30 cwts. of such briquettes were added, the slag, 10 minutes after the last of the briquettes had been thrown in, contained only 4.08 per cent. Fe.

A reduction will start inside the charging tube bubble if ore and carbon are charged mixed, but the value of that reaction will probably not warrant the fine crushing of all ores.

### A Calorific Computation.

In this process it is, of course, of interest to have the percentage of iron in ores as high as possible. But I will figure on an ore of 60 per cent. metallic iron, as great quantities of that and better grades exist and can otherwise be readily produced by concentration. It will take 166.67 kg. of this ore to produce 100 kg. of free metal, and if the ore is a hematite we will find that it contains 42.86 kg. of oxygen and 23.81 kg. of gangue; and if it requires 10 kg. of calcined lime to save the furnace lining, we will have a total of 33.81 kg. of slag. The temperature of the metal bath will be kept at about 1300 degrees C. and 1100 degrees C. for the top part of the slag bath all through the charging. We may take 1250 degrees C. as a safe average figure for the heat absorbed by materials and off going gases, and 25 to 40 per cent. of this heat will be returned by checker chambers, but is not taken into account. The fuel used is coal with about 10 per cent. ash and 90 per cent. carbons. Its heat value is then at least 7272 calories.

Kilograms.

Reduction of 142.857 kg. $Fe_2O_3$ = 142.857 × 1,320.9 = 188,700 cal.

Amount of fuel required: 188,700 ÷ 7,272 = ..... 25.95

Kilograms.

This fuel must be burned to $CO_2$ in order to perform that amount of work. Thus the oxygen required = ..... 62.28

The ore contains ..... 42.86

Thus we must provide, oxygen ..... 19.42

from air blown into the bath. This air contains, besides the oxygen, 64.29 kg. of nitrogen. The carbon with the oxygen will form 85.64 kg. carbon dioxide. These gases will be heated to 1,250 degrees C. before passing off

Fuel consumed for N = 64.29 × 0.2438 × 1,250 ÷ 7,272 =.. 2.69
Fuel consumed for $CO_2$ = 85.64 × 0.2169 × 1,250 ÷ 7,272 =. 3.20
Fuel consumed for melting of 100 kg. steel, including latent heat, = 100 × 206.4 ÷ 7,272 =..... 2.84
4 per cent. carbon dissolved in bath when ore charging is stopped =..... 4.44
Melting of slag from ore and flux.....33.81
Melting of slag from reduction fuel..... 2.60
Melting of slag from heating of N..... 0.27
Melting of slag from heating of $CO_2$..... 0.32
Melting of slag from melting of steel..... 0.29
Melting of slag from carbon in bath..... 0.44
37.73
37.73 × 388 ÷ 7,272 =..... 2.01
Combustion air is needed for heating N.....2.69 kg. fuel.
Combustion air is needed for heating $CO_2$.....3.20 kg. fuel.
Combustion air is needed for melting metal...2.84 kg. fuel.
Combustion air is needed for melting cinder..2.01 kg. fuel.
Total.....10.74 kg. fuel.
Less 10 per cent..... 1.07 ash.
Total carbon..... 9.67 kg.
9.67 kg. C will need 25.79 kg. oxygen and forms 36.46 kg. $CO_2$ and air used will contain 85.37 kg. N. Fuel consumed for heating of $CO_2$ = 35.46 × 0.2169 × 1,250 ÷ 7,272 =..... 1.32
Fuel consumed for heating of N = 85.37 × 0.2438 × 1,250 ÷ 7,272 =..... 3.58
Additional fuel used for heating of combined products of last mentioned and following fuels, their ashes, &c.... 4.15
Total.....50.18
Gasified fuel is used in standard open hearth furnaces at a rate of about 20 kg. per 100 kg. steel. Less should be required in this process, but if same amount is allowed here.....20.00
We get a grand total of.....70.18
for 100 kg. steel.
The metal contains, say, 4 kg. carbon when charging is stopped. The combustion of this carbon will require 10.67 kg. O and will produce 14.67 kg. $CO_2$ and handle 35.32 kg. N.
Heat produced by 4.44 kg. coal = 4.44 × 7,272.....32,288 cal.
Deduct heat absorbed by $CO_2$ = 14.67 × 0.2169 × 1,250 =..... 3,978 cal.
Deduct heat absorbed by N = 35.32 × 0.2438 × 1,250 =.....10,764 cal.
14,742 cal.
Surplus heat.....17,546 cal.
Calorific capacity of 100 kg. steel and about 25 kg. slag is:
100 × 0.1165..... 11.65 cal.
25 × 0.217..... 5.43 cal.
17.08 cal.

Thus 17.08 cal. will raise the temperature of the bath 1 degree C, and 17,546 ÷ 17.08 = 1,027 degrees C. The surplus heat is therefore sufficient to raise the temperature of the bath 1,027 degrees C. above the temperature at the start of final decarburizing.

This is much more than needed and some heat must necessarily be carried away by radiation and waste gases. Thus it is possible to carry out the process without any large amount of producer gas firing, which will save the charging tubes from exposure to extreme high temperature.

The advantages with direct steel making are in short: The fuel is not required to carry any burden as in the blast furnace, and as it is charged in small quantities it has no chance to cake or clog. Therefore practically any fuel can be used that is fairly high in carbon. Steel is produced with less fuel than is used for the present production of pig iron. The cost of a plant will be reduced to open hearth and bin system for raw materials. The units in the plant are smaller and easier to handle. Thus troubles and irregularities in the run can be adjusted and overcome in a few minutes, when a blast furnace will take days and weeks before it will overcome a cold spell. A unit in the plant can be stopped and started just as easily as the present open hearth furnace. Every furnace is an independent plant, and a plant of 20 tons production in 24 hr. can be operated at practically the same cost and advantage as one of larger size.

**A Large Shipment of Allis-Chalmers Pumping Engines.**—A notable shipment of pumping engines recently made by the Allis-Chalmers Company from its Reliance Works, Milwaukee, Wis., occupied a train of 14 cars. In included the water ends only of two huge vertical expansion pumps, one going to the city of Chicago for installation in its Lake View pumping station, and the other to the San Antonio Water Company for addition to its present equipment. That for the city of Chicago is of a vertical expansion condensing engine, having three single acting pumps of the direct flow crank and flywheel type, equipped with automatic valves. The engine is entirely self-contained on the pump chambers, and is guaranteed to develop a duty of 155,000,000 foot-pounds of work delivered by the pumps for each 1,000,000 B.t.u. used by the engine and auxiliaries when pumping continuously at the rate of 25,000,000 gal. in 24 hr. against a total head of 140 ft. The San Antonio engine is practically a duplicate of the unit just described. Twenty million gal. for 24 hr. is the normal and economical rating, although the company guarantees the unit to operate at a rate of 24,000,000 gal. per 24 hr. in case of emergency caused by fire, or extreme hot and dry weather.

## The Industrial Instrument Company.

The above named company was organized by men who have long been engaged in the manufacture of measuring instruments. The leaders are B. B. Bristol, E. H. Bristol and W. E. Goodyear, all of Waterbury, Conn., who were for many years active in the development of the Bristol Company. The Messrs. Bristol, who were among the original incorporators of the Bristol Company, with several of their co-workers, withdrew from the company last spring, to develop a plan of larger scope and broader aims than was possible in that organization. Their plan involves the development of an extensive line of those types of measuring instruments and apparatus, the use of which promotes directly or indirectly safety and economy of operation in industrial plants, and oftentimes makes possible operations which without such instruments or apparatus would be impossible. It is proposed to concentrate all energies in the development and sale of a harmonious line of apparatus for this one broad, economic field.

The Industrial Instrument Company, which was formed to achieve the above purpose, is a Connecticut corporation, with authorized capital stock of $2,000,000. This company now owns the entire capital stock of the Standard Gauge Mfg. Company, until recently of Syracuse, N. Y., and of the Standard Electric Time Company, Waterbury, Conn. The Standard Gauge Mfg. Company will be reincorporated in Connecticut. It has purchased a plant at Foxboro, Mass., into which it has moved from its outgrown quarters at Syracuse. The personnel of the organization includes instrument engineers of long experience, so that its engineering staff is capable of meeting successfully demands for apparatus of a special nature for particular conditions so long as it falls within the company's scope.

The sales end of the business will be carried on by the Industrial Instrument Company of New York, which has recently been formed for this purpose. This company will handle the entire output of the Standard Gauge Mfg. Company, and the industrial branch of the business of the Standard Electric Time Company. Its president is Bennett B. Bristol, formerly secretary and treasurer of the Bristol Company; vice-president, Walter W. Patrick, until recently manager of the New York office of the Bristol Company; secretary, Henry P. Dennis, formerly manager of the Chicago office of the Bristol Company; treasurer, Arthur F. Mundy, secretary and general manager of the Standard Gauge Mfg. Company. The home office will be located at Foxboro, Mass., with sales offices at 50 Church street, Hudson Terminal, New York, and 753 Monadnock Building, Chicago.

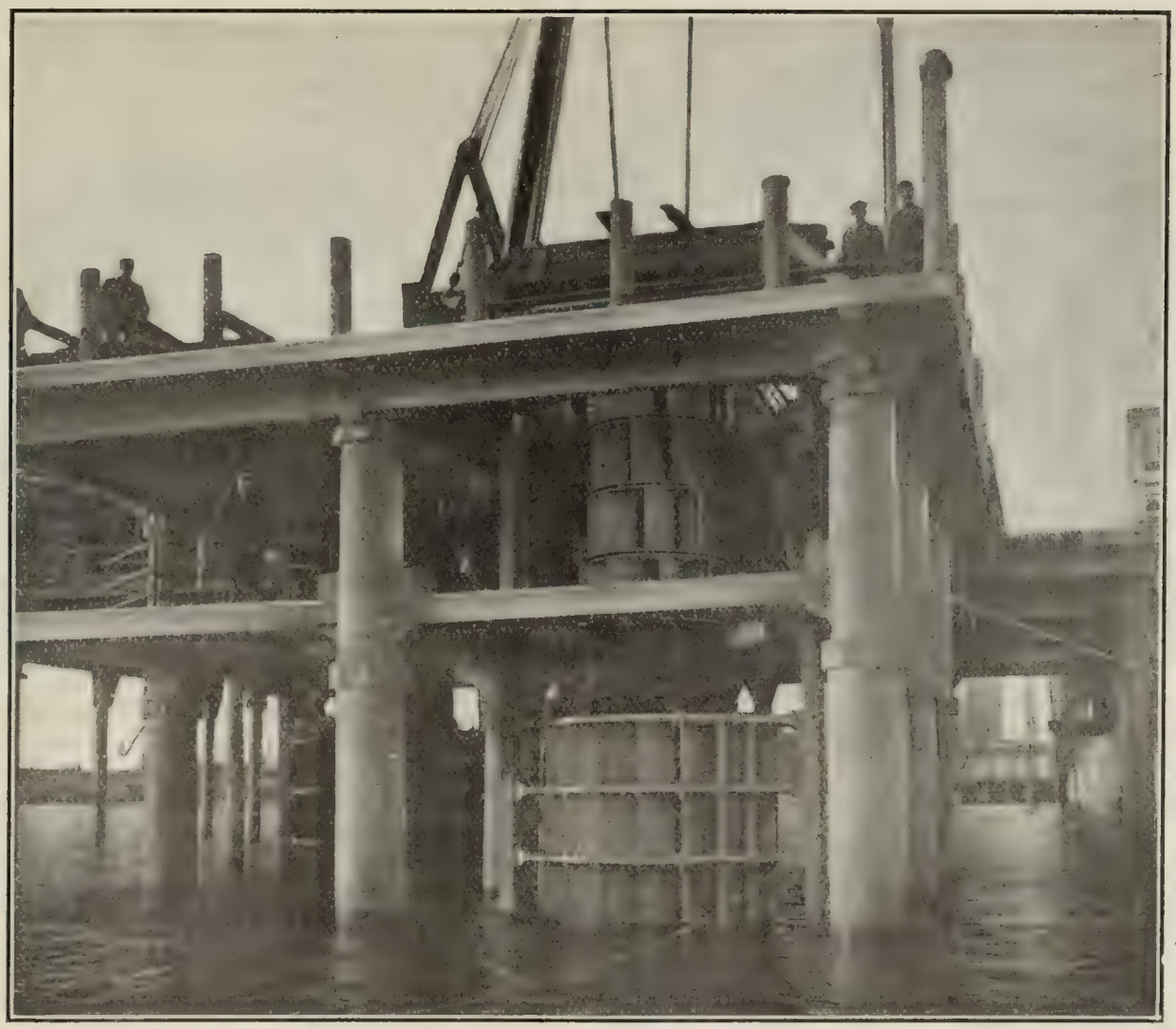
Twenty students of the senior class in mechanical engineering of the Iowa State College visited Milwaukee December 17 and 18, for an inspection of some of its manufacturing plants. The party was in charge of Prof. W. H. Meeker and R. Cleighorn. They spent the first day in visiting the Allis-Chalmers plant, and the second day they visited that of the Nordberg Mfg. Company.

## The Snee Turbine Wave Motor.

Attempts to use nature's inexhaustible resources for power have been many, not alone because it is appreciated that the supply of fuels is constantly dwindling, but because wind, water and sun power are practically free, and the installation, depreciation and attendance of the machinery would constitute the entire expense. Waterfalls and to a less extent air currents have been utilized commercially, but sun and wave or tidal power remain still to be developed to that point. The first really notable installation of wave motors is now being made at Young's pier, Atlantic City, N. J., by the Snee Universal Wave Motor Company, 1278 Broadway, New York City. The illustration shows the present state of work on this plant and gives some idea of the forms of the rotor and stationary member.

The motor, which is the invention of William Snee of Pittsburgh, Pa., is in effect a turbine, and is said to be the first construction of that character ever applied in generating power from wave motion. The motor consists of an upright, cylindrical wheel, equipped with vertical radial and curved blades revolving within a stationary shield. This outer shield consists of a series of deflectors or guide vanes set at such angles that currents of water striking the shield in any direction are deflected so as to enter tangentially. The revolving wheel is equipped with specially devised and constructed vanes. The moving water rushing from any direction through the outside blades drives the wheel and revolves it in one continuous direction, and escapes from the opposite side of the shield. The motor is claimed to be very sensitive to any action of water, and responds very freely. According to the tests which are reported to have been made it has an efficiency of 80 per cent.

The steel reinforced concrete structure now completed at Atlantic City has been equipped with two 61-ton wave motors. The wheels are hung on roller bearings and have hollow steel shafts. The outside guide blades, or deflectors, are of 9-16-in. steel plate. These guide blades are riveted to cast steel heads set 30 in. apart. The six steel heads used in the construction of each motor are 2½ in. thick and weigh 4700 lb. The foundation rests on nine concrete piles, each containing 1050 barrels of concrete, reinforced with steel rails and bars. In addition to this piling, three steel reinforced concrete floors, weighing upward of 100 tons each, make this structure a rigid mass of concrete and steel, weighing more than 500 tons. These two wave motors will be employed to generate power direct from the wave motion, and a self-regulating rheostat will be used to charge a storage battery when surplus power is available, to carry the system when the power generated is below the average, as during low tide or still water. It is estimated that this plant will be capable of developing enough power to light and heat the entire pier and the buildings in its vicinity. The installation is about completed and within a week or two inspection of its operation will be invited. Power for power, it is declared that the cost of installation of these wave motors is only half that of steam plants and less than a fifth that of ordinary water power plants.



The Nearly Completed Installation of Two Snee Turbine Wave Motors at Young's Pier, Atlantic City, N. J.

Among inquiries for cars recently reported, chiefly by the *Railroad Age Gazette*, are the following: Delaware, Lackawanna & Western, 500 refrigerator cars; Spokane, Portland & Seattle, 200 box cars; Chicago & Eastern Illinois, 60 freight cars; Erie & Michigan Railway & Navigation Company, 200 box cars; Illinois Traction System, Champaign, Ill., 25 box cars; Northern Pacific, 200 freight cars; National Car Line, Chicago, 200 steel underframe beef cars; Third Avenue Railroad, New York, 200 cars; New York Central, 3000 cars. Among recent orders are the following: Morris & Co. Refrigerator Line, Chicago, 200 cars; Western Maryland, 500 steel hopper cars; the Virginian Railway, 1500 steel coal cars; Indian Refining Company, Cincinnati, 167 tank cars; San Antonio & Arkansas Pass, 700 cars; Canadian Pacific, 500 box cars; Duluth & Iron Range, 800 steel ore cars.

A bill providing for an 8-hr. day in coal mines in Great Britain was passed by the House of Lords last week and goes into effect July 1, 1909. It originally contemplated 8 hr. from surface to surface, but its opponents eliminated the time occupied in descending and ascending, reckoning a half hour each way. The bill thus provides for 8 hr. of acutal labor below ground, or practically 9 hr. from surface to surface.

# Economy in Purchasing Supplies.*

BY ROBERT JOB.

At one time high cost was to a certain extent an indication of high quality, but one soon learns without extended business training, that quality sometimes bears an inverse relation to the price, and in any event that the latter can seldom be depended upon as an exact measure of utility. These facts have led to an accurate study of the properties necessary to secure favorable service results under different surrounding conditions, and definite standards in many cases have been worked out, detailing in as simple form as possible the requirements necessary to efficient results. These specifications, as is well known, are submitted to the dealers for bids; the orders are placed with the lowest bidder, and a sample of the shipment is taken upon receipt and tested in order to be certain that the material is fully in accordance with the requirements. When below the specified limits, the shipment is rejected and the freight both ways is paid by the shipper.

It is a matter of general observation, that the highest quality of a given material is not by any means necessarily the most desirable in service, and consequently there is often direct loss without corresponding gain when one merely purchases upon this basis without regard to the properties necessary to insure long life. An example will point our meaning: Let us suppose that freight car paint is desired of good appearance and of great durability. If we select sesquioxide of iron for the coloring matter, as is usually done, it is well known that 30 per cent. or so of oxide of iron will give ample covering or hiding power, and that a larger proportion does not increase the efficiency of the paint as to either color or durability, while the use of relatively cheap inert fillers when of proper physical condition may even cause decidedly increased life. Hence, insistence upon use of pigment consisting solely of sesquioxide of iron or other coloring matter is of no practical advantage for such work and would raise the cost of the paint without increasing its efficiency. If the paint were desired for tinting purposes the case would be different and the greatest possible strength or coloring power would then be specified and would be fully utilized.

### Saving Due to Specifications.

From the above it will be clear that specifications to be efficient must be based upon a study of the properties of the material under the conditions which exist in service, and not upon mere trade quality. The prime essential is that a quality be specified which will give the most effective results, and it is equally important that definite methods of test shall be stated, or shall exist, which will enable the purchaser to determine whether the desired properties are present. Specifications which are not systematically enforced are far worse than useless since they seem to give a measure of security which may be wholly lacking in fact after the first shipment or two.

Having fixed upon the most suitable quality, the price is determined by competition. In some cases the price will be unchanged by the specifications, but generally a higher quality of material will be obtained at a given expenditure. Frequently, however, an astonishing difference in cost occurs as a result of the specifications, and we have in mind an instance in which a certain compound was obtained by this method for one-tenth the former cost. Sometimes a difference of 50 per cent. is obtained, frequently with increased efficiency in service in addition to the reduction in cost.

Some articles largely used are manufactured and sold under trade names, and often the price is out of all proportion to the true value. Many of these materials, such as disinfectants, car cleaners, boiler compounds, polishes, &c., can be easily made up, often for one-quarter of the regular selling price. Other materials, as for instance, oils, special alloys, &c., can be obtained under specifications at a market value much below the prices usually charged by the dealers, with generally better service owing to the greater uniformity of the shipments.

### Value of a Study of Wastes.

One source of great economy in maintenance lies in the systematic study of waste materials. In railroad operation, and in fact in almost any large enterprise, many chances for such work exist. An instance of this type in the writer's railroad experience will illustrate the point. A large number of track batteries were in use in connection with the track signals, and as the renewals for these were a large item of expense, a careful study was begun to devise, if possible, some plan whereby the exhausted material might be renewed. The investigation was carried on step by step, and a method was finally worked out upon a commercial scale by which the worn out element was brought back to its original condition at a trifling expense. The other materials used in the renewals were put upon a specification basis, and as a result of the investigation the cost of the renewals was reduced to less than one-quarter of the former price, with higher efficiency than was originally present.

Sometimes heavy loss results from the purchase of material which is of high grading for the simple reason that the properties present may be radically different from those essential to successful service. At one time we recall that cast iron wheel centers, cylinders, and other castings were breaking rapidly in service after a comparatively short life, and a careful investigation was made to determine the causes, and put a stop to the loss. A special high silicon low sulphur No. 1 foundry iron was in use, recommended by the furnace people particularly for such work. On investigation it was found that the proportion of phosphorus was much beyond the point desirable in castings exposed to sudden impact, and the high silicon was also a source of weakness for such service. As a remedy, specifications were drawn up placing the limits in the pig iron and in the coke at the points generally recognized as necessary to produce in the castings the desired properties. Also a thorough study of foundry practice was made and methods were introduced for the deoxidation of the iron in order to secure tough, dense metal free from hardness or sponginess. Every carload of the pig iron and of the coke was tested before used, and if not in accordance with the specifications it was rejected. The new grade of iron was obtained at a lower price than the former quality, and practically a complete stop was put to the difficulties which had occurred, and the life of the castings was very much increased. Thus the higher grade did not have the properties essential to good service, and a large economy was effected by selection of material at lower initial cost but having the desired character.

### Failures Should Be Carefully Investigated.

Still another fruitful source of economy lies in the careful study of failures in service in order to determine the precise cause of the failures and devise methods for avoiding repetitions. The study of defective iron castings has already been referred to and an equally profitable field lies in the investigation of brass castings and babbitt metals. Hot boxes are often a heavy item of expense and repay careful investigation. This difficulty may be due directly to incorrect foundry practice or composition and may be largely remedied by properly enforced specifications. In some cases unsatisfactory service willl be due to failure to get a metal adapted to the requirements. We have in mind an instance in which the cost of a bearing metal was reduced 75 per cent. owing to the fact that an antimonial lead mixture was better adapted to the conditions than the harder and more expensive brass had been. In this case the unsatisfactory results were stopped and decided economy resulted both by bettering the service and by lowering the cost of the metal.

The thorough study of failures of steel rails opens another line of work by which great economy may be gained in the purchase of material. Steel rails are a large item of expense in the operation of a railroad, and whatever will tend to decrease the failures of the rails and lengthen the life is certain to bring gratifying results not only in economy of operation but also through

* From a paper read before the Franklin Institute, Philadelphia, Pa.

increased safety. Many types of failures of rails are caused directly by improper practice at the mill, as for instance in failure to crop ingots to sound metal, and as a result fracture or slivering occurs after relatively short service. At times the steel is too soft and the metal cuts out under heavy traffic. These evils can be very largely prevented by carefully arranged specifications and by placing a sufficient force of thoroughly trained men at the mill to be certain that the provisions are fully carried out. Precautions such as these are comparatively inexpensive and they pay for themselves over and over again in the increased efficiency of the product.

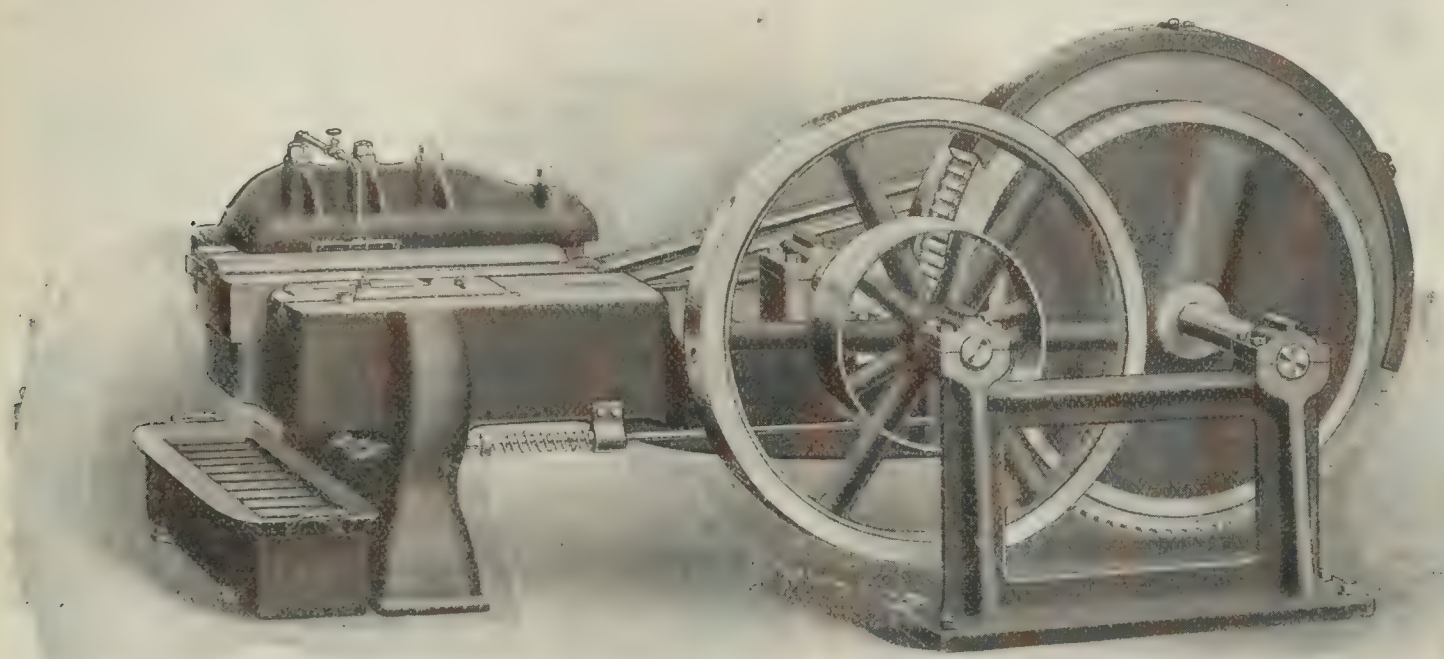
In certain cases the process by which material is made has a decided influence upon the efficiency. A striking example is found in the manufacture of steel. As is well known, many articles of steel are made up by the Bessemer process, and the strength and serviceability at times are decidedly decreased by the proportion of phosphorus with its attending brittleness. If made by the basic open hearth process both phosphorus and sulphur can be largely eliminated and the tenacity of the steel under impact so greatly increased that a much higher proportion of carbon is safe, producing greater hardness and a larger capacity for wear. These facts have an important bearing in the case of steel rails, for soft brittle steel commonly used in the past, with carbon contents, say of about 0.50 per cent. and phosphorus of about 0.10 per cent., can be replaced by steel in which the phosphorus is reduced to about 0.02 per cent. or less, and we have known of instances in which the two types of rails laid side by side in track showed only one-third the amount of wear in the latter as in the former quality, with the factor of safety and freedom from fracture greatly increased. The cost of manufacture by either process is practically the same. It should, however, be borne in mind that the mere fact that the steel has been made by the basic open hearth process is no assurance that the quality will be satisfactory, and in consequence the precautions alluded to above are essential to good service.

A portion of the new gravity freight yards of the New York Central lines at Gardenville, just east of Buffalo, N. Y., was placed in commission December 19. The entire yard is far from completion, but heavy traffic necessitated the opening of the 25 tracks that are finished. When completed the new yard will have a capacity of 26,500 cars every 24 hr., or 9000 cars more than that of the largest gravity yard now existing in the country, which is located at Renovo, on the Pennsylvania Railroad. The cost of the new gravity yard at Gardenville will be over $2,000,000.

Reports that the Jones & Laughlin Steel Company, Pittsburgh, had resumed work actively on its new Aliquippa plant, to consist eventually of four blast furnaces, steel works, plate mills, &c., are untrue. Little work has been done at Aliquippa for a year and probably will not be for some time. About a year ago the company ceased active work on the building of four Talbot furnaces at its plant on the South Side, Pittsburgh, but recently this work has been started again and these furnaces will be pushed to completion. The plant will then have a total of nine Talbot furnaces, with a capacity of turning out about 2500 tons of steel per day.

## The National Improved Thread Roller.

An improved thread rolling machine is a new product of the National Machinery Company, Tiffin, Ohio, manufacturer of bolt and nut machinery. This machine is of the reciprocating type, and in attempting to overcome certain difficulties that have been experienced with machines of this type, this machine has been made heavy and powerful, with slides of large proportions, &c., so that the machine would operate without excessive wear and give the greatest possible accuracy to the work and long life to the dies.



An Improved Thread Rolling Machine Built by the National Machinery Company, Tiffin, Ohio.

The slide which carries the reciprocating die is unusually long and is backed by a bank of hardened steel rollers, which contribute to reducing the wear upon the various parts and the power required to operate the machine. This slide is operated by a crank having a Whitworth quick return movement, so that the machine can be operated at high speed and still allow the operator a maximum time for feeding. Removable wearing plates are provided under the reciprocating slide, and in all respects the design aims to afford the greatest possible effectiveness in operation.

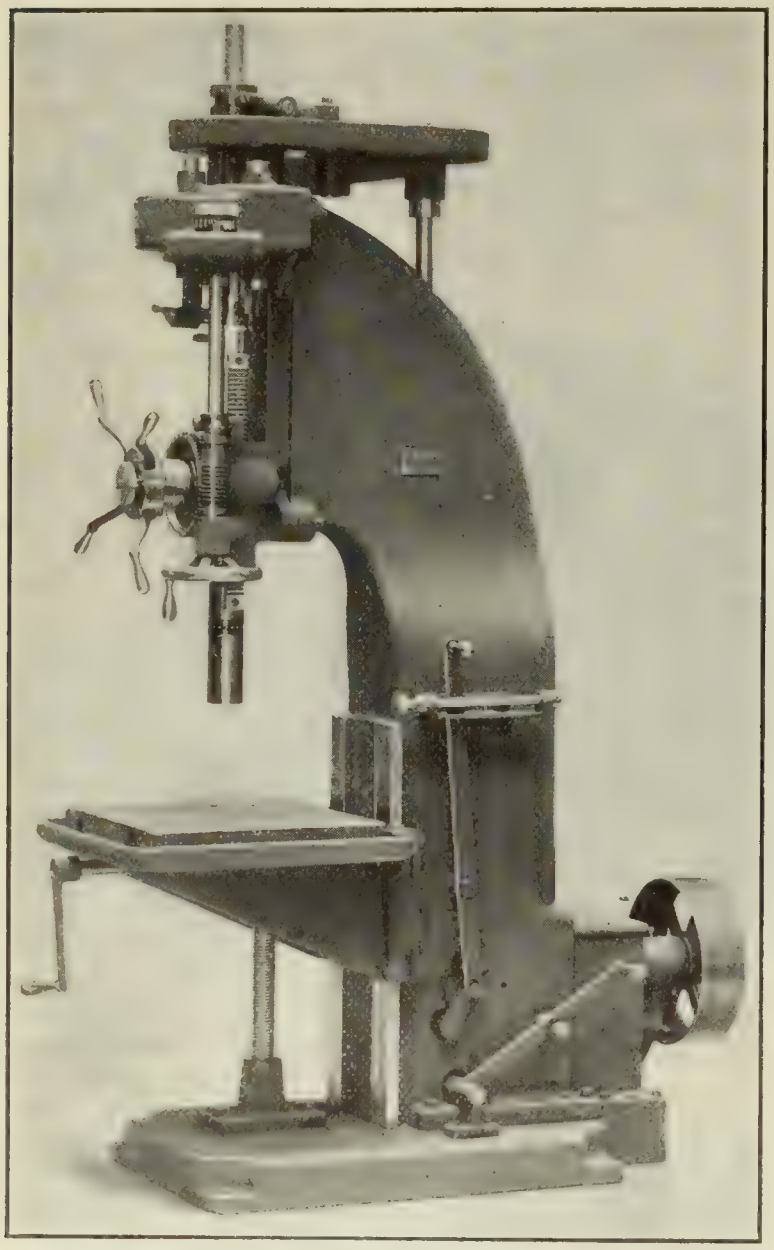
This machine rolls threads on bolts of all sizes, up to 1 in. in diameter. It operates at a speed of 35 strokes per minute, and its net weight is 18,000 lb.

## The Clough Reversible Swivel Blade Foot Power Shear.

A foot power shear having as characteristic features a reversible blade and swivel adjustment to any desired angle, from straight to crossways of the frame, is a new product of R. M. Clough, Tolland, Conn. The frame is of the same pattern as the hand power shear built by its maker. The machine is worked by foot power, permitting the workman to operate it without the assistance of a helper. The blades being reversible, when one edge is dulled the other may be used without stopping for regrinding. The blade holder swivels and may be clamped at the desired angle, the range being sufficient to permit the cutting of regular or irregular shapes either internally or externally. The capacity is No. 16 gauge steel. The machine is built regularly in one size, with 18-in. throat, or to order in 12 and 24 in. sizes.

## The Foote-Burt No. 24 High Duty Drill.

A drilling machine especially adapted for handling high speed drills of from ½ to ¾ in. in diameter, when drilling in solid steel to their full cutting capacity, is a new product of the Foote-Burt Company, Cleveland, Ohio. The machine is an addition to the company's line of high duty single spindle machines, of which one smaller size and two larger sizes are at present built, and embodies substantially the same construction. The machine is driven by a single belt pulley and requires no shifting of belts, all speed and feed changes being made by a quick change gear device. The levers for starting and stopping



The No. 24 High Duty Drill Built by the Foote-Burt Company, Cleveland, Ohio.

the machine and for changing speeds and feeds are conveniently located within easy reach of the operator.

All bearings are bronze bushed and are provided with liberal oil grooves. Throughout the machine spur gears are used, except one pair of slow running 2-to-1 bevel gears at the driving end, and one worm and worm gear for the feed. The spindle is of forged high carbon steel fitted with a ball thrust bearing.

Three changes of geared feed are provided, any one of which is instantly available by shifting a lever at the front of the machine. All of the feed changes can be made without stopping the machine. The power feed is equipped with an adjustable automatic stop and a hand stop. The hand feed is through a worm and worm wheel, and quick traverse of the spindle in either direction is afforded through the spider hand wheel at the front of the machine, which is engaged or disengaged automatically, depending upon the positions of the various associated handles.

In the base of the machine is located the drive, which is a self-contained unit. Nine spindle speeds are available through a double train of gearing, which is always in mesh and runs in a bath of oil. The device employs a lock bolt engaging any one of three gears, in each of the two trains, thereby giving the nine different speeds, any one of which is instantly available by shifting the levers at the side of the machine, directions for the use of which are given on the index furnished. At the end of the speed box is the pair of 2-to-1 bevel gears inside of the column, making the connection to the vertical driving shaft. Between the latter and the spindle gear is an idle spur gear, making it unnecessary to employ any more bevel gears.

When desired a tapping attachment can be furnished which consists of a positive steel clutch, located on the idle gear on the top of the machine. It obviates the necessity of driving and leading the spindle through the keyed member of the clutch. The attachment reverses at a ratio of 2 to 1.

The table is of the bracket knee type and has a large square lock bearing surface on the upright, to which it is securely gibbed. It is further supported and elevated by a square thread jack screw beneath it, slightly back of the center of the spindle, to permit boring bars or other tools passing through the table. It is also provided with a liberal oil groove and T-slots. A compound table is an extra attachment, consisting of an entirely new knee for this purpose, not an attachment to the regular table. It has a longitudinal adjustment of 14 in. and a cross adjustment of 8 in. The top platen is fitted with two T-slots running lengthwise, and also with an oil groove and has a working surface of 16½ x 30 in.

The following table gives the most important dimensions and speeds of the machine:

| | |
|---|---|
| Distance from center of spindle to face of column, inches | 12 |
| Maximum distance from nose of spindle to top of table, inches | 28 |
| Length of power feed, inches | 16 |
| Diameter spindle sleeve, inches | 3 |
| Length of spindle sleeve, inches | 23 |
| Width of spindle sleeve steel rack, inches | 1½ |
| Diameter of spindle driving end, inches | 1⅝ |
| Diameter of spindle in sleeve, inches | 1¾ |
| Diameter of spindle in nose, inches | 3 |
| Morse taper in spindle | No. 4 |
| Diameter of spindle driving gear, inches | 8⅞ |
| Face of spindle driving gear, inches | 1½ |
| Size of working table surface, inches | 20 x 20 |
| Vertical adjustment of table, inches | 20 |
| Feed changes, inches per rev. of spindle | 0.007, 0.016, 0.033 |
| Spindle speeds, rev. per min | 71, 87, 107, 143, 174, 203, 215, 247, 306 |
| Speed of driving pulley, rev. per min | 200 |
| Size of driving pulley, inches | 14 x 4¼ |
| Net weight, pounds | 2,450 |

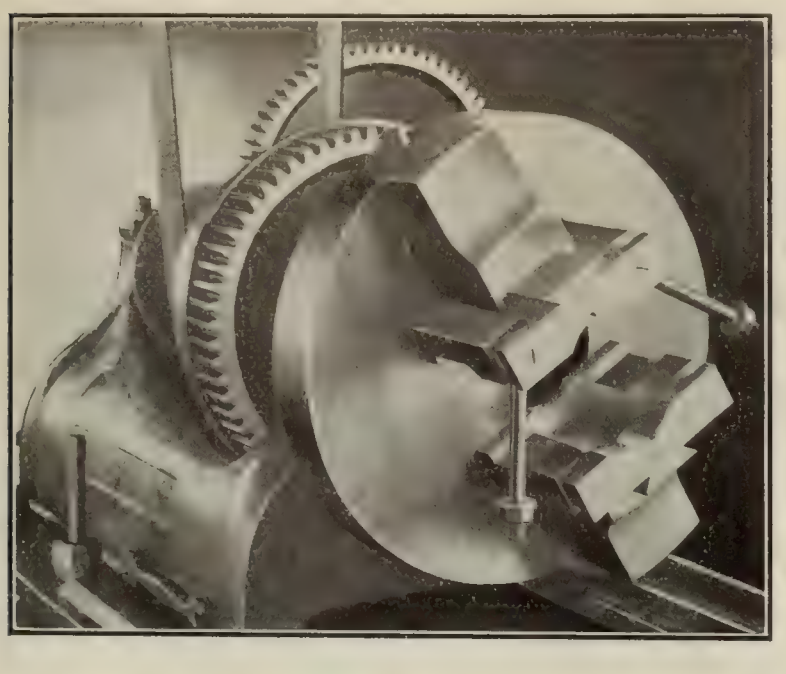
When a compound table is furnished the maximum distance from the nose of the spindle to the top of the table is decreased 5¾ in.

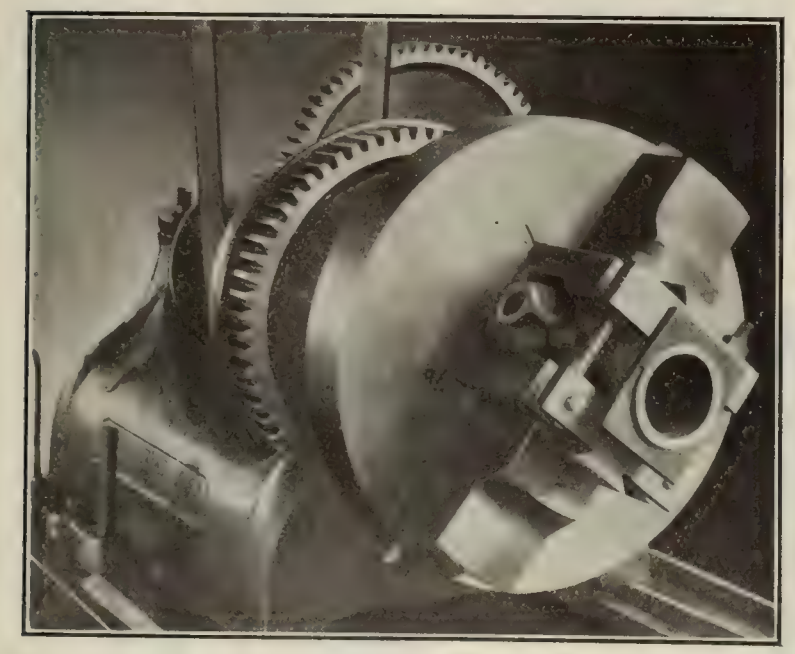
## Vatudrip, an Anti-Rust Liquid.

A new rust preventive to be known as Vatudrip is being placed on the market by the Vatudrip Company, 237 Broadway, New York. It is in liquid form and is intended to be used as a dip or applied with a brush to metallic surfaces or articles which it is desired to protect against the action of corrosion. It is claimed by the makers that it will set sufficiently to protect the articles coated during ordinary handling, but may be wiped off when desired. It is further claimed that it will not affect the metal, and will prevent rust, no matter where or how exposed to the elements. Specimens of machinery and hardware are exhibited by the maker, which have been partly coated with Vatudrip and exposed to the elements for a period of several months showing the unprotected parts badly rusted, while the coated portions remain bright and without a trace of corrosion. It is especially recommended for protecting machinery, steel and bright metal products while in transit, insuring their arrival at their destination in good condition. As a safeguard against the action of salt air and salt water it has proved especially efficacious. Another important claim of the maker is that it may be used for giving structure iron and steel a protective coating to be applied just before painting, the Vatudrip acting as a drier for the paint and affording perfect protection against rust.

## A Special Skinner Chuck.

For holding automobile engine cylinders while the cylinder is being bored and faced and practically finished complete at one setting, a special two-jaw chuck is made by the Skinner Chuck Company, New Britain, Conn. On account of its size the chuck is of interest, the following being some of its principal dimensions: Diameter of the chuck body, 24 in.; width of the adjustable jaws above the face of the chuck, 6 in.; size of the adjusting screw





Open and Closed Positions of a Special Automobile Engine Cylinder Chuck Made by the Skinner Chuck Company, New Britain, Conn.

nuts, 1¼ in. square, and net weight of the chuck, 490 lb.

The chuck is a universal one, the jaws working together when it is operated with either screw. The jaws are connected together by rack and pinion gears, which are completely inclosed. To prevent chance of chatter when the work is being operated upon at its extreme outer end two bolts are provided, as shown in the illustrations, which obviate any tendency of the jaws opening at the front or outer end. In practice the work is usually performed in a turret lathe or boring mill, the boring bars and facing tools being used in succession with a single chucking of the casting.

**A Foreign Aluminum Manufacturer Fails.**—Advices have just been received that the Aluminum Corporation, Ltd., Conway, North Wales, has gone into the hands of receivers, the principal creditor being Lloyds Bank. A statement has been issued by the bankrupt company, which says that its failure is principally due to the heavy decline in prices of aluminum. Several years ago the manufacture of aluminum was quite profitable, but owing to keen competition values have steadily declined, and it is claimed that at the prices at which this material is now being sold there is little or no profit in its manufacture. Should a revival in trade come after the first of the year, as generally anticipatel, it is not improbable that prices of aluminum may be advanced sufficiently to allow a fair profit to the producers.

## Ryerson Pressed Steel Separators.

Following the general tendency to eliminate cast iron in steel structural work wherever steel shapes can be made to serve the same purpose equally well or better, a pressed steel separator, the form and application of which are shown in the accompanying illustrations, has just been placed on the market by Joseph T. Ryerson & Son, Chicago. The separator is pressed from plate steel in one piece, loops for the bolt being corrugated, cut and pressed out as indicated in Fig. 1. Fig. 2 shows the sep-

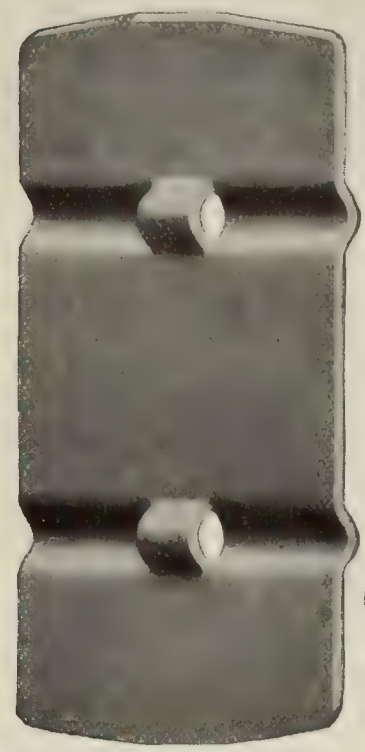


Fig. 1.

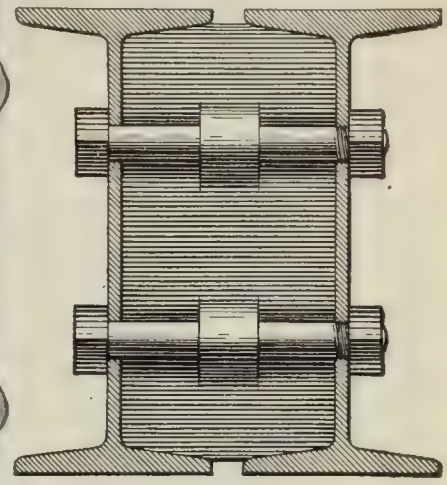


Fig. 2.

A Pressed Steel Separator for Structural Members, Made by Joseph T. Ryerson & Son, Chicago, Ill.

arator in position between two beams. Uniformity and accuracy as to size are assured by their being cut to form by dies; the advantage of this is obvious, since it not only assures a fit under the flange of the beam, but also gives a good bearing and a proper spread without chipping or fitting.

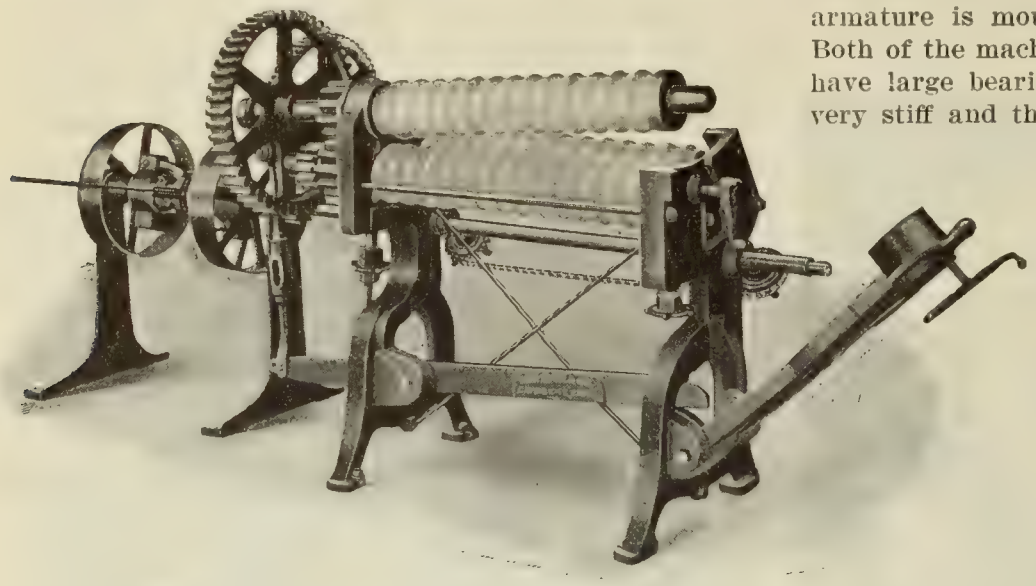
These separators are, unless otherwise specified, made to the Carnegie specifications as to beam spreads, the location of holes, &c. The small sizes are made for use with but one bolt, and range in thickness from No. 10 gauge to ¼-in. steel, and vary in weight from less than 1 lb. for beams of 6 in. to a little more than 8 lb .for one of 18 in. Freedom from breakage, either in shipment or when bolts are being inserted, is a point that is particularly emphasized.

Ernest Schmatolla, 317 High Holborn, London, W. C., has published an abridgement of his work on "Gas Producers and Gas Firing." In its 16 pages the pamphlet presents comparisons of direct and gas firing for boilers, lime kilns and reverberatory furnaces. In the case of the last named the economy of introducing a recuperator is dwelt upon. The author also describes a kiln intended for very high temperatures, which does away with the limitations of the ordinary gas fired kiln by connecting the heating chamber with two or more heat accumulators. The price of the booklet is 1 shilling.

The sheet and tin plate plant of the Whitaker-Glessner Company at Wheeling, W. Va., is in full operation, with good prospects for the future. The plant contains seven sheet and jobbing mills and five tin plate mills.

## Bertsch Forming Rolls.

For forming culverts, tanks, barrels, &c., of corrugated sheets Bertsch & Co., Cambridge City, Ind., manufacture a machine shown in the accompanying illustration. This machine has the same housings, gearing, driving mechanism, &c., as their regular sheet metal forming and bending rolls, and is made any required size. It is also



Corrugated Forming Rolls Built by Bertsch & Co., Cambridge City, Ind.

built with their patented automatic opening and closing device, which may be seen in the engraving. With this device the hinged end of the top roll is raised and supported, and the opposite ends of the bottom rolls are lowered simultaneously, in one operation, for removing the formed plate. The machine is opened in a few seconds by simply turning down the hinged member shown. This is accomplished by the eccentric motion of the cam or lug on the bottom of the hinge, which lifts the adjacent end of the lever or bar, and lowers the opposite end, which is connected beyond the fulcrum with the top roll, thereby pulling down on that end of the roll and raising the other end.

The bottom rolls rest on a pivoted post, which allows them to raise and lower with the movement of the lever bar. As the post rests on the bar just beyond the fulcrum, its weight assists in pulling down on the top roll connection; hence, it helps to lift and balance the top roll while the machine is open. The hinge is made heavy enough so that by the aid of the long lever bar it helps to balance the rolls; therefore dropping the hinge raises the adjacent end of the top roll and simultaneously lowers the opposite ends of the bottom rolls enough to release the formed plate without disturbing the adjustment of the feed rolls, and closing the hange brings them automatically back into position for the next plate. If the plates are of different thicknesses it is necessary to adjust the bottom rolls accordingly, by means of screws as shown. As the feed rolls are constantly balanced when the machine is open, the hinge is easily closed and opened.

Moorhead, Brother & Co., Inc., Pittsburgh, works at Sharpsburg, Pa., manufacturers of pure wrought iron skelp, muck bar, sheared iron plates, &c., are remodeling their plate mills, and when it is finished will be able to roll plates up to 100 in. in width.

## Willey Electric Grinders.

Two of the latest in the Willey line of electrically driven tools, made by the James Clark, Jr., Electric Company, Louisville, Ky., are a floor grinder of the type shown in Fig. 1, and a combination wet and dry grinder shown in Fig. 2. From the illustrations it will be seen that the motor is incorporated in the machine, and its armature is mounted directly on the machine spindle. Both of the machines are of substantial construction and have large bearings of self-oiling type. The shafts are very stiff and the tool rests are easily adjusted for any position. The motors are particularly designed for the service expected of them and are completely inclosed to exclude emery dust or grindings. The motor frame and pedestal are one casting, and the starter is contained in the pedestal, where it is out of the way and well protected. These starters are specially made for the work and are not of the ordinary pattern, such as may be placed on the outside or inside of the frame.

The floor grinder, when desired, is furnished with a surface grinding attachment for one of the wheels, as shown in Fig. 1. The hight of this machine over all is 48 in. The wheels are 12 in. in diameter by 2-in. face and are intended to run at approximately 1600 rev. per min. The motor is of 2 hp. and is wound for either 110 or 220 volt direct or alternating current. Complete, the machine occupies a floor space of 19 x 30 in. and weighs 475 lb.

From Fig. 2, which shows the Willey electric combined wet and dry grinder, it is clear that the tool is the standard floor grinder shown in Fig. 1, with a water attachment as shown. The left hand wheel is used for dry grinding and the right hand wheel for either wet or dry grinding. The attachment consists of hood, splash bowl for the wheel, water reservoir, and settling chamber, and a centrifugal pump bolted to the bottom of the pedestal. No bearings of the pump are under water and it requires no stuffing box. It is driven from a pulley on the wheel shaft, as shown. Using the attachment converts the machine into a wet grinder, suitable for a wide range of work, and when it is desired to make of the machine a double dry grinder the water attachment can be readily removed. This machine stands 48 in. high; has two 12 x 2 in. wheels, a 2-hp. motor, wound for either 110 or 220 volt direct or alternating current, and running at

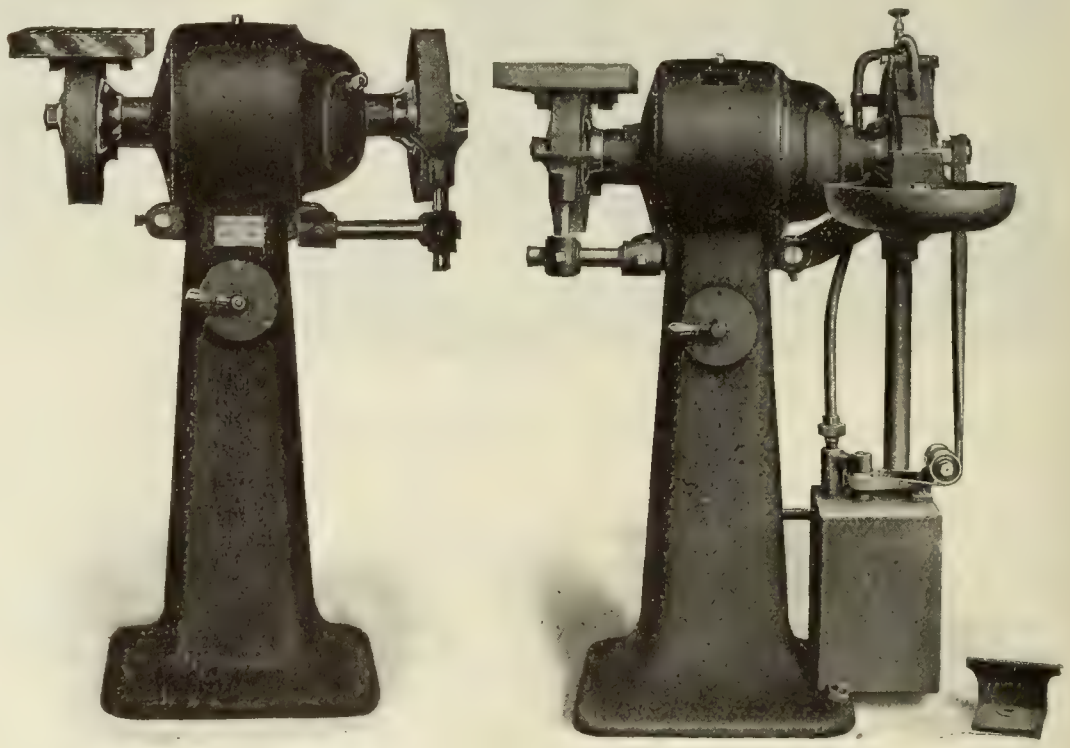


Fig. 1. Fig. 2.

Two New Willey Electric Floor Grinders Made by the James Clark, Jr., Electric Company, Louisville, Ky.

1600 rev. per min. The machine weighs, complete, 670 lb., and occupies a floor space of 19 x 30 in. The size of the base alone is 19 x 19 in.

## A French Sheet Metal Machine.

The machine herewith illustrated is specially adapted to the cutting out of metal sheets into any desired shape —templates, sweeping boards for foundries and all kinds of curved shapes required in every day shop practice.

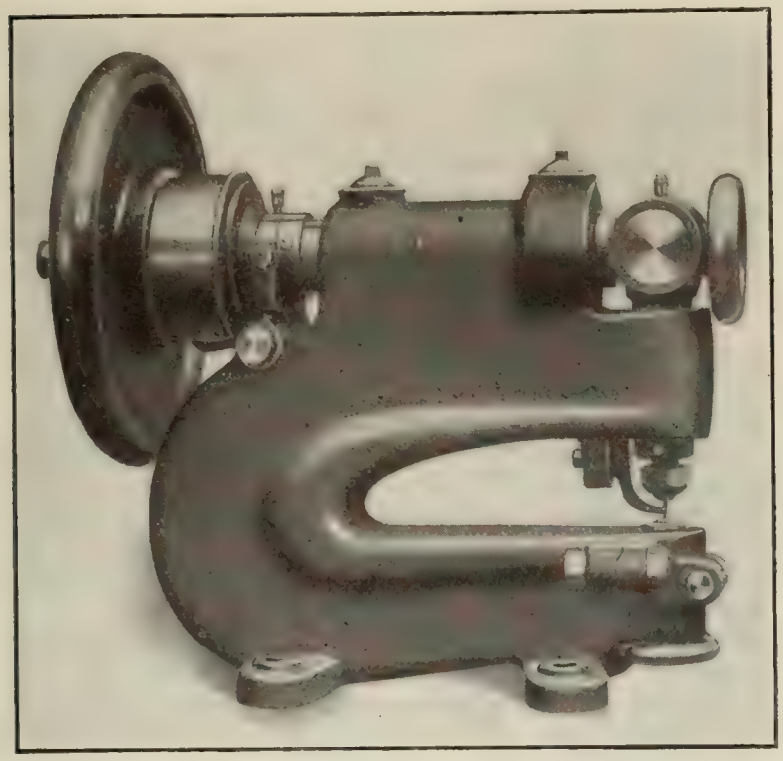


Fig. 1.—The No. 1 Machine for Cutting Out Sheet Metals, Made by the Société Anonyme des Etablissements Ph. Bonvillain & E. Ronceray, Paris, France.

The machine is not intended for duplicate work, as such work is more suitably done by special dies and punches. Essentially it replaces the hammer and chisel work which have been necessary when only one or two pieces of a similar shape have been required. The machines

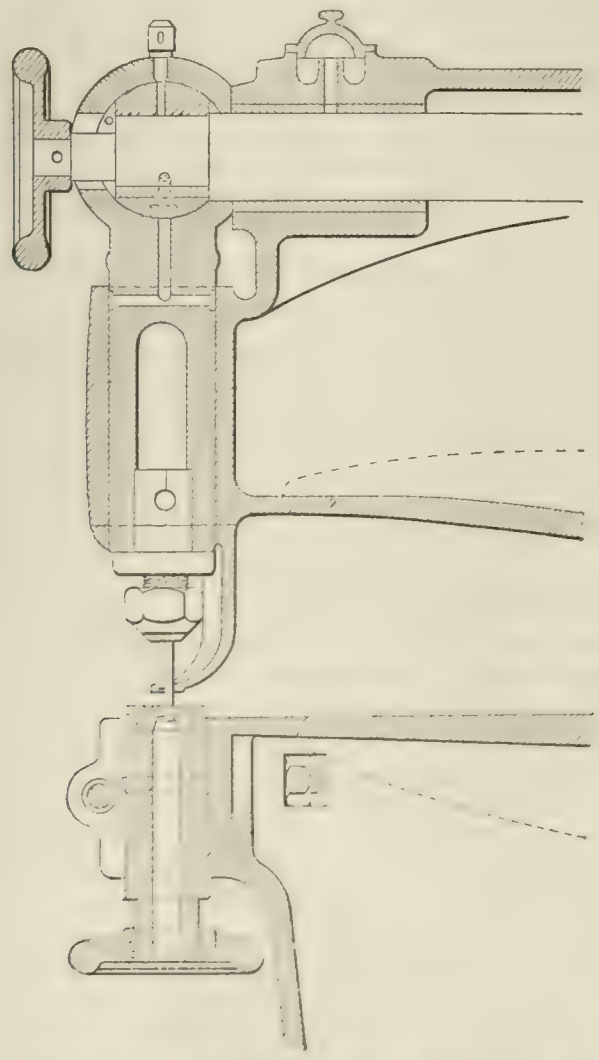


Fig. 2.—Detail of the Slide-Actuating Mechanism, Punch and Adjustable Die.

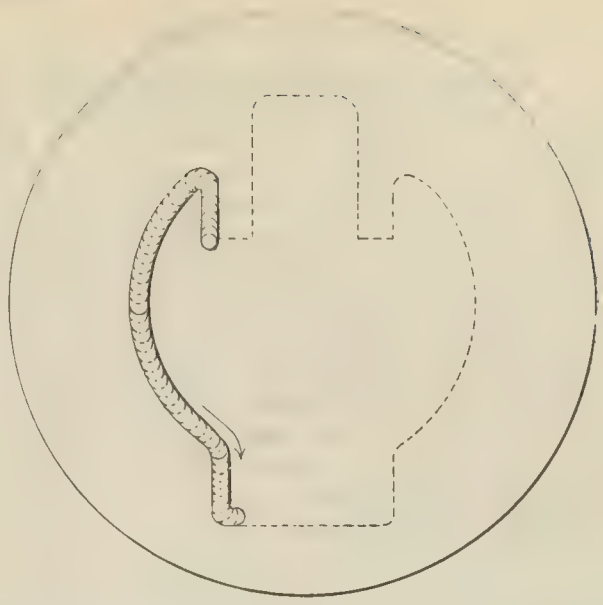


Fig. 3.—The Style of Cut Made and Example of Work Which Can Be Done.

are made in two sizes by the Société Anonyme des Etablissements, Ph. Bonvillain & E. Ronceray, 8 and 11 Rue des Envierges, 17 and 19 Villa Faucheur, Paris, France. The No. 1 size, Fig. 1, has a gap of 12 in. and is suitable for plates up to ⅛-in. thick, and the No. 2 size has a gap of 24 in. and is suitable for plates up to ¼-in. thick.

The machines run at high speed, 300 rev. per min., for the No. 1 machine and 250 rev. per min. for the No. 2 machine, and are furnished with a punch of special shape, as shown in Fig. 2. The cutting edge of the tool is in front and the back of the punch is prolonged to act as a stay. The cutting edge can be set in any direction to suit the work. The stroke of the machine is slightly greater than the thickness of the piece to be cut, and the movement is obtained, as shown in Fig. 2, by a special eccentric motion, the whole arrangement being of a circular construction.

The end or tail of the punch works in a die which is placed in the anvil of the machine just below the punch, and the tail of the latter is long enough to work up and down in this die throughout the stroke and affords a very efficient stay for the punch. The die can be raised and lowered by a screw to enable the operator to pass a sheet of metal under the punch so as to begin to cut a hole in the middle of the plate. The punch is quick acting and it will be noticed from Fig. 3 that the chips produced are of crescent shape. To obtain any desired shape the operator has simply to manipulate the plate under the punch as he would work on a jig saw; the groove left by the punch acts as a guide. It is claimed that with a little practice on this machine a boy can follow a mark and cut out any shape so closely that a smooth file suffices to finish the work.

## The Clough Style B Adjustable Reamer.

The style B adjustable reamer made by R. M. Clough, Tolland, Conn., contains as an improvement the shortening of the body 50 per cent. in sizes 2 in. and over and 33 1-3 per cent. on the smaller sizes. This decrease in weight of large reamers has removed a former objection to them. Another advantage is that the bottom of the slots carrying the blades can be given double the incline, permitting twice the amount of adjustment. The blades are well fitted in dovetail slots. In making adjustment for wear it is not necessary to regrind the blades, as they are not clamped by screws or nuts. Shell reamers have taper or straight holes and solid reamers straight or taper shanks. The reamers are made in sizes from ¾ to 6 in.

The New South Wales Railway Department is now building 10 locomotives in its own work shops at Eveleigh, a mile or so from the central station at Sydney. It is said that the railroad management's experience of the first two turned out has been entirely satisfactory, both as regards cost and workmanship.

## Customs Decisions.

### Automobile Repairs Made Abroad.

A case of much interest to owners and domestic manufacturers of automobiles, as well as importers generally, will come before the United States Circuit Court of Appeals at the present session, when an appeal by the Government will be argued relating to the status of repairs made on machines while abroad. The appeal is for review of a decision of the Circuit Court, in which it was decided that an automobile is a household effect, and that where an automobile has been repaired abroad by the addition of a new landaulet limousine body at a cost of $875, it is to be treated for customs purposes, not as an entirety, but as if divided into two parts, and is dutiable only to the value of the repairs, the remainder of the motor car being admitted free.

W. R. Grace & Co., New York, appear as the litigants in the test case which may eventually reach the Supreme Court. The attorneys for the importers will maintain that only the value of repairs should be assessed for duty upon the reimportation of cars, and that the imposition of the full 45 per cent. duty on renovated machines is unjust, and has no warrant in law. The Government, however, has concluded to make a hard fight in the Appellate Court, and in the Supreme Court if necessary, to establish the right to exact duty on repaired automobiles as entireties in the same manner as would be done in the case of the importation of a new car. In this position the Government is supported by the domestic makers of cars.

### General Appraisers Cannot Be Ignored.

In overruling claims made by J. S. Plummer & Co., New York, the United States Circuit Court of Appeals holds that importers cannot ignore the Board of General Appraisers and take cases directly to the Circuit Court. The court rebukes severely the attempt of the importing firm to go over the heads of the general appraisers. It appears that at the time of filing the original protest with the Board of Appraisers objecting to the assessment of duties made by the collector of customs, the counsel for the importers protested the assessments made on certain of the goods, but not on the entire importations. When the Circuit Court was reached, however, the importers undertook to protest duties exacted on merchandise which was not before the board. This action the Appellate tribunal condemns, as being in contravention of the Administrative act of 1890. In part, the decision of the Circuit Court of Appeals says:

> Here, as we have seen, the importers appeared but offered no proof and suffered a default to be taken without objection. The law does not contemplate a review by the Circuit Court unless there is some law or fact to review. Unless there is some evidence introduced by the importer there is nothing upon which to base the "further evidence," provided for in the act. In other words, the controversy cannot be presented for the first time to the Circuit Court. If this were otherwise, the importers could, if they chose, ignore the board and try their issues in the Circuit Court. The act of June 10, 1890, was intended to prevent such a proceeding.

### Steel Rivets.

The board has sustained a protest filed by M. J. Corbett & Co. and C. Dion, New York, against the imposition by the collector of a 45 per cent. duty on steel rivets. The merchandise was classified by the authorities as a "manufacture of metal." The importers, on the other hand, set up the contention that duty should have been exacted on the goods as "rivets of steel," with a tax of only 2 cents per pound. It is remarked in the board's decision that the point taken by the importers is meritorious.

### Sundry Minor Decisions.

Several routine customs cases have been handed down by the Board of Appraisers. In each instance the importers maintained that the component material of chief value in their respective importations was not metal. The board failed, however, to sustain any of the contentions, the merchandise being held dutiable as assessed at 45 per cent. under the metal schedule. The importers, and their importations follow: John Lucas, iron ore; Edwin A. Burch, bronze statuary; George Borgfeldt & Co., metal and leather dog collars; Stix, Beer & Fuller Dry Goods Company, metal show pieces; Butler Bros., toy doll carriages with pin cushions.

### A Household Effect Ruling.

In overruling a protest filed by Paul A. Isler, New York, the Board of United States General Appraisers has decided that a resident of the United States traveling to and from a foreign country and not remaining there more than a few months at a time, is not a "person from a foreign country" within the meaning of the Dingley tariff act. It is therefore held that an automobile used under the circumstances as described cannot be regarded as a "household effect" within the meaning of the tariff law. The decision says, in part:

> A citizen and resident of the United States going abroad on a few months' pleasure trip and returning is not, in our judgment, a "person from a foreign country" within the meaning of that phrase as used in this paragraph of the law. The benefit of this was in our judgment intended by Congress to accrue only to citizens of a foreign country, or citizens of this country who remain in a foreign country at least long enough to acquire a temporary residence there.
>
> A citizen of the United States who is a mere traveler to and from Europe, without ever remaining there more than a few months, has not acquired such status as to be entitled to the exemption provided by paragraph 504.

## Industrial Railroads in Foundry Work.

During the recent slack business many manufacturers have taken advantage of the opportunity to improve their plant facilities, to enable them to handle future large orders rapidly and economically. In numerous places industrial railroads have been added to expedite the routing of materials. One of the foundries recently so equipped is that of the Pittsburgh Valve, Foundry & Construction Company, Pittsburgh, Pa., which has installed a system furnished by the Arthur Koppel Company of the same city. The system extends through the entire foundry and touches every point in which raw material is kept. It is also used in carrying fuel and in supplying the cupolas, &c.

To reach the charging floor the cars are run on a hydraulic lift, upon leaving which they are run in front of the smaller cupolas, or by a turntable are passed on to the larger cupolas, and then back to the lift to receive another load of fuel. It is stated that the expense which will be saved by the use of this system during the year will more than pay for its installation.

Every plant requires a different system on account of the arrangement of the buildings, the location of the furnaces, machines, storage yards, &c. For this reason track sections must be cut to different lengths, curves must be made of different lengths, radius, &c. The Koppel industrial railroads can be imbedded in floors of concrete, brick, earth, &c., and in certain places, when it is desirable to have a floor that can be kept clean and on which fires may be drawn out without injury, cast plate track and floor plates are often supplied.

## The Summers Steel Ore Cars.

The United States Steel Corporation has placed an order for 800 steel ore cars with the Summers Steel Car Company, Pittsburgh. These cars are for the Duluth & Iron Range Railroad and are equipped with Session's standard friction draft gears, and it is the largest single order it ever placed for cars. The cars are of new design and will be the first of the Summers type ever used outside of the single car built and tried for six months. This car gave entire satisfaction, which is indicated by the placing of the larger contract.

The cars will be built at the Hammond Works of the Standard Steel Car Company. The plates will be furnished by the Carnegie Steel Company, which also will supply 6400 steel wheels from its newly acquired steel wheel plant at McKees Rocks, Pittsburgh. Under the contract the cars must be delivered in March and April of next year. Ore dump cars of the Summers type are of 100,000 lb. capacity, 24 ft. long, 9 ft. 5 in. high and 8 ft. 6 in. wide. The car is center dump, with doors hinged on the side of the car and meeting in its longitudinal center. They are so arranged that, when opened, all of the load is discharged clear of the rails. The car is operated by one man from either side of it, who discharge the whole load and close the car inside of 2 min. The car is absolutely self-cleaning, a feature which, it is said, does not exist with cars heretofore in use.

# TARIFF HEARINGS AT WASHINGTON.

## More Manufacturers' Views on Rates in the Metal Schedule.

Additional statements and briefs have been filed with the Ways and Means Committee relating to the pending tariff revision. Among those dealing with matters treated in the metal schedule of the present tariff are the following:

### SCRAP IRON AND STEEL.

**Statement of the Collins Company, Collinsville, Conn.**

We are consumers of scrap iron and scrap steel in the manufacture of bar iron and tool steel, which we consume ourselves in the manufacture of edge tools. For this purpose we use per annum about 2000 tons of scrap iron and 1000 tons of scrap steel. The bar iron and tool steel produced form the basis of our whole industry, which employs about 900 men, and is the support of this village.

The difficulty of obtaining scrap iron and scrap steel is increasing annually on account of the demand from the West and possibly the decreased production in New England. Although we are about the only consumers of high carbon steel scrap in New England, it is at times impossible to get this scrap within the limit of distance which transportation charges permit. Such scrap is produced to some extent in Canada, but we think is not consumed there. Occasionally we have obtained it there, but usually the duty makes the cost prohibitive. On account of occasional scarcity we are obliged to carry on hand sometimes a year's supply of steel scrap to carry us over periods like the present, when the production is light. In view of these conditions we ask that the matter of the rate of duty on scrap iron and scrap steel be considered, and, if consistent with protection principles, in which we firmly believe, we suggest that the duty be removed or materially reduced. We think the continuation of the present duty will tend to encourage steel and iron making in Canada, in order to use this scrap there, and thus take away Canadian markets for tool steel now supplied by United States producers.

**Statement of the Aetna Nut Company, Southington, Conn.**

We wish to call your attention to the items of scrap iron and steel which enter largely into our manufacture of rolled iron and steel, and at the present time are of vital importance to the continuance of our business. The new formula for making open hearth steel rails and other products of steel has created such a demand for melting scrap that not enough is made in this country to supply the demand, and we are unable to supply our mill one-half capacity, and we respectfully ask that you endeavor to place scrap iron and steel on the free list in the coming tariff revision. We do not expect that with scrap material free of duty the supply will be great enough to reduce prices, which are now advanced about 50 per cent. since July 1, 1908, but we do hope that the supply will be nearer the actual demand. Below we give actual figures of our purchases ending July 1, 1907, in which year our profits were not to exceed 6 per cent. on our investment:

Paid for scrap bought year ending July 1, 1907, $144,-661.19; payroll, year ending July 1, 1907, $124,994.59, making our labor cost nearly equal to the scrap material.

We employ abouut 200 men and have a plant that we have expended over $250,000 to build, and owing to the present scarcity of scrap material we are unable to run, and without relief we must close our mill permanently, and we think the same will occur in practically all Eastern rolling mills.

**Statement of the Clark Bros. Bolt Company, Milldale, Conn.**

In connection with the consideration of paragraph 122, particularly wrought and cast iron and scrap steel, we believe it will be of benefit to manufacturer, merchant and consumer if these items were put on the free list. We are producers and sellers of iron and steel scrap; nevertheless we would recommend taking off all duty on this "raw material" item. This country needs all the raw material in the way of iron and steel scrap that can be encouraged across our borderland or to our shores. When once American labor and equipment has been applied, then protect it in its remanufactured form.

### PIG IRON.

**Statement of Henry K. McHarg, of the Virginia Iron, Coal & Coke Company, New York.**

In the published reports of the proceedings before your committee it has seemed to me that steel and iron as affected by the existing duties have for the most part been considered as one subject, whereas, to my mind, the latter is upon a very different basis from the former, and it will be my endeavor in as concise a monner as possible to give you, knowing full well your laborious duties, the reason why from my standpoint the present duty on pig iron should not be changed, and I would be glad to appear before your committee and to verify any statements made herein, or to answer any further questions the committee may desire.

This company owns nine blast furnaces—seven in the State of Virginia and two at Middlesboro, Ky. It owns and leases a large acreage of iron ore lands mostly in the State of Virginia, but some few of the properties are in Tennessee, Kentucky and Georgia. It also owns approximately 950 coke ovens situated at Inman and Toms Creek, Va., and some 30,000 acres of coal lands in Virginia and 80,000 or 90,000 acres of coal lands in Kentucky, these latter being mostly at long distances from the railroad, and all being undeveloped. We practically sell no coke, it being made and used in our furnaces in producing pig iron.

On February 6, 1901, I was appointed one of the receivers of the company by the United States Court at Harrisonburg, Va. On January 1, 1903, all debts having been paid, the property was restored to the stockholders and I became president. The company has never paid any cash dividend to its stockholders. When our furnaces, ore mines, coke ovens and coal mines are in active operation we employ 5000 to 6000 men, and, figured on the basis of four persons to a laborer, furnish food, clothing and a living for 20,000 to 25,000 people. From July, 1906, to July, 1907, this company made 202,453 tons of pig iron, 394,791 tons of coke and mined 1,166,445 tons of coal, and during this year—I have not the official figures at hand—believe it to be very conservative when I make the statement that we paid out for labor alone between $2,000,000 and $3,000,000.

We use no foreign ores, and practically our entire consumption is furnished by mines in three States—Virginia, Tennessee and Georgia—in the past, probably 95 per cent. Virginia alone. With few exceptions our ores are washed; in some cases it takes 20 cars of material in its natural state to produce one car of iron ore that will assay 45 to 50 per cent. metallic iron, and our cost for making pig iron for the period named from July 1, 1906, to July 1, 1907, was $14.11.

Roanoke, where we have two furnaces, is our nearest point to tidewater and to points in New England, where 40 to 50 per cent. of our iron finds a market. Our average railroad rate to New England points is $4 per ton; from Radford to Pulaski, which are 60 to 75 miles farther west, on the Norfolk & Western Railroad, our rate is 25 cents additional, and from Max Meadows and Bristol, which are, respectively, about 100 to 125 miles farther west from Roanoke, the rate is 50 cents additional. At each of these places we have one furnace, and considering the additional distance and additional haul, the above rates are fully justified; in fact, although our all-rail rate to New England, in which way 95 per cent. of our shipments are made, averages about $4 per ton, it is practically a haul of 800 miles, which gives the railroad but 5 mills per ton per mile, and is as low as the business can be expected to be handled.

Let us look now to the foreign market for iron. The New York papers give the quotation as 49s. 6d.; this is practically $12. It is well known that it is the habit for vessels from England, Belgium, Germany and France, bound for Boston, New York, Philadelphia and Baltimore, to come largely in ballast, the rate by Cunard Line being lately quoted $1.22 per ton from Liverpool to New York. They will take iron or any other heavy commodity as freight for whatever rate they can obtain, for outside of the handling whatever sum they receive is all gain. They can, therefore, put English iron down at our ocean ports, irrespective of the $4 duty, at about $14 a ton, a price less than our cost prices for the year referred to at our furnaces in Virginia. This is the basis of my argument: That it is unfair, under conditions which prevail, owing to subsidies given by some foreign nations to their mercantile marine, and the known bulky nature of our exports to England, Belgium, Germany and France, creating as it does a large proportion of empty cargo room in vessels bound to the States from above countries, and that therefore the rate on freight shipments bound west bears no proportion to the actual cost of carrying them, but simply results in an unfair competition, which in the case of pig iron needs fully the present duty of $4 per ton to place our manufacturers on an equal footing.

Our company has from $10,000,000 to $15,000,000 invested in furnaces, ore mines, coke ovens and coal lands; we give a living to 20,000 to 25,000 people when our plants are in active operation, and have from the different agitations lost money in the past 18 months in common with the majority of our fellow citizens. After the Presidential election we enjoyed for two weeks the best market for iron since April, 1907, since which time these hearings began and newspapers reported them, sales have stopped and a relapse is once more in full lforce. It is hardly necessary to remind your committee that the wages paid in our furnaces are

double those of England, Belgium, Germany and France for common labor; that our maritime laws, very justly, reserve to American bottoms the coastwise trade, which precludes our shipment by water north from Norfolk, except at rates as measured by distance six or seven times greater than England or Norwegian tramp ships will bring it from foreign ports. There can never be a combination of pig iron producers; they are too many in number, and their location and conditions surrounding them are so widely different and because iron is the basis of steel. Should the interest of those that have their money invested in the production of the former be punished for the sins of the latter, which in some lines of production are controlled by a few companies and individuals of large means?

As long as present hard times and depression exist in England, Belgium and Germany, and prices of iron remain there as at present, I believe any reduction of duty on pig iron will compel us to close our entire operations, with the exception of our coal mines, throwing necessarily a large number of worthy American workingmen out of employment.

After Mr. McKinley's election in 1896, the 10 years following gave this country its business men, its farmers and its laborers such prosperity and wages as the most optimistic would hardly have conceived. Let well enough alone. Certainly any lowering of the duty on pig iron will be an unjust discrimination against those citizens who have their money invested in furnaces and ore lands in our own country, and who employ a large force of employees mining and manufacturing the same.

## BAR IRON.

### Statement of the Western Bar Iron Association.

This association is composed of manufacturers of bar iron having plants in the States of Ohio, Indiana, Missouri and Illinois, and organized for the sole purpose of adjusting wage scales for their employees through the officers of the Amalgamated Association. They employ a secretary who devotes all of his time to the adjustment of rates of wages and disputes between any member of the association and his employees.

The manufacturers of bar iron have appeared before your committee and suggested a reduction in the tariff of one-tenth cent per pound, or $2 a ton, and I would respectfully ask that in the adjustment of clause 123 of Schedule C. you give due consideration to the difference in wages paid in this country and Europe. Unfortunately, I am only able to obtain the wages paid for similar labor in England, while on the Continent we believe wages to be considerably less.

British statistics do not give the price per ton on mill men's wages, but they appear to be based upon the price of puddling, advancing and declining with it. In the year 1907 the wages paid for puddling in Great Britain was as follows:

| | Per ton. |
|---|---|
| Northumberland District | $2.25 |
| West of Scotland District | 2.43 |
| Midlands District | 2.31 |
| Average price | 2.33 |

During the same year, 1907, the price per ton paid by the members of this association to its employees for the same class of work was from $6.50 to $6.62½ per ton; or, in other words, the English puddler received from 35 to 40 per cent. of what was paid to the puddlers in the mills of your petitioners; and it is fair to assume that there is substantially the same proportion of difference in all other classes of labor.

Our agreement with the Amalgamated Association provides that whenever the selling price of bar iron advances $1 per ton above the base rate, the labor shall advance from 1 to 2½ per cent., according to the scale of each particular department. That at the present time is 6 per cent. above base rates. So that if by any undue reduction in the tariff rates you should bring about lower prices for bar iron, the labor employed in its manufacture must suffer its proportion of the lower prices.

The mills making iron bars are in no way interested in the manufacture of steel, but, as steel bars can in a large number of places be used to take the place of iron bars, the price of steel largely influences the selling price of iron bars. The manufacture of steel bars being largely a mechanical proposition, while the manufacture of iron bars must necessarily remain one of skilled manual labor, the cost of producing the latter is considerably higher and, at the present time, at least $3.50 per ton above the cost of steel bars. Therefore we ask that the same differential be maintained as in the present tariff bill.

The mills making iron bars are scattered all over this country, from Maine to California, and are for the most part what are considered small mills whose tonnage is not large, but who supply a certain locality with its merchant bars largely made from the scrap made in its own market, which is considered greatly to the advantage of those producing scrap in those sections, and should be considered in making up this schedule. For the above reasons we ask that in fixing the tariff on iron bars you give due consideration:

1. To the difference in wages paid to the labor in this country and that paid in other countries engaged in manufacturing the same product.

2. That, on account of the largely increased cost of producing iron bars over steel, whatever may be the rate agreed upon you will maintain a corresponding differential between steel and iron bars as in the present tariff measure.

3. That on account of the mills making iron bars being scattered through so many localities the people in so many States of this Union are interested in the preservation of this industry.

## STRUCTURAL STEEL.

### Statement of the King Bridge Company, Cleveland, Ohio.

We are interested with a large number of others in the future of structural steel and kindred lines of business. A revision and lowering of the tariff on rolled shapes, such as I-beams, channels, angles, plates, &c., have long seemed to us a necessity.

It is a well-known fact to all in the manufacturing or finishing lines of the iron and steel business that outside of the United States Steel Corporation, and perhaps three or four others, there are no makers of the class of materials we use, excepting the item of plates. With but few exceptions all of the makers of this class of raw material do fabricating—*i. e.*, putting it together in the shape of bridges, girders, columns and what is designated generally as fabricated work, although perhaps their aggregate tonnage in the fabricating line itself would not amount to more than one-third of the total fabricating output of the country. At present, however, with the high prices they are enabled to maintain on the material before it is fabricated, these makers are given undue advantage over those fabricators who are not makers of the material, but to whom they sell, and can make much lower prices on fabricated work, and are doing so to-day and virtually controlling the price on this class of work, the reason being that the tariff, now so excessive, enables them to make a good profit on the material as first rolled into the shapes mentioned above, so that they can afford, if necesssary, virtually to throw in the fabricating for little or nothing. This, you will see, works an injustice on a large manufacturing industry that is virtually at the mercy of this combination who, bolstered up by the tariff, are enabled to meet together at the Waldorf-Astoria or other fashionable places of entertainment in the East and arrange among themselves agreed prices that these materials, together with rails, &c., shall be sold to their customers throughout the country, and there seems to be no recourse.

So that it would seem that if there is really a desire on the part of your committee to correct an evil that is fast tending to create a monopoly, in comparison with which any others now existing would be mere infants, we would respectfully call your attention to the present bolstering-up effect the tariff has on materials of all kinds entering into the manufacture of iron and steel, as sold to the general trade for its various uses, thereby enabling the producers from the mine to the furnace and rolling mill to maintain regular published price schedules which they are all bound by gentlemen's agreement to maintain and which seems thus far to have escaped the general investigation into such agreements in restraint of trade, notwithstanding that it is really the greatest and most far reaching in existence.

## STEEL WOOL AND STEEL SHAVINGS.

### Statement of the American Steel Wool Manufacturing Company, New York City.

Steel wool is a highly manufactured article requiring for its manufacture special and expensive machinery and tools and skilled labor. It is used by painters, woodworkers, &c., as an abrasive for the same purposes as sandpaper, emery paper, &c. Steel shavings are the coarser grades.

About 10 years ago the Board of United States General Appraisers found that it should be classified under paragraph 135, but this decision was rendered on one-sided testimony, the importers falsely testifying that it was only a by-product and no witnesses were called to controvert this evidence. In 1904 the Treasury Department directed the collection of duties under paragraph 193, the Secretary drawing attention to the existing anomalous condition, by which some of the grades of this article paid a lower duty than the wire from which they were made. The Board of General Appraisers again found it to be dutiable under paragraph 135, holding that they were constrained to do so "in view of the former decision, but if it had been a new case they would have found for the Government on the new evidence (under paragraph 193);" a minority decision accompanying this dissented, not approving of the application of *stare decisis*, and claiming that the board should have found in accordance with the evidence submitted irrespective of any previous decision. The Circuit Court, on the appeal of both the Government and importer, upheld the board, also in view of *stare decisis*. The Circuit Court of Appeals decided against the board's decision, as well as against the Government's contention, claiming that paragraph 137 covered the article. It laid stress on the fact that the decision was rendered on the shipment under protest only, as it had been conceded that the goods were made from wire. It held that in the

case of each importation the collector would, of course, assess duty on the basis of the highest value of wire which the appearance of the article would warrant, and that if the value were less, or the gauge larger, it would be for the importer to inform the collector of those facts by satisfactory proofs.

As a matter of fact, the identity of the article from which steel wool is made is entirely lost. It is made not only from steel wire but also from sheet steel, band, and plates (see various patents), so that it is obvious to what confusion and possible fraud the enforcement of the collection of duties under this decision would lead.

Irrespective of all the foregoing, there is positively no question as to the intent of the tariff having been that just such articles as steel wool should come under paragraph 193, which paragraph is really nullified by this decision, for no article made of steel is a more highly manufactured or finished article than steel wool, for the production of which is required expensive and special machinery and tools and the greatest skill, labor forming the greatest part of its cost. This view is also taken by the Treasury Department, where the claim that steel wool rightfully belonged under paragraph 193 has always been maintained.

As steel wool and steel shavings are now recognized staple articles in the trade, we beg to request that they be enumerated, and to guard against undervaluation, as has been practiced for years, the Government having made some confiscations and the Board of General Appraisers raised the values repeatedly (at one time over 200 per cent.), we further request that a specific duty be levied. The wages to operators, machinists and others engaged in the manufacturing of this article in Germany are approximately one-third of those paid in this country, and labor forms the principal part of the cost of the goods (about 60 per cent.); the difference in rent, power and other expenses, as well as in the material and other necessary articles, is also considerable.

The actual difference in the cost of production between Europe and this country is 9 cents on the coarsest grade and 24 cents on the finest grade of steel wool and about 6 cents on steel shavings. The difference in the cost of production of No. 1 and No. 2 is about 11 cents per pound, and as the sale of these two numbers is greater than of all the others combined (including steel shavings), we request the assessment of duties at the rate of 11 cents per pound on steel wool and steel shavings.

We are impelled to make this suggestion, as we find and are informed by the Government's appraising officer and scientist that it is very difficult, almost impossible, to determine the actual thickness or width of the threads of these articles, so as to distinguish them reliably and draw a line between the coarser grade of steel wool and the finer of steel shavings. To guard against confusion or fraud, it will be to the interest of the Government to let one rate apply on all. The consumption of steel shavings in this country is very small, and the excess of duty which would be collected on steel shavings is more than offset by the benefit which the importers will have on No. 0 and No. 00 steel wool, as the difference in the cost of production on the former is 15 cents and on the latter 24 cents per pound.

We would also beg to suggest that in enumerating the articles these words be added, "or called by any other name," and that the weight of the wrapper be included when imported in pound or other packages.

The freight charges from Europe to this country need not be taken into consideration, being less than 1 cent per pound. To Chicago (which is the principal market for steel wool) the rate from New York is 75 cents per 100 lb. and only 87½ cents from German and Swiss points.

We are prepared to supply your committee with any additional facts you may require, and beg to add that the price of the goods to the consumer or even the dealer would not be affected by the duty proposed by us. Our object has steadfastly been to market our product with as close a margin as possible, in order to create a general demand for the same by its displacing other abrasives. It has been solely through us that the selling price has been lowered to the present figures—the importers charging vastly higher prices until forced to reduce them.

As the duty proposed by us merely covers the difference in the cost of production, competition between the European and the American manufacturers will continue as it has during the years that the Government has been collecting duty under paragraph 193, in accordance with the Treasury Department's ruling.

While the importers have always been eager for profit, we have documentary evidence to show that their principal object is the output, looking upon the American market as their dumping ground. For this reason we would have been justified in asking for a higher duty, but we only ask for the actual difference in the cost of producing the goods, which is, we believe, also in the spirit of the present and coming administration.

We would add that we can prove that operators whom we pay $7.50 to $8 per week are paid $2.25 to $2.50 in Germany, while machinists are paid $6 to $7 in Germany, against $18 to $30 with us, and the wages paid these people are about 60 per cent. of the cost of the goods and over 75 per cent. of the manufacturing cost.

In closing our appeal for revision, we respectfully represent to your committee that if a fair and just duty is not imposed on these articles and the paragraph referring to it be not cleared from possible misconstruction by the appraising officers, we may have to abandon our industry, discharge our help (nearly 100 people), and throw our machinery into the scrap pile, losing all of the capital invested and naught would result from our labors of 13 years to establish this branch of American manufacture.

## GRINDING MACHINERY.

**Statement of the Diamond Machine Company, Providence, R. I.**

As manufacturers of grinding machinery, we respectfully ask leave to present to you a statement of the ways in which our business would be benefited by a reduction of the tariff, especially by lower duties on iron and steel.

1. If iron and steel could be imported free of duty, our trade would be greatly increased, especially abroad. In our machines the cost of the metal forms a large element in the price of the machine, frequently exceeding the labor cost. This is particularly true of our larger machines and of our grinder columns. Consequently, if we were able to buy our iron cheaper we could sell our machines much more cheaply. More people in this country could afford to buy grinders, and so general trade would benefit as well as ourselves. And we could meet foreign competition better.

As it is now, high prices are a marked obstacle to sales abroad. Moreover, the price we are obliged to pay for American steel and iron exceeds the foreign price of these same metals by a margin equal to the duty. Our foreign competitors buy American steel and iron much cheaper than Americans do, and consequently can undersell Americans abroad.

So far it has occasionally been possible to justify higher prices on the ground of superior design and workmanship. Of late years, however, this superiority has become less marked because the Germans have improved their shop methods and copied our designs. We have several times felt that they have copied our own machines. Consequently our German sales have fallen greatly in the last few years, and we cannot hope to recover lost ground unless we can compete with them on the basis of an open market for iron and steel.

2. The same conditions apply to other articles in a less degree. Lumber is a very heavy item in boxing for foreign shipments, and free lumber would be of great advantage to us in foreign sales.

During the coal strike of 1902 we had an inkling of the blessing that free coal would bring, for we were able to import free of duty a cargo from Wales, and for once burned cheap and good coal.

Lower duties on paint and oils would also benefit us.

3. There is another obstacle to foreign trade which might be removed through a revision of the tariff. Besides the disadvantage of high-priced metals and supplies, American tool builders are obliged to overcome retaliatory tariffs which have been imposed by foreign countries. From this cause our Russian trade has declined greatly. Our Australian agent lately wrote us as follows, speaking of a grinder he had ordered: "We have to make the column in Vienna on account of the high freight charges and duty, the duty alone being $2.50 per 100 lb. With this price added to your price-list we never could have sold the machine."

And now we are informed that France is considering a marked increase in her duties on machinery. This would practically wipe out our sales to Fenwick Freres & Co., Paris, France. They are our largest foreign customers, and do a considerable portion of our whole business. They also pay very promptly. The loss of their trade would be a serious blow to us.

Consequently, we hope that your honorable committee will recommend a reduction of duties on the chief imports from France, in return for which we may secure concessions on her part, or at least prevent the imposition of higher duties. We hope that a similar policy of reciprocity may be used toward other nations. Not only would this throw down the tariff walls erected, or about to be erected, against American goods, but it would promote good feeling toward this country and increase the desire to buy American goods.

4. We do not expect to gain all these advantages from a reduction of the tariff without some concession on our part. It would not be fair that all protection should be taken from the iron and steel people, while the machinery manufacturers were still heavily protected. We feel that, if we were allowed to buy our raw materials in the cheapest markets, American enterprise and American skill in workmanship and design would make it possible for us to meet foreign competition without fear. Despite our many disadvantages under the present system we are able to meet foreign competition abroad to some extent. With these disadvantages removed it will not threaten us seriously at home, even though there be a duty on machinery.

We therefore ask for a reduction of the tariff, first, because it will increase our foreign sales, and second, because

it will lower machinery prices in this country, and so increase the machinery trade at home.

## NIPPERS AND PLIERS.

**Statement of the Utica Drop Forge & Tool Company, Utica, N. Y.**

This company manufactures nippers and pliers and no other product, and is in the keenest competition with similar goods made in Germany. We employ 90 to 110 men. Our annual payrolls are from $48,000 to $55,000. In 1902 the writer was in Rhenscheid, Germany, seeing how tools similar to our product were made, and what wages were paid, which at that time were from 60 to 80 cents, our money, a day. Examination of the consular reports shows no increase in the German rates. In other words, we are paying our laborers on the average per man more than double what is paid for similar work in Germany. We should be pleased to submit payroll showing wage paid for the various classes of laborers compared with similar classes in Germany.

We are the only plant in the country making no other product except that of nippers and pliers. The following is a list taken from *The Iron Age Directory* of 1906, showing the names of firms and addresses who make pliers in this country, but with them their nipper and plier line is a side line, where we are devoting our energy exclusively to the manufacture of high grade American goods, fully guaranteed:

William Schollhorn Company, New Haven, Conn.; Vaughan & Bushnell Mfg. Company, Chicago, Ill.; Peck, Stow & Wilcox Company, 27 Murray street, New York City; Bridgeport Hardware Mfg. Company, Bridgeport, Conn.; Athol Machine Company, Athol, Mass.; Billings & Spencer Company, Hartford, Conn.; Cronk & Carrier Mfg. Company, Elmira, N. Y.; Indianapolis Drop Forging Company, Indianapolis, Ind.; Kilborn & Bishop Company, New Haven, Conn.; J. M. King & Co., Waterford, N. Y.; Richmond Forgings Corporation, Richmond, Va.; Otis A. Smith, Rockfall, Conn.; Columbia Gray Iron Company, Columbia, Pa.; Smith & Egge Mfg. Company, Bridgeport, Conn.; D. Saunders' Sons, Yonkers, N. Y.; A. C. Williams, Ravenna, Ohio.

Under the present tariff, pliers are imported into this country on payment of 45 per cent. duty, being in the class of manufactured metals, making unfair competition.

We desire to be given a classing under cutlery, section 153, with pen knives, &c., as the price of labor employed in the cutlery trade on the Continent is quite similar to the price of labor paid in the production of nippers and pliers.

What we want is American made goods, paid for by American wages, with a tariff which will enable this country to be built up, and price reduction to follow naturally by competition among our home makers.

## WIRE STRAINERS.

**Statement of the National Manufacturing Company, Hamblin & Russell Manufacturing Company, and Parker Wire Goods Company, of Worcester, Mass., and the Sherwood Company, of Lowell, Mass.**

The importation into the United States of wire strainers has wrought and is working great injury to your petitioners, by reason of the low cost of the goods in Germany and the inadequate tariff protection as they are now imported into this country.

Your petitioners estimate that there are nearly one-half million dollars in value of these goods imported annually into the United States, and this importation is increasing so rapidly that the manufacture of the goods in this country has fallen off 50 per cent. in the past year, and unless this importation can be made unprofitable by means of tariff legislation the foreign goods will shortly have replaced the goods of American manufacture.

The line of goods in question has been manufactured for many years in this country, giving employment to a large number of operatives, both directly and indirectly, and your petitioners deplore a condition which will deprive these operatives from employment, and for this additional reason relief is asked.

The present rate of duty is 40 per cent. ad valorem, plus a specific duty of 1¾ cents, plus two-tenths of 1 per cent. per pound. As these goods are very light in weight this specific duty adds but very little to the importation cost of the goods. To afford the American manufacturer any protection whatever, the rate of duty should not be less than 60 per cent. ad valorem, plus a specific duty of 20 cents per pound, and to afford adequate protection the specific duty should be as much as 25 cents per pound.

## RAZORS.

**Statement of the Geneva Cutlery Company, Robeson Cutlery Company, and George W. Kern Razor Company.**

In asking you to increase the tariff on the schedule covering razors, finished and unfinished, the undersigned committee, representing 80 per cent. of the product of the manufacturers of American razors, submit the following facts for your consideration:

The razor industry in the United States is not controlled by any trust or combination. This is an industry that had not assumed any proportions at the time of the passage of the Dingley bill. There being only one factory in the United States at that time, no one appeared before the committee to ask for any protection.

Since the enactment of the Dingley bill, however, an effort has been made to manufacture razors in this country. Within the last eight years nine factories for the manufacture of American razors have been started, but owing to the inadequate protection afforded by the present tariff five of them have been forced out of business, or at least, to discontinue the manufacture of razors. There are to-day only five manufacturers of American razors, and the reason that these five are now operating is mainly due to the fact that they manufacture principally patented articles, safety razors and specialties.

During the year ending June 30, 1907, the imports of razors amounted to 255,429 dozens, for which the foreign manufacturers received $533,903.88. The duties paid upon these razors amounted to $296,633.20, making the total amount paid by importers $830,537.08. The price to jobbers of all American made razors manufactured during the same period did not exceed $150,000.

During the year ending June 30, 1908, the imports of razors amounted to 218,975 dozens, for which the foreign manufacturers received $463,883.79. The duties paid upon these razors amounted to $263,935.11, making the total amount paid by importers $727,768.90. The sale to jobbers of all American made razors manufactured during the same period did not exceed $140,000.

It will thus be seen that of the total amount consumed less than 20 per cent. are of American manufacture.

We are advised that the average proportion of labor to cost of all merchandise imported is about 30 per cent. We know that the proportion of labor to cost of American made razors is actually over 80 per cent.

We submit below table of operatives' wages in Germany as compared with those in the United States:

| | Weekly wages paid. | |
|---|---|---|
| | Germany. | United States. |
| Forgers | $4.30 to $7.00 | $15 to $21 |
| Dry grinders | 4.30 to 5.70 | 12 to 18 |
| Hardeners and temperers | 4.30 to 6.00 | 15 to 21 |
| Concavers | 4.30 to 9.00 | 16 to 24 |
| Polishers | 4.30 to 5.70 | 12 to 21 |
| Razor handle makers | 4.30 to 5.00 | 12 to 18 |
| Honers | 2.50 to 6.00 | 9 to 15 |

This tariff schedule attached, which we, as American razor manufacturers, ask to be enacted does not protect us to the extent of the full difference in labor costs. As we understand the Republican platform, the proposed tariff revision is to equalize foreign and domestic labor costs. The tariff which we ask for will not be prohibitive, because (1) it will not fully equalize the difference in labor costs, and (2) because the overhead charges of American manufacturers are larger than of their foreign competitors, owing to difference in methods of manufacture. A large proportion of foreign made razors are made by the workmen in their homes, thus reducing very largely the overhead charges.

In our opinion, the price to the consumer will not be increased because the price of razors at retail of the various kinds of grinds and finishes is pretty firmly fixed. There is, on the other hand, an unusual profit between actual cost to the jobber and consumer, amounting in some cases to over 200 per cent.

It will be noticed that while the large proportion of razors consumed in this country are of the $3 classification, the imports under that classification have been relatively small. The reason is that the duties upon the higher classification have been heretofore and are now being evaded by the importation of the higher grade razors in an unfinished condition, to wit, without handles and not in boxes. The blades otherwise complete are imported in this condition at the low tariff and are fitted with handles and boxes in this country. As a matter of fact, many large importers have so-called "naturalization shops," in which foreign made blades are fitted with American handles and packed in American boxes. To illustrate: Under the present tariff a razor costing complete in Germany over $3 per dozen (which, if correctly classified would constitute a large part of the imports) may, by leaving off handles, cases and boxes, be imported under the schedule carrying only $1 per dozen specific duty and 15 per cent. ad valorem, whereas, it should carry a duty of the next schedule higher, or $1.75 per dozen and 20 per cent. ad valorem.

We would call the committee's special attention to the last item in our proposed schedule, which we hope may not be overlooked, inasmuch as it will to a large extent eliminate the evasions of the present tariff above noted.

Owing to the high standard that has always been maintained by American manufacturers of razors, the few distributed have made such a favorable impression on the consumer that he has demanded them of his dealer, and the dealer has been supplying them only under pressure, from the fact that he could not realize as large a profit as on German and other imported goods. The importer, in order to meet this demand, has been stamping the blades on the right side of the tang with an American firm name and address, and on the opposite side of the tang, etching in a very light manner the word "Germany," which can be removed at a slight expense by means of acid or a buff wheel. This work is

usually done by the importer, or if the mark is left on the tang it is very inconspicuous and the razor to all intents and purposes passes as American made goods.

We therefore request that this imposition on the purchasing public be eliminated by proper legislation, either in connection with the proposed tariff bill or otherwise. We suggest that the name of the country of origin be required to be plainly stamped into the steel on the tang of the razor between the handle and blade, and that in case the name of any person, firm or corporation appears upon the razor the name of the country of origin be plainly stamped into the steel directly underneath said name.

# THE CAST IRON PIPE DUTY.

Walter Wood of R. D. Wood & Co., Philadelphia, Pa., appeared before the Ways and Means Committee, December 16, to give his views regarding the duty on cast iron pipe. His testimony is as follows:

Mr. Wood: We are manufacturers of cast iron pipe. The total business of the country is about three-quarters of a million tons. Our product is about 15 per cent. of that amount. The trust in our business has a product of about 50 per cent. of the total amount. The duty on cast iron pipe is $8.96 a ton, which is about $5 above the duty on pig iron. It is essential to state it this way to compare it with pig iron, the duty of which is on the gross ton. Pig iron is essentially the largest factor in our manufacture, and whatever you put the pig iron duty at will be the basis really for estimating the duty on cast iron pipe. If you reduce pig iron $1, that of course, takes $1 off the duty on pipe.

The Chairman: How much pipe would a ton of pig iron make?

Mr. Wood: There is only about 3 to 5 per cent. waste. The waste is a negligible quantity in a broad discussion, but when we come down to our drawbacks we are allowed 5 per cent. waste. If there is $2 to come off pig iron, the cast iron pipe man can stand $2 additional. The duty on pipe being $5 above pig iron, or $9 nearly, is a duty larger than the market really demands, and to that extent is too high; and to that extent also, it is detrimental to the comfortable growth of the business.

The Chairman: What is the labor cost of pipe?

Mr. Wood: The labor cost in the foundry runs from about $5 to $5.50 per ton, according to the character and weight of the individual pieces of pipe. The material cost, such as coal and other materials which go into the manufacture, will run from $2.50 to $3. The overhead charges of the manufactory will amount to about $1.25—that is, maintenance and sinking fund and various items—and selling expense will be about another dollar, making a total cost, roughly, of about $10 a ton.

The Chairman: What is the labor cost in Great Britain?

Mr. Wood: To answer that question accurately would require a knowledge of their figures. We take it, from what we hear of the general trade abroad, that their costs abroad are, as near as may be, $2 less than ours.

The Chairman: Does that correspond with your experience in running in competition with the imported pipe, or is there any imported?

Mr. Wood: There is practically no pipe imported because the duty is excessive. There has been some imported in the last year. We imported some into California ourselves in the past year.

Mr. Dalzeil: There was more last year, 1907, than ever before, according to statistics.

Mr. Wood: Roughly, I should say that that is correct.

The Chairman: With a differential of $5 is it your idea that the business could then stand and still be on a protected basis?

Mr. Wood: Our business would be thoroughly protected, if we had a duty of $3 above that of pig iron.

The Chairman: And only $2 difference in labor?

Mr. Wood: There is this point to be borne in mind. The computation of $2 which you are alluding to means at the factory in America. Now the factory in America must have a certain market in order to run, and the freight from Glasgow or Middlesbrough to Boston or to Charleston is the same as it would be to Philadelphia and New York; consequently they put their goods at those points at the same price as they would at our home port, while we have to pay about $2 to $3 to reach the different points on the seaboard.

The Chairman: How much does it cost you for freight to New York?

Mr. Wood: Freight to New York, I think, is $1.25 a ton; but I am speaking from memory. Cast iron pipe is the point I am speaking to.

The Chairman: What is the freight from Glasgow?

Mr. Wood: Glasgow to New York—I am speaking of a supposed rate, because there is no published rate. It would roughly be, I should say, from $2 to $3 a ton, according to the contract that they were able to make with the steamship that brought it over.

The Chairman: Then you do better on freight rates?

Mr. Wood: At the home port. At Philadelphia our freight would be 50 cents. To Boston or Charleston, $2 to $3; or, to go farther, the California coast, they would get decidedly a better freight rate than we would. The question of protection between what you might call the Atlantic States and the Pacific States is a very serious question.

The Chairman: What is your freight rate from your point of production to Boston?

Mr. Wood: Two dollars and seventy cents by rail and about $1.75 by water.

The Chairman: And to Charleston?

Mr. Wood: To Charleston it would be about, I should say, $2.50 by water, and probably $4 to $5 by rail. I am speaking in a casual way, because I haven't the exact data in mind.

The Chairman: Do you have a market at Charleston?

Mr. Wood: No; because that is controlled by the Alabama producers of castings.

Mr. Boutell: How long have you been in business?

Mr. Wood: Personally, I have been in the business about 40 years.

Mr. Boutell: The duty on these pipes under the McKinley law was nine-tenths of a cent a pound.

Mr. Wood: Very possibly; I do not know.

Mr. Boutell: And under the Wilson bill six-tenths of a cent a pound, and under the present bill four-tenths of a cent a pound.

Mr. Wood: Very probably.

Mr. Boutell: In other words, the present duty is about one-third less than it was under the Wilson bill. What I wanted to ask was whether those changes from nine-tenths of a cent to six-tenths of a cent, and now to four-tenths of a cent, represented pretty fairly the difference in the cost of production at home and abroad at those periods?

Mr. Wood: I should think that they were always in excess of the cost abroad.

Mr. Boutell: So that your suggestion now is that the four-tenths of a cent be lowered?

Mr. Wood: We can stand a reduction on the four-tenths of a cent and yet control the market.

Mr. Boutell: What rate would you suggest, that pig iron remain as it is?

Mr. Wood: Pig iron remaining as it is, a differential of not over $3 a ton above pig iron.

Mr. Boutell: Have you figured out what that would be as expressed in the terms of the tariff, per pound?

Mr. Wood: It would figure out about 1⅜ cents per pound.

Mr. Needham: You started to say something about California in your answer just now.

Mr. Wood: The point is this, that the freight from all of our establishments to California by rail is about $14.50 a ton—gross ton. By water it is about $9 to $10 a ton. The rate from England to the California coast varies according to the character of the shipment from $6 to $15, whether it is by small shipment in a merchant vessel or whether it is a full cargo by a tramp; so that, as to California, we would either have to have a higher duty on our pipe or California will get the foreign product, or vice versa, she will get the foreign product and the East would have the larger duty.

Mr. Needham: This would not be a disadvantage at all to the California consumer?

Mr. Wood: Not the least.

Mr. Hill: Do you export?

Mr. Wood: We did at one time; very largely 10 years ago.

Mr. Hill: To what countries?

Mr. Wood: I could easier tell you the countries to which we didn't export.

Mr. Hill: But most of the countries of Europe?

Mr. Wood: Abroad; everywhere except the Mediterranean and Australia.

Mr. Hill: The Orient, India and China?

Mr. Wood: Yes; India, not Australia, also to China and Japan, Africa and England.

Mr. Hill: Did you get drawbacks on that?

Mr. Wood: Not at that time, because we were using domestic iron.

Mr. Hill: If you can compete in China and Japan, why can you not compete at San Francisco with the foreign manufacturers—on equal terms with the foreign manufacturers?

Mr. Wood: Shall I clarify your question a little?

Mr. Hill: Yes; all of my ideas, if you can.

Mr. Wood: If we start on equal values of pig iron, we cannot compete in California, as we have a $14.50 freight rate, and England, with tramp steamers under favorable conditions, has from $6 to $7 freight rate.

Mr. Hill: Simply because of the difference in freight?

Mr. Wood: In handling a product like ours freight cuts a very large figure.

Mr. Hill: Does the same difference in freight rate exist so far as China and Japan are concerned, or between England and Philadelphia?

Mr. Wood: Sometimes. It varies sometimes so that we have had cheaper rates to China than London has had, while sometimes it is otherwise.

Mr. Hill: Is that the only reason why you cannot compete at San Francisco with England, the question of freight rates?

Mr. Wood: Freight rates.

Mr. Hill: You do compete in China and Japan, or you did, on equal terms?

Mr. Wood: When we had equal iron, iron on the same basis, we had a fair chance of competing in Japan and China.

Mr. Hill: Are not our ore beds more economically worked than in any other country in the world?

Mr. Wood: That I cannot tell you, but there is no doubt that they are very economically worked.

Mr. Hill: What is the reason why ore costs more here than in England, if we have a larger supply and it is more economically worked?

Mr. Wood: Well, I cannot tell you the real reason.

Mr. Hill: What do you think is the reason?

Mr. Wood: Because the price is "pegged."

Mr. Gaines: Held up, I suppose.

Mr. Underwood: Referring to Mr. Hill's question, as to the difference in the price of ore, it is purely a question of difference in freight rate, is it not; the difference in laying the ore down at the furnace? That is where the difference in the cost of ore at the furnace comes, and that is why the cost of iron is greater at Pittsburgh than in England. The cost of laying the ore from the Mesaba mines down at Pittsburgh is greater than laying the ore down at South Wales, Cumberland, or Lincolnshire, isn't it?

Mr. Wood: I guess the handling of ore from the ore bodies that you have spoken of is very small, but that is not the difference. I think I explained the difference a moment ago.

Mr. Randell: I did not understand just exactly what you said. Did you say that it was a price that had to be paid that made the difference?

Mr. Wood: I said "pegged."

Mr. Underwood: I don't understand what you mean by "pegged."

Mr. Wood: You will have to ask the gentlemen who sell the ore. They can explain that better than I can. I do not know about their business.

Mr. Randell: Does that mean that they have the power to charge a certain price and that you have to pay it?

Mr. Wood: I would rather your committee would find that out. I do not want to be responsible for any testimony excepting what relates to my business.

Mr. Randell: If the trouble is the price being "pegged," don't you think it would be better to look after the correction of that rather than make a tariff to suit the pegging price?

Mr. Wood: That is a question for your committee.

Mr. Hill: You think that the duty is too high on the cast iron pipe anyhow, even if the pig iron remains as it is?

Mr. Wood: Any duty that is more than enough is too high and destructive to manufacture.

Mr. Hill: If the entire duty were taken off of pig iron, you see no reason why an equivalent amount should not be taken from pipe?

Mr. Wood: No; it would be a benefit to the business.

Mr. Underwood: If you take the entire duty off of pig iron, why should not the entire duty be taken off of iron pipe? Why not put both on the same basis?

Mr. Wood: Because iron pipe, the conversion from pig iron to iron pipe is a question of labor.

Mr. Underwood: It is a question of labor from the ore to the furnace?

Mr. Wood: But let me give you the whole answer. The reason that the price of the conversion of pipe abroad costs a little less than in this country is a question of labor. In the manufacture of iron there is not (excepting in the transportation) very much labor. It is mostly machinery.

Mr. Underwood: Very well; now, let us see. Do you know that of your own knowledge, in the making of pig iron, or is that a guess?

Mr. Wood: I cannot give you the exact figures, but as I walk through my friend's large furnaces, mines and rolling mills, it is very evident.

Mr. Underwood: What do you say is the cost of making pig iron at Pittsburgh?

Mr. Wood: I do not know.

Mr. Underwood: Do you know how much it costs to produce the ore from the mines?

Mr. Wood: I can make a guess, but I do not know.

Mr. Underwood: Do you know how much it costs to coke a ton of coke?

Mr. Wood: Simple approximately.

Mr. Underwood: Do you know how much it costs to lift the ore from the stockhouse to the bell of the furnace?

Mr. Wood: The cost of running the skip up the inclined plane.

Mr. Underwood: Do you know how many men work in the stockhouse?

Mr. Wood: I have not pretended to have that knowledge; I do not know.

Mr. Underwood: Do you know how many men work in the casthouse?

Mr. Wood: I guess it is mostly done by machine pouring, is it not?

Mr. Underwood: To make cold pig—done by machine pouring?

Mr. Wood: Largely, but not altogether.

Mr. Underwood: Somebody has to fix the forms.

Mr. Wood: That is machinery altogether.

Mr. Underwood: In the average furnace of the United States—I do not think so. Then you do not know what the cost in the gashouse is; you do not know what it will cost in the stockhouse; you do not know the cost of a ton of ore, and you do not know the cost of a ton of coke—as a matter of fact, you really do not know what it costs to make a ton of pig iron—how much labor is in it?

Mr. Wood: The answer to that is very plain. A man in the pig iron business knows those things, and a man who is not in the pig iron business, but in the iron business generally, does not pretend to know exactly what those things cost.

Mr. Underwood: He does not know?

Mr. Wood: He hasn't the exact figures.

Mr. Underwood: You sell this cast iron pipe at your foundry at how much at the present time?

Mr. Wood: At present we are lucky if we get $24.50, and we will sell you some at $24 if you want it real badly.

Mr. Underwood: The cost of pig iron is $16.90, the cost of labor is $5.50. that makes it cost you $22.40, and you sell it for $24.50, so that you have about $2 margin to cover everything at the present time.

Mr. Wood: And are losing. Because of the high tariff which exists in the last year or two it has built up domestic competition until it is exasperating.

Mr. Underwood: You testified a while ago about California and Charleston markets. The California markets naturally belong within the zone of the manufacturers of Colorado, and not to the Eastern manufacturers, do they?

Mr. Wood: No; you are incorrect. The California trade is controlled from the Southern foundries by the adjustment of freight rates and the cost of raw material.

Mr. Underwood: How much does Birmingham supply the California market?

Mr. Wood: I should say that Birmingham took about 85 per cent. of the west coast trade.

Mr. Underwood: And it also takes the Southern trade?

Mr. Wood: It takes the Southern trade.

Mr. Underwood: So that your real competition, so far as your factories are concerned, is practically at the Atlantic seaboard, is it not?

Mr. Wood: Our natural market starts on the Chesapeake and runs perhaps to Harrisburg, up through Albany, and what is east of those points, so that we are, of all the manufacturers, most seriously subjected to the foreign competition.

Mr. Underwood: Now, if we put pig iron on the free list, the duty on cast iron pipe would not only be reduced the difference in cost of pig iron, but it could be reduced very considerably more than that, and yet you would have control of your market?

Mr. Wood: Yes; you are entirely correct.

Mr. Underwood: To what extent?

Mr. Wood: What I said was about $3.

Mr. Underwood: Three dollars in addition to the differential on pig iron?

Mr. Wood: That would be ample.

Mr. Hill: I would like to have you clarify one more idea of mine. You said that the higher tariff had built up a domestic competition in your line that was exasperating. Why has not that domestic competition lowered the price instead of raising it for the last 10 years?

Mr. Wood: It has so lowered the price this year that our workingmen are without work.

Mr. Hill: I am not speaking of the panic year, but I mean up to 1906. Why did it not lower the price up to that time?

Mr. Wood: It does not lower the price.

Mr. Hill: Has the price been lowered in any respect, excepting to bring it nearer to the cost of pig iron?

Mr. Wood: That is all. We all have to pay the same price for pig iron.

Mr. Hill: You follow the price of pig iron up?

Mr. Wood: Yes.

Mr. Hill: It has made your margin of profit lower and lower?

Mr. Wood: Lower and lower.

Mr. Hill: The increase in the last 20 years has been four times the production of pig iron. Why has not it reduced the price? Why has not the iron fallen in proportion to your price? You say that the effect of competition has been to lower and lower the margin of your profit, and

that the increase in price is caused by the increase in the price of iron, which, I think is true—and I will say that I am very much gratified at the way you answer these questions, because I want to get information on that subject—but why, in your judgment, has not the same competition lowered the price of iron?

Mr. Wood: Has it not lowered the price of iron? There have been some years when iron sold at $60. As I have testified, iron can be bought now at between $16 and $17. The exact year when the prices changed could only be known by having the tables before me, you understand. But iron has gone down, in my recollection, from $65.

Mr. Hill: Well, it has steadily increased since 1898, has it not?

Mr. Wood: It has increased, and perhaps steadily.

Mr. Hill: Why? That is what I want to get at. Please tell me why, in your judgment.

Mr. Wood: Largely the congestion of labor. The cost of everything has gone up in all particulars, and there has been less competition in the sale of iron.

Mr. Crumpacker: There is no combination between pipe makers or sellers that you know of?

Mr. Wood: The only combination is a combination that has been formed by joint ownership of the trust of about 10 to 13 shops.

Mr. Crumpacker: How much territory does that cover?

Mr. Wood: The trust has a shop on the seaboard, a shop at Duluth, a shop at Buffalo, a shop at Birmingham—altogether 13 shops.

Mr. Crumpacker: How many independent establishments are there?

Mr. Wood: Ten.

Mr. Crumpacker: What percentage of the product does the trust control?

Mr. Wood: About 50 per cent.

Mr. Fordney: Did I understand you to say that you thought it would be beneficial to the trade if the duty on pig iron was removed?

M. Wood: I should say it would be, on the whole.

Mr. Fordney: Is it true that the industry of pig iron needs any protection?

Mr. Wood: It does indeed if it has to pay high prices for ore.

Mr. Fordney: Suppose the man who produced the pig iron owned the iron mine, would he need protection as against the English pig iron or the foreign pig iron?

Mr. Wood: Ask the man who makes the pig iron.

Mr. Fordney: I understood you to say that it could be removed, and you think that it ought to be removed, but that you ought to have protection on your product. Did I understand you correctly?

Mr. Wood: I will try to boil down what I said to cover the thought that I think was in your mind. As one looking on the trade, knowing it as one casually knows things in every day life, it would be a benefit to our particular concern to have a low duty on pig iron, but I do not think that is possible under existing conditions altogether. I should be sorry to see it made too low, because Eastern furnaces who have not the Lake Superior ore supply have to buy their ore on the market, and it would be an injustice to our Eastern pig iron furnaces.

Mr. Fordney: I certainly misunderstood you. I did not understand your meaning as you now explain it.

Mr. Underwood: Suppose the ore was free.

Mr. Wood: You are now asking me to wander in the realms of everyday discussion without any figures. If ore was free, it would be difficult to transport in oceangoing vessels quite all the Eastern furnaces would require. If ore was free it would reduce the cost of pig iron, I should suppose—and I am only speaking roughly, and you will pardon me for trespassing on somebody else's business which I do not know thoroughly—but it would reduce the cost from 35 to 40 cents a ton.

Mr. Fordney: Taking into consideration the cost of your raw material and the amount of protection you have on your finished product, can you afford to stand any reduction of duty on pipe?

Mr. Wood: This rate between pig iron and pipe now is practically $5. You can reduce it to $3 without doing the business any injury, excepting the California trade, and perhaps Galveston.

Mr. Fordney: With $5 reduction, you would lose the Pacific Coast trade, you think?

Mr. Wood: The Pacific Coast trade would be lost to the Eastern manufacturers, unless it went to the interior points to which the railroads charge excessive rates of freight.

Mr. Fordney: Do you control most of the Pacific Coast trade now?

Mr. Wood: That goes to Birmingham.

Mr. Fordney: But the factories in the United States do?

Mr. Wood: The factories in the United States control the Pacific Coast trade, speaking in a general way.

The Chairman: Would the Birmingham factories lose that trade with the reduction of duty?

Mr. Wood: I should expect that the Birmingham foundries would lose the trade to the seaports on the Pacific Coast.

Mr. Cockran: Who would get it?

Mr. Wood: It would probably go to Germany or England.

Mr. Underwood: The English shipper has an advantage in the fact that he has more tramp ships which go around the world. But what I want to lead up to is this, as to whether, in your opinion, when the Panama Canal is finished, the direct communication with the Pacific Coast would not put the Alabama manufacturer of pipe and pig iron and rail in a better position to reach the California market than the English manufacturer?

Mr. Wood: It is a question which is getting to a very narrow point. It is a question really of how much lumber is going from Mobile and how much coal is going, and whether the steamer is to go there for the freight or not.

Mr. Underwood: I am assuming that most of the tramp steamers of the world, when the Panama Canal is finished, will go to the Gulf Coast to get coal, and that they will take on surplus freight regardless of lumber or anything else. They will not simply go for lumber, but for everything?

Mr. Wood: If you will pardon me for answering that question this way, I will say that it is difficult enough to answer a question as regards the facts, let alone the time when the Panama Canal shall be finished.

Mr. Dalzell: There are no tramp steamers engaged in the coastwise trade of this country?

Mr. Underwood: We hope some day that the prohibitive coastwise laws may be taken off. That is one of the monopolies that ought to be removed so that we can do business.

The Chairman: I do not think it would come very soon if the opposition party was in power.

Mr. Clark: That is a gratuitous prophecy.

The Chairman: Can you make this pipe cheaper in Birmingham than on the Atlantic Coast?

Mr. Wood: I wish the trust would tell me. I don't know. But I should rather have white labor than black labor. That is the real analysis of your question.

### Brief Filed by Mr. Wood.

Following is a copy of a brief also filed with the Ways and Means Committee by Mr. Wood:

Any duty that is more than enough to protect the existence of a business (but not including profits) is too high, and therefore detrimental to a healthy development. Because with high duties it is impossible to prevent (by admission of small amounts of foreign material) abnormal profits during times of great pressure, thus drawing newcomers into the business and causing those already manufacturing to expand their output on an artificial basis.

The cast iron pipe industry during the past few years is a marked example of such conditions. The increase of domestic output has given rise to "exasperating" competition, and caused loss to makers and employees. Three dollars per ton above the duty on pig iron is ample to protect the cast iron pipe industry of the United States, although this duty will permit importations to cities near the Pacific Coast and perhaps in southern Texas.

Under the present conditions of manufacture of pig iron in the United States, it would be unwise for the committee to reduce the tariff more than, at the most, $2 per ton. Until the prices of lake ore is reduced it would be unfair and improper to further reduce the duty.

The influence that the "pegging" of the lake ore prices has upon the pig iron production of the United States (and the impossibility of foreign ores competing effectively) is shown by the table of production and importation of ores in the United States:

*Iron Ore Production by Districts.*

| | Per cent. |
|---|---|
| Lake region | 80.5 |
| Alabama and Georgia | 10.4 |
| New York | 2.6 |
| Pennsylvania | 1.6 |
| Virginia | 1.6 |
| New Jersey | 1.06 |
| | 97.76 |
| Balance of United States | 2.24 |
| Importations | 2.4 |

Any considerable reduction in the cost of pig iron must therefore come from the lowering of prices of lake ores.

In the discussions between those claiming that duties should be entirely removed, and those wishing to retain moderate rates, I would strongly urge that the clauses referring to drawbacks should be so adjusted that parties importing material under the reduced rates can still secure practically free trade privileges by making it possible for them to sell "importation certificates" to exporters in other parts of the country.

Thus importation certificates could be used for importing coal into New England; wheat into Minneapolis; iron and steel on the Pacific Coast. For exporting coal from Alabama; wheat from California; iron and steel from Pennsylvania.

Ores for smelters could be brought into Arizona; metal exported from New York or Baltimore.

A thorough and carefully devised scheme permitting importations of either raw or finished material, if facilitated by drawbacks granted to exportations of similar material from other parts of the country, will tend to bring into the United States a large amount of trade which it otherwise could not obtain.

# The Gary and Carnegie Hearings at Washington.

WASHINGTON, D. C., December 22, 1908.—The formal tariff hearings before the Ways and Means Committee have been brought to a close by the exceedingly interesting testimony of two notable figures in the iron and steel industry, Judge Elbert H. Gary, chairman of the United States Steel Corporation, and Andrew Carnegie, the famous retired iron and steel manufacturer. It is safe to say that the evidence of both these widely experienced men will have a greater influence upon the steel schedule of the bill, as reported to the House, than that of all the other witnesses combined, not even excepting Charles M. Schwab, who made a deep impression upon Chairman Payne and his colleagues of both political parties. There was a large attendance of the committee while the testimony of these witnesses was being given, those present including Messrs. Payne, chairman; Dalzell of Pennsylvania, Hill of Connecticut, Boutell of Illinois, Gaines of West Virginia, Fordney of Michigan, Calderhead of Kansas, Bonynge of Colorado, Longworth or Ohio and Crumpacker of Indiana, Republicans, and Clark of Missouri, Cockran of New York, Underwood of Alabama, Granger of Rhode Island and Randell of Texas, Democrats.

### Judge Gary's Testimony.

Judge Gary's testimony was delivered on the 18th inst. and was replete with points of interest. He frankly admitted that the United States Steel Corporation was in position to control prices on certain products in the sense that all competitors would surely follow its example, whether prices were put up or down. In the matter of cost of production, he asserted that the United States Steel Corporation could produce more cheaply than any competitor as to nearly all of its output, and from $1 to $2 per ton cheaper on such items as steel rails, structural steel, &c. As to the effect of the removal of the tariff on the iron and steel industry at large, Judge Gary expressed the opinion that it would drive out of business all the competitors of the United States Steel Corporation and leave it an absolute monopoly. Whether the corporation itself would be able to survive he absolutely refused to express an opinion. He did, however, go so far as to say that if the tariff should be reduced the corporation would endeavor to take care of itself, but he thought if the reduction were material it would seriously injure the smaller producers. At present the United States Steel Corporation produced only from 40 to 45 per cent. of the total output of iron and steel in the United States and in no way "controlled the industry." Its policy had been to treat all competitors justly and fairly, and to use all the influence at its command to maintain fair and uniform prices, believing such prices to be for the welfare of the corporation, its competitors and consumers at large.

Referring specifically to the tariff on certain items of the metal schedule, Judge Gary said that if Mr. Follansbee was right in his statement to the committee that independent tin plate manufacturers would be amply protected if the duty should be reduced from the present rate of 1.5 cents per pound to 1.2 cents, the United States Steel Corporation could stand a still further reduction amounting to 10 per cent. In conclusion Judge Gary declared that the solution of the most important industrial problems of the day was Government control or supervision—as distinguished from any form of Government ownership, which he opposed—to the extent that it should be in position to prohibit manufacturers from exacting unreasonable prices.

### Mr. Carnegie's Evidence.

Mr. Carnegie's evidence was largely predicated upon the testimony given by Messrs. Schwab and Gary, but throughout he labored under the disadvantage of not having read a comprehensive report of either, and therefore was frequently at cross purposes with members of the committee, his premises being contrary to the fact in numerous instances. He started out on the assumption that Judge Gary had assured the committee that the iron and steel industry no longer needed any tariff, although, as a matter of fact, Judge Gary had not said so and had been particularly careful to avoid committing himself in what he characterized as a "realm of prophesy." On this basis Mr. Carnegie declared that he desired the committee to consider Judge Gary as his witness to the fact that the industry no longer needed any protection, a statement that provoked much discussion with several members of the committee, whose recollection as to Judge Gary's testimony did not agree with Mr. Carnegie's assumption.

Mr. Carnegie stood firmly by the utterances in his much discussed article in the *Century Magazine*, and asserted that Mr. Schwab told only the exact truth when he said that steel rails could be produced by the Carnegie Company in 1899 at $12 per ton, mill cost. He added, however, that Mr. Schwab's statement to the Ways and Means Committee that this cost was much higher to-day was based upon a different system of calculation, and that, after all, estimates of cost were very largely bookkeeping. If Mr. Schwab employed the same system today, he asserted, the showing for steel rails would be much below the figures cited by him or by Judge Gary. With considerable sarcasm Mr. Carnegie declared that Judge Gary's solicitude for his small competitors was "simply sublime," and he then told the committee the fable of the monkey who utilized the cat's paw to get the chestnuts out of the fire. Mr. Gary, he said, had spoken as a judge when he said the United States Steel Corporation needed no tariff, but when he brought in his little competitors for the pity of the committee he spoke as a lawyer, and was equally eminent as a judge and a lawyer. Referring further to Judge Gary, whom he frequently spoke of in the terms of the highest respect, he said that he was fitly characterized by the Scotch expression, a "pawkey chiel," and when Representative Fordney of Michigan inquired whether that was the equivalent of the colloquial expression "a pretty slick article," Mr. Carnegie answered with mock horror in the negative, adding that a "pawkey chiel" was a person of an exceedingly sweet disposition whose statements ought to be examined with very great care. Mr. Carnegie created additional amusement when he demanded to know what Chairman Payne had said in an aside to Representative Dalzell, and when told that Mr. Payne had said the committee was getting "more fun than information," he exclaimed, "I thought he said, 'Dalzell, the jig's up.'"

Mr. Carnegie repeatedly complimented Mr. Schwab, whom he declared to be a "positive genius," and said that the committee ought to recognize by a resolution of thanks the splendid work of "that enterprising young man" in importing the best ideas of the foreign steel makers and putting the United States ahead of the world in the iron and steel industry. W. L. C.

# Judge Elbert H. Gary's Tariff Testimony.

Judge Elbert H. Gary, chairman of the United States Steel Corporation, appeared before the Ways and Means Committee in Washington December 18 in response to a subpoena issued by the committee. Following is a report of the testimony elicited:

The Chairman: If you would prefer to go in and make a statement, you can do so, and then answer questions afterward. You will of course have opportunity to do that.

Mr. Gary: No; I prefer to answer questions. The United States Steel Corporation is the owner of the shares of stock of various manufacturing corporations, and those corporations manufacture iron and a great many different lines of steel; also mine ore, mine coal, manufacture coke; and also these corporations own the shares of various transportation companies, including several railroads and a steamship line on the lakes.

The Chairman: Now, won't you state the principal lines of manufacture in iron and steel which your company is engaged in?

Mr. Gary: Our corporations manufacture 10,000,000 or 11,000,000 tons of pig iron per annum; about 12,000,000 or 13,000,000 tons of finished steel—not quite so much as that of finished steel, but about 10,000,000 or 11,000,000 tons of finished steel, including steel rails, blooms, billets, slabs, sheet and tin plate, bars and plates, heavy structural shapes, merchant steel, skelp, hoops, bands and cotton ties, tubing and pipe, rods, wire and products of wire, sheets, block and galvanized steel plates, spikes, bolts, nuts and rivets, axles, car wheels and sundry and various other items that would be connected with or kindred to these various things; spelter, sulphate of iron and cement.

The Chairman: Now, commencing back with ore, you control extensive fields of iron mines?

Mr. Gary: Yes; we do.

The Chairman: Where are they situated?

Mr. Gary: In the Lake Superior region, the Menominee, Gogebic, Marquette and Tennessee and Alabama fields.

The Chairman: Will you give us the cost of mining ore in the Lake Superior region?

Mr. Gary: Yes; I can give that accurately. Seventy-three cents is the average mining cost, per ton.

The Chairman: That does not include any royalty?

Mr. Gary: No; nor depreciation. One dollar and forty-three cents includes the mining expense, the depreciation and the royalty.

Mr. Underwood: Will you state what you mean by depreciation, so that the committee can understand?

Mr. Gary: A sufficient sum to keep the properties in condition and to take care of the exhaustion. We calculate it at 40 cents.

The Chairman: Is that calculated on the basis of acquiring additional mines to take the place of the exhausted mines?

Mr. Gary: No; it is not. Mines could not be purchased. Yes: if they were for sale and if they could be purchased at the same price.

The Chairman: You have recently acquired mines, according to public rumor, from the Northern Pacific. Is that correct?

Mr. Gary: Yes; we buy good iron ore properties whenever we have opportunity.

The Chairman: Is that true as to the Northern Pacific?

Mr. Gary: Yes; it is true. The Great Northern you refer to particularly?

The Chairman: Yes. The $1.43 included the cost of mining, as I understood, and the replacing of exhausted mines of ore by the acquirement of new mines. Did it include anything else?

Mr. Gary: The royalties which we pay.

The Chairman: Anything else?

Mr. Gary: Of course that 40 cents would not take care of the fund for replacing the property, if we would have to do it, on the basis of what we would have to pay at the present time. For instance, in our Great Northern deal, we pay on the basis of 85 cents a ton for iron ore running as high in iron as 59 per cent. Our iron ores are, many of them, very much higher than that. Now, if properties such as we own up there could be had, if they were on the market for sale, situated as they are, accessible, and as easy of mining, and with as good analysis, we would have to pay very much higher than that, and the 40 cents of course would not take care of that; but we allow 40 cents for depreciation on the basis—it is more or less an arbitrary basis—on the basis of what those properties originally cost, and so forth.

The Chairman: Now, take the next item, transportation.

Mr. Gary: Well, the transportation by rail and lake, $1.45; 73 cents for rail transportation and 72 cents for the lake.

The Chairman: Is that taking it to the Pittsburgh District?

Mr. Gary: No; to the lower lake ports.

The Chairman: And from the Lake Erie ports—one or more of them—from there it is transported to Pittsburgh over your own railroad?

Mr. Gary: Part of it.

The Chairman: What does it cost to produce a ton of ore in the Tennessee region?

Mr. Gary: You mean what is the cost of assembling the ore at the furnace?

The Chairman: Producing it there at the mine—the royalty on the value of the ore, the royalty on the ore and the cost of working the mines? What is that?

Mr. Gary: I have not those figures. The cost of pig iron at Birmingham is not far from the cost of pig iron at South Chicago. It is very little different.

The Chairman: How close is it?

Mr. Gary: I am not certain which is lower, but the cost at Chicago, the manufacturer's cost, is probably $14.75 to $15. That is the manufacturer's cost. Of course, that does not give credit for any profit to the United States Steel Corporation which it derives by reason of its investment in mines or railroads or ships.

The Chairman: Can the Bethlehem Steel Company produce it cheaper than you can?

Mr. Gary: I do not think it can.

The Chairman: We have a statement from them at $14.

Mr. Gary: I think that is pretty low, allowing for depreciation.

The Chairman: Does it cost more to-day than it did on the average in 1906?

Mr. Gary: A little more, 15 cents, maybe; besides extra cost of material. Wages have been increased a little.

The Chairman: Then it cost $14.60 in 1906. What in 1905?

Mr. Gary: I cannot answer that. It is not much different from 1906.

The Chairman: Would you be surprised to know that the cost in the United States from 1902 to 1906, both inclusive, averaged $14.01 on over 90 per cent. of the entire production of pig iron?

Mr. Gary: That depends a little on the basis of cost or the way of getting at it.

The Chairman: Let us see what you take into consideration as the basis of cost.

Mr. Dalzell: As to this $14.75 that you gave us, do you count in that depreciation?

Mr. Gary: Yes; I count depreciation.

Mr. Dalzell: The figures that Mr. Schwab gave us did not take that into account?

Mr. Gary: This includes administration charges and overhead cost and all those things. I do not think Mr. Schwab's figures took those into account.

Mr. Dalzell: They did not.

Mr. Gaines: He took in the administration charges at the mills, but not the corporate costs.

The Chairman: How much do you allow in your estimate? What are the figures there?

Mr. Gary: Forty cents a ton on the blast furnace.

Mr. Clark: Do you mean that the blast furnace depreciates 40 cents for every ton of iron that is made?

Mr. Gary: I think that is very moderate. Furnaces wear out very fast.

Mr. Clark: How long does one of those things last?

Mr. Gary: I cannot answer that definitely. Our depreciation charges and everything are regularly and carefully made, and intended only to be the actual depreciation. Of course, we do intend to keep up. We do intend to make it large enough to keep up the properties, but not for the sake of burying any money that is received. And I may add that as a rule, in my judgment, the manufacturers of this country have not taken enough depreciation charges to keep up their properties.

The Chairman: Now, I wish you would give me, if you have them figured out, the elements of cost to make pig iron at $14.75 a ton. What do you charge for the metallic mixture, the iron basis per ton of pig iron?

Mr. Gary: The average for all our pig iron was $4.70 for the ore at furnace; $8.62 in the iron. Coke, $3.93 per ton at the furnace, which would be $4.15 in the iron. Limestone, $1.06 per ton; that is, 49 cents in the iron, 49 cents per ton of iron. Scrap, 16 cents per ton in the iron; cinder and scale, 11 cents. The cost of labor, material and expense in operating, $1.37 per ton of iron, and the depreciation 40 cents. That makes a total of $15.30. That is the average of all our furnaces. Of course, it is less than that at some points. It is less at South Chicago and higher in other places.

The Chairman: Was $7.30 per ton of pig iron a fair average price from 1902 to 1906, both inclusive, for the iron ore going into the pig iron?

Mr. Gary: It was lower then. The ore was a little lower at that time. You understand that the ores on the average

are becoming a little less in quality, a little poorer in quality, a little less iron per ton of ore; and as the quantity of iron in the ore decreases, the cost of the iron in the furnace, of course, increases, because it costs just as much to handle a ton of ore with 40 per cent. iron as a ton of ore with 60 per cent. iron. And the same is true in the transportation; and then, when you get to the furnace, the cost of smelting is increased. It costs more to extract the iron per ton of ore.

The Chairman: What has that loss been since 1906?

Mr. Gary: It might account for that difference.

The Chairman: Has the cost of iron ore increased since 1906?

Mr. Gary: I think it has.

Mr. Dalzell: Have you got there the percentage of iron in the ore that went to make pig iron at $15.30 a ton?

Mr. Gary: No; I have not got that. In 1906 and 1908 the prices were the same. The price was higher in 1907.

The Chairman: Are you able to say what the percentage of iron in the ore was in 1906 and again in 1908, on the average?

Mr. Gary: No; I cannot. I certainly cannot give it on the average. I might possibly give it with reference to some one ore.

Mr. Cockran: Is there any difference in the relative richness of the ores?

Mr. Gary: Yes, there is. The ores are decreasing in richness.

Mr. Cockran: Can you tell in what proportion?

Mr. Gary: Take what we call our Hull-Rust District. In 1906 the Pillsbury mine produced ore containing 64.33 per cent. in iron. In 1907 the same mine produced ore containing 63.63 per cent. The Aragon mine, in the Menominee Range, and the Grenada mine, in 1906, produced ore containing 59.16 per cent. of iron, and in 1907, 58.82 per cent.

The Chairman: Now, the item of coke; has that increased in price since 1906 as compared with 1908?

Mr. Gary: It has increased somewhat. The cost at the oven last year was $1.75 a net ton. We have slightly increased the wages there. In fact, we have slightly increased all our wages since we were organized.

The Chairman: Has the cost of coke increased as much as to justify the statement of an increase of 46 cents in the cost of the coke that goes to make that ton of pig iron?

Mr. Gary: All of that, I would think, compared with 1906.

Mr. Cockran: How many tons of coke to the ton of iron?

Mr. Gary: The cost of coke would be $3.93 per gross ton, and in the iron $4.15. It would be about 1 1-5 tons of coke for 1 ton of iron.

The Chairman: I have a statement here showing that when coke costs $3.37 a ton, the amount or value of coke in a ton of pig iron is $3.89.

Mr. Gary: That is about it. Ours is exact.

The Chairman: Now, the limestone. By the way, do you give credit for the by-products in the production of a ton of coke when you say the cost is so much?

Mr. Gary: Of course we would to the extent that we make it. We do; but we have not very many by-product coke ovens.

The Chairman: You have not got to that point of competition where you have to take care of little things like a by-product?

Mr. Gary: We are putting them in now.

The Chairman: How much do you estimate you would save by saving the by-products?

Mr. Gary: That is more or less problematical. There will be some saving, a little saving, enough to justify us in putting them in, although we have had very grave doubts about it, and have delayed putting them in for that reason.

The Chairman: Other companies have put them in in the making of coke.

Mr. Gary: There have been different reasons. For instance, the Cambria put them in some years ago. They had coal rather of poor quality, and it needed a different character of oven to utilize that coal. They were obliged to do it. In foreign countries, perhaps, in some places the by-product ovens were put in because of the peculiarity of the coal. But with our coking coal, which. I suppose, is recognized as the best, the Connellsville coal, the by-products would not probably be of utility or benefit.

The Chairman: But it has been so successful that you are changing over some of your works and putting in your ovens so as to save the by-products?

Mr. Gary: There are two reasons for that. Connellsville coke is getting more or less scarce, and we will use in the by-product ovens a mixture of Pocahontas coal and the Pennsylvania coal outside of that of the Connellsville District; but if we had enough Connellsville coal I doubt if we would put in the by-product ovens.

The Chairman: You will make a saving by that?

Mr. Gary: There will be some saving.

Mr. Gaines: It is not proposed to do away with the regular coke ovens?

Mr. Gary: No, sir.

The Chairman: You will have to put in new coke ovens?

Mr. Gary: Yes.

The Chairman: You are throwing away the old and putting in new?

Mr. Gary: No; this is not for the old. We are putting in new ovens at Gary, Ind. We shall use a mixture of the Pocahontas and Pennsylvania coal outside of the Connellsville District and get the coke, which will be a little cheaper than the Connellsville coke, saving the by-products.

Mr. Cockran: These ovens would be available even if the by-products would be profitless? They would be available for both purposes?

Mr. Gary: Yes.

The Chairman: Now, we will get on to limestone. Does that cost any more than it did in 1906?

Mr. Gary: Not much more; possibly a little more, but not any appreciable amount, I would say; not very much more; very little, if any. I will put it that way.

The Chairman: What makes it cost more?

Mr. Gary: Labor costs generally are a little bit higher.

The Chairman: Then material and maintenance, what do you estimate for that—materials and repairs in maintenance?

Mr. Gary: The cost of material and expense in operating in all is $1.37.

The Chairman: Does that include steam and power?

Mr. Gary: Forty cents is not included in the last item of $1.37.

The Chairman: State whether you can produce pig iron cheaper than your rivals in business?

Mr. Gary: Yes; I think we can. We certainly can at a large number of our furnaces. I think there is no doubt that we can produce iron and steel materially cheaper than most of our competitors.

The Chairman: Materially? How much? Take pig iron, for instance.

Mr. Gary: On the same basis of calculation—that is, on the basis of their having due regard for depreciation, and so forth, as we do—of course any one hesitates to speak about a competitor, but I would not hesitate to say, in my opinion, at least $1 a ton, certainly from the standpoint of the Steel Corporation.

The Chairman: Cheaper than your competitors?

Mr. Gary: Yes.

Mr. Bonynge: What items make that difference?

Mr. Gary: In methods, in equipment; the character of our equipment, largely, I would say.

Mr. Bonynge: Do you get your iron ore cheaper than they do, owning the iron fields, as you do?

Mr. Gary: My figures are based on the price they would have to pay for iron ore at the furnaces.

The Chairman: How much of that dollar did you allow for the difference in iron ore, the cost of it?

Mr. Gary: I did not itemize it, but not any.

The Chairman: How about coke? Is there any difference in the cost of coke between you and your rival companies?

Mr. Gary: I think there is.

The Chairman: How much difference is there in the coke to make a ton of iron?

Mr. Gary: I cannot answer that.

The Chairman: When you say you think it is as much as a dollar, you believe it is more than that?

Mr. Gary: I do.

Mr. Cockran: How much do you really believe it is? That is not binding. Let us get your best opinion.

Mr. Gary: Of course, you see, that would put me in the position, to some extent at least, of guessing. The figures I have given you are intended to be exact, and it seems to me our competitors ought to give their figures exact.

Mr. Cockran: We try to get them. When you say a dollar, it is a guess. The other might be a little better guess. We understand it to be a guess.

Mr. Gary: If you carried that to a logical sequence I might do our competitors an injustice.

The Chairman: Give us your best judgment. You say not less than a dollar.

Mr. Gary: I would rather not guess any further than that.

The Chairman: Would it be safe to say $2?

Mr. Gary: Not on the basis of manufacturing cost, I think. Of course, I am not speaking from the standpoint of the corporation, which has a decided advantage in the quantity and quality of its ores and in owning its transportation companies to carry the ores to the lakes, and its transportation facilities on the lakes, and all that sort of thing. The advantage to the corporation is very much more, very much more than that.

The Chairman: Very much more than a dollar?

Mr. Gary: Oh, yes; very much more.

The Chairman: Is the entire difference more than $2?

Mr. Gary: Take an item of rails, for instance——

The Chairman: No; let us keep to pig iron.

Mr. Gary: All right. I think it is possibly more than $2. I think there is no doubt it is more than that.

The Chairman: Now, you do not import any iron ore, I suppose?

Mr. Gary: No.

The Chairman: There is some imported from Cuba and Spain, I believe?

Mr. Gary: Yes.

The Chairman: Do you know what the import price is on the Cuban ore, laid down in New York?

Mr. Gary: No: I do not.

The Chairman: Are you at all acquainted with the quality of that ore—ore from Spain?

Mr. Gary: The Spanish ores are very good.

The Chairman: Is it of a character similar to the Superior ores, or similar to the ores you get in the East that are mixed with the Superior ores?

Mr. Gary: Similar to our old range ores, as we call them, coming from the Marquette, Vermilion and Menominee ranges; not so much like Mesaba.

The Chairman: It is not a Bessemer ore, is it?

Mr. Gary: Yes.

The Chairman: Do you know anything about the extent of the deposits of ore in Cuba?

Mr. Gary: No; I do not think those are ascertained definitely. I think the ores, which have been mined have come from the Southern coast, in the vicinity of Santiago; but they have lately discovered a large body of ore on the northern coast.

The Chairman: Does your corporation buy any pig iron?

Mr. Gary: Yes; we do buy pig iron.

The Chairman: What is the price at which they are producing it at the present time?

Mr. Gary: We are not buying any at the present time.

The Chairman: When did you last buy any?

Mr. Gary: In any quantities, a year and three months, I think.

The Chairman: At what price?

Mr. Gary: Well, at about $18.75, I think, delivered at Pittsburgh.

The Chairman: From whom did you buy it?

Mr. Gary: Largely from the Mahoning Valley furnaces.

The Chairman: Do you know the amount of freight from the point at which it was shipped?

Mr. Gary: Eighteen dollars and seventy-five cents would be the delivered price.

The Chairman: You do not know the amount of freight they paid?

Mr. Gary: No.

Mr. Underwood: In making your estimate of the cost of pig iron at $15.30, you made the cost at Chicago of the ore in a ton of pig iron $8.62, whereas in giving the items of cost you said that the cost of mining the Lake Superior ore was 73 cents, and that the royalties and other charges made the ore cost $1.43, total cost at the mine; that the transportation to the lake was 73 cents and by water on the lake 72 cents, making the total cost of transportation $1.45, making a total cost of $2.88 a ton. Now, estimating at the same average, that gave the total cost of a ton of ore at Chicago, at your works, at $2.88, whereas you make your estimate in estimating the cost of ore $4.70 a ton. I wish you would explain to the committee wherein the difference comes.

Mr. Gary: The difference is due to the fact that the figures you quote are based on actual mining and transportation cost to lower lake ports (which figures of cost would apply only to ore smelted in furnaces located on the lake shore), while the costs I furnished were the average for ore used at all our furnaces, inland as well as on the lakes, and also to the fact that the figure of $4.70 includes the profit to the ore mining companies. You have a total of what?

Mr. Underwood: I have $2.88.

Mr. Gary: It should be $4.70.

Mr. Underwood: The difference between $4.70 and $2.88 is profit?

Mr. Gary: Yes: the profit to the mining company and transportation from lakes to inland furnaces. The difference between the average cost of all ore at lower lake ports to the ore mining interests and the average cost of such ore to the manufacturing interests using it at their furnaces is equal to $3.30 per ton of pig iron. This difference represents the profit to the mining interests and the transportation from lower lake ports to furnaces.

Mr. Underwood: Now, on the coke. In estimating the cost of coke at $3.93, was that estimate made of the cost of coke at Chicago?

Mr. Gary: No; $4.15 is the average cost of coke in pig iron at all furnaces. At Chicago the cost for coke in a ton of iron is more, about $5.73, or $3 for transportation and $2.73 for the coke.

Mr. Underwood: That is the average cost of the production of coke at all the furnaces of the United States Steel Corporation?

Mr. Gary: Yes.

Mr. Underwood: Does that include the profit to the mining company?

Mr. Gary: Yes; 54 cents per gross ton of coke.

Mr. Underwood: Then you figure that the cost of coke to a ton of pig iron is $4.15. Will you eliminate the profit from that item, and give us what it would be without the profit—the actual cost?

Mr. Gary: It would be about 60 cents less per ton: not quite. It would be $4.15 less 60 cents.

Mr. Underwood: That would make it about $3.55?

Mr. Gary: That is about it, $3.55 to $3.60.

Mr. Underwood: Now, as to the lime rock. You estimated the cost of lime rock at 49 cents. Is that the cost of lime rock at the Chicago furnaces, or is that the average at all your works?

Mr. Gary: The average.

Mr. Underwood: What is the profit you included in that?

Mr. Gary: It is not in it.

Mr. Underwood: The item of 16 cents for scrap. Is it the usual practice of your furnace business to include scrap in the manufacture?

Mr. Gary: Yes.

Mr. Underwood: Is there any profit in that, or is that cost?

Mr. Gary: That is cost.

Mr. Underwood: Labor and operation. Is that the average cost of all your works?

Mr. Gary: Yes.

Mr. Underwood: I suppose that the cost at the various works differs materially, though, as to labor and operation?

Mr. Gary: Oh, yes.

Mr. Underwood: I suppose the most improved furnaces are at Gary and Pittsburgh, are they not?

Mr. Gary: Youngstown, Lorain and Cleveland. We have some good furnaces at various points.

Mr. Underwood: Is there much difference in the cost of operation between your plants?

Mr. Gary: The new furnaces at Gary are not yet in operation. There are furnaces at South Chicago, Lorain, Cleveland, Pittsburgh and Youngstown whose cost is very nearly the same, but, of course, I am speaking now of the most modern and latest furnaces. Their cost is considerably less than a great many other furnaces which we operate.

Mr. Underwood: I figure that the difference in cost between the statement this morning that it included the profit on coke and ore, and what it is with that eliminated amounts to $2.65. Is there any other difference in those figures that stands for profits? Taking that $2.65 out, does that eliminate all the profit there was?

Mr. Gary: It does not. There is some profit on transportation. Of course, the United States Steel Corporation is the owner of subsidiary corporations, which corporations own, as an independent investment, various railroads; two important railroads in Minnesota; the Bessemer Railroad, running from the lakes to Pittsburgh, and the steamship line consisting of, say, 110 steel boats on the lakes; and those transportation lines are given a profit amounting to the difference of the actual cost to the companies and the price which they receive, and they receive the same prices that other railroads or other boats doing similar business would receive. In other words, they are treated as an independent investment and get the ordinary profits.

Mr. Underwood: Of course, that is very proper and very necessary; but can you say, in estimating your profits to the transportation companies, you only estimate a profit which would be equal to that which a person shipping the same freight by an independent company would have to pay?

Mr. Gary: Exactly.

Mr. Underwood: Then the actual cost, not eliminating the profits of transportation cost that any furnace would have to pay, of your producing a ton of pig iron at Chicago would be $12.75, about—eliminating the profits on the coke and the ore?

Mr. Gary: It is not that much, is it? I think your figures must be wrong.

Mr. Underwood: I subtracted $2.05 for ore and 60 cents for coke. That would be $2.65, which, deducted from $15.30, according to my figures, leaves $12.65.

Mr. Gary: $12.65 is about the average for all furnaces, but at those furnaces located at Chicago and Pittsburgh, the cost referred to is about $12.

Mr. Underwood: Now, where do you bring your coke from?

Mr. Gary: From Pocahontas, and some from the Connellsville region.

Mr. Underwood: Now, what is the transportation charge?

Mr. Gary: Two dollars and thirty-five cents from Pittsburgh to Chicago; the same from Pocahontas to Chicago. That is a net ton.

Mr. Underwood: How much would it be to a ton of pig iron?

Mr. Gary: You would have to add to the same percentage. I have forgotten just what the percentage of increase is, but if the percentages are kept it would be in the neighborhood of $2.80, would it not? My assistant says he thinks it would be about $3, because this is a net ton.

Mr. Underwood: I would like to have you make the same estimate as to your Pittsburgh furnaces, so we can get that estimate. How much more does it cost you to carry your ore, per ton of ore and per ton of pig iron, to the Pittsburgh plant?

Mr. Gary: Well, you add the freight rate from Conneaut, say, to Pittsburgh, which would be $1.18. The rate is the same on the independent railroads.

Mr. Underwood: That would be $1.18 per ton of ore. If you will kindly figure what that means per ton of pig iron, I will be obliged.

Mr. Gary: It is $2.16.

Mr. Underwood: So that it would cost you $2.16 more to land that ore to make a ton of pig iron at Pittsburgh than it would at Chicago.

Mr. Gary: Yes.

Mr. Underwood: I would like to get the same figures on coke.

Mr. Gary: Coke would be at the rate of 70 cents a ton for the transportation.

Mr. Underwood: And in a ton of iron that would amount to how much?

Mr. Gary: About 99 cents.

Mr. Underwood: Then on pig iron at Pittsburgh it would cost you $2.16 more to get your ore there, and it would cost you $2.15 less to get your coke.

Mr. Gary: You are getting into our secrets fast.

Mr. Underwood: I do not intend to do that, but the committee wants to balance these things, because the freight rate will depend on where you are shipping from.

Mr. Gary: Yes. Of course, in locating our new furnaces, in extending our works, the cost of assembly is one of the important elements to be considered, as you know by experience.

Mr. Underwood: Can you give us the cost of labor in the ore and coal mines where you operate?

Mr. Gary: I haven't it figured in tons. I can give you the rate per day.

Mr. Underwood: Are the wages for ore mining in the Mesaba Range and in Pennsylvania and in Alabama anything like equal, or is there a difference in the cost?

Mr. Gary: I have no statistics in regard to Tennessee, but we hope to get down to a good basis there. I don't hesitate to say we cannot manufacture there as cheaply as the Woodward Company.

Mr. Underwood: That is quite a compliment to the Woodward Company.

Mr. Gary: The average earnings per man per day, outside of administrative positions, in manufacturing companies in 1907 was $2.43; in coal and coke companies, $2.39; in ore mining companies, $2.46; in transportation companies, $2.44; in other sundry companies, $1.92; a total average of $2.42, as against $2.26 in 1902. Of course, with your knowledge of the Birmingham District, you personally know something about the advantage we have there, but I cannot give you those figures. I did not bring them.

Mr. Underwood: I would like to ask you where is the place where you dispose of your product from your pig iron furnaces. Do you convert it into finished product?

Mr. Gary: So far as possible, and to a large extent—it is not true of every locality—but ever since we were organized we have been more and more concentrating, with the idea of making each plant complete in itself.

Mr. Underwood: Where is the radius of sale of your finished product from your Chicago furnaces? What is the zone in which you dispose of that product?

Mr. Gary: West, Northwest and Southeast.

Mr. Underwood: In that zone you will have a differential in your favor on freight rates over any imported iron or steel, will you not?

Mr. Gary: Yes.

Mr. Underwood: Now, as to your Southern properties, the Birmingham property, where is the zone in which you dispose of those products?

Mr. Gary: Well, South and Southwest from that point, mostly. We could not go to the Eastern seaboard.

Mr. Underwood: Now, as to your Eastern plants, where is the zone in which they would dispose of their products?

Mr. Gary: Well, from the shores of the Atlantic to the Chicago District, or about that, I should think.

Mr. Underwood: Leaving out the territory in that zone, where do you dispose of your Eastern product, taking the point of comparison in this country as New York or the Atlantic seaboard, and your point to reach the market at Pittsburgh, which I suppose is a central point for most of your finished products in the Eastern market?

Mr. Gary: Yes; for the majority of the tonnage.

Mr. Underwood: The zone in which the Pittsburgh plants operate lies between Chicago and the Atlantic Ocean?

Mr. Gary: Yes.

Mr. Underwood: Now, assuming that the foreign manufacturer had his plant in New York City, or along the seaboard line where the principal boats land, that his plant was located there, and he was competing with you, I want to know in that territory in whose favor would be the differential on freight rates—that is, domestic freight rates—not foreign freight rates.

Mr. Gary: The rate from Germany, for instance, would be, on rails, $1.60, and from Pittsburgh to the same point $2.50, so that it would be in favor of the foreigner 90 cents a ton.

Mr. Underwood: And from Pittsburgh to New York City, how much?

Mr. Gary: Two dollars and a half.

Mr. Underwood: But I was figuring on the entire territory.

Mr. Gary: The average of the district?

Mr. Underwood: Yes; because, you see, the foreign competitor has got to go in here.

Mr. Gary: I cannot give you the point where they would come together. Of course, it would depend upon the product. If it was billets delivered to a finishing mill situated inland, your suggestion would apply. It would not apply to rails, because rails would be delivered to the railroad at its Eastern terminus.

Mr. Underwood: On pig iron from Germany to this country, of course, I know the rate varies very greatly, from practically nothing to a good high freight rate.

Mr. Gary: Yes; it is carried as ballast, sometimes.

Mr. Underwood: What is the freight rate from the English coast?

Mr. Gary: Just the same.

Mr. Underwood: Can you give us some information, if you have it, of the cost of production of pig iron in Germany and in Great Britain?

Mr. Gary: I cannot give you the cost at all the places, but we have had a pretty careful inquiry made in regard to it, and I would say that for the production of large quantities of pig iron, the lowest cost is in the Lorraine District, where they produce at about $8.50 per ton. There are some furnaces which produce at $7.75, but I would not think in large enough quantities to make it a very important question when considered in comparison with our own.

Mr. Underwood: I have been laboring under the impression that on account of the material in the German iron and steel districts being farther apart it costs considerably more to assemble the raw material there than it does in the English districts.

Mr. Gary: There is a great deal of iron there and a great deal of coal. Take, for instance, the works at Neunkirchen as an illustration. The coal is in the immediate vicinity of the furnaces and mills, and the ore is within 25 or 30 miles.

Mr. Underwood: Would that be an average throughout the German District?

Mr. Gary: No; I think, perhaps, it would be more distant than that, but it is low. Their costs are low all through that district. Of course, their labor is very low, as you know.

Mr. Underwood: What would you estimate as the cost of the production of a ton of pig iron, if you know, in England?

Mr. Gary: That is about $10; $8.50 is the best cost in the Lorraine-Luxemburg District.

The Chairman: But not in all Germany?

Mr. Gary: Not in all Germany. I think it is about $11. That is my impression. In the Lorraine-Luxemburg District the average is about $9.50.

Mr. Clark: The Lorraine and Luxemburg District is the place where the materials are the closest together of any place in Europe; are they not?

Mr. Gary: I think that is probably so, not including England. In England the native ores and the coal are very close together. England makes cheap iron. I have the figures somewhere. I think it is about $10.25. The Cleveland cost is $9, in my figures.

Mr. Underwood: Have you the average of the English furnaces there?

Mr. Gary: No; I have not the average. They are higher than that, though—the average of all English furnaces. Of course, it is the low man we have to contend with; but that is a matter of argument. That is not a question.

Mr. Underwood: You say it would be about $9, as the low price?

Mr. Gary: Yes. They have immense tonnages of ore in Germany; not so much in England, but they have at least 1,000,000,000 tons left in England, I think.

Mr. Underwood: In your estimate of cost at the furnace for labor and operation you included the overhead charges, did you? I mean the office charges and so on.

Mr. Gary: No; the administration charges all go to the finished product.

Mr. Underwood: Mr. Schwab, when he was on the stand a day or two ago, made this statement, and I will ask you whether you agree with him or not. He stated that the cost of labor in a ton of pig iron in this country and in England was about the same, but it was due to the increased efficiency of American labor in this country over that of the English labor, which was due to the improved methods of production and improved plants in this country over those in Great Britain and Germany.

Mr. Gary: I think that is probably correct, as applied to pig iron. It is not true as applied to some steel products, by a good deal.

Mr. Underwood: By reason of that increased efficiency of methods here, in your judgment, does that increase the cost of the plants here over those in England to any extent?

Mr. Gary: It certainly does.

Mr. Cockran: Do you say you do not include, in this deduction you make, the profit which your company makes on transportation?

Mr. Gary: No; I do not give credit for that.

Mr. Cockran: Could you give us some statement of about how much that would be? Let me see if I understand you correctly. I understood you to say that your cost of transportation by rail to the lower lake ports—Chicago, Cleveland, Lorain and Ashtabula—is $1.42 for the ore. Am I correct in that?

Mr. Gary: I think so.

Mr. Cockran: What proportion of that is profit?

Mr. Gary: I can give you those figures if you think they are important. I have them. That is, if it is important in considering this question to know what the profit to the carrying companies is, of course, I will give it.

Mr. Cockran: No; I am asking for the purpose of ascertaining the cost of the raw material to you.

Mr. Gary: That is susceptible of two constructions.

Mr. Cockran: I understand that. I want to get the information from whatever point of view you look at it.

Mr. Gary: From the standpoint of the United States Steel Corporation, the cost of pig iron is the manufacturing cost, which I have given you, less any credits the corporation gets by reason of its outside investments which are connected with that particular industry or that branch.

Mr. Cockran: I understand that, but to get at the actual status of the industry of the country, it seems to me we will have to get information as the returns that come back to the company by reason of that very condition you have described—not by any means with an idea of criticising it.

Mr. Gary: If you think it material to this inquiry I will give it.

Mr. Cockran: From the deductions you make by reason of the profits upon ore and coke, it seems to me your ownership of the transportation companies is just as complete as your ownership of the coke and ore, and we might as well have it.

Mr. Dalzell: The transportation is common to all the companies.

Mr. Cockran: But they control the transportation companies.

Mr. Gary: It would not strike me in the same way for this reason: the United States Steel Corporation, owning control of the railroads, so far as the cost of the manufacture of iron and steel is concerned, is no different than what it would be if you owned that railroad. That is the point.

Mr. Cockran: I understand all that, but I think it is also important, or at least valuable, that the methods by which your economies are accomplished should be thoroughly understood. It is just as important to you as to the committee. If there is any objection to it I do not insist upon it, but for the completeness of the inquiry I do not see any reason why we should not get before us to what extent the company profits by its control of transportation lines.

Mr. Gary: Taking into account all of the ore which we use, the profit to the transportation companies by land and by water averages, on the whole of it, 55½ cents per ton. That is the net profit.

Mr. Cockran: You have to carry the ore for your competitors as well as for yourselves?

Mr. Gary: Yes.

Mr. Bonynge: You actually pay for the transportation of this ore, do you? You actually make a real payment for it?

Mr. Gary: Oh, yes; certainly.

Mr. Bonynge: And if you did not own the transportation company you would pay the same amount or a different amount?

Mr. Gary: Just the same amount.

Mr. Cockran: That is perfectly clear.

Mr. Gary: Mr. Cockran, you asked a question this morning that I would like to give you information in regard to. I think you had an impression that 40 cents a ton was pretty large for depreciation of the furnaces, and therefore it is only right to tell you the basis for that. Our modern furnaces produce about 140,000 tons a year, which, at 40 cents a ton, would be $56,000 per furnace. We think the life of the furnace is about 20 years. That would be $1,120,000 in 20 years. That represents just about the cost of the furnace. In other words, we intend to have those figures accurate.

Mr. Clark: You say that you charge off 40 cents a ton for depreciation of your ore mines; but if you take out enough to make up for the ore that you dig out of the ground that ought not to be charged in as a part of the expense of making the pig iron, ought it? If you hold out enough now in this calculation to recoup you on the ore that you actually take out of the ground, that is so much profit, and ought to be charged up on the other side, too, ought it not, as well as on the debit side?

Mr. Gary: I do not see it that way.

Mr. Clark: Well, if you do not see it that way, then you have always got as much on hand as you started with, theoretically, and you never diminish the amount of ore, and yet you charge 40 per cent. off for the depreciation of the ores. That is what I could not understand about it. If there is suuch a thing as using up an acre of land, for instance, and you charge off enough depreciation to pay for the acre of land, then you are just exactly where you started, are you not?

Mr. Gary: But we have not got the land.

Mr. Clark: But you have got the stuff to buy the land with?

Mr. Gary: That is our capital, which we keep intact.

Mr. Underwood: When you sell your ore, you mean, you depreciate your capital stock and make an attempt to reimburse that capital stock?

Mr. Gary: Certainly; we take it right out of the capital, 40 cents; and we put the capital back. As a matter of fact, as I said this morning, Mr. Clark, it would not be possible to buy this quality of ore at any such price.

Mr. Clark: That is admitted.

Mr. Gary: We charge that 40 cents in order to keep our capital intact. That is the object of it.

Mr. Clark: Will not the Illinois coal make coke as good as the Connellsville coal?

Mr. Gary: No; it is not practicable up to date.

Mr. Clark: They do make good coke out there. Is not this coke business now a sort of fashion, and do you not prefer that because it does come from Connellsville?

Mr. Gary: No; if you could discover a way of practically satisfying us to that effect you would be a rich man very suddenly.

Mr. Clark: I wish I could.

Mr. Gary: The best Illinois coal is cokable, but in the first place it is very high in sulphur, which could be eliminated at a certain cost; but worse than that, the physical structure is such that it is not practicable. It will not carry the burden in the furnace. We own quite a substantial acreage of Illinois coal, and would be very glad to utilize it for coke. We could buy a great deal more at a very low price, and we have other contracts whereby we get that coal for steam purposes, and it would be an immense saving if that coal were cokable.

Mr. Clark: Do you make any considerable amount of charcoal products?

Mr. Gary: No; we do not make any.

Mr. Randell: If any foreign products were really to compete with you, they would have to be sold in New York City, or they would have to pay an additional freight to the point of consumption?

Mr. Gary: Yes.

Mr. Randell: Whether it was a railroad rail or any other product, the same thing would apply, would it not?

Mr. Gary: Yes.

Mr. Randell: Because either the importer would have to ship the rails to the point of consumption, or the railroad would have to carry it. It would have to be transported. That is a fact, is it not?

Mr. Gary: Yes; I think it is only fair, as that is an argumentative question, it seems to me to let me give you what are facts.

Mr. Randell: Certainly.

Mr. Gary: Not that our company is so much interested in it, perhaps, but assuming you could make pig iron in the Lorraine District at $8.50, as I think you can, the cost of conversion there into billets would be about $5 a ton. That would be $13.50.

Mr. Randell: I thought you had been over that in your testimony?

Mr. Gary: No; I have not. You add the freight charges, say, $3, and it would be $16.50 for the billets in New York. Now, the cost of conversion at the Eastern furnaces and mills is not less than $5, and, including all legitimate charges, I do not believe they can make pig iron for less than $15. Fifteen dollars and $5 would be $20. In other words, the German billets would be laid down in New York at $16.50, whereas the Eastern mills at their mills would have to pay $20 for the same thing. That would be their cost, or, laid down in New York, the cost of transportation added. Of course, I admit that is argumentative, and I only give you the facts and make the point to make the facts clear. As I say, it applies to these Eastern furnaces and Eastern mills.

Mr. Randell: Then the fact of the matter is—I am asking the question if it is not a fact—that without any tariff on any of these products, the iron manufacturer in this country can control the American market as against the foreigner.

Mr. Gary: Did you say can or can not?

Mr. Randell: Can he not do it?

Mr. Gary: My figures do not seem to show that.

Mr. Randell: He cannot control it?

Mr. Gary: No; that is true of various other products.

Mr. Randell: Then, under present conditions, is it material to me what your answer is? I want to get at the facts.

Mr. Gary: That is all you will get, of course.

Mr. Randell: That is what I am after.

Mr. Gary: It is very material to me what I answer.

Mr. Randell: The American manufacturers, you say, cannot control the American market?

Mr. Gary: I do not say that controlling the market——

Mr. Randell: That is a very plain question.

Mr. Gary: It is a very unfortunate question. Nobody can control any market.

Mr. Randell: Some people can control some markets, and do.

Mr. Gary: For how long a time? The man who attempts to control any market, up or down, is soon in the poorhouse.

Mr. Randell: Some people take a very circuitous route and go through diamond mines before they get to the poorhouse; but whether that is true or not, I only want to get an answer to the question I propound, so that I may understand from my standpoint what the conditions are.

Mr. Gary: You say you ask for conclusions?

Mr. Randell: No matter what may be the cost, the conditions in this country are such that, in your opinion, the iron manufacturers cannot control the American market without the help of the tariff. Is that your opinion?

Mr. Gary: Yes; it is. You are speaking of the manufacturers generally?

Mr. Randell: Of the iron producers.

Mr. Gary: I have made no answer in regard to the United States Steel Corporation. I don't know. I think, with reductions in the tariff, the United States Steel Corporation would endeavor to take care of itself; but I think many, if not most, of our competitors would soon be out of business and we would have the field.

Mr. Randell: Then, from a selfish standpoint, it would be to the interest of the United States Steel Corporation to take the tariff off?

Mr. Gary: You might think so, but I do not. I think it would be the worst thing that could happen to the United States Steel Corporation, because the people would not stand it. We do not want those conditions, and instead of trying to bring about such conditions as that, we have done what we could, fairly and justly, to prevent it and to assist our competitors.

Mr. Randell: Now, is it not a fact that men who own and control the iron interests also to a large extent own and control the railroad interests and transportation facilities?

Mr. Gary: Well, just to how large an extent I can't say, but not to an extent that I think influences the question of prices in the slightest.

Mr. Randell: I did not ask you that, because that is a conclusion. You might think one thing and somebody else another. I was getting at the fact. Is it not a fact that the interests are largely controlled by the same men and the same interests?

Mr. Gary: I don't think so.

Mr. Randell: Then the railroad stocks are owned by entirely different men who own the steel stock?

Mr. Gary: Well, entirely is one word. You used one word in one question and another word in another question. There are some men who have interests in steel manufactures and in railroading, both.

Mr. Randell: They are men of large interests in both, as a rule, are they not?

Mr. Gary: I don't think so.

Mr. Randell: The men who have the largest interests in the steel business have large interests and a certain amount of controlling and directing interest in railroads. Is not that a fact?

Mr. Gary: I don't think so.

Mr. Randell: Then, according to your opinion, the interests that operate the iron and steel industries have no power or control in reference to the regulation of railroads?

Mr. Gary: Yes; that is my opinion. I have been up against the question too many times to agree with you.

Mr. Randell: You have never been trying to get lower rates, have you?

Mr. Gary: Yes, indeed; and I have had a great many discussions in regard to the price of rails with these people. That does not contradict what Mr. Schwab said, as applied to certain railroads and certain manufacturing companies. For instance, if a certain railroad is receiving large amounts of freight from a manufacturing company located on its lines, then the business between those two proceeds without any friction; but we sell rails to large numbers of railroads who have no business of that kind.

Mr. Randell: I did not mean to ask you if the people who own the steel industry own the largest per cent. of all the railroads in the United States, but the railroads that they need to use. They have interests in them, have they not?

Mr. Gary: To some extent. It is not a question of the interests. It is a question of freights, a question of the interchange of business, not a question of interest in the securities of one company or the other.

Mr. Randell: Take it that they consider their interests are the same. Then is not this the practical situation, that the steel industry and the railroad transportation business, having a community of interests, that the high freight rates are tolerated by the steel companies and the high prices of steel are tolerated by the railroad companies, and it all comes out finally to the consumer, and the steel company, being a producer, and the railroad company, being the carrier, which is also a producer, simply pool issues and get the benefit of a higher price, which is protected by a tariff on the steel product?

Mr. Gary: I know of no case where that is a fact; where your premises are justified by the facts.

Mr. Randell: When, in your opinion, will the steel industry get strong enough so that it can maintain itself just as an independent industry, without having to tax the balance of the country to support it, if you ever thought about that proposition?

Mr. Gary: You might as well ask me how long a string is as to ask me in regard to the future.

Mr. Randell: I might as well ask you how long the Government will last, or something like that.

Mr. Gary: Yes.

Mr. Randell: In other words, the proposition is to keep it everlastingly.

Mr. Gary: But in reference to that question, outside of the net profits realized by the corporation and the value of its raw products, everything is paid to labor goes to labor.

Mr. Randell: I am glad you mentioned that subject. I want to ask you about that. My understanding is that all this tariff and everything is for the benefit of labor.

Mr. Gary: No; you don't understand that from me.

Mr. Randell: I have understood it from most people who have been here, and it has always been the cry in every tariff bill. It is the cry of the Republican party. We will not discuss those things. I want to get at the facts. I wanted you to tell me the fact, if it is—and I take it to be the fact, because it has been testified to by various witnesses here who are not antagonistic to your interests—that in reference to food products, the cheapest, the most uninviting kinds of food are imported and brought to the different parts of the country here and consumed among the mill towns and among the laboring people; that the most uninviting, unwholesome and the commonest food is the kind that is sold to these people. Do you know where that is?

Mr. Gary: I doubt the statement of fact, to begin with.

Mr. Randell: Then you could not give an opinion on it?

Mr. Gary: Therefore I could not; no.

Mr. Randell: Now, in reference to clothes. People have been here before this committee, and everything that wants a tariff seems to think they must keep out the coarser clothing. We find further testimony that the commonest, meanest, most undesirable clothing is the kind that is bought by the laboring people who are in the manufacturing business. Can you explain why that is, if they are going to get any benefit from this tariff?

Mr. Dalzell: I suggest, Mr. Chairman, that we have wandered a long way from the point at issue here.

Mr. Randell: With all due respect to the gentleman from Pennsylvania, it seems to me we have not wandered as far as, perhaps, the investigation did yesterday on the peanut question, when it came to tariff matters.

The Chairman: Of course, the important inquiry here is the difference of cost of foreign ore and pig iron and ore and pig iron in this country. If you will tell me that, I will not have much trouble adjusting the rate of duty. That is what I want to get at.

Mr. Randell: Mr. Chairman, my idea was that it might be well that the tariff he is asking for in reference to this commodity be done away with in the interest of the laboring man, and my questions were directed in reference to that matter.

Mr. Gary: You ask me why the workingmen use the cheapest kind of goods for clothing?

Mr. Randell: Why the commonest clothing, not merely for the laborer, but for the community, for his family—the cheapest and most undesirable clothing is sent to those sections where they have manufacturing establishments?

Mr. Gary: Of course, the obvious answer is that the workingman is influenced a good deal like other people, and that if he is disposed to be economical and saving he will buy and wear the goods which he can get at the lowest price.

Mr. Randell: If your idea is that it is on account of his being saving, then I will ask if it is not a fact that it has taken all his wages, and he has saved practically nothing, but that, on the contrary, he is coming and asking a continuation and in some cases an increase of the tariff in order to permit him to work more than half time, in order to give him a chance to work more than half time?

Mr. Fordney: Before you answer that question, let me ask you this: Do you know whether the men who work for you wear any different clothes than the average laboring men elsewhere?

Mr. Gary: No; I do not. I think they are fully as well dressed. I should like to have you see a picture that was taken a short time ago at our Vandergrift mill in Pennsylvania, showing drawn up in front of the public park about 20 automobiles, owned by our own employees and operated by them.

Mr. Randell: They were the high priced men.

Mr. Gary: Well, they were the rollers in the mills. They get good wages compared with the foreign wages. I could give you, if I were talking tariff, some facts concerning our workingmen as compared with workingmen abroad that I believe would astonish you.

Mr. Randell: Have you any pictures of any of the soup houses?

Mr. Gary: Well, we used all sorts of houses during the last year, taking care of our men temporarily who were out of employment. I don't think that is any crime.

Mr. Randell: Let me ask you this question. It is not a question of tariff; it is a question of humanity for the country.

Mr. Gary: The tariff question is a question of business, I think.

Mr. Randell: It is a question of humanity, from my standpoint; it may be a question of business with you. What is the trouble in your industry that makes it so frequently the case that there are too many men for the work, so that you can only give them about half time each, and you have to work some a while and others a while, so as to support all, and you are unable to give them a full day's work?

Mr. Gary: That is, what produces panics, do you mean?

Mr. Randell: No; what produces that condition?

Mr. Gary: When there is no panic?

Mr. Randell: Yes.

Mr. Gary: There are various things. One would be, for instance, large quantities of foreign products brought into this country at a price our people could not compete with, reducing our production of some of our mills, and to that extent throwing our people out of employment. That is one reason.

Mr. Randell: You mean to say, then, that the foreign production, even with the present tariff, has made all that calamity for the laboring man in this country?

Mr. Gary: What calamity do you refer to?

Mr. Randell: The time you are talking about. You said it occurred when there was not a panic, or between panics.

Mr. Gary: I have not fixed any time nor spoken of any calamity.

Mr. Gaines: Judge, you have not stated, have you, that there is any such condition prevailing in your business now?

Mr. Gary: No.

Mr. Gaines: Or that there has been in the last few years?

Mr. Gary: There has not.

Mr. Randell: Do you mean to say such a condition has not existed?

Mr. Gary: I mean to say during the last year the volume of business has not been as great as it was before that time. At the present time it is pretty good.

The Chairman: It is hardly fair to ask the witness to prophesy about what would happen.

Mr. Randell: I am not asking him to be a prophet or a patriarch, either.

The Chairman: It comes pretty close to it.

Mr. Randell: The chairman evidently did not understand my question. I was not asking this gentleman to prophesy. I would not take him for a prophet.

The Chairman: You were asking him whether if such and such conditions existed they would not be employed for the full time.

Mr. Randell: I asked him what was the cause, more as a philosopher and historian than as a prophet.

The Chairman: Proceed, Mr. Randell. We will stay with you. I want to say to the gentlemen who are here upon other matters that the committee will probably sit until 7 o'clock, and take a recess for an hour for dinner, and continue until we get through.

Mr. Randell: As the chairman is restless with reference to time, I will ask this question and quit. I have taken up too much time.

The Chairman: Certainly not; but there are a number of gentlemen here and I do not want them to go away.

Mr. Randell: I would hate to discommode them in any way. Can you explain to me why it is that under your present system there are so many men who have no other business except to work in your manufactories, and still cannot get an average of more than about half time to work?

Mr. Gary: Unless you refer to times of panic, I think your assumption is wrong. This will answer your question, I think. In 1905, 1906 and 1907, at our mills, labor was so scarce that a good deal of the time we had difficulty in getting as many men as we needed. During the last year the conditions have been different, but since the election conditions have been improving.

Mr. Randell: You have not answered my question as to whether or not there is a percentage of men commonly unable to get work because you have more men there who depend upon that industry and upon it alone for work than you can give employment to?

Mr. Gary: I don't think that is true.

Mr. Randell: Do you ordinarily, on the average, have a surplus of labor?

Mr. Gary: At our mills? And exclusive of time of panic?

Mr. Randell: Yes.

Mr. Gary: We do not.

Mr. Randell: Then you have full employment for all the men in your business?

Mr. Gary: As a rule, yes; we do. That is the rule.

Mr. Randell: And yet, with full employment their condition, whatever it is, is chargeable to the wages that they get and the opportunities that they have and the expenses they are put to under the system in which they live?

Mr. Gary: Yes; the conditions which I speak of are the result of wages paid in this country as compared with wages paid in other countries.

Mr. Randell: And to make a long matter short, if you will excuse the expression, the condition that the laboring man is under, whether it is good or bad, is by your admission the result of the environment about him, by reason of the institutions, and the laws that control your business there?

Mr. Gary: Of course, I don't state that or admit that, because during the last year this country has been passing through a panic, not resulting from any question concerning which you have been talking, the tariff or this investigation, and that has brought about certain conditions with reference to the laboring men.

Mr. Randell: Then previous to the panic he was the natural result of his environment there. Is that right?

Mr. Gary: The conditions of our mills and furnaces as I have stated them; yes.

The Chairman: Judge, I want to ask you one or two questions about this same subject: What is the cost at which ore can be laid down in New York from Germany before the duty is paid—at what price?

Mr. Gary: No; I cannot answer that, because I have not the separate mining costs and the royalties and things of that sort. I have no figures on that. I know about the cost of iron or billets, but the ore I could not give it.

The Chairman: I would like to have you put that in later, and then I would like to have you show the relative richness in iron of the American ore and the English ore and the German ore.

Mr. Gary: I cannot give you that exactly; but I think it requires about 3 tons of German ore to 2 tons of our ore. I would not be surprised if English ore was about the same. Their processes are somewhat different. They make basic iron in Germany, largely; they import some ore from Sweden, some from Spain, but more from Sweden; and Belgium, I think, for instance, imports all its ore. That is why their tariff on ore is different from our tariff on ore. That accounts for the difference, because they have to bring it in.

The Chairman: Can you tell me what it would cost to lay down a ton of pig iron in New York, including the total cost of the iron, from Germany and also from Great Britain?

Mr. Gary: I think about $11.50 from Germany to $12 from England. Steel is still more favorable to Germany.

The Chairman: Why, then, does not Germany drive you out of the market? Seven dollars and fifty cents and $4 added would make $11.50, against your $15.50 cost.

Mr. Gary: Eight dollars and fifty cents and $3 would be $11.50, and the tariff, $4, $15.50. If they had a surplus of iron at any time, of course it would come in here; it does come in here, lots of it.

The Chairman: Then there is nothing but their need for it for their own manufacturing purposes that keeps it out?

Mr. Gary: That is exactly right. Selling pig iron, German pig iron, would not pay them very well, and they can do very much better by converting it into steel of all kinds.

The Chairman: Would the same rule apply if the $4 were taken off the duty?

Mr. Gary: That I cannot answer; I do not know. We are not very much interested in the question of iron; we buy pig iron. It pays better to convert it. They do a very large export business in the finished steel.

Mr. Clark: Do you believe it would make any difference with the steel business if the tariff was taken off pig iron and ore?

Mr. Gary: I cannot answer that question. It would be an opinion.

The Chairman: We will go up to pig iron if you have not anything further to say there.

Mr. Gary: The importations of pig iron in 1907 to this country were 489,440 tons, as I have it.

Mr. Underwood: Here are the exact figures for 1907 as given by the statistics we have before us. Eliminating spiegeleisen and ferromanganese and ferrosilicon and tungsten, coming down strictly to pig iron, these statistics give 366,706 tons, valued at $5,862,930, paying a duty of $1,466,825; and the value of a unit, the average value of each ton that was imported, which does not include the duty, was $15.99.

Mr. Clark: If the Europeans could lay their pig iron down in New York at the figures that have been agreed on here, and do not import any more than they do, how can you explain the fact that they do not come in and get more of our trade than they do?

Mr. Gary: Business has been very good abroad for the last two years, up to a comparatively recent period; at least most of the time. That would account for it in a large measure. Then, when business is dull over there they would dump here, if they could, just as all countries do.

Mr. Clark: It could not be possible that you estimate the cost of the American pig too high and the cost of this foreign pig a little too low, could it?

Mr. Gary: I think our figures are accurate during this last summer.

The Chairman: Where do you get your foreign figures?

Mr. Gary: We had two men travel through the country this year visiting the furnaces and mills and going into that question very carefully, getting well acquainted with the local people, and while they may have been deceived at any place, I think not. In 1899—that is a long time ago—I was

at the furnaces and mills at Neunkirchen, where I found the lowest cost of manufacture, and I do not believe I was mistaken there. If not, they were making basic iron at that point at that time for $6.50.

Mr. Clark: We have it over and over here before this committee that if you give the foreigner the slightest profit imaginable he will send all the stuff he has got over here.

Mr. Gary: Of course I do not like to characterize any other person's testimony, but that would seem to be an exaggeration, if it covers the whole period.

Mr. Clark: That is what I thought.

Mr. Gary: At times that is true, but it is not true all the time. Every man gets the most he can for his product at particular times.

Mr. Clark: Certainly.

Mr. Gary: When business is dull they do in Germany what we do here—to keep their mills running and the men employed, they dump the surplus.

Mr. Clark: I am glad you confirm my opinion about the correctness of this other theory that has been broached here so often.

Mr. Gary: I am only giving you facts as I understand them.

The Chairman: For a period of five years some of the manufacturers of iron and steel threw their books open to the Bureau of Corporations for examination by experts, allowing them to look at their balance sheets, and so forth, regarded by the companies as confidential, so far as each individual company was concerned, whatever figures they gave. Do you care to say whether your company did that or not?

Mr. Gary: We did; we were the leaders.

Mr. Clark: You do not know if the same experts examined into the steel question who examined into the beef packing business and came back here and reported that they only made 98 cents on a steer?

Mr. Gary: I know they were not the same.

Mr. Clark: I hope they were not.

Mr. Gary: Mr. Clark, the examination in our case occupied a period of, I think, two years.

The Chairman: Five years.

Mr. Gary: Nearly three years, and we furnished all the assistance we could. I think it was thoroughly done.

The Chairman: You were allowed to go over the work with the department men and test it, I suppose, to see whether their work was correct or not?

Mr. Gary: No; we have not been allowed that; probably we will be.

Mr. Clark: Not any reflection on you or your company, but I was just wondering what kind of arithmeticians they had up there in that Bureau of Corporations when they got to the steer question, because I do know something about that.

Mr. Gary: They have very competent men. I do not know any more than you do what the conclusion is.

The Chairman: You have stated without any reservation that your company was examined with the others. I want to say to you that the total aggregate of the output of pig iron of the companies—there were certain companies examined, including yours—was 93 per cent. of the total output in this country, and that the average cost of pig iron for the five years, including 1902 and 1906, was $14.01 a ton. The report gives the items in detail from beginning to end.

Mr. Gary: Including depreciation? Does it include depreciation and overhead charges and administration charges?

The Chairman: I will read you the items it does include: Net total metallic mixture, coke, limestone, labor, steam, materials in repairs and maintenance, supplies and tools, miscellaneous and general works expenses, general expense, relining and renewals, depreciation, 39 cents, which is within a cent of what you put it; so I suppose you confirm the depreciation.

Mr. Gary: Of course, the basis is different, evidently. The cost last year, which I have given, must be considerably less than the cost this year, because when the mills are running full the cost is less, as one can see. In those figures they certainly could have not allowed any profit to any of the mining companies.

The Chairman: I should infer they did, perhaps; I am not disputing you. Of course, you are testifying, I am not; but I should infer that they did allow the profits on the coke and on the iron ore.

Mr. Gary: Have you got, for instance, the cost of the ore in the furnace?

The Chairman: Net total metallic mixture, $3.97; total, $7.30; coke, $3.37; total, $3.89.

Mr. Gary: That is for 1902 to 1906, inclusive; that is the average for the whole time?

The Chairman: Yes.

Mr. Gary: The cost of ore has been materially increasing right along, very materially increasing, largely because of the reduction in metallic ore, the percentage of metallic ore in the ton of iron mined.

The Chairman: It is not large according to your figures, as I understood them this morning. Of course I could not repeat the figures given this morning, but I noticed at the time; I thought the percentage was very small.

Mr. Gary: It is very much larger now than it was in 1902.

The Chairman: It says here: "The item of labor does not include, for much of the tonnage, the labor in unloading raw materials and in producing steam, which some companies include in the cost of raw materials and in the item steam. The tonnage covers 93 per cent. of the Bessemer pig iron made in the United States during the period." The item of labor is put down as 77 cents, and, of course, when steam is put down at 12 cents, I understand that includes the cost of labor in making the steam, and so on with the other items, the cost of labor in the making of coke and producing iron ore and all the way through. Taking that into consideration, in connection with your statement this morning that the cost of your company was $2 less per ton for pig iron than that of the other companies—by the way, what percentage of the pig iron did your company turn out during those five years?

Mr. Gary: I cannot give it for five years, but I can give it for some period. Our percentage last year was 41.7 per cent. of the whole.

The Chairman: How does that compare with 1902, for instance; did it increase it?

Mr. Gary: No; our percentage has been decreasing a little.

The Chairman: Then it was greater during this period of five years?

Mr. Gary: Yes.

The Chairman: Do you think it would average 50 per cent.?

Mr. Gary: No; 45, I presume. About 45.

The Chairman: Then the other companies were producing 48 per cent., so that you were producing not quite half of what the other companies were. Your company, with the other six, produced 93 per cent. of the entire output?

Mr. Gary: Yes.

The Chairman: If you produced 45, of course the others produced 48, or a little more than you produced in the aggregate, and of course it would be fair to deduct from this general average about $1 per ton, because of the advantage which you had, showing that your total cost of production of pig iron during this period would be $13, or very close to that. Are you able to say whether that is correct?

Mr. Gary: No; I am not. The figures I have given here for last year are accurate, on the basis which I have given them.

The Chairman: I want to ask you this question in that connection: You stated that the cost per ton of pig iron was larger this year because of the smaller production, and of course that is quite obvious, and there has been quite an addition to the cost per ton during this last year over a period of high production like 1907. You have not the figures here to show the cost per ton before 1907?

Mr. Gary: No; I have not, prior to that.

The Chairman: The committee desires that you go back to 1906 as a normal year, 1907 being a boom year and a year of large importation of everything, because the people could not get enough of what they wanted and were willing to pay the foreign prices for the article, and we had such large importations, abnormal importations; 1906, we calculate, was a normal year, and of course figures on that would be more acceptable. I blame myself somewhat for not writing you to that effect, although you are here under subpœna, but it would be, perhaps, more to the point if you had the figures for 1906, and still we are not entirely without them, because this statement from the Bureau of Corporations includes the year 1906. We do not regard the present conditions, under the present conditions of the industries of the country, as the determining factor in fixing the amount of the tariff.

Mr. Gary: That is right; I think that is right. But we will be glad to give you the figures for any year, all these years, and also give you the bases, so that you can determine how they are made up.

The Chairman: Now, coming down to the making of steel rails, or up to it, how much pig iron does it take to make a ton of rail? What does the iron cost necessary to make a ton of steel rails, including the waste?

Mr. Gary: The cost of pig iron and scrap used, exclusive of depreciation, was $15.06 per ton of iron in 1907.

Mr. Dalzell: The cost of rails made by what process, Bessemer?

Mr. Gary: Bessemer. This is the way our cost of rails is made up. We start with the cost of pig iron and scrap used, exclusive of depreciation, $15.06; the conversion cost, pig iron to ingots, $2.88; ingots to rails, conversion cost, $3.22; depreciation, 84 cents. Then the administration and taxes, 81 cents.

The Chairman: What do you make the total?

Mr. Gary: Twenty-two dollars and eighty-one cents.

The Chairman: The average cost was $22.23 for this factory during that period of which I spoke, including 1907.

Mr. Gary: The basis, of course, is different; it must be.

The Chairman: I think that you have included the item of taxation, which is not included in this estimate; I cannot set it out from any of these items.

Mr. Gary: I think there is a difference, too, in the profit to the mining companies; there must be.

The Chairman: I suppose the same rule holds good, that your company produces at least $2 a ton cheaper than your competitors?

Mr. Gary: Of course it does hold true that we can manufacture cheaper than our competitors.

The Chairman: The difference is as much as $2?

Mr. Gary: Yes.

The Chairman: So that your lower price was included in this table made up by the Bureau of Corporations?

Mr. Gary: Apparently.

The Chairman: The lowest cost reported of any company for any year was 1905, $19.33; the average cost for 1905 was $21.30. The difference would be $1.97. That would be within 3 cents of your $2 business.

Mr. Gary: That must be giving credit to the manufacturer for some things that do not belong to him.

Mr. Cockran: What might they be, for instance?

The Chairman: I am told that experts were detailed to make these examinations and that they spent more than a year and had a sufficient corps of clerks and had expert steel men to help them in the accounts. But coming to your last answer, will you tell me what you think might be excluded?

Mr. Gary: The profit of the mining companies, for instance.

The Chairman: But this was taken from your books, so that it would look as though it were excluded?

Mr. Gary: It might not be made up in the same way.

The Chairman: The other factories might not have done that.

Mr. Gary: The figures which you give, in my judgment, represent the cost to our corporation; that is, it excludes all these items of cost, and if those are our figures, that is the basis.

Mr. Dalzell: These are the average figures of seven companies.

The Chairman: What percentage of the steel rails did you produce during the five years from 1902 to 1906, inclusive?

Mr. Gary: I think I have those figures somewhere—about 50 per cent.

The Chairman: This statement includes seven companies which produced more than 93 per cent., so that in that you would have more than 50 per cent. as the average; but while you should only be a dollar under the general average, if your steel costs $2 less a ton, it would seem you would be $2 below.

Mr. Gary: I do not think our rails cost $2 less than the others, from the manufacturer's standpoint, probably.

The Chairman: It would look as though, from the statement from your books, that it costs a good deal more than $2 less from this comparative statement that is made.

Mr. Gary: I have not seen the figures.

The Chairman: Have you any objection to the Bureau of Corporations giving over to us what was submitted to them originally as confidential, the results which they obtained?

Mr. Gary: Do you mean for use by this committee?

The Chairman: I will be perfectly fair with you. I will not undertake to keep the secrets of any such thing from the public. I do not know; there are a good many men who think the public ought to know anything that this committee does, and it is very hard work to keep a secret within the committee. Of course, I refer generally to the enterprising newspaper men. It is a part of their business; I am not complaining of them, but I cannot promise you that they will not ever get into print.

Mr. Gary: I will answer that in the negative. We have no objection.

The Chairman: You have no objection. All right; that is sufficient. We can get that information, then, from the Bureau of Corporations, and after it is printed in the record, if you desire to make any correction in the statement, or any comment upon it, it will be entirely fair that you should do so. Of course, you will have an opportunity to do that.

Mr. Gary: I do not know what that may lead to as affecting our business relations with one another, but during the last year we have been pretty frank with one another anyhow, but we have got to stand, and that will be my position; we have to stand on the merits of the proposition, whatever the merits may be, based on actual figures.

The Chairman: I am in hopes that it will lead the other companies to give up the same information to the committee. I would judge from what Mr. Felton, the president of the Pennsylvania Steel Company, said in his hearing before the committee that possibly he would not be adverse to it. I think perhaps it may open up the whole subject, and the committee want to get all the information they can from first hand; that is our object in pursuing these inquiries.

Mr. Gary: Of course the business man can see there is some objection to a manufacturer making public the costs relating to his production, because that not only extends to this country but to every other country, and while we have that with reference to some of the products abroad, we have not got it with reference to a good many, and we are doing business at neutral ports with foreign countries. Still, your question is such that I do not see how we can very well answer except to allow it.

The Chairman: I am obliged to you for the concession, and I want to say to you that I can see how, from your standpoint, your company of all others might well afford to give up the secrets to the committee and give us the information which we desire.

Mr. Gary: I am very certain it will be found on a careful examination of our figures, which any member of the committee is at liberty to make at any time and place he desires, that on the basis which we have determined as right our figures are strictly accurate. If not, it is because of mistake.

The Chairman: Have you figured on all the products of the steel company—tin plate and so forth?

Mr. Gary: The leading ones, anyhow.

The Chairman: Tin plate?

Mr. Gary: Yes.

The Chairman: You make steel pipe?

Mr. Gary: Yes.

The Chairman: Have you the figures in such shape that you can file them with the committee, so that they can examine them, and if later they want further information, we can either ask you or some man familiar with the figures to come over here and give us such information on the figures as we desire?

Mr. Gary: Yes.

The Chairman: I have a final inquiry with reference to the royalty on the ore in the bed. As I understand it, you pay 85 cents a ton to the railroad company, and that includes royalty, the whole price that you pay for the ore?

Mr. Gary: Yes; the Great Northern, except interest is added to that every year at the rate of 4 per cent. so as to make it on the basis of paying that in cash now.

The Chairman: You are required to take so much a year?

Mr. Gary: Yes; or pay the royalty.

The Chairman: If it is upon the ratio you indicate in your contract, I do not think you are losing much of that 4 per cent. interest.

Mr. Gary: That is what we hope.

The Chairman: Of course, you are not charging anything for what the lead ore miners call amortization? You are not charging that on this 85 cent ore, not adding 40 cents for that, are you?

Mr. Gary: No.

The Chairman: Have you any knowledge of whether that charge goes into the cost of the German or the English ore you have been speaking of?

Mr. Gary: It does, as I understand it.

The Chairman: At the same rates?

Mr. Gary: I do not know about that; I cannot answer.

Mr. Clark: Is is true that the United States Steel Corporation absolutely fixes the price of steel rails and of other steel products of the United States?

Mr. Gary: Certainly not.

Mr. Clark: How did it happen that they all got on to this $28 price?

Mr. Gary: The $28 price started, I think, in 1899. That was the result of conferences and discussions between the steel makers as to what would be a fair price, and perhaps more or less talk with the railroad companies. Since that time the steel manufacturers have adhered to that as a fair price. The manufacturers have no regular meetings, have no agreements and have no way of fixing that price, but I doubt if any one of them would change the price without telling the others he was going to change it. The price has seemed to all concerned to be fair and reasonable, and the adherence to that price, in my judgment, is the result of knowledge and information on the part of all in regard to the business of each; in other words, publicity of each one's business.

Mr. Clark: Publicity to each other, or do you mean publicity to everybody, the public in general?

Mr. Gary: Publicity in regard to prices, of course, is to everybody.

Mr. Clark: Certainly.

Mr. Gary: But as to the individual business, to each other and to the railroads. As an illustration, you know there was great agitation concerning the quality of steel rails during the last year or two, and so much had been said by way of criticism in the newspapers and magazines that some of the rail users, some of the railroad presidents, were asking us to improve the conditions, to make a better rail, and they were making some complaints. In fact, some complaints of Mr. Harriman and others were published, whereupon we called a meeting of all the rail manufacturers and the presidents of all the leading railroads. They met in my office, and we there went over the whole subject matter of the manufacture of rails, the cost of rails, the analysis, the treatment—that is, the process in the mills—and since that time have had frequent conferences with them in regard to these, and some of the railroad companies, who are specifying a special analysis or test, and I think I cannot state it any more accurately than to say that the adherence to this price is the

result of this knowledge by those interested in the subject in regard to the business.

Mr. Clark: If you want to—that is, if the United States Steel Corporation wants to fix the price of steel rails in this country at a given figure—have you not such a hold on these independent operators that not a single solitary one of them would dare to mark under your price?

Mr. Gary: I think, as applied to steel rails, that is probbly true. That is, I believe if our people should say to the independents, "We are going to make a lower price," I believe the others would follow suit. Mr. Clark, that is a fair and frank answer, and the reason I say that is that at times, when the demand has been very great, the other manufacturers have frequently said to us that they wanted to increase the price, they could just as well get more, and we have said, "We will not change our price," and as a result they have adhered to theirs. I think it works both ways. They are under no obligations to us whatever, directly or indirectly.

Mr. Clark: I understand they are under no obligation to you except the obligation of fear?

Mr. Gary: Of course, if we make 50 per cent. of the business and we should reduce our price to $26, or any other amount, they would not expect to get any business at a higher price, at least what they would consider their fair proportion at a higher price, until our mills were filled. That is true of all industries.

Mr. Clark: The reason I asked that question was to lay the foundation for another. Suppose you take it into your heads—that is, the United States Steel Corporation—to mark steel rails up to $30 a ton. These independents and you are all making over $4. Do you think there is an independent maker of steel rails in the United States who would dare to undertake to keep his product below $30 a ton if you marked yours up to $30?

Mr. Gary: Of course, I would have to guess at that answer. I am inclined to think they would mark theirs up if we marked ours up first; I believe so; I may be mistaken.

Mr. Clark: One other question. Suppose this case; suppose you did conclude, for any reason, no difference what, to mark yours up to $30, and one of these independent concerns thought it had a good opportunity to make money, and it held its at $28 or marked them down to $27, have you not such a hold on the American market that you could immediately mark yours down to $20 or $25 long enough to put that fellow clear out of business, and then mark yours up again to where you wanted it?

Mr. Gary: Quite likely; that may be true. I will not say that is not true. I will not say that in the competition we could not drive a good many of our competitors out of business. It is because of our ability to produce cheaper, and because of our ownership in the independent concerns, such as the railroads, the steamship lines, and so forth, which gives a large credit from the United States Steel Corporation's standpoint.

Mr. Clark: Now, you absolutely dominate the steel market in the United States?

Mr. Gary: Oh, no; that is very much out of the way. During the last year, when business was dull, a great many people, not the majority, but a great many of the smaller producers, have sold at prices less than our prices, less than the prices of the majority, and have taken business that belonged to the others in the sense of being old customers, and so forth. It is the man with the small price who can pretty nearly dictate.

Mr. Clark: He can dictate if he has money enough.

Mr. Gary: He can dictate as long as he lasts; as long as he keeps within his cost or a little above his cost. Of course, if we were in competition in defense, and that is the only competition I believe in—speaking for myself—that is, destructive competition—if we were in destructive competition in self-defense, of course we would mark down to pretty nearly our cost, and the result would be that the competitor who could not manufacture as low as we could would go out of business in the course of time.

Mr. Clark: Now, if he was obnoxious enough to you, you could mark down temporarily with perfect impunity below your cost to get rid of him, could you not?

Mr. Gary: No; I do not think we could. I do not think we are as poor business men as that. We might do it in some particular instance or as to some particular commodity for some time, but that is the theory, so far as we are concerned. During the last year we have been tempted to put some prices pretty low to meet certain competition, but, of course, the effect upon our workmen and the effect upon business conditions generally would have been such, in our opinion—in my opinion, at least—that we would have lost some business we ought to have had.

Mr. Clark: You do not want any steel war, of course, if that is what that amounts to.

Mr. Gary: We do not want any war that would affect trade conditions generally. I consider that as more important during the last year. I consider the action of the steel people more important to be considered, in connection with general business conditions, than the the condition of the steel trade.

Mr. Clark: Now, all the large steel products of your mills pay about the same profit as steel rails, such as plates and all that?

Mr. Gary: Some pay more.

Mr. Clark: Do any of them pay less?

Mr. Gary: Yes; I think so, certainly at times. The prices of no other commodity have been uniform like steel rails, as I remember.

Mr. Clark: Your selling price for the United States is $28 a ton. What is your selling price abroad?

Mr. Gary: For 1907, the last figures made up, the price of export rails was, on the average, about 22 cents per ton higher than the domestic price.

Mr. Clark: What was it in 1906; how did it run?

Mr. Gary: In 1906 it was $24.08; that would be lower, you see—$28.07 at the mill.

Mr. Clark: In 1905?

Mr. Gary: In 1905 there was a still greater difference. The export price was $20.98, or a difference of $6.39.

Mr. Clark: You sell all of your steel products abroad, as a rule, cheaper than you do at home?

Mr. Gary: Sometimes we do. I think maybe I can give you the figures on the average for 1907.

Mr. Clark: We would be glad to have them.

Mr. Gary: The average mill price per ton received for exported materials was 7½ per cent. less than the average price for domestic shipments.

Mr. Clark: You sell this stuff that you ship abroad at a profit, do you not?

Mr. Gary: We do; our company, some of the companies we own, have at times shipped at less than profit, I think, taking into account depreciation and administration charges and all that sort of thing. But it is a fact that manufacturers at times export at prices down to or below cost.

Mr. Clark: Why do they not reduce the price for the domestic consumer so as to use up this surplus?

Mr. Gary: That probably would not have the result of increasing the domestic sales. As a rule, the consumers supply their demands at the best price they can get.

Mr. Clark: There might be somebody around who wanted to use steel who was prohibited from using it by the higher price.

Mr. Gary: There might be, but I think that would be exceptional.

Mr. Clark: A good many railroads in the United States, at one place or another, at places out West that we call jerkwater places, or something of that kind, are still using iron rails, that would be glad to use steel rails if they could get rails at the prices they are able to pay for them.

Mr. Gary: How much are they able to pay?

Mr. Clark: I do not know. They might be able to pay $20 or $22 or $24 or $25 per ton.

Mr. Gary: I think not.

Mr. Clark: If they could get them as cheap as these foreigners get them it would make a good deal of difference.

Mr. Gary: I do not think any railroad company able to pay $22 or $25 for rails has gone without rails because the price was $28.

Mr. Clark: Of course that is a case where there are only practically a few consumers, but you take the price of steel generally, structural steel and all these other steel products, and do you not think the difference that you have stated there would make a good deal of difference in the amount consumed in the United States?

Mr. Gary: I do not think so; of course, I may be mistaken. I think the question should be approached from the other standpoint, as a matter of opinion; that is, I do not think a manufacturer ought to be allowed, on account of tariff laws or anything else, to charge or receive more than a fair return on the value of his property and the amount of business done. I think that is where you ought to start. Now, if he does not charge more than that price, that is, a fair price, and in that case if he can keep that price down to a fair basis by exporting the surplus, by dumping the surplus, it seems to me that is good business and works to the benefit of the domestic user because it reduces the total cost of production on the part of the mill which runs full, keeps the men employed and as a total result is beneficial. I think it is the same argument that every man in every kind of business uses in disposing of his surplus. So I think this tariff question—I speak to you because of your peculiar position, and I am not making any tariff speech—but I think in some way the manufacturer ought to be restricted to fair dealings with the public on the basis I have suggested, without the introduction of tariff laws or anything else that might be very harmful to some of the industries and to the working people. That is my theory. I am speaking as an individual.

Mr. Clark: Have you any idea how that thing could be accomplished?

Mr. Gary: I have.

Mr. Clark: I would like very much to hear it.

Mr. Gary: Now, I am binding myself only.

Mr. Clark: I understand.

Mr. Gary: Publicity and government control.

Mr. Clark: Government control of the railroads and other industries?

Mr. Gary: Yes; government control as distinguished from government management. I am not talking about that; I think that would be a failure. But I believe in thorough publicity on the part of corporations, railroads and manufacturing concerns, and I believe in the Government having some way of controlling the manufacturer within reasonable bounds. I think this tariff question should be determined at the point where real protection leaves off and opportunity to oppress begins. Our theories must be alike it seems to me.

Mr. Clark: I agree with you thoroughly in that statement you have made. Now, I want to ask you right on that. You make over $4 a ton on a ton of steel rails that costs $22 a ton?

Mr. Gary: Yes.

Mr. Clark: In round figures, I am not counting the cents. That is a dividend of 20 to 30 per cent. now?

Mr. Gary: No; you have left out the investment; the cost of the investment is very large.

Mr. Clark: I know, but my understanding has been all the time that you have been talking here to-day on the basis of counting in every item of expense.

Mr. Gary: Not interest on our investment.

Mr. Clark: Why did you not start out with that as one of your basic facts?

Mr. Gary: We could not get that; we are not getting that, in my judgment, on the fair basis of the value of our total investment; we are not getting an adequate return, it seems to me. And I think our figures will show that. I believe we shall do it.

Mr. Clark: Do you know how much profit you are making on the value of the property?

Mr. Gary: Of course there is involved the question of real value. I would have to give you my opinion, my figures, and, if you please, the reason for my figures.

Mr. Clark: All right; we would be delighted to hear them.

Mr. Gary: Did you happen to read the article published in the June number of *Munsey's Magazine* on our corporation?

Mr. Clark: No; I was too busy doing other things in June and July.

Mr. Gary: This is the result of an independent examination by Mr. Munsey concerning the values of our properties. He gives the properties in detail, and his valuations, and if anything I would say that it is a little high, but not very much too high, and certainly properties could not be reproduced for anything like that; in fact, it would be impossible to reproduce them at any price, perhaps, some of them.

Mr. Cockran: Could you tell us the amount at which he values the property—that is, the whole value?

Mr. Gary: $1,782,187,383.

Mr. Cockran: Does he include in that good will of any kind, or is it naked property?

Mr. Gary: No; naked property. He gives the details here, itemized.

Mr. Clark: Does he state there anywhere how much that property cost you?

Mr. Gary: No; he does not.

Mr. Clark: He did not know?

Mr. Gary: Of course he did not know. I do not know. I know, so far as the mills and railroads and all the physical properties are concerned, what it would cost to reproduce them, of course.

Mr. Clark: If you or I or anybody else knew how much the properties cost you, and we knew how much profits you had distributed, in one way or another, and then knew how much your properties were worth, we could come to a rational conclusion as to what you really had made during the life of this United States Steel Corporation.

Mr. Gary: I have all those figures. I can give you all those figures.

Mr. Clark: I will be very glad to have them.

Mr. Gary: There is no dispute about that.

Mr. Clark: Well, how much are you making?

Mr. Gary: If this represented the value of our properties—assuming that it does for the sake of the question—then I say the profits we have realized from year to year have not been adequate and have not been a fair return on the investment. Now, our ore products, the raw products, perhaps, ore and coal and so forth, did not originally cost anything like their valuation, but they are really worth that at the present time; and in my answer, therefore, I assume that we are entitled to the same return which you would be entitled to if you purchased a piece of real estate to-day for $1,000,000 and held it five years and were able to sell it for $2,000,000; you would be entitled to the return on the $2,000,000, regardless of what it cost you originally.

Mr. Clark: I would have made $1,000,000, though, in the transaction, and that is what I am trying to get at with you. How much are you making? You say you are not getting an adequate return. How much profit are you making?

Mr. Gary: The increase in value you would charge as a part of the profits?

Mr. Clark: I undoubtedly would if I were estimating how much you are worth when you organized and how much you are worth now, so as to get at what you have made.

Mr. Gary: But what becomes of a man's risk in investment?

Mr. Clark: Every man takes a risk.

Mr. Gary: If you buy a piece of property you are entitled to, say, 4 or 5 per cent. annually on that property. Now, if it increases in value year by year it seems to me you are entitled to that increase in value in addition, as against the risk you take in buying that property. It might have gone the other way.

Mr. Clark: Why, certainly; that is all true.

Mr. Gary: That is all I am saying.

Mr. Clark: But coming back to your own proposition; now, that I thoroughly agree with you about, that if it was possible—and I hope somebody will have ingenuity enough to work it out—to restrain people from making undue profits, then you have got to count in what you make.

Mr. Gary: That is increases in value?

Mr. Clark: Why, certainly. Suppose a case now. Suppose a corporation organizes with $1,000,000 capital, and that it takes $500,000 of its profits and invests them in outside property which increases in value; then is it not fair to count the increase of that property in with your total profits?

Mr. Gary: If it is property outside of your business and you have realized on it, perhaps—well, I would say no in answering the question. I do not think that would be a part of your manufacturing profit at all. The profit you would get I think is the return for the risk of your investment, which risk every man takes.

Mr. Clark: Take your own case. You get hold of these lands up there from the Great Northern at practically a royalty of 85 cents. Suppose circumstances worked out so that the iron you pay 85 cents for in the ground turns out to be worth $10—I do not suppose it will—but suppose it might?

Mr. Gary: Yes.

Mr. Clark: Do you think that the difference between $10 and 85 cents ought to be counted in in the profits you are making?

Mr. Gary: Manufacturing profits?

Mr. Clark: Yes; the profits of the United States Steel Corporation.

Mr. Gary: Certainly not.

Mr. Clark: Of course, I would charge against the corporation a loss if it made a poor investment. I think that is what ought to be. Now, is not this possible, under your theory, then, that a corporation that starts in with $1,000,000 might reinvest its profits on this side and get to be worth a $1,000,000,000 and still declare small dividends to the stockholders all the time?

Mr. Gary: Certainly. If the corporation acts within the domain of its power, and acts fairly and openly with its stockholders and takes the risk of making an investment, I think it is entitled to the benefit of that, if there is a benefit independently of its manufacturing profit. I think it is exactly the same as your investment in real estate. If you buy a piece of ground in the city and put a building on that ground that costs you $1,000,000, you are entitled to 4 per cent. return on that, annually, on your investment; and if values of property in that neighborhood increase from year to year, and as a consequence new investments like that bring a higher yield, a larger percentage, you are entitled to a rental which will pay 4 per cent. on the actual value of your property, or on the amount which you could realize if you sold. Otherwise, it seems to me, it would be a good idea for you to sell it, and invest in something else if you have got to the point where the increase has ceased.

Mr. Clark: That is what I would do, if I could.

Mr. Gary: Certainly. That is outside of manufacturing returns, it seems to me.

Mr. Clark: Now, can you tell how much profit you are making? I mean this United States Steel Corporation. I do not care a straw how it makes it—that is, for the purposes of this inquiry.

Mr. Gary: I do not figure increases in value.

Mr. Clark: Will you please state how much you are making, without figuring the increases in value?

Mr. Gary: Yes; I can give you those figures, and I can tell you how much this valuation is that is given, in the manner I have stated, over and above the estimate we put of the value, the value we estimated these properties to have at the time the United States Steel Corporation was organized. That is represented by its capital stock and bonds.

Mr. Clark: Well, how much is it?

Mr. Gary: I think these figures will cover it. Since we were organized, in the beginning of 1901, we have paid out in interest, from our earnings, $180,711,000. We have paid out in dividends $262,354,600. We have carried to surplus $87,645,000, and we have paid out for construction $163,694,000. That has returned to our properties through expenditures for extensions and improvements 1.7 per cent. on our capitalization annually, and on account of interest on debt and dividends 4.6 per cent., and if added to surplus 1 per cent., making a total on our capitalization per annum of 7.3 per cent.

Mr. Cockran: On your total capitalization?

Mr. Gary: Yes.

Mr. Clark: That accounts for all you have got. When

you started this capitalization were you connected with the corporation yourself?

Mr. Gary: Yes; that is, I assisted in the organization. I was connected with the organization of the United States Steel Corporation, and before that I was president of the Federal Steel Company.

Mr. Clark: These properties that were put in to make up the United States Steel Corporation, were they put in at a fictitious value, or were they put in at the real value?

Mr. Gary: They were put in at what we believed was the real value.

Mr. Clark: How much is it capitalized for?

Mr. Gary: The preferred stock is $360,281,100, par value. The common stock is $508,302,500. That is the capital stock.

Mr. Clark: How much dividend is guaranteed on the preferred stock?

Mr. Gary: No dividends are guaranteed, but the stock is 7 per cent. cumulative; that is, the 7 per cent. must be paid before anything is paid on the common stock, annually.

Mr. Clark: Did not the preferred stock represent really the valuation of that property?

Mr. Gary: No; it did not.

Mr. Clark: Is the common stock paying anything?

Mr. Gary: It is paying 2 per cent.

Mr. Clark: As a matter of fact, did not the preferred stock represent the value of the property and the common stock represent what in popular parlance is called "water?"

Mr. Gary: No; it did not.

Mr. Clark: Suppose that to the 7.3 per cent. you were to add whatever the difference was between your property when you acquired it and what Munsey estimates it at—if Munsey is anywhere near correct—that is, convert that into a per cent. and add it to the 7.3 per cent., where would you come out?

Mr. Gary: I have not any figures on that. Of course figures speak for themselves. As a matter of fact, we have put large sums of money into new properties, some of which have increased in value over and above the values of our properties when we took them over and the other portion of which has been necessary to take care of old properties which have become obsolete. Of course that is the trouble with manufacturing business. We have abandoned, dismantled, stripped a great deal of property. Manufacturing property wears out very rapidly. And then the methods change. We are now, as you know, going into the open hearth process very largely. We are obliged to do it for certain reasons; first, because the demands of trade require it, it being supposed that for some things, at least, the open hearth process is better, and it produces better steel, and for another reason and more particularly, because of the changes in the quality of our ores, which are becoming poorer from year to year, lower in iron and perhaps higher in phosphorus. We are making over our properties, so to speak, and abandoning the Bessemer process and increasing the open hearth process, so as to keep that parallel with the changed and changing conditions of the iron ores, so that when we take the ore out of the mine from time to time, instead of separating it at large cost and setting the Bessemer ore aside and abandoning the poorer ore for the present, we can use it all as it comes out. Now, that involves very large expenditures, and therefore a great deal of this money has been made necessary.

Mr. Clark: The money that is put in you have first taken out, have you not? You do not borrow it? The moneys you put into these new properties were not made out of an original investment?

Mr. Gary: Yes, that is true; but are counted as profit in my figures to you. That is included in the 7 per cent.

Mr. Clark: Has it been the general experience that a mine gradually peters out the deeper you get, in quality? Of course that is a common colloquial expression, but a very expressive one.

Mr. Gary: It depends upon the range and the location of the ore. Some is irregular and some is in pockets; but it is not entirely uniform. You take a large mine; suppose, for instance, we uncover, as we have done in places, a great many acres, stripping the earth, as we call it, from the ore, so that we can shovel the ore from the mine to the car. Now, we have exposed a very large area of iron ore. That is, perhaps, more or less in streaks.

Mr. Clark: Yes, of course it is.

Mr. Gary: Under our old practice, when the ore was cheap and seemed to be plentiful, it seemed the most reasonable thing for the miner and manufacturer to do was to select the best and leave the others, and in that way we could get all the Bessemer ore we needed. But as the business of the country has grown there has not been enough of that, and we have been obliged to use the other, and a great deal of that other can be utilized only by taking very great pains. We want to use it up.

Mr. Clark: If you were to run across a deposit equal to the Iron Mountain you would get right at this business now.

Mr. Gary: There are no more of those. We have searched pretty thoroughly.

Mr. Clark: Suppose this committee and Congress were to cut down the rate on steel one-half, would it affect your business a particle?

Mr. Gary: The United States Steel Corporation?

Mr. Clark: Yes.

Mr. Gary: I cannot answer that. I do not know.

Mr. Clark: You do not want to volunteer or, rather, I will say, venture, an opinion here?

Mr. Gary: Intentionally, I would not want to say anything that would hurt any of our competitors who are entitled to be in business. I think that the manufacturer of this country who is justified in continuing in business should be protected against the foreign manufacturer who can manufacture at a less cost. I think that is only fair. I think that is for the best interests of this country, and I think that condition, and that condition only, is what has made the prosperity of this country. If that condition should be changed I think you would be back to the times and conditions when the laboring man's wages were very materially reduced, when strikes all over the country were in existence; and I believe that Germany and some of the other foreign countries which are thoroughly protected, and will be thoroughly protected, will get a decided advantage. That is my opinion, so far as that question is concerned.

Mr. Randell: What is the time you are referring to?

Mr. Gary: The period following the passage of the Wilson bill, so called.

Mr. Clark: They had the worst strike that ever was had under the McKinley bill, did they not?

Mr. Gary: When was that?

Mr. Clark: The Homestead riots, when Pinkerton had his army down there and they killed people. It was in the summer of 1892.

Mr. Gary: They had a pretty bad strike there. I remember that; but I am not familiar with it, and cannot answer your question. I speak of general conditions. I think there is no doubt about wages being very much lower, and therefore strikes much more frequent during the period when the Wilson bill was in force. The wages of the men at South Chicago during that period were about 90 cents per day, as I remember it, and at the present time they are $1.60 per day.

Mr. Clark: I will ask you another question. Do you not think that the facilities which American citizens have had for going out and getting hold of a piece of land and being independent, taken in connection with the labor unions, has had a great deal more to do with putting up the price of labor in the United States than all the tariffs that have been passed since the flood?

Mr. Gary: I do not think so. I think to the contrary. We have, as a rule, no union labor, as you perhaps know. We are at peace with our men generally. Large numbers of them are holders of our shares. They are prosperous and contented, as a rule. When the panic occurred a year ago, and the question of reducing wages came up, when it seemed to a great many to be inevitable, following the precedents of the past, that wages should be reduced, we stood out pretty strongly against any reduction, and said we would not consent to it unless we were driven to it.

Mr. Clark: I think you are to be congratulated on that. But you have not answered my question, and that is whether if this tariff were cut in two you would not still be able to hold these foreigners out and control the American steel market, or, rather, dominate it? I would rather use the word "dominate" than the word "control."

Mr. Gary: I tried to answer that by saying there might be one answer as applied to the United States Steel Corporation and another as applied to outsiders. If there should be such a horizontal cut as that, I think it would certainly be very damaging.

Mr. Clark: How would it strike you?

Mr. Gary: The United States Steel Corporation is pretty strong and could stand reduction, I have no doubt, and still prosper.

Mr. Clark: It is really stronger than the Federal Government, is it not?

Mr. Gary: No; we are so weak in comparison with it that, so far as I am concerned at least, I would not do anything disapproved by the Federal Government.

Mr. Clark: You are in better financial fix than the Federal Government. You have no deficiencies in your revenues, have you?

Mr. Gary: No.

Mr. Clark: And the Government, as I understand it, is running behind about $10,000,000 a month.

Mr. Gary: It has been more extravagant in its expenditures, made necessary by a great many political exigencies not necessary for me to refer to.

Mr. Clark: I wish you would refer to them.

The Chairman: Especially the Spanish-American War, of which my friend Clark was one of the chief promoters.

Mr. Clark: And that is one of the things I am willing to answer for until the day of judgment.

Mr. Gary: The Federal Government should not hesitate to expend money, even if it has to borrow it. All patriots believe that.

Mr. Clark: Suppose that Congress should wipe out these

duties entirely, the United States Steel Corporation would still survive, would it not?

Mr. Gary: I do not know that I would like to answer that question. In the first place I do not know, and therefore cannot answer it with certainty; but I have an impression that if we did we would have a monopoly of the business in this country.

Mr. Cockran: That is about what you have now.

Mr. Gary: No; far from it. If you should hear some of these people talk to us you would not think so.

Mr. Clark: What I want to get at is this: Whether the United States Steel Corporation, through natural advantages and acquired properties, is not in a condition to dominate the American steel market against the world, tariff or no tariff?

Mr. Gary: No, Mr. Clark; I do not think it is. That is, I do not think we could make any fair or reasonable profit on our investment, or on the value of our property, on such a basis.

Mr. Clark: Suppose we take the tariff off from ores and pig iron.

Mr. Gary: You should not ask me that question. We are not interested particularly in them, it seems to me. I think you should call on men who are interested in that question, and who are better capable of speaking about it than I am. I submit that you should not ask me any question that could be interpreted to have the effect of injuring any of our competitors, even if it does not injure us at the same time.

Mr. Clark: But when we had your competitors here we had to operate on them with a corkscrew because they seemed to be so afraid of giving any information which might injure you. To tell you the truth about it, Mr. Schwab and yourself are the two men who have come before this committee who have been willing to answer the questions that were asked them.

Mr. Gary: It was not because they feared to injure us.

Mr. Clark: But because they were afraid you would injure them?

Mr. Gary: No; it was because they were afraid of injuring themselves, perhaps. I do not know about that. I am not familiar with their testimony; but there is no doubt that many of the independents labor under a disadvantage.

Mr. Clark: Certainly they do.

Mr. Gary: Is not this merely a question of figures, if you can ascertain accurately what the figures are? I will start out with the proposition on which the questioner and the witness agree, as I understand it; that is, that protection means protection, and does not mean any more than what is necessary for protection. It does not mean the fostering of any particular industries to enable them to get an unreasonable price. Is not the whole question, after all, determined by figures?

Mr. Clark: Certainly it is.

Mr. Gary: That is, when you find out the cost abroad, the cost here, the facilities for supplying the markets, taking into consideration the disposition of the foreigners to protect their own countries thoroughly, so as to keep us out of there, and the disposition to dump their surplus here, is it not a mere question of figures? Germany is exporting 4,000,000 or 5,000,000 tons annually at the present time. She has a big surplus. You know the disposition of Germany, for instance, to sell abroad at prices very much less than she sells at home. If our costs are such that she can sell in this country at less than the producing cost here—that is, if she will sell at such a cost—does not that determine whether the industry here needs protection? I would like to give you one or two figures with reference to one or two items merely by way of illustration. During the last four years a substantial tonnage of rails has been sold at different times on the western coast of this country at $31.50, or about that, duty paid, and on the Gulf of Mexico at $30.50, or about that. Now, the freight rate from our nearest mill to the western coast is $15 a ton, and to the Gulf of Mexico and New Orleans about $7 a ton. To meet those sales our people must sell at less than cost, and at considerably less than cost. That applies more or less to some other commodities, depending upon the state of trade abroad.

Mr. Clark: I cannot understand, to save my life, why, if you can ship this stuff to Europe, Asia, Africa, and the islands of the seas and sell in open competition with all mankind in a free trade market, you could not hold this market, tariff or no tariff, against all comers.

Mr. Gary: Does it follow that because a grocer sells his brown sugar below cost, or because a dry goods man in the spring cleans his counters at less than cost, he ought to sell his whole product at the same price?

Mr. Clark: No.

Mr. Gary: It is the same thing. This is the surplus.

Mr. Clark: This committee has to revise this tariff, and wants to work out the exorbitant features of it. I want to get it down to a revenue basis, and if I could discover the revenue basis for steel I would vote for it; but I know, as every man who has any common sense knows, that whenever he votes for a given revenue tariff, whether he wants it to work out that way or not, *pro tanto*, it is a protective tariff.

Mr. Gary: May I interrupt you one moment, because a thought is in my mind, and I desire to give one fact in regard to a commodity, which is important, and in line with this other inquiry. It relates to tin plate and sheets. At the present time they are produced in Wales and England at considerably less than the cost to us, and that represents the difference in wages paid to the men, the labor element being large as to those commodities. So that if we should make our costs as low as their costs, we could only do it by cutting the wages of our men about these mills in half—that is, making them one-half as large as they are at the present time. I think I am perfectly accurate in those figures. I mean to be.

Mr. Cockran: You do not think you could cut the wages of your labor in half? You would get no men to work for you at all, would you?

Mr. Gary: No; if it applied to only one commodity.

Mr. Dalzell: Does the German Government pay a bounty to the steel industry?

Mr. Gary: It does not at the present time, except in the way of low freights.

Mr. Dalzell: Bounties are paid to the steel industries in Canada?

Mr. Gary: Yes.

Mr. Dalzell: Do you know what those bounties are?

Mr. Gary: I have not the figures before me. There is one thing which I think is important to tariff makers. You know Canada has a countervailing tax, or a dumping tax, which is really a great thing. If Germany, for instance, is proposing to dump its products in this country at any time because business is dull, there ought to be such a tax as would prevent it selling here more than 5 per cent. below the price it gets in its own country. In that case, you see, you would protect this country against dumping.

Mr. Underwood: Do you not think, under the trade conditions of the world, that it is advisable for us to write a minimum and maximum tariff by which we can force concessions from other countries?

Mr. Gary: Among manufacturers there is some difference of opinion about that, but personally I would favor it. I may not be well enough posted to be competent to speak on it, but I have thought favorably on that subject. Some people think we would be in trouble all the time; that it would be so indefinite and so subject to change in the conduct of business that it would make it impracticable. You, gentlemen, can answer the question very much better than I can, because you have studied it and you are experts while I am not. My opinion, however, is favorable to a maximum and a minimum tariff.

Mr. Cockran: With relation to the profits of your company concerning which Mr. Clark questioned you, let me call your attention to what Mr. Schwab said in answer to me during the giving of his testimony. I was inquiring into the original capital of the Carnegie Company, which, as you know, is one of the chief elements in your combination.

Mr. Gary: Yes.

Mr. Cockran: I asked him how much money was put into the Carnegie Company, and he said: "I cannot give you those figures offhand. I will tell you why I cannot. I do not know that any of us know. The Carnegie Company was a partnership; it was not a stock company. Then I broke in on him, and he continued: "And when you ask how much real money was put in the Carnegie Company I can only say that the earnings of the company were put in; none of us had any money to put in." Then the report read as follows: "Mr. Cockran: That is it then; now we have got it. Mr. Schwab: We developed the company. Mr. Cockran: So that whatever capital, whatever property was owned by this company was the result of profits paid in the company. Mr. Schwab: Profit and increase in the value of property." Now is that true of all the property taken over by your company?

Mr. Gary: Certainly not; and I do not think it is true as to that company. I think it is a mistake.

Mr. Cockran: We will come to that in a minute. So far as these stupendous figures of $1,782,187,383 are concerned, are you in a position to inform this committee how much of that represents capitalization profits as distinguished from the original investment of capital?

Mr. Gary: No; I cannot. When the United States Steel Corporation was formed, the original board took testimony in relation to all the values of the property taken over, and those valuations were made up in various ways—upon the possibility or probability of earnings, the cost of producing the mills and furnaces which would have the capacities those companies had, the values of the raw products based on what they were being sold at, and so forth.

Mr. Cockran: Of this sum of $1,782,000,000, was not $1,000,000,000, at least, capitalized profits as distinguished from original investment?

Mr. Gary: I should have to guess at that; but I should guess yes.

Mr. Cockran: So that when you speak of the profits which this industry has yielded, you do not mean to be understood as confining your statement of profits to what have been entered as earnings, but it should also include this vast sum which has been added to the capital?

Mr. Gary: I have done that. I have included that as I have given you the figures.

Mr. Cockran: What I meant to call your attention to is this: That when you are speaking of profits the impression naturally made would be that it meant a profit on investment. What I want to ascertain, if I can, is the amount of investment and the amount of profit that has entered into the capitalization.

Mr. Gary: In considering the values of the United States Steel properties, I start out with the assumption that those properties are of a certain value. In determining the profits since the company was organized, I take the amount paid as interest on bonds, the amount paid as dividends on stock and the amount expended for new property, and the amount carried forward to surplus.

Mr. Cockran: So far as you are concerned, you are not prepared to state on your own responsibility as a citizen and under your oath as a witness that any protection whatever is necessary for the United States Steel Corporation?

Mr. Gary: No. Of course, I would have to go through the list carefully before I could answer your question accurately. That might be true of some commodities and not true as to others; that is, it might drive us out of business so far as some commodities are concerned.

Mr. Cockran: You are not prepared to name one now?

Mr. Gary: This occurs to me; I do not see how we could survive in the sheet and tin plate business if the tariff is removed. I think we would be driven out of that business.

Mr. Cockran: As to that, what tariff is essential to keep you afloat in that business? Do you need the present rate or would one-half of that rate be sufficient?

Mr. Dalzell: The tariff is 1.5 cents a pound, which was advanced from 1.2 cents a pound under the Wilson bill.

Mr. Gary: My impression is that the amount which was fixed under the Wilson bill, which was 1.2 cents, would protect us. I think it would.

Mr. Cockran: Could you get along with any less?

Mr. Gary: I would not like to say, because I don't know.

Mr. Cockran: I suppose you would be willing to admit that this is a fair principle on which to charge a tariff, that in the absence of very satisfactory evidence of the necessity for the imposition of a tax, the tax ought not to be imposed. I am speaking now from a protective point of view, to which I do not agree at all, but which I am willing to concede is the policy of this bill.

Mr. Gary: Yes; but I think the responsibility of getting that evidence and of being certain is just as great or greater with the Congressmen than it is with the manufacturers. That is what I think.

Mr. Cockran: Could we go to a more responsible source for information than to the manufacturers themselves?

Mr. Gary: But have not I covered the question from the standpoint of my duty when I say that it does not seem to me that it would be safe to make it lower than 1.2 cents?

Mr. Cockran: That is to say, you suspect or apprehend that any change below that might hurt you?

Mr. Gary: No; I think that is the consensus of opinion of those who have studied the question carefully. That seems to be the common belief.

Mr. Cockran: You, as the head of this company, could tell whether you could go on making tin plates if we reduce this tariff to 60 cents, which would about cut it in two?

Mr. Gary: No; I must confess I cannot answer that question.

The Chairman: Some of the manufacturers come in here and recommend a reduction of 20 per cent. They said that was a sufficient protection for tin plates.

Mr. Gary: I did not know that.

Mr. Cockran: That is what these independent manufacturers think, and you say their necessity for protection is very much greater than yours. I would like to get your testimony as to how much you would need, regardless of what these weaker competitors might need.

Mr. Gary: Well, I may be mistaken; but I certainly believe we could stand 10 per cent. less than our competitors.

Mr. Dalzell: I do not recall now who made that statement, but it seems to me that it was one of your constituent members.

Mr. Cockran: I think it was one of the Follansbee brothers.

Mr. Gary: He is a well posted man. I may be mistaken, and I may do him an injustice; but I believe if he could stand 1.2 cents we could take 10 per cent. off from that and make a fair profit.

Mr. Cockran: So that if we regulate this protective duty to the necessities of Follansbee, we should be affording you a luxurious margin?

Mr. Dalzell: And if you regulate it by the United States Steel Company, what will you do to Follansbee?

Mr. Gary: That is right. If you protect our competitors you leave us more than protection. I say that the United States Steel Corporation ought to take the position of not only making public the conduct of its affairs and business, but of submitting to government control. Now, that is a radical view, and you understand that I am not speaking for the corporation when I say that.

Mr. Cockran: I understand that.

Mr. Gary: We have got to come to that, in my opinion.

Mr. Cockran: I am questioning you now solely with reference to the effect of the tariff on your industry.

Mr. Gary: Yes; I understand that.

Mr. Cockran: I am one of those who believe that you cannot make dollars for yourself without making hundreds for the community, provided you make it without any aid from the Government. I would rather see you make it than not, if you make it solely by your own efforts and not by the assistance from or discrimination by the Government. I do not think the Government has any right whatever to interfere with you, because you are not in the position of a corporation exercising a public franchise. Personally, I do not think there is any foreign manufacturer in the world who can compete with you, even in a neutral market, much less in this one. That is what I am seeking to find out now. I do not want you to think that when I am questioning you as to profits I am in the slightest degree critical of any profits that can be made by any man through the exercise of his labor and genius, provided it is made without any aid from the Government, because he cannot enrich himself without enriching the community more.

Mr. Gary: That seems to me to be a pretty fair statement.

Mr. Cockran: I mean to say that you cannot make steel cheaper without increasing the welfare of every man in this country. Now, the particular question I put to you is with that object in view. I hope to see hundreds of million of dollars made by the industry without any assistance. Now, in answer to Mr. Clark, you said you did not dominate the market. Is it not a fact that if you have competitors today it is because you tolerate them? Are you not in a position, if you wish, to compel——

Mr. Gary (interrupting): That is a pretty strong statement.

Mr. Cockran: I know it is a strong statement.

Mr. Gary: It is a fact, however, that we have been friendly and of benefit to our competitors, not simply because we are so much better than anybody else, but as a matter of policy. It is good business policy for us to pay heed to the interests of others, including our competitors and our customers, the Government and the public generally. It is good business policy. Your question, if I really understand it, answers itself, provided my facts are right—that is, if in any particular line by reason of our opportunities, our wealth, our organization and our ownership of the best raw products, we can manufacture cheaper than our competitors, then with reference to that line we could drive them out of business.

Mr. Cockran: To be perfectly frank about it, there is nobody who could compete with you if you made up your mind to take this market and exercise all your powers to control it?

Mr. Gary: Would you not think it looked like boasting for me to say so if I believe it? I do not know.

Mr. Cockran: No, I do not think so. I do not think so, because, as I say, I think your position in the trade is so pronounced that you can afford to be candid without exposing yourself to the reproach of boasting. I think you can speak the truth about that.

Mr. Gary: I think we have the commanding position in the trade, and I believe we recognize our responsibility to all on account of that position.

Mr. Cockran: I think you do. If by any chance the management of this stupendous organization should pass from hands as wise and as prudent and as just as yours into the hands of somebody more reckless and more avaricious and with less forethought, and he should undertake to exercise this province, there is little doubt that for a while at least he would have a monopoly of the entire trade and be without practical competition. That is one of the conditions that we are confronting.

Mr. Gary: You are asking for an opinion. Your opinion is just as good as mine.

Mr. Cockran: I think it is, on your statement.

Mr. Cockran: Mr. Schwab testified that when the rate of $28 a ton was fixed the rails were costing actually less than $14, so the original profit was 100 per cent.

Mr. Gary: He has made his own explanation. They are not my figures, and I have no explanation to make, and I do not know anything about his figures.

Mr. Cockran: Quite so.

Mr. Gary: He is a very competent man.

Mr. Cockran: His statement was, as I recall it, to see if you agree, that when these prices were fixed, the price of $28 was fixed, when the cost of the article was $14 a ton, and it was fixed by an agreement with a number of producers, among others, your company, the Federal Steel, and the Carnegie Company, and some others.

Mr. Gary: If he made that statement he overstated it.

Mr. Cockran: You mean he overstated the amount of profit?

Mr. Gary: No; he overstated the whole thing.

Mr. Cockran: Was not there an understanding or agreement——

Mr. Gary: In this way. I will be very frank with you——

Mr. Cockran: We are giving you credit with that all through. You have not shown the slightest disposition to dodge the issue.

Mr. Gary: When the steel manufacturers fixed a price for their rails which was uniform, or practically uniform, it was done because two or three individuals said they would recommend to their companies so and so.

Mr. Cockran: What do you mean by "so and so?" Recommend what?

Mr. Gary: That whenever they changed their prices of rails they would notify the others and give every other person the same chance; that they would not act independently; that they would come into consultation from time to time whenever it was necessary.

Mr. Cockran: Was that after the formation of the Federal Steel Company?

Mr. Gary: Yes.

Mr. Cockran: And the Steel & Wire Company?

Mr. Gary: Yes.

Mr. Cockran: After these several consolidations that occurred in 1898 and 1899?

Mr. Gary: Yes; and that was the understanding, if you may call it such, among a very few individuals, and was not communicated to the companies themselves or the officers or the Boards of Directors of the different companies or anything of that kind.

Mr. Cockran: It was a gentleman's agreement?

Mr. Gary: It hardly amounted to an agreement, but it resulted about the same, and it ran along for a year or two, and there was a question in my mind whether even that was not a breach of the law, or so close to it that it should not exist; and therefore the meetings were abandoned and they did not meet at all, and those connected with it stated positively they would not be bound by anything, and every one would have to take his chance, except they said they would furnish information at any time to anybody concerning what they were doing.

Mr. Cockran: The net result was $28 a ton as a price?

Mr. Gary: That has been the result.

Mr. Cockran: From that time down to this the price has never been disturbed, and, as you testified to Mr. Clark, if anybody should undertake to disturb it now, you are in a position to make it unpleasant for them if you want to.

Mr. Gary: Yes, of course.

Mr. Cockran: Now, this common stock of the United States Steel Corporation, which was issued for property, was issued at a very much lower valuation than the preferred stock and bonds—I mean nobody estimated it was worth par?

Mr. Gary: The market did not estimate it so.

Mr. Cockran: The consensus of opinion of the men who took it under this distribution did not value it any higher than the market, which was about 10 cents on the dollar?

Mr. Gary: Every one will have to answer for himself on that.

Mr. Cockran: I would like to get the theory of it.

Mr. Gary: This was dominant in my mind, and I was one of the participants, that shares of stock of the old companies even though selling on the market at a price less than par, as applied to common stock at least, when they were put together, as they would be put together after acquired, would be worth at least par—at least the capital stock which was delivered in exchange for those old shares on the basis of par.

Mr. Cockran: You mean the combination itself added to the value of each element that entered into it?

Mr. Gary: Yes; I thought so. I believed that then, and I was just as certain of it as I am now as a result.

Mr. Cockran: Do you not remember that about that time there was published an option which Mr. Carnegie had given on that property at that time, which was even less than par?

Mr. Gary: And which he took the first opportunity to back out of.

Mr. Cockran: Yes; but I mean taking the valuation of the property according to the option which Mr. Carnegie himself gave, that stock was not worth par, was it?

Mr. Gary: I think so.

Mr. Dalzell: This is all very interesting, but how it contributes to the question of determining the proper duty on steel or whether there should be any I do not understand.

Mr. Cockran: I am just showing the value of this company.

Mr. Dalzell: You have all the figures there and you are asking for his simple conclusions.

The Chairman: What difference does it make about his capital as compared with that of other people?

Mr Cockran: It makes a great deal of difference.

Mr. Dalzell: Let him go, Mr. Chairman; perhaps he will get through after a while.

The Chairman: He was almost through when you interrupted him. Let him go; do not interrupt him any further.

Mr. Cockran: Oh, gentlemen, you should not show so much sensitiveness about this little matter!

Mr. Gary: It may be my fault, but I intend to answer your question to the best of my ability.

Mr. Cockran: I understand that, and I appreciate it. What I want to ask is this, in brief, and I merely mention the option that Mr. Carnegie gave for the purpose of refreshing your memory. Are you able to state or could you state just what the value of all these constituent stocks was before the beginning of the negotiations for the consolidation of the steel companies and the market price of the steel companies' securities at the consolidation?

Mr. Gary: I could tell you that so far as the companies whose stocks were on the market, but I could not tell you that as to Mr. Carnegie's and, of course, Rockefeller's. Very large quantities of ores and the ships and the railroads up there represented great values, and those stocks were not on the market at all. That price which Mr. Carnegie gave is no test, I think, whatever. He gave it at too low a figure, and discovered it, and he seized the first opportunity to get out of it; and his only source of annoyance now is that he did not make the United States Steel Corporation pay very much more than it did pay; and Mr. Rockefeller the same—because those two believed the intrinsic value of these properties and these securities would be materially increased by reason of the combination, and now believe that the results have demonstrated their original belief. I do not know whether I have answered your question very clearly or not.

Mr. Cockran: I think it is perfectly clear. Now, suppose steel were put on the free list, do you think it would have any serious effect on the value of these securities?

Mr. Gary: Our securities?

Mr. Cockran: Yes.

Mr. Gary: Of course, that is another way of asking the same old question.

Mr. Cockran: Yes; it is.

Mr. Gary: I do not know.

# Andrew Carnegie's Tariff Testimony.

The witness was duly sworn by the chairman.

The Chairman: Mr. Carnegie, the committee desired you to come before us because there was an article published by you a short time since with reference to the tariff, and the committee would like to have such a statement from you as you desire to make in regard to the matter contained in that article, and especially showing the reasons why the article mentioned by you is no longer in need of a protective duty.

Mr. Carnegie: I am delighted to give you all the information in my power, the truth, and the whole truth, and nothing but the truth. I am a reluctant witness, as you know. I thought that not being an iron manufacturer, perhaps you would excuse me from appearing. You have judged otherwise; and, now, as a citizen, it is my duty to tell you everything I know, and I shall do so. Most fortunate am I in the postponement of my appearance which has taken place. Events have traveled fast since I wrote that article early this year as a reminiscence article, a companion to a similar article giving my experience upon rates and rebates. I no longer appear this morning as the sole announcer of the fact that the steel industry no longer needs protection. I am flanked on the right by the head of the greatest corporation that the world has even known, who told you that we could get along without a tariff; and on the left by a harvester manufacturer—what is his name?

Mr. Gaines: Mr. Metcalf.

Mr. Carnegie: On the left by the head of the greatest agricultural implement manufacturing concern that the world has ever seen; and in the mouths of these two my statement is justified. But it was no news to me that Judge Gary would make that statement. He has never hesitated to make it long before I wrote my article; and the officials of the Government know that these were his views, not only his, but others in the steel business. It was a matter of common acquiescence, if you talked steel, that they were quite independent of the tariff. I did not think it necessary for me to go into any details to justify my statement. I produced these two witnesses that have been before you.

The Chairman: Mr. Carnegie, the president of the Pennsylvania Steel Company appeared before the committee and gave us items of cost of steel rails in his mill. He made the cost considerably higher than that of the United States Steel Corporation, and Judge Gary said in his statement that the cost of the United States Steel Company was at least $2 per ton less than some or all of their rivals in business. One aspect of his testimony—one view of it—looked as though it might be more than $2 per ton less, and the committee desires to get at the facts that will tend to show whether the taking off of the entire duty upon steel rails, for instance, would cripple the independent concerns, what few there are outside of the United States Steel Corporation, and perhaps

stop their business, if we should remove the whole duty or a part of it—I think that is what Mr. Felton, the president of the Pennsylvania Steel Company, said.

Mr. Carnegie: Well, there are more ways of figuring cost than there are ways of killing a cat. It is a simple matter of bookkeeping. You have a statement from Mr. Schwab that we made steel rails at $15 a ton—$12 a ton shop cost, and $3 a ton, I believe, for general expenses. Now, if the mode of keeping accounts of cost that we adopted, and also held to, were held to now, I do not think that the cost of steel rails to any concern in this country would be as great as either Judge Gary, or the other witnesses, have testified. I made a statement that a ton of steel is now made cheaper in America than any foreign countries, and if that were tested to-day at the works at Pittsburgh, which made the $15 rate, and a commission should make the foreign manufacturer adopt the same mode of telling cost, then I do not believe the result would be that Pittsburgh would lose the trophy or the honor of being to-day the cheapest producer of steel in the world.

Mr. Dalzell: The statement that Mr. Schwab made whereby he showed the mill cost of rails at $12 a ton, related to a period some 10 years or more ago. And he also gave us the present figures based upon the same method of bookkeeping and covering the same detail of items, to show the present cost of steel rails at his mill to be $21.50 a ton, mill cost.

Mr. Carnegie: You are quite mistaken, Mr. Dalzell. Mr. Schwab did not give you—I have not read the testimony, nor I have not read Judge Gary's testimony. I wish to be questioned, and to give you my own impressions, and tell the truth as I see it; but Mr. Schwab told me that he was not speaking for any steel mill, that he got his information from a private producer of ore in Pittsburgh.

Mr. Dalzell: Well, Mr. Schwab gave us the cost of his $12 rails by items, beginning with the ore, the coke and all that sort of thing; and he also gave us the cost of rails at the present time, commencing with the same figures, the same method of bookkeeping, and going on and following precisely the same details as in the previous case.

Mr. Carnegie: Mr. Chairman, the ore the United States Steel Corporation is smelting to-day to make a ton of rails in Pittsburgh—upon that it pays royalties in perpetuity of 20 cents a ton.

The Chairman: Mr. Gary testified that they paid 85 cents a ton for all they bought of Mr. Hill of the Northern Pacific.

Mr. Carnegie: Quite true, but Mr. Gary has not smelted a ton of ore from Mr. Hill's mines; they are not open yet.

The Chairman: He stated that he made a contract to take ore during the present year, a large quantity—I do not know as he stated the quantity—at 85 cents a ton, and that they are bound by that contract to pay 4½ per cent. upon the value at 85 cents of the ore they were to take out this year, and so on from year to year, the price increasing annually; the 4½ per cent. is paid as a deferred payment.

Mr. Carnegie: Certainly, and they have a right to cancel that contract after 10 years. It is a speculation in ore. My statement was that if you take the things to-day to make a ton of steel, you will make it as the party abroad can do it, and therefore that no tariff is needed, because nature has placed a tariff in favor of the home producer which not even Congress can remove. The cost of transporting rails from the English mill, if you please, to the seaboard, to be shipped across the Atlantic 3000 miles to land at a seaport here, when four-fifths of that steel that they would import would be needed, on the average, at the center of population, which would be near Chicago, and therefore they would have to pay freight out there again—it is impossible that foreign manufacturers can compete seriously to the injury of our home manufacturers, otherwise, how could Judge Gary say he could do it without the tariff?

The Chairman: What do you say as to the Pennsylvania Steel Company's mill located at Harrisburg, where freights are substantially the same as Chicago or New York?

Mr. Carnegie: Quite true, but they do not have to pay the ocean freight.

The Chairman: That is correct.

Mr. Carnegie: Now, Judge Gary is the ablest man I know in the steel business, and he tells you that their great concern does not need a duty; but the solicitude of the judge for his competitors, or those who should be his competitors, is sublime.

Mr. Cockran: Competitors by his own admission; perhaps you will concede that?

Mr. Carnegie: Allow me to continue this strain. It is sublime. It reminds one of one of Æsop's fables, where the monkey wanted to take the chestnuts out of the fire, but put that duty upon the cats. And that is what Judge Gary is trying to do here. When he told you that his vast company could do without a tariff, that was the judge who spoke. But when he introduced the smaller concerns, that was the lawyer, and he is equally eminent in both.

The Chairman: What do you say of the president of the Pennsylvania Steel Company?

Mr. Carnegie: I say that if he is making rails at $26.50 cost, and selling rails to Canada at a loss, his stock would not be above par to-day. And the Pennsylvania Railroad Company, which owns and controls that works, would, I think, very soon put it under a different management. Now let me tell you about these dear, poor cats that judge—no, not the judge, but the lawyer—Gary has introduced. We will take the case of the Cambria Company, because it is the oldest. The Cambria Steel Company now is a tremendous institution. It has departments connected with its works in the manufacture of wire and other things, and it has been very successful. It can compete with the United States Steel Corporation within a dollar or a dollar and a half a ton, for the reason that it has everything which I know the United States Steel Corporation has, except that the Steel Corporation has railroads; one that I built to Pittsburgh and the other that it got with the North Chicago Works. Now, the profit on transportation of its ore is the only advantage that I know that the Steel Corporation has over the Cambria, and if ever it was to compete, that profit of a dollar or a dollar and a half, whatever it is on the transportation—it would be a cold day for the United States Steel Corporation—a dollar or two a ton on its product—why, the thought is stifling; it would make me doubt about the security of my bonds, and I have not the slightest. Now, we will take the Lackawanna Company. Mr. Chairman, I would like to hear that remark that you just made to my friend, Mr. Dalzell. That is not fair. Now, just tell us what you told him.

The Chairman: I did not make a remark, I said "We are getting a little more fun than information."

Mr. Carnegie: I am sorry. I will step out if I am not giving information.

Mr. Cockran: That is his personal view. I do not think that represents the view of the committee.

Mr. Carnegie: Mr. Chairman, I can quite understand that remark, because the chairman is as full of information as I am, but I am here to tell the truth, I am bound to do it, I have sworn to tell the whole truth, and come what may, I am going to do it.

The Chairman: Of course, I did not mean that as a reflection on you.

Mr. Carnegie: I have no suspicion that you did. On the contrary, I think you whispered to Dalzell: "The jig is up."

Mr. Cockran: I think perhaps it was that "The jig is down."

Mr. Carnegie: Well, "Where was I at"? I had spoken of the Cambria Steel Company. I will now speak of the Lackawanna Company. That is another of Lawyer Gary's cats that he expects to use to rake the chestnuts out of the fire. He has no concern for himself, mark you, not the slightest; therefore, he must find some weak and struggling people whom a reduction of the tariff would injure. Is that not true?

The Chairman: The Lackawanna Company has an ideal location, has it not, at Buffalo?

Mr. Carnegie: Certainly, it is a good location. What are business men for?

The Chairman: Sometimes I wonder, when I see some of them locate, what they are for.

Mr. Carnegie: Perhaps, because you do not know the steel business as well as those who locate it.

The Chairman: I agree with you on that.

Mr. Carnegie: Now, let me speak of the Lackawanna. It was a good location, but I am sorry to say, corporation like, it placed its works upon the sand, and there has been a continuous struggle ever since to make these works run, so that it has no advantages in that respect. The Lackawanna Company has its own coal, coke, ironstone—I placed it with the Cambria in regard to United States Steel. We come then to the Pennsylvania Steel Company. Now, the Pennsylvania Steel Company has great works at Harrisburg and great works at Baltimore. When the judge talks about little ones, little manufacturers, there is not one of these that is not bigger than anything I know of in Europe excepting Krupp, and he is not a manufacturer of ordinary things; his principal business is in armor. The Pennsylvania Steel Company has a mine of wealth in its ore in Cuba, I am delighted to say, because the question of ore threatens to be a serious one; and it is going—it expects, and I believe it is going—to make a quality of steel rails so far superior to any made now, at a cost which no other can reach, except that enterprising young man, Schwab, of the Bethlehem Company—for he has a mine in Cuba, too. It is going to make a great fortune on its ore. Now, I have said he cannot figure cost anyway. That is the same gentleman who told you he had no agreement with other steel companies; that he could sell where he pleased, to whom he pleased, and as much as he pleased. Well, if you had asked him if he had not a sort of understanding which he affected to say had the same result as the agreement, he would have had to tell you that he had; and I do not like witnesses to talk in a double sense. We have not only to tell the truth, but we have to tell the whole truth, and I tell it. The Pennsylvania Steel Company and the Cambria Steel Company and the Lackawanna Company were handling steel before the Carnegie Steel Company began to build steel

works, and if either of these companies is unable to compete with the world in making steel, it is quite time for the Government to cease to give them artificial protection in order to enable them to do it. That is my opinion—what is best for the country. Remember, I am one who believes that the total abolition of the duties on steel will not affect one of these companies, perhaps, to any serious extent. There may be a carload of steel landed in San Francisco, or in Galveston, that would not otherwise have arrived, but if you are going to take the money of the people to injure the Pacific Coast and the Galveston Coast, I think it is an unjust use of money. The Pacific Coast is benefited by having ships coming there for their exports to get a little lading, because it reduces the price of transportation for their products to the competing market; and to rob the Pacific Coast of its natural advantages, and Galveston of its natural advantages, in order simply that the manufacturer of the East, 3000 miles away, should not pay $15 a ton freight upon the 2000 tons of rails that reach the Pacific Coast—there is no great amount of rails needed there—would I believe be an unfair policy to the people. Now, I want to make just one remark here. There is not one of these companies that was not in the business before the Carnegie Steel Company was, and it is not the policy of any government to coddle and nurse inefficient management. These companies have had opportunities to get into a position to compete with anything, and if the Government is going to bolster up the inefficient, then it is a bad outlook for the position of America in the steel business.

The Chairman: California can be supplied from the Alabama, the Birmingham, works, can it not?

Mr. Carnegie: Thank you for pressing that very cogent reason for not bolstering these works in the East up.

The Chairman: Mr. Carnegie, the Bureau of Corporations of the Department of Commerce and Labor has inquired into the cost of making pig iron, steel rails and structural steel for a period of five years, from 1902 to 1906, both inclusive. It had access to the books of seven great companies, making 93 per cent. of the total output of each of those articles. It has tabulated the cost ascertained from the books of those companies by an efficient corps of clerks, and with a steel expert to help them. We have the results of that tabulation, which shows the average cost of steel for those five years to be $22.39 per ton. It was $22.32 for 1902; $22.78 for 1903; $21.57 for 1904; $21.30 for 1905, and $22.77 for 1906. Now, they make up a table of the items of cost of steel rails as prepared from the books, and they put the cost of Bessemer pig iron at $14.52 and for other pig iron, not Bessemer, they make the cost $14.01. They say: "The difference of $0.51 between the average cost of Bessemer pig iron and of pig iron used for rails is due to the variation in the cost of the excess tonnage and to freight on some of the iron." They add that 51 cents to the cost of pig iron which they have ascertained from the same source to be $14.01 on the average for five years, and then they allow for waste $1.95, making a total cost for pig iron in a ton of rails $16.47. They make a cost of labor $1.98, manganese and so forth, 99 cents, fuel 35 cents, steam 62 cents—of course labor is included in that item—molds 15 cents, rolls 17 cents, materials in repairs and maintenance 42 cents, supplies and tools 27 cents, miscellaneous and general works' expense 51 cents, general expense 14 cents, depreciation 16 cents, making a total, on the average, of $22.23 for the five years. Now, they further show that the lowest cost of steel rails by any one company for one year, in their investigation, was $19.33, for the year 1905, while the highest cost was $31.27, in 1905, but that, they explain, was in the starting of new works. The next highest cost was $30.29, in 1903, under normal conditions of work. And, then, they have also compiled the prices obtained for these steel rails, which were $28 a ton, less freight, allowed in certain instances to certain points, which made it something over $27. I can give you about what the prices were: 1902, $27.65; 1903, $28.07; 1904, $25.70; 1905, $27.13; 1906, $27.61. And that shows a profit per ton in 1902 of $5.34; 1903, $4.32; 1904, $4.17; 1905, $5.88; 1906, $4.85, with an average of $4.97. That is the result of this investigation made by the Department of Commerce and Labor. Of course, those figures are as close as we can get at it with our information, such as we have, and they are confirmed by the testimony of Mr. Gary, who did not know that we had the figures when he came before the committee; and also by the president of the Pennsylvania Steel Company, although they explained that in 1907, when there was a boom on and prices were a little higher—and I think they also spoke of 1906. But if those prices are correct, do you say that to remove the whole duty on pig iron and steel rails would not cripple any steel corporation or any pig iron producing corporation in the United States, by competition coming from abroad?

Mr. Carnegie: I will answer that question by asking you another.

The Chairman: Oh, do not ask me——

Mr. Carnegie: But "turn about is fair play"; I have answered a great many of your questions, and now answer one for me. If those figures were correct—and remember the celebrated adage of the man who said "As for figures, I know they lie"—but I ask you, as a man of sense and judgment, if those figures be anything like the real truth, how can Judge Gary stand up before you on oath, and declare that he does not need protection?

The Chairman: If he tells the truth in other respects, that he can produce steel rails at least $2 a ton cheaper than any one else; and if his product goes into this percentage, as it must, his being 50 per cent. of the whole output, then it may be that Judge Gary is not so far out of the way.

Mr. Carnegie: You have not quite answered my question, Mr. Chairman; I am not talking about Judge Gary; I am talking about Chairman Payne. Judge Gary is the ablest man in that business. If I had followed the advice which parties gave me, to gain control of the United States Steel Corporation when its prices were at $8 or $9 a share, which I could easily have done, I should immediately have said to Judge Gary, "Judge, I want you to remain with me; you are the ablest manager I know;" and I would have doubled his salary, or, better still, I would have followed my practice and made him a partner. The judge spoke the truth, just as Schwab spoke the truth, when he told you the cost of our steel rails, which was $15, against your $22; but it was the judge who spoke, as I said before, but when he pities the other people, it is the lawyer; and the judge is equally eminent in both. I can describe him best by a Scotch term that comes to me, and if there was a Scotchman here I would speak it, but it is not translatable, because I cannot find a synonym. The judge is what the Scotch call a "pawkey chiel." Now, there is another question that I want to ask you. If steel rails of the Pennsylvania Company cost $26.50, why is its stock, even in the depressed times, above par?

The Chairman: Oh, well, when you get into that realm, I will have to say that I do not know why stocks are above par.

Mr. Carnegie: Gentlemen of the committee, allow me to address you in one word. Figures will do nothing but mislead you. If you do not apply your brains to such questions as these upon which I address you, how do these people not require a tariff? And I would advise you to take Judge Gary's word for that.

The Chairman: How much profit should a manufacturer receive on steel rails in order to pay the reasonable interest on the investment, and to renew his plant, if necessary?

Mr. Carnegie: That depends on what steel company it is and what the management of it is. When we made rails at $15—I have sold them at $16 in competition, but that is not a fair profit. But I refrain from naming what is a fair profit, because I think if you have competition and a free market it is for the interests of this country that the most enterprising manufacturer should make the greatest profit. If you want to keep this country ahead in steel you cannot depend upon great combinations. In the nature of the case they become conservative. Now, as an illustration: We were the foremost nation in the manufacture of steel, admittedly so, and we should be to-day. We make 23,000,000 tons of steel; Britain only makes 5,000,000 tons. We have suffered ourselves to fall behind in adopting improvements, except in the case of the Bethlehem Steel Company. I think Mr. Schwab deserves a vote of thanks by Congress for two things he has done. He visited Germany, and he found in one mill the practice of rolling girders of scientific form. There is not a girder made in America that does not charge the consumer for 15 per cent. of steel in that beam which is useless. The form is not scientifically right. Mr. Schwab is a genius. I have never met his equal. And when he had me as a partner we were a great team.

The Chairman: That is quite evident.

Mr. Carnegie: He has genius, and I had a little saving, common sense; and I could boss Schwab because I brought him up as a boy, and genius is, of all things, most difficult to control. And that one fellow, not in the combination, and struggling against them, beset by financial difficulties that would have almost overwhelmed any other man, nevertheless resolved that his mill should have a beam mill equal to any in the world, and he has improved upon the German, and is making beams to-day scientifically correct. And he has all the orders he can take. He made 20,000 tons in one month, while we used to think when we began to roll beams that 2000 tons a month was good work. He has carried forward America. And not only that, he saw a mill in Germany where there was not a pound of coal used. They utilized the gases over there in their blast furnaces. He adopted the same thing at Bethlehem. I tell you I am in earnest, and I hope, Mr. Chairman, and you, members of the committee, that you will give Mr. Schwab the unique honor of having retrieved for America its rightful position as foremost in steel. And Mr. Schwab is rolling rails to-day that he gets $51 a ton for, because the rails we have been making are inferior, and the railroad companies are willing to pay any price for better rails. He will make those rails, and so will the Pennsylvania Steel Company next year, and sell them for $28 a ton at a good profit, because to-day he has to buy the needed nickel; but in the mines they have in Cuba there is the nickel in its natural state. Now, I will imagine, from my own experience, what

happens in a board of directors of a corporation such as that of the United States Steel Corporation, for instance; or the Pennsylvania Steel Company; or the Cambria Company, or any of them that is not under individual management, and where there is not strong competition to spur them on to adopt every improvement and keep our country ahead. When I started into steel not one of my partners in Pittsburgh would join me; I was so rash. They thought—and, unfortunately for me, people in the steel business have differed with me so much and so often—they did not see things as I saw them, or I would be working to-day for a competence to keep my family. Now, the meeting of the board was called—mind you, this is all imaginary, but from my own experience, and just what I went through. A druggist or a merchant sits over there; I had to take him because he had money and I had not. A banker sits there; and they own stock—and I want to say that I did no stock gambling, and I have never in my life associated with stock gamblers—and there were others just as ignorant as the stock broker. And I think that a stock gambler is one of the worst citizens that a country can have. They leave barnacles upon values, and they create none. It is gambling. Now, we will say, Judge Gary has just read his annual report to his directors, and he shows $158,000,000 of profit, averaging $15.50 on every ton of steel he sold, and what do they think of that?

The Chairman: Is that on the steel rails, or on the whole business?

Mr. Carnegie: On the whole business. It does not matter much what it is upon, but the treasury has that $158,000,000, and it is all in the steel business.

The Chairman: It would be more satisfactory if I knew what it was upon the steel rail business.

Mr. Carnegie: Excuse me, but I do not think any corporation could keep its cost on steel rails separate from its general work. It would have to be estimated. But it is not steel rails that we are concerned with here, it is all articles of steel that the company makes; and I am only talking about the published reports. It is impossible for me to give you detailed statements, but here are the published reports. The judge says that he made in one year $158,000,000 on 10,000,000 tons of products. Everything he sold averaged $15.50. Now, this is public property, and probably you have all had the reports; they are published. And it is a great credit to the United States Steel Corporation that it does publish these reports. Now, at a subsequent meeting—and this is all imaginary, but it is my own experience—at a subsequent meeting the president may suggest that his beam mills are not up to date, and that the American people are paying for 15 per cent. of steel that is useless; and he proposes an appropriation of so many millions of dollars to place his company in its rightful position, to roll beams such as Schwab is now rolling. Now, one member who has to go in a hurry to his legitimate business will say: "Well, gentlemen, I vote against that resolution; we are doing well enough now, and we cannot create any competition, because we have an understanding with all of the manufacturers"—and don't you know that President Gary had to let well enough alone, and the proposition is voted down. Now, that is my experience with the directors that I had in my steel company. Fortunately I bought them out and got rid of them, and then I got men like Schwab, and others, around me, and we went on and produced the cheapest steel that has ever been made in the world; and if you will contrast the two costs to-day, on the same basis, as we make profits; and if every subsidiary department is placed at cost, and the total profit created to the steel company on the proper cost, you will find what I tell you to be true, that what we make at the mill at Pittsburgh will show that it is the cheapest mill in the world to-day.

The Chairman: Can you tell us where we can get that proper cost; that is what we are after. You have been at the steel business a number of years, since 1899?

Mr. Carnegie: Yes, but, Mr. Chairman, when you put the price of rails in that year—please show me now how far you go back?

The Chairman: Well, 1899. Mr. Schwab wrote his letter in 1899, and placed it at $12 a ton. That is the lowest price I have ever heard stated by anybody, and I did not know but that you might make it lower.

Mr. Carnegie: Never, never. As I have told you, that is the banner mill, and America beats the world.

The Chairman: It was rather intimated the other day that the letter was written for other purposes, and did not place the cost accurately.

Mr. Carnegie: My dear sir, allow me to tell you just what happened about that. I purposely refrained from reading the statements of interested parties. They are incapable of judging justly. No judge should be permitted to sit in a cause in which he is interested; and you make the greatest mistake in your life if you attach importance to an interested witness. You would not do it in a court of justice, would you? If the judge were interested in a cause would you respect his decision? (No response.) Silence in the court! Upon my word, I must laugh at you people.

Mr. Cockran: The chairman was never so eloquent.

The Chairman: I want to say to you very frankly that I always weigh the witness's silence as well as his words.

Mr. Carnegie: Listen. Will you read me again what your expert told you based upon information he derived from interested parties? It was not the average cost of making steel rails in America the year that we were making them at $15.50.

The Chairman: We have not got that. These are only from the year 1902 to 1906, both inclusive.

Mr. Carnegie: Well, 1902; that is a long time ago.

The Chairman: But 1906 is more recent. while 1902 is only five years ago. They give the average cost for each year. It happens to be the only year that the Bureau of Corporations went after the steel business in order to get this information; so that what we have is all that is available.

Mr. Carnegie: Well, does it stand to reason that a works that makes rails at $15 a ton and covers everything, in the year that they said it did; and then in those years that the average cost of rails should be so much greater?

Mr. Dalzell: But isn't that the fact? What do you say as to the relative cost of making steel rails in 1899, and in 1906 or 1907?

Mr. Carnegie: Well, I have told you over and over again that I do not judge by figures given by interested parties charged by the mill. I put it to you, Mr. Dalzell. If steel rails cost $26.50 at Harrisburg, and they have to sell them at $28, why is their stock above par? Why does not the Pennsylvania Company change its management?

The Chairman: To an ordinary man that looks like a pretty good profit on a ton of steel rails.

Mr. Carnegie: Oh, no; oh, no!

The Chairman: I am trying to get you to say how large a profit a man ought to have.

Mr. Carnegie: Well, I do not want to limit a man's profit. I would let the steel manufacturers strive to compete and manage their own business; and a man who was clever enough to make three or four dollars more than another who was lazy, and with inert corporation management, I would be glad to have him do it in the interest of my company. It is the enterprising man that needs to go ahead.

The Chairman: What I want to know is whether, in your judgment, $5 a ton is too large or too small a profit?

Mr. Carnegie: Well, I say again that one man might deserve $5 a ton profit, and it would be for the good of the country if another man should make $8.

The Chairman: But I want your judgment on it as a man of sense and an expert in the steel business, as to whether $5 a ton is too great or too small a profit upon steel rails?

Mr. Carnegie: That is a question that I will not answer, because I do not believe it is the fair gauge of what a man ought to get. I think if a man goes in like Schwab has done, and adopts that new experiment from Germany, for it was, mind you, an experiment, because conditions in this country might have been very different, and it is a chance that nobody else took, then I should like to see Schwab make $10 on steel rails when the slow coaches are making $5; and that is for the interest of our country. Mr. Chairman, do you know what philanthropy can do if it gives its assistance to undeserving people? It encourages those people; and if you want to do the most harm with money, give it away to those who will not struggle for themselves. And so it is in the steel concern, and with all other enterprises.

Mr. Underwood: The proposition, however, is this: In a well organized, well equipped, well managed mill, would $5 a ton on steel rails be an excessive profit?

Mr. Carnegie: I do not think it would on the best managed mill with every improvement; no, I should think not. And yet I say this, without study, as I have never—I do not attach importance to the question—but you have nothing to do with reasonable profits, as the President-elect has shown by the Republican platform, excepting in this way, and here is one of the soundest deliveries that I have heard a public man make for many a long day. Our platform is somewhat obscure and ambiguous. It can be twisted a little when you add a cost and reasonable profit. What did the President-elect say? He said two things. First, he said that we are to allow a duty comparing costs abroad with costs here; and we are to add a reasonable profit to both parties alike. That is the platform. Now, he also said, there is no doubt that a tariff makes it much easier for people to combine and exact excessive profits, and therefore we should have as little of it as possible. Now, the leading steel manufacturer of the world has declared he does not need protective duties any longer. A protective duty in its nature and in its object means that the consumer has to pay a higher price than he otherwise would for the articles protected. In my opinion—and I am a protectionist like the President-elect is, and a strong one—I have studied, and I labored many years with President McKinley on the tariff; and I have never appeared before Congress without urging a reduction in iron and steel, as the records will show. And I have been abused by the foremost advocate of protection in this country, the New York *Tribune*, for doing so. But now the *Tribune* itself—you have read it, I suppose—in its editorials, accepts Mr.

Taft's construction of our tariff plank, which the President-elect says we are in duty bound to conform to. I would give you the *Tribune* article—I have a copy here—approving of that, and also Mr. Taft's verbatim words from the report.

The Chairman: Well, of course, the *Tribune* is entitled to opinions as all other newspapers are, but what we are most anxious to get at are facts upon the question. It becomes our duty to report a tariff bill, and in doing so we must have due regard for several things. In the first place, not to make the tariff unnecessarily high where we can get the required information; on the other hand, not to withdraw protection from an industry so as to force a decrease in the price of wages. And another thing that we must bear in mind, that latterly, through large combinations of capital, there is more or less stifling of competition, and we do not want to destroy competition, Mr. Carnegie. Hence, the responsibility is up to us. It is easy for a newspaper editor or a newspaper writer to go on and talk generally about the tariff and about reducing it, scaling it down, or putting it up—that is comparatively easy. They can publish something else the next day. But we are to perform a work which has to stand, and which is to have its effect one way or the other upon the industries of the country for some time to come. And what we want are facts.

Mr. Carnegie: Mr. Chairman, would you set yourself up in opposition to Judge Gary as a judge whether the steel industry needs a tariff or not?

The Chairman: But what I want of Judge Gary is the facts. I do not want his judgment; he is not the judge in this case at all.

Mr. Dalzell: Mr. Carnegie, I think Judge Gary did not make any such broad statement as you seem to understand him to have made?

Mr. Carnegie: I see it announced in the newspapers.

Mr. Dalzell: But he did not. For instance, he was asked about the duty on tin plate. The duty on tin plate is 1.5 cents now, and he said, and we so understood him, that tin plate manufacturers like Mr. Follansbee thought they could stand a reduction to 1.2 cents. We asked him whether or not the United States Steel Corporation could stand any further reduction, and he said he thought it could to the extent of 10 per cent., but not any more. So that Judge Gary is not on record at all in the way in which you put him, by saying that the United States Steel Corporation does not need any duty on steel. You are mistaken about it.

The Chairman: He said further in that connection that the United States Steel Corporation could go on and do business if steel rails were put on the free list; but that it would have to cut down wages of employees. He made that statement.

Mr. Dalzell: The newspaper report of Judge Gary's testimony, to which you referred, is evidently wrong.

Mr. Cockran: He said, in answer to a question of mine, page 5512 of the hearings. My question is: "Mr. Cockran: Therefore, so far as you are concerned, you are not prepared to state on your own responsibility as a citizen and under your oath as a witness that any protection whatever is necessary? Mr. Gary: For the United States Steel Corporation? Mr. Cockran: Yes; so far as the United States Steel Corporation is concerned. Mr. Gary: No." And then he goes on and makes an exception of certain steel.

Mr. Dalzell: It is just as I have said.

Mr. Cockran: He said, as to production generally; but so far as the Steel Corporation was concerned, that no protection was necessary. But as to the tin plate he did not speak of his own knowledge.

Mr. Dalzell: Oh, yes; he spoke of his own knowledge.

Mr. Cockran: I think you will find on that same page that he declined to state.

Mr. Payne: Allow me to read following what you read: "Mr. Cockran: Now, that is clear. There is just one thing more I want to question you about. Mr. Gary: Of course, I would have to go through the list carefully, Mr. Cockran, before I could answer your question accurately. That might be true of some commodities, and not true as to others; that is it might drive us out of business so far as some commodities are concerned."

Mr. Cockran: And to go further, the record shows: "Mr. Cockran: You are not prepared to name one now? Mr. Gary: No; the only way that could be determined is to look up the figures of cost." Then he says a little further down in the next clause: "Mr. Gary: This occurs to me: I do not see how we could survive in the sheet and tin plate business if the tariff is removed. I think we would be driven out of that business."

Mr. Cockran: Now, if you will look back, Mr. Chairman, on page 5511, you will see a reference there to this point: "Mr. Cockran: Just conceive for a moment the position of the committee and your position. We are here discussing the amount of protection—that is to say, of tax that ought to be levied on the community for the protection of this industry—and if the chief factor in that protection is not able to say how much is necessary, it would be difficult for us to decide that it is necessary at all, for you would not have us impose a tax on suspicion." And the answer of Judge Gary was: "As a fair minded citizen, I would have you impose a tax which would protect our competitors, even if we did not need it." The question was whether he could not say that there was a single item on which protection was necessary.

Mr. Dalzell: And he mentioned tin plate.

The Chairman: Mr. Gary said "My impression is that the amount which was fixed under the Wilson bill, which was 1.2 cents would protect us." That is, tin plate. But we are here to get at the facts. Mr. Gary did state explicitly in another case that if we removed the entire duty, while the steel companies would still make steel rails, they would be obliged to reduce the rate of wages. He said that, but whether it is true or false I do not know.

Mr. Cockran: I do not think he said that.

Mr. Carnegie: Well, Mr. Chairman, Mr. Gary only thought so. Mr. Gary has not had any experience in running under free trade. In my opinion it will make only the slightest possible difference to the American manufacturer.

The Chairman: Have any of us had experience under free trade with the steel schedule?

Mr. Carnegie: Mr. Chairman, I would like to call your attention to this discussion, about what President Gary said, and the costs of this thing and that thing—you cannot agree among yourselves as to what the real purport of his answer is; and the further you depend upon figures given you by interested parties—mind you, I do not think that they want to misrepresent, but naturally you would not tolerate an interested judge for a moment that sat in a cause in which you are interested; you would not place much value upon the testimony of interested parties.

The Chairman: But your criticism is entirely unjust about our not agreeing among ourselves. We have not had any opportunity of going over the evidence since it was printed. Of course, before making a just tariff bill we would go very carefully over what Judge Gary said and what you have said on the subject.

Mr. Hill: You stated, Mr. Carnegie, that Mr. Schwab's statement made when he was with you, and set forth in his letter of 1899, that $12 a ton of cost of rails was correct?

Mr. Carnegie: Yes, and I wish to say that I did not know the letter had been written. I was abroad at the time. I took no part in the negotiations for the sale of our property. I only told my young partners that if they wished to change I was delighted, and I would retire from business. But I do well remember that that was our cost; and when Mr. Schwab came to me, after appearing here the other day, the first words I said to him were, "Schwab, your feelings and not your sins are accountable for much of your experience." He told the truth here, and you have said, Mr. Chairman, that it seemed to weaken and it did weaken his statement when he began to explain that he was "looking for preferment in a great company"; and that his letter was written at the suggestion of Mr. Frick. If there ever was a more foolish or gratuitous statement than that—but there was no question that the man told the absolute truth.

The Chairman: He said he did.

Mr. Carnegie: He said he might have put in some other items that he mentioned. I do not know how he could, because when I sold rails for $16 I did it because I knew we were not losing money.

Mr. Hill: Now, I took down his figures making up the $12 cost in 1899 and I then took down his figures making it, as I had it on the paper, $20.93, at the present time. Now is that last item of $20.93 as correct as the figure of $12 given by Mr. Schwab?

Mr. Carnegie: No. It is based on entirely different terms.

Mr. Hill: I would like to give you the items of cost and have you tell us in what way they are wrong.

Mr. Carnegie: I could not tell you about the division of cost between different departments. You can make them anything you please.

The Chairman: You mean you could not do that and tell the truth?

Mr. Carnegie: Yes; the truth—in a fashion, if you can say so.

Mr. Cockran: A kind of a truth?

Mr. Carnegie: Yes. He can tell. Now, Mr. Chairman, I will tell you the difference now—the difference in Mr. Felton's statement that he was free and could sell anything and do anything that he chose, and he had no agreement, and the truth was he had no agreement. Now that is a distinction without a difference, and it is the whole truth that you have to tell, and Mr. Schwab told you, and this is what he told me and pointed out—I did not read his testimony—but he told you expressly they were not based upon any figures of manufacturing.

Mr. Hill: Mr. Schwab started with ore and said that at that time, when he made those figures, you were paying a royalty of 10 to 15 cents a ton, and that now the ore costs $1.

Mr. Carnegie: Excuse me, Mr. Hill. Mr. Schwab is giving you the cost of ore to a private miner of ore in Pittsburgh. The royalty on the steel ore we have sold—and there were hundreds of millions of tons—and it was 20 cents a ton, and that is the cost to-day to the United States Steel Corporation, on that ore, and it is in perpetuity. Now, he

takes the value of ore to-day. Certainly there have been purchases recently of ore at higher prices. The same thing is going on in Europe. England is in far worse position as to ore than we are, or even as Germany is. Her ore supply has been derived from Spain, and these mines are now failing, and where Britain is to manufacture a ton of steel cheaply in a few years from now I confess I do not see. They are in far worse condition than we are. Then, gentlemen, my statement was to compare the English or German cost at this time and take the two to-day from all I know—and I have talked to steel men generally on the other side, and I have many friends there among the steel men in Britain; much of my fortune was made by learning of them and seeing their failures, and I still know them well, and they visit me at Skibo and we talk over matters—and that is their complaint as well as ours, so that the relative cost of making the foreign article is rising like ours. We are exporting steel to all the countries of the world to-day, and unless you take these broad facts into account and give them their proper bearing upon divisions of cost, arbitrary divisions of cost, you will become befogged. You must use your brains.

Mr. Hill: We must have something to work on with our brains.

Mr. Carnegie: I say that because you have plenty of them to use, and really it was a superfluous remark to make.

Mr. Hill: Mr. Schwab said it was 58 per cent. ore then, and it is now 49 per cent. ore, but he figured the ore on the basis of 10 to 15 cents per ton royalty delivered at Pittsburgh at $4.31 per ton of rails and made an allowance, calling it in round figures $4.50 for the ore in a ton of rails. He says now that that ore costs $1. In his statement he figures the freight to the lake, the lake freight and the rail freight to Pittsburgh and 49 per cent. ore. He says now that that costs $8.26. Which is correct, or are both correct?

Mr. Carnegie: Probably if you purchased the ore, but I am not talking about people who buy ore and sell ore. The question is whether the steel interests of America can do without protection. What your committee should do would be to go to European works and see what their costs are, and you will see what the condition of affairs is.

Mr. Hill: The question of whether they can do without it or not depends on the cost of the articles to-day, does it not, and this is the evidence of Mr. Schwab?

Mr. Carnegie: Let me say again, these are not the manufacturer's costs that Mr. Schwab gave you. He told me he did not appear for the steel companies at all.

Mr. Dalzell: He told us they were the actual costs.

Mr. Carnegie: There you are again, gentlemen; you are on figures. If you are going to assume that you gentlemen, who know nothing about steel, can in a cursory examination of the case get at the facts of the case, you are deluding yourselves.

Mr. Dalzell: We want you to give the facts.

Mr. Carnegie: I tell you expressly that I have no details to give, but I look at the broad facts that we are exporting to all the world, and we make $15.50 a ton on everything we sell.

The Chairman: How do you know that fact that they are making something on everything they sell? Do you know?

Mr. Carnegie: I read the last report of the United States Steel Corporation, and in the year the report covered it made that.

Mr. Dalzell: Won't you give us information how you make that $15 profit on every ton of steel rails out of the United States Steel Corporation's report? Tell us how you make that out?

Mr. Carnegie: Mr. Dalzell, I have already stated. Have you not read that report?

Mr. Dalzell: Yes.

Mr. Carnegie: Did you not find that it sold 10,000,000 tons of steel?

Mr. Dalzell: I have read the figures. Tell us how you make the problem out?

Mr. Carnegie: I did it once. The Steel Corporation in its last report stated that it made something over 10,000,000 tons of steel of various forms, and its profits were $158,000,000. Now, it does not take much figuring to show that that is $15.50 profit for every ton it sold or it would not have made $158,000,000 on 10,000,000 tons of steel. Does that enter into your brain?

Mr. Dalzell: Is that the way you would arrive at that result? You would divide the $158,000,000 profit by 10,000,000 tons of steel?

Mr. Carnegie: Sold; yes.

Mr. Dalzell: Yes, and the result you arrive at by that process without any other figures is a profit of $15 a ton on all the steel sold?

Mr. Carnegie: Certainly. Can you arrive at any other conclusion? I want to ask you a question: Can you arrive at any other conclusion? There is silence in the court again. It is too bad that while I am questioned in every way I cannot get a chance to get at these dignitaries.

Mr. Hill: Mr. Schwab said that the royalty nine years ago was from 10 to 15 cents and now it is $1, and that the ore nine years ago per ton was $2.40 and now costs $4.50. Then he said that the coke cost $1.05 a ton of steel nine years ago, and that it costs $2.05 a ton of steel now.

Mr. Carnegie: I have no judgment on that except that Mr. Schwab stated to you distinctly that he was not giving manufacturing costs.

Mr. Hill: Mr. Schwab said that the labor nine years ago on a ton of steel was $1.65, and then to my great surprise he said it was only $1.30 now. He said that the cost of conversion of iron, including the profit, nine years ago was $3.75, and that now it is $7.50, or just twice as much.

Mr. Carnegie: Conversion of steel?

Mr. Hill: Conversion of iron into steel. Now, that makes a difference of $3.84 in the price of rails.

Mr. Cockran: How much did you say he said the cost of conversion of steel was?

Mr. Hill: Nine years ago, $3.75, including profit, and $7.50 now.

Mr. Carnegie: Did he explain how that extraordinary increase was made?

Mr. Hill: It was a strange thing to me that he did not, because his letter, the letter that has been referred to, said that all costs would be reduced while the European cost would be continually advancing; and yet here is his own statement with his own figures showing a double cost now. Now, I want to know—whether the rest of the committee do or not—whether this latter statement is correct—just as correct as the first one.

Mr. Carnegie: You are asking the wrong person.

Mr. Hill: I ask your judgment.

Mr. Carnegie: Oh, my judgment. I decline to give my judgment against a positive statement. I believe there is a mistake there, a misunderstanding. But that is another evidence that if you gentlemen, professional gentlemen, public men, imagine that you can get at a basis of legislation while ignoring the great facts before you that we are exporters of steel and do not import steel, and, above all things are attempting to gainsay the evidence of a witness who is truthful because he testified as it were against his own company—I put the word of Judge Gary beyond all figures, and I would take the word of Judge Gary in this matter beyond all the figures—if I were as you are, a non-manufacturer—I would take that evidence of Judge Gary rather than the judgment which I could form, being ignorant of the steel business, from all figures you could lay before me. Your proceedings this morning show that you have different ideas and different constructions on all the figures.

The Chairman: Mr. Carnegie, these figures are almost uniform, drawn from different sources.

Mr. Carnegie: They are all uniform in this, that they are the work of interested parties who are incapable of rising—as we would be ourselves if we were interested—of rising to the broad fact of the case.

The Chairman: Now, you oppose to figures no knowledge as to their correctness except these two propositions: One is that they are selling steel rails abroad; they claim that they are selling them at a loss; so has Mr. Felton of the Pennsylvania Steel Company, who testified about that; I do not know whether it is true or not; but that was the statement and explanation, and thereby it was stated that he kept his mill running the year round.

Mr. Cockran: I think you are mistaken in stating that Mr. Felton said he was selling at a loss.

The Chairman: I do not think so. Now, Mr. Carnegie, you base the profits of the United States Steel Corporation on all its manufactures. You say there are so many thousand tons of steel rails and structural steel produced, as I understand it, and you divide the profits by that, and come to the conclusion that it is making $15 a ton. You do not take into account all its other business. It is enormous, is it not?

Mr. Carnegie: Mr. Chairman, you have misapprehended me entirely. I took the statement covering all steel, and you are dealing here, this commission, with the duties on all steel.

The Chairman: Do they cover tin plate, for instance?

Mr. Carnegie: Surely. How could they exclude tin plate? Their statement is a summary of all the business of the year. I do not think they made more than $158,000,000. That was the extreme, and necessarily included everything.

The Chairman: The 10,000,000 tons, then, included the tin plate, did it?

Mr. Carnegie: I leave you to imagine that the total profits would have included that.

The Chairman: I do not want to imagine. I want to get out of you the facts of it, if you will give it.

Mr, Carnegie: You cannot get that fact out of me. There is Judge Gary's published report.

The Chairman: Then it comes down to this that we must rely on Judge Gary for the facts? Is that true?

Mr. Carnegie: Judge Gary has already summarized the facts for you, and told you he could do without the tariff. I would rely upon that,if I were a member of this committee, as quite sufficient.

The Chairman: You consider Judge Gary a truthful man?

Mr. Carnegie: I do.

The Chairman: He has testified here as to what we believed to be the facts.

Mr. Carnegie: It is the facts as he understands them. As I told you before, the question of costs of a thing depends entirely upon your bookkeeping. Now, Mr. Chairman, I would like to ask you a question: If the cost of steel rails abroad—no; steel abroad, because, we are not talking about steel rails particularly—if the cost of steel abroad has risen as the cost of steel here, then you would find that according to the interpretation of our tariff plank, Judge Gary's statement was quite true, that he could still stand free trade in steel, because the cost abroad had risen as it has risen here.

The Chairman: He says the cost has risen abroad, and that the price there is $28 up to $31 or $32; $31, I think, was the highest. He put it at $31 and some odd figure. That is the selling price.

Mr. Carnegie: Is not that confirming just what I told you, that you have nothing to dread from free trade in steel?

The Chairman: In so far as that is concerned, yes. If they all sold at $31, but some of them sell them at $25 and $26.

Mr. Carnegie: Do you know any business in the world where every dealer sells at a like price?

The Chairman: Yes; steel rails seem to now; for the last two years in this country they sold for the same price, $28, but abroad they have been selling all the way from $20 to $31, according to the law of demand and supply.

Mr. Carnegie: Yes, and very often a manufacturer would sell at a low price in order to keep his works employed. If he is a wise man he would never cease to keep his men working, even at a loss.

The Chairman: Mr. Felton comes in here and gives the figures from his books, and he gives instances where he has sold at a loss of $1 a ton on steel sold abroad. He says that was a big loss, but it was a good thing for the steel company because it enabled him to keep his plant running.

Mr. Carnegie: I venture a suggestion that you should send for Mr. Felton again and ask him if he agrees with Judge Gary. The details of this thing you are not interested in. It is the broad general question, is it allowable any longer to tax the consumer and make him pay a higher price than he would otherwise have to pay? Because that is the only result of protection.

The Chairman: It is not justifiable to tax the consumer if you can show that they can compete and get, as you say, a reasonable profit here and a reasonable profit there. It is not justifiable to tax the consumer under such conditions; I agree with you on that, but what we want to know is whether you can do it.

Mr. Carnegie: You have Judge Gary's testimony.

The Chairman: That is the reason we have you here. We have Judge Gary's testimony, and it would seem to show that we could not place steel rails on the free list without injury to American industry.

Mr. Carnegie: Excuse me. About half of the American industries would not be injured, he said. He can stand it on half the product of American industry.

The Chairman: He says he could not stand it unless he reduced wages to his workmen. He made that plain statement.

Mr. Cockran: I do not recall that.

Mr. Carnegie: The lawyer Gary is equally adroit in calling in the workmen.

The Chairman: Now, you refer to Judge Gary, whom you referred to a moment ago as being a truthful witness, as being a lawyer. My experience has been that lawyers are as truthful as other men. Now you are taking a fling at lawyers.

Mr. Carnegie: No. I take it that a lawyer in defending his own cause makes the best statement he can for it.

The Chairman: He was sworn to tell the truth and the whole truth and nothing but the truth, and you say he is a truthful man.

Mr. Carnegie: Yes.

The Chairman: Now, the question of his being a lawyer or a manufacturer does not enter into that question at all.

Mr. Carnegie: No, it does not; but if you are speaking for your own cause I think a man is justified in making the best statement he can, especially since it is a matter of judgment for him to have.

The Chairman: Even if it conflicts with the truth?

Mr. Carnegie: No. I do not say that; his judgment was for the future, what would be in the future. My judgment is entirely the reverse.

Mr. Dalzell: You would tell us, Mr. Carnegie, that we cannot get truthful figures as to the manufacture of steel from steel manufacturers. Can you tell us where we can get those figures?

Mr. Carnegie: I do not believe you can get those figures that you can rely upon, because there are different costs in different works and because there are different ways of making up costs.

The Chairman: Can you get them?

Mr. Carnegie: No. I could not pretend to get them.

The Chairman: Then how could you say what a tariff should be if you cannot get the figures as to what the cost would be?

Mr. Carnegie: Because I should judge of my general knowledge of the steel business, and what the people in the steel business admit. Judge Gary did not make that statement for the first time. He made that statement long before I wrote my article, and there are others that I have conversed with, and it has passed as a matter of general acceptance.

Mr. Dalzell: According to you, Judge Gary is not reliable. He is an interested man.

Mr. Carnegie: He is reliable; he is an interested man. He is not reliable, nor is any man who is interested, for estimating future effects, and he only estimated generally and gave you his judgment of future effects as to free trade, that it might injure.

Mr. Cockran: Mr. Carnegie, in talking about the difficulty of obtaining figures, you apply, as I understand it, your own experience in the steel trade to these reports that have been published by the Steel Corporation and upon these two premises you base your conclusions as to the power of this industry to get along without protection?

Mr. Carnegie: Well, partly so, but, really I must say, more upon Judge Gary's statement than these figures.

Mr. Cockran: You mean Judge Gary's statement here under oath. You are referring to that?

Mr. Carnegie: Yes.

Mr. Cockran: Now, Mr. Carnegie, with reference to the difficulty of obtaining reliable figures, you mentioned once or twice the capacity of bookkeepers to distribute the profits into various channels and by the multiplication of them magnify costs before the raw material reaches the mill. Now, with reference to ore especially, I think you said that Mr. Schwab, in estimating the increased cost of ore, took its value in the market and not in costs to the United States Steel Corporation.

Mr. Carnegie: That is what I believe. He does not take the cost of ore as the United States Steel Corporation could mine it from the same mines that we mined it when we made the cheap steel.

Mr. Cockran: That is to say, in estimating the cost of ore, Mr. Schwab, in your judgment—and this would account for the large difference in what the ore costs the company—he took the value of the ore in the open market to-day?

Mr. Carnegie: Mr. Schwab states that to you frankly. He does not misrepresent.

Mr. Cockran: Now the advance in the value of ore as distinguished from its cost to the company is what?

Mr. Carnegie: I cannot tell you that.

Mr. Cockran: It has advanced enormously.

Mr. Carnegie: Yes; the recent purchases of ore have advanced enormously, and abroad, gentlemen, you neglect half the case.

Mr. Cockran: I spent a good deal of time trying to find out from Mr. Felton that very fact when he spoke of the advance in the cost of his material. I tried to find out whether there was a corresponding advance in the cost of materials to the foreign producers, and I may say I made but little headway. Are you able to enlighten us upon that?

Mr. Carnegie: Not as to the exact figures, but as to the general facts.

Mr. Cockran: Approximately?

Mr. Carnegie: Yes, because I was going to repeat that I do not know what Britain is going to do for ore in a few years from now.

Mr. Cockran: Now, judging from the general conditions of supply—we were told there was no particular difference in the labor conditions—the cost, in the nature of things, must have advanced proportionately abroad as it has advanced here?

Mr. Carnegie: That is my opinion, that the costs have advanced from all that I hear.

Mr. Cockran: And, therefore, so far as protection is concerned, there is no justification for a protective tax based on the cost of materials out of which steel is manufactured?

Mr. Carnegie: Not according to the definition of the Republican tariff plank.

Mr. Cockran: I am not as familiar with that document as some of the other gentlemen present. I was asking as to the particular lines of policy you indicated a moment ago.

Mr. Carnegie: Yes; you must take the difference in cost on both sides. I do not know whether I stated that I was quite sure that if a commission were appointed to stay at the mills for a month on the other side, the first mill in Britain and the first mill in America—that would be one at Pittsburgh—if a disinterested expert who knows the steel business was sworn to give you the exact cost, and the United States Steel Corporation put only in what it costs to-day, and gives credit to its subsidiary companies, its coke works, its ore mills, its railways and everything that it has subsidiary, the result would be that the cost of a ton of steel abroad would be slightly greater than it is here. That leaves naturally the freight in favor of the home producer, because they have to transport the steel here.

Mr. Cockran: Now, Mr. Carnegie, what you contend for in this testimony is that the condition has been reached in the production of this commodity where the producers should be put to the development of their skill and capacity for profits and not to trust at all to legislation?

Mr. Carnegie: I believe that would be best for the American public, for our country.

Mr. Cockran: It would be better for our country in the way of increasing the value of the product?

Mr. Carnegie: Yes, sir.

Mr. Cockran: And to increase the value of the product would necessitate the employment of more human hands?

Mr. Carnegie: Certainly.

Mr. Cockran: And, therefore, it would operate to stimulate the rate of wages?

Mr. Carnegie: Certainly.

Mr. Cockran: Several gentlemen here when discussing the matter of decreasing the cost to the consumer expressed doubt whether that would stimulate consumption. In your experience of the trade, have you not found that every reduction in the cost stimulates the demand or consumption?

Mr. Carnegie: That is a truism.

Mr. Cockran: I had always supposed so, but it seems to have been doubted here under oath by several witnesses whether the decrease in the cost of the commodity would stimulate the production.

Mr. Carnegie: I cannot imagine an intelligent man doubting that.

Mr. Cockran: I have asked you to testify as to that in the industry you have been connected with for many years.

Mr. Carnegie: That has been a grave objection to the policy that has been pursued in not reducing prices in the recent panic. Now, I am one political economist who has followed the other plan. I wanted to keep all our men employed. I think the greatest loss an employer can make is to part with his good men. We had such an organization of men in our works that I think never had been equaled upon the face of the earth. We wanted not only the best workmen, but we wanted the best American citizens. We had very strict rules. A man on duty the worse for liquor was suspended for 60 days. For a second offence he was suspended three months. On a third offence we shook him by the hand and said, "Good-by." Now, I was going to say this: When the recent panic came the policy of the Carnegie Steel Company would have been to reduce prices enormously, and it would have stimulated the capitalist, who is the shrewd man, and the valuable man in the country. The result would have been that if a man wished to build a skyscraper on his property in New York he would have said, "Here is a chance for me. Here is a bargain. I will build now." And that would have employed labor, and the same thing would have been the result in every city in the United States, and we would have run our works—I judge from the past—and kept our men employed.

Mr. Cockran: I want you to testify from the past, from your own experience, as distinguished from speculations. Any man may indulge in speculations on an economic proposition. Did you ever find yourself during your experience as a steel producer confronted with a situation where there was a depression of industry and doubt and you met it by reducing the price, and what was the result?

Mr. Carnegie: We did.

Mr. Cockran: Insert that in the record.

Mr. Carnegie: If I was in business to-day again, I would not change that policy for anything, so satisfactory have been its results.

Mr. Cockran: If you were in business to-day as a steel producer, when the demand for steel slackened, would you stimulate it by reducing the price?

Mr. Carnegie: I would.

Mr. Cockran: And judging by the experience of the past, that would inevitably result in increasing the demand?

Mr. Carnegie: It would.

Mr. Cockran: Judge Gary among other subjects that he enlightened us upon, discussed his relations with the other corporations, and in answer to my question as to whether there was a general agreement among them, he stated that there was no specific agreement among them in the sense of a treaty or bargain or even understanding when reduced to words expressed or reached, and all that; but by some process which he failed to describe, before he got into the business, a figure was fixed and that figure has been fixed ever since; that it was threatened at one time after 1899 by yourself; you were about to build some new works; you announced a purpose to build some new works, and that purpose on your part led to apprehensions that the price of $28 a ton on rails might be reduced, and the desire to avert that possibility was the moving cause in the bringing out of the steel combination known as the United States Steel Corporation. He testified to that and so stated to the committee.

Mr. Hill: I do not think so. I think you are entirely mistaken, Mr. Cockran. The increase was not made until after the United States Steel Corporation was formed.

Mr. Cockran: You are mistaken, Mr. Hill. The price of $28 was fixed in 1899.

Mr. Hill: When was the Steel Corporation formed?

Mr. Cockran: In 1901. Now, Mr. Carnegie, Mr. Schwab testified that they jumped in one year from $14 to $28.

Mr. Dalzell: Oh, no. Look at your figures. You will find no such figures.

Mr. Randell: I think you will find in 1898 the price was $28, but in competition they went down to $17 or $18, and then they got tired of that price, and went back to $28 a ton.

Mr. Dalzell: You have got your figures reversed.

Mr. Randell: They went back to $28 before the steel trust was formed.

Mr. Dalzell: In 1897 it was $20; in 1898 it was $12.

Mr. Randell: Competition brought it down, and they went back to that before the steel company was organized.

Mr. Dalzell: That is right.

Mr. Cockran: My statement agrees with your recollection, does it not, Mr. Carnegie?

Mr. Carnegie: Well, gentlemen, you are in figures again.

Mr. Cockran: I know I am, undoubtedly.

Mr. Carnegie: And look how befogged you get. These men are trying to tell you the truth, but they talk in language which you do not understand.

Mr. Cockran: Mr. Carnegie, Judge Gary stated that the various companies kept at that price. He described them as competitors, and in answer to my question whether these men were his competitors, because he entitled them as such, he said that was so, that he could drive them out of business if they went into competition.

Mr. Carnegie: That is a question of judgment on the part of Judge Gary. It is a speculation.

Mr. Cockran: Does your judgment agree with it?

Mr. Carnegie: No, sir; very far from it.

Mr. Cockran: If they are combined to agree upon the price, it is your judgment that that combination is the result of independent men getting together and not the result of any coercion on the part of the steel company?

Mr. Carnegie: You are speaking now of steel rails?

Mr. Cockran: I am speaking of steel production generally.

Mr. Carnegie: Yes, generally; I think here is the judgment again. It is not a matter of fact. My judgment is that the Pennsylvania Steel Company, the Cambria Iron Company and the Lackawanna Company could approach so nearly to the cost of the United States Steel Corporation that I would begin to fear for the value of my bonds. I have stated that once.

Mr. Cockran: Yes; that is another thing I would like to call your attention to. You speak of Judge Gary and other persons being interested. You yourself are an interested party in the solvency of the steel company, are you not—deeply interested?

Mr. Carnegie: Well, sir, Mr. Cockran, I consider the steel bonds of the United States Steel Corporation so much more secure than any other bonds I could get, short of the United States, that I have provided for those dependent upon me by these bonds. I cannot answer any more particularly than that.

Mr. Cockran: You believe these securities would not be in the slightest degree imperiled if steel were put on the free list?

Mr. Carnegie: Not the slightest. On the contrary, I believe it would be better in the long run for the steel company, and especially for the position our country would occupy as a steel manufacturer.

Mr. Cockran: Now, I asked Judge Gary also in his testimony where he stated in his judgment his company could drive his competitors out of business—I asked him if his power to do that rested upon their control of the ore supply, and he said it did, and I asked him in addition if the markets of the world, the suppply of ore throughout the world, were open to his competitors, if they would not then be in a position to maintain competition no matter what the steel company did, and he answered that it was so. Do you agree with him in that?

Mr. Carnegie: I agree in the latter part of the statement.

Mr. Cockran: He said immediately they had enough to go on, but that the ultimate supply of ore in the country was in the hands of the United States Steel Corporation.

Mr. Carnegie: We purchased a great deal of ore. I saw this coming and——

Mr. Cockran: I will read his exact language, Mr. Carnegie. I asked him about the effect of this, whether they could not drive others out of competition if they wanted to. He said, Yes, the ownership of ore was an important item; and I said, "You practically do control the ore supply of the country?" Mr. Gary replied, "No, not now; not for the immediate future." Then I asked him, "Well, the ultimate supply?" and he answered, "Yes, I think so; that is, pretty nearly. It is not absolute control." Then I asked him whether it was sufficient to put the competitor somewhat at his mercy, and he agreed with me. Then I put this question:

> This is not the only supply of the world by any means, is it?
> Mr. Gary: Oh, no.
> Mr. Cockran: So if your supply of the world were open to these competitors, and with the advantages of cheap transportation by water, which you discussed a short time ago, they might be able to make a stand for life and liberty?
> Mr. Gary: If you remove the duty from ore alone, and it remains so, no doubt that would protect the people here, who will in the future have to buy their ore, against a possible oppression on the part of our corporation. That is your question, only in my words.

Do you agree with that?

Mr. Carnegie: No, sir; I do not. On the contrary, I believe the Pennsylvania Steel Company will have ore when the United States Steel Corporation may be short of it. But let me again point out, What have we to do with the future? Is not this commission appointed to legislate under the conditions of to-day? Judge Gary may be wrong or he may be right. You may to-morrow get a telegram that a lode of ore has been found in the Northwest exceeding any that we have now. This coountry has not been explored. I know several parties now with men searching everywhere for ore. I met one the other day. He told me that he had discovered three deposits of ore. The one was sure for 6,000,000 tons, and he thought the other would be enormously greater. I myself lent a professional man money—he was a great geologist; I lent him money, and he is exploring for ore. If you are going to leave the present and legislate for the future, why you are liable to mislead the country. If our steel industry is ever imperiled, how easy for Congress to put on the duty again.

Mr. Cockran: Judging by the past, nothing would be easier, Mr. Carnegie. The easiest thing in the world in this country seems to be to get the duty. Now, let me put this question to you. It is a fact, is it not, Mr. Carnegie, that you believe it would wonderfully improve the condition of the steel industry if ore and all other elements were admitted duty free?

Mr. Carnegie: I do in the long run.

Mr. Cockran: You believe it would not hurt any industry to-day?

Mr. Carnegie: No.

Mr. Cockran: You believe it would cheapen the cost of the article and stimulate consumption?

Mr. Carnegie: I do not believe it would lessen the cost of the article much.

Mr. Cockran: To put it on the free list?

Mr. Carnegie: Yes; because I assure you that it is impossible for Europe to compete successfully with the home producer of steel. That is my deliberate opinion.

Mr. Cockran: Suppose the tariff be removed now, because after all, the effect on the consumer is the thing we are interested in here: Do you mean to say if the tariff was reduced and this article put on the free list it would not reduce the cost to the consumer?

Mr. Carnegie: Mr. Cockran, no; once more let me say you have derived a mistaken impression of my views if you thought that under free trade the foreign producer could compete with the American in a home market.

Mr. Cockran: My question was whether the American would not reduce the price of steel and allow the consumer to get a cheaper article, and therefore the industry would be stimulated.

Mr. Carnegie: The steel combination would not raise its prices so high to the consumer if we had free trade with the world. Now, that is all that I can say.

Mr. Cockran: And the net result of your testimony is that by placing this article on the free list the cost would be reduced to the consumer, the amount of the production would be stimulated and largely increased, and therefore the number of human hands employed in the industry would be increased also. That is what you would expect from the reduction of this duty?

Mr. Carnegie: No, sir; not quite, Mr. Cockran. I must tell you that my opinion is this; that if there were free trade to-morrow between the world and America in steel, it would affect the home steel manufacturer very slightly indeed. It is not possible for the world to compete with the home producer. But I agree with the President-elect that the effect of a tariff is to render easier combinations raising their prices to an excessive degree beyond what they could do under free trade.

Mr. Cockran: That is an abstraction, Mr. Carngie. What I want to get at is—if you will excuse me for pressing the question—your view of the reduction of this particular article, judging by your experience: Do you feel that if the article was put on the free list it would lessen the price to the consumer, thus increasing the use of it and widening the demands for wages?

Mr. Boutell: I am going to suggest that you answer the first part of the question first. He has asked you in another question whether the reduction of the tariff on steel would reduce the price to the consumer.

Mr. Carnegie: I have already answered that: It is impossible to answer it. The steel combination might conclude it is best policy to continue the price of rails, or to make a low price on rails; but what the law would effectually guard against is their raising the price of rails as high as with a tariff they evidently could raise it.

Mr. Cockran: They are evidently doing it now. According to your judgment, they must be doing that now. If the cost of producing steel rails is as low as you believe it to be, then the price of $28 a ton is an excessive price.

Mr. Carnegie: No; I cannot agree with you there, if you will allow me to explain, to get all the truth.

Mr. Cockran: Yes; I want to get that.

Mr. Carnegie: Well, gentlemen, that agreement between the railroad companies and the producer is in every respect admirable.

Mr. Cockran: The railway companies and the producer?

Mr. Carnegie: Yes, sir; in every respect admirable. Now, I said in a letter in regard to combinations and interstate commerce—I insist on that as being an exception—the railroad companies in this country have mills upon their own lines, and they wish to distribute the railroaders fairly among the various makers, and they have agreed with the steel people that $28 a ton was a fair price. They get a great deal of traffic from the manufacturers. They make a great deal of money out of them, and they have given them a fair price. You might say a liberal price, but I do not really think it is not a fair price for both parties. Now, the manufacturers accept from the railroad companies the portion which they think proper to give to each of them. Therefore, there is no competition, and it is an arrangement which I pronounce admirable in every respect fair to the consumer and fair to the producers.

Mr. Cockran: If your theory is to be believed as to the cost of steel rails, since it varies so widely from Mr. Schwab's conception of it, it is plain that $28 a ton would yield to both of you a different rate of profit. You assume that steel rails could be made at the outside at $18. Is not that what you figure it would cost?

Mr. Carnegie: Mr. Cockran, I have never made a statement in regard to that, so far as I know.

Mr. Cockran: No, but you said this, and it must mean something, that the cost of $22 or $21 was too high, and you said that in such a way as indicated the belief that it was too high.

Mr. Dalzell: I did not hear Mr. Carnegie express any opinion as to the cost of steel rails at all.

Mr. Cockran: Would you mind telling us whether you would consider $22 too much?

Mr. Carnegie: I do not say anything about it. I told you over and over and over again that I would not sit and figure on these costs and hear the testimony for anything in the world.

Mr. Cockran: Do I understand you, Mr. Carnegie, that you expressed doubt, as I understood, of these costs and figures, the cost of conversion, for instance, at $7.50, as too high. Did you not state that?

Mr. Carnegie: I did question that and thought it was a mistake. I am not prepared to say it is a mistake. It is surprising to me; it is surprising that that should be so much.

Mr. Cockran: I see. So, then, you do not undertake to say that in your judgment this cost of steel rails, as stated by the Chairman, is too high?

Mr. Carnegie: I would investigate that subject before forming an opinion; before entering a judgment I would investigate it.

Mr. Cockran: So that, in point of fact, all this testimony that you give before us is nothing but an adjuration to this committee to look to their figures?

Mr. Carnegie: If I have succeeded in doing that I am glad.

Mr. Cockran: You have succeeded in doing that.

Mr. Carnegie: I do not know as to that.

Mr. Underwood: I notice in the report that in the last decade, although the production of iron and steel in this country has nearly doubled, the production of Germany has increased from a third to a quarter and the production in England has practically stood still. Can you give us the reasons for that condition in the English market?

Mr. Carnegie: Here is another opinion that I have to express upon this subject. You see I may be right or I may be wrong.

Mr. Underwood: You just stated that at Skibo you talked with English producers. I would like to have you explain that.

Mr. Carnegie: I believe I can explain that. I believe I have told you that in my opinion Great Britain has reached the apex of its manufactures, that its coal is thinner as it is getting deeper and its supply of ore is getting low to a degree, and that accounts for Britain not manufacturing more steel, and it accounts for Germany manufacturing more. Germany has had a great increase of population. She is developing her manufactures. She has 60,000,000 of people as against Great Britain's 40,000,000, and she has increased her steel production.

Mr. Underwood: Is any large percentage of British ore brought from Spain at this time to be used in manufactures?

Mr. Carnegie: Yes, sir, there is. I am now telling what I hear. I have not personally investigated it, and yet I believe that the impressions I have received are correct. The ore is getting of less value and less iron in it, and the mines, I am told, are failing in their supply.

Mr. Underwood: Do you know what the cost to the British manufacturer is to bring the Spanish ore to the furnace?

Mr. Carnegie: No, sir; I do not.

Mr. Underwood: Do you, Mr. Carnegie, know anything about the development of Norwegian ores?

Mr. Carnegie: Yes, sir. In an article written for the

*Nineteenth Century and After*, I think I have said that it is a matter of the gravest importance that these Norwegian ores should be found as expected. I should say this, that I have read a recent report of the company called the Dunderland Company, and I find it most disappointing. It is to be reconstructed and recapitalized, and so far it has not been a success.

Mr. Underwood: Are these Norwegian ores far from the coast, or are they on the coast line?

Mr. Carnegie: I think some of them are some distance from the coast, 80 odd miles. I think some are now worked for Germany—for Germany even is compelled to go to those sources of supply, and to put on boats for that purpose.

Mr. Underwood: Do you think it is possible, when the English ore mines play out, for them to obtain or ship a supply of ore from the Norwegian banks?

Mr. Carnegie: From what I have told you you will yourself see that it is wholly problematical. The prospects are not as good as they were.

Mr. Underwood: In your judgment, then, we are not threatened with cheaper Norwegian ores in English furnaces?

Mr. Carnegie: No; on the contrary.

Mr. Underwood: Now, as to the relation of ore and coal supplies in Germany; from your investigation of these matters, is the coal and ore supply near the furnaces, or do they have a long distance to haul?

Mr. Carnegie: I must be excused from speaking of Germany. I have not been able to give it the study that I made elsewhere.

Mr. Underwood: Mr. Schwab made a very important statement here the other day to the effect that he did not think the labor cost on the iron or steel or pig iron was greater here than in England, but that the difference was due to the fact that the American laborer could produce a larger amount; the greater productive capacity was due to improved machinery in the plants and in the furnaces. Do you agree with him in that?

Mr. Carnegie: Decidedly. I agree with him fully.

Mr. Underwood: He also said that the cost of building a pig iron or steel plant in England was more than double at least that of producing the same plant in this country. I believe he said it cost a third in England as compared with the cost of the building of a modern furnace or steel plant in this country.

Mr. Carnegie: You mean that the cost of the furnace abroad was one-third of the cost of it here?

Mr. Underwood: Yes; that is what he said. What is your information in reference to that?

Mr. Carnegie: I have none, but I think when you speak of furnaces you are getting into another trouble about costs. You can buy a horse for $100, and another you cannot buy for $1000. You can build a furnace for one or two hundred thousand dollars, and it would be a much dearer furnace than the one you paid half a million dollars for.

Mr. Underwood: I understand; but I want to know whether under the conditions our steel plants require more capital and investment to produce the same tonnage than they do in an English furnace.

Mr. Carnegie: I should say that was highly probable; yes.

Mr. Underwood: Can you give us the difference?

Mr. Carnegie: No, sir; I cannot. Our furnaces in America, every year or two we build them bigger and bigger and make a cheaper product in consequence.

Mr. Underwood: That accounts for the additional cost?

Mr. Carnegie: Largely.

Mr. Dalzell: Mr. Cockran asked you something about our future supply of iron ore. I do not recall what your answer was.

Mr. Carnegie: My answer is that any man who can see into the future I should like to get him to tell me.

Mr. Dalzell: You are not anticipating any early exhaustion of our ore supply? I think you said before the Conservation Congress that 70 years from now we would have no ores.

Mr. Carnegie: Oh, I beg your pardon; I said first-class ores. That is a very different proposition. I said that if our rate of increase continued as it has been, which is at the extraordinary speed of doubling every 10 years.

Mr. Fordney: Mr. Carnegie, this committee is called upon to get information, the most reliable possible or obtainable, and to prepare a tariff bill to present to Congress, and the committee is aiming to obtain the very best possible information not only on steel and iron, but each and every article in every paragraph in the bill. I do not believe there is a man on the committee to-day who is interested in the production and manufacture of steel. Therefore we must rely upon the information obtained here from witnesses. The committee called Mr. Schwab. He came here and readily gave information. I am frank to say that I have never met a man who had such a world of information as Mr. Schwab.

Mr. Carnegie: He is a genius.

Mr. Fordney: I do not think I have ever met a man more thoroughly posted in the business in which he is engaged and who could give such a detailed statement of the cost from the raw ore in the ground to the finished steel as Mr. Schwab. We took his testimony and are weighing it for what it is worth. Mr. Gary came here and gave testimony. I believe him to be a thoroughly honest man in the statement which he made. He gave his testimony to the best of his knowledge. You have referred to him as a very competent and a very well posted man.

Mr. Carnegie: Judge Gary had no intention of misrepresenting the conditions. But I think it was the cleverest dodge I have heard of in pushing his weak brethren forward to invoke your sympathy for them and not on his account, not for the world, to forbear abolishing the duties on steel. He can stand it, but his poor brethren, for their sake, forbear. I have stated my honest opinion. Judge Gary makes the mistake of his life if he thinks that he can compete with his poor brothers without ruining his own company. The difference cannot be more and I put it at the extreme—I do not believe that he can have $2 a ton profit on the few miles of railroad transportation and beyond that he has nothing.

Mr. Fordney: After hearing Mr. Schwab and Judge Gary and after hearing the other men in the steel industry and now hearing you, and believing that each and every citizen, including you, testifying aims to tell the whole truth and nothing but the truth, if this committee should form an opinion different from the one they would form if they heard your testimony only, would you criticise it?

Mr. Carnegie: Not the slightest; but you must remember that if you form an opinion different from what I have given you, that Judge Gary and myself are together, that Judge Gary expresses an opinion, but when he comes and you ask the question "Can you do without a tariff?" he tells you "Yes," and the President-elect says that tariffs no doubt enable a combination to exact excessive profits and therefore we should have as little of them as needed. Therefore, as a good Republican, on the Republican platform, I hold it to be your duty to accept Judge Gary's statement.

Mr. Fordney: Do you think it only possible to form a combination on account of the tariff?

Mr. Carnegie: Why, certainly. On account of the tariff, yes, and raise the price of everything up to the point where the cost to the producer and the freights coming here plus the tariff, $7, enables them to raise the price. I think the President-elect is entirely right about that.

Mr. Hill: Is there not a steel rail combination existing to-day in Great Britain, the United States and Germany, fixing the price, where there is no tariff? I have asked that question of every man who has been on the stand and I would like to ask you.

Mr. Carnegie: I must say to you that I am not conversant with international arrangements. I heard it stated by a witness who was before you, Mr. Miles, but the proper party to ask that question of is the party that you think is in the combination. He could tell you.

Mr. Hill: I have asked that question, but get no satisfaction. I will repeat this question: The official report of our Consul in Great Britain says that the three greatest trusts or combinations in the iron trade to-day are the United States Steel Corporation, the German Steel Syndicate and the International Rail Syndicate, which has its headquarters in London, controlling an output of some 4,000,000 tons of rails annually in the United States, Germany and the United Kingdom. That was in 1905, if I am not mistaken. Do you know anything about such a combination controlling 4,000,000 tons or any other amount of steel rails in the United States, Germany and Great Britain, and fixing the price?

Mr. Carnegie: Mr. Hill, that is a question that you should ask of parties interested in it, if there be such a combination.

Mr. Hill: I was not here when Mr. Gary testified. I have asked that question of everybody else, and my recollections is that they all stated that they did not know of such a combination as our Consul reports. Now, I am asking you if you know.

Mr. Carnegie: I do not know. I have heard it stated. You have the evidence of Mr. Miles that there is an international organization, but I think it highly probable. I do not think, Mr. Chairman, that that is a proper question to ask me. Is it? I am not in it.

The Chairman: If you do not know, of course, you can say so; but if you do know, you can give the information.

Mr. Carnegie: Well, I would not be telling the whole truth if I said I did not believe there was such a thing.

Mr. Hill: Whether it exists or whether it does not exist, if it exists would changing the tariff here have any effect on the price of steel rails to the consumer, if the price was fixed in London?

Mr. Carnegie: If that price was fixed in London and it was made permanent and the companies were bound by enormous penalties if they broke it, I would consider, as long as that existed, that it would of course prevent competition here.

Mr. Hill: I would like to supplement that question in

regard to steel rails with the same question that I have asked of everybody except Mr. Gary, and I was not present when he was on the stand. Do you know of any combination that exists by which the price of tin plate is fixed internationally.

Mr. Carnegie: I do not.

Mr. Hill: Do you know of any combination by which the price of wire nails is fixed internationally.

Mr. Carnegie: I do not.

Mr. Hill: You do not answer with as much positiveness in regard to steel rails?

Mr. Carnegie: Because I have heard so much. I read Mr. Miles' testimony. Has Mr. Miles' statement been contradicted?

Mr. Fordney: He contradicted himself all the time.

Mr. Dalzell: It was not necessary to do that.

Mr. Carnegie: Please remember that I do not pose as an authority, that I speak absolutely without knowledge of any combination of that kind, and yet I would not tell you the whole truth if I do not say that I have heard it spoken of.

Mr. Hill: Then I will shape the question in this form: If the official statement of our Consul is correct and 4,000,000 tons of rails are controlled in the United States, Germany and the United Kingdom, by an international agreement, would any change in the tariff affect the price here?

Mr. Carnegie: As long as they continued such an agreement as you specify, why, tariff or no tariff has no bearing upon it. But why do you ask me a question so obvious as that?

Mr. Hill: Because it does control evidently in Great Britain, where there is no tariff, just the same as it controls here, where there is a tariff of $7.80 a ton.

Mr. Carnegie: Great Britain is the great exporting country of steel. It does not consume the steel that it makes. It has relations all over the world.

Mr. Hill: Let me supplement that by this: You retired in 1901 from the steel business. The price of steel rails then was $28 a ton, as it is now. Was there any international agreement then, when you were in business?

Mr. Carnegie: Not that I remember of. Oh, I never heard of such a thing.

Mr. Calderhead: If this tariff was removed, would it not be easier to form an international agreement or combination to maintain prices?

Mr. Carnegie: I do not think it affects the formation one iota. The American producer would get more favorable terms if he had a tariff than he would get if he had none, but the formation of a trust, Mr. Chairman, I do not know of anything that can prevent it, if it be lawful.

Mr. Fordney: If I understand you correctly, you stated that you had read or heard Mr. Miles' statment here and you gave some credence to what he said?

Mr. Carnegie: I did. It is not likely that he would invent it.

Mr. Fordney: I do not believe that I ever heard a man deal more in theory and hearsay, lest it be one man, in my life.

Mr. Cockran: He stated some facts very clearly. He wanted his own articles on the free list.

Mr. Fordney: You can question the witness as you choose, but I think I am right in my premises. Mr. Carnegie, if we are entitled to give credence and to believe what we hear from people who appear before this committee, hearing so many men on this subject, we are entitled to give credence then to the statements made by Mr. Schwab and Mr. Gary, who are thoroughly posted in the business that they are engaged in, are they not? Let me supplement that a little further. When Mr. Hill asked you a question about a combination you stated: "You must ask a man who is engaged in it. I do not know anything about it. I am not in it," and you suggested that he ask a man in the business to get reliable information. If that is true in the case Mr. Hill asked you about, is it not also true in getting information from Mr. Schwab and Mr. Gary and you?

Mr. Carnegie: No, sir; it is not true. You can get honest men to take different views of questions. Now, one man will tell you that it will be very serious for the steel business if you reduce the tariff, and Judge Gary will tell you that it will not be. They deal so much with opinions that neither of them knows exactly what the future will be; and so with the cost, one concern will estimate cost in one way and some in another. The steel business is a business by itself, and the cost to one man means a very different thing from the cost to another.

Mr. Fordney: If we cannot get reliable information, as we are now aiming to get, how can we get it? Can you tell us?

Mr. Carnegie: You ought to cease trying to get it. You have gone wrong in trying to get it. When a gentleman of Judge Gary's character comes to you and tells you that he does not need a tariff, you ought to believe him.

Mr. Longworth: The Republican platform, which you have spoken of with admiration on this subject, says that we must revise the tariff on the basis of the difference between the cost abroad and the cost at home. If there is no way of ascertaining that cost approximately, is not that a rather bare statement in the platform?

Mr. Carnegie: Yes, sir; and it requires a man practiced in the art, interested in neither, to estimate the cost upon the same systems. And, as I have stated, from the best judgment I can form, if a commission were appointed and spent a month in the mill that now holds the record for the cheapest steel made in the world, and that is ours, the Carnegie Steel Company, and a month in the foremost works of England and Germany, you would find that the difference in cost, mind you, estimated in the same form, every company credited only with the outlay it required, including transportation of the ore, mines and everything there is, and the same to the foreign manufacturer, you will find that the foreign manufacturer's cost of steel at his works exceeds slightly—I should say, will be the same. You cannot do this, for during the month one mill might be running finely and at the other mill there may be some trouble, and *vice versa.* The foreign mill is equal to the best mill in this country and that leaves a natural tariff between the two, the transportation here and the many disadvantages under which a foreign manufacturer labors in selling a foreign product to a patriotic American. Therefore I have stated to Mr. Cockran, perhaps to his great disappointment, that my judgment is that we could start with free trade to-morrow and it would not seriously affect the price, but it would give the combination here the power to raise the price to the consumer to the amount of the duty imposed.

Mr. Bonynge: If we put steel products on the free list, the present price to the consumer would practically be maintained, in your judgment?

Mr. Carnegie: No. I think that the tendency of combination is to raise prices and to exact from the consumer what they safely can.

Mr. Bonynge: But as to steel rails, I understood you to say, in answer to Mr. Cockran, that you believed the price of $28 would be maintained if steel rails were put on the free list; that the price would be maintained?

Mr. Carnegie: Excuse me, I did not say that the price would be maintained, but I do say that the present arrangement is a fair one, in my judgment, between the consumer and the producer. Let me show you the difference. If there is no tariff, the combination comes together and fixes a price, and it will fix a price lower than if there is a tariff. I think you will agree with me that the tendency of human nature is to get a good profit.

Mr. Bonynge: Certainly.

Mr. Carnegie: And that the tariff would enable them to raise the price to the extent of the duty.

Mr. Bonynge: But you do not think that the price of steel rails has been raised above what it should be at the present time, $28 a ton?

Mr. Carnegie: I say I think that the railways are not paying too much for steel rails, and I think that the steel rail mills are making a fair profit.

Mr. Bonynge: How about other steel products besides steel rails, what about the other present prices, are they above what they should be, structural steel and other steel, do you know?

Mr. Carnegie: I do not. I have not a word to say about the price of anything. That is not my province. I came to give you my views of what the effect would be by taking off the duty.

Mr. Fordney: When Judge Gary stated, as you put it, that they could get along without protection on steel, we could believe him?

Mr. Carnegie: Yes, sir.

Mr. Fordney: Judge Gary in making up his figures of cost showed a profit on steel rails, Bessemer and open hearth rails, the difference in cost—that is to say, the difference in price—showed a profit to his company of $4.69 a ton; would you have us believe him?

Mr. Carnegie: No, but I would have asked him to explain that statement.

Mr. Fordney: He did in the most detailed manner.

Mr. Carnegie: Very well.

Mr. Fordney: Do you regard one statement as inconsistent with the other?

Mr. Carnegie: I do. I thought he was interested and I thought he gave, so to speak, an opinion.

Mr. Fordney: Judge Gary was under oath. I have no good reason to doubt the truthfulness or correctness of his statement, and I do not believe that he would testify falsely under oath. I want to believe every man under oath, at least, until I find out to the contrary.

Mr. Carnegie: Judge Gary was honest, I say.

Mr. Fordney: I believe he was honest in both statements. Now, if he was correct in both statements, then what have you to say?

Mr. Carnegie: I simply say that I cannot understand how, with a profit of $4.69 on rails, he could stand it if the tariff was reduced from $7.84.

Mr. Fordney: He did not say that he could do that. He said that his company could survive by reducing the cost of the product, and to do that, labor being the largest item that enters into the cost of the product, it would be com

pelled to reduce labor and all other costs all along the line. That is what Judge Gary said.

Mr. Carnegie: Yes, sir.

Mr. Fordney: And that is what Mr. Schwab said.

Mr. Carnegie: Now, that is a matter of judgment.

Mr. Fordney: He is in the business and knows what it costs to-day to produce it, and he stated that not for the past 10 years had there been a single year that the cost of their labor did not increase each year over the last year, and that this increase in the cost of labor amounted to an increased cost of production from the time that the ore was taken from the ground until it was put into the finished product, and that that accounted for his difference in cost.

Mr. Carnegie: I think I heard this morning that Mr. Schwab had referred to a decrease in labor.

Mr. Hill: Yes, 35 cents a ton.

Mr. Cockran: The labor cost, not the rate of wages.

Mr. Carnegie: That could have nothing to do with it.

Mr. Fordney: Mr. Schwab did say that the amount paid for labor had increased each year, one over the other, for the past 10 years.

Mr. Cockran: And yet that his total cost of labor had decreased.

Mr. Fordney: On account of efficiency.

Mr. Hill: In one item.

Mr. Carnegie: There is no reconciling the statements.

Mr. Fordney: Without any intention to embarrass or to criticise you, but to get an honest, candid opinion from one who is most deeply interested, one of the most important questions for this committee in rearranging this tariff law is to leave a sufficient revenue to this Government. To-day our revenues are not sufficient to meet the expenditures of the Government. If by a reduction of duty we reduce the revenues to the Government, and it will unless imports are increased, and that is very undesirable from a Republican point of view, would you recommend an income tax to make up that deficit?

Mr. Carnegie: I believe with Mr. Gladstone, who had more experience with income taxes than any man of his day, that an income tax makes a nation of liars. That is what he said, that of all the demoralizing taxes that a nation can place upon the people the income tax is the most demoralizing.

Mr. Fordney: You and I, who are at the age when we look to something else besides to make the almighty dollar, would not lie?

Mr. Carnegie: It is not a question of lying.

The Chairman: You agree with Mr. Gladstone on that?

Mr. Carnegie: Yes, sir.

The Chairman: So do I.

Mr. Cockran: I agree with you, I believe.

Mr. Dalzell: You are getting on common ground.

Mr. Carnegie: I would like to interrupt there. When President Roosevelt wrote his article in favor of progressive taxation you may remember that I sent him my "Gospel of Wealth," written 17 years before. His reply was, "I am struck with the fact that 17 years ago you had it all." Now, I believe the distribution of wealth is unfair. I believe that we should legislate to make a fairer distribution, and I stated in that article that I was in favor of progressive taxation at the death of a man. I would not disturb the honey bee making honey during its life. I do not think anybody else could make fortunes so well as the men engaged in that business, but wealth is largely the product of the community. I instanced five brothers in that article. One starts at Pittsburgh and one in New York, but otherwise they got farms of equal value; one happened to be in the center of business and the other several miles away. One became a millionaire. He did nothing to produce that wealth. It was the community settling there that made that wealth. I shall be glad to send each member of the committee a copy of that article. You need not read it, but just have your secretary thank me.

Mr. Fordney: I thank you for that. What was the duty on steel rails when you began the production of steel rails in the United States, do you remember?

Mr. Carnegie: I cannot tell you that from memory. I never paid much attention to the duty on steel rails. Why, that is not very much of an advantage to the manufacturer when there is competition; but if you permit combination, remember, gentlemen, that is the great question before this country to-day, that is the most serious.

Mr. Fordney: But there was no way by law to prevent you from selling your plant to the combination, was there?

Mr. Carnegie: None at all.

Mr. Fordney: There is no fault to find with any man selling his plant to a combination or corporation engaged in the same business that produces more?

Mr. Carnegie: Certainly not. What did I ever say that would make you infer that?

Mr. Fordney: You sold your property to a combination.

Mr. Carnegie: Certainly.

Mr. Fordney: You helped to make that combination. I do not criticise you for it.

Mr. Carnegie: Excuse me, there was no combination [illegible] when I sold.

Mr. Fordney: The United States Steel Corporation is a very great concern and it is a combination of many?

Mr. Carnegie: I sold to J. P. Morgan & Co.

Mr. Fordney: I am not criticising that.

Mr. Carnegie: I am quite willing to be criticised for that, but that is not the point. If any branch of manufacture is in the hands of a monopoly it stands to reason that they will get more profit than if there is healthy competition.

Mr. Fordney: Mr. Carnegie, from information given here by the men engaged in the production of steel, it is evident to me—I do not know about the other members of the committee—that the only way that the present manufacturers of all kinds of steel can meet foreign competition is to reduce the cost, and in doing that labor must certainly stand a very great share in that reduction. That I believe would be disastrous to the American people or undesirable, and therefore I do not believe that we can remove all the duties on those articles and do justice to American labor. What do you think about that? That is my opinion.

Mr. Carnegie: I say that you are entitled to hold it. This is a free country, and I think for a man with the knowledge you have of the manufacturing business that opinion does not do you great discredit.

Mr. Fordney: In my line of production, I think I know just as much about my business as you know about the production of steel, which you have been engaged in your whole life. Therefore, as to the amount of knowledge I have, are you competent to judge what I know about the production in which I am engaged?

Mr. Carnegie: I thought it was steel.

Mr. Fordney: No, you were criticising me as a manufacturer.

Mr. Carnegie: I thought you were asking me about steel.

Mr. Fordney: I was, but you did not answer me in reference to steel alone.

Mr. Carnegie: I meant steel.

Mr. Fordney: That is different.

Mr. Carnegie: I bow to you as an authority on manufacture in any branch in which you are engaged, I am sure. I have not attempted to give my views about any manufacture but that of steel, and I do this at the summons of this committee, which I consider it my duty as a citizen. I do not volunteer it.

Mr. Fordney: I do not discredit you. I admire you for the fortune you have made by your brains and your efforts in this country. Your efforts have caused a reduction in the price of steel rails right in my time from $100 down to the present price of $28, and when Mr. Gary and the statistics show that American steel to-day is selling cheaper at the mills than English steel is being sold at its place of production, there is no danger of competition between English and American rails in the United States.

Mr. Carnegie: Then what is the necessity for a tariff? There is none.

Mr. Fordney: Where do you get your cost of production? You have not given any.

Mr. Carnegie: You have information enough. You should cease your labor. You should accept Judge Gary's statement and the statement you have given—I do not know who gave it—but assuming that the statement is true, then, of course, there can be no competition. That is what I have been trying to tell you gentlemen. When Mr. Cockran asked me if I thought the abolition of the tariff duty would lessen the cost of steel, I said my opinion—remember, my opinion—was, judging from all I know, that it would not.

Mr. Fordney: If that statement is true, that the price of steel rails is higher to-day in England than the price of steel rails at the American steel mills, the tariff has absolutely nothing to do with fixing the price in this country, has it?

Mr. Carnegie: That is what I am trying to tell you gentlemen, that the tariff has little bearing.

Mr. Fordney: It does not in any way enable the manufacturer in this country to put the price up and get more than he otherwise could?

Mr. Carnegie: There you are wrong. Assuming that they are selling at $22 in Great Britain——

Mr. Fordney (interrupting): They are selling higher there than here.

Mr. Carnegie: That is true. If they are selling higher there than they are here, and you add the cost to the foreign producer of bringing his rails here and selling them here in the interior, as he would most of them, then the parties here can raise the price still higher than $28 a ton, can they not?

Mr. Fordney: They can, but they are not. That is the point, they are not.

Mr. Carnegie: But, my dear friend, if you are legislating for a country you are not going to legislate to leave a party the power at any moment to raise it, are you?

Mr. Fordney: That is not the question.

Mr. Carnegie: But that is the question I would like to ask you.

Mr. Fordney: I am not the witness.

Mr. Carnegie: Oh, I wish I were the cross examiner.

Mr. Fordney: I will go on the witness stand as to the business in which I am engaged and let you cross examine me or any other man.

The point is this. You have stated that the duty on an article helps to form a combine and put up the price.

Mr. Carnegie: I said that it gave the combiners the power to do so.

Mr. Fordney: They are not exercising that power in the steel business.

Mr. Carnegie: In the steel rail business—I told you that that had been taken out of competition and stands in a class by itself, by an arrangement with all the consumers of steel rails, the railways and themselves, and it is mutually satisfactory. Now, I would be a very impracticable man if I did not realize that that was a just and a fair and a salutary arrangement, but as the President-elect tells you, a tariff places in the combination the power to raise the rates higher than they could raise them if there were no tariff, then I consider it would be your duty to guard against that power.

Mr. Fordney: If the tariff would permit the manufacturer in this country to raise the price on an article above what it is selling for in competition with the same article made abroad, is it not a good law if it protects labor and funishes it a greater income for the labor given?

Mr. Carnegie: I do not think I quite understood that question.

Mr. Fordney: I will repeat it. If the tariff will permit the manufacturer to put an advanced price on his manufactured product——

Mr. Carnegie (interrupting): Here at home?

Mr. Fordney: Yes, sir; here at home, so as to compete with the foreign imported article and by so doing benefits the labor that produces it, is not that a good law?

Mr. Carnegie: No, decidedly no. Allow me to explain that. The only justification for a government raising the price to the consumer of any article, because that is what a tariff does—if a tariff did not raise the price it would be of no use—that is only justifiable when you can induce a body of capitalists to risk capital in the experiment of introducing the new industry to the country, which is in its nature temporary. If the experiment be successful, as it has been in steel, which in my opinion vindicates the protective policy which we have pursued, but permanent protection, I think, is an injustice to the consumer; and if after 40 years of trial the American steel industry, contrary to Judge Gary's opinion, does not need a tariff, then I think we should lessen it. The President-elect tells us that there is no doubt that the tariff puts into the hands of a combination the power to raise the price higher than if that tariff against foreign competition did not exist. In my opinion—and here I think I differ from you—I agree with the President-elect.

Mr. Fordney: Then you believe that protection should be granted to every industry that needs it in order to compete with foreign competition?

Mr. Carnegie: I do not.

Mr. Fordney: You had it when you first went into the business and you could not have engaged in the production of steel rails without protection?

Mr. Carnegie: It is true, and I did not start to make steel rails until I saw that both parties in this country—that is to say, a large proportion of the Democrats—supported that policy. I would never have gone into the manufacture if the tariff was to be the football of the parties, but when I saw that the American people were resolved to make their own steel—the war had demonstrated the necessity for that—we sent an agent abroad to buy all the steel he could find in Great Britain when the war broke out. The man was Philip S. Justice. There were the Baldwin Locotive Works and others, and we needed all the steel we could get because we were not making steel, and the nation resolved that thereafter it would not be without that invaluable article. Why, so hazardous was the entrance into steel in those days that not one of my partners in iron would touch it, and I went in alone, and I went to the dry goods merchants and bankers and got the money. All my life I have been a protectionist, as the President-elect says he is, but after we do not need protection in an industry, what gross injustice is put upon the consumer! If taken off to-morrow the steel business would not be seriously affected; to my mind, it is the combination which permits it to be completed Now, I am not appearing here against this movement; it is one to which I keep an open mind. It seems inevitable that we are to give a trial to abolish competition and to depend upon governments to fix the prices, because that is inevitable—the most momentous departure that the world has ever seen. I am a protectionist if I can introduce a new industry into this country. Mark this. I prefer to maintain a cheaper supply than we could get, a more regular supply than we could get from abroad, and if after 40 years' experience we cannot develop steel to that condition—fortunately you have the highest testimony in the world that it is in that position—but if we had failed, our protective policy in that instance would be a great failure instead of a triumphant success, which it has become, and the vindication of the protective policy is in the fact that we can agree with Judge Gary and say, "Take back your protection, you paternal government that first nursed this industry." We are now men and we can beat the world in the manufacture of steel, and we shall make half of all the world's product in three years from now. What is the use of continuing a protection when the leading man in the steel business, representing 45 per cent. of the total production of steel—and 45 per cent. is greater than any nation in the world makes, even greater than Germany—and therefore I say that its total abolition will leave the steel business of America in a better position for the country's sake than if you coddle it by protection and insist that they "Let well enough alone." You want a vigorous progressive steel industry.

Mr. Fordney: You had protection when you went into the business and had it all your life?

Mr. Carnegie: I never appeared before a committee without urging a reduction in the tariff on iron and steel. When the McKinley bill was under consideration I labored long with President McKinley. He was a protectionist after my own heart. The McKinley bill reduced the duty on iron and steel 35 per cent., partly upon my advice, and I am consistent now in believing that now the removal of the present duties would not affect injuriously any person engaged in the manufacture of steel.

Mr. Fordney: Yet when you engaged in the business you did not engage until you became satisfied that both the Republican and Democratic parties were for protection?

Mr. Carnegie: That is the reason I am a protectionist for any new industry that needs it. Show me anything that needs protection to introduce it into this country and I will go the farthest in claiming it, but in the leading industry of steel I think it no longer needs it.

Mr. Longworth: Whether it needs it or not, it is the difference in cost abroad and home?

Mr. Carnegie: Yes, sir.

Mr. Longworth: And your proposition, now reduced to its last analysis, so to speak, is the difference between the cost of producing steel abroad and at home?

Mr. Carnegie: I believe to-day that the cost at the mill which has the record of the lowest cost compared with the best mills abroad in England and Germany would not show much difference. The difference of transportation for 3000 miles on sea and the difference in inland transportation here render any serious competition with the steel industry of this country, in my opinion, impossible.

At this juncture the committee took a recess of 1 hour for luncheon. When the session was resumed again at two o'clock, Mr. Carnegie continued his testimony and under the cross examination of various members of the committee retraced much of the ground gone over during the morning. Some new and interesting points were developed, however, although the efforts of the committee to secure information along certain lines proved futile. Chairman Payne examined Mr. Carnegie at some length regarding his holdings of the bonds of the United States Steel Corporation and the security behind them as follows:

The Chairman: Are your bonds a lien on this ore property of the United States Steel Corporation?

Mr. Carnegie: Everything they purchase.

The Chairman: I do not wonder that even if their business were wiped out your bonds would be amply good.

Mr. Carnegie: But I might have to go, in case of default, and prove them to be good, and that would be very objectionable.

The Chairman: I do not know; you could put Schwab in charge, and I think you would get out of it.

Mr. Carnegie: The trouble is, when I put Schwab in charge, that I would like to be pretty close to him all the time.

The Chairman: If the ores of the world are to play out as soon as some people imagine, the ore bed, even without any mill or any prospects of running one for a long time, would be pretty good security for an ordinary business man for even the amount of your bonds which you hold.

Mr. Carnegie: I do not like things that are only a pretty good security.

The Chairman: Evidently you do not; I agree with you on that, if you think that these ore beds would not be security enough for your bonds.

Mr. Carnegie: Now, Judge Gary there again uses his judgment, that it would be necessary to do so and so. I cannot say anything about that except that my judgment is that it would not be necessary to do any such thing.

The Chairman: I started in at that point to ask Mr. Gary what it cost to produce steel rails abroad, or suggested to a member of the committee who was interrogating him at that time to ask him, but I do not find that that was done, so that we are without his estimate of the cost of steel ex-

cept in one instance. He said that the cost of pig iron in the Lorraine District in Germany was $7.50 a ton and the cost of converting it, I think, about $7 a ton—$6 or $7—so that they could produce steel rails there at $14 or $15, somewhere near that rate, in that district. He said that was lower than the price generally in Germany. He also stated that as a factor in the competition between Germany and this country the German Government, owning the railroads, in order to give a bounty to the steel business or to any other export business, for that matter, were accustomed to make a rebate in the freights, and while they carry goods to the seashore for export to cut the freights.

Mr. Carnegie: Mr. Chairman, if the German maker can make a ton of steel rails at $15 and can send them here at a cost of $6, why does he not send them here and get $28?

The Chairman: That would be $21 and $7.80, which would make it $28.80. Simply because he could not get his money back.

Mr. Carnegie: That is the answer.

The Chairman: In that case, if he was exporting them at $22 a ton and can find a market at that rate for the surplus which he wishes to dump on the markets of the world, that would be another good answer why he should not send them here, if that is the export price of Germany, $22 a ton. I am not saying this to indicate how I would stand on this question; I am only trying to get at the facts.

Mr. Carnegie: Yes, but you are pursuing the wrong policy. You are on the wrong track altogether.

The Chairman: I may be. My only endeavor is to find out the truth, to get it from you. I hope you will not discourage me in saying that I am on the wrong track in that.

Mr. Carnegie: Listen to me a minute. Does any foreign country send rails here?

The Chairman: Not to any extent, I think. There is a small importation, I think, every year, a very small importation; nothing to count at all. It is prohibitive now, so to speak.

Mr. Carnegie: Very well.

The Chairman: That satisfies you on that, does it not?

Mr. Carnegie: Certainly. The very year you speak of there we shipped abroad 345,000 tons to different countries, and we met German competition and English competition.

The Chairman: But the German competition got away with more of the market than our people did.

Mr. Carnegie: Because our people had a good home market. We consumed 22,500,000 tons of steel in our country, leaving about 500,000 tons to be exported.

The Chairman: And if Mr. Felton is right, they had to sell it at less than the cost in order to get it there. Mr. Felton is a high toned man, is he not?

Mr. Carnegie: I think he must be very high toned; yes.

The Chairman: You are speaking of it in a joking way.

Mr. Cockran: He is emphasizing the adjective.

The Chairman: Mr. Felton made a very good appearance before the committee. I never had the honor of his acquaintance before that.

Mr. Carnegie: Mr. Chairman, the Pennsylvania Steel Company was in business making steel before the Carnegie Steel Company started. It shows the grossest mismanagement.

Recurring to Mr. Schwab's statement concerning the increase in the cost of various items in the manufacture of steel, Chairman Payne examined the witness as follows:

The Chairman: Mr. Schwab makes a very interesting statement about the labor. In effect, he says that he never knew labor so cheap as it was in 1899, the year in which he wrote that letter to Mr. Frick; that the common laborer earned from $1 to $1.50 a day; that the laborer was very efficient, men were begging for jobs. He said that his own salary was lower that year than it had been in the years before, and that one man working in the big iron foundry would do as much that year in a day as two men to-day at a higher price per day for the labor. That is what he said about the labor. And he made out a large increase—$1.30 a ton—for labor. Do you remember about labor in 1899?

Mr. Carnegie: No; I have no recollection of the details. How could I?

The Chairman: Mr. Schwab seemed to have a very definite recollection on that subject.

Mr. Carnegie: He did not have a recollection; he went back and got his data somewhere.

The Chairman: The fact that his salary was so low that year might have impressed it on his mind.

Mr. Carnegie: I do not remember of ever reducing the salaries, but it is possible. I cannot remember of a case.

The Chairman: Putting all those items together he made the cost of producing pig iron $14, including the materials, at present, against $7 and $8 in 1899. Then he said that in converting a ton of steel rails the necessary quantity of pig iron cost $7.50, and that it cost his company $21.50 to make a ton of steel rails. That was his statement as to the items, and what I was struck with about it was this, that it came pretty near bearing out the statement that these seven companies had made to the Bureau of Corporations, that they made the average price during the five years from 1902 to 1906, both inclusive, $22.30 a ton, or 80 cents more than Mr. Schwab. Schwab has a good mill, I suppose; he has an up to date plant, has he not?

Mr. Carnegie: He is the man whom the Congress of the United States should thank, as I told you this morning, for the improved appliances that he has introduced.

The Chairman: You brought him up, did you not, in the business?

Mr. Carnegie: I did.

The Chairman: There is no excuse for his not having an up to date plant?

Mr. Carnegie: There is this excuse for him, that I have not been with him for seven years.

The Chairman: And still you would advise him if an opportunity offered?

Mr. Carnegie: You have got into a maze of figures, and you will never arrive at results in that way. You have got a statement from Mr. Gary that he could do without a tariff. Now, you are in the position of the Irishman who was arrested for stealing a pig and he was sentenced on the testimony of one man. He told the judge, when he was asked why sentence should not be passed, that he thought it was an injustice to a citizen to convict him on the testimony of one man, who said he saw him steal the pig, when he could bring 100 men to prove that they had never seen any such thing.

The Chairman: That is all very well, but if we sought to make that an excuse the judges might ask us, they being the people, if we did not have not only the testimony of Mr. Gary, but the testimony of Mr. Schwab, and that after that we had the benefit of the article of Andrew Carnegie in the magazine, in which he stated with a good deal of emphasis that the duty might all be taken off; although, when we called him before us and asked him to give us the facts and figures, he answered us with a story about an Irishman; or, in other words, indicating that he was one of the men who did not know.

Mr. Carnegie: No, Mr. Chairman; I am sorry that you say you did not hear me this morning. I stated that Judge Gary said that the tariff was not important for him long before I made that statement, and that others made the same statement, and that his solicitude for the weaker brethren was sublime, but it was quite unnecessary; that these weaker brethren will not find their business injured by the tariff being taken off. You cannot arrive at a correct judgment until you know what the prices of production are abroad, as far as the tariff is concerned, because you have combinations among these people at home, and they are working together. Now, the statement of the consul there was very important on the cost abroad, but if you are not willing to act on the fact that we have no foreign importations of steel to-day, and that we are sending steel all over the world, then until you know what the absolute costs are in Europe you cannot judge whether the cost and interest and the cost of transportation and a reasonable profit for the producer, comparing the same items here with the home producer, as the President-elect requires, I say, you cannot judge whether or not they can do without a tariff.

The Chairman: We expect to get the cost abroad furnished by Judge Gary, but we were led to expect from your article that, in order to make up your mind that these things should be put upon the free list, you had that information, both as to the cost abroad and the cost here, because we believed, as you say you believe now, that the only fair thing to do was to find out the difference in cost between two things; the fact that there is no importation would go to show that the duty was higher, but just how much too high it is impossible to say, unless you can get the cost abroad and here. We expect to get the figures from Judge Gary, whom you certify as a very honorable witness, if he is a lawyer, although he may be somewhat interested. We thought we might get it from a disinterested party in you.

Mr. Carnegie: I have a general knowledge of costs abroad.

The Chairman: Why do you not give them to us?

Mr. Carnegie: Because it would not be fair.

The Chairman: It seems to be fair enough for you to publish a magazine article and base it on them, but not fair enough to tell us.

Mr. Carnegie: That statement in my magazine article has not been refuted.

Mr. Dalzell: What statement is that?

Mr. Carnegie: That the cost of a ton of steel in Britain to-day or in Germany to-day is as dear, or a shade dearer, than the cost is here, taking the cost under similar conditions. That is the statement that I made. I did not make that without general knowledge of the business, and if it has proven untrue then my reputation for knowledge of the business would be seriously imperiled.

Mr. Dalzell: You see, Mr. Carnegie, that general statement would cover every article of iron and steel without regard. You make the general statement that the cost there is about the cost here, and that covers everything.

Mr. Carnegie: Yes. He has given the cost abroad, and we also have the cost of making tin plate at home, and that

does not bear out the position that you assign to Judge Gary. When you talk about steel, you do not talk about tin plate.

Mr. Dalzell: Ninety-nine per cent. of tin plates are steel; they are steel sheets.

Mr. Carnegie: That is quite true, but no man—no steel man—but would differentiate between steel and tin plate.

Mr. Dalzell: Well, they are steel sheets first before they are tin plates.

Mr. Carnegie: They are; they are composed of tin. If the harvester man talks of harvesters those are composed of steel, too. But I wish you to know that the expert, the steel man, talks in a language which it is impossible for you to understand.

Mr. Dalzell: I have heard a good deal of it all my life.

Mr. Carnegie: Well, John, you are a better lawyer; you, I think, were always considered by us even a more experienced lawyer than you were a steel manufacturer.

Mr. Dalzell: I should be sorry if I was not.

Mr. Carnegie: Let me put myself right there, because I am determined that you shall have from me no half truths. There are statements that can be made that do not cover the whole circle of truth, and witness is not always compelled—he may not think of the other things, and he answers you one question. Now, in regard to tin plate, tin plate has been made for 100 years in Wales, and girls have been trained to it, and it is the one article where, I think, the British people in Wales could make a ton of tin plate, probably, a shade cheaper than we make here. But if you add the cost of bringing tin plate here, I doubt whether they could import it here to any great extent.

Mr. Hill: If it was free?

Mr. Carnegie: Yes. That is my honest opinion about it; so you see, gentlemen, it will not do for you people to assume that tin plate was included in the statement of steel. I do not want to hurt any American manufacturer. I do not want to injure the steel trade of this country. As long as I thought we needed a tariff I supported it, but now I have arrived at the conclusion that we do not, as Judge Gary said. That was about tin plate and labor. There again, you see, Judge Gary is probably right about tin plate, but it did not embrace steel.

Mr. Longworth: You would not advocate the taking off of the duty on any American article without justification for it. I, personally, admitting that I know very little about the cost of steel, am inclined to think that we can substantially reduce the tariff on steel without injury to the American industry; and yet before I vote for it, if I should vote for it, I want to feel that I am justified in so doing. I do not know of any other way that I can personally feel justified, unless I know or have some opportunity of finding out something about the difference between the cost abroad and the cost at home. Is there any way that you can suggest to me—as a member of this committee, with practically every facility, the right to summon all witnesses, the facilities that this Government has, without the practical experience, and without the means of getting it, because we must act as promptly as possible—of finding out those things?

Mr. Carnegie: In reply, I know of only one way that this committee can arrive at anything approaching the real truth of the difference in cost, and that is to have men belonging to the steel industry, men familiar with it, who are not interested in either the foreign or the American works, experts of the highest character and ability, to be charged with visiting the works of Europe, selecting in each country the best works, because you will be greatly misled if you select works that are not properly managed. You can easily obtain the list of the best works, and these men should go there and study the question. They will be received by the foreign manufacturer with open arms, because they will see in this a probability of the tariff being reduced.

Mr. Longworth: Mr. Carnegie, the trouble is that it is a condition and not a theory that confronts this committee now. The Republican members of this committee are bound, as you have stated, by the Republican platform, which states that the tariff shall be revised as soon as possible. The President-elect, it is understood, proposes to call an extra session of this Congress to do that, and this committee wants to prepare a bill which can be submitted as soon as possible after the inauguration of the President-elect. It is utterly impossible for us to send experts abroad. What authority have we so far which would justify us in wiping off entirely the duty on steel, except your personal opinion—that of a man of great experience—and that of Judge Gary, who I do not think went as far as you do in that respect? Have we any other authority, Mr. Carnegie, which would justify us in removing absolutely the tariff on steel, except those two statements?

Mr. Carnegie: I do not know what other statements you have had here.

Mr. Longworth: They have not been to that effect.

Mr. Carnegie: Very well; then you have two; and I think, again, that if you cannot convict the tariff duty on the evidence of two such credible witnesses, because there are hundreds that have not told you so, that is a matter for the judgment of the committee.

The subject of the possible control of the American steel industry by an international combination, which might be effective even with iron and steel products on the free list, having been taken up, Mr. Hill interrogated Mr. Carnegie as follows:

Mr. Hill: Mr. Carnegie, let me ask you this question: Have you ever heard of an agreement made by the United States Steel Corporation with the tin-plate manufacturers of Wales that the exports of manufactured tin plate from the United States should not exceed a certain quantity, based on a counter agreement on their part that they would not take a certain amount of black plates from the United States?

Mr. Carnegie: Well, Mr. Hill, I have heard all kinds of reports.

Mr. Hill: You have heard that report?

Mr. Carnegie: I think I have. I would not be so positive. It seems to me as if it is no matter of news to me; but I am——

Mr. Hill: Now, I am reading from the New York *Tribune* in July. You were in Scotland, were you not, at that time?

Mr. Carnegie: Yes, sir.

Mr. Hill: "An agreement was reached in December last year among the tube makers of the United States, Germany, Great Britain, and other countries for a working arrangement, the purpose of which was to put an end to the serious losses resulting from international competition." Do you know anything about that agreement?

Mr. Carnegie: I do not. I never saw that statement, and that statement is news to me.

Mr. Hill: Then this statement:

LONDON, July 1.

According to the *Iron and Steel Trades Journal*, the English and Scotch steel manufacturers have decided not to join the proposed international combination, and to ally themselves with the national amalgamation that is being formed to fight the international trust. This amalgamation, the paper says, will soon be established. It will consist of the principal American, German, Russian and French steel companies, and fierce competition, both here and elsewhere, with a slump in prices, may be expected.

Do you know anything about the facts in regard to that?

Mr. Carnegie: Not the slightest.

Mr. Hill: It occurred while you were abroad.

Mr. Carnegie: I never heard of it before.

Mr. Hill: A combination to fight the "international trust?"

Mr. Carnegie: I never heard of it.

Mr. Hill: If the price of steel is to be reduced, it is not to be reduced by revising the tariff, Mr. Carnegie, according to the testimony that is before us. The increase which Mr. Schwab has shown in the cost of steel is in all of these increases of freight rates all the way through. If those are controlled by a combination of the steel manufacturers and a combination of the railroads, acting in harmony, how is the tariff going to affect it?

Mr. Carnegie: My dear friend, if we are going into authorizing combinations, the result is this: We shall have a supreme court of industry, and that court will have to fix the prices of everything if the consumer is to be protected.

Mr. Hill: But, Mr. Carnegie, if this committee is to fix the tariff, is it not its duty to find out whether the increased cost is the result of the tariff or the result of something else? I am asking you that question.

Mr. Carnegie: That is your duty; but I am unable to give you any opinion about the railroads.

Mr. Hill: But you say that the rate of $28 is a justifiable price, and that it is caused by the agreement between the railroads and the steel manufacturers, both as to freights and the price of steel.

Mr. Carnegie: No; excuse me. I have never mentioned freights.

Mr. Hill: If you did not, some of the other witnesses have.

Mr. Carnegie: Ah!. Well, gentlemen, I have enough sins of my own to answer for. I do not propose to speak here upon any subject but that question I am called to speak upon, and that is the main question, at last: Has protection done its office? Has it enabled the manufacturers of steel of America—not the inefficient, but the efficient, well managed manufacturing concerns of America—to do without further support, protection, which should never be given except temporarily; to determine the question whether we can, in our country, produce a home supply of the article temporarily protected, better, more conveniently, more steadily than it was before coming from abroad? If the manufacturers of America, after 40 years' nursing, cannot to-day do without the crutch of protection, then our policy has been a failure.

Mr. Calderhead: It is generally admitted that the wages of laborers in the steel mills, in all branches of labor that contribute to the making of steel, producing ore, making pig iron, &c., are much lower in England and Germany than in the United States. If it costs as much to produce steel in England and Germany as it does in the United States, and the wages of labor are so much less, what effect will it have

on the wages of labor in this country if steel is to be sold at the same price there and here?

Mr. Carnegie: If the steel of Britain is as dear to make in Britain as it is here, it does not follow that their labor cost is not as great as ours; because they use many more men than we do, having smaller markets and not having the continuous rolling of steel that we have. The costs being the same, there is a natural tariff which even Congress cannot surmount. The foreign manufacturer has to pay the freights of bringing his steel here.

Mr. Calderhead: Yes; I am familiar with that, and I have heard it a number of times to-day. But it is evident, if the wages are so much less in those countries than they are in this country, that the cost of steel must be in something else. You say, then, that it is in the increased price of ore, or the approaching scarcity or value of it?

Mr. Carnegie: Well, no. There is a very large element in this: That with our machinery, and making such enormous outputs, you must not take the cost of labor which they give out here. The cost of labor per man is much higher here; but if it requires two Englishmen, with their appliances and mills, and so forth (in which it would be folly for them to imitate us), to produce the amount of steel that one man can produce here, then there would not be the labor cost difference which you assume. You must not take it per man. You must give credit to the United States Steel Corporation and the works at Gary. This is what I hear from men who are chiefly interested in the problem of steel; and they are rejoicing. There is a new mill building at Gary that is much to the credit of the United States Steel Corporation. I am told that it will make 40,000 tons of rails a month, and that there will only be four men at the rolls; and if they ran them three turns, eight hours apiece, there would be only 12 men employed. Gentlemen, there is no such mill that could be built in any other part of the world, judiciously; because they have not the great market that we have for rails, that allows the mill to go for weeks and weeks on one form of rails without changing rolls. The Englishman is glad if he gets an order for 500 tons of rails of the same pattern. He has to make them, and then he has to change the rolls; and that is a day lost for his mill. Then he has to put in another, and the size is different from the rail that has to be rolled next week. His men have to have time to get accustomed to the lighter or the heavier sections; and it takes a day or two for them to get into it. In the case of this rail mill at Gary, the labor cost there will not be half what it is in England, notwithstanding the cheaper cost of labor per man.

One of the most interesting features of Mr. Carnegie's testimony related to the effect of the big combinations on the opportunities for men of small means to succeed in manufacturing enterprices. In this connection he was examined by Mr. Gaines as follows:

Mr. Gaines: In connection with what you were just saying, Mr. Carnegie, I understand that you question our ability to find out the cost here and abroad, owing to the difficulty of the subject matter, and our lack of the technical capacity to understand the information which we get; and that you advise us to make up our minds with reference to the steel schedules from two facts: First, the statement of Judge Gary, about which, however, there is some dispute; and then the other known fact, that the United States Steel Corporation exports a considerable amount of steel. In coming to a determination as to whether the steel company makes such a profit that it can be independent of foreign competition, you divide the number of tons of its output by its net profit, and that is somewhere from $13 to $15 a ton. The Steel Corporation, however, owns its own ore, and has in that profit an ore seller's profit. It owns transportation on the lakes, and in that is included a lake transportation profit. It owns railroad interests, and in that is included railroad profits. It owns coal mines and makes its own coke, and in that is included the profits of the seller of coke. What would be the effect, in your opinion, of a reduction? It also owns limestone and a number of other raw materials. I do not undertake to name them all.

Mr. Carnegie: No, no; I understand. Say "and all the materials."

Mr. Gaines: Yes. What about the maker of pig iron or steel billets or any other form at any other stage of the manufacture you choose, who does not own these primary processes of manufacture? What would be the effect on him?

Mr. Carnegie: He would make less profit per ton than the man who owned all of these, necessarily.

Mr. Gaines: Oh, yes; he makes much less profit per ton now on any one or two or three items of manufacture or processes of manufacture than the man who has a larger number of them. My question was, Would not the tariff wipe out that small competitor? Take the man who has to buy his ore and his coke, and who has no transportation profits, but must buy transportation from some one else. Have you considered the effect on him of this reduction?

Mr. Carnegie: No; I have not. I have considered the effect of the tariff upon men who run their business and make all these things; and then I do not know any small concern that makes just one item of steel, that buys everything and makes steel. I would not regard him, because I consider that he has not managed his business well, and he should not be considered a steel manufacturer at all.

Mr. Gaines: That brings us right up to the point. You have stated that in your opinion it is not the business of the Government, by the use of the tariff or by any other device, to aid the incompetent or the sluggish?

Mr. Carnegie: Yes, sir.

Mr. Gaines: I agree entirely with that; but is that intended to include all men who are not in the "aristocracy," as you might call it, of steel production? Everybody cannot have your success, Mr. Carnegie, nor that of Judge Gary, nor that of Mr. Schwab; and yet there are men of, I think, very considerable capacity, perhaps, who are not so large. How is any man to start? You were small one day in the iron production, were you not, and in the production of steel?

Mr. Carnegie: No; we started with Bessemer works and everything. When I went into steel we had everything.

Mr. Gaines: But you did not start at the top of the steel production, did you? Perhaps you did, but there are other very capable men who did not.

Mr. Carnegie: There are numerous small manufacturers who make a specialty of a thing, but such a man certainly cannot compete with the United States Steel Corporation, in making rails or structural steel or plates or any of these things. The time has gone past for that.

Mr. Gaines: I think you are right on the very question: Has the time for the small, independent man gone by? We cannot legislate, Mr. Carnegie, for the steel corporation, or ought not to; and we ought not to legislate at it, but for the general condition of the country. Now, let me ask you this question, based upon that assertion. It may be correct or not, but it is my opinion. Is there not danger, if we take the tariff entirely off of steel products, that we may be aiding the steel company still further to create a monopoly of the business by destroying its remaining competition in this country, or tending to destroy that remaining compeition?

Mr. Carnegie: Why, these small makers do not compete.

Mr. Gaines: Some of them sell billets, do they not?

Mr. Carnegie: I do not know of any concern that makes only billets.

Mr. Gaines: Are there not small makers of pig iron in the country?

Mr. Carnegie: If there are small makers of pig iron in the country they may do just as well as the large ones. If you have a furnace plant capable of turning out a few hundred tons a day of pig iron, I do not think the man that has 10 furnaces can make pig very much cheaper—pig iron by itself. And there are many small manufacturers who make specialties for which they get large prices. There will always be room for the able, enterprising man to devote himself to one specialty and make a profit on it. His specialty, probably, would not be imported. But a man who, under present conditions, wishes to go into the steel business, except on a large scale, is a man whom you need not bother yourselves about. He has not the judgment necessary; and if the Governmentt underakes to nurse failures in business——

Mr. Gaines: No; I am not talking about nursing the failures. I am talking about a condition under which there is an opportunity for other people to start in a business than those who have already achieved the most pronounced success in the business.

Mr. Carnegie: You cannot conduct a great steel business on a small scale, and make rails and plates and girders and all that; the man is destitute of judgment who would attempt it. The time has gone past when in this great country the things that are used in the hundreds of thousands, of steel, can be economically produced on a small scale.

Mr. Gaines: Then your opinion is that the time for the small manufacturer in steel has gone by, and we are to recognize the day of the large man and legislate solely with reference to him?

Mr. Carnegie: I think that that is quite true; but, mind you, there will always be specialties which can be made in small quantities by the able man—always.

Mr. Gaines: Oh, yes; a razor or a special sort of high speed steel or something like that?

Mr. Carnegie: Oh, a thousand little things.

Mr. Gaines: But in the general steel business, not the specialties, the day for the small man in the business, in your opinion, has gone by; and in making up this tariff bill we should recognize that there is no longer any hope for him?

Mr. Carnegie: That is what I believe. Do you differ with that?

Mr. Gaines: Yes, Mr. Carnegie. I am very reluctant indeed to believe that the day of opportunity for the man of fairly modest means and the man who is not even a great genius has gone by, and that he must simply operate under the shadow of the protective wing and care of the big man. That is a thing that I hate to come to.

Mr. Carnegie: My dear sir, the enterprising man under

the shadow of what you call the big man, the big establishment, has far more opportunity of rising to fortune than he ever had of conducting a small business.

Mr. Gaines: I am inclined to think so.

Mr. Carnegie: And I am sure of it.

Mr. Gaines: But, at the same time, he should have an independent chance, I think. Still, that is a mere question of giving my opinion now, when yours are of much greater interest.

Mr. Carnegie: Yes; but hold on a little, now. Let us just get your judgment on this point: You agree with me in the statement that the opportunities for clever men never were so great as since these great aggregations of capital and works have taken place. Why, imagine—take my own experiences. I had 43 partners. There is not one of them that put a dollar in the business, and they were millionaires when we sold out. There never was such a chance. The man that had half of 1 per cent. of interest with us—we promoted 42 of them, young fellows; no relatives. There was only one that was a cousin of some partner, and he got in on his merits. No; there were two, but they got in in spite of that. It was ability; and these young fellows—Schwab was one of them—I found Schwab on the Allegheny Mountains. He had a taste for music then and played a little. He was a bright boy. He wanted a situation. I sent him down to the works. He was a draftsman. He is an awfully clever fellow, Schwab is. He attracted attention, and he got an interest in the firm; and he had—I need not tell the money he had when he left. He was no small man.

Mr. Gaines: That I can readily believe.

Mr. Carnegie: Imagine what chance there would have been for Schwab when men were small manufacturers, pegging away at a hundred small establishments. That genius would never have had a chance to develop; because, besides being a great mechanic, he is the best manager of men I ever knew.

Mr. Cockran devoted nearly half an hour to an unsuccessful attempt to learn from Mr. Carnegie how much actual money was contributed by himself and partners to the first enterprise in connection with the manufacture of iron and steel upon which he embarked. Mr. Carnegie went so far as to say that he was one of five who contributed $1500 each to start the first plant with which he was connected, but he could not remember any further fiscal details. Mr. Cockran put the question many times and in many different forms, but Mr. Carnegie declared it was so long ago that he could not remember and demanded to know if Mr. Cockran himself could recall how much money he had 40 years ago, to which Mr. Cockran rejoined, amid the laughter of the audience, that he could not only remember the exact amount, but in which pocket he kept it.

At the close of Mr. Carnegie's testimony, Chairman Payne placed in the record the sixth annual report of the United States Steel Corporation for the year ended December 31, 1907, which Mr. Payne stated showed net earnings of $104,565,563 instead of $158,000,000, as stated by Mr. Carnegie in the early part of his examination. Mr. Payne pointed out that this would reduce the average profit on the 10,000,000-ton product of the steel trust from about $15 to approximately $10 a ton.

**Labor Leaders Sentenced for Contempt.**—At Washington, December 23, Justice Wright of the Supreme Court of the District of Columbia sentenced President Gompers of the American Federation of Labor to 12 months' imprisonment, Vice-President Mitchell to nine months and Secretary Morrison to six months. They were adjudged guilty of contempt of court for violating the court order in the famous boycott case brought by the Bucks Stove & Range Company of St. Louis. The court had forbidden the publication of the name of the St. Louis company in the *Federationist*, the organ of the American Federation of Labor, in the "We do not patronize" list.

A convention is called for February 9-11, 1909, at Indianapolis, Ind., of Governors, Congressmen, Mayors of cities of over 10,000 inhabitants, and representatives of boards of trade and commercial clubs to organize a movement for a permanent, nonpartisan national tariff commission. Among those who have promised to attend are mentioned Senator Albert J. Beveridge, Indiana; Senator A. B. Cummins, Iowa; Charles P. Neil, United States Commissioner of Labor, and James W. Van Cleave, president of the National Association of Manufacturers.

## PERSONAL.

George A. Paff, superintendent of the South Sharon Works of the American Steel & Wire Company at South Sharon, Pa., has resigned, effective December 31, and has accepted the position of general superintendent of the Dillon-Griswold Wire Company, Sterling, Ill.

Charles T. Main of Boston, Mass., well known through his extended practice as mill engineer and architect, has been appointed by the Council of the American Society of Mechanical Engineers as a member of the National Conservation Commission, with special reference to water powers. Mr. Main is particularly well equipped for this work. He is at present engaged in two large developments on the upper Missouri River, near Great Falls, Mont., each of which will provide for the distribution of 36,000 hp.

Phelps, Dodge & Co., Inc., New York, recently incorporated with a capital of $50,000,000, to take over the mining and other properties heretofore controlled by the firm of Phelps, Dodge & Co., have elected the following officers: James Douglas, president; Cleveland H. Dodge, Arthur Curtiss James and James McLean, vice-presidents; George Notman, secretary and treasurer. The other members of the directorate are George B. Agnew, E. Haywood Ferry, Francis L. Hine and William Church Osborn.

E. C. Haggett has been appointed superintendent of the Brooks Works of the American Locomotive Company, Dunkirk, N. Y., to succeed J. R. Marshall, who was transferred to the plant at Richmond, Va., last June; General Foreman Charles Schrader is appointed assistant superintendent and Chief Clerk John W. Holmes is appointed assistant to Manager John R. Magarvey.

J. S. Coffin has been elected vice-president of the American Brake Shoe & Foundry Company. He was formerly connected with the Galena Signal Oil Company as its vice-president.

J. A. Farrell, president of the United States Steel Products Export Company, has returned from Europe.

## OBITUARY.

ELLICOTT FISHER, chairman of the Ellicott-Fisher Company, Ltd., Philadelphia, Pa., died December 20, aged 70 years. He had been engaged for many years in the iron and steel business, particularly in connection with the horseshoe trade, and was prominently connected with the local Hardware Merchants' and Manufacturers' Association. He leaves a widow.

DR. THOMAS GRAY, vice-president of Rose Polytechnic Institute, Terre Haute, Ind., died December 19, aged 58 years. He was born in Scotland, was graduated from Glasgow University and taught electrical engineering in the Imperial College of Engineering, Tokio, Japan, from 1879 to 1881, which position he left to go with Lord Kelvin at the University of Glasgow. He was Lord Kelvin's assistant for seven years in electrical engineering work. He leaves a widow and three children.

The agency for the products of the Falls Hollow Staybolt Company, Cuyahoga Falls, Ohio, for the railroad and boiler trade in the New York territory has been accepted by Alexander S. Mitchell, 45 Broadway, and that for the railroad trade in the Chicago territory has been accepted by Willis Squire, Western Union Building, Chicago, Ill.

The great Gary plant of the Indiana Steel Company, subsidiary of the United States Steel Corporation, which has been under construction for two years, has been started. The first completed blast furnace was blown in December 21.

The bill authorizing the Government to expend $75,000,000 for armaments, passed by the Argentine Chamber of Deputies December 16, provides for the construction of two large battleships and authorizes the laying down of a third such vessel, if necessary.

# THE IRON AGE

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## Measuring the Improvement.

It is now agreed that the buoyant feeling that showed itself in many quarters early in November and the accompanying predictions of a speedy return to normal conditions in the country's industries went beyond anything warranted by the record of the intervening weeks. Yet there has been distinct improvement, and one of the best guaranties of its continuance is that it has not been marked by the effervescence that characterized much of the prophecy concerning it. It is still true, as it was several months ago, that the good things are coming back at a slow pace. The number of idle freight cars does not diminish rapidly. Railroad earnings are now compared with a time in 1908 when the shock of the panic was still distinct, and the comparisons are therefore better than those of earlier months. The demand from Europe for our surplus grain has been stronger than might have been expected in view of the trade prostration there, and the percentages of decrease in our farm product exportations are less than in other lines. While it may be said generally that the world must eat, the amount of its eating has been found to depend upon whether it has the price. This year both the price of wheat and crop conditions abroad have worked for the American farmer

Referring to four prominent tests of financial and industrial improvement, the *Evening Post* says that all show favorably, but only moderately so. It shows that while the 4 per cent. gain in pig iron output in November was called disappointing it represents 56 gain upon the January production; that the November bank earnings, increasing 7 per cent. over October and coming within 5 per cent. of the enormous total of November, 1906, are striking, even though due in part to an outburst of speculation; that the business failures last month, while comparing unfavorably with any November in the past decade, except the November of 1907, were smaller in number than for any month this year except September, and the smallest in liabilities for any month of the year; that stock trading has had no parallel in any November outside of 1905 and 1904, while the buying of bonds has had but one parallel for magnitude in the November records, showing that the investing community is by no means poor.

The significance of these comparisons in four important particulars needs no elaboration. In the metal working trades, while reports differ in detail and all expressions are tempered by conservatism, betterment is indicated by the increase in the melt of foundry iron. The machinery foundries may not yet have progressed to the same extent as some other lines, but the increased consumption of pig iron by foundries and iron rolling mills in the past two months is probably not far from 15 per cent., as compared with the early fall. That much may be inferred from the statistics of production and what is known in a general way about pig iron stocks. Of the improvement shown in the second half of the year over the first half, the pig iron figures give positive testimony. Indications now point to somewhat under 15,900,000 tons for the pig iron production of the year, or an increase of about 30 per cent. in the second half over the official total of 6,918,004 tons in the first six months.

## Peace or War in the Anthracite Region?

The second three years of the arrangement provided by the finding of the Anthracite Coal Strike Commission in 1902, under which the operators and miners in the anthracite region of Pennsylvania have worked, expires March 31, 1909. Already the miners' union has formulated the demands that will be made upon the operators previous to that date, and there is no doubt, in view of the history of their relations, that the chief of these demands will be refused. In the first place, the abolition of the Conciliation Board is apparently aimed at in the paragraph providing that "an agreement shall be negotiated between the representatives of the miners and the operators in the anthracite region, and all disputes arising under the contract shall be adjusted as provided for in said agreement." The present Conciliation Board makes it possible for any employee to be heard on any grievance, in case it cannot be settled by consultation with a mine superintendent or manager. No doubt the chief objection of the union to it is that it does not make it possible for the national officers of the miners' union to handle grievances in direct conference with a committee of operators. On the other hand, a chief objection of the anthracite operators to dealing with the United Mine Workers of America is that a majority of its members and most of its officers represent the bituminous fields, which are rivals of the anthracite mines. Some of the operators in the soft coal districts, it was alleged at the time of the great strike, had even contributed funds for its continuance.

It was to be expected that the "open shop" regime in the anthracite region, which the Strike Commission's finding established in its most famous paragraph, would be struck at again, as the union did in 1906. But the latest demand for its abolition not only calls for "the complete recognition of the United Mine Workers of America as a party to negotiate a wage contract," but it provides that the miners' union "shall be recognized in our right to provide any method we may adopt for the collection of revenues for the organization." This last requirement introduces in a veiled way the "check-off"—the system which makes the company the collector of dues for the union through a deduction from the pay of each employee. Here and there a union has an employing company so well under control that it is able to fasten on it this badge of subserviency; but the anthracite operators made it plain in 1906 that they will not be parties to such an arrangement. The legality of a deduction from wages in this way may be questioned.

Other features of the new demands are shorter hours, increased pay per hour, the payment of contract miners by weight exclusively and the shortening of the term of the agreement to one year. This last can scarcely be construed as other than an admission that peace is not conducive to the maintenance of union discipline—that

the union leaders must bring forward something to be fought for, in order to hold their members and key them up to their proper pitch. President Mitchell, in going up and down the anthracite region three years ago, rallying the forces for a strike in the following spring, said that the miners would have no peace until the *régime* established by the finding of the Anthracite Coal Strike Commission was abolished. Yet under that order of things the miners had earned higher wages and secured better working conditions than were ever known. It is now stated that besides the advance in wages decreed by the Commission, the miners, under the provision giving them an advance when coal advanced, have had an additional 5 cents a ton on all coal mined. This increment in 1907, on a production of 76,432,000 tons of anthracite coal, amounted to more than $3,820,000.

The union will encounter just as determined objection to the closed shop in 1909 as it met three years ago. Then after a six weeks' "suspension," so called, which was in reality a strike, the commission's conciliation plan was continued for another three years. It will be hard to enlist public sympathy with a strike which has for its main end the introduction of a large element of union control of the anthracite coal industry. There is a widespread feeling that the conditions at the anthracite mines of Pennsylvania, while not ideal, have had intelligent and fair minded oversight from the tribunal that has now been in existence for nearly six years. It has been well demonstrated that wage advances do not come by lessening the profits of the companies, but are made up by advances in the price the consumer pays for coal. The practical way for the public to show its sympathy with a fresh demand for higher wages is, therefore, to pay cheerfully the higher prices that are sure to follow the successful prosecution of the demand. But insistence on the closed shop will find public opinion less tolerant, according to all signs, than it was in 1902. It is one thing for the public to be inconvenienced, and even to suffer in behalf of underpaid men; but that it will so endure in behalf of union control of the right to work in the anthracite mines is greatly to be doubted.

It was shown in 1906 that the threat of a strike increased production and led to the storing of anthracite coal by millions of tons. There cannot be again such an embargo upon industry as came with the strike of 1902, nor such a stimulus to bituminous coal production through the scarcity of anthracite. So far as the iron trade is concerned, its fear of an anthracite strike has never been less than it is to-day. Even the small inroad upon pig iron production made in 1902 could not be repeated to-day. Blast furnaces ordinarily using anthracite could readily accumulate enough to last for months, and in any event the relatively small amount of coke that would be needed to make up the deficiency could be had with but little difficulty.

## The Textile Mill Machine Shop.

The textile mills are at last learning a truth long realized by machinery experts that it is a profitable investment to have a first-class machine shop to do repair work, instead of employing the makeshift, expensive methods of repair which constitute an inheritance of the industry that has been hard to dissipate. Some of the modern mills have very good shops, and in the designing of new plants mill engineers are showing a constantly growing disposition to provide adequate and appropriate quarters for this department. Machinery builders and dealers find that the more enterprising of the textile manufacturers are showing practical interest in the better grade of machines. Altogether the outlook for an increasing and profitable market from this class of customers is much more encouraging than it has been.

The manufacturers of textile machinery have always depended for an important part of their profits upon the sale of repair parts. Probably in the course of time they will follow in the footsteps of the machine tool trade and establish a policy of very low prices for duplicate parts, placing their profit on the original machine. The machine tool builders formerly followed the other practice, but found that it did not pay. But whatever transition of policy time may bring forth in the textile machinery industry, there is little sign of its beginning, and the mills must either pay well for their repair parts or manufacture them. This is one of the prime factors in the change in their machine shop methods.

The mill repair shop has always been a dismal spot, located in the basement or in some other ill-lighted location, and equipped with tools that have long ceased to be classed with modern machinery. To operate such a shop is expensive. The tendency has been to replace tools only when absolutely necessary, and then with second-hand machinery. The buyer who would accept nothing but the best of textile machinery for his mill would purchase anything in the way of a machine tool if it was cheap enough. Machinery salesmen have striven for years to educate the industry to a better shop practice, and undoubtedly their work has been to an important extent responsible for the beginning of a realization of the value of modern machinery in its incomparably better results as to quality and economy of the work performed.

A large amount of textile mill construction is planned for 1909, and the field for the machine tool dealer promises to be more profitable proportionately than ever before. If the modern mill has learned the value of studying this department of the plant, the difference to the machine tool trade should be an important one.

## The Specialized Training of Apprentices.

Among the exponents of a general revival of the apprentice system is a group constantly increasing in importance which advocates highly specialized training instead of the attempt to produce what is known as the "all round mechanic." The theory is that as this is an era of specialization in practically every line of industrial production, the mechanic should be trained within narrower limits, concentrating his education on a single branch of machine tool practice. It is argued that conditions in the machine shop have changed; that each general type of tool has been developed and its scope extended to a point where years of experience are required before a man can become a real master of it. According to this group, the specialist would replace to an important extent the nucleus of general mechanics heretofore considered so essential to shop organization. The latter workmen would still have a place, to be sure, but it would be subordinate to that of the body of men who have been trained along scientific lines as experts on individual classes of tools. In other words, the apprentices would be considered from the same standpoint as the body of the working forces of the large machine shop, the equipment of which is divided into bodies, each having its own special workmen. In employing men today, by far the larger number are considered as specialists and are hired as planer hands, lathe hands, &c., not as general mechanics. It should be recalled in this connection that this same degree of specialization has been

an important influence in the revival of the apprentice system, because, it was contended, too few general mechanics existed. But it should be also remembered that the average mechanic who knows but one machine has never served an apprenticeship, and his training has been restricted even in its relation to the tool which he operates.

Without attempting to pass upon the merits of the question, as between the specialized and general training of apprentices, there are several interesting sides to the former system. The purpose of the re-establishment of apprenticeship, as well as of the development of the industrial school, is the training of young men as mechanics, some of whom will later develop those qualities that will make them good material for foremen and later for superintendents. The more popular conception of the question is that the comprehensive training of the young man, giving him familiarity with each of the types of machine tools and the several branches of bench work, will produce the most useful workman and will best fit him to direct the labor of other men. But the advocates of specialized training do not agree to this. Their position is, briefly, as follows: Each of the important machine tools constitutes a great field in itself, not alone in its actual manipulation, but in the element of maximum production under the varying circumstances of materials to be worked and the kinds of operation to be performed. The ability to master the problems of the tool steels and of the relation of the machine to other operations on other tools comes only with the long experience under proper instruction. The changes in machine tool practice in the last decade have been simply revolutionary. The contention is that a few months each on the standard tools will produce a machinist who is a master of no machine. On the other hand, the graduate specialist, who knows all sides of the operation and application of one machine, would be a valuable man in a shop. His knowledge might very well extend to suggestion in design of the machine itself and of the jigs and fixtures used on it. Particularly useful would be the specialist on the machine built in the shop where he is employed, as, for example, the graduate lathe specialist in a plant devoted to the manufacture and development of engine lathes. He could be used in many ways, such as introducing machinery, by starting up tools in shops that have had no previous experience with them and breaking in operators, a practice adopted as a part of the sales system of some of the important machine tool builders.

As for the argument of the result of training on the future value of men as foremen or superintendents, the exponents of specialized training maintain that under their system the result would be as good as under the other. The young man who is to ascend the ladder of industrial employment absorbs much from the atmosphere of the shop during his early experience. His own work may be within the narrow environments of a single machine, but he learns a great deal concerning other machines and their practice. If he has it in him to get ahead, he will not be kept back because he has not had actual experience with all classes of tools. On the other hand, in the works where his specialty is manufactured there might be distinct advantages from his training should he be made a foreman.

The great obstacle is the difficulty of procuring the apprentice. Some of the machine tool builders would have established the specialized system long ago were it not for the fact that young men as a rule are unwilling to indenture themselves under such conditions. They do not wish to be known as lathe "hands" or planer "hands." They fail to differentiate between the specialist who has had a full, scientific training, and the mechanic, who has learned the rudiments of one machine, but whose mechanical education is limited. Some of the graduates of engineering schools are going in for just this sort of work. Probably the specialized system could be developed more rapidly by making it more attractive from a social viewpoint, which constitutes a factor which must be reckoned with if the best class of boys is to be obtained. There is no doubt of the fact that to offer to train a boy as a planer "specialist" would attract him where the word planer "hand" would repel him. If he is to be an apprentice he wishes to graduate with recognition as a journeyman, and present day nomenclature has made the mechanic who knows but one machine a "hand." Additional verbal dignity for a calling can do no harm.

An element of the specialized system which is important, though not a prime factor in ultimate results, is the greater producing power of a boy during his apprenticeship. The old theory was that an apprentice would be an expense to his employer during the first of his service, but as time went on would so increase in value as to more than make up for earlier loss and perhaps net a profit for his master before the course had ended. It is easy to see where the boy specializing on a single tool would become a high class producer before his apprenticeship had expired, even though the term should be shorter than under the general system, as it might well be in certain cases.

## To Develop a New Brunswick Iron Ore Deposit.

TORONTO, December 21, 1908.—Application has been made to the New Brunswick Government for aid to the enterprises which the Canadian Iron Corporation has in hand. This company is the one recently organized, in which the Drummond interests are consolidated. Members of the Provincial Ministry were waited on at Fredericton some days ago by George J. Drummond and W. F. C. Parsons, who submitted proposals for government action to promote the development of the company's iron ore deposits in Gloucester County. They asked that the government guarantee the bonds of a railroad to be constructed from the mines to Bathurst, which is situated at the head of the Bay of Chaleur. They asked also for the privilege of cutting timber from the Crown Lands in the vicinity of the deposits, the timber to be used in mining operations. They informed the government that the Gloucester iron ore deposits are the richest in Canada, their estimate of the ore in sight being 50,000,000 tons. The government gave an encouraging reply, and is expected to introduce legislation authorizing it to make the desired concessions. The company would undertake to operate the railroad continuously and to mine not less than 1000 tons of ore per day. A royalty of 5 cents a ton may be imposed by the government. The company proposes to expend $200,000 on docks and may afterward build furnaces in New Brunswick. At the outset the ore would be shipped to the company's plants in Nova Scotia.

C. A. C. J.

The Clyde Engineering Company, Granville, near Sydney, New South Wales, has made delivery of about 20 of the 60 locomotives ordered by the New South Wales Government Railways. The price paid for the 71-ton passenger engines works out at £5205 each, as against £5601 paid for imported engines in 1907 and £5407 the past year.

New lines of railroad are being opened up in various States of Australia, more notably in New South Wales and Westralia, and further steel rail contracts will be coming out in the near future.

# NEWS OF THE WORKS.

### Iron and Steel.

The Niles Iron & Steel Company, Niles, Ohio, manufacturer of iron and steel and galvanized sheets, roofing and siding, &c., reports an improvement in orders and a good outlook for the beginning of the new year. The company's plant, which was enlarged a few months ago, is now running at full capacity.

The plant of the Pittsburgh Forge & Iron Company, N. S., Pittsburgh, manufacturer of car and locomotive axles, railroad, marine and machine forgings and merchant iron, is in operation to practically full capacity. In the boiling department 19 boiling furnaces and two cinder bottom furnaces are on three turns, and one pile-on-board and one sand bottom furnace are on double turn.

T. S. Kyle of the Kyle Lumber Company, Gadsden, Ala., has purchased the property of the Eagle Iron Company, consisting of Attala Furnace at Attala, Ala., a battery of charcoal ovens and an acreage of mineral property. The furnace has been idle for several years. Mr. Kyle purchased the property as agent for others, who have not yet decided what disposition they will make of it. It is thought that the purchasers will put the furnace in operation as soon as the iron market shall warrant.

Repairs have been commenced on No. 2 furnace of the Sloss-Sheffield Steel & Iron Company at North Birmingham, Ala., which will probably be ready for operation within four months.

The charcoal furnace of the Shelby Iron Company, at Shelby, Ala., has been put in operation after a suspension of 12 days, during which time the stack was relined.

There is no truth in the report that C. M. Schwab, president of the Bethlehem Steel Company, South Bethlehem, Pa., has purchased the plant of the Diamond State Steel Company, Wilmington, Del., and that the plant is to be used in connection with the contemplated expansion of the works of the Harlan & Hollingsworth Corporation.

The Maryland Rail Company, Cumberland, Md., has increased its capital stock from $100,000 to $150,000.

### General Machinery.

The recently organized American Automatic Stoker Company, in which D. W. Ross, Edwin Hawley and Theodore P. Shonts of New York are interested, has arranged to open offices in Chicago and New York. The Chicago offices will be in charge of John J. Hanrahan, who has resigned as grand master of the Brotherhood of Locomotive Firemen and Engineers to become first vice-president of the company, which intends to manufacture a new automatic stoker and may build a plant for that purpose.

The Woodruff Garage Company, Watertown, N. Y., has leased the building formerly occupied as a gas plant and will remodel it into a garage in which it will install machinery for automobile repairing. H. G. Kapel is secretary.

The G. Drouve Company, Bridgeport, Conn., bought at a receiver's sale, all machinery, material and fixtures of the bankrupt American Machinery Company, 651 West Forty-third street, New York.

The Sumner Iron Works, Everett, Wash., whose enlargement of its plant was noted in these columns December 10, has decided to make more extensive improvements than were planned at that time. It has been decided to add 7000 sq. ft. of floor space to its machine shop, giving it a little over 15,000 sq. ft.

The Ogden City Corporation, Ogden, Utah, has let a contract for the building of a water works repair shop on the City Hall Square. The Ogden water works system was recently purchased from the Ogden City Water Works Company.

Negotiations are under way for the establishment of an automobile fire apparatus factory at Rochester, N. Y., by S. W. Luitwieler of the Luitwieler Pumping Engine Company, Los Angeles, Cal., who is the inventor of a nonpulsating pump.

The Variety Iron Works Company, Seattle, Wash., which is to move its plant to a new location, has not yet decided upon the additional tools it will have to purchase.

The Screw Cutting Company of America, Philadelphia, Pa., has let contract for the construction of its two-story building, 60 x 82 ft., to be erected at Seventeenth street and Sedgley avenue.

### Power Plant Equipment.

C. E. Smith of the S. Morgan Smith Company, York, Pa., has purchased from the receivers the property of the North Georgia Electric Company, Atlanta, Ga., which he will develop, furnishing power to factories located on the outskirts of the city from the plant which is located at Gainsville. The S. Morgan Smith Company is in no way interested in the transaction. Mr. Smith owns several power plants throughout the South.

Bids will be received until February 22 by the Board of Control, Winnipeg, Man., for a turbine pump with electric motor for the city water works.

The People's Electric & Ice Company, Montgomery, Ala., incorporated with a capital stock of $200,000, has taken over the properties of the Exchange Ice Works and the Edison Electric Company, together with the franchises under which they operate. While plans have not yet been fully determined, it is now the intention of the company to increase the capacity of the plant. The officers are A. G. Forbes, president, and C. E. White, treasurer and general manager.

The St. Lawrence River Power Company, Massena, N. Y., has awarded contract to the Dayton Globe Iron Works, Dayton, Ohio, for two water turbine units, each set consisting of six 60-in. turbines, with a total capacity of 12,000 hp. The equipment, together with the electrical generators, will be installed during the coming spring.

### Foundries.

Work has been commenced at Green Bay, Wis., on the foundation for the new reinforced foundry building of Joseph Rothe. The plant will be 80 x 120 ft.

Oman & Johnson, Willmar, Minn., will erect a new foundry which will be operated in connection with their machine shop and which will be completed the first of next month. Gust Erickson, who has had more than 20 years' experience in the foundry business at Moline, Ill., will have charge of the new foundry and will become a member of the firm, the name of which will be the Oman & Johnson Company. In addition to a general machine shop business, iron and brass castings will be made.

The Syracuse Die Molded Casting Company, Syracuse, N. Y., has been incorporated with a capital stock of $10,000, to manufacture finished castings from dies, requiring no machine work. The company has leased a portion of the factory building at 303 Wallace street, and for the present will confine itself to producing difficult parts of machines made of aluminum or an alloy equal in strength to ordinary brass castings. All machine work, including the dies, will be done outside. O. M. Gale is president and treasurer; O. E. Stowell, vice-president, and L. H. Johnston, secretary.

George W. Thomas and William G. Bridges have leased some ground fronting on the Pennsylvania Railroad at Johnstown, Pa., on which they propose to erect a foundry.

The Hewitt Mfg. Company, Houston, Texas, will erect a brass foundry, 85 x 150 ft., of corrugated iron and steel.

The E. R. Thomas Motor Company, Buffalo, N. Y., has awarded contracts for enlarging its foundry and for an addition of a galvanized iron building.

The Beggs Pipe & Foundry Company, North Birmingham, Ala., has resumed operations after a month's idleness.

### Bridges and Buildings.

The Milwaukee Bridge Company has received the contract from the Cargill Coal Company, Green Bay, Wis., for the construction of a new movable steel bridge, to replace the one destroyed in November, which will be 270 ft. long, and used to distribute coal to different sections of its big docks.

W. N. Kratzer & Co., Pittsburgh, Pa., were awarded the contract for fabricating and erecting the structural steel work in the rebuilding of the Kosmos Portland Cement Company's plant, Kosmosdale, Ky., which was destroyed several months ago by fire. The contract covers the erection of eight buildings and the connecting bridges.

### Fires.

The plant of the Dansville Paper Company, Dansville, N. Y., was burned December 16, the loss being about $75,000. Plans are being prepared for rebuilding.

The tipple, boiler house and other buildings of the Fairmont Coal Company at Enterprise, W. Va., were burned December 16, the loss being about $50,000.

The machine shop of Rodgers & d'Artenay, Sacramento, Cal., was damaged $10,000 by fire, December 9.

The mill of the Ballston Paper Company, Ballston, N. Y., was burned December 19. The loss is placed at $75,000.

The machine shop of the Canadian Iron & Foundry Company at Three Rivers, Quebec, was damaged $25,000 by fire December 17.

The plant of the Sternberg Supply & Foundry Company, Asheville, N. C., was damaged $6000 by fire December 16.

### Hardware.

As a result of the recent material increase in its business, the G. M. Yost Mfg. Company, Meadville, Pa., has purchased a large milling machine and an edging grinder, the machines having just been installed. The company manufactures woodworkers', machinists', blacksmiths' and jewelers' vises.

### Miscellaneous.

Vollkommer & Co., 1004 Empire Building, Pittsburgh, manufacturers of enamels and supplies for enameling plants, have completed the rebuilding of their factory, recently destroyed by fire, and it is again in full operation.

A receiver has been appointed for the Pressed Steel Pole Company, Pittsburgh, whose plant is at Mount Pleasant, Pa. The company manufactured pressed steel trolley and telegraph poles.

The Standard Chain Company, Pittsburgh, operating the Standard Chain Company of Canada, Ltd., Sarnia, Ont., Canada, which plant was partially wrecked by high winds recently, has completed rebuilding the damaged sections, and this plant is now in full operation, turning out a full line of coil and bright chain for various services.

The Standard Emery & Polishing Wheel Company, Springfield, Mass., will move its plant to Coxsackie, N. Y., where it has leased a factory building on Riverside avenue, which it will remodel and equip for manufacturing.

The Enochs Electric Company, St. Paul, Minn., has been organized to manufacture common battery telephones and other electrical and mechanical specialties, and is incorporated at $100,000. A definite location has not yet been selected, but it has been decided that one of the three available buildings in the downtown district of St. Paul will be occupied. A considerable portion of the tools and dies required for manufacture has already been secured, and the company expects to have its goods on the market by the middle of January, and that by the first of March a complete line of its common battery telephones will be offered.

The Denver Gas & Electric Company, Denver, Colo., is contemplating improvements for the coming year which will include the installation of a new gas holder with a capacity of 2,000,000 to 3,000,000 cu. ft., the letting of 25 or 30 miles of transmission feeder and distribution gas mains, besides some additions and changes in the gas plant. The superintendent of the gas department is W. E. Malone.

The Security Lightning Rod Company, Burlington, Wis., has amended its articles of incorporation so as to increase its capital stock from $50,000 to $100,000.

The International Telechronometer Company has been incorporated at Rochester, N. Y., with a capital stock of $500,000, to engage in electrical work and to manufacture and deal in electrical supplies. Among the directors are Merton E. Lewis, James W. Lewis and Clarence McKay of Rochester, and Victor B. Deyher of Albany. The office is at 21 Elwood Building, Rochester

The Dixie Culvert & Metal Company, Birmingham, Ala., recently incorporated with a capital stock of $100,000, will take over the business of the Arkansas Metal Culvert Company, Little Rock, Ark., and will handle the products of the American Rolling Mill Company of Middletown, Ohio, in Alabama, Georgia, Florida, South Carolina, Mississippi, Louisiana and Arkansas, giving particular attention to the latter company's ingot building material. The new company expects to be doing business January 1. C. C Fouts is president; R. C. Phillips, treasurer, and F. O. Putney, secretary.

Anti-Pluvius skylights and sidelights have recently been ordered and are now nearing completion for the Delaware, Lackawanna & Western Railroad Bush type trainshed at Scranton, Pa. This is the second order the G. Drouve Company, Bridgeport, Conn., has received for these skylights and sidelights from the Lackawanna Railroad for new passenger trainsheds, the other being at the Hoboken terminal. The 1908 edition of the Anti-Pluvius skylight catalogue, recently received from the German manufacturers describes the new railroad station at Hamburg, on which the skylights were used. This station is one of the largest in the world, and it is interesting to note that the engineers over there are giving their approval to this type of skylight in this practical way. A few of the important installations recently made in Germany and Belgium are the municipal electric power station at Charlottenbourg, Berlin; railroad station, Lubeck, Belgium; locomotive works, Darmstadt, Germany, and the industrial plant of the G. Schiele Company, Frankfort-on-Main. In this country recent installations include the American & British Mfg. Company, New York Central & Hudson River Railroad, Chicago City Railway Company, New York City Railway Company, Purdue University and the Central Railroad of New Jersey ferry terminal. This type of puttyless skylight meets the demand for easily accessible construction, permits of repainting the steel supporting bars and cleaning of the inside glass surface without much trouble and with ordinary labor, can be sent anywhere and is easily erected with the aid of a screw driver and a wrench. The Drouve patented continuous clip is a valuable improvement in skylight construction, as it secures a tight and proper fit of skylight to the curb.

The American Auto-Heater Company has been incorporated at Buffalo, N. Y., to manufacture radiators utilizing the engine exhaust for heating automobiles. These will be made under contract for the present and a factory established later. The company is located in the D. S. Morgan Building.

The Patten & Stafford Company, Canastota, N. Y., manufacturer of farm machinery, has sold its plant to the Bateman Mfg. Company, Grenloch, N. J.

The Georgian Mfg. Company, Binghamton, N. Y., with which are connected several officials of the New York office of the Fairbanks Company, has awarded contract to the A. E. Stephans Company for the erecting of an additional building with 16,000 sq. ft. of floor space. This building will be equipped with a line of modern machinery for the manufacture of fine tools. With the letting of this contract the company will have under contract the construction of three buildings, with total of over 40,000 sq. ft. of floor space. The company will not let contracts for other buildings until spring.

The Terry Core Drill Company, Hastings-on-the-Hudson, N. Y., has been incorporated, with capital of $100,000, by C. A. Terry of New York, Frederick Snare of Englewood, N. J.; A. W. Buttenheim of Madison, N. J.; C. S. Ackley of Brooklyn and Samuel G. Borland of Hastings-on-the-Hudson.

The American Telpher Company has been incorporated at Buffalo, N. Y., with a capital stock of $300,000, to manufacture telpher apparatus for transporting goods, under patents recently granted. The company has established an office at 653 Ellicott Square Building and will arrange for a factory later. Reynold F. Penton is president, Luther Hatch, secretary and treasurer, and John J. Tisdale, manager.

The Hyle Spring Hub Company, recently incorporated at Buffalo, N. Y., will manufacture spring hub wheels for automobiles and other vehicles, under patents of William A. Hyle, also automobiles complete and motor boats. It has not yet been decided whether the company's factory will be located at Buffalo, Jamestown, N. Y., or Warren, Pa. The capital stock of the company is $150,000. Offices are in the Ellicott Square Building.

The Cleveland Construction Company, Brockport, N. Y., has been incorporated, with a capital of $250,000, by Merrith A. Cleveland, Milo L. Cleveland and Harold Cleveland. The main purpose of the company is to construct Barge Canal contract No. 61, consisting of about 8 miles of construction between the west bridge in Adams basin and the Monroe-Orleans county line. The contract price is $1,047,994. The contract includes a large amount of steel castings and structural steel, which will be sublet by the present holders of the contract.

## Gathering Walnuts by Air.

The English walnut industry in California has given employment to hundreds, if not thousands, in gathering the nuts from among the fallen leaves, but a machine is now being used which bids fair to largely supplant them. One machine does the work of the ordinary crew of men, women and children in about one-tenth the time.

The new walnut picker is mounted on a truck and is moved from point to point through the orchards by the same gasoline engine that drives the fan for gathering the nuts by suction. In a sense it is a vacuum cleaner on a large scale. The exhausting ducts have fan shaped mouths near the ground, and lead to a large drum on the truck. These ducts are arranged side by side along the front of the truck, and cover a strip of orchard from 8 to 10 ft. wide, sucking up everything which comes in their way as they move down the rows of trees.

The air is drawn through the pipes to the drum by the fan, and in the drum the clods, twigs and rotten nuts are separated from the perfect ones, and the latter poured into sacks, which occupy the attention of one of the two men required to run the machine. The other man's duties are those of driver. The big truck is guided by a steering wheel, like that of any automobile, and operates in the same manner.

One of the chief expenses of walnut raising hitherto has been the cost of picking, which is enormous in proportion to the actual work accomplished. The new machine does away with a great deal of this expense. It was invented by a practical walnut grower, L. L. Sidwell of Pico Station, near Los Angeles, and the first year's experiments show that its use will effect a saving of from 5 to 25 per cent. in the cost of harvesting the California walnut crop.

F. P. Schlelein, for six years general manager of the second-hand department of the Brown & Zortman Machinery Company, Pittsburgh, recently resigned, and has engaged in business for himself under the name of the F. P. Schlelein Machinery Company, 402 Real Estate Savings & Trust Building, N. S., Pittsburgh, to deal in new and second-hand wood and metal working machinery. He has already accepted the sales agency for several prominent manufacturers of machine tools, including a line of commercial gas engines, planers, drill presses, &c., and is arranging to secure quarters for keeping a stock of equipment on hand to fill orders promptly.

The Goldschmidt Detinning Company, New York, has been incorporated with a capital stock of $3,000,000, to detin scrap under the process of Dr. Carl Goldschmidt of Germany. It is understood that the American Can Company is interested in the new enterprise. The management of the company is at present in the hands of F. H. Hirschland, 60 Wall street, New York, who is the representative in this country of Dr. Goldschmidt.

## Trade Publications.

**Portable, Industrial and Narrow Gauge Railroads and Equipment.**—Arthur Koppel Company, Pittsburgh, Pa. Catalogue No. 400, 8¼ x 11 in., 56 pages. The company's industrial railroad equipment, which includes about everything in that line from cars and locomotives to track, switches, &c., is shown, and considerable space is given to the numerous types of dumping cars, flat cars, wrecking cars and trucks, &c. The standard sections of steel rails are pictured and prices listed, together with parts of railroad equipment, such as car wheels, track frogs, switches, &c.

**Centrifugal Pumps.**—Alberger Pump Company, 95 Liberty street, New York. Catalogue B, 6 x 9 in., 39 pages. The development and theory of volute centrifugal pumps are treated of in this book and considerable space is also devoted to describing the standard type of the Alberger centrifugal condensers. Illustrations of a number of standard types are given, and there is a chapter explaining their adaptability for use in sugar refineries, irrigation works, oil works, mines and smelters, &c. Several types of the Alberger turbine pumps are also shown.

**Woodworking Machinery.**—Gibbs Machinery Company, Columbia, S. C. Circulars. These illustrate and describe briefly the Gibbs sawmill, which is made in all the standard sizes; a portable shingle machine, an improved gang lath mill and bolter, a swing cut-off saw, a planer, matcher and molder for heavy work, and the Little Giant planer and molder for use in small planing mills and carpenter and cabinet shops.

**Grab Buckets and Tubs.**—Brown Hoisting Machinery Company, Cleveland, Ohio. Catalogue E, 6¼ x 9 in., 54 pages. Grab buckets and coal tubs are treated of chiefly in this book. The company's standard type of grab bucket shown is claimed to be especially efficient because it operates over a very wide area and because the spades when open stand vertical, and as soon as the operation of closing commences the back inclines in such a manner that the material gathered assists the bucket to penetrate deeper. A number of installations of different types of buckets are shown, two-rope and single-rope grab buckets for ore, coal, excavating, &c., dumping shovels and special ore shovel buckets. Some space is also given to tub carrying cars, larries, &c.

**Power Drills.**—Silver Mfg. Company, Salem, Ohio. Booklet. Shows the company's line of power drills, which are made in four styles, including a plain lever feed drill, combined lever and wheel feed drill, a power feed drill with automatic stop, and a power feed drill with back gearing and automatic stop. Types of the various machines are shown and prices are included.

**Foundry Supplies.**—Brass Founders' Supply Company, Newark, N. J. Catalogue No. 14, 6 x 9 in., 79 pages. About everything needed in a first-class foundry is listed in this book, and while an especially complete line of brass and bronze founders' supplies is included, equipment for use in aluminum, iron and steel foundries is also shown. Core machines, sprue cutters, tumblers of various types, sand blast apparatus, core ovens, brass melting furnaces, crucibles, &c., are listed, together with a complete line of smaller apparatus and general foundry supplies.

**Air Compressors.**—Bury Compressor Company, Erie, Pa. Catalogue No. 42, 6 x 9 in., 28 pages. This comprises all the material contained in the company's catalogues 40 and 41, and includes descriptions of the company's line of single and duplex belt and steam driven compressors. A general description of the company's standard machines is given. While vacuum pumps are not specially listed, it is explained that the regular low-pressure compressors are excellently adapted to this service.

**Boiler Feed Regulators.**—American Boiler Economy Company, North American Building, Philadelphia, Pa. Catalogue, 6 x 9 in., 31 pages. Devoted to the Copes boiler feed regulator for maintaining a constant water level in steam boilers, and the Copes pump governor for maintaining the pressure in the boiler feed line at a fixed excess over boiler pressure and for regulating the discharge of house, elevator, fire and small water works pumps. The advantages of feed water regulators are fully explained, and a diagram showing the manner of operation of the Copes regulator is included, together with illustrations of installations and accounts of performances.

**Reamers.**—Cleveland Twist Drill Company, Cleveland, Ohio. Catalogue No. 36, 6 x 9 in., 24 pages. A line of the Peerless high speed reamers is shown in all the standard types. The company has a process called "brazo hardening" of wire steel blades into a soft steel body which, it is claimed, produces practically a one-piece solid reamer which can be run at surface speed of from 50 to 80 ft. per minute, and can be marketed at a lower price than that of solid high speed reamers.

**Rope Drives.**—C. W. Hunt Company, West New Brighton, N. Y. Pamphlet No. 082. Explains the method of manufacturing Stevedore Manila rope for power transmission for use on pile drivers, hoisting engines, &c. These ropes are furnished cut to exact length, with adjustable steel couplings spliced into the ends, and they are made in three styles for pile driving, power transmission and for cargo hoisting falls. A number of illustrations showing the rope in use are given, and illustrations of blocks and sheaves are included.

**Piping and Chimneys, Barometric Condensers and Valves.**—The M. W. Kellogg Company, 50 Church street, New York. Catalogue, 8¼ x 11 in., 47 pages. The company, which in addition to manufacturing makes a specialty of contracting for power plants, &c., shows in the book a number of installations of chimneys made of corrugated, perforated radial brick. Several views of the company's plant are shown and samples of its welded pipe. Welded separators, wrought iron bends, &c., are also illustrated. Sectional views of the Kellogg barometric condenser are given, and a number of types of valves which the company carries in stock are included, together with price-lists of fittings.

**Bomb Calorimeters.**—S. C. Dinsmore, 305 Avon avenue, Newark, N. J., successor to Dinsmore & Singleton, Middletown, Conn. Booklet. Explains the use of the Atwater bomb calorimeter for determining the heats of oxidation of food stuffs, coals, oils, &c., and the amount of sulphur and phosphorus in organic compounds. The apparatus consists of a steel bomb, a water holder, stirrer, thermometer, and two concentric cylinders of indurated fiber with double hard rubber covers. The material to be burned is placed in the ignition capsule, the bomb is closed, charged with oxygen and immersed in the water. Electrical connections are made, the thermometer adjusted and the operation of the stirrer commenced. Thermometer readings are taken during the initial, main and final periods.

**Arc Lamps.**—Nernst Lamp Company, Pittsburgh, Pa. Bulletin A. This is in booklet form and describes the Westinghouse Nernst Lamp. It contains information which should be interesting to those intending to install lighting systems, and refers particularly to the single glower Westinghouse Nernst lamp, which has been made in answer to a demand for a unit of medium size. Several types of lighting arrangements are shown, and price-lists of lighting systems are included.

**Pneumatic Tools.**—Independent Pneumatic Tool Company, Aurora, Ill. Circular L. Illustrates and describes a number of the leading pneumatic tools made by this company, and points out their application to special work in steel and iron work foundries, boiler, car and machine shops, &c.

**Automobile Parts.**—Burgess & Son, Wenona, Ill. Circulars. One contains drawings showing manner of attaching a tension spring to leaf springs for automobiles, and sectional view of the tension spring, with a description of its construction and practical efficiency. The other circular describes the Burgess double-acting gas motor, illustrated with elevation and cross section. One of its special features is an air cooling system, which includes the continuous forced circulation of air through the crank case and cylinders.

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Newark, N. J., will have an automobile show this winter. The State Military Board has granted the use of the new Essex Troop Armory on Roseville avenue, from Saturday, February 20, to the Saturday following, and the arrangements for the exhibit are already under way. The show will be held by the New Jersey Automobile Trade Association, and will be conducted under the auspices of the First Troop, N. G. N. J. H. A. Bonnell, secretary of the Associated Automobile Clubs of New Jersey, who was chairman of the committee in charge of last year's show, has been engaged as general manager and will have direct charge of this one.

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J. A. McLaughlin of Greensburg, Pa.; William Hays of Pittsburgh and others, have purchased the plant formerly operated by the Westmoreland Steel Company at South Greensburg, Pa., and will form a new company that will remodel the plant for the manufacture of railroad spikes and a new design of rails. The company proposes to manufacture compound rails with the head and web in one part and the flange in another. The two parts will be bolted together, and when the head is worn out a new section can be supplied without disturbing the flange. Switch frogs and cross-overs will also be manufactured.

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The Massillon Bridge Company, Massillon, Ohio, has been formed to build bridges and structural steel work with a capitalization of $250,000. It is announced that the company will at once begin the erection of a plant.

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The Scottdale Furnace Company's blast furnace at Scottdale, Pa., which has been out of blast since December 17, 1907, has been completely rebuilt and will be blown in shortly after January 1.

# The Iron and Metal Trades

## Current Business Light and Specifications Decreasing.

### A Cheerful Outlook for Line Pipe Next Year.

Generally speaking, the volume of business has been light in crude and finished lines. While this is naturally attributed to the season, there is reason to believe that the tariff discussion is having some effect. The fact observed lately of a falling off in specifications in many branches of the Steel trade is attributed to that cause.

In some quarters some disappointment is expressed at the failure of the railroads to promptly follow the lead of the Pennsylvania Railroad in taking care of its requirements for Rails for next year. It is expected, however, that the Baltimore & Ohio will soon close for about 65,000 tons, that the New York Central will distribute about 150,000 tons and that the Pittsburgh & Lake Erie will call for 10,000 tons.

A number of minor contracts for Structural Material have been awarded, but the only large order placed is that for 11,000 tons for the Chicago City Hall, which went to the American Bridge Company.

It is estimated that during the year now drawing to a close the latter company took a total of about 250,000 tons of fabricated work, while other shops received orders for three times that quantity, a total which compares favorably with last year.

Pittsburgh sends rather encouraging reports concerning the Pipe industry. A local natural gas company has placed an order during the past week. One inquiry is in the market from a gas company for 80 miles of 16-in. Pipe which, it is expected, will be placed as soon as the right of way has been secured. There are two other inquiries for 160 to 170 miles of 16-in. Pipe, and there are projects under consideration for nearly 900 miles of Line Pipe for next year's delivery.

The Pig Iron markets are rather quiet in all sections of the country. Last week an Eastern Pennsylvania Open Hearth plant purchased 20,000 tons of Basic Pig for the first quarter, and there is still some urgent demand in that section, the market being firm.

Cast Iron Pipe makers who have been steady buyers of Iron for a long time have taken additional round lots, but find the supply of suitable Irons rather limited. The Cast Iron Pipe business itself is not prosperous, however, and recent sales have not been on a liberal scale, or at satisfactory prices. St. Paul closed for 2000 tons lately.

There has been a reduction in the price of Lead, which makes the price now 4.20c., New York.

Nothing definite has yet been accomplished in the movement to establish again, for the Copper industry, a statistical bureau like that conducted so successfully years ago by the late John Stanton.

## A Comparison of Prices.

**Advances Over the Previous Month in Heavy Type, Declines in Italics.**

At date, one week, one month and one year previous.

| | Dec.23, 1908. | Dec.16, 1908. | Nov.25, 1908. | Dec.25, 1907. |
|---|---|---|---|---|
| **PIG IRON,** Per Gross Ton: | | | | |
| Foundry No. 2, Standard, Philadelphia | $17.25 | $17.25 | $17.25 | $18.25 |
| Foundry No. 2, Southern, Cincinnati | 16.25 | 16.25 | 16.25 | 16.25 |
| Foundry No. 2, Local, Chicago | 17.00 | 17.00 | 17.00 | 18.00 |
| Basic, delivered Eastern Pa. | **16.75** | 16.75 | 16.50 | 17.25 |
| Basic, Valley Furnace | **15.75** | 15.50 | 15.50 | 17.00 |
| Bessemer, Pittsburgh | 17.40 | 17.40 | 17.40 | 18.50 |
| Gray Forge, Pittsburgh | **15.40** | 15.15 | 15.15 | 17.90 |
| Lake Superior Charcoal, Chicago | 19.50 | 19.50 | 19.50 | 23.50 |
| **BILLETS, &c.,** Per Gross Ton: | | | | |
| Steel Billets, Pittsburgh | 25.00 | 25.00 | 25.00 | 28.00 |
| Forging Billets, Pittsburgh | 27.00 | 27.00 | 27.00 | 30.00 |
| Open Hearth Billets, Phila. | 26.20 | 26.20 | 26.20 | 30.00 |
| Wire Rods, Pittsburgh | 33.00 | 33.00 | 33.00 | 34.00 |
| Steel Rails, Heavy, at mill | 28.00 | 28.00 | 28.00 | 28.00 |
| **OLD MATERIAL,** Per Gross Ton: | | | | |
| Steel Rails, Melting, Chicago | 15.50 | 15.50 | 15.50 | 12.00 |
| Steel Rails, Melting, Phila. | **17.50** | 17.50 | 16.25 | 11.50 |
| Iron Rails, Chicago | 19.50 | 19.50 | 19.50 | 15.00 |
| Iron Rails, Philadelphia | **21.25** | 21.25 | 20.50 | 17.50 |
| Car Wheels, Chicago | 16.00 | 16.00 | 16.00 | 20.00 |
| Car Wheels, Philadelphia | *16.00* | 16.00 | 16.50 | 19.00 |
| Heavy Steel Scrap, Pittsburgh | **17.00** | 16.50 | 16.75 | 12.50 |
| Heavy Steel Scrap, Chicago | *14.75* | 15.00 | 15.00 | 10.75 |
| Heavy Steel Scrap, Phila. | **17.50** | 17.50 | 16.25 | 11.50 |
| **FINISHED IRON AND STEEL,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Refined Iron Bars, Philadelphia. | **1.52** | 1.52 | 1.50 | 1.75 |
| Common Iron Bars, Chicago | 1.50 | 1.50 | 1.50 | 1.75 |
| Common Iron Bars, Pittsburgh. | 1.50 | 1.50 | 1.50 | 1.60 |
| Steel Bars, Tidewater, New York | 1.56 | 1.56 | 1.56 | 1.76 |
| Steel Bars, Pittsburgh | 1.40 | 1.40 | 1.40 | 1.60 |
| Tank Plates, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Tank Plates, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Beams, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Beams, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Angles, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Angles, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Skelp, Grooved Steel, Pittsburgh | 1.45 | 1.45 | 1.45 | 1.70 |
| Skelp, Sheared Steel, Pittsburgh. | 1.50 | 1.50 | 1.50 | 1.80 |
| **SHEETS, NAILS AND WIRE,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Sheets, Black, No. 28, Pittsburgh. | 2.50 | 2.50 | 2.50 | 2.60 |
| Wire Nails, Pittsburgh | 1.95 | 1.95 | 1.95 | 2.05 |
| Cut Nails, Pittsburgh | 1.75 | 1.75 | 1.75 | 2.00 |
| Barb Wire, Galv., Pittsburgh | 2.40 | 2.40 | 2.40 | 2.50 |
| **METALS,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Lake Copper, New York | *14.37½* | 14.50 | 14.50 | 13.50 |
| Electrolytic Copper, New York. | 14.12½ | 14.12½ | 14.12½ | 13.37½ |
| Spelter, New York | **5.15** | 5.20 | 5.10 | 4.30 |
| Spelter, St. Louis | **5.00** | 5.05 | 4.95 | 4.20 |
| Lead, New York | *4.20* | 4.25 | 4.37½ | 3.60 |
| Lead, St. Louis | *4.05* | 4.10 | 4.22½ | 3.50 |
| Tin, New York | *29.20* | 29.10 | 30.35 | 27.00 |
| Antimony, Hallett, New York | 8.12½ | 8.12½ | 8.12½ | 8.50 |
| Nickel, New York | 45.00 | 45.00 | 45.00 | 45.00 |
| Tin Plate, 100 lb., New York | $3.89 | $3.89 | $3.89 | $4.09 |

## Chicago.

FISHER BUILDING, December 23, 1908.

The volume of business in Iron and Steel thus far in December is as a whole slightly less than for November. To what extent this is due to the influences that commonly have a retarding effect upon trade toward the close of the year cannot be definitely determined, but it is safe to say they are measurably responsible for what slowing up is apparent. The new orders for finished Iron and Steel entered have fallen off in tonnage but little, if any, but specifications in the past few days have eased off somewhat, though not in greater proportion than it was reasonable to expect under the circumstances. None of the more important fabricating contracts upon which figures have been submitted is included among the closures for the week, but it is likely that the 11,000 tons for the new City Hall will be placed before the year is out; it is, in fact, rumored that a verbal understanding has been reached, but confirmation of a formal award is lacking. Merchant Pipe, Tubes and Plates are less active than other mill products, and the demand for Sheets has declined slightly since the first of the month. The hardening tendency in Bar Iron prices has had the effect of stimulating the anticipation of forward requirements by consumers, and in consequence a fair tonnage in orders for first half delivery has been placed. The railroads are ordering more freely, but the principal contract inquiry reported from these interests is one for 8000 tons, which represents the prospective needs of the Illinois Central Railroad. Mill productive capacities are engaged about as fully as they have been for some time. At the South Works of the Illinois

Steel Company all of the finishing mills are going, with 20 of the 24 open hearth furnaces in operation. Old Material is not only quieter, but, in absence of any sustaining demand from users, prices have softened slightly. Dullness rules in Pig Iron, but prices hold steady at the recognized schedules established by both Northern and Southern producers. As against such disappointment as may exist touching present conditions, there is in every section of the market a strong feeling of confidence in the steady revival of business in all lines, when things get fairly started again after January 1.

**Pig Iron.**—Judging from the reported transactions in Pig Iron elsewhere, there is less doing in all grades in this district than in other distributing centers. Last week was productive of no trading in which important tonnages were involved, most of the few orders placed being for carloads and small lots. The market, in fact, is extremely quiet from every point of view. Consumers do not seem to be enough interested just now to make inquiries, though quite a number are asking sellers to keep them posted as to developments, so that they may be able to anticipate any advance that might follow an active buying movement on second quarter requirements. Should the improvement be realized that is expected to mark the course of business after the holiday season is passed, it is believed that buyers will give early consideration to their prospective needs through the second and, perhaps, the third quarter. Their attitude in this respect will doubtless be governed to a large extent by the future trend of affairs, but they are not unmindful of the possibility of a higher level of values in event of a substantial increase in the melt. The temporary halt in demand has in no wise disturbed the complacent mood of furnacemen, who are as a rule fairly well sold up on present producing capacity for the initial quarter of the new year, nor is there any wavering observed in the firmness of ruling price schedules. Northern Iron is still held at $17, furnace, for first, and $17.50 for second quarter delivery. At least two of the leading Southern furnace interests are selling through the entire second half at $13, Birmingham, for No. 2 Foundry, while others are holding for $13.50 for exclusively second quarter Iron. The only inquiry of noteworthy size reported this week is one of 2000 to 3000 tons from an Indiana radiator concern, the specifications calling for both Northern and Southern Iron. With both sides of the market resting quietly, nothing of special interest is expected to develop in the few remaining days of the year. The following quotations are for December delivery, f.o.b. Chicago:

| | |
|---|---|
| Lake Superior Charcoal | $19.50 to $20.00 |
| Northern Coke Foundry, No. 1 | 17.50 to 18.00 |
| Northern Coke Foundry, No. 2 | 17.00 to 17.50 |
| Northern Coke Foundry, No. 3 | 16.50 to 17.00 |
| Northern Scotch, No. 1 | 18.00 to 18.50 |
| Southern Coke, No. 1 | 17.85 to 18.35 |
| Southern Coke, No. 2 | 17.35 to 17.85 |
| Southern Coke, No. 3 | 16.85 to 17.35 |
| Southern Coke, No. 4 | 16.35 to 16.85 |
| Southern Coke, No. 1 Soft | 17.85 to 18.35 |
| Southern Coke, No. 2 Soft | 17.35 to 17.85 |
| Southern Gray Forge | 15.85 to 16.35 |
| Southern Mottled | 15.60 to 16.10 |
| Malleable Bessemer | 17.00 to 17.50 |
| Standard Bessemer | 17.90 to 18.40 |
| Jackson Co. and Kentucky Silvery, 6 % | 19.90 to 20.40 |
| Jackson Co. and Kentucky Silvery, 8 % | 20.90 to 21.40 |
| Jackson Co. and Kentucky Silvery, 10 % | 22.90 to 23.40 |

(*By Mail.*)

**Billets and Rods.**—One order for 500 tons of Forging Billets from a Milwaukee machinery manufacturer, booked by the leading interest, and an inquiry for 600 tons from a manufacturer of railroad track material in the same city were the leading features of the week in this division of the market. Some of the smaller users of Forging Billets are buying in small quantities, and a few are seeking to cover for first half requirements, but the amounts involved in these cases have rarely exceeded 100 tons. We are advised that the regular price of $28.50, base, Chicago, is being well maintained. Wire Rods continue fairly active. We continue to quote as follows: Bessemer, $33; Basic, $34; Chain, $33, all at Pittsburgh.

**Rails and Track Supplies.**—No new Rail orders were included in the business from railroads entered last week, with the exception of two or three small lots for early shipment. It is understood that delivery of the Chicago, Burlington & Quincy Railroad's recent order is to begin February 1, and continue at the rate of 5000 tons a month. Whether or not the first of these specifications will be turned out by the Gary mills is not definitely known, but it is highly probable that these works will be in shape to start at that time if desired. It is understood that Tie Plates instead of Angle Bars will be used as fastenings for these Rails, but orders for them have not yet been placed. Light Rail business continues about on a par with last month, and specifications for Spikes and Bolts, while not equaling those of recent weeks, are fairly good. We quote as follows: Angle Bars, accompanying Rail orders, 1908 delivery, 1.50c.; car lots, 1.60c.; Spikes, 1.80c. to 1.90c., according to delivery; Track Bolts, 2.15c. to 2.25c., base, Square Nuts, and 2.30c. to 2.40c., base, Hexagon Nuts. The store prices on Track Supplies range from 0.15c. to 0.20c. above mill prices. Light Rails, 25 to 45 lb., $26; 20-lb., $27; 16-lb., $28; 12-lb., $29. Standard Sections, Bessemer, $28; Open Hearth, $30, on lots of 500 tons and over; on smaller lots, $2 a ton extra.

**Structural Material.**—Little new business has been entered by fabricating shops the past week, the business closed being made up of small jobs of unimportant size. It is expected that the formal contract for the construction of the Hart, Schaffner & Marx Building, Chicago, is likely to be placed within a day or two, but no haste is being manifested by the promoters of other building projects to place orders for the Structural Material required. The few inquiries that have been received refer principally to small work, and nothing involving large Structural requirements is included in them. The situation as respects fabricating prices is not materially changed, and buyers do not seem to anticipate the early establishment of higher schedules. It is reported that the Hermitage Hotel, Nashville, Tenn., and the White Building, Seattle, Wash., each requiring 1000 tons, have been placed. The railroads have contributed little to the week's business, either in new business or specifications. The American Bridge Company secured an order of 300 tons for highway bridges, and specifications for about 500 tons from the railroads. No order has as yet been placed by the Northern Pacific Railroad for the 7000 to 8000 tons for which it was recently reported to be in the market, and it is hardly expected that the purchase will be concluded until after the first of the year. Specifications for Plain Material are coming out fairly well, and the local mill continues in operation. Prices from store are 1.95c. to 2c. Mill prices at Chicago are as follows: Beams and Channels, 3 to 15 in., inclusive, 1.78c.; Angles, 3 to 6 in., ¼-in. and heavier, 1.78c.; larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 15 in., 1.88c.; Zees, 3 in. and over, 1.78c.; Tees, 3 in. and over, 1.83c.

**Plates.**—Business is light, and is comprised of small orders from miscellaneous sources representing almost wholly material needed for work actually in hand. Jobbers' stocks are not being depleted rapidly enough to require frequent replenishment, and specifications from this source are correspondingly light. A relatively large proportion of the demand is coming from car builders, but this in the aggregate is comparatively small. Prices are reasonably firm, though concessions of $1 a ton from the established schedules are still being made by a few mills. We quote mill shipments as follows: Tank Plates, ¼-in. and heavier, wider than 6¼ and up to 100 in. wide, inclusive, car lots, Chicago, 1.78c.; 3-16 in., 1.88c.; Nos. 7 and 8 gauge, 1.93c.; No. 9, 2.03c.; Flange quality, in widths up to 100 in., 1.88c., base, for ¼-in. and heavier, with the same advance for lighter weights; Sketch Plates, Tank quality, 1.88c.; Flange quality, 1.98c. Store prices on Plates are as follows: Tank Plates, ¼-in. and heavier, up to 72 in. wide, 2c. to 2.10c.; from 72 to 96 in. wide, 2.10c. to 2.20c.; 3-16 in. up to 60 in. wide, 2.10c. to 2.25c.; 72 in. wide, 2.30c. to 2.40c.; No. 8, up to 60 in. wide, 2.10c. to 2.15c.; Flange and Head quality, 0.25c. extra.

**Sheets.**—Except that there has been a slight falling off in orders in the past week or two, no material change has taken place in the Sheet market. Neither manufacturers nor jobbers seem anxious to contract just now for forward requirements, and the business moving is, therefore, comprised largely of small lots for immediate shipment. The quieter trend of the market has, however, not effected prics, which are perhaps being held with a greater degree of firmness now than at any time during the year. We quote mill shipments as follows, Chicago: Blue Annealed, No. 10, 1.98c.; No. 12, 2.05c.; No. 14, 2.08c.; No. 16, 2.18c.; Box Annealed, Nos. 17 to 21, 2.43c.; Nos. 22 to 24, 2.48c.; Nos. 25 and 26, 2.53c.; No. 27, 2.58c.; No. 28, 2.68c.; No. 29, 2.78c.; No. 30, 2.88c.; Galvanized Sheets, Nos. 10 to 14, 2.63c.; Nos. 15 and 16, 2.83c.; Nos. 17 to 21, 2.98c.; Nos. 22 to 24, 3.13c.; Nos. 25 and 26, 3.33c.; No. 27, 3.53c.; No. 28, 3.73c.; No. 30, 4.23c.; Black Sheets from store: Blue Annealed, No. 10, 2.15c.; No. 12, 2.20c.; No. 14, 2.25c.; No. 16, 2.35c.; Box Annealed, Nos. 18 to 21, 2.60c.; Nos. 22 to 24, 2.65c.; No. 26, 2.70c.; No. 27, 2.75c.; No. 28, 2.85c.; No. 30, 3.25c.; Galvanized from store: Nos. 10 to 16, 3c.; Nos. 18 to 20, 3.15c.; Nos. 22 to 24, 3.30c.; No. 26, 3.50c.; No. 27, 3.70c.; No. 28, 3.90c.; No. 30, 4.40c. to 4.45c.

**Bars.**—Noting the relatively high level of prices that has ruled for Scrap for several weeks past, consumers of Iron Bars have recently been more disposed to place forward contracts than for some time. As a result orders for a considerable tonnage of first half business have been entered by the mills. Railroads have also been buying more freely. The Illinois Central has an inquiry out for 8000 tons, on which deliveries extending through the coming year are desired. Some producers who have accumulated stock piles large enough to carry them well through the first half are willing to quote on such business through that period, but none seems anxious to discount conditions further than that, except on the basis of a substantial advance. The market appears to be quite firm at the present quotations, and specifications have come out fast enough to keep the mills going at about the same rate as for two or three months past. Steel Bar specifications are said to be quite satisfactory. Quotations, Chicago, are as follows: Steel Bars, 1.58c.,

with half extras; Iron Bars, 1.50c.; Hoops, No. 13 and lighter, 1.98c., full extra Hoop card; Bands, No. 12 gauge and heavier, 1.58c., half extras, Steel Bar card, Soft Steel Angles and Shapes, 1.68c., half extras. Store prices are as follows: Bar Iron, 2c. to 2.15c.; Steel Bars, 1.90c. to 2c.; Steel Bands, 1.90c., as per Bar card, half extras; Soft Steel Hoops, 2.25c. to 2.35c., full extras.

**Merchant Pipe.**—While the orders of last week aggregated a little larger than those of the preceding weeks of December, this is ascribed rather to the coincident bunching of requirements than to a generally increased demand. Under the steadiness of present price conditions and the curtailment of consumption—always a feature of the winter months—there is really no inducement for jobbers to buy in excess of what is needed to supply current requirements. Under the circumstances, therefore, the movement is about what might be expected at this time. The following mill discounts are quoted: Black Pipe, ¾ to 6 in., 73.2; 7 to 12 in., 70.2; Galvanized, ¾ to 6 in., 63.2. These discounts are subject to one point on the base. From store, in small lots, Chicago jobbers quote 73 per cent. on Black Steel Pipe, ¾ to 6 in. About three points above these prices is asked for Iron Pipe.

**Boiler Tubes.**—A good many inquiries for Locomotive Tubes are being received, some of them concerning the forward requirements of railroads based upon a conservative estimate of their needs for the first half of next year. Most of them, however, contemplate immediate shipment. Merchant Tubes are moving slowly, and continue to reflect the existing dullness in boiler construction. Mill quotations for future delivery, on the base sizes, are as follows: 2¾ to 4¼ in., inclusive, Steel Tubes, 63.2; Iron, 50.2; Seamless, 50.2; 2½ in. and smaller, and lengths over 18 ft., and 2½ in. and larger, and lengths over 22 ft., 10 per cent. extra. Store prices are as follows:

| | Steel. | Iron. | Seamless. |
|---|---|---|---|
| 1 to 1¼ in. | 35 | 35 | 35 |
| 1¾ to 2¼ in. | 50 | 35 | 35 |
| 2½ in. | 52½ | 35 | 35 |
| 2¾ to 5 in. | 60 | 47½ | 47½ |
| 6 in. and larger | 50 | 35 | .. |

**Merchant Steel.**—Although fluctuating from week to week to some extent, the average of specifications for Merchant Steel of various shapes is being fairly well maintained. A little more activity is expected after the turn of the year, when the work of invoicing has been finished and undivided attention is again concentrated upon the expansion of business. We quote as follows: Planished or Smooth Finished Tire Steel, 1.78c.; Iron Finish, up to 1½ x ½ in., 1.73c., base, Steel card; Iron Finish, 1½ x ½ in. and larger, 1.58c., base, Tire card; Channels for solid Rubber Tires, ¾ to 1 in., 2.08c., and 1⅛ in. and larger, 1.98c.; Smooth Finished Machinery Steel, 2.08c.; Flat Sleigh Shoe, 1.63c.; Concave and Convex Sleigh Shoe, 1.83c.; Cutter Shoe, 2.05c.; Toe Calk Steel, 2.13c.; Railroad Spring, 1.98c.; Crucible Tool Steel, 7¼c. to 8c., and still higher prices are asked on special grades. Cold Rolled Shafting in car lots and over, 57 per cent. off; in less than car lots, 52 per cent. off, with carload freight allowed within base territory.

**Metals.**—An analysis of recent buying indicates that consumers are holding off on spot requirements as far as possible until after January 1, the principal object being to reduce stocks to the minimum for the taking of inventories. In the last few days some carload buying from the larger consumers for January and February shipment has developed. Lead is easier, but with this exception there is no change noted in the entire list of Metals, either new or old. Quotations are as follows: Casting Copper, 14¼c.; Lake, 14½c. to 14¾c., in car lots, for prompt shipment; small lots, ¼c. to ⅜c. higher; Pig Tin, car lots, 31½c.; small lots, 34½c.; Lead, Desilverized, 4.45c. to 4.55c., for 50-ton lots; Corroding, 4.70c. to 4.80c., for 50-ton lots; in car lots, 2¼c. per 100 lb. higher; Spelter, 5.10c. to 5.25c.; Cookson's Antimony, 10½c., and other grades, 9¾c. to 10¼c.; Sheet Zinc is $7, f.o.b. La Salle, in car lots of 600-lb. casks. On Old Metals we quote: Copper Wire, 13¼c.; Heavy Copper, 13c.; Copper Bottoms, 11¾c.; Copper Clips, 13c.; Red Brass, 12c.; Yellow Brass, 9½c.; Light Brass, 6¼c.; Lead Pipe, 4.35c.; Zinc, 3¾c.; Pewter, No. 1, 21c.; Tin Foil, 23c.; Block Tin Pipe, 26c.

**Cast Iron Pipe.**—The 2000 tons advertised by the city of St. Paul has been awarded to the Dimmick Pipe Company. All bids were rejected on the 1500 tons for the city of Indianapolis, and it is not stated when the next letting will take place. No lettings of important size are scheduled for the immediate future, and the market generally is extremely quiet. We quote nominally per ton, Chicago, as follows: Water Pipe, 4 in., $27; 6 to 12 in., $26; 16 in. and up, $25, with $1 extra for Gas Pipe.

**Old Material.**—With no railroad lists up for closure and scarcely any demand from consumers of any kind, last week was the dullest experienced in the Scrap market for a long while. Dealers found it difficult to place material as it came in, and in order to avoid demurrage charges on track consignments, accepted prices below the market. At the same time they seem willing to pay considerably higher prices than were thus established on this week's offerings in the hope of a stronger market by the time shipments begin to come in a month or six weeks hence. While the Iron and Steel mills are not actively seeking more tonnage they are quietly adding to their stock piles when suitable concessions are offered. Dealers are not looking for much increase in demand from consumers until business begins to move after the first of the year, but the prices they are offering for material indicate a strong degree of confidence in the future course of prices. The only lot to be offered this week by the railroads is 3500 tons from the Chicago, Burlington & Quincy. The following prices are per gross ton, f.o.b. Chicago:

| | |
|---|---|
| Old Iron Rails | $19.50 to $20.00 |
| Old Steel Rails, rerolling | 16.75 to 17.25 |
| Old Steel Rails, less than 3 ft | 15.00 to 15.50 |
| Relaying Rails, standard sections, subject to inspection | 22.50 to 23.50 |
| Old Car Wheels | 16.00 to 16.50 |
| Heavy Melting Steel Scrap | 14.75 to 15.25 |
| Frogs, Switches and Guards, cut apart | 14.75 to 15.25 |
| Mixed Steel | 12.25 to 12.75 |

The following quotations are per net ton:

| | |
|---|---|
| Iron Fish Plates | $17.25 to $17.75 |
| Iron Car Axles | 20.50 to 21.00 |
| Steel Car Axles | 18.50 to 19.00 |
| No. 1 Railroad Wrought | 14.75 to 15.25 |
| No. 2 Railroad Wrought | 13.75 to 14.25 |
| Springs, Knuckles and Couplers | 14.00 to 14.50 |
| Locomotive Tires, smooth | 14.75 to 15.25 |
| No. 1 Dealers' Forge | 11.25 to 11.75 |
| Mixed Busheling | 9.00 to 9.50 |
| Iron Axle Turnings | 8.50 to 9.00 |
| Soft Steel Axle Turnings | 8.50 to 9.00 |
| Machine Shop Turnings | 8.50 to 9.00 |
| Cast Borings | 7.25 to 7.75 |
| Mixed Borings, &c | 7.25 to 7.75 |
| No. 1 Mill | 9.00 to 9.50 |
| No. 2 Mill | 8.00 to 8.50 |
| No. 1 Boilers, cut to Sheets and Rings | 10.50 to 11.00 |
| No. 1 Cast Scrap | 13.50 to 14.00 |
| Stove Plate and Light Cast Scrap | 12.00 to 12.50 |
| Railroad Malleable | 13.25 to 13.75 |
| Agricultural Malleable | 11.50 to 12.00 |
| Pipes and Flues | 11.00 to 11.50 |

## Birmingham.

BIRMINGHAM, ALA., December 21, 1908.

**Pig Iron.**—With the approach of the holidays the inactivity of this market is more pronounced. Purchasers are apparently disposed to defer negotiations for such future deliveries as are yet to be engaged until the probable condition of the trade after the beginning of the new year is more definitely determined and the demand for spot shipment is of little moment. There has been no change in the schedule of prices. A basis of $13, Birmingham, for No. 2 Foundry is considered the market for prompt deliveries, and shipment to cover the first quarter, with an advance from that basis of 50c. per ton being asked for second quarter deliveries. So far as can be ascertained, no figures have been elicited on deliveries further advanced than the first half, and, in the case of leading producing interests, indifference is manifested as to additional commitments at quotations in existence. A comparison of order book requirements with the probable make during the first quarter indicates but a small margin against which sales can be made, although it is understood that a material addition will be made to the active producing capacity within the next 30 days. The recent engagements of Pipe manufacturers have practically relieved the market of low grades for early shipment. An effort during the week just ended to secure 3000 tons of Gray Forge is so far unsuccessful, one of the largest producers reporting the probable make of grades below No. 3 for some months in advance having been disposed of. The production of Foundry grades in this district is now represented by 18 stacks; six stacks are producing Basic Iron and one is making Charcoal Iron. It is quite unlikely that any change will be made in the active capacity before January 1.

**Cast Iron Pipe.**—The records of the week are without a criterion of values, but conditions existing are not such as to warrant an advance in published quotations. There has been no addition to the list of contracts actually in sight, and minor considerations have composed the volume of business transacted for some weeks past, yet the producing capacity has been well provided for and the outlook for the winter months is more promising than would have been expected under normal conditions. The recent movement from producers' yards to apply against contracts has been unusually large, and accumulations have been reduced to such an extent as to hardly feature in the status of the market. We quote Water Pipe as follows, per net ton, f.o.b. cars here: 4 in. to 6 in., $25; 8 in. to 12 in., $24; over 12 in., average, $23, with $1 per ton extra for Gas Pipe. These quotations would probably be shaded on large municipal contracts, but are firm for such orders as are now being offered.

**Old Material.**—As is the case in the Pig Iron market, purchasers are indisposed to negotiate for advanced deliveries and the movement for early consumption is light. Dealers adhere firmly to prices recently adopted and are unable to

increase stocks at the rate desired. The number of inquiries for Steel Scrap has increased, and in view of the scarcity of low grade Pig Iron a greater demand for Light Cast and Stove Plate for prompt shipment is anticipated. We quote dealers' asking prices as follows, per gross ton, f.o.b. cars here:

| | |
|---|---|
| Old Iron Rails | $15.00 to $15.50 |
| Old Iron Axles | 16.00 to 17.00 |
| Old Steel Axles | 13.50 to 14.00 |
| No. 1 Railroad Wrought | 14.00 to 14.50 |
| No. 2 Railroad Wrought | 11.00 to 11.50 |
| No. 1 Country Wrought | 11.00 to 11.50 |
| No. 2 Country Wrought | 9.50 to 10.00 |
| No. 1 Machinery | 11.50 to 12.00 |
| No. 1 Steel | 10.50 to 11.00 |
| Stove Plate and Light Cast | 9.50 to 10.00 |
| Cast Borings | 5.00 to 5.50 |
| Standard Car Wheels | 13.50 to 14.00 |
| Tram Car Wheels | 12.00 to 12.50 |

## Philadelphia.

PHILADELPHIA, PA., December 22, 1908.

Transactions have been on a comparatively small scale, due largely to the approaching holidays as well as to preparations for the annual closing down of plants for stock taking and repairs. The general situation, however, continues very strong in all branches of the trade. Prices are being well maintained, and advances for some grades of Pig Iron for forward delivery are paid, but the amounts taken are small, although a large business is pending. Tariff revision hearings at Washington are creating a considerable amount of interest, and the varied testimony given will probably result in a waiting policy in some cases.

**Pig Iron.**—Buying has been on a small scale, and sales have been almost entirely confined to the foundry grades. The Cast Iron Pipe interest have purchased in the aggregate about 10,000 tons for early delivery in 1909, and are still in the market for low grade Irons. The bulk of the recent sales for Pipe making purposes have been of high silicon forge Iron, at prices close around $16, delivered, although some off basic has also been sold. In the higher grades of Foundry Iron, sales have as a rule been small, individually, ranging from carloads to lots of several hundred tons for both prompt and first quarter delivery. Prices for these grades have been firmly maintained. Eastern Pennsylvania No. 2X Foundry can still be had in moderate quantity, and for reasonable delivery, at $17.25, delivered, although a good share of the sales made have been at $17.50. For forward deliveries some sellers are still out of the market, and very little has been done for anything beyond the first quarter, although there is considerable inquiry for second quarter iron. From the sellers' standpoint the situation is decidedly strong. Stocks in this section are decreasing. From statistics recently available, furnace yards do not hold over a week's supply at the present curtailed rate of production, and if the demand continues producers will soon be forced to blow in additional capacity. In instances orders for delivery in the next three months already quite exceed the capacity that some producers have in blast, and the blowing in of additional furnaces early in the year is planned. The Topton furnace of the Empire Steel & Iron Company will be blown in just after the first of the year, and soon afterward that company expects to blow in still another stack. One of the Sweede furnaces which recently met with a mishap is expected to be blown in again within a few days. Several other producers are awaiting developments, having their plants in shape for early resumption should the demand warrant it. Virginia Foundry Irons have been sold in small amounts for prompt delivery in this territory at full prices. A number of sellers are still out of the market for anything beyond first quarter delivery. A sale of nearly 1000 tons of off grade Virginia basic is reported at close to $16.50, delivered, to one of the Delaware River Pipe foundries. Southern Foundry Iron, being firmly held at $13, Birmingham, finds but a small market in this territory, not being able to compete with local Irons at the present market level. The steel making Irons show but little movement, though a large tonnage of Basic Iron is still pending. Low Phosphorus Iron is also quiet, but prices are being well maintained. Little change in any direction is expected in the next two weeks, the year's end and the holidays interfering with the routine transaction of business. The following range of prices is quoted for delivery in buyers' yards, Philadelphia, and nearby territory, in the first quarter of the year:

| | |
|---|---|
| Eastern Pennsylvania, No. 2 X Foundry | $17.25 to $17.50 |
| Eastern Pennsylvania, No. 2 Plain | 16.75 to 17.00 |
| Virginia, No. 2 X Foundry | 17.25 to 17.75 |
| Virginia, No. 2 Plain | 17.00 to 17.25 |
| Gray Forge | 16.60 to 16.50 |
| Basic | 16.75 to 17.00 |
| Low Phosphorus | 21.50 to 21.75 |

**Ferromanganese.**—The market has been dull, with inquiries light and no transactions of importance reported. For prompt delivery $45, Baltimore, is quoted, with $46 to $46.50 named for delivery over the first half of the year.

**Steel Billets.**—New business comes out slowly, being largely for small lots for prompt delivery; these, however, have recently reached a larger aggregate. Prices are unchanged. Ordinary Rolling Steel for delivery in this territory is quoted at $26.20, with Forging Steel $28.20, subject to the usual extras for high carbons and special sizes.

**Plates.**—Mills report increased orders during the week, although the business from this particular territory shows but little improvement. Boiler, locomotive and bridge Plates appear to be in best demand, although some good business is pending in other directions. For delivery in this territory the following range of prices is still quoted:

| | Carloads. Cents. | Parts carload. Cents. |
|---|---|---|
| Tank, Bridge and Boat Steel | 1.75 | 1.80 |
| Flange or Boiler Steel | 1.85 | 1.95 |
| Commercial Firebox | 1.95 | 2.00 |
| Marine | 2.15 | 2.20 |
| Locomotive Firebox Steel | 2.25 | 2.30 |

The above are base prices for ¼-in. and heavier. The following extras apply:

| | Extra per 100 lb. |
|---|---|
| 3-16-in. thick | $0.10 |
| Nos. 7 and 8, B. W. G | .15 |
| No. 9, B. W. G | .25 |
| Plates over 100 to 110 in | .05 |
| Plates over 110 to 115 in | .10 |
| Plates over 115 to 120 in | .15 |
| Plates over 120 to 125 in | .25 |
| Plates over 125 to 130 in | .50 |
| Plates over 130 in | 1.00 |

**Structural Material.**—The demand continues rather quiet. Some small lots for buildings have been placed, but large propositions are still held in abeyance. Prices are unchanged, and for delivery in this territory range from 1.75c. to 1.90c., according to specifications.

**Sheets.**—Quite a good volume of business has been offered, particularly for prompt shipment, as mills will shut down within a few days for the holidays, repairs and stock taking. Some little forward business has been taken, but as a rule orders on the books are not large. Quotations for mill shipments range as follows, a tenth extra being added for small lots: Nos. 18 to 20, 2.50c.; Nos. 22 to 24, 2.60c.; Nos. 25 to 26, 2.70c.; No. 27, 2.80c.; No. 28, 2.90c.

**Bars.**—The situation is practically unchanged. Business comes out slowly, while prices are showing greater firmness. Mills that have advanced prices beyond the market get but little business. The usual quotations for Refined Iron Bars are 1.52c. to 1.60c., for delivery in this territory. Steel Bars are inactive, at 1.55c., with Rerolled Bars at 1.50c., delivered in this district.

**Coke.**—But a small volume of business has been transacted during the week Some buyers have been in the market for supplies for the first half of next year, but contracts are still unclosed. Prices are fairly strong, but show practically no change from those quoted last week, ranging about as follows for delivery in this territory:

| | |
|---|---|
| Connellsville Furnace Coke | $3.90 to $4.10 |
| Foundry Coke | 4.20 to 4.50 |
| Mountain Furnace Coke | 3.50 to 3.70 |
| Foundry Coke | 3.80 to 4.10 |

**Old Material.**—While the market has been quiet the situation regarding Heavy Melting Steel continues rather complex. Opinions differ as to the market price of this grade, and while small scattered tonnages have been offered mills at $17 to $17.50, delivered, a proportionately small volume of this class of business is available. Large lots, however, are not to be had under the top prices quoted, and dealers have paid close to quoted figures for moderate quantities. The market continues strong, notwithstanding that sales have not been sufficiently large to test the situation. Quotations while, to a large extent, nominal, range about as follows for deliveries in buyers' yards, Philadelphia and nearby territory:

| | |
|---|---|
| No. 1 Steel Scrap and Crops | $17.50 to $18.00 |
| Low Phosphorus | 20.00 to 21.00 |
| Old Steel Axles | 22.50 to 23.00 |
| Old Iron Axles | 24.25 to 24.75 |
| Old Iron Rails | 21.25 to 21.75 |
| Old Car Wheels | 16.00 to 17.00 |
| Choice No. 1 R. R. Wrought | 20.00 to 20.50 |
| Machinery Cast | 16.00 to 16.50 |
| Railroad Malleable | 15.75 to 16.25 |
| Wrought Iron Pipe | 15.25 to 15.75 |
| No. 1 Forge Fire Scrap | 13.75 to 14.25 |
| No. 2 Light Iron | 10.00 to 10.50 |
| Wrought Turnings | 14.00 to 14.50 |
| Stove Plate | 13.75 to 14.25 |
| Cast Borings | 13.00 to 13.50 |
| Grate Bars | 14.50 to 15.00 |

William F. Watson, general sales agent for the Solid Steel Casting Company, Chester, Pa., has tendered his resignation, taking effect December 31. After that date he will open an office at 1303 Land Title Building, Philadelphia, under the firm name of Watson & Co., general iron and steel selling agents.

An order for 75,000 tons of rails for the Tientsin & Pukow Railroad in China is reported to have been placed with the German Steel Syndicate.

## Pittsburgh.

PARK BUILDING, December 23, 1908.—(*By Telegraph.*)

**Pig Iron.**—Consumers generally are waiting until after the first of the year before taking up any new negotiations. Two Open Hearth interests are inquiring for about 5000 tons of Basic Iron for delivery in the first quarter of next year, and we note sales of 500 tons of Basic for January delivery at $14.75; 150 tons of Bessemer for first quarter at $16.45, and 300 tons of Forge for prompt shipment at $14.50, all at Valley furnace. The furnaces have a fair amount of contracts on their books, against which consumers are specifying satisfactorily, and the tone of the market is firm. Little is doing in Foundry or Forge Iron. We have advanced prices on Basic and Forge, and now quote Standard Bessemer Iron, $16.50; Basic, $15.75, with some furnaces holding for $16; Malleable Bessemer, $16; No. 2 Foundry, $15.50, and Forge $14.50, all at Valley furnace, and for first quarter delivery plus a freight of 90c. a ton to Pittsburgh.

**Steel.**—Mills advise us that shipments of Billets and Sheet and Tin Bars and also Forging Billets on specifications against contracts this month will be nearly as heavy as in November, which was a good month. Few new orders are being placed, as consumers are well covered by contracts. We quote Bessemer and Open Hearth Billets, 3⅞ in. and larger, up to and including 0.25 carbon, $25; 0.26 to 0.60 carbon, $1 extra; over 0.60 carbon, $2 extra, all f.o.b. Pittsburgh. For Wheeling, Martin's Ferry, Follansbee, Newcastle, Sharon, Steubenville and Washington (Pa.) delivery, half the freight, or 50c. additional, is charged. Sheet and Tin Bars in random lengths are $27.50, f.o.b. Pittsburgh. Forging Billets take $2 advance over Rolling Billets.

(*By Mail.*)

The local Iron and Steel situation continues extremely quiet, and will continue so until after the first of the year. While there is very little buying of Pig Iron, prices are reasonably firm. Specifications against contracts for Billets and Sheet and Tin Bars are still coming in quite freely, and the tonnage shipped out by the mills this month on actual orders will be nearly as large as in November. Some nice orders have been placed for line Pipe, and a very large tonnage is pending. There is quite a flurry in the Scrap trade, and some kinds of Old Material have advanced fully $1 a ton or more, notably Bundled Sheet Scrap, which is very active.

**Ferromanganese.**—With little new buying, prices are firm, and we quote 80 per cent. foreign Ferro, for forward delivery, at about $44, seaboard, or $45.90, Pittsburgh.

**Ferrosilicon.**—A sale is reported of two cars, or some 50 tons, of 50 per cent.. at about $64.25, Pittsburgh. For delivery over first quarter and first half of next year, 50 per cent. Ferrosilicon is held at $63 to $63.50, Pittsburgh.

**Wire Rods.**—Two or three fairly large inquiries for both Wire Rods and Chain Rods are in the market, but will hardly be closed until after the first of the year. Prices are firm, and we quote Bessemer Rods at $33, Chain Rods $33, and Basic $34, Pittsburgh.

**Muck Bar.**—A sale of about 300 tons of specially high grade Muck Bar for January shipment is reported at $28.50, Pittsburgh. The higher prices ruling for Forge Iron have brought about decidedly higher prices for Muck Bar, and we quote best grades, made from all Pig Iron, at $28 to $28.50, Pittsburgh.

**Skelp.**—We note a continued active demand for both Grooved and Sheared Iron Plates, the mills being filled for several months, and some makers are quoting as high as 2c., at mill, for wide sizes of Sheared Iron Plates. As yet there is not much movement in Steel Skelp, but the market is firm. We have advanced prices on Iron Plates and now quote: Grooved Steel Skelp, 1.45c. to 1.50c.; Sheared Steel Skelp, 1.50c. to 1.60c.; Grooved Iron Skelp, 1.75c. to 1.80c., and Sheared Iron Skelp, 1.90c. to 1.95c., Pittsburgh. We note sales of 1500 to 2000 tons of Sheared Iron Plates at about 1.90c., Pittsburgh.

**Steel Rails.**—As yet the Pennsylvania Railroad order for Steel Rails has not been followed by orders from other roads, but estimates have been sent in by the Baltimore & Ohio engineers for about 65,000 tons and by the New York Central for about 150,000 tons, and the Pittsburgh & Lake Erie is expected to place its contract for about 10,000 tons before the first of the year. Indications are that 1909 will be a good year in the Rail trade. The Carnegie Steel Company received in the past week orders from several traction lines for 3000 to 4000 tons of 60 and 70 lb. sections and also new orders and specifications against contracts for over 2000 tons of Light Rails. The demand for Light Rails has been quite active all this month. Makers of Light Rails rerolled from Old Rails continue to sell at $2 to $3 a ton under Rails rolled from Billets. Prices on new Light Rails, rolled from Billets, are as follows: $25 for 25 to 45 lb. Sections, with $1 advance for 20 lb., $2 advance for 16 lb., and $3 advance for 12 lb. Standard Sections are $28, at mill, and Angle Splice Bars, 1.65c., at mill.

**Structural Material.**—This trade continues quiet, but one leading interest reports inquiries a little better. The American Bridge Company has taken about 1000 tons for grade crossings for the Lake Shore at Chicago. Bids have gone in on about 1000 tons for the new Wick Building at Youngstown, while the Second National Bank in this city will erect a bank and office building combined, requiring about 1500 tons, on which bids will be asked in a short time. The material for the Crane-Best shops at Verona, 2700 tons, has not been placed. Complaints are still being made about the very low prices made by some Structural interests, which makes it impossible in numerous cases for fabricating concerns to compete. We quote, f.o.b. mill, Pittsburgh: I-Beams and Channels, 3 to 15 in., inclusive, 1.60c., net; I-Beams over 15 in., 1.70c. net; H-Beams over 8 in., 1.80c.; Angles, 3 to 6 in., inclusive, ¼ in. and up, 1.60c., net; Angles, over 6 in., 1.70c., net; Angles, 3 x 3 in. and up, less than ¼ in., 1.50c., base, half extras, Steel Bar card; Tees, 3 in. and up, 1.65c., net; Zees, 3 in. and up, 1.60c., net; Angles, Channels and Tees under 3 in., 1.50c., base, half extras, Steel Bar card; Deck Beams and Blub Angles, 1.90c., net; Hand Rail Tees, 3c., net; Checkered and Corrugated Plates, 3c., net.

**Plates.**—This month has been extremely dull in the Plate trade, but a larger demand is expected after the first of the year. Leading Plate mills are not operating to over 60 per cent. of capacity and some are not running even that well. The tone of the market is firmer than some time ago, but concessions are still being made of $1 to $2 a ton, mostly on narrow sizes. Regular prices are as follows: Tank Plates, ¾ in. thick, 6¼ in. up to 100 in. wide, 1.60c.; base, at mill, Pittsburgh. Extras over this price are as follows:

Tank, Ship and Bridge quality, ¼-in. thick on edges, 100 in. wide, down to but not including 6 in. wide, is taken as base.

Steel Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per square foot, shall be considered ¼-in. Plate. Steel Plates over 72 in. wide must be ordered ¼-in. thick on edge, or not less than 11 lb. per square foot, to take base price. Steel Plates over 72 in. wide ordered less than 11 lb. per square foot down to the weight of 3-16-in. shall take the place of 3-16-in.

Percentages as to overweight on Plates, whether ordered to gauge or weight, to be governed by the Association of American Steel Manufacturers' Standard Specifications.

| | |
|---|---|
| Gauges under ¼-in. to and including 3-16-in. Plates on thin edges | $0.10 |
| Gauges under 3-16-in. to and including No. 8 | .15 |
| Gauges under No. 8 to and including No. 9 | .25 |
| All sketches (excepting straight taper Plates varying not more than 4 in. in width at ends, narrowest end being not less than 30 in.) | .10 |
| Complete Circles | .20 |
| Boiler and Flange Steel Plates | .10 |
| "A. B. M. A." and ordinary Firebox Steel Plates | .20 |
| Still Bottom Steel | .30 |
| Marine Steel | .40 |
| Locomotive Firebox Steel | .50 |
| Shell grade of Steel is abandoned. | |
| For widths over 100 in. up to 110 in | .05 |
| For widths over 110 in. up to 115 in | .10 |
| For widths over 115 in. up to 120 in | .15 |
| For widths over 120 in. up to 125 in | .25 |
| For widths over 125 in. up to 130 in | .50 |
| For widths over 130 in | 1.00 |

TERMS.—Net cash 30 days. Pacific Coast base, 1.50c., f.o.b. Pittsburgh.

**Sheets.**—New orders for Sheets this month have not been as plentiful as in November, but this trade always shows a falling off in the last month of the year, due to inventory period and the desire of jobbers and consumers to take in as few Sheets as possible. The market is fairly strong, but there is still some shading being done, not over $1 to $2 a ton, and mostly on Galvanized and Corrugated Sheets. For shipment from mill regular prices are as follows: Blue Annealed Sheets, No. 10 and heavier, 1.80c.; Nos. 11 and 12, 1.85c.; Nos. 13 and 14, 1.90c.; Nos. 15 and 16, 2c.; Box Annealed, Nos. 17 to 21, 2.25c.; Nos. 22 to 24, 2.30c.; Nos. 25 and 26, 2.35c.; No. 27, 2.40c.; No. 28, 2.50c.; No. 29, 2.60c.; No. 30, 2.70c. Galvanized Sheets, Nos. 10 and 11, 2.45c.; Nos. 12 and 14, 2.55c.; Nos. 15 and 16, 2.65c.; Nos. 17 to 21, 2.80c.; Nos. 22 and 24, 2.95c.; Nos. 25 and 26, 3.15c.; No. 27, 3.35c.; No. 28, 3.55c.; No. 29, 3.70c.; No. 30, 3.95c.; No. 28, Painted Roofing Sheets, $1.75 per square, and Galvanized Roofing Sheets, No. 28, $3.10 per square, for 2½-in. corrugations. These prices are subject to a rebate of 5c. per 100 lb. to the large trade under the usual conditions, jobbers charging the usual advances for small lots from store.

**Tin Plate.**—The heavy demand from the salmon packers and canning interests is pretty well over, but the Tin Plate mills have a good deal of tonnage on their books, most of which is to be filled and shipped out prior to April 1, so that they will likely run pretty full through the winter months. The market is firm, and practically all new orders are being placed at full regular prices. We quote: $3.70 for 100-lb. Cokes, 14 x 20, f.o.b. Pittsburgh, terms 30 days, less 2 per cent. off for cash in 10 days, this price being subject to the usual rebate of 5c. per base box in large lots.

**Iron and Steel Bars.**—Little new business is being placed in either Iron or Steel Bars, but this is always the case at this season of the year, and particularly so at this time, for the reason that nearly all consumers covered their requirements some time ago, and have been specifying quite

heavily against these contracts. Some fairly large inquiries are in the market for Iron Bars for first half of the year, and also a few for Steel, but owing to the high prices ruling for Scrap, which promise to still further advance, the mills rolling Iron Bars are not eager to commit themselves on contracts running over first half of the year at present prices. It is intimated that if Scrap prices continue to advance the mills will have to get more money in the near future for Iron Bars. The market is very firm, and we quote Iron Bars at 1.42c., Pittsburgh, for Western shipment, or 1.60c., Chicago, while the price for delivery in the Pittsburgh District is 1.50c. Iron Bars that have a high reputation in the trade and rolled from strictly Muck Bar stock, such as Zug, Lockhart and a few others, are held at about 1.90c., at mill. Steel Bars are firm at 1.40c., Pittsburgh, for base sizes.

**Hoops and Bands.**—This trade is over for this year, all contracts having been cleaned up, and new prices have not yet been announced. We quote as follows: Steel Hoops, 1.80c., base, full Hoop card prices; Steel Bands, 1.40c., base, half Steel card extra, all f.o.b. cars, Pittsburgh, in carload lots, for delivery during 1908.

**Railroad Spikes.**—The Erie Railroad has recently placed orders for 3000 to 4000 kegs of Railroad Spikes, and some other new orders for fair sized lots are coming out, but in a general way the Spike trade is quiet. The demand for smaller sizes is fairly active, and it is believed that very early in the new year some of the leading systems will place their orders for Spikes for delivery through 1909. Prices are firm, and we quote: Standard sizes, 4½ x 9-16 in., at $1.70, and the smaller sizes at $1.80 per 100 lb., in carload and larger lots. with an advance of 5c. per 100 lb. for less than carload, f.o.b. Pittsburgh.

**Merchant Steel.**—Few new orders are being placed, while specifications against contracts this month have fallen off materially as compared with November. The demand for Shafting is fairly active, and we are advised that regular prices are being maintained. We quote Cold Rolled Shafting at 57 per cent. off in carloads and 52 per cent. in less than carloads, delivered in base territory. Regular prices on Merchant Steel, which are being shaded to some extent, are as follows: Smooth Finished Machinery Steel, 1.80c. to 1.90c.; Flat Sleigh Shoe, 1.75c. to 1.85c.; Cutter Shoe Steel, 2.15c. to 2.25c.; Toe Calk, 1.90c. to 1.95c.; Railroad Spring Steel, 1.60c. to 1.75c., the higher prices being for Pennsylvania Railroad analysis. Carriage Spring Steel is 1.80c.; Tire Steel, Iron finish, 1½ x ½ in. and heavier, 1.40c.; under 1½ in., 1.55c. Planished Tire Steel is 1.60c., all f.o.b., at mill.

**Spelter.**—New orders for Spelter are light, but the tone of the market is fairly strong. We quote prime grades of Western at 5c., St. Louis, equal to 5.12½c., Pittsburgh.

**Merchant Pipe.**—A local natural gas company has placed an order in the past week, and another inquiry is in the market from a gas company for 80 miles of 16-in. Pipe, which is expected to be placed as soon as rights of way have been secured. We also note two other inquiries for 160 to 170 miles of 16-in. Pipe, and projects now under way calling for nearly 900 miles of line Pipe, ranging from 6 to 16-in., for next year delivery. All signs point to an enormous demand for line Pipe for next year, as some very large projects are taking shape. The general demand for Merchant sizes keeps up remarkably well, and the whole Pipe trade, when general conditions are considered, is in very satisfactory condition. We are advised that prices on both Iron and Steel Pipe are being absolutely maintained. Discounts on Steel Pipe, ¾ to 6 in., to the large trade, are 75 and 5 per cent. off list, while a few of the very largest jobbers, that have mill connections, are given 76 and 5 per cent. off list. Regular discounts are as follows:

*Merchant Pipe.*

| | Jobbers, carloads, Steel. | |
|---|---|---|
| | Black. % | Galv. % |
| ⅛ to ¼ in | 67 | 51 |
| ⅜ in | 69 | 55 |
| ½ in | 71 | 59 |
| ¾ to 6 in | 75 | 65 |
| 7 to 12 in | 72 | 57 |
| Extra strong, plain ends: | | |
| ⅛ to ⅜ in | 60 | 48 |
| ½ to 4 in | 67 | 55 |
| 4½ to 8 in | 63 | 51 |
| Double extra strong, plain ends: | | |
| ½ to 8 in | 56 | 45 |

Discounts on Genuine Iron Pipe are as follows:

| | Black. % | Galv. % |
|---|---|---|
| ⅛ to ¼ in | 65 | .. |
| ⅜ in | 67 | 53 |
| ½ in | 69 | 57 |
| ¾ to 6 in | 73 | 63 |
| 7 to 12 in | 70 | 55 |
| Extra strong, plain ends: | | |
| ⅛ to ⅜ in | 58 | 46 |
| ½ to 4 in | 65 | 53 |
| 4½ to 8 in | 61 | 49 |
| Double extra strong, plain ends: | | |
| ½ to 8 in | 54 | 43 |

**Boiler Tubes.**—Some fairly large orders for Locomotive Tubes are being placed by the railroads for repair work and new track laying, one road having made a nice contract with a local mill this week. The demand for Merchant Tubes is only fair and mostly for small lots. For Merchant Tubes in small lots, on which an extra 5 per cent. is allowed in carloads, discounts are as follows:

*Boiler Tubes.*

| | Iron. | Steel. |
|---|---|---|
| 1 to 1½ in | 42 | 47 |
| 1¾ to 2¼ in | 42 | 59 |
| 2½ in | 47 | 61 |
| 2¾ to 5 in | 52 | 65 |
| 6 to 13 in | 42 | 59 |

2½ in. and smaller, over 18 ft. long, 10 per cent. net extra.
2¾ in. and larger, over 22 ft. long, 10 per cent. net extra.

**Iron and Steel Scrap.**—Something of a corner in the Old Material trade has developed, and dealers who have large quantities of Scrap piled in their yards are holding it in the belief that prices in the near future will be higher. In the past week there has been a heavy movement in Bundled Sheet Scrap, and prices have advanced fully $1 a ton. Two mills have sold their Bundled Scrap for delivery over the next six months at $15 and better at point of shipment. Prices on Heavy Steel Scrap are very firm, and it is now held at $17 minimum, at Pittsburgh, and nearby points of delivery. There seems to be more demand for Scrap than available supply. The Eastern market is very active, and a good deal of Scrap continues to be routed through Pittsburgh for Eastern delivery, that otherwise would be consumed here. We have advanced prices on some grades, notably Heavy Steel Scrap and Bundled Sheet Scrap, and now quote per gross ton: Heavy Steel Scrap for Pittsburgh, Steubenville, Sharon, Leecuburg or Monessen delivery, $17; Cast Iron Borings, $11.50 to $11.75; Bundled Sheet Scrap, $15 to $15.25; No. 1 Busheling Scrap, $14.75 to $15; No. 2, $10.75 to $11; No. 1 Cast Scrap, $15 to $15.25; Iron Axles, $24.50 to $25; Sheet Bar Crop Ends, $21 to $21.25. Rerolling Rails, $18, delivered, Cambridge, Ohio, or $18.50, delivered, Cumberland, Md.; Low Phosphorus Melting Stock 0.04 and under, $18.50 to $19; Steel Axles, $19.50 to $20; Grate Bars, $13 to $13.25; Machine Shop Turnings, $12.50 to $13; Railroad Wrought Scrap, $17 to $17.25; Railroad Malleable Scrap, $15.50 to $15.75; Iron Rails, $18.75 to $19, and Locomotive Tires, $17.50 to $17.75. We note sales of 3000 to 4000 tons of Heavy Steel Scrap at $17, delivered, and 6000 to 8000 tons of Bundled Sheet and Tin Scrap at $15 and $15.50 at point of delivery.

**Coke.**—The Coke regions have been favored recently with some heavy rains, and prices on Furnace and Foundry Coke for prompt shipment are easier. We quote Connellsville Furnace Coke for prompt shipment at $1.75 to $1.80 per net ton, at oven, while on contracts for first half $1.90 to $2 is quoted. Connellsville 72-hr. Foundry Coke for first half is held at $2.45 to $2.50, but for prompt shipment $2.15 to $2.25 could be done. The output in the two Connellsville regions last week was 244,309 tons, an increase over the previous week of about 9000 tons.

## St. Louis.

ST. LOUIS, MO., December 21, 1908.

Though with many interests there is some slacking of demand for immediate delivery, this causes no uneasiness, since for the most part it was looked for and is normal. There is a marked contrast between the attitude of the larger manufacturers and merchants now as compared with the corresponding time a year ago. The best informed look for activity in all staple lines, basing their opinion on moderate stocks in distributers' hands, an easy money market and the free movement of the large crops of the country at good prices.

**Coke.**—All the leading sales agencies report a fair number of inquiries for Coke, both for prompt and forward shipment. Buyers seem, however, inclined to purchase cautiously, and, in fact, with some houses all their sales are confined to prompt shipment. Specifications on contract are coming in freely, and for this reason it would appear that some consumers are quite urgently needing supplies and will ere long be in the market again. With regard to prices, as the indications in the Connellsville District point to an increase in production, there is a somewhat easier feeling which tends to restrict business. For prompt or December shipment we quote for 72-hr. Foundry $2.25, at oven, Connellsville; for shipment over first half, 1909, $2.25 to $2.65.

**Pig Iron.**—The market for Pig Iron has ruled quiet during the week, the inquiry of a large car building company being the only one received for a round lot. With most buyers there is a disposition to hold off until after New Year's before entering the market, except through inquiry, part of whom are asking for quotations for shipment over the year 1909. So far as can be learned, no seller has a price for the second half of 1909 and it is difficult to place business for the second quarter, except at a premium. No sales locally are reported exceeding 1000 tons and it was stated at the close of the week that an important car building company had contractod for 8500 tons of various grades

of Iron. We quote Southern No. 2 Foundry, Birmingham, as follows: Immediate shipment and first quarter, 1909, $13; first half, 1909, $13.25; second quarter, 1909, $13.50. Ohio Iron is unchanged at $15.50 to $16 for No. 2 at Ironton; Northern Silvery, 8 per cent. Silicon, $18.50 to $19, at Jackson County furnaces.

**Finished Iron and Steel.**—The movement in Structural Material is at present confined to supplying fabricators with small lots for building and general purposes. All these plants are busy, as the aggregate of numerous small orders reaches good volume. There is more activity among car builders, which brings a good inquiry for Axles. With more inquiry from the railroads the manufacturers of Frogs are in the market for material. Reports from dealers indicate that Bar Steel and Iron are not active, and manufacturers are also going slow. Light Rails continue in fair request, and the demand for Track Supplies is excellent, the mills of the leading interest being filled up with a tonnage in orders close to what they are able to turn out.

**Old Material.**—Buyers of some of the largest plants have postponed purchases until after the holidays. There is very little spot trade passing, and what business is being transacted refers to forward shipment, for which there is some inquiry from melters. This lack of demand is causing some weakness, though as there is no disposition to force sales, we hear of no marked change in prices. None of the railroads is making offerings this week. In the absence of sales of importance we quote, nominally, as follows, per gross ton, f.o.b. St. Louis:

| | |
|---|---|
| Old Iron Rails | $17.00 to $17.50 |
| Old Steel Rails, rerolling | 15.50 to 16.00 |
| Old Steel Rails, less than 3 ft | 14.25 to 14.75 |
| Relaying Rails, standard sections, subject to inspection | 24.00 to 24.50 |
| Old Car Wheels | 16.00 to 16.50 |
| Heavy Melting Steel Scrap | 14.75 to 15.25 |
| Frogs, Switches and Guards, cut apart | 14.75 to 15.25 |
| Mixed Steel | 10.25 to 10.75 |

The following quotations are per net ton:

| | |
|---|---|
| Iron Fish Plates | $16.00 to $16.50 |
| Iron Car Axles | 20.00 to 20.50 |
| No. 1 Railroad Wrought | 14.50 to 15.00 |
| No. 2 Railroad Wrought | 13.50 to 14.00 |
| Railway Springs | 13.00 to 13.50 |
| Locomotive Tires, smooth | 13.50 to 14.00 |
| No. 1 Dealers' Forge | 11.50 to 12.00 |
| Mixed Borings, &c | 7.00 to 7.50 |
| Machine Shop Turnings | 9.50 to 10.00 |
| No. 1 Boilers, cut to Sheets and Rings | 10.00 to 10.50 |
| No. 1 Cast Scrap | 13.50 to 14.00 |
| Railroad Malleable | 12.00 to 12.50 |
| Agricultural Malleable | 10.50 to 11.00 |
| Pipes and Flues | 10.50 to 11.00 |
| Railroad Sheet Scrap | 10.50 to 11.00 |
| Railroad Grate Bars | 12.50 to 12.75 |

**Lead, Spelter, &c.**—Lead is off in price and we quote 4.05c. to 4.10c., East St. Louis. The market is dull, with very little demand. Reports indicate there may be a further decline before January 1, but after that time the market should work up. Lead Ore is held at $24.50 to $25 per 1000 lb., Joplin. Spelter is firm, at 5.10c. to 5.25c. for galvanizing. The market is quiet, owing to the leading consuming interests holding off until after the holidays. Such purchases as are now being bought for December may be considered as January business. Zinc Ore is a little lower, at $42.50 to $43 per ton, Joplin basis. All production is practically cleaned up. The market for Tin, Antimony and Copper is easier.

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The Pemberton Investment Company will erect on the corner of Seventh street and Washington avenue a 10-story fireproof commercial and office building, to cost $200,000. Eames & Towne, architects, state that the plans are nearly completed. It is expected that work on the building will be begun February 1.

The coagulant house of the city water works is nearing completion. The building is made up of eight concrete cylinders, each 20 x 50 ft. inside. On top of the whole is a large room, 100 ft. long by 20 ft. wide. The cost of the structure will exceed $80,000, and about $20,000 additional will be expended for machinery, consisting of a power shovel, conveyors, pumps, &c., which will be operated by electricity.

The city of St. Louis is using in its Water Department 500 tons of copperas per month at a cost of $10 per ton. Copperas is used in connection with lime for precipitating the mud in the river water.

The work of checking up the plans for the City Hospital is practically completed, and an ordinance will soon be drafted authorizing the construction of the buildings. The estimates show the buildings will cost about $900,000, the plans calling for four structures. The main building will be five stories, and at each side of it will be two hospital wings, each four stories.

A new implement factory to be occupied by the Oliver Chilled Plow Works will be erected at the corner of Broadway and Warren street, to cost $150,000. The building will be a six-story structure, having a frontage on Broadway of 80 ft. and of 170 ft. on Warren street.

The H. A. Fuller Iron & Steel Company has been appointed local agent for the Lukens Iron & Steel Company, Coatesville, Pa.

The Hoyt Metal Company states that during the past fortnight a marked revival of demand has taken place. This was not looked for until after New Year's.

## Cincinnati.

CINCINNATI, OHIO, December 23, 1908.—(*By Telegraph.*)

The local Iron and Steel market is quiet. Managers, officers and sales agents of the various establishments are busied with inventories or making preparations for a confidently expected revival all along the line about the middle of January. There are, too, a number of important changes in Pig Iron sales offices, and some rumors of new offices to be started. The coming year is expected to be an important one in Scrap circles; some new establishments are to be located, and with the immense stocks of Old Material on yards of the larger dealers there is promised considerable activity. As a rule manufacturing establishments are increasing time and forces, and the majority of them are busied with getting out new tools or adding improvements. Foundries are increasing their melt through the increased orders coming in for castings for tool making and woodworking machinery manufacturers and special machinery.

**Pig Iron.**—An occasional order is received for a hurry shipment on spot Iron, contracting for the first quarter, and with many large consumers for the entire first half having been effected in November or early December. There is no change in prices of either Northern or Southern, save that the Ohio furnaces making High Silicon Irons confine quotations to the first quarter, and are asking 50c. advance for the second quarter, which is also true of most furnaces in the Ironton District on Foundry Iron. For the entire first half $13, Birmingham, can be done, but for the second quarter alone the price is $13.50. There is a great dearth of low grades, the experience of a prominent car manufacturing interest which has just bought some Iron for its Detroit plant demonstrating the point quite clearly. Of a total of about 8000 tons of Nos. 1 and 2 Foundry and Gray Forge, for delivery March to June, only the Foundry Iron was obtained. Another large furnace interest which had a price in on the entire tonnage refused to contract for the Forge alone at the reported price of $11.50, Birmingham. The Foundry Iron was sold at about $16.80, and $16.30, for Nos. 1 and 2, respectively, delivered Detroit, and a northern Ohio furnace interest is accredited with the sale. It is also reported that a prominent manufacturer of plumbing supplies which asked for 4000 to 5000 tons, to be delivered to its Louisville plant, has bought a considerable portion of the tonnage required in this market. The Iron wanted was Nos. 2 and 3 Foundry, and for the second quarter. A price of $13, Birmingham, is mentioned in connection with the deal. Furnaces are selling ahead of Forge, something unusual, and some respectives are holding the price at about $11.25, minimum, Birmingham. There is a tendency on the part of manufacturers of Silveries to establish a range covering the first half of 50c. over the published flat price of $18.50, at furnace, for 8 to 9 per cent., and 9 to 10 per cent. is quoted at $19.50, flat, minimum rate. Nothing is heard of Basic or Malleable, and the little resale Iron abroad a few days ago seems to be exhausted. While railroads in this territory will restore the old rates on Iron based on $1.20 from the Hanging Rock District on February 1, there is no sign that the prevailing rate of $3.25 from Birmingham will be disturbed. For delivery, Cincinnati, through the first quarter and half, based on freight rates of $3.25 from Birmingham, and $1.10 from the Hanging Rock District, we quote as follows:

| | |
|---|---|
| Southern Coke, No. 1 | $16.75 to $17.25 |
| Southern Coke, No. 2 | 16.25 to 16.75 |
| Southern Coke, No. 3 | 15.75 to 16.25 |
| Southern Coke, No. 4 | 15.25 to 15.75 |
| Southern Coke, No. 1 Soft | 16.75 to 17.25 |
| Southern Coke, No. 2 Soft | 16.25 to 16.75 |
| Southern Coke, Gray Forge | 14.75 to 15.25 |
| Southern Mottled | 14.50 to 15.00 |
| Ohio Silvery, 8 per cent. Silicon | 19.60 to 20.10 |
| Lake Superior Coke, No. 1 | 17.10 to 17.60 |
| Lake Superior Coke, No. 2 | 16.60 to 17.10 |
| Lake Superior Coke, No. 3 | 16.10 to 16.60 |
| Standard Southern Car Wheel | 22.25 to 23.25 |
| Lake Superior Car Wheel | 21.75 to 22.75 |

(*By Mail.*)

**Coke.**—The market is quiet, with little moving save the hurry shipments to take care of the holidays when workmen in the Coke districts are difficult to handle. It is estimated here that only 60 to 65 per cent. of the oven capacity is active, and this steadies the price in times like the present by preventing overproduction. Connellsville Coke is selling at $1.85 to $1.90 for Furnace, $2.10 to $2.25 for Foundry spot, and $2.25 to $2.50 for Foundry contract. Pocahontas grades are selling at $1.90 for Furnace and $2.50 for Foundry. The demand for Foundry Coke is improving slowly, and it is expected that the first of the year will see some good spot business.

**Finished Iron and Steel.**—All dealers report business light, with few specifications in sight on structural material.

On the better grades of Steel for tool manufacture some good orders are reported. This is inventory taking time with most houses here and little business is anticipated until after the holiday season. If the expected revival in business in the tool and general machinery line develops there will be something the nature of a boom in Tool Steel, according to a large local dealer. The report reaches here that the Snead Architectural Iron Works Company has secured the contract for structural material to go into the new Hermitage Hotel at Nashville, Tenn., 1000 tons, and that work is going ahead on the contract. On finished lines, in small or medium orders, local dealers' prices are as follows, f.o.b. Cincinnati: Iron Bars, carload lots, 1.55c., base, with half extras; small lots from store, 1.85c., base, half extras; Steel Plates, carload lots, 1.75c., base, with half extras; small lots from store, 1.85c., base, half extras; Base Angles, carload lots, 1.85c., base; small lots from store, 2.10c.; Beams, Channels and Structural Angles, 1.85c., base; small lots from store, 2.10c.; Plates, ¼-in. and heavier, carload lots, 1.85c.; small lots from store, 2c.; Blue Annealed Sheets, heavy, No. 16, carload lots, 2.15c.; small lots from store, 2.50c.; No. 14, carload lots, 2.05c.; small lots from store, 2.40c.; No. 10 and heavier, carload lots, 1.95c.; small lots from store, 2.20c.; No. 12, carload lots, 2c.; small lots from store, 2.30c.; Sheets (Light), Black, No. 28, carload lots, 2.65c.; Galvanized Sheets, No. 28, carload lots, 3.70c.; Steel Tire, 4-in. and heavier, carload lots, 1.95c.; Plates, 3-16 and No. 8, carload lots, 2c.; small lots from store, 2.20c.

**Old Material.**—The Scrap markets are very quiet, a usual occurrence the last month of the year, but dealers are preparing for a revival about the 15th or the 20th of January. There is some demand for No. 1 Machinery Scrap at $15 per net ton, the minimum price, but as a rule all descriptions are dull at published prices. Foundries are inquiring about Cast Scrap, the firmness of the Pig Iron markets working to the interests of the Scrap dealer. Asking prices locally are about as follows, and are f.o.b. Cincinnati:

| | |
|---|---|
| No. 1 R. R. Wrought, net ton | $14.50 to $15.50 |
| Cast Borings, net ton | 5.50 to 6.50 |
| Heavy Melting Steel Scrap, gross ton | 15.50 to 16.00 |
| Steel Turnings, net ton | 6.00 to 7.00 |
| No. 1 Cast Scrap, net ton | 13.00 to 14.00 |
| Burnt Cast, net ton | 9.00 to 10.00 |
| Old Iron Axles, net ton | 16.75 to 17.75 |
| Old Iron Rails, gross ton | 15.00 to 16.00 |
| Old Steel Rails, short, gross ton | 13.00 to 14.00 |
| Old Steel Rails, long, gross ton | 13.00 to 14.00 |
| Relaying Rails, 56 lb. and up, gross ton | 21.50 to 22.50 |
| Old Car Wheels, gross ton | 15.50 to 16.50 |
| Low Phosphorus Scrap, gross ton | 14.00 to 15.00 |

## Buffalo.

BUFFALO, N. Y., December 22, 1908.

**Pig Iron.**—The usual holiday dullness pervades the market, which, although strong, is quiet and featureless. Shipments in good volume are going forward from the furnaces, and there is a general feeling of confidence among producers that there will be a steady gain in consumption and that increased prices will go hand in hand with the increased demand, which is expected the fore part of the new year. We quote as follows, f.o.b. Buffalo:

| | |
|---|---|
| No. 1 X Foundry | $16.50 to $17.00 |
| No. 2 X Foundry | 16.00 to 16.50 |
| No. 2 Plain | 15.50 to 16.00 |
| No. 3 Foundry | 15.50 to 16.00 |
| Gray Forge | 15.50 to 15.75 |
| Basic | 16.00 to 16.50 |
| Malleable Bessemer | 17.00 to 17.50 |
| Charcoal | 20.75 to 21.25 |

**Old Material.**—The demand is extremely light in all lines, incident to the year-end holiday season, and the market is likely to remain inactive and trade continue quiet until after the completion of inventories the first of the year. The following prices, f.o.b. Buffalo, which are largely nominal, closely represent the market:

| | |
|---|---|
| Heavy Melting Steel Scrap | $15.50 to $16.00 |
| No. 1 Railroad Wrought | 17.00 to 17.75 |
| No. 1 Railroad and Machinery Cast Scrap | 15.25 to 16.00 |
| Old Steel Axles | 19.00 to 20.00 |
| Old Iron Axles | 22.50 to 23.50 |
| Old Car Wheels | 16.75 to 17.75 |
| Railroad Malleable | 14.50 to 15.00 |
| Boiler Plate | 13.00 to 13.50 |
| Locomotive Grate Bars | 12.50 to 13.00 |
| Pipe | 12.50 to 13.00 |
| Wrought Iron and Soft Steel Turnings | 9.25 to 9.75 |
| Cast Iron Borings | 8.75 to 9.25 |
| No. 1 Busheling Scrap | 14.25 to 14.75 |

**Finished Iron and Steel.**—Although business is feeling the holiday quietness, and there is some let up in the placement of new orders, specifications on contracts continue in good volume, especially for Bars and small Shapes, and compared with a year ago very satisfactory conditions exist. Indications are numerous that the beginning of the new year will show an increasing ratio of activity and agumentation in volume of business in all lines of Finished Iron and Steel. Bids covering the Structural Material for the addition to the New Process Raw Hide Company's factory building at Syracuse, about 160 tons, were closed Wednesday of this week.

## Cleveland.

CLEVELAND, OHIO, December 22, 1908.

**Iron Ore.**—The reservation of a considerable tonnage of Old Range Bessémer Ore for 1909 has been made by several furnace interests. The Merchant Ore firms have not yet taken up the question of prices for the coming season, and will probably not do so for several weeks. Consumers who have spoken for certain tonnages of Ore have an understanding that they will pay the regular market price. While some of the Bessemer Ore consumers are looking after their Ore supply much earlier than they did the past year, an active buying movement is not expected for the next two months at least. Sales of a few small lots of Ore on the docks are reported in the past few days, but very little unsold Ore was shipped down the lakes the past season. A few orders for shipment from docks to furnace yards are coming in, deliveries to continue as long as the weather is satisfactory. The lake shipping season closed December 21, with the receipt of a cargo at Milwaukee from Escanaba. The amount of Ore on Lake Erie docks at the close of the shipping season is estimated at 8,000,000 tons, or slightly more than a year ago. Ore prices at Lake Erie ports are as follows: Old Range Bessemer, $4.50; Mesaba Bessemer, $4.25; Old Range non-Bessemer, $3.70; Mesaba non-Bessemer, $3.50.

**Pig Iron.**—While not entirely lifeless, the local market is very quiet. The only sale of any size reported was 2500 tons of No. 2 Northern Foundry to an Indiana melter for first quarter delivery. A local interest reports new inquiries for 4000 to 5000 tons of Foundry Iron coming from consumers who had previously covered for a portion of their requirements for the first half, but who have decided to take on some more tonnage now that their melt has increased and there is prospect for a further increase after the first of the year. The largest inquiry was for 1000 tons. The local market is firm, but a slight weakness is reported in the Hanging Rock District, where there is considerable Iron on the stock piles. For spot shipment No. 2 Foundry Iron is being quoted at $15 to $15.25, at furnace, by Hanging Rock furnaces, and $15.50 for first half. These prices do not affect the market in this immediate vicinity as the freight rate from the Hanging Rock District to Cleveland is $1.40. Consumers are taking Iron freely on contract, no requests to withhold shipments being made. Local furnaces have little Iron in their yards and reports from the valleys indicate that the stock piles of Foundry Iron in the furnace yards there have been largely reduced. The high price of Scrap has stimulated the demand somewhat for No. 3 and off Iron. A local furnace interest which has been practically out of the market for several weeks is again offering No. 2 Foundry for first quarter and first half delivery at $16, at furnace, for outside shipment, and $16.50 to $16.75, delivered, Cleveland. Local furnace interests are not disposed to quote prices for last half delivery, and an inquiry by a Cleveland foundry for 2000 tons for that delivery did not result in a sale. The demand for Malleable Iron is still light, the only inquiries being for small lots. A local interest reports one inquiry for a round tonnage of Basic Iron. For first quarter and first half we quote, delivered, Cleveland, as follows:

| | |
|---|---|
| Bessemer | $17.40 to $17.90 |
| Northern Foundry, No. 1 | 16.90 to 17.40 |
| Northern Foundry, No. 2 | 16.50 to 16.90 |
| Northern Foundry, No. 3 | 16.00 to 16.50 |
| Gray Forge | 15.25 to 15.75 |
| Southern Foundry, No. 2 | 17.35 |
| Jackson County Silvery, 8 per cent. Silicon | 20.05 |

**Coke.**—The market is very quiet. Consumers seem to be well covered for the first half of the year. There is a good demand for Foundry Coke on contracts and foundrymen are urging prompt shipments. A local interest that is planning to start some additional ovens reports a scarcity of labor in the Coke regions. We quote Standard Connellsville Furnace Coke at $1.80 to $1.90, at oven, for spot shipment, and $2 to $2.10 for first half delivery. Connellsville 72-hr. Foundry Coke is quoted at $2.25 to $2.50 for first half delivery and $2.20 to $2.25 for spot shipment.

**Finished Iron and Steel.**—Few new orders are being placed, and specifications, while fairly good, are not as large as in November. The volume of business is as good as was expected, however, considering that the holiday season and inventory time is at hand. The outlook for considerable improvement after the first of the year is regarded as very encouraging, for the reason that the majority of consumers have low stocks and they are gradually consuming more material. Local jobbers have closed contracts with mills for a good tonnage of Steel Bars and other products for stock and mill shipments, these contracts to take the place of others that expire January 1. The only good sized order taken from a consumer was for 2500 tons of Plates, Shapes and Steel Bars. A meeting of the Western Bar Iron men was held in Indianapolis, December 17, at which the question of prices was discussed, but no action was taken. It was the opinion of those present that present prices were unsatisfactory, but it was deemed unwise to make an advance because of the light demand for Iron Bars at present. The two local Bar Iron mills are running, having a fair volume of specifications on low priced contracts that expire January 1.

but the outlook for orders after the first of the year is not encouraging. A good volume of specifications for Steel Bars continues to come in, and there is a fairly good demand for Structural Material from fabricators and bridge builders. Bridge building plants that do municipal and county highway work have a large amount of work on hand. The demand for Sheets shows considerable improvement. Quite a number of orders have been placed recently by manufacturing consumers for Black and Galvanized Sheets for delivery, beginning after the first of the year, the contracts extending to July 1. Sheet prices are being fairly well maintained, and some of the independent mills are six weeks behind on deliveries. Some specifications for Boiler Plates are beginning to come from builders of traction engines. The only new Plate inquiry of importance is one from the Lake Shore Railroad for its requirements during the coming year. Plate prices are fairly firm, but there is still some cutting. Mills are getting some specifications on Billet contracts. The demand for Light Rails in car lots continues fairly good. Some orders from railroads for Track Supplies in very small lots are being received. Orders received by jobbers are light. We quote: Iron Bars, 1.50c., Cleveland, for car lots; Steel Bars, 1.60c., Cleveland, for car lots, half extras; Beams and Channels, 1.70c., base, Cleveland, and Plates, ¼-in. and heavier, 1.70c., Cleveland. We quote Sheets, mill shipments, car lots, Cleveland, as follows: Blue Annealed, No. 10, 1.90c.; Box Annealed, No. 28, 2.60c.; Galvanized, No. 28, 3.65c. Jobbers quote Iron Bars out of stock at 1.55c. to 1.60c., and Steel Bars at 1.60c. to 1.70c. Beams and Channels from warehouse are 2c., and Plates, ¼-in. and heavier, 1.90c. Warehouse prices on Sheets are as follows: Blue Annealed, No. 10, 2.10c.; Box Annealed, No. 28, 2.70c.; Galvanized, No. 28, 3.80c. Warehouse prices on Boiler Tubes, 2¾ to 5 in., are 65 per cent. discount, and on Black Merchant Iron Pipe, base sizes, 71 per cent. discount.

**Old Material.**—The market is very quiet and shows signs of weakness. Busheling has declined 50c. a ton, but other prices remain about stationary. Present quotations would, doubtless, have to be shaded a little to move material. The local mills are taking little Scrap on contract, and, as they have fair stocks on hand, are not expected to need more than a limited amount until after the beginning of the year. The majority of the dealers are looking for a fair demand in January, when they think prices will again become firm, and they are not disposed to let go of their stocks at any shading of prices. Dealers' prices to the trade per gross ton, f.o.b. Cleveland, are as follows:

| | |
|---|---|
| Old Steel Rails | $16.50 to $17.00 |
| Old Iron Rails | 19.50 to 20.00 |
| Steel Car Axles | 20.50 to 21.00 |
| Old Car Wheels | 16.00 to 16.50 |
| Heavy Melting Steel | 15.25 to 15.75 |
| Relaying Rails, 50 lb. and over | 22.00 to 23.00 |
| Railroad Malleable | 14.50 to 15.00 |
| Agricultural Malleable | 13.50 to 14.00 |
| Light Bundled Sheet Scrap | 9.50 to 10.00 |

The following prices are per net ton, f.o.b. Cleveland:

| | |
|---|---|
| Iron Car Axles | $20.00 to $20.50 |
| Cast Borings | 8.50 to 9.00 |
| Iron and Steel Turnings and Drillings | 9.50 to 10.00 |
| Steel Axle Turnings | 11.00 to 11.50 |
| No. 1 Busheling | 13.00 to 13.50 |
| No. 1 Railroad Wrought | 15.50 to 16.00 |
| No. 1 Cast | 14.00 to 14.50 |
| Stove Plate | 12.00 to 12.50 |
| Bundled Tin Scrap | 9.00 |

## New York.

NEW YORK, December 23, 1908.

**Pig Iron.**—Aside from the sale of a block of 20,000 tons of Basic Pig to an open hearth Steel melter in eastern Pennsylvania, no large transactions are reported. Some round blocks have been sold to Pipe makers, and the run of small orders for Founders is good. Some good business, however, is pending, and the market is steady. We quote $17.50 to $17.75 for No. 1 Northern Foundry, $17 to $17.50 for No. 2 Foundry, and $16.50 to $16.75 for No. 2 Plain. Alabama Irons are quoted $17.50 to $17.75 for No. 1 Foundry, and $17.25 to $17.50 for No. 2 Foundry.

**Steel Rails.**—The Baltimore & Ohio Railroad has not definitely entered the market for its requirements for 1909, but is reported to be figuring on 65,000 tons, a portion of which—less than half—will be Open Hearth Rails. In other directions some good business is pending, of which announcement is expected within a week or two. The last purchase for the Isthmian Canal, amounting to 1100 tons, went to the Lackawanna Steel Company.

**Structural Material.**—The year's bookings of the American Bridge Company will approximate 250,000 tons, or a little more than half the business taken in 1907. The other fabricating companies, however, have increased greatly this year the proportion of the total which went to them in 1907, and their contracts for 1908 are estimated at 750,000 tons. At 1,000,000 tons roundly the Bridge and Steel building business done this year is practically equal to that reported for 1907. The American Bridge Company secured the principal fabricating contract of the past week, the City Hall at Chicago, 11,000 tons, the general contract for which was taken by the Noel Construction Company. The Lackawanna Steel Company will do the fabricating work for the White Building, Seattle, Wash., about 1000 tons. Other business recently placed includes 900 tons of bridge work for the Baltimore & Ohio, taken by the Phoenix Bridge Company; 1500 tons for the Hotel Ordway, St. Paul, by A. Bolter's Sons, Chicago; 500 tons for the State Library, Hartford, Conn., by Levering & Garrigues; 1100 tons for a bascule bridge at Milwaukee, by the Worden-Allen Company, Milwaukee; 1200 tons for the Cosmopolitan Electric Company Building, Chicago, by the Morava Construction Company; 500 tons for a power house at Bellevue Hospital, New York; 2000 tons for elevated work at Division and Allen streets, New York, for the Interborough system. On this last project, which came up early in the year and was only recently revived, there was spirited competition. While the general situation in Steel construction is quiet, as the year draws to a close, the amount of work ahead is considerable, though in many cases the time of its actual development into orders is indefinite. The manufacturers have been selling to dealers in Structural Shapes in recent weeks for delivery in the first quarter, while in the case of fabricators and of other manufacturers who are buyers of Shapes, some contracts covering the year 1909 have been entered into. We quote as follows, on mill shipments of plain material, tidewater deliveries: Beams, Channels, Angles and Zees, 1.76c.; Tees, 1.81c. On Beams, 18 to 24 in., and Angles, over 6 in., the extra is 0.10c. Structural Material, cut to lengths, is sold in small lots at 2¼c.

**Bars.**—The demand is light for early delivery, but consumers are making inquiries on fairly large quantities to cover requirements for the early portion of next year. It is probable that some contracts would be placed now if manufacturers were willing to meet buyers' views, but, as raw material is considerably dearer than it has been, and the mills are rather better supplied with orders, prices are held firmly, and only the smaller makers will quote under the general price of 1.56c., tidewater, for Bar Iron. Steel Bars are firmly held, at 1.56c., tidewater.

**Plates.**—The market is exceedingly quiet. Practically no inquiries are being received for more than carload lots. Prices are firmly held, on Standard Sized Plates, as follows, at tidewater: Sheared Plates, 1.76c. to 1.86c.; Flange Plates, 1.86c. to 1.96c.; Marine Plates, 2.16c. to 2.26c.; Firebox Plates, 2.65c. to 3.50c., according to specifications.

**Cast Iron Pipe.**—A few orders are still being received for small quantities of Pipe for immediate delivery to close water works extensions before severe winter weather sets in. Occasionally an order of this kind calls for a good sized lot. Manufacturers quote on carload lots of 6-in. Pipe for such shipment $24.50 per net ton, tidewater. Some business is being done for spring delivery on the basis of about $1 per ton advance. Manufacturers are looking forward to a large business next year in view of the fact that so much work which should have been done in the past year was deferred. This will be undertaken of course as soon as financial arrangements can be made.

**Ferroalloys.**—Ferromanganese continues firm, and it is pointed out that the present price of $45, Baltimore, represents an advance of not over $3 from the lowest figures of the year. This is a smaller percentage of advance than in practically any other line. While 50 per cent. Ferrosilicon shows some improvement the market is still uneven, $67, Pittsburgh, being quoted in some quarters, but it is possible that $65 could be done for second hands.

**Old Material.**—Some weakness is noted in Rerolling Steel Rails, and it is also observed that No. 1 Railroad Wrought can be had at a little under recent figures. The demand for Heavy Steel Scrap has by no means completely subsided, but the large eastern Pennsylvania consumers are endeavoring to control the market and are not willing to pay the prices asked by holders. The immediate demand for Rolling Mill Stock and Cast Scrap is not heavy, but the trade is looking forward to a renewed buying movement in January. Quotations are as follows, New York and vicinity, per gross ton:

| | |
|---|---|
| Old Girder and T Rails for melting | $14.00 to $14.50 |
| Heavy Melting Steel Scrap | 14.00 to 14.50 |
| Old Steel Rails, rerolling lengths | 15.50 to 16.00 |
| Relaying Rails | 22.50 to 23.00 |
| Old Iron Rails | 19.00 to 19.50 |
| Standard Hammered Iron Car Axles | 21.50 to 22.00 |
| Old Steel Car Axles | 18.50 to 19.00 |
| No. 1 Railroad Wrought | 17.00 to 17.50 |
| Iron Track Scrap | 15.00 to 15.50 |
| No. 1 Yard Wrought, long | 16.50 to 17.00 |
| No. 1 Yard Wrought, short | 15.00 to 15.50 |
| Light Iron | 8.50 to 9.00 |
| Cast Borings | 10.00 to 10.50 |
| Wrought Turnings | 11.00 to 11.50 |
| Wrought Pipe | 13.00 to 13.50 |
| Old Car Wheels | 15.00 to 15.50 |
| No. 1 Heavy Cast, broken up | 14.50 to 15.00 |
| Stove Plate | 12.50 to 13.00 |
| Locomotive Grate Bars | 12.50 to 13.00 |
| Malleable Cast | 13.50 to 14.00 |

# Metal Market.

NEW YORK, December 23, 1908.

**Pig Tin.**—Business shows no improvement over last week, although inquiries have been slightly more numerous. The trade in general, however, agrees that the ability of the market to sustain the prices in the face of such poor business demonstrates that the London operators have the situation well in hand. The same conditions now prevail which were noticed last week, deliveries being specified on Tin which was purchased in October and November. Price changes during the week have been unimportant, the trend, however, being toward higher levels, as follows:

| | Cents. |
|---|---|
| December 16 | 29.05 to 29.10 |
| December 17 | 29.00 |
| December 18 | 29.00 |
| December 21 | 29.10 |
| December 22 | 29.20 |
| December 23 | 29.20 |

The London market has advanced about 10s. from last week and closes at £132 12s. 6d. for spot and £134 5s. for futures. The arrivals so far this month are large, amounting to 2762 tons, and the afloats for American ports are likewise large, being 3076 tons.

**Copper.**—The situation is mixed. Spot Electrolytic Copper, for immediate shipment, can be had at 14.12½c. to 14.15c., but for future deliveries the market is higher. For January and February 14.25c. is asked, and March deliveries command 14.37½c. This is a usual condition, following such a heavy buying movement as took place in November, and only shows that some stray lots of Spot are unsold. Lake Copper is slightly easier, at 14.50c. In the Sheet Copper trade the activity is falling off, and in the Brass trade a noticeable diminution of business has been noted in the last week. The wire trade is still very quiet. The new smelting company incorporated last week may have an important bearing on the Copper trade in the future. The London market closes firm to-day, at £63 1s. 3d., for spot, and £63 18s. 9d. for futures. Representatives of perhaps 75 per cent. of the tonnage of Copper produced in the United States met in the office of Phelps, Dodge & Co., last week, for the purpose of conferring with respect to statistics of the Copper production. At present there are no official figures available regarding the production of Copper except those compiled by the Geological Survey, which appear six months after the close of the year. The meeting lasted about an hour and a half, and no very definite agreement was reached. Any movement to restrict production, however, would meet with serious opposition, and more than one producer would refuse to be a party to such an agreement. The publication of figures of production may perhaps be carried out. The late John Stanton published such figures in the early '90s, but these were afterward discontinued through the refusal of some companies to make reports. At present, probably every large producer compiles figures month to month which will check up within 2 per cent. of the Government's estimate at the end of the year.

**Pig Lead.**—Some good business has been done in Lead this week, and consumers have bought freely at constantly lower prices. The best day of the week was Tuesday when Soft Missouri brands sold at 4.17½c. to 4.20c. The lowest price was reached about 2 o'clock, and by 3 o'clock an announcement was made that the American Smelting & Refining Company had cut its price 10c. per 100 lb. to 4.20c., New York, for shipment Lead in 50-ton lots. Doubtless the Lead market is under the continued influence of agitation for tariff revision, and the incorporation of a new independent smelting company promises much for lower prices.

**Spelter.**—The market has been dull, but prices are fairly well sustained, and Prime Western brands are quotable at 5.15c., New York, and 5c. to 5.02½c., St. Louis.

**Antimony.**—Unchanged quotations prevail for Antimony and the market continues dull and featureless. Hallett's is quoted at 8.12½c. to 8.25c., Cookson's at 8.37½c. to 8.50c., and outside brands at 8c.

**Tin Plate.**—Orders are coming in to the mills fairly well and prices are firm, at $3.70, Pittsburgh, and $3.89, New York, for 100-lb. I. C. Coke Plates. In Swansea, Welsh Plates continued unchanged, at 12s. 1½d.

**Old Metals.**—The market is firm, although the business transacted is of small volume. The following dealers' selling prices represent actual transactions during the week, but to-day the market is nearer the upper rather than the lower limit.

| | Cents. |
|---|---|
| Copper, Heavy Cut and Crucible | 13.50 to 13.75 |
| Copper, Heavy and Wire | 13.25 to 13.50 |
| Copper, Light and Bottoms | 12.00 to 12.25 |
| Brass, Heavy | 9.50 to 9.75 |
| Brass, Light | 7.50 to 7.75 |
| Heavy Machine Composition | 12.50 to 13.00 |
| Clean Brass Turnings | 8.50 to 9.00 |
| Composition Turnings | 10.50 to 11.00 |
| Lead, Heavy | 4.15 |
| Lead, Tea | 3.90 |
| Zinc Scrap | 3.75 |

# Iron and Industrial Stocks.

NEW YORK, December 23, 1908.

Securities of all kinds have fluctuated somewhat widely since the last report. A sharp decline in American Smelting & Refining stock had a sympathetic influence on other securities, and the downward tendency was accelerated by the tariff hearings at Washington. The decline continued until Monday of this week, when lowest prices on this movement were realized. Much better prices were made on Tuesday, when a general recovery was apparently firmly established. The range of prices on iron and industrial stocks from Thursday of last week to Monday of this week was as follows:

| | | | |
|---|---|---|---|
| Allis-Chalm., com. | 15 - 16⅛ | Railway Spr., pref. | 100 -101 |
| Allis-Chalm., pref. | 48¼- 50¼ | Republic, com | 24 - 26⅝ |
| Beth. Steel, com. | 21 - 22½ | Republic, pref | 85¼- 86½ |
| Beth. Steel, pref. | 51 - 52 | Sloss, com | 76⅛- 78 |
| Can, com | 8½- 9⅛ | Pipe, com | 27½- 28¾ |
| Can, pref | 72 - 74½ | Pipe, pref | 75¾ |
| Car & Fdry, com. | 45¼- 47¼ | Steel, com | 51¼- 54⅛ |
| Car & Fdry, pref. | 107 -108½ | Steel, pref | 110½-112 |
| Steel Foundries | 39 - 40 | West. Electric | 84½- 89½ |
| Colorado Fuel | 36½- 38⅜ | Chic. Pneu. Tool | 25 |
| Gen. Electric | 155½-161 | Am. Ship, com | 56 |
| Gr. N. ore cert | 70 - 73½ | Am. Ship, pref | 103 |
| Int. Harv., com. | 62 - 65 | Cambria Steel | 38⅛- 39 |
| Int. Harv., pref. | 108¾-109¼ | L. S. Corp | 12½- 14¾ |
| Locomotive, com. | 53⅜- 56¼ | Penna. Steel, pref | 104 |
| Locomotive pref. | 109½ | Warwick I. & S Co | 8 |
| Nat. En. & St., com. | 13 - 13½ | Crucible Steel, com. | 8 - 8¼ |
| Pressed St., com. | 40¼- 43 | Crucible Steel, pref. | 57¼- 58 |
| Pressed St., pref. | 99 - 99⅞ | Harb.-Walker, Ref | 16½ |
| Railway Spr., com. | 44¾- 47 | | |

Last quotations up to 1.30 p.m. to-day on active iron and industrial stocks are reported as follows: United States Steel common 53¾, preferred 112, bonds 102½; Car & Foundry common 47⅛, preferred 109; Locomotive common 56, preferred 110¼; Colorado Fuel 39⅜; Pressed Steel common 42, preferred 99½; Railway Spring common 48; Republic common 25, preferred 85¼; Sloss-Sheffield common 78; Cast Iron Pipe common 28¼, preferred 79¾; Can common 8¾, preferred 73⅞.

Directors of the Crucible Steel Company of America, Pittsburgh, met in that city last week but took no action on the dividend on the preferred stock which was passed about a year ago. A statement was issued for the three months ended November 30, which was regarded as quite favorable, and which is as follows:

Earnings after deducting all expenditures for repairs, interest, &c.:

| | |
|---|---|
| September | $90,966.75 |
| October | 156,878.44 |
| November | 163,367.55 |
| Total | $411,212.74 |
| Deduct: | |
| Reserve set aside for contingencies | 8,224.26 |
| Net profits for the quarter | $402,988.48 |
| Surplus November 30, 1908 | $2,095,882.75 |
| Surplus August 31, 1907 | 1,692,894.27 |
| Increase | $402,988.48 |

The above statement of earnings is based on inventory values of raw material at cost or market values, whichever was the lower, and the material in process and finished stock at approximate cost of manufacture. The condition of the company's plants has been fully maintained, $140,335.93 having been charged against the operations of the quarter for repairs and renewals.

The foregoing compares with the corresponding quarter in the two preceding years as follows:

| | | | |
|---|---|---|---|
| Net earnings | $411,213 | $193,524 | $542,345 |
| Reserve for contingencies | 8,224 | 5,838 | 10,922 |
| Balance for dividends | $402,988 | $187,688 | $531,422 |
| Preferred dividend | | 244,365 | 366,548 |
| Deficit | | $56,676 | |
| Surplus | $402,988 | | $164,875 |

**Dividends.**—The American Locomotive Company has declared the regular quarterly dividend of 1¾ per cent. on the preferred stock, payable January 21.

The Westinghouse Air Brake Company has declared the regular quarterly dividend of 2½ per cent., payable January 9.

The Union Switch & Signal Company has declared the regular quarterly dividend of 3 per cent. on the common and preferred stocks, payable January 11.

The Central Coal & Coke Company has declared a quarterly dividend of 1¼ per cent. on the preferred stock and 1½ per cent. on the common stock, payable January 15.

Manning, Maxwell & Moore have declared the regular quarterly dividend of 1½ per cent., payable December 31.

It is estimated by the New York *Journal of Commerce* that $180,250,188 will be disbursed in dividends and interest in the United States in January, as compared with $182,653,533 one year previous. Dividends are $7,615,350 less than in January, 1908, while interest is $5,212,005 more in view of the numerous bond and note issues.

# Foundry Cupola Practice.*

## Smaller Charges as a Remedy for Melting Troubles.

BY DR. RICHARD MOLDENKE, WATCHUNG, N. J.

In the last few years considerable has been written on the subject of imperfect castings and many and varied have been the reasons advanced to account for the existence of pin, gas and slag holes, interior shrinkages, draws, cracks, and the like. The supposition that these undesirable manifestations are solely due to molding troubles, bad sand, air in the molds which cannot escape fast enough, bad design, or an improper mixture of metal, does not always convince the experienced foundryman. He has, however, no other recourse than to correct what he can in his practice as he sees it, and trust that he will soon get out of his run of bad luck. Usually by the time things begin to get irritating the castings have all been made and the trouble is forgotten for the time being.

For a number of years it has been my feeling that aside from causes easily seen and remedied, the fundamental difficulty in nearly all cases of imperfect castings lies deeper, and may be found directly in the manner in which the stock is melted down. In other words, there is something about every melting process, whether cupola, air furnace or open hearth, that must be taken into account, otherwise a greater or less number of the castings made will show spongy spots, pin holes, &c., when machined.

### The St. Louis Foundry Coke Tests.

Foundrymen will remember that several years ago very elaborate cupola melting tests were made at the Government testing plant in connection with the St. Louis Exposition. I was in charge of this work and present at nearly every individual test, and hence could observe the peculiar behavior of the several cokes tested out. A large number of cokes made on the premises from coals gathered all over the country, and selected specially for their probable usefulness for foundry purposes, were run through two small cupolas under standard conditions and the results noted. The series of tables subsequently published, while giving the coal producer information of direct value to him for his special use, also demonstrated a number of things for the foundry which it would have been impossible to get in ordinary practice, as no individual could afford to burn up a lot of valuable iron in order to derive information therefrom.

As these tests really form the basis for what is to follow, a few words in further explanation may not be amiss. The Technological Branch of the United States Geological Survey coked a great number of coals sent in by producers all over the country. Wherever these cokes showed a composition anywhere near foundry requirements, some was set aside for melting tests. In all some 190 tests were made. Three thousand pounds of metal was melted in each test. In order to have uniform conditions for the coke bed and still suit the average coke made 14 in. above the lower tuyeres was selected, and this hight kept for every test. The upper tuyeres were kept closed. A melting ratio of 7 to 1 was adopted. The coke used for the bed was weighed as put into the proper mark. In this manner, measuring the hight of the bed by a wire and weight dropped in the exact amount of coke used could be noted. This weight varied from 180 to 230 lb., showing quite a range in specific gravity. Four times this weight was charged in metal, and the successive charges of coke and metal divided up into four parts, coke varying from 50 to 62 lb., and the metal correspondingly.

Blast was put on- about 7 oz.—and the time noted when iron began to show at the spout. Iron came in [illegible] to 15 min. This is interesting as indicating the rate at which coke was consumed and the iron brought into the melting zone. With the best results the iron came in 7 to 10 min.

### Losses from Burnt Iron.

Necessarily for the extremely light and the unduly heavy cokes this melting practice would spell disaster, and it did so, the melting loss showing this up very markedly. Possibly this may convince many foundrymen who think it impossible to burn iron in the cupola. The results show this melting loss to be from 3.2 all the way up to 52.5 per cent. of the metal charged. The cupolas were constantly slagged off, but in the worst case above mentioned so much slag was made that it flooded the tuyeres, and effectually stopped operations. When bottom was dropped, there was no metal remaining. It was quite evident that the lighter varieties of coke burned away so fast that the metal came to the lower portion of the melting zone much earlier than it should. Hence metal was burned directly by the blast. The first heavy charge in melting lowered this coke bed to a point which not only ruined the metal melted, but also prevented the subsequent charges of coke from restoring the bed to its proper level again. The burning, therefore, continued and a very bad heat resulted.

Now taking the very heavy cokes. Here it was necessary to wait quite a while before the bed had burned low enough to begin melting. Necessarily to keep the ratio of 1 to 4 for the first charge, a very heavy one resulted. Here again the coke bed was lowered unduly in melting this first extra heavy charge, again bringing the metal too close to the blast. Result—burnt metal. The trouble in such cases, however, was aggravated by the fact that the subsequent coke charges were very small, too much going into the bed and burning away without effect. Hence, again difficulty, and the bottom dropped with a lot of unmelted pig iron remaining. The fuel became insufficient to support even the Bessemerizing influence of the blast.

So it will be seen that where the melting process with a given coke and conditions normal gives good iron, it does not necessarily follow that any other coke will act the same, and hence many are the mistakes made in using new varieties of coke in a foundry without studying the conditions that should obtain to get results from them.

### Burning Under Various Conditions.

A word about burning iron in the cupola: Those who have watched the making of the iron silicates can realize how very little silica can carry great quantities of iron to make a thin black slag. In the heating shop where steel or wrought iron billets are made ready for the hammers, this process can be watched very nicely. The regenerative system of heating the modern furnace keeps things intensely hot in them, and as the billets become red and then white hot the metal oxidizes and wastes away rapidly, uniting with the sand bottom to form a rich silicate, which flows out of the back of the hearth in a steady, thin stream. This material is prized by the blast furnace as a wash, and is easily 60 per cent. and over in iron content. In the bottom of the open hearth furnace after a malleable heat oftentimes pools of iron remain which rapidly oxidize, burning with a display of fine sparks, to disappear after uniting with the sand bottom as a dark spot on a fiery surface. Of the Bessemer process nothing need be said here, as the burning of the metal is a self-evident proposition, though theoretically the iron goes last. In the case of the blast furnace one has only to note that a given size of furnace which produces 250 tons a day under one set of conditions and makes good, honest iron for the foundryman, is made to yield double the amount in another place, with a corresponding diminution in value to the foundry. Some of the metal made gets oxidized before arriving in the crucible. In the cupola it is a simple thing to watch the scintillations from the drops of iron falling through the coke bed. Every little shot is thus coated with a skin of oxide as it passes the fresh blast and goes into the mass bath below. Just how much this oxidation amounts to depends upon the position of the stock with reference to the melting zone, as the material runs off molten.

Whether the blast first attacks the lining and this eats up the oxidized metal, or the oxidized metal unites

* A paper presented to the American Foundrymen's Association and the Philadelphia Foundry Foremen's Association jointly.

with the ash of the coke, needing so little silica, matters very little. The slag formed eventually gets blown upward and to the sides, the rich iron oxides greedily eat the lining, and great quantities of slag result. In the case above cited where the melting loss was over half the metal charged, the slag contained 43.50 per cent. iron.

**Effect of Reduction in Melting Time.**

A study of the St. Louis results leads one to look into the melting process a little. Melting in the crucible has always given the best results, and simply because the oxidizing influences are at a minimum. In the air furnace proper attention to the melting, and doing away with the thin edge of molten metal on the sand bottom by making this approach the open hearth shape more, does away with much of the oxidation resulting in weak metal. In the open hearth, as well as the air furnace, the reduction of the time in melting does more than anything else to keep the quality of the metal up.

In the case of the cupola things are more complex. It is necessary to see what function each part of the operation serves. Take the coke bed; this may be divided into three parts. The first is that portion below the tuyeres which serves as a filling. It occupies the space intended to hold the molten iron, and holds up the balance of the charges. The second portion of the bed is that just above the tuyeres and up to the zone of melting. In this space the blast has its oxygen more or less converted to carbonic acid and carbonic oxide. The third portion is the incandescent coke at which the actual melting takes place. The second and third portions of the coke, of course, shade into each other, the temperature of the coke rising from the comparatively dull heat of the bottom filling to the hottest part of the melting line. As the metal melts this line—if it may be so called—naturally drops downward, and when all of the first charge is gone the first intermediate coke charge gets on the bed, bringing it upward again. The second charge of iron is melted, the bed dropped in so doing, and again the next intermediate coke charge brings it up—and so on. On the nicety of the charges depends the rate of melting, the melting loss and a number of other things.

That practically only the portion of the coke above the tuyeres does any melting is proved by the fact that in many foundries, where it is not desired to hold any metal in the cupola at all, the tuyeres are placed a few inches from the bottom. Again, that the lower portion of the coke above the tuyeres is also not effective for good is shown by the damage done when the iron gets too low. Hence the upper part only of the coke charge should be counted as effective, and study be given it to see how it can be made most so.

**Too Heavy Charges Give Trouble.**

The first question that presents itself to the thinking mind is, Why, if only the upper part of the coke bed does the melting, and this part, being used up in so doing, is replaced by the small coke charge above—why is the first charge in cupolas made heavier than the rest? It seems unreasonable, in fact, absolutely incorrect to do so. Think a moment. Iron does not begin to melt until the coke has burned down to the proper point. It takes more coke burned away after melting starts to care for a big first charge than for a little one, such as those subsequently used. Therefore, with the big charge the coke bed has been lowered so much that the subsequent coke charge does not restore the bed to its original hight; in fact, far from it. The second iron charge, therefore, does not begin to melt where the first one did, but much below it. The result is burnt iron in both cases. This goes right on for every succeeding charge, the latter end of each being too low and near the blast, which at this low point contains a lot of unconsumed oxygen. Usually we find that the intermediate coke charges are just a little large, and gradually the line of melting is brought back to where it should be, and hence the burning trouble is confined to the first part of the heat. One often hears that toward the end of a heat the iron comes slow, and by cutting the coke in the last charges a little, quicker results are obtained. This is simply due to the extra large coke charges bringing the bed above the melting line, and hence coke must be burned away to get the iron into the proper place again for melting. The conclusion that one must come to, if the reasoning is correct, is that the first charge shall be no larger than the others succeeding.

The second thought that comes from this is the natural result of the first, and that is, if the unreasonable fluctuation of the melting zone produced by an excessively large first charge does damage to the metal, then why not make all the charges not only alike, but as small as it is possible to make them, in order to hold the melting line as constant as possible. Herein lies the change I suggest in cupola practice, as it is carried on to-day. I have tried this method repeatedly in the last year with remarkable results, nearly all the imperfections mentioned in the beginning of this paper being wiped out wherever the charges were made very small, the bed started off at the right hight, and the intermediate coke charges proportioned in such a way that uniform melting resulted throughout the heat, it being assumed, of course, that the chemical composition is correct and that charging and melting are accomplished with care.

The bed may be accepted as of proper hight when iron comes at the spout in 7 to 10 min., the latter time being preferable. The charges are made so small that the coke between just covers them and no more. The ratio of iron and coke is kept just the same as previously in starting off this way, except that after deducting the coke for the bed from the sum total of coke charged, all the iron and all the coke left is divided up into equal and small charges. After running a while it will invariably be found that the coke can be reduced somewhat, as the small charge system keeps the melting so uniform that the fuel formerly used in making slag and keeping it hot, is applied for melting iron.

**Results with Smaller Charges.**

It may be of interest to say that with cupolas of about 54 in. inside diameter the metal charges have been made as low as 750 lb. each and with admirable results. In general, however, it is well to be guided by the coke between the metal charges, keeping this down to the smallest convenient amount. In this way there is a quick succession of coke layers to keep the bed right up to the proper level. In no case is the metal charge so large that the melting line is lowered very materially, and hence a minimum of iron is burned. The consequence of this is the practical wiping out of pin holes, the removal of draws, gas pockets, lessening of strains which mean cracks, and the closing up or rather prevention of spongy metal. All this, of course, not in its entirety, but in so great a measure that the discount is lowered to a highly gratifying extent. I could name case after case, where upon being called in to assist over such difficulties, this simple and logical charging method, has accomplished everything that could be desired. I take pleasure, therefore, in giving it to the foundry public for criticism and trial. It may help some one who has castings to make which are machined and put under pressure tests.

I need not call attention to the greater uniformity in the mixture attained by this small charge method. This alone would commend it to the smaller jobber, who oftentimes has either no bull ladle or a very small one, holding, say, half of a charge only.

My own suggestion for charging a cupola, especially for big heats, would be somewhat on the following line: Have the cupola cut off 6 in. above the platform, and arrange a hood further up to draw off the gases. (This, I believe, is done in England in some places.) Have a large cylinder of the inside diameter of the cupola and provided with a drop bottom. Place the charges for the cupola inside this cylinder, or several of them, laying the metal, scrap and coke evenly and carefully. Do this in your metal yard. Then transport to the cupola, run directly over it by some overhead method, and drop the charges squarely into the cupola. This will reduce the platform labor to next to nothing, allow the charges to be weighed and laid right, and mean only the handling in the yard.

# The Machinery Trade.

NEW YORK, December 23, 1908.

The effect of the holidays is being felt in the machinery trade, where a temporary lull in the demand is believed to be only a natural result of the season and in no wise manifests the trend of business. In fact, the little interest on the part of buyers of mechanical equipment seems to be taken as a matter of course, and merchants freely express the opinion that they do not expect much activity until after the opening of the year. Shortly thereafter, however, a perceptible forward movement is looked for. Up to the middle of last week a fair business was transacted, but since our last report the demand has fallen off materially. None of the large interests have come into the market for important requirements, the business being made up almost wholly of small lots of tools. With lines of manufacture affiliated with the machinery trade conditions are similar. In power equipment a good sized proposition is before the trade, which is expected to be closed this week.

While there is no concerted movement in the machinery trade toward closing up business houses next Saturday, from all appearances there will not be a great deal of business done toward the latter end of the week, as several leading machinery manufacturers and dealers have announced to their selling force that their offices will be closed on the day following Christmas. This also applies to the offices of many New York representatives of manufacturers who maintain only small quarters in the city.

The Crosby Company, Buffalo, N. Y., manufacturer of stamped metal goods, has let contracts for the additions it is to make to its plant, consisting of two three-story brick buildings, each 60 x 124 ft., and one four-story brick building, 40 x 146 ft., giving a total frontage of 400 ft. on Pratt street. About $40,000 worth of new metalworking machinery is being negotiated for, as part of the equipment of the new additions. These buildings will represent an investment approximating $200,000 and will very largely increase the capacity of the plant.

The Ellsworth Company, fiscal agent for the Radial Wireless Telegraph & Telephone Company, has rented a factory at 16-22 Boyden place, Newark, N. J., in which machinery equipment will be installed for the manufacture of wireless apparatus. The company will require considerable special machinery and some machine tools. All of the apparatus will be motor driven, and from all accounts no purchases have yet been made. Roscoe Kent, who can be addressed at the plant, is the chief engineer. In addition to manufacturing its own apparatus, the company expects to make experimental equipment for others in the field of wireless telegraphy and wireless telephony.

The Hilles & Jones Company, Wilmington, Del., received the order from the Harlan & Hollingsworth Corporation, Wilmington, Del., for the machinery equipment for the latter's new underframe shop. The machinery purchased included various punching and shearing machines for steel underframes, three special drills, coping machines and plate bending rolls.

The Canadian Palace Car Company, Ltd., Montreal, Canada, in which A. J. Estes, Sovereign Bank Building, is interested, is perfecting arrangements to manufacture parlor and sleeping cars in Canada under rights obtained from the American Parlor Car Company, New York. The company is capitalized at $1,300,000, and has not yet prepared plans for a plant.

The Scranton Railway Company, Scranton, Pa., has planned a new power station on the block system, and now has under construction a boiler room, 75 x 120 ft., which will ultimately be 240 ft. long, and an engine room, 60 x 60 ft., which will ultimately be 180 ft. long. The building will be of brick and steel construction with concrete roof. The new unit is only half of the capacity of the company's present station, but the new station when completed will have double the capacity of the old one. The company is now installing five Stirling boilers of approximately 420 hp. each and one 1600-kw. electric unit, the generator being of the General Electric direct current type, and the engine is a 30 x 62 x 54 in. cross compound condensing Rice & Sargent. The boiler room will be provided with overhead coal bunkers and forced and induced draft, and the engine room will have a 60-ton traveling crane. When the plant shall be extended to its maximum, as now planned, the building will contain 16 boilers and 4 1600-kw. electric units.

For the fourth time bids for Barge Canal Contract No. 20, which includes the dredging of the channel in the Mohawk River from Rexford Flats to Little Falls, a distance of nearly 60 miles, have been in excess of the engineer's estimate of $4,173,000, and award can only be made with the approval of the State Engineer and the Canal Board. The two bids opened December 22 were Sundstrom & Stratton Company, New York, $4,973,800, and the American Pipe Mfg. Company, Philadelphia, Pa., $4,913,168.

The incorporation at Trenton, N. J., of the International Smelting & Refining Company with a capital stock of $50,000,000, is understood to be the first step toward the construction of several large copper smelters by interests connected with the Amalgamated Copper Company. Among those prominently connected with the new enterprise is John D. Ryan of the Amalgamated Copper Company, who will shortly go West to look over the ground and determine where the company can begin operations to the best advantage. The operations of this new company will be watched with a great deal of interest by manufacturers who supply equipment for smelting and refining plants.

The Board of Water Supply, Gas and Electricity, New York, has again rejected all bids for the building of the Wallkill siphon, a part of the new Catskill waterworks. It is said that the bids were rejected because the board believed that the lowest bidder for the work had not had sufficient experience to carry out such a large contract. It is now having trouble with the McNally Company, which has a contract for similar work at Peekskill, N. Y., and it does not care to get into another such difficulty. The estimated cost of the work is about $4,000,000.

## Philadelphia Machinery Market.

PHILADELPHIA, PA., December 22, 1908.

Buying in this territory continues along narrow lines, as is to be expected at this season. Some scattered business has come out, but on the whole manufacturers and merchants find the market dull. The tendency of those buying for improvements and extensions is to carry matters under consideration over into the next year, as with preparations under way for the year-end stock taking no new equipment beyond that absolutely required for maintenance is taken in. Most of the business placed recently comes from the smaller plants; the larger ones are still waiting. The railroads also show but little disposition to make purchases of machine tools, although the orders placed last week by the Pennsylvania Railroad for its steel rail requirements for next year, a good portion of which comes to Eastern mills, are expected to stimulate trade to a considerable extent.

Machine tool builders report no material gain in new business taken, and are not increasing production to any marked degree. With present forces, a considerable quantity of fresh business can be taken care of without apparent notice. As a rule, plants are still being operated on a 50 to 75 per cent. basis. The smaller plants continue to show the most activity. Among larger plants, the Baldwin Locomotive Works notes a betterment in conditions, orders have been coming out somewhat more freely, and the prospects for the future are encouraging. But even though the new orders taken show a marked increase over the volume of a few months ago, no increase in working forces or hours of labor has yet been necessary to take care of the output.

There is a fair amount of general inquiry for medium size tools, mostly, however, in small lots. Some good business in the heavier class of tools is still being considered but develops slowly, while the demand for special tools shows but little change. A good proportion of the inquiry is to get prices on probable equipment, to be considered, along with other matters concerning future policies which will likely be taken up in annual board meetings after the first of the year.

The foreign demand shows but little change, apart from some little business in special equipment, little in the way of orders for standard machine tools coming out.

In the second-hand machinery market conditions follow closely those to be noted in the general market. The demand has been rather irregular. The class of tools sold varies, but considering the season of the year a fair volume of business continues to be transacted. The demand for second-hand boilers and engines has not been very active, a seasonable decline being noted. In new power equipment there is a better demand, particularly in the medium and larger horsepowers for plant installation. Some little business in central power station equipment which has been before the trade for some time is still unclosed, and no movement in this class of work is expected until after the turn of the year.

In the foundry trade new business develops but slowly, although both gray iron and steel casting plants are showing signs of more activity. But little work comes from the machine tool builders, orders being largely of a general nature, although some improvement is to be noted in railroad work, particularly in the construction of cars.

The Hydro-Electric Company is now having plans prepared for a one-story water power plant to be built on Main street, Nanayunk, on the bank of the Schuylkill River. The building is to be of brick and concrete and will be 70 x 140 ft.

The Latta & Terry Construction Company, Pennsylvania Building, has been awarded the contract for the building of a sewage disposal plant at the Girls' House of Refuge at Darlington, Delaware County, Pa. The cost will run something over $10,000.

Plans and specifications have been completed for a new

power and drying house to be built for the Delaware Storage & Freezing Company, at American and Willow streets. It will be of reinforced concrete, 40 x 120 ft. Henry L. Reinhold, Jr., has been engaged on the plans.

Koelle-Spaeth & Co., architects and engineers, have been commissioned to prepare plans and specifications for a brewery plant to be erected in Panama for the Panama Brewing Company. The building is to be of steel and concrete, the main portion being 80 x 180 ft., three stories high.

The Pennsylvania Railroad has begun work at its Juniata shops on 15 locomotives of the "H-8-b" type. They are intended for extra heavy service, weighing about 120 tons each. The tenders have a carrying capacity of 13½ tons of coal and 7000 gal. of water. The boilers are to be of the standard Belpaire type, 180 ft. long,, with minimum inside diameter of 76¾ in. The total grate area is 55.13 sq. ft. and the total heating surface 3839 sq. ft. The Juniata shop will be quite actively engaged with this and other work for some time to come.

Proposals will be received for 17 classes of supplies for use in various departments for the city of Philadelphia, by Henry Clay, Director of Public Safety, until December 28, 1908. The requirements cover a wide range, including hardware and machinery supplies, repairs to machinery, elevators, power plant, castings, wrought and malleable fittings, clay products, firebrick and specialties of different kinds to be supplied throughout the year. Specifications may be had and samples seen on application to Room 217, City Hall.

## New England Machinery Market.

BOSTON, MASS., December 22, 1908.

The slight reaction in the machine tool trade continues. A steady volume of orders is being booked by the dealers, but totals are not quite so large as they were a few weeks ago. The holiday season is exerting its usual influence, and, coupled with it, according to general belief, is the effect of the tariff agitation, the hearings at Washington having been very carefully followed, as the various lines of manufacturing were directly interested. Especially engrossing have been the hearings on the iron and steel schedules, which have been carefully read by a great many men who are influential in the buying end of the machinery market. The effect, naturally, is a slight retarding influence, which may not be removed until Congress has shown its hand as to the probable outcome of the discussions in the way of a new tariff. It is not thought, however, that this will prevent a radical improvement in business after the beginning of 1909. The very large increase in clearing house figures in the West indicates that the farming sections are receiving and disbursing the proceeds of the gigantic crops of 1908, and the effects of the buying of these great areas of prosperity are being felt more and more in the East, with each succeeding week, and have already begun to reach the manufacturers of all kinds of goods. The bond market indicates a healthy demand for industrial securities. As for the machine tool manufacturers, their business is slowly but surely improving, more so in some cases than in others, but in every shop there is a change for the better. One of the indications of the important increase of business in general manufacturing is the activity of the press builders, who are receiving large numbers of inquiries, not only from established concerns, but from industries which are still in the incipient stages of development.

In looking over the machine tool situation with the purpose of considering the effect that a sharp revival of business will have on deliveries, it becomes apparent that it will not take long for a brisk market to absorb the stocks which the builders have accumulated to a greater or less extent. Even now immediate delivery is not obtainable in all cases, either from the stocks of dealers or the shops of the builders. It is a well established fact that the machine tool output of the United States does not nearly equal such a demand as that of 1906 and 1907, even with the greatly increased facilities of to-day as compared with those of the larger part of the two great years. There are at present hundreds of engine lathes, many drills and some milling machines, planers, grinders and shapers in the stockrooms of the shops. Of the more expensive machines, the stocks are smaller. The dealers believe that business will reach the normal productive capacity of the shops before the first half of 1909 is ended, and that even earlier certain classes of machines will cease to be available for reasonably quick delivery. If, as expected, a really great market will be experienced before the close of 1909, then even the most energetic manufacturing on the part of the builders will avail but little, and the great stock of engine lathes of the standard patterns will be wiped out. In connection with this question it is important to note that the chief market at the present time is for the higher priced tools. Users of machinery who are buying are apparently not seeking to extend their equipment in the sense of increasing the number of machines, but are replacing older tools with those that will effect an economy of production. The total of such business is considerable.

The extraordinary activity of the textile industry in planning to extend manufacturing facilities, and, generally speaking, in the increasing volume of production, is strongly reflected in the textile machinery business. With the exception of the builders of woolen and worsted machinery the demand is very strong. One large concern has sold its narrow fabric looms up to next summer and its silk looms up to the late spring, while the woolen and worsted machinery departments are quite busy, though not running at maximum capacity. The other works of New England, which produce the various types of machinery used in manufacturing textile goods, are correspondingly busy. The result is that they are buying some tools, not only in scattering single machine orders, but in several instances in considerable lots.

The Connecticut River Company, which operates a large water power at Windsor Locks, Conn., has filed formal notice that it intends to petition the Connecticut Legislature for the right to construct dams across the Connecticut River between the towns of Suffield and Enfield and between Windsor Locks and East Windsor, for the purpose of improving navigation and obtaining additional water and electric power for its own use and for supplying manufacturers. This enterprise would not only mean largely increasing power facilities in the thriving community bordering upon the company's power canal, but it is said would help toward solving the navigation problem of the river by opening the way to vessels between Hartford, the present head of navigation, and Springfield and Holyoke, Mass.

A new street railroad enterprise is that of the Boston & Western Electric Railroad Company, which is petitioning the Massachusetts Railroad Commission for the right to operate a system from Waltham to Marlboro, Mass., through the towns of Weston, Wayland, Sudbury and Maynard.

The business of Boynton & Plummer, Worcester, Mass., manufacturers of blacksmiths' tools and machinery, has been incorporated as Boynton & Plummer, Inc., under Massachusetts laws, with capital stock of $40,000. W. J. H. Nourse, Worcester, is the president; William H. Wilder, Gardner, Mass., treasurer; Ernest F. Hodgson, Dover, Mass., vice-president, and Paul Wilder, Gardner, clerk. The business was recently purchased by William H. Wilder from the estate of James Kindred, who had conducted it for years and who recently died. Mr. Wilder is the head of the Central Oil & Gas Stove Company, Gardner. Mr. Hodgson is president of the E. F. Hodgson Portable House Company, Dover. It is the purpose of the company to further develop the present line of tools and to make a specialty of garage equipments.

The Simplex Faucet Company is removing its factory from Hyde Park, Mass., to Bridgeport, Conn., where it has taken a part of the building of the Grant Mfg. & Machine Company, at 90 Silliman avenue. The company will be manufacturing at the new location in about six weeks.

A corporation is organizing to establish a plant at 696 East First street, South Boston, for the welding of metal by the Davis-Bournonville process. Fred M. Fay, Chicopee Falls, Mass., will head the business, which will be incorporated in Massachusetts within a few days.

## Chicago Machinery Market.

CHICAGO, ILL., December 22, 1908.

A summary of the week's business in machinery lines, as gathered from reports made by machinery houses, indicates a falling off in the rate at which orders have been coming in since the first of the month. The movement started at that time seems likely to prove a shortlived spurt; but, in truth, it was scarcely believed by any one that there was enough insistence back of it to prolong it with unimpaired vigor over the holiday period. From past experience it is evident that nothing short of an unusually urgent demand would suffice to overcome the dullness commonly coincident with this period. Nothing of unusual size in the way of orders or inquiries is coming out, nor is there anything to indicate that the railroads are making any haste to enter the market. Touching the requirements of one of the Western roads, it was stated by the purchasing department that it would require a considerable amount of machinery equipment in the coming year; but when it would be bought, and for how much orders would actually be placed, was as yet wholly undetermined.

In common with the better demand experienced in other machinery lines, there was a livelier run of orders for pneumatic tools through the first half of the month, but here, too, the evidences of spasmodic movement are beginning to develop. The quietness of the last few days is expected to last through the remaining days of the year. There is no change, however, in the confident feeling that exists in all branches of trade that there will be no permanent retrogression, but the belief is generally entertained that the entrance of the

new year will mark the opening of gradual progress toward busier times.

Articles for the incorporation of the Mason Automobile Company, Des Moines, Iowa, with a capital stock of $250,000, have been filed. This organization will take over the plant and business of the Mason Motor Car Company, and will prepare to increase its output. To this end it is planned to immediately enlarge the present plant to a capacity of 1000 machines per year, and for this purpose the construction of a new two-story brick or concrete building 96 x 150 ft. is contemplated. The carrying out of these plans will probably involve the purchase of some additional machinery.

Because of limitations of its present capacity, the Strubler Computing Scale Company, Elkhart, Ind., expects to build a new factory between now and next spring. A location for the new plant has not been definitely decided upon as yet.

The Brownell Improvement Company, Chamber of Commerce Building, Chicago, has recently equipped a new 60 x 150 ft. machine shop in connection with its rock crushing plant at Thornton, Ill. The machinery for this installation was supplied by the H. A. Stocker Machinery Company, Chicago.

The expenditure of $30,000 for the installation of an hydro-electric heat, light and power plant is being considered by the Escondido Mutual Water Company, Escondido, Cal. This will include the construction of a dam, powerhouse and the installation of a 150-kw. generator and water turbine, together with necessary auxiliary apparatus.

Burns & McDonnell, engineers, Kansas City, Mo., are preparing plans and specifications for the new water works system to be installed by the city of Council Bluffs, Iowa. It is expected that bids on material and equipment will be invited some time in February.

## Cincinnati Machinery Market.

CINCINNATI, OHIO, December 22, 1908.

December is quiet in the machine tool trade—to this opinion there is scarcely a dissenting voice—that is, in the matter of new orders. But there is a pleasing air of business about the offices and the unmistakable evidences of increase in time and forces in the shop departments. With the larger establishments December greatly resembles September's experiences. October showed an improvement and November was ranked as really good, comparatively speaking. The most important inquiry before the trade is that of the Western railroad which asks for prices on a long list of tools needed for its various shops. This came through the Chicago representatives of various Cincinnati tool manufacturers, and the specifications are such that the builders of some special tools feel rather confident of landing a goodly portion of the order. Conspicuous among these are manufacturers of heavy duty upright drills.

Tool men generally are busy getting out November orders and the few scattering ones that have come in for December. They look for a good January. There is little foreign inquiry, but Canada and Mexico have furnished some fairly good business for local manufacturers in the past few weeks.

The average working time in local establishments is now 40 hr. per week, although some are working the full 55 hr. and a few isolated cases are known where 59 hr. are being maintained.

The dealers in special tool steels report continued activity, which indicates that tool builders are replacing parts taken from machines on the stock floor and in process of construction during the past year.

Several of the local manufacturers are redesigning tools and among these the lathe, planer, shaper and drill builders lead.

Boring mills have been in specially good demand, one manufacturer noting sales of five heavy types to Chicago and New England parties respectively in the past few weeks.

With the Bradford Machine Tool Company December represents the best shipping month of the year since February.

The Sebastian Lathe Company, Covington, Ky., reports a number of excellent orders for 16-in. lathes from a wide range of territory. With this company September, October and December are regarded as three good months. Some nice orders were received from New York for the stock floors and several tools were shipped to Mexico to go into the tool rooms of large sugar plantations. This establishment is on a 55-hr. per week schedule and employing a full force, save two or three vacancies in the expert machinist [illegible].

The Fosdick Machine Tool Company, which is changing officials in the retirement of Philip Fosdick, who disposes of his stock to Arthur Leatherby, for 10 years superintendent of the Hamilton Machine Tool Company, at Hamilton, Ohio, is enjoying a fine run of business in high speed drills. Mr. Leatherby will assume the position of vice-president and superintendent about January 1. Clifford Kern is president and manager.

The recording of a document at La Porte, Ind., showing that James P. Goodrich, receiver of the Chicago, Cincinnati & Louisville Railroad, has contracted with the Haskell & Barker Car Company, Michigan City, for 460 cars, to cost $372,076, is pleasing news to local tool manufacturers.

Another important development in local tool building circles is the incorporation of the Acme Machine Tool Company, referred to in former correspondence, by C. H. M. Atkins, president of the Warner Elevator Company; B. B. Quillen of the Cincinnati Planer Company, E. N. Atkins, J. H. Williams, and W. H. Burtner. This company will continue at the Buck street plant of the Cincinnati Planer Company, which, on or about the first of the year, will, it is said, manufacture the greater part of its output at its new plant in the Oakley factory colony.

Local foundrymen in conjunction with C. E. Hoyt of Cleveland; F. N. Perkins, Indianapolis, Ind.; N. E. Kanavel, Cleveland; E. N. Roth of the Sinton Hotel, Cincinnati, and Will L. Finch of the Cincinnati Convention League, met on Saturday to work out the preliminaries for the entertainment of the National Foundrymen's Association and allied organizations here in the spring.

The annual election of the Engineers' Club of Cincinnati was held in the rooms of the Literary Club Friday night. Officers elected were: President, F. M. Crocker; vice-president, E. H. Berry; secretary and librarian, E. A. Gant; directors, J. N. Caldwell, H. C. Innes and J. A. Lilly. The club membership is now 160. It is proposed to start a fund soon for a permanent building.

A test is being made in a hemp factory located in Fayette County, Kentucky, of a machine devised and manufactured by the Maysville, Ky., Foundry & Machinery Company. This company, which has contracts for castings from several Cincinnati tool manufacturers, is enjoying a run of prosperity, working full time with almost its full quota of workmen.

The Hamilton Mfg. Company, Hamilton, Ohio, is testing one of its pit car loaders in the Castle Shannon mine of the Pittsburgh District. Good reports come to the company from Gary, Ind., where it has in successful operation one of its coal storage machines.

Some innovations in the conduct of large establishments for the buying and selling of old material are expected in the opening for business of the Southern Iron & Steel Company of Cincinnati. The company has bought the buildings and site of the old Cincinnati water works, on Front street, which has a river frontage of 300 ft. and a depth of approximately 350 ft., or to the water's edge, and will install electric magnets of 2 tons capacity, four shears, one each No. 1 and 3, and two No. 18; also power plant and possibly some other machinery. The shears will be operated by gas, but electricity will be the medium for operation of all other machinery. The company will, for the present, it is announced, confine itself to the handling of iron and steel scrap and pig iron. It will take advantage of the river transportation rates, which is considerable, and, regarding Cincinnati as an especially stragetic point in the iron and steel trade, expects to build up a big business. Organization is not yet effected, but it is practically certain that G. M. Skiles of Shelby, Ohio, will be president, and L. B. Sawyer, attorney, of Cincinnati, secretary and treasurer. The capital stock for the present will be $150,000. The gentlemen interested in the new company are: G. M. Skiles, R. C. Skiles, J. T. Green and Joseph Goldberger of Shelby, Ohio; J. W. Wolfe, and L. B. Sawyer. It is hoped to organize by February 1.

## Cleveland Machinery Market.

CLEVELAND, OHIO, December 22, 1908.

The demand for machine tools has been good during the past week, contrary to the expectations of the dealers who were looking for a quiet spell until after the beginning of the year. Some of the leading local dealers report that their sales so far this month were larger than during a corresponding period of any previous month of the year. This is regarded as very encouraging, considering the fact that December is usually a dull month in the machinery trade. Sales during the week were mostly single tools, but a fair proportion of these were good sized tools. All kinds of manufacturing plants are adding somewhat to their equipment or replacing old tools with new. Many of the present buyers have been holding off during the past year, waiting for an improvement in business conditions before putting in needed equipment. Some concerns are building plant extensions, necessitating the purchase of considerable new machine tool

equipment and quite a number of new manufacturing enterprises are being launched, each of which requires a few tools. Inquiries continue to come in in fair volume, and these together with the fact that a number of prospective purchasers are holding off until the beginning of the year lead machinery houses to look for considerable business soon after the first of the month. One local machinery house reports that it is taking inventory earlier than usual, in order to be in better shape to attend to the better volume of business that it expects in January. A few scattering orders for machine tools are still coming from the automobile builders, but not much additional business is expected from this source during the next few months.

The general manufacturing situation in Cleveland and surrounding territory continues to improve. This improvement is noticed by the machine tool builders as well as by others engaged in metal working lines. Orders are coming in more plentiful and additions are being made to the men employed. Many manufacturing plants that were running at one-half or less of their capacity during the greater part of the year are now being operated at 80 per cent. of their full capacity. In the foundry trade the demand for light castings continues to improve slowly.

At the last meeting of the Cleveland Metal Trades Superintendents' and Foremen's Club, Benjamin D. Fuller, superintendent of the Cleveland plant of the Westinghouse Electric & Mfg. Company, gave an interesting talk on the possibilities of organization among superintendents and foremen in the metal trades. The meeting was a regular monthly one, held in the form of a smoker at the rooms of the Cleveland Engineering Society in the Caxton Building. The club holds a meeting the second Saturday of each month, and is always looking for speakers who can give practical talks at these meetings, a hearty welcome being extended to shopmen from plants in other cities who will volunteer to speak. Philip Frankel, New England Building, is secretary.

The Automatic Typewriter Company, Cleveland, has been incorporated with a capitalization of $750,000, to place on the market a new typewriter operated by electricity, designed for writing circular letters. The company announces that it will have its machines manufactured for the present, but that in a few months it will probably perfect plans to erect a plant. The incorporators are Maynard H. Murch, Jr., Fred C. Kingsbury, M. D. Squire, A. W. Mason and F. E. Rudenauer.

Several Cleveland and Pittsburgh men have become interested in the Union Metal Post Company, Canton, Ohio, and a reorganization of that company has been effected, with an increase in capitalization from $25,000 to $75,000. The new officers elected are as follows: President, C. C. Barrick; vice-president, C. L. Eschleman; secretary, D. C. Barrick; treasurer, Henry E. Sherlock. These officers, with Harry E. Duff, Charles H. Barrick and L. M. Barrick form the Board of Directors. The company, which manufactures metal porch columns, will add some new products, including ornamental trolley poles.

The Diebolt Safe & Lock Company, Canton, Ohio, which recently announced that it would build a large addition to its plant, will buy considerable machine tool equipment, and is now in the market for several large tools, including a planer and boring mill. .

The Youngstown Furnace & Supply Company, which recently moved its plant from Youngstown to Niles, Ohio, but which has continued to operate its foundry department in Youngstown to the present time, is erecting an up to date foundry adjoining its plant in Niles. The building is 110 x 125 ft., of brick and steel construction. Most of the foundry equipment has been purchased. The company may be in the market for a crane later. It is erecting the foundry with the view of eventually replacing the other buildings now in use with a thoroughly modern plant.

The Hill Clutch Company, Cleveland, reports considerable improvement in small orders for power transmission machinery and a better volume of inquiries. The company has recently increased its working force and is now running its plant on full time.

The XXth Century Heating & Ventilating Company, Akron, Ohio, reports an improvement in orders for heating furnaces and a good outlook for the coming year. The company's business at present is 90 per cent. of normal.

The Torrent Pump Company is the name of a new concern in Sebring, Ohio, that will manufacture a new steam pump. The company has inquiries out for several machine tools for its plant.

The Warren City Boiler Works, Warren, Ohio, which recently changed its name to the Warren City Tank & Boiler Company, reports the receipt of some good orders for tank work, and the plant is now being run night and day at nearly full capacity.

The machine tool equipment of the Crown Drilling Machine Company, Akron, Ohio, consisting of lathes, drills, planers, shapers, &c., and the company's forging plant, have been sold by the receiver to the W. M. Pattison Supply Company, Cleveland.

The Commercial Motor Truck Company, Plymouth, Ohio, has been placed in the hands of A. M. Trago as receiver on the application of a creditor.

## Government Purchases.

WASHINGTON, D. C., December 22, 1908.

The following bids were opened December 14, Circular No. 481, for machinery for the Isthmian Canal Commission:

Class 1.—Two water tube boilers, one breeching stack and fittings—Bidder 6, Babcock & Wilcox Company, New York, $5484; 20, A. D. Granger Company, New York, $5998 and $6888; 29, E. Keeler Company, Williamsport, Pa., $7424 and $6068; 34, Motley, Green & Co., New York, $8992.25; 60, Mosher Water Tube Boiler Company, New York, $9000.

Class 2.—One surface condenser with air and circulating pumps—Bidder 1, Alberger Condenser Company, New York, $4245 and $4100; 23, Hall Steam Pump Company, Pittsburgh, Pa., $4150; 44, Pusey & Jones Company, Wilmington, Del., $3513; 54, Wheeler Condenser & Engineering Company, Carteret, N. J., $4000; 55, C. H. Wheeler Mfg. Company, Philadelphia, Pa., $3298; 56, Henry R. Worthington, New York, $4060.46.

Class 3.—One generator and one engine—Bidder 7, Ball Engine Company, Philadelphia, Pa., item 5, $1185 and $1187; item 6, $1899; 14, Diehl Mfg. Company, Elizabeth, N. J., item 5, $1200; item 6, $1918; 18, G. & W. Mfg. Company, New York, item 5, $1044.85; 20, A. D. Granger Company, New York, item 5, $1298; item 6, $1895; 27, A. L. Ide & Son, New York, item 5, $1195; item 6, $1918; 34, Motley, Green & Co., New York, item 5, $1195; item 6, $1918; 37, Northern Electric Mfg. Company, Madison, Wis., item 5, $1162; 45, Ridgway Dynamo & Engine Company, Ridgway, Pa., items 5 and 6, own specifications, $2650; 47, Edward Schenck, Pittsburgh, Pa., item 5, $1100 and $1200; 52, Western Electric Company, New York, item 5, $1020; item 6, $2295.74; 53, Westinghouse Electric & Mfg. Company, Pittsburgh, Pa., item 5, $1045; item 6, $1995; 57, Ames Iron Works, Philadelphia, Pa., item 6, $1650.

The following bids were opened September 15 for machinery for the navy yards:

Class 1.—One universal milling machine—Bidder 29, Brown & Sharpe Mfg. Company, Providence, R. I., $2419.25; 85 Harron, Ricard & McCone, San Francisco, Cal., $2608 and $2588.

Class 2.—One No. 4 vertical high power milling machine—Bidder 29, Brown & Sharpe Mfg. Company, Providence, R. I., $2391.69; 85, Harron, Ricard & McCone, San Francisco, Cal., $2205 and $2175; 90, Henshaw, Bulkley & Co., San Francisco, Cal., $2280 and $3085.

Class 3.—One automatic turret machine—Bidder 85, Harron, Ricard & McCone, San Francisco, Cal., $1448.85; 90, Henshaw, Bulkley & Co., San Francisco, Cal., $1445.

Class 101.—One oil fuel combination furnace—Bidder 127, Myres Fuel Oil Equipment Company, Norfolk, Va., $465 and $490; 165, Rockwell Furnace Company, $498.84; 166 W. S. Rockwell Company, New York, $475.

Class 102.—One shaper—Bidder 63, Frevert Machinery Company, New York, $665; 65, Fairbanks Company, New York, $589; 78, Garvin Machine Company, New York, $634; 91, Hendey Machine Company, Torrington, Conn., $410 and $518; 116, Motley, Green & Co., New York, $455; 135, Niles-Bement-Pond Company, New York, $548; 158, Prentiss Tool & Supply Company, New York, $674 and $649.

The Niles-Bement-Pond Company, New York, has been awarded contract for three 10-ton and one 20-ton hand cranes for use in the power plant in connection with the Mimidoka irrigation project, Idaho. The contract price was $3643.

Under bids opened December 8 for machinery for the navy yards, Henshaw, Bulkley & Co., San Francisco, Cal., have been awarded class 42, one hydraulic bolt forcer, $200.

The following awards have been made for machinery for the navy yards, bids for which were opened November 24:

Pacific Tool & Supply Company, San Francisco, Cal., class 31, one power facing press, $375.

Watson-Stillman Company, New York, class 71, one motor driven triplex hydraulic accumulator pump, $6300.

General Electric Company, Schenectady, N. Y., class 135, two motor generator sets, $3686.50.

**The Mining Engineers.**—The next meeting of the American Institute of Mining Engineers for the reading and discussion of papers will begin on Tuesday evening, February 23, 1909, at New Haven, Conn. The leading topics for discussion will be the conservation of national resources, technical education and the Panama Canal, the latter in discussion of a paper by Granger. A more detailed programme will be issued by official circular about the middle of January.

Competing lines in territory covered by the Cincinnati, Hamilton & Dayton Railroad have brought that road into line on freights on iron from Hamilton. A new schedule, which will become effective February 1, will reinstate the old rate of $1.20 from the Hanging Rock District to Cincinnati and places shipments from Hamilton on a relative basis by advancing that rate generally as follows: To St. Louis and Chicago territory about 25 cents; Indianapolis and the Indiana gas belt and Dayton, Ohio, from 5 to 10 cents, and other points in Central Freight Association accordingly. The rate to Columbus is also affected slightly. Roads in the new agreement are the Baltimore & Ohio Southwestern, the Hocking Valley, the Chesapeake & Ohio, the Norfolk & Western, the Toledo & Ohio Central, the Pennsylvania Lines, the Detroit, Toledo & Ironton and the Cincinnati, Hamilton & Dayton.

# HARDWARE

THE movement for the organization of the retail Hardware trade has been attended with remarkable success. The associations in the various States need not fear comparison with those in any other branch of trade. Through these associations much has been accomplished, something in the correction of trade abuses, more in the stimulating and educating influence of the meetings, and probably most of all in the development of the spirit of comradeship and co-operation among the members. All this being freely granted it must be remembered that there are limitations to the usefulness of the associations which will be frankly acknowledged by every real friend of the movement. A recognition of the facts is essential to continued growth, to progress along the right lines and to the attainment of the greatest efficiency and usefulness.

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It is well thus to bear in mind that Hardware merchants identified with an association are apt to leave to the association work which should be done by them individually. There is a tendency to regard the association as the guardian of the interests of the trade and to leave it to take care of trade evils instead of giving them personal and individual attention. The members are accordingly apt to rely on some official action instead of taking up the matter themselves. This is illustrated in the case of the parcel post. Because the association with which the merchant is identified has condemned the scheme and put itself on record against it, many a Hardwareman has been content to do nothing in regard to it. They excuse their inactivity by the reflection that their State Association has spoken for all the merchants, ignoring the fact that action by associations possesses only a fraction of the influence that the individual utterances would have. A resolution of an organization with 500 or 1000 members would naturally have some weight with Senators or Representatives, but this influence would be insignificant compared to the influence that would be exerted by 500 or 1000 individual letters. When the associations succeed in overcoming this tendency, as they are endeavoring to do, and are able to stimulate to a much greater extent than at present individual effort and initiative, they will chronicle a marked advance in their usefulness.

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Another serious limitation to the usefulness of the associations is in the fact that there is so little besides the annual convention to give suggestion, information and enthusiasm to the members. It is a long time between meetings. A great gathering for two or three days, with an attractive programme, practical discussions, most enjoyable good fellowship, and then back to the store and the routine of business for another year. There are indeed in some of the States stimulating and suggestive letters from the secretaries, and these are welcomed and helpful, and do as much good as can be expected from communications of this character. In this long separation of the members and the practical cessation of association activity there is a defect, perhaps unavoidable, in the movement, and a failure to attain the efficiency which is at least theoretically desirable. There is certainly an opportunity for some one who can suggest how this defect can be remedied and the organizations put on a higher plane, where their usefulness to the members will be more constantly exerted. This is a matter deserving consideration at the approaching conventions.

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The retail Hardware associations are in a good degree representative of the retail trade of the country. In general they may be regarded as voicing the sentiment of the retail merchants as a whole, and their membership embraces many representative houses. In a few States most of the Hardware merchants are identified with the association, but in the majority there is still an opportunity for liberal growth. There are in all parts of the country merchants of standing and importance, with admirable business administration, who hold aloof, while a large number of merchants of less progressive methods remain outside the association fold. It is not easy to indicate definitely the boundaries of the retail Hardware trade, or to draw the line which separates the Hardwareman from the country store on the one side and from the jobbers on the other side. Some very small concerns and some very large ones are in the membership of the associations, but it is probably not greatly out of the way to estimate that the association movement comprises about one-third of the Hardware merchants of the country. The association work will obviously be more thoroughly representative and more widely useful when the organization takes in a much larger proportion of the trade of the country.

## Condition of Trade.

The past week has been without important developments in the Hardware field. The changes in price have been few owing in part to the season and in part to the uncertainties of the market and the difficulty of forecasting the course of trade. A number of lines of goods are somewhat unsettled in price and manufacturers are considering the course which should be adopted in regard to them. In some cases the announcement of higher prices is likely, but in general the market is not especially strong and there is little disposition on the part of the trade to purchase at all speculatively. The discussion of the tariff and the probability of its revision is doubtless having some effect on business and will continue to operate in inducing conservatism until the question is settled. The principal practical effect of the matter so far as the Hardware field is concerned will be to lead both manufacturers and merchants to pursue a careful policy and not purchase beyond early requirements. So far as the merchants are concerned it is obviously wise for them to purchase in such quantities as will keep their stocks in good shape and enable them to meet the demands which will be made upon them, the probability being that any changes which take place in the market will not affect very soon or very radically the prices of manufactured articles. Meanwhile the country is in such splendid shape with a substantial basis for prosperity that it is the part of wisdom for the distributors, both wholesale and retail, to make sufficient provision for current business and encourage expenditure by the people along reasonable lines. The manner in which the holiday season is being observed, as liberal purchases are reported, indicates that notwithstanding the pressure of comparatively dull times the people as a rule are well off and the most distressing effects of the last year's

panic in good measure overcome. While there is still call for care and economy and for a prudent management of affairs until general conditions become more settled and values more definitely established, there is no reason to doubt that things are constantly improving with a gradual return to a safe and perhaps enlarged prosperity throughout the country. In view of the excellent condition of things at present, the escape during the past year from grave perils apprehended at its opening, and the promise of a much better business in 1909, there is abundant reason for entering on the Christmas season with at least the usual cheer and hopefulness. To our readers, some of whom will be permitted to read these words on Christmas Day, while others, scattered as they are not only throughout the length and breadth of the land in every State and Territory, but also in every foreign land on both sides the sea, will not receive the greeting until the holiday is passed and 1909 has opened, we very sincerely extend the old but always new and kindly wish for a MERRY CHRISTMAS AND A HAPPY NEW YEAR.

### Chicago

It is the forward view of things rather than the events of the immediate present that is commanding the attention and interest of Hardware manufacturers and jobbers at this time. From now on until after the first of the year these interests will be resting on their oars, content to drift without much effort with the general tide of things, being more absorbed in casting up and summarizing the business of the current year than in directing an active campaign for new business. The usual diversions of the holiday season can also be counted on to distract a large share of attention from the more serious occupations of business. Altogether it is not likely, therefore, there will be startling trade developments to record in the expiring days of the old year. The chief feature of general market interests concerns the recently announced advance of 2½ per ecnt. on Poultry Netting. We are advised upon good authority that the jobbing trade has generally expressed itself as being in full sympathy with this advance. In view of the close relations existing between the two lines, it would not be surprising if a similar advance should follow soon on Wire Cloth. Wire and Wire products have all along been the leaders in activities, and with the growing volume of business which has now reached nearly a normal level prices are notably firm and strong. Local retail Hardware stores in which special attention is given to holiday lines in the way of arranging attractive displays and effective advertising are beginning to reap the benefits of their efforts to secure business through these channels, at a time when trade in staple goods is periodically dull. A leading retail house which bends its energies in this direction with particularly effective results says that all indications point to an unusually active trade in gift goods and predicts that the volume of such business will largely exceed that of last year. This being the case, the inference naturally follows that the number of unemployed must now be very small, otherwise the curtailment of purchasing power would be positively expressed in lessened purchases of this character. It is in such observations of current condition, perhaps, that the truest measure of improvement is seen, and the most reassuring proofs of economic and industrial soundness are found.

## NOTES ON PRICES

**Wire Nails.**—Demand thus far this winter has been very good, but is now showing a falling off, incident to the season. Traveling salesmen are in for the holidays, and after the first of the year it is anticipated that business in this line will revive. With regular prices steadily maintained, quotations are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

| | |
|---|---|
| Carloads, to jobbers | $1.95 |
| Carload lots to retail merchants | 2.00 |
| Less than carloads to jobbers | 2.00 |
| Less than carloads to retail merchants | 2.10 |

*New York.*—Business is naturally light at this season and will probably continue so, at least until after the first of the year. Nails are held on the basis of $2.30 per keg in small lots at store, but some sellers are occasionally inclined to shade this figure.

*Chicago.*—While the past week has been productive of slightly less tonnage than was entered in the first week of December, the volume of new business coming out, as well as specifications, is rather more than was expected at this time. Under the circumstances, the consumption of Nails thus far this winter has undoubtedly been sustained in a better degree than usual by the continuance of weather favorable to building operations. It is expected, however, that from now on until the close of the year the slowing up will be more marked, because of the temporary withdrawal of active efforts in sales departments. The outlook for spring trade continues promising. Prices, we are advised, are being steadily maintained at the regular schedule. Quotations are as follows: $2.13 in car lots to jobbers, and $2.18 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

*Pittsburgh.*—The demand for Wire Nails is only for small lots. Jobbers and consumers are now busy with their inventories and closing up the year's business, so that the present quiet condition of this trade will continue into January. A material betterment in demand is then expected. Reports have been current of an impending change in prices of Wire Nails, effective about January 1, but, we are advised, there is no basis for this report. Prices are reported as being well maintained. Quotations are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

| | |
|---|---|
| Carloads, to jobbers | $1.95 |
| Carload lots to retail merchants | 2.00 |

Galvanized Nails are quoted at $1 over the price of the regular Nails.

**Cut Nails.**—The Eastern Cut Nail Association will hold no meeting this month, but one will be called in January. New business and specifications on contract orders are light, while mills are not anxious to contract far ahead at present prices, in view of the narrow margin of profits. The price for Steel Cut Nails is $1.80, base, per keg, f.o.b. Pittsburgh, for less than carloads, and $1.75 for carloads and larger lots. In the Western market Iron Cut Nails are held at an advance of 10 cents per keg over Steel Cut Nails, but this differential is not observed in the East.

*New York.*—Local demand continues moderate, as the immediate requirements of the trade are light. Steel Cut Nails are held on the basis of $2.15 per keg for small lots at store, but this price is not strictly adhered to by all sellers.

*Chicago.*—Effected by the same conditions that have had a retarding influence upon business during the closing weeks of the year, new orders are being placed sparingly with a view only to present needs; for the same reason specifications against contracts are light. The optimistic views of manufacturers respecting future demands are reflected in their reluctance to contract far ahead at present prices. Current transactions are generally governed by present prices, which are only shaded to the extent of 5 cents a keg on especially desirable orders. We quote Chicago prices as follows: In car lots to jobbers, Iron Cut Nails, $2.08; Steel Cut Nails, $1.98.

*Pittsburgh.*—A fair demand for Cut Nails is noted, mostly for small lots, but jobbers and consumers are now more concerned in taking inventory and closing up business affairs for the year than in placing new orders. Specifications against contracts are coming in fairly well, being heavy enough to meet the current consumption. The market is $1.80, base, per keg, f.o.b. Pittsburgh, but $1.75 is made on carloads and over. In the Western market Iron Cut Nails are held at an advance of 10 cents per keg over Steel Cut Nails, but this differential is not observed in the East.

**Barb Wire.**—As usual at this season demand is light. The natural increase in business is looked for when spring demand commences. According to reports regular

prices are being maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

| | Painted. | Gal. |
|---|---|---|
| Jobbers, carload lots | $2.10 | $2.40 |
| Retailers, carload lots | 2.15 | 2.45 |
| Retailers, less than carload lots | 2.25 | 2.55 |

*Chicago.*—New orders for Barb Wire are naturally light, but this has no special significance, because at this time of the year there is usually but little doing. Indications point to an active demand from the Southern trade, which it is believed will begin to develop early in January. No change is reported in prices, which, it is claimed, are being satisfactorily maintained. Quotations are as follows: Jobbers, Chicago, car lots, Painted, $2.28; Galvanized, $2.58; to retailers, car lots, Painted, $2.33; Galvanized, $2.63; retailers, less than car lots, Painted, $2.45; Galvanized, $2.75; Staples, bright, in car lots, $2.25; Galvanized, $2.55; car lots, to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

*Pittsburgh.*—The trade for this year in this product is over and only a few small scattering orders are being placed. Early in the New Year buying in Southern territory will probably start, and a heavy demand from that section of the country is confidently expected. In spite of the lack of new orders, we are advised that prices are well maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

| | Painted. | Gal. |
|---|---|---|
| Jobbers, carload lots | $2.10 | $2.40 |
| Retailers, carload lots | 2.15 | 2.45 |
| Retailers, less than carload lots | 2.25 | 2.55 |

**Plain Wire.**—The light requirements of Wire Fence and manufacturers of other Wire products are reflected in the curtailed demand for Plain Wire. A fairly heavy business is anticipated after the first of the year. Regular prices are being maintained, according to advices. Quotations per 100 lb. to jobbers in carload lots are as follows, on a basis of $1.80 for Plain and $2.10 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the price to retailers being 5 cents additional:

| Nos. | 6 to 9 | 10 | 11 | 12&12½ | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|
| Annealed | $1.80 | 1.85 | 1.90 | 1.95 | 2.05 | 2.15 | 2.25 | 2.35 |
| Galvanized | 2.10 | 2.15 | 2.20 | 2.25 | 2.35 | 2.45 | 2.85 | 2.95 |

*Chicago.*—Due to seasonable conditions, manufacturers of Fence and other Wire products are ordering and specifying a little less freely than was the case a few weeks ago. It is thought, however, that a renewal of interest will be manifested in this department as soon as the work incident to the closing up of the year's work has been finished. In view of the excellent prospects for a fairly heavy spring trade in Fencing, the outlook for new business in January and February is quite encouraging. Prices are reported to be firmly maintained. We quote as follows: Car lots to jobbers, $1.98, f.o.b. Chicago, and to retailers, $2.05.

*Pittsburgh.*—It is now late in the season and specifications against contracts are naturally showing a large falling off while comparatively few new orders are being placed. The trade in Plain Wire for 1908 is regarded by the manufacturers as quite satisfactory, in view of the depressed business conditions existing during the whole year. We are advised that prices are being well maintained. Quotations per 100 lb. to jobbers in carload lots are as follows, on a basis of $1.80 for Plain and $2.10 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the price to retailers being 5 cents additional:

| Nos. | 6 to 9 | 10 | 11 | 12&12½ | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|
| Annealed | $1.80 | 1.85 | 1.90 | 1.95 | 2.05 | 2.15 | 2.25 | 2.35 |
| Galvanized | 2.10 | 2.15 | 2.20 | 2.25 | 2.35 | 2.45 | 2.85 | 2.95 |

**Registers.**—Prices, terms, &c., on Registers have been established for the first half of next year on the same basis as a year ago, the discount to the general trade being 70 per cent.

**Table Cutlery.**—Some irregularities have recently developed in quotations on lower grades of Table Cutlery known as Gross Goods, and good buyers are watching this market with special attention. The sale of these lines seems to be decreasing in some sections, largely because of the enterprise of manufacturers and jobbers in pushing better grades, as well as the recognized tendency among all classes of consumers to use better articles.

**Rubber Belting, Packing, &c.**—Within the past week or so a number of manufacturers have withdrawn their prices on Rubber Belting, Packing, Hose, &c., and quite a general scaling up of quotations is going on. This, of course, is due to the advance in the market for crude rubber already referred to in these columns, although some manufacturers who have good supplies of raw material on hand have delayed for the present making any changes in their prices.

**Bright Wire Goods.**—A further advance of about 10 per cent. has been made by leading manufacturers of Bright Wire Goods, whose discount to the general trade on both iron and brass goods is now 90 and 40 per cent. The market on Brass Cup and Shoulder Hooks may be represented by a discount of 85 per cent.

**Rope.**—There is evidence of increased quietness in the Cordage market as the end of the year draws to a close. Manufacturers continue anxious sellers, especially where large quantities are involved. One of the manufacturers secured a Government order at a price under 8½ cents, base, for first-class Manila Rope, but such orders are regarded as not affecting general market prices. A manufacturer states that his volume of business for the present year has been equal to that of 1907, but others have not been so fortunate. The quotations on small quantities of Rope, 7-16 in. in diameter and larger, remain as before: Pure Manila, 8¾ to 9 cents; Pure Sisal, 6¾ to 7 cents. Mixed grades of both kinds grade down in price according to quality. Jute Rope, ¼-in. and up, No. 1, is 6½ to 6¾ cents; No. 2, 6 to 6¼ cents.

**Linseed Oil.**—The market is weak and the demand light. While no change has been made in card prices it is understood that considerable Eastern Oil, on contract, has been disposed of on a basis of 45 cents for Raw in carload lots. Western crushers are unwilling to meet this price. Consumers are supposed to be fairly well supplied, in view of limited requirements, while it is understood that crushers have accumulated considerable Oil. These conditions would point to easier prices before the spring demand sets in. Quotations in 5-barrel lots are unchanged, as follows: State and Western Raw, 47 cents per gallon; City Raw, 48 cents per gallon. Boiled Oil is 1 cent advance on Raw.

**Spirits Turpentine.**—The local market is quiet, the demand being light, as usual, at this season. Manufacturers of Varnishes and Paint, the largest consumers of Turpentine, are closed down for the annual inventory and repairs. Under present conditions there is nothing to indicate any boom in the market. Prices have fallen off about 1 cent during the week. The New York market is represented by the following quotations: Oil Barrels, 41 to 41½ cents; Machine Made Barrels, 41½ to 42 cents per gallon.

**Window Glass.**—The substitution of a flat scale of wages for the sliding scale which has been in use, and to which reference was made in our report last week, has now been agreed upon by Window Glass workers generally. It is reported that the change of wage scale calls for an immediate advance in wages to workmen in hand operated factories of from 36.7 to 41.6 per cent. This wage contest is of interest to the trade in so far as it will affect the supply and price of Glass. A marked curtainment of production is looked for, as it would be impossible for manufacturers to fill orders taken at prices based on the sliding scale of wages at the proposed advanced cost of production. Possibly a number of the factories will be closed, at least until the question of wages is definitely settled. All hand operated factories may be forced to close if the threat of the workmen to strike should the manufacturers not adopt the flat scale is carried out. It is reported on good authority that the American Window Glass Company, maker of machine blown Glass, has agreed to pay the advanced rate of wages, thus preventing a strike of its employees. It may be said in the way of explanation that a smaller proportion of machine Glass workmen is affected by the pro-

posed change in wages than in the hand operated factories. The immediate result of the wage agitation will probably be the stiffening of prices by both manufacturers and jobbers. Recent quotations on Window Glass by Western distributers were 90 and 40 per cent. discount on Single and 90 and 45 per cent. discount on Double Strength, from jobbers' list of October 1, 1903. The minimum price recommended by the Eastern Window Glass Jobbers' Association on all sizes single and double strength Glass, covering territory east of Chicago, is 90 and 20 per cent. discount from jobbers' list, October 1, 1903, but this price has been shaded 5 or 10 per cent., sometimes for inferior goods or under the pressure of a special desire to effect sales.

## WHAT HARDWARE MERCHANTS ARE DOING IN OPPOSITION TO PARCEL POST.

THERE is evidently a good deal of activity among Hardware merchants in opposition to the establishment of a parcel post, especially on the rural routes. Sometimes this is done in the towns and villages by circulating petitions or protests in which practically all the merchants of the place unite. In other cases the publication of articles in the local papers secures the presentation of some of the objections to the project of opening the mails to the carriage of merchandise.

Among the most active workers in the circulation of literature giving the arguments against the merchandise or parcel post are the secretaries of a good many of the State associations. In this connection the reprints of matter which has recently appeared in *The Iron Age* are generally made use of. Individual letters to Senators or Representatives are also being sent out by merchants. Some of these lines of activity are illustrated in the measures referred to below.

### The Use of Country Newspapers.

The most successful method of getting arguments opposed to parcel post printed in country newspapers is for individual merchants to send such matter in usable form to the local papers with which they can exert an influence. As an example of what can be done in this direction, W. P. Lewis, Huntingdon, Pa., secretary of the Pennsylvania Retail Hardware Association, sent his local paper a copy of an editorial from *The Iron Age*, which was reprinted in full.

### A Unanimous Protest from Batavia, N. Y.

John Holley Bradish, Batavia, N. Y., president of the New York State Retail Hardware Association, has sent to the Congressman representing his district a petition against establishment of a parcel post on the rural routes and against parcel post legislation in any form. The petition was signed by every business man and firm in Batavia, 108 in all, but does not include professional men. Representative Porter presented the petition in the House on Friday last, and it was referred to the Committee on Post Offices and Post Roads.

### Oklahoma Retail Hardware and Implement Dealers' Association.

D. C. Patterson, Oklahoma City, Okla., secretary of the Oklahoma Retail Hardware and Implement Dealers' Association, who has distributed 1000 of *The Iron Age* reprints referring to the parcel post question is preparing for circulation an article based on this and other matter outlining the plans of the catalogue houses to put educators in the field and showing how the Postmaster-General and his parcel post advocates and the mail order firms are working along converging lines, so that if the parcel post bill is passed these houses will have their men ready to put it in operation for their benefit.

### Texas Retai Hardware and Implement Association.

In sending to his membership a letter referring to the coming convention, January 19-21, J. W. McManus, Dallas, secretary of the Retail Dealers' Hardware and Implement Association of Texas, inclosed reprints of *The Iron Age* editorial matter, &c., calling special attention to the suggested form of petition and urging that this be circulated and forwarded without delay to the members' representatives in Congress, no matter how many letters and petitions on the subject had been sent to them in the past.

### New England Hardware Dealers' Association.

Secretary C. L. Underhill of the New England Hardware Dealers' Association is taking active measures to stir up the Hardware merchants of New England to individual action against parcel post legislation. He is now compiling a bulletin on the subject to be widely circulated throughout this territory, which will contain in addition to other matter some excerpts from the columns of *The Iron Age*.

### In Far Off Washington.

One enterprising Hardware merchant in the State of Washington has asked for 100 copies of *The Iron Age* reprint, which he intends to circulate among his brother merchants, Hardware and otherwise, to the best advantage.

## Requests for Catalogues, Etc.

*The trade is given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.*

**REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate:**

FROM HENLY HARDWARE COMPANY, A. L. Henly & Son, proprietors, which will open a store at 239 Market street, Philadelphia, carrying a full line of Hardware, Brushes, Novelties, &c.

FROM THE GENERAL PURCHASING COMPANY, Trenton, N. J., which has been formed to carry on a general brokerage business in all kinds of Mill Supplies, &c., buying on a commission basis for the various industries of Trenton and vicinity.

FROM LOWE-HORD HARDWARE COMPANY, Knoxville, Tenn., which has purchased the business of McClung, Buffat & Buckwell, and will continue it along the old lines, handling general Hardware, Stoves, Tinware, House Furnishings, Sporting Goods, Farm Implements and Machinery, Fertilizers, &c.

FROM JOHN W. JOHNSON & Co., who have engaged in the retail business in Asotin, Wash., handling Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints, Oils, and Sporting Goods.

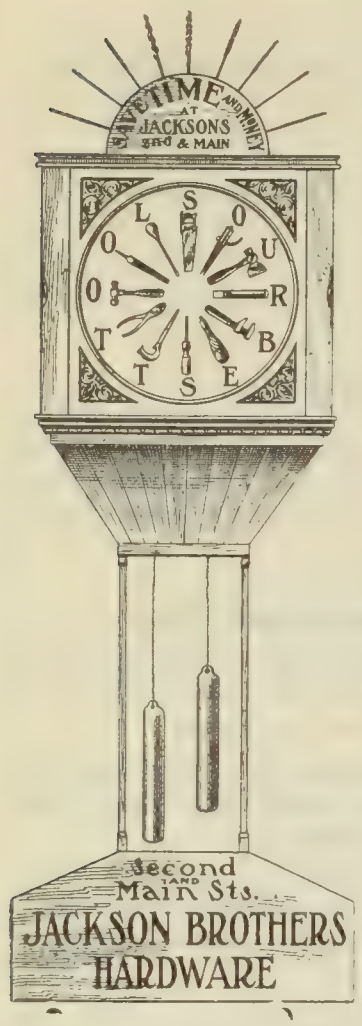
FROM WEBSTER & YOUNG, who have purchased the business of E. M. Wagner in Summerfield, Kan., and who will carry Hardware, Tinware, Furniture, Fencing and Cream Separators.

A. L. BACH, Solingen, Germany, expects to be in New York about January 15, making his headquarters with Elias Bach & Son, 166 Water street, New York. Mr. Bach has started a buying office in Solingen for the purchase of Cutlery and Specialties. He is desirous of arranging with American houses to act as buying agent. He is an American, who has lived 12 years in Solingen, and during that time has handled the manufacturing and purchasing of Cutlery in that market for A. L. Silberstein, 476 Broadway, New York, having had six years' previous business experience with that house in this country.

JOHN S. RUSH, who has been the largest stockholder of the Zimmerman Hardware & Mfg. Company, Dodge City, Kan., has become sole owner of the business, which he will continue under his own name. The house was founded in 1871 and Mr. Rush's connection with it dates from 1884.

## A TOOL CLOCK.

THE tool clock herewith illustrated is designed to serve two purposes: the first to attract attention; the second to clinch it. From observation it has been learned that these purposes should go hand in hand. The design and arrangement of the tools is believed to be sufficiently unique to serve the first purpose, and elastic enough to permit of many alterations and adaptations.




*A Tool Clock.*

It will be noticed that in addition to the tools on the clock face, that Levels are used as pillars on the sides, while Sash Weights suspended by Sash Cord, serve as the clock weights. The half circle on top of clock can be used to display a set of Bits by boring holes at suitable intervals and placing Bits so they will stand upright, taking the shape of a fan. Around the base and up the center post of the clock large tools can be arranged.

In speaking of some attractive feature, the remark is often made, "I saw it downtown," or "In some store window." The merchant loses the benefit of his advertising by not clinching in the observer's mind that it was in his window the attraction was seen. For this reason the name of the store and location should be placed in conspicuous positions.

## George C. Weaver.

AFTER traveling 40 years as a Hardware salesman, George C. Weaver has tendered his resignation, to take effect January 1, his intention having been to retire entirely from active business, but his principals, Hermann Boker & Co., New York City, have prevailed on him to accept a house position and still continue with them. Mr. Weaver started in the Hardware business in 1861, with the house of A. Bosley & Co., Baltimore, Md. In 1868 he was connected with Hoyt, Busick & Co., as a traveling salesman, and leaving them was for a time with C. W. Dunlap, New York. He became identified with the house of Boker January 1, 1881, traveling for that firm 28 years. He estimates that as a traveler he has covered between 700,000 and 800,000 miles, and was in but one railroad accident, when he was injured slightly.

Mr. Weaver takes especial pride in the infinitesimally small financial loss chargeable against his sales during this long period. He also observes that none of the houses to which he has been selling goods now have the same buyers they had when he first began to travel for Hermann Boker & Co. His associates, fellow employees of the house, will tender him a supper on the evening of December 29. Mr. Weaver has been the recipient of many valued letters testifying to his sterling qualities and expressing regret at the termination of satisfactory and pleasant associations during a long period.

THE VALLEY FORGE CUTLERY COMPANY, Newark, N. J., after the usual shutdown at the holiday season for stock taking, repairs, &c., will resume operations January 11 on full time with a full force. The company express confidence in the outlook for next season, and we are advised have on hand a good line of orders. Reference is made to the year just closing as particularly good in the acquisition of new customers.

## Hardware Merchants' Christmas Booklets, Circulars, &c.

A NICELY PRINTED booklet of 24 pages has been issued by the Brown-Rogers Company, Winston-Salem, N. C., in the interest of its holiday trade. The cover is an attractive one and also presents a view of the interior of the company's fine store. Among the goods covered by the booklet are Pocket Knives, Razors, Rifles, Hunting Clothes, Carving Sets, Aluminum Ware, Nickel Plated Ware, Chafing Dishes, Baseball Supplies, Food Choppers, &c., which are copiously illustrated. One of the pages contains a partial list of goods in the stock which are admirably adapted as holiday gifts.

A BOOKLET in green and of vest pocket size has been issued by the Peirson Hardware Company, Pittsfield, Mass. The front cover is headed "Everything that a Good Hardware Store Should Have," and attention is effectively directed to such holiday goods as Knives, Scissors, Carvers, Safety Razors, Watches, Sporting Goods, Children's Drawing Sets, Skates, &c. The closing pages supply lists of articles of holiday character classified according to value, the divisions covering goods to be had from 10 cents to 25 cents, 35 cents to $1 and $1 to $5.

F. A. HULL & SON, Danbury, Conn., one of the oldest Hardware stands in New England, has issued its "Christmas Suggestions" in the form of a circular about 9 x 16 in. in size. The circular illustrates such gods as Tool Cabinets, Safety Razors, Carvers, Watches, Coffee Percolators, Pocket Knives, Food Choppers, Skates, Sleds, &c., and calls attention to other practical holiday goods which they are prepared to supply. It is intimated that the firm will set aside any article desired for delivery on Christmas Eve.

CLARK L. HORTON & SON, Afton, N. Y., have issued their No. 2 Holiday Catalogue, which carries the title, "Christmas Shopping in a Modern Hardware Store and a few pointers as to what you will find at the Horton Hardware." The front cover also conveys the compliments of the season to recipients. The catalogue comprises 24 pages covering a variety of holiday Hardware, and on its last page presents under the head of suggestions a list of many useful presents, the remark being made that "it is always economy to buy the best." The firm advises us that copies of the catalogue will be sent to interested Hardware merchants on receipt of 6 cents in stamps.

"THOMPSON'S seventh annual grand holiday sale and opening of toyland" is the subject of a mammoth four-page circular, 24 x 18 in., issued by J. M. Thompson & Sons Hardware Company, Owatonna, Minn. It is intimated that the store has been turned into a regular toyland for this sale, and parents are encouraged to come and to bring the children—or let them come alone—to see the hundreds of interesting things. The circular contains illustrations and prices on a large variety of holiday Hardware, attention being called to the fact that it was impossible to provide a place for many other articles. The firm sells for cash exclusively, a method which has been found to work well, as the majority of its customers do not seem to want to buy goods on the old credit system but at the lower cash prices.

A. H. WILLY, who has represented Hermann Boker & Co., 101-103 Duane street, New York, for 14 years on the road, will succeed George C. Weaver in the territory the latter has so acceptably covered for many years. Mr. Willy will also retain portions of the trade heretofore cared for by him, his new territory including the Middle West, Southwest and Missouri River jobbing points.

T. B. HENDRICKSON, who has been manager of the Philadelphia office of the Reading Hardware Company, Reading, Pa., for the past 20 years, and who has also had charge of Southern territory during the past five years, has sent in his resignation, to take effect on December 31.

# Hardware Organizations.

### Missouri Retail Hardware Association.

F. D. Kansteiner, 1008 Market street, St. Louis, secretary of the Missouri Retail Hardware Association, advises us that the indications point to a rousing meeting on February 3, 4 and 5, at St. Louis. The present members of the association number about 350, and a large proportion of them, it is expected, will be in attendance. As is the case with so many of the other State associations a Hardware exposition will be held in connection with the meeting, particulars about which may be obtained from Mr. Kansteiner.

### Oklahoma Hardware and Implement Association.

The Oklahoma Retail Hardware and Implement Association has changed the dates of its sixth annual convention to February 9, 10 and 11. It will be held in the Exposition Hall at the State fair grounds at Oklahoma City. Provision has been made for a Hardware exposition, the first floor of the Exposition Hall, 175 x 225 ft. in dimensions, being admirably arranged for this purpose. On the second floor there is a large assembly hall with a capacity of seating 750 persons, and here the business sessions will be held. As is the custom with gatherings where exhibitions are a feature the business sessions will be held in the forenoons, the afternoons being devoted to the exhibits, which will comprise Hardware specialties, Cream Separators, Stoves, Implements, Buggies, Wagons, Automobiles, &c. Automobile races and efficiency tests are on the programme for each afternoon at 4 o'clock. At night entertainments of various kinds will be provided for the visiting merchants. There are about 1000 Hardware and Implement merchants in the territory covered by the association, and it is expected by the secretary, D. C. Patterson, Bassett Building, Oklahoma City, that a very creditable proportion of these will be present at the convention.

### Iowa Retail Hardware Association.

At Des Moines on the 27th ult. the boards of directors of the Iowa Hardware Mutual Fire Insurance Association and of the Iowa Retail Hardware Association held separate as well as joint meetings at the Savery Hotel. The fire insurance association declared a rebate on 1909 policies of 40 per cent., and a general review of the work of the past year was made by Secretary A. R. Sale, Mason City. Up to December 1 the business increase of the year amounted to 25 per cent. of the insurance in force. The total savings paid to policy holders for 1908 amounted to $12,872.41. Losses paid to December 1 aggregated $15,521.88, the ratio of losses to premiums being 30 per cent., and the ratio of expenses to premiums being 12½ per cent. The annual meeting of the policy holders will be held in Des Moines on February 10, at the same time and place as the meeting of the State Association. By holding these meetings simultaneously it will be possible for a large number of the policy holders to participate actively in the affairs of the insurance association.

#### Programme for Convention.

The outline of the programme for the State Association meeting, as prepared by the committee appointed for that purpose, after a little revision was approved by the Board of Directors. A feature of this convention will be the discussion of questions submitted by the members, and a special campaign has been inaugurated to develop the Question Box. Every session of the convention has been arranged to provide a free and full discussion of all topics presented by the members of the association. Another special feature will be the traveling men's hour, at which all the travelers present at the convention will be invited to participate in the discussion, the general arrangements for this part of the programme being in the hands of a committee of traveling men, consisting of W. B. Barney, Hampton; A. J. Collins, Des Moines, and Sam. T. White, Davenport. Parcel post will receive marked attention at the Iowa meeting, special addresses being arranged for by Charles W. Burrows of Cleveland and George H. Maxwell of Chicago.

#### Hardware Exhibition.

The Hardware exhibition will be held in a separate building, the Shriners' Temple. One floor of the structure will be occupied by Stoves, Furnaces and other heavy goods, about 75 per cent. of this space having already been contracted for. The second floor will be devoted to a display of general Hardware, and about 90 per cent. of its capacity has already been reserved. The Shriners' Temple is admirably equipped for exhibition purposes, and the entire building will be occupied by the Hardwaremen during the four days' session.

### Pennsylvania Retail Hardware Association.

The growth in membership of the Pennsylvania Retail Hardware Association during the past year has been remarkable. Since the first of August, when a systematic campaign for new members was begun, the accessions number 255, and it is believed that not less than 100 new names will be added before the annual convention, to be held in Philadelphia, February 10, 11 and 12. An invitation has been given for merchants in adjoining States not organized to come into the Pennsylvania Association and many favorable responses have been received.

#### Plans for the Convention.

W. P. Lewis, Huntingdon, the able and hard working secretary to whom so much of this success is due, has addressed a letter to the membership urging them to focus their efforts on the approaching convention and make it a history making gathering. He points out the power which the members may wield if they will but concentrate their influence and efforts, and gives many cogent reasons why the convention may be attended with profit by every Hardware merchant in the State.

#### Hardware Exhibit.

Special emphasis is laid on the Hardware exhibit which will be held at the First Regiment Armory. It is desired to make this feature an unqualified success, not only for the present year but also because of its influence on future years. Secretary Lewis has sent out a special circular headed, "Buy Goods at the Armory," urging the members to study their want books and come to Philadelphia prepared to place orders which will encourage the manufacturers and jobbers who are exhibiting and influence them to take space another year.

## Butler Brothers.

OWING to some misrepresentation of their selling policy Butler Brothers, with warehouses in New York, Chicago, St. Louis and Minneapolis, are making an emphatic announcement to the trade that they are not to be confused with the so-called retail mail order houses, and that their operations are strictly limited to merchants, their monthly catalogues, which are the medium through which the trade is reached, being sent only to legitimate merchants and storekeepers. They advise us that they go to extremes to protect their catalogue and selling methods against misuse, and that the catalogue never falls into any hands save those of bona fide merchants if it can possibly be prevented. It is suggested that even if one of their catalogues should fall into improper hands much skillful and definite lying would have to be done by the recipient and others associated with him before an order could be filled from it.

THE AVERY STAMPING COMPANY, Cleveland, Ohio, is calling attention to the fact that it is particularly well equipped for turning out Pressed Steel Specialties and for doing all sorts of Metal Stamping Work. It makes to order such articles as Automobile Parts, Steel Bushings, Steel Barrel Heads, Brake Drums, Burner Pans, Gasoline Tanks, Tank Ends, Steel Gongs, Propeller Blades, Conveyor Chutes, Aerial Conveyor Bucket Ends, Filter Plates, &c. An illustrated circular has recently been sent out by the company calling attention to its facilities for doing this class of special work.

## National Association of Brass Manufacturers.

THE National Association of Brass Manufacturers held a meeting at the Bellevue-Stratford, in Philadelphia, December 8 and 9. The meeting was well attended and matters were discussed pertaining to the labor situation, the tariff, freight rates, &c. An order was passed, to be effective January 1, making $1 per hundredweight the maximum freight allowance on shipments of 125 lb. or over, but stipulating that in no case should freight be allowed in excess of that actually paid by the consignee. This applies to all parts of the United States and Canada. The following officers were elected: President, J. H. Glauber, Cleveland; trustees, J. W. Sharp, Jr., Philadelphia; A. D. Sanders, Chicago; Fred Somerville, Toronto; E. F. Niedecken, Milwaukee; A. S. Deutsch, Cleveland; A. S. Hills, Haydenville, Mass. The associated manufacturers will continue to be represented by W. M. Webster, 109 Randolph street, Chicago. The next meeting will be held in St. Louis, March 16 and 17.

## Cleveland Wire Goods Company.

HERMANN BOKER & CO., 101-103 Duane street, New York, have been appointed representatives and sole agents for the sale of the products of the Cleveland Wire Goods Company, Cleveland, Ohio. This will include the selling of a new line of Chains made automatically by special machinery designed by Irving A. Brown, the original inventor of Brown Chain and the machines by which it is made. The manufacturing part of this new industrial enterprise is under the supervision of Mr. Brown. The Chains will be marketed under the trade names Tenso and Lock-Link, the line at present including Coil, Halter, Tie-Out, Kennel and Dog Chains, Cow Ties, &c. The factory in Cleveland is already in full operation and selling and delivering goods, a catalogue of which will be ready for delivery shortly after the opening of the year.

## Trade Items.

ON November 15 a test of the Kwik Kut Power Hack Saw Machine was made in connection with A A A Hack Saw Blades by Leslie Hewitt, metal saw expert, at the plant of E. C. Atkins & Co., Indianapolis, Ind. A piece of circular machinery steel, 6 in. in diameter, was placed in the machine and using A A A blades, 50 strokes to the minute, the first cut was made in less than two hours. The cut was absolutely true and straight, so that no tooling or planing was necessary. The machine was then speeded to 40 strokes per minute. This cut was made in an hour and thirty minutes, and was perfectly true as before. The third cut was made at a speed of 40 strokes with a 5-lb. weight added, and occupied an hour and fifteen minutes. In a recent test of the A A A Blades they held up almost as sharp as new after 32 hours' use in annealed tool steel.

HENRY DISSTON & SONS, Philadelphia, are distributing as a souvenir of Founders' Week, recently celebrated in Philadelphia, a folder handsomely illustrated in colors showing the Disston exhibit in the industrial parade. Six large floats are represented, which, beside their interest in this connection, will doubtless be found suggestive by merchants who may require ideas along this line for use in getting up displays of this character.

THE STANDARD CHAIN COMPANY, Pittsburgh, Pa., is calling special attention to its facilities for producing Welded Link Chain. The company owns and operates ten plants, making all sizes and grades of Coil Chain, as well as bright Chains of every description, including Trace, Butt, Breast and Heel Chains, Cow Ties, German Pattern Coil and Halter Chains, &c. For use on cranes, steam shovels and dredges, the company especially recommends its Ajax and H. B. brands.

JACOB SMITH of Topeka, Kan., died on the 30th ult., aged 77 years. He had been connected with the Hardware business since 1857, having been president of the W. A. L. Thompson Hardware Company since 1884. He also had been identified with many affairs connected with the early history of the State. He leaves one daughter, Mrs. W. A. L. Thompson.

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| The Mining Engineers | 1939 |
| Hardware: | |
| Condition of Trade | 1940 |
| Notes on Prices | 1941 |
| What Hardware Merchants Are Doing in Opposition to Parcel Post | 1943 |
| Requests for Catalogues, &c | 1943 |
| A Tool Clock. Illustrated | 1944 |
| George C. Weaver | 1944 |
| Hardware Merchants, Christmas Booklets, Circulars, &c. | 1944 |
| Hardware Organizations | 1945 |
| Butler Brothers | 1945 |
| National Association of Brass Manufacturers | 1946 |
| Cleveland Wire Goods Company | 1946 |
| Trade Items | 1946 |
| Idaho Hardware and Implement Association | 1947 |
| Australian Notes | 1949 |
| Belknap Hardware & Mfg. Company's Furniture Department | 1949 |
| Hardware Freights | 1949 |
| The Armstrong Tool Display Case. Illustrated | 1951 |
| Price-Lists, Circulars, &c | 1951 |
| Improvements in Perfect Sliding Sets | 1951 |
| Barnes' Pneumatic Ratchet Double Acting Pump with Air Cylinder. Illustrated | 1952 |
| Caliber .25 Colt Automatic Hammerless Pistol. Illus. | 1952 |
| The Sterling Hammer. Illustrated | 1952 |
| The Sight Feed Spot Machine. Illustrated | 1953 |
| Multiplex Slide Rule. Illustrated | 1953 |
| The Diamond Bench Skate Grinding Attachment No. 2. Illustrated | 1953 |
| Improved Pneumatic Gas Lighters. Illustrated | 1954 |
| Buckeye Ratchet Head Pumps. Illustrated | 1954 |
| The Peerless Speedodometer. Illustrated | 1955 |
| Current Hardware Prices | 1956 |

# IDAHO HARDWARE AND IMPLEMENT ASSOCIATION.

THE fifth annual convention of the Idaho Hardware and Implement Dealers' Association was held in the Commercial Club rooms at Boise, Idaho, December 11 and 12. While the attendance was about the same as in former years the members showed more interest and enthusiasm in the work, realizing that much good had been accomplished in the way of regulating the sale of Hardware and Implement lines, and in coming to a better understanding in regard to trade conditions generally.

### Vice-President Kerr's Address.

The unavoidable absence of President A. B. Moss, Payette, was much regretted, and in his place Vice-President V. C. Kerr, Boise, presided. In opening the convention Mr. Kerr made a brief address, in which he said that while Idaho merchants had passed through a year that had not been all sunshine, yet they were probably more fortunate than their Eastern neighbors, and he was satisfied that the greater number had done a better business than had been anticipated a year since. The bright spots now appearing on the horizon seemed to indicate that the coming season would bring to all the old time rush of business so much enjoyed. He said that a great deal of good had been accomplished by the association in the past and that more would be effected in the future, provided that the members would show a more unselfish spirit and a greater desire to co-operate for the common welfare.

### Secretary's Report.

The report of Secretary Cook was in part as follows:

The general condition of these lines of business is so much better than prior to the forming of the association that dealers have forgotten the changes that have taken place. The good results have come gradually and with regularity for several years past, until the dealer has come to look upon the present condition in a matter-of-fact way, forgetting to give due credit to the association, while dealers outside of the organization are also sharing the benefits.

#### Interest Lagging.

The past year has been a difficult one to keep up interest. The conditions of trade in general have been bad; at several points stocks have been sold out, prices have been slaughtered, and as a result business has been demoralized in the towns so situated. We are glad to know, however, that indications in all lines for the coming year are very promising, and your association should keep pace with the prosperity that is ours as a people to enjoy.

#### Legislation.

The fact that it is through legislative channels that we have not only a right but the best reason to expect great benefits to originate is becoming more and more apparent to an organization of this kind, and it is a pleasure for me to say to you that this organization has selected from its members one of the best legislative committees that could have been chosen. We have a right to expect some good legislation along lines that will benefit all dealers in Hardware and Implements in Idaho.

#### Sales to Consumer.

This association should demand that sales made by representatives of jobbing houses to the consumer be made through the dealer or in accordance with his instructions, and that all invoices covering such goods should be made in the dealer's name and at prices acceptable to him. This for the purpose of correcting the custom of jobbing representatives selling direct to the consumer, making their own prices and afterward issuing a credit memorandum of a size to suit themselves as a sort of commission when so demanded.

#### Parcel Post.

This association has gone on record at previous meetings relative to this question. It has been and still is opposed to the enactment of such a law as outlined by Postmaster-General Meyer. A resolution relative to this was passed at our last quarterly meeting in October, since which time the resolution has been circulated in every town in this territory, with the result that we have the signatures of prominent men, merchants of all classes adding their protest to ours against such a law being enacted. These petitions have been forwarded to our Congressional delegation, and we trust that they will help to head off such a law at this time.

#### Good Roads.

If there is a State in the Union whose highways need the attention of its people more than any other State, it is our own fair Idaho. Modern road building is hardly known to us, and the question of keeping our roads passable at all seasons should be given legislative attention. To aid in this we hope that our resolution committee will recommend the passage of a law providing for the use of wide-tired wagons.

#### Peddlers' License Law.

I have consulted some of the best legal talent recently relative to a possible amendment to our present Peddlers' License law, and have been advised that it will be a very difficult thing to have a law enacted that would not be found unconstitutional. So far there is no State in the Union that has succeeded in passing a law on this subject that has stood the tests of the courts.

Now, if we can have a law enacted that will compel these people to pay a license and by so doing help pay our public expenditures, it will not only be a great help to the taxpayers, but it will have a tendency to put a stop to such piratical business. As soon as our legislative committee has succeeded in having a law along these lines drafted we are to submit same to the secretary of the Pacific Federation of Hardware and Implement Associations, who in turn will present it at the annual meeting of the Pacific Federation to be held in Spokane on January 22 and 23 next.

### C. S. Graybill's Address.

A stimulating address on the subject, "Our Association," was made by C. S. Graybill, Nampa, from which we make the following extracts:

When we consider our beginning in a small way more than five years ago, the obstacles we have had to overcome, and the work that has been accomplished in our organization, we can look with pride upon what we have done. We are fortunate in having those among us who, knowing that hard work was necessary for success, have never failed to put their shoulder to the wheel. I dare say that few of us who met here to form this organization anticipated the success that has been ours up to the present time. And when we see to-day so many of those who have been with us from the beginning, it goes to show that we are working in earnest, knowing that we are doing something for the benefit of ourselves and the communities in which we live.

And yet do we stop to consider what our association is really doing for us? Are we not inclined to take things as they come, not giving the organization the credit to which it is entitled? Who is there that having become one of us and having been enthused with the association spirit, can say it has not benefited him many times the amount of the cost?

Who can put a money value on the feeling of good-fellowship we hold toward each other and the good-will we can extend to our competitor?

#### Learning from Each Other.

We find that we can each learn something from the other, and that those who are new in the business can get the benefit of the experience of those who have traveled the same road for many years, and those who are weak in some particular can feel that there are among us stronger shoulders ever ready to bear part of the burden

Our association has made us more up to date merchants and better business men. It gives us a means of getting united action when some condition arises that would be detrimental to our welfare.

#### Eternal Vigilance and Hard Work.

When we consider that in no line of business in the West to-day is eternal vigilance and hard work more necessary than in retail merchandizing, it is easy to be seen that we have a large field of work which we have barely touched upon and which will more enable us to cope with conditions as they arise.

It seems to me that no other line of business has more risks to run or a larger investment with a smaller percentage of profit than we find in the retail store. This being the case, let us reason together, learning to overcome the difficulties that beset us, learning to buy to better advantage, to cut the corners off the expense account, and to have each year's business show a fair profit for the work we have done.

### Letter from E. C. Simmons.

An interesting communication from E. C. Simmons of the Simmons Hardware Company, St. Louis, Mo., was read, in which a number of practical suggestions were made as to the successful conduct of business. Mr. Simmons' letter was in part as follows:

The benefits of retail Hardware associations are many, the interchange of views, the learning of one man from another as to how to arrange his stock and store, what goods sell the best, how to buy discreetly and wisely, how to educate clerks to become salesmen, how best to advertise to bring back the most substantial returns on the least amount of money, and, last but not least, how to be good collectors. All these things come—sometimes unconsciously—from personal contact of one Hardware merchant with another; hence it is a good thing to come together, compare notes and interchange ideas.

#### Business Methods in this Country Are Changing and Improving.

with great rapidity. I have a few "hobbies" that I have intruded on the trade for at least a third of a century, and I beg of you to bear with me while I intrude them upon your honorable body. My first thought is that a man should keep his store clean; nothing like having an attractive store with goods well displayed. People will buy what they see, will buy what you call their attention to, will buy what is in plain sight, and particularly what they can put their hands on. Personal touch, personal contact, is a great factor in selling goods.

**Points on Buying.**

In buying there are three cardinal points that should be observed by every successful Hardware dealer, or every Hardware dealer who hopes and expects to be successful.

The first is to buy goods of good quality, because on no other kind can a man make a success in his business.

The second is to buy something that has a name and reputation.

The third is to buy something on which you can make a satisfactory profit, and by that I mean to say, buy something that is not sold by catalogue houses, department stores, junk shops or racket stores. Ask a good price for it, and stick to it.

**Good Collectors.**

If I were to be asked what I consider the most important thing in connection with the retail Hardware business, I should say, be good collectors. The man who is afraid to ask his customer to pay him is a poor merchant and is possessed of what I call commercial cowardice. During my experience of over half a century, more than three-fourths of the people who have failed that our house was interested in, have failed from the one simple cause of not being good collectors.

I believe the year 1909 will be one of great commercial activity, second to none in the history of the United States.

## Paper on Parcel Post.

Vice-President Kerr presented an able paper on the subject of parcel post, from which we make the following extracts:

Every successful manufacturer, jobber and retailer is constantly studying some plan whereby he can cheapen the cost of distribution of his goods as he passes them on to the consumer, so that he may be able to make a fair profit on them and be on an equal basis with his competitor. This one idea has been the motive power, as it were, that has driven the wheels of commerce for all past ages, and will continue to do so unless we adopt some of the new isms that have been advocated in late years and change from our form of government. There is no plan that can be adopted whereby we can eliminate cost of distribution.

**Our Government with All Its Power**

cannot take from the mine, the farm or the forest and deliver to the consumer without cost, but Postmaster-General Meyer seems to think that it can be done cheaper by them than by the methods that are now in use, that it can be done more economically. If this be true, why not have the Government own and operate all of our distributing agencies? Mr. Meyer has had a very good opportunity to show his ability along these lines in the management of the free rural mail delivery system, which he admits has run the Government in debt to the amount of $17,000,000 in the past year. Does it seem possible that he would be more successful by undertaking something that would be on a much larger scale? He now asks that he be given authority to establish a parcel post so that he may be able to make up that which has been lost in the mail service. As a general rule a wise merchant abandons a plan that loses him money. It is seldom that he will add some other branch to his business for the purpose of defraying the expenses on those that are losing money. He will try to change the plan of that part of his business so as to at least make it self-sustaining.

**Principle Wrong.**

Granting, however, that Mr. Meyer is correct in his conclusions as to the economic features of his plan, it is not fair. The principle is wrong. Is it right that the Government should deliver, as Mr. Meyer recommended in his first plan of a general parcel post law, 11 lb. of merchandise from Chicago to Boise, Idaho, as cheap as he would deliver it one mile out of Chicago, and then tax every citizen in the country in order to equalize the loss, if any. If this principle is right, why not make the limit of weight large enough so that we could deliver a Threshing Machine in Long Valley as cheaply as we would to Meridian, which is only 10 miles away, with no mountains to climb.

**The Real Advocates of Parcel Post**

are the catalogue houses that are located in the large cities. They believe that if they can get our Government to adopt this policy that it will be the entering wedge establishing a principle that will bring about a general parcel post law. This would be ruinous to Western merchants, for the reason that the catalogue house could then deliver goods just as cheaply in Idaho as they could a mile out of Chicago, and we would be compelled to compete with a cost of distribution that would be ruinous, and our Government would be taking money from one class or one location and using it to equalize this rate of transportation and in addition to this turning a larger sum into the coffers of the catalogue houses located in our largest cities with which to drive out of business every small merchant in our Western States.

Centralization of wealth is one of the great problems that is confronting our statesmen to-day, and they are striving to formulate some law by which there may be a more general distribution of it on a fair and honest basis. To my mind a law could not be passed that would have a greater tendency to concentrate wealth in our great commercial centers than the parcel post bill.

## Resolutions.

Among the resolutions submitted by the committee appointed for that purpose and adopted by the association were the following:

**Parcel Post.**

*Resolved,* That we expressly commend the action of this association in regard to the parcel post bill as recommended by Postmaster-General Von Meyer, in that it has expressed its disapproval. Should this bill become a law it would work the greatest harm to all country merchants, and it would simply be a matter of a few years until we would all be out of business. We recommend that each and every member of this association continue in the good work already started and allow no opportunity to pass to enter his protest against parcel post.

**Peddlers.**

*Resolved,* That the Legislative Committee be instructed to make every effort toward the passage of some State or National law that will put the peddler out of business. It is the sense of this committee that to accomplish this some concerted action similar to the work now being done against parcel post will be necessary

**Bureau of Mines.**

*Resolved,* That this association is heartily in favor of the creation of a Bureau of Mines and Mining, and that we commend the work of Hon. J. H. Richards as president of the Mining Congress, together with his associate officers and members, and we would call to your attention that Mr. Richards has again been re-elected president of the Mining Congress of the United States, thereby drawing attention to the great mining interests of our State, and that this association urge upon our Congressmen their earnest support in the enactment of such a measure at this session of Congress.

**Exemption Law.**

*Resolved,* That we most positively recommend the lowering of the present Exemption law, as our State is rapidly filling up with new settlers and our farms and ranches are being cut up into small tracts of 5, 10, 20 and 40 acres, to care for which only two to four horses are required and only one to three or four cows can be pastured, thereby placing the farmer or rancher in the position as being exempt from prosecution in collection of his debts under the present Exemption law.

**Consignment of Goods.**

*Resolved,* That it is the sense of this association that we are opposed to consignment of goods by jobbers and manufacturers. The dealer who does business with consigned goods has practically no money invested. He is not responsible for the goods, and is a menace at all times, not only to the dealer in his town but to the life, purposes and existence of this association.

**Lien Law.**

*Resolved,* That the Legislative Committee use its best efforts in having a law passed making municipal, county, State and school buildings subject to the same lien law as governs individual property.

## Election of Officers.

The following officers were elected for the ensuing year:

PRESIDENT, J. B. Gowen, Caldwell, Idaho.
FIRST VICE-PRESIDENT, F. E. Fisk, Parma, Idaho.
SECOND VICE-PRESIDENT, L. E. Salladay, Twin Falls, Idaho.
TREASURER, W. H. Wulff, Weiser, Idaho.
MEMBER EXECUTIVE BOARD, V. C. Kerr, Boise.

Mr. Cook, having gone out of the Implement business, tendered his resignation as secretary, which was accepted with regret and under the condition that he hold office until the Executive Committee could select his successor.

## Convention Notes.

E. W. Evenson, Spokane, Wash., secretary of the Inland Empire Implement and Hardware Association, addressed the meeting speaking especially on the Pacific Federation of Hardware and Implement associations. Mr. Evenson urged that a strong delegation of the members of the Idaho body attend the annual meeting of the Federation at Spokane on January 22 and 23 next.

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J. H. LaRue of the Pacific Hardware & Steel Co., San Francisco, spoke at considerable length on the subject of "Association Co-operation." He reviewed the work of associations, showing how they had grown in a very few years until they covered almost the entire country.

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A letter was read from H. M. Kinney, chairman of the Executive Committee of the National Association of Agricultural Implement and Vehicle Manufacturers in which he expressed his regret that it was impossible for him to attend the convention. Mr. Kinney assured the association that the interests of the merchant and manufacturer were mutual, and that the latter was ready to do everything possible to promote the former's welfare. He alluded to what his association was doing in the way of opposition to parcel post legislation. He emphasized the

necessity of studying the cost of doing business and insisting on a reasonable profit, and suggested that the association appoint a Cost Committee. The duties of this committee should be to get up a simple and effective method of keeping costs, and also a strong statement of the necessity for so doing, which should be printed and distributed to the membership and perhaps also to merchants in other lines in Idaho.

## AUSTRALIAN NOTES.

MELBOURNE, November. 16, 1908.

SINCE my last advice the whole continent of Australia has been visited by a generous spring rainfall. The intense heat of the Australian summer is not setting in so early as usual, and this is enabling the ground to retain its moisture longer, and crops and grass country alike are looking healthier than they have for many years past.

Agriculturists, with the exception of a very few in less favored districts, are really jubilant in expectation of a record harvest. This has naturally stimulated the demand for Agricultural Implements and Farm Tools. In New Zealand, makers of these lines have decided to increase prices on account of the increased cost of raw materials and the higher wages imposed by recent decisions of the local Arbitration Court. The increase will be less than 5 per cent. and will be spread over nearly all lines, though Ploughs, Harrows, &c., will bear the bulk of the advance.

Coming back to Australia, local engineers and iron founders are fairly full of orders, while throughout the whole continent the demand for building material and Builders' Hardware still continues brisk.

R. C. Swan & Co., 119 Bathurst street, Sydney, one of the best known plumbers' supply houses in this part of the world, have just removed to newly built premises at 304 Pitt street.

The New South Wales Hardware Assistants' Association, following the lines of its elder brother in Melbourne, winds up its first year of existence with £168 of actual assets, a highly creditable beginning. Of the educational value of these associations, it would be impossible to speak too highly, to say nothing of the close and friendly relations thus established in the various branches of the trade.

## Belknap Hardware & Mfg. Company's Furniture Department.

THE Belknap Hardware & Mfg. Company, Louisville, Ky., has organized a separate Furniture department. For some years the company has been active in some branches of the Furniture business, but has not carried a complete line largely because it lacked storage capacity. Recently, however, new warehouses have been completed, which add so much to the available floor space that an entire building has been allotted to the Furniture department for its exclusive use. The company states that it is not merely putting in a lot of Furniture specialties, but will have a complete assortment of all branches, with stock large enough to take care of a big business right at the start. The variety will be sufficient to afford merchants a source of supply for their entire line, and the quality and styles will be of the sort to appeal to reputable Furniture dealers everywhere. The company believes that its Furniture sample room will increase the number of visitors to Louisville for the purchase not only of this line, but Hardware as well. Salesmen will start out January 1 thoroughly equipped to sell Furniture and will be able to offer immediate deliveries on orders covering all items.

THE NEW ENGLAND IRON AND HARDWARE ASSOCIATION held one of its bimonthly meetings and dinners at Young's Hotel, Boston, Tuesday evening, December 15, at which William A. Sayward of the Master Builders' Association of Boston made an address on "Industrial Issues."

# HARDWARE FREIGHTS.

## UNIFORM CLASSIFICATION A VAST UNDERTAKING.

ONE of the first recommendations of the Interstate Commerce Commission when that body was established 20 years ago was that the railroads of the United States should have a uniform classification. Leading railroad officials took the matter up and appointed a committee of traffic experts, who labored several years in the effort to compile a classification that would be satisfactory to the entire country, but nothing came of it. The differences between the classifications in use at that time were too great to be harmonized. There has been, however, a continual discussion of the question ever since. Many commercial organizations have passed resolutions every year favoring a uniform classification, and many efforts have been made to have Congress dispose of the matter by law.

During the past year the question has again come to the front. A joint committee of railroad traffic experts has been appointed from the Official, Western and Southern sections of the country to compile a new uniform classification, and this committee began preliminary meetings in Chicago in September last. The committee has a long job before it, which may require several years of strenuous labor. There are fundamental differences in the old classifications which cannot be harmonized in a day, and even when these questions are disposed of there will remain thousands of articles on which the ratings differ in the three existing classifications. Each change in a rating may involve a contest with the shippers interested, or possibly a complaint that will grow into a lawsuit before the Interstate Commerce Commission. It is not surprising that the members of the committee decline to talk for publication.

**Committee at Work.**

During the past 20 years the United States for purposes of freight classification has been divided into three great sections, covered by the Official, Western and Southern classifications. The exact boundaries are somewhat confusing, although they are definitely defined. Portions of Virginia and Kentucky, on the border between the Official and Southern, are partly one and partly t'other, the same territory being subject to both. In Illinois the situation is even more complex as the same car moving over an Illinois road may contain freight subject to all three, besides articles subject to the Illinois State classification, established by State authority.

**Three Great Divisions.**

Interstate shipments from points north of the Potomac going into Virginia as far as stations on the line of the Norfolk & Western are subject to official ratings, but traffic originating south of the Potomac takes the Southern classification of it goes south. Shipments going north from points on the Norfolk & Western or territory between that road and the Potomac take Official ratings. The Mississippi River is in a sense a boundary between the Official and Western classifications as far north as Wisconsin, which is included in Western territory; but the State of Illinois has four classifications overlapping and all applying to traffic under different conditions. On interstate shipments to and from eastern points the Official extends over Illinois, excepting for a few stations in the northwestern part of the State. Where shipments to or from eastern points cross the Mississippi the rating changes at the river. In shipping west from Chicago, however, or from other points in Illinois to territory west of the river the Western classification applies. Going south the rating changes on some traffic at the Ohio River, but the Southern roads have made through rates to and from Chicago which are subject to the Southern classification, which is thus extended north as far as Chicago. From Chicago to Illinois points or between any two points within the State the Illinois classification must be observed.

**Some Examples of Overlapping.**

A respectable number of States have established com-

plete classifications by law or through State railroad commissions, and this complication is likely to increase rather than diminish in future years. As another bewildering feature nearly every railroad has filed at Washington in the form of a tariff a long list of "exceptions" to the classification under which it operates, and the shipper must have this document before him for each road that he uses in figuring the correct rate on any shipment. From this brief review of the present situation one may understand the desire of the Interstate Commerce Commission for one uniform classification that would cover the entire country.

**State Classifications and Exceptions.**

For political as well as commercial reasons it is desirable that there should be no sectional lines in a great country like the United States. The present division of the country creates confusion for the shipper who does a national business in merchandise subject to class rates, and, perhaps, a greater amount of confusion and expense in the traffic and auditing departments of the railroads. The entire commerce of the country, with all its bewildering entanglements, passes through the hands of the railroad billing clerk. He receives a copy of the shipping order or bill of lading, which merely shows the names of the articles and the weight or quantity of each as checked into the freight house or into the car. It is very easy to make mistakes in billing merchandise of so many kinds, both in the classification and in the class rates, and on every large railroad system thousands of mistakes are made every day in billing. The majority of these mistakes are corrected by the auditing department, which receives tissue copies of the billing, and many are corrected by the delivering agents where the consignee demands correction before paying the bill. There remain, however, on every large railroad system 500 to 1000 mistakes every day, for which the consignees or the shippers present claims. One of the arguments for a uniform classification is that it would prevent a large proportion of these mistakes by simplifying the work of billing.

**Confusion for the Shipper.**

**Prolific of Mistakes.**

There are, however, more difficulties in the way of a national classification than the mere vastness of the undertaking. A surprisingly large number of shippers and railroad traffic men are opposed to the idea and even refuse to consider it seriously. They insist that it is a beautiful theory but one that can never be put into operation. The men who are thus opposed to the undertaking are men who have had the widest experience in handling the details of complex traffic on the side of the shipper as well as in all branches of the railroad traffic department. There is it must be confessed no serious demand from either shipping or railroad interests for a national classification; and it has never been shown that the shipper suffers any serious disadvantage because of the present division of the country into three sections. The demand for it has come from the Interstate Commerce Commission and from a few commercial organizations whose resolutions as a rule are not written by shipping clerks or industrial traffic managers. There is some ground for the criticism that the agitation comes from those who take only a theoretical view of the question and that it receives but scant support from those who are supposed to suffer under present conditions. The difficulties of present classifications are not as formidable as other details which the shipper or his employees must understand in handling railroad traffic; and they are very simple when compared with the bewildering features of some of the new tariffs that are compiled in accordance with the rulings of the commission.

**Demand for Change Not from Sufferers.**

It would be necessary for all the railroads to reconstruct their systems of class rates. The Official, for example, has only six classes, while the Western has 10, and the percentage of gradation from one class to the next is different. Rates in Official territory are now based on the rates between Chicago and New York, which now grade down from 75 cents first class to 25 cents sixth class. If 10 classes were adopted to divide the same spread in rates they would be thrown entirely out of harmony with the present Official classification; and no one would know where to begin an attempt to weld the new structure with the Western classification and the Western sliding scale of rates. The Southern classification would offer complications of its own in any atempt to hammer it into harmony with the other two.

**Class Rate Reconstruction.**

Articles in common use handled by Hardware merchants run through all the classes. Barb Wire and Wire Nails have the same rating at present in all three, but this can be said of only a small number of articles sold through the Hardware trade. In nearly all cases the ratings differ. How can they be harmonized? The railroad which for years has carried an article at the first class rate cannot in justice to its stockholders consent to a reduction to second class, which would reduce the revenue. The only way to harmonize the differences would be to adopt the highest class that is found at present in any one of the three existing classifications. This would raise the rates which the public must pay on 50 to 75 per cent. of the merchandise of the country that is carried at class rates. A compromise by reducing some ratings and raising others might equalize the revenue which the railroad receives from the people, but the Hardware merchant would not like to have his rates advanced to compensate a reduction in the charges on soap or dry goods. The soap manufacturer would look with the same disapproval on an advance in his rates which would shut him out of distant territory where he had spent a large amount of money to build up his trade. He might appeal to the courts.

**Harmonizing Differences Would Be Difficult.**

There are important differences in the general rules of the existing classifications which would be difficult to harmonize without doing violence to long established business interests. For example, the Official classification allows any articles of the same class to be mixed in a car at the carload rate, which favors the retail merchant who buys in carloads. The Western rules restrict the privilege of loading mixed cars, only authorizing it in a few lines, and this favors the Western jobber, as it restricts the number of merchants who can buy in carloads from the manufacturer or from Eastern jobbers. This may look like favoritism in one direction or the other, but the greater part of the structure of American industries and commerce is erected on foundations of natural or artificial advantages in rates which may look like favoritism or discrimination when viewed from the other side. It is a serious matter to tear out or shift the foundation of any structure, and in this case a change in these underlying rules might cause a grave disturbance to established business interests.

**General Rules Another Obstacle.**

The United States Supreme Court does not look with approval on any change in rate conditions which disturbs the commercial interests of shippers. Where rates have been established a long time on a certain basis and shippers have invested capital in enterprises in which their profits would be curtailed by a change in traffic conditions, the great national tribunal is able to see clearly the wrong that is done. This broad view which the Supreme Court takes of the traffic structure of commerce may prove the fatal stumbling block in the way of a uniform classification.

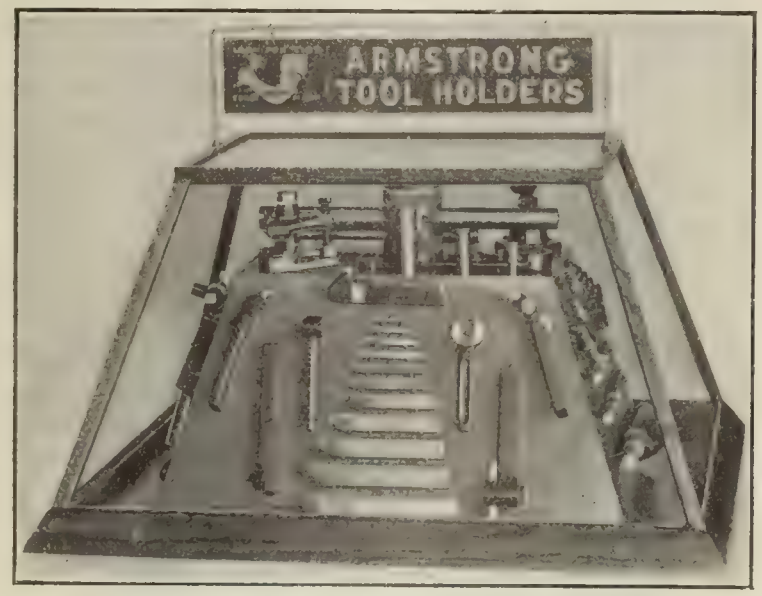
**Supreme Court's Disfavor.**

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THE NEW YORK STAMPING COMPANY, North Eleventh and Berry streets, Brooklyn, N. Y., has issued a supplement to its 1904 catalogue, devoted to illustrations and prices of Chafing Dishes, Food Pans, Hot Water Plates and Cover, Chafing Dish Spoons and Forks, Coffee Urn Percolators, Wind Shields for Lamps, Tea Kettles, Baking Dishes, Dish Covers, Oblong Trays, Fancy Baskets, Liquor Mixers and Strainers, &c. The catalogue is well printed and illustrates some new designs.

## The Armstrong Tool Display Case.

AN attractive case for the display of tools made by the Armstrong Brothers Company, Chicago, is being distributed upon certain conditions among the trade as a means of advertising its product in a way mutually advantageous to both merchant and manufacturer. The case, which is herewith illustrated, is substantially built of natural finished oak, with clear double thick glass sides. Its dimensions are as follows: Base, 25 x 33 in.; top, 13 x 21 in.; hight, exclusive of sign, 18 in. It is painted and lettered on both sides in black and gold with the company's Arm and Hammer trademark. A sign 4 in. wide and 19 in. long is mounted on the top of the case with a brass rod and fixtures. The shape and size of the case make it readily adaptable to varying conditions or positions, and it is equally effective upon the counter or in a window display. Beyond its value as an advertising medium, it is of decided utility as an aid to customers in selecting the pattern or size of tool wanted. Time is saved in this way, since the buyer can, if he does not know the number, size or exact pattern of the tool wanted, quickly point it out when put before him in this




*The Armstrong Tool Display Case.*

manner. The tools are arranged in a harmonious design, and are firmly fastened in place on the sides of the finished oak centerpiece by means of brass screw hooks, while those on top are securely held by screws. In order to make the display permanent and avoid recourse as far as possible to the collection for filling orders, no door is provided for the case, the top and base being fastened together by screws which must be removed before the tools inside can be reached. The case is placed with merchants on consignment, and the tools are billed on regular account at a special net price. The Armstrong tools comprising the set are as follows: No. 1 B Three-Bar Boring Tool; No. 2 Planer Jack; No. 1 T Improved Tool Post; No. 1 S Straight Shank Tool Holder; No. 1 R Offset Tool Holder; No. 1 L Offset Tool Holder; No. 101 S Drop Head Tool Holder; No. 1 K Knurling Tool; No. 51 Threading Tool; No. 40 Planer Tool; No. 21 Cutting-off Tool; No. 31 R Cutting-off Tool; No. 31 L Cutting-off Tool; No. 71 R Offset Side Tool; No. 71 L Offset Side Tool.

## Price-Lists, Circulars, Etc.

*Manufacturers in Hardware and related lines are requested to send us copies of catalogues, price-lists, &c., for our Catalogue Department in New York; and at the same time to call attention to any new goods or additions to their lines, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.*

RIPLEY PIPE WRENCH COMPANY, Ripley, N. Y.; J. A. Jochum Hardware Company, 105-107 Chambers street, New York, sole representative: Illustrated booklet devoted to the Leader Pipe Wrench.

OHIO IMPLEMENT COMPANY, Bowling Green, Ohio: Illustrated implement catalogue, No. 7, 32 pages, containing Farm Implements, Garden Tools, Burton Bob Sleds, Rollers, Pulverizers, Hay Loaders, Single Trees and Feed Cutters.

CONTINENTAL COMPANY, Detroit, Mich.: Large cardboard hangers in two colors referring to the fly peril and calling attention to Screen Doors and Window Screens.

SARGENT & Co., New Haven, Conn., and 94-96 Centre street, New York, leaflet of Sargent's Cow Bells in Kentucky and Western patterns.

ANGLE STEEL SLED COMPANY, Kalamazoo, Mich.: Illustrated booklet referring to Angle Steel Stools, Chairs, &c., and containing testimonials from users.

LORD & BURNHAM COMPANY, Irvington-on-Hudson, N. Y., 48 page illustrated catalogue No. 6, of sash operating apparatus for modern power houses, factories, foundries, car barns, public buildings and manufacturing plants, generally.

CHARLES ROSS & SON COMPANY, 148-156 Classon avenue, Brooklyn, N. Y., 20 page illustrated catalogue of Kneading and Mixing Machines for heavy plastic masses, pastes and semi-pastes, putty, ink, doughs, powder, blackings, greases, lubricants, ointments, medical compounds, &c.

BADGER WIRE & IRON WORKS, Milwaukee, Wis., illustrated catalogue E, 124 pages, covering plain and ornamental wire and wrought iron work, metal clothes lockers, vases and lawn furniture.

SAFETY DOOR HANGER COMPANY, Ashland, Ohio: Illustrated catalogue relating to Barn Door Hangers in rigid, swing and tandem styles, Hanger Rail and Barn Door Latches.

AMBERG FILE & INDEX COMPANY, 79-81 Duane street, New York: Illustrated net price-list of Vertical Filing Cabinets, Guides, Folders, Transfer Cases, &c.

PETTINGILL-ANDREWS COMPANY, Boston, Mass.: Illustrated booklet of Electric and Gas Portable Reading Lamps of old brass, Pompeiian, jap bronze and ox copper finishes, with glass shades of various styles.

NEW ENGLAND ENAMELING COMPANY, Middletown, Conn., H. Ginsburg, sales agent, 736 Broadway, New York: Pamphlet illustrating and describing the Ideal Coffee Percolator.

WELLS BROS. COMPANY, Greenfield, Mass.: Folder devoted to assortments of Little Giant Screw Plates. Each assortment contains taps and dies in collets with stocks and adjustable drop forged tap wrenches.

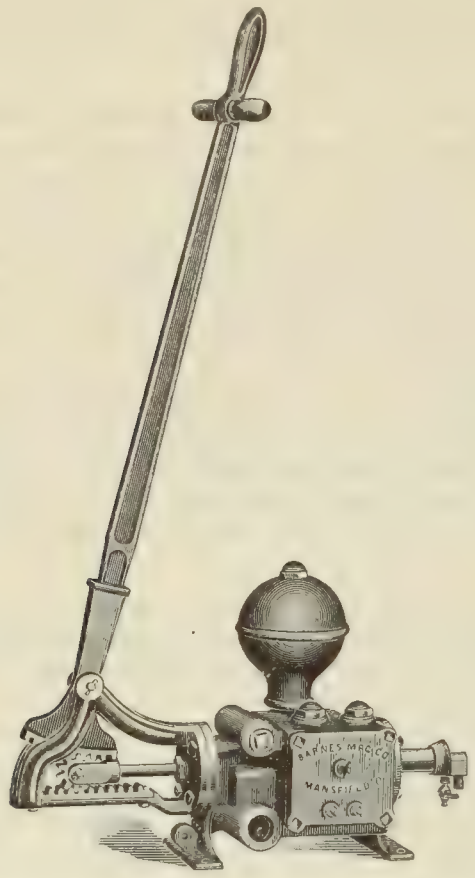
SNELL MFG. COMPANY, Fiskdale, Mass., John H. Graham & Co., 113 Chambers street, New York, agents: Catalogue No. 28, illustrating and listing an extensive line of Boring Tools and Machines, Screwdrivers, Countersinks, Nail Sets, Reamers, Gimlets, Cold Chisels, Punches, Ice Picks, &c. The catalogue shows many additions to the company's line of solid center Augers and Bits.

## Improvements in Perfect Sliding Sets.

The Bridgeport Hardware Mfg. Corporation, Bridgeport, Conn., has made a number of improvements in its Perfect sliding sets for single, double and automatic house doors. The rail is now made of a different grade of material, and also heavier; the hanger arms are heavier and have a wide rib extending the entire length, strengthening the design. An arrangement has been added to the arm of the hanger which prevents the nut bolt becoming disengaged when the door is in normal position and its weight is on the hanger. Changes have been made on the bracket horns, which are the means of adjustment for the rails at each end. The devices for the adjustment of the track up and down and for the door hanger up and down have also been improved. Other changes of a minor character have been made, all contributing to a material improvement in the sets as now put on the market.

## Barnes' Pneumatic Ratchet Double Acting Pump with Air Cylinder.

The pneumatic ratchet double acting pump, with air cylinder for pumping water and air for use in connection with pneumatic tank systems, shown herewith, is put on the market by the Barnes Mfg. Company, Mansfield, Ohio. The pump has brass air cylinder and intake valve, and the ratchet head is fitted with an auxiliary



*Barnes' Pneumatic Ratchet Double Acting Pump with Air Cylinder.*

pinion which compounds the leverage so that a pressure of 100 lb. can be easily developed. The suction discharge can be connected on either side of the pump. By removing the four cap screws which hold the plate on the side of the valve chamber, the valves can be easily got at when repairs are necessary. A stop cock is connected on the end of the air cylinder, which can be closed when used for pumping air in connection with water; the cock is left open for pumping water only. The pump is alluded to as being substantially built throughout of the best material and workmanship, and is fitted with brass valves and seats and provided with brass drip plugs to prevent freezing; it also has an extra plug for priming when necessary. The point is made that there are no air pockets in the pump.

## Caliber .25 Colt Automatic Hammerless Pistol.

To meet the demand for an extra light weight, very small size automatic pistol, that would have the necessary features of an effective and practical arm, the Colt's

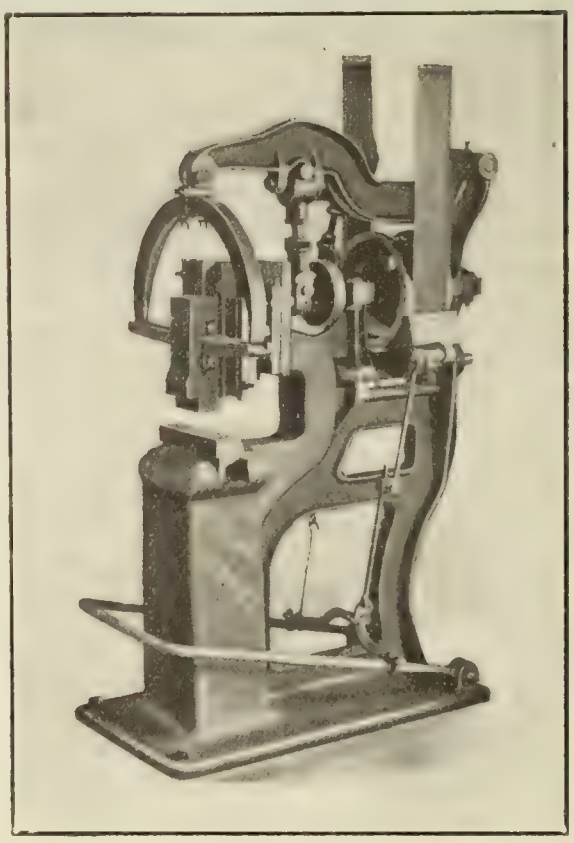



*Caliber .25 Colt Automatic Hammerless Pistol.*

Patent Fire Arms Mfg. Company, Hartford, Conn., has perfected the models illustrated herewith. The pistol weighs 13 oz., is 4½ in. long, and of flat, compact shape, may be carried in a vest pocket or lady's muff. It is provided with the Colt devices, which insure against accidental discharge. An action safety prevents discharge until the breech is entirely closed; an automatic grip safety locks the firing mechanism until released by pressure on the handle in the usual manner of grasping the pistol when pulling the trigger; and a side lock which, when pushed up and engaged in the slide cut when the arm is cocked, blocks the sear so that it cannot be released from the trigger. Like all of the company's automatic pistols the .25 caliber is quick in action. If the pistol is cocked ready for an emergency, and the slide lock thrown on, as when carrying the weapon, the lock may be instantly drawn down by a slight movement of the thumb as the pistol is brought to the firing position. It is then only necessary to pull the trigger to fire each shot, the ejection of empty shells, charging of the chamber with a fresh cartridge, and cocking of the piece being automatically performed by the recoil, which is so absorbed in manipulating the action that it has no disturbing effect on the aim. There is no limit to the rapidity of fire, which is under instant control of a finger. The pistol is neat in appearance, made of special materials, and each one is carefully inspected and tested before leaving the factory. The new arm is alluded to as of inestimable value to those who desire an inconspicuous, handy and practical pocket pistol. The magazine holds six shots, and the arm is of blued finish with case hardened trigger, slide lock safety and grip safety, with rubber stocks. The cartridge adapted for the pistol is of the rimless, smokeless powder type, with metal patched bullets that will penetrate three and one-half ⅞-in. pine boards.

## The Sterling Hammer.

The Sterling Machine Works, Sterling, Ill., are offering the hammer here shown for the use of carriage makers and for general blacksmith work, the machine having the necessary adjustments for a wide range of work. The floor space dimensions of the hammer are



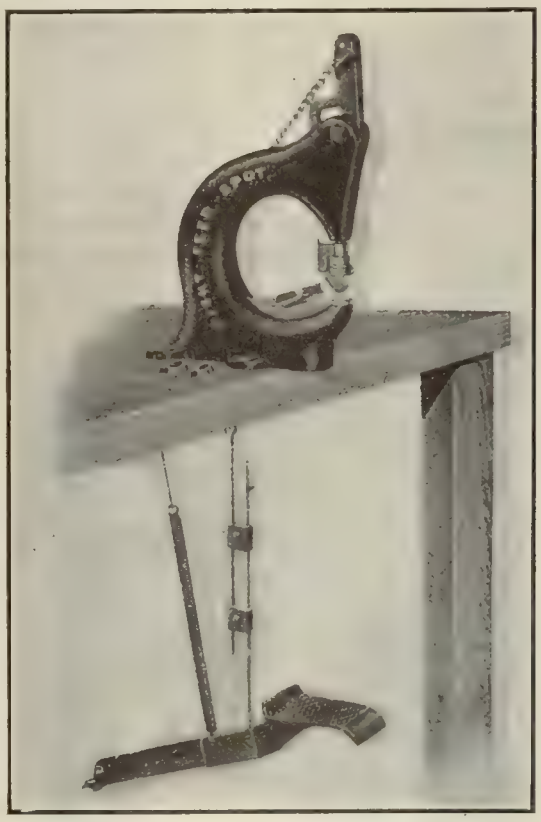
*The Sterling Hammer.*

20 x 36 in.; the hight to center of crank shaft is 40 in.; weight of ram, 40 lb.; hight over all, 4 ft. 9 in.; speed, 350 rev. per min., and shipping weight, 1700 lb. The frame and anvil are cast in one piece to insure perfect alignment of dies. The anvil is solid—not cored out—to give great weight and rigidity to receive impact of blows. The guides are adjustable for wear. The guide yoke can be raised to admit work 6 in. high, or can be lowered so that the ram is almost entirely within the guides when the dies are together. The length of stroke can be adjusted to suit any conditions, though when properly set

for ordinary work it seldom need be changed. The idler can be adjusted to allow for stretching or shrinking of belt, and can be put on either side of the hammer, thus allowing the belt to run either way. The machine is referred to as being exceptionally strong, durable and simple; its weight and strength are where they are most needed, and it is at all times under perfect control of the operator.

## The Sight Feed Spot Machine.

The F. H. Smith Mfg. Company, Chicago, has just brought out the machine here illustrated, which is designed for the use of harness makers in fastening the ornamental disks, known as spots, on harness. The machine is operated by a foot lever arranged with adjustable rods for attachment to the machine when set on benches of varying hight. A feature of convenience noted in the machine is the hinged spot holder, which allows the operator to feed in the spots at a convenient

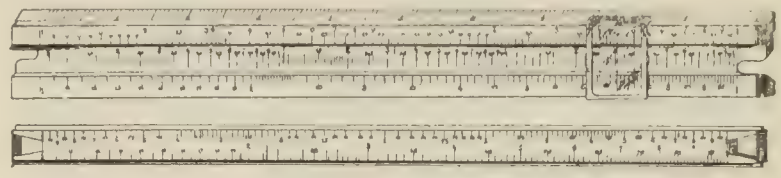


*The Sight Feed Spot Machine.*

angle, the illustration showing it in an open position, from which it is brought back to working position by a positive stop. The spot holders are made easily interchangeable from one size to another by pressing a lever ot the rear of the carrier. When shipped from the factory the machine is fitted to set round spots, with either cone or flat heads, and the capacity of the machine runs from ⅜ to 1 in. spots, inclusive, by eighths. By means of an adjustable gauge, having a 5-in. range of adjustment, spots can be set close to the edge of the strap, and can be quickly changed to accommodate different widths. All working parts of the machine are made of malleable iron and steel, the construction being durable throughout.

## Multiplex Slide Rule.

The Eugene Dietzgen Company, 214-220 East Twenty-third street, New York, is introducing its Multiplex slide rule, with improved automatic adjustment, as here illustrated. This is offered by the company for making quick computations, not only in solving arithmetical, trigonometrical and logarithmic examples possible with their Mannheim slide rule, but possessing other marked advantages. Some of these are multiplication of three numbers in one setting; division of one number by two numbers in one setting; more convenient solution of inverse proportion; direct solution in a single setting of a series of divisions with a constant dividend; direct reading of cubes and cube roots; direct reading of three halves and two-thirds powers, and direct solution in a single setting of many combined operations which require the slide to be shifted with the Mannheim rule. The only change on the face of the rule from the ordinary Mannheim type is the substitution of a reversed or reciprocal scale for one of the upper scales on the slide, this scale being of the same length and division as the one replaced. It introduces no complication and does not in any way subtract from the operations possible with the other types of

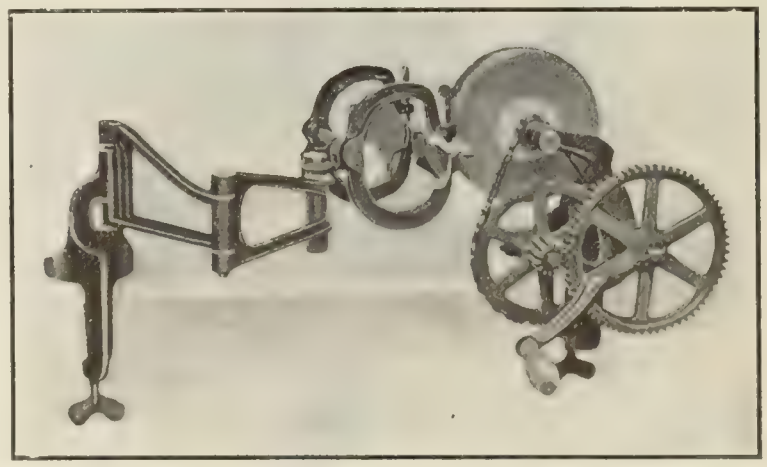


*Multiplex Slide Rule.*

rules. The rule is also provided with a cube scale, which is not located on the face of the rule; hence this arrangement does not confuse the operator in the solution of ordinary problems, but gives the same clear reading surface found in Mannheim rules. The cube scale makes it possible to obtain direct readings in a single setting of cubes, cube roots, three-halves and two-thirds powers, besides broadening the field of application in great measure with corresponding economy of time and increase of accuracy. It is also said that by combining the ordinary scales with the reciprocal and cube scale, as this rule does, 93 separate and distinct solutions of practical problems are secured at a single setting, against about one-third that number for the Mannheim rule. A manual or book of instructions accompanies each Multiplex rule, giving to beginners the elements of the subject necessary for the proper understanding of theory and practical application of both the Mannheim and Multiplex slide rules, together with a large amount of useful data and a number of conversion tables applicable to slide rules. The rules are made in 8, 10, 16 and 20 in. lengths in two ranges of prices.

## The Diamond Bench Skate Grinding Attachment No. 2.

A simple and convenient bench skate grinding attachment, made by the Luther Brothers Company, Milwaukee, Wis., is here illustrated. It is designed for use in connection with any one of the various styles of electric or hand power grinders made by this company, and because of its adaptability in this respect finds serviceable employment in hardware stores during the winter months.



*The Diamond Bench Skate Grinding Attachment No. 2.*

It is readily adjusted to any position, and no difficulty is experienced even by one unfamiliar with the work in aligning the skate at right angles with the center of the wheel, thus insuring a true, straight and hollow grinding of the blade. The skate is firmly held in position, square with the wheel and directly opposite the center by thumbscrew clamps. Skates of any style with runners of various length and thickness can be handled with equal facility. The attachment is intended, not only to expedite the work of grinding, but eliminates the need of skilled mechanics for its performance.

## Improved Pneumatic Gas Lighters.

The Pneumatic Gas Lighting Company, 150 Nassau street, New York, has just put on the market two improved pneumatic gas lighters, both for incandescent mantle and open flame burners, together with a new form of bulb for lighting and extinguishing one or more lights, as shown in Fig. 3. The gas lighters as now made are more compact and unobtrusive than ever, and have these marked advantages over the previous construction. Fig. 1 illustrates the lighter for mantle burners with flexible tubular outer by-pass, adjustable to the various styles of such burners by merely cutting the brass tube to suit. Fig. 2 represents the same principle in pneumatic light-

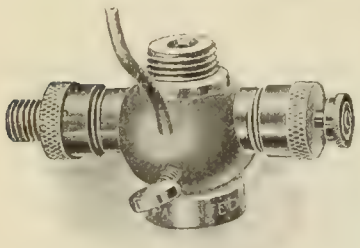


*Fig. 1.—Pneumatic Gas Lighter for Mantle Burner.*

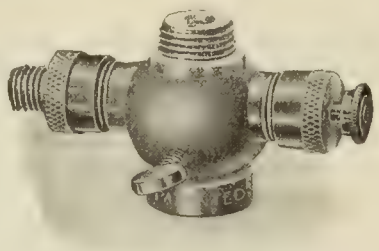


*Fig. 2.—Similar Lighter for Open Flame Burner.*

ing, except that the by-pass is contained in the spherical body of the lighter, a gas way being bored diagonally so as to permit gas to pass when light is down directly into the base of the ordinary open flame burner commonly in use, the small pilot light in this case burning at the top of the lava tip. This lighter is recommended by the company only for such places as are not in a draft, as cellars, &c., because of the lack of protection to flame drafts might blow it out, which will not occur in using the other lighter. As now made both lighters have a small thumbscrew tapped into the body by which to regulate the light of the pilot by a twist of the fingers, and this convenience is especially helpful in connection with the open flame burner, as the pilot flame can be made stronger if necessary to resist drafts. Another betterment is the present form of the piston, which about once a year may need cleaning to remove the deposit incident



*Fig. 3.—Showing Application to Chandelier, &c., and Rubber Bulb Pump.*

to the use of gas. The piston is ¼ x 1 in., with a lateral cut 3 in. wide to allow a flow of gas to the burner when pushed in and send the gas through by-pass to pilot flame when thrown out by the pneumatic pressure, which is exerted through small brass tubing about 0.08 in. diameter carried to any point and worked by bulb or small push button pump supplied. This improved style of piston likewise adds the convenience of a pump near the burner without the expense of extra tubing and fittings, so that if the individual is near the light it can be thrown on or extinguished without walking across a room, possibly, to operate it. This form of piston is also much more convenient to handle in cleaning and cannot be reversed in replacing it. The rubber bulb pendant for operating one or a series of lights in room, show window, &c., by a skillful graduation of finger pressure can be made to light or extinguish one or more in the series. In a show window this arrangement obviates danger from the use of matches or tapers where inflammable materials exist and obviates disturbing window arrangement. The pistons as now made have a clearance of 1-4000 in., all accurately tested to 3½ lb. pressure and from the close fit can be used for the inverted style of burners.

## Buckeye Ratchet Head Pumps.

Mast, Foos & Co., Springfield, Ohio, have begun the manufacture of Buckeye ratchet head pumps, as here shown, which have some novel features. The distance from the fulcrum to the pitch line of the rack is but 2½ in., and as the lever or handle on the various pumps of the line of this style construction, shown in a 16-page booklet, is from 3 to 4 ft. in length the increased power secured will be appreciated. The cog gear here used is a complete wheel instead of a small segment of a circle, and is drilled with a multiple of pin holes near the outer rim of the wheel, the handle being so arranged that it

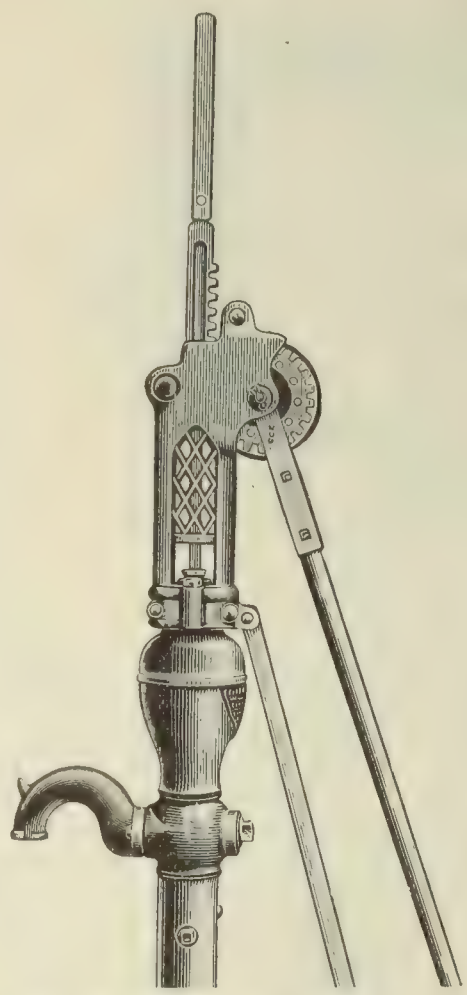


*Fig. 1.—Buckeye Single Acting Windmill Force Pump.*

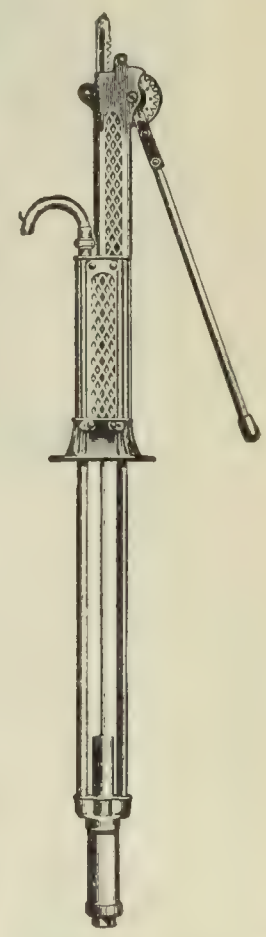


*Fig. 2.—Buckeye Double Acting Ratchet Force Pump for Shallow Wells.*

can be attached to the wheel by inserting a pin through any of the holes that may be selected. This enables the operator to adjust the handle to the exact hight most convenient for use. When desired to use the pump in connection with a windmill all that is necessary is to remove the pin referred to when the wheel becomes free to revolve with the rack while the windmill is in motion, the pump handle hanging pendant and out of the way. This construction enables the rack to travel its full length and allows the pump to operate on a long stroke when attached to the windmill. This line of pumps have a wrought steel band, encircling the gear wheel, which protects the operator from injury by the teeth of the gear wheel. The roller back of the toothed rack is placed in the frame slightly higher than the gear wheel, which prevents the rack being pushed out of line when the pump is operating on heavy work.

## The Peerless Speedodometer.

The Peerless Specialty Company, 1876 Broadway, New York, is offering the speedodometer shown herewith, for use on automobiles. It can be read from the tonneau of




*The Peerless Speedodometer.*

the car. The wheels are pure white, with neat black numerals, and the device is referred to as being a simple, efficient and accurate recorder of speed, trip and season mileage, also giving the maximum speed run. The indicating hand shows the speed at which the machine is traveling. The maximum speed hand and trip mileage can be set back at the will of the operator, and the season and trip odometers work independently of each other when resetting. The speed hand is controlled by a centrifugal governor and registers, it is explained, without fluctuation. The mileage record is arranged so as to make it impossible for it to skip or jump miles. The drive spindle runs in ball bearings to insure long life. The flexible shaft is made of 16 strands of best piano wire, woven alternately four strands to the layer in four layers. Casings are made of the best grade of polished brass flexible tube, steel lined, to avoid breaking or mashing. The casing is filled with cosmoline and graphite to lubricate and insure the shaft from crystallization. To set back the trip mileage, the knob on the right side is pulled out and turned in either direction until each numeral wheel shows zero. The maximum hand is set back by touching the button at the bottom of the case. The company states that the instrument and attachments are made from the best material obtainable and are strong, durable and accurate, and fully guaranteed for one year.

# PAINTS, OILS AND COLORS

### Animal, Fish and Vegetable Oils—

| | ₱ gal bbls. |
|---|---|
| Linseed, Western, Raw | 47 @48 |
| State, Raw | 47 @48 |
| City, Raw | 48 @49 |
| Boiled, 1¢ ₱ gal. advance on Raw. | |
| Raw, Calcutta, in bbls | 70 @.. |
| Lard, Prime, Winter | 73 @77 |
| Extra No. 1 | 51 @52 |
| No. 1 | 46 @48 |
| Cotton-seed, Crude, f.o.b. mill | 29½@29¾ |
| Summer Yellow, prime | 38¼@38¾ |
| Summer, White | 40½@41 |
| Yellow Winter | 46 @47 |
| Tallow, Acidless | 58 @59 |
| Menhaden, Brown, Strained | 34 @35 |
| Northern Crude | @.. |
| Southern | 24½@.. |
| Light Strained | 34 @35 |
| Bleached Winter | 36 @38 |
| Ex. Bleached Winter | 38 @39 |
| Cocoanut, Ceylon | ₱ lb 6⅞@ 7 |
| Cochin | ₱ lb 7¼@ 7½ |
| Cod, Domestic, Prime | 38 @40 |
| Newfoundland | 40 @42 |
| Red, Elaine | 39 @42 |
| Saponified | ₱ lb 6 @ 6⅛ |
| Olive, Yellow | $1.20@$1.35 |
| Neatsfoot, Prime | 55 @58 |
| Palm, Lagos | ₱ lb 6 @ 6⅛ |

### Mineral Oils—

| | ₱ gal. |
|---|---|
| Black, 29 gravity, 25@30 cold test | 13 @13½ |
| 29 gravity, 15 cold test | 13½@14 |
| Summer | 12½@13 |
| Cylinder, light filtered | 20½@21 |
| Dark, filtered | 18 @19 |
| Paraffine, 903-907 sp. gravity | 14½@15 |
| 903 sp. gravity | 13½@14 |
| 883 sp. gravity | 11 @11½ |
| Red | 13½@14 |

### Miscellaneous—

| | |
|---|---|
| Barytes: | |
| White, Foreign | ₱ ton $18.50@20.50 |
| Amer., floated | ₱ ton 17.00@18.00 |
| Off color | ₱ ton 12.50@15.00 |
| Chalk, in bulk | ₱ ton 3.00@ 2.40 |
| China Clay, Imported | ₱ ton 11.50@18.00 |
| Cobalt, Oxide | ₱ 100 lb 1.45@ 2.60 |
| Whiting, Commercial | ₱ 100 lb 42@52 |
| Gilders | ₱ 100 lb .55@ .60 |
| Ex. Gilders | ₱ 100 lb .60@ .65 |

### Putty, Commercial—₱ 100 lb

| | |
|---|---|
| In bladders | $1.70 @1.80 |
| In bbls. or tubs | 1.20 @1.45 |
| In 1 lb to 5 lb cans | 2.65 @2.95 |
| In 12½ to 50 lb cans | 1.50 @1.90 |

### Spirits Turpentine—₱ gal.

| | |
|---|---|
| In Oil bbls | 41 @41½ |
| In machine bbls | 41½@42 |

### Glue—

| | ₱ lb |
|---|---|
| Cabinet | 12 @15 |
| Common Bone | 7½@ 9 |
| Extra White | 18 @24 |
| Fish, liquid, 50 gal. bbls., per gallon | 60 @1.20 |
| Foot Stock, White | 12 @14 |
| Foot Stock, Brown | 9 @11 |
| German Common Hide | 10 @12 |
| German Hide | 12 @18 |
| French | 10 @40 |
| Irish | 13 @16 |
| Low Grade | 10 @12 |
| Medium White | 14 @17 |

### Gum Shellac—

| | ₱ lb |
|---|---|
| Bleached, Commercial | 21 @22 |
| Bone Dry | 25 @26 |
| Button | 30 @40 |
| Diamond I | @39 |
| Fine, Orange | 30 @35 |
| A. C. Garnet | 22½@23 |
| G. A. L | 20 @21 |
| Kala Button | 15½@16 |
| D. C | @41 |
| Octagon B | 31 @32 |
| T. N | 21 @22 |
| V. S. O | @39 |

### Colors in Oil—

| | ₱ lb |
|---|---|
| Black, Lampblack | 12 @14 |
| Blue, Chinese | 36 @46 |
| Blue, Prussian | 32 @36 |
| Blue, Ultramarine | 13 @16 |
| Brown, Vandyke | 11 @14 |
| Green, Chrome | 12 @16 |
| Green, Paris | @24 |
| Sienna, Raw | 12 @15 |
| Sienna, Burnt | 12 @15 |
| Umber, Raw | 11 @14 |
| Umber, Burnt | 11 @14 |

### White and Red, Lead &c.—

| | ₱ lb |
|---|---|
| Lead, English white, in Oil | 10⅛@10⅜ |
| Lead, American White: | |
| Dry and in Oil, 100, 250 and 500 lb kegs | 6¾ |
| Dry and in Oil, 25 and 50 lb kegs | 7 |
| Dry and in Oil, 12½ lb kegs | 7¼ |
| In Oil, 25 lb tin pails | 7¼ |
| In Oil, 12½ lb tin pails | 7¾ |
| In Oil, 1, 2, 3 and 5 lb tin cans, ass't | 8¾ |
| Red Lead and Litharge: | |
| In 100 lb kegs | 7 |
| In 25 and 50 lb kegs | 7¼ |
| In 12½ lb kegs | 7½ |
| In lots of less than 500 lbs. ½¢ ₱ lb advance over above prices of White and Red Lead and Litharge. | |
| Lead, American. Terms: On lots of 500 lbs and over, 60 days, or 2% for cash if paid in 15 days from date of invoice. | |

### Zinc, Dry—

| | ₱ lb |
|---|---|
| American, dry | 5⅛@ 5⅝ |
| Red Seal (French process) | 6¾@ 7 |
| Green Seal | 7¼@ 7½ |
| German Red Seal (French process) | 7 @7¼ |
| Green Seal | 7½@ 7⅞ |
| White Seal | 8¼@ 9 |
| French, Red Seal | 8⅜@ 8⅞ |
| Green Seal | 10⅜@10⅝ |

### Dry Colors—

| | ₱ lb |
|---|---|
| Black, Carbon | 6½@10 |
| Black Drop, American | 3½@ 8 |
| Black Drop, English | 5 @15 |
| Black, Ivory | 16 @20 |
| Lamp, commercial | 4 @ 6 |
| Blue, Celestial | 4 @ 6 |
| Blue, Chinese | 30 @32 |
| Blue, Prussian | 28 @30 |
| Blue, Ultramarine | 3½@15 |
| Brown, Spanish | ½@ 1 |
| Carmine, No. 40 | $3 10@3 25 |
| Green, Chrome, ordinary | 3½@ 5 |
| Green, Chrome, pure | 17 @25 |
| Ocher, American | ₱ ton $8.50@16.00 |
| American Golden | 2½@ 3¼ |
| French | 1¼@ 2 |
| Foreign Golden | 3 @ 4 |
| Orange Mineral, English | 10 @12 |
| French | 12¾@13 |
| German | 12 @13 |
| American | 9 @10 |
| Red, Indian, English | 4½@ 6 |
| American | 3 @ 3¼ |
| Red, Turkey, English | 4 @10 |
| Red, Tuscan, English | 7 @19 |
| Red, Venetian, Amer. | ₱ 100 lb $0.50@1.25 |
| English | ₱ 100 lb $1.15@1.60 |
| Sienna, Italian, Burnt and Powdered | 3 @ 9 |
| Italian, Raw, Powdered | 3 @ 7 |
| American, Raw | 1½@ 2 |
| American Burnt and Pow'd | 1½@ 2 |
| Talc, French | ₱ ton $18.00@25.00 |
| American | ₱ ton 15.00@25.00 |
| Terra Alba, French | ₱ 100 lb .90@ 1.00 |
| English | ₱ 100 lb .80@ 1.00 |
| American | ₱ 100 lb, No. 1, .75@ .80 |
| American | ₱ 100 lb, No. 2, .60@ .65 |
| Umber, T'key, Bnt. & Pow. | 2¾@ 3 |
| Turkey, Raw and Powdered | 2¾@ 3 |
| Burnt, American | 1½@ 2 |
| Raw, American | 1½@ 2 |
| Yellow, Chrome, Pure | 12¾@15 |
| Vermilion, American Lead | 7 @25 |
| Quicksilver, bulk | .65 @.. |
| Quicksilver, bags | @66 |
| English, Imported | @70 |
| Chinese | $0.90@1.00 |


# THE IRON AGE

*The oldest paper in the world devoted to the interests of the Hardware, Iron, Machinery and Metal Trades, and a standard authority on all matters relating to those branches of industry.*

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# Current Hardware Prices.

**General Goods.**—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

**Special Goods.**—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

**Range of Prices.**—A range of prices is indicated by means of the symbol @. Thus 33⅓ @ 33⅓ & 10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

**Names of Manufacturers.**—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued annually, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

**Standard Lists.**—"The Iron Age Standard Hardware Lists" contains the list prices of many leading goods.

**Additions and Corrections.**—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

### Adjusters, Blind—
Columbian and Domestic.....33⅓%
North's .....10%
Upson's Patent, ℔ gro., $29.90.....10%
Zimmerman's—See Fasteners, Blind.

### Window Stop—
Ives' Patent.....10%
Ives' Stop Bead Screws and Washers .....10%
Taplin's Perfection.....10%

### Ammunition—See *Caps, Cartridges, Shells, &c.*

### Anti—Rattlers—
Fernald Mfg. Co. Burton Anti-Rattlers, ℔ doz. pairs, Nos. 1, $0.75; 2, $0.60; 4, $1.00; 5, $0.50.
Fernald Quick Shifter, ℔ doz. pairs .....$2.00@$3.00

### Anvils—American—
Eagle Anvils.....℔ lb @8 ¢
Hay-Budden, Wrought.....9½@9¾ ¢
Trenton .....℔ lb 9½@9¾ ¢

### Imported—
Swedish Solid Steel Paragon, ℔ lb .....10@10½ ¢
Swedish Solid Steel Sisco, Superior, ℔ lb.....10@10½ ¢
Peter Wright & Sons, ℔ lb, 84 to 349 lb, 11¢; 350 to 600 lb, 11½¢.

### Anvil, Vice and Drill—
Millers Falls Co., $18.00.....15&10%

### Apple Parers—See *Parers, Apple, &c.*

### Aprons, Blacksmiths'—
Livingston Nail Co.....10%

### Augers and Bits—
*Com. Double Spur....80@80&10%*
*Jennings' Patn., Bright.65&10@70%*
*Black Lip or Blued...65@65&5%*
*Boring Mach. Augers.....70%*
*Car Bits, 12-in. twist.....40&10%*
Ford's Auger and Car Bits.....40&5%
Ft. Washington Auger Co., Conard's .....35%
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip. R. Jennings' list, 25&7½%
No. 30, R. Jennings' list.....50%
Russell Jennings'.....25&10&2½%
L'Hommedieu Car Bits.....15%
Mayhew's Countersink Bits.....45%
Pugh's Black.....20%
Pugh's Jennings' Pattern.....35%
Snell's Auger Bits.....60%
Snell's Bell Hangers' Bits.....60%
Snell's Car Bits, 12-in. twist.....60%
Snell's King Auger Bits.....50%
Swan's .....65&10@70
Swan's, Jennings' Pattern.....50%
Wright's Jennings' Bits.....50%

### Bit Stock Drills—See *Drills, Twist.*

### Expansive Bits—
Clark's Pattern, No. 1, ℔ doz., $26; No. 2, $18.....60&10%
Ford's, Clark's Pattern...60&5@60&10%
C. E. Jennings & Co., Steer's Pat..25%
Lavigne Pat., small size, $18.00; large size, $26.00.....60&10%
Swan's .....60%

### Gimlet Bits—
*Per gro.*
*Common Dbl. Cut.....$3.00@3.25*
*German Pattern, Nos. 1 to 10, $4.75; 11 to 13, $5.75*

### Hollow Augers—
*Bonney Pat., per doz..$5.50@6.00*
Ames .....20&10%
Universal .....20%

### Ship Augers and Bits—
*Ship Augers.....40&10@—%*
Ford's .....33⅓&5%
C. E. Jennings & Co.:
L'Hommedieu's .....6%
Watrous' .....33⅓&7½%
Snell's .....48%

### Awl Hafts—See *Handles, Mechanics' Tool.*

### Awls—
*Brad Awls:*
*Handled .....gro. $2.75@3.00*
*Unhdled, Shldered...gro.63@66¢*
*Unhandled, Patent..gro.66@70¢*
*Peg Awls:*
*Unhandled, Patent..gro. 31@34¢*
*Unhdled, Shldered..gro. 65@70¢*
*Scratch Awls:*
*Handled, Com...gro. $3.50@4.00*
*Handled, Socket.gro.$11.50@12.00*

### Awl and Tool Sets—See *Sets, Awl and Tool.*

### Axes—
*Single Bit, base weights: Per doz.*
*First Quality.....$4.75@5.00*
*Second Quality.....$4.25@4.50*
*Double Bit, base weights:*
*First Quality.....$7.00@7.50*
*Second Quality.....$6.50@6.75*

### Axle Grease—See *Grease, Axle.*

### Axles—Iron or Steel.
*Concord, Loose Collar...4¼@4½¢*
*Concord, Solid Collar....4½@5 ¢*
*No. 1 Common, Loose...3½@4 ¢*
*No. 1½ Com., New Style.4¼@4¾¢*
*No. 2 Solid Collar.....4¼@4¾¢*
*Half Patent:*
*Nos. 7, 8, 11 and 12.....70%*
*Nos. 13 to 14.....70%*
*Nos. 15 to 18...70&10@70&10&5%*
*Nos. 19 to 22...70&10@70&10&5%*

### Boxes, Axles—
*Common and Concord, not turned .....lb., 5@6¢*
*Common and Concord, turned, lb., 6@7¢*
*Half Patent.....lb., 9½@10¢*

### Bait—Fishing—
Hendryx:
A Bait.....20%
B Bait.....25%
Competitor Bait.....20&5%

### Balances—Sash—
Caldwell new list.....50&10%
Pullman .....50&10%

### Spring—
*Light Spring Balances.60@60&5%*
Chatillon's:
Light Spg. Balances.....50@50&10%
Straight Balances.....40@40&10%
Circular Balances.....50&10%
Large Dial.....30%

### Barb Wire—See *Wire, Barb.*

### Bars—Crow—
*Steel Crowbars, 10 to 40 lb:... per lb., 2¼@2½¢*

### Towel—
No. 10 Ideal, Nickel Plate..℔ gro. $8.50

### Beam, Scale—
*Scale Beams.....40%*
Chattillon's No. 1.....30%
Chatillon's No. 2.....40%

### Beaters, Carpet—
Holt-Lyon Co.:
No. 12 Wire Coppered ℔ doz. $0.80; Tinned .....$0.85
No. 11 Wire Coppered ℔ doz. $1.15; Tinned .....$1.20
No. 10 Wire Tinned.....℔ doz. $1.50

### Beaters Egg—
Dover Stamping & Mfg. Co.:
Genuine Dover, per gro., No. 1, Tumbler Size, $7.50; No. 2, Family Size, $7.50; No. 3, Extra Family Size, $24.00; No. 4, Hotel Size, $30.00.
Holt-Lyon Co.:
Holt, per doz., No. 5, Jap'd. $0.80; No. A, Jap'd, $1.15; No. B, Jap'd, $1.85; No. 6, Jap'd, $1.65.
Lyon, Jap'd, per doz., No. 2, $1.35.
Taplin Mfg. Co.:
Improved Dover, per gro., No. 60, $6.00; No. 75, $6.50; No. 100, $7.00; No. 102, Tin'd, $8.50; No. 150, Hotel, $15.00; No. 152, Hotel Tin'd, $17.00; No. 200, Tumbler, $8.50; No. 202, Tumbler Tin'd, $9.50; No. 300, Mammoth, per doz., $25.00.

### Bellows—
*Blacksmith, Standard List:*
*Split Leather.....60&10@65%*
*Grain Leather.....50@50&10%*

### Hand—
| *Inch..* | *6* | *7* | *8* | *9* | *10* |
|---|---|---|---|---|---|
| *Doz..* | *$5.00* | *5.50* | *6.00* | *6.50* | *7.50* |

### Molders—
| *Inch..* | *10* | *12* | *14* | *16* |
|---|---|---|---|---|
| *Doz..* | *$7.50* | *9.00* | *12.00* | *15.00* |

*Net Prices.*

### Bells—Cow—
*Wrought Cow Bells.....75%*
Jersey .....75&10
Texas Star.....50%

### Door—
Home, R. & E. Mfg. Co.'s.....55&10%

### Hand—
*Polished, Brass.....60@60&10%*
*White Metal.....60@60&10%*
*Nickel Plated.....50&10%*
*Swiss .....50&10%*
Cone's Globe Hand Bells.....33⅓@35%

### Miscellaneous—
*Farm Bells.....lb., 2¼@2½¢*
*Church and School....60@60&10%*

### Belting—Leather—
*First Quality, Ex. Hy., Strictly Short Lap.....60&10%*
*Standard .....70&10@70&10&5%*
*Light Double.....75&10%*
*Cut Leather Lacing.....45@50%*
*Leather Lacing Sides, per sq. ft.25¢*

### Rubber—
*Competition (Low Grade), 70&10@75%*
*Standard .....60&10@70%*
*Best Grades.....40@50%*

### Bench Stops—See *Stops, Bench*

### Benders and Upsetters, Tire—
Green River Tire Benders and Upsetters .....20%

### Bicycle Goods—
John S. Leng's Son & Co.'s 1908 list:
Chain, Parts, Spokes.....50%
Tubes .....60%

### Bits—
Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

### Blocks—Tackle—
*Common Wooden.....75@75&5%*
B. & L. B. Co.:
Boston Wood Snatch, 50%; Eclipse Steel, 75%; Hollow Steel, 50&10%; Star Wire Rope, 50%; Tarbox Metal Snatch, 50%; Tarbox New Style Steel, 50&10%; Wire Rope Snatch, 50%.
Lane's Patent Automatic Lock and Junior .....30%
See also Machines, Hoisting.

### Boards, Stove—
*Paper and Wood Lined.....55%*
*Embossed .....55%*

### Boards, Wash—See *Washboards.*

### Bobs, Plumb—
Kenffel & Esser Co.....33⅓&10%

### Bolts
### Carriage, Machine, &c,—
*Common Carriage (cut thread):*
*⅜ x 6 and smaller.....75&5%*
*Larger and longer.....70&5%*
*Common Carriage (rolled thread):*
*⅜ x 6, smaller and shorter, 75&10&5%*
*Phila. Eagle, $3.00 list...80@—%*
*Bolt Ends, with C. & T. Nuts, 70&10%*
*Machine (Cut Thread):*
*¾ x 4 and smaller.....75&10%*
*Larger and longer.....70&10%*

### Door and Shutter—
*Cast Iron Barrel, Japanned, Round Brass Knobs:*

| *Inch ...* | *3* | *4* | *5* | *6* | *8* |
|---|---|---|---|---|---|
| *Per doz..* | *$0.30* | *.35* | *.45* | *.60* | *.80* |

*Cast Iron Spring Foot, Jap'd:*

| *Inch .....* | *6* | *8* | *10* |
|---|---|---|---|
| *Per doz.....* | *$1.20* | *1.50* | *2.25* |

*Cast Iron Chain, Flat, Japanned:*

| *Inch .....* | *6* | *8* | *10* |
|---|---|---|---|
| *Per doz.....* | *$1.00* | *1.40* | *1.65* |

*Cast Iron Flat Shutter, Jap'd, Brass Knobs:*

| *Inch .....* | *6* | *8* | *10* |
|---|---|---|---|
| *Per doz.....* | *$0.75* | *.95* | *1.25* |

*Wrought Barrel Japanned, 80&10@80&10&5%*
*Barrel Bronzed.....60&10%*
*Spring .....70&10@70&10&10%*
*Shutter .....50&5@50&10&5%*
*Square Neck.....75@75&10%*
*Square .....70&10&10@80%*
Ives' Mortise.....10%
Ives' Wrought Metal.....10%

### Expansion—
F. H. Evans' Crescent.....40@60%
Richards Mfg. Co.....55&10%
Star Expansion Bolt Co.:
Star, Lag Screw Type..60&10&5&2½%
Star, Wood Screw Type.....40%
Star, Machine, Single Wedge....60%
Star, Machine, Double Wedge....60%
Steward & Romain Mfg. Co.:
Style No. 13, Double.....60%
Style No. 1, Single.....60%
Style No. 100, Dbl. Jaw, Single..55%
Lag Screw.....66⅔%

### Plow and Stove—
*Plow .....65&5@70%*
*Stove .....85@85&5%*

### Tire—
*Common Iron.....80%*
*Norway Iron.....80%*
American Screw Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84...82½%
Bay State, list Dec. 28, '99.....80%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84...82½%
Eclipse, list Dec. 28, '99.....80%
Russell, Burdsall & Ward Bolt & Nut Co.:
Empire, list Dec. 28, '99.....80%
Norway Phila., list Oct. '84.....80%
Eagle .....82½%
Shelton Co.:
Tiger Brand, list Dec. 28, '99....80%
Phila., Eagle, list Oct. 16, 1884..82½%
Upson Nut Co.:
Tire Bolts.....72½%

### Borers, Bung—
*Borers Bung, Ring, with Handle:*

| *Inch.....* | *1¼* | *1½* | *1¾* | *2* |
|---|---|---|---|---|
| *Per doz...* | *$4.80* | *5.60* | *6.40* | *8.00* |
| *Inch.....* | | *2¼* | | *2½* |
| *Per doz.....* | | *$8.65* | | *11.50* |

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.75; No. 3, $2.50 each.....25%

### Boxes, Mitre—
C. E. Jennings & Co.....25%
Langdon, New Langdon and Langdon Improved, 20&10%; Langdon Acme .....15&10%
Perfection .....40%
Seavey .....45%

### Braces—
*Comman Ball, American....$1.50*
Barber's .....50&10&10@60&10%
Fray's Genuine Spofford's.....60%
Fray's No. 61, 166, 206, 614.....50%
C. E. Jennings & Co.....50&5%
Mayhew's Ratchet.....60%
Mayhew's Quick Action Hay Pat...50%
Millers Falls Drill Braces.....25&10%
P., S. & W. Co., Peck's Pat....60&10%

### Brackets—
*Wrought Steel.....75&10&5@80%*
Bradley Metal Clasp...80&10@80&10&5%
Griffin's Pressed Steel.....75@75&10%
Griffin's Folding Brackets.....70&10%
Taplin Victor Handy Egg Beater Bracket .....℔ doz. $1.50

### Bright Wire Goods—See *Wire and Wire Goods.*

### Broilers—
Kilbourne Mfg. Co.....75&20%
Wire Goods Co.....75%

### Buckets, Galvanized—

| *M'fr's list, price per gross.* *Quart..* | *10* | *12* | *14* | |
|---|---|---|---|---|
| *Water, Reg...* | *26.85* | *29.50* | *33.50* | *10&7½&5&5%* |
| *Water, Hrp...* | *45.35* | *48.00* | *52.00* | |
| *Fire, Rd. Btm.* | *32.00* | *34.65* | *38.65* | |
| *Well .....* | *37.35* | *41.35* | *45.35* | |

### Bull Rings—See *Rings, Bull.*

### Butts—Brass—
*Wrought, High List, Oct.26,'06.65%*
Cast Brass, Tiebout's.....40&10%

### Cast Iron—
*Fast Joint, Broad....40&10@50%*
*Fast Joint, Narrow...40&10@50%*
*Loose Joint.....70&10@75%*
*Loose Pin.....70&10@75%*
*Mayer's Hinges.....70@70&5*
*Parliament Butts.....70@70&5*

### Wrought Steel—Bright.
*Light Narrow, Light Reversible .....70&5%*
*Reversible and Broad..70&5%*
*Loose Joint, Narrow, Light Inside Blind, &c.....70%*
*Back Flaps, Table Chest.65%*
*Japanned.*
*Light Narrow, Loose Pin. 40&5%*
*Light Narrow, Ball Tip..60%*
*Broad .....40&5%*
*Steeple Tipped.....70%*
*Ball Tipped.....70%*

*Extra, 10—*

## Cages, Bird—

Hendryx Brass: Series 3000, 5000, 1100, net list; 1200, 15%; 200, 30%, 900 ..... 30%
Hendryx Bronze: Series 700, 800.... 30%
Hendryx Enameled..... 35%

## Calipers—See *Compasses.*

## Calks, Toe and Heel—

*Blunt, 1 prong, per 100 lb.,* $3.50@$3.85
*Sharp, 1 prong, per 100 lb.,* $4.00@$4.35
Burke's, 1 pg. Blunt Toe, 3¾¢; 2 pg. Blunt Toe, 4¼¢; 1 pg. Sharp Toe, 4¼¢; 2 pg. Sharp, 4¾¢; Blunt Heel, 4¼¢; Sharp Heel..... 4¾¢
Lantier, Blunt, 4@4¼¢; Sharp, 4½@4¾¢
Perkins', Blunt, ℔ lb, 3.65¢; Sharp, 4.15¢

## Can Openers—

See *Openers, Can.*

## Caps, Percussion—

*Eley's E. B.*..... 52@55¢
*G. D.*..... per M 34@35¢
*F. L.*..... per M 40@42¢
*G. E.*..... per M. 48@50¢
*Musket*..... per M 62½@63¢

## Primers—

*Berdan Primers, $2 per M..* 20&5%
*Primer Shells and Bullets..* 15&10%
*All other primers per M..$1.52@1.60*

## Carpet Stretchers—

See *Stretchers, Carpet.*

## Cartridges—

*Blank Cartridges:*
*32 C. F., $5.50*..... 10&5%
*38 C. F., $7.00*..... 10&5%
*22 cal. Rim, $1.50*..... 10&5%
*32 cal. Rim, $2.75*..... 10&5%
*B. B. Caps, Con. Ball, Swgd.$190*
*B. B. Caps, Round Ball*..... *$1.40*
*Central Fire*..... 25%
*Target and Sporting Rifle.*.15&5%
*Primed Shells and Bullets.*.15&10%
*Rim Fire, Sporting*..... 50%
*Rim Fire, Military*..... 15&5%

## Casters—

*Bed*..... 65&10@70%
*Plate*..... 60@60&5%
*Philadelphia*..... 70&10@75%
Acme, Ball Bearing..... 35%
Gem (Roller Bearing)..... 70&10&10&5%
Steel Gem (Roller Bearing)..... 70%
Standard Ball Bearing..... 45%
Yale (Double Wheel) low list...40&10%

## Cattle Leaders—

See *Leaders, Cattle.*

## Chain, Proof Coil—

*American Coil, Straight Link:*

| 3-16 | ¼ | 5-16 | ⅜ | ½ | ⅝ |
|---|---|---|---|---|---|
| $7.70 | 5.10 | 4.15 | 3.50 | 3.30 | 3.10 |

¾-⅞-1 1⅛ to 1¼ inch.
$3.00 3.10
*In cask lots, deduct 25¢.*
*German Coil*..... 70%
*German Pattern Coil:*
*6-0 to 1*..... 70&10&5%
*2 and 3*..... 60&10&10@70%
*4, 5 and 6*..... 50&10@50&10&5%

## Halter—

*Halter Chains*..... 60&5@60&10%
*German Pattern Halter Chains list July 24, '97*.... 60&10&5@70%
Covert Mfg. Co.:
Halter ..... 35&5%

## Cow Ties—

See *Halters and Ties.*

## Trace, Wagon, &c.—

*Traces, Western Standard: 100 pr.*
*6½—6-3, Straight, with ring.$28.00*
*6½—6-2, Straight, with ring.$29.00*
*6½—8-2, Straight, with ring.$32.00*
*6½—10-2, Str'ght, with ring.$37.00*
*NOTE.—Add 2c per pair for Hooks Twist Traces: add per pair for Nos. 2 and 3, 2c; No. 1, 3c; No. 0, 4c to price of Straight Link.*
*Eastern Standard Traces, Wagon Chain, &c*... 60&10@60&10&5%

## Miscellaneous—

*Jack Chain, list July 19, '05:*
*Iron*..... 60&10&5@60&10&10%
*Brass*..... 65%
*Safety and Plumbers' Chain.*75%
*Gal. Pump Chain....lb.,* 4½@5%
Bridgeport Chain Co.:
Triumph Halter and Coil.35&2½@40
Triumph Dog..... 50&10@60
Brown Halter and Coil....45@50&5%
Covert Mfg. Co.:
Breast, Halter, Heel, Rein, Stallion ..... 40%
Oneida Community:
American Halter, Dog and Kennel Chains ..... 35&2½@40
Niagara Dog Leads and Kennel Chains ..... 45@50&5
Wire Goods Co.:
Dog Chain..... 70%
Universal Dbl.-Jointed Chain.... 70

## Chain and Ribbon, Sash—

Oneida Community:
Steel Chain..... 60%
Pullman:
Bronze Chain, 60%; Steel Chain, Coppered ..... 60&10%
Sash Chain Attachments, per set..8¢
Aluminoy Sash Ribbon, per 100 ft. ..... $2.00@$5.00
Sash Ribbon Attachments, per set..8¢

## Chalk—

*Carpenters' Blue*..... *gro.,* 50¢
*Carpenters' Red*..... *gro.,* 50¢
*Carpenters' White*..... *gro.,* 10¢

## Checks, Door—

Bardsley's ..... 45%
Pullman, per gro..... $54.00
Russwin ..... 33⅓%

## Chests, Tool—

American Tool Chest Co.:
Boys' Chests, with Tools..... 55%
Youths' Chests, with Tools..... 40%
Gentlemen's Chests, with Tools..30%
Farmers', Carpenters, etc., Chests, with Tools ..... 20%
Machinists' and Pipe Fitters' Chests, Empty..... 15%
Tool Cabinets..... 45%
C. E. Jennings & Co.'s Machinists' Tool Chests..... 7½%

## Chisels—Socket Framing and Firmer

*Standard List*. .80&10@80&10&10%
Buck Bros..... 30%
C. E. Jennings & Co.:
Socket Firmer No. 10..... 25&7½%
Socket Framing No. 15..... 25&7½%
Swan's ..... 66⅔@70%
L. & I. J. White & Co..... 30@30&5%

## Tanged—

*Tanged Firmers*..... 30&5@35%
Buck Bros..... 30%
C. E. Jennings & Co. Nos. 191, 181..25%
L. & I. J. White Co..... 25&5%

## Cold—

*lb.*
*Cold Chisels, good quality.*.13@15¢
*Cold Chisels, fair quality*..11@12¢
*Cold Chisels, ordinary*.... 9@10¢

## Chucks—

Almond Drill Chucks..... 35%
Almond Turret Six-Tool Chuck..... 40%
Beach Pat, each $8.00..... 35&5%
Empire ..... 25%
Blacksmiths' ..... 25%
Jacobs' Drill Chucks..... 35%
Pratt's Positive Drive..... 25%
Skinner Lathe Chucks:
Independent ..... 35%
Universal, Reversible Jaws..... 35%
Universal, Com. Style Jaws..... 40%
Combination, Reversible Jaws....35%
Combination, Com. Style Jaws...40%
Round Body or Box Body, 2 Chuck Jaws ..... 25%
Geared Scroll Chucks..... 25%
Drill Chucks:
New Model, 25%; Geared Pattern, 25%; Skinner Patent, ...25%
Positive Drive..... 40%
Planer Chucks..... 20%
Standard ..... 45%
Drill Press Vises..... 30%
Face Plate Jaws..... 35%
Standard Tool Co.:
Improved Drill Chuck..... 45%
Union Mfg. Co.:
Combination, Nos. 1, 2, 3, 4, 5, 6, 7, 8 and 17, 40%; No. 21..... 35%
Scroll Combinations, Nos. 83 and 84 ..... 30%
Geared Scroll, Nos. 33, 34 and 35..25%
Independent Iron, Nos. 18 and 318..35%
Independent Steel, No. 64..... 25%
Union Drill, Nos. 000, 00, 100, 101, 102, 103, 104..... 35%
Union Czar Drill..... 25%
Uniyersal, 11, 12, 16, 17, 13, 14, 15..40%
Universal No. 42..... 35%
Iron Face Plate Jaws, Nos. 28, 30, 48 and 50..... 35%
Steel Face Plate Jaws, Nos. 70 and 72 ..... 30%
Westcott Patent Chucks:
Lathe Chucks..... 50%
Little Giant Auxiliary Drill..... 50%
Little Giant Double Grip Drill...50%
Little Giant Drill, Improved..... 50%
Oneida Drill..... 50%
Scroll Combination Lathe..... 50%
Whitaker Mfg. Co.:
National Drill..... 25%

## Clamps—

Carriage Makers', Star, P., S. & W. Co. ..... 50%
Besly, Parallel..... 33⅓&10%
Hammer & Co.:
Adjustable ..... 20&5%
Carriage Makers' H. P. Screw.40&5%
Myers' Hay Rack..... 50%
Lineman's Swedish Neverturn..... 65%
Saw Clamps, see Vises, Saw Filers'

## Cleaners, Drain,

Iwan's Champion, Adjustable..... 50%
Iwan's Champion, Stationary..... 40%

## Sidewalk—

American Fork & Hoe Co.:
Star, ℔ doz., Socket, $4.00; Shank ..... $3.50
Shank, ℔ doz., X 7½, $3.50; Shank, X 8..... $3.75

## Cleavers, Butchers'—

Foster Bros..... 30%
Fayette R. Plumb..... 30%
L. & I. J. White Co..... 30%

## Clippers, Horse and Sheep—

Chicago Flexible Shaft Co.:
1902 Chicago Horse, each..$10.75
20th Century Horse, each...$5.00
Lightning Belt Horse, each.$15.00
Chicago Belt Horse, each..$20.00
Stewart's Enclosed Gear Roll Bearing Horse, each.....$6.75
Stewart's New Model Sheep Shearing Machine, each.$12.75
Stewart Enclosed Gear Shearing Machine, No. 8, each..$9.75
} 20%

## Clips, Axle—

*Regular Styles, list July 1, '05,* 80&80&10%

## Cloth and Netting, wire—See *Wire, &c.*

## Cocks, Brass—

*Hardware list:*
*Plain Bibbs, Globe, Kerosene, Racking, Liquor, Bottling, &c*..... 75%
*Compression Bibbs*..... 70%

## Coffee Mills—

See *Mills, Coffee.*

## Collars, Dog—

Nickel Chain, Walter B. Stevens & Son's list..... 40%
Leather, Walter B. Stevens & Son's list ..... 40%

## Compasses, Dividers, &c.

*Ordinary Goods*..... 70&10@75%

## Conductor Pipe,—

*L. C. L. to Dealers:*

| | *Gal. Steel.* | *Charcoal.* | *Copper.* |
|---|---|---|---|
| *Northeastern:* | | | |
| | 70&10% | 50&10&7½% | 50&10% |
| *Eastern:* | | | |
| | 70&10&5% | 50&10&7½% | 50&10% |
| *Central:* | | | |
| | 75&5% | 60% | 50&10% |
| *Northwestern:* | | | |
| | 75&2½% | 60% | 50&10% |
| *Western:* | | | |
| | 70&7½% | 50&12½% | 50&5% |
| *Tennessee:* | | | |
| | 70&10% | 50&12½% | 50&10% |
| *Southern:* | | | |
| | 70% | 50&12½% | 50&5% |
| *Southwestern:* | | | |
| | 70% | 50&5% | 50&5% |

*Terms, 60 days: 2% cash 10 days. Factory shipments generally delivered.*
See also Eave Troughs.

## Coolers, Water—

L. & G. Mfg. Co.:

| Gal. | 2 | 3 | 4 | 6 | 8 |
|---|---|---|---|---|---|
| Galvanized, ea. | $1.85 | $2.00 | $2.25 | $2.90 | $3.90 |
| Galvanized, Lined, side handles, Gal. | 2 | 3 | 4 | 6 | 8 |
| Each | $1.95 | $2.15 | $2.40 | $3.30 | $4.15 |

White Enameled..... 10%
Agate Lined..... 10%

## Coppers' Tools—

See *Tools, Coopers'.*

## Coppers, Soldering—

*Soldering Coppers, 3 lb. to pair and heavier, 21½¢; lighter than 3 lb. to pair*..... 23½¢

## Cord—Sash—

*Braided, Drab*..... *lb.* 35¢
*Braided, White, Com., Nos. 8 to 12, 22¢; No. 7, 22½¢; No. 6, 23½¢. In lots of 12 doz. or over, 1 cent less per pound.*
*Cable Laid Italian, lb., No. 18.*.37¢
*Italian, lb., A, No. 18, 25¢; B, 22¢*
*Common India*..... *lb., 11@11½¢*
*Cotton Sash Cord, Tw'ted.*.18@20¢
*Patent Russia*..... *lb.*... 20¢
*Cable Laid Russia*..... *lb.*... 21¢
*India Hemp, Br'd'd*..... *lb.*... 21¢
*India Hemp, Twisted*... *lb.*.13@17¢
*Patent India, Twisted*.. *lb.*... 17¢
Pearl Braided, cotton, No. 6, ℔ lb. 20½¢; No. 7, 19½¢; Nos. 8 to 12, 19½¢, in 12 doz. to 100 doz. lots.
Eddystone, Braided, Nos. 8 to 12, 26¢; 7, 26½; 6, 27½¢.
Harmony Cable Laid Italian, Nos. 7 to10..... ℔ lb 23¢
Pullman:
Wire Sash Cord..... 10%
Sash Cord Attachments, per 100..$2.00
Samson, Nos. 8 to 12:
Braided, ℔ lb., Drab Cotton, 55¢; Italian Hemp, 40¢@50¢; Linen, 65¢; White Cotton, 50¢; Spot Cord.....50¢
Massachusetts, White...℔ lb 40¢
Massachusetts, Drab... ℔ lb 45¢
Phoenix, White, Nos 8 to 12....27¢
} 15%
Silver Lake, per lb.:
A, Drab, 45¢; A, White, 40¢; B, Drab, 40¢; B, White, 35¢; Italian Hemp, 40¢; Linen....57½¢
See also Chain and Ribbon.

## Wire, Picture—

*Full Length*..... 90@—%
*Short Length*..... 90&20@—%
Hendryx Standard Wire Picture Cord, old list, 85&10%
Turner & Stanton Co. Wire Picture Cord ..... 90%

## Cradles—

*Grain* ..... 50%

## Crayons—

*White Round Crayons, Cases, 100 gro., $8.00, $8.50, $9.00 and $10.00 according to grade.*
Zelnicker's Lumber: ℔ gro.
White and Purple, Indelible....$7.50
Blue, Red, Green, Yellow and Terra Cotta, $6.50; Black.....$4.50
Giant Lumber, 5¼ in. x 15-16 in. round, all colors, $12.00; Indelibles, $14.00; Blacks.....$10.00
Genuine Soapstone, Metal Workers', 5 in. x ¼ in. Round, $2.50; 5 in. x ¼ in. Square, $1.75; 5 x ½ x 3-16, $2.50; 5 x 1¼ x 3 16.....$3.00
Suremark, Black, $2.25; Blue, Red and Yellow..... $2.50

## Crooks, Shepperds'—

American Fork & Hoe Co.:
Montana ..... ℔ doz. $4.50

## Crow Bars—See *Bars, Crow.*

## Cultivators—

American Fork & Hoe Co.:
Victor Garden..... 50&10%

## Cutlery, Table—

International Silver Company:
No. 12 M'd'm Knives, 1847. ℔ doz. $3.50
Star, Eagle, Rogers & Hamilton and Anchor..... ℔ doz. $3.00
Wm. Rogers & Son..... ℔ doz. $2.50

## Cutters—Glass—

H. H. Mayhew Co..... 40%
Red Devil..... 60
B. Mfg. Co..... 40%
Woodward ..... 50%

## Meat and Food—

American ..... 30%

| Nos. | 401 | 402 | 403 | 404 | 405 | 406 | 407 |
|---|---|---|---|---|---|---|---|
| Each | $5 | $7 | $10 | $12 | $25 | $50 | $60 |

Enterprise:

| Nos. | 5 | 10 | 12 | 22 | 32 | |
|---|---|---|---|---|---|---|
| Each | $2 | $3 | $2.75 | $4.50 | $6 | 25@25&7½% |
| No. 202 | $1.50 | | | | | 10&7½ |

P., S. & W. Co.:
Ideal ..... 40@10&5%
Hales ..... 60&5%
Little Giant..... ℔ doz. 40@50%

| Nos.. | 305 | 310 | 312 | 320 | 322 |
|---|---|---|---|---|---|
| | $35.00 | $18.00 | $14.00 | $72.00 | $68.00 |

New Triumph No. 605, ℔ doz. $24.00, 40%
Russwin Food, No. 1, $24.00; No. 2, $27.00; 3, $42.00..... 45&10&10%
$15.00 $18.00
Enterprise Beef Shavers..... 25@30%

## Siaw and Kraut—

Henry Disston & Sons:
Slaw and Kraut Cutters..... 35%
Corn Graters..... 30%
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife....℔ doz. $3.00
Combined Slaw Cutter and Corn Grater ..... ℔ doz. $4.00

## Tobacco—

*All Iron, Cheap...doz, $4.25@4.50*
Enterprise ..... 25@30%
National, ℔ doz., No. 1, $21; No. 2, $18 ..... 40%

## Diggers, Post Hole, &c—

Disston's:
Rapid, ℔ doz., $24.00..... 25%
Samson, ℔ doz., $34.00..... 25%
Iwan's Pat. Post Hole and Well Auger ..... 40%
Vaughan Pattern Post Hole Augers, ℔ doz., $7.00
Perfection Post Hole Diggers, ℔ doz. ..... $8.50
Split Handle Post Hole Diggers, ℔ doz., $7.50
Hercules Pattern, ℔ doz..... $9.50
Kohler's, ℔ doz., Universal, $14.00; Little Giant, $12.00; Hercules, $10.00; Invincible, $9.00; Rival, $8.50; Pioneer..... $7.50
Never-Break Crucible Steel Post Hole Diggers ..... 60%

## Dividers—See *Compasses.*

## Drawing Knives—

See *Knives, Drawing.*

## Dressers Emery Wheel—

Sterling Emery Wheel Dressers..... 35%
Sterling Wheel Dresser Cutters..... 35%

## Drills and Drill Stocks—

*Blacksmith's Common Drilling Machines*..... *$1.50@1.75*
Breast, Millers Falls..... 15&10%
Breast, P., S. & W..... 33⅓%
C. & C. Ratchet..... 25%
Reversible Ratchet Die Stocks....25%
Goodell Automatic Drills.50&10@60&10%
Millers Falls Automatic Drills, Graves', per doz., Nos. 1, $4.86; 2, $8.16.
Millers Falls Automatic Drills,33⅓&10%
Ratchet, Curtis & Curtis..... 25%
Ratchet, Parker's..... 40%
Ratchet, Weston's..... 40%
Ratchet, Weston's, Style H Improved ..... 40@40&5%
Ratchet, No. 012..... 40@40&5%
Ratchet, Celebrated..... 40@40&5%
Ratchet, Whitney's, P., S. & W., 40&10@50%
Whitney's Adjustable, No. 10, $12.00, 33⅓%

## Twist Drills—

*Bit Stock*..... 70&5@70&10%
*Taper and Straight Shank.* 60&10@70%

## Drivers, Screw—

*Screw D'ver Bits, per doz..45@50¢*
Balsey's Screw Holder and Driver, ℔ doz., 2½-in., $6; 4-in., $7.50; 6-in., $9 ..... 50%
Buck Bros.' Screw Driver Bits..... 30%
Champion ..... 50%
Disston's ..... 70%
Fray's Hol. H'dle Sets, No. 3, $12..50%
Ford's Brace Screw Drivers....40&10%
Gay's Double Action Ratchet..... 35%
Goodell's Auto..... 65@65&10%
Mayhew's Black Handle..... 40%
Mayhew's Monarch..... 40%
Millers Falls, ℔ doz., Nos. 11, $9.95; 12, $13.73; 20, $8.17; 21, $8.46; 41, $13.43; 42, $17.21.
Smith & Hemenway Co. Neverturn, 66⅔%; Elmora, 60%; Star, 30&10%
Swan's:
Nos. 7565 to 7568, 60%; No. 7540, 40&10%

## Eave Trough, Galvanized—

| *Territory.* | *Gal. Steel.* | *Copper.* |
|---|---|---|
| *Northeastern* | 75&10&5% | 50&10% |
| *Eastern* | 80% | 50&10% |
| *Central* | 80&10&5% | 50&10% |
| *Northwestern* | 80&10&5% | 50&10% |
| *Western* | 80&5% | 50&5% |
| *Tennessee* | 80&5% | 50&10% |
| *Southern* | 75&10% | 50&5% |
| *Southwestern* | 75&10&2½% | 50&5% |

*Terms.—2% for cash. Factory shipments generally delivered.*
*Note. Lower prices are made in some sections.*
See also Conductor Pipe and Elbows.

## Elbows and Shoes—

*Factory shipments, all territories: Galv. Steel, Galv. C. I. and Copper.*
*Sizes 2, 3, ¼*..... 80%
*Sizes 1½, 2½, 3½, 5, 6*... 60&10%
*No. 26*..... 50%
*No. 24*..... 25%
*Copper Elbows*..... 50%

## Elbows, Stove Pipe—

Edwards, Standard Blue....40&10&10%
Edwards, Royal Blue..... 40&10&10%
Reeves, Dover, Flat Crimp..40&10&5%

## Emery, Turkish—

| | *¼ to 46:* | *5½ to 220:* | *Flour.* |
|---|---|---|---|
| *Kegs*.....*lb.* | 5 ¢ | 5½¢ | 5½¢ |
| *⅛ Kegs*.....*lb.* | 5½¢ | 5¾¢ | 3¾¢ |
| *¼ Kegs*.....*lb.* | 5½¢ | 6 ¢ | 4 ¢ |

10-lb. cans,
10 in case....6½¢ 7 ¢ 6 ¢
10 lb. cans, less
than 10.....10 ¢ 10 ¢ 8 ¢
Less quantity..10 ¢ 10 ¢ 8 ¢

*NOTE.—In lots 1 to 3 tons a discount of 10% is given.*

### Extensions, Bit—
Ford's Auger Bit Extensions....40&5%

### Ext.actors, emon Juice—
—See *Squeezers, Lemon.*

## Fasteners, Blind—
Zimmerman's Jap'd and Galv., 50 & 5 ; Bronze and Plated.....50%
Walling's .....50%
Upson's Patent.....40%

### Cord and Weight—
Ives, ₱ gro., $1.08.....10%
Titan, ₱ gro., $0.66.....10%

### Corrugated—
Acme Corrugated Fasteners.....70%

### Faucets—
*Cork Lined.....50&10@60%*
*Metallic Key, Leather Lined, ..60&10@70%*
*Red Cedar.....40&5@40&10&5%*
*Petroleum .....70&10@75%*
B. & L. B. Co.:
Metal Key.....60&10%
Star .....60%
West Lock.....50&10%
John Sommer's Peerless Tin Key....40%
John Sommer's Boss Tin Key.....50%
John Sommer's Victor Mtl. Key.50&10%
John Sommer's Duplex Metal Key..60%
John Sommer's Diamond Lock.....40%
John Sommer's I.X.L. Cork Lined..50%
John Sommer's Reliable Cork Lined..50&10%
John Sommer's Chicago Cork Lined.60%
John Sommer's O. K. Cork Lined...50%
John Sommer's No Brand, Cedar....50%
John Sommer's Perfection, Cedar....40%
Self Measuring:
Enterprise, Self Measuring and Pump, ₱ doz., $36.00.....40&10%
Lane's, ₱ doz., $36.00.....40&10%
National Measuring, ₱ doz. $36.40&10%

### Felloe Plates—
See *Plates, Felloe.*

### Files— Domestic—
*List Nov. 1, 1899.*
*Best Brands.....70&10@75&10%*
*Standard Brands.....75&10@80%*
*Lower Grade....75&10&10@80&10%*
Gold Medal.....70%
McCaffrey's American Standard, 60&10&10%

### Imported—
*Stubs' Tapers, Stubs' list, July 24, '97.....33⅓@40%*

### Fixtures, Fire Door—
Richards Mfg. Co.:
Universal, No. 103; Special, No. 104 .....$3.75
Fusible Links, No. 96.....50%
Expansion Bolts, No. 107.....60&10%

### Grindstone—
*Net Prices:*

| *Inch* | *15* | *17* | *19* | *21* |
|---|---|---|---|---|
| *Per doz* | *$3.60* | *3.85* | *4.15* | *4.65* |

Peck, Stow & Wilcox Co.:

| In. | 15 | 17 | 19 | 21 | 24 | |
|---|---|---|---|---|---|---|
| | $4.00 | 4 40 | 4 75 | 5 50 | 6 50 | ....30% |

Reading Hardware Co.....60%

### Fodder Squeezers—
See *Compressors.*

### Forks—
American Fork & Hoe Co.:
Iowa Dig-Ezy Potato.....70&5%
Hay, Regular, 3-time.....45&20&12½
Hay, Regular, 4-time.....60&7½&5%
Champion, Hay.....60&12½
Acme, Hay.....60&20%
Manure, Regular, 4-time.....65&5%
Manure, Regular, 5 and 6 time..70
Champion, Manure.....65&5%
Columbia, Manure.....70
Acme, 4 time.....60&10&5
Round Shoulder Header, 4 time..65
Champion, Header.....65%
Dakota, Header.....65
Kansas Header.....65%
Wood, Barley.....35&5%
Steel, Barley.....66⅔
Columbia, Spading.....70&7½&5

### Frames— Wood Saw—
*White, S'g't Bar, per doz.75@80¢*
*Red, S'g't Bar, per doz.$1.00@1.25*
*Red, Dbl. Brace, per doz.$1.40@1.50*

### Freezers, Ice Cream—

| *Qt.* | *1* | *2* | *3* | *4* | *6* |
|---|---|---|---|---|---|
| *Each* | *$1.25* | *$1.60* | *$1.90* | *$2.20* | *$2.80* |

### Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

### Fry Pans—See *Pans, Fry.*

### Fuse— *Per 1000 Feet.*
*Hemp .....$2.75*
*Cotton .....5.20*
*Waterproof Sgl. Taped..3.65*
*Waterproof Dbl. Taped..4.40*
*Waterproof Tpl. Taped..5.15*
} 25%

### Gates, Molasses and Oil—
*Lemon Pattern.....80@80&5%*

### Gauges—
*Marking, Mortise, &c..50@50&10%*
[illegible] Co.:
[illegible] Mortise &c 50&50&10%
[illegible] Mortise &c 67½
[illegible] & Sharpe's .....33⅓%
[illegible] .....25%
[illegible] W. S. & W. Co .....33⅓%

### Gimlets— Single Cut—
*Numbered assortments, per gro.*
*Nail, Metal, No. 1, $2.00; 2, $2.30*
*Spike, Metal, No. 1, $4.00; 2, $4.30*
*Nail, Wood Handled, No. 1, $2.30; 2, $2.60*
*Spike, Wood Handled, No. 1, $4.30; 2, $4.60*

### Glass, American Window
See *Trade Report.*

### Glasses, Level—
Chapin-Stephens Co.....65@65&10%

### Glue, Liquid Fish—
*Bottles or Cans, with Brush, 25&10@50%*
Elwell's .....40%

### Grease, Axle—
*Common Grade...gro.$6.00@$6.50*
Dixon's Everlasting, 10-lb. pails, ea. 85¢ ; in boxes, ₱ doz., 1 lb, $1.20; 2 lb.....$2.00
Helmet Hard Oil.....25%

### Griddles, Soapstone—
Pike Mfg. Co.....33⅓@33⅓&10%

### Grinders—
Pike Mfg. Co.:
Hand and Foot Power, Pyko Nos. 1, 2, 3; Pyko Primo; Pyko Peerless; Pyko Spiral (foot power).33⅓%
Mower Knife and Tool, $5.00..40&10%
Royal Mfg. Co.:
Alundum Grinding Machines, each, Nos. 01, $1.75; 1A, $2.50; 10, $5.00 .....30%
Alundum Sickle Grinders, each, Nos. 20, $5.00; 20A, $6.00; 20A Combined, $6.50.....30%
Alundum Disc Grinders, each, $2.50 .....30%

### Grindstones—
Pike Mfg. Co.:
Improved Family Grindstones, ₱ inch, ₱ doz., $2.00.....33⅓%
Richards Mfg. Co., Eli and Cycle, Ball Bearing, mounted.....40%

### Grips, Nipple—
Perfect Nipple Grips.....40&10&2%

## Halters and Ties—
*Cow Ties.....65@65&10%*
Bridgeport Chain Co.:
Triumph Coil and Halters.35&2½@40%
Brown Coil and Halters...45@50&5%
Brown Cow Ties.....50&5@50&10&5%
Brown Tie Outs.....70&10@75&5%
Covert Mfg. Co.:
Web .....30&2%
Jute Rope.....35%
Sisal Rope.....20%
Cotton Rope.....45%
Hemp Rope.....45%
Oneida Community:
Am. Coil and Halters.....40@40&5%
Am. Cow Ties.....45@50%
Niagara Coil and Halters...45@50&5%
Niagara Cow Ties.....45&5@50&10&5%

### Hammers—
### Handled Hammers—
Heller's Machinists'....55&10@55&10&5%
Heller's Farriers.....40&5@40&10&5%
Peck, Stow & Wilcox Co.:
Crucible Steel.....40&10@50%
Farriers' .....40&10@50%
Riveting .....40&10@50%
Machinists' .....66⅔@5%
Blacksmiths' .....50%
Fayatte R. Plumb:
A. E. Nail.....40&2½@40&12½%
Eng. and B. S. Hand.50&10&5@60&5%
Machinists' Hammers.....60&10&5%
Rivet and Tinners'.10&7½@40&12½&5%
Victor Magnetic Tack, ₱ gro....$7.75

### Heavy Hammers and Sledges—
*Under 3 lb., per lb.. 50c...80&10%*
*3 to 5 lb., per lb., 40c...80&10&10%*
*Over 5 lb., per lb., 30c.....*
*Over 5 lb., per lb., 30¢.80&10&10%*

### Handles—
### Agricultural Tool Handles
*Axe, Pick, &c....60&10@60&10&5%*
*Hoe, Rake, &c.....40%*
*Fork, Shovel, Spade, &c.:*
*Long Handles.....40%*
*D Handles.....40%*

### Cross-Cut Saw Handles—
Atkins' .....40%
Champion .....50%
Disston's .....50%

### Mechanics' Tool Handles—
*Auger, assorted...gro.$3.00@$3.50*
*Brad Awl.....gro.$1.65@$1.75*
*Chisel Handles, Ass'd, per gro.:*
*Tanged Firmer, Apple, $2.40@$2.65; Hickory.....$2.15@2.40*
*Socket Firming, Apple, $1.75@$1.95; Hickory.....1.60@1.75*
*Socket Framing, Hickory, $1.60@$1.75*
*File assorted.....gro.$1.30@$1.40*
*Hammer, Hatchet, &c., 60&10@60&10&5%*
*Hand Saw, Varnished, doz., 80¢ 85¢; Not Varnished.....65@75¢*
*Plane Handles:*
*Jack, doz., 30¢; Fore, doz...45¢*
Chapin-Stephens Co.:
Carving Tool.....30@30&10%
Chisel .....60@60&10%
File and Awl .....60@60&10%
Saw and Plane.....30@30&10%
Screw Driver.....30@30&10%
Millers Falls Adj. and Ratchet Auger Handles .....15&10%
Nicholson Simplicity File Handle.... ₱ gro. $0.85@$1.50
J. L. Osgood:
Indestructible File and Tool, ₱ gro., No. 1, $8.00; No. 2, $8.50; No. 3, $9.00; No. 4, $9.50; No. 5, $10.00.....gro. lots 10%
W. A. Zehnicker Supply Co.:
Hammer, ₱ doz., 12 in., $2.00; 14 in., $2.00; 16 in., $2.30; 18 12., $2.50; 20 in., $2.70; 22 in., $3.00; 24 in., $3.30; 26 in., $3.50; 30 in., $3.80.
Sledge, ₱ doz., oval, 30 in., $3.80; octagon, 30 in., $3.80; oval, 36 in., $4.00; octagon, 36 in., $4.00.
Axe, ₱ doz., 28 to 34 in., $5.60; 36 in., $5.80.
Adze, ₱ doz., 36 in., $5.80; 36 in., $7.80.
Pick, ₱ doz., R. R., 36 in., $8.00; coal, 34 in., $5.80.
Hatchet, ₱ doz., 12 to 14 in., $2.00.
} 50%

### Hangers—
*NOTE.—Barn Door Hangers are generally quoted per pair, without track and Parlor Door Hangers per double set with track, &c.*
Chicago Spring Butt Co.:
Friction .....25%
Oscillating .....25%
Big Twin.....25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door.....50%
Elevator .....30%
Railroad .....50%
Cronk & Carrier Mfg. Co.:
Loose Axle.....60&10%
Roller Bearing.....70%
Griffin Mfg. Co.:
Solid Axle, No. 10, $12.00..60&10%
Roller Bearing, No. 11, $15.00, 60&10%
Roller Bearing, Ex. Hy., No. 22, $18.00.....60&10%
Bull Dog, $24.00.....70%
Lane Bros. Co.:
Parlor, Ball Bearing, $4.00; Standard, $3.15; No. 105, $2.85; New Model, $2.80; New Champion per set of 4 Hangers, complete with track.....$2.25
Barn Door, Standard.....60&10%
Hinged .....net $6.08
Covered .....60&5%
Special .....70&5%
Trolley Hangers and track...50%
Lawrence Bros.:
Cleveland .....70&7½%
Clipper, No. 75.....60%
Crown .....55&10%
Cyclone, No. 40.....net $6.50
Tandem, No. 50.....net $7.30
New York.....55&10%
Trolley, No. 30, ₱ pair.....$1.25
McKinney Mfg. Co.:
Roller Bearing, Nos. 1 and 2..70%
Anti-Friction .....60
Hinged Hangers, King Charm.60%
Richards Mfg. Co.:
Hangers, Nos. 47, 48, 147, 247, 60&5%
Pioneer Wood Track, No. 3..$2.25
Roller B'r'g St'l Track No. 12.$2.20
Roller B'r'g St'l Track No. 13.$2.50
Roller B'r'g, Nos. 39, 41, 43, 70&7½%
Hero, Adj. Track No. 19..50&10%
Adjustable Track Tandem Trolley Track No. 16.....50&10%
Seal, Steel Track No. 8.....$2.25
Auto Adj. Track No. 22..50&5%
Trolley B. D. No. 17, $1.25; F. D. No. 120, $2.25; No. 121, $2.45; No. 150.....$2.50
Safety Underwriters F. D. No. 101 .....50%
Tandem No. 41..2½ and 3 60&10%
Palace, Adjustable Track No. 132 .....50&5%
Royal, Adjustable Track No. 122 .....50&10%
Ives' Wood Track No. 1.....$2.25
Trolley B. D. No. 20.....50&10%
Trolley B. D. No. 24, $1.30; No. 27, $1.40; No. 28.....$1.60
Roller Bearings, Nos. 37 38, 39, 41, 43, 44, Sizes 1 and 2.70&7½%
Anti-friction, No. 42; No. 44, sizes 2½ and 3.....60%
Hinged Tandem No. 48....60&5%
Folding Door B. B. Swivel No. 135 .....10%
Taylor & Boggis F'y Co.'s Kidder's Roller Bearing, ₱ doz., 4 in., $12.00; 5 in., $14.00..40&10%
Myers' Stayon Hangers.....60%

### Hangers— Garment—
Pullman Trouser, ₱ gro. No. 1 $9.00; No. 4, $24.00; No. 5, $16.50; No. 8, Black Enamel, $7.50; No. 10, $21.00; No. 12, $8.00; No. 15, Rods, $9.00; No 18, Loops.....$10.00
Victor Folding.....₱ gro. $9.60

### Gate—
Myers' Patent Gate Hangers, ₱ doz. net .....50%

### Joist and Timber—
Lane Bros. Co.....35%

### Hasps—
Griffin's Security Hasp.....50&10%
McKinney's Perfect Hasp, ₱ doz..60%

### Hatchets—
*Regular list, first qual.40&12½@—*
*Second quality.....50&10&5@—*

### Heaters, Carriage—
Clark, No. 5, $1.25; No. 5B, $1.50; No. 3, $1.75; No. 3D, $2.00; No. 7D, $2.25; No. 3E, $2.50; No. 1, $3.00.....25%
Clark Coal, ₱ doz., $0.75.....20%

### Hinges—
### Blind and Shutter Hinges
*Surface Gravity Locking Blind:*
*Doz. Sets with Fastenings, No. 1, $0.70; No. 2, $1.25; No. 5, $2.65.*
*Mortise Shutter.....80%*
*Mortise Reversible Shutter...80%*
North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3 for Brick, $11.50.....10%
Charles Parker Co.....70&75%
Parker Wire Goods Co.
Hale & Benjamin Automatic Blind Hinges .....20%
Hale's Blind Awning Hinges, No. 110, for wood, $9.00; No. 111, for brick, $9.00.....20%
Reading's Gravity.....60%
Stanley's Steel Gravity Blind Hinges, No. 1617½, ₱ doz. sets, without screws, $0.95; with screws, $1.25.
Wrightsville Hardware Co.:
O. S., Lull & Porter.....75&5%
Acme, Lull & Porter.....75
Queen City Reversible.....75%
Shepard's Noiseless, Nos. 60, 65, 55 .....75&5%
Niagara, Gravity Locking, Nos. 1, 3 & 5.....75&5%
Clark's O. P., No. 1.....75&10%
Clark's O. P., Nos. 3 and 5....75&5%
Tip Pat'n, No. 1.....75&10%
Clark's No. 3.....75&5
Buffalo Gravity Locking, Nos. 1, 3 & 5.....70&10&5%
Shepard's Double Locking.....75%
Champion Gravity Locking.....75&5%
Pioneer .....75&10%
Empire .....65%
W. H. Co.'s Mortise Gravity Locking, No. 2.....60&10%

### Gate Hinges—
*Clark's or Shepard's—Doz. sets:*

| *No.* | *1* | *2* | *3* |
|---|---|---|---|
| *Hinges with L'tches.* | *$2.00* | *2.70* | *5.00* |
| *Hinges only.....* | *1.25* | *1.90* | *3.50* |
| *Latches only.....* | *.70* | *.75* | *.35* |

*New England:*
*With Latch.....doz..@$2.00*
*Without Latch.....doz..@$1.60*
*Reversible Self-Closing:*
*With Latch.....doz..@$1.75*
*Without Latch...doz. ...@$1.35*
*Western:*
*With Latch.....doz. $1.75*
*Without Latch.....doz..$1.15*
Wrightsville Hardware Co.:
Shepard's or Clark's Hinges and Latches, Hinges only or Latches only, Nos. 1, 2 or 3.....70%

### Miscellaneous—
Griffin Mfg. Co., Fleur de Lis Surface Hinges, ₱ doz. prs.....$1.00

### Pivot Hinges—
Bommer Bros. Pivot, Ball Bearing .....40%
Lawson Mfg. Co. Matchless.....30%

### Spring Hinges—
*Holdback, Cast Iron...$6.75@$7.00*
*Non-Holdback, C'st Iron$6.50@$6.75*
J. Bardsley:
Bardsley's Non-Checking Mortise Floor Hinges.....40%
Bardsley's Patent Checking.33⅓%
Bommer Bros.:
Spring Butt Hinges.....40%
Surface Floor, Ball Bearing .....40%
Mortise Floor, Ball Bearing.40%
Lavatory Hinges.....40%
Non-Holdback Screen Door, Nos. 2000 and 900.....40%
Holdback Screen Door, No. 999.....₱ gro. $9.00
Chicago Spring Butt Co.:
Chicago Spring Hinges.....25%
Triple End Spring Hinges....50%
Chicago (Ball Bearing) Floor.50
Garden City Engine House....25
Keene's Saloon Door.....25
Columbian Hardware Co.:
Acme, Wrought Steel.....30%
Acme, Brass.....25
American .....30
Columbia, ₱ gr., No. 14, $9.00; No. 18.....$25.00
Columbia, Adj., No. 7, ₱ gr.$12.00
Gem, new list.....30%
Clover Leaf and Acorn, per gro. .....$12.00
Oxford, new list.....30
Floor Spring Hinges.....65&10%
Columbian Steel.....65&10%
Lawson Mfg. Co.:
Matchless Spring Hinges.....30%
Matchless Jamb Hinges.....30%
Richards Mfg. Co.:
Superior Double Acting Floor Hinges .....40%
Shelby Spring Hinge Co.:
Buckeye All Steel Holdback Screen Door.....₱ gr. $9.00
Chief Ball Bearings Floor Hinge .....50%
Ball Bearing Door.....25%
No. 777, Sheet Steel Holdb'k, ₱ gr. pr.....$9.00
Standard Mfg. Co.:
Champion Double Acting Door Hinge .....25&10&10
Standard Double Acting Floor Hinge .....25&10&10
Superior Spring Hinge Co.:
Superior Floor Hinges.....33⅓
Spring Hinges.....33⅓
} Extra 10% often given on most of these Hinges.

### Wrought Iron Hinges—
*Strap and T Hinges, &c., list February 10, 1908:*
*Light Strap Hinges..50&10%*
*Heavy Strap Hinges..60&5%*
*Light T Hinges.....50%*
*Heavy T Hinges.....40%*
*Extra Hvy. T Hinges.50&10%*
*Hinge Hasps.....33⅓%*
*Cor. Heavy Strap.....60&5%*
*Cor. Ex. Heavy T....50&10%*
*Screw Hook and Strap.* { *6 to 12 in..lb.3½¢* / *1½ to 20 in..lb..3½¢* / *22 to 36 in..lb..3 ¢*
*Screw Hook and Eye:*
*¾ to 1 inch.....lb.6¼¢*
*⅝-inch .....lb.7½¢*
*½-inch .....lb.8½¢*
} Extra 10&7½%.

### Hitchers, Stall—
Covert Mfg. Co., Stall Hitchers..30&2%

### Hods— Coal—
*M'f'gr's list, price per gross:*

| *Inch* | *15* | *16* | *17* | *18* |
|---|---|---|---|---|
| *Galv. Open....* | *$35* | *$39* | *$42* | *$46* |
| *Jap. Open...* | *26* | *28* | *31* | *35* |
| *Galv. Funnel...* | *48* | *48* | *52* | *56* |
| *Jap. Funnel....* | *33* | *36* | *59* | *43* |

} Extra 65%

### Masons' Etc.
Cleveland Wire Spring Co.:
Steel Brick, No. 162.....each $1.05
Steel Mortar, No. 158.....each $1.35

### Hoes— Eye—
*Scovil and Oval Pattern, 60&10@60&10&10%*
*Grub, list Feb. 23, 1899, 70&10@70&10&10%*
D. & H. Scovil....27½%
Am. Fork & Hoe Co. (Scovil Pattern)....60&5%

### Handled—
Cronk's Weeding, No. 1, $2.00; No. 2, $2.50
Star Double Bit....$2.50
American Fork & Hoe Co.:
Regular, Cotton....75&10&5&2½%
Crescent, Cultivator....75&2½%
Mattock, Senior....70%
Mattock, Junior....70%
Sprouting....50%
Tobacco, Harper's....66⅔&15&10%
Warren....55&10&10&5%
Ivanhoe....65&15&10%
Cultivator, B B 6....70&10&10&5%
Cultivator, B B 6½....70&10&10&5%
Weeding, Acme....72½&10&2½%
Scuffle, Lightning....60&5%

### Hoisting Apparatus—
See *Machines, Hoisting.*

### Holders— Bit—
Angular, ₱ doz. $21.00....45&10%

### Door—
Bardsley's, Iron, 40%; Brass and Bronze....25%
Empire....50%
Pullman....25%
Richards Mfg. Co.: No. 117, Ever-ready, 40%; Nos. 118, 119, Sure Grip....50%
Superior....33⅓%

### File and Tool—
Nicholson File Holders and File Handles....33⅓@40%

### Fruit Jar—
Triumph Fruit Jar Holder, ₱ gross, $18.00; ₱ doz....$2.00

### Trace and Rein—
Fernald Double Trace Holder, ₱ doz. pairs....$1.25
Dash Rein Holder, ₱ doz....$1.25

### Hones—Razor—
Pike Mfg. Co., Belgian and Swaty, 50%; German....33⅓%

### Hooks—Cast Iron—
Bird Cage, Reading....40%
Clothes Line, Reading List....40%
Coat and Hat, Reading....45&20%
Coat and Hat, Wrightsville....60&5%
Harness, Reading List....40%

### Wire—
*Belt, Nos. 1 to 15....75&10@80%*
*Wire C. & H. Hooks..80@80&10%*
Bradley Metal Clasp Wire, Coat and Hat, 75&10@80%; Ceiling..75&10@80
Columbian Hdw. Co., Gem....75&10%
Parker Wire Goods Co., King..75&10%
Wire Goods Co.:
Acme, 60&10%; Chief, 70&10; Crown, 75%; Czar, 65&10%; V Brace, 75%; Czar Harness, 50%; Ceiling, 75%.

### Wrought Iron—
*Box, 6 in., per doz., $0.90; 8 in., $1.15.*
*Cotton....doz. $1.25@$1.50*
Wrought Staples, Hooks, &c.—See Wrought Goods.

### Miscellaneous—
*Hooks, Bench, see Stops, Bench.*
*Bush, Light, doz., $6.20; Medium, $6.75; Heavy, $7.65*
*Grass, best, all sizes, per doz., $2.75@$3.00*
*Grass, common grades, all sizes, per doz....$1.25@$1.50*
*Whiffletree....lb. 5¼@6¢*
*Hooks and Eyes:*
*Brass....60@60&10%*
*Malleable Iron....70@70&10%*
Covert Mfg. Co. Gate and Scuttle Hooks....40%
Turner & Stanton Co. Cup and Shoulder....85&10%
Bench Hooks—See Bench Stops.
Corn Hooks—See Knives, Corn.

### Horse Nails—
See *Nails, Horse.*

### Horseshoes—
See *Shoes, Horses.*

### Hose, Rubber—
*Garden Hose, ¾-inch:*
*Competition....ft. 6@6½¢*
*3 ply Guaranteed....ft. 8½@9¢*
*4-ply Guaranteed....ft. 9½@12¢*
*Cotton Garden, ¾-in., coupled:*
*Low Grade....ft. 8@9c*
*Fair Quality....ft. 10@11¢*

### Irons— Sad—
*From 4 to 10....lb. 2½@2¾¢*
*B. B. Sad Irons....lb. 3¼@3½¢*
*Mrs. Potts', cents per set:*

| | Nos. 50 | 55 | 60 | 65 |
|---|---|---|---|---|
| *Jap'd Caps* | 86 | 93 | 96 | 93 |
| *Tin'd Caps* | 91 | 88 | 1.01 | 98 |

*New England Pressing..lb. 3¾@4¼¢*

### Bar and Corner—
Richards Mfg. Co., Bar, 60&10%; Corner....60

### Pinking—
*Pinking Irons....doz. 60@65¢*

### Irons, Soldering
See *Coppers.*

### Jacks, Wagons—
Covert Mfg. Co.:
Auto Screw....30&2%; Steel, 45%
Lockport....50%
Lane's Steel....30&5%
Richards' Tiger Steel, No. 130...50&10%
Smith & Hemenway Co.'s....25%

### Ladder—
Richards Mfg. Co., Ladder Jacks..50%

### Jointers—
Pike Mfg. Co., Saw Jointers, $7.00..10%

### Kettles—
*Brass, Spun, Plain....20@25%*
Enameled and Cast Iron—See Ware, Hollow.

### Knives—

### Butcher, Kitchen, &c.—
Foster Bros.' Butcher, &c....30%
Wilkinson Shear & Cutlery Co....60%

### Corn—
Columbian Cutlery Co., Wilcut Brand Knives and Hooks....60%
American Fork & Hoe Co.:
Easy Cut, ₱ doz., No. 10 C H...$2.10
Easy Cut, ₱ doz., No. 10 B C H..$2.20
Acme, ₱ doz....$2.35
Dent, ₱ doz....$2.35
Adjustable, Serrated, ₱ doz....$1.90
Serrated, ₱ doz....$1.85
Yankee, No. 1 C H....$1.35
Yankee, No. 2 C H....$1.15

### Drawing—
*Standard List....80&10@—%*
C. E. Jennings & Co., Nos. 45, 46, 25&7½%
Jennings & Griffin, Nos. 41, 42, 66⅔&7½%
Swan's....66⅔@70%
Watrous....16⅔%
L. & I. J. White....20&5@25%

### Hay and Straw—
*Serrated Edge, per doz. $5.00@5.50*
Iwan's Sickle Edge....₱ doz. $9.50
Iwan's Serrated....₱ doz. $10.00

### Miscellaneous—
*Farriers'....doz. $2.60@3.55*
Wostenholm's....₱ doz. $3.00@3.25

### Knobs—
*Base, 2½-inch, Birch or Maple, Rubber Tip....gro. $1.25@1.40*
*Carriage, Jap., Drive, all sizes, gro. 35@40¢*
*Door, Mineral....doz. 65@70¢*
*Door, Por. Jap'd....doz. 70@75¢*
*Door, Por. Nickel..doz. $2.05@2.15*
Bardsley's Wood Door, Shutters, &c. 15%

### Lacing, Leather—
See *Belting, Leather*

### Ladders, Store, &c.—
Lane's Store....25%
Myers' Noiseless Store Ladders....50%
Richards Mfg. Co.:
Improved Noiseless, No. 112....50%
Climax Shelf, No. 113....50%
Trolley, No. 109....50%

### Ladles, Melting—
L. & G. Mfg. Co., Melting and Plumbers'....25%
P., S. & W....40&10%
Reading....60%

### Lamps,—
Hammer's M. I. Hand....45%

### Lanterns—Tubular—
*Regular, No. 0....doz. $4.35@4.50*
*Side Lift, No. 0....doz. $4.60@4.75*
*Hinge Globe, No. 0. doz. $4.60@4.75*
*Other Styles....40@40&10%*

### Bull's Eye Police—
*3-inch....$3.75@4.00*

### Latches— Thumb—
*Roggin's Latches, Jap'd, with Screws....doz. 35@40¢*

### Door—
Cronk & Carrier Mfg. Co., No. 101, ₱ doz. $2.00
Richards' Bull Dog, Heavy, No. 125....50&5%
Richards' Trump, No. 127....$1.50

### Leaders, Cattle—
*Small....doz. 50¢; large, 60¢*
Covert Mfg. Co.:
Cotton, 45%; Hemp, 45%; Jute, 35%; Sisal, 20%.

### Leathers, Pump—
See *Pumps—*

### Lifters, Transom—
R. & E....10%

### Lines—

| | *Wire Clothes, Nos.* | *18* | *19* | *20* |
|---|---|---|---|---|
| | *100 feet* | *$2.30* | *1.95* | *1.75* |
| | *75 feet* | *$1.95* | *1.65* | *1.50* |

Samson Cordage Works:
Solid Braided Chalk, Nos. 0 to 3..40%
Solid Braided Masons'....30%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50....₱ gr. 20%
Masons' Lines, Shade Cord, &c.; White Cotton, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50; Colors, No. 3½, $1.75; No. 4, $2.25; No. 4½, $2.75; Linen, No. 3½, $2.50; No. 4, $3.50; No. 4½, $4.50....20%
Tent and Awning Lines: No. 5, White Cotton, $7.50; Drab Cotton, $8.50....20%
Clothes Lines, White Cotton: 50 ft., $2.75; 60 ft., $3.25; 70 ft., $3.75; 75 ft., $4.00; 80 ft., $4.25; 90 ft., $4.75; 100 ft. $5.25....20%
Turner & Stanton Co.:
Solid Braided Chalk, Masons' and Awning Lines....40%
Clothes Lines, White Cotton....20%
Shade Cord, Cotton or Linen....20%

### Locks— Cabinet—
*Cabinet Locks....33⅓@33⅓@5%*

### Door Locks, Latches, &c.—
*NOTE.—Net Prices are very often made on these goods.*
Reading Hardware Co....40%
R. & E. Mfg. Co....10%

### Padlocks—
R. & E. Mfg. Co. Wrought Steel and Brass....75&10%

### Sash, &c.—
Ives' Patent:
Crescent....10%
Automatic Gravity Metal Sash, ₱ gro., $119.58....10%
Window Ventilating....10%
Pullman Patent Ventilating Lock..25%
Reading Sash Locks....40%
Taylor Mfg. Co., Perfect Ventilating, ₱ doz....$0.75@$1.00

### Machines—Boring—
*Com. Upr't, without Augers, $2.00@2.25*
*Com. Angl'r, without Augers, $2.25@2.50*
Ford Auger Bit Co....$2.00
Jennings', Nos. 1 and 4....25&7½%
Millers' Falls....5.75
Snell's, Upright, $2.65; Angular, $2.90
Swan's Improved....40&10%

### Corking—
Reisinger Invincible Hand Power... ₱ doz. $48.00

### Fence—
Williams' Fence Machines....each, $5.50

### Hoisting—
Moore's Anti-Friction Chain Hoist..30%
Moore's Hand Hoist, with Lock Brake....20%
Moore's Cyclone High Speed Chain Hoist....25%

### Ice Cutting—
Chandler's....12½%

### Washing

| Boss Washing Machine Co.: | Per doz. |
|---|---|
| Boss No. 1 | $57.00 |
| Boss Rotary | $57.00 |
| Champion Rotary Banner No. 1 | $57.00 |
| Standard Champion No. 1 | $50.00 |
| Standard Perfection | $27.00 |
| Cincinnati Square Western | $33.00 |
| Uneeda American, Round | $33.60 |

### Mallets—
*Hickory....45&5@50%*
*Lignumvitæ....45&5@50%*
*Tinners' Hickory and Applewood....doz. 45&5@50%*

### Mangers, Stable—
Swett Iron Works....50%

### Mats, Door—
Acme Flexible Steel....50%
Elastic Steel (W. G. Co.), new list..50%

### Mattocks—
See *Picks and Mattocks.*

### Milk Cans—See *Cans, Milk.*

### Mills, Coffee, &c.—
Enterprise Mfg. Co.:
Coffee....20@25%
Shell and Corn....25&10%
National list Jan. 1, 1902....30%
Parker's Columbia and Victoria..33⅓%
Parker's Box and Side....50&10%
Swift, Lane Bros. Co....30%

### Motors, Water—
Divine's Red Devil....30%

| $2.50 | 3.50 | 10.00 | 15.00 | |
|---|---|---|---|---|
| No. 1. | 2 | 3 | 4 | |
| Lippincott's: | | | | |
| No.... | 1 | 2 | 3 | 4 |
| | $2.50 | 3.50 | 10.00 | 15.00..33⅓% |

Pike Mfg. Co., Tool and Knife Grinding....33⅓%

### Mowers, Lawn—
*NOTE.—Net prices are generally quoted*
*Cheapest, 10-in., $2.00; advance 10¢ for each size.*
*Cheap, 10-in., $2.25; advance 15@20¢ for each size.*
*Better Grade, 10-in., $3.00; advance 25¢ for each size.*

| | *12* | *14* | *16* | *18 in.* |
|---|---|---|---|---|
| *High Grade* | *$4.50* | *4.75* | *5.00* | *5.25* |

Continental....60
Great American....70
Great American Ball B'r'g, new list 70
Quaker City....70
Pennsylvania....60
Pennsylvania, Jr., Ball Bearing 50&10&5
Pennsylvania Golf....50
Pennsylvania Horse....33⅓&5
Pennsylvania Pony....40&5%

### Nails—
*Wire Nails and Brads, Miscellaneous....85&5@85&10%*
*Cut and Wire. See Trade Report.*
*Hungarian, Finishing, Upholsterers', &c. See Tacks.*

### Horse—

| Nos. | 6 | 7 | 8 | 9 | 10 | |
|---|---|---|---|---|---|---|
| Anchor | 23 | 21 | 20 | 19 | 18 | .. ₱ lb. net, 12¢ |
| Coleman | 13 | 12 | 12 | 11 | 11 | net ₱ lb |
| New Haven.. | 23 | 21 | 20 | 19 | 18 | .. ₱ lb. net, 12¢ |
| Livingston | 19 | 18 | 17 | 16 | 16 | ....10% |
| Western | | | | | | ₱ lb 8½¢ |

*Jobbers' Special Brands, per lb. 9¢*

### Picture—

| | *1½* | *2* | *2½* | *3 in.* |
|---|---|---|---|---|
| *Brass Hd, gro.* | *.45* | *.55* | *.60* | *.70* |
| *Por. Head, gro.* | *1.10* | *1.10* | *1.10* | |

### Upholsters—
*Brass....30%*
*Plated....30&10%*

### Nippers—
See *Pliers and Nippers.*

### Nipples—
Standard Nipple Co.:
Wrought Pipe Nipples....80

### Nuts— *Blank or Tapped.*

| *Cold Punched:* | *Off list* |
|---|---|
| *Square* | *5.30¢* |
| *Hexagon* | *5.90¢* |
| *Square, C., T. & R.* | *5.70¢* |
| *Hexagon, C., T. & R.* | *6.50¢* |
| *Hot Pressed:* | Off list. |
| *Square* | *5.80¢* |
| *Hexagon* | *6.30¢* |

### Oakum—
*Best....lb. 6½¢*
*U. S. Navy....lb. 6¢*
*Navy....lb. 5¢*
*Plumbers' Spun Oakum..2¾@3¢*

### Oil—
Pike Mfg. Co., Stonoil....40%

### Oil Tanks—See *Tanks, Oil.*

### Oilers—
*Steel, Copper Plated....75&10%*
*Chase or Paragon:*
*Brass and Copper....50&10*
*Zinc....65&10@70%*
*Railroad....60&10&10%*
Malleable, Hammers' Improved, Nos. 11, 12 and 13, 10%; Old Pattern, Nos. 1, 2, 3, 4, 50%.
American Tube & Stamping Co.:
Spring Bottom Cans....70@70&10%
Railroad Oilers, &c....60@60&10%
Maple City Mfg. Co.:
Spring Bottom Cans....70@70&10%
Railroad Oilers, &c....60@60&10%

### Openers—Packing Box—
Herculever, ₱ doz., $24....30%

### Can Openers—

| | *Per doz.* |
|---|---|
| *Sprague, Iron Handle* | *30@35¢* |
| *Sprague, Wood Handle* | *40¢* |
| *Sardine Scissors* | *$1.75@3.00* |

Can and Bottle Openers, ₱ doz., net: Yankee, $0.75@$0.85; Little Gem, $0.50@$0.65; Nifty....$0.75

### Egg—
Hartigan Nickel Plate, ₱ doz., $2.00; Silver Plate, $4.00.

### Packing—
*Asbestos Packing, Wick and Rope, any quantity....18@20¢*

### Rubber—
*(Fair quality goods.)*
*Sheet, C. I....11@12¢*
*Sheet, C. O. S....11@12¢*
*Sheet, C. B. S....12@13¢*
*Sheet, Pure Gum....40@45¢*
*Sheet, Red....40@50¢*
Jenkins' '96, ₱ lb, 80¢....25%

### Miscellaneous—
*American Packing....lb. 7@10¢*
*Cotton Packing....lb. 16@25¢*
*Italian Packing....lb. 9@10c*
*Jute....lb. 4@4¼c*
*Russia Packing....lb. 9@10¢*

### Pails, Water, Well, &c.—
See *Buckets.*

### Paint—
Dixon's Silica-Graphite, in 1 gal. pails and 5 gal. kegs, 25%; packages of larger size....20%

### Pans— Dripping—
*Standard List....75%*
Edwards, Royal Blue....75%

### Fry—
*Common Lipped:*

| *Nos.* | *1* | *2* | *3* | *4* | *5* |
|---|---|---|---|---|---|
| *Per doz.* | *$0.75* | *0.85* | *0.95* | *1.15* | *1.30* |

### Refrigerator, Galva.—

| *Inch* | *12* | *14* | *16* | *18* |
|---|---|---|---|---|
| *Per doz.* | *$1.75* | *2.25* | *2.80* | *3.1* |

### Paper—Building Paper

| *Asbestos:* | *lb.* |
|---|---|
| *Roll Board or Building Felt, 6 to 30 lb., per 100 sq. ft.* | *2½¢* |
| *Roll Board or Building Felt, 3-32 and ⅛ in., 45 to 60 lb., per 100 sq. ft.* | *3½¢* |
| *Mill Board, Sheet, 40 x 40 in., 1-32 to ½ in.* | *3¢* |

*Per roll*
*Rosin Sized Sheathing: 500 sq. ft Light weight, 25 lbs. to roll, 48@50¢*
*Medium weight, 30 lbs. to roll, 56@70¢*
*Heavy weight, 40 lbs. to roll, 75@78¢*
*Black Water Proof Sheathing, 500 sq. ft., 1 ply, 65¢; 2 ply, 85¢; 3 ply, $1.10; 4 ply, $1.25.*
*Deafening Felt, 9, 6 and 4½ sq. ft. to lb., ton....$54.50*
*Red Rope Roofing, 250 sq. ft. per roll....$1.75*

### Tarred Paper—
*1 ply (roll 400 sq. ft.), ton, $34.00@$38.00*
*2 ply, roll 108 sq. ft....65¢*
*3 ply, roll 108 sq. ft....88¢*
*Slater's Felt (roll 500 sq. ft.)..80¢*

### Sand Paper and Cloth—
*Flint and Emery....50&10%*
*Garnet Paper and Cloth....25%*

### Parers—Apple—
Goodell Co.:
Family Bay State....₱ doz. $15.00
Improved Bay State....₱ doz. $36.00
New Lightning....₱ doz. $7.00
Turn Table '98....₱ doz. $6.00
White Mountain....₱ doz. $5.00
Bonanza Improved....each $7.50
Dandy....each $10.00
Eureka Improved....each $20.00
New Century....each $20.00
Ranger....each $30.00

Livingston Nail Co.:
Daisy ..... ℔ doz. $4.00
Little Star ..... ℔ doz. $5.00
Rocking Table ..... ℔ doz. $6.20
Reading Hardware Co.:
Advance ..... ℔ doz. $4.00
Baldwin ..... ℔ doz. $4.00
Reading 72 ..... ℔ doz. $3.25
Reading 78 ..... ℔ doz. $6.25

### Orange—

Goodell Co., Success ..... each $20.00

### Potato—

Saratoga ..... ℔ doz. $7.00
White Mountain ..... ℔ doz. $6.00

## Picks and Mattocks—

*(List Jan., 1908.)*

*List* ..... *75&10%*
Cronk's Handled Garden Mattock. ℔ doz., $3.00 ..... 33⅓%

## Pinking Irons—

See *Irons, Pinking.*

## Pins, Escutcheon—

*Brass* ..... *50@50&10%*
*Iron, list Nov. 11, '85* ..*60@60&10%*

## Pipe, Cast Iron Soil—

*Standard, 2-6 in* ..... *70&10%*
*Extra Heavy, 2-6 in* ..*75&10@80%*
*Fittings, Standard and Heavy,* *80&10@85%*

## Pipe, Merchant—

*Carloads to Consumers:*

| | *Steel.* | | *Iron.* | |
|---|---|---|---|---|
| | *Blk.* | *Galv.* | *Blk.* | *Galv.* |
| | % | % | % | % |
| *⅛ and ¼ in* | *..66* | *50* | *64* | *..* |
| *⅜ in* | *....68* | *54* | *66* | *52* |
| *½ in* | *....70* | *58* | *68* | *56* |
| *¾ to 6 in* | *....74* | *64* | *72* | *62* |
| *7 to 12 in* | *....71* | *56* | *69* | *54* |

## Pipe, Vitrified Sewer—

*Carload lots.*
*Standard Pipe and Fittings, 3 to 24 in., f.o.b. factory:*
*First-class* ..... *87%*
*Second-class* ..... *90%*

## Pipe, Stove—

| Edwards' Nested: | Per 100 joints. C. L. | L. C. L. |
|---|---|---|
| 5 in., Standard Blue | $6.25 | $7.25 |
| 6 in., Standard Blue | 6.75 | 7.75 |
| 7 in., Standard Blue | 7.75 | 8.75 |
| 5 in., Royal Blue | 7.00 | 8.00 |
| 6 in., Royal Blue | 7.50 | 8.50 |
| 7 in., Royal Blue | 8.50 | 9.50 |
| Wheeling Corrugating Co.'s Nested: | | |
| 5 in., Uniform Color | $5.90 | $6.90 |
| 6 in., Uniform Color | 6.40 | 7.40 |
| 7 in., Uniform Color | 7.40 | 8.40 |

## Planes and Plane Irons—

### Wood Planes—

*Bench, first qual* ..... *30@30&10%*
*Bench, second qual* ...*40@40&10%*
*Molding* ..... *25@25&10%*
Chapin-Stephens Co.:
Bench, First Quality ..... 30%
Bench, Second Quality ..... 40%
Molding and Miscellaneous ..... 25%
Toy and German ..... 30%
Union ..... 60%

### Iron Planes—

Chaplin's Iron Planes ..... 60%
Union ..... 60%

### Plane Irons—

*Wood Bench Plane Irons, list Dec. 12, '06* ..... *25%*
Buck Bros. ..... 30
Chapin-Stephens Co. ..... 25%
Union ..... 50%
L. & I. J. White ..... 20&5@25%

## Planters, Corn, Hand—

Kohler's Eclipse ..... ℔ doz. $7.50

## Plates—

*Felloe* ..... *lb. 3¾@4¢*
Avery Stamping Co.:
Standard Wrot. Steel Felloe Plates in 100 lb kegs, per 100 lb, ¾-in. to 1¼-in., $4.00 net; 1¼-in. to 2-in., inclusive, $3.75 net.

## Steel Pipe Hook—

Clever-Break ..... 75&10%

## Pliers and Nippers—

*Button Pliers* ....*75&5@75&10&5%*
*Gas Burners, per doz., 5 in., $1.25 @$1.30; 6 in., $1.45, $1.50.*

| *Gas pipe* | *7* | *8* | *10* | *12-in.* |
|---|---|---|---|---|
| | *$2.00* | *$2.25* | *$2.75* | *$3.50* |

Game Nippers ..... 50&5%
Cronk & Carrier Mfg. Co.:
American Button ..... 80%
Improved Button ..... 75&10%
Cronk's ..... 60%
No. 89 Linemen's ..... 50%
Stub's Pattern ..... 45%
Combination and others ..... 33⅓%
Heller's Farriers' Nippers, Pincers and Tools ..... 40&5@40&10&5%
H., S. & W. Tinners' Cutting Nippers ..... 40%
Swedish Side, End and Diagonal Cutting Pliers ..... 50%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds ....40%

## Plumbs and Levels—

Chapin-Stephens Co.:
Plumbs and Levels ..... 30@30&10%
Stanley's Imp. Brass Cor. ..40@40&10%
Stanley Levels ..... 30@30&10%
Stanley Sights ..... 30@30&10%
Stanley Levels ..... 40@40&10%
Stanley Plumbs and Levels ....60&10%
Stanley Pocket Levels ..... 60&10%
Stanley Dusters ..... 35%
Stanley Discussion ..... 33⅓%

## Points, Glaziers'—

*Bulk and 1-lb. papers* .... *lb. 9 ¢*
*½-lb. papers* ..... *lb. 9½¢*
*¼-lb. papers* ..... *lb. 10 ¢*

## Police Goods—

*Manufacturers' Lists* ...*25@25&5%*
Tower's ..... 25%

## Polish—Metal, Etc—

Ladd Co.:
Putzade Liquid, ℔ gro., ½ pts., $12.00; 1 pts., $20.00; 1 qts., $40.00; ℔ doz., ½ gals., $6.35; 1 gals., $12.00.
Prestoline Liquid, No. 1 (½ pt.), ℔ doz., $3.00; No. 2 (1 qu.), $9.00..40%
Prestoline Paste ..... 40%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, ℔ doz. 50¢; ℔ gro. $4.50; ½ lb boxes, ℔ doz. $1.25; 1 lb boxes, ℔ doz. $2.25.
U. S. Liquid, 8 oz. cans, ℔ doz., $1.25.
Barkeepers' Friend Metal Polish, ℔ doz., $1.75.

### Stove—

Black Eagle Benzine Paste, 5 lb cans, ℔ lb 10¢
Black Eagle, Liquid, ½ pt. cans.. ℔ doz. 75¢
Black Jack Paste, ¾ lb cans, ℔ gr. $9.00
Black Kid Paste, 5 lb can...each, $0.65
Ladd's Black Beauty Liquid, per 100 tins ..... $6.75
Joseph Dixon. ℔ gr. $5.75 ..... 10%
Dixon's Plumbago ..... ℔ lb 8¢
Fireside ..... ℔ gr. $2.50
Gem, ℔ gr. $4.50 ..... 10%
Japanese ..... ℔ gr. $3.50
Jet Black ..... ℔ gr. $3.50
Peerless Iron Enamel, 10 oz. cans.. ℔ doz. $1.50

### Window Polish—

Benj. P. Forbes:
Glasbright, No. 2, gal pails, ℔ doz., $24.00; each, $2.50; 1 lb cans, each ..... 75¢
Glasbright Powder, bbls., ℔ lb..20¢

## Poppers, Corn—

*1 qt. Square..doz. $0.80; gro. $8.75*
*1 qt. Round..doz. $0.90; gro. $10.00*
*1½ qt. Square. doz. $1.20; gro..$12.00*
*2 qt. Square..doz. $1.50; gro..$15.00*

## Post Hole and Tree Augers and Diggers—

See also *Diggers, Post Hole, &c.*

## Posts, Steel—

Steel Fence Posts, each, 6 ft., 46¢; 6½ ft., 48¢; 7 ft., 50¢.
Steel Hitching Posts ..... each $1.30

## Potato Parers—

See *Parers, Potato.*

## Pots, Glue—

*Enameled* ..... *40%*
*Tinned* ..... *30&10%*

## Powder—

*Black Sporting:*
*Kegs (25 lb.)* ..*$5.00@5.50*
*Half Kegs (12½ lb.),* *$2.75@3.00*
*Quarter Kegs (6¼ lb.),* *$1.50@1.65*
*Canisters, pounds* ... *.25*
*Canisters, ½ pounds.* *.15*
*Canisters, ¼ pounds.* *.12*
*Discount to the trade, 10%.*

*NOTE.—Prices vary according to territory.*

King's Semi-Smokeless:
Keg (25 lb bulk) ..... $6.50
Half Keg (12½ lb bulk) ..... $3.50
Quarter Keg (6¼ lb bulk) ..... $1.90
Case 24 (1 lb cans bulk) ..... $8.50
Half case (1 lb cans bulk) ..... $4.50

| King's Smokeless: | Shot Gun. | Rifle. |
|---|---|---|
| Keg (25 lb bulk) | $12.00 | $15.00 |
| Half Keg (12½ lb bulk) | 6.25 | 7.75 |
| Quarter Keg (6¼ lb bulk) | 3.25 | 4.00 |
| Case 24 (1 lb cans bulk) | 14.00 | 17.00 |
| Half case 12 (1 lb c. bk) | 7.25 | 8.75 |

## Presses—

### Fruit, Wine and Jelly—

Enterprise Mfg. Co. ..... 20@25%

### Seal Presses—

Morrill's No. 1, ℔ doz., $20.00 ..... 50%

## Pruning Hooks and Shears

See *Shears.*

## Pullers, Nail, Etc.—

Cyclops ..... 50%
Miller's Falls, No. 3, ℔ doz., $12.00.. 33⅓&10%
Morrill's No. 1, Nail Puller, ℔ doz. $20.00 ..... 50%
Pearson No. 1, Cyclone Spike Puller, each $30.00 ..... 50%
The Scranton Co. Case Lots:
No. 2B (large) ..... $5.50
No. 3B (small) ..... $5.00
Smith & Hemenway Co.:
Diamond B ..... 70%
Giant ..... 50%
Staple Pullers, Utica and Davison ..... 60%
Taylor Mfg. Co., Sampson Tack, ℔ doz ..... $0.40

## Pulleys, Single Wheel—

| *Inch* | *1½* | *1¾* | *2* | *3* |
|---|---|---|---|---|
| *Awning or Tackle, doz* | *$0.30* | *.45* | *.60* | *1.05* |

*Hay Fork, Swivel or Solid Eye, doz., 4 in., $1.25; 5 in., $1.55*

| *Inch* | *2* | *2¼* | *2½* |
|---|---|---|---|
| *Hot House, doz* | *$0.65* | *.85* | *1.20* |
| *Inch* | *1¼* | *1½* | *1¾* | *2* |
| *Screw, doz* | *$0.16* | *.19* | *.23* | *.30* |
| *Inch* | *1¾* | *2* | *2¼* | *2½* |
| *Side, doz* | *$0.25* | *.40* | *.55* | *.60* |
| *Inch* | *1½* | *1¾* | *2* | *2½* |

## Sash Pulleys—

*Common Frame; Square or Round End, per doz., 1¾ and 2 in* ..... *17@20¢*
*Auger Mortise, no Face Plate, per doz., 1¾ and 2 in* ....*20@21¢*
Acme, No. 35..1¾ in., 19¢; 2 in., 20½¢
American Pulley Co.:
Wrought Steel American Plain Axle ..... 50&10%
Wrought Steel. Eagle ..... 17@20¢
Top Notch, Electrically Welded, Nos. 3 and 4 ..... 19¢
Common Sense ..... ℔ doz. 20¢
Fox-All-Steel, Nos. 3 and 7, 2 in.... ℔ doz. 50%
Grand Rapids All Steel Noiseless..50%
Niagara, No. 25, 1¾ in., 19¢; 2 in. ..... 20½¢
No. 26 Troy..1¾ in., 14½¢; 2 in., 16½¢
Star, No. 26....1¾ in., 19¢; 2 in., 20½¢
Tackle Blocks—See Blocks.

## Pumps—

*Cistern* ..... *60%*
*Pitcher Spout* ..... *75&10&5@80*
*Wood Pumps, Tubing, &c* .... *50%*
Barnes Dbl. Acting (low list) ..... 50
Barnes Pitcher Spout ..... 80%
Contractors' Rubber Diaphragm, No. 2, B. & L. Block Co. ..... $16.00
Daisy Spray Pump ..... ℔ doz. $6.50
Flint & Walling's Fast Mail Hand (low list) ..... 50&5%
Flint & Walling's Fast Mail (low list) ..... 50&5%
Flint & Walling's Tight Top Pitcher ..... 80%
National Specialty Mfg. Co., Measuring, Nos. 2, $6.00; 3, $5.50 ..... 30%
Myers' Pumps (low list) .....
Myers' Power Pumps ..... } 50%
Myers' Spray Pumps .....

## Pump Leathers—

*Plunger and Valve Leathers—Per gro.:*

| *No* | *1* | *2* | *3* | *4* |
|---|---|---|---|---|
| | *$5.00* | *6.00* | *7.00* | *8.00* |

*Cup Leathers—Per 100:*

| *Inch* | *2½* | *3* | *3½* | *4* |
|---|---|---|---|---|
| | *$5.00* | *7.00* | *9.00* | *12.00* |

*Gro. lots 10%*

## Punches—

*Saddlers' or Drive, good, doz.* ..*50@75¢*
*Spring, single tube, good quality* ..... *$1.75*
*Revolving (4 tubes)* ....*doz. $3.50*
Bemis & Call Co.'s Cast St'l Drive.50%
Morrill's Nos. 1AA, 1A, 1B, 1C, 1D, $15.00 ..... 50%
Hercules, 1 die, each $5.00 ..... 50%
Niagara Hollow Punches ..... 40%
Niagara Solid Punches ..... 55&10%
Tinners' Hollow, P., S. & W. Co..40%
Tinners' Solid, P., S. & W. Co., ℔ doz., $1.44 ..... 40&10%

## Rail—Barn Door, &c.—

*Sliding Door, Painted Iron,* *2½@2¾¢*
*Sliding Door, Wrought Brass, 1⅛ in., lb., 36¢* ..... *30%*
Cronk's:
Double Braced Steel Rail..℔ ft. 2¾¢
O. N. T. Rail ..... 2¾¢
Griffin's:
xxx, ℔ 100 ft., 1 x 3-16 in., $3.25; 1¼ x 3-16 in., $3.75.
Hinged Hanger, ℔ 100 ft., 1 x 3-16 in., $3.50; 1¼ x 3-16 in., $4.00.
Lane's:
Hinged Track, ℔ 100 ft. ..... $3.45
O. N. T., ℔ 100 ft., 1 in., $3.12½; 1¼ in., $3.45; 1½ in., $4.00.
Standard, 1¼ in. ..... ℔ 100 ft. $4.00
Lawrence Bros.:
1 x 3-16 in., ℔ 100 ft., $7.50; 1¼ x 3-16 in., $8.75 ..... 55&7½%
Trolley, No. 301, ℔ ft. ..... 9¢
McKinney's:
Hinged Hanger Track, ℔ ft., 11¢. 60&5%
1 x 3-16 Track ..... 55&7½%
Myers' Stayon Track ..... 60&5%
Richards Mfg. Co.:
Common, 1 x 3-16 in., $3.00; 1¼ x 3-16, $3.25; 1¼ x 3-16, $3.50.
Special Hinged Hanger Rail..60&10%
Lag Screw Rail, No. 65 ..... 50%
Gauge Trolley Track, ℔ ft., No. 31, 9¢; No. 32, 14¢; No. 33, 20¢.
No. 50 ..... 60&10%
Nos. 61, $3.00; 62, $3.25; 63, $3.50; 64, $4.00; 45, $3.25; 46, $3.50; 49, No. 1, $3.25; 49, No. 2, $3.50.

## Rakes—

*NOTE.—Many goods are sold at net prices.*
American Fork & Hoe Co.:
Lawn, ℔ doz., No. 24, $2.50; No. 20 ..... $2.25
Cronk's:
Steel Garden: Champion, ℔ doz., 12-tooth, $3.75; 14-tooth, $4.00; 16-tooth, $4.25; Ideal ℔ doz., 12-tooth, $3.00; 14-tooth, $3.30; 16-tooth, $3.60.
Victor, 12-tooth, $2.25; 14-tooth, $2.50; 16-tooth, $2.75.
Queen City Lawn, ℔ doz., 20 teeth, $2.85; 24, $3.00 ..... net
Anticlog Lawn. ℔ doz. ..... $4.00
Malleable Garden ..... 70&10%
Ideal Steel Garden, ℔ doz., 12 teeth, $15.00; 14, $16.00; 16, $18.00 ..... 80%
Kohler's:
Jumbo Lawn, 36-tooth....℔ doz. $5.00
Lawn Queen, 20-tooth....℔ doz. $2.85
Lawn Queen, 24-tooth....℔ doz. $3.00
Paragon, 20-tooth ..... ℔ doz. $2.65
Paragon, 24-tooth ..... ℔ doz. $2.75
Steel Garden, 14-tooth....℔ doz. $2.40
Malleable Garden, 14-tooth, ℔ doz. $1.75@2.00

## Rasps, Horse—

Disston's ..... 75%
Heller Bros.' ..... 70&5@70&10&5%
Liveright Bros.' Gold Medal.70&10@75%
McCaffrey's American Standard ..... 60&10&5%
New Nicholson ..... 70&10@75%
See also Files.

## Razors—

John Engstrom Swedish ..... 65%
Sharp Shaver ..... 60%
Fox Razors, ℔ doz.. No. 42, $24.00; No. 44, $20.00; No. 82, Platina, $36.00. } Disc. 50%

## Reels, Fishing—

Hendryx:
M 6, Q 6, A 6, B 6, M 9¼, M 16, Q 16, A 16, B 16, 4008, Rubber, Populo. Nickeled Populo ..... 20%
Aluminum, German Silv., Bronze. 25%
1210 N, 124 N ..... 20%
3004 N, 06 N, 6 RM, G 9 ..... 25%
4 N, 6 PN, 24 N, 26 PN ..... 20%
2904 P., 33⅓%; 2904 PN., 33⅓%; 0924 N., 33⅓%; 92084 N., 33⅓%; 002904 PN., 33⅓%; 802 N., 33⅓%.
986 PN, 2904 N, 974 PN ..... 25%
5009 PN, 5009 N ..... 20%
Competitor, 102 P, 102 PN, 202 P, 202 PN, 102 PR, 202 PR ..... 20%
304 P, 304 PN, 00304 P, 00304 PN. 33⅓%

## Registers—*List July 1, 1903.*

*Japanned, Electroplated and Bronzed* ..... *70%*
*White Porcelain Enamel..50&10%*
*Solid Brass or Bronze Metal. 40%*

## Revolvers—

*Single Action* ..... *95¢@$1.00*
*Double Action, except 44 cal. $2.00*
*Double Action, 44 caliber... $2.00*
*Automatic* ..... *$4.00*
*Hammerless* ..... *$4.50*

## Riddles, Hardware Grade

*16 in.....per doz. $2.50@$2.75*
*17 in.....per doz. $2.75@$3.00*
*18 in.....per doz. $3.00@$3.25*

## Rings and Ringers—

### Bull Rings—

| | *1* | *2½* | *3 inch.* |
|---|---|---|---|
| *Steel* | *$0.70* | *0.75* | *0.80 doz.* |
| *Copper* | *$1.10* | *1.25* | *1.65 doz.* |

### Hog Rings and Ringers—

*Hill's Rings, per gro. boxes, $4.60@$4.75; per doz. boxes, 40@45¢*
*Hill's Ringers, Gray Iron, doz., 55@65¢*
*Hill's Ringers, Malleable Iron, doz. 85@95¢*
*Blair's Rings..per gro. $5.50@$6.00*
*Blair's Ringers..per doz. 65@70¢*

## Rivets—

*Copper Rivets and Burrs....50%*
*Tinners' and Miscellaneous Rivets* ..... *80@80&10%*

## Bifurcated and Tubular—

*Assorted in Boxes.*
*Bifurcated, per doz. boxes, pasteboard boxes, 50 count, 23@25¢; Tin boxes, 100 count, 2[illegible]@25¢.*
*Tubular, per doz. boxes, 50 count, 29@33¢; 100 count, 51@58¢.*

## Rollers—

Cronk's Stay, No. 50 ..... $1.00
Cronk's Brinkerhoff No. 55, $0.60; No. 56, $0.75; No. 60 ..... $0.75
Lane's Stay ..... 40%
Richards' Stay:
Handy Adj. and Reversible No. 53.75¢
O. K. Adj. and Reversible No. 58.50¢
Lag Screw, Nos. 55 and 57 ..... 50%
Underwriters', Nos. 59, 60 ..... 50%
Favorite, No. 51 ..... 60%

## Rope—

*Manila, 7-16 in. diam. and larger:*
*Pure* ..... *lb. 9¢*
*Sisal, 7-16 in. diam. and larger:*
*Pure* ..... *lb. 7¢*
*Sisal, Hay, Hide and Bale Ropes, Medium and Coarse:*
*Pure* ..... *lb. 7½@7¾¢*
*Sisal, Tarred, Medium Lath Yarn:*
*Pure* ..... *lb. 6½@6¾¢*
*Cotton Rope:*
*Best, ¼-in. and larger. 16½@18¢*
*Medium, ¼-in. and larger. 15@16¢*
*Common, ¼-in. and larger..7½¢*
*In coils, ½¢ advance.*
*Jute Rope:*
*Thread, No. 1, ¼-in. and up, lb.* ..... *5½¢*
*Thread, No. 2, ¼-in. and up, lb.* ..... *5¢*

### Wire Rope—

*Galvanized* ..... *37½&2½%*
*Plain* ..... *45&2½%*

## Ropes, Hammock—

Covert Mfg. Co.:
Jute, 35%; Sisal ..... 20%

## Rules

*Boxwood* ..... *60@60&10%*
*Ivory* ..... *35&10@35&10&5%*
Chapin-Stephens Co.:
Boxwood ..... 60%
Flexifold ..... 40%
Ivory ..... 25@25&10%
Miscellaneous ..... 50@50&10%
Stephens' Combination ..... 55%
Stationers' ..... 50@50&10%
Keuffel & Esser Co.:
Folding, Wood ..... 35&10%
Folding, Steel ..... 33⅓&10%
Lufkin's Steel ..... 50&10%
Lufkin's Lumber ..... 50&10%
Upson Nut Co.:
Boxwood ..... 60@60&10%
Ivory ..... 35&10@35&10&10%

## Sash Balances—

See *Balance, Sash.*

## Sash Locks—See *Locks, Sash.*

## Sash Weights—

See *Weights, Sash.*

## Sausage Stuffers or Fillers

See *Stuffers or Fillers, Sausage.*

## Saw Frames—

See *Frames, Saw.*

## Saw Sets—See *Sets, Saw.*

## Saw Tools—See *Tools, Saw.*

## Saws—

Atkins':
- Circular ..... 45%
- Band ..... 50@50&10%
- Butcher Saws ..... 50%
- Cross Cuts ..... 35%
- One-Man Cross Cut ..... 40%
- Narrow Cross Cut ..... 50%
- Hand, Rip and Panel ..... 35&5%
- Miter Box and Compass ..... 40%
- Mulay, Mill and Drag ..... 45%
- Wood Saws ..... 40&10%

Chapin-Stephens Co.:
- Turning Saws and Frames. 30@30&10%

Diamond Saw & Stamping Works:
- Sterling Kitchen Saws....30&10&10%

Disston's:
- Circular, Solid and Ins'ted Tooth. 50%
- Band, 2 to 18 in. wide ..... 60%
- Band, ¼ to 1¾ ..... 60%
- Crosscuts ..... 45%
- Narrow Crosscuts ..... 50%
- Mulay, Mill and Drag ..... 50%
- Framed Woodsaws ..... 25%
- Woodsaw Blades ..... 25%
- Woodsaw Rods, Tinned ..... 15%
- Hand Saws, Nos. 12, 99, 9, 16, d100, D8, 120, 76, 77, 8 ..... 25%
- Hand Saws, Nos. 7, 107, 107½, 3, 1, 0, 00, Combination ..... 30%
- Compass, Key Hole, &c ..... 25%
- Butcher Saws and Blades ..... 30%

C. E. Jennings & Co.'s:
- Back Saws ..... 16⅔%
- Butcher Saws ..... 25&7½%
- Compass and Key Hole Saws, 33⅓&7½%
- Framed Wood Saws ..... 25&7½%
- Hand Saws ..... 12½%
- Wood Saw Blades ..... 33⅓&7½%

Millers Falls:
- Butcher Saws ..... 15&10%
- Star Saw Blades ..... 15&10%

Massachusetts Saw Works:
- Victor Kitchen Saws ..... 40&10&50%
- Butcher Saws Blades ..... 35@40%

Peace & Richardson's Hand Saws. 30%

Simonds':
- Circular Saws ..... 45%
- Crescent Ground Cross Cut Saws. 30%
- One-Man Cross Cuts ..... 40&10%
- Gang Mill, Mulay and Drag Saws. 45%
- Band Saws ..... 50%
- Back Saws ..... 25@25&7½%
- Butcher Saws ..... 35@35&7½%
- Hand Saws ..... 25@25&7½%
- Hand Saws, Bay State Brand.... 45%
- Compass, Key Hole, &c..25@25&7½%
- Wood Saws ..... 40&7½%

Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws ..... 50%

## Hack Saw Blades and Frames—

Atkins' Hack Saw Blades A A A..25%

Disston's:
- Concave Blades ..... 25%
- Keystone Blades ..... 35%
- Hack Saw Frames ..... 30%

Simonds, 25%; The Best, 35%; Culley ..... 35%

C. E. Jennings & Co.'s:
- Hack Saw Frames, Nos. 175, 180.... 40&7½%
- Hack Saws, Nos. 175, 180, complete, 40&7½%

Goodell's Hack Saw Blades....40&10%

Griffin's Hack Saw Frames..35&5&10%

Griffin's Hack Saw Blades....35&5&10%

Star Hack Saws and Blades....15&10%

Sterling Hack Saw Blades..30&10&5%

Sterling Hack Saw Frames..30&10&10%

Sterling Power Hack Saw Machines, each, No. 1, $25.00; No. 2, $30.00..10%

Victor Hack Saw Blades ..... 20%

Victor Hack Saw Frames ..... 40%

Whitaker Mfg. Co.:
- National Hand Blades, Hand Frames, Power Blades ..... 10%

## Scroll—

Barnes, No. 7, $15 ..... 25%

Barnes' Scroll Saw Blades ..... 40%

Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20..... 20%

Lester, complete, $10.00 ..... 15&10%

Rogers, complete, $3.50 and $4.00.. 15&10%

## Scales—

*Union Platform, Plain. $2.10@2.20*

*Union Platform, Stpd. $2.20@2.30*

Chatillon's:
- Eureka ..... 25%
- Favorite ..... 40%
- Grocers' Trip Scales ..... 5%

The Standard Portables ..... 40%

The Standard R. R. and Wagon ..... 50&10%

## Scrapers—

*Box, 1 Handle ..... doz. $1.85@2.10*

*Box, 2 Handle ..... doz. $2.35@2.50*

*Ship...Light, $2.00; Heavy, $4.50*

Chapin-Stephens Co., Box ..... 70&10%

Richards Mfg. Co., Foot ..... 60%

## Screws—Bench and Hand

*Bench, Iron, doz., 1 in., $2.50@2.75; 1¼, $3.00@3.25; 1¼, $3.50@3.75*

*Bench, Wood ..... 20@20&10%*

*Hand, Wood....70&10&70&10&10%*

Chapin-Stephens Co., Hand ..... 70@70&10&2½%

## Coach, Lag and Hand Rail—

*Lag, Cone Point ..... 80&5%*

*Coach, Gimlet Point ..... 80%*

*Hand Rail ..... 70&10@75%*

## Jack Screws—

*Standard List ..... 70&10@75%*

Millers Falls ..... 50&10&10%

Swett Iron Works ..... 70@75%

## Machine—

*Cut Tread, Iron, Brass or Bronze:*
- *Flat Head or Round Head, 50@50&10%*
- *Fillister Head ..... 40@40&10%*

*Rolled Thread, F. H. or R. H., Iron ..... 75&10%*

*F. H. or R. H., Brass, Nos. 8 to 14 ..... 65&10%*

## Set and Cap—

*Set (Iron) ..... 75&10&7½%*

*Set (Steel), net advance over Iron ..... 25%*

*Sq. Hd. Cap ..... 70&10&7½%*

*Hex. Hd. Cap ..... 70&10&7½%*

*Rd. Hd. Cap ..... 50&7½%*

*Fillister Hd. Cap ..... 60&7½%*

## Wood—

*List July 23, 1903.*

*Flat Head, Iron..... 87½&5@..%*

*Round Head, Iron..... 85&5@..%*

*Flat Head, Brass..... 80&5@..%*

*Round Head, Brass..77½&5@..%*

*Flat Head, Bronze..... 75&5@..%*

*Round Head, Bronze..72½&5@..%*

*Drive Screws..... 87½&5@..%*

## Scroll Saws—

See *Saws, Scroll.*

## Scythes— *Per doz.*

*Plain Grass, Cutting Edge Polished ..... $6.25@$6.50*

*Clipper, Bronzed Web. $6.50@$6.75*

*Solid Steel, Web and Backs Polished ..... $7.00@$7.25*

*Bush, Weed and Bramble, Painted ..... $6.50@$6.75*

*Grain, Painted, Cutting Edge Polished ..... $8.25@$8.50*

*Clipper Grain, Bronze Web, $8.50@$8.75*

## Seeders, Raisin—

Enterprise ..... 25@30%

## Sets— Awl and Tool—

Fray's Tool Handles, Nos. 1, $12; 2, $16; 3, $12 ..... 50%

Millers Falls Adj. Tool Handles, No. 1, $12; No. 4, $12; No. 5, $18..20&10%

## Garden Tool Sets—

American Fork & Hoe Co.:
- Rake, Shovel and Hoe, ₱ doz. sets, No. 3 P F ..... $7.25

## Sets, Nail—

*Octagon ..... gro. $3.50@3.75*

Buck Bros. ..... 27½%

Mayhew's ..... ₱ gro. $9.00

Snell's Corrugated, Cup Pt..... 40&10%

Snell's Knurled, Cup Pt..... 40&10%

Victor Knurled, Cup Pt....₱ gro. $7.50

## Rivet—

*Regular list ..... 75@75&10%*

## Saw—

Atkin's:
- Criterion ..... 40%
- Adjustable ..... 40%

Disston's Star, Monarch and Triumph ..... 30%

Morrill's No. 1 ..... $15.00
Nos. 3 and 4, Cross Cut.... $20.60
No. 5, Mill ..... $30.00
Nos. 10, 11, 95 ..... $15.60
No. 1 Old Style ..... $10.00
Special ..... $16.25
} 50%

Giant Royal Cross Cut.....₱ doz. $7.50

Royal, Hand ..... ₱ doz. $4.50

Taintor Positive ..... ₱ doz. $6.75

## Shaving—

Fox Shaving Sets, No. 30..... ₱ doz., net, $24.00

Smith & Hemenway Co.'s ..... 75%

## Sharpeners, Knife—

Pike Mfg. Co.:
- Fast Cut Pocket Knife Hones, ₱ doz. ..... $1 50
- Mounted Kitchen Sand Stone, ₱ doz. ..... $1.50
- Natural Grit Carving Knife Hones, ₱ doz. ..... $3.00
- Quick Cut Emery Carving Knife Hones, ₱ doz. ..... $1.50
- Quick Edge Pocket Knife Hones, ₱ doz. ..... $2.50

} 50%

## Skate—

Smith & Hemenway Co., Eureka..50%

## Shaves, Spoke—

*Iron ..... doz. $1.25*

*Wood ..... doz. $2.00*

Bailey's (Stanley R. & L. Co.)..... 45%

Chapin-Stephens Co..... 30@30&10%

Goodell's, ₱ doz. $9.00..... 15&10%

## Shears—

| | 7 | 8 | 9 in. |
|---|---|---|---|
| *Cast Iron..* | | | |
| *Best* | *$16.00* | *18.00* | *20.00 gro.* |
| *Good* | *$13.00* | *15.00* | *17.00 gro.* |
| *Cheap* | *$5.00* | *6.00* | *7.00 gro.* |

*Straight Trimmers, &c.:*
- *Best quality Jap ..... 70@10@5%*
- *Best Quality Nickel.. 60@10@5%*

*Tailors' Shears ..... 40@40&10*

Acme Cast Shears ..... 40@40&5%

Heinisch's Tailor's Shears ..... 10%

National Cutlery Co.'s Nickel Plated, 60&10%; Japan Handles..... 70&10%

Columbian Cutlery Co.:
- Sheep, 1900 list ..... 30&10&5%
- Grass ..... 50&10%
- Horse or Mule ..... 50&10%

J. Wiss & Sons Co.:
- Best Quality Jap'd ..... 60&10%
- Best Quality Nickeled ..... 50&10%
- Tailors' ..... 25%

## Tinners' Snips—

*Steel Blades ..... 20&5@20&10%*

*Steel Laid Blades ..... 50&10%*

Acme Cast Snips ..... 40@45&5%

Forged Handles, Steel Blades, Berlin ..... 50%

Heinisch's Snips ..... 40%

Jennings & Griffin Mfg. Co.'s 6½ to 10 in ..... 33⅓&7½%

National Cutlery Co.'s Forged Steel. 50%

Niagara Snips ..... 40%

P., S. & W. Forged Handles, 25%; W. R. W ..... 50%

J. Wiss & Sons Co.:
- Wiss Forged Steel ..... 25%

## Pruning Shears—

Cronk's Hand Shears ..... 33⅓%

Cronk's Wood Handle Shears.... 33⅓%

Disston's Combined Pruning Hook and Saw, ₱ doz. $18.00 ..... 25%

Disston's Pruning Hook only, ₱ doz., $12.00 ..... 25%

J. T. Henry Mfg. Co.:
- Pruning Shears, all grades ..... 40%

P., S. & W. Co ..... 40&10%

Columbian Cutlery Co.:
- Hedge, Wilcut Brand ..... 60&10%
- Lawn and Border, Wilcut Brand, 60&10%

## Sheaves—Sliding Door—

Reading ..... 40%

R. & E. list ..... 15%

## Sliding Shutter—

Reading list ..... 40%

R. & E. list ..... 15%

## Shells—Shells, Empty—

Brass Shells, Empty:
- Climax, 10 and 12 gauge..... 60&5%
- Club, Rival, 65&5%; First Quality, 60&5%

Paper Shells, Empty:
- New Rapid, 10, 12, 16 and 20 gauge, 25&10%
- Climax, 10 and 12 gauge; Acme and Magic, 10, 12, 16 and 20 gauge; Ideal, 10, 12, 16 and 20 gauge; Leader grade ..... 25&5%
- Union, League, 10 and 12 gauge, Rival Grade ..... 25%
- New Climax, Defiance, 10, 12, 14, 16 and 20 gauge; Climax, 14, 16 and 20 gauge ..... 20%
- Challenge, Monarch, 10, 12, 16 and 20 gauge; League, Union, 14, 16 and 20 gauge; Repeater Grade..20%

## Shells, Loaded—

*Loaded with Black Powder..40%*

*Loaded with Smokeless Powder, medium grade ..... 40&5%*

*Loaded with Smokeless Powder, high grade ..... 40&10&10%*

Union Metallic Cartridge Co.:
- New Club, Black Powders ..... 40%
- Nitro Club, Smokeless Powders. 40&5%
- Arrow, Smokeless Powders. 40&10&10%

Winchester:
- Smokeless Repeater Grade..... 40&5%
- Smokeless Leader Grade... 40&10&10%
- Black Powder ..... 40%

## Shingles, Metal— Per Sq.

Edwards Mfg. Co.:

| | Painted. | Galv. |
|---|---|---|
| 14 x 20 | $4.25 | $6.00 |
| 10 x 14 | 4.50 | 6.25 |
| 7 x 10 | 4.75 | 6.50 |

Wheeling Corrugating Co.:

| | | |
|---|---|---|
| Dixie, 14 x 20 in. | $4.05 | $5.05 |
| Dixie, 10 x 14 in. | 4.25 | 5.45 |
| Dixie, 7 x 10 in. | 5.25 | 6.70 |

## Shoes, Horse, Mule, &c.—

*F.o.b. Pittsburgh:*
- *Iron ..... per keg. $4.10*
- *Steel ..... per keg. $3.85*

Burden's, all sizes ..... ₱ keg $3.90

## Shot—

| | 25-lb. bag. |
|---|---|
| *Drop, up to B* | *$1.80* |
| *Drop, B and larger* | *2.05* |
| *Buck* | *2.05* |
| *Chilled* | *2.05* |
| *Dust* | *2.30* |

## Shovels and Spades—

*Association List..40&7½@40&10%*

Avery Stamping Co ..... 40%

## Snow Shovels—

*Long Handle ..... $2.50@$2.75*

*Wood and Mall, D Handle, $2.65@$2.90*

## Sieves and Sifters—

*Hunter's Imitation, gro.... $9.50*

*Hunter's Genuine, per gro..$12.00*

## Sifters, Ash—

Acme Ball Bearing Sales Co., Acme Automatic Ash Sifter, each, $3.25; ₱ doz ..... $39.00

## Sieves, Seamless Metallic

| | Per dozen. | | | |
|---|---|---|---|---|
| *Mesh* | *14* | *16* | *18* | *20* |
| *Iron Wire* | *$1.05* | *1.05* | *1.10* | *1.20* |
| *Tinned Wire* | *$1.15* | *1.15* | *1.20* | *1.30* |

## Sieves, Wooden Rim—

*Nested, 10, 11 and 12 Inch.*

*Mesh 18, Nested ..... doz. $0.90@0.95*

*Mesh 20, Nested ..... doz. $1.00@1.05*

*Mesh 24, Nested ..... doz. $1.30@1.40*

## Sinks, Cast Iron—

*Painted, Standard list:*
- *12 x 12 to 22 x 36 in ..... 60%*
- *20 x 24 to 24 x 50 in ..... 50%*
- *24 x 60 to 24 x 120 in ..... 30%*

Barnes' low list ..... 60%

*NOTE.—There is not entire uniformity in lists used by jobbers.*

## Skeins, Wagon—

*Cast Iron ..... 70@75&10%*

*Steel ..... 40@45%*

## Slates, School—

*Factory Shipments.*

*"D" Slates ..... 50@50&10%*

*Eureka, Unexcelled Noiseless.. 60&7 tens.*

*Victor A, Noiseless. 60&4 tens &5%*

## Slaw Cutters—See *Cutters.*

## Snaps, Harness—

*German ..... 40@40&10%*

Covert Mfg. Co.:
- Derby, 25%; Yankee, 30&2%; Yankee Roller, 30&2%
- High Grade, 40%; Trojan ..... 40%
- Jockey ..... 25%

## Snaths—

*Grass Scythe ..... 50@50&5%*

## Snips, Tinners—See *Shears.*

## Spoons and Forks—

### Silver Plated—

*Good Quality ..... 50&10@60&5%*

*Cheap ..... 60@60&10%*

International Silver Co:
- 1847 Rogers Bros. ..... 40&10%
- Rogers & Bro., William Rogers' Eagle Brand ..... 50&10%
- Anchor, Rogers Brand ..... 60%
- Wm. Rogers & Son ..... 60&10%

### Miscellaneous

*German Silver ..... 60@60&5%*

### Tinned Iron—

*Teas ..... per gro. 50&55¢*

*Tables ..... per gro. $0.90@$1.00*

Atlas Mfg. Co.:
- Tea Spoons, ₱ gro. ..... 50¢@55¢
- Table Spoons, ₱ gro. ..... $0.90@$1.00

## Springs— Door—

Bardsley's Spring and Check..... 40%

Chicago (Coil) ..... 40&10%

Gem (Coil) ..... 20%

Pullman Door and Gate ..... 10%

Reliance (Coil) ..... 40&10%

Star (Coil) ..... 35%

Torrey's Rod, 39 in. ..... ₱ doz. $1.00

## Carriage, Wagon, &c.—

*1¼ in. and Wider: Per 100 lb.*
- *Black ..... $4.75@$5.00*
- *Half Bright ..... $4.75@$5.00*
- *Bright ..... $5.25@$5.50*

*Painted Seat Springs:*
- *1½ x 2 x 26....per pair. 45@47¢*
- *1½ x 3 x 28....per pair. 68@71¢*

## Sprinklers, Lawn—

American Foundry & Mfg. Co.:
- Cactus, 65%; Japanese, 70%; National, ₱ doz ..... $12.00

Enterprise ..... 25@30%

Philadelphia No. 1, ₱ doz. $12; No. 2, $15; No. 3, $20 ..... 30%

## Squares—

*Nickel plated..* } *List Jan. 5, 1900.*
*Steel and Iron.* } *80@80&10%*

*Rosewood Hdl. Try Square and T-Bevels ..... 60&10&10@70%*

*Iron Hdl. Try Squares and T-Bevels ..... 40&10@40&10&10%*

Disston's Try Squares and Bevels, Rosewood Handle, 60 & 10%; Iron Stock and Bevel ..... 15%

## Squeezers, Lemon

*Wood, Porcelain Lined:*
- *Cheap ..... doz. $1.00*
- *Good Grade..... doz. $1.25*

*Tinned Iron ..... doz. $0.75@1.00*

*Iron, Porcelain Lined...doz. $1.75*

Victor, ₱ gro ..... $9.00

## Staples—

*Barbed Blind ..... 85&5@85&10%*

*Electricians' ..... 80&10&10@85%*

*Fence Staples, Polished, $2.05; Galvanized ..... $2.35*

*Poultry Netting Staples..... per lb. 3¼@3½¢*

## Steels, Butchers'—

Dick's ..... 30%

Foster Bros.' ..... 30%

## Steelyards— ....30@30&10%

## Stocks and Dies—

*Blacksmiths' ..... 50@50&10%*

Curtis Rev'ble Ratchet Die Stock..25%

Derby Screw Plates ..... 25%

Green River ..... 25%

Lightning Screw Plate ..... 25%

Little Giant ..... 25%

Reece's New Screw Plate ..... 25%

## Stoners, Cherry—

Enterprise ..... 25@30%

## Stones, Axe—

Pike Mfg. Co., Axe Stones (all kinds) ..... 33⅓%

## Glass Cutters' Stones—

Pike Mfg. Co., Glass Cutters' Stones and Supplies ..... 40%

## Stones, Oil, &c.—

Pike Mfg. Co., 1907 list: ₱ lb
- Arkansas St. No. 1, 3 to 5½ in. $2.80
- Arkansas St. No. 1, 5½ to 8 in. $3.50
- Arkansas Stips No. 1 ..... $4.00
- Lily White Washita, 4 to 8 in. 60¢
- Rosy Red Washita, 4 to 8 in. 60¢
- Washita St., Extra, 4 to 8 in. 50¢
- Washita St., No. 1, 4 to 8 in. 40¢
- Washita St., No. 2, 4 to 8 in. 25¢
- Lily White Slips ..... 90¢
- Rosy Red Slips ..... 90¢
- Washita Slips Extra ..... 80¢
- Washita Slips, No. 1 ..... 70¢
- Washita Slips, No. 2 ..... 40¢
- India Oil Stones (entire list)..... 33⅓%
- Quickcut Emery and Corundum Oil Stone, Double Grit ..... 40%
- Quickcut Emery and Corundum Axe Stone, Double Grit ..... 33⅓%
- Quickcut Emery Rubbing Bricks. 40%
- Hindostan No. 1, R'g'lar ₱ lb 80¢
- Hindostan No. 1 Small ₱ lb 10¢
- Turkey Oil Stones, Extra 5 to 8 in. ..... ₱ lb 80¢
- Queer Creek Stones, 4 to 8 in. 20¢
- Queer Creek Slips ..... 40¢
- Sand Stone ..... 6¢

} 33⅓%

} 33⅓%

### Scythe Stones—

Pike Mfg. Co., 1907 list:
Black Diamond S. S. ℔ gro. $12.00
Lamoille S. S. ℔ gro. $11.00
White Mountain S. S. ℔ gro. $9.50
Green Mountain S. S. ℔ gro. $7.00
Extra Indian Pond S.S. ℔ gro. $8.00
No. 1 Indian Pond S.S. ℔ gro. $7.50
No. 2 Indian Pond S.S. ℔ gro. $5.00
Leader Red End S. S. ℔ gro. $5.00
Quick Cut Emery.... ℔ gro. $10.00
Pure Corundum..... ℔ gro. $18.00
Crescent ..... $7.00
Emery Scythe Rifles, 2 Coat. $8.80
Emery Scythe Rifles, 3 Coat. $11.00
Emery Scythe Rifles, 4 Coat. $13.20
Balance of 1907 list 33⅓%.
Lectro (Artificial), ℔ gro., $12.00 ..... 33⅓%
$12.00 .....
Lightning (Artificial), ℔ gro., $18.00 ..... 33⅓%

### Stoppers, Bottle—

Victor Bottle Stoppers..... ℔ gro. $9.00

### Stops— Bench—

Millers Falls.....15&10%
Morrill's, ℔ doz., No. 1, $10.00....50%
Morrill's, No. 2, $12.50.....50%

### Door—

Chapin-Stephens Co.....50@50&10%

### Plane—

Chapin-Stevens Co.....20%

### Straps— Box—

Acme Embossed, case lots..20&10&10%
Cary's Universal, case lots...20&10&10%

### Stretchers, Carpet—

*Cast Iron, Steel Points..doz.55¢*
*All Steel Socket...doz.$2.00@2.25*
Excelsior Stretcher and Tack Hammer Combined, ℔ doz., $6.00....20%

### Stuffers, Sausage—

Enterprise Mfg. Co., Stuffers and Lard Presses.....25@25&7½%
National Specialty Co., list Jan. 1, 1902 .....30&5%
P., S. & W. Co.....40&10&5%

### Sweepers, Carpet—

| Goshen Sweeper Co.: | Per doz. |
|---|---|
| Gilt Edge | $27.00 |
| Superfine | 26.00 |
| Majestic | 24.00 |
| Select, Nickeled | 22.00 |
| National Sweeper Co.: | |
| National Queen, Nickeled | $27.00 |
| Martha Washington, Nickeled | 25.00 |
| Monarch, Japanned | 20.00 |
| Perpetual, Japanned | 18.00 |
| Streator Metal Stamping Co.: | |
| Model E. Sanitaire | $25.00 |
| Eureka | 15.00 |
| Streator Majestic, Nickeled | 24.00 |
| Streator Conqueror, Japanned | 22.00 |

*NOTE.—Leading Manufacturers give the following rebates from list prices: 50c per dozen on three-dozen lots: $1 per dozen on five-dozen lots; $2 per dozen on ten dozen lots.*

### Tacks, Finishing Nails, &c.

*American Carpet Tacks.90&25@—%*
*American Cut Tacks..90&25@—%*
*Swedes' Cut Tacks.L..90&30@—%*
*Swedes' Upholsterers'.90&35@—%*
*Gimp Tacks.....90&35@—%*
*Lace Tacks.....90&35@—%*
*Trimmers' Tacks.....90&30@—%*
*Looking Glass Tacks.....65@—%*
*Bill Posters' and Railroad Tacks, 90&40@—%*
*Hungarian Nails.....80@—%*
*Finishing Nails.....70@—%*
*Trunk and Clout Nails.75&65@—%*

*NOTE.—The above prices are for Straight Weights.*

### Miscellaneous—

*Double Pointed Tacks, 90&6 tens@—%*
Se also Nails, Wire.

### Tanks, Oil and Gasoline—

Wilson & Friend Co.:

| Gal. | Gasoline | Oil |
|---|---|---|
| 30 | $2.75 | $3.00 |
| 60 | $3.50 | $4.00 |
| 110 | $5.00 | $5.75 |

### Tapes, Measuring—

*American Asses' Skin....50@—%*
*Patent Leather.....25@30&5%*
*Steel .....33⅓&5%*
*Chesterman's .....25@25&5%*
Kraftel & Esser Co.:
Favorite, Ass Skin.....10&10@50%
Favorite, Duck and Leather..... 25&5@25&10%
Metallic and Steel, lower list, 35@ 35&5 ; Pocket, 35@35&5%.
Lufkins:
Asses' Skin.....40&10@50%
Metallic .....30@30&5%
Patent Brad. Leather...25&5@25&10%
Pocket .....10@40&5%
Steel .....33⅓@35%
Wichlasch & Hilger:
Chesterman's Metallic, No. 34L, etc. .....25%
Chesterman's Steel, No. 1038L, etc. .....35%

### Teeth, Harrow—

*Steel Harrow Teeth, plain or headed, 5/8-inch and larger, per 100 lb.....$2.55@$2.80*

### Thermometers—

*Tin Case, Cabinet, Flange, Dairy, &c. .....80@85%*

### Ties, Bale—Steel Wire—

*Single Loop.....82½&10%*
*Monitor, Cross Head, &c.70&2½%*

### Tinners' Shears, &c.—

*See Shears, Tinners', &c.*

### Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

### Tire Benders, Upsetters, &c.

See *Benders and Upsetters, Tire.*

### Tools—Coopers'—

L. & I. J. White.....20@20&5%

### Haying—

Myers' Hay Tools.....50%

### Ice Tools—

Gifford-Wood Co.....15%

### Miniature—

Smith & Hemenway Co.'s, Davidson, ℔ doz., Nickel Plated, $1.50; Gold Plated.....$2.00

### Saw—

Atkins' Cross Cut Saw Tools....35&5%
Simond's Improved.....33⅓%
Simonds' Crescent.....30%

### Ship—

L. & I. J. White.....25%

### Torches—

Hammers, Engine, ℔ doz.....$4.50

### Transom Lifters—

See *Lifters, Transom.*

### Traps—Fly—

*Balloon, Globe or Acme, doz., $1.15@$1.25; gro....$11.50@12.00*
*Harper, Champion or Paragon, doz., $1.25@1.40; gro.$13.00@13.50*

### Game—

*Imitation Oneida.....75@10%*
Newhouse .....50&5%
Hawley & Norton.....65&10%
Victor .....75@75&10%
Oneida Community Jump.....70&5%
Stop Thief.....60%
Tree Trap.....60%
Hector .....75@75&10%

### Mouse and Rat—

*Mouse, Wood, Choker, doz. holes, 12¢*
*Mouse, Round or Square Wire, doz.85@90¢*
Marty French Rat and Mouse Traps (Genuine), ℔ doz.:

| | Crate lots. | Small lots. |
|---|---|---|
| No. 1, Rat | $11.50 | $14.50 |
| No. 3, Rat | $5.75 | $6.50 |
| No. 3½, Rat | $4.70 | $5.25 |
| No. 5, Mouse | $2.25 | $3.00 |

Animal Trap Co.:
Out o' Sight, Mouse, ℔ doz.....$0.60
Out o' Sight, Rat, ℔ doz..... 1.20
Easy Set, Mouse, ℔ doz..... .35
Easy Set, Rat, ℔ doz..... .85
Out o' Sight Chockers, ℔ doz. holes ..... .12
Out o' Sight, Tin, 5-hole, ℔ doz. traps ..... .75

### Trowels—

Disston Brick and Pointing.....25%
Disston Plastering.....20%
Disston "Standard Brand" and Garden Trowels.....30%
Kohler's Steel Garden Trowels, ℔ gro., 5 in., $1.80; 6 in., $6.00.
Never-Break, Forged Steel Garden Trowels, in bulk, net ℔ gro. $5.50
In 1 doz. boxes.....℔ gro. $6.00
Woodrough & McParlin, Plastering.25%

### Trucks, Warehouse, &c.—

B. & L. Block Co.:
New York Pattern.....50&10%
Western Pattern.....60&10%
Handy Trucks.....℔ doz. $16.00
Grocery .....℔ doz $15.00
McKinney Trucks.....each, net $10.00
Model Stove Trucks.....℔ doz $18.50

### Tubs, Wash—

*M'f'gr's list, price per gross.*

| | No. 0 | 1 | 2 | 3 | |
|---|---|---|---|---|---|
| *Galvanized* | $67 | $79 | $89 | $99 | 10&7½&5&5% |

### Twine, Miscellaneous—

*Flax Twine:*
*No. 9, ¼ and ½-lb. Balls.21@23¢*
*No. 12, ¼ and ½-lb. Balls.19@21¢*
*No. 18, ¼ and ½-lb. Balls.16@18¢*
*No. 24, ¼ and ½ -lb. Balls. 15½@17½¢*
*No. 36, ¼ and ½-lb. Balls.15@17¢*
*Chalk Line, Cotton ½-lb. Balls .....24@29¢*
*Cotton Mops, 6, 9, 12 and 15 lb. to doz.....8½@19¢*
*Cotton Wrapping, 5 Balls to lb., according to quality..13½@19¢*
*American 2-Ply Hemp, ¼ and ½ lb. Balls.....12½@15¢*
*American 3-Ply Hemp, 1-lb Balls .....13½@16¢*
*India, 2-Ply Hemp, 1½-lb. Balls, Balls (Spring Twine)...7½@9¢*
*India 3-Ply Hemp, 1-lb. Balls 7½@9¢*
*India 3-Ply Hemp, 1½-lb. Balls, 7@8½¢*
*2, 3, 4 and 5-Ply Jute, 1¼-lb. Balls .....9@11¢*
*Mason Line, Linen, ½-lb. Bls.17¢*
*No. 264 Mattress, ¼ and ½ lb. Balls, according to quality, 30@60¢*
*Wool, 3 to 6 ply....B 6¢; A 7½¢*

### Vises—

*Solid Box.....60@60&10%*

### Parallel—

Athol Machine Co.:
Simpson's Adjustable.....40%
Standard .....40%
Amateur .....25%
Columbian Hdw. Co., 40&5%:
Slide .....65%
Fisher & Norris Double Screw, net, each Nos. 2, $10.50; 3, $16.00; 4, $20.50; 5, $27.00; 6, $32.00.
Fulton Mach. & Vise Co.:
F. & R. Double Swivel Machinists' .....40%
Star, Solid Jaw, Machinists'.....40%
Hollands':
Machinists' .....40@40&5%
Keystone .....65&5@70%
Lewis Tool Co.:
Adjustable Jaw.....30%
Monarch, 50%; Solid Jaw.....50%
Massey Vise Co.:
Clincher .....40%
Parallel Bar.....15%
Perfect, 15%; Lightning Grip.....15%
Merrill's .....25%
Millers Falls Oval Slide Pattern.60&10%
Parker's:
Victor, 20@25%; Regulars....20@25%
Vulcan's .....40@45%
Combination Pipe.....55@60%
Prentiss .....20@25%
Rock Island.....25%
Snediker's X. L.....33⅓%
Stephens' .....33⅓%

### Saw Filers

Disston's D 3 Clamp and Guide, ℔ doz., $24.00, 30%; Clamps.....30%
Perfection Saw Clamps, ℔ doz....$4.50
Reading .....60%

### Wood Workers—

Fulton Mach. & Vise Co.:
F. & R. Double Swivel Coachman's .....40%
Star Solid Jaw Woodworkers'....60%
Massey Vise Co.:
Lightning Grip, 15%; Perfect....15%
Wyman & Gordon's Quick Action, 6 in., $6.00; 9 in., $7.00; 14 in., $8.00.

### Miscellaneous—

Fulton Machine & Vise Co., Combination Pipe.....70%
Holland's Combination Pipe..60@60&5%
Massey's Quick Action Pipe.....40%
Parker's Combination Pipe:
87 Series, 60%; 187 Series, 60&5%; No. 870, 40%.
Rock Island Pipe.....25%

### Wads— *Price per M.*

*B. E., 11 up.....60¢*
*B. E., 9 and 10.....70¢*
*B. E., 8.....80¢*
*B. E., 7.....80¢*
*P. E., 11 up.....$1.00*
*P. E., 9 and 10..... 1.25*
*P. E., 8..... 1.50*
*P. E., 7..... 1.50*
*Dis. 15%*
*Ely's B. E., 11 and larger.$1.70@1.75*
*Ely's P. E., 12 to 20....$3.00@3.25*

### Ware, Hollow—

### Cast Iron, Hollow—

*Stove Hollow Ware:*
*Enameled .....45&10%*
*Ground .....50&5%*
*Plain or Unground.....60%*
*Country Hollow Ware, per 100 lbs .....$2.75@$3.00*
*White Enameled Ware:*
*Maslin Kettles.....65&10%*
*Covered Wares:*
*Tinned and Turned.....35&10%*
*Enameled .....45&10%*
See also *Pots, Glue.*

### Enameled—

Agate Nickel Steel Ware.....33⅓%
El-an-ge .....60&10%
Iron Clad Ware.....70&10%
Lava and Volcanic, Enameled..40&10%

### Tea Kettles—

*Galvanized Tea Kettles:*

| *Inch* | 6 | 7 | 8 | 9 |
|---|---|---|---|---|
| *Each* | 45¢ | 50¢ | 55¢ | 65¢ |

### Steel Hollow Ware—

Avery Stamping Co.:
Never-Break Spiders and Griddles .....65&10%
Steel Kettles, Maslins Scotch Bowls, Tin'd.....60%
Steel Stew Pans, Stew Pots, etc., Porcelained .....50%
Cleveland Stamping & Tool Co.:
Solid Steel Spiders and Griddles .....65&5%
Solid Steel Kettles.....60&5%

### Warmers, Foot—

Pike Mfg. Co., Soapstone....40@40&10%

### Washboards—

| No. | ℔ doz. |
|---|---|
| 800—Brass King, Single Surface, Open Back | $2.80 |
| 862—White Hen, Spiral Grimp Glass | $3.35 |
| 964—Royal Blue Enamel, Single Surface, Ventilated Back | $3.35 |
| 172—Our Best, Single Zinc, Soap Drainer | $3.35 |
| 722 Soap Saver, Single Zinc, Iron Top | $3.35 |
| 100 Northern Queen, Single Zinc, Perforated, Open Back | $3.00 |
| 134—Universal, Single Zinc, Extra Family Size, Ventilated Back | $2.80 |
| 760—Banner Globe, Single Zinc, Ventilated Back | $2.25 |
| 57—Peerless, Double Zinc, Spring Protector | $3.70 |
| 56—Red Cross, Double Zinc, Swing Protector | $3.60 |
| 17—North Star, Solid Zinc, Swing Protector | $3.60 |
| 797—Jewel, Single Zinc, Pail Size | $1.25 |

### Washers—Leather, Axle—

*Solid .....90@90&10%*
*Patent .....90@90&5%*
*Coil: 7/8 1 1⅛ 1¼ inch. 9¢ 10¢ 11¢ 14¢ per box.*

### Iron or Steel—

*Size bolt.... 5-16 ⅜ ½ ⅝ ¾*
*Washers....$4.90 4.00 2.70 2.50 2.30*
*The above prices are based on $6.50 off list.*
*In lots less than one keg add ½¢ per lb.; 5-lb. boxes add ½¢ to list.*

Avery Stamping Co.:
Standard, in 200 ℔ kegs, $6.00 ℔ 100 ℔, disct.; in 100 ℔ kegs add 10¢ net ℔ 100 ℔; in 5 or 10 ℔ boxes, add 50¢ net ℔ 100 ℔; in 1 ℔ boxes, add $1.00 net ℔ 100 ℔.

### Cast Washers—

*Over ½-inch, barrel lots, per lb. 1½@1¾¢*

### Wedges—

*Oil Finish.....lb., 2¼@2¾¢*

### Weights—Hitching—

Covert Mfg. Co.....30&2%

### Sash—

*Per net ton.....$19.50@$21.00*

### Wheels, Corundum and Emery—

Pike Mfg. Co., Corundum, 65%; Emery .....75%

### Well—

*8-in., $2.00; 10-in., $2.30; 12-in., $3.00; 14-in., $4.45.*

### Wire and Wire Goods—

*Bright and Annealed:*
*6 to 9.....72&10&7½%*
*10 to 18.....72½&10&10%*
*19 to 26.....75&10&10&2½%*
*27 to 36.....77½&7½%*
*Galvanized:*
*6 to 9.....72½&10%*
*10 to 14.....72½&10&5%*
*15 to 16.....72½&10&5%*
*17 to 18.....72½%*
*19 to 26.....70&5&2½%*
*27 to 36.....65&10&10%*
*Coppered:*
*6 to 9.....65&10&10%*
*10 to 14.....70&10&5%*
*15 to 18.....65&10&10&10%*
*19 to 26.....70&5&2½%*
*27 to 36.....72½&10&2½%*
*Tinned:*
*6 to 18.....67&10&10%*
*Brass .....16¼¢ lb., base*
*Copper .....15¼¢ lb., base*
*Cast Steel Wire.....50%*

### Spooled Wire—

*Annealed and Tinned.75@75&10%*
*Brass and Copper....70@70&10%*
*Retailers' Assortments, per box, $1.90@$2.10*
Wire Clothes Line, See Lines.
Wire Picture Cord, see Cord.

### Bright Wire Goods—

*Steel Wire Goods.....90&40%*
*Brass Wire Goods, 90&40@90&40&10%*
*Brass Cup and Shoulder Hooks, 85&10%*

### Wire Cloth and Netting—

*Galvanized Poultry Netting, 80&10@80&10&5%*
*Screen Cloth, 12 Mesh, Per 100 sq. ft.: Painted, $1.30; Galvanized, $1.90; 14 Mesh, Bronze $6.50*
*Standard Galv. Hardware Grade: 100 ft. rolls, 2¼ to 48 in. wide, Per 100 sq. ft.*
*Nos. 2, 2½ and 3 Mesh....$2.75*
*Nos. 4 and 5 Mesh.....$3.00*
*No. 6 Mesh.....$3.25*
*Nos. 7 and 8 Mesh.....$3.75*

### Wire, Barb—See *Trade Report*

### Wrenches—

*Agricultural .....80&5@80&10%*
*Alligator or Crocodile..70&10@75%*
*Baxter Pattern S Wrenches, 70&5@70&10%*
*Drop Forged S.....45@45&5%*
Acme .....60&10%
Alligator Pattern, 70%; Bull Dog..70%
Bemis & Call's:
Adjustable S, 40&5%; Adjustable S Pipe, 40&5%; Briggs Pattern, 40%; Combination Bright, 50%.
Steel Handle Nut.....50&5%
Combination Black.....50&5%
Merrick Pattern.....50&5%
Boardman's .....40%
Coes' Genuine Knife Hdl...40&10&5&5
Coes' Genuine Steel Hdl...40&10&5&5%
Coes' Genuine Key Model..40&10&5&5%
Coes' Genuine Hammer Handle..... 40&10&5&5%
Coes' "Mechanics'"...40&10&10&5&5
Donohue's Engineer.....40&10%
Eagle .....70%
Gem Pocket.....30%
Hercules .....70%
W. & B. Machinist:
Case lots.....50&10%
Less than case lots.....50%
W. & B. Railroad Special:
Case lots.....50%
Less than case lots.....40&10&5%
Solid Handles, P., S. & W..50&10%; full cases.....50&10&5%
Standard Nipple Mfg. Co.:
Duplex Chain.....50%
Uwanta Wrench Co.:
Uwanta Special, Iron Handle.... 40&10&5%
Other Wrenches.....50%
Vulcan and Agrippa Chain.....50%
Whitaker Machinists'.....50&10%
Wizard Adjustable Ratchet.....50%

### Fruit Jar—

Beni. P. Forbes, Triumph, ℔ gro., $7.50; per doz.....$0.90

### Wrought Goods—

*Staples, Hooks, &c., list March 17, '02.....90@—%*

### Zinc— (*Cask lots at mill.*)

*Sheet.....per 100 lb., $7.00*

# THE IRON AGE

New York, Thursday, December 31, 1908.

## The Lodge & Shipley Heavy Axle Lathe.

An extra heavy pattern axle lathe, with an extremely powerful drive, rigid construction, and designed with special reference to convenience in the execution of the work for which it is intended, is a new product of the Lodge & Shipley Machine Tool Company, Cincinnati, Ohio. Fig. 1 shows one of these lathes with a crane for handling the work when putting it in or out of the lathe.

The bed is of very massive construction, with cross braces of box section. A longitudinal member of box section is cast in the center of the bed, extending its length parallel to the outer walls, and further stiffens the cross braces. The walls of the bed are thick, and the metal dovetails on the upper and lower edges are as nearly equal in cross section as possible. The ends of the bed are cut away to facilitate removing the tailstock, or permit of a reasonable overhang for unusual length. In addition to the front and rear V's, with the inner flat tracks, an additional 45-degree plain surface has been machined upon the bed to accommodate the bearing of the carriage on the bed.

For simplicity in design and ability to deliver power for taking a heavy cut, the drive on this lathe is particularly noteworthy. Power is applied to a constant speed pulley of large diameter and wide face, running at a high velocity. Variation in speed is obtained by sliding gears, which run in a bath of oil. All shafts are carried in bushed positive ring oiled bearings. All gears are of steel. The driving shaft is of large diameter and held in alignment by a number of journal blocks bolted to the bed. There is no overhang on the pinion of the main driving gear; the shaft is supported on either side of it in long bearings. The large gear meshing with this pinion is placed in the center of the driving head, and as with the pinion, has a double bearing. A powerful compensating driver is secured to the gear in the head, the dogs of which are faced with steel plates. Fig. 2 shows the gears of the drive and feed gears.

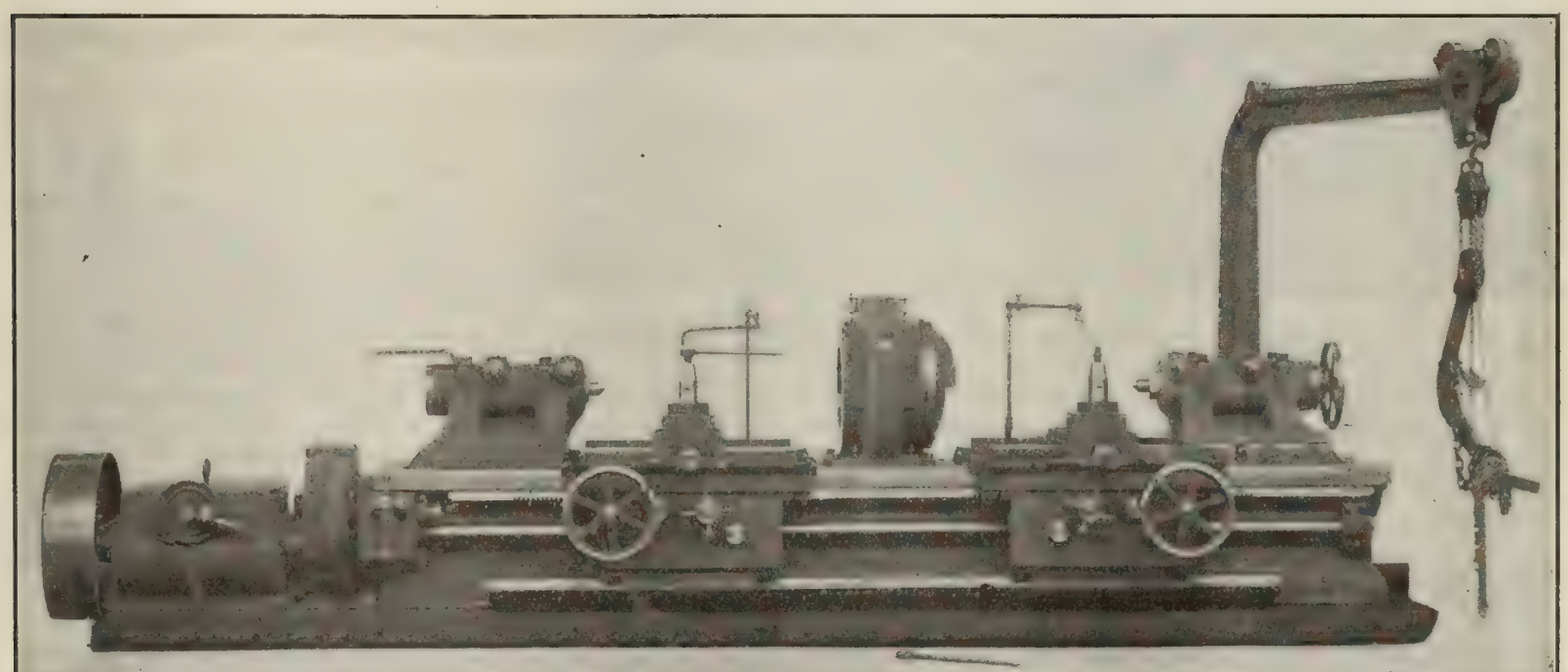


Fig. 1.—The New Axle Lathe with Crane, Built by the Lodge & Shipley Machine Tool Company, Cincinnati, Ohio.

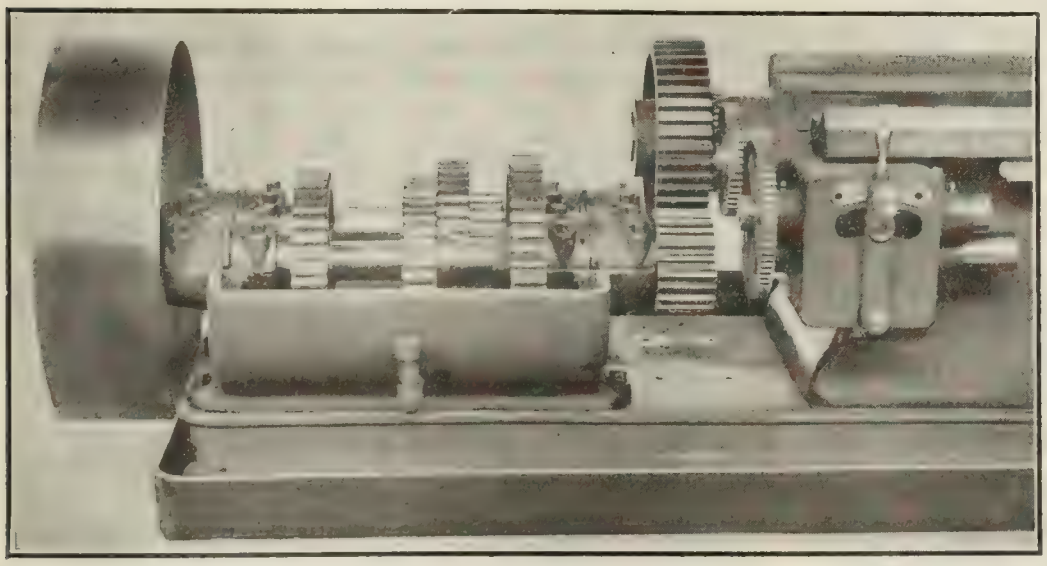


Fig. 2.—The Gears of the Drive and the Feed Gears.

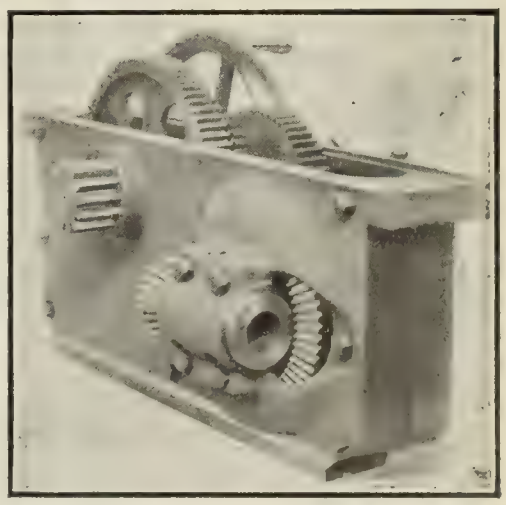


Fig. 3.—The Double or Box Apron.

All of the feed gears are of steel. The splined feed rod is driven by a gear train from the main shaft. Through a change gear box three feeds are obtained, which may be changed while the lathe is in operation.

Particular attention is directed to the compact box construction of the apron, Fig. 3, which is tongued and grooved to the carriage. All of its gears are steel. In addition to being clamped to the carriage, the apron is further supported by a third V cast in the bed, and in such position as to be directly under the apron, as shown in Fig. 4. The purpose of this construction is to support the apron at the bottom for both vertical and transverse stress. The spring of the apron due to the thrust from the rack pinion is thus effectively overcome.

The carriage in addition to the bearing on the V's on the front and rear shears of the bed, also has a flat bearing or track on the inside of the front shear. A further angular bearing of 45 degrees tends to secure a perma-

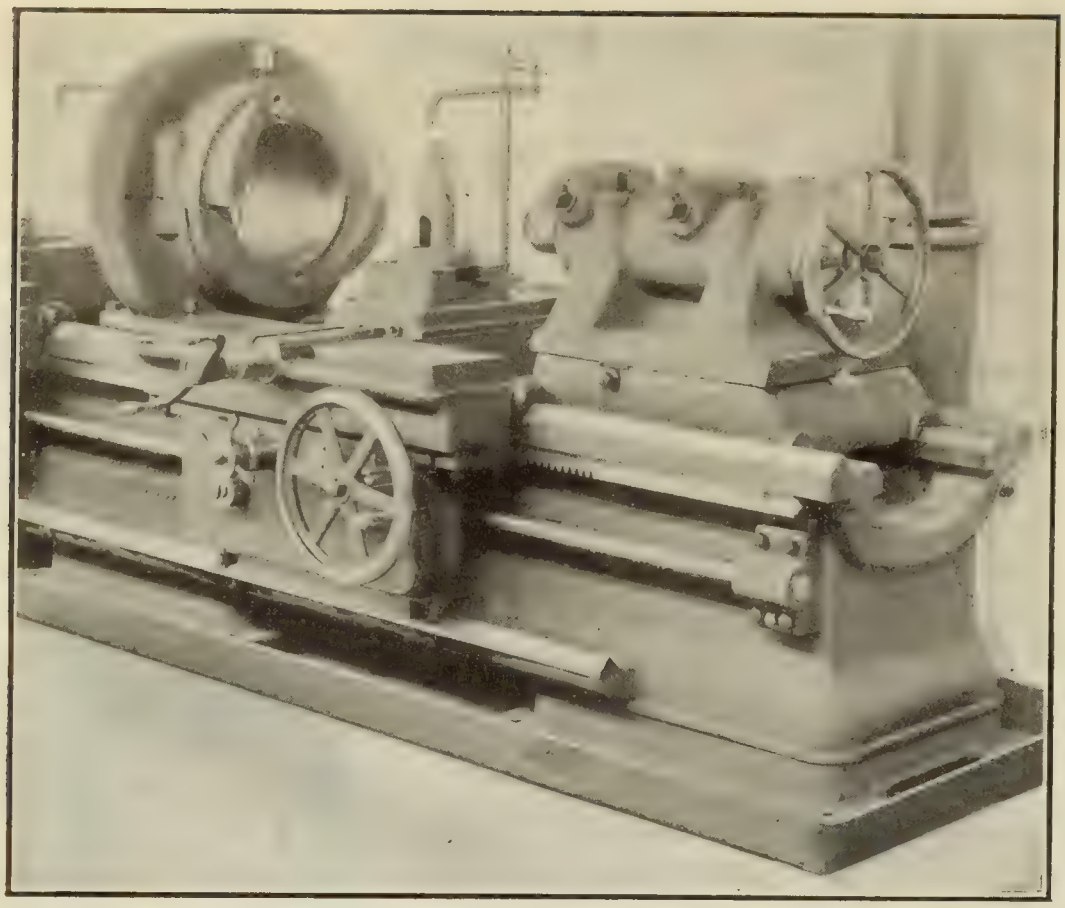


Fig. 4.—A View Showing the Bearing of the Apron Upon a Third V on the Bed.

nent alignment of the carriage with the bed. The carriage bearing on the bed is considered of importance in view of the great thrust from the burnisher as well as from heavy cutting. The end view of the lathe, Fig. 5, shows quite clearly the ample carriage bearing. Water troughs are provided around the tool slide and wings of the carriage. The tool posts are arranged with hardened toothed plates interlocking with the tool and effectively preventing any possibility of the tool swiveling or slipping under the heaviest cuts. The tool slide is of steel.

The tailstocks are massive and are firmly bolted to the bed. The clamps are brought to the top of the spindle barrel. A pawl, engaging with a rack cast in the bed, is attached to each tailstock, this design tending to relieve the strain on the clamping bolts and overcome the thrust of heavy cutting, when blunt cutting tool angles are used. The tailstock at the driving end has a stationary spindle with no transverse adjustment, the necessary

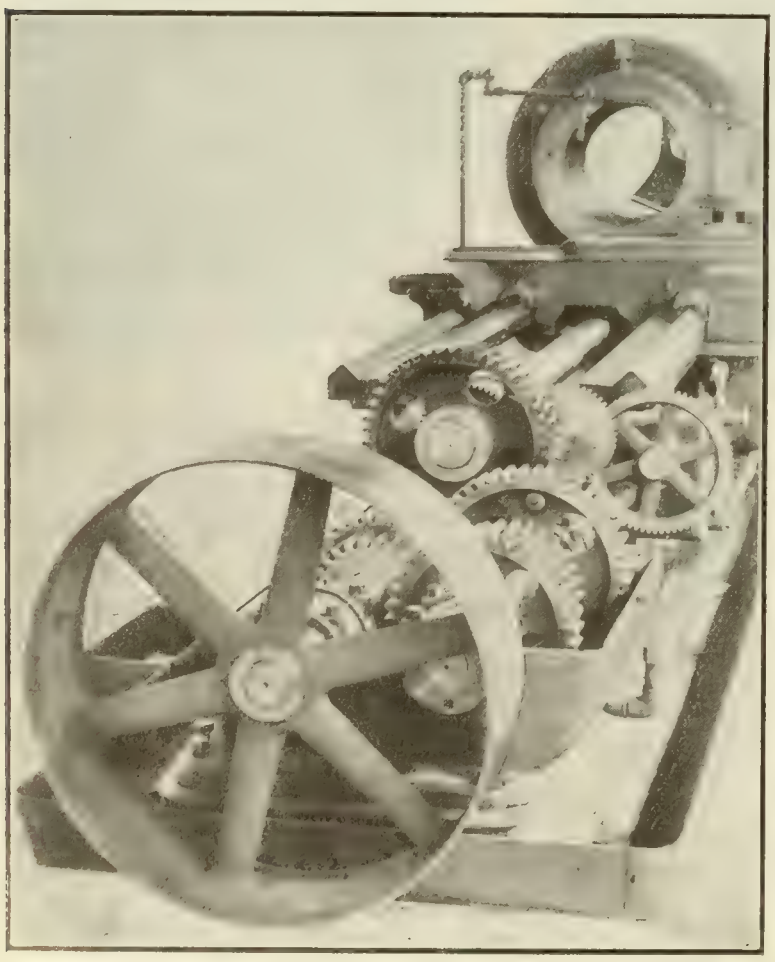


Fig. 5.—An End View, Showing the Drive and the Carriage Bearing on the Bed.

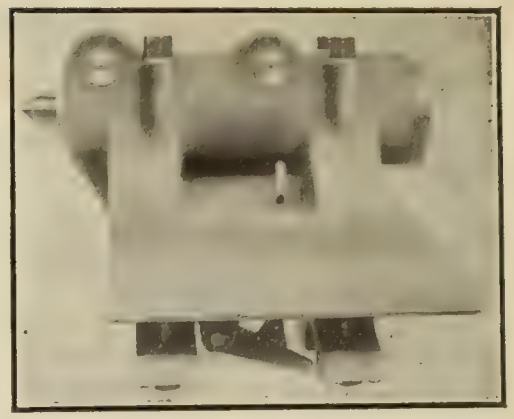


Fig. 6.—The Tailstock, Showing the Means for Clamping to the Bed and the Thrust Plugs for Locking the Spindle.

adjustment being obtained from the spindle of the second tailstock, which is also provided with a transverse adjustment. The plug clamps for binding the tail spindles are of improved design, two instead of one for each tailstock, and are placed at the top of the spindle barrel, as shown in Fig. 6.

The workmanship and material are of the highest class. The flat bearing surfaces are carefully scraped to fit. Ample provision is made for delivering an adequate supply of water to the tools, all journals being copiously supplied with oil by means of positive automatic oil rings.

**The Glamorgan Pipe & Foundry Company Changes Control.**—Leading business men of Lynchburg have purchased from M. J. Drummond and David McClure of New York a controlling interest in the Glamorgan Pipe & Foundry Company, which has a large cast iron pipe plant at Lynchburg, Va. While the control of the property will be in the hands of the Lynchburg capitalists, M. J. Drummond and David McClure, who own all of the $200,000 of nonvoting preferred stock, will continue to be interested in the business. M. J. Drummond & Co., New York, will continue as sales agents for the Glamorgan products and will assist the new management in every way possible in the operation of the plant. In the last six years a large sum of money was spent in enlarging the plant to double the capacity, and it is not the purpose of the new management to make any extensive improvements in the near future. The new Board of Directors is composed of John W. Craddock, O. B. Barker, R. D. Apperson, N. D. Eller, Walker Pettyjohn and G. E. Vaughan of Lynchburg; J. I. Pritchett of Danville; Arthur J. McClure and M. J. Drummond of New York; John D. Horsley and A. M. Campbell, the last three having been on the old board. The four members of the old board who resigned were John McClure, David McClure, A. H. Mellert and Walter J. Drummond, all of New York. Walker Pettyjohn is president and A. M. Campbell, who for many years has been secretary of the company, is now vice-president and general manager. The offices of secretary and treasurer, the latter position having been filled by J. M. Frazier, New York, have been united and Harry L. Campbell, who has for some time been secretary-treasurer of the Lynchburg Cotton Mill Company, has been elected secretary and treasurer. The Executive Committee consists of John W. Craddock, O. B. Barker and N. D. Eller.

**More Gayley Dry Blast Installations.**—The Hamilton Steel & Iron Company, Ltd., Hamilton, Canada, has taken a license to use the Gayley dry blast at its two blast furnaces, and the construction of the refrigerating plant will be undertaken at once. The dry blast apparatus will be built under the designs and supervision of Frank C. Roberts & Co., Philadelphia. The same engineers have in charge the design and construction of the dry blast plant for the Pioneer Iron Company, at its Marquette furnace.

## Two Special Hoefer Machines.

During the past dull season a number of special machines have been designed and built by the Hoefer Mfg. Company, Freeport, Ill., particularly for its own use in the building of drill presses and power metal saws. Two of these are herewith illustrated.

In Fig. 1 is shown a splining machine for milling the spline in drill press spindles. It is extremely rapid and entirely automatic, so that no attention need be paid to the machine, except to change spindles when work is completed. The heads are well ribbed and solidly constructed to give rigidity and are gibbed to a carefully planed bed, which insures accuracy of the spline. The cutters are held in a simple and easily operated draw-in chuck. The heads are connected through a shaft, which has a right and left hand screw at either end. On this shaft are two frictions by means of which, after loosening two cap screws, the heads can be independently adjusted. This shaft carries a hand wheel which permits of a rapid setting of either head and also rapid return for both cutters.

The shaft or spindle to be splined is placed on a standard Morse taper plug, firmly held in a plunger by a screw collar which also gives a vertical adjustment to the spindle. The spindle is further made firm and solid by the standards and collars which hold it upon the taper plug. This plunger has connecting rods attached to an adjustable crank pin, so that drift holes of various lengths can be made. The crank plate carrying the adjustable crank pin is operated by a shaft which receives its drive through a worm wheel and a worm on a horizontal shaft belt driven from the left hand head. As the bearing in which the plunger works is very long and as the fish tail cutters are accurately located at the center of the plunger, very satisfactory and accurate drift holes are obtained. The bed carries an oil tank, also an oil pump which keeps a steady stream of oil on each cutter.

The spindle is slowly moved up and down by the plunger, and at the end of each stroke the heads are automatically fed in the desired amount. This feed mechanism consists of a ratchet which is engaged by a pawl actuated through a lever, the roller of which bears on a cam attached to the rear of the worm wheel before mentioned. The feed mechanism is so arranged that the roller can be lifted from the cam by the handle A, or the pawl removed from engaging the ratchet by the handle B. As the heads are fed toward one another the pin C comes in contact with the adjustable stop D and throws out the automatic feed. When this occurs a thin section still remains separating the two cutters. To remove it the two feed screws on the shaft can be disengaged from each other and one head alone fed downward.

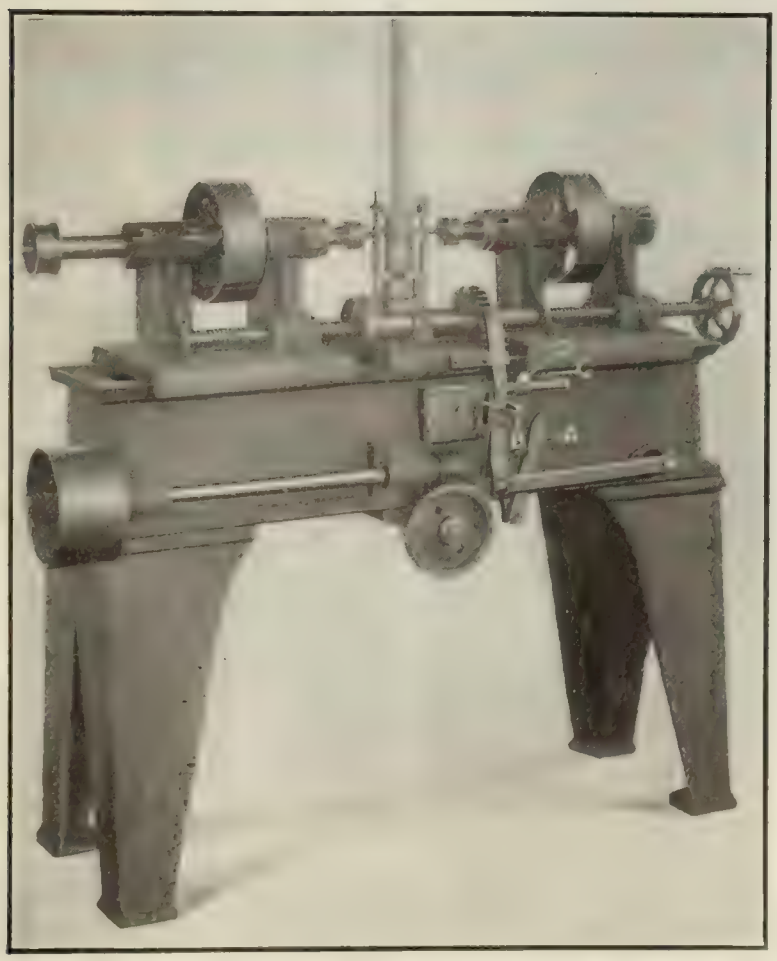


Fig. 1.—A Machine for Splining Drill Press Spindles, Built and Used by the Hoefer Mfg. Company, Freeport, Ill.

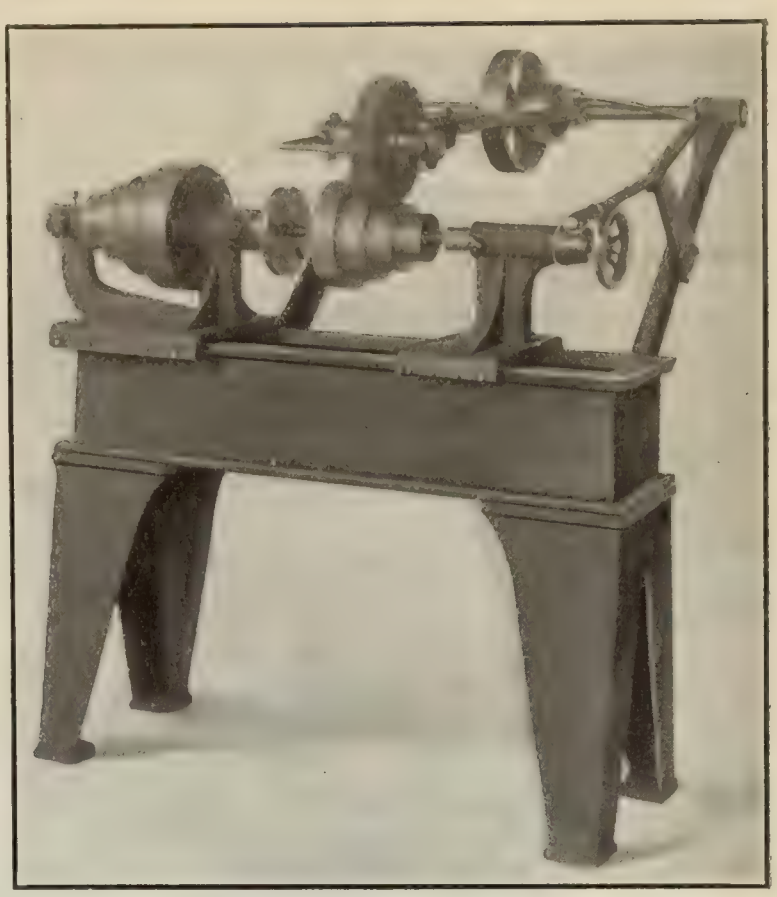


Fig. 2.—The Hoefer Pulley Polishing Machine.

In Fig. 2 is shown a polishing machine which has done away with the old and troublesome process of polishing cone and driving pulleys, and substituted a rapid and simple means of attaining excellent results on this class of work. The illustration is almost self-explanatory of the operation. The arm which carries the polishing wheel is counterbalanced to make its operation easy. It has a swivel joint so that the wheel can be swung in a vertical plane about the axis of the arm. Two pulleys are fastened together and rotate on a stationary sleeve, forced into the forked arm. The arm is capable of a sliding motion on its shaft, which motion is obtained through the lever at the right within easy reach of the operator. To avoid spending time in putting the pulleys to be polished on an arbor, a conical plug is used instead of the usual lathe center and gives directly a proper centering of the pulley. Each plug will accommodate two or three different diameters of pulley holes. To drive the pulley a dog is placed on the face plate and engages one of the pulley spokes. In the tailstock an auxiliary conical bushing revolving on the regular center gves the proper bearing for the rear end of the pulley. The polishing wheel has a bevel so as to reach the corners of the pulleys. The remarkably short time which it takes to polish pulleys as compared with the old method makes this tool a valuable addition to the company's line of labor saving machines.

The Harbison-Walker Refractories Company, Farmers' Bank Building, Pittsburgh, has broken ground at Birmingham, Ala., for the erection of a firebrick plant to have a capacity of 40,000 brick per day. It will be patterned after the company's plants in the Pittsburgh District, and is being built to take care of Southern trade. The plans provide for the construction of reinforced concrete buildings of modern design, which, with the equipment, will cost approximately $250,000. The company has heretofore been shipping brick to the Southern markets from its plants in the Pittsburgh District, and the increased business originating in the South and high freight rates resulted in the decision to build a plant in Alabama.

## The Newton Heavy Four-Spindle Miller.

The size and work producing capacity of the four spindle milling machine recently furnished the Pennsylvania Railroad Company for its Altoona shops by the Newton Machine Tool Works, Philadelphia, Pa., are impressive. The table of this machine is 42 in. wide and spindles is 32 in. The two side heads and the right hand head on the rail are of the same general design. The spindles are 5⅜ in. in diameter, have a brass bushed bearing 17 in. long, and have a double taper bearing in the mouth of the adjusting sleeve 8¾ in. long. The ends of the spindles have an external thread on which face cutters can be fitted and No. 5 taper sockets into which

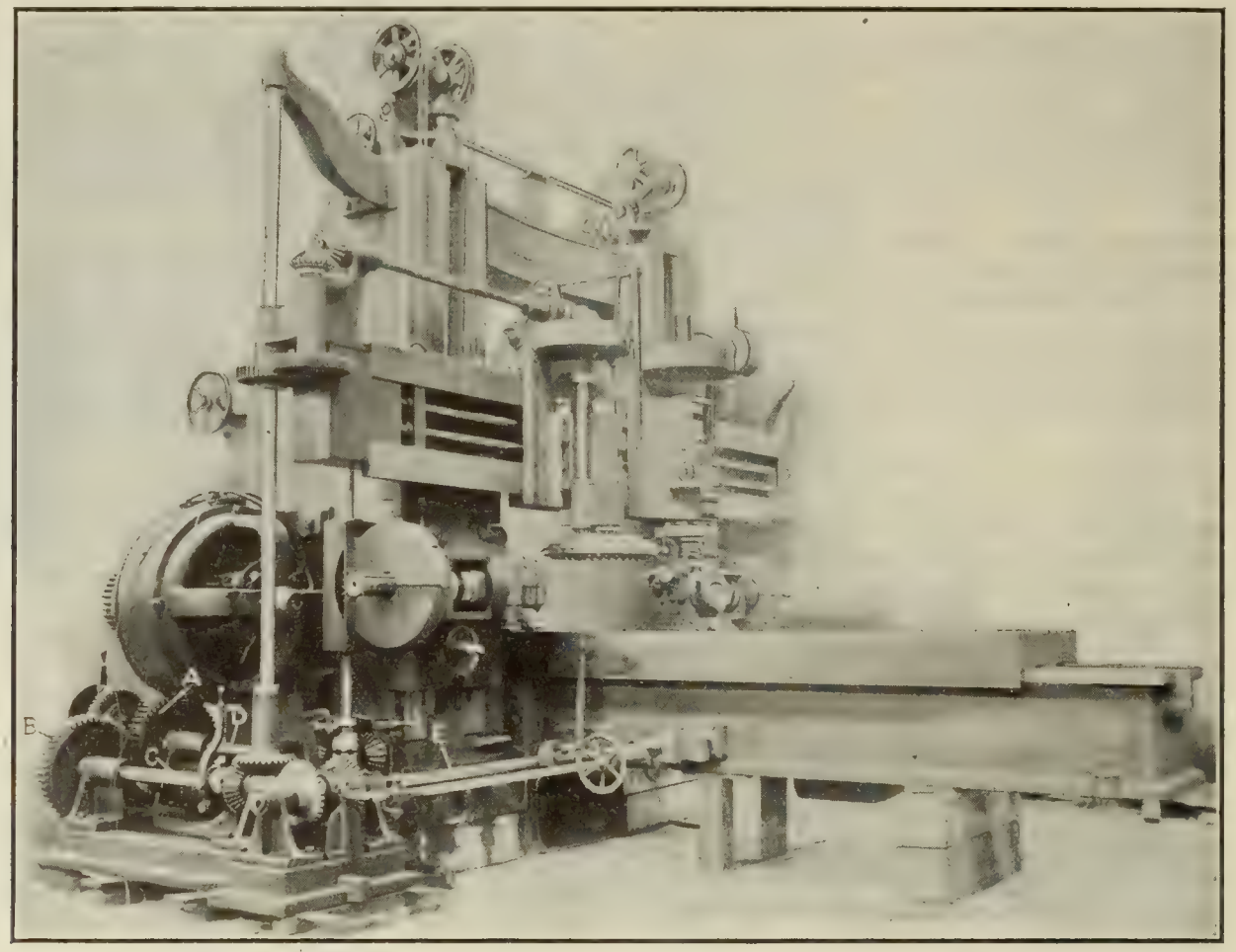



Fig. 1.—A Heavy Four-Spindle Milling Machine Built by the Newton Machine Tool Works for the Pennsylvania Railroad.

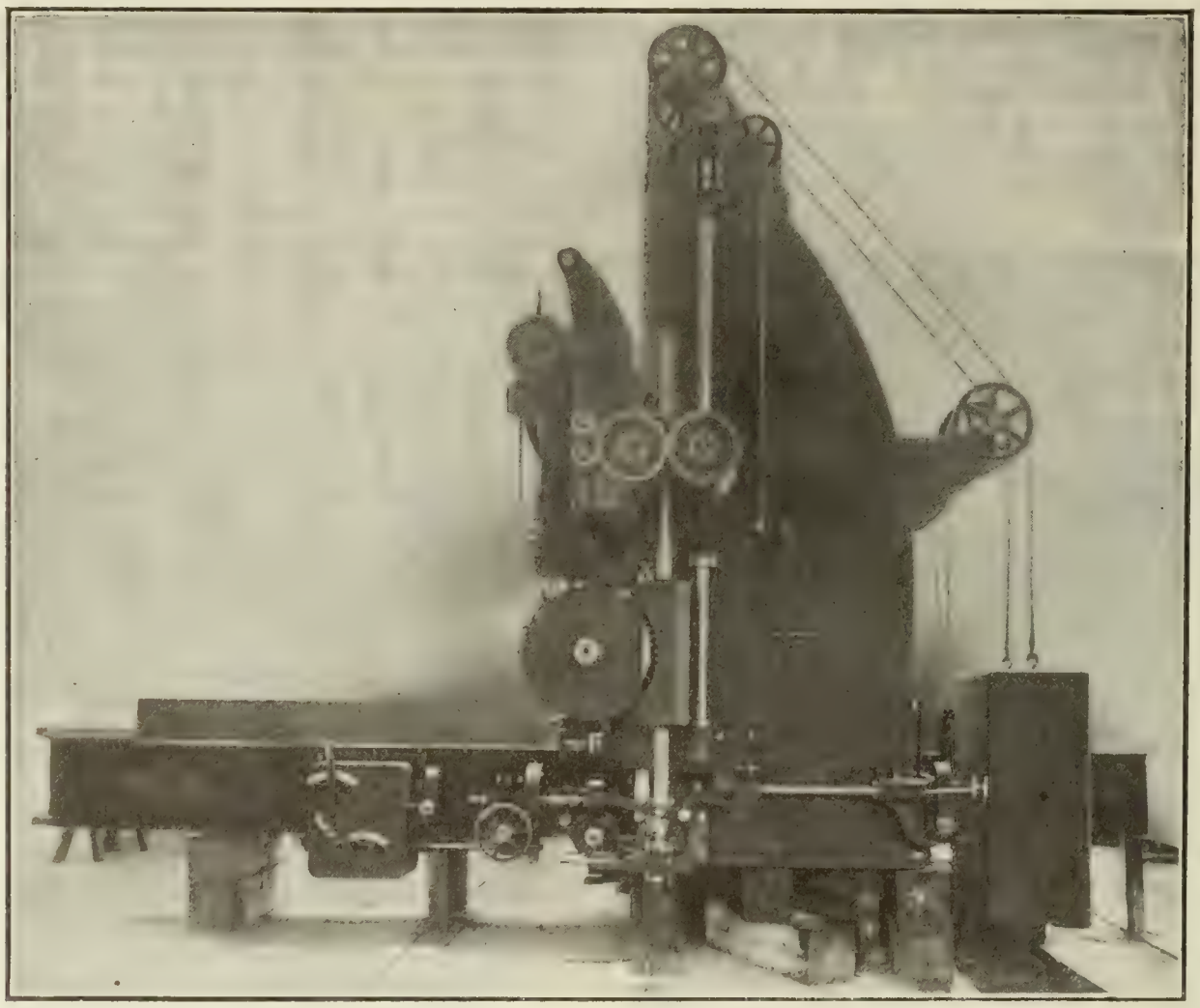


Fig. 2.—A View of the Newton Miller from the Operating Side.

18 ft. long overall, and work to a length of 16 ft. can be milled. The maximum distance between the ends of the horizontal spindles is 60 in., and the minimum distance is 36 in. The maximum distance between the end of the vertical spindles and the top of the work table is 66 in., and the minimum distance between the centers of the end mills can be fitted. There are holes entirely through the spindles in which are inserted retaining bolts. Across the ends of the spindles are broad slots to hold rigidly the large diameter face cutters frequently used on this machine.

The drive of the spindles is through steep lead sleeve

bronze worm wheels approximately 26½ in. diameter and hardened steel worms having roller thrust bearings; both of these are encased and continually run in oil. The rack sleeve is of sufficient length to permit of an independent adjustment to the spindle on the saddle of 12 in. by means of the adjusting worm and worm wheel shown, operated by squared crank holds. The left saddle on the cross rail carries an auxiliary slide in which is mounted a spindle carrying a solid cast steel rotary planing head 26 in. diameter over the cutters. This cutter head is driven through a steep lead bronze worm wheel and hardened steel worm of similar design to those on the other heads by a pinion shaft meshing with the internal head gear.

The cross rail and the side heads are counter weighted. The cross rail slides are provided with forked lugs on the bottom, so that the side heads can be attached to them by swinging bolts and elevated with the rail by power.

The elevating screws have roller thrust top and bottom bearings on the rail, permitting of maintaining a tension on the screws when pulling the cutters to the work. The drive is from a 50-hp. General Electric motor running at 560 to 1120 rev. per min., and is transmitted through an idler rawhide pinion and the idler gear A, Fig. 1, to the gear B, which is fitted to the shaft C. From the latter the two vertical heads obtain their drive, feed and fast traverse. To the hub of the idler pinion A, a smaller pinion is fitted meshing with a pull pin gear and back gear which drive the shaft D, and through it operate the two side heads. Motion for the fast traverse and feeds is transmitted through the shaft E to the working side of the machine, as illustrated in Fig. 2. This view shows the feedbox, which is of the maker's standard design, and gives nine changes of feed. The feed and fast traverse are obtained from the horizontal feed shaft operated by the clutch F. Power is taken from this horizontal feed shaft at H for elevating the rail and adjusting the heads on the cross rail. Clutches in the transmission make possible individual or simultaneous driving of the heads and feeds, and fast traverse for the table, the cross rail and the cross adjustment of the heads on the rail. The drive of the left hand rotary planer head is controlled through a clutch operated by the lever I, Fig. 3. As shown in the latter illustration, the right vertical spindle is arranged to be driven direct or through back gears.

There are available table feeds at the high speed of the motor from 0.789 to 8.15 in. per minute, and at the slow speed of the motor feeds of from 0.394 to 4.08 in. per minute, and quick return in both directions at the rate of 21.94 ft. per minute. The maximum feed to the rail vertically and the saddles on the rail is 4½ in. per minute, with the motor running at 1120 rev. per min.

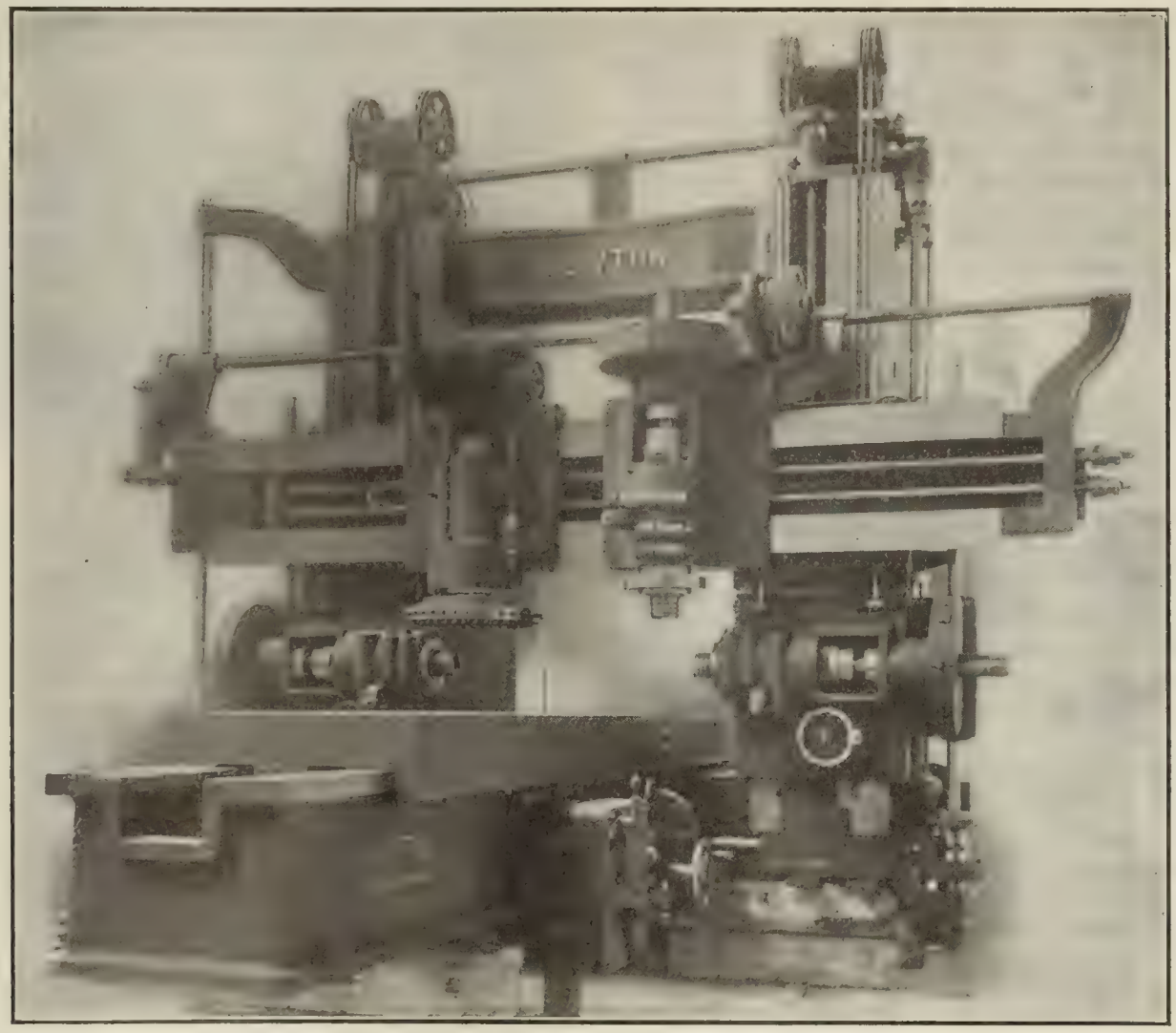


Fig. 3.—Three-Quarter Front View of the Newton Miller.

## A World Wide Shrinkage in Trade.

The United States, says the Bureau of Statistics, is not alone in the record of smaller imports and smaller exports which will characterize the history of our foreign commerce in the year about to end. Of the 25 principal countries of the world, all but four show a falling off in exports and nearly two-thirds show a falling off in imports. The countries are Argentina, Australia, Austria-Hungary, Belgium, Brazil, Canada, Chile, China, Cuba, Egypt, France, Germany, Italy, Japan, Mexico, Netherlands, Norway, Russia, Spain, Sweden, Switzerland, the United Kingdom, the United States and a number of smaller countries. In all except China, Chile and the Netherlands, the figures of certain months of the year 1908 are now available.

In every country for which 1908 figures are available, with the exceptions of Argentina, Spain, Greece and Sweden, the exports of 1908 fall below those of 1907, while in practically two-thirds of the cases the imports of 1908 also fall below those for a corresponding period of 1907. Taking the full list of countries in question, but omitting the United States, the average monthly importation of the more than a score of principal countries thus included has fallen from $935,000,000 in 1907 to $885,000,000 in 1908, and the average monthly exportation has fallen from $804,000,000 in 1907 to $739,000,000 in 1908. Part of this shrinkage is of course due to lower prices.

# The Whitcomb-Blaisdell Cushion Clutch Geared Head Lathe.

The Whitcomb-Blaisdell Machine Tool Company, Worcester, Mass, has brought out a new single pulley drive all-geared friction head engine lathe, designed for a wide range of usefulness up to heavy duty with high speed steels. Fig. 1 shows the 16-in. size of this lathe, Fig. 2 a detail of its head and Fig. 3 an end view. The machine possesses several novel features. In securing the eight changes of speed in the head a new form of clutch is employed, which combines the action of the friction type with a positive engagement, and which automatically adjusts itself to the load. The head feed and gear box give 32 changes of thread pitch and feed without the use of change gears. A double key device is used in securing the changes in the feed box. A thread indicator on the carriage enables the operator accurately to catch the thread while screw cutting. A new principle in lathe design is embodied in the tailstock, which is held to the bed by compound lever action controlled by a hand wheel. By this arrangement the tailstock is loosened quickly, permitting it to slide easily on the ways in adjusting its position to lengths of work, while a turn of the wheel again clamps it rigidly to the bed.

The drive is from the pulley shaft *a*, Fig. 4, through four gears, *b*, to corresponding clutch driven gears, *c*, on the shaft *d*, from which the power is transmitted to the lathe spindle *e* through the gear train *f f'* for the high series and the train *g g'* for the low series, thus giving the eight speed changes. There are six clutches in the head, all of the same general design, but differing slightly in detail. The four clutches on the shaft *d* engaging the several speeds of the series are identical in construction, while the same is true of the two on the shaft *e*, except that the low speed clutch at the right is somewhat larger than that of the high speed series, seen at the left, and has two cam pins instead of one to insure prompt engagement.

The low series clutch, Fig. 4, consists of the case *h* keyed to the spindle within which is the friction ring *i*, carried by the gear *g* through the pin *e* and operated by the lever *j*. The cam pin *k*, which slides through a hole in the friction casing *h*, keyed to the spindle, when brought into engagement, presents an obstacle in the path of the lever *j*, causing it to rise and expand the friction ring with whatever force may be required by the load against the casing *h*. The principle of the wedge as well as that of the lever is involved. In other words, the clutch automatically adjusts itself to the power required to be transmitted. The action is the same when the lathe is reversed to back out taps or for other similar

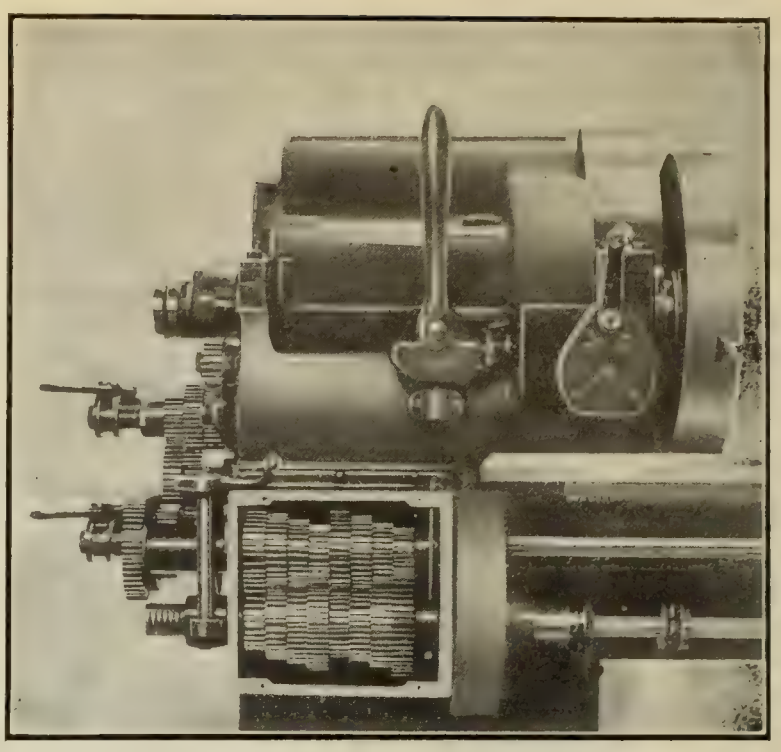


Fig. 2.—A Detail of the Head.

purposes, the pin striking against the opposite end of the lever. The other form of the clutch is the same in its details, except that the cam is a block instead of a pin.

The means of operating the frictions constitute an interesting mechanism. Those on the lathe spindle, giving the two series of speeds, are controlled by a lever handle seen at the center of the head of the machine. In Figs. 1 and 2 it is shown in its intermediate position, both clutches being disengaged and the spindle idle. In Fig. 4 the clutch is seen engaged for the low speed series. The hub of the lever is fastened to the crank *m* by a stud passing through the headstock. The crank carries a bronze block *n*, which engages a sliding member *o* carrying the two cam pins *k* for the low speed and the single pin *k'* for the high speed. Two pins are used in the low speed clutch because its friction ring always revolves slowly.

In operating the clutches on shaft *d*, effecting the four changes of the series, the crank at the right of the front of the head is used. Beneath the crank is a pointer which indicates the lever position for the several speeds. The crank is always in an upright position when a clutch is engaged. Through a pair of spur gears and shaft at the rear of the indicator shield (they do not appear in the drawing) the motion is transmitted to the rear of the headstock through a second pair of spur gears, the upper of which is seen at *p* keyed to the shaft *q*, on which is cut the pinion *r*. This pinion engages a rack on the shaft

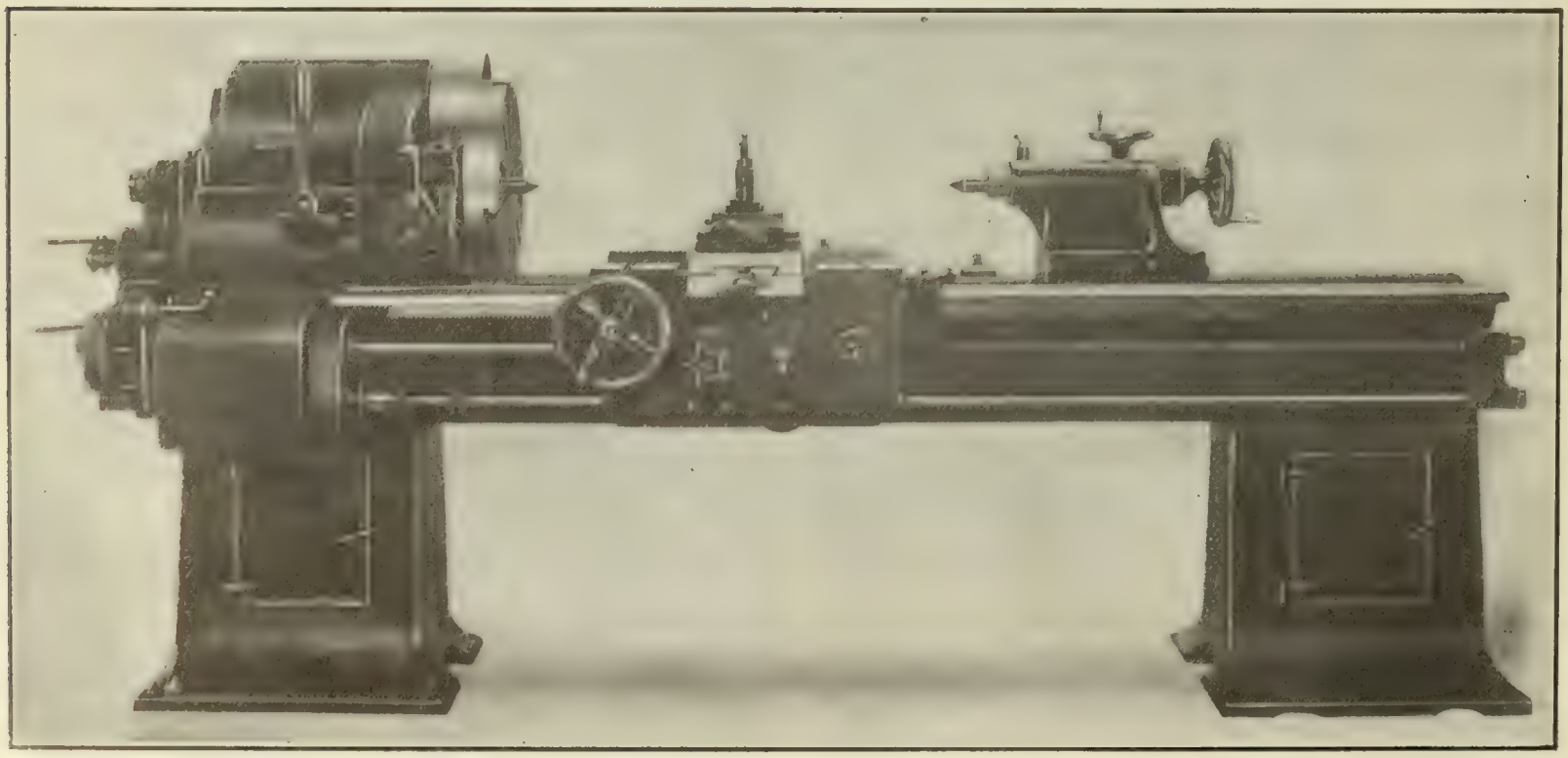


Fig. 1.—The Geared Head Friction Drive 16-In. Engine Lathe Built by the Whitcomb-Blaisdell Machine Tool Company, Worcester, Mass.

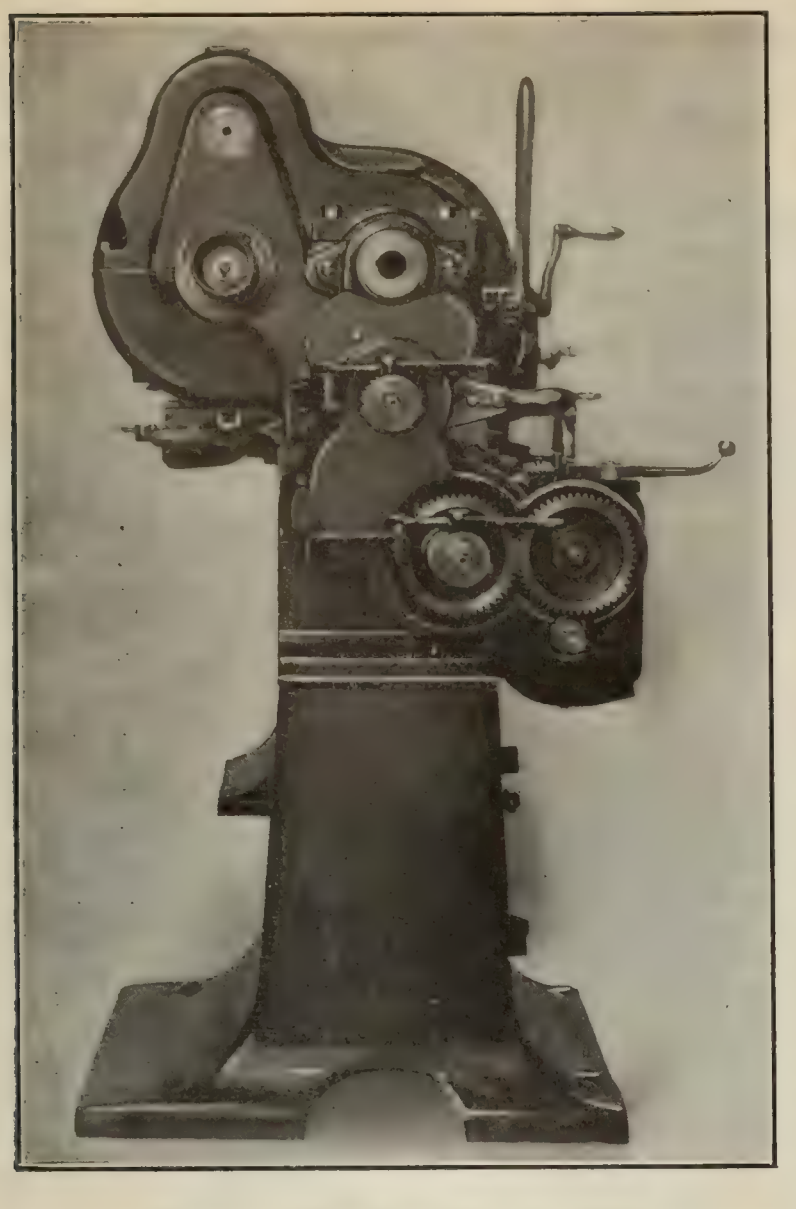


Fig. 3.—A Head End View of the Lathe.

*s* which slides within shaft *d*. On the opposite end of this interior shaft is a connection to the sliding, keylike piece *t*, to which are fastened the cam blocks *u*. Thus the movement of the lever handle in its revolution engages the blocks with their respective gear clutch levers one after another.

The end feed mechanism possesses features of novelty in the manner in which the use of change gears is eliminated except for special thread pitches. All changes are effected by the combination of the positions of two levers, each controlling two gears, thus quadrupling the eight changes of the feed box, making available 32 feeds or pitches without change of gearing.

Power is transmitted to the feed works from a gear on the lathe spindle *e*, Fig. 5, to the pinion *v* on the shaft *w*. Loose on this shaft are the gears *x* and *y* operated by the sliding key *z* controlled by a lever connected with the spool. Meshing *x* and *y* and mounted on a sleeve on the stud A are the gears B and C, and on the end of the sleeve is the pinion D meshing gear E on the shaft F. On this shaft is the gear G meshing gear C. The pinion E and the gear G are mounted loose and are engaged by a sliding key in the same manner as on the shaft *w*. The gear H on the shaft F meshes gear I on the shaft J at the top of the feed box. Thus with the two positions of each of the two handles controlling the sliding keys a compound gear effect is transmitted to the shaft J, giving four feeds for each of the eight changes in the feed box. The gears H and I are arranged to be removed for the substitution of such others as may be required to obtain such universal thread pitches as are not in the regular range.

The feed box is of the standard Whitcomb-Blaisdell type. The shaft K is milled out to take the double key L, which arrangement shortens the motion of the sliding shaft. The two keys are so spaced that when one is engaged the other must be opposite one of the separating rings. The interlocking feature causes the engaged key to hold the other out of contact with the ring, preventing wear. The spring serves to engage the one key when the other is withdrawn from engagement, but when the keys are locked the spring becomes inoperative. The shaft carrying the keys is moved by the hand wheel, which is cut away at its center to permit of the reading of the dial number. Bringing any number into view sets the gearing for that thread.

The lathe is furnished with an entirely new patent tailstock, in which a hand wheel either locks the stock to the bed or releases it so that it may easily be moved backward or forward on the ways. The details of this construction are shown in Fig. 6. The principle of the compound lever is employed. The screw M, operated by a hand wheel, presses down upon a steel plate in the lever N. The fulcrum is at O. When the screw is

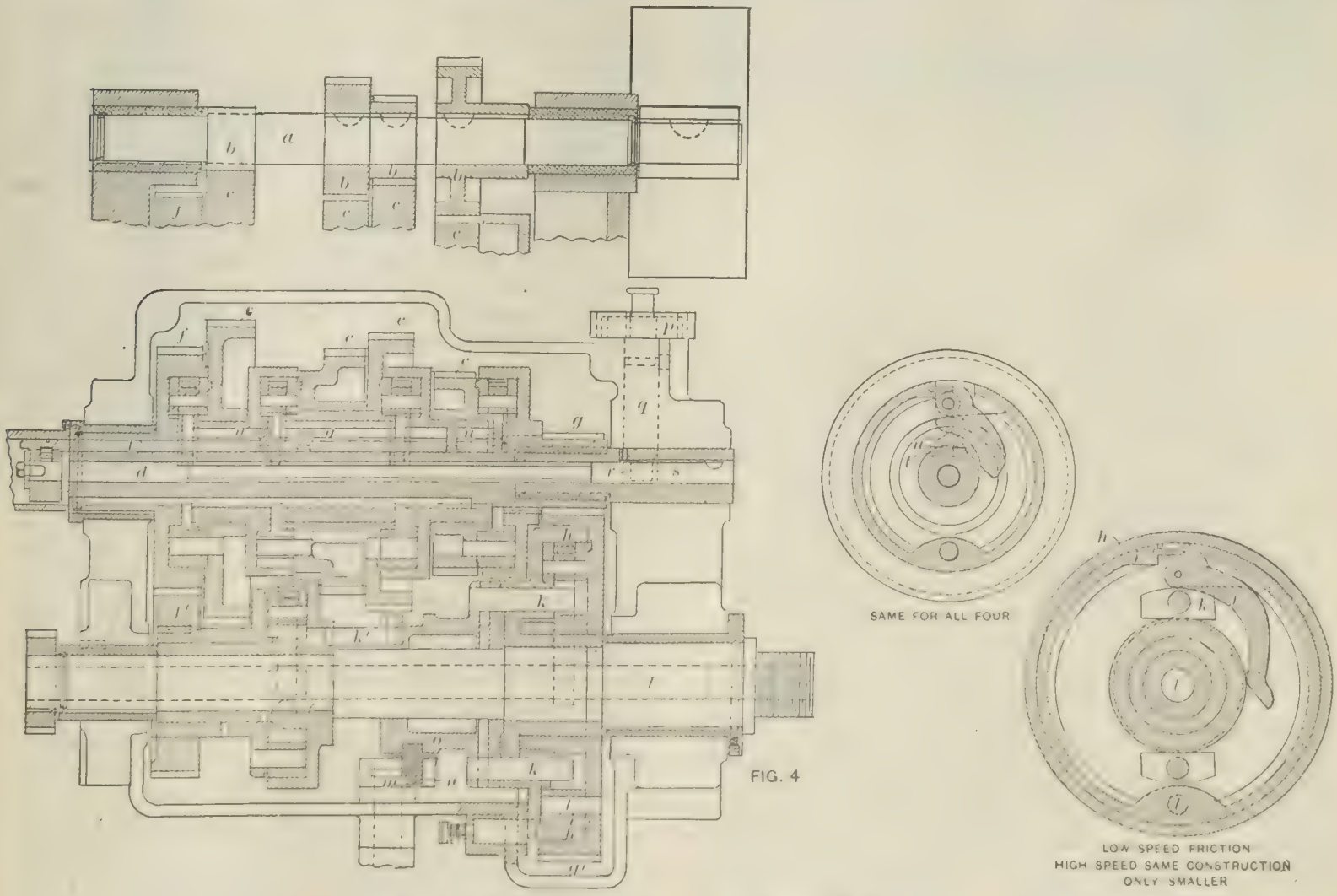



Fig. 4.—Details of the Head and Clutch Mechanism.

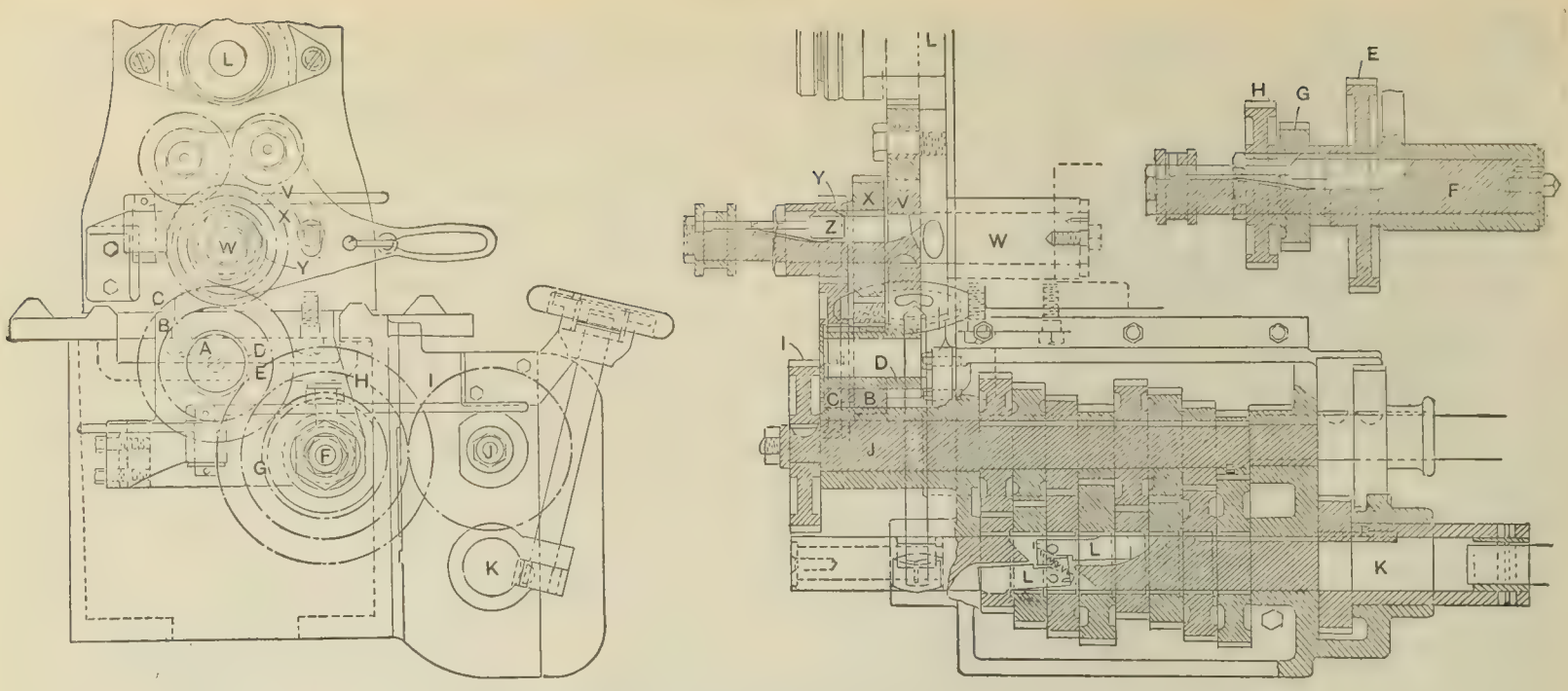



Fig. 5.—Details of the Driving End and Feed Box.

lowered the pressure is transmitted to and further multplied by the interlocking levels P, each fulcrumed on two nuts, this action causing the lip Q at each of the four corners of the tailstock to bind to the bed, giving a very rigid hold. The loosening process, consisting of a slight movement of the hand wheel, is assisted by four springs which cause the levers to release their hold the instant pressure is removed.

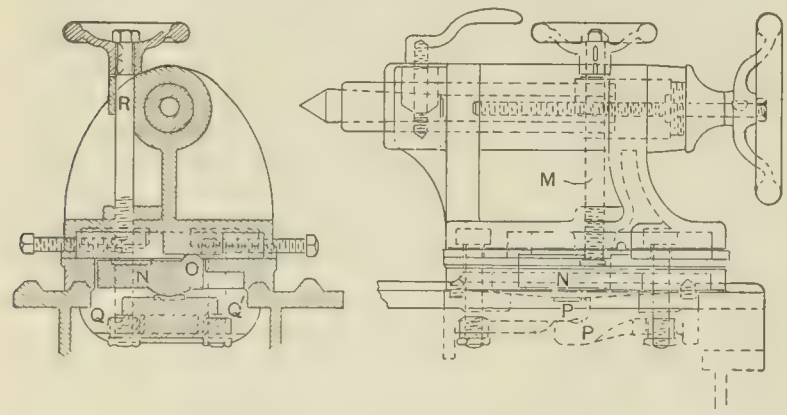



Fig. 6.—The New Tailstock.

The new thread indicator is shown in detail in Fig. 7. The shaft R, to the top of which is fastened the dial, is connected through gears S and worm T to the lead screw. On the dial is a pointer adjustable to either of the three series of divisions. A four-pitch lead screw is used, consequently the thread will catch once in each half inch of lead screw for an even pitch, once to an inch for an odd pitch and once in 2 in. for each fractional pitch having two as a denominator. The ratio between lead screw and dial shaft being 8 to 1, the dial makes a complete turn for each 8 in. of travel of the carriage, and therefore the thread may be caught in any one of 16 positions of the dial for even pitches, in eight positions for odd pitches and in four positions for one-half pitch. If the dial is set so that the pointer is against one of the marks of the dial corresponding to the pitch to be cut, the thread may be caught on the next cut when the pointer is at any corresponding mark of the dial, which may be a great convenience in thread cutting. The transmission from the lead screw to the dial shaft is arranged so that there will be no interference between it and the end screw box.

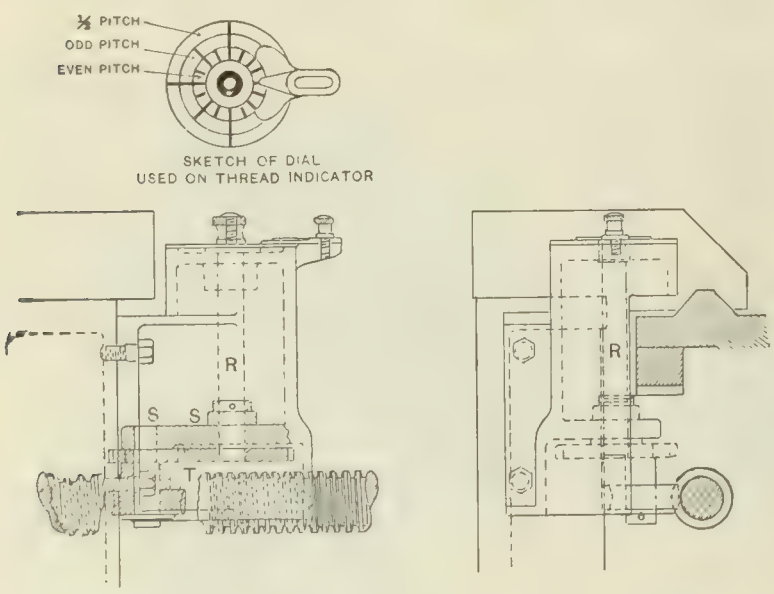



Fig. 7.—Means for Obtaining Feeds and Screw Pitches.

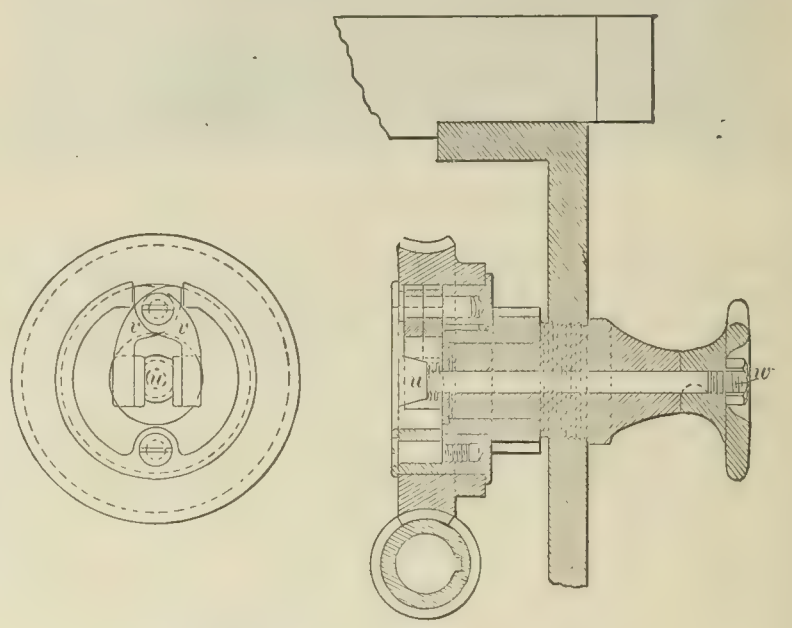



Fig. 8.—The Apron Clutch Mechanism.

The apron friction is shown in Fig. 8. The turn of the knob causes the cam block U to expand the two lever arms V, thus setting the friction. An important feature of this arrangement is that for adjustment. The clutch block is tapered, so that by tightening or loosening the nut W in the knob adjustment, greater or less pressure is obtained.

## A German Electric Contractors' Drill.

For extra heavy and difficult drilling in stone, concrete, &c., an electrically driven drill has been developed by Siemens & Schuckert, Berlin, Germany. About two years ago this company brought out a machine which resembled this one in many respects, but it did not fill the want for a machine for heavy work, and so the present one was developed. This "handle machine," as it is called, has a direct connected 1-hp. motor mounted in a saddle on the back of the machine. The motor is easily disconnected from the machine and is, as well as the machine itself, absolutely water and dust proof.

The machine operates in either a vertical or horizontal plane, as shown in Figs. 1 and 2. By employing special cutting tools it can be used quite readily as a cutting and channeling machine. It can be used on the

toughest and hardest granite, the energy demand not depending on the quality of stone or other material worked. The manufacturers of the drill recommend for medium and soft stone and similar work the working of a hole

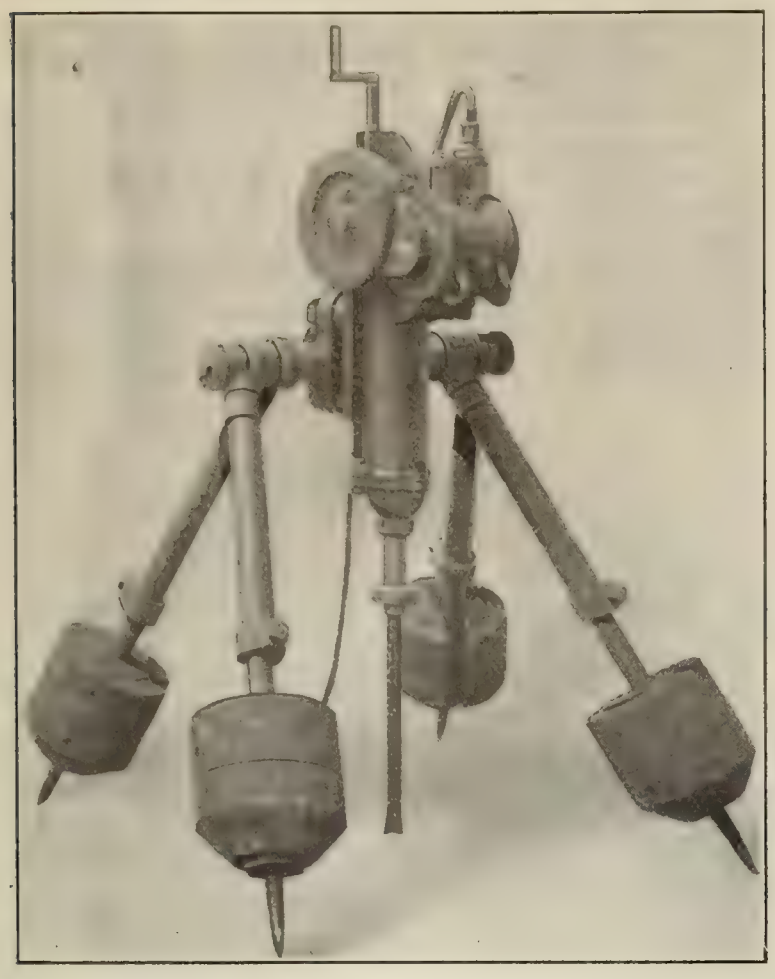


Fig. 1.—Vertical Mounting of the Siemens & Schuckert Electric Rock Drill.

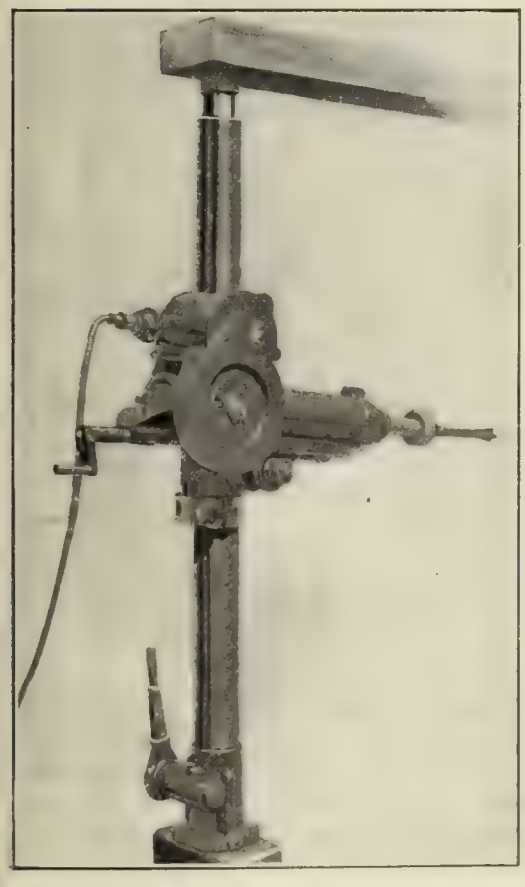


Fig. 2.—Horizontal Mounting.

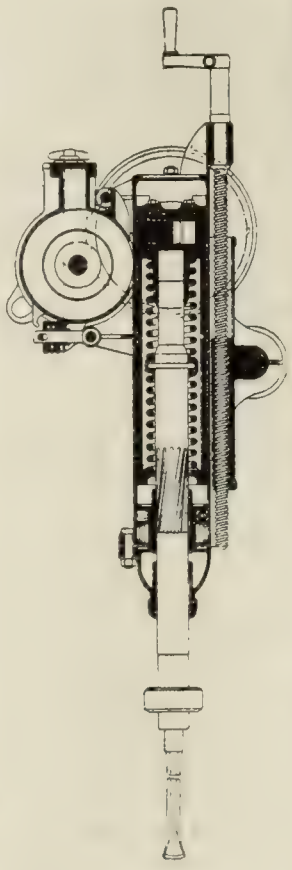


Fig. 3.—Section.

The Siemens & Schuckert Electric Contractors' Drill.

of about ½ to 2 in., while in granite a diameter of about ½ to ¾ in. is advisable. In consequence of the drill having a very quick and powerful retreat its operation is more than ordinarily even.

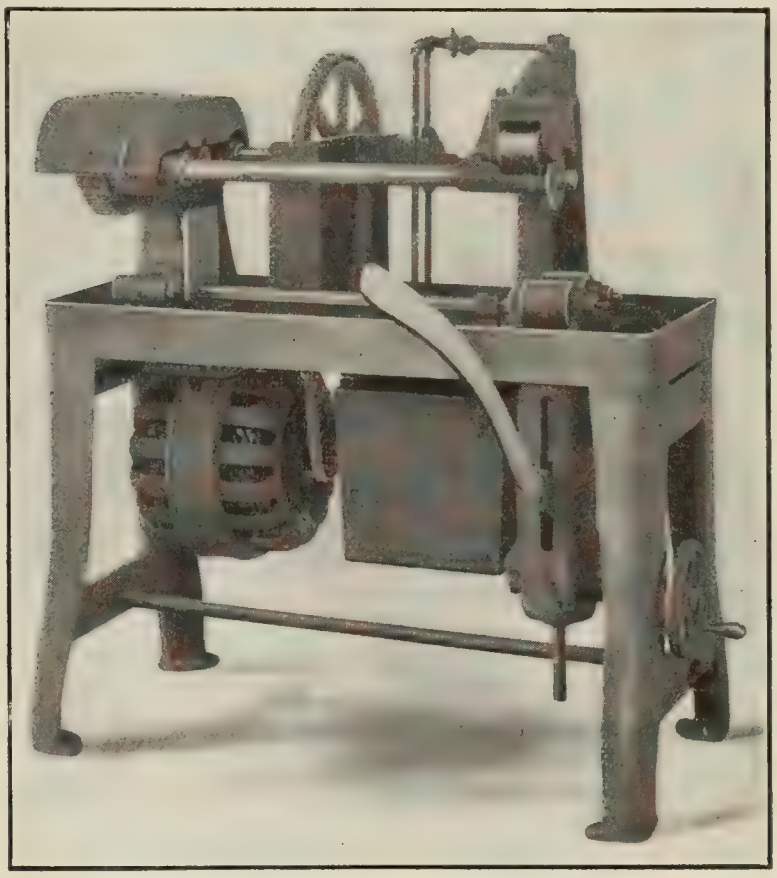
One of the decided advantages of the machine is its small energy demand. It is claimed to be equivalent to a steam drill of double its horsepower rating. The current is supplied through flexible conduit 250 to 300 ft. long, the slack of which is automatically taken up by a spring wound drum. The connecting plug is attached to the drum and is practically a part of it, being well secured a few feet from the end to keep it from being pulled off the drum. After the connection to the drill is made the operator has only to turn the switch on the drill to set the machine in motion.

A sectional view of the drill is given in Fig. 3. By means of a wheel located on the handle shaft the handle movements become driven by the motor and balanced by a flywheel, the motor operating the thrust mechanism. In the cylinder are located two heavy springs which surround the working thrust plugs.

The weight of the machine exclusive of the motor is 220 lb., while the motor weighs 100 lb. When the machine is working a vertical surface, as in Fig. 2, an iron column of about 5 in. diameter is used, which usually weighs about 250 lb., so that it is readily seen that this type of drill is much heavier than those of American manufacture intended for the same work.

## A Fox Motor Driven Pipe Cutter.

A compact arrangement of motor drive on a No. 6 pipe or tube cutter, made by the Fox Machine Company, Grand Rapids, Mich., is here illustrated. There is practically no change from the standard machine except that the bed is provided with two pads for bolting on the motor. Power from the motor is transmitted through a



The No. 6 Pipe and Tube Cutter, Motor Driven, Built by the Fox Machine Company, Grand Rapids, Mich.

Morse silent chain and a series of gears to the cutter shaft. The flues to be cut rest on the two rollers under the cutting disk, and the hand wheel shown below adjusts the position of the rollers for different sizes of pipe or flues. The material is brought in contact with the cutter by depressing the front lever, which raises the rollers, thus bringing the flue or pipe against the cutting disk, where it is quickly severed. Standard wrought iron pipe of ordinary sizes, it is claimed, can be cut off in about 3 sec.

The machine is regularly equipped with an oil pump and tank for supplying lubricant to the cutting disk. Because of the inconvenience in supplying power to a belt driven machine, when it is desired to use it in a pipe shed or other place remote from mechanical power, it is believed that this self-contained motor driven type will be appreciated. The motor is a 3-hp. Westinghouse alternating current motor, wound for 440-volt, 60-cycle, three-phase current. Two cutters of the type and size here shown were recently furnished one of the largest railroad systems for its locomotive boiler shop for cutting off boiler flues, safe ends, &c. Four-inch boiler flues can be cut off in about 8 sec.

# THE BRAY CONTINUOUS SHEET MILL.

**Located at the Mercer Works of the American Sheet & Tin Plate Company, South Sharon, Pa.**

The general arrangement of the Bray continuous sheet mill at Sharon, which was built during the year 1906, is shown in Fig. 1. The mill consists of four double continuous pair heating furnaces and nine sets of sheet rolls, all driven from one 30 x 60 x 72 in. cross compound engine.

In the operation of this mill the sheet bars are received at the plant cut to the proper length, and are unloaded and stored by cranes. Bars are taken by crane and delivered on a platform in the rear of the continuous heating furnace shown in Fig. 2. The bars are piled in twos and threes, depending on the number of sheets that are to form the pack, on guides in the rear of the furnaces.

The furnace, as shown, consists of two chambers, and in each chamber are two water cooled pipes carrying corrugated tile. In the operation of the furnaces these pipes are raised, carried forward and lowered, so that the groups of bars are carried forward step by step in the furnace, the ends of the bars resting on the brick side walls in the furnace. At each step forward one group of bars is delivered from the front of the furnace on a roller table, the bars being piled two or three high, as the case may be, and consequently uniformly heated. The furnaces are operated by a motor and stop device, whereby the furnaces are operated one after another successively at the rate at which the bars are being required for the mill. The furnaces are fired by producer gas.

The roller tables in front of the furnaces operate continuously and feed the bars toward the center in front of the first set of reducing rolls. At this point there is a man who starts the bars singly and successively into the first set of rolls, and from this point on the bars are taken care of automatically.

The apparatus employed for feeding the bars through the first group of six rolls is shown in Fig. 3. Depending swinging arms are employed, together with stationary tables, and, as will be noted, on the bottom of these arms are swinging fingers and there are two arms in front of each set of rolls. Thus as the bar emerges from the first set of rolls on an inclined stationary table the reciprocating arms returning pass over this bar, the swinging fingers permitting the arms to pass over the

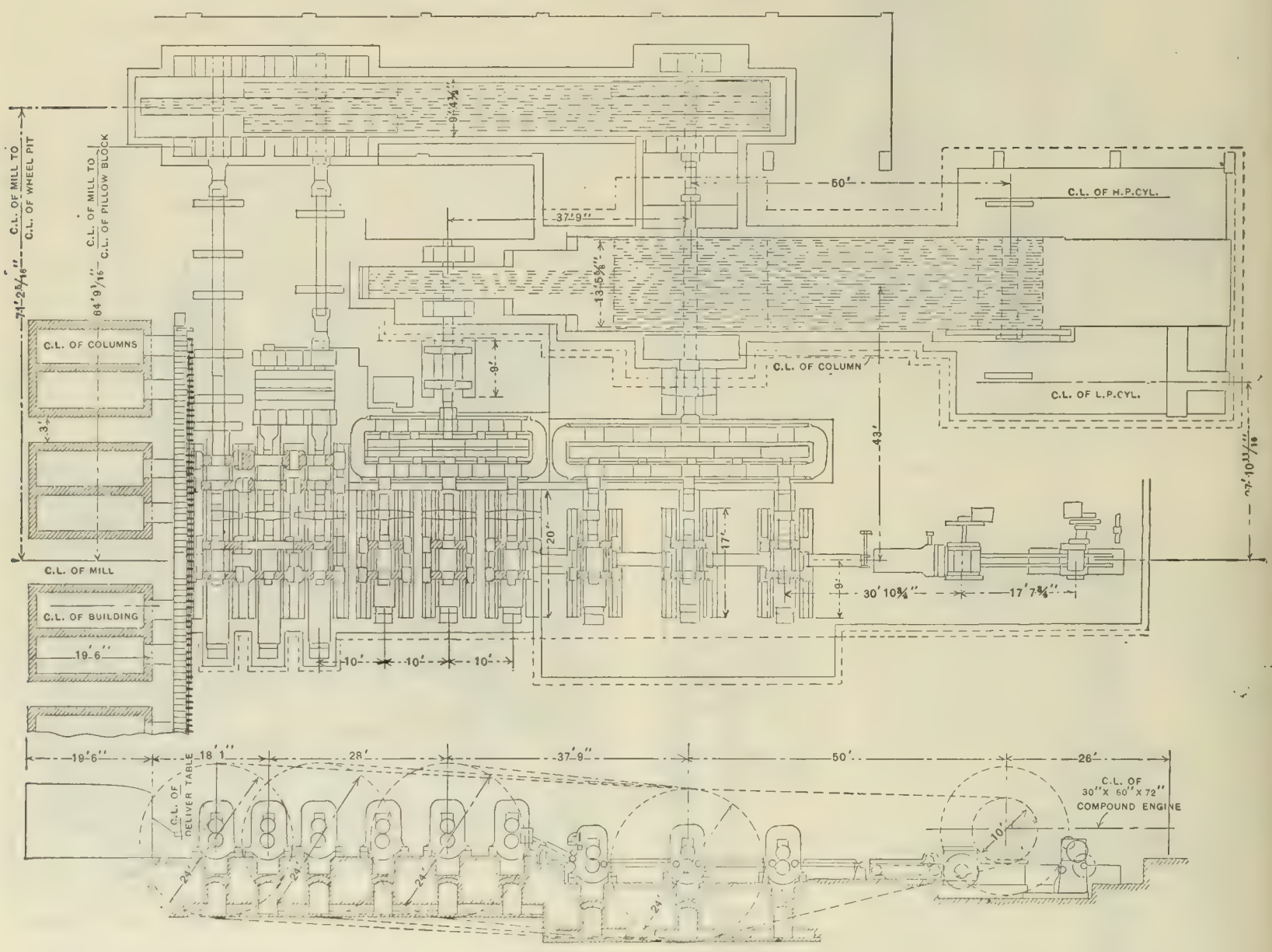



Fig. 1.—General Arrangement of the Bray Continuous Mill in the Mercer Works of the American Sheet & Tin Plate Company, South Sharon, Pa.

bars without disturbing them, and then in its forward movement the two arms engage the rear of the bar and feed it forward squarely into the next set of reducing rolls. This arrangement is necessary, as in a mill of this character it is essential that the bars enter the rolls perfectly square. Chain tables are not desirable for the reason that the bar is of such short length that side guides do not necessarily guide the bar perfectly square with respect to the table, and the piece is apt to enter the next set of reducing rolls at an angle. After the bar has been elongated to some considerable extent, chain tables are desirable and are used, as will be shown later.

As will be noticed by the general drawing, Fig. 1, the bars pass singly through the first group of six pairs of reducing rolls. After emerging from the last pass the bars slide down onto an inclined table into a matcher, the front edges being held at the lower end by means of a stop. The general practice is to match in threes and consequently plates pile up one on the other in this matcher, the front edge of each plate coming against the stop. This matcher is shown in detail in Fig. 4. The stop is shown in its lowered or inoperative position, but

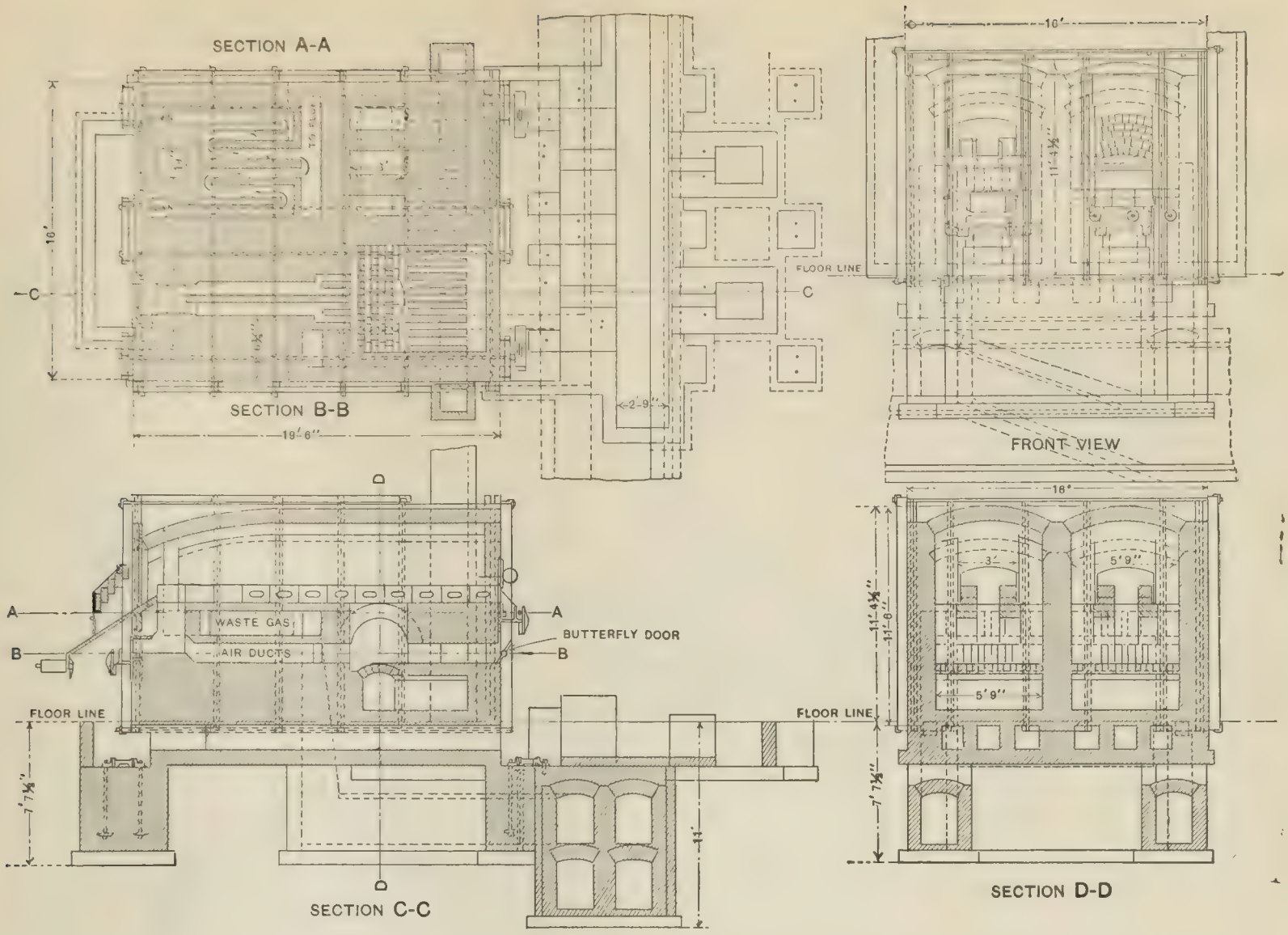



Fig. 2.—The Continuous Heating Furnace.

is normally held in an upper position, and the plates coming against this stop pass between the set of positively driven feed rollers, which are opened when the stop is raised so as to permit the plates to pass between them.

In the operation of the matcher, after the two or three plates have passed one on top of another to the inclined table and are against the stop, the operator, by means of a lever, squares up the pack by reciprocating side guides operating through link mechanism. Holding the side guides in this position, the operator by means of hydraulic cylinders lowers the stop, at the same time lowering the positively driven feed rollers, and the pack thus held together by these feed rollers is fed forward into the next set of reducing rolls. The feed roll and stop is then raised, and the side guides opened ready for the next cycle of operations. The pack thus formed is carried forward through three sets of reducing rolls with intermediate chain tables. After leavng the last set of reducing rolls the pack is passed through a water bosh, which suddenly chills and contracts the metal, and thence through an opening machine, whereby the sheets are loosened.

From this machine the plate is carried forward on chain tables to a roller doubler. This doubler is shown in Fig. 5. The pack is brought to a central position under the rolls of this doubler by means of centering devices, and a plunger then feeds the center of the pack up into

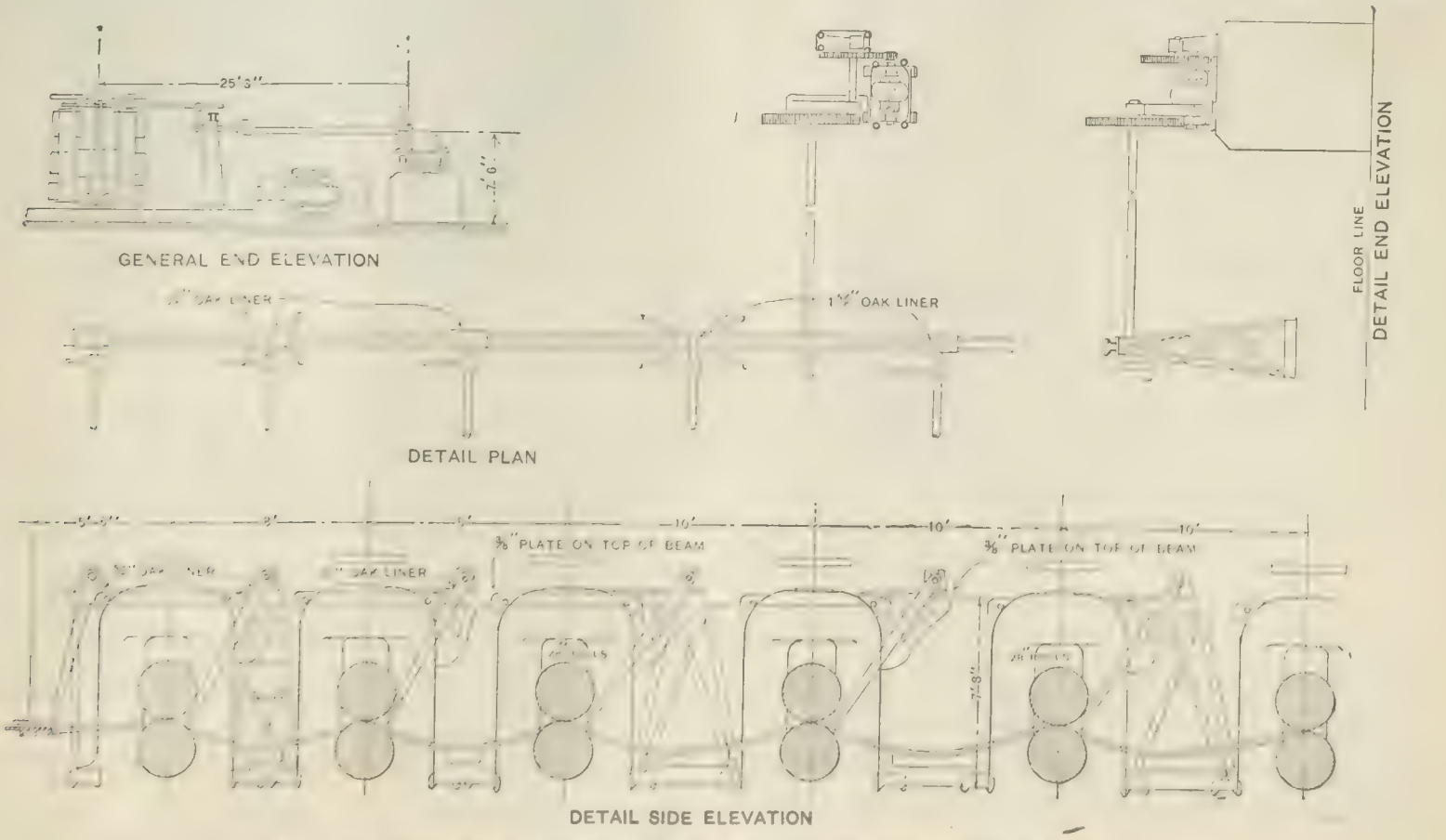



Fig. 3.—Apparatus for Feeding the Bars Through the First Group of Rolls.

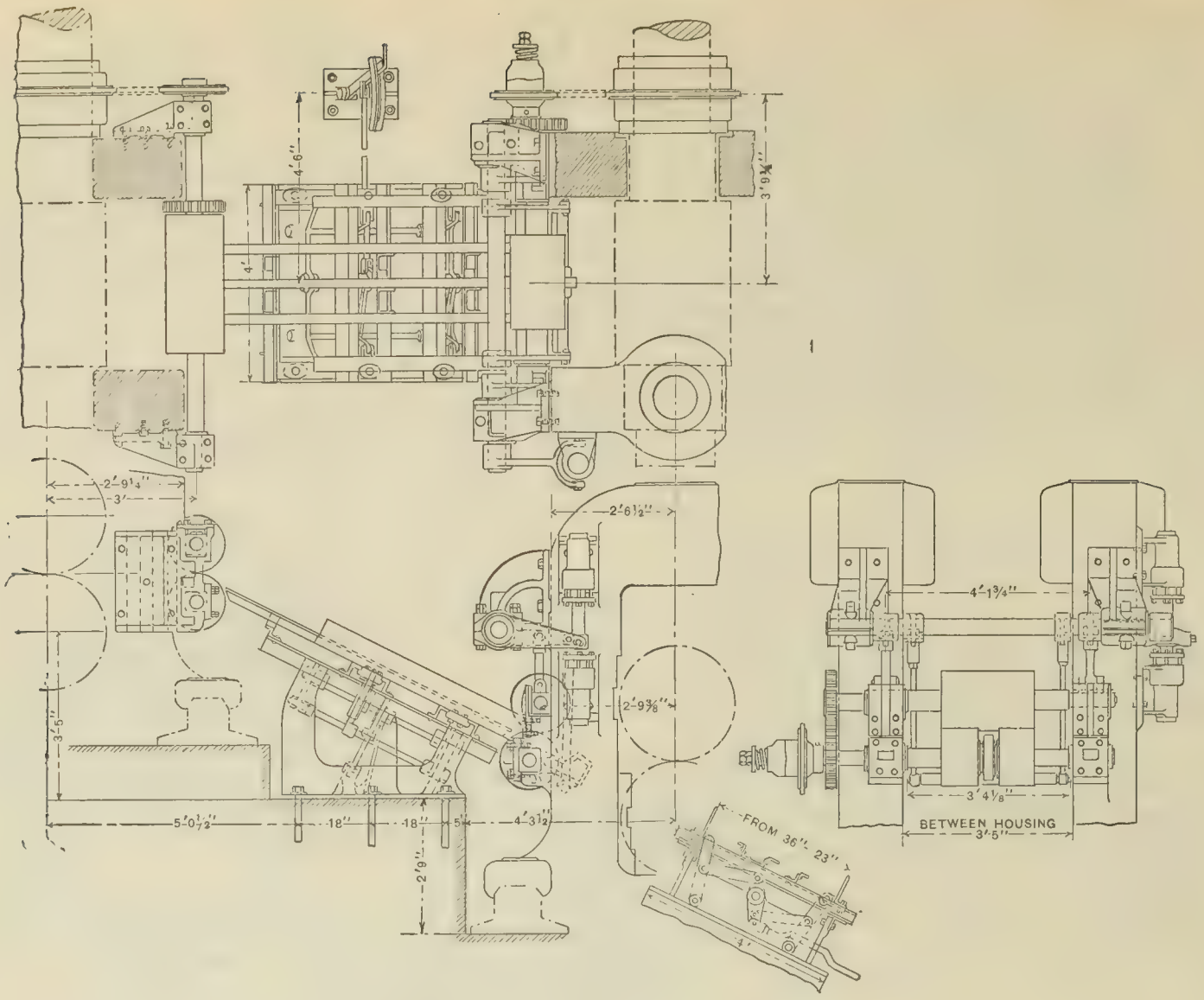
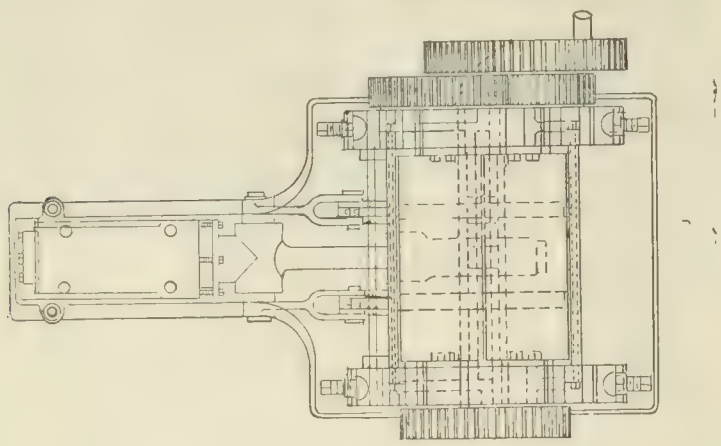



Fig 4.—General Arrangement of the Matcher.

the bite of the doubler rolls; the plunger dropping back to its normal position and the pack feeding through the doubler to a delivery table, not shown. From this delivery table the plates are automatically delivered under a small overhead traveling crane, where the packs are carried to the rear of the sheet furnaces for reheating, the packs being fed into the rear of these furnaces and drawn from the front of the furnaces by hand. In this plant there are five sets of finishing rolls, and the operation of finishing the product is the same as in the regular processes employed to-day.

As will be noticed from the general arrangement, the mills are driven through rope drives and gears; the rolls run at about 28 rev. per min. Owing to the weight of the bar for rolling sheets, it was found desirable to have the first three sets of rolls in the roughing train balanced mills, the top rolls to be driven through pinions, as shown. Bars are fed through this mill at the rate of about 16 per minute, the output of this mill being about 150 gross tons per 24 hr. The sheets are reduced to approximately 18 gauge in the continuous mill, and are finished in the single stands of rolls in the regular manner.

In the operation of this mill it is, of course, desirable to maintain uniform and regular operations, in order to preserve to the best possible degree the proper contour of the rolls. Therefore the construction throughout the mill was made very heavy to withstand shocks and strains, and the rolls in use are 28 in. diameter, with 22-in. necks. The general practice in rolling material



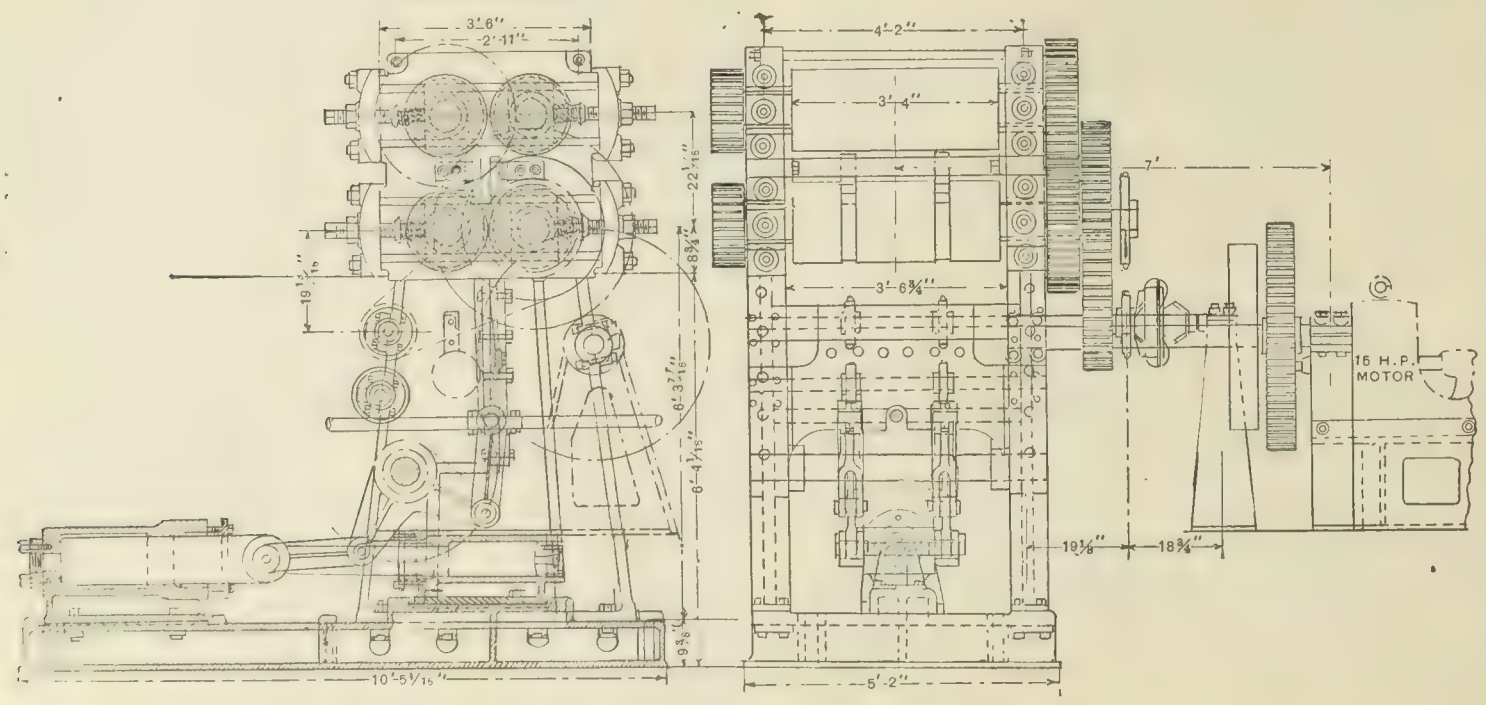



Fig. 5.—General Arrangement of the Doubling Machine.

of this character is to use 26-in. rolls with 20-in. necks.

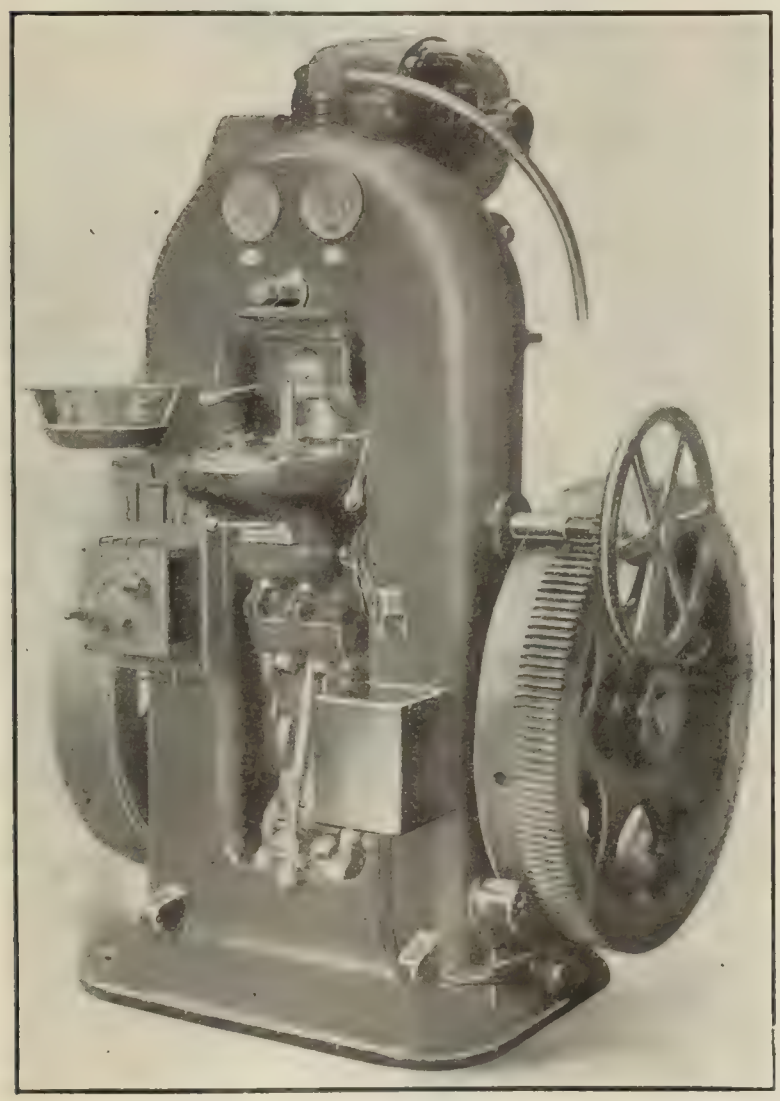
The first mill, after the pack is formed, is subject to very severe work and some trouble has been experienced from roll breakage on this particular mill. The housing used on this mill, therefore, is a steel housing with open windows, permitting the rolls to be removed from the window instead of having to separate the housings, as is customary in mills of this character. In order to handle these rolls to the best advantage, they are picked up on the end of a gooseneck, the end of the gooseneck fitting closely over the wabbler of the roll; thus the two rolls can be easily and quickly removed by means of the gooseneck and an overhead traveling crane, and new rolls put into position and the rolling continued.

Owing to the rapidity of the operation of rolling, it is possible to obtain a greater reduction with the first heating than is possible in the regular process of rolling sheets, and the advantages to be obtained by the use of this mill consist in greater output and lower labor cost.

## A New Ferracute Coining Press.

There are several new features in a coining press recently shipped to a foreign country by the Ferracute Machine Company, Bridgeton, N. J.

The frames of all presses for embossing coins have the shape of a letter O, the distance between the side



A New Coining Press Built for a Foreign Mint by the Ferracute Machine Company, Bridgeton, N. J.

columns being just enough to allow for the coining mechanism, and all sections of the frame being much in excess of what is needed for strength, so that there is no possibility of spring. All modern coining presses contain a toggle or knee joint mechanism to produce the great pressure required to make the cold metal flow sharply into the recesses of the design sunk into the hardened steel dies. The press illustrated is driven by an electric motor mounted on a shelf at the rear. The rheostat is conveniently placed at the left front.

Coining dies must be set with extreme accuracy, the press being run by hand during the operation. The usual method has been to insert a bar or lever in a hole in the face of the flywheel, but in this machine a hand wheel and pinion, engaging teeth cut in the rim of the flywheel, enable the operator to revolve the press by hand with ease. The hand wheel stud is made sufficiently long to allow the hand wheel to be slipped out of gear without removing it from the press.

Another new feature is the adjustable stationary ejecting rod, which extends up through the bed and ejects the coin as the ram descends. The swinging head is also a valuable device. Pressure on the hand lever at the left of the dies unlocks the head, which can then be swung outwardly by the hand lever at the right. As this head contains the upper die, which must frequently be inspected, the convenience of this arrangement is apparent; the ordinary procedure is to remove the die. The head can be swung back and locked in position in an instant. The lower die, with its connected parts, may also be removed conveniently and quickly by turning three hand nuts; two of these are shown on the bolster and the other is at the back of the machine. The press has a wedge adjustment; the wedge is shown just above the swinging head, and the wedge adjusting bolt and lock nut are also shown.

The head containing the upper die is supported by a stiff steel spring, shown at the top of the press, which keeps the head up against the upper part of the press frame with considerable tension while the press is running, and which may be sufficiently released when setting or adjusting the dies so as to just take the weight of the head.

Much attention has been devoted to the feeding mechanism, which is claimed to be superior to that commonly used. It is impossible for two coin blanks or planchets to come between the dies at the same time, and automatic devices are provided for removing the embossed coins as well as accurately locating the planchet between the dies.

A curious feature in connection with coining is that time must be provided for the metal to flow. For this reason a press coining silver dollars must be run at a slower speed than when embossing coins of a smaller size, even if, as in this case, the mechanical operation is otherwise satisfactory at a higher speed. The press illustrated runs from 90 to 120 strokes per minute, and the pressure exerted by the ram is 250 tons. It is the third in a series of four sizes built by the Ferracute Machine Company and weighs 10,700 lb.

## Micanneal, an Annealing Packing.

A packing material for covering steel during annealing, to prevent rapid cooling and oxidation of the surface must be a good heat insulator; that is, allow heat to pass through it but slowly, and also must contain no constitutents likely to affect the qualities of the steel, either through fusing or oxidation. This requires that the packing shall be infusible at the temperatures used and shall not be capable of absorbing gases. The Laurentide Mica Company, Ltd., Pittsburgh, Pa., has just placed on the market a product known as Micanneal, which is infusible, will not absorb gas and is a remarkably good heat insulator. Therefore it prevents the steel from being heated or cooled too rapidly, and also protects it from oxidation. Under the same circumstances pieces packed in micanneal will require from 25 to 150 per cent. longer to heat and to cool than with any other packing, which it is argued insures greater uniformity of the steel and the pieces come out clean with no evidence of scale. Micanneal is prepared in different degrees of fineness from the coarsest to the finest mesh and is ordinarily sold in lots of approximately 100 lb.

The Superior Iron & Steel Company, Warren, Ohio, has been formed with a capitalization of $300,000 to operate the plant of the Penn Shovel Mfg. Company, on which the men interested have secured an option. For the present the company will devote itself to the manufacture of sheet steel. The incorporators of the company are O. E. Krueger, M. H. Joy, Robert A. Slater, Mathias Slater and C. F. Clapp.

# The Prentice 16-In. Shaft Turning Lathe

The 16-in. shaft turning lathe illustrated is designed for rapidly machining shafts and studs. It is equipped with the standard headstock and quick change feed mechanism, embodied in the regular line of geared head lathes of its builder, the Prentice Bros. Company, Worcester, Mass. Three levers at the front of the head give eight changes of speed, while 44 changes of feed and screw pitches are obtained in the feed mechanism. The illustrations show the lathe without the lead screw, but the machine will hereafter be regularly equipped for thread cutting, as it has been found that users desire this feature in connection with the work for which the lathe is specially intended. Its capacity is from 13-16 to 5 in. diameter.

The characteristic features of the machine are a tailstock cut away for the passage of the tool blocks, and with spindle grooved to prevent interference with the points of the cutting tools; a tool carriage with the bridge at the left end and the bearings projecting to the right, and a roller follow rest, which assists in forming the equivalent of a box tool. As the tools are on the rear bearings of the carriage the spindle revolves backward, or the reverse of the usual rotation, and the face plate is keyed to it. The feed may be either backward or forward. The tool blocks permit the use of 10 cutting tools, if so many are desired.

Fig. 1 is a general view of the machine. From Fig. 2, which shows the rear of the tailstock, it will be seen that the tool blocks and tool have a clear passage by the tailstock, which arrangement is essential to the machine. Preparatory to turning, the tool carriage must be run back, so that the first tool will start to cut at the right end of the shaft, and in this position the tools must clear the tailstock. Ample clearance is especially necessary when producing small diameters. In Fig. 3, the cutting tools are directly behind the tailstock, which leaves the space between the centers free of obstruction when taking out or putting in work.

Fig. 4 shows the construction of the tool carriage and roller follow rest. The reversing of the positions of the bridge and bearing enables the tool block to pass the tailstock. The blocks are bound to the dovetail on the rear bearings of the carriage by means of packing screws. In setting the tools at the desired distances between the shoulders on a shaft the three packing screws are slightly loosened and the entire tool carrier is slid to position and there locked by the screws. The cutting tools are held in the slots by hardened steel taper wedges, brought to bear by means of an adjusting screw, the square end

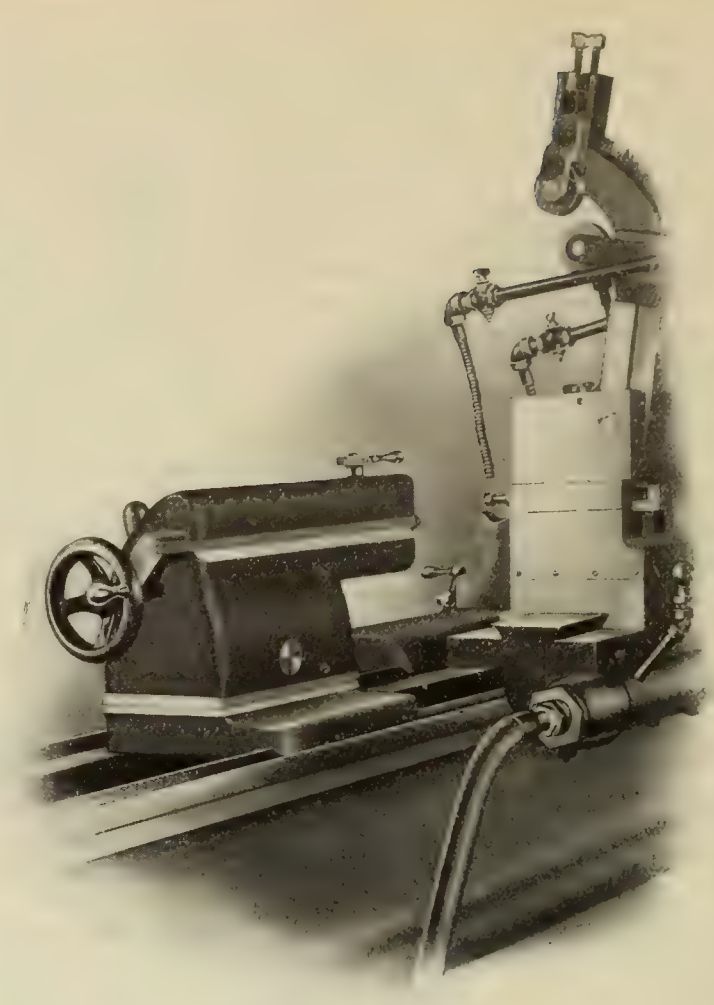


Fig. 2.—A Detail of the Tailstock of the Prentice Shaft Turning Lathe.

of which is seen projecting through the front of the block, directly over each slot. The screw in the bottom block, operated by the socket wrench used for the tool binder screw, is fitted to a nut in the lower part of the block, and brings the tool to or from the work in obtaining the desired diameter.

The roller follow rest is seen in Fig. 4, lifted out of the way in the left hand block and lowered into position for operation at the right hand. In this latter position the rest is forced under a ledge which securely binds it in position. The fitting is so exact that the presence of a particle of grit or chip under the follow rest will prevent it from sliding beneath the ledge. The roll carriers may be fastened at either side of the follow rest, so that the rolls may be brought to bear upon the work directly following the tool cut. The combination of the two rolls with the cutting tool constitutes a box tool. Provision

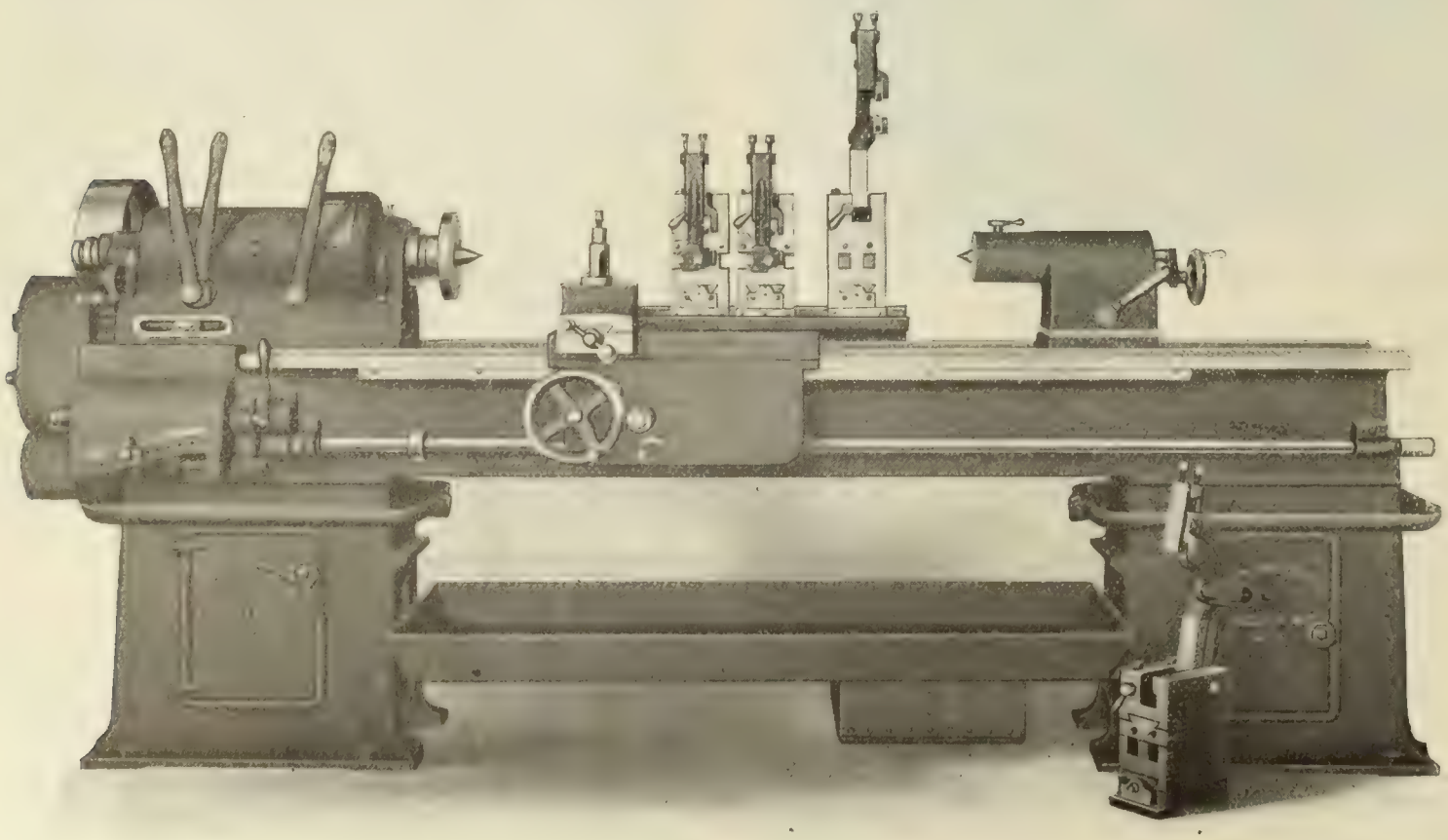


Fig. 1.—The 16-In. Shaft Turning Lathe Built by the Prentice Bros. Company, Hartford, Conn.

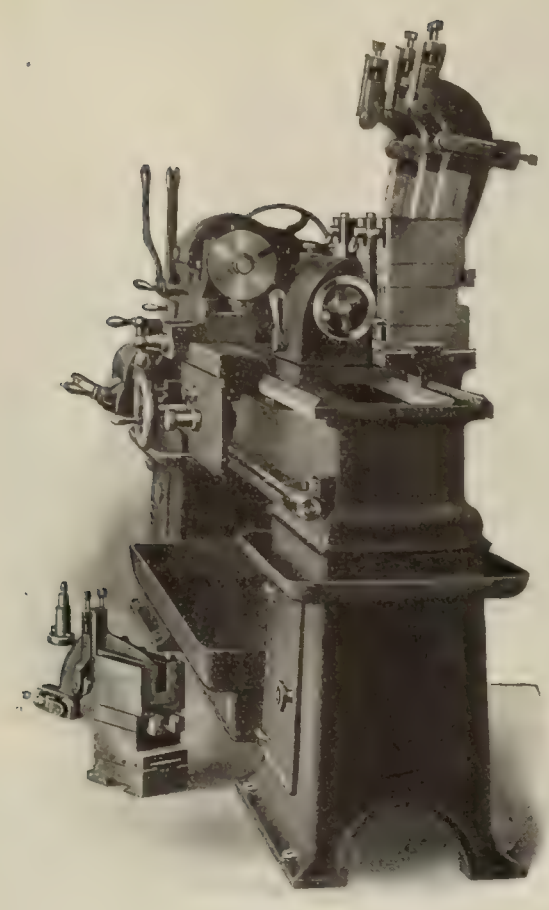


Fig. 3.—An End View of the Lathe, Showing the Tool Blocks Behind the Tailstock.

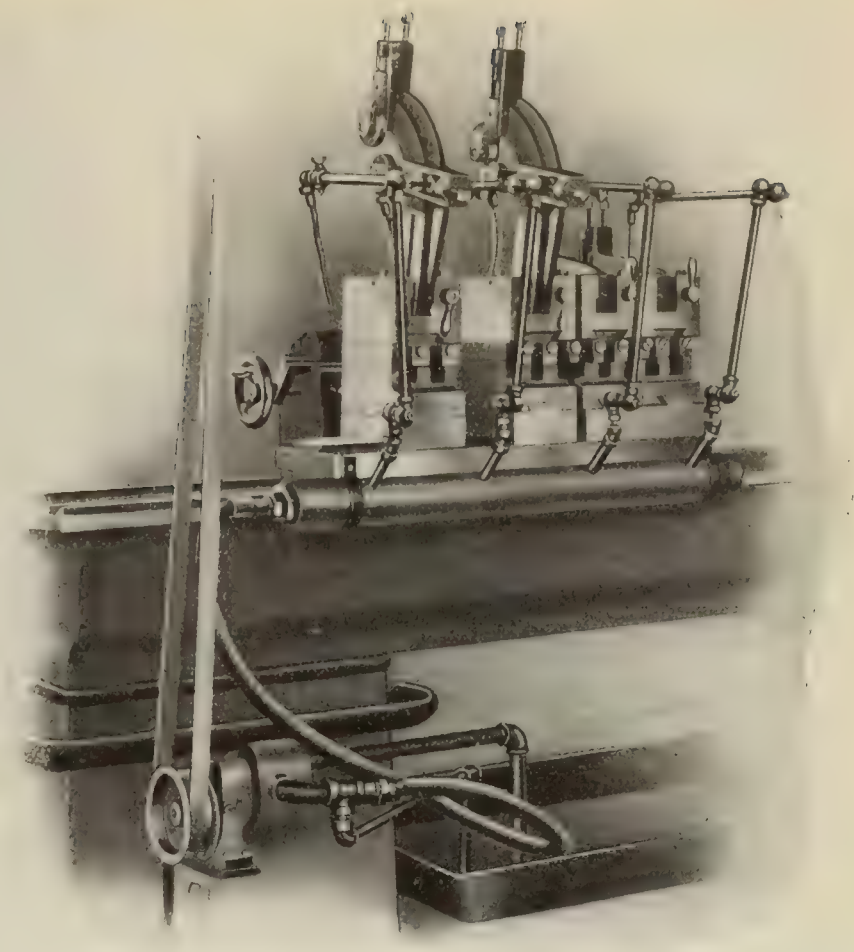


Fig. 5.—A Rear View of the Tool Carrier, Showing the Tool Lubricating System.

is made for flooding the work with cutting compound by the arrangement shown in Fig. 5.

The following are among the more important dimensions: The diameter of the front bearing is 2 13-16 in.; length of front bearing, 5½ in.; diameter of rear bearing, 2 3-16 in.; length of rear bearing, 3⅜ in.; hole in spindle, 1¼ in. The lathe swings 17½ in. over the ways, and the maximum distance between centers with a 9-ft. bed is 62 in. The follow rests have a capacity to turn 5 in. The width of the driving belt is 3 in. on a 12-in. pulley from a 12-in. countershaft pulley, running at 350 rev. per min. The 44 changes of thread pitchs range from 2 to 30. The net weight with a 9-ft. bed is 3300 lb.

Among recent car orders are those of the Pittsburgh & Lake Erie, for 500 steel hopper cars, of the Lackawanna for 500 box cars and 300 steel hopper cars, of the Louisiana Central for 15 logging cars, of the Cuba Eastern for 20 flat cars, and of the Virginian Railway for 30 passenger and baggage cars. The Rock Island has ordered 35 locomotives; the Carolina, Clinchfield & Ohio, 20; the Virginia Railway, 19; the Chicago, Cincinnati & Louisville, 5; the Union Railroad, 10, with scattering orders amounting to 20. The Wabash-Pittsburgh Terminal Company is negotiating for 12 locomotives.

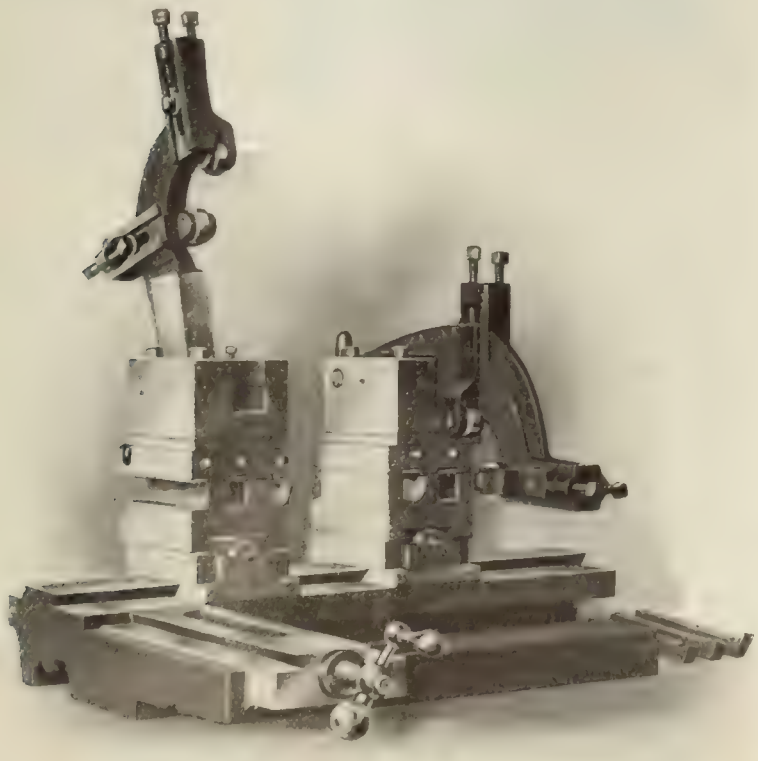


Fig. 4.—Detail of the Roller Follow Rests and Tool Blocks.

## Pennsylvania Railroad Locomotives.

Forty-two locomotives are to be built at the Altoona shops of the Pennsylvania Railroad for service on the main and branch lines east of Pittsburgh, an order having been given for 27 last week. These comprise 33 engines of the H-8-H type for freight service, and nine heavy shifting engines. The H-8-H type locomotives are the heaviest yet designed for main line service and will weigh almost 200 tons each. The new order for H-8-B engines will make a total of 72 engines of this type ordered from the shops at Altoona this year, though they will not all be completed until some time next summer. The order placed last week is the largest of its kind given to the Altoona shops since the depression set in last fall. At present the company has a number of freight locomotives which were delivered last spring and which have never been used, as they were kept in the shops and roundhouses on account of the reduced traffic.

**The Wealth of France.**—Leroy Beaulieu, a prominent French statistician, estimates the present wealth of the French people at $45,000,000,000, or more than $1100 for every man, woman and child in France. He further says that as the estimate is based upon declared succession taxes it is admittedly much below the real figures. In this estimate no account is taken of the vast amount of gold and securities which the French, especially the peasants, keep in concealment and which probably rivals the hidden treasures of India. The accumulations of the country are growing steadily as the result of annual saving of $1,000,000,000, much of which must seek investment abroad. France now receives $360,000,000 as an annual income from foreign holdings, which are principally government bonds, the amount having been almost doubled in the last 15 years.

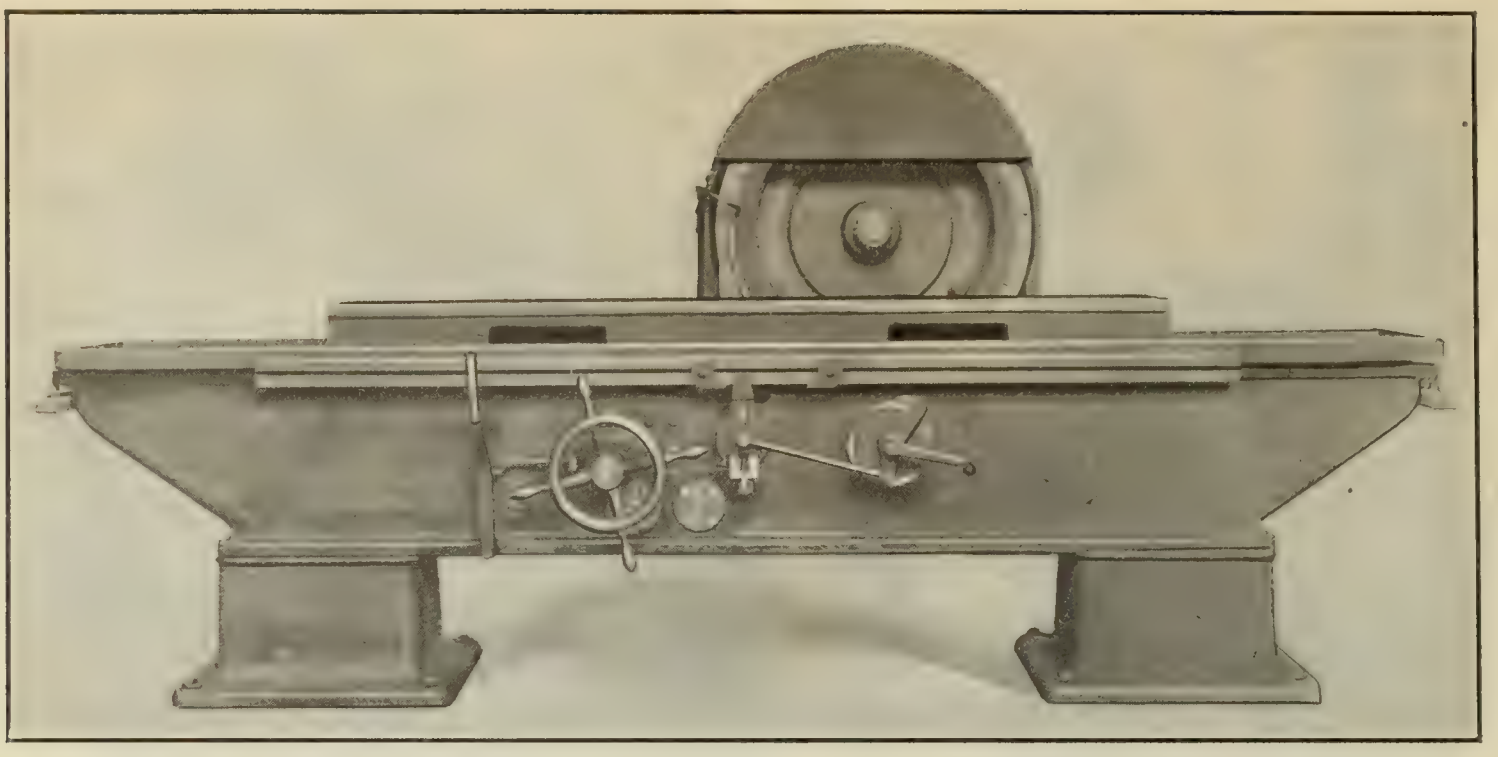


Fig. 1.—A New Guide Bar and General Face Grinder Built by the Diamond Machine Company, Providence, R. I.

## A New Diamond Face Grinder.

A large face grinder for general shop use has recently been put on the market by the Diamond Machine Company, Providence, R. I. In it particular attention has been paid to the needs of railroad shops, and the machine is especially designed with a view to grinding locomotive guide bars. This, however, is only one of the many ways in which it has proved efficient, as it is equally well adapted to grinding of work of almost all kinds, including castings such as machine parts, pipe flanges, floor plates, &c. The wheel grinds cast iron with great speed.

Fig. 1 shows a front view of the machine in its belt driven form, Fig. 2 a partial rear view of the same machine, Fig. 3 a partial rear view of a machine equipped with motor drive and Fig. 4 a view of the machine in use on typical work—in this case venturi water meter register cases.

Among the advantages of the machine these may be mentioned: Its operation is not hindered by hard iron or material of any kind. The work need not be so rigidly fastened as on a planer or milling machine. The mechanism movements are lively compared with those of other

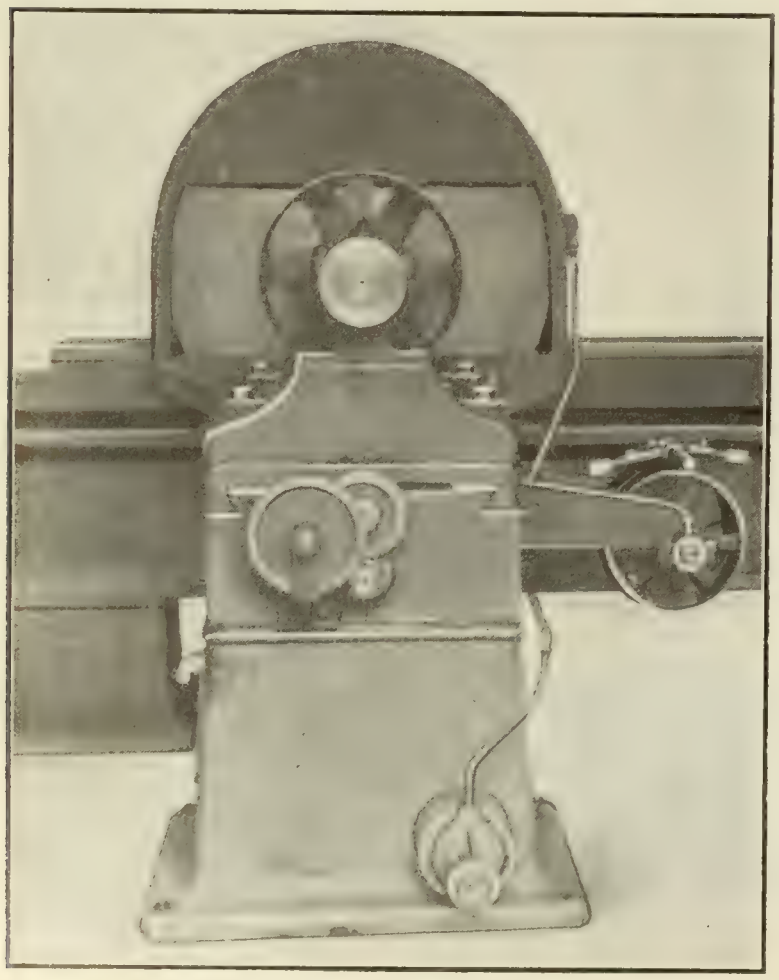


Fig. 2.—Detail Rear View of the Belt-Driven Machine.

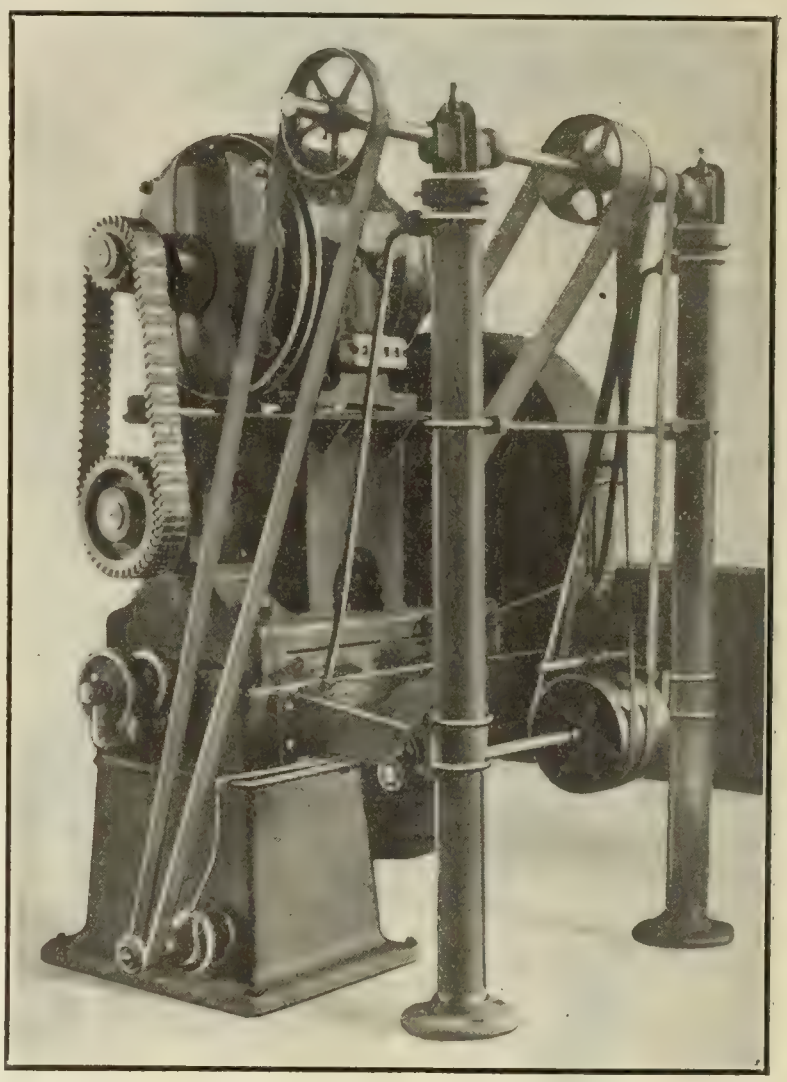


Fig. 3.—Detail Rear View of the Motor-Driven Machine.

machines doing this class of work. The emery ring is held in a steel bound adjustable chuck, as on machines of this nature the wheel should not run unsupported.

The bearings are ample, are lined with babbitt, are ring oiling, and are well protected from dust. The end thrust is taken by a ball thrust bearing. The longitudinal table feed is obtained by open and cross belts which are connected to heavy gearing and a rack, with automatic reversing mechanism for any length of stroke, shifted by adjustable dogs. When hand feed is desired a clutch is thrown in mesh with a hand wheel, which is shown in the front view, Fig. 1. The cross feed is either automatic or by hand, as desired, and is capable of fine adjustment. An automatic pump with attachments is furnished for wet grinding on all machines.

The following are the more important dimensions applying to the 84-in. machine:

| | |
|---|---|
| Length of bed, inches | 134 |
| Length of table, inches | 130 |
| Width of table, inches | 19½ |
| Length of platen (4 slots 13 16 in. wide), inches | 84 |

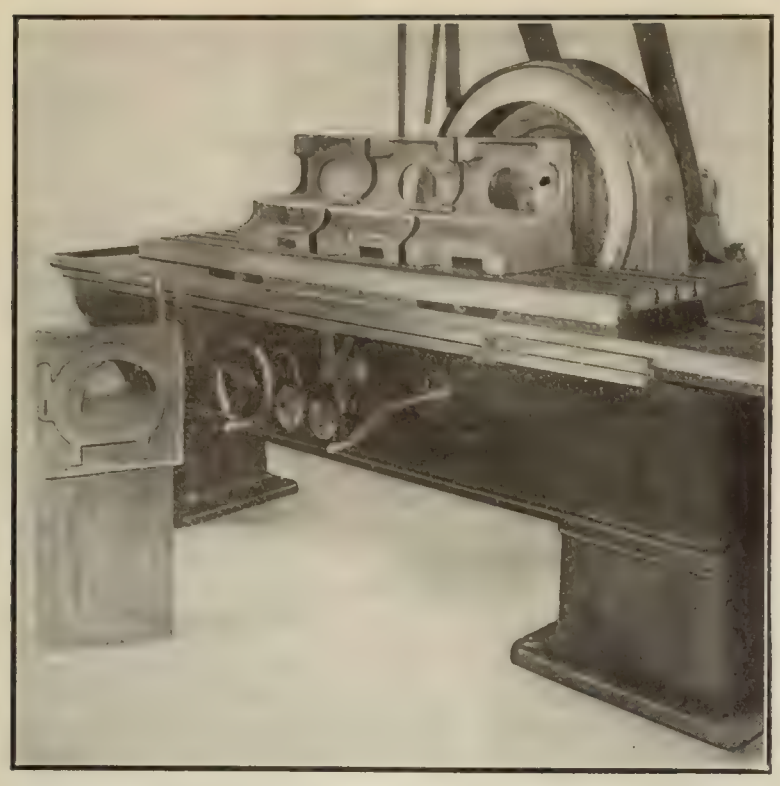


Fig. 4.—The Machine as Used for Grinding Miscellaneous Work.

| | |
|---|---|
| Width of platen, inches | 17½ |
| Table travel per minute, feet | 20 |
| Total length, including table travel | 18 ft. 4 in. |
| Total floor space required for operating | 18 ft. 4 in. x 7 ft. |
| Diameter of wheel (in adjustable holder), inches | 30 |
| Wheel speed, depending on work, rev. per min | 350 to 700 |
| Diameter of wheel spindle, inches | 3½ |
| Wheel spindle bearing, inches | 3½ x 10 |
| Weight, complete with countershaft, pounds, about | 8,000 |
| Weight, with motor drive, pounds, about | 10,000 |

These machines have been built in 84 and 114 in. lengths for belt or motor drive. Longer machines can be made if desired.

## Government Supervision Over Corporations.

Announcement is made that President-elect Taft is working out the details of a plan designed to increase the efficiency of government regulation of corporations doing an interstate business. Mr. Taft's friends say that the proposed plan will need legislation from Congress decreasing the powers of the Interstate Commerce Commission, greatly increasing the powers of the Bureau of Corporations in the Department of Commerce and Labor and creating a practically new bureau in the Department of Justice.

The general outline of the plan is described as follows: The Interstate Commerce Commission is to be relieved of its duties as an investigating body. It is to be a commission exercising only quasi-judicial functions. The jurisdiction of the Bureau of Corporations, on the other hand, is to be extended over all corporations doing an interstate business. It will be charged with the detailed work of investigating and preparing cases.

This bureau, acting upon individual complaints or upon its own initiative, will lay the results of its investigations before the Interstate Commerce Commission for decision. It will originate all cases. The new bureau in the Department of Justice will work in co-operation with the Bureau of Corporations and the Interstate Commerce Commission when legal aid is necessary.

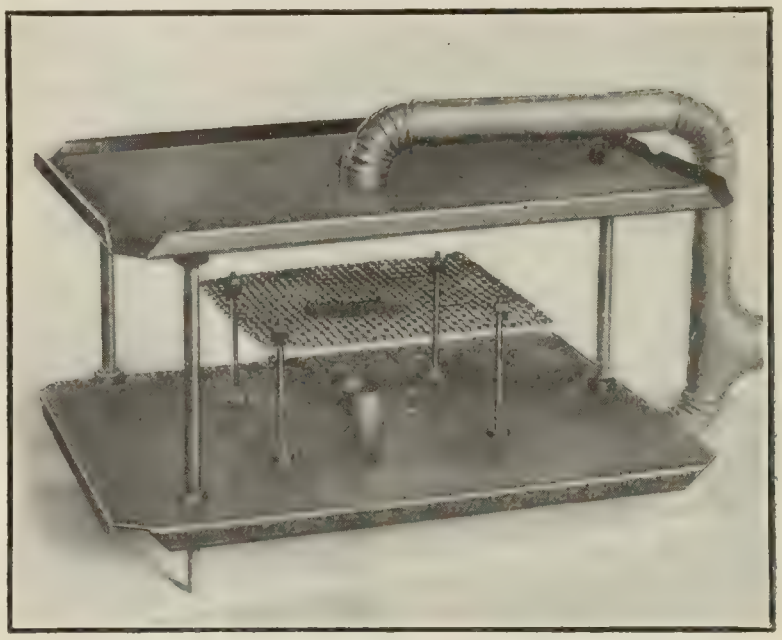
Mr. Taft's friends say that the proposed plan does not contemplate the licensing of corporations, but that under it corporations will probably be obliged to submit to closer scrutiny by the Bureau of Corporations. Under a plan such as Mr. Taft's friends suggest the Department of Commerce and Labor, containing the Bureau of Corporations, will become a Cabinet post of the first importance.

Statistics collected by the *Electrical World* show that the number of students enrolled in electrical courses in the universities, colleges and technical schools of the United States at the end of the scholastic year 1907-08 was 9651. The number of graduates for that year was 1501 and the grand total of graduates to date 12,805. These figures only include students having followed systematic courses of electrical engineering, schools being excluded which conduct only evening classes or whose instruction covers only elementary or practical parts of electrotechnics. Adding the number of students who have dropped out after completing two or three years of work in electrical engineering, it is estimated that 17,000 young men have come from the technical schools of the country to enter the electrical industry.

## The Krieger Cold Blast Tool Tempering Stand.

In tempering and hardening high speed steel by cold air blast it is desirable that the air circulate freely upon all sides of the tool treated. To effect this result the Krieger Tool & Mfg. Company, Grand Rapids, Wis. (Chicago office, 83 West Randolph street), has brought out an apparatus designed to hold the tool or tools between two impinging currents of forced air blast. This is accomplished by mounting a wire screen of reasonably fine mesh upon four steel rod posts between two sheet steel plates similarly supported by steel rods, and discharging the blast through a branched outlet to deliver the air simultaneously from above and below directly upon the screen.

To secure greater concentration and proper distribution of the blast upon a number of tools placed in the



A Cold Blast Apparatus for Tempering and Hardening High Speed Steels, Made by the Krieger Tool & Mfg. Company, Grand Rapids, Wis.

center of the screen, V-shaped sheet steel hoods with slotted openings at the apex, and closed ends, can be attached to the top and base plates of the apparatus in a longitudinal line over the center of the discharge nozzles. These hoods do not appear in the engraving, not having been attached to this stand. By means of them the blast is distributed uniformly along the center line of the screen longitudinally, affording equal cooling to a number of tools, placed side by side, at the same time, all sides of which are surrounded by an equal flow of air.

This stand can be furnished in any desired size, and of varying weights, according to the service required. The one illustrated is approximately 2 ft. long, 18 in. wide and 12 in. high, with a tool holding screen 8 x 12 in., and is supplied with air through a 2-in. galvanized steel pipe. The upper cover of the stand affords a convenient shelf upon which to deposit tools after they have been tempered.

The Heil Company, Milwaukee, Wis., has moved into its newly constructed structural iron and boiler shops, at Twenty-sixth and Montana streets. The new plant is 80 x 140 ft., of steel, concrete and brick construction. A spur line of the Northwestern Railway runs through the center of the plant, affording excellent shipping facilities. A feature of the new plant is the 55-ft. tower for the accommodation of the new 24-ton upright Hanna air riveter.

# TARIFF HEARINGS AT WASHINGTON.

## Numerous Briefs and Statements Submitted Relative to the Metal Schedule.

WASHINGTON, D. C., December 29, 1908.—The Ways and Means Committee is in receipt of a large number of briefs and less formal written statements from prominent concerns in the iron and steel industry based in many instances upon the publication heretofore made in the columns of *The Iron Age* of full reports of oral hearings and liberal extracts from briefs and other documents which have attracted wide attention throughout the trade. An interesting feature of these briefs is the spirited attack made therein upon the testimony and written statements of prominent men in the industry, and it is already apparent that the Ways and Means Committee will have need of the combined wisdom of all its members in reaching just conclusions in the framing of the metal schedule. The statements referred to are as follows:

### FERROSILICON.

**Statement of the Bessie Ferrosilicon Company, New Straitsville, Ohio.**

We earnestly beg that Congress will give us the protection on ferrosilicon, which was evidently intended, but which we are not now receiving. The conditions of the business, and particularly new methods of manufacturing, have altered the situation from what it was in 1897, when the present tariff act was passed, so that a readjustment of the duty is imperatively required. Otherwise an established business in this country, which has already declined, is threatened with extinction. During this last year our furnace has been shut down for almost all the time, owing chiefly to foreign competition.

Ferrosilicon is a combination of silicon and iron and is used in the manufacture of steel to make it sound and to prevent blowholes, &c. It was formerly made only in blast furnaces, and perhaps for that reason was classified in the tariff with pig iron, which is also made in blast furnaces, though, as indicated below, it never really belonged in that class. However that may be, since 1897 an important change in manufacturing has occurred, so that ferrosilicon can be and is now largely made by electro-metallurgical processes.

The value of ferrosilicon depends on the silicon content—that is, the amount of silicon present—so that a ferrosilicon of 8 per cent. silicon is worth correspondingly less than the ferrosilicon of 50 per cent. silicon. The blast furnace ferrosilicon only runs about as high as 15 per cent. silicon, whereas the electrical furnace product runs from 50 per cent. silicon up and has a correspondingly higher value. Yet all these kinds of ferrosilicon are now being admitted for duty, whatever their value, on a basis of $4 per ton.

The official figures of the importations of ferrosilicon show three marked facts as between the year 1897 and the year 1907: First, that the importations have increased from 1,324.93 tons to 12,653.12 tons; second, that the value per ton has increased from $17.60 to $72.26, which, of course, is due to the fact of the increasing importations of the electric furnace product with its correspondingly higher values; third, that the equivalent percentage of duty on an ad valorem basis has consequently diminished from 22.73 per cent. to 5.54 per cent. The figures by years are as follows:

| Year. | Duty per ton. | Tonnage. | Value per ton. | Equivalent percentage on ad valorem basis. |
|---|---|---|---|---|
| 1897 | $4.00 | 1,324.93 | $17.60 | 22.73 |
| 1898 | 4.00 | 697 | 21.92 | 18.24 |
| 1899 | 4.00 | 1,559.26 | 24.00 | 16.66 |
| 1900 | 4.00 | 4,666.25 | 36.85 | 10.92 |
| 1901 | 4.00 | 546.22 | 30.92 | 12.94 |
| 1902 | 4 00 | 3,567.63 | 20.77 | 19.26 |
| 1903 | 4.00 | 23,795.35 | 24.63 | 16.24 |
| 1904 | 4.00 | 6,262.04 | 33.30 | 12.01 |
| 1905 | 4.00 | 6,833.99 | 48.93 | 8.18 |
| 1906 | 4.00 | 10,275.20 | 60.07 | 6.66 |
| 1907 | 4.00 | 12,653.12 | 72.26 | 5.54 |

The only way to secure proper protection on ferrosilicon is to remove it entirely from the class of pig iron and put it with such other ferroalloys as are made by both the blast furnace and the electric processes. Ferrosilicon, whether in the form of pigs or otherwise, never really belonged in the class with pig iron. To make a ton of it by the blast furnace process costs from two to three times as much for labor cost alone, besides requiring twice as much fuel as to make a ton of ordinary pig iron.

The total labor cost in making ferrosilicon, if we regard the entire cost of the manufacture from mining the ore to the complete ferrosilicon, is doubtless at least 80 per cent. to 90 per cent. If we take the actual cost of the blast furnace process alone, it is, as before stated, from two to three times as great as in making pig iron; and if we compare this blast furnace part of the manufacture alone with the cost abroad, we have a striking contrast in the wages paid. From the best information we can obtain, after careful inquiry, we believe that these comparative costs of labor would be as follows:

| | Europe. | United States. |
|---|---|---|
| Ordinary unskilled labor, per day. | $0.50 to $0.60 | $1.80 to $2.00 |
| Skilled labor, per day | .80 to 1.00 | 2.50 to 3.50 |

We understand that foreign blast furnace ferrosilicon (of 10 per cent. silicon content) is being offered at the present time at New York and at Philadelphia on a basis of $22.50 per ton, duty paid. The average cost of making our 10 per cent. grade during the last four years has been about $21.50 per ton at furnace (in the Hocking Valley), which, with freight added, means $25.20 at New York and $24.80 at Philadelphia, without figuring in any profit whatever. In other words, the foreign manufacturers can pay $4 per ton duty and sell their products here at from $2.70 to $2.30 per ton less than our cost price, without including in such cost any profit whatever for us. The following tabulation shows this clearly:

| | | |
|---|---|---|
| Our average cost for the last four years for putting down 10 per cent. ferrosilicon in Philadelphia, without any allowance whatever for profit | | $24.80 |
| Foreign value of imported 10 per cent. ferrosilicon per ton, say | $16.75 | |
| Expenses for freight, brokerage, &c., about 10 per cent., say | 1.75 | |
| Duty at $4 per ton | 4.00 | |
| Selling price of imported ferrosilicon at Philadelphia | | 22.50 |
| Advantage to foreigners | | $2.30 |

To put us on equal basis in that territory with the foreigner, even without any profit to ourselves, we need a duty of $6.30 on 10 per cent. ferrosilicon, which, on the basis of the foreign value, would equal about 37½ per cent. And if we regard territory somewhat nearer our furnace, as for instance, between Philadelphia and Pittsburgh, we need a protection of 30 per cent. to 35 per cent.

It is true that there have been times when we have been obliged to make sales at below cost to hold our trade or to get rid of a surplus stock, and about the only times when we can get into the Eastern market are those when the foreign supply happens to be short while there is a local demand for immediate delivery. But the situation is summed up when we say that at the present time we have been practically driven out of the Eastern market and cannot compete profitably in the Pittsburgh territory.

We do not ask for the required protection on the ground that ours is an infant industry needing encouragement, but on the ground that it is an old industry threatened with extinction. Only a few years ago there were in the Hocking Valley seven or eight blast furnaces making silicious iron. To-day our company is the only one left, and even we for a long period have been unable to keep our furnace in steady operation, while at the same time the importers have been bringing over and selling the foreign product. Possibly our industry might have been able to maintain itself on the present duty if conditions of manufacture had not changed so tremendously, but as it is now there is no hope for us except in a change of the tariff.

We do not wish to object to the electric furnace manufacturers receiving proper protection, but we do firmly believe that manufacturers of blast furnace ferrosilicon should also receive due consideration in the tariff, and we beg that the same may be accorded us.

We therefore ask that you remove ferrosilicon from paragraph 122 in the tariff and put it in paragraph 183 with other ferroalloys (except ferromanganese, as to which the facts are very different and in which we are not interested). We also ask that you insert in paragraph 183, in order to prevent any doubt of the intention of Congress, some such words as "whether produced in electric furnace, in blast furnace, or by chemical process, or otherwise." As to the rate of duty, as before pointed out, we need a protection of about 37½ per cent. ad valorem (on the foreign value) to compete (even without reckoning profit to us) with the foreign product at the seaboard, though possibly 30 or 35 per cent. ad valorem would enable us to compete in the Pittsburgh territory.

**Statement of the Northern Iron Company, Philadelphia, Pa.**

We wish to place before your committee a few facts concerning the duty upon a certain quality of pig iron upon which, like all other pig iron, an import duty of $4 per ton

is imposed. This pig iron is used in making steel with the surface blown converter and analyzes as follows:

| | Per cent. |
|---|---|
| Silicon | 2.25 to 3.50 |
| Manganese | 0.50 to 0.90 |
| Carbon | 3.00 to 4.50 |
| Sulphur | 0.03 to 0.04 |
| Phosphorus | 0.03 to 0.04 |

This iron is very scarce in the United States, the production small, the price high and is confined principally in the hands of one house. This quality of iron could be imported from England at a reasonable price, lower than the American quality even with the addition of freight charges.

For the past 12 years we have been engaged in the business of putting up plants for making steel by the converter process, and though we may have been able to develop it successfully to a certain degree, yet its wider extension has been very much hindered by the high price of the required pig iron. We have made efforts with several furnacemen to make this so-called "silicon iron," but the demand for iron used in the open hearth process is so great that no one cares to divert from his regular work.

By lowering or suppressing the duty on this high silicon iron you will not hurt any existing furnaces, as they do not make this brand of iron, and you will benefit all the industries mentioned.

We respectfully beg to state that these statements are untrue. This so-called silicon pig iron is what is known in the trade as low phosphorus pig iron. It does not differ in any respect from pig iron used in the open hearth acid furnaces, excepting that the silicon is somewhat higher. The open hearth furnaces use iron usually with silicon from 1 to 2 per cent. The Tropenas converter, represented by Colne & Co., requires iron with silicon from 2.25 to 3.50 per cent. The same furnaces which make the open hearth iron produce the so-called silicon iron. It is not true that only one house is interested in this matter. This iron has been produced during the past few years by the following concerns:

Northern Iron Company, Standish, N. Y.
Empire Steel & Iron Company, Catasauqua, Pa.
Bethlehem Steel Company, Bethlehem, Pa.
Pennsylvania Steel Company, Steelton, Pa.
Carbon Iron & Steel Company, Parryville, Pa.
R. Heckscher & Sons Company, Swedeland, Pa.
Carnegie Steel Company, Pittsburgh, Pa.
Cambria Steel Company, Johnstown, Pa.
Stewart Iron Company, Cleveland, Ohio.
Cranberry Furnace Company, Johnson City, Tenn.

There has been no period during the past 20 years when an abundant supply of this iron has not been available from at least three to six of these furnace companies. More of the iron would have been produced had the demand called for it. Any discrimination in duty on this so-called silicon iron would be a distinct blow at the capital and labor interested in the manufacture of low phosphorus pig iron, and would be an injustice to users of low phosphorus iron by the acid open hearth process.

## SCRAP IRON AND STEEL BILLETS.

**Statement of the Portland Iron & Steel Company, Portland, Maine.**

We write you in the interest of an industry which we are operating at Portland, Maine. We have a rolling mill which employs about 300 men, turning out a product of merchant bar iron which we distribute to the railroads and jobbers in the New England States.

The raw material which we use is entirely wrought scrap iron. There is a present import duty of $4 per ton on this material coming into the United States. Canada is close to us, with the Grand Trunk Railroad running into the city of Portland. We have a dock at our mill, with tidewater, where we can discharge our coal vessels from Philadelphia on low rates of freight.

We feel that the duty on scrap iron should be taken off to enable us to buy this material from Canada and other foreign countries.

Large quantities of this material are shipped into Pennsylvania which are used by the mills making the same product that we do, and the quantity produced during the year has been less than heretofore on account of the depression in business; and we find that market advancing now so that the profit on our manufactured product is seriously affected. If we had another source of supply where we could import scrap, we would be better off than we are to-day.

One other product which we advocate a radical reduction on is steel billets. Situated as we are on tidewater with our mills, we feel that lower duty on billets, or none at all, would give our industry in New England a great advantage over what it now has. We are obliged to pay the makers of open hearth billets in Pennsylvania almost the price of the finished product of steel bars, which prohibits our using steel billets to reroll into soft steel bars for our trade in New England. We are well equipped to roll this material and feel that this industry should be supported and prospered.

We have an up to date, well equipped plant, equal to any first-class Pennsylvania mill turning out the same product, and all we ask is an equal chance with Pennsylvania mills to make the same product and sell it in New England.

## STEEL BARS AND BILLETS.

**Statement of John O. Pew of the Youngstown Iron & Steel Roofing Company, Youngstown, Ohio.**

The plant with which I am connected is located in Youngstown, Ohio, and has an output of about 30,000 tons per annum. It produces sheet steel from sheet steel bars or slabs. The sheet bar or slab mentioned in section 135 is our raw material, and I am led to make these suggestions by feeling that the committee might be misled by the fact that the word "bars" in the iron trade is used in two distinct senses. The merchant bar made of steel, the round and the finished steel product which corresponds with the bar iron mentioned in section 123, is separate and distinct from the steel bars in which we take an interest, because they are our raw material, and we feel that the sheet bar is an unfortunate name for that form of billet, which is essentially a billet and should not be called a bar, because it is so distinct and separate and different from the finished bar iron or bar steel that to call both things by the same name may lead to an error in the framing of your bill that would be exceedingly disastrous to the manufacturers of sheet steel and tin plate.

The steel bars which we buy and roll down into the finished sheets would be more properly styled a billet than a bar, but in the trade they are known as sheet bars, and should not be carried in the same schedule as the finished bar steel. The cost of producing sheet bars of steel is about 30 cents a ton more than the steel billet. The difference in cost and real value is so slight that the billet and the sheet bar should, in our judgment, carry the same tariff duty. We are anxous that no mistake be made in the adjusting of this duty.

Briefly, I wish to say that I believe that a careful but not a radical reduction may be made without serious injury to all the iron schedules. We are paying high wages, and a radical reduction in the protection that we have at present under the Dingley bill would make it necessary for us to quit business or to reduce wages.

We think that section 135, in its classification, is open to a very serious criticism. The several kinds of steel therein mentioned are classified according to their value in the market. This, it seems to us, ought to be changed to a specific duty that would remain uniform and not go higher if the price of steel should rapidly rise in our market.

It seems that there is no reason why the duty should also be increased by the mere fact that the market value of the steel itself should go from 1 cent a pound to 1.4 cents a pound. The effort in the Dingley bill manifestly was to charge a higher duty for those products upon which a greater amount of labor had been expended, and this was right. The new bill, we think, should do the same thing, but it seems to us that it might be done in a more scientific way. The bloom, the slab and the sheet bar are all essentially the same thing and cannot differ much in cost of production. It is possible, however, that some influence might raise the price of the sheet bar in our market until it would go to $30 per ton, while at the same time the price of billets would remain as it is at practically $24 per ton. Under the classification that exists now in section 135 the tariff on the bars would, by a mere change in the quotations of market value, be advanced $4 per ton at a time when, owing to the scarcity of sheet bars in this country, it would be exceedingly disastrous to the sheet mill industry, making the increasing rise a barrier against relief through importations from abroad at a time when the tariff ought to be lower and not higher; and in the making of the new rates of duty, if it is thought wise by the committee to change this schedule, it is suggested that the prices of these different articles be ascertained as they exist at present, and that as nearly as possible a specific duty be made and omit the ad valorem classification which is now in this section.

## STEEL RAILS.

**Statement of E. C. Felton, President Pennsylvania Steel Company, Philadelphia, Pa.**

For the manufacturer whose works are located near the seaboard the present rate of duty is none too high to give the protection necessary to enable him to make a reasonable profit on his investment and at the same time pay his labor such wages as the present scale of living in this country demands. The competition of foreign rail manufacturers reaches him first; works located in the interior having a natural protection because of the freight which must be paid on foreign rails coming into their market, while he not only has no such protection but because his market is along the seacoast must pay in freights to reach his points of delivery an amount often equal to or in excess of that paid by the foreign manufacturer to reach the same points.

To illustrate. The works of the Maryland Steel Company are located at Sparrows Point, on the Patapsco River, near Baltimore. Its market is along the Atlantic and Gulf seaboard and on the Pacific Coast of the United States. To reach a considerable part of the market, notably the Gulf of Mexico points and more especially the Pacific Coast, this company must pay in freights an amount equal to or in excess of that paid by the foreign mills shipping to the same points.

The equipment of the Maryland Steel Company's plant is modern and was designed with special regard to the economical manufacture of steel rails. Its location on the seacoast is favorable to its engaging in the export business, and this it has done to a large extent. At the low prices received for exported rails a book loss has been shown, but it is felt that the business as a whole has been advantageous, since the foreign orders taken have allowed of the steady and regular operation of the mills and so cheapened the entire output of the plant, besides permitting the fixed charges to be distributed over a larger tonnage.

The following table gives for the 10 years 1898 to 1907, inclusive, the average prices received per ton, f.o.b. mill, for rails sold in domestic and foreign markets:

| Year. | Domestic. | Foreign. | Average. |
|---|---|---|---|
| 1898 | $19.44 | $17.61 | $18.72 |
| 1899 | 22.42 | 18.64 | 21.04 |
| 1900 | 29.78 | 26.06 | 28.00 |
| 1901 | 25.84 | 22.46 | 25.12 |
| 1902 | 27.72 | 22.17 | 27.46 |
| 1903 | 27.92 | .... | 27.92 |
| 1904 | 27.44 | 17.98 | 22.76 |
| 1905 | 27.66 | 20.79 | 25.96 |
| 1906 | 27.93 | 23.42 | 27.33 |
| 1907 | 28.08 | 27.52 | 28.02 |
| Average | $27.13 | $21.43 | $25.89 |

During the 10 years the Maryland Steel Company sold an average of 76.42 per cent. of its product in the domestic market and exported 23.58 per cent., the proportion sold abroad varying from nothing to about 50 per cent. in different years.

The profit per ton during this same period on this business, after deducting all fixed charges, but without charging off anything for general depreciation, is as follows: 1898, $1.136; 1899, $1.199; 1900, $1.643; 1901, $2.011; 1902, $2.880; 1903, $1.644; 1904, $1.745; 1905, $3.718; 1906, $3.280; 1907, $1.664; average, 10 years, $2.133.

During these years an average of 52.8 cents per ton was charged off to depreciation, leaving the net profits available for dividends and plant additions and extensions $1.605 per ton of rails. It is impossible to determine with absolute accuracy the comparative costs of rails made for the foreign and domestic markets, since both are often produced concurrently and the cost items cannot be separated. A careful estimate has been made, however, by crediting to the costs of exported rails all rebates received from imported materials, such as iron ore, pig iron and spiegeleisen used in their manufacture, but not crediting the incidental advantages coming from steady, regular operation, the spreading of fixed charges over a larger output, &c. This estimate shows that for the above period of 10 years the exported rails show a book loss of $1.489 per ton and the domestic rails a profit of $3.138, and after deducting the 52.8 cents charged to general depreciation, a loss of $2.017 and a profit of $2.610 per ton, respectively.

The net cost of rails during this same period, before deducting anything for general depreciation, was as follows: 1898, $19.856; 1899, $19.841; 1900, $26.357; 1901, $23.109; 1902, $24.580; 1903, $26.276; 1904, $21.015; 1905, $22.242; 1906, $24.05; 1907, $26.356.

Much has been said in the public prints about the low costs at which rails could be made in the United States. These statements were true in the period between 1895 and 1900. The low costs have, however, permanently disappeared in the last 10 years, as is indicated in the above table, which shows an increase of $6.50 in that time. This increased cost has been brought about by higher wages paid to labor, higher freight rates and higher costs of raw material. The higher wages paid to labor have been largely offset by improved machinery, but the higher freight rates and higher costs of raw material are, it is believed, permanent elements of cost, which must always be considered in the future.

While the prices of raw materials have fluctuated widely in the past, the present level, or higher, will undoubtedly be maintained in the future, as a result of the withdrawal from the open market of many of the most important sources of supply through their acquisition by owners who reserve them for their own purposes. . . .

In the 10 years considered the average price obtained for rails at Sparrows Point was $25.89 per ton, showing a profit of $2.13 per ton, or, after depreciation had been charged off, of $1.60 per ton. The costs had advanced in this period from $19.85 to $26.35 per ton, or $6.50 per ton.

Let us consider not the profit per ton, but the return on the capital employed, and let us take not the whole period, but the two most profitable years—1905 and 1906.

The total amount employed in those years in plant and property, materials on hand and working capital was, approximately, $10,500,000. The average profit per year without depreciation was as follows:

| | Amount. | Per cent. on $10,500,000 capital employed. |
|---|---|---|
| Gross profit | $1,369,602 | 13.08 |
| Less interest on bonded indebtedness... | 182,137 | 1.74 |
| Net income | $1,187,465 | 11.34 |

From the net income a charge for depreciation averaging $652,799 each year was made, leaving a net profit of 5.09 per cent.

As the Maryland Steel Company, whose figures are those given, is a subsidiary company of the Pennsylvania Steel Company, which owns other companies engaged in similar and related lines of business directly concerned with steel manufacture, a diversion of profits legitimately arising from the operations of the Maryland Steel Company might appear to have been made to those other companies and the true state of affairs concealed. The total amount employed in all the companies owned by the Pennsylvania Steel Company (and these companies are all engaged in the line of business connected directly with steel and iron making, such as ore and coal mining, transportation and the manufacture of many kinds of steel products besides rails) was approximately $50,000,000.

The average aggregate profits of these companies (including the Maryland Steel Company) for 1905 and 1906 were as follows:

| | Amount. | Per cent. on $50,000,000 capital employed. |
|---|---|---|
| Gross profit | $5,420,117 | 10.79 |
| Less interest on bonded indebtedness... | 748,313 | 1.49 |
| Net income | $4,671,804 | 9.30 |

From the net income a charge of depreciation, averaging $1,572,787 each year, was made, leaving a net profit of 6.2 per cent.

It will be seen from these figures that the percentage of profit made by the Maryland Steel Company (which is a manufacturing company only) is somewhat in excess of that made by the combined companies, and that no misrepresentation has been made, either knowingly or unintentionally, in the figures presented.

To again summarize. On the capital investment in rail manufacture the Maryland Steel Company has earned yearly in the two best years of the last 10 years 11.34 per cent. It is submitted that an average profit during the last 10 years of $2.13 per ton on rails and a return of 11.34 per cent. before charging off any amount for depreciation, during the two most profitable years of that period, on the capital invested is not unreasonable or excessive.

Any reduction in the present duty will bring about a reduction in the price at which rails sell along the seaboard and will reduce or wipe out the existing margin of profit. The present rate is not higher than necessary to prevent the dumping in this country of surplus of foreign manufacturers, and that it has not resulted in exorbitant profits or unreasonable prices to American railroads is shown by the foregoing statements and by available records of prices in the steel producing countries of Europe. It is therefore asked that no change be made in the existing duty of $7.84 per ton on rails unless a corresponding reduction is made in the duties on the materials which enter into the manufacture of rails—namely, iron ore, pig iron, spiegeleisen and ferromanganese.

While the figures presented apply only to the operations of the Maryland Steel Company, they are believed to represent substantially those of other American rail manufacturers.

## ABRASIVES OF IRON.

**Statement of the Calais Shop Works, Calais, Maine.**

Ten years ago we started at Calais, Maine, a plant to make chilled shot for use in granite mills here and elsewhere. We have been in competition chiefly with foreign manufacturers, and feel that in revising the tariff it should be changed from an ad valorem duty of 45 per cent. to a specific duty of not less than 1 cent per pound on all sizes of chilled shot. We have carried on our business in a most economical manner and have not in the 10 years been able to get a profit of 6 per cent. a year on our investment, leaving out all allowance for depreciation of plant.

The foreign makers get pig iron for $13.40, which costs us $23. A reduction in duty on pig iron would not help us, as it would only be added to the foreign price to us. The foreign freights to New York are about $3.23, against $5 from Calais.

We do not know the comparative wages in Scotland and here. We do know, however, that in 10 years of hard work we have been constantly facing a foreign competition which has kept our prices down below a fair business profit, and this has been especially true of small sized shot, which has been imported and sold as low as $25 a ton of 2240 lb., and this is below cost here.

The duty should apply to all sizes of shot and should be specific duty, as in the past the valuations have been such that the price has been forced down to less than the actual cost to us on small sizes.

In 1904 an effort was made by the foreign manufacturers to combine the American makers with them and regulate prices. We declined to do this, and we think we ought to have the tariff protection.

## STEEL WIRE.

**Statement of Julius Breckwoldt & Co., Dolgeville, N. Y.**

I have been interested in the importation of the Rudolf Giese steel music wire, manufactured at Westig, Germany, for the past 10 years.

I do not know what measures will be taken by Congress on the tariff question, but generally speaking it looks as if there would be a revision. The American steel trust has cut a great inroad in the business and is doing its utmost to drive us out of the market. As you will see by the inclosed copy of letter that it is selling spring wire at 22 cents per pound, and it costs us 28 cents to import this wire. You are aware that I am a strong protectionist, out and out, but at the same time I would like to have justice done all around, and believe that the tariff on cast steel music wire and spring wire should be reduced. The manufacturers in this country can never produce wire of such high standard as that produced by foreigners, as it requires the best Swedish steel to make it. Our manufacturers are, so to say, imitators, and it will be a great many years to come before they have the results achieved by the foreign manufacturers.

Furthermore, the extent of the piano business, as well as other lines of manufacturing where these wires are used in this country, is so large and there is so much capital invested that it means a great help to them if they can get the right wire at the right price. It would be detrimental to these industries if they were forced to take inferior goods, which would be largely the case should the American Steel & Wire Company drive us out of the market. You can judge from the letter which our agent sends us that it is doing everything in its power to cut into the market. Even if it is not entirely successful in so doing, it compels us to cut the price, and if this state of affairs continues it will discourage us.

Knowing that you have our interests at heart, I wish, if there is cause for it, that you would look after this matter for us and see if you can get the duty reduced. At present we are paying 45 per cent., which is altogether too much protection for the combine; 30 per cent. would give us a fighting chance to keep it off. Three or four years ago its influence went so far that we had to add market value to our invoices, notwithstanding the proof of the consular agent in Europe that we entered our goods at the true market value.

## HORSESHOE CALKS.

**Statement of the H-Calk Company, New York City.**

We are engaged in the importation of horseshoe calks, for which there is no specific provision in the tariff act of 1897, and which have been assessed with duty under the general provision for manufactures of metal in paragraph 193, schedule C, at the rate of 45 per cent. ad valorem, and we desire to submit for the consideration of your committee certain statements of fact and reasons which we believe will convince you that the articles are entitled to a lower rate of duty than that under which they are at present assessed.

On Wednesday, November 25, 1908, Warren R. Chase, representing the Sterling Mfg. Company, Hartford, Conn., appeared before your committee and made application for an increase in the rate of duty covering these goods in the tariff act now in the course of preparation. There are certain statements made by Mr. Chase to which we wish to take exception, as we deem them inaccurate, to say the least. Mr. Chase is reported as saying that "at the present time there are four different manufacturers in the United States, having an invested capital of about $1,250,000 and employing about 400 hands. Their annual product is from about $1,000,000 to $1,200,000."

We have ascertained from reliable sources that the capital invested by the Neverslip Mfg. Company, New Brunswick, N. J.; Williams Drop Forging Company, Scranton, Pa.; Sterling Mfg. Company, Hartford, Conn., and American Calk Company, Detroit, Mich., which concerns manufacture practically all of the horseshoe calks produced in this country, is not more than $350,000 in the aggregate, and their total output, based upon the selling price to the jobbers, is not more than $500,000 per annum.

Mr. Chase has stated that his selling price is $26 per 1000, whereas we know positively that he has sold during the years 1907 and 1908 all his product to the H & Rowe Calk Company of New York and the H Rowe Calk Company of Hartford, Conn., on the basis of from $11 to $13.50 per 1000 for the ½-in. calks, which are the average size of calk and are the size to which he refers throughout his argument. He states that during the last year (presumably 1907) there were from $20,000 to $25,000 in value imported. For the further information of the committee, we desire to state that within the past three years horseshoe calks of the value of $52,000 have been imported, as follows: Maldonado & Co., H-Calk Company and H & Rowe Calk Company, $43,000; Neverslip Mfg. Company, $7500, and others less than $1500. Of this amount, approximately, $8000 have been exported to Canada, and there are $6000 worth still in bonded warehouses, leaving a balance of, say, $38,000 foreign product consumed in this country.

The witness takes no account of the fact that of all the importations only 23 per cent. are what are known as steel center calks, which are the same design as those manufactured in this country, and that the balance—namely, 77 per cent.—of the importations are what are known as H calks, so called because the sharpened end which prevents the horse from slipping is in the form of a letter H, and which have never been made in the United States, and therefore cannot be said to come in competition with the domestic product.

The first steel center calks were imported in 1907 and were made especially for the Sterling Mfg. Company according to samples furnished by them, and they agreed to purchase 1,000,000 calks in 1907 and 2,000,000 calks in 1908 at a duty paid price landed in New York of $11.50 per 1000, and these are the calks which the witness refers to as being offered at $15 per 1000 throughout the country. The Sterling Mfg. Company rejected these calks on the ground that they did not accord with the specifications—to wit, to be in every way up to the quality of the sample of domestic calks submitted to the German manufacturers when the order was placed—and we can draw no other conclusion from its refusal to accept delivery than that it could manufacture them in this country of an equal quality at considerably less than the equivalent of the duty paid price of $11.50 per 1000.

The horseshoe calk business in this country is practically controlled by the Neverslip Mfg. Company, which produces approximately 85 per cent. of the domestic product and which actually fixes the selling price to jobbers and consumers, and which, we understand, is now negotiating with the Sterling Mfg. Company to take over its business.

The consumption of the imported article during the past three years, outside of those exported to Canada, has been approximately 3,000,000 calks, and if this be compared with the consumption reported by the Sterling Mfg. Company of 40,000,000 to 50,000,000 calks per annum it will be seen that the domestic interests already control 98 per cent. of the market in this country for this merchandise. If we take the statement of Mr. Chase, that about $2,000 to $25,000 was imported last year, and figuring on the ½-in. calk at a value of, say, $11.50 per 1000, which would be equivalent to 2,000,000 calks, and take also his statement that 40,000,000 to 50,000,000 are sold in this country annually, it will be seen that from his own figures the domestic interests have control of approximately 95 per cent. of the consumption of this country.

An equitable specific duty would be, say, 2½ cents per pound, which would be sufficient to offset any difference in the cost of production in Germany and this country, and which would therefore allow both the domestic and importing interests a fair opportunity to develop this business.

If your committee is not disposed to specifically enumerate horseshoe calks in the new tariff act, we submit that the foregoing statements as to the difference in the cost of production, because of lower rates of duty that may be granted on the imported material, apply with equal force to all manufactures of metal, and we therefore suggest that if these articles are to be classified under such a general provision said provision should be at a rate of not more than 25 per cent. ad valorem.

## MACHINERY.

**Statement of the Binsse Machine Company, Newark, N. J.**

Referring to the proposed tariff revision, I urge as a matter of great importance a reduction from the present [machinery] tariff to 25 per cent. or perhaps even 20 per cent., because:

1. The existing duty is unnecessarily high and one of 25 per cent. would cover our needs amply.

2. The 45 per cent. duty, which far exceeds that of any other country, has worked great injury to our interests by provoking retaliatory duties, and further injury is in sight by additional increases in France and elsewhere.

The United States has always led in machinery products. In every branch of this industry American machinery is the standard throughout the world. The exceptions are so few that they merely emphasize the rule. Therefore all we require is duty enough to offset the difference in the price of labor, and for this 25 per cent. is ample.

The importance of the foreign trade may be estimated by the fact that it saved at least 75 per cent. of our machinery manufacturers from bankruptcy during the panic period following the year 1893.

We could have a large part of the machinery trade of the world were it not for hostile tariffs.

Between 1893 and 1900 the United States sold machinery amounting to many millions to Europe. The merit of our product was quickly noticed in Germany, where the machine tool builders at once began to copy our designs and methods. This led to a great development in the German machine tool trade. Germany now has the most energetic machinery houses in the world, covering every country with their salesmen and branch offices.

About 1901 the German machinery manufacturers petitioned for an increase of duties. This was granted, and to-

day the German exports of machinery have grown to great importance and they have taken from us business which should be ours. In Canada, which should be an excellent field for American industry, our export trade has been almost wiped out by a retaliatory duty.

A general increase of foreign tariffs to 25 per cent. would destroy the export of American machinery to Europe, as it has practically destroyed our Canadian trade. In keeping our tariff at 45 per cent. we are giving our commercial opponents the strongest possible argument for a tariff against our products. We cannot consistently appeal against a German or a French tariff when our own is about three times theirs.

It is possible that this proposed reduction may not please a very small minority (about 5 per cent.) of our manufacturers of machinery, as it is understood by those who have given attention to the subject that the tariff of 45 per cent. was created, not for the purpose of protecting American manufacturers in general, but with the intention of preventing the reimportation of American machinery by a very few large companies which, although they are seemingly competitors, are in fact banded together as to prices. By this arrangement and by means of the tariff they can and do exact a profit from our citizens of about 30 per cent. over what they sell their goods for in competition in Europe. The tariff prevents their product sold in Europe from being reimported into the United States.

Any one who will study carefully and without prejudice the United States customs requirements for the reimportation of American machinery will find the strongest evidence that this is so.

I advocate strongly a maximum and minimum rate, and also the appointment of a commission of experts to draw up a scientifically made tariff, one that will be a benefit to the consumer as well as the honest manufacturer.

## MACHINE TOOLS.

**Statement of the Warner & Swasey Company, Cleveland, Ohio.**

The manufacturers throughout the country are greatly interested in the work that your committee is doing just at this time, and while we are presuming that most of the letters you receive strongly advise high tariff, it is our pleasure as manufacturers of machine tools to state that the facilities for manufacturing in this country are so fully developed that we feel it would be greatly to our advantage to have the tariff on machinery and machine tools reduced, for by that means a strong argument would be in the hands of our Government against the raising of tariffs in foreign countries.

Just now we are threatened with threats of higher tariff on machines sent to France, and probably similar changes will be made in German tariffs in the very near future. We strongly favor reciprocity along these lines and do not fear competition. We are in favor of a minimum tariff being established with countries that will favor us. The tariff for this purpose might be reduced to 30 per cent., or even 25 per cent., and we feel that the American manufacturers would then receive protection enough. In fact, our high tariff of 45 per cent. is absolutely prohibitory, and therefore our Government receives nothing in the way of a revenue from this source.

We realize the importance of the work you are doing and the great amount of labor incident thereto, but trusting that you welcome suggestions from others, we have been bold enough to write you this letter.

**Statement of the Bullard Machine Tool Company, Bridgeport, Conn.**

There is, as you are doubtless aware, a movement of considerable volume on foot among all builders of machine tools looking toward a reduction of the tariff on that particular product.

We have had an opportunity to discuss this matter fully, and beg to state that in our opinion the present duty of 45 per cent. ad valorem is decidedly excessive and has in the past worked us more harm than good because of the retaliatory measures which have been directed at the American exporters by foreign governments.

Our foreign business has been practically 30 per cent. of our total volume, and had it not been for the above retaliatory tariffs it would have been, in our opinion, a far greater proportion of a greater total.

Our sales to France, one of our best customers heretofore, are now threatened with a material reduction, owing to the added handicap in the proposed French increase in duty on American machinery, which increase is admittedly a slap at our own duty of 45 per cent. on all classes of machinery, which directly affects the exportation of French automobiles. If the present duty is maintained we fear the eventual discontinuance of our foreign trade, and trust, therefore, that material reductions will be made.

The position which American machine tool builders hold to-day in the markets of the world is solely one of superiority in design and workmanship, and it is our earnest belief that should the tariff on our particular line—namely, boring and turning mills—be entirely wiped out we would have nothing whatever to fear in the way of foreign competition in this country. This may not, however, apply to all lines of machinery or all lines of metal manufacture.

We also believe that in order to obtain a reduction in the tariffs which have already been enacted by foreign countries there should be a maximum and minimum tariff which would form a basis for reciprocal arrangements. A minimum of 10 per cent. we believe to be sufficient to thoroughly protect all lines of machine tools, and that the maximum should not exceed 25 to 30 per cent., the difference between the maximum and minimum to be used solely for the purpose of reducing tariffs by reciprocal measures already directed against our product in foreign countries.

## GAUGES FOR TESTING MACHINES.

**Statement of the Gisholt Machine Company, Madison, Wis.**

[The Hendey Machine Company, Torrington, Conn., has filed with the committee, through Representative Hill of Connecticut, the following communication regarding the tariff on gauges brought into the United States for testing machines intended for export, which it has received from the Gisholt Machine Company:]

You, no doubt, have had some experience in trying to get through the customs house sample pieces sent from across the water to be used for the purpose of testing our machines. We have had considerable of this, and it has always been necessary to pay duty on these samples, although in many cases the samples are defective pieces and sent here simply to enable us to determine whether or not special tools are made exactly right to accomplish the desired results. Not only is it necessary to pay duty on these samples, but no way has been found by which the duty would be refunded in case the samples were returned to the original owner. In other words, it is necessary for the foreign consumer to pay for the privilege of dealing with the American manufacturer by paying duty on something that is of absolutely no value except to the purchaser, and which, in most instances, could not possibly be made use of here in this country.

We had an extremely aggravated case lately, when we were sent a number of gauges to be used for testing tools, and, doubtless for insurance purposes, our customer placed a value of $450 on these gauges, which, of course, were valuable to him, but of absolutely no value to any one else. There seemed to be no way to get these into this country without paying a duty of approximately $200, and if this duty had been paid no refund could have been obtained. Therefore we found it necessary to have the gauges returned, we taking the chances that our tools would be so nearly right that our expert, when it comes to starting up the machine (which is to go to France) will be able to make any necessary changes.

This matter of paying duty on parts sent here for the purpose of testing machines has been one that many manufacturers have been up against, and you can well imagine that it is very aggravating for the foreign customer to be charged with the cost of duty on such articles as mentioned. In order to guard against dishonest practices it might be necessary to collect the duty, but provision should be made whereby this duty could be refunded in case the parts were returned to the country from which they came.

## BICYCLES.

**Brief of American Manufacturers of Bicycles.**

We represent the following bicycle manufacturers of the United States: Consolidated Mfg. Company, Toledo, Ohio; Emblem Mfg. Company, Angola, N. Y.; Great Western Mfg. Company, Laporte, Ind.; Pierce Cycle Company, Buffalo, N. Y.; Pope Mfg. Company, Hartford, Conn.; also the signers to this brief and by authority given in telegrams and letters herewith attached, from Arnold Schwinn & Co., Chicago, Ill.; Snyder Mfg. Company, Little Falls, N. Y.; National Cycle Company, Bay City, Mich.; Iver Johnson Arms & Cycle Company, Fitchburg, Mass.; Miami Cycle Mfg. Company, Middletown, Ohio; Toledo Metal Wheel Company, Toledo, Ohio; Gendron Wheel Company, Toledo, Ohio; Excelsior Motor & Mfg. Company, Chicago, Ill. These corporations produce more than 90 per cent. of the bicycles manufactured in the United States.

We beg leave to present to your notice the decline in the industry of the manufacturing of foot propelled bicycles and tricycles and parts thereof in the United States, as shown in Bulletin No. 66, Census of Manufactures, 1905:

*Census of Automobiles and Bicycles and Tricycles.*

| | 1900. | 1905. |
|---|---|---|
| Factories | 312 | 101 |
| Capital | $29,783,659 | $5,883,458 |
| Total wages | $8,189,817 | $1,971,403 |
| Value of bicycles | $23,689,437 | $4,109,429 |
| Bicycles | 1,182,850 | 252,923 |
| Average value | $20.03 | $16.25 |

While there are no statistics available since the census of 1905, it is a fact that the number of bicycles manufactured has not increased, nor has there been any advance in the selling prices since that time.

We beg leave to call your attention to the great decrease

in the value of bicycles and bicycle parts exported from the United States since 1897 and to the great increase in exports from England and Germany in the same period:

*Bicycle Exports.—United States, England and Germany.*

| | United States. | England. | Germany. |
|---|---|---|---|
| 1897 | $6,902,736 | $6,937,052 | * |
| 1898 | 7,092,197 | 4,660,554 | * |
| 1899 | 4,820,284 | 3,227,025 | * |
| 1900 | 3,061,061 | 2,573,361 | * |
| 1901 | 2,599,237 | 2,800,448 | * |
| 1902 | 2,581,255 | 3,482,479 | $3,600,250 |
| 1903 | 2,099,092 | * | 4,639,250 |
| 1904 | 1,621,820 | * | 5,028,000 |
| 1905 | 1,320,496 | 4,727,000 | 6,948,250 |
| 1906 | 1,404,546 | * | * |
| 1907 | 1,082,727 | ‡4,843,325 | †10,172,000 |
| 1908 | §604,583 | ‡5,260,925 | †7,846,250 |

* No statistics available. † For six months only. ‡ Nine months. § For ten months only.

Practically during these years no bicycles of foreign manufacture have been imported into the United States.

It will be seen, therefore, that the export trade in bicycles and bicycle parts has diminished to an extent that nearly takes it from the list of exports, while during the same periods the export trade of European countries, notably England and Germany, has increased.

Until about 1902 the United States could fairly compete in the sale of bicycles in all the markets of the world with England and Germany, the advantage of improved and labor saving machinery largely offsetting the extremely low wages paid in European countries as compared with those paid in the United States. But English and German shops are now equipped with the most modern machinery—much of it of American makes—and the competition between Europe and the United States to-day as affecting costs of production is in wages, and this competition in wages applies not only to the labor expended directly on the bicycle but to the costs of materials used and to the expenses in the marketing of the bicycles.

The American manufacturers have tried to meet these conditions and maintain a fair competition, but they have apparently gone as far as they can. Even a moderate reduction in the tariff would without question invite shipments from England and Germany to this country, with the result of a further if not total decline in our industry or the other alternative of forcing European wages upon American workmen.

Now, shall we open the doors to the foreign manufacturers or reduce the wages of American workmen to meet this competition?

There are engaged in the manufacture of bicycles and bicycle parts 5000 men, and in the retail sale about 8400 more, all of whom are dependent on the bicycle industry for the livelihood of themselves and their families.

The estimated wages paid 2500 bicycle factory employees, 2500 bicycle parts factory employees, 8400 bicycle dealers and repair men, total, 13,400, at a conservative average of $2 per diem for 250 days per annum, makes a distribution in payrolls amounting to $6,700,000.

Bicycle manufacturers have no desire for special treatment or an unfair rate of tariff, but with the prices on most material and lower wages paid in Europe, as compared with said cost of labor and material in the United States, the present rate of 45 per cent. is only fair protection.

We further petition that the present rate of tariff be maintained and that bicycles and tricycles and parts of same be classified as such.

## CUTLERY.

### Statement of Representative Thomas W. Bradley of Walden, N. Y., Relative to Evasions of Section 8 of Dingley Act.

[Representative Thomas W. Bradley of Walden, N. Y., has filed with the Ways and Means Committee a statement in which he makes serious charges against certain importers of foreign cutlery, particularly German products, which he alleges are annually brought into the United States in very large quantities, the stamps indicating the country of origin removed and the goods sold as of domestic manufacture. The letter in question was originally prepared for submission to the Secretary of the Treasury, but in view of the pending revision of the Dingley act Mr. Bradley has also filed it with the Ways and Means Committee. It is in part as follows:]

In connection with outrageous evasion of section 8, tariff law of 1897, I have the honor to file complaint and charges, as follows:

The law providing that all imported goods shall bear the name of the country of origin was first passed in connection with the McKinley tariff, and was based on a copy of the English law submitted by me to the Ways and Means Committee.

At the time our law was framed and until about 1900, the only method of stamping the firm name, trademark and country of origin on pocket knives and razors was by a steel stamp or die driven deep into the tang of the blade.

It is a matter of record that subsequent to October 9, 1890, imports of German knives were, in some cases, held up until the importer had caused the word "Germany" to be stamped with a steel die on the blade tang of each knife, and this at the appraiser's stores, under the supervision of a customs employee; all this at the importer's expense. I mention this to show that stamping deep with a steel die was the manner in which German and English knives and razors were usually and ordinarily marked, both as to the name of country of origin, trademark and firm name, and that the department enforced the real intent of the law as covered by section 8 of the tariff law of 1897.

For some time, how long I cannot state, but for more than a year past, German knives and razors have been passed through the port of New York with the name of the country of origin wash stamped instead of stamped with steel die, and have also been passed with the word "Germany" in light etching so shallow as to be easily buffed off, the wash stamped name of "Germany" being merely a composition easily wiped off with a cloth moistened with benzine. Even the firm name on the front or "mark" side of the blade tang is treated in the same manner, so that both the name of the country of origin and the firm name may be easily removed and the knives and razors be then steel die stamped in this country with a name representing the product to be of American manufacture. The entire proceeding is a deliberate and carefully thought out scheme for evading the true intent of section 8, and of placing on the American market an inferior grade of German manufacture under the guise of a reputable American product.

Five hundred thousand dollars is a low estimate, in my judgment, of the amount of German wash stamped product imported, and evading the intent of section 8, during the year 1908. It can readily be understood that a continuance of this practice will steadily depreciate and eventually ruin the high standing of reputable American production.

I have not a dollar of interest in any manufacturing industry; but in my home town of Walden, N. Y., are three manufacturing plants, producing about 50 per cent. of the American output of pen and pocket knives. The people of my town depend on this territory, and I am deeply concerned for the welfare of these pocket knife operatives, whose highly skilled trade will be discredited and probably ruined if this nefarious evasion of the true intent of section 8 is permitted to continue. I therefore most earnestly request as follows:

1. That the attention of the appraiser at every United States port of entry be called to this evasion of section 8, tariff law of 1897, and instructed to refuse entry to all imported articles named in paragraph 153 of said law that do not strictly conform to the true intent of said section 8.

2. That appraisers be instructed to rule that the true intent of section 8, "Usually and ordinarily marked, stamped," &c., means stamped by steel die deep into the blade tang, and refers not only to the stamp of the name of the country of origin, but to the name of individual, firm, or corporation or trademark thereon.

3. If a department ruling in relation to section 8, as affecting all articles named in paragraph 153, has not been issued, that such ruling issue as promptly as practicable.

4. That if the department can consistently do so, I be given a legal opinion as to the erasing of foreign stamps, the restamping with intention to misrepresent and deceive, all as above referred to, and whether there be any Federal statute under which persons can be proceeded against, whether amendment to the Interstate Commerce law might be made to cover such cases, or whether action under the common law is the only recourse for the consumer or manufacturer injured by the kind of deception herein complained of.

Through the consideration of Sereno E. Payne, chairman, I am permitted to submit all points here mentioned to Thomas J. Doherty, assistant counsel United States Treasury Department, assigned to the Committee on Ways and Means, with a view of amending section 8, and protecting, so far as practicable, reputable American makers of pen and pocket knives and razors, and have submitted to Mr. Doherty certain exhibits of wash stamped pocket knives.

## PIG IRON.

### Statement of the Empire Steel & Iron Company, Catasauqua, Pa.

I cannot allow the recent communications on this subject you have received from other sources to pass by without comment on my part, for the statements made, if the reports shown by the trade papers are correct, are so misleading, from our way of thinking, that I feel compelled to encroach on your good nature by giving you my views in answer thereto.

First of all, I wish to touch on the statement made by Colne & Co. of New York, who claim that the present duty of $4 per ton should be either considerably lowered or entirely abrogated on what they are pleased to call silicon iron, claiming that it is practically unprocurable in this country, the product being confined principally in the hands of one house, and that with the duty out of the way a supply sufficient for their needs could readily be secured from England at a lower price than the American quality, even after the addition of freight charges.

While the latter fact is admitted, I am obliged to disagree with their statement as to the manufacture of the product in America, for the metal is nothing more than ordinary iron, known in the trade as low phosphorus pig iron, and does not differ in any respect from iron used in our open hearth acid furnaces excepting in the matter of silicon, which is an element that is controlled entirely in the blast furnace and can be made high or low to meet the requirements of the trade.

The average requirements in silicon are from 1 to 2 per cent., but we have contracts on our books now calling for the same iron running from 2 to 3 per cent. in silicon, which percentage is sufficiently high for the so-called Tropenas converter, a system of melting used by Colne & Co. and which I understand requires iron with silicon from 2.25 per cent. upward.

As to one house controlling this low phosphorus iron, I have positive knowledge of 10 cencerns having made it for many years past, and the company I represent has made a specialty of this metal since 1885; but although we own and operate eight blast furnaces, not more than one of them has been continuously in operation on this particular metal, because of the failure of the trade to require a sufficient amount to warrant our increasing the output.

If the present duty of $4 is to be reduced more than a maximum of 25 per cent. the industry will be killed, and not only does this statement apply to the so-called silicon iron, but, in spite of what others have said on the subject, it will put out of business practically every Eastern furnace, for English iron could very profitably be brought in here practically all the time were it not for the duty, although, as I have already stated, a moderate reduction can be made without damaging effect on the American producer.

In a letter to Mr. Butler, under date of November 28, I stated that in order to carry out the party's pledges a revision of the Dingley tariff was surely necessary, and that I saw no reason for cutting out the products of iron and steel and iron ores, if each commodity throughout the entire line was to be fairly dealt with regardless of selfish or personal interests, nor could I, on the other hand, see why iron ore should be placed on the free list, as suggested by some of my colleagues.

As to pig iron, I felt in the beginning that a 25 per cent. reduction could be made without any harm to the producer, either East or West, but after going considerably deeper into the question I now think 25 per cent. would perhaps be more than the industry as a whole could stand at this time, and therefore recommend not over 10 per cent., or, say, 40 cents a ton, thereby fixing the new schedule at $3.60.

For iron ore, 2 tons of which are required for a ton of pig, I suggest 10 cents per ton, or 30 cents, instead of 40 cents as provided in the Dingley tariff.

It is, of course, easy to see why some of my nearby competitors, whose investments in iron ore properties are altogether in Cuba, while urging the retention of the duty on finished products of iron and steel, favor free ore, but having during the last three or four years spent half a million dollars in the development of iron ore properties in the State of New Jersey, thereby aiding American labor to a greater extent than would have been the case had we resorted to Cuba for our needs, I hardly think it would be fair to make ore free at one stroke, preferring a gradual reduction in all these products over a series of years, otherwise labor will be severely dealt with before our business can be made to compete with the foreign situation.

The next quotations I refer to are those of Frank Samuel and Major Ennis of Philadelphia, neither of them producers, but both importers, and apparently looking entirely at the mercantile end, for their branch of the industry would certainly be benefited by anything that you can do to enable them to import foreign material at a price that will undersell the American manufacture at home.

These remarks are certainly not intended to reflect any selfish interest or throw discredit anywhere, but they are made by one who has spent the last 15 years of his life in attempting to build up a business in such a way as to warrant a fair return to the investor, but which, since the formation of the company (the Empire Company) some 10 years ago, has not enabled me to pay more than an average of, say, 6 per cent. to those who put in their money at the start, and in making this statement I feel that only the closest attention to the business has enabled us to make any returns, and that a reduction of over $1 on pig iron at this time would force us to close down every plant we control before the end of the year.

In conclusion, you will please understand that our business is purely that of the mining of iron ore and manufacture of pig iron, our maximum capacity of pig being approximately 26,000 tons monthly, all of which is sold in the open market before going through any further stages of refinement.

**Statement of the Oregon Iron & Steel Company, Portland, Oregon.**

We beg respectfully to call to your attention some particulars regarding the tariff on pig iron.

We are manufacturers of cast iron pipe in our foundry at Oswego, close to Portland, Ore., and by reason of the high tariff of $4 per ton on pig iron from abroad we have to close down our foundry from time to time. For example, we have not operated our pipe foundry since November, 1907, and are not operating it now.

We believe that were the tariff on pig iron cut in two a very large development would take place on this Pacific Coast. It seems more logical for the best interests of this country that the tariff on what may be called the raw material should be cut down rather than cut the tariff on the manufactured material, such as steel beams, &c. Were the tariff on the raw material cut in two, this coast would be enabled to purchase pig iron from Europe and China, from which latter source we are now beginning to receive some, so that large manufacturing establishments could be operated and employment given to American workmen in them. But if a cut is made on steel beams and other manufactured goods and no cut made on the tariff on pig iron, it simply means, as far as this coast is concerned, that the manufacturer of iron and steel commodities will be placed at a greater disadvantage than ever when competing with foreign manufactured goods; and not only with foreign manufactured articles, but with domestic Eastern manufactured articles also. We trust that you may see your way to help us in this respect.

## An Anti-Accident Convention to Meet in New York.

The American Anti-Accident Association, whose headquarters are located at Sharpsville, Pa., is arranging to hold a public meeting in New York some time in January. Thomas D. West of Sharpsville, the founder and president of the association, announces that it will be held for the purpose of securing a wider practical consideration of the following questions: 1. What universal actions are best to aid the prevention of accidents, with their accompanying losses of life and property? 2. What methods will be most humane and reliable to compensate the injured and afflicted through accidents and also prove the most just for all concerned? Mr. West continues:

"In view of the fact that at least 14 of the 31 State Legislatures which will be in session this coming winter are to consider the question of employers' liability, something that employees as well as employers are now condemning, it is felt that there should be no delay in giving the broadest publicity to all facts, experiences and views that are feasible on this question. In regard to the first question, the factor whether care and faithfulness in work or recreation is not more important than safety devices in best helping to prevent the most accidents is also a feature that demands the freest expression of views, experiences and facts.

"It is timely that this whole subject should be directed to correct channels, in order that we may best prevent accidents, and a meeting as above suggested should do great good for the cause. A cordial invitation is hereby tendered to Government and municipal officials, professional men and women, proprietors, office and shop managers, union labor leaders, merchants, artisans, laborers, insurance officials, factory inspectors and any other citizens of our country, who may feel an interest in this work, to attend this meeting. The time and place are to be arranged later on."

Any desiring further information are requested to write to Mr. West.

Statistics of strikes in Germany show that there were 773 in the first six months of 1908, against 1054 for the corresponding period of 1907. The number of men affected was 40,504 this year and 80,340 last year. In the first half of 1907 there were 144 lockouts, affecting 37,798 hands. The figures for the first half of 1908 are 119 lockouts and 26,083 employees. The decrease in labor troubles is attributable in part to the depression, also to the consolidation of German employing interests, as well as to efforts to improve the relations of employers and employees.

The output of pig iron in Belgium in the first eleven months of this year was 1,095,240 tons, as against 1,303,970 tons to November 30, 1907. On December 1, 31 furnaces were in blast; on December 1, 1907, the number was 37.

# STEEL COSTS IN TYPICAL PLANTS.

## The Bureau of Corporations' Investigation Made Public.

WASHINGTON, D. C., December 29, 1908.—The Ways and Means Committee has made public two letters with accompanying tables forwarded to Chairman Payne by Herbert Knox Smith, chief of the Bureau of Corporations, giving the results of an exhaustive investigation undertaken by the bureau to determine the cost of producing steel rails, billets, &c., in typical plants. This work was incident to the general investigation of the iron and steel industry now being made by the bureau, the results of which will be transmitted to the President and, in his discretion, forwarded to Congress and made public. Inasmuch as the books of the United States Steel Corporation supplied the greater part of the data upon which Commissioner Smith's calculations are based, Chairman Payne, during Judge Gary's testimony on the 18th inst., requested his permission to make the figures public, and, having obtained it, has since incorporated them in the official record. The communications and accompanying tables are as follows:

DEPARTMENT OF COMMERCE AND LABOR, BUREAU OF CORPORATIONS, WASHINGTON, D. C., December 14, 1908.

MY DEAR CONGRESSMAN: In reply to the letter of November 25 of the clerk to your committee and in accordance with our conversation of the 11th inst., I enclose herewith a statement as to the costs, prices, and profits of standard rails for the years 1902 to 1906, inclusive, which I showed you on that day. I have made one or two slight modifications, but nothing of importance, in that statement.

I desire to call your attention to one or two points of explanation which are perhaps referred to somewhat too briefly in the statement itself.

1. The figures in table I. are taken from the profit and loss accounts of the various companies examined by the bureau. You will note that they give an average cost per ton for the five years, of all the companies examined, of $22.39.

The figures in table II. under the heading of "Cost Items" are obtained in a different way, to-wit, directly from the cost sheets of the companies themselves, and give an average cost of $22.23, a difference of 16 cents in costs on every ton, as obtained by these two methods. This difference, which is very slight, is due to the different sources used in compiling the figures, *i. e.*, accounting as against cost-keeping work in a given company. The same company gets at the same result in two ways, and uses often different tonnages in doing so, thus getting a slight variation; and their approximation by the small sum of 16 cents is about as excellent a confirmation as could be desired of the accuracy of the results.

2. You will note that under "cost items," table II., we start with Bessemer pig iron, $14.52. In table IV. we go a step farther back and bring it up to the Bessemer pig iron, starting with the ore. We show here the cost of Bessemer pig iron to be $14.01, a difference of 51 cents between the cost as shown here and the cost of Bessemer pig iron as set forth in table II. The difference between these two figures is due to the fact that the Bessemer pig iron figure in table IV. includes all the iron of this sort for all districts, while the figure used in table II., $14.52, is simply the Bessemer pig used for steel rails. In regard to this particular division of Bessemer pig, there were some variations due to excess tonnage and the higher freight costs on this class of iron, and to the fact that some of the iron was purchased.

3. There is, of course, a certain amount of labor included in the items on table IV. for raw material, such as limestone and coke, as there necessarily must be in the cost of any raw material. So far as the steel companies are concerned, the only labor that they have put into these raw materials is substantially that of unloading.

4. I have set forth in table III. certain extremes of cost and profit which I think may be of interest to your committee. You will note that I have stated that the highest cost for any company in any year was $31.27 for one company in 1903. It should be noted, however, that this is not a normal case, as the company was a new one. I have, therefore, inserted what was the next highest cost, to-wit, $30.29, for another company for the same year. This company presented a normal condition. I felt also that possibly the figures for 1906 would be of especial interest, so I have inserted the lowest profit of any company during that year, to-wit, 99 cents. The average profit for all companies during that year was $4.85. All of these figures, of course, are per ton.

These results appear simple, and are stated in comparatively small space, but they cover companies which have produced more than 93 per cent. of all rails produced in the United States during that period. This means an enormous volume of tonnage and an enormous mass of transactions. To get these figures required the work of a considerable force of men in this office for over a year in an examination of thousands of accounts under the direction of an expert steel man. I think it is safe to say that no such complete or accurate figures have been compiled in this country, and that while they necessarily involve some variations, these are small in amount, and nothing approaching this statement in reliability can be obtained from any other source.

I will endeavor to furnish you as quickly as possible such other information as I have available.

HERBERT KNOX SMITH, Commissioner.

To HON. SERENO E. PAYNE, Chairman Committee on Ways and Means.

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*Table I.—Standard Rails.*

Cost of Rails Sold and Used.

| | Tons. | Cost per ton. | Amount. |
|---|---|---|---|
| 1902 | 2,594,338 | $22.32 | $57,910,323.72 |
| 1903 | 2,641,857 | 23.78 | 62,820,909.68 |
| 1904 | 1,934,682 | 21.57 | 41,735,625.60 |
| 1905 | 2,974,926 | 21.30 | 63,361,006.09 |
| 1906 | 3,491,649 | 22.77 | 79,512,433.50 |
| Five years | 13,637,452 | $22.39 | $305,340,298.59 |

Sold.

| | Tons. | Price. | Profit per ton. |
|---|---|---|---|
| 1902 | 2,594,961 | $27.65 | $5.34 |
| 1903 | 2,615,754 | 28.07 | 4.32 |
| 1904 | 1,898,057 | 25.70 | 4.17 |
| 1905 | 2,883,671 | 27.13 | 5.88 |
| 1906 | 3,396,381 | 27.61 | 4.85 |
| Five years | 13,388,824 | $27.34 | $4.97 |

*Table II.—Cost Items of Rails Produced for Five Years,* 1902-06.

Tons produced.....14,020,303

| Cost Items. | |
|---|---|
| Bessemer pig iron | *$14.52 |
| Waste | 1.95 |
| Cost pig iron in rails | $16.47 |
| Labor | 1.98 |
| Manganese, &c | .99 |
| Fuel | .35 |
| Steam | †.62 |
| Molds | .15 |
| Rolls | .17 |
| Materials in repairs and maintenance | .42 |
| Supplies and tools | .27 |
| Miscellaneous and general works expense | .51 |
| General expense | .14 |
| Depreciation | .16 |
| Total cost | ‡$22.23 |

Cost of conversion from pig iron, $7.71.

* The difference of 51 cents between the average cost of Bessemer pig iron and of pig iron used for rails is due to variation in the cost of the excess tonnage and to freight on some of the iron.

† The item of labor does not include, for much of the tonnage, the labor in producing steam, which some companies include in the item "Steam."

‡ The difference of 16 cents between the cost of rails sold from sales statements and rails produced from cost sheets is due to difference in tonnage and in inventories.

*Table III.—Comparison of Costs of Several Companies.*

| | Any company for any year. | Any company average for five years. |
|---|---|---|
| Lowest cost | $19.33 (1905) | $20.74 |
| Highest cost | 31.27 (1903) | 26.61 |
| Next highest cost | 30.29 (1903) | .... |
| Lowest profit for any company in 1906 | $0.99 | |
| Average profit for all companies in 1906 | 4.85 | |

This statement includes the production of seven companies, and covers more than 93 per cent. of all rails produced in the United States during the period.

*Table IV.—Cost of Bessemer Pig Iron, All Districts,* 1902-1906.

[Tons produced, 51,902,699.]

| Cost items. | Price. | Cost per ton pig iron. |
|---|---|---|
| Net total metallic mixture | $3.97 | $7.30 |
| Coke | 3.37 | 3.89 |
| Limestone | ... | .43 |
| Labor | ... | .77 |
| Steam | ... | .12 |
| Materials in repairs and maintenance | ... | .16 |
| Supplies and tools | ... | .13 |
| Miscellaneous and general works expense | ... | .28 |
| General expense | ... | .36 |
| Relining and renewals | ... | .18 |
| Depreciation | ... | .39 |
| Totals | ... | $14.01 |

The item of labor does not include, for much of the tonnage, the labor in unloading raw materials, and in producing steam, which some companies include in the cost of raw materials and in the item "steam."

The tonnage covers 93 per cent. of the Bessemer pig iron made in the United States during the period.

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DEPARTMENT OF COMMERCE AND LABOR, WASHINGTON, D. C., December 17, 1908.

MY DEAR CONGRESSMAN: In accordance with your request, I am sending sheets, showing costs and profits on steel billets, both of the Bessemer and open hearth basic.

As was pointed out in my letter of December 14, transmitting profits and costs on steel rails, there are two sets of figures here, secured from two totally different sources, and therefore valuable as checks on each other, and as showing their general accuracy. The figures in the first table herewith submitted are taken from the profit and loss accounts of the companies examined. The figures in the second table are taken from the cost sheets of those companies. The figures in the first are combined for Bessemer and open hearth steel, giving a total average cost for five years, for all companies represented, of $20.60 per ton.

The figures for the second set are divided according to Bessemer and open hearth steel, but if the two are averaged up on a weighted average that average of cost will differ only about 13 cents per ton from the average cost given in the first set. This discrepancy is extremely small when the vastness of the transactions is considered, and the enormous number of figures which had to be consulted. It would have been remarkable if there had not been a discrepancy, and the fact that it exists shows the genuineness of the figures, and the fact that it is so small shows that they must be substantially accurate.

While these results are comprised in comparatively few figures, they are the results of a great amount of work—practically 10 or 12 men for nearly a year—and cover all the large companies, practically all the Bessemer ingots produced in the country and more than 75 per cent. of the open hearth ingots for the period used.

HERBERT KNOX SMITH, Commissioner.

TO HON. SERENO E. PAYNE, Chairman Committee on Ways and Means.

*Cost of Bessemer and Open Hearth Steel Billets, Sold and Used at a Profit.*

Produced for Sale or for Use at a Profit.

| | Tons. | Cost per ton. | Amount. |
|---|---|---|---|
| 1902 | 2,565,084 | $21.73 | $55,735,789.47 |
| 1903 | 2,119,275 | 23.01 | 48,758,554.92 |
| 1904 | 2,697,870 | 19.34 | 52,187,831.98 |
| 1905 | 4,365,583 | 19.19 | 83,776,622.37 |
| 1906 | 4,881,728 | 20.93 | 102,153,273.45 |
| Totals | 16,629,540 | $20.60 | $342,612,072.19 |

Sold.

| | Tons. | Price per ton. | Profit per ton. |
|---|---|---|---|
| 1902 | 978,386 | $26.33 | $4.62 |
| 1903 | 628,070 | 28.55 | 5.01 |
| 1904 | 870,829 | 20.59 | 1.26 |
| 1905 | 1,414,638 | 21.95 | 2.85 |
| 1906 | 1,381,306 | 25.68 | 4.48 |
| Totals | 5,273,319 | $24.30 | $3.60 |

Final Commercial Cost.

| | Large Bessemer billets. | Large basic open hearth billets. |
|---|---|---|
| Tons produced | 17,908,033 | 13,422,740 |
| Pig iron and scrap | $14.34 | $13.78 |
| Waste | 1.95 | 1.64 |
| Cost of pig iron and scrap in billets | $16.29 | $15.42 |
| Variation in cost ingots | .36 | .06 |
| Labor | 1.18 | 1.58 |
| Manganese and fluxes | .37 | .59 |
| Fuel | .37 | .94 |
| Steam | .49 | .37 |
| Molds | .16 | .17 |
| Rolls | .03 | .04 |
| Materials in repair and maintenance | .27 | .47 |
| Supplies and tools | .17 | .36 |
| Miscellaneous and general works expense | .29 | .39 |
| General expense | .10 | .13 |
| Open hearth rebuilding | .. | .24 |
| Depreciation | .10 | .11 |
| Total cost | $20.18 | $20.87 |

The difference of $0.33 between the average cost of Bessemer pig iron, $14.01, and that used for Bessemer billet ingots is due to variation in cost of excess tonnage, and to freight on some of the pig iron. This figure, $14.01, here referred to, was shown on the cost sheets of rails already transmitted to the committee by my letter of December 14, 1908.

The difference of $0.36 on account of the variation in cost of Bessemer and of $0.06 in cost of open hearth ingots is due chiefly to the fact that only a portion of the ingots made was used for large billets, and the average price at which this portion was used differed by that much from the average cost of all ingots.

The item of labor does not include, for much of the tonnage, the labor in unloading raw materials and in producing steam, which some companies include in the cost of raw materials and in the item "steam."

Only a little more than half of the tonnage of Bessemer and open hearth billets covered by the cost sheets appears in the tonnage of billets sold or used at a profit, the remainder having been used without profit in making other products.

Because of the way in which they are used, no report of the total tonnage of steel billets produced in the United States is made, but the cost sheets obtained for Bessemer ingots cover practically all, and of open hearth ingots more than 75 per cent., of the production of the country for the period.

*Comparative Costs and Profits.*

Costs.

| | |
|---|---|
| Bessemer billets (any company for any year): | |
| Lowest cost (1905) | $17.43 |
| It must be noted, however, that this cost ($17.43) was merely the cost for steel sold. But about nine times as much more steel was made and used by this same company at a cost of $18.26, which is perhaps a fairer and certainly a more significant figure. | |
| Highest cost under normal conditions (1903) | 24.95 |
| It should be noted that there were some costs still higher for certain companies, but these were companies apparently just beginning operations and are not fairly representative. | |
| Open hearth basic billets: | |
| Lowest cost (1905) | 18.24 |
| Highest cost (1903) | 29.04 |

Profits.

| | |
|---|---|
| Bessemer: | |
| Lowest profit (1906) | 0.62 |
| Average profit (1906) | 3.71 |
| Open hearth basic: | |
| Lowest profit (1906) | 4.90 |
| Average profit (1906) | 5.42 |

As pointed out above, it has been generally attempted to give figures that are fairly representative, and not those of companies whose conditions, for one reason or another, are abnormal, either as dealing in some special product or having just started, &c. It has been assumed that what the committee desired were figures which would represent different businesses of importance carried on under general conditions. W. L. C.

## A New Scrap Yard at Harrisburg.

The United American Iron & Steel Company, whose headquarters are at Albany, N. Y., has established an important branch at Harrisburg, Pa., for shearing and putting in shape the various grades of scrap for rolling mill and steel works purposes. The company is erecting five buildings along the tracks of the Pennsylvania Railroad and will lay 3000 ft. of sidings in its yards. The sizes of the buildings are as follows: 24 x 120 ft., 40 x 100 ft., 16 x 40 ft., 16 x 24 ft., and 24 x 40 ft. The equipment will include locomotive cranes capable of lifting 20 tons; two large 60-ft. derricks, each capable of lifting 15 tons; one large crane magnet used in unloading; five shears, the largest being able to shear a 100-lb. steel rail. The machines will be run by electricity, each having its individual motor. The shear building will be equipped with an arrangement of trolleys to take the material from the shears to the cars.

It is claimed that the yards at Harrisburg will be the most complete in the world as regards the unloading and handling of scrap material. W. E. Friedman, the secretary of the company, will have direct charge of the Harrisburg branch, and will conduct the sales. His offices will be located in the Union Trust Building. The company maintains yards at Burlington and Rutland, Vt., and Syracuse, N. Y., in addition to those at Albany and Harrisburg.

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Bids were opened December 15 at the Navy Department for the construction of a steel steam collier as follows: Newport News Shipbuilding and Dry Dock Company, Newport News, Va., bid 1, $790,000; bid 2, $825,000; time, 16 months. Fore River Shipbuilding Company, Quincy, Mass., bid 1, $933,000; bid 2, $954,000; time, 15 months. New York Shipbuilding Company, Camden, N. J., $1,074,000; if Lidgerwood coal apparatus is installed $30,000 additional; time, 15 months. Maryland Steel Company, Sparrow's Point, Md., class 1, $933,800; class 2, $1,011,400; class 3, $1,027,350; time, 16 months. Wm. Cramp & Sons Ship & Engine Company, Philadelphia, Pa., bid 1, $805,000; bid 2, $775,000; time, 20 months.

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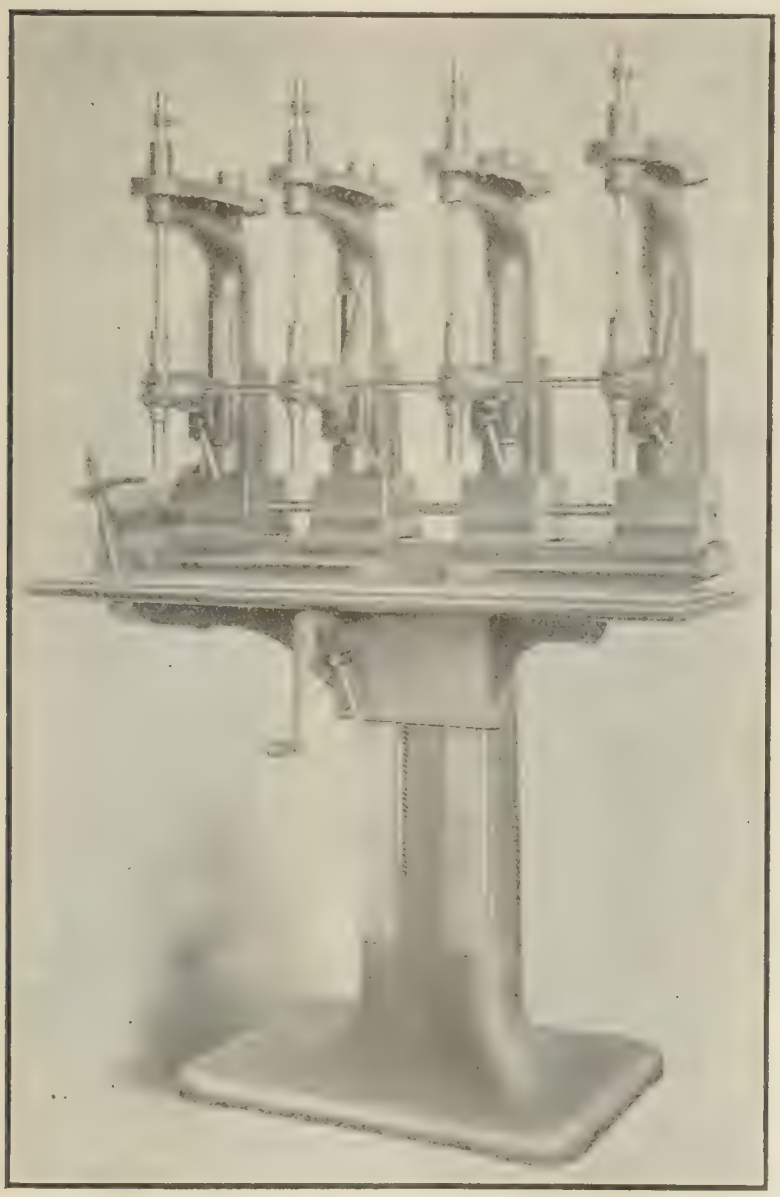
It is stated that over 900 miles of railroad was equipped with automatic block signals in 1908, and that probably 2000 miles will be so equipped in 1909. The Union and the Southern Pacific did considerably more than half the new work this year.

## A Modified Taylor & Fenn Multiple Drill.

In a new adaptation of the manufacturers' drill press, built by the Taylor & Fenn Company, Hartford, Conn., the particular feature is that all of the spindles are simultaneously fed to the work. This is accomplished by connecting the feed pinions by a splined shaft. Any number of feed levers may be applied; the machine shown in the illustration has two of these levers. This arrangement in no way interferes with the adjustable features of the regular machines.

The illustration shows the top columns spaced evenly, but they are adjustable laterally on the bed and may be placed close together or at various distances apart. This type of machine is particularly adapted for drilling a large number of duplicate parts having the same distance between the holes to be drilled.

By releasing the keys in the hubs of the feed pinions the connecting shaft may be removed at any time, so that the spindles may be used independently, as in the company's other multiple drilling machines. This type of machine is built with any number of spindles up to six.



A Manufacturers' Multiple Spindle Drill Press with Connected Feeds, Built by the Taylor & Fenn Company, Hartford, Conn.

**Congressional Legislation.**—In an article soon to be published in *American Industries*, James W. Van Cleave, president of the National Association of Manufacturers, warns the National Council for Industrial Defense, which the association organized, that a determined effort will be made at the present and next session of Congress to pass antiinjunction labor legislation. He says that there are now before the Judiciary Committee of the House of Representatives 10 bills which would restrict the use of the injunction. Several similar measures are also before Senate committees. He states that all of these measures require watching, and urges every business man to do his part. He further declares against attempts to amend the Sherman Antitrust law, which he says would mean its virtual repeal. He opposes the amendment of that law, not only because the boycott might then be legalized, but also because, he says, "I am as much opposed to the greedy and tyrannical employers outside as well as inside the trusts as I am to the boycotters."

## Expected Tax Legislation in Pennsylvania.

HARRISBURG, PA., December 29, 1908.—The session of the Pennsylvania Legislature, which will begin January 4, will probably have revenue raising legislation as one of its chief features, because of the demands of the State for road construction, school and other objects which were established on a more expensive basis in the session of 1907, and the chances are that among the bills to be presented will be three of considerable importance to the manufacturing and mining interests of the Commonwealth.

It is understood in official circles that a bill to tax the capital stock of all manufacturing companies is contemplated. At present all capital actually engaged in manufacturing is exempt, so that the iron and steel companies as well as others conducting huge enterprises in Pennsylvania do not feel the burden of State taxation except upon loans and such capital as is held for other purposes. The plan of the new bill is to impose a tax of 3 mills.

Taxes are also proposed upon the coal and oil produced in the State, this plan having been advocated four years ago, but defeated. Bills for these objects have been prepared and are now being considered by prominent legislators.

Some enlargement of the powers of the State Railroad Commission may also be asked, as the commission has been in operation a year and finds the need of wider authority.

Coincident with this legislation there will be inaugurated a policy of closer collection of corporation taxes. It is said that many companies have failed to make settlement, considerable leniency having been shown, but the fiscal officers propose to enforce payment and if necessary to impose 12 per cent. penalty and interest.

A. B. H.

## A Proposed Patent Law Agreement with Germany.

The Washington correspondent of the New York *Times* states that a patent law agreement between this country and Germany will be sent to the Senate for ratification in the very near future. The exact wording of the agreement is not yet made public, but it is likely that no reference will be made to England's recent change in her patent laws, though that change was the original cause which led up to the present proposed entente between this country and Germany.

England's patent policy has long been a thorn in the commercial and industrial sides of several of her neighbors. In August a new British law went into effect making things still worse by shortening the period of protection, and when the congress at Stockholm brought German representatives in contact with Commissioner of Patents Edward B. Moore the pending agreement was at once canvassed eagerly as the most promising scheme by which Germany and the United States could either retaliate on England, or, better still, force her to join a new patent convention.

## A New Blount Motor Driven Speed Lathe.

The J. G. Blount Company, Everett, Mass., has brought out a new motor driven speed lathe designed particularly for manual training schools, but suitable for manufacturing purposes. The feature of the machine is an overhanging headstock containing a three-step cone pulley belted to a corresponding cone mounted on an extension of the motor spindle, the constant speed motor being placed underneath the bed, below the pan, where it is protected by the leg. The motor spindle is provided with an outer bearing to prevent side strain. The speed variations are the same as with the usual drive from a countershaft. The head spindle runs in ring oiling bearings. The tailstock is furnished with a clamping lever, permitting of quick adjustment for varying lengths of work.

## Judge Gary Revises His Testimony.

WASHINGTON, D. C., December 29, 1908.—The Ways and Means Committee has received from Judge Elbert H. Gary, chairman of the United States Steel Corporation, a revision of the testimony given by him on the 18th inst. The corrections are nearly all minor verbal changes, but in a few instances he has amended his estimates of cost and has added figures showing freight rates between various points which he was unable to supply at the time of his hearing. The general effect of the changes and conditions is to emphasize the necessity, from the standpoint of the witness, of retaining at least a large part of the protection afforded by the existing tariff. The figures submitted by Judge Gary are designed to show that English and German steel manufacturers can land their products in New York at 90 cents per ton less than Pittsburgh manufacturers, while the all-water freight rates from German and British ports to San Francisco give the foreign manufacturer a net advantage of nearly $8 per ton in view of his somewhat lower cost of production. Judge Gary quotes the freight rate on pig iron from New York to Pittsburgh at $2.45 and the rate from Germany and British ports at $2.85. Pig iron, which he stated in his testimony could be produced at profit at Pittsburgh for $12.65, he now says can be manufactured for $12.29, and on this basis he figures his total cost in New York at $14.74. Foreign pig iron at the furnace he quotes at $11 per ton, and with the freight to New York added he figures at $13.85, a differential of 89 cents per ton in favor of the foreign producer.

### The Work of the Ways and Means Committee.

The Ways and Means Committee, having completed the hearings on the new tariff bill, has taken up for consideration the oral testimony, briefs and other statements submitted since the committee held its first meeting, November 10, and the work of preparing the new measure may be said to be fairly under way, although little progress will be made in the actual adjustment of rates until after the holiday recess.

The first work of the committee since the close of the hearings has been the careful examination of the revised text of the Dingley act, which has been prepared for the committee by Thomas J. Doherty, special counsel of the Treasury Department before the Board of General Appraisers. The text of schedule C, metals and manufactures thereof, as thus revised, has already appeared in *The Iron Age*. The complete revised text is now being printed in bill form, with wide margins for annotation.

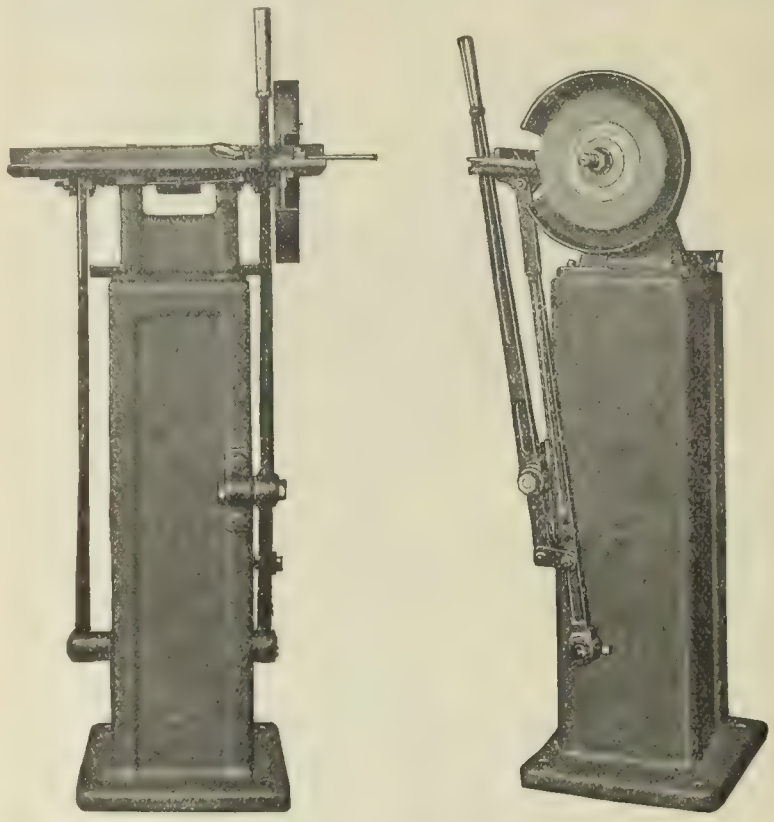
A subject that has already received attention at the hands of the committee is the form to be given the bill to carry out the maximum and minimum principle upon which the new measure is to be based. While, of course, all decisions reached at this early stage are more or less tentative, it has been practically decided to prepare the bill in such form as to permit rates to be entered in parallel columns, each item to carry two rates, the lower of which will be that of the general tariff to be extended to the products of all countries granting to the United States the most favored nation treatment, while the higher will be a retaliatory rate to be assessed upon the products of countries which discriminate against goods imported from the United States. No uniform margin between these two sets of rates will prevail, and in some cases the maximum and minimum rates will be identical, but, as heretofore intimated in this correspondence, the object of the committee will be to provide an average difference of approximately 20 per cent. For obvious reasons the committee does not desire to authorize maximum rates which are clearly prohibitory, as the imposition of such rates would give foreign countries upon whose products they were imposed a sound basis for protest through diplomatic channels.

The committee has decided to take up the schedules of the bill in the order in which they appear in the present law; hence schedules A, chemicals, oils, paints, drugs, &c., and B, earthen ware, glass, &c., will probably be disposed of before the details of schedule C, metals and manufactures thereof, are considered. Nevertheless, owing to the overshadowing importance of the metal schedule, it is the subject of more or less discussion at the daily meetings of the committee. The conflicting testimony of Messrs. Schwab, Gary and Carnegie with reference to the necessity for continuing existing rates of duty, or at least a large measure of protection, is causing the members of the committee much perplexity, and it is possible that before schedule C is reached it may be decided to call other witnesses specially equipped to testify as to costs of production. If further hearings on the metal schedule are held the witnesses will be heard in public as heretofore, and their testimony will be fully reported in this correspondence. W. L. C.

## The Colton High Speed Steel Cutter.

The Colton Combination Tool Company, Easthampton, Mass., has brought out a machine for cutting high speed steel, performing the same function for this class of steel as the hack saw does for the common tool steels. The cutting agent is a thin abrasive wheel, containing carborundum, running at 2500 rev. per min. The bar is clamped to a swinging frame, operated by a lever, which brings the work to the thin cutting wheel. An adjustable gauge permits of cutting off to sizes.

The special purpose of the machine is the cutting of steel into sections which are to be fashioned into tools for use in holders, but it is also useful for cutting other materials where a clean, square edge is desired. It cuts



Front and Side Views of a Machine for Cutting High Speed Steel Bars, Made by the Colton Combination Tool Company, Easthampton, Mass.

5-16-in. square tool steel in 5 sec., ½-in. in 10 sec. and proportionately with increasing sizes up to 1-in. round or square stock, according to the test of the builder. A larger size cuts high speed steel up to 2½ in. The arbor is of crucible steel and the bearings are made dust proof. The weight of the No. 1 machine shown is 200 lb. and the floor space 12 x 12 in.

The American Society of Mechanical Engineers will hold its next monthly meeting January 12 at 8.15 p.m., in the Engineering Societies Building, 29 West Thirty-ninth street, New York. Carl G. Barth, consulting engineer, Philadelphia, Pa., will present the paper of the evening on "The Transmission of Power by Leather Belting." The paper will give the author's conclusions based on 18 years' experience in the use of belting and the designing of machine tool drives where uniform cutting speeds must be maintained for protracted periods. Stereopticon views will illustrate the paper, among which will be charts for the solution of belting problems. Altogether, it will probably be one of the most comprehensive presentations of the subject of belting ever given before the society.

## Trade Publications.

**Industrial Narrow Gauge Equipment.**—Atlas Car & Mfg. Company, Cleveland, Ohio. Pamphlets Nos. 1070 and 1075. Deal with the company's industrial railroad equipment, including mine, dump, quarry, scoop, ore, rocker dump, radial truck, mill, foundry, dryer, cane and plantation, and electric motor cars, &c. Wheels, axles, trucks, turntables, switches, crossings, portable track, trolleys, car hitchings, &c., for industrial railroads are included.

**Steel Pulleys.**—Oneida Steel Pulley Company, Oneida, N. Y. Three folders. Refer to the Oneida steel pulleys, that are built in all sizes from 6 to 104 in. in diameter, the width of face ranging from 3 to 40 in., and the bore from 1 to 8 in. Illustrations are given of Oneida steel pulleys having diameters of 80 and 90 in. respectively.

**Grates.**—George H. Thatcher Company, Albany, N. Y. New York agents, Universal Grate Bar Company, 95 Liberty street, New York. Catalogue. Pertains to the Coe sectional shaking and dumping grates, which are claimed to be easy to operate and to insure perfect combustion with any grade of fuel. Illustrations show the construction of the grates, including the solid and stationary types.

**Air Compressors.**—National Brake & Electric Company, Milwaukee, Wis. Publication No. 386. Size, 6 x 9 in.; pages, 24. Devoted to air compressors for industrial service, and illustrates and describes type H motor driven compressors, types L and 3VS compressors, belted compressors, portable air compressor outfits, combined air compressor and water pump units, air compressor governors, types A and R governors, and type N oil-pneumatic governor. Tables of dimensions, capacities and other data relating to the compressors are appended.

**Concrete and Concrete Machinery.**—Enamel Concrete Company, Des Moines, Iowa. Catalogue. Size, 5½ x 9 in.; pages, 30. Descriptive of Enamel concrete, which is claimed to possess all the virtues of ordinary concrete and also other desirable features. The machine for making the concrete is illustrated and described, and the Enamel process is explained step by step.

**Speed Reducing Transmission.**—D. O. James Mfg. Company. 351 W. Monroe street, Chicago, Ill. Folder. Shows the O'Kelly speed reducing transmissions for reducing the speed from a motor or driving shaft to any required speed of the machine or driven shaft. The device is made in a variety of sizes and speed reductions from ⅛ to 50 hp., either vertical or horizontal. An illustrated description of these devices appeared in *The Iron Age* July 30, 1908.

**Chain Blocks, Electric Hoists, Trolleys and Cranes.**—Yale & Towne Mfg. Company, 9 Murray street, New York. Catalogue, 6 x 9 in., 70 pages. A brief story of the development of hoisting devices from the time of the invention of the differential pulley block to the present form an introduction, and assembled views of chain blocks and unassembled parts are given, together with illustrations of the various types of trolleys and cranes made by the company. A section of the book is devoted to the company's standard lines of electric hoists, which are illustrated with sectional views. Price-lists of standard sizes are included.

**Roller Bearings.**—Hyatt Roller Bearing Company, Newark, N. J. Folder. Treats briefly of the advantages of anti-friction bearings and shows the Hyatt standard bearing, the roller of which is made from a strip of steel wound into a coil or spring of uniform diameter. It is claimed that owing to its flexibility it presents a bearing surface along its entire length.

**Friction Clutches.**—The Hill Clutch Company, Cleveland, Ohio. Supplemental catalogue of 24 pages. Devoted exclusively to the company's friction clutch devices. The various types of clutches made by the company are shown, with assembled and sectional views. Unassembled parts are also illustrated and price-lists given.

**Well Drilling and Prospecting Machinery.**—America Well Works, Aurora, Ill. Bulletin No. 105, 7¾ x 10½ in., 191 pages. Shows a number of views of well drilling, prospecting and coring machinery, together with parts of such equipment. An interesting history of the development of the well drilling industry is set forth and the advantages of drilling deep wells for pure water, with information as to the method of drilling economically. Some views of the Beaumont, Texas, oil fields are given and a description of the operations of the first gusher well sunk in the district is included. Several types of pumping equipment are shown and described, and other supplies, such as smithing tools, belts, pulleys, &c. Useful hydraulic information is also given.

**Metal Planers.**—Rockford Machine Tool Company, Rockford, Ill. Two circulars. One describes the 24 x 24 in. Rockford metal planer, which is furnished with one of two heads on the cross rail and with any length of bed required in even lengths. The other circular describes the 28 x 28 in. planer, which is similar except for size.

**Roller Bearings, Ball Bearings, &c.**—Standard Roller Bearing Company, Fiftieth street and Lancaster avenue, Philadelphia, Pa. Catalogue No. 24, 5 x 8 in., 187 pages. This supersedes all of the company's previous publications and shows its full line of roller bearings and ball bearings designed for all purposes. The company also manufactures special steel castings containing alloys of chrome, nickel, vanadium, &c., examples of which are illustrated, together with a line of standard drop forgings. Space is given to the various types of thrust bearings and a number of shop interiors where these bearings are in use are shown. An interesting illustration is that of the largest thrust bearing ever made, which complete weighs 7500 lb. and carries a load of 1,500,000 lb., running at 100 rev. per min. A number of views of the company's plant are scattered through the book, and sectional views of the more important bearings are given.

**Iron and Steel, Heavy Hardware, Steam Fitters' Supplies, &c.**—W. G. Hagar Iron Company, formerly Western Iron & Supply Company, 2208 North Second street, St. Louis, Mo. Catalogue, 6 x 8½ in., 532 pages, bound in cloth. A particularly complete jobbers' catalogue of bar iron and steel; sheet, tank and flange steel; painted and galvanized roofing; tool and machinery steel; cold rolled shafting; boiler tubes; staybolt iron; bolts, nuts, rivets and washers; and supplies for steam fitters, machinists and engineers, boilermakers and blacksmiths, mines, mills and railroads. Standard fittings and supplies are illustrated and prices are listed. The book also contains considerable useful information, such as the number of tubes usually put in water tube boilers of various sizes, standard steam boiler measurements, weights of iron and steel, weights of black sheets and galvanized sheets, weights of steel angles, steel channels, steel dies, &c.; table showing approximate number of rivets in 100 lb., table of transmission of power by wire rope, belting, steel shafting, &c. Directions for setting and operating boilers and steam pumps and much other valuable information.

**Valves.**—American Steam Gauge & Valve Mfg. Company, Boston, Mass. Catalogue, 6 x 9¼ in., 89 pages. The company's line of valves, which include about all the known standard types, are shown, together with some special valves and valve fittings. Useful information, such as rules and information of the United States Board of Supervisors and Inspectors of Steam Vessels and directions for adjusting valves are included.

**The Petroleum Iron Works Company's Enlargement.**—The Petroleum Iron Works Company, Sharon, Pa., builder of blast furnaces, steel plate work, &c., has completed the concrete foundations for an extension, 145 x 160 ft., to its main shop and will shortly commence work on the steel structure. The building will be equipped with a dipping plant, the tank of which will be set 35 ft. under the floor level and will contain asphalt in which riveted steel pipe will be immersed. This new addition is expected to be completed by March. The main shop will then be 145 x 480 ft., the extension increasing the floor space about 50 per cent. The company is operating full force on contracts for steel riveted storage tanks for the oil fields in Illinois, Texas, Indian Territory, Mexico, Oregon and California. It is also building a self-supporting steel stack, 4 ft. 6 in. diameter by 100 ft. high, for the Youngstown Sheet & Tube Company, Youngstown, Ohio; two Leman oil condensers of 600 bbl. capacity each for the Cudahy Refining Company, Coffeyville, Kan., and four Leman oil condensers of 1000 bbl. capacity for the National Refining Company, Findlay, Ohio.

The next regular meeting of the American Institute of Electrical Engineers will be held in the auditorium of the Engineers' Building, 33 West Thirty-ninth street, New York City, on the evening of January 8, at 8 o'clock. Prof. Elihu Thomson of the General Electric Company, West Lynn, Mass., will present a paper, entitled "Conditions Affecting Stability in Electric Lighting Circuits."

It is stated that the Russian Government did not offer any encouragement to the recently formed South Russian Iron Syndicate and no assurances were given as to the policy the government would pursue in relation to it. The management of the new trust has been committed to M. G. A. Bunge, general director, and two associates.

John L. Wilkie of Gould & Wilkie, New York, has been appointed receiver for the American Diesel Engine Company, New York, manufacturer of oil and gas engines. The company, which has a capital stock of $250,000, is said to have assets exceeding $100,000. The receiver has been authorized to continue the business 10 days.

# THE IRON AGE

Established in 1855.

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## Railroad Buying in 1908 and the Outlook.

If all the outlets for iron and steel works products had shriveled in proportion to the shrinkage in railroad demand, 1908 must have been a far leaner year for the iron trade. The actual consumption of structural steel this year has probably been within 15 or 20 per cent. of that for 1907—and so far as steel buildings and bridges alone are concerned the gap was even less. In the wire trade, too, the comparison with 1907 has been more favorable than in the average of rolling mill products. But beginning with rails and running down the line of railroad consumption, the showing is that of a veritable famine. In the absence of statistics, and, judging only from the information available through the year as to the rate of rail mill operation and of rail laying for renewals and new track, the rail production for 1908 may be estimated as considerably below 50 per cent. of that for 1907.

The data gathered by the *Railroad Age Gazette* and printed in another column of this paper tell the story for the car and locomotive works. While the railroads had begun to curtail smartly in 1907, the locomotives ordered in that year were 3482, against 1182 this year, or three times as many, and the freight cars ordered were 151,711, against 62,669, or two and a half times as many. Measuring the two years by the actual record of locomotives and cars built, the poverty of 1908 is glaring—2342 locomotives and 76,555 cars this year, against 7362 locomotives and 284,188 cars in 1907, which was by far the best year on record.

Naturally the disposition is to turn from so unfavorable a showing to the prospects for the new year. The car works, we are told, have less than two months' work ahead even for the reduced forces all are employing. Further orders are expected early in the new year, but there are no indications yet that 1909 will be a year of plentiful railroad orders. It promises to stand nearer to 1908 than to 1907 in volume of business in rails, locomotives and cars. The view of an Eastern railroad officer, expressed in an article published some months ago, is that the extraordinary earnings of the railroads in the five years ending with 1907 were due largely to traffic created by their own enormous expenditures for track, bridges and equipment. His conclusion was that it will be several years before such a run of railroad buying will be repeated. While this is not an inevitable conclusion, even if the premise as to the chief source of railroad earnings in recent prosperous years be granted, the fact that the bonded indebtedness of the railroads has increased so rapidly in years of prosperity has an important bearing upon the scale of their expenditure in the next few years. An increase in bonded debt from $6,722,000,000 for the railroads of the United States in 1903 to $9,043,000,000 in 1907 is a matter of no small significance.

As to the prospect for 1909 the opinions of railroad presidents and managers have been asked and are printed in connection with the track and equipment statistics cited above. There is agreement in the general statement that improvement will come slowly. It is also the testimony of those who answered the inquiries that while the outlook now is much better than that of a year ago, and the chance of harm from hostile legislation is greatly reduced, the assurance that the railroads will not suffer further at the hands of politicians is not all that could be desired. Mention is made of the pendency of tariff changes as likely to delay activity in new directions or in industrial extensions. In a word, the railroad attitude is one of hopefulness, but still a measurable distance short of assurance.

## Reorganizing the Navy Yards.

If Secretary of the Navy Newberry succeeds in carrying out his announced policy of reorganizing the navy yards, and brings the great plants to the point of high efficiency which they would achieve if they were conducted as intelligently directed private enterprises, he will have accomplished a great work. Costs should be cut in an important way; the same annual expenditure should produce much better results. Items for the repairs of warships should be smaller, and expenses should be proportionately less where the navy undertakes new construction. But to bring about this improved order of things the reorganization must be thorough; the present system of management must be altered essentially, not only in the elimination of the bureau system, but also in the department offices themselves. The purchasing system of the navy as it applies to navy yard equipment must be placed on a new basis, following some one of the systems that have been worked out in the best managed of the great industrial establishments. Otherwise the promised improvement will be by no means complete.

It has long been realized by practical manufacturers that the shops conducted under the direction of the Navy Department, perhaps with some exceptions, which do not, however, include the navy yards, are extravagantly managed. The dividing up of a plant into departments known as bureaus, each operated independently of the others, even to the unnecessary duplication of minor sub-departments and their equipment and to some extent of the shops themselves, has been the chief cause of this. But another and important reason is the method of buying, which has been freely criticised as wasteful.

Contracts are awarded on bids submitted on specifications prepared at the yards as they require equipment or supplies. The office corresponding to the purchasing department is located at Washington. It has, of necessity, only a superficial knowledge of the greater portion of the articles it is called upon to buy. Specifications are often considered subordinate to price. If a department of one of the yards requires a machine and specifies certain features deemed essential to the work to be done, bidders are given the option of submitting bids with a tool presumed to be the equivalent in design and construction. If the machine purchased at a lower price was really the equal to that specified no harm could result from this system, and frequently such is the case. But there are instances where work in hand can best be done on a certain ma-

chine having special characteristic features, and a substitution is disadvantageous. Even more often a machine inferior to the specification is named in the contract. Every practical manufacturer realizes that in deciding upon new equipment the work to be done with it should be the first consideration, and that price is a factor only in its relation to the cost of producing and the quality of the product. The navy yards are compelled more often than is generally known to accept machines which are wholly unsuitable or uneconomical for the purposes for which they were bought, and shop efficiency is proportionately reduced. The War Department has a better system; the specifications of the various arsenals are usually followed closely in the buying, the effect being that in a great percentage of cases the men responsible for results practically do their own buying. In the navy yards there are glaring instances of machines which have hardly been used because they could not accomplish the tasks required of them. They were purchased regardless of specifications and have practically proved to be losses, to say nothing of the wasted space which they occupy. Other machines have been built over at considerable cost in order to render them useful, which is an expensive way of doing business.

It may not be considered practical under government management of the naval shops to centralize the purchasing department of each yard at the yard itself, but it is difficult to see the logical objection. Under the plan of reorganization, according to the announcement of Secretary Newberry's plans, the Bureau of Steam Engineering, Bureau of Construction and Repair and other bureaus will be wiped out and the various departments of each yard placed under a single head. There will be consolidation of shops with active co-operation throughout the establishment. Presuming that the head is an efficient officer, he would be better situated to know the wants of the works in the way of equipment and supplies than the purchasing office of the Navy Department. If he is a man sufficiently able to manage the yard his judgment should not be overruled at Washington. If he is inefficient, he should be relieved. The time will probably come when expert civilian heads will be chosen for Government works, or naval officers will specialize along the lines of industrial management instead of taking navy yard work as an occasional period of shore duty. There can be no doubt of the fact that whoever heads so great a plant, doing so important a task as construction and repair of warships and their intricate equipment and mechanisms, should be trained for the work. But under any circumstances the man chosen should be given the power to select the tools upon which the success of his charge must depend for success. Either a recommendation as contained in specifications should be followed more closely or the purchasing power placed directly in the control of the manager, just as it is in large private manufacturing establishments.

## The Revival of the Profit Sharing Proposal.

A distinction is to be made between the relations existing between employers and labor unions and the relations existing between employers and their employees. While the former, judging from many developments of the past few years, do not show improvement, there are many signs of an advance toward a better footing of proprietors and wage earners. Nothing is plainer in the campaign so vigorously carried on for the open shop in the machine shops and foundries of the country than the evidence that employers who do not make a union card a condition of employment are striving to give their men better conditions than the union can offer. The employer who refuses recognition to the union with the intention of running a low wage shop and getting off more cheaply in the matter of shop conveniences finds himself quite out of step with the general movement.

It is interesting in this connection to note the revived advocacy of profit sharing in the closing weeks of 1908. From Andrew Carnegie's latest book extracts have been widely published in the past week, containing the prophecy that the day will come when payment to the worker will be made wholly or in part by profit sharing, with a guaranty of a minimum wage. At the last annual meeting of the National Civic Federation in New York, M. E. Ingalls, chairman of the Big Four Railroad, predicted that profit sharing would supplant the trade agreement as the basis of co-operation between employers and employed. In some form or other, he argued, profit sharing with labor is bound to come, and to the railroad companies of the country he considered that it offered the best form of insurance that can be devised against a régime of Government ownership. Sir Christopher Furness, a third capitalist who has very recently given prominence to the plan, avowed frankly that he had recourse to it as a preventive of such strikes as had made the operation of his shipyards at Hartlepool, England, an unending succession of strikes alternating with brief and well nigh profitless seasons of activity of a business sort. That may be the first thought that will ordinarily be entertained in considering the subject, for partnership is doubtless the nearest approach to the perfect relation between employer and employed. But there are other benefits than the elimination of friction over questions of labor. The vast advance toward economical production made possible by community of interest, and, perhaps, of equal weight with this, the powerful forces set in motion through the accumulated savings of profit sharing workmen, are factors whose effect is great and far reaching. In some such way, it seems likely, is a solution to be reached of the problem of high cost of production, which is a matter of grave and growing concern to the managers of American industries.

The decrease in number of employers through the multiplication of great corporations furnishes an added incentive to the practical development of schemes for employee participation in earnings. The stockholding privilege given to employees of the United States Steel Corporation's subsidiaries has unquestionably been a strong factor in the corporation's advance to its place of eminence. If this accumulated interest and esprit de corps could be capitalized it would rank well among the increase in iron ore values and the other increments that are commonly credited with the squeezing out of the original infusion of water in the corporation's stock. Moreover, the plan as it has been carried out in the past six years has been at least a partial answer to the complaint that men who might have become moderate sized employers under the conditions of 15 or 20 years ago have no longer a chance to become more than workers for salaries.

It is of no small significance that profit sharing, which has now for a good many years been passed by as a proposal perhaps ultimately applicable, should lately have been thrust forward for serious consideration as a practical remedy for the bad adjustment between capital and labor.

Deprivation of the right to boycott may be an interference with the liberty of one set of persons, but it safeguards the liberty of others.

## Canadian Opinion on Steel Protection.

TORONTO, December 28, 1908.—Parliament opens January 20. It is not expected that the Government will have any fiscal or commercial changes to propose, and there seems little likelihood that the Opposition will raise important questions under either of these heads, expect in the way of the usual criticism of the Government's financial management. It will cause no surprise, however, if private members cause some discussion of features of the tariff. There is very strong feeling on the subject of the policy adhered to for fostering the iron and steel industries. With a fresh lease of power from the people, the Government may not be disposed to treat present objections to its policy very seriously. At the same time it cannot afford to be disrespectful to a sentiment that is steadily growing among the farmers. Two recent occurrences have contributed very greatly to the strength of this sentiment. The first of these is the launching of the Dominion Iron & Steel Company into a rail export business, and the other is the publication of Andrew Carnegie's views as to the needlessness of protection for the prosperity of the steel industry of the United States. Few matters have been more canvassed by the Canadian press of late than these two, and this discussion has given a strong, new impulse to the agitation from consumers for an abatement of the burden which the steel duties and bounties impose. In the Canadian West the feeling against these imposts is particularly strong, as they keep out the cheaply produced American steel of which Mr. Carnegie speaks.

The Western provinces are all earnestly endeavoring to develop internal railroad systems that will be the diffusers of settlement and gatherers of produce over their vast areas. The transcontinental railroads traverse the provinces and throw out branch lines, but to do the gridironing necessary for the development of such great expanses of fertile territory purely local lines are needed. To promote the construction of these the three prairie provinces have but slender means, for the basic security of the public credit—that is, the land itself—is not the property of these provinces. The owner of the public lands in Manitoba, Saskatchewan and Alberta is the Dominion Government. Hence these provinces cannot give land and subsidies to encourage railroad building, and their bond guarantee does not carry as much weight as it would if they owned the crown domain. It is not an easy matter, therefore, for Alberta and Saskatchewan to induce capital to go into the building of the much needed domestic railroads. Everything that tends to add to the difficulties of this provincial railroad problem causes irritation, and in no other part of the country is the duty on rails so unpopular as in the West. From that quarter, therefore, any movement in Parliament for the carrying out of the Dominion Grange's demands for the lessening of protection on iron and steel will receive hearty support.

### Trade Notes.

Of the project to establish steel works at Cobourg, on Lake Ontario, something was said in a previous issue of *The Iron Age*. An agreement was reached between the promoters and the representatives of the municipality, providing for a site and for limitation of taxation. A company has now been incorporated under the laws of Ontario for the purpose of constructing and operating the works which the private negotiators agreed to establish in Cobourg. The name of the new corporation is the Provincial Steel Company, Ltd., and the capital is $250,000. The provisional directors are Robert Heath of Staffordshire, England; Frank W. Coolbaugh, Philadelphia; Rev. William Beattie and Niel F. MacNachtan, Cobourg. Mr. Heath is said to be of the firm of Robert Heath & Sons, proprietors of large collieries and iron works in North Staffordshire.

Among other companies of which notice of incorporation appears in the current number of the Ontario *Gazette* are the following: The National Metalware Company, Hamilton, capital $40,000; Torwell Foundry, Ltd., Berlin, capital $50,000; Nipissing Diamond Drilling Company, Cobalt, capital $50,000.

The Ontario Iron & Steel Company of Welland has received orders for some of the steel work on the 25 locomotives that the Canadian Locomotive Company of Kingston is building for the Grand Trunk Pacific Railway Company. C. A. C. J.

## Henry Grey and the New Structural Mill.

The Carl Lueg Medal has just been awarded by the Verein deutscher Eisenhuettenleute to Max Meier, now the general manager of the Bismarck Huette in Silesia, but formerly of the Differdingen Works in Lorraine. The award was made on the ground of Meier's courage in introducing the large unit gas engine and the Grey universal mill. During the recent tariff hearing Andrew Carnegie gave much credit to Charles M. Schwab for having brought from Germany a mill for rolling new shapes of structural steel. It is somewhat exasperating that there is being ignored in all this commendation the original inventor, Henry Grey, an American, who not alone designed and built the first mill at Differdingen, but also the second mill at Bethlehem.

In presenting the Carl Lueg Medal to Mr. Meier, the president of the society, C. Springorum, general manager of the great Hoesch Works, said: "You have won high merit, furthermore, by having carried through practically, under great difficulties, a method of rolling based upon new principles, which, it was true, had been invented by an American, but which had not been practically introduced in the home country of the inventor." The Germans, therefore, gave Henry Grey credit for his achievements, which are fully appreciated also by those familiar with rolling mill work in this country. To the larger lay audience, however, Mr. Carnegie's words may convey the impression that Mr. Schwab brought over a German invention, when, as a matter of fact, it was a German, Max Meier, who first had the courage to introduce Henry Grey's mill, and it was only years after it had been in regular operation at Differdingen that Mr. Schwab installed it at Bethlehem.

## British Steel Works Earnings in Depression.

Reports given at the annual meeting of Dorman, Long & Co., Ltd., Middlesbrough, England, December 8, show that the profits in the last fiscal year were £171,841, while the amount carried forward from the previous year was £57,542. After paying dividends of 6½ per cent., against 7½ per cent. in the preceding year, £64,709 was carried forward. The company set aside £20,000 for the redemption of the second debenture stock, and wrote off £30,000 for depreciation. The expenditure on new plant amounted to £83,554, an electrically driven finishing mill being among the additions, while an electrically driven blooming mill is expected to be completed in February. The company received from its investments in Bell Brothers, Ltd., and the Northeastern Steel Company, Ltd., which it has under lease, £20,250 and £9940, respectively, as against £27,000 and £19,988 in the preceding year. The report says there is reason to believe that the end of the depression in the iron trade is approaching, and that within the next few months the relations between costs and market prices will be more satisfactory. Through Bell Brothers, Ltd., the company has been involved in litigation with the Carnegie Steel Company, which alleges that the process used at the open hearth plant of the Clarence Works of Bell Brothers, Ltd., infringes the patents on the Monell open hearth process.

Samuel Gompers, president of the American Federation of Labor, announces that on advice of counsel, in view of the application of the Sherman antitrust law to labor unions in the decision of the United States Supreme Court in the Loewe hat boycott case, the publication of the "We do not patronize" list in the *Federationist* is discontinued, and that Congress will be asked to except labor unions from the antitrust provisions of the Sherman act.

# OBITUARY.

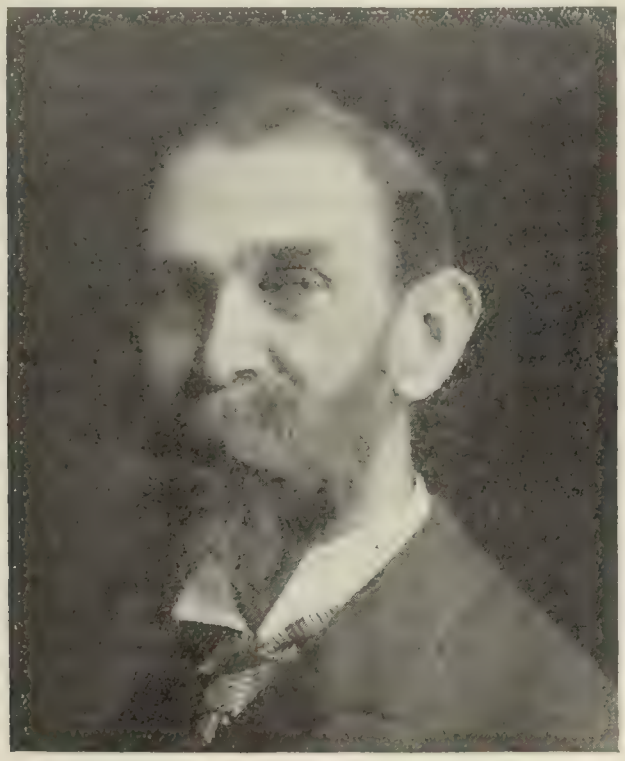
H. W. CALDWELL.

Henry Wallace Caldwell, president of the H. W. Caldwell & Son Company, Chicago, Ill., died December 22, at Redlands, Cal., aged 65 years. He had been an invalid for a number of years and had taken up his residence in California in the hope of improving his health.

Mr. Caldwell was born in Bath County, Ky., and left college to enlist in the Union Army in the Civil War. Although at the time very young, he attained the rank of lieutenant. At the close of the war he moved to Indianapolis, Ind., and engaged in business there. He was for a number of years general superintendent of the Indiana State Board of Agriculture, and in this capacity had charge of the erection of the exposition buildings at the State Fair Grounds, these being among the first buildings of that class that were erected in the United States. He afterward engaged in the grain elevator business and became interested in the mechanical devices used in such plants.

His particular attention was directed to the transportation of grain by means of conveyors, and he turned his efforts especially to the improvement of the screw or spiral conveyor, which was then a very crude device and ordinarily manufactured by hand by millwrights equipping the elevator. Mr. Caldwell patented and commenced the manufacture of the Caldwell conveyor, and for 33 years his name has been associated with the manufacture of this special type of conveying apparatus. While continuing the manufacture and sale of the screw conveyor, he also engaged in the building of grain elevators, moving from Indianapolis to St. Louis in 1876.

After several years the grain elevator contracting department was discontinued, and he then gave his



H. W. CALDWELL.

entire attention to the manufacture of screw conveyor and other machinery for the conveying and elevating of materials and the transmission of power. In 1881 he moved to Chicago, and the history of the business has been one of steady growth ever since. In 1892 the business was incorporated and his sons, Frank C. and Oliver N., became associated with him. His wife died eight years ago. In addition to the two sons mentioned he leaves two daughters, residing in California.

Mr. Caldwell's long continued connection with the manufacture of machinery and the large proportions to which his business had grown made him one of the prominent figures in the machinery world. He was a member of the Presbyterian Church and of the Loyal Legion.

JAMES CORRIGAN.

James Corrigan, head of the firm of Corrigan, McKinney & Co., Cleveland, Ohio, iron mine, vessel and blast furnace owner and operator, died December 24, after an illness of several months, at the age of 59 years. Mr. Corrigan was stricken with peritonitis last September, and was in a critical condition for several days. He grew better, however, and appeared on the way to recovery, but later there were complications, which led to an operation the day before his death. He was born in Iroquois, Ont., in 1849. While a boy he was employed on a boat on Lake Ontario. Later he went to Cleveland, and was employed in an oil refinery. Soon he embarked in business for himself as a refiner of oil, and after several years of very successful operations sold out to the Standard Oil Company in 1881. Soon after this he turned his



JAMES CORRIGAN.

attention to the Great Lakes, and became a large vessel owner and operator. In the past few years his vessel holdings had been decreased considerably, and he had devoted his attention to his valuable iron ore properties and furnace interests. The firm of Corrigan, McKinney & Co. was formed in 1888, Price McKinney becoming associated with Mr. Corrigan in the business, and an important interest was acquired by the late Stevenson Burke. The company is one of the largest independent shippers of lake ores, and operates the Genesee Furnace in New York and the Josephine and Scottdale in Pennsylvania, the latter of which is now being rebuilt. The company started some time ago to build a duplicate of the Josephine Furnace, and recently acquired a large site in Cleveland, on which it was planned to commence soon the erection of a large blast furnace. Until 18 months ago it operated the River Furnace in Cleveland, which reverted to its owner, the Upson Nut Company, at the expiration of a 10-year lease. Mr. Corrigan leaves only a brother, John Corrigan, and one son, James W. Corrigan. His wife and three children were drowned eight years ago when Mr. Corrigan's yacht Idler was capsized in a storm in Lake Erie.

CHARLES A. BRAYTON, president of the Standard Car Wheel Company, Cleveland, died December 24, aged 65 years, from the effects of a stroke of paralysis, which he suffered a year ago. He leaves two sons, W. A. and Charles A., Jr., who were associated with their father in business.

CHARLES W. WHITNEY, who built the Keokuk, an iron clad vessel, which led the Federal naval attack on Fort Sumter in April, 1863, died December 25, at Kinderhook, N. Y., aged 77 years. He was born in New York, and two years before the Civil War he became New York manager for Horace Abbott & Son, iron manufacturers of Baltimore. He was a friend of Ericsson, who designed the Monitor, and he himself designed and built the Keo-

kuk,, which was launched at East River and Eleventh street in December, 1862, and in April of the next year it figured in the attack on Fort Sumter. The Keokuk was struck during that engagement and sank the next day in Charleston harbor. The Keokuk because of its speed, 10 miles an hour, and its armor, which was 5½ in. thick, was one of the wonders of naval architecture of the time.

ENOCH JAMES, a well-known British engineer and steel works manager, died November 13 in his sixty-first year. He was best known as manager of the Dowlais Works of Guest, Keen & Nettlefolds, Ltd., at Cardiff, Wales, in the nineties. Since 1902 he had been engaged in general consulting engineering. He was one of the four commissioners of the British Iron Trade Association who visited the United States in the fall of 1901 to investigate the conditions of iron and steel production, and he wrote the portion of the commission's report dealing with general steel works practice.

A. HICKS, superintendent of the Hudson Iron Company's mines at Fort Montgomery, N. Y., was struck by a West Shore Railroad train December 26 and shortly afterward died at the Newburgh Hospital. He was 63 years old.

## PERSONAL.

Fritz Asthoewer, Sr., engineer, of Essen, has been elected an honorary member of the Verein deutscher Eisenheuttenleute, as pioneer in the steel casting industry in Germany, the first successful castings having been made by Jakob Mayer of Bochum.

Paul B. Morgan of the Morgan Construction Company, Worcester, Mass., has returned from a short European trip.

Charles H. Daker has resigned as vice-president and secretary of the Iron City Steel Company, Bessemer Building, Pittsburgh, to go in business for himself at 717 Park Building, where he will represent the Cambridge, Ohio, plant of the Interstate Iron & Steel Company, which rolls high carbon steel bars, and also John Church, Glen Iron, Pa., manufacturer of Glen cold blast charcoal pig iron.

C. S. Lovell, secretary of the E. H. Mumford Company, Philadelphia, since its organization, has resigned to accept a position with Baxter D. Whitney & Son, Winchendon, Mass., and is succeeded in office by E. M. Huggins, chief draftsman of the Mumford Company, also since its organization.

Just after recovery from an illness Dr. Richard Moldenke, secretary of the American Foundrymen's Association, was severely injured in a runaway accident two weeks ago. He is still incapacitated for work, but is much improved.

W. S. McCoombs, superintendent of Mary Furnace of the Ohio Iron & Steel Company, Lowellville, Ohio, has resigned and will retire from active business. He will be succeeded by Mark C. Steese, formerly superintendent of blast furnaces of the La Belle Iron Works, Steubenville, Ohio.

J. I. Andrews, who on January 1 assumes the position of general manager of sales of the American Sheet & Tin Plate Company, Pittsburgh, has returned from a two months' sojourn in the South, greatly improved in health.

**A Distribution to Employees.**—The American Blower Company, Detroit, Mich., repeated this year at Christmas time the distribution of money, first made two years ago, to its employees. On the former occasion each employee received $1 and an additional dollar for each year of continuous employment. The largest single sum thus paid was $25, the entire life of the company at that time being 25 years. At the close of 1907, owing to the business depression, there was no distribution. In connection with the presentation of the various amounts this year the president of the company, James Inglis, addressed the employees, extending holiday greetings and expressing the satisfaction of the management at the continued cordial relations which had gone on practically without a break for more than a quarter of a century.

### The Vice-Presidents of the Steel Corporation.

The vacancy created by the resignation of James Gayley as first vice-president of the United States Steel Corporation has been filled by the appointment of William B. Dickson, until now second vice-president. David G. Kerr, long connected with the Carnegie Steel Company, and one of the partners at the time of consolidation, has been appointed second vice-president. Mr. Kerr has been associated with the work of Mr. Gayley in the management of the ore properties and transportation of the Steel Corporation, his special function having been to direct the distribution of the ore, limestone and coke from their source to the blast furnace.

### Pacific Coast Metal Trades.

The Washington District members of the United Metal Trades Association, the membership of which is made up of machinery manufacturers on the Pacific Coast, held a successful meeting at the Hotel Washington, Seattle, on the evening of December 21. Addresses were made by J. M. Frink, Washington Iron Works, Seattle; T. B. Sumner, Sumner Iron Works, Everett; Gilbert Hunt, Gilbert Hunt Company, Walla Walla; George James, Variety Iron Works, Seattle; Niven McConnell, McConnell Engineering & Machinery Company, Tacoma; John Hartman, Atlas Foundry & Machinery Works, Tacoma; J. V. Patterson, manager, the Moran Company, Seattle; J. T. Heffernan, Heffernan Engine Works, Seattle; H. S. Hastings, commissioner of the United Metal Trades' Association.

In the main, subjects of particular interest to manufacturers on the Pacific Coast were discussed. The promotion of the open shop movement and through it the bettering of shop conditions were emphasized, and it was shown that the possibilities in this direction now open to the employer are greater than they have ever been. Emphasis was put by several speakers on the advisability of specializing. It was pointed out that instead of entering upon some line already represented in that section the manufacturers would do well to study how to produce on the coast articles now almost exclusively drawn from the East. It was suggested that officers of the United Metal Trades Association obtain information as to various manufactured articles now shipped in which could be manufactured there. The question of raw material supply was considered in this connection. The encouragement of trade schools was another matter touched upon, and some attention was paid to the question of freight rates from the East to the coast and the desirability of securing reductions. Much interest was shown in the statement of members connected with shipbuilding, as to the impossibility of the development of this industry under existing laws.

A committee was appointed to arrange for another meeting of the Washington District at which employers and their foremen will consider the formation of a foremen's association. Committees were chosen on legislation and on trade schools, and delegates were elected to represent the Washington District at the Transcontinental Freight Bureau Committee meeting, to be held in Chicago in January.

In the issue of *The Iron Age* of December 24 an item was printed to the effect that the Torrent Pump Company is a new concern in Sebring, Ohio. This is incorrect. That company has been out of business for nearly a year. The Service Pump Company, however, has been recently started at Sebring, Ohio, to manufacture iron pumps.

Tate, Jones & Co., Inc., Empire Building, Pittsburgh, have received a contract from the Republic Iron & Steel Company, Youngstown, Ohio, for the equipping of a large spike furnace, with producers and other appliances, for using fuel oil.

# The Working Requirement of the British Patent Law.

## Notes on the First Decision Thereunder.

BY JOHN D. MORGAN.*

In the present month the British Comptroller-General has handed down his first decision in a case arising under section 27 of the present British patent act. This is the section which provides, in substance, that any one may ask for the revocation of a patent which is being worked mainly or exclusively outside of the United Kingdom.

The case just adjudicated, which may be regarded as a test case, possessed many desirable features for that purpose. In the first place, the patent was granted in 1900, seven years before the law went into effect. Second, a factory had been built in Belgium for making roof tile according to the patented process, and the trade in Great Britan had been supplied from the Belgian factory. These are the conditions under which many valuable outside patents have been exploited, and a question confronting many importing patentees has been, What allowance will the English authorites make for a home factory built with sufficient capacity to supply the English trade? The third fact of interest is that the patents were advertised for sale or as open for license agreements.

There is little else that could be done by foreign patentees in any effort to save patents, after the expiration of four years, where it is impracticable or undesirable to manufacture in England in good faith and on a commercial scale. It can fairly be said that the whole question of the application of this section was up for decision.

### The Facts on Which the Case Was Based.

The facts are succinctly stated by the Comptroller as follows:

It appears that the invention is in commercial operation in Germany, France and Belgium under licenses from the grantee, Mr. Hatschek, in those countries, and it is admitted that the process is carried on exclusively outside the United Kingdom. The first and main question which arises under the section, therefore, is whether the patentees . . . can give satisfactory reasons why it is not carried on in this country. The Société Anonyme Eternit [of Belgium] became the licensee of both [British] patents under a license dated January 26, 1906, granted by Mr. Hatschek . . . In reply to the question whether the factory was erected in Belgium with a view of supplying the English market, he said that at the outset there was no question of that, but that while the works were under construction the British license was negotiated for and was then taken into account in the construction. He was unable, however, to say how much more capital was expended on the factory in consequence of the intention to supply the English market than would have been expended if it had not been proposed to supply that market. The witness also admitted that it would be difficult to ascertain to what extent the expenditure on the factory was increased by this consideration, nor could he state whether it would have been necessary to enlarge the works for the purpose of the English sale.

He further affirms in his declaration that in consequence of the erection of this factory the company has always been and is now in a position to meet fully and satisfactorily all demands in the United Kingdom for articles made according to the patented process; that the factory has been sufficient to enable the company to deal with the whole of its trade both in the United Kingdom and in other countries; and that if the patents were revoked and factories were established in England for carrying on the process, it would not be possible to produce the articles made according to the process as cheaply in such factories in Great Britain as is done now in Germany, France and Belgium, owing to the cost both of labor and materials; and that the goods made in such factories in England could not be supplied to the trade and public at such low figures as are now offered by the company, or as could be offered by the French and German manufacturing companies if they were free to import such goods into the United Kingdom. . . . The proportion of slabs manufactured at his factory in Belgium which come to the English market may be taken to be about one-sixth of the total amount of the sale everywhere, and about one-half of what is not imported into England is consumed in Belgium. He further alleged that it is necessary to manufacture a certain quantity of the goods to a certain scale in order that the cost of manufacture should not be too high, but that he could only give an approximate estimate of the quantity and scale necessary. In his opinion it would be necessary to manufacture 500,000 square meters annually in order to work on acceptable conditions. . . .

The only other witness on behalf of the patentees stated in his declaration that on or about July 13 last his firm received instruction from patent agents in Belgium in behalf of the company to insert advertisements in various British journals, intimating that the owners of the patents were desirous of disposing of them, or of entering into a working arrangement with firms in Great Britain likely to be interested in the process covered by the patents. His firm was also instructed to communicate with various British firms for the purpose of granting licenses under the patents, or of selling them, the object of these advertisements and offers being to secure, if possible, some proper and sufficient arrangement for the manufacture of the process covered by the patents within the United Kingdom, having regard to the terms of section 27. Copies of the advertisements and replies to the offers are annexed as exhibits to his declaration.

In his examination he said that he knew of no better firms than those to which he wrote, and that he knew of no journals which would circulate among those likely to be interested better than those he had advertised in. In reply to a question by the counsel for the applicant as to whether the firms and people whom he addressed personally were not brick makers, he stated that one, Doulton & Co., were not brick makers, but tile makers and makers of terra cotta and imitation tiles of which Doultons were one of the leading makers in the country. In reply to the question whether he thought the offers were *bona fide* offers and that the company wished to sell the patents, he answered that it certainly wished to sell them so far as his firm was concerned, and that his firm had no instructions that this was to be an attempt to evade the act. They were instructed to obtain a license if they could.

In this connection it is to be observed that Mr. Hatschek could not have granted a license without contravening the terms of his present license to the company, inasmuch as he is precluded by it from granting any one else a license in regard to this manufacture for Great Britain and Ireland, and that the effect of a sale to any British manufacturer by him and the company of its patent rights outright would have been to close the British market to the Belgian company, a more serious result than the revocation of its patents seems likely to entail. Mr. Marks' firm was acting on behalf of the company, and apparently without any instructions from Mr. Hatschek. No offer was received in response to these advertisements and communications.

### The Point of the Case.

It will be seen, therefore, that the case turned on the question as to whether a British patentee manufacturing on a commercial scale outside the realm, who imported his goods into the realm and thus exercised his monopoly of selling and, through purchasers, the monopoly of using, and held in abeyance his monopoly of making, but had advertised his willingness to sell or license, had given "satisfactory reasons why the article or process is not so manufactured or carried on" (*i. e.*, within the United Kingdom) as required by the statute.

Counsel for the patentees asked the Comptroller to hold that satisfactory reasons within the meaning of the law why the process was not carried out in the country had been given. He urged, in brief, that the erection of the Belgian factory had temporarily impoverished the company and it was, therefore, financially impossible for it to erect a factory in England; that the factory had been built in Belgium before the enactment of the working requirement of the English law; that this factory is capable of satisfying the entire commercial demand, including that from the English market. He contended further that the goods could be manufactured more cheaply abroad than in England. He also urged the advertising of the patents as subject to sale or license, "but admits that the mere offer, that the owners were prepared to treat on reasonable terms, as made in the advertisements, would not, of itself, have satisfied the re-

* Of the New York Patent Bar.

quirements of the act." It was urged finally that, as the patents were issued prior to the enactment of the law, the statute was retroactive. Counsel asked on this score for greater leniency on the question of sufficiency of excuse.

Counsel for the petitioner requesting revocation of the patent, as stated by the Comptroller, argued as follows:

The object of the section was to remove the restraint upon manufacturers in this country which is caused by the existence of patents in cases such as this; that the intention of Parliament was by the section to create a position of allowing any one to manufacture, and to see whether the manufacture will spring up in this country or not. If the manufacture is for the benefit of the country, it will spring up; but if it is not for the benefit of the country, it will not spring up. What I am to take into consideration, he says, is this: The patented article is not manufactured in the United Kingdom. Is there reason why we should not fairly expect up to the present moment that it should be; and are there any special circumstances which make it practically impossible to have got the manufacture carried on up to the present moment? The patentees have taken practically no steps to get the article manufactured in this country; nobody would expect such advertisements as they have inserted in the papers to be attended to by substantial people; the letters which have been written have been, with one exception, sent to brick makers, and it could not be expected that brick makers would take up these patents.

He also urged that as long as the patented article is simply manufactured in Belgium and imported here on terms satisfactory to the Belgian manufacturers and patentees, it is impossible to find out what the real demand in this country is, because the demand of course depends very largely on the terms upon which the goods are offered. He also maintained that there was no proof whatever that the goods can be made more cheaply abroad than in this country; but that this was not a question which Parliament had intended that either the Comptroller or the court, or any one else, should decide unless it were in a very extreme case. With respect to the contention that existing patentees should be treated more leniently than persons who take out their patents after the passing of the act, he pointed out that Parliament had thought one year of grace sufficient, and that it was not possible to put any interpretation on the act which would have the effect of lengthening this period.

### The Decision.

The decision of the Comptroller is probably best represented by a series of extracts from his decision, as follows:

The main question to be determined is whether the patentees have given satisfactory reasons why the patented process is not carried on in this country. If they have given satisfactory reasons for their inaction, their patents cannot be revoked either under section 27 or under section 24 (3). The provision in each of these sections which makes the giving of satisfactory reasons for inaction by a patentee a conclusive reply to any application for revocation was inserted in the act in order to carry into effect. so far as Great Britain is concerned, article 2 of the Additional act of 1900, to which all the states that have joined the International Union for the Protection of Industrial Property are parties. That article provides that patents may only be revoked within the states in the union for nonworking, . . . "provided the patentee cannot show reasonable cause for his inaction." Whilst the bill for the act was passing through Parliament, many efforts were made on the part of its opponents and critics to define what might and what might not be accepted as reasonable causes for the inaction of a patentee. But Parliament decided to leave it to the tribunal dealing with each case to determine after hearing the facts and arguments whether or not the patentee could give satisfactory reasons for his inaction. It is obvious that in determining this question, regard must be had not only to the interests of the patentee, but also to those of the public; and that the mere fact that it would be more profitable or convenient to a patentee to manufacture abroad than in this country cannot be regarded as a satisfactory reason for not taking the necessary steps for introducing the manufacture into this country. Otherwise no advantage would be gained in any state of the union by legislation under which patents can be revoked for non-working; because a patentee of his own accord and without any legislative pressure will naturally be disposed to manufacture where it is most profitable and convenient for him to do so.

Every existing patent granted in this country has conferred on the patentee the monopoly of making, using, exercising and vending his invention in this country in such manner as may to him seem meet. In the present case, the patentees have taken advantage of their monopoly of sale, but have not availed themselves of the monopoly given to them by their patents to manufacture the patented articles in this country. On the evidence I can find no good ground for coming to the conclusion that there is any inherent reason why the patented process should not be carried on commercially in this country. It is already so carried on in Belgium, Germany and France; and Mr. de Meulemeester in paragraph 4 of his declaration has admitted that the patented articles are produced in Germany at a very cheap rate and on a very extensive scale. From the evidence it appears that there is little, if any, difference in the prices at home and abroad of the materials used or in the facilities for obtaining them, and the only other reason which has been alleged why the process can be more profitably carried on in Belgium, Germany and France, than in the United Kingdom, is that the wages of the workpeople in those countries, who in the carrying out of the patented process now under consideration for the most part are unskilled laborers, are lower than in England. If this reason is an insuperable bar to the introduction of the industry to this country, it is very difficult to understand how many industries which are carried on successfully in the United Kingdom continue to be so carried on.

Dealing next with the question of the advertisements and offers to sell the patent rights, I cannot regard the fact that no answers were received by the patentees to them as a satisfactory reason for not manufacturing in this country. In the first place, they were not inserted or made until very near the expiration of the year of grace which had been allowed the patentees by the act; and, even if they had attracted the attention of persons who might otherwise have been willing to work the process, the fact that only a month of the year of grace remained unexpired would naturally make manufacturers less willing than they otherwise might have been to enter into arrangements with the patentees. For any one acquiring the patent rights would be in no better position to defend the patents against applications for revocation than that which the patentees themselves from whom he bought them possessed. It seems to me impossible to hold that a patentee can relieve himself from the duty of manufacturing in this country by the mere insertion at any time of a few advertisements, and the sending round to manufacturers of a few circulars to which no replies are received. The advertisements and offers in this case were, I may say, of the vaguest description; they gave no intimation of the terms on which the owners of the patents were prepared to treat, beyond the statement that such terms would be reasonable.

With reference to the suggestion that patentees who had taken out their patents before the passing of the act should be treated with greater leniency than those who have since taken out patents, it is to be remembered that the act contained a considerable number of provisions, *e. g.*, those relating to the procedure for obtaining extensions of the terms of patents, the restoration of lapsed patents, the granting of patents of addition, and the mitigation of the severity of the patent laws in the matter of disconformity, which materially improved the position of existing as well as that of future patentees, and that these provisions all came into force at the commencement of the act on January 1 last; while the act also prevented any application being made under section 27 for the revocation of an existing patent until after August 28 last; that is to say, until the expiration of a year from the passing of the act. . . . The interpretation which I am asked to put upon the act would have the effect of lengthening this year of grace. I can find nothing in the act which would justify me in doing this.

. . . . . .

It has been further contended . . . that the object of the section being merely to bring about the establishment of new industries in this country, a patent may not be revoked under it unless it can be shown that the revocation will lead to the establishment of such new industries. In the present instance, if the patents are revoked, it seems to me impossible to say that a new industry will not be established in this country where no royalties will be payable in respect of the carrying on of the process; but even if no such industry is started here, their revocation will undoubtedly have one beneficial result, for it will free the trade in the patented article and enable French and German manufacturers to import it freely into this country, the effect of which may very possibly be to reduce its price, and whilst in no way preventing its importation from the Belgian factory, give purchasers an opportunity of selecting for themselves between the articles manufactured there and at other foreign factories. Mr. Shaw argues that this was not the intention of the section, but I can find nothing in the act to warrant me in coming to that conclusion. I have always regarded the object of the section as being to put a check on the practice, which was alleged to prevail very extensively, of taking out and maintaining patents in this country, not with any intention of working them here, but with the object of preventing the patented articles from being manufactured here, and from being imported by any other parties than the patentees. If, on the evidence which has been submitted in this case, the two patents in question may not be revoked, I find it very difficult to imagine any case in which a patent can be revoked under the section.

The decision of the Comptroller evidences a strong desire to carry out the wishes and intent of Parliament.

and that he has been successful in this can scarcely be questioned. It is true that appeal lies from the Comptroller to the court. If, however, the Comptroller is right in this general and significant statement of the basic intent of section 27—viz., "I have always regarded the object of the section as being to put a check on the practice, which was alleged to prevail very extensively, of taking out and maintaining patents in this country, not with any intention of working them here, but with the object of preventing the article from being manufactured here and from being imported by any other parties than the patentees"—it is difficult to see how there can be any serious modification of his decision on appeal. This official declaration is in full accord with the construction heretofore placed upon this section in *The Iron Age*, both in the editorial of October 1 and in my article in the issue of August 20 last.

The Comptroller very explicitly and properly (following the custom of tribunals in cases where the law leaves such great latitudes as in the present case as to what does or does not constitute a state of facts justifying a suspension of statutory operation) limits his decision to a case involving the particular facts before him. There is, therefore, some slight possibility of going too far in an attempt to generalize from a case of this kind, and yet a careful generalization should be made to assist an important class of American manufacturers in the crisis which now confronts them with regard to English business. With this understanding, I believe we are warranted in making the following deductions:

1. Advertising the English patents for license or sale will not be considered either as a "nominal working" or as a sufficient excuse for not working.

2. No leniency will be extended to patentees on the ground that the statute is retroactive so far as they are concerned.

3. That fiscal reasons, such as an extensive foreign plant, advantages of centralized production elsewhere and kindred things, will not be regarded as germane to a showing of sufficient cause for nonmanufacture under this section.

4. That valuable English patent rights granted to foreigners can be protected only by adequate commercial exploitation in England, or by inactivity in other countries until the English rights are disposed of, should this not occur within the period of grace.

5. The careful avoidance in this decision of the enunciation of any general principle as to what might constitute a good excuse for nonmanufacture should warn all interested parties of the peril of relying on conditions and state of facts as matter of excuse.

**A Hydro-Electric Development in Colorado.**—The Central Colorado Power Company, says a correspondent of the New York *Evening Post*, is expending no less than $22,000,000 for the development of the water power of the State. It has expended $6,000,000 and two years' time on the construction of its main transmission lines for hundreds of miles across the Rocky Mountains, from Glenwood Springs to Denver. Within 30 days it will be delivering electric power in the city of Denver to run the tramways, light the streets, and supply private and public buildings. Thenceforth it will be possible to run the city by the water power of the mountains without coal. Nearly every important mining district in the State will adopt the new power for the operation of its mines, meaning greater economy, greater efficiency, and increased output at less cost. In the gold mining districts, hundreds of low grade propositions that cannot now be operated on account of the excessive cost of power will be rendered available to capital.

The Fosdick Machine Tool Company, Cincinnati, Ohio, states that an error was made in *The Iron Age* of December 24 in the announcement that that company is changing officials in the retirement of Philip Fosdick. The change was made in the Kern Machine Tool Company. Philip Fosdick has not been connected with the Fosdick Machine Tool Company for several years.

# NEWS OF THE WORKS.

### Iron and Steel.

Reports that the Hyde Park and Saltsburg sheet mill plants of the American Sheet & Tin Plate Company would start up early in January are untrue. These plants may start later in the year, but from present indications will not be started next month.

The new tube mill of the Parkesburg Iron Company, Parkesburg, Pa., is now in operation and is running on charcoal iron tubes. The mill is electrically driven, and the machinery and motors are giving excellent results. The company has placed contracts for the erection of an addition to its tube mill, 85 x 150 ft., of steel construction. The new building will be placed at the finishing end of the mill and will be covered by a traveling crane.

The plant of the Lebanon Iron & Steel Company, Lebanon, Pa., has been sold under foreclosure proceedings for $225,000. The purchase, it is understood, was made in the interest of the bondholders, who will reorganize the company.

### General Machinery.

The Carlin Machinery & Supply Company, N. S., Pittsburgh, Pa., has received a contract for furnishing a 40-hp. tail rope or double drum haulage engine for handling coal and fire clay near Dennison, Ohio. This equipment is put in to save the cost of doing the work of mules as now, and the investment is the result of the extreme low prices prevailing for fire clay products.

It is reported that the North Coast Railroad, of which Robert E. Strahorn, Spokane, Wash., is president, contemplates the erection of new shops at Spokane.

The Merrill Iron Works, Merrill, Wis., making a specialty of the manufacture of sawmill machinery, reports much activity. It has recently been making machinery for a new sawmill at Pine River.

Coincident with the increase of its capital stock to $25,000, the name of the Leader Foundry Company, Quincy, Ill., has been changed to the Leader Foundry & Machine Company. The management contemplates the addition of a machine shop to the plant, which, besides doing general machine work, will make a specialty of power presses and die work.

The Link-Belt Company, Nicetown, Philadelphia, Pa., has received an order from the Philadelphia & Reading Railroad for a locomotive, coal, ashes and sand station to be erected at Ninth and Wallace streets, Philadelphia. The plans for this station, which will eventually supersede the one now in use, call for reinforced concrete bins supported by an under structure of steel covered with concrete, and there will be duplicate systems of conveying machinery, each to have a capacity of 100 tons per hour of coal and 250 cu. yd. of ashes in 10 hr. There will be 12 pockets for coal, two to each of the six coaling tracks, with a total capacity of 2000 tons, and the ashes will be kept in two pockets having a capacity of 250 cu. yd. The sand storage will contain six hoppers, three on each side of the station, to hold 48 cu. yd of sand. It is expected that work will be begun on the station early next year. Other installations in Pennsylvania include elevating and conveying machinery at cement mills, paint works, hat factory and fuel equipment for a mining company. An open-top carrier will be installed for a contractor in New York and an ashes hoist for a manufacturer in North Carolina.

The State Board of Public Works, F. C. Stevens, superintendent, Capitol Building, Albany, N. Y., is having plans prepared for a machine shop to be erected at State and Water streets, Syracuse. The structure will be of brick, two stories, and will be equipped with a modern line of machine tools. The plant is to be used in connection with repairs to tools and machinery for State bridges and canal work.

The American Laundry Machinery Company, Rochester, N. Y., and Chicago, D. M. Cooper, local manager, has purchased property on Kossuth street and the Buffalo, Rochester & Pittsburgh Railroad, Rochester, and contemplates erecting in the spring a large plant, including foundry, machine shop and warehouse of brick and steel or reinforced concrete construction for the manufacture of laundry machinery. The company is already operating two plants in Rochester.

### Power Plant Equipment.

The Foos Gas Engine Company, Springfield, Ohio, is furnishing a producer gas plant complete to the Standard Optical Company for its new lens grinding department at Geneva, N. Y. The engine will be a 100 hp. three-cylinder Foos vertical, from which power will be transmitted by rope drive. The producer will use Pennsylvania anthracite, and is so arranged that a portion of the gas will be drawn off and used for annealing furnaces. The plant will be a very complete one and will contribute materially to the economical operation of the factory. The Foos Company's factory at Springfield has been working overtime for several months in the endeavor to keep up with orders.

The Buffalo Steam Pump Company, Buffalo, N. Y., has been awarded contract by the city of Grand Rapids, Mich., for 10

sewage pumps having a total capacity under maximum conditions of 250,000 gal. per min. The pumps are to be placed in four stations, one to contain two 18-in. pumps, the second to contain two 24-in. pumps, the third to contain two 24-in. pumps and the fourth four 40-in. pumps. The 10 pumps together, without motors, will weigh approximately 200,000 lb. The electrical equipment will be furnished by the Westinghouse Electric & Mfg. Company under a separate contract.

The Syracuse Cold Storage Company, Northwest street and Erie Canal, Syracuse, N. Y., is receiving bids until about January 10 for four 150-hp. boilers and four 200-hp. boilers.

**Foundries.**

The general machinery and foundry plant of the Rogers & D'Artenay Company, Sacramento, Cal., which was recently partially destroyed by fire, has been rebuilt and is about ready to begin operations. It is expected that a foundry will be added to the plant in the near future.

The Hart-Parr Gasoline Engine Company, Charles City, Iowa, intends to erect a large steel foundry to manufacture castings for its engines. The company is having a heavy demand for its oil cooled gasoline engines and is making shipments to all parts of the world. It has just completed a second building, the same size as the original, which it will equip with modern machinery. This new building will double the capacity, and when in operation about 500 men will be employed.

The North plant of the Chickasaw Iron Works, Memphis, has just installed a 5-ton Newten cupola, making the fourth cupola of this design in the works of this firm.

The Paxton Foundry & Machine Company, Paxton, Ill., has added a foundry to its plant for the making of iron, brass and aluminum castings. Plans are being made for further additions during the coming season.

Application for a Pennsylvania charter has been made by George W. Thomas, William B. Rodgers and Joseph G. Thomas of Johnstown for the Penn Foundry Company.

**Bridges and Buildings.**

The Radley Steel Construction Company has been incorporated at Hornell, N. Y., with a capital stock of $50,000, to engage in a general mechanical and civil engineering business and to manufacture engines, machinery, tools, &c. J. J. Radley of Hornell, and R. T. Brooks and R. W. Pease of New York are the incorporators and directors.

The Toledo-Massillon Company, Toledo, Ohio, has secured contract, at its bid of $20,190, for erecting a two-span steel bridge at Fort Hunter across the Schoharie River and connecting the towns of Florida and Glen.

**Fires.**

Fire, which is said to have originated in the cupola, December 24 destroyed the iron foundry of the American Car & Foundry Company at Berwick, Pa., causing a loss of about $50,000.

**Hardware.**

The business of M. R. Warner & Son, Cromwell, Conn., manufacturer of hammers, has been incorporated in Connecticut with an authorized capital stock of $80,000, of which $10,000 will be issued immediately. The incorporators are Chauncey M. Warner, Cromwell; Theodore M. Savage, Berlin, Conn., and Willis C. Warner, Cromwell. The officers have not been chosen. The company will continue the manufacture of the Warner & Noble hammers. The Warner hammer business dates from 1818. The factory will be located as before in Cromwell.

The directors of the United States Whip Company, Westfield, Mass., have organized with these officers: President, George E. Whipple; vice-president, Frederick L. Parker; treasurer, F. A. Sanford; assistant clerk, H. M. Gowdy. The new directors are J. H. Millikne, manager of the Sidney plant of the company, and C. F. Donovan of the firm of Donovan Bros., lash manufacturers.

C. C. Carter has purchased the factory of E. Butterick & Co., Troy, N. H., and is equipping it for the manufacture of tubs, pails and packages. The business will be conducted under the name of the Carter Wooden Ware Company. Operations will begin January 1. Fifty hands will be employed.

The Northwestern Woven Wire Works, Milwaukee, Wis., has recently taken out a building permit for a $16,000 factory at Thirtieth and Clark streets.

The Eller Mfg. Company, Canton, Ohio, has just completed a warehouse in which a large and varied stock will be carried of its various lines, including metal ceilings, eave trough, conductor pipe, cornices, skylights, metal roofing, metal shingles and tin plate. During the past year the company has been somewhat handicapped on account of the lack of warehouse facilities, but the new building will permit carrying sufficient stock at all times to meet customers' requirements.

**Miscellaneous.**

The Lawson Mfg. Company, Ellicott Square, Buffalo, N. Y., has not yet decided whether it will erect a plant to manufacture its loose pulley oil cup and other articles which it intends to place on the market. C. G. Lawson is president and treasurer, A. F. Lawson vice-president, and E. G. Zacher secretary.

It is planned to erect a new plant at Minneapolis, Minn., to manufacture the Joy-McVicker gasoline traction engine, the invention of W. E. McVicker, who also invented the McVicker engine which is manufactured by the Alma Mfg. Company, Alma, Mich. Those interested in the new enterprise in addition to Mr. McVicker, who is connected with the McVicker Engineering Company, Minneapolis, Minn., are M. H. Joy of the Joy-Wilson Sales Company, Minneapolis, and A. W. Wright of the Alma Mfg. Company.

The Keystone Iron & Steel Company, Pittsburgh, Pa., has been chartered in Pennsylvania to engage in the sale of iron and steel and scrap. It has $25,000 capital, those interested being Benjamin Haas, M. B. and Joseph P. Kelley, and E. S. Reilly of Pittsburgh.

The Fairmont Coal Company, Fairmont, W. Va., intends to replace the tipple recently destroyed by fire at Enterprise with a steel structure. Very little machinery was destroyed, as the fire did not reach the power plant except to burn a portion of the roof of the boiler house.

In a recent reference to the lease of the old plant of the Lindermann & Hoverson Company, Milwaukee, Wis., by the Heinn Company, Milwaukee, an error was made in the products of the latter company. It manufactures loose leaf devices of all kinds.

The Herath & Hultman Mfg. & Equipment Company, Schenectady, N. Y., recently incorporated with a capital stock of $100,000, has leased the building at 106-108 South Church street, in which it is installing machinery for the manufacture of automatic motor tripping devices, trolley wheel gasoline engine, crank shaft, electrical controller and other devices. The company expects to have its plant in operation by January. Iver Hultman is president; Augustus Herath, vice-president and general manager; David Cary, treasurer; Ira B. Ingram, secretary and sales manager, and William Bushnell, superintendent.

The Youngstown Car Mfg. Company, Youngstown, Ohio, builder of wood and steel cars for iron, steel and industrial uses, is filling an order for 10 small ore cars for use in the Calumet copper region, two standard wooden box cars for the Navy Yard, Philadelphia, Pa., and has a contract for 40 steel skips for shipment to the Panama Canal.

The Vanguard Mfg. Company, Joliet, Ill., has been incorporated with a capital stock of $25,000, to build high grade automobile accessories.

The Auto-Car Equipment Company, Buffalo, N. Y., manufacturer of motor trucks, self-propelled commercial vehicles, sightseeing cars, &c., will erect and equip a one and two story factory building, 180 x 240 ft., of brick, steel and concrete, on Elmwood avenue near the New York Central Belt Line, to enable it to keep pace with its rapidly increasing business.

The Foster-Glidden Vacuum Cleaning Company, formerly of Chicago, has decided to locate its manufacturing plant and offices in Buffalo, N. Y., and has purchased a factory building, 40 x 135 ft., at 63 Chandler street, in the latter city, which it will equip for the manufacture of its vacuum cleaning apparatus.

The American Automatic Fire Curtain Company of Buffalo, incorporated as the United States branch of the Ford Automatic Shutter Company of Bridgeburg, Ont., to manufacture steel shutters, doors, &c., to operate automatically, has leased factory premises at Letchworth and Grant streets, Buffalo, N. Y., which it will at once equip to manufacture its line of products.

The Automobile & Motor Boat Company, Steubenville, Ohio, a newly organized concern, has under construction a building 48 x 150 ft., which will be used for the manufacture of automobiles, motor boats and gas engines. The plant, it is stated, will be equipped with the best of modern machinery required for this work. Walter D. Strong, formerly with the Winton Motor Carriage Company, Cleveland, is superintendent of the new works.

On its trackage property at West Colfax avenue and Osage street, Denver, Colo., the Vulcan Iron Works Company is building a new shop, 52 x 152 ft., with an annex of 18 x 40 ft., which will be occupied by the Vulcan Sheet Metal Company. The tools and machinery for the equipment of this shop will be moved from the old works.

The report in these columns printed December 3 to the effect that the plant of the General Roofing Mfg. Company at East St. Louis, Ill., had been burned, was erroneous. The company's plant was in no way damaged by fire and its operation was not interfered with.

The Uniform Fibrous Talc Company, Gouverneur, N. Y., has purchased 3 acres of property on which it proposes to erect a 25-ton talc mill.

Sir Christopher Furness, in addressing his employees, now his co-partners, in the shipyards at Hartlepool and West Hartlepool, England, said that he was ready to lay down at once 12 vessels, six in each of the two shipyards. The building of 12 sets of engines will also proceed at once. In answer to recent criticisms by labor leaders, he said that he was prepared to bear any loss that might result from the new co-operative plan.

# The Iron and Metal Trades

## Tariff Uncertainty the Leading Factor.

### All Markets Quiet.

There have been exceedingly few transactions of any significance in the whole range of the Steel industry, and there have been no happenings from which indications of the trend of the markets might be inferred. The uncertainties of tariff revision are becoming a more potent factor, and are expected to keep the markets rather quiet until the outcome can be measured. It is not believed that the situation will be clear before early summer. In the meantime conservative buying by consumers will prevail, since they seem to be generally convinced that revision means a downward readjustment of prices. They urge that there is little danger of being caught when there are an ample supply of raw materials, a liberal reserve of idle manufacturing capacity, an overstocked labor market and transportation facilities adequate for any reasonable strain.

In the meantime the ground swell of steadily improving general conditions and growing courage is expected to lift the consumptive requirements of the country to a steadily higher level.

The Pig Iron markets have been quiet. There have been some moderate transactions in Foundry Iron, a Louisville plant taking 8000 tons of Alabama and Tennessee Irons, while an Indiana radiator concern has contracted for 4000 tons. Some of the Cast Iron Pipe shops who have been fighting the upward tendency steadily are in the market for an aggregate of upward of 40,000 tons, but find the lower silicon Irons quite scarce. There is still an unsatisfied demand for Basic Pig in eastern Pennsylvania, and lots aggregating about 30,000 tons are asked for.

The announcement is made that the Gary plant will begin Steel making between March 15 and April 1, the plant producing Open Hearth Steel exclusively. In the meantime Open Hearth Steel Rails will be made at the South Chicago works of the Illinois Steel Company, so that the requirements of the railroads in the West for Open Hearth Rails will be met.

While a number of large systems are figuring on their Rail requirements for next year nothing definite has yet been done.

It is estimated that the total amount of Fabricated Structural Steel made this year was about 1,050,000 tons. The American Bridge Company fabricated about 100,000 tons more than it sold.

A number of small contracts, aggregating about 9000 tons, are reported this week. Among the new work being figured on is 7000 tons for two buildings for the Prudential Insurance Company.

A somewhat firmer feeling is developing in Iron Bars, owing to the advance in Scrap. The order for 8000 tons of Iron Bars for the Illinois Central Railroad does not seem to be attractive to the mills because of the extended delivery.

The situation in Old Material is somewhat curious. Some very large figures are named as representing the accumulations of dealers in such leading centers as Chicago, St. Louis, Cincinnati and Indianapolis and in the territory east of the Allegheny Mountains. It is generally conceded that what Old Material there is is strongly held; but it is denied that the quantities are as large as reported. Our Chicago correspondent states that good authorities place the stock there at 175,000 tons instead of 300,000 tons, which is freely given in other quarters.

In eastern Pennsylvania there are reported to have been sales aggregating 25,000 tons to 30,000 tons, in addition to the purchase of about 20,000 tons made some time since by a leading plate mill. There have been some rejections of Steel Scrap lately, which, however, have been promptly placed.

While there has been no general domestic buying movement in Copper, the market has stiffened, and Electrolytic is now selling at 14¼c. to 14⅜c. Lake Copper is closely sold up and is quoted 14⅝c. for March and April delivery. Europe has been buying rather freely during the last few days.

## A Comparison of Prices.

**Advances Over the Previous Month in Heavy Type, Declines in Italics.**

At date, one week, one month and one year previous.

| | Dec.30, 1908. | Dec.23, 1908. | Nov.25, 1908. | Dec.25, 1907. |
|---|---|---|---|---|
| **PIG IRON,** Per Gross Ton: | | | | |
| Foundry No. 2, Standard, Philaphia | $17.25 | $17.25 | $17.25 | $18.25 |
| Foundry No. 2, Southern, Cincinnati | 16.25 | 16.25 | 16.25 | 16.25 |
| Foundry No. 2, Local, Chicago | 17.00 | 17.00 | 17.00 | 18.00 |
| Basic, delivered Eastern Pa | **16.75** | 16.75 | 16.50 | 17.25 |
| Basic, Valley Furnace | **15.75** | 15.75 | 15.50 | 17.00 |
| Bessemer, Pittsburgh | 17.40 | 17.40 | 17.40 | 18.50 |
| Gray Forge, Pittsburgh | **15.40** | 15.40 | 15.15 | 17.90 |
| Lake Superior Charcoal, Chicago | 19.50 | 19.50 | 19.50 | 23.50 |
| **BILLETS, &c.,** Per Gross Ton: | | | | |
| Steel Billets, Pittsburgh | 25.00 | 25.00 | 25.00 | 28.00 |
| Forging Billets, Pittsburgh | 27.00 | 27.00 | 27.00 | 30.00 |
| Open Hearth Billets, Phila | 26.20 | 26.20 | 26.20 | 30.00 |
| Wire Rods, Pittsburgh | 33.00 | 33.00 | 33.00 | 34.00 |
| Steel Rails, Heavy, at mill | 28.00 | 28.00 | 28.00 | 28.00 |
| **OLD MATERIAL,** Per Gross Ton: | | | | |
| Steel Rails, Melting, Chicago | *15.00* | 15.50 | 15.50 | 12.00 |
| Steel Rails, Melting, Phila | **17.50** | 17.50 | 16.25 | 11.50 |
| Iron Rails, Chicago | 19.50 | 19.50 | 19.50 | 15.00 |
| Iron Rails, Philadelphia | **21.25** | 21.25 | 20.50 | 17.50 |
| Car Wheels, Chicago | 16.00 | 16.00 | 16.00 | 20.00 |
| Car Wheels, Philadelphia | *16.00* | 16.00 | 16.50 | 19.00 |
| Heavy Steel Scrap, Pittsburgh | **17.00** | 17.00 | 16.75 | 12.50 |
| Heavy Steel Scrap, Chicago | *14.50* | 14.75 | 15.00 | 10.75 |
| Heavy Steel Scrap, Phila | **17.50** | 17.50 | 16.25 | 11.50 |
| **FINISHED IRON AND STEEL,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Refined Iron Bars, Philadelphia | **1.52** | 1.52 | 1.50 | 1.75 |
| Common Iron Bars, Chicago | 1.50 | 1.50 | 1.50 | 1.75 |
| Common Iron Bars, Pittsburgh | 1.50 | 1.50 | 1.50 | 1.60 |
| Steel Bars, Tidewater, New York | 1.56 | 1.56 | 1.56 | 1.76 |
| Steel Bars, Pittsburgh | 1.40 | 1.40 | 1.40 | 1.60 |
| Tank Plates, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Tank Plates, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Beams, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Beams, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Angles, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.86 |
| Angles, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.70 |
| Skelp, Grooved Steel, Pittsburgh | 1.45 | 1.45 | 1.45 | 1.70 |
| Skelp, Sheared Steel, Pittsburgh | 1.50 | 1.50 | 1.50 | 1.80 |
| **SHEETS, NAILS AND WIRE,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Black Sheets, No. 28, Pittsburgh | 2.50 | 2.50 | 2.50 | 2.60 |
| Wire Nails, Pittsburgh | 1.95 | 1.95 | 1.95 | 2.05 |
| Cut Nails, Pittsburgh | 1.75 | 1.75 | 1.75 | 2.00 |
| Barb Wire, Galv., Pittsburgh | 2.40 | 2.40 | 2.40 | 2.50 |
| **METALS,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Lake Copper, New York | **14.75** | 14.37½ | 14.50 | 13.50 |
| Electrolytic Copper, New York | **14.25** | 14.12½ | 14.12½ | 13.37½ |
| Spelter, New York | **5.15** | 5.15 | 5.10 | 4.30 |
| Spelter, St. Louis | **5.00** | 5.00 | 4.95 | 4.20 |
| Lead, New York | *4.15* | 4.20 | 4.37½ | 3.60 |
| Lead, St. Louis | *4.00* | 4.05 | 4.22½ | 3.50 |
| Tin, New York | *28.85* | 29.20 | 30.35 | 27.00 |
| Antimony, Hallett, New York | 8.12½ | 8.12½ | 8.12½ | 8.50 |
| Nickel, New York | 45.00 | 45.00 | 45.00 | 45.00 |
| Tin Plate, 100 lb., New York | $3.89 | $3.89 | $3.89 | $4.09 |

## Chicago.

FISHER BUILDING, December 30, 1908.—(*By Telegraph.*)

The year is ending in a profound lull in the Iron and Steel markets. Doubtless part of the indifference and inactivity can be properly ascribed to holiday vacations, stock taking and like influences, but it cannot be ignored that tariff agitation, with its uncertain and unsettling possibilities, is entering into the situation with positive effect. Whatever the outcome of the proposed revision is, whether for better or for worse, there is left in the interim no stable basis upon which to rest plans for the projection of new enterprises intimately connected with tariff schedules in which radical changes are contemplated. At the same time the business of the country cannot wait on these deliberations, and with confidence and energy now back of industrial movements the general anticipation of a gradual growth in volume of business through the coming year is reasonably sure of realization. The transactions of last week were notably lacking in incidents of specific interest. While it is known that some of the Western railroads have the question of 1909 Rail requirements under consideration, no new orders were placed. It is not improbable that their dilatoriness is prompted in part at least by the knowledge that with the large mill capacity now available their wants can be promptly supplied. Specifications on Rail Fastenings, Structural Shapes, Sheets and Steel Bars are fairly good, especially the last, which are quite up to expectations. Old Material is dull and a shade weaker. Attractive concessions are required to move track stuff, although no large amount is coming in. But with the small amount of Scrap being offered by the

railroads, dealers are not looking for much of a recession from present prices. Trading in Pig Iron is restricted almost entirely to car lots, and for the present the market is bare of inquiries. In view of the sluggish movement in all lines, prices exhibit a remarkable degree of stability.

**Pig Iron.**—Business has dwindled to almost nothing, and the tonnage booked by furnaces in the past week was exceedingly small. For the time being consumers are giving no thought to forward requirements. As matters now stand it appears that melters generally have contracted for enough Iron to carry them through the first quarter at a moderate rate of consumption; and unless business picks up more rapidly than has been anticipated, not much more buying for this period is expected. Continued improvement, however, would develop a considerable amount of second quarter buying, but under present conditions consumers are not now inclined to pay the premium of 50c. a ton generally asked by sellers for this delivery. The slowing up of demand has not affected prices, which on Southern Iron are especially firm at $13, Birmingham, for No. 2 Foundry, with $13.50 asked by the majority of producers for second quarter shipments. While not characterized by the uncompromising firmness of the Southern product, Northern Iron is being held reasonably steady at $17 at local furnaces, which for this immediate district means from $17.35 to $17.50 in consumers' yards. The price of $17.50 is reported as having been done in Milwaukee, which is equivalent to a $12.50, Birmingham, basis. What kind of a price would be made on third quarter or second half orders is not known, since there are no firm inquiries for such deliveries in the market. The lot of 4000 tons referred to in last report as an inquiry from an Indiana radiator concern was purchased, being equally divided between Northern and Southern furnaces. There are few inquiries of any kind in the market. The following quotations are for January, February and March delivery, f.o.b. Chicago:

| | |
|---|---|
| Lake Superior Charcoal | $19.50 to $20.00 |
| Northern Coke Foundry, No. 1 | 17.50 to 18.00 |
| Northern Coke Foundry, No. 2 | 17.00 to 17.50 |
| Northern Coke Foundry, No. 3 | 16.50 to 17.00 |
| Northern Scotch, No. 1 | 18.00 to 18.50 |
| Southern Coke, No. 1 | 17.85 to 18.35 |
| Southern Coke, No. 2 | 17.35 to 17.85 |
| Southern Coke, No. 3 | 16.85 to 17.35 |
| Southern Coke, No. 4 | 16.35 to 16.85 |
| Southern Coke, No. 1 Soft | 17.85 to 18.35 |
| Southern Coke, No. 2 Soft | 17.35 to 17.85 |
| Southern Gray Forge | 15.85 to 16.35 |
| Southern Mottled | 15.60 to 16.10 |
| Malleable Bessemer | 17.00 to 17.50 |
| Standard Bessemer | 17.90 to 18.40 |
| Jackson Co. and Kentucky Silvery, 6 % | 19.90 to 20.40 |
| Jackson Co. and Kentucky Silvery, 8 % | 20.90 to 21.40 |
| Jackson Co. and Kentucky Silvery, 10 % | 22.90 to 23.40 |

(*By Mail.*)

**Billets and Rods.**—The business in Forging Billets reported for the last week included no large lots, but carload orders were a little more numerous. Reassured by the firmer attitude of producers respecting prices, some of the smaller consumers are figuring on contracts for moderate forward requirements, and some business of this kind has been entered. The regular price of $28.50, base, Chicago, is reported to be well maintained on Forging Billets. Wire Rod specifications hold up well, but there is not much doing on new contracts. We continue to quote as follows: Bessemer, $33; Basic, $34; Chain, $33, all at Pittsburgh.

**Rails and Track Supplies.**—The market was not enlivened last week by any new developments respecting Rail purchases or new inquiries that would furnish a line on the prospective requirements of 1909. The demand for Standard Rails is confined to small orders coming from minor steam lines and traction roads, one from the latter amounting to 900 tons being among those entered by the Illinois Steel Company. Quite a number of inquiries are coming out from established and projected interurban roads, and the prospects seem to favor a good deal of activity in new construction and in extension and betterments of old systems during the coming year. Specifications for Spikes and Bolts are fairly satisfactory, but, in common with the rest of the market, not much new business in Track Fastenings of any kind was booked. We quote as follows: Angle Bars, accompanying Rail orders, 1908 delivery, 1.50c.; car lots, 1.60c.; Spikes, 1.80c. to 1.90c., according to delivery; Track Bolts, 2.15c. to 2.25c., base, Square Nuts, and 2.30c. to 2.40c., base, Hexagon Nuts. The store prices on Track Supplies range from 0.15c. to 0.20c. above mill prices. Light Rails, 25 to 45 lb., $26; 20-lb., $27; 16-lb., $28; 12-lb., $29. Standard Sections, Bessemer, $28; Open Hearth, $30, on lots of 500 tons and over; on smaller lots, $2 a ton extra.

**Structural Material.**—Few of the large Structural contracts will be carried over into the new year, most of those pending having been closed. The 11,000 tons for the new City Hall will be, as has been announced, fabricated by the American Bridge Company, as will in all probability the 1200 tons for the Hart, Shaffner & Marx Building, which will be constructed by Wells Brothers. Plans are now in the hands of fabricators for figures on a new warehouse building to be erected as an addition to Crane Company's Chicago plant, which will require about 2500 tons. Bids will go in about January 5 on the material required for the construction of the new Pipe foundry to be built at Newcomerstown, Ohio, by James B. Clow & Sons. Part of these buildings will be of Steel and part of reinforced concrete construction, but estimates as to the tonnage of Steel that will go into these buildings have not been completed. The Chicago, Milwaukee & St. Paul Railroad has an inquiry out for 300 tons of bridge material. While little new business has developed in the past week or two, the feeling seems to be that the prospects are favorable to considerable activity in construction work after the turn of the year. Prices from store are 1.95c. to 2c. Mill prices at Chicago are as follows: Beams and Channels, 3 to 15 in., inclusive, 1.78c.; Angles, 3 to 6 in., ¼-in. and heavier, 1.78c.; larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 15 in., 1.88c.; Zees, 3 in. and over, 1.78c.; Tees, 3 in. and over, 1.83c.

**Plates.**—The existing dullness in Plates has been emphasized by the absorption of interest in holiday diversions. The Plate using industries are all extremely quiet, and the few orders being placed are of unimportant tonnage, individually and collectively. As to prices, conditions are practically unchanged, since concessions of $1 a ton made by a few mills are still available. We quote mill shipments as follows: Tank Plates, ¼-in. and heavier, wider than 6¼ and up to 100 in. wide, inclusive, car lots, Chicago, 1.78c.; 3-16 in., 1.88c.; Nos. 7 and 8 gauge, 1.93c.; No. 9, 2.03c.; Flange quality, in widths up to 100 in., 1.88c., base, for ¼-in. and heavier, with the same advance for lighter weights; Sketch Plates, Tank quality, 1.88c.; Flange quality, 1.98c. Store prices on Plates are as follows: Tank Plates, ¼-in. and heavier, up to 72 in. wide, 2c. to 2.10c.; from 72 to 96 in. wide, 2.10c. to 2.20c.; 3-16 in. up to 60 in. wide, 2.10c. to 2.25c.; 72 in. wide, 2.30c. to 2.40c.; No. 8, up to 60 in. wide, 2.10c. to 2.15c.; Flange and Head quality, 0.25c. extra.

**Sheets.**—The movement in Sheets is not as brisk as it was a few weeks ago, but the exceptional quietness of the past few days is attributed largely to seasonable influences. As soon as the jobbers and manufacturers have finished taking account of stock, a better demand is looked for. One of the most encouraging features of the situation at the present time is the more uniform maintenance of prices, which, on mill shipments, are subject to but little, if any, irregularity. We quote mill shipments as follows, Chicago: Blue Annealed, No. 10, 1.98c.; No. 12, 2.05c.; No. 14, 2.08c.; No. 16, 2.18c.; Box Annealed, Nos. 17 to 21, 2.43c.; Nos. 22 to 24, 2.48c.; Nos. 25 and 26, 2.53c.; No. 27, 2.58c.; No. 28, 2.68c.; No. 29, 2.78c.; No. 30, 2.88c.; Galvanized Sheets, Nos. 10 to 14, 2.63c.; Nos. 15 and 16, 2.83c.; Nos. 17 to 21, 2.98c.; Nos. 22 to 24, 3.13c.; Nos. 25 and 26, 3.33c.; No. 27, 3.53c.; No. 28, 3.73c.; No. 30, 4.23c.; Black Sheets from store: Blue Annealed, No. 10, 2.15c.; No. 12, 2.20c.; No. 14, 2.25c.; No. 16, 2.35c.; Box Annealed, Nos. 18 to 21, 2.60c.; Nos. 22 to 24, 2.65c.; No. 26, 2.70c.; No. 27, 2.75c.; No. 28, 2.85c.; No. 30, 3.25c.; Galvanized from store: Nos. 10 to 16, 3c.; Nos. 18 to 20, 3.15c.; Nos. 22 to 24, 3.30c.; No. 26, 3.50c.; No. 27, 3.70c.; No. 28, 3.90c.; No. 30, 4.40c. to 4.45c.

**Bars.**—Specifications received by the leading producer for Steel Bars and Angles thus far in December amount to 18,000 tons. This continues to be, in this respect, the most satisfactory division of the market. The inquiry of the Illinois Central Railroad for 8000 tons of Iron Bars, mention of which was made in last report, does not seem to be attractive to the mills, because of the requirement for deliveries a year ahead. None of the Iron Bar mills, it is reported, has signified a willingness to accept the business under these conditions on a basis of the present prices. Makers generally would not object to booking part of the tonnage for shipment through the first half, but are not anxious to speculate on the prices of raw material beyond that time. Current business both in specifications and orders is light. Quotations, Chicago, are as follows: Steel Bars, 1.58c., with half extras; Iron Bars, 1.50c.; Hoops, No. 13 and lighter, 1.98c., full extra Hoop card; Bands, No. 12 gauge and heavier, 1.58c., half extras, Steel Bar card, Soft Steel Angles and Shapes, 1.68c., half extras. Store prices are as follows: Bar Iron, 2c. to 2.15c.; Steel Bars, 1.90c. to 2c.; Steel Bands, 1.90c., as per Bar card, half extras; Soft Steel Hoops, 2.25c. to 2.35c., full extras.

**Merchant Pipe.**—The sharp falling off in orders which characterized the business of last week was not unlooked for, since, even at the best of times, some slowing up is expected toward the end of December. Until the new year is fairly started and plans for new construction begin to develop, no marked improvement is expected. The fact that jobbers can rely upon the prompt execution and shipment of their orders tends to make them indifferent as to the maintenance of surplus stocks. The result is frequent buying in small lots. The following mill discounts are quoted: Black Pipe, ¾ to 6 in., 73.2; 7 to 12 in., 70.2; Galvanized, ¾ to 6 in., 63.2. These discounts are subject to one point on the base. From store, in small lots, Chicago jobbers quote 73 per cent. on Black Steel Pipe, ¾ to 6 in. About three points above these prices is asked for Iron Pipe.

**Boiler Tubes.**—The only encouraging feature in an otherwise stagnant market for Tubular goods is an increasing demand for Locomotive Tubes. A fair number of orders is coming in from the railroads for Locomotive Tubes needed for repair work. The demand for Merchant Tubes is very light, both as to mill shipments and stock orders. Mill quotations for future delivery, on the base sizes, are as follows: 2¾ to 4¼ in., inclusive, Steel Tubes, 63.2; Iron, 50.2; Seamless, 50.2; 2½ in. and smaller, and lengths over 18 ft., and 2½ in. and larger, and lengths over 22 ft., 10 per cent. extra. Store prices are as follows:

| | Steel. | Iron. | Seamless. |
|---|---|---|---|
| 1 to 1½ in | 35 | 35 | 35 |
| 1¾ to 2¼ in | 50 | 35 | 35 |
| 2½ in | 52½ | 35 | 35 |
| 2¾ to 5 in | 60 | 47½ | 47½ |
| 6 in. and larger | 50 | 35 | .. |

**Merchant Steel.**—Business, while holding up to the average of recent weeks, presents no special features of interest, except that specifications for shipment subsequent to January 1, are beginning to come in from jobbers and manufacturers who will by that time have completed their inventories. Shapes required by automobile manufacturers have become an important item in Merchant Steel products, and are furnishing a growing volume of business. We quote as follows: Planished or Smooth Finished Tire Steel, 1.78c.; Iron Finish, up to 1½ x ½ in., 1.73c., base, Steel card; Iron Finish, 1½ x ½ in. and larger, 1.58c., base, Tire card; Channels for solid Rubber Tires, ¾ to 1 in., 2.08c., and 1⅛ in. and larger, 1.98c.; Smooth Finished Machinery Steel, 2.08c.; Flat Sleigh Shoe, 1.63c.; Concave and Convex Sleigh Shoe, 1.83c.; Cutter Shoe, 2.05c.; Toe Calk Steel, 2.13c.; Railroad Spring, 1.98c.; Crucible Tool Steel, 7¼c. to 8c., and still higher prices are asked on special grades. Cold Rolled Shafting in car lots and over, 57 per cent. off; in less than car lots, 52 per cent. off, with carload freight allowed within base territory.

**Cast Iron Pipe.**—The city of Chicago is in the market for 5500 tons of small Pipe, which is up for letting early this week. The Indianapolis letting for 1500 tons, on which all bids were recently rejected, is readvertised for January 8. It is rumored in trade circles that the 13,000 tons on which all bids were recently declined by the city of Detroit has been secured by the local shops, but there is no confirmation of this report. We quote nominally per ton, Chicago, as follows: Water Pipe, 4 in., $27; 6 to 12 in., $26; 16 in. and up, $25, with $1 extra for Gas Pipe.

**Old Material.**—Little trading is being done, and offerings from all sources are light. There were, in fact, not enough transactions last week to furnish a definite criterion as to prices, but the general tone of the market is undoubtedly weaker. With consumers buying sparingly, track sales were usually made at prices disadvantageous to the seller. Purchases of round lots, however, could not be effected at any appreciable shading from the week's quotations. Heavy Melting Steel and Old Steel Rails are slightly lower. A good deal of conjectures as to the amount of stocks held by dealers has been indulged in, and it is believed that some of the estimates made are wide of the mark. It is the opinion of those closest in touch with the situation, that there has not been at an time more than 200,000 tons held in the yards of the various Scrap interests in the city of Chicago. To what extent these were reduced by the recent buying movement cannot be determined, but the probabilities are that the surplus now does not exceed 175,000 tons. The following prices are per gross ton, f.o.b. Chicago:

| | |
|---|---|
| Old Iron Rails | $19.50 to $20.00 |
| Old Steel Rails, rerolling | 16.50 to 17.00 |
| Old Steel Rails, less than 3 ft | 15.00 to 15.50 |
| Relaying Rails, standard sections, subject to inspection | 22.50 to 23.50 |
| Old Car Wheels | 16.00 to 16.50 |
| Heavy Melting Steel Scrap | 14.50 to 15.00 |
| Frogs, Switches and Guards, cut apart | 14.50 to 15.00 |
| Mixed Steel | 12.25 to 12.75 |

The following quotations are per net ton:

| | |
|---|---|
| Iron Fish Plates | $17.25 to $17.75 |
| Iron Car Axles | 20.50 to 21.00 |
| Steel Car Axles | 18.50 to 19.00 |
| No. 1 Railroad Wrought | 14.50 to 15.00 |
| No. 2 Railroad Wrought | 13.50 to 14.00 |
| Springs, Knuckles and Couplers | 14.00 to 14.50 |
| Locomotive Tires, smooth | 14.75 to 15.25 |
| No. 1 Dealers' Forge | 11.00 to 11.50 |
| Mixed Busheling | 9.00 to 9.50 |
| Iron Axle Turnings | 8.50 to 9.00 |
| Soft Steel Axle Turnings | 8.50 to 9.00 |
| Machine Shop Turnings | 8.50 to 9.00 |
| Cast Borings | 7.25 to 7.75 |
| Mixed Borings, &c | 7.25 to 7.75 |
| No. 1 Mill | 9.00 to 9.50 |
| No. 2 Mill | 8.00 to 8.50 |
| No. 1 Boilers, cut to Sheets and Rings | 10.50 to 11.00 |
| No. 1 Cast Scrap | 13.50 to 14.00 |
| Stove Plate and Light Cast Scrap | 12.00 to 12.50 |
| Railroad Malleable | 13.25 to 13.75 |
| Agricultural Malleable | 11.50 to 12.00 |
| Pipes and Flues | 11.00 to 11.50 |

**Metals.**—Very little is doing in any of the Metals, the demand being confined to small pick up orders. There are, however, a number of inquiries in the market, which it is believed will result in orders soon after the first of the year. Prices are practically stationary on both Ingot and Old Metals. Quotations are as follows: Casting Copper, 14¼c.; Lake, 14½c. to 14¾c., in car lots, for prompt shipment; small lots, ¼c. to ⅜c. higher; Pig Tin, car lots, 31½c.; small lots, 34½c.; Lead, Desilverized, 4.45c. to 4.55c., for 50-ton lots; Corroding, 4.70c. to 4.80c., for 50-ton lots; in car lots, 2¼c. per 100 lb. higher; Spelter, 5.10c. to 5.25c.; Cookson's Antimony, 10½c., and other grades, 9¾c. to 10¼c.; Sheet Zinc is $7, f.o.b. La Salle, in car lots of 600-lb. casks. On Old Metals we quote: Copper Wire, 13¼c.; Heavy Copper, 13c.; Copper Bottoms, 11¾c.; Copper Clips, 13c.; Red Brass, 12c.; Yellow Brass, 9½c.; Light Brass, 6¼c.; Lead Pipe, 4.35c.; Zinc, 3¾c.; Pewter, No. 1, 21c.; Tin Foil, 23c.; Block Tin Pipe, 26c.

## Philadelphia.

PHILADELPHIA, PA., December 29, 1908.

Holiday conditions prevail and the trade is practically at a standstill. Both producers and consumers are busy with their annual stock takings, and a large number of plants have been shut down to facilitate this work and to make the usual midwinter repairs. Little business of importance is expected to develop until after the turn of the year, but it will no doubt require a somewhat longer period for the trade to get back into the usual routine.

**Pig Iron.**—Consumers appear willing for the most part to defer purchases until after the turn of the year; transactions therefore have been on a very small scale and the trade on the whole remains quiet. There has been more inquiry for low grade Foundry Irons from Cast Iron Pipe makers, but little tonnage has been closed. In the higher grades sales have been small, confined largely to carload lots for prompt shipment with an occasional sale of somewhat larger quantities for delivery over several months. Notwithstanding moderate purchases, which are attributed entirely to the season, the situation in the market is decidedly strong. With furnaces well sold up, in many instances beyond their capacities for the next few months, sellers refuse to consider business for extended deliveries at the ruling quotations, which for the first quarter range from $17.25 to $17.50 for No. 2 X Foundry, the bulk of the business being done close to the higher level. In some cases firm offers at a higher range of prices for the second quarter are reported, but, even at the advance, sellers refuse to consider such business. Little business has been done in Southern Foundry Iron; there have been quite a few inquiries for low grades for Pipe making, but not much is available and prices are being firmly held. The Virginia Foundry grades have not been active, sales during the week being confined largely to small spot lots at full prices. Forge Iron is quiet; operations at the mills are largely suspended, and little new business is being considered. One inquiry for a lot of 600 tons for first quarter delivery is reported. Some business in Basic Iron for first quarter delivery is still pending, as is also a large amount for the second quarter, but no developments have been reported in that grade. The largest individual sale during the week was in Low Phosphorus Iron, 1000 tons of 0.035 per cent. Iron being taken for the first quarter at close to $21.50, delivered. Some small lots of standard Low Phosphorus were also sold at full prices. Quotations on all grades are firmly held, and for delivery in buyers' yards, eastern Pennsylvania and nearby points, during the first quarter range as follows:

| | |
|---|---|
| Eastern Pennsylvania, No. 2 X Foundry | $17.25 to $17.50 |
| Eastern Pennsylvania, No. 2 Plain | 16.75 to 17.00 |
| Virginia, No. 2 X Foundry | 17.25 to 17.75 |
| Virginia, No. 2 Plain | 17.00 to 17.25 |
| Gray Forge | 16.00 to 16.50 |
| Basic | 16.75 to 17.00 |
| Low Phosphorus | 21.50 to 21.75 |

**Ferromanganese.**—Transactions have been confined to small spot lots, with little business pending for forward delivery. Quotations are unchanged, $45 to $46, Baltimore, being named for delivery in the first half of the year.

**Plates.**—A fair volume of business was reported last week, but so far this week orders have been rather meager. Mills, for the most part, are shut down for repairs and stock taking. The trade, however, is quite hopeful for a resumption of business early next year. Prices are firm and for delivery in this territory range as follows:

| | Carloads. Cents. | Parts carload. Cents. |
|---|---|---|
| Tank, Bridge and Boat Steel | 1.75 | 1.80 |
| Flange or Boiler Steel | 1.85 | 1.95 |
| Commercial Firebox | 1.95 | 2.00 |
| Marine | 2.15 | 2.20 |
| Locomotive Firebox Steel | 2.25 | 2.30 |

The above are base prices for ¼-in. and heavier. The following extras apply:

| | Extra per 100 lb. |
|---|---|
| 3-16-in. thick | $0.10 |
| Nos. 7 and 8, B. W. G. | .15 |
| No. 9, B. W. G. | .25 |
| Plates over 100 to 110 in. | .05 |
| Plates over 110 to 115 in. | .10 |
| Plates over 115 to 120 in. | .15 |
| Plates over 120 to 125 in. | .25 |
| Plates over 125 to 130 in. | .50 |
| Plates over 130 in. | 1.00 |

**Steel Billets.**—Business has been light, and little improvement is expected until after the first of the year. Specifications are light, as consumers are not taking in very much material, pending stock taking. For delivery in this territory ordinary Rolling Steel is quoted at $26.20, with Forging Steel $28.20, subject to the usual extras for high carbons and special sizes.

**Structural Material.**—Business has been along very narrow lines. Quite a large volume is under consideration, but little of interest is expected to develop until some time in January. For delivery in this territory prices range from 1.75c. to 1.90c., according to specification.

**Sheets.**—Practically all the mills in this district are closed for stock taking and overhauling. Orders are small and irregular, and little business of importance is being considered at this time. Prices show no change, ranging as follows for mill shipments, a tenth extra being added for small lots: Nos. 18 to 20, 2.50c.; Nos. 22 to 24, 2.60c.; Nos. 25 to 26, 2.70c.; No. 27, 2.80c.; No. 28, 2.90c.

**Bars.**—Current business is small. Buying is largely suspended, owing to the holidays, but a more active movement is expected after the turn of the year. Prices are firmer; quotations for Refined Iron Bars, delivered in this territory, range from 1.52c. to 1.60c., with Steel Bars 1.55c., and Rerolled Bars 1.50c., delivered.

**Coke.**—The movement has been light. Some fair contracts for Foundry Coke are pending, and sellers are maintaining prices more firmly. For delivery in this territory quotations range about as follows:

| | |
|---|---|
| Connellsville Furnace Coke | $3.90 to $4.10 |
| Foundry Coke | 4.20 to 4.50 |
| Mountain Furnace Coke | 3.50 to 3.70 |
| Foundry Coke | 3.80 to 4.10 |

**Old Material.**—The market while inactive continues strong. Considerable interest is still being shown in the Heavy Melting Steel situation. Mills are able to pick up small odd lots, as well as off grades, under ruling prices, but holders of any tonnage will not accept business except at top prices. There is still a difference of opinion between buyers and sellers regarding the price of this grade, but sufficient business has not yet come out to test the market. The demand for the other grades of Old Material has been light, and prices for prompt deliveries in buyers' yards in this vicinity are nominally quoted as follows:

| | |
|---|---|
| No. 1 Steel Scrap and Crops | $17.50 to $18.00 |
| Low Phosphorus | 20.00 to 21.00 |
| Old Steel Axles | 22.50 to 23.00 |
| Old Iron Axles | 24.25 to 24.75 |
| Old Iron Rails | 21.25 to 21.75 |
| Old Car Wheels | 16.00 to 17.00 |
| Choice No. 1 R. R. Wrought | 20.00 to 20.50 |
| Machinery Cast | 16.00 to 16.50 |
| Railroad Malleable | 15.75 to 16.25 |
| Wrought Iron Pipe | 15.25 to 15.75 |
| No. 1 Forge Fire Scrap | 15.00 to 15.50 |
| No. 2 Light Iron | 10.00 to 10.50 |
| Wrought Turnings | 14.00 to 14.50 |
| Stove Plate | 13.75 to 14.25 |
| Cast Borings | 13.00 to 13.50 |
| Grate Bars | 14.50 to 15.00 |

## Birmingham.

BIRMINGHAM, ALA., December 28, 1908.

**Pig Iron.**—The volume of business transacted in this market during the past week is comparatively insignificant. Prospective purchasers have manifested little interest in advanced deliveries, while a few small lots of High Manganese Iron are only considerations reported for prompt shipment. In view of the general suspension of operations for annual inventories the slight demand for spot deliveries is not unexpected, and there has been no perceptible change in the sentiment of any parties concerned in the outlook. The trade is no doubt chiefly interested just at this time in ascertaining the result of the year's operations, and the attitude of producing interests, to await the summary of conditions as will be indicated by the demand to develop, seems warranted. It is generally conceded that the schedule of $13.50, Birmingham, now being quoted by concerns willing to name figures on second quarter deliveries will ultimately be adopted as the market price. The addition to the producing capacity that has been made from time to time as the result of order-book requirements and the tonnage that is to be carried over into the new year indicate that the situation is well in the hands of the furnace interests, but, as it is not definitely known to what extent speculative purposes are represented by engagements now on record, developments in this connection are to be awaited with interest. A feature also to be taken into consideration is the raw material accumulations on yards of various founders and the extent leading melters are known to have provided for their probable requirements. The actual improvement in the condition of the foundry trade has necessitated the operation of considerably more capacity than at one time anticipated, but there are still a number of idle plants in this district that have been out of operation since the fall of 1907.

**Cast Iron Pipe.**—With operations practically suspended at all plants for the usual annual inventory, and the attention of prospective purchasers apparently attracted in other directions, this market is unusually quiet. No lettings of consequence other than has been mentioned are advertised, and the business that has been anticipated is yet to develop. The status of prices is so far unaffected, although the sentiment of sellers indicates a relatively higher basis. The recent advance in prices of Cast Iron Soil Pipe has been maintained, and it is expected that the output will be materially increased soon after the inception of the new year. A feature in the Soil Pipe market is the scarcity of staples both in Pipe and fittings. We quote Water Pipe as follows, carload lots, per net ton, f.o.b. cars here; 4 in. to 6 in., $25; 8 in. to 12 in., $24; over 12 in., average, $23, with $1 per ton extra for Gas Pipe. These quotations are probably shaded on large municipal contracts.

**Old Material.**—There has been no improvement in the demand since last report. The cleaning up at foundries and furnaces now in process will no doubt add materially to offerings for dealers' stocks, which are in some cases practically depleted. Among the latest offering to dealers, 100 tons of Light Cast and approximately 300 tons of Slag are the principal consideration. We quote dealers' asking prices as follows, per gross ton, f.o.b. cars here, which are believed to be firm:

| | |
|---|---|
| Old Iron Rails | $15.00 to $15.50 |
| Old Iron Axles | 16.00 to 17.00 |
| Old Steel Axles | 13.50 to 14.00 |
| No. 1 Railroad Wrought | 14.00 to 14.50 |
| No. 2 Railroad Wrought | 11.00 to 11.50 |
| No. 1 Country Wrought | 11.00 to 11.50 |
| No. 2 Country Wrought | 9.50 to 10.00 |
| No. 1 Machinery | 11.50 to 12.00 |
| No. 1 Steel | 10.50 to 11.00 |
| Stove Plate and Light Cast | 9.50 to 10.00 |
| Cast Borings | 5.00 to 5.50 |
| Standard Car Wheels | 13.50 to 14.00 |
| Tram Car Wheels | 12.00 to 12.50 |

## Pittsburgh.

PARK BUILDING, December 30, 1908.—(*By Telegraph.*)

**Pig Iron.**—Some new inquiry for Pig Iron has come up during the week, for delivery in first quarter and first half of next year, but as yet very little actual business has been closed. The Grand Crossing Tack Company, Chicago, is in the market for 4000 tons of Basic Iron, for delivery in first quarter, but this will hardly go to any of the Valley furnaces, the freight rate to Chicago being against them. The Iron will likely be supplied by some of the furnaces near Chicago. A local interest has bought 600 tons of Standard Bessemer Iron for delivery in April, May and June on the basis of about $16.60, Valley, or $17.50, Pittsburgh. Foundry and Forge Iron are very quiet. We quote Standard Bessemer for first quarter, at $16.50; Malleable Bessemer, $16; Basic, $15.75; No. 2 Foundry, $15.50, and Gray Forge, $14.50, all at Valley furnace, the freight rate to Pittsburgh being 90c. a ton.

**Steel.**—There is practically no new demand for Billet and Sheet and Tin Bars, but consumers are specifying quite liberally against contracts, and are taking out about as much tonnage this month as in November. It is claimed that regular prices on Steel are being maintained. We quote Bessemer and Open Hearth Billets, 3⅞ in. and larger, up to and including 0.25 carbon, $25; 0.26 to 0.60 carbon, $1 extra; over 0.60 carbon, $2 extra, all f.o.b. Pittsburgh. For Wheeling, Martin's Ferry, Follansbee, Newcastle, Sharon, Steubenville and Washington (Pa.) delivery, half the freight, or 50c. additional, is charged. Sheet and Tin Bars in random lengths are $27.50, f.o.b. Pittsburgh. Forging Billets take $2 advance over Rolling Billets.

(*By Mail.*)

The last week of 1908 finds the Iron and Steel situation about as quiet as it has been at any time in the year. It is known, however, that nearly all consumers are holding up orders until after the first of the year. There is some inquiry for Basic and Bessemer Pig Iron for first quarter delivery. Billets and Sheet and Tin Bars are quiet, and no more large orders for Rails have been given out. The flurry in the Scrap trade continues; the available supply in the large centers seems to be in the hands of dealers who are strong enough to hold it for higher prices. The Coke trade is quiet; prices on prompt Coke, and probably on Coke for first half of the year delivery, are slightly weaker. While the demand for Finished Iron and Steel has been light all the month, this was expected, and is not taken to mean that the Steel trade is going back again, but simply that consumers are keeping out of the market until after the turn of the year.

**Ferromanganese.**—The consumption is heavier, and the available supply for prompt shipment seems limited. The Carnegie Steel Company, which does not sell Ferromanganese in the open market, is running short in its supply, and is blowing in No. 2 Isabella Furnace to-day on this product

for its own supply. The stack will make about 6000 tons a month. Prices are firm, and we quote 80 per cent. foreign at $44.50 to $45, seaboard, the freight rate to Pittsburgh being $1.95 a ton.

**Ferrosilicon.**—We note a sale of two cars, or about 50 tons, of 50 per cent., at about $63.25, Pittsburgh. We quote 50 per cent. Ferrosilicon for first quarter delivery, at about $63, Pittsburgh.

**Wire Rods.**—Some fairly large inquiries for both Chain Rods and Wire Rods are in the market, and consumers are specifying against contracts at a fairly satisfactory rate. We continue to quote Bessemer Rods at $33, Chain Rods $33, and Basic $34, Pittsburgh.

**Muck Bar.**—The market is firm, but the demand is very quiet. Some buying is expected after the first of the year. We quote best grades of Muck Bar, made from all Pig Iron, at $28 to $28.50, Pittsburgh.

**Skelp.**—Little is doing in Steel Skelp, but the demand for Grooved and Sheared Iron Skelp, particularly the latter, is very active, and the mills rolling Sheared Iron Plates are filled up for several months ahead, and are very firm as to prices. We quote: Grooved Steel Skelp, 1.45c. to 1.50c.; Sheared Steel Skelp, 1.50c. to 1.60c.; Grooved Iron Skelp, 1.75c. to 1.80c., and Sheared Iron Skelp, 1.90c. to 1.95c., Pittsburgh.

**Steel Rails.**—The anticipated orders for Rails from the Baltimore & Ohio, New York Central and other lines that were expected to follow the Pennsylvania Railroad's lead in buying have not been placed. It is confidently expected, however, that some large contracts will come out soon. Manufacturers believe that the coming year will be a good one in the Rail trade, and are hopeful that it will far exceed 1908. The estimated quantity of Rails actually shipped out on orders by the mills in 1908 is given as 1,600,000 tons, but this is not official. The Carnegie Steel Company received in the past week new orders and specifications against contracts for about 1500 tons of Light Rails. This year has been fairly good in the Light Rail trade, especially the last three or four months. Makers of Light Rails rerolled from Old Rails continue to sell at $2 to $3 a ton under Rails rolled from Billets. Prices on new Light Rails, rolled from Billets, are as follows: $25 for 25 to 45 lb. Sections, with $1 advance for 20 lb., $2 advance for 16 lb. and $3 advance for 12 lb. Standard Sections are $28, at mill, and Angle Splice Bars, 1.65c., at mill.

**Structural Material.**—The local situation is very quiet. Interest attaches to the report that the German Lutheran Church, of this city, will erect a church and office building combined, plans for which have been made, and if put through will require about 10,000 tons. The trade is skeptical of the project being consummated. A good deal of new business is held up, which is expected to be placed early in the new year. We quote, f.o.b. mill, Pittsburgh: I-Beams and Channels, 3 to 15 in., inclusive, 1.60c., net; I-Beams over 15 in., 1.70c., net; H-Beams over 8 in., 1.80c.; Angles, 3 to 6 in., inclusive, ¼ in. and up, 1.60c., net; Angles, over 6 in., 1.70c., net; Angles, 3 x 3 in. and up, less than ¼ in., 1.50c., base, half extras, Steel Bar card; Tees, 3 in. and up, 1.65c., net; Zees, 3 in. and up, 1.60c., net; Angles, Channels and Tees under 3 in., 1.50c., base, half extras, Steel Bar card; Deck Beams and Bulb Angles, 1.90c., net; Hand Rail Tees, 3c., net; Checkered and Corrugated Plates, 3c., net.

**Sheets.**—New orders for Sheets this month show a falling off as compared with November; but this was expected, as jobbers do not seem anxious to make contracts until after the first of the year, and orders are confined mostly to small lots for actual needs. Some slight shading in prices is still being done, from $1 to $2 a ton, on Corrugated and Galvanized Sheets. For shipment from mill regular prices are as follows: Blue Annealed Sheets, No. 10 and heavier, 1.80c.; Nos. 11 and 12, 1.85c.; Nos. 13 and 14, 1.90c.; Nos. 15 and 16, 2c.; Box Annealed, Nos. 17 to 21, 2.25c.; Nos. 22 to 24, 2.30c.; Nos. 25 and 26, 2.35c.; No. 27, 2.40c.; No. 28, 2.50c.; No. 29, 2.60c.; No. 30, 2.70c. Galvanized Sheets, Nos. 10 and 11, 2.45c.; Nos. 12 and 14, 2.55c.; Nos. 15 and 16, 2.65c.; Nos. 17 to 21, 2.80c.; Nos. 22 and 24, 2.95c.; Nos. 25 and 26, 3.15c.; No. 27, 3.35c.; No. 28, 3.55c.; No. 29, 3.70c.; No. 30, 3.95c.; No. 28, Painted Roofing Sheets, $1.75 per square, and Galvanized Roofing Sheets, No. 28, $3.10 per square, for 2½-in. corrugations. These prices are subject to a rebate of 5c. per 100 lb. to the large trade under the usual conditions, jobbers charging the usual advances for small lots from store.

**Plates.**—In addition to the contract for 1500 80,000-lb. Coke cars placed by the Pittsburgh & Lake Erie Railroad some time ago with the American Car & Foundry Company, the Plates and Shapes for which are being rolled by the Jones & Laughlin Steel Company, the same road has ordered 500 all-Steel 100,000-lb. hopper cars of the Standard Steel Car Company, for which the Carnegie Steel Company will furnish the Plates and Shapes, about 6000 tons, and also about 2000 Axles. The general demand for Plates is quiet. The Carnegie Steel Company will soon finish rolling the order for Plates for the Springfield, Mass., water works, but has not yet received specifications for the 22,000 tons of Plates or more for the Brooklyn water works job. Prices are still being shaded by some mills about $1 to $2 a ton. Regular prices are as follows: Tank Plates, ¾ in. thick, 6¼ in. up to 100 in. wide, 1.60c., base, at mill, Pittsburgh. Extras over this price are as follows:

Tank, Ship and Bridge quality, ¼-in. thick on edges, 100 in. wide, down to but not including 6 in. wide, is taken as base.

Steel Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per square foot, shall be considered ¼-in. Plate. Steel Plates over 72 in. wide must be ordered ¼-in. thick on edge, or not less than 11 lb. per square foot, to take base price. Steel Plates over 72 in. wide ordered less than 11 lb. per square foot down to the weight of 3-16-in. shall take the place of 3-16-in.

Percentages as to overweight on Plates, whether ordered to gauge or weight, to be governed by the Association of American Steel Manufacturers' Standard Specifications.

| | |
|---|---|
| Gauges under ¼-in. to and including 3-16-in. Plates on thin edges | $0.10 |
| Gauges under 3-16-in. to and including No. 8 | .15 |
| Gauges under No. 8 to and including No. 9 | .25 |
| All sketches (excepting straight taper Plates varying not more than 4 in. in width at ends, narrowest end being not less than 30 in.) | .10 |
| Complete Circles | .20 |
| Boiler and Flange Steel Plates | .10 |
| "A. B. M. A." and ordinary Firebox Steel Plates | .20 |
| Still Bottom Steel | .30 |
| Marine Steel | .40 |
| Locomotive Firebox Steel | .50 |
| Shell grade of Steel is abandoned. | |
| For widths over 100 in. up to 110 in | .05 |
| For widths over 110 in. up to 115 in | .10 |
| For widths over 115 in. up to 120 in | .15 |
| For widths over 120 in. up to 125 in | .25 |
| For widths over 125 in. up to 130 in | .50 |
| For widths over 130 in | 1.00 |

TERMS.—Net cash 30 days. Pacific Coast base, 1.50c., f.o.b. Pittsburgh.

**Tin Plate.**—The demand is pretty well over, but the Tin Plate mills are pretty comfortably fixed with orders for shipment through the first quarter. The Tin Plate trade this year has been quite satisfactory considering general conditions, but is expected to be much better next year. We are advised that regular prices are being well maintained. We quote: $3.70 for 100-lb. Cokes, 14 x 20, f.o.b. Pittsburgh, terms 30 days, less 2 per cent. off for cash in 10 days, this price being subject to the usual rebate of 5c. per base box in large lots.

**Iron and Steel Bars.**—For Iron Bars the demand has been accelerated to some extent by the active condition of the Scrap market for the past three or four weeks, consumers being more disposed to contract ahead in view of possible higher prices for Iron Bars in the near future. As a result of this, some good sized contracts for shipment over the first quarter and first half have recently been placed with the mills. Orders for Steel Bars are few, but specifications against contracts are being received in fairly good volume, although not so heavy this month as in November. We quote Iron Bars at 1.42c., Pittsburgh, for Western shipment, or 1.60c., Chicago, while the price for delivery in the Pittsburgh District is 1.50c. Iron Bars that have a high reputation in the trade and rolled from strictly Muck Bar stock, such as Zug, Lockhart and a few others, are held at about 1.90c., at mill. Steel Bars are firm at 1.40c., Pittsburgh, for base sizes.

**Hoops and Bands.**—As yet the mills have not fixed prices for 1909 delivery, but this will likely be done in the first or second week in January. Present prices are as follows: Steel Hoops, 1.80c., base, full Hoop card prices; Steel Bands, 1.40c., base, half Steel card extra, all f.o.b. cars, Pittsburgh, in carload lots, for delivery during 1908.

**Railroad Spikes.**—It is expected that two or three of the leading railroads will be in the market with large inquiries for Spikes early in the year. The demand for the small sizes is quite active, the mills having work ahead for three or four weeks. Prices are firm, and we quote: Standard sizes, 4½ x 9-16 in., at $1.70, and the smaller sizes at $1.80 per 100 lb., in carload and larger lots, with an advance of 5c. per 100 lb. for less than carload, f.o.b. Pittsburgh.

**Merchant Steel.**—Specifications against contracts this month were only fair, and show a falling off as compared with last month. More activity in this trade is expected after the first of the year, when consumers will have finished taking inventory. We quote Cold Rolled Shafting at 57 per cent. off in carloads and 52 per cent. in less than carloads, delivered in base territory. Regular prices on Merchant Steel, which are being shaded to some extent, are as follows: Smooth Finished Machinery Steel, 1.80c. to 1.90c.; Flat Sleigh Shoe, 1.75c. to 1.85c.; Cutter Shoe Steel, 2.15c. to 2.25c.; Toe Calk, 1.90c. to 1.95c.; Railroad Spring Steel, 1.60c. to 1.75c., the higher prices being for Pennsylvania Railroad analysis. Carriage Spring Steel is 1.80c.; Tire Steel, Iron finish, 1½ x ½ in. and heavier, 1.40c.; under 1½ in., 1.55c. Planished Tire Steel is 1.60c., all f.o.b., at mill.

**Spelter.**—The demand is light, and prices are only fairly strong. We quote prime grades of Western at 4.95c., East St. Louis, equal to 5.07½c., Pittsburgh.

**Merchant Pipe.**—No more new orders for line Pipe have been placed since our last report, but we are advised that the Ohio Fuel Supply Company is in the market for

about 80 miles of 16-in., and may possibly buy 25 miles of 8-in. Other large projects are under way, and the demand for line Pipe promises to be very heavy for the larger sizes in the new year. Orders booked by the mills for merchant sizes in December were not quite as heavy as in November, but the month is regarded as quite satisfactory. It is estimated that close to 65 per cent. of the Pipe capacity is active at present. It is claimed that prices on both Iron and Steel Pipe are being absolutely maintained. If Sheared Iron Plates continue to advance, higher prices on Iron Pipe in the future are not unlikely. Discounts on Steel Ppe, ¾ to 6 in., to the large trade, are 75 and 5 per cent. off list, while a few of the very largest jobbers, that have mill connections, are given 76 and 5 per cent. off list. Regular discounts are as follows:

*Merchant Pipe.*

| | Jobbers, carloads. Steel. | |
|---|---|---|
| | Black. % | Galv. % |
| ⅛ to ¼ in | 67 | 51 |
| ⅜ in | 69 | 55 |
| ½ in | 71 | 59 |
| ¾ to 6 in | 75 | 65 |
| 7 to 12 in | 72 | 57 |
| Extra strong, plain ends: | | |
| ⅛ to ⅜ in | 60 | 48 |
| ½ to 4 in | 67 | 55 |
| 4½ to 8 in | 63 | 51 |
| Double extra strong, plain ends: | | |
| ½ to 8 in | 56 | 45 |

Discounts on Genuine Iron Pipe are as follows:

| | Black. % | Galv. % |
|---|---|---|
| ⅛ to ¼ in | 65 | .. |
| ⅜ in | 67 | 53 |
| ½ in | 69 | 57 |
| ¾ to 6 in | 73 | 63 |
| 7 to 12 in | 70 | 55 |
| Extra strong, plain ends: | | |
| ⅛ to ⅜ in | 58 | 46 |
| ½ to 4 in | 65 | 53 |
| 4½ to 8 in | 61 | 49 |
| Double extra strong, plain ends: | | |
| ½ to 8 in | 54 | 43 |

**Boiler Tubes.**—Only a small order is being occasionally placed by the railroads for Locomotive Tubes for repair work. It has been suggested that an advance in prices on Locomotive Tubes by the mills might have the effect of increasing the demand. Only small lots of Merchant Tubes are being ordered. The whole Tube market, in fact, is very dull. For Merchant Tubes in small lots, on which an extra 5 per cent. is allowed in carloads, discounts are as follows:

*Boiler Tubes.*

| | Iron. | Steel. |
|---|---|---|
| 1 to 1½ in | 42 | 47 |
| 1¾ to 2¼ in | 42 | 59 |
| 2½ in | 47 | 61 |
| 2¾ to 5 in | 52 | 65 |
| 6 to 13 in | 42 | 59 |

2½ in. and smaller, over 18 ft. long, 10 per cent. net extra.
2¾ in. and larger, over 22 ft. long, 10 per cent. net extra.

**Iron and Steel Scrap.**—There seems to be something of a deadlock on between dealers and consumers of Scrap, and as a result very little material is being sold by dealers, and in this respect the market is quiet. However, the available stocks in large Scrap centers, such as Pittsburgh, Chicago, Cleveland, Indianapolis and other cities, are strongly held and prices are very firm. Dealers insist they are in position to maintain the market on its present basis for an indefinite length of time and are not disposed to make even slight concessions to secure new business. We quote: Heavy Steel Scrap for Pittsburgh, Steubenville, Sharon, Leechburg or Monessen delivery, $17; Cast Iron Borings, $11.50 to $11.75; Bundled Sheet Scrap, $15 to $15.25; No. 1 Busheling Scrap, $14.75 to $15; No. 2, $10.75 to $11; No. 1 Cast Scrap, $15 to $15.25; Iron Axles, $24.50 to $25; Sheet Bar Crop Ends, $21 to $21.25. Rerolling Rails, $18, delivered, Cambridge, Ohio, or $18.50, delivered, Cumberland, Md.; Low Phosphorus Melting Stock 0.04 and under, $18.50 to $19; Steel Axles, $19.50 to $20; Grate Bars, $13 to $13.25; Machine Shop Turnings, $12.50 to $13; Railroad Wrought Scrap, $17 to $17.25; Railroad Malleable Scrap, $15.50 to $15.75; Iron Rails, $18.75 to $19, and Locomotive Tires, $17.50 to $17.75.

**Coke.**—The output of Coke has increased considerably in the past two or three weeks, due to heavy rains relieving the shortage of water. The available supply of Coke for prompt shipment is larger, with the result that prices on both Furnace and Foundry Coke for spot delivery are easier. We quote Connellsville Furnace Coke for prompt delivery at $1.75 to $1.80 per net ton, at oven, while on contracts for first half $1.90 is now being quoted with reports that two large consumers have recently covered their requirements for Furnace Coke for first half of the year at a slightly lower price. Strictly Connellsville 72-hr. Furnace Coke on contracts for first half of the year is held at $2.40 to $2.50, while for prompt shipment $2.25 or lower could be done. Furnace and Foundry Coke made in the Klondike and other outside regions can be bought on contracts and for prompt shipment at slightly lower prices than are named above. The output of Coke in the two Connellsville regions last week was 251,903 tons, an increase over the previous week of 8600 tons.

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The offices of Richardson & Co., Inc., dealers in New and Relaying Steel Rails, have been removed from the Westinghouse Building to 1211 Fulton Building, Pittsburgh.

## St. Louis.

ST. LOUIS, MO., December 28, 1908.

Announcement is made that plans have been arranged for the erection at an early date of a large department store building, to be located on Olive street, and represent a cost exceeding $2,000,000. Plans are under consideration for the completion of the 18-story bank and office building of the National Bank of Commerce, Broadway, between Olive and Pine streets. The contemplated improvements and the completion of the bank building, including the new structure, will cost approximately $8,000,000.

**Coke.**—Except for inquiries and some business in small lots for immediate shipment, the market is ruling very quiet, and these conditions are expected to obtain for the coming week. After New Year's, the leading sellers will look for a marked improvement in conditions. We quote for prompt or December shipment 72-hr. Foundry $2.25, at ovens, Connellsville; for shipment over first half of 1909, $2.25 to $2.65.

**Pig Iron.**—The dullness incident to the holiday season has been more pronounced during the week, but as this was anticipated it does not affect prices. The leading sellers state they note evidences of a heavy consumption in all branches of the foundry trade, and the large purchases of Northern and Southern Iron last week by the leading carbuilders is having a strengthening effect on the market. It is believed the increased requirements of the railroads indicate that general business is increasing in volume, and that the improvement is likely to continue. We quote Southern No. 2 Foundry, Birmingham, as follows: Immediate shipment and first quarter of 1909, $13; first half of 1909, $13.25; second quarter, $13.50; Ohio Iron, $15.50 to $16 for No. 2 at Ironton; Northern Silvery, 8 per cent. Silicon, $18.50 to $19, at Jackson County furnaces.

**Old Material.**—With the Iron trade simply marking time, dealers in Scrap Iron could not reasonably expect activity in their line, and during the week not only has there been no demand from rolling mills and foundries, but there has been very little doing with the dealers. No offerings are posted by the railroads. While in the absence of business quotations are nominal, the near approach of the season for a large movement brings some assurance of prices being maintained. It is proper to note an exception—that of Relaying Rails—for which there is an active demand from the West and Southwest. We quote as follows, per gross ton, f.o.b. St. Louis:

| | |
|---|---|
| Old Iron Rails | $17.00 to $17.50 |
| Old Steel Rails, rerolling | 14.75 to 15.00 |
| Old Steel Rails, less than 3 ft | 14.25 to 14.75 |
| Relaying Rails, standard sections, subject to inspection | 24.00 to 24.50 |
| Old Car Wheels | 16.50 to 17.00 |
| Heavy Melting Steel Scrap | 14.75 to 15.25 |
| Frogs, Switches and Guards, cut apart | 14.75 to 15.25 |
| Mixed Steel | 10.25 to 10.75 |

The following quotations are per net ton:

| | |
|---|---|
| Iron Fish Plates | $16.00 to $16.50 |
| Iron Car Axles | 20.00 to 20.50 |
| No. 1 Railroad Wrought | 14.50 to 15.00 |
| No 2 Railroad Wrought | 13.50 to 14.00 |
| Railway Springs | 13.00 to 13.50 |
| Locomotive Tires, smooth | 13.50 to 14.00 |
| No. 1 Dealers' Forge | 11.50 to 12.00 |
| Mixed Borings | 7.00 to 7.50 |
| No. 1 Boilers, cut to Sheets and Rings | 10.00 to 10.50 |
| No. 1 Cast Scrap | 13.50 to 14.00 |
| Stove Plate and Light Cast Scrap | 10.50 to 11.00 |
| Railroad Malleable | 12.00 to 12.50 |
| Agricultural Malleable | 10.50 to 11.00 |
| Pipes and Flues | 10.50 to 11.00 |
| Railroad Sheet Scrap | 11.50 to 12.00 |
| Railroad Grate Bars | 11.50 to 12.00 |
| Machine Shop Turnings | 9.50 to 10.00 |

**Lead, Spelter, Etc.**—For Lead, there are a good many inquiries, and but little actual business passing, and the market is quiet, at 4c. to 4.02½c. Mining interests are dull, and there is not much Lead or Zinc production going on. We quote Joplin basis, $24.50 to $25, per 1000 lb. Spelter is in quite active demand, by both galvanizers and brass foundries. The market range is as follows: For Galvanizing, 5.10c. to 5.12½c.; brass manufacture, 5.25c. to 5.50c. Very little business is being booked on account of the holiday season, and the close of the year, but the volume of inquiries would seem to indicate considerable activity after New Year's.

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The Scullin-Gallagher Iron & Steel Company reported the contract for cast Steel bolsters for 500 fifty-ton coal cars to be built by the Cambria Steel Company. Also cast Steel bolsters for 500 thirty-ton cars for the Delaware, Lackawanna & Western Railroad Company.

The American Car & Foundry Company states that it has begun work on 800 new cars at its plant at Madison, Ill.

## Cincinnati.

CINCINNATI, OHIO, December 30, 1908.—(*By Telegraph.*)

The closing days of 1908 find the local Iron and Steel market quiet, but full of promise. This promise is best exemplified by the machinery manufacturing lines probably, as inquiries from the large railroad and other corporations needing tools and shop equipment suggest a good opening for the first quarter. The Pig Iron inquiry is light, the largest consumers having filled their requirements for the first half as a rule, the greater part, at least, when Iron was lower, a few weeks ago, and furnaces are reluctant to quote on last half requirements except at prohibitive prices. In finished Iron and Steel no item is in strong demand, and dealers and jobbers alike are busied with inventories. Scrap dealers and consumers are quite as far apart as at any time since the election; present quoted prices being regarded as prohibitive by consumers, who are buying only for actual needs.

**Pig Iron.**—Most selling agencies are awaiting notice of routine changes, results of inventories and new year orders from their furnace chiefs, and little new business has come out, although one local agency checks up sales for the week ending the 26th inst. at 3580 tons, mostly in small lots. There have been no changes in price. Low grades still have the call, a late sale of Southern Forge bringing $12, Birmingham, and nothing better than $13, Birmingham, for No. 2 Foundry for the first half is heard here. Many rumors of new furnace activity for the first quarter, coupled with reports of large stocks on furnace yards, tend to reassure consumers against any phenomenal advance in the near future. There are some inquiries from Indiana ranging from a few carloads to 500 and 600 ton lots. A local foundry which wanted about 750 tons of No. 3 Foundry, deliveries February to May, has deferred the purchase temporarily. It is understood here that the plumbing supply establishment inquiring for 8000 tons for its Louisville plant has secured it, taking a considerable lot from the Tennessee furnace whose Iron it has used largely in former years, 1000 tons from a Tennessee furnace making an extra fluid softener, 1000 tons of Foundry Iron from Woodstock, and a total of about 4000 tons divided between two of the largest Alabama interests. The price was on a basis of $13, Birmingham, and deliveries in second quarter. It is stated that a considerable part of the tonnage wanted by the large car manufacturing concern for its Detroit plant, mentioned last week, has been secured, 1000 tons of No. 4 Foundry coming from the South and at a price around $12.25, Birmingham. Some late inquiries are for a special analysis Iron wanted by Pittsburgh parties. Stove makers are not much in evidence, the latest sale of any special importance reported here being one of 6000 tons of Nos. 2 and 3 Foundry to a large St. Louis establishment on a basis of $13, Birmingham, deliveries extending to November, 1909. Late visitors to Jackson County report a total of about 10,000 tons on furnace yards there. Globe Furnace is scheduled to go in blast January 6. The price is firm at $18.50, at furnace for 8 per cent. Silicon, with a disposition to advance the spread above 10 per cent. to $1. Warner Furnace, which blew out on the 24th inst. for relining and repairs, is scheduled to go in blast March 1 and will continue on Foundry Iron. Embreeville Furnace at Embreeville, Tenn., which blew out November 20 for repairs, is active again, having been blown in December 19. For first half delivery, based on freight rates of $3.25 from Birmingham and $1.10 from the Hanging Rock District, we quote delivered Cincinnati as follows:

| | |
|---|---|
| Southern Coke, No. 1 | $16.75 to $17.25 |
| Southern Coke, No. 2 | 16.25 to 16.75 |
| Southern Coke, No. 3 | 15.75 to 16.25 |
| Southern Coke, No. 4 | 15.25 to 15.75 |
| Southern Coke, No. 1 Soft | 16.75 to 17.25 |
| Southern Coke, No. 2 Soft | 16.25 to 16.75 |
| Southern Coke, Gray Forge | 14.75 to 15.25 |
| Southern Mottled | 14.50 to 15.00 |
| Ohio Silvery, 8 per cent. Silicon | 19.60 to 20.10 |
| Lake Superior Coke, No. 1 | 17.10 to 17.60 |
| Lake Superior Coke, No. 2 | 16.60 to 17.10 |
| Lake Superior Coke, No. 3 | 16.10 to 16.60 |
| Standard Southern Car Wheel | 22.25 to 23.25 |
| Lake Superior Car Wheel | 21.75 to 22.75 |

(*By Rail.*)

**Coke.**—Spot Coke is a trifle weaker. Spot Furnace brands from the Connellsville region are obtainable as low as $1.65, at oven, and ranging to $1.85 on contract. Spot Foundry grades are quotable at about $2 and $2.15 to $2.50, at oven, on contract. Pocahontas Foundry ranges from about $2.15 to $2.25, spot and contract, and Furnace grades $1.85 to $2. Not much buying is expected before the second week in January, and not a great deal then, as most contracting has been done for the first half or the whole year, for furnace use. If the jobbing foundry business picks up, as it is expected to do early in the year, there will be some demand for the 72-hr. grades.

**Finished Material.**—It is very dull in the retail and jobbing lines, although some specialty concerns, for instance, those straightening and cutting Wire and handling twisted Steel Bars for concrete work, are enjoying a fair run of business. The demand for coated Nails for use by box makers is good. The reported purchase of 3500 tons of Iron Bars by the Louisville & Nashville Railroad for use in building new cars has stimulated interest in that commodity in this market. The Andrews Steel Company is now running all 10 Finishing mills. The Sheet mills are turning out 800 to 900 tons per week. The Steel plant is running two-thirds capacity and expects within 30 days to be running full. The present output is about 225 tons a day of Sheet Bars and Billets. Dealers are quoting to the trade as follows, f.o.b. Cincinnati: Iron Bars, carload lots, 1.55c., base, with half extras; small lots from store, 1.85c., base, half extras; Steel Plates, carload lots, 1.75c., base, with half extras; small lots from store, 1.85c., base, half extras; Base Angles, carload lots, 1.85c., base; small lots from store, 2.10c.; Beams, Channels and Structural Angles, 1.85c., base; small lots from store, 2.10c.; Plates, ¼-in. and heavier, carload lots, 1.85c.; small lots from store, 2c.; Blue Annealed Sheets, heavy, No. 16, carload lots, 2.15c.; small lots from store, 2.50c.; No. 14, carload lots, 2.05c.; small lots from store, 2.40c.; No. 10 and heavier, carload lots, 1.95c.; small lots from store, 2.20c.; No. 12, carload lots, 2c.; small lots from store, 2.30c.; Sheets (Light), Black, No. 28, carload lots, 2.65c.; Galvanized Sheets, No. 28, carload lots, 3.70c.; Steel Tire, 4-in. and heavier, carload lots, 1.95c.; Plates, 3-16 and No. 8, carload lots, 2c.; small lots from store, 2.20c.

**Old Material.**—There is no life in the Scrap market and no interest is displayed in any item. Dealers have forced prices to such hights that consumers have apparently retired for the time being. Although Heavy Melting Steel is quoted as high as $15.50 and $16, some heavy consumers insist that they have bought quite recently at $14 and $14.50. All mills in this vicinity are now pretty well stocked up on Scrap, and about all the movement there is in this commodity the closing days of the year is between dealers, who quote, f.o.b. Cincinnati, about as follows:

| | |
|---|---|
| No. 1 R. R. Wrought, net ton | $14.50 to $15.50 |
| Cast Borings, net ton | 6.50 to 7.50 |
| Heavy Melting Steel Scrap, gross ton | 14.50 to 15.00 |
| Steel Turnings, net ton | 6.00 to 7.00 |
| No. 1 Cast Scrap, net ton | 13.00 to 14.00 |
| Burnt Cast, net ton | 9.00 to 10.00 |
| Old Iron Axles, net ton | 16.75 to 17.75 |
| Old Iron Rails, gross ton | 15.00 to 16.00 |
| Old Steel Rails, short, gross ton | 13.00 to 14.00 |
| Old Steel Rails, long, gross ton | 13.00 to 14.00 |
| Relaying Rails, 56 lb. and up, gross ton | 21.50 to 22.50 |
| Old Car Wheels, gross ton | 15.50 to 16.50 |
| Low Phosphorus Scrap, gross ton | 14.00 to 15.00 |

## Buffalo.

BUFFALO, December 29, 1908.

**Pig Iron.**—A continuation of the quiet tone prevailing the past week or two marks the closing week of the year, but signs of good business for the new year are appearing above the horizon, and the general feeling among furnacemen is that the market is on the up grade and that increasing activity will be manifest after the middle of January. Prices are firm and unchanged. We quote as follows, f.o.b. Buffalo:

| | |
|---|---|
| No. 1 X Foundry | $16.50 to $17.00 |
| No. 2 X Foundry | 16.00 to 16.50 |
| No. 2 Plain | 15.50 to 16.00 |
| No. 3 Foundry | 15.50 to 16.00 |
| Gray Forge | 15.50 to 15.75 |
| Basic | 16.00 to 16.50 |
| Malleable Bessemer | 17.00 to 17.50 |
| Charcoal | 20.75 to 21.25 |

**Old Material.**—There is practically no demand from consumers and the market has lapsed into a state of dullness, which is not likely to be much changed until the end of the inventory period. Prices have softened appreciably. We quote as follows, per gross ton, f.o.b. Buffalo:

| | |
|---|---|
| Heavy Melting Steel Scrap | $15.25 to $15.75 |
| No. 1 Railroad Wrought | 16.25 to 17.25 |
| No. 1 Railroad and Machinery Cast Scrap | 15.00 to 15.50 |
| Old Steel Axles | 18.50 to 19.50 |
| Old Iron Axles | 22.00 to 22.75 |
| Old Car Wheels | 16.00 to 16.75 |
| Railroad Malleable | 14.00 to 14.50 |
| Boiler Plate | 12.50 to 13.00 |
| Locomotive Grate Bars | 12.25 to 12.75 |
| Pipe | 12.25 to 12.75 |
| Wrought Iron and Soft Steel Turnings | 9.00 to 9.50 |
| Clean Cast Iron Borings | 8.50 to 9.00 |
| No. 1 Busheling Scrap | 14.00 to 14.50 |

**Finished Iron and Steel.**—Quiet conditions continue. The placement of considerable new business is evidently held awaiting the turn of the year, making the general run of new orders somewhat lighter than two or three weeks ago. The volume is very satisfactory, however, compared with last year, and one of the largest local interests reports the tonnages for Bars and small Shapes specified on contracts the current week to have been the heaviest for some time. No large business in Structural Shapes is in evidence, but a few small contracts have been placed, including the addition to the Schreiber Brewing Company's plant, about 100 tons, secured by the George Kellogg Structural Company, Buffalo, and the Structural Material and Ornamental Ironwork for the new inclined railroad to be built in Prospect Park, New York State Reservation, at Niagara Falls, requiring between 200 and 300 tons, awarded to Chas. E. Fraser & Co., New York, in the general contract for entire work erected complete.

## Cleveland.

CLEVELAND, OHIO, December 29, 1908.

**Iron Ore.**—Outside of the reservation of a considerable tonnage of Old Range Bessemer Ore by several consumers, which was noted last week, there has been no activity in the Ore market. The merchant Ore firms appear in no hurry to have a buying movement start, and will let the furnace interests take their time about coming into the market. It is probable that nothing will be done about fixing next season's prices until consumers make inquiries and seem about ready to cover for their 1909 requirements. Little Ore is being shipped from the docks, and as furnace yards are well filled the movement from the docks from now to early spring is expected to be light. Ore prices at Lake Erie docks, per gross ton, are as follows: Old Range Bessemer, $4.50; Mesaba Bessemer, $4.25; Old Range Non-Bessemer, $3.70; Mesaba Non-Bessemer, $3.50.

**Pig Iron.**—The market is exceedingly quiet. Only one important inquiry for Foundry Iron came out last week—for 1000 tons of No. 2 for delivery in this territory during the first quarter. The only sales reported are a few small lots. There is no demand whatever for spot Iron. In cases where foundries are running short they are asking furnaces to anticipate shipments on contracts. That consumers did not all cover for their full requirements for the first half in the recent buying movement is indicated by the fact that some of them have come into the market with inquiries for additional quantities, but these as yet have not become orders. Some resale Iron was recently offered at prices slightly below the market, but this appears to have all been disposed of. Prices are firm. Local furnaces quote No. 2 Foundry for first quarter and first half delivery at $16, at furnace, for outside shipment, and $16.50 to $16.75, delivered, Cleveland. Iron is being taken freely on contracts and furnaces are shipping as much Iron as they are producing. While furnace interests are well sold up for the first quarter and feel satisfied with the situation at present, some of them are beginning to feel more disposed to look for additional contracts for second quarter delivery. Some inquiries continue to come in for Basic Iron, one received during the week being for 6000 tons for delivery in the first half. A local interest is holding firm at $16, at furnace, for Basic. There is but little inquiry for Malleable Iron. None of the large consumers are as yet coming into the market. For the first quarter and first half we quote, delivered, Cleveland, as follows:

| | |
|---|---|
| Bessemer | $17.40 |
| Northern Foundry, No. 1 | $16.90 to 17.40 |
| Northern Foundry, No. 2 | 16.50 to 16.90 |
| Northern Foundry, No. 3 | 16.00 to 16.50 |
| Gray Forge | 15.25 to 15.75 |
| Southern Foundry, No. 2 | 17.35 to 17.85 |
| Jackson County Silvery, 8 per cent. Silicon | 20.05 |

**Coke.**—The market is inactive and prices are a shade weaker, particularly on Coke for spot shipment, the softening tendency being attributed to the recent rains in the Coke regions and to the fact that the new car service regulation requiring a per diem charge for loaded Coke cars in yards soon goes into effect. Good shipping orders on contracts are being received. We quote Standard Connellsville Furnace Coke at $2, at oven, for first half deilivery, and $1.80 to $1.85 for spot shipment. Connellsville 72-hr. Foundry Coke is held at $2.25 to $2.50 for first half and $2.20 to $2.25 for spot shipment.

**Finished Iron and Steel.**—The effect of the holiday season is being felt. Practically no new business is being placed, and inquiries are almost entirely lacking. The majority of the salesmen representing the branch sales agencies of the mills have been called in, and will do little in the way of looking for new orders until after the first of the year. Taken as a whole, specifications have dropped off considerably, as was expected during the holidays and inventory time. While some of the mills report the receipt of few orders on contracts during the past week others have received about as many as usual, but for smaller lots. A large proportion of the consumers have small stocks on hand, and are buying from hand to mouth until they finish taking their inventories. Some orders are being received for delivery from three to four weeks ahead. The general situation is regarded as quite satisfactory, and considerable improvement is expected in the demand for most lines by the middle of January. Business has improved considerably with the Bolt manufacturers, and some good Bar specifications have come from them the past week, these being the first specifications from this source for some time. An encouraging sign is the fact that railroads that have been practically out of the market for Forgings for car repair and new work for some time seem about ready to place orders. A local Forging plant has received a number of good inquiries of this character. The demand for Iron Bars continues light, and the two local mills have shut down until after the holidays. Present prices on Iron Bars are being firmly maintained, and mills are unwilling to close contracts for extended delivery at the present prices. The demand for Plates is light, and prices are being shaded $1 to $2 a ton on the narrow sizes. Similar concessions are being made by some of the mills on Sheets, the demand for which is less active than in the previous two or three weeks. Some Structural specifications are being received in small lots. Local fabricators are fairly busy on old contracts. Among the new Structural work that is expected to develop in this city the coming year is considerable railroad grade crossing elimination and track elevation work. Bids were received by the Board of Public Service of Columbus for a viaduct over railroad tracks, the lowest bid for the superstructure being made by the Champion Lron Works, Kenton, Ohio. We quote: Iron Bars, 1.50c., Cleveland, for car lots; Steel Bars, 1.60c., Cleveland, for car lots, half extras; Beams and Channels, 1.70c., base, Cleveland, and Plates, ¼-in. and heavier, 1.70c., Cleveland. We quote Sheets, mill shipments, car lots, Cleveland, as follows: Blue Annealed, No. 10, 1.90c.; Box Annealed, No. 28, 2.60c.; Galvanized, No. 28, 3.65c. Jobbers quote Iron Bars out of stock at 1.55c. to 1.60c., and Steel Bars at 1.60c. to 1.70c Beams and Channels from warehouse are 2c., and Plates, ¼-in. and heavier, 1.90c. Warehouse prices on Sheets are as follows: Blue Annealed, No. 10, 2.10c.; Box Annealed, No. 28, 2.70c.; Galvanized, No. 28, 3.80c. Warehouse prices on Boiler Tubes, 2¾ to 5 in., are 65 per cent. discount, and on Black Merchant Iron Pipe, base sizes, 71 per cent. discount.

**Old Material.**—The market is almost lifeless and prices on all grades are weaker. Wherever possible, dealers are holding their Scrap until after the first of the year, when they expect a better market, with prices, perhaps, higher than have prevailed the past few weeks. Sales the past week of Scrap on cars and other material that dealers have been unable to hold have been made at price concessions of 25c. to 50c. per ton. Mills, however, are fairly well supplied and are not buying much at the lower prices. Dealers' prices to the trade, which are being shaded by those anxious to make sales, per gross ton, f.o.b. Cleveland, are as follows:

| | |
|---|---|
| Old Steel Rails | $16.50 to $17.00 |
| Old Iron Rails | 19.50 to 20.00 |
| Steel Car Axles | 20.50 to 21.00 |
| Old Car Wheels | 16.00 to 16.50 |
| Heavy Melting Steel | 15.25 to 15.75 |
| Relaying Rails, 50 lb. and over | 22.00 to 23.00 |
| Railroad Malleable | 14.50 to 15.00 |
| Agricultural Malleable | 13.50 to 14.00 |
| Light Bundled Sheet Scrap | 9.50 to 10.00 |

The following prices are per net ton, f.o.b. Cleveland:

| | |
|---|---|
| Iron Car Axles | $20.00 to $20.50 |
| Cast Borings | 8.50 to 9.00 |
| Iron and Steel Turnings and Drillings | 9.50 to 10.00 |
| Steel Axle Turnings | 11.00 to 11.50 |
| No. 1 Busheling | 13.00 to 13.50 |
| No. 1 Railroad Wrought | 15.50 to 16.00 |
| No. 1 Cast | 14.00 to 14.50 |
| Stove Plate | 12.00 to 12.50 |
| Bundled Tin Scrap | 9.00 |

## Metal Market.

NEW YORK, December 30, 1908.

**Pig Tin.**—The trade has been very quiet, although some business has been done for delivery after January 1. It is conceded that the statistics at the end of this month will be unfavorable to holders of the metal. Some well informed in the trade advance the opinion that there may be a sharp break in prices after the new year opens. Price changes during the week have been within narrow limits, as follows:

| | Cents. |
|---|---|
| December 23 | 29.15 to 29.20 |
| December 24 | 29.20 |
| December 28 | 29.10 |
| December 29 | 29.00 |
| December 30 | 28.85 |

The London market is about £1 lower than last week, closing at £131 10s. for spot and £133 for futures. The arrivals so far this month are unusually large, amounting to 3469 tons. The afloats likewise are large, being 2529 tons.

**Copper.**—The market is much firmer. Electrolytic for January and February is not available at less than 14.25c., and 14.37½c. is demanded for future shipments. Lake likewise has advanced sharply, and is quoted at 14.75c. Rumors are heard of some buying under the surface by American consumers. This is probably true, for it is known that a number of inquiries have been in the market for large tonnages. There is not any general buying movement, however. Of course, all the business transacted is for next year's billing and shipment. Nevertheless, the market is in decidedly better shape than it was a fortnight ago. On Tuesday European melters again bought freely, and have already taken considerable Copper. There does not appear to be the same difference in price between Copper for American consumption and European consumption there was a few months ago, and this is probably accounted for by the fact that consumers here are buying more largely. The exports of Copper so far this month are 21,000 tons. The total exports for the year will amount to about 295,000 tons, while the imports of Copper for the year the last two months being estimated are about 95,000 tons. The London market has advanced approximately 15s. during the week, closing at £63 16s. 3d. for spot and £64 12s. 6d. for futures.

**Pig Lead.**—Buying of Lead has been larger this week,

and Soft Missouri brands have sold at lower prices. This Lead can now be had at 4.15c., New York, but Desilverized Lead is firm, at 4.20c., which is the price of the leading interest. The St. Louis market is lower, at 4c. to 4.05c.

**Spelter.**—Prices apparently are well sustained, Prime Western brands being quotable at 5.15c., New York, and 5c. to 5.02½c., St. Louis. The demand, however, is disappointing.

**Antimony.**—This market is as dull and uninteresting as at any time this year. Prices are without change, at 8.12½c. to 8.25c., for Hallett's, and 8.37½c. to 8.50c., for Cookson's, and 8c. for outside brands.

**Tin Plate.**—Business at the mills is fair. Prices continue firm, at $3.70, Pittsburgh, and $3.89, New York, for 100 lb. IC Coke Plates. Lower prices prevail abroad and in Swansea Welsh Plates are 1½d. lower, at 12s.

**Old Metals.**—The market is higher, and firm. A fair run of small orders has been received by dealers for shipment of Scrap after January 1. The only change in prices has been an advance in the quotation of brass and heavy machine composition. Otherwise dealers' selling prices are unchanged, as follows:

| | Cents. |
|---|---|
| Copper, Heavy Cut and Crucible | 13.50 to 13.75 |
| Copper, Heavy and Wire | 13.25 to 13.50 |
| Copper, Light and Bottoms | 12.00 to 12.25 |
| Brass, Heavy | 9.50 to 9.75 |
| Brass, Light | 7.50 to 8.00 |
| Heavy Machine Composition | 12.75 to 13.00 |
| Clean Brass Turnings | 8.50 to 9.00 |
| Composition Turnings | 10.50 to 11.00 |
| Lead, Heavy | 4.15 |
| Lead, Tea | 3.90 |
| Zinc Scrap | 3.75 |

## New York.

NEW YORK, December 30, 1908.

**Pig Iron.**—Business has been rather quiet, but the market has been firm. The inquiry for larger lots, at the present time, is coming chiefly from Pipe makers. Some of the Steel mills are also in the market for round lots. We quote $17.25 to $17.75 for No. 1 Northern Foundry, $17 to $17.50 for No. 2 Foundry and $16.50 to $16.75 for No. 2 Plain. Alabama Irons are quoted $17.50 to $17.75 for No. 1 Foundry, and $17.25 to $17.50 for No. 2 Foundry.

**Steel Rails.**—The consideration of Rail requirements for 1909 by the B. & O., New York Central, New Haven, Boston & Maine, and the Harriman lines is reported, but no formal inquiries for definite amounts have been received. Light Rail business has been of fair proportions recently, and the year's record in this product is far better relatively, than in heavy Rails. Frog and crossing work has also shown up well in 1908, and the total is probably not far behind that for 1907.

**Structural Material.**—The Steel fabricating companies report quietness at the end of the year, and an outlook for a continuance of that condition in the early weeks of 1909. The railroad situation has no large possibilities for the immediate future, and the one large bridge contract figured on some weeks ago—8500 tons for the Northern Pacific—is still withheld. The Bridgeport, Conn., bridge, at Congress street, which involves a large amount of concrete construction with a Scherzer lift in one span, went to Snare & Triest. The Steel amounts to 850 tons. Among other contracts placed, amounting for the week to about 9000 tons, were the following: Otis Elevator Company foundry, at Yonkers, N. Y., 500 tons; Lake Shore elevated work, at Chicago, 400 tons, to the Toledo & Massillon Bridge Company; two apartment houses in New York for the Carlyle Realty Company, 1100 tons, to Alfred Norton; Steel warehouse in the Bronx, 800 tons, to Levering & Garrigues; terminal work at Hoboken, N. J., for the Public Service Corporation, 800 tons, to Fagan Iron Works; terminal warehouse in Baltimore, 1300 tons; addition to the Hartford Building, near Union square, New York, 600 tons; the Interborough Company's approach at Division and Allen streets to the Williamsburg Bridge, 1900 tons; Shiel's Estate Building, at San Francisco, 550 tons, to Llewellyn Iron Works, Los Angeles, Cal.; electric power house, at Vernon, Vt., 400 tons; Paul A. Sorg Paper Company Building, at Middletown, Ohio, 800 tons, to Riverside Bridge Company. Bids have just gone in on two buildings for the Prudential Life Insurance Company, at Newark, N. J., requiring about 7000 tons of Steel. The American Bridge Company will increase its operations at the first of the year to a 60 per cent. basis. It has booked about 32,000 tons this month, and other fabricators probably 60,000 tons. In the year the American Bridge Company has fabricated about 350,000 tons, or about 100,000 tons more than it booked, while outside companies have fabricated about 700,000 tons, or practically the equivalent of their bookings. We continue to quote plain material shipped from mill on the following basis, delivered at tidewater: Beams, Channels, Angles and Zees, 1.76c.; Tees, 1.81c. On Beams, 18 to 24 in., and Angles, over 6 in., the extra is 0.10c. Structural Material, cut to lengths, is sold in small lots at 2¼c.

**Bars.**—The demand for Iron Bars has distinctly improved. Sales are more numerous, and inquiries are coming forward for good quantities to cover requirements of manufacturing consumers. Prices are firm, with quotations ranging from 1.56c. to 1.60c., tidewater. Steel Bars are unchanged at 1.56c., tidewater.

**Plates.**—Only the ordinary run of small orders for immediate requirements is coming to local sales offices. Prices are firmly held on Standard Sized Plates, as follows, at tidewater: Sheared Plates, 1.76c. to 1.86c.; Flange Plates, 1.86c. to 1.96c.; Marine Plates, 2.16c. to 2.26c.; Firebox Plates, 2.65c. to 3.50c., according to specifications.

**Cast Iron Pipe.**—Public lettings are few in this locality, nothing of any importance being immediately in sight. Inquiries for spring delivery are excellent, and quite a number of contracts have been made for both Gas and Water Pipe, at prices higher than have recently been ruling. Carload lots of 6-in. are quoted at $24.50, per net ton, tidewater, for prompt delivery.

**Old Material.**—Some large transactions are reported in Heavy Melting Steel Scrap. One buyer has taken from 25,000 to 30,000 tons, and another has about closed for 10,000 tons. While inquiries are fairly numerous for other classes of Old Material, actual orders have been light. Prices are well held, and in some lines are higher. Quotations are as follows, New York and vicinity, per gross ton:

| | |
|---|---|
| Old Girder and T Rails for melting | $15.00 to $15.50 |
| Heavy Melting Steel Scrap | 15.00 to 15.50 |
| Old Steel Rails, rerolling lengths | 15.50 to 16.00 |
| Relaying Rails | 22.50 to 23.00 |
| Old Iron Rails | 20.00 to 20.50 |
| Standard Hammered Iron Car Axles | 22.00 to 22.50 |
| Old Steel Car Axles | 19.50 to 20.00 |
| No. 1 Railroad Wrought | 18.00 to 18.50 |
| Iron Track Scrap | 15.50 to 16.00 |
| No. 1 Yard Wrought, long | 16.50 to 17.00 |
| No. 1 Yard Wrought, short | 15.50 to 16.00 |
| Light Iron | 9.00 to 9.50 |
| Cast Borings | 10.50 to 11.00 |
| Wrought Turnings | 11.50 to 12.00 |
| Wrought Pipe | 13.00 to 13.50 |
| Old Car Wheels | 15.00 to 15.50 |
| No. 1 Heavy Cast, broken up | 14.50 to 15.00 |
| Stove Plate | 12.50 to 13.00 |
| Locomotive Grate Bars | 12.50 to 13.00 |
| Malleable Cast | 13.50 to 14.00 |

Nash, Isham & Co., 82 Beaver street, New York, have been appointed sole Eastern selling agents for the Ashland Iron & Mining Company, Ashland, Ky., manufacturer of Ashland High Silicon Pig Iron and Bessemer Ferrosilicon.

## The Iron and Steel Works of Canada.

The American Iron and Steel Association has issued a supplement to its Directory for 1908, giving a complete list of the blast furnaces, rolling mills and steel works in Canada, corrected to December 1, 1908. The association's last previous list of Canadian works was published in December, 1904. The summary of the industry shows at the present time 15 completed blast furnaces (12 coke and 3 charcoal), 1 rebuilding (charcoal) and 2 projected (coke). In addition 1 abandoned coke furnace is still standing. There are also 2 plants making pig iron, ferrosilicon, &c., by electricity. The annual capacity of the finished and rebuilding plants is 1,005,000 gross tons of coke pig iron, 34,800 tons of charcoal pig iron and 2500 tons for the electric plants. The number of furnaces four years ago was 16 completed and 3 projected, the former having a capacity of 755,000 tons of coke pig iron and 75,000 tons of charcoal pig iron, a total of 830,000 tons.

The list of rolling mills and steel works shows 26 completed and 1 to be rebuilt. Of these 1 has a standard Bessemer steel plant with 2 converters, 1 has a plant with an idle modified Bessemer converter, 1 has a Tropenas plant with 1 converter, and 1 has 2 standard Bessemer converters used for desiliconizing and decarburizing metal for open hearth furnaces; 7 plants have 24 basic open hearth steel furnaces, 1 has 2 acid open hearth steel furnaces, 1 is to rebuild a basic open hearth furnace, and 1 open hearth plant may add 1 basic furnace; 1 plant has 6 furnaces for making steel by the Hunter process, and 1 plant with 2 furnaces makes steel by electricity. The capacity double turn is 200,800 gross tons of Bessemer ingots, 690,300 tons of basic open hearth ingots and castings, 12,000 tons of acid open hearth castings, 1500 tons of Hunter steel castings and 1200 tons of electric steel ingots and castings. The annual capacity of the 18 completed and 3 building plants in 1904 was 200,800 gross tons of Bessemer ingots, 451,000 tons of open hearth ingots and castings and 1500 tons of Hunter steel castings. The annual capacity, double turn, in finished rolled and forged products, not including muck

bars, billets, blooms, sheet bars, &c., is now 1,004,600 tons, against 839,600 tons in 1904.

From the Directory Supplement the following list is taken of the blast furnace, steel works and rolling mill companies of Canada, with annual capacity of each:

**Nova Scotia.**

Dominion Iron & Steel Company, Ltd., Sydney.—Four blast furnaces, capacity 400.000 gross tons; 300-ton metal mixer; 500 Otto-Hoffman coke ovens, capacity 450,000 net tons; coal washing plant, tar and chemical works, and cement plant. Ten 50-ton open hearth furnaces, two 15-ton Bessemer converters, and rolling mills. Capacity, 400,000 tons of ingots. Product, steel rails and wire rods.

Londonderry Iron & Mining Company, Ltd., Montreal, Quebec.—Works at Londonderry. One blast furnace, capacity 35,000 tons; coal washing plant; 97 coke ovens, capacity 40,000 net tons. Product, foundry pig iron.

Nova Scotia Steel & Coal Company, Ltd., New Glasgow.—One blast furnace at Sydney mines, capacity 70,000 tons. Forge and open hearth steel plant at New Glasgow, capacity 60,000 tons of finished roll and forged products and 7500 tons of railroad spikes. Open hearth steel works at Sydney Mines. Three Wellman 40-ton basic furnaces and one 75-ton tilting melting mixer. Capacity, 70,000 tons. Coal mines near New Glasgow and at Sydney Mines and iron mines on Belle Island.

Rhodes, Curry & Co., Ltd., Amherst.—Forge fire, scrap and heating furnaces and 9 and 16 in. mills. Capacity, 12,000 tons of rolled material, 12,000 tons of axles and other forgings and 600 tons of nuts. Gray iron and car wheel foundry.

Star Mfg. Company, Ltd., Dartmouth.—Two trains of rolls, capacity 10,800 tons of merchant iron.

**New Brunswick.**

Portland Rolling Mills, Ltd., Strait Shore, St. John.—Three bar mills and nail plate mill. Capacity, 10,000 tons of finished rolled products, besides cut nails, spikes, horseshoes, nuts and bolts.

**Quebec.**

Canada Iron Furnace Company, Ltd., Montreal.—One charcoal blast furnace, capacity 10,000 tons.

John McDougall & Co., Montreal.—Two charcoal blast furnaces at Drummondville, capacity 4800 tons. Charcoal kilns with capacity of 1,621,800 bushels.

Best Steel Casting Company, Ltd., Verdun.—One 10-ton basic open hearth furnace, capacity 9000 tons of low carbon steel castings.

Grand Trunk Railway Rolling Mill, Point St. Charles, Montreal.—One 12-in. train, capacity 7000 tons of bars, angles and tees.

Montreal Rolling Mills Company, Montreal.—Ste. Cunegonde Works, on Lachine Canal, Hochelaga County: Four trains of rolls, capacity 35,000 tons of finished iron and steel, 100,000 kegs of horseshoes, 30,000 boxes of horse nails, 25,000 tons of wire, 250,000 kegs of wire nails, and 30,000 kegs of cut nails. St. Patrick Street Department, Montreal: Two trains of rolls, capacity 25,000 tons of bar iron and steel, 125,000 kegs of spikes, and 5000 tons of bolts and nuts. St. Henri Department, Montreal: One butt welding furnace, capacity 25,000 tons of wrought iron and steel pipe.

Montreal Steel Works, Ltd., Point St. Charles, Montreal.—One 3000-lb. modified Bessemer converter (idle) and 2 15-ton acid open hearth steel furnaces. Capacity, 12,000 tons of open hearth and manganese steel castings.

National Tool & Axe Works, Three Rivers.—One furnace for a secret steel process, destroyed by fire February, 1908. To be rebuilt in 1909 with one 20-ton basic open hearth furnace. Capacity, 5000 tons of steel castings and 3000 tons of malleable and brass castings.

Peck Rolling Mills, Ltd., Montreal.—Rolling mill on Lachine Canal. Product, bar iron and steel, light rails, spikes, cut nails, wire nails, horseshoes, &c.

**Ontario.**

Algoma Steel Company, Ltd., Sault Ste. Marie.—Two blast furnaces, capacity 230,000 tons of Bessemer and basic pig iron; 150-ton mixer, 20 resorts for charcoal manufacture, two blast furnaces projected, two 6-ton Bessemer converters, two 35-ton open hearth steel furnaces, blooming mill, rail and structural mill. Capacity, 200,000 tons of Bessemer ingots, 56,000 tons of open hearth ingots and 230,000 tons of rails and other finished products.

Atikokan Iron Company, Ltd., Port Arthur.—One blast furnace, capacity 50,000 tons.

Standard Chemical Company of Toronto, Ltd.—One blast furnace at Deseronto, capacity 20,000 tons of charcoal pig iron; damaged by fire in September, 1908; now being rebuilt.

Hamilton Steel & Iron Company, Ltd., Hamilton.—Two blast furnaces, capacity 175,000 tons; two rolling mill plants at Hamilton, capacity 44,000 tons of bar and band iron and steel, fish plates and forgings; a third mill at East Hamilton, capacity 25,000 tons of bars, 105,000 kegs of spikes and 8000 boxes of washers; four basic open hearth furnaces, two 30-ton and two 15-ton; capacity, 71,000 tons of ingots and 1300 tons of castings.

Canada Iron Furnace Company, Ltd., Montreal.—Blast furnace at Midland, capacity 45,000 tons of foundry and malleable Bessemer and Bessemer pig iron.

Electro Metals, Ltd., Welland.—Electric plant for the manufacture of pig iron, ferrosilicon and other ferroalloys.

Lake Superior Power Company, Sault Ste. Marie.—Two experimental electric furnaces for the manufacture of pig iron and ferroalloys, capacity 1000 tons of ferronickel pig iron or 250 tons of ferrosilicon.

Belleville Iron & Horseshoe Company, Ltd., Belleville.—One 9-in., one 12-in. and one 18-in. mill, capacity 12,000 tons of rolled products, 50,000 kegs of spikes and 40,000 kegs of horseshoes; formerly operated by the Iron & Steel Company of Canada, Ltd.; later by the Toronto & Belleville Rolling Mills, Ltd., and acquired by the present company July 1, 1908.

Canada Tin Plate & Sheet Steel Company, Ltd., Morrisburg.—Eight black plate mills. Product, 12,500 tons of black and galvanized sheets and black plates for tinning. Four sets for tin plates, weekly capacity 2500 boxes.

William Kennedy & Sons, Ltd., Owen Sound.—One 2-ton Tropenas converter, capacity 400 tons of steel castings; gray iron foundry, capacity 300 tons.

London Rolling Mill Company, Ltd., London.—One 18-in., one 14-in. and one 10-in. mill, capacity 15,000 tons of merchant bars and 6000 tons of bolts, nuts, hinges, &c.

Northern Iron & Steel Company, Ltd., Toronto.—At Collingwood: Two 20-ton basic open hearth furnaces, capacity 36,000 tons of ingots; two heating furnaces and two trains of rolls, capacity 30,000 tons of billets, bars, angles, light rails, &c. Excavation made in 1902 for a blast furnace, but project abandoned. Steel plant idle and for sale.

Ontario Iron & Steel Company, Ltd., Toronto.—At Welland: Two open hearth steel furnaces and two three-high trains, capacity 10,000 tons of steel castings and 28,000 tons of billets, bars, angles, fish plates, &c.; one 50-ton basic open hearth furnace projected.

Ottawa Steel Casting Company, Ltd., Ottawa.—Six Hunter furnaces and three cupolas, capacity 1500 tons of steel and 1500 tons of iron castings.

Toronto Bolt & Forging Company, Ltd., at Sunnyside, Toronto.—Three heating and two busheling furnaces and three trains of rolls, capacity 8000 tons of merchant bars, implement and carriage iron; also works at Swansea and Gananoque for the manufacture of bolts, nuts, spikes, rivets and drop forgings.

American Electric Furnace Company, 45 Wall street, New York.—At Niagara Falls: Two electric furnaces with daily capacity of 3 tons and 2000 lb., respectively. Product, steel ingots and steel castings and various alloys.

**Manitoba.**

Manitoba Rolling Mill Company, Ltd., Winnipeg.—Two heating furnaces, one forge fire and two trains of rolls; capacity, 12,000 tons of merchant bar iron. May add two busheling furnaces and a squeezer in 1909. Branch office with the United States Horseshoe Company, Erie, Pa.

# New Railroad and Equipment Building in 1908.

That the figures for new railroad mileage for 1908 would show a sharp falling off was expected. The statistics presented by the *Railroad Age-Gazette* are really surprising in that the falling off from 1907 was not greater. In 1907, according to returns from all the railroad companies in the United States, approximately 5212 miles of new main track was laid, while a similar record for 1908 shows 3214 miles, a decrease of 1998 miles, or 38.3 per cent. The 1908 record is the smallest since 1904, when 3832 miles of main track was laid. The mileage built in 1904 showed a falling off of 1820 miles, or 32.2 per cent., from 1903. It is interesting to note that for each fifth year since 1893 the mileage record has been a little over 3000 miles. In 1894 1760 miles of new main track was laid, a decrease of 1264 miles, or 41.7 per cent. from the mileage built in 1893. This parallels closely the percentage of decrease this year. Not until 1898, when 3265 miles was laid, did the record again reach that of 1893, showing a drag of five years following that panic.

The mileage laid east of the Mississippi in 1908 was 761 as compared with 1884 miles in 1907, a decrease of 59.6 per cent. West of the Mississippi the 1908 and 1907 records were 2455 miles and 3420 miles, respectively, a decrease of 28.2 per cent. The longest stretch added by one company this year was 790 miles for the Pacific coast extension of the Chicago, Milwaukee & St. Paul. The Southern Pacific added 448 miles and the Great Northern 274 miles, the latter construction being in Minnesota, Montana and Canada. The above three companies added 1088 miles or 55.6 per cent. of the mileage built west of the Mississippi. The Virginian Railway leads in new construction east of the Mississippi, with 131 miles for Virginia and West Virginia. Next is the Carolina, Clinchfield & Ohio, with nearly 85 miles built in North Carolina, Tennessee and Virginia.

Canada showed an increase of 21.7 per cent. in new construction in 1908, or 1248 miles, against 976 miles in 1907. The following table shows the mileage built in the United States in the last 16 years:

| | | |
|---|---|---|
| 1893.....3,024 | 1899.....4,569 | 1904.....3,832 |
| 1894.....1,760 | 1900.....4,894 | 1905.....4,388 |
| 1895.....1,428 | 1901.....5,368 | 1906.....5,623 |
| 1896.....1,692 | 1902.....6,026 | 1907.....5,212 |
| 1897.....2,109 | 1903.....5,652 | 1908.....3,214 |
| 1898.....3,265 | | |

### Car and Locomotive Building.

Very few car and locomotive orders were carried over from 1907, though car and locomotive builders worked at full capacity throughout that year on orders placed in its early months. Reports from 35 car building companies in the United States and Canada show a total of 78,271 cars built in 1908, or only 27 per cent. of the number for 1907. The figures include subway and elevated cars, but not street railroad and interurban cars. Of the cars built in the United States 66,751 were freight cars for domestic service, 1206 freight cars for export, 1566 passenger cars for domestic service and 71 passenger cars for export. Canada built 8593 freight cars and 79 passenger cars for domestic service and 5 freight cars for export. In 1907 Canada built 9159 freight cars and 106 passenger cars. The record of cars built in the past 10 years is as follows:

| Year. | Freight. | Passenger. | Total. |
|---|---|---|---|
| 1899 | 419,886 | 1,305 | 121,191 |
| 1900 | 115,631 | 1,636 | 117,267 |
| 1901 | 136,950 | 2,055 | 139,005 |
| 1902 | 162,599 | 1,948 | 164,547 |
| 1903 | 153,195 | 2,007 | 155,202 |
| 1904 | 60,806 | 2,144 | 62,950 |
| 1905 | 165,455 | 2,551 | *168,006 |
| 1906 | 240,503 | 3,167 | *243,670 |
| 1907 | 284,188 | 5,457 | *289,645 |
| 1908 | 76,555 | 1,716 | *78,271 |

* Includes Canadian output.

Returns from 11 locomotive builders in the United States and Canada show a total of 2342 engines, about the same relative falling off as in the cars built. Of the 2124 built in the United States, 1668 were for domestic use and 456 for export. These figures include 245 electric and 79 compound locomotives. The Canadian engines, 218, were all for domestic service. Of these 20 were compound. Comparisons for the last 16 years are given in the following table:

| | | | |
|---|---|---|---|
| Year. No. built. | Year. No. built. | Year. No. built. | Year. No. built. |
| 1893....2,011 | 1897....1,251 | 1901....3,384 | 1905....*5,491 |
| 1894.... 695 | 1898....1,875 | 1902....4,070 | 1906....*6,952 |
| 1895....1,101 | 1899....2,475 | 1903....5,152 | 1907....*7,362 |
| 1896....1,175 | 1900....3,153 | 1904....3,441 | 1908....*2,342 |

* Includes Canadian output.

### Motive Power and Rolling Stock Ordered in 1908.

The statistics of the *Railroad Age-Gazette* show that the orders for motive power and rolling stock placed by the railroads of the United States and Canada in 1908 were smaller than in any year since 1901, when the compilation of these statistics was begun. The smallest previous year was 1903 and in 1908 the total was only about 50 per cent. of that for 1903. The total orders for locomotives in 1908 were 1182; for passenger cars, 1319, and for freight cars, 62,669. The car shops have not run 50 per cent. of their capacity this year. Few have sufficient business booked to carry them up to March, 1909, even with largely reduced shop forces. The rate at which new rolling stock orders have come in in the past two or three weeks is more encouraging, and it is believed a considerable amount of equipment will be placed early in the new year. Of the freight cars ordered in 1908 15,561 are for all steel and 19,651 for steel under frames. Of the passenger cars 320 are all steel and 56 for steel under frames. Of the locomotives 32 are compound. The totals of cars and locomotives ordered in the past seven years, as distinguished from cars and locomotives built, are shown in the following table:

| | 1902. | 1903. | 1904. | 1905. | 1906. | 1907. | 1908. |
|---|---|---|---|---|---|---|---|
| Locomo'tvs | 4,665 | 3,283 | 2,538 | 6,265 | 5,642 | 3,482 | 1,182 |
| Pass. cars.. | 3,459 | 2,310 | 2,213 | 3,289 | 3,402 | 1,791 | 1,319 |
| Fght crs. | 195,248 | 108,936 | 136,561 | 341,315 | 310,315 | 151,711 | 62,669 |

### Developments in Car Construction.

The tendencies apparent in railroad equipment design and construction are interestingly reviewed by the *Railroad Age-Gazette*. A synopsis of its comments follows:

All steel cars for passenger equipment are now being confidently ordered in large numbers. The order of the Harriman lines for 200 steel passenger cars will furnish initial equipment of this kind for the Union Pacific and the Central Pacific, as well as the Illinois Central. The Pennsylvania has had on many of its trains in regular main line service the steel coaches built last year, and it has placed orders for large additions to this class of equipment. It has also arranged to provide for solid steel trains, including Pullman sleepers, to be used in connection with its new passenger terminal in New York City. The Union Pacific experience with steel cars having semielliptical roofs has been so satisfactory that all the new steel equipment recently ordered will be built in that way. This road has become prominent as the builder of steel gasoline motor cars on a large scale. While steel coaches are being ordered by only a few roads, the use of steel underframes for baggage and mail cars has become more general.

While a few large capacity steel freight cars have been built for special uses in and around steel works, the maximum capacity remains 50 tons. The 50-ton steel cars built for Western lines are usually of the gondola type, with drop bottom doors, as this form is available for lumber and other kinds of freight, in addition to the usual lading of coal or ore.

Solid rolled steel wheels for freight cars have become well established in the best practice, and they are now used in such large numbers that three important works are making them—the Carnegie Steel Company, the Standard Steel Company at Burnham, and the Standard Steel Car Company, at Butler, Pa.

Roller side bearings and center plates have at last demonstrated their advantages for large capacity cars, and they are now used in increasing numbers. The development of these details is one of the most important matters connected with the satisfactory operation of this class of cars.

### Developments in Locomotive Construtiion.

The Pacific type of locomotive has become the established standard for heavy passenger service, and most of

the larger orders have been for this kind. These engines as built for the trunk lines have cylinders 23 x 28 in., with heating surface 4000 sq. ft. and tractive effort of 35,000 lb. While the average weight per driving axle has been as high as 57,800 lb., there is little tendency to exceed 55,000 lb. in general practice. Probably the best solution of difficulties due to excessive wheel weights in the growth of the American locomotive to enormous proportions is the division into two units, as in the Mallet type, and the experience with these engines in the past year has been particularly instructive and satisfactory. Eight railroads have already ordered Mallet locomotives.

As pointed out in the paper by C. J. Mellin, read at the New York meeting of the American Society of Mechanical Engineers and summarized in *The Iron Age* of December 10, page 1706, the American Locomotive Company and the Baldwin Locomotive Works differ in that the former provides no small truck wheels, regarding the front engine as an efficient leading truck for the rear engine. The B. & O. articulated locomotives have for each engine six drivers and no truck. The Erie engines, the heaviest of this type yet built, have four pairs of drivers and no trucks. The Baldwin engines built for the Great Northern and the Northern Pacific have for each unit six drivers and a pony truck. The Baldwin passenger locomotive of the articulated type has for each unit four drivers and a pony truck. The two leading locomotive builders also differ regarding the construction of superheaters. The Baldwin Works have adopted the policy of using smoke box superheaters and low superheat. The American Locomotive Company prefers to use in its practice field tubes and a high degree of superheat. Further progress on the latter line is expected. In improved valve gear for locomotives there have been interesting developments. The Young rotary valve and gear has been modified so as to use the Walschaerts form. The Pilliod valve gear is being applied to the new Alton passenger engines.

In boiler construction the combustion chamber is growing in favor. It will be used in new engines for the St. Paul. There is some hesitation about the further use of fireboxes as wide as 65 to 75 in. for bituminous coal, and there is a tendency to use more moderate widths, 50 to 56 in. The short life of side sheets in wide fireboxes has suggested the importance of inclining firebox sheets out toward the top instead of in, as they do on many wide boxes. This will probably lead to a narrower grate and decided changes in the prevailing shape of large fireboxes.

The electrification of the St. Clair tunnel on the Grand Trunk has demonstrated the success of the single phase electric locomotive in the heaviest freight service thus far operated by electricity, and its adaptability to high speed passenger service is shown by its performance on the New Haven. The three-phase system for electric locomotives is soon to be used by the Great Northern in its Cascade tunnel. The decision of the Pennsylvania to use direct current for the locomotives operating in its terminal lines connected with the New York station is an important event in the history of the application of electricity to steam lines in the United States.

**The Pressed Steel Car Company.**—Early in January the steel car works of the Pressed Steel Car Company at McKees Rocks, Pittsburgh, will be put in full operation after being practically shut down in all departments for some months. For several weeks the plant has been working part time on steel passenger coaches for the Hudson Terminal Companies and the Chicago Railways Company. Important repairs and improvements have been made, the buildings having all been remodeled and furnished with new roofs and are now in splendid condition. A Weiss condenser has been installed and work is being completed on the installation of a 1000-kw. steam turbine for generating electricity by means of exhaust steam by the Westinghouse Electric & Mfg. Company. The company is also putting in one 500-kw. live steam turbine. When the plant is started, work will be begun on orders recently booked for nearly 10,000 steel cars. These include 2000 for the Grand Trunk Railroad, 2350 for the Carolina, Clinchfield & Ohio Railroad, and 1500 for the Virginian Railroad.

## Iron and Industrial Stocks.

NEW YORK, December 30, 1908.

The double holiday of Friday and Saturday considerably curtailed the transactions in securities the past week, but the market has been exceedingly strong with prices not only maintained, but in some instances considerably advanced. The range of prices on iron and industrial stocks from Tuesday of last week to Monday of this week was as follows:

| | | | |
|---|---|---|---|
| Allis-Chalm., com.. | 15½- 16 | Pressed Steel, pref. | 100 -101½ |
| Allis-Chalm., pref.. | 49½- 50 | Rail. Spring, com.. | 48¼- 49¼ |
| Beth. Steel, com... | 24 - 25⅝ | Rail. Spring, pref. | .....102½ |
| Beth. Steel, pref... | 54⅞- 55½ | Republic, com..... | 25½- 26 |
| Can, com..... | 9 - 9¼ | Republic, pref..... | 86½- 87 |
| Can, pref..... | 73¼- 73⅞ | Sloss, com..... | 78 - 78¾ |
| Car & Fdry, com.. | 47¼- 50¾ | Pipe, com..... | 28¼- 29⅜ |
| Car & Fdry, pref. | .....109 | Pipe, pref..... | 75 - 77½ |
| Steel Foundries.... | 38⅝- 39½ | Steel, com..... | 53⅝- 54⅞ |
| Colorado Fuel..... | 39½- 41½ | Steel, pref..... | .112 -113 |
| Gen. Electric..... | .158 -160¾ | West. Electric..... | 85½- 86¾ |
| Gr. N. ore cert.... | 72¾- 73¾ | Chi. Pneu. Tool... | 20 - 24¼ |
| Int. Harvester, com. | ..... 63½ | Cambria Steel..... | 39 - 39⅞ |
| Int. Harv., pref... | 109¼-109½ | L. S. Corp..... | 16½- 17 |
| Locomotive, com... | 56⅜- 58¾ | Penna. Steel, pref. | .....104⅛ |
| Locomotive, pref... | 111 -111½ | Crucible St., com.. | 8 - 8¼ |
| Nat. En. & St.,com. | 13⅝- 15¼ | Crucible St., pref.. | 57 - 57¼ |
| Pressed Steel, com. | 42½- 44¾ | | |

Last transactions up to 1.30 p.m. to-day are reported at the following prices: United States Steel common 54⅝, preferred 113, bonds 102¾; Car & Foundry common 49¾, preferred 109; Locomotive common 57¾, preferred 111½; Colorado Fuel 39½; Pressed Steel common 43½, preferred 102; Railway Spring common 47¾; Republic common 25¾, preferred 86⅞; Sloss-Sheffield common 77½; Cast Iron Pipe common 28½, preferred 76; Can common 8¾, preferred 73⅜.

**Dividends.**—The Montreal Steel Works has declared a semiannual dividend of 2 per cent. on the common stock, payable January 2, and a quarterly dividend of 1¾ per cent. on the preferred stock, payable January 8.

The Vulcan Detinning Company has declared the regular quarterly dividend of 1¼ per cent. on the preferred stock, payable January 20.

The Board of Directors of the Riehle Brothers' Testing Machine Company, Philadelphia, Pa., has declared an annual dividend of 6 per cent. on the capital stock, for the year 1908.

The Standard Underground Cable Company, Pittsburgh, has declared a quarterly dividend of 3 per cent., an annual extra dividend of 3 per cent., both out of the earnings for the year ended December 31, 1908, and also a special dividend of 7 per cent. out of the accumulated earnings of the company in past years.

## The Westinghouse Shops Busy.

The business of the Westinghouse Machine Company, Pittsburgh, is showing some improvement of late and several good sized orders have been received within the last few days. Among these orders was one for a large steam engine from the Pennsylvania-Arizona Mining Company, Poland, Ariz., which will be used to operate the machinery of a copper mine. The city of Frankfort, Ind., has ordered a 750-hp. steam turbine. The American Iron & Steel Mfg. Company, which is erecting a new plant at Lebanon, Pa., has ordered a 1500-hp. steam turbine outfit. The American Plate Glass Company has ordered a 1000-hp. gas engine, an electric generator, and a switchboard for a complete power plant for its new plate glass factory at James City, Pa. The Standard Underground Cable Company, Pittsburgh, by way of adding to its producing facilities at its plant in Perth Amboy, N. J., has contracted for a 1000-hp. horizontal double acting gas engine. The Rockland Light & Power Company, Nyack, N. Y., has ordered a 1000-hp. turbine equipment; the Youngstown Sheet & Tube Company a 3000-hp. turbine set, and the Warren Street Railway Company, Warren, Pa., a 500-hp. gas engine.

The management at the East Pittsburgh Works of the Westinghouse Electric & Mfg. Company reports that the situation is improving and that the volume of orders is growing steadily. An interesting feature of the new orders is the large demand for motors and power house machinery, from mills, mines and other large industrial establishments throughout the country.

Danner & Co., Wien, Austria, manufacturers of electrically melted Styrian tool steel, made from Styrian Erzberg ore and pig iron, have appointed Frantz Djorup, 349½ Washington boulevard, Chicago, agent for the exclusive sale of their product in the United States.

# The Machinery Trade.

NEW YORK, December 30, 1908.

Machine houses report no sales or inquiries of individual importance the past week, though business compared favorably with that of the previous week, and the slight improvement was maintained. Considerable encouragement is afforded by the business transacted, in view of the time of the year, and it undoubtedly augurs well for a substantial betterment early in the new year. This opinion is based to some extent on the orders promised shortly after the opening of the year of which there are quite a number, and new shop construction planned which will be carried through without delay, two projects alone calling for the expenditure of $450,000. In preparation for the expected increase in demand for new machines, dealers are making special efforts to dispose of their second-hand tools, to make room in their storehouse for the new stock. Since our last report quite a number of second-hand tools have been sold, this class of business constituting a good share of the sales of some houses. Practically all of the dealers and manufacturers report business for December well up to that for November, and there are few whose trade increased to any extent. In the West the railroads are considerably more active than in the East, from whom no machinery requirements of importance have been reported in some time. The Chicago & Northwestern Railroad has issued a fair sized list of machine tools, and one of substantial proportions is expected soon from the St. Louis & San Francisco Railroad.

### Two Important Machinery Requirements.

Large shops are to be erected by the Caroline, Clinchfield & Ohio Railroad, Johnson City, Tenn., for the construction and equipment of which $200,000 has been authorized, all of which will be spent within the next three months. As these are to be the principal shops of the road, and are to be equipped with modern machinery capable of handling the largest motive power, an extensive equipment of heavy machinery will likely be required. The company is making a number of improvements and the extension of 210 miles from the coal fields of southwestern Virginia to the tracks of the Seaboard Air Line, at Bostic, N. C., will be completed and in operation about February 1. An extension of 35 miles from Bostic to Spartanburg is under construction, and will be completed about October. Other extensions are in contemplation, but have not yet been determined upon.

About $250,000 is to be spent by the York Mfg. Company, York, Pa., in enlarging its plant, $100,000 of which will be used in the purchase of modern equipment for the new additions. A tract of land has been purchased for the new buildings, and contract is about to be let for the construction of a new machine shop, 100 x 230 ft., having a 40-ft. center bay, with 30-ft. galleries on either side. The buildings will be of steel, concrete and brick construction. Other additions to the plant will be built as soon as the new machine shop is completed. The company already has a large plant devoted to the manufacture of refrigerating machinery.

The Delaware, Lackawanna & Western Railroad has inquiries out for a 36-in. vertical turret lathe, a No. 2 turret lathe, a 400-ton hydraulic press, and a 16-in. shaper.

The Pennsylvania Railroad contemplates the erection of a new boiler shop at Renovo, Pa., and has made estimates as to what would be the cost, but has not yet definitely decided to erect the shop. It is understood that the new building will be about 80 x 280 ft., of brick and steel construction.

The Cutler-Hammer Company, 50 Church street, New York, with uptown offices at 79 East 130th street, has purchased a block of property on 144th street, from the Southern Boulevard to Timpson place, where, it is understood, the company will eventually build a manufacturing plant. A. B. Hubbell, who has his headquarters at the uptown office, is in charge of the details.

Of the inquiries in the market one is from the Standard Roller Bearing Company, Philadelphia, Pa., for a few tools.

Improvements to the various plants are being planned by the Lynchburg Foundry Company, Lynchburg, Va., which will necessitate the installation of considerable new mechanical equipment. It will be remembered that the company is to spend about $50,000 in making improvements to its plant at Radford, Va., and that contract has been let for an addition to the special foundry to be 50 x 125 ft. This building is to be equipped with electric traveling crane, and pits for the vertical casting of flanged pipe ranging from 30 to 60 in. in diameter and 2 to 20 ft. in length. The company has purchased 23 acres of land at Norfolk, Va., with a deep water frontage of 732 ft., and belt line railroad connections, on which it will build a modern pipe foundry for export and coastwise trade. Details of the construction of the new plant have not been completed. H. E. McWane, president of the Lynchburg Foundry Company, with his brother, J. R. McWane, vice-president and general manager of the American Cast Iron Pipe Company, Birmingham, Ala., will sail January 6 for a trip to England, Belgium, and Germany, to visit pipe foundries in those countries.

The T. H. Symington Company, Baltimore, Md., with plant located at Corning, N. Y., has secured an option on 20 acres of land in the triangle formed by the tracks of the main line of the New York Central Railroad and a spur of the Buffalo, Rochester & Pittsburgh Railroad, at Rochester, N. Y., and has announced its decision to erect on the property a large plant for the manufacture of malleable iron journal boxes for freight and passenger cars, ball bearing center plates and miscellaneous malleable castings used by railroads. During the past six months the company has had under consideration sites in various cities, but finally decided on the one in the vicinity of the plant of the General Railway Signal Company. The new plant will consist of several buildings, the principal of which will be a large machine shop, foundry and power plant. Most of the equipment at the present plant in Corning will be moved to Rochester, but on account of the large increase in capacity of the new plant a quantity of new machinery will be required. A special feature regarding the new equipment will be three large milling machines, especially designed for the finishing of journal castings. Designs for these machines are being prepared by a firm of Rochester mechanical engineers. The company has been turning out 2000 castings a day at the Corning plant, and this capacity will be more than doubled, giving employment to 1200 men at the start. The company is capitalized at $1,432,900, of which $1,000,000 is common stock and $432,900 preferred stock. To cover the construction of the new plant without drawing on the working capital the company will issue bonds to the amount of $650,000, secured by a first mortgage on the new plant. The Rochester Trust & Safe Deposit Company is to act as trustee under the mortgage. Thomas H. Symington is president and A. H. Weston, mechanical engineer. It is expected to start construction about March 1.

The Delaware Railway Tunnel Company has secured the necessary legislation both in Philadelphia and in New Jersey to construct the tunnel under the Delaware River, connecting the former city with Camden. Beginning at Market and Second streets, Philadelphia, one tube will extend south to Chestnut street and thence across the river to Camden. The north tube will extend from Third street in Camden across the river to Second and Arch streets in Philadelphia, meeting the first tube at Market street. The combined mileage will be about 4 miles. Having secured the necessary legislation, it is expected that the company will now proceed with the work of construction.

# New England Machinery Market.

BOSTON, MASS., December 29, 1908.

While the closing week of the year has naturally been a dull one in the machinery market, yet the change since a year ago this time is a great one, for more actual business is being transacted and the promise is for a good beginning for 1909. Business was practically at a standstill Saturday, as well as Christmas Day, the dealers, while keeping their doors open, giving a holiday to most of their employees. It is expected that the large buyers will come into evidence in the market early in the year. Up to the present time they have been noticeably absent. Few purchases from railroads have reached the New England machine tool builders, and in some cases orders for machinery have stipulated delivery after January 1, that the business might not appear on the books of 1908. Heavy machinery is not moving to any great extent. The planer builders, for example, have not experienced any appreciable increase in orders, though inquiries are active and appear to promise a brisk business shortly. Evidences multiply that the pending tariff legislation is retarding business. But the opinion is expressed by some of the best conservative observers in this section that the circumstances which tend to hold back demand are not without their advantages, because they serve to make the resumption of business gradual, instead of starting it in with a rush, a condition which had been prophesied by many business men. In lines kindred to machinery manufacturers are having various experiences. The foundries are more active, though most of them are not running near to full capacity. The boiler builders are in their natural dull season, and are not expecting a brisk year, though they look to the textile mills for some good business in the replacing of existing installations and in new power plants. Announcements of new textile building continue to be made, indicating a season of at least normal increase.

The Massachusetts State Commission on Industrial Education, with offices in the Ford Building, Ashburton place, Boston, is making a general investigation of American machine tools, preparing data which will be used in connection with the equipment of State Industrial Schools. These schools are provided for by legislative act, the State cooperating with cities or towns in their establishment, paying

a share of the cost of equipment and maintenance. The city of Worcester is progressing toward the creation of a school independent of the regular city school system, to be managed by a board of trustees. When it comes to the equipment, the information obtained by the State commission will be valuable, though the actual buying will be done by the city establishing the school, the State agreeing to reimburse the municipality afterward. The general inquiry from the State commission has led many manufacturers to believe that actual business was in sight, but such is not the case.

The supply trade is much interested in the action of manufacturers of leather belting in establishing a resale price. The details of the matter are not wholly settled, it is understood, the trade not being entirely satisfied with the discounts named, but it is believed that the arrangement will be carried out to the mutual advantage of manufacturers and dealers.

The Shawmut Motor Company, Stoneham, Mass., manufacturer of motors and automobiles, is making tentative inquiries for machine tools, with the purpose of replacing the plant recently destroyed by fire. The list, as figured, is a large one; but it is not understood that a final decision has been reached as to whether the transaction will go through.

A dispatch from Hartford, Conn., tells of the incorporation of the American Envelope Machine Company, with authorized capital stock of $100,000. The company will manufacture envelope machinery. The incorporators are: Sidney M. Grant, Thompsonville, Conn.; Ralph M. Grant, South Windsor, Conn., and Frank Grant, Westfield, Mass.

The Doolittle & Whitehead Corporation, Wallingford, Conn., has been organized to do a general machinist and tool making business in that town, occupying quarters in the Linsley factory on Ivy street. Eldridge Doolittle is president, and Oscar Whitehead, secretary and treasurer.

The Connecticut industrial stocks are showing decided strength, all holding their own in the market, while several have advanced during the past month. The American Brass Company has gone from $108 to $110, Colt's Patent Fire Arms Mfg. Company, Hartford, from $81 to $83, and the Stanley Works, New Britain, from $49 to $50 (par $25).

## Chicago Machinery Market.

CHICAGO, ILL., December 29, 1908.

One of the most encouraging signs pointing to future betterment is the increased demand for machinery noted through the month of December, and the growing number of inquiries that are now coming into the market. An unlooked for improvement set in about the first of the month and continued for a fortnight, when a few days' lull led to the belief that the expected holiday dullness would surely rule during the closing days of the year. The results predicted in this respect have, however, not been fulfilled, for the total volume of business for the month will probably compare favorably with that of any other like period during the year. There is, of course, more or less variation in the experience of machine tool houses, but there is general agreement as to the fact, if not the degree, of betterment realized in the past few weeks. A feature which is regarded as significant of future development, is that included among the orders recently entered, are a number from various manufacturing interests, which have for some time been notably inactive. Purchases and inquiries made by concerns closely allied to the railroads give rise to the inference that more business is to be looked for from this source in the near future. At any rate, it is assumed that those closest in touch with developments in this direction would hardly be adding to their equipment at this time without some sort of assurance that work would soon be forthcoming to employ the additions to equipment already made as well as that contemplated. The effect of such buying has undoubtedly had a beneficial effect upon the general market, since it is recognized that when the railroads resume their normal purchases, things will be decidedly better in all lines. One inquiry from a manufacturer now in the market includes tools amounting to $10,000.

Although it seemed unlikely that much would be heard of in the way of railroad tool machinery lists until after the first of the year, some are already in the hands of the trade. Of the three lots now being figured on, that of the Chicago & Northwestern is the most important. It is stated upon good authority that the extensive list of machinery required for the equipment of the new Springfield, Mo., shops of the 'Frisco System, which has been held up for more than a year, will soon again reappear in the market, and will doubtless be placed this time with but little delay, since the shops in which it is to be installed are either altogether or nearly finished.

### Machinery Requirements of Chicago & Northwestern Railroad.

Figures have been asked on the following list of tools and machinery by the Chicago & Northwestern Railroad: One set plate straightening rolls, motor driven, capacity ½ in. by 8 ft.; one Lassiter taper bolt turning machine, with full equipment of tools; one power ramming split pattern molding machine, 16½ x 21 in., to be drilled for pattern plate to suit present machine; one 70-in. radial drill press, motor driven; four 24-in. crank shapers, with chucks; one 90-in. extra heavy, motor driven, quartering machine, equipped with crank pin turning attachment, and steady rest for boring bar; one 800-lb. single frame steam hammer, with anvil; one 48-in. friction cold cutting off saw, motor driven; one 18-in. independent and universal lathe chuck, four-jaw; two 24-in. independent and universal lathe chuck, four jaw; four 18-in. belt driven engine lathes, 6 ft. between centers; one 36-in. belt driven lathe, 8 ft. between centers, without steady rests; one No. 2 universal cutter and tool grinder; one power twist drill grinder, capacity up to 3 in; one power pipe threading machine, capacity from 1 in. to 4 in., with dies; one 10-in. universal and independent lathe chuck, four jaw; one double head 1½ in. bolt cutter, one head with United States standard from ½ in. to 1½ in. inclusive, second head with 12 thread lead screw and dies in sixteenths from ⅞ in. to 1¼ in., inclusive; one 1500-lb. single frame steam hammer, with anvil and steel dies; one combination power punch and shear 48 in. throat, ¾ in. capacity; one universal grinder 12-in. swing, 40 in. between centers; one 36-in. valve facing machine; five 40-in. table upright drill presses; two No. 4 motor driven pipe threading and cutting machines; one twist drill grinder with pointing device for drills up to 3 in.; one portable oil rivet forge; two universal tool grinders, motor driven; one 60-in. throat, right angle belt driven punch, capacity 1⅛-in. hole, through 1-in. steel; one combination power punch and shear, 48-in. throat, ¾-in. capacity; one self emptying centrifugal oil separator.

The Chicago, Milwaukee & St. Paul Railroad Company is in the market for the following tools: One 48-in. draw cut crossing shaper, low down base and extra heavy swivel vise, complete with direct current motor drive; one 36 x 12 in. by 12 ft. frog crossing planer, extra heavy cross rail and saddles to run approximately 26 ft. per minute, with 3 to 1 return cut, motor driven.

Improvements now under way by the Sioux City Foundry & Mfg. Company, Sioux City, Iowa, include the erection of new steel warehouse, boiler shop and office buildings, which, together with new equipment, will represent an expenditure estimated at $50,000. The machine and boiler shop will be 75 x 100 ft., with a warehouse of like dimensions. The new plant will be equipped to handle, not only heavier work, but a greater volume of business than heretofore. Among the new machines that will be required are an 8-ton punch, a cold friction saw, for cutting 15-in. I beams, and a 6-ton cupola. Efforts will be made to have the plant ready for operation by April.

The Reynolds Machine Company, Rock Island, Ill., has removed its plant and business to Moline, Ill., where, in addition to its present line of screw driving machines, it will manufacture a hobbing spur gear cutter, which is described as one of the simplest and most nearly "fool proof" tools of the kind ever put out.

The building of a new garage, 37 x 114 ft., is contemplated by Tom. Connolly, Dubuque, Iowa, manufacturer of high grade carriages. The plans include all of the adjuncts and equipment of a modern garage.

The new Process Steel Company, Marshall, Mich., is adding to its plant a foundry, 25 x 110 ft., and a two-story office building. A machine shop department has also been installed, so that the company is now in position to furnish vanadium steel crank shafts and connecting rods in the rough as well as finished. Following the reorganization of the company, the following officers were elected: S. C. French, president; F. A. Stewart, vice-president; H. L. Chapman, secretary and treasurer.

The La Grange Water & Power Company, La Grange, Cal., expects to install an additional 450-kw. generator, and an 800-hp. water turbine, which will duplicate the unit now in service. G. L. Dyer is superintendent.

## Cleveland Machinery Market.

CLEVELAND, OHIO, December 29, 1908.

Business with the local machine tool dealers has been very light, as was expected during the holiday season. Dealers, however, are quite well satisfied with the volume of their orders during December, for the market continued active well along in the last half of the month, when the falling off that was looked for during the holiday season began to be noticed. The outlook is regarded quite promising, owing to the fact that inquiries are still coming in fairly plentiful, and considerable buying is expected soon after the first of the year. While no large lists are coming out a number of inquiries have been received during the past few days for two or three standard machine tools. The inquiries are coming from all kinds of manufacturing plants that are planning the installation of some additional machine tool equipment or the substitution of new and modern machine tools for old ones. In addition to late inquiries a

number have been made by some of the larger manufacturing establishments during the past few weeks, it being announced at the time the inquiries were made that orders would not be placed until after the first of the year. Builders of machine tools and of heavy and special machinery are feeling the effects of the holiday season, but they are confident of improved conditions early next month. A number of deals for the purchase of conveying machinery for mines and industrial plants are expected to be closed soon after the first of the year. Very few inquiries are as yet being received from the railroads.

The demand for second-hand tools continues fairly good, and dealers are quickly moving the limited supply that is being placed on the market.

In the foundry trade there is a lull, due to the holiday season, but foundries making light gray castings have considerable more work on hand than several weeks ago, and the outlook is brighter.

The creditors of the Brown-Cochran Company, maker of gas engines, Lorain, Ohio, have accepted the offer of the Johnson Company of Lorain for the purchase of the Brown-Cochran plant. The Johnson Company agreed to cancel its own claim of $398,000 against the company, and to pay all the secured creditors in full and the unsecured creditors 25 per cent. The Johnson Company expects to place the plant in operation soon.

The Automatic Sewing Machine Company, formerly of Cincinnati, has moved its plant to Ashland, Ohio, after undergoing a reorganization. Machinery is now being installed for the manufacture of sewing machines, which will be started in a small way. The officers are R. P. Dollings, president; C. L. Downey, vice-president; L. M. Helbert, secretary and treasurer.

The Electric Welding Products Company, Cleveland, reports that it has enough orders on hand for automobile parts to keep its plant running at full capacity until May, and that orders are picking up in its cap screw department.

The C. O. Bartlett & Snow Company, Cleveland, reports an improvement in inquiries for coal conveying machinery for mines and industrial plants, and that the outlook is good for a better volume of orders soon after the first of the year.

The Cleveland City Forge & Iron Company reports considerable improvement in the business outlook. Orders for forgings have been scarce for some time, but the company reports that during the past two weeks it has received a number of inquiries from railroads for forgings for new and repair work.

The Mack Iron & Wireworks Company, Sandusky, Ohio, has been incorporated with a capitalization of $50,000, by A. D. Mack, P. C. Mack, E. M. Blinn, J. D. Mack and J. T. Mack.

The Reverse Draft Furnace Company, Akron, Ohio, has been incorporated with a capitalization of $20,000, by G. D. Renfield, H. J. Hough, Ray Cook, S. S. Osborne and L. H. Horner.

## Cincinnati Machinery Market.

CINCINNATI, OHIO, December 29, 1908.

The local machine tool manufacturers are just now for the most part deep in the annual inventory taking. There are but a very few exceptions with the tool trade in this territory that stock taking is passed over at the turn of the year, but those few exceptions give it quite as much attention at the middle of the year, usually early in July.

For the most part December will show better returns than was anticipated early in the month, and with some tool concerns the last month of the year will go ahead of November, which was figured as the banner month. Shapers and lathes have done exceedingly well, some new types of both recently introduced having had quite a good demand during the month.

Practically all manufacturers in this field are preparing for a phenomenal year: not the tremendous strain of the early part of 1907, but a gradual restoration of confidence which will result in large orders for greatly needed equipment in all kinds of shops throughout the country. Correspondence from dealers in all sections shows that there is a gradual awakening in industrial lines, and with the tariff question safely disposed of and no political questions or labor uncertainties to annoy owners of great industrial plants it is expected that they will come into the market more freely.

The year to come will be an important one for the Cincinnati manufacturing interests. The Oakley colony which will consist of five or six of the largest tool and machinery and sanitary appliance manufacturing interests in this section, will be completed during the year, and all establishments in good working order. The Modern Foundry Company and the Cincinnati Planer Company are already making good headway in their new homes, and others are rapidly getting in shape for early occupancy.

Christmas festivities apparently interfered little with some customers of local tool manufacturing plants. On Saturday the Steptoe Shaper Company received an order for one 24-in. triple gear to go to Buffalo, one 20-in. back gear to Mexico, and two 14-in. single gears to Canada. On Monday the company had an order for a 20-in. back gear.

The Rahn-Carpenter Company, about which much has been published in the matter of removal of shops to Richmond, Ind., reports good business also. It has had several orders for its new 22 x 36 in. swing gap lathe with sliding bed. These orders have come from the North and South. The new lathe is favored as an economical medium, some figuring that with the enlarged swing capacity they can combine the duties of two, another illustration of the conservatism of the times in manufacturing.

The Triumph Ice Machine Company, which is to be one of the new year's additions to the Oakley factory colony, is keeping up its excellent late year record on ice machines. Several orders were received in December. With the very excellent improvement made in the business of this company during the past year, it will be impatient to get into its new quarters, which will give it the desired additional capacity for finishing up work.

For the national convention of the foundrymen to be held in Cincinnati next May the Cincinnati section has held several important meetings recently. At the conference Saturday at the Grand Hotel a committee was appointed to work in conjunction with the Cincinnati Convention League and the Industrial Bureau in preparing entertainment, place of meeting, &c. The veteran foundryman, James Murphy, of Hamilton, read a paper on "Modernizing an Iron Foundry."

The Empire Machine Works, Frankfort, Ind., has taken new and larger quarters at 659 West McClurg street. O. B. Smith, proprietor, has added considerable new equipment.

## Philadelphia Machinery Market.

PHILADELPHIA, PA., December 29, 1908.

The market has the usual preholiday appearance. Some little business has been transacted, but it has been very much scattered, and of an individual nature. Buyers as well as sellers are giving their attention at the time to a large extent to preparations for the annual accounting of stocks, and little actual business is expected to come out until this has been completed. In a number of instances, however, orders which have been held back so as to bring them into next year's expenditures are expected to be placed, as they involve no further outlay against the current year, for which the balance sheet on the part of many concerns will hardly show much profit. While there has been a fair amount of inquiry in some directions, a good share has been for the purpose of getting a line on costs for improvements and extensions not yet adopted. Railroad buying shows no forward movement, even further purchases of rails and supplies, which were expected to follow the recent order for rails by the Pennsylvania Railroad, have not materialized, and while developments are expected almost daily they may not come out for some time. The larger industrial establishments have not yet booked sufficient business to make them a factor in the machinery trade, so that little in the near future can be expected from that quarter.

The trade is quite hopeful regarding the future, and it is believed that a forward movement will develop early in the year, although continued discussion regarding tariff revision, while it may not affect the trade directly, will no doubt retard for a time the general development of plans for improvement and extension now under contemplation.

The foreign trade has been inactive, no developments of an importance being reported.

The second-hand machinery market has been dull and listless, reflecting the general condition of the trade, while the same may be said of the boiler and engine trade, both new and second hand.

Nothing of importance has developed in either the gray iron or steel casting trade. Business is quiet and foundrymen are giving a good part of their attention to the annual stock taking.

The Board of Trustees of the State Institution for Feeble Minded of western Pennsylvania will receive bids until January 13 for the construction of a sewage disposal plant. The specifications, which may be obtained at the office of the Department of Health, Harrisburg, Pa., provide, in addition to the necessary work of excavation and concrete work, for 30 tons of cast iron pipe, special connections and other equipment.

Samuel G. Dixon, Commissioner of Health for the Commonwealth of Pennsylvania, will receive bids at his office, 1900 Race street, Philadelphia, until Monday, January 4, for the furnishing of materials and labor for the construc-

tion of an acetylene gas plant at the State South Mountain Sanitarium, Mont Alto, Pa. The work includes the furnishing and installing of a complete plant, specifications regarding which can be obtained at the office of the Commissioner of Health, Harrisburg, Pa.

The Wright Specialty Company, Greensburg, Pa., has under consideration the erection of a manufacturing plant in that city. Charles Wright of South Greensburg, Pa., is general manager of the company.

The Baldwin Locomotive Works reports somewhat quieter conditions, inquiries having fallen off, while no orders of importance since that recently taken for 14 locomotives for the United States Steel Corporation have been booked. A betterment in the demand is expected after the first of the year, but the recovery, it is believed, may be slow. No change in the number of men employed has been made by this company, although the present working hours may be slightly increased after January 1.

The Board of Trustees of the State Hospital, Danville, Pa., will receive bids until January 14, for constructing a new sanitary sewage system for the hospital, the disposal plant to consist of concrete sedimentation tanks, sprinkling and sand filters, 12-in. cast iron force main, electrically driven and automatically controlled sewage pumps, &c. Plans and specifications may be seen at the office of the superintendent of the hospital, Danville, Pa., or of the engineers, Albright & Mebus, 908 Land Title Building, Philadelphia.

## Government Purchases.

WASHINGTON, D. C., December 29, 1908.

The Isthmian Canal Commission will receive bids until January 18, Circular No. 486, for punch and shear, bolt cutter and other supplies.

The Isthmian Canal Commission will soon ask bids for two 25-hp. shunt wound electric motors.

The following bids were opened December 21, Circular No. 482, for machinery for the Isthmian Canal Commission:

Class 1.—Seven marine boilers—Bidder 32, Coatesville Boiler Works, Coatesville, Pa., $13,000; 43, P. Delany & Co., Newburgh, N. Y., $14,175; 53, G. & W. Mfg. Company, New York, $17,451; 63, Harlan & Hollingsworth Corporation, Wilmington, Del., $11,999; 71, Kingsford Foundry & Machine Company, Oswego, N. Y., $12,796 and $12,292; 73, Lake Erie Boiler Works, Buffalo, N. Y., $14,350; 84, Manning, Maxwell & Moore, New York, $13,195; 85, Marine Boiler Works Company, Toledo, Ohio, $12,953.50; 88, Maryland Steel Company, Sparrow's Point, Md., $13,825; 91, I. P. Morris Company, Philadelphia, Pa., $13,475; 98, New York Shipbuilding Company, Camden, N. J., $15,500; 112, Phœnix Iron Works, Meadville, Pa., $12,700; 116, Pusey & Jones Company, Wilmington, Del., $12,859; 128, Springfield Boiler & Mfg. Company, Springfield, Ill., $13,594; 143, Vermilye & Power, New York, $12,341; 156, Casey & Hedges Company, Chattanooga, Tenn., $12,600; 162, National Electrical Supply Company, Washington, D. C., $13,013; 165, Robb-Mumford Boiler Company, South Framingham, Mass., $14,504; 169, Volk & Murdock Iron Works, Charleston, S. C., $10,808.

The following bids were opened December 22 for machinery for the navy yards:

Class 41.—Two 12-hp. internal combustion kerosene engines—Bidder 80, August Mietz, New York, $1325 and $1500; 113, Remington Oil Engine Company, Stamford, Conn., $1100.

Class 51.—One electric truck—Bidder 56, GeneralVehicle Company, New York, $3500; 122, Studebaker Brothers' Company, New York, $3435.

Class 52.—Two No. 2 universal tool grinding and shaping machines—Bidder 45, W. H. Foster Company, New York, $363; 121, William Sellers Company, Philadelphia, Pa., $535.

Class 53.—One No. 2 universal tool and cutter grinder—Bidder 6, Brown & Sharpe Mfg. Company, Providence, R. I., $4593.70; 44, Fairbanks Company, New York, $1079, $1104, $1005 and $1030; 60, Hill, Clarke & Co., Boston, Mass., $1000; 62, Hendey Machine Company, Torrington, Conn., $1108 and $1093; 97, Niles-Bement-Pond Company, New York, $1065.

Class 71.—One 60-hp. kerosene engine—Bidder 80, August Mietz, New York, $3700 and $4000.

The following bids were opened on December 17, for pumps for the new National Museum Building:

Item 1, water service pump; 2, four vacuum pumps; 3, two boiler feed pumps.

Henry R. Worthington, New York, item 1, $675; 2, $1458; 3, $520. Fairbanks, Morse & Co., Chicago, Ill., item 1, $590; 2, $900; 3, $410. D'Olier Engineering Company, Philadelphia, Pa., item 1, $660; 3, $450. Buffalo Steam Pump Company, Buffalo, N. Y., item 1, $595; 2, $315; 3, $240.

The following awards have been made for machinery for the Isthmian Canal Commission, bids for which were opened October 22, Circular No. 471:

Browning Engineering Company, Cleveland, Ohio, class 1, one locomotive crane and grab bucket, $7966.25.

Henry R. Worthington, New York, class 4, for two 6-in. steam cylinder pumps, $304.37 each; class 5, for two 9-in. steam cylinder pumps, $285.03; six 6-in. steam cylinder pumps, $119.51; for six duplex horizontal feed pumps, $74.95.

Fox Brothers & Co., New York, class 4, for 3½-in. steam cylinder pumps, $148 each.

Motley, Green & Co., New York, class 5, one pneumatic flue welder, $687.

Under bids opened November 17, for machinery for the navy yards, the Hilles & Jones Company, Wilmington, Del., has been awarded class 131, one guillotine frame shear, $2634.

The following awards have been made for supplies for the navy yards, bids for which were opened November 24:

Harron, Ricard & McCone, San Francisco, Cal., class 1, one vertical automatic steam engine, $280.80; class 2, one patent head engine lathe, $957.30; class 4, one crank shaping machine, $565.80; class 5, one grinder head, $99.65.

Frevert Machinery Company, New York, class 3, one upright drilling machine, $334.

Pratt & Whitney Company, Hartford, Conn., class 61, six engine lathes, $869; class 62, two engine lathes, $1472.

The following awards have been made for machinery for the navy yards, bids for which were opened December 8:

Springfield Boiler & Machine Company, Springfield, Ill., class 131, two Scotch marine boilers, $2838.50.

Pratt & Whitney Company, Hartford, Conn., class 151, two vertical surface grinding machines, $1800.

Knox & Bro., New York, class 200, one valve reseater, $175.

## The American Institute of Chemical Engineers.

The first annual meeting of the American Institute of Chemical Engineers was held in the Carnegie Technical Schools at Pittsburgh, commencing Monday morning, December 28. Nearly 50 per cent. of the membership was present. This society was organized only a short time and has about 100 members. At the meeting just held applications for membership were received from Spain, Cuba, England and Hungary. In the basement corridor was an exhibit of chemical appliances, which were of much interest to the members.

A business session was held on Monday morning, and in the afternoon the delegates inspected the Homestead and Duquesne works of the Carnegie Steel Company. On the same day an election of officers was held, all the old officials being re-elected, as follows: President, Samuel P. Sadtler, Philadelphia; vice-presidents, Charles F. McKenna, New York; H. A. Hunicke, St. Louis, and Edward G. Acheson, Niagara Falls, N. Y.; secretary, John C. Olsen, Brooklyn; treasurer, William A. Booth, Syracuse, N. Y.

At the session on Monday evening R. K. Meade of Easton, Pa., delivered an address on the use of pulverized coal for heating purposes. Tuesday morning a number of papers were presented, and in the afternoon the delegates visited the plant of the Westinghouse Machine Company at East Pittsburgh and the Government Testing Laboratory in Arsenal Park, Pittsburgh.

## Customs Decisions.

### Sheet Steel in Strips.

The Board of United States General Appraisers has sustained protests filed by George Nash & Co. and Frank A. Tasker of New York. The importers objected to the assessment on certain merchandise of duty at the rate of 45 per cent. ad valorem as "sheet steel in strips," it being maintained that the goods should be allowed to enter at the specific rate according to value per pound as "steel in all forms and shapes not specially provided for."

Another decision has been handed down by the board sustaining a claim filed by George Nash & Co. It is held by the board that the assessment of an additional duty of 1 cent per pound on certain steel strips, which have been cold rollled, is illegal. General Appraiser Fischer, who writes the decision for the board, holds that the ordinary tax on the strips is sufficient. The additional tax is accordingly set aside.

The New Haven, Conn., plant of the American Steel & Wire Company, formerly operated by the National Wire Corporation, will be started up soon, but in a comparatively small way. The wire drawing mill will begin with a force of about 100 men, and the number will be increased gradually to perhaps 300, which does not mean the full capacity of this department of the works. Eventually, when a rush of business is experienced and the plant is working full, probably the force will be close to 1000. The works will be operated under the management of the Worcester office, with Edward H. Parker as resident manager.

The Portland Oxy-Acetylene Welding & Fixture Company, Portland, Ore., has been organized to do all kinds of metal welding by the oxy-acetylene welding process.

# HARDWARE

THE passing of another year, which, notwithstanding the slower movement of trade, has been characterized by progress and change in business conditions and methods, will suggest to many the very different state of things which prevailed when the country was first entering on its marvelous career of manufacture and development. Up to within a few years the unique relations between the employer and employee in the Eastern States, and especially so in the rural towns of New England, provoked much favorable comment from visiting foreigners as well as from persons from other parts of the country. It was, for example, no uncommon thing for the head of the factory, upon some errand in connection with his duties, to be found in the factory or in the factory yard when the whistle blew to announce the end of the day's labors. Very likely the "boss" would be greeted by 50 or 100 workmen as they passed out, to whom he would reply in a pleasant, familiar manner, calling them by name, and often inquiring in regard to their families, evincing a genuine interest in his people and their affairs. This meant more than mere dollars and cents. Their respect for each other was mutual and sincere. Fortunately this has not become entirely a thing of the past.

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How this much-to-be-admired state of affairs came to exist can easily be traced to its source. It goes back to the small beginnings of manufacturing. Throughout New England, and more especially in Connecticut and Massachusetts, the various streams which abound in all the valleys began to be utilized for power by means of which ingenious and industrious men turned out "Yankee inventions." As the years went by their trade increased and neighbors were "hired to help out." The business kept growing and the plant enlarging until there was the development of an important industry. Many a large and flourishing manufacturing firm in these States was founded in just such a primitive manner. The sons of the employer and employee were sent to the common school together, and in due course the one took his place in the business and the other in the workshop, but the bond of fellowship formed in their youth remained unsevered in spite of difference in material welfare.

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While in some remote parts this condition of things may still occasionally be found, it is to be sincerely regretted that this bond of good fellowship and personal interest, as a generality, has disappeared or is fast disappearing. The growth of the factories, whose employees have increased by leaps and bounds, put masters and men in an entirely different relationship. Competition required the invention and installation of automatic or semiautomatic machinery. It was soon found that unskilled labor could be taught to care for these machines, possibly under the direction of one skilled mechanic, thus enabling a marked reduction in costs to be effected. The great influx of foreigners furnished much of the unskilled labor, and so the men with unpronounceable names have in a great measure taken the place of those whom in former times the employer was able to meet upon a friendly, equal footing. In the changes which have taken place as a result of the advance of economic progress there have been both gains and losses.

## Condition of Trade.

The year closes with an admirable condition of things in matters commercial and financial, with cheerfulness in regard to the prospects for business in 1909. Most of the factories are fairly busy on orders and in accumulating goods for spring trade, so that they may be in a position to execute promptly the orders, large or small, which will come to them in connection with the quickening trade anticipated after the opening of the year. While the possibility of a reduction in the price of raw material as a result of changes in the tariff or of other influences which may affect the market, naturally induces conservatism and caution, the general outlook for trade is such as to make manufacturers feel justified in preparing for a good volume of business. They are thus applying to their interests the principle which is recognized as applicable to the distributors of goods—that it is poor policy to let a possible decline in some values lead to inactivity or neglect in the regular carrying on of business. Throughout the country the stocks of Hardware merchants are generally fairly complete and well assorted, although the effect of the carefulness with which goods have been purchased has been to prevent overstocking. During the past month, too, much more attention has been given to selling than to buying, and the trade which culminated in the holidays has probably cut into assortments which will soon call for replenishing orders. Some of the jobbing houses have of late been making contracts for goods for early delivery with normal liberality, and will enter upon the new year with many of their requirements for some months at least well covered. This is an indication of the hopeful way in which the business for next year is regarded. While the repressing effects of the financial and commercial disturbances of the year are not entirely a thing of the past, the trade are taking a cheerful view of the future of business and anticipating the early development of activity and a prosperous new year.

### Chicago.

With the actual selling forces of manufacturers and jobbers inoperative because of the withdrawal of salesmen from their respective fields on account of holiday vacations business is naturally quiet. The interim between now and the second week of January will probably be largely occupied in reviewing the past year's work and planning for the future, so that in the meantime an uneventful period is expected. A backward glance over the past year reveals a degree of prosperity in the Hardware trade great enough, in view of the obstacles encountered, to be regarded as fairly satisfactory. Indeed, a comparison with results in other lines would doubtless show that the Hardware business suffered less, recovered earlier and improved more than almost any other. Profits were diminished, it is true; but, owing to economies effected by retrenchment and closer scrutiny of details, they were not reduced in proportion to the shrinkage in volume of business. Another effect of the trying experiences of the year has been to inspire confidence in the management and financial stability of all concerns that have withstood the tests imposed by the panic and subsequent business depression. If hopefulness of the future is any criterion of what is to come, the new year will open the way to fuller employment of the energies of the country in all lines of trade. Since the recent advance in Poultry Netting was announced orders for spring shipments have improved. Buyers who have been holding off with the expectation of securing lower prices later on seem to be convinced that no such advan-

tage is likely to be gained by delay, and they are therefore coming into the market. Although no similar action has been taken with reference to Woven Wire Cloth, the close relation between this line and Poultry Netting leads to the assumption that an early advance in price is not unlikely. The heavier movement of Wire Cloth noted during the past week is doubtless due to such apprehension on the part of buyers.

## NOTES ON PRICES.

**Wire Nails.**—The amount of business being received at the mills is light, as the requirements of the trade are small at this season, and most of the salesmen are off the road. The market is in good condition, as prices are maintained during this period of inactivity. Quotations are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

| | |
|---|---|
| Carloads, to jobbers | $1.95 |
| Carload lots to retail merchants | 2.00 |
| Less than carloads to jobbers | 2.00 |
| Less than carloads to retail merchants | 2.10 |

Galvanized Nails are quoted at $1 over the price of the regular Nails.

*New York.*—Business has been of moderate proportions during the holidays and is likely to continue so until inventory taking is out of the way. Nails are held on the basis of $2.30 per keg, in small lots at store, but some sellers are occasionally inclined to shade this figure.

*Chicago.*—The demand for Wire Nails is very quiet, consisting chiefly of small orders required to supply current needs. Salesmen are all in for the holiday vacation and will not return to the field until after the first week of the new year. In the meantime but little is expected in the way of new business. Prices continue firm, being, we are advised, uniformly maintained: $2.13 in car lots to jobbers, and $2.18 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

*Pittsburgh.*—As usual at this season, new demand for Wire Nails has shown a marked falling off, but is expected to show betterment very early in the new year. Jobbers and consumers alike have been busy this month taking inventory and closing the year's business and have not been desirous of making new contracts. Active efforts to make sales at this period are not being made by the mills, which have withdrawn their men from the road until after the first of the year. We are advised that the outlook for the Wire Nail trade for the new year is very promising. Prices are reported as being maintained on the small amount of new business that has been placed recently. Quotations are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

| | |
|---|---|
| Carloads, to jobbers | $1.95 |
| Carload lots to retail merchants | 2.00 |

Galvanized Nails are quoted at $1 over the price of the regular Nails.

**Cut Nails.**—The comparatively small number of orders received by the mills are for limited quantities, which is a condition not unlooked for at this time of the year. Stocks throughout the country are supposed to be light, owing to the policy pursued for some time of ordering for immediate requirements only. The price for Steel Cut Nails is $1.80, base, per keg, f.o.b. Pittsburgh, for less than carloads, and $1.75 for carloads and larger lots. In the Western market Iron Cut Nails are held at an advance of 10 cents per keg over Steel Cut Nails, but this differential is not observed in the East.

*New York.*—The local market is unchanged, as far as demand is concerned, requirements being somewhat light at this season. Steel Cut Nails are held on the basis of $2.15 per keg for small lots at store, but this price is not strictly adhered to by all sellers.

*Chicago.*—There is not much doing in the market just now, business being halted for the present by the holiday dullness. Orders are principally for small lots needed for stock assorting. A better movement is expected when business begins in earnest after January first. Except for a possible shading of 5 cents a keg on desirable orders, prices are maintained with reasonable firmness. We quote Chicago prices as follows: In car lots to jobbers, Iron Cut Nails, $2.08; Steel Cut Nails, $1.98.

*Pittsburgh.*—New orders for Cut Nails and specifications against contracts are light, but the mills are not very anxious to enter contracts for long periods of delivery ahead, owing to the high prices ruling for Steel Billets and Nail Slabs. It is stated that the margin of profit in Cut Nails at present is very narrow. The market is $1.80, base, per keg, f.o.b. Pittsburgh, but $1.75 is made on carloads and over. In the Western market Iron Cut Nails are held at an advance of 10 cents per keg over Steel Cut Nails, but this differential is not observed in the East.

**Barb Wire.**—The expectation of manufacturers is that soon after the opening of the new year demand from the Southern part of the country will show itself. At present there is very little doing in Barb Wire. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

| | Painted. | Gal. |
|---|---|---|
| Jobbers, carload lots | $2.10 | $2.40 |
| Retailers, carload lots | 2.15 | 2.45 |
| Retailers, less than carload lots | 2.25 | 2.55 |

*Chicago.*—Pending the opening of business for the spring trade new orders are few and scattering. Soon after the first of the year active buying should begin in the South and Southwest, when a fairly heavy demand is expected. The temporary dullness has not affected prices, which remain firm and unchanged. Quotations are as follows: Jobbers, Chicago, car lots, Painted, $2.28; Galvanized, $2.58; to retailers, car lots, Painted $2.33; Galvanized, $2.63; retailers, less than car lots, Painted, $2.45; Galvanized, $2.75; Staples, bright, in car lots, $2.25; Galvanized, $2.55; car lots, to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

*Pittsburgh.*—This season of the year always shows an almost utter absence of new buying of Barb Wire, and the present is no exception. A heavier demand is expected from the South and Southwest when spring trade opens early in January, this section of the country usually being the first to contract ahead for its requirements. We are advised that prices are being well maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

| | Painted. | Gal. |
|---|---|---|
| Jobbers, carload lots | $2.10 | $2.40 |
| Retailers, carload lots | 2.15 | 2.45 |
| Retailers, less than carload lots | 2.25 | 2.55 |

**Plain Wire.**—Conditions ruling in the Barb Wire market apply to that of Plain Wire. Manufacturers are looking forward to a revival of business after the first of the year. Prices are reported as being well maintained. Quotations per 100 lb. to jobbers in carload lots are as follows, on a basis of $1.80 for Plain and $2.10 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the price to retailers being 5 cents additional:

| Nos. | 6 to 9 | 10 | 11 | 12&12½ | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|
| Annealed | $1 80 | 1.85 | 1.90 | 1.95 | 2.05 | 2.15 | 2.25 | 2.35 |
| Galvanized | 2.10 | 2.15 | 2.20 | 2.25 | 2.35 | 2.45 | 2.85 | 2.95 |

*Chicago.*—The year just closing has been, all things considered, quite satisfactory in the Wire trade. The total volume of business will, it is estimated, foot up between 75 and 80 per cent. of that of 1907. Just now consumers of Plain Wire are buying sparingly, but prospects for a more active demand early in the coming year are encouraging. We are advised that prices are being firmly held at the established schedule. We quote as follows: Car lots to jobbers, $1.98, f.o.b. Chicago, and to retailers, $2.05.

*Pittsburgh.*—Incident to the late season of the year, new orders for Fencing and other Wire products are light. It is expected, however, that early in January buying will be more active, as jobbers and consumers have been taking inventory and closing the year's business dur-

ing this month. We are advised that regular prices are being well maintained, in spite of the small amount of new business being placed. Quotations per 100 lb. to jobbers in carload lots are as follows, on a basis of $1.80 for Plain and $2.10 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the price to retailers being 5 cents additional:

| Nos. | 6 to 9 | 10 | 11 | 12&12½ | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|
| Annealed | $1.80 | 1.85 | 1.90 | 1.95 | 2.05 | 2.15 | 2.25 | 2.35 |
| Galvanized | 2.10 | 2.15 | 2.20 | 2.25 | 2.35 | 2.45 | 2.85 | 2.95 |

**Conductor Pipe, Etc.**—Considerable irregularity is now observed in the market for Conductor Pipe, Eaves Trough, &c. Established quotations are maintained only in a few sections and on small orders. Copper lines are a trifle stronger than Steel and Iron because Sheet Copper is on a little higher level than a few months ago. Elbows and Shoes are reasonably firm.

**Traps.**—Prices on Game Traps recently established by leading manufacturers show no change from those of last season. The market on Oneida pattern Traps may be represented by a discount of 75 and 10 per cent.

**Oilers.**—The market on Copper Plated Steel Oilers continues weak, as reported in our columns a couple of weeks ago. The irregularity seems also to have been communicated to all varieties of Oilers.

**Elmore Tool Mfg. Company.**—Following are the quotations on the Screw Drivers, Ice Picks, Awls, Punches and other goods manufactured by the Elmore Tool Mfg. Company, Hartford, Conn.:

| | Discount. |
|---|---|
| Indestructible Screwdrivers | 55 and 7 % |
| Standard Neverturn Screwdrivers | 66⅔ % |
| Star Screwdrivers | 75 and 5 % |
| Hartford Screwdrivers | 66⅔ % |
| Ice Picks | 55 and 7 % |
| Standard Ice Picks | 66⅔ % |
| Scratch Awls | 60 % |
| Tinners' Awls | 55 and 7 % |
| Brad Awls | 55 and 7 % |
| Screwdriver Bits | 25 % |
| Nail Sets | 30 % |
| Machinists' Center Punches | 40 % |
| Diamond Point Chisels | 50 % |
| Cape Chisels | 50 % |
| Cold Chisels | 50 and 5 % |
| Machinists' Chisels | 55 and 5 % |
| Tinners' Solid Punches | 50 % |
| Tinners' Prick Punches | 50 % |
| Drop Forged Tack Pullers | 10 % |
| Gas Pliers | 70 % |
| Star Nail Pullers | 40 % |
| Wire Cutter and Pliers | 75 % |
| Shoemakers' Hammer | 75 % |
| Prying and Pinch Bars | 75 % |
| Compound Lever Bar | 75% |
| Box Chisels | 50 % |
| Combination Hatchets | 40 % |

**Window Glass.**—The aspect of the Window Glass situation has been entirely changed by the members of the National Window Glass Workers, an association including all branches of the Glass workers' craft, carrying out their threat to strike if the flat scale of wages was not accepted by both machine and hand operated Glass factories. It is understood that practically all the hand operated factories and the American Window Glass Company, the latter operating machine factories, have closed down because they would not accept the new wage scale, and withdrawn prices. The few hand operated factories that signed the flat scale are quoting 90 and 20 per cent. discount on Single and 90 and 25 per cent. discount on Double Strength Glass, for limited quantities, from manufacturers' list of January 1, 1901. The Western Window Glass Jobbers' Association has adopted discounts from the jobbers' list of October 1, 1903, which is about 25 per cent. higher than the manufacturers' list, as follows: Single, 90 and 25 per cent.; Double, 90 and 30 per cent. The Eastern Window Glass Jobbers' Association, pending a meeting to be held this week, has adopted the same discounts. The changed conditions in the Glass situation have brought again to the front the plan of forming the Imperial Glass Company, which had been temporarily abandoned because all factories could not be induced to come in. It will be recalled that this was the selling corporation proposed in September to handle all orders received by the hand operated factories. The prospects for successfully carrying out this project are now said to be more encouraging.

**Rope.**—Holiday quietness pervades the Cordage market, as traveling men are all in and closing up the year's business is occupying the attention of customers. Purchasing has been along conservative lines during the year, and stocks in buyers' hands are regarded as low. It is hoped that the coming 12 months will show a better record. Quotations on small quantities of Rope, 7-16 in. in diameter and larger, remain as before: Pure Manila, 8¾ to 9 cents; Pure Sisal, 6¾ to 7 cents. Mixed grades of both kinds grade down in price according to quality. Jute Rope, ¼-in. and up, No. 1, is 6½ to 6¾ cents; No. 2, 6 to 6¼ cents.

**White Lead in Oil.**—The amount of new business being placed is comparatively light, but well up to the expectations of manufacturers. The market remains firm notwithstanding this inactivity. Quotations are as follows for the best brands: Lots of 500 lb. and over, in 100-lb. kegs and upward, 6¾ cents per pound; in lots of less than 500 lb., ½ cent per pound advance.

**Linseed Oil.**—The Oil market reflects the strong position of Seed, so that it is not affected by the lack of activity in buying which has been somewhat more pronounced during holiday week. The Oil now in manufacturers' hands has been crushed from high priced seed and there is apparently little prospect of much lower prices. The car lot price is recognized as being about 46 cents, as sales for nearby delivery are reported at that figure. Quotations in 5-barrel lots are unchanged, as follows: State and Western Raw, 47 cents per gallon; City Raw, 48 cents per gallon. Boiled Oil is 1 cent advance on Raw.

**Spirits Turpentine.**—Although prices are the same as a week ago, there is a more confident tone to the market in anticipation of more liberal buying after the first of the year. Demand is exceedingly light. The New York market is represented by the following quotations: Oil Barrels, 41 to 41½ cents; Machine Made Barrels, 41½ to 42 cents per gallon.

## Ninth International Automobile Show.

THE ninth international automobile show, at the Grand Central Palace, New York City, under the auspices of the American Motor Car Manufacturers' Association, will open New Year's Eve, December 31, and continue until January 7, inclusive. Some idea of the scope of the exhibition is afforded by the statement of the management that there will be 77 manufacturers of complete motor cars and 230 makers of accessories represented. There will be 66 distinct types of pleasure cars and 11 makes of commercial vehicles, which will include everything from a low powered delivery wagon costing about $500 up to huge three and ten ton trucks selling at from $3000 to $6500. An interesting portion of the pleasure vehicle exhibit will be the importers' salon section, at which will be displayed for the first time in this country the latest 1909 models of a dozen of the leading imported cars direct from the Paris salon.

## Cleveland Wire Goods Company.

IN a reference to the Cleveland Wire Goods Company, Cleveland, Ohio, in our last issue mention was made of Hermann Boker & Co. as sole agents for the company's products. This, however, is only the case with various styles and kinds of Chain made by a patented process. In other lines manufactured by the company they are represented by J. C. McCarty & Co., 21 Murray street, New York, covering Spooled Wire, Stove Pipe Wire in 50 ft. coils, Solid Wire Clothes Line and Folding Trellis, Border and Supports.

BARNEY & BERRY, Springfield, Mass., are sending out a fine calendar for the skating season, ending with March, illustrating in color a skating scene of a century ago, handsome enough to frame, all advertising matter being attached, but not a part of the picture.

## AMONG THE HARDWARE TRADE.

The Wittker Hardware & Contractors' Supply Company has succeeded the Brinkmeyer Hardware Company, St. Louis, Mo., the change being one of corporate name only, all other conditions of the business remaining the same.

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The J. M. Clifton Hardware Company, Dawson, Ga., has been incorporated with a capital stock of $10,000. At the first stockholders' meeting the following officers were elected: President, J. W. Glass; vice-president, A. J. Hill; secretary and treasurer, W. R. Cox; general manager, J. M. Clifton.

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The Ware-Watts Hardware Company, Orange, Va., whose store was burned out some time since, has resumed business under the name of the Ware-Watts-Gill Hardware Company, the members of the company remaining as before. The lines handled include Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints and Oils.

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The stock of Hardware and Mine Supplies carried by the Weeks-Betts Hardware Company, Prosperity, Mo., was recently damaged by fire to the extent of $10,000.

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Frank A. Osborn & Son, Goshen, Ind., heretofore engaged exclusively in the sale of Farm Implements, will add to these lines a general stock of Hardware, including Wagons, Buggies, Harness, Gasoline Engines, Cream Separators, Feed Grinders, Paints, Oils, Greases, &c. The firm is also preparing to build light vehicles to order.

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Irish & Eyman, Raymond, Kan., have been succeeded in the Hardware business by the Boy Lumber, Hardware & Furniture Company, in whose stock will be included Harness, Pumps, Cement, Plaster, Glass, Paints and Oils.

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Selden Weber has disposed of his Hardware business, which he has conducted continuously for the past 39 years at Warsaw, Ind., his successors being G. F. Liebrock and H. B. Gerard, who will take possession on January 1, under the firm name of Liebrock & Gerard.

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The Hardware stock and business owned by Eikenberry Brothers, Marion, Ind., has been purchased by McGrew & Bury. They will readjust the stock and continue the business in the same location.

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C. W. Cisue, who for 21 years has conducted a Hardware business at Cherokee, Iowa, has sold out to Keys & Cargin, who will take possession January 1.

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The Hardware and Lumber business in Roslyn, L. I., N. Y., which has been conducted for the past 20 years under the firm name of John D. Hicks & Co., will, after January 1, be carried on by the surviving partners under the firm name of Conklin, Tubby & Conklin. Mr. Hicks died a year ago.

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A bad fire occurred last month in the store of C. A. Carlson, Frederick, Wis., causing almost a total loss, which was partly covered by insurance. He had policies in both the Minnesota and Wisconsin Hardware Mutuals, both of which were paid within three days.

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A new Hardware store will be opened at Chariton, Iowa, about February 15, by Dunshee Brothers, who have purchased the stock of H. H. Larimer, which will be increased by the addition of a full line of Farm Implements, Windmills, Pumps, Buggies, &c.

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The Kneeland Hardware Company has embarked in the retail business in Emporia, Kan.

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## Death of Warren D. Rollins.

WARREN D. ROLLINS of the firm of John G. Rollins & Sons, 15 Whitehall street, New York, and head of the London branch, died suddenly of pneumonia in London, December 19, after a brief illness. Warren D. Rollins was the son of John G. Rollins, Sr., a native of Maine, who founded the business in the 60s in London of introducing American manufactured products, such as Hardware, Tools, Agricultural Implements, House Furnishing Goods and kindred lines, and was born in England. He returned to the United States with his father and other members of the family in the 90s, and as the time came for going into business was employed by the Enterprise Mfg. Company, and afterward by the Yale & Towne Mfg. Company, until he joined his father and brothers in carrying on the business of John G. Rollins & Sons, spending his time of late years at the London branch, 124 Holborn, E. C.

## Trade Items.

HENDRICKS BROTHERS, 49 Cliff street, New York, importers of and dealers in Copper and kindred metals and manufacturers of Sheet Copper, Bolts, Rods, Wire and numerous forms of Copper material, have distributed a handsome pocket leather bound diary for 1909, with maps and much useful data.

THE KNOXVILLE TINWARE MFG. COMPANY, successor to Hill-Lloyd & Co., Knoxville, Tenn., will enlarge as rapidly as possible the manufacturing part of the business, which at present includes Cans of all kinds, both tin and galvanized and wood jacket. The company will deal largely in Tin Plate, Sheet Metals, Tinners' Supplies, Roofing Material, Stoves, Hollow Ware, Enameled and Galvanized Ware and kindred lines. The company's territory extends from Virginia and Kentucky to Florida, including the Carolinas, Georgia and Alabama. The officers are as follows: J. A. Moncrief, president; T. H. Stewart, vice-president, and W. F. Lenoir, secretary and treasurer.

JOHN H. BAIRD, who has been identified with the Joseph Dixon Crucible Company, manufacturer of graphite products from crucibles to lubricants, polish and lead pencils, crayons and erasers, has re-established himself at the New York headquarters of the house, 68 Reade street, having been located at the works in Jersey City, N. J., for the past year or two. Mr. Baird has been with the Dixon Company since 1884.

C. C. NARET, long the New York representative of the Arcade Mfg. Company, Freeport, Ill., manufacturer of Coffee Mills and Cork Pullers, House Furnishing and Hardware specialties, has removed his sample room and office from 97 Warren street to 109 Murray street, New York.

F. L. SCOTT, formerly of the Scott Hardware Company, Paducah, Ky., has moved to Denver, Colo., where he will be district manager of the Dictaphone Company of America, his office being 608 Kittredge Building.

THE HORTON MFG. COMPANY, Bristol, Conn., has issued a very handsome calendar in the interest of its Bristol Steel Fishing Rods. This calendar will be sent upon request to merchants handling Fishing Tackle; others will be sent a copy on receipt of 15 cents.

THE SICKELS, PRESTON & NUTTING COMPANY, Davenport, Iowa, is sending out, as a Christmas favor, a collection of six artistic and attractive pictures, 11 x 14 in. in size. The views are reproduced by color photography from modern paintings.

THE KIEFER-HAESSLER HARDWARE COMPANY, Milwaukee, Wis., has been awarded the contract for Hardware trimmings, including Locks, Hinges, &c., for the new auditorium in that city. The Hardware will be of special design and will be manufactured by the Russell & Erwin Mfg. Company, New Britain, Conn. The contract amounts to about $1500.

GEORGE C. WEAVER, who has represented Hermann Boker & Co. as a traveling salesman for 25 years, was the honored guest at a banquet given at Martin's, December 29, by C. H. Hawkins, manager of the Cutlery department, 14 of Mr. Weaver's associates being present. Carl F. Boker, head of the house, presented Mr. Weaver with a handsome silver loving cup as a token of the esteem in which he is held, and the employees gave him a fine scarf pin, having a pearl center surrounded by 11 diamonds.

THE BARR HARDWARE COMPANY, Greenville, S. C., has been awarded the contract for the plumbing and steam heating in the Ottaray Hotel, now under construction in that city; also the contract for the plumbing, steam heating and metal work for the addition to the post office and court house in the same place.

THE WINCHESTER REPEATING ARMS COMPANY, New Haven, Conn., is distributing a very striking hanger, 25½ x 33 in., printed in a dozen colors, on heavy coated paper. It is suggested by the company that if the merchant will give it a place in his window it will serve to draw attention to his entire line.

THE Christmas circular of the Callender Hardware Company, Angola, Ind., is a reprint of a large advertisement which has lately been appearing in the local paper. It enumerates many goods, with prices, classified for the housekeeper, for the young woman, for the man, for the boys and girls and for the baby.

FOR SERVING the double purpose of illuminating store fronts and show windows, the General Electric Company, Schenectady, N. Y., is calling special attention to its G-I Flame Arc Lamps. For this service the Lamps are suspended from suitable supports just above the top of the window. It is pointed out that these Lamps emit an unusually brilliant light when in operation, thus attracting special attention and increasing the advertising value of the window. The entire globe appears filled with a luminous gas, and, although the light has the property of penetrating fog or smoke, it is soft and not blinding to the eye. Carbons giving a yellow or orange colored light are generally used, but carbons may be obtained that will give a light of a red or white color. All clock mechanism is eliminated in the construction of the Lamp, making it simple, and the carbons are placed at such an angle as to form a V, the arc forming at the lower end. This is to direct all of the light downward and the absence of obstructions below the arc prevents the formation of shadows.

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CALENDARS, while not apparently as numerous as in former years, have been issued by the following manufacturers among others:

F. E. MYERS & BRO., Ashland, Ohio, Pumps and Hay Tools.

HAZARD MFG. COMPANY, Wilkes-Barre, Pa., Wire Rope.

DIAMOND SAW & STAMPING WORKS, Buffalo, N. Y., Hack Saws, &c.

REPUBLIC IRON & STEEL COMPANY, Pittsburgh, Pa.

S. B. MARTIN, Dalton, Ohio, Barn Door Hangers and Store Ladders.

BLAKE & JOHNSON COMPANY, Waterbury, Conn., Metal Working Machinery, Screws, Rivets, Nuts, &c.

JOHNSON HARVESTER COMPANY, Batavia, N. Y.

DRAPER COMPANY, Hopedale, Mass., Set and Cap Screws, Special Screws, &c.

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HANSEN & LOWE, Atlantic City, Iowa, handling Farm Machinery, Implements and Vehicles, are preparing to open a Hardware store in the building formerly occupied by J. C. Yetzer with a similar line. It is expected that the new store, which has been equipped with Warren Hardware cabinets and shelving, will be ready to begin business on January 1.

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THE FINLEY HARDWARDE COMPANY has been incorporated in Antlers, Okla., with a capital stock of $8000. The company handles Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints, Sporting Goods, Wagons and Carriages.

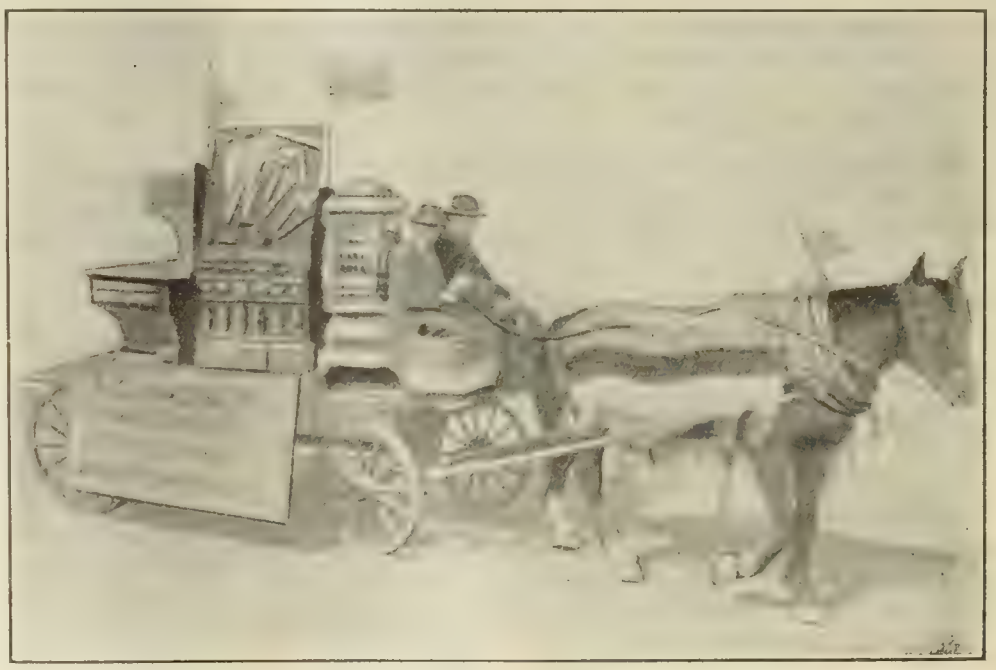
## TAG ADAPTED AS AN ADVERTISEMENT.

WHAT proved to be a very effective advertisement for Babcock, Hinds & Underwood, wholesale and retail Hardware, Binghamton, N. Y., was the tag reproduced herewith in reduced size, the actual tag being about 5¼ x 2⅝ in. The tag was the firm's regular delivery style, the words having been written in and an etching made and used to print from. The etching cost about $1 and the tags $1.07 per 1000. The tag was given extensive circulation among the 40,000 attendants at the Broome County Industrial Exposition, which was held in the fall, and doubtless enforced the importance and progressiveness of "The Big Hardware Store." The firm occupied a booth at the exposition, and on the first day distributed nearly 5000 tags. The demand for them was so great that at times four of the clerks were occupied in handing out the tags, as well as other advertising matter issued by the firm. Next day it was discovered that another firm had floated an identical tag in size and color, bearing its own advertisement, which was accepted as evidence that the tag had hit the mark. The tag was the clever idea of J. Herbert Toal, who prepares the effective advertising got out by this house.




## A PARADE FLOAT.

THE float here shown was arranged by N. C. Madsen, Ludington, Mich., and used in a recent parade. In making the Hardware display a short section of shelving was used, with packing boxes fitted in the openings as substitutes for the regular drawers. These were mounted with samples of Shelf Hardware, &c., on both ends. A sample board was placed on the shelving, and Tools were arranged on both sides of it. In front of the Hardware display was a base burner Heating Stove and in the rear a Steel Range. The cost of getting up the float was about $7.50, not counting labor. The larger portion of the expense was for signs and bunting, the latter being plentifully used. It is gratifying to learn that the float captured the first prize, though the object in entering the parade was for the advertising it would give, prize winning being a secondary consideration with Mr. Madsen, who is an enterprising Hardwareman, always on the alert to keep his business prominently before the public.



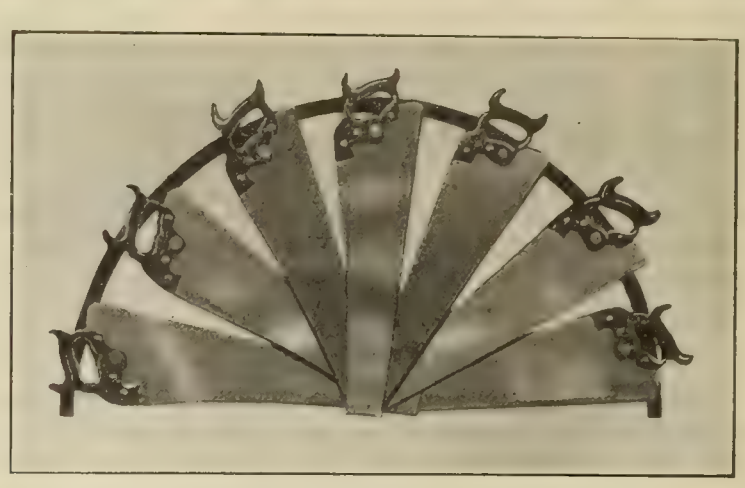
*A Parade Float.*

Wheeler & Fowler, Tulon, Ill., a new firm, is successor to R. E. Wheeler and Davis & Fell in the retail Hardware business in that city. The latter firm retires after an existence of more than 30 years. The new firm will handle the regular lines of Hardware and Implements and will maintain a roofing and tin work department.

T. C. Smyth, Sandy Lake, Pa., has purchased the stock of Arthur H. Tryon, Leroy, N. Y., and will carry a line of Hardware, Stoves and Furnaces.

## AN INGENIOUS WINDOW DISPLAY OF HAND SAWS.

THE window display of Hand Saws shown herewith was made with a buggy wheel rim covered with black cloth and was 3½ ft. wide. The Saws were fastened to the rim with light copper wire, while the background of the window and the floor was covered with black cloth. The window is 3 x 7 ft. in size and is lighted by electricity. The display included the different kinds of Saws used in that section, and an increased sale of these goods was directly traceable to the display. The goods were shown in the window of E. F. Hortz, Sheffield, Ill., and were arranged by Fred. Runft, an employee.



*An Ingenious Window Display of Hand Saws.*

The stock of the Park Hardware Company, Warren, Ohio, has been sold by the Smith-Denison interests to C. L. Bailey, R. A. Cobb and others, who will retain the old title and continue the business without increasing the authorized capital, which is $50,000. L. & S. Denison will retire from the business and the management will be assumed by Mr. Bailey, who has been with the company for many years.

The Carroll County Hardware Company has purchased the stock of Dallas Walker, Berryville, Ark., and will handle Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints, Oils and Sporting Goods.

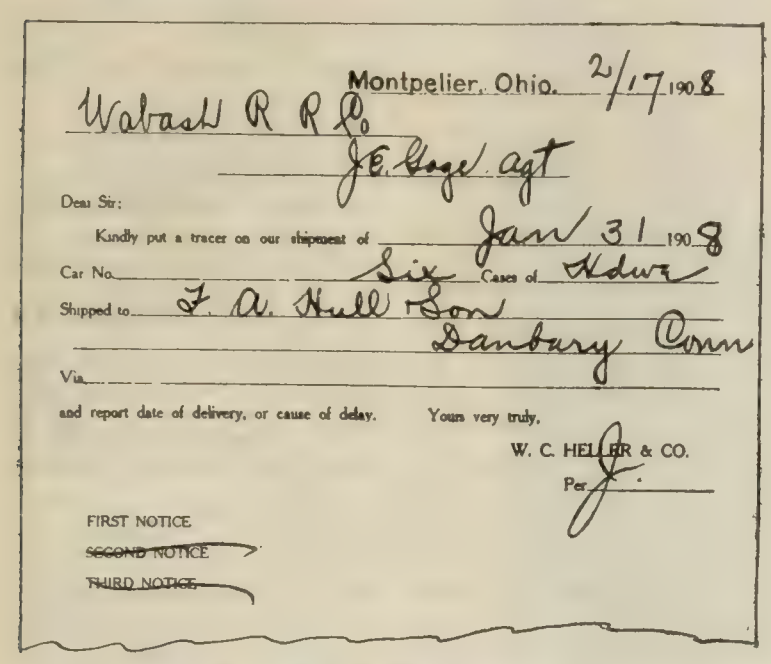
Fallers & Seymour have purchased the business of M. C. Joyce, Syracuse, Neb., and will carry Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Sporting and Athletic Goods and Harness.

E. G. Gard, Toledo, Iowa, has purchased the Hardware business formerly owned and operated by P. Jones.

# HARDWARE FREIGHTS.

## TRACING FREIGHT SHIPMENTS.

BY courtesy of W. C. Heller & Co., Montpelier, Ohio, manufacturers of Steel Hardware Shelf Boxes, Shelving, Screw and Bolt Cases, &c., we are able to reproduce herewith some blanks which they have devised


Montpelier, Ohio. 2/17 1908

Wabash R R Co.

J. E. Sage agt

Dear Sir:

Kindly put a tracer on our shipment of Jan 31 1908

Car No. Six Cases of Hdwe

Shipped to F. A. Hull Son

Danbury Conn

Via

and report date of delivery, or cause of delay. Yours very truly,

W. C. HELLER & CO.

Per

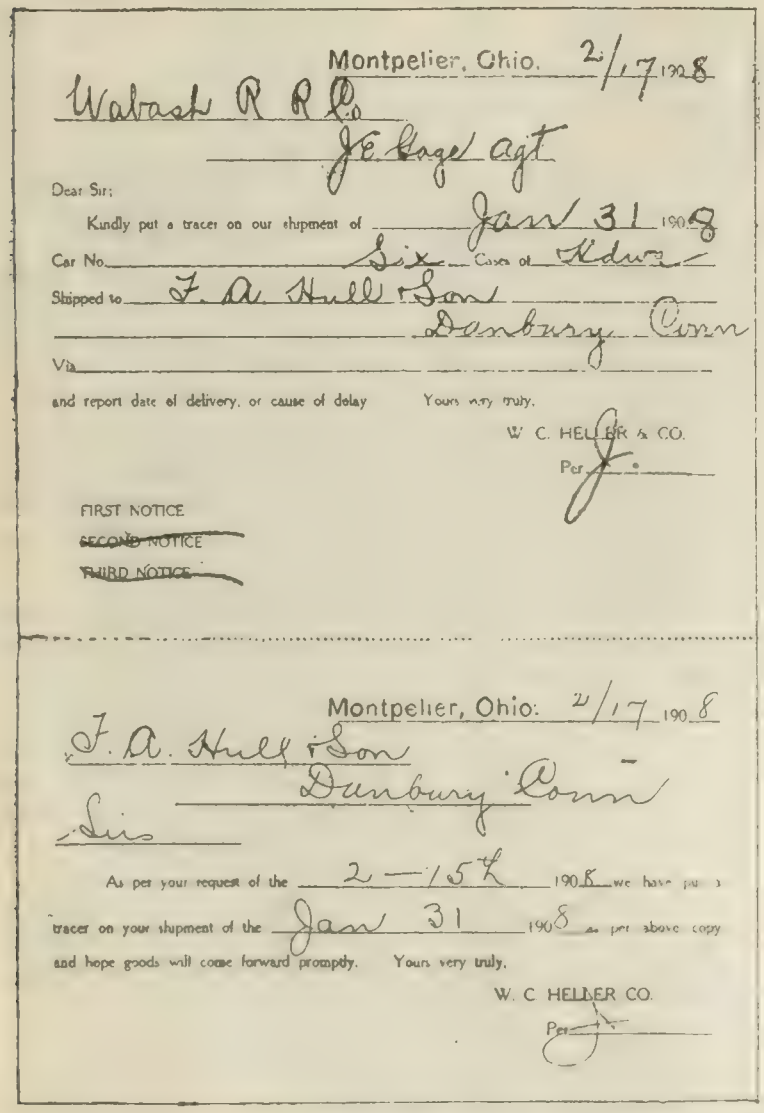
FIRST NOTICE

~~SECOND NOTICE~~

~~THIRD NOTICE~~

*Fig. 1.—Blank Requesting Railroad Company to Start Tracer, Duplicate of Which Goes on File.*

for use in connection with tracing shipments. The blanks are bound up in block form with white, yellow and pink sheets alternating. They are written in triplicate by using carbon paper, the white sheet, or original, going to the railroad company marked first, second or third notice,


Montpelier, Ohio. 2/17 1908

Wabash R R Co.

J. E. Sage agt

Dear Sir:

Kindly put a tracer on our shipment of Jan 31 1908

Car No. Six Cases of Hdwe

Shipped to F. A. Hull Son

Danbury Conn

Via

and report date of delivery, or cause of delay Yours very truly,

W. C. HELLER & CO.

Per

FIRST NOTICE

~~SECOND NOTICE~~

~~THIRD NOTICE~~

Montpelier, Ohio: 2/17 1908

F. A. Hull & Son

Danbury Conn

Sirs

As per your request of the 2—15th 1908 we have put a tracer on your shipment of the Jan 31 1908 as per above copy and hope goods will come forward promptly. Yours very truly,

W. C. HELLER CO.

Per

*Fig. 2.—Duplicate of Request to Trace, with Accompanying Acknowledgment Which Goes to Consignee.*

as the case may be, by crossing off the phrases which do not apply, as shown in the illustrations. The yellow sheet is retained for filing and the pink one with attached acknowledgment (Fig. 2), goes to the consignee as evidence that attention has been given. The firm has found the blanks a practical and time saving method of following up delayed shipments.

## Price-Lists, Circulars, Etc.

*Manufacturers in Hardware and related lines are requested to send us copies of catalogues, price-lists, &c., for our Catalogue Department in New York; and at the same time to call attention to any new goods or additions to their lines, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.*

OTIS ELEVATOR COMPANY, New York and Chicago: Catalogue, 20 pages, devoted to views and descriptions of Hand Power Elevators, Dumb Waiters, &c., specifications to capacity and construction being given with each size shown. A Hand Sidewalk Elevator is also included.

W. C. HELLER & Co., Montpelier, Ohio: Illustrated catalogue with net price-list relating to Steel Hardware Shelf Boxes, Bins, Cases, Drawers, Cabinets, Counters, Rolling Store Ladders, &c.

BOSTON PRESSED METAL COMPANY, Worcester, Mass.: Folder illustrating and describing the Household Banks, which are recommended for individuals, families, banks and trust companies, retailers, premium use, &c.

ARLINGTON MFG. COMPANY, Canton, Ohio: Catalogue of Technical Paints, including Carbonelastic Coating, a Paint covering for the protection of steel from rust and corrosion, gases, alkalies and other deteriorating influences; also Galvanized Steel Paint for use on galvanized surfaces, where ordinary Paints fail to give satisfaction.

MANHATTAN ELECTRICAL SUPPLY COMPANY, 17 Park place, New York: Illustrated folders and price-lists of a varied line of Electrical Articles suitable for Christmas gifts, grouped under the heading of Holiday Suggestions.

NEWMAN CLOCK COMPANY, Chicago, and 178 Fulton street, New York: Illustrated catalogue of Time Recording Devices, Watchman's Clock Systems, &c.

H. G. OSBORNE, 74 Cortlandt street, New York: Illustrated folder of Osborne's extension Brick and Stone Drill, consisting of a hardened steel drill head, which can be screwed onto a threaded gas pipe.

NATIONAL CYCLE MFG. COMPANY, Bay City, Mich.: Catalogue devoted to a line of Bicycles, both chain and chainless.

SIDNEY HOLLOW WARE COMPANY, Sidney, Ohio: Complete catalogue, No. 20, relating to high grade Cast Iron Polished and Nickel Plated Hollow Ware.

ENTERPRISE MFG. COMPANY, Philadelphia, Pa.: Large post card relating to the Enterprise Meat and Food Chopper.

F. E. KOHLER & Co., Canton, Ohio: Catalogue illustrating Post Hole Diggers, Hoes, Rakes, Corn Planters, Trowels, Anti-Rattlers, Shovels, Sidewalk Scrapers, Spraying Pumps, &c.

BUTLER BROTHERS, New York: Midwinter catalogue, No. 698, relating to general merchandise, including Hardware and kindred lines, which is sold at wholesale only.

The autumn number of the *Iron Age Farm and Garden News*, lately issued by the Bateman Mfg. Company, Grenloch, N. J., on its first page presents an illustration of the old shop in which the business was established by Stephen Bateman in 1836. In this old building, with its walls of stone, 4½ ft. in thickness, Mr. Bateman with a few workmen turned out Hay and Manure Forks, then the principal article of manufacture, together with some Garden Implements. For sentimental reasons the old building has been spared the destruction usually the fate of such antiquated structures in making room for something more modern, and it still bears a little share in the busy scenes round about, being used partly for storage and for some minor operations by hand and machinery.

McIntyre & McLeod have purchased the Hardware stock of Fisher & McCoy, Schuyler, Neb.

## FLORIDA RETAIL HARDWARE ASSOCIATION.

THE Florida Retail Hardware Association, organized about two months since, has made an excellent start and already embraces some of the best known and most representative retail Hardware houses in the State. It is estimated by the able and energetic secretary, W. K. Jackson, that there are something over 100 firms in the State eligible for membership in the association. A fair percentage of these firms are already enrolled, and the prospect is that by the time of the next meeting, to be held in Tampa in February, the membership with which the association was inaugurated will be doubled.



M. E. GRUBER,
President.



B. F. WATTS,
Vice-President.

The officers of the association are as follows: M. E. Gruber, who is president of the Lake Worth Mercantile Company, West Palm Beach, and of the Gruber-Morris Hardware Company, Daytona, president; B. F. Watts, Watts Hardware Company, Leesburg, vice-president;



W. K. JACKSON,
Secretary.



DAVID L. THOMAS,
Treasurer.

W. K. Jackson, Jackson & Wilson Company, Lakeland, secretary, and D. L. Thomas, Tampa, treasurer.

The objects and purposes of the association, as proclaimed in the constitution and by-laws, are to

> foster and promote a feeling of fellowship and good will among its members, and on broad and equitable lines to advance the welfare of the Hardware trade of Florida; to promote and protect the interests of its members in the various lines of Hardware; to promote mutual confidence with each other; to eliminate and minimize abuses and harmful methods and practices, within the provisions of Federal and State laws relating to trade and commerce, and with the understanding that in the efforts of the association to accomplish the purposes above set forth, no action shall be taken which will in any manner tend to fix or regulate prices.

Any firm or corporation selling Hardware at retail from a regularly maintained stock may become a member of the association, subject to the approval of the Executive Committee. This membership can be terminated at any time by a majority vote of the Executive Committee if in its judgment it is for the best interests of the association.

The annual dues are $10, payable in advance. Traveling men, manufacturers and jobbers in Hardware and kindred lines who are in sympathy with the purposes of the association will be accepted as honorary members upon payment of an annual fee of $5. These honorary members may attend the annual conventions and take part in all open sessions, but will not be entitled to a vote on association questions or policies.

The membership of the association includes the following houses:

Lake Worth Mercantile Co., West Palm Beach.
Gruber-Morris Hardware Co., Daytona.
Hillsborough Hardware Co., Tampa.
Trimble Hardware Co., Bradentown.
Watts Hardware Co., Leesburg.
W. J. Hill, Sanford.
Lakeland Hardware & Plumbing Co., Lakeland.
Joseph E. Young, Lake City.
Fee & Stewart Co., Fort Pierce.
Bartow Hardware Co., Bartow.
Smedley-Rodgers Co., Jacksonville.
Florida Hardware Co., Jacksonville.
Towers Hardware Co., Jacksonville.
Joseph Bumby, Orlando.
Stanford-Carson-Graves Hardware Co., Kissimmee.
T. P. Carpenter, Bartow.
Suwannee Hardware Co., Live Oak.
Jackson & Wilson Co., Lakeland.
St. Petersburg Hardware Co., St. Petersburg.
Nicholson & Co., Clearwater.
Bell & Bates, Quincy.
Bond & Bours, Jacksonville.
Kennerly Hardware Co., Palatka.
Martin & Griffin Co., Palatka.
A. B. Lees, Leesburg.
Dozier & Gay Paint Co., Jacksonville.
Watts & Miller Co., De Land.
Harry J. Wilson, Sanford.
Geo. W. Fernald Co., Sanford.
L. N. Pipkin, Mulberry.
Arcadia Hardware Co., Arcadia.
L. L. Morgan, Arcadia.
Heitman-Evans Co., Fort Myers.
H. A. Hendry, Fort Myers.
Lakeland Furniture & Hardware Co., Lakeland.
Wauchula Hardware Co., Wauchula.
Punta Gorda Hardware Co., Punta Gorda.
Geo. W. Blackman, Sarasota.
Bradentown Hardware Co., Bradentown.
J. B. Owens & Co., Palmetto.
James A. Newsom, Fort Meade.
Tarpon Springs Hardware Store, Tarpon Springs.
Weller Hardware Co., St. Petersburg.

Among the associate or honorary members are the following: W. H. G. Scott, Supplee Hardware Company, Philadelphia; G. M. Dickey, Dozier & Gay Paint Company, Jacksonville; G. H. Cantrell, Simmons Hardware Company, St. Louis; R. F. Paddison, Simmons Hardware Company, St. Louis; H. J. Nevins, American Steel & Wire Company, New York; D. A. Reed, J. G. Christopher & Co., Jacksonville; E. H. Norris, Stauffer, Eshelman & Co., New Orleans; Rosser & Fitch, Jacksonville, and O. Leon, E. L. Roberts & Co., Chicago.

## Requests for Catalogues, Etc.

*The trade is given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.*

**REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate:**

FROM ZELLWEGER & KLAASSEN, Inman, Kan., handling Shelf and Heavy Hardware, Stoves, Tinware, House Furnishings, Agricultural Implements, Paints, Oils and Sporting Goods. Isaac D. Klaassen recently purchased a half interest in the business of D. E. Zellweger.

FROM S. D. MISNER, who has just engaged in business in Lewis, Kan., and will handle Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints, Oils, Sporting Goods and Harness.

FROM JAS. P. SUITER, who has purchased the stock of C. F. Graham in Le Claire, Iowa, and will carry on the Stove business in connection with his undertaking establishment.

FROM EGGERT BROS.' HARDWARE COMPANY, Racine, Wis., which has doubled the capacity of its wholesale and retail store. The company handles Shelf Hardware, Stoves, Tinware, House Furnishings, Paints, Sporting Goods and Cutlery Specialties.

## A SOUTH CAROLINA HARDWARE STORE.

THE new brick building of the Union Hardware Company, Union, S. C., is 26 ft. wide and 140 ft. long, with basement, first and second floors. The basement is devoted to Nails, Horseshoes, Wire, Plows, Oils, Putty, Wheelbarrows, Shovels, Field and Garden Tools, Roofing, &c. The first floor, the left hand side of which is shown in Fig. 1, is arranged for a full line of Shelf Goods, Guns, Cutlery, Chains, Crockery, Enameled Ware, Tinware, Paints, Varnishes, &c. On the second floor are carried Buggies, Buggy and Wagon Material, Rope, Glass, Harness, &c. The shelving on both sides of the store is 12 ft. high and 100 ft. long, all 24 in. deep. The front part of the right hand side is taken up with China, Cut Glass and Glassware, and the Paints, Varnishes, Tinware and Stove Hollowware are toward the back.

As shown in Fig. 1, the left hand side of the store is fitted up for Shelf Hardware, Cutlery, &c. A feature of the front counter is the Horseshoe rack, which is 30 ft. long and 24 in. high. The rack is made of ½-in. round iron and pine uprights 1 x 4 x 24 in. At each end of the rack is an end piece made of 2 x 4 x 24 in. lumber, with holes bored part way through to keep the rods from slipping either way.



*Fig. 1.—A South Carolina Hardware Store.*

### Chain and Belting Racks.

In Fig. 2 are illustrated the Chain and Belting racks, Fig. 3 showing the way the Chain rack is built. The rack is 8 ft. high and 7 ft. 6 in. long. The upper cross piece is 4 x 6 in. and the uprights, braces and lower cross piece are 4 x 4 in. The pieces at the bottom of the uprights are 24 in. long, and are fastened to the platform by lag screws. The cross pieces are held in place by ⅝ x 6 in. lag screws. The pins on which the chains are hung are made of ⅝-in. rod, 18 in. long, and are driven into ⅝-in. holes bored 4 in. apart.

Trace Chains are hung from the upper cross piece, Stay and Breast Chains from the lower cross piece and Grab Chains on the hook at the right hand side of the rack. The platform on which Plow Shapes are carried is built of 2 x 8 in. lumber and is 10 in. high, 10 ft. long and 42 in. wide. The iron rods for keeping the shapes in place are driven into ½-in. holes, bored through, any distance apart to suit the shapes.

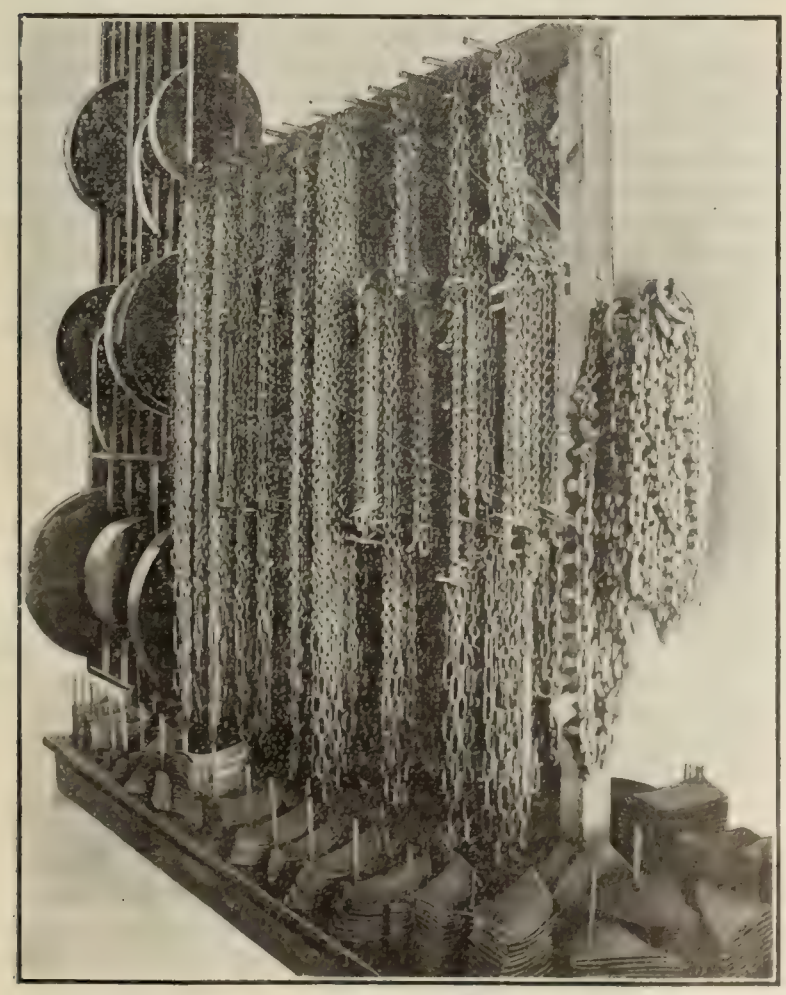


*Fig. 2.—Chain and Belt Racks.*

The Belt rack, shown at the end of the Chain rack, extends from the floor to the ceiling. The outside uprights are made of 4 x 6 in. boards, and the lower portion of the rack is divided from the upper by a 2 x 6 in. board. Above the board the space is equally divided to accommodate two rollers, one above the other. Slots, 1½ in. across, are cut on the same level in the partitions,

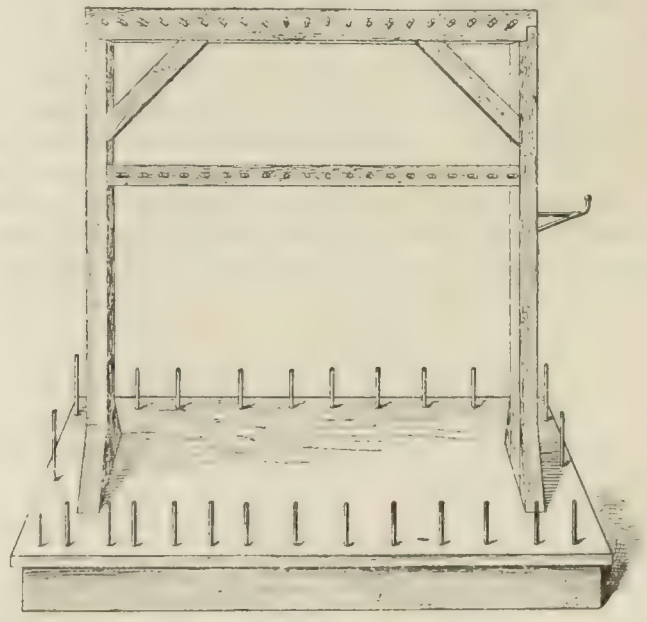


*Fig. 3.—Detail of Chain Rack.*

slanting downward from front to back, to receive the rollers that the Belting revolves on. The rollers are 3 in. in diameter between the uprights, and the ends are turned down to 1½ in., forming shoulders at each end. The 1½ in. ends of the rollers nearly meet in the center of the partitions. The partitions are spaced far enough apart to accommodate the different widths of Belting carried in stock. The lower section holds Leather Belting 6, 8 and 10 in. wide, and Rubber Belting 6, 8, 10 and 12 in. wide. The upper section holds Belting of both kinds in narrower widths, from 1 in. up.

# Here and There in the Hardware Store.

BY SAMUEL MASTERS.

## XII.—GETTING THE BUSINESS.

THERE were now five men soliciting trade in the city and its environs, instead of two. Mr. Martin, the city manager, had eliminated from the list of eligibles about 400 firms as not promising to yield enough business to pay for solicitation, reducing to about 1200 the number of firms to be visited. The two oldest men had the smallest lists, and the others had manifestly more than could be covered regularly. Henderson, one of the originals, and the only one who followed the lunch-and-pool-room route to business resisted any attempt to enlarge his field. Grueby, too new to have got his grooves of action worn very deep, was more amenable, and I was able to secure the addition to his list of a number of factories near the people he visited. He and the three new men soon got interested in the record of calls and sales I kept, and the abstracts which were made for Mr. Martin's benefit, and we grew quite friendly. Henderson, however, shunned me, and at every opportunity minimized the importance of the work I was doing.

### The City Manager Pleased.

The increase in the number of orders was immediate. The name of Hartman Brothers was a guaranty of good goods and good faith, and the ready response to the salesmen's efforts proved conclusively that the only reason why the firm had not been getting the business was the absence of any effort to get it. Mr. Martin looked through the order books each day, and his gratification was intense, particularly so as he ascribed the growth to the success of his own plans and the efforts of the men whom he had selected. His old plea for a business done at his desk instead of the customer's, was heard no more, although he still personally engineered the large orders and was the sole source of authority for any variation from the regular prices. The ability of the new men to get full prices in nearly every instance was a revelation to him, and a complete refutal of his statement that a personally solicited business meant a reduction of profits.

### The BookKeepers Displeased.

There was one place where the increase in business was not welcomed, and that was at the bookkeepers' desks. It was Hartman Brothers' practice to change the ledgers every two years, and it was a little over a year to the next change when the new business began to appear. There was nothing to serve as a guide as to the space that would be required to carry the accounts to the time for transfer to the new books, and the bookkeepers did some anxious guesswork in this connection. In general they did not believe there would be many entries, and the smaller spaces were usually chosen. Be-

HARTMAN BROTHERS.
SALESMAN'S DAILY REPORT OF CALLS AND SALES.

| SALESMAN John Grueby | 10-10 1901 |
|---|---|
| Jones Iron Works | Sold |
| Brown & Wilkinson | " |
| Globe Stove Co | No sale Nothing wanted |
| Crown Crane Works | Sold |
| Anderson Roller Mills | Buyer out |
| | |
| Globe Stove To claim credit their letter of 9-25 | for files returned see |
| Masters—Please look into this and see me | C. M. |

*Salesman's Daily Report of Calls and Sales.*

fore long it was necessary to transfer accounts to new pages, and some accounts were eventually transferred five or six times, causing a large amount of inconvenience in looking up individual items. The city accounts were carried upon three ledgers arranged alphabetically —A to H, I to R, S to Z. The I to R man made the most complaint, and submitted to Mr. Clark a schedule showing the amount of business on a selected number of small accounts, with the estimated profit and the expense for selling and collecting. He was not encouraged to pursue this line of action and subsided.

### Expectations More Than Met.

Of the five city salesmen, four were working in new fields. It was not expected that their sales would be large at the beginning, and the amount of business done was a pleasurable surprise to Hartman, Junior, whose estimate of the time required to reach full efficiency was a year.

"We've not only got to make friends outside, but we've got to train our own men," said he. "They have got a whole lot to learn and they are doing it rapidly, but it will take time."

### Procedure Varied to Suit Conditions.

At the close of the day, each man handed to Mr. Martin, the city manager, a report like the one reproduced herewith, which he passed on to me in order that the calls made might be entered upon the customers' record cards. The new salesmen studied these cards and tried to make the record as favorable a one as possible. It was recognized that it was impossible to cover the entire list each month, and that it was not advisable to call upon some of the firms regularly, but we all worked together, upon a common sense basis to get the best results we could. Some of the firms were called upon each week, others once a month, and others once in two or three months, or not at all, when visits could not bring increased orders.

### A Friend Displeased.

Grueby, for instance, made one call at a foundry upon his list, the German owner of which had been a regular unsolicited customer. This man was incensed at the attention. He had been a warm, personal friend of old Peter Hartman, and had given the sons, from a sentimental regard for the house, the trade he had originally begun with their father. He had felt proud of the long continued relations, and was hurt at the lack of recognition of the friendly feeling which Grueby's call seemed to imply. When Grueby made his report, Hartman Senior was told of the matter and at once made a personal call upon his father's old friend, with the explanation that additional salesmen were being sent out to see that old friends were receiving proper treatment as well as to make new ones, and mollified the old gentleman. Grueby made one subsequent call, under Senior's instructions to convey the impression of an appreciative friendly interest, and was cordially received. The name was then transferred to Kelly's list, as Kelly and he lived in the same neighborhood and it was easy to keep in touch with this customer through accidental meetings.

### The Personal Pull Encountered.

There was another concern, a large planing mill and lumber firm, that had bought little or nothing from Hartman Brothers. Williams called upon their manager several times, without receiving a satisfactory audience, and was then told not to call again. The head of another Ironville Hardware house telephoned Mr. Martin, asking him to call off his salesman, as he and the manager of the planing mill were brothers-in-law, and it would be impossible for Hartman Brothers to get the business. His request was promptly granted.

### Concessions Made.

In several instances, it was found that the credit manager's interest charges upon overdue accounts had terminated the business. This was a matter over which Mr. Martin and Mr. Clark had had heated discussions, and Mr. Clark was not inclined to make concessions. I found, however, that when approached from the viewpoint of waiving a legitimate claim for the sake of policy, Mr. Clark was very reasonable, and his credit slips, sent with a friendly letter to each of the concerns, not only withdrew the cause of the offense, but the irritation as well.

### Retributive Justice.

There was some trade we could not gain—the planing mill mentioned, and three other firms would not buy

from Hartman Brothers. One was a flour mill—the largest in the State—which had been deliberately driven away by Hartman Brothers' clerks. This firm's purchases were made upon pass book, by the millers, who were in the habit of calling at the store early in the morning. The clerks would sometimes find the mill buyer at the door before it was opened. The "early" clerks, who cared for this particular account wanted the first few minutes of the day to themselves, and by studied incivility and intentional lack of attention drove the business away. The account had run from $700 to $800 per year at regular prices, and it was thought worth an effort to get it back. After several calls, Williams reported that he could not make any headway—that the head miller was angry and positively refused to reopen the account. The name was placed upon Grueby's list, and later given to Morgan and then to Kelly, but each reported inability to make any impression, and the matter was dropped.

**Personal Animosities Interfere.**

In another instance Hartman, Senior, had trouble with the president of a local traction company over a line fence, and a once valued account was lost beyond recall. Morgan reported that he was having a pleasant visit with the purchasing agent when the president entered, and stated with much violence that the company would not give a dollar's worth of business to Hartman Brothers while Senior lived. The matter was reported to Senior, who at once gave peremptory orders not to call there again.

**A Wrangle Spoils Trade.**

In the fourth case, an Ironville Stove dealer and manufacturer had purchased a Range, but later returned it, saying the woman for whom it was ordered had decided not to buy. Mr. Martin claimed to have been privately advised that the Range had been ordered for the purpose of making measurements for drawings and then returned to Hartman Brothers. This the Stove man indignantly denied, and refused to buy any more goods until Mr. Martin made a retraction and apology, which he positively declined to do.

**The Results Attained.**

Now please note the following statements carefully:

*With the exception of the four concerns mentioned we brought onto the books within a year and a half every firm from whom we personally solicited business. In some instances we lost the accounts later, in others we only received a small part of the business, but in the major number of cases we did a profitable and regular trade.*

*We accomplished this result first, by making a complete list of the people we wanted to sell—and then going after them.*

*If one salesman failed, another tried. Occasionally the Hartmans were brought into service when their personal influence would turn the scale.*

*Some hard and fast rules were broken when necessary, and special concessions made to heal old sores.*

*We got the orders, and at the end of the period named Hartman Brothers had, we were sure, more of the local supply trade than all the other houses combined.*

*When the profits were figured, at the end of the year, it was the city business that made a dividend possible, the wholesale department barely paying its own expenses.*

THE HUMPHRYES MFG. COMPANY, Mansfield, Ohio, is prepared to enamel on order, either by the wet or dry process, special work in iron or steel. The company solicits orders from manufacturers and builders of machinery who find it desirable and often necessary to finish their products, or parts of them, with a fine, clear white sanitary enameled finish. Estimates will be furnished promptly on request.

THE active management of the Clark-Rutka-Weaver Company, Grand Rapids, Mich., is now in the hands of W. D. Weaver, secretary and treasurer, J. J. Rutka having retired from the company.

## CATALOGUE HOUSES SOLICITING BUSINESS FROM DISTANT MANUFACTURERS.

THE enterprise of the catalogue houses in soliciting business in new fields may well be emulated by other classes of retail merchants. The following letter from a well-known Western mail order concern was recently received by a manufacturer in the East, not connected with the Hardware business:

> We are receiving so many orders daily from factories all over the country (very few of which sell us any of their product), that it has occurred to us, why not solicit business from manufacturers such as your good selves for any goods which you may want for your factory.
>
> In a great many cases it would be an advantage to you to simply drop us a line when you need an article of Office Furniture, a Clock for the factory or office, a Wagon, or Buggy, Tools, Office Supplies, Plumbing Supplies, Hardware of all kinds which might be required, house or barn Paint, a Safe, Scales, a Stove, Telephones to connect various departments, Belting and Mill Supplies, a Lamp or Lantern, Toilet Paper, Harness, Rubber Hose, Roofing and hundreds of other articles which are used in and about a factory.
>
> We would be glad to fill any order for goods which you might select from our catalogue, to be paid for at the end of the month.
>
> The members of your family might like to order goods to be charged to your account, and we would be glad to have them do so.
>
> A number of factories with whom we do business encourage their employees to order goods from us, and we would be pleased to send such goods on your order, to be paid for at the end of the month.
>
> While it would not make the slightest difference in our relations with you whether or not you ordered goods from us, we would nevertheless appreciate whatever business would come our way.
>
> It is probably unnecessary to state that any goods ordered either for the factory or for personal use would be sent with the distinct understanding that they may be returned to us at our expense of transportation both ways if for any reason whatever the goods are not entirely satisfactory. We would be glad to send you a catalogue if you have none at hand.

## Adolph Kastor & Bros.

UNDER the style of A. K. A. B. R. O. Social Circle, the employees of Adolph Kastor & Bros, 109 Duane street, New York, have organized an association, the object of which is to promote fraternity among the members. The membership numbers 22, including both male and female employees of the firm. The first annual dinner was held at Mouquin's December 26, and was a very enjoyable occasion. The guests of the evening were: Adolph Kastor, Sigmund Kastor and Gus Kastor, who were elected honorary members of the association. The officers of the organization are H. K. Zust, president; E. M. Netter, vice-president; Thomas P. Thompson, treasurer, and Miss S. A. Hirschberg, secretary. Paperweights in the form of a four-leaf clover, which is the trademark of the firm's best goods, were distributed as souvenirs. Addresses were made by the Messrs. Kastor and the officers of the new formed association.

THE BATEMAN MFG. COMPANY, Grenloch, N. J., has recently purchased the patterns, stock and good will of the Patten & Stafford Company, which formerly made the New York Champion Wood Hay Rake. The Rake is alluded to as having been popular throughout New England, New York State, portions of Pennsylvania, Maryland, New Jersey and Delaware, and the original manufacturers also had quite a large export trade.

G. N. JACOBI, who has been connected with the Reading Hardware Company, Reading, Pa., for the past 21 years, has tendered his resignation. He has served the company efficiently as assistant treasurer, treasurer and general manager.

T. R. Haton, Mount Vernon, Wash., general Hardware, Farm Implements and Machinery, will be succeeded on January 1 by the Hayton-Peck Hardware Company, newly incorporated with a capital of $30,000.

## The Grip Nut.

The grip nut illustrated in Figs. 1 and 2 is made by the Grip Nut Company, 1590 Old Colony Building, Chicago, and 500 Fifth avenue, New York. It is made from special steel of high tensile strength, and is tapped

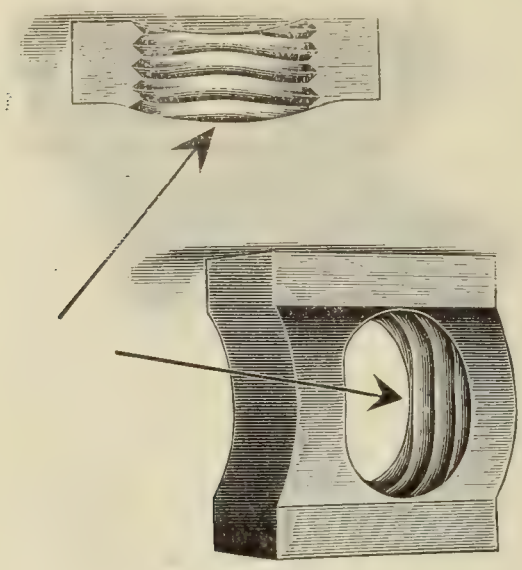


*Fig. 1.—The Grip Nut, Treatment of Threads.*

through the arch shaped section with United States standard threads, such as are used on ordinary bolts. It owes its distinctive feature to the subsequent treatment of the threads, by which, it is claimed, a tenacious gripping power is imparted. This is accomplished by subjecting the crown of the arch to pressure after the nut is threaded, which alters the pitch of the threads by giving them a slight downward curve on the arched sides. The effect of this treatment is shown in Fig. 1, where the deflection of the threads is exaggerated in order to bring out more clearly the principle involved. The nut is applied by starting it with the hollow side or face toward the first nut or bearing, and it is recommended that in setting it up it should not be wrenched so tight as to spring or flatten the set of the curve. Owing to the grip afforded by the deflected threads it does not depend for the tightness of its hold upon being jammed up against the inner nut or bearing; in other words, it is designed to lock itself upon its eccentric threads and to hold permanently and securely at any point on the bolt to which it may be threaded. It is stated that notwithstanding this slight eccentricity given the threads the bolt is not injured. The nuts may be removed with a wrench and used again repeatedly. They are made in all sizes, both hexagon and square.

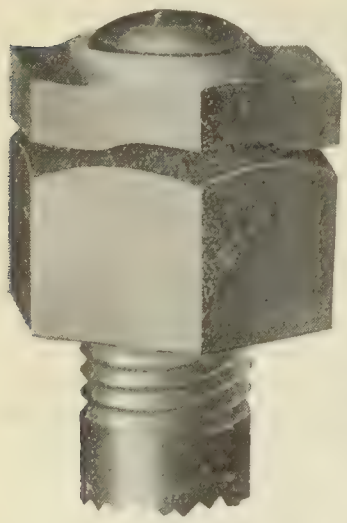
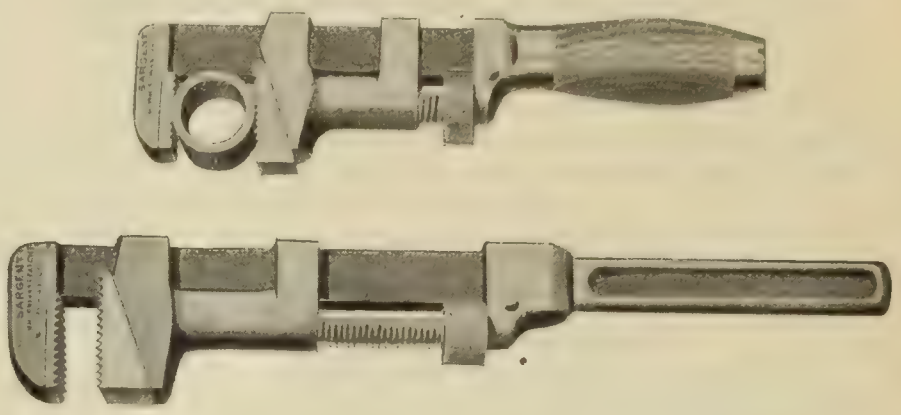


*Fig. 2.—Grip Nut on Bolt.*

## The Brosnihan Pipe Wrench.

The Brosnihan Wrench Company, 31 Hermon street, Worcester, Mass., is putting on the market a new pipe wrench, embodying interesting mechanical features. As seen in the illustration the tool resembles the standard screw wrench in appearance, and possesses the same advantage of being adjusted and operated by one hand, leaving the other free to hold and guide the pipe. The sleeve jaw is cut away on an angle, and is T-slotted to take the sliding jaw. The angle of the sleeve jaw being the same as that of the sliding jaw, the working jaw surfaces always maintain the same angular relation one to the other. The sliding jaw is held toward the bar by a spring. The result is that when the wrench is turned in the direction to cause the sliding jaw to ride up on the incline, that is to say toward the bar, the wrench tightens on the work, thus combining the force of lever and wedge, the harder the pull the firmer the grip. Turning the wrench in the opposite direction loosens the jaws, the wedge riding down the incline. The effect is similar to a ratchet motion. It is explained that the wrench can be set so that it will not crush thin pipe. The jaws are of hardened tool steel and are easily replaceable. The bar sleeve and screw



*The Brosnihan Pipe Wrench with Wood or Steel Handle.*

are case hardened. The wrench is made in two styles, polished and dark finished, and in three sizes, 8, 12 and 18 in., the two smaller sizes having wooden handles, Fig. 1, and the 18 in. an iron handle, Fig. 2.

## Factory Pans with Handles.

Among recent additions to the product of the Kilbourne & Jacobs Mfg. Company, Columbus, Ohio, is a line of factory pans, two of which are here illustrated. The pan shown in Fig. 1 is smooth inside, with no seams or rivets, and is suitable for handling or storing parts of electrical instruments, clocks, watches and parts of ma-



*Fig. 1.—Pan with Flat Steel Handles.*

chinery. It is pressed from No. 16 gauge steel, but can be made of heavier or lighter steel if desired. It is 13¾ in. wide, 21½ in. long, 5¾ in. deep, weighs 9 lb., and is furnished plain, painted or galvanized. The pan shown in Fig. 2 has a heavy rolled flange and rolled steel handles, and is designed not to buckle in use. It is referred to as being very strong, and is especially adapted to

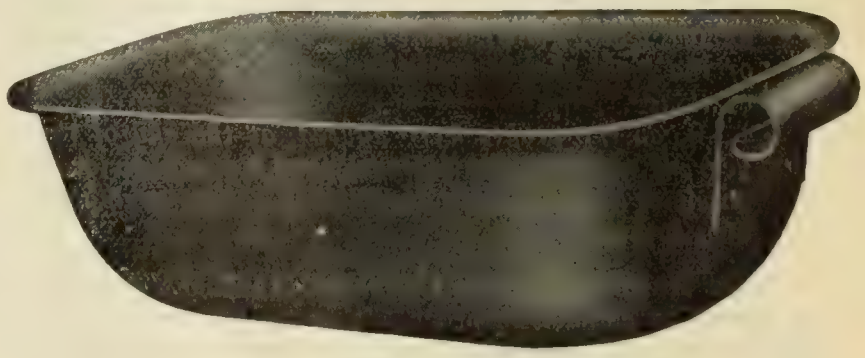


*Fig. 2.—Heavy Pan with Rolled Steel Handles.*

handling castings, ore, quartz, bolts, rivets, nails, screws, washers, parts of machines and for all other purposes for which tote boxes are used. The pan is pressed from No. 16 gauge steel, but can be made heavier or lighter as desired. It is made in two sizes, as follows: I, 11 in. wide, 16 in. long, 5½ in deep, weight, 7½ lb.; J, 8¾ in. wide, 16½ in. long, 5¼ in. deep, weight, 6 lb.

## Palmer's 1909 Hammocks.

The accompanying illustrations show new hammocks manufactured by the I. E. Palmer Company, Middletown, Conn. The swinging couch hammock shown in Fig. 1 is suspended from the company's special couch support,

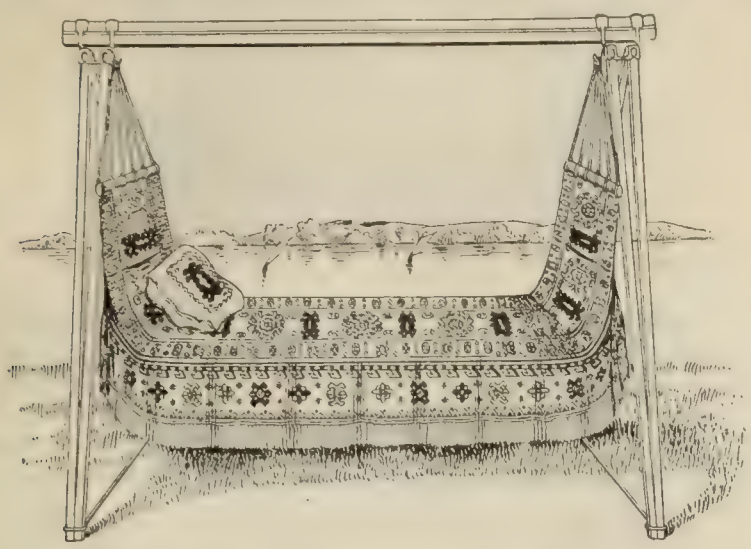


*Fig. 1.—Utopia Couch Hammock on Special Support.*

which can be supplied with an awning. In Fig. 2 the same kind of a hammock is hung from a veranda ceiling by ceiling plates specially constructed to afford a noiseless antifriction movement. The hammock may also be suspended from trees. It comprises a bed frame, 28 x

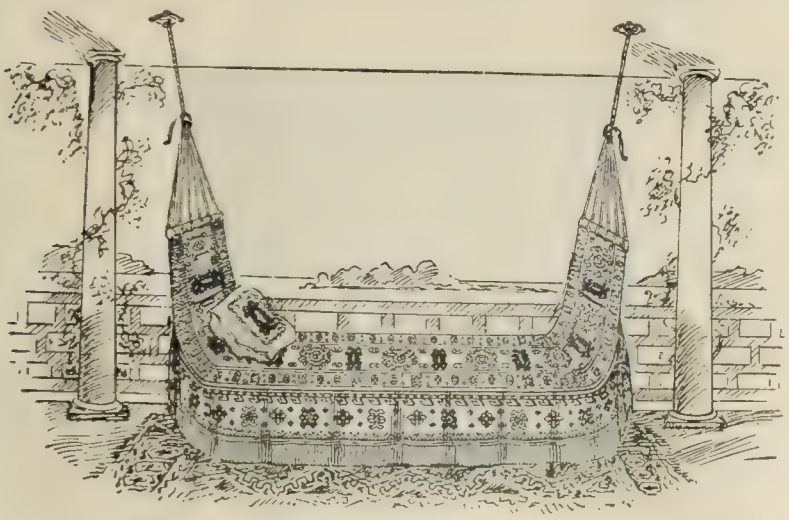


*Fig. 2.—Utopia Couch Hammock on Veranda.*

72 in. in size, strongly made from well seasoned rock maple. To the frame is attached a helical spring and wire mattress, or bed support, of modern construction, calculated to supply the maximum amount of ease and durability. Upon this is placed a thick cotton quilt wadding, giving, it is shown, in connection with the spring an easy bed, over which is stretched the fabric of the ham-

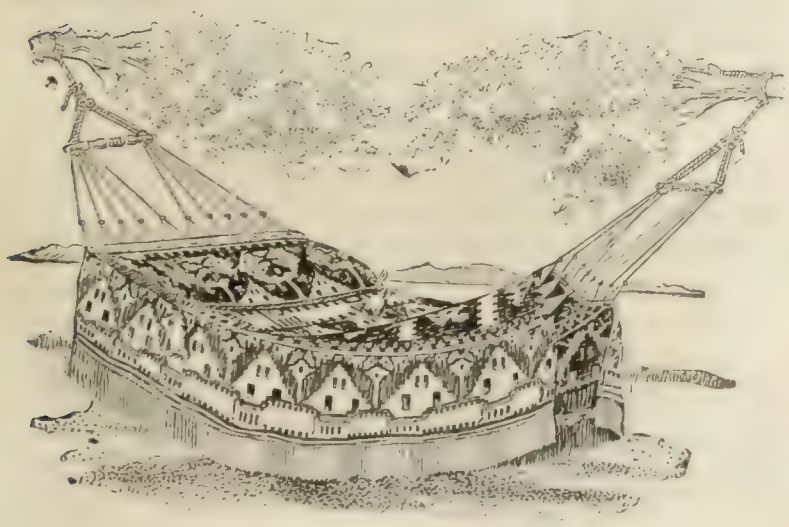


*Fig. 3.—Palmer Hammock, Model Town Design.*

mock body. The bed frame is easily removed and can be reversed if it spring or warps. The hammock is supplied with valances, concealed spreaders and adjustable hitch end rings, and is furnished in two styles of weave in colors. Wind shields for attachment to one side of the hammock are supplied where requested, as are also adjustable back rests, converting the hammock into a swinging settee. Pockets at each end for the reception of magazines and papers are also supplied only when requested. One of the company's regular line of hammocks is illustrated in Fig. 3. It is explained that the naïve treatment of this "Model Town" design is on the order of Swedish hand woven work of 100 years ago, which is now being revived by order of the Queen of Sweden. This hammock is made in two colors.

## The Utica Lawn Trimmer.

The Utica Lawn Trimmer Company, 15 Post street, Utica, N. Y., is offering the lawn trimmer shown herewith. The handle is 36 in. long, and the slot in the top of the frame permits the handle to be adjusted by loosening the nut to suit the hight of the operator. The outer



*Utica Lawn Trimmer.*

end of the head of the trimmer is provided with a thin steel ring, which serves as a protector to the end of the knives and permits close trimming. Special attention has been given to the quality of the steel used in the knives. The trimmer weighs 11½ lb.

## Improved Bullet Sizing and Lubricating Implement.

The Ideal Mfg. Company, New Haven, Conn., is now prepared to furnish its new improved tool for sizing and lubricating cast bullets. The improvement pertains mainly to the grease pressure nut, shown herewith, which is provided with a wide metal spring band. When the slot is closed this will fit tightly inside of the tube which contains the lubrication. There is a hole on each opposite side of the band that goes over projecting pins on opposite side of the nut; thus the spring band and nut are fastened together. When the nut and spring band are forced in the tube, that is filled with grease, the lubrication forces the wide band snugly against the inside of the tube. By this friction the nut is prevented from turning with the screw when the pressure is applied. The grease on the inside is also prevented from escaping past the nut, which heretofore has caused trouble and some dissatisfaction. With the implement as now constructed, the work may be done in the parlor, if desired, without fear of soiling the hands. The new



*Improved Bullet Sizing and Lubricating Implement.*

pressure nuts will work in the old machines, that are now out on the market without any change, excepting the old original machines, that have the feather on the inside of the grease tube. In that case a new grease tube, as well as improved pressure nut, will be required to bring the machine up to date. In ordering it should be stated whether the nuts are wanted for the No. 1 or No. 2 lubricator.

## The Fixed Compass Plate.

The Brass Shop, 806 Empire Building, Pittsburgh, Pa., is offering the fixed compass plate here shown. It is a highly polished, flat, brass or bronze fixed plate, which permanently indicates the points of the compass, and is made in two sizes, one for the floor and the other for the window sill. The edge of the compass is beveled




*The Fixed Compass Plate.*

so that the plate lies perfectly flat. The compass is designed to satisfy the curiosity of guests at country and seaside houses, golf and country clubs, hotels, &c., who immediately wish to know the points of the compass. The direction marks are deeply cut and the plate is referred to as being decidedly unique and ornamental.

## The Vollrath Roasters.

To the line of Vollrath ware made by the Jacob J. Vollrath Mfg. Company, Sheboygan, Wis., has been recently added a two-part round roaster, here illustrated. The bottom pan has a corrugated and raised bottom to keep the fowl or roast from the extreme heat of the



*Fig. 1.—The Vollrath Two-Part Roaster.*

stove and so avoid burning. Particular attention is called to the dimensions of the roaster, which are 7½ in. in hight by 14¼ in. in diameter. It will be recognized that the hight is such as to permit its use in the smaller stoves without removing the oven shelf. The double roaster has three parts, Fig. 2, and is self-basting with a center drip, and the inner dish is so constructed as to guard against burning the roast. It has no grooves or buttons to make it unsanitary or hard to clean. The roasters

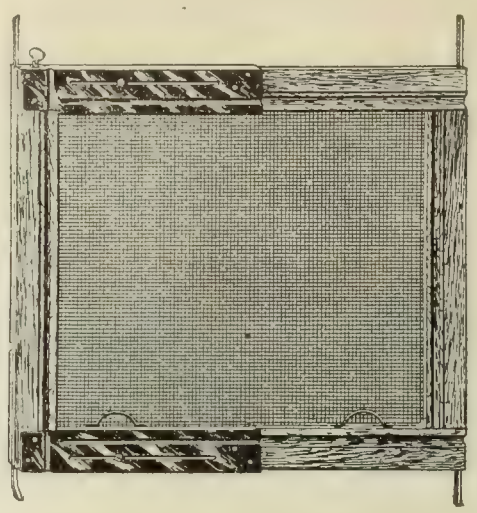


*Fig. 2.—The Vollrath Double Roaster.*

are furnished in special blue, white and white majestic and gray enamels, corresponding to those used upon the other ware made by the company.

## Worthington Adjustable Lift Screen.

The Worthington Roller Screen Company, Baltimore, Md., has just brought out the adjustable lift screen illustrated herewith. Its features include metal tongues or slides, calculated to overcome the difficulties of swelling, binding and sticking, sometimes experienced with wooden tongues, and being at the same time, it is said, neater and stronger. There is a spring solid in the tongue to hold the screen up, which the company states will not get out of order. The construction is such that new



*Worthington Improved Adjustable Lift Screen.*

cloth can easily be fitted in at trifling cost. The screens are made of highly finished hard wood, golden oak or mahogany finish. The cloth with which they are filled is described as of a specially treated linen mesh, waterproof, rustless, and not affected by salt air or sulphur. Stock widths offered are 22, 28, 34 and 40 in., each having a 6-in. adjustment and opening to 28, 34, 40 and 46 in., respectively. Three hights are offered—26, 31 or 36 in. Quotations on other than stock sizes will be gladly furnished by the company.

## The Royal Knife Polisher.

The Royal Mfg. Company, Lancaster, Pa., has placed on the market the knife polisher shown in Fig. 1. The knobs hold a piece of cork, which is reversible. The

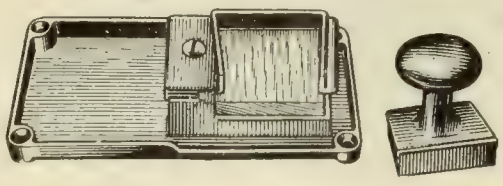


*Fig. 1.—The Royal Knife Polisher.*

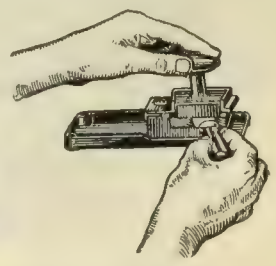


*Fig. 2.—Manner of Using Polisher.*

knife, on the opposite side, slides along a hard piece of wood. The attached receptacle is for holding sand for scouring and polishing. Fig. 2 represents the manner in which knives are polished, by rubbing them back and forth between the cork and the wood.

## The Mossberg Diamond Razor Blade Stropper

The razor blade stropper shown in the accompanying illustrations, put on the market by Frank Mossberg Company, Attleboro, Mass., is designed primarily for Gillette safety razor blades. The stropper shown in Fig. 1, with a blade in place, is 6½ in. long, being long enough to give a firm, easy grip, thus avoiding likelihood of slipping, turning in the hand or causing the operator to cut his hand or the strop. Inserting the blade, Fig. 2, is

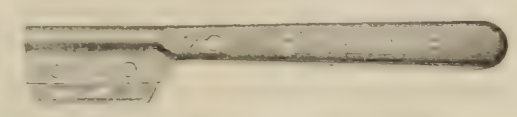


*Fig. 1.—The Mossberg Diamond Razor Blade Stropper.*

simple and easy, and can be done without danger of injury to the hand. It is accomplished by drawing back the button with the right thumb, allowing the jaws of the stropper to open to admit the blade. Holding the blade at the end, between the left thumb and finger, it is inserted between the jaws, bringing the two outside holes in the blade over the studs in the lower jaw of the stropper. The jaws are then pinched together so that the studs engage the blade, at the same time thrusting the button forward in the slot with the right thumb as far as it will go. Thus the blade is held in a viselike

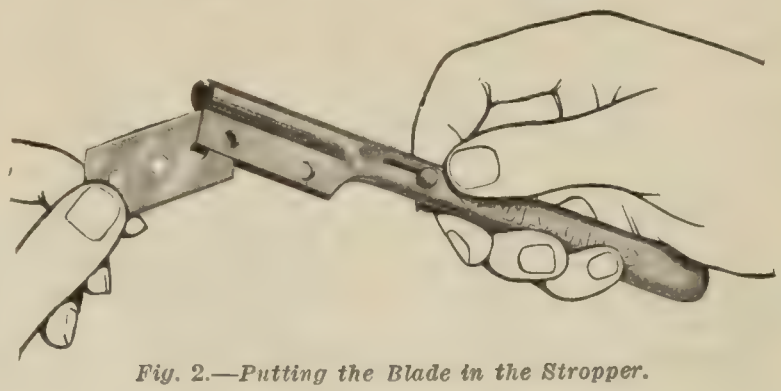


*Fig. 2.—Putting the Blade in the Stropper.*

grip, ready for stropping. The stropper will make an edge for every shave, preventing a blade from gradually growing dull through use from day to day until a new blade becomes a necessity. The stroppers are packed one in a box, one dozen boxes in a container, or carton, to be displayed on the merchant's showcase or counter.

## PAINTS, OILS AND COLORS

**Animal, Fish and Vegetable Oils—**

| | ₱ gal bbls. |
|---|---|
| Linseed, Western, Raw | 46 @47 |
| State, Raw | 46 @47 |
| City, Raw | 47 @48 |
| Boiled, 1¢ ₱ gal. advance on Raw. | |
| Raw, Calcutta, in bbls | 70 @.. |
| Lard, Prime, Winter | 73 @77 |
| Extra No. 1 | 51 @52 |
| No. 1 | 46 @48 |
| Cotton-seed, Crude, f.o.b. mill | 29¾@30 |
| Summer Yellow, prime | 38½@38¾ |
| Summer, White | 41 @42 |
| Yellow Winter | 48 @50 |
| Tallow, Acidless | 58 @59 |
| Menhaden, Brown, Strained | 34 @35 |
| Northern Crude | @.. |
| Southern | 24½@25 |
| Light Strained | 34 @35 |
| Bleached Winter | 36 @38 |
| Ex. Bleached Winter | 38 @39 |
| Cocoanut, Ceylon | ₱ lb 6¾@ 7 |
| Cochin | ₱ lb 7¼@ 7½ |
| Cod, Domestic, Prime | 38 @40 |
| Newfoundland | 40 @42 |
| Red Elaine | 41 @43 |
| Saponified | ₱ lb 6⅛@ 6¼ |
| Olive, Yellow | $1.15@$1.35 |
| Neatsfoot, Prime | 55 @58 |
| Palm, Lagos | ₱ lb 6 @ 6⅛ |

**Mineral Oils—**

| | ₱ gal. |
|---|---|
| Black, 29 gravity, 25@30 cold test | 13 @13½ |
| 29 gravity, 15 cold test | 13½@14 |
| Summer | 12½@13 |
| Cylinder, light filtered | 20½@21 |
| Dark, filtered | 18 @19 |
| Paraffine, 903-907 sp. gravity | 14½@15 |
| 903 sp. gravity | 13½@14 |
| 883 sp. gravity | 11 @11½ |
| Red | 13½@14 |

**Miscellaneous—**

| | |
|---|---|
| Barytes: | |
| White, Foreign | ₱ ton $18.50@20.50 |
| Amer., floated | ₱ ton 17.00@18.00 |
| Off color | ₱ ton 12.50@15.00 |
| Chalk, in bulk | ₱ ton 3.00@ 3.40 |

| | ₱ gal. |
|---|---|
| China Clay, Imported | ₱ ton 11.50@18.00 |
| Cobalt, Oxide | ₱ 100 lb 1.45@ 2.60 |
| Whiting, Commercial | ₱ 100 lb 42@52 |
| Gilders | ₱ 100 lb .55@ .60 |
| Ex. Gilders | ₱ 100 lb .60@ 65 |

**Putty, Commercial—** ₱ 100 lb

| | |
|---|---|
| In bladders | $1.70 @1.80 |
| In bbls. or tubs | 1 20 @1.45 |
| In 1 lb to 5 lb cans | 2.65 @2.95 |
| In 12½ to 50 lb cans | 1.50 @1.90 |

**Spirits Turpentine—** ₱ gal.

| | |
|---|---|
| In Oil bbls | 41 @41½ |
| In machine bbls | 41½@42 |

**Glue—**

| | ₱ lb |
|---|---|
| Cabinet | 12 @15 |
| Common Bone | 7½@ 9 |
| Extra White | 18 @24 |
| Fish, liquid, 50 gal. bbls., per gallon | 60 @1.20 |
| Foot Stock, White | 12 @14 |
| Foot Stock, Brown | 9 @11 |
| German Common Hide | 10 @12 |
| German Hide | 12 @18 |
| French | 10 @40 |
| Irish | 13 @16 |
| Low Grade | 10 @12 |
| Medium White | 14 @17 |

**Gum Shellac—**

| | ₱ lb |
|---|---|
| Bleached, Commercial | 21 @22 |
| Bone Dry | 25 @26 |
| Button | 30 @40 |
| Diamond I | @39 |
| Fine, Orange | 30 @35 |
| A. C. Garnet | 22½@23 |
| G. A. L. | 20 @21 |
| Kala Button | 15½@16 |
| D. C. | @41 |
| Octagon B | 31 @32 |
| T. N. | 20½@21 |
| V. S. O. | @35 |

**Colors in Oil—**

| | ₱ lb |
|---|---|
| Black, Lampblack | 12 @14 |
| Blue, Chinese | 36 @16 |
| Blue, Prussian | 32 @36 |
| Blue, Ultramarine | 13 @16 |
| Brown, Vandyke | 11 @14 |
| Green, Chrome | 12 @16 |
| Green, Paris | @24 |
| Sienna, Raw | 12 @15 |
| Sienna, Burnt | 12 @15 |
| Umber, Raw | 11 @14 |
| Umber, Burnt | 11 @14 |

**White and Red, Lead &c.—**

| | ₱ lb |
|---|---|
| Lead, English white, in Oil | 10⅛@10⅜ |
| Lead, American White: | |
| Dry and in Oil, 100, 250 and 500 lb kegs | 6¾ |
| Dry and in Oil, 25 and 50 lb kegs | 7 |
| Dry and in Oil, 12½ lb kegs | 7¼ |
| In Oil, 25 lb tin pails | 7¼ |
| In Oil, 12½ lb tin pails | 7¾ |
| In Oil, 1, 2, 3 and 5 lb tin cans, ass't | 8¾ |
| Red Lead and Litharge: | |
| In 100 lb kegs | 7 |
| In 25 and 50 lb kegs | 7¼ |
| In 12½ lb kegs | 7½ |
| In lots of less than 500 lbs, ½¢ ₱ lb advance over above prices of White and Red Lead and Litharge. | |

Lead, American. Terms: On lots of 500 lbs and over, 60 days, or 2% for cash if paid in 15 days from date of invoice.

**Zinc, Dry—**

| | ₱ lb |
|---|---|
| American, dry | 5⅛@ 5⅝ |
| Red Seal (French process) | 6¾@ 7 |
| Green Seal | 7¼@ 7½ |
| German Red Seal (French process) | 7 @7¼ |
| Green Seal | 7½@ 7⅞ |
| White Seal | 8¼@ 9 |
| French, Red Seal | 8¾@ 8¾ |
| Green Seal | 10⅜@10⅝ |

**Dry Colors—**

| | ₱ lb |
|---|---|
| Black, Carbon | 6½@10 |
| Black, Drop, American | 3½@ 8 |
| Black, Drop, English | 5 @15 |
| Black, Ivory | 16 @20 |
| Lamp, commercial | 4 @ 6 |
| Blue, Celestial | 4 @ 6 |
| Blue, Chinese | 30 @32 |
| Blue, Prussian | 28 @30 |
| Blue, Ultramarine | 3½@15 |
| Brown, Spanish | ½@ 1 |
| Carmine, No. 40 | $3 10@3 25 |
| Green, Chrome, ordinary | 3½@ 5 |
| Green, Chrome, pure | 17 @25 |
| Ocher, American | ₱ ton $8.50@16.00 |
| American Golden | 2½@ 3¼ |
| French | 1¼@ 2 |
| Foreign Golden | 3 @ 4 |
| Orange Mineral, English | 10 @12 |
| French | 12¾@13 |
| German | 12 @13 |
| American | 9 @10 |
| Red, Indian, English | 4½@ 6 |
| American | 3 @ 3¼ |
| Red, Turkey, English | 4 @10 |
| Red, Tuscan, English | 7 @10 |
| Red, Venetian, Amer. | ₱ 100 lb $0.50@1.25 |
| English | ₱ 100 lb $1.15@1.60 |
| Sienna, Italian, Burnt and Powdered | 3 @ 9 |
| Italian, Raw, Powdered | 3 @ 7 |
| American, Raw | 1½@ 2 |
| American Burnt and Pow'd | 1½@ 2 |
| Talc, French | ₱ ton $18.00@25.00 |
| American | ₱ ton 15.00@25.00 |
| Terra Alba, French | ₱ 100 lb .90@ 1.00 |
| English | ₱ 100 lb .80@ 1.00 |
| American | ₱ 100 lb, No. 1, .75@ .80 |
| American | ₱ 100 lb, No. 2, .60@ .65 |
| Umber, T'key, Bnt, & Pow. | 2⅝@ 3 |
| Turkey, Raw and Powdered | 2⅝@ 3 |
| Burnt, American | 1½@ 2 |
| Raw, American | 1½@ 2 |
| Yellow, Chrome, Pure | 12¾@15 |
| Vermilion, American Lead | 7 @25 |
| Quicksilver, bulk | 65 @.. |
| Quicksilver, bags | @66 |
| English, Imported | @70 |
| Chinese | $0.90@1.00 |


# THE IRON AGE

*The oldest paper in the world devoted to the interests of the Hardware, Iron, Machinery and Metal Trades, and a standard authority on all matters relating to those branches of industry.*

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# Current Hardware Prices.

**General Goods.**—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

**Special Goods.**—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

**Range of Prices.**—A range of prices is indicated by means of the symbol @. Thus 33⅓ @ 33⅓ & 10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

**Names of Manufacturers.**—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued annually, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

**Standard Lists.**—"The Iron Age Standard Hardware Lists" contains the list prices of many leading goods.

**Additions and Corrections.**—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

### Adjusters, Blind—
Columbian and Domestic.....33⅓%
North's .....10%
Upson's Patent, ℔ gro., $29.90.....10%
Zimmerman's—See Fasteners, Blind.

### Window Stop—
Ives' Patent.....10%
Ives' Stop Bead Screws and Washers .....10%
Taplin's Perfection.....10%

### Ammunition—See *Caps, Cartridges, Shells, &c.*

### Anti—Rattlers—
Fernald Mfg. Co. Burton Anti-Rattlers, ℔ doz. pairs, Nos. 1, $0.75; 2, $0.60; 4, $1.00; 5, $0.50.
Fernald Quick Shifter, ℔ doz. pairs .....$2.00@$3.00

### Anvils—American—
Eagle Anvils.....℔ lb @8 ¢
Hay-Budden, Wrought.....9½@9¾ ¢
Trenton .....℔ lb 9½@9¾ ¢

### Imported—
Swedish Solid Steel Paragon, ℔ lb .....10@10½ ¢
Swedish Solid Steel Sisco, Superior, ℔ lb.....10@10½ ¢
Peter Wright & Sons, ℔ lb, 84 to 349 lb, 11¢; 350 to 600 lb, 11½ ¢.

### Anvil, Vice and Drill—
Millers Falls Co., $18.00.....15&10%

### Apple Parers—See *Parers, Apple, &c.*

### Aprons, Blacksmiths'—
Livingston Nail Co.....10%

### Augers and Bits—
*Com. Double Spur....80@80&10%*
*Jennings' Patn., Bright.65&10@70%*
*Black Lip or Blued...65@65&5%*
*Boring Mach. Augers.....70%*
*Car Bits, 12-in. twist.....40&10%*
Ford's Auger and Car Bits.....40&5%
Ft. Washington Auger Co., Conard's .....35%
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip. R. Jennings' list, 25&7½%
No. 30, R. Jennings' list.....50%
Russell Jennings'.....25&10&2½%
L'Hommedieu Car Bits.....15%
Mayhew's Countersink Bits.....45%
Pugh's Black.....20%
Pugh's Jennings' Pattern.....35%
Snell's Auger Bits.....60%
Snell's Bell Hangers' Bits.....60%
Snell's Car Bits, 12 in. twist.....60%
Snell's King Auger Bits.....50%
Swan's .....65&10&7½%
Swan's, Jennings' Pattern.....50%
Wright's Jennings' Bits.....50%

### Bit Stock Drills—
See *Drills, Twist.*

### Expansive Bits—
Clark's Pattern, No. 1, ℔ doz., $26; No. 2, $18.....60&10%
Ford's, Clark's Pattern...60&5@60&10%
C. E. Jennings & Co., Steer's Pat..25%
Lavigne Pat., small size, $18.00; large size, $26.00.....60&10%
Swan's .....60%

### Gimlet Bits—
*Per gro.*
*Common Dbl. Cut.....$3.00@3.25*
*German Pattern, Nos. 1 to 10, $4.75; 11 to 13, $5.75*

### Hollow Augers—
***Bonney Pat., per doz..$5.50@6.00***
Ames .....20&10%
Universal .....20%

### Ship Augers and Bits—
*Ship Augers.....40&10@—%*
Ford's .....33⅓&5%
C. E. Jennings & Co.:
L'Hommedieu's .....6%
Warrens' .....33⅓&7½%
Snell's .....48%

### Awl Hafts—See *Handles, Mechanics' Tool.*

### Awls—
*Brad Awls:*
*Handled .....gro. $2.75@3.00*
*Unhdled, Shldered...gro.63@66¢*
*Unhandled, Patent..gro.66@70¢*
*Peg Awls:*
*Unhandled, Patent..gro. 31@34¢*
*Unhdled, Shldered..gro. 65@70¢*
*Scratch Awls:*
*Handled, Com...gro. $3.50@4.00*
*Handled, Socket..gro.$11.50@12.00*
*Elmore Tool Mfg. Co..*
*Tinners' and Brad Awls.55&7%*
*Scratch Awls.....60%*

### Awl and Tool Sets—See *Sets, Awl and Tool.*

### Axes—
*Single Bit, base weights: Per doz.*
*First Quality.....$4.75@5.00*
*Second Quality.....$4.25@4.50*
*Double Bit, base weights:*
*First Quality.....$7.00@7.50*
*Second Quality.....$6.50@6.75*

### Axle Grease—
See *Grease, Axle.*

### Axles—Iron or Steel.
*Concord, Loose Collar...4¼@4½¢*
*Concord, Solid Collar....4½&5 ¢*
*No. 1 Common, Loose...3½@4 ¢*
*No. 1½ Com., New Style.4¼@4¾¢*
*No. 2 Solid Collar.....4¼@4¾¢*
*Half Patent:*
*Nos. 7, 8, 11 and 12.....70%*
*Nos. 13 to 14.....70%*
*Nos. 15 to 18...70&10@70&10&5%*
*Nos. 19 to 22...70&10@70&10&5%*

### Boxes, Axles—
*Common and Concord, not turned .....lb., 5@6¢*
*Common and Concord, turned, lb., 6@7¢*
*Half Patent.....lb., 9½@10¢*

### Bait—Fishing—
Hendryx:
A Bait.....20%
B Bait.....5%
Competitor Bait.....20&5%

### Balances—Sash—
Caldwell new list.....50&10%
Pullman .....50&10%

### Spring—
*Light Spring Balances.60@60&5%*
Chattillon's:
Light Spg. Balances.....50@50&10%
Straight Balances.....40@40&10%
Circular Balances.....50&10%
Large Dial.....30%

### Barb Wire—See *Wire, Barb.*

### Bars—Crow—
*Steel Crowbars, 10 to 40 lb.... per lb., 2¼@2½¢*

### Towel—
No. 10 Ideal, Nickel Plate..℔ gro. $8.50

### Beam, Scale—
*Scale Beams.....40%*
Chattillon's No. 1.....30%
Chatillon's No. 2.....40%

### Beaters, Carpet—
Holt-Lyon Co.:
No. 12 Wire Coppered ℔ doz. $0.80; Tinned .....$0.85
No. 11 Wire Coppered ℔ doz. $1.15; Tinned .....$1.20
No. 10 Wire Tinned.....℔ doz. $1.50

### Beaters Egg—
Dover Stamping & Mfg. Co.:
Genuine Dover, per gro., No. 1, Tumbler Size, $7.50; No. 2, Family Size, $7.50; No. 3, Extra Family Size, $24.00; No. 4, Hotel Size, $30.00.
Holt-Lyon Co.:
Holt, per doz., No. 5, Jap'd, $0.80; No. A, Jap'd, $1.15; No. B, Jap'd, $1.85; No. 6, Jap'd, $1.65.
Lyon, Jap'd, per doz., No. 2, $1.35.
Taplin Mfg. Co.:
Improved Dover, per gro., No. 60, $6.00; No. 75, $6.50; No. 100, $7.00; No. 102, Tin'd, $8.50; No. 150, Hotel, $15.00; No. 152, Hotel Tin'd, $17.00; No. 200 Tumbler, $8.50; No. 202, Tumbler Tin'd, $9.50; No. 300, Mammoth, per doz., $25.00.

### Bellows—
*Blacksmith, Standard List:*
*Split Leather.....60&10@65%*
*Grain Leather.....50@50&10%*

Hand—Net Prices.

| Inch | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|
| Doz. | $5.00 | 5.50 | 6.00 | 6.50 | 7.50 |

Molders—Net Prices.

| Inch | 10 | 12 | 14 | 16 |
|---|---|---|---|---|
| Doz. | $7.50 | 9.00 | 12.00 | 15.00 |

### Bells—Cow—
*Wrought Cow Bells.....75%*
Jersey .....75&10%
Texas Star.....50%

### Door—
Home, R. & E. Mfg. Co.'s.....55&10%

### Hand—
*Polished, Brass.....60@60&10%*
*White Metal.....60@60&10%*
*Nickel Plated.....50&10%*
*Swiss .....50&10%*
Cone's Globe Hand Bells.....33⅓@35%

### Miscellaneous—
*Farm Bells.....lb., 2¼@2½¢*
*Church and School....60@60&10%*

### Belting—Leather—
*First Quality, Ex. Hy., Strictly Short Lap.....60&10%*
*Standard .....70&10@70&10&5%*
*Light Double.....75&10%*
*Cut Leather Lacing.....45@50%*
*Leather Lacing Sides, per sq. ft.25¢*

### Rubber—
*Competition (Low Grade), 70&10@75%*
*Standard .....60&10@70%*
*Best Grades.....40@50%*

### Bench Stops—
See *Stops, Bench*

### Benders and Upsetters, Tire—
Green River Tire Benders and Upsetters .....20%

### Bicycle Goods—
John S. Leng's Son & Co.'s 1908 list:
Chain, Parts, Spokes.....50%
Tubes .....60%

### Bits—
Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

### Blocks—Tackle—
*Common Wooden.....75@75&5%*
B. & L. B. Co.:
Boston Wood Snatch, 50%; Eclipse Steel, 75%; Hollow Steel, 50&10%; Star Wire Rope, 50%; Tarbox Metal Snatch, 50%; Tarbox New Style Steel, 50&10%; Wire Rope Snatch, 50%.
Lane's Patent Automatic Lock and Junior .....30%
See also Machines, Hoisting.

### Boards, Stove—
*Paper and Wood Lined.....55%*
*Embossed .....55%*

### Boards, Wash—
See *Washboards.*

### Bobs, Plumb—
Keuffel & Esser Co.....33⅓&10%

### Bolts
### Carriage, Machine, &c,—
*Common Carriage (cut thread):*
*⅜ x 6 and smaller.....75&5%*
*Larger and longer.....70&5%*
*Common Carriage (rolled thread):*
*⅜ x 6, smaller and shorter, 75&10&5%*
*Phila. Eagle, $3.00 list...80@—%*
*Bolt Ends, with C. & T. Nuts, 70&10%*
*Machine (Cut Thread):*
*¾ x 4 and smaller.....75&10%*
*Larger and longer.....70&10%*

### Door and Shutter—
*Cast Iron Barrel, Japanned, Round Brass Knobs:*

| Inch | 3 | 4 | 5 | 6 | 8 |
|---|---|---|---|---|---|
| Per doz. | $0.30 | .35 | .45 | .60 | .80 |

*Cast Iron Spring Foot, Jap'd:*

| Inch | 6 | 8 | 10 |
|---|---|---|---|
| Per doz. | $1.20 | 1.50 | 2.25 |

*Cast Iron Chain, Flat, Japanned:*

| Inch | 6 | 8 | 10 |
|---|---|---|---|
| Per doz. | $1.00 | 1.40 | 1.65 |

*Cast Iron Flat Shutter, Jap'd, Brass Knobs:*

| Inch | 6 | 8 | 10 |
|---|---|---|---|
| Per doz. | $0.75 | .95 | 1.25 |

*Wrought Barrel Japanned, 80&10@80&10&5%*
*Barrel Bronzed.....60&10%*
*Spring .....70&10@70&10&5%*
*Shutter .....50&5@50&10&5%*
*Square Neck.....75@75&10%*
*Square .....70&10&10@80%*
Ives' Mortise.....10%
Ives' Wrought Metal.....10%

### Expansion—
F. H. Evans' Crescent.....40@60%
Richards Mfg. Co.....55&10%
Star Expansion Bolt Co.:
Star, Lag Screw Type..60&10&5&2½%
Star, Wood Screw Type.....40%
Star, Machine, Single Wedge....60%
Star, Machine, Double Wedge....60%
Steward & Romain Mfg. Co.:
Style No. 13, Double.....60%
Style No. 1, Single.....60%
Style No. 100, Dbl. Jaw, Single..55%
Lag Screw.....66⅔%

### Plow and Stove—
*Plow .....65&5@70%*
*Stove .....85@85&5%*

### Tire—
*Common Iron.....80%*
*Norway Iron.....80%*
American Screw Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84..82½%
Bay State, list Dec. 28, '99.....80%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84...82½%
Eclipse, list Dec. 28, '99.....80%
Russell, Burdsall & Ward Bolt & Nut Co.:
Empire, list Dec. 28, '99.....80%
Norway Phila., list Oct. '84.....80%
Eagle .....82½%
Shelton Co.:
Tiger Brand, list Dec. 28, '99...80%
Phila., Eagle, list Oct. 16, 1884..82½%
Upson Nut Co.:
Tire Bolts.....72½%

### Borers, Bung—
*Borers Bung, Ring, with Handle:*

| Inch | 1¼ | 1½ | 1¾ | 2 |
|---|---|---|---|---|
| Per doz. | $4.80 | 5.60 | 6.40 | 8.00 |

| Inch | 2¼ | 2½ |
|---|---|---|
| Per doz | $8.65 | 11.50 |

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.75; No. 3, $2.50 each.....25%

### Boxes, Mitre—
C. E. Jennings & Co.....25%
Langdon, New Langdon and Langdon Improved, 20&10%; Langdon Acme .....15&10%
Perfection .....40%
Seavey .....45%

### Braces—
*Comman Ball, American....$1.50*
Barber's .....50&10&10@60&10%
Fray's Genuine Spofford's.....60%
Fray's No. 61, 166, 206, 614.....50%
C. E. Jennings & Co.....50&5%
Mayhew's Ratchet.....60%
Mayhew's Quick Action Hay Pat..50%
Millers Falls Drill Braces.....25&10%
P., S. & W. Co., Peck's Pat....60&10%

### Brackets—
*Wrought Steel.....75&10&5@80%*
Bradley Metal Clasp...80&10@80&10&5%
Griffin's Pressed Steel.....75@75&10%
Griffin's Folding Brackets.....70&10%
Taplin Victor Handy Egg Beater Bracket .....℔ doz. $1.50

### Bright Wire Goods—
See *Wire and Wire Goods.*

### Broilers—
Kilbourne Mfg. Co.....75&20%
Wire Goods Co.....75%

### Buckets, Galvanized—
*M'fr's list, price per gross.*

| Quart.. | 10 | 12 | 14 |
|---|---|---|---|
| Water, Reg... | 26.85 | 29.50 | 33.50 |
| Water, Hvy... | 45.35 | 48.00 | 52.00 |
| Fire, Rd. Btm. | 32.00 | 34.65 | 38.65 |
| Well ..... | 37.35 | 41.35 | 45.35 |

10&7½&5&5%

### Bull Rings—See *Rings, Bull.*

### Butts—Brass—
*Wrought, High List, Oct. 26, '06.65%*
Cast Brass, Tiebout's.....40&10%

### Cast Iron—
*Fast Joint, Broad....40&10@50%*
*Fast Joint, Narrow...40&10@50%*
*Loose Joint.....70&10@75%*
*Loose Pin.....70&10@75%*
*Mayer's Hinges.....70@70&5*
*Parliament Butts.....70@70&5*

### Wrought Steel—Bright.
*Light Narrow, Light Reversible .....70&5%*
*Reversible and Broad..70&5%*
*Loose Joint, Narrow, Light Inside Blind, &c.....70%*
*Back Flaps, Table Chest.65% Japanned.*
*Light Narrow, Loose Pin, 40&5%*
*Light Narrow, Ball Tip .60%*
*Broad .....40&5%*
*Steeple Tipped.....70%*
*Ball Tipped.....70%*

Extra, 10@ —

## Cages, Bird—

Hendryx Brass: Series 3000, 5000, 1100, net list; 1200, 15%; 200, 300, 900 ..... 30%
Hendryx Bronze: Series 700, 800.... 30%
Hendryx Enameled..... 35%

## Calipers—See *Compasses.*

## Calks, Toe and Heel—

*Blunt, 1 prong, per 100 lb., $3.50@$3.85*
*Sharp, 1 prong, per 100 lb., $4.00@$4.35*
Burke's, 1 pg. Blunt Toe, 3¾c; 2 pg. Blunt Toe, 4¼¢; 1 pg. Sharp Toe, 4¼¢; 2 pg. Sharp, 4¾¢; Blunt Heel, 4¼¢; Sharp Heel..... 4¾¢
Lautier, Blunt, 4@4¼¢; Sharp, 4½@4¾¢
Perkins', Blunt, ℔ lb, 3.65¢; Sharp, 4.15¢

## Can Openers—

See *Openers, Can.*

## Caps, Percussion—

*Eley's E. B..... 52@55¢*
*G. D..... per M 34@35¢*
*F. L..... per M 40@45¢*
*G. E..... per M. 48@50¢*
*Musket ..... per M 62@63¢*

## Primers—

*Berdan Primers, $2 per M..20&5%*
*Primer Shells and Bullets..15&10%*
*All other primers per M. $1.52@1.60*

## Carpet Stretchers—

See *Stretchers, Carpet.*

## Cartridges—

*Blank Cartridges:*
*32 C. F., $5.50..... 10&5%*
*38 C. F., $7.00..... 10&5%*
*22 cal. Rim, $1.50..... 10&5%*
*32 cal. Rim, $2.75..... 10&5%*
*B. B. Caps, Con. Ball, Swgd. $1.90*
*B. B. Caps, Round Ball.....$1.40*
*Central Fire..... 25%*
*Target and Sporting Rifle. 15&5%*
*Primed Shells and Bullets. 15&10%*
*Rim Fire, Sporting..... 50%*
*Rim Fire, Military..... 15&5%*

## Casters—

*Bed ..... 65&10@70%*
*Plate ..... 60@60&5%*
*Philadelphia ..... 70&10@75%*
Acme, Ball Bearing..... 35%
Gem (Roller Bearing)..... 70&10&10&5%
Steel Gem (Roller Bearing)..... 70%
Standard Ball Bearing..... 45%
Yale (Double Wheel) low list... 40&10%

## Cattle Leaders—

See *Leaders, Cattle.*

## Chain, Proof Coil—

*American Coil, Straight Link:*

| 3-16 | ¼ | 5-16 | ⅜ | ½ | ⅝ |
|---|---|---|---|---|---|
| $7.70 | 5.10 | 4.15 | 3.50 | 3.30 | 3.10 |

¾-⅞-1 1⅛ to 1¼ inch.
$3.00 3.10
*In cask lots, deduct 25¢.*
*German Coil..... 70%*
*German Pattern Coil:*
*6-0 to 1..... 70&10&5%*
*2 and 3..... 60&10&10@70%*
*4, 5 and 6..... 50&10@50&10&5%*

## Halter—

*Halter Chains..... 60&5@60&10%*
*German Pattern Halter Chains, list July 24, '97.... 60&10&5@70%*
Covert Mfg. Co.:
Halter ..... 35&5%

## Cow Ties—

See *Halters and Ties.*

## Trace, Wagon, &c.—

*Traces, Western Standard: 100 pr.*
*6½—6-3, Straight, with ring. $28.00*
*6½—6-2, Straight, with ring. $29.00*
*6½—8-2, Straight, with ring. $32.00*
*6½—10-2, Str'ght, with ring. $37.00*
*NOTE.—Add 2c per pair for Hooks Twist Traces: add per pair for Nos. 2 and 3, 2c; No. 1, 3c; No. 0, 4c to price of Straight Link.*
*Eastern Standard Traces, Wagon Chain, &c...60&10@60&10&5%*

## Miscellaneous—

*Jack Chain, list July 10, '93:*
*Iron .....60&10&5@60&10&10%*
*Brass ..... 65%*
*Safety and Plumbers' Chain. 75%*
*Gal. Pump Chain....lb., 4½@5%*
Bridgeport Chain Co.:
Triumph Halter and Coil. 35&2½@40%
Triumph Dog..... 50&10@60%
Brown Halter and Coil....45@50&5%
Covert Mfg. Co.:
Breast, Halter, Heel, Rein, Stallion ..... 40%
Oneida Community:
American Halter, Dog and Kennel Chains ..... 35&2½@40%
Niagara Dog Leads and Kennel Chains ..... 45@50&5%
Wire Goods Co.:
Dog Chain..... 70%
Universal Dbl.-Jointed Chain....70%

## Chain and Ribbon, Sash—

Oneida Community:
Steel Chain..... 60%
Pullman:
Bronze Chain, 60%; Steel Chain, Coppered ..... 60&10%
Sash Chain Attachments, per set..8¢
Aluminoy Sash Ribbon, per 100 ft. ..... $2.00@$5.00
Sash Ribbon Attachments, per set..8¢

## Chalk—

*Carpenters' Blue..... gro., 50¢*
*Carpenters' Red..... gro., 50¢*
*Carpenters' White..... gro., 40¢*

## Checks, Door—

Bardsley's ..... 45%
Pullman, per gro..... $54.00
Russwin ..... 33⅓%

## Chests, Tool—

American Tool Chest Co.:
Boys' Chests, with Tools..... 55%
Youths' Chests, with Tools..... 40%
Gentlemen's Chests, with Tools..30%
Farmers', Carpenters, etc., Chests, with Tools ..... 20%
Machinists' and Pipe Fitters' Chests, Empty..... 45%
Tool Cabinets..... 45%
C. E. Jennings & Co.'s Machinists' Tool Chests..... 7½%

## Chisels—Socket Framing and Firmer

*Standard List..80&10@80&10&10%*
Buck Bros..... 30%
C. E. Jennings & Co.:
Socket Firmer No. 10..... 25&7½%
Socket Framing No. 15..... 25&7½%
Swan's ..... 66⅔@70%
L. & I. J. White & Co..... 30@30&5%

## Tanged—

*Tanged Firmers..... 30&5@35%*
Buck Bros..... 30%
C. E. Jennings & Co. Nos. 191, 181..25%
L. & I. J. White Co..... 25&5%

## Cold—

*lb.*
*Cold Chisels, good quality. 13@15¢*
*Cold Chisels, fair quality. 11@12¢*
*Cold Chisels, ordinary.... 9@10¢*
*Elmore Tool Mfg. Co.:*
*Cold Chisels..... 50&5%*

## Chucks—

Almond Drill Chucks..... 35%
Almond Turret Six-Tool Chuck..... 40%
Beach Pat. each $8.00..... 35&5%
Empire ..... 25%
Blacksmiths' ..... 25%
Jacobs' Drill Chucks..... 35%
Pratt's Positive Drive..... 25%
Skinner Lathe Chucks:
Independent ..... 35%
Universal, Reversible Jaws..... 35%
Universal, Com. Style Jaws..... 40%
Combination, Reversible Jaws....35%
Combination, Com. Style Jaws...40%
Round Body or Box Body, 2 Chuck Jaws ..... 25%
Geared Scroll Chucks..... 25%
Drill Chucks:
New Model, 25%; Geared Pattern, 25%; Skinner Patent, ...25%
Positive Drive..... 40%
Planer Chucks..... 20%
Standard ..... 45%
Drill Press Vises..... 30%
Face Plate Jaws..... 35%
Standard Tool Co.:
Improved Drill Chuck..... 45%
Union Mfg. Co.:
Combination, Nos. 1, 2, 3, 4, 5, 6, 7, 8 and 17, 40%; No. 21..... 35%
Scroll Combinations, Nos. 83 and 84 ..... 30%
Geared Scroll, Nos. 33, 34 and 35..25%
Independent Iron, Nos. 18 and 318.35%
Independent Steel, No. 64..... 25%
Union Drill, Nos. 000, 00, 100, 101, 102, 103, 104..... 35%
Union Czar Drill..... 25%
Universal, 11, 12, 16, 17, 13, 14, 15..40%
Universal No. 42..... 35%
Iron Face Plate Jaws, Nos. 28, 30, 48 and 50..... 35%
Steel Face Plate Jaws, Nos. 70 and 72 ..... 30%
Westcott Patent Chucks:
Lathe Chucks..... 50%
Little Giant Auxiliary Drill..... 50%
Little Giant Double Grip Drill...50%
Little Giant Drill, Improved..... 50%
Oneida Drill..... 50%
Scroll Combination Lathe..... 50%
Whitaker Mfg. Co.:
National Drill..... 25%

## Clamps—

Carriage Makers', Star, P., S. & W. Co. ..... 50%
Besly, Parallel..... 33⅓&10%
Hammer & Co.:
Adjustable ..... 20&5
Carriage Makers' H. P. Screw. 40&5
Myers' Hay Rack..... 50
Lineman's Swedish Neverturn..... 65
Saw Clamps, see Vises, Saw Filers'

## Cleaners, Drain,

Iwan's Champion, Adjustable..... 50%
Iwan's Champion, Stationary..... 40%

## Sidewalk—

American Fork & Hoe Co.:
Star, ℔ doz., Socket. $1.00; Shank ..... $3.50
Shank, ℔ doz., X 7½, $3.50; Shank, X 8..... $3.75

## Cleavers, Butchers'—

Foster Bros..... 30%
Fayette R. Plumb..... 30
L. & I. J. White Co..... 30

## Clippers, Horse and Sheep—

Chicago Flexible Shaft Co.:
1902 Chicago Horse, each..$10.75
20th Century Horse, each...$5.00
Lightning Belt Horse, each.$15.00
Chicago Belt Horse, each..$20.00
Stewart's Enclosed Gear Roll Bearing Horse, each..... $6.75
Stewart's New Model Sheep Shearing Machine each.$12.75
Stewart Enclosed Gear Shearing Machine, No. 8, each..$9.75

## Clips, Axle—

*Regular Styles, list July 1, '05.* 50@50&10%

## Cloth and Netting, wire—See *Wire, &c.*

## Cocks, Brass—

*Hardware list:*
*Plain Bibbs, Globe, Kerosene, Racking, Liquor, Bottling, &c ..... 75%*
*Compression Bibbs..... 50%*

## Coffee Mills—

See *Mills, Coffee.*

## Collars, Dog—

Nickel Chain, Walter B. Stevens & Son's list..... 40%
Leather, Walter B. Stevens & Son's list ..... 40%

## Compasses, Dividers, &c.

*Ordinary Goods..... 70&10@75%*

## Conductor Pipe,—

*L. C. L. to Dealers:*

| | Gal. Steel. | Charcoal. | Copper. |
|---|---|---|---|
| *Northeastern:* | | | |
| | 70&10% | 50&10&7½% | 50&10% |
| *Eastern:* | | | |
| | 70&10&5% | 50&10&7½% | 50&10% |
| *Central:* | | | |
| | 75&5% | 60% | 50&10% |
| *Northwestern:* | | | |
| | 75&21½% | 60% | 50&10% |
| *Western:* | | | |
| | 70&7½% | 50&12½% | 50&5% |
| *Tennessee:* | | | |
| | 70&10% | 50&12½% | 50&10% |
| *Southern:* | | | |
| | 70% | 50&12½% | 50&5% |
| *Southwestern:* | | | |
| | 70% | 50&5% | 50&5% |

*Terms, 60 days: 2% cash 10 days. Factory shipments generally delivered.*
See also Eave Troughs.

## Coolers, Water—

L. & G. Mfg. Co.:

| Gal. | 2 | 3 | 4 | 6 | 8 |
|---|---|---|---|---|---|
| Galvanized, ea. | $1.85 | $2.00 | $2.25 | $2.90 | $3.90 |
| Galvanized, Lined, side handles, Gal. | 2 | 3 | 4 | 6 | 8 |
| Each | $1.95 | $2.15 | $2.40 | $3.30 | $4.15 |

White Enameled..... 10%
Agate Lined..... 10%

## Coppers' Tools—

See *Tools, Coopers'.*

## Coppers, Soldering—

*Soldering Coppers, 3 lb. to pair and heavier, 21½¢; lighter than 3 lb. to pair..... 23½¢*

## Cord—Sash—

*Braided, Drab..... lb. 35¢*
*Braided, White, Com., Nos. 8 to 12, 22¢; No. 7, 22½¢; No. 6, 23½¢. In lots of 12 doz. or over, 1 cent less per pound.*
*Cable Laid Italian, lb., No. 18. 37¢*
*Italian, lb., A, No. 18, 25¢; B, 22¢*
*Common India..... lb., 11@11½¢*
*Cotton Sash Cord, Tw'ted. 18@20¢*
*Patent Russia..... lb.... 20¢*
*Cable Laid Russia..... lb... 21¢*
*India Hemp, Br'd'd..... lb... 21¢*
*India Hemp, Twisted... lb. 13@14¢*
*Patent India, Twisted.. lb... 17¢*
Pearl Braided, cotton, No. 6, ℔ lb, 20½¢; No. 7, 19½¢; Nos. 8 to 12, 19½¢, in 12 doz. to 100 doz. lots.
Eddystone, Braided, Nos. 8 to 12, 26¢; 7, 26½; 6, 27½¢.
Harmony Cable Laid Italian, Nos. 7 to10..... ℔ lb 23¢
Pullman:
Wire Sash Cord..... 10%
Sash Cord Attachments, per 100..$2.00
Samson, Nos. 8 to 12:
Braided, ℔ lb., Drab Cotton, 55¢; Italian Hemp, 40¢@50¢; Linen, 65¢; White Cotton, 50¢; Spot Cord.....50¢ } 15%
Massachusetts, White...℔ lb 40¢ } 15%
Massachusetts, Drab....℔ lb 45¢ } 15%
Phoenix, White, Nos 8 to 12....27¢
Silver Lake, per lb.:
A, Drab, 45¢; A, White, 40¢; B, Drab, 40¢; B, White, 35¢; Italian Hemp, 40¢; Linen....57½¢
See also Chain and Ribbon.

## Wire, Picture—

*Full Length..... 90@—%*
*Short Length..... 90&20@—%*
Hendryx Standard Wire Picture Cord, old list, 85&10%
Turner & Stanton Co. Wire Picture Cord ..... 90%

## Cradles—

*Grain ..... 50%*

## Crayons—

*White Round Crayons, Cases, 100 gro., $8.00, $8.50, $9.00 and $10.00 according to grade.*
Zelnicker's Lumber: ℔ gro.
White and Purple, Indelible....$7.50
Blue, Red, Green, Yellow and Terra Cotta, $6.50; Black.....$4.50
Giant Lumber, 5¼ in. x 15-16 in. round, all colors, $12.00; Indelibles, $14.00; Blacks.....$10.00
Genuine Soapstone, Metal Workers', 5 in. x ¼ in. Round, $2.50; 5 in. x ¼ in. Square, $1.75; 5 x ½ x 3-16, $2.50; 5 x 1¼ x 3 16.....$3.00
Suremark, Black, $2.25; Blue, Red and Yellow.....$2.50

## Crooks, Shepperds'—

American Fork & Hoe Co.:
Montana ..... ℔ doz. $4.50

## Crow Bars—See *Bars, Crow.*

## Cultivators—

American Fork & Hoe Co.:
Victor Garden..... 50&10%

## Cutlery, Table—

International Silver Company:
No. 12 M'd'm Knives, 1847, ℔ doz. $3.50
Star, Eagle, Rogers & Hamilton and Anchor..... ℔ doz. $3.00
Wm. Rogers & Son..... ℔ doz. $2.50

## Cutters—Glass—

H. H. Mayhew Co..... 40%
Red Devil..... 60%
B. Mfg. Co..... 40%
Woodward ..... 50%

## Meat and Food—

American ..... 30%

| No. | 401 | 402 | 403 | 404 | 405 | 406 | 407 |
|---|---|---|---|---|---|---|---|
| Each | $5 | $7 | $10 | $12 | $25 | $50 | $60 |

Enterprise:

| No. | 5 | 10 | 12 | 22 | 32 | |
|---|---|---|---|---|---|---|
| Each | $2 | $3 | $2.75 | $4.50 | $6 | 25@25&7½% |

No. 242, $1.50 ..... 40&7½%
P., S. & W. Co.:
Ideal ..... 40@40&5%
Hales ..... 60&5
Little Giant..... ℔ doz. 40@50

| Nos. | 305 | 310 | 312 | 320 | 322 |
|---|---|---|---|---|---|
| | $35.00 | $48.00 | $44.00 | $72.00 | $68.00 |

New Triumph No. 605, ℔ doz. $24.00. 40%
Russwin Food, No. 1, $24.00; No. 2, $27.00; 3, $42.00..... 15&10&10%
$15.00 $18.00
Enterprise Beef Shavers..... 25@30%

## Slaw and Kraut—

Henry Disston & Sons:
Slaw and Kraut Cutters..... 35%
Corn Graters..... 30%
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife....℔ doz. $3.00
Combined Slaw Cutter and Corn Grater ..... ℔ doz. $4.00

## Tobacco—

*All Iron, Cheap...doz, $4.25@4.50*
Enterprise ..... 25@30%
National, ℔ doz., No. 1, $21; No. 2, $18 ..... 40%

## Diggers, Post Hole, &c—

Disston's:
Rapid, ℔ doz., $24.00..... 25%
Samson, ℔ doz., $34.00..... 25%
Iwan's Pat. Post Hole and Well Auger ..... 40%
Vaughan Pattern Post Hole Augers, ℔ doz., $7.00
Perfection Post Hole Diggers, ℔ doz. ..... $8.50
Split Handle Post Hole Diggers, ℔ doz., $7.50
Hercules Pattern, ℔ doz..... $9.50
Kohler's, ℔ doz., Universal, $14.00; Little Giant, $12.00; Hercules, $10.00; Invincible, $9.00; Rival, $8.50; Pioneer..... $7.50
Never-Break Crucible Steel Post Hole Diggers ..... 60%

## Dividers—See *Compasses.*

## Drawing Knives—

See *Knives, Drawing.*

## Dressers Emery Wheel—

Sterling Emery Wheel Dressers..... 35%
Sterling Wheel Dresser Cutters..... 35%

## Drills and Drill Stocks—

*Blacksmith's Common Drilling Machines ..... $1.50@1.75*
Breast, Millers Falls..... 15&10%
Breast, P., S. & W..... 33⅓%
C. & C. Ratchet..... 25%
Reversible Ratchet Die Stocks....25%
Goodell Automatic Drills. 50&10@60&10%
Millers Falls Automatic Drills, Graves', per doz., Nos. 1, $4.86; 2, $8.16.
Millers Falls Automatic Drills. 33⅓&10%
Ratchet, Curtis & Curtis..... 25%
Ratchet, Parker's..... 40%
Ratchet, Weston's..... 40%
Ratchet, Weston's, Style H Improved ..... 40@40&5%
Ratchet, No. 012..... 40@40&5%
Ratchet, Celebrated..... 40@40&5%
Ratchet, Whitney's, P., S. & W., 40&10@50%
Whitney's Adjustable, No. 10, $12.00, 33⅓%

## Twist Drills—

*Bit Stock..... 70&5@70&10%*
*Taper and Straight Shank, 60&10@70%*

## Drivers, Screw—

*Screw D'ver Bits, per doz. 45@50¢*
Balsey's Screw Holder and Driver, ℔ doz., 2½-in., $6; 4-in., $7.50; 6-in., $9 ..... 50%
Buck Bros.' Screw Driver Bits..... 30%
Champion ..... 50%
Disston's ..... 70%
Elmore Tool Mfg. Co.:
Hartford ..... 66⅔%
Indestructible ..... 55&7%
Standard Neverturn..... 66⅔%
Star ..... 75&5%
Screw Driver Bits..... 25%
Fray's Hol. H'dle Sets, No. 3, $12..50%
Ford's Brace Screw Drivers....40&10%
Gay's Double Action Ratchet..... 35%
Goodell's Auto..... 65@65&10%
Mayhew's Black Handle..... 40%
Mayhew's Monarch..... 40%
Millers Falls, ℔ doz., Nos. 11, $9.95; 12, $13.73; 20, $8.17; 21, $8.46; 41, $13.43; 42, $17.21.
Smith & Hemenway Co., Neverturn, 66⅔%; Elmora, 60%; Star, 30&10%
Swan's:
Nos. 7565 to 7568, 60%; No. 7540, 40&10%

## Eave Trough, Galvanized—

| Territory. | Gal. Steel. | Copper. |
|---|---|---|
| *Northeastern..* | 75&10&5% | 50&10% |
| *Eastern.....* | 80% | 50&10% |
| *Central.....* | 80&10&5% | 50&10% |
| *Northwestern..* | 80&10&5% | 50&10% |
| *Western .....* | 80&5% | 50&5% |
| *Tennessee.....* | 80&5% | 50&10% |
| *Southern.....* | 75&10% | 50&5% |
| *Southwestern..* | 75&10&2½% | 50&5% |

*Terms.—2% for cash. Factory shipments generally delivered.*
*Note. Lower prices are made in some sections.*
See also Conductor Pipe and Elbows.

## Elbows and Shoes—

*Factory shipments, all territories: Galv. Steel, Galv. C. I. and Copper.*
*Sizes 2, 3, 4..... 80%*
*Sizes 1½, 2½, 3½, 5, 6...60&10%*
*No. 26..... 50%*
*No. 24..... 25%*
*Copper Elbows..... 50%*

## Elbows, Stove Pipe—

Edwards, Standard Blue....40&10&10%
Edwards, Royal Blue ..... 40&10&10%
Reeves, Dover Flat Crimp..40&10&5%

## Emery, Turkish—

| | ¼ to ⅛: | 5½ to 220: | Flour. |
|---|---|---|---|
| *Kegs .....lb.* | 5 ¢ | 5½¢ | 3½¢ |
| *½ Kegs.....lb.* | 5½¢ | 5¾¢ | 3¾¢ |
| *¼ Kegs.....lb.* | 5½¢ | 6 ¢ | 4 ¢ |

10-lb. cans, 10 in case....6½¢ 7 ¢ 6 ¢
10-lb. cans, less than 10.....10 ¢ 10 ¢ 8 ¢
Less quantity..10 ¢ 10 ¢ 8 ¢

*NOTE.—In lots 1 to 3 tons a discount of 10% is given.*

### Extensions, Bit—
Ford's Auger Bit Extensions....40&5%

### Extractors, Lemon Juice—
—See *Squeezers, Lemon.*

### Fasteners, Blind—
Zimmerman's Jap'd and Galv., 50 & 5%; Bronze and Plated.....50%
Walling's .....50%
Upson's Patent.....40%

### Cord and Weight—
Ives, ℔ gro., $1.08.....10%
Titan, ℔ gro., $0.66.....10%

### Corrugated—
Acme Corrugated Fasteners.....70%

### Faucets—
*Cork Lined.....50&10@60%*
*Metallic Key, Leather Lined, ..60&10@70%*
*Red Cedar.....40&5@40&10&5%*
*Petroleum .....70&10@75%*
B. & L. B. Co.:
Metal Key.....60&10%
Star .....60%
West Lock.....50&10%
John Sommer's Peerless Tin Key....40%
John Sommer's Boss Tin Key.....50%
John Sommer's Victor Mtl. Key.50&10%
John Sommer's Duplex Metal Key..60%
John Sommer's Diamond Lock.....40%
John Sommer's I.X.L. Cork Lined..50%
John Sommer's Reliable Cork Lined..50&10%
John Sommer's Chicago Cork Lined.60%
John Sommer's O. K. Cork Lined...50%
John Sommer's No Brand, Cedar....50%
John Sommer's Perfection, Cedar....40%
Self Measuring:
Enterprise, Self Measuring and Pump, ℔ doz., $36.00.....40&10%
Lane's, ℔ doz., $36.00.....40&10%
National Measuring, ℔ doz. $36.40&10%

### Felloe Plates—
See *Plates, Felloe.*

### Files— Domestic—
*List Nov. 1, 1899.*
*Best Brands.....70&10@75&10%*
*Standard Brands.....75&10@80%*
*Lower Grade....75&10&10@80&10%*
Gold Medal.....70%
McCaffrey's American Standard, 60&10&10%

### Imported—
*Stubs' Tapers, Stubs' list, July 24, '97.....33⅓@40%*

### Fixtures, Fire Door—
Richards Mfg. Co.:
Universal, No. 103; Special, No. 104 .....$3.75
Fusible Links, No. 96.....50%
Expansion Bolts, No. 107.....60&10%

### Grindstone—
*Net Prices:*

| | | | | |
|---|---|---|---|---|
| *Inch* | *15* | *17* | *19* | *21* |
| *Per doz* | *$3.60* | *$3.85* | *4.15* | *4.65* |

Peck, Stow & Wilcox Co.:

| In | 15 | 17 | 19 | 21 | 24 |
|---|---|---|---|---|---|
| | $4.00 | 4.40 | 4.75 | 5.50 | 6.50 |

....30%
Reading Hardware Co.....60%

### Fodder Squeezers—
See *Compressors.*

### Forks—
American Fork & Hoe Co.:
Iowa Dig-Ezy Potato.....70&5%
Hay, Regular, 3-tine.....45&20&12½%
Hay, Regular, 4-tine.....60&7½&5%
Champion, Hay.....60&12½
Acme, Hay.....60&20
Manure, Regular, 4-tine.....65&5%
Manure, Regular, 5 and 6 tine....70
Champion, Manure.....65&5%
Columbia, Manure.....70
Acme, 4-tine.....60&10&5%
Round Shoulder Header, 4-tine..65%
Champion, Header.....65%
Dakota, Header.....65%
Kansas Header.....65%
Wood, Barley.....35&5%
Steel, Barley.....66⅔%
Columbia, Spading.....70&7½&5%

### Frames— Wood Saw—
*White, S'g't Bar, per doz.75@80¢*
*Red, S'g't Bar, per doz.$1.00@1.25*
*Red, Dbl. Brace, per doz.$1.40@1.50*

### Freezers, Ice Cream—

| *Qt.....* | *1* | *2* | *3* | *4* | *6* |
|---|---|---|---|---|---|
| *Each....* | *$1.25* | *$1.60* | *$1.90* | *$2.20* | *$2.80* |

### Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

### Fry Pans—See *Pans, Fry.*

### Fuse— *Per 1000 Feet.*
*Hemp .....$2.75*
*Cotton .....3.20*
*Waterproof Sgl. Taped..3.65*
*Waterproof Dbl. Taped..4.40*
*Waterproof Tpl. Taped..5.15*
} 10&2½%

### Gates, Molasses and Oil—
*Stebbins' Pattern.....80@80&5%*

### Gauges—
*Marking, Mortise, &c..50@50&10%*
Chapin-Stephens Co.:
Mortise, &c.....50&50&10%
Marking, Mortise, &c...67½%
Wire, Brown & Sharpe's.....33⅓%
Mortise .....25%
Nos. P. S. & W. Co.....33⅓%

### Gimlets— Single Cut—
*Numbered assortments, per gro.*
*Nail, Metal, No. 1, $2.00; 2, $2.30*
*Spike, Metal, No. 1, $4.00; 2, $4.30*
*Nail, Wood Handled, No. 1, $2.30; 2, $2.60*
*Spike, Wood Handled, No. 1, $4.30; 2, $4.60*

### Glass, American Window
See *Trade Report.*

### Glasses, Level—
Chapin-Stephens Co.....65@65&10%

### Glue, Liquid Fish—
*Bottles or Cans, with Brush, 25&10@50%*
Elwell's .....40%

### Grease, Axle—
*Common Grade...gro.$6.00@$6.50*
Dixon's Everlasting, 10-lb. pails, ea. 85¢; in boxes, ℔ doz., 1 lb, $1.20; 2 lb.....$2.00
Helmet Hard Oil.....25%

### Griddles, Soapstone—
Pike Mfg. Co.....33⅓@33⅓&10%

### Grinders—
Pike Mfg. Co.:
Hand and Foot Power, Pyko Nos. 1, 2, 3; Pyko Primo; Pyko Peerless; Pyko Spiral (foot power).33⅓%
Mower Knife and Tool, $5.00..40&10%
Royal Mfg. Co.:
Alundum Grinding Machines, each, Nos. 01, $1.75; 1A, $2.50; 10, $5.00 .....30%
Alundum Sickle Grinders, each, Nos. 20, $5.00; 20A, $6.00; 20A Combined, $6.50.....30%
Alundum Disc Grinders, each, $2.50 .....30%

### Grindstones—
Pike Mfg. Co.:
Improved Family Grindstones, ℔ inch, ℔ doz., $2.00.....33⅓%
Richards Mfg. Co., Eli and Cycle, Ball Bearing, mounted.....40%

### Grips, Nipple—
Perfect Nipple Grips.....40&10&2%

### Halters and Ties—
*Cow Ties.....65@65&10%*
Bridgeport Chain Co.:
Triumph Coil and Halters.35&2½@40%
Brown Coil and Halters...45@50&5%
Brown Cow Ties.....50&5@50&10&5%
Brown Tie Outs.....70&10@75&5%
Covert Mfg. Co.:
Web .....30&2%
Jute Rope.....35%
Sisal Rope.....20%
Cotton Rope.....45%
Hemp Rope.....45%
Oneida Community:
Am. Coil and Halters.....40@40&5%
Am. Cow Ties.....45@50%
Niagara Coil and Halters...45@50&5%
Niagara Cow Ties....45&5@50&10&5%

### Hammers—
### Handled Hammers—
Heller's Machinists'....55&10@55&10&5%
Heller's Farriers.....40&5@40&10&5%
Peck, Stow & Wilcox Co.:
Crucible Steel.....40&10@50%
Farriers' .....40&10@50%
Riveting .....40&10@50%
Machinists' .....66⅔@5%
Blacksmiths' .....50%
Fayatte R. Plumb:
A. E. Nail.....40&2½@40&12½%
Eng. and B. S. Hand.50&10&5@60&5%
Machinists' Hammers.....60&10&5%
Rivet and Tinners'.40&7½@40&12½&5%
Victor Magnetic Tack, ℔ gro....$7.75

### Heavy Hammers and Sledges—
*Under 3 lb., per lb., 50¢...80&10%*
*3 to 5 lb., per lb., 40¢...80&10&10%*
*Over 5 lb., per lb., 30¢.....*
*Over 5 lb., per lb., 30¢.80&10&10%*

### Handles—
### Agricultural Tool Handles
*Axe, Pick, &c....60&10@60&10&5%*
*Hoe, Rake, &c.....40%*
*Fork, Shovel, Spade, &c.:*
*Long Handles.....40%*
*D Handles.....40%*

### Cross-Cut Saw Handles—
Atkins' .....40%
Champion .....50%
Disston's .....50%

### Mechanics' Tool Handles—
*Auger, assorted...gro.$3.00@$3.50*
*Brad Awl.....gro.$1.65@$1.75*
*Chisel Handles, Ass'd, per gro.:*
*Tanged Firmer, Apple, $2.40@$2.65; Hickory.....$2.15@2.40*
*Socket Firming, Apple, $1.75@$1.95; Hickory.....1.60@1.75*
*Socket Framing, Hickory, $1.60@$1.75*
*File, assorted.....gro.$1.30@$1.40*
*Hammer, Hatchet, &c.. 60&10@60&10&5%*
*Hand Saw, Varnished, doz., 80¢ 85¢; Not Varnished.....65@75¢*
*Plane Handles:*
*Jack, doz., 30¢; Fore, doz...45¢*
Chapin-Stephens Co.:
Carving Tool.....30@30&10%
Chisel .....60@60&10%
File and Awl.....60@60&10%
Saw and Plane.....30@30&10%
Screw Driver.....30@30&10%
Millers Falls Adj. and Ratchet Auger Handles .....15&10%
Nicholson Simplicity File Handle.... ℔ gro. $0.85@$1.50
J. L. Osgood:
Indestructible File and Tool, ℔ gro., No. 1, $8.00; No. 2, $8.50; No. 3, $9.00; No. 4, $9.50; No. 5, $10.00.....gro. lots 10%

W. A. Zelnicker Supply Co.:
Hammer, ℔ doz., 12 in., $2.00; 14 in., $2.00; 16 in., $2.30; 18 12., $2.50; 20 in., $2.70; 22 in., $3.00; 24 in., $3.30; 26 in., $3.50; 30 in., $3.80.
Sledge, ℔ doz., oval, 30 in., $3.80; octagon, 30 in., $3.80; oval, 36 in., $4.00; octagon, 36 in., $4.00.
Axe, ℔ doz., 28 to 34 in., $5.60; 36 in., $5.80.
Adze, ℔ doz., 36 in., $5.80; 36 in., $7.80
Pick, ℔ doz., R. R., 36 in., $8.00; coal, 34 in., $5.80.
Hatchet, ℔ doz., 12 to 14 in., $2.00.
} 50%

### Hangers—
*NOTE.—Barn Door Hangers are generally quoted per pair, without track and Parlor Door Hangers per double set with track, &c.*
Chicago Spring Butt Co.:
Friction .....25%
Oscillating .....25%
Big Twin.....25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door.....50%
Elevator .....30%
Railroad .....50%
Cronk & Carrier Mfg. Co.:
Loose Axle.....60&10%
Roller Bearing.....70%
Griffin Mfg. Co.:
Solid Axle, No. 10, $12.00..60&10%
Roller Bearing, No. 11, $15.00, 60&10%
Roller Bearing, Ex. Hy., No. 22, $18.00.....60&10%
Bull Dog, $24.00.....70%
Lane Bros. Co.:
Parlor, Ball Bearing, $4.00; Standard, $3.15; No. 105, $2.85; New Model, $2.80; New Champion per set of 4 Hangers, complete with track.....$2.25
Barn Door, Standard.....60&10%
Hinged .....net $6.08
Covered .....60&5%
Special .....70&5%
Trolley Hangers and track...50%
Lawrence Bros.:
Cleveland .....70&7½%
Clipper, No. 75.....60%
Crown .....55&10%
Cyclone, No. 40.....net $6.50
Tandem, No. 50.....net $7.50
New York.....55&10%
Trolley, No. 30, ℔ pair.....$1.25
McKinney Mfg. Co.:
Roller Bearing, Nos. 1 and 2..70%
Anti-Friction .....60%
Hinged Hangers, King Charm.60%
Richards Mfg. Co.:
Hangers, Nos. 47, 48, 147, 247, 60&5%
Pioneer Wood Track, No. 3..$2.25
Roller B'r'g St'l Track No. 12.$2.20
Roller B'r'g St'l Track No. 13.$2.50
Roller B'r'g, Nos. 39, 41, 43. 70&7½%
Hero, Adj. Track No. 19..50&10%
Adjustable Track Tandem Trolley Track No. 16.....50&10%
Seal, Steel Track No. 8.....$2.25
Auto Adj. Track No. 22..50&5%
Trolley B. D. No. 17, $1.25; F. D. No. 120, $2.25; No. 121, $2.45; No. 150.....$2.50
Safety Underwriters F. D. No. 101 .....50%
Tandem No. 41..2½ and 3 60&10%
Palace, Adjustable Track No. 122 .....50&5%
Royal, Adjustable Track No. 122 .....50&10%
Ives' Wood Track No. 1.....$2.25
Trolley B. D. No. 20.....50&10%
Trolley B. D. No. 24, $1.30; No. 27, $1.40; No. 28.....$1.60
Roller Bearings, Nos. 37, 38, 39, 41, 43, 44, Sizes 1 and 2.70&7½%
Anti-friction, No. 42; No. 44, sizes 2½ and 3.....60%
Hinged Tandem No. 48....60&5%
Folding Door B. B. Swivel No. 135 .....40%
Taylor & Boggis F'y Co.'s Kidder's Roller Bearing, ℔ doz., 4 in., $12.00; 5 in., $14.00..40&10%
Myers' Stayon Hangers.....60%
} Extra 5@10% often given.

### Hangers— Garment—
Pullman Trouser, ℔ gro., No. 1 $9.00; No. 4, $21.00; No. 5, $16.50; No. 8, Black Enamel, $7.50; No. 10, $21.00; No. 12, $8.00; No. 15, Rods, $9.00; No. 18, Loops.....$10.00
Victor Folding.....℔ gro. $9.60

### Gate—
Myers' Patent Gate Hangers, ℔ doz. net .....50%

### Joist and Timber—
Lane Bros. Co.....35%

### Hasps—
Griffin's Security Hasp.....50&10%
McKinney's Perfect Hasp, ℔ doz..60%

### Hatchets—
*Regular list, first qual.40&12½@—*
*Second quality.....50&10&5@—*

### Heaters, Carriage—
Clark, No. 5, $1.25; No. 5B, $1.50; No. 3, $1.75; No. 3D, $2.00; No. 7D, $2.25; No. 3E, $2.50; No. 1, $3.00.....25%
Clark Coal, ℔ doz., $0.75.....20%

### Hinges—
### Blind and Shutter Hinges
*Surface Gravity Locking Blind:*
*Doz. Sets with Fastenings, No. 1, $0.70; No. 3, $1.25; No. 5, $2.65.*
*Mortise Shutter.....80%*
*Mortise Reversible Shutter...80%*
North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%
Charles Parker Co.....70@75%
Parker Wire Goods Co.
Hale & Benjamin Automatic Blind Hinges .....20%
Hale's Blind Awning Hinges, No. 110, for wood, $9.00; No. 111, for brick, $9.00.....20%
Reading's Gravity.....60%
Stanley's Steel Gravity Blind Hinges, No. 1647½, ℔ doz. sets, without screws, $0.95; with screws, $1.25.
Wrightsville Hardware Co.:
O. S., Lull & Porter.....75&5%
Acme, Lull & Porter.....75%
Queen City Reversible.....75%
Shepard's Noiseless, Nos. 60, 65, 55 .....75&5%
Niagara, Gravity Locking, Nos. 1, 3 & 5.....75&5%
Clark's O. P., No. 1.....75&10%
Clark's O. P., Nos. 3 and 5....75&5%
Tip Pat'n, No. 1.....75&10%
Clark's No. 3.....75&5%
Buffalo Gravity Locking, Nos. 1, 3 & 5.....70&10&5%
Shepard's Double Locking.....75%
Champion Gravity Locking.....75&5%
Pioneer .....75&10%
Empire .....65%
W. H. Co.'s Mortise Gravity Locking, No. 2.....60&10%

### Gate Hinges—
*Clark's or Shepard's—Doz. sets:*

| *No.* | *1* | *2* | *3* |
|---|---|---|---|
| *Hinges with L't'chs.* | *$2.00* | *2.70* | *5.00* |
| *Hinges only.....* | *1.25* | *1.90* | *3.50* |
| *Latches only.....* | *.50* | *.75* | *.35* |

*New England:*
*With Latch.....doz..@$2.00*
*Without Latch.....doz..@$1.60*
*Reversible Self-Closing:*
*With Latch.....doz..@$1.75*
*Without Latch...doz. ...@$1.35*
*Western:*
*With Latch.....doz. $1.75*
*Without Latch.....doz..$1.15*
Wrightsville Hardware Co.:
Shepard's or Clark's Hinges and Latches, Hinges only or Latches only, Nos. 1, 2 or 3.....70%

### Miscellaneous—
Griffin Mfg. Co., Fleur de Lis Surface Hinges, ℔ doz. prs.....$1.00

### Pivot Hinges—
Bommer Bros. Pivot, Ball Bearing .....40%
Lawson Mfg. Co. Matchless.....30%

### Spring Hinges—
*Holdback, Cast Iron...$6.75@$7.00*
*Non-Holdback, C'st Iron$6.50@$6.75*
J. Bardsley:
Bardsley's Non-Checking Mortise Floor Hinges.....40%
Bardsley's Patent Checking.33⅓%
Bommer Bros.:
Spring Butt Hinges.....40%
Surface Floor, Ball Bearing .....40%
Mortise Floor, Ball Bearing.40%
Lavatory Hinges.....40%
Non-Holdback Screen Door, Nos. 2000 and 900.....40%
Holdback Screen Door, No. 999.....℔ gro. $9.00
Chicago Spring Butt Co.:
Chicago Spring Hinges.....25%
Triple End Spring Hinges....50%
Chicago (Ball Bearing) Floor.50%
Garden City Engine House...25%
Keene's Saloon Door.....25%
Columbian Hardware Co.:
Acme, Wrought Steel.....30%
Acme, Brass.....25%
American .....30%
Columbia, ℔ gr., No. 14, $9.00; No. 18.....$25.00
Columbia, Adj., No. 7, ℔ gr.$12.00
Gem, new list.....30%
Clover Leaf and Acorn, per gro. .....$12.00
Oxford, new list.....30%
Floor Spring Hinges.....65&10%
Columbian Steel.....65&10%
Lawson Mfg. Co.:
Matchless Spring Hinges.....30%
Matchless Jamb Hinges.....30%
Richards Mfg. Co.:
Superior Double Acting Floor Hinges .....40%
Shelby Spring Hinge Co.:
Buckeye All Steel Holdback Screen Door.....℔ gr. $9.00
Chief Ball Bearings Floor Hinge .....50%
Ball Bearing Door.....25%
No. 777, Sheet Steel Holdb'k, ℔ gr. pr.....$9.00
Standard Mfg. Co.:
Champion Double Acting Door Hinge .....25&10&10%
Standard Double Acting Floor Hinge .....25&10&10%
Superior Spring Hinge Co.:
Superior Floor Hinges.....33⅓%
Spring Hinges.....33⅓%
} Extra 10% often given on most of these Hinges.

### Wrought Iron Hinges—
*Strap and T Hinges, &c., list February 10, 1908:*
*Light Strap Hinges..50&10%*
*Heavy Strap Hinges..60&5%*
*Light T Hinges.....50%*
*Heavy T Hinges.....40%*
*Extra Hvy. T Hinges.50&10%*
*Hinge Hasps.....33⅓%*
*Cor. Heavy Strap....60&5%*
*Cor. Ex. Heavy T....50&10%*
} Extra 10&2½%.

*Screw Hook and Strap.* { *6 to 12 in..lb.3½¢* / *1½ to 20 in..lb.3¼¢* / *22 to 36 in..lb..3 ¢* }

*Screw Hook and Eye:*
*⅜ to 1 inch.....lb.6¼¢*
*⅝-inch .....lb.7½¢*
*½-inch .....lb.8½¢*
} 10&7½&5%

### Hitchers, Stall—
Covert Mfg. Co., Stall Hitchers..30&2%

### Hods— Coal—
*M'f'gr's list, price per gross:*

| *Inch* | *15* | *16* | *17* | *18* |
|---|---|---|---|---|
| *Galv. Open....* | *$35* | *$39* | *$42* | *$46* |
| *Jap. Open....* | *26* | *28* | *31* | *35* |
| *Galv. Funnel...* | *43* | *48* | *52* | *56* |
| *Jap. Funnel....* | *33* | *36* | *59* | *43* |

### Masons' Etc.
Cleveland Wire Spring Co.:
Steel Brick, No. 162.....each $1.05
Steel Mortar, No. 158.....each $1.35

### Hoes— Eye—
*Scovil and Oval Pattern, 60&10@60&10&10%*
*Grub, list Feb. 23, 1899, 70&10@70&10&10%*
D. & H. Scovil....27½%
Am. Fork & Hoe Co. (Scovil Pattern)....60&5%

### Handled—
Cronk's Weeding, No. 1, $2.00; No. 2, $2.50
Star Double Bit....$2.50
American Fork & Hoe Co.:
Regular, Cotton....75&10&5&2½%
Crescent, Cultivator....75&2½%
Mattock, Senior....70%
Mattock, Junior....70%
Sprouting....50%
Tobacco, Harper's....66⅔&15&10%
Warren....55&10&10&5%
Ivanhoe....65&15&10%
Cultivator, B B 6....70&10&10&5%
Cultivator, B B 6½....70&10&10&5%
Weeding, Acme....72½&10&2½%
Scuffle, Lightning....60&5%

### Hoisting Apparatus—
See *Machines, Hoisting.*

### Holders— Bit—
Angular, ₱ doz. $24.00....45&10%

### Door—
Bardsley's, Iron, 40%; Brass and Bronze....25%
Empire....50%
Pullman....25%
Richards Mfg. Co.: No. 117, Ever-ready, 40%; Nos. 118, 119, Sure Grip....50%
Superior....33⅓%

### File and Tool—
Nicholson File Holders and File Handles....33⅓@40%

### Fruit Jar—
Triumph Fruit Jar Holder, ₱ gross, $18.00; ₱ doz....$2.00

### Trace and Rein—
Fernald Double Trace Holder, ₱ doz. pairs....$1.25
Dash Rein Holder, ₱ doz....$1.25

### Hones—Razor—
Pike Mfg. Co., Belgian and Swaty, 50%; German....33⅓%

### Hooks—Cast Iron—
Bird Cage, Reading....40%
Clothes Line, Reading List....40%
Coat and Hat, Reading....45&20%
Coat and Hat, Wrightsville....60&5%
Harness, Reading List....40%

### Wire—
*Belt, Nos. 1 to 15....75&10@80%*
*Wire C. & H. Hooks..80@80&10%*
Bradley Metal Clasp Wire, Coat and Hat 75&10@80%; Ceiling..75&10@80%
Columbian Hdw. Co., Gem....75&10%
Parker Wire Goods Co., King..75&10%
Wire Goods Co.:
Acme, 60&10%; Chief, 70&10%; Crown, 75%; Czar, 65&10%; V Brace, 75%; Czar Harness, 50%; Ceiling, 75%.

### Wrought Iron—
*Box, 6 in., per doz., $0.90; 8 in., $1.15.*
*Cotton....doz. $1.25@$1.50*
Wrought Staples, Hooks, &c.—See Wrought Goods.

### Miscellaneous—
*Hooks, Bench,* see *Stops, Bench.*
*Bush, Light, doz., $6.20; Medium, $6.75; Heavy, $7.65*
*Grass, best, all sizes, per doz., $2.75@$3.00*
*Grass, common grades, all sizes, per doz....$1.25@$1.50*
*Whiffletree....lb. 5¼@6c*
*Hooks and Eyes:*
*Brass....60@60&10%*
*Malleable Iron....70@70&10%*
Covert Mfg. Co. Gate and Scuttle Hooks....40%
Turner & Stanton Co. Cup and Shoulder....85&10%
Bench Hooks, See Bench Stops.
Corn Hooks, See Knives, Corn.

### Horse Nails—
See *Nails, Horse.*

### Horseshoes—
See *Shoes, Horses.*

### Hose, Rubber—
*Garden Hose, ¾-inch:*
*Competition....ft. 6@6½¢*
*3 ply Guaranteed....ft. 8½@9¢*
*4 ply Guaranteed....ft. 9½@12¢*
*Cotton Garden, ¾-in., coupled:*
*Low Grade....ft. 8@9c*
*Fair Quality....ft. 10@11¢*

### Irons— Sad—
*From 4 to 10....lb. 2½@2¾¢*
*B. B. Sad Irons....lb. 3¼@3½¢*
*Mrs. Potts', cents per set:*

| | Nos. 50 | 55 | 60 | 65 |
|---|---|---|---|---|
| Jap'd Cups | 86 | 93 | 96 | 98 |
| Tin'd Cups | 91 | 88 | 1.01 | 98 |

*New England Pressing..lb. 3¾@4¼¢*

### Bar and Corner—
Richards Mfg. Co., Bar, 60&10%; Corner....60%

### Pinking—
*Pinking Irons....doz. 60@85¢*

### Irons, Soldering
See *Coppers.*

### Jacks, Wagons—
Covert Mfg. Co.:
Auto Screw....30&2%; Steel, 15%
Lockport....50%
Lane's Steel....30&5%
Richards' Tiger Steel No. 120..50&10%
Smith & Hemenway Co.'s....25%

### Ladder—
Richards Mfg. Co., Ladder Jacks..50%

### Jointers—
Pike Mfg. Co., Saw Jointers, $7.00..40%

### Kettles—
*Brass, Spun, Plain....20@25%*
Enameled and Cast Iron—See Ware, Hollow.

### Knives—

### Butcher, Kitchen, &c.—
Foster Bros.' Butcher, &c....30%
Wilkinson Shear & Cutlery Co....60%

### Corn—
Columbian Cutlery Co., Wilcut Brand Knives and Hooks....60%
American Fork & Hoe Co.:
Easy Cut, ₱ doz., No. 10 C H...$2.10
Easy Cut, ₱ doz., No. 10 B C H..$2.20
Acme, ₱ doz....$2.35
Dent, ₱ doz....$2.35
Adjustable, Serrated, ₱ doz....$1.90
Serrated, ₱ doz....$1.85
Yankee, No. 1 C H....$1.35
Yankee, No. 2 C H....$1.15

### Drawing—
*Standard List....80&10@—%*
C. E. Jennings & Co., Nos. 45, 46, 25&7½%
Jennings & Griffin, Nos. 41, 42, 66⅔&7½%
Swan's....66⅔@70%
Watrous....16⅔%
L. & I. J. White....20&5@25%

### Hay and Straw—
*Serrated Edge, per doz. $5.00@5.50*
Iwan's Sickle Edge....₱ doz. $9.50
Iwan's Serrated....₱ doz. $10.00

### Miscellaneous—
*Farriers'....doz. $2.60@3.55*
Wostenholm's....₱ doz. $5.00@3.25

### Knobs—
*Base, 2½-inch, Birch or Maple, Rubber Tip....gro. $1.25@1.40*
*Carriage, Jap., Drive, all sizes, gro. .35@40¢*
*Door, Mineral....doz. .65@70¢*
*Door, Por. Jap'd....doz. .70@75¢*
*Door, Por. Nickel..doz. $2.05@2.15*
Bardsley's Wood Door, Shutters, &c. 15%

### Lacing, Leather—
See *Belting, Leather*

### Ladders, Store, &c.—
Lane's Store....25%
Myers' Noiseless Store Ladders....50%
Richards Mfg. Co.:
Improved Noiseless, No. 112....50%
Climax Shelf, No. 113....50%
Trolley, No. 109....50%

### Ladles, Melting—
L. & G. Mfg. Co., Melting and Plumbers'....25%
P. S. & W....40&10%
Reading....60%

### Lamps,—
Hammer's M. I. Hand....45%

### Lanterns—Tubular—
*Regular, No. 0....doz. $4.35@4.50*
*Side Lift, No. 0....doz. $4.60@4.75*
*Hinge Globe, No. 0. doz. $4.60@4.75*
*Other Styles....40@40&10%*

### Bull's Eye Police—
*3 inch....$3.75@4.00*

### Latches— Thumb—
*Roggin's Latches, Jap'd, with screws....doz. .35@40¢*

### Door—
Crank & Carrier Mfg. Co., No. 191, ₱ doz. $2.00
Richards' Bull Dog, Heavy, No. 125....50&5%
Richards' Trump, No. 127....$1.00

### Leaders, Cattle—
*Small....doz. 50¢; large, 60¢*
Covert Mfg. Co.:
Cotton, 45%; Hemp, 45%; Jute, 35%; Sisal, 20%

### Leathers, Pump—
See *Pumps—*

### Lifters, Transom—
R. & E....10%

### Lines—

| *Wire Clothes, Nos.* | *18* | *19* | *20* |
|---|---|---|---|
| *100 feet* | *$2.30* | *1.95* | *1.75* |
| *75 feet* | *$1.95* | *1.65* | *1.50* |

Samson Cordage Works:
Solid Braided Chalk, Nos. 0 to 3..40%
Solid Braided Masons'....
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50....₱ gr. 20
Masons' Lines, Shade Cord, &c.; White Cotton, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50; Colors, No. 3½, $1.75; No. 4, $2.25, No. 4½, $2.75; Linen, No. 3½, $2.50; No. 4, $3.50; No. 4½, $4.50....2
Tent and Awning Lines: No. 5, White Cotton, $7.50; Drab Cotton, $8.50....2
Clothes Lines, White Cotton: 50 ft., $2.75; 60 ft., $3.25; 70 ft., $3.75; 75 ft., $4.00; 80 ft., $4.25; 90 ft., $4.75; 100 ft., $5.25....20
Turner & Stanton Co.:
Solid Braided Chalk, Masons' and Awning Lines....40%
Clothes Lines, White Cotton....2
Shade Cord, Cotton or Linen....20

### Locks— Cabinet—
*Cabinet Locks....33⅓@33⅓@5%*
*NOTE.—Net Prices are very often made on these goods.*
Berning Hardware Co....40%
R. & E. Mfg. Co....10%

### Padlocks—
R. & E. Mfg. Co. Wrought Steel and Brass....75&10%

### Sash, &c.—
Ives' Patent:
Crescent....10%
Automatic Gravity Metal Sash, ₱ gro., $149.58....10%
Window Ventilating....10%
Pullman Patent Ventilating Lock..25%
Reading Sash Locks....40%
Taylor Mfg. Co., Perfect Ventilating, ₱ doz....$0.75@$1.00

### Machines—Boring—
*Com. Upr't, without Augers, $2.00@2.25*
*Com. Angl'r, without Augers, $2.25@2.50*
Ford Auger Bit Co....$22.00
Jennings', Nos. 1 and 4....25&7½%
Millers' Falls....5.75
Snell's, Upright, $2.65; Angular, $2.90
Swan's Improved....40&10%

### Corking—
Reisinger Invincible Hand Power... ₱ doz. $48.00

### Fence—
Williams' Fence Machines....each, $5.50

### Hoisting—
Moore's Anti-Friction Chain Hoist..30%
Moore's Hand Hoist, with Lock Brake....20%
Moore's Cyclone High Speed Chain Hoist....25%

### Ice Cutting—
Chandler's....12½%

### Washing
Boss Washing Machine Co.: Per doz.
Boss No. 1....$57.00
Boss Rotary....$57.00
Champion Rotary Banner No. 1..$57.00
Standard Champion No. 1....$50.00
Standard Perfection....$27.00
Cincinnati Square Western....$33.00
Uneeda American, Round....$33.60

### Mallets—
*Hickory....45@65@50%*
*Lignumvitæ....45@65@50%*
*Tinners' Hickory and Applewood....doz. .45@65@50%*

### Mangers, Stable—
Swett Iron Works....50%

### Mats, Door—
Acme Flexible Steel....50%
Elastic Steel (W. G. Co.), new list..50%

### Mattocks—
See *Picks and Mattocks.*

### Milk Cans—See *Cans, Milk.*

### Mills, Coffee, &c.—
Enterprise Mfg. Co.:
Coffee....20@25%
Shell and Corn....25&10%
National list Jan. 1, 1902....30%
Parker's Columbia and Victoria..33⅓%
Parker's Box and Side....50&10%
Swift, Lane Bros. Co....30%

### Motors, Water—
Divine's Red Devil....30%

| $2.50 | 3.50 | 10.00 | 15.00 | |
|---|---|---|---|---|
| No. 1. | 2 | 3 | 4 | |
| Lippincott's: | | | | |
| No.... | 1 | 2 | 3 | 4 |
| | $2.50 | 3.50 | 10.00 | 15.00..33⅓ |

Pike Mfg. Co., Tool and Knife Grinding....33⅓%

### Mowers, Lawn—
*NOTE.—Net prices are generally quoted*
*Cheapest, 10-in., $2.00; advance 10¢ for each size.*
*Cheap, 10-in., $2.25; advance 15@20¢ for each size.*
*Better Grade, 10-in., $3.00; advance 25¢ for each size.*

| | 12 | 14 | 16 | 18 in. |
|---|---|---|---|---|
| *High Grade...* | *$4.50* | *4.75* | *5.00* | *5.25* |
| Continental | | | | 6.0 |
| Great American | | | | 7.0 |
| Great American Ball B'r'g, new list. | | | | 70% |
| Quaker City | | | | 70 |
| Pennsylvania | | | | 60 |
| Pennsylvania, Jr., Ball Bearing | | | | 50&10&5 |
| Pennsylvania Golf | | | | 50 |
| Pennsylvania Horse | | | | 33⅓&5 |
| Pennsylvania Pony | | | | 40&5 |

### Nails—
*Wire Nails and Brads, Miscellaneous....85@65@85@10%*
*Cut and Wire.* See *Trade Report.*
*Hungarian, Finishing, Upholsterers', &c.* See *Tacks.*

### Horse—

| Nos. | 6 | 7 | 8 | 9 | 10 | |
|---|---|---|---|---|---|---|
| Anchor | 23 | 21 | 20 | 19 | 18 | .. ₱ lb. net, 12¢ |
| Coleman | 13 | 12 | 12 | 11 | 11 | net ₱ lb |
| New Haven | 23 | 21 | 20 | 19 | 18 | .. ₱ lb. net, 12¢ |
| Livingston | 19 | 18 | 17 | 16 | 16 | ....10% |
| Wrought | | | | | | ₱ lb 8½¢ |

*Jobbers' Special Brands, per lb. 9¢*

### Picture—

| | 1½ | 2 | 2½ | 3 in. |
|---|---|---|---|---|
| *Brass Hd. gro.* | *.45* | *.55* | *.60* | *.70* |
| *Por. Head, gro.* | *1.00* | *1.10* | *1.20* | *1.40* |

### Upholsters—
*Brass....30%*
*Plated....30@40%*

### Nippers—
*See Pliers and Nippers.*

### Nipples—
Standard Nipple Co.:
Wrought Pipe Nipples....80%

### Nuts— *Blank or Tapped.*

| *Cold Punched:* | *Off list* |
|---|---|
| *Square* | *5.30¢* |
| *Hexagon* | *5.90¢* |
| *Square, C., T. & R.* | *5.70¢* |
| *Hexagon, C., T. & R.* | *6.50¢* |
| *Hot Pressed:* | *Off list.* |
| *Square* | *5.80¢* |
| *Hexagon* | *6.30¢* |

### Oakum—
*Best....lb. 6½¢*
*U. S. Navy....lb. 6¢*
*Navy....lb. 5¢*
*Plumbers' Spun Oakum..2¾@3¢*

### Oil—
Pike Mfg. Co., Stonoil....40%

### Oil Tanks—See *Tanks, Oil.*

### Oilers—
*Steel, Copper Plated....75&10%*
*Chase or Paragon:*
*Brass and Copper....50&10%*
*Zinc....65&10@70%*
*Railroad....60&10&10%*
Malleable, Hammers' Improved, Nos. 11, 12 and 13, 10%; Old Pattern, Nos. 1, 2, 3, 4, 50%.
American Tube & Stamping Co.:
Spring Bottom Cans....70@70&10%
Railroad Oilers, &c....60@60&10%
Maple City Mfg. Co.:
Spring Bottom Cans....70@70&10%
Railroad Oilers, &c....60@60&10%

### Openers—Packing Box—
Herculever, ₱ doz., $24....30%

### Can Openers—

| | *Per doz.* |
|---|---|
| *Sprague, Iron Handle....* | *30@35¢* |
| *Sprague, Wood Handle....* | *40¢* |
| *Sardine Scissors....* | *$1.75@3.00* |

Can and Bottle Openers, ₱ doz., net: Yankee, $0.75@$0.85; Little Gem, $0.50@$0.65; Nifty....$0.75

### Egg—
Hartigan Nickel Plate, ₱ doz., $2.00; Silver Plate, $4.00.

### Packing—
*Asbestos Packing, Wick and Rope, any quantity....18@20¢*

### Rubber—
*(Fair quality goods.)*
*Sheet, C. I....11@12¢*
*Sheet, C. O. S....11@12¢*
*Sheet, C. B. S....12@13¢*
*Sheet, Pure Gum....40@45¢*
*Sheet, Red....40@50¢*
Jenkins' '96, ₱ lb. 80¢....25%

### Miscellaneous—
*American Packing....lb. 7@10¢*
*Cotton Packing....lb. 16@25¢*
*Italian Packing....lb. 9@10¢*
*Jute....lb. 4@4¼¢*
*Russia Packing....lb. 9@10¢*

### Pails, Water, Well, &c.—
See *Buckets.*

### Paint—
Dixon's Silica-Graphite, in 1 gal. pails and 5 gal. kegs, 25%; packages of larger size....20%

### Pans— Dripping—
*Standard List....75%*
Edwards, Royal Blue....75%

### Fry—
*Common Lipped:*

| *Nos....* | *1* | *2* | *3* | *4* | *5* |
|---|---|---|---|---|---|
| *Per doz....* | *$0.75* | *0.85* | *0.95* | *1.15* | *1.30* |

### Refrigerator, Galva.—

| *Inch....* | *12* | *14* | *16* | *18* |
|---|---|---|---|---|
| *Per doz....* | *$1.75* | *2.25* | *2.80* | *3.15* |

### Paper—Building Paper

| *Asbestos:* | *lb.* |
|---|---|
| *Roll Board or Building Felt, 6 to 30 lb., per 100 sq. ft..* | *2½¢* |
| *Roll Board or Building Felt, 3 32 and ⅛ in., 45 to 60 lb., per 100 sq. ft....* | *3½¢* |
| *Mill Board, Sheet, 40 x 40 in., 1-32 to ½ in....* | *3¢* |
| | *Per roll.* |
| *Rosin Sized Sheathing: 500 sq. ft. Light weight, 25 lbs. to roll,* | *48@58¢* |
| *Medium weight, 30 lbs. to roll,* | *56@70¢* |
| *Heavy weight, 40 lbs. to roll,* | *75@78¢* |

*Black Water Proof Sheathing, 500 sq. ft., 1 ply, 65c; 2 ply, 85c; 3 ply, $1.10; 4 ply, $1.25.*
*Deafening Felt, 9, 6 and 4½ sq. ft. to lb., ton....$54.50*
*Red Rope Roofing, 250 sq. ft. per roll....$1.75*

### Tarred Paper—
*1 ply (roll 400 sq. ft.), ton, $34.00@$38.00*
*2 ply, roll 108 sq. ft....65¢*
*3 ply, roll 108 sq. ft....88¢*
*Slater's Felt (roll 500 sq. ft.) 80¢*

### Sand Paper and Cloth—
*Flint and Emery....50&10%*
*Garnet Paper and Cloth....25%*

### Parers—Apple—
Goodell Co.:
Family Bay State....₱ doz. $15.00
Improved Bay State....₱ doz. $36.00
New Lightning....₱ doz. $7.00
Turn Table '98....₱ doz. $6.00
White Mountain....₱ doz. $5.00
Bonanza Improved....each $7.50
Dandy....each $10.00
Eureka Improved....each $20.00
New Century....each $20.00
Ranger....each $30.00

Livingston Nail Co.:
Daisy ..... ℔ doz. $4.00
Little Star ..... ℔ doz. $5.00
Rocking Table ..... ℔ doz. $6.20
Reading Hardware Co.:
Advance ..... ℔ doz. $4.00
Baldwin ..... ℔ doz. $4.00
Reading 72 ..... ℔ doz. $3.25
Reading 78 ..... ℔ doz. $6.25

### Orange—
Goodell Co., Success ..... each $20.00

### Potato—
Saratoga ..... ℔ doz. $7.00
White Mountain ..... ℔ doz. $6.00

### Picks and Mattocks—
*(List Jan., 1908.)*
*List* ..... *75&10%*
Cronk's Handled Garden Mattock, ℔ doz., $3.00 ..... 33⅓%

### Pinking Irons—
See *Irons, Pinking.*

### Pins, Escutcheon—
*Brass* ..... *50@50&10%*
*Iron, list Nov. 11, '85* ..*60@60&10%*

### Pipe, Cast Iron Soil—
*Standard, 2-6 in* ..... *70&10%*
*Extra Heavy, 2-6 in* ..*75&10@80%*
*Fittings, Standard and Heavy,* *80&10@85%*

### Pipe, Merchant—
*Carloads to Consumers:*

| | Steel. Blk. | Steel. Galv. | Iron. Blk. | Iron. Galv. |
|---|---|---|---|---|
| | % | % | % | % |
| ⅛ and ¼ in. | 66 | 50 | 64 | .. |
| ⅜ in. | 68 | 54 | 66 | 52 |
| ½ in. | 70 | 58 | 68 | 56 |
| ¾ to 6 in. | 74 | 64 | 72 | 62 |
| 7 to 12 in. | 71 | 56 | 69 | 54 |

### Pipe, Vitrified Sewer—
*Carload lots.*
*Standard Pipe and Fittings, 3 to 24 in., f.o.b. factory:*
*First-class* ..... 87%
*Second-class* ..... 90%

### Pipe, Stove—

| | Per 100 joints. C. L. | L. C. L. |
|---|---|---|
| Edwards' Nested: | | |
| 5 in., Standard Blue | $6.25 | $7.25 |
| 6 in., Standard Blue | 6.75 | 7.75 |
| 7 in., Standard Blue | 7.75 | 8.75 |
| 5 in., Royal Blue | 7.00 | 8.00 |
| 6 in., Royal Blue | 7.50 | 8.50 |
| 7 in., Royal Blue | 8.50 | 9.50 |
| Wheeling Corrugating Co.'s Nested: | | |
| 5 in., Uniform Color | $5.90 | $6.90 |
| 6 in., Uniform Color | 6.40 | 7.40 |
| 7 in., Uniform Color | 7.40 | 8.40 |

### Planes and Plane Irons—
#### Wood Planes—
*Bench, first qual* ..... *30@30&10%*
*Bench, second qual* ...*40@40&10%*
*Molding* ..... *25@25&10%*
Chapin-Stephens Co.:
Bench, First Quality ..... 30%
Bench, Second Quality ..... 40%
Molding and Miscellaneous ..... 25%
Toy and German ..... 30%
Union ..... 60%

#### Iron Planes -
Chaplin's Iron Planes ..... 60%
Union ..... 60%

#### Plane Irons—
*Wood Bench Plane Irons, list Dec. 12, '06* ..... 25%
Buck Bros. ..... 30%
Chapin-Stephens Co. ..... 25%
Union ..... 50%
L. & I. J. White ..... 20&5@25%

### Planters, Corn, Hand—
Kohler's Eclipse ..... ℔ doz. $7.50

### Plates—
*Felloe* ..... *lb. 3¾@4¢*
Avery Stamping Co.:
Standard Wrot. Steel Felloe Plates in 100 lb kegs, per 100 lb, ¾-in. to 1⅛-in., $4.00 net; 1¼-in. to 2-in., inclusive, $3.75 net.

### Steel Pipe Hook—
Never-Break ..... 75&10%

### Pliers and Nippers -
*Button Pliers* ....*75&5@75&10&5%*
*Gas Burners, per doz., 5 in., $1.25 @$1.30; 6 in., $1.45, $1.50.*
*Gas pipe* .. 7 *$2.00* 8 *$2.25* 10 *$2.75* 12-in *$3.50*
Acme Nippers ..... 50&5
Cronk & Carrier Mfg. Co.:
American Button ..... 80%
Improved Button ..... 75&10%
Cronk's ..... 60
No. 89 Linemen's ..... 50
Stub's Pattern ..... 45%
Combination and others ..... 33⅓
Elmore Gas Pliers ..... 70%
Heller's Farriers' Nippers, Pincers and Tools ..... 40&5@40&10&5%
P., S. & W. Tinners' Cutting Nippers ..... 40%
Swedish Side, End and Diagonal Cutting Pliers ..... 50%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds ....40%

### Plumbs and Levels—
Chapin-Stephens Co.:
Plumbs and Levels ..... 30@30&10%
Chapin's Imp. Brass Cor. ..40@40&10%
Pocket Levels ..... 30@30&10%
Extension Sights ..... 30@30&10%
Machinists' Levels ..... 40@40&10%
Disston's Plumbs and Levels ....60&10%
Disston's Pocket Levels ..... 60&10%
Stanley's Duplex ..... 35%
Woods' Extension ..... 33⅓%

### Points, Glaziers'—
*Bulk and 1-lb. papers* .... *lb. 9 ¢*
*½-lb. papers* ..... *lb. 9½¢*
*¼-lb. papers* ..... *lb. 10 ¢*

### Police Goods—
*Manufacturers' Lists* ...*25@25&5%*
Tower's ..... 25%

### Polish—Metal, Etc—
Ladd Co.:
Putzade Liquid, ℔ gro., ½ pts., $12.00; 1 pts., $20.00; 1 qts., $40.00; ℔ doz., ½ gals., $6.35; 1 gals., $12.00.
Prestoline Liquid, No. 1 (½ pt.), ℔ doz., $3.00; No. 2 (1 qt.), $9.00 ..10%
Prestoline Paste ..... 10%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, ℔ doz. 50¢; ℔ gro. $4.50; ½ lb boxes, ℔ doz. $1.25; 1 lb boxes, ℔ doz. $2.25.
U. S. Liquid, 8 oz. cans, ℔ doz., $1.25.
Barkeepers' Friend Metal Polish, ℔ doz., $1.75.

### Stove—
Black Eagle Benzine Paste, 5 lb cans, ℔ lb 10¢
Black Eagle, Liquid, ½ pt. cans.. ℔ doz. 75¢
Black Jack Paste, ¾ lb cans, ℔ gr. $9.00
Black Kid Paste, 5 lb can...each, $0.65
Ladd's Black Beauty Liquid, per 100 tins ..... $6.75
Joseph Dixon, ℔ gr. $5.75 ..... 10%
Dixon's Plumbago ..... ℔ lb 8¢
Fireside ..... ℔ gr. $2.50
Gem, ℔ gr. $4.50 ..... 10%
Japanese ..... ℔ gr. $3.50
Jet Black ..... ℔ gr. $3.50
Peerless Iron Enamel, 10 oz. cans.. ℔ doz. $1.50

### Window Polish—
Benj. P. Forbes:
Glasbright, No. 2, gal pails, ℔ doz., $24.00; each, $2.50; 1 lb cans, each ..... 75¢
Glasbright Powder, bbls., ℔ lb..20¢

### Poppers, Corn—
*1 qt. Square..doz.$0.80; gro.$8.75*
*1 qt. Round..doz.$0.90; gro.$10.00*
*1½ qt. Square.doz.$1.20; gro..$12.00*
*2 qt. Square..doz.$1.50; gro..$15.00*

### Post Hole and Tree Augers and Diggers—
See also *Diggers, Post Hole, &c.*

### Posts, Steel—
Steel Fence Posts, each, 6 ft., 46¢; 6½ ft., 48¢; 7 ft., 50¢.
Steel Hitching Posts ..... each $1.30

### Potato Parers—
See *Parers, Potato.*

### Pots, Glue—
*Enameled* ..... *40%*
*Tinned* ..... *30&10%*

### Powder—
*Black Sporting:*
*Kegs (25 lb.)..$5.00@5.50*
*Half Kegs (12½ lb.).* *$2.75@3.00*
*Quarter Kegs (6¼ lb.).* *$1.50@1.65*
*Canisters, pounds... .25*
*Canisters, ½ pounds. .15*
*Canisters, ¼ pounds. .12*
*Discount to the trade, 10%.*
*NOTE.—Prices vary according to territory.*
King's Semi-Smokeless:
Keg (25 lb bulk) ..... $6.50
Half Keg (12½ lb bulk) ..... $3.50
Quarter Keg (6¼ lb bulk) ..... $1.90
Case 24 (1 lb cans bulk) ..... $8.50
Half case (1 lb cans bulk) ..... $1.50

| King's Smokeless: | Shot Gun. | Rifle. |
|---|---|---|
| Keg (25 lb bulk) | $12.00 | $15.00 |
| Half Keg (12½ lb bulk) | 6.25 | 7.75 |
| Quarter Keg (6¼ lb bulk) | 3.25 | 4.00 |
| Case 24 (1 lb cans bulk) | 14.00 | 17.00 |
| Half case 12 (1 lb c. bk) | 7.25 | 8.75 |

### Presses—
#### Fruit, Wine and Jelly—
Enterprise Mfg. Co. ..... 20@25%

#### Seal Presses—
Morrill's No. 1, ℔ doz., $20.00 ..... 50%

### Pruning Hooks and Shears
See *Shears.*

### Pullers, Nail, Etc.—
Cyclops ..... 50%
Elmore Drop Forged Tack Pullers..10%
Miller's Falls, No. 3, ℔ doz., $12.00.. 33⅓&10%
Morrill's No. 1, Nail Puller, ℔ doz. $20.00 ..... 50%
Pearson No. 1, Cyclone Spike Puller, each $30.00 ..... 50%
The Scranton Co. Case Lots:
No. 2B (large) ..... $5.50
No. 3B (small) ..... $5.00
Smith & Hemenway Co.:
Diamond B ..... 70%
Ginat ..... 50%
Staple Pullers, Utica and Davison ..... 60%
Taylor Mfg. Co., Sampson Tack, ℔ doz. ..... $0.40

### Pulleys, Single Wheel—

| *Inch* | *1½* | *1¾* | *2* | *3* |
|---|---|---|---|---|
| *Awning or Tackle, doz* | *$0.80* | *.55* | *.60* | *1.05* |

*Hay Fork, Swivel or Solid Eye, doz., 4 in., $1.25; 5 in., $1.55*

| *Inch* | 2 | *2¼* | *2½* |
|---|---|---|---|
| *Hot House, doz* | *$0.65* | *.85* | *1.20* |
| *Inch* | *1¼* | *1½* | *1¾* | 2 |
| *Screw, doz* | *$0.16* | *.19* | *.23* | *.30* |
| *Inch* | *1¾* | 2 | *2¼* | *2½* |
| *Side, doz* | *$0.25* | *.40* | *.55* | *.60* |
| *Inch* | *1½* | *1¾* | 2 | *2½* |

#### Sash Pulleys—
*Common Frame; Square or Round End, per doz., 1¾ and 2 in* ..... *17@20¢*
*Auger Mortise, no Face Plate, per doz., 1¾ and 2 in* ....*20@21¢*
Acme, No. 35..1¾ in., 19¢; 2 in., 20½¢
American Pulley Co.:
Wrought Steel American Plain Axle ..... 5&10%
Wrought Steel, Eagle ..... 17@20¢
Top Notch, Electrically Welded, Nos. 3 and 4 ..... 19¢
Common Sense ..... ℔ doz. 20¢
Fox-All-Steel, Nos. 3 and 7, 2 in.... ℔ doz. 50%
Grand Rapids All Steel Noiseless..50%
Niagara, No. 25, 1¾ in., 19¢; 2 in. ..... 20½¢
No. 26 Troy..1¾ in., 14½¢; 2 in., 16½¢
Star, No. 26....1¾ in., 19¢; 2 in., 20½¢
Tackle Blocks—See Blocks.

### Pumps—
*Cistern* ..... *60%*
*Pitcher Spout* ..... *75&10&5@80*
*Wood Pumps, Tubing, &c* .... *50%*
Barnes Dbl. Acting (low list) ..... 50%
Barnes Pitcher Spout ..... 80%
Contractors' Rubber Diaphragm, No. 2, B. & L. Block Co. ..... $16.00
Daisy Spray Pump ..... ℔ doz. $6.50
Flint & Walling's Fast Mail Hand (low list) ..... 50&5%
Flint & Walling's Fast Mail (low list) ..... 50&5%
Flint & Walling's Tight Top Pitcher ..... 80%
National Specialty Mfg. Co., Measuring, Nos. 2, $6.00; 3, $5.50 ..... 30%
Myers' Pumps (low list) ..... } 50%
Myers' Power Pumps ..... }
Myers' Spray Pumps ..... }

#### Pump Leathers—
*Plunger and Valve Leathers—Per gro.:*

| *No.* | *1* | *2* | *3* | *4* |
|---|---|---|---|---|
| | *$5.00* | *6.00* | *7.00* | *8.00* |

*Cup Leathers—Per 100:*

| *Inch* | *2½* | *3* | *3½* | *4* |
|---|---|---|---|---|
| | *$5.00* | *7.00* | *9.00* | *12.00* |

*30@30&10%*

### Punches—
*Saddlers' or Drive, good, doz.50@75¢*
*Spring, single tube, good quality* ..... *$1.75*
*Revolving (4 tubes)....doz.$3.50*
Bemis & Call Co.'s Cast St'l Drive.50%
Elmore Tool Mfg. Co.:
Machinists' Center ..... 40%
Tinners': Solid, 50%; Prick ..... 50%
Morrill's Nos. 1AA, 1A, 1B, 1C, 1D, $15.00 ..... 50%
Hercules, 1 die, each $5.00 ..... 50%
Niagara Hollow Punches ..... 40%
Niagara Solid Punches ..... 55&10%
Tinners' Hollow, P., S. & W. Co..40%
Tinners' Solid, P., S. & W. Co., ℔ doz., $1.44 ..... 40&10%

## Rail—Barn Door, &c.—
*Sliding Door, Painted Iron, 2½@2¾¢*
*Sliding Door, Wrought Brass, 1⅛ in., lb., 36¢* ..... *30%*
Cronk's:
Double Braced Steel Rail..℔ ft. 2¾¢
O. N. T. Rail ..... 2¾¢
Griffin's:
xxx, ℔ 100 ft., 1 x 3-16 in., $3.25; 1¼ x 3-16 in., $3.75.
Hinged Hanger, ℔ 100 ft., 1 x 3-16 in., $3.50; 1¼ x 3-16 in., $4.00.
Lane's:
Hinged Track, ℔ 100 ft. ..... $3.45
O. N. T., ℔ 100 ft., 1 in., $3.12½; 1¼ in., $3.45; 1½ in., $4.00.
Standard, 1¼ in. ..... ℔ 100 ft. $4.00
Lawrence Bros.:
1 x 3-16 in., ℔ 100 ft., $7.50; 1¼ x 3-16 in., $8.75 ..... 55&7½%
Trolley, No. 301, ℔ ft. ..... 9¢
McKinney's:
Hinged Hanger Track, ℔ ft., 11¢. 60&5%
1 x 3-16 Track ..... 55&7½%
Myers' Stayon Track ..... 60&5%
Richards Mfg. Co.:
Common, 1 x 3-16 in., $3.00; 1⅛ x 3-16, $3.25; 1¼ x 3-16, $3.50.
Special Hinged Hanger Rail..60&10%
Lag Screw Rail, No. 65 ..... 50%
Gauge Trolley Track, ℔ ft., No. 31, 9¢; No. 32, 14¢; No. 33, 20¢.
No. 50 ..... 60&10%
Nos. 61, $3.00; 62, $3.25; 63, $3.50; 64, $4.00; 45, $3.25; 46, $3.50; 49, No. 1, $3.25; 49, No. 2, $3.50.

### Rakes—
*NOTE.—Many goods are sold at net prices.*
American Fork & Hoe Co.:
Lawn, ℔ doz., No. 24, $2.50; No. 20 ..... $2.25
Cronk's:
Steel Garden: Champion, ℔ doz., 12-tooth, $3.75; 14-tooth, $4.00; 16-tooth, $4.25; Ideal, ℔ doz., 12-tooth, $3.00; 14-tooth, $3.30; 16-tooth, $3.60.
Victor, 12-tooth, $2.25; 14-tooth, $2.50; 16-tooth, $2.75.
Queen City Lawn, ℔ doz., 20 teeth, $2.85; 24, $3.00 ..... net
Anticlog Lawn ℔ doz. ..... $4.00
Malleable Garden ..... 70&10%
Ideal Steel Garden, ℔ doz., 12 teeth, $15.00; 14, $16.00; 16, $18.00 ..... 80%
Kohler's:
Jumbo Lawn, 36 tooth ....℔ doz. $5.00
Lawn Queen, 20 tooth ....℔ doz. $2.85
Lawn Queen, 24-tooth ....℔ doz. $3.00
Paragon, 20-tooth ..... ℔ doz. $2.65
Paragon, 24-tooth ..... ℔ doz. $2.75
Steel Garden, 14-tooth ....℔ doz. $2 40
Malleable Garden, 14-tooth, ℔ doz. $1.75@2.00

### Rasps, Horse—
Disston's ..... 75%
Heller Bros. ..... 70&5@70&10&5%
Liveright Bros.' Gold Medal..70&10@75%
McCaffrey's American Standard ..... 60&10&5%
New Nicholson ..... 70&10@75%
See also Files.

### Razors—
John Engstrom Swedish ..... 65%
Sharp Shaver ..... 60%
Fox Razors, ℔ doz., No. 42, $24.00; No. 44, $20.00; No. 82, Platina, $36.00. } Dis. 50%

### Reels, Fishing—
Hendryx:
M 6, Q 6, A 6, B 6, M 9¼ M 16, Q 16, A 16, B 16, 4098, Rubber, Populo Nickeled Populo ..... 20%
Aluminum, German Silv., Bronze..25%
1210 N, 124 N ..... 20%
3004 N, 06 N, 6 RM, G 9 ..... 25%
4 N, 6 PN, 24 N, 26 PN ..... 20%
2904 P., 33⅓%; 2904 PN., 33⅓%; 0924 N., 33⅓%; 02084 N., 33⅓%; 002904 PN., 33⅓%; 802 N., 33⅓%
986 PN, 2904 N, 974 PN ..... 25%
5009 PN, 5009 N ..... 20%
Competitor, 102 P, 102 PN, 202 P, 202 PN, 102 PR, 202 PR ..... 20%
304 P, 304 PN, 00304 P, 00304 PN..33⅓

### Registers—*List July 1, 1903.*
*Japanned, Electroplated and Bronzed* ..... *70%*
*White Porcelain Enamel..50&10%*
*Solid Brass or Bronze Metal..40%*

### Revolvers—
*Single Action* ..... *95¢@$1 00*
*Double Action, except 44 cal..$2.00*
*Double Action, 44 caliber...$2.00*
*Automatic* ..... *$4.00*
*Hammerless* ..... *$4.50*

### Riddles, Hardware Grade
*16 in.....per doz.$2.50@$2.75*
*17 in.....per doz.$2.75@$3.00*
*18 in.....per doz.$3.00@$3.25*

### Rings and Ringers—
#### Bull Rings—

| | *1* | *1½* | *3 inch.* |
|---|---|---|---|
| *Steel* | *$0.70* | *0.75* | *0.80 doz.* |
| *Copper* | *$1.10* | *1.25* | *1.65 doz.* |

#### Hog Rings and Ringers—
*Hill's Rings, per gro. boxes, $4.60@$4.75; per doz. boxes 40@45¢*
*Hill's Ringers, Gray Iron, doz., 55@65¢*
*Hill's Ringers, Malleable Iron, doz.85@95¢*
*Blair's Rings..per gro.$5.50@$6.00*
*Blair's Ringers..per doz.65@70¢*

### Rivets—
*Copper Rivets and Burrs....50%*
*Tinners' and Miscellaneous Rivets* ..... *80@80&10%*

### Bifurcated and Tubular—
*Assorted in Boxes.*
*Bifurcated, per doz. boxes, pasteboard boxes, 50 count, 23@25¢; Tin boxes, 100 count, 29@32¢.*
*Tubular, per doz. boxes, 50 count, 29@32¢; 100 count, 51@58¢.*

### Rollers—
Cronk's Stay, No. 50 ..... $1.00
Cronk's Brinkerhoff No. 55, $0.60; No. 56, $0.75; No. 60 ..... $0.75
Lane's Stay ..... 40%
Richards' Stay:
Handy Adj. and Reversible No. 53.75¢
O. K. Adj. and Reversible No. 58.50¢
Lag Screw, Nos. 55 and 57 ..... 50%
Underwriters', Nos. 59, 60 ..... 50%
Favorite, No. 54 ..... 60%

### Rope—
*Manila, 7-16 in. diam. and larger:*
*Pure* ..... *lb. 9¢*
*Sisal, 7-16 in. diam. and larger:*
*Pure* ..... *lb. 7¢*
*Sisal, Hay, Hide and Bale Ropes, Medium and Coarse:*
*Pure* ..... *lb. 7½@7¾¢*
*Sisal, Tarred, Medium Lath Yarn:*
*Pure* ..... *lb. 6½@6¾¢*
*Cotton Rope:*
*Best, ¼-in. and larger. 16½@18¢*
*Medium, ¼-in. and larger.15@16¢*
*Common, ¼-in. and larger..7½¢*
*In coils, ½¢ advance.*
*Jute Rope:*
*Thread, No. 1, ¼-in. and up, lb.* ..... *5½¢*
*Thread, No. 2, ¼-in. and up, lb.* ..... *5¢*

#### Wire Rope—
*Galvanized* ..... *37½&2½%*
*Plain* ..... *45&2½%*

### Ropes, Hammock—
Covert Mfg. Co.:
Jute, 35%; Sisal ..... 20%

### Rules
*Boxwood* ..... *60@60&10%*
*Ivory* ..... *35&10@35&10&5%*
Chapin-Stephens Co.:
Boxwood ..... 60%
Flexifold ..... 40%
Ivory ..... 25@25&10%
Miscellaneous ..... 50@50&10%
Stephens' Combination ..... 55%
Stationers' ..... 50@50&10%
Keuffel & Esser Co.:
Folding, Wood ..... 35&10%
Folding, Steel ..... 33⅓&10%
Lufkin's Steel ..... 50&10%
Lufkin's Lumber ..... 50&10%
Upson Nut Co.:
Boxwood ..... 60@60&10%
Ivory ..... 35&10@35&10&10%

## Sash Balances—
See *Balance, Sash.*

### Sash Locks—See *Locks, Sash.*

### Sash Weights—
See *Weights, Sash.*

### Sausage Stuffers or Fillers
See *Stuffers or Fillers, Sausage.*

### Saw Frames—
See *Frames, Saw.*

### Saw Sets—See *Sets, Saw.*

### Saw Tools—See *Tools, Saw.*

### Saws—
Atkins':
- Circular ..... 45%
- Band ..... 50@50&10%
- Butcher Saws ..... 50%
- Cross Cuts ..... 35%
- One-Man Cross Cut ..... 40%
- Narrow Cross Cut ..... 50%
- Hand, Rip and Panel ..... 35&5%
- Miter Box and Compass ..... 40%
- Mulay, Mill and Drag ..... 45%
- Wood Saws ..... 40&10%

Chapin-Stephens Co.:
- Turning Saws and Frames 30@30&10%

Diamond Saw & Stamping Works:
- Sterling Kitchen Saws ..... 30&10&10%

Disston's:
- Circular, Solid and Ins'ted Tooth 50%
- Band, 2 to 18 in. wide ..... 60%
- Band, ¼ to 1¾ ..... 60%
- Crosscuts ..... 45%
- Narrow Crosscuts ..... 50%
- Mulay, Mill and Drag ..... 50%
- Framed Woodsaws ..... 25%
- Woodsaw Blades ..... 25%
- Woodsaw Rods, Tinned ..... 15%
- Hand Saws, Nos. 12, 99, 9, 16, d100, D8, 120, 76, 77, 8 ..... 25%
- Hand Saws, Nos. 7, 107, 107½, 3, 1, 0, 00, Combination ..... 30%
- Compass, Key Hole, &c. ..... 25%
- Butcher Saws and Blades ..... 30%

C. E. Jennings & Co.'s:
- Back Saws ..... 16⅔%
- Butcher Saws ..... 25&7½%
- Compass and Key Hole Saws, 33⅓&7½%
- Framed Wood Saws ..... 25&7½%
- Hand Saws ..... 12½%
- Wood Saw Blades ..... 33⅓&7½%

Millers Falls:
- Butcher Saws ..... 15&10%
- Star Saw Blades ..... 15&10%

Massachusetts Saw Works:
- Victor Kitchen Saws ..... 40&10&50%
- Butcher Saws Blades ..... 35@40%

Peace & Richardson's Hand Saws. 30%

Simonds':
- Circular Saws ..... 45%
- Crescent Ground Cross Cut Saws. 30%
- One-Man Cross Cuts ..... 40&10%
- Gang Mill, Mulay and Drag Saws. 45%
- Band Saws ..... 50%
- Back Saws ..... 25@25&7½%
- Butcher Saws ..... 35@35&7½%
- Hand Saws ..... 25@25&7½%
- Hand Saws, Bay State Brand .... 45%
- Compass, Key Hole, &c. 25@25&7½%
- Wood Saws ..... 40&7½%

Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws ..... 50%

### Hack Saw Blades and Frames—
Atkins' Hack Saw Blades A A A .. 25%

Disston's:
- Concave Blades ..... 25%
- Keystone Blades ..... 35%
- Hack Saw Frames ..... 30%

Simonds, 25%; The Best, 35%; Culley ..... 35%

C. E. Jennings & Co.'s:
- Hack Saw Frames, Nos. 175, 180 .... 40&7½%
- Hack Saws, Nos. 175, 180, complete, 40&7½%

Goodell's Hack Saw Blades .... 40&10%

Griffin's Hack Saw Frames .. 35&5&10%

Griffin's Hack Saw Blades .... 35&5&10%

Star Hack Saws and Blades .... 15&10%

Sterling Hack Saw Blades .. 30&10&5%

Sterling Hack Saw Frames .. 30&10&10%

Sterling Power Hack Saw Machines, each, No. 1, $25.00; No. 2, $30.00 .. 10%

Victor Hack Saw Blades ..... 20%

Victor Hack Saw Frames ..... 40%

Whitaker Mfg. Co.:
- National Hand Blades, Hand Frames, Power Blades ..... 40%

### Scroll—
Barnes, No. 7, $15 ..... 25%

Barnes' Scroll Saw Blades ..... 40%

Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20 ..... 20%

Lester, complete, $10.00 ..... 15&10%

Rogers, complete, $3.50 and $4.00 .. 15&10%

### Scales—
*Union Platform, Plain .. $2.10@2.20*

*Union Platform, Stpd .. $2.20@2.30*

Chatillon's:
- Eureka ..... 25%
- Favorite ..... 40%
- Grocers' Trip Scales ..... 50%

The Standard Portables ..... 40%

The Standard R. R. and Wagon ..... 50&10%

### Scrapers—
*Box, 1 Handle ..... doz. $1.85@2.10*

*Box, 2 Handle ..... doz. $2.35@2.50*

*Ship ... Light, $2.00; Heavy, $4.50*

Chapin-Stephens Co., Box .. 30@30&10%

Richards Mfg. Co., Foot ..... 60%

### Screws—Bench and Hand
*Bench, Iron, doz., 1 in., $2.50@2.75; 1¼, $3.00@3.25; 1¼, $3.50@3.75*

*Bench, Wood ..... 20@20&10%*

*Hand, Wood .... 70&10@70&10&10%*

Chapin-Stephens Co., Hand ..... 70@70&5&2½%

### Coach, Lag and Hand Rail—
*Lag, Cone Point ..... 80&5%*

*Coach, Gimlet Point ..... 80%*

*Hand Rail ..... 70&10@75%*

### Jack Screws—
*Standard List ..... 70&10@75%*

Millers Falls ..... 75&5&10%

Swett Iron Works ..... 70@75%

### Machine—
*Cut Tread, Iron, Brass or Bronze:*
- *Flat Head or Round Head, 50@50&10%*
- *Fillister Head ..... 40@50&10%*

*Rolled Thread, F. H. or R. H., Iron ..... 75&10%*

*F. H. or R. H., Brass, Nos. 8 to 14 ..... 65&10%*

### Set and Cap—
*Set (Iron) ..... 75&10&7½%*

*Set (Steel), net advance over Iron ..... 25%*

*Sq. Hd. Cap ..... 70&10&7½%*

*Hex. Hd. Cap ..... 70&10&7½%*

*Rd. Hd. Cap ..... 50&7½%*

*Fillister Hd. Cap ..... 60&7½%*

### Wood—
*List July 23, 1903.*

*Flat Head, Iron ..... 87½&5@..%*

*Round Head, Iron .... 85&5@..%*

*Flat Head, Brass ..... 80&5@..%*

*Round Head, Brass .. 77½&5@..%*

*Flat Head, Bronze .... 75&5@..%*

*Round Head, Bronze .. 72½&5@..%*

*Drive Screws ..... 87½&5@..%*

### Scroll Saws—
See *Saws, Scroll.*

### Scythes—
*Per doz.*

*Plain Grass, Cutting Edge Polished ..... $6.25@$6.50*

*Clipper, Bronzed Web .. $6.50@$6.75*

*Solid Steel, Web and Backs Polished ..... $7.00@$7.25*

*Bush, Weed and Bramble, Painted ..... $6.50@$6.75*

*Grain, Painted, Cutting Edge Polished ..... $8.25@$8.50*

*Clipper Grain, Bronze Web, $8.50@$8.75*

### Seeders, Raisin—
Enterprise ..... 25@30%

### Sets—Awl and Tool—
Fray's Tool Handles, Nos. 1, $12; 2, $16; 3, $12 ..... 50%

Millers Falls Adj. Tool Handles, No. 1, $12; No. 4, $12; No. 5, $18 .. 20&10%

### Garden Tool Sets—
American Fork & Hoe Co.:
- Rake, Shovel and Hoe, ℔ doz. sets, No. 3 P F ..... $7.25

### Sets, Nail—
*Octagon ..... gro. $3.50@3.75*

Buck Bros. ..... 27½%

Elmore Tool Mfg. Co. ..... 30%

Mayhew's ..... ℔ gro. $9.00

Snell's Corrugated, Cup Pt. .... 40&10%

Snell's Knurled, Cup Pt. .... 40&10%

Victor Knurled, Cup Pt. .... ℔ gro. $7.50

### Rivet—
*Regular list ..... 75@75&10%*

### Saw—
Atkin's:
- Criterion ..... 40%
- Adjustable ..... 40%

Disston's Star, Monarch and Triumph ..... 30%

Morrill's No. 1 ..... $15.00
Nos. 3 and 4, Cross Cut .... $20.60
No. 5, Mill ..... $30.00
Nos. 10, 11, 95 ..... $15.60
No. 1 Old Style ..... $10.00
Special ..... $16.25
} 50%

Giant Royal Cross Cut ..... ℔ doz. $7.50

Royal, Hand ..... ℔ doz. $4.50

Taintor Positive ..... ℔ doz. $6.75

### Shaving—
Fox Shaving Sets, No. 30 ..... ℔ doz., net, $24.00

Smith & Hemenway Co.'s ..... 75%

### Sharpeners, Knife—
Pike Mfg. Co.:
- Fast Cut Pocket Knife Hones, ℔ doz. ..... $1.50
- Mounted Kitchen Sand Stone, ℔ doz. ..... $1.50
- Natural Grit Carving Knife Hones, ℔ doz. ..... $3.00
- Quick Cut Emery Carving Knife Hones, ℔ doz. ..... $1.50
- Quick Edge Pocket Knife Hones, ℔ doz. ..... $2.50

} 50%

### Skate—
Smith & Hemenway Co., Eureka .. 50%

### Shaves, Spoke—
*Iron ..... doz. $1.25*

*Wood ..... doz. $2.00*

Bailey's (Stanley R. & L. Co.) ..... 45%

Chapin-Stephens Co. ..... 30@30&10%

Goodell's, ℔ doz. $9.00 ..... 15&10%

### Shears—

| | 7 | 8 | 9 in. |
|---|---|---|---|
| *Cast Iron* | | | |
| *Best* | $16.00 | 18.00 | 20.00 gro. |
| *Good* | $13.00 | 15.00 | 17.00 gro. |
| *Cheap* | $5.00 | 6.00 | 7.00 gro. |

*Straight Trimmers, &c.:*
- *Best quality Jap ..... 70&10&5%*
- *Best Quality Nickel .. 60&10&5%*

*Tailors' Shears ..... 40@40&10%*

Acme Cast Shears ..... 40@40&5%

Heinisch's Tailor's Shears ..... 10%

National Cutlery Co.'s Nickel Plated, 60&10%; Japan Handles ..... 70&10%

Columbian Cutlery Co.:
- Sheep, 1900 list ..... 30&10&5%
- Grass ..... 50&10%
- Horse or Mule ..... 50&10%

J. Wiss & Sons Co.:
- Best Quality Jap'd ..... 60&10%
- Best Quality Nickeled ..... 50&10%
- Tailors' ..... 25%

### Tinners' Snips—
*Steel Blades ..... 20&5@20&10%*

*Steel Laid Blades ..... 50&10%*

Acme Cast Snips ..... 40@45&5%

Forged Handles, Steel Blades, Berlin ..... 50%

Heinisch's Snips ..... 40%

Jennings & Griffin Mfg. Co.'s 6½ to 10 in. ..... 33⅓&7½%

National Cutlery Co.'s Forged Steel. 50%

Niagara Snips ..... 40%

P., S. & W. Forged Handles, 25%; W. R. W. ..... 50%

J. Wiss & Sons Co.:
- Wiss Forged Steel ..... 25%

### Pruning Shears—
Cronk's Hand Shears ..... 33⅓%

Cronk's Wood Handle Shears .... 33⅓%

Disston's Combined Pruning Hook and Saw, ℔ doz. $18.00 ..... 25%

Disston's Pruning Hook only, ℔ doz., $12.00 ..... 25%

J. T. Henry Mfg. Co.:
- Pruning Shears, all grades ..... 40%

P., S. & W. Co. ..... 40&10%

Columbian Cutlery Co.:
- Hedge, Wilcut Brand ..... 60&10%
- Lawn and Border, Wilcut Brand, 60&10%

### Sheaves—Sliding Door—
Reading ..... 40%

R. & E. list ..... 15%

### Sliding Shutter—
Reading list ..... 40%

R. & E. list ..... 15%

### Shells—Shells, Empty—
Brass Shells, Empty:
- Climax, 10 and 12 gauge ..... 60&5%
- Club, Rival, 65&5%; First Quality, 60&5%

Paper Shells, Empty:
- New Rapid, 10, 12, 16 and 20 gauge, 25&10%
- Climax, 10 and 12 gauge; Acme and Magic, 10, 12, 16 and 20 gauge; Ideal, 10, 12, 16 and 20 gauge; Leader grade ..... 25&5%
- Union, League, 10 and 12 gauge, Rival Grade ..... 25%
- New Climax, Defiance, 10, 12, 14, 16 and 20 gauge; Climax, 14, 16 and 20 gauge ..... 20%
- Challenge, Monarch, 10, 12, 16 and 20 gauge; League, Union, 14, 16 and 20 gauge; Repeater Grade .. 20%

### Shells, Loaded—
*Loaded with Black Powder .. 40%*

*Loaded with Smokeless Powder, medium grade ..... 40&5%*

*Loaded with Smokeless Powder, high grade ..... 40&10&10%*

Union Metallic Cartridge Co.:
- New Club, Black Powders ..... 40%
- Nitro Club, Smokeless Powders. 40&5%
- Arrow, Smokeless Powders. 40&10&10%

Winchester:
- Smokeless Repeater Grade ..... 40&5%
- Smokeless Leader Grade ... 40&10&10%
- Black Powder ..... 40%

### Shingles, Metal—Per Sq.

| Edwards Mfg. Co.: | Painted. | Galv. |
|---|---|---|
| 14 x 20 | $4.25 | $6.00 |
| 10 x 14 | 4.50 | 6.25 |
| 7 x 10 | 4.75 | 6.50 |
| Wheeling Corrugating Co.: | | |
| Dixie, 14 x 20 in. | $4.05 | $5.05 |
| Dixie, 10 x 14 in. | 4.25 | 5.45 |
| Dixie, 7 x 10 in. | 5.25 | 6.70 |

### Shoes, Horse, Mule, &c.—
*F.o.b. Pittsburgh:*
- *Iron ..... per keg. $4.10*
- *Steel ..... per keg. $3.85*

Burden's, all sizes ..... ℔ keg $3.90

### Shot—

| | 25-lb. bag. |
|---|---|
| *Drop, up to B* | $1.80 |
| *Drop, B and larger* | 2.05 |
| *Buck* | 2.05 |
| *Chilled* | 2.05 |
| *Dust* | 2.30 |

### Shovels and Spades—
*Association List .. 40&7½@40&10%*

Avery Stamping Co. ..... 40%

### Snow Shovels—
*Long Handle ..... $2.50@$2.75*

*Wood and Mall, D Handle, $2.65@$2.90*

### Sieves and Sifters—
*Hunter's Imitation, gro .... $9.50*

*Hunter's Genuine, per gro .. $12.00*

### Sifters, Ash—
Acme Ball Bearing Sales Co., Acme Automatic Ash Sifter, each, $3.25; ℔ doz. ..... $39.00

### Sieves, Seamless Metallic

| | Per dozen. | | | |
|---|---|---|---|---|
| *Mesh* | 14 | 16 | 18 | 20 |
| *Iron Wire* | $1.05 | 1.05 | 1.10 | 1.20 |
| *Tinned Wire* | $1.15 | 1.15 | 1.20 | 1.30 |

### Sieves, Wooden Rim—
*Nested, 10, 11 and 12 Inch.*

*Mesh 18, Nested .... doz. $0.90@1.0.95*

*Mesh 20, Nested .... doz. $1.00@1.05*

*Mesh 24, Nested .... doz. $1.30@1.40*

### Sinks, Cast Iron—
*Painted, Standard list:*
- *12 x 12 to 22 x 36 in ..... 60%*
- *20 x 24 to 24 x 50 in ..... 50%*
- *24 x 60 to 24 x 120 in ..... 30%*

Barnes' low list ..... 60%

*NOTE.—There is not entire uniformity in lists used by jobbers.*

### Skeins, Wagon—
*Cast Iron ..... 70@75&10%*

*Steel ..... 40@45%*

### Slates, School—
*Factory Shipments.*
- *"D" Slates ..... 50@50&10%*
- *Eureka, Unexcelled Noiseless .. 60&7 tens.*
- *Victor A, Noiseless .. 60&4 tens &5%*

### Slaw Cutters—See *Cutters.*

### Snaps, Harness—
*German ..... 40@40&10%*

Covert Mfg. Co.:
- Derby, 25%; Yankee, 30&2½%; Yankee Roller, 30&2%.
- High Grade, 40%; Trojan ..... 40%
- Jockey ..... 25%

### Snaths—
*Grass Scythe ..... 50@50&5%*

### Snips, Tinners—See *Shears.*

### Spoons and Forks—
#### Silver Plated—
*Good Quality ..... 50&10@60&5%*

*Cheap ..... 60@60&10%*

International Silver Co:
- 1847 Rogers Bros. ..... 40&10%
- Rogers & Bro., William Rogers' Eagle Brand ..... 50&10%
- Anchor, Rogers Brand ..... 60%
- Wm. Rogers & Son ..... 60&10%

#### Miscellaneous
*German Silver ..... 60@60&5%*

#### Tinned Iron—
*Teas ..... per gro. 50@55¢*

*Tables ..... per gro. $0.90@$1.00*

Atlas Mfg. Co.:
- Tea Spoons, ℔ gro. ..... 50¢@55¢
- Table Spoons, ℔ gro. ..... $0.90@$1.00

### Springs—Door—
Bardsley's Spring and Check ..... 40%

Chicago (Coil) ..... 40&10%

Gem (Coil) ..... 20%

Pullman Door and Gate ..... 10%

Reliance (Coil) ..... 40&10%

Star (Coil) ..... 35%

Torrey's Rod, 39 in. ..... ℔ doz. $1.00

### Carriage, Wagon, &c.—
*1¼ in. and Wider: Per 100 lb.*
- *Black ..... $4.75@$5.00*
- *Half Bright ..... $4.75@$5.00*
- *Bright ..... $5.25@$5.50*

*Painted Seat Springs:*
- *1½ x 2 x 26 .... per pair. 45@47¢*
- *1½ x 3 x 28 .... per pair. 68@71¢*

### Sprinklers, Lawn—
American Foundry & Mfg. Co.:
- Cactus, 65%; Japanese, 70%; National, ℔ doz. ..... $12.00

Enterprise ..... 25@30%

Philadelphia No. 1, ℔ doz. $12; No. 2, $15; No. 3, $20 ..... 30%

### Squares—
*Nickel plated .. List Jan. 5, 1900.*

*Steel and Iron .. 80@80&10%*

*Rosewood Hdl. Try Square and T-Bevels ..... 60&10&10@70%*

*Iron Hdl. Try Squares and T-Bevels ..... 40&10@40&10&10%*

Disston's Try Squares and Bevels, Rosewood Handle, 60 & 10%; Iron Stock and Bevel ..... 15%

### Squeezers, Lemon
*Wood, Porcelain Lined:*
- *Cheap ..... doz. $1.00*
- *Good Grade ..... doz. $1.25*

*Tinned Iron ..... doz. $0.75@1.00*

*Iron, Porcelain Lined ... doz. $1.75*

Victor, ℔ gro. ..... $9.00

### Staples—
*Barbed Blind ..... 85&5@85&10%*

*Electricians' ..... 80&10&10@85%*

*Fence Staples, Polished, $2.05; Galvanized ..... $2.35*

*Poultry Netting Staples ..... per lb. 3¼@3½¢*

### Steels, Butchers'—
Dick's ..... 30%

Foster Bros.' ..... 30%

### Steelyards—.... 30@30&10%

### Stocks and Dies—
*Blacksmiths' ..... 50@50&10%*

Curtis Rev'ble Ratchet Die Stock .. 25%

Derby Screw Plates ..... 25%

Green River ..... 25%

Lightning Screw Plate ..... 25%

Little Giant ..... 25%

Reece's New Screw Plate ..... 25%

### Stoners, Cherry—
Enterprise ..... 25@30%

### Stones, Axe—
Pike Mfg. Co., Axe Stones (all kinds) ..... 33⅓%

### Glass Cutters' Stones—
Pike Mfg. Co., Glass Cutters' Stones and Supplies ..... 40%

### Stones, Oil, &c.—
Pike Mfg. Co., 1907 list: ℔ lb.
- Arkansas St. No. 1, 3 to 5½ in. .. $.80
- Arkansas St. No. 1, 5½ to 8 in. .. $.50
- Arkansas Slips No. 1 ..... $4.00
- Lily White Washita, 4 to 8 in. 60¢
- Rosy Red Washita, 4 to 8 in. 60¢
- Washita St., Extra, 4 to 8 in. .. 50¢
- Washita St., No. 1, 4 to 8 in. .. 40¢
- Washita St., No. 2, 4 to 8 in. .. 25¢
- Lily White Slips ..... 90¢
- Rosy Red Slips ..... 90¢
- Washita Slips, Extra ..... 80¢
- Washita Slips, No. 1 ..... 70¢
- Washita Slips, No. 2 ..... 40¢

} 25%

India Oil Stones (entire list) .. 33⅓%

Quickcut Emery and Corundum Oil Stone, Double Grit ..... 40%

Quickcut Emery and Corundum Axe Stone, Double Grit ..... 33⅓%

Quickcut Emery Rubbing Bricks .. 40%

Hindostan No. 1, R'p'lar ℔ lb. 8¢
Hindostan No. 1, Small ℔ lb. 10¢
Turkey Oil Stones, Extra, 5 to 8 in. ..... ℔ lb. 80¢
Queer Creek Stones, 4 to 8 in. 20¢
Queer Creek Slips ..... 10¢
Sand Stone ..... 6¢

} 50%

## Scythe Stones—

Snedeker Mfg. Co., 1907 list:
Extra Diamond S. S. ₩ gro. $12.00
Lancette S. S. ₩ gro. $11.00
White Mountain S. S. ₩ gro. $9.50
Green Mountain S. S. ₩ gro. $7.00
Extra Indian Pond S.S. ₩ gro. $8.00
No. 1 Indian Pond S.S. ₩ gro. $7.50
No. 2 Indian Pond S.S. ₩ gro. $5.00
Leader Red End S. S. ₩ gro. $5.00
Quick Cut Emery....₩ gro. $10.00
Pure Corundum.....₩ gro. $18.00
Crescent .....$7.00
Emery Scythe Rifles, 2 Coat. $8.80
Emery Scythe Rifles, 3 Coat. $11.00
Emery Scythe Rifles, 4 Coat. $13.20
Balance of 1907 list 33⅓%
Electro (Artificial), ₩ gro., $12.00.33⅓%
$12.00 .....33⅓%
Lightning (Artificial), ₩ gro., $18.00 .....33⅓%

## Stoppers, Bottle—

Victor Bottle Stoppers.....₩ gro. $9.00

## Stops— Bench—

Millers Falls.....15&10%
Morrill's, ₩ doz., No. 1, $10.00....50%
Morrill's, No. 2, $12.50.....50%

## Door—

Chapin-Stephens Co.....50@50&10%

## Plane—

Chapin-Stevens Co.....20%

## Straps— Box—

Acme Embossed, case lots..20&10&10%
Cary's Universal, case lots...20&10&10%

## Stretchers, Carpet—

*Cast Iron, Steel Points..doz.55¢*
*All Steel Socket...doz.$2.00@2.25*
Excelsior Stretcher and Tack Hammer Combined, ₩ doz., $6.00....20%

## Stuffers, Sausage—

Enterprise Mfg. Co., Stuffers and Lard Presses.....25@25&7½%
National Specialty Co., list Jan. 1, 1902 .....30&5%
P., S. & W. Co.....40&10&5%

## Sweepers, Carpet—

| | Per doz. |
|---|---|
| Goshen Sweeper Co.: | |
| Gilt Edge | $27.00 |
| Superfine | 26.00 |
| Majestic | 24.00 |
| Select, Nickeled | 22.00 |
| National Sweeper Co.: | |
| National Queen, Nickeled | $27.00 |
| Martha Washington, Nickeled | 25.00 |
| Monarch, Japanned | 20.00 |
| Perpetual, Japanned | 18.00 |
| Streator Metal Stamping Co.: | |
| Model E, Sanitaire | $25.00 |
| Eureka | 15.00 |
| Streator Majestic, Nickeled | 24.00 |
| Streator Conqueror, Japanned | 22.00 |

*NOTE.—Leading Manufacturers give the following rebates from list prices: 50c per dozen on three-dozen lots; $1 per dozen on five-dozen lots; $2 per dozen on ten dozen lots*

## Tacks, Finishing Nails, &c.

*American Carpet Tacks.90&25@—%*
*American Cut Tacks..90&35@—%*
*Swedes' Cut Tacks.L..90&30@—%*
*Swedes' Upholsterers'.90&35@—%*
*Gimp Tacks.....90&55@—%*
*Lace Tacks.....90&35@—%*
*Trimmers' Tacks.....90&30@—%*
*Looking Glass Tacks....65@—%*
*Bill Posters' and Railroad Tacks, 90&40@—%*
*Hungarian Nails.....80@—%*
*Finishing Nails.....70@—%*
*Trunk and Clout Nails.75&50@—%*

*NOTE.—The above prices are for Straight Weights*

### Miscellaneous—

*Double Pointed Tacks, 90&6 tens@—%*

See also Nails, Wire.

## Tanks, Oil and Gasoline—

Wilson & Friend Co.:

| Gal. | Gasoline | Oil |
|---|---|---|
| 50 | $2.75 | $3.00 |
| 60 | $3.50 | $4.00 |
| 110 | $5.00 | $5.75 |

## Tapes, Measuring—

*American Asses' Skin....50@—%*
*Patent Leather.....25@30&5%*
*Steel .....33⅓@5%*
*Chesterman's .....25@25&5%*
Keuffel & Esser Co.:
Favorite, Ass Skin.....40&10&5%
Favorite, Duck and Leather.....25&5%&10%
Metallic and Steel, lower list, 35@35&5%; Pocket, 35@35&5%.
Lufkin's:
Asses' Skin.....40&10@50%
Metallic .....35@20&5%
Patent Bend, Leather...25&5%&10%
Pocket .....40@10&5%
Steel .....33⅓@5%
Wm. Rabone & Hilger:
Chesterman's Metallic, No. 34L, etc. .....25%
Chesterman's Steel, No. 1038L, etc. .....35%

## Teeth, Harrow—

*Steel Harrow Teeth, plain or headed, 5/8 inch and larger, per 100 lb.....$2.55@$2.80*

## Thermometers—

*Tin Case, Cabinet, Flange, Dairy &c .....30@35%*

## Ties, Bale—Steel Wire—

*Single Loop.....82½&10%*
*Malleable Cross Head, &c..70&2½%*

## Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

## Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

## Tire Benders, Upsetters, &c.

See *Benders and Upsetters, Tire.*

## Tools—Coopers'—

L. & I. J. White.....20@20&5%

## Haying—

Myers' Hay Tools.....50%

## Ice Tools—

Gifford-Wood Co.....15%

## Miniature—

Smith & Hemenway Co.'s, Davidson, ₩ doz., Nickel Plated, $1.50; Gold Plated.....$2.00

## Saw—

Atkins' Cross Cut Saw Tools....35&5%
Simond's Improved.....33⅓%
Simonds' Crescent.....30%

## Ship—

L. & I. J. White.....25%

## Torches—

Hammers, Engine, ₩ doz.....$4.50

## Transom Lifters—

See *Lifters, Transom.*

## Traps—Fly—

*Balloon, Globe or Acme, doz., $1.15@$1.25; gro.....$11.50@12.00*
*Harper, Champion or Paragon, doz., $1.25@1.40; gro.$13.00@13.50*

### Game—

*Imitation Oneida.....75@10%*
Newhouse .....50&5%
Hawley & Norton.....65&10%
Victor .....75@75&10%
Oneida Community Jump.....70&5%
Stop Thief.....60%
Tree Trap.....60%
Hector .....75@75&10%

### Mouse and Rat—

*Mouse, Wood, Choker, doz. holes, 12¢*
*Mouse, Round or Square Wire, doz.85@90¢*
Marty French Rat and Mouse Traps (Genuine), ₩ doz.:

| | Crate lots. | Small lots. |
|---|---|---|
| No. 1, Rat..... | $11.50 | $14.50 |
| No. 3, Rat..... | $5.75 | $6.50 |
| No. 3½, Rat..... | $4.70 | $5.25 |
| No. 5, Mouse..... | $2.25 | $3.00 |

Animal Trap Co.:
Out o' Sight, Mouse, ₩ doz.....$0.60
Out o' Sight, Rat, ₩ doz..... 1.20
Easy Set, Mouse, ₩ doz..... .35
Easy Set, Rat, ₩ doz..... .85
Out o' Sight Chockers, ₩ doz. holes ..... .12
Out o' Sight, Tin, 5-hole, ₩ doz. traps ..... .75

## Trowels—

Disston Brick and Pointing.....25%
Disston Plastering.....20%
Disston "Standard Brand" and Garden Trowels.....30%
Kohler's Steel Garden Trowels, ₩ gro., 5 in., $4.80; 6 in., $6.00.
Never-Break, Forged Steel Garden Trowels, in bulk, net ₩ gro. $5.50
In 1 doz. boxes.....₩ gro. $6.00
Woodrough & McParlin, Plastering.25%

## Trucks, Warehouse, &c.—

B. & L. Block Co.:
New York Pattern.....50&10%
Western Pattern.....60&10%
Handy Trucks.....₩ doz. $16.00
Grocery .....₩ doz $15.00
McKinney Trucks.....each, net $10.00
Model Stove Trucks.....₩ doz $18.50

## Tubs, Wash—

*M'f'gr's list, price per gross.*

| | No. 0 | 1 | 2 | 3 | |
|---|---|---|---|---|---|
| *Galvanized* | $67 | $79 | $89 | $99 | 10&7½&5&5% |

## Twine, Miscellaneous—

*Flax Twine:*
*No. 9, ¼ and ½-lb. Balls .21@23¢*
*No. 12, ¼ and ½-lb. Balls .19@21¢*
*No. 18, ¼ and ½-lb. Balls .16@18¢*
*No. 24, ¼ and ½ -lb. Balls. 15½@17½¢*
*No. 36, ¼ and ½-lb. Balls .15@17¢*
*Chalk Line, Cotton ½-lb. Balls .....24@29¢*
*Cotton Mops, 6, 9, 12 and 15 lb. to doz.....8½@19¢*
*Cotton Wrapping, 5 Balls to lb. according to quality..13½@19¢*
*American 2-Ply Hemp, ½ and ½-lb. Balls.....12½@15¢*
*American 3-Ply Hemp, 1-lb Balls: .....13¼@16¢*
*India, 2-Ply Hemp, ½-lb. Balls, Balls (Spring Twine)...7½@9¢*
*India 3 Ply Hemp, 1-lb. Balls 7¼@9¢*
*India 2 Ply Hemp, 1½-lb. Balls, 7@8½¢*
*2, 3, 4 and 5-Ply Jute, 1¼-lb. Balls .....9@11¢*
*Mason Line, Linen, ½-lb. Bls.17¢*
*No. 24 Mattress, ¼ and ½ lb. Balls, according to quality, 30@60¢*
*Wool, 3 to 6 ply....B 6¢; A 7½¢*

## Vises—

*Solid Box.....60@60&10%*

### Parallel—

Athol Machine Co.:
Simonds' Adjustable.....40%
Standard .....40%
Amateur .....25%
Columbian Hdw. Co., Slide .....40&5%; .....65%
Fisher & Norris Double Screw net, each Nos. 2 $16.50; 3 $16.00; 4. $20.50 5. $[illegible] 6 $32.00

Fulton Mach. & Vise Co.:
F. & R. Double Swivel Machinists' .....40%
Star, Solid Jaw, Machinists'.....40%
Hollands':
Machinists' .....40@40&5%
Keystone .....65&5@70%
Lewis Tool Co.:
Adjustable Jaw.....30%
Monarch, 50%; Solid Jaw.....50%
Massey Vise Co.:
Clincher .....40%
Parallel Bar.....15%
Perfect, 15%; Lightning Grip.....15%
Merrill's .....25%
Millers Falls Oval Slide Pattern.60&10%
Parker's:
Victor, 20@25%; Regulars....20@25%
Vulcan's .....40@45%
Combination Pipe.....55@60%
Prentiss .....20@25%
Rock Island.....25%
Snediker's X. L.....33⅓%
Stephens' .....33⅓%

## Saw Filers

Disston's D 3 Clamp and Guide, ₩ doz., $24.00, 30%; Clamps.....30%
Perfection Saw Clamps, ₩ doz....$4.50
Reading .....60%

## Wood Workers—

Fulton Mach. & Vise Co.:
F. & R. Double Swivel Coachman's .....40%
Star Solid Jaw Woodworkers'....60%
Massey Vise Co.:
Lightning Grip, 15%; Perfect....15%
Wyman & Gordon's Quick Action, 6 in., $6.00; 9 in., $7.00; 14 in., $8.00.

## Miscellaneous—

Fulton Machine & Vise Co., Combination Pipe.....70%
Holland's Combination Pipe..60@60&5%
Massey's Quick Action Pipe.....40%
Parker's Combination Pipe:
87 Series, 60%; 187 Series, 60&5%; No. 870, 40%.
Rock Island Pipe.....25%

## Wads— *Price per M.*

*B. E., 11 up.....60¢*
*B. E., 9 and 10.....70¢*
*B. E., 8.....80¢*
*B. E., 7.....80¢*
*P. E., 11 up.....$1.00*
*P. E., 9 and 10..... 1.25*
*P. E., 8..... 1.50*
*P. E., 7..... 1.50*
*Dis. 15%*
*Ely's B. E., 11 and larger.$1.70@1.75*
*Ely's P. E., 12 to 20....$3.00@3.25*

## Ware, Hollow—

### Cast Iron, Hollow—

*Stove Hollow Ware:*
*Enameled .....45&10%*
*Ground .....50&5%*
*Plain or Unground.....60%*
*Country Hollow Ware, per 100 lbs .....$2.75@$3.00*
*White Enameled Ware:*
*Maslin Kettles.....65&10%*
*Covered Wares:*
*Tinned and Turned.....35&10%*
*Enameled .....45&10%*

See also *Pots, Glue.*

### Enameled—

Agate Nickel Steel Ware.....33⅓%
El-an-ge .....60&10%
Iron Clad Ware.....70&10%
Lava and Volcanic, Enameled..40&10%

### Tea Kettles—

*Galvanized Tea Kettles:*

| | | | | |
|---|---|---|---|---|
| *Inch* ..... | 6 | 7 | 8 | 9 |
| *Each* ..... | 45¢ | 50¢ | 55¢ | 65¢ |

### Steel Hollow Ware—

Avery Stamping Co.:
Never-Break Spiders and Griddles .....65&10%
Steel Kettles, Maslins Scotch Bowls, Tin'd.....60%
Steel Stew Pans, Stew Pots, etc., Porcelained .....50%
Cleveland Stamping & Tool Co.:
Solid Steel Spiders and Griddles .....65&5%
Solid Steel Kettles.....60&5%

### Warmers, Foot—

Pike Mfg. Co., Soapstone....40@40&10%

### Washboards—

| No. | ₩ doz. |
|---|---|
| 800 Brass King, Single Surface, Open Back | $2.80 |
| 862—White Hen, Spiral Grimp Glass | $3.35 |
| 964 Royal Blue Enamel Single Surface, Ventilated Back | $3.35 |
| 172—Our Best, Single Zinc, Soap Drainer | $3.35 |
| 722—Soap Saver, Single Zinc, Iron Top | $3.35 |
| 100—Northern Queen, Single Zinc, Perforated, Open Back | $3.00 |
| 134—Universal, Single Zinc, Extra Family Size, Ventilated Back | $2.80 |
| 760—Banner Globe, Single Zinc, Ventilated Back | $2.25 |
| 57—Peerless, Double Zinc, Spring Protector | $3.70 |
| 56—Red Cross, Double Zinc, Swing Protector | $3 60 |
| 17—North Star, Solid Zinc, Swing Protector | $3.60 |
| 797—Jewel, Single Zinc, Pail Size | $1.25 |

### Washers—Leather, Axle—

*Solid .....90@90&10%*
*Patent .....90@90&5%*
*Coil: ⅞ 1 1¼ 1¼ inch. 9¢ 10¢ 11¢ 14¢ per box.*

### Iron or Steel—

*Size bolt.... 5-16 ⅜ ½ ⅝ ¾*
*Washers....$4.90 4.00 2.70 2.50 2.30*
*The above prices are based on $6.50 off list.*
*In lots less than one keg add ½¢ per lb.; 5-lb. boxes add ½¢ to list.*

Avery Stamping Co.:
Standard, in 200 lb kegs, $6.00 ₩ 100 lb. discount; in 100 lb kegs add 10¢ net ₩ 100 lb; in 5 or 10 lb boxes, add 50¢ net ₩ 100 lb; in 1 lb boxes, add $1.00 net ₩ 100 lb.

## Cast Washers—

*Over ½-inch, barrel lots, per lb. 1½@1¾¢*

## Wedges—

*Oil Finish.....lb., 2¼@2¾¢*

## Weights—Hitching—

Covert Mfg. Co.....30&2%

## Sash—

*Per net ton.....$19.50@$21.00*

## Wheels, Corundum and Emery—

Pike Mfg. Co., Corundum, 65%; Emery .....75%

## Well—

*8-in., $2.00; 10-in., $2.30; 12-in., $3.00; 14-in., $4.45.*

## Wire and Wire Goods—

*Bright and Annealed:*
*6 to 9.....72&10&7½%*
*10 to 18.....72½&10&10%*
*19 to 26.....75&10&10&2½%*
*27 to 36.....77½&7½%*
*Galvanized:*
*6 to 9.....72½&10%*
*10 to 14.....72½&10&5%*
*15 to 16.....72½&10&5%*
*17 to 18.....72½%*
*19 to 26.....70&5&2½%*
*27 to 36.....65&10&10%*
*Coppered:*
*6 to 9.....65&10&10%*
*10 to 14.....70&10&5%*
*15 to 18.....65&10&10&10%*
*19 to 26.....70&5&2½%*
*27 to 36.....72½&10&2½%*
*Tinned:*
*6 to 18.....67&10&10%*
*Brass .....16¼¢ lb., base*
*Copper .....15¼¢ lb., base*
*Cast Steel Wire.....50%*

### Spooled Wire—

*Annealed and Tinned.75@75&10%*
*Brass and Copper....70@70&10%*
*Retailers' Assortments, per box. $1.90@$2.10*

Wire Clothes Line, See Lines.
Wire Picture Cord, see Cord.

### Bright Wire Goods—

*Steel Wire Goods.....90&40%*
*Brass Wire Goods.....90&40%*
*Brass Cup and Shoulder Hooks, 85%*

### Wire Cloth and Netting—

*Galvanized Poultry Netting, 80&10@80&10&5%*
*Screen Cloth, 12 Mesh, Per 100 sq. ft.: Painted, $1.30; Galvanized, $1.90; 14 Mesh, Bronze $6.50*
*Standard Galv. Hardware Grade: 100 ft. rolls, 24 to 48 in. wide, Per 100 sq. ft.*
*Nos. 2, 2½ and 3 Mesh....$2.75*
*Nos. 4 and 5 Mesh.....$3.00*
*No. 6 Mesh.....$3.25*
*Nos. 7 and 8 Mesh.....$3.75*

## Wire, Barb—See *Trade Report*

## Wrenches—

*Agricultural .....80&5@80&10%*
*Alligator or Crocodile..70&10@75%*
*Baxter Pattern S Wrenches, 70&5@70&10%*
*Drop Forged S.....45@45&5%*
Acme .....60&10
Alligator Pattern, 70%; Bull Dog..70%
Bemis & Call's:
Adjustable S, 40&5%; Adjustable S Pipe, 40&5%; Briggs Pattern, 40%; Combination Bright, 50%.
Steel Handle Nut.....50&5%
Combination Black.....50&5%
Merrick Pattern.....50&5%
Boardman's .....40%
Coes' Genuine Knife Hdl...40&10&5&5
Coes' Genuine Steel Hdl...40&10&5&5%
Coes' Genuine Key Model..40&10&5&5%
Coes' Genuine Hammer Handle.....40&10&5&5%
Coes' "Mechanics'"...40&10&10&5&5%
Donohue's Engineer.....40&10%
Eagle .....70%
Gem Pocket.....30%
Hercules .....70%
W. & B. Machinist:
Case lots.....50&10%
Less than case lots.....50%
W. & B. Railroad Special:
Case lots.....50%
Less than case lots.....10&10&5%
Solid Handles, P., S. & W..50&10%; full cases.....50&10&5%
Standard Nipple Mfg. Co.:
Duplex Chain.....50%
Uwanta Wrench Co.:
Uwanta Special, Iron Handle.....40&10&5%
Other Wrenches.....50%
Vulcan and Agrippa Chain.....50%
Whitaker Machinists'.....50&10%
Wizard Adjustable Ratchet.....50%

## Fruit Jar—

Beni, P. Forbes, Triumph, ₩ gro., $7.50; per doz.....$0.90

## Wrought Goods—

*Staples, Hooks, &c., list March 17, '92.....90@—%*

## Zinc— *(Cask lots at mill.)*

*Sheet.....per 100 lb., $7.00*

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